Research Report
KTC-02-25/FR108-01-1F

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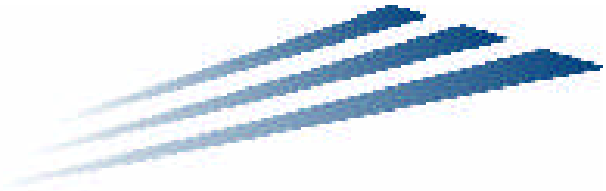
EXPERIMENTAL MAINTENANCE PAINTING OF I-65 IN LOUISVILLE FEDERAL AID RESEARCH TASK NO. 108



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ktc@engr.uky.edu

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EXPERIMENTAL MAINTENANCE PAINTING OF I 65 IN LOUISVILLE

FEDERAL AID RESEARCH TASK NO: 108

By

Rick Younce
Senior Engineer Technician

Theodore Hopwood II
Engineer Associate III, Research

And

Sudhir Palle
Engineer Associate II, Research

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

In cooperation with

Kentucky Transportation Cabinet
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16. Abstract

I-65 project in downtown Louisville consisted of 27 bridges having approximately 1,493,100 ft^2 of steel. The structures had existing coatings that contained lead. The project posed significant operational and public safety and operational constraints due to close proximity of the structures with residences and businesses along the entire route. In 2000, the Central Office Project Design Team developed experimental specifications to abrasive blast and re-paint the bridges. Surface preparation procedures included solvent cleaning, pack rust removal and abrasive blast cleaning. Containment enclosures were employed throughout the project, air monitoring was performed to assure satisfactory containment, and hazardous wastes were collected and disposed of. The I-65 bridges were painted with an organic zinc rich primer and a coat of tinted moisture cure aluminum polyurethane intermediate coat and an acrylic polyurethane finish coat. The project was let at a cost of about \$9.30/ft^2. The painting project started in April, 2001 and was successfully completed in November, 2001.

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EXECUTIVE SUMMARY

The maintenance painting project addressed under this study consisted of 27 mainline bridges on I 65 in the urban limits of Louisville running from Phillips Lane (on the south end of the Project) to Main Street (at the north end). All of those bridges were deck-girder structures. They possessed approximately 1,493,100 ft^2 of steel surfaces requiring painting.

Many of the bridges still had their original paint systems. However, some of the structures had been widened to accommodate additional lanes and the new steel contained paint systems that differed from that employed on the original bridges. As a consequence, the coatings on some structures varied in type, age and condition.

In 2000, the Central Office Project Design Team began preparing special notes for maintenance painting of the I-65 structures. Preliminary inspections of them revealed that much of the existing paint contained lead. Most of the existing paint was in relatively good condition with the exception of a few of the structures which had extensive coating failures and some corrosion. On many of the I 65 bridges, corrosion was observed on girders directly under open or leaking deck joints.

Due to the close proximity of the bridges to residences and business along the entire route, the project posed significant operational and public safety constraints. To minimize the potential for conflicts with adjacent landowners and businesses, the Central Office Project Design Team sought close cooperation from District 5 officials. Plans were made prior to the contract letting to address contractor access requirements for those structures. Abrasive blasting and re-painting was selected for this project to maximize coating durability.

Painting of the I-65 structures was designated as an experimental project. Some of the experimental features of this project included the surface preparation, the containment, and the air monitoring. Due to the presence of lead paint, all paint-related debris was considered to be hazardous waste and it was to be handled and disposed of according to applicable environmental regulations.

A quality control/quality assurance (QC/QA) procedure was employed on this project. The contractor was required to employ a full-time QC person to perform 100 percent inspection of the completed work. KYTC inspectors performed random QA audits at each site. Each structure was divided into control areas and each phase of work had to be approved by a KYTC QA inspector before the next phase of work could begin in that control area.

The Central Office Project Design Team selected a polyurethane paint system that had been successfully employed on many projects from 1995. The coatings system consisted of an organic zinc-rich primer applied by spraying, followed by a brushed, rolled or sprayed-on coat of tinted moisture cure aluminum polyurethane and a topcoat of acrylic polyurethane applied by brushing, rolling or spraying.

The project included a mandatory full day pre-bid meeting for prospective contractors. The meeting included a review of the contract specifications and special notes by KYTC officials and walkover of the complete project. Only attending contractors were eligible to submit acceptable bids.

The project was awarded for a total bid of $13,908,955. That yielded a unit cost for the project of approximately $9.30/ft^2. The low bid of the performing contractor was not an abnormality. The next lowest bid was only $841,045 higher and four bids were received that would have provided unit costs at or below $10.50/ft^2.

The contractor began work on the project in April 2001. Work progressed satisfactorily. At all locations, the contractor fully enclosed the structures with containment tarpaulins as required to allow him to abrasive blast and spray on the coatings to contain hazardous paint debris generated during abrasive blasting, to prevent overspray damage to neighboring property and to preclude dust contamination of wet paint.

The contractor worked successfully with District 5 officials to schedule and complete work without undue interference with businesses and agencies. For his work areas, the contractor used land under and adjacent to the structures. No problems occurred related to the contractor's access to his work sites.

The project was completed in November 2001. The KYTC Central Office Division of Construction inspector worked closely with the contractor during final inspections of each span. Often, the contractor would assign a painter to accompany the inspector on the final inspection and touch-up missed or deficient spots. This cooperation facilitated the completion of work. The paintwork on this large project was in excellent condition at time of completion. The gloss retention and general appearance were very good and the color of the structures was in harmony with the environs.

BACKGROUND

The maintenance painting project investigated under this study consisted of 27 mainline steel deck-girder bridges on I 65 starting at Phillips Lane to the south and ending with Main Street to the north. The bridges collectively had approximately 1,493,100 ft^2 of steel surface area to be painted. Many of the structures had the original paint systems dating from their erection and had not been repainted since. That paint system consisted of one coat of 615D red-lead primer, a leafing aluminum intermediate coat and a non-leafing aluminum finish coat. Lanes were added to I 65 after the original structures were built. The new steel incorporated the current coatings systems in use by KYTC at the time of reconstruction (e.g. inorganic zinc/vinyl).

Over the years, some of the bridge coatings had deteriorated to the point that the structures required maintenance painting. In 2000, the Kentucky Department of Highways (KYTC) Division of Operations personnel began efforts to repaint the bridges by abrasive blasting and re-painting. This was the first use of total removal/containment on a maintenance painting project in about 8 years. As many of the I 65 structures were in downtown Louisville, KYTC officials wanted to provide very durable coatings on those bridges to limit the intrusion to the motoring public in the future. Abrasive blasting coupled with the use of a zinc-rich coating system was expected to provide extended coating lives to those structures.

Prior to the maintenance painting of I 65, a contract was awarded in July 2000, for repairs on North-South Expressway (I 65) from Watterson (I-264) to Spaghetti Junction (I 64). The scope of the project involved repairing and/or resealing bridge joints, deck patching and substructure repairs like replacing pier caps, etc. Seventeen expansion joints were replaced on Northbound (NB) structures and 27 on Southbound (SB) ones; two expansion joints were resealed on NB structures and 6 on SB ones. Deck patching was performed on 5 NB structures and on 5 SB ones. The three different alternatives for traffic control were partial lane closures for 90 days, partial lane closures for 30 weekends and complete closure for 2 weekends. The last option was selected because it would have less impact on motorists, include safety of motorists and workers, and have better quality of product. The maintenance painting of I 65 was specifically delayed to accommodate the above maintenance work so that the painting work would perform satisfactorily.

INITIAL FIELD INSPECTIONS

In 2000, KYTC conducted a series of preliminary inspections to assess the condition of the structures and to identify sensitive receptors under and adjacent to them. The condition of the existing paint varied from bridge to bridge throughout the project. There were some bridges with paint systems in relatively good condition (approximately 12 – 13) especially the structures towards south with the remaining bridges in the north in worse condition. On bridges, where the paint was in good condition there was a slight amount of rust, usually observed around the bearing areas. On bridges, where the paint was deteriorating at different parts of the structure, larger areas were affected with paint disbonding being the common type of distress.

There were several sensitive receptors along and below I 65 Expressway which included hospitals, businesses, University campus and several attendant parking lots. It was concluded that the number of sensitive receptors did pose a lot of traffic problems when maintenance painting actually took place. Hence general traffic notes for controlling and maintaining traffic was written into the specification for every bridge.

WORKSITE CONDITIONS

Several situations existed that complicated the painting operations. Most of the bridges were over city streets necessitating traffic control during painting. Numerous businesses, the University of Louisville campus, the University of Louisville Hospital, the Jewish Hospital, the State Fairgrounds, and several attendant parking lots were located under or immediately adjacent to the various bridges. Hence potential problems existed if hazardous wastes generated during the work were accidentally released into the environment.

KYTC District 5 officials were enlisted to identify the various landowners/users impacted by the painting operations and inform them as to when and how long closures/access restrictions would be enforced. During the project, contractor progress along I 65 was discussed in detail at monthly partnership meetings. District officials were constantly informed of contractor's current progress of work and future intentions in order to properly alert impacted businesses and municipal agencies in a timely manner.

Each bridge site on this project had a different set of traffic notes. No lane or shoulder closures were permitted on mainline I 65. Traffic control plans prepared by the painting contractor for each individual site were to be submitted for approval by District 5 personnel, to minimize impact on motorists. The close proximity of the structures to homes, schools, businesses, parking lots, hospitals, etc. posed additional concerns such as hazardous waste releases, traffic detours, overspray damage and etc.

SPECIAL NOTES

The contract for this project included Special Notes for:

- Surface Preparation And Paint Application,
- Paint,
- Polyurethane Paint System Used For Maintenance Applications,
- Quality Control,
- Environmental And Worker Safety Regulations,
- Pre-Bid Conference,
- Project Monitoring,
- Partnering.

In addition to the special notes, the contract required that all work be done in accordance with the Kentucky Transportation Cabinet, Department of Highways, Standard

Specifications for Road and Bridge Construction, Section 614 Maintenance Cleaning and Painting Steel Bridges.

Surface Preparation

A visual standard, Structures Painting Council (SSPC) VIS 1-89, was used to determine acceptability of prepared surfaces (abrasive blast cleaned) prior to painting. Before the structural steel was blasted, the surface was to be cleaned in accordance with SSPC-SP 1 to remove oil, grease, and any other surface contaminants. All pack rust was also to be removed from structural steel prior to abrasive blast cleaning. All steel was to be abrasive blast cleaned to the VIS 1-89, SSPC-SP 6/NACE 3 (Commercial Blast) condition. A recyclable steel grit was specified for abrasive blasting to limit the amount of hazardous debris generated. After blasting, the prepared surface was to be vacuumed to remove all dust and contaminates prior to applying paint. The abrasive blasting process was to provide an anchor profile height of 1.5 to 3.0 mils.

Paint Application

All structures were to receive three coats of paint. That included a full prime coat of organic zinc rich primer to be sprayed on at 2.0 to 4.0 mils dry film thickness (DFT), an intermediate coat of a tinted moisture cure aluminum polyurethane to be applied by brushing, rolling or spraying (at the option of the contractor) at 2.0 to 4.0 mils DFT, and a acrylic polyurethane finish coat to be applied by brushing, rolling or spraying at 2.0 to 4.0 mils DFT. If spraying was to be used, then total containment of overspray was required. Addition of solvents to paint was permitted only by written approval from the Division of Materials. The contractor was also solely responsible for any damages to public property arising from painting operations.

Materials

A list of coatings manufacturers qualified to provide KYTC-specification paint was provided to bidding contractors along with the specifications. Those manufacturers had submitted qualification samples that were extensively tested by the KYTC Division of Materials. All paint sent to the job site was to be subjected to acceptance testing on a per-lot basis from random samples taken by KYTC personnel. Paint samples were to be tested and results reported by the Division of Materials within 10 days of sampling. Painting the structures could not proceed without sample approval.

Quality in Workmanship

A quality control/quality assurance (QC/QA) approach to inspection was employed by KYTC to obtain a satisfactory project. Structures were divided into pre-defined areas that limited the extent of the contractor work (control areas). The work was divided into specific tasks. Only one task could be performed in a control area at a time. That task was not considered complete until QC/QA inspections indicated that the work was acceptable. Then, the contractor was permitted to address the succeeding task.

The contractor was required to employ a full-time QC inspector who has successfully been certified by the Transportation Cabinet's, Bridge Coating Inspector Training. That individual was assigned to examine all work in a control area after it was completed and have any corrective work performed. After the QC inspector deemed the work satisfactory, a KYTC QA inspector would re-examine a portion of the work. If the QA inspector considered it acceptable, he would notify the QC inspector and sign-off his acceptance in a logbook maintained by the QC inspector. The QC inspector would inform the contractor's foreman that the next task could be performed in that control area. Rejected work would need to be corrected to the satisfaction of the QA inspector.

Prior to the onset of work, the contractor was required to apply a test patch incorporating the equipment, coatings and procedures specified for the project. KYTC personnel and the contractor's personnel attended the test to confirm that it was conducted properly and to ensure that all parties comprehended the level of quality in cleaning and painting expected on the project. There were a total of four QA's assigned for this job. The test patch area was to be covered with plastic sheet and retained as a reference standard until the project was completed.

Pre-Bid Meeting

Painting contractors wishing to bid on the project were required to participate in a pre-bid meeting on January 5, 2001. The meeting was held in Louisville several weeks prior to the bid opening. Attendees included contractors, KYTC District 5 officials associated with the project, and the Central Office Project Design Team. Central Office Project Design Team members reviewed the project specifications in detail and answered the contractors' questions. District 5 officials discussed scheduling requirements for accessing each structure. Thereafter, the group was taken to all of the structures to review their condition and to observe the non-KYTC facilities and activities under and adjacent to the bridges. The prospective contractors were required to sign a form that showed they had attended the meeting and had also participated in the field review. The bids of contractors did not sign the form were not read at the letting.

Environmental Protection and Worker Safety

General requirements were provided for environmental and worker safety regulations. The contractor was required to totally enclose all structural steel during all phases of work and use containment that meets the criteria for SSPC Guide 6 – Containment Classification Class 1A. Air movement in the containment was not specified, but the contractor was to demonstrate that it would provide the necessary engineering controls to comply with OSHA (Occupational Safety and Health Administration) worker safety requirements. Observance of emissions at any time required that cleaning and painting cease until the containment was sufficient to prevent emissions. In order to be in compliance with the National Ambient Air Quality Standards (NAAQS), additional monitoring at each structure may be required. A total solid particulate device (Figure 108) was used by the contractor's competent person for lead abatement to monitor the air

quality at specific sites throughout the project. Quantity of emissions was to be monitored and recorded in the log book.

The contractor was responsible for collecting, storing, transporting, and disposing of any waste generated in accordance with applicable regulations. The contractor was to have a "Competent Person for Lead Abatement" as defined by OSHA 1926.62 on site during any operations which disturbed lead. KYTC provided a secured hazardous waste storage location at its Phillips Lane site (Bridge No: 209) in Louisville. The Kentucky Natural Resources Cabinet, Division of Waste Management, allowed the contractor to transport hazardous wastes generated along the project to that storage area. At the onset of the project, KYTC applied for a large-quantity waste generator permit. The contractor was required to dispose of all hazardous wastes within 75 days of generation. Failure to remove the hazardous waste was to result in a penalty of two thousand dollars per day per drum that the containers are left in storage. This penalty was in addition to any fines that may be assessed by regulatory agencies other than the Transportation Cabinet. The contractor was required to provide KYTC with all manifests related to hazardous waste transport and disposal.

PROJECT BIDS

The bid opening was held on February 16, 2001 at the State Office Building in Frankfort. There were three bids received on the project ranging from $13,908,955 to $15,445,550. The difference between the lowest bid and the next lowest bid was $841,045. A rough estimate of the original surface area of steel to be painted was about 1,493,100 ft^2 based upon the tons of steel. That resulted in an estimated unit cost of $\$9.30/ft^2$.

PARTNERING

KYTC 2000's Standard Specifications for Road and Bridge Construction – Section 114 allows for partnering (formal or informal) depending upon the scope of the project. I 65 project specifications required partnering to resolve any problem issues relating to maintenance operations between KYTC and the contractor. The initial partnering meeting was held on March 27, 2001. During the course of the project, partnering meetings were held on regular monthly intervals. There were a total of about ten partnering meetings during the duration of the project. The spirit and the function of partnership on this project permitted addressing and resolving of all issues before they became problems.

CONCLUSIONS/SUMMARY

The I 65 maintenance painting project went well on many levels, even though there were few complaints by locals, good cooperation by all relevant firms, hospitals, the city of Louisville, the railroads, etc. There were no citations or undesirable incidents. At completion the projects looked good and were performing well. Though the abrasive blast profile on all bridges ranged between 3 and 4.5 mils (Specification 1.5 – 3 mils), it was not a problem in successfully completing the project as it has minimal impact on

painting operations. The project was started on April 6, 2001 with application of the test patch on the Manning Street Bridge and the official completion date was November, 2001 with a total work time of about seven months. Class 1A containment specified for blasting operation of I 65 project worked well and should be used in future urban projects. The QC/QA effort on this project was well structured and partnership between the contractors and Transportation Cabinet personnel was also a success. The overall paint work was good and achieved the expectations of KYTC officials.

Appendix A: **Main Street Bridge between Hancock and Jackson**

MP 056-0065-B00174 136.251

Main Street Bridge between Hancock and Jackson

Background

Main Street Bridge between Hancock and Jackson Street on 1-65 was painted for a lump sum of $1,400,000. The bridge consisted of four continuous simple welded composite girder spans with floor beams and had approximately 194,600 ft^2 of steel surface area.

Observations

During the cleaning and painting of this bridge, the contractor had to maintain at least two 12' usable traffic lanes out of four (Westbound Lanes-One way) at all times. No problems were encountered during the cleaning and painting of this bridge.

Final Inspection and Summary

A partial final inspection of the bridge was performed on September 28, 2001. The inspection revealed that touching up was required to repair rigging damage in several control areas. A final inspection was done on October 25, 2001 and revealed that the remaining control areas required the same action. All work was completed properly within general conformance of the **Standard Specifications and Special Notes** of this project. Personnel from KYTC Central Office Division of Construction and District 5, the Kentucky Transportation Center, and the contractor were present for that final inspection.

Figure 1. Overall view of Main Street Bridge before the painting started.

Figure 2. Close up of the composite girders of Main Street Bridge before painting.

Figure 3. View of containment structure on the Main Street Bridge during maintenance painting operation.

Figure 4. Finished view of the Main Street Bridge.

Figure 5. Completed view of the girders on the Main Street Bridge.

Appendix B: **Market Bridge between Hancock and Jackson**

MP 056-0065-B00201 136.145

Market Bridge between Hancock and Jackson

Background

Market Street Bridge between Hancock and Jackson Street on 1 65 was painted for a lump sum of $325,000. The bridge consisted of one continuous simple welded composite girder span with stringers and had approximately 36,100 ft^2 of steel surface area.

Observations

The painting contractor moved on site in September, 2001 to start blasting and painting of the bridge. During the maintenance painting operations, the contractor had to maintain at least one 12’ usable traffic lane both on eastbound (Out of total of three) and westbound at all times. No problems were encountered during cleaning and painting of this bridge.

Final Inspection and Summary

A partial final inspection of the bridge was done on October 15, 2001. The bridge had few areas requiring minor touch up of holidays (Minute spots or areas with missed intermediate or topcoat). Touch up included roughening of existing surfaces by sanding and application of finish coat to 2 to 4 mils DFT. A final inspection performed in November, 2001 revealed that all work was completed properly within general conformance of the **Standard Specifications and Special Notes** applicable to this project. Personnel from KYTC Central Office Division of Construction and District 5, the Kentucky Transportation Center, and the contractor were present for that final inspection.

Figure 6. Overall view of the Market Street Bridge before painting began.

Figure 7. View of the girders before painting.

Figure 8. Completed view of the Market Street Bridge.

Figure 9. View of newly painted girders on the Market Street Bridge.

Appendix C: **Jackson Bridge, I-65 North of Jefferson**

MP 056-0065-B00200 136.052

Jackson Bridge, I-65 North of Jefferson

Background

Jackson Street Bridge, north of Jefferson on 1 65 was painted for a lump sum of $175,000. The bridge consisted of one simple welded composite girder span with floor beams and had approximately 18,400 ft^2 of steel surface area.

Observations

The contractor had to maintain at least one 12’ usable traffic lane out of two (One way traffic) at all times. No problems were encountered during the cleaning and painting of this bridge.

Final Inspection and Summary

The final inspection of the bridge on September 12, 2001 revealed that all work was completed properly within general conformance of the **Standard Specifications and Special Notes** applicable to this project with some minor exceptions. The contractor was to repair holidays and missed spots in the finish coat. Also, some random cracking in the intermediate coat was found, mostly along the diaphragms and steel near the abutments. Repair of these areas was done by sanding or grinding the cracked coating and reapplication of intermediate and finish coats. The work area required cleaning of debris and waste removal before the project could be approved. Personnel from KYTC Central Office Division of Construction and District 5, the Kentucky Transportation Center, and the contractor were present for that final inspection.

Figure 10. Overall view of the Jackson Street Bridge prior to maintenance painting.

Figure 11. View of the girders on the Jackson Street Bridge before painting.

Figure 12. Overall view of the Jackson Street Bridge after painting.

Figure 13. View of newly painted girders on the Jackson Street Bridge.

Appendix D: **Preston and Jefferson Bridge**

MP 056-0065-B00199 135.919

Preston and Jefferson Bridge

Background

The Preston and Jefferson Bridge on 1 65 was painted for a lump sum of $1,700,000. The bridge consisted of six simple welded composite girder spans with floor beams and had approximately 188,400 ft^2 of steel surface area.

Observations

The painting contractor moved on site in May, 2001 to begin blasting and painting of the bridge. The contractor had to maintain at least two 12' usable traffic lanes on Jefferson Street (Out of four) and two 12' usable traffic lanes on Preston Street (Out of four) at all times. No problems were encountered during the cleaning and painting of this bridge.

Final Inspection and Summary

A final inspection was performed on August 17, 2001 for this bridge. Personnel from KYTC Central Office Division of Construction and District 5, the Kentucky Transportation Center, and the contractor were present for that final inspection. The inspection revealed that several control areas needed touch up work for fixing holidays especially around the bolts, missed spots, cracking and application flaws. The work area was to be cleaned and all debris and waste removed from site. The final inspection report revealed that all work was completed properly within general conformance of the Standard Specifications and Special Notes applicable to this project with the above noted exceptions.

Figure 14. View of bridge at Preston and Jefferson Streets prior to painting.

Figure 15. Girders of bridge at Preston and Jefferson Streets before painting.

Figure 16. View of bridge at Preston and Jefferson Streets after painting.

Figure 17. View of newly painted girders at Preston and Jefferson Streets.

Appendix E: **Approach Ramp Liberty to Northbound I-65**

MP 056-0065-B00198 135.848

Approach Ramp Liberty to Northbound I-65

Background

The approach ramp from Liberty Street to Northbound I-65 was painted for a lump sum of $70,000. The bridge consisted of one simple welded composite girder span with stringers and had approximately 6,100 ft^2 of steel surface area.

Observations

The painting contractor moved on site in September, 2001 so blasting and painting of the bridge could begin. The contractor had to maintain at least three 12’ usable traffic lanes out of five eastbound lanes at all times. No problems were encountered during the cleaning and painting of this bridge.

Final Inspection and Summary

The final inspection of the bridge on September 28, 2001 revealed that all work was completed properly within general conformance of the Standard Specifications and Special Notes applicable to this project. Personnel from KYTC Central Office Division of Construction and District 5, the Kentucky Transportation Center, and the contractor were present for that final inspection.

Figure 18. View of approach ramp at Liberty Street prior to painting.

Figure 19. View of girders at the approach ramp at Liberty Street prior to painting.

Figure 20. Bridge at approach ramp of Liberty Street after painting.

Figure 21. View of girders at the approach ramp at Liberty Street after painting.

Appendix F: **Liberty Street Bridge**

MP 056-0065-B00197 135.907

Liberty Street Bridge

Background

Liberty Street Bridge on 1-65 was painted for a lump sum of $250,000. The bridge consisted of one simple welded composite girder span with floor beams and had approximately 26,800 ft^2 of steel surface area.

Observations

The contractor had to maintain at least three 12’ usable traffic lanes out of five eastbound lanes at all times. No problems were encountered during the cleaning and painting of this bridge.

Final Inspection and Summary

A final inspection of the bridge was performed on September 11, 2001. The inspection revealed that all work was completed properly within general conformance of the **Standard Specifications and Special Notes** for this project with the following exceptions. Some control areas on had an area of old paint that had not been removed during the blasting of the upper horizontal stiffener on the outside fascia. This old material was to be removed down to bare metal and have the three layers of coatings properly applied. Some other areas on the outside fascia had steel shot rust staining the coating and were to be removed. If staining could not be removed, the area had to be cleaned and repainted. The work area was to be cleaned and all debris and waste removed from site. Personnel from KYTC Central Office Division of Construction and District 5, the Kentucky Transportation Center, and the contractor were present for that final inspection.

Figure 22. View of bridge at Liberty Street prior to painting.

Figure 23. Girders on bridge at Liberty Street before painting.

Figure 24. Overall view of Liberty Street Bridge after painting.

Figure 25. Newly painted girders on the Liberty Street Bridge.

Appendix G: **Floyd Street Bridge, South of Jefferson Street**

MP 056-0065-B00196 135.861

Floyd Street Bridge, South of Jefferson Street

Background

The Floyd Street Bridge, south of Jefferson on 1 65 was painted for a lump sum of $50,000. The bridge consisted of one simple welded composite girder span with floor beams and had approximately 3,900 ft^2 of steel surface area.

Observations

The contractor had to maintain at least one 12’ usable traffic lanes both north and south at all times. Curb lanes were used in addition to the normal traffic lanes to maintain traffic. No problems were encountered during the cleaning and painting of this bridge.

Final Inspection and Summary

The final inspection of the bridge on October 15, 2001 revealed that all work was completed properly within general conformance of the **Standard Specifications and Special Notes** of this project with the following exceptions. The bridge had numerous holidays and light spots in the finish coating, which required sanding to roughen up the areas and reapplication of finish coat to proper DFT. The work area also needed to be cleaned and all debris and waste removed. Personnel from KYTC Central Office Division of Construction and District 5, the Kentucky Transportation Center, and the contractor were present for that final inspection.

Figure 26. Overall view of Floyd Street Bridge before painting.

Figure 27. Girders on Floyd Street Bridge before painting.

Figure 28. Bridge at Floyd Street after painting.

Figure 29. Girders on bridge at Floyd Street after painting.

Appendix H: **Floyd Street Bridge, South of Liberty**

MP 056-0065-B00195 135.849

Floyd Street Bridge, South of Liberty

Background

Floyd Street Bridge, south of Liberty on 1-65 was painted for a lump sum of $165,000. The bridge consisted of one simple welded composite girder span with floor beams and had approximately 18,400 ft^2 of steel surface area.

Observations

No problems were encountered during the cleaning and painting of this bridge. The contractor had to maintain at least one 12’ usable traffic lanes both north and south at all times. Curb lanes were used in addition to the normal traffic lanes to maintain traffic.

Final Inspection and Summary

The final inspection of the bridge revealed that all work was completed properly within general conformance of the **Standard Specifications and Special Notes** of this project with the following exceptions. The new paint had some areas of holidays and light spots in the finish coat, which required sanding to roughen up the areas and reapplication of finish coating to proper DFT. The work area also needed to be cleaned and all debris and waste removed from the site. Personnel from KYTC Central Office Division of Construction and District 5, the Kentucky Transportation Center, and the contractor were present for that final inspection.

Figure 30. Bridge at Floyd Street, South of Liberty before painting.

Figure 31. Girders at Floyd Street, South of Liberty before painting.

Appendix I: **Muhammad Ali Bridge, West of Brook**

MP 056-0065-B00194 135.681

Muhammad Ali Bridge, West of Brook

Background

Muhammad Ali Blvd. Bridge, west of Brook on 1-65 was painted for a lump sum of $40,000. The bridge consisted of one simple welded composite girder span with floor beams and had approximately 3,300 ft^2 of steel surface area.

Observations

No problems were encountered during the cleaning and painting of this bridge. The contractor had to maintain at least two 12’ usable traffic lanes out of the four westbound lanes.

Final Inspection and Summary

The final inspection of the bridge on revealed that all work was completed properly within general conformance of the **Standard Specifications and Special Notes** of this project with the following exceptions. The topcoat needed to be reapplied to proper DFT. Also, Touch up work was needed on areas with holidays and light spots. The work area must be cleaned and all debris and waste removed from site. Personnel from KYTC Central Office Division of Construction and District 5, the Kentucky Transportation Center, and the contractor were present for that final inspection.

Figure 32. View of Muhammad Ali, West of Brook before painting.

Figure 33. Girders at Muhammad Ali, West of Brook before painting.

Figure 34. View of Muhammad Ali Bridge, West of Brook after painting.

Appendix J: **Muhammad Ali Bridge, East of Brook**

MP 056-0065-B00193 135.649

Muhammad Ali Bridge, East of Brook

Background

Muhammad Ali Blvd. Bridge, east of Brook on 1-65 was painted for a lump sum of $1,250,000. The bridge consisted of six simple welded composite girder spans with stringers and had a total of approximately 100,400 ft^2 of steel surface area.

Observations

No problems were encountered during the cleaning and painting of this bridge. The contractor had to maintain at least two 12' usable traffic lanes out of four westbound lanes on Muhammad Ali Street at all times. The contractor had to maintain at least two 12' usable traffic lanes out of four northbound lanes on Brook Street at all times. The maintenance painting of all four spans over Jewish Hospital Parking lot was completed with minimum impact on the parking.

Final Inspection and Summary

A partial final inspection, completed on November 5, 2001, revealed that all work was completed properly and within general conformance of the **Standard Specifications and Special Notes** of this project with the following exceptions. Some control areas had cracking in the intermediate coat around the bolt patterns. The cracks were to be grounded out and the intermediate coat reapplied if needed for adequate DFT, and the topcoat reapplied to proper DFT. Also, the topcoat needed to be reapplied in the web areas where there was thin DFT. Touching up of light spots, holidays and areas where rigging was removed was required.

Another partial final inspection of the bridge, on November 16, 2001 revealed that all work was completed properly within general conformance of the Standard Specifications and Special Notes applicable to this project with the following exceptions. One control area had rough and lifted coatings in the areas where the bulk heads were constructed. These areas needed to be ground down, feathered out and have topcoat reapplied. Areas of grit and blasting dust were to be cleaned. Overspray from flanges and horizontal stiffeners were to be ground or scrapped and the topcoat reapplied where necessary. Touch up of light spots and holidays were necessary. Stenciling of the appropriate information is also needed. The work area was to be cleaned and all debris and waste removed from site. Personnel from KYTC Central Office Division of Construction and District 5, the Kentucky Transportation Center, and the contractor were present for that final inspection.

Figure 35. View of bridge at Muhammad Ali, East of Brook before painting.

Figure 36. View of girders on bridge at Muhammad Ali, East of Brook before painting.

Figure 37. View of joint at Muhammad Ali, East of Brook before painting.

Figure 38. View of Muhammad Ali, East of Brook after painting.

Figure 39. View of girders at Muhammad Ali, East of Brook after painting.

Appendix K: **Jacobs-Broadway-Gray, Between 1st and Brook**

MP 056-0065-B00191 135.195

Jacobs-Broadway-Gray, Between 1st and Brook

Background

Jacobs-Broadway-Gray Streets Bridge, between 1st and Brook, on 1-65 was painted for a lump sum of $515,000. The bridge consisted of 30 (CONT. RCDG, WSP, PCIB) spans and had a total of approximately 53,100 ft^2 of steel surface area.

Observations

No problems were encountered during the cleaning and painting of this bridge. The contractor had to maintain at least one 12' usable traffic lane both east and west bound on Gray Street at all times. On Gray Street, curb lanes were used in addition to the normal traffic lanes to maintain traffic. The contractor had to maintain at least one 12' usable traffic lane out of two westbound lanes on Jacobs Street at all times. The maintenance painting of all the six spans over Jewish Hospital Parking lot and University of Louisville Parking lot were completed with minimum impact on the parking.

Final Inspection and Summary

A final inspection was completed on September 12, 2001 for the bridge at Gray Street. Some areas needed scrapping and or sanding of over spray areas with re-application of finish coat. The areas where intermediate coat was cracked by sanding or grinding into the cracked coating needed to be repaired. The intermediate coat and finish coat was to be reapplied to proper thickness if needed. Other areas required touch up of cable and rigging marks, holidays and missed spots with finish coat.

A final inspection was also performed on September 12, 2001 for the Jacob Street Bridge. Control areas required touch up of cable and rigging marks, holidays and missed spots with finished coat. Many areas needed scraping and/or sanding of over spray areas with reapplication of finish coat. An area where intermediate coat has cracked was to be repaired by sanding or grinding into the cracked coating. Reapplication of intermediate coat and finish coat to proper thickness was needed. The work area was to be cleaned and all debris and waste removed from site. Personnel from KYTC Central Office Division of Construction and District 5, the Kentucky Transportation Center, and the contractor were present for that final inspection.

Figure 40. View of bridge at Jacobs-Broadway-Gray, between 1st and Brook before painting.

Figure 41. Girders on bridge at Jacobs-Broadway-Gray, between 1st and Brook before painting.

Figure 42. Bridge at Jacobs-Broadway-Gray, between 1st and Brook after painting.

Appendix L: **College Street Bridge, Between 1st and Brook**

MP 056-0065-B00188 135.109

College Street Bridge, Between 1st and Brook

Background

College Street Bridge, between 1st and Brook, on 1-65 was painted for a lump sum of $280,000. The bridge consisted of three simple welded composite girder spans with floor beams and had a total of approximately 27,100 ft^2 of steel surface area.

Observations

No problems were encountered during the cleaning and painting of this bridge. The contractor had to maintain at least one 12' usable traffic lane both east and west at all times.

Final Inspection and Summary

A final inspection was performed on September 28, 2001. Cracks in the intermediate coating on nearly all the rockers and feet at the abutment were to be ground down and repaired by applying additional intermediate coat where needed and reapplying finish coat. The work area was to be cleaned and all debris and waste removed from site. Personnel from KYTC Central Office Division of Construction and District 5, the Kentucky Transportation Center, and the contractor were present for that final inspection.

Figure 43. Bridge at College Street, between 1st and Brook before painting.

Figure 44. Girders on bridge at College Street, between 1st and Brook before painting.

Figure 45. View of bridge at College Street, between 1st and Brook after painting.

Figure 46. Girders on the bridge at College Street, between 1st and Brook after painting.

Appendix M: **Breckinridge Street, Between 1st and Brook**

MP 056-0065-B00189 134.987

Breckinridge Street, Between 1st and Brook

Background

Breckinridge Street Bridge, between 1st and Brook, on 1-65 was painted for a lump sum of $210,000. The bridge consisted of three simple welded composite girder spans with floor beams and had a total of approximately 21,100 ft^2 of steel surface area.

Observations

No problems were encountered during the cleaning and painting of this bridge. The contractor had to maintain at least two 12' usable traffic lanes out of three westbound lanes at all times.

Final Inspection and Summary

A final inspection was completed on September 28, 2001. The inspection revealed that touch up work was needed in areas where rigging had been placed. Also, areas having holidays and light spots in the finish coat required sanding and re-application of finish coat to the proper DFT. The work area was to be cleaned and all debris and waste removed from site. Personnel from KYTC Central Office Division of Construction and District 5, the Kentucky Transportation Center, and the contractor were present for that final inspection.

Figure 47. Bridge at Breckinridge Street, between 1st and Brook before painting.

Figure 48. Girders on bridge at Breckinridge Street, between 1st and Brook before painting.

Figure 49. View of bridge at Breckinridge Street, between 1st and Brook after painting.

Figure 50. Girders on bridge at Breckinridge Street, between 1st and Brook after painting.

Appendix N: **Caldwell Street, Between 1st and Brook**

MP 056-0065-B00190 134.884

Caldwell Street, Between 1st and Brook

Background

Caldwell Street Bridge, between 1st and Brook, on 1-65 was painted for a lump sum of $215,000. The bridge consisted of three simple welded composite girder spans with floor beams and had a total of approximately 21,600 ft^2 of steel surface area.

Observations

No problems were encountered during the cleaning and painting of this bridge. The contractor had to maintain at least one 12' usable traffic lane both east and west bound lanes at all times. Curb lanes were used in addition to the normal traffic lanes to maintain traffic.

Final Inspection and Summary

A final inspection was completed on September 28, 2001. The bridge was found to be within conformance to the **Standard Specifications and Special Notes** of this project. Stenciling of the appropriate information is also needed. The work area was to be cleaned and all debris and waste removed from site. Personnel from KYTC Central Office Division of Construction and District 5, the Kentucky Transportation Center, and the contractor were present for that final inspection.

Figure 51. Bridge at Caldwell Street, between 1st and Brook before painting.

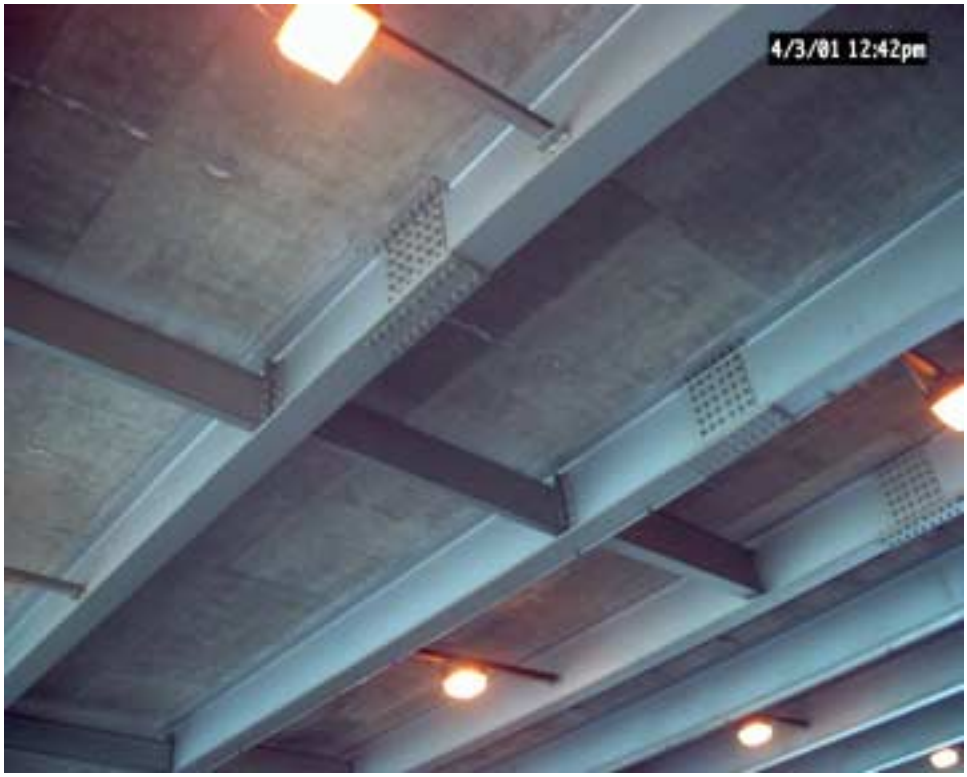

Figure 52. Girders at Caldwell Street Bridge, between 1st and Brook before painting.

Figure 53. Bridge at Caldwell Street, between 1st and Brook after painting.

Figure 54. Girders on bridge at Caldwell Street, between 1st and Brook after painting.

Appendix O: **Kentucky Street Bridge at Brook**

MP 056-0065-B00183 134.820

Kentucky Street Bridge at Brook

Background

Kentucky Street Bridge, at Brook Street, on 1-65 was painted for a lump sum of $1,380,000. The bridge consisted of nine simple welded composite girder main spans with floor beams and eight approach spans had a total of approximately 169,000 ft^2 of steel surface area.

Observations

No problems were encountered during the cleaning and painting of this bridge. The contractor had to maintain at least two 12' usable traffic lanes out of three west bound lanes on Kentucky Street at all times. The contractor had to maintain at least one 12' usable traffic lane out of two northbound lanes on Brook Street. The maintenance painting of all the seven spans over Louisville Deaf Oral School Parking lot was completed with minimum impact on the parking.

Final Inspection and Summary

A final inspection was completed on September 28, 2001. The final inspection revealed that the bridge has cracking in the intermediate coat on the steel pier (upright) in one control area. The cracks were to be ground out so that the intermediate and finish coats could be reapplied. The bridge was found to be within conformance to the **Standard Specifications and Special Notes** of this project with the previous exceptions. Stenciling of the appropriate information is also needed. The work area was to be cleaned and all debris and waste removed from site. Personnel from KYTC Central Office Division of Construction and District 5, the Kentucky Transportation Center, and the contractor were present for that final inspection.

Figure 55. Bridge at Kentucky and Brook Streets before painting.

Figure 56. View of girders on bridge at Kentucky and Brook Streets before painting.

Figure 57. Bridge at Kentucky and Brook Streets after painting.

Figure 58. View of girders at Kentucky and Brook Street Bridge after painting.

Figure 59. View of containment used at the Kentucky and Brook Street Bridge.

Appendix P: **St. Catherine Street Bridge, Between Brook and Floyd**

MP 056-0065-B00184 134.675

St. Catherine Street Bridge, Between Brook and Floyd

Background

St. Catherine's Street Bridge, between Brook Street and Floyd Street, on 1-65 was painted for a lump sum of $250,000. The bridge consisted of three simple welded composite girder spans with floor beams and had a total of approximately 23,200 ft^2 of steel surface area.

Observations

No problems were encountered during the cleaning and painting of this bridge. The contractor had to maintain at least two 12' usable traffic lanes out of four west bound lanes at all times.

Final Inspection and Summary

A final inspection was completed on September 28, 2001. The bridge was found to be within conformance to the **Standard Specifications and Special Notes** for this project. The work area was to be cleaned and all debris and waste removed from site. Personnel from KYTC Central Office Division of Construction and District 5, the Kentucky Transportation Center, and the contractor were present for that final inspection.

Figure 60. Bridge at St. Catherine Street before painting.

Figure 61. View of girders at the St. Catherine Street Bridge before painting.

Figure 62. View of bridge at St. Catherine Street after painting.

Figure 63. View of girders at St. Catherine Street Bridge after painting.

Appendix Q: **Floyd Street Bridge, North of Oak**

MP 056-0065-B00185 134.589

Floyd Street Bridge, North of Oak

Background

Floyd Street Bridge, north of Oak Street, on 1-65 was painted for a lump sum of $585,000. The bridge consisted of three simple welded composite girder spans with floor beams and had a total of approximately 74,400 ft^2 of steel surface area.

Observations

No problems were encountered during the cleaning and painting of this bridge. The contractor had to maintain at least two 12' usable traffic lanes out of three east bound lanes at all times.

Final Inspection and Summary

A final inspection was completed on September 12, 2001. The bridge was found to be within conformance to the **Standard Specifications and Special Notes** of this project with the following exceptions. Holidays and missed spots needed to be repaired by applying finish coat to those areas. Also, touch up was required where the rigging had been removed. The work area was to be cleaned and all debris and waste removed from site. Personnel from KYTC Central Office Division of Construction and District 5, the Kentucky Transportation Center, and the contractor were present for that final inspection.

Figure 64. View of bridge at Floyd Street, North of Oak before painting.

Figure 65. Girders at Floyd Street Bridge, North of Oak before painting.

Figure 66. View of bridge at Floyd Street, North of Oak after painting.

Appendix R: **Oak Street Bridge, Between Floyd and Preston**

MP 056-0065-B00186 134.473

Oak Street Bridge, Between Floyd and Preston

Background

Floyd Street Bridge, north of Oak Street, on 1-65 was painted for a lump sum of $245,000. The bridge consisted of three simple welded composite girder spans with floor beams and had a total of approximately 24,400 ft^2 of steel surface area.

Observations

No problems were encountered during the cleaning and painting of this bridge. The contractor had to maintain at least one 12' usable traffic lane at all times.

Final Inspection and Summary

A final inspection was completed on November 2, 2001. The bridge was found to be within conformance to the **Standard Specifications and Special Notes** of this project with the following exceptions. In some control areas, cracks in the intermediate coat around the bolt patterns and rockers needed repairing by grinding and reapplying coatings to proper DFT. The touch up of holidays and lights spots was also needed. The work area was to be cleaned and all debris and waste removed from site. Personnel from KYTC Central Office Division of Construction and District 5, the Kentucky Transportation Center, and the contractor were present for that final inspection.

Figure 67. View of bridge at Oak Street before painting.

Figure 68. Girders on bridge at Oak Street before painting.

Figure 69. Bridge at Oak Street after painting.

Figure 70. View of girders at bridge on Oak Street after painting.

Appendix S: **Ormsby Ave. Bridge, Between Floyd and Preston**

MP 056-0065-B00187 134.297

Ormsby Ave. Bridge, Between Floyd and Preston

Background

Ormsby Ave. Bridge, between Floyd and Preston, on 1-65 was painted for a lump sum of $220,000. The bridge consisted of five simple welded composite girder spans with stringers and had a total of approximately 31,200 ft^2 of steel surface area.

Observations

No problems were encountered during the cleaning and painting of this bridge. The contractor had to maintain at least one 12' usable traffic lane at all times.

Final Inspection and Summary

A final inspection was completed on September 28, 2001. The bridge was found to be within conformance to the **Standard Specifications and Special Notes** of this project with the following exceptions. Over Ormsby Street, two areas of significant run in the finish coat were found. Runs were to be repaired by grinding or sanding smooth and reapplying the topcoat. The work area was to be cleaned and all debris and waste removed from site. Personnel from KYTC Central Office Division of Construction and District 5, the Kentucky Transportation Center, and the contractor were present for that final inspection.

Figure 71. Bridge at Ormsby Ave. before painting.

Figure 72. View of girders on bridge at Ormsby Ave before painting.

Figure 73. View of bridge at Ormsby Ave. after painting.

Figure 74. View of girders on bridge at Ormsby Ave. after painting.

Appendix T: **Burnett and Hill Street Bridge, and CSX Railroad**

MP 056-0065-B00179 133.889

Burnett and Hill Street Bridge, and CSX Railroad

Background

I-65 over Burnett and Hill Street and CSX Railroad was painted for a lump sum of $900,000. The bridge consisted of five simple welded composite girder spans with stringers and had a total of approximately 127,900 ft^2 of steel surface area.

Observations

No problems were encountered during the cleaning and painting of this bridge. The contractor had to maintain at least one 12' usable traffic lanes at all times.

Final Inspection and Summary

A final inspection was completed on June 28, 2001 for four of the five spans. At this point, the middle span had yet to be painted. The bridge was found to be within conformance to the **Standard Specifications and Special Not**es of this project. Contractor was directed to repair misses on the diaphragms and finish touch up work to complete this bridge.

The final inspection for the middle span was completed on November 11, 2001. Work was completed with no apparent problems. The work area had to be cleaned and all debris and waste removed from site. Personnel from KYTC Central Office Division of Construction and District 5, the Kentucky Transportation Center, and the contractor were present for that final inspection.

Figure 75. View of bridge at Burnett and Hill Street before painting.

Figure 76. View of the bridge at Burnett and Hill Street over the railroad before painting.

Figure 77. View of girders at Burnett and Hill Street Bridge before painting.

Figure 78. View of containment at the Burnett and Hill Street Bridge during painting.

Figure 79. View of bridge at Burnett and Hill Street after painting.

Figure 80. View of girders at Burnett and Hill Street Bridge after painting.

Appendix U: **Eastern Parkway Bridge**

MP 056-0065-B00180 132.955

Eastern Parkway Bridge

Background

I-65 over Eastern Parkway was painted for a lump sum of $575,000. The bridge consisted of three simple welded composite girder spans with floor beams and had a total of approximately 70,000 ft^2 of steel surface area.

Observations

No problems were encountered during the cleaning and painting of this bridge. The contractor had to maintain at least two 12’ usable traffic lanes out of three east bound lanes at all times and at least one 12’ usable traffic lane out of two west bound lanes at all times.

Final Inspection and Summary

A partial final inspection was completed on November 5, 2001 for some control areas on this bridge. In those areas, holidays and light spots needed to be repaired by applying finish coat. Clean up of the grit and red dust was required. Touch up around rivets and edges, and of holidays and light spots were to be repaired by applying finish coat where needed.

A final inspection was completed on November 16, 2001 for some other control areas. These areas had holidays and light spots which required the application of the finish coat. The bridge was found to be within conformance to the **Standard Specifications and Special Notes** for this project. The work area was to be cleaned and all debris and waste removed from site. Personnel from KYTC Central Office Division of Construction and District 5, the Kentucky Transportation Center, and the contractor were present for that final inspection.

Figure 81. View of bridge at Eastern Parkway before painting.

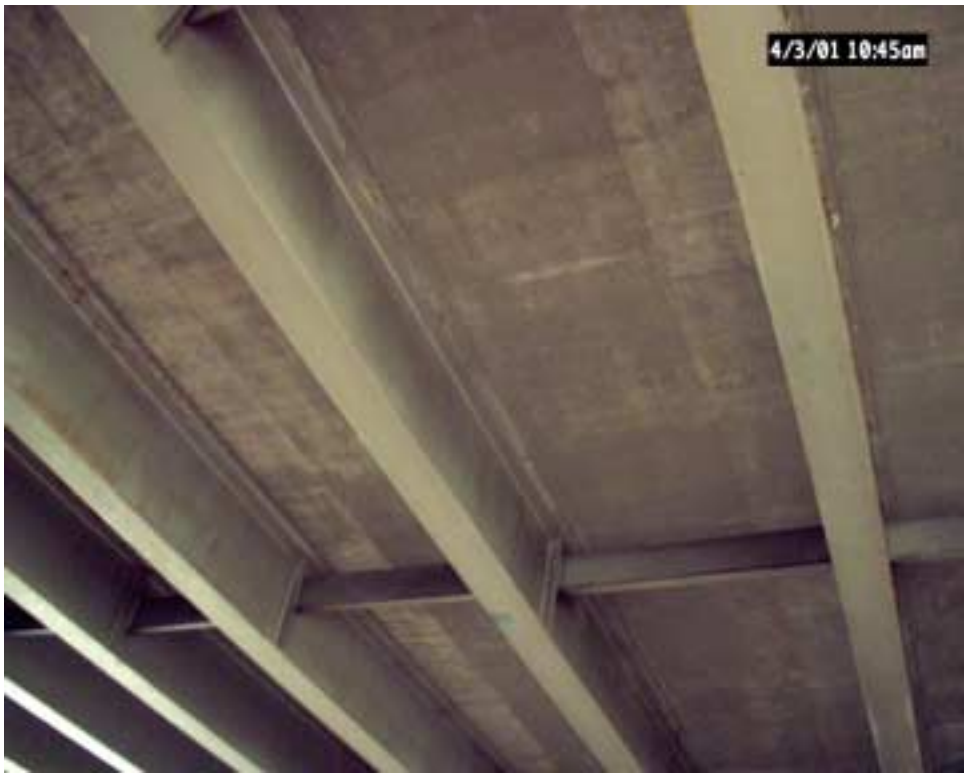

Figure 82. View of girders on bridge at Eastern Parkway before painting.

Figure 83. View of bridge at Eastern Parkway after painting.

Appendix V: **Southern Railway Bridge, West of Crittenden**

MP 056-0065-B00205 132.689

Southern Railway Bridge, West of Crittenden

Background

Southern Railway Bridge west of Crittenden Drive on I-65 was painted for a lump sum of $625,000. The bridge consisted of four simple welded composite girder spans with stringers and had a total of approximately 97,500 ft^2 of steel surface area.

Observations

The observations made on this bridge with the blasting and painting of this bridge are as follows. The contractor suggested that he be allowed to pressure wash at 5000 psi and power tool clean to SP3. The reason for this request was because the railroad could not alter their schedule to allow the contractor time to set up his equipment to blast and paint the span over the railroad tracks. After further evaluation, it was determined that there was enough clearance over the middle span to set up containment and blast the whole bridge.

There were considerable diesel fume deposits on the beams over the railroad tracks. A test patch was prepared using a number of different solvents one of the beams to determine which solvent would best clean off the deposits. This test indicated that MEK (Methyl Ethyl Ketone) was the best solvent. The contractor proceeded with the solvent cleaning prior to blasting and painting of this bridge.

The contactor had problems with blistering in the intermediate coat on the north end of the bridge. After reviewing the problem, it was revealed that the DFT of the intermediate coat was too high (7 to 8 mils). The contractor sanded and reapplied the intermediate coat. No further problems were encountered on this bridge.

Final Inspection and Summary

A partial final inspection was completed on June 28, 2001 for eight of nine spans on this bridge. All work was completed properly within conformance to the **Standard Specifications and Special Notes** for this project. A partial final inspection was completed on October 25, 2001 for area over the railroad tracks. Touch up was needed around areas where rigging has been removed. Holidays and light spots in the finish coat required sanding and reapplication of the finish coat to the proper DFT. The work area was to be cleaned and all debris and waste removed from site. Personnel from KYTC Central Office Division of Construction and District 5, the Kentucky Transportation Center, and the contractor were present for that final inspection.

Figure 84. View of the bridge at Southern Railway before painting.

Figure 85. View of girders at the Southern Railway Bridge before painting.

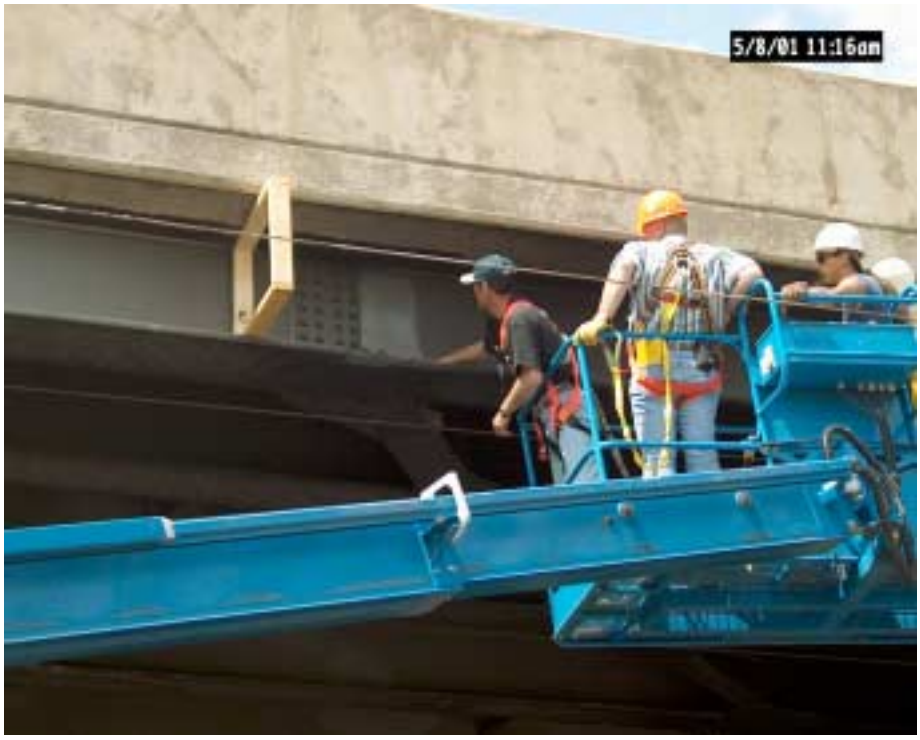

Figure 86. Solvent cleaning test patch being performed by the contractor on the bridge at Southern Railway.

Figure 87. Bridge at Southern Railway after painting.

Figure 88. View of girders at the Southern Railway Bridge after painting.

Appendix W: **Crittenden Drive Bridge**

MP 056-0065-B00213 132.601

Crittenden Drive Bridge

Background

The bridge on I-65 over Crittenden Drive was painted for a lump sum of $415,000. The bridge consisted of three simple welded composite girder spans with stringers and had a total of approximately 43,800 ft^2 of steel surface area.

Observations

No problems were encountered during the cleaning and painting of this bridge. The contractor had to maintain at least two 12’ usable traffic lanes out of three east bound lanes at all times. The contractor had to maintain at least one 12’ usable traffic lane out of two west bound lanes at all times.

Final Inspection and Summary

A final inspection was completed on November 5, 2001. The bridge was found to be within conformance to the **Standard Specifications and Special Notes** of this project with the following exceptions. Some control areas had over spray and grit had to be removed from areas that had been painted over. Also touch up of holidays and light spots was needed where the rigging was removed. Cracks in intermediate coat around bolts and rivets needed to be repaired. The work was to be cleaned and all debris and waste removed from site. Personnel from KYTC Central Office Division of Construction and District 5, the Kentucky Transportation Center, and the contractor were present for that final inspection.

Figure 89. View of bridge at Crittenden Drive before painting.

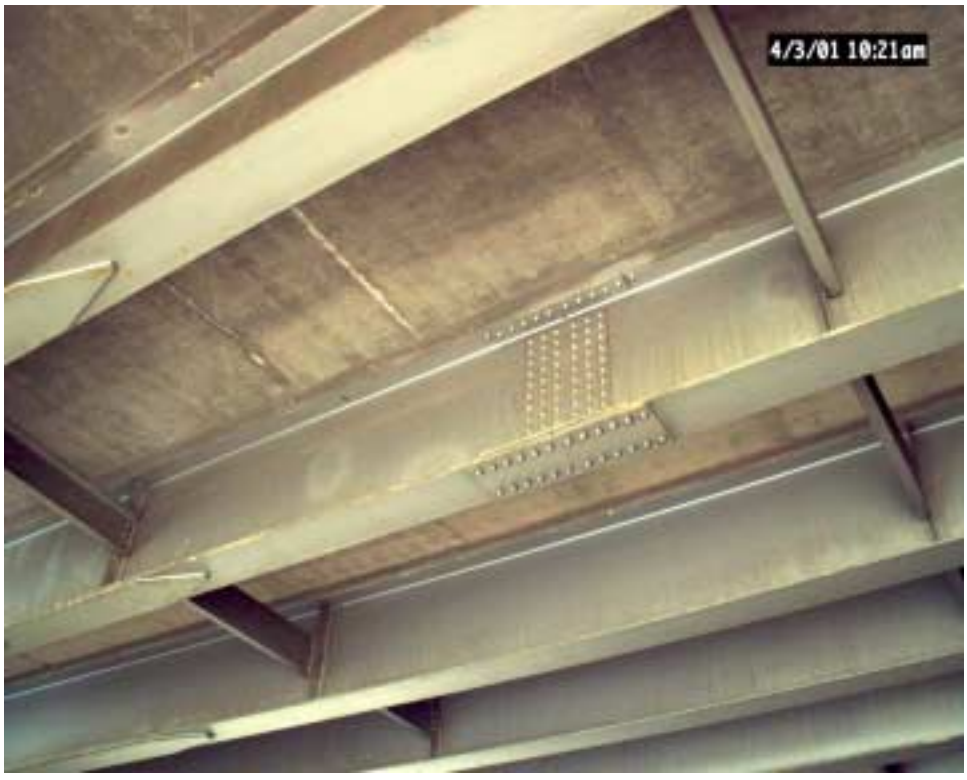

Figure 90. View of girders on the Crittenden Drive Bridge before painting.

Figure 91. View of bridge at Crittenden Drive after painting.

Figure 92. View of girders on the bridge at Crittenden Drive after painting.

Appendix X: **Fairgrounds Entrance from Bradley Ave.**

MP 056-0065-B212 132.262

Fairgrounds Entrance from Bradley Ave.

Background

The bridge on I-65 over the fair grounds entrance from Bradley Ave. was painted for a lump sum of $150,000. The bridge consisted of three simple welded composite girder spans with stringers and had a total of approximately 23,000 ft^2 of steel surface area.

Observations

No problems were encountered during the cleaning and painting of this bridge. There were no lane closure restrictions for this bridge except that the structure had to be painted before June 30, 2001, failure of which resulted in a performance penalty of $1000 per day.

Final Inspection and Summary

A final inspection was completed on June 9, 2001. All work was completed properly within general conformance to the **Standard Specifications and Special Notes** of this project. The work area was to be cleaned and all debris and waste removed from site. Personnel from KYTC Central Office Division of Construction and District 5, the Kentucky Transportation Center, and the contractor were present for that final inspection.

Figure 93. View of bridge at the fairgrounds entrance before painting.

Figure 94. View of girders on bridge at the fairgrounds entrance before painting.

Figure 95. View of bridge at the fairgrounds entrance after painting.

Appendix Y: **East Entrance to Kentucky Fair and Expo Center**

MP 056-0065-B00211 131.445

East Entrance to Kentucky Fair and Expo Center

Background

The bridge on I-65 over the east entrance to the Kentucky Fair and Exposition Center was painted for a lump sum of $425,000. The bridge consisted of three simple welded composite girder spans with stringers and had a total of approximately 31,500 ft^2 of steel surface area.

Observations

No problems were encountered during the cleaning and painting of this bridge. The contractor had to maintain at least one 12’ usable traffic lane out of two east bound lanes at all times. The contractor had to maintain at least one 12’ usable traffic lane out of two west bound lanes at all times. The restriction for this bridge was that the structure had to be painted before June 30, 2001, failure of which resulted in a performance penalty of $1000 per day.

Final Inspection and Summary

A final inspection was completed on June 23, 2001. All work was completed properly within general conformance to the **Standard Specifications and Special Notes** of this project. The work area was to be cleaned and all debris and waste removed from site. Personnel from KYTC Central Office Division of Construction and District 5, the Kentucky Transportation Center, and the contractor were present for that final inspection.

Figure 96. Bridge at east entrance to Ky. Fair and Exposition Center before painting.

Figure 97. View of girders at the east entrance of the Ky. Fair and Exposition Center Bridge before painting.

Figure 98. View of bridge at the east entrance to the Ky. Fair and Exposition Center after painting.

Figure 99. View of girders on bridge at the east entrance of the Ky. Fair and Exposition Center after painting.

Appendix Z: **Manning Street Bridge, West of Preston**

MP 056-0065-B00210 131.352

Manning Street Bridge, West of Preston

Background

The bridge on I-65 over Manning Street, West of Preston was painted for a lump sum of $340,000. The bridge consisted of three simple welded composite girder spans with stringers and had a total of approximately 29,200 ft^2 of steel surface area.

Observations

The mandatory test patch for the whole project was done on this bridge, with the contractor beginning the blasting operation on April 6, 2001. On April 9, 2001 the organic zinc rich primer was applied at 5.0 to 6.0 mils wet film thickness (WFT) by spraying. The following day, the intermediate coat of tinted moisture cure aluminum polyurethane was applied by spraying at 4.0 to 6.0 mils WFT. The next morning, the finish coat was applied at 4.0 to 6.0 mils WFT. The finish coat was to be acrylic polyurethane. Later that afternoon, the test patch was approved. The contractor continued painting rest of that structure.

No other problems were encountered during the cleaning and painting of this bridge. There were no lane closure restrictions for this bridge except that the structure had to be painted before June 30, 2001, failure of which resulted in a performance penalty of $1000 per day.

Final Inspection and Summary

A final inspection was completed on May 25, 2001. The bridge was found to be within conformance to the **Standard Specifications and Special Notes** of this project. Personnel from KYTC Central Office Division of Construction and District 5, the Kentucky Transportation Center, and the contractor were present for that final inspection.

Figure 100. View of bridge at Manning Street before painting.

Figure 101. View of girders on the Manning Street Bridge before painting.

Figure 102. The containment and equipment at the Manning Street Bridge.

Figure 103. View of the Manning Street Bridge where the prime coat of the test patch was applied.

Figure 104. Portion of the Manning Street Bridge where the intermediate coat of the test patch was applied.

Figure 105. Area of the Manning Street Bridge where the finish coat of the test patch was applied.

Figure 106. View of the Manning Street Bridge after painting.

Figure 107. View of the girders on the Manning Street Bridge after painting.

Figure 108. View of the air monitoring device at the Manning Street Bridge.

Appendix AA: **Phillips Lane Bridge, West of Preston**

MP 056-0065-B00209 131.289

Phillips Lane Bridge, West of Preston

Background

The bridge on I-65 over Phillips Lane, West of Preston was painted for a lump sum of $375,000. The bridge consisted of three simple welded composite girder spans with stringers and had a total of approximately 28,700 ft^2 of steel surface area.

Observations

During the painting of the Manning Street Bridge, the contractor painted over the prime coat portion of the test patch with the intermediate coat. It required that a new prime coat test patch be done. On June 26, 2001, a test patch of the prime coat was completed and accepted on this bridge. After this minor problem, the contactor continued toward completion of this bridge. No other problems were encountered during the cleaning and painting of this bridge. The contractor had to maintain at least one 12' usable traffic lane at all times. The restriction for this bridge was that the structure had to be painted before June 30, 2001, failure of which resulted in a performance penalty of $1000 per day.

Final Inspection and Summary

A final inspection was completed on June 28, 2001. The bridge was found to be within conformance to the **Standard Specifications and Special Notes** of this project. Personnel from KYTC Central Office Division of Construction and District 5, the Kentucky Transportation Center, and the contractor were present for that final inspection.

Figure 1089. View of the Phillips Lane Bridge before painting.

Figure 109. View of girders at the Phillips Lane Bridge before painting.

Figure 111. View of the storage site at the Phillips Lane Bridge.

Figure 1102. View of bridge at Phillips Lane after painting.