



Illinois Department of Transportation

Division of Highways / Bureau of Construction
2300 South Dirksen Parkway, Springfield, Illinois 62764

Subject:
Bridge Deck
Patching

CONSTRUCTION MEMORANDUM 02-78

Effective: May 31, 2002

Expires: Indefinite

The purpose of this memorandum is to establish guidelines for the layout and documentation of as built quantities for concrete bridge deck patching. These guidelines are to be followed for bare concrete patching. If the bridge deck to be rehabilitated has a bituminous or epoxy wearing surface or hard overlay, the surface must be removed before commencing the layout of the patching limits.

Prior to layout of the deck, patching plans should be reviewed. Typically a patching survey performed during plan preparation has been included with the project plans. The proposed location of the patches are shown on the plan view of the structures deck within the bridge plans. The locations shown for both partial and full depth patching represent the designers best estimate based on the information available at the time of the plan preparation. This is typically not the final quantity of patching needed for the structure in question.

Before construction, the department's representative should conduct an initial visual inspection of the deck. Areas under the deck which show rust stains, water stains, leaching, spalling or map cracking are a good indication that a full-depth patch may be required. Prior to the removal of a wearing surface, areas which are map cracked are a sign of a potential patch.

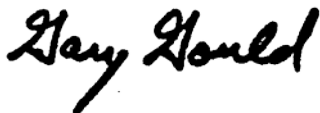
After the concrete deck is exposed, the deck should be sounded to determine areas of unsound concrete. If scarification of the deck is to be done prior to patching, sounding of the deck should be done after the scarification process. A common practice by construction field personnel is to use a chain drag. A hollow noise is heard in areas where the concrete is unsound. Some common methods for determining the limits of a patch may involve sounding with a light hammer, claw or ball peen, or may involve the use of a hammer and sand. The sand is placed near the proposed limit of the patch, and the deck is tapped with the hammer while vertical movement of the sand is observed. The limits of the patch are determined where little or no vertical movement of the sand is observed. Note that for projects where hydroscarification is used, the hydroscarification may eliminate the need for much of the partial depth patching.

After the patching limits have been determined, a proposed quantity is calculated. This quantity should be compared to the initial plan quantities of the various patch types anticipated. If there is a significant increase or decrease in the quantity or location of patches relative to the amount of patching shown in the contract plans, the District's Bridge Maintenance Engineer should be contacted for a review of the proposed patches to be constructed. Increases in quantities should be submitted on Form [BC 22](#), Authorization of Contract Changes, so that contractor payments can be made in a timely manner. If the authorization can't be processed prior to needing to perform the

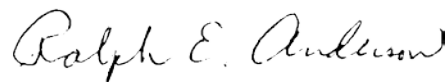
additional quantities a Prior Approval Authorization of Contract Change (Form [BC 2256](#)) must be filled out authorizing the additional work.

After the contractor has performed the patching operation, as built quantities should be shown on the plans. If a plan sheet showing the proposed patching limits is included in the plans, the as built locations with dimensions should be documented on the plan sheet. Documentation of as built patch locations and quantities is important information that may be used in the future for determining the scope of work for repair, rehabilitation or replacement projects and may be useful when preparing the contract plans for those projects. This information will also be valuable for evaluating the different types of investigation techniques used for estimating patching locations and quantities shown in contract plans.

Form [BC 2544](#), Report of Bridge Deck Patching Quantities, is to be filled out upon completion of the project. A copy of the completed form should be sent to the Bureau of Bridges and Structures as well as the District Bridge Maintenance Engineer. Patching information should be attached to the form and should include patch sizes, locations and the type of each patch (partial or full depth).



Gary Gould
Engineer of Construction



Ralph E. Anderson, P.E., S.E.
Engineer of Bridges and Structures



County

Section

Route

District

Contract No.

Job No.

Project

Structure Number _____

Plan Quantity: Partial Depth _____ Full Depth _____

Final Quantity: Partial Depth _____ Full Depth _____

Date Patching Completed _____

Please attach documentation showing patch size, type (PD or FD) and location.

Resident _____