

WEST VIRGINIA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
MATERIALS CONTROL, SOILS AND TESTING DIVISION

MATERIALS PROCEDURE

FIELD CALIBRATION AND OPERATION OF ROLLING
3 m STRAIGHT EDGE ON BRIDGE DECKS

1.0 PURPOSE

1.1 To establish a field calibration procedure for the 3 m rolling straight edge.

1.2 To establish a procedure for documenting out of tolerance bridge deck sections.

2.0 FIELD CALIBRATION

2.1 The marking of high and low sections on the deck is best accomplished by the use of red and green clothes dye. One small package should be mixed with 1.89 L of water. It is suggested the dye be mixed in gallon jugs and poured into the appropriate tank on the machine. Drain the tanks and flush when it is anticipated the machine will not be used for a week or more.

2.1.1 Before using, ensure the tank valves on the bottom of the tank are open. Use the red dye solution for high areas and green dye solution for low areas. Do not leave fluid in tanks in freezing weather.

2.2 Under each set of wheels place a piece of steel or other suitable solid material, with dimensions approximately 76 mm x 305 mm x 13 mm. Stretch a piece of string between the front and rear wheels, across the top of each of the pieces, and adjust the center riding wheel so that it just touches the string.

2.3 When straight edging a deck with a vertical curve, the riding wheel should be adjusted as above and then a final adjustment up or down should be made according to the vertical differences of the curve in a 3 m length.

- 2.4 When the center wheel is in proper alignment, the dial on the straight edge should read zero. This adjustment may be made by removing the top from the control box and loosening the Allen-bolt on the straight gear ram. Move the ram up or down to get the zero adjusted, then tighten the Allen-bolt.
- 2.5 The adjustment for the high and low valves to open on 3 mm, 6.3 mm or any other designated tolerance is accomplished in the following manner.
 - 2.5.1 Fill the tanks with premixed red dye and green dye.
 - 2.5.2 Set the dial to read the designated high tolerance.
 - 2.5.3 Loosen the two Allen-bolts at the lower front face of the dial marker high side.
 - 2.5.4 Turn on the electric switch at the side of the control box (on is up), and raise or lower the slide held by the Allen-bolts until the solenoid valve opens. Then secure by tightening the Allen-bolts.
 - 2.5.5 Repeat the above procedures for the low side.
- 3.0 OPERATION
 - 3.1 Preparation
 - 3.1.1 Obtain a bridge deck floor plan from the project plans and place this plan sheet on a hard surface. Cover the deck floor plan with graph paper. Align the graph paper so that the lines are parallel to the centerline of the deck. Draw a centerline and parallel lines, set to scale at 0.6 m intervals, the length of the deck.
 - 3.1.2 As an alternate method, the bridge floor plan may be printed on graph paper with one set of lines parallel to the centerline or a sketch may be drawn on graph paper.

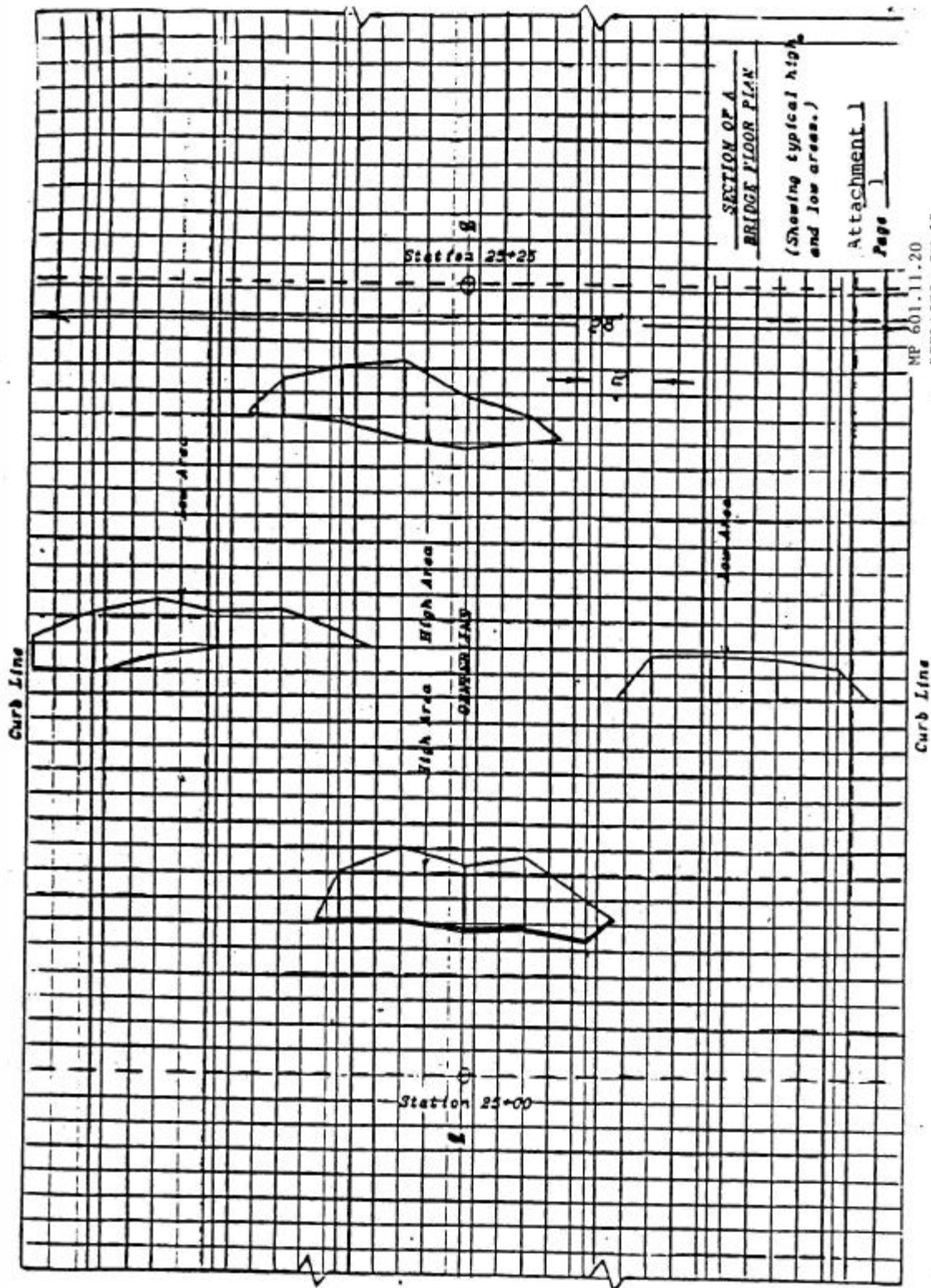
- 3.1.3 If the bridge includes a horizontal curve, mark locations on the scale drawing that are 7.6 m to 15.2 m, apart along the centerline. Lay off lines at these locations, perpendicular to the centerline. Mark locations that represent 0.6 m intervals along these lines. Connect these locations to produce lines parallel to the centerline.
- 3.2 Procedure
- 3.2.1 Mark the centerline of the bridge with a suitable chalk. If stations are available on the bridge, draw a transverse perpendicular line every 7.6 m to 15.2 m. Continue to mark off longitudinal lines parallel to the centerline at 0.6 m centers. Transfer the location of the transverse perpendicular lines to the bridge deck plans or overlay.
- 3.2.2 Pull the rolling straight edge down the bridge centerline with the center wheel running over the chalk line. When the pass is completed, move the straight edge to the next 0.6 m line and push it back across the bridge. Repeat this operation until all lines have been straight edged. The direction the straight edge is oriented should not be changed.
- 3.2.3 Transfer the location of any dye markings (measure to the nearest 30 mm) from the deck to the overlay paper or other graph paper. Mark red and green (red for high, green for low) lines and tie them together as per the attachment. The lines should be extended and joined approximately 0.3 m into the next two segments of the bridge deck area. The areas may then be computed by use of a planimeter.



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Attachment



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ATTACHMENT I