Inspection Training Course on Bridge Preventive Maintenance Activities

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Kentucky Transportation Center
College of Engineering, University of Kentucky, Lexington, Kentucky

in cooperation with
Kentucky Transportation Cabinet
Commonwealth of Kentucky

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University of Kentucky

Research Report
KTC-24-12

Inspection Training Course on Bridge Preventive Maintenance Activities

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In Cooperation With
Kentucky Transportation Cabinet
Commonwealth of Kentucky

September 2023

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4. Title and Subtitle Inspection Training Course on Bridge Preventive Maintenance Activities		**5. Report Date** September 2023 **6. Performing Organization Code**
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15. Supplementary Notes Prepared in cooperation with the Kentucky Transportation Cabinet		

16. Abstract

Despite over 30 percent of bridges in the United States having exceeded their 50-year design lives, most state departments of transportation (DOTs) lack the funding needed to replace bridges on a large scale. In response, agencies have increasingly turned to bridge preventive maintenance activities to prolong bridge service lives. These activities provide a safe and cost-effective way to slow the rate at which structures deteriorate, mitigate the effects of aging, and improve bridge functional condition. The Kentucky Transportation Cabinet (KYTC) has become increasingly reliant on preventive maintenance to preserve and extend the service lives of its steel and concrete bridges. In need of resources to educate current and future inspectors, KYTC commissioned Kentucky Transportation Center researchers to develop training modules for supervisors, field crews, inspectors, and contractor personnel. Based on a literature review, analysis of guidance issued by other state DOTs, and knowledge accumulated on earlier projects, researchers created eight training modules that address key bridge preventive maintenance activities including bridge deck patching, cleaning and painting pier caps and abutments, cleaning and sealing bearings, bridge deck expansion joints, bridge deck sealing, bridge washing, erosion and sediment control, and spot painting.

17. Key Words bridges, maintenance, inspection		**18. Distribution Statement** Unlimited with approval of the Kentucky Transportation Cabinet	
19. Security Classification (report) Unclassified	**20. Security Classification (this page)** Unclassified	**21. No. of Pages** 173	**19. Security Classification (report)**

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Acknowledgements

The authors would like to thank the members of the Study Advisory Committee, FHWA, and KYTC consultants that reviewed the contents of presentations for accuracy for their efforts on this study.

Executive Summary

Nationwide, over 30 percent of bridges have surpassed their 50-year design lives. But most state departments of transportation (DOTs) lack the funding that would be needed to replace bridges on a large scale. As a result, most agencies have introduced bridge preventive maintenance (PM) programs. PM activities slow bridge deterioration, mitigate the effects of aging, and improve bridge functional condition — safely and economically. The Kentucky Transportation Cabinet (KYTC) has embraced PM activities as a way to preserve and extend the service lives of its steel and concrete bridges. Yet a PM program can only be successful if inspectors have a thorough understanding of the procedures used to maintain bridges. Recognizing the importance of well-trained staff, KYTC asked Kentucky Transportation Center (KTC) researchers to document inspection processes and develop training modules focused on eight bridge PM activities:

- Bridge Deck Patching
- Clean and Paint Pier Caps and Abutments
- Clean and Seal Bearings
- Bridge Deck Expansion Joints
- Bridge Deck Sealing
- Bridge Washing
- Erosion and Sediment Control
- Spot Painting

Training modules focus on understanding contract documents and specific tasks involved in the inspection process. Developed as standalone sessions, modules are easily combined to suit specific assignments. KYTC has successfully implemented several PM activities, with many combined under one contract. A number of stakeholders can benefit from the training materials (see Appendices A – H), including supervisors, field crews, inspectors, and contractor personnel. With this store of knowledge, the Cabinet is well-positioned to train and qualify personnel on effective inspection methods.

Section 1 Introduction

1.1 Background

The Kentucky Transportation Cabinet (KYTC) has embraced cost-effective preventive maintenance (PM) programs to preserve and extend the service lives of steel and concrete bridges. PM activities slow the deterioration of bridges and improve their functional condition. As part of a previous research previous effort (SPR 15-504 — *A Programmatic Approach to Long-Term Bridge Preventive Maintenance*) the Kentucky Transportation Center (KTC) identified eight basic PM activities required to maintain the Cabinet's bridge inventory:

- Bridge Deck Patching
- Clean and Paint Pier Caps and Abutments
- Clean and Seal Bearings
- Bridge Deck Expansion Joints
- Bridge Deck Sealing
- Bridge Washing
- Erosion and Sediment Control
- Spot Painting

KYTC has successfully implemented several PM activities, with many combined under one contract. As such, Cabinet inspection staff need training in multiple activities. Appendices A – H contain PowerPoint-based training modules that tackle the eight topics listed above. Developed as standalone sessions, modules are easily combined to suit specific assignments. They focus primarily on understanding contract documentation and tasks performed during inspections. Reviewing content in these modules will benefit KYTC supervisors, field crews, inspectors, and staff employed by contractors.

1.2 Methods

To create the training modules, KTC researchers identified and reviewed training programs on bridge PM activities developed by national and state departments of transportation (DOT). They also reviewed papers, technical articles, reports, and agency guidance related to asset management, bridge maintenance, bridge preservation, and PM. As part of an earlier project (SPR 11-424), researchers interviewed nine KYTC District Bridge Engineers and other KYTC staff about District-level maintenance practices and their concerns. Information gathered during these conversations proved invaluable for this project. Based on their review of materials and research conducted previously on behalf of the Cabinet, researchers developed the training materials for PM inspection activities. Once modules were prepared, researchers worked with KTC's Technology Transfer Program to develop and implement a training program that can be delivered to KYTC.

References

1. Kentucky Standard Specifications for Road and Bridge Construction
2. NCHRP Synthesis 483, Project 20-05, Topic 46-17, “Training and Certification of Highway Maintenance Workers.”
3. Joseph Saleeby, “Common Coating Inspection Practices, Standards, & Equipment.” Joseph Saleeby
4. Iowa DOT Bridge Maintenance Manual
5. Federal Highway Administration (Spring 2018). “Bridge Preservation Guide: Maintaining a Resilient Infrastructure to Preserve Mobility.” McLean, VA. https://www.fhwa.dot.gov/bridge/preservation/guide/guide.pdf
6. Publication No. FHWA-NHI-14-050 “Bridge Maintenance Reference Manual”
7. FHWA Bridge Inspector's Reference Manual
8. TxDOT Concrete Repair Manual, Section 4, Bridge Deck Repair
9. Florida Department of Transportation Maintenance and Repair Handbook
10. Georgia Department of Transportation Bridge Structure Maintenance and Rehabilitation Repair Manual
11. Michigan DOT Bridge Spot Painting Standards and Guidelines
12. Hopwood, T., Fairchild, J., Meade, B.W. and Palle, S., “Preventive Maintenance Program for Bridges”, Kentucky Transportation Center, Report No. KTC-15-07/SPR11-424-1F, July 2015.
13. Danny, W., Meade, B.W., Hopwood, T., and Palle, S., “A Programmatic Approach to Long-Term Bridge Preventive Maintenance”, Kentucky Transportation Center, Report No. KTC-16-22/SPR15-504-1F, March 2017.
14. Danny, W., Palle, S., and Hopwood, T., “Developing Work Standards, Special Notes, and Specifications for Proposed Bridge Preventive Maintenance Actions”, Kentucky Transportation Center, Report No. KTC-19-11/KHIT-112-1F, May 2019.

Appendix A Bridge Deck Patching

KYTC

Bridge Preventive Maintenance

Inspection Training Module

Deck Patching – Full & Partial Depth

TEAM KENTUCKY® TRANSPORTATION CABINET

1

Concrete Bridge Deck Patching Introduction

- Bridge deck patching is an important bridge preservation method to maintain a smooth, structurally sound riding surface for the travelling public
- Deck patching may be performed on a concrete bridge deck with an existing overlay (concrete or asphalt) or without an overlay
- This module presents the process of performing a deck patching with an overlay

2

Concrete Bridge Deck Patching Introduction

- Knowledge of standard concrete repairs for bridge decks damaged by long term exposure to field conditions is extremely valuable to the inspector.
- Delamination of the concrete deck or slab is typically caused by corrosion of the reinforcing steel. The expansive corrosion results in concrete cracks along the rebar lines parallel to the surface of the deck. Delamination can be identified using acoustic methods such as chain drag, hammering, impact echo, or through density test methods like ground penetrating radar (GPR).
- Delamination will create potholes that affect the rideability and potentially contribute towards structural damage of the bridge.
- The required repairs can be partial-depth, or if the deterioration is severe, full depth.

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Concrete Bridge Deck Patching Introduction

- Concrete deck patching can be performed during full overlay replacement or local spall (pothole) repairs and are classified as either partial depth repair or full depth repair.
- Full Overlay Replacement:
  - The existing overlay material is first removed, then concrete patching is performed. Activities are typically conducted per KY Std Spec 606.
- Pothole Repair:
  - Typically occurs at isolated location(s) along the bridge deck. Portions of KY Std Spec 606 are typically applied.
- Construction Phase Activities:
  - Surface preparation, deck sounding, full depth or partial depth repair.
  - Steel reinforcement, concrete placement and curing.

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Bridge Deck Patching Index

The training module will focus on the following topics:

- The Importance of Contract Documents
- Inspector Responsibilities and Qualifications
- Environmental Concerns
- Traffic Control
- Pre-Construction Activities
- Personal Protective Equipment and Tools
- Surface Preparation
- Construction Activities
- Summary
- Post Construction

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KYTC Links

- https://transportation.ky.gov/Construction
  - Home page with many useful links and documents for inspection
- https://transportation.ky.gov/Construction/Pages/Kentucky-Standard-Specifications.aspx
  - Standard Specifications and Supplemental Specifications
- https://transportation.ky.gov/Construction/Pages/Construction-Engineer%27s-Resource-Center.aspx
  - Includes several inspection documents and spreadsheets
- https://transportation.ky.gov/Construction/Pages/Special-Notes-Special-Provisions.aspx
  - Special Notes and Provisions
- https://transportation.ky.gov/Highway-Design/Pages/Standard-Drawings-2020.aspx
  - Std Drawings, Sepia Drawings and other useful links
- https://transportation.ky.gov/Construction-Procurement/Pages/default.aspx
  - Contract Proposals and Letting Information
- https://transportation.ky.gov/Organizational-Resources/Pages/Forms-Library.aspx
  - KYTC forms and templates
- https://transportation.ky.gov/Materials
  - Home page with many useful links and documents such as Sampling Manual and LAM
- https://transportation.ky.gov/Materials/pages/List-Of-Approved-Materials.aspx
  - KYTC List of Approved Materials (LAM)

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Kentucky Standard Specifications

Standard Specifications

Type Name

Spec Year : **2019** (11)

- 100 General Provisions 2019
- 200 Earthwork 2019
- 300 Aggregate Base Courses 2019
- 400 Asphalt Pavements 2019
- 500 PCC Pavement and Non-Structural Concrete Construction 2019
- 600 Structures and Concrete 2019
- 700 Drainage, Traffic, and Roadside Construction 2019
- 800 Materials Details 2019
- Appendix A Tabulation of Construction Tolerances 2019
- Appendix B Index 2019
- Complete KYTC Standard Specifications - 2019

Supplemental Specifications

Type Name

Spec Year : **2019** (7)

- Supplemental Specs Effective with May 26, 2022 Letting
- Supplemental Specs Effective with November 19 2021 Letting
- Supplemental Specifications Effective with June 25 2021 Letting
- Supplemental Specification Effective with September 25, 2020 Letting
- Supplemental Specifications Effective with July 24, 2020 Letting rev 20200617
- Supplemental Specifications Effective with March 20, 2020 Letting
- Supplemental Specifications Effective with July 26 2019 Letting

https://transportation.ky.gov/Construction/Pages/Kentucky-Standard-Specifications.aspx

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Kentucky Standard Specifications

- Kentucky Standard Specifications are a compilation of guidelines for construction and maintenance requirements useful to engineers for developing of projects and contracts
- When referenced in KYTC contracts they become legally binding specifications
- Inspectors need to be knowledgeable of these contractual specifications as they are pertinent to the inspection process

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8

Safety Data and Product Data Sheets
(Example)

Inspection staff should have a copy of SDS & PDS for all materials/chemicals being utilized by the contractor.


Mobil


ExxonMobil

SAFETY DATA SHEET

9

9

KYTC Contract Proposal
(Example)

- KYTC contract proposals will include detailed information about the project. It will include any Special Notes for construction and will include the bid item list
- **Inspection personnel should review the contract proposal carefully; paying close attention to the Special Notes**

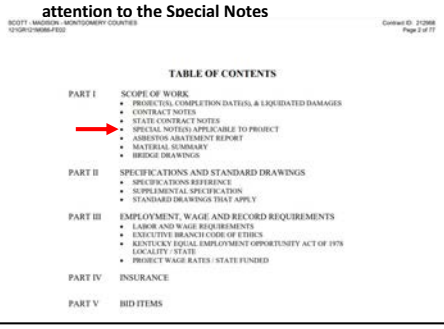
TABLE OF CONTENTS

PART I SCOPE OF WORK
- PROJECT(S), COMPLETION DATE(S), & LIQUIDATED DAMAGES
- CONTRACT NOTES
- STATE CONTRACT NOTES
- SPECIAL NOTE(S) APPLICABLE TO PROJECT
- ASBESTOS ABATEMENT REPORT
- MATERIAL SUMMARY
- BRIDGE DRAWINGS

PART II SPECIFICATIONS AND STANDARD DRAWINGS
- SPECIFICATIONS REFERENCE
- SUPPLEMENTAL SPECIFICATION
- STANDARD DRAWINGS THAT APPLY

PART III EMPLOYMENT, WAGE AND RECORD REQUIREMENTS
- LABOR AND WAGE REQUIREMENTS
- EXECUTIVE BRANCH CODE OF ETHICS
- KENTUCKY EQUAL EMPLOYMENT OPPORTUNITY ACT OF 1978 LOCALITY / STATE
- PROJECT WAGE RATES / STATE FUNDED

PART IV INSURANCE

PART V BID ITEMS


Kentucky UNBRIDLED SPIRIT

eProposal Jan-2009

CALL NO. 416
CONTRACT ID. 212968
SCOTT - MADISON - MONTGOMERY COUNTIES
FED/STATE PROJECT NUMBER 121GR121M086-FE02
DESCRIPTION VARIOUS ROUTES IN DISTRICT 7
WORK TYPE BRIDGE DECK RESTORATION & WATERPROOFING
PRIMARY COMPLETION DATE 11/30/2022

LETTING DATE: September 24,2021
Sealed Bids will be received electronically through the Bid Express bidding service until 10:00 am EASTERN DAYLIGHT TIME September 24,2021. Bids will be publicly announced at 10:00 am EASTERN DAYLIGHT TIME.

NO PLANS ASSOCIATED WITH THIS PROJECT.

REQUIRED BID PROPOSAL GUARANTY: Not less than 5% of the total bid.

NOTE:
Construction plans will be included within many proposals

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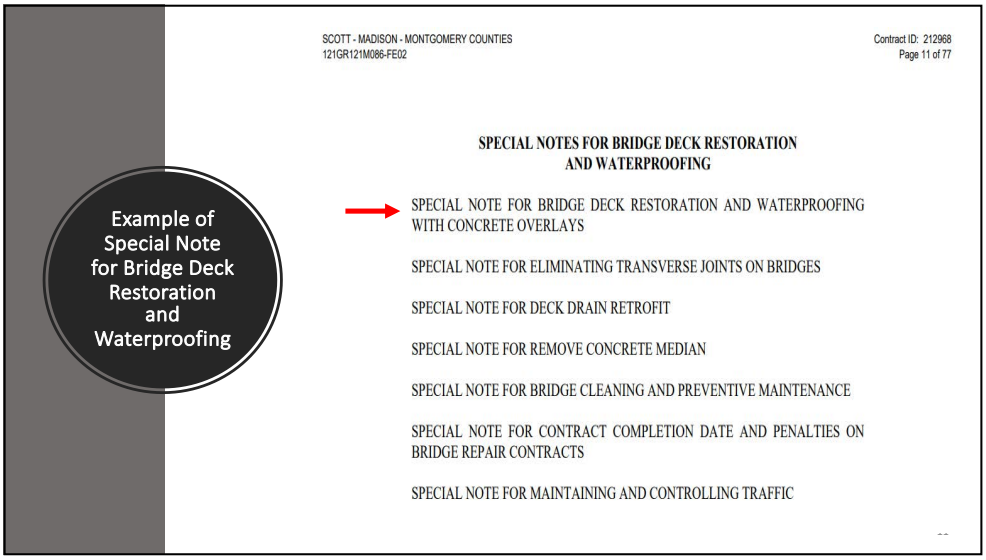
Example of Special Note for Bridge Deck Restoration and Waterproofing
SCOTT - MADISON - MONTGOMERY COUNTIES
121GR121M086-FE02
Contract ID: 212968
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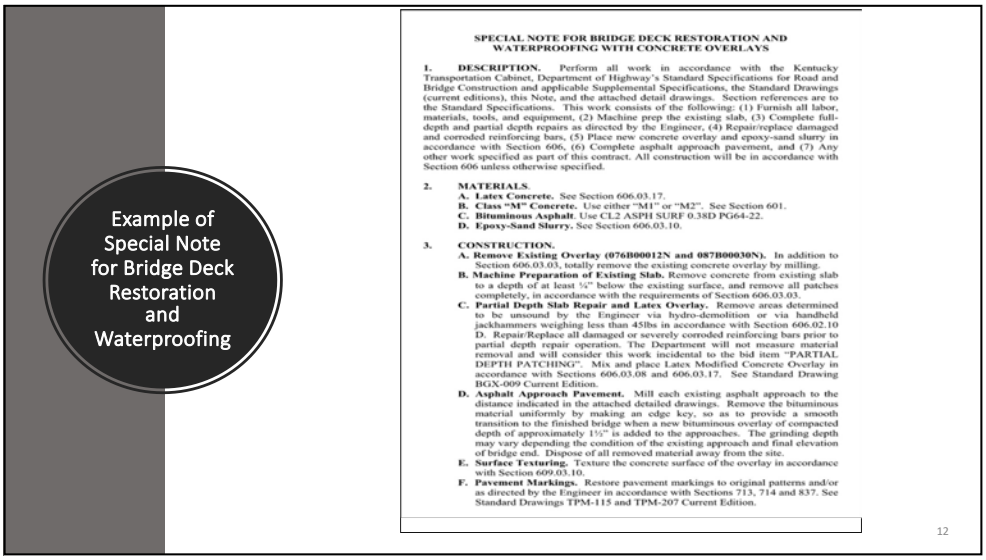
SPECIAL NOTES FOR BRIDGE DECK RESTORATION AND WATERPROOFING
SPECIAL NOTE FOR BRIDGE DECK RESTORATION AND WATERPROOFING WITH CONCRETE OVERLAYS
SPECIAL NOTE FOR ELIMINATING TRANSVERSE JOINTS ON BRIDGES
SPECIAL NOTE FOR DECK DRAIN RETROFIT
SPECIAL NOTE FOR REMOVE CONCRETE MEDIAN
SPECIAL NOTE FOR BRIDGE CLEANING AND PREVENTIVE MAINTENANCE
SPECIAL NOTE FOR CONTRACT COMPLETION DATE AND PENALTIES ON BRIDGE REPAIR CONTRACTS
SPECIAL NOTE FOR MAINTAINING AND CONTROLLING TRAFFIC

11


Example of Special Note for Bridge Deck Restoration and Waterproofing
SPECIAL NOTE FOR BRIDGE DECK RESTORATION AND WATERPROOFING WITH CONCRETE OVERLAYS
1. DESCRIPTION. Perform all work in accordance with the Kentucky Transportation Cabinet, Department of Highway's Standard Specifications for Road and Bridge Construction and applicable Supplemental Specifications, the Standard Drawings (current editions), this Note, and the attached detail drawings. Section references are to the Standard Specifications. This work consists of the following: (1) Furnish all labor, materials, tools, and equipment, (2) Machine prep the existing slab, (3) Complete full-depth and partial depth repairs as directed by the Engineer, (4) Repair/replace damaged and corroded reinforcing bars, (5) Place new concrete overlay and epoxy-sand slurry in accordance with Section 606, (6) Complete asphalt approach pavement, and (7) Any other work specified as part of this contract. All construction will be in accordance with Section 606 unless otherwise specified.
2. MATERIALS.
A. Latex Concrete. See Section 606.03.17.
B. Class "M" Concrete. Use either "M1" or "M2". See Section 601.
C. Bituminous Asphalt. Use CL2 ASPH SURF 0.38D PG64-22.
D. Epoxy-Sand Slurry. See Section 606.03.10.
3. CONSTRUCTION.
A. Remove Existing Overlay (076B00012N and 087B00030N). In addition to Section 606.03.03, totally remove the existing concrete overlay by milling.
B. Machine Preparation of Existing Slab. Remove concrete from existing slab to a depth of at least ¼" below the existing surface, and remove all patches completely, in accordance with the requirements of Section 606.03.03.
C. Partial Depth Slab Repair and Latex Overlay. Remove areas determined to be unsound by the Engineer via hydro-demolition or via handheld jackhammers weighing less than 45lbs in accordance with Section 606.02.10 D. Repair/Replace all damaged or severely corroded reinforcing bars prior to partial depth repair operation. The Department will not measure material removal and will consider this work incidental to the bid item "PARTIAL DEPTH PATCHING". Mix and place Latex Modified Concrete Overlay in accordance with Sections 606.03.08 and 606.03.17. See Standard Drawing BGX-009 Current Edition.
D. Asphalt Approach Pavement. Mill each existing asphalt approach to the distance indicated in the attached detailed drawings. Remove the bituminous material uniformly by making an edge key, so as to provide a smooth transition to the finished bridge when a new bituminous overlay of compacted depth of approximately 1½" is added to the approaches. The grinding depth may vary depending the condition of the existing approach and final elevation of bridge end. Dispose of all removed material away from the site.
E. Surface Texturing. Texture the concrete surface of the overlay in accordance with Section 609.03.10.
F. Pavement Markings. Restore pavement markings to original patterns and/or as directed by the Engineer in accordance with Sections 713, 714 and 837. See Standard Drawings TPM-115 and TPM-207 Current Edition.

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Example of Special Note for Bridge Deck Restoration and Waterproofing

G. **Verifying Field Conditions.** The Contractor shall field verify all joint openings, locations and manufacture before ordering any material. New material that is unsuitable due to variation in existing structure shall be replaced at the Contractors expense.
H. **Damage to the Structure.** The Contractor shall bear all responsibility and expense for all damage to the structure during the repair work even to removal and replacement of a fallen span, should the fallen span result from the Contractor's actions.

4. **MEASUREMENT.** See Section 606 and the following:
A. **Latex Modified Concrete for Overlay.** The Department will measure the quantity in cubic yards using the theoretical volume as follows for each bridge:

076B00012N	**(111'0" x 23'9" x 1.50") = 12.2**
087B000360N	**(118'0" x 26'0" x 1.50") = 22.7**
087B00032N	**(38'0" x 26'0' x 1.50") = 4.6**
087B00033N	**(53'0" x 24'0' x 1.50") = 5.9**
105B00083N	**(280'0" x 64'0' x 1.50") = 83.0**

B. **Remove Epoxy Bit Foreign Overlay, Machine Prep of Slab, Blast Cleaning, Epoxy Sand Slurry and Bridge Overlay Approach Pavement.** The Department will measure the removal of the existing overlay in square yards.
C. **Partial Depth Patching.** The Department will measure the quantity in cubic yards by deducting the theoretical volume of bridge deck overlay (LMC) from the total volume (as indicated by the batch quantity tickets) of Concrete required to obtain the finished grade shown on the plans or established by the Engineer.
D. **Concrete Class M Full Depth Patch and Concrete Latex Overlay.** The Department will measure the quantity in cubic yards.
E. **Steel Reinforcement.** The Department will measure any reinforcing steel necessary for the partial or full depth patch in pounds.
F. **Pave Striping-Perm 4 Inch.** The Department will measure the quantity in lineal feet.
G. **Pavement Marking-Thermo Curv Arrow.** The Department will measure the quantity as Each.

5. **PAYMENT.** See Section 606 and the following:
A. **Remove Epoxy Bit Foreign Overlay (08510).** Payment at the contract unit price in square yards is full compensation for the removal of the existing overlay.
B. **Machine Pre of Slab (08551).** Payment at the contract unit price in square yards is full compensation for the machine preparation of the existing slab.
C. **Partial Depth Patching (24094EC).** Payment at the contract unit price in cubic yards is full compensation for removing existing materials, furnishing and placing all new materials completed and accepted.
D. **Concrete Class M Full Depth Patch (08526).** Payment at the contract unit price in cubic yards is full compensation for removing existing materials, furnishing and placing all new materials.
E. **Blast Cleaning (08549).** Payment at the contract unit price in square yards is full compensation for blast cleaning all surfaces specified.

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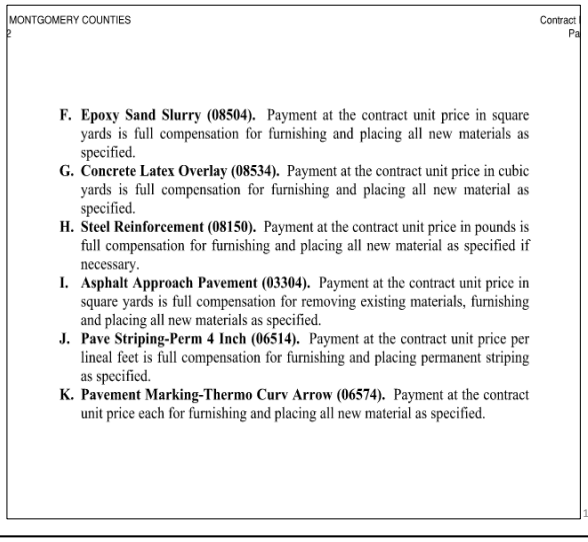
Example of Special Note for Bridge Deck Restoration and Waterproofing



MONTGOMERY COUNTIES Contract
2 Pa

F. **Epoxy Sand Slurry (08504).** Payment at the contract unit price in square yards is full compensation for furnishing and placing all new materials as specified.
G. **Concrete Latex Overlay (08534).** Payment at the contract unit price in cubic yards is full compensation for furnishing and placing all new material as specified.
H. **Steel Reinforcement (08150).** Payment at the contract unit price in pounds is full compensation for furnishing and placing all new material as specified if necessary.
I. **Asphalt Approach Pavement (03304).** Payment at the contract unit price in square yards is full compensation for removing existing materials, furnishing and placing all new materials as specified.
J. **Pave Striping-Perm 4 Inch (06514).** Payment at the contract unit price per lineal feet is full compensation for furnishing and placing permanent striping as specified.
K. **Pavement Marking-Thermo Curv Arrow (06574).** Payment at the contract unit price each for furnishing and placing all new material as specified.

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Inspector Documentation Requirements

- An inspector will be **required to have a copy of all contract documents** including Special Notes, Kentucky Standard Specifications, Material Data Requirements (Safety Data Sheets and Product Data Sheets), and any other documentation necessary for the Inspector to make informed decisions
- An inspector needs to be **knowledgeable with the bid item units being inspected** per the contract
- A Daily Work Report (DWR) requires basic information such as date and time, contractor identification, personnel onsite, bridge identification, weather data, as well as general and specific information on daily activities including traffic control
- There may also be specific information of work performed by the contractor that should be documented on the DWR. This information will be determined from the specifications. The DWR should reflect evidence of compliance and/or action taken to correct non-compliance to the specification
- Photographic documentation of work should supplement the DWR

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KYTC DWR


Kentucky Transportation Cabinet
Division of Construction
DAILY INSPECTION REPORT
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03/2000
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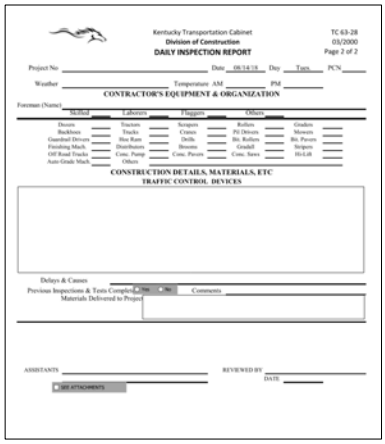
PAY QUANTITIES

PAY QUANTITY DETAILS, REFERENCES, SKETCHES, ETC.

Attention Project Engineer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CONTRACTOR'S EQUIPMENT & ORGANIZATION

CONSTRUCTION DETAILS, MATERIALS, ETC
TRAFFIC CONTROL DEVICES

https://transportation.ky.gov/Construction/Pages/Construction-Engineer%27s-Resource-Center.aspx

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Inspector Documentation Requirements
• Compile all applicable documents for the project including but not limited to: Special Notes, Plans, Standard Specifications, Qualified Materials lists, Environmental compliance reference documents, Occupational Health and Safety reference documents, Contractor submittals.
• Contractor submittals may include; Product Data Sheets, Safety Data Sheets, Materials Certifications, Schedule (bar chart or narrative), Access plan, and Traffic Control Plans.
• Specifications, plans and special notes should be reviewed in advance of the project initiation and the Pre-Construction Conference. Questions and concerns should be discussed with the Section Engineer and/or the Project Manager for clarification.
• Complete mark up of documents and tabulation for ease of reference
17

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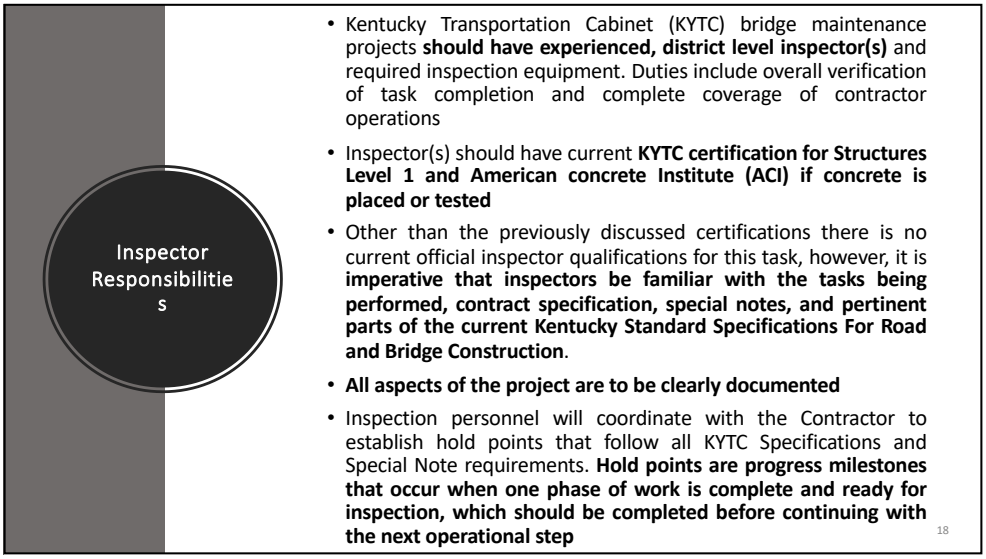
Inspector Responsibilities
• Kentucky Transportation Cabinet (KYTC) bridge maintenance projects **should have experienced, district level inspector(s)** and required inspection equipment. Duties include overall verification of task completion and complete coverage of contractor operations
• Inspector(s) should have current **KYTC certification for Structures Level 1 and American concrete Institute (ACI) if concrete is placed or tested**
• Other than the previously discussed certifications there is no current official inspector qualifications for this task, however, it is **imperative that inspectors be familiar with the tasks being performed, contract specification, special notes, and pertinent parts of the current Kentucky Standard Specifications For Road and Bridge Construction**.
• **All aspects of the project are to be clearly documented**
• Inspection personnel will coordinate with the Contractor to establish hold points that follow all KYTC Specifications and Special Note requirements. **Hold points are progress milestones that occur when one phase of work is complete and ready for inspection, which should be completed before continuing with the next operational step**
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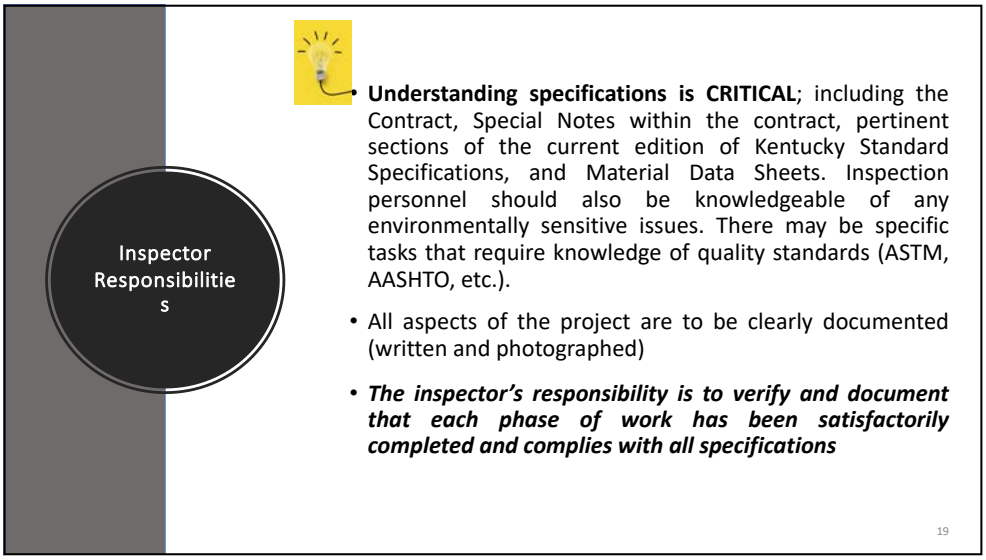
Inspector Responsibilities
• Understanding specifications is CRITICAL; including the Contract, Special Notes within the contract, pertinent sections of the current edition of Kentucky Standard Specifications, and Material Data Sheets. Inspection personnel should also be knowledgeable of any environmentally sensitive issues. There may be specific tasks that require knowledge of quality standards (ASTM, AASHTO, etc.).
• All aspects of the project are to be clearly documented (written and photographed)
• The inspector's responsibility is to verify and document that each phase of work has been satisfactorily completed and complies with all specifications
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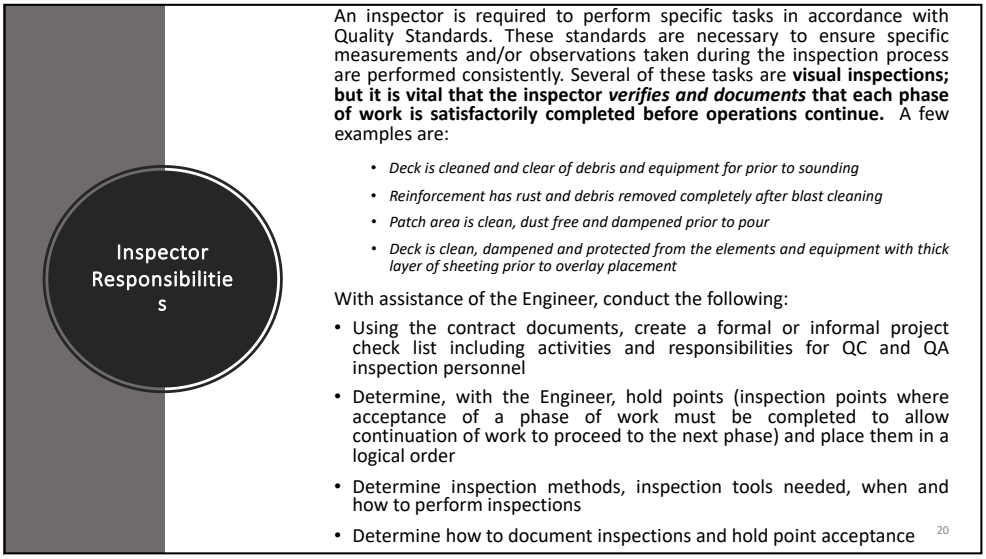
Inspector Responsibilities
An inspector is required to perform specific tasks in accordance with Quality Standards. These standards are necessary to ensure specific measurements and/or observations taken during the inspection process are performed consistently. Several of these tasks are visual inspections; but it is vital that the inspector verifies and documents that each phase of work is satisfactorily completed before operations continue. A few examples are:
• Deck is cleaned and clear of debris and equipment for prior to sounding
• Reinforcement has rust and debris removed completely after blast cleaning
• Patch area is clean, dust free and dampened prior to pour
• Deck is clean, dampened and protected from the elements and equipment with thick layer of sheeting prior to overlay placement
With assistance of the Engineer, conduct the following:
• Using the contract documents, create a formal or informal project check list including activities and responsibilities for QC and QA inspection personnel
• Determine, with the Engineer, hold points (inspection points where acceptance of a phase of work must be completed to allow continuation of work to proceed to the next phase) and place them in a logical order
• Determine inspection methods, inspection tools needed, when and how to perform inspections
• Determine how to document inspections and hold point acceptance
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Environmental and Worker Safety

The **Contractor is solely responsible for both environmental and worker safety**, however this does not relieve the inspector of the responsibility to monitor, report, and document observed practices or issues. The contractor should hold daily safety meetings

The inspector needs to be aware of the environmental regulations to which the contractor must comply. The contractor may be required to submit an Environmental Compliance Plan. Depending on the size of the project, a Storm Water Permit or other permits may be required by Kentucky Division of Water. Also, certain urban jurisdictions may require an erosion and sediment control plan to be filed locally prior to work beginning. Some of the permitting requirements and regulations can be found in the Kentucky Administrative Regulations, Title 401, Chapters 4, 5, 6, 8, 9, 10, and 11. The contractor is required to conform to Kentucky Revised Statute 224.70-110 "General Prohibition Against Water Pollution." There may also be required permitting from the United States Army Corps of Engineers (USACE)

A variety of substances and materials found on construction sites can become pollutants of concern if they are washed into nearby water bodies, dumped onto porous soils, or discharged directly to surface waters or groundwater. When required by KYTC the contractor will submit the Best Management Practice (BMP) for the project. Inspectors should be familiar with these submittals and the use of "Controlling Erosion, Sediment, and Pollutant Runoff from Construction Sites" as a reference (see BMP Manual link below)

Use this link to access the KYTC Drainage Resource Materials:
https://transportation.ky.gov/Highway-Design/Pages/Drainage-Resource-Materials.aspx

Use this link to access the BMP Manual:
Https://eec.ky.gov/Environmental-Protection/Forms%20Library/09BMPManual_Final.pdf

Click here for a Special Note on Erosion Prevention and Sediment Control

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Traffic Control Plan

- **The Contractor is responsible for conformance to the requirements in the Traffic Control Plan** (TCP), Proposal, plan sheets, specifications, and the Manual on Uniform Traffic Control Devices (MUTCD). There may be other requirements not listed here.
- All Traffic Control Supervisors, Technicians, and Flaggers shall have current temporary work zone traffic control certifications.
- All equipment should be maintained for safe operation and safety checks should be performed and documented daily.
- Document traffic control concerns, notes, reviews, updates, accidents or any other applicable conditions on the DWR

ACTION: Read the TCP to become familiar with the proposed temporary work zone activities. Obtain the TC 63-67 (Traffic Control Inspection Report) which can be utilized for traffic control reviews as needed. Link below can be utilized to access the TC-63-67 Report

https://transportation.ky.gov/Organizational-Resources/Pages/Forms-Library-(TC-63).aspx

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Traffic Control Inspection Report

Kentucky Transportation Center
Division of Construction
TRAFFIC CONTROL INSPECTION REPORT
TC 63-67
12/2011

Contract Id _____ County _____
Project No. _____ Road Name _____
Contractor _____
Inspector _____ Section Engineer _____

This form is to be completed daily when there is traffic control restricting the normal traffic pattern, i.e. lane closures, temporary detours, etc. At least once per week, the form should be completed documenting the condition of signing, cones or barrels being used for delineation, traveled surface (pot holes, mud, dirt, striping, delineators). Whenever, possible, the inspection should be made in the company of the contractor's traffic control coordinator or superintendent. For any areas receiving UNACCEPTABLE, the form is to be signed by the traffic control coordinator or superintendent, a deadline established for correction based upon specification 112.03.15, a copy given to the contractor, and time & date that the non-compliant issue was corrected. Penalties for failure to correct the unacceptable or noted items needing corrections will result in penalties being assessed in accordance with specification 112.03.15.

	N/A	ACCEPTABLE	UNACCEPTABLE
CONES/BARRELS			
STRIPING			
BARRICADES			
VARIABLE MESSAGE BOARDS			
CONSTRUCTION SIGNS			
DELINEATORS			
LANE CLOSURES			
PAVEMENT MARKERS			
CONDITION OF TRAVELLED ROADWAY			
TEMPORARY TRAFFIC SIGNALS			
DETOUR SIGNAGE			

Additional Remarks Regarding Non-Compliant Issues or Items Other than those listed Above That Need Attention:

Time & Date for Corrections to be Complete: _____
Reviewed By: _____ (KYTC Representative)
(Sign & Date)
Reviewed With: _____ (Contractor Representative)
(Sign & Date)

Time & Date that Corrections were Completed: _____
Reviewed By: _____ (KYTC Representative)
(Sign & Date)
Reviewed With: _____ (Contractor Representative)
(Sign & Date)

23

Pre-Construction Activities

Prior to the contractor beginning work ensure you have the necessary items to perform your activities. Common items include:

a) Contract documents (KY Std Spec, plans, proposal and any special notes)
b) Quality Assurance Plan
c) Safety (environmental & worker), Traffic Control Plan, Schedule and all Contractor Submittals including Material Product Data Sheets
d) Inspector Documentation Requirements
e) Personal Protective Equipment (PPE); ***additional equipment may be required for environmental or hazardous exposures***
f) Field tools; ***specialized inspection equipment/tools may be necessary***

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Obtain Personal Protective Equipment
(Pre-Construction)

- Class 2 (day) or 3 (night) high visibility apparel
- Hard hat
- Hearing protection
- Safety glasses w/side shields
- Gloves
- Steel toe boots
- Respirator may be required **(Contact Bridge Painting Liaison)**
- Fall protection in accordance with 29 CFR Part 1926 (as required)

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Pre-Construction Phase
Obtain Tools and Equipment

- A camera of sufficient quality to enlarge images for viewing critical details. The camera on most cell phones is usually adequate for photo documentation.
- Flashlight
- Dull scraper
- Claw hammer or handheld sledgehammer
- Measuring tape
- Sounding Chain(s)
- Notepad or ability to take notes
- Any other equipment necessary to perform the inspection duties

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26

Surface Preparation

- Concrete saw capable of sawing to a specified depth **(Dry sawing is not prohibited by OSHA)**
- Hand tools include jackhammers lighter than the nominal 45 lb. (20 kg) class
- Equipment with a maximum rated striking energy of 360 ft-lbs are permitted only in areas of concrete removal more than 6 inches away from boundaries of surface areas to remain in service. The Contractor is to provide data information to the engineer on the equipment they wish to utilize to ensure compliance with this note
- Equipment capable of removing rust and old concrete from exposed reinforcement bars. Blast cleaning may be performed by wet sandblasting, high-pressure water blasting, shotblasting or other abrasive blasting media, and shall have oil traps

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Surface Preparation

- The Engineer will determine the limits of removal as the work progresses. Limits of unsound concrete removal is typically performed by **"sounding"** the deck using chain drag or hammer. **Delaminated areas have a hollow sound**
- Remove all loose, disintegrated and unsound concrete from portions of the deck slab shown on the plans or as designated by the Engineer
- **These steps are applicable to Partial Depth and Full Depth repairs**.

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Surface Preparation

This work typically consists of asphalt or concrete surface removal, when required, followed by the removal and disposal of all loose and deteriorated concrete from the bridge deck. The work is conducted according to the applicable requirements of Std Spec Section 606 and applicable Special Notes, when provided.

Common Tools and Equipment

- Mechanical Scarifiers or Grinders (Milling) - Equipment designed specifically for scarifying bridge decks that the Engineer approves. Ensure that the scarifier or grinder can produce a surface matching the existing slab cross section and that each pass of the machine matches the previous pass in elevation
- Hydro-demolition Equipment - The equipment shall be capable of being controlled to remove only unsound concrete. When hydro-demolition is used, cleaning shall be performed with a vacuum system capable of removing wet debris and water all in the same pass. The vacuum equipment shall be capable of washing the deck with pressurized water prior to the vacuum operation to dislodge all debris and slurry from the deck surface

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Surface Preparation using Milling Machine

- Equipment shall be capable of removing material to the required depth resulting in a reasonably uniform surface without damaging adjacent areas or the remaining material

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Surface Preparation using Milling Machine

- **Totally remove existing overlay** by milling the existing concrete to the specified depth
  - **This may require removing existing material to a depth greater then shown in the contract documents; but a thin layer of existing overlay cannot remain**
  - **If any of the existing overlay were to remain; it could de-bond and act as a bond breaker between existing deck and new overlay material**
- Surface preparation should occur as close as possible before overlay placement
- Remove and dispose of deteriorated or delaminated areas of concrete as determined by use of a sounding hammer, chain drag or another acceptable device

Surface after Milling and Cleaning

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Surface Preparation Using Hydro-demolition

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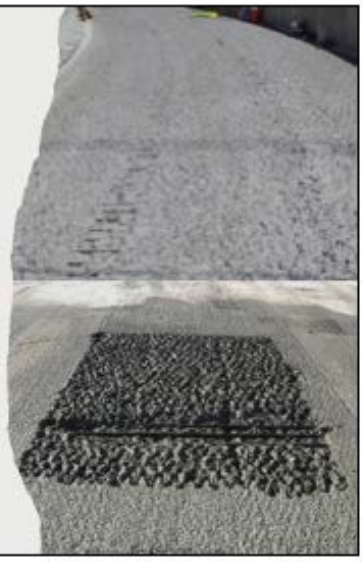
Surface Preparation using Hydro-demolition

- Hydrodemolition equipment shall be calibrated before surface preparation begins
- Hydrodemolition equipment should be computerized and self-propelled
- Hydrodemolition should provide a rough and bondable surface
- All unsound concrete, rust and friable fragments should be removed in one pass
- Surface preparation should occur as close as possible before overlay placement
- Remove and dispose of deteriorated or delaminated areas of concrete as determined by use of a sounding hammer, chain drag or another acceptable device
- **Prior to any hydrodemolition operation, submit a hydrodemolition plan, in writing, for approval by the Engineer.** The Hydrodemolition Plan must include at a minimum the following: water source, type of machine, water pressure settings, methods to collect and strain wastewater, protection of the public, protection of the structural protective coating system (paint), and protection of structural steel.
- Calibrate the hydrodemolition machine to remove only unsound concrete



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Partial Depth Repair

- When no overlay is required; use a concrete saw to provide vertical edges, **approximately 1-inch deep**, around the perimeter of the area to be patched to prevent feathering of edges
- Where steel is located high in the deck, the depth may be reduced as directed by the Engineer. A saw cut is not required along the face of the curb, or when sharp vertical edges are provided by hydrodemolition
- Remove unsound concrete using approved equipment / tools. **Remove concrete to a depth of 3/4-inch below any reinforcing bar which is more than 50 percent exposed or that appears not to be bonded to the existing concrete**

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PARTIAL DEPTH REPAIR

Partial depth repairs consist of removing the loose and unsound deck concrete, disposing of the concrete removed and replacing with new concrete to the existing top of deck. The removal may be performed by chipping with power driven hand tools lighter than nominal 45 lb. class (KYTC Std. Spec. 606.02.10 B) or by hydro-demolition equipment. When depth of removal exceeds two-thirds (KYTC Std. Spec. 606.03.03) the deck thickness, remove and replace the remaining sound concrete for a full depth repair. For example, with an 8-inch concrete deck, if the depth of removal exceeds 5-inches than a full-depth repair is required.

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FULL DEPTH REPAIR

Full depth repairs consist of removing concrete full-depth of the deck, disposing of the concrete removed, and replacing with new concrete to the existing top of deck. The removal may be performed with power driven hand tools (maximum 45-lb hammers), or by hydro-demolition equipment (KYTC Std. Spec. 606.03.03).

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Full Depth Repair

- Remove concrete within areas designated by the Engineer, including all areas designated for full depth repair and all designated areas of partial depth repair in **which unsound concrete is found to extend two-thirds below the concrete deck thickness**
- When not performing an overlay, make saw cuts along the top of the deck, except those boundaries along the face of curbs, parapets and joints or where hydrodemolition provides sharp vertical edges. The top saw cut may be omitted if the deck is to receive an overlay

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Pre-Pour Activities

STEEL REINFORCEMENT

- **Care needs to be exercised during concrete removal to protect the reinforcement bars from damage. Damage to the remaining reinforcement bars must be repaired or replaced**
- 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 as directed by the Engineer. 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 is permitted**. Ensure all exposed steel reinforcement is tied according to KY Std Spec 602.03.04

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Pre-Pour Activities

- After concrete removal and reinforcement repairs, the repair area(s) shall be cleaned of dust and debris
- **Blast clean all exposed steel reinforcement and structural steel** according to Std Spec Section 606.03.04 to remove scale, rust, grease, oil and other material that would prevent adhesion of the concrete
- **Remove all dust and chips of asphalt materials, concrete, or other debris and clean the entire area with compressed air**. Ensure that the compressed air is free of detrimental quantities of water, oil, grease, or any other adverse substances

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Pre-Pour Activities

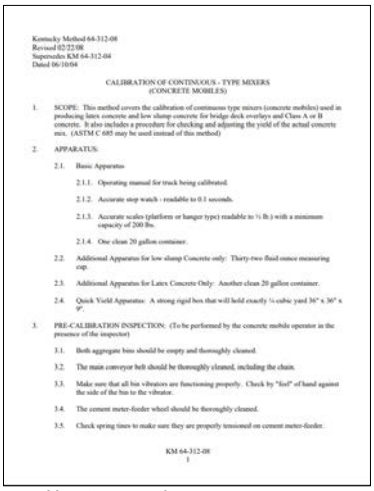
- Protect the cleaned and prepped area with thick layer of plastic sheeting until overlay is poured
- Ensure the overlay area remains damp the entire time after cleaning until the overlay is poured

41

Concrete Mixers

- Refer to the current edition of Kentucky Standard Specifications 601.02.16 for details on the various types of concrete mixers used:
  - When a Continuous Mixer is utilized, equipment shall be calibrated prior to performing the work in accordance with Kentucky Method KM 64-312.
  - The Inspector should use the current version of Kentucky Standards, Kentucky Methods, and other contract documentation for reference.
  - The Inspector shall be ACI Level 1 Certified in order to verify proper testing and documentation
  - An ACI Level I concrete technician is responsible for testing production material for slump, entrained air, unit weight and temperature of the mixture. Ensure the technician performs all sampling and testing according to the appropriate Kentucky Methods.

42



Kentucky Method 64-312-08
Revised 02/22/08
Supersedes KM 64-312-04
Dated 06/10/04

CALIBRATION OF CONTINUOUS - TYPE MIXERS
(CONCRETE MOBILES)

1. SCOPE: This method covers the calibration of continuous type mixers (concrete mobiles) used in producing latex concrete and low slump concrete for bridge deck overlays and Class A or B concrete. It also includes a procedure for checking and adjusting the yield of the actual concrete mix. (ASTM C 685 may be used instead of this method)

2. APPARATUS:

2.1. Basic Apparatus

2.1.1. Operating manual for truck being calibrated.

2.1.2. Accurate stop watch - readable to 0.1 seconds.

2.1.3. Accurate scales (platform or hanger type) readable to ½ lb.) with a minimum capacity of 200 lbs.

2.1.4. One clean 20 gallon container.

2.2. Additional Apparatus for low slump Concrete only: Thirty-two fluid ounce measuring cup.

2.3. Additional Apparatus for Latex Concrete Only: Another clean 20 gallon container.

2.4. Quick Yield Apparatus: A strong rigid box that will hold exactly ¼ cubic yard 36" x 36" x 9".

3. PRE-CALIBRATION INSPECTION: (To be performed by the concrete mobile operator in the presence of the inspector)

3.1. Both aggregate bins should be empty and thoroughly cleaned.

3.2. The main conveyor belt should be thoroughly cleaned, including the chain.

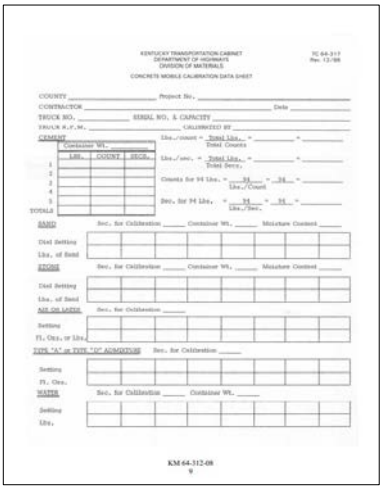
3.3. Make sure that all bin vibrators are functioning properly. Check by "feel" of hand against the side of the bin to the vibrator.

3.4. The cement meter-feeder wheel should be thoroughly cleaned.

3.5. Check spring tines to make sure they are properly tensioned on cement meter-feeder.

KM 64-312-08
1

Calibration Procedure KM 64-312 *(page 1)*



KENTUCKY TRANSPORTATION CABINET
DEPARTMENT OF HIGHWAYS
DIVISION OF MATERIALS
TC 64-317
Rev. 12/08

CONCRETE MOBILE CALIBRATION DATA SHEET

COUNTY _____ Project No. _____
CONTRACTOR _____ Date _____
TRUCK NO. _____ SERIAL NO. & CAPACITY _____
TRUCK R.P.M. _____ CALIBRATED BY _____
CEMENT Container Wt. _____ Lbs./count = Total Lbs. / Total Counts = _____ = _____
LBS. | COUNT | SECS. Lbs./sec. = Total Lbs. / Total Secs. = _____ = _____
1
2
3
4
5
TOTALS
Counts for 94 Lbs. = 94 / Lbs./Count = 94 = _____
Sec. for 94 Lbs. = 94 / Lbs./Sec. = 94 = _____
SAND Sec. for Calibration _____ Container Wt. _____ Moisture Content _____
Dial Setting
Lbs. of Sand
STONE Sec. for Calibration _____ Container Wt. _____ Moisture Content _____
Dial Setting
Lbs. of Stone
ADD ON LATEX Sec. for Calibration _____
Setting
Fl. Ozs. or Lbs.
TYPE "A" or TYPE "D" ADMIXTURE Sec. for Calibration _____
Setting
Fl. Ozs.
WATER Sec. for Calibration _____ Container Wt. _____
Setting
Lbs.

KM 64-312-08
9

Mobile Calibration Data Sheet KM 64-317 *(page 1)*

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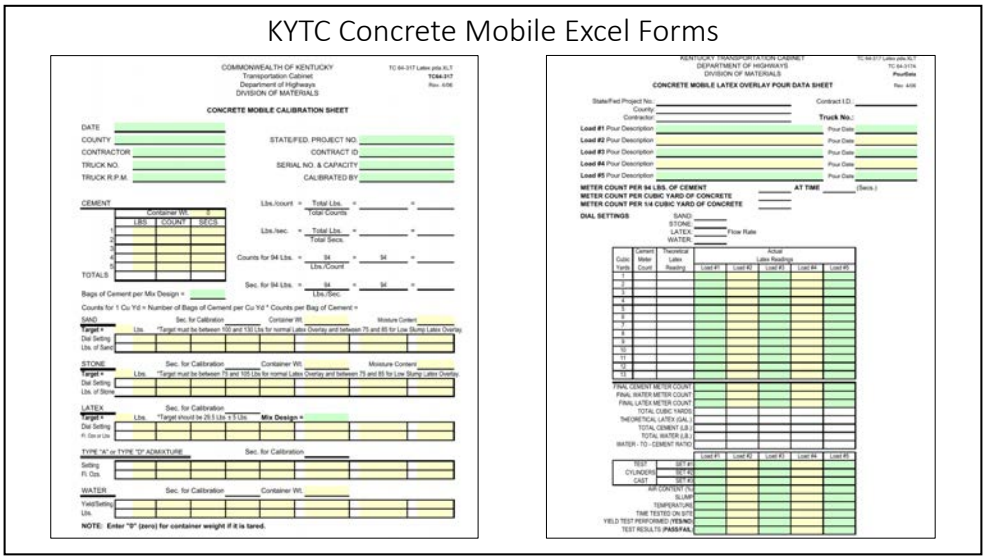

COMMONWEALTH OF KENTUCKY
Transportation Cabinet
Department of Highways
DIVISION OF MATERIALS
TC 64-317 Latex pdx XLT
TC64-317
Rev. 4/06

CONCRETE MOBILE CALIBRATION SHEET

DATE
COUNTY
CONTRACTOR
TRUCK NO.
TRUCK R.P.M.
STATE/FED. PROJECT NO.
CONTRACT ID
SERIAL NO. & CAPACITY
CALIBRATED BY

CEMENT Container Wt. 0
LBS | COUNT | SECS
1
2
3
4
5
TOTALS

Lbs./count = Total Lbs. / Total Counts = _____ = _____
Lbs./sec. = Total Lbs. / Total Secs. = _____ = _____
Counts for 94 Lbs. = 94 / Lbs./Count = _____ = 94
Sec. for 94 Lbs. = 94 / Lbs./Sec. = _____ = 94
Bags of Cement per Mix Design =
Counts for 1 Cu Yd = Number of Bags of Cement per Cu Yd * Counts per Bag of Cement =

SAND Sec. for Calibration _____ Container Wt. _____ Moisture Content _____
Target = Lbs. *Target must be between 100 and 130 Lbs for normal Latex Overlay and between 75 and 85 for Low Slump Latex Overlay
Dial Setting
Lbs. of Sand

STONE Sec. for Calibration _____ Container Wt. _____ Moisture Content _____
Target = Lbs. *Target must be between 75 and 105 Lbs for normal Latex Overlay and between 75 and 85 for Low Slump Latex Overlay
Dial Setting
Lbs. of Stone

LATEX Sec. for Calibration _____
Target = Lbs. *Target should be 25.5 Lbs. x 5 Lbs. Mix Design =
Dial Setting
Fl. Ozs or Lbs

TYPE "A" or TYPE "D" ADMIXTURE Sec. for Calibration _____
Setting
Fl. Ozs.

WATER Sec. for Calibration _____ Container Wt. _____
Yield/Setting
Lbs.

NOTE: Enter "0" (zero) for container weight if it is tared.

KENTUCKY TRANSPORTATION CABINET
DEPARTMENT OF HIGHWAYS
DIVISION OF MATERIALS
TC 64-317A Latex pdx XLT
TC 64-317A
Pour/Date
Rev. 4/06

CONCRETE MOBILE LATEX OVERLAY POUR DATA SHEET

State/Fed Project No.:
County:
Contractor:
Contract I.D.:
Truck No.:
Load #1 Pour Description / Pour Date
Load #2 Pour Description / Pour Date
Load #3 Pour Description / Pour Date
Load #4 Pour Description / Pour Date
Load #5 Pour Description / Pour Date
METER COUNT PER 94 LBS. OF CEMENT
METER COUNT PER CUBIC YARD OF CONCRETE
METER COUNT PER 1/4 CUBIC YARD OF CONCRETE
AT TIME (Secs.)
DIAL SETTINGS
SAND:
STONE:
LATEX: Flow Rate
WATER:

Cubic Yards	Cement Meter Count	Theoretical Latex Reading	Actual Latex Readings Load #1	Load #2	Load #3	Load #4	Load #5
1							
2							
3							
4							
5							
6							
7							
8							
9							
10							
11							
12							
13							

FINAL CEMENT METER COUNT
FINAL WATER METER COUNT
FINAL LATEX METER COUNT
TOTAL CUBIC YARDS
THEORETICAL LATEX (GAL.)
TOTAL CEMENT (LB.)
TOTAL WATER (LB.)
WATER - TO - CEMENT RATIO

TEST	SET #	Load #1	Load #2	Load #3	Load #4	Load #5
CYLINDERS	SET #1					
CAST	SET #2					
AIR CONTENT (%)						
SLUMP						
TEMPERATURE						
TIME TESTED ON SITE						
YIELD TEST PERFORMED (YES/NO)						
TEST RESULTS (PASS/FAIL)						

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Yield Test for Concrete Mobile Pour

Yield testing shall be performed during the placement of the overlay on the deck using a ¼ cubic yard box (36" x 36" x 9"). The chute shall be clean of any material prior to discharge. The mixer shall be operated until the cement counter indicates ¼ cubic yard of concrete has been produced, and the contents consolidated and struck off. If the box is not full, the gates shall be adjusted, and the procedure repeated until the actual and calculated volumes of concrete agree.

Yield tests should be run on the first load of each truck and additional tests will be required after making any adjustments.

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Aggregates

- The contractor should be cautioned that **material will have to be available for sampling and testing early** enough so these procedures won't delay the operation.
- The stockpile should also have sufficient lighting to permit proper inspection of the materials being loaded. Truck lights alone are often not adequate.
- **Tarps, plastic sheeting or some other means to prevent contamination and ensure the moisture content of the stockpiles shall be used**.

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Placing and Finishing Concrete

- **Perform Dry-Run inspection** (check screed machine grade prior to concrete placement) to verify overlay thickness and cleanliness
- Ensure expansion joints are formed so that overlay will not be in contact with the adjacent span
- **Moisten surface and ensure it remains damp** until covered by the overlay concrete
- Apply bonding grout as specified, do not allow bonding grout to dry prior to overlay placement
- Vibrate overlay to ensure adequate consolidation in corners and angles and around exposed reinforcing steel
- Use mechanical screeding device to strike off overlay and finish the surface to final grade
- Hand-finish edges and joints to ensure tight and uniform finish

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Placing and Finishing Concrete

- A bonding agent is used to promote adhesion between the existing concrete surfaces and new concrete. Bonding agents come in various forms such as grout-bond and epoxy bond coat per KY Std Spec 511
- The concrete shall be placed and cured for a full depth patch in accordance with KY Std Spec 606.03.05. The Department may allow monolithic placement of the partial depth patches with the new overlay placement
- **No traffic is permitted on a patch until after the specified cure period and the concrete has obtained a minimum compressive strength of 4000 psi**

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Pouring the Overlay & Bonding Agent

The operation of scrubbing the latex grout from the latex concrete mixture into the deck results in a sizeable quantity of coarse aggregate left over. **The contractor shall collect this aggregate and dispose of it outside the overlay operation.** The latex grout should remain fluid until covered by the overlay material.

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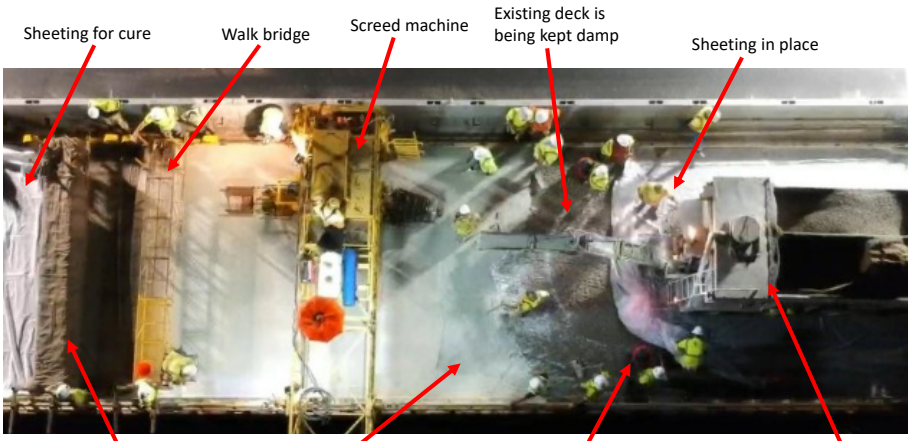

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Curing

- The burlap shall be thoroughly wet but allowed to drain before being applied to the deck. Be sure water is not draining from the burlap since latex will be washed from the surface leaving coarse aggregate exposed
- This curing shall be done in accordance with Section 606.03.17(A)(4) of the Standard Specifications

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General Summary

- Bridge deck patching is an important bridge preservation method to maintain a smooth, structurally sound riding surface for the travelling public
- Surface preparation completed using milling or hydro demolition
- Bridge deck patching can occur during full overlay replacement and local (potholes) repairs
  - **Full Overlay Replacement** – during this project type the existing overlay material is first removed, then concrete patching is performed. Activities are typically conducted per KY Std Spec Section 606
  - **Local spall (pothole) repair** - typically occurs at isolated location(s) along the bridge deck. Portions of KY Std Spec Section 606 are typically applied
- Sounding of the overlay material may be required to ensure proper bonding to the existing surface concrete
  - Sounding hammer, chain drag, etc.
- Remove and repair any unbonded areas

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Post Construction

After all work items are completed, there are several critical steps required to close out KYTC contracts:

- All waste has been collected for proper disposal at an approved facility or as directed by the Engineer
- Review plans and ensure that all tasks and objectives have been completed
- Excess aggregate should be swept from the construction area with powered equipment and removed
- Sounding of the overlay material is required to ensure proper bonding to the existing surface concrete (Latex Modified Concrete)
- Remove and repair any unbonded areas found (Latex Modified Concrete)
- All equipment, including containment and traffic control devices, have been removed from work area
- Normal traffic pattern has been re-established

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Example of Special Note for Erosion Prevention and Sediment Control

Special Note For:
Erosion Prevention and Sediment Control
Item xx-xxxx County Description

- The Contractor shall be responsible for filing the Kentucky Pollution Discharge Elimination System (KPDES) KYR10 permit Notice of Intent (NOI) with the Kentucky Division of Water (DOW) and any KPDES local Municipal Separate Storm Sewer System (MS4) program that has jurisdiction. The NOI shall name the contractor as the Facility Operator and include the KYTC Contract ID Number (CID) for reference.
- The Contractor shall perform all temporary erosion/sediment control functions including providing a Best Management Practice (BMP) Plan, conducting required inspections, modifying the BMP plan documents as construction progresses and documenting the installation and maintenance of BMPs in conformance with the KPDES KYR10 permit effective on August 1, 2009, or a permit re-issued to replace that KYR10 permit. This work shall be conducted in conformance with the requirements of Section 213 of KYTC 2008 Department of Highways, Standard Specifications for Road and Bridge Construction.
- Contrary to Section 213.03.03, paragraph 2, the Engineer shall conduct inspections as needed to verify compliance with Section 213 of KYTC 2008 Department of Highways, Standard Specifications for Road and Bridge Construction. The Engineer's inspections shall be performed a minimum of once per month and within seven days after a storm of ½ inch or greater. Copies of the Engineer's inspections shall not be provided to the contractor unless improvements to the BMP's are required. The contractor shall initiate corrective action within 24 hours of any reported deficiency and complete the work within 5 days. The Engineer shall use Form TC 63-61 A for this report. Inspections performed by the Engineer do not relieve the Contractor of any responsibility for compliance with the KPDES permit.
- Contrary to Section 213.05, bid items for temporary BMPs will not be listed and will be replaced with one lump sum item for the services. Payment will be pro-rated based on the Project Schedule as submitted by the Contractor and as agreed to by the Engineer.
- The contractor shall be responsible for applying "good engineering practices" as required by the KPDES permit. The contractor may use any temporary BMPs with the approval of the KYTC Engineer.
- The contractor shall provide the Engineer copies of all documents required by the KPDES permit at the time they are prepared.
- The contractor shall be responsible for the examination of the soils to be encountered and make his own independent determination of the temporary BMPs that will be required to accomplish effective erosion prevention and sediment control.
- The Contractor shall be responsible for filing the KPDES permit Notice of Termination (NOT) with the Kentucky DOW and any local MS4 program that has jurisdiction. The NOT shall be filed after the Engineer agrees that the project is stabilized, or the project has been formally accepted.

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Appendix B Clean and Paint Pier Caps and Abutments

KYTC

Bridge Preventive Maintenance

Inspection Training Module

Clean & Paint Pier Caps & Abutments

TEAM KENTUCKY®
TRANSPORTATION CABINET

1

Clean & Paint Pier Caps & Abutments Introduction

- Cleaning and painting of pier caps and abutments is one element of a bridge cleaning project and typically combined with cleaning and sealing bearings, deck washing, and deck sealing.
- Properly maintained pier caps and abutments are essential for preserving the integrity of the structure
- Properly cleaned pier caps and abutments ensure the most accurate annual inspections
- This section presents the overall process of how to clean and paint pier caps and abutments
- If not properly maintained, runoff from leaking deck joints can deteriorate the substructure elements, pier caps and abutments
- This runoff, in winter months, will be contaminated with deicing chemicals (chlorides), which will penetrate the concrete and lead to cracking and spalling due to the corrosion of reinforcing steel
- Accumulation of debris will accelerate the corrosion process by retaining moisture for extended periods
- The typical masonry coating currently applied to substructure elements offers no protection from intrusion of moisture and deicing chemicals. The most effective method for preservation of substructure elements is the application of protective coatings to both new and existing concrete

2

Spot Painting Index

The training module will focus on the following topics:

- The Importance of Contract Documents
- Inspector Responsibilities and Qualifications
- Environmental Concerns
- Traffic Control
- Pre-Construction Activities
- Personal Protective Equipment and Tools
- Spot Painting Inspection
- Summary
- Post Construction

3

3

KYTC Links

- https://transportation.ky.gov/Construction
  - Home page with many useful links and documents for inspection
- https://transportation.ky.gov/Construction/Pages/Kentucky-Standard-Specifications.aspx
  - Standard Specifications and Supplemental Specifications
- https://transportation.ky.gov/Construction/Pages/Construction-Engineer%27s-Resource-Center.aspx
  - Includes several inspection documents and spreadsheets
- https://transportation.ky.gov/Construction/Pages/Special-Notes-Special-Provisions.aspx
  - Special Notes and Provisions
- https://transportation.ky.gov/Highway-Design/Pages/Standard-Drawings-2020.aspx
  - Std Drawings, Sepia Drawings and other useful links
- https://transportation.ky.gov/Construction-Procurement/Pages/default.aspx
  - Contract Proposals and Letting Information
- https://transportation.ky.gov/Organizational-Resources/Pages/Forms-Library.aspx
  - KYTC forms and templates
- https://transportation.ky.gov/Materials
  - Home page with many useful links and documents such as Sampling Manual and LAM
- https://transportation.ky.gov/Materials/pages/List-Of-Approved-Materials.aspx
  - KYTC List of Approved Materials (LAM)

4

4

KYTC Standard Specifications

Standard Specifications

Type Name

Spec Year : **2019** (11)

- 100 General Provisions 2019
- 200 Earthwork 2019
- 300 Aggregate Base Courses 2019
- 400 Asphalt Pavements 2019
- 500 PCC Pavement and Non-Structural Concrete Construction 2019
- 600 Structures and Concrete 2019
- 700 Drainage, Traffic, and Roadside Construction 2019
- 800 Materials Details 2019
- Appendix A Tabulation of Construction Tolerances 2019
- Appendix B Index 2019
- Complete KYTC Standard Specifications - 2019

Supplemental Specifications

Type Name

Spec Year : **2019** (7)

- Supplemental Specs Effective with May 26, 2022 Letting
- Supplemental Specs Effective with November 19 2021 Letting
- Supplemental Specifications Effective with June 25 2021 Letting
- Supplemental Specification Effective with September 25, 2020 Letting
- Supplemental Specifications Effective with July 24, 2020 Letting rev 20200617
- Supplemental Specifications Effective with March 20, 2020 Letting
- Supplemental Specifications Effective with July 26 2019 Letting

https://transportation.ky.gov/Construction/Pages/Kentucky-Standard-Specifications.aspx

5

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Kentucky Standard Specifications

- Kentucky Standard Specifications are a compilation of guidelines for construction and maintenance requirements useful to engineers for developing of projects and contracts
- When referenced in KYTC contracts they become legally binding specifications
- Inspectors need to be knowledgeable of these contractual specifications as they are pertinent to the inspection process

6

6

Safety Data and Product Data Sheets

Inspection staff should have a copy of SDS & PDS for all materials/chemicals being utilized by the contractor.

7

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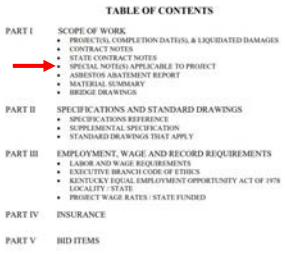
KYTC Contract Proposal

- KYTC contract proposals will include detailed information about the project. It will include any Special Notes for construction and will include the bid item list
- **Inspection personnel should review the contract proposal carefully; paying close attention to the Special Notes**



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- PROJECT(S), COMPLETION DATE(S), & LIQUIDATED DAMAGES
- CONTRACT NOTES
- STATE CONTRACT NOTES
- SPECIAL NOTE(S) APPLICABLE TO PROJECT
- ASBESTOS ABATEMENT REPORT
- MATERIAL SUMMARY
- BRIDGE DRAWINGS

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- SPECIFICATIONS REFERENCE
- SUPPLEMENTAL SPECIFICATION
- STANDARD DRAWINGS THAT APPLY

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- KENTUCKY EQUAL EMPLOYMENT OPPORTUNITY ACT OF 1978 LOCALITY - STATE
- PROJECT WAGE RATES - STATE FUNDED

PART IV INSURANCE

PART V BID ITEMS

CALL NO. 201
CONTRACT ID. 212955
KENTON COUNTY
FED/STATE PROJECT NUMBER 059GR21M007 - NHPP
DESCRIPTION LEXINGTON-CINCINNATI ROAD (I-71 / I-75)
WORK TYPE BRIDGE PAINTING & CLEANING
PRIMARY COMPLETION DATE 11/15/2021

LETTING DATE: January 29,2021
Sealed Bids will be received electronically through the Bid Express bidding service until 10:00 am EASTERN STANDARD TIME January 29,2021. Bids will be publicly announced at 10:00 am EASTERN STANDARD TIME.

NO PLANS ASSOCIATED WITH THIS PROJECT.

DBE CERTIFICATION REQUIRED - 0%

REQUIRED BID PROPOSAL GUARANTY: Not less than 5% of the total bid.

NOTE:
Construction plans will be included within many proposals

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Example of Special Notes for Clean and Paint Pier Caps and Abutments
SPECIAL NOTES FOR CLEANING AND PAINTING
SPECIAL NOTE FOR BIDDING PREQUALIFICATION AND STAFFING
SPECIAL NOTE BRIDGE CLEANING AND PAINTING
SPECIAL NOTE FOR UTILITIES AND SIGNS
SPECIAL NOTE FOR WEIGHT LIMITS ON STRUCTURE
SPECIAL NOTE FOR WORKING OVER OR FROM THE OHIO RIVER
SPECIAL NOTE FOR OHIO RIVER
SPECIAL NOTE FOR REPLACE TRAFFIC PROTECTION PANELS
SPECIAL NOTE FOR OVERHEAD TRAFFIC SIGN AND PAVEMENT MARKING REPLACEMENT
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SPECIAL NOTE FOR CONTRACT COMPLETION DATE AND LIQUIDATED DAMAGES ON BRIDGE REPAIR CONTRACTS
SPECIAL NOTE FOR PRE-BID CONFERENCE
9

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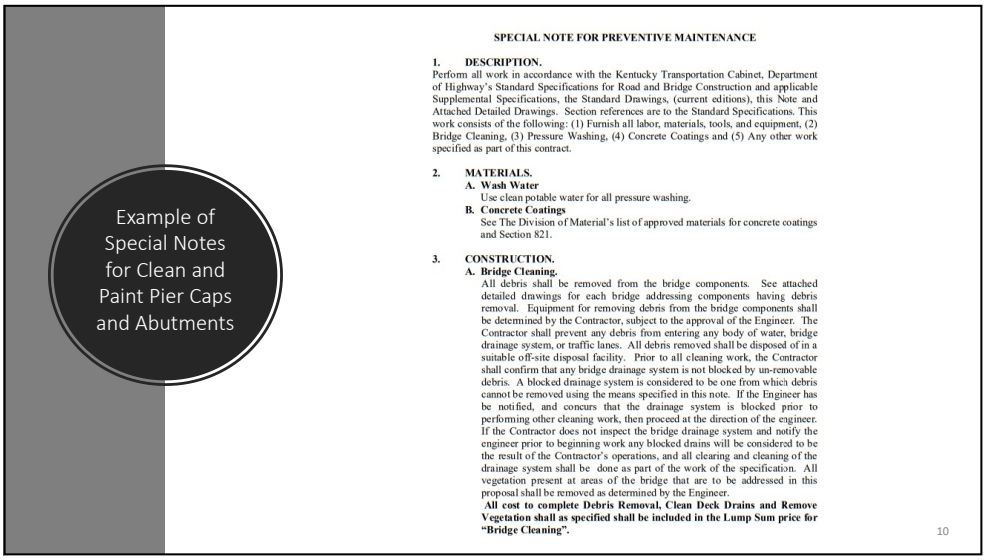
Example of Special Notes for Clean and Paint Pier Caps and Abutments
SPECIAL NOTE FOR PREVENTIVE MAINTENANCE
1. DESCRIPTION.
Perform all work in accordance with the Kentucky Transportation Cabinet, Department of Highway's Standard Specifications for Road and Bridge Construction and applicable Supplemental Specifications, the Standard Drawings, (current editions), this Note and Attached Detailed Drawings. Section references are to the Standard Specifications. This work consists of the following: (1) Furnish all labor, materials, tools, and equipment, (2) Bridge Cleaning, (3) Pressure Washing, (4) Concrete Coatings and (5) Any other work specified as part of this contract.
2. MATERIALS.
A. Wash Water
Use clean potable water for all pressure washing.
B. Concrete Coatings
See The Division of Material's list of approved materials for concrete coatings and Section 821.
3. CONSTRUCTION.
A. Bridge Cleaning.
All debris shall be removed from the bridge components. See attached detailed drawings for each bridge addressing components having debris removal. Equipment for removing debris from the bridge components shall be determined by the Contractor, subject to the approval of the Engineer. The Contractor shall prevent any debris from entering any body of water, bridge drainage system, or traffic lanes. All debris removed shall be disposed of in a suitable off-site disposal facility. Prior to all cleaning work, the Contractor shall confirm that any bridge drainage system is not blocked by un-removable debris. A blocked drainage system is considered to be one from which debris cannot be removed using the means specified in this note. If the Engineer has be notified, and concurs that the drainage system is blocked prior to performing other cleaning work, then proceed at the direction of the engineer. If the Contractor does not inspect the bridge drainage system and notify the engineer prior to beginning work any blocked drains will be considered to be the result of the Contractor's operations, and all clearing and cleaning of the drainage system shall be done as part of the work of the specification. All vegetation present at areas of the bridge that are to be addressed in this proposal shall be removed as determined by the Engineer.
All cost to complete Debris Removal, Clean Deck Drains and Remove Vegetation shall as specified shall be included in the Lump Sum price for "Bridge Cleaning".
10

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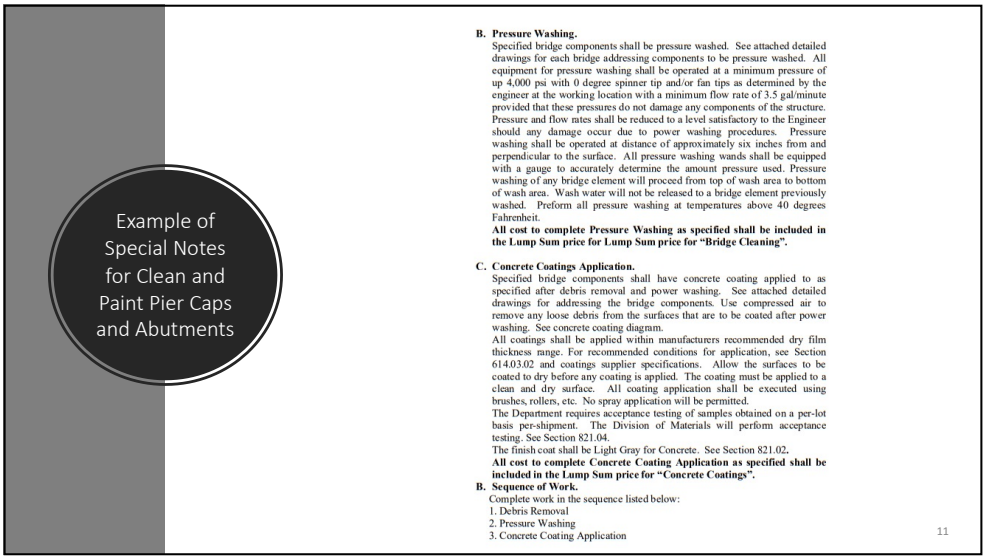
Example of Special Notes for Clean and Paint Pier Caps and Abutments
B. Pressure Washing.
Specified bridge components shall be pressure washed. See attached detailed drawings for each bridge addressing components to be pressure washed. All equipment for pressure washing shall be operated at a minimum pressure of up 4,000 psi with 0 degree spinner tip and/or fan tips as determined by the engineer at the working location with a minimum flow rate of 3.5 gal/minute provided that these pressures do not damage any components of the structure. Pressure and flow rates shall be reduced to a level satisfactory to the Engineer should any damage occur due to power washing procedures. Pressure washing shall be operated at distance of approximately six inches from and perpendicular to the surface. All pressure washing wands shall be equipped with a gauge to accurately determine the amount pressure used. Pressure washing of any bridge element will proceed from top of wash area to bottom of wash area. Wash water will not be released to a bridge element previously washed. Preform all pressure washing at temperatures above 40 degrees Fahrenheit.
All cost to complete Pressure Washing as specified shall be included in the Lump Sum price for Lump Sum price for "Bridge Cleaning".
C. Concrete Coatings Application.
Specified bridge components shall have concrete coating applied to as specified after debris removal and power washing. See attached detailed drawings for addressing the bridge components. Use compressed air to remove any loose debris from the surfaces that are to be coated after power washing. See concrete coating diagram.
All coatings shall be applied within manufacturers recommended dry film thickness range. For recommended conditions for application, see Section 614.03.02 and coatings supplier specifications. Allow the surfaces to be coated to dry before any coating is applied. The coating must be applied to a clean and dry surface. All coating application shall be executed using brushes, rollers, etc. No spray application will be permitted.
The Department requires acceptance testing of samples obtained on a per-lot basis per-shipment. The Division of Materials will perform acceptance testing. See Section 821.04.
The finish coat shall be Light Gray for Concrete. See Section 821.02.
All cost to complete Concrete Coating Application as specified shall be included in the Lump Sum price for "Concrete Coatings".
B. Sequence of Work.
Complete work in the sequence listed below:
1. Debris Removal
2. Pressure Washing
3. Concrete Coating Application
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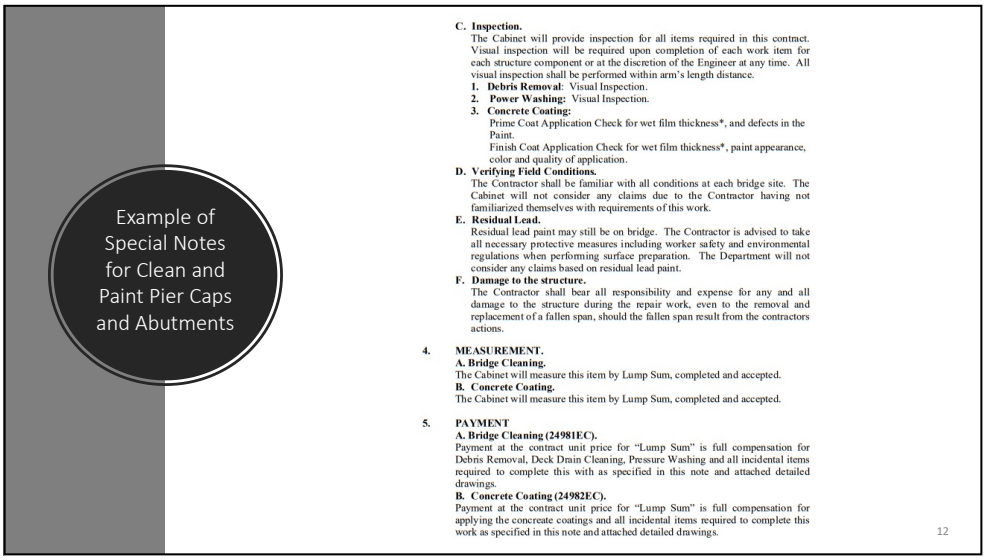
Example of Special Notes for Clean and Paint Pier Caps and Abutments
C. Inspection.
The Cabinet will provide inspection for all items required in this contract. Visual inspection will be required upon completion of each work item for each structure component or at the discretion of the Engineer at any time. All visual inspection shall be performed within arm's length distance.
1. Debris Removal: Visual Inspection.
2. Power Washing: Visual Inspection.
3. Concrete Coating:
Prime Coat Application Check for wet film thickness*, and defects in the Paint.
Finish Coat Application Check for wet film thickness*, paint appearance, color and quality of application.
D. Verifying Field Conditions.
The Contractor shall be familiar with all conditions at each bridge site. The Cabinet will not consider any claims due to the Contractor having not familiarized themselves with requirements of this work.
E. Residual Lead.
Residual lead paint may still be on bridge. The Contractor is advised to take all necessary protective measures including worker safety and environmental regulations when performing surface preparation. The Department will not consider any claims based on residual lead paint.
F. Damage to the structure.
The Contractor shall bear all responsibility and expense for any and all damage to the structure during the repair work, even to the removal and replacement of a fallen span, should the fallen span result from the contractors actions.
4. MEASUREMENT.
A. Bridge Cleaning.
The Cabinet will measure this item by Lump Sum, completed and accepted.
B. Concrete Coating.
The Cabinet will measure this item by Lump Sum, completed and accepted.
5. PAYMENT
A. Bridge Cleaning (24981EC).
Payment at the contract unit price for "Lump Sum" is full compensation for Debris Removal, Deck Drain Cleaning, Pressure Washing and all incidental items required to complete this with as specified in this note and attached detailed drawings.
B. Concrete Coating (24982EC).
Payment at the contract unit price for "Lump Sum" is full compensation for applying the concreate coatings and all incidental items required to complete this work as specified in this note and attached detailed drawings.
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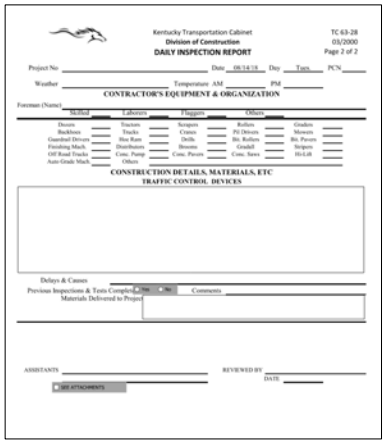
KYTC DWR


Kentucky Transportation Cabinet
Division of Construction
DAILY INSPECTION REPORT
TC 63-28
03/2000
Page 1 of 2

PAY QUANTITIES

PAY QUANTITY DETAILS, REFERENCES, SKETCHES, ETC.

Attention Project Engineer


Kentucky Transportation Cabinet
Division of Construction
DAILY INSPECTION REPORT
TC 63-28
03/2000
Page 2 of 2

CONTRACTOR'S EQUIPMENT & ORGANIZATION

CONSTRUCTION DETAILS, MATERIALS, ETC
TRAFFIC CONTROL DEVICES

https://transportation.ky.gov/Construction/Pages/Construction-Engineer%27s-Resource-Center.aspx

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Kentucky Transportation Cabinet
Division of Construction
DAILY INSPECTORS REPORT FOR BRIDGE PAINTING
TC 63-14
03/2000

ATTACH TAPES HERE

KYTC DWR for Bridge Painting

- https://transportation.ky.gov/Construction/Pages/Construction-Engineer%27s-Resource-Center.aspx

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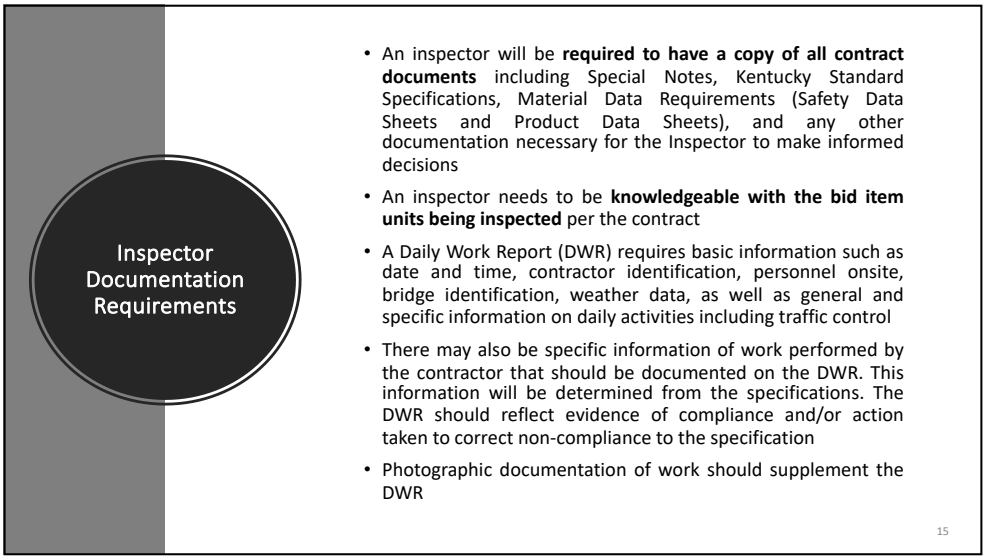
Inspector Documentation Requirements
• An inspector will be **required to have a copy of all contract documents** including Special Notes, Kentucky Standard Specifications, Material Data Requirements (Safety Data Sheets and Product Data Sheets), and any other documentation necessary for the Inspector to make informed decisions
• An inspector needs to be **knowledgeable with the bid item units being inspected** per the contract
• A Daily Work Report (DWR) requires basic information such as date and time, contractor identification, personnel onsite, bridge identification, weather data, as well as general and specific information on daily activities including traffic control
• There may also be specific information of work performed by the contractor that should be documented on the DWR. This information will be determined from the specifications. The DWR should reflect evidence of compliance and/or action taken to correct non-compliance to the specification
• Photographic documentation of work should supplement the DWR
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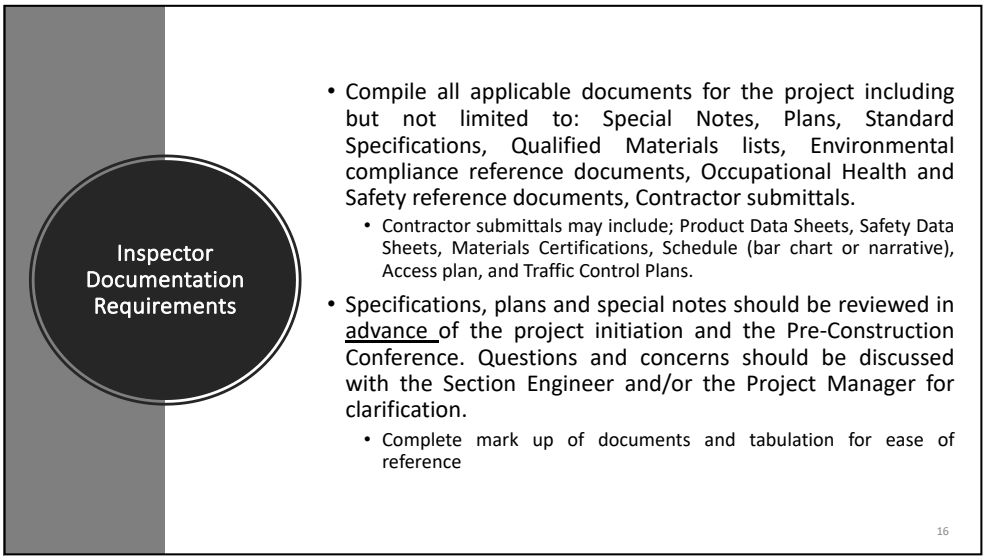
Inspector Documentation Requirements
• Compile all applicable documents for the project including but not limited to: Special Notes, Plans, Standard Specifications, Qualified Materials lists, Environmental compliance reference documents, Occupational Health and Safety reference documents, Contractor submittals.
• Contractor submittals may include; Product Data Sheets, Safety Data Sheets, Materials Certifications, Schedule (bar chart or narrative), Access plan, and Traffic Control Plans.
• Specifications, plans and special notes should be reviewed in advance of the project initiation and the Pre-Construction Conference. Questions and concerns should be discussed with the Section Engineer and/or the Project Manager for clarification.
• Complete mark up of documents and tabulation for ease of reference
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Inspector Responsibilities

- Kentucky Transportation Cabinet (KYTC) bridge maintenance projects **should have experienced, district level inspector(s)** and required inspection equipment. Duties include overall verification of task completion and complete coverage of contractor operations
- Currently Kentucky Transportation Cabinet (KYTC) does not require Qualified Assurance (QA) inspectors for concrete painting projects, however, the Association for Materials Protection and Performance (AMPP) offers Concrete Coating Inspector (CCI) courses level 1 and 2.
- While no inspector qualifications are required for this task, it is **imperative that inspectors be familiar with the tasks being performed, contract specification, special notes, and pertinent parts of the current Kentucky Standard Specifications For Road and Bridge Construction**.
- **All aspects of the project are to be clearly documented**
- Inspection personnel will coordinate with the Contractor to establish hold points that follow all KYTC Specifications and Special Note requirements. **Hold points are progress milestones that occur when one phase of work is complete and ready for inspection, which should be completed before continuing with the next operational step**

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Inspector Responsibilities

- **Understanding specifications is CRITICAL**; including the Contract, Special Notes within the contract, pertinent sections of the current edition of Kentucky Standard Specifications, and Material Data Sheets. Inspection personnel should also be knowledgeable of any environmentally sensitive issues. There may be specific tasks that require knowledge of quality standards (ASTM, AASHTO, etc.).
- All aspects of the project are to be clearly documented (written and photographed)
- ***The inspector's responsibility is to verify and document that each phase of work has been satisfactorily completed and complies with all specifications***

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Inspector Responsibilities

- An inspector is required to perform specific tasks in accordance with Quality Standards. These standards are necessary to ensure specific measurements taken during the inspection process are performed consistently. Some of these tasks/measurements include surface preparation, wet and dry film thickness, adhesion, ambient conditions, and moisture. Some may be destructive in nature and will require the contractor to perform repair work. **Contact KYTC Central Office Construction to ensure coordination with the Bridge Painting Liaison for projects that include coating applications.**
- With assistance of the Engineer conduct the following:
  - Using the contract documents, create a formal or informal project check list including activities and responsibilities for QC and QA inspection personnel
  - Determine hold points (inspection points where acceptance of a phase of work must be completed to allow work to proceed to the next phase) and place them in a logical order
  - Determine inspection methods, inspection tools needed, when and how to perform inspections
  - Determine how to document inspections and hold point acceptance

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Environmental and Worker Safety

The **Contractor is solely responsible for both environmental and worker safety**, however this does not relieve the inspector of the responsibility to monitor, report, and document observed practices or issues. The contractor should hold daily safety meetings

The inspector needs to be aware of the environmental regulations to which the contractor must comply. The contractor may be required to submit an Environmental Compliance Plan. Depending on the size of the project, a Storm Water Permit or other permits may be required by Kentucky Division of Water. Also, certain urban jurisdictions may require an erosion and sediment control plan to be filed locally prior to work beginning. Some of the permitting requirements and regulations can be found in the Kentucky Administrative Regulations, Title 401, Chapters 4, 5, 6, 8, 9, 10, and 11. The contractor is required to conform to Kentucky Revised Statute 224.70-110 "General Prohibition Against Water Pollution." There may also be required permitting from the United States Army Corps of Engineers (USACE)

A variety of substances and materials found on construction sites can become pollutants of concern if they are washed into nearby water bodies, dumped onto porous soils, or discharged directly to surface waters or groundwater. When required by KYTC the contractor will submit the Best Management Practice (BMP) for the project. Inspectors should be familiar with these submittals and the use of "Controlling Erosion, Sediment, and Pollutant Runoff from Construction Sites" as a reference (see BMP Manual link below)

Use this link to access the KYTC Drainage Resource Materials:
https://transportation.ky.gov/Highway-Design/Pages/Drainage-Resource-Materials.aspx

Use this link to access the BMP Manual:
Https://eec.ky.gov/Environmental-Protection/Forms%20Library/09BMPManual_Final.pdf

Click here for a Special Note on Erosion Prevention and Sediment Control

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Traffic Control Plan

- **The Contractor is responsible for conformance to the requirements in the Traffic Control Plan** (TCP), Proposal, plan sheets, specifications, and the Manual on Uniform Traffic Control Devices (MUTCD). There may be other requirements not listed here.
- All Traffic Control Supervisors, Technicians, and Flaggers shall have current temporary work zone traffic control certifications.
- All equipment should be maintained for safe operation and safety checks should be performed and documented daily.
- Document traffic control concerns, notes, reviews, updates, accidents or any other applicable conditions on the DWR

ACTION: Read the TCP to become familiar with the proposed temporary work zone activities. Obtain the TC 63-67 (Traffic Control Inspection Report) which can be utilized for traffic control reviews as needed. Link below can be utilized to access the TC-63-67 Report

https://transportation.ky.gov/Organizational-Resources/Pages/Forms-Library-(TC-63).aspx

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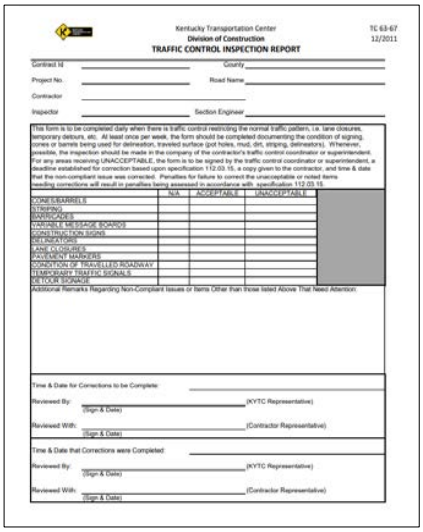
Traffic Control Inspection Report



Kentucky Transportation Center
Division of Construction
TC 63-67
12/2011

TRAFFIC CONTROL INSPECTION REPORT

Contract Id _____ County _____

Project No. _____ Road Name _____

Contractor _____

Inspector _____ Section Engineer _____

This form is to be completed daily when there is traffic control restricting the normal traffic pattern, i.e. lane closures, temporary detours, etc. At least once per week, the form should be completed documenting the condition of signing, cones or barrels being used for delineation, traveled surface (pot holes, mud, dirt, striping, delineators). Whenever possible, the inspection should be made in the company of the contractor's traffic control coordinator or superintendent. For any areas receiving UNACCEPTABLE, the form is to be signed by the traffic control coordinator or superintendent, a deadline established for correction based upon specification 112.03.15, a copy given to the contractor, and time & date that the non-compliant issue was corrected. Penalties for failure to correct the unacceptable or noted items needing corrections will result in penalties being assessed in accordance with specification 112.03.15.

	N/A	ACCEPTABLE	UNACCEPTABLE
CONES/BARRELS			
STRIPING			
BARRICADES			
VARIABLE MESSAGE BOARDS			
CONSTRUCTION SIGNS			
DELINEATORS			
LANE CLOSURES			
PAVEMENT MARKERS			
CONDITION OF TRAVELLED ROADWAY			
TEMPORARY TRAFFIC SIGNALS			
DETOUR SIGNAGE			

Additional Remarks Regarding Non-Compliant Issues or Items Other than those listed Above That Need Attention:

Time & Date for Corrections to be Complete: _____

Reviewed By: _____ (KYTC Representative)
(Sign & Date)

Reviewed With: _____ (Contractor Representative)
(Sign & Date)

Time & Date that Corrections were Completed: _____

Reviewed By: _____ (KYTC Representative)
(Sign & Date)

Reviewed With: _____ (Contractor Representative)
(Sign & Date)

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Pre-Construction Activities

Prior to the contractor beginning work ensure you have the necessary items to perform your activities. Common items include:

a) Contract documents (KY Std Spec, plans, proposal and any special notes)

b) Quality Assurance Plan

c) Safety (environmental & worker), Traffic Control Plan, Schedule and all Contractor Submittals including Material Product Data Sheets

d) Inspector Documentation Requirements

e) Personal Protective Equipment (PPE); ***additional equipment may be required for environmental or hazardous exposures***

f) Field tools; ***specialized inspection equipment/tools may be necessary***

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Obtain Personal Protective Equipment *(Pre-Construction)*

- Class 2 (day) or 3 (night) high visibility apparel
- Hard hat
- Hearing protection
- Safety glasses w/side shields
- Gloves
- Steel toe boots
- Respirator may be required **(Contact Bridge Painting Liaison)**
- Fall protection in accordance with 29 CFR Part 1926 (as required)

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Obtain Tools and Equipment
(Pre-Construction)

- A camera of sufficient quality to enlarge images for viewing critical details. The camera on most cell phones is usually adequate for photo documentation.
- Wet Film Thickness (WFT) Gauge **(Contact Bridge Painting Liaison)**
- Equipment to measure ambient conditions **(Contact Bridge Painting Liaison)**
- Flashlight
- Dull scraper
- Claw hammer or handheld sledgehammer
- Inspection mirror
- Measuring tape
- Notepad or ability to take notes
- Any other equipment necessary to perform the inspection duties

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Inspection Activities
Surface Preparation

Verify by observation and documentation the following tasks satisfy the contract requirements *(photographs recommended)*:

- All vegetation and debris has been removed from abutments, end bent caps, back walls, pier caps, pedestals, shear keys, all faces of parapet walls including abutment/end bent wing walls, and all deck drains and gutters to 2'-0" each side of the bridge deck
- All surface, stratified or pack rust has been removed from bearings. Use a handheld sledgehammer to inspect for pack rust/stratified removal by striking the steel surfaces as hard as possible. If no rust is removed, the cleaning is satisfactory.
- Wash all surfaces *(continued)*

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Inspection Activities Surface Preparation

- Pressure wash all abutment/end bent caps and back walls, pier caps, pedestals, shear keys, all faces of parapet walls including abutment/end bent wing walls and all deck drains and gutters to 2'-0" each side of the bridge deck.
- All equipment for pressure washing shall be operated at a minimum pressure of 4000 psi with fan tips and/or 0-degree spinner tips as determined by the Engineer at the working location with a minimum flow rate of 3.5 gal/minute provided that these pressures do not damage any components of the structure.
- Pressure and flow rates shall be reduced or increased to the satisfaction of the Engineer should any damage occur due to power washing procedures.
- The washing wand must be approximately perpendicular to the washed surface and within a maximum 12 inches of the surface.
- Wand extensions greater than 36 inches will be subject to Central Office Division of Construction approval.
- Use clean potable water for all pressure washing.

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Inspection Activities

- Ensure surface preparation satisfies the specifications of the contract documentation and that all surfaces are sufficiently dried
- Verify that concrete coatings are applied to all abutments, end bent caps, back walls, pier caps, pedestals, shear keys, all faces of parapet walls including abutment/end bent wing walls and all deck drains, and gutters to 2'-0" each side of the bridge deck as specified by the contract documents
- The coating must be applied to a clean and dry surface as specified in the contract documentation
- All coating application shall be executed using brushes, rollers, etc.
  - Spray application will be permitted if containment is in place for structural steel paint application
- Comply with KYTC "Standard Specifications for Road and Bridge Construction" Section 614.03.02 and coatings supplier recommended conditions for application. The Department requires acceptance testing of paint/coating. See Special Note for Bridge Cleaning and Preventive Maintenance
- All coatings shall be applied within manufacturers recommended dry film thickness range

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Concrete Coatings

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Summary
Clean and Paint Pier Caps and Abutments

- Pier caps and abutments that are cleaned and properly maintained are essential for preserving the integrity of the structure
- Properly cleaned pier caps and abutments ensure the most accurate annual inspections

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Post Construction

After all work items are completed, several critical steps are required to close out KYTC contracts. Verify the following have been satisfactorily completed:

- Review plans and ensure that all tasks and objectives have been completed in accordance with specifications
- All waste has been collected for proper disposal at an approved facility or as directed by the Engineer
- All equipment, including containment and traffic control devices, have been removed from work area
- Normal traffic pattern has been re-established

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Example of Special Note for Erosion Prevention and Sediment Control

Special Note For:
Erosion Prevention and Sediment Control
Item xx-xxxx County Description

- The Contractor shall be responsible for filing the Kentucky Pollution Discharge Elimination System (KPDES) KYR10 permit Notice of Intent (NOI) with the Kentucky Division of Water (DOW) and any KPDES local Municipal Separate Storm Sewer System (MS4) program that has jurisdiction. The NOI shall name the contractor as the Facility Operator and include the KYTC Contract ID Number (CID) for reference.
- The Contractor shall perform all temporary erosion/sediment control functions including providing a Best Management Practice (BMP) Plan, conducting required inspections, modifying the BMP plan documents as construction progresses and documenting the installation and maintenance of BMPs in conformance with the KPDES KYR10 permit effective on August 1, 2009, or a permit re-issued to replace that KYR10 permit. This work shall be conducted in conformance with the requirements of Section 213 of KYTC 2008 Department of Highways, Standard Specifications for Road and Bridge Construction.
- Contrary to Section 213.03.03, paragraph 2, the Engineer shall conduct inspections as needed to verify compliance with Section 213 of KYTC 2008 Department of Highways, Standard Specifications for Road and Bridge Construction. The Engineer's inspections shall be performed a minimum of once per month and within seven days after a storm of ½ inch or greater. Copies of the Engineer's inspections shall not be provided to the contractor unless improvements to the BMP's are required. The contractor shall initiate corrective action within 24 hours of any reported deficiency and complete the work within 5 days. The Engineer shall use Form TC 63-61 A for this report. Inspections performed by the Engineer do not relieve the Contractor of any responsibility for compliance with the KPDES permit.
- Contrary to Section 213.05, bid items for temporary BMPs will not be listed and will be replaced with one lump sum item for the services. Payment will be pro-rated based on the Project Schedule as submitted by the Contractor and as agreed to by the Engineer.
- The contractor shall be responsible for applying "good engineering practices" as required by the KPDES permit. The contractor may use any temporary BMPs with the approval of the KYTC Engineer.
- The contractor shall provide the Engineer copies of all documents required by the KPDES permit at the time they are prepared.
- The contractor shall be responsible for the examination of the soils to be encountered and make his own independent determination of the temporary BMPs that will be required to accomplish effective erosion prevention and sediment control.
- The Contractor shall be responsible for filing the KPDES permit Notice of Termination (NOT) with the Kentucky DOW and any local MS4 program that has jurisdiction. The NOT shall be filed after the Engineer agrees that the project is stabilized, or the project has been formally accepted.

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Appendix C Clean and Seal Bearings

KYTC

Bridge Preventive Maintenance

Cleaning & Sealing Bearings

TEAM KENTUCKY®
TRANSPORTATION CABINET

1

Clean & Seal Bearings Introduction

- Bearing devices should be cleaned to remove contaminants, loose and lifting paint, stratified/pack rust, and other debris from their steel surfaces. If not cleaned properly degradation, section loss, and malfunction of the bearing elements may result. Bearing devices should be cleaned as part of a multi-component preventative maintenance project
- Bearing cleaning and sealing is only one element of a bridge cleaning project. Information related to bridge cleaning is provided in the Bridge Washing section
- A heavy marine grade grease is utilized as a protective coating on bearings. The grease also provides some lubrication qualities

2

2

Clean & Seal Bearings Index

The training module will focus on the following topics:

- The Importance of Contract Documents
- Inspector Responsibilities and Qualifications
- Environmental Concerns
- Traffic Control
- Pre-Construction Activities
- Personal Protective Equipment and Tools
- Examples of Bearing Type
- Pre-Existing Conditions
- Inspection
- Summary
- Post Construction

3

3

KYTC Links

- https://transportation.ky.gov/Construction
  - Home page with many useful links and documents for inspection
- https://transportation.ky.gov/Construction/Pages/Kentucky-Standard-Specifications.aspx
  - Standard Specifications and Supplemental Specifications
- https://transportation.ky.gov/Construction/Pages/Construction-Engineer%27s-Resource-Center.aspx
  - Includes several inspection documents and spreadsheets
- https://transportation.ky.gov/Construction/Pages/Special-Notes-Special-Provisions.aspx
  - Special Notes and Provisions
- https://transportation.ky.gov/Highway-Design/Pages/Standard-Drawings-2020.aspx
  - Std Drawings, Sepia Drawings and other useful links
- https://transportation.ky.gov/Construction-Procurement/Pages/default.aspx
  - Contract Proposals and Letting Information
- https://transportation.ky.gov/Organizational-Resources/Pages/Forms-Library.aspx
  - KYTC forms and templates
- https://transportation.ky.gov/Materials
  - Home page with many useful links and documents such as Sampling Manual and LAM
- https://transportation.ky.gov/Materials/pages/List-Of-Approved-Materials.aspx
  - KYTC List of Approved Materials (LAM)

4

4

Kentucky Standard Specifications

Standard Specifications

Type Name

Spec Year : **2019** (11)

- 100 General Provisions 2019
- 200 Earthwork 2019
- 300 Aggregate Base Courses 2019
- 400 Asphalt Pavements 2019
- 500 PCC Pavement and Non-Structural Concrete Construction 2019
- 600 Structures and Concrete 2019
- 700 Drainage, Traffic, and Roadside Construction 2019
- 800 Materials Details 2019
- Appendix A Tabulation of Construction Tolerances 2019
- Appendix B Index 2019
- Complete KYTC Standard Specifications - 2019

Supplemental Specifications

Type Name

Spec Year : **2019** (7)

- Supplemental Specs Effective with May 26, 2022 Letting
- Supplemental Specs Effective with November 19 2021 Letting
- Supplemental Specifications Effective with June 25 2021 Letting
- Supplemental Specification Effective with September 25, 2020 Letting
- Supplemental Specifications Effective with July 24, 2020 Letting rev 20200617
- Supplemental Specifications Effective with March 20, 2020 Letting
- Supplemental Specifications Effective with July 26 2019 Letting

https://transportation.ky.gov/Construction/Pages/Kentucky-Standard-Specifications.aspx

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Kentucky Standard Specifications

- Kentucky Standard Specifications are a compilation of guidelines for construction and maintenance requirements useful to engineers for developing of projects and contracts
- When referenced in KYTC contracts they become legally binding specifications
- Inspectors need to be knowledgeable of these contractual specifications as they are pertinent to the inspection process

6

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Examples of Safety Data and Product Data Sheets

Inspection staff should have a copy of SDS & PDS for all materials/chemicals being utilized by the contractor.

7

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KYTC Contract Proposal

(Example)

- KYTC contract proposals will include detailed information about the project. It will include any Special Notes for construction and will include the bid item list
- **Inspection personnel should review the contract proposal carefully; paying close attention to the Special Notes**

SPECIAL NOTES FOR BRIDGE DECK RESTORATION AND WATERPROOFING

SPECIAL NOTE FOR ELIMINATING TRANSVERSE JOINTS ON BRIDGES

SPECIAL NOTE FOR BRIDGE DECK RESTORATION AND WATERPROOFING WITH CONCRETE OVERLAYS

SPECIAL NOTE FOR DECK DRAIN RETROFIT

SPECIAL NOTE FOR PREVENITIVE MAINTENANCE

SPECIAL NOTE FOR CONTRACT COMPLETION DATE AND PENALTIES ON BRIDGE REPAIR CONTRACTS

SPECIAL NOTE FOR MAINTAINING AND CONTROLLING TRAFFIC

Kentucky UNBRIDLED SPIRIT

CALL NO. 407
CONTRACT ID. 237900
MEADE - NELSON - HARDIN COUNTIES
FED/STATE PROJECT NUMBER 121GR23M016
DESCRIPTION VARIOUS ROUTES IN DISTRICT 4 - 3 LOCATIONS
WORK TYPE BRIDGE DECK RESTORATION & WATERPROOFING
PRIMARY COMPLETION DATE 11/30/2023

LETTING DATE: February 23,2023
Sealed Bids will be received electronically through the Bid Express bidding service until 10:00 AM EASTERN STANDARD TIME February 23,2023. Bids will be publicly announced at 10:00 AM EASTERN STANDARD TIME.

NO PLANS ASSOCIATED WITH THIS PROJECT.

REQUIRED BID PROPOSAL GUARANTY: Not less than 5% of the total bid.

NOTE:
Construction plans will be included within many proposals

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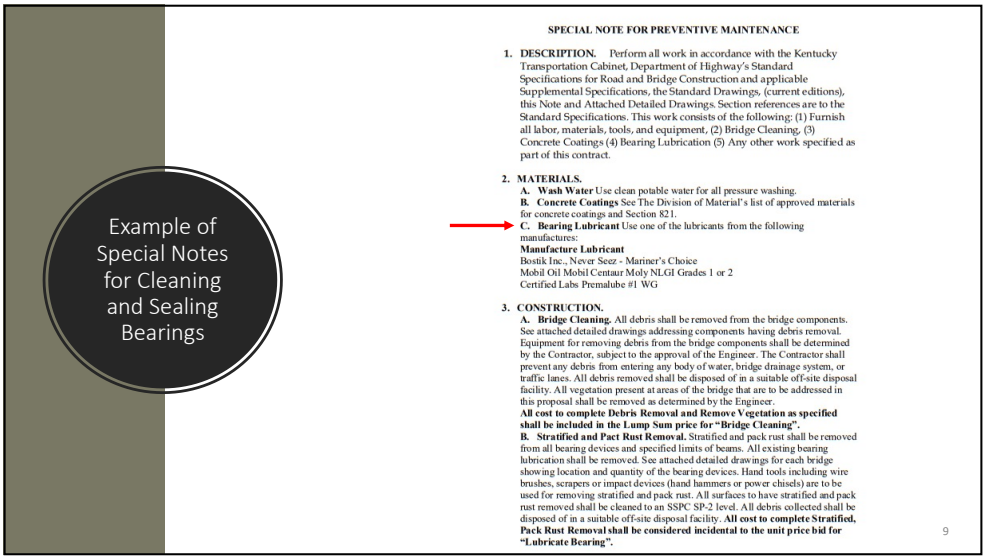
Example of Special Notes for Cleaning and Sealing Bearings
SPECIAL NOTE FOR PREVENTIVE MAINTENANCE
1. DESCRIPTION. Perform all work in accordance with the Kentucky Transportation Cabinet, Department of Highway's Standard Specifications for Road and Bridge Construction and applicable Supplemental Specifications, the Standard Drawings, (current editions), this Note and Attached Detailed Drawings. Section references are to the Standard Specifications. This work consists of the following: (1) Furnish all labor, materials, tools, and equipment, (2) Bridge Cleaning, (3) Concrete Coatings (4) Bearing Lubrication (5) Any other work specified as part of this contract.
2. MATERIALS.
A. Wash Water Use clean potable water for all pressure washing.
B. Concrete Coatings See The Division of Material's list of approved materials for concrete coatings and Section 821.
C. Bearing Lubricant Use one of the lubricants from the following manufactures:
Manufacture Lubricant
Bostik Inc., Never Seez - Mariner's Choice
Mobil Oil Mobil Centaur Moly NLGI Grades 1 or 2
Certified Labs Premalube #1 WG
3. CONSTRUCTION.
A. Bridge Cleaning. All debris shall be removed from the bridge components. See attached detailed drawings addressing components having debris removal. Equipment for removing debris from the bridge components shall be determined by the Contractor, subject to the approval of the Engineer. The Contractor shall prevent any debris from entering any body of water, bridge drainage system, or traffic lanes. All debris removed shall be disposed of in a suitable off-site disposal facility. All vegetation present at areas of the bridge that are to be addressed in this proposal shall be removed as determined by the Engineer.
All cost to complete Debris Removal and Remove Vegetation as specified shall be included in the Lump Sum price for "Bridge Cleaning".
B. Stratified and Pact Rust Removal. Stratified and pack rust shall be removed from all bearing devices and specified limits of beams. All existing bearing lubrication shall be removed. See attached detailed drawings for each bridge showing location and quantity of the bearing devices. Hand tools including wire brushes, scrapers or impact devices (hand hammers or power chisels) are to be used for removing stratified and pack rust. All surfaces to have stratified and pack rust removed shall be cleaned to an SSPC SP-2 level. All debris collected shall be disposed of in a suitable off-site disposal facility. All cost to complete Stratified, Pack Rust Removal shall be considered incidental to the unit price bid for "Lubricate Bearing".
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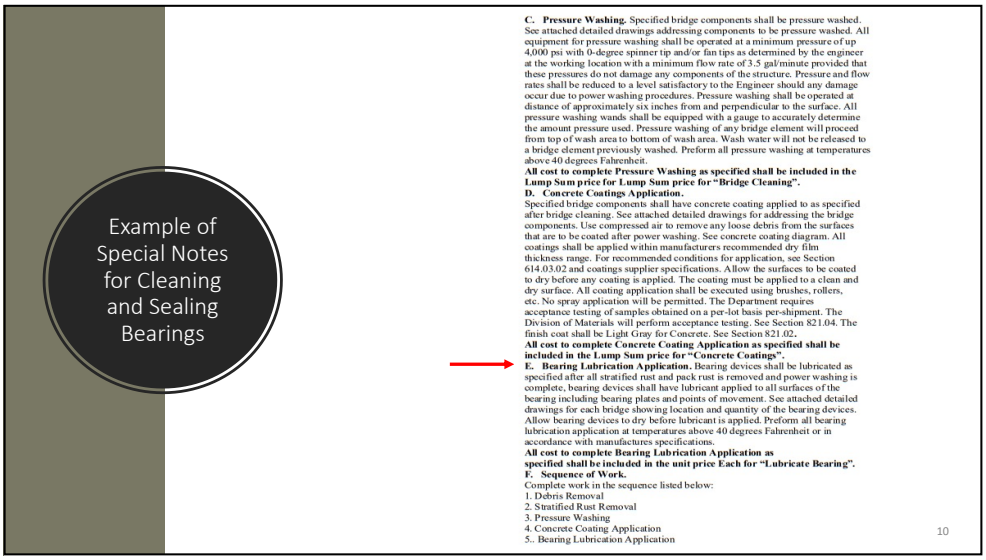
Example of Special Notes for Cleaning and Sealing Bearings
C. Pressure Washing. Specified bridge components shall be pressure washed. See attached detailed drawings addressing components to be pressure washed. All equipment for pressure washing shall be operated at a minimum pressure of up 4,000 psi with 0-degree spinner tip and/or fan tips as determined by the engineer at the working location with a minimum flow rate of 3.5 gal/minute provided that these pressures do not damage any components of the structure. Pressure and flow rates shall be reduced to a level satisfactory to the Engineer should any damage occur due to power washing procedures. Pressure washing shall be operated at distance of approximately six inches from and perpendicular to the surface. All pressure washing wands shall be equipped with a gauge to accurately determine the amount pressure used. Pressure washing of any bridge element will proceed from top of wash area to bottom of wash area. Wash water will not be released to a bridge element previously washed. Preform all pressure washing at temperatures above 40 degrees Fahrenheit.
All cost to complete Pressure Washing as specified shall be included in the Lump Sum price for Lump Sum price for "Bridge Cleaning".
D. Concrete Coatings Application.
Specified bridge components shall have concrete coating applied to as specified after bridge cleaning. See attached detailed drawings for addressing the bridge components. Use compressed air to remove any loose debris from the surfaces that are to be coated after power washing. See concrete coating diagram. All coatings shall be applied within manufacturers recommended dry film thickness range. For recommended conditions for application, see Section 614.03.02 and coatings supplier specifications. Allow the surfaces to be coated to dry before any coating is applied. The coating must be applied to a clean and dry surface. All coating application shall be executed using brushes, rollers, etc. No spray application will be permitted. The Department requires acceptance testing of samples obtained on a per-lot basis per-shipment. The Division of Materials will perform acceptance testing. See Section 821.04. The finish coat shall be Light Gray for Concrete. See Section 821.02.
All cost to complete Concrete Coating Application as specified shall be included in the Lump Sum price for "Concrete Coatings".
E. Bearing Lubrication Application. Bearing devices shall be lubricated as specified after all stratified rust and pack rust is removed and power washing is complete, bearing devices shall have lubricant applied to all surfaces of the bearing including bearing plates and points of movement. See attached detailed drawings for each bridge showing location and quantity of the bearing devices. Allow bearing devices to dry before lubricant is applied. Preform all bearing lubrication application at temperatures above 40 degrees Fahrenheit or in accordance with manufactures specifications.
All cost to complete Bearing Lubrication Application as specified shall be included in the unit price Each for "Lubricate Bearing".
F. Sequence of Work.
Complete work in the sequence listed below:
1. Debris Removal
2. Stratified Rust Removal
3. Pressure Washing
4. Concrete Coating Application
5.. Bearing Lubrication Application
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Example of Special Notes for Cleaning and Sealing Bearings

G. Inspection.
The Cabinet will provide inspection for all items required in this contract. Visual inspection will be required upon completion of each work item for each structure component or at the discretion of the Engineer at any time. All visual inspection shall be performed within arm's length distance.

1. Debris Removal: Visual Inspection.
2. Stratified Rust or Pack Rust Removal: Visual Inspection and Scraper Test any surface cleaned to SSPC SP2 will be inspected by a dull scraper test to ascertain adherence of existing coating and a hammer test for tightness of pact rust.
3. Power Washing: Visual Inspection.
4. Concrete Coating: Prime Coat Application Check for wet film thickness*, and defects in the Paint. Finish Coat Application Check for wet film thickness*, paint appearance, color and quality of application.
5. Bearing Lubrication. Visual Inspection.

H. Verifying Field Conditions. The Contractor shall be familiar with all conditions at each bridge site. The Cabinet will not consider any claims due to the Contractor having not familiarized themselves with requirements of this work.
I. Residual Lead. Residual lead paint may still be on bridge. The Contractor is advised to take all necessary protective measures including worker safety and environmental regulations when performing surface preparation. The Department will not consider any claims based on residual lead paint.
J. Damage to the structure. The Contractor shall bear all responsibility and expense for any and all damage to the structure during the repair work, even to the removal and replacement of a fallen span, should the fallen span result from the Contractors actions.

4. MEASUREMENT.
A. Bridge Cleaning. The Cabinet will measure this item by Lump Sum, completed and accepted.
B. Concrete Coating. The Cabinet will measure this item by Lump Sum, completed and accepted.
C. Bearing Lubrication: The Cabinet will measure this item by Each, completed and accepted.

5. PAYMENT.
A. Bridge Cleaning (24981EC). Payment at the contract unit price for "Lump Sum" is full compensation for Debris Removal, Deck Drain Cleaning, Pressure Washing and all incidental items required to complete this with as specified in this note and attached detailed drawings.
B. Concrete Coating (24982EC). Payment at the contract unit price for "Lump Sum" is full compensation for applying the concreate coatings and all incidental items required to complete this work as specified in this note and attached detailed drawings.
C. Bearing Lubrication (24983EC): Payment at the contract unit price "Each" is full compensation for applying bearing lubrication and all incidental items required to complete this work as specified in this note and attached detailed drawings.

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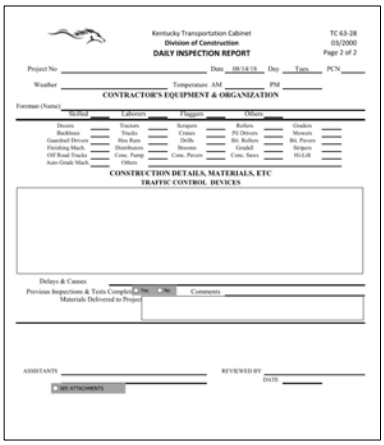
KYTC DWR


Kentucky Transportation Cabinet
Division of Construction
DAILY INSPECTION REPORT
TC 63-28
03/2000
Page 1 of 2

PAY QUANTITIES

PAY QUANTITY DETAILS, REFERENCES, SKETCHES, ETC.


Kentucky Transportation Cabinet
Division of Construction
DAILY INSPECTION REPORT
TC 63-28
03/2000
Page 2 of 2

CONTRACTOR'S EQUIPMENT & ORGANIZATION

CONSTRUCTION DETAILS, MATERIALS, ETC
TRAFFIC CONTROL DEVICES

https://transportation.ky.gov/Construction/Pages/Construction-Engineer%27s-Resource-Center.aspx

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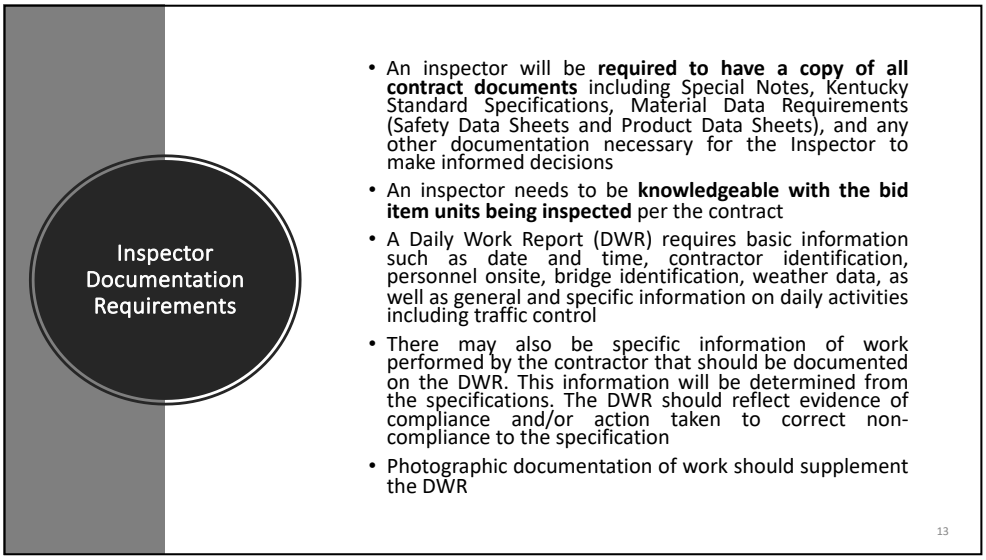
Inspector Documentation Requirements
• An inspector will be **required to have a copy of all contract documents** including Special Notes, Kentucky Standard Specifications, Material Data Requirements (Safety Data Sheets and Product Data Sheets), and any other documentation necessary for the Inspector to make informed decisions
• An inspector needs to be **knowledgeable with the bid item units being inspected** per the contract
• A Daily Work Report (DWR) requires basic information such as date and time, contractor identification, personnel onsite, bridge identification, weather data, as well as general and specific information on daily activities including traffic control
• There may also be specific information of work performed by the contractor that should be documented on the DWR. This information will be determined from the specifications. The DWR should reflect evidence of compliance and/or action taken to correct non-compliance to the specification
• Photographic documentation of work should supplement the DWR
13

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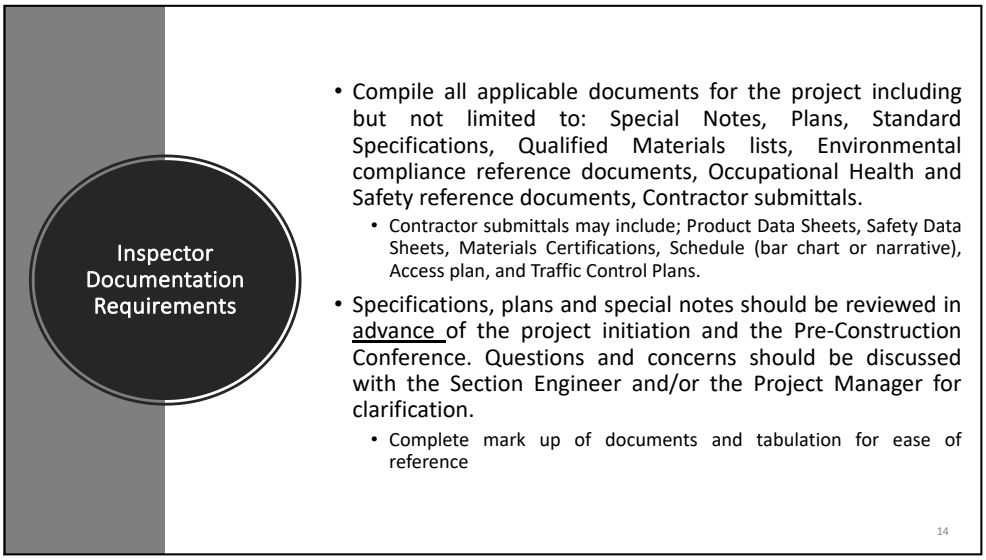
Inspector Documentation Requirements
• Compile all applicable documents for the project including but not limited to: Special Notes, Plans, Standard Specifications, Qualified Materials lists, Environmental compliance reference documents, Occupational Health and Safety reference documents, Contractor submittals.
• Contractor submittals may include; Product Data Sheets, Safety Data Sheets, Materials Certifications, Schedule (bar chart or narrative), Access plan, and Traffic Control Plans.
• Specifications, plans and special notes should be reviewed in advance of the project initiation and the Pre-Construction Conference. Questions and concerns should be discussed with the Section Engineer and/or the Project Manager for clarification.
• Complete mark up of documents and tabulation for ease of reference
14

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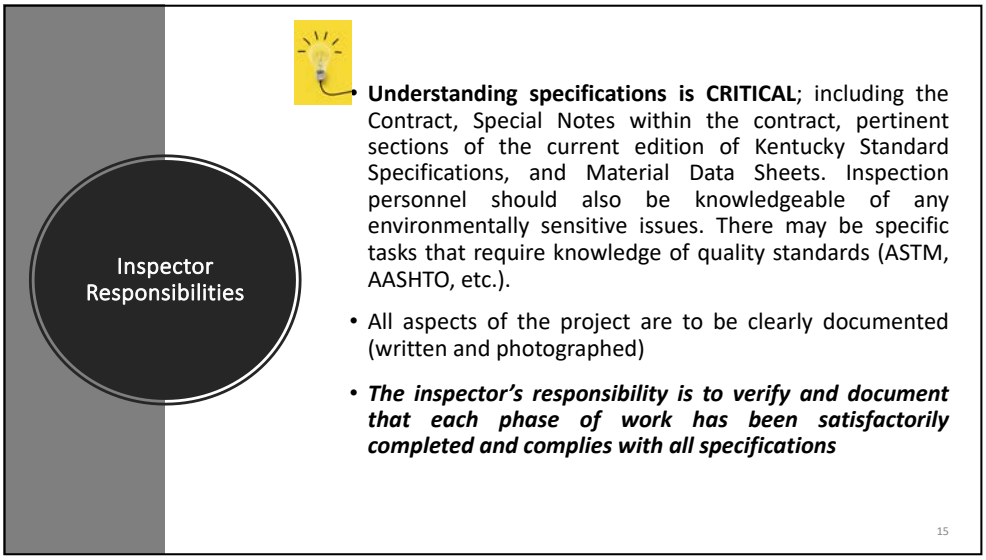
Inspector Responsibilities
Understanding specifications is CRITICAL; including the Contract, Special Notes within the contract, pertinent sections of the current edition of Kentucky Standard Specifications, and Material Data Sheets. Inspection personnel should also be knowledgeable of any environmentally sensitive issues. There may be specific tasks that require knowledge of quality standards (ASTM, AASHTO, etc.).
All aspects of the project are to be clearly documented (written and photographed)
The inspector's responsibility is to verify and document that each phase of work has been satisfactorily completed and complies with all specifications
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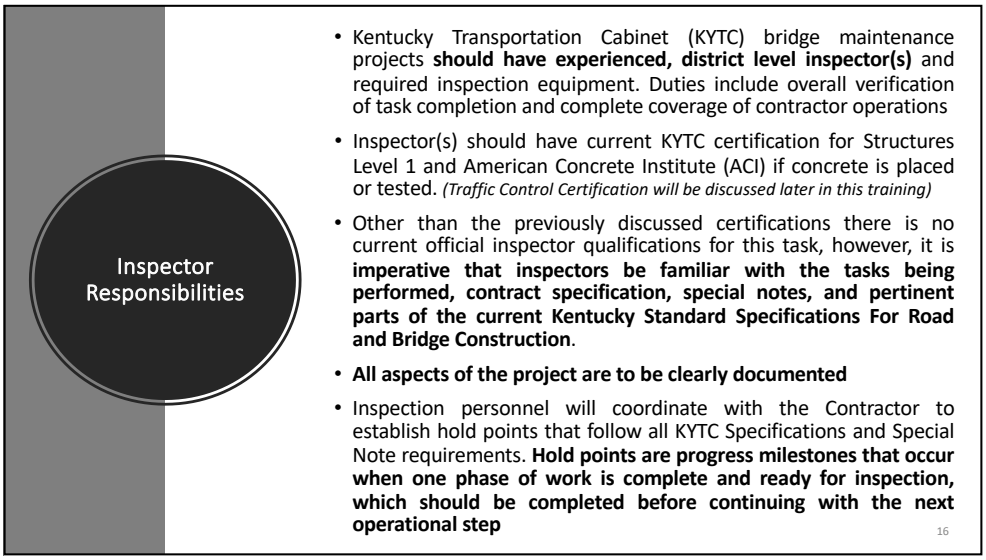
Inspector Responsibilities
Kentucky Transportation Cabinet (KYTC) bridge maintenance projects should have experienced, district level inspector(s) and required inspection equipment. Duties include overall verification of task completion and complete coverage of contractor operations
Inspector(s) should have current KYTC certification for Structures Level 1 and American Concrete Institute (ACI) if concrete is placed or tested. (Traffic Control Certification will be discussed later in this training)
Other than the previously discussed certifications there is no current official inspector qualifications for this task, however, it is imperative that inspectors be familiar with the tasks being performed, contract specification, special notes, and pertinent parts of the current Kentucky Standard Specifications For Road and Bridge Construction.
All aspects of the project are to be clearly documented
Inspection personnel will coordinate with the Contractor to establish hold points that follow all KYTC Specifications and Special Note requirements. Hold points are progress milestones that occur when one phase of work is complete and ready for inspection, which should be completed before continuing with the next operational step
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Inspector Responsibilities

- An inspector is required to perform specific tasks in accordance with Quality Standards. These standards are necessary to ensure specific measurements taken during the inspection process are performed consistently. Some of these tasks/measurements include surface preparation, wet and dry film thickness, adhesion, ambient conditions, and moisture. Some may be destructive in nature and will require the contractor to perform repair work. **Contact KYTC Central Office Construction to ensure coordination with the Bridge Painting Liaison for projects that include coating applications.**
- With assistance of the Engineer conduct the following:
  - Using the contract documents, create a formal or informal project check list including activities and responsibilities for QC and QA inspection personnel
  - Determine hold points (inspection points where acceptance of a phase of work must be completed to allow work to proceed to the next phase) and place them in a logical order
  - Determine inspection methods, inspection tools needed, when and how to perform inspections
  - Determine how to document inspections and hold point acceptance

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Environmental and Worker Safety

The **Contractor is solely responsible for both environmental and worker safety**, however this does not relieve the inspector of the responsibility to monitor, report, and document observed practices or issues. The contractor should hold daily safety meetings

The inspector needs to be aware of the environmental regulations to which the contractor must comply. The contractor may be required to submit an Environmental Compliance Plan. Depending on the size of the project, a Storm Water Permit or other permits may be required by Kentucky Division of Water. Also, certain urban jurisdictions may require an erosion and sediment control plan to be filed locally prior to work beginning. Some of the permitting requirements and regulations can be found in the Kentucky Administrative Regulations, Title 401, Chapters 4, 5, 6, 8, 9, 10, and 11. The contractor is required to conform to Kentucky Revised Statute 224.70-110 "General Prohibition Against Water Pollution." There may also be required permitting from the United States Army Corps of Engineers (USACE)

A variety of substances and materials found on construction sites can become pollutants of concern if they are washed into nearby water bodies, dumped onto porous soils, or discharged directly to surface waters or groundwater. When required by KYTC the contractor will submit the Best Management Practice (BMP) for the project. Inspectors should be familiar with these submittals and the use of "Controlling Erosion, Sediment, and Pollutant Runoff from Construction Sites" as a reference (see BMP Manual link below)

Use this link to access the KYTC Drainage Resource Materials:
https://transportation.ky.gov/Highway-Design/Pages/Drainage-Resource-Materials.aspx

Use this link to access the BMP Manual:
Https://eec.ky.gov/Environmental-Protection/Forms%20Library/09BMPManual_Final.pdf

Click here for a Special Note on Erosion Prevention and Sediment Control

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Traffic Control Plan

- **The Contractor is responsible for conformance to the requirements in the Traffic Control Plan** (TCP), Proposal, plan sheets, specifications, and the Manual on Uniform Traffic Control Devices (MUTCD). There may be other requirements not listed here.
- All Traffic Control Supervisors, Technicians, and Flaggers shall have current temporary work zone traffic control certifications.
- All equipment should be maintained for safe operation and safety checks should be performed and documented daily.
- Document traffic control concerns, notes, reviews, updates, accidents or any other applicable conditions on the DWR

ACTION: Read the TCP to become familiar with the proposed temporary work zone activities. Obtain the TC 63-67 (Traffic Control Inspection Report) which can be utilized for traffic control reviews as needed. Link below can be utilized to access the TC-63-67 Report

https://transportation.ky.gov/Organizational-Resources/Pages/Forms-Library-(TC-63).aspx

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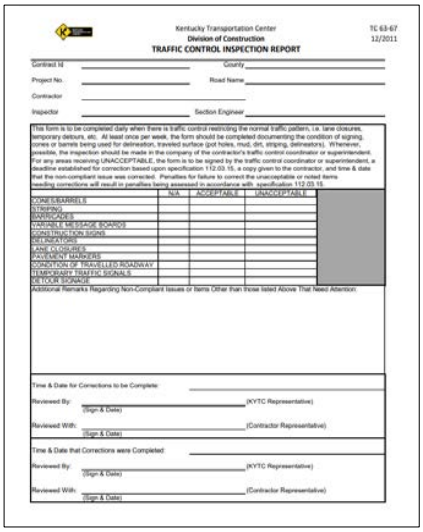
Traffic Control Inspection Report



Kentucky Transportation Center
Division of Construction
TRAFFIC CONTROL INSPECTION REPORT
TC 63-67
12/2011

Contract Id: County:
Project No.: Road Name:
Contractor:
Inspector: Section Engineer:

This form is to be completed daily when there is traffic control restricting the normal traffic pattern, i.e. lane closures, temporary detours, etc. At least once per week, the form should be completed documenting the condition of signing, cones or barrels being used for delineation, traveled surface (pot holes, mud, dirt, striping, delinestors). Whenever possible, the inspection should be made in the company of the contractor's traffic control coordinator or superintendent. For any areas receiving UNACCEPTABLE, the form is to be signed by the traffic control coordinator or superintendent, a deadline established for correction based upon specification 112.03.15, a copy given to the contractor, and time & date that the non-compliant issue was corrected. Penalties for failure to correct the unacceptable or noted items needing corrections will result in penalties being assessed in accordance with specification 112.03.15.

	N/A	ACCEPTABLE	UNACCEPTABLE
CONES/BARRELS			
STRIPING			
BARRICADES			
VARIABLE MESSAGE BOARDS			
CONSTRUCTION SIGNS			
DELINEATORS			
LANE CLOSURES			
PAVEMENT MARKERS			
CONDITION OF TRAVELLED ROADWAY			
TEMPORARY TRAFFIC SIGNALS			
DETOUR SIGNAGE			

Additional Remarks Regarding Non-Compliant Issues or Items Other than those listed Above That Need Attention:

Time & Date for Corrections to be Complete:
Reviewed By: (KYTC Representative)
(Sign & Date)
Reviewed With: (Contractor Representative)
(Sign & Date)

Time & Date that Corrections were Completed:
Reviewed By: (KYTC Representative)
(Sign & Date)
Reviewed With: (Contractor Representative)
(Sign & Date)

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Pre-Construction Activities

Prior to the contractor beginning work ensure you have the necessary items to perform your activities. Common items include:

a) Contract documents (KY Std Spec, plans, proposal and any special notes)

b) Quality Assurance Plan

c) Safety (environmental & worker), Traffic Control Plan, Schedule and all Contractor Submittals including Material Product Data Sheets

d) Inspector Documentation Requirements

e) Personal Protective Equipment (PPE); ***additional equipment may be required for environmental or hazardous exposures***

f) Field tools; ***specialized inspection equipment/tools may be necessary***

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Obtain Personal Protective Equipment *(Pre-Construction)*

- Class 2 (day) or 3 (night) high visibility apparel
- Hard hat
- Hearing protection
- Safety glasses w/side shields
- Gloves
- Steel toe boots
- Respirator may be required **(Contact Bridge Painting Liaison)**
- Fall protection in accordance with 29 CFR Part 1926 (as required)

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Obtain Tools and Equipment
(Pre-Construction)

- A camera of sufficient quality to enlarge images for viewing critical details. The camera on most cell phones is usually adequate for photo documentation.
- Wet Film Thickness (WFT) Gauge **(Contact Bridge Painting Liaison)**
- Equipment to measure ambient conditions **(Contact Bridge Painting Liaison)**
- Flashlight
- Dull scraper
- Claw hammer or handheld sledgehammer
- Inspection mirror
- Measuring tape
- Notepad or ability to take notes
- Any other equipment necessary to perform the inspection duties

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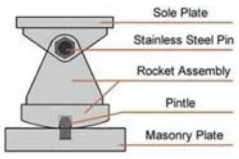
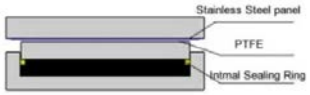
Examples of Common Bearing Types for Bridges

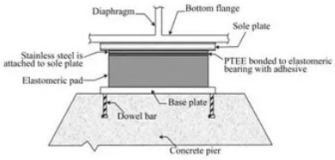


Rocker and pin bearings

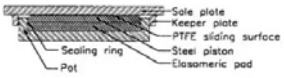
Roller bearings



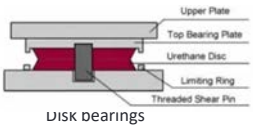
Sliding bearings



Elastomeric bearings



Pot bearings



Disk bearings

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Pre-Existing Conditions of Bearing Devices and Surrounding Area

- Prior to the contractor beginning work, perform an inspection of the bearing devices and surrounding areas to determine current condition of bearings and accessibility to perform work
- Bearing devices may be in excellent condition having recently been cleaned and painted, newly installed bearings, lightly rusted or very heavily rusted
- Prior to the contractor beginning their cleaning operations document all items observed in your daily work report(s)
- Make notes about any items that need to be removed and cleaned in order to achieve the specified debris removal and pressure washing cleanliness

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Pre-Existing Conditions Bearing Devices

Heavily Rusted Bearing

Recently Cleaned & Painted Bearing

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Pre-Existing Conditions
Difficult to access with debris present
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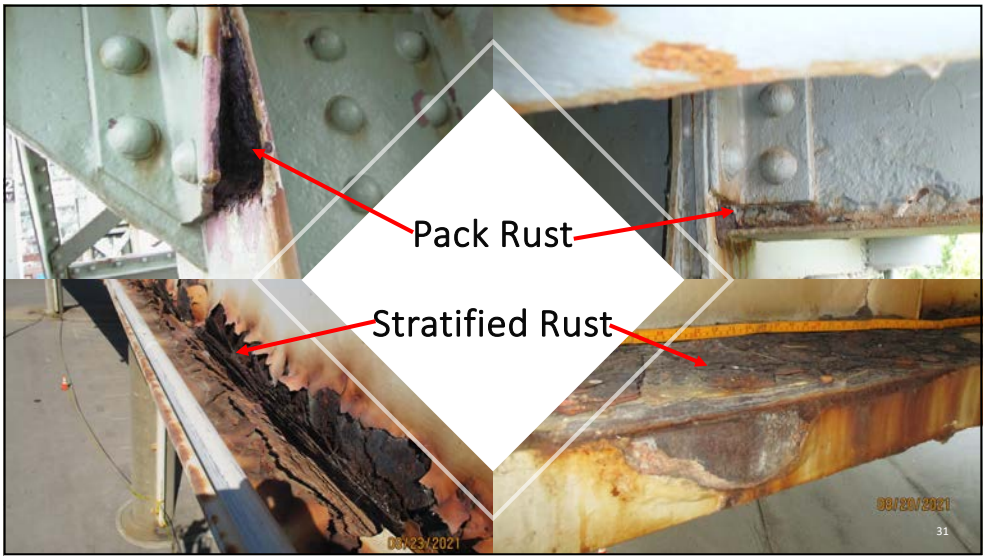

31

Inspection Means and Methods

- Observe, document, and report large debris, vegetation, and litter removal along with the means and methods used. Photos recommended
- Observe, document, and report removal of hydrocarbons, stratified or pack rust, loose paint, and any other contaminants from the bearings along with the means and methods utilized prior to pressure washing operations. Photos recommended
  - Stratified corrosion progresses parallel to the metal surface in such a manner that underlying layers are gradually separated
  - Pack rust is a type of corrosion that occurs due to atmospheric conditions within restricted spaces, such as crevices and joints of metallic components
- Inspect the dry cleaning of the bearings using visual observations, a 2-inch dull putty knife, handheld sledgehammer, or other items to ensure any remaining materials are firmly adherent (see inspection means and methods)

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Inspection Means and Methods

- Perform a visual inspection to check for removal of hydrocarbons, loose paint, loose rust and other contaminants and debris. Document results. Photos recommended
- Use a dull putty knife applying reasonable pressure to remove broken/lifted paint. If no paint is removed, the cleaning is satisfactory. Document results. Photos recommended
- Use a handheld sledgehammer to inspect for pack rust/stratified removal by striking the steel surfaces using handheld sledgehammer. If no rust is removed, the cleaning is satisfactory. Document results. Photos recommended

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Pressure Washing Bearings

- **Note: pressure washing is typically performed after mechanical cleaning of bearings, check special notes or specification.**
- Ensure that the water being used is potable and from an approved source. Document amounts of water used, when tanks filled and where the source is located
- Ensure proper equipment is used. Document the brand and model of pressure washers, size and type wands and tips (0-degree spinner tip typically required, 3.5 gal/min. flow rate typical, Minimum 4000 psi typical). Document the equipment utilized on daily work reports. Photos are also recommended
- Ensure specified stand off distance is maintained, and the wand is held perpendicular to surface being washed. Documentation that satisfactory stand off distance and wand placement is being achieved is typically obtained by photographs and noted in daily work reports

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Pressure Washing Bearings

- Ensure any stuck-on contaminants are removed, according to specification, prior to pressure washing operations
  - i.e., asphalt, paint, adhesives, etc.
- Ensure pressure washing operations proceed from top to bottom of any bridge elements
- Ensure that pressure washing operations do not damage any surrounding areas
- Ensure runoff water from pressure washing operations are not contaminating previously washed areas
- Ensure runoff water is directed to ground surfaces or captured as directed by the special notes, plans or standard specification, and is **within compliance of environmental regulations**

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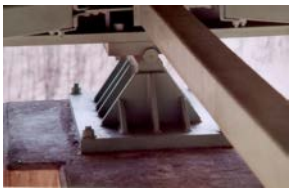
Pressure Washing Bearings

Bearing before washing



Bearing after washing

36

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Bearing Sealing/Greasing Inspection

Clean unsealed/ungreased bearing

Sealed/greased bearing

37

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Sealing/Greasing Inspection And Reporting

- Ensure all cleaning, rust removal, pressure washing, and preparation items have been completed, documented and reported. Verify checklist and hold point items have been completed. Photos recommended
- Sometimes project notes will require the application of a rust inhibitor prior to the sealing of the bearings. Visually inspect the rust inhibitor to confirm the approved material has been applied to all steel areas not containing tightly adherent intact paint. Document and report all means, methods and findings. Photos recommended
- The inspector will visually inspect to ensure the **entire bearing assembly from the bottom flange to the sole plate attached to the substructure is completely covered in a continuous heavy film of the specified grease**. It is recommended to use an inspection mirror to see hard to reach areas. Document and report all means, methods and findings. Photos recommended

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Non-Compliant Greased Bearings

The entire bearing assembly from the bottom flange to the sole plate attached to the substructure must be completely covered in a continuous heavy film of the specified grease. Examples below show bearings that were not properly greased and require additional work for compliance with KYTC requirements. Use hand help inspection mirrors to view the back of bearings.

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General Summary

- Bearing cleaning and sealing/greasing is an important part of the KYTC Bridge Maintenance Program
- Bearing cleaning removes materials from the structure that have a negative impact on the life cycle and function of the bearing devices
- Sealing of bearings with an approved marine grade grease after proper cleaning and surface preparation provides a barrier to the bearing devices from salts/chlorides and other contaminants

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General Summary *continued*

Evaluate onsite pre-existing conditions of bearings and adjacent areas prior to beginning any work operations. Observe and report:

- Is there any debris present?
  - Vegetation, concrete rubble, stone, etc.
- Access to work area. Ensure a safe ingress/egress is maintained
- Condition of bearing assemblies
  - Painted and intact, painted but in poor condition, rusted, heavily rusted

Method of Inspection:

- Visual – Document and photograph

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General Summary *continued*

During mechanical cleaning operations of bearing devices observe and document:

- Mechanical removal of debris, vegetation, loose paint, stratified rust and pack rust.
- Examples of means and methods

Methods of Inspection:

- Use of visual method of inspections along with instrument inspections as necessary
- Use a dull putty knife and handheld sledgehammer
- Document and photograph

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General Summary
continued

Items to observe and report for bearing sealing:

- Ensure mechanical removal paint, asphalt, adhesives, etc. and pressure washing requirements have been met
- Verify application of specified grease to bearing devices

Method of Inspection:

- Visual – Document and photograph

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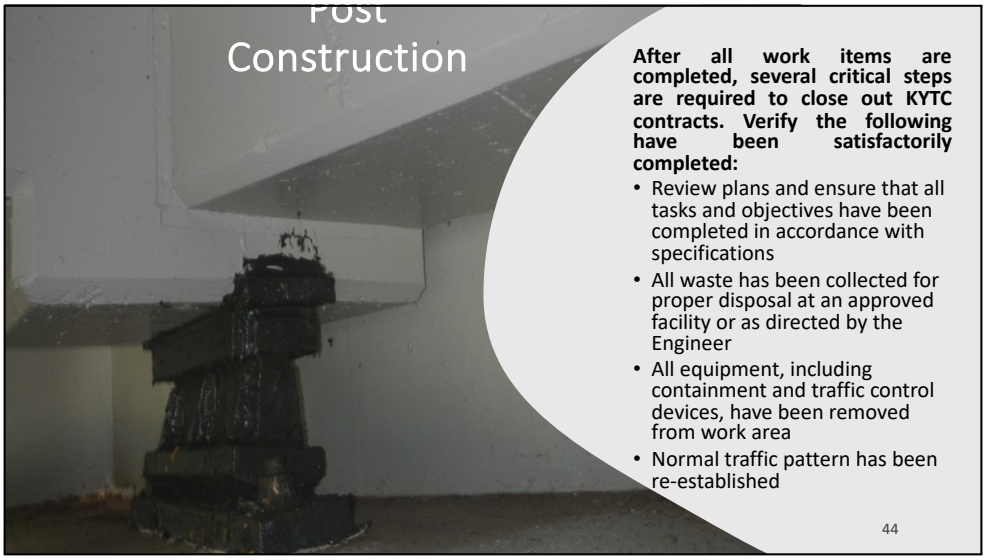
43



Post Construction

After all work items are completed, several critical steps are required to close out KYTC contracts. Verify the following have been satisfactorily completed:

- Review plans and ensure that all tasks and objectives have been completed in accordance with specifications
- All waste has been collected for proper disposal at an approved facility or as directed by the Engineer
- All equipment, including containment and traffic control devices, have been removed from work area
- Normal traffic pattern has been re-established

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Example of Special Note for Erosion Prevention and Sediment Control

Special Note For:
Erosion Prevention and Sediment Control
Item xx-xxxx County Description

- The Contractor shall be responsible for filing the Kentucky Pollution Discharge Elimination System (KPDES) KYR10 permit Notice of Intent (NOI) with the Kentucky Division of Water (DOW) and any KPDES local Municipal Separate Storm Sewer System (MS4) program that has jurisdiction. The NOI shall name the contractor as the Facility Operator and include the KYTC Contract ID Number (CID) for reference.
- The Contractor shall perform all temporary erosion/sediment control functions including providing a Best Management Practice (BMP) Plan, conducting required inspections, modifying the BMP plan documents as construction progresses and documenting the installation and maintenance of BMPs in conformance with the KPDES KYR10 permit effective on August 1, 2009, or a permit re-issued to replace that KYR10 permit. This work shall be conducted in conformance with the requirements of Section 213 of KYTC 2008 Department of Highways, Standard Specifications for Road and Bridge Construction.
- Contrary to Section 213.03.03, paragraph 2, the Engineer shall conduct inspections as needed to verify compliance with Section 213 of KYTC 2008 Department of Highways, Standard Specifications for Road and Bridge Construction. The Engineer's inspections shall be performed a minimum of once per month and within seven days after a storm of ½ inch or greater. Copies of the Engineer's inspections shall not be provided to the contractor unless improvements to the BMP's are required. The contractor shall initiate corrective action within 24 hours of any reported deficiency and complete the work within 5 days. The Engineer shall use Form TC 63-61 A for this report. Inspections performed by the Engineer do not relieve the Contractor of any responsibility for compliance with the KPDES permit.
- Contrary to Section 213.05, bid items for temporary BMPs will not be listed and will be replaced with one lump sum item for the services. Payment will be pro-rated based on the Project Schedule as submitted by the Contractor and as agreed to by the Engineer.
- The contractor shall be responsible for applying "good engineering practices" as required by the KPDES permit. The contractor may use any temporary BMPs with the approval of the KYTC Engineer.
- The contractor shall provide the Engineer copies of all documents required by the KPDES permit at the time they are prepared.
- The contractor shall be responsible for the examination of the soils to be encountered and make his own independent determination of the temporary BMPs that will be required to accomplish effective erosion prevention and sediment control.
- The Contractor shall be responsible for filing the KPDES permit Notice of Termination (NOT) with the Kentucky DOW and any local MS4 program that has jurisdiction. The NOT shall be filed after the Engineer agrees that the project is stabilized, or the project has been formally accepted.

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Appendix D Bridge Deck Expansion Joints

KYTC

Bridge Preventive Maintenance

Inspection Training Module

Expansion Joints

TEAM KENTUCKY®
TRANSPORTATION CABINET

1

Re-Sealing and Repairing Joints Introduction

- The structural materials of bridge decks are subjected to movement due to thermal expansion and contraction, live loads, and physical changes, such as creep and shrinkage.
- Expansion joints are designed to protect bridge decks from damage due to these movements.
  - Early designs were mainly open joints which did not provide protection from water, debris, and other contaminates reaching the lower bridge components.
  - Current designs use waterproof seals or other means of diverting water and corrosive contaminants from de-icing chemicals while maintaining protection from movement.
- Expansion joints are frequently one of the first components of a bridge deck to fail. The failure of expansion joints is not only a problem in Kentucky but nation wide. Repairing or replacing expansion joints are essential to extending the life of any bridge.
- Joint materials and design are not necessarily the cause of failures. Poor installation and/or inadequate maintenance can play a major part in the service life of expansion joints, therefore, proper inspection is critical.

2

Re-Sealing and Repairing Joints Index

This training module will focus on the following topics:

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KYTC Links

- https://transportation.ky.gov/Construction
  - Home page with many useful links and documents for inspection
- https://transportation.ky.gov/Construction/Pages/Kentucky-Standard-Specifications.aspx
  - Standard Specifications and Supplemental Specifications
- https://transportation.ky.gov/Construction/Pages/Construction-Engineer%27s-Resource-Center.aspx
  - Includes several inspection documents and spreadsheets
- https://transportation.ky.gov/Construction/Pages/Special-Notes-Special-Provisions.aspx
  - Special Notes and Provisions
- https://transportation.ky.gov/Highway-Design/Pages/Standard-Drawings-2020.aspx
  - Std Drawings, Sepia Drawings and other useful links
- https://transportation.ky.gov/Construction-Procurement/Pages/default.aspx
  - Contract Proposals and Letting Information
- https://transportation.ky.gov/Organizational-Resources/Pages/Forms-Library.aspx
  - KYTC forms and templates
- https://transportation.ky.gov/Materials
  - Home page with many useful links and documents such as Sampling Manual and LAM
- https://transportation.ky.gov/Materials/pages/List-Of-Approved-Materials.aspx
  - KYTC List of Approved Materials (LAM)

4

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Kentucky Standard Specifications

Standard Specifications

Type Name

Spec Year : **2019** (11)

- 100 General Provisions 2019
- 200 Earthwork 2019
- 300 Aggregate Base Courses 2019
- 400 Asphalt Pavements 2019
- 500 PCC Pavement and Non-Structural Concrete Construction 2019
- 600 Structures and Concrete 2019
- 700 Drainage, Traffic, and Roadside Construction 2019
- 800 Materials Details 2019
- Appendix A Tabulation of Construction Tolerances 2019
- Appendix B Index 2019
- Complete KYTC Standard Specifications - 2019

Supplemental Specifications

Type Name

Spec Year : **2019** (7)

- Supplemental Specs Effective with May 26, 2022 Letting
- Supplemental Specs Effective with November 19 2021 Letting
- Supplemental Specifications Effective with June 25 2021 Letting
- Supplemental Specification Effective with September 25, 2020 Letting
- Supplemental Specifications Effective with July 24, 2020 Letting rev 20200617
- Supplemental Specifications Effective with March 20, 2020 Letting
- Supplemental Specifications Effective with July 26 2019 Letting

https://transportation.ky.gov/Construction/Pages/Kentucky-Standard-Specifications.aspx

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Kentucky Standard Specifications

- Kentucky Standard Specifications are a compilation of guidelines for construction and maintenance requirements useful to engineers for developing of projects and contracts.
- When referenced in KYTC contracts they become legally binding specifications.
- Inspectors need to be knowledgeable of these contractual specifications as they are pertinent to the inspection process.

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Examples of Safety Data and Product Data Sheets

Inspection staff should have a copy of SDS & PDS for all materials/chemicals being utilized by the contractor.

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KYTC Contract Proposal

(Example)

- KYTC contract proposals will include detailed information about the project. It will include any Special Notes for construction and will include the bid item list.
- **Inspection personnel should review the contract proposal carefully; paying close attention to the Special Notes.**

TABLE OF CONTENTS

Kentucky UNBRIDLED SPIRIT

CALL NO. 318
CONTRACT ID. 182971
MARSHALL COUNTY
FED/STATE PROJECT NUMBER FE02 079 0024 B00116L 28.52
DESCRIPTION I-24 OVER PADUCAH AND LOUISVILLE RAILROAD IN MARSHALL COUNTY
WORK TYPE BRIDGE REPAIRS EXPANSION JOINTS
PRIMARY COMPLETION DATE 1/31/2019

LETTING DATE: December 07,2018
Sealed Bids will be received electronically through the Bid Express bidding service until 10:00 AM EASTERN STANDARD TIME December 07,2018. Bids will be publicly announced at 10:00 AM EASTERN STANDARD TIME.

NO PLANS ASSOCIATED WITH THIS PROJECT.

NOTE:
Construction plans will be included within many proposals

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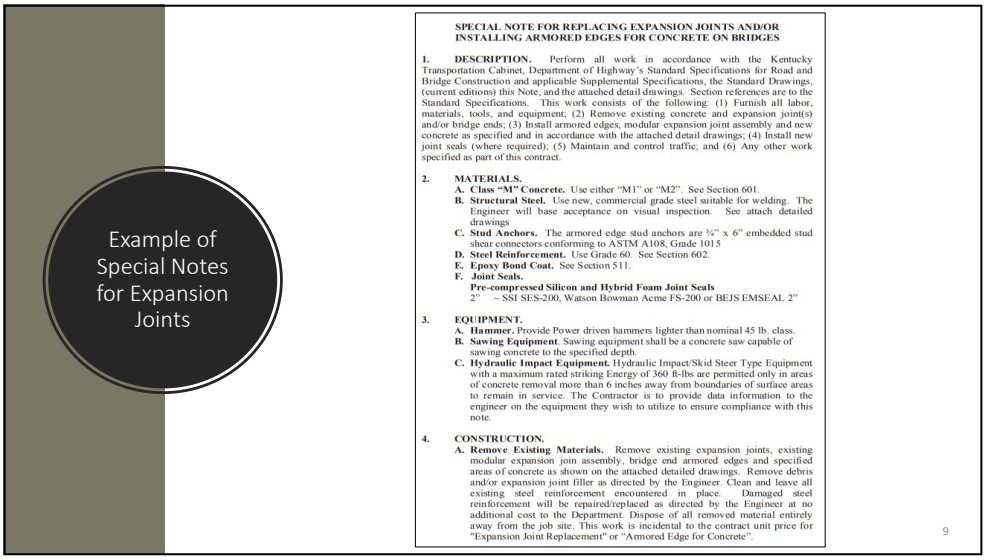
Example of Special Notes for Expansion Joints
SPECIAL NOTE FOR REPLACING EXPANSION JOINTS AND/OR INSTALLING ARMORED EDGES FOR CONCRETE ON BRIDGES
1. DESCRIPTION. Perform all work in accordance with the Kentucky Transportation Cabinet, Department of Highway's Standard Specifications for Road and Bridge Construction and applicable Supplemental Specifications, the Standard Drawings, (current editions) this Note, and the attached detail drawings. Section references are to the Standard Specifications. This work consists of the following: (1) Furnish all labor, materials, tools, and equipment; (2) Remove existing concrete and expansion joint(s) and/or bridge ends; (3) Install armored edges, modular expansion joint assembly and new concrete as specified and in accordance with the attached detail drawings; (4) Install new joint seals (where required); (5) Maintain and control traffic; and (6) Any other work specified as part of this contract.
2. MATERIALS.
A. Class "M" Concrete. Use either "M1" or "M2". See Section 601.
B. Structural Steel. Use new, commercial grade steel suitable for welding. The Engineer will base acceptance on visual inspection. See attach detailed drawings
C. Stud Anchors. The armored edge stud anchors are ¾" x 6" embedded stud shear connectors conforming to ASTM A108, Grade 1015
D. Steel Reinforcement. Use Grade 60. See Section 602.
E. Epoxy Bond Coat. See Section 511.
F. Joint Seals.
Pre-compressed Silicon and Hybrid Foam Joint Seals
2" ~ SSI SES-200, Watson Bowman Acme FS-200 or BEJS EMSEAL 2"
3. EQUIPMENT.
A. Hammer. Provide Power driven hammers lighter than nominal 45 lb. class.
B. Sawing Equipment. Sawing equipment shall be a concrete saw capable of sawing concrete to the specified depth.
C. Hydraulic Impact Equipment. Hydraulic Impact/Skid Steer Type Equipment with a maximum rated striking Energy of 360 ft-lbs are permitted only in areas of concrete removal more than 6 inches away from boundaries of surface areas to remain in service. The Contractor is to provide data information to the engineer on the equipment they wish to utilize to ensure compliance with this note.
4. CONSTRUCTION.
A. Remove Existing Materials. Remove existing expansion joints, existing modular expansion join assembly, bridge end armored edges and specified areas of concrete as shown on the attached detailed drawings. Remove debris and/or expansion joint filler as directed by the Engineer. Clean and leave all existing steel reinforcement encountered in place. Damaged steel reinforcement will be repaired/replaced as directed by the Engineer at no additional cost to the Department. Dispose of all removed material entirely away from the job site. This work is incidental to the contract unit price for "Expansion Joint Replacement" or "Armored Edge for Concrete".
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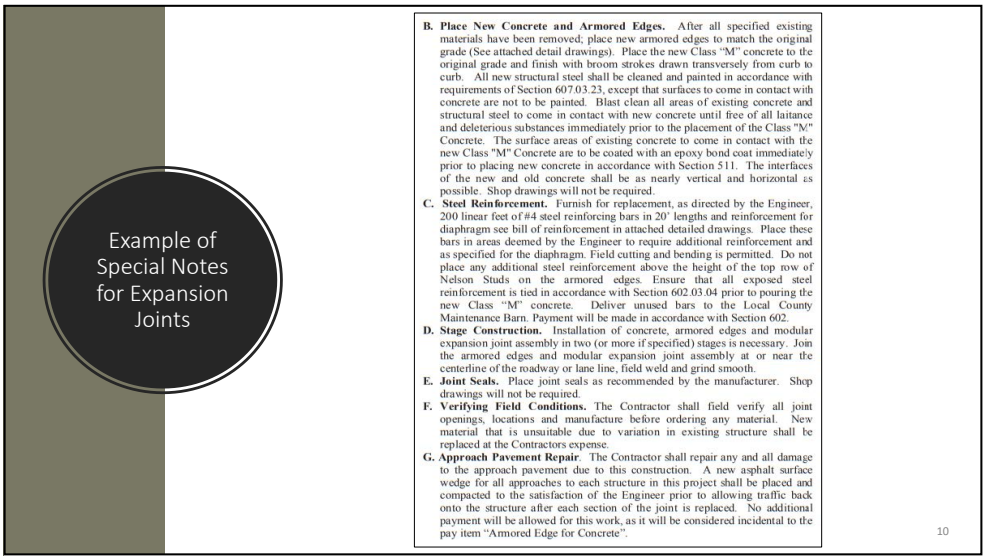
Example of Special Notes for Expansion Joints
B. Place New Concrete and Armored Edges. After all specified existing materials have been removed; place new armored edges to match the original grade (See attached detail drawings). Place the new Class "M" concrete to the original grade and finish with broom strokes drawn transversely from curb to curb. All new structural steel shall be cleaned and painted in accordance with requirements of Section 607.03.23, except that surfaces to come in contact with concrete are not to be painted. Blast clean all areas of existing concrete and structural steel to come in contact with new concrete until free of all laitance and deleterious substances immediately prior to the placement of the Class "M" Concrete. The surface areas of existing concrete to come in contact with the new Class "M" Concrete are to be coated with an epoxy bond coat immediately prior to placing new concrete in accordance with Section 511. The interfaces of the new and old concrete shall be as nearly vertical and horizontal as possible. Shop drawings will not be required.
C. Steel Reinforcement. Furnish for replacement, as directed by the Engineer, 200 linear feet of #4 steel reinforcing bars in 20' lengths and reinforcement for diaphragm see bill of reinforcement in attached detailed drawings. Place these bars in areas deemed by the Engineer to require additional reinforcement and as specified for the diaphragm. Field cutting and bending is permitted. Do not place any additional steel reinforcement above the height of the top row of Nelson Studs on the armored edges. Ensure that all exposed steel reinforcement is tied in accordance with Section 602.03.04 prior to pouring the new Class "M" concrete. Deliver unused bars to the Local County Maintenance Barn. Payment will be made in accordance with Section 602.
D. Stage Construction. Installation of concrete, armored edges and modular expansion joint assembly in two (or more if specified) stages is necessary. Join the armored edges and modular expansion joint assembly at or near the centerline of the roadway or lane line, field weld and grind smooth.
E. Joint Seals. Place joint seals as recommended by the manufacturer. Shop drawings will not be required.
F. Verifying Field Conditions. The Contractor shall field verify all joint openings, locations and manufacture before ordering any material. New material that is unsuitable due to variation in existing structure shall be replaced at the Contractors expense.
G. Approach Pavement Repair. The Contractor shall repair any and all damage to the approach pavement due to this construction. A new asphalt surface wedge for all approaches to each structure in this project shall be placed and compacted to the satisfaction of the Engineer prior to allowing traffic back onto the structure after each section of the joint is replaced. No additional payment will be allowed for this work, as it will be considered incidental to the pay item "Armored Edge for Concrete".
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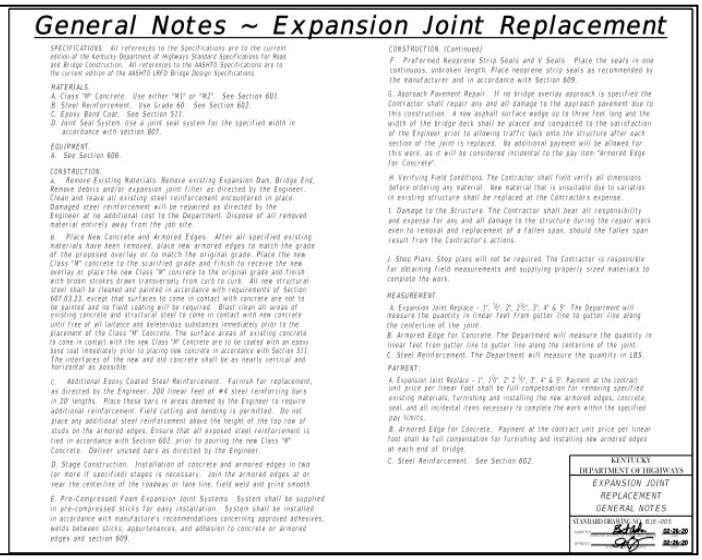
General Notes Expansion Joint Replacement



General Notes ~ Expansion Joint Replacement

SPECIFICATIONS: All references to the Specifications are to the current edition of the Kentucky Department of Highways Standard Specifications for Road and Bridge Construction. All references to the AASHTO Specifications are to the current edition of the AASHTO LRFD Bridge Design Specifications.

MATERIALS:
A. Class "M" Concrete. Use either "M1" or "M2". See Section 601.
B. Steel Reinforcement. Use Grade 60. See Section 602.
C. Epoxy Bond Coat. See Section 531.
D. Joint Seal System. Use a joint seal system for the specified width in accordance with section 807.

EQUIPMENT:
A. See Section 606.

CONSTRUCTION:
A. Remove Existing Materials. Remove existing Expansion Dam, Bridge End, Remove debris and/or expansion joint filler as directed by the Engineer. Clean and leave all existing steel reinforcement encountered in place. Damaged steel reinforcement will be repaired as directed by the Engineer at no additional cost to the Department. Dispose of all removed material entirely away from the job site.

B. Place New Concrete and Armored Edges. After all specified existing materials have been removed, place new armored edges to match the grade of the proposed overlay or to match the original grade. Place the new Class "M" concrete to the scarified grade and finish to receive the new overlay or place the new Class "M" concrete to the original grade and finish with broom strokes drawn transversely from curb to curb. All new structural steel shall be cleaned and painted in accordance with requirements of Section 607.03.23, except that surfaces to come in contact with concrete are not to be painted and no field coating will be required. Blast clean all areas of existing concrete and structural steel to come in contact with new concrete until free of all laitance and deleterious substances immediately prior to the placement of the Class "M" Concrete. The surface areas of existing concrete to come in contact with the new Class "M" Concrete are to be coated with an epoxy bond coat immediately prior to placing new concrete in accordance with Section 531. The interfaces of the new and old concrete shall be as nearly vertical and horizontal as possible.

C. Additional Epoxy Coated Steel Reinforcement. Furnish for replacement, as directed by the Engineer, 200 linear feet of #4 steel reinforcing bars in 20' lengths. Place these bars in areas deemed by the Engineer to require additional reinforcement. Field cutting and bending is permitted. Do not place any additional steel reinforcement above the height of the top row of studs on the armored edges. Ensure that all exposed steel reinforcement is tied in accordance with Section 602. prior to pouring the new Class "M" Concrete. Deliver unused bars as directed by the Engineer.

D. Stage Construction. Installation of concrete and armored edges in two (or more if specified) stages is necessary. Join the armored edges at or near the centerline of the roadway or lane line, field weld and grind smooth.

E. Pre-Compressed Foam Expansion Joint Systems. System shall be supplied in pre-compressed sticks for easy installation. System shall be installed in accordance with manufacture's recommendations concerning approved adhesives, welds between sticks, appurtenances, and adhesion to concrete or armored edges and section 609.

CONSTRUCTION. (Continued)
F. Preformed Neoprene Strip Seals and V Seals. Place the seals in one continuous, unbroken length. Place neoprene strip seals as recommended by the manufacturer and in accordance with Section 609.

G. Approach Pavement Repair. If no bridge overlay approach is specified the Contractor shall repair any and all damage to the approach pavement due to this construction. A new asphalt surface wedge up to three feet long and the width of the bridge deck shall be placed and compacted to the satisfaction of the Engineer prior to allowing traffic back onto the structure after each section of the joint is replaced. No additional payment will be allowed for this work, as it will be considered incidental to the pay item "Armored Edge for Concrete".

H. Verifying Field Conditions. The Contractor shall field verify all dimensions before ordering any material. Any material that is unsalable due to variation in existing structure shall be replaced at the Contractors expense.

I. Damage to the Structure. The Contractor shall bear all responsibility and expense for any and all damage to the structure during the repair work even to removal and replacement of a fallen span, should the fallen span result from the Contractor's actions.

J. Shop Plans. Shop plans will not be required. The Contractor is responsible for obtaining field measurements and supplying properly sized materials to complete the work.

MEASUREMENT:
A. Expansion Joint Replace - 1", ½", 2", 2½", 3", 4" & 5". The Department will measure the quantity in linear feet from gutter line to gutter line along the centerline of the joint.
B. Armored Edge for Concrete. The Department will measure the quantity in linear feet from gutter line to gutter line along the centerline of the joint.
C. Steel Reinforcement. The Department will measure the quantity in LBS.

PAYMENT:
A. Expansion Joint Replace - 1", 1½", 2" & ½", 3", 4" & 5". Payment at the contract unit price per linear foot shall be full compensation for removing specified existing materials, furnishing and installing the new armored edges, concrete, seal, and all incidental items necessary to complete the work within the specified pay limits.
B. Armored Edge for Concrete. Payment at the contract unit price per linear foot shall be full compensation for furnishing and installing new armored edges at each end of bridge.
C. Steel Reinforcement. See Section 602.

KENTUCKY DEPARTMENT OF HIGHWAYS
EXPANSION JOINT REPLACEMENT GENERAL NOTES
STANDARD DRAWING NO. BDE-005
02.28.20
02.28.20

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Inspector Documentation Requirements

- An inspector will be **required to have a copy of all contract documents** including Special Notes, Kentucky Standard Specifications, Material Data Requirements (Safety Data Sheets and Product Data Sheets), and any other documentation necessary for the Inspector to make informed decisions.
- An inspector needs to be **knowledgeable with the bid item units being inspected** per the contract.
- A Daily Work Report (DWR) requires basic information such as date and time, contractor identification, personnel onsite, bridge identification, weather data, as well as general and specific information on daily activities including traffic control.
- There may also be specific information of work performed by the contractor that should be documented on the DWR. This information will be determined from the specifications. The DWR should reflect evidence of compliance and/or action taken to correct non-compliance to the specification.
- Photographic documentation of work should supplement the DWR.

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KYTC DWR

https://transportation.ky.gov/Construction/Pages/Construction-Engineer%27s-Resource-Center.aspx


Kentucky Transportation Cabinet
Division of Construction
DAILY INSPECTION REPORT
TC 63-28
03/2000
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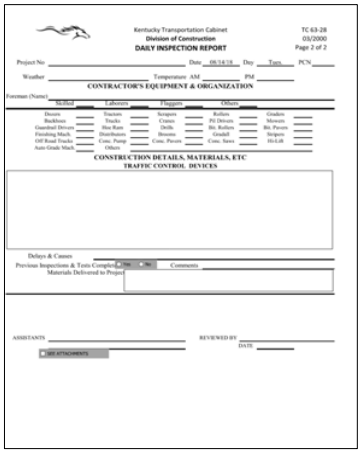
PAY QUANTITIES

PAY QUANTITY DETAILS, REFERENCES, SKETCHES, ETC.

Attention Project Engineer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CONTRACTOR'S EQUIPMENT & ORGANIZATION

CONSTRUCTION DETAILS, MATERIALS, ETC
TRAFFIC CONTROL DEVICES

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Inspector Documentation Requirements

- Compile all applicable documents for the project including but not limited to: Special Notes, Plans, Standard Specifications, Qualified Materials lists, Environmental compliance reference documents, Occupational Health and Safety reference documents, Contractor submittals.
  - Contractor submittals may include; Product Data Sheets, Safety Data Sheets, Materials Certifications, Schedule (bar chart or narrative), Access plan, and Traffic Control Plans.
- Specifications, plans and special notes should be reviewed in advance of the project initiation and the Pre-Construction Conference. Questions and concerns should be discussed with the Section Engineer and/or the Project Manager for clarification.
  - Complete mark up of documents and tabulation for ease of reference.

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Inspector Responsibilities

- Kentucky Transportation Cabinet (KYTC) bridge maintenance projects **should have experienced, district level inspector(s)** and required inspection equipment. Duties include overall verification of task completion and complete coverage of contractor operations.
- Inspector(s) should have current **KYTC certification for Structures Level 1 and American Concrete Institute (ACI) if concrete is placed or tested** *(Traffic Control Certification will be discussed later in this training).*
- Other than the previously discussed certifications there is no current official inspector qualifications for this task, however, it is **imperative that inspectors be familiar with the tasks being performed, contract specification, special notes, and pertinent parts of the current Kentucky Standard Specifications For Road and Bridge Construction**.
- **All aspects of the project are to be clearly documented.**
- Inspection personnel will coordinate with the Contractor to establish hold points that follow all KYTC Specifications and Special Note requirements. **Hold points are progress milestones that occur when one phase of work is complete and ready for inspection, which should be completed before continuing with the next operational step.**

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Inspector Responsibilities

- **Understanding specifications is CRITICAL**; including the Contract, Special Notes within the contract, pertinent sections of the current edition of Kentucky Standard Specifications, and Material Data Sheets. Inspection personnel should also be knowledgeable of any environmentally sensitive issues. There may be specific tasks that require knowledge of quality standards (ASTM, AASHTO, etc.).
- All aspects of the project are to be clearly documented (written and photographed).
- ***The inspector's responsibility is to verify and document that each phase of work has been satisfactorily completed and complies with all specifications.***

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Inspector Responsibilities

- An inspector is required to perform specific tasks in accordance with Quality Standards. These standards are necessary to ensure specific measurements taken during the inspection process are performed consistently. Some of these tasks/measurements include surface preparation, wet and dry film thickness, adhesion, ambient conditions, and moisture. Some may be destructive in nature and will require the contractor to perform repair work. **Contact KYTC Central Office Construction to ensure coordination with the Bridge Painting Liaison for projects that include coating applications.**
- With assistance of the Engineer conduct the following:
  - Using the contract documents, create a formal or informal project check list including activities and responsibilities for QC and QA inspection personnel.
  - Determine hold points (inspection points where acceptance of a phase of work must be completed to allow work to proceed to the next phase) and place them in a logical order.
  - Determine inspection methods, inspection tools needed, when and how to perform inspections.
  - Determine how to document inspections and hold point acceptance.

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Environmental and Worker Safety

The **Contractor is solely responsible for both environmental and worker safety**, however this does not relieve the inspector of the responsibility to monitor, report, and document observed practices or issues. The contractor should hold daily safety meetings

The inspector needs to be aware of the environmental regulations to which the contractor must comply. The contractor may be required to submit an Environmental Compliance Plan. Depending on the size of the project, a Storm Water Permit or other permits may be required by Kentucky Division of Water. Also, certain urban jurisdictions may require an erosion and sediment control plan to be filed locally prior to work beginning. Some of the permitting requirements and regulations can be found in the Kentucky Administrative Regulations, Title 401, Chapters 4, 5, 6, 8, 9, 10, and 11. The contractor is required to conform to Kentucky Revised Statute 224.70-110 "General Prohibition Against Water Pollution." There may also be required permitting from the United States Army Corps of Engineers (USACE)

A variety of substances and materials found on construction sites can become pollutants of concern if they are washed into nearby water bodies, dumped onto porous soils, or discharged directly to surface waters or groundwater. When required by KYTC the contractor will submit the Best Management Practice (BMP) for the project. Inspectors should be familiar with these submittals and the use of "Controlling Erosion, Sediment, and Pollutant Runoff from Construction Sites" as a reference (see BMP Manual link below)

Use this link to access the KYTC Drainage Resource Materials:
https://transportation.ky.gov/Highway-Design/Pages/Drainage-Resource-Materials.aspx

Use this link to access the BMP Manual:
Https://eec.ky.gov/Environmental-Protection/Forms%20Library/09BMPManual_Final.pdf

Click here for a Special Note on Erosion Prevention and Sediment Control

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Traffic Control Plan

- **The Contractor is responsible for conformance to the requirements in the Traffic Control Plan** (TCP), Proposal, plan sheets, specifications, and the Manual on Uniform Traffic Control Devices (MUTCD). There may be other requirements not listed here.
- All Traffic Control Supervisors, Technicians, and Flaggers shall have current temporary work zone traffic control certifications.
- All equipment should be maintained for safe operation and safety checks should be performed and documented daily.
- Document traffic control concerns, notes, reviews, updates, accidents or any other applicable conditions on the DWR.

ACTION: Read the TCP to become familiar with the proposed temporary work zone activities. Obtain the TC 63-67 (Traffic Control Inspection Report) which can be utilized for traffic control reviews as needed. Link below can be utilized to access the TC-63-67 Report:

https://transportation.ky.gov/Organizational-Resources/Pages/Forms-Library-(TC-63).aspx

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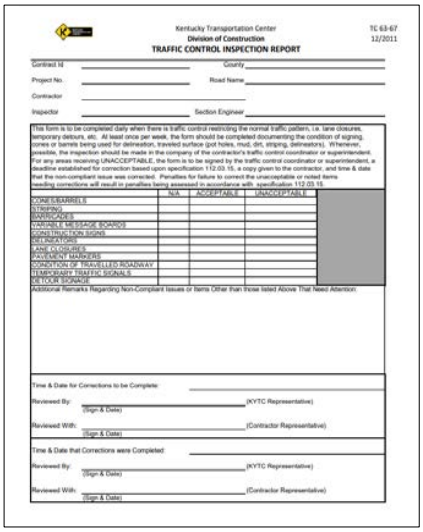
Traffic Control Inspection Report



Kentucky Transportation Center
Division of Construction
TC 63-67
12/2011

TRAFFIC CONTROL INSPECTION REPORT

Contract Id: _____ County: _____

Project No.: _____ Road Name: _____

Contractor: _____

Inspector: _____ Section Engineer: _____

This form is to be completed daily when there is traffic control restricting the normal traffic pattern, i.e. lane closures, temporary detours, etc. At least once per week, the form should be completed documenting the condition of signing, cones or barrels being used for delineation, traveled surface (pot holes, mud, dirt, striping, delinestors). Whenever possible, the inspection should be made in the company of the contractor's traffic control coordinator or superintendent. For any areas receiving UNACCEPTABLE, the form is to be signed by the traffic control coordinator or superintendent, a deadline established for correction based upon specification 112.03.15, a copy given to the contractor, and time & date that the non-compliant issue was corrected. Penalties for failure to correct the unacceptable or noted items needing corrections will result in penalties being assessed in accordance with specification 112.03.15.

	N/A	ACCEPTABLE	UNACCEPTABLE
CONES/BARRELS			
STRIPING			
BARRICADES			
VARIABLE MESSAGE BOARDS			
CONSTRUCTION SIGNS			
DELINEATORS			
LANE CLOSURES			
PAVEMENT MARKERS			
CONDITION OF TRAVELLED ROADWAY			
TEMPORARY TRAFFIC SIGNALS			
DETOUR SIGNAGE			

Additional Remarks Regarding Non-Compliant Issues or Items Other than those listed Above That Need Attention:

Time & Date for Corrections to be Complete: _____

Reviewed By: _____ (KYTC Representative)
(Sign & Date)

Reviewed With: _____ (Contractor Representative)
(Sign & Date)

Time & Date that Corrections were Completed: _____

Reviewed By: _____ (KYTC Representative)
(Sign & Date)

Reviewed With: _____ (Contractor Representative)
(Sign & Date)

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Pre-Construction Activities

Prior to the contractor beginning work ensure you have the necessary items to perform your activities. Common items include:

a) Contract documents (KY Std Spec, plans, proposal and any special notes).

b) Quality Assurance Plan.

c) Safety (environmental & worker), Traffic Control Plan, Schedule and all Contractor Submittals including Material Product Data Sheets.

d) Inspector Documentation Requirements.

e) Personal Protective Equipment (PPE); ***additional equipment may be required for environmental or hazardous exposures.***

f) Field tools; ***specialized inspection equipment/tools may be necessary .***

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Obtain Personal Protective Equipment
(Pre-Construction)

- Class 2 (day) or 3 (night) high visibility apparel
- Hard hat
- Hearing protection
- Safety glasses w/side shields
- Gloves
- Steel toe boots
- Respirator may be required **(Contact Bridge Painting Liaison)**
- Fall protection in accordance with 29 CFR Part 1926 (as required)

22

22

Obtain Tools and Equipment
(Pre-Construction)

- A camera of sufficient quality to enlarge images for viewing critical details. The camera on most cell phones is usually adequate for photo documentation.
- Wet Film Thickness (WFT) Gauge **(Contact Bridge Painting Liaison)**
- Equipment to measure ambient conditions **(Contact Bridge Painting Liaison)**
- Flashlight
- Dull scraper
- Claw hammer or handheld sledgehammer
- Inspection mirror
- Measuring tape
- Notepad or ability to take notes
- Any other equipment necessary to perform the inspection duties

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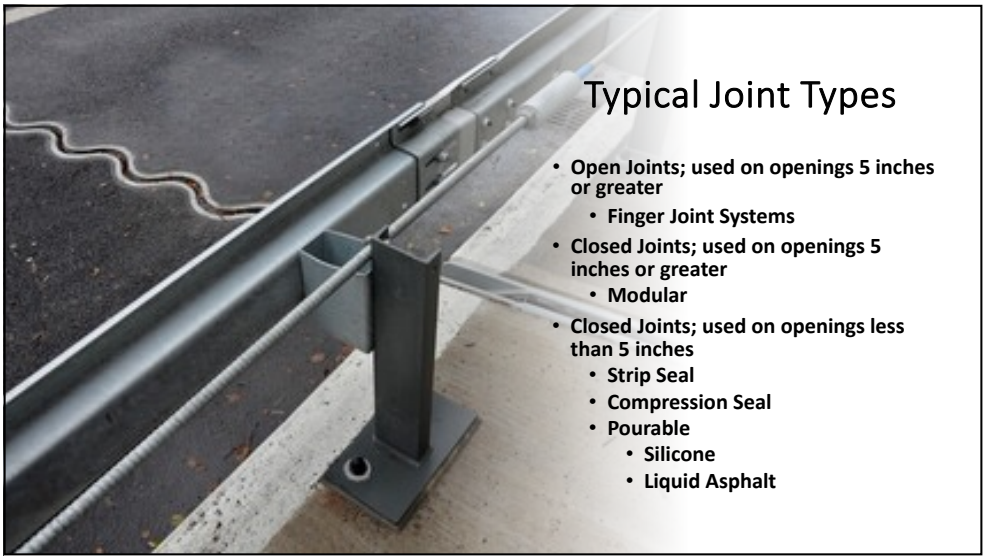

Typical Joint Types

- **Open Joints; used on openings 5 inches or greater**
  - **Finger Joint Systems**
- **Closed Joints; used on openings 5 inches or greater**
  - **Modular**
- **Closed Joints; used on openings less than 5 inches**
  - **Strip Seal**
  - **Compression Seal**
  - **Pourable**
    - **Silicone**
    - **Liquid Asphalt**

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Pre-Existing Condition of Joint

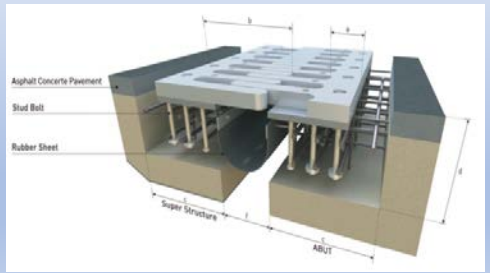
25

Re-Sealing a Joint

26

Finger Joint

The finger expansion joint is composed of the finger's plate, waterproofing membrane, and anchors. The waterproofing membrane will form a channel to drain the water away from the bridge structure. Fingers plate will rest on the bridge deck and behave statically as a supported beam.



Follow manufacturer's application procedures/instructions as methods vary by product.

27

Modular Joint

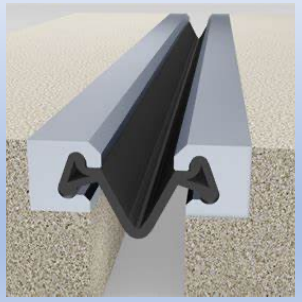
The Modular Expansion Joint System (MEJS) is a mechanical device installed in bridge expansion joint openings. The primary function of the MEJS is to permit vehicle traffic to travel smoothly across large expansion joint openings. It does this by dividing the large expansion joint openings into a series of smaller openings called cells.

Follow manufacturer's application procedures/instructions as methods vary by product.

28

Strip Seal Joint

Strip Seal is a mechanical device adapted for sealing an elongated gap formed between two adjacent road slab sections by providing a continuous support for vehicles crossing the gap while allowing the desired thermal movement of the road slab sections.


Follow manufacturer's application procedures/instructions as methods vary by product.

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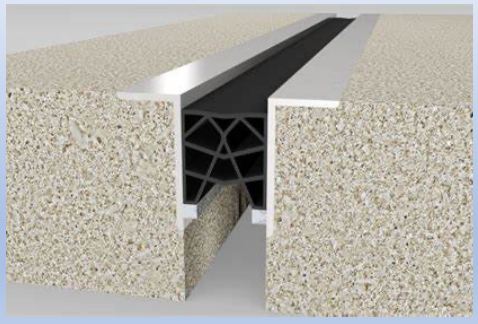
Compression Joint

The Compression Seal Expansion Joint Seal Expansion Joint System is an extruded, neoprene rubber material. When compressed into a gap, this system provides an excellent sealing against the expansion and contraction.

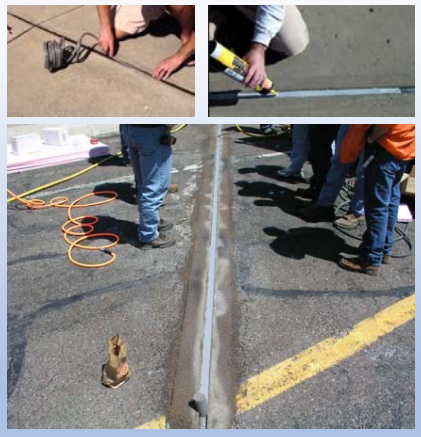



Follow manufacturer's application procedures/instructions as methods vary by product.

30

Pourable Joints

Generally, this type of joint will consist of viscous adhesive, and pourable waterproof silicone or liquid asphalt installed with backer rods to prevent the sealant from flowing down the joint. Typically, they work best if the sealant is poured when the ambient temperature is at the middle of the historical temperature range.



Follow manufacturer's application procedures/instructions as methods vary by product.

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Inspection Overview

- Re-sealing of poured joints will consist of removal of old joint material and cleaning the opening by using wire brushes, rotary grinders and blast cleaning, as necessary. Installation of a backer rod and filling the joint to the proper level with pourable joint seal material. Specialized tools may be required in some cases.
- Joint repair may consist of removing any damaged armor plates, anchors, deteriorated concrete and corroded rebar. Concrete shall be removed by using hand tools and small pneumatic hammers.
- Joint replacement will consist of removal of old joint material and cleaning the opening by using wire brushes, rotary grinders and blast cleaning, as necessary. Prior to the new seal being installed, an adhesive/lubricant is applied. Specialized tools may be required for installation of some seals.

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Inspection Overview

- Joint openings should be constructed with a consistent width, vertical sides, and no edge spalling.
- Seals must be set at the proper distance below the top of the deck to prevent damage.
- Seals are difficult to install and subject to damage during installation if not placed when the temperature is relatively low.
- **It is critical to follow manufacturer's application procedures/instructions as methods vary by product and other contract documentation.**

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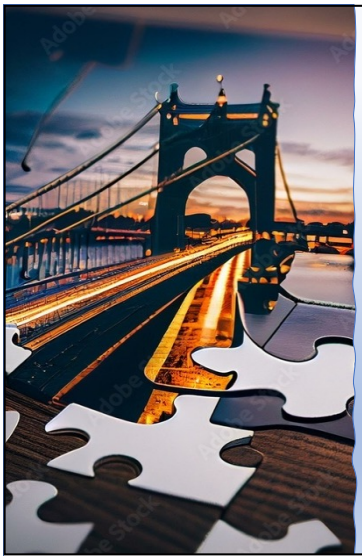

General Summary for Re-sealing and Repairing Joints

- Improper installation and inadequate maintenance are among the leading causes of expansion joint failure.
- Re-sealing and repairing joints is essential for preserving the integrity of the structure.
- Expansion joints protect bridge decks from damage due to movement from expansion and contraction.
- Properly installed joints will allow water and corrosive contaminants from de-icing chemicals to be diverted from lower bridge components while maintaining protection from movement.

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Post
Construction
After all work items are completed, several critical steps are required to close out KYTC contracts. Verify the following have been satisfactorily completed:
• Review plans and ensure that all tasks and objectives have been completed in accordance with specifications.
• All waste has been collected for proper disposal at an approved facility or as directed by the Engineer.
• All equipment, including containment and traffic control devices, have been removed from work area.
• Normal traffic pattern has been re-established.
35

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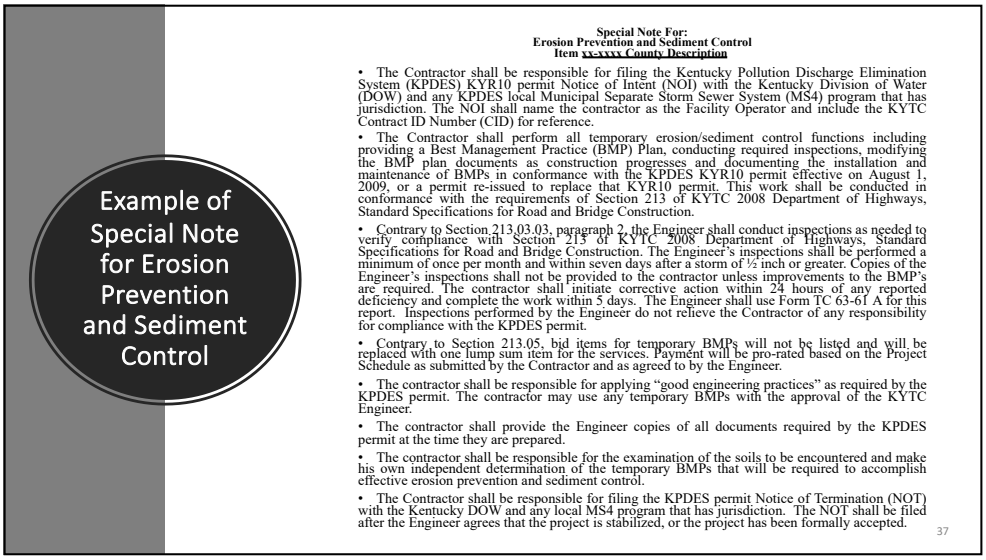
END
ROAD WORK
36

36


Example of Special Note for Erosion Prevention and Sediment Control
Special Note For:
Erosion Prevention and Sediment Control
Item xx-xxxx County Description
• The Contractor shall be responsible for filing the Kentucky Pollution Discharge Elimination System (KPDES) KYR10 permit Notice of Intent (NOI) with the Kentucky Division of Water (DOW) and any KPDES local Municipal Separate Storm Sewer System (MS4) program that has jurisdiction. The NOI shall name the contractor as the Facility Operator and include the KYTC Contract ID Number (CID) for reference.
• The Contractor shall perform all temporary erosion/sediment control functions including providing a Best Management Practice (BMP) Plan, conducting required inspections, modifying the BMP plan documents as construction progresses and documenting the installation and maintenance of BMPs in conformance with the KPDES KYR10 permit effective on August 1, 2009, or a permit re-issued to replace that KYR10 permit. This work shall be conducted in conformance with the requirements of Section 213 of KYTC 2008 Department of Highways, Standard Specifications for Road and Bridge Construction.
• Contrary to Section 213.03.03, paragraph 2, the Engineer shall conduct inspections as needed to verify compliance with Section 213 of KYTC 2008 Department of Highways, Standard Specifications for Road and Bridge Construction. The Engineer's inspections shall be performed a minimum of once per month and within seven days after a storm of ½ inch or greater. Copies of the Engineer's inspections shall not be provided to the contractor unless improvements to the BMP's are required. The contractor shall initiate corrective action within 24 hours of any reported deficiency and complete the work within 5 days. The Engineer shall use Form TC 63-61 A for this report. Inspections performed by the Engineer do not relieve the Contractor of any responsibility for compliance with the KPDES permit.
• Contrary to Section 213.05, bid items for temporary BMPs will not be listed and will be replaced with one lump sum item for the services. Payment will be pro-rated based on the Project Schedule as submitted by the Contractor and as agreed to by the Engineer.
• The contractor shall be responsible for applying "good engineering practices" as required by the KPDES permit. The contractor may use any temporary BMPs with the approval of the KYTC Engineer.
• The contractor shall provide the Engineer copies of all documents required by the KPDES permit at the time they are prepared.
• The contractor shall be responsible for the examination of the soils to be encountered and make his own independent determination of the temporary BMPs that will be required to accomplish effective erosion prevention and sediment control.
• The Contractor shall be responsible for filing the KPDES permit Notice of Termination (NOT) with the Kentucky DOW and any local MS4 program that has jurisdiction. The NOT shall be filed after the Engineer agrees that the project is stabilized, or the project has been formally accepted.
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Appendix E Bridge Deck Sealing

KYTC

Bridge Preventive Maintenance

Inspection Training Module

Concrete Deck Sealing

TEAM KENTUCKY TRANSPORTATION CABINET

1

Bridge Deck Sealing Introduction

Bridges are exposed to many different environmental conditions. Freezing and thawing of the concrete can affect the concrete integrity. The winter months call for the use of deicing chemicals. Steel reinforced concrete is susceptible to cracking caused by water contaminated with deicing chemicals. These chemicals pass through the porous surface and cracks in the concrete. Moisture within the concrete expands during freeze-thaw cycles creating internal stress on the concrete. Chloride ions from the de-icing chemicals attack the reinforcing steel in the concrete deck. The resulting corrosion expands and will lead to the additional formation of defects.

To reduce the effects deicing chemicals and water have on concrete and the reinforcing steel, a liquid applied concrete sealer can be used. This is commonly referred to as “sealing” the concrete. Sealing is accomplished by applying a barrier to the concrete to prevent chloride penetration.

Penetrating Sealers and Film formers are the two main types of materials used to seal bridge concrete.

2

Bridge Deck Sealing Index

This training module will focus on the following topics:

3

3

KYTC Links

- https://transportation.ky.gov/Construction
  - Home page with many useful links and documents for inspection
- https://transportation.ky.gov/Construction/Pages/Kentucky-Standard-Specifications.aspx
  - Standard Specifications and Supplemental Specifications
- https://transportation.ky.gov/Construction/Pages/Construction-Engineer%27s-Resource-Center.aspx
  - Includes several inspection documents and spreadsheets
- https://transportation.ky.gov/Construction/Pages/Special-Notes-Special-Provisions.aspx
  - Special Notes and Provisions
- https://transportation.ky.gov/Highway-Design/Pages/Standard-Drawings-2020.aspx
  - Std Drawings, Sepia Drawings and other useful links
- https://transportation.ky.gov/Construction-Procurement/Pages/default.aspx
  - Contract Proposals and Letting Information
- https://transportation.ky.gov/Organizational-Resources/Pages/Forms-Library.aspx
  - KYTC forms and templates
- https://transportation.ky.gov/Materials
  - Home page with many useful links and documents such as Sampling Manual and LAM
- https://transportation.ky.gov/Materials/pages/List-Of-Approved-Materials.aspx
  - KYTC List of Approved Materials (LAM)

4

4

Kentucky Standard Specifications

Standard Specifications

Type Name

Spec Year : **2019** (11)

- 100 General Provisions 2019
- 200 Earthwork 2019
- 300 Aggregate Base Courses 2019
- 400 Asphalt Pavements 2019
- 500 PCC Pavement and Non-Structural Concrete Construction 2019
- 600 Structures and Concrete 2019
- 700 Drainage, Traffic, and Roadside Construction 2019
- 800 Materials Details 2019
- Appendix A Tabulation of Construction Tolerances 2019
- Appendix B Index 2019
- Complete KYTC Standard Specifications - 2019

Supplemental Specifications

Type Name

Spec Year : **2019** (7)

- Supplemental Specs Effective with May 26, 2022 Letting
- Supplemental Specs Effective with November 19 2021 Letting
- Supplemental Specifications Effective with June 25 2021 Letting
- Supplemental Specification Effective with September 25, 2020 Letting
- Supplemental Specifications Effective with July 24, 2020 Letting rev 20200617
- Supplemental Specifications Effective with March 20, 2020 Letting
- Supplemental Specifications Effective with July 26 2019 Letting

https://transportation.ky.gov/Construction/Pages/Kentucky-Standard-Specifications.aspx

5

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Kentucky Standard Specifications

- KYTC Standard Specifications are a compilation of guidelines for construction and maintenance requirements useful to engineers for developing of projects and contracts
- When referenced in KYTC contracts they become legally binding specifications
- Inspectors need to be knowledgeable of these contractual specifications as they are pertinent to the inspection process

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Examples of Safety Data and Product Data Sheets

Inspection staff should have a copy of SDS & PDS for all materials/chemicals being utilized by the contractor.

7

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KYTC Contract Proposal *(Example)*

- KYTC contract proposals will include detailed information about the project. It will include any Special Notes for construction and will include the bid item list
- **Inspection personnel should review the contract proposal carefully; paying close attention to the Special Notes**

TABLE OF CONTENTS

PART I SCOPE OF WORK
- PROJECT(S), COMPLETION DATE(S), & LIQUIDATED DAMAGES
- CONTRACT NOTES
- STATE CONTRACT NOTES
- SPECIAL NOTE(S) APPLICABLE TO PROJECT
- ASBESTOS ABATEMENT REPORT
- MATERIAL SUMMARY
- BRIDGE DRAWINGS

PART II SPECIFICATIONS AND STANDARD DRAWINGS
- SPECIFICATIONS REFERENCE
- SUPPLEMENTAL SPECIFICATION
- STANDARD DRAWINGS THAT APPLY

PART III EMPLOYMENT, WAGE AND RECORD REQUIREMENTS
- LABOR AND WAGE REQUIREMENTS
- EXECUTIVE BRANCH CODE OF ETHICS
- KENTUCKY EQUAL EMPLOYMENT OPPORTUNITY ACT OF 1978 LOCALITY - STATE
- PROJECT WAGE RATES / STATE FUNDED

PART IV INSURANCE

PART V BID ITEMS

Kentucky UNBRIDLED SPIRIT

CALL NO. 201
CONTRACT ID. 212955
KENTON COUNTY
FED/STATE PROJECT NUMBER 059GR21M007 - NHPP
DESCRIPTION LEXINGTON-CINCINNATI ROAD (I-71 / I-75)
WORK TYPE BRIDGE PAINTING & CLEANING
PRIMARY COMPLETION DATE 11/15/2021

LETTING DATE: January 29,2021
Sealed Bids will be received electronically through the Bid Express bidding service until 10:00 am EASTERN STANDARD TIME January 29,2021. Bids will be publicly announced at 10:00 am EASTERN STANDARD TIME.

NO PLANS ASSOCIATED WITH THIS PROJECT.

DBE CERTIFICATION REQUIRED - 0%

REQUIRED BID PROPOSAL GUARANTY: Not less than 5% of the total bid.

NOTE:
Construction plans will be included within many proposals

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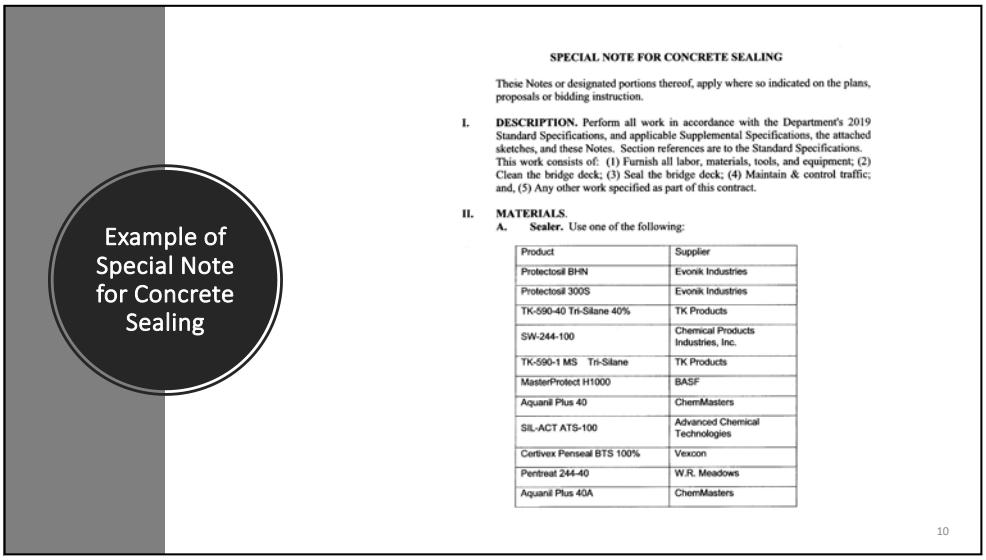
Example of Special Notes for Concrete Sealing
SPECIAL NOTES FOR CLEANING AND PAINTING
SPECIAL NOTE FOR BIDDING PREQUALIFICATION AND STAFFING
SPECIAL NOTE BRIDGE CLEANING AND PAINTING
SPECIAL NOTE FOR UTILITIES AND SIGNS
SPECIAL NOTE FOR WEIGHT LIMITS ON STRUCTURE
SPECIAL NOTE FOR WORKING OVER OR FROM THE OHIO RIVER
SPECIAL NOTE FOR OHIO RIVER
SPECIAL NOTE FOR REPLACE TRAFFIC PROTECTION PANELS
SPECIAL NOTE FOR OVERHEAD TRAFFIC SIGN AND PAVEMENT MARKING REPLACEMENT
SPECIAL NOTE FOR CONCRETE SEALING
SPECIAL NOTE FOR DECK DRAIN RETROFIT
SPECIAL NOTE FOR MAINTAINING AND CONTROLLING TRAFFIC
SPECIAL NOTE FOR CONTRACT COMPLETION DATE AND LIQUIDATED DAMAGES ON BRIDGE REPAIR CONTRACTS
SPECIAL NOTE FOR PRE-BID CONFERENCE
9

9


Example of Special Note for Concrete Sealing
SPECIAL NOTE FOR CONCRETE SEALING
These Notes or designated portions thereof, apply where so indicated on the plans, proposals or bidding instruction.
I. DESCRIPTION. Perform all work in accordance with the Department's 2019 Standard Specifications, and applicable Supplemental Specifications, the attached sketches, and these Notes. Section references are to the Standard Specifications. This work consists of: (1) Furnish all labor, materials, tools, and equipment; (2) Clean the bridge deck; (3) Seal the bridge deck; (4) Maintain & control traffic; and, (5) Any other work specified as part of this contract.
II. MATERIALS.
A. Sealer. Use one of the following:
Product | Supplier
Protectosil BHN | Evonik Industries
Protectosil 300S | Evonik Industries
TK-590-40 Tri-Silane 40% | TK Products
SW-244-100 | Chemical Products Industries, Inc.
TK-590-1 MS Tri-Silane | TK Products
MasterProtect H1000 | BASF
Aquanil Plus 40 | ChemMasters
SIL-ACT ATS-100 | Advanced Chemical Technologies
Certivex Penseal BTS 100% | Vexcon
Pentreat 244-40 | W.R. Meadows
Aquanil Plus 40A | ChemMasters
10

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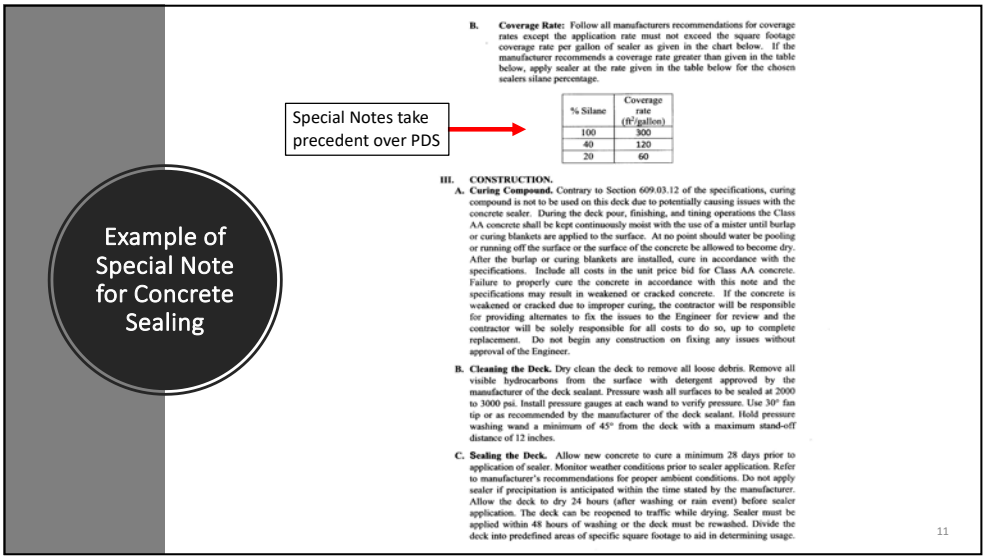
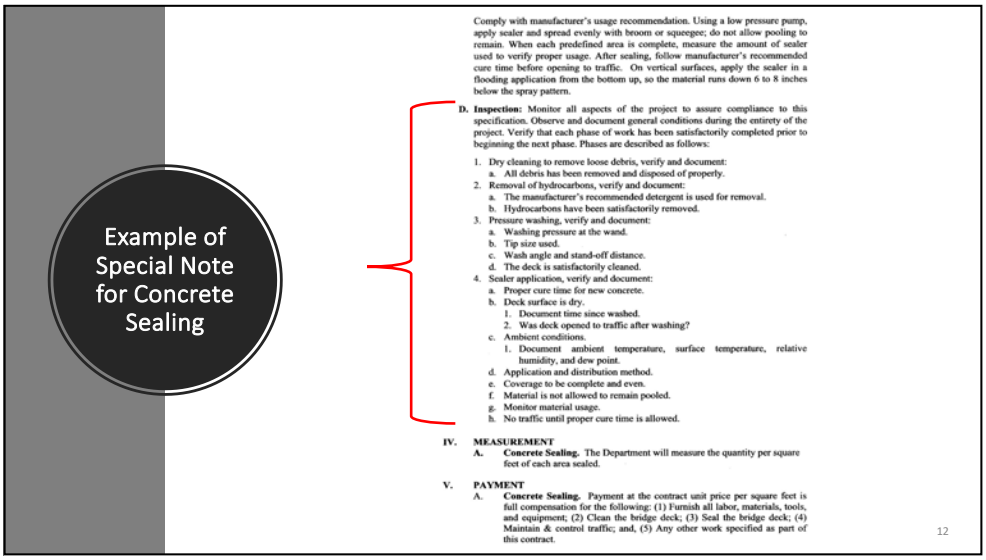

Example of Special Note for Concrete Sealing
Special Notes take precedent over PDS
B. Coverage Rate: Follow all manufacturers recommendations for coverage rates except the application rate must not exceed the square footage coverage rate per gallon of sealer as given in the chart below. If the manufacturer recommends a coverage rate greater than given in the table below, apply sealer at the rate given in the table below for the chosen sealers silane percentage.
% Silane
Coverage rate (ft²/gallon)
100
300
40
120
20
60
III. CONSTRUCTION.
A. Curing Compound. Contrary to Section 609.03.12 of the specifications, curing compound is not to be used on this deck due to potentially causing issues with the concrete sealer. During the deck pour, finishing, and tining operations the Class AA concrete shall be kept continuously moist with the use of a mister until burlap or curing blankets are applied to the surface. At no point should water be pooling or running off the surface or the surface of the concrete be allowed to become dry. After the burlap or curing blankets are installed, cure in accordance with the specifications. Include all costs in the unit price bid for Class AA concrete. Failure to properly cure the concrete in accordance with this note and the specifications may result in weakened or cracked concrete. If the concrete is weakened or cracked due to improper curing, the contractor will be responsible for providing alternates to fix the issues to the Engineer for review and the contractor will be solely responsible for all costs to do so, up to complete replacement. Do not begin any construction on fixing any issues without approval of the Engineer.
B. Cleaning the Deck. Dry clean the deck to remove all loose debris. Remove all visible hydrocarbons from the surface with detergent approved by the manufacturer of the deck sealant. Pressure wash all surfaces to be sealed at 2000 to 3000 psi. Install pressure gauges at each wand to verify pressure. Use 30° fan tip or as recommended by the manufacturer of the deck sealant. Hold pressure washing wand a minimum of 45° from the deck with a maximum stand-off distance of 12 inches.
C. Sealing the Deck. Allow new concrete to cure a minimum 28 days prior to application of sealer. Monitor weather conditions prior to sealer application. Refer to manufacturer's recommendations for proper ambient conditions. Do not apply sealer if precipitation is anticipated within the time stated by the manufacturer. Allow the deck to dry 24 hours (after washing or rain event) before sealer application. The deck can be reopened to traffic while drying. Sealer must be applied within 48 hours of washing or the deck must be rewashed. Divide the deck into predefined areas of specific square footage to aid in determining usage.
11

11


Example of Special Note for Concrete Sealing
Comply with manufacturer's usage recommendation. Using a low pressure pump, apply sealer and spread evenly with broom or squeegee; do not allow pooling to remain. When each predefined area is complete, measure the amount of sealer used to verify proper usage. After sealing, follow manufacturer's recommended cure time before opening to traffic. On vertical surfaces, apply the sealer in a flooding application from the bottom up, so the material runs down 6 to 8 inches below the spray pattern.
D. Inspection: Monitor all aspects of the project to assure compliance to this specification. Observe and document general conditions during the entirety of the project. Verify that each phase of work has been satisfactorily completed prior to beginning the next phase. Phases are described as follows:
1. Dry cleaning to remove loose debris, verify and document:
a. All debris has been removed and disposed of properly.
2. Removal of hydrocarbons, verify and document:
a. The manufacturer's recommended detergent is used for removal.
b. Hydrocarbons have been satisfactorily removed.
3. Pressure washing, verify and document:
a. Washing pressure at the wand.
b. Tip size used.
c. Wash angle and stand-off distance.
d. The deck is satisfactorily cleaned.
4. Sealer application, verify and document:
a. Proper cure time for new concrete.
b. Deck surface is dry.
1. Document time since washed.
2. Was deck opened to traffic after washing?
c. Ambient conditions.
1. Document ambient temperature, surface temperature, relative humidity, and dew point.
d. Application and distribution method.
e. Coverage to be complete and even.
f. Material is not allowed to remain pooled.
g. Monitor material usage.
h. No traffic until proper cure time is allowed.
IV. MEASUREMENT
A. Concrete Sealing. The Department will measure the quantity per square feet of each area sealed.
V. PAYMENT
A. Concrete Sealing. Payment at the contract unit price per square feet is full compensation for the following: (1) Furnish all labor, materials, tools, and equipment; (2) Clean the bridge deck; (3) Seal the bridge deck; (4) Maintain & control traffic; and, (5) Any other work specified as part of this contract.
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Inspector Documentation Requirements

- An inspector will be **required to have a copy of all contract documents** including Special Notes, Kentucky Standard Specifications, Material Data Requirements (Safety Data Sheets and Product Data Sheets), and any other documentation necessary for the Inspector to make informed decisions
- An inspector needs to be **knowledgeable with the bid item units being inspected** per the contract
- A Daily Work Report (DWR) requires basic information such as date and time, contractor identification, personnel onsite, bridge identification, weather data, as well as general and specific information on daily activities including traffic control
- There may also be specific information of work performed by the contractor that should be documented on the DWR. This information will be determined from the specifications. The DWR should reflect evidence of compliance and/or action taken to correct non-compliance to the specification
- Photographic documentation of work should supplement the DWR

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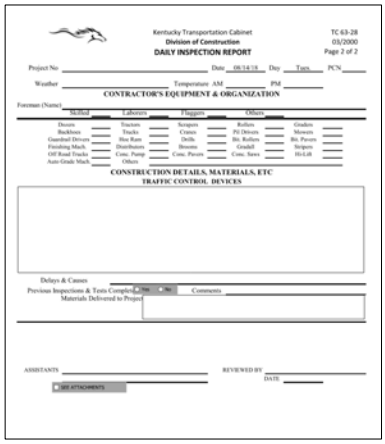
KYTC DWR


Kentucky Transportation Cabinet
Division of Construction
DAILY INSPECTION REPORT
TC 63-28
03/2000
Page 1 of 2
PAY QUANTITIES
PAY QUANTITY DETAILS, REFERENCES, SKETCHES, ETC.
Attention Project Engineer


Kentucky Transportation Cabinet
Division of Construction
DAILY INSPECTION REPORT
TC 63-28
03/2000
Page 2 of 2
CONTRACTOR'S EQUIPMENT & ORGANIZATION
CONSTRUCTION DETAILS, MATERIALS, ETC
TRAFFIC CONTROL DEVICES

https://transportation.ky.gov/Construction/Pages/Construction-Engineer%27s-Resource-Center.aspx

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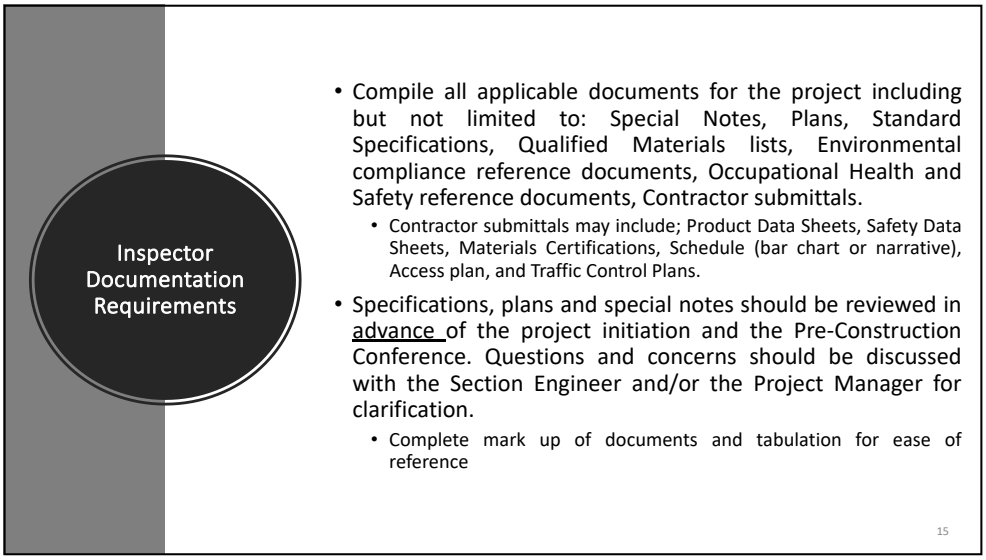
Inspector Documentation Requirements
• Compile all applicable documents for the project including but not limited to: Special Notes, Plans, Standard Specifications, Qualified Materials lists, Environmental compliance reference documents, Occupational Health and Safety reference documents, Contractor submittals.
• Contractor submittals may include; Product Data Sheets, Safety Data Sheets, Materials Certifications, Schedule (bar chart or narrative), Access plan, and Traffic Control Plans.
• Specifications, plans and special notes should be reviewed in advance of the project initiation and the Pre-Construction Conference. Questions and concerns should be discussed with the Section Engineer and/or the Project Manager for clarification.
• Complete mark up of documents and tabulation for ease of reference
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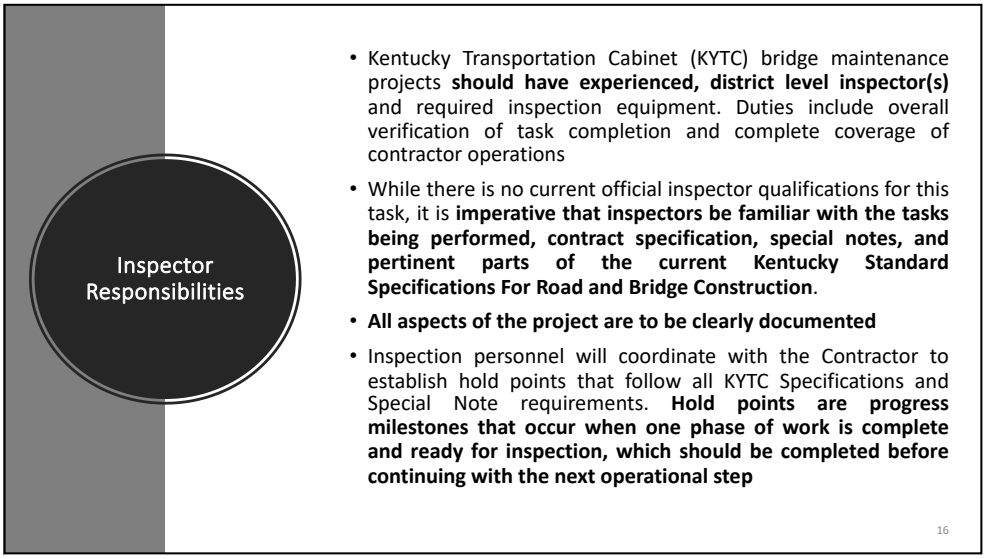
Inspector Responsibilities
• Kentucky Transportation Cabinet (KYTC) bridge maintenance projects **should have experienced, district level inspector(s)** and required inspection equipment. Duties include overall verification of task completion and complete coverage of contractor operations
• While there is no current official inspector qualifications for this task, it is **imperative that inspectors be familiar with the tasks being performed, contract specification, special notes, and pertinent parts of the current Kentucky Standard Specifications For Road and Bridge Construction**.
• **All aspects of the project are to be clearly documented**
• Inspection personnel will coordinate with the Contractor to establish hold points that follow all KYTC Specifications and Special Note requirements. **Hold points are progress milestones that occur when one phase of work is complete and ready for inspection, which should be completed before continuing with the next operational step**
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Inspector Responsibilities

- **Understanding specifications is CRITICAL**; including the Contract, Special Notes within the contract, pertinent sections of the current edition of Kentucky Standard Specifications, and Material Data Sheets. Inspection personnel should also be knowledgeable of any environmentally sensitive issues. There may be specific tasks that require knowledge of quality standards (ASTM, AASHTO, etc.).
- All aspects of the project are to be clearly documented (written and photographed)
- ***The inspector's responsibility is to verify and document that each phase of work has been satisfactorily completed and complies with all specifications***

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Inspector Responsibilities

- An inspector is required to perform specific tasks in accordance with Quality Standards. These standards are necessary to ensure specific measurements taken during the inspection process are performed consistently. Some of these tasks/measurements include surface preparation, wet and dry film thickness, adhesion, ambient conditions, and moisture. Some may be destructive in nature and will require the contractor to perform repair work. **Contact KYTC Central Office Construction to ensure coordination with the Bridge Painting Liaison for projects that include coating applications.**
- With assistance of the Engineer conduct the following:
  - Using the contract documents, create a formal or informal project check list including activities and responsibilities for QC and QA inspection personnel
  - Determine hold points (inspection points where acceptance of a phase of work must be completed to allow work to proceed to the next phase) and place them in a logical order
  - Determine inspection methods, inspection tools needed, when and how to perform inspections
  - Determine how to document inspections and hold point acceptance

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Environmental and Worker Safety

The **Contractor is solely responsible for both environmental and worker safety**, however this does not relieve the inspector of the responsibility to monitor, report, and document observed practices or issues. The contractor should hold daily safety meetings

The inspector needs to be aware of the environmental regulations to which the contractor must comply. The contractor may be required to submit an Environmental Compliance Plan. Depending on the size of the project, a Storm Water Permit or other permits may be required by Kentucky Division of Water. Also, certain urban jurisdictions may require an erosion and sediment control plan to be filed locally prior to work beginning. Some of the permitting requirements and regulations can be found in the Kentucky Administrative Regulations, Title 401, Chapters 4, 5, 6, 8, 9, 10, and 11. The contractor is required to conform to Kentucky Revised Statute 224.70-110 "General Prohibition Against Water Pollution." There may also be required permitting from the United States Army Corps of Engineers (USACE)

A variety of substances and materials found on construction sites can become pollutants of concern if they are washed into nearby water bodies, dumped onto porous soils, or discharged directly to surface waters or groundwater. When required by KYTC the contractor will submit the Best Management Practice (BMP) for the project. Inspectors should be familiar with these submittals and the use of "Controlling Erosion, Sediment, and Pollutant Runoff from Construction Sites" as a reference (see BMP Manual link below)

Use this link to access the KYTC Drainage Resource Materials:
https://transportation.ky.gov/Highway-Design/Pages/Drainage-Resource-Materials.aspx

Use this link to access the BMP Manual:
Https://eec.ky.gov/Environmental-Protection/Forms%20Library/09BMPManual_Final.pdf

Click here for a Special Note on Erosion Prevention and Sediment Control

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Traffic Control Plan

- **The Contractor is responsible for conformance to the requirements in the Traffic Control Plan** (TCP), Proposal, plan sheets, specifications, and the Manual on Uniform Traffic Control Devices (MUTCD). There may be other requirements not listed here.
- All Traffic Control Supervisors, Technicians, and Flaggers shall have current temporary work zone traffic control certifications.
- All equipment should be maintained for safe operation and safety checks should be performed and documented daily.
- Document traffic control concerns, notes, reviews, updates, accidents or any other applicable conditions on the DWR

ACTION: Read the TCP to become familiar with the proposed temporary work zone activities. Obtain the TC 63-67 (Traffic Control Inspection Report) which can be utilized for traffic control reviews as needed. Link below can be utilized to access the TC-63-67 Report

https://transportation.ky.gov/Organizational-Resources/Pages/Forms-Library-(TC-63).aspx

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Traffic Control Inspection Report

Kentucky Transportation Center
Division of Construction
TC 63-67
12/2011

TRAFFIC CONTROL INSPECTION REPORT

Contract Id _____ County _____
Project No. _____ Road Name _____
Contractor _____
Inspector _____ Section Engineer _____

This form is to be completed daily when there is traffic control restricting the normal traffic pattern, i.e. lane closures, temporary detours, etc. At least once per week, the form should be completed documenting the condition of signing, cones or barrels being used for delineation, traveled surface (pot holes, mud, dirt, striping, delineators). Whenever possible, the inspection should be made in the company of the contractor's traffic control coordinator or superintendent. For any areas receiving UNACCEPTABLE, the form is to be signed by the traffic control coordinator or superintendent, a deadline established for correction based upon specification 112.03.15, a copy given to the contractor, and time & date that the non-compliant issue was corrected. Penalties for failure to correct the unacceptable or noted items needing corrections will result in penalties being assessed in accordance with specification 112.03.15.

	N/A	ACCEPTABLE	UNACCEPTABLE	
CONES/BARRELS				
STRIPING				
BARRICADES				
VARIABLE MESSAGE BOARDS				
CONSTRUCTION SIGNS				
DELINEATORS				
LANE CLOSURES				
PAVEMENT MARKERS				
CONDITION OF TRAVELLED ROADWAY				
TEMPORARY TRAFFIC SIGNALS				
DETOUR SIGNAGE				

Additional Remarks Regarding Non-Compliant Issues or Items Other than those listed Above That Need Attention:

Time & Date for Corrections to be Complete: _____
Reviewed By: _____ (KYTC Representative)
(Sign & Date)
Reviewed With: _____ (Contractor Representative)
(Sign & Date)

Time & Date that Corrections were Completed: _____
Reviewed By: _____ (KYTC Representative)
(Sign & Date)
Reviewed With: _____ (Contractor Representative)
(Sign & Date)

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Pre-Construction Activities

Prior to the contractor beginning work ensure you have the necessary items to perform your activities. Common items include:

a) Contract documents (KY Std Spec, plans, proposal and any special notes)
b) Quality Assurance Plan
c) Safety (environmental & worker), Traffic Control Plan, Schedule and all Contractor Submittals including Material Product Data Sheets
d) Inspector Documentation Requirements
e) Personal Protective Equipment (PPE); ***additional equipment may be required for environmental or hazardous exposures***
f) Field tools; ***specialized inspection equipment/tools may be necessary***

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Obtain Personal Protective Equipment
(Pre-Construction)

- Class 2 (day) or 3 (night) high visibility apparel
- Hard hat
- Hearing protection
- Safety glasses w/side shields
- Gloves
- Steel toe boots
- Respirator may be required **(Contact Bridge Painting Liaison)**
- Fall protection in accordance with 29 CFR Part 1926 (as required)

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Obtain Tools and Equipment
(Pre-Construction)

- A camera of sufficient quality to enlarge images for viewing critical details. The camera on most cell phones is usually adequate for photo documentation.
- Wet Film Thickness (WFT) Gauge **(Contact Bridge Painting Liaison)**
- Equipment to measure ambient conditions **(Contact Bridge Painting Liaison)**
- Flashlight
- Dull scraper
- Claw hammer or handheld sledgehammer
- Inspection mirror
- Measuring tape
- Notepad or ability to take notes
- Any other equipment necessary to perform the inspection duties

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Bridge Deck
Sealing
25

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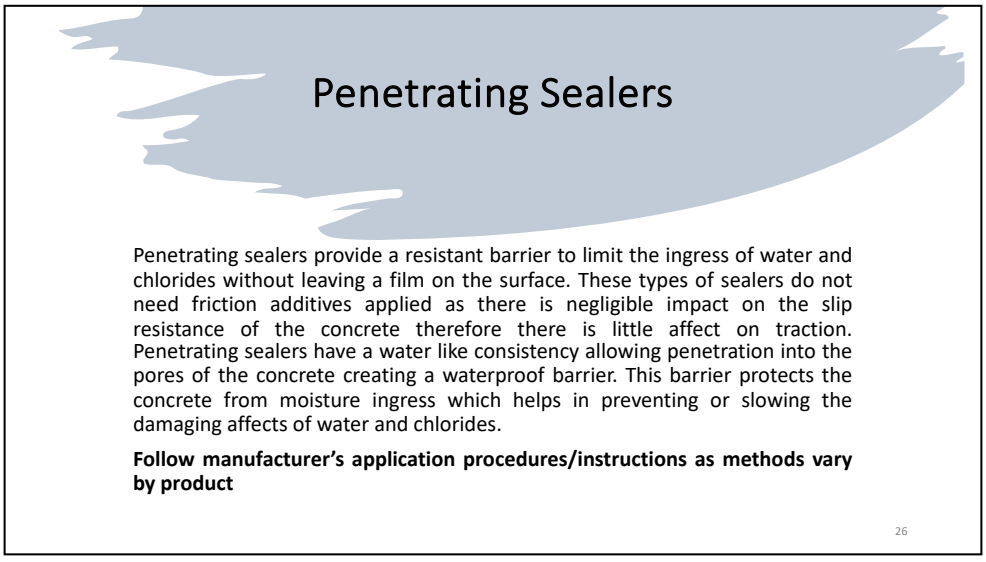
Penetrating Sealers
Penetrating sealers provide a resistant barrier to limit the ingress of water and chlorides without leaving a film on the surface. These types of sealers do not need friction additives applied as there is negligible impact on the slip resistance of the concrete therefore there is little affect on traction. Penetrating sealers have a water like consistency allowing penetration into the pores of the concrete creating a waterproof barrier. This barrier protects the concrete from moisture ingress which helps in preventing or slowing the damaging affects of water and chlorides.
Follow manufacturer's application procedures/instructions as methods vary by product
26

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Penetrating Sealer Application

- The sealer has a wet appearance and is easily identified during application
- After curing is complete the sealer will no longer be distinguishable from the existing concrete
- Inspection personnel should be present during application to verify all required areas are adequately covered by **monitoring application rate**

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Penetrating Sealer Application

- Sealing decks require debris, hydrocarbons, and other foreign material be removed.
- Hydrocarbons should be removed mechanically or chemically prior to pressure washing. Refer to PDS for compatible chemicals.
- Inspection staff should observe application to assure the correct application rate**.**
- The PDS will provide application rates, (i.e., 200-350 sq ft/gal). If allowed, the contractor will target the higher range to use less product.
- The contractor should provide a means of measuring usage. *Example:* Using a target application rate of 250^2 ft/gal, lay out an area in multiples of 250^2 ft. Periodically stop production at end of a pre-determined area and measure the amount of sealer used. An area of 1000^2 ft should have used 4 gallons. The contractor must adjust application rates accordingly.
- Special Notes (see Slide 11) take precedent over other specifications and may specify an application rate that differs from the PDS.

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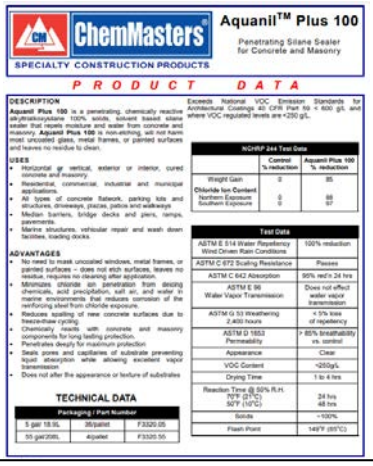
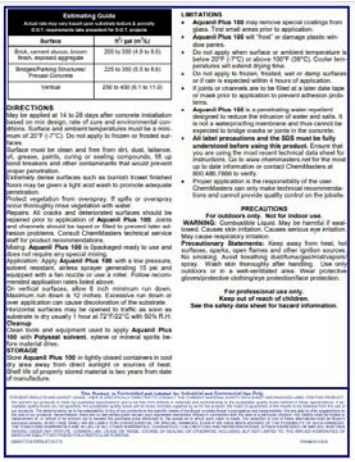
PDS for Concrete Sealer

(Example)



Application Rate



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Film Forming Sealers

- Film formers have a thick honey like consistency and are typically self-leveling. Film formers fill surface inconsistencies effectively making the concrete waterproof. Since this sealer does not penetrate the concrete, it will have an adverse impact on the traction of driving surfaces, therefore, it is necessary to add aggregate to increase the surface friction. The aggregate, specified in the contract documents, is typically applied when the sealer is wet allowing the media to embed itself into the material surface. A second sealer application might be used on top of the friction media. Proper application generally requires dry decks with warm conditions. The surface must be clean prior to the application which typically includes sand blasting of the existing surface
- After curing sounding of the material is required to ensure proper bonding to the existing concrete surface
- **Follow manufacturer's application procedures/instructions as methods vary by product**

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Film Former
Overlay
Application
Surface to be sealed should be sandblasted, cleaned of blasting residue. and dry prior to application of sealing material
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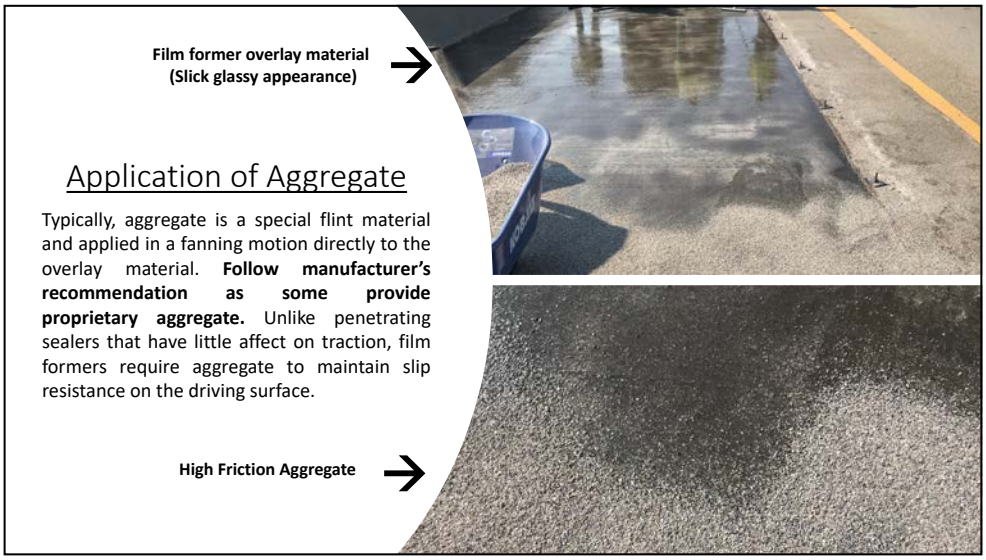
Film former overlay material
(Slick glassy appearance)
Application of Aggregate
Typically, aggregate is a special flint material and applied in a fanning motion directly to the overlay material. Follow manufacturer's recommendation as some provide proprietary aggregate. Unlike penetrating sealers that have little affect on traction, film formers require aggregate to maintain slip resistance on the driving surface.
High Friction Aggregate

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General Summary for Bridge Deck Sealing

- Sealers provide resistance to the infiltration of water and chlorides into structure.
- Penetrating sealers require less labor to apply, however, when applied properly the effective service life of film formers should be longer.
- Following the Manufacture's PDS for both types of sealers is critical.

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Post Construction

After all work items are completed, there are several critical steps required to close out KYTC contracts check highway bridge

- Sounding of the overlay material is required to ensure proper bonding to the existing surface concrete (Film Former Overlays)
- Remove and repair any unbonded areas found (Film Former Overlays)
- Review plans and ensure that all tasks and objectives have been completed
- Excess aggregate should be swept from the construction area with powered equipment and removed
- All waste has been collected for proper disposal at an approved facility or as directed by the Engineer
- All equipment, including containment and traffic control devices, have been removed from work area

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Example of Special Note for Erosion Prevention and Sediment Control

Special Note For:
Erosion Prevention and Sediment Control
Item xx-xxxx County Description

- The Contractor shall be responsible for filing the Kentucky Pollution Discharge Elimination System (KPDES) KYR10 permit Notice of Intent (NOI) with the Kentucky Division of Water (DOW) and any KPDES local Municipal Separate Storm Sewer System (MS4) program that has jurisdiction. The NOI shall name the contractor as the Facility Operator and include the KYTC Contract ID Number (CID) for reference.
- The Contractor shall perform all temporary erosion/sediment control functions including providing a Best Management Practice (BMP) Plan, conducting required inspections, modifying the BMP plan documents as construction progresses and documenting the installation and maintenance of BMPs in conformance with the KPDES KYR10 permit effective on August 1, 2009, or a permit re-issued to replace that KYR10 permit. This work shall be conducted in conformance with the requirements of Section 213 of KYTC 2008 Department of Highways, Standard Specifications for Road and Bridge Construction.
- Contrary to Section 213.03.03, paragraph 2, the Engineer shall conduct inspections as needed to verify compliance with Section 213 of KYTC 2008 Department of Highways, Standard Specifications for Road and Bridge Construction. The Engineer's inspections shall be performed a minimum of once per month and within seven days after a storm of ½ inch or greater. Copies of the Engineer's inspections shall not be provided to the contractor unless improvements to the BMP's are required. The contractor shall initiate corrective action within 24 hours of any reported deficiency and complete the work within 5 days. The Engineer shall use Form TC 63-61 A for this report. Inspections performed by the Engineer do not relieve the Contractor of any responsibility for compliance with the KPDES permit.
- Contrary to Section 213.05, bid items for temporary BMPs will not be listed and will be replaced with one lump sum item for the services. Payment will be pro-rated based on the Project Schedule as submitted by the Contractor and as agreed to by the Engineer.
- The contractor shall be responsible for applying "good engineering practices" as required by the KPDES permit. The contractor may use any temporary BMPs with the approval of the KYTC Engineer.
- The contractor shall provide the Engineer copies of all documents required by the KPDES permit at the time they are prepared.
- The contractor shall be responsible for the examination of the soils to be encountered and make his own independent determination of the temporary BMPs that will be required to accomplish effective erosion prevention and sediment control.
- The Contractor shall be responsible for filing the KPDES permit Notice of Termination (NOT) with the Kentucky DOW and any local MS4 program that has jurisdiction. The NOT shall be filed after the Engineer agrees that the project is stabilized, or the project has been formally accepted.

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Appendix F Bridge Washing

KYTC

Bridge Preventive Maintenance

Inspection Training Module

Bridge Washing

1

Bridge Washing Introduction

Bridge washing is a preventive maintenance activity to remove debris and other contaminants that can cause steel and concrete to become weathered and deteriorate. All parts of the bridge should be washed from the top down including the deck, joints, drains, superstructure and substructure. Bridge washing facilitates annual inspections by allowing access to critical areas that are otherwise obscured by debris.

Bridge washing involves little if any material other than the water used for pressure washing. Clean, potable water must be used. Pumping water from any waterway is not allowed. Typically bridge washing contracts will be combined with other tasks (e.g., concrete coating and sealing).

2

Bridge Washing Index

The training module will focus on the following topics:

- The Importance of Contract Documents
- Inspector Responsibilities and Qualifications
- Environmental Concerns
- Traffic Control
- Pre-Construction Activities
- Personal Protective Equipment and Tools
- Bridge Washing
- Inspection
- Summary
- Post Construction

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KYTC Links

- https://transportation.ky.gov/Construction
  - Home page with many useful links and documents for inspection
- https://transportation.ky.gov/Construction/Pages/Kentucky-Standard-Specifications.aspx
  - Standard Specifications and Supplemental Specifications
- https://transportation.ky.gov/Construction/Pages/Construction-Engineer%27s-Resource-Center.aspx
  - Includes several inspection documents and spreadsheets
- https://transportation.ky.gov/Construction/Pages/Special-Notes-Special-Provisions.aspx
  - Special Notes and Provisions
- https://transportation.ky.gov/Highway-Design/Pages/Standard-Drawings-2020.aspx
  - Std Drawings, Sepia Drawings and other useful links
- https://transportation.ky.gov/Construction-Procurement/Pages/default.aspx
  - Contract Proposals and Letting Information
- https://transportation.ky.gov/Organizational-Resources/Pages/Forms-Library.aspx
  - KYTC forms and templates
- https://transportation.ky.gov/Materials
  - Home page with many useful links and documents such as Sampling Manual and LAM
- https://transportation.ky.gov/Materials/pages/List-Of-Approved-Materials.aspx
  - KYTC List of Approved Materials (LAM)

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Kentucky Standard Specifications

Standard Specifications

Type Name

Spec Year : **2019** (11)

- 100 General Provisions 2019
- 200 Earthwork 2019
- 300 Aggregate Base Courses 2019
- 400 Asphalt Pavements 2019
- 500 PCC Pavement and Non-Structural Concrete Construction 2019
- 600 Structures and Concrete 2019
- 700 Drainage, Traffic, and Roadside Construction 2019
- 800 Materials Details 2019
- Appendix A Tabulation of Construction Tolerances 2019
- Appendix B Index 2019
- Complete KYTC Standard Specifications - 2019

Supplemental Specifications

Type Name

Spec Year : **2019** (7)

- Supplemental Specs Effective with May 26, 2022 Letting
- Supplemental Specs Effective with November 19 2021 Letting
- Supplemental Specifications Effective with June 25 2021 Letting
- Supplemental Specification Effective with September 25, 2020 Letting
- Supplemental Specifications Effective with July 24, 2020 Letting rev 20200617
- Supplemental Specifications Effective with March 20, 2020 Letting
- Supplemental Specifications Effective with July 26 2019 Letting

https://transportation.ky.gov/Construction/Pages/Kentucky-Standard-Specifications.aspx

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Kentucky Standard Specifications

- Kentucky Standard Specifications are a compilation of guidelines for construction and maintenance requirements useful to engineers for developing of projects and contracts
- When referenced in KYTC contracts they become legally binding documents
- Inspectors need to be knowledgeable of these contractual specifications as they are pertinent to the inspection process

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Examples of Safety Data and Product Data Sheets

Inspection staff should have a copy of SDS & PDS for all materials/chemicals being utilized by the contractor.

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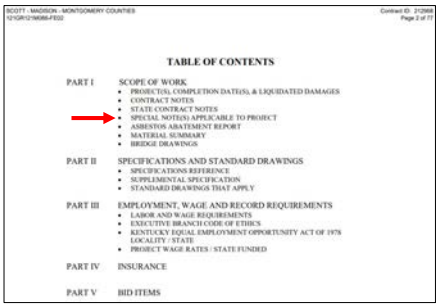
KYTC Contract Proposal

(Example)

- KYTC contract proposals will include detailed information about the project. It will include any Special Notes for construction and will include the bid item list
- **Inspection personnel should review the contract proposal carefully; paying close attention to the Special Notes**



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- STATE CONTRACT NOTES
- SPECIAL NOTE(S) APPLICABLE TO PROJECT
- ASBESTOS ABATEMENT REPORT
- MATERIAL SUMMARY
- BRIDGE DRAWINGS

PART II SPECIFICATIONS AND STANDARD DRAWINGS
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- SUPPLEMENTAL SPECIFICATION
- STANDARD DRAWINGS THAT APPLY

PART III EMPLOYMENT, WAGE AND RECORD REQUIREMENTS
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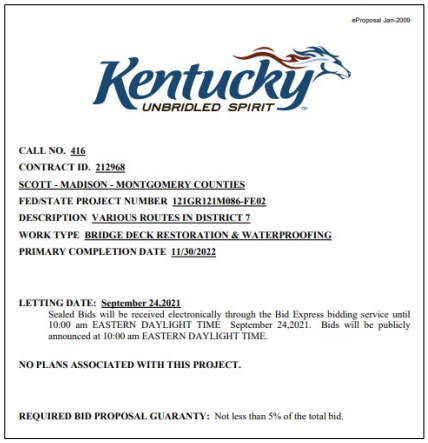
- LOCALITY / STATE
- PROJECT WAGE RATES / STATE FUNDED

PART IV INSURANCE

PART V BID ITEMS



eProposal Jan-2009

Kentucky UNBRIDLED SPIRIT

CALL NO. 416
CONTRACT ID. 212968
SCOTT - MADISON - MONTGOMERY COUNTIES
FED/STATE PROJECT NUMBER 121GR121M086-FE02
DESCRIPTION VARIOUS ROUTES IN DISTRICT 7
WORK TYPE BRIDGE DECK RESTORATION & WATERPROOFING
PRIMARY COMPLETION DATE 11/30/2022

LETTING DATE: September 24,2021
Sealed Bids will be received electronically through the Bid Express bidding service until 10:00 am EASTERN DAYLIGHT TIME September 24,2021. Bids will be publicly announced at 10:00 am EASTERN DAYLIGHT TIME.

NO PLANS ASSOCIATED WITH THIS PROJECT.

REQUIRED BID PROPOSAL GUARANTY: Not less than 5% of the total bid.

NOTE: Construction plans will be included within many proposals

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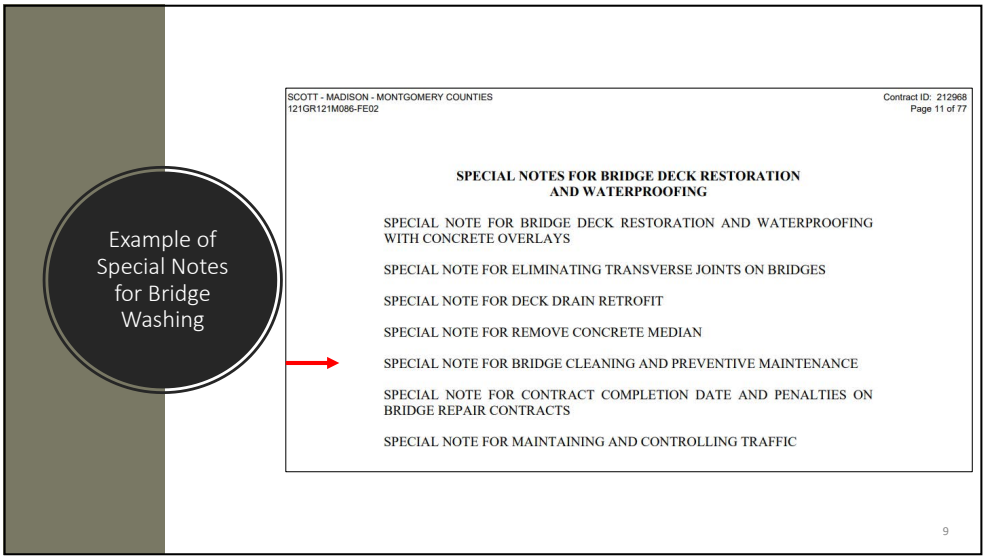
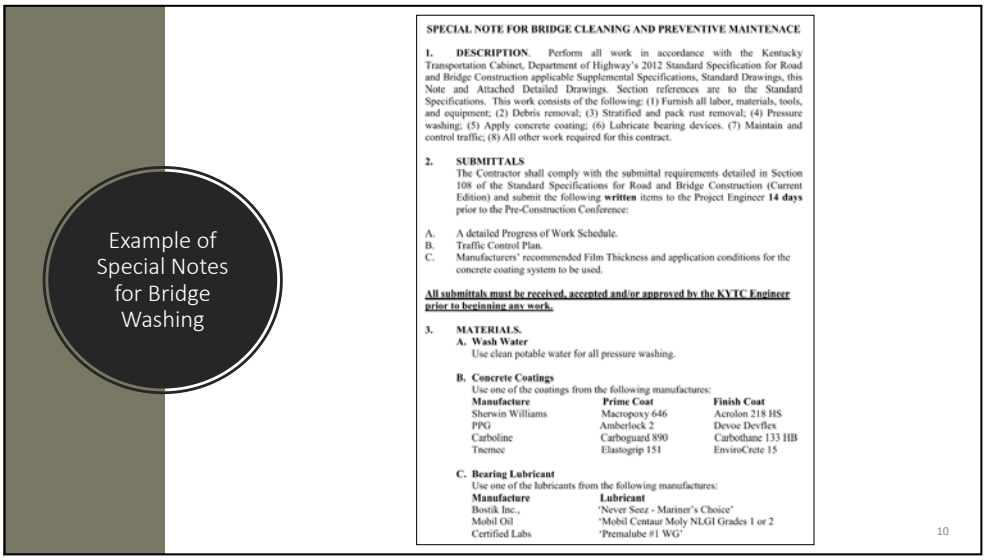

Example of Special Notes for Bridge Washing
SCOTT - MADISON - MONTGOMERY COUNTIES
121GR121M086-FE02
Contract ID: 212968
Page 11 of 77
SPECIAL NOTES FOR BRIDGE DECK RESTORATION AND WATERPROOFING
SPECIAL NOTE FOR BRIDGE DECK RESTORATION AND WATERPROOFING WITH CONCRETE OVERLAYS
SPECIAL NOTE FOR ELIMINATING TRANSVERSE JOINTS ON BRIDGES
SPECIAL NOTE FOR DECK DRAIN RETROFIT
SPECIAL NOTE FOR REMOVE CONCRETE MEDIAN
SPECIAL NOTE FOR BRIDGE CLEANING AND PREVENTIVE MAINTENANCE
SPECIAL NOTE FOR CONTRACT COMPLETION DATE AND PENALTIES ON BRIDGE REPAIR CONTRACTS
SPECIAL NOTE FOR MAINTAINING AND CONTROLLING TRAFFIC
9

9


Example of Special Notes for Bridge Washing
SPECIAL NOTE FOR BRIDGE CLEANING AND PREVENTIVE MAINTENACE
1. DESCRIPTION. Perform all work in accordance with the Kentucky Transportation Cabinet, Department of Highway's 2012 Standard Specification for Road and Bridge Construction applicable Supplemental Specifications, Standard Drawings, this Note and Attached Detailed Drawings. Section references are to the Standard Specifications. This work consists of the following: (1) Furnish all labor, materials, tools, and equipment; (2) Debris removal; (3) Stratified and pack rust removal; (4) Pressure washing; (5) Apply concrete coating; (6) Lubricate bearing devices. (7) Maintain and control traffic; (8) All other work required for this contract.
2. SUBMITTALS
The Contractor shall comply with the submittal requirements detailed in Section 108 of the Standard Specifications for Road and Bridge Construction (Current Edition) and submit the following written items to the Project Engineer 14 days prior to the Pre-Construction Conference:
A. A detailed Progress of Work Schedule.
B. Traffic Control Plan.
C. Manufacturers' recommended Film Thickness and application conditions for the concrete coating system to be used.
All submittals must be received, accepted and/or approved by the KYTC Engineer prior to beginning any work.
3. MATERIALS.
A. Wash Water
Use clean potable water for all pressure washing.
B. Concrete Coatings
Use one of the coatings from the following manufactures:
Manufacture | Prime Coat | Finish Coat
Sherwin Williams | Macropoxy 646 | Acrolon 218 HS
PPG | Amberlock 2 | Devoe Devflex
Carboline | Carboguard 890 | Carbothane 133 HB
Tnemec | Elastogrip 151 | EnviroCrete 15
C. Bearing Lubricant
Use one of the lubricants from the following manufactures:
Manufacture | Lubricant
Bostik Inc., | 'Never Seez - Mariner's Choice'
Mobil Oil | 'Mobil Centaur Moly NLGI Grades 1 or 2
Certified Labs | 'Premalube #1 WG'
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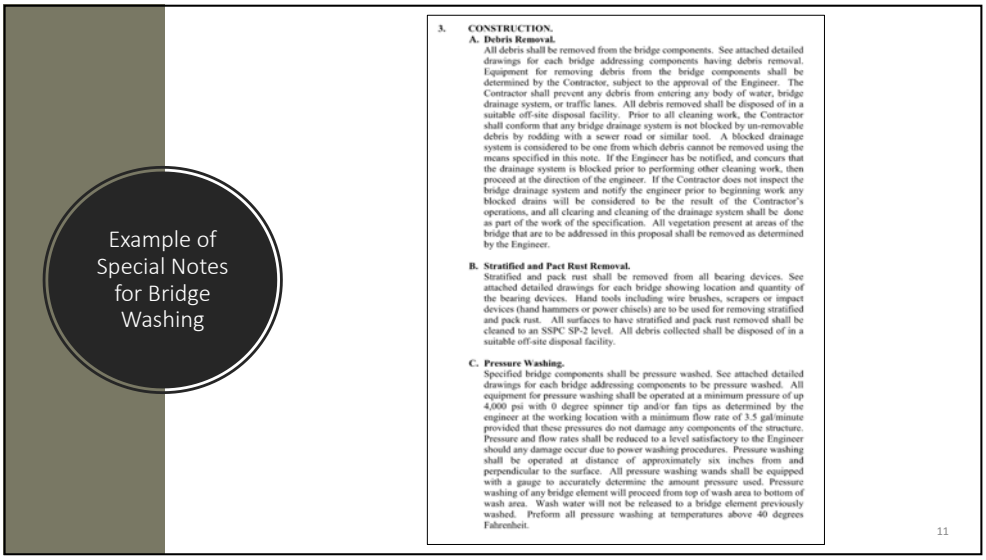
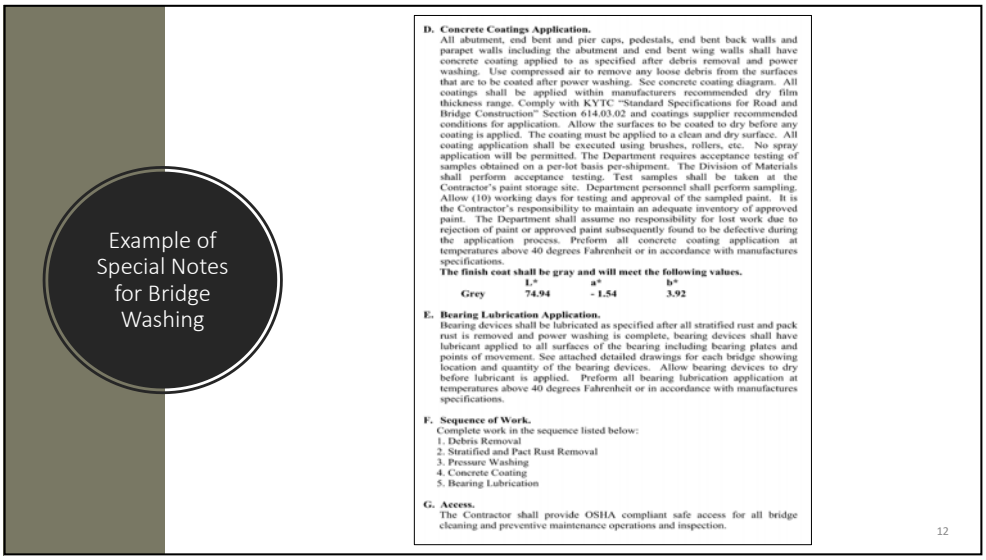

Example of Special Notes for Bridge Washing
3. CONSTRUCTION.
A. Debris Removal.
All debris shall be removed from the bridge components. See attached detailed drawings for each bridge addressing components having debris removal. Equipment for removing debris from the bridge components shall be determined by the Contractor, subject to the approval of the Engineer. The Contractor shall prevent any debris from entering any body of water, bridge drainage system, or traffic lanes. All debris removed shall be disposed of in a suitable off-site disposal facility. Prior to all cleaning work, the Contractor shall conform that any bridge drainage system is not blocked by un-removable debris by rodding with a sewer road or similar tool. A blocked drainage system is considered to be one from which debris cannot be removed using the means specified in this note. If the Engineer has be notified, and concurs that the drainage system is blocked prior to performing other cleaning work, then proceed at the direction of the engineer. If the Contractor does not inspect the bridge drainage system and notify the engineer prior to beginning work any blocked drains will be considered to be the result of the Contractor's operations, and all clearing and cleaning of the drainage system shall be done as part of the work of the specification. All vegetation present at areas of the bridge that are to be addressed in this proposal shall be removed as determined by the Engineer.
B. Stratified and Pact Rust Removal.
Stratified and pack rust shall be removed from all bearing devices. See attached detailed drawings for each bridge showing location and quantity of the bearing devices. Hand tools including wire brushes, scrapers or impact devices (hand hammers or power chisels) are to be used for removing stratified and pack rust. All surfaces to have stratified and pack rust removed shall be cleaned to an SSPC SP-2 level. All debris collected shall be disposed of in a suitable off-site disposal facility.
C. Pressure Washing.
Specified bridge components shall be pressure washed. See attached detailed drawings for each bridge addressing components to be pressure washed. All equipment for pressure washing shall be operated at a minimum pressure of up 4,000 psi with 0 degree spinner tip and/or fan tips as determined by the engineer at the working location with a minimum flow rate of 3.5 gal/minute provided that these pressures do not damage any components of the structure. Pressure and flow rates shall be reduced to a level satisfactory to the Engineer should any damage occur due to power washing procedures. Pressure washing shall be operated at distance of approximately six inches from and perpendicular to the surface. All pressure washing wands shall be equipped with a gauge to accurately determine the amount pressure used. Pressure washing of any bridge element will proceed from top of wash area to bottom of wash area. Wash water will not be released to a bridge element previously washed. Preform all pressure washing at temperatures above 40 degrees Fahrenheit.
11

11


Example of Special Notes for Bridge Washing
D. Concrete Coatings Application.
All abutment, end bent and pier caps, pedestals, end bent back walls and parapet walls including the abutment and end bent wing walls shall have concrete coating applied to as specified after debris removal and power washing. Use compressed air to remove any loose debris from the surfaces that are to be coated after power washing. See concrete coating diagram. All coatings shall be applied within manufacturers recommended dry film thickness range. Comply with KYTC "Standard Specifications for Road and Bridge Construction" Section 614.03.02 and coatings supplier recommended conditions for application. Allow the surfaces to be coated to dry before any coating is applied. The coating must be applied to a clean and dry surface. All coating application shall be executed using brushes, rollers, etc. No spray application will be permitted. The Department requires acceptance testing of samples obtained on a per-lot basis per-shipment. The Division of Materials shall perform acceptance testing. Test samples shall be taken at the Contractor's paint storage site. Department personnel shall perform sampling. Allow (10) working days for testing and approval of the sampled paint. It is the Contractor's responsibility to maintain an adequate inventory of approved paint. The Department shall assume no responsibility for lost work due to rejection of paint or approved paint subsequently found to be defective during the application process. Preform all concrete coating application at temperatures above 40 degrees Fahrenheit or in accordance with manufactures specifications.
The finish coat shall be gray and will meet the following values.
L* a* b*
Grey 74.94 - 1.54 3.92
E. Bearing Lubrication Application.
Bearing devices shall be lubricated as specified after all stratified rust and pack rust is removed and power washing is complete, bearing devices shall have lubricant applied to all surfaces of the bearing including bearing plates and points of movement. See attached detailed drawings for each bridge showing location and quantity of the bearing devices. Allow bearing devices to dry before lubricant is applied. Preform all bearing lubrication application at temperatures above 40 degrees Fahrenheit or in accordance with manufactures specifications.
F. Sequence of Work.
Complete work in the sequence listed below:
1. Debris Removal
2. Stratified and Pact Rust Removal
3. Pressure Washing
4. Concrete Coating
5. Bearing Lubrication
G. Access.
The Contractor shall provide OSHA compliant safe access for all bridge cleaning and preventive maintenance operations and inspection.
12

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Example of Special Notes for Bridge Washing

H. Inspection.
The Cabinet will provide inspection for all items required in this contract. Visual inspection will be required upon completion of each work item for each structure component or at the discretion of the Engineer at any time. All visual inspection shall be performed within arm's length distance.

1. **Debris Removal**: Visual Inspection
2. **Stratified Rust or Pack Rust Removal:** Visual Inspection and Scraper Test any surface cleaned to SSPC SP2 will be inspected by a dull scraper test to ascertain adherence of existing coating and a hammer test for tightness of pact rust.
3. **Power Washing:** Visual Inspection
4. **Concrete Coating:**
   Prime Coat Application Check for dry film thickness*, and defects in paint Finish Coat Application Check for dry film thickness*, paint appearance, color and quality of application.
   *Destructive DFTs shall be used. Contractor shall repair all test locations, cost will be considered incidental to the contract.
5. **Bearing Greasing:** Visual Inspection.

I. Verifying Field Conditions.
The Contractor shall be familiar with all conditions at each bridge site. The Cabinet will not consider any claims due to the Contractor having not familiarized themselves with requirements of this work. Residual lead paint may present on each bridge. The Contractor is advised to take all necessary protective measures including worker safety and environmental regulations when performing surface preparation. The Department will not consider any claims based on residual lead paint.

J. Damage to the structure.
The Contractor shall bear all responsibility and expense for any and all damage to the structure during the repair work, even to the removal and replacement of a fallen span, should the fallen span result from the Contractors actions.

4. MEASUREMENT.
Bridge Cleaning and Preventative Maintenance: The Cabinet will measure this item as "Lump Sum"

5. PAYMENT.
Bridge Cleaning and Preventative Maintenance (23949ECC): The contract price for this item will be paid as a lump sum. The payment for this bid item at the contract unit price of Lump Sum shall be considered full compensation for complete and accepted work for all work items described in this note and attached detailed drawings which includes all labor, materials, equipment needed to complete all specified items in this contract for '**BRIDGE CLEANING AND PREVENTIVE MAINTENANCE**'.

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Inspector Documentation Requirements

- An inspector will be **required to have a copy of all contract documents** including Special Notes, Kentucky Standard Specifications, Material Data Requirements (Safety Data Sheets and Product Data Sheets), and any other documentation necessary for the Inspector to make informed decisions
- An inspector needs to be **knowledgeable with the bid item units being inspected** per the contract
- A Daily Work Report (DWR) requires basic information such as date and time, contractor identification, personnel onsite, bridge identification, weather data, as well as general and specific information on daily activities including traffic control
- There may also be specific information of work performed by the contractor that should be documented on the DWR. This information will be determined from the specifications. The DWR should reflect evidence of compliance and/or action taken to correct non-compliance to the specification
- Photographic documentation of work should supplement the DWR

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KYTC DWR

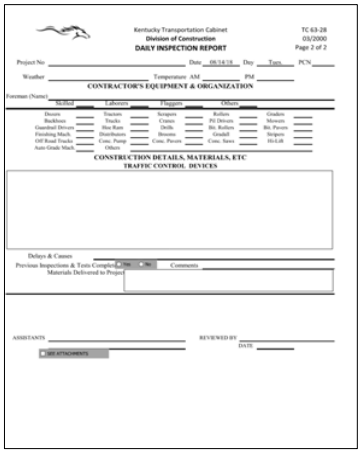
https://transportation.ky.gov/Construction/Pages/Construction-Engineer%27s-Resource-Center.aspx


Kentucky Transportation Cabinet
Division of Construction
DAILY INSPECTION REPORT
TC 63-28
03/2000
Page 1 of 2

PAY QUANTITIES

PAY QUANTITY DETAILS, REFERENCES, SKETCHES, ETC.

Attention Project Engineer


Kentucky Transportation Cabinet
Division of Construction
DAILY INSPECTION REPORT
TC 63-28
03/2000
Page 2 of 2

CONTRACTOR'S EQUIPMENT & ORGANIZATION

CONSTRUCTION DETAILS, MATERIALS, ETC
TRAFFIC CONTROL DEVICES

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Inspector Documentation Requirements

- Compile all applicable documents for the project including but not limited to: Special Notes, Plans, Standard Specifications, Qualified Materials lists, Environmental compliance reference documents, Occupational Health and Safety reference documents, Contractor submittals.
  - Contractor submittals may include; Product Data Sheets, Safety Data Sheets, Materials Certifications, Schedule (bar chart or narrative), Access plan, and Traffic Control Plans.
- Specifications, plans and special notes should be reviewed in advance of the project initiation and the Pre-Construction Conference. Questions and concerns should be discussed with the Section Engineer and/or the Project Manager for clarification.
  - Complete mark up of documents and tabulation for ease of reference

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Inspector Responsibilities

- Kentucky Transportation Cabinet (KYTC) bridge maintenance projects **should have experienced, district level inspector(s)** and required inspection equipment. Duties include overall verification of task completion and complete coverage of contractor operations
- Inspector(s) should have current **KYTC certification for Structures Level 1 and American concrete Institute (ACI) if concrete is placed or tested**
- Other than the previously discussed certifications there is no current official inspector qualifications for this task, however, it is **imperative that inspectors be familiar with the tasks being performed, contract specification, special notes, and pertinent parts of the current Kentucky Standard Specifications For Road and Bridge Construction**.
- **All aspects of the project are to be clearly documented**
- Inspection personnel will coordinate with the Contractor to establish hold points that follow all KYTC Specifications and Special Note requirements. **Hold points are progress milestones that occur when one phase of work is complete and ready for inspection, which should be completed before continuing with the next operational step**

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Inspector Responsibilities

- **Understanding specifications is CRITICAL**; including the Contract, Special Notes within the contract, pertinent sections of the current edition of Kentucky Standard Specifications, and Material Data Sheets. Inspection personnel should also be knowledgeable of any environmentally sensitive issues. There may be specific tasks that require knowledge of quality standards (ASTM, AASHTO, etc.).
- All aspects of the project are to be clearly documented (written and photographed)
- ***The inspector's responsibility is to verify and document that each phase of work has been satisfactorily completed and complies with all specifications***

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Inspector Responsibilities

- An inspector is required to perform specific tasks in accordance with Quality Standards. These standards are necessary to ensure specific measurements taken during the inspection process are performed consistently. Some of these tasks/measurements include surface preparation, wet and dry film thickness, adhesion, ambient conditions, and moisture. Some may be destructive in nature and will require the contractor to perform repair work. **Contact KYTC Central Office Construction to ensure coordination with the Bridge Painting Liaison for projects that include coating applications.**
- With assistance of the Engineer conduct the following:
  - Using the contract documents, create a formal or informal project check list including activities and responsibilities for QC and QA inspection personnel
  - Determine hold points (inspection points where acceptance of a phase of work must be completed to allow work to proceed to the next phase) and place them in a logical order
  - Determine inspection methods, inspection tools needed, when and how to perform inspections
  - Determine how to document inspections and hold point acceptance

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Environmental and Worker Safety

The **Contractor is solely responsible for both environmental and worker safety**, however this does not relieve the inspector of the responsibility to monitor, report, and document observed practices or issues. The contractor should hold daily safety meetings

The inspector needs to be aware of the environmental regulations to which the contractor must comply. The contractor may be required to submit an Environmental Compliance Plan. Depending on the size of the project, a Storm Water Permit or other permits may be required by Kentucky Division of Water. Also, certain urban jurisdictions may require an erosion and sediment control plan to be filed locally prior to work beginning. Some of the permitting requirements and regulations can be found in the Kentucky Administrative Regulations, Title 401, Chapters 4, 5, 6, 8, 9, 10, and 11. The contractor is required to conform to Kentucky Revised Statute 224.70-110 "General Prohibition Against Water Pollution." There may also be required permitting from the United States Army Corps of Engineers (USACE)

A variety of substances and materials found on construction sites can become pollutants of concern if they are washed into nearby water bodies, dumped onto porous soils, or discharged directly to surface waters or groundwater. When required by KYTC the contractor will submit the Best Management Practice (BMP) for the project. Inspectors should be familiar with these submittals and the use of "Controlling Erosion, Sediment, and Pollutant Runoff from Construction Sites" as a reference (see BMP Manual link below)

Use this link to access the KYTC Drainage Resource Materials:
https://transportation.ky.gov/Highway-Design/Pages/Drainage-Resource-Materials.aspx

Use this link to access the BMP Manual:
Https://eec.ky.gov/Environmental-Protection/Forms%20Library/09BMPManual_Final.pdf

Click here for a Special Note on Erosion Prevention and Sediment Control

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Traffic Control Plan

- **The Contractor is responsible for conformance to the requirements in the Traffic Control Plan** (TCP), Proposal, plan sheets, specifications, and the Manual on Uniform Traffic Control Devices (MUTCD). There may be other requirements not listed here.
- All Traffic Control Supervisors, Technicians, and Flaggers shall have current temporary work zone traffic control certifications.
- All equipment should be maintained for safe operation and safety checks should be performed and documented daily.
- Document traffic control concerns, notes, reviews, updates, accidents or any other applicable conditions on the DWR

ACTION: Read the TCP to become familiar with the proposed temporary work zone activities. Obtain the TC 63-67 (Traffic Control Inspection Report) which can be utilized for traffic control reviews as needed. Link below can be utilized to access the TC-63-67 Report

https://transportation.ky.gov/Organizational-Resources/Pages/Forms-Library-(TC-63).aspx

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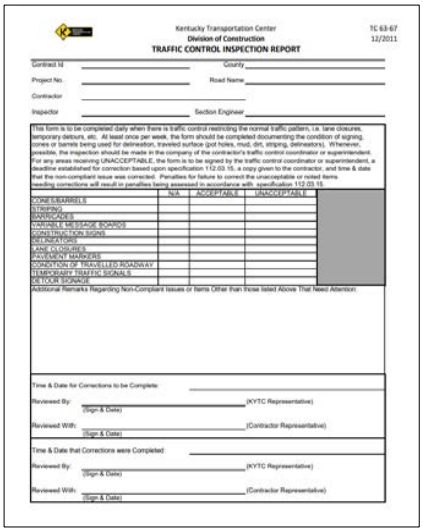
Traffic Control Inspection Report



Kentucky Transportation Center
Division of Construction
TC 63-67
12/2011

TRAFFIC CONTROL INSPECTION REPORT

Contract Id: _____ County: _____

Project No.: _____ Road Name: _____

Contractor: _____

Inspector: _____ Section Engineer: _____

This form is to be completed daily when there is traffic control restricting the normal traffic pattern, i.e. lane closures, temporary detours, etc. At least once per week, the form should be completed documenting the condition of signing, cones or barrels being used for delineation, traveled surface (pot holes, mud, dirt, striping, delineators). Whenever possible, the inspection should be made in the company of the contractor's traffic control coordinator or superintendent. For any areas receiving UNACCEPTABLE, the form is to be signed by the traffic control coordinator or superintendent, a deadline established for correction based upon specification 112.03.15, a copy given to the contractor, and time & date that the non-compliant issue was corrected. Penalties for failure to correct the unacceptable or noted items needing corrections will result in penalties being assessed in accordance with specification 112.03.15.

	N/A	ACCEPTABLE	UNACCEPTABLE
CONES/BARRELS			
STRIPING			
BARRICADES			
VARIABLE MESSAGE BOARDS			
CONSTRUCTION SIGNS			
DELINEATORS			
LANE CLOSURES			
PAVEMENT MARKERS			
CONDITION OF TRAVELLED ROADWAY			
TEMPORARY TRAFFIC SIGNALS			
DETOUR SIGNAGE			

Additional Remarks Regarding Non-Compliant Issues or Items Other than those listed Above That Need Attention:

Time & Date for Corrections to be Complete: _____

Reviewed By: _____ (KYTC Representative)
(Sign & Date)

Reviewed With: _____ (Contractor Representative)
(Sign & Date)

Time & Date that Corrections were Completed: _____

Reviewed By: _____ (KYTC Representative)
(Sign & Date)

Reviewed With: _____ (Contractor Representative)
(Sign & Date)

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Pre-Construction Activities

Prior to the contractor beginning work ensure you have the necessary items to perform your activities. Common items include:

a) Contract documents (KY Std Spec, plans, proposal and any special notes)

b) Quality Assurance Plan

c) Safety (environmental & worker), Traffic Control Plan, Schedule and all Contractor Submittals including Material Product Data Sheets

d) Inspector Documentation Requirements

e) Personal Protective Equipment (PPE); ***additional equipment may be required for environmental or hazardous exposures***

f) Field tools; ***specialized inspection equipment/tools may be necessary***

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Obtain Personal Protective Equipment *(Pre-Construction)*

- Class 2 (day) or 3 (night) high visibility apparel
- Hard hat
- Hearing protection
- Safety glasses w/side shields
- Gloves
- Steel toe boots
- Respirator may be required **(Contact Bridge Painting Liaison)**
- Fall protection in accordance with 29 CFR Part 1926 (as required)

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Obtain Tools and Equipment

(Pre-Construction)

- A camera of sufficient quality to enlarge images for viewing critical details. The camera on most cell phones is usually adequate for photo documentation.
- Wet Film Thickness (WFT) Gauge **(Contact Bridge Painting Liaison)**
- Equipment to measure ambient conditions **(Contact Bridge Painting Liaison)**
- Flashlight
- Dull scraper
- Claw hammer or handheld sledgehammer
- Inspection mirror
- Measuring tape
- Notepad or ability to take notes
- Any other equipment necessary to perform the inspection duties

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Bridge Washing

- Knowledge of standard procedures and tasks involved with properly cleaning bridge decks, and other key components that are damaged by long term exposure to field conditions is extremely valuable to the inspector.
- Skills such as identifying problem areas are essential for any assigned inspector
  - Vegetation in the way
  - Asphalt/Concrete debris
  - Aggregate
  - Contaminants (Oils, Liquid Asphalt, Mud, Etc.)
- Improper cleaning can lead to damaged bridge structures. It can also lead to obstructed views during routine inspections.
- Techniques for cleaning may include the following
  - Removing vegetation
  - Sweeping/shoveling away loose debris
  - Vacuuming
  - Chemical(s) and/or mechanical removal
  - Pressure washing

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Construction Phase Preparation

- Make sure all documentation is up to date and finalized
- Attend contractor's safety meetings
- Verify that all equipment is tested and is working properly and in safe working order
- Discuss areas that need to be cleaned
- Ensure that the traffic control is in place and functioning properly (if applicable)
- Document all actions thoroughly

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Debris Removal and Drain Cleaning

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Loose Debris and Drainage

Inspector should confirm and document the following:

- Vegetation contacting the structure or restricting work has been removed
- The entire structure has been cleared and debris removed
- The bridge drainage system is clear and functioning
- All debris has been collected and disposed of properly
- All loose rust has been removed
- Tightness of pack rust has been checked using handheld sledgehammer

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Pressure Washing

- Washing begins at the highest point of the bridge and proceeds to the lowest to ensure no wash water contaminates previously washed components
- Document equipment pressure, tip size used, stand-off distance, and wand angle to the wash surface
- Check the cleanliness of steel surfaces
- Filter fabric must be used to filter wash water prior to release into waterways or may be required to be captured and removed
  - Special Note may state: "The Contractor shall prevent any debris from entering any body of water, bridge drainage system, or traffic lanes". The DWR should reflect that this activity was completed to the satisfaction of the inspector before the contractor was allowed to move to the next task

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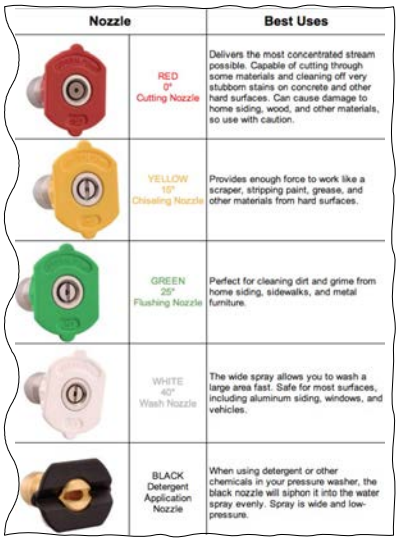
Summary

- Loose debris and drainage
  - Assure all loose debris has been removed by brushing, sweeping, shoveling, etc. and that all drains are cleared and functional
- Pressure washing
  - Assure that pressure washing is properly performed and specified level of cleanliness has been achieved and that **clean potable water from a known approved source is used**
- Demobilization
  - Assure the project is free of any defects all debris has been properly removed, and the traffic pattern is returned to normal

All documentation is complete and accurate



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Post Construction

After all work items are completed, several critical steps are required to close out KYTC contracts. Verify the following have been satisfactorily completed:

- Review plans and ensure that all tasks and objectives have been completed in accordance with specifications
- All waste has been collected for proper disposal at an approved facility or as directed by the Engineer
- All equipment, including containment and traffic control devices, have been removed from work area
- Normal traffic pattern has been re-established

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Example of Special Note for Erosion Prevention and Sediment Control

Special Note For:
Erosion Prevention and Sediment Control
Item xx-xxxx County Description

- The Contractor shall be responsible for filing the Kentucky Pollution Discharge Elimination System (KPDES) KYR10 permit Notice of Intent (NOI) with the Kentucky Division of Water (DOW) and any KPDES local Municipal Separate Storm Sewer System (MS4) program that has jurisdiction. The NOI shall name the contractor as the Facility Operator and include the KYTC Contract ID Number (CID) for reference.
- The Contractor shall perform all temporary erosion/sediment control functions including providing a Best Management Practice (BMP) Plan, conducting required inspections, modifying the BMP plan documents as construction progresses and documenting the installation and maintenance of BMPs in conformance with the KPDES KYR10 permit effective on August 1, 2009, or a permit re-issued to replace that KYR10 permit. This work shall be conducted in conformance with the requirements of Section 213 of KYTC 2008 Department of Highways, Standard Specifications for Road and Bridge Construction.
- Contrary to Section 213.03.03, paragraph 2, the Engineer shall conduct inspections as needed to verify compliance with Section 213 of KYTC 2008 Department of Highways, Standard Specifications for Road and Bridge Construction. The Engineer's inspections shall be performed a minimum of once per month and within seven days after a storm of ½ inch or greater. Copies of the Engineer's inspections shall not be provided to the contractor unless improvements to the BMP's are required. The contractor shall initiate corrective action within 24 hours of any reported deficiency and complete the work within 5 days. The Engineer shall use Form TC 63-61 A for this report. Inspections performed by the Engineer do not relieve the Contractor of any responsibility for compliance with the KPDES permit.
- Contrary to Section 213.05, bid items for temporary BMPs will not be listed and will be replaced with one lump sum item for the services. Payment will be pro-rated based on the Project Schedule as submitted by the Contractor and as agreed to by the Engineer.
- The contractor shall be responsible for applying "good engineering practices" as required by the KPDES permit. The contractor may use any temporary BMPs with the approval of the KYTC Engineer.
- The contractor shall provide the Engineer copies of all documents required by the KPDES permit at the time they are prepared.
- The contractor shall be responsible for the examination of the soils to be encountered and make his own independent determination of the temporary BMPs that will be required to accomplish effective erosion prevention and sediment control.
- The Contractor shall be responsible for filing the KPDES permit Notice of Termination (NOT) with the Kentucky DOW and any local MS4 program that has jurisdiction. The NOT shall be filed after the Engineer agrees that the project is stabilized, or the project has been formally accepted.

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Appendix G Erosion and Sediment Control

KYTC

Bridge Preventive Maintenance

Erosion & Sediment Control

1

Erosion and Sediment Control Introduction

- Knowledge of stream bed erosion and the countermeasures used to combat the degradation to bridges and surrounding areas is extremely valuable to the inspector. The size and shape of streams effect the design and maintenance of bridges. Geographical features of a stream will change naturally over time. These changes can be exacerbated during flooding events. Bridge designs incorporate countermeasures for this hydraulic degradation, however, over time changes can be extreme and may undermine the integrity of the bridge.
- Countermeasures are designed to redirect water flow within the stream bed to prevent erosion or provide a protective barrier to the bridge structure. Examples of counter measures designed to redirect flow include Spurs and Guide Banks or Dikes. Barrier style countermeasures include Gabion Baskets, Riprap, Channel Lining, and Footing Aprons.

2

2

Erosion and Sediment Control Index

The training module will focus on the following topics:

- Importance of Contract Documents
- Inspector Qualifications/Responsibilities
- Environmental/Worker Safety
- Traffic Control
- Pre-Production Activity
- Personal Protective Equipment
- Tools
- Examples of Erosion Countermeasures
- Inspection
- Summary
- Post Construction

3

3

KYTC Links

- https://transportation.ky.gov/Construction
  - Home page with many useful links and documents for inspection
- https://transportation.ky.gov/Construction/Pages/Kentucky-Standard-Specifications.aspx
  - Standard Specifications and Supplemental Specifications
- https://transportation.ky.gov/Construction/Pages/Construction-Engineer%27s-Resource-Center.aspx
  - Includes several inspection documents and spreadsheets
- https://transportation.ky.gov/Construction/Pages/Special-Notes-Special-Provisions.aspx
  - Special Notes and Provisions
- https://transportation.ky.gov/Highway-Design/Pages/Standard-Drawings-2020.aspx
  - Std Drawings, Sepia Drawings and other useful links
- https://transportation.ky.gov/Construction-Procurement/Pages/default.aspx
  - Contract Proposals and Letting Information
- https://transportation.ky.gov/Organizational-Resources/Pages/Forms-Library.aspx
  - KYTC forms and templates
- https://transportation.ky.gov/Materials
  - Home page with many useful links and documents such as Sampling Manual and LAM
- https://transportation.ky.gov/Materials/pages/List-Of-Approved-Materials.aspx
  - KYTC List of Approved Materials (LAM)

4

4

Kentucky Standard Specifications

Standard Specifications

Type Name

Spec Year : **2019** (11)

- 100 General Provisions 2019
- 200 Earthwork 2019
- 300 Aggregate Base Courses 2019
- 400 Asphalt Pavements 2019
- 500 PCC Pavement and Non-Structural Concrete Construction 2019
- 600 Structures and Concrete 2019
- 700 Drainage, Traffic, and Roadside Construction 2019
- 800 Materials Details 2019
- Appendix A Tabulation of Construction Tolerances 2019
- Appendix B Index 2019
- Complete KYTC Standard Specifications - 2019

Supplemental Specifications

Type Name

Spec Year : **2019** (7)

- Supplemental Specs Effective with May 26, 2022 Letting
- Supplemental Specs Effective with November 19 2021 Letting
- Supplemental Specifications Effective with June 25 2021 Letting
- Supplemental Specification Effective with September 25, 2020 Letting
- Supplemental Specifications Effective with July 24, 2020 Letting rev 20200617
- Supplemental Specifications Effective with March 20, 2020 Letting
- Supplemental Specifications Effective with July 26 2019 Letting

https://transportation.ky.gov/Construction/Pages/Kentucky-Standard-Specifications.aspx

5

5

Kentucky Standard Specifications

- Kentucky Standard Specifications are a compilation of guidelines for construction and maintenance requirements useful to engineers for developing of projects and contracts
- When referenced in KYTC contracts they become legally binding specifications
- Inspectors need to be knowledgeable of these contractual specifications as they are pertinent to the inspection process

6

6

Examples of Safety Data and Product Data Sheets

Inspection staff should have a copy of SDS & PDS for all materials/chemicals being utilized by the contractor.

7

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KYTC Contract Proposal

(Example)

- KYTC contract proposals will include detailed information about the project. It will include any Special Notes for construction and will include the bid item list
- **Inspection personnel should review the contract proposal carefully; paying close attention to the Special Notes**

- **SPECIAL NOTES FOR INSTALLATION AND CONSTRUCTION OF SCOUR COUNTERMEASURES**
- **SPECIAL NOTE FOR ENVIRONMENTAL AND WORKER SAFETY REGULATIONS**
- **GENERAL NOTE FOR MAINTAINING AND CONTROLLING TRAFFIC**
- **SPECIAL NOTE FOR CONTRACT COMPLETION DATE AND LIQUIDATED DAMAGES**

Kentucky UNBRIDLED SPIRIT

CALL NO. 411
CONTRACT ID. 212940
WARREN COUNTY
FED/STATE PROJECT NUMBER 114GR21M045-FE01 & FE02
DESCRIPTION BRIDGE ABUTMENT SLOPE PROTECTION.
WORK TYPE BRIDGE SCOUR MITIGATION
PRIMARY COMPLETION DATE 12/15/2021

LETTING DATE: April 23,2021
Sealed Bids will be received electronically through the Bid Express bidding service until 10:00 am EASTERN DAYLIGHT TIME April 23,2021. Bids will be publicly announced at 10:00 am EASTERN DAYLIGHT TIME.

NO PLANS ASSOCIATED WITH THIS PROJECT.

REQUIRED BID PROPOSAL GUARANTY: Not less than 5% of the total bid.

NOTE:
Construction plans will be included within many proposals

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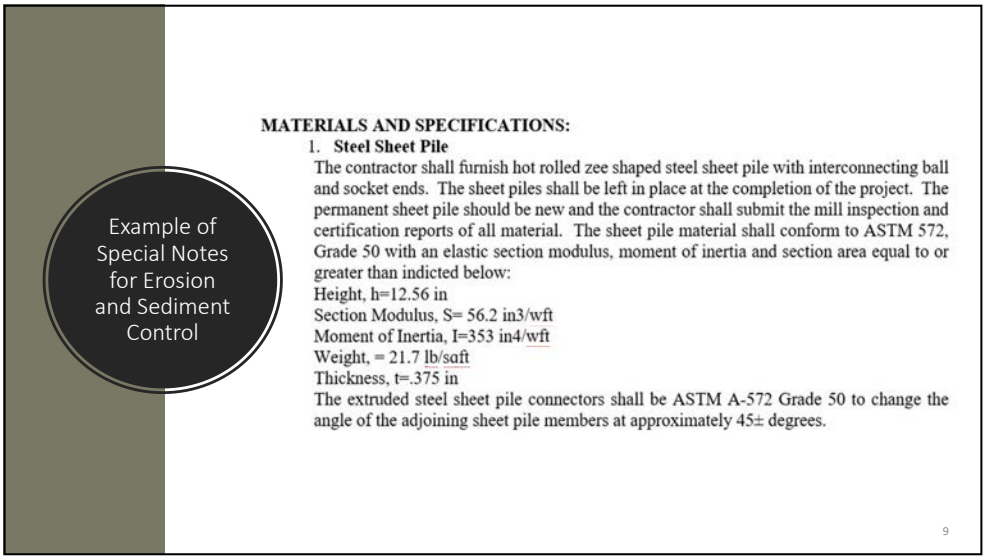
Example of Special Notes for Erosion and Sediment Control
MATERIALS AND SPECIFICATIONS:
1. Steel Sheet Pile
The contractor shall furnish hot rolled zee shaped steel sheet pile with interconnecting ball and socket ends. The sheet piles shall be left in place at the completion of the project. The permanent sheet pile should be new and the contractor shall submit the mill inspection and certification reports of all material. The sheet pile material shall conform to ASTM 572, Grade 50 with an elastic section modulus, moment of inertia and section area equal to or greater than indicted below:
Height, h=12.56 in
Section Modulus, S= 56.2 in3/wft
Moment of Inertia, I=353 in4/wft
Weight, = 21.7 lb/saft
Thickness, t=.375 in
The extruded steel sheet pile connectors shall be ASTM A-572 Grade 50 to change the angle of the adjoining sheet pile members at approximately 45± degrees.
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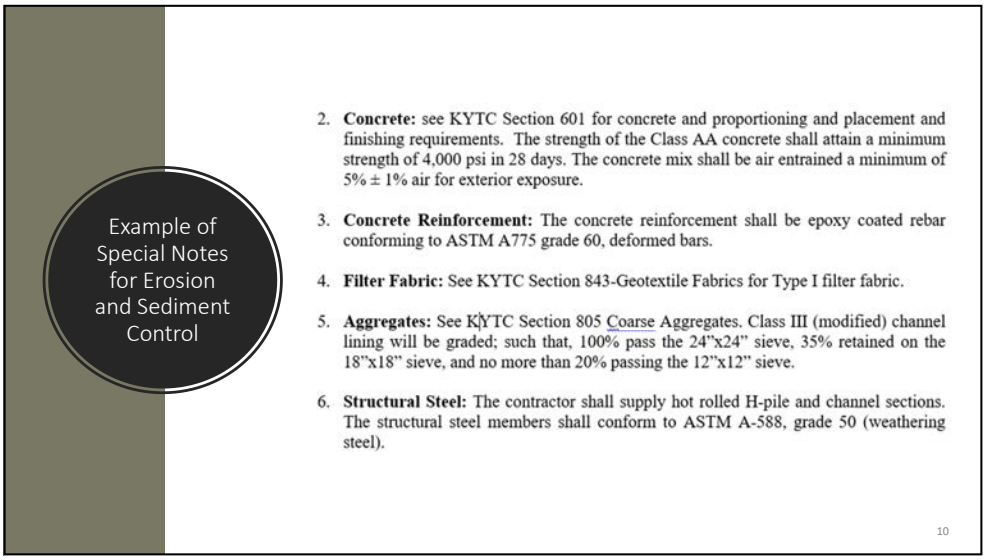
Example of Special Notes for Erosion and Sediment Control
2. Concrete: see KYTC Section 601 for concrete and proportioning and placement and finishing requirements. The strength of the Class AA concrete shall attain a minimum strength of 4,000 psi in 28 days. The concrete mix shall be air entrained a minimum of 5% ± 1% air for exterior exposure.
3. Concrete Reinforcement: The concrete reinforcement shall be epoxy coated rebar conforming to ASTM A775 grade 60, deformed bars.
4. Filter Fabric: See KYTC Section 843-Geotextile Fabrics for Type I filter fabric.
5. Aggregates: See KYTC Section 805 Coarse Aggregates. Class III (modified) channel lining will be graded; such that, 100% pass the 24"x24" sieve, 35% retained on the 18"x18" sieve, and no more than 20% passing the 12"x12" sieve.
6. Structural Steel: The contractor shall supply hot rolled H-pile and channel sections. The structural steel members shall conform to ASTM A-588, grade 50 (weathering steel).
10

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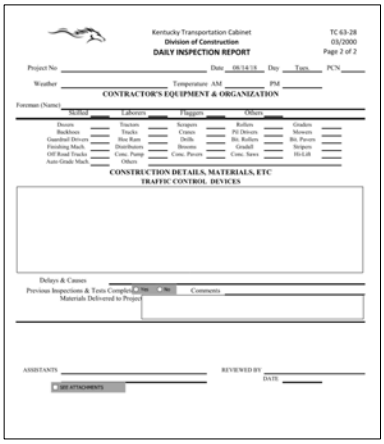
KYTC DWR


Kentucky Transportation Cabinet
Division of Construction
DAILY INSPECTION REPORT
TC 63-28
03/2000
Page 1 of 2

PAY QUANTITIES

PAY QUANTITY DETAILS, REFERENCES, SKETCHES, ETC.


Kentucky Transportation Cabinet
Division of Construction
DAILY INSPECTION REPORT
TC 63-28
03/2000
Page 2 of 2

CONTRACTOR'S EQUIPMENT & ORGANIZATION

CONSTRUCTION DETAILS, MATERIALS, ETC
TRAFFIC CONTROL DEVICES

https://transportation.ky.gov/Construction/Pages/Construction-Engineer%27s-Resource-Center.aspx 11

11

Inspector Responsibilities

- **Understanding specifications is CRITICAL**; including the Contract, Special Notes within the contract, pertinent sections of the current edition of Kentucky Standard Specifications, and Material Data Sheets. Inspection personnel should also be knowledgeable of any environmentally sensitive issues. There may be specific tasks that require knowledge of quality standards (ASTM, AASHTO, etc.).
- All aspects of the project are to be clearly documented (written and photographed)
- ***The inspector's responsibility is to verify and document that each phase of work has been satisfactorily completed and complies with all specifications***

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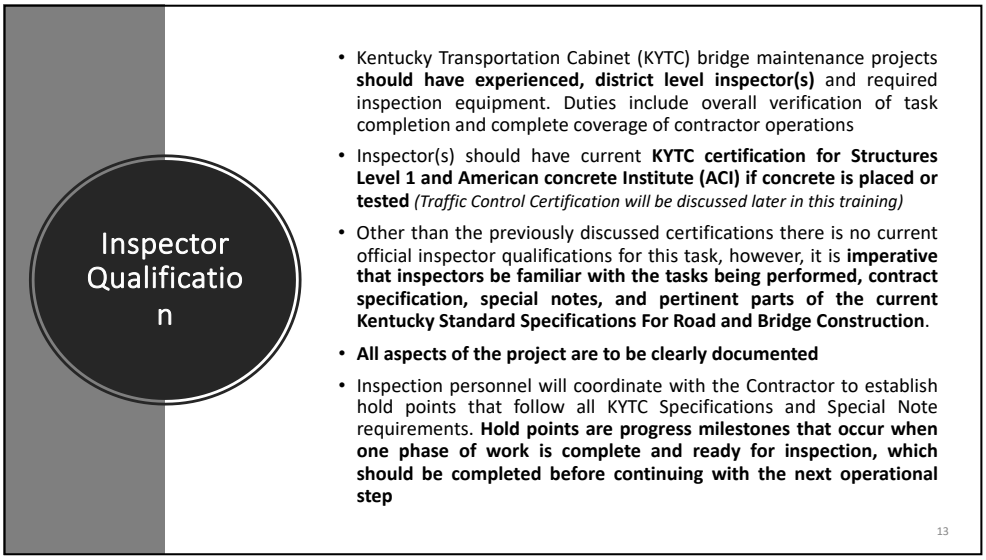
Inspector Qualification
• Kentucky Transportation Cabinet (KYTC) bridge maintenance projects **should have experienced, district level inspector(s)** and required inspection equipment. Duties include overall verification of task completion and complete coverage of contractor operations
• Inspector(s) should have current **KYTC certification for Structures Level 1 and American concrete Institute (ACI) if concrete is placed or tested** *(Traffic Control Certification will be discussed later in this training)*
• Other than the previously discussed certifications there is no current official inspector qualifications for this task, however, it is **imperative that inspectors be familiar with the tasks being performed, contract specification, special notes, and pertinent parts of the current Kentucky Standard Specifications For Road and Bridge Construction**.
• **All aspects of the project are to be clearly documented**
• Inspection personnel will coordinate with the Contractor to establish hold points that follow all KYTC Specifications and Special Note requirements. **Hold points are progress milestones that occur when one phase of work is complete and ready for inspection, which should be completed before continuing with the next operational step**
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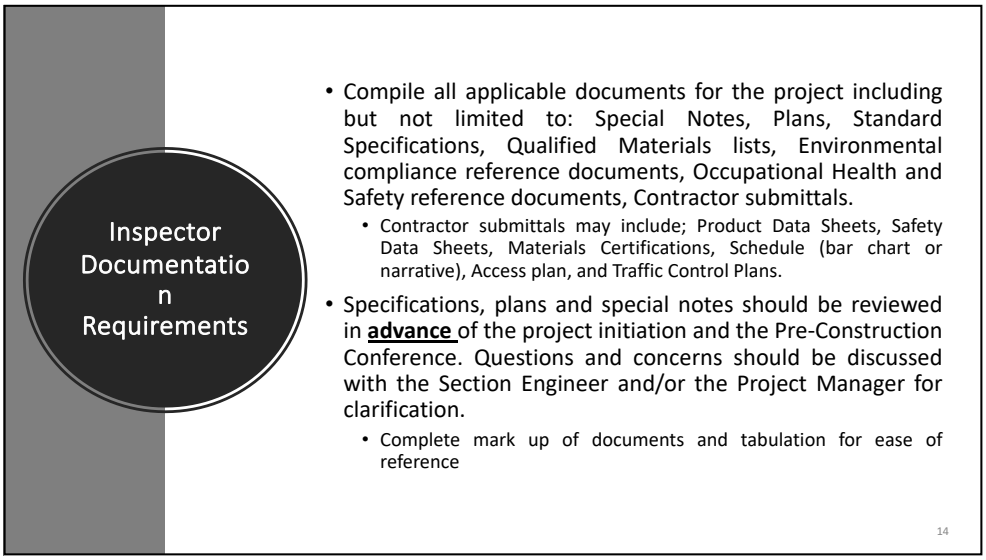
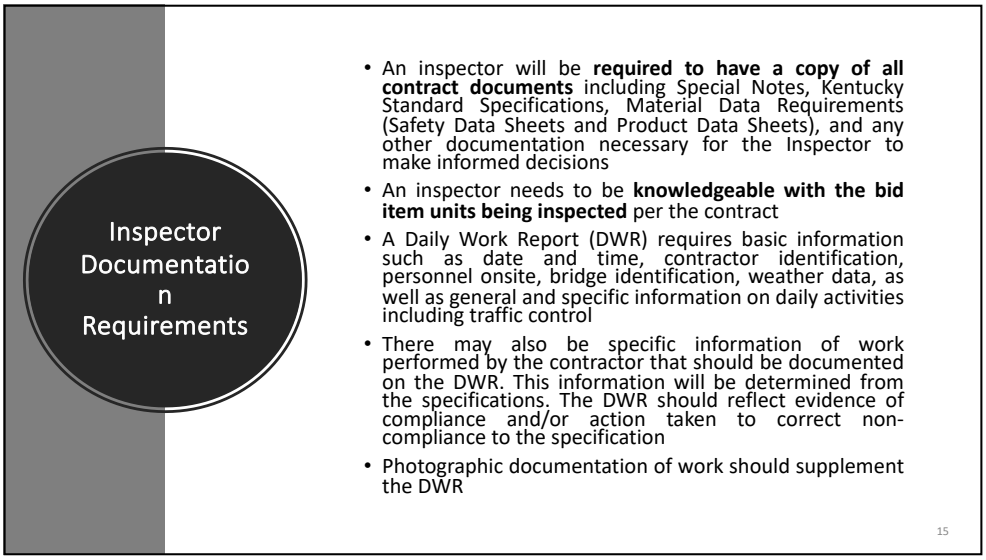

Inspector Documentation Requirements
• Compile all applicable documents for the project including but not limited to: Special Notes, Plans, Standard Specifications, Qualified Materials lists, Environmental compliance reference documents, Occupational Health and Safety reference documents, Contractor submittals.
• Contractor submittals may include; Product Data Sheets, Safety Data Sheets, Materials Certifications, Schedule (bar chart or narrative), Access plan, and Traffic Control Plans.
• Specifications, plans and special notes should be reviewed in **advance** of the project initiation and the Pre-Construction Conference. Questions and concerns should be discussed with the Section Engineer and/or the Project Manager for clarification.
• Complete mark up of documents and tabulation for ease of reference
14

14


Inspector Documentation Requirements
• An inspector will be **required to have a copy of all contract documents** including Special Notes, Kentucky Standard Specifications, Material Data Requirements (Safety Data Sheets and Product Data Sheets), and any other documentation necessary for the Inspector to make informed decisions
• An inspector needs to be **knowledgeable with the bid item units being inspected** per the contract
• A Daily Work Report (DWR) requires basic information such as date and time, contractor identification, personnel onsite, bridge identification, weather data, as well as general and specific information on daily activities including traffic control
• There may also be specific information of work performed by the contractor that should be documented on the DWR. This information will be determined from the specifications. The DWR should reflect evidence of compliance and/or action taken to correct non-compliance to the specification
• Photographic documentation of work should supplement the DWR
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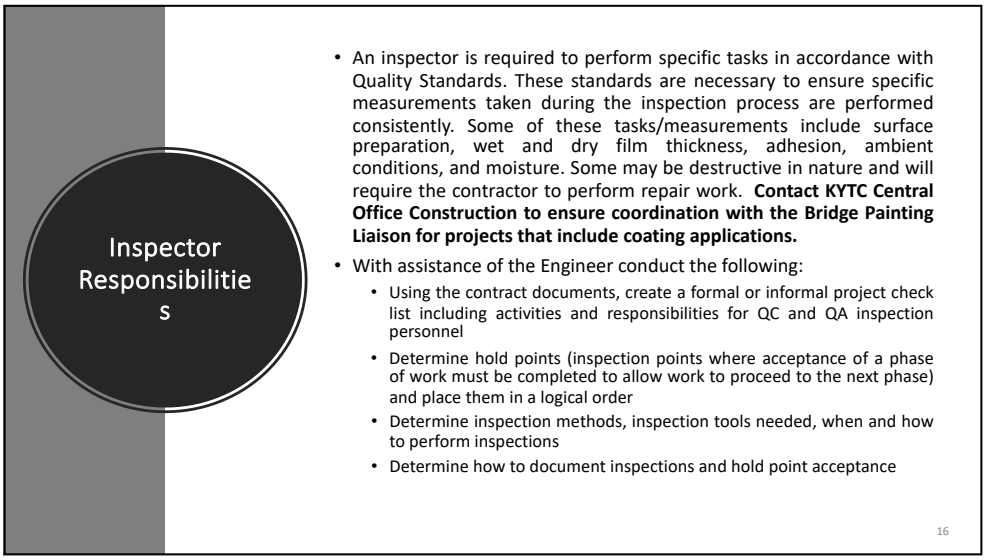
Inspector Responsibilities
• An inspector is required to perform specific tasks in accordance with Quality Standards. These standards are necessary to ensure specific measurements taken during the inspection process are performed consistently. Some of these tasks/measurements include surface preparation, wet and dry film thickness, adhesion, ambient conditions, and moisture. Some may be destructive in nature and will require the contractor to perform repair work. **Contact KYTC Central Office Construction to ensure coordination with the Bridge Painting Liaison for projects that include coating applications.**
• With assistance of the Engineer conduct the following:
  • Using the contract documents, create a formal or informal project check list including activities and responsibilities for QC and QA inspection personnel
  • Determine hold points (inspection points where acceptance of a phase of work must be completed to allow work to proceed to the next phase) and place them in a logical order
  • Determine inspection methods, inspection tools needed, when and how to perform inspections
  • Determine how to document inspections and hold point acceptance
16

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Environmental and Worker Safety

The **Contractor is solely responsible for both environmental and worker safety**, however this does not relieve the inspector of the responsibility to monitor, report, and document observed practices or issues. The contractor should hold daily safety meetings

The inspector needs to be aware of the environmental regulations to which the contractor must comply. The contractor may be required to submit an Environmental Compliance Plan. Depending on the size of the project, a Storm Water Permit or other permits may be required by Kentucky Division of Water. Also, certain urban jurisdictions may require an erosion and sediment control plan to be filed locally prior to work beginning. Some of the permitting requirements and regulations can be found in the Kentucky Administrative Regulations, Title 401, Chapters 4, 5, 6, 8, 9, 10, and 11. The contractor is required to conform to Kentucky Revised Statute 224.70-110 "General Prohibition Against Water Pollution." There may also be required permitting from the United States Army Corps of Engineers (USACE)

A variety of substances and materials found on construction sites can become pollutants of concern if they are washed into nearby water bodies, dumped onto porous soils, or discharged directly to surface waters or groundwater. When required by KYTC the contractor will submit the Best Management Practice (BMP) for the project. Inspectors should be familiar with these submittals and the use of "Controlling Erosion, Sediment, and Pollutant Runoff from Construction Sites" as a reference (see BMP Manual link below)

Use this link to access the KYTC Drainage Resource Materials:
https://transportation.ky.gov/Highway-Design/Pages/Drainage-Resource-Materials.aspx

Use this link to access the BMP Manual:
https://eec.ky.gov/Environmental-Protection/Forms%20Library/09BMPManual_Final.pdf

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Example of Special Note for Erosion Prevention and Sediment Control

Special Note For:
Erosion Prevention and Sediment Control
Item xx-xxxx County Description

- The Contractor shall be responsible for filing the Kentucky Pollution Discharge Elimination System (KPDES) KYR10 permit Notice of Intent (NOI) with the Kentucky Division of Water (DOW) and any KPDES local Municipal Separate Storm Sewer System (MS4) program that has jurisdiction. The NOI shall name the contractor as the Facility Operator and include the KYTC Contract ID Number (CID) for reference.
- The Contractor shall perform all temporary erosion/sediment control functions including providing a Best Management Practice (BMP) Plan, conducting required inspections, modifying the BMP plan documents as construction progresses and documenting the installation and maintenance of BMPs in conformance with the KPDES KYR10 permit effective on August 1, 2009, or a permit re-issued to replace that KYR10 permit. This work shall be conducted in conformance with the requirements of Section 213 of KYTC 2008 Department of Highways, Standard Specifications for Road and Bridge Construction.
- Contrary to Section 213.03.03, paragraph 2, the Engineer shall conduct inspections as needed to verify compliance with Section 213 of KYTC 2008 Department of Highways, Standard Specifications for Road and Bridge Construction. The Engineer's inspections shall be performed a minimum of once per month and within seven days after a storm of ½ inch or greater. Copies of the Engineer's inspections shall not be provided to the contractor unless improvements to the BMP's are required. The contractor shall initiate corrective action within 24 hours of any reported deficiency and complete the work within 5 days. The Engineer shall use Form TC 63-61 A for this report. Inspections performed by the Engineer do not relieve the Contractor of any responsibility for compliance with the KPDES permit.
- Contrary to Section 213.05, bid items for temporary BMPs will not be listed and will be replaced with one lump sum item for the services. Payment will be pro-rated based on the Project Schedule as submitted by the Contractor and as agreed to by the Engineer.
- The contractor shall be responsible for applying "good engineering practices" as required by the KPDES permit. The contractor may use any temporary BMPs with the approval of the KYTC Engineer.
- The contractor shall provide the Engineer copies of all documents required by the KPDES permit at the time they are prepared.
- The contractor shall be responsible for the examination of the soils to be encountered and make his own independent determination of the temporary BMPs that will be required to accomplish effective erosion prevention and sediment control.
- The Contractor shall be responsible for filing the KPDES permit Notice of Termination (NOT) with the Kentucky DOW and any local MS4 program that has jurisdiction. The NOT shall be filed after the Engineer agrees that the project is stabilized, or the project has been formally accepted.

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Traffic Control Plan

- **The Contractor is responsible for conformance to the requirements in the Traffic Control Plan** (TCP), Proposal, plan sheets, specifications, and the Manual on Uniform Traffic Control Devices (MUTCD). There may be other requirements not listed here.
- All Traffic Control Supervisors, Technicians, and Flaggers shall have current temporary work zone traffic control certifications.
- All equipment should be maintained for safe operation and safety checks should be performed and documented daily.
- Document traffic control concerns, notes, reviews, updates, accidents or any other applicable conditions on the DWR

ACTION: Read the TCP to become familiar with the proposed temporary work zone activities. Obtain the TC 63-67 (Traffic Control Inspection Report) which can be utilized for traffic control reviews as needed. Link below can be utilized to access the TC-63-67 Report

https://transportation.ky.gov/Organizational-Resources/Pages/Forms-Library-(TC-63).aspx

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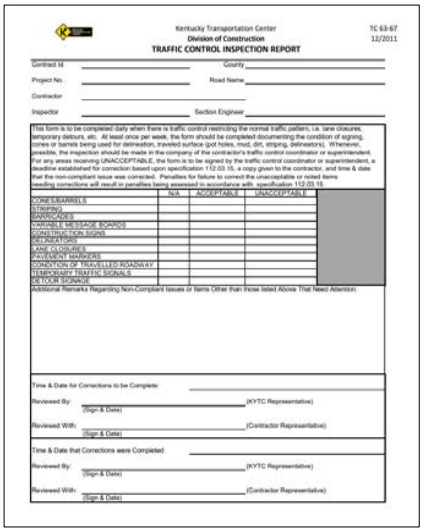
Traffic Control Inspection Report



Kentucky Transportation Center
Division of Construction
TC 63-67
12/2011

TRAFFIC CONTROL INSPECTION REPORT

Contract Id: _____ County: _____

Project No.: _____ Road Name: _____

Contractor: _____

Inspector: _____ Section Engineer: _____

This form is to be completed daily when there is traffic control restricting the normal traffic pattern, i.e. lane closures, temporary detours, etc. At least once per week, the form should be completed documenting the condition of signing, cones or barrels being used for delineation, traveled surface (pot holes, mud, dirt, striping, delineators). Whenever possible, the inspection should be made in the company of the contractor's traffic control coordinator or superintendent. For any areas receiving UNACCEPTABLE, the form is to be signed by the traffic control coordinator or superintendent, a deadline established for correction based upon specification 112.03.15, a copy given to the contractor, and time & date that the non-compliant issue was corrected. Penalties for failure to correct the unacceptable or noted items needing corrections will result in penalties being assessed in accordance with specification 112.03.15.

	N/A	ACCEPTABLE	UNACCEPTABLE
CONES/BARRELS			
STRIPING			
BARRICADES			
VARIABLE MESSAGE BOARDS			
CONSTRUCTION SIGNS			
DELINEATORS			
LANE CLOSURES			
PAVEMENT MARKERS			
CONDITION OF TRAVELLED ROADWAY			
TEMPORARY TRAFFIC SIGNALS			
DETOUR SIGNAGE			

Additional Remarks Regarding Non-Compliant Issues or Items Other than those listed Above That Need Attention:

Time & Date for Corrections to be Complete: _____

Reviewed By: _____ (KYTC Representative)
(Sign & Date)

Reviewed With: _____ (Contractor Representative)
(Sign & Date)

Time & Date that Corrections were Completed: _____

Reviewed By: _____ (KYTC Representative)
(Sign & Date)

Reviewed With: _____ (Contractor Representative)
(Sign & Date)

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Pre-Construction Activities

Prior to the contractor beginning work ensure you have the necessary items to perform your activities. Common items include:

a) Contract documents (KY Std Spec, plans, proposal and any special notes)

b) Quality Assurance Plan

c) Safety (environmental & worker), Traffic Control Plan, Schedule and all Contractor Submittals including Material Product Data Sheets

d) Inspector Documentation Requirements

e) Personal Protective Equipment (PPE); ***additional equipment may be required for environmental or hazardous exposures***

f) Field tools; ***specialized inspection equipment/tools may be necessary***

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Obtain Personal Protective Equipment
(Pre-Construction)

- Class 2 (day) or 3 (night) high visibility apparel
- Hard hat
- Hearing protection
- Safety glasses w/side shields
- Gloves
- Steel toe boots
- Respirator may be required **(Contact Bridge Painting Liaison)**
- Fall protection in accordance with 29 CFR Part 1926 (as required)

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Obtain Tools and Equipment
(Pre-Construction)

- A camera of sufficient quality to enlarge images for viewing critical details. The camera on most cell phones is usually adequate for photo documentation.
- Wet Film Thickness (WFT) Gauge **(Contact Bridge Painting Liaison)**
- Equipment to measure ambient conditions **(Contact Bridge Painting Liaison)**
- Flashlight
- Dull scraper
- Claw hammer or handheld sledgehammer
- Inspection mirror
- Measuring tape
- Notepad or ability to take notes
- Any other equipment necessary to perform the inspection duties

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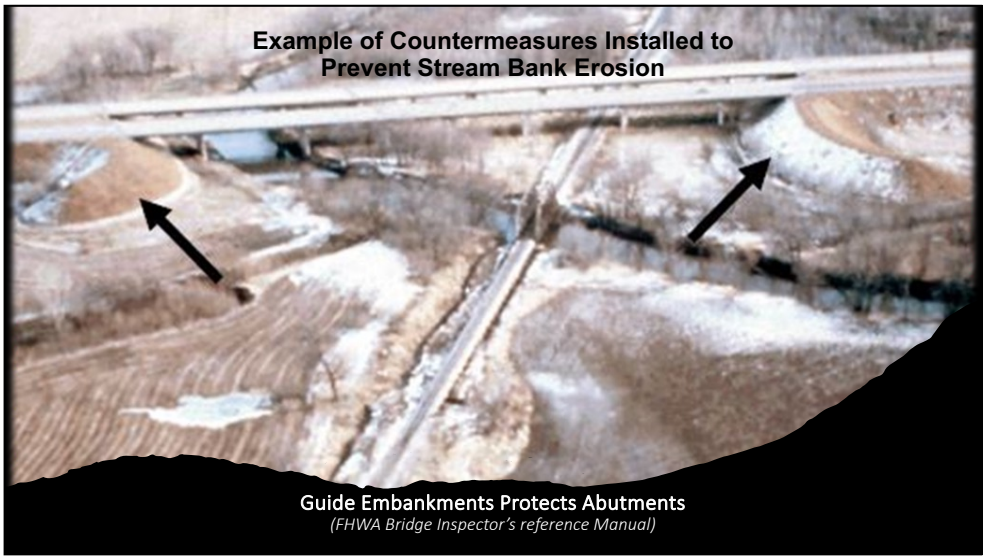

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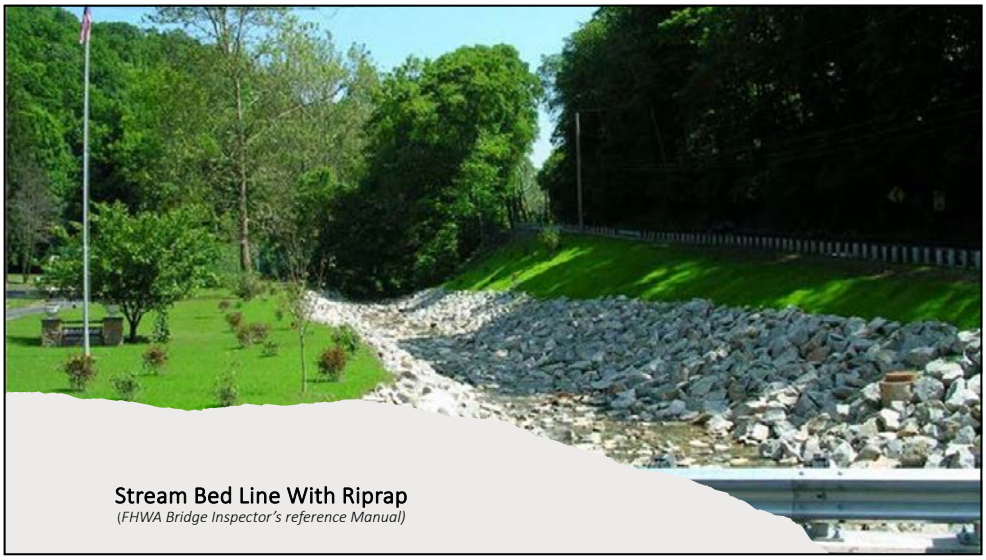
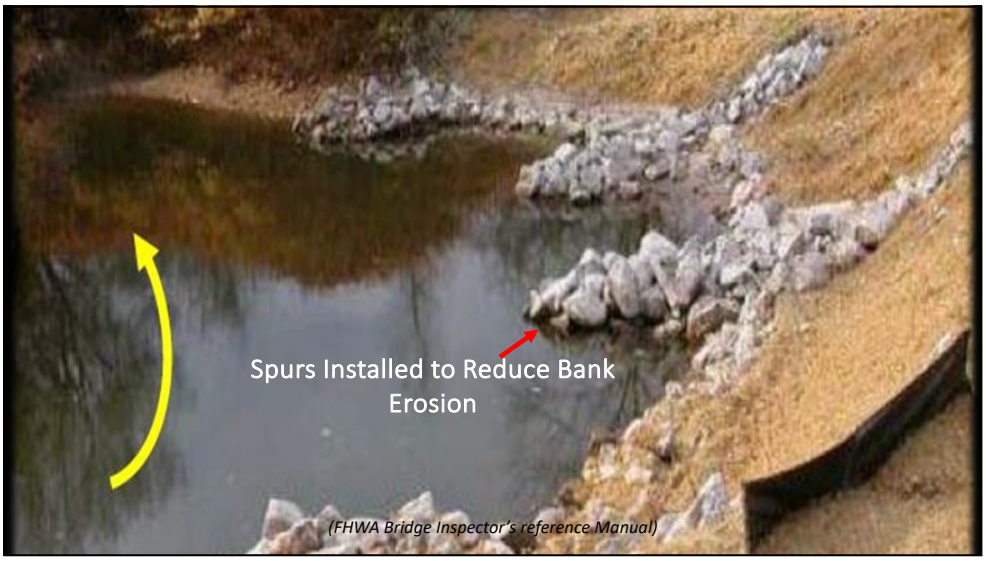


Stream Bed Line With Riprap
(FHWA Bridge Inspector's reference Manual)

25

Installation Of Revetment Mat On Geotextile Used As Channel Lining
(FHWA Bridge Inspector's reference Manual)

26


Spurs Installed to Reduce Bank Erosion
(FHWA Bridge Inspector's reference Manual)

27


Gabion Baskets
(FHWA Bridge Inspector's reference Manual)

28

29

Erosion and Sediment Control Inspection

(copied from Special Notes)

INSTALLATION:

The contractor shall remove all tree debris, earth, concrete debris, trash and soft loose bearing material down to suitable bearing material to prepare for the construction improvements at each bridge site. After removing the unsuitable bearing material. The retaining wall footings shall be stepped down as per the retaining wall schedule. The contractor can drive sheet pile, construct the perimeter grade beam, install filter fabric and #57 crushed stone for the sloped areas for the concrete slab. The apron elevation where water is released back to the stream is at the streambed elevation. The contractor shall drive the sheet pile to the desired (tip) elevation as indicated on the KYTC drawings. The minimum depth of the sheet pile is 8'-0" below the stream bed elevation. Some sheet pile will be longer than 8'-0" at the sloped portions along the concrete apron. The sheet pile will slope up with the concrete apron and will be required to be cut-off at the same slope. *(continued)*

30

Erosion and Sediment Control Inspection

(copied from Special Notes)

INSTALLATION: *(continued)*

The concrete apron will be turned down along the top of the perimeter 12" grade beam. The sheet pile members shall be continuous without laps, splices, and joints. **The installed sheet pile material should be coordinated with the downstream cast-in-place concrete apron and perimeter grade beam to join together adequately. The perimeter concrete apron beam should be poured with the sheet pile as one unit.** The concrete apron will be retained by the sheet pile wall along the ends of the apron. The sheet pile will be anchored to the downstream concrete apron and grade beam with 3/4" diameter hot-dipped galvanized anchors, washers and fasteners. The sheet piles should be driven straight and plumb along the ground surface and should align with adjacent sheet pile members. *(continued)*

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Erosion and Sediment Control Inspection

(copied from Special Notes)

INSTALLATION: *(continued)*

The sheet pile-connectors should be installed to change the angle of the sheet pile and are incidental to the unit bid for sheet pile. The interlocking sheet piles should be clean of debris and kept free of distortion. A sheet pile log of the driven lengths of sheet pile shall be maintained for KYTC review. The engineer can change the orientation, wall height section and tapering (sloping) of the retaining wall as needed due to existing site conditions.

Scour holes can be filled with placement of filter fabric prior to placement of #57 crush stone or #2 crushed stone. The #57 crush stone will be graded smooth with the streambed. The crushed stone shall be consolidated with a vibratory compactor to fill rock voids along the sloped areas of the concrete apron.

32

Erosion and Sediment Control Inspection

(copied from Special Notes)

STEEL CONSTRUCTION *(continued)*

The steel members shall be placed according to the construction drawings American Institute of Steel Construction (AISC) and KYTC Section 607. Field welding shall be per the American Welding Society (AWS). Welders shall be certified welders and should submit their welding certificates prior to welding on site.

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Erosion and Sediment Control Inspection

(copied from Special Notes)

SHEET PILE DRIVING *(continued)*

The sheet pile driving equipment shall have adequate strength to drive and erect the sheet pile members to the plan bottom (tip) elevation. The contractor shall keep accurate sheet pile driving logs and record the depth of sheet piles driven each day. The driving logs should describe any unexpected conditions encountered; such as, but not limited to soft and hard material, early refusal etc. Notify KYTC engineer of early sheet pile refusal. The sheet pile shall be cut off after the member is driven to the desired tip elevation and the KYTC Engineer has approved the driven elevations per the sheet pile logs. The sheet pile should be cut-off straight, square and in a clean manner. Tapered sheet pile shall follow the slope of the finished apron concrete.

34

Erosion and Sediment Control Inspection

There may be other tasks involve in Erosion and Sediment Control including but not limited to:

- Concrete construction
- Placement of filter fabric
- Placement of channel lining material
- Permeation pressure grouting

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Erosion and Sediment Control Inspection
Wrap up

- KYTC will provide qualified inspectors and inspection equipment to inspect and monitor all items required in this contract.
- QA hold point (control area) inspections will be required upon completion of each work item for each task or at the discretion of the Engineer at any time.
- QA hold points are progress milestones that occur when one phase of work is complete and ready for inspection before continuing with the next operational step.
- The Contractor shall provide the QA inspector with OSHA-compliant access to inspect all pertinent areas.
- If QA inspection indicates a deficiency, that phase of work shall be corrected and re-inspected prior to beginning the next phase of work.
- The QA inspector's responsibility is to verify that each phase of work has been satisfactorily completed and complies with the specification.
- This responsibility extends to monitoring in-progress work throughout the project to ensure overall compliance.

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Erosion and Sediment Control Inspection
Post Construction

After all work items are completed, several critical steps are required to close out KYTC contracts. Verify the following have been satisfactorily completed:

- Review all contract documents to ensure that all tasks and objectives have been completed in accordance with specifications
- All waste has been collected for proper disposal at an approved facility or as directed by the Engineer
- All equipment, including containment and traffic control devices, have been removed from work area
- Normal traffic pattern has been re-established

37

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Appendix H Spot Painting

Kentucky Transportation Cabinet (KYTC)

Bridge Preventive Maintenance Inspection

Spot Painting

1

Spot Painting Introduction

A major problem, common for bridge maintenance personnel, is the deterioration of bridge components. Typically, components below leaking joints will see the most corrosion. All joints tend to leak at some point after construction or resealing. The bridge components affected may be steel or concrete, but the result will be the same, deterioration. When compared to other locations, structural steel coatings are more susceptible for failure in these areas due to the extended time of wetness and the high levels of contaminants from run-off, including excessive build up of debris, and deicing chemicals. Spot painting is employed as a low cost means of extending the life cycle of the entire coating system. Although spot painting requires less effort than total removal and recoat, proper application is important and proper inspection is critical to achieve the desired results.

2

2

Spot Painting Index

The training module will focus on the following topics:

- The Importance of Contract Documents
- Inspector Responsibilities and Qualifications
- Environmental Concerns
- Traffic Control
- Pre-Construction Activities
- Personal Protective Equipment and Tools
- Surface Preparation
- Spot Painting Inspection
- Summary
- Post Construction

3

3

The following KYTC Links will provide help the Inspector make informed decisions:

- https://transportation.ky.gov/Construction
  - Home page with many useful links and documents for inspection
- https://transportation.ky.gov/Construction/Pages/Kentucky-Standard-Specifications.aspx
  - Standard Specifications and Supplemental Specifications
- https://transportation.ky.gov/Construction/Pages/Construction-Engineer%27s-Resource-Center.aspx
  - Includes several inspection documents and spreadsheets
- https://transportation.ky.gov/Construction/Pages/Special-Notes-Special-Provisions.aspx
  - Special Notes and Provisions
- https://transportation.ky.gov/Highway-Design/Pages/Standard-Drawings-2020.aspx
  - Std Drawings, Sepia Drawings and other useful links
- https://transportation.ky.gov/Construction-Procurement/Pages/default.aspx
  - Contract Proposals and Letting Information
- https://transportation.ky.gov/Organizational-Resources/Pages/Forms-Library.aspx
  - KYTC forms and templates
- https://transportation.ky.gov/Materials
  - Home page with many useful links and documents such as Sampling Manual and LAM
- https://transportation.ky.gov/Materials/pages/List-Of-Approved-Materials.aspx
  - KYTC List of Approved Materials (LAM)

4

4

Kentucky Standard Specifications

Standard Specifications

Type Name

Spec Year : **2019** (11)

- 100 General Provisions 2019
- 200 Earthwork 2019
- 300 Aggregate Base Courses 2019
- 400 Asphalt Pavements 2019
- 500 PCC Pavement and Non-Structural Concrete Construction 2019
- 600 Structures and Concrete 2019
- 700 Drainage, Traffic, and Roadside Construction 2019
- 800 Materials Details 2019
- Appendix A Tabulation of Construction Tolerances 2019
- Appendix B Index 2019
- Complete KYTC Standard Specifications - 2019

Supplemental Specifications

Type Name

Spec Year : **2019** (7)

- Supplemental Specs Effective with May 26, 2022 Letting
- Supplemental Specs Effective with November 19 2021 Letting
- Supplemental Specifications Effective with June 25 2021 Letting
- Supplemental Specification Effective with September 25, 2020 Letting
- Supplemental Specifications Effective with July 24, 2020 Letting rev 20200617
- Supplemental Specifications Effective with March 20, 2020 Letting
- Supplemental Specifications Effective with July 26 2019 Letting

https://transportation.ky.gov/Construction/Pages/Kentucky-Standard-Specifications.aspx

5

5

Kentucky Standard Specifications

- Kentucky Standard Specifications are a compilation of guidelines for construction and maintenance requirements useful to engineers for developing of projects and contracts
- When referenced in KYTC contracts they become legally binding specifications
- Inspectors need to be knowledgeable of these contractual specifications as they are pertinent to the inspection process

6

6

Examples of Safety Data (SDS) and Product Data Sheets (PDS)

Inspection staff should have a copy of SDS & PDS for all materials/chemicals being utilized by the contractor.

7

7

KYTC Contract Proposal

(Example)

- KYTC contract proposals will include detailed information about the project. It will include any Special Notes for construction and will include the bid item list
- **Inspection personnel should review the contract proposal carefully; paying close attention to the Special Notes**

PART I SCOPE OF WORK
- PROJECT(S), COMPLETION DATE(S), & LIQUIDATED DAMAGES
- CONTRACT NOTES
- STATE CONTRACT NOTES
- EXPEDITE WORK ORDER
- SPECIAL NOTE(S) APPLICABLE TO PROJECT
- LIQUIDATED DAMAGES
- SKETCH MAP(S)
- BRIDGE DRAWINGS

PART II SPECIFICATIONS AND STANDARD DRAWINGS
- SPECIFICATIONS REFERENCE
- SUPPLEMENTAL SPECIFICATION

Kentucky UNBRIDLED SPIRIT

CALL NO. 333
CONTRACT ID. 152610
MERCER COUNTY
FED/STATE PROJECT NUMBER FE02 084 0152 B00005N
DESCRIPTION BRIDGE OVER HERRINGTON LAKE (MP 18.849).
WORK TYPE BRIDGE REPAIRS
PRIMARY COMPLETION DATE 4/1/2016

LETTING DATE: November 20,2015
Sealed Bids will be received electronically through the Bid Express bidding service until 10:00 AM EASTERN STANDARD TIME November 20,2015. Bids will be publicly announced at 10:00 AM EASTERN STANDARD TIME.

NO PLANS ASSOCIATED WITH THIS PROJECT.

REQUIRED BID PROPOSAL GUARANTY: Not less than 5% of the total bid.

NOTE:
Construction plans will be included within many proposals

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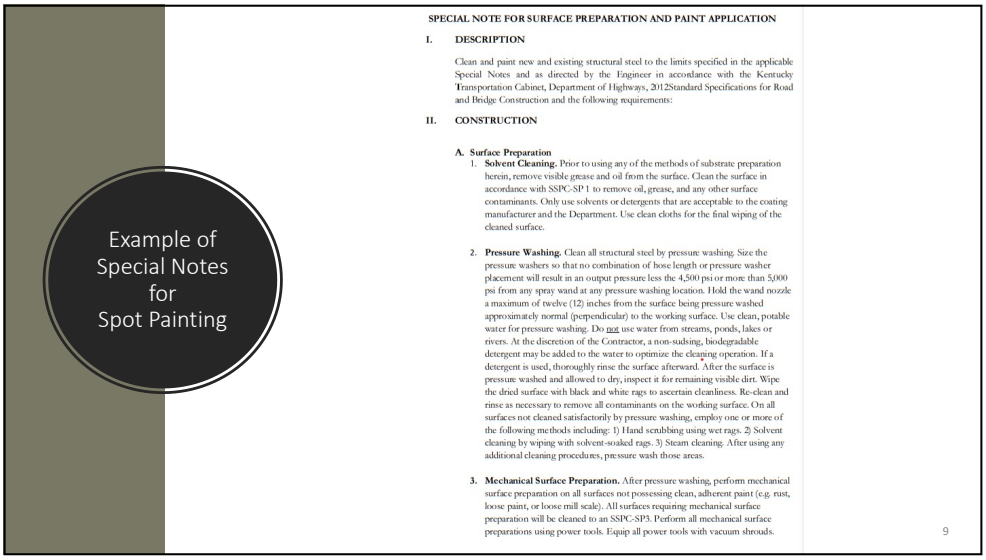
Example of Special Notes for Spot Painting
SPECIAL NOTE FOR SURFACE PREPARATION AND PAINT APPLICATION
I. DESCRIPTION
Clean and paint new and existing structural steel to the limits specified in the applicable Special Notes and as directed by the Engineer in accordance with the Kentucky Transportation Cabinet, Department of Highways, 2012Standard Specifications for Road and Bridge Construction and the following requirements:
II. CONSTRUCTION
A. Surface Preparation
1. Solvent Cleaning. Prior to using any of the methods of substrate preparation herein, remove visible grease and oil from the surface. Clean the surface in accordance with SSPC-SP 1 to remove oil, grease, and any other surface contaminants. Only use solvents or detergents that are acceptable to the coating manufacturer and the Department. Use clean cloths for the final wiping of the cleaned surface.
2. Pressure Washing. Clean all structural steel by pressure washing. Size the pressure washers so that no combination of hose length or pressure washer placement will result in an output pressure less the 4,500 psi or more than 5,000 psi from any spray wand at any pressure washing location. Hold the wand nozzle a maximum of twelve (12) inches from the surface being pressure washed approximately normal (perpendicular) to the working surface. Use clean, potable water for pressure washing. Do not use water from streams, ponds, lakes or rivers. At the discretion of the Contractor, a non-sudsing, biodegradable detergent may be added to the water to optimize the cleaning operation. If a detergent is used, thoroughly rinse the surface afterward. After the surface is pressure washed and allowed to dry, inspect it for remaining visible dirt. Wipe the dried surface with black and white rags to ascertain cleanliness. Re-clean and rinse as necessary to remove all contaminants on the working surface. On all surfaces not cleaned satisfactorily by pressure washing, employ one or more of the following methods including: 1) Hand scrubbing using wet rags. 2) Solvent cleaning by wiping with solvent-soaked rags. 3) Steam cleaning. After using any additional cleaning procedures, pressure wash those areas.
3. Mechanical Surface Preparation. After pressure washing, perform mechanical surface preparation on all surfaces not possessing clean, adherent paint (e.g. rust, loose paint, or loose mill scale). All surfaces requiring mechanical surface preparation will be cleaned to an SSPC-SP3. Perform all mechanical surface preparations using power tools. Equip all power tools with vacuum shrouds.
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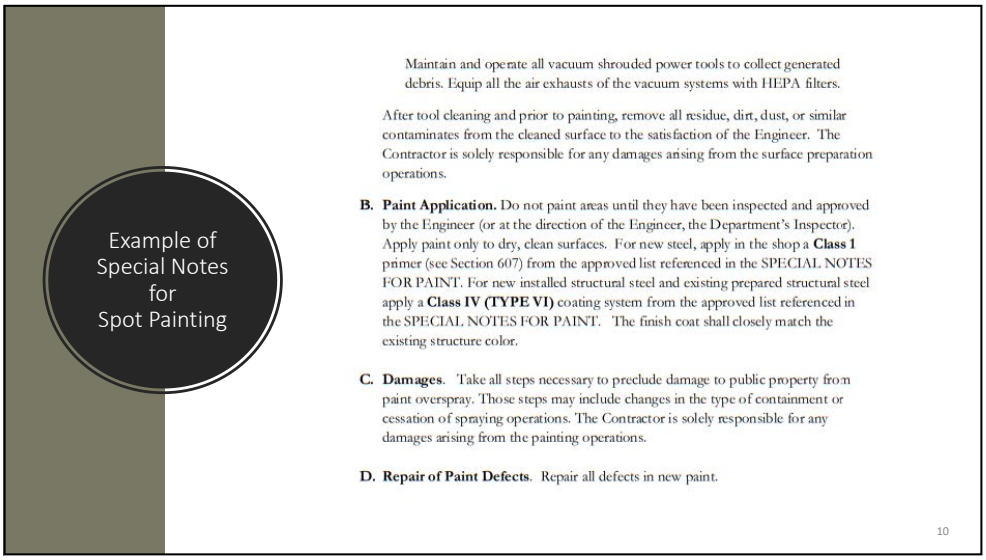
Example of Special Notes for Spot Painting
Maintain and operate all vacuum shrouded power tools to collect generated debris. Equip all the air exhausts of the vacuum systems with HEPA filters.
After tool cleaning and prior to painting, remove all residue, dirt, dust, or similar contaminates from the cleaned surface to the satisfaction of the Engineer. The Contractor is solely responsible for any damages arising from the surface preparation operations.
B. Paint Application. Do not paint areas until they have been inspected and approved by the Engineer (or at the direction of the Engineer, the Department's Inspector). Apply paint only to dry, clean surfaces. For new steel, apply in the shop a Class 1 primer (see Section 607) from the approved list referenced in the SPECIAL NOTES FOR PAINT. For new installed structural steel and existing prepared structural steel apply a Class IV (TYPE VI) coating system from the approved list referenced in the SPECIAL NOTES FOR PAINT. The finish coat shall closely match the existing structure color.
C. Damages. Take all steps necessary to preclude damage to public property from paint overspray. Those steps may include changes in the type of containment or cessation of spraying operations. The Contractor is solely responsible for any damages arising from the painting operations.
D. Repair of Paint Defects. Repair all defects in new paint.
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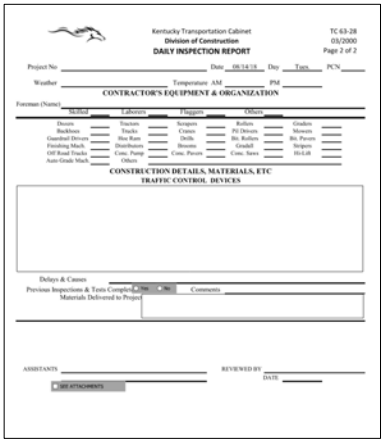
KYTC DWR


Kentucky Transportation Cabinet
Division of Construction
DAILY INSPECTION REPORT
TC 63-28
03/2000
Page 1 of 2

PAY QUANTITIES

PAY QUANTITY DETAILS, REFERENCES, SKETCHES, ETC.

Attention Project Engineer


Kentucky Transportation Cabinet
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DAILY INSPECTION REPORT
TC 63-28
03/2000
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CONTRACTOR'S EQUIPMENT & ORGANIZATION

CONSTRUCTION DETAILS, MATERIALS, ETC
TRAFFIC CONTROL DEVICES

https://transportation.ky.gov/Construction/Pages/Construction-Engineer%27s-Resource-Center.aspx

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Kentucky Transportation Cabinet
Division of Construction
DAILY INSPECTORS REPORT FOR BRIDGE PAINTING
TC 63-14
03/2000

ATTACH TAPES HERE

NOTE: This form is to be used as supplement to Daily Inspectors Report TC No 63-28

KYTC DWR for Bridge Painting

https://transportation.ky.gov/Construction/Pages/Construction-Engineer%27s-Resource-Center.aspx

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Inspector Responsibilities

- **Understanding specifications is CRITICAL**; including the Contract, Special Notes within the contract, pertinent sections of the current edition of Kentucky Standard Specifications, and Material Data Sheets. Inspection personnel should also be knowledgeable of any environmentally sensitive issues. There may be specific tasks that require knowledge of quality standards (ASTM, AASHTO, etc.).
- All aspects of the project are to be clearly documented (written and photographed)
- ***The inspector's responsibility is to verify and document that each phase of work has been satisfactorily completed and complies with all specifications***

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Inspector Qualifications & Responsibilities

- Kentucky Transportation Cabinet (KYTC) requires qualified QA inspectors for inspection of spot painting projects. Duties will include overall verification of task completion, inspections of surface preparation, adequate ambient conditions, verification of coating thickness, etc.
- Association for Materials Protection and Performance (AMPP) offers Bridge Coating Inspector (BCI) courses Level 1 and 2 for steel coatings. **The level 1 course is the minimum requirement for steel bridge coating inspection in Kentucky.**
- Inspector(s) should have current **KYTC certification for Structures Level 1 and American Concrete Institute (ACI) if concrete is placed or tested** *(Traffic Control Certification will be discussed later in this training)*
- Other than the previously discussed certifications there is no current official inspector qualifications for this task, however, it is **imperative that inspectors be familiar with all tasks being performed, contract specification, special notes, and pertinent parts of the current Kentucky Standard Specifications For Road and Bridge Construction**.
- **All aspects of the project are to be clearly documented**
- Inspection personnel will coordinate with the Contractor to establish hold points that follow all KYTC Specifications and Special Note requirements. **Hold points are progress milestones that occur when one phase of work is complete and ready for inspection, which should be completed before continuing with the next operational step**

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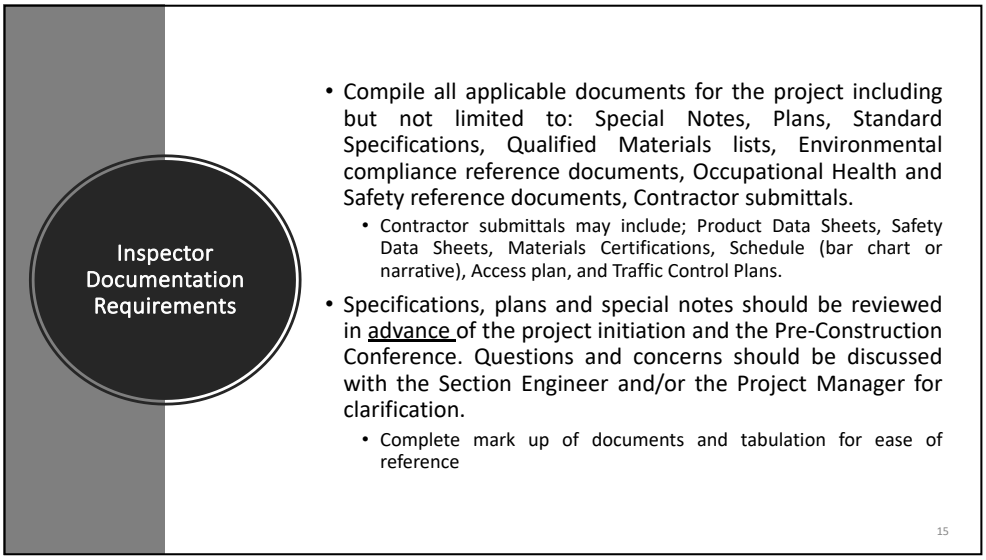
Inspector Documentation Requirements
• Compile all applicable documents for the project including but not limited to: Special Notes, Plans, Standard Specifications, Qualified Materials lists, Environmental compliance reference documents, Occupational Health and Safety reference documents, Contractor submittals.
• Contractor submittals may include; Product Data Sheets, Safety Data Sheets, Materials Certifications, Schedule (bar chart or narrative), Access plan, and Traffic Control Plans.
• Specifications, plans and special notes should be reviewed in advance of the project initiation and the Pre-Construction Conference. Questions and concerns should be discussed with the Section Engineer and/or the Project Manager for clarification.
• Complete mark up of documents and tabulation for ease of reference
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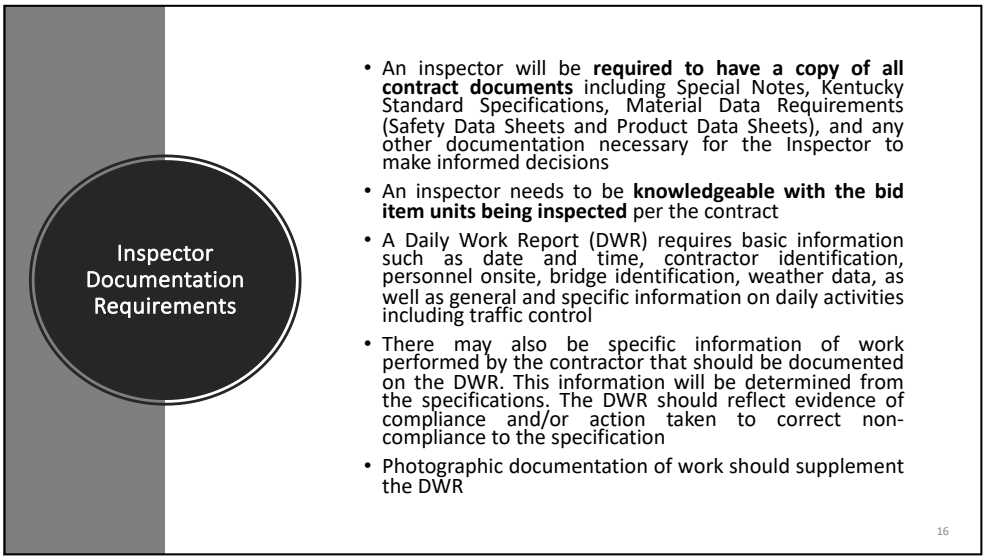
Inspector Documentation Requirements
• An inspector will be **required to have a copy of all contract documents** including Special Notes, Kentucky Standard Specifications, Material Data Requirements (Safety Data Sheets and Product Data Sheets), and any other documentation necessary for the Inspector to make informed decisions
• An inspector needs to be **knowledgeable with the bid item units being inspected** per the contract
• A Daily Work Report (DWR) requires basic information such as date and time, contractor identification, personnel onsite, bridge identification, weather data, as well as general and specific information on daily activities including traffic control
• There may also be specific information of work performed by the contractor that should be documented on the DWR. This information will be determined from the specifications. The DWR should reflect evidence of compliance and/or action taken to correct non-compliance to the specification
• Photographic documentation of work should supplement the DWR
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Inspector Responsibilities

- An inspector is required to perform specific tasks in accordance with Quality Standards. These standards are necessary to ensure specific measurements taken during the inspection process are performed consistently. Some of these tasks/measurements include surface preparation, wet and dry film thickness, adhesion, and ambient conditions. Some may be destructive in nature and will require the contractor to perform repair work. **Contact KYTC Central Office Construction to ensure coordination with the Bridge Painting Liaison for projects that include coating applications.**
- With assistance of the Engineer conduct the following:
  - Using the contract documents, create a formal or informal project check list including activities and responsibilities for QC and QA inspection personnel
  - Determine hold points (inspection points where acceptance of a phase of work must be completed to allow work to proceed to the next phase) and place them in a logical order
  - Determine inspection methods, inspection tools needed, when and how to perform inspections
  - Determine how to document inspections and hold point acceptance

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Environmental and Worker Safety

The **contractor is solely responsible for both environmental and worker safety**, however this does not relieve the inspector of the responsibility to monitor, report, and document observed practices or issues. The contractor should hold daily safety meetings

The inspector needs to be aware of the environmental regulations to which the contractor must comply. The contractor may be required to submit an Environmental Compliance Plan. Depending on the size of the project, a Storm Water Permit or other permits may be required by Kentucky Division of Water. Also, certain urban jurisdictions may require an erosion and sediment control plan to be filed locally prior to work beginning. Some of the permitting requirements and regulations can be found in the Kentucky Administrative Regulations, Title 401, Chapters 4, 5, 6, 8, 9, 10, and 11. The contractor is required to conform to Kentucky Revised Statute 224.70-110 "General Prohibition Against Water Pollution." There may also be required permitting from the United States Army Corps of Engineers (USACE)

A variety of substances and materials found on construction sites can become pollutants of concern if they are washed into nearby water bodies, dumped onto porous soils, or discharged directly to surface waters or groundwater. When required by KYTC the contractor will submit the Best Management Practice (BMP) for the project. Inspectors should be familiar with these submittals and the use of "Controlling Erosion, Sediment, and Pollutant Runoff from Construction Sites" as a reference (see BMP Manual link below)

Use this link to access the KYTC Drainage Resource Materials:
https://transportation.ky.gov/Highway-Design/Pages/Drainage-Resource-Materials.aspx

Use this link to access the BMP Manual:
Https://eec.ky.gov/Environmental-Protection/Forms%20Library/09BMPManual_Final.pdf

Click here for a Special Note on Erosion Prevention and Sediment Control

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Traffic Control Plan

- **The Contractor is responsible for conformance to the requirements in the Traffic Control Plan** (TCP), Proposal, plan sheets, specifications, and the Manual on Uniform Traffic Control Devices (MUTCD). There may be other requirements not listed here.
- All Traffic Control Supervisors, Technicians, and Flaggers shall have current temporary work zone traffic control certifications.
- All equipment should be maintained for safe operation and safety checks should be performed and documented daily.
- Document traffic control concerns, notes, reviews, updates, accidents or any other applicable conditions on the DWR

ACTION: Read the TCP to become familiar with the proposed temporary work zone activities. Obtain the TC 63-67 (Traffic Control Inspection Report) which can be utilized for traffic control reviews as needed. Link below can be utilized to access the TC-63-67 Report:

https://transportation.ky.gov/Organizational-Resources/Pages/Forms-Library-(TC-63).aspx

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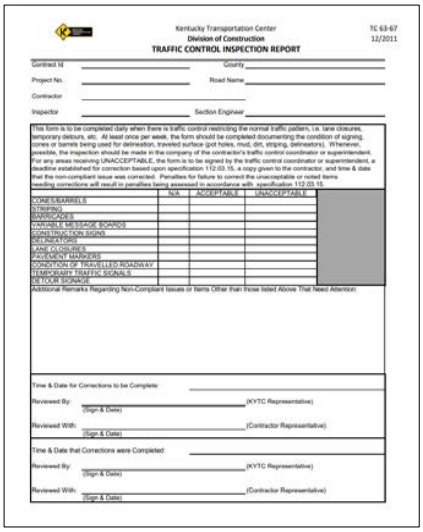
Traffic Control Inspection Report



Kentucky Transportation Center
Division of Construction
TRAFFIC CONTROL INSPECTION REPORT
TC 63-67
12/2011

Contract Id: County:
Project No.: Road Name:
Contractor:
Inspector: Section Engineer:

This form is to be completed daily when there is traffic control restricting the normal traffic pattern, i.e. lane closures, temporary detours, etc. At least once per week, the form should be completed documenting the condition of signing, cones or barrels being used for delineation, traveled surface (pot holes, mud, dirt, striping, delineators). Whenever possible, the inspection should be made in the company of the contractor's traffic control coordinator or superintendent. For any areas receiving UNACCEPTABLE, the form is to be signed by the traffic control coordinator or superintendent, a deadline established for correction based upon specification 112.03.15, a copy given to the contractor, and time & date that the non-compliant issue was corrected. Penalties for failure to correct the unacceptable or noted items needing corrections will result in penalties being assessed in accordance with specification 112.03.15.

	N/A	ACCEPTABLE	UNACCEPTABLE
CONES/BARRELS			
STRIPING			
BARRICADES			
VARIABLE MESSAGE BOARDS			
CONSTRUCTION SIGNS			
DELINEATORS			
LANE CLOSURES			
PAVEMENT MARKERS			
CONDITION OF TRAVELLED ROADWAY			
TEMPORARY TRAFFIC SIGNALS			
DETOUR SIGNAGE			

Additional Remarks Regarding Non-Compliant Issues or Items Other than those listed Above That Need Attention:

Time & Date for Corrections to be Complete:
Reviewed By: (KYTC Representative)
(Sign & Date)
Reviewed With: (Contractor Representative)
(Sign & Date)
Time & Date that Corrections were Completed:
Reviewed By: (KYTC Representative)
(Sign & Date)
Reviewed With: (Contractor Representative)
(Sign & Date)

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Pre-Construction Activities

Prior to the contractor beginning work ensure you have the necessary items to perform your activities. Common items include but are not limited to:

a) Contract documents (KY Standard Specifications, plans, proposal, and special notes)
b) Quality Assurance Plan
c) Safety (environmental & worker), Traffic Control Plan, Schedule and all Contractor Submittals including Material Product Data Sheets and Safety Data Sheets
d) Inspector Documentation Requirements
e) Personal Protective Equipment (PPE); ***additional equipment may be required for environmental or hazardous exposures***
f) Field tools; ***specialized inspection equipment/tools may be necessary***

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Obtain Personal Protective Equipment *(Pre-Construction)*

- Class 2 (day) or 3 (night) high visibility apparel
- Hard hat
- Hearing protection
- Safety glasses w/side shields
- Gloves
- Steel toe boots
- Respirator may be required **(Contact Bridge Painting Liaison)**
- Fall protection in accordance with 29 CFR Part 1926 (as required)

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Obtain Tools and Equipment
(Pre-Construction)

- A camera of sufficient quality to enlarge images for viewing critical details. The camera on most cell phones is usually adequate for photo documentation.
- Wet Film Thickness (WFT) Gauge **(Contact Bridge Painting Liaison)**
- Equipment to measure ambient conditions **(Contact Bridge Painting Liaison)**
- Flashlight
- Dull scraper
- Claw hammer or handheld sledgehammer
- Inspection mirror
- Measuring tape
- Notepad or ability to take notes
- Any other equipment necessary to perform the inspection duties

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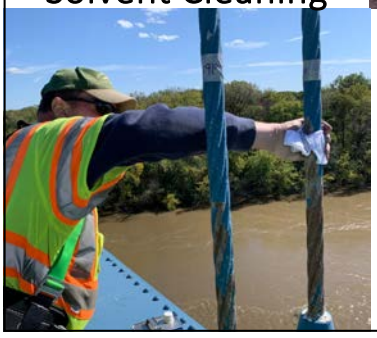
Surface Preparation SSPC SP1 Solvent Cleaning



- *"SSPC-SP 1 Solvent Cleaning"* describes the end-condition of a metal surface from which visible deposits of oil, grease, and other visible contaminants have been removed in preparation for subsequent application of protective coatings or for the use of additional methods to prepare the surface for the application of coatings. The standard also includes requirements for materials and procedures necessary to achieve and verify the end condition. Inspection is typically visual. The surface shall be free of visible oil, grease, dust, dirt, and other visible soluble contaminants.
- A wipe test may be beneficial in certain cases. A dry white rag is wiped across the cleaned and dried area(s) and examined for visible residue.

(For more details review SSPC SP1)

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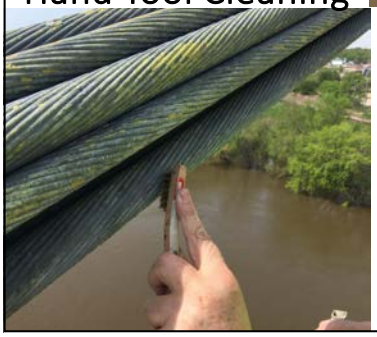
Surface Preparation SSPC SP2 Hand Tool Cleaning



- SSPC-SP 2 “Hand Tool Cleaning” – Describes the level of cleanliness required when using hand tools to remove loose mill scale, rust, paint, and other loose material.
- Typical tools required are hammers, scrapers, and wire brushes.
- It is not intended that adherent mill scale, rust, or paint be removed by this process.
- Mill scale, rust, and paint are considered adherent if they cannot be removed by lifting with a dull putty knife.

(For more details review SSPC SP2)

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Surface Preparation SSPC SP3 Power Tool Cleaning

- SSPC-SP 3 “Power Tool Cleaning” – Describes the level of cleanliness required when using power tools to remove loose mill scale, rust, paint, and other loose material.
- Power tool cleaning removes all loose mill scale, rust, paint, and other loose detrimental foreign matter.
- It is not intended that adherent mill scale, rust, and paint be removed by this process.
- Mill scale, rust, and paint are considered adherent if they cannot be removed by lifting with a dull putty knife.

(For more details review SSPC SP3)

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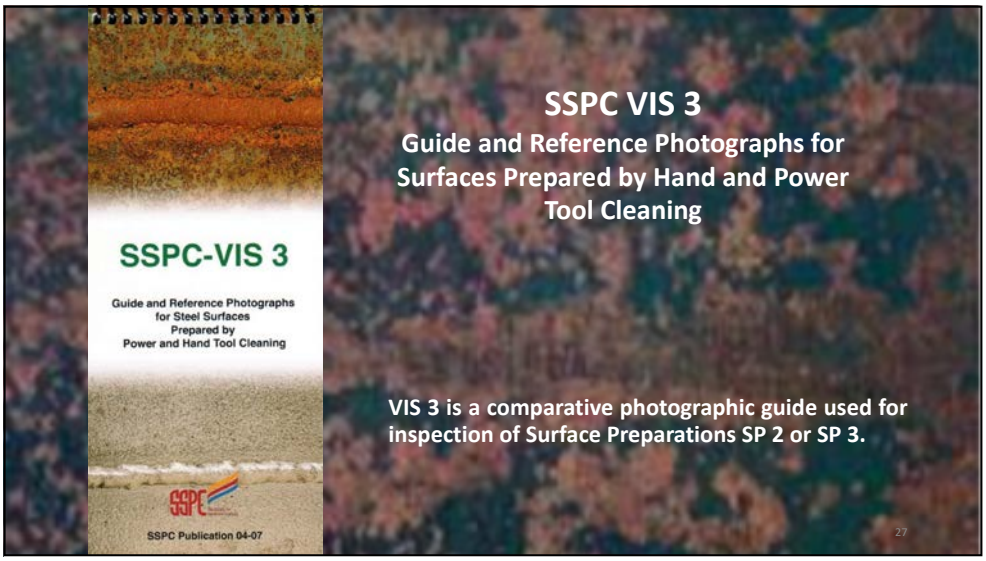

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Spot Painting Inspection

- Prior to coating application ensure that dust and loose material has been removed from hand or power tool cleaned surfaces by brushing, blowing off with compressed air, vacuum cleaning, or other methods established within the specification. When compressed air is used verify that it is clean and dry in accordance with the procedure described in ASTM D4285 "Blotter Test".
- Verify that the surface preparation meets the required SSPC Standard.
- Verify coating application is in accordance with the contract documents. Pay close attention to the Manufacturer's PDS for mixing requirements, ambient conditions for application, coating thickness, re-coat windows, etc.
- Verify coating thickness during application using a Wet Film Thickness (WFT) gauge. Dry Film Thickness (DFT) are to be measured and coating has cured using a calibrated DFT thickness gauge. All coatings shall be applied within manufacturers recommended dry film thickness range.
- All coating application shall be executed using brushes, rollers, etc. Spray application may be permitted if approved within the contract documents or by the Engineer. Proper containment must be in place for spray application.
- Comply with Kentucky Standard Specifications Section 614.03.02 and coatings supplier required conditions for application.

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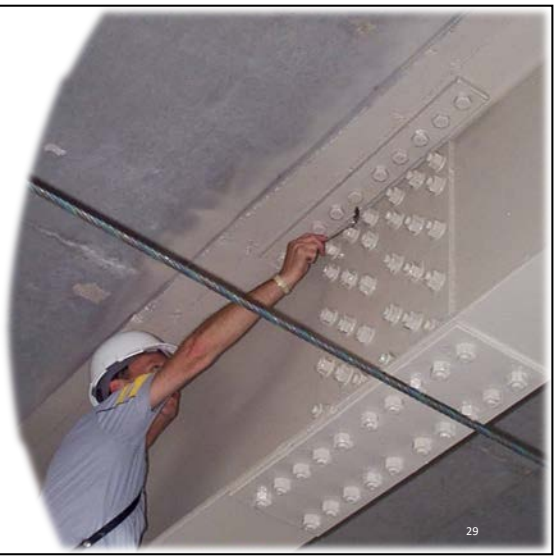
Spot Painting Summary

- The overall service life of the existing coating on steel bridges can be extended for ten years or more by spot painting areas where corrosion has caused coating failures.
- Spot painting is performed over an area where the existing coating has failed. These areas represent a small percentage of the bridge and are usually in areas below expansion joints.
- Typical failures consist of rust, mill scale, cohesive/adhesive failed existing coating or some combination of those. Some areas may require chloride remediation.
- Proper surface preparation and coating application are critical in order to achieve of extending the service life of the intact coating.



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Post Construction

After all work items are completed, several critical steps are required to close out KYTC contracts. Verify the following have been satisfactorily completed:

- Review plans and ensure that all tasks and objectives have been completed in accordance with specifications
- All waste has been collected for proper disposal at an approved facility or as directed by the Engineer
- All equipment, including containment and traffic control devices, have been removed from work area
- Normal traffic pattern has been re-established

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Example of Special Note for Erosion Prevention and Sediment Control

Special Note For:
Erosion Prevention and Sediment Control
Item xx-xxxx County Description

- The Contractor shall be responsible for filing the Kentucky Pollution Discharge Elimination System (KPDES) KYR10 permit Notice of Intent (NOI) with the Kentucky Division of Water (DOW) and any KPDES local Municipal Separate Storm Sewer System (MS4) program that has jurisdiction. The NOI shall name the contractor as the Facility Operator and include the KYTC Contract ID Number (CID) for reference.
- The Contractor shall perform all temporary erosion/sediment control functions including providing a Best Management Practice (BMP) Plan, conducting required inspections, modifying the BMP plan documents as construction progresses and documenting the installation and maintenance of BMPs in conformance with the KPDES KYR10 permit effective on August 1, 2009, or a permit re-issued to replace that KYR10 permit. This work shall be conducted in conformance with the requirements of Section 213 of KYTC 2008 Department of Highways, Standard Specifications for Road and Bridge Construction.
- Contrary to Section 213.03.03, paragraph 2, the Engineer shall conduct inspections as needed to verify compliance with Section 213 of KYTC 2008 Department of Highways, Standard Specifications for Road and Bridge Construction. The Engineer's inspections shall be performed a minimum of once per month and within seven days after a storm of ½ inch or greater. Copies of the Engineer's inspections shall not be provided to the contractor unless improvements to the BMP's are required. The contractor shall initiate corrective action within 24 hours of any reported deficiency and complete the work within 5 days. The Engineer shall use Form TC 63-61 A for this report. Inspections performed by the Engineer do not relieve the Contractor of any responsibility for compliance with the KPDES permit.
- Contrary to Section 213.05, bid items for temporary BMPs will not be listed and will be replaced with one lump sum item for the services. Payment will be pro-rated based on the Project Schedule as submitted by the Contractor and as agreed to by the Engineer.
- The contractor shall be responsible for applying "good engineering practices" as required by the KPDES permit. The contractor may use any temporary BMPs with the approval of the KYTC Engineer.
- The contractor shall provide the Engineer copies of all documents required by the KPDES permit at the time they are prepared.
- The contractor shall be responsible for the examination of the soils to be encountered and make his own independent determination of the temporary BMPs that will be required to accomplish effective erosion prevention and sediment control.
- The Contractor shall be responsible for filing the KPDES permit Notice of Termination (NOT) with the Kentucky DOW and any local MS4 program that has jurisdiction. The NOT shall be filed after the Engineer agrees that the project is stabilized, or the project has been formally accepted.

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