

Maryland Department of Transportation  
State Highway Administration

SOP No.: 5300.400.05  
Effective Date: April 2, 2024

Approved by: *Sutapa Samanta*  
Chief Engineer / Deputy Chief Engineer

Date: 9/4/24

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**Concrete Bridge Deck Steel Deflection and Rebound  
Standard Operating Procedure (SOP)**

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**Purpose**

The purpose of this SOP is to establish guidelines in the inspection procedures for deflection during the steel placement for deck construction or the rebound during rehab stages of deck replacement. Verifying the work and completion of Form No. OOC 30 "Bridge Deck Elevation/Deflection Work Sheet" is a required part of the bridge deck inspection procedure and will become a permanent part of the Contract Records. By requiring tabulation of deflection data at each deflection control point, it established reference elevations to check against design elevation. This also provides a reference list for checking Stay-in-Place (SIP) forms and adjusting screed heights during dry run **prior to placement**, recording "wet-depth: checks and wet straight-edge checks **during placement**.

**Reference**

Structural Detail Manual: bridge detail # (SUP-BD(SG)-501)

**Scope**

This SOP is applicable to Construction Project Engineers along with their staff are responsible for the implementation of the follow SOP. **This SOP is replacing the existing SHA Construction Directive 07220.400.05 – Concrete Bridge Deck Steel Deflection and Rebound.** Diligent inspection is required at all stages of bridge construction to establish and maintain desired structural and riding qualities and to conform to design grades and elevations. Continuous and accurate checks of elevations at all deflection point locations are an integral part of the inspection process and critical to producing the final quality desired.

**Responsible Party**

SHA Chief Engineer  
SHA Director for Office of Construction

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**PROCEDURE**

1. New Construction.  
The following procedure will be used, and data recorded on OOC 30 Form.
  - A. Verify Deflection Points after structural steel bolts have been torqued and before loading the deck with materials.
  - B. A separate sheet will be completed for each girder and multiple sheets may be sequentially numbered for extra-long girders.

C. Each sheet will be properly identified with information requested and tabulated for each deflection/control point.

1. Enter Finished Concrete Elevations from plans.
2. Enter Deflection Points from plans (Mass Concrete)
3. Add (1) + (2) = Screed Elevation.
4. Enter Concrete Deck Slab Thickness from plans.
5. Subtract (3) – (4) = Bottom of Slab.
6. Actual Survey elevation at each deflection point. (Atop the Girder)
7. Subtract (5) – (6) = Depth of Haunch.
8. Add (4) + (7) = Top of flange to top of deck. (Theoretical ‘D’ dimension from plans)
9. Subtract (8) – (7) + Pan Depth = Top of Deck to Bottom of Pan.
10. Insert Dimension C/L of girder as noted.
11. Enter Shear Developer Embedment

2. Bridge Deck Replacement.

Refer to Section 405 of the Specifications, and deck removal notes contained in the plans, prior to removing any portions of the existing deck. The Inspector will ensure that the Contractor takes elevations at locations along the bottom flange or top of the top flange by removing small sections of slabs over stringers using pilot holes at the at the same locations and spacing shown on the finished deck elevations sheet, prior to any deck removal. The following procedure will be used, and data recorded on the OOC 30 Form.

A. A separate sheet will be completed for each girder and multiple sheets may be sequentially numbered for extra-long girders.

B. Each sheet will be properly identified with information requested and tabulated for each deflection/control point.

1. Enter Finished Concrete Elevations from Plans.
2. Girder Rebound
  - a. Layout Deflection Control Points in accordance with contract plans at the centerline of existing girder and remove a small portion of existing bridge deck and survey and record elevation.
  - b. After Deck is removed, resurvey and verify the girder elevations at each control point.
  - c. Perform (2.b) - (2.a) = Girder Rebound.
3. Add (1) + (2.c) = Screed Elevation. (If new deck slab is thicker than existing deck slab, and (1) + (2.c) + (additional expected deflection is noted in plans) = Screed Elevation)
4. Enter Slab Thickness from Plans.
5. Subtract (3) - (4) = Bottom of Slab.
6. Actual Beam Elevation at Control Points.
7. Subtract (5) – (6) = Depth of Haunch.

8. Add (4) + (7) = Top Flange to Top of Deck. (Theoretical 'D' dimension from plans.)
9. Subtract (8) – (7) + Pan Depth = Top of Deck to Bottom of Pan.
10. Complete calculations from C/L Girder.
11. Enter Shear Developer Embedment

The Inspector performing the work will sign or initial and date form OOC30 in the space provided and where necessary note appropriate corrective action on work sheet. This Record will become part of the Project Record and submitted with Sketchbook upon completion of Project.

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### ADDITIONAL AUTHORIZED DOCUMENTS

OOC 30 – Bridge Deck Elevation & Deflection Worksheet – 5300.400.05 S.D.01  
07220.400.07–Prefabricated Structural Steel (PSS) Erection Meeting – 53.00.400.05. S.D.02

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### ADDITIONAL INFORMATION

#### Other Divisions Impacted

This SOP will impact any office that is participating in the loading or unloading of structural steel for construction activities on bridge deck rehabilitation or new bridge construction activities.

**Note:** For bridge detail # (SUP-BD(SG)-501), see [Chapter 3, page 31 of the Structural Detail Manual](#)

#### Contact Information

Office of Construction Director  
Office of Structures Director