DESIGN-BUILD CONTRACT
BOOK 3

Illinois State Toll Highway Authority

Illinois Tollway Route 390

RR-23-4920R

Table of Contents

DESIGN-BUILD MODIFICATIONS TO IDOT Standard Specifications adopted January 1, 2022 and IDOT Supplemental Specifications and Recurring Special provisions adopted January 1, 2026.....J-6

DESIGN-BUILD MODIFICATIONS AND CROSS REFERENCES TO THE *ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS TO THE ILLINOIS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, ADOPTED JANUARY 1, 2022, ISSUED JANUARY 1, 2026*.....J-6

EARTH AND ROCK EXCAVATION (Illinois Tollway).....J-8

EROSION AND SEDIMENT CONTROL.....J-9

NPDES PERMIT NO. ILR10.....J-10

STORM WATER POLLUTION PREVENTION PLAN (SWPPP).....J-13

ASPHALT MIXTURES (Illinois Tollway).....J-27

ASPHALT PAVEMENT CONSTRUCTION (Illinois Tollway).....J-38

RECLAIMED ASPHALT MATERIALS (RAM) (Illinois Tollway).....J-60

PORTLAND CEMENT CONCRETE (Illinois Tollway).....J-69

CONCRETE STRUCTURES (Illinois Tollway GBSP).....J-85

Reinforcement Bars (Illinois Tollway).....J-88

JOINT SEALER.....J-89

CLEANING OF CATCH BASINS, END SECTIONS, INLETS AND DRAINAGE STRUCTURES.....J-89

DISPOSAL OF REGULATED SUBSTANCES AND UNCONTAMINATED SOIL (Illinois Tollway).....J-90

BOLT REPLACEMENT.....J-98

SLOPE WALL CRACK SEALING.....J-100

FLOOR DRAINS TO BE CLEANED.....J-100

NOISE ABATEMENT WALL REPAIR.....J-100

POLYURETHANE SEALANT.....J-106

CLEANING AND PAINTING BEARINGS.....J-106

TIGHTEN SUPPORT ANCHOR BOLT.....J-107

STORM SEWERS TO BE CLEANED.....J-107

CHAIN LINK FENCE TO BE REMOVED AND RE-ERECTED.....J-108

TIGHTEN EXISTING STRUCTURE BOLT.....J-109

OVERHEAD SIGN STRUCTURE - END CAP.....J-109

PROTECTION AND MAINTENANCE OF EXISTING UNDERPASS LUMINAIRES.....J-110

MAST ARM REPLACEMENT (SPECIAL) (Illinois Tollway).....J-112

MODIFY EXISTING LIGHTING CONTROLLER.....J-112

CLEANING BRIDGE SEATS J-113
DEBRIS REMOVAL J-114
DECK DRAIN REPAIR J-114
DRAINAGE SCUPPERS TO BE ADJUSTED J-115
DRAINAGE STRUCTURES TO BE CLEANED J-115
DRILL AND GROUT DOWEL BARS J-116
LUMINAIRE SAFETY CABLE ASSEMBLY J-116
PIPE UNDERDRAIN REMOVAL J-117
REPLACE U-BOLT J-118
TOPSOIL AND COMPOST (Illinois Tollway) J-118
ASPHALT PAVEMENT SURFACE REMOVAL (Illinois Tollway) J-120
SHOULDER RUMBLE STRIP REMOVAL (Illinois Tollway) J-121
ASPHALT PAVEMENT PATCHING (Illinois Tollway) J-122
ASPHALT PARTIAL DEPTH REMOVAL AND OVERLAY J-123
PATCHING (Illinois Tollway) J-123
ACCELERATED PORTLAND CEMENT CONCRETE PAVEMENT PATCHING (Illinois Tollway) J-125
AGGREGATE SHOULDERS (Illinois Tollway) J-128
SLOPED HEADWALL REMOVAL J-131
BRIDGE DECK LATEX CONCRETE OVERLAY (Illinois Tollway GBSP) J-131
References. J-131
CLEANING JOINTS J-139
REPLACE STRIP SEAL GLANDS J-140
REPLACE BEARING SIDE RETAINERS J-141
GUTTER, TYPE G (Illinois Tollway) J-141
TRAFFIC BARRIER TERMINAL, TYPE T1 (SPECIAL) TANGENT (Illinois Tollway) J-142
TRAFFIC BARRIER TERMINAL, TYPE T1-A (SPECIAL) (Illinois Tollway) J-145
REMOVAL AND REPLACEMENT OF GUARDRAIL BLOCK-OUT J-147
RUMBLE STRIPS J-148
HEADWALL AND SLOPED HEADWALL J-148
TEMPORARY CONCRETE BARRIER, CROSS-BOLT CONNECTION (Illinois Tollway) J-149
RAISED PAVEMENT LANE MARKER (Illinois Tollway) J-152
MAST ARM CABLE ASSEMBLY (SPECIAL) (Illinois Tollway) J-155
SURFACE SMOOTHNESS TESTING (Illinois Tollway) J-163
PERFORMANCE BASED NOISE ABATEMENT WALL (PRECAST CONCRETE) (Illinois Tollway) J-167
CONTRACTOR 3D GRADING REPORTS J-189

DIGITAL UTILITY AS-BUILT (Illinois Tollway) J-190
AGGREGATE FOR SUBBASE RESTORATION (Illinois Tollway) J-195
PROTECTIVE SHIELD (Illinois Tollway) J-197
DECK SLAB AND APPROACH SLAB REPAIR (Illinois Tollway GBSP) J-198
ACCELERATED CONCRETE DECK SLAB AND APPROACH SLAB REPAIR (Illinois Tollway GBSP) J-203
STRUCTURAL REPAIR OF CONCRETE (Illinois Tollway GBSP) J-208
BEAM END ENCASEMENT J-218
APPLY CONCRETE SEALANT (Illinois Tollway GBSP) J-221
BRIDGE DECK CONCRETE SEALER (Illinois Tollway GBSP) J-222
bonded PREFORMED Joint Seal REPLACEMENT (Illinois Tollway GBSP) J-224
TELEVISION INSPECTION OF SEWER (Illinois Tollway) J-229
ALLOWANCE FOR RAILROAD FLAGGING AND SERVICES (Illinois Tollway) J-231
CONTRACT ALLOWANCE FOR CONSTRUCTIONWORKS APPRENTICES (Illinois Tollway) J-232
ALLOWANCE FOR EMERGENCY PAVEMENT AND SHOULDER REPAIR J-234
ALLOWANCE for DISPOSAL OF UNKNOWN PRE-EXISTING HAZARDOUS MATERIAL J-234
ALLOWANCE FOR DRAINAGE PIPE REPAIR J-235
PIPE UNDERDRAIN TO BE CLEANED J-236
REMOVAL AND REPLACEMENT OF PRECAST CONCRETE NOISE WALL PANEL SECTIONS J-237
NOISE WALL ACCESS DOOR REPLACEMENT J-237
LIGHT POLE PROTECTION BOX J-237
CONCRETE BARRIER (Illinois Tollway) J-238
EARTHWORK MANAGEMENT PLANS (Illinois Tollway) J-239
REMOVE AND REINSTALL MILEPOST MARKER J-240
SIGN STRUCTURE RODENT SCREEN J-241
FURNISH AND INSTALL STRUCTURAL STEEL SUPPORT MEMBER FOR OVERHEAD SIGN STRUCTURE J-241
PREFORMED JOINT FILLER J-242
MULTI-POLYMER PAVEMENT MARKINGS (Illinois Tollway) J-242
PAVEMENT MARKING AND MARKER REMOVAL (Illinois Tollway) J-254
HANDHOLE COVER REPLACEMENT J-255
DITCH CLEANING J-255
MICROSURFACING (Illinois Tollway) J-256
HIGH TENSION CABLE MEDIAN BARRIER (Illinois Tollway) J-257
EMBANKMENT (Illinois Tollway) J-260

EMBANKMENT MODIFICATION (Illinois Tollway) J-264
CONTRACTOR'S QUALITY PROGRAM (Illinois Tollway) J-267
PUBLIC CONVENIENCE AND SAFETY (D1) D1-1
WORK ZONE TRAFFIC CONTROL (D1) D1-1
TRAFFIC CONTROL PLAN (D1) D1-1
TEMPORARY INFORMATION SIGNING D1-2
TRAFFIC CONTROL FOR WORK ZONE AREAS D1-3
KEEPING ARTERIAL ROADWAYS OPEN TO TRAFFIC (LANE CLOSURES ONLY) D1-4
TEMPORARY TRAFFIC SIGNAL TIMING D1-5
WORK ZONE TRAFFIC CONTROL DEVICES (BDE) BDE-1
VEHICLE AND EQUIPMENT WARNING LIGHTS (BDE) BDE-3
WORK ZONE TRAFFIC CONTROL DEVICES (BDE) BDE-3
VEHICLE AND EQUIPMENT WARNING LIGHTS (BDE) BDE-5
JACK AND REMOVE EXISTING BEARINGS GBSP-1
MODULAR EXPANSION JOINT GBSP-2
CLEANING AND PAINTING EXISTING STEEL STRUCTURES GBSP-6
CONTAINMENT AND DISPOSAL OF LEAD PAINT CLEANING RESIDUES GBSP-28
BRIDGE DECK GROOVING (LONGITUDINAL) GBSP-50
BRIDGE DRAINAGE SYSTEM REPAIRS GBSP-51
STRUCTURAL STEEL REPAIR GBSP-52
TEMPORARY SHORING AND CRIBBING GBSP-53
RECURRING SPECIAL PROVISIONS IDOT-54

All applicable provisions of the IDOT Standard Specifications adopted January 1, 2022, herein after referred to as the Standard Specifications, IDOT Supplemental Specifications and Recurring Special provisions adopted January 1, 2022, Illinois Tollway Supplemental Specifications to said Standard Specifications issued January 1, 2026, and all Illinois Tollway Construction Bulletins in effect at the time of bidding, shall govern this work except as herein amended.

The Project Standards shall include all references listed below, as well as any documents referenced within the documents listed below. These standards shall be:

- AASHTO Standard Specifications for Highway Bridges
- A Code of Federal Regulations, Title 23 (Highways), Chapter 1, Part 752, Landscape and Roadside Development
- AASHTO A Guide for Transportation Landscape and Environmental Design
- AASHTO A Policy on Geometric Design of Highways and Streets
- AASHTO Construction Handbook for Bridge Temporary Works
- AASHTO Guide Design Specifications for Bridge Temporary Works
- AASHTO Guide for the Development of Bicycle Facilities
- AASHTO Guide specifications for Design and Construction of Segmental Concrete Bridges
- AASHTO Guide Specifications for Fracture Critical Non- Redundant Steel Bridge Members
- AASHTO Laboratory Specifications
- AASHTO LRFD Bridge Construction Specifications
- AASHTO LRFD Bridge Design Specifications
- AASHTO LRFD Guide Specifications for the Design of Pedestrian Bridges
- AASHTO Manual for Bridge Evaluation
- AASHTO Manual on Subsurface Investigations
- AASHTO Mechanistic-Empirical Pavement Design Guide: A Manual of Practice
- AASHTO Roadside Design Guide
- AASHTO Roadway Lighting Design Guide
- AASHTO Standard Specifications for Highway Bridges
- AASHTO Standard Specifications for Structural Supports for Highway Signs, Luminaires and Traffic Signals
- AASHTO Standards
- AASHTO/AWS D1.5 M- D 1.5, Bridge Welding Code
- AASHTO/NSBA Guide Specification for Application of Coating Systems with Zinc-Rich Primers to Steel Bridges
- AASHTO/NSBA Steel Bridge Fabrication Guide Specification
- American Congress on Surveying and Mapping and the American Society of Civil Engineers Definitions of Surveying and Associated Terms
- American Society of Civil Engineers Practical Highway Aesthetics
- ANSI/IES RP-8 (latest edition) Recommended Practice: Lighting Roadway and Parking Facilities
- Applicable federal or state railroad standards and safety requirements (AREMA)

- ASTM Standards
- CEB-FIP Model Code for Concrete Structures (For Time Dependent Behavior of Concrete)
- Context Sensitive Solutions Information (CSS)
- EIA/TIA Fiber Optic Test Procedure (FOTP) Standards
- FAA Hazardous Wildlife Attractants on or near Airports, Advisory Circular 150/5200-33C
- FHWA Corrosion/Degradation of Soil Reinforcements for Mechanically Stabilized Earth Walls and Reinforced Soil Slopes
- FHWA Flexibility in Highway Design
- FHWA Geotechnical Engineering Circular Number 4 Ground Anchors and Anchored Systems
- FHWA Hydraulic Design Series No. 2, Highway Hydrology
- FHWA Hydraulic Design Series No. 5, Hydraulic Design of Highway Culverts
- FHWA Hydraulic Design Series No. 7, Hydraulic Design of Safe Bridges
- FHWA Hydraulic Engineering Circular No. 14 (HEC-14), Hydraulic Design of Energy Dissipators for Culverts and Channels
- FHWA Hydraulic Engineering Circular No. 15 (HEC-15), Design of Roadside Channels with Flexible Linings
- FHWA Hydraulic Engineering Circular No. 17 (HEC-17), Highways in the River Environment – Floodplains, Extreme Events, Risk, and Resilience
- FHWA Hydraulic Engineering Circular No. 20 (HEC-20), Stream Stability at Highway Structures
- FHWA Hydraulic Engineering Circular No.18 (HEC-18), Evaluating Scour at Bridges
- FHWA Hydraulic Engineering Circular No.21 (HEC-21), Design of Bridge Deck Drainage
- FHWA Hydraulic Engineering Circular No.22 (HEC-22), Urban Drainage Design Manual
- FHWA Hydraulic Engineering Circular No.23 (HEC-23), Bridge Scour and Stream Instability Countermeasures: Experience, Selection and Design Guidance, Volumes 1 and 2
- FHWA Manual for Design and Construction Monitoring of Soil Nail Walls, FHWA HI-95-038 Geosynthetic Design and Construction Guidelines, FHWA Manual for the Design & Construction Monitoring of Soil Nail Walls, FHWA RD-73-93, Analysis and Design Problems in Modeling Slurry Wall Construction, FHWA SA-93-068, Soil Nailing Field Inspectors Manual-Soil Nail Walls, FHWA Hydraulic Design Series (HDS) No. 4, Introduction to Highway Hydraulics, AASHTO Guide Specifications for Structural Design of Sound Barriers
- FHWA Manual on Uniform Traffic Control Devices
- FHWA Mechanically Stabilized Earth Walls and Reinforced Soil Slopes Design and Construction Guidelines
- FHWA Post-Tensioning Tendon Installation and Grouting Manual
- FHWA publications
- FHWA Standard Highway Signs and Markings

- IDNR - Interagency Wetland Policy Act of 1989 (20 ILCS 830/)
- Illinois Department of Transportation All Bridge Design Memorandums
- Illinois Department of Transportation All Geotechnical Manual User Memorandums (AGMU)
- Illinois Department of Transportation BDE Chapter 17- Bicycle and Pedestrian Accommodations
- Illinois Department of Transportation BDE Special Provisions
- Illinois Department of Transportation Bridge Condition Report Procedures & Practices
- Illinois Department of Transportation Bridge Manual
- Illinois Department of Transportation Bureau of Design and Environment Manual
- Illinois Department of Transportation CADD Manual
- Illinois Department of Transportation Chapter 59 Landscape Design
- Illinois Department of Transportation Chapter 59 Landscape Design Bureau of Design and Environment Manual
- Illinois Department of Transportation Culvert Manual
- Illinois Department of Transportation Design and Engineering Policies
- Illinois Department of Transportation District One CADD Standards (Traffic Signal Cell Library)
- Illinois Department of Transportation District One ITS Detail Drawings
- Illinois Department of Transportation District One ITS Special Provisions
- Illinois Department of Transportation District One Lighting Design Guidelines
- Illinois Department of Transportation District One Lighting Detail Sheets
- Illinois Department of Transportation District One Signing Design Guidelines
- Illinois Department of Transportation District One Special Provisions
- Illinois Department of Transportation District One Traffic Signal Design Guidelines
- Illinois Department of Transportation District One Traffic Signal Detail Sheets
- Illinois Department of Transportation Drainage Manual
- Illinois Department of Transportation Geotechnical Manual
- Illinois Department of Transportation Guide Bridge Special Provisions (GBSPs)
- Illinois Department of Transportation Highway Standard Drawings
- Illinois Department of Transportation Highway Standards
- Illinois Department of Transportation Illinois Supplement to the FHWA Manual on Uniform Traffic Control Devices
- Illinois Department of Transportation Land Acquisition Policies and Procedures Manual
- Illinois Department of Transportation OA Vegetation and Landscape Control Plan
- Illinois Department of Transportation Policy and Procedures Public Act 93-0545 Context Sensitive Solutions
- Illinois Department of Transportation Sign Structures Manual
- Illinois Department of Transportation Special Provisions
- Illinois Department of Transportation Standard Drawings
- Illinois Department of Transportation Standard Specifications for Road and Bridge Construction

- Illinois Department of Transportation Structure Services Manual
- Illinois Department of Transportation Subgrade Stability Manual
- Illinois Department of Transportation Supplemental Specifications and Recurring Special Provisions
- Illinois Department of Transportation Survey Manual
- Illinois Freedom of Information Act (FOIA)
- Illinois Supplement to the National Manual on Uniform Traffic Control Devices (IL MUTCD)
- Illinois Tollway Lane Closures Management Application User Guide
- Illinois Tollway AADT Lane Closure Guide
- Illinois Tollway Base Sheet Drawings
- Illinois Tollway Base Sheets
- Illinois Tollway Base Sheets (Sections M-BUS and M-ITS)
- Illinois Tollway BIM Implementation Manual
- Illinois Tollway Business Systems Toll Plaza Manual
- Illinois Tollway CADD Standards Manual
- Illinois Tollway Computer Aided Design and Drafting (CADD) Standards Manual
- Illinois Tollway Construction Bulletins
- Illinois Tollway Construction Managers Manual
- Illinois Tollway Contractor's Quality Program Manual
- Illinois Tollway Design Bulletins
- Illinois Tollway Design Guidelines
- Illinois Tollway Design Section Engineers Manual
- Illinois Tollway Drainage Design Manual
- Illinois Tollway Emergency Communication Plan
- Illinois Tollway Environmental Studies Manual
- Illinois Tollway Erosion and Sediment Control, Landscape Design Criteria Manual
- Illinois Tollway Erosion Control and Landscape Manual and Appendices
- Illinois Tollway Geotechnical Manual
- Illinois Tollway Guidelines for Roadway Illumination
- Illinois Tollway Intelligent Transportation Systems (ITS) Deployment Guide
- Illinois Tollway INVEST Project Development Manual
- Illinois Tollway ITS Base Sheets (Section M)
- Illinois Tollway ITS Deployment Guide
- Illinois Tollway ITS Deployment Manual
- Illinois Tollway ITS Labeling Guide
- Illinois Tollway ITS Maintenance Manual
- Illinois Tollway ITS Special Provisions
- Illinois Tollway Lane Closure Forms
- Illinois Tollway Lane Closure Guide
- Illinois Tollway Lane Closure Reference Guide
- Illinois Tollway Maintenance Manual
- Illinois Tollway Manual of Test Procedures

- Illinois Tollway ProVal User Guide
- Illinois Tollway Provisions for Form Liners – Noise Walls and Retaining Walls.
- Illinois Tollway Quality Standard for Work Zone Traffic Control Devices
- Illinois Tollway Roadway Design Criteria
- Illinois Tollway Roadway Signing and Pavement Marking Guidelines
- Illinois Tollway Roadway Traffic Control and Communications Manual
- Illinois Tollway Roadway Traffic Control and Maintenance of Traffic
- Illinois Tollway Signing and Pavement Marking Guidelines
- Illinois Tollway Special Provisions
- Illinois Tollway Standard D7-04 Landscape Planting Details
- Illinois Tollway Standard Drawing Section D
- Illinois Tollway Standard Drawings
- Illinois Tollway Structure Design Manual
- Illinois Tollway Supplemental Specifications to the Illinois Department of Transportation Standard Specifications for Road and Bridge Construction 2024
- Illinois Tollway Supplemental Specifications.
- Illinois Tollway Technical Memoranda;
- Illinois Tollway Toll Plaza and ITS Special Provisions
- Illinois Tollway Traffic Barrier Guidelines
- Illinois Tollway Traffic Generator Decision Tree
- Illinois Tollway Traffic Generator Sign Policy
- Illinois Tollway Work Zone Speed Limit Flow Chart
- Illinois Urban Manual
- International Society of Arboriculture and the Council of Tree and Landscape Appraisers Guide for Plant Appraisal, 9th Edition
- Manual on Uniform Traffic Control Devices (MUTCD)
- National Electric Code
- National Electrical Manufacturers Association (NEMA) Standards
- National Fire Protection Agency National Electric Code (NEC) Standards, including Listing Requirements
- National Spatial Data Infrastructure Geospatial Positioning Accuracy Standards, Part 3: National Standards for Spatial Data Accuracy, FGDC-STD-007.3-1998
- National Transportation Communications for ITS Protocol (NTCIP) Standards
- Post Tensioning Institute (PTI) Acceptance Standards for Post Tensioning Systems
- Secretary of the Interior’s Standards for the Treatment of Historic Properties
- Standard Specifications for Water and Sewer Construction in Illinois
- Traffic Barrier Guidelines
- U.S. Department of Transportation National ITS Architecture
- USACE Engineering Manuals
- USACE Publications
- USDA-Wildlife Service Illinois Preferred Airport Plant List
- USDA-Wildlife Service Illinois Prohibited Airport Plant List

DESIGN-BUILD MODIFICATIONS TO IDOT STANDARD SPECIFICATIONS ADOPTED JANUARY 1, 2022 AND IDOT SUPPLEMENTAL SPECIFICATIONS AND RECURRING SPECIAL PROVISIONS ADOPTED JANUARY 1, 2026

1. When these specifications refer to “Method of Measurement,” or “Basis of Payment”, such language shall be disregarded. It is not the intent of the Design-Build Contract that the various components of the Work will be measured for payment. Final payment will be at the Contract Price for the completed Project irrespective of the quantities of the various components incorporated in the Work.
2. When these Specifications refer to “basis of payment,” to “unit prices,” or to “adjustments of unit prices,” such references and language shall be disregarded, except unit prices as identified in Book 2, applicable to disincentives for Nonconforming Work or incentives for surface ride quality shall be either the specific dollar amount set forth in the standard specifications or a unit price proposed by the Contractor and Approved by The Illinois Tollway.
3. When these Specifications refer to “extra work or similar phrases, such references shall be disregarded. It is the intent that the payment of the Contract Price will be full compensation for all Work performed pursuant to the Design-Build Contract unless specific provisions for additional payments are contained in the Contract Documents.
4. When these specifications refer to the term “incidental” such term shall mean that the costs shall be included in the Contractor’s Price Proposal.
5. When a reference to “Engineer” relates to design responsibilities or other technical issues, “the Engineer” shall mean the Contractor’s Design Manager. When a reference to “Engineer” relates to administrative issues, “the Engineer” shall mean the Illinois Tollway. It shall be in the Illinois Tollway’s sole discretion to determine when the context refers to technical or administrative responsibilities.

DESIGN-BUILD MODIFICATIONS AND CROSS REFERENCES TO THE *ILLINOIS TOLLWAY SUPPLEMENTAL SPECIFICATIONS TO THE ILLINOIS DEPARTMENT OF TRANSPORTATION STANDARD SPECIFICATIONS FOR ROAD AND BRIDGE CONSTRUCTION, ADOPTED JANUARY 1, 2022, ISSUED JANUARY 1, 2026*

General. This Contract Special Provision amends the Illinois Tollway Supplemental Specifications to the Illinois Department of Transportation Standard Specifications for Road and Bridge Construction (Tollway Supplemental Specifications) and contain requirements generally applicable to the Work to be performed by Contractor. In certain cases, provisions in the Tollway Supplemental Specifications have been superseded by other Special Provisions in Book 3 of the Contract Documents. For ease of reference, this document uses the same section numbers as the above-mentioned documents and identifies provisions of the Contract Documents that have replaced or modified the standard clauses. If there are conflicts between the “General” Modifications and the Specific Provision Modifications of Book 3, the Special Provision Modifications have precedence over the General Modifications.

Any references to other standards, codes, or criteria, or to the latest version of other standards, codes, or criteria in Book 2 of the Contract Documents shall mean the latest version as of the date the Request For Proposals is released. Unless otherwise designated, when AASHTO, ASTM, FSS, AWS, CRSI, UL, and other specifications, standards, methods, tests, or practices are cited in these Specifications, the reference shall be to the latest edition as revised or updated by approved supplements or interim editions published and issued as of the date the Request for Proposals is released. By mutual agreement, the referenced provisions may govern as updated to the time of application.

Those specifications that are not modified in this General Modification Special Provision, may be modified by other Special Provisions or other Contract Documents.

General Exceptions:

1. When these Specifications refer to “Method of Measurement,” or “Basis of Payment”, such language shall be disregarded. It is not the intent of the Design-Build Contract that the various components of the Work will be measured for payment. Final payment will be at the Contract Price for the completed Project irrespective of the quantities of the various components incorporated in the Work.
2. When these Specifications refer to “basis of payment,” to “unit prices,” or to “adjustments of unit prices,” such references and language shall be disregarded, except unit prices as identified in Book 2, applicable to disincentives for Nonconforming Work or incentives for surface ride quality shall be either the specific dollar amount set forth in the standard specifications or a unit price proposed by the Contractor and Approved by The Illinois Tollway.
3. When these Specifications refer to “extra work or similar phrases, such references shall be disregarded. It is the intent that the payment of the Contract Price will be full compensation for all Work performed pursuant to the Design-Build Contract unless specific provisions for additional payments are contained in the Contract Documents.
4. When these specifications refer to the term “incidental” such term shall mean that the costs shall be included in the Contractor’s Price Proposal.
5. When a reference to “Engineer” relates to design responsibilities or other technical issues, “the Engineer” shall mean the Contractor’s Design Manager. When a reference to “Engineer” relates to administrative issues, “the Engineer” shall mean the Illinois Tollway. It shall be in the Illinois Tollway’s sole discretion to determine when the context refers to technical or administrative responsibilities.

Section 101. Definition of Terms
Section 101 is deleted in its entirety and its content is now set forth in INSTRUCTIONS TO PROPOSERS, Book 1 and Book 2 of the Contract Documents.

Section 102. Proposal Requirements and Conditions
Section 102 is deleted in its entirety and its content is now set forth in the INSTRUCTIONS TO PROPOSERS, Book 1 of the Contract Documents and Book 2 of the Contract Documents.

Section 103. Award and Execution of Contract
Section 103 is deleted in its entirety and its content is now set forth in REQUEST FOR QUALIFICATIONS, INSTRUCTIONS TO PROPOSERS, Book 1 of the Contract Documents and

Book 2 of the Contract Documents.

Section 104. Scope of Work
Section 104 is deleted in its entirety and its content is now set forth in INSTRUCTIONS TO PROPOSERS, Book 1 of the Contract Documents and Book 2 of the Contract Documents.

Section 105. Control of Work
Section 105 is deleted in its entirety and its content is now set forth in Book 1 of the Contract Documents and Book 2 of the Contract Documents.

Section 106. Control of Materials
Section 106 is deleted in its entirety and its content is now set forth in Book 2 of the Contract Documents.

Section 107. Legal Relations and Responsibility to the Public
Section 107 is deleted in its entirety and its content is now set forth in Book 1 of the Contract Documents and Book 2 of the Contract Documents.

END OF SECTION

EARTH AND ROCK EXCAVATION (ILLINOIS TOLLWAY)

Effective: October 29, 2012
Revised: April 6, 2022

Description. This work shall consist of the excavation and transportation of suitable excavated material to embankment locations throughout the limits of the contract, or the excavation, transportation, and disposal of excavated material according to Section 202 of the Standard Specifications except as modified herein. This work also includes the placement of material at embankment locations in accordance with the Illinois Tollway Special Provision for Embankment. This work does not include excavation for structures or channel excavation.
Revise Article 202.03 of the Standard Specifications to read:

202.03 Removal and Disposal of Surplus, Unsuitable Materials, and Organic Waste. Suitable excavated materials of any moisture content shall not be wasted without the permission of the Engineer. The Contractor shall dispose of all surplus, unsuitable materials, and organic waste, in such a manner that public or private property will not be damaged or endangered. Suitable but excessively moist excavated materials if used for embankment may be treated in accordance with the Illinois Tollway Special Provision for Embankment to obtain the specified compaction levels.

Suitable earth, stones and boulders naturally occurring within the right-of-way may be placed in fills or embankments in lifts and compacted according to Section 205. Reclaimed Asphalt Pavement (RAP) may be used in embankment or in fill according to the Illinois Tollway Special Provision for Embankment. No material will be allowed for reuse within Tollway right-of-way outside contract limits without prior approval from the Tollway in accordance with Article 107.22 of the Supplemental Specifications.

Excavated Soils are classified for disposal and are also classified for reuse or non-reuse in accordance with the Illinois Tollway Special Provision for Disposal of Regulated Substances and Uncontaminated Soils. Soils approved for reuse may be used for embankment. Aside from the materials listed above, all other construction and demolition debris or waste shall be disposed of in a licensed landfill or otherwise disposed of as allowed by State or Federal laws and regulations.

Organic waste originating within the right-of-way limits may be chipped or shredded and placed as mulch around landscape plantings within the right-of-way when approved by the Engineer. Chipped or shredded material to be placed as mulch shall not exceed a depth of 6 inches.

When the Contractor proposes to dispose of uncontaminated surplus excavated material off the right-of-way, the Contractor shall obtain and file with the Engineer permission in writing, from the property owner, for the use of the property for this purpose. The approval of the proposed disposal site shall be according to Article 107.22 of the Illinois Tollway Supplemental Specifications. Any such disposal shall not create an unsightly or objectionable appearance or detract from the natural topographic features, nor be placed at an elevation higher than that of the adjacent roadway without permission from the Engineer.

A volume of excavated material from sewer trenches, electrical or ITS trenches, drainage structures, or other underground construction is shown on the plans for information. At the approval of the Engineer, this material may be placed within the right-of-way according to the Illinois Tollway Special Provision for Embankment. Reuse of excavated material from trenches and drainage, electrical, or fiber structures or other underground construction is classified in accordance with the Illinois Tollway Special Provision for Disposal of Regulated Substances and Uncontaminated Soil.

If unsuitable material is present at or below the finished grade, it shall be removed and replaced with suitable material as directed by the Engineer. Unsuitable material shall be placed as approved by the Engineer within the right-of-way according to the Illinois Tollway Special Provision for Embankment.

Delete Article 202.07 Method of Measurement
Delete Article 202.08 Basis of Payment

END OF SECTION

EROSION AND SEDIMENT CONTROL

The Illinois Tollway, in order to comply with various environmental regulations, has included Bid Items from Section 280 of the Illinois Tollway Supplemental Specifications and/or the Standard Specifications, to implement such compliance. The Contractor shall make his/her employees and subcontractors aware that the Illinois Tollway will strictly enforce these requirements.

The National Pollutant Discharge Elimination System (NPDES) program of the Federal Clean Water Act addresses pollution by regulating point sources that discharge pollutants into waters of the United States. In Illinois, coverage under an NPDES stormwater permit is required from the IEPA for construction activities that have the potential to adversely affect water quality or water

resources or result in disturbance of one (1) or more acres of total land area. The Illinois Tollway must comply with the requirements of the current ILR10 permit for all projects that meet the ILR10 permit applicability criteria.

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.

Erosion and sediment controls and/or other stormwater protection measure BMPs (regardless of the area of disturbance) must be provided on projects which expose soil or otherwise have potential to impact water quality or the environment. Such impacts include but are not limited to adverse effects to operations on the highway or associated rights-of-way, introduction of pollutants into receiving waters, or could affect adjacent properties, sensitive environmental resources, bioswales or other resources which the Illinois Tollway has committed to protect from pollutant impacts.

Illinois Tollway projects which involve demolition, dewatering discharge, clearing, and grubbing, trenching, excavation, grading, drainage modifications, stockpiling of soil and aggregate, borrow, concrete wash, construction of embankment, storm sewer construction and cleanout, or otherwise require the use of erosion and sediment control measures requires the preparation and implementation of an Erosion and Sediment Control Plan.

All Illinois Tollway projects have been evaluated for the need for an NPDES permit, erosion and sediment controls, and pollution prevention measures to protect stormwater as part of the preparation of the Contract Plan and Documents. Requirements of the NPDES permit are specified below in NPDES Permit No. ILR10. Requirements regarding erosion and sediment control and other pollution prevention controls to minimize stormwater pollution are specified below in Storm Water Pollution Prevention Plan.

The Contract Plans identify the types of erosion and sediment control practices and BMPs to be used, the locations in which they will be applied, and when they should be applied in relation to the sequence of construction operations. The sequence of construction operations may not have been specified in the Contract Plans. Rather, the application of erosion and sediment control measures and BMPs in relation to the specific stages of construction that may expose soil wherever those stages occur shall be described.

NPDES PERMIT NO. ILR10

The general construction site activities of this project will be conducted under the Illinois Environmental Protection Agency (IEPA) General Permit to Discharge Stormwater associated with construction site activities (ILR10).

The requirements of this permit include the development of detailed Erosion and Sediment Control Plan (ESCP) and the preparation of a Stormwater Pollution Prevention Plan (SWPPP) that addresses erosion and sediment control issues, stormwater management, water quality, and

control of other construction-related pollutants that could impact the environment. Also included are the installation of the required measures by the Contractor, along with the implementation of an active inspection and maintenance program, and the filing of the necessary required documents.

The Contract Plans and Documents describe the ESCP proposed for the project. The Contractor may submit new drawings defining the measures to be installed but these drawings will need to be approved by the Illinois Tollway prior to the Illinois Tollway certifying the SWPPP.

If required, SWPPP is to be completed by the Contractor and submitted to the Illinois Tollway for review and signature. This SWPPP must be approved and signed by the Illinois Tollway and the Contractor and submitted to the IEPA no later than 30 days prior to the start of construction, with the Notice of Intent (NOI). A copy of the signed SWPPP and referenced documents are to be always kept on the construction site by the Engineer and the Contractor. The SWPPP is to be updated by the Engineer and Contractor as changes are made during construction.

The NOI must be submitted electronically to the IEPA's NPDES eReporting Tool (NeT) through the EPA's Central Data Exchange (CDX) no later than 30 days prior to the start of construction. The NOI will be initiated by the Design Section Engineer (DSE), who is responsible for completing the owner, construction site (except for construction start/end dates), type of construction, historic preservation, and endangered species compliance, and receiving water information sections. The Contractor will finalize the NOI by completing the contractor information, dates of construction start/end, SWPPP information, and any missing information from the type of construction information sections. The Contractor will submit the completed NOI to the Engineer, who will then submit it to the Illinois Tollway Environmental Unit "Certifier" for signature and filing with the IEPA. The Contractor shall submit the completed NOI and SWPPP within five (5) business days of Notice to Proceed date, to the Engineer in order to provide sufficient time for this process and for the forms to be certified by the Illinois Tollway and filed with the IEPA no later than 30 days before any ground disturbing activity begins. IEPA's NeT tool can be accessed through EPA's CDX website found here:

http://cdx.epa.gov

A copy of the letter of notification of coverage from the IEPA, along with the General NPDES Permit for Storm Water Discharges from Construction Site Activities shall be accessible to the site. A digital copy made available upon request is acceptable.

The Illinois Tollway's General Permit ILR40 from the IEPA requires established and controlled concrete washout location(s) in order to reduce contaminated runoff into nearby ditches and streams. The Contractor shall be responsible for locating the concrete truck washout locations. At the time of the Preconstruction Conference, the Contractor shall submit for approval the proposed concrete truck washout location(s). The locations will be reviewed and discussed at the Preconstruction Conference to reinforce to the Contractor the importance of the washout facilities so that pollutants do not reach the storm sewer or ditch systems. The approved location(s) shall be annotated on the Engineer's copy(ies) of the Erosion and Sediment Control Plan.

The Illinois Tollway's General Permit ILR40 also requires that sediment laden stormwater runoff containing suspended and dissolved solids from roadway base comprised of either recycled concrete or rubblized concrete have said solids removed prior to discharging outside of Illinois

Tollway right-of-way to the extent required by the NPDES General Permit. For construction areas adjacent to creeks and streams, the stormwater's pH must also be moderated prior to discharge. The Contract Documents have incorporated appropriate Best Management Practices (BMPs) into the project plans to prevent these types of sediments from leaving Illinois Tollway right-of-way. The Contractor shall be responsible for installing identified BMPs, identifying any areas where sediments are leaving Illinois Tollway right-of-way, and removing said BMPs following completion of the project when sediments are no longer being released.

For any violation of the SWPPP observed during any inspection conducted, including those not required by the plan, and any illicit discharge (defined as any discharge that is not composed entirely of stormwater) exiting the right-of-way or to receiving waters, the Engineer will immediately report the incident to the Illinois Tollway Environmental Unit. Corrective actions must be initiated immediately to address any non-compliance issues.

Reports of violations of the SWPPP and illicit discharges shall be reported to the Illinois Tollway Environmental Unit at environment@getipass.com. For additional inquiry, contact (630) 241-6800 ext. 4222. The Illinois Tollway Environmental Unit will coordinate any potential violations directly with the IEPA. In addition, the Engineer will provide a written submission to the Illinois Tollway Environmental Unit and the project files within five (5) days summarizing the incident(s) and actions taken.

A Notice of Termination (NOT) will be submitted to the Illinois Tollway Environmental Unit before being filed electronically to EPA's NeT by the Engineer when construction is completed and construction related discharge authorized by the permit is eliminated, or the contract is terminated. If the discharge of concrete fines continues at the time of contract termination, the Engineer will advise the Illinois Tollway Environmental Unit. The NOT will be filed when the site is permanently stabilized either with a uniform perennial vegetated cover that has a density of 70% coverage or has an equivalent permanent stabilization such as riprap, gabions, or geotextiles. In addition, the NOT will not be filed until all temporary erosion and sediment control measures have been removed. The NOT will not be filed until at least 30 days after all permanent stabilization is installed, all temporary erosion and sediment control measures have been removed, all BMPs associated with concrete or limestone dust particles from roadway base have been removed, and associated disturbed areas stabilized. The NOT will contain information on the dates the construction was completed and when the site was stabilized.

An example NOI is included on the Erosion Control & Landscaping Manual (Appendix 1). This process is further described in the Environmental Manual. Illinois Tollway Environmental Studies Manual

The SWPPP shall be amended whenever there is a change in design, construction, operation, or maintenance, which has a significant effect on the potential for the discharge of pollutants to Waters of the U.S. and which has not otherwise been addressed in the plan. The SWPPP shall also be amended if the plan proves to be ineffective in eliminating or significantly minimizing pollutants, or in otherwise achieving the general objectives of controlling pollutants in storm water discharges associated with construction site activity. In addition, the SWPPP shall be amended to identify any new contractor and/or subcontractor that will implement a measure of the plan. The SWPPP and ESCP must be modified within 7 days for any changes to construction plans, stormwater controls or other activities at the site that are no longer accurately reflected in the SWPPP. Any revisions of the documents for the SWPPP shall be kept on site at all times.

All inspection reports, Contract Drawings relating to the NPDES permitted activities, the SWPPP as amended and other erosion and sediment control documents will be maintained by the Illinois Tollway for at least three (3) years after filing the NOT.

STORM WATER POLLUTION PREVENTION PLAN (SWPPP)

1. Site Description.

The following is a description of the construction activity which is the subject of this plan:

a. Project Location

{Note: Designer to provide}

b. Description of the Construction Activity

{Note: Designer to provide}

c. Sequence of Major Earth Disturbing Construction Activities

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. **{Note: Designer to provide as a numbered list}**

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 updated as necessary and made part of the SWPPP.

Additional details regarding the progress schedule and erosion and sediment control sequencing are shown on Sheets **{Designer to provide}** "Suggested Progress Schedule", Sheets **{Designer to provide}** "Erosion and Sediment Control Plan", and Sheets **{Designer to provide}** "Landscape Plan" and shall be made part of the SWPPP. Where deviations from those drawings are required due to field conditions, the Engineer shall document and maintain a record of the changes as part of this SWPPP.

d. Total Construction Area and Total Area of Earth Disturbance

The total area of the construction sites is estimated to be **{Designer to provide}** acres (including on-site or off-site stockpiling of soils or storage of materials).

The total project area of the site that it is estimated to be disturbed by excavation, grading, or other earth disturbing activities is **{*Designer to provide*}** acres.

e. Runoff Coefficients

The following estimates are provided for the construction site:

Percentage impervious area before construction: **{Designer to provide}**
Runoff coefficient before construction: **{Designer to provide}**
Percentage impervious area after construction: **{Designer to provide}**
Runoff coefficient after construction: **{Designer to provide}**

f. Soil Characteristics

{Note: Designer to provide}

g. Topography and Drainage

{Note: Designer to provide}

h. Drainage System Ownership

The drainage systems which receive stormwater discharge from the project are owned by **{Designer to provide}**.

i. Site Maps

The plan documents identified below, hereby incorporated 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:

{Note: Designer to provide}

j. Receiving Waters and Wetland Acreage

{Note: Designer to provide}

k. 303(d) Listed Receiving Waters

{Note: Designer to provide}

l. Receiving Waters with Total Maximum Daily Load (TMDL)

{Note: Designer to provide}

m. Site Features and Sensitive Areas to be Protected

Sensitive environmental resources or site features on or adjacent to the project site that will have the potential to be impacted by the proposed construction and are to be protected and/or remain undisturbed are identified below. 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.

{Note: Designer to identify the site features and resources to be protected and explain what measure will be taken to provide protection}

n. Pollutants and Pollutant Sources

The following pollutants and pollutant sources are anticipated to be associated with the project:

{Note: Designer to identify the pollutants and pollutant sources anticipated on the project. Use the "other" boxes as needed.}

- ☐ Soils and Sediment
- ☐ Demolition Waste
- ☐ Paving Operation Materials and Waste
- ☐ Cleaning Products
- ☐ Joint and Patching Compounds
- ☐ Concrete Curing Compounds
- ☐ Painting Products and Wastes
- ☐ Sandblasting Materials and Waste Products
- ☐ Landscaping Materials and Wastes
- ☐ Soil Amendments and Stabilization Products
- ☐ Building Construction Materials and Wastes
- ☐ Vehicle and Equipment Fluids
- ☐ Building Construction Materials and Wastes
- ☐ Portable Toilet Wastes
- ☐ Litter and Miscellaneous Solid Waste
- ☐ Glues, Adhesives, and Sealants
- ☐ Contaminated Soils
- ☐ Dust Palliative Products
- ☐ Other (specify):

☐ Other (specify):
☐ Other (specify):
☐ Other (specify):

o. Applicable Federal, State or Local Requirements

Procedures and requirements specified in applicable sediment and erosion control site plans or storm water management plans approved by local officials, or are required by Federal or State regulatory agencies are described below:

- **{Designer to provide}**

2. Controls.

This section of the plan addresses the various controls that will be implemented for each of the major construction activities described in 1.b. above. For each measure discussed, the contractor that will be responsible for its implementation as indicated. Each such contractor has signed the required certification on forms which are attached to, and are part of, this plan.

The Erosion Control Plan Drawings **{Designer to provide}** included in the Contract Documents define the size and location of the measures to be installed during the construction of this project.

a. Stabilization Practices

Stabilization of disturbed areas must, at a minimum, be initiated immediately whenever any clearing, grading, excavation, or other earth disturbing activities have permanently ceased on any portion of the site, 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. 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.

The Engineer may also direct the Contractor to provide Same-Day Stabilization to critical disturbed areas where there is a risk that sediment laden runoff may occur. When directed by the Engineer, Same-Day

Stabilization of specified areas shall commence the same day as directed and shall be completed no later than 24 hours after receipt of such direction.

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.

Provided below is a description of interim and permanent stabilization practices, including site-specific scheduling of the implementation of the practices and the locations for use. Site plans should ensure that existing vegetation is preserved where practicable and disturbed portions of the site are stabilized.

The following stabilization practices will be used for this project:

{Note: Designer to identify the structural practices to be used on the project. Use the Other boxes as needed.}

- ☐ 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
- ☐ Other (specify):
- ☐ Other (specify):
- ☐ Other (specify):
- ☐ Other (specify):

Description of Interim Stabilization Practices:

- **{Note: Designer to provide}**

Description of Final Stabilization Practices:

- **{Note: Designer to provide}**

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

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.

{Note: Designer to identify the structural practices to be used on the project. Use the "other" boxes as needed.}

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
- ☐ Temporary Riprap
- ☐ Temporary Swales
- ☐ Temporary Channel Diversion
- ☐ Diversion Dike
- ☐ Sediment Filter Bag
- ☐ Dewatering Basin
- ☐ Flotation Boom
- ☐ Other (specify):
- ☐ Other (specify):
- ☐ Other (specify):
- ☐ Other (specify):

Description of Structural Practices:

- **{Note: Designer to provide}**

c. Treatment Chemicals

Provided below is a description of the planned use of polymer flocculants or treatment chemicals at the site. The location, use, and application technique, along with an explanation of need for their use is provided.

- **{Note: Designer to provide}**

d. Permanent Storm Water Management Controls

Provided below is a description of measures that will be installed during the construction process to control pollutants in storm water discharges that will occur after construction operations have been completed. The installation of these devices may be subject to Section 404 of the Clean Water Act.

Permanent storm water management controls to be installed as part of the project are as follows:

- **{Note: Designer to provide}**

e. Pollution Prevention

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:

- **{Note: Designer to provide}**

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

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:

- **{Note: Designer to provide}**

g. Natural Buffers

{Note: Designer to provide a description of the locations and width(s) of any existing natural buffers to be maintained. 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}

3. Maintenance.

The following is a description of procedures that will be used to maintain, in good and effective operating conditions, vegetation, erosion and sediment control measures and other protective measures identified in this plan:

- **{Note: Designer to provide a description of the maintenance requirements for each of the control measures specified in the plan}**

4. Inspections and Corrective Actions.

The Engineer will be responsible for conducting inspections along with the Contractor's ESCM. A maintenance inspection report will be completed after each inspection. A copy of the report form will be completed by the Engineer and Contractor and will be maintained on site.

Qualified personnel shall inspect disturbed areas of the construction site which have not been finally stabilized, structural control measures, and locations where vehicles enter or exit the site. Such inspection shall be conducted at least once every seven (7) calendar days and within 24 hours of the end of a storm or by the end of the following business or work day that is 0.5 inches or greater or the equivalent snowfall. Inspections may be reduced to once per month when construction activities have ceased due to frozen conditions. Weekly inspections shall recommence when construction activities are resumed, or if there is a 0.50 inches or greater rain event, or a discharge due to snowmelt occurs.

a. Disturbed areas and areas used for storage of wastes, equipment, and materials shall be inspected for evidence of, or the potential for, pollutants entering the drainage system. Erosion and sediment control measures

identified in the plan shall be observed to ensure that they are operating correctly. All locations where stabilization measures have been implemented shall be observed to ensure that they are still stabilized. Where discharge locations or points are accessible, they shall be inspected to ascertain whether erosion control measures are effective in preventing significant impacts to receiving waters. Locations where vehicles enter or exit the site shall be inspected for evidence of offsite sediment tracking. If repair is necessary, it will be initiated within 24 hours of the completion of the inspection report.

If the inspections determine concrete fines are discharging as a result of roadway reconstruction, the Contractor must ensure that the discharge does not exit the right-of-way. The Engineer will immediately test the pH levels of the affected discharge runoff to determine the average pH levels. Where pH levels exceed 9.0, the Engineer will recommend remediation strategy to reduce the alkalinity to acceptable levels before allowing to exit the right-of-way or discharge to environmentally sensitive locations.

b. Based on the results of the inspection, the description of potential pollutant sources identified in Section 1 above, and pollution prevention measures identified in Section 2 above, the Storm Water Pollution Prevention Plan shall be revised as appropriate as soon as practicable after such inspection to minimize discharges. Any changes to this plan resulting from the required inspections shall be implemented within seven (7) calendar days following the inspection.

c. A report summarizing the scope of the inspection, name(s), qualifications of personnel making the inspection, the date(s) of the inspection, major observations relating to the implementation of this Storm Water Pollution Prevention Plan, and actions taken in accordance with Section 4.b. above shall be made and retained as part of the plan for at least three (3) years after the date of the inspection. The report shall be signed by the Contractor and the Engineer.

d. For any violation of the SWPPP observed during any inspection conducted, including those not required by the plan, and any illicit discharge (defined as any discharge that is not composed entirely of storm water) exiting the right-of-way or to receiving waters, the Engineer will immediately report the incident to the Illinois Tollway Environmental Unit and shall be submitted electronically on the Incidence of Non-Compliance (ION) forms provided by IEPA within 12 hours.

Reports of violations of the SWPPP or illicit discharges shall be reported to the Illinois Tollway Environmental Unit at environment@getipass.com. For additional inquiry, contact (630) 241-6800 ext. 4222. The Illinois Tollway Environmental Unit will coordinate any potential violations directly with the IEPA. In addition, the Engineer will provide a written submission to the Illinois Tollway Environmental Unit and the project files within 5 days summarizing the incident(s) and actions taken.

e. Corrective action shall be taken to address any of the following conditions if identified at the site: a stormwater control needs repair or replacement; a stormwater control necessary to comply with the requirements of this permit was never installed or was installed incorrectly; or discharges are causing an exceedance of applicable water quality standards; or a prohibited discharge has occurred.

Corrective actions shall be completed as soon as possible and documented within 7 days of the non-compliance in an inspection report. If it is infeasible to complete the installation or repair within seven (7) calendar days, the inspection report(s) will describe the conditions contributing to the infeasibility to complete the installation or repair within the 7-day timeframe and document the schedule for installing the stormwater control(s) and making them operational as soon as feasible after the 7-day timeframe.

5. Non-Storm Water Discharges.

The following allowable non-stormwater discharges may combine with stormwater discharges that are treated by the measures included in this plan and are anticipated on the project:

{Note: Designer to check appropriate items}

Allowable Non-Stormwater Discharges	**Likely to be Present on the Site**	
	Yes	**No**
Waters used to wash vehicles where detergents are not used	☐	☐
Waters used to control dust	☐	☐
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	☐	☐
Landscape irrigation drainages	☐	☐
Uncontaminated groundwater or spring water	☐	☐
Foundation or footing drains where flows are not contaminated with process materials, such as solvents	☐	☐
Potable water sources including uncontaminated water main or fire hydrant flushing water	☐	☐
Discharges from dewatering of trenches and excavations if managed by appropriate controls	☐	☐

For each allowable 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:

- **{Note: Designer to provide}**

6. Contractor Inventory of Hazardous Materials and Substances.

The materials or substances listed below are expected to be present on site during construction (use additional pages, as necessary). **To be filled in by Contractor.**

7. Contractor Required Submittals.

The Contractor and any subcontractor responsible for compliance with the provisions of the SWPPP 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:

- **{Note: Designer to provide}**

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:

- **{Note: Designer to provide}**

ILLINOIS TOLLWAY CERTIFICATION STATEMENT

This certification statement is a part of the Storm Water Pollution Prevention Plan for the project described below, in accordance with NPDES Permit No. ILR10, issued by the Illinois Environmental Protection Agency.

Project Information:

Route _____ Marked _____

Section _____ Project No. _____

County _____

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 am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Prepared By: _____
DESIGN SECTION ENGINEER

By: _____
Name/Title

Dated: _____

OWNER: ILLINOIS STATE TOLL HIGHWAY AUTHORITY

Signed: _____
Name/Title

CONTRACTOR CERTIFICATION STATEMENT

This certification statement is a part of the Storm Water Pollution Prevention Plan for the project described below, in accordance with NPDES Permit No. ILR10, issued by the Illinois Environmental Protection Agency.

Project Information:

Route_____ Marked _____

Section_____ Project No_____

County _____

I certify under penalty of law that I understand the terms of the general National Pollutant Discharge Elimination System (NPDES) permit No. ILR10 that authorizes the storm water discharges associated with industrial activity from the construction site identified as part of this certification: That I agree to comply therewith; and that I will ensure that all Subcontractors working on the subject project understand and comply with said permit.

_____

Signature Date

_____

Title

_____

Name of Firm

_____

Street Address

_____

City State Zip Code

_____

Telephone Number

ATTACHMENT _____

Note: CONTRACTOR TO COMPLETE

Prepare additional signature pages as needed if the responsibilities of the Storm Water Pollution Prevention Plan are split between contractors - specify which item(s) these sub-contractors assume responsibility for.

ASPHALT MIXTURES (ILLINOIS TOLLWAY)

Effective: July 25, 2019
Revised: August 18, 2025

Table of Contents

1. Description.
2. Reference Standards.
3. Requirements.
4. Materials.
4.1. Fine Aggregate
4.2. Coarse Aggregate
4.3. Mineral Filler
4.4. RAP/FRAP/RAS Requirements
4.5. Asphalt Binder
4.6. Mix Additives
5. Mix Design.
5.1. Gradation Requirements
5.2. Volumetric Requirements
5.3 Reserved
5.4. Reclaimed Asphalt Pavement (RAP) and Fractionated RAP (FRAP)
5.5 Reclaimed Asphalt Shingles (RAS)
5.6 Asphalt Binder Replacement (ABR)
5.7 Performance Testing
5.8 Recovered Asphalt Binder Performance Grade (PG)
5.9 Mix Design Verification

Description. This work shall consist of designing Asphalt Mixes for the Illinois Tollway. Any verbiage relating to "Hot Mix Asphalt" Mixtures in the referenced documents is considered interchangeable with the Tollway's use of "Warm Mix Asphalt" (WMA) Mixtures, unless specifically noted herein.

Reference Standards. The following documents are referenced in the Illinois Tollway Asphalt Mixtures Special Provision and must be followed in the asphalt mix design process unless revised herein.

Illinois Department of Transportation (IDOT) – Current Standard Specifications for Road and Bridge Construction
Illinois Department of Transportation (IDOT) – Supplemental Specifications and Recurring Special Provisions
Illinois Department of Transportation (IDOT) – Manual of Test Procedures for Materials
Illinois Department of Transportation (IDOT) – Manual of Aggregate Quality Test Procedures
Illinois Tollway – Illinois Tollway Manual of Test Procedures (referred to as TTP)
Illinois Tollway – Approved List of Asphalt Binder and Mixture Modifiers
Illinois Tollway – Approved List of Warm Mix Asphalt (WMA) Technologies

Illinois Tollway – Special Provision for Reclaimed Asphalt Materials (RAM)

Requirements. Contractor and Consultant laboratories performing the tasks set forth in this special provision shall either be AASHTO Accredited or meet the minimum requirements specified in the current version of the IDOT policy memorandum 6-08 “Minimum Private Laboratory Requirements for Construction Materials Testing or Mix Design,”, and participate in the AASHTO re:source Proficiency Sample Program (PSP) for AASHTO T166, T209, T324 as well as AASHTO T164 or ASTM D8159. A proficiency z-score of 3 or above is required for each standard. Verification shall be provided to Tollway Materials.

Materials.

Fine Aggregate – If the contractor proposes a non-IDOT-approved source, testing and acceptance procedures must be reviewed and approved by Tollway Materials. Fine Aggregate shall conform to Article 1003.03 of the Standard Specifications except as modified herein.

Revise the first paragraph of Article 1003.03(a) of the Standard Specifications to read:

“(a) Description. Fine aggregate for Asphalt Mixtures may consist of sand, stone sand, slag sand or steel slag sand as permitted by Tollway Table 1. For gradation FA 22, uncrushed material will not be permitted. Fine aggregate for SMA shall consist of stone sand, slag sand, or steel slag sand.”

Revise the first through third paragraphs of Article 1003.03(c) of the Standard Specifications with the following.

“(c) Gradation. Fine aggregate gradations for Asphalt Mixtures shall be FA 1, FA 2, FA 20, FA 21, or FA 22, as permitted by Tollway Table 1.

Tollway Table 1 – Allowable Fine Aggregate Gradations

<table>
<tr><th>Mixture Type</th><th colspan="2">FA1</th><th>FA2</th><th>FA20</th><th>FA21</th><th>FA22</th></tr>
<tr><td>SMA</td><td colspan="2">Not Permitted</td><td rowspan="2">Permitted</td><td rowspan="3">Not Permitted[1/]</td><td rowspan="3">Permitted</td></tr>
<tr><td>Binder and Surface Course</td><td colspan="2">Permitted</td></tr>
<tr><td>IL-4.75</td><td colspan="3">Permitted</td></tr>
<tr><td>Asphalt Stabilized Subbase</td><td colspan="5">Permitted</td></tr>
</table>

1/ Allowed if no RAP, FRAP or RAS in mix

For mixtures with a Ndesign = 90 and for mixture IL-4.75, at least 50 percent of the required fine aggregate fraction shall consist of either stone sand, slag sand, or steel slag meeting the FA 20 gradation.

For mixture IL-19-0, Ndesign = 90, the fine fraction shall consist of at least 67% manufactured

sand meeting the FA 20 gradation. The manufactured sand shall be stone sand, slag sand, steel slag sand, or combinations thereof."

Coarse Aggregate – If the contractor proposes a non-IDOT-approved source, testing and acceptance procedures must be reviewed and approved by Tollway Materials. Coarse Aggregate shall conform to Article 1004.03 of the Standard Specifications, except as modified herein.

Revise Article 1004.01 (b) of the Standard Specifications to include the Additional Requirements for SMA Coarse Aggregate as listed in Tollway Table 2.

"Tollway Table 2 – Additional Requirements for SMA Coarse Aggregate

Quality Test	Test Method & Procedure	Coarse Aggregate Material		
		Crushed Gravel	Dolomite	Category I FRAP for SMA
Coarse Aggregate Angularity	ITP 5821	>98% two fractured faces		
Flat & Elongated	ITP 4791	≤ 10% (5:1)	≤ 10% (5:1)	
LA Abrasion	ITP 96	≤ 28.0%	≤ 28.0%	
Micro-Deval[1/]	ASTM D6928 or AASHTO T327	≤ 11.0%	≤ 11.0%	<9.0%

1/ All Micro-Deval testing must be performed by a laboratory with AASHTO Re: Source aggregate accreditation. The Engineer reserves the right to verify Micro-Deval testing."

Revise Article 1004.03(a) to add Tollway Table 3 for Allowable Coarse Aggregate for SMA Mixes.

"Tollway Table 3 – Allowable Coarse Aggregate for SMA Mixes

Coarse Aggregate	Friction Surface	Surface	Unmodified SMA[1/]	Binder
Crushed Steel Slag	Permitted	Permitted	Permitted	Not Permitted
Quartzite				Permitted
Granite				
Diabase / Trap Rock				
Crushed Gravel	Not Permitted			
Dolomite		Not Permitted	≤ 25%	≤ 25%

[1/]Crushed Steel Slag is not permitted in Unmodified SMA if used in the Binder

"

Mineral Filler – Shall conform to Article 1011 except as modified herein.

Add the following to Article 1011.01 of the Standard Specifications.

"As an option, collected baghouse dust may be used in lieu of manufactured mineral filler, provided: 1) there is enough available for the production of the mix for the entire project, and 2) a mix design was prepared with collected baghouse dust."

RAP/FRAP/RAS Requirements – RAP/FRAP/RAS stockpile production shall conform to the Illinois Tollway Reclaimed Asphalt Materials (RAM) special provision. Additionally:

(1) The coarse aggregate in all RAP and FRAP shall be equal to or less than the nominal maximum size requirement for the asphalt mixture to be produced. Only FRAP that is processed over a 5/16 in. or smaller screen will be permitted in the IL-4.75 mm mix.

(2) RAP and FRAP stockpiles containing steel slag shall be approved for use in surface mixtures only.

Asphalt Binder –

All asphalt binder shall conform to the Article 1032.05 of the Standard Specifications except as modified herein.

Revise Table 1 of Article 1032.05 (b) as follows.

Add “SB/SBS PG 64-34” in Row 2, Column 2, underneath “SB/SBS PG 70-28.”

Revise Table 2 of Article 1032.05 (b) as follows.

Add “SBR PG 64-34” in Row 2, Column 2, underneath “SBR PG 70-28.”

Revise Table 1 and 2 Notes of Article 1032.05 (b) with the following.

“Note: The SBS/SBR PG 76-22, SBS/SBR PG 70-22, SBS/SBR PG 70-28 or SBS/SBR PG 64-34 binder shall meet the requirements of Article 1032.05(b) of the Standard Specifications. In addition, the elastic recovery of the asphalt binder used shall be a minimum of 80.”

Add the following paragraph to Article 1032.05 (b).

“The base asphalt binder that is blended with the Terminal Blend Ground Tire Rubber (GTR) or Dry Process GTR shall meet the requirements of Article 1032.05 of the Standard Specifications. The GTR blended asphalt shall comply with the specified PG Grade in accordance Table 1 of Article 1032.05 (b) of the Standard Specifications with exception to the Separation of Polymer test and Force Ratio. In addition, the elastic recovery shall be a minimum of 75% for all grades of GTR blended asphalt binder. Dynamic Shear Rheometer tests on GTR blended asphalt binder shall use a 2.00mm gap for 25mm plates.”

Mix Additives

Fibers – Replace Article 1030.02(h) (Note 2) of the Standard Specifications with the following.

"Note 2. A fiber additive shall be included in all SMA mixtures. For Cellulose or Mineral Fiber, the fiber additive shall comply with the requirements of AASHTO M 325. RAS may be used as a fiber additive in Stone Matrix Asphalt (SMA) mixtures. Fibers may be used in other asphalt mixtures if approved by Tollway Materials."

Warm Mix Additives – Replace Article 1030.02(i) (Note 3) of the Standard Specifications with the following.

"Note 3. Warm mix additives/processes shall be on the Illinois Tollway's Approved List of Warm-Mix Asphalt (WMA) Technologies."

Asphalt Modifiers – GTR and Rejuvenators shall be on the Illinois Tollway's Approved List of Asphalt Binder and Mixture Modifiers.

Mix Design

Gradation Requirements – Shall conform to Article 1030.05 of the Standard Specifications except as modified herein.

Revise the Table in Section 1030.05(a)(1) of the Standard Specifications as follows.

"Tollway Table 4 - Gradation Requirements

Mixture Composition Range (% Passing) [1/]							
Sieve Size	SMA IL-12.5 [4/]	SMA IL-9.5 [4/]	IL-19.0	IL-12.5	IL-9.5	IL-4.75	Asphalt Stabilized Subbase
1 in. (25 mm)	-	-	100	-	-	-	100
3/4 in. (19.0 mm)	100	-	90 – 100	100	-	-	90 - 100
1/2 in. (12.5 mm)	82 – 100	100	69 – 89	90 – 100	100	-	69 - 89
3/8 in. (9.5 mm)	65 max	90 – 100	-	89 max	90 – 100	100	-
No. 4 (4.75 mm)	20 – 30	36 – 50	45 – 60	28 – 65	32 – 69	90 - 100	45 – 60
No. 8 (2.36 mm)	16 – 24[3/]	16 – 32	30 – 45	28 – 48	34[5] – 52[2/]	70 - 90	30 – 45
No. 16 (1.18 mm)	-	-	20 – 35	10 – 32	10 – 32	50 - 65	20 – 35
No. 30 (600 μm)	12 – 16	12 – 18	-	-	-	35 - 55	-
No. 50 (300 μm)	10 – 15	-	8 – 16	4 – 15	4 – 15	15 - 30	8 – 16

No. 100 (150 µm)	-	-	6 – 9	3 – 10	3 – 10	10 - 18	6 – 9
No. 200 (75µm)	8 – 10	7.5 – 9.5	3 – 6	4 – 6	4 – 6	7 - 9	3 – 6

1/ Based on percent of total aggregate weight.
2/ The mixture composition shall not exceed 44 percent passing the #8 (2.36 mm) sieve for surface courses with Ndesign = 90.
3/ When establishing the Adjusted Job Mix Formula (AJMF) the percent passing the #8 (2.36 mm) sieve shall not be adjusted above 24 percent.
4/ When the bulk specific gravity (Gsb) of the component aggregates vary by more than 0.20, the blend gradations shall be based on percent by volume.
5/ When establishing the Adjusted Job Mix Formula (AJMF) the percent passing the #8 (2.36 mm) sieve shall not be adjusted below 34 percent."

All asphalt plants are required to use positive dust control. The contractor may choose to develop the mix design with less than 1.0 percent mineral filler added in the laboratory.

Volumetric Requirements - Shall conform to Article 1030.05 of the Standard Specifications except as modified herein.

Revise the table of Article 1030.05(b) of the Standard Specifications to the following tables.

"Tollway Table 5 – Binder and Surface Course Mix Volumetric Requirements

VOLUMETRIC REQUIREMENTS Binder and Surface Course Mixes					
Ndesign	Design Air Voids Target %	Voids in the Mineral Aggregate (VMA), % minimum			Ratio Dust/Asphalt Binder
		IL-19.0	IL-12.5	IL-9.5	
30	3.0	N/A	N/A	15.0	1.0 Max
50	3.0	13.5[2/]	14.0	15.0	
70[3/]	4.0[1/]	13.5	14.0	15.0	
75	3.5				
90	4.0				

1/ Target air voids on IL-19.0 N70 Binder shall be 3.5%
2/ IL-19.0 N50 Binder 3.0% void mixes placed on shoulders or temporary pavement are allowed a VMA minimum of 12.5%"
3/ Target air voids on N70 SC shall be 3.0% and are allowed a VMA minimum of 14.5%

"Tollway Table 6 – SMA, IL-4.75mm, and Asphalt Stabilized Subbase Volumetric Requirements

Property	Mixture Type		
	SMA	IL-4.75	Asphalt Stabilized

			Subbase
Design Air Voids	3.5 % @ 80 Gyrations	3.5 % @ 50 Gyrations	2.0 % @ 50 Gyrations
Voids in the Mineral Aggregate (VMA), % (Minimum)	16.0 % (for specific gravity of coarse aggregate < 2.78) 1/ 17.0 % (for specific gravity of coarse aggregate ≥ 2.78) 1/	18.5	11.0
Ratio Dust/Asphalt Binder	-	1.0 max	1.2 max
Draindown (%) (Maximum)	0.2 2/		-

1/The calculation for the Gsb is a weighted average including the RAP and/or FRAP
2/The draindown shall be determined at the job mix formula asphalt binder content at the mixing temperature of 350ºF, as per AASHTO T305."

Reserved

Reclaimed Asphalt Pavement (RAP) and Fractionated Reclaimed Asphalt Pavement (FRAP)

All stockpiles shall conform to the Illinois Tollway Reclaimed Asphalt Materials (RAM) special provision.

Tollway Table 7 – Allowable RAP in Asphalt Mixtures

RAP Type	Mixture Type			
	SMA and IL-4.75mm	Surface Course	Binder Course	Asphalt Stabilized Subbase
Homogenous	Not Permitted	Not Permitted	Not Permitted	Permitted
Conglomerate 3/8				
Conglomerate 5/8				
Conglomerate DQ				

Tollway Table 8 – Allowable FRAP in Asphalt Mixtures

FRAP Type	Mixture Type

		SMA	IL – 4.75mm	Unmodified SMA, Binder, Surface, and Asphalt Stabilized Subbase
Category I	Fine	Permitted[1/]	Permitted	Permitted
	Coarse	≤15%[2/]	Not Permitted	
Category II	Fine	Not Permitted[3/]	Permitted	
	Coarse		Not Permitted	

1/ When using FRAP for SMA, the fine portion Category 1 FRAP may be used separately or as proportioned with the stone sand.
2/ Category 1 Coarse FRAP may be increased to 25% provided it is from a friction SMA source.
3/ A Category 2 Fine-FRAP source may be used in the mix design for SMA provided that the fine aggregate angularity of the fine FRAP sand, following the Illinois Tollway Modified Test Procedure (TTP) 002, equals 45.0 or greater.
.

Reclaimed Asphalt Shingles (RAS) in Asphalt Mixtures

Quality requirements of RAS materials can be found in the Illinois Tollway Special Provision for Reclaimed Asphalt Materials (RAM).

RAS shall not exceed 5.0 percent by weight of the total mix for all asphalt mixtures.

For asphalt mixtures that contain RAS that has not been mechanically blended with any other product, a bulk specific gravity (G_{sb}) of 2.300 shall be used for RAS in the design. Blended RAS products may have other specific gravity values for use in asphalt mix design but shall be verified by the Illinois Tollway. When the blended RAS product is approved by the Illinois Tollway an approval letter will be sent to the supplier with the approved gradation and specific gravity assignment.

Asphalt Binder Replacement (ABR)

Virgin asphalt binder performance grade (PG) shall depend on the mix type, the types of reclaimed materials, the level of binder replacement, and the presence of a rejuvenator. For SMA and IL-4.75, the contractor shall use a SBS polymer, a Terminal Blend GTR, or a Dry Process GTR to modify the asphalt mixture.

For shoulders and temporary pavement the Contractor shall use any asphalt binders allowed under this section, or any product allowed under the Illinois Tollway Approved List of Asphalt Binder and Mixture Modifiers. Illinois Tollway Approved Asphalt Binder and Mixture Modifiers shall be used at manufacturer recommended rates. Alternate Grades or Modifiers, including Modifiers approved by other regional authorities, may be considered for approval by Tollway Materials.

Tollway Table 9 - RAM, ABR, and Asphalt Binder Requirements

Reclaimed Asphalt Material (as permitted in Tollway Tables 7 & 8)		RAP[1/]/FRAP/RAS	FRAP/RAS	Category 1[2/] FRAP with RAS
ABR		0-17%	18-33%	34-50%
Allowable Mix Options	SMA and IL-4.75[3/]	SBS/SBR 70-28 GTR PG 70-28 PG 58-28 10%[4] Dry GTR SM PG 58-28 10%[4] Dry GTR		SBS/SBR 64-34 GTR PG 64-34 PG 52-34 10%[4] Dry GTR PG 46-34 10%[4] Dry GTR
	Unmodified SMA[9/] and Binder & Surface Course[9/]	PG 58-28[7/] SM PG 58-28		PG 52-34[5/7/] PG 46-34[5/]
	Asphalt Stabilized Subbase	PG 58-28[7/8/] SM PG 58-28		

1/ RAP only allowed in Asphalt Stabilized Subbase
2/ Category II is allowed in Unmodified SMA, Binder and Surface Course, and Asphalt Stabilized Subbase
3/ IL-4.75 ABR cannot exceed 33%
4/ Dry GTR shall be added at the WMA Plant at a rate of not less than 10% nor greater than 12%, by weight, of the virgin asphalt cement needed for the mix design.
5/ Up to 60% ABR on N50 IL 19.0mm Binder for mainline.
6/ Reserved
7/ Alternate Grades or Modifiers may be considered with approval of the Engineer
8/ Up to 65% ABR on Asphalt Stabilized Subbase

9/ No maximum limit on ABR from Category I and Category II FRAP for shoulder mixes and temporary pavement.

For all asphalt mixtures containing RAS or more than 17 percent Asphalt Binder Replacement, a chemical additive shall be used as the WMA technology.

Performance Testing

Replace 1030.05(c) and 1030.05(d) with the following.

"(c) The following tests are additionally required for mix design.

The contractor shall determine the asphalt mix maximum rut depth using the Hamburg Wheel Tracking (HWT) test. Testing shall conform to Illinois Tollway Modified Test Procedure AASHTO T324. The maximum rut depth shall meet Hamburg Requirements in Table 10.

Determination for Need of Anti-Strip Additive. The mixture designer shall determine if an additive is needed in the mix to prevent stripping. The determination will be based on the stripping inflection point as calculated according to the Illinois Tollway Modified Test Procedure AASHTO T324. The stripping inflection point requirements are listed in Table 10.

For WMA designs proposed using organic or chemical additives, Hamburg Wheel testing according to Illinois Tollway Modified AASHTO T324 shall be conducted on a laboratory mixed sample at the recommended WMA additive dosage rate.

Tollway Table 10 - Hamburg and Stripping Inflection Point Requirements

Mixture Type	Maximum Rut Depth	Maximum Rut Depth Recorded at # Wheel Passes	Minimum # of Wheel Passes at Stripping Inflection Point[1]
SMA[2/]	6 mm	20,000	15,000
Unmodified SMA	9 mm	15,000	10,000
IL-4.75	12.5 mm	15,000	10,000
Mainline or Shoulder Binder Course Ndesign > N50	12.5 mm	15,000	10,000
Mainline or Shoulder Binder Course Ndesign = N50	12.5 mm	10,000	7,500
Surface Course Ndesign ≤ N70	12.5 mm	10,000	7,500
Asphalt Stabilized Subbase	12.5 mm	7,500	5,000

1/ If the Stripping Inflection point does not meet minimum requirements, the designer has the option to perform the Tensile Stripping Ratio (TSR) test per article 1030.04(c)
2/ Calculation of the stripping inflection point is not required for SMA with less than 4.0 mm rut depth at 20,000 passes.

The contractor shall determine the asphalt mix fracture energy using the Disk-Shaped Compact Tension (DCT) Test. Testing shall conform to Illinois Tollway Modified ASTM D7313. For WMA designs proposed using organic or chemical additives, DCT testing according to Illinois Tollway Modified ASTM D7313 shall be conducted on a laboratory mixed sample at the recommended WMA additive dosage rate. Fracture energy shall meet the DCT requirements of Table 11.

Tollway Table 11 – DCT Requirements

Mixture Type	Minimum Fracture Energy
SMA – Friction Surface	775 J/m^2
SMA – Surface	700 J/m^2
SMA – Binder	650 J/m^2
Unmodified SMA	500 J/m^2

”

IL 4.75	450 J/m^2
Mainline Binder Course Ndesign > N50	425 J/m^2
Mainline Binder Course Ndesign = N50	450 J/m^2
Surface Course Ndesign ≤ N70	450 J/m^2
Shoulder Binder Course	425 J/m^2
Asphalt Stabilized Base	N/A

Recovered Asphalt Binder Performance Grade (PG)

The Contractor shall perform Illinois Tollway Test Procedure (TTP) 001 on material mixed in accordance with AASTHO R35 for all asphalt mixtures except asphalt stabilized subbase. Testing must be performed by a laboratory accredited for all ASTM and AASHTO test procedures referenced in TTP 001. Results shall be reported to the Tollway in accordance with TTP 005 , Results shall meet the requirements of Table 12.

Tollway Table 12 – Recovered PG Requirements

Application	Mix Type	Recovered Binder PG Grade	ΔTc (20hr)
Mainline	SMA and IL-4.75	PG 70.0-25.0	ΔTc ≥ -5°C
	IL-19.0 Binder Course	PG 64.0-22.0	
Shoulder	Unmodified SMA or Surface Course	PG 64.0-25.0	
	Binder Course	PG 64.0-22.0	

Mix Design Verification

IDOT verified mix designs will be accepted as long as they meet the requirements of this special provision. If the contractor requests to use an IDOT verified mix design and intends to add a warm mix chemical additive for use on the Tollway, the contractor must provide test results of a 1-point at optimum AC using the additive, showing compliant volumetrics, SIP, Hamburg, DCT, and recovered PG.

For all non-IDOT approved mix designs, the mix design verification process shall be according to the Tollway Standard Method of Test for Asphalt Mixture Design Verification Procedure TTP 005.

Mixture components may not be substituted within an approved mix design. A new mix design verification process is required for alternate mixture components. Substitutions for neat unmodified asphalt binder or SBS asphalt binder of the same AASHTO M 320 grade will be allowed if the Contractor provides test results of a 1-point verification at optimum AC using the substituted asphalt binder showing compliant volumetrics, SIP, Hamburg, DCT, and recovered PG. Asphalt binder substitutions will not be allowed for mixes that use a Terminal Blend GTR, or

a Dry Process GTR, or a Rejuvenator; changes to these asphalt binders require a new mix design.

END OF SECTION

ASPHALT PAVEMENT CONSTRUCTION (ILLINOIS TOLLWAY)

Effective: July 25, 2019
Revised: August 18, 2025

Table of Contents

1. Description.
2. References.
3. Quality Control/ Quality Assurance (QC/QA).
3.1. Quality Control (QC) Addendum for Warm Mix Asphalt (WMA) Production.
3.2. Control Limits.
3.3. Testing.
4. Asphalt Plant.
4.1. Dust Collection.
4.2. Hot-Mix Silos and Surge Bins.
4.3. Storage Tanks for Asphalt Binders.
4.4. Equipment for Weighing HMA.
4.5. Equipment for FRAP/RAP/RAS.
4.6. Loose Fiber.
4.7. Asphalt Additives and Modifiers.
5. Placement.
5.1. Pavement Preparation
5.2. Placement Conditions.
5.3. IL-4.75 Placement.
5.4. SMA Placement.
5.5. Field Conditions.
5.6. Spreading and Finishing.
5.7. Construction Joints.
6. Compaction.
6.1. General Requirements.
6.2. Rollers.
6.3. Density Modifications.
6.4. Longitudinal Joint Density.
6.5. IL-4.75 Requirements.
6.6. Class D Patching Requirements
6.7. Control Limits.
7. Test Strip.
8. Pavement Surface Smoothness.
9. Pay Adjustments.
9.1. Construction Joints.

9.2. Bleeding and/or Flushing for SMA Mainline Surface Pavement
10. Method of Measurement.
11. Basis of Payment.

1. Description. This Special Provision establishes and describes the responsibilities of the Contractor in producing and constructing asphalt pavements. Any verbiage relating to "Hot Mix Asphalt" Mixtures in the referenced documents is considered interchangeable with the Tollway's use of "Warm Mix Asphalt" (WMA) Mixtures, unless specifically noted herein.

2. References. The following documents are referenced in this Special Provision. References to Articles are to the IDOT Standard Specifications. Work shall be according to Sections 406, 407, 1102, 1030 and 1032 of the Standard Specifications except as modified herein.

2.1. Illinois Department of Transportation (IDOT) – Current Standard Specifications for Road and Bridge Construction
2.2. Illinois Department of Transportation (IDOT) – Supplemental Specifications and Recurring Special Provisions.
2.3. Illinois Department of Transportation (IDOT) – Manual of Test Procedures for Materials
2.4. Illinois Tollway – Illinois Tollway Manual of Test Procedures (referred to as "Tollway-Modified" throughout this document)
2.5. Illinois Tollway Special Provision for Asphalt Mixtures
2.6. Illinois Tollway Special Provision for Reclaimed Asphalt Materials (RAM)
2.7. Illinois Tollway Special Provision for Surface Smoothness Testing
2.8. Illinois Tollway Approved List of Asphalt Modifiers
2.9. Illinois Tollway Approved List of Warm Mix Asphalt (WMA) Technologies

3. Quality Control/ Quality Assurance (QC/QA). QC/QA shall be in accordance with Articles 1030.06 and 1030.09 of the Standard Specifications, except as modified herein.

3.1. Quality Control (QC) Addendum for Warm Mix Asphalt (WMA) Production.

Replace the first 5 paragraphs of Article 1030.06 with the following:

"Quality Control / Quality Assurance (QC/QA) shall be used for each asphalt mixture.

The following shall apply to QC/QA."

Add the following to the first paragraph of 1030.06(a)

"The QC laboratory located at asphalt plants producing WMA for any Illinois Tollway project shall participate in the AASHTO re:source Proficiency Sample Program (PSP) for AASHTO T166, T209 as well as AASHTO T164 or ASTM D8159. A proficiency z-score of three (3) or above is required for each standard. Verification shall be included as part of the job specific QC addendum."

Replace the third sentence of the first paragraph of Article 1030.06(b) with the following.

"Job-specific QC Addenda to the Annual QC Plan must be submitted using the Tollway Form A-81 "Quality Control (QC) Addendum for Warm Mix Asphalt (WMA) Production"."

Delete the first sentence of Article 1030.09.

Replace Footnote 4/ in Article 1030.09(a)(2) with the following:

"4/ If the required tonnage of any mixture for a single pay item is less than 1000 tons in total, Footnote 3/ shall not apply, unless otherwise waived by the Engineer. If waived, the mixture shall be produced using a mix design that has been verified as specified and validated by the Tollway's recent acceptable field test data. A Hot-Mix Asphalt Level II Technician shall oversee all quality control operations for the mixture."

Replace Articles 1030.09 (g) and 1030.09(h) with the following:

"(g) Quality Assurance by the Engineer. The Engineer will conduct quality assurance tests on split samples taken by the Contractor for quality control testing. In addition, the Engineer will witness the sampling and splitting of these samples a minimum of twice a month and will immediately retain the samples for quality assurance testing.

The overall testing frequency will be performed over the entire range of Contractor samples and will be equal to or greater than ten percent for gradations and equal to or greater than 20 percent for asphalt binder content, bulk specific gravity, maximum specific gravity and field density. The Engineer may select any or all split samples for assurance testing. The Engineer will initiate quality assurance testing during mixture field verification. These tests may be performed immediately or anytime up to ten working days after sampling. The test results will be made available to the Contractor as soon as they become available.

The Contractor's density gauge/core correlation will be verified utilizing the Engineer's density gauges.

The Engineer may witness the sampling and testing being performed by the Contractor. The Engineer will document all witnessed samples and tests.

The Engineer will promptly notify the Contractor, both verbally and in writing, of observed deficiencies. If the Engineer observes that the sampling and quality control tests are not being performed according to the applicable test procedures, the Engineer may stop production until corrective action is taken.

The Engineer may elect to obtain samples for testing, separate from the Contractor's quality control process, to verify specification compliance. No more than 20 cores per day will be required by the Engineer for the purpose acceptance and/or comparison with density gauge measurements. The cost of this work will not be paid for separately but shall be considered as included in the unit price bid for the HMA item involved. Differences between the Contractor's and the Engineer's split sample test results will be

considered acceptable if within the following limits.

Test Parameter	Acceptable Limits of Precision
% Passing: 1/	
1/2 in. (12.5 mm)	5.0 %
3/8 in. (9.5mm) 2/	4.0%
No. 4 (4.75 mm)	5.0 %
No. 8 (2.36 mm)	3.0 %
No. 30 (600 µm)	2.0 %
No. 200 (75 µm)	2.2 %
Asphalt Binder Content	0.3 %
Maximum Specific Gravity of Mixture	0.026
Bulk Specific Gravity	0.030
VMA	1.4 %
Density (% Compaction)	1.0 % (Correlated)

1/ Based on washed ignition.

2/ IL-12.5 SMA mixture

The Tollway may run extractions for assurance, when deemed necessary by the Engineer.

In the event comparison of the required plant test results is outside the above acceptable limits of precision, Tollway split or independent samples fail the control limits, a Tollway extraction indicates non-compliance, or a continual trend of difference between Contractor and Tollway test results is identified, the Engineer will immediately investigate. The Engineer may suspend production as stated in Article 108.07 of the Standard Specifications, while the investigation is in progress. The investigation may include testing by the Engineer of any remaining split samples or a comparison of split sample test results on the HMA currently being produced. The investigation may also include review and observation of the Contractor's technician performance, testing procedure, and equipment.

If a problem is identified with the mix, the Contractor shall take immediate corrective action. After corrective action, both the Contractor and the Engineer shall immediately resample and retest according to Article 1030.05(d)(6).

In the event comparison of the required field test results (densities) are outside the above acceptable limits of precision, Tollway split or independent samples fail the density limits, or a continual trend of difference between Contractor and Tollway test results is identified, the Engineer will immediately investigate. The investigation will include testing by the Engineer of any remaining random density locations. The Engineer may establish additional locations for testing by both the Contractor and the Tollway to provide further

comparison results. The investigation shall also include review and observation of the Density Tester performance, testing procedure, and equipment. The original correlation and/or comparison data, for both gauges, shall be reviewed as part of the investigation process. If the problem continues, the Engineer may require a new correlation be performed.

Warm Mix Asphalt (WMA) Verification Testing: Tollway Materials will conduct periodic WMA verification testing to determine compliance with specification requirements. Verification testing will consist of WMA mixture and/or field density testing. WMA mixtures will be sampled according to the Tollway Test Procedure 015 "Warm Mix Asphalt Sampling from the Paver Auger." Density will be determined by correlated density gauge or cores. Verification tests will be within the following tolerances from the Adjusted Job Mix Formula:

Parameter	**Precision**
Percent Passing #200 sieve	± 2.0 %
Asphalt Binder Content (Dense Graded mixtures)	± 0.4 %
Asphalt Binder Content (SMA mixtures)	± 0.3 %
Air Voids	± 1.5%
Field VMA	-1.0 to + 2.0 percent*
Density	Passing

*- compared to mix design minimum

In the event the verification test exceeds these tolerances, an investigation will be conducted by Tollway Materials, the CM, and Contractor to determine the causes and possible solutions."

3.2. Control Limits. Add the following category to the table in Article 1030.09(c)of the Standard Specifications.

"Tollway Table 1 – Asphalt Stabilized Subbase Control Limits

Parameter	Individual Test
1/2 in. (12.5 mm)	± 15 %
No. 4 (4.75 mm)	± 10 %
No. 200 (75 µm)	± 2.5 %
Asphalt Content	± 0.5 %
Air Voids	± 1.2 % (of design)
VMA	-0.7%

"

4. Asphalt Plant. The asphalt plant shall be calibrated and approved by IDOT or the Illinois Tollway before the production of asphalt mixtures. The type of plant used to produce asphalt mixtures shall meet the requirements of Article 1102.01 of the Standard Specifications, except were modified herein.

4.1. Dust Collection. Add the following to the first paragraph of Article 1102.01(a)(4) of the Standard Specifications.

"Positive dust control must be used."

IL-4.75 Dust Collection – Add the following to Article 1102.01(a)(4)(a) of the Standard Specifications.

"5. Plant modifications may be required to accommodate the addition of higher percentages of mineral filler as required by the JMF.

6. Only metered bag house dust may be returned directly back to the mix. Any additional minus No. 200 (75 μm) material needed to produce the IL-4.75 shall be mineral filler."

4.2. Hot-Mix Silos and Surge Bins. Replace the last paragraph of Article 1102.01(a)(5) of the Standard Specifications with the following.

"IL-4.75 mixtures containing steel slag sand or aggregate having absorptions ≥ 2.5 percent shall have a silo storage plus haul time of not less than 1.5 hours.

Storage silos or surge bins must be able to hold a minimum of 200 tons of warm mix asphalt. Surge bins or silos are required to contain a batching device to charge the silo or surge bin and prevent the incoming WMA from forming a conical pile within the silo or surge bin. All SMA mixtures shall have a silo storage plus haul time of not less than 1.0 hour. Silo storage plus haul time of all SMA mixture types shall not exceed 6.0 hours."

4.3. Storage Tanks for Asphalt Binders. Add the following paragraphs to Article 1102.01(a)(6) of the Standard Specifications.

"SBS/SBR. SBS/SRB PG 76-22, SBS PG 70-22, SBS PG 70-28, or SBS PG 64-34 binder shall be shipped, maintained, and stored at the mix plant according to the manufacturer's requirements. Polymer modified asphalt binder shall be placed in an empty tank and not blended with other asphalt binders.

Terminal Blend Ground Tire Rubber (GTR). A dedicated storage tank for "terminal blended GTR" shall be required at the hot mix plant. The GTR binder shall be placed in an empty tank and not blended with other asphalt cements. This tank shall be equipped with a mechanical agitator, capable of providing continuous mixing and/or recirculation of the asphalt-rubber blend. This tank shall be heated and capable of maintaining the temperature of the homogeneous blend of asphalt cement and GTR at 325ºF to 375ºF for a minimum of 45 minutes. Terminal Blended GTR modified asphalt may be stored at

the asphalt production facility for up to 30 days at 300ºF to 350ºF with continuous mixing."

4.4. Equipment for Weighing HMA. Add the following to Article 1102.01(a)(7).

"The printouts shall be maintained in a file at the plant for a minimum of one year or as directed by the Engineer and shall be made available upon request. The printing system will be inspected by the Engineer prior to production and verified at the beginning of each construction season thereafter."

4.5. Equipment for FRAP/RAP/RAS. Replace the last two sentences Article 1102.01(a)(9) of the Standard Specifications with the following.

"To remove or reduce oversized material, a scalping screen, crushing unit, or comparable sizing device approved by Tollway Materials shall be used in the RAP/FRAP/RAS feed system to remove or reduce oversized material. If material passing the sizing device adversely affects the mix production or quality of the mix, the sizing device shall be set at a size specified by Tollway Materials.

RAS shall be incorporated into the asphalt mixture either by a separate weight depletion system or by using the RAP weigh belt. Either feed system shall be interlocked with the aggregate feed or weigh system to maintain correct proportions for all rates of production and batch sizes. While an auger-feed system is preferred, any system must provide a consistent, even flow of material and be approved by the Illinois Tollway. The portion of RAS shall be controlled accurately to within ±0.5 percent of the amount of RAS utilized. When using the weight depletion system, flow indicators or sensing devices shall be provided and interlocked with the plant controls such that mixture production is halted when RAS flow is interrupted.

If the RAP/FRAP/RAS control tolerances or QC/QA test results require corrective action, the Contractor shall cease production of the mixture containing RAP/FRAP/RAS and either switch to the virgin aggregate design or submit a new RAP/FRAP/RAS design."

4.6. Loose Fiber. In Article 1102.01(a)(10) of the Standard Specifications, replace "Stabilizing Additive" with "Loose Fiber" and add the following to the first paragraph of Article 1102.01(a)(10) of the Standard Specifications.

"When new equipment is provided for adding fibers into the mix, a representative from supplier/manufacturer of the equipment shall be present for calibration and first day of production (test strip). The Contractor shall notify Tollway Materials of Loose Fiber calibrations, and Tollway Materials shall be afforded the opportunity to witness calibrations."

Add the following to Article 1102.01(a)(10)a of the Standard Specifications.

"The batch size shall not exceed 75% of pugmill size as rated by IDOT. The fiber shall be added to the aggregate in the weigh hopper or as approved and directed by Tollway

Materials. The fibers are to be uniformly distributed prior to the injection of asphalt cement into the mixes."

Replace the last sentence of Article 1102.01(a)(10)b of the Standard Specifications with the following.

"The fiber shall be added to the aggregate and uniformly dispersed prior to the injection of asphalt cement."

4.7. Asphalt Additives and Modifiers. Add the following to the end of Article 1102.01(a) of the Standard Specifications.

"(11) WMA Additives. When a mix is produced using an approved warm mix asphalt technology, the asphalt mixing plant shall be modified as required by the additive or process manufacturer to introduce the technology and produce an asphalt mixture meeting the volumetric properties specified in the Illinois Tollway Special Provision for Asphalt Mixtures. Plant modifications may include additional plant instrumentation, the installation of asphalt binder foaming systems and/or warm mix additive delivery systems, tuning the plant burner and adjusting the flights to operate at lower production temperatures and/or reduced tonnage.

All metering devices will meet the current IDOT requirement for liquid additives, except they shall be capable of controlling the introduction of additive into the asphalt binder within ±2.0 percent of the amount specified or required. Document the integration of plant controls and interlocks when using warm mix additive metering devices. The Contractor shall notify Tollway Materials of WMA Additive calibrations, and Tollway Materials shall be afforded the opportunity to witness calibrations.

(12) Terminal Blend Ground Tire Rubber. The use of GTR modified asphalt may require additional plant modifications approved by Tollway Materials.

(13) Dry Process GTR. Shall be controlled with a feeder system using a proportioning device that is accurate to within ± 3 percent of the amount required. The system shall automatically adjust the feed rate to maintain the material within this tolerance at all times and shall have a convenient and accurate means of calibration. The system shall provide in-process monitoring, consisting of either a digital display of output or a printout of feed rate, in pounds per minute, with data recorded, to verify feed rate. The supply system shall report the feed in 1 lb. increments using load cells that will enable the user to monitor the depletion of the GTR. Monitoring the system volumetrically will not be allowed. The feeder shall interlock with the aggregate weigh system and asphalt binder pump to maintain the correct proportions at all production rates.

Flow indicators or sensing devices for the system shall be interlocked with the plant controls to interrupt the mixture production if the GTR introduction output rate is not within the ±3 percent tolerance given above. This interlock will immediately notify the operator if the targeted rate exceeds introduction tolerances. All plant production will cease if the

introduction rate is not brought back within tolerance after 30 seconds. When the interlock system interrupts production and the plant has to be restarted, upon restarting operations; the modifier system shall run until a uniform feed can be observed on the output display. All mix produced prior to obtaining a uniform feed shall be rejected.

With a drum mixing plant, introduce the dry process GTR prior to the injection of asphalt cement. The point of introduction in the drum mixer will be approved by-Tollway Materials prior to production. The Contractor shall notify Tollway Materials of Dry Process GTR calibrations, and Tollway Materials shall be afforded the opportunity to witness calibrations. Ensure the GTR will not become entrained in the exhaust system of the drier or plant and will not be exposed to the drier flame at any point after induction.

During operations, the asphalt plant shall record feed records daily from the feeder unit for the purposes of verifying dry process GTR inputs into the process.

(14) Equipment for Rejuvenators. When a rejuvenator is used, it shall be added to the asphalt binder using an approved in-line blending system located between the asphalt binder supply tank and distribution onto the heated aggregate. The in-line blending system shall be installed so that the rejuvenator cannot recirculate and return to the asphalt binder supply tank. The in-line blending system shall deliver a consistent and controllable stream of rejuvenator to the asphalt binder under all operating weather conditions and shall control the introduction of rejuvenator into the asphalt binder within +/- 2 percent of the amount specified or required. The Contractor shall use manufacturer's methods and procedures for handling and storing the rejuvenator.

All metering devices will meet the current IDOT requirements for liquid additives. Document the integration of plant control and interlocks when using metering devices. The contractor shall notify Tollway Materials of rejuvenator calibrations, and Tollway Materials shall be given the opportunity to witness calibrations."

5. **Placement.** Asphalt mix placement shall conform to Article 406.06, 442.08 and 1030.08 of the Standard Specifications except as modified herein.

5.1. Pavement Preparation. The base shall be prepared according to 406.05 of the Standard Specifications except as modified herein.

Revise the application rate table in 406.05(c)(1) with this table:

Type of Surface to be Tacked	Residual Asphalt Rate lb/sq ft
Milled HMA, Aged Non-Milled HMA, Milled Concrete, Non-Milled Concrete & Tined Concrete	0.055
New HMA	0.035

Replace the second paragraph of 406.05(c)(1) with the following:

The tack coat shall be placed one lane at a time. Pavement with tack coat applied shall not be opened to traffic until the subsequent asphalt lift is placed. Any vertical or inclined face that is to be paved against shall be tack coated at the above specified rate.

Add the following to the third paragraph of 406.05(c):

If failing results are encountered, the contractor shall be notified, and another test performed on the next tack application. Payment deduction will be enforced for all pavement affected by failing results. A failing test applies to all areas from the beginning of the job or the most recent passing result. Payment for areas with less than required tack coat shall be applied according to the following table:

Tack Quantity less than Specified (lb/sq-ft)	Deduction from unit price of HMA lift above tack placement**
0.001 – 0.010*	$1.00/ton
0.011 – 0.020*	$2.00/ton
0.021 – 0.030*	$5.00/ton
> 0.030*	Remove and replace HMA lift above tack placement at contractor's expense

*If tack quantity results are available before subsequent lift of HMA is placed, the contractor will have the opportunity to place additional tack to get the quantity within specification.

**If the HMA lift above tack placement is paid for by square yards, the Engineer will use an HMA weight of 112 lbs. per square yard-inch to convert deductions.

5.2. Placement Conditions. Replace the first two paragraphs of Article 406.06(c) of the Standard Specifications with the following.

"(c) Placement Conditions: Asphalt mixes shall be placed on a clean, dry surface and when weather conditions are suitable. Asphalt mixes shall be placed within the temperature ranges (measured in the shade) listed below. Work shall not begin when local conditions indicate rain is imminent.

Tollway Table 2 – Ambient Air Temperature Requirements for Asphalt Mixes

	WMA Binder and Surface Course and SMA	WMA IL-4.75
Minimum Ambient Air Temperature (In shade)	32°F and Rising	40°F and Rising
Delivery Temperature (In truck just prior to placement)	250 to 280°F for neat virgin asphalt 270 to 300°F for modified virgin asphalt	

Minimum ambient air temperature requirements may be waived with the approval of the Engineer and Tollway Materials. Asphalt mix below the minimum specified delivery temperature shall be rejected by the Engineer. The first three loads of asphalt mix above the maximum specified delivery temperature may be acceptable at start up, otherwise shall be rejected by the Engineer.

The minimum ambient air temperature specifications in Tollway Table 2 can be waived, with all the following conditions:

1) All mix testing specifications are met.
2) The contractor shall submit a cold weather paving plan including, but not limited to, actions by the Quality Control Manager in the event that asphalt mix requirements are not achieved.
3) No paving shall be conducted on frozen ground.
4) The WMA chemical additive dosage shall be increased 50% from the mix design target. No foaming will be allowed when outside of the ambient air temperatures (Tollway Table 2).
5) Non-tracking or fast cure tack is used.
6) For IL-4.75 level binder, the growth curve target density shall have been created during allowable ambient air temperatures (Tollway Table 2)."

5.3. IL-4.75 Placement. Replace Article 406.06(c)(1)a of the Standard Specifications with the following.

"a. The surface shall be dry for at least 12 hours, and clean, prior to placement of the mixture."

5.4. SMA Placement. Replace Article 406.06(c)(2)a of the Standard Specifications with the following.

"a. SMA mixture produced with a Warm Mix Additive Technology shall be placed at a minimum compaction temperature as recommended by the technology manufacturer after the SMA test strip has been placed and tested."

Replace the last sentence of the third paragraph of Article 406.06(f) of the Standard Specifications with the following.

"In no case shall speed of the paver exceed 50 ft (15 m) per minute for binder and surface mixtures or 25 ft/min for SMA during placement."

Replace the fifth paragraph of Article 406.06(f) of the Standard Specifications with the following.

"A material transfer device (MTD) shall be used for the placement of binder and surface course stone matrix asphalt mixtures placed with a paver including ramps but excluding bridge decks. When not required, an MTD may still be used at the Contractor's option, subject to the requirements and restrictions herein. Use of MTDs shall be according to the following."

Replace the MTD Category table in Article 406.06(f) of the Standard Specifications with the following.

"Use of a material transfer device with a roadway contact pressure exceeding 25 psi will be limited to partially completed segments of full-depth asphalt pavement where the thickness of binder in place is 7 inches or greater. A material transfer device can be used on partially completed segments of full-depth asphalt pavement where the thickness of binder in place is 6.25 inches or greater with the following conditions.

(a) MTD tire pressure is less than 80psi.
(b) Total axle load (fully loaded) is less than 64,000 lbs.

If the materials transfer device is operating on a concrete pavement, it shall remain 4 feet away from the free edge of the concrete pavement. This distance is measured from center of tire to edge of pavement. A free edge is defined as a longitudinal pavement joint not tied to a concrete pavement lane or shoulder.

For new concrete pavement, any MTD should not be allowed until the pavement reaches 3500 psi as tested in accordance with the Illinois Tollway Portland Cement Concrete Special Provision. The test results shall be taken within the last 50 feet of placement to represent the end of each pour. Strength test results shall be submitted to the Engineer prior allowing to MTD on the pavement."

5.5. Field Conditions. Replace the last sentence of paragraph two of Article 1030.12 and Article 1030.12(a) through (d) of the Standard Specifications with the following.

"All trucks shall be covered when hauling the mixture to the paver."

Add the following to Article 1030.12 of the Standard Specifications:

"Release agents for all equipment used in transporting and placing WMA, including but

not limited to transportation vehicles, material transfer devices, pavers, rollers, and miscellaneous equipment must be listed on IDOT's Qualified Product List for Asphalt Release Agents for Vehicles Transporting Hot Mix Asphalt"

5.6. Spreading and Finishing. Replace the last paragraph of Article 406.06(f) of the Standard Specifications with the following.

"A painted stringline shall be used as a guide for the finishing machine in order to maintain a uniform edge alignment; if any other method is proposed, it shall meet the approval of the Engineer prior to paving. Irregularities in the alignment of the outside edges and along the longitudinal joint shall be corrected by adding or removing asphalt mixture before the edges are rolled.

The stringline shall be painted on the pavement or base in a manner that provides a clear, well-defined path for the paver operator to follow. The paver operator shall operate the paver in such a manner that the painted stringline guide is clearly visible. A painted stringline shall be used for every lift. Additional care must be taken where curved lanes are being paved to ensure a good guideline through the curves.

The paver screed shall be operated such that the end gate shoe is in contact with or within ½" of the pavement surface while paving to properly form the pavement edge and minimize the need for raking at the joints.

Excess asphalt mixture deposited on the existing base, binder course, or surface course outside the limits of the lane being laid shall be removed immediately and disposed of as directed by the Engineer."

5.7. Construction Joints. Replace the first five paragraphs of Article 406.06(h)(2) with the following.

"(2) Longitudinal Joints. For asphalt overlays, including the asphalt lifts in composite pavement construction, the longitudinal joint in all lifts shall be the same as the longitudinal joint location of the underlying pavement.

For full-depth asphalt pavements or when stage construction prohibits the total completion of a particular lift, the longitudinal joint in one lift shall be offset from the longitudinal joint in the preceding lift between 3 and 6 inches. The longitudinal joint in the surface course shall be at the lane width of the roadway.

For all asphalt surface placement, the joint shall be a minimum of 2 inches from the edge of the final pavement marking. For all Asphalt Pavement consisting of 3 or more lifts, the contractor shall submit to the Engineer for approval a drawing showing the location of the longitudinal joint of each lift in relationship to the final lane line. The drawing shall contain final pavement marking, including width, as well as location and limits of any staggered longitudinal joints.

For ramp pavements, the joint locations are not limited by the above conditions.

The contractor shall continuously monitor the constructed longitudinal joints for straightness. Straightness is defined as no greater than a 2-inch deviation over 16 feet from the plan location of the longitudinal joint."

Replace the first sentence of the eight paragraph of Article 406.06 (h)(2) with the following:

"The LJS shall be applied in a single pass with a self-propelled LJS pressure distributor. Non-self-propelled or melter kettle equipment shall not be allowed unless the Contractor successfully performs an off-site placement of 1000 feet of LJS entirely within specification. At least 100 feet of the off-site placement location must have a cross slope greater than 2%. If any part of the off-site placement is out of specification, it must be repeated until passing before approval for on-site use. The off-site placement may be waived at the Engineer's discretion if the Contractor provides evidence of previous successful placements with the same equipment and personnel on Illinois Tollway or other local agency projects."

Replace the twelfth and thirteenth paragraphs of Article 406.06 (h)(2) with the following.

"The Contractor shall furnish to the Engineer a bill of lading for each tanker supplying material to the project. The application rate of LJS shall be verified within the first 500 ft of the day's placement and every 12,000 ft thereafter. A suitable paper or pan shall be placed at a random location in the path of the LJS. After application of the LJS, the paper or pan shall be picked up and weighed at the job site on a certified scale. The application rate must be verified before the LJS application can continue. The tolerance between the application rate shown in the LJS Application Table and the calculated rate shall be between +5 percent and -10 percent.

A 1 qt sample shall be taken from the distributor at the jobsite once for during the initial placement and from one additional random placement for each contract and sent to Tollway Materials."

Replace the fourteenth paragraph of Article 406.06 (h)(2) with the following.

"When LJS is placed on asphalt, the LJS shall be suitable for construction traffic to drive on without pickup or tracking of the LJS within 30 minutes of placement. If pickup or tracking occurs, LJS placement shall stop, and all damaged areas shall be repaired. When LJS is placed on concrete, the LJS shall be covered immediately following its application with fine aggregate spread at a uniform rate of 1 to 2 lb/sq-yd."

5.8. Maximum Lifts Per Day. Add the following to Article 406.06.

"(i) Maximum Lifts Per Day. The Contractor shall not place more than two subsequent lifts of WMA per 12-hour period unless waived by the Engineer. In no case shall the

Contractor place a subsequent lift of WMA prior to the underlying WMA cooling to below 140°F. The temperature shall be measured at three equally spaced readings across the mat, with readings taken two feet from both edges of pavement and one reading at the center, with all readings below 140°F. Temperatures shall be checked at a minimum of 500 feet increments when lifts are placed in the same 12-hour period."

6. **Compaction.** Asphalt compaction shall conform to Article 406.07 and 1030.09 of the Standard Specifications except as modified herein.

6.1. General Requirements. Add the following paragraphs to Article 406.07 of the Standard Specifications.

"Compact the asphalt mix immediately after spreading and finish compaction before the asphalt mixture temperature falls below the minimum job mix compaction temperature as recommended by the manufacturer of the Warm Mix Additive technology used. Discontinue paving if the Contractor is unable to achieve the specified density before the mixture cools below the minimum recommended Warm Mix Additive mix design compaction temperature.

The addition of a non-foaming detergent to the roller water will be allowed to prevent sticking, if necessary.

Traffic will not be permitted on asphalt pavement until the temperature of the mat has fallen below 140°F."

6.2. Rollers. Modify note 4/ of Article 406.07(a) of the Standard Specifications to the following:

"4/ The Contractor shall provide a minimum of two steel wheel tandem rollers (T_B), and/or oscillatory rollers (O_T), and/or three-wheel (3W) rollers for breakdown and one finish steel-wheeled roller (T_F) meeting the requirements of Articles 406.07 and 1101.01(e). 3W, T_B, and T_F rollers shall be a minimum of 280 lb/in, except when used for SMA, a minimum of 310 lb/in shall be required. The 3W, O_T, and T_B rollers shall be operated at a uniform speed not to exceed 3 mph, with the drive roll for T_B rollers nearest the paver and maintain an effective rolling distance of not more than 150 ft (45 m) behind the paver."

Add the following to Article 406.07(b) of the Standard Specifications.

"Rolling patterns shall be as established by the Tollway Materials approved test strip. Any change to the rolling pattern, including but not limited to a change in equipment or number of passes, shall require a new growth curve and be approved by the Engineer and Tollway Materials."

6.3. Density Modifications. Add the following to Article 1030.09(b) of the Standard Specifications.

"For acceptance, mat density shall be measured either by correlated nuclear gauge (Illinois-modified ASTM D 2950), correlated non-nuclear gauge (Tollway Modified ASTM D7113), or from cores obtained by the Contractor at random locations. The correlation coefficient ("r" value) for correlating density gauge densities with core densities shall be greater than 0.87. For the correlation to be valid, two or more of the cores must read at least 1.0% below the minimum required densities for both the mat and edge densities.

The use (or non-use) of mineral filler for density testing shall be consistent with the method used for the test strip gauge correlation. Mineral Filler is not allowed on 4.75mm mixes.

Non-nuclear gauges will be allowed in lieu of nuclear gauges in accordance with Tollway Modified ASTM D7113."

6.4. Longitudinal Joint Density. Replace the second paragraph of Article 1030.09(b)(1) of the Standard Specifications with the following:

"Longitudinal joint density testing shall be performed at each random density test location. Longitudinal joint testing shall be located at a distance equal to the lift thickness, or a minimum of two inches, from each pavement edge (i.e. for a four inch lift the near edge of the density gauge or core barrel shall be within four inches from the edge of pavement). It shall be documented as to whether the joint was confined or unconfined. The joint density value shall be determined using either a correlated density gauge or cores."

Replace the Article 1030.09(b)(1)(b) of the Standard Specifications with the following:

"(b) Unconfined Edge. Each unconfined edge joint density shall be represented by an average of two one-minute density readings or a single core density at the given density test location and shall meet the density requirements specified herein. When using a correlated density gauge, the gauge shall be rotated 180 degrees between readings. If the two readings are not within 1.5 lb./cu ft., then one additional reading shall be taken. Additional density readings taken at a given site shall not be allowed to replace the original density readings unless an obvious error has occurred (i.e. the density gauge was sitting on debris)."

6.5. IL-4.75 Requirements. Add the following to Article 1030.09(b) of the Standard Specifications.

"The density of the IL-4.75 mixture shall be according to the following.

The Contractor shall perform a growth curve at the beginning of each day. Quality Assurance shall be present for growth curve measurements. If an adjustment is made to the specific mix design, the Engineer or Tollway Materials reserve the right to request an additional growth curve and supporting tests at no additional cost to the Illinois Tollway.

Compaction of the growth curve shall commence immediately after the course is placed and at a temperature of not less than 300ºF. The growth curve, consisting of a plot of lb./cu ft. vs. number of passes with the project breakdown roller, shall be developed. This curve shall be established by use of a density gauge. Tests shall be taken after each pass until the highest lb./cu ft. is obtained. This value shall be the target density provided the air voids are within acceptable limits. If air voids are not within the specified limits, corrective action shall be taken, and a new target density shall be established. A new growth curve is required if the breakdown roller used on the growth curve is replaced with a new roller during production.

The target density shall apply only to the specific gauge used. If additional gauges are to be used to determine density specification compliance, the Contractor shall establish a unique minimum allowable target density from the growth curve location for each gauge. The Engineer will establish a target density for its Quality Assurance density gauge from the growth curve location.

All lifts shall be compacted to an average density of not less than 95 percent nor greater than 102 percent of the target density obtained on the growth curve. The average density shall be based on tests representing one day's production.

Quality Control density tests shall be performed at randomly selected locations within ¼ mile intervals per lane. In no case shall more than one half day's production be completed without density testing being performed. If density tests exceed 102 percent, the Contractor shall perform a new growth curve and supporting tests at no additional cost to the Illinois Tollway."

6.6. Class D Patching Requirements. Replace Article 442.08(b) with the following.

"The density of the Class D Patching mixture shall be according to the following.

The Contractor shall perform a growth curve on the first patch filled each day. Quality Assurance shall be present for growth curve measurements. If an adjustment is made to the specific mix design, the Engineer or Tollway Materials reserve the right to request an additional growth curve and supporting tests at no additional cost to the Illinois Tollway.

Compaction of the growth curve shall commence immediately after the course is placed and at a temperature of not less than 275ºF. The growth curve, consisting of a plot of lb./cu ft. vs. number of passes with the project breakdown roller, shall be developed. This curve shall be established by use of a density gauge. Tests shall be taken after each pass until the highest lb./cu ft. is obtained. This value shall be the target density provided the air voids are within acceptable limits. If air voids are not within the specified limits, corrective action shall be taken, and a new target density shall be established. A new growth curve is required if the vibratory roller used on the growth curve is replaced with a new roller during production.

The target density shall apply only to the specific gauge used. If additional gauges are to be used to determine density specification compliance, the Contractor shall establish a unique minimum allowable target density from the growth curve location for each gauge. The Engineer will establish a target density for its Quality Assurance density gauge from the growth curve location.

The above procedure shall be repeated for each lift placement of the patch.

All lifts shall be compacted to an average density of not less than 97 percent nor greater than 103 percent of the lift target density obtained on the growth curve(s). A valid test shall consist of three locations, equally spaced within the patch and average together.

Quality Control density tests shall be performed at randomly selected locations within ¼ mile intervals per lane. In no case shall more than one half day's production be completed without density testing being performed. If density tests exceed 103 percent, the Contractor shall perform a new growth curve and supporting tests at no additional cost to the Illinois Tollway."

6.7. Control Limits. Revise the density control limits table and footnotes of Article 1030.09(c) of the Standard Specifications to the following.

"Tollway Table 4 – Density Control Limits

Mixture Composition	Parameter	Individual Test (includes confined edges)	Unconfined Edge Joint Density Minimum
IL-4.75[1]	Ndesign = 50	Growth Curve, 95 – 102%, see 6.5.	
Class D Patch	Ndesign = 70	Growth Curve, 97 – 103%, see 6.6.	
IL-9.5, IL-12.5	Ndesign = 90	92.0 – 96.0%	91.0%
IL-9.5, IL-12.5	Ndesign < 90	92.5 – 97.4%	91.0%
IL-19.0	Ndesign = 90	93.0 – 96.0%	91.0%
IL-19.0	50 < Ndesign < 90	93.0 – 97.4%	91.0%
IL-19.0	Ndesign = 50	94.0 – 98.4%	92.0%
SMA	Ndesign = 80	93.5 – 97.4%	92.0%
Asphalt Stabilized Subbase	Ndesign = 50	95.0 - 98.4 %	92.0%

1/ A density gauge/core correlation shall not be required for IL-4.75 mixtures.

If the longitudinal joint densities do not meet the minimum requirements of Tollway Table 4, the Engineer may allow the use of a Rapid Penetrating Emulsion (RPE) in lieu of remove and replace."

7. Test Strip and Production Testing.

Replace the Article 1030.10 with the following:

“For each contract, a 300 ton (for dense graded mixes) or 400 ton (for SMA mixes) test strip will be required at the beginning of the WMA production for each mix design. This can be waived by the Engineer if a test strip has been performed and the results approved by Tollway Materials in the same calendar year. The test strip shall be performed according to the IDOT document *Hot Mix Asphalt Test Strip Procedures*.

Before start-up, target values shall be determined by applying gradation correction factors to the JMF when applicable. These correction factors shall be determined from previous experience. The target values, when approved by the Engineer, shall be used to control HMA production. Plant settings and control charts shall be set according to target values.

Before constructing the test strip, target values shall be determined by applying gradation correction factors to the JMF when applicable. After any JMF adjustment, the JMF shall become the Adjusted Job Mix Formula (AJMF). Upon completion of the first acceptable test strip, the JMF shall become the AJMF regardless of whether the JMF has been adjusted. If an adjustment/plant change is made, the Engineer may require a new test
strip to be constructed. If the HMA placed during the initial test strip is determined to be unacceptable to remain in place by the Engineer, it shall be removed and replaced.

The limitations between the JMF and AJMF are as follows.

Parameter	Adjustment
1/2 in. (12.5 mm)	± 5.0 %
No. 4 (4.75 mm)	± 4.0 %
No. 8 (2.36 mm)	± 3.0 %
No. 30 (600 µm)	*
No. 200 (75 µm)	*
Asphalt Binder Content	± 0.3 %

* In no case shall the target for the amount passing be greater than the JMF.

Any adjustments outside the above limitations will require a new mix design.

Hamburg Wheel, DCT, and Recovered Asphalt Binder Performance Grading (TTP 001) testing will be conducted by the Tollway after an approved test strip and the results must meet the requirements set forth in the Illinois Tollway Asphalt Mixtures Special Provision. Production Hamburg Wheel, DCT, and TTP 001 will be tested a minimum of once each calendar year. Additionally, theTollway may sample and test again at any point in production, and results must meet the requirements set forth in the Illinois Tollway Asphalt Mixtures Special Provision. If failures occur, the Tollway will retest from the same sample. If failures occur on the retest, the Contractor shall make allowable mix adjustments/plant changes prior to the next placement, and the Tollway will resample and retest. If the Engineer or Tollway Materials determines additional adjustments to the mix will not produce acceptable results, a new mix design shall be required.

The Tollway reserves the right to request and witness investigative samples of any material, or conduct field testing, at any point during the project."

Replace IDOT's "Manual of Test Procedures for Materials - Appendix B4 - HMA Test Strip Procedures" with the following.

"General Requirements. A QC/QA mixture test strip will be required for all asphalt mixes. The mix design shall be approved by Tollway Materials prior to the test strip. Target values shall be provided by the Contactor and will be approved by Tollway Materials or their designee prior to construction of the test strip. A pre-pave meeting shall be held to coordinate personnel and materials prior to the construction of the test strip.

The test strip shall be constructed at a location approved by the Engineer and Tollway Materials to determine the mix properties, density, and laydown characteristics, and as needed to finalize any proposed mix design. These test results and visual inspections on the mixture shall be used to make corrective adjustments if necessary.

Prior to the start of mix production and placement the Engineer, in conjunction with Tollway Materials, will review and approve all test strip results, mix designs, and rolling pattern.

Team Members. The start-up team may consist of the following with required personnel in bold:

(1) Resident Engineer
(2) Tollway Project Manager, or representative
(3) Tollway Materials representative
(4) Contractor's QC Manager
(5) Construction Manager's QA representative
(6) Contractor's QC technician
(7) Supplier representative (Required for new technologies)

Communication. The Contractor shall advise the team members of the anticipated start time of production for the test strip. The QC Manager shall direct the activities of the test strip team. An Illinois Tollway-appointed representative from the start-up team will act as spokesperson for the Illinois Tollway.

Process. The Test Strip(s) for asphalt mixtures shall be in accordance with the Standard Specifications except as modified herein. For SMA, the Test Strip(s) shall consist of approximately 400 tons. For asphalt stabilized base, binder course and surface course, the Test Strip(s) shall consist of approximately 300 tons.

a. Mix Information. On the day of construction of the Test strip, the Contractor shall provide the start-up team documentation of test data showing the combined hot-bin or the combined aggregate belt sample and mineral filler at a drier-drum plant.

b. Mix and Gradation Test Strip Samples. The first and second sets of mixture and gradation samples shall be taken by the Contractor at such times as to represent the mixture between the two growth curves and the rolling pattern area, respectively. All test strip samples shall be processed by the Contractor for determination of mix composition and volumetric properties including air voids. This shall include washed gradation tests. This information shall then be compared to the JMF and required design criteria. Prepare and test any WMA test strip mixtures, including gyratory compacted specimens for QC/QA using the same test methods, procedures and frequencies as specified for HMA, except that the WMA mixture shall be aged at the production temperature for a period of 2 hours before gyratory or performance-based test specimens are compacted.

   All samples shall be processed for determination of the mix composition and volumetric properties, including air voids, before production may continue. The test data shall meet the JMF target value control limits to be considered acceptable. If the results of the required plant tests exceed the JMF target value control limits, the Contractor shall propose ingredient materials adjustments. This mixture AJMF proposal shall be uploaded into the Web-Based Project Management System (WBPM) and directed to the Engineer and Tollway Materials.

   The Contractor shall upload a proposal for full mixture production whether changes to the JMF need to be made or not. Full production of the mixture shall not commence until the Engineer and Tollway Materials have approved the test strip.

   If the Engineer or Tollway Materials determines that the Contractor proposed adjustments to the mix may not produce acceptable results, a meeting between Tollway Materials and the Quality Control Manager shall be required to discuss the proposed changes before a 2nd Test Strip can be attempted.

c. Compaction Equipment. It shall be the responsibility of the start-up team to verify roller compliance before commencement of growth curve construction. All paving and rolling equipment required by Section 4 herein for use on the specific mix and application shall be utilized on the test strip.

   For vibratory rollers, appropriate amplitude shall be selected on the basis of the roller weight and mat thickness to achieve maximum density. The vibratory roller speed shall be balanced with frequency so as to provide compaction at a rate not less than 10 impacts per 1 foot, which shall be maintained throughout paving operations.

d. Construction of the Test Strip. After the Contractor has produced the mix, transported the mix, and placed approximately 100 to 150 tons of mix, placement of the mix shall stop, and a growth curve shall be constructed. After completion of the first growth curve, paving shall resume for 50 to 100 tons of mix, placement shall stop, and the second growth curve shall be constructed within this area. Additional growth curves may be required if an adjustment/plant change is made during the test strip. The Contractor shall use the specified rolling procedures for all portions of the test strip

except for the growth curve areas which shall be compacted as directed by the QC Manager. Smoothness of the test strip shall be to the satisfaction of the Engineer.

e. Location of Test Strip. The test strip shall be located on a pavement type similar to the contract pavement and acceptable to the Engineer and Tollway Materials. It shall be on a relatively flat portion of the roadway. Descending/Ascending grades or ramps shall be avoided.

f. Compaction Temperature. For WMA mixtures, the temperature of the mix at the beginning of the growth curve shall be within the additive / process manufacturer's recommended temperature range for compaction, with the lowest compaction temperature not less than 220°F.

g. Compaction and Testing. The QC Manager will specify the roller(s) speed and number of passes required to obtain a completed growth curve. The density gauge shall be placed near the center of the hot mat and the position marked for future reference. With the bottom of the density gauge and the source rod clean, a density reading using the gauge's shortest time setting (without mineral filler) shall be taken after each pass of the roller. Rolling shall continue until the maximum density is achieved and three consecutive passes show no appreciable increase in density or no evidence of destruction of the mat. The growth curve shall be plotted.

h. Evaluation of Growth Curves. Mixtures which exhibit density potential less than 94 percent or greater than 97 percent of the maximum theoretical density (D) shall be considered as sufficient cause for mix adjustment. If a mix adjustment is made, an additional test strip may be requested. The Illinois Tollway will pay half the cost of the contract unit price for a test strip if an additional test strip is required. The information shall then be compared to the AJMF and required design criteria.

   If the density gauge potential of the mixture does not exceed 91 percent, the operation will cease until all test data is analyzed or a new mix design is produced.

   In addition, other aspects of the mixture, such as appearance, segregation, texture, or other evidence of mix problems, should be noted and corrective action taken at this time.

i. Density Gauge/Core Correlation. A correlation of core and density gauge test results shall be performed on-site as defined in the IDOT's "Procedure for Correlating Nuclear Gauge Densities with Core Densities". All correlation locations shall be cooled with ice or dry ice so that cores can be taken as soon as possible. Three locations shall be selected. Two sites shall be located on the two growth curves from the first acceptable test strip. The third location shall be in an area corresponding to the second set of mixture/ gradation samples taken at the plant. The correlation may be performed with or without mineral filler placed on the testing locations, however all future correlated density testing shall be consistent with the method selected for the test strip. This

correlation shall be completed at the same time by the Contractor prior to the next day's production.

Documentation. The Test Strip rolling pattern information (including growth curves) and required plant tests will be tabulated by the contractor with copies provided to each team member, and the original submitted to the Engineer and Tollway Materials. Any change to the rolling pattern shall be approved by the Engineer and Tollway Materials."

8. Pavement Surface Smoothness. Smoothness testing and corrections of the finished asphalt surface shall be conducted according to the requirements of the Illinois Tollway Special Provision for Surface Smoothness Testing.

9. **Pay Adjustments**

9.1. Construction Joints. See sections 5.5 and 5.6 of this document.

For SMA binder and surface, the Engineer will assess a 1-ton quantity deduction for each instance where a 2-inch or greater deviation in the longitudinal joint is found within a 16-foot segment measured from the top of the constructed mat. Deductions shall only be applied to deviations noted along an unconfined edge prior to construction of the adjacent lane. No more than 1 deduction will be assessed in any 16-foot length.

9.2. Bleeding or Flushing for SMA Surface Pavement.

If bleeding or flushing occurs in SMA pavement, regardless of the cause, areas of bleeding larger than one square foot within a five-foot length of pavement shall result in a deduction of 5 tons in the SMA measured for payment as specified. If bleeding or flushing occurs in SMA, regardless of the cause, areas of bleeding larger than 10 square feet within a five-foot length of pavement shall result in the entire area affected to be removed and replaced with equivalent SMA for the full width of the paving lane and a minimum 25 foot length at no additional cost to the Illinois Tollway.

END OF SECTION

RECLAIMED ASPHALT MATERIALS (RAM) (ILLINOIS TOLLWAY)

Effective: July 25, 2019
Revised: August 30, 2023

Table of Contents:

1. Description
2. References
3. Requirements
4. Materials
4.1. RAP and FRAP Description.
4.2. RAP and FRAP Stockpiles
4.3. RAS Description
4.4. RAS Stockpile
5. Testing
5.1. RAP and FRAP
5.2. RAS
6. Evaluation of Tests
6.1. RAP and FRAP
6.2. RAS
7. Quality Designation of FRAP/RAP

1. Description. This work shall consist of the quality and production requirements for Reclaimed Asphalt Materials (RAM) used in Tollway asphalt mixes and subgrade aggregate. This Special Provision shall replace Articles Section 1031 Reclaimed Asphalt Pavement and Reclaimed Asphalt Shingles of the Illinois Department of Transportation (IDOT) Standard Specifications.

2. References. The following documents are referenced in the Illinois Tollway Reclaimed Asphalt Material (RAM) Special Provision.

2.1. Illinois Department of Transportation – Current Standard Specifications
2.2. Illinois Department of Transportation – Manual of Test Procedures
2.3. Illinois Tollway – Illinois Tollway Manual of Test Procedures
2.4. Illinois Tollway – Asphalt Mixtures Special Provision
2.5. Illinois Tollway - Subgrade Aggregate Special Provision
2.6. Illinois Tollway – Aggregate Shoulders Special Provision

3. Requirements. Laboratories performing the tasks set forth in this special provision shall either be AASHTO Re:Source Accredited or meet the minimum requirements specified in the current IDOT policy memorandum 6-08.3 “Minimum Private Laboratory Requirements for Construction Materials Testing or Mix Design.”

4. Materials. The Contractor shall construct individual, sealed stockpiles meeting one of the definitions for Reclaimed Asphalt Pavement (RAP), Fractionated Reclaimed Asphalt Pavement (FRAP), or Reclaimed Asphalt Shingles (RAS) described in the following subsections.

4.1. RAP and FRAP Description.

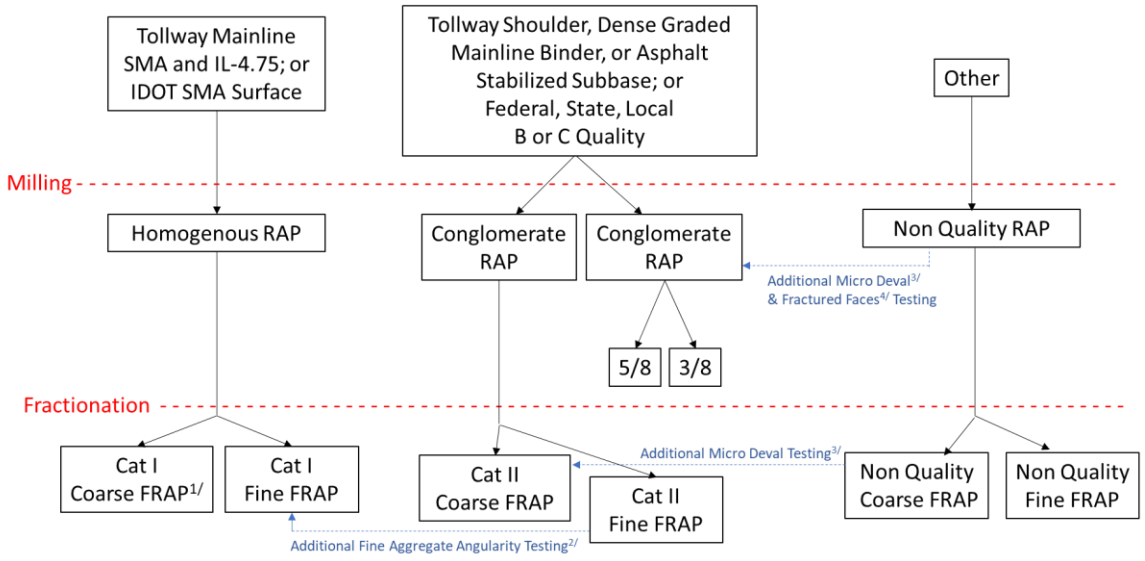
Reclaimed Asphalt Pavement (RAP) is the material resulting from cold milling or crushing of an existing asphalt pavement. The Contractor shall supply written documentation that RAP and/or FRAP originated from routes or airfields under federal, state, or local agency jurisdiction.

4.2. RAP and FRAP Stockpiles.

Prior to milling, the Contractor shall request IDOT or the Illinois Tollway to provide verification of the quality of the RAP to clarify the appropriate RAP and FRAP stockpile type. RAP/FRAP taken from an Illinois Tollway Class I, Superpave mainline (high ESAL) surface or binder mixtures is designated as containing Class B quality coarse aggregate. For RAP/FRAP taken from an Illinois Tollway location or other routes or airfields under federal, state, or local agency jurisdiction, if Tollway Materials has documentation of the quality of the aggregate, the Contractor shall use the assigned quality provided by Tollway Materials. For pre-existing stockpiles, documentation must be provided that guarantees the following requirements are met.

RAP/FRAP containing contaminants, such as earth, brick, sand, concrete, sheet asphalt, bituminous surface treatment (i.e. chip seal), pavement fabric, joint sealants, etc., will be unacceptable unless the contaminants are removed to the satisfaction of the Engineer. Sheet asphalt shall be stockpiled separately.

Tollway Table 1 - Allowable sources and minimum quality for RAP and FRAP Stockpiles



1/ If Category I Coarse FRAP is used as Friction Category I Coarse FRAP, the surface and binder lifts must be Milled separately.
2/ See Tollway Asphalt Mixtures Special Provision, Section 5.4 for specific requirements

[3/] See Tollway Table 9 for Micro-Deval requirements
[4/] See Tollway Table 9 for Fractured Faces requirements
All RAP/FRAP stockpiles shall be sufficiently separated to prevent intermingling at the base. Stockpiles shall be identified by signs indicating the type of material. No additional material shall be added to the pile after the pile has been sealed.

4.2.1. RAP Stockpiles

(a) Homogeneous. Homogeneous RAP stockpiles shall consist of sources that represent all of the following:
- The same aggregate quality but shall be at least C quality
- The same type of crushed aggregate (either crushed natural aggregate, ACBF slag, or steel slag)
- Equivalent design gradation requirements
- Design asphalt binder content within 2%

If approved by the Engineer, combined single pass surface/binder millings may be considered "homogenous" with a quality rating dictated by the lowest coarse aggregate quality present in the mixture.

(b) Conglomerate. Conglomerate RAP stockpiles may represent more than one aggregate type and/or quality. This RAP may have an inconsistent gradation and/or asphalt binder content prior to processing. Conglomerate RAP stockpiles shall not contain steel slag or other expansive material as determined by the Tollway Materials.

1) Conglomerate 5/8 – The coarse aggregate in this RAP shall be crushed aggregate of at least C quality and be processed by crushing to where all RAP shall pass the 5/8 in. or smaller screen.

2) Conglomerate 3/8 – The coarse aggregate in this RAP shall be crushed aggregate of at least B quality and be processed by crushing to where all RAP shall pass the 3/8 in. or smaller screen.

(c) Non-Quality. RAP stockpiles that do not meet the requirements of the stockpile categories listed above, or have no documentation of quality, shall be classified as "Non-Quality". Non-Quality RAP may be used for Capping Aggregate.

4.2.2. FRAP Stockpiles

FRAP shall require mechanical separation of RAP materials into appropriate sizes using an approved separation device. The Contractor is required to have a QC plan approved by Tollway Materials, a fractionation device approved the Tollway Materials, and sufficient cold feed bins. Fractionated RAP shall be separated by source (Category I and II), size (fine and coarse portions), and presence of steel slag and/or expansive materials and shall be stockpiled separately. Separate calibrated cold feed bins are required for each size of FRAP.

(a) FRAP Category

1) Category I: The aggregate type shall be crushed/manufactured and may represent more than one aggregate type. Category 1 coarse portion shall be at least B quality. Stockpiles designated as "with steel slag/expansive materials" shall be milled from surface friction course pavements that include steel slag and/or expansive materials. Category I coarse portion FRAP containing steel slag may be blended with friction aggregate to obtain the specified properties in asphalt surface friction course mixes.

2) Category II: Aggregates present may represent more than one aggregate type and/or quality. The fine aggregate in this RAP shall be manufactured or natural sand. The coarse aggregate in this RAP may be crushed aggregate shall be at least C quality. Category 2 coarse portion RAP stockpiles shall not contain steel slag or other expansive material and shall not contain uncrushed gravel as determined by the Illinois Tollway.

(b) FRAP Size

1) Fine Portion: The fine portion of FRAP is the portion of the processed material that meets the gradation in the table below.

Tollway Table 2 - Fine FRAP Gradation Requirements

Sieve Size	Percent Passing
3/8 in. (9.5mm)	100
No. 4 (4.75mm)	95-100

2) Coarse Portion: The coarse portion of FRAP is one or more of the coarse portions of the processed material larger than the No. 4 sieve. The maximum top size of the coarse portion of FRAP may not exceed Tollway Table 3, and the gradation must be within Table 3's limits.

Tollway Table 3 – Coarse FRAP Size Requirements for Mix Designs

Asphalt Mix Design Designation	Maximum FRAP Screen Size 100% Passing	No. 4 Sieve (Percent Passing)
19.0 mm	5/8 inch	≤45%
12.5 mm	5/8 inch	
9.5 mm	½ inch	

4.3. RAS Description.

RAS shall be salvaged asphalt shingles from the processing and grinding of pre-consumer or post-consumer shingles.

The RAS producer must be certified under the current version of IDOT's "Qualified Producer List of Certified Sources for Reclaimed Asphalt Shingles."

4.4. RAS Stockpile.

RAS stockpiles shall be sufficiently separated to prevent intermingling at the base. Stockpiles shall be identified by signs indicating the type of material. No additional material shall be added to the pile after the pile has been sealed.

4.4.1 RAS Type

1) Type 1. Type 1 RAS shall be processed, pre-consumer asphalt shingles salvaged from the manufacturer of asphalt roof shingles.

2) Type 2. Type 2 RAS shall be processed post-consumer shingles only, salvaged from residential dwellings of four units or less, that are not subject to the National Emission Standards for Hazardous Air Pollutants (NESHAP).

RAS shall meet either Type 1 or Type 2 requirements as specified herein. Type 1 and Type 2 RAS shall not be blended in any asphalt mixture. Processed RAS materials from Type 1 or Type 2 RAS sources shall be stockpiled separately from other recycled materials. Blending of RAS materials in a stockpile with other recycled materials from other sources is prohibited.
The RAS producer may mechanically blend sand (FM 01, FM 02, FM 20 or FM 22) or fine, processed reclaimed asphalt pavement (RAP) up to an equal weight of processed RAS will be permitted. The process and procedures to incorporate sand or RAP shall be included in the producer's QC Plan. The sand shall be "B Quality" or better from an approved Aggregate Gradation Control System source.

Processed Type 1 or Type 2 RAS materials shall not contain more than 0.5% deleterious materials. Deleterious materials including, but not limited to, asbestos, metals, glass, rubber, nails, soil, brick, tars, paper, wood, and plastics, shall not exceed 0.5% by weight as determined on material retained on the 4.75 mm (No. 4) sieve.
4.4.2 RAS Size

RAS Requirements: All RAS materials shall be processed by certified producers such that the following gradation requirements in Tollway Table 4 are met:

Tollway Table 4 - RAS Gradation Requirements

Sieve Size	Percent Passing
3/8 in. (9.5 mm)	100
No. 4 (4.75 mm)	93 - 100

5. Testing.

Reclaimed asphalt materials to be used on Illinois Tollway projects shall be tested by the contractor according to the following requirements. The Engineer or Tollway Materials reserves the right to witness and test any sample (split or agency-taken) to verify the Contractor/processors' test results. All RAP/FRAP/RAS gradation and asphalt production test results shall be uploaded into the Web-Based Project Management System when testing is complete.

5.1. RAP and FRAP

When used in asphalt mixtures, the RAP/FRAP shall be sampled and tested as follows for mix design and production.

Extract RAP/FRAP samples using a chemical extraction according to Illinois Modified AASHTO T164 or Illinois Tollway Modified ASTM D8159 Automatic Extraction Procedure. Report both gradation and asphalt content at the frequencies in Tollway Table 5.

Tollway Table 5 - RAP/FRAP Stockpile Testing Frequencies

Testing Type	Number of tests	Tonnage
Mix Design Gradation	Average of 5 tests	200 - 2500 ton
Start-up Production	1 test per 500 ton	Up to 2000 ton
Production	1 test per 2000 ton	Throughout production

The above frequencies shall be used for establishing a RAP/FRAP gradation target for mix design and production of new RAP/FRAP for use in existing an asphalt mix design.

For use of an existing un-tested RAP/FRAP stockpile, the Contractor shall submit a plan for approval to the Illinois Tollway proposing a satisfactory method of sampling and testing the RAP/FRAP pile either in-situ or by re-stockpiling. The sampling plan shall meet the minimum frequency required above and detail the procedure used to obtain representative samples throughout the pile for testing. Additionally, each field sample shall be split to obtain two samples of test sample size. One of the two test samples from the final split shall be labeled and stored for Tollway Materials use.

5.2. RAS

When used in asphalt mixtures, the RAS shall be sampled and tested as follows for mix design and production.

Extract RAS samples using a chemical extraction according to Illinois Modified AASHTO T164 or Illinois Tollway Modified ASTM D8159 Automatic Extraction Procedure. Report both gradation and asphalt content at the frequencies in Tollway Table 6.

Tollway Table 6 - RAS Stockpile Testing Frequencies

Testing Type	Number of tests	Tonnage

Mix Design Gradation	Average of 5 tests	200 - 1000 ton
Start-up Stockpile	1 test per 200 ton	Up to 1000 ton
Continued Stockpile	1 test per 500 ton	Throughout stockpiling

The above frequencies shall be used for establishing a RAS gradation target for mix design and stockpiling of RAS for use in existing an asphalt mix design.

Dry Gradation and Deleterious Content shall be tested at the same frequency as extractions. A sample of 500 to 700 grams of the RAS shall be air dried and dry sieved on the 3/8 and No. 4 sieve and any deleterious material larger than the No. 4 sieve shall be removed and weighed. Dry gradations shall meet the gradation specified in Tollway Table 4, and deleterious content shall meet the requirements set forth in Section 4.4.1 of this document.

6. Evaluation of Tests

6.1. RAP and FRAP

Once the Mix Design RAP/FRAP target is established for a stockpile, that gradation and asphalt content will be the target for future stockpile testing. When adding to an existing approved stockpile, production of RAP/FRAP shall follow the “start-up” frequencies in Tollway Table 5. If the average of the first 4 tests fall within the targets of Tollway Table 7, production can continue and testing frequencies shall follow “production” frequencies in Tollway Table 5.

Tollway Table 7 – RAP/FRAP Extraction Requirements Compared to Mix Design

Parameter	Homogeneous / Conglomerate 5/8 and 3/8 RAP	Conglomerate “D” Quality	Fine FRAP	Coarse FRAP
1 in. (25 mm)		± 5 %		
1/2 in. (12.5 mm)	± 8 %	± 15 %		± 8 %
No. 4 (4.75 mm)	± 6 %	± 13 %		± 6 %
No. 8 (2.36 mm)	± 5 %		± 5 %	
No. 16 (1.18 mm)		± 15 %		
No. 30 (600 µm)	± 5 %		± 5 %	
No. 200 (75 µm)	± 2.0 %	± 4.0 %	± 2.0 %	
Asphalt Binder	± 0.4 % 1/	± 0.5 %	± 0.3 %	± 0.3 %

1/ The tolerance for conglomerate 3/8 shall be ± 0.3%.

If the running average of four, for any property, falls outside the tolerances set forth in Tollway Table 7, the RAP/FRAP shall be diverted into another stockpile. The RAP/FRAP can be placed on the approved stockpile after two consecutive tests, tested at a frequency of one sample per 500 tons, each passing the requirements of Tollway Table 7.

6.2. RAS

Once the Mix Design RAS target is established for a stockpile, that gradation and asphalt content will be the target for future stockpile testing. When adding to an existing approved stockpile, RAS testing shall follow the "start-up" frequencies in Tollway Table 6. If the average of the first 4 tests fall within the targets of Tollway Table 8, production can continue and testing frequencies shall follow "stockpile" frequencies in Tollway Table 6.

Tollway Table 8 – RAS Testing Requirements Compared to Mix Design

Parameter	RAS Sample
No. 8 (2.36 mm)	±5%
No. 16 (1.18 mm)	±5%
No. 30 (600 µm)	±4%
No. 200 (75 µm)	±2.0%
Asphalt Binder	±1.5%

If the running average of four for any property, falls outside the tolerances set forth in Tollway Table 8, the RAS shall be stockpiled separately. At that time, the Contractor shall contact the RAS producer and stop shipment until the producer can assure compliance. When new RAS is shipped, test at the start up frequency for the running average of 4 passes the requirements of Tollway Table 8.

7. Quality Designation of RAP/FRAP

See Tollway Table 1 for Tollway quality designation of RAP/FRAP. If the quality is not known, the quality shall be determined as follows.

The Contractor shall obtain a representative sample witnessed by Tollway Materials. The sample shall be a minimum of 50 lb. (25 kg). The sample shall be extracted according to Illinois Modified AASHTO T164 or Illinois Tollway Modified ASTM D8159 Automatic Extraction Procedure by a consultant laboratory prequalified by IDOT for the specified testing. The consultant laboratory shall submit the test results along with the recovered aggregate to Tollway Materials. The cost for this testing shall be paid by the Contractor. The aggregate portion of the RAP/FRAP must meet the requirements in Tollway Table 9:

Tollway Table 9 – RAP/FRAP Aggregate Quality Testing Requirements

Quality Test	Test Procedure	Minimum Requirement
Micro Deval	ASTM D6928 or AASHTO T327	≤15.0%
Coarse Aggregate Angularity	ITP 5821	≥85.0% 2 or more crushed faces ≥97.0% 1 or more crushed faces

END OF SECTION

PORTLAND CEMENT CONCRETE (ILLINOIS TOLLWAY)

Effective: March 11, 2022
Revised: May 30, 2025

Table of Contents.

1. **Description.**
2. **Reference Standards.**
3. **Requirements.**
   3.1. Laboratory
   3.2. Equipment
   3.3. Personnel
4. **Materials.**
   4.1. Coarse Aggregates
   4.2. Supplementary Cementitious Materials (SCM)
   4.3. Concrete Admixtures
   4.4. Other Materials
5. **Mixture Design.**
   5.1. Proportioning
   5.2. Laboratory Performance Parameters
   5.3. Field Trial Batch Performance Parameters
   5.4. Mixture Qualification Submittal
   5.5. Mixture Design Approval
6. **Field Production.**
   6.1. Quality Plan
   6.2. Production Facility and Transport Equipment
   6.3. Mixing Portland Cement Concrete
   6.4. Curing
   6.5. Protection of Concrete Other Than Structures from Low Air Temperatures
   6.6. Protection of Concrete Structures from Low Air Temperatures
   6.7. Temperature Control
   6.8. Field Acceptance

1. Description. This item shall consist of the materials, mixture design, production, testing, curing, low air temperature protection, and temperature control of concrete. This item shall be in accordance with Section 1020 of the IDOT Standard Specifications for Road and Bridge Construction and the IDOT Special Provision for Quality Control/Quality Assurance of Concrete Mixtures, except as modified herein, and shall apply to all IDOT classes of concrete and the following Illinois Tollway Portland cement concrete (PCC) mixtures:

- Class AX - high early strength patching of pavements and structures
- Class HP - high performance concrete
- Class MC - mass concrete structures including drilled shafts
- Class TL - ternary cementitious with an optimized aggregate gradation for pavement

2. **Reference Standards.** The current versions of following documents are referenced in the Portland Cement Concrete Special Provision and shall be followed, except as modified herein.

   2.1. Illinois Department of Transportation (IDOT) – Standard Specifications for Road and Bridge Construction

   2.2. Illinois Department of Transportation (IDOT) – Supplemental Specifications and Recurring Special Provisions

   2.3. Illinois Department of Transportation (IDOT) – Manual of Test Procedures for Materials

   2.4. Illinois Department of Transportation (IDOT) – Manual of Aggregate Quality Test Procedures

   2.5. Illinois Tollway – Illinois Tollway Manual of Modified Test Procedures

   2.6. Illinois Tollway – Approved List of Shrinkage Reducing Admixtures (SRA)

   2.7. Indiana Department of Transportation (INDOT) ITM 222 – Specific Gravity Factor and Absorption of Lightweight Fine Aggregate

   2.8. Applicable American Association of State Highway and Transportation Officials (AASHTO) Test Methods

   2.9. Applicable American Society for Testing and Materials (ASTM) Test Methods

3. **Requirements.**

   3.1. Laboratory. Contractor and Consultant laboratories performing testing for mixture qualification shall be AASHTO re:source accredited. Laboratories performing testing for field acceptance shall be either AASHTO re:source accredited or meet the minimum requirements specified in the current version of IDOT policy memorandum 6-08 “Minimum Private Laboratory Requirements for Construction Materials Testing or Mix Design.”

   3.2. Equipment. Compression Machine Requirements. All laboratories reporting compressive strength results for all PCC items shall utilize compressive testing machines capable of storing results digitally for the duration of the contract and producing those results on request. This requirement extends to Quality Control laboratories furnished by the Contractor or their subcontractors, Quality Assurance laboratories representing the Engineer, or Independent Assurance laboratories reporting directly to the Tollway. The digital readouts shall be provided to the Engineer upon request and shall display the following:

   - Specimen identification number
   - Diameter and cross-sectional area of specimen
   - Specimen age at time of test
   - Date and time of test
   - Rate of loading to the nearest pound per second and maximum load achieved to the nearest pound of applied load
   - Compressive strength calculated to nearest pounds per square inch

- Type of fracture and any length/diameter corrections applied
- Test equipment and technician identification
- Laboratory name and location

If a volumetric mobile mixer is utilized, it shall be in accordance with Tollway Test Procedure (TTP) 016 Volumetric Mobile Mixer Approval Procedures.

3.3. Personnel. Personnel conducting strength testing for mixture qualification and field acceptance shall be certified as an American Concrete Institute (ACI) Concrete Strength Testing Technician**.**

4. Materials. Portland cement, water, fine and coarse aggregates, supplementary cementitious materials, and concrete admixtures shall conform to the requirements of Division 1000 of Standard Specifications with exceptions as noted. Specific references are as follows:

Table 1 – Materials for Concrete Mixtures

Material	**Section**
Portland Cement	1001
Water	1002
Fine Aggregates	1003
Coarse Aggregates	1004 & Section 4.1 below
Supplementary Cementitious Materials	1010 & Section 4.2 below
Concrete Admixtures	1021 & Section 4.3 below
Other Materials	Section 4.4 below

4.1. Coarse Aggregate.

Table 2 – Coarse Aggregate Requirements

Mixture Class	**Section**
AX	1004
HP	1004 & Section 4.1.1
MC	1004
TL	1004 & Section 4.1.2

4.1.1. For Class HP mixtures, aggregates shall contain no more than two percent by weight of deleterious materials. Deleterious materials shall include substances whose disintegration is accompanied by an increase in volume which may cause spalling of the concrete.

4.1.2. For Class TL mixtures, all coarse aggregate gradations and sources used in the mixture design shall be on the IDOT Freeze-Thaw Rating List for 30 Year Extended Life Pavement Design.

Revise footnote 6/ of Article 1004.01(b) of the Standard Specifications to read as follows:

"6/ For crushed aggregate, if the material finer than the No. 200 sieve consists of the dust from fracture, essentially free from clay or silt, this percentage may be increased to 3.5."

4.2. Supplementary Cementitious Materials (SCM).

Table 3 – SCM Requirements

Mixture Class	**Section**
AX	1010 & Section 4.2.1
HP	1010, Section 4.2.1 & Section 4.2.2
MC	
TL	1010 & Section 4.2.1

4.2.1. The limestone in a portland-limestone cement is not classified as an SCM.

4.2.2. For Class HP and MC mixtures, SCM's shall have an alkali content less than 3.5 percent (Na_2O_{eq}).

4.3. Concrete Admixtures.

Table 4 – Concrete Admixtures

Mixture Class	**Section**
AX	1021, Section 4.3.1 & Section 4.3.2
HP	
MC	
TL	1021, Section 4.3.2 & Section 4.3.3

4.3.1. Shrinkage reducing admixtures (SRA) shall be per the Illinois Tollway Approved List of Shrinkage Reducing Admixtures (SRA).

4.3.2. Replace Article 1020.05(b)(9) with the following:

(9) When a Type F admixture is used, retempering with water will not be allowed. When a Type G admixture is used, retempering with water or with Type G admixture will not be allowed.

4.3.3. For Class TL mixtures, the injection and subsequent mineralization of CO_2 may be permitted provided it is used in accordance with the manufacturer's recommendations and meets the requirements for an ASTM C494 Type S admixture.

4.4. Other Materials.

4.4.1. Fiber reinforcement may be permitted provided the material is used in accordance with the product manufacturer's recommendations and it is demonstrated that the concrete complies with the herein established performance requirements.

4.4.2. Lightweight aggregate shall meet the requirements of ASTM C1761. The surface moisture and absorption capacity shall be determined in accordance with INDOT Procedure ITM 222.

5. Mixture Design.

5.1. Proportioning.

5.1.1. **SCM.**

5.1.1.1. For Class AX, HP, and MC mixtures, a portion of the portland cement shall be replaced with at least one SCM to meet the performance parameters in section 5.2.

5.1.1.2. For Class TL mixtures, ternary concrete incorporates portland cement, slag cement, fly ash and other SCM's to produce a mix with three cementitious constituent materials. Slag, fly ash, and any other SCM's combined as constituent materials in a ternary mix or as part of a blended cement shall consist of no less than 35% and no more than 50% of the total cementitious material.

5.1.2. **Alkali Silica Reactivity.** Concrete shall be proportioned such that the maximum total alkali content (Na_2O_{eq}) contributed by portland cement (as determined in accordance with AASHTO T 105) does not exceed the requirements in Table 5.

Table 5: Alkali Content

Mixture Class	AX	HP	MC	TL
Maximum Alkali Content contributed by Portland Cement (lb/yd^3)	5.0	4.0	4.0	5.0

For all mixtures, the requirements in Table 5 shall be waived, if one of the following two requirements are met.

5.1.2.1. Each aggregate shall be evaluated individually in accordance with ASTM C1260 and must have a measured expansion no greater than 0.10 percent after 16 days.

Each aggregate that does not meet this limit when tested with portland cement alone may demonstrate acceptance using a blended cement or a combination of portland cement and supplementary cementitious materials

proposed for the mixture. The supplementary cementitious replacement content needed to pass the ASTM C1260 requirement shall become the minimum required replacement percentage of the concrete mixture.

5.1.2.2. The aggregate has been evaluated in accordance with ASTM C1293 within the last 12 months and has an average expansion of three concrete specimens equal to or less than 0.04 % at one year.

5.1.3. **Estimated Concrete Temperature and Equivalent Cement Ratio (w/c_{eq}) for Class MC Mixtures.**

5.1.3.1. Estimated temperature rise of the proposed concrete mixture shall be less than 80°F when calculated according to the following equation:

Temperature Rise = 0.16 x C_{eq}, where C_{eq} is the equivalent cement content given by

$C_{eq} = C + 0.5 \times F_{ClassF} + 0.8 \times (F_{ClassC} + S_{100}) + 0.9 \times S_{120} + 1.25 \times (SF + MK)$,

and C represents portland cement, F_{ClassF} is Class F fly ash, F_{ClassC} is Class C fly ash, S_{100} is Grade 100 slag, S_{120} is Grade 120 slag, SF is silica fume, and MK is metakaolin. These values are in pounds per cubic yard of concrete.

Other proposed cementitious contents may be submitted if testing is performed to demonstrate the actual temperature rise of the concrete will be less than 80°F or if the approved thermal control plan demonstrates the maximum temperature limit and the maximum temperature difference limits won't be exceeded. Several different possible methods may be utilized to demonstrate the actual temperature rise, including a super insulated 3'x3'x3' test block (ATR cube method), Quadrel Q-drum, or other similar measurement that evaluates the semi-adiabatic temperature rise of concrete. The testing procedure must be approved by the Illinois Tollway.

5.1.3.2. The equivalent w/c_{eq} shall not be greater than 0.45 when calculated using the equivalent cement content used for calculation of temperature rise.

5.1.4. **Aggregate Gradation.**

5.1.4.1. For Class AX mixtures, the coarse aggregate gradation shall be CA 13, CA 14, CA 16, or a blend of these gradations, except CA 11 may be used for full-depth patching.

5.1.4.2. For Class HP and MC mixtures, CA 11, CA 13, CA 14, CA 16 or a blend of these gradations shall be used. The combined coarse aggregate gradation shall have a minimum of 45 percent passing the ½ in. sieve.

5.1.4.3. For Class TL mixtures, the coarse aggregate shall be a combination of two or more gradations specified in Article 1004.01(c) of the Standard Specifications and shall be combined with the fine aggregate during batching at the concrete plant to produce a combined aggregate gradation that complies with Table 6. Each of the individual aggregate gradations used in the mixture design shall be an average of a minimum of 5 stockpile gradations from existing stockpiles at the plant.

Table 6 – Tarantula Curve Gradation Requirements

Sieve Size	Tarantula Curve Limits *% Retained by Weight*
1 in.	0
¾ in.	≤ 20
½ in.	4 - 20
⅜ in.	4 - 20
# 4	4 - 20
# 8	≤ 12
# 16	≤ 12
# 30	4 - 20
# 50	4 - 20
#100	≤ 10
#200	≤ 2
Coarse Sand % Retained (No. 8 to No. 30 Sieve)	> 15
Fine Sand % Retained (No. 30 to No. 200 Sieve)	24 - 34

5.2. Laboratory Performance Parameters. Class AX, HP, and MC mixtures require a laboratory trial batch to demonstrate the following requirements. A laboratory trial batch is not required for Class TL mixtures.

5.2.1. **Slump Loss.** For HP and MC mixtures, unless otherwise approved by the Illinois Tollway, the initial slump (measured within 10 minutes after the addition of water) shall be between 3 and 8 inches. The slump shall be no less than 3 inches for at least 45 minutes after the addition of water as measured by Illinois Modified AASHTO T 119. The change in slump shall be no greater than 2 inches in 20 minutes and no greater than 4 inches from the initial measurement (measured within 10 minutes after the addition of water). The concrete temperature during testing shall be greater than 70°F. Specimens for compressive strength and hardened air void analysis shall be cast after the final slump measurement.

5.2.2. **Compressive Strength.** Compressive strength shall be no less than the values in Table 7 when determined in accordance with Illinois Modified AASHTO T 22. Test cylinders shall be made and cured in accordance with Illinois Modified AASHTO R 39. Strength shall be defined as the average of two 6 x 12 in. cylinder breaks.

Table 7: Minimum Compressive Strength Requirements

Mixture Class	Age	AX	HP	MC
		(psi)		
Interim Strength	16 hours	2,500[1/]	-	-
Ultimate Strength	36 hours	4,000[2/]	-	-
	14 days	3,500[1/]	4,000[4/]	3,500[2/&4/]
	28 days	-	-	4,000[3/&4/]

[1/] Pavement
[2/] Structures
[3/] Drilled shaft. The time to obtain the specified strength may be increased to a maximum 56 days.
[4/] The compressive strength determined in the laboratory shall be designated as f'_{target} for future acceptance of the mixture

5.2.3. **Plastic Air Content.** Plastic air content shall meet the requirements in Table 8 when determined in accordance with Illinois Modified AASHTO T 152.

Table 8 – Plastic Air Content Requirements

Mixture Class	AX	HP	MC
Air Content (%) Range	5.0 – 8.0		

5.2.4. **Time to Cracking.** Net time to cracking shall be no less than the values in Table 9 when determined in accordance with ASTM C1581. Prior to batching for a test sample, all coarse aggregate particles exceeding ¾-inch shall be removed and replaced with an equal volume of minus ¾-inch graded material.

Table 9 – Minimum Time to Cracking Requirements

Mixture Class	AX	HP	MC
Time to Cracking (days)	10	28	-

5.2.4.1. For Class HP mixtures, this test shall be waived if the concrete mixture contains 605 lb/yd^3 or less total cementitious material and a minimum dosage of 1.5 gal/yd^3 of approved SRA.

5.2.5. **Length Change.** Measured shrinkage shall be no greater than the values in Table 10 after 21 days of air drying when determined in accordance with

AASHTO T 160. Specimens shall be wet cured for 7 days prior to air drying. The initial reading for calculation of shrinkage shall be taken at the initiation of drying.

Table 10: Measured Shrinkage

Mixture Class	AX	HP	MC
Length Change	0.05%	0.03%	0.04%[1/]

[1/] The length change requirement will be waived if the mixture will only be used for drilled shaft construction.

5.2.6. **Freeze Thaw Durability.**

5.2.6.1. Class AX, HP, and MC mixtures shall possess an air-void system having the following characteristics as determined by ASTM C457 (Method B):

- Spacing factor not exceeding 0.008-in.
- Specific surface not less than 600 in^2/in^3
- Total air content not less than 4.0 percent

5.2.6.2. For Class AX, HP, and MC mixtures, the durability factor shall be no less than 80 percent after 300 cycles of freezing and thawing as determined in accordance with AASHTO T 161 Procedure A. The freeze-thaw testing in accordance with AASHTO T 161 Procedure A shall be waived if the air-void system parameters are met.

5.2.7. **Electrical Surface Resistivity.**

5.2.7.1. Electrical surface resistivity shall be determined in accordance with AASHTO T 358, except that 4 x 8 in. cylinder specimens shall be used and shall be made in accordance with Illinois Modified AASHTO R 39 and moist-cured in lime-water for 28 days prior to testing. An interim test result can be provided at the option of the contractor. A test shall consist of three specimens.

Electrical surface resistivity shall meet the requirements of Table 11.

Table 11: Surface Resistivity

Mixture Class	AX	HP	MC
	Minimum Surface Resistivity (kΩ-cm)		
28 days	-	18.0	-

5.3. Field Trial Batch Performance Parameters. Class AX, HP, MC, and TL mixtures require a field trial batch, witnessed by the Tollway, to demonstrate the following requirements. The Contractor shall schedule the field trial batch with Tollway Materials a minimum of 7 days before the proposed date of the trial batch.

5.3.1. **Slump.** Slump shall meet the requirements of Table 12 when determined in accordance Illinois Modified AASHTO T 119.

Table 12 – Trial Batch Slump Requirements

Mixture Class	AX	HP	MC	TL
Slump (inches)	3-8	3-8[1/]	3-8[1/]	2-4[2/]

[1/] Slump loss shall be tested in accordance with section 5.2.1.
[2/] Slump less than 2 inches will be permitted if the mixture is intended for slipform placement.

Compressive Strength. Compressive strength shall be no less than the values in Table 13 when determined in accordance with Illinois Modified AASHTO T 22. Test cylinders shall be made and cured in accordance with Illinois Modified AASHTO R 100. Strength shall be defined as the average of two 6 x 12 in. cylinder breaks.

Table 13 – Trial Batch Compressive Strength Requirements

Type of Strength	Age	AX	HP	MC	TL
		(psi)			
Interim	16 hours	2,500[1/]	-	-	-
	3 days	-	-	-	2,500
Ultimate	36 hours	4,000[2/]	-	-	-
	14 days	3,500[1/]	4000 ≤ fc ≤ [f'$_{target}$ +1500][3/]	3,500 ≤ fc ≤ [f'$_{target}$ +1500][2/&3/]	3,500
	28 days	-	-	4,000 ≤ fc ≤ [f'$_{target}$ +1500][3/&4/]	-

[1/] Pavement
[2/] Structures
[3/] f'$_{target}$ and fc are defined as the strength obtained in the laboratory and field trial batches, respectively.
[4/] Drilled Shaft. The 7 and 14-day compressive strength results shall also be provided. The time to obtain the specified strength may be increased to a maximum 56 days.

5.3.2. **Plastic Air Content**. Plastic air content shall meet the requirements of Table 14 when determined in accordance with Illinois Modified AASHTO T 152.

Table 14 – Trial Batch Plastic Air Requirements

Mixture Class	AX	HP	MC	TL
Air Content (%)	+/- 1.5 from design, Minimum of 4.0	5.0 – 8.0%	5.0 – 8.0%	5.0 – 8.0%, 5.5 - 8.0% for slipform

5.3.3. **Freeze Thaw Durability.**

5.3.3.1. Class AX, HP, MC, and TL mixtures shall possess an air-void system having the following characteristics as determined by ASTM C457 (Method B):

- Spacing factor not exceeding 0.008-in.
- Specific surface not less than 600 in^2/in^3
- Total air content not less than 4.0 percent

5.3.3.2. The air-void system requirement in Section 5.3.4.1 shall be waived if the mixture has a system air metric (SAM) number no greater than 0.20 and an air content no less than 5.0% when determined in accordance with AASHTO TP 118. In addition, the difference between the QC and Tollway Materials representative's SAM number and air content shall be no greater than 0.1 and 0.9%, respectively.

5.3.4. **Water / Cementitious Materials Ratio**. For AX, HP, MC and TL mixtures, water / cementitious materials ratio shall be design -0.03, +0.00.

5.3.5. **Electrical Surface Resistivity.**

5.3.5.1. Electrical surface resistivity shall be determined in accordance with AASHTO T 358, except that 4 x 8 in. cylinder specimens shall be used and shall be made in accordance with Illinois Modified AASHTO R 39 and moist-cured in lime-water for 28 days prior to testing. An interim test result can be provided at the option of the contractor. A test shall consist of three specimens.

Electrical surface resistivity shall meet the requirements of Table 15.

Table 15: Surface Resistivity

Mixture Class	AX	HP	MC	TL
	Minimum Surface Resistivity (kΩ-cm)			
28 days	-	18.0	-	14.0

5.3.6. **Maturity.** For Class AX, HP, MC, and TL mixtures, a strength-maturity relationship shall be developed in accordance with Illinois Tollway Test Procedure (TTP) 014 Estimating Concrete Strength by Maturity. If the maturity verification fails during use, then the Contractor shall be responsible for developing a new maturity-strength relationship according to TTP 014.

5.4. Mixture Qualification Submittal. The concrete mixture design shall be submitted using the Tollway A-70 form, and a mixture submittal shall include the following items:

5.4.1. Mixture design showing:

- Quantities, description, sources and mill certifications of all mixture ingredients
- Design water-cementitious materials ratio (w/cm)

- Design Slump
- Design Air content
- Gradation and absorption of all aggregates
- Bulk specific gravity (SSD) of all cementitious materials and aggregates
- Theoretical mass and fresh density
- Admixture dosage

5.4.2. A trial batch report demonstrating that the concrete complies with the performance requirements herein specified.

5.4.3. A strength-maturity relationship in accordance with Illinois Tollway Test Procedure (TTP) 014 Estimating Concrete Strength by Maturity.

5.5. Mixture Design Approval.

5.5.1. Once verified, a mixture design will be approved for use for a three-year period. In addition, any change in aggregate or cement source; cement/supplementary cementitious type, grade or classification; or admixture brand or manufacturer; must be approved by Tollway Materials and will require a resubmittal and additional testing to screen for potential changes in performance. Additional testing will be limited only to tests in this special provision and may consist only of selected tests depending on the substitution.

5.5.2. **Fly Ash Substitution.** For Class TL mixtures, a source of fly ash may be substituted for another source of fly ash of the same class if the LOI does not differ by more than 2.0% and the specific gravity does not differ by more than 10% or if the proportions of the mixture are corrected to account for differences in specific gravity. A fly ash substitution will require a trial batch at an AASHTO re:source accredited laboratory to demonstrate the new mixture meets all requirements of Section 5.3., except Section 5.3.6., at the time of resubmittal. The SAM option in Section 5.3.4.2. cannot be used for a fly ash substitution. Specimens shall also be cast during the laboratory trial batch to meet Section 5.3.6; however, these results can be submitted for record once testing is complete.

6. Field Production

6.1. Quality Plan.

6.1.1. At least 14 days prior to the first concrete placement, the Contractor shall submit the Tollway A-71 form, Quality Control Plan for Concrete Production at the Jobsite.

6.1.2. Prior to placements requiring cold weather protection, the Contractor shall submit the Tollway A-72 form, QC Plan for Cold Weather Placement of Concrete.

6.2. Production Facility and Transportation Equipment. Production facilities and transportation equipment shall be in accordance with Section 1103, with the following additions:

The production facility and ready-mix trucks supplying portland cement concrete shall have a current Certification of Ready Mixed Concrete Production Facilities from the National Ready Mixed Concrete Association (NRMCA). The Contractor's Quality Control Plan shall include documentation of NRMCA certification.

6.3. Mixing Portland Cement Concrete.

6.3.1. Replace the table in Article 1020.11(a)(7) with the following:

The time elapsing from when water is added to the mix until it is deposited in place at the site of the work shall not exceed 30 minutes when the concrete is transported in nonagitating trucks.

The maximum haul time for concrete transported in truck mixers or truck agitators shall be according to the following.

Concrete Temperature at Point of Discharge °F	Haul Time[1/]	
	Hours	Minutes
50-64	1	30
>64 – without retarder	1	0
>64 – with retarder	1	30

[1/] To encourage start-up testing for mix adjustments at the plant, the first two trucks will be allowed an additional 15 minutes haul time whenever such testing is performed.

6.4. Curing. Class AX, MC, and TL mixtures shall be in accordance with Article 1020.13 for the appropriate type of construction. For Class HP mixtures, curing shall be in accordance with Article 1020.13(a)(5) of the Standard Specifications for a 7-day period, with the following additions:

6.4.1. The temperature of the curing water shall not be more than 20 °F cooler than the surface temperature of the concrete at the time the water and concrete come in contact. The curing water temperature shall be measured in the storage tank. The surface temperature of the concrete shall be measured under the cotton mats placed for curing. Measuring the temperatures of the curing water and concrete surface, and any required heating or cooling of the curing water, shall be the responsibility of the contractor.

6.4.2. Use black or dark colored plastic sheets when the daily high ambient temperature is below 60 °F. Use white or similarly reflective plastic sheets when the daily high ambient temperature is above 85°F. Use any color or transparency of plastic sheet at temperatures between 60 and 85 °F.

6.4.3. Remove Article 1020.13(a)(6).

6.5. Protection of Concrete Other Than Structures from Low Air Temperatures

The Contractor shall protect the concrete in accordance with Article 1020.13(c), except as revised herein:

6.5.1. Replace the 3rd sentence of the 2nd paragraph of Article 1020.13(c) with the following.

The protective cover shall also extend a minimum of 1 ft. beyond the placed concrete and shall remain in place until the estimated in-place concrete strength as determined by Illinois Tollway Test Procedure (TTP) 014 Estimating Concrete Strength by Maturity meets the design strength of the item. This is to evaluate when removal of protection is allowed, or when concrete can be opened to traffic. Final acceptance of the strength of the item is based on standard laboratory cured cylinders.

6.5.2. Replace the 3rd paragraph of Article 1020.13(c) with the following.

The Contractor shall provide means for checking the temperature near the surface of the concrete during the protection period according to Article 1020.13(d)(1) and Section 6.6.2 of this special provision.

6.5.3. Replace the 4th paragraph of Article 1020.13(c) with the following.

The concrete temperature should be a minimum of 40 °F and a maximum of 90 °F, but shall not be less than 35 °F. The Contractor is advised the protection specified, including the insulation R value, is an approximation for meeting the 40 °F minimum within the first 48 hours of placement. Additional insulation during the protection period may be required to meet the requirements in Section 6.5.1 of this special provision. The Contractor shall implement corrective action, as detailed in the A-72 form, if temperature probe sensor readings are below 40°F.

6.6. Protection of Concrete Structures from Low Air Temperatures

The Contractor shall protect the concrete in accordance with Article 1020.13(d), except as revised herein:

6.6.1. Replace the 2nd sentence of the 1st paragraph of Article 1020.13(d) with the following.

This protection shall remain in place until the estimated in-place concrete strength as determined by Illinois Tollway Test Procedure (TTP) 014 Estimating Concrete Strength by Maturity meets the design strength of the item. This is to evaluate when removal of protection is allowed, or when concrete can be opened to traffic. Final acceptance of the strength of the item is based on standard laboratory cured cylinders.

6.6.2. Replace the 8th sentence of 5th paragraph of Article 1020.13(d)(1) with the following.

Temperature sensor readings shall be provided to the Engineer in the morning of each day for the duration of the required protection.

6.6.3. Replace the 6th paragraph of Article 1020.13(d)(1) with the following:

The concrete temperature should be a minimum of 45 °F and a maximum of 90 °F, but shall not be less than 40 °F. The Contractor is advised the protection specified, including the insulation R value, is an approximation for meeting the 45 °F minimum within the first 72 hours of placement. Additional insulation during the protection period may be required to meet the requirements in Section 6.6.1 of this special provision. The Contractor shall implement corrective action, as detailed in the A-72 form, if temperature probe sensor readings are below 45°F.

6.6.4. Add the following to Article 1020.13(d):

For Class HP mixtures, when protection is required, the temperature of water for curing shall be no less than 45°F.

6.6.5. Add the following to Article 1020.13(d)(1)

6.6.5.1. Protection Method IA. For superstructure and moment slabs, Protection Method I shall apply, with the following exception: The insulating material shall only cover the top and sides of the superstructure and moment slabs.

6.6.5.2. Protection Method IB. For superstructure and moment slabs, Protection Method I shall apply, with the following exceptions: The insulating material shall only cover the top and sides of the bridge deck. The Contractor shall place heating coils uniformly across the superstructure and moment slabs.

6.7. Temperature Control. Temperature control for concrete placement shall be in accordance with Article 1020.14, except as revised herein.

6.7.1. The temperature of form surfaces and reinforcement bars smaller than No.18 to receive concrete shall be no less than 20°F. The temperature of all other metals to receive concrete shall be no less than 32°F.

6.7.2. The temperature of the concrete at the point of placement shall not be less than 60°F for ternary mixtures or for any concrete with more than 20% fly ash or 35% slag replacement of Portland cement. This does not apply to Class MC mixtures.

6.7.3. Class HP mixtures shall not be placed when the ambient air temperature exceeds 90ºF without approval of the Engineer and the maximum concrete temperature shall be 85ºF at the point of placement, except when placement operations are conducted at night, when the maximum concrete temperature shall be 90ºF.

6.8. Field Acceptance.

6.8.1. Concrete mixtures shall be tested and evaluated according to the Illinois Department of Transportation Recurring Special Provision for Quality Control/Quality Assurance of Concrete Mixtures, except as revised herein.

6.8.1.1. Add the following to Article 1020.16(g) Schedule B Footnote 2/:

If a gap in the placement of a given mix design exceeds two hours, the procedure to determine testing frequency shall restart for slump, air content, temperature, and compressive strength.

6.8.1.2. Revise Article 1020.16(g) Schedule B Footnote 7/ to read:

The test of record for strength shall be the day indicated in Article 1020.04 and herein as ultimate strength. Compressive strength, as measured using Illinois Modified AASHTO T 22, shall be determined using only 6 x 12 in. cylinders. Estimated in-place concrete strength as determined by Illinois Tollway Test Procedure (TTP) 014 Estimating Concrete Strength by Maturity shall be used to determine early falsework and form removal, early pavement (interim strength) or bridge opening to traffic, or to monitor strengths.

6.8.2. Acceptance to this specification shall be based on the key characteristics in Table 16:

Table 16 – Field Acceptance Requirements

Test	AX	HP	MC	TL
Strength (psi)	Interim: 2,500 at 16 hours[1/] Ultimate: 3,500 at 14 days[1/] Ultimate: 4,000 at 36 hours[2/]	Ultimate: 4000 ≤ f_c ≤ [f'_{target} +1500]	Ultimate: 3,500 ≤ f_c ≤ [f'_{target} +1500] [2/] Ultimate: 4,000 ≤ f_c ≤ [f'_{target} +1500] [3/]	Interim: 2,500 at 3 days Ultimate: 3,500 at 14 days
Plastic Air Content (%)	Design ± 1.5%, Minimum of 4%	5.0 – 8.0%		5.0 – 8.0% 5.5 - 8.0% for slipform
Slump (in.)	3-8	3-8[5/]		2-4[4/]
Water / cementitious materials ratio	Design -0.03, +0.00			

[1/] Pavement

[2/] Structures

[3/] Drilled Shaft. The 7 and 14-day compressive strength results shall also be provided. The time to obtain the specified strength may be increased to a maximum 56 days, provided the curing period specified in Article 1020.13 is increased to a minimum of 14 days.

[4/] For Slipform Placement - Maintain the concrete at a uniform consistency. The Engineer will not allow an edge slump greater than ½ inch where no additional concrete work is to be constructed immediately adjacent to the pavement being placed. The Engineer will not allow an edge slump greater than ¼ inch where additional concrete work is to be constructed immediately adjacent to the pavement being placed.

[5/] Slump may be increased to a 10” maximum when a tremie is utilized for drilled shafts, if approved by the Engineer. END OF SECTION

CONCRETE STRUCTURES (ILLINOIS TOLLWAY GBSP)

Effective: July 22, 2014
Revised: November 5, 2024

Description. This special provision shall consist of constructing cast-in-place concrete structures that shall include bridge deck and diaphragm elements of the superstructure and moment slab structures. The concrete bridge structure shall also include concrete parapets and railing elements of the superstructure that shall not be placed monolithically with the deck and shall be constructed using IDOT Class BS concrete. Section 503 of the Standard Specifications shall apply, except as modified herein.

When Diamond Grinding and Surface Smoothness Testing for Bridge Sections is specified, hand finishing of the deck surface shall be limited to areas not finished by the finishing machine and to address surface corrections according to Article 503.16(a)(2). Hand finishing shall be limited solely for the purpose of facilitating a timelier application of the curing protection. In addition, the requirements of 503.16(a)(3)a. and 503.16(a)(4) will be waived.

Materials. Materials shall be according to Article 503.02 of the Standard Specifications, except as modified herein:

Replace Article 503.02(a) of the Standard Specifications with the following:

> Portland cement concrete for all portions of the structure, excluding the bridge deck and diaphragms, and exposed moment slabs shall be in accordance with Section 1020 of the Standard Specifications. High Performance Concrete for deck and diaphragms of the concrete superstructure and for slab portions of exposed moment slab structures shall be Illinois Tollway Class HP concrete designed in accordance with the Illinois Tollway Special Provision for Portland Cement Concrete.

CONSTRUCTION REQUIREMENTS

The moment slabs shall be finished in accordance with Article 420.09 (e) (1) of the Standard Specifications. Hand tining is acceptable.

The moment slabs shall be tested and remediated for smoothness in accordance with the revised Article 420.10 shown below unless otherwise controlled to a tighter standard. For moment slabs outside the traveled way, the lane shall be defined as the entire area, less any gutter line containing drainage structures. Where moment slabs are outside the traveled way, the wheel paths shall be defined by the Engineer parallel to the direction of traffic and be at least 6 feet apart. Where moment slabs are within the traveled way, the pavement smoothness specifications shall apply. The contractor is responsible for providing sufficient rebar cover remaining after any corrective grinding for smoothness.

Revise Article 420.10 of the Standard Specifications to read:

"420.10 Surface Tests. The Contractor shall test the surface for trueness in each wheelpath. The Engineer shall witness surface testing. The surface will be tested by means of a 16 ft straightedge placed parallel to the centerline of the pavement, parallel to the grade line, and touching the surface. Surface variations which exceed 3/8 in. will be marked and shall be removed with pavement surface grinding equipment. All surface corrective work shall be for the entire lane width. Pavement cross slope shall be maintained through areas where corrective action is performed. Surface corrections shall be made prior to placing permanent pavement markings. In the event that permanent pavement markings are damaged or destroyed during corrective work, they will be replaced at no cost to the Illinois Tollway.

Curing and protective covers, if used, shall be removed from the pavement for the required straightedge measurements and properly replaced when the testing is completed according to Article 1020.13(b)."

Add this sentence to the end of the ninth paragraph of Article 503.06 of the Standard Specifications:

> "Where stainless steel reinforcement bars are specified, all metal items to remain in the concrete structure, such as tie bars, bolts, anchorages, and metal ties, shall be fabricated with stainless steel."

Add this sentence to the end of the first paragraph of Article 503.06(b) of the Standard Specifications to read:

> "Where stainless steel reinforcement bars are specified, all metal tie rods, bolts, anchorages, brackets, and other forming hardware which is incorporated into the bridge deck shall be stainless steel."

Revise the Second Paragraph of Article 503.06(b) of the Standard Specifications to read as follows.

> "When the Contractor uses cantilever forming brackets on exterior beams or girders, additional requirements shall be as follows."

Revise Article 503.06(b)(1) of the Standard Specifications to read as follows.

> "(1) Bracket Placement. The spacing of brackets shall be per the manufacturer's published design specifications for the size of the overhang and the construction loads anticipated. The resulting force of the leg brace of the cantilever bracket shall bear on the web within 6 inches of the bottom flange of the beam or girder."

Revise Article 503.06(b)(2) of the Standard Specifications to read as follows.

"(2) Beam Ties. The top flange of exterior steel beams or girders supporting the cantilever forming brackets shall be tied to the bottom flange of the next interior beam. The top flange of exterior concrete beams supporting the cantilever forming brackets shall be tied to the top flange of the next interior beam. The ties shall be spaced at 4-foot centers. Permanent cross frames on steel girders may be considered a tie. Ties shall be a minimum of ½-inch diameter threaded rod with an adjusting mechanism for drawing the tie taut. The ties shall utilize hanger brackets or clips which hook onto the flange of steel beams. No welding will be permitted to the structural steel or stud shear connectors, or to reinforcement bars of concrete beams, for the installation of the tie bar system. After installation of the ties and blocking, the tie shall be drawn taut until the tie does not vary from a straight line from beam to beam. Where stainless steel reinforcement bars are specified, ties shall be a minimum of No. 4 stainless steel reinforcement bars, and steel items contained in the tie bar stabilizing system shall be fabricated with stainless steel. The tie system shall be approved by the Engineer."

Revise Article 503.06(b)(3) of the Standard Specifications to read as follows.

"(3) Beam Blocks. Suitable beam blocks of 4 inch x 4 inch timbers or metal structural shapes of equivalent strength or better, acceptable to the Engineer, shall be wedged between the webs of the two beams tied together, within 6 inches of the bottom flange at each location where they are tied. When it is not feasible to have the resulting force from the leg brace of the cantilever brackets transmitted to the web within 6 inches of the bottom flange, then additional blocking shall be placed at each bracket to transmit the resulting force to within 6 inches of the bottom flange of the next interior beam or girder."

Delete the last paragraph of Article 503.06(b) of the Standard Specifications.

Revise the third paragraph of Article 503.16 of the Standard Specifications to read as follows.

"Fogging equipment shall be in operation during the bridge deck placement. Fogging equipment shall be adequate to reach or cover the entire pour from behind the finishing machine or vibrating screed to the point of curing covering application, and shall be operated in a manner which shall not accumulate water on the deck until the curing covering has been placed."

Revise Article 503.17 of the Standard Specifications to read as follows.

"Concrete shall be cured according to Article 1020.13 with the exception that the Illinois Tollway Class HP concrete for bridge decks will be cured in accordance with the Illinois Tollway special provision for Portland Cement Concrete."

Moment slab curing shall be in accordance with Article 1020.13 of the Standard Specifications, using the "Superstructure (except deck)" Type of Construction.

Revise Article 1103.13(a) of the Standard Specifications to read as follows.

"(a) Bridge Deck. The finishing machine shall be equipped with: (1) a mechanical strike off device; (2) either a rotating cylinder(s) or a longitudinal oscillating screed which transversely finishes the surface of the concrete. The Contractor may attach other equipment to the finishing machine to enhance the final finish when approved by the Engineer. The finishing machine shall produce a deck surface of uniform texture, free from porous areas, and with the required surface smoothness.

The finishing machine shall be operated on rails or other supports that will not deflect under the applied loads. The finishing machine supports shall be located outside the pour, where possible. The maximum length of rail segments supported on top of beams and within the pour shall be 10 feet. The supports shall be adjustable for elevation and shall be completely in place to allow the finishing machine to be used for the full length of the area to be finished. The supports shall be approved by the Engineer before placing of the concrete is started."

Revise Article 1103.17(k) of the Standard Specifications to read as follows.

"(k) Fogging Equipment. Fogging equipment shall be handheld fogging equipment for humidity control. The equipment shall be capable of atomizing water to produce a fog blanket using pressure 2500 psi minimum and an industrial fire hose fogging nozzle or equivalent. Fogging equipment attached to the finishing machine will not be permitted."

END OF SECTION

REINFORCEMENT BARS (ILLINOIS TOLLWAY)

Effective: February 12, 2020
Revised: May 30, 2025

Description. The work shall consist of furnishing and placing reinforcement bars as required by Section 508 of the Standard Specifications except as modified herein. For work outside the limits of bridge approach pavement, all references in the IDOT Highway Standards and Standard Specifications for reinforcement shall be epoxy coated, unless noted on the plans. This includes dowel bars and tie bars in all pavements, shoulders, curb, gutter, combination curb and gutter and median; and chair supports for CRC pavement.

Reinforcement for IDOT Highway Standard drainage structures shall be as shown on the Standards, unless otherwise noted on the plans.

Delete Article 508.10 Method of Measurement
Delete Article 508.11 Basis of Payment

END OF SECTION

JOINT SEALER

Description. This work shall consist of sealing transverse relief joints in the bridge decks.

General. The work shall be performed according to Section 588 of the Standard Specifications.

Materials. The materials shall be according to Section 1050.02 of the Standard Specifications.

END OF SECTION

CLEANING OF CATCH BASINS, END SECTIONS, INLETS AND DRAINAGE STRUCTURES

Description. This work shall consist of cleaning existing catch basins, manholes, restrictor manholes, inlets, end sections and drainage structures (some drainage structures may have multiple chambers) which have accumulated silt, debris and vegetation over time, at locations shown in the plans, and as directed by the Engineer.

Equipment. Cleaning of catch basins, manholes, restrictor manholes, inlets, end sections and drainage structures shall be performed by truck-mounted vacuum method, or other methods as approved by the Engineer.

Construction Requirements. After the work is completed, the entire catch basins, manholes, inlets, end sections and drainage structures shall be free and clear of all silt, debris, and vegetation. Any damage to the existing items due to the Contractor's operations shall be removed and replaced at no additional expense to the Illinois Tollway.

Disposal shall be offsite and shall be in accordance with Article 107.19 of the Illinois Tollway Supplemental Specifications.

Prior to cleaning of catch basins, manholes, restrictor manholes, inlets, end sections and drainage structures, it may be necessary to remove the existing steel grating. The existing steel grating which is suitable for use under proposed conditions and is not scheduled for removal and replacement shall be handled with care. Any damage to the steel grating to be reused, or to the drainage structure, due to the Contractors operations, shall be repaired or replaced at no additional expense to the Illinois Tollway.

The Contractor shall implement “Best Management Practices” (BMP’s) for the control of sediment that will be removed during the cleaning operation. Flushing of the material downstream is not

authorized and discharges of any materials into wetlands or WOUS is prohibited unless noted in the plans, approved by USACE Permit and/or approved by the Engineer.

Where an End Section and associated pipe requiring cleaning and televising is completely or partially submerged, temporary damming and dewatering may be required. Contractor shall submit damming/dewatering plan to Engineer for approval prior to beginning work. The Contractor shall control the runoff water generated by the cleaning activity in such a manner as to prohibit the discharge of visible debris and sediment into wetlands and WOUS, and without causing erosion. Dewatering operations shall be contained within the existing structures and shall not extend into any wetland or WOUS.

Precautions shall be taken to ensure that the operations do not cause any damage or flooding to public or private property. The Contractor shall perform the work so there is adequate drainage of the roadway at all times.

END OF SECTION

DISPOSAL OF REGULATED SUBSTANCES AND UNCONTAMINATED SOIL (ILLINOIS TOLLWAY)

Effective: October 31, 2019
Revised: August 1, 2024

Replace Articles 669.01 through 669.08 of the Standard Specifications with the following:

669.01 Description. This work shall consist of the transportation and proper disposal of excavated soils based on characterization of materials as either a regulated substance or an uncontaminated soil.

Hazardous Waste[1] (as defined in 669.05), Non-Special Waste Disposal Type 1 (as defined 669.06) and Special Waste are categorized as regulated substances. Disposal Types 2, 3, and 4 (as defined in 669.05) are deemed Uncontaminated Soils as defined in 35 Ill. Adm. Code 1100.

669.02 Equipment. The Contractor shall notify the Engineer of the delivery of all excavation, storage, and transportation equipment to a work area location. The equipment shall comply with OSHA and American Petroleum Institute (API) guidelines and shall be furnished in a clean

[1] A regulated substance is any hazardous substance as defined under Section 101(14) of the Comprehensive Environmental Response, Compensation, and Liability Act of 1980 (P.L. 96-510) and petroleum products including crude oil or any fraction thereof natural gas, natural gas liquids, liquefied natural gas, or synthetic gas usable for fuel (or mixtures of natural gas and such synthetic gas).

condition. Clean condition means the equipment does not contain any residual material classified as a non-special waste, non-hazardous special waste, or hazardous waste. Residual materials include, but are not limited to, petroleum products, chemical products, sludge, or any other material present in or on equipment.

Before beginning any associated soil or groundwater management activity, the Contractor shall provide the Engineer with the opportunity to visually inspect and approve the equipment. If the equipment contains any contaminated residual material, decontamination shall be performed on the equipment as appropriate to the regulated substance and degree of contamination present according to OSHA and API guidelines. All cleaning fluids used shall be treated as the contaminant unless laboratory testing proves otherwise.

The Contractor shall supply a photoionization detector (PID) (minimum 10.6eV lamp), or a flame ionization detector (FID), and other equipment, as appropriate.

669.03 Pre-construction Submittals and Qualifications. Prior to beginning earthwork, the Contractor shall adhere to the requirements set forth in the Illinois Tollway Special Provision for “Earthwork Management Plans”.

CONSTRUCTION REQUIREMENTS

669.04 Soils Monitoring. Soils Monitoring includes regulated substances monitoring during regulated substances management activities and field screening during uncontaminated soil disposal activities at the contract specific work areas.

(a) Regulated Substances Monitoring. Prior to beginning excavation, the Contractor shall mark the limits of removal for areas of regulated substances for approval by the Engineer. Once excavation begins, the work and work area involving regulated substances shall be monitored for compliance with this Special Provision and the Illinois Tollway A-51 Earthwork Construction Plan (ECP) by qualified personnel. The qualified personnel shall be on-site continuously during loading and haul-off of material containing regulated substances.

(b) Field Screening. Field screening shall be performed by the qualified personnel with either a PID (minimum 10.6eV lamp) or an FID, and other equipment, as appropriate, only to monitor when loading soils anticipated for CCDD or Uncontaminated Soil Fill Operation (USFO) disposal. The PID or FID shall be calibrated on-site and background level readings taken and recorded daily, and as field and weather conditions change. Any field screen reading on the PID or FID in excess of background levels indicates the potential presence of regulated substances requiring handling as a non-special waste, special waste, or hazardous waste. PID or FID readings may be used as the basis of increasing the limits of non-special waste, special waste, or hazardous waste with the approval of the Engineer but

shall in no case be used to decrease the limits.

(c) Additional Sampling. If the Contractor chooses to conduct additional soil sampling to better define the limits of uncontaminated soil for disposal at a CCDD or USFO facility, sampling shall be limited to refining the horizontal boundary between a CCDD eligible sample location (Types 2, 3 and 4) and a non-CCDD eligible sample location (Type 1 or hazardous waste). LPC-663 forms shall be prepared by the Contractor based on their sampling and shall be signed and stamped by the Contractor's qualified Professional Engineer or Professional Geologist. The Contractor shall provide a detailed sampling plan as part of the A-51 ECP Section 4C to the Engineer for review and approval prior to any proposed sampling activities.

The sampling plan shall include proposed boring locations and sample depths, testing parameters for each proposed sample, proposed boring surface elevation, and the initial boring location that is being delineated including surface elevation, depth of samples, and contaminant(s) of concern that exceeded CCDD disposal requirements. The Contractor shall only sample for contaminant(s) of concern that exceeded CCDD disposal requirements in the samples collected during design.

The Contractor shall not sample between two borings classified as Type 1. The Contractor shall not sample for the purpose of refining the boundary between reuse types.

To refine the boundary noted in the Environmental Soil Classification Plan between a CCDD eligible and a non-CCDD eligible sample the Contractor shall conduct a minimum of two borings on the new proposed boundary line. Within a boring, the Contractor shall collect and analyze samples at a minimum of one sample per five vertical feet of Type 1 soil in the Environmental Soil Classification Plan. Both of the samples in the five-foot interval must have soil below the CCDD requirements for the Contractor to recertify the material. The reclassified soil may vary vertically, if two different disposal types are identified, conservatively assume the most restrictive soil type extends to the nearest "cleaner" vertical sample (i.e. do not assume the boundary between soil types is halfway between samples).

Any LPC-663 form prepared by the contractor shall only certify soil up to the new sample locations. The Contractor shall not extrapolate the horizontal or vertical boundary between a sample meeting CCDD requirements and Type 1 soil when conducting Additional Sampling. The analytical results shall serve to document the level of contamination.

Samples shall be grab samples (not combined with other locations). The samples shall be taken with decontaminated or disposable instruments. The samples shall be placed in sealed containers and transported in an insulated container to the laboratory. The container shall maintain a temperature of 39 °F (4 °C). All samples shall be clearly labeled. The labels shall indicate the sample number, date sampled, collection location and depth, and any other relevant

observations. All samples shall be submitted for laboratory analysis on the same chain of custody.

The laboratory shall use analytical methods which are able to meet the lowest appropriate practical quantitation limits (PQL) or estimated quantitation limit (EQL) specified in "Test Methods for Evaluating Solid Wastes, Physical/Chemical Methods", EPA Publication No. SW-846; "Methods for the Determination of Organic Compounds in Drinking Water", EPA, EMSL, EPA-600/4-88/039; and “Methods for the Determination of Organic Compounds in Drinking Water, Supplement III”, EPA 600/R-95/131, August 1995. For parameters where the specified cleanup objective is below the acceptable detection limit (ADL), the ADL shall serve as the cleanup objective. For other parameters the ADL shall be equal to or below the specified cleanup objective.

The results of the sampling shall be provided in a revised A-51 ECP and include a signed and sealed LPC-663; analytical tables; lab results including excel file from lab; exhibits with contract Environmental Soil Classification Plan, contractor borings and proposed extent of reclassified disposal types; and boring logs.

669.05 Excavated Soil and/or Groundwater Management and Disposal.

The management and disposal of excavated soil and/or groundwater shall be according to the following:

(a) Disposal of Excavated Soil:

Hazardous Waste. When analytical results indicate soil is hazardous by characteristic or listing pursuant to 35 Ill. Adm. Code 721, contains radiological constituents, or the Engineer otherwise determines the soil cannot be managed as Types 1 through 4, the soil shall be managed and disposed of off-site as a hazardous waste or special waste as applicable.

Type 1: Non-Special Waste. This material does not meet the requirements for disposal at a CCDD or USFO facility. Any material that cannot be reused shall be disposed of as non-special waste. This includes any geotechnically unsuitable Type 1 material, which shall be disposed of as NON-SPECIAL WASTE, (TYPE 1). See section 669.06 for definition of non-special waste.

Type 2: Polynuclear aromatic hydrocarbon analytical results exceed the most stringent MACs but do not exceed the MACs for a populated area[2] in a Metropolitan Statistical Area (MSA)

[2] A populated area, as defined by 35 Ill. Adm. Code 742.200, is an area within the boundaries of a municipality that has a population of 10,000 or greater based on the year 2000 or most recent census; or an area less than three miles from the boundary of a municipality that has a population of 10,000 or greater based on the year 2000 or most recent census.

County[3] excluding Chicago AND inorganic results do not exceed the MACs for an MSA county AND all other analytical results do not exceed the most stringent MACs AND the pH is between 6.25 and 9.0, inclusive.

Type 3: Inorganic analytical results exceed the most stringent MACs but do not exceed the MACs for an MSA County AND all other analytical results do not exceed the most stringent MACs AND the pH is between 6.25 and 9.0, inclusive.

Type 4: Soil Analytical Results Do Not Exceed Most Stringent MACs and the pH is between 6.25 and 9.0, inclusive.

Regarding Type 2, Type 3, and Type 4 disposal, the information provided on the IEPA LPC-662 or LPC-663 forms was developed utilizing the Illinois Tollway's Sampling Plan Guidance. The IEPA LPC-662 or LPC-663 forms will be provided to the Engineer for coordination with the Contractor's chosen regulated receiving facilities. The Contractor is expected to use one or more of the Illinois Tollway's conditionally approved CCDD or USFO facilities. These facilities agreed the Illinois Tollway Sampling Plan Guidance provides sufficient data to accept material on the condition it meets the requirements of 35 Ill. Adm. Code 1100 and it is conditionally approved. The facilities maintain the right to reject loads based on PID/FID screening, visual or other inspection. The Phase I and or Phase II Environmental Site Assessment is available on the Illinois Tollway's Online Plan Room for use by the Contractor in determining the contract's conditionally approved CCDD or USFO facilities. Should a Contractor elect to use an alternate facility for disposal, the Contractor shall be responsible for all testing, trucking, and tipping fees for proper disposal of all accepted loads and proper disposal of all rejected loads.

For material that is taken to an Illinois Tollway's conditionally approved CCDD or USFO facility, the Contractor shall notify the engineer immediately if any load is rejected. Hauling from the area where the rejected material was excavated from shall be suspended until further testing is performed to confirm the Soil Classification Type shown in the plans.

(b) Reuse of Excavated Soil within the project area

i. Type A: Soils Not Approved:

Contaminants of concern (COC) exceed the Tiered Approach to Corrective Action Objectives (TACO) Tier 1 Soil Remediation Objectives for the Industrial Commercial Ingestion or Inhalation Exposure Routes. Soil shall not be reused on the Illinois Tollway system.

[3] MSA counties: Boone, Champaign, Clinton, Cook, DuPage, Grundy, Henry, Jersey, Kane, Kankakee, Kendall, Lake, Macon, Madison, McHenry, McLean, Menard, Monroe, Peoria, Rock Island, Sangamon, St. Clair, Tazewell, Will, Winnebago, and Woodford.

ii. Type B: Soils Approved with Restrictions:

COC do not exceed the TACO Tier 1 Soil Remediation Objectives for the Industrial Commercial Ingestion and Inhalation Exposure Routes but exceed the TACO Tier 1 Soil Remediation Objectives for the Soil Component of the Groundwater Ingestion Exposure Route (Class I).

The material shall be reused within a municipality with an existing IEPA approved groundwater ordinance upon award of contract. The location of the approved groundwater ordinances are shown on the plans.

iii. Type C: Soils Approved for Reuse:

COC do not exceed the TACO Tier 1 Soil Remediation Objectives for the Industrial Commercial Ingestion and Inhalation Exposure Routes, AND COC do not exceed the TACO Tier 1 Soil Remediation Objectives for the Soil Component of the Groundwater Ingestion Exposure Route (Class I).

The Contractor shall reuse soil that is classified as non-special waste and meets TACO requirements as described above to minimize the volume of material disposed at a non-special waste disposal facility.

The plan set describes soil with the naming convention of “Number Letter”, for example Type 1a is *Disposal Type 1 Reuse Type a*, Type 1b is *Disposal Type 1 Reuse Type b*, etc.

(c) Groundwater. When groundwater analytical results indicate the detected levels are above Appendix B, Table E of 35 Ill. Adm. Code 742, the most stringent Tier 1 Groundwater Remediation Objectives for Groundwater Component of the Groundwater Ingestion Route for Class 1 groundwater, the groundwater shall be managed off-site as a special waste. The groundwater shall be containerized and trucked to an off-site treatment facility or may be discharged to a sanitary sewer or combined sewer when permitted by the local sewer authority. Groundwater discharged to a sewer shall be pre-treated to remove particulates and measured with a calibrated flow meter to comply with applicable discharge limits. A copy of the permit shall be provided to the Engineer prior to discharging groundwater to the sewer.

All groundwater or stormwater encountered within trenches may be managed within the trench and allowed to infiltrate back into the ground. If the groundwater or stormwater cannot be managed within the trench it must be removed as a special or hazardous waste. The Contractor is prohibited from managing groundwater or stormwater within the trench by discharging it through any existing or new storm sewer. The Contractor shall install backfill plugs within the area of groundwater contamination.

One backfill plug shall be placed down gradient to the area of groundwater contamination. Backfill plugs shall be installed at intervals not to exceed 50 ft. (15 m). Backfill plugs are to be

4 ft. (1.2 m) long, measured parallel to the trench, full trench width and depth. Backfill plugs shall not have any fine aggregate bedding or backfill, but shall be entirely cohesive soil or any class of concrete. The Contractor shall provide test data that the material has a permeability of less than 10-7 cm/sec according to ASTM D 5084, Method A or per another test method approved by the Engineer.

The Contractor shall use due care when transferring contaminated material from the area of origin to the transporter. Should releases of contaminated material to the environment occur (i.e., spillage onto the ground, etc.), the Contractor shall clean-up spilled material and place in the appropriate storage containers as previously specified. Clean-up shall include, but not be limited to, sampling beneath the material staging area to determine complete removal of the spilled material.

The Contractor shall be responsible for transporting and disposing all material classified as a non-special waste, special waste, or hazardous waste from the job site to an appropriately permitted Subtitle D or C landfill facility. The transporter and the vehicles used for transportation shall comply with all federal, state, and local rules and regulations governing the transportation of non-special waste, special waste, or hazardous waste.

The Contractor shall provide engineered barriers, when required, and shall include materials sufficient to completely line excavation surfaces, including sloped surfaces, bottoms, and sidewall faces, within the areas designated for protection.

The Contractor shall obtain all documentation including any permits and/or licenses required to transport the material containing regulated substances to the disposal facilities. The Engineer shall coordinate with the Contractor on the completion of all documentation. The Contractor shall make all arrangements for collection and analysis of landfill acceptance testing. The Contractor shall coordinate waste disposal approvals with the disposal facility. After the Contractor completes these activities and upon receipt of authorization from the Engineer, the Contractor shall initiate the disposal process.

The Contractor shall provide the Engineer with all transport-related documentation within two days of transport or receipt of said document(s). The Engineer shall maintain the file for all such documentation. For management of special or hazardous waste, the Contractor shall provide the Engineer with documentation the Contractor (or subcontractor, if a subcontractor is used for transportation) is operating with a valid Illinois special waste transporter permit at least two weeks before transporting the first load of contaminated material.

The Contractor shall schedule and arrange the transport and disposal of each load of excavated material that cannot be reused. The Contractor shall make all transport and disposal arrangements, so no excavated hazardous material remains within the project area at the close

of business each day. Exceptions to this specification require prior approval from the Engineer within 24 hours of close of business. The Contractor shall be responsible for all other pre-disposal/transport preparations necessary daily to accomplish management activities.

Any waste generated as a special or hazardous waste from a non-fixed facility shall be manifested off-site using the Illinois Tollway's generator number. An authorized representative of the Illinois Tollway shall sign all manifests for the disposal of the contaminated material and confirm the Contractor's transported volume. Any waste generated as a non-special waste may be managed off-site without a manifest, a special waste transporter, or a generator number.

The Contractor shall select a landfill mandated by definition of the contaminant within the State of Illinois. The Illinois Tollway will review and approve or reject the facility proposed by the Contractor to use as a landfill. The Contractor shall verify whether the selected disposal facility is compliant with those applicable standards as mandated by definition of the contaminant and whether the disposal facility is presently, has previously been, or has never been, on the United States Environmental Protection Agency (U.S. EPA) National Priorities List or the Resource Conservation and Recovery Act (RCRA) List of Violating Facilities. The Contractor shall be responsible for coordinating permits with the IEPA. The use of a Contractor selected landfill shall in no manner delay the construction schedule or alter the Contractor's responsibilities as set forth. If the Contractor proposes to dispose of material at a facility other than a landfill or CCDD/USFO, it shall be requested in Section 4C of the A-51 ECP and include the following: an acceptance letter from the proposed disposal site, a copy of the service contract and pollution liability policy that include the Illinois Tollway as an additional insured, and a waiver of subrogation which also names and provides the Illinois Tollway full protections under the conditions of the document. Additional documentation may be required by the Illinois Tollway depending on the proposed location. Approval of a non-landfill or CCDD/USFO disposal location is at the sole discretion of the Illinois Tollway.

669.06 Non-Special Waste Certification. An authorized representative of the Illinois Tollway shall sign and date all non-special waste certifications. The Contractor shall be responsible for collecting landfill waste characterization sample(s) and providing the required information that will allow the Engineer to certify the waste is not a special waste.

Non-Special Waste Disposal Type 1 Definition. A waste is considered a non-special waste as long as it is not:

(1) a potentially infectious medical waste.

(2) a hazardous waste as defined in 35 Ill. Adm. Code 721.

(3) an industrial process waste or pollution control waste that contains liquids, as

determined using the paint filter test set forth in subdivision (3)(A) of subsection (m) of 35 Ill. Adm. Code 811.107.

(4) a regulated asbestos-containing waste material, as defined under the National Emission Standards for Hazardous Air Pollutants in 40 CFR 61.141.

(5) a material containing polychlorinated biphenyls (PCB's) regulated pursuant to 40 CFR Part 761.

(6) a material subject to the waste analysis and recordkeeping requirements of 35 Ill. Adm. Code 728.107 under land disposal restrictions of 35 Ill. Adm. Code 728.

(7) a waste material generated by processing recyclable metals by shredding and required to be managed as a special waste under Section 22.29 of the Environmental Protection Act; or

(8) an empty portable device or container in which a special or hazardous waste has been stored, transported, treated, disposed of, or otherwise handled.

669.07 Temporary Staging. Temporary staging shall be in accordance with the approved Earthwork Management Plan.

669.08 Intentionally Left Blank

Remove Articles 669.09 through Article 669.14

END OF SECTION

BOLT REPLACEMENT

Description. This work shall consist of furnishing all labor, equipment, and materials necessary to remove deteriorated rivets and/or bolts and replace them with high strength bolt assemblies. Work under this item shall apply only to the replacement of deteriorated or missing fasteners that connect existing components to remain and shall also include cleaning and painting the disturbed coating surfaces in the vicinity of the connector replacement. Work under this item shall be performed according to Section 505 of the Standard Specifications, except as modified herein. Removal and disposal of rivets and bolts, as necessary, shall be according to Section 501 of the

Standard Specifications.

General Requirements. The basis for replacement of a corroded bolt shall be the loss of section of the bolt head or nut. The existing deteriorated rivets and/or bolts to be removed and replaced with high strength bolt assemblies shall be shown in the schematic on the repair drawings and as approved by the Engineer, or as identified by the Engineer at the time work is being performed.

Construction Requirements. All new bolts shall be 7/8-inch diameter AASHTO M164 Type 1 bolts with AASHTO M291 Grade DH nuts and AASHTO M293 hardened washers, unless noted otherwise. The diameter of the new bolts shall be the larger of (1) the existing diameter of the rivet or bolt removed, or (2) the diameter of the existing hole, less 1/16 inch, rounded down to the nearest bolt size.

Burning or thermal cutting of existing rivets or bolts will not be allowed. Extreme care shall be taken while removing connectors so as not to damage the existing structural steel which is to remain. Corroded and loose bolts or rivets to be removed that cannot be untorqued shall be sheared or mechanically cut off at the nut or head and the shank driven or drilled out. All damage to existing members shall be repaired or the member replaced to the satisfaction of the Engineer. Repair or replacement of damaged members shall be at the Contractor's expense.

When required to realign existing holes, field drilling or reaming of holes in existing members shall be accomplished using existing holes as a template. Burning of holes will not be permitted. All field drilling, reaming, or grinding necessary to furnish and install the replacement bolts shall be included in this item. Reuse of any existing bolts or nuts is not allowed. The removal and disposal of any existing bolts and rivets necessary for the installation of the new bolts as shown in the plans shall be included in this item. Before installing each new bolt, all nicks, burrs, corrosion, scale, paint, and foreign substance shall be removed from inside the hole and from the surfaces around the hole with a power tool to ensure proper seating of the nut, bolt head, and washers. Holes in the existing material shall be inspected for fatigue cracking. Any cracking found shall be immediately reported to the Engineer. Necessary repairs will be as directed by the Engineer.

Upon completion of the connector replacement and tightening in accordance with the Standard Specifications, the new bolts, and damaged coatings on existing steel, shall be cleaned and painted in accordance with the Cleaning and Painting Contact Surface Areas of Existing Steel Structures special provision, and the cost shall be considered incidental to this pay item.

Delete Article 501.06 Method of Measurement
Delete Article 501.07 Basis of Payment

Delete Article 505.12 Method of Measurement
Delete Article 505.13 Basis of Payment

END OF SECTION

SLOPE WALL CRACK SEALING

Description. All open random cracks in the existing concrete slope wall shall be cleaned and sealed according to Section 452 of the Standard Specifications. Routing of the cracks is not required provided that the crack opening equals or exceeds 1/8".

Materials. Hot Joint Sealer meeting the requirements of Article 1050.02 shall be used for slope wall repair.

Cleaning. The open cracks shall be cleaned of all debris, dust and laitance using methods specified by the sealant manufacturer. All crack preparation and cleaning shall be performed immediately prior to application of sealant to an acceptable bond between the sealant and concrete.

Delete Article 452.05 Method of Measurement
Delete Article 452.06 Basis of Payment

END OF SECTION

FLOOR DRAINS TO BE CLEANED

Description. This work shall consist of cleaning the existing floor drains on the bridge decks as shown on the plans.

General. All active existing floor drains shall be cleaned of any accumulation of silt, debris, or foreign matter of any kind, and shall be free from such accumulations at the time of final inspection. Debris that is removed from all the drains shall be properly disposed of off-site.

END OF SECTION

NOISE ABATEMENT WALL REPAIR

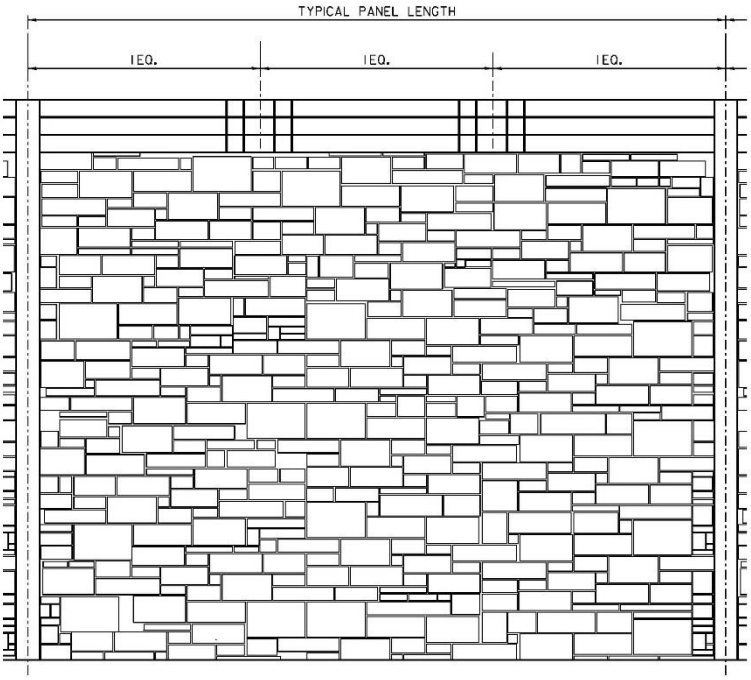
Description. This work shall consist of furnishing of all materials, labor, and equipment necessary for the structural repair and replacement of damaged Precast Concrete Noise Wall Panels as shown on the Plans.

Aesthetic Requirements.

The aesthetics of both front and back surfaces for each type of Noise Abatement Wall replacement panel shall be as follows:

Precast Concrete

Precast Concrete Noise Abatement Wall Cap detail Layout

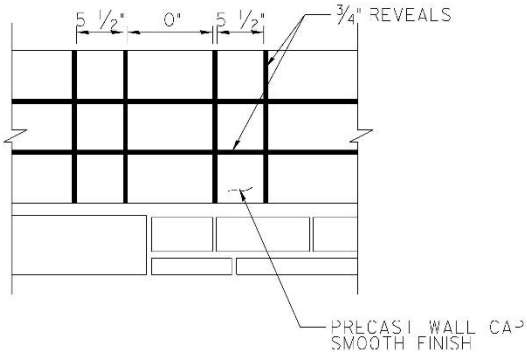


Typical Panel Elevation

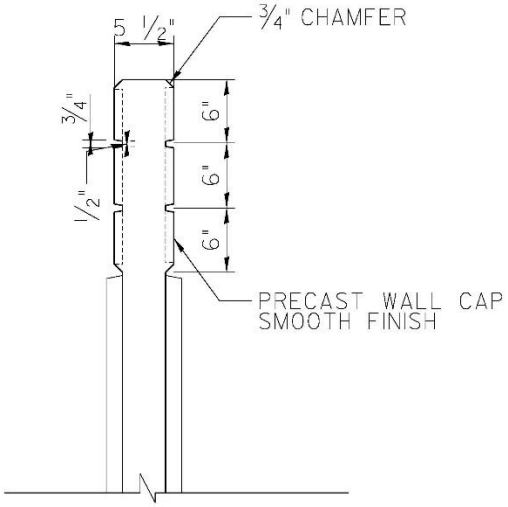
The image created by the vertical reveal pattern on the cap shall be spaced to achieve a consistent and repeating rhythm throughout each continuous length of wall, as shown above. When the panel length is less than that of a typical panel, only one vertical reveal image may be applied to that panel to maintain the desired appearance. If the length of the panel is less than 1/3 of a typical panel, no vertical reveal image may be required on the panel cap.

Noise wall end panels should step in 2-foot increments beginning at ends of designated limits. Panel stepping should reflect grading with a desired minimum end panel height of 8 feet.

CIP/Precast Concrete Noise Abatement Wall Cap Detail



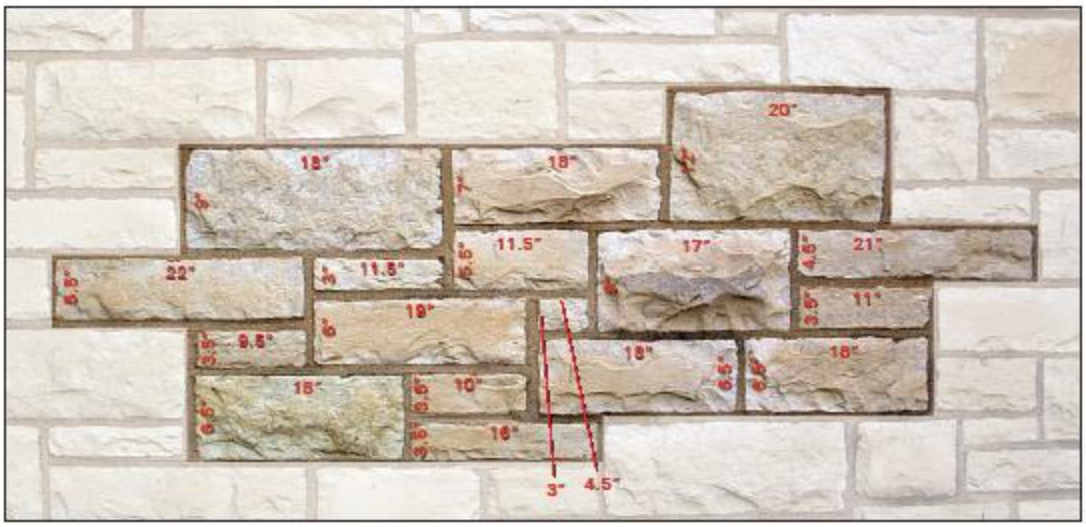
Enlarged Cap Vertical Reveal Image - Elevation



Enlarged Cap Detail – Section Detail

The Precast Concrete Panels shall be capped with a smooth finish detail as shown above.

CIP/Precast Concrete Noise Abatement Wall Random Ashlar Limestone Form Liner Pattern



The Precast Concrete Panels shall be constructed with a square cut random ashlar rusticated limestone surface with a 1 ½" relief. The aesthetic surface treatment shall be accomplished by the use of form liners for precast panels as specified. The panels shall not contain patched or unpatched tie holes. The concrete pours of the panels shall be coordinated to prevent visible differences between individual pours or batches.

A concrete stain shall be provided and applied to replicate stone with sealer as required. The base stain color is to match the Sandstone color HC-157 as produced by H & C Concrete Coatings, www.hc-concrete.com.

The surface stain for precast concrete support columns, if utilized, shall match the color of the precast concrete panel.

For crash worthy walls or walls that could otherwise be impacted by vehicles, asperity shall be considered for the form liner, finish and supports conforming with NCHRP Report 554, "Guidelines for Aesthetic Barrier Design".

Asperities are depressions in the surface of the wall with variable geometric configurations which can be placed within one of three categories: perpendicular, rounded, or angled surface interruptions. The asperity dimensions may present more resistance to an impacting vehicle sliding on the wall surface creating a potential for snagging to the vehicle.

MATERIALS

Precast Concrete Panels, Posts, and Form Liner

Concrete for Precast Concrete Noise Abatement Wall panels and posts shall conform to the requirements of the applicable portions of Section 1020 of the Standard Specifications.

Manufacturer's specifications and mix designs shall be submitted for approval to the Engineer.

1. Concrete for precast, prestressed units shall be Class PS Portland cement concrete; with a minimum compressive strength of 3,500 psi at release and 5,000 psi at 28 days age. Class PS concrete shall conform to the requirements of Section 1020 of the Standard Specifications.

1. The concrete for precast, non-prestressed units shall be IDOT Class PC Portland cement, with a minimum compressive strength of 4,000 psi at 28 days age. Class PC concrete shall conform to the requirements of Section 1020 of the Standard Specifications.

2. The curing methods shall be compatible with the desired aesthetic results.

3. The form liner used to create the random ashlar limestone pattern shall be of high quality and capable of withstanding anticipated concrete pour pressures without causing leakage or causing physical defects. The liner shall be made from high-strength elastomeric urethane material which shall not compress more than 0.02 feet when poured at a rate of 10 vertical feet per hour. The form release agents shall be non-staining, non-residual, and non-reactive.

Pre-stressing Steel Strands

Pre-stressing steel strands for precast concrete noise abatement wall panels and precast concrete posts shall conform to Article 1006.10 of the Standard Specifications.

Anchor Bolt Assemblies

Anchor bolts shall be cast-in-place and shall conform to Article 1006.09 of the Standard Specifications. If the anchor bolts in accordance with the Standard Specifications have insufficient shear or tensile strength by maximum dimensions, they may conform to the requirements of ASTM F1554. Hooked anchor bolts are not allowed. Anchor bolt assemblies shall be furnished with either anchorage plates meeting Article 1006.09 of the Standard Specifications, or plate washers in accordance with ASTM A572 (AASHTO M223) Grade 50. Anchor plates and plate washers shall be hot-dip galvanized after fabrication in accordance with ASTM A153 (AASHTO M 232).

Fasteners and Hardware

Miscellaneous fasteners and hardware shall conform to Article 1006.08 of the Standard Specifications and shall be galvanized steel in accordance with ASTM A153 (AASHTO M232).
All fasteners used with treated wood products shall be stainless steel or hot-dipped galvanized per AASHTO M232, Class C, except the minimum weight of Zinc coating shall be 2.0 oz./sq. ft.

Fasteners for structural steel, other than anchor bolts, shall be high strength structural bolts in conformance with ASTM A325 (AASHTO M 164), Type I and shall be mechanically galvanized in accordance with ASTM A 153 (AASHTO M 232).

Stain & Sealer

Store paint, stain, sealer material in an area where temperatures will not be less than 50°F or more than 100°F in accordance with OSHA and local Fire Code requirements.

The staining products must be compatible with the surface sealing coating.

Stains shall be water-based acrylic stain. The staining products must be compatible with the surface sealing coating specified. The Illinois Tollway may waive the requirement of a separate sealing product if the staining product also meets the performance requirements of the sealing product.

Penetrating concrete stain mix, shall achieve color variations present in the natural stone being simulated for this project. Stain shall create a surface that is breathable (allowing water vapor transmission), and that resists deterioration from water, acid, alkali, fungi, sunlight, or weathering. Stain mix shall be a waterborne, low V.O.C. material, less than 1.5 lbs./gal., and shall meet requirements for weathering resistance of 2000 hours accelerated exposure.

The concrete and wood sealer shall be UV stable, non-yellowing, V.O.C. compliant with EPA 40 CFR Part 59, and in accordance with the manufacturer's recommendations.

Products used to color the brick surfaces shall be free of oil and wax, exhibit excellent resistance to weathering, and shall exhibit no efflorescence.

General

Submittals shall be in conformance with Article 105.04 of the Illinois Tollway Supplemental Specifications except as modified herein.

Precast Concrete replacement Panels

Fabrication, construction, and erection of the precast concrete Noise Abatement Wall panels shall be accomplished in accordance with the details shown on approved Shop Drawings, this Special Provision, Section 504 of the Standard Specifications, as recommended by the System Supplier, and as approved by the Engineer.

The thickness of panels shall not be less than 4 inches (6 ½ inches for Crashworthy Noise Abatement Walls) plus the dimension of the form liner projection. The depths of the surface treatments shall not be included in calculating the minimum panel thickness. The minimum concrete cover over reinforcing shall be:

1. Steel reinforcing bars and welded wire fabric: 1.50 inches.

2. Pre-stressing strands: 1.50 inches.

If the finished grade lines on both sides of the Noise Abatement Wall are at equal elevations, the

Noise Abatement Wall shall be embedded at least 6 inches below the finished grade line. If a difference in finished grade line elevations exist from one side of the ground mounted Noise Abatement Wall to the other side, the Noise Abatement Wall shall be embedded at least 6 inches below the lower finished grade line. The base of the retaining wall or bridge mounted Noise Abatement Wall shall be hidden behind the parapet, or a portion thereof.

No field cutting of the panels shall be permitted, except as required by the Plans or ordered by the Engineer.

Before the release strength is attained, the concrete shall be cured by steam, wetted burlap or polyethylene sheet methods. The use of membrane curing compounds will not be permitted.

END OF SECTION

POLYURETHANE SEALANT

Description. This work shall consist of removal and disposal of existing sealant and backer rod from parapet joints, and installation of new backer rod and polyurethane sealant. Disposal shall be according to Section 202.03 of the Standard Specifications.

Materials. The polyurethane sealant shall be according to Article 1050.04, and color shall be gray.

Construction Requirements. Remove existing sealant and backer rod. Prepare surface and install sealant in accordance with sealant manufacturer’s recommendations.

END OF SECTION

CLEANING AND PAINTING BEARINGS

Description. This work shall consist of the cleaning and painting of steel materials of the existing bridge bearings as indicated on the plans and in accordance with the Special Provision for "Cleaning and Painting Existing Steel Structures". This work also includes cleaning and painting all appurtenances associated with the bearings including all side retainer angles and anchors at the bridge seats, if present. The work includes the satisfactory containment and disposal of all debris and residues generated by the cleaning process in accordance with the Standard Specifications.

Any loose anchor bolt nuts shall be tightened prior to painting.

Materials. Paint materials shall be compatible with coatings specified in the plans and shall be according to the following Special Provision except that the final color shall be selected by the

Tollway:

1) Special Provision "Cleaning and Painting Existing Steel Structures"

Construction Requirements. The existing bridge bearings shall be cleaned and painted in accordance with the following special provisions:

1) Special Provision "Cleaning and Painting Existing Steel Structures"
2) Special Provision "Containment and Disposal of Non-Lead Paint Cleaning Residues"

END OF SECTION

TIGHTEN SUPPORT ANCHOR BOLT

Description. This work shall consist of all labor, materials, and equipment necessary to tighten loose anchor bolt nuts at existing sign structure foundations as indicated on the Plans or as directed by the Engineer. All work shall be in accordance with the applicable portions of the Standard Specifications.

Materials. The existing wire cloth between the base plate and the foundation, if present, shall be removed and replaced according to Article 733.08 of the Standard Specifications.

Construction Requirements. The Contractor shall tighten existing loose anchor bolt nuts at existing sign structure foundations identified in the Plans or otherwise specified by the Engineer. All debris and rust shall be cleaned from the mating surfaces of the nuts, bolts and plates and the areas touched-up with paint or galvanization prior to tightening. All work shall be performed as per the tightening requirements for new anchor rod nuts at sign structure foundations as per the Standard Specifications or as otherwise directed by the Engineer.

The Contractor shall take all necessary precautions to avoid damage to existing elements during the work. Any damage to existing elements caused by the Contractor in the performance of his/her work shall be repaired by the Contractor, to the satisfaction of the Engineer, at no cost to the Tollway.

END OF SECTION

STORM SEWERS TO BE CLEANED

Description. This work shall consist of cleaning storm sewers necessary in order to televise the pipe due to accumulated silt, debris and vegetation over time, at locations directed by the Engineer.

Materials. Cleaning of all culverts and sewers shall be performed by water jet method, or other methods as approved by the Engineer.

Construction Requirements. After the work is completed, the entire culverts and sewers shall be free and clear of all silt, debris, and vegetation. Any damage to the existing items due to the Contractor's operations shall be removed and replaced at no additional expense to the Illinois Tollway.

The Contractor shall implement “Best Management Practices” (BMP’s) for the control of sediment that will be removed during the cleaning operation. Flushing of the material downstream is not authorized and discharges of any materials into wetlands or WOUS is strictly prohibited.

Disposal shall be offsite and meet all applicable legal requirements.

Prior to cleaning of sewers, it may be necessary to remove the existing steel grating from catch basins and end sections. The existing steel grating which is suitable for use under proposed conditions and is not scheduled for removal and replacement shall be handled with care. Any damage to the steel grating to be reused, or to the end section, due to the Contractors operations, shall be repaired or replaced at no additional expense to the Illinois Tollway. Where a sewer requiring cleaning and televising is completely or partially submerged, temporary damming and dewatering may be required. Such damming and dewatering shall be included in this work. Contractor shall submit damming/dewatering plan to Engineer for approval prior to beginning work.

END OF SECTION

CHAIN LINK FENCE TO BE REMOVED AND RE-ERECTED

Description. This work shall consist of the removal and replacement of the existing chain link fence at the locations shown on the plans within the temporary easement and right of way. Installation of the chain link fence shall be performed in accordance with the applicable Articles of Section 664 of the Standard Specifications and as directed by the Engineer.

Construction Requirements. The Contractor shall remove and dispose of the existing chain link fence, install new chain link fence, and reuse the existing posts and their foundations in a workmanlike manner to avoid damaging the material. Any repair or touch-up required shall be performed by the Contractor using a method approved by the Engineer and at the Contractor’s expense. If any material is damaged by the Contractor, it shall be replaced with the same type of material at the Contractor’s expense.

The removal limits shown in the plans are approximate. The existing chain link fence shall be removed to the nearest post location as directed by the Engineer. The existing posts and their foundations shall be reused.

Delete Article 664.12 Method of Measurement
Delete Article 664.13 Basis of Payment

END OF SECTION

TIGHTEN EXISTING STRUCTURE BOLT

Description. This work shall consist of all labor, materials, and equipment necessary to tighten loose structure bolt nuts at existing sign structure connections as indicated on the Plans or as directed by the Engineer. All work shall be in accordance with the applicable portions of the Standard Specifications and Illinois Tollway Overhead Sign Structure Standard Drawings

Materials. The materials shall be according to Sections 733 and 1094 of the Standard Specifications.

Construction Requirements. The Contractor shall tighten existing loose structure bolt nuts at existing sign structure connections identified in the Plans or otherwise specified by the Engineer. All debris and rust shall be cleaned from the mating surfaces of the nuts, bolts and plates and the areas touched-up with paint or galvanization prior to tightening. All work shall be performed as per the tightening requirements for new anchor rod nuts at sign structure connections as per the Standard Specifications or as otherwise directed by the Engineer.

The Contractor shall take all necessary precautions to avoid damage to existing elements during the work. Any damage to existing elements caused by the Contractor in the performance of his/her work shall be repaired by the Contractor, to the satisfaction of the Engineer, at no cost to the Tollway.

END OF SECTION

OVERHEAD SIGN STRUCTURE - END CAP

Description. This work shall consist of installing a new end cap on the existing overhead sign structure post as noted on the plans and shall include all equipment, labor and materials required to furnish, and install the new end cap with connecting hardware.

General. The Contractor shall verify the dimensions of the existing access hole prior to ordering the new end cap. This work shall be performed according to Sections 733 and 1094 of the Standard Specifications.

The Contractor shall provide shop drawings to the Engineer for approval. The shop drawings shall be approved before fabrication is begun. The Contractor may submit an alternative design of the end caps for consideration and review by the Engineer.

Material. Materials for the end caps shall match existing materials specified for the spans of the span type overhead sign structure.

All structural steel plates and shapes shall conform to AASHTO M270 Gr. 36, Gr. 50, or Gr. 50W. If M270 Gr. 40W (M222) steel as proposed and the chemistry of the plate shall be approved by the Engineer as suitable for galvanizing and welding prior to ordering the material.

Delete Article 733.10 Method of Measurement
Delete Article 733.11 Basis of Payment

END OF SECTION

PROTECTION AND MAINTENANCE OF EXISTING UNDERPASS LUMINAIRES

Effective: July 1, 2012

Description. This item shall consist of providing protection, temporary support, removal, and reattachment as required, of the existing underpass lighting system. The system consists of, but not limited to, luminaires, junction boxes, raceways, support equipment and conductors. Any wiring required to maintain the operation of the underpass or other circuits feed through the underpass lighting system shall be included in this item.

Materials. Materials shall be according to the following Articles of Section 1000 - Materials

Item	Article/Section
(a) Electric Raceway Material	1088
(b) Conductors	1066.02
(c) Insulation	1066.03

Construction Requirements

General. Before performing any work, an inventory of all missing hardware of the existing lighting system shall be taken jointly by the Contractor and the Engineer.

Protection During Deck Reconstruction. Luminaires, junction boxes, and conduit hangers attached to the bridge deck shall be removed prior to the removal of the existing bridge deck. The luminaires, junction boxes and the conduits shall be temporarily supported during bridge deck reconstruction. The method of support shall be structurally equivalent to the existing system and shall be approved by the Engineer. Existing vertical clearances shall be maintained at all times.

The underpass luminaires and hardware shall be protected from overhead debris during the removal and reconstruction of the bridge deck. The underpass luminaire protection shall be

coordinated with the protective shield as described elsewhere in these Special Provisions.

The underpass lighting system shall be protected from spills and over-spray during any painting operations. Spills and overspray shall be removed by the Contractor at no additional expense to the State. If spills or over-spray occur on the luminaire lens, the luminaire lens shall be replaced with new lens from the luminaire manufacturer at no additional cost to the State.

Prior to bridge deck removal the Contractor shall measure and log the location of all existing conduit and luminaire hangers for reattachment purposes. Upon completion of the bridge deck reconstruction, the existing underpass lighting system shall be permanently reattached at these locations. New heavy duty expansion anchors, as approved by the Engineer, shall be used. New hangers may be installed at the option of the Contractor. The new hangers shall be equivalent to the existing hangers or as approved by the Engineer. The cost of the new expansion anchors and hangers shall be included in this pay item.

Protection During concrete repair. Luminaires, junction boxes, and conduit attached to any structural concrete walls and or bridge deck shall be temporarily supported during the concrete repair. The method of support shall be structurally equivalent to the existing system and shall be approved by the Engineer. Existing clearances shall be maintained at all times.

Prior to any equipment or raceway removal the Contractor shall measure and log the location of all existing equipment for reattachment purposes. Upon completion of the concrete repair, the existing equipment shall be permanently reattached at these locations. New heavy duty expansion anchors, as approved by the Engineer, shall be used. The new hangers shall be equivalent to the existing hangers or as approved by the Engineer. The cost of the new expansion anchors and hangers shall be included in this pay item.

Damage to Underpass Lighting System. Should the lighting system be damaged through the Contractor's operations; repairs shall be made by the Contractor at no additional cost to the State.

All repairs shall be performed expeditiously and shall be approved by the Engineer. The Contractor shall conduct his work in a manner as not to keep out of service any of the lighting between 4:00 PM and 8:00 AM. All lights shall be tested daily, and any necessary repairs shall be made immediately without delay.

Damaged cable shall be replaced in complete spans, no underground splices will be allowed. Temporary aerial quadraplex cable may be used to maintain luminaires operational provided it does not interfere with traffic or other operations as determined by the Engineer.

Grounding of Existing Lighting System. As indicated on the plans, the Contractor shall furnish and install a grounding conductor for the underpass lighting system in all existing conduits, junction boxes and luminaires. The ground conductor shall be a 1/C #10 AWG EPR (Type-RHW) green insulated conductor. The new ground conductor shall be connected to the existing ground conductor in the main junction box. The cost of this work shall be included in this pay item.

The continuity and continued operation of the adjacent lighting system shall be the responsibility

of the Contractor. Any temporary wiring required to comply with this requirement shall be included in this item.

END OF SECTION

MAST ARM REPLACEMENT (SPECIAL) (ILLINOIS TOLLWAY)

Effective: October 23, 2023
Revised: May 30, 2025

Description. This work shall consist of removing a 6' single member mast arm from existing median barrier wall mounted pole and furnishing and installing an equivalent 6' truss type mast arm.

All work shall be performed according to the Tollway Supplemental Specifications and the IDOT Standard Specifications for Road and Bridge Construction as applicable, and as stated herein.

Material.
Materials shall be according to Section 1069 of the Tollway Supplemental Specifications and the IDOT Standard Specifications for Road and Bridge Construction, as applicable.

Construction Requirements.
This work shall be performed according to Section 830 of the Tollway Supplemental Specifications and the IDOT Standard Specifications for Road and Bridge Construction as applicable.

END OF SECTION

MODIFY EXISTING LIGHTING CONTROLLER

Description. This work shall consist of furnishing and installing a replacement enclosure and contactor within the existing lighting controller. All hardware and accessories of the replacement component shall be per the contract plans as required for the intended use of the contactor.

Materials. Material shall be according to contract plan details and Section 1068 of the Illinois Tollway Supplemental Specifications.

Construction Requirements. Construction shall be according to Section 1068(e)(5) of the Illinois Tollway Supplemental Specifications.

Contactors. Lighting contactors, unless otherwise noted, shall be two-pole, line voltage and current rated contactors in NEMA type 1 enclosures as shown in the Plans.

Lighting contactors shall be of a single coil, electrically operated, electrically held type.

The contactors shall be designed to withstand the large initial inrush currents associated with lighting and resistive loads without contact welding.

Coils shall be permanently marked with voltage, frequency, and part number.
Contacts shall be equipped with double break alloy contacts.

The contactors shall have straight-through wiring.

Line and load terminals shall be back-out saddle clamp design.
Lighting contractors shall meet the requirements of Underwriters' Laboratories Standard UL 508.

Lighting contactors shall meet the withstand current requirements of UL 67 for panelboard applications.

Lighting contactors shall be provided with provisions for manual operation.

Lighting Contactors shall be model number CN35NN2A with model number C320KGS42 auxiliary contacts as manufactured by Eaton Cutler-Hammer or approved equal.

END OF SECTION

CLEANING BRIDGE SEATS

Description. This work shall consist of cleaning bridge beam seats at locations shown on the plans.

Materials. Water shall be according to Section 1002 of the Standard Specifications. The Contractor shall obtain his/her own source of water.

Equipment. Washing equipment shall consist of power brushes, air compressors, water tanks, water pumps with associated delivery hardware, and hand tools, to properly flush, clean, and remove all foreign material from the bridge seats. Other types of washing equipment may be used, subject to the approval of the Engineer. Water pressure shall be sufficient to remove the accumulated material without damaging paint coverage of the structural steel. Other equipment may be necessary to gain access to areas designated for washing.

Construction Requirements. All accumulated debris shall be removed from the bridge seats. Special care shall be taken of connected parts, members below open joints and difficult to reach areas when removing foreign material. The area beneath all expansion devices shall be thoroughly flushed and washed with water under pressure. All bridge seats shall have foreign material removed by compressed air, water under pressure, or hand sweeping. Areas which have

been washed shall be free of all accumulated sand, gravel, dirt, bird nests and excrete, and other foreign materials. Free standing water shall be removed upon completion of washing. The Contractor shall provide adequate protection for workers from dust and their washing operations. Disposal shall be according to Section 202.03 of the Standard Specifications.

END OF SECTION

DEBRIS REMOVAL

Description. This work shall consist of the satisfactory removal and disposal of debris at existing slopewalls, at other locations specified in the Plans, and as determined in the field by the Engineer.

Construction Requirements. This work shall be performed according to Article 202.03 of the Standard Specifications for removal of unsuitable material and organic waste. The Contractor shall remove all built-up debris from the toe of existing slopewalls using hand tools and shall power-wash as required to remove residual debris.

Actual field conditions may vary from location to location and the actual extent of debris removal shall be determined by the Engineer.

END OF SECTION

DECK DRAIN REPAIR

Description. This work shall consist of repairing existing bridge deck drains as shown on the Plans and as specified by the Engineer.

Materials. Fiberglass pipe shall conform to ASTM D2996 with short-time rupture strength hoop tensile stress of 30,000 psi minimum.

Aluminum bar shall be ASTM B211 Alloy 6061-T6 and aluminum tube shall be Alloy 6061-T6. Silicone sealant shall be according to Article 1050.04 of the Standard Specifications.

Construction Requirements. Deck drains shall be repaired as indicated in the plans and as directed by the Engineer. Prior to any repair, the existing drains shall be flushed clean of all debris.

New crossbars shall be added to the tops of existing drains at locations of broken or missing crossbars. The cross bar shall match the material used for the existing drainpipe or tube, i.e., fiberglass reinforced plastic rebar shall be used on fiberglass pipes and aluminum bars shall be used on aluminum pipes.

The interface between the deck drain and concrete bridge deck shall be sealed around the entire perimeter of the deck drain. Any debris in this area shall first be removed. Gaps smaller than 1/4” shall be sealed with silicone sealant. Gaps larger than 1/4” shall be filled with expanding foam followed by silicone sealant after the foam cures.

Open holes or gaps larger than 1/4” in the drain extension or drain-to-extension connection shall be filled with expanding foam. Gaps smaller than 1/4” in these areas shall be sealed with silicone sealant. This shall include the full length of the vertical fabrication joint of the drain extension.

Any other points of potential leakage shall also be sealed. Beam flange clamps that are damaged or missing shall be repaired or replaced and shall be galvanized according to AASHTO M232.

END OF SECTION

DRAINAGE SCUPPERS TO BE ADJUSTED

Description. This item of work shall consist of cleaning and adjusting the existing bridge drainage scuppers to the new elevation resulting from the concrete overlay as shown on the Plans, as directed by the Engineer, and as specified herein and shall include all tools, equipment, material, and labor required to complete the work. This work shall also include drilling for and providing stainless steel pins as required. The adjustment shall be done by fabricating and installing a new adjusting ring, and removing and reinstalling the grate, to compensate for the elevation increase resulting from the overlay.

General. The work shall be performed according to Section 602 of the Standard Specifications. Prior to installation of the adjusting rings the existing drainage scupper shall be cleaned. The Contractor shall verify the dimensions of the existing grate prior to ordering material.

Material. All cast iron parts shall be gray iron conforming to the requirements of AASHTO M 105, Class 35B. Bolts, , and nuts shall conform to the requirements of ASTM A 307. All bolts, washers and nuts shall be galvanized according to AASHTO M 232.

The existing scuppers are provided with four (4) 1/2" diameter A307 bolts to secure the grate in position; similar but longer bolts shall be used to fasten the adjusted existing grate to the scupper.

END OF SECTION

DRAINAGE STRUCTURES TO BE CLEANED

All existing storm sewers, pipe culverts, manholes, catch basins and inlets shall be considered as drainage structures insofar as the interpretation of this Special Provision is concerned. The location of drainage structures to be cleaned will be determined in the field by the Engineer.

All existing drainage structures which are to be adjusted or reconstructed shall be cleaned according to Article 602.15 of the Standard Specifications.

All other existing drainage structures which are specified to be cleaned by the Engineer will be cleaned according to Article 602.15 of the Standard Specifications. Disposal shall be according to Section 202.03 of the Standard Specifications.

END OF SECTION

DRILL AND GROUT DOWEL BARS

Description. This work shall consist of the drilling and epoxy grouting of reinforcement bars into existing concrete parapets at the locations shown in the plans or as directed by the Engineer and shall include all equipment, labor and materials required to perform the work.

General. The size of the holes to be drilled shall be of depth and diameter as detailed in the plans, according to the grout manufacturer or per the Standard Specifications.

Materials. Adhesive materials shall be according to Article 584.02 of the Standard Specifications. The drilling and epoxy grouting of reinforcement bars shall be performed according to Article 584.03 of the Standard Specifications and steel reinforcement bars shall be according to Section 508 of the Standard Specifications.

END OF SECTION

LUMINAIRE SAFETY CABLE ASSEMBLY

Effective: January 1, 2012

Description. This item shall consist of providing a luminaire safety cable assembly as specified herein and as indicated in the plans.

Materials. Materials shall be according to the following:

Wire Rope. Cables (wire rope) shall be manufactured from Type 304 or Type 316 stainless steel having a maximum carbon content of 0.08 % and shall be a stranded assembly. Cables shall be 3.18 mm (0.125”) diameter, 7x19 Class strand core and shall have no strand joints or strand splices.

Cables shall be manufactured and listed for compliance with Federal Specification RR-W-410 and

Mil-DTL-83420.

Cable terminals shall be stainless steel compatible with the cable and as recommended by the cable manufacturer. Terminations and clips shall be the same stainless-steel grade as the wire rope they are connected to.

U-Bolts. U-Bolts and associated nuts, lock washers, and mounting plates shall be manufactured from Type 304 or Type 316 stainless steel.

Construction Requirements

General. The safety cable assembly shall be installed as indicated in the plan details. One end of the cable assembly shall have a loop fabricated from a stainless-steel compression sleeve. The other end of the cable assembly shall be connected with stainless steel wire rope clips as indicated. Slack shall be kept to a minimum to prevent the luminaire from creeping off the end of the mast arm. Unless otherwise indicated in the plans, the luminaire safety cable shall only be used in conjunction with luminaires which are directly above the traveled pavement.

END OF SECTION

PIPE UNDERDRAIN REMOVAL

Description. This work shall consist of all labor and equipment necessary to remove and dispose of pipe underdrains at the locations shown in the plans or as directed by the Engineer. The work shall be performed in accordance with the applicable portions of Sections 551 and 601 of the Standard Specifications and Illinois Tollway Standard Drawing B24, except where modified herein, the plan detail, or as directed by the Engineer.

Construction Requirements. The Contractor shall take all necessary precautions to avoid damage to existing elements during the work. Any damage to existing elements caused by the Contractor shall be repaired by the Contractor at no additional cost to the Tollway.

After the installation of the new Pipe Underdrains, trenches shall be backfilled as necessary to match the proposed grade in accordance with the applicable portions of Sections 551 and 601.

Delete Article 551.05 Method of Measurement
Delete Article 551.06 Basis of Payment

Delete Article 601.07 Method of Measurement
Delete Article 601.08 Basis of Payment

END OF SECTION

REPLACE U-BOLT

Description. This work shall consist of replacing the missing existing U-Bolt at the rear monotube bracket to monotube connection of the overhead sign structure as noted on the plans including all equipment, labor and materials required to complete the work.

General. The work shall be performed according to Sections 733 and 1094 of the Standard Specifications and the Tollway Standard Drawing B8-08.

Material. U-Bolts must be produced from ASTM A276 Type 304, 304L, 316 or 316L, Condition A, Cold finished stainless steel, or an equivalent material acceptable to the Engineer. All nuts for U-Bolts must be lock nuts equivalent to ASTM A307 with nylon or steel inserts and hot dip galvanized per AASHTO M232. A stainless-steel flat washer confirming to ASTM A240, Type 302 or 304, is required under each U-Bolt and Eyebolt lock nut.

Delete Article 733.10 Method of Measurement
Delete Article 733.11 Basis of Payment

END OF SECTION

TOPSOIL AND COMPOST (ILLINOIS TOLLWAY)

Effective: February 10, 2014
Revised: April 1, 2016

Description. This work shall consist of furnishing, excavating, transportation of topsoil to locations throughout the limits of the contract, temporary stockpiling, placing topsoil, placing special types of topsoil, placing compost, disposal of surplus excavated topsoil, or permanently stockpiling surplus excavated topsoil for the future use.
Materials. Materials shall be according to the following provisions of the Standard Specifications:

Item	Article/Section
(a) Topsoil (Furnished from outside of the R.O.W.)	1081.05(a)
(b) Compost	1081.05(b)

Construction Requirements

Excavating Topsoil. Topsoil shall be obtained from within the limits of the Illinois Tollway right-of-way at the locations designated in the plans or approved by the Engineer.

When special types of topsoil are specified, each type shall be handled separately and not allowed to mix with any other material. When special types of topsoil (Hydric, Prairie or Woodland) are specified, the seeds and plants within the excavated special topsoils are desirable to maintain.

To keep these seeds and plants viable, the topsoil shall be excavated then placed as directed by the Engineer or as specified in the contract.

If, at the time of stripping, the topsoil cannot be placed in its final location as shown on the plans, the material shall be handled in one of the following ways, as directed by the Engineer:

a) Temporarily stockpiled.
b) Disposed of. Only applicable to surplus topsoil.
c) Permanently stockpiled for the future use by the Illinois Tollway. The permanent stockpile location(s) shall be as shown in the plans or designated by the Engineer.

When stockpiling, special measures, such as watering the stockpile, dust control, temporary seeding, and silt fence shall be required as directed by the Engineer and will be paid according to Article 104.02 of the Illinois Tollway Supplemental Specifications.

Furnishing Topsoil. If additional topsoil is required to complete the contract to the lines, grades and depth as shown on the plans, the Contractor shall furnish the additional topsoil from areas outside the limits of the Illinois Tollway right-of-way. This additional topsoil obtained from outside the Illinois Tollway right-of-way shall be tested in accordance with Section 1081.05(a) of the Standard Specifications and approved by the Engineer prior to its use. The Contractor is responsible for all testing of material obtained from an outside source.

Placing Topsoil and Compost. Topsoil shall not be placed until the area to be covered has been shaped, trimmed, and finished according to Section 212 of the Standard Specifications. All irregularities or depressions in the surface due to weathering or other causes shall be filled or smoothed out before the topsoil is placed. If the existing surface has become hardened or crusted, it shall be disked or raked or otherwise broken up so as to provide a bond with the lift of topsoil to be applied, as directed by the engineer.

When compost is specified, it shall be placed at the specified depth on top of the topsoil. The Engineer will verify that the proper topsoil and compost depths have been applied. After verification of proper depth, the Contractor shall completely incorporate the compost into the topsoil by disking or tilling.
Finishing. The surface of the topsoil or compost/topsoil blend shall be free from clods, stones, sticks and debris and shall be according to the lines, grades and the minimum depth as shown on the plans or as directed by the Engineer. A single pass from a track or roller over the entire surface shall be made. Care must be taken to avoid excessive compaction of the topsoil.

Surplus Topsoil. Surplus topsoil shall not be disposed of before topsoil placement is complete unless otherwise approved by the Engineer. Surplus topsoil shall be disposed of in a licensed landfill, recycled, reused, or otherwise disposed of as allowed by State or Federal solid waste disposal laws and regulations and solid waste determinations of the Illinois Environmental Protection agency (IEPA). Surplus topsoil shall not be thickened on site without prior approval from the Engineer.

When the contractor proposes to dispose of surplus topsoil off the Illinois Tollway right-of-way,

the Contractor shall obtain and file with the Engineer permission in writing, from the property owner, for the use of the property for this purpose. The approval of the proposed disposal site shall be in accordance to Article 107.22 of the Illinois Tollway Supplemental Specifications. Any such disposal shall not create an unsightly or objectionable appearance or detract from the natural topographical features, nor be placed at an elevation higher than that of the adjacent roadway without permission from the Engineer.

END OF SECTION

END OF SECTION

ASPHALT PAVEMENT SURFACE REMOVAL (ILLINOIS TOLLWAY)

Effective: September 21, 2011
Revised: May 30, 2025

Description. This work shall consist of removal of the existing asphalt pavement surface for subsequent resurfacing with asphalt mixtures in accordance with Section 440 of the Standard Specifications except as modified herein.

Revise the Article 440.04 of the Standard Specifications to read:

"Asphalt Surface Removal for Subsequent Resurfacing. The existing asphalt pavement surface shall be removed to the depth specified on the plans with a self-propelled milling machine. The machine shall be equipped with a means to control dust and other particulate matter created by the cutting action. The temperature at which the work is performed, the nature and condition of the equipment, and the manner of performing the work shall be such that the milled surface is not torn, gouged, shoved or otherwise damaged by the milling operation. Sufficient cutting passes shall be made so that all irregularities or high spots are eliminated to the satisfaction of the Engineer. The removal shall provide a milled surface that has uniform texture and a smooth riding surface for traffic. When tested with a 16 ft (5 m) straightedge, the milled surface shall have no surface variations in excess of 3/16 in. (5 mm). The 16 ft (5 m) straightedge shall be supplied by the Contractor.

No transverse vertical edges will be allowed. Transverse milled surface tie-ins to existing pavement shall be tapered to not less than a 50:1 slope. Transverse tapered joints may be tapered with the milling machine, a temporary asphalt wedge, or other methods approved by the Engineer. No longitudinal joint between the milled and existing surfaces shall fall between 1 to 5 feet of any lane line.

If the transverse joint is tapered with a temporary asphalt wedge, the milled surface at the joint shall be constructed as a butt joint the full depth of the lift of asphalt to be placed on the milled

surface. The Contractor shall be responsible for maintaining this asphalt wedge until all corresponding asphalt mixture is placed. All work associated with this joint will not be paid for separately, but shall be included in the cost of milling.

If the transverse joint is tapered with a milling machine, a butt joint shall be cut into the taper the full depth of the lift of asphalt to be placed on the milled surface prior to commencement of resurfacing. All work associated with this joint will not be paid for separately, but shall be included in the cost of milling.

All debris and milled material, including that removed by other means, shall be immediately removed from the milled surfaces and adjacent surfaces. Surfaces shall be cleaned of all fines and dust prior to opening to traffic and to the satisfaction of the Engineer. Vacuum trucks, street sweepers or pick-up brooms shall be used to clean the milled surfaces. The Contractor shall conduct operations in such a manner that dust is controlled and is not objectionable.

When working adjacent to traffic, the Contractor shall immediately remove material that is spilled on the traveled way.

Removing the existing asphalt pavement surface to the required depth adjacent to structures in the pavement surface such as drain castings and utility covers shall be accomplished in a manner satisfactory to the Engineer using either machine or hand methods. Castings for existing utility or drainage structures within the pavement which are exposed to traffic after the pavement has been milled shall be protected according to Article 603.07 of the Standard Specifications.

The roadway shall be left in a safe and usable condition at the end of each work day. Property damage due to the asphalt surface removal activities is the responsibility of the Contractor, as indicated in Article 107.38 of the Tollway Supplemental Specifications.

Milled pavement shall be resurfaced within four calendar days."

Add the following to Article 1101.16 of the Standard Specifications:

"Operation of a milling machine with broken or missing teeth will not be allowed. Worn teeth shall be replaced if the milling machine does not produce a uniform surface. The milling machine shall be capable of picking up the removed asphalt in a single operation. A self loading conveyer shall be an integral part of the milling machine"

END OF SECTION

SHOULDER RUMBLE STRIP REMOVAL (ILLINOIS TOLLWAY)

Effective: January 1, 2012
Revised: May 30, 2025

Description. This work shall consist of the scarification of existing shoulder rumble strips constructed in hot-mix asphalt shoulders, and the furnishing and placement of warm-mix asphalt in the scarified area, prior to placing traffic onto the shoulder in a construction stage. This work shall take place per the limits shown on the Plans and/or as directed by the Engineer.

General Requirements. The nominal depth of scarification of the hot-mix asphalt shoulders shall be 2 inches. Unless otherwise shown in the Plans, the width of scarification shall be three (3) feet.

After removing all millings from the scarified limits, the surface shall have a bituminous tack coat applied in accordance with Article 406.05(c) of the Standard Specifications.

The scarified area shall then be filled with warm-mix asphalt surface course and compacted flush with the adjoining pavement and shoulder surfaces. The mix to be used for this item shall be Warm Mix Asphalt Surface Course, Mix D, N70, as per the Illinois Tollway special provision for Asphalt Mixtures, unless otherwise specified in the Contract.

END OF SECTION

ASPHALT PAVEMENT PATCHING (ILLINOIS TOLLWAY)

Effective: October 23, 2023

Description. This work shall consist of partial depth or full depth saw cutting and satisfactorily removing existing pavement or shoulder and reinforcement, restoration of substrate, tack coating and priming exposed horizontal or vertical surfaces, and furnishing, placing, and compacting asphalt mixtures in sufficient lifts with adequate equipment to obtain the specified densities for the class and type of patch specified at the designated locations or as directed by the Engineer. Removal and replacement of pavement shall be in accordance with Section 442 of the Standard Specifications except as modified herein. Patches shall be a minimum of four feet in the longitudinal direction. Patches shall be lane width(s) in the transverse direction.

Revise Article 442.01 of the Standard Specifications to read.

442.01 Description. This work shall consist of the removal of the existing pavement or shoulder, the necessary excavation and the replacement with the class and type of patch specified at designated locations.

This work will be classified as follows:

Class D1 Patches: Pavement Removal and Asphalt Mixture Replacement with Binder Course below Top 2 inches and Surface Course for the Top 2 inches

Class D2 Patches: Pavement Removal following Shoulder Surface Removal and Asphalt Mixture Replacement with Binder Course up to the elevation of the removed surface
Class D3 Patches: Pavement Removal and Asphalt Mixture Replacement with Binder Course
Class D4 Patches: Partial Depth Pavement Removal to the specified depth and Replacement with Binder Course below the Top 1.5 inches and Surface Course for the Top 1.5 inches

For each of the above classifications, the work on a lane width or less shall be further quantified by size as follows:

Type I Less than 5 sq. yd.
Type II 5 sq. yd. or more, but less than 15 sq. yd.
Type III 15 sq. yd. or more, but less than 25 sq. yd.
Type IV 25 sq. yd. or more

Materials. WMA mix designs and production shall be in accordance with the Tollway Special Provisions for Asphalt Mixtures, Asphalt Pavement Construction and Reclaimed Asphalt Materials (RAM).

Construction Requirements. Revise Article 442.08(b) of the Standard Specifications to read:

(b) Density. The density of the compacted Class D Patch shall be in accordance with section 6.6 of the Tollway Special Provision titled “Asphalt Pavement Construction”.

Delete Articles 442.10 and 442.11

END OF SECTION

ASPHALT PARTIAL DEPTH REMOVAL AND OVERLAY PATCHING (ILLINOIS TOLLWAY)

Effective: February 3, 2023

Description. This work shall consist of partial depth milling/removal of existing pavement or shoulder, cleaning and tack coating the exposed horizontal and vertical surfaces and furnishing, placing, and compacting asphalt mixtures at designated locations or as directed by the Engineer.

General. Partial depth removal and replacement of asphalt pavement shall be in accordance with Sections 406 and 1030 of the Standard Specifications except as modified herein. WMA mix designs, production, and placement shall be in accordance with the Tollway Special Provisions for Asphalt Mixtures, Asphalt Pavement Construction, and Reclaimed Asphalt Materials (RAM).

At locations were the underlaying concrete pavement will be patched prior to the asphalt replacement, partial or full depth removal and replacement of the concrete pavement shall be in accordance with Section 442 of the Standard Specifications.

The existing asphalt pavement shall be removed as shown on the plans or as directed by the Engineer with the following minimum dimensions.

- Transverse full lane width repairs – Shall be a lane width wide, and a minimum length of 4 ft.
- Longitudinal joint repairs – Minimum width of 4 ft.

Existing areas of pavement to be removed and replaced will be delineated by the Engineer using spray paint furnished by the Contractor. All transverse repairs shall extend 6 inches past the longitudinal joint into the adjacent lane or shoulder. Any areas of existing pavement removed and replaced outside of the limits established by the Engineer shall be at no additional cost to the Tollway. The Contractor is hereby notified of the potential for raised pavement lane markers that may remain in the PCC substrate, covered by the existing overlay being removed.

Following partial depth pavement removal, the surface shall be air blasted and tack coat shall be applied to the substrate for all partial depth and overlay asphalt patching in accordance with the Illinois Tollway special provision for Asphalt Pavement Construction". All pavement replacement shall be with the asphalt mixture(s) designated in the contract. Any pavement replacement in the repair area with an average thickness of 2.5 in. or greater shall be placed in two lifts of asphalt surface course of equal thickness. Any replacement in the repair area with a minimum thickness less than 2.5 in. shall be placed in one lift of surface course.

Density. The density of the compacted asphalt mixture shall be according to the following:

The Contractor shall perform a growth curve each day/night at the beginning of placement of the asphalt mixture. QA shall be present for growth curve measurements. If an adjustment is made to the asphalt mix design, the Engineer reserves the right to request an additional growth curve and supporting tests at the Contractor's expense.

Compaction of the growth curve shall commence immediately after the asphalt course is placed and at a temperature of not less than 280 ºF. The growth curve, consisting of a plot of lb/cu ft vs. number of passes with the project breakdown roller, shall be developed. This curve shall be established by use of a nuclear gauge. Up to four passes of the roller may be completed before the 1st nuclear test is performed. Tests shall be taken starting with the 4th pass until the highest lb/cu ft is obtained. This value shall be the target density provided the air voids are within specified limits. If air voids are not within the specified limits, corrective action shall be taken, and a new target density shall be established.

A new growth curve is required if the breakdown roller used on the growth curve is replaced with a new roller during production.

The target density shall apply only to the specific gauge used. If additional gauges are to be used to determine density specification compliance, the Contractor shall establish a unique minimum allowable target density from the growth curve location for each gauge. The Engineer will establish a target density for its Quality Assurance nuclear gauge from the growth curve location.

If more than one lift of asphalt pavement is required because of patch thickness, each lift shall have its own unique target density.

All lifts shall be compacted to an average density of not less than 95 percent nor greater than 102 percent of the target density obtained on the growth curve. The average density shall be based on tests representing one day's production.

Quality Control density tests shall be performed at random on pavement repairs, one test is required per ¼ mile pavement interval, if no pavement repairs exist within a given ¼ mile interval, the test will be taken on the 1st patch within the subsequent ¼ mile interval. In no case shall more than one half day's production be completed without density testing being performed.

If the Contractor is not controlling the compaction process and is making no effort to take corrective action, the operation shall stop as directed by the Engineer.

Pavement Markings. Prior to opening any repair areas to traffic, the Contractor shall apply pavement markings to the edge line, lane lines, and/or dotted lines according to Section 780 of the Standard Specifications. The Contractor may select either Epoxy Pavement Marking or Preformed Plastic Pavement Marking Type B – Inlaid for the application.

END OF SECTION

ACCELERATED PORTLAND CEMENT CONCRETE PAVEMENT PATCHING (ILLINOIS TOLLWAY)

Effective: May 28, 2014
Revised: March 7, 2025

Description. This work shall consist of the removal of existing concrete pavement, restoration of the subbase material, the replacement with type of patch specified at designated locations, and the sealing of joints at locations designated by the Engineer, or as shown in the Plans, or described in the Special Provisions. The removal and replacement patching shall be performed within weekend lane closures or within lane closures as specified in the contract to allow for the specified minimum cure time.

This work will be classified as follows.

Accelerated Class A Patches:	Pavement Removal and Continuously Reinforced Portland Cement Concrete Replacement
Accelerated Class B Patches:	Pavement Removal and Portland Cement Concrete Replacement Using Dowels or Tie Bars
Accelerated Class C Patches:	Pavement Removal and Portland Cement Concrete Replacement

Materials. The Illinois Tollway Class AX portland cement concrete used for this special provision shall be in accordance with the Special Provision titled "Portland Cement Concrete". All other materials for cast-in-place patching shall comply with Article 442.02 of the Standard Specifications except as modified herein.

Add the following to Article 442.02 of the Standard Specifications:

"(k) Chemical Adhesive Resin System (Note 5) 1027.01
(l) Calcium Chloride (Note 6) 1013.01

Note 5. A plastic or nylon adhesive retention disk that fits tightly over the dowel and effectively seals the gap around the hole is required to prevent flowable adhesive from running out of the hole. This disk is essential to successful anchoring of a dowel bar. This disk may be about 2 inches larger in diameter than the dowel being used and should be manufactured to fit snugly over the bar and slide up against the face of the slab when the bar is being inserted into the hole. The retaining disk is inserted over the dowel bar and pushed to flush against the PCC surface to retain the adhesive. The disk will keep most of the material in the dowel hole and provide an excellent bearing surface at the face of the slab.

Note 6. The calcium chloride accelerator, when permitted by the Illinois Tollway, shall be Type L (Liquid) with a minimum of 32.0 percent by weight of calcium chloride."

Equipment. Equipment for any cast-in-place patching shall be in accordance with Article 442.03 of the Standard Specifications.

CONSTRUCTION REQUIREMENTS

The construction requirements for any cast-in-place patching shall be in accordance with Section 442 and 1020 of the Standard Specifications for Class A and Class B patching except as modified herein. Individual pours shall not exceed one traffic lane in width, and the size of the individual pours shall be approved by the Engineer for all patches.

Revise the second paragraph of Article 442.05(c) of the Standard Specification to read:

"Non-reinforced pavement shall be scored by saw cutting. The scoring shall be at least 6 in. from the marked face of the patch. Marginal bars and tie bars shall be cut in a manner satisfactory to the Engineer. As an alternate, the Contractor may use an approved wheel saw to score the pavement full depth on either standard reinforced or non-reinforced pavement. Should the wheel saw damage the pavement and/or reinforcement which are to remain in place, the Engineer will withdraw approval of this alternate."

Revise the third paragraph of Article 442.05(c) of the Standard Specification to read:

"The existing pavement shall be removed as shown on the plans. Ends of the patch shall be squared straight and perpendicular to the centerline of the pavement."

Add the following to Article 442.05 of the Standard Specifications:

(d) **Patching Barricades**

The openings resulting from concrete removal for pavement repair shall be protected with Type 1 barricades for the period beginning immediately after removal is completed and until the curing period for the new concrete has elapsed and all debris is cleared away.

A minimum of 2 barricades for each lane, in front of each opening, shall be provided. Where an opening is adjacent to a traffic lane, the barricade(s) shall be placed in the opening, (along the edge of the adjacent traffic lane) with a minimum of one barricade for every 12 feet of open excavation.

(e) **Penalties**

(1) **Non-compliance with Specifications**
The Contractor will be subject to a penalty of $500 per incident, to be deducted from the next pay estimate due the Contractor, for each occurrence when the Engineer determines that the Contractor or his Subcontractor is not in full compliance with Article 442.05(d).

(2) **Failure to Respond**
The Contractor shall be required to respond within ½ hour to any request from the Engineer for realigning, replacing, or moving barricades or otherwise reestablishing compliance with Article 442.05(d). "Respond" is interpreted to mean on the job preparing to make repairs.
Failure by the Contractor to so respond shall be grounds for a penalty of $500 for each and every occurrence, to be deducted from the next pay estimate due the Contractor.

Revise the fourth sentence of the fourth paragraph of Article 442.06(a)(2) of the Standard Specifications to read:

"After the material has been positioned at the back of the hole, the dowel shall be fully inserted into the drill holes with retention disks against the face of the slab, using a back-and–forth twisting motion, leaving the proper length exposed as shown on the plans."

Revise the first paragraph of Article 442.06(g) of the Standard Specifications to read:

"(g) Curing and Protection. Concrete patches shall be cured by the Wetted Burlap or Wetted Cotton Mat Method according to Article 1020.13 (a)(3) or Article 1020.13 (a)(5). The curing period shall be from the time of final setting of the mix until the patch is exposed to traffic no less than 16 hours after placement for concrete. In addition to Article 1020.13,

when the air temperature is less than 55 °F, the Contractor shall cover the patch with minimum R12 insulation until opening strength is reached. Insulation is optional when the air temperature is 55 °F - 90 °F. Concrete shall not be placed when the air temperature is greater than 90 °F."

Replace the first paragraph of Article 442.09 of the Standard Specifications with the following:

Opening Patches to Traffic. No traffic will be permitted on a patch of Illinois Tollway Class AX portland cement concrete until after the minimum curing time of 16 hours, and until an in-place compressive strength of a minimum of 2,500 psi as determined by Illinois Tollway Test Procedure (TTP) 014 Estimating Concrete Strength by Maturity.

TTP 014 shall not be used in place of random sampling requirements for strength acceptance. Compressive strength for ultimate strength acceptance shall be a minimum of 3,500 psi at 14 days and tested in accordance with Illinois Modified AASHTO T 22. Test cylinders shall be made and cured in accordance with Illinois Modified AASHTO R 100. Strength shall be defined as the average of two 6 x 12 in. cylinder breaks.

END OF SECTION

AGGREGATE SHOULDERS (ILLINOIS TOLLWAY)

Effective: October 23, 2006
Revised: May 30, 2025

Revise Section 481 of the Standard Specifications to read:

"SECTION 481. AGGREGATE SHOULDERS

481.01 Description. This work shall consist of the furnishing and placing filter fabric (for new shoulders where specified) furnishing, placing, shaping and compacting aggregate on a prepared subgrade adjacent to the edges of the completed pavement structure or stabilized shoulder.

481.02 Materials. Materials shall be according to the following.

Item	Article/Section
(a) Coarse Aggregate (Note 1)	1004.04
(b) RAP Material (Note 2)	1031
(c) Filter Fabric (Note 3)	1080.02

Note 1. Grading shall be CA-6 with aggregate shoulders Type A and B, and CA-1 for aggregate shoulders special, Type C. If recycled aggregate is used for this application, work shall be in accordance with the Special Provision for Production of Recycled Aggregate and Article 1004.04.

Note 2. Reclaimed asphalt pavement (RAP) may be used as aggregate wedge shoulders Type B and Aggregate Shoulders, Type B. All recycled material shall be meet the requirements found in the Tollway Special Provision for Production of Recycled Aggregate and Reclaimed Asphalt Materials (RAM).

Note 3. Filter fabric shall meet the requirements of Article 1080.02 for ground stabilization.

481.03 Equipment. Equipment shall be according to the following.

Item	Article/Section
(a) Tamping Rollers	1101.01
(b) Pneumatic-Tired Rollers	1101.01
(c) Three-Wheel Rollers (Note 1)	1101.01
(d) Tandem Rollers (Note 1)	1101.01
(e) Vibratory Machine (Note 2)	
(f) Aggregate Spreaders	1102.04

Note 1. Three-wheel or tandem rollers shall weigh from 6 to 10 tons and not less than 200 lb/in. nor more than 325 lb/in. of width of roller.

Note 2. The vibratory machine shall meet the approval of the Engineer.

CONSTRUCTION REQUIREMENTS

481.04 Subgrade Preparation. The subgrade shall be prepared in a manner approved by the Engineer and any required filter fabric shall be placed. A minimum IBV of 4 in accordance with Illinois Test Procedure 501 shall be maintained on the subgrade.

481.05 Moisture Content. Prior to being placed on the subgrade, the aggregate shall contain sufficient moisture to provide satisfactory compaction.

For Type A shoulders, the water and aggregate shall be mixed through a controlled aggregate mixing system. The system shall consist of a mechanical mixing device and aggregate and water measuring devices, meeting the approval of the Engineer. Wetting the aggregate in cars, bins, stockpiles, or trucks will not be permitted.

481.06 Aggregate Shoulders With and Without Filter Fabric, Type A and Type B. The shoulders shall be constructed in lifts of not more than 6 in. thick when compacted, except that if tests indicate the desired results are being obtained, the compacted thickness of any lift may be increased to a maximum of 8 in. . The aggregate shall be placed with a spreader.

Each lift of material shall be compacted with a tamping roller, a pneumatic-tired roller, a vibratory machine, or a combination of any of the three, until the compaction has been approved by the Engineer. If the moisture content of the material is not such as to permit satisfactory compaction during the compacting operations, water shall be added in such quantity that

satisfactory compaction can be obtained. The top lift shall be given a final rolling with a three-wheel or tandem roller.

If any subgrade material is worked into the aggregate during the compacting or finishing operation, all granular material within the affected area shall be removed and replaced with new aggregate.

The shoulders shall be constructed to the thicknesses shown on the plans. Thickness determinations shall be made at such points as the Engineer may select. When the constructed thicknesses are less than 90 percent of the thicknesses shown on the plans, aggregate shall be added to obtain the required thicknesses; however, the surface elevation of the completed shoulders shall not exceed by more than 1/8 in. the surface elevation shown on the plans or authorized by the Engineer.

481.07 Aggregate Wedge Shoulders, Type B. Prior to placing the aggregate wedge shoulder, Type B, the weeds and grass on the area to be covered shall be cut. The aggregate shall be deposited in its final position with a spreader and compacted to the satisfaction of the Engineer. If the moisture content of the aggregate is not such as to permit satisfactory compaction during the rolling operations, water shall be added in such quantity that satisfactory compaction can be obtained.

481.08 Aggregate Shoulders Special, Type C. The aggregate shoulder special, Type C, shall be placed along the edge of paved shoulders or as a backfill behind curbs constructed at the edge of shoulder only where there is to be existing or new guardrail at the completion of the work or in other specific locations such as large wash-outs at the edge of shoulders.

Before any aggregate is placed, weeds, grass, and miscellaneous vegetation shall be removed from the area in a manner acceptable to the Engineer. The Contractor shall give the Engineer at least 48 hours' notice that an area will be prepared to receive treatment, prior to the placement of the aggregate.

The aggregate shall be placed along the existing pavement or behind the existing curb in sufficient quantity and in such a manner that after compaction the aggregate shall have the configuration shown on the Plans. If any subgrade material is worked into the aggregate during the compacting or finishing operation, all granular material within the affected area shall be removed and replaced with new aggregate.

Aggregate containing free water at the time of delivery will be rejected by the Engineer and shall not be incorporated in the work.

481.08 Opening to Traffic. The road shall be open to traffic according to Article 701.07.

END OF SECTION

SLOPED HEADWALL REMOVAL

Description. This work shall consist of removing existing concrete sloped headwalls in their entirety according to Section 605 of the Standard Specifications as modified herein. The sloped headwall shall be removed and disposed of in a manner approved by the Engineer.

Construction Requirements. Existing sloped headwalls called out on the Plans for removal shall be completely removed by methods approved by the Engineer in such a manner that does not damage existing drainage to remain.

Delete Article 605.05 Method of Measurement
Delete Article 605.06 Basis of Payment

END OF SECTION

BRIDGE DECK LATEX CONCRETE OVERLAY (ILLINOIS TOLLWAY GBSP)

Effective: September 27, 2019
Revised: November 21, 2023

Description. This work shall consist of the preparation of the existing concrete bridge deck and the construction of a latex overlay to the specified thickness.
REFERENCES. The following documents are referenced in this Special Provision. References to Articles are to the IDOT Standard Specifications. Work shall be according to Sections 503, 1018, 1020, 1022, 1100 and 1103 of the Standard Specifications except as modified herein.

1.1. Illinois Department of Transportation (IDOT) – Current Standard Specifications for Road and Bridge Construction

1.2. Illinois Department of Transportation (IDOT) – Supplemental Specifications and Recurring Special Provisions.

1.3. Illinois Tollway – Illinois Tollway Manual of Test Procedures

1.4. ASTM C 685 - Standard Specification for Concrete Made by Volumetric Batching and Continuous Mixing

Materials. Materials shall meet the following Articles of Section 1000:

Item	Section
(a) Latex/Portland Cement Concrete (Note 1) (Note 2)	1020
(b) Packaged Rapid Hardening Mortar or Concrete	1018
(c) Concrete Curing Materials	1022.02

Note 1: The latex admixture shall be a uniform, homogeneous, non-toxic, film-forming, polymeric emulsion in water to which all stabilizers have been added at the point of manufacture.

Physical properties of the latex admixture shall be in accordance with the following:

Properties of Latex Admixture	
Property	**Requirement**
Polymer Type	Styrene Butadiene
Stabilizers	Anionic and Nonionic Surfactants
Percent Solids, % by Mass	46 - 49
Average Polymer Particle Size	1400 – 2500 Angstroms
Coagulum (%)	0.10 by weight, maximum
Surface Tension	50.0 dynes/cm, maximum
Mass Per Gallon	8.4 lb. at minimum
pH	9.0 - 11.0
Shelf Life	2 Years, minimum
Color	White

The Contractor shall submit a manufacturer's certification that the latex emulsion meets the requirements of FHWA Research Report RD-78-35, Chapter VI. The certificate shall include the date of manufacture of the latex admixture, batch or lot number, quantity represented, manufacturer's name, and the location of the manufacturing plant. The latex emulsion shall be sampled and tested in accordance with RD-78-35, Chapter VII, Certification Program.

The latex admixture shall be packaged and stored in containers and storage facilities which will protect the material from freezing and from temperatures above 85°F. Additionally, the material shall not be stored in direct sunlight and shall be shaded when stored outside of buildings during moderate temperatures.

Note 2: Cement shall be Type I Portland cement. The cement used shall have a maximum total equivalent alkali content ($Na_2O + 0.658K_2O$) of 0.60 percent. Fine aggregate shall be natural sand of FA 2 gradation and the coarse aggregate shall be crushed stone or crushed gravel. The gradation of the coarse aggregate shall be CA 13, CA 14 or CA 16. The coarse aggregate shall be Class A quality and contain no more than two percent by weight of deleterious materials. Deleterious materials shall include substances whose disintegration is accompanied by an increase in volume which may cause spalling of the concrete.

Mixture Design. The latex concrete shall contain the following approximate units of measure or volumes per cubic yard

Type 1 Portland Cement	658 lb.
Latex Admixture	24.5 gal
Coarse Aggregate	48 to 50 percent by weight of total aggregate
FA 2	50 to 52 percent by weight of total aggregate
Water (including free moisture on aggregates)	131 lb. maximum
No air entraining admixture shall be added to the mix	

The contractor shall submit the mixture with a design water/cement ratio (considering all the non-solids in the latex admixture as part of the total water) within the water/cement

ratio range of 0.26-0.36. The target slump shall be 5 ½ inches.

The latex concrete shall meet the following requirements:

Slump shall be 4 to 7 inches.

Slump tests shall be completed between 4 and 5 minutes after sampling, with material stored on plywood or plastic during the hold period.

The slump limit of 7 inches may be exceeded at the Engineer's discretion.

Air Content shall be according to Article 1020.08 and 1020.12 at 7.0% maximum

Production of the mixture shall take place within +/-0.03 of the design water-cement ratio with a minimum of 0.26.

During production, yield tests by ¼ yard box yield method shall be run on the first load from each mobile mixer.

Compressive Strength (14 days) is 4000 psi minimum according to Article 1020.09 except 4" x 8" cylinders shall be used, with three specimens per break date. After removal from the jobsite and delivery to the lab, cylinders shall be wet-cured for a period of 48 hours, then air cured in 70-77 ^{o}F laboratory conditions for the remainder of the curing period.

Field Trial Batch:

Qualification of the concrete mixture will require a field trial batch on an annual basis. The trial must be produced with one of the mobile mixer trucks that will be used during jobsite production. A calibration of the truck must take place prior to the trial. The trial and calibration shall be in accordance with Tollway Testing Procedure 016 and shall be witnessed by a Tollway representative.

The mixture must be produced within the required specifications. Strength testing shall be required at 3, 7 and 14 days age.

Equipment. The equipment used shall be subject to the approval of the Engineer and shall meet the following requirements:

(a) Surface Preparation Equipment. Surface preparation equipment shall be according to the applicable portions of Section 1100 and the following:

(1) Sawing Equipment. Sawing equipment shall be a concrete saw capable of sawing concrete to the specified depth.

(2) Mechanical Blast Cleaning Equipment. Mechanical blast cleaning may be performed by high-pressure water-blasting or shot-blasting. Mechanical blast cleaning equipment shall be capable of removing weak concrete at the surface, including the micro-fractured concrete surface layer remaining as a result of mechanical scarification, and shall have oil traps.

Mechanical high-pressure water-blasting equipment shall be mounted on a wheeled carriage and shall include multiple nozzles mounted on a rotating assembly, and shall be operated with a 7000 psi minimum water pressure. The distance between the nozzles and the deck surface shall be kept constant and the wheels shall maintain contact with the deck surface during operation.

(3) Hand-Held Blast Cleaning Equipment. Blast cleaning using hand-held equipment may be performed by high-pressure water-blasting or abrasive blasting. Hand-held blast cleaning equipment shall have oil traps.

Hand-held high-pressure water-blasting equipment that is used in areas inaccessible

to mechanical blast cleaning equipment shall have a minimum water pressure of 7000 psi.

(4) Mechanical Scarifying Equipment. Scarifying equipment shall be a power-operated, mechanical scarifier capable of uniformly scarifying or removing the old concrete surface and new patches to the depths required in a satisfactory manner. Other types of removal devices may be used if their operation is suitable and they can be demonstrated to the satisfaction of the Engineer.

(5) Hydro-Scarification Equipment. The hydro-scarification equipment shall consist of filtering and pumping units operating with a computerized, self-propelled robotic machine with gauges and settings that can be easily verified. The equipment shall use water according to Section 1002. The equipment shall be capable of removing in a single pass, sound concrete to the specified depth, and operating at a 16,000 psi minimum water pressure with a 55 gal/min minimum water flow rate.

(6) Vacuum Cleanup Equipment. The equipment shall be equipped with fugitive dust control devices capable of removing wet debris and water all in the same pass. Vacuum equipment shall also be capable of washing the deck with pressurized water prior to the vacuum operation to dislodge all debris and slurry from the deck surface.

(7) Power-Driven Hand Tools. Power-driven hand tools will be permitted including jackhammers lighter than the nominal 45 lb. class. Jackhammers or chipping hammers shall not be operated at an angle in excess of 45 degrees measured from the surface of the slab.

(b) Pull-off Test Equipment. Equipment used to perform pull-off testing shall be approved by the Engineer.

Pull-off test equipment shall include all miscellaneous equipment and materials to perform the test and clean the equipment, as indicated in the Illinois Test procedure 304 and 305 “Pull-off Test (Surface or Overlay Method)”. Prior to the start of testing, the Contractor shall submit to the Engineer a technical data sheet and safety data sheet for the epoxy used to perform the testing. For solvents used to clean the equipment, a safety data sheet shall be submitted.

(c) Concrete Equipment: A mobile Portland cement concrete plant shall be used for Latex Concrete and shall be according to Articles 1020.12, 1103.04, ASTM C 685, and the following:

(1) The device for proportioning water shall be accurate within one percent.

(2) The mixer shall be a self-contained, mobile, continuous mixer used in conjunction with volumetric proportioning.

(3) The mixer shall be in accordance with Tollway Test Procedure (TTP) 016 Volumetric Mobile Mixer Approval Procedures.

(d) Finishing Equipment. Finishing equipment shall be according to Article 503.03.

(e) Mechanical Fogging Equipment. Mechanical fogging equipment shall be according to 503.03.

CONSTRUCTION REQUIREMENTS

Sidewalks, curbs, drains, reinforcement and/or existing transverse and longitudinal joints which are to remain in place shall be protected from damage during scarification and cleaning operations. All damage caused by the Contractor shall be corrected, at the Contractor’s expense,

to the satisfaction of the Engineer.

The Contractor shall control the runoff water generated by the various construction activities in such a manner as to minimize, to the maximum extent practicable, the discharge of untreated effluent into adjacent waters, and shall properly dispose of the solids generated according to Article 202.03. The Contractor shall submit a water management plan to the Engineer specifying the control measures to be used. The control measures shall be in place prior to the start of runoff water generating activities. Runoff water shall not be allowed to constitute a hazard to adjacent or underlying roadways, waterways, drainage areas or railroads nor be allowed to erode existing slopes.

(a) Deck Preparation:

(1) Bridge Deck Scarification. The scarification work shall consist of removing the designated concrete deck surface using mechanical and hydro-scarifying equipment as specified. The areas designated shall be scarified to the depth specified on the plans. The depth specified shall be measured from the existing concrete deck surface to the top of peaks remaining after scarification. In areas of the deck not accessible to the scarifying equipment, power-driven hand tools will be permitted. Power driven hand tools shall be used for removal around areas to remain in place.

The Contractor shall use mechanical scarification equipment to remove an initial depth of concrete roughening the concrete deck surface to facilitate hydro- scarification. At a minimum, the last 1/2 in. (13 mm) of removal shall be accomplished with hydro-scarification equipment. If the Contractor's use of mechanical scarifying equipment results in exposing, snagging, or dislodging the top mat of reinforcing steel, the mechanical scarifying depth shall be reduced as necessary immediately. If the exposing, snagging, or dislodging the top mat of reinforcing steel cannot be avoided, the mechanical scarifying shall be stopped immediately and the remaining removal shall be accomplished using the hydro- scarification equipment. All damage to the existing reinforcement resulting from the Contractor's operation shall be repaired or replaced at the Contractor's expense as directed by the Engineer. Replacement shall include the removal of any additional concrete required to position or splice the new reinforcing steel. Undercutting of exposed reinforcement bars shall only be as required to replace or repair damaged reinforcement. Repairs to existing reinforcement shall be according to the Tollway Special Provision for "Accelerated Concrete Deck Slab and Approach Slab Repair".

Just prior to performing hydro-scarification, the deck shall be sounded, with unsound areas marked on the deck by the Engineer. A trial section, in an area of sound concrete, on the existing deck surface will be designated by the Engineer to calibrate the equipment settings to remove sound concrete to the required depth, in a single pass, and provide a highly roughened bondable surface. The trial section shall consist of approximately 30 sq. ft. After calibration in an area of sound concrete, the equipment shall be moved to a second trial section, as designated by the Engineer, in an area containing unsound concrete to verify the calibrated settings are sufficient to remove the unsound concrete. If the calibrated settings are insufficient to remove the unsound concrete, the equipment may be moved back to an area of sound concrete and the calibration settings verified. If the equipment cannot be calibrated to produce the required results in an area of sound concrete, it shall be removed and additional hydro-scarification equipment capable of producing the required results shall be supplied by

the Contractor.

After the equipment settings are established, they shall be supplied to the Engineer. These settings include the following:

a) Water pressure
b) Water flow rate
c) Nozzle type and size
d) Nozzle travel speed
e) Machine staging control (step/advance rate)

Hydro-scarification may begin after the calibration settings have been approved by the Engineer.

The removal depth shall be verified by the Engineer, as necessary. If sound concrete is being removed below the desired depth, the equipment shall be recalibrated.

After hydro-scarification the deck shall be thoroughly vacuum cleaned in a timely manner before the water and debris are allowed to dry and re-solidify to the deck. The uses of alternative cleaning and debris removal methods to minimize driving heavy vacuum equipment over exposed deck reinforcement may be used subject to the approval of the Engineer.

(2) Deck Patching. After bridge deck scarification and cleaning, the Engineer will sound the scarified deck and survey the existing reinforcement condition. All remaining unsound concrete and unacceptably corroded reinforcement bars will be marked for additional removal and/or repairs as applicable. All designated repairs and reinforcement treatment shall be completed according to the Tollway Special Provision for "Accelerated Concrete Deck Slab and Approach Slab Repair" except as noted below:

a) Partial depth removal will not be measured for payment. Any deck survey information implying partial depth repairs is for information only. Partial depth removal shall be accomplished concurrent with the hydro-scarification operation. After the hydro scarification has been performed to the satisfaction of the Engineer, areas requiring additional partial depth removal of unsound concrete will be paid for according to Article 109.04.
b) In areas where unsound concrete extends below the specified removal depth and hydro-scarification completely removes unsound concrete, a full-depth repair is only required when the bottom mat of reinforcement is exposed.
c) All partial and full-depth patches shall be struck off to the scarified deck surface and then roughened with a suitable stiff bristled broom or wire brush to provide a rough texture designed to promote bonding of the overlay. Hand finishing of the patch surface shall be kept to a minimum to prevent overworking of the surface.
d) All partial and full-depth repairs shall be completed prior to final surface preparation.
e) Any removal, measured from the existing deck surface, that does not exceed the overlay thickness by a factor of 2, shall be filled with the overlay material at the time of the overlay placement.
f) Epoxy coating, on existing reinforcement bars, damaged during hydro-scarification shall not be repaired.
g) Undercutting of exposed reinforcement bars shall only be as required to replace

or repair damaged or corroded reinforcement.

(3) Final Surface Preparation. Any areas determined by the Engineer to be inaccessible to scarifying equipment shall be thoroughly blast cleaned with hand-held equipment. If spoils from the scarification operation are allowed to dry and re-solidify on the deck surface, the deck surface shall be cleaned with mechanical blast cleaning equipment. Final surface preparation shall also include the cleaning of all dust, debris, concrete fines and other foreign substances from the deck surface including vertical faces of curbs, previously placed adjacent overlays, barrier walls up to a height of 1 in. above the overlay, depressions, and beneath reinforcement bars. Hand-held high-pressure waterblasting equipment shall be used for this operation.

The Tollway may require surface pull-off testing of areas inaccessible to scarifying equipment. Testing shall be in according to the Illinois Test Procedure 304 “Pull-off Test (Surface Method)”. The Contractor shall provide the test equipment. The Engineer shall determine each test location, and each individual test shall have a minimum strength of 175 psi. In the case of a failing test, the Contractor shall adjust the blast cleaning method and re-clean the area. Testing will be repeated until satisfactory results are attained.

Exposed reinforcement bars shall be free of dirt, detrimental scale, paint, oil, and other foreign substances which may reduce bond with the concrete. A tight non- scaling coating of rust is not considered objectionable. Loose, scaling rust shall be removed by rubbing with burlap, wire brushing, blast cleaning or other methods approved by the Engineer. All loose reinforcement bars, as determined by the Engineer, shall be retied at the Contractor's expense.

All dust, concrete fines, debris, including water, resulting from the surface preparation shall be confined and shall be immediately and thoroughly removed from all areas of accumulation. If concrete placement does not follow immediately after the final cleaning, the area shall be carefully protected with well-anchored white polyethylene sheeting.

(b) Pre-placement Procedure. Prior to placing the overlay, the Engineer will inspect the deck surface. All contaminated areas shall be blast cleaned again at the Contractor's expense. Before placing the overlay, the finishing machine shall be operated over the full length of bridge segment to be overlaid to check support rails for deflection and confirm the minimum overlay thickness. All necessary adjustments shall be made and another check performed, unless otherwise directed by the Engineer.

(c) Placement Procedure: Concrete placement shall be according to Article 503.07 and the following:

(1) Bonding Method. The deck shall be cleaned to the satisfaction of the Engineer and shall be thoroughly wetted and maintained in a dampened condition with water for at least 12 hours before placement of the overlay. Any excess water shall be removed by compressed air or by vacuuming prior to the beginning of overlay placement. Water shall not be applied to the deck surface within one hour before or at any time during placement of the overlay.

(2) Overlay Placement. Placement of the concrete shall be according to Article 503.16. Internal vibration will be required along edges, adjacent to bulkheads, and where the overlay thickness exceeds 3 in. Internal vibration along the longitudinal edges of a pour will be required with a minimum of 2 hand-held vibrators, one on each edge of

the pour. Hand finishing will be required along the edges of the pour and shall be done from sidewalks, curbs or work bridges.

A construction dam or bulkhead shall be installed in case of a delay of 30 minutes or more in the concrete placement operation.

All construction joints shall be formed. When required by the Engineer the previously placed overlay shall be sawed full-depth to a straight and vertical edge before fresh concrete is placed. The Engineer will determine the extent of the removal. When longitudinal joints are not shown on the plans, the locations shall be subject to approval by the Engineer and shall not be located in the wheel paths.

(3) Limitations of Operations:

(a) Weather Limitations. Temperature control for concrete placement shall be according to 1020.14(b). The concrete protection from low air temperatures during the curing period shall be according to Article 1020.13(d). Concrete shall not be placed when rain is expected during the working period. If night placement is required, illumination and placement procedures will be subject to the approval of the Engineer. No additional compensation will be allowed if night work is required.

(b) Evaporation Rates.

i) When the evaporation rate exceeds 0.15 lbs./sf/hr., casting latex concrete shall not be performed.

ii) When the evaporation rate exceeds 0.10 lbs./sf/hr., casting latex concrete at night shall be performed.

(c) Other Limitations. Concrete delivery vehicles driven on the structure shall be limited to a maximum load of 6 Cu. Yd. The Contractor may retain the services of an Illinois Licensed Structural Engineer to provide analysis (accounting for the condition of the existing structure) that the specific structure can support a concrete delivery vehicle with a maximum load up to 8 Cu. Yd. The Structural Engineer shall sign and seal the analysis demonstrating that the structural adequacy of the bridge or portions thereof at any time during the work activities is not compromised. The Contractor shall submit the analysis to the Engineer for review and acceptance a minimum of 14 days prior to placement of the overlay.

Mobile concrete mixers, truck mixers, concrete pumps, or other heavy equipment will not be permitted on any portion of the deck where the top reinforcing mat has been exposed. Conveyors, buggy ramps and pump piping shall be installed in a way that will not displace undercut reinforcement bars. Air compressors may be operated on the deck only if located directly over a pier and supported off undercut reinforcement bars. Compressors will not be allowed to travel over undercut reinforcement bars.

Concrete removal may proceed during final cleaning and concrete placement on adjacent portions of the deck, provided the removal does not interfere in any way with the cleaning or placement operations.

Water or contaminants from the hydro-scarification shall not be permitted in areas where the new overlay has been placed until the overlay has cured a minimum of 24 hours.

No concrete shall be removed within 6 ft. of a newly-placed overlay until the concrete has obtained a minimum compressive strength of 3000 psi.

(4) Curing. The minimum curing time shall be 48 hours of wet cure followed by 48 hours

of dry cure. The wet cure shall be according to 1020.13(a)(3) (Wetted Burlap Method), with the exception that the burlap must be completely submerged under water for at least 24 hours prior to the placement. Concrete shall be covered with burlap as soon as possible after finishing; the contractor shall not wait until the concrete has hardened sufficiently to prevent marring the surface. Excess water shall not be allowed to drip from the burlap onto the overlay during placement of the burlap. After the wet cure is completed all layers of covering materials shall be removed to allow for the dry cure.

If the ambient temperature falls below 50°F during either the wet or dry curing periods, the time below 50°F will not be included in the 96-hour curing period. If there is sufficient rain to wet the surface of the overlay for more than one hour of the dry cure period, the wet time will not be included in the 48-hour dry cure period.

(5) Opening to Traffic.

No traffic or construction equipment will be permitted on the overlay until after the specified cure period and the concrete has obtained a minimum compressive strength of 4000 psi unless permitted by the Engineer.

(6) Overlay Testing. The Engineer reserves the right to conduct pull-off tests on the overlay to determine if any areas are not bonded to the underlying concrete, and at a time determined by the Engineer. The overlay will be tested according to the Illinois Test procedure 305 “Pull-off Test (Overlay Method)”, and the Contractor shall provide the test equipment. Each individual test shall have a minimum strength of 150 psi. Unacceptable test results will require removal and replacement of the overlay at the Contractor’s expense, and the locations will be determined by the Engineer. When removing portions of an overlay, the saw cut shall be a minimum depth of 1 inch.

If the overlay is to remain in place, all core holes due to testing shall be filled with a rapid set mortar or concrete. Only enough water to permit placement and consolidation by rodding shall be used, and the material shall be struck-off flush with the adjacent material.

For a rapid set mortar mixture, one part packaged rapid set cement shall be combined with two parts fine aggregate, by volume; or a packaged rapid set mortar shall be used.

For a rapid set concrete mixture, a packaged rapid set mortar shall be combined with coarse aggregate according to the manufacturer’s instructions; or a packaged rapid set concrete shall be used. Mixing of a rapid set mortar or concrete shall be according to the manufacturer’s instructions.

END OF SECTION

CLEANING JOINTS

Description. This work shall consist of cleaning existing expansion joints (including modular expansion joints) on the bridge decks as shown on the plans and as directed by the Engineer.

General. The bridge deck expansion joints shall be cleaned of all accumulated silt, debris, and/or foreign matter of any kind, and shall be free from such accumulations at the time of final inspection. All removed debris shall be properly disposed of off-site and in accordance with all

local, state, IDOT and ISTHA requirements. The Contractor shall perform joint cleaning utilizing materials, methods and workmanship that will not damage elements of the existing joints or adjacent bridge decks and approach slabs. Any damage to portions of the existing expansion joints or adjacent elements to remain shall be repaired by the Contractor, to the satisfaction of the Engineer, at no cost to the Tollway.

Upon completion of the work, the elastomeric seals and other elements of the joints shall be inspected for damage and wear unrelated to the cleaning operations. Such damage shall include, but not be limited to, tears, bulging, excessive wear, and deterioration. Any defects shall be brought to the attention of the Engineer and an appropriate repair method shall be determined. No repair work may proceed without the written approval of the Tollway. All costs associated with proposed repairs shall be paid according to Article 109.04 of the Standard Specifications.

END OF SECTION

REPLACE STRIP SEAL GLANDS

Description. This work shall consist of replacing in-kind the existing strip seal gland as shown on the plans, and as directed by the Engineer. The work includes the complete removal and disposal of the existing strip seal's elastomeric gland, cleaning and preparation of the existing steel rails and installing a new strip seal gland as recommended by the manufacturer. Disposal shall be according to Section 202.03 of the Standard Specifications.

Material. The strip seal elastomeric gland shall meet the requirements of Article 1053.03 of the Standard Specifications. The strip seal shall be made continuous and shall have a minimum thickness of 1/4 inch. The size of the strip seal gland shall be as required to fit in the existing joint opening as shown in the plans.

Installation. The Contractor shall verify the type of existing Locking Edge Rails and select a strip seal gland that will match the configuration of the existing Locking Edge Rail. The edges of the existing steel lug cavity shall be thoroughly cleaned to remove all old adhesive and gland material along the entire length using a 2-inch wire brush on a rotary grinder and sandblasting, if required, using a medium grit sand. The strip seal gland shall be installed according to Article 520.08 of the Standard Specifications. The joint shall follow the existing end treatment. The manufacturer shall supply technical support during surface preparation and the installation of the strip seal gland.

Additional Requirements. The strip seal gland shall be installed continuously from end to end. The remaining portion of the strip seal gland at a stage line shall be pushed through the open joint to an area below the deck. During the following stage the strip seal gland shall be carefully pulled back up through the openings. Care shall be taken not to damage the strip seal gland.

END OF SECTION

REPLACE BEARING SIDE RETAINERS

Description. This work shall consist of furnishing all labor, equipment, and materials necessary to furnish and install bearing side retainers and removal and disposal of structural steel members as necessary and as indicated on the plans.

General. The work shall be performed according to Section 505 of the Standard Specifications. Removal and disposal of structural steel members shall be according to Section 501 of the Standard Specifications.

Material. Structural Steel shall be according to Article 505.02 of the Standard Specifications. Side Retainers shall be painted or hot dip galvanized according to Article 506.09.

Delete Article 501.06 Method of Measurement
Delete Article 501.07 Basis of Payment

Delete Article 505.12 Method of Measurement
Delete Article 505.13 Basis of Payment

END OF SECTION

GUTTER, TYPE G (ILLINOIS TOLLWAY)

Description. This work shall consist of constructing concrete gutter of the type specified at locations indicated in the plans or as directed by the Engineer. The concrete gutter shall be constructed per the applicable portions of Illinois Tollway Standard Drawings and in accordance with Section 606 of the Standard Specifications except as modified herein.

Materials. Materials shall be according to Article 606.02 of the Standard Specifications except as modified herein:

Replace Article 606.02(a) of the Standard Specifications with the following:

> Concrete supplied for the concrete pavement under this special provision shall be an Illinois Tollway Class TL mix designed in accordance with the Illinois Tollway Special Provision for Portland Cement Concrete.

CONSTRUCTION REQUIREMENTS

Add the following to Article 606.06:

> The Contractor shall lay out the locations of all gutter transitions, both width and height, and expansion joints for review by the Engineer prior to the start of the concrete

placement. All gutter transitions shall be constructed as shown in the plans and applicable Tollway Standard Drawings.

Replace Article 606.07 through 606.10 with the following:

Joints in concrete gutter shall be a continuation of the joints in the adjacent concrete pavement, CRC pavement, or concrete shoulder. Expansion joints adjacent to drainage castings may be placed in prolongation with other joint types. Tie bars between the concrete pavement or CRC pavement will be required. The tie bars shall be held in the proper position by support pins or placed by approved mechanical means.

When a concrete gutter, a curb, and a combination curb and gutter are constructed adjacent to asphalt pavement or shoulders, joints shall be constructed according to the details shown on the plans.

Longitudinal construction, transverse contraction, and transverse expansion joints shall be constructed according to the applicable portions of Article 420.05. Contraction joints shall be sawed to a depth equal to 1/3 the thickness of the gutter flag and to a width of not less than 1/8 in. Transverse contraction joints shall align in prolongation with the existing or proposed concrete pavement or shoulder. The expansion joint filler material shall be cut to the exact cross section of the gutter. Dowel bars for expansion and contraction joints in combination concrete curb and gutter shall be spaced as shown on the plans, except only one dowel bar will be required at a joint if the width of the gutter is less than 18 in.

Transverse contraction and longitudinal construction joints shall be sealed according to Article 420.12, except transverse joints in concrete curb and gutter shall be sealed with polysulfide or polyurethane joint sealant.

Delete Article 606.14 Method of Measurement
Delete Article 606.15 Basis of Payment

END OF SECTION

TRAFFIC BARRIER TERMINAL, TYPE T1 (SPECIAL) TANGENT (ILLINOIS TOLLWAY)

Effective: October 1, 2009
Revised: March 1, 2023

Description. This work shall consist of furnishing and erecting a traffic barrier terminal as shown in the Plans and/or directed by the Engineer.

Materials. Materials shall be in accordance with Article 631.02 of the Standard Specifications.

Construction Requirements.

General. General requirements for traffic barrier terminal shall be according to Article 631.03 of the Standard Specifications, except as modified herein.

Add the following to Article 631.03 of the Standard Specifications.

The rail elements shall be of uniform section. Warped or deformed elements will be rejected. The edges of the elements shall be rolled or rounded so that they present no sharp edges. All connections and splices shall be made with button head bolts with oval shoulders in such a manner that there will be no appreciable projection on the roadside of the guardrail.

Replace Article 631.04 of the standard specifications with following.

The Traffic Barrier Terminal, Type T1 (Special) shall meet the testing criteria contained in MASH for Test Level 3 and be approved by the Illinois Tollway. The terminal shall conform to the individual manufacturer's specifications and shall be installed according to the manufacturer's instructions. The terminal shall be installed at the taper rate shown on Illinois Tollway Standard Drawing C6.

The terminal shall be delineated with a direct applied reflective terminal marker per the Section 725 of the Tollway Supplemental Specifications. No other guardrail delineation shall be attached to the terminal section.
The traffic barrier terminals shall be in accordance with the following table.

Terminal	MASH Test Level	Model No.	Manufacturer
Traffic Barrier Terminal, Type T1 (Special)	3	MSKT-SP-MGS	Road Systems, Inc.

Fabrication. The plates for the rail element shall be blanked to proper shape, fabricated, and ready for assembly when received. No punching, drilling, cutting, or welding will be permitted in the field. Plates in lap splices shall make contact throughout the entire area of the splice.

Erection. Materials or hardware, on which the galvanizing has been damaged shall be replaced with new materials having properly galvanized surfaces, except subject to the approval of the Engineer, minor damage to galvanized surfaces may be repaired by field galvanizing in accordance with the recommendations of the American Hot Dip Galvanizers Association.

The rail and post elements shall be erected to the required elevation. The top of the rail shall be visually straight in horizontal alignment and shall be continuously parallel to the roadway profile grade in vertical alignment. If insufficient adjustment is available in the holes, posts shall be reset, at no additional cost to the Illinois Tollway, until the traffic barrier terminal is properly aligned. The brackets may be loosely bolted to the posts, and after erection of rail elements, the rail shall be

carefully aligned, and the bolts then fully tightened. Nuts shall be drawn up tight on all bolts.

Posts. Terminal posts (end and line) shall be a steel system. Wood posts shall not be permitted. Posts Number 3 thru downstream terminal limit shall be standard line posts. Posts shall be installed according to Article 634.05 of the Standard Specifications.

Block-outs. All block-outs shall be wooden, either southern pine or Douglas fir (coast region), Grade No. 1 structural. Plastic and/or steel block-outs shall not be permitted.

Contractor's Responsibility for Underground Facilities. It shall be the Contractor's responsibility to ascertain in advance of any work, by any and all possible means, the presence of underground electrical or telecommunications cables in or near the vicinity of the work. It shall be the Contractor's further responsibility to notify the Engineer at least ten days in advance of setting new posts when working near underground electrical or telecommunications cables. The Illinois Tollway or its representative will then locate any such cables which may be in jeopardy. It shall be the Contractor's responsibility to preserve cable location markings and all information relating thereto given to him/her, and to effectively communicate such information to his/her workers. If the Contractor cuts or damages any such cables, either through carelessness or failure to follow the foregoing procedures, he/she shall be responsible for repairing all damages or replacing the cable without splicing and all at no additional cost to the Illinois Tollway and without cause for the Contractor claiming delay.

Such repair or replacement shall include the immediate installation by the Contractor, without further notice to him/her, of temporary cables satisfactory to the Engineer, the temporary cables to remain in service until the directed repairs or replacements are made. Stringing temporary cables on the ground shall not be allowed in any circumstances. Temporary cables shall be either:

(a) Suitable for direct burial installation, acceptable to the Engineer, and shall be buried to a depth not less than 12 inches.

(b) Weather-proof cable, acceptable to the Engineer, and shall be suspended not less than 8 feet above the highest point of terrain between supports, unless otherwise directed by the Engineer. Suspended temporary cables may be attached to existing poles, or, in their absence, shall be attached to supports acceptable to the Engineer, furnished, and installed by the Contractor.

Any posts that are to be located near or over any buried cable shall be installed by first digging a hole by hand, and then installing the post and backfilling the hole. No posts shall be driven under such conditions. Care shall be taken while digging by hand so as not to damage the cable.

All efforts on the Illinois Tollway's part to advise the Contractor as to the locations of underground cables notwithstanding, it shall be understood that such locations are at best approximate, may be in error, and that such efforts by the Illinois Tollway shall not relieve the Contractor of any responsibility for restoring damage resulting from the activities of any employee, Subcontractor, agent, or representative of the Contractor.

The Contractor shall also be responsible for notifying owners of other cables and underground

facilities which may be jeopardized by the Contractor's operations in the same manner as required for notice to the Illinois Tollway.

END OF SECTION

TRAFFIC BARRIER TERMINAL, TYPE T1-A (SPECIAL) (ILLINOIS TOLLWAY)

Effective: June 14, 2010
Revised: March 1, 2023

Description. This work shall consist of furnishing and erecting a traffic barrier terminal as shown in the Plans and/or directed by the Engineer. The Type T1-A (Special) terminal is used on the upstream end of a galvanized steel plate beam guardrail barrier system on ramps with a design speed of 40 mph or less.

Materials. Materials shall be in accordance with Article 631.02 of the Standard Specifications.

Construction Requirements.

General. General requirements for a traffic barrier terminal shall be according to the following Article 631.03 of the Standard Specifications, except as modified herein.

Add the following to Article 631.03 of the Standard Specifications:

The rail elements shall be of uniform section. Warped or deformed elements will be rejected. The edges of the elements shall be rolled or rounded so that they present no sharp edges. All connections and splices shall be made with button head bolts with oval shoulders in such a manner that there will be no appreciable projection on the roadside of the guardrail.

Replace Article 631.04 of the Standard Specifications with the following;

The Traffic Barrier Terminal, Type T1-A (Special) terminal shall meet the testing criteria contained in MASH for Test Level 2 and be approved by the Illinois Tollway. The terminal shall conform to the individual manufacturer's specifications and shall be installed according to the manufacturer's instructions. The terminal shall be installed at the taper rate shown on Illinois Tollway Standard Drawing C12.

The terminal shall be delineated with a reflective terminal marker direct applied. No other guardrail delineation shall be attached to the terminal section.

The traffic barrier terminals shall be in accordance with the following table.

Terminal	MASH Test Level	Model No.	Manufacturer

Traffic Barrier Terminal, Type T1-A (Special)	2	MSKT-SP-MGS TL-2	Road Systems, Inc.

Fabrication. The plates for the rail element shall be blanked to proper shape, fabricated, and ready for assembly when received. No punching, drilling, cutting, or welding will be permitted in the field. Plates in lap splices shall make contact throughout the entire area of the splice.

Erection. Materials or hardware, on which the galvanizing has been damaged shall be replaced with new materials having properly galvanized surfaces, except, subject to the approval of the Engineer, minor damage to galvanized surfaces may be repaired by field galvanizing in accordance with the recommendations of the American Hot Dip Galvanizers Association.

The rail and post elements shall be erected to the required elevation. The top of the rail shall be visually straight in horizontal alignment and shall be continuously parallel to the roadway profile grade in vertical alignment. If insufficient adjustment is available in the holes, posts shall be reset, at no additional cost to the Illinois Tollway, until the traffic barrier terminal is properly aligned. The brackets may be loosely bolted to the posts, and, after erection of rail elements, the rail shall be carefully aligned, and the bolts then fully tightened. Nuts shall be drawn up tight on all bolts.

Posts. Terminal posts (end and line) shall be a steel system. Wood posts shall not be permitted. Posts Number 3 thru downstream terminal limit shall be standard line posts. Posts shall be installed according to Article 634.05 of the Standard Specifications.

Block-outs. All block-outs shall be wooden, either southern pine or Douglas fir (coast region), Grade No. 1 structural. Plastic and/or steel block-outs shall not be permitted.

Contractor's Responsibility For Underground Facilities. It shall be the Contractor's responsibility to ascertain in advance of any work, by any and all possible means, the presence of underground electrical or telecommunications cables in or near the vicinity of the work. It shall be the Contractor's further responsibility to notify the Engineer at least ten days in advance of setting new posts when working near underground electrical or telecommunications cables. The Illinois Tollway or its representative will then locate any such cables which may be in jeopardy. It shall be the Contractor's responsibility to preserve cable location markings and all information relating thereto given to him/her, and to effectively communicate such information to his/her workers. If the Contractor cuts or damages any such cables, either through carelessness or failure to follow the foregoing procedures, he/she shall be responsible for repairing all damages or replacing the cable without splicing and all at no additional cost to the Illinois Tollway and without cause for the Contractor claiming delay.

Such repair or replacement shall include the immediate installation by the Contractor, without further notice to him/her, of temporary cables satisfactory to the Engineer, the temporary cables to remain in service until the directed repairs or replacements are made. Stringing temporary cables on the ground shall not be allowed in any circumstances. Temporary cables shall be either:

(a) Suitable for direct burial installation, acceptable to the Engineer, and shall be buried to a depth not less than 12 inches.

(b) Weather-proof cable, acceptable to the Engineer, and shall be suspended not less than 8 feet above the highest point of terrain between supports, unless otherwise directed by the Engineer. Suspended temporary cables may be attached to existing poles, or, in their absence, shall be attached to supports acceptable to the Engineer, furnished, and installed by the Contractor.

Any posts that are to be located near or over any buried cable shall be installed by first digging a hole by hand, and then installing the post and backfilling the hole. No posts shall be driven under such conditions. Care shall be taken while digging by hand so as not to damage the cable.

All efforts on the Illinois Tollway's part to advise the Contractor as to the locations of underground cables notwithstanding, it shall be understood that such locations are at best approximate, may be in error, and that such efforts by the Illinois Tollway shall not relieve the Contractor of any responsibility for restoring damage resulting from the activities of any employee, Subcontractor, agent, or representative of the Contractor.

The Contractor shall also be responsible for notifying owners of other cables and underground facilities which may be jeopardized by the Contractor's operations in the same manner as required for notice to the Illinois Tollway.

END OF SECTION

REMOVAL AND REPLACEMENT OF GUARDRAIL BLOCK-OUT

Description. This work shall consist of furnishing and installing wood block-outs as indicated on the plans or as directed by the Engineer. All work shall be in accordance with Section 630 of the Standard Specifications. Removal of the existing block-out includes the removal of existing wooden or plastic block-out and splice bolt and nut. Installation of new block-out should be of the material specified herein and should be secured to the rail element and post with new bolt and nut through the existing slotted hole on the rail element.

Materials. The materials shall be according to Section 630 of the Standard Specifications.

All block-outs shall be wooden, either southern pine or Douglas fir (coast region), Grade No. 1 structural. Plastic and/or steel block-outs shall not be permitted.

Construction Requirements. The Contractor shall take all necessary precautions to avoid damage to existing elements during the work. Any damage to existing elements caused by the Contractor in the performance of his/her work shall be repaired by the Contractor, to the satisfaction of the Engineer, at no cost to the Tollway.

Delete Article 630.07 Method of Measurement
Delete Article 630.08 Basis of Payment

END OF SECTION

RUMBLE STRIPS

Description. This work shall consist of installing shoulder rumble strips in asphalt shoulders, concrete shoulders, and moment slabs, as shown in the Plans and in accordance with applicable portions of Tollway Standard Drawing D6 and Section 642 of the Standard Specifications.

Delete Article 642.04 Method of Measurement
Delete Article 642.05 Basis of Payment

END OF SECTION

HEADWALL AND SLOPED HEADWALL

Description. This work shall consist of constructing a cast-in-place or precast concrete headwall or sloped headwall structure in accordance with the applicable portions of Section 503 and 504 of the Standard Specifications. The contractor shall refer to Tollway standard details B6, B9, B10 and B30 and/or the Plan Details, and as directed by the Engineer.

Materials. Materials shall be in accordance with Articles 503.02 and 504.02 of the Standard Specifications.

Portland Cement Concrete (Class SI) shall be used throughout the structure. Reinforcement Steel (Epoxy coated) shall be used throughout the structure.

Equipment. Equipment shall be in accordance with Articles 503.03 and 504.03 of the Standard Specifications.

Construction Requirements. Construction shall conform to the details shown in the Plans, all applicable Tollway Standard Drawings, and all applicable portions of Sections 503 of the Standard Specifications.

The required excavation, backfilling, restoration, and ditch grading shall be included in the contract unit price.

Headwalls and Sloped Headwalls are to be used only on slopes specified in the Tollway Standard Drawings and shalt be constructed flush with the existing or proposed final grade.

Delete Article 503.21 Method of Measurement
Delete Article 503.22 Basis of Payment

Delete Article 504.07 Method of Measurement
Delete Article 504.08 Basis of Payment

END OF SECTIONEND OF SECTION

TEMPORARY CONCRETE BARRIER, CROSS-BOLT CONNECTION (ILLINOIS TOLLWAY)

Effective: January 15, 2021
Revised: March 16, 2023

Replace Section 704 of the Standard Specifications in its entirety with the following.

704.01 Description. This work shall consist of furnishing, placing, maintaining, repairing, relocating, and removing precast concrete barrier at temporary locations.

704.02 Materials. Materials shall be according to the following.

Item Article/Section
(a) Precast Temporary Concrete Barrier (Note 1) 1042
(b) Reinforcement Bars 1006.10(a)
(c) Anchor Pins (Note 2)
(d) Connecting Rods and Hardware s (Note 3)
(f) Fast Set Concrete (Note 4)

Note 1. Precast concrete barrier units shall be supplied by one of the approved manufacturers. The approved list of Temporary Concrete Barrier wall as found on the Illinois Tollway Website.

Note 2. Anchor pins shall be according to the requirements of ASTM F 1554 Grade 36.

Note 3. Connecting Rods shall be threaded according to the requirements of ASTM A193 B7 and of the diameter and length shown in the plans. Plate Washers shall be according to the requirements of ASTM A36 and of the size shown in the plans. Washers shall be 7/8” and according to the requirements of ASTM F436. Nuts shall be 7/8” Heavy Hex and according to the requirements of ASTM A563.

Note 4. Fast set concrete shall be a product from the Illinois Tollway Approved List of Fast Set Concrete as listed on the Illinois Tollway Website.

704.03 General. Precast concrete barrier shall be the F shape as detailed on the plans. Precast barrier units shall meet the following tolerances.

Dimension	Tolerance
Length	1 in.

Cross-Bolt insert placement	½ in. in either the vertical or horizontal direction.
Cross-Bolt leave-out block	¼ in, in opening dimension width
Horizontal Alignment	1/8 in. per 10 feet of length
Horizontal Skew	¼ in.
Vertical Batter	1/8 in. per foot of depth

704.04 Submittals. Temporary Concrete Barrier produced prior to 2023 ("Alternate Temporary Concrete Barrier") by Welch Bros., inc. and Utility Concrete Products, LLC with cross bolt connection differing from that detailed on the plans may be proposed for use. To be considered, prepared shop drawings, stamped and sealed by an Illinois Licensed Structural Engineer must be submitted and approved by the Engineer prior to being installed. Such shop drawings must include details relative to the following:

1. All connection hardware, including plates, washers, nuts, threaded rods, thrie-beam and/or spacers, between the Alternate Temporary Concrete Barrier and Temporary Concrete Barrier specified in the plans, or anchoring device.
2. Supporting documentation and FHWA Approval letter for connecting hardware if different than those specified in Note 3.
3. Location plan and transition type between Alternate Temporary Concrete Barrier and Temporary Concrete Barrier wall specified in the plans, including min/max space between such successive barrier units for barrier located on pavement /structure on alignment.
4. An Illinois Licensed Structural Engineer sealed evaluation letter stating the Alternate Temporary Concrete Barrier will provide equal or better performance than that specified in the contract plans and meet or exceed Manual for Assessing Safety Hardware (MASH) 2016 TL-3 evaluation criteria (structural adequacy and occupant risk) for longitudinal barriers.

704.05 Installation. The temporary concrete barrier shall be installed at the locations and according to details shown in the plans. The barriers shall be seated on bare, clean pavement or paved shoulder and connected with cross bolts in a smooth, continuous line at the locations provided by the Engineer.

Units of free-standing barrier shall be connected to adjacent units using the cross-bolt connection hardware shown in the plans. Units of temporary concrete barrier shall be snug tight against adjacent units such that no light is visible between units. Cross bolts shall be inserted, washers placed, and nuts tightened. Nuts shall be impact wrench tight. At locations where temporary concrete barrier is placed on roadways with a curve, a variable gap of 0"- 2" will be allowed at the base of one edge of adjacent barrier units placed on curved alignments. The other edge shall be flush.

Except on bridge decks, or where alternate anchoring details are shown on the plans, the barrier unit at each end of an installation shall be anchored to the pavement or paved shoulder using six

anchor pins and shielded with an impact attenuator as shown on the plans. When anchoring of additional barrier units within the installation is specified on the plans, three anchor pins shall be installed in the traffic side holes of the required barriers.

Where both anchored and free-standing barrier units are used in a continuous installation, a transition shall be provided between them. The transition from anchored to free-standing barrier shall consist of two anchor pins installed in the end holes on the traffic side of the first barrier beyond the anchored section and one anchor pin installed in the middle hole on the traffic side of the second barrier beyond the anchored section. The third barrier beyond the anchored section shall then be free-standing.

Improper installation, including anchoring, of the temporary concrete barrier shall be subject to penalty in accordance with Illinois Tollway Supplemental Specifications Article 701.08(b). An incident of non-compliance for the temporary concrete barrier installation shall be defined anytime the Engineer finds during the daily inspection, the temporary concrete barrier is missing anchors, missing cross bolts and hardware, improper cross-bolt connections, incorrect anchors, and/or has improper embedment depth of anchors.

Temporary concrete barriers located on bridge decks shall be restrained as shown in the plans. Anchor pins shall not be installed through bridge decks, bridge approach slabs or transition approach slabs, unless otherwise noted.

Temporary concrete barriers or attachments that are damaged during transportation, placement or relocation and determined to be unacceptable by the Engineer shall be repaired or replaced. The Engineer will be the sole judge in determining which units or attachments require repair or replacement.

The temporary concrete barriers shall be removed when no longer required by the contract. After removal, all anchor pin holes in the pavement or paved shoulder shall be completely filled with an approved fast setting concrete. No Alternate Temporary Concrete Barrier shall remain in place after the contract and must be removed prior to completion.

704.06 Inspection. The Engineer is responsible for the inspection, documentation, and acceptance of the temporary concrete barrier. The Engineer will inspect the temporary concrete barrier prior to the transport of the temporary concrete barrier to the job site and will inspect the installation and anchorage of the temporary concrete barrier during placement.

704.07 Repairs. Repairs on temporary concrete barrier damaged on site from placement or impacts by vehicles shall be repaired using lane closures. Repairs to temporary concrete barrier adjacent to a travel lane shall not be performed without prior approval of the Engineer. Materials used for repairs shall be in accordance with the materials specified herein.

Spalled or Delaminated Concrete shall be repaired as follows:

(a) Concrete spalling and delamination of depths less than 1 inch will not require patching if the exposed cavity has side slopes of at least 1:3. Grinding of the concrete cavity perimeter will be

allowed to satisfy the required 1:3 (V:H) side slope.
(b) Concrete spalling and delamination of a depth of 1 inch to a depth of 2 inches shall be repaired utilizing approved fast set concrete.
(c) Concrete spalling and delamination of depths greater than 2 inches will be considered for repair by methods proposed by the Contractor and approved by the Engineer.

Connecting rods, plate washers, or anchor nuts which are bent, cracked, or deformed shall be replaced with hardware meeting the requirements specified in 704.02 Note 2.

Delete Section 704.08 Method of Measurement
Delete Section 704.09 Basis of Payment

END OF SECTION

RAISED PAVEMENT LANE MARKER (ILLINOIS TOLLWAY)

Effective: July 1, 2009
Revised: May 30, 2025

Description. This work shall consist of furnishing and installing plowable prismatic reflector type pavement markers on pavement and/or concrete bridge decks as shown in the Plans, or as directed by the Engineer.

This work shall include necessary pavement and/or deck preparation for the raised pavement marker installation.

Materials. All materials for raised pavement lane markers shall meet the following specifications:

(a) The markers shall be low profile units consisting of an iron casting according to ASTM A 536-84, Grade 72-45-05 hardened to 52-54RC to which is attached a replaceable prismatic retro-reflector for reflecting light from one direction as specified. The casting shall be shaped to deflect a snowplow blade upward, thus preventing damage to the reflectors. The bottom of the casting shall incorporate two parallel keels and a bow shaped web designed to fit into a grooved road surface. The casting shall have leveling tabs to ensure proper embedment and shall be fastened to the road surface using an epoxy adhesive. The casting shall be designed for one directional plowing. The casting shall be marked with the manufacturer's name and the model number of the marker shall be visible after installation.

(b) The overall dimensions for pavement raised reflective pavement markers shall be approximately 10 inches long by 5.5 inches wide and a maximum of 1.76 inches high. The overall dimensions for bridge raised pavement lane markers shall be approximately 9.25 inches long by 5.86 inches wide and a maximum of 1.25 inches high. The surface of the keel and web shall be free of scale, dirt, rust, oil, grease, or any other contaminant which may reduce bond.

(c) The reflector shall be of the prismatic type consisting of a methyl methacrylate or suitably compounded acrylonitrile butadiene styrene (ABS) shell filled with a mixture of an inert thermosetting compound and filler material. The exterior surface of the shell shall be smooth and contain one (monodirectional) methyl methacrylate prismatic reflector face of the color specified. The shell shall be fabricated in a manner that will provide a mechanical interlock between the thermosetting compound and the shell. The thermosetting compound shall bond directly to the backside of the metalized lens surface. The manufacturer's trademark shall be molded in the face of the reflector lens or on the reflector body so as to be visible after installation.

(d) The reflector lens shall be high-intensive type corner cube prismatic and shall provide total internal reflection of the light entering the lens face. The reflector shall be 4 in. long x 2 in. wide x 0.44 in. high and fit securely into a recessed area on the upper surface of the marker casting web. The reflective surface shall be a minimum of 1.6 sq in. in area. The reflector shall have an abrasion resistant reflective surface.

(e) The specific intensity of the reflective surface at 0.2 degrees divergence angle shall be as follows when the incident light is parallel to the base of the marker.

Minimum Specific Intensity (candelas/foot candle)		
Color	Incidence Angle 0º	20º
Crystal	3.0	1.2

Construction Requirements. It shall be the Contractor's responsibility to determine the location of any traffic control devices installed in the pavement and/or deck before beginning work, and shall conduct work to avoid damage to these devices. Any damage to these devices caused by the Contractor's operation shall be repaired at no additional cost to the Illinois Tollway.

The pavement and/or deck to which the marker is to be applied shall be accurately cut to the marker manufacturer’s specifications. The depression shall be clean and dry prior to the installation of the marker.

The pavement shall be cut to match the bottom contour of the marker using a concrete saw fitted with 18 and 20-inch diameter blades. The bridge deck shall be cut to match the bottom contour of the marker using a concrete saw fitted with 18 and 19-inch diameter blades. Diamond blades shall be used on portland cement concrete pavement. The entire cut shall be made in a single plunge. Single blade cutting shall not be used. The cut shall be clean and completely dry prior to pouring the epoxy. After the cut is cleaned, the configuration shall be checked using a pavement marker. The marker shall fit easily within the cut with the leveling tabs resting on the pavement. If

any force is required to place or remove the marker or if the leveling tabs do not rest on the pavement surface, the cut shall be enlarged as necessary. Installations on crowned pavements and/or decks, superelevations, or ramps shall be cut deeper than those on level pavements if necessary to get proper marker fit. A rapid setting (hard in one hour) epoxy meeting the requirements of AASHTO M 237 shall be poured into the cut to within 3/8 inch of the pavement surface. The installed height for the reflective pavement markers shall be approximately 0.3 in. above the road surface.

The marker shall then be placed into the epoxy-filled cut. After placement of the marker, epoxy should be flush with the pavement and/or deck surface. The leveling tabs shall rest on the pavement surface and the marker tips shall be slightly below the pavement surface when properly installed. There shall be no epoxy on the reflective lens. The epoxy, when properly mixed, shall be hard cured in 30-45 minutes. If after one hour, a screwdriver or other pointed instrument can be pushed into the epoxy, the marker and the uncured epoxy shall be removed, the marker shall be cleaned and the unit reinstalled.

The pavement and/or deck surface temperature and the ambient air temperature shall be at or above 50 ºF at the time of installation of the marker for the epoxy adhesive to properly cure.

The reflectors may be attached to the castings prior to or after the placement of the markers. The depression in the web shall be clean and dry. The reflector shall be laminated to an elastomeric pad and adhesively attached to the casting. A primer meeting the marker manufacturer's specifications shall be applied to the web surface. The protective paper or plastic film covering the adhesive pad shall be removed immediately prior to placing the reflector on the casting. Once the film covering is removed, extreme care shall be taken to avoid contamination of the exposed pad surface.

In lieu of an adhesive pad, an adhesive meeting the marker manufacturer's specification should be used. The adhesive shall be placed either on the reflector or on the web in sufficient quantity so as to ensure complete coverage of the contact area with no voids present and with a slight excess after the reflector is pressed in place. The reflector shall be placed on the casting with sufficient pressure to firmly seat it in place.

The raised pavement lane marker shall be in accordance with the Manufacturer's details and specifications. The raised reflective pavement markers shall not be laid directly over a longitudinal or transverse crack or joint. The raised reflective markers shall be placed in line with the permanent pavement markings with edge of the marker offset, toward traffic, a minimum distance of 2 in. from any joint (longitudinal or transverse) or crack in the pavement surface.

Reflector.

Where only the raised pavement lane marker reflector is specified in the Plans, the remaining portions of the existing raised pavement lane marker shall be cleaned by sandblasting or other methods approved by the Engineer. The contractor shall make certain the casting surface is dry and free of dirt and rust prior to placing the reflector on the casting.

Raised Pavement Lane Markers Inspection.

The permanent raised pavement lane marker will be inspected following installation, but no later than November 30. In addition, they will be inspected following a winter performance period that will extend 180 days from November 30.

Within 15 calendar days after the end of the winter performance period, a final performance inspection will be made. If this inspection discloses any work which is not visibly intact and serviceable, the Contractor shall, within 30 calendar days, completely repair or replace such work to the satisfaction of the Engineer.

Measured in its entirety, the work shall be 97 percent intact.

Upon completion of the final performance inspection or after satisfactory completion of any necessary corrections, the Engineer shall notify the Contractor in writing of the date of such final performance inspection and release him/her from further performance responsibility.

END OF SECTION

MAST ARM CABLE ASSEMBLY (SPECIAL) (ILLINOIS TOLLWAY)

Effective: March 20, 2018
Revised: April 25, 2018

Description. This work shall consist of furnishing and installing a mast arm cable assembly as specified herein and shown on the plans. This work shall also include furnishing all supervision, labor, transportation, equipment, and materials necessary to complete mast arm (s) inspection prior to installation of the cable assemblies at the locations specified in the plans in accordance with the procedures described elsewhere in this special provision.

Materials. Materials shall be according to the following:

Wire Rope: Cable (wire rope) shall be manufactured from Type 304 or Type 316 stainless steel having a maximum carbon content of 0.08% and shall be a stranded assembly. Cables shall be 0.125” diameter, 7x19 Class strand core and shall have no strand joints or strand splices.

Cables shall be manufactured and listed for compliance with Federal Specification RR-W-1410 and Mil-DTL-83420.

Cable clips shall be stainless steel compatible with the cable and as recommended by the cable manufacturer. Clips shall be the same stainless steel grade as the wire rope they are connected to.

Construction Requirements

General

Prior to the installation of the cable assembly, the Contractor shall perform inspection of the mast arm (s) as outlined in the Inspection section herein. If inspection reveals cracks of any size or other defects, the mast arm (both mast arms in the case of twin mast arms) shall be replaced. The replacement of the mast arms shall be in accordance with the Special Provisions MAST ARM REPLACEMENT (SPECIAL). The removal and replacement of the mast arm (s) shall be done such that the pole poles and mast arm(s) are not left unloaded. If the mast arm replacement cannot be completed on the same day, the cable assembly shall be installed immediately and let in place until the mast arm(s) are replaced.

The cable assembly shall be installed as indicated in the plan details. The aluminum pole cap and luminaire lid may be removed to allow for the routing of the cable. If the mast arm(s) are not aligned with the cable holes, the mast arm(s) shall be raised and retightened, so the hole is no longer obstructed. If a polyethylene tube is present to protect the copper cables, the steel cable assembly shall be routed outside the polyethylene tube. The cable shall be routed around the bolts for the luminaire connection bracket encompassing a minimum of two (2) bolts. Each end of the cable shall be connected with a minimum of two (2) stainless steel wire rope clips as indicated. Slack shall be provided as shown on the plans. Excess slack shall be tucked into the end of the mast arm to avoid entanglement with the luminaire fixture. Reattach pole cap with new three (3) ¼” set screws and close the luminaire lid.

Each pole shall be tagged with an aluminum tag. The tag shall be always placed on the same side of the light pole facing the roadway and towards lower milepost. The tag shall be attached to the pole with adhesive at a distance of 6 feet above the roadway elevation and shall be a minimum 4” wide by 2“high, yellow color and have the year of the installation of the cable shown. Character height shall be 1”. The tag and adhesive shall be for exterior use and provide a minimum of 15 years of service. In addition, each mast arm shall be tagged with a unique identifier (Pole Inventory Number Convention as described below). Same type and requirements for the pole tags shall apply to the mast arm tag, except character font shall be ½”.

Inspection

The inspections shall be in accordance with the guidelines, policies and procedures outlined herein and shall be conducted considering the safety of the inspection crew and Illinois Tollway patrons.

Inspection activities shall be scheduled with the applicable Illinois Tollway Maintenance Sections several weeks in advance of the inspections. The Contractor shall confirm in writing the specific inspection locations and dates with the Maintenance Section Manager between five and fifteen calendar days prior to the inspection.

The following manuals are to be used as references in the planning and performance of these inspections:

- Illinois Department of Transportation (IDOT) Sign Structure Inspection Manual

- FHWA "Guidelines for the Installation, Inspection, Maintenance and Repair of Structural Supports for Highway Signs, Luminaires and Traffic Signals
- Illinois Tollway Traffic Control and Communications Guidelines
- Bridge Inspector's Reference Manual (FHWA) and Applicable Supplements
- IDOT Structural Services Manual

The Contractor shall have a detailed safety plan submitted prior to work commencing. The Safety Plan shall include, but not limited to:

- Safety Plan Officer for Inspection firm
- Safety Organization
- Safety Incident Report Procedures and Forms
- Fall Safety Specifications
- Operation of Bucket or lift truck guidelines
- Hospital Locations
- Latest Manual of Uniform Traffic Control Devices (MUTCD)
- Specific work zone traffic setups for 'gore' areas
- Specific work zone lane closure or shoulder closure schedule and lengths
- Mandatory personal safety equipment
- First Aid Kit

Inspector Qualifications. The minimum qualifications of the Team Leader shall be as follows:

- Is a Professional Engineer or Structural Engineer licensed in the State of Illinois who has designed, supervised the construction of, or inspected steel or aluminum structures for a minimum of 2 years; or
- Has a minimum of 5 years of experience in structure assignments in a responsible capacity or NICET Level III or IV certification in Structure Inspection and have completed a comprehensive training program based on the Guidelines for the Installation, Inspection, Maintenance and Repair of Structural Supports for Highway Signs, Luminaires and Traffic Signals.
- The Team Leader shall be trained in and responsible for work zone traffic control and shall have received OSHA aerial lift certification and equipment training for the equipment being used.
- The Inspector shall be able to identify defective welds and fatigue prone connection details.
- The ability to perform all tasks outlined in the Mandatory Inspection Procedures.

Mandatory Inspection Procedures.

It is the responsibility of the Inspector to perform:

- A hands-on visual inspection of the mast arm, identify defects, deterioration, malfunction, damage or potential hazards; and report these deficiencies. The inspection shall include:
    - The mast arm to pole connection, luminaire to mast arm connection, light cover latches, missing cover plates, loose, broken or missing sections of conduit, open electrical boxes.
    - The mast arm to bracket welded connection shall be examined for any cracking.

All cracks found during the inspection shall have their beginning and end points marked on the structure along with the date of inspection using a paint stick.

- The mast arm to pole connections shall be checked for missing fasteners, misalignment, missing or loose nuts and cracked castings.

- If no clearly visible cracks are observed, Non-Destructive Testing (NDT) techniques such as Dye Penetrant shall be used to verify cracks. It is important that the person conducting the test, as well as the personnel interpreting the test data, be properly trained in the applied method. Additional qualifications include both an understanding of the theory behind the test and practical experience. All inspection methods shall be conducted in accordance with applicable American Society for Nondestructive Testing (ASNT) procedures. A 10-power magnifying glass shall be used to confirm the existence of a suspected crack.
- Document deficient areas with sketches, dimensions, and photographs as necessary, but at a minimum as described below. Sketches shall be attached to the inspection record as a PDF file.
- A minimum of three photographs for each mast arm inspected shall be taken during the inspection and included in the report. At least one photograph of entire mast arm shall be included. A photograph shall be taken of both sides of all mast arm to bracket welded connections. Additional photos detailing specific defects and problems shall be taken and included in the report. A caption must be entered for each photograph. A sequential photo order number must be entered for each photograph that is to be printed in the final report. The following naming convention shall be utilized for each photograph:

PH_Pole_Description_Date.jpg

Photograph Naming Convention		
PH	PH	Constant, stands for photograph
Pole	See below for Pole Inventory Number Convention	Inventory number of Light Pole photographed
Description	i.e. Cracked Weld	Brief description of photograph (no spaces between words, capital first letter of each word, and abbreviate if necessary)
Date	MMDDYYYY	Date photograph was taken

The Pole Inventory Number Convention shall be as follows:
Tollway, Milepost, Type, Direction, Ramp location

TOLLWAY: EW = Reagan Memorial Tollway (I-88)
NS = Veterans Memorial Tollway (I-355)
NW = Jane Addams Memorial Tollway (I-90)
TS = Tri-State Tollway (I-294 & I-294/I-80)
TN = Tri-State Tollway (I-94)
ES = Eden's Spur (I-94)
EO = Elgin-O'Hare Tollway (I-390)

WA = West O'Hare Access Bypass (I-490)

MILEPOST: Milepost to the tenth or hundredth if a ¼ mile posts (i.e. 14.75)

TYPE: The type only refers to the basic shape of the light pole
P = Single Mast Arm
T = Twin Mast Arms, add direction (E, W, N, or S) to identify which arm

DIRECTION: EB, SB, WB, NB Inventory direction of the roadway, or X for centerline median

RAMP: (R) = along ramp (omitted if not along ramp)

EXAMPLE: TS38.4TE, NB(R) for a light pole with twin mast arm located along the Tri-State Tollway (I-294) northbound, east arm at milepost 38.4 on a ramp

Reporting Procedure. A report for each mast arm inspected shall be prepared and submitted electronically in PDF format. The report may include all mast arms inspected for the particular corridor. The general order of the report is as follows:

- A narrative description summarizing the scope of the inspections, the structures inspected, and the significant deficiencies found
- Individual mast arm Inspection Report Forms for each structure inspected
- Photographs or sketches for each mast arm depicting the overall condition and significant deficiencies
- Summary table of all mast arms inspected depicting Pole Identification (Pole Inventory Number Convention), Manufacturer of mast arm, Type (twin, truss, mono tube), Type of Luminaire and Defects.

The summary table shall be submitted to the Engineer for approval prior to Mast Arm Replacement.

END OF SECTION

DIAMOND GRINDING AND SURFACE SMOOTHNESS TESTING FOR BRIDGE SECTIONS (Illinois Tollway GBSP)

Effective: February 15, 2019
Revised: August 18, 2025

Description. This work shall consist of diamond grinding and surface smoothness testing bridge sections. A bridge section shall consist of the bridge deck, bridge approach slab, transition approach shoulder slab, transition approach slab, and up to 25 feet of adjacent pavement.

Final acceptance of a diamond ground bridge section is done by surface smoothness testing with an inertial profiler (IP).

Equipment. Equipment shall be according to the following.

(a) Diamond Grinder. The grinding device shall be a self-propelled machine with multiple diamond saw blades. Diamond blades or diamond impregnated cylinder rings must be mounted on an arbor head that is a minimum of 4 ft. wide and the diamond saw blades shall be gang mounted on the grinding head at a rate of 50 to 60 blades per foot.

The device must be capable of grinding the surface in the longitudinal direction without causing spalling or other damage at cracks, joints and other locations. Excessive ravels, aggregate fractures, spalls, or disturbance of the transverse and/or longitudinal joints will not be permitted. The device must be capable of correcting the pavement profile and providing proper transverse cross slope. The device must be configured such that it does not encroach on traffic movement outside of the work area in adjacent lanes.

The equipment shall have a positive means of vacuuming the grinding residue from the pavement surface, leaving the surface in a clean, near-dry condition. The slurry shall be disposed of according to Article 202.03.

(b) Surface Testing Equipment. Required surface testing and analysis equipment will be provided by the Tollway. The Tollway will furnish a properly certified, calibrated and documented inertial profiler (IP).

The IP shall conform to the Class I requirements of the most recent revision of AASHTO M 328 and is operated according to AASHTO R 57 except as modified herein. The IP shall be outfitted with wide footprint displacement transducers (line lasers). The IP shall be outfitted with transducers to simultaneously measure the left and right wheelpath IRI. The left and right transducers shall be centered on the vehicle. The distance between the outer edge of the left wheelpath laser and the outer edge of the right wheelpath laser, as shown on the pavement, shall be 68 ± 3.0 inches.

The profile testing device shall have a decal displayed to indicate it has been tested through the IDOT Profile Equipment Verification (PEV) process.

(1) The Tollway will perform and report the Daily Profiler Calibration Verification (Tollway Testing Form 002) prior to each use. This shall consist of the following:

a. Longitudinal (Distance) Verification.

b. Vertical (Height) Verification.

(i) Block Test.

(ii) Bounce Test.

Should the equipment not verify, the profile device will not be used.

The Tollway will furnish an operator trained in the operation of the particular IP to be used on the project. The operator shall be capable of the following:

- Distance Measuring Instrument (DMI) calibration and check
- Static height sensor(s) calibration and check
- Bounce test
- Generate road profiles in a ProVAL compatible electronic format
- Generate requisite smoothness indices using ProVAL software
- Provide smoothness indices in Excel format
- Complete the Tollway Profile Report for Bridge Section Smoothness (Tollway Testing Form 003)

(2) IRI Calculation Software. The software program for IRI calculation will be the FHWA's Profile Viewing and Analysis (ProVAL) software.

CONSTRUCTION REQUIREMENTS

General. After all components have been cured, the bridge section shall be ground over its entire length and over a width that extends to within 2 ft. of the parapets in a longitudinal direction. Grinding shall be done separately before any saw cut grooving, and no concurrent combination of the two operations will be permitted. Whenever possible, each subsequent longitudinal grinding pass shall be nominal ¼ inch; however, when the bridge deck thickness noted on the plans can be maintained, as a minimum, additional removal thickness may be permitted.

The grinding process shall produce a surface that is true to grade and uniform in appearance with longitudinal line-type texture. The line-type texture shall contain corrugations parallel to the outside pavement edge and present a narrow ridge corduroy type appearance. The peaks of the ridges shall be 1/8-inch +/- 1/16-inch higher than the bottom of the grinding with evenly spaced ridges.

It shall be the contractor's responsibility to provide the proper surface finish for the aggregate type and concrete present on the project within the bridge section defined above.

The vertical difference between longitudinal passes shall be 1/8-inch maximum. The grinding at the ends of the bridge section, along the parapets and adjacent pavement shall be diminished uniformly to zero.

Grinding shall be continuous through all joints. All expansion joints and bridge components under the joints shall be protected from damage or contact with the grinding slurry.

In order to match the outside edge of the pavement, adjacent paved areas (for example, shoulders, curb and gutter, ramps, tapers, paved crossovers, and so forth) shall be grinded to minimize vertical projections.

Surface Testing. The diamond ground bridge section shall be surface smoothness tested in accordance with AASHTO R57, in the direction of travel, and prior to opening to traffic.

Measurements will be performed when all final wearing courses are in place within the bridge section lanes being measured. Remove all dirt and debris from the surface of the travel lanes prior to performing the surface smoothness measurements. During surface testing, joint openings may be temporarily filled with material approved by the Engineer.

Provide permanent or temporary pavement markings for all travel lanes that are of sufficient size to be visible during surface smoothness measurements.

Provide necessary traffic control and survey stationing for all surface smoothness measurements.

Smoothness measurements will be collected by the Tollway for both wheelpaths in each proposed travel lane during one continuous pass. The wheelpaths will be located parallel to the centerline or baseline of the roadway or ramp and approximately 3.0 feet from the centerline of the proposed travel lane, measured transversely in both directions. The travel lane is defined by the permanent striping as shown in the plans.

The International Roughness Index (IRI) will be calculated by the Tollway for each wheelpath according to the Tollway Test Procedure 004 ProVAL Protocol for Bridge Section Smoothness Calculation for the bridge section using a continuous 25-foot base length analysis and calculate the Mean IRI (MRI) for each travel lane. The MRI is the average of the IRI values for the right and left wheelpaths in each travel lane.

The Tollway will complete the following documents:

1. The competed Tollway Testing Form (TTF) 003 - Tollway Profile Report for Bridge Section Smoothness including the final data for each lane
2. TTF 002 - Daily Profiler Calibration Verification Report for each day of profiler use corresponding to the data reported in TTF 003
3. ProVAL .ppf file of the cropped profile data for each lane reported in TTF 003
4. ProVAL Short Continuous IRI PDF for each lane reported in TTF 003

The Engineer will use a 16 ft straightedge in accordance with Article 1101.10(a) to evaluate areas excluded from IP surface testing. A 3/16-inch tolerance will be used with the straightedge. Any areas not meeting this specification shall be corrected.

CORRECTIVE ACTION

The MRI shall be 100 inch/mile or less for each travel lane. Corrective action is required when the MRI is greater than 100 inches/mile, or where the IRI in any 25-foot segment of the bridge

section exceeds 200 inch/mile. Corrective action shall not result in the deck thickness being less than the minimum.

Where corrective work is performed, the bridge section shall be retested to verify that corrections have produced an MRI of 100 inch/mile or less for each lane, with IRI in any 25-foot segment of the bridge section less than 200 inch/mile.

Corrective actions shall be performed at no additional cost to the department.

The Tollway may perform profile testing on the surface at any time for monitoring and comparison purposes.

END OF SECTION

SURFACE SMOOTHNESS TESTING (ILLINOIS TOLLWAY)

Effective: August 22, 2014
Revised: August 18, 2025

Description. This work consists of ensuring surface smoothness for all asphalt and PCC pavement except for performance related specified pavement. The Tollway will conduct surface smoothness testing on all mainline, auxiliary lanes and ramp lanes. The requirements for calibration of equipment measuring surface smoothness and the verification process for the output data at the project site are defined in the Tollway Manual of Test Procedures.

Definitions.

1. Smoothness. Smoothness is defined using the International Roughness Index (IRI) value of the pavement in each wheelpath per smoothness segment.

2. Smoothness Segment. A smoothness segment is be defined as:
    a. One lane of pavement wide and a length of 0.1 mile.
    b. Partial segments are less than 0.1 mile and shall be included in the analysis.

3. Initial Smoothness Testing: The initial pavement smoothness testing will be performed just prior to any change in maintenance of traffic stages, any corrective action, and when possible, before opening the pavement to public traffic.

4. Final Smoothness Testing: The final pavement smoothness testing will be performed after any corrective action.

5. Pavement Exemptions. The first and last 25’ of the pavement segment where the contractor is not responsible for the adjoining surface shall be exempt. Also exempt shall be variable width pavement, ramp pavement within 300 feet of an intersection, and

pavement constructed with plan lengths less than 600 feet.

Additional exempt locations identified by Design Section Engineer (DSE) due to geometric profile constraints are the following:

a. _____
b. _____

6. Wheelpath. The wheelpath shall be the location of the IRI transducers with the data collection vehicle centered between the location of the permanent lane markings, as shown in the plans.

Equipment.

Surface Testing Equipment. The Tollway will furnish a properly certified, calibrated and documented inertial profiler (IP) according to the Illinois Tollway Testing Procedure (TTP) 007 – Surface Smoothness Equipment and Procedural Requirements.

The Tollway will perform and report the Daily Profiler Calibration Verification (Tollway Testing Form 002) prior to each use. The Tollway will furnish an operator trained in the operation of the particular IP to be used on the project.

IRI Calculation Software. The software program for IRI calculation will be the FHWA's Profile Viewing and Analysis (ProVAL) software.

Surface Testing.

The pavement section will be surface tested in accordance with AASHTO R57 and Tollway Testing Procedure (TTP) 007 – Surface Smoothness Equipment and Procedural Requirements, in the direction of travel.

During the pre-pave meeting, the Contractor and Tollway will discuss and document a schedule to test the initial smoothness, considering the following:

- Test smoothness just prior to any change in maintenance of traffic stages.
- When possible, test smoothness before opening the pavement to traffic.
- Set the schedule to ensure the longest profile runs possible for each lane.

During construction, the contractor shall notify the Tollway when the pavement is ready to test for the initial and final profile. The Contractor shall remove all objects, dirt, and debris from the surface of the travel lanes prior to profiling,and provide necessary traffic control and survey stationing for all surface smoothness measurements. The pavement must be dry prior to testing.

The Contractor will use a 16 ft straightedge in accordance with Article 1101.10(a) to evaluate exempt areas and areas of concern. A 3/16-inch tolerance will be used with the straightedge. Any areas not meeting this specification shall be corrected.

Dispute Resolution.

Dispute resolution testing will only be permitted when the contractor submits their profile results, within 4 working days of receiving the Tollway's analysis, showing that the difference between the contractor and the Tollway exceeds the precision limits listed in Table 2 of AASHTO R54-14, for the same segment of pavement. The contractor's IP must be IDOT approved and calibrated according to TTP 007.

Dispute resolution testing will include a remeasurement of the segment(s) in question using the contractor's and Tollway's IP. If one IP proves to be incorrect, the data collected from the correct IP will be used to recalculate the incentives and disincentives.

Evaluation.

The profile will be analyzed according to the Tollway Testing Procedure (TTP) 010 ProVAL Protocol for smoothness. Each lane tested will be evaluated and reported separately. The Mean International Roughness Index (MRI) will be reported and used for acceptance.

The finished pavement surface, both HMA and PCC, will be evaluated for acceptance based on MRI and area of Localized Roughness (LR) as follows. These values are based on the initial profile, prior to any corrective action.

Table 1 - Maximum Limits for MRI and LR

Location	Maximum segment MRI (in/mi)	Maximum area of LR (in/mi)
Mainline Surface	60.0	125.0
Ramp (design speed ≥ 45 mph)	80.0	135.0
Ramp (design speed < 45 mph)	100.0	145.0

Incentive.

The Tollway will pay an incentive for the initial profile for each pavement segment, as follows:

Table 2 – Incentive for Initial MRI

Location	Segment MRI Range	Pay Equation [1]
Mainline	0 – 45.0	(45 – MRI) x $45.00

Ramp (design speed ≥ 45 mph)	0 – 65.0	(65 – MRI) x $65.00
Ramp (design speed < 45 mph)	0 – 85.0	(85 – MRI) x $85.00

[1] Maximum $800 per segment

Corrective Action.

The Contractor shall perform one or both of the two methods allowed to correct surface smoothness deficiencies when a segment MRI or LR of the initial profile exceeds the maximum limits in Table 1:

1. Remove and replace the pavement that exceeds the limit.
2. Grind the segment to bring the pavement surface into conformance with the acceptable limits without adversely affecting the required thickness of the pavement structure.

Either of the above options may be applied to correct each rejectable segment or LR. The contractor shall provide a corrective work plan that describes the methods, procedures, and limits of the repair. The corrective work shall not proceed until the plan has been approved in writing by the Engineer.
The Contractor shall notify the Engineer at least 24 hours before commencement of the corrective work. All smoothness corrective work shall be for the entire lane width. Pavement cross slope shall be maintained through areas where corrective action is performed. If pavement markings are damaged or destroyed during corrective work, they will be replaced at no cost to the Illinois Tollway. A sufficient length of pavement must be corrected when addressing areas of unacceptable smoothness to prevent producing additional high or low points. The contractor may only perform corrective work once after the initial smoothness testing.

Once corrections have been completed, the Tollway will perform the final smoothness testing. Retesting of the segments after corrective action shall include, at least, the segment before and four segments after the corrected segment. The contractor is not eligible for an incentive based on the final corrected profile.

Disincentive.

The Tollway will assess a disincentive for the final profile for each pavement segment, as follows:

Table 3 – Disincentive for final MRI

Location	Segment MRI	Pay Equation [1]
Mainline	> 60.0	- (MRI–60) * $20.00
Ramp (design speed ≥ 45 mph)	> 80.0	- (MRI–80) * $20.00
Ramp (design speed < 45 mph)	> 100.0	- (MRI–100) * $20.00

[1] Any segment length less than 528-ft will be prorated.

The Tollway will assess a disincentive for each remaining area of LR in the final profile that exceeds the maximum limit in Table 1. If an area of LR exists in each wheel path, take the average in/mile for that length of pavement.

Table 4 – Disincentive for the final profile area of LR

Location	Area of LR	Pay Equation
All pavements	≥ *(maximum LR listed in Table 1)* to < 175.0	$10.00 per LF
	≥ 175 to < 250.0	$25.00 per LF
	≥ 250	$100.00 per LF

Designer Notes (*do not include this language in the inserted special provision*):

Under item #3, the DSE should insert all locations with approved design deviations regarding the profile which do not meet ProVAL requirements. The DSE should add or delete lines based on the number of locations. If none, indicate “None”

END OF SECTION

PERFORMANCE BASED NOISE ABATEMENT WALL (PRECAST CONCRETE) (ILLINOIS TOLLWAY)

Effective: March 19, 2013

Revised: May 30, 2025

DESCRIPTION

This work shall consist of the complete design, submittal of Shop and Working Drawings,

furnishing all materials, testing, warranties, labor, and equipment necessary to construct a Precast Concrete Noise Abatement Wall at the locations and to the heights and lengths shown in the Contract Plans, in accordance with the Special Provisions, the Standard Specifications, and the Contractor's accepted Shop and Working Drawings. The Noise Abatement Wall support types shall be ground mounted, structure mounted, and/or crashworthy ground mounted at the locations shown in the Plans, as described in this Special Provision, and as accepted by the Engineer.

The Noise Abatement Wall type for this Contract shall be: Precast Concrete Noise Abatement Wall.

The Precast Concrete Noise Abatement Wall shall consist of either separate panels, or posts and panels spanning between vertical posts. The precast concrete panels of the noise abatement wall may be conventionally reinforced, pre-stressed, post-tensioned, or any combination that meets the requirements of the Contract. The posts of the noise abatement wall may be constructed of precast concrete or galvanized steel. If precast concrete posts are chosen, they may be conventionally reinforced, pre-stressed, post-tensioned, or any combination that meets the requirements of the Contract.

DEFINITIONS

System Supplier: The manufacturer or supplier responsible for the design and integration of the component elements of the Noise Abatement Wall system into a fully integrated system capable of meeting the requirements of the Work.

Noise Abatement Wall: A wall designed to attenuate the sounds generated by highway traffic before the sounds travel outside of the Illinois Tollway right-of-way and capable of meeting the requirements of the Work.

Zone of Influence: The zone or volume bounded by the construction limits of the Noise Abatement Wall, including excavation and backfill, and extending horizontally, an additional ten feet.

Service Life: The limit of time in which the wall satisfactorily provides its intended function. Over this time the Noise Wall Systems shall:

- Provide the required noise attenuation
- Meet the original specified material requirements
- Meet all structural and safety requirements
- Meet construction requirements regarding horizontal and vertical alignment

REFERENCED STANDARDS

In addition to the Illinois Department of Transportation Standard Specifications and Supplemental Specifications (latest edition), the following specifications and standards shall govern the design, fabrication and construction of Noise Abatement Walls comprised of Precast Concrete.

The standards and specifications shall be the latest edition as revised to the date of the Advertisement for Bids.

1. AASHTO LRFD Bridge Design Specifications, 8th Edition Dated September 2017.

2. AASHTO Standard Specifications for Transportation Materials and Methods of Sampling and Testing.

3. Illinois Department of Transportation All Geotechnical Manual User Memo 11.1: Light Tower, Traffic Signal, Sign Structure Foundation Design, September 2011.

4. Underwriters Laboratories, Inc. (UL):
    a. Building Materials Directory

5. International Conference of Building Officials (ICBO)

6. International Building Code (IBC), 2018 or latest edition, and State of Illinois amendments, referred to herein as Building Code.

7. United States Department of Transportation (USDOT), Federal Highway Administration (FHA).
    a. Noise Barrier Design Handbook (Report No. FHWA-RD-76-58).

8. National Co-operative Highway Research Program Report 350. (Crashworthiness of Noise Abatement Walls in the roadway clear zone).

9. Precast Prestressed Concrete Institute (PCI) Design Handbook, 8th Edition.

10. Standards promulgated by the ASTM International (ASTM), including item C33, Specification for Concrete Aggregates.

11. Interim Guidelines for the Use of Self Consolidating Concrete in PCI Members (PCI).

12. Illinois Tollway Structure Design Manual, Latest Edition

Should a conflict occur between the Standard Specifications and another requirement, the Standard Specifications shall govern.

GENERAL REQUIREMENTS

1. The Contractor shall submit a complete description detailing the proposed performance based noise abatement wall system to the Illinois Tollway. New construction methods will be allowed

for consideration should they meet the specified requirements of this special provision. This submittal shall include name(s) of the Design Consulting firm and/or the name(s) of proprietary noise abatement wall system supplier(s) that will perform the design.

2. This work shall consist of the complete design, submittal of Shop and Working Drawings, furnishing all materials, and constructing noise abatement walls at the locations shown on the Contract Plans (Plans) and in accordance with the requirements of the Plans, this Special Provision, the Standard Specifications, and the Contractor's accepted Shop and Working Drawings. The noise abatement wall designs may be innovative and shall provide the same desired essential aesthetics, functions and characteristics of the facility including, but not limited to, service life, reliability, economy of operation, ease of maintenance, any necessary standardized features, desired appearance and required design standards.

3. The Contractor shall be responsible for any changes required to the Maintenance of Traffic (MOT) plan due to the Contractor's accepted Shop and Working and Shop Drawings. Any changes to the MOT shall comply with the Contract Documents. The Contractor must abide by the Contract Completion Date and Substantial and Interim Completion Dates. Time extensions will not be approved due to delays in completing the final Working Drawings, Shop Drawings and modification to the MOT plan.

4. In addition to the complete design and preparation of Shop and Working Drawings for the noise abatement walls, this work shall include a supplemental soil exploration and testing program if required for design refinement. A subsurface soil exploration and testing program has been conducted in the project area. In addition to the boring logs provided in the Contract Plans, the reports, containing the investigations, findings, and recommendations, are available for review on the Illinois Tollway on-line Plan Room. If additional information is required, the Contractor is responsible for obtaining the information at no additional cost to the Illinois Tollway.

5. The Contractor shall identify the Design Consulting Firm, Manufacturer or Supplier of proprietary wall system that is to perform the design of the noise abatement walls. If the Contractor proposes to utilize more than one firm to provide these services, the Contractor shall identify all proposed firms. The Contractor shall indicate the roles of each of the individual design firms and their subconsultants. The Design Consulting Firm(s) shall meet the following minimum qualifications:

    - Illinois Department of Transportation Prequalification of Highway Structures
    - Experience in Illinois Tollway structural design
    - Sufficiently staffed and capable of performing the required structural design in accordance with the Contract documents
    - All insurance requirements as stated in Article 107.27 of the Illinois Tollway Supplemental Specifications.
    - The Illinois Tollway's General Engineering Consultant (GEC), the Program Management Office (PMO), the Design Section Engineer (DSE), the Corridor

Construction Manager (CCM), the Construction Manager (CM), and the Owners Representative (OR) firms and their Sub-Consultants shall be excluded as the Design Consulting Firm.

Suppliers of proprietary noise abatement wall systems must have an equivalent level of expertise and will be allowed to perform the design work providing the responsible designer is a Licensed Structural Engineer registered in the State of Illinois with three (3) years of relevant experience.

6. The noise abatement walls shall be designed to safely support all earth pressures, surcharges and lateral loads from roadway pavement, any construction loads, traffic surcharge and impact loads, wind loads on the noise abatement wall and parapet, lateral snow loads and any other temporary or permanent loads. Bearing loads shall be accounted for during all aspects of the walls service life, including but not limited to; fabrication, storage, transportation, placement and final location.

7. The Contractor shall verify the location of all existing utilities and structures and shall take all necessary precautions to perform the work in such a manner as to not damage existing utilities or structures, located near or beneath the noise abatement walls. Any damage to existing utilities or structures shall be repaired at no additional cost to the Illinois Tollway.

8. Any adjustments to other work items shown in the Plans or additional pay items required to construct the noise abatement walls per the Contractor's accepted design shall be his responsibility subject to review by the Engineer. Additional costs for any adjustments shall be the responsibility of the Contractor and shall be included in the lump sum bid price for the noise abatement walls.

DESIGN REQUIREMENTS

General

1. All appurtenances behind, in front of, under, over, mounted upon, or passing through the noise wall, such as drainage structures, fire hydrant access, highway signage, emergency access, utilities or appurtenances shown on the plan, shall be designated in the contract documents and accounted for in the design of the noise abatement wall system.

2. If the Noise Abatement Wall system manufacturer, supplier, or designer needs additional information to complete the design, the Contractor shall be responsible for obtaining such information at no additional cost to the Illinois Tollway.

3. The Noise Abatement Wall design shall follow the general dimensions of the wall envelope shown on the plans. The top of the wall shall be at or above the acoustical profile line shown on the plans, unless noted otherwise.

4. The Noise Abatement Wall shall be designed for a minimum service life of 50 years, based on the consideration of the potential long-term effects of weathering, corrosion, spray from de-icing chemicals, and other potentially deleterious environmental factors on each of the material components comprising the Noise Abatement Wall system.

5. The Noise Abatement Wall shall be designed to attenuate the sounds generated by highway traffic and achieve a minimum noise reduction of 5 decibels.

6. No daylight shall be visible through the Noise Abatement Wall at any locations including the joints, connections, light pole locations, and anchorage systems. For Noise Abatement Walls attached to a 6.0ft tall parapet with an offset from the parapet, it is permitted to have a gap between the parapet and Noise Abatement Wall panel. To remove any degradation in the noise wall performance, the bottom of Noise Abatement Wall shall be a 4:1 ratio of the offset measured from rear face of the parapet (e.g. if a 10” offset is used the bottom of Noise Abatement Wall must be 40” below the top of barrier) or as shown on the plans. Other means of filling the gap to eliminate overlap may be considered and are subject to Engineer’s approval.

7. The Noise Abatement Wall material shall not release any toxic material into the surrounding area under normal environmental conditions.

8. The Noise Abatement Wall material shall be manufactured from fire retardant material that meets State and local requirements.

9. Crashworthy walls located in the roadway clear zone shall be specifically identified in the plans and must meet the test level as stated in the “Structural Mounted Noise Abatement Walls” or “Ground Mounted Noise Abatement Walls” portions of this Special provision. Other Reference Documents include:
    - Illinois Tollway’s Traffic Barrier Guidelines
    - NCHRP Report 554, “Guidelines for Aesthetic Barrier Design”,

10. Noise Abatement Wall connection details and post spacing shall be coordinated with Retaining Walls and Bridges.

11. The top of the wall shall be level. Changes in top of wall elevation shall be accomplished by stepping adjacent sections in increments not to exceed 2 feet. The elevation of the top of the Noise Abatement Wall shall not be lower than the requirements shown in the Contract Plans.

12. The reflectiveness Noise Abatement Wall shall be measured using the noise reduction coefficient (NRC), which measures a material’s sound absorption quality, and is derived using tests on the material at 250, 500, 1000, and 2000 Hz. The NRC value of the wall shall be equal to 0.5 rating or less.

13. The Noise Abatement Wall shall be designed to achieve a Sound Transmission Class (STC) equal to or greater than 20 when tested in accordance with ASTM E 90. The test frequency band shall be extended to include the 125 and 4000 Hz bands.

14. All noise abatement wall surfaces of the panels and posts shall receive a coating to seal the surfaces against the intrusion of deicing salts and water. The sealing coating shall successfully pass the Water Vapor Transmission Tests, as specified in ASTM D 1653.

General Structural

1. Design horizontal pressures shall account for the direction of wind, height, and elevation of the wall, topography factors and gust factors. The dead load shall consist of the weight of all the component materials making up the Noise Abatement Wall. For retaining wall and bridge mounted Noise Abatement Walls, the point of action of the weight of the individual components shall be their respective centers of gravity. Structure mounted noise wall systems must not exceed a weight of 1.67klf for the total dead weight including panels, posts, and support system.

2. In addition, the Noise Abatement Wall shall be designed to withstand wind pressure, applied perpendicular to the wall and separately in each direction, a load of 35 pounds per square foot for ground-mounted noise walls, and 50 pounds per square foot for structure-mounted noise walls for Strength III load combination in accordance with the AASHTO LRFD Bridge Design Specifications, 8th Edition. Other load combinations shall be determined per Article 3.8. Deflection of panels shall be limited to L/240 for ground mounted and L/180 for structure mounted where L is equal to the length between panel supports.

3. Noise abatement wall posts with signs mounted shall be designed per AASHTO Standard Specifications for Structural Supports for Highway, Signs, Luminaires, and Traffic Signals, 6th Edition with all interims. Sign panel dead load shall be 2.5 psf and wind load 35 psf. Posts shall be sized to accommodate a minimum 14ft vertical clearance for signs. If noise abatement wall height is less than the clearance, post shall be extended to meet this requirement.

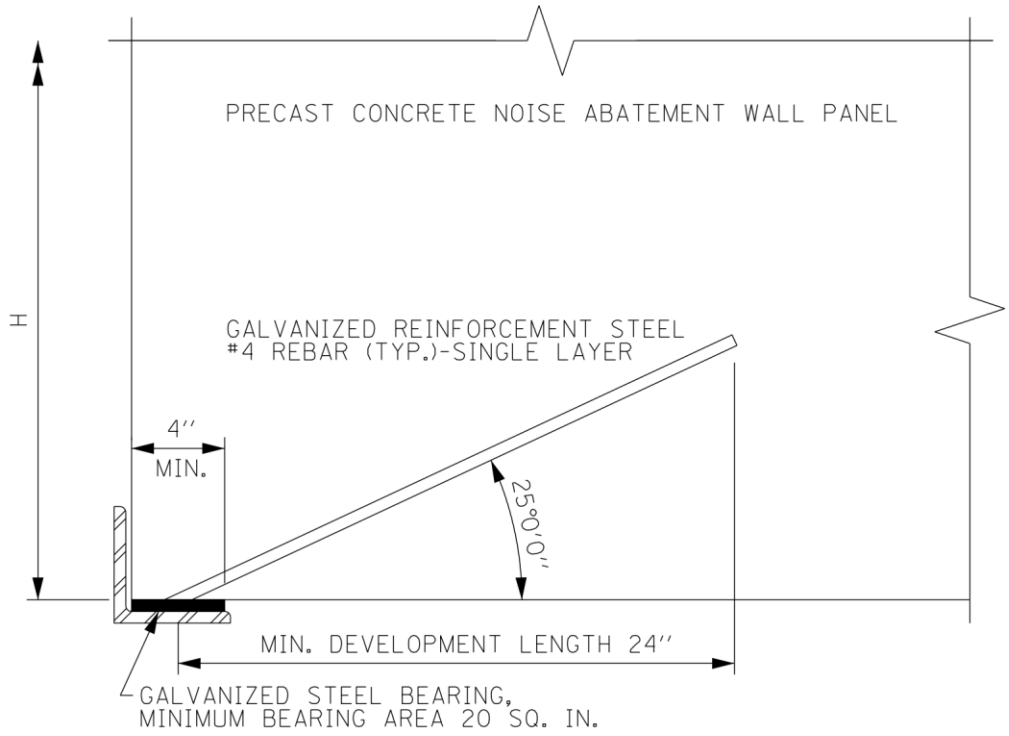
4. All Loading and Geometric requirements as specified in the AASHTO LRFD Specification shall be satisfied.

5. If not specified on the Plans, seismic loads shall be determined in accordance with Sub-Section 1-2.1.3 of the AASHTO LRFD Specifications for Structural Design of Sound Barriers.

6. The Noise Abatement Wall shall be designed with consideration of the movements in the wall due to temperature changes, dead loads and wind loads. Locations and spacing of expansion and contraction devices shall be as designed by the Contractor and reviewed by the Engineer.

7. Posts shall be designed as vertical cantilever beams. Maximum permitted post deflection shall be limited to L/360 where L equals post height (cantilever length). The effects of rotation and deflection at the top of the drilled caisson if used shall be ignored and only the relative displacement between the top of the caisson and top of post due to the applied loads shall be considered when calculating the deflections. Post shall be installed truly vertical.

8. Precast concrete panel wall planks that are end bearing shall incorporate the design elements shown in drawing below. Each supporting edge of the precast panel shall include a galvanized steel bearing pad poured integral with the panel. The pad shall extend a minimum distance of 4 inches beyond the edge of the panel or have a minimum area of 20 sq. in., whichever is greater. The bearing pad shall have a single #4 reinforcement bar welded to it extending into the precast panel.



9. Permanent stabilizers are required between posts and panels to maintain the vertical positions of the panel while resisting the perpendicular, lateral loading primarily due to wind. The stabilizers shall be spaced at intervals not to exceed 4 feet, and shall be a minimum height of 4 inches.

10. Wall design shall account for bearing loads during all phases of the walls service life, including but not limited to; fabrication, storage, transportation, placement and final location.

Structure Mounted Noise Abatement Walls

1. All structure mounted Noise Abatement Walls located within the clear zone shall be designed for Test Level 5 (TL-5) in accordance with NCHRP Report 22-20(2). Design shall also include a load of 30 kip for zero offset behind the back face of the barrier or 4 kip for offset of 10 inch or more behind the back face of the barrier
applied at the maximum height of the noise abatement wall but no higher than 14 feet. Loading shall be interpolated for offsets between zero and ten inches.

2. Post and panel type, size, spacing of post and post connections such as corbels, spacer or other connection type shall be coordinated with and approved by the Tollway. Continuous corbels shall not be allowed.

3. Structure mounted wall, in addition to expansion/contraction considerations must also accommodate vibration. Shock absorbing vibration pads shall be utilized at bearing points.

Ground Mounted Noise Abatement Walls

1. All ground-mounted Noise Abatement Walls located within the clear zone and unshielded shall be designed for 54 kips (Test Level 4 (TL-4) per AASHTO LRFD Bridge Design Specifications Table A13.2-1), and point of load application per Case 1 Section 15.8.4 at 6 feet above pavement. In addition, independently from the above AASHTO specified impact loads, design shall also include a load of 4 kips applied at the maximum height of the noise abatement wall but no higher than 14 feet. Roadway face of the panel is to be flush with the roadway face of the posts.

2. All ground-mounted Noise Abatement Walls located within the clear zone and behind a structurally independent TL-4 or TL-5 barrier shall be design for 54 kips (TL-4 per AASHTO LRFD Bridge Design Specifications Table A13.2-1) for Case 1, and point of load application at 6 feet above pavement (AASHTO LRFD Case 1 15.8.4). For Case 2 loads shall be applied per AASHTO LRFD 5.8.4 and for Case 3 where setback is between 1 foot and 4 feet, load shall be interpolated between 54 kips (Case 1) and 4 kips (Case 2) with a point of application interpolated between 6 feet (Case 1) and 14 feet (Case 2) above pavement. In addition, independently from the above AASHTO specified impact loads, design shall also include a load of 4 kips applied at the maximum height of

the noise abatement wall but no higher than 14 feet for setbacks 4 feet or less as defined per AASHTO LRFD Figure 15.8.4-1.

3. The design of the Noise Abatement wall shall also include the effects of lateral earth pressure when the finish or interim grade lines on either side of the wall are unequal and lateral snow storage loads when required.

4. The bottom of any Ground Mounted Noise Abatement Walls foundation shall be a minimum of four feet below finished grade, unless competent rock is encountered. If a drilled shaft foundation is used, it shall be a minimum of six feet below finished grade line or two times the drilled shaft diameter, whichever is greater, unless competent rock is encountered.

5. Foundations for crashworthy Noise Abatement Walls shall consider impact loads.

6. Foundations Design shall be designed per Article 15.9 of AASHTO LRFD Bridge Design Specifications, 8th Edition Dated 2017.

7. Drilled shaft foundations shall be designed per the requirements as set forth in IDOT All Geotechnical Manual User Memo 11.1: Light Tower, Traffic Signal, Sign Structure Foundation Design using the load combinations as specified herein. The shafts shall satisfy Strength Limit State and, if applicable, Extreme Limit States. For both load cases, an overload factor of 2.0 and under-capacity factor of 0.7 shall be used and a minimum factor of safety of 2.86 shall be achieved.

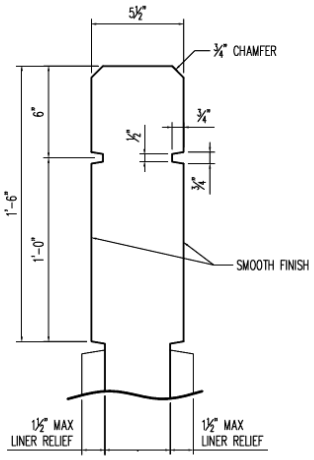
Aesthetics

The Noise Abatement Wall shall be designed with due consideration of the aesthetic environment in which the wall is located.

The aesthetics of both front and back surfaces for each type of Noise Abatement Wall option shall be as follows:

Precast Concrete

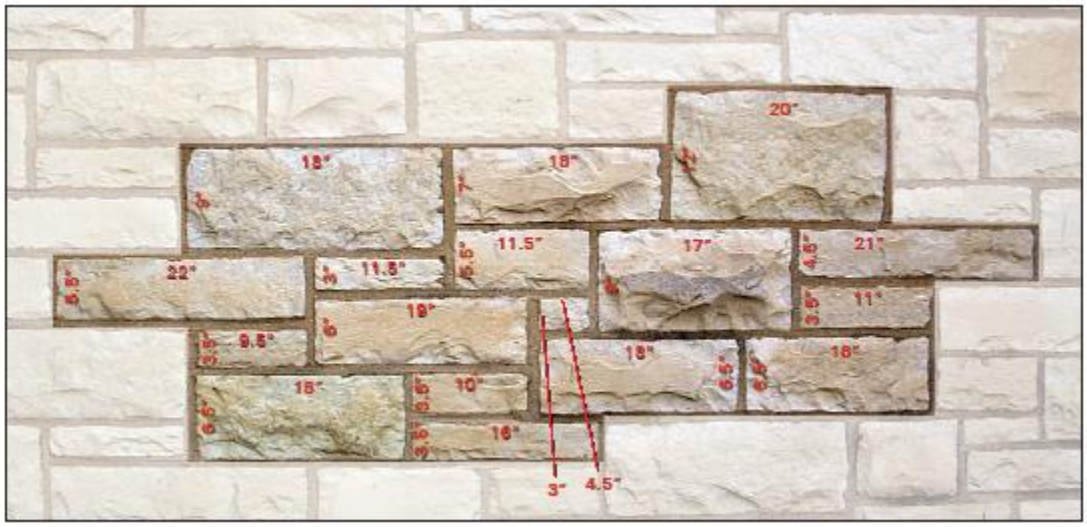
CIP/Precast Concrete Noise Abatement Wall Cap Detail



ENLARGED CAP DETAIL

The Precast Concrete Panels shall be capped with a smooth finish detail as shown above.

CIP/Precast Concrete Noise Abatement Wall Random Ashlar Limestone Form Liner Pattern



The Precast Concrete Panels shall be constructed with a square cut random ashlar rusticated limestone surface with a maximum 1 ½" relief. The aesthetic surface treatment shall be accomplished by the use of form liners for precast panels as specified. The architectural aesthetic surface treatment thickness, on each side of precast concrete panel, is permitted to vary from 0 to 1½ inches, but the total average architectural surface treatment thickness, on both sides of the precast concrete panel, must not be greater than 1½ inches. Thicker architectural surface treatments may be permitted if accepted by the Tollway Bridge Engineer and accounted for in the design of the precast concrete panel. The panels shall not contain patched or unpatched tie holes. The concrete pours of the panels shall be coordinate to prevent visible differences between individual pours or batches.

A concrete stain shall be provided and applied to replicate stone with sealer as required. The base stain color is to match the Siberian Haze color HC-149 as produced by H & C Concrete Coatings, www.hc-concrete.com.

The surface stain for precast concrete support columns, if utilized, shall match the color of the precast concrete panel.

For crashworthy walls or walls that could otherwise be impacted by vehicles, asperity shall be considered for the form liner, finish and supports conforming with NCHRP Report 554, “Guidelines for Aesthetic Barrier Design”. This requirement shall apply to the entire roadway face of crashworthy walls.

Asperities are depressions in the surface of the wall with variable geometric configurations which can be placed within one of three categories: perpendicular, rounded, or angled surface interruptions. The asperity dimensions may present more resistance to an impacting vehicle sliding on the wall surface creating a potential for snagging to the vehicle.

MATERIALS

Precast Concrete Panels, Posts, and Form Liner

Concrete for Precast Concrete Noise Abatement Wall panels and posts, shall conform to the requirements of the applicable portions of Section 1020 of the Standard Specifications. Manufacturer's specifications and mix designs shall be submitted for approval to the Engineer.

1. Concrete for precast, prestressed units shall be Class PS Portland cement concrete; with a minimum compressive strength of 3,500 psi at release and 5,000 psi at 28 days age. Class PS concrete shall conform to the requirements of Section 1020 of the Standard Specifications.

The concrete for precast, non-prestressed units shall be IDOT Class PC Portland cement, with a minimum compressive strength of 4,000 psi at 28 days age. Class PC concrete shall conform to the requirements of Section 1020 of the Standard Specifications.

The curing methods shall be compatible with the desired aesthetic results.

The form liner used to create the random ashlar limestone pattern shall be of high quality and capable of withstanding anticipated concrete pour pressures without causing leakage or causing physical defects. The liner shall be made from high-strength elastomeric urethane material which shall not compress more than 0.02 feet when poured at a rate of 10 vertical feet per hour. The form release agents shall be non-staining, non-residual, and non-reactive.

Foundation Concrete

Concrete for constructing Noise Abatement Wall foundations shall be Class SI conforming to Section 1020 of the Standard Specifications.

Reinforcing Steel and Welded Wire Fabric

Reinforcing steel shall be in accordance with Article 1006.10 of the Standard Specifications and shall meet the requirements of ASTM A706, Grade 60. Welded wire fabric shall be in accordance with Article 1006.10 of the Standard Specifications. The reinforcing steel and welded wire fabric for precast panels, precast posts, and foundations shall be epoxy coated conforming to Article

1006.10 of the Standard Specifications. Non-epoxy reinforcing steel and welded wire fabric can be used in concrete structures that are permanently underground.

Pre-stressing Steel Strands

Pre-stressing steel strands for precast concrete noise abatement wall panels and precast concrete posts shall conform to Article 1006.10 of the Standard Specifications.

Structural Steel

Unless otherwise specified, structural steel shall conform to ASTM A709 (ASSHTO M 270) Grade 36, and as specified in Article 1006.04 of the Standard Specifications. Structural steel exposed to weathering shall be hot-dip galvanized in accordance with ASTM A 123 (AASHTO M 111). Weathering Steel (ASTM A588) is not permitted. Before galvanizing, provide a blast surface as specified in Standard Specification Section 506.07. Grind all cut edges.

Paint galvanized steel posts using an approved two-coat paint system, from an approved manufacturer, consisting of an epoxy polyamide as an intermediate coat and an aliphatic urethane as a finish coat. Select colors for the intermediate and finish coat before fabrication. Paint to match wall color unless noted otherwise. Do not use the system prime coat. Do not mix components from different systems. If a wash primer is used, provide the manufacturer's certification of compatibility with the selected paint system.

The paint system shall be applied according to the applicable portions of Section 506 and the paint manufacturer's recommendations.

Anchor Bolt Assemblies

Anchor bolts shall be cast-in-place and shall conform to Article 1006.09 of the Standard Specifications. If the anchor bolts in accordance with the Standard Specifications have insufficient shear or tensile strength by maximum dimensions, they may conform to the requirements of ASTM F1554. Hooked anchor bolts are not allowed. Anchor bolt assemblies shall be furnished with either anchorage plates meeting Article 1006.09 of the Standard Specifications, or plate washers in accordance with ASTM A572 (AASHTO M223) Grade 50. Anchor plates and plate washers shall be hot-dip galvanized after fabrication in accordance with ASTM A153 (AASHTO M 232). Paint galvanized anchor bolts using an approved two-coat paint system, from an approved manufacturer, consisting of an epoxy polyamide as an intermediate coat and an aliphatic urethane as a finish coat. The paint system shall be applied according to the applicable portions of Section 506 and the paint manufacturer's recommendations.

Fasteners and Hardware

Miscellaneous fasteners and hardware shall conform to Article 1006.08 of the Standard Specifications and shall be galvanized steel in accordance with ASTM A153 (AASHTO M232).

All fasteners used with treated wood products shall be stainless steel or hot-dipped galvanized per AASHTO M232, Class C, except the minimum weight of Zinc coating shall be 2.0 oz./sq. ft.

Fasteners for structural steel, other than anchor bolts, shall be high strength structural bolts in conformance with ASTM A325 (AASHTO M 164), Type I and shall be mechanically galvanized in accordance with ASTM A 153 (AASHTO M 232). Paint galvanized fasteners and hardware using an approved two-coat paint system, from an approved manufacturer, consisting of an epoxy polyamide as an intermediate coat and an aliphatic urethane as a finish coat. The paint system shall be applied according to the applicable portions of Section 506 and the paint manufacturer's recommendations.

Access Door

Access door(s) shall only be provided at locations show in the plans. Any proposed changes to the locations by the Contractor shall be coordinated through the Engineer and Illinois Tollway PM.

Maintenance Door

Maintenance door(s) shall only be provided at locations shown in the plans. Any proposed changes to the locations by the Contractor shall be coordinated through the Engineer and Illinois Tollway PM.

Stain & Sealer

Store paint, stain, sealer material in an area where temperatures will not be less than 50°F or more than 100°F in accordance with OSHA and local Fire Code requirements.

The staining products must be compatible with the surface sealing coating.

Stains shall be water-based acrylic stain. The staining products must be compatible with the surface sealing coating specified. The Illinois Tollway may waive the requirement of a separate sealing product if the staining product also meets the performance requirements of the sealing product.

Penetrating concrete stain mix, shall achieve color variations present in the natural stone being simulated for this project. Stain shall create a surface that is breathable (allowing water vapor transmission), and that resists deterioration from water, acid, alkali, fungi, sunlight, or weathering. Stain mix shall be a waterborne, low V.O.C. material, less than 1.5 lbs./gal., and shall meet requirements for weathering resistance of 2000 hours accelerated exposure.

SUBMITTALS

General

Submittals shall be in conformance with Article 105.04 of the Illinois Tollway Supplemental Specifications except as modified herein.

Precast Concrete

1. Product technical data including:
a. Manufacturer's mix design and material certifications for aggregate and cement type used to precast wall panels and posts.
b. Manufacturer's installation instructions.
2. A 4'x4' sample of the concrete form liner pattern and texture of each type, including special shapes to show range of colors, texture, finishes, and dimensions. Submit a separate set of sample panels approximately 2'x2' from the stain manufacturer to establish application procedures, color and appearance to the Illinois Tollway's Landscape Architect for review and approval.
3. Manufacturer's certification that precast panels that are to be furnished meet or exceed the specifications.
4. Qualifications of testing lab and technician.
5. Test results for all concrete testing.

System Supplier Certification

The Contractor shall submit the following documents for the Engineer's review, within 30 days after the issuance of the Notice to Proceed:

Specifications for all materials, including trade names of the products along with the name and address of the each Supplier, and the name of the System Manufacturer's contact person.

Specifications regarding geotechnical assessment, installation procedures, and sequence of construction.

Color photographs, preferably 8 inch x 10 inch size, depicting the surface treatments and colors available for the noise abatement wall.

A list of representative projects performed by this Contractor, including key client contacts.

The anticipated reaction forces the noise abatement wall system applies to the supporting structure.

The Contractor shall provide documentation to the Illinois Tollway that provides technical data confirming that sunlight and headlight glare reflected from the proposed Noise Abatement Wall material does not cause glare to the Illinois Tollway motorists, or those that may be on an adjacent roadway system.

The Contractor shall provide documentation confirming that the material that will be used to construct the proposed Noise Abatement Wall is resistant to ultra violet deterioration and

degradation within the minimum service life.

The Illinois Tollway reserves the right to request a physical sample of the Noise Abatement Wall proposed by the Contractor prior to the issuance of the Notice to Proceed.

Design Calculations, Shop Drawings, and Working Drawings

The Contractor shall submit final design calculations and detailed Shop and Working Drawings for the Noise Abatement Wall no later than 90 days after the Notice to Proceed or no later than 90 days prior to the scheduled start of construction of the wall, whichever date is earlier. Working drawings and shop drawings including calculations shall be prepared and submitted in accordance with Article 105.04 of the Illinois Tollway Supplemental Specifications. Partial and/or incomplete submittals are not allowed and will be returned “Make Corrections as Noted”, or “Rejected” if submitted without prior approval of the Engineer. The Contractor shall consider in his schedule a 14 calendar day period from the date the submittal is received by the Engineer to the expected date of return with comment. This 14-day review period shall be considered with any resubmittal, and such resubmittals shall not be considered cause for an extension of time to the Contract.

The design calculations, shop drawings, and working drawings shall be submitted under the seal of a Structural Engineer currently licensed by the State of Illinois. The Illinois Tollway reserves the right to require proof of licensure.

The design calculations shall demonstrate that the design criteria as set forth in the Contract have been satisfied. They shall be prepared on 8-½ inch x 11 inch pages, which shall be neat, legible, organized and indexed. Pages for calculations and notes shall contain the project designation, wall designation, date of preparation, initials of the designer, initials of the checker, and the page number at the top of each page.

The Shop Drawings shall meet ISTHA Computer Aided Plan Preparations (ICAPP) requirements, and include all views, detail, notes, erection sequences, quantities and cross sections necessary to construct the Noise Abatement Wall. The Shop Drawings shall be prepared on reproducible sheets 11 inch x 17 inch. Each sheet shall have a title block in the lower right hand corner. The title block shall include the number and description of the drawing, name or designation of the Noise Abatement Wall (or station limits), the project designation, Illinois Tollway contract number, the owner’s name (i.e., the Illinois State Toll Highway Authority), the designer, the System Supplier, and the Contractor. The Contractor shall also provide the Engineer with an electronic format copy of the final accepted Shop Drawings including the Structural Engineer seal and signature, in a MicroStation and/or Acrobat PDF, or other format approved by the Engineer.

The content of the Shop Drawings is as follows:

General information shall include the index of drawings, general notes, design criteria, erection sequence, specifications, material strengths and designations horizontal and vertical control data and a Bill of Materials necessary to construct each section of Noise Abatement Wall including

foundations (ground mounted) or parapet blisters (retaining wall mounted).

Elevation views of the Noise Abatement Walls shall show: post and panel designations; beginning and ending stations and offsets; overall wall length dimension; post-to-post spacing; elevations of the top of the Noise Abatement Wall at all changes in vertical profile and at 50-foot minimum intervals; elevations of the bottom of the Noise Abatement Wall at all changes in vertical profile and at 50-foot minimum intervals; location of vertical cap reveal image patterns, elevations of the proposed ground line at the centerline of the ground mounted Noise Abatement Wall at one foot vertical intervals, low points, high points, and at 50-foot minimum intervals; elevations of the top of foundations (ground mounted) or blisters (retaining wall mounted); locations of all expansion joints; zone of influence, and limits of all appurtenances within the zone of influence, such as, barrier rails, moment slabs, crashworthy wall, parapets, light poles, retaining walls, sign structures, and fencing.

Post location and spacing for ground mounted walls shall be coordinated with existing and/or proposed drainage structures, storm sewers, and all utilities, and shall be adjusted as necessary to avoid conflicts therewith.

Plan views of the Noise Abatement Wall shall show: the Noise Abatement Wall foundations (ground mounted) or blisters (retaining wall mounted); post, panel and foundations designations; starting point and ending point stations; overall length dimension; stations and offsets from the project horizontal control line to the centerline of the Noise Abatement Wall posts; locations of all expansion joints; locations of overlaps and maintenance or access doors; locations of all fire hydrant access doors; locations of all soil borings; zone of influence, and distances to all appurtenances within the Zone of influence, such as, roadway lighting, signage, drainage structures; other foundations and all utilities.

All panel types shall be detailed. The details shall show dimensions necessary to cast and construct each type of panel, reinforcing steel in the panel and the location of post or foundation connection hardware and lifting devices embedded in the panels if applicable.

Details of wall panels with appurtenances attached to or passing through the wall, such as utilities, maintenance or access doors, drainage structures, sign structures, etc. shall be shown. Any modifications to the design or location of these appurtenances to accommodate a particular system shall also be submitted.

Architectural panel treatment, including color, texture, block pattern, and form liner patterns as appropriate shall be shown. All joints shall be placed horizontal or vertical.

Plans shall show the details for the connection between panels and posts, as well as, the post connection to the foundation or parapet blister, allowed maximum shimmed height including a leveling grout to level and plum panels. A foundation detail shall be shown indicating the reinforcement and post anchorage system for ground mounted Noise Abatement Walls. Parapet details shall be shown indicating the reinforcement and post anchorage system for retaining wall mounted Noise Abatement Walls.

Geotechnical information for ground mounted Noise Abatement Walls in the project area not already provided for in the Contract Plans shall be shown.

Test Results

Per Section 106 of the Illinois Tollway Supplemental Specifications, the Contractor shall submit all test results necessary to assure compliance of the materials with this Special Provision, and shall furnish copies of such test results to the Engineer. The Contractor shall not make use of nor incorporate into the Work any materials until the tests have been made and the materials are found to be acceptable and in compliance with the requirements of this Special Provision. Tests shall be performed by a nationally accredited testing laboratory, and the test results shall be notarized.

The submittal shall include, but not be limited to, test results for:

Precast Concrete

Sound Transmission Class (STC).
Sound Transmission Quality Control Testing of precast concrete

Precast Concrete
Quality control testing of Precast concrete panels and posts, including certification of all materials incorporated into the panels, including Class PC or PS Concrete
compressive strengths
slump & air
Self-Consolidating Concrete (SCC)
slump flow
compressive strengths
visual stability index
passing ability
static/dynamic segregation of any SCC mixtures

Water Vapor Transmission Test – ASTM D 1653.

Concrete for foundations per Section 1020 of the Standard Specifications Portland Cement Concrete requirements.

Additional testing or retesting of concrete materials or other cement-containing products occasioned by their failure, by test or inspection, to meet requirements of the Contract Documents.

Samples

Prior to commencing design and preparation of Shop Drawings, the Contractor shall submit color samples and details of the proposed surface treatments and finish to the Engineer for their review and approval. The Engineer will select the color and type of surface treatment from the options submitted by the Contractor. The samples shall include an approximately sized 12' long by 14' high physical mock-up representative of the panels and posts to be incorporated into the Work. If the test panels and posts are not approved, additional test panels and posts shall be furnished until a satisfactory color and finish is obtained, at no additional cost to the Illinois Tollway. The mock-up approved by the Engineer shall then be the standard of comparison for the remaining finishes. The Contractor shall consider in his schedule a 14-calendar day period from the date the submittal is received by the Engineer to the expected date of return with comment. This 14-day review period shall be considered with any resubmittal, and such resubmittals shall not be considered cause for an extension of time to the Contract.

The physical sample shall be constructed at the yard and or at a location on the construction site and may not be included in the final construction. At the conclusion of the project the sample is to be removed and disposed of by the Contractor.

Permanent stabilizers shall be submitted to the Engineer as specified for acceptance prior to Shop drawing acceptance.

Mix Design

The Contractor shall submit concrete mix designs in conjunction with the submittal of the Shop Drawings. The mix design submittal shall include product data on all materials used in the mix, material sources and material testing. All mix designs for Portland Cement Concrete shall be in accordance with Section 1020 of the Standard Specifications. The Contractor shall consider in his schedule a 14-calendar day period from the date the submittal is received by the Engineer to the expected date of return with comment. This 14-day period shall be considered with any resubmittal, and such resubmittals shall not be considered caused for an extension of time to the Contract.

Warranties

The Contractor shall submit all System Supplier's warranties for materials incorporated into the Work in accordance with Article 105.18 of the Illinois Tollway Supplemental specifications except as modified herein.

The workmanship guaranty shall be for a minimum period of 3 years starting from the date of final completion of the Work. In the event any defects occur, the Contractor shall complete the repairs within 60 days of written notification of such defects and at no additional cost to the Illinois Tollway.

The materials shall be impervious to road salt and calcium chloride for a 5-year Manufacturer/System Supplier warranty period. In the event the material fails to meet the aforementioned requirement within the 5-year warranty period, the Manufacturer/System Supplier

shall complete the repairs within 60 days of written notification of such defects and at no additional cost to the Illinois Tollway.

FABRICATION, CONSTRUCTION AND ERECTION REQUIREMENTS

The Contractor shall obtain technical assistance from the System Supplier during the progress of the Work.

Delivery, Storage, and Handling

The Contractor shall inspect all materials and allow the Engineer to inspect all materials as the materials arrive at the project site. The Contractor shall follow the System Supplier's recommendations in regards to protecting the materials from mechanical damage and damage due to excessive temperatures, sunlight, moisture, dirt and debris. Any materials damaged during storage or installation shall be promptly replaced at no additional cost to the Illinois Tollway.

All materials are to be stored above ground on level platforms. Cover and protect against wetting prior to use.

Precast Concrete Panels and Posts

Fabrication, construction and erection of the precast concrete Noise Abatement Wall shall be accomplished in accordance with the details shown on the approved Working and Shop Drawings, this Special Provision, Section 504 of the Standard Specifications, as recommended by the System Supplier, and as approved by the Engineer.

The panels shall have a minimum thickness of 4 inches (6 ½ inches for Crashworthy Noise Abatement Walls) plus the dimension of the form liner projection. The depths of the surface treatments shall not be included in calculating the minimum panel thickness. The minimum concrete cover over reinforcing shall be:

Steel reinforcing bars and welded wire fabric: 1.50 inches.

Pre-stressing strands: 1.50 inches.

If the finished grade lines on both sides of the Noise Abatement Wall are at equal elevations, the Noise Abatement Wall shall be embedded at least 12 inches below the finished grade line. If a difference in finished grade line elevations exist from one side of the ground mounted Noise Abatement Wall to the other side, the Noise Abatement Wall shall be embedded at least 6 inches below the lower finished grade line. The base of the retaining wall or bridge mounted Noise Abatement Wall shall be hidden behind the parapet, or a portion thereof.

No field cutting of the panels shall be permitted, except as required by the Plans or ordered by the Engineer.

The constructed horizontal alignment of the Noise Abatement Wall shall be within one inch of the

designed alignment. The accepted plumbness of the posts and panels shall be ½ inch per 10 feet of wall height.

Before the release strength is attained, the concrete shall be cured by steam, wetted burlap or polyethylene sheet methods. The use of membrane curing compounds will not be permitted.

Staining of Precast Concrete Post

Application of the stain on precast concrete post, if used, shall be applied to a clean surface free of latency, dirt, dust, grease, efflorescence, paint, or other foreign material, following manufacturer's requirements for surface preparation. Do not sand blast. Surfaces to receive stain shall be structurally sound, clean, dry, fully cured. Curing agents must be removed a minimum of 14-days prior to the application of stain to allow to dry. Concrete shall also be a minimum of 30-days old prior to the application of stain. Stain shall be thoroughly mixed in accordance to manufacturer's specifications. Do not thin material.

Material shall be applied at rate as recommended by the manufacturer. Absorption rates could be increased or decreased depending on the surface texture and porosity of the substrate so as to achieve even staining.

The manufacturer's temperature and humidity requirement shall be adhered to. Do not apply stain under rainy conditions or within 3 days after the surface has become wet.

Clean up all splatters and over spray.

Structural Steel

Structural steel shall be fabricated and erected in accordance with Section 505 of the Standard Specifications, the System supplier's recommendations and as approved by the Engineer. Shop cleaning and preparation of steel surfaces shall be prepared in accordance with ASTM D6386 after galvanizing. The furnishing, application, and protection of the paint coatings shall be as shown on the plans and as specified in Standard Specification Section 506. Structural steel coatings shall be according to Section 1008. The first coat shall meet the requirements of Article 1008.05 (d) of the Standard Specifications. The second coat shall meet the requirements of Article 1008.05 (e) except the color shall be a color created by the paint manufacturer that matches the color of the precast concrete panel stain of HC-149, Siberian Haze as produced by H&C Concrete Coating.

The galvanized and two coat paint system shall meet all the requirements of Article 1008.05 (f) of the standard specifications. The coating system shall be evaluated for performance through the National Transportation Product Evaluation Program (NTPEP) for Structural Steel Coatings following the requirements of AASHTO R31 and shall meet the performance criteria listed herein.

Hardware and Fasteners

Hardware and fasteners shall be installed in accordance with the System Supplier's recommendations and as approved by the Engineer.

Excavation and Backfill

Excavation, including rock excavation, shall be done in accordance with the Shop Drawings, Working Drawings and Section 202 of the Standard Specifications. If drilled caisson shafts are used, they shall be constructed in accordance with Section 516 of the Standard Specifications.

If Unsuitable Material is present at or below the foundation level, it shall be removed per Section 202 of the Standard Specifications, and replaced with Special Fill or Porous Granular Backfill (or CA18 grade aggregate) to a depth, length and width determined by the Engineer. Special Fill or Porous Granular Backfill shall be placed in accordance with Section 206 of the Standard Specifications. Unsuitable Material shall be any soil material containing vegetable or organic material, such as mulch, peat, or debris such as wood, glass, concrete and brick pieces. In addition to the locations shown on the Plans, Unsuitable Material shall also be any material determined to be unsuitable by the Engineer. Soils classified as Pt, OH, OL, and MH as per the United Soil Classification System shall also be considered Unsuitable Material. All open trenches and holes resulting from excavation, placement of the wall and posts shall be protected. The length of open trench shall be limited to 100 feet.

Site excavations and/or fill construction shall be completed to plan elevations and profiles prior to the start of ground mounted wall foundation construction. The Contractor shall verify the ground elevations as shown on the accepted Noise Abatement Wall shop drawings and correct discrepancies prior to material fabrication. Underground utilities shall be located and marked to verify adequate clearance from foundations. The Contractor shall consider OSHA clearances for excavations, and overhead obstructions such as wires, cables and roadway/area lighting, prior to wall erection.

If required, the Contractor shall trim any trees in order to install the Noise Abatement Wall system. Trimming shall be limited to only that which is necessary to install the system. All trimmings shall be disposed of outside the Illinois Tollway right-of-way in a manner that will not be in violation of any law, regulation or ordinance. Specific tree trimming procedures shall be identified, and comply with Standard Specifications, Article 201.06. Burning within, or in proximity to Illinois Tollway right-of-way is not permitted.

END OF SECTION

CONTRACTOR 3D GRADING REPORTS

Description. This work shall consist of utilizing electronic GPS equipment and software and to prepare, submit, update, and administering 3D Grading Reports**.** During active grading, the Contractor will produce a minimum of 4 interim grading reports as the surface elevations are

constructed, or the number of grading reports necessary to accurately determine the applicable contract quantities. A final report will be provided once final grading is completed with all the final surfaces combined.

Equipment. Free-standing equipment shall be a minimum of GPS rovers for grading equipment, individual rover, GPS base station and associated GPS software. The GPS software shall be equipped to read the 3D surfaces models provided with the bid advertisement documents. Construction software for the report shall be compatible with MicroStation software.

Existing earthmoving equipment can be retrofitted with electronic GPS equipment and software to construct embankment, excavate, compact or shape earth to the final elevations specified in the bid documents CADD files.

Construction Requirements.

The contractor shall use Automated Machine Guidance (AMG) to grade the ground surfaces to the proposed elevations provided in the bid documents.

The contractor shall provide monthly update reports of the surface points at minimum intervals of 20 ft or at major grade changes to accurately depict the surface to the Engineer, until such time the grades have been determined by the Engineer to be final. Major grade changes include but not limited to gradient changes greater than 5 ft in any direction or a slope breakpoint.

The 3D grading reports should include the staged surface represented at the time of survey at each interval for the submittal. Additional 3D grading reports may include surfaces required to quantify excavation for other associated roadway appurtenances as determined by the Engineer. The contractor final grading report will include surfaces for the existing ground, topsoil removal, excavated surface and the final surface.

END OF SECTION

DIGITAL UTILITY AS-BUILT (ILLINOIS TOLLWAY)

Effective: April 27, 2022

Description. The work shall consist of the collection, and the documentation of each utility installation with subsurface attributes. This shall include all information installed by the contractor or potholed at the direction of the engineer for location confirmation. The subsurface utility quality levels for all installed underground utilities will follow the Illinois Tollway quality levels (QL) described as follows:

- QL-A indicates the precise horizontal and vertical location of utilities obtained by the actual exposure (or verification of previously exposed and surveyed utilities) and subsequent measurement of subsurface utilities, usually at a specific point. Relative local positional accuracy shall be equal to or less than 0.2’ Vertical and 0.1’ Horizontal

- QL-B indicates information obtained through the application of appropriate surface geophysical methods to determine the existence and approximate horizontal position of subsurface utilities. Survey of the surface marker shall have a relative positional accuracy equal to or less than of 0.2' Vertical and 0.1' Horizontal

The utilities to be relocated or installed outlined in S.P. 106 are to be collected unless installed by non-Tollway contracts. These utilities for collection may include but are not limited to the following:

Electrical non-Tollway lighting
Gas
Fiber Optic Cable
Sanitary
Water
Tolling Underground Infrastructure

Equipment. Equipment for data collection may include but not limited to GPS Rovers, Base Stations and Total stations that meet the minimum accuracy requirements. Equipment used to collect this data shall be properly calibrated and capable of meeting a minimum accuracy of 0.05' Vertical and 0.05' Horizontal, under optimal conditions.

Construction Requirements

Notification.
Prior to initiating field work, the contractor shall provide advance notification in accordance with Article 107.31 of the Illinois Tollway Supplemental Specifications.

Data Collection.
Before work is started, conduct research of available utility records to assist in identifying utility owners who may have facilities at the project site and/or whose operations may be affected by the project. Sources of information may be state, city, and county agencies. Previous collected data shall be translated to the current project coordinate survey control in accordance with Article 105.09 of the Standard Specifications.

The contractor should obtain survey data during or immediately after installation of the utility for QL-A. Where contractors were unable to obtain information immediately after installation, or the utility is buried during installation, then QL-B shall be collected and documented, and state why QL-A was not obtained as a note. For open trenched or exposed utility installation, QL-A shall be obtained at intervals of 25 ft and at directional changes with a minimum of 2 points. Non-Disruptive utility installation or boring will result in a combination of quality Level A and B. QL-A will be obtained at the exposed locations at either end of the open pit for the bore machine. During installation, the receiver operator shall denote horizontal location and depth every 25', with a minimum of 2 points approximately 1/3 of the length on shorter runs. These locations shall be surveyed and will result in a QL-B. When taking survey shots of the utility, the location on the utility needs to be documented using the survey P-code structure.

When collecting data, survey shots can be taken at different locations along a utility. Location of collected data for round utilities the preferred survey shot is in the center of the utility. For square utilities the edges and corners should be shot. Documentation should be specified in the survey P-code structure. Manholes, catch basins, valve vaults and similar items shall be collected at the center of the actual structure and not the center of frame or access port. Frame rim elevation values should be included in the data points comment.

Exploration

Where the contractor will be required or directed by the Engineer to expose utilities, the contractor shall backfill the test survey potholing and all open trenches using the soil previously removed, unless directed otherwise by the Engineer. Potholing shall conform to EXPLORATORY POTHOLING, UTILITIES. Reuse of excavated material from trenches shall be in accordance with the Illinois Tollway Special Provision for “Disposal of Regulated Substances and Uncontaminated Soil”. Placement and compaction of the soil in the trench shall be in accordance with the Illinois Tollway Special Provision for “Embankment.” Surplus material for the trenches may be used within the project limits or disposed of off-site in accordance with the Illinois Tollway Special Provision for “Earth and Rock Excavation.

Documentation of Utility and Deliverable

The contractor shall record the dimensions and elevations of the existing utility. If the existing utility is a circular pipe, document and provide the outside diameter. If the existing utility is rectangular in shape (e.g., concrete duct bank), document and provide outside dimensions for its height and width. Record all visible features of the utility (i.e., joints, pipe materials, bedding, etc.). Digital photographs of the utility and the test hole location shall be taken. Record time, date, location, and direction of the view of the photograph.

The utility information and photographs shall be documented using the Illinois Tollway survey coding system. The Illinois Tollway utility coding consists of five major components. These different components are combined into a full survey code. Refer to Figure 1 below for the format, table, and structure of the codes to be implemented on the as-built files and other associated documents.

Definitions

Survey Code

The survey code represents the surveyed element.

Quality Level

Include Quality Level on each point to provide information about the confidence of the utility.

Point Sub-Code

The sub-code is information supplementing the Survey Code. These are mainly material, but also contain specific item names which are part of multiple survey codes.

Point Location

A code that defines the point of reference for the survey information. The location is used to define the origin of the feature, which translates to the precise location of the asset.

Description

The description will vary depending on the survey code.

Figure 1 {Example}

Survey Code		Quality Level		Point Sub-Code		Point Location	
Pcode	**Full Description**	**Name**	**Code**	**Pcode**	**Full Description**	**Pcode**	**Full Description**
274	Handhole	{Quality Level A}	{A}	304	Tile	{356}	{Invert}
275	Double Handhole	{Quality Level B}	{B}	328	Meter	{703}	{Topo Survey Point}
276	Heavy Duty Handhole	{Quality Level C}	{C}	334	Regulator	{761}	{Bottom}
280	Junction Box	{Quality Level D}	{D}	340	Tee	{767}	{Center}
281	Above Grd Splice Box			341	Valve	{792}	{Floor}
282	Splice Box - Electrical			345	Vault	{793}	{Flowline}
283	Splice Box - Telephone			383	Cleanout	{861}	{Top}
284	Splice Box - Cable TV			753	Aluminum		
300	Culvert - Pipe			762	Brick		
301	Culvert - Pipe Arch			766	Cast Iron		
302	Culvert - Pipe Elliptical			772	CMP		
303	Culvert - Box			773	CMP Arch		
306	Catch Basin			774	Concrete		
308	Drop Inlet			784	Ductile Iron Pipe		
309	End Section Flared			804	Iron		
310	End Section Flared with Grate			806	Metal		
339	Standard Inlet			836	PVC		
342	Valve Box			840	RCP		
351	Manhole			841	RCP Arch		
922	Cable TV, Under Ground - MAIN			865	Vitrified Clay		
923	Cable TV, Under Ground - FEED			866	Vitrified Clay Encased		
925	Cable TV, Under Ground - FIBER						
932	Electric, Under Ground - MAIN						
933	Electric, Under Ground - FEED						
942	Gas, Under Ground - MAIN						

943	Gas, Under Ground - FEED						
951	IDOT Electric, Under Ground						
953	IDOT Telecommunication, Under Ground						
958	ISHTA, Fiber, Aboveground						
959	ISHTA, Fiber, Underground						
960	Sanitary Sewer - MAIN						
962	Storm Sewer - MAIN						
972	Telephone, Under Ground - MAIN						
973	Telephone, Under Ground - FEED						
975	Telephone, Under Ground - FIBER						
980	Water - MAIN						
990	Duct Bank						

Accuracy Testing & Reporting

A post-processing report from the survey equipment shall be submitted. When using the global National Satellite Systems (GNSS) on a project, this survey report shall contain standard content for that equipment. Manufacturer-specific programs are acceptable for GNSS processing. When using these programs, a least-squares network adjustment must be applied, and a statistical analysis included in the survey report. If localizing, provide a transformation report.

Data Submittal

Upon completion of installation, the Contractor shall submit to the Construction Manager, all data collected and obtained to complete the task, including but not limited to:

1. Survey unadjusted files
2. ASCII Coordinates (Point Survey codes)
3. Compiled CADD drawings
4. All field notes, associated data
5. Survey dates of collection
6. Data accuracy test report
7. Translation or similar report to demonstrate adherence to project coordinate grid.
8. Equipment data sheets and annual calibration certificate.

Survey Unadjusted files

Conventional Survey: The raw files are the unadjusted files directly from the field equipment. This file will include the keyed in points, base station set-ups, horizontal and vertical angles of side shots.

GNSS Survey: Create point reports including collection point name, grid coordinates, point code, horizontal and vertical precisions, Position Dilution of Precision (PDOP), and the number of

satellites.

American Standard Code for Information Interchange (ASCII) Coordinate
This is a file in a comma-delimited format. The columns shall be Point Number, Northing, Easting, Elevation, Survey Code, Notes.

Drawings
The contractor shall remit collected utility data in a CADD format to the construction manager. The digital CADD data shall be in a form which can be read by the Bentley software required by the Illinois Tollway. The surveyed utility information shall be included in this file. It also includes connecting data shots from point to point for each utility or element. This file shall be modified to eliminate errors. These modifications include verify points, coding discrepancies, and removing inaccurate shots.

Quality Plan
The contractor shall be responsible for maintaining the quality records. The contractor shall submit a quality plan for approval prior to utility work which includes trained staff and type of training, control point verification and collection procedures. At any point in the surveying process, the contractor will make records available to the Illinois Tollway for a quality review. Work shall consist of a check into verified control before beginning each day's data collection, at a minimum of every 2 hours after that, and before leaving the site. In accordance with a quality plan, the contractor shall have qualified staff that are trained to perform the work and a quality manager to confirm and maintain records.

END OF SECTION

AGGREGATE FOR SUBBASE RESTORATION (ILLINOIS TOLLWAY)

Effective: April 1, 2016
Revised: February 25, 2022

Description. This work shall consist of furnishing, placing, and compacting aggregate materials for the replacement of existing granular subbase materials as required by contract Plans, or as directed by the Engineer.

Materials. All materials shall conform to the requirements of Article 1004.04 of the Standard Specifications. If recycled aggregate is used for this application, work shall be in accordance with the Special Provision for Production of Recycled Aggregate and Article 1004.04.

Equipment. Equipment used for placing and compacting aggregate for subbase restoration shall conform to the requirements of Section 1101 of the Standard Specifications, shall be adequate to place and compact the material as specified, and shall be subject to the approval of the Engineer.

CONSTRUCTION REQUIREMENTS

The granular material, as deposited on the roadbed shall contain sufficient uniformly distributed moisture to minimize segregation. No granular subbase shall be placed on other materials which contain frost.

The subbase shall be constructed in layers not more than 6 inches in compacted thickness, except that thicker layers may be used when compacted by vibratory methods when the Contractor can consistently obtain the required density or to the satisfaction of the Engineer. The granular material shall be deposited directly on the prepared subgrade or on the preceding layer of compacted subbase in a manner approved by the Engineer. The granular material, in place, shall be free of segregation. Blading or other manipulation of the material shall be the minimum required to place and uniformly distribute the material before compaction. Each layer of the material shall be compacted with a vibratory roller, multiple vibratory compactors, pneumatic tired roller, tandem roller, or combination thereof, to not less than 100% of the maximum dry density as determined by AASHTO T180, Method C, Annex A1.

Moisture shall be added to the material during compaction when it is necessary to obtain the specified density.

If any subgrade material is mixed into the granular subbase material during the compacting or finishing operations, the subgrade shall be repaired as required by the Engineer and all of the affected granular subbase materials shall be removed and replaced with new material. No construction-related traffic shall be allowed over the completed or partially completed work, and the Contractor shall plan his operation in such a manner as to comply with this requirement. The Engineer may also restrict hauling during or after inclement weather or at any time when the subgrade is soft and there is a tendency for the subgrade material to infiltrate the subbase material.

When restoration of both subgrade and granular subbase is necessary in any area of pavement removal after proof rolling is completed, the unstable subgrade soils shall be replaced with a minimum 9 inches of POROUS GRANULAR EMBANKMENT to within 6 inches of the finished subbase elevation and then covered with the AGGREGATE FOR SUBBASE RESTORATION that will be placed and compacted separately to the level of the surrounding granular subbase.

Care shall be taken by the Contractor at all times to prevent the intermingling of granular subbase material with subgrade or other materials during the process of placing and compacting. Any granular subbase material so contaminated shall be removed and satisfactorily replaced by the Contractor at no additional cost to the Illinois Tollway and without cause for claiming delay.

Aggregate containing free water at the time of delivery will be rejected by the Engineer and shall not be incorporated in the work.

END OF SECTION

PROTECTIVE SHIELD (ILLINOIS TOLLWAY)

Effective: February 25, 2022
Revised: April 11, 2025

Description. This work consists of designing, furnishing all labor, tools, materials, and equipment for erecting, maintaining and removing temporary protective shields at the locations and limits shown in the plans, or as determined in the field by the engineer. The Contractor is responsible ensuring the safety and convenience of vehicular, railroad, and pedestrian traffic, as well as the general public, during demolition, erection, and construction of each element of the structure.

CONSTRUCTION REQUIREMENTS

A protective shield system shall be erected and maintained under the superstructure or at the lower level of the superstructure for demolition or new construction whenever equipment, falling objects or material may cause damage to existing aerial wire lines, railroads, streets, highways, regulatory waterways, vehicular or waterway traffic or injury to pedestrians, bicyclist or individuals traveling in trains, vehicles, or watercraft. For new construction, the protective shield system shall be in place prior to the forming of the bridge deck.

Lane closures required for installation of the protective shield shall be completed in accordance with allowable hours contained in the Maintenance of Traffic special provision.

The protective shield system shall be designed and constructed to sustain loads of 200 lb/sq ft in addition to its own weight. The protective shield system shall extend 2 feet beyond the outside edge of the parapet. Protective shield systems consisting of wood members shall be designed for a minimum loading duration of seven days. The system may be either fixed or mobile. The existing vertical clearances above roadways and/or railroad tracks shall be maintained. The Contractor shall coordinate the installation with municipalities and/or utilities to ensure protection of their facilities during the removal and construction processes.

The Contractor shall submit working drawings and calculations for the protective shield system, prepared and sealed by an Illinois Licensed Structural Engineer, to the Engineer for review and approval. The drawings shall provide full details, dimensions, and types of materials proposed for use in accordance with Article 107.09 of the latest Illinois Tollway Supplemental Specifications. Two separate drawings will be required. One set of drawings for demolition of the existing deck, and one set of the drawings for the new structure. The protective shield system shall not be installed until authorization to proceed is given by the Engineer.

Concrete removal or construction shall not commence until the protective shield system is in place

and in conformity with the sealed working drawings.

Upon completion of the work or when directed by the Engineer, the protective shield system shall be removed.

For deck replacement projects, the protective shield system installed for the removal of the existing deck may remain in place for the construction of the new deck. Any damaged section(s) shall be replaced.

END OF SECTION

DECK SLAB AND APPROACH SLAB REPAIR (ILLINOIS TOLLWAY GBSP)

Effective: December 16, 2014
Revised: March 1, 2023

Description. This work shall consist of the removal and disposal of all loose and deteriorated concrete from the bridge deck or approach slab and the replacement with new concrete to the top of the slab surface at locations shown on the plans and as directed by the Engineer. The work shall be done according to the applicable requirements of Sections 501, 503 and 1020 of the Standard Specifications, and this Special Provision.

Bridge deck and approach slab repairs will be classified as follows:

(a) Partial-Depth. Partial-depth repairs shall consist of removing the loose and unsound deck or approach slab concrete to a depth satisfactory to the Engineer, disposing of the concrete removed and replacing with new concrete to the top of existing slab surface or remaining slab surface if the slab overlay has been scarified under separate work item. The removal may be performed by chipping with power driven hand tools or by hydro-demolition equipment. The depth shall be measured from the top of the concrete deck surface or the remaining surface if scarified, at least 3/4 in. but not more than 1/2 the concrete deck thickness.

(b) Full-Depth. Full-depth repairs shall consist of removing concrete full-depth of the bridge deck or approach slab, disposing of the concrete removed, and replacing with new concrete to the top of the existing slab surface or remaining slab surface if the slab overlay has been scarified under separate work item. The removal may be performed with power driven hand tools or by hydro-demolition equipment. Full-depth repairs shall be classified for payment as Full-Depth, Type I and Full-Depth, Type II according to the following:

Type I Full-depth patches less than or equal to 5 sq. ft. in area. The minimum dimensions for a patch shall be 1 ft. X 1 ft.

Type II Full-depth patches greater than 5 sq. ft. in area.

Materials. Materials shall be according to Article 503.02 of the Standard Specifications.

Portland cement concrete for partial depth repairs shall be Class DS concrete. Portland cement concrete for full-depth repairs shall be Class DS or Class BS concrete.

Equipment. The equipment used shall be subject to the approval of the Engineer and shall meet the following requirements:

(a) Surface Preparation Equipment. Surface preparation and concrete removal equipment shall be according to the applicable portions of Section 1101 of the Standard Specifications and the following:

(1) Sawing Equipment. Sawing equipment shall be a concrete saw capable of sawing concrete to the specified depth.

(2) Blast Cleaning Equipment. The blast cleaning may be performed by wet sandblasting, high-pressure water blasting, shotblasting or abrasive blasting. Blast cleaning equipment shall be capable of removing rust and old concrete from exposed reinforcement bars and shall have oil traps.

(3) Power-Driven Hand Tools. Power-driven hand tools will be permitted including jackhammers lighter than the nominal 45 lb class. Chipping hammers heavier than a nominal 15 lb class shall not be used for removing concrete from below any reinforcing bar for partial depth repairs or final removal at the boundary of full-depth repairs. Jackhammers or chipping hammers shall not be operated at an angle in excess of 45 degrees measured from the surface of the slab.

(4) Hydraulic Impact Equipment. Hydraulic impact equipment with a maximum rated striking energy of 360 ft-lbs may be permitted only in areas of full depth removal more than 1 ft away from existing beams, girders or other supporting structural members that are to remain in service or more than 1 ft from the boundaries of full-depth repairs.

(5) Hydro-Demolition Equipment. The hydro-demolition equipment shall consist of filtering and pumping units operating with a remote-controlled robotic device. The equipment shall use water according to Section 1002 of the Standard Specifications. The equipment shall be capable of being controlled to remove only unsound concrete.

(b) Concrete Equipment: Equipment for proportioning and mixing the concrete shall be according to Article 1020.03 of the Standard Specifications.

(c) Finishing Equipment: Finishing equipment shall be according to Article 1103.17 of the Standard Specifications. Adequate hand tools will be permitted for placing and consolidating concrete in the patch areas and for finishing small patches.

Construction Requirements. Sidewalks, curbs, drains, reinforcement and/or existing transverse and longitudinal joints which are to remain in place shall be protected from damage during removal and cleaning operations. All damage caused by the Contractor shall be corrected, at no additional cost to the Illinois Tollway, to the satisfaction of the Engineer.

The Contractor shall control the runoff water generated by the various construction activities in such a manner as to minimize, to the maximum extent practicable, the discharge of construction debris into adjacent waters, and shall properly dispose of the solids generated according to Article 202.03 of the Standard Specifications. Runoff water will not be allowed to constitute a hazard on adjacent or underlying roadways, waterways, drainage areas or railroads nor be allowed to erode existing slopes.

(a) Hot-Mix Asphalt Surface Removal.

The hot-mix asphalt concrete surface course and all waterproofing membrane shall be removed and disposed of according to applicable portions of Articles 440.04 and 440.06 of the Standard Specifications, except milling equipment will not be allowed if the bridge deck or approach slab is to receive a waterproofing membrane system. If the overlay or waterproofing membrane contains asbestos fibers, removal shall be in accordance with the IDOT Recurring Special Provision for "Asbestos Waterproofing Membrane and Asbestos HMA Surface Removal". Removal of the hot-mix asphalt surface by the use of radiant or direct heat will not be permitted.

(b) Surface Preparation:

All loose, disintegrated, and unsound concrete shall be removed from portions of the bridge deck or approach slab shown on the plans or as designated by the Engineer. The Engineer will determine the limits of removal as the work progresses.

The Contractor shall take care not to damage reinforcement bars or expansion joints which are to remain in place. Any damage to reinforcement bars or expansion joints shall be corrected at no additional cost to the Illinois Tollway. All loose reinforcement bars, as determined by the Engineer, shall be retied at the Contractor's expense.

(1) Partial-Depth. Areas to be repaired will be determined and marked by the Engineer. A concrete saw shall be used to provide vertical edges approximately 3/4 in. deep around the perimeter of the area to be patched when a concrete overlay is not specified. Where high steel is present, the depth may be reduced as directed by the Engineer. A saw cut will not be required on those boundaries along the face of the curb, parapet or joint or when sharp vertical edges are provided by hydro-demolition.

The loose and unsound concrete shall be removed by chipping, with power driven hand tools or by hydro-demolition equipment. All exposed reinforcing bars and newly exposed concrete shall be thoroughly blast cleaned. Where, in the judgment of the Engineer, the bond between existing concrete and reinforcement steel within the patch area has been destroyed, the concrete adjacent to the bar shall be removed to a depth that will permit new concrete to bond to the entire periphery of the exposed bar. The Engineer may require enlarging a designated removal area should inspection indicate deterioration beyond the limits previously designated. In this event, a new saw cut shall be made around the extended area before additional removal is begun. The removal area shall not be enlarged solely to correct debonded reinforcement or deficient lap lengths.

(2) Full-Depth. Concrete shall be removed as determined by the Engineer within all areas designated for full-depth repair and in all designated areas of partial depth repair in which unsound concrete is found to extend below half the concrete bridge deck or approach slab thickness. Full depth removal shall be performed according to Article 501.05 of the Standard Specifications. Saw cuts shall be made on the top of the bridge deck or approach slab, except those boundaries along the face of curbs, parapets, and joints or where hydro-demolition provided sharp vertical edges.

Restoration of the subbase material under approach slabs shall be according to the Illinois Tollway Special Provision “Aggregate for Subbase Restoration.”

Forms for full-depth repair of bridge decks may be supported by hangers with adjustable bolts or by blocking from the beams below. When approved by the Engineer, forms for Type 1 patches may be supported by No. 9 wires or other devices attached to the reinforcement bars.

All form work shall be removed after the curing sequence is complete and prior to opening to traffic.

(3) Reinforcement Treatment. Care shall be exercised during concrete removal to protect the reinforcement bars and structural steel from damage. Any damage to the reinforcement bars or structural steel to remain in place shall be repaired or replaced to the satisfaction of the Engineer at no additional cost to the Illinois Tollway. All existing reinforcement bars shall remain in place except as herein provided for corroded bars. Tying of loose bars will be required. Reinforcing bars which have been cut or have lost 25 percent or more of their original cross-sectional area shall be supplemented by new in kind reinforcement bars. New bars shall be lapped a minimum of 32 bar diameters to existing bars. An approved mechanical bar splice capable of developing in tension at least 125 percent of the yield strength of the existing bar shall be used when it is not feasible to provide the minimum bar lap. No welding of bars will be permitted.

(4) Cleaning. Immediately after completion of the concrete removal and reinforcement repairs, the repair areas shall be cleaned of dust and debris. Once the initial cleaning is completed, the repair areas shall be thoroughly blast cleaned to a roughened appearance free from all foreign matter. Particular attention shall be given to removal of concrete fines. Any method of cleaning which does not consistently produce satisfactory results shall be discontinued and replaced by an acceptable method. All debris, including water, resulting from the blast cleaning shall be confined and shall be immediately and thoroughly removed from all areas of accumulation. If concrete placement does not follow immediately after the final cleaning, the area shall be carefully protected with well-anchored polyethylene sheeting.

Exposed reinforcement bars shall be free of dirt, detrimental scale, paint, oil, or other foreign substances which may reduce bond with the concrete. A tight non-scaling coating of rust is not considered objectionable. Loose, scaling rust shall be removed by rubbing with burlap, wire brushing, blast cleaning or other methods approved by the Engineer.

(c) Placement & Finishing of Concrete Repair:

(1) Bonding Method. The patch area shall be cleaned to the satisfaction of the Engineer and shall

be thoroughly wet and maintained in a dampened condition with water for at least 12 hours before placement of the concrete. Any excess water shall be removed by compressed air or by vacuuming prior to the beginning of concrete placement. Water shall not be applied to the patch surface within one hour before or at any time during placement of the concrete.

(2) Concrete Placement.

The concrete shall be placed and consolidated according to Article 503.07 and as herein specified. The temperature control for placement shall be according to Article 1020.14 (b) of the Standard Specifications and the Illinois Tollway Special Provision for "Portland Cement Concrete".

When an overlay system is not specified, the patches shall be finished according to Article 503.16 (a)(1) of the Standard Specifications, followed by a light brooming.

(d) Curing and Protection.

Concrete patches shall be cured by the Wetted Burlap or Wetted Cotton Mat Method according to Article 1020.13 (a)(3) or Article 1020.13 (a)(5) of the Standard Specifications. The curing period shall be from the time of final setting of the mix until the patch is exposed to traffic, which shall be no less than 3 days. In addition to Article 1020.13 of the Standard Specifications, when the air temperature is less than 55º F, the Contractor shall cover the patch with minimum R12 insulation. Insulation is optional when the air temperature is 55º F. - 90º F. Insulation shall not be placed when the air temperature is greater than 90° F. A 72-hour minimum drying period shall be required before placing waterproofing or asphalt surfacing.

(e) Opening to Traffic.

No traffic will be permitted on a patch of Class DS or BS Portland cement concrete until after the minimum curing period of 3 days, and the concrete has obtained a minimum compressive strength of 4000 psi.

Construction equipment will be permitted on a patch during the cure period if the concrete has obtained the minimum required strength. In this instance, the strength specimens shall be cured with the patch.

(f) Quality Management Plan

At least 14 days prior to the first Deck Slab and Approach Slab Repair placement, the Contractor shall submit a Quality Management Plan (QMP), for materials, production, and construction for review and approval by the Engineer and the Illinois Tollway Materials Department. The minimum details in the QMP shall include the proposed: material; production process, including equipment; the materials construction procedures; and the curing procedures.

END OF SECTION

ACCELERATED CONCRETE DECK SLAB AND APPROACH SLAB REPAIR (ILLINOIS TOLLWAY GBSP)

Effective: December 14, 2010
Revised: October 23, 2023

DESCRIPTION

This work shall consist of the removal and disposal of all loose and deteriorated concrete from the bridge deck or approach slab and the replacement with new concrete to the top of the slab surface. The work shall be done according to the applicable requirements of Sections 501, 503 and 1020 of the Standard Specifications, the Illinois Tollway Special Provision "Portland Cement Concrete", and this Special Provision.

Bridge deck and approach slab repairs will be classified as follows:

(a) Partial-Depth. Partial-depth repairs shall consist of removing the loose and unsound deck or approach slab concrete to a depth satisfactory to the Engineer, disposing of the concrete removed and replacing with new concrete to the top of existing slab surface or remaining slab surface if the slab overlay has been scarified under separate work item. The removal may be performed by chipping with power driven hand tools or by hydro-demolition equipment. The depth shall be measured from the top of the concrete deck surface or the remaining surface if scarified, at least 3/4 in. but not more than 1/2 the concrete deck thickness.

(b) Full-Depth. Full-depth repairs shall consist of removing concrete full-depth of the bridge deck or approach slab, disposing of the concrete removed, and replacing with new concrete to the top of existing slab surface or remaining slab surface if the slab overlay has been scarified under separate work item. The removal may be performed with power driven hand tools or by hydro-demolition equipment. Full-depth repairs shall be classified for payment as Full-Depth, Type I and Full-Depth, Type II according to the following:

Type I Full-depth patches less than or equal to 5 sq ft in area. The minimum dimensions for a patch shall be 1 ft X 1 ft.

Type II Full-depth patches greater than 5 sq ft in area.

MATERIALS

Materials shall be according to Article 503.02 of the Standard Specifications except as modified herein: Concrete shall be an Illinois Tollway Class AX mix designed in accordance with the Illinois Tollway Special Provision for "Portland Cement Concrete".

EQUIPMENT

The equipment used shall be subject to the approval of the Engineer and shall meet the following

requirements:

(a) Surface Preparation Equipment. Surface preparation and concrete removal equipment shall be according to the applicable portions of Section 1101 of the Standard Specifications and the following:

(1) Sawing Equipment. Sawing equipment shall be a concrete saw capable of sawing concrete to the specified depth.

(2) Blast Cleaning Equipment. The blast cleaning may be performed by wet sandblasting, high-pressure water blasting, shotblasting or abrasive blasting. Blast cleaning equipment shall be capable of removing rust and old concrete from exposed reinforcement bars and shall have oil traps.

(3) Power-Driven Hand Tools. Power-driven hand tools will be permitted including jackhammers lighter than the nominal 45 lb class. Chipping hammers heavier than a nominal 15 lb class shall not be used for removing concrete from below any reinforcing bar for partial depth repairs or final removal at the boundary of full-depth repairs. Jackhammers or chipping hammers shall not be operated at an angle in excess of 45 degrees measured from the surface of the slab.

(4) Hydraulic Impact Equipment. Hydraulic impact equipment with a maximum rated striking energy of 360 ft-lbs may be permitted only in areas of full depth removal more than 1 foot away from existing beams, girders or other supporting structural members that are to remain in service or more than 1 foot from the boundaries of full-depth repairs.

(5) Hydro-Demolition Equipment. The hydro-demolition equipment shall consist of filtering and pumping units operating with a remote-controlled robotic device. The equipment shall use water according to Section 1002 of the Standard Specifications. The equipment shall be capable of being controlled to remove only unsound concrete.

(b) Concrete Equipment: Equipment for proportioning and mixing the concrete shall be according to Article 1020.03 of the Standard Specifications.

(c) Finishing Equipment: Finishing equipment shall be according to Article 1103.17 of the Standard Specifications. Adequate hand tools will be permitted for placing and consolidating concrete in the patch areas and for finishing small patches.

CONSTRUCTION REQUIREMENTS

Sidewalks, curbs, drains, reinforcement and/or existing transverse and longitudinal joints which are to remain in place shall be protected from damage during removal and cleaning operations. All damage caused by the Contractor shall be corrected, at no additional cost to the Illinois Tollway, to the satisfaction of the Engineer.

The Contractor shall control the runoff water generated by the various construction activities in

such a manner as to minimize, to the maximum extent practicable, the discharge of construction debris into adjacent waters and shall properly dispose of the solids generated according to Article 202.03 of the Standard Specifications. Runoff water will not be allowed to constitute a hazard on adjacent or underlying roadways, waterways, drainage areas or railroads nor be allowed to erode existing slopes.

(a) Hot-Mix Asphalt Surface Removal.

The hot-mix asphalt concrete surface course and all waterproofing membrane shall be removed and disposed of according to applicable portions of Articles 440.04 and 440.06, except milling equipment will not be allowed if the bridge deck or approach slab is to receive a waterproofing membrane system. If the overlay or waterproofing membrane contains asbestos fibers, removal shall be in accordance with IDOT Recurring Special Provision for "Asbestos Waterproofing Membrane or Asbestos Hot-Mix Asphalt Surface Removal". Removal of the hot-mix asphalt surface by the use of radiant or direct heat will not be permitted.

(b) Surface Preparation:

All loose, disintegrated and unsound concrete shall be removed from portions of the bridge deck or approach slab shown on the plans or as designated by the Engineer. The Engineer will determine the limits of removal as the work progresses.

The Contractor shall take care not to damage reinforcement bars or expansion joints which are to remain in place. Any damage to reinforcement bars or expansion joints shall be corrected at no additional cost to the Illinois Tollway. All loose reinforcement bars, as determined by the Engineer, shall be retied at no additional cost to the Illinois Tollway.

(1) Partial-Depth. Areas to be repaired will be determined and marked by the Engineer. A concrete saw shall be used to provide vertical edges approximately 3/4 in. deep around the perimeter of the area to be patched when a concrete overlay is not specified. Where high steel is present, the depth may be reduced as directed by the Engineer. A saw cut will not be required on those boundaries along the face of the curb, parapet or joint or when sharp vertical edges are provided by hydro-demolition.

The loose and unsound concrete shall be removed by chipping, with power driven hand tools or by hydro-demolition equipment. All exposed reinforcing bars and newly exposed concrete shall be thoroughly blast cleaned. Where, in the judgment of the Engineer, the bond between existing concrete and reinforcement steel within the patch area has been destroyed, the concrete adjacent to the bar shall be removed to a depth that will permit new concrete to bond to the entire periphery of the exposed bar. A minimum of 1 in. clearance will be required. The Engineer may require enlarging a designated removal area should inspection indicate deterioration beyond the limits previously designated. In this event, a new saw cut shall be made around the extended area before additional removal is begun. The removal area shall not be enlarged solely to correct debonded reinforcement or deficient lap lengths.

(2) Full-Depth. Concrete shall be removed as determined by the Engineer within all areas designated for full-depth repair and in all designated areas of partial depth repair in which unsound concrete is found to extend below half the concrete bridge deck or approach slab thickness. Full depth removal shall be performed according to Article 501.05 of the Standard Specifications. Saw cuts shall be made on the top of the bridge deck or approach slab, except those boundaries along the face of curbs, parapets and joints or where hydro-demolition provided sharp vertical edges.

Restoration of the subbase material under approach slabs shall be according to the Illinois Tollway Special Provision “Aggregate for Subbase Restoration”.

Forms for full-depth repair of bridge decks may be supported by hangers with adjustable bolts or by blocking from the beams below. When approved by the Engineer, forms for Type 1 patches may be supported by No. 9 wires or other devices attached to the reinforcement bars.

All form work shall be removed after the curing sequence is complete and prior to opening to traffic.

(3) Reinforcement Treatment. Care shall be exercised during concrete removal to protect the reinforcement bars and structural steel from damage. Any damage to the reinforcement bars or structural steel to remain in place shall be repaired or replaced to the satisfaction of the Engineer at no additional cost to the Illinois Tollway. All existing reinforcement bars shall remain in place except as herein provided for corroded bars. Tying of loose bars will be required. Reinforcing bars which have been cut or have lost 25 percent or more of their original cross sectional area shall be supplemented by new in kind reinforcement bars. New bars shall be lapped a minimum of 32 bar diameters to existing bars. An approved mechanical bar splice capable of developing in tension at least 125 percent of the yield strength of the existing bar shall be used when it is not feasible to provide the minimum bar lap. No welding of bars will be permitted.

(4) Cleaning. Immediately after completion of the concrete removal and reinforcement repairs, the repair areas shall be cleaned of dust and debris. Once the initial cleaning is completed, the repair areas shall be thoroughly blast cleaned to a roughened appearance free from all foreign matter. Particular attention shall be given to removal of concrete fines. Any method of cleaning which does not consistently produce satisfactory results shall be discontinued and replaced by an acceptable method. All debris, including water, resulting from the blast cleaning shall be confined and shall be immediately and thoroughly removed from all areas of accumulation. If concrete placement does not follow immediately after the final cleaning, the area shall be carefully protected with well-anchored polyethylene sheeting.

Exposed reinforcement bars shall be free of dirt, detrimental scale, paint, oil, or other foreign substances which may reduce bond with the concrete. A tight non-scaling

coating of rust is not considered objectionable. Loose, scaling rust shall be removed by rubbing with burlap, wire brushing, blast cleaning or other methods approved by the Engineer.

(c) Placement & Finishing of Concrete Repair:

(1) Bonding Method. The patch area shall be cleaned to the satisfaction of the Engineer and shall be thoroughly wetted and maintained in a dampened condition with water for at least 1 hour before placement of the concrete. Any excess water shall be removed by compressed air or by vacuuming prior to the beginning of concrete placement. Water shall not be applied to the patch surface within one hour before or at any time during placement of the concrete.

(2) Concrete Placement.

The concrete shall be placed and consolidated according to Article 503.07 of the Standard Specifications and as herein specified. The temperature control for placement shall be according to Article 1020.14 (b) of the Standard Specifications and the Illinois Tollway Special Provision for “Portland Cement Concrete”.

When an overlay system is not specified, the patches shall be finished according to Article 503.16 (a)(1) of the Standard Specifications, followed by a light brooming.

(d) Curing and Protection.

Concrete patches shall be cured by the Wetted Burlap or Wetted Cotton Mat Method according to Articles 1020.13 (a)(3) or 1020.13 (a)(5) of the Standard Specifications. The curing period shall be from the time of final setting of the mix until the patch is exposed to traffic, which shall be no less than 36 hours. In addition to Article 1020.13 of the Standard Specifications, when the air temperature is less than 55º F, the Contractor shall cover the patch with minimum R12 insulation. Insulation is optional when the air temperature is 55º F. - 90º F. Insulation shall not be placed when the air temperature is greater than 90° F. A 72-hour minimum drying period shall be required before placing waterproofing or asphalt surfacing.

(e) Opening to Traffic.

No traffic will be permitted on a patch of Class AX Portland cement concrete until after the minimum curing period of 36 hours, and the concrete has obtained a minimum compressive strength of 4000 psi. Compressive strength testing shall be conducted in accordance with the Illinois Tollway Special Provision for Portland Cement Concrete, except that the testing frequency shall be every 50 sq. yds. placed as well as from the last patch placed to confirm that the minimum strength has been obtained before the work zone is opened to traffic.

Construction equipment will be permitted on a patch during the cure period if the concrete

has obtained the minimum required strength. In this instance, the strength specimens shall be cured with the patch.

(f) Quality Management Plan

At least 14 days prior to the first Accelerated Concrete Deck Slab and Approach Slab Repair placement, the Contractor shall submit a Quality Management Plan (QMP), for materials, production, and construction for review and approval by the Engineer and the Illinois Tollway Materials Department. The minimum details in the QMP shall include the proposed: material; production process, including equipment; the materials construction procedures; and the curing procedures.

Delete Article 501.06 Method of Measurement
Delete Article 501.07 Basis of Payment

Delete Article 503.21 Method of Measurement
Delete Article 503.22 Basis of Payment

END OF SECTION

STRUCTURAL REPAIR OF CONCRETE (ILLINOIS TOLLWAY GBSP)

Effective: May 29, 2007
Revised: February 25, 2022

Description. This work shall consist of structurally repairing concrete.

Materials. Materials shall be according to the following provisions of the Standard Specifications.

Item	Article/Section
(a) Portland Cement Concrete (Note 1)	1020
(b) R1, R2, or R3 Concrete (Note2)	
(c) Normal Weight Concrete (Notes 3 and 4)	
(d) Shotcrete (High Performance) (Notes 5 and 6)	
(e) Reinforcement Bars	1006.10
(f) Anchor Bolts	1006.09
(g) Water	1002
(h) Curing Compound (Type I)	1022.01
(i) Cotton Mats	1022.02
(j) Protective Coat	1023.01
(k) Epoxy (Note 5)	1025
(l) Mechanical Bar Splicers	1006.10(a)(1)g

Note 1. The concrete shall be Class SI or DS, except the cement factor shall be a minimum 6.65

cwt/cu. yd., the coarse aggregate shall be a CA 16, and the strength shall be a minimum 4000 psi compressive at 14 days. For Class SI and DS mixes, a high range water-reducing admixture shall be used to obtain a 5-8 in. slump at the point of placement, but the cement factor shall not be reduced. A self-consolidating concrete mixture is also acceptable per Article 1020.04 of the Standard Specifications, except the mix design requirements of this note regarding the cement factor, coarse aggregate, strength, and cement factor reduction shall apply.

Note 2. The R1, R2, or R3 concrete shall be from the IDOT's approved list of Packaged, Dry, Rapid Hardening, Cementitious Materials for Concrete Repairs. The R1, R2, or R3 concrete shall comply with the air content and strength requirements for Class SI or DS concrete as indicated in Note 1. Mixing shall be per the manufacturer's recommendations, except the water/cement ratio shall not exceed the value specified for Class SI or DS concrete as indicated in Note 1. A high range water-reducing admixture shall be used to obtain a 5-8 in. slump, and a retarder may be required to allow time to perform the required field tests. The admixtures shall be per the manufacturer's recommendation, and IDOT's approved list of Concrete Admixtures shall not apply. The coarse aggregate shall be 100 percent passing the 1/2 in. sieve.

Note 3. The "high-slump" packaged concrete mixture shall be from the IDOT's approved list of Packaged, Dry, Formed, Concrete Repair Mixtures. The materials and preparation of aggregate shall be according to ASTM C 387. The cement factor shall be 6.65 cwt/cu. yd. minimum to 7.05 cwt/cu. yd. maximum. Cement replacement with fly ash or ground granulated blast-furnace slag shall be according to Section 1020 of the Standard Specifications. The "high slump" packaged concrete mixture shall have a water-soluble chloride ion content of less than 0.40 lb./cu yd. The test shall be performed according to ASTM C 1218, and the "high slump" packaged concrete mixture shall have an age of 28 to 42 days at the time of test. The ASTM C 1218 test shall be performed by an AASHTO Re: Source Accredited lab a minimum of once every two years, and the test results shall be provided to the Department. The coarse aggregate shall be a maximum size of 1/2 in. The packaged concrete mixture shall comply with the air content and strength requirements for Class SI or DS concrete as indicated in Note 1. Mixing shall be per the manufacturer's recommendations, except the water/cement ratio shall not exceed the value specified for Class SI or DS concrete as indicated in Note 1. A high range water-reducing admixture shall be used to obtain a 5-7 in. slump. The admixture shall be per the manufacturer's recommendation, and IDOT's approved list of Concrete Admixtures shall not apply. A maximum slump of 10 in. may be permitted if no segregation is observed by the Engineer in a laboratory or field evaluation.

Note 4. The "self-consolidating concrete" packaged concrete mixture shall be from the IDOT's approved list of Packaged, Dry, Formed, Concrete Repair Mixtures. The materials and preparation of aggregate shall be according to ASTM C 387. The cement factor shall be 6.65 cwt/cu yd minimum to 7.05 cwt/cu yd maximum. Cement replacement with fly ash or ground granulated blast-furnace slag shall be according to Section 1020 of the Standard Specifications. The "self- consolidating concrete" packaged concrete mixture shall have a water-soluble chloride ion content of less than 0.40 lb./cu yd. The test shall be performed according to ASTM C 1218, and the "self-consolidating concrete" packaged concrete mixture shall have an age of 28 to 42 days at the time of test. The ASTM C 1218 test shall be performed by an AASHTO Re: Source Accredited lab a minimum of once every two years, and the test results shall be provided to the

Engineer. The concrete mixture should be uniformly graded. The coarse aggregate shall be 100 percent passing the 1/2 in. sieve. The fine aggregate proportion shall be a maximum 50 percent by weight (mass) of the total aggregate used. The packaged concrete mixture shall comply with the air content and strength requirements for Class SI or DS concrete as indicated in Note 1. Mixing shall be per the manufacturer's recommendations, except the water/cement ratio shall not exceed the value specified for Class SI or DS concrete as indicated in Note 1. The admixtures used to produce self-consolidating concrete shall be per the manufacturer's recommendation, and the IDOT's approved list of Concrete Admixtures shall not apply. The packaged concrete mixture shall meet the self- consolidating requirements of Article 1020.04 of the Standard Specifications.

Note 5. Packaged shotcrete that includes aggregate shall be from IDOT's approved list of Packaged High-Performance Shotcrete, and tests results provided by an AASHTO Re: Source Accredited lab showing the product meets Department specifications will be required. The product shall be a packaged, pre-blended, and dry combination of materials, for the wet-mix shotcrete method shall be provided according to ASTM C 1480. A non-chloride accelerator may be used according to the shotcrete manufacturer's recommendations. The shotcrete shall be Type FA or CA, Grade FR, and Class I. The fibers shall be Type III synthetic according to ASTM C 1116.

The packaged shotcrete shall have a maximum water-soluble chloride ion content of 0.4 lb./cu yd. The test shall be performed according to ASTM C 1218, and the hardened shotcrete shall have an age of 28 to 42 days at the time of test. The test shall be performed a minimum of once every two years.

Each individual aggregate used in the packaged shotcrete shall have either a maximum ASTM C 1260 expansion of 0.16 percent or a maximum ASTM C 1293 expansion of 0.040 percent. However, the ASTM C 1260 value may be increased to 0.27 percent for each individual aggregate if the cement total equivalent alkali content ($Na_2O + 0.658K_2O$) does not exceed 0.60 percent. As an alternative to these requirements, ASTM C 1567 testing which shows the packaged shotcrete has a maximum expansion of 0.16 percent may be submitted. The ASTM C 1260, C 1293, or C 1567 test shall be performed a minimum of once every two years.

The 7- and 28-day compressive strength requirements in ASTM C 1480 shall not apply. Instead, the shotcrete shall obtain a minimum compressive strength of 4000 psi at 14 days.

The packaged shotcrete shall be limited to the following proportions:

The portland cement and finely divided minerals shall be 6.05 cwt/cu. yd. to 8.50 cwt/cu. yd for Type FA and 6.05 cwt/cu. yd. to 7.50 cwt/cu. yd. for Type CA. The portland cement shall not be below 4.70 cwt/cu. yd. for Type FA or CA.

The finely divided mineral(s) shall constitute a maximum of 35 percent of the total cement plus finely divided mineral(s).

Class F fly ash is optional, and the maximum shall be 20 percent by weight of cement.

Class C fly ash is optional and the maximum shall be 25 percent by weight of cement.

Ground granulated blast-furnace slag is optional and the maximum shall be 30 percent by weight of cement.

Microsilica is required and shall be a minimum of 5 percent by weight of cement, and a maximum of 10 percent. As an alternative to microsilica, high reactivity metakaolin may be used at a minimum of 5 percent by weight of cement, and a maximum of 10 percent.

Fly ash shall not be used in combination with ground granulated blast-furnace slag. Class F fly ash shall not be used in combination with Class C fly ash. Microsilica shall not be used in combination with high reactivity metakaolin. A finely divided mineral shall not be used in combination with a blended hydraulic cement, except for microsilica or high reactivity metakaolin.

The water/cement ratio as defined in Article 1020.06 of the Standard Specifications shall be a maximum of 0.42.

The air content as shot shall be 4.0 – 8.0 percent.

Note 6. Packaged shotcrete that does not include pre-blended aggregate shall be from IDOT's approved list of Packaged High Performance Shotcrete, and test results provided by an AMRL-accredited lab showing the product meets Department specifications will be required. The shotcrete shall be according to Note 5, except the added aggregate shall be according to Articles 1003.02 and 1004.02 of the Standard Specifications in addition to each individual aggregate meeting the maximum expansion requirements of Note 5. The aggregate gradation shall be according to the manufacturer. The shotcrete shall be batched and mixed with added aggregate according to the manufacturer.

Note 7. In addition, ASTM C 881, Type IV, Grade 2 or 3, Class A, B, or C may be used.

Equipment. Equipment shall be according to Article 503.03 of the Standard Specifications and the following.

Chipping Hammer – The chipping hammer for removing concrete shall be a light-duty pneumatic or electric tool with a 15 lb. maximum class or less.

Blast Cleaning Equipment – Blast cleaning equipment for concrete surface preparation shall be the abrasive type, and the equipment shall have oil traps.

Hydrodemolition Equipment – Hydrodemolition equipment for removing concrete shall be calibrated and shall use water according to Section 1002 of the Standard Specifications.

High Performance Shotcrete Equipment – The batching, mixing, pumping, hose, nozzle, and auxiliary equipment shall be for the wet-mix shotcrete method and shall meet the requirements of

ACI 506R.

CONSTRUCTION REQUIREMENTS

General. The repair methods shall be either formed concrete repair or shotcrete. The repair method shall be selected by the Contractor with the following rules.

(a) Rule 1. For formed concrete repair, a subsequent patch to repair the placement point after initial concrete placement will not be allowed. As an example, this may occur in a vertical location located at the top of the repair.

(b) Rule 2. Formed concrete repair shall not be used for overhead applications.

(c) Rule 3. If formed concrete repair is used for locations that have reinforcement with less than 0.75 in. of concrete cover, the concrete mixture shall contain fly ash or ground granulated blast-furnace slag at the maximum cement replacement allowed.

(d) Rule 4. Shotcrete shall not be used for any repair greater than 6 in. in depth, except in horizontal applications, where the shotcrete may be placed from above in one lift.

(e) Rule 5. Shotcrete shall not be used for column repairs greater than 4 in. in depth, unless the shotcrete mixture contains a coarse aggregate that 100 percent passes the 1/2 in. sieve.

Temporary Shoring or Cribbing. When a temporary shoring or cribbing support system is required, the Contractor shall provide details and computations, prepared and sealed by an Illinois licensed Structural Engineer, to the Engineer for review and approval. Whenever possible the support system shall be installed prior to starting the associated concrete removal. If no system is specified, but during the course of removal the need for temporary shoring or cribbing becomes apparent or is directed by the Engineer due to a structural concern, the Contractor shall not proceed with any further removal work until an appropriate and approved support system is installed.

Concrete Removal. The Contractor shall provide ladders or other appropriate equipment for the Engineer to mark the removal areas. Repair configurations shall be kept simple, and squared corners will be preferred. The repair perimeter shall be sawed to a depth of 1/2 in. or less, as required to avoid cutting the reinforcement. Any cut reinforcement shall be repaired or replaced at no additional cost to the Illinois Tollway. If the concrete is broken or removed beyond the limits of the initial saw cut, the new repair perimeter shall be recut. The areas to be repaired shall have all loose, unsound concrete removed completely using chipping hammers, hydrodemolition equipment, or other methods approved by the Engineer. The concrete removal shall extend along the reinforcement bar until the reinforcement is free of bond inhibiting corrosion. Reinforcement bar with 50 percent or more exposed shall be undercut to a depth of 3/4 in. or the diameter of the reinforcement bar, whichever value is larger.

If sound concrete is encountered before existing reinforcement bars are exposed, further removal of concrete shall not be performed unless the minimum repair depth is not met.

The repair depth shall be a minimum of 1 in. The substrate profile shall be ± 1/16 in. The perimeter of the repair area shall have a vertical face.

If a repair is located at the ground line, any excavation required below the ground line to complete the repair shall be included in this work.

The Contractor shall have a maximum of 14 calendar days to complete each repair location with concrete or shotcrete once concrete removal has started for the repair.

The Engineer shall be notified of concrete removal that exceeds 6 in. in depth, one fourth the cross section of a structural member, more than half the vertical column reinforcement is exposed in a cross section, more than 6 consecutive reinforcement bars are exposed in any direction, within 1.5 in. of a bearing area, or other structural concern. Excessive deterioration or removal may require further evaluation of the structure or installation of temporary shoring and cribbing support system.

Surface Preparation. Prior to placing the concrete or shotcrete, the Contractor shall prepare the repair area and exposed reinforcement by blast cleaning. The blast cleaning shall provide a surface that is free of oil, dirt, and loose material.

If a succeeding layer of shotcrete is to be applied, the initial shotcrete surface and remaining exposed reinforcement shall be free of curing compound, oil, dirt, loose material, rebound (i.e. shotcrete material leaner than the original mixture which ricochets off the receiving surface), and overspray. Preparation may be by lightly brushing or blast cleaning if the previous shotcrete surface is less than 36 hours old. If more than 36 hours old, the surface shall be prepared by blast cleaning.

The repair area and perimeter vertical face shall have a rough surface. Care shall be taken to ensure the perimeter sawcut is roughened by blast cleaning. Just prior to concrete or shotcrete placement, saturate the repair area with water to a saturated surface-dry condition. Any standing water shall be removed.

Concrete or shotcrete placement shall be done within 3 calendar days of the surface preparation or the repair area shall be prepared again.

Reinforcement. Exposed reinforcement bars shall be cleaned of concrete and corrosion by blast cleaning. After cleaning, all exposed reinforcement shall be carefully evaluated to determine if replacement or additional reinforcement bars are required.

Reinforcing bars that have been cut or have lost 25 percent or more of their original cross-sectional area shall be supplemented by new in-kind reinforcement bars. New bars shall be lapped a minimum of 32 bar diameters to existing bars. A mechanical bar splicer shall be used when it is not feasible to provide the minimum bar lap. No welding of bars shall be performed.

Intersecting reinforcement bars shall be tightly secured to each other using 0.06 in. or heavier

gauge tie wire and shall be adequately supported to minimize movement during concrete placement or application of shotcrete.

For reinforcement bar locations with less than 0.75 in. of cover, protective coat shall be applied to the completed repair. The application of the protective coat shall be according to the second paragraph of Article 503.19 of the Standard Specifications, except blast cleaning shall be performed to remove curing compound.

The Contractor shall anchor the new concrete to the existing concrete with 3/4 in. diameter hook bolts for all repair areas where the depth of concrete removal is greater than 8 in. and there is no existing reinforcement extending into the repair area. The hook bolts shall be spaced at 15- inch maximum centers both vertically and horizontally and shall be a minimum of 12 inches away from the perimeter of the repair. The hook bolts shall be installed according to Section 584 of the Standard Specifications.

Repair Methods. All repair areas shall be inspected and approved by the Engineer prior to placement of the concrete or application of the shotcrete.

(a) Formed Concrete Repair. Falsework shall be according to Article 503.05 of the Standard Specifications. Forms shall be according to Article 503.06 of the Standard Specifications. Formwork shall provide a smooth and uniform concrete finish and shall approximately match the existing concrete structure. Formwork shall be mortar tight and closely fitted where they adjoin the existing concrete surface to prevent leakage. Air vents may be provided to reduce voids and improve surface appearance. The Contractor may use exterior mechanical vibration, as approved by the Engineer, to release air pockets that may be entrapped.

The concrete for formed concrete repair shall be a Class SI or DS Concrete or a packaged R1, R2, or R3 Concrete, or a packaged Normal Weight Concrete at the Contractor's option. The concrete shall be placed and consolidated according to Article 503.07 of the Standard Specifications. The concrete shall not be placed when frost is present on the surface of the repair area, or the surface temperature of the repair area is less than 40 °F. All repaired members shall be restored as close as practicable to their original dimensions.

Curing shall be done according to Article 1020.13 of the Standard Specifications.

If temperatures below 45°F are forecast during the curing period, protection method I or protection method II shall be used during the curing period in according to Article 1020.13(d)(1), or Article 1020.13(d)(2) of the Standard Specifications respectively.

The surfaces of the completed repair shall be finished according to Article 503.15 of the Standard Specifications.

(b) Shotcrete. Shotcrete shall be tested by the Contractor for air content according to Illinois Modified AASHTO T 152. The Engineer shall verify 20% (minimum) of the air content tests performed by the Contractor. Obtain the sample in a damp, non-absorbent container from

the discharge end of the nozzle, or by shooting a pile large enough to scoop a representative amount for filling the air meter measuring bowl. Shotcrete shall not be shot directly into the measuring bowl for testing.

For compressive strength of shotcrete, an 18 x 18 x 3.5 in. test panel shall be shot and tested by the Contractor. Compressive test specimens shall be prepared in accordance with ASTM C 1140 and tested in accordance with ASTM 39. The Engineer shall verify 20% (minimum) of the compressive strength tests performed by the Contractor. The Contractor shall provide the test panel to the Engineer. Acceptable limits of precision between the Contractor and Engineer shall be 900 psi. A steel form test panel shall have a minimum thickness of 3/16 in. for the bottom and sides. A wood form test panel shall have a minimum 3/4 in. thick bottom, and a minimum 1.5 in. thickness for the sides. The test panel shall be cured according to Article 1020.13 (a) (3) or (5) of the Standard Specifications while stored at the jobsite and during delivery to the laboratory. After delivery to the laboratory for testing, curing, and testing shall be according to ASTM C 1140.

The method of alignment control (i.e. ground wires, guide strips, depth gages, depth probes, and formwork) to ensure the specified shotcrete thickness and reinforcing bar cover is obtained shall be according to ACI 506R. Ground wires shall be removed after completion of cutting operations. Guide strips and formwork shall be of dimensions and a configuration that do not prevent proper application of shotcrete. Metal depth gauges shall be cut 1/4 in. below the finished surface. All repaired members shall be restored as close as practicable to their original dimensions.

For air temperature limits when applying shotcrete in cold weather, the first paragraph of Article 1020.14(b) of the Standard Specifications shall apply. For hot weather, shotcrete shall not be applied when the air temperature is greater than 90°F. The applied shotcrete shall have a minimum temperature of 50°F and a maximum temperature of 90°F. The shotcrete shall not be applied during periods of rain unless protective covers or enclosures are installed. The shotcrete shall not be applied when frost is present on the surface of the repair area, or the surface temperature of the repair area is less than 40°F. If necessary, lighting shall be provided to provide a clear view of the shooting area.

The shotcrete shall be applied according to ACI 506R and shall be done in a manner that does not result in cold joints, laminations, sandy areas, voids, sags, or separations. In addition, the shotcrete shall be applied in a manner that results in maximum densification of the shotcrete. Shotcrete which is identified as being unacceptable while still plastic shall be removed and re-applied.

The nozzle shall normally be a distance of 2 to 5 ft. from the receiving surface and shall be oriented at right angles to the receiving surface. Exceptions to this requirement will be permitted to fill corners, encase large diameter reinforcing bars, or as approved by the Engineer. For any exception, the nozzle shall never be oriented more than 45 degrees from the surface. Care shall be taken to keep the front face of the reinforcement bar clean during shooting operations. Shotcrete shall be built up from behind the reinforcement bar. Accumulations of rebound and overspray shall be continuously removed prior to application of new shotcrete. Rebound material shall not be incorporated in the work.

Whenever possible, shotcrete shall be applied to the full thickness in a single layer. The maximum thickness shall be according to Rules 4 and 5 under Construction Requirements, General. When two or more layers are required, the minimum number shall be used and shall be done in a manner without sagging or separation. A flash coat (i.e. a thin layer of up to 1/4 in. applied shotcrete) may be used as the final lift for overhead applications.

Prior to application of a succeeding layer of shotcrete, the initial layer of shotcrete shall be prepared according to the surface preparation and reinforcement bar cleaning requirements. Upon completion of the surface preparation and reinforcement bar treatment, water shall be applied according to the surface preparation requirements unless the surface is moist. The second layer of shotcrete shall then be applied within 30 minutes.

Shotcrete shall be cut back to line and grade using trowels, cutting rods, screeds, or other suitable devices. The shotcrete shall be allowed to stiffen sufficiently before cutting. Cutting shall not cause cracks or delamination in the shotcrete. For depressions, cut material may be used for small areas. Rebound material shall not be incorporated in the work. For the final finish, a wood float shall be used to approximately match the existing concrete texture. A manufacturer approved finishing aid may be used. Water shall not be used as a finishing aid. All repaired members shall be restored as close as practicable to their original dimensions.

Contractor operations for curing shall be continuous with shotcrete placement and finishing operations. Curing shall be accomplished using wetted cotton mats, membrane curing, or a combination of both. Cotton mats shall be applied according to Article 1020.13(a)(5) of the Standard Specifications except the exposed layer of shotcrete shall be covered within 10 minutes after finishing, and continuous wet curing shall begin immediately. Type I curing compound shall be applied according to Article 1020.13(a)(4) of the Standard Specifications, except the curing compound shall be applied as soon as the shotcrete has hardened sufficiently to prevent marring the surface, and each of the two separate applications shall be applied in opposite directions to ensure coverage. The curing compound shall be according to Article 1022.01 of the Standard Specifications. Note 5 of the Index Table in Article 1020.13 of the Standard Specifications shall apply to the membrane curing method.

When a shotcrete layer is to be covered by a succeeding shotcrete layer within 36 hours, the repair area shall be protected with intermittent hand fogging, or continuous wet curing with either burlap or cotton mats shall begin within 10 minutes. Intermittent hand fogging may be used only for the first hour. Thereafter, continuous wet curing with burlap or cotton mats shall be used until the succeeding shotcrete layer is applied. Intermittent hand fogging may be extended to the first hour and a half if the succeeding shotcrete layer is applied by the end of this time.

The curing period shall be for 7 days, except when there is a succeeding layer of shotcrete. In this instance, the initial shotcrete layer shall be cured until the surface preparation and reinforcement bar treatment is started.

If temperatures below 45°F are forecast during the curing period, protection method I or protection method II shall be used during the curing period in according to Article 1020.13(d)(1), or Article 1020.13(d)(2) of the Standard Specifications respectively.

Inspection of Completed Work. The Contractor shall provide ladders or other appropriate equipment for the Engineer to inspect the repaired areas. After curing but no sooner than 28 days after placement of concrete or shooting of shotcrete, the repair shall be examined for conformance with original dimensions, cracks, voids, and delamination's. Sounding for delamination's shall be done with a hammer or by other methods determined by the Engineer.

The acceptable tolerance for conformance of a repaired area shall be within 1/4 in. of the original dimensions. A repaired area not in dimensional conformance or with delamination's shall be removed and replaced.

A repaired area with cracks or voids shall be considered as nonconforming. Exceeding one or more of the following cracks and void criteria listed below shall be cause for removal and replacement of a repaired area.

1. The presence of a single surface crack greater than 0.01 in. in width and greater than 12 in. in length.

2. The presence of two or more surface cracks greater than 0.01 in. in width that total greater than 24 in. in length.

3. The presence of map cracking in one or more regions totaling 15 percent or more of the gross surface area of the repair.

4. The presence of two or more surface voids with least dimension 3/4 in. each.

A repaired area with cracks or voids that do not exceed any of the above criteria may remain in place, as determined by the Engineer.

If a nonconforming repair is allowed to remain in place, cracks greater than 0.007 in. in width shall be repaired with epoxy according to Section 590 of the Standard Specifications. For cracks less than or equal to 0.007 in. in width, the epoxy may be applied to the surface of the crack. Voids shall be repaired according to Article 503.15 of the Standard Specifications.

Publications and Personnel Requirements. The Contractor shall provide a current copy of ACI 506R to the Engineer a minimum of one week prior to start of construction.

The shotcrete personnel who perform the work shall have current American Concrete Institute (ACI) nozzlemen certification for vertical wet and overhead wet applications, except one individual may be in training. This individual shall be adequately supervised by a certified ACI nozzlemen as determined by the Engineer. A copy of the nozzlemen certificate(s) shall be given to the Engineer.

END OF SECTION

BEAM END ENCASEMENT

Description. This work shall consist of structurally encasing the ends of existing PPC I-beams as herein specified and as directed by the Engineer.

Materials. Materials shall be according to the following provisions of the Standard Specifications:

Item	Article/Section
(a) Concrete materials shall be in accordance with the Illinois Tollway Special Provision for Structural Repair of Concrete	
(b) Reinforcement Bars	1006.10
(c) Anchor Dowels	1006.09
(d) High Strength Dowel Anchor Adhesive	1006.09
(e) Water	1002
(f) Curing Compound (Type I)	1022
(g) Cotton Mats	1022.02
(h) Protective Coat	1023.01
(i) Epoxy (Note 1)	1025

Note 1. In addition, ASTM C 881, Type IV, Grade 2 or 3, Class A, B, or C may be used.

Equipment. Equipment shall be according to Article 503.03 and the following.

Chipping Hammer – The chipping hammer for removing concrete shall be a light-duty pneumatic or electric tool with a 15 lb. maximum class or less.

Blast Cleaning Equipment – Blast cleaning equipment for concrete surface preparation shall be the abrasive type, and the equipment shall have oil traps.

Hydrodemolition Equipment – Hydrodemolition equipment for removing concrete shall be calibrated and shall use water according to Section 1002.

Temporary Shoring or Cribbing. When a temporary shoring or cribbing support system is required, the Contractor shall provide details and computations, prepared and sealed by an Illinois-licensed Structural Engineer, to the Engineer for review and approval. Whenever possible, the support system shall be installed prior to starting the associated concrete removal. If no system is specified, but during the course of removal the need for temporary shoring or cribbing becomes apparent or is directed by the Engineer due to a structural concern, the Contractor shall not proceed with any further removal work until an appropriate and approved support system is installed.

Construction Requirements. The length of encasement along the beam shall be 2’-3”. The typical length of repair is expected to be less than 3’-0”. The repair shall be formed concrete repair in accordance with Section 503 of the Standard Specifications or as indicated in the Illinois Tollway Special Provision for Structural Repair of Concrete. Concrete removal shall be performed

as noted below. Shotcrete shall not be used for the beam end encasements.

Bars and Dowels to be drilled and grouted into hardened concrete in accordance with Section 584 of the Standard Specifications. Protective Coat shall be in accordance with Article 420.18 and 503.19 of the Standard Specifications.

The Contractor shall provide ladders or other appropriate equipment to the Engineer for the purpose of sounding the PPC beam ends and marking the proposed removal areas. Repair configurations will be kept simple, and squared corners will be preferred. The repair depth shall be a minimum of 1 inch and the substrate profile shall be ±1/16 inch. The Contractor shall have a maximum of 14 calendar days to complete each repair location once concrete removal has started for the repair.

The repair perimeter shall have a vertical face and shall be saw-cut to a depth of 1/2 in. or less, as required, to avoid cutting the reinforcement or tendons. A pachometer or bar locator shall be used to locate existing reinforcement and prestressing strands. If the concrete is broken or removed beyond the limits of the initial saw-cut, the new repair perimeter shall be recut. The areas to be repaired shall have all loose, unsound concrete removed completely by the use of chipping hammers, hydrodemolition equipment, or other methods approved by the Engineer. Hand tools shall be used for the removal of concrete adjacent to the prestressing strands located in the bottom flange. The concrete removal shall extend along the reinforcement bar until the reinforcement is free of bond-inhibiting corrosion. The outermost layer of reinforcement bar within the repair area shall be undercut to a depth of 3/4 in. (19 mm) or the diameter of the reinforcement bar, whichever value is larger. The underlying transverse reinforcement bar shall also be undercut as previously described, unless the reinforcement is not corroded, and the reinforcement bar is encased and well bonded to the surrounding concrete.

The Engineer shall be notified of concrete removal that exceeds one fourth the cross section of a structural member, extends to within 1.5 inches of a bearing area, or other structural concerns are present. Excessive deterioration or removal may require further evaluation of the structure or installation of a temporary shoring and cribbing support system.

If sound concrete is encountered before existing reinforcement bars are exposed, further removal of concrete shall not be performed unless the minimum repair depth is not met.

Longitudinal cracking along the length of the beam at the bottom flange is also an indication of repair required. However, in this case, the Engineer shall be contacted for further disposition related to appropriate repair type and no concrete shall be removed without prior approval.

The Contractor shall exercise extreme care during concrete removal to not damage the prestressing strands or other reinforcement. If any of the prestressing strands or other reinforcement are damaged, concrete removal shall be stopped immediately and the Engineer shall be informed. Any damaged strands or cut reinforcement shall be repaired or replaced by the Contractor, to the satisfaction of the Engineer, at no additional cost to the Illinois Tollway.

All removed materials shall be disposed of according to Article 202.03 of the Standard

Specifications.

Surface Preparation. Prior to placing the concrete, the Contractor shall prepare the repair area and exposed reinforcement by blast cleaning. The blast cleaning shall provide a surface that is free of oil, dirt, and loose material.

The repair area and perimeter vertical face shall have a rough surface. Care shall be taken to ensure that the perimeter saw-cut is roughened. Just prior to concrete placement, saturate the repair area with water to a saturated surface-dry condition. Any standing water shall be removed.

Concrete placement shall be done within 3 calendar days of the surface preparation, or the repair area shall be prepared again.

Reinforcement. Exposed reinforcement bars shall be cleaned of concrete and corrosion by blast-cleaning. After cleaning, all exposed reinforcement shall be carefully evaluated to determine if replacement or additional reinforcement bars are required.

Reinforcing bars that have been cut or have lost 25 percent or more of their original cross-sectional area shall be supplemented by new in-kind reinforcement bars. New bars shall be lapped a minimum of 32 bar diameters to existing bars. A mechanical bar splicer shall be used when it is not feasible to provide the minimum bar lap. No welding of bars shall be performed.

Intersecting reinforcement bars shall be tightly secured to each other using 0.06 in. or heavier gauge tie wire and shall be adequately supported to minimize movement during concrete placement.

For reinforcement bar locations with less than 0.75 in. of cover, a protective coat shall be applied to the completed repair. The application of the protective coat shall be according to Article 503.19, 2nd paragraph, except blast cleaning shall be performed to remove curing compound (where applied on overhead surfaces) on the finished surface.

Repair Methods. All repair areas shall be inspected and approved by the Engineer prior to placement of the concrete.

Falsework shall be according to Article 503.05. Forms shall be according to Article 503.06. Formwork shall provide a smooth and uniform concrete finish and shall approximately match the existing concrete structure. Formwork shall be mortar tight and closely fitted where they adjoin the existing concrete surface to prevent leakage. Air vents may be provided to reduce voids and improve surface appearance. The Contractor may use exterior mechanical vibration, as approved by the Engineer, to release air pockets that may be entrapped.

The concrete for formed concrete repair shall be a Class BS Concrete or a packaged R1or R2 Mortar with coarse aggregate added, or a packaged Normal Weight Concrete at the Contractor’s option. The concrete shall be placed and consolidated according to Article 503.07. The concrete shall not be placed when frost is present on the surface of the repair area, or the surface temperature of the repair area is less than 40 °F. All repaired members shall be restored as close

as practicable to their original dimensions.

Curing shall be done according to Article 1020.13.

If temperatures below 45°F are forecast during the curing period, protection methods shall be used. Protection Method I according to Article 1020.13(d)(1), or Protection Method II according to Article 1020.13(d)(2), shall be used during the curing period.

The surfaces of the completed repair shall be finished according to Article 503.15.

Inspection of Completed Work. The Contractor shall provide ladders or other appropriate equipment for the Engineer to inspect the repaired areas. After curing but no sooner than 28 days after placement of concrete, the repair shall be examined for conformance with original dimensions, cracks, voids, and delaminations. Sounding for delaminations will be done with a hammer or by other methods determined by the Engineer.

The repaired area shall be removed and replaced, as determined by the Engineer, for nonconformance with original dimensions, surface cracks greater than 0.01 in. in width, map cracking with a crack spacing in any direction of 18 in. or less, voids, or delaminations.

If a nonconforming repair is allowed to remain in place, cracks 0.01 in. or less shall be repaired with epoxy according to Section 590. For cracks less than 0.007 in., the epoxy may be applied to the surface of the crack. Voids shall be repaired according to Article 503.15.

END OF SECTION

APPLY CONCRETE SEALANT (ILLINOIS TOLLWAY GBSP)

Effective: October 25, 2016

Description. This work shall consist of furnishing and applying the specified concrete sealant to the surfaces of abutments, piers and walls as shown in the Plans and as directed by the Engineer.

Materials. Materials for sealing concrete surfaces to prevent scaling and freeze-thaw spalling shall be according to the following Section of the Standard Specifications:

Item	Section
(a) Concrete Sealer (Note 1.)	1026

Note 1. Concrete sealers shall be solvent based silane/siloxane or silane penetrating sealers from the latest IDOT Bureau of Materials and Physical Research list of approved/qualified concrete sealers.

CONSTRUCTION REQUIREMENTS

General. Traffic adjacent to operations shall be protected from overspray and debris from cleaning and sealing.

Surface Preparation.

(1) Existing Concrete. Prior to application of the sealant, all surfaces to be sealed shall be blast cleaned. Blast-cleaning may be performed by either wet sand blasting, high pressure water blasting, shot blasting, shrouded dry sand blasting, dry sand blasting with dust collectors. or other methods approved by the Engineer. The method used shall be performed so as to conform with air and water pollution regulations applicable to the jurisdiction where the work site is located and to also conform to applicable safety and health regulations. Any method which does not consistently produce satisfactory work shall be discontinued and replaced by an acceptable method. All debris of every type, including dirty water, resulting from the blast-cleaning operation shall be reasonably confined during the performance of the blast-cleaning work and shall be immediately and thoroughly removed from the blast-cleaned surfaces and all other areas where debris may have accumulated. Prior to applying the sealant, the Engineer will inspect the blast-cleaned surfaces and any and all contaminated areas shall be blast-cleaned again at no additional cost to the Illinois Tollway and without cause for the Contractor claiming delay.

(2) New Concrete. Surfaces of new concrete that are to receive sealant are to be free of all loose concrete, grease, foreign matter, and debris. Blast-cleaning may be required, if so directed by the Engineer to obtain a clean surface. In addition, prior to application of the sealant, the concrete surface shall be in strict accordance with manufacturer's recommendations.

Application. The sealant shall be applied at the rate of 175 square feet or less per gallon. Two applications may be required to obtain the application rate of 175 square feet per gallon.

When applying sealant to piers adjacent to waterways, lower nozzle velocity and brush or roller apply on vertical surfaces so that excess sealant does not drain into the waterways.

On new concrete or repaired concrete, any curing compounds used must be removed by blast cleaning before the silane type sealant can be applied to the surface to be sealed. Concrete shall be a minimum of 28 days old prior to applying sealant.

END OF SECTION

BRIDGE DECK CONCRETE SEALER (ILLINOIS TOLLWAY GBSP)

Effective: October 25, 2016

Description. This work shall consist of the surface preparation, furnishing, and application of a

concrete sealer upon the entire top surface of the deck, approach slabs and the tops and inside vertical faces of the parapets of the structure(s), as outlined in the plans.

Materials. Materials shall be according to the following Section of the Standard Specifications:

Item	Section
Concrete Sealer (Note 1.)	1026

Note 1. Concrete sealers shall be solvent based silane/siloxane or silane penetrating sealers from the latest IDOT Bureau of Materials and Physical Research list of approved/qualified concrete sealers for products requiring only one application.

Construction Requirements

General. This work, including satisfactory curing of the sealer, shall be completed within the permitted lane closure periods.

Surfaces which are to be sealed shall be thoroughly cleaned by brooming and blowing off with high pressure air. Mechanical scraping may also be required to assist in the removal of mud and other foreign material. The use of chemicals and other cleaning compounds to facilitate the removal of foreign materials shall be approved by the manufacturer of the concrete sealer or its representative before use. Traffic shall not be allowed on the cleaned surface prior to treatment or application of sealer. Cleaning and application equipment shall be fitted with suitable traps, filters, drip pans, and other devices in order to prevent oil and other foreign material from being deposited on the surface.

Deck drains shall be temporarily plugged at the start of each daily operation before the bridge deck concrete sealer is applied, to control run off. The material used to plug the drains shall be removed and disposed of immediately upon the completion of the sealing treatment.

Traffic shall not be permitted to drive over plugged deck drains.

Existing pavement markings shall be temporarily covered prior to the application of the bridge deck concrete sealer. The temporary covering material used shall be such that it will not affect the marking's retroreflectivity when removed. After application of the bridge deck concrete sealer and prior to opening to traffic, all temporary coverings shall be removed.

For new concrete, sealing shall be performed after all grinding and/or saw cut grooving is completed and before the deck is marked and open to traffic.

The concrete surface moisture condition state shall be dry. Pavement moisture shall be checked by the following procedure. Tape the edges of a square foot of plastic to the pavement surface. Allow the plastic to stand for 15 minutes. After 15 minutes, observe the plastic for drops of moisture. If moisture is present and the drop sizes are larger than approximately ¼" diameter, the pavement moisture is too high and bridge deck concrete sealer shall not be applied. Do not apply when inclement weather is anticipated within 12 hours.

Bridge deck surfaces shall be flooded using a distribution sprayer, roller, brush, or broom. Distribution sprayers shall include a skirting system to control overspray. Material shall be brushed or squeegeed for even distribution. Redistribute any puddles or free-standing material. The bridge deck concrete sealer shall be applied according to the manufacturer's instructions, and information provided on the approved list of concrete sealers. The final total coverage rate shall not exceed the manufacturer's recommendations.

Traffic will be allowed on the deck only after a treated area does not track. The Contractor shall allow sufficient time for curing within the Maintenance of Traffic.

END OF SECTION

BONDED PREFORMED JOINT SEAL REPLACEMENT (ILLINOIS TOLLWAY GBSP)

Effective: April 1, 2016
Revised: December 8, 2023

Description. This work shall consist of removal and disposal of the existing joint, cleaning of the joint interface, technical assistance from the joint manufacturer during surface preparation and installation, and furnishing and installation of the bonded preformed joint seal as shown on the plans and as specified herein.

Materials. Joint seals used for the replacement and reconstruction of the existing seals shall consist of the pre-formed neoprene pressurized seals of the JEENE Joint Seal System as manufactured by Watson, Bowman, Acme, Corp., and/or of the pre-formed neoprene compression seals of the J-Series Joint Seal System as manufactured by D. S. Brown Company. Only the following materials supplied by Watson, Bowman, Acme or D. S. Brown shall be used to install the joint seal systems.

(1) Alternate "A": JEENE Joint System. A polychloroprene (neoprene) elastomer seal, preformed by extrusion and vulcanized into its definitive shape, which is supplied in several configurations and dimensions, ranging from ¼" to 5" shall be required for use. The preformed seal shall have the following properties:

PROPERTY	ASTM METHOD	REQUIREMENT
Tensile Strength, min.	D-412	2000 psi (13.8 Mpa)
Elongation at Break, min.	D-412	250%
Hardness, Shore A	D-2240	65 ± 5

PROPERTY	ASTM METHOD	REQUIREMENT
Tensile Strength	D-638	4,000 psi
Axial Compression	D-638	8,000 psi
Pot Life at 68ºF	N/A	40 minutes
Flash Point	N/A	> 200ºF
Initial Cure at 68ºF	N/A	24 hours
Full Cure at 68ºF	N/A	7 days
Oven Aging, 70 hrs. at 212ºF Tensile Strength, max. loss Elongation at Break, max. loss Change in Hardness	D-573	 20% 20% 0 – 10 points
Oil Swell, 70 hrs. at 212ºF Weight Change, max.	D-471	 45%
Ozone Resistance, 70 hrs. at 104ºF	D-1149	No Cracks
Low Temperature Stiffing, 7 days at 14ºF Change in Hardness	D-2240	0 – 15 points

A two-component, thixotropic, epoxy-based adhesive, which is mixed at the job site and supplied by the joint seal manufacturer, shall be required for use with the JEENE Joint Seal System. The adhesive shall have the following properties:

Note: If the ambient air temperature is between 40ºF and 60ºF, an alternate cold weather epoxy shall be utilized.

(2) Alternate “B”: J-Series Joint Seal System. A polychloroprene (neoprene) elastomeric seal preformed by extrusion and vulcanized into its definitive shape, ranging from 1” to 4” shall be required for use. The preformed seal shall have the following properties:

PROPERTY	**ASTM METHOD**	**REQUIREMENT**
Tensile Strength, min.	D-412	2000 psi
Elongation at Break, min.	D-412	250%
Hardness, Shore A	D-2240	55 ± 5
Oven Aging, 70 hrs. @ 212°F Tensile Strength, max. loss Elongation at Break, max. loss Change in Hardness, Shore A		 20% 20% 0 – 10 points
Oil Swell, 70 hrs at 212°F Weight Change, max.	 D-471	 45%
Ozone Resistance, 20% strain, 70 hrs aging, D573, 3 ppm in air	D-1149	No Cracks

A two-component modified epoxy-based adhesive, which is mixed at the job site and supplied by the joint seal manufacturer, shall be required for use with the J-Series Joint Seal System. The adhesive shall have the following properties:

PROPERTY	**ASTM METHOD**	**REQUIREMENT**
Tensile Strength, min.	D-638	4,500psi, min.
Axial Compression	D-638	8,775 psi, min.
Pot Life at 68°F	N/A	45 minutes
Flash Point	N/A	>200°F
Non-Volatile content		100% reactive
Initial cure @ 70°F	N/A	24 hours

CONSTRUCTION REQUIREMENTS

General. The Contractor shall furnish and install the specified joint seal system at the locations shown on the plans in accordance with the manufacturer's instructions and as directed by the Engineer.

Technical assistance provided by the manufacturer during surface preparation and installation shall be furnished at no additional cost to the Illinois Tollway. The Contractor shall furnish the Engineer with the manufacturer's written product information, installation procedures, and instructional video at least two weeks prior to installation. The Contractor, the manufacturer's representative, and the Engineer shall meet to review and clarify installation procedures, and requirements prior to starting the work. A technical representative must be present for the start of surface preparations and installation for at least one day. The Contractor shall contact the manufacturer at least two weeks prior to installation

Any required concrete repairs required to remove and replace unsound concrete as indicated on the plans or specified by the Engineer shall be in accordance with the Illinois Tollway special provision "Accelerated Concrete Deck Slab and Approach Slab Repair".

Installation.

The joint shall be installed without splices under the maintenance of traffic as shown in the plans or as approved by the Engineer. A minimum of two hours cure time is required prior to opening to traffic.

When placing the bonded preformed joint seal against concrete, the concrete surface shall be dry. For newly placed concrete, the concrete shall be fully cured and allowed to dry out a minimum of 7 additional days prior to placement of the bonded preformed joint seal. Cold, wet, inclement weather will require an extended drying time.

Joint Seal System Installations. Joint seal installations shall be as follows.

(1) JEENE Joint Seal System Installation. After all applicable concrete repair work has cured and the joint opening form has been removed, (and after the Engineer verifies that work done under other subsections meets requirements,) the pre-formed neoprene pressurized seal shall be installed. Before installation of the seal, the entire formed joint opening shall be cleaned with all foreign materials totally removed from the gap. The environment should be free of dust, oil, grease, wax, moisture, and frost. The joint interfaces must first be cleaned out by disc grinding or sandblasting using black beauty sand and then vacuumed or blown with dry, oil free, compressed air before the two component epoxy adhesive is mixed and applied. No installation may be performed in rainy weather, or when rain is expected within one hour before installation. All surfaces must be completely dry prior to applying adhesive.

The pre-formed neoprene pressurized seals shall be of the size and shape shown on the Plans. Ambient temperature shall not be lower than 40ºF during installation. Note that gap size will change with cold and hot temperature extremes. Gap measurement should optimally be carried out at the mid-point of the average temperature range for the area of installation. The pre-formed seal shall be cut to the correct length of the appropriate gap for installation, without pulling or exerting excess tension. After the seal length is determined and required cut-outs are completed, both ends of the seal shall be plugged (air tight) and the air valves installed. All end plugs in the seal shall be tested for air tightness and integrity by careful inspection and water submergence prior to seal installation in the joint opening. Deflate and dry off the pre-formed seal before installation.

Clean and abrade the sides of the pre-formed seal per the manufacturer's instructions before the epoxy adhesive is applied. Mix adhesive according to manufacturer's directions only after all preparation of the joint openings in all lanes and for the pre-formed seal are complete. The adhesive shall be applied to the inner faces of the joint opening in an even manner, without leaving blank spots. In the same even manner, the adhesive shall be applied to the outer rigid side walls of the pre-formed seal. As the adhesive is applied to the seal walls (on both sides), the seal should be gradually inserted into the gap, without stress or compression. The contractor should maintain the profile at the depth desired, by hand or by any convenient means. The seals shall be installed at all times with the top of the seal placed below the top of the seal placed below the top of the adjoining pavement slabs as shown on the Plans. Any excess adhesive shall be removed.

Pressurization should be done through the air valve with a heavy pump. Pressurization should be applied slowly so as not to cause the joint to squeeze adhesive out of the flanges on the sides of the joint. Following pressurization, immediately clean all excess adhesive around the edges and top of the joint with a trowel or scraping tool, allow the epoxy adhesive to cure approximately 24 hours, and then remove the air valve to bleed off air pressure.

(2) J-Series Joint Seal System Installation. After all applicable concrete repair work has cured and the joint opening form has been removed (and after the Engineer verifies that work done under other subsections meets requirements), the pre-formed neoprene compression seal shall be installed. Before installation of the seal, the entire formed joint opening shall be cleaned with all foreign materials totally removed from the gap. The environment should be free of dust, oil, grease, wax, moisture, and frost. The joint interfaces must first be cleaned using a stiff bristled brush or sandblasting using black beauty sand and then vacuumed or blown with dry, oil free, compressed air before the two component epoxy adhesive is mixed and applied. No installation may be performed in rainy weather, or when rain is expected within one hour before installation. Clean the concrete surfaces with alcohol cleaner and all surfaces must be completely dry prior to applying adhesive.

The pre-formed neoprene compression seals shall be of the size and shape shown on the Plans. Uncoil the seal and allow it to relax. Apply seal conditioner, scrubbing vigorously into the ribs of the seal using a wire brush or wire wheel on the sidewalls. The surface

must be abraded and tacky to the touch. This roughened, dull finish is needed for an aggressive bond. Continued scrubbing with a stiff nylon brush and new conditioner will clean the surface. Do this in two separate passes, and then rinse the profile with cleaner.

Apply the adhesive to the joint surfaces and into the ribs of the profile using a margin trowel. The ribs must be completely filled. Using a vacuum hooked up to one end of the seal length, draw down the seal enough to insert into the opening. Once placed and leveled, turn off vacuum pump and allow the seal to expand and push against the concrete. A small amount of adhesive should be visible above the ribbed area. Remove any additional adhesive using organic solvents. Allow the adhesive to cure for 24 hours.

END OF SECTION

TELEVISION INSPECTION OF SEWER (ILLINOIS TOLLWAY)

Effective: May 29, 2015
Revised: February 12, 2020

Description. This work shall consist of the inspection and video televising sewers, taking photos, locating drainage structures, and furnishing written reports of the sewers, as shown in the Plans. The work shall be completed in accordance with the National Association of Sewer Service Contractors (NASSCO) Pipeline Assessment & Certification Program (PACP).

Construction Requirements. The Contractor shall perform one pass of a hydraulic flusher to remove loose debris. Should additional cleaning be required, as determined by the Engineer on the basis of the initial pass, that work will be paid for separately.

Television equipment shall be remote controlled from above ground by a skilled technician controlling the camera. The camera shall be a pan and tilt color unit with sufficient lighting for inspection of the sewer. If the contractor has cameras with an automatic iris, they shall use them for all mainline televising; otherwise, lighting shall be manually adjusted so no glares, bright spots, etc. are recorded. The contractor shall pan and tilt up each lateral that is in the main and up and around the entire manhole where the inspection is ending. The camera shall be pulled through the sewer line in either direction at a speed not greater than 30 feet per minute, stopping as necessary to permit proper documentation of the sewer's condition. If the camera is submerged due to a sag or dip in the pipe, a high velocity jet shall be utilized to pull water from the camera lens. If, during the inspection operations the inspection camera will not pass through the entire manhole section, the contractor shall reset his equipment so that the inspection can begin at the opposite manhole. If the contractor is unable to televise the entire manhole-to-manhole segment, he shall notify the Engineer prior to abandoning the attempt. Payment will be based on only the length televised with no additional cost to the Illinois Tollway for the extra setups.

The view seen by the television camera shall be transmitted to a monitor located inside a mobile TV studio, which has the capabilities to produce a transmittable digital copy. The contractor's

mobile studio shall be large enough to accommodate at least two people for the purpose of viewing the monitor while the inspection is in progress. The Engineer shall have access to view the television screen at all times.

Pipe identification and location shall be displayed on the video at the beginning and end of each segment for a minimum of 15 seconds. The pipe location and information shall include Pipe identification, Starting drainage structure location with station and offset, Ending drainage structure location with station and offset, Material, Pipe Size, Date, and Length. If the segment is reversed, the display shall say “Reversal” to differentiate the video from the original run. The date and pipe length counter shall be displayed for the entire length of sewer segment. The contractor shall display all pipe spalling, obtrusions, or obstructions, for a minimum of five seconds.

Inspection reports shall be prepared for each line segment televised. A separate inspection report shall be included where segments are abandoned, and a reverse TV is required. Each inspection report shall include the following information:

a) Illinois Tollway logo
b) Contractor logo
c) Unit number
d) Pipe identification
e) Roadway name/route
f) Direction of Traffic
g) Nearest cross street
h) Starting drainage structure (number, station and offset)
i) Ending drainage structure (number, station and offset)
j) Total length
k) Pipe Material
l) Pipe Shape
m) Pipe Size
n) Pipe joint length
o) Manufactured Year
p) Flow direction
q) Surveyor’s name (name & certification number)
r) Date Recorded
s) Weather
t) Pre-cleaning
u) Date cleaned
v) Drainage structure condition & type of construction
w) Location of all service connections
x) Location & description of all PACP items
y) Report generation date
z) Page number

The contractor shall produce an electronic copy of the inspection report (pdf), video files, and spreadsheet summarizing all inspection records. The electronic data shall be provided to the Engineer via upload to the Illinois Tollway WBPM system contract folder: 03 Construction - 08

Reports and Logs - 05 Sewer Television Reports.

END OF SECTION

ALLOWANCE FOR RAILROAD FLAGGING AND SERVICES (ILLINOIS TOLLWAY)

Effective: April 1, 2016
Revised: May 30, 2025

Description. This Special Provision establishes a budgetary allowance against which payment can be made for flagging and/or other services required and provided by the railroad as a result of work being performed by the Contractor for expansion of the Illinois Tollway system for which the scope of work cannot be determined at the time of submittal of the Proposal. This work shall be performed in accordance with Section 107.12 of the Illinois Tollway Supplemental Specifications, except the Railroad will bill the Contractor directly for this work. Railroad coordination shall be performed in accordance with SP 106.X and 106.X. **{DSE to complete based on the number of railroads involved in the contract and the sequencing of agencies listed in Section 106}**

General Requirements. The Contractor shall pay all costs for Railroad Flagging and/or other services required and provided by the Railroad for work performed under the contract. These costs shall be considered separate from the contract unit prices bid for the various items of work involved. Upon written order of the Engineer, the Contractor shall pay the costs of providing flaggers and/or other services as specified. The Contractor will be reimbursed for the actual amounts paid.

The Contractor shall contact the Railroad a minimum of 30 days in advance to request and schedule the flagging and/or other services required. The Contractor shall concurrently notify the Engineer of each request made to the Railroad. The Contractor shall notify the Railroad in advance if previously requested flagger(s) or services will not be needed or if they need to be rescheduled.

The Railroad may have specific work rules that govern their use of flaggers and furnishing of other services. The Contractor shall coordinate with the appropriate Railroad contact to obtain information about specific Railroad work rules and how they may impact the cost of flagging and/or other services.

Method of Measurement. This work will not be measured for payment.

Basis of Payment. Invoices received from the Railroad for flagging or other services required shall be submitted to the Engineer by the contractor on a monthly basis. The contractor shall promptly pay the Railroad and submit the invoice along with a record of the payment to the Tollway for reimbursement. The Contractor shall receive an administration cost based on the cumulative amount invoiced, an amount equal to five percent for the first $1,000,000 or three percent for any

amount over $1,000,000. Administrative costs shall be applied per invoice. Payment for this work shall not exceed the costs incurred by the Contractor and approved by the Engineer. If more than one railroad lies within the contract limits, the administration cost shall apply to separately for invoices received from each Railroad. Any costs incurred for flagging protection or other services provided by the Railroad at the Contractor's request for those days when the Contractor does not work shall be borne by the Contractor.

The Contractor shall also receive, as administrative costs, an amount equal to ten percent of each bill until fifty percent or more of The Work has been completed. This total amount shall be deducted from a future pay estimate when the retainage amount is reduced below five percent in accordance with Tollway Supplemental Specification Article 109.07.

Other railroad services will be paid for according to Article 109.04 of the Tollway Supplemental Specifications.

Pay Item Number	Designation	Unit of Measure
JT154103	ALLOWANCE FOR RAILROAD FLAGGING AND SERVICES	UNIT

END OF SECTION

CONTRACT ALLOWANCE FOR CONSTRUCTIONWORKS APPRENTICES (ILLINOIS TOLLWAY)

Effective: January 22, 2019
Revised: August 27, 2020

Description. In addition to the Design-Builder's equal employment opportunity efforts undertaken as elsewhere required by this Contract, the Design-Builder is encouraged to participate in this Special Provision for reimbursement of qualifying Construction Works (CW) Eligible Apprentices. This incentive will provide wage reimbursement to Design-Builder's who employ Construction Works (CW) participants within the following skilled trades: (i.e., Operating Engineers, Electricians, Iron workers, Carpenters, Cement Masons, etc.) The CW wage reimbursement Incentive promotes the employment and retention of CW Eligible Apprentices in their acquisition of the prerequisite skills needed to achieve journey worker status in the top skilled trades predominately utilized within Tollway heavy highway and related transportation construction industries. CW encourages retention and utilization of historically underrepresented individuals such as minorities, women, veterans, ex-offenders, and economically disadvantaged individuals on Tollway projects.

CW Eligible Apprentices are defined as a CW program participant placed into a USDOL-registered apprenticeship and/or other suitable construction related employment for not less than

160 hours within a 12 consecutive month period with the objective of gaining the necessary on-the job experiences to fulfil the task competency requirements of an apprenticeship program to achieve journey worker status as evidenced by certified payroll.
The Design-Builder shall submit each CW Eligible Apprentice for Tollway Approval through the Tollways web-based project management system. The Design-Builder is not eligible for the incentive payment until the CW Apprentices are Approved by the Tollway through the web-based project management system.

Prior to payment, the Design-Builder shall submit to the Tollway the CONSTRUCTIONWORKS COMMUNITY HIRING INITIATIVE ALLOWANCE REPORT detailing the hours which the Design-Builder is requesting reimbursement incentive for CW Eligible Apprentices. This report shall be submitted to the Tollway with every pay estimate that the Construction Works wage reimbursement is applied. A SAMPLE REPORT is included as part of this Special Provision. The Design-Builder will also need to provide records documenting hours worked by each CW Eligible Apprentice to the Tollway.

The Design-Builder will be reimbursed at $15 per hour worked by a Tollway Approved CW Eligible Apprentice. This reimbursement will be made even though the Design-Builder may receive additional Tollway incentives such as the CW Bid Credit incentive. However, the hourly incentive payment in this special provision may not be combined with the hourly incentive payment in the Special Provision for Community Hiring Initiative, if applicable, for any one individual.

For purposes of this Special Provision, the Design-Builder is not relieved of requirements under the Illinois Prevailing Wage Act or other applicable laws and regulations.

The Tollway's CW Administrator, Chicago-Cook Workforce Partnership upon request, will provide the Design-Builder with assistance via a network of CW service providers serving the project area in order to facilitate the Design-Builder's hiring of CW Eligible Apprentices.

The initial maximum contract allowance is specified within the contract quantities. During the course of performance of the Contract, the Design-Builder may request that the Tollway provide additional funds to increase the maximum allowance for the incentive and the Tollway may do so under its sole discretion. The Design-Builder shall also ensure that this Special Provision is made applicable to each subcontract if CW Eligible Apprentices are to be employed by a subcontractor and that the incentive payment earned by such subcontractor is passed on to each participating subcontractor.

Method of Measurement. This work will not be measured for payment.

Basis of Payment. Should the Design-Builder qualify for such a wage rate reimbursement; payment will be made under item number 999ADJ45. A corresponding adjustment amount will then be made to CONTRACT ALLOWANCE FOR CONSTRUCTIONWORKS APPRENTICES. Payment for this work will not exceed the costs incurred by the Design-Builder and Approved by the Tollway as described elsewhere in the Special Provision.

Pay Item Number	Designation	Unit of Measure
JT154067	CONTRACT ALLOWANCE FOR CONSTRUCTIONWORKS APPRENTICES	UNIT

END OF SECTION

ALLOWANCE FOR EMERGENCY PAVEMENT AND SHOULDER REPAIR

Description. This Special Provision establishes a budgetary allowance against which payment can be made for emergency pavement and shoulder repair the Tollway directs the Design-Builder to perform. This Work could include repairs to isolated areas, and delaminated and/or rutted pavement overlays within the contract limits, and along the designated detour routes.

This allowance is for Work that is in addition to the Design-Builder's responsibility for maintenance of the pavement and shoulder areas contained in Book 2 – Section 19 Maintenance and is not to be used for the scope of work the Design-Builder is already responsible for under Book 1 – Section 13.2 *(Maintenance and Repair of Work and On-Site Property*).

General Requirements. The Design-Builder shall perform the emergency pavement and shoulder work as directed by the Tollway within the allowable Book 2 – Section 18 Maintenance of Traffic requirements of the contract, unless otherwise directed by the Tollway.

The Design-Builder shall coordinate with Tollway staff to accommodate proper tracking of all materials, labor, and equipment utilized in the Work.

Method of Measurement. This work will not be measured for payment.

Basis of Payment. Due to the emergency nature of the work, payment will be made in accordance with Book 1 – Section 17.14 (*Time and Materials Change Orders*).

Pay Item Number	Designation	Unit of Measure
JT154005	ALLOWANCE FOR EMERGENCY PAVEMENT AND SHOULDER REPAIR	UNIT

END OF SECTION

ALLOWANCE FOR DISPOSAL OF UNKNOWN PRE-EXISTING HAZARDOUS MATERIAL

Description. This Special Provision establishes a budgetary allowance against which payment can be made for Work the Tollway directs the Design-Builder to perform associated with disposal of Unknown Pre-Existing Hazardous Material within the project limits. The Work shall consist of

various items of Work which may be required to be done by the Design-Builder, the scope of which cannot be determined at the time of submittal of the Proposal. This item will provide a line item for:

JT154002 Disposal of Unknown Pre-Existing Hazardous Material following Article 107.19 (a) of the Illinois Tollway Supplemental Specifications, except for compensation being in accordance with Book 1 – Section 17.16 (*Change Order Due to Hazardous Material*).

General Requirements. Work shall be done under this item as directed by the Tollway.

Method of Measurement. This work will not be measured for payment.

Basis of Payment. Payment for this work will be made as specified in Book 1- Section 17.14 (*Time and Materials Change Order*). Payment for this work will not exceed the costs incurred by the Design-Builder and Approved by the Tollway.

Pay Item Number	Designation	Unit of Measure
JT154002	DISPOSAL OF UNIDENTIFIED HAZARDOUS WASTE	UNIT

END OF SECTION

ALLOWANCE FOR DRAINAGE PIPE REPAIR

Description. This Special Provision establishes a budgetary allowance against which payment can be made for drainage repairs the Tollway directs the Design-Builder to perform. This work will be based on the results of the Cleaning and Televising work done by the Design-Builder. This Work includes, but is not limited to, the design of proposed drainage repairs, coordination of those repairs with the Illinois Tollway, construction of the approved repairs, construction materials, construction equipment, additional access roads beyond the roads needed for inspection, grading, landscaping, erosion control measures, and environmental compliance.

This allowance is for Work that is in addition to the Design-Builder's responsibility for drainage Work contained in Book 2 – Section 12 Maintenance and is not to be used for the scope of work the Design-Builder is already responsible for.

General Requirements. The Design-Builder shall perform the drainage Work as directed by the Tollway within the allowable Book 2 – Section 12 Drainage requirements of the contract, unless otherwise directed by the Tollway.

If any of the proposed repairs require additional Temporary Access, the Design-Builder will be responsible for constructing the Temporary Access as directed by the Tollway within the allowable Book 2 – Section 11 Roadways and Grading requirements of the contract, unless otherwise directed by the Tollway.

The Design-Builder shall also incorporate any additional environmental impacts into the environmental documentation based on requirements outlined in Book 2 – Section 4 Environmental Compliance.

The Design-Builder shall coordinate with Tollway staff to accommodate proper tracking of all materials, labor, and equipment utilized in the Work.

Method of Measurement. This work will not be measured for payment.

Basis of Payment. Payment for this work will be made as specified in Book 1 – Section 17.14 (*Time and Materials Change Orders*). Payment for this work will not exceed the costs incurred by the Design-Builder and Approved by the Tollway.

Pay Item Number	Designation	Unit of Measure
XXXXXX	ALLOWANCE FOR DRAINAGE PIPE REPAIR	UNIT

END OF SECTION

PIPE UNDERDRAIN TO BE CLEANED

Description. The work consists of cleaning, removing, and disposing of all debris and obstructions from pipe underdrains as noted on the plans, including all equipment, labor and materials required to complete the work.

General. Pipe underdrains shall be cleaned by flushing, rodding, or whatever means necessary to provide unobstructed drainage and shall be free from such accumulations at the time of inspection. All silt, debris, vegetation, and other materials removed from the pipes shall be disposed of in accordance with Article 202.03 of the Standard Specifications. Should water be used in the cleaning process, the water used shall be collected after use and disposed of in accordance with Article 202.03 of the Standard Specifications or discharged in a manner that does not release sediment or other debris into receiving channels, wetlands, or streams. The cost for the disposal of all materials, contaminated water and debris removed during cleaning is included in the pay item.

END OF SECTION

REMOVAL AND REPLACEMENT OF PRECAST CONCRETE NOISE WALL PANEL SECTIONS

Description. This work shall consist of the removal and replacement of damaged Precast Concrete Noise Wall Panels as shown on the Plans, including the furnishing of all materials, testing, labor, and equipment necessary to construct a Precast Concrete Noise Abatement Wall.

General. The work shall be performed according to the Illinois Tollway Performance-Based Noise Abatement Wall Precast Concrete System Special Provision and Illinois Tollway Standard Drawings G15-04 and G16-04.

Material. The material shall be according to the Illinois Tollway Performance-Based Noise Abatement Wall Precast Concrete System Special Provision and Illinois Tollway Standard Drawings G15-04 and G16-04.

END OF SECTION

NOISE WALL ACCESS DOOR REPLACEMENT

Description. This work shall consist of furnishing and installing a new Fire Hydrant Access Door into the existing Noise Abatement Wall door frame at the locations noted, and per the details shown, on the plans. Such work shall include all equipment, labor, and materials necessary to furnish and install the new door with appropriate connecting hardware.

General. The Contractor shall verify the dimensions of the existing door frame and the necessary connecting hardware prior to ordering the new fire hydrant access door. All work shall be performed according to the Illinois Tollway Performance-Based Noise Abatement Wall Precast Concrete System Special Provision. The thickness of the access door shall be 3/16” minimum with the appropriate hinges and non-locking closing mechanisms to match and connect to the existing frame.

Material. The access door shall be structural steel and shall conform to ASTM A709 (AASHTO M 270) Grade 36, and as specified in Article 1006.04 of the Standard Specifications.

END OF SECTION

LIGHT POLE PROTECTION BOX

Description. This work shall consist of all labor, equipment, and materials necessary to construct a Light Pole Protection Box at the locations shown, and per the details presented, on the plans.

Materials. All structural steel shall conform to the requirements of ASTM A36.

Stainless-steel countersunk bolts shall meet the requirements of ASTM F593 Type 304.
The 3/4" diameter threaded anchor rods shall conform to Article 1006.09 of the Standard Specifications. If the anchor rods in accordance with the Standard Specifications have insufficient tensile strength by maximum dimensions, they may conform to the requirements of ASTM F1554. Anchor rod assemblies shall be furnished with either anchorage plates meeting Article 1006.09 of the Standard Specifications or plate washers in accordance with ASTM A572 (AASTHO M223) Grade 50.

Construction Requirements. The Contractor shall submit Shop Drawings of the Light Pole Protection Box to the Engineer for review and approval. Light Pole Protection Box dimensions shall be detailed such that the top of box is flush with the top of extended concrete barrier. A 1-inch gap shall be provided between the top of existing concrete barrier (to remain) and the bottom of the Light Pole Protection Box to prevent ponding water and debris accumulation.
Welding shall be performed according to AWS D1.5 Bridge Welding Code (latest edition) using E70XX low hydrogen electrodes.

After fabrication, each steel piece shall be galvanized per ASTM A123. Anchor plates and plate washers shall be galvanized according to ASTM A 153 (AASHTO M232).
The Contractor shall drill new holes in the existing parapet for installation and epoxy grouting of the 3/4" diameter anchor rods. Such anchor rods shall have a minimum embedment in existing concrete of 6 inches. Care shall be taken not to damage the existing barrier wall or any new construction. The Contractor shall repair any damage to existing or new items at no additional cost to the Tollway.
Holes shall be cleaned and prepared per the epoxy grout manufacturer's requirements.

END OF SECTION

CONCRETE BARRIER (ILLINOIS TOLLWAY)

Effective: October 23, 2006
Revised: May 30, 2025

Description. This work shall consist of constructing Concrete Barrier and Concrete Barrier Base according to Section 637 of the Standard Specifications except as modified herein.

Revise Article 637.02 of the Standard Specifications to read:

"637.02 Materials. Materials for the barrier and the Portland cement concrete base shall conform to the requirements of the following Articles/Sections of Division 1000 - Materials:

Item	Article/Section
(a) Portland Cement Concrete	1020
(b) Tie Bars (Note 1)	1006.10(a)(2)
(c) Dowel Bars	1006.11(b)

(d) Protective Coat....1023
(e) Non-Shrink Grout 1024.02
(f) Chemical Adhesive Resin System....1027.01
(g) Preformed Expansion Joint Filler.... 1051.01 – 1051.08
(h) Reinforcement Bars (Note 2) .... 1006.10(a)(2)

Note 1. Tie bars shall meet the requirements of ASTM A 706, Grade 60 AASHTO M312, Grade 60 (400).
Note 2. Reinforcement Bars shall meet the requirements of Illinois Tollway Special Provision for Reinforcement Bars.

The coarse aggregate to be used in concrete barrier shall conform to the requirements for the coarse aggregate that is used for superstructure concrete.

Hot mix asphalt (HMA) base will not be allowed."

Add the following to Article 637.06 of the Standard Specifications:

"When a reinforced, single face barrier is specified, the required reinforcing shall be as detailed in the plans."

Delete Article 637.11 Method Measurement
Delete Article 637.12 Basis of Payment

END OF SECTION

EARTHWORK MANAGEMENT PLANS (ILLINOIS TOLLWAY)

Effective: October 18, 2019
Revised: April 23, 2021

Description. This work shall consist of providing earthwork management plans for the earth and rock excavation, furnished material, borrow excavation, unsuitable excavation, topsoil, and embankment work including the excavation of incidental items, performance-based items, structure excavation and channel excavation.

Requirements.

General. The Contractor shall be responsible for filling out the A-51 Earthwork Construction Plan (ECP) and A-53 Earthwork Final Construction Report (EFCR) forms when the total amount of excavation required is greater than 300 cubic yards as a minimum documentation of the items listed above.

As part of the A-51 ECP, the Contractor(s) or firm(s) performing the regulated substances monitoring, field screening, and/or additional sampling, as defined in special provision Disposal

of Regulated Substances and Uncontaminated Soil, shall either be pre-qualified in Hazardous Waste (Simple or Advanced) by IDOT or demonstrate acceptable project experience in remediation and special waste operations for contaminated sites in accordance with applicable Federal, State, or local regulatory requirements using A-51 ECP.

The initial A-51 ECP will be required to be filled out at least 14 days prior to performing excavation.

The Engineer will require up to 30 calendar days for review of the A-51 ECP. The review may involve rejection or revision and resubmittal; in which case, an additional 14 days will be required for each subsequent review. Earthwork shall not commence until the A-51 ECP has been approved by the Engineer. After approval, the A-51 ECP shall be revised and resubmitted to reflect changed conditions in the field.

The Contractor shall be responsible for tracking staging activities between generation, staging, sampling, testing, inspections, and final placement or disposal. Documentation pertaining to staging shall be included in the A-51 ECP to be approved by the Engineer.

The A-53 EFCR form shall be filled out prior to contract final completion date in SP 103.1. The A-53 EFCR shall describe the methods and manners in which all soils including hazardous waste, non-special waste, uncontaminated soil and soils reused on site were managed during construction activities. The Contractor shall submit the A-53 EFCR Form to the Engineer for review and approval.

END OF SECTION

REMOVE AND REINSTALL MILEPOST MARKER

Description. This work shall consist of the removal of existing Mile Post Markers and installation in their permanent plan location at the end of contract to ground mount supports, wood posts or telescoping steel posts as shown in the Plans and herein specified. Included is the transportation, storage, reinstallation of sign panels and ground mount supports, wood posts or telescoping steel posts as required.

Materials. Post clip bolts shall be stainless steel conforming to ASTM A193, Class I Type 304, Grade 33. Aluminum flat washers shall conform to ASTM B209, Alloy 2024-T4 and shall be used under each nut to prevent gouging of the clip. Elastic stop nuts shall be stainless steel conforming to ASTM A194 (AASHTO M292), Grade B8. Aluminum hardware for sign mounting panels shall conform to ASTM B211, Alloy 2024-T4.

Construction Requirements. The Contractor shall load, transport, and re-erect the signs in the new locations as shown in the Plans and directed by the Engineer. If interim storage of such signs is necessary for any reason the Contractor shall store the signs and be solely responsible for them until they are acceptably re-erected.

The Contractor shall assemble sign sections in the field as needed, erect and attach the signs to the supports. The Contractor shall supply hardware for attaching the signs to the supports. Extreme care shall be used in tightening elastic stop nuts to avoid excessive torque and cracking. Any nuts so damaged during installation shall be replaced.

The Contractor shall exercise due care in handling the signs during all phases of this operation. Any sign that is damaged due to the Contractor's handling or operations shall be repaired by the Contractor to the satisfaction of the Tollway, at no additional cost to the Illinois Tollway, and without cause for the Contractor claiming delay. Any sign that is lost or damaged beyond use shall be replaced by the Contractor at no additional cost to the Tollway and without cause for the Contractor claiming delay.

Milepost marker removed and reinstalled which includes the removal of the sign panel, supports and foundations from the original location of the marker, storage of the mile marker till such time that it shall be reinstalled per plan location, and the installation itself.

END OF SECTION

SIGN STRUCTURE RODENT SCREEN

Description. This work shall consist of furnishing and installing a rodent screen at the base of the sign structure according to the notes on the plans including all equipment, labor and materials required to perform the work.

General. The work shall be performed according to the Tollway Overhead Sign Structure Standard Drawing B8-08s, as applicable.

Material. The work shall be performed using stainless steel standard grade wire mesh cloth, ASTM E437 Type 304, 4x4 Mesh, with a 0.047-inch wire diameter. A 1/2" stainless steel band conforming to ASTM A276 Type 304L shall be used around the base plate.

END OF SECTION

FURNISH AND INSTALL STRUCTURAL STEEL SUPPORT MEMBER FOR OVERHEAD SIGN STRUCTURE

Description. This work shall consist of furnishing and installation of missing vertical overhead sign structure supports as noted on the plans including all equipment, labor and materials required to furnish and install the structural steel support members.

General. The work shall be performed according to Sections 733 and 1094 of the Standard Specifications and the Tollway Overhead Sign Structure Standard Drawings, as applicable.

Material. The materials shall be according to Section 1094 of the Standard Specifications and Illinois Tollway Supplemental Specifications.

Delete Article 733.10 Method of Measurement
Delete Article 733.11 Basis of Payment

END OF SECTION

PREFORMED JOINT FILLER

This work shall consist of furnishing all labor, equipment, and materials necessary to remove and dispose of the existing joint filler and install the proposed preformed expansion joint filler and seal as shown on the plans and as specified herein.

Materials. Preformed expansion joint filler shall conform to Article 1051.03, 1051.04 or 1051.05 of the Standard Specifications.

Hot-poured joint sealer shall conform to Article 1050.02 of the Standard Specifications.

Construction.

Preparation: The Contractor shall remove and dispose of all existing joint filler, debris or any other foreign matter that has been collected in the joint. Disposal shall be according to Section 202.03 of the Standard Specifications and the joint shall be cleaned to the satisfaction of the Engineer.

Installation: The preformed expansion joint filler shall be placed uniformly across the joint.

Once the preformed joint filler is in place, the Contractor shall seal the joint with hot-poured joint sealer as shown on the plans. Hot-poured joint sealing material shall be placed according to Article 420.14(a) of the Standard Specifications. The joint sealer shall cure to the satisfaction of the Engineer prior to opening to traffic.

END OF SECTION

MULTI-POLYMER PAVEMENT MARKINGS (ILLINOIS TOLLWAY)

Effective: October 20, 2008
Revised: December 8, 2023

Description. This work shall consist of the furnishing and application of a durable, long life multi-polymer pavement marking system. The binder portion of the system is to be applied to the road

surface at 20 mils ± 1 mil in thickness on concrete/asphalt pavements and 25 mils ± 1 mil on open grade pavement (or according to Engineers and manufacturers recommendation); and into which reflective media is applied by means of pressurized applicator in accordance with the requirements stated in this specification.

Materials. All materials used to formulate a system for hot-spray applications of permanent multi-polymer pavement markings shall conform to the requirements specified herein.

A. Multi-Polymer Resins

a) Physical Properties of the Mixed Compound:

The multi-polymer pavement marking material shall consist of a 100 percent solid two part system formulated and designed to provide a simple volumetric mixing ratio of two components (must be two volume(s) of Component A and one volume(s) of Component B). No volatile solvents or fillers will be allowed. The multi-polymer resin shall be as follows:

- **Multi-Polymer Content (Component A).** The multi-polymer content of the multi-polymer resin shall be tested according to ASTM D 1652 and calculated as the weight per multi-polymer equivalent (WPE) for both white and yellow. The multi-polymer content shall be determined on a pigment free basis and shall meet the target value provided by the manufacturer's certification and approved by the Illinois Tollway. A tolerance of plus or minus 50 of WPE will be applied to the target value to establish the acceptance range.

- **Amine Value (Component B).** The amine value of the curing agent shall be determined according to ASTM D2074. The total amine value shall be less than 530.

The system shall be formulated as a Long Life Pavement Marking System capable of providing an average of 6 years performance. The Long Life Pavement Marking System shall be free of TMPTA (trimethylolpropane-triacrylate), free of toxic heavy metal (lead, chromium, cadmium, and other toxic heavy metals as defined by the U.S. EPA), and free of other such multi functional monomers.

Material composition of the mixed compound shall be as follows:

Material Requirements		
Tests	ASTM Testing Method	Requirements
Density (Gallon Weight)	D1475	±0.30 lb./gal
Viscosity (Krebs-Stormer)	D562	±7 KU
Viscosity (Cone & Plate)		±0.5 Poises
Grind	D1210	Not Less than the Standard
% Weight Non-Volatile Matter	D2369	±1.0%
% Pigment (white & yellow)	D2371	±3.0%
% Volume Non-Volatile Matter	D2697	±5.0%
Infrared Spectrum	-	Both component A and component B shall be analyzed to verify for control purposes that materials submitted for use are of an identical formulation as originally approved. Deviations as determined by comparison with the original sample shall be cause for rejection.
Trifunctional or Multifunctional Monomers	-	0%
Isocyanate	-	0%

The Manufacturer must provide target composition values for the following testing determinations: Theoretical (Mixed) Density, Percent Pigment, Volume Solids (non-volatile matter), Dry Time at 70F & 40F, Weight Solids (non-volatile matter), Epoxide Content, Amine Content, Viscosity Stormer, Fineness of Grind, Daylight Reflectance, Weathering Resistance, Adhesion to Concrete, Hardness. Acceptance ranges will be established based on target composition values.

b) Pigmentation:

The pigment composition shall be as follows:

	Percent by Weight	
Pigment Composition	**Minimum**	**Maximum**
White:		
Titanium Dioxide Rutile (94% minimum	18.0	25.0

purity, ASTM D 476, Type III)		
Multi-Polymer Resin	75.0	86.0
Yellow:		
Organic Non-Lead Yellow	10.0	15.0
Titanium Dioxide (ASTM D 476, Type III)	4.0	9.0
Multi-Polymer Resin	75.0	86.0

The entire pigment composition shall consist of titanium dioxide.

c) Toxicity:
Upon heating to application temperature, the material shall not exude fumes which are toxic or injurious to persons or property. Upon curing the materials should be completely inert with all components fully reacted and environmentally safe.

d) Daylight Reflectance:

The testing method shall follow the requirements of ASTM D2244. Chromaticity and reflectance requirements shall be as follows:

Federal 595 Color		**Chromaticity Coordinates**								**Daylight directional reflectance (Y)**
		1		**2**		**3**		**4**		
		x	**y**	**x**	**y**	**x**	**y**	**x**	**y**	
White	17855	.302	.344	.325	.344	.302	.320	.325	.320	80 min.
Yellow	33538	.543	.472	.475	.472	.543	.425	.475	.425	50 min.

e) Weathering Resistance:

The multi-polymer compound, both white and yellow, must be applied to 2 sets of 3"x 6" aluminum panels at 20 ± 1 mil in thickness, one set with no glass spheres and one set with glass spheres as specified herein (must ensure 50/50 distribution of Type A and Type B beads for this will impact the results of this test) and expose the prepared samples in a Q.U.V. Environmental Testing Chamber, as described in ASTM G-53, and they shall conform to the following requirements. The testing method shall follow the requirements of ASTM D4587. (The test shall be conducted for 75 hours at 122°F, 4 hours humidity and 4 hours U.V., in alternating cycles. The prepared panels shall be cured at 77°F for 72 hours prior to exposure.) The color of the white multi-polymer material shall not be darker than Federal Standard No. 595A-17855. The color of the yellow multi-polymer material shall be reasonably close to Federal Standard No. 595A-13415.

f) Dry Time:

The multi-polymer resin compounds, when properly applied with the required gradations and bead application rates per gallon, shall cure to a no-track condition, when tested in accordance with ASTM D 711, within 240 minutes at 40 degrees F and not more than 35 minutes at temperature 70 degrees F.

g) Adhesion to Pavement (Concrete and Asphalt):

The multi-polymer system markings must perform for an average of 6 years. The testing method shall follow the requirements of ASTM D7234. The cured pavement marking materials, when tested according to ACI Method 503, shall have such a higher degree of adhesion to the specified concrete (compressive strength, 4,000 psi minimum) or asphalt surface such that there shall be a 100% substrate failure in the performance of this test. The prepared specimens shall be conditioned at room temperature (75°F ± 2°F) for a minimum of 24 hours and a maximum of 72 hours prior to the performance of the tests indicated.

h) Hardness:

The multi-polymer paint pavement marking material, when tested according to ASTM D 2240, shall have a Shore D Hardness from 75 to 95. The samples shall be allowed to cure at room temperature (75 ±2 degrees F) for a minimum of 24 hours and a maximum of 72 hours prior to performing the indicated tests.

i) Abrasion:

The abrasion resistance shall be evaluated on a Taber Abrader with a 1,000 gram load and CS-17 wheels. The duration of the test shall be 1,000 cycles. The wear index shall be calculated based on ASTM D4060, and the wear index for the dual component material shall not be more than 100 milligrams. The test shall be performed on cured samples of material which have been applied, without glass beads, at a film thickness of 0.020 ± 0.0005 inches to code S-16 stainless steel plates. The samples shall be allowed to cure at room temperature (75 ± 2 degrees F) for a minimum of 24 hours and a maximum of 72 hours prior to performing the indicated tests.

j) Accelerated Life-Cycle Aging Test: The material must not show any evidence of blistering, bubbling, or delaminating when submitted to test method ATR-931. Results of the test shall be provided by the manufacturer during the approval process.

k) Thermal compatibility:
The mixed hybridized polymer system must have thermal compatibility and tensile strength requirements of 4500-6500 psi, such that, it is compatible with asphalt and Portland cement concrete under all weather conditions.

l) Delineation profile:
To enhance better profile of the marking by minimizing splattering and improved bead embedment the viscosity of the mixed Component A and Component B of the hybridized polymer system shall be greater than 4500cP at 75°F.

m) Reflective Media. The reflective media shall meet the following requirements:

i) First Drop Glass Beads. The first drop glass beads shall be tested by the

standard visual method of large glass spheres adopted by the Illinois Department of Transportation. The beads shall have a silicone, moisture resistant coating and meet the following sieve requirements:

U.S. Standard Sieve Number	Sieve Size	% Passing By Weight (mass)
12	1.70 mm	95-100
14	1.40 mm	75-95
16	1.18 mm	10-47
18	1.00 mm	0-7
20	850 µm	0-5

ii) Second Drop Glass Beads. The second drop glass beads shall meet the requirements of Article 1095.07 of the Standard Specifications for Type B.

n) Packaging:

Glass beads shall be delivered in approved moisture proof bags or weather resistant bulk boxes. Each carton shall be legibly marked with the manufacturer, specifications and type, lot number, and the month and year the glass beads were packaged. The letters and numbers used in the stencils shall be a minimum of ½ in. in height.

a. Moisture Proof Bags. Moisture proof bags shall consist of at least five ply paper construction unless otherwise specified. Each bag shall contain 50 lb. net.

b. Bulk Weather Resistance Boxes. Bulk weather resistance boxes shall conform to the Federal Specification PPP-8-640D Class II or latest revision. Boxes are to be weather resistant, triple wall, fluted, corrugated-fiber board. Cartons shall be strapped with two metal straps. Straps shall surround the outside perimeter of the carton. The first strap shall be located approximately 2 in. from the bottom of the carton and the second strap shall be placed approximately in the middle of the carton. All cartons shall be shrink wrapped for protection from moisture. Cartons shall be lined with a minimum 4 mil polyester bag and meet Interstate Commerce Commission requirements. Cartons shall be approximately 38 x 38 in., contain 2000 lb of glass beads and be supported on a wooden pallet with fiber straps.

The material shall be shipped to the job site in substantial containers and shall be plainly marked with the manufacturer's name and address, the name and color of the material, date of manufacture, and batch number.

o) Verification:

Prior to approval and use of the multi-polymer pavement marking materials, the manufacturer shall submit 1 – quart samples and/or a notarized certification of an independent laboratory, together with the results of all tests, stating these materials

meet the requirements as set forth herein. The certification test report shall state the lot tested, manufacturer's name, brand name of the multi-polymer and date of manufacture. In addition, all multi-polymer components shall be pre-approved for use on the project under the following conditions:

- Documentation of acceptable performance as certified by a Department of Transportation of surface-applied field performance of 100,000 ADT for 6 consecutive years to the standards of this specification.
- Any changes in formulation, physical or chemical properties of the approved multi-polymer resin needed to be explained in writing and submit to the Illinois Tollway within 30 days for reevaluation and approval process. The documentation shall include the Material Safety Data Sheets (MSDS).

Equipment. Application crew and equipment for the placement of reflectorized pavement marking shall be approved by the Pavement Marking Material Manufacturer to perform such operations.

In general, the applicating equipment shall be mobile, truck mounted and self contained pavement marking machine, specifically designed to apply resin materials and reflective glass spheres in continuous and skip line patterns. The applicating equipment shall be maneuverable to the extent that straight lines can be followed and normal curves can be made in a true arc. In addition, the truck mounted unit shall be provided with accessories to allow for the marking of legends, symbols, crosswalks and other special patterns.

The mobile applicator shall include the following features:

1. The mobile applicator shall provide individual material reservoirs, or space, for the storage of Component A and Component B of the resin composition.

2. The applicator shall be equipped with heating equipment of sufficient capacity to maintain the individual resin components at the manufacturer's recommended temperature and produce the required amount of heat at the mixing head & gun tip and maintain those temperatures with the tolerances recommended by the resin manufacturer for spray application.

3. The applicator shall be equipped with adequate individual tanks for the storage and dispensing of Size I and Size II glass spheres and black aggregate.

4. The applicator shall be equipped with individual dispensers for the simultaneous application of Type A and Type B glass beads respectively. Each dispenser shall be capable of applying beads at a minimum rate of 20 pounds per gallon of the resin composition. The applied combined total of both types of beads should be a maximum of 25 lbs./gal. (12 to 13 lbs. of each type).

5. The applicator shall be equipped with individual metering devices or pressure gauges, on the proportioning pumps (one indicator per pump) as well as stroke counters to monitor gallon usage. All such devices shall be visible to the Engineer.

6. The applicator shall be equipped with all the necessary spray equipment, mixers, compressors and other appurtenances to allow for the placement of reflectorized pavement marking system in a simultaneous sequence of operations.

7. Each application equipment must have a proven mixing system for proper mixing of the two components.

8. Each mobile applicator must be equipped with a completely enclosed flush and purge system to clean the lines and the guns without exuding any of the solution into the environment.

The Contractor shall provide an accurate temperature-measuring device(s) that shall be capable of measuring the pavement temperature prior to application of the material, the material temperature at the gun tip and the material temperature prior to mixing.

INSTALLATION REQUIREMENTS

A. Surface Preparation:

Clean the surface by a method approved by the Engineer to remove all dirt, grease, debris, glaze, laitance and any other contaminants that may hinder the adhesion of the system to the surface with minimum or no damage to the pavement surface. New Portland cement concrete pavements shall be water, shot or sand blasted clean to remove all latents. New pavements shall be grooved where required by design in accordance with the Illinois Tollway Supplemental Specifications for grooving for recessed pavement markings followed by blast cleaning. Whenever grinding/grooving, scarifying, sandblasting, shot blasting or other operations are performed, the debris generated must be contained through vacuum type equipment or equivalent and the work shall be conducted in such a manner that the finished pavement surface is not damaged or left in a pattern that will mislead or misdirect the motorist.

When these operations are completed the pavement surface shall first be power broomed and then blown off with compressed air to remove residue and debris resulting from the cleaning work. All such debris must be properly contained especially when removing yellow paint lines and disposed of in the appropriate manner.

Removal and cleaning work shall be a continuous moving operation and conducted in such a manner as to control and minimize airborne dust, and similar debris so as to prevent a hazard to motor vehicle operation or nuisance to property.

Care shall be taken on bituminous and portland cement concrete surface when performing removal and cleaning work to prevent damage to transverse and longitudinal joint sealers.

B. Limits of Work:

Cleaning and surface preparation work shall be confined to the surface area specified for the application of pavement marking materials; or the surface area of existing pavement markings that are specified for removal on the plans, or as directed by the Engineer.

Surface preparation work includes cleaning for lines or cleaning for letters and symbols. Lines will be meant to include: Solid lines, broken lines, dotted lines, channelizing lines, barrier lines, stop lines, crosswalk lines and crossbars.

When lines are cleaned, the area of preparation will be the width of the new pavement marking, or existing line, plus one (1) inch on each side. When letters and symbols are cleaned the area of preparation will be sufficiently large to accommodate the new marking, or to remove the existing marking. Markings shall be applied to the cleaned surfaces on the same calendar day. If this cannot be accomplished, the surface shall be re-cleaned prior to applying the markings. No new marking, line or symbols shall be applied on any pavement that has not been properly prepared as per this specification and until the Engineer approves the cleaning.

C. Removal of Concrete Curing Compounds:

On new portland cement concrete pavements, cleaning operations shall not begin until a minimum of 10 days after the placement of concrete. The extent of the blasting work and/or grooving shall be to clean and prepare the concrete surface such that:

a. There is not visible evidence of curing compound on the peaks of the textured concrete surface.

b. There are no heavy puddled deposits of curing compound in the valleys of the textured concrete surface.

c. All remaining curing compound is intact; all loose and flaking material is removed.

d. The peaks of the textured pavement surface are rounded in profile and free of sharp edges and irregularities.

e. The extent of the removal should be as such to insure the laitance is removed on both old as well as new concrete.

D. Removal of Existing Pavement Markings:

Existing pavement marking shall be cleaned for the purpose of:

a. Preparing the pavement surface for the application of a new multi-polymer pavement marking in the same location as the existing markings of a different type.

b. To remove existing markings that are in good condition which, if allowed to remain, will interfere with or otherwise conflict with newly applied marking patterns.

It shall be understood that in this context cleaning means the removal of an existing marking. It is not intended that all deteriorated existing pavement markings be removed. Example: If a new marking is applied to an unmarked "gap" in a broken line and the existing broken line pattern is worn or deteriorated, as determined by

the Engineer, to the extent that it is not misleading or confusing to the motorist, the existing markings do not require removal.

Existing pavement markings that are to be totally replaced with a multi-polymer marking shall be cleaned to the extent that 95% to 100% of the existing marking is removed. Removal operations shall be conducted in such a manner that no more than moderate color and/or surface texture change results on the surrounding pavement surface.

The determination of acceptable removal will be made by judgment of the Engineer.

c. Existing multi-polymer pavement markings to be recapped shall be cleaned via approved light grinding or blasting operations to the extent that all loose/flaky marking materials are removed as well as oil, dirt, etc. that may contaminate the application of the new marking material. A complete removal of the existing multi-polymer pavement markings is not necessary provided that it has been established to the Engineers' satisfaction that the existing markings are well bonded to the substrate and will not compromise the new markings. Recapping of existing markings will be limited to application over only long-life markings (TMPTA or other multifunctional monomer free systems) after verification with manufacturer and limited to one recapping event. A minimum of 20 mil of the liquid multi-polymer material is required for recapping before application of the glass beads.

E. Remove excess oils on asphalt pavements:

Removal of excess oils on SBR Latex, SBS, and SMA polymer/GTR modified asphalts shall require the following procedure (for any other type of polymer modified asphalts contact the pavement marking manufacturer for recommendations):

Remove excess oils exposing the top of the aggregates using approved light grinding or blast cleaning operations. Care shall be taken when performing this work to prevent gouging of the pavement and damage to the transverse and longitudinal joints.

F. Application:

The pavement marking system shall be applied through special machinery designed to precisely meter the two components in the ratio of proportion recommended by the material manufacturer. This equipment shall also comply with the previous specifications. The application of and combination of reflective media (glass beads and/or reflective elements) shall be applied at a rate specified by the manufacturer.

The edge of the center line or lane line shall be offset a minimum distance of 2 in. (50 mm) from a longitudinal crack or joint. Edge lines shall be approximately 2 in. (50 mm) from the edge of pavement. The finished center and lane lines shall be straight, with lateral deviation of any 10 ft. line not to exceed 1 in.

G. Atmospheric Conditions:

The pavement marking shall only be applied during conditions of dry weather and on subsequently dry pavement surfaces at the specified minimum uniform wet thickness according to the manufacturer's installation instructions. At the time of installation, the pavement surface temperature and the ambient temperature shall be above 45°F. For application at temperatures below 50°F, the hybridzed polymer manufacturer shall be contacted for guidance. The Engineer shall determine the atmospheric conditions and pavement surface conditions that produce satisfactory results.

H. Application Temperatures:

Both components shall be brought to the temperature condition recommended by the manufacturer prior to mixing and spraying.

At any time throughout the duration of the project, the Contractor shall provide free access to his/her application equipment for inspection by the Engineer, his/her authorized representative, or the materials representative.

Notification. The Contractor shall notify the Engineer 72 hours prior to the placement of the markings in order that he/she can be present during the operation. At the time of notification, the Contractor shall provide the Engineer the manufacturer and lot numbers of multi-polymer material and reflective media that will be used.

Inspection and Performance Requirements. The multi-polymer pavement markings will be inspected according to Article 780.12 of the Standard Specifications. The initial inspection will occur by October 15 or 30 days after placement, whichever is later.

Final inspection will follow a winter performance period and will occur between April 1 and May 30. Lane line, edgeline, and centerline pavement markings shall provide effective delineation, presence, and retroreflectivity as noted below. During the inspection period, the Engineer will make such observations and measurements as necessary to determine conformance with these performance requirements.

A. The pavement markings shall meet the following Minimum Retroreflectivity Requirements:

B.

Performance Retroreflectivity Criteria mcd/m^2/lux	
White	Yellow
325	275

Retroreflectivity requirements shall be measured with a handheld or mobile retroreflectometer that meets the requirements of ASTM E 1710. Performance criteria apply to the average retroreflectance over a 0.1 mile section. Any 0.1 mile section that does not meet this requirement shall be replaced within 30 days, weather permitting.

C. The pavement markings shall meet or exceed 95% present and intact. Evaluation of presence and intact shall be made on 25' sections and averaged for 0.1 mile sections. Any 0.1 mile section that does not meet this requirement shall be replaced within 30 days, weather permitting.

Packaging and Shipment. The pavement marking materials shall be shipped to the jobsite in strong substantial containers. Individual containers shall be plainly marked with the following information:

a. Name of Product
b. Lot Number
c. Batch Number
d. Date of Manufacture
e. Quantity
f. Mixing proportions
g. Safety information
h. Manufacturer's Name and Address

Reflective media shall be shipped in moisture resistant bags. Each bag shall be marked with name and address of the manufacture and the name and net weight of the material with a clear indication of what type of coating is present on the beads.

Sampling and Acceptance.

A. Certification of Compliance:
The material manufacturer shall furnish a notarized certification that the material complies with the provisions of this specification. It shall not be inferred that the provisions of a certification of compliance waives Illinois Tollway inspection, sampling or testing.

B. Laboratory Samples: Promptly after execution of the contract, the contractor shall notify the Engineer of the sources of material he/she expects to use. The material manufacturer shall furnish samples of the hybridized polymer materials as may be required by the Engineer, a minimum of ten days before the date of intended use of these materials.

C. Infrared Spectra: A copy of the infrared spectra of each component on each lot number shall be supplied by the manufacturer along with the certification papers. This infrared spectra will be on record with the Illinois Tollway to serve as a quality control measure for the future supply of this system to the Illinois Tollway.

Qualification.

A. Qualifying a Manufacturer:

The Manufacturer must have expertise providing a pavement marking material that meets this specification with a documented performance history to include:

a. Verifiable installations: proof of successful installations of at least 6 years old

covering a minimum of 200,000 feet in 4 states in North America inclusive of climates having high UV exposure and high snow fall/plowing (seasonal snow fall >36 inches). Documentation of installations of similar climatic and traffic conditions shall be provided to the Illinois Tollway for material approval.

b. The manufacturer will have demonstrated field performance in the locale of proposed application for a minimum of 12 months.
c. Production facilities; 2 geographically separate locations minimum
d. Compliance with EPA regulations
e. A Verifiable ISO 9001 certified Q.C. Program

B. Qualifying a Contractor:

Multi-polymer pavement markings shall only be applied by Contractors on the IDOT list of Approved Contractors, listed under the Modified Urethane Pavement Marking sub-category, maintained by the Engineer of Operations and in effect on the date of advertisement for bids.

In order for an installer of such pavement marking material to be approved, the following document must be submitted:

a. A certificate from a pre-approved manufacturer of such pavement marking materials, certifying that such a contractor has functional, appropriate equipment to install the pavement marking material of choice. The certification must be submitted to the Illinois Tollway for review and approval prior to the installation of the pavement marking.

END OF SECTION

PAVEMENT MARKING AND MARKER REMOVAL (ILLINOIS TOLLWAY)

Effective: September 27, 2006
Revised: February 25, 2022

This work shall consist of removing existing pavement markings, temporary pavement markings, and raised pavement lane markers according to Section 783 of the Standard Specifications except as modified herein.

Add the following to Article 1101.12 of the Standard Specifications:

Water blasting shall be used only when the air temperature is a minimum of 32° and rising.

Revise the first paragraph of Article 783.03(a) of the Standard Specifications to read:

“(a) Pavement Markings. The existing and temporary pavement markings shall be removed from the pavement by a method that does not materially damage the surface or texture of the pavement

or surfacing. Very small particles of tightly adhering existing markings may remain in place, if in the opinion of the Engineer, complete removal of the small particles will result in pavement surface damage. Any damage to the pavement or surfacing caused by pavement marking removal shall be repaired by the Contractor at his/her own expense by methods acceptable to the Engineer. Where blast cleaning is used for the removal of pavement markings, care should be taken to protect all vehicular traffic from damage. Removal by Hydro blasting shall be required on new permanent pavement. Removal by grinding shall be allowed only on temporary short life pavements or on existing permanent pavements as approved by the Engineer."

Remove Article 783.05 Method of Measurement
Remove Article 783.06 Basis of Pavement

END OF SECTION

HANDHOLE COVER REPLACEMENT

Description. This work shall consist of installing a new handhole cover on the existing overhead sign structure post as noted on the plans and shall include all equipment, labor and materials required to furnish, and install the new handhole cover with connecting hardware.

General. The Contractor shall verify the dimensions of the existing access hole prior to ordering the new handhole cover. The work shall be performed according to Sections 733, 801 and 1094 of the Standard Specifications and the Illinois Tollway Standard Drawings.

Material. Stainless Steel Handhole Covers shall be ASTM A240, Type 302 or 304, or another alloy suitable for exterior exposure and acceptable to the Engineer. Carbon Steel Handhole Covers shall be hot dip galvanized after fabrication. Painting is not permitted.

END OF SECTION

DITCH CLEANING

Description: This work shall consist of regrading and shaping existing ditches which have accumulated debris and vegetation over time, at locations shown in the plans, and as directed by the Engineer, in order to re-establish existing ditch grade lines.

Construction Requirements: All restoration areas shall have positive longitudinal drainage patterns. Ditch bottoms and side slopes shall be re-cut to conform to Illinois Tollway Standards and as shown in the plans. All regraded material shall be redistributed and regraded within the existing ROW and shall be placed outside the areas of any wetlands or Waters of the US (WOUS) as shown in the plans unless approved by the Engineer.

The seeding and any required topsoil shall be paid for separately. Re-cut areas shall be deep enough to accommodate restoration topsoil if removal of material results in remaining topsoil to be than 4 inches in depth.

END OF SECTION

MICROSURFACING (ILLINOIS TOLLWAY)

Effective: January 5, 2011
Revised: May 30, 2025

Description. This work shall consist of microsurfacing the hot-mix asphalt (HMA) surface. The work will be in accordance with Section 404 of the Standard Specifications except as modified herein.

Add Note 5 to Article 404.02(d) Emulsified Asphalts:

> Note 5. Each load of emulsified asphalt shall be accompanied with a certificate of analysis/compliance to indicate the emulsion meets the specification.

Add Note 1 to Article 404.03(a) Slurry Systems Mixing Machine:

> Note 1. Only Continuous (self-loading) machines shall be used for microsurfacing.

Add Note 2 to Article 404.03(b) Slurry Systems Spreader:

> Note 2. The secondary strike off shall allow for variable pressures to control the surface texture.

Replace Article 404.04 with the following:

> **General.** The paving mixture shall be capable of covering 100% of the area to be covered in one pass, be capable of field regulation of the setting time, and be suitable for nighttime placement. The compatibility of all ingredients of the mix, including the mix set additive, shall be certified by the emulsified asphalt manufacturer.

Remove last sentence and second table of Article 404.06(a).

Replace the last paragraph of Article 404.08 with the following:

> “Cracks wider than 3/16-inch shall be sealed in accordance with the Article 451 of the Supplemental Specification.”

Replace the last paragraph of Article 404.09(e) with the following:

> A smooth, neat seam shall be provided where two passes meet or where a single pass is adjacent to a mainline lift of HMA or of exposed concrete pavement. Excess material shall be immediately removed from the ends of each run. Transverse joints are to be constructed with no more than 1/8-inch difference in elevation across the joint. Any damage to, or irregularities in, the microsurfacing shall be repaired, as directed by the Engineer. All repairs shall be made with a paver box, except areas designated as hand work areas.

Remove the last paragraph of Article 404.12 with the following:

> When requested by the Engineer, samples of component materials or of the composite micro-surface mixture must be provided.

Remove Article 404.15 Method of Measurement
Remove Article 404.16 Basis of Pavement

END OF SECTION

HIGH TENSION CABLE MEDIAN BARRIER (ILLINOIS TOLLWAY)

Effective: March 19, 2013
Revised: February 25, 2022

Description. This work consists of furnishing all labor, materials, equipment, and performing all operations in connection with the installation of a complete and operational High Tension Cable Median Barrier system as shown in the Plans and/or directed by the Engineer.

The High Tension Cable Median Barrier shall conform to the individual manufacturer's specifications and shall be installed according to the manufacturer's instructions. The High Tension Cable Median Barrier shall be capable of roadside, median mounting meeting MASH (2016) Test Level 3 conditions (TL3). The manufacturer shall provide FHWA Letter of Eligibility prior to approval. In consideration of the Tollway's existing systems, the approved manufacturer shall be limited to Gibraltar.

The Contractor shall submit a Proposal including plan and details for installation of high tension cable median barrier system based on manufacturer's recommended design practice. The Proposal shall be accepted by the Illinois Tollway prior to commencement of work.

At no cost to the Illinois Tollway, deliver 150 each Line Posts, 15 Each End Terminal units, and 15 each Field Splice Kits to the Maintenance Section designated in the contract for future maintenance of the system. Any costs associated with manufacturer's on-site field representative shall be considered incidental to the contract. Site restoration work shall be included in this item.

Line Post
All posts shall be of the size and shape as recommended by the manufacturer and shall be uniformly spaced as to limit the deflection to a maximum of 12'-6". The line post system shall be driven.

Concrete
All concrete used in the installation of the Cable Median Barrier shall be Class SI concrete meeting all requirements of Section 1020 of the Standard Specifications.

Delineation
The adhesive reflector shall be flexible reflective sheeting, a minimum of 7 square inches, direct applied, fabricated of high-performance reflective sheeting, color: yellow or white, meeting the minimum reflective values for incidence angles of -4 and +30 degrees for Type AZ sheeting as set forth in Article 1091.03 of the Standard Specifications. The sheeting shall be manufactured by either 3M, Stimsonsite, Reflexite, or an approved equivalent. The Contractor shall furnish written documentation from the sheeting manufacturer that the sheeting is approved as being compatible for use as a permanent reflector face. The sheeting shall adhere securely to the steel posts at temperatures of -30 ºF to +160 ºF and shall not crack when struck at -10 ºF.

The reflector shall be installed directly onto the terminal end post in accordance with the manufacturer's requirements. The line post reflector shall be installed directly onto both sides of the posts at intervals not to exceed 100 feet. The surface of the steel posts shall be cleaned of all contaminants prior to the installation of the reflector. The surface shall be cleaned using a 5-8 percent phosphoric acid solution and rinsed with clean water or as recommended by the manufacturer of the direct applied flexible reflective sheeting and as approved by the Engineer.

CONSTRUCTION METHODS

General
The alignment and location of the High Tension Cable Median Barrier shall be according to the Contractor's accepted proposal or as directed by the Engineer. Extreme care shall be taken to ensure proper wire rope height.

Wire rope shall be placed per manufacturer's recommendations and be tensioned immediately after initial installation. Tension shall be rechecked and adjusted after initial tensioning according to manufacturer's recommendation. A tension log form shall be completed showing the time, date, location, ambient temperature, and final tension reading, signed by the person performing the tension reading. This log shall be furnished to the Engineer upon completion of work. This form shall also include the Cable Median Barrier manufacturer's recommended tension chart.

Contractor is responsible for installing the cable median barrier system in accordance with the manufacturer's requirements which must meet all FHWA requirements for the proposed MASH TL-3 system on embankment slopes between 1:6 and 1:4 (V:H).

Provide maintenance training during/after installation of the system including classroom and field

instruction and a training video or CD-ROM to the Maintenance Section. The scheduling and location of this training shall be approved by the Engineer.

Areas adjacent to cable median barrier installations that are damaged by construction activities shall be restored. Restoration shall include placement of Topsoil (4”), Seeding of the Class Specified and Erosion Control in accordance with the Illinois Tollway Supplemental Specifications and Standard Specifications.

Contractor’s Responsibility for Underground Facilities.
It shall be the Contractor’s responsibility to ascertain in advance of any work, by any and all possible means, the presence of underground electrical or telecommunications cables in or near the vicinity of the work. It shall be the Contractor’s further responsibility to notify the Tollway at least ten days in advance of setting new posts when working near underground electrical or telecommunications cables. Tollway technicians will then locate any such cables which may be in jeopardy. It shall be the Contractor’s responsibility to preserve cable location markings and all information relating thereto given to him, and to effectively communicate such information to his workers. If the Contractor cuts or damages any such cables, either through carelessness or failure to follow the foregoing procedures, he shall then be held responsible for repairing all damages or replacing the cable without splicing, at the Tollway’s option, and all at no additional cost to the Illinois Tollway or cause for the Contractor claiming delay.

Such repair or replacement shall include the immediate installation by the Contractor, without further notice to him, of temporary cables satisfactory to the Engineer, the temporary cables to remain in service until the directed repairs or replacements are made. Stringing temporary cables on the ground will not be allowed in any circumstances.

All efforts on the Illinois Tollway’s part to advise the Contractor as to the locations of underground cables notwithstanding, it shall be understood that such locations are at best approximate, may be in error, and that such efforts by the Illinois Tollway shall not relieve the Contractor of any responsibility for restoring damage resulting from the activities of any employee, Subcontractor, agent, or representative of the Contractor.

The Contractor shall also be responsible for notifying owners of other cables and underground facilities which may be jeopardized by the Contractor’s operations in the same manner as required for notice to the Illinois Tollway.

Basis of Acceptance
Basis of acceptance of the High Tension Cable Median Barrier furnished shall be based on the following:

Visual inspection of all items furnished for condition and conformance with dimensional and other requirements.

Receipt of manufacturer’s certification and material test reports for wire rope, posts, and anchor frames.

Determination (at project site prior to installation) of the weight of galvanized coating by means of a magnetic gauge.

END OF SECTION

EMBANKMENT (Illinois Tollway)

Effective: April 16, 2014
Revised: April 6, 2022

Description. The work shall consist of the construction of embankments by depositing, placing, and compacting earth, stone, gravel, or other materials of acceptable quality above the natural ground surface or other surface. This work also includes modifying the moisture content of the suitable embankment material to achieve the specified compaction by drying, adding water, or by chemical treatments.

The work shall be in accordance with Sections 202, 204, and 205 of the Standard Specifications except as modified herein, and in accordance with the Tollway Special Provision for Embankment Modification when chemical treatments are applied.

Materials.

1. Embankment Source Submittal Requirements

Unless otherwise specified in the contract plans, proposed earth excavation, borrow excavation and furnished excavation locations are to be designated by the Contractor and approved by the Engineer prior to their use.

The Contractor shall submit the following information to the Engineer for approval no later than 30 days prior to the planned start of work at each area:

a) Location map for the proposed excavation:
    a. Property boundaries
    b. Planned excavation extents
    c. Access locations
    d. Planned depths and quantity of excavation
    e. Contractor's proposed sampling locations for geotechnical and environmental testing.
b) Narrative describing the planned use, schedule and quantities planned for the excavation.
c) Written permission for the Illinois Tollway and Engineer to enter the non-job site property to collect earth excavation and furnished excavation soil samples for geotechnical and environmental testing.

2. Embankment Material

Embankment material shall be as required in Sections 202, 204, and 205 of the Standard Specifications, except as follows.

Embankment material shall be sampled, tested, and approved before use. The contractor shall identify embankment sources, and provide equipment as the Engineer requires, for the collection of samples from those sources. Samples will be furnished to the Engineer a minimum of 14 days prior to use in order that laboratory tests for approval and compaction can be performed. Embankment material placement cannot begin until tests are completed and approval given. The Engineer may collect independent soil samples and perform confirmatory tests prior to approval. One test will be performed for every 5000 cubic yards of material, or as required by the Engineer.

Replace Article 1009.04 of the Standard Specification with the following:

1009.04 Soil and Other Materials for Embankments, Fills, and Subgrades. The Engineer may designate a soil as suitable, unsuitable, or restricted-use; and stable or unstable through visual inspection and the testing described below.

Suitable and restricted-use soil shall be defined as follows.

Test	Suitable Soil	Restricted-Use Soil
Standard Dry Density at Optimum Moisture Content (OMC), (Illinois Modified AASHTO T 99 – Method C & Annex A1), lb/cu ft	98 min.	98 min.
Organic Content, (AASHTO T 194, Wet Combustion), %	10 max.	10 max.
Silt and Fine Sand, (AASHTO T 88), %	65 max.	
Passing No. 200 Sieve, %	35 min.	
Plasticity Index, (AASHTO T 90), %	12 min.	
Liquid Limit, (AASHTO T 89), %	50 max.	60 max.

A stable and suitable or restricted-use soil shall meet the above criteria and in addition have a moisture content within the range defined in Article 205.06.

An unstable and suitable or restricted-use soil shall meet the above criteria, but the moisture content exceeds the maximum defined in Article 205.06. These soils may be modified per the Tollway Embankment Modification Special Provision.

Restricted-use miscellaneous materials shall include stones and boulders naturally occurring within the right-of-way; broken concrete without protruding metal bars; bricks; rock; stone; uncontaminated dirt and sand generated from construction or demolition activities; and other materials proposed by the Contractor and approved by the Engineer.

If reclaimed asphalt pavement (RAP) is used, it shall not be used within the ground water table or as a fill if ground water is present. RAP shall be according to the Illinois Tollway Special Provision for Production of Recycled Aggregate. Gradation deleterious count shall not exceed 10% of total RAP and 5% of other by total weight per Illinois Test Procedure (ITP) 203 in the IDOT Manual of Aggregate Quality Test Procedures. Gradations may be performed dry, without the need for washing per ASTM C136. The following requirements shall be met.

1) The material shall have 100% passing the 1.5-inch sieve and be well graded down through fines.
2) The material shall be determined as well graded by calculating the Coefficient of Uniformity (C_u) and Coefficient of Curvature (C_c) per ASTM D2487, with required $C_u \geq 4.0$, and $3.0 \geq C_c \geq 1.0$.
3) RAP shall not be used within the top five feet of embankment in any pavement with concrete layers, or within the top eight feet of embankment in a flexible, full depth asphalt pavement. RAP shall not be used in embankment above any rigid underground structures or bedrock. RAP shall not be used within lineal 100 feet of a transition approach slab or approach slab.
4) RAP in the embankment shall be capped with 3 feet material that meets the requirements above.

If there are changed or differing site conditions according to Article 105.01, an absence or sparsity of geotechnical data, or for other reasons; an unstable and suitable or restricted-use soil may be declared unsuitable by the Engineer.

Other excavated material not described above shall be designated as unsuitable by the Engineer. At the discretion of the Engineer, soils that exhibit potential for significant erosion or excessive volume change may also be designated as unsuitable.

Construction Requirements.

1. Placing Embankment Material

   Embankment material shall be placed in accordance with Article 205.04 of the Standard Specifications, with the following additional requirements.

   In addition to Article 202.03 of the Standard Specifications, broken concrete, reclaimed asphalt with no expansive aggregate, or uncontaminated dirt and sand generated from construction or demolition activities shall be placed in 6-inch lifts and disked with the underlying lift until a uniform homogenous material is formed. This process also applies to the overlaying lifts. The disk must have a minimum blade diameter of 24 inches.

The placement of reclaimed asphalt pavement shall only be allowed when ambient air temperature is 40°F and rising.

Replace the second sentence of paragraph six of Article 205.03 of the Standard Specifications, with the following:

When embankments are to be constructed on hillsides or existing slopes that are steeper than 4H:1V, steps shall be keyed into the existing slope by stepping and benching as shown in the plans or as directed by the engineer.

Replace the second sentence of paragraph three of Article 205.04 of the Standard Specifications, with the following:

Restricted-use materials shall be encapsulated by suitable soil a minimum of 3 ft, measured vertically and horizontally from each face of the in-place restricted-use materials.

2. Compaction of Embankment Material

Embankment material shall be compacted in accordance with Article 205.06 of the Standard Specifications, except as follows.
RAP shall be compacted to not less than 100 percent of the standard laboratory density, according to AASHTO T99 (Method C) using a coarse particle correction (AASHTO T99, Annex A.1)

Soils classification for moisture content control will be determined by the Soils Inspector using visual field examination techniques and the IDH Textural Classification Chart.

When tested for density in place each lift shall have a moisture content as follows.

The minimum moisture content of all embankment lifts shall be 80% of the optimum moisture content and shall not exceed 110% on any type of soil except for the moisture restrictions mentioned below for clay loam, silt and silt loam soils when determined according to AASHTO T99, Method C using a coarse particle correction (AASHTO T99, Annex A1).

a) A maximum of 105 percent of the optimum moisture for all forms of clay loam soils.
b) A maximum of 90 percent of the optimum moisture for silt and silt loam soils.

The Contractor shall disk and dry the embankment material to achieve proper moisture and density. The Contractor will be permitted to use an approved additive to effectively provide a quicker drying time. As soon as acceptable moisture contents are achieved, the Contractor must complete the compaction of the layer as specified herein and to the satisfaction of the Engineer. No separate payment will be made for this work.

If the Engineer approves the Contractor to place embankment with an excessively high moisture content (greater than 120 percent of the optimum moisture content at the time of placement), then the Contractor will be compensated in accordance with the Illinois Tollway

special provision for Embankment Modification to reduce the moisture to between 80% and 110% of the optimum moisture content at the time of compaction.

END OF SECTION

EMBANKMENT MODIFICATION (ILLINOIS TOLLWAY)

Effective: May 15, 2017
Revised: July 25, 2025

Description. This work shall consist of the chemical treatment of suitable embankment soil when excessive moisture is present.

Materials. Materials shall be in accordance with Article 302.02 of the Standard Specifications.

Equipment. Revise Article 302.03 of the Standard Specifications to the following.

Item	Article/Section
(a) Distributor (Note 1)	
(b) Rotary Speed Mixer	1101.06
(c) Lime Slurry Equipment (Note 2)	
(d) Water Truck (Note 3)	

Note 1. The distributor shall be a mechanical type and shall be approved by the Engineer. All spreader trucks shall be equipped with a dust collection/filter system to capture fugitive dust when transferring material into the spreader truck. All spreader trucks used to place the chemical modifier shall have a fully intact skirt to limit fugitive dust. Release of pressurized air in the equipment, when necessary, shall not be directed downward onto the spread material.

Note 2. The equipment used for mixing, transporting, slaking, and placing lime slurry shall be approved by the Engineer.

Note 3. A water truck shall be on site when modification is in progress. The water truck shall be specialized equipment with a large tank in the rear able to transport water and shall be capable of regulating an even distribution of water. Release of pressurized air in the equipment, if necessary, shall not be directed downward onto the spread material.

CONSTRUCTION REQUIREMENTS

General. The modified soil shall be constructed when the temperature of the soil measured 6.0 inches below the surface is above 45°F and ambient air temperature is above freezing and rising. The chemical modifier shall not be applied to or mixed with frozen soil. The quantity of modified embankment constructed or treated shall be limited to that which can be covered with subbase, base or pavement within the same construction season unless otherwise permitted by the Engineer.

The Contractor is responsible for the control of dust at all times. The Contractor's procedures for controlling dust before, during and after any dust-generating operations shall be submitted as part of the Contractor's Dust Control Plan according to Article 107.36 of the Illinois Tollway Supplemental Specifications.

Prior to the start of stabilization activities, a pre-construction meeting shall be conducted. The Contractor's proposed materials, equipment, construction methods, dust mitigation strategies and tactics, and communication protocols should be reviewed.

Testing and Mix Design. The Contractor shall be responsible for all testing required to determine the chemical modifier type and optimum chemical modifier content. Mix designs shall be developed using Sections B2 and B3 of Appendix B “Laboratory Test and Mix Design Procedures” of the current IDOT Geotechnical Manual.

Mix design proportioning shall be performed according to Section B.3.4(e)(1) of the IDOT Geotechnical Manual.

The modifier selection, laboratory testing, and mix design shall be performed by a laboratory that is either prequalified in Geotechnical Services by IDOT, or is AASHTO re:source accredited for the following tests:

- AASHTO R 58 Dry Preparation of Disturbed Soil and Soil-Aggregate Samples for Test
- AASHTO T 27 Sieve Analysis of Fine and Coarse Aggregate
- AASHTO T 88 Particle Size Analysis of Soils
- AASHTO T 89 Determining the Liquid Limit of Soils
- AASHTO T 90 Determining the Plastic Limit and Plasticity Index of Soils
- AASHTO T 99 Moisture-Density Relations of Soils Using a 5.5-lb Rammer and a 12-inch Drop
- AASHTO T 100 Specific Gravity of Soils
- AASHTO T 180 Moisture-Density Relations of Soils Using a 10-lb Rammer and 18-inch Drop
- AASHTO T 193 California Bearing Ratio

Particle size analysis shall be performed on the untreated soil according to AASHTO T 88. The Standard Dry Density and the Optimum Moisture Content of the soil-chemical modifier mixture shall be determined according to AASHTO T 99 (Method C).

Lime shall be used as a modifier only when the soil has a minimum clay content of 15 percent, determined according to AASHTO T 88; and has a maximum organic matter content of 10 percent, determined according to AASHTO T 194. Fly ash shall be used as a modifier only when the soil has a maximum clay content of 15 percent, or when the soil has less than 35 percent passing the #200 sieve, determined according to AASHTO T 88. Cement may be used as a modifier for all types of soils.

For silt subgrade material, cement shall be used as a modifier.

Test results and the geotechnical consultant's recommendation for chemical modifier type and content shall be submitted to the Engineer prior to use. The source or type of chemical modifier shall not be changed during the progress of the work without approval by the Engineer. A change in source or chemical type shall require a new mix design.

Application of Modifier. The chemical modifier shall be applied uniformly as follows.

The surface of the grade shall be lightly scarified or disked prior to the distribution of the chemical modifier. The chemical modifier shall be distributed uniformly over the surface. The Engineer may reject any application procedure which does not provide an even distribution of the chemical modifier. The spreading of chemical modifier shall be limited to that amount which can be incorporated into the soil within the same working day.

The chemical modifier shall not be applied when wind conditions exceed 20 mph or are such that blowing chemical modifier becomes objectionable to adjacent property owners or creates a hazard to air traffic or to vehicular traffic on adjacent highways as determined by the Engineer.

No other equipment or vehicles shall drive through spread chemical modifier material prior to the completion of mixing or compaction operations.

Mixing. The modifier, soil and water shall be thoroughly mixed by a rotary speed mixer. Mixing shall continue until a homogenous layer of the required thickness has been obtained and a minimum of 75% of the mixture particles are smaller than 1 inch in any dimension. The loose thickness of a single layer of modified soil shall not exceed 16 inches.

Compaction. Compaction of soil modified with fly ash and cement shall be completed no later than one hour after mixing begins.

Compaction of soil modified with hydrated lime or by-product non-hydrated lime shall be completed within the same day.

The modified soil shall be compacted to a minimum dry density, maximum moisture content, and stability in accordance with the Illinois Tollway special provision for Embankment. Aeration by means of further mixing, or the addition of water and further mixing, may be required by the Engineer to achieve the required compaction.

END OF SECTION

CONTRACTOR'S QUALITY PROGRAM (ILLINOIS TOLLWAY)

Effective: May 1, 2007
Revised: April 1, 2016

Description. This work shall consist of the Contractor establishing, implementing, and maintaining an effective Quality Program in accordance with the Illinois Tollway Contractor's Quality Program Manual.

END OF SECTION

PUBLIC CONVENIENCE AND SAFETY (D1)

Effective: May 1, 2012
Revised: July 15, 2012

Add the following to the end of the fourth paragraph of Article 107.09:

"If the holiday is on a Saturday or Sunday, and is legally observed on a Friday or Monday, the length of Holiday Period for Monday or Friday shall apply."

Add the following sentence after the Holiday Period table in the fourth paragraph of Article 107.09:

"The Length of Holiday Period for Thanksgiving shall be from 5:00 AM the Wednesday prior to 11:59 PM the Sunday After"

Delete the fifth paragraph of Article 107.09 of the Standard Specifications:

"On weekends, excluding holidays, roadways with Average Daily Traffic of 25,000 or greater, all lanes shall be open to traffic from 3:00 P.M. Friday to midnight Sunday except where structure construction or major rehabilitation makes it impractical."

END OF SECTION

WORK ZONE TRAFFIC CONTROL (D1)

Effective: February 1, 1996
Revised: January 1, 2007

Specific traffic control plan details and Special Provisions have been prepared for this contract. This work shall include all labor, materials, transportation, handling, and incidental work necessary to furnish, install, maintain, and remove all traffic control devices required as indicated in the plans and as approved by the Engineer.

When traffic is to be directed over a detour route, the Contractor shall furnish, erect, maintain and remove all applicable traffic control devices along the detour route according to the details shown in the plans.

END OF SECTION

TRAFFIC CONTROL PLAN (D1)

Effective: September 30, 1985

Revised: January 1, 2007

Traffic Control, **on arterial routes outside the jurisdiction of the Illinois Tollway**, shall be according to the applicable sections of the Standard Specifications, the Supplemental Specifications, the "Illinois Manual on Uniform Traffic Control Devices for Streets and Highways", any special details and Highway Standards contained in the plans, and the Special Provisions contained herein.

Special attention is called to Article 107.09 of the Standard Specifications and the following Highway Standards, Details, Quality Standard for Work Zone Traffic Control Devices, Recurring Special Provisions and Special Provisions contained herein, relating to traffic control.

The Contractor shall contact the District One Bureau of Traffic at least 72 hours in advance of beginning work.

STANDARDS: 701001, 701006, 701301, 701601, 701427, 701606, 701611, 701801, 701901 and 704001

DETAILS: TC-14: Traffic Control and Protection at Turn Bays (To Remain Open to Traffic)
TC-22: Arterial Road Information Signs

SPECIAL PROVISIONS: Public Convenience and Safety (D1)
Traffic Control and Protection (Arterials)
Traffic Control for Work Zone Areas
Keeping Arterial Roadways Open to Traffic (Lane Closures Only)
Temporary Information Signing
Temporary Traffic Signal Timing
Vehicle Equipment and Warning Lights (BDE)
Work Zone Traffic Control Devices (BDE)

END OF SECTION

TEMPORARY INFORMATION SIGNING

Effective: November 13, 1996
Revised: January 29, 2020

Description. This work shall consist of furnishing, installing, maintaining, relocating for various states of construction, and eventually removing temporary informational signs. Included in this item may be ground mount signs, skid mount signs, truss mount signs, bridge mount signs, and overlay sign panels which cover portions of existing signs.

Materials.

Materials shall be according to the following Articles of Section 1000 - Materials:

	Item	Article/Section
a.)	Sign Base (Note 1)	1090
b.)	Sign Face (Note 2)	1091
c.)	Sign Legends	1091
d.)	Sign Supports	1093
e.)	Overlay Panels (Note 3)	1090.02

Note 1. The Contractor may use 5/8 inch (16 mm) instead of 3/4 inch (19 mm) thick plywood.
Note 2. The sign face material shall be in accordance with the Department's Fabrication of Highway Signs Policy.
Note 3. The overlay panels shall be 0.08 inch (2 mm) thick.

GENERAL CONSTRUCTION REQUIREMENTS

Installation.
The sign sizes and legend sizes shall be verified by the Contractor prior to fabrication.

Signs which are placed along the roadway and/or within the construction zone shall be installed according to the requirements of Article 701.14 and Article 720.04. The signs shall be 7 ft (2.1 m) above the near edge of the pavement and shall be a minimum of 2 ft (600 mm) beyond the edge of the paved shoulder. A minimum of two (2) posts shall be used.

The attachment of temporary signs to existing bridges, sign structures or sign panels shall be approved by the Engineer. Any damage to the existing signs and/or structures due to the Contractor's operations shall be repaired or signs replaced, as determined by the Engineer, at the Contractor's expense.

END OF SECTION

TRAFFIC CONTROL FOR WORK ZONE AREAS

Effective: September 14, 1995
Revised: January 1, 2007

Work zone entry and exit openings shall be established daily by the Contractor with the approval of the Engineer. All vehicles including cars and pickup trucks shall exit the work zone at the exit openings. All trucks shall enter the work zone at the entry openings. These openings shall be signed in accordance with the details shown elsewhere in the plans and shall be under flagger control during working hours.

The Contractor shall plan his trucking operations into and out of the work zone as well as on to

and off the expressway to maintain adequate merging distance. Merging distances to cross all lanes of traffic shall be no less than 1/2 mile. This distance is the length from where the trucks enter the expressway to where the trucks enter the work zone. It is also the length from where the trucks exit the work zone to where the trucks exit the expressway. The stopping of expressway traffic to allow trucks to change lanes and/or cross the expressway is prohibited.

Failure to comply with the above requirements will result in a Traffic Control Deficiency charge.

The deficiency charge will be calculated as outlined in Article 105.03 of the Standard Specifications. The Contractor will be assessed this daily charge for each day a deficiency is documented by the Engineer.

END OF SECTION

KEEPING ARTERIAL ROADWAYS OPEN TO TRAFFIC (LANE CLOSURES ONLY)

Effective: January 22, 2003
Revised: August 10, 2017

The Contractor shall provide the necessary traffic control devices to warn the public and to delineate the work zone as required in these Special Provisions, the Standard Specifications, the State Standards, and the District Details.

Arterial lane closures shall be in accordance with the Standard Specifications, Highway Standards, District Details, and the direction of the Engineer. The Contractor shall request and gain approval from the Engineer seventy–two (72) hours in advance of all long-term (24 hrs. or longer) lane closures.

Arterial lane closures not shown in the staging plans will not be permitted during **peak traffic volume hours**.

Peak traffic volume hours are defined as weekdays (Monday through Friday) from
6:00 AM to 8:30 AM and 4:30 PM to 6:00 PM.

Private vehicles shall not be parked in the work zone. Contractor's equipment and/or vehicles shall not be parked on the shoulders or in the median during non-working hours. The parking of equipment and/or vehicles on State right-of-way will only be permitted at locations approved by the Engineer in accordance with Articles 701.08 and 701.11 of the Standard Specifications.

Should the Contractor fail to completely open and keep open all the traffic lanes to traffic in accordance with the limitations specified above, the Contractor shall be liable to the Department for the amount of:

One lane or ramp blocked = **$ 1000 / 15 minutes**
Two lanes blocked = **$ 2500 / 15 minutes**

Not as a penalty but as liquidated and ascertained damages for each and every 15 minute interval or a portion thereof that a lane is blocked outside the allowable time limitations. Such damages may be deducted by the Department from any monies due the Contractor. These damages shall apply during the contract time and during any extensions of the contract time.

END OF SECTION

TEMPORARY TRAFFIC SIGNAL TIMING

Effective: May 22, 2002
Revised: July 1, 2015
890.02TS

Description. This work shall consist of developing and maintaining appropriate traffic signal timings for the specified intersection for the duration of the temporary signalized condition, as well as impact to existing traffic signal timings caused by detours or other temporary conditions.

All timings and adjustments necessary for this work shall be performed by an approved Consultant who has previous experience in optimizing Closed Loop Traffic signal Systems for District One of the Illinois Department of Transportation. The Contractor shall contact the Traffic Signal Engineer at (847) 705-4424 for a listing of approved Consultants.

The following tasks are associated with TEMPORARY TRAFFIC SIGNAL TIMING.
(a) Consultant shall attend temporary traffic signal inspection (turn-on) and/or detour meeting and conduct on-site implementation of the traffic signal timings.

(b) Consultant shall be responsible for making fine-tuning adjustments to the timings in the field to alleviate observed adverse operating conditions and to enhance operations.

(c) Consultant shall provide monthly observation of traffic signal operations in the field.

(d) Consultant shall provide on-site consultation and adjust timings as necessary for construction stage changes, temporary traffic signal phase changes, and any other conditions affecting timing and phasing, including lane closures, detours, and other construction activities.

(e) Consultant shall make timing adjustments and prepare comment responses as directed by the Area Traffic Signal Operations Engineer.

(f) Return original timing plan once construction is complete.

END OF SECTION

WORK ZONE TRAFFIC CONTROL DEVICES (BDE)

Effective: March 2, 2020
Revised: January 1, 2026

Add the following to Article 701.03 of the Standard Specifications:

"(q) Temporary Sign Supports…… 1106.02"

Revise Article 701.03(p) of the Standard Specifications to read:

"(p) Detectable Pedestrian Channelizing Barricades..... 1106.02(m)"

Revise the third paragraph of Article 701.14 of the Standard Specifications to read:

" For temporary sign supports, the Contractor shall provide a FHWA eligibility letter for each device used on the contract. The letter shall provide information for the set-up and use of the device as well as a detailed drawing of the device. The signs shall be supported within 20 degrees of vertical. Weights used to stabilize signs shall be attached to the sign support per the manufacturer's specifications."

Revise the first paragraph of Article 701.15 of the Standard Specifications to read:

" **701.15 Traffic Control Devices.** For devices that must meet crashworthiness standards, the Contractor shall provide a manufacturer's self-certification or a FHWA eligibility letter for each Category 1 device and a FHWA eligibility letter for each Category 2 and Category 3 device used on the contract. The self-certification or letter shall provide information for the set-up and use of the device as well as a detailed drawing of the device."

Revise the first six paragraphs of Article 1106.02 of the Standard Specifications to read:

" **1106.02 Devices.** Work zone traffic control devices and combinations of devices shall meet crashworthiness standards for their respective categories. The categories are as follows.

Category 1 includes small, lightweight, channelizing, and delineating devices that have been in common use for many years and are known to be crashworthy by crash testing of similar devices or years of demonstrable safe performance. These include cones, tubular markers, plastic drums, and delineators, with no attachments (e.g. lights). Category 1 devices manufactured after December 31, 2019 shall be MASH-16 compliant. Category 1 devices manufactured on or before December 31, 2019, and compliant with NCHRP 350 or MASH 2009, may be used on contracts let before December 31, 2024.

Category 2 includes devices that are not expected to produce significant vehicular velocity change but may otherwise be hazardous. These include vertical panels with lights, barricades, temporary sign supports, and Category 1 devices with attachments (e.g. drums with lights). Category 2

devices manufactured after December 31, 2019 shall be MASH-16 compliant. Category 2 devices manufactured on or before December 31, 2019, and compliant with NCHRP 350 or MASH 2009, may be used on contracts let before December 31, 2024.

Category 3 includes devices that are expected to cause significant velocity changes or other potentially harmful reactions to impacting vehicles. These include crash cushions (impact attenuators), truck mounted attenuators, and other devices not meeting the definitions of Category 1 or 2. Category 3 devices manufactured after December 31, 2019 shall be MASH-16 compliant. Category 3 devices manufactured on or before December 31, 2019, and compliant with NCHRP 350 or MASH 2009, may be used on contracts let before December 31, 2029. Category 3 devices shall be crash tested for Test Level 3 or the test level specified.

Category 4 includes portable or trailer-mounted devices such as arrow boards, changeable message signs, temporary traffic signals, and area lighting supports. It is preferable for Category 4 devices manufactured after December 31, 2019 to be MASH-16 compliant; however, there are currently no crash tested devices in this category, so it remains exempt from the NCHRP 350 or MASH compliance requirement.

For each type of device, when no more than one MASH-16 compliant is available, an NCHRP 350 or MASH-2009 compliant device may be used, even if manufactured after December 31, 2019."

Revise Articles 1106.02(g), 1106.02(k), and 1106.02(l) to read:

" (g) Truck Mounted/Trailer Mounted Attenuators. The attenuator shall be approved for use at Test Level 3. Test Level 2 may be used for normal posted speeds less than or equal to 45 mph.

(k) Temporary Water Filled Barrier. The water-filled barrier shall be a lightweight plastic shell designed to accept water ballast and be on the Department's qualified product list.

Shop drawings shall be furnished by the manufacturer and shall indicate the deflection of the barrier as determined by acceptance testing; the configuration of the barrier in that test; and the vehicle weight, velocity, and angle of impact of the deflection test. The Engineer shall be provided one copy of the shop drawings.

(l) Movable Traffic Barrier. The movable traffic barrier shall be on the Department's qualified product list.

Shop drawings shall be furnished by the manufacturer and shall indicate the deflection of the barrier as determined by acceptance testing; the configuration of the barrier in that test; and the vehicle weight, velocity, and angle of impact of the deflection test. The Engineer shall be provided one copy of the shop drawings. The barrier shall be capable of being moved on and off the roadway on a daily basis."

80427
END OF SECTION

VEHICLE AND EQUIPMENT WARNING LIGHTS (BDE)

Effective: November 1, 2021
Revised: November 1, 2022

Add the following paragraph after the first paragraph of Article 701.08 of the Standard Specifications:

" The Contractor shall equip all vehicles and equipment with high-intensity oscillating, rotating, or flashing, amber or amber-and-white, warning lights which are visible from all directions. In accordance with 625 ILCS 5/12-215, the lights may only be in operation while the vehicle or equipment is engaged in construction operations."

80439
END OF SECTION

WORK ZONE TRAFFIC CONTROL DEVICES (BDE)

Effective: March 2, 2020

Add the following to Article 701.03 of the Standard Specifications:

" (q) Temporary Sign Supports 1106.02"

Revise the third paragraph of Article 701.14 of the Standard Specifications to read:

" For temporary sign supports, the Contractor shall provide a FHWA eligibility letter for each device used on the contract. The letter shall provide information for the set-up and use of the device as well as a detailed drawing of the device. The signs shall be supported within 20 degrees of vertical. Weights used to stabilize signs shall be attached to the sign support per the manufacturer's specifications."

Revise the first paragraph of Article 701.15 of the Standard Specifications to read:

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Revise the first six paragraphs of Article 1106.02 of the Standard Specifications to read:

" **1106.02 Devices.** Work zone traffic control devices and combinations of devices

shall meet crashworthiness standards for their respective categories. The categories are as follows.

Category 1 includes small, lightweight, channelizing, and delineating devices that have been in common use for many years and are known to be crashworthy by crash testing of similar devices or years of demonstrable safe performance. These include cones, tubular markers, plastic drums, and delineators, with no attachments (e.g. lights). Category 1 devices manufactured after December 31, 2019 shall be MASH-16 compliant. Category 1 devices manufactured on or before December 31, 2019, and compliant with NCHRP 350 or MASH 2009, may be used on contracts let before December 31, 2024.

Category 2 includes devices that are not expected to produce significant vehicular velocity change but may otherwise be hazardous. These include vertical panels with lights, barricades, temporary sign supports, and Category 1 devices with attachments (e.g. drums with lights). Category 2 devices manufactured after December 31, 2019 shall be MASH-16 compliant. Category 2 devices manufactured on or before December 31, 2019, and compliant with NCHRP 350 or MASH 2009, may be used on contracts let before December 31, 2024.

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Category 4 includes portable or trailer-mounted devices such as arrow boards, changeable message signs, temporary traffic signals, and area lighting supports. It is preferable for Category 4 devices manufactured after December 31, 2019 to be MASH-16 compliant; however, there are currently no crash tested devices in this category, so it remains exempt from the NCHRP 350 or MASH compliance requirement.

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Revise Articles 1106.02(g), 1106.02(k), and 1106.02(l) to read:

" (g) Truck Mounted/Trailer Mounted Attenuators. The attenuator shall be approved for use at Test Level 3. Test Level 2 may be used for normal posted speeds less than or equal to 45 mph.

(k) Temporary Water Filled Barrier. The water-filled barrier shall be a lightweight plastic shell designed to accept water ballast and be on the Department's qualified product list.

Shop drawings shall be furnished by the manufacturer and shall indicate the deflection of the barrier as determined by acceptance testing; the configuration of the barrier in that test; and the vehicle weight, velocity, and angle of impact of the deflection test. The Engineer shall be provided

one copy of the shop drawings.

(l) Movable Traffic Barrier. The movable traffic barrier shall be on the Department's qualified product list.

Shop drawings shall be furnished by the manufacturer and shall indicate the deflection of the barrier as determined by acceptance testing; the configuration of the barrier in that test; and the vehicle weight, velocity, and angle of impact of the deflection test. The Engineer shall be provided one copy of the shop drawings. The barrier shall be capable of being moved on and off the roadway on a daily basis."

80427
END OF SECTION

VEHICLE AND EQUIPMENT WARNING LIGHTS (BDE)

Effective: November 1, 2021
Revised: November 1, 2022

Add the following paragraph after the first paragraph of Article 701.08 of the Standard Specifications:

" The Contractor shall equip all vehicles and equipment with high-intensity oscillating, rotating, or flashing, amber or amber-and-white, warning lights which are visible from all directions. In accordance with 625 ILCS 5/12-215, the lights may only be in operation while the vehicle or equipment is engaged in construction operations."

80439
END OF SECTION

JACK AND REMOVE EXISTING BEARINGS

Effective: April 20, 1994
Revised: April 13, 2018

Description. This work consists of furnishing all labor, tools and equipment for jacking and supporting the existing beams/slab while removing the bearing assembly. The Contractor is responsible for the complete design of the bridge lifting procedures and the materials used. The Contractor shall furnish and place all bracing, shoring, blocking, cribbing, temporary structural steel, timber, shims, wedges, hydraulic jacks, and any other materials and equipment necessary for safe and proper execution of the work. The Contractor shall remove and dispose of the bearings according to Article 501.05 of the Standard Specifications.

Construction Requirements. The Contractor shall submit details and calculations of his/her proposed jacking systems and temporary support procedures for approval by the Engineer before commencing work. If unforeseen field conditions preclude the execution of the approved jacking plan, the Engineer may require the Contractor to provide additional supports or measures. All changes to the jacking plan shall be approved by the Structural Engineer that sealed the jacking plan. Neither added precautions nor the failure of the Engineer to order additional protection will in any way relieve the Contractor of sole responsibility for the safety of lives, equipment and structure.

(a) Jack and Remove Existing Bearings with bridge deck in place. Jacking and cribbing under and against the existing diaphragms, if applicable, will not be allowed. The Contractor's jacking plans and procedures shall be designed and sealed by an Illinois Licensed Structural Engineer.

In all cases, traffic shall be removed from the portion of the structure to be jacked prior to and during the entire time the load is being supported by the hydraulic pressure of the jack(s). The minimum jack capacity per beam shall be as noted in the plans. Whenever possible, traffic shall be kept off that portion of the structure during the entire bearing replacement operation. The shoring or cribbing supporting the beam(s) during bearing replacement shall be designed to support the dead load plus one half of the live load and impact shown in the plans. If traffic cannot be kept off that portion of the structure during the bearing replacement, then the shoring or cribbing supporting the beam(s) shall be designed to support the dead load and full live load and impact shown in the plans.

No jacking shall be allowed during the period of placement and cure time required for any concrete placed in the span(s) contributing loads to the bearings to be jacked and removed.

Jacking shall be limited to 1/8 in. (4 mm) maximum when jacking one bearing at a time. Simultaneous jacking of all beams at one support may be performed provided the maximum lift is 1/4 in. (7 mm) and the maximum differential displacement between adjacent beams is 1/8 in. (4 mm). Suitable gauges for the measurement of superstructure movement shall be furnished and installed by the Contractor.

(b) Jack and Remove Existing Bearings when entire bridge deck is removed. Jacking and

bearing removal shall be done after the removal of the existing bridge deck is complete. The Contractor's plans and procedures for the proposed jacking and cribbing system shall be designed and sealed by an Illinois Licensed Structural Engineer, unless jacking can be accomplished directly from the bearing seat under the beams or girders.

Jacking shall be limited to 1/4 in. (7 mm) maximum when jacking one beam at a time. Simultaneous jacking of all beams at one support may be performed provided the maximum lift is 3/4 in. (19 mm) and the maximum differential displacement between adjacent beams is 1/4 in. (7 mm). When staged construction is utilized, simultaneous jacking of all beams shall be limited to 1/4 in. (7 mm) unless the diaphragms at the stage line are disconnected, in which case the maximum lift is 3/4 in. (19 mm). Suitable gauges for the measurement of superstructure movement shall be furnished and installed by the Contractor.

The Contractor shall be responsible for restoring to their original condition, prior to jacking, the drainage ditches, pavement, or slopewall disturbed by the cribbing footings.

END OF SECTION

MODULAR EXPANSION JOINT

Effective: May 19, 1994
Revised: December 9, 2022

Description. This work shall consist of furnishing and installing a modular expansion joint(s) as shown on the plans, and according to applicable portions of Section 520 of the Standard Specifications.

General. The expansion joint device shall be capable of handling the specified longitudinal movement. In addition, when specified, the joint shall also be capable of handling the differential non-parallel longitudinal movement. The expansion joint device shall effectively seal the joint opening in the deck surface and barrier curbs against the entrance of water and foreign materials. There shall be no appreciable change in the deck surface plane with the expansion and contraction movements of the bridge.

The device shall consist of a shop-fabricated modular assembly of transverse neoprene seals, edge, and separation beams, bearing on support bars spanning the joint opening. The assembly shall maintain equal distances between intermediate support rails, at any cross section, for the entire length of the joint. The assembly shall be stable under all conditions of expansion and contraction.

The noise level of the joint in service shall meet all Federal and State of Illinois noise requirements.

On sidewalks, concrete median barriers and concrete parapet joints, a sliding steel plate shall be fabricated and installed according to the plans. Painting or galvanizing of sliding steel plates shall be as specified on the plans.

Suppliers. The Department maintains a pre-qualified list of proprietary structural systems allowed for modular expansion joints. This list can be found on the Departments web site under Prequalified Structural Systems. The Contractor's options are limited to those systems pre-qualified by the Department on the date that the contract was bid. These systems have been reviewed for structural feasibility and adequacy only. Presence on this list shall in no case relieve the Contractor of the site-specific design or QC/QA requirements stated herein.

The supplier shall notify the Department at least two weeks in advance of fabrication of the fabrication shop address. The fabricator shall provide evidence of current certification by AISC according to Article 106.08(e) of the Standard Specifications.

Submittals. Shop drawings and a copy of the calculations and support documents shall be submitted to the Engineer for approval according to Article 105.04 of the Standard Specifications. Calculations shall be sealed by an Illinois Licensed Professional Engineer. Submittals will be required for each modular expansion joint device specified. In addition, the Contractor shall provide the Department with a certification of compliance by the manufacturer listing all materials in the system. The certification shall attest that the system conforms to the design requirements, material requirements, and that all components of the joint are the same as what was included in the prequalification submittal that was successfully tested in the OMV, seal push out, and fatigue tests of Section 19, Appendix 19, Article 5.1, 5.2, and 5.3 of the AASHTO LRFD Bridge Construction Specifications. Submittals with insufficient test data and supporting certifications will be rejected.

The shop drawings shall include tables showing the total anticipated movements for each joint and the required setting width of the joint assemblies at various temperatures.

Fabrication. Fabricators of the modular expansion device(s) are required to meet the following tolerances:

Allowable variation in straightness of center beam rails Length < 30' Length 30' to 45' Length > 45'	 1/8" per 10' total length 3/8" 3/8" + 1/8"*(total length (feet) – 45')/10'
Allowable lateral variation in specified location of support boxes	±1/4"
Allowable lateral variation in specified location of stirrup or other attachments to center beam	±1/16"
Allowable variation in total depth	±1/8"
Allowable vertical dimension variation of all components	±1/8"
Allowable variation from specified elevation end squareness or skew	±1/8"
Allowable variation in overall length of joint	±1"

Metallic attachments used to secure elastomeric seals to centerbeams, if welded to the centerbeams and edge beams, shall be welded continuously along either their top or bottom edges.

Run off tabs shall be used for stirrup or other attachments to the center beam full penetration welds.

Design Requirements. The maximum vertical, transverse and horizontal rotations and displacements shall be defined and included in the design.

The expansion joint device(s) shall be designed, detailed, and successfully tested, according to Section 14 of the AASHTO LRFD Bridge Design Specifications.

The design forces used for centerbeam to support beam analysis shall be taken at the centerline of the centerbeam.

The maximum fatigue resistance of any detail shall not exceed that associated with the fatigue category prescribed in the table below.

Type of Detail	**Maximum Permitted Category**
Welded Multiple Centerbeam to Support Bar Connections	C
Weld Stirrup Attachments for Single Support Bar Systems	C
Bolted Stirrup Attachments for Single Support Bar Systems	D
Groove Welded Centerbeam Splices	B
Miscellaneous Welded Connections[1]	C
Miscellaneous Bolted Connections	D

[1]Miscellaneous connections include attachments for equidistant devices and any metallic attachments to the centerbeams or edge beams that are used to secure the elastomeric seals.

In addition, expansion joint device(s) shall be designed for the vehicular live load as specified on the General, Plan, and Elevation sheet of the plans across the entire width of the structure.

Top, bottom and sides of support bars shall be restrained to prevent uplift, transmit bearing loads, and maintain the lateral position of the bars.

The total service movement of each individual sealing element shall not exceed 3 in. (75 mm).

Materials.

(a) Metals. Structural Steel. All structural steel, except stainless steel, shall be according to AASHTO M 270, Grade 50 or 50W (M 270M Grade 345), unless otherwise specified. All structural steel, except stainless steel, shall be hot-dip galvanized according to ASTM A123 or A153 as applicable.
Stainless steel sheets for the sliding surfaces of the support bars shall conform to the requirements of ASTM A240 (A240M) type 302 or 304. Stainless steel mating surfaces shall require a No. 8 finish. For non-mating surfaces a 2B finish is required.

The use of aluminum components in the modular joint will not be allowed.

(b) Preformed Elastomeric Seals. The elastomeric sealing element shall be according to ASTM D5973.

Lubricant/Adhesive for installing the preformed elastomeric elements in place shall be a one-part, moisture-curing, polyurethane, and hydrocarbon solvent mixture as recommended by the manufacturer and containing not less than 65 percent solids.

(c) Support Bar Bearings. Support bar bearings shall be fabricated from elastomeric pads with polytetrafluorethylene (PTFE) surfacing or from polyurethane compound with PTFE sliding surfaces. The elastomeric and PTFE materials shall meet the requirements of Section 1083 of the Standard Specifications.

(d) Support Bars. Support bars shall incorporate stainless steel sliding surfaces to permit joint movement.

Construction Requirements.

General. Installation of expansion devices shall be according to the plans and shop drawings.

The fabricator of the modular joint assembly shall be AISC certified according to Article 106.08 for Bridge and Highway Metal Component Manufacturers. In lieu of AISC certification, the Contractor may have all welding on main members (support bars and separation beams) observed and inspected by independent (third party) personnel at the Contractor's expense. Welding shall then be observed by a Certified Welding Inspector (CWI) in addition to the manufacturer's own welding inspection. Third-party Non-Destructive Examination (NDE) shall be performed by inspector(s), certified as level II in applicable methods, and all complete penetration beam-to-bar welds and butt joints in beams shall be UT inspected and 10 percent of fillet and partial pen welds shall be MT inspected.

The manufacturer of the expansion device shall provide a qualified technical service representative to supervise installation. Modular expansion joint devices shall be factory prefabricated assemblies, preset by the manufacturer prior to shipment with provisions for field adjustment for the ambient temperature at the time of installation.

Unless otherwise shown on the plans, the neoprene seals shall be continuous without any field splices. Installation of the joint seals shall be performed by a trained representative of the Manufacturer.

The metal surfaces in direct contact with the neoprene seals shall be blast cleaned to permit a high strength bond of the lubricant/adhesive between the neoprene seal and mating metal surfaces.

The Contractor shall anticipate and make all necessary adjustments to existing or plan-specified reinforcement bars, subject to the approval of the Engineer, in order to prevent interferences with placement of the selected joint in the structure. Any adjustments to reinforcement bars interfering

with the joint installation shall be the responsibility of the Contractor and preapproved by the Engineer prior to installation of the joint. Cutting of reinforcement shall be minimized, and any bars that are cut shall be replaced in-kind at no additional cost.

The prefabricated joint assembly shall be properly positioned and attached to the structure according to the manufacturer's approved shop drawings. The attachment shall be sufficiently rigid to prevent non-thermal rotation, distortion, or misalignment of the joint system relative to the deck prior to casting the concrete. The joints shall be adjusted to the proper opening based on the ambient temperature at the time of installation and then all restraints preventing thermal movement shall be immediately released and/or removed. The joint upturn may be recessed 1 inch into the parapet to allow for lateral adjustment. The joint assembly units shall be straight, parallel and in proper vertical alignment or reworked until proper adjustment is obtained prior to casting of the concrete around the joint.
After the joint system is installed, the joint area shall be flooded with water and inspected, from below for leakage. If leakage is observed, the joint system shall be repaired, at the expense of the Contractor, as recommended by the manufacturer and approved by the Engineer.

END OF SECTION

CLEANING AND PAINTING EXISTING STEEL STRUCTURES

Effective: October 2, 2001
Revised: April 15, 2022

Description. This work shall consist of the preparation of all designated metal surfaces by the method(s) specified on the plans. This work also includes the painting of those designated surfaces. This work also includes caulking locations designated on the plans and painting with the paint system(s) specified on the plans. The Contractor shall furnish all materials, equipment, labor, and other essentials necessary to accomplish this work and all other work described herein and as directed by the Engineer.

Materials. All materials to be used on an individual structure shall be produced by the same manufacturer.

The Bureau of Materials and Physical Research has established a list of all products that have met preliminary requirements. Each batch of material, except for the penetrating sealer, shall be tested and assigned a MISTIC approval number before use. The specified colors shall be produced in the coating manufacturer's facility. Tinting of the coating after it leaves the manufacturer's facility is not allowed.

The paint materials shall meet the following requirements of the Standard Specification and as noted below:

Item	Article
(a) Waterborne Acrylic	1008.04

(b) Aluminum Epoxy Mastic 1008.03
(c) Organic Zinc Rich Primer 1008.05
(d) Epoxy/ Aliphatic Urethane 1008.05
(e) Penetrating Sealer (Note 1)
(f) Moisture Cured Zinc Rich Urethane Primer (Note 2)
(g) Moisture Cured Aromatic/Aliphatic Urethane (Note 2)
(h) Moisture Cured Penetrating Sealer (Note 3)
(i) Caulk (Polyurethane Joint Sealant) 1050.04

Note 1: The Epoxy Penetrating Sealer shall be a cross-linked multi component sealer. The sealer shall have the following properties:

(a) The volume solids shall be 98 percent (plus or minus 2 percent).
(b) Shall be clear or slightly tinted color.

Note 2: These material requirements shall be according to the Special Provision for the Moisture Cured Urethane Paint System.

Note 3: The Moisture Cured Penetrating Sealer manufacturer's certification will be required.

Submittals. The Contractor shall submit for Engineer review and acceptance, the following plans and information for completing the work. The submittals shall be provided within 30 days of execution of the contract unless given written permission by the Engineer to submit them at a later date. Work cannot proceed until the submittals are accepted by the Engineer. Details for each of the plans are presented within the body of this specification.

a) Contractor/Personnel Qualifications. Evidence of Contractor qualifications and the names and qualifications/experience/training of the personnel managing and implementing the Quality Control program and conducting the quality control tests, and certifications for the CAS (Coating Application Specialists) on SSPC-QP1 and QP2 projects.

b) Quality Control (QC) Program. The QC Program shall identify the following; the instrumentation that will be used, a schedule of required measurements and observations, procedures for correcting unacceptable work, and procedures for improving surface preparation and painting quality as a result of quality control findings. The program shall incorporate at a minimum, the IDOT Quality Control Daily Report form, or a Contractor form (paper or electronic) that provides equivalent information.

c) Inspection Access Plan. The inspection access plan for use by Contractor QC personnel for ongoing inspections and by the Engineer during Quality Assurance (QA) observations.

d) Surface Preparation/Painting Plan. The surface preparation/painting plan shall include the methods of surface preparation and type of equipment to be utilized for washing, hand/power tool cleaning, removal of rust, mill scale, paint or foreign matter, abrasive blast or water jetting, and remediation of chloride. If detergents, additives, or inhibitors are incorporated into the water,

the Contractor shall include the names of the materials and Safety Data Sheets (SDS). The Contractor shall identify the solvents proposed for solvent cleaning together with SDS.

If cleaning and painting over existing galvanized surfaces are specified, the plan shall address surface preparation, painting, and touch up/repair of the galvanized surfaces.

The plan shall also include the methods of coating application and equipment to be utilized.

If the Contractor proposes to heat or dehumidify the containment, the methods and equipment proposed for use shall be included in the Plan for the Engineer's consideration.

e) Paint Manufacturer Certifications and Letters. When a sealer is used, the Contractor shall provide the manufacturer's certification of compliance with IDOT testing requirements listed under "Materials" above. A certification regarding the compatibility of the sealer with the specified paint system shall also be included.

When rust inhibitors are used, the Contractor shall provide a letter from the coating manufacturer indicating that the inhibitor is compatible with and will not adversely affect the performance of the coating system.

If the use of a chemical soluble salt remover is proposed by the Contractor, provide a letter from the coating manufacturer indicating that the material will not adversely affect the performance of the coating system.

The paint manufacturer's most recent application and thinning instructions, SDS and product data sheets shall be provided, with specific attention drawn to storage temperatures, and the temperatures of the material, surface, and ambient air at the time of application.

A letter or written instructions from the coating manufacturer shall be provided indicating the length of time that each coat must be protected from cold or inclement weather (e.g., exposure to rain) during its drying period, the maximum recoat time for each coat, and the steps necessary to prepare each coat for overcoating if the maximum recoat time is exceeded.

f) Abrasives. Abrasives to be used for abrasive blast cleaning, including SDS. For expendable abrasives, the Contractor shall provide certification from the abrasive supplier that the abrasive meets the requirements of SSPC-AB1. For steel grit abrasives, the certification shall indicate that the abrasive meets the requirements of SSPC-AB3.

g) Protective Coverings. Plan for containing or controlling paint debris (droplets, spills, overspray, etc.). Any tarpaulins or protective coverings proposed for use shall be fire retardant. For submittal requirements involving the containment used to remove lead paint, the Contractor shall refer to Special Provision for Containment and Disposal of Lead Paint Cleaning Residues.

h) Progress Schedule. Progress schedule shall be submitted per Article 108.02 and shall identify all major work items (e.g., installation of rigging/containment, surface preparation, and coating application).

When the Engineer accepts the submittals, the Contractor will receive written notification. The Contractor shall not begin any paint removal work until the Engineer has accepted the submittals. The Contractor shall not construe Engineer acceptance of the submittals to imply approval of any particular method or sequence for conducting the work, or for addressing health and safety concerns. Acceptance of the programs does not relieve the Contractor from the responsibility to conduct the work according to the requirements of Federal, State, or Local regulations and this specification, or to adequately protect the health and safety of all workers involved in the project and any members of the public who may be affected by the project. The Contractor remains solely responsible for the adequacy and completeness of the programs and work practices, and adherence to them.

Contractor Qualifications. Unless indicated otherwise on the contract plans, for non lead abatement projects, the painting Contractor shall possess current SSPC–QP1 certification. Unless indicated otherwise on the plans, for lead abatement projects the Contractor shall also possess current SSPC-QP2 certification. The Contractor shall maintain certified status throughout the duration of the painting work under the contract. The Department reserves the right to accept Contractors documented to be currently enrolled in the SSPC-QP7, Painting Contractor Introductory Program, Category 2, in lieu of the QP certifications noted above.

Quality Control (QC) Inspections. The Contractor shall perform first line, in process QC inspections. The Contractor shall implement the submitted and accepted QC Program to ensure that the work accomplished complies with these specifications. The designated Quality Control inspector shall be onsite full time during any operations that affect the quality of the coating system (e.g., surface preparation and chloride remediation, coating mixing and application, and evaluations between coats and upon project completion). The Contractor shall use the IDOT Quality Control Daily Report form to record the results of quality control tests. Alternative forms (paper or electronic) will be allowed provided they furnish equivalent documentation as the IDOT form, and they are accepted as part of the QC Program submittal. The completed reports shall be turned into the Engineer before work resumes the following day. The Engineer or designated representative will sign the report. The signature is an acknowledgment that the report has been received but should not be construed as an agreement that any of the information documented therein is accurate.

Contractor QC inspections shall include, but not be limited to the following:

- Suitability of protective coverings and the means employed to control project debris and paint spills, overspray, etc.
- Ambient conditions
- Surface preparation (solvent cleaning, pressure washing including chalk tests, hand/power tool or abrasive blast cleaning, etc.)
- Chloride remediation
- Coating application (specified materials, mixing, thinning, and wet/dry film thickness)
- Recoat times and cleanliness between coats
- Coating continuity and coverage (freedom from runs, sags, overspray, dry spray, pinholes, shadow-through, skips, misses, etc.)

The personnel managing the Contractor's QC Program shall possess a minimum classification of Society of Protective Coatings (SSPC) BCI certified, National Association of Corrosion Engineers (NACE) Coating Inspector Level 2 - Certified and shall provide evidence of successful inspection of 3 bridge projects of similar or greater complexity and scope that have been completed in the last 2 years. Copies of the certification and experience shall be provided. References for experience shall be provided and shall include the name, address, and telephone number of a contact person employed by the bridge owner.

The personnel performing the QC tests shall be trained in coatings inspection and the use of the testing instruments. Documentation of training shall be provided. The QC personnel shall not perform hands on surface preparation or painting activities. Painters shall perform wet film thickness measurements, with QC personnel conducting random spot checks of the wet film. The Contractor shall not replace the QC personnel assigned to the project without advance notice to the Engineer, and acceptance of the replacement(s), by the Engineer.

The Contractor shall supply all necessary equipment with current calibration certifications to perform the QC inspections. Equipment shall include the following at a minimum:

- Sling psychrometer or digital psychrometer for the measurement of dew point and relative humidity, together with all necessary weather bureau tables or psychrometric charts. In the event of a conflict between readings with the sling psychrometer and the digital psychrometer, the readings with the sling psychrometer shall prevail.
  - Surface temperature thermometer
  - SSPC Visual Standards VIS 1, Guide and Reference Photographs for Steel Surfaces Prepared by Dry Abrasive Blast Cleaning; SSPC-VIS 3, Visual Standard for Power, and Hand-Tool Cleaned Steel; SSPC-VIS 4, Guide and Reference Photographs for Steel Prepared by Water Jetting, and/or SSPC-VIS 5, Guide and Reference Photographs for Steel Prepared by Wet Abrasive Blast Cleaning, as applicable.
  - Test equipment for determining abrasive cleanliness (oil content and water-soluble contaminants) according to SSPC abrasive specifications AB1, AB2, and AB3.
  - Commercially available putty knife of a minimum thickness of 40 mils (1mm) and a width between 1 and 3 in. (25 and 75 mm). Note that the putty knife is only required for projects in which the existing coating is being feathered and tested with a dull putty knife.
  - Testex Press-O-Film Replica Tape and Micrometer compliant with Method C of ASTM D4417, Standard Test Methods for Field Measurement of Surface Profile of Blast Cleaned Steel, or digital profile depth micrometer compliant with ASTM D4417, Method B. In the event of a conflict between measurements with the two instruments on abrasive blast cleaned steel, the results with the Testex Tape shall prevail. Note that for measuring the profile of steel power tool cleaned to SSPC-SP15, Commercial Grade Power Tool Cleaning, the digital profile depth micrometer shall be used.
  - Bresle Cell Kits or CHLOR*TEST kits for chloride determinations, or equivalent
  - Wet Film Thickness Gage
  - Blotter paper for compressed air cleanliness checks
  - Type 2 Electronic Dry Film Thickness Gage per SSPC - PA2, Procedure for Determining Conformance to Dry Coating Thickness Requirements

- Standards for verifying the accuracy of the dry film thickness gage
- Light meter for measuring light intensity during paint removal, painting, and inspection activities
- All applicable ASTM and SSPC Standards used for the work (reference list attached)

The accuracy of the instruments shall be verified by the Contractor's personnel according to the equipment manufacturer's recommendations and the Contractor's QC Program. All inspection equipment shall be made available to the Engineer for QA observations on an as needed basis.

Hold Point Notification. Specific inspection items throughout this specification are designated as Hold Points. Unless other arrangements are made at the project site, the Contractor shall provide the Engineer with a minimum 4-hour notification before a Hold Point inspection will be reached. If the 4-hour notification is provided and the Work is ready for inspection at that time, the Engineer will conduct the necessary observations. If the Work is not ready at the appointed time, unless other arrangements are made, an additional 4-hour notification is required. Permission to proceed beyond a Hold Point without a QA inspection will be granted solely at the discretion of the Engineer, and only on a case-by-case basis.

Quality Assurance (QA) Observations. The Engineer will conduct QA observations of any or all phases of the work. The presence or activity of Engineer observations in no way relieves the Contractor of the responsibility to provide all necessary daily QC inspections of his/her own and to comply with all requirements of this Specification.

The Engineer has the right to reject any work that was performed without adequate provision for QA observations.

Inspection Access and Lighting. The Contractor shall facilitate the Engineer's observations as required, including allowing ample time to view the work. The Contractor shall furnish, erect and move scaffolding or other mechanical equipment to permit close observation of all surfaces to be cleaned and painted. This equipment shall be provided during all phases of the work. Examples of acceptable access structures include:

- Mechanical lifting equipment, such as scissor trucks, hydraulic booms, etc.
- Platforms suspended from the structure comprised of trusses or other stiff supporting members and including rails and kick boards.
- Simple catenary supports are permitted only if independent lifelines for attaching a fall arrest system according to Occupational Safety and Health Administration (OSHA) regulations are provided.

When the surface to be inspected is more than 6 ft. (1.8 m) above the ground or water surface, and fall prevention is not provided (e.g., guardrails are not provided), the Contractor shall provide the Engineer with a safety harness and a lifeline according to OSHA regulations. The lifeline and attachment shall not direct the fall into oncoming traffic. The Contractor shall provide a method of attaching the lifeline to the structure independent of the inspection facility or any support of the platform. When the inspection facility (e.g., platform) is more than 2 1/2 ft. (800 mm) above the ground, the Contractor shall provide an approved means of access onto the platform.

The Contractor shall provide artificial lighting in areas both inside and outside the containment where natural light is inadequate, as determined by the Engineer, to allow proper cleaning, inspection, and painting. Illumination for inspection shall be at least 30 foot-candles (325 LUX). Illumination for cleaning and painting, including the working platforms, access and entryways shall be at least 20 foot-candles (215 LUX). General work area illumination outside the containment shall be employed at the discretion of the Engineer and shall be at least 5 foot-candles. The exterior lighting system shall be designed and operated so as to avoid glare that interferes with traffic, workers, and inspection personnel.

Surface Preparation and Painting Equipment. All cleaning and painting equipment shall include gauges capable of accurately measuring fluid and air pressures and shall have valves capable of regulating the flow of air, water or paint as recommended by the equipment manufacturer. The equipment shall be maintained in proper working order.

Diesel or gasoline powered equipment shall be positioned or vented in a manner to prevent deposition of combustion contaminants on any part of the structure.

Hand tools, power tools, pressure washing, water jetting, abrasive blast cleaning equipment, brushes, rollers, and spray equipment shall be of suitable size and capacity to perform the work required by this specification. All power tools shall be equipped with vacuums and High Efficiency Particulate Air (HEPA) filtration. Appropriate filters, traps and dryers shall be provided for the compressed air used for abrasive blast cleaning and conventional spray application. Paint pots shall be equipped with air operated continuous mixing devices unless prohibited by the coating manufacturer.

Test Sections. Prior to surface preparation, the Contractor shall prepare a test section(s) on each structure to be painted in a location(s) which the Engineer considers to be representative of the existing surface condition and steel type for the structure as a whole. More than one test section may be needed to represent the various design configurations of the structure. The purpose of the test section(s) is to demonstrate the use of the tools and degree of cleaning required (cleanliness and profile) for each method of surface preparation that will be used on the project. Each test section shall be approximately 10 sq. ft. (0.93 sq m). The test section(s) shall be prepared using the same equipment, materials, and procedures as the production operations. The Contractor shall prepare the test section(s) to the specified level of cleaning according to the appropriate SSPC visual standards, modified as necessary to comply with the requirements of this specification. The written requirements of the specification prevail in the event of a conflict with the SSPC visual standards. Only after the test section(s) have been approved shall the Contractor proceed with surface preparation operations. Additional compensation will not be allowed the Contractor for preparation of the test section(s).

For the production cleaning operations, the specifications and written definitions, the test section(s), and the SSPC visual standards shall be used in that order for determining compliance with the contractual requirements.

Protective Coverings and Damage. All portions of the structure that could be damaged by the surface preparation and painting operations (e.g., utilities), including any sound paint that is allowed to remain according to the contract documents, shall be protected by covering or

shielding. Tarpaulins drop cloths, or other approved materials shall be employed. The Contractor shall comply with the provisions of the Illinois Environmental Protection Act. Paint drips, spills, and overspray are not permitted to escape into the air or onto any other surfaces or surrounding property not intended to be painted. Containment shall be used to control paint drips, spills, and overspray, and shall be dropped and all equipment secured when sustained wind speeds of 40 mph (64 kph) or greater occur, unless the containment design necessitates action at lower wind speeds. The contractor shall evaluate project-specific conditions to determine the specific type and extent of containment needed to control the paint emissions and shall submit a plan for containing or controlling paint debris (droplets, spills, overspray, etc.) to the Engineer for acceptance prior to starting the work. Acceptance by the Engineer shall not relieve the Contractor of their ultimate responsibility for controlling paint debris from escaping the work zone.

When the protective coverings need to be attached to the structure, they shall be attached by bolting, clamping, or similar means. Welding or drilling into the structure is prohibited unless approved by the Engineer in writing. When removing coatings containing lead the containment and disposal of the residues shall be as specified in the Special Provision for Containment and Disposal of Lead Paint Cleaning Residues contained elsewhere in this Contract. When removing coatings not containing lead the containment and disposal of the residues shall be as specified in the Special Provision for Containment and Disposal of Non-Lead Paint Cleaning Residues contained elsewhere in this Contract.

The Contractor shall be responsible for any damage caused to persons, vehicles, or property, except as indemnified by the Response Action Contractor Indemnification Act. Whenever the intended purposes of the controls or protective devices used by the Contractor are not being accomplished, work shall be immediately suspended until corrections are made. Damage to vehicles or property shall be repaired by the Contractor at the Contractor’s expense. Painted surfaces damaged by any Contractor's operation shall be repaired, removed and/or repainted, as directed by the Engineer, at the Contractor's expense.

Weather Conditions. Surfaces to be painted after cleaning shall remain free of moisture and other contaminants. The Contractor shall control his/her operations to ensure that dust, dirt, or moisture do not come in contact with surfaces cleaned or painted that day.

a) The surface temperature shall be at least 5°F (3°C) above the dew point during final surface preparation operations. The manufacturers’ published literature shall be followed for specific temperature, dew point, and humidity restrictions during the application of each coat.

b) If the Contractor proposes to control the weather conditions inside containment, proposed methods, and equipment for heating and/or dehumidification shall be included in the work plans for the Engineer’s consideration. Only indirect fired heating equipment shall be used to prevent the introduction of moisture and carbon monoxide into the containment. The heating unit(s) shall be ventilated to the outside of the containment. Any heating/dehumidification proposals accepted by the Engineer shall be implemented at no additional cost to the department.

c) Cleaning and painting shall be done between April 15 and October 31 unless authorized

otherwise by the Engineer in writing.

The Contractor shall monitor temperature, dew point, and relative humidity every 4 hours during surface preparation and coating application in the specific areas where the work is being performed. The frequency of monitoring shall increase if weather conditions are changing. If the weather conditions after application and during drying are forecast to be outside the acceptable limits established by the coating manufacturer, coating application shall not proceed. If the weather conditions are forecast to be borderline relative to the limits established by the manufacturer, monitoring shall continue at a minimum of 4-hour intervals throughout the drying period. The Engineer has the right to reject any work that was performed, or drying that took place, under unfavorable weather conditions. Rejected work shall be removed, recleaned, and repainted at the Contractor's expense.

Compressed Air Cleanliness. Prior to using compressed air for abrasive blast cleaning, blowing down the surfaces, and painting with conventional spray, the Contractor shall verify that the compressed air is free of moisture and oil contamination according to the requirements of ASTM D 4285. The tests shall be conducted at least one time each shift for each compressor system in operation. If air contamination is evident, the Contractor shall change filters, clean traps, add moisture separators or filters, or make other adjustments as necessary to achieve clean, dry air. The Contractor shall also examine the work performed since the last acceptable test for evidence of defects or contamination caused by the compressed air. Effected work shall be repaired at the Contractor's expense.

Low Pressure Water Cleaning and Solvent Cleaning (HOLD POINT). The Contractor shall notify the Engineer 24 hours in advance of beginning surface preparation operations.

a) Water Cleaning of Lead Containing Coatings Prior to Overcoating. Prior to initiating any mechanical cleaning such as hand/power tool cleaning on surfaces that are painted with lead, all surfaces to be prepared and painted, and the tops of pier and abutment caps shall be washed. Washing is not required if the surfaces will be prepared by water jetting.

Washing shall involve the use of potable water at a minimum of 1000 psi (7 MPa) and less than 5000 psi (34 MPa) according to "Low Pressure Water Cleaning" of SSPC-SP WJ-4. There are no restrictions on the presence of flash rusting of bare steel after cleaning. Paint spray equipment shall not be used to perform the water cleaning. The cleaning shall be performed in such a manner as to remove dust, dirt, chalk, insect and animal nests, bird droppings, loose coating, loose mill scale, loose rust and other corrosion products, and other foreign matter. Water cleaning shall be supplemented with scrubbing as necessary to remove the surface contaminants. . The water, debris, and any loose paint removed by water cleaning shall be collected for proper disposal. The washing shall be completed no more than 2 weeks prior to surface preparation.

If detergents or other additives are added to the water, the detergents/additives shall be included in the submittals and not used until accepted by the Engineer. When detergents or additives are used, the surface shall be rinsed with potable water before the detergent water dries.

After washing has been accepted by the Engineer, all traces of asphaltic cement, oil, grease, diesel fuel deposits, and other soluble contaminants which remain on the steel surfaces to be

painted shall be removed by solvent cleaning according to SSPC – SP1, supplemented with scraping (e.g., to remove large deposits of asphaltic cement) as required. The solvent(s) used for cleaning shall be compatible with the existing coating system. The Contractor shall identify the proposed solvent(s) in the submittals. If the existing coating is softened, wrinkled, or shows other signs of attack from the solvents, the Contractor shall immediately discontinue their use. The name and composition of replacement solvents, together with MSDS, shall be submitted for Engineer acceptance prior to use.

Under no circumstances shall subsequent hand/power tool cleaning or abrasive blast cleaning be performed in areas containing surface contaminants or in areas where the Engineer has not accepted the washing and solvent cleaning. Surfaces prepared by hand/power tool cleaning or abrasive blast cleaning without approval of the washing and solvent cleaning may be rejected by the Engineer. Rejected surfaces shall be recleaned with both solvent and the specified mechanical means at the Contractor's expense.

After all washing and mechanical cleaning are completed, representative areas of the existing coating shall be tested to verify that the surface is free of chalk and other loose surface debris or foreign matter. The testing shall be performed according to ASTM D4214. Cleaning shall continue until a chalk rating of 6 or better is achieved in every case.

b) Water Cleaning of Non-Lead Coatings Prior to Overcoating. Thoroughly clean the surfaces according to the steps defined above for "Water Cleaning of Lead Containing Coatings Prior to Overcoating." The wash water does not need to be collected, but paint chips, insect and animal nests, bird droppings and other foreign matter shall be collected for proper disposal. If the shop primer is inorganic zinc, the chalk rating does not apply. All other provisions are applicable.

c) Water Cleaning/Debris Removal Prior to Total Coating Removal. When total coating removal is specified, water cleaning of the surface prior to coating removal is not required by this specification and is at the option of the Contractor. If the Contractor chooses to use water cleaning, the above provisions for water cleaning of lead and non-lead coatings apply as applicable, including collection and disposal of the waste.

Whether or not the surfaces are pre-cleaned using water, the tops of the pier caps and abutments shall be cleaned free of dirt, paint chips, insect and animal nests, bird droppings and other foreign matter and the debris collected for proper disposal. Cleaning can be accomplished by wet or dry methods.

Prior to mechanical cleaning, oil, grease, and other soluble contaminants on bare steel or rusted surfaces shall be removed by solvent cleaning according to SSPC-SP1.

d) Water Cleaning Between Coats. When foreign matter has accumulated on a newly applied coat, washing and scrubbing shall be performed prior to the application of subsequent coats. The water does not need to be collected unless it contacts existing lead containing coatings.

Laminar and Stratified Rust. All laminar and stratified rust that has formed on the existing steel surfaces shall be removed. Pack rust formed along the perimeter of mating surfaces of connected

plates or shapes of structural steel shall be removed to the extent feasible without mechanically detaching the mating surface. When caulking is specified, all rust shall be removed to a surface depth as directed by the Engineer to accommodate the approved sealant. Any pack rust remaining after cleaning the mating surfaces shall be tight and intact when examined using a dull putty knife. The tools used to remove these corrosion products shall be identified in the submittals and accepted by the Engineer. If the surface preparation or removal of rust results in nicks or gouges in the steel, the work shall be suspended, and the damaged areas repaired to the satisfaction of the Engineer, at the Contractor's expense. The Contractor shall also demonstrate that he/she has made the necessary adjustments to prevent a reoccurrence of the damage prior to resuming work. If surface preparation reveals holes or section loss, or creates holes in the steel, the Contractor shall notify the Engineer. Whenever possible, the Department will require that the primer be applied to preserve the area, and allow work to proceed, with repairs and touch ups performed at a later date.

Surface Preparation (HOLD POINT). One or more of the following methods of surface preparation shall be used as specified on the plans. When a method of surface preparation is specified, it applies to the entire surface, including areas that may be concealed by the containment connection points. In each case, as part of the surface preparation process, soluble salts shall be remediated as specified under "Soluble Salt Remediation." The Contractor shall also note that the surface of the steel beneath the existing coating system may contain corrosion and/or mill scale. Removal of said corrosion and/or mill scale, when specified, shall be considered included in this work and no extra compensation will be allowed.

When a particular cleaning method is specified for use in distinct zones on the bridge, the cleaning shall extend into the existing surrounding paint until a sound border is achieved. The edge of the existing paint is considered to be sound and intact after cleaning if it cannot be lifted by probing the edge with a dull putty knife. The sound paint shall be feathered for a minimum of 1 1/2 in. (40 mm) to achieve a smooth transition between the prepared steel and the existing coatings. Sanders with vacuum attachments, which have been approved by the Engineer, shall be used as necessary to accomplish the feathering.

a) Limited Access Areas: A best effort with the specified methods of cleaning shall be performed in limited access areas such as the backsides of rivets inside built up box members. The equipment being used for the majority of the cleaning may need to be supplemented with other commercially available equipment, such as angle nozzles, to properly clean the limited access areas. The acceptability of the best effort cleaning in these areas is at the sole discretion of the Engineer.

b) Near-White Metal Blast Cleaning: This surface preparation shall be accomplished according to the requirements of Near-White Metal Blast Cleaning SSPC-SP 10. Unless otherwise specified in the contract, the designated surfaces shall be prepared by dry abrasive blast cleaning, wet abrasive blast cleaning, or water jetting with abrasive injection. A Near-White Metal Blast Cleaned surface, when viewed without magnification, shall be free of all visible oil, grease, dirt, dust, mill scale, rust, paint, oxides, corrosion products, and other foreign matter, except for staining.

Random staining shall be limited to no more than 5 percent of each 9 sq. in. (58 sq. cm) of surface

area and may consist of light shadows, slight streaks, or minor discoloration caused by stains of rust, stains of mill scale, or stains of previously applied paint. With the exception of crevices as defined below, surface discoloration is considered to be a residue that must be removed, rather than a stain, if it possesses enough mass or thickness that it can be removed as a powder or in chips when scraped with a pocketknife.

A surface profile shall be created on the steel as defined later under “Surface Profile.”

At the discretion of the Engineer, after a best effort cleaning, slight traces of existing coating may be permitted to remain within crevices such as those created between the steel and rivets or bolts/washers/nuts, and between plates. When traces of coating are permitted to remain, the coating shall be tightly bonded when examined by probing with a dull putty knife. The traces of coating shall be confined to the bottom portion of the crevices only and shall not extend onto the surrounding steel or plate or onto the outer surface of the rivets or bolts. Pitted steel is excluded from exemption considerations and shall be cleaned according to SSPC-SP10.

If hackles or slivers are visible on the steel surface after cleaning, the Contractor shall remove them by grinding followed by reblast cleaning. At the discretion of the Engineer, the use of power tools to clean the localized areas after grinding, and to establish a surface profile acceptable to the coating manufacturer, can be used in lieu of blast cleaning.

If the surfaces are prepared using wet abrasive methods, attention shall be paid to tightly configured areas to assure that the preparation is thorough. After surface preparation is completed, the surfaces, surrounding steel, and containment materials/scaffolding shall be rinsed to remove abrasive dust and debris. Potable water shall be used for all operations. An inhibitor shall be added to the supply water and/or rinse water to prevent flash rusting. With the submittals, the Contractor shall provide a sample of the proposed inhibitor together with a letter from the coating manufacturer indicating that the inhibitor is suitable for use with their products and that the life of the coating system will not be reduced due to the use of the inhibitor. The surfaces shall be allowed to completely dry before the application of any coating.

c) Commercial Grade Power Tool Cleaning: This surface preparation shall be accomplished according to the requirements of SSPC-SP15. The designated surfaces shall be completely cleaned with power tools. A Commercial Grade Power Tool Cleaned surface, when viewed without magnification, is free of all visible oil, grease, dirt, rust, coating, oxides, mill scale, corrosion products, and other foreign matter, except for staining. In previously pitted areas, slight residues of rust and paint may also be left in the bottoms of pits.

Random staining shall be limited to no more than 33 percent of each 9 sq. in. (58 sq. cm) of surface area. Allowable staining may consist of light shadows, slight streaks, or minor discoloration caused by stains of rust, stains of mill scale, or stains of previously applied paint. Surface discoloration is considered to be a residue that must be removed, rather than a stain, if it possesses enough mass or thickness that it can be removed as a powder or in chips when scraped with a pocketknife.

A surface profile shall be created on the steel as defined later under “Surface Profile.”

At the Contractor's option, Near-White Metal Blast Cleaning may be substituted for Power Tool Cleaning – Commercial Grade, as long as containment systems appropriate for abrasive blast cleaning are utilized and there is no additional cost to the Department.

d) Power Tool Cleaning – Modified SP3: This surface preparation shall be accomplished according to the requirements of SSPC-SP3, Power Tool Cleaning except as modified as follows. The designated surfaces shall be cleaned with power tools. A power tool cleaned surface shall be free of all loose rust, loose mill scale, loose and peeling paint, and loose rust that is bleeding through and/or penetrating the coating. All locations of visible corrosion and rust bleed exposed or lifting mill scale, and lifting or loose paint shall be prepared using the power tools, even if the material is tight.

Upon completion of the cleaning, rust, rust bleed, mill scale, and surrounding paint are permitted to remain if they can not be lifted using a dull putty knife.

e) Power Tool Cleaning of Shop Coated Steel. When shop-coated steel requires one or more coats to be applied in the field, the surface of the shop coating shall be cleaned as specified under "Water Cleaning of Non-Lead Coatings Prior to Overcoating." If the damage is to a fully applied shop system, water cleaning is not required unless stipulated in the contract. Damaged areas of shop coating shall be spot cleaned according to Power Tool Cleaning - Modified SSPC-SP3. If the damage extends to the substrate, spot cleaning shall be according to SSPC-SP15. The edges of the coating surrounding all spot repairs shall be feathered.

f) Galvanized Surfaces: If galvanized surfaces are specified to be painted, they shall be prepared by brush-off blast cleaning in accordance with SSPC-SP 16 or by using proprietary solutions that are specifically designed to clean and etch (superficially roughen) the galvanized steel for painting. If cleaning and etching solutions are selected, the Contractor shall submit the manufacturer's technical product literature and SDS for Engineer's review and written acceptance prior to use.

Abrasives. Unless otherwise specified in the contract, when abrasive blast cleaning is specified, it shall be performed using either expendable abrasives (other than silica sand) or recyclable steel grit abrasives. Expendable abrasives shall be used one time and disposed of. Abrasive suppliers shall certify that the expendable abrasives meet the requirements of SSPC-AB1 and that recyclable steel grit abrasives meet SSPC-AB3. Tests to confirm the cleanliness of new abrasives (oil and water-soluble contamination) shall be performed by the Contractor according to the requirements and frequencies of SSPC-AB1 and SSPC-AB3, as applicable. On a daily basis, the Contractor shall verify that recycled abrasives are free of oil and water-soluble contamination by conducting the tests specified in SSPC-AB2.

All surfaces prepared with abrasives not meeting the SSPC-AB1, AB2, or AB3 requirements, as applicable, shall be solvent cleaned or low-pressure water cleaned as directed by the Engineer, and reblast cleaned at the Contractor's expense.

Surface Profile (HOLD POINT). The abrasives used for blast cleaning shall have a gradation

such that the abrasive will produce a uniform surface profile of 1.5 to 4.5 mils (38 to 114 microns). If the profile requirements of the coating manufacturer are more restrictive, advise the Engineer and comply with the more restrictive requirements. For recycled abrasives, an appropriate operating mix shall be maintained in order to control the profile within these limits.

The surface profile for SSPC-SP15 power tool cleaned surfaces shall be within the range specified by the coating manufacturer, but not less than 2.0 mils (50 microns).

The surface profile produced by abrasive blast cleaning shall be determined by replica tape or digital profile depth micrometer according to SSPC-PA 17 at the beginning of the work, and each day that surface preparation is performed. Areas having unacceptable profile measurements shall be further tested to determine the limits of the deficient area. When replica tape is used, it shall be attached to the daily report. In the event of a conflict between measurements taken with the replica tape and digital profile depth micrometer, the measurements with the replica tape shall prevail.

The surface profile produced by power tools to SSPC-SP15, shall be measured using the digital profile depth micrometer only. Replica tape shall not be used.

When unacceptable profiles are produced, work shall be suspended. The Contractor shall submit a plan for the necessary adjustments to ensure that the correct surface profile is achieved on all surfaces. The Contractor shall not resume work until the new profile is verified by the QA observations, and the Engineer confirms, in writing, that the profile is acceptable.

Soluble Salt Remediation (HOLD POINT). The Contractor shall implement surface preparation procedures and processes that will remove chloride from the surfaces to levels below 7 micrograms per square centimeter. Surfaces that may be contaminated with chloride include, but are not limited to, expansion joints and all areas that are subject to roadway splash or run off such as fascia beams and stringers. Surfaces shall be tested for chlorides at a frequency of five tests per bearing line or fascia beam, with tests performed on both the beams and diaphragms/cross-frames at expansion joints.

Methods of chloride removal may include, but are not limited to, hand washing, steam cleaning, or pressure washing with or without the addition of a chemical soluble salt remover as approved by the coating manufacturer and scrubbing before or after initial paint removal. The Contractor may also elect to clean the steel and allow it to rust overnight followed by recleaning, or by utilizing blends of fine and coarse abrasives during blast cleaning, wet abrasive/water jetting methods of preparation, or combinations of the above. If steam or water cleaning methods of chloride removal are utilized over surfaces where the coating has been completely removed, and the water does not contact any lead containing coatings, the water does not have to be collected. The Contractor shall provide the proposed procedures for chloride remediation in the Surface Preparation/Painting Plan.

Upon completion of the chloride remediation steps, the Contractor shall use cell methods of field chloride extraction and test procedures (e.g., silver dichromate) accepted by the Engineer, to test representative surfaces that were previously rusted (e.g., pitted steel) for the presence of remaining chlorides. Remaining chloride levels shall be no greater than 7µg/sq cm as read

directly from the surface without any multiplier applied to the results. The testing must be performed, and the results must be acceptable, prior to painting each day.

A minimum of 5 tests per 1000 sq. ft. (93 sq m) or fraction thereof completed in a given day, shall be conducted at project start up. If results greater than 7 µg/sq cm are detected, the surfaces shall be recleaned and retested at the same frequency. If acceptable results are achieved on three consecutive days in which testing is conducted, the test frequency may be reduced to 1 test per 1000 sq. ft. (93 sq. m) prepared each day provided the chloride remediation process remains unchanged. If unacceptable results are encountered, or the methods of chloride remediation are changed, the Contractor shall resume testing at a frequency of 5 tests per 1000 sq. ft. (93 sq. m).

Following successful chloride testing the chloride test areas shall be cleaned. SSPC-SP15, Commercial Grade Power Tool Cleaning can be used to clean the test locations when the specified degree of cleaning is SSPC-SP10.

Surface Condition Prior to Painting (HOLD POINT). Prepared surfaces shall meet the requirements of the respective degrees of cleaning immediately prior to painting and shall be painted before rusting appears on the surface. If rust appears or bare steel remains unpainted for more than 12 hours, the affected area shall be prepared again at the expense of the Contractor.

All loose paint and surface preparation cleaning residue on bridge steel surfaces, scaffolding and platforms, containment materials, and tops of abutments and pier caps shall be removed prior to painting. When lead paint is being disturbed, cleaning shall be accomplished by HEPA vacuuming unless it is conducted within a containment that is designed with a ventilation system capable of collecting the airborne dust and debris created by sweeping and blowing with compressed air.

The quality of surface preparation and cleaning of surface dust and debris must be accepted by the Engineer prior to painting. The Engineer has the right to reject any work that was performed without adequate provision for QA observations to accept the degree of cleaning. Rejected coating work shall be removed and replaced at the Contractor's expense.

General Paint Requirements. Paint storage, mixing, and application shall be accomplished according to these specifications and as specified in the paint manufacturer's written instructions and product data sheets for the paint system used. In the event of a conflict between these specifications and the coating manufacturers' instructions and data sheets, the Contractor shall advise the Engineer and comply with the Engineer's written resolution. Until a resolution is provided, the most restrictive conditions shall apply.

Unless noted otherwise, if a new concrete deck or repair to an existing deck is required, painting shall be done after the deck is placed and the forms have been removed.

a) Paint Storage and Mixing. All Paint shall be stored according to the manufacturer's published instructions, including handling, temperatures, and warming as required prior to mixing. All coatings shall be supplied in sealed containers bearing the manufacturers name, product designation, batch number and mixing/thinning instructions. Leaking containers shall not be used.

The Contractor shall only use batches of material that have an IDOT MISTIC approval number. For multi-component materials, the batch number from one component is tested with specific batch numbers from the other component(s). Only the same batch number combinations that were tested and approved shall be mixed together for use.

Mixing shall be according to the manufacturer's instructions. Thinning shall be performed using thinner provided by the manufacturer, and only to the extent allowed by the manufacturer's written instructions. In no case shall thinning be permitted that would cause the coating to exceed the local Volatile Organic Compound (VOC) emission restrictions. For multiple component paints, only complete kits shall be mixed and used. Partial mixing is not allowed.

The ingredients in the containers of paint shall be thoroughly mixed by mechanical power mixers according to the manufacturer's instructions, in the original containers before use or mixing with other containers of paint. The paint shall be mixed in a manner that will break up all lumps, completely disperse pigment and result in a uniform composition. Paint shall be carefully examined after mixing for uniformity and to verify that no unmixed pigment remains on the bottom of the container. Excessive skinning or partial hardening due to improper or prolonged storage will be cause for rejection of the paint, even though it may have been previously inspected and accepted and the container may have been unopened.

Multiple component coatings shall be discarded after the expiration of the pot life. Single component paint shall not remain in spray pots, paint buckets, etc. overnight. It shall be stored in a covered container and remixed before use.

The Engineer reserves the right to sample field paint (individual components and/or the mixed material) and have it analyzed. If the paint does not meet the product requirements due to excessive thinning or because of other field problems, the coating shall be removed from that section of the structure and replaced as directed by the Engineer.

b) Application Methods. Unless prohibited by the coating manufacturer's written instructions, paint may be applied by spray methods, rollers, or brushes. If applied with conventional or airless spray methods, paint shall be applied in a uniform layer with overlapping at the edges of the spray pattern.

The painters shall monitor the wet film thickness of each coat during application. The wet film thickness shall be calculated based on the solids by volume of the material and the amount of thinner added. When the new coating is applied over an existing system, routine QC inspections of the wet film thickness shall be performed in addition to the painter's checks in order to establish that a proper film build is being applied.

When brushes or rollers are used to apply the coating, additional applications may be required to achieve the specified thickness per layer.

c) Field Touch Up of Shop-Coated Steel. After cleaning, rusted and damaged areas of shop-primed inorganic zinc shall be touched up using epoxy mastic. Damaged areas of shop-applied intermediate shall be touched-up using the same intermediate specified for painting the existing

structure. Following touch up, the remaining coats (intermediate and finish, or finish only, depending on the number of coats applied in the shop) shall be the same materials specified for painting the existing structure. When inorganic zinc has been used as the shop primer, a mist coat of the intermediate coat shall be applied before the application of the full intermediate coat in order to prevent pinholing and bubbling.

d) Recoating and Film Continuity (HOLD POINT for each coat). Paint shall be considered dry for recoating according to the time/temperature/humidity criteria provided in the manufacturer's instructions and when an additional coat can be applied without the development of film irregularities, such as lifting, wrinkling, or loss of adhesion of the under coat. The coating shall be considered to be too cured for recoating based on the maximum recoat times stipulated by the coating manufacturer. If the maximum recoat times are exceeded, written instructions from the manufacturer for preparing the surface to receive the next coat shall be provided to the Engineer. Surface preparation and application shall not proceed until the recommendations are accepted by the Engineer in writing. If surfaces are contaminated, washing shall be accomplished prior to intermediate and final coats. Wash water does not have to be collected unless the water contacts existing lead containing coatings.

Painting shall be done in a neat and workmanlike manner. Each coat of paint shall be applied as a continuous film of uniform thickness free of defects including, but not limited to, runs, sags, overspray, dry spray, pinholes, voids, skips, misses, and shadow-through. Defects such as runs and sags shall be brushed out immediately during application. Dry spray on the surface of previous coats shall be removed prior to the application of the next coat.

Paint Systems. The paint system(s) from the list below shall be applied as specified.

The paint manufacturer's relative humidity, dew point, and material, surface, and ambient temperature restrictions shall be provided with the submittals and shall be strictly followed. Written recommendations from the paint manufacturer for the length of time each coat must be protected from cold or inclement weather (e.g., exposure to rain), during the drying period shall be included in the submittals. Upon acceptance by the Engineer, these times shall be used to govern the duration that protection must be maintained during drying.

Where stripe coats are indicated, the Contractor shall apply an additional coat to edges, rivets, bolts, crevices, welds, and similar surface irregularities. The stripe coat shall be applied by brush or spray, but if applied by spray, it shall be followed immediately by brushing to thoroughly work the coating into or on the irregular surfaces and shall extend onto the surrounding steel a minimum of 1 in. (25 mm) in all directions. The purpose of the stripe coat is to assure complete coverage of crevices and to build additional thickness on edges and surface irregularities. If the use of the brush on edges pulls the coating away, brushing of edges can be eliminated, provided the additional coverage is achieved by spray. Measurement of stripe coat thickness is not required, but the Contractor shall visually confirm that the stripe coats are providing the required coverage.

The stripe coat may be applied as part of the application of the full coat unless prohibited by the coating manufacturer. If applied as part of the application process of the full coat, the stripe coat shall be allowed to dry for a minimum of 10 minutes in order to allow Contractor QC personnel to verify that the coat was applied. If a wet-on-wet stripe coat is prohibited by the coating

manufacturer or brush or roller application of the full coat pulls the underlying stripe coat, the stripe coat shall dry according to the manufacturers' recommended drying times prior to the application of the full coat. In the case of the prime coat, the full coat can also be applied first to protect the steel, followed by the stripe coat after the full coat has dried.

The thicknesses of each coat as specified below shall be measured according to SSPC-PA2, using Coating Thickness Restriction Level 3 (spot measurements 80% of the minimum and 120% of the maximum, provided the entire area complies with the specified ranges).

a) System 1 – OZ/E/U – for Bare Steel: System 1 shall consist of the application of a full coat of organic (epoxy) zinc-rich primer, a full intermediate coat of epoxy, and a full finish coat of aliphatic urethane. Stripe coats of the prime and finish coats shall be applied. The film thicknesses of the full coats shall be as follows:

- One full coat of organic zinc-rich primer between 3.5 and 5.0 mils (90 and 125 microns) dry film thickness. The prime coat shall be tinted to a color that contrasts with the steel surface.

- One full intermediate coat of epoxy between 3.0 and 6.0 mils (75 and 150 microns) dry film thickness. The intermediate coat shall be a contrasting color to both the first coat and finish coat.

- One full finish coat of aliphatic urethane between 2.5 and 4.0 mils (65 and 100 microns) dry film thickness. Finish coat color shall be according to contract plans.

The total dry film thickness for this system, exclusive of areas receiving the stripe coats, shall be between 9.0 and 15.0 mils (225 and 375 microns).

b) System 2 – PS/EM/U – for Overcoating an Existing System: System 2 shall consist of the application of a full coat of epoxy penetrating sealer, a spot intermediate coat of aluminum epoxy mastic and a stripe and full finish coat of aliphatic urethane.

A full coat of epoxy penetrating sealer shall be applied to all surfaces following surface preparation. A spot intermediate coat shall consist of the application of one coat of the aluminum epoxy mastic on all areas where rust is evident and areas where the old paint has been removed, feathered and/or damaged prior to, during or after the cleaning and surface preparation operations. After the spot intermediate, a stripe coat and full finish coat of aliphatic urethane shall be applied. The film thicknesses shall be as follows:

- One full coat of epoxy penetrating sealer between 1.0 and 2.0 mils (25 and 50 microns) dry film thickness.

- One spot coat of aluminum epoxy mastic between 5.0 and 7.0 mils (125 and 175 microns) dry film thickness. The color shall contrast with the finish coat.

- One full finish coat of aliphatic urethane between 2.5 and 4.0 mils (65 and 100 microns) dry film thickness. Finish coat color shall be according to contract plans.

The total dry film thickness for this system, exclusive of the stripe coat, shall be between 8.5 and 13.0 mils (215 and 325 microns). The existing coating thickness to remain under the overcoat must be verified in order to obtain accurate total dry film thickness measurements.

c) System 3 – EM/EM/AC – for Bare Steel: System 3 shall consist of the application of two full coats of aluminum epoxy mastic and a full finish coat of waterborne acrylic. Stripe coats for first coat of epoxy mastic and the finish coat shall be applied. The film thicknesses of the full coats shall be as follows:

- One full coat of aluminum epoxy mastic between 5.0 and 7.0 mils (125 and 175 microns) dry film thickness. The first coat of aluminum epoxy mastic shall be tinted a contrasting color with the blast cleaned surface and the second coat.

- One full intermediate coat of aluminum epoxy mastic between 5.0 and 7.0 mils (125 and 175 microns) dry film thickness. The intermediate coat shall be a contrasting color to the first coat and the finish coat.

- A full finish coat of waterborne acrylic between 2.0 and 4.0 mils (50 and 100 microns) dry film thickness. Finish coat color shall be according to contract plans.

The total dry film thickness for this system, exclusive of areas receiving the stripe coats, shall be between 12.0 and 18.0 mils (360 and 450 microns).

d) System 4 – PS/EM/AC – for Overcoating an Existing System: System 4 shall consist of the application of a full coat of epoxy penetrating sealer, a spot intermediate coat of aluminum epoxy mastic and a stripe and full finish coat of waterborne acrylic.

A full coat of epoxy penetrating sealer shall be applied to all surfaces following surface preparation. A spot intermediate coat shall consist of the application of one coat of the aluminum epoxy mastic on all areas where rust is evident and areas where the old paint has been removed, feathered and/or damaged prior to, during or after the cleaning and surface preparation operations. After the spot intermediate, a stripe coat and full finish coat of waterborne acrylic shall be applied. The film thicknesses shall be as follows:

- One full coat of epoxy penetrating sealer between 1.0 and 2.0 mils (25 and 50 microns) dry film thickness.

- One spot coat of aluminum epoxy mastic between 5.0 and 7.0 mils (125 and 175 microns) dry film thickness. The color shall contrast with the finish coat.

- One full finish coat of waterborne acrylic between 2.0 and 4.0 mils (50 and 100 microns) dry film thickness. Finish coat color shall be according to contract plans.

The total dry film thickness for this system, exclusive of the stripe coat, shall be between 8.0 and 13.0 mils (200 and 325 microns). The existing coating thickness to remain under the overcoat

must be verified in order to obtain accurate total dry film thickness measurements.

e) System 5 – MCU – for Bare Steel: System 5 shall consist of the application of a full coat of moisture cure urethane (MCU) zinc primer, a full coat of MCU intermediate, and a full coat of MCU finish. Stripe coats of the prime and finish coats shall be applied. The Contractor shall comply with the manufacturer's requirements for drying times between the application of the stripe coats and the full coats. The film thicknesses of the full coats shall be as follows:

- One full coat of MCU zinc primer between 3.0 and 5.0 mils (75 and 125 microns) dry film thickness. The prime coat shall be tinted to a color that contrasts with the steel surface.

- One full MCU intermediate coat between 3.0 and 4.0 mils (75 and 100 microns) dry film thickness. The intermediate coat shall be a contrasting color to both the first coat and finish coat.

- One full MCU finish coat between 2.0 and 4.0 mils (50 and 100 microns) dry film thickness. Finish coat color shall be according to contract plans.

The total dry film thickness for this system, exclusive of areas receiving the stripe coats, shall be between 8.0 and 13.0 mils (200 and 325 microns).

f) System 6 – MCU – for Overcoating an Existing System: System 6 shall consist of the application of a full coat of moisture cure urethane (MCU) penetrating sealer, a spot coat of MCU intermediate, and a stripe and full coat of MCU finish.

A full coat of MCU penetrating sealer shall be applied to all surfaces following surface preparation. A spot intermediate coat shall consist of the application of one coat of MCU intermediate on all areas where rust is evident and areas where the old paint has been removed, feathered and/or damaged prior to, during or after the cleaning and surface preparation operations. After the spot intermediate, a stripe coat and full coat of MCU finish shall be applied. The Contractor shall comply with the manufacturer's requirements for drying time between the application of the stripe coat and the full finish coat. The film thicknesses shall be as follows:

- One full coat of MCU sealer between 1.0 and 2.0 mils (25 and 50 microns) dry film thickness.

- One full MCU intermediate coat between 3.0 and 4.0 mils (75 and 100 microns) dry film thickness. The color shall contrast with the finish coat.

- One full MCU finish coat 2.0 and 4.0 mils (50 and 100 microns) dry film thickness. Finish coat color shall be according to contract plans.

The total dry film thickness for this system, exclusive of areas receiving the stripe coats, shall be between 6.0 and 10.0 mils (150 and 250 microns). The existing coating thickness to remain under the overcoat must be verified in order to obtain accurate total dry film thickness measurements.

Application of Paint System over Galvanizing. If galvanized surfaces are present and specified

to be painted, the Contractor shall apply one of the following as designated on the plans:

- A 2-coat system consisting of a full aluminum epoxy mastic coat and a full waterborne acrylic finish coat from System 3. If red rust is visible, rusted areas shall be spot primed with aluminum epoxy mastic prior to the application of the full coat of aluminum epoxy mastic.
- A 2-coat system consisting of a full epoxy coat and a full urethane coat from System 1. If red rust is visible, rusted areas shall be spot primed with organic zinc prior to the application of the full coat of epoxy.

Surface Preparation and Painting of Galvanized Fasteners. The Contractor shall prepare all fasteners (i.e., galvanized nuts, bolts, etc.) by power tool cleaning in accordance with SSPC-SP 2 or SSPC-SP3 to remove loose material. Following hand/power tool cleaning and prior to painting, the surfaces shall be solvent cleaned according to SSPC-SP 1. Slight stains of torqueing compound dye may remain after cleaning provided the dye is not transferred to a cloth after vigorous rubbing is acceptable. If any dye is transferred to a cloth after vigorous rubbing, additional cleaning is required.

The fasteners shall be coated with one coat of an aluminum epoxy mastic meeting the requirements of Article1008.03 and the same acrylic or urethane topcoat specified above for use on galvanized members.

Repair of Damage to New Coating System and Areas Concealed by Containment. The Contractor shall repair all damage to the newly installed coating system and areas concealed by the containment/protective covering attachment points, at no cost to the Department. The process for completing the repairs shall be included in the submittals. If the damage extends to the substrate and the original preparation involved abrasive blast cleaning, the damaged areas shall be prepared to SSPC-SP15 Power Tool Cleaning - Commercial Grade. If the original preparation was other than blast cleaning or the damage does not extend to the substrate, the loose, fractured paint shall be cleaned to Power Tool Cleaning – Modified SP3.

The surrounding coating at each repair location shall be feathered for a minimum distance of 1 1/2 in. (40 mm) to achieve a smooth transition between the prepared areas and the existing coating.

If the bare steel is exposed, all coats shall be applied to the prepared area. For damaged galvanization, the first coat shall be aluminum epoxy mastic. If only the intermediate and finish coats are damaged, the intermediate and finish shall be applied. If only the finish coat is damaged, the finish shall be applied.

Special Instructions.

a) At the completion of the work, the Contractor shall stencil the painting date and the paint code on the bridge. The letters shall be capitals, not less than 2 in. (50 mm) and not more than 3 in. (75 mm) in height.

The stencil shall contain the following wording "PAINTED BY (insert the name of the Contractor)"

and shall show the month and year in which the painting was completed, followed by the appropriate code for the coating material applied, all stenciled on successive lines:

CODE U (for field applied System 3 or System 4).

CODE Z (for field applied System 1 or System 2).

CODE AA (for field applied System 5 or System 6).

This information shall be stenciled on the cover plate of a truss end post near the top of the railing, or on the outside face of an outside stringer near both ends of the bridge facing traffic, or at some equally visible surface near the end of the bridge, as designated by the Engineer.

b) All surfaces painted inadvertently shall be cleaned immediately.

c) Caulking complex structures. Pack rust shall be removed prior to the application of the approved sealant as per the Laminar and Stratified Rust article of this special provision. Chloride shall be remediated as specified elsewhere in this provision. The caulk shall be compatible with the approved paint system, and applied in accordance with the paint manufacturers recommendations as described in the Contractors submittal

The following coatings shall be applied prior to the application of the caulk. Stripe coat of organic zinc primer, full coat of organic zinc primer, intermediate epoxy stripe coat, full coat of epoxy intermediate, full coat of urethane finish. Apply caulk after the urethane has dried for top coating. After the caulk has been applied it shall be allowed to dry to coat according to the manufacturer's written recommendations and a stripe coat of urethane applied to all areas of caulking.

Alternatively, as directed by the Engineer, apply the caulking after the intermediate coat has dried for overcoating. After the caulking has dried according to the manufacturer's written recommendations, apply the urethane finish over the caulking and intermediate coat.

1. All vertical, diagonal and horizonal lapping members shall be caulked along the top and sides. The bottom shall remain open for drainage.
2. Locations where pack rust was removed leaving a gap between two steel surfaces shall also be caulked. Locations greater than ¼ inch in depth shall be filled with a closed cell backer rod in accordance with the caulking manufacturer's instructions prior to the application of the caulk.

It is understood and agreed that the cost of all work outlined above, unless otherwise specified, has been included in the bid, and no extra compensation will be allowed.

Appendix 1 – Reference List

The Contractor shall maintain the following regulations and references on site for the duration of the project:

- Illinois Environmental Protection Act
- ASTM D 4214, Standard Test Method for Evaluating Degree of Chalking of Exterior Paint Films
- ASTM D 4285, Standard Test Method for Indicating Oil or Water in Compressed Air
- ASTM D4417, Standard Test Methods for Field Measurement of Surface Profile of Blast Cleaned Steel
- SSPC-AB 1, Mineral and Slag Abrasives
- SSPC-AB 2, Cleanliness of Recycled Ferrous Metallic Abrasives
- SSPC-AB 3, Ferrous Metallic Abrasive
- SSPC-PA 2, Procedure for Determining Conformance to Dry Coating Thickness Requirements
- SSPC-PA 17, Procedure for Determining Conformance to Steel Profile/Surface Roughness/Peak Count Requirements
- SSPC-QP 1, Standard Procedure for Evaluating Painting Contractors (Field Application to Complex Structures)
- SSPC-QP 2, Standard Procedure for Evaluating the Qualifications of Painting Contractors to Remove Hazardous Paint
- SSPC-SP 1, Solvent Cleaning
- SSPC-SP 2, Hand Tool Cleaning
- SSPC-SP 3, Power Tool Cleaning
- SSPC-SP 10/NACE No. 2, Near White Metal Blast Cleaning
- SSPC-SP WJ-4, Waterjet Cleaning of Metals – Light Cleaning
- SSPC-SP 15, Commercial Grade Power Tool Cleaning
- SSPC-SP 16, Brush-Off Blast Cleaning of Coated and Uncoated Galvanized Steel, Stainless Steels, and Non-Ferrous Metals
- SSPC-VIS 1, Guide and Reference Photographs for Steel Surfaces Prepared by Dry Abrasive Blast Cleaning
- SSPC-VIS 3, Visual Standard for Power- and Hand-Tool Cleaned Steel
- SSPC-VIS 4, Guide and Reference Photographs for Steel Cleaned by Water Jetting
- SSPC-VIS 5, Guide and Reference Photographs for Steel Prepared by Wet Abrasive Blast Cleaning
- The paint manufacturer's application instructions, MSDS and product data sheets

END OF SECTION

CONTAINMENT AND DISPOSAL OF LEAD PAINT CLEANING RESIDUES

Effective: October 2, 2001
Revised: April 22, 2016

Description. This work shall consist of the containment, collection, temporary storage, transportation, and disposal of waste from lead paint removal projects. Waste requiring

containment and control includes, but is not limited to, old paint, spent abrasives, corrosion products, mill scale, dirt, dust, grease, oil, salts, and water used for cleaning the surface of existing lead coatings prior to overcoating.

General. The existing coatings contain lead and may also contain other toxic metals. This specification provides the requirements for containment and for the protection of the public, and the environment from exposure to harmful levels of toxic metals that may be present in the paint being removed or repaired. The Contractor shall take reasonable and appropriate precautions to protect the public from the inhalation or ingestion of dust or debris from the operations and is responsible for the clean-up of all spills of waste at no additional cost to the Department.

The Contractor shall comply with the requirements of this Specification and all applicable Federal, State, and Local laws, codes, and regulations, including, but not limited to the regulations of the United States Environmental Protection Agency (USEPA), Occupational Safety and Health Administration (OSHA), and Illinois Environmental Protection Agency (IEPA). The Contractor shall comply with all applicable regulations even if the regulation is not specifically referenced herein. If a Federal, State, or Local regulation is more restrictive than the requirements of this Specification, the more restrictive requirements shall prevail.

Submittals. The Contractor shall submit for Engineer review and acceptance, the following drawings, and plans for accomplishing the work. The submittals shall be provided within 30 days of execution of the contract unless given written permission by the Engineer to submit them at a later date. Work cannot proceed until the submittals are accepted by the Engineer. Details for each of the plans are presented within the body of this specification. The Contractor shall also maintain on site, copies of the standards and regulations referenced herein (list provided in appendix 1).

Containment Plans. The containment plans shall include drawings, equipment specifications, and calculations (wind load, air flow and ventilation when negative pressure is specified. The plans shall include copies of the manufacturer's specifications for the containment materials and equipment that will be used to accomplish containment and ventilation.

When required by the contract plans, the submittal shall provide calculations that assure the structural integrity of the bridge when it supports the containment, and the calculations and drawings shall be signed and sealed by a Structural Engineer licensed in the state of Illinois.

When working over the railroad or navigable waterways, the Department will notify the respective agencies that work is being planned. Unless otherwise noted in the plans, the Contractor is responsible for follow up contact with the agencies, and shall provide evidence that the railroad, Coast Guard, Corps of Engineers, and other applicable agencies are satisfied with the clearance provided and other safety measures that are proposed.

Environmental Monitoring Plan. The Environmental Monitoring Plan shall address the visual inspections and cleanup of the soil and water that the Contractor will perform, including final project inspection and cleanup. The plan shall address the daily visible emissions observations that will be performed and the corrective action that will be implemented in the event emissions or releases occur. When high volume ambient air monitoring is required, an Ambient Air

Monitoring Plan shall be developed. The plan shall include:

- Proposed monitor locations and power sources in writing. A site sketch shall be included, indicating sensitive receptors, monitor locations, and distances and directions from work area.
- Equipment specification sheet for monitors to be used, and a written commitment to calibrate and maintain the monitors.
- Include a procedure for operation of monitors per 40 CFR 50, Appendix B, including use of field data chain-of-custody form. Include a sample chain of custody form.
- Describe qualifications/training of monitor operator.
- The name, contact information (person's name and number), and certification of the laboratory performing the filter analysis. Laboratory shall be accredited by one of the following: 1) the American Industrial Hygiene Association (AIHA) for lead (metals) analysis, 2) Environmental Lead Laboratory Accreditation Program (ELLAP) for metals analysis, 3) State or federal accreditation program for ambient air analysis or, 4) the EPA National Lead Laboratory Accreditation Program (NLLAP) for lead analysis. The laboratory shall provide evidence of certification, a sample laboratory chain-of-custody form, and sample laboratory report that provides the information required by this specification. The laboratory shall also provide a letter committing to do the analysis per 40 CFR 50, Appendix G. If the analysis will not be performed per 40 CFR Appendix G, a proposed alternate method shall be described, together with the rationale for using it. The alternate method can not be used unless specifically accepted by the Engineer in writing.

Waste Management Plan. The Waste Management Plan shall address all aspects of handling, storage, testing, hauling and disposal of all project waste, including wastewater. Include the names, addresses, and a contact person for the proposed licensed waste haulers and disposal facilities. Submit the name and qualifications of the laboratory proposed for Toxicity Characteristic Leaching Procedure (TCLP) analysis. If the use of abrasive additives is proposed, provide the name of the additive, the premixed ratio of additive to abrasive being provided by the supplier, and a letter from the supplier of the additive indicating IEPA acceptance of the material. Note that the use of any steel or iron-based material, such as but not limited to grit, shot, fines, or filings as an abrasive additive is prohibited. The plan shall address weekly inspections of waste storage, maintaining an inspection log, and preparing a monthly waste accumulation inventory table.

Contingency Plan. The Contractor shall prepare a contingency plan for emergencies including fire, accident, failure of power, failure of dust collection system, failure of supplied air system or any other event that may require modification of standard operating procedures during lead removal. The plan shall include specific procedures to ensure safe egress and proper medical attention in the event of an emergency.

When the Engineer accepts the submittals, the Contractor will receive written notification. The Contractor shall not begin any work until the Engineer has accepted the submittals. The Contractor shall not construe Engineer acceptance of the submittals to imply approval of any particular method or sequence for conducting the work, or for addressing health and safety concerns. Acceptance of the plans does not relieve the Contractor from the responsibility to conduct the work according to the requirements of Federal, State, or Local regulations, this specification, or to adequately protect the health and safety of all workers involved in the project

and any members of the public who may be affected by the project. The Contractor remains solely responsible for the adequacy and completeness of the programs and work practices, and adherence to them.

Quality Control (QC) Inspections. The Contractor shall perform first line, in process QC inspections of all environmental control and waste handling aspects of the project to verify compliance with these specification requirements and the accepted drawings and plans. The Contractor shall use the IDOT Environmental Daily Report form to record the results of the inspections. Alternative forms (paper or electronic) will be allowed provided they furnish equivalent documentation as the IDOT form, and they are accepted as part of the QC Program submittal. The completed reports shall be turned into the Engineer before work resumes the following day. Contractor QC inspections shall include, but not be limited to the following:

- Proper installation and continued performance of the containment system(s) in accordance with the approved drawings.
- Visual inspections of emissions into the air and verification that the cause(s) for any unacceptable emissions is corrected.
- Set up, calibration, operation, and maintenance of the regulated area and high volume ambient air monitoring equipment, including proper shipment of cassettes/filters to the laboratory for analysis. Included is verification that the Engineer receives the results within the time frames specified and that appropriate steps are taken to correct work practices or containment in the event of unacceptable results.
- Visual inspections of spills or deposits of contaminated materials into the water or onto the ground, pavement, soil, or slope protection. Included is verification that proper cleanup is undertaken and that the cause(s) of unacceptable releases is corrected.
- Proper implementation of the waste management plan including laboratory analysis and providing the results to the Engineer within the time frames specified herein.
- Proper implementation of the contingency plans for emergencies.

The personnel providing the QC inspections shall poses current SSPC-C3 certification or equal, including the annual training necessary to maintain that certification (SSPC-C5 or equal), and shall provide evidence of successful completion of 2 bridge lead paint removal projects of similar or greater complexity and scope that have been completed in the last 2 years. References shall include the name, address, and telephone number of a contact person employed by the bridge owner. Proof of initial certification and the current annual training shall also be provided.

Quality Assurance (QA) Observations. The Engineer will conduct QA observations of any or all of the QC monitoring inspections that are undertaken. The presence or activity of Engineer observations in no way relieves the Contractor of the responsibility to provide all necessary daily QC inspections of its own and to comply with all requirements of this Specification.

Containment Requirements. The Contractor shall install and maintain containment systems surrounding the work for the purpose of controlling emissions of dust and debris according to the requirements of this specification. Working platforms and containment materials that are used shall be firm and stable and platforms shall be designed to support the workers, inspectors, spent surface preparation media (e.g., abrasives), and equipment during all phases of surface

preparation and painting. Platforms, cables, and other supporting structures shall be designed according to OSHA regulations. If the containment needs to be attached to the structure, the containment shall be attached by bolting, clamping, or similar means. Welding or drilling into the structure is prohibited unless approved by the Engineer in writing.

The containment shall be dropped in the event of sustained winds of 40 mph (64 kph) or greater and all materials and equipment secured.

The Contractor shall provide drawings showing the containment system and indicating the method(s) of supporting the working platforms and containment materials to each other and to the bridge. When the use of negative pressure and airflow inside containment is specified, the Contractor shall provide all ventilation calculations and details on the equipment that will be used for achieving the specified airflow and dust collection.

When directed in the contract plans, the Contractor shall submit calculations and drawings, signed and sealed by a Structural Engineer licensed in the state of Illinois, that assure the structural integrity of the bridge under the live and dead loads imposed, including the design wind loading.

When working over railroads, the Contractor shall provide evidence that the proposed clearance and the safety provisions that will be in place (e.g., flagman) are acceptable to the railroad. In the case of work over navigable waters, the Contractor shall provide evidence that the proposed clearance and provisions for installing or moving the containment out of navigation lanes is acceptable to authorities such as the Coast Guard and Army Corps of Engineers. The Contractor shall include plans for assuring that navigation lighting is not obscured, or if it is obscured, that temporary lighting is acceptable to the appropriate authorities (e.g., Coast Guard) and will be utilized.

Engineer review and acceptance of the drawings and calculations shall not relieve the Contractor from the responsibility for the safety of the working platforms and containment, and for providing ample ventilation to control worker and environmental exposures. After the work platforms and containment materials are erected, additional measures may be needed to ensure worker safety according to OSHA regulations. The Contractor shall institute such measures at no additional cost to the Department.

Containment for the cleaning operation of this contract is defined as follows:

- The containment system shall maintain the work area free of visible emissions of dust and debris according to all provisions of this Specification, with no debris permitted outside of the regulated area at any time. All debris within the regulated area and within the containment shall be collected at the end of the last shift each day, and properly stored in sealed containers. Cleaning shall be accomplished by HEPA vacuuming unless it is conducted within a containment that is designed with a ventilation system capable of collecting the airborne dust and debris created by sweeping and blowing with compressed air. The ventilation system shall be in operation during the cleaning.

- The containment systems shall comply with the specified SSPC Guide 6 classifications as presented in Table 1 for the method of paint removal utilized.

- TSP-lead in the air at monitoring locations selected by the Contractor shall comply with the requirements specified herein.

The Contractor shall take appropriate action to avoid personnel injury or damage to the structure from the installation and use of the containment system. If the Engineer determines that there is the potential for structural damage caused by the installed containment system, the Contractor shall take appropriate action to correct the situation.

In addition to complying with the specific containment requirements in Table 1 for each method of removal, the Contractor shall provide and maintain coverage over the ground in the areas to be cleaned. This coverage shall be capable of catching and containing surface preparation media, paint chips, and paint dust in the event of an accidental escape from the primary containment. The containment materials shall be cleaned of loose material prior to relocation or dismantling. Acceptable methods of cleaning include blowing down the surfaces with compressed air while the ventilation system is in operation, HEPA vacuuming, and/or wet wiping. If paint chips or dust is observed escaping from the containment materials during moving, all associated operations shall be halted and the materials and components recleaned.

The containment systems shall also meet the following requirements:

a) Dry Abrasive Blast Cleaning - Full Containment with Negative Pressure (SSPC Class 1A)

The enclosure shall be designed, installed, and maintained to sustain maximum anticipated wind forces, including negative pressure. Flapping edges of containment materials are prohibited and the integrity of all containment materials, seams, and seals shall be maintained for the duration of the project. Airflow inside containment shall be designed to provide visibility and reduce worker exposures to toxic metals according to OSHA regulations and as specified in Table 1 and its accompanying text. When the location of the work on the bridge, or over lane closures permit, the blast enclosure shall extend a minimum of 3 ft. (1 m) beyond the limits of surface preparation to allow the workers to blast away from, rather than into the seam between the containment and the structure. The blast enclosure shall have an airlock or resealable door entryway to allow entrance and exit from the enclosure without allowing the escape of blasting residue.

If recyclable metallic abrasives are used, the Contractor shall operate the equipment in a manner that minimizes waste generation. Steps shall also be taken to minimize dust generation during the transfer of all abrasive/paint debris (expendable or recyclable abrasives) for recycling or disposal. Acceptable methods include, but are not limited to vacuuming, screw or belt conveyance systems, or manual conveyance. However manual conveyance is only permitted if the work is performed inside a containment that is equipped with an operating ventilation system capable of controlling the dust that is generated.

Appropriate filtration shall be used on the exhaust air of dust collection and abrasive recycling equipment as required to comply with IEPA regulations. The equipment shall be cleaned/maintained, enclosed, or replaced if visible dust and debris are being emitted and/or the regulated area or high-volume monitor lead levels are not in compliance.

Areas beneath containment connection points that were shielded from abrasive blast cleaning shall be prepared by vacuum blast cleaning or vacuum-shrouded power tool cleaning after the containment is removed.

b) Vacuum Blast Cleaning within Containment (SSPC-Class 4A)

Vacuum blasting equipment shall be fully automatic and capable of cleaning and recycling the abrasive. The system shall be designed to deliver cleaned, recycled blasting abrasives and provide a closed system containment during blasting. The removed coating, mill scale, and corrosion shall be separated from the abrasive, and stored for disposal.

The Contractor shall attach containment materials around and under the work area to catch and contain abrasive and waste materials in the event of an accidental escape from the vacuum shroud. This containment is in addition to the ground covers specified earlier.

It is possible that the close proximity of some structural steel members, such as the end diaphragms or end cross-frames underneath transverse deck expansion joints, preclude the use of the vacuum blasting equipment for the removal of the old paint. For surfaces that are inaccessible for the nozzles of the vacuum blasting equipment, the Contractor shall remove the paint by means of full containment inside a complete enclosure as directed by the Engineer.

c) Vacuum-Shrouded Power Tool Cleaning within Containment (SSPC-Class 3P)

The Contractor shall utilize power tools equipped with vacuums and High Efficiency Particulate Air (HEPA) filters. The Contractor shall attach containment walls around the work area, and install containment materials beneath the work area to catch and contain waste materials in the event of an accidental escape from the vacuum shroud. This containment is in addition to the ground covers specified earlier and shall be installed within 10 ft. (3m) of the areas being cleaned.

d) Power Tool Cleaning without Vacuum, within Containment (SSPC-Class 2P)

When the use of power tools without vacuum attachments is authorized by the Engineer, the Contractor shall securely install containment walls and flooring around the work area to capture and collect all debris that is generated. The containment material requirements for this Class 2P are similar to Class 3P used for vacuum-shrouded tools, but the supporting structure will be more substantial in Class 2P to better secure the containment materials from excessive movement that could lead to the loss of waste paint chips and debris. Containment beneath the work shall be within 10 ft. (3m) of the areas being cleaned and is in addition to the ground covers specified earlier.

Water Washing, Water Jetting or Wet Abrasive Blast Cleaning within Containment
(SSPC Class 2W-3W)

Water washing of the bridge for the purpose of removing chalk, dirt, grease, oil, bird nests, and other surface debris, and water jetting or wet abrasive blast cleaning for the purpose of removing paint and surface debris shall be conducted within a containment designed, installed, and maintained in order to capture and contain all water and waste materials. The containment shall

consist of impermeable floors and lower walls to prevent the water and debris from escaping. Permeable upper walls and ceilings are acceptable provided the paint chips, debris, and water, other than mists, are collected. A fine mist passing through the permeable upper walls is acceptable, provided the environmental controls specified below are met. If paint chips, debris, or water, other than mists, escape the containment system, impermeable walls and ceilings shall be installed.

When water is used for surface cleaning, the collected water shall be filtered to separate the particulate from the water. Recycling of the water is preferred in order to reduce the volume of waste that is generated. The water after filtration shall be collected and disposed of according to the waste handling portions of this specification.

When a slurry is created by injecting water into the abrasive blast stream, the slurry need not be filtered to separate water from the particulate.

Environmental Controls and Monitoring. The Contractor shall prepare and submit to the Engineer for review and acceptance, an Environmental Monitoring Plan. The purpose of the plan is to address the observations and equipment monitoring undertaken by the Contractor to confirm that project dust and debris are not escaping the containment into the surrounding air, soil, and water.

a) Soil and Water. Containment systems shall be maintained to prevent the escape of paint chips, abrasives, and other debris into the water, and onto the ground, soil, slope protection, and pavements. Releases or spills of paint chips, abrasives, dust and debris that have become deposited on surrounding property, structures, equipment or vehicles, and bodies of water are unacceptable. If there are inadvertent spills or releases, the Contractor shall immediately shut down the emissions-producing operations, clean up the debris, and change work practices, modify the containment, or take other appropriate corrective action as needed to prevent similar releases from occurring in the future.

Water booms, boats with skimmers, or other means as necessary shall be used to capture and remove paint chips or project debris that falls or escapes into the water.

At the end of each workday at a minimum, the work area inside and outside of containment, including ground tarpaulins, shall be inspected to verify that paint debris is not present. If debris is observed, it shall be removed by hand and HEPA-vacuuming. If wet methods of preparation are used, the damp debris can remain overnight provided it is protected from accidental release by securely covering the waste, folding the waste into the ground tarps, or by other acceptable methods. Prior to commencing work the next day, the debris from the folded ground tarps shall be removed.

Upon project completion, the ground and water in and around the project site are considered to have been properly cleaned if paint chips, paint removal media (e.g., spent abrasives), fuel, materials of construction, litter, or other project debris have been removed.

NOTE: All project debris must be removed even if the debris (e.g., spent abrasive and paint chips) was a pre-existing condition.

b) Visible Emissions. The Contractor shall conduct observations of visible emissions and releases on an ongoing daily basis when dust-producing activities are underway, such as paint removal, clean up, waste handling, and containment dismantling or relocation. Note that visible emissions observations do not apply to the fine mist that may escape through permeable containment materials when wet methods of preparation are used.

Visible emissions in excess of SSPC-TU7, Method A (Timing Method), Level 1 (1% of the workday) are unacceptable. In an 8-hour workday, this equates to emissions of a cumulative duration no greater than 5 minutes. This criterion applies to scattered, random emissions of short duration. Sustained emissions from a given location (e.g., 1 minute or longer), regardless of the total length of emissions for the workday, are unacceptable and action shall be initiated to halt the emission.

If unacceptable visible emissions or releases are observed, the Contractor shall immediately shut down the emission-producing operations, clean up the debris, and change work practices, modify the containment, or take other appropriate corrective action as needed to prevent similar releases from occurring in the future.

c) Ambient Air Monitoring. The Contractor shall perform ambient air monitoring according to the following:

- Monitor Siting. The Contractor shall collect and analyze air samples to evaluate levels of TSP-lead if there are sensitive receptors within 5 times the height of the structure or within 1000 ft. (305 m) of the structure, whichever is greater. If sensitive receptors are not located within these limits, monitoring is not required. Sensitive receptors are areas of public presence or access including, but not limited to, homes, schools, parks, playgrounds, shopping areas, livestock areas, and businesses. The motoring public is not considered to be a sensitive receptor for the purpose of ambient air monitoring.

The Contractor shall locate the monitors according to Section 7.3 of SSPC-TU-7, in areas of public exposure and in areas that will capture the maximum pollutant emissions resulting from the work. The Contractor shall identify the recommended monitoring sites in the Ambient Air Monitoring Plan, including a sketch identifying the above. The monitors shall not be sited until the Engineer accepts the proposed locations. When possible, monitors shall be placed at least 30 feet (9 m) away from highway traffic.

- Equipment Provided by Contractor. The Contractor shall provide up to 4 monitors per work site and all necessary calibration and support equipment, power to operate them, security (or arrangements to remove and replace the monitors daily), filters, flow chart recorders and overnight envelopes for shipping the filters to the laboratory. The number of monitors required will be indicated in the Plan Notes. Each monitor shall be tagged with the calibration date.

- Duration of Monitoring. Monitoring shall be performed for the duration of dust-producing operations (e.g., paint removal, waste handling, containment clean-up and movement, etc.) or a minimum of 8 hours each day (when work is performed).

The monitoring schedule shall be as follows:

1. For dry abrasive blast cleaning monitoring shall be conducted full time during all days of dust-producing operations (e.g., paint removal, waste handling, containment movement, etc.).
2. For wet abrasive blast cleaning, water jetting, or power tool cleaning, monitoring shall be conducted for the first 5 days of dust producing operations. If the results after 5 days are acceptable, monitoring may be discontinued. If the results are unacceptable, corrective action shall be initiated to correct the cause of the emissions, and monitoring shall continue for an additional 5 days. If the results are still unacceptable, the Engineer may direct that the monitoring continue full time.

When monitoring is discontinued, if visible emissions are observed and/or the Contractor's containment system changes during the course of the project, then air monitoring will again be required for a minimum of two consecutive days until compliance is shown.

- Background Monitoring. Background samples shall be collected for two days prior to the start of work while no dust producing operations are underway to provide a baseline. The background monitoring shall include one weekday and one weekend day. The background monitoring shall coincide with the anticipated working hours for the paint removal operations but shall last for a minimum of 8 hours each day.

- Monitor Operation and Laboratory Analysis .

The Contractor shall calibrate the monitors according to the manufacturer's written instructions upon mobilization to the site and quarterly. Each monitor shall be tagged with the calibration date, and calibration information shall be provided to the Engineer upon request.

All ambient air monitoring shall be performed by the Contractor according to the accepted Ambient Air Monitoring Plan and according to EPA regulations 40 CFR Part 50 Appendix B, Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere (High-Volume Method), and 40 CFR Part 50 Appendix G, Reference Method for the Determination of Lead in Suspended Particulate Matter Collected from Ambient Air.

Filters shall be placed in monitors and monitors operated each day prior to start of dust-producing operations and the filters removed upon completion each day. The Contractor shall advise the Engineer in advance when the filters will be removed and replaced. The monitor operator shall record the following information, at a minimum, on field data and laboratory chain-of-custody forms (or equivalent):

1. Monitor location and serial number
2. Flow rate, supported by flow charts
3. Start, stop times and duration of monitoring
4. Work activities and location of work during the monitoring period
5. Wind direction/speed

For the first 5 days of monitoring, the Contractor shall submit the filters, field data and laboratory

chain-of-custody forms together with the flow chart recorders (i.e. monitor flow rate and the duration of monitoring) on a daily basis in an overnight envelope to the laboratory for analysis. The laboratory must provide the Engineer with written results no later than 72 hours after the completion of each day's monitoring. At the discretion of the Engineer, if the initial 5 days of monitoring on full time monitoring projects is acceptable, the filters may be sent to the laboratory every 3 days rather than every day. Written results must be provided to the Engineer no later than 5 days after the completion of monitoring for the latest of the 3 days.

- Ambient Air Monitoring Results. The laboratory shall provide the report directly to the Engineer with a copy to the contractor. The report shall include:

1. Monitor identification and location
2. Work location and activities performed during monitoring period
3. Monitor flow rate, duration, and volume of air sampled
4. Laboratory methods used for filter digestion / analysis
5. Sample results for the actual duration of monitoring
6. Sample results expressed in terms of a 24-hour time weighted average. Assume zero for period not monitored.
7. Comparison of the results with the acceptance criteria indicating whether the emissions are compliant.
8. Field data and chain-of-custody records used to derive results.

Should revised reports or any information regarding the analysis be issued by the laboratory directly to the Contractor at any time, the contractor shall immediately provide a copy to the Engineer and advise the laboratory that the Engineer is to receive all information directly from the laboratory.

- Acceptance Criteria. TSP-lead results at each monitor location shall be less than 1.5 μg/cu m per calendar quarter converted to a daily allowance using the formulas from SSPC- TU7 as follows, except that the maximum 24-hour daily allowance shall be no greater than 6 μg/cu m.

The formula for determining a 24-hour daily value based on the actual number of paint disturbance days expected to occur during the 90-day quarter is:

DA = (90 ÷ PD) x 1.5 μg/cu m, where

DA is the daily allowance, and
PD is the number of preparation days anticipated in the 90-day period
If the DA calculation is > 6.0 μg/cu m, use 6.0 μg/cu m.

Regulated Areas. Physically demarcated regulated area(s) shall be established around exposure producing operations at the OSHA Action Level for the toxic metal(s) present in the coating. The Contractor shall provide all required protective clothing and personal protective equipment for personnel entering into a regulated area. Unprotected street clothing is not permitted within the regulated areas.

Hygiene Facilities/Protective Clothing/Blood Tests. The Contractor shall provide clean lavatory and hand washing facilities according to OSHA regulations and confirm that employees wash hands, forearms, and face before breaks. The facilities shall be located at the perimeter of the regulated area in close proximity to the paint removal operation. Shower facilities shall be provided when workers' exposures exceed the Permissible Exposure Limit. Showers shall be located at each bridge site, or if allowed by OSHA regulations, at a central location to service multiple bridges. The shower and wash facilities shall be cleaned at least daily during use.

All wash and shower water shall be filtered and containerized. The Contractor is responsible for filtration, testing, and disposal of the water.

The Contractor shall make available to all IDOT project personnel a base line and post project blood level screening for lead and zinc protoporphyrin (ZPP) (or the most current OSHA requirement) levels as determined by the whole blood lead method, utilizing the Vena-Puncture technique. This screening shall be made available every 2 months for the first 6 months, and every 6 months thereafter.

The Contractor shall provide IDOT project personnel with all required protective clothing and equipment, including disposal or cleaning. Clothing and equipment include but is not limited to disposable coveralls with hood, booties, disposable surgical gloves, hearing protection, and safety glasses. The protective clothing and equipment shall be provided and maintained on the job site for the exclusive, continuous, and simultaneous use by the IDOT personnel. This equipment shall be suitable to allow inspection access to any area in which work is being performed.

All handwash and shower facilities shall be fully available for use by IDOT project personnel.

Site Emergencies.

a) Stop Work. The Contractor shall stop work at any time the conditions are not within specifications and take the appropriate corrective action. The stoppage will continue until conditions have been corrected. Standby time and cost required for corrective action is at the Contractor's expense. The occurrence of the following events shall be reported in writing to IDOT and shall require the Contractor to automatically stop lead paint removal and initiate clean up activities.

- Airborne lead levels at any of the high-volume ambient air monitoring locations that exceed the limits in this specification, or airborne lead in excess of the OSHA Action Level at the boundary of the regulated area.
- Break in containment barriers.
- Visible emissions in excess of the specification tolerances.
- Loss of negative air pressure when negative air pressure is specified (e.g., for dry abrasive blast cleaning).
- Serious injury within the containment area.
- Fire or safety emergency
- Respiratory system failure
- Power failure

b) Contingency Plans and Arrangements. The Engineer will refer to the contingency plan for site specific instructions in the case of emergencies.

The Contractor shall prepare a contingency plan for emergencies including fire, accident, failure of power, failure of dust collection system, failure of supplied air system or any other event that may require modification of standard operating procedures during lead removal. The plan shall include specific procedures to ensure safe egress and proper medical attention in the event of an emergency. The Contractor shall post the telephone numbers and locations of emergency services including fire, ambulance, doctor, hospital, police, power company and telephone company on clean side of personnel decontamination area.

A two-way radio, or equal, as approved by the Engineer, capable of summoning emergency assistance shall be available at each bridge during the time the Contractor's personnel are at the bridge site under this contract. The following emergency response equipment described in the contingency plan (generic form attached) shall be available during this time as well: an appropriate portable fire extinguisher, a 55 gal (208 L) drum, a 5 gal (19 L) pail, a long handled shovel, absorbent material (one bag).

A copy of the contingency plan shall be maintained at each bridge during cleaning operations and during the time the Contractor's personnel are at the bridge site under this contract. The Contractor shall designate the emergency coordinator(s) required who shall be responsible for the activities described.

An example of a contingency plan is included at the end of this Special Provision.

Collection, Temporary Storage, Transportation and Disposal of Waste. The Contractor and the Department are considered to be co-generators of the waste.

The Contractor is responsible for all aspects of waste collection, testing and identification, handling, storage, transportation, and disposal according to these specifications and all applicable Federal, State, and Local regulations. The Contractor shall provide for Engineer review and acceptance a Waste Management Plan that addresses all aspects of waste handling, storage, and testing, and provides the names, addresses, and a contact person for the proposed licensed waste haulers and disposal facilities. The Department will not perform any functions relating to the waste other than provide EPA identification numbers, provide the Contractor with the emergency response information, the emergency response telephone number required to be provided on the manifest, and to sign the waste manifest. The Engineer will obtain the identification numbers from the state and federal environmental protection agencies for the bridge(s) to be painted and furnish those to the Contractor.

All surface preparation/paint residues shall be collected daily and deposited in all-weather containers supplied by the Contractor as temporary storage. The storage area shall be secure to prevent unauthorized entry or tampering with the containers. Acceptable measures include storage within a fully enclosed (e.g., fenced in) and locked area, within a temporary building, or implementing other reasonable means to reduce the possibility of vandalism or exposure of the waste to the public or the environment (e.g., securing the lids or covers of waste containers and

roll-off boxes). Waste shall not be stored outside of the containers. Waste shall be collected and transferred to bulk containers taking extra precautions as necessary to prevent the suspension of residues in air or contamination of surrounding surfaces. Precautions may include the transfer of the material within a tarpaulin enclosure. Transfer into roll-off boxes shall be planned to minimize the need for workers to enter the roll-off box.

No residues shall remain on surfaces overnight, either inside or outside of containment. Waste materials shall not be removed through floor drains or by throwing them over the side of the bridge. Flammable materials shall not be stored around or under any bridge structures.

The all-weather containers shall meet the requirements for the transportation of hazardous materials and as approved by the Department. Acceptable containers include covered roll-off boxes and 55-gallon drums (17H). The Contractor shall insure that no breaks and no deterioration of these containers occurs and shall maintain a written log of weekly inspections of the condition of the containers. A copy of the log shall be furnished to the Engineer upon request. The containers shall be kept closed and sealed from moisture except during the addition of waste. Each container shall be permanently identified with the date that waste was placed into the container, contract number, hazardous waste name and ID number, and other information required by the IEPA.

The Contractor shall have each waste stream sampled for each project and tested by TCLP and according to EPA and disposal company requirements. The Engineer shall be notified in advance when the samples will be collected. The samples shall be collected and shipped for testing within the first week of the project, with the results due back to the Engineer within 10 days. Testing shall be considered included in the pay item for “Containment and Disposal of Lead Paint Cleaning Residues.” Copies of the test results shall be provided to the Engineer prior to shipping the waste.

Wastewater generated from bridge washing, hygiene purposes, and cleaning of equipment shall be filtered on site to remove particulate and disposed of at a Publicly Owned Treatment Works (POTW) according to State regulations. The Contractor shall provide the Engineer with a letter from the POTW indicating that they will accept the wastewater. If the POTW allows the filtered water to be placed into the sanitary sewer system, the Contractor shall provide a letter from the POTW indicating that based on the test results of the water, disposal in the sanitary sewer is acceptable to them. Water shall not be disposed of until the above letter(s) are provided to, and accepted by, the Engineer.

If approved abrasive additives are used that render the waste non-hazardous as determined by TCLP testing, the waste shall be classified as a non-hazardous special waste, transported by a licensed waste transporter, and disposed of at an IEPA permitted disposal facility in Illinois.

When paint is removed from the bridge without the use of abrasive additives, the paint, together with the surface preparation media (e.g. abrasive) shall be handled as a hazardous waste, regardless of the TCLP results. The waste shall be transported by a licensed hazardous waste transporter, treated by an IEPA permitted treatment facility to a non-hazardous special waste and disposed of at an IEPA permitted disposal facility in Illinois.

The treatment/disposal facilities shall be approved by the Engineer and shall hold an IEPA permit

for waste disposal and waste stream authorization for this cleaning residue. The IEPA permit and waste stream authorization must be obtained prior to beginning cleaning, except that if necessary, limited paint removal will be permitted in order to obtain samples of the waste for the disposal facilities. The waste shall be shipped to the facility within 90 days of the first accumulation of the waste in the containers. When permitted by the Engineer, waste from multiple bridges in the same contract may be transported by the Contractor to a central waste storage location(s) approved by the Engineer in order to consolidate the material for pick up, and to minimize the storage of waste containers at multiple remote sites after demobilization. Arrangements for the final waste pickup shall be made with the waste hauler by the time blast cleaning operations are completed or as required to meet the 90-day limit stated above.

The Contractor shall submit a waste accumulation inventory table to the Engineer no later than the 5th day of the month. The table shall show the number and size of waste containers filled each day in the preceding month and the amount of waste shipped that month, including the dates of shipments.

The Contractor shall prepare a manifest supplied by the IEPA for off-site treatment and disposal before transporting the hazardous waste off-site. The Contractor shall prepare a land ban notification for the waste to be furnished to the disposal facility. The Contractor shall obtain the handwritten signature of the initial transporter and date of the acceptance of the manifest. The Contractor shall send one copy of the manifest to the IEPA within two working days of transporting the waste off-site. The Contractor shall furnish the generator copy of the manifest and a copy of the land ban notification to the Engineer. The Contractor shall give the transporter the remaining copies of the manifest.

All other project waste shall be removed from the site according to Federal, State and Local regulations, with all waste removed from the site prior to final Contractor demobilization.

The Contractor shall make arrangements to have other hazardous waste, which he/she generates, such as used paint solvent, transported to the Contractor's facility at the end of each day that this waste is generated. These hazardous wastes shall be manifested using the Contractor's own generator number to a treatment or disposal facility from the Contractor's facility. The Contractor shall not combine solvents or other wastes with cleaning residue wastes. All waste streams shall be stored in separate containers.

The Contractor is responsible for the payment of any fines and undertaking any cleanup activities mandated by State or federal environmental agencies for improper waste handling, storage, transportation, or disposal.

Contractor personnel shall be trained in the proper handling of hazardous waste, and the necessary notification and clean up requirements in the event of a spill. The Contractor shall maintain a copy of the personnel training records at each bridge site.

Appendix 1 – Reference List

The Contractor shall maintain the following reference standards and regulations on site for the duration of the project:

- Illinois Environmental Protection Agency – Information Statement on the Removal of Lead-Based Paint from Exterior Surfaces, latest revision
- Illinois Environmental Protection Act
- SSPC Guide 6, Guide for Containing Debris Generated During Paint Removal Operations
- 29 CFR 1926.62, Lead in Construction
- 40 CFR Part 50, Appendix B, Reference Method for the Determination of Suspended Particulate Matter in the Atmosphere (High-Volume Method)
- 40 CFR Part 50, Appendix G, Reference Method for the Determination of Lead in Suspended Particulate Matter Collected from Ambient Air
- SSPC Guide 16, Guide to Specifying and Selecting Dust Collectors
- SSPC TU-7, Conducting Ambient Air, Soil, and Water Sampling Activities During Surface Preparation and Paint Disturbance Activities.

Table 1
Containment Criteria for Removal of Paint Containing Lead and Other Toxic Metals[1]

Removal Method	SSPC Class[2]	Containment Material Flexibility	Containment Material Permeability[3]	Containment Support Structure	Containment Material Joints[4]
Hand Tool Cleaning	3P[6]	Rigid or Flexible	Permeable or Impermeable	Minimal	Partially Sealed
Power Tool Cleaning w/ Vacuum	3P[6]	Rigid or Flexible	Permeable or Impermeable	Minimal	Partially Sealed
Power Tool Cleaning w/o Vacuum	2P	Rigid or Flexible	Permeable or Impermeable	Rigid or Flexible	Fully or Partially Sealed
Water Jetting Wet Ab Blast Water Cleaning[7]	2W-3W	Rigid or Flexible	Permeable and Impermeable[7]	Rigid, Flexible, or Minimal	Fully and Partially Sealed
Abrasive Blast Cleaning	1A	Rigid or Flexible	Impermeable	Rigid or Flexible	Fully Sealed
Vacuum Blast Cleaning	4A[6]	Rigid or Flexible	Permeable	Minimal	Partially Sealed

Table 1 (Continued)
Containment Criteria for Removal of Paint Containing Lead and Other Toxic Metals[1]

Removal Method	SSPC Class[2]	Containment Entryway	Ventilation System Required[5]	Negative Pressure Required	Exhaust Filtration Required
Hand Tool Cleaning	3P[6]	Overlapping or Open Seam	Natural	No	No
Power Tool Cleaning w/ Vacuum	3P[6]	Overlapping or Open Seam	Natural	No	No
Power Tool Cleaning w/o Vacuum	2P	Overlapping or Open Seam	Natural	No	No
Water Jetting Wet Ab Blast Water Cleaning[7]	2W-3W	Overlapping or Open Seam	Natural	No	No
Abrasive Blast Cleaning	1A	Airlock or Resealable	Mechanical	Yes	Yes
Vacuum Blast Cleaning	4A[6]	Open Seam	Natural	No	No

Notes:

[1]This table provides general design criteria only. It does not guarantee that specific controls over emissions will occur because unique site conditions must be considered in the design. Other combinations of materials may provide controls over emissions equivalent to or greater than those combinations shown above.

[2]The SSPC Classification is based on SSPC Guide 6. Note that for work over water, water booms or boats with skimmers must be employed, where feasible, to contain spills or releases. Debris must be removed daily at a minimum.

[3]Permeability addresses both air and water as appropriate. In the case of water removal methods, the containment materials must be resistant to water. Ground covers should always be impermeable, and of sufficient strength to withstand the impact and weight of the debris and the equipment used for collection and clean-up. Ground covers must also extend beyond the containment boundary to capture escaping debris.

[4] If debris escapes through the seams, then additional sealing of the seams and joints is required.

[5]When “Natural” is listed, ventilation is not required provided the emissions are controlled as specified in this Special Provision, and provided worker exposures are properly controlled. If unacceptable emissions or worker exposures to lead or other toxic metals occur, incorporate a ventilation system into the containment.

[6]Ground covers and wall tarpaulins may provide suitable controls over emissions without the need to completely enclose the work area.

[7]This method applies to water cleaning to remove surface contaminants, and water jetting (with and without abrasive) and wet abrasive blast cleaning where the goal is to remove paint. Although both permeable and impermeable containment materials are included, ground covers and the lower portions of the containment must be water impermeable with fully sealed joints, and of sufficient strength and integrity to facilitate the collection and holding of the water and debris for proper disposal. If water or debris, other than mist, escape through upper sidewalls or ceiling areas constructed of permeable materials, they shall be replaced with impermeable materials. Permeable materials for the purpose of this specification are defined as materials with openings measuring 25 mils (1 micron) or less in greatest dimension.

A. Containment Components - The basic components that make up containment systems are defined below. The components are combined in Table 1 to establish the minimum containment system requirements for the method(s) of paint removal specified for the Contract.

1. Rigidity of Containment Materials - Rigid containment materials consist of solid panels of plywood, aluminum, rigid metal, plastic, fiberglass, composites, or similar materials. Flexible materials consist of screens, tarps, drapes, plastic sheeting, or similar materials. When directed by the Engineer, do not use flexible materials for horizontal surfaces directly over traffic lanes or vertical surfaces in close proximity to traffic lanes. If the Engineer allows the use of flexible materials, The Contractor shall take special precautions to completely secure the materials to prevent any interference with traffic.

2. Permeability of Containment Materials - The containment materials are identified as air impenetrable if they are impervious to dust or wind such as provided by rigid panels, coated solid tarps, or plastic sheeting. Air penetrable

materials are those that are formed or woven to allow air flow. Water impermeable materials are those that are capable of containing and controlling water when wet methods of preparation are used. Water permeable materials allow the water to pass through. Chemical resistant materials are those resistant to chemical and solvent stripping solutions. Use fire retardant materials in all cases.

3. Support Structure - Rigid support structures consist of scaffolding and framing to which the containment materials are affixed to minimize movement of the containment cocoon. Flexible support structures are comprised of cables, chains, or similar systems to which the containment materials are affixed. Use fire retardant materials in all cases.

4. Containment Joints - Fully sealed joints require that mating surfaces between the containment materials and to the structure being prepared are completely sealed. Sealing measures include tape, caulk, Velcro, clamps, or other similar material capable of forming a continuous, impenetrable, or impermeable seal. When materials are overlapped, a minimum overlap of 8 in. (200 mm) is required.

5. Entryway - An airlock entryway involves a minimum of one stage that is fully sealed to the containment, and which is maintained under negative pressure using the ventilation system of the containment. Resealable door entryways involve the use of flexible or rigid doors capable of being repeatedly opened and resealed. Sealing methods include the use of zippers, Velcro, clamps, or similar fasteners. Overlapping door tarpaulin entryways consist of two or three overlapping door tarpaulins.

6. Mechanical Ventilation - The requirement for mechanical ventilation is to ensure that adequate air movement is achieved to reduce worker exposure to toxic metals to as low as feasible according to OSHA regulations (e.g., 29 CFR 1926.62), and to enhance visibility. Design the system with proper exhaust ports or plenums, adequately sized ductwork, adequately sized discharge fans and air cleaning devices (dust collectors) and properly sized and distributed make-up air points to achieve a uniform air flow inside containment for visibility. The design target for airflow shall be a minimum of 100 ft. (30.5m) per minute cross-draft or 60 ft. (18.3 m) per minute downdraft. Increase these minimum airflow requirements if necessary to address worker lead exposures. Natural ventilation does not require the use of mechanical equipment for moving dust and debris through the work area.

7. Negative Pressure - When specified, achieve a minimum of 0.03 in. (7.5 mm) water column (W.C.) relative to ambient conditions, or confirm through visual assessments for the concave appearance of the containment enclosure.

8. Exhaust Ventilation - When mechanical ventilation systems are used, provide filtration of the exhaust air, to achieve a filtration efficiency of 99.9 percent at 0.02 mils (0.5 microns).

HAZARDOUS WASTE
CONTINGENCY PLAN
FOR
LEAD BASED PAINT REMOVAL PROJECTS

Bridge No.: __
Location: ____
USEPA Generator No.: ____
IEPA Generator No.: .

Note:

1. A copy of this plan must be kept at the bridge while the Contractor's employees are at the site.

2. A copy of the plan must be mailed to the police and fire departments and hospital identified herein.

Primary Emergency Coordinator

Name: _____
Address: ____
City: _
Phone: (Work) _____
(Home) _____

Alternate Emergency Coordinator

Name: _____
Address: ____
City: _
Phone: (Work) _____
(Home) _____

Emergency Response Agencies

POLICE:

1. State Police (if bridge not in city) Phone:_____

District No. _____

Address: _____

2. County Sheriff _____Phone: _____

County: _____

Address: ____

3. City Police __Phone: _____

District No. __

Address: ____

Arrangements made with police: (Describe arrangements or refusal by police to make arrangements):

_____
_____

FIRE:

1. City __Phone: _____

Name: _____

Address:_____

2. Fire District __Phone: _____

Name: _____

Address: ____

3. Other _Phone: _____

Name: _____

Address: ____

Arrangements made with fire departments: (Describe arrangements or refusal by fire departments to make arrangements):

_____
_____

HOSPITAL:

Name: _____Phone: _____

Address:_____

Arrangements made with hospital: (Describe arrangements or refusal by hospital to make arrangements):

_____

_____

Properties of waste and hazard to health:

Places where employees working:

Location of Bridge:

Types of injuries or illness which could result:

Appropriate response to release of waste to the soil:

Appropriate response to release of waste to surface water:

Emergency Equipment at Bridge

Emergency Equipment List	Location of Equipment	Description of Equipment	Capability of Equipment
1. Two-way radio	Truck		Communication
2. Portable Fire Extinguisher	Truck		Extinguishes Fire
3. Absorbent Material	Truck		Absorbs Paint or Solvent Spills
4. Hand Shovel	Truck		Scooping Material
5. 55 Gallon (208 L) Drum	Truck		Storing Spilled Material
6. 5 Gallon (19 L) Pail	Truck		Storing Spilled Material

Emergency Procedure

1. Notify personnel at the bridge of the emergency and implement emergency procedure.

2. Identify the character, source, amount and extent of released materials.

3. Assess possible hazards to health or environment.

4. Contain the released waste or extinguish fire. Contact the fire department if appropriate.

5. If human health or the environment is threatened, contact appropriate police and fire department. In addition, the Emergency Services and Disaster Agency needs to be called using their 24-hour toll free number (800-782-7860) and the National Response Center using their 24-hour toll free number (800-824-8802).

6. Notify the Engineer that an emergency has occurred.

7. Store spilled material and soil contaminated by spill, if any, in a drum or pail. Mark and label the drum or pail for disposal.

8. Write a full account of the spill or fire incident including date, time, volume, material, and response taken.

9. Replenish stock of absorbent material or other equipment used in response.

END OF SECTION

BRIDGE DECK GROOVING (LONGITUDINAL)

Effective: December 29, 2014
Revised: March 29, 2017

Revise Article 503.16(a)(3)b. to read as follows.

b. Saw Cut Grooving. The grooving operation shall not be started until after the expiration of the required curing or protection period and after correcting excessive variations by grinding or cutting has been completed.

The grooves shall be cut into the hardened concrete, parallel to the centerline of the roadway, using a mechanical saw device equipped with diamond blades that will leave grooves 1/8 in. wide and 3/16 in. ± 1/16 in. deep (3 mm wide and 5 mm ± 1.5 mm deep), with a uniform spacing of 3/4 in. ± 1/16 in. (20 mm ± 1.5 mm) centers. The grooving shall typically extend the full width of the traffic lanes and terminate at the edge of the traffic lane or shoulder. If the bridge has a variable width traffic lane, the grooving shall remain parallel to the centerline of the main roadway. Any staggering of the groove terminations to accommodate the variable width shall be within the shoulders. Grooves shall not be cut closer than 3 inches (75 mm) nor further than 6 inches (150 mm) from any construction joint running parallel to the grooving. In addition, grooves shall not be cut within 6 in. ± 1 in. (150 mm ± 25 mm) from deck drains and expansion joints.

The grooving machine shall contain diamond blades mounted on a multi-blade arbor on a self-propelled machine built for grooving hardened concrete surfaces. The grooving machine shall have a depth control device that detects variations in the deck surface and adjusts the cutting

head height to maintain a specified depth of groove. The grooving machine shall have a guide device to control multi-pass alignment.

The removal of slurry shall be continuous throughout the grooving operations. The grooving equipment shall be equipped with vacuum slurry pickup equipment which shall continuously pick up water and sawing dust and pump the slurry to a collection tank. The slurry shall be disposed of offsite according to Article 202.03.

Cleanup shall be continuous throughout the grooving operation. All grooved areas of the deck shall be flushed with water as soon as possible to remove any slurry material not collected by the vacuum pickup. Flushing shall be continued until all surfaces are clean.

END OF SECTION

BRIDGE DRAINAGE SYSTEM REPAIRS

Effective: November 16, 2010
Revised: September 15, 2011

Description. This work shall consist of repairing the existing bridge drainage system as shown on the plans, and as directed by the Engineer including: all piping, fittings, support brackets, inserts, bolts, splash blocks, and connections to catch basins or other drainage structures. Locations of leaking joints shall be inspected and replaced or wrapped with an approved joint sealing material as directed by the Engineer. This work will also include any removals, excavations, backfilling, and surface restorations as required.

The existing piping typically consists of cast iron, steel, fiberglass, or PVC pipe with diameters from 8 to 12 inches. The Contractor and Engineer shall inspect, and field verify the locations, pipe sizes and dimensions of existing drainage system repairs prior to commencing the work.

Material. The pipe and fittings shall be reinforced fiberglass according to ASTM D 2996 RTRP with a 30,000 psi (207 MPa) minimum short-time rupture strength hoop tensile stress. The reinforced fiberglass shall also have an apparent stiffness factor at 5 percent deflection exceeding 200 cu in.-lbf/sq in (22.6 cu mm-kPa) and a minimum wall thickness of 0.10 in. (2.54 mm). All pipe supports and associated hardware shall be hot dip galvanized according to AASHTO M 232. The fiberglass pipe and fittings furnished shall be pigmented throughout, or have a resin-rich pigmented exterior coat, specifically designed for overcoating fiberglass, as recommended by the manufacturer. The color shall be as specified by the Engineer. The resin in either case shall have an ultraviolet absorber designed to prevent ultraviolet degradation. The supplier shall certify the material supplied meets or exceeds these requirements.

Installation. All connections of pipes and fittings shown on the plans to facilitate future removal for maintenance cleanout or flushing shall be made with a threaded, gasketed coupler or a bolted gasketed flange system. Adhesive bonded joints will be permitted for runs of pipe between such connections. The end-run connection shall feature a minimum nominal 6 in. (150 mm) female threaded fiberglass outlet. Straight runs may utilize a 45-degree reducing saddle bonded to the pipe. The female outlet shall be filled with a male threaded PVC plug.

Runs of pipe shall be supported at spacings not exceeding those recommended by the manufacturer of the pipe. Supports that have point contact or narrow supporting areas shall be avoided. Standard slings, clamps, clevis hangers and shoe supports designed for use with steel pipe may be used. A minimum strap width for hangers shall be 1 1/2 in. (40 mm) for all pipe under 12 in. (300 mm) in diameter and 2 in. (50 mm) for diameters 12 in. (300 mm) or greater. Straps shall have 120 degrees of contact with the pipe. Pipes supported on less than 120 degrees of contact shall have a split fiberglass pipe protective sleeve bonded in place with adhesive.

All pipe, fittings, and expansion joints shall be handled and installed according to guidelines and procedures recommended by the manufacturer or supplier of the material.

Additional Requirements. Certain locations of repairs are at or below ground and may require the removal of bituminous or concrete materials and excavation to remove damaged sections of pipes and make proper new connections. This work shall be as directed by the Engineer for each individual location that this applies. The work involved will also include backfilling and restoration of the surfaces with approved materials and at the direction of the Engineer.

The Contractor, at the direction of the Engineer, may be required to install expansion joints at locations of pipe repairs where free movement is required to prevent future deterioration.

END OF SECTION

STRUCTURAL STEEL REPAIR

Effective: December 15, 2000
Revised: January 1, 2007

Description. This work shall consist of furnishing all labor, equipment, and materials necessary to furnish and install steel repair plates and members, according to Section 505 and removal and disposal of structural steel members as necessary according to Section 501 of the Standard Specifications, as indicated on the plans and in this special provision.

Construction Requirements. Existing members noted in the plans to have structural steel repair, that are also noted to be straightened, shall be straightened prior to the connection of any new steel repair plates or members. If beam straightening is required, it shall not be included in this item and shall be paid for separately.

Where required to align with existing holes, field drilling of holes in new members shall be accomplished using existing holes as a template unless field measurements are used to verify the plan dimensions. Burning of holes will not be permitted. All field drilling and grinding necessary to furnish and install the new steel plates and members shall be included in this item.

The removal and disposal of any existing members, bolts, or rivets necessary for the installation of the new members as shown in the plans shall be included in this item. Burning of existing rivets will only be allowed near steel surfaces which are to be removed and discarded. Burning of existing rivets will not be allowed for members to remain in place or members that are to be removed and reinstalled. When burning of rivets is not allowed, the head of the rivet shall be sheared off and the shank driven or drilled out. Extreme care shall be taken while removing the

rivets so as not to damage the existing structural steel which is to remain. All damage to existing members which are to remain shall be repaired or the member replaced to the satisfaction of the Engineer. Repair or replacement of damaged members shall be at the Contractor's expense.

Delete Article 501.06 Method of Measurement
Delete Article 501.07 Basis of Payment
Delete Article 505.12 Method of Measurement
Delete Article 505.13 Basis of Payment

END OF SECTION

TEMPORARY SHORING AND CRIBBING

Description. This item shall consist of furnishing all material, equipment, and labor to support the effected beam(s) during the substructure repairs as shown on the plans, as herein specified and as directed by the Engineer.

Construction Requirements. The Contractor shall submit details and calculations, prepared, and sealed by an Illinois Licensed Structural Engineer, of the support system he/she proposes to use for approval of the Engineer prior to ordering of material and implementation. Such approval shall in no way relieve the Contractor of responsibility for the safety of the structure. The supports used shall be such that vertical adjustments may be made in order to maintain the existing beam profile. Prior to starting substructure repairs, the temporary supports shall be used to place an upward reaction on the effected beams designated in the plans, equal to but not larger than the dead load reactions given in the plans, thus relieving the superstructure dead load reaction from the substructure unit to be repaired. It is not the intention to raise the effected beams. As the vertical load is incrementally increased to the specified load, if vertical movement is detected the load shall not be increased further.

Additionally, if the work is to be completed under stage construction without traffic directly over the beams being shored then the Temporary Shoring and Cribbing shall be designed to carry the Dead Load plus 1/2 (Live Load + Imp) as shown in the plans. If work is to be completed with traffic directly over the beams being shored then the Temporary Shoring and Cribbing shall be designed to carry the Dead Load plus full (Live Load + Imp) as shown in the plans.

END OF SECTION

RECURRING SPECIAL PROVISIONS

The following RECURRING SPECIAL PROVISIONS indicated by an "X" are applicable to this contract and are included by reference:

CHECK SHEET #			PAGE NO.
1		Additional State Requirements for Federal-Aid Construction Contracts	87
2		Subletting of Contracts (Federal-Aid Contracts)	90
3		EEO	91
4		Specific EEO Responsibilities Non Federal-Aid Contracts	101
5		Required Provisions - State Contracts	106
6		Asbestos Bearing Pad Removal	112
7	**X**	Asbestos Waterproofing Membrane and Asbestos HMA Surface Removal	113
8		Temporary Stream Crossings and In-Stream Work Pads	114
9		Construction Layout Stakes	115
10		Use of Geotextile Fabric for Railroad Crossing	118
11		Subsealing of Concrete Pavements	120
12		Hot-Mix Asphalt Surface Correction	124
13		Pavement and Shoulder Resurfacing	126
14		Patching with Hot-Mix Asphalt Overlay Removal	127
15		Polymer Concrete	129
16		Reserved	131
17		Bicycle Racks	132
18		Temporary Portable Bridge Traffic Signals	134
19		Nighttime Inspection of Roadway Lighting	136
20		English Substitution of Metric Bolts	137
21		Calcium Chloride Accelerator for Portland Cement Concrete	138
22		Quality Control of Concrete Mixtures at the Plant	139
23	**X**	Quality Control/Quality Assurance of Concrete Mixtures	147
24		Reserved	163
25		Reserved	164
26		Temporary Raised Pavement Markers	165
27		Restoring Bridge Approach Pavements Using High-Density Foam	166
28		Portland Cement Concrete Inlay or Overlay	169
29		Portland Cement Concrete Partial Depth Hot-Mix Asphalt Patching	173
30		Longitudinal Joint and Crack Patching	176
31		Concrete Mix Design – Department Provided	178
32		Station Numbers in Pavements or Overlays	179