



INDIANA DEPARTMENT OF TRANSPORTATION

Driving Indiana's Economic Growth

Design Memorandum No. 20-03

April 13, 2020

Rev. July 6, 2020

TO: All Design, Operations, and District Personnel, and Consultants

FROM: /s/ Elizabeth W. Phillips
Elizabeth W. Phillips
Director, Standards and Policy
Engineering Department

SUBJECT: Bridge Painting

REVISES: *Indiana Design Manual (IDM)* Sections 17-5.11 and 412-3.03(06),
Figures 17-5K and 17-5L (new)

EFFECTIVE: Lettings on or after June 1, 2020
Stage 3 Submittal on or after July 6, 2020

This memo has been revised to incorporate changes related to RSP 619-B-314, which provides additional finish coat options for partial bridge painting. Several of the colors for the new finish coat options have color numbers that differ from those currently listed in *Standard Specifications* section 909.02.

When standard colors are used only the color name should be listed on the Bridge Painting Locations and Information table on the plans. This will avoid potential inconsistencies between the plans and specifications. Figure 17-5K, Bridge Painting Locations and Information, has been revised accordingly.

When colors not listed in the *Standard Specifications* are used, both the color name and color number are required on the plans. Coordination with the District Bridge Asset Engineer is required prior to using a non-standard color.

Standard Specifications section 619, Painting Bridge Steel, has been revised to address cleaning paint off the top flange of steel structural members; cleaning and painting bearing assemblies, cleaning and painting steel piling, as well as the associated environmental and safety requirements.

Effective with lettings on or after June 1, 2020, RSP 619-B-312, Painting Bridge Steel should be included on all contracts with a 619 pay item, including those newly created pay items listed below.

New pay items used in conjunction with the RSP include the following. See IDM Figure 17-5L for a summary of selecting the appropriate bridge painting pay items.

Pay Item	Pay Item Description	Unit
619-12506	CLEAN STEEL BRIDGE, TOP FLANGE, QP-2, BR. NO. _____	LS
619-12507	CLEAN AND PAINT STEEL PILING, BR. NO. _____	LS
619-95315	CLEAN AND PAINT BEARING ASSEMBLIES, BR. NO. _____	LS

The revised IDM sections are included for reference and summarized below.

Section	Revision Summary
17-5.11(01)	Revised to improve guidance on the selection of the appropriate QP designation.
17-5.11(03)	Revised to provide reference information for paint color selection.
17-5.11(04)	Revised to provide guidance on use of new and existing pay items based on scope of work.
Figure 17-5K	Revised table format. Added columns for Des no., Clean and Paint Bearing Assemblies, and Clean and Paint Steel Piling. Updated Contract Structure No. heading to Contract Bridge No. to be consistent with Bridge Numbers for Pay Items RSP. Revised footnotes to include reference information on contract bridge numbers and selecting appropriate paint color number for full and partial bridge painting.
Figure 17-5L (new)	Created table to present guidance in section 17-5.11(04).
412-3.03(06)	Revised to provide guidance on projects that include a bridge deck replacement or superstructure replacement on an existing steel bridge that was constructed prior to 1995. This work will require the beam top flanges to be cleaned and the waste disposed of properly.

IDM Revisions

[Bridge Quantities]

17-5.11 Structural Steel Painting [Rev. Oct. 2011, Apr. 2020]

17-5.11(01) Cleaning and Painting Existing Structural Steel Members and Components (Rev. Apr. 2020)

The oldest year of any existing structural steel should be shown on the plans. This information is used by the Contractor to assess the likelihood of hazardous materials being present.

Bridge cleaning and partial-bridge cleaning on an existing bridge are designated by QP type. The QP designation refers to the contractor's required certification level. If the structure was built in 1995 or later, the QP-1 designation should be used. If all or a portion of the structure to be cleaned was built in 1994 or earlier, the QP-2 designation should be used.

The waste generated from cleaning an existing coating off a bridge is required to be disposed of at an appropriate facility and is a separate pay item from the cleaning and painting activity. The waste type to be designated in the disposal of cleaning waste pay item should be determined by the same criteria as the QP designation. For bridges built in 1994 or earlier, the hazardous designation should be used. Otherwise, the non-hazardous designation should be used. The Department's *Bridge Inventory Log Book*'s year built should be used to determine the QP type.

See Figure 17-5L for guidance on selecting pay items based on the scope of work. When more than one bridge is included in a contract, each bridge within the contract stands alone and should contain all necessary pay items for the work to be performed on that specific bridge. This is accomplished by adding a supplemental description "Br. No. _" to each pay item.

17-5.11(03) Paint Colors [Rev. Apr. 2020, Jul. 2020]

Standard paint colors and associated color numbers are provided in the *Standard Specifications* – section 909.02(e) for allowable color numbers names for full bridge painting and section 909.02(d)4 for and partial bridge painting. One of these colors should be specified for the final finish coat, and the color number name from the *Standard Specifications* placed in the appropriate blank included on the Bridge Painting Locations and Information table, Figure 17-5K. Light blue or green is typically specified for full bridge painting and light blue or light green for partial bridge painting.

Colors not listed in the *Standard Specifications* should be specified only after consultation with the district Bridge Asset Engineer. When a non-standard color is used, both the color name and color number should be included. The Office of Materials Management can assist with determining color numbers that are appropriate for the painting system to be used. Reasons for using non-standard colors may include a request from an LPA, desire to match surroundings, etc. Darker colors, especially the color black, should be avoided as there can be longer lead times with obtaining approved paint due to intricacies with the darker color formulations. Dark colors also present a problem with future bridge inspections.

An editable version of the Bridge Painting Locations and Information table, Figure 17-5K is available on the Department's Editable Documents website, at www.in.gov/dot/div/contracts/design/dmforms/, under Bridges. The completed table should be shown on the plans.

17-5.11(04) Quantities Determination [Rev. Apr. 2020]

Pay item selection based on work included is summarized in Figure 17-5L, Bridge Painting Pay Item Selection. Pay items related to painting should be specified only for existing structural steel.

All pay items related to bridge painting are quantified as a lump sum.

A pay item for disposal of cleaning waste should be included with cleaning and painting activity. The waste type designated in the pay item should be determined using same criteria as the QP designation.

If only the end diaphragms, beam ends, etc., are to be cleaned and painted, such work should be identified on the plans and should be paid for as partial painting.

If the bearings are being cleaned and painted and the bridge is not being clean and painted (full or partial), such as on a variable depth concrete girder bridge, such work should be paid for as clean and paint bearing assemblies.

If the bearings are being cleaned and painted in conjunction with the bridge (full or partial) cleaned and painted, such work is not paid for directly. It should be included in the appropriate clean steel bridge and paint steel bridge pay items.

If steel piling is being cleaned and painted, such work should be paid for as clean and paint steel piling, regardless of other bridge members or components being painted.

If the bridge deck is removed, include the pay item cleaning steel bridge top flange, even if no other component on the bridge is being cleaned or painted.

A pay item for maintaining traffic should be included. Corresponding pay items for other traffic maintenance appurtenances, such as construction signs, temporary traffic barrier, attenuator truck, etc., should also be included. The designer should discuss the need for the inclusion of other site-specific work such as clearing, tree trimming, guardrail removal and replacement, working platform, or other unique items that may be required, with the district Construction project engineer or supervisor who typically handles painting contracts.

[Bridge Preservation]

412-3.03(06) Steel Beam and Plate Girder Structures [Rev. Apr. 2020]

... [Preceding items not shown remain unchanged]

8. Top Flange Cleaning During Deck Replacement. Steel beam and plate girder bridges constructed before 1995 may have been painted with coating systems that included hazardous materials. The bridge deck covers the top flange and prevents this material from being removed during painting projects. When the scope of work includes bridge deck removal, the top of the top flange of all steel members will need to be cleaned and the waste material will need to be properly disposed.

BRIDGE PAINTING LOCATIONS AND INFORMATION

Contract Bridge No. ⁽¹⁾	Des. No.	Bridge File Number	Route and Crossing	Route	Ref. Post	County	Location
1	0000000	I65-116-04914 C	I-65 over Clifton St	I-65	116+21	Marion	6.00 mi. N. of I-70

Contract Bridge Number ⁽¹⁾	Year Built	Year Last Painted	Existing Primer Type (hazardous or non-hazardous)	No. Spans	Span Lengths	Structural Steel, (tons) ⁽²⁾	Surf. Area Structural Steel, (ft ²) ⁽²⁾	New Paint Color Name (number) ⁽³⁾	Additional Information			
									Clean and Paint Casting, (each)	Roadway Drain Casting Extension, (each)	Clean and Paint Bearing Assy., (each)	Clean and Paint Steel Piling, (ft ²) ⁽²⁾
1	1968	1993	hazardous	3	51'-0", 78'-0", 51'-0"	234	38,789	Green (14260)			20	

⁽¹⁾ See RSP 101-B-042, Bridge Numbers for Pay Item

⁽²⁾ Quantities shown are approximate. The Contractor shall determine the quantities upon which to base its bid.

⁽³⁾ See *Standard Specifications* section 909.02(e) for allowable color numbers for full bridge painting and section 909.02(d)4 for and partial bridge painting. Color numbers should only be included on the table for color names not listed in 909.02.

If project contains ...	And...	Use the following pay items:	Notes
Painting bearing assemblies	Beams are being fully or partially painted	Cost of cleaning and painting of bearings is included in the appropriate clean steel bridge and paint steel bridge pay items, respectively.	The contract bridge number should be included as a pay item supplemental description.
Painting bearing assemblies	Beams are not being fully or partially painted	Clean and Paint Bearing Assemblies, Br. No. (LS) Disposal of Cleaning Waste, [waste type], Br. No. (LS)	QP-1 applies to bridges built after 1994 and is based on the low probability that hazardous materials are present in the existing paint system.
Painting or partial painting steel bridge		Clean Steel Bridge, QP-[1 or 2], Br. No. (LS) Paint Steel Bridge, Br. No. (LS) -or- Clean Steel Bridge, Partial, QP-[1 or 2], Br. No. (LS) Paint Steel Bridge, Partial, Br. No. (LS) -and- Disposal of Cleaning Waste, [waste type], Br. No. (LS)	QP-2 applies to bridges built before 1995 and is based on the likelihood that hazardous materials are present in the existing paint system.
Painting steel piles		Clean and Paint Steel Piling, Br. No. (LS) Disposal of Cleaning Waste, [waste type ⁽¹⁾], Br. No. (LS)	[Waste type] is hazardous or non-hazardous based on the same criteria as QP-1 & QP-2 shown above. See ⁽¹⁾ for additional considerations for steel piles.
Bridge deck replacement (existing steel beam superstructure)		Clean Steel Bridge, Top Flanges, QP-2*, Br. No. (LS) Disposal of Cleaning Waste, [waste type], Br. No. (LS) * always uses QP-2 designation	
Bridge superstructure replacement or complete bridge replacement (existing steel beam superstructure)		Present Structure, Remove Portions (LS) -or- Present Structure, Remove (LS) (Contractor has option to recycle steel or clean prior to removing from project site. No additional payment)	Indicate the oldest year of any existing structural steel on the plans. This communicates the likelihood of hazardous materials being present.

(LS) = Lump Sum

⁽¹⁾ **Notes for painting steel piles.** Steel piles used in exposed pile bents are typically epoxy coated and may not contain hazardous materials, even if built prior to 1995. The non-hazardous waste type designation may be used if the absence of hazardous materials can be confirmed, regardless of the year the piles were built. When the presence of hazardous materials is unknown, the hazardous waste type designation based on year built should be