MICHIGAN
DEPARTMENT OF TRANSPORTATION

SPECIAL PROVISION
FOR
STRUCTURE SURVEY DURING CONSTRUCTION

STR:BMW 1 of 4 APPR:KCK:JAB:04-21-22
FHWA:APPR:05-05-22

a. Description. This work consists of obtaining elevation observations along existing and proposed beams or girders at the stages of construction set forth in this special provision. Complete all work in accordance with section 824 of the Standard Specifications for Construction, except as modified herein.

Submit the qualifications of the survey crew chief used to complete this work for review and approval by the Engineer in accordance with subsection 824.01 of the Standard Specifications for Construction.

b. Materials. None specified.

c. Construction. Witness horizontal control points in accordance with subsection 824.03.A of the Standard Specifications for Construction and verify plan benchmarks and establish new benchmarks in accordance with subsection 824.03.B of the Standard Specifications for Construction prior to starting work.

Furnish the Engineer with elevation observations at the same points along the existing and proposed beams or girders as the bottom of slab and screed point locations included on the plans and at the stages of construction listed below. Measure the elevations requested to an accuracy of 0.01 feet. Furnish the information using the Bridge Elevation Table spreadsheet included in the Reference Information Documents (RID).

1. Deck Replacement Projects.

A. Elevation observations along the bottom of the bottom flange of the existing beams or girders prior to the removal of any of the existing superstructure and without any live load or materials or equipment stored on top of the existing superstructure.

As an alternative to bottom flange elevations, the Contractor may elect to remove portions of the deck to permit access to obtain the required elevations on the top flange. Deck concrete removal is limited to an area with length and width not exceeding the smaller of the flange width or 18 inches, at each survey location. Ensure access is sufficient to positively identify the top of the beam flange and to mark the beam at each survey location to ensure repeatability during successive stages. Core drilling is prohibited.

B. Elevation observations along the top of the top flange or bottom of the bottom flange of the existing beams or girders after the existing bridge deck has been removed and prior to installing forms or reinforcement. Include information regarding any false decking and/or fascia walkways in place. Submit to the Engineer and obtain approval prior to beginning installation of deck formwork.

C. Elevation observations along the top of the top flange or bottom of the bottom flange of the existing beams or girders after installing the forms and reinforcement and prior to placing the superstructure concrete. Include formwork information.

D. Elevation observations along the bottom of the bottom flange of the existing beams or girders after the proposed superstructure is complete and without any live load or materials or equipment stored on top of the proposed superstructure. Furnish these elevations no more than 7 calendar days after completing placement of all superstructure concrete, including deck slab, sidewalks, and concrete barriers.

2. Projects with a New Prestressed Concrete Superstructure.

A. Obtain the initial camber measurement and prestressing force release date from the precast concrete fabricator and submit along with item B, of this subsection.

B. Elevation observations relative to a local datum, with an elevation of 100.00 feet at one end of the proposed prestressed concrete beam, along the top of the proposed beams while they are still at the precaster's facility as soon after strand release as possible. Coordinate access to the precaster's facility. Measure the height of the beam at the point of each elevation observation and furnish this information to the Engineer. Complete this work within 14 days of release of prestressing force. Indicate the distance from the end of each beam to the support location at the time elevations are surveyed.

Prior to conducting any data collection/survey work at a precaster's facility furnish the precaster copies of completed certificates of insurance proving the workers carry Workers' Compensation Insurance and General Liability Insurance.

C. Elevation observations along the top of the proposed prestressed concrete beams after they have been erected on the abutments and piers and prior to installing forms or reinforcement. Include information regarding any false decking and/or fascia walkways in place.

Submit items A, B and C to the Engineer and obtain approval prior to beginning installation of deck formwork.

D. Elevation observations along the top of the top flange or bottom of the bottom flange of the proposed prestressed concrete beams after installing forms and reinforcement and prior to placing the superstructure concrete. Include formwork information.

E. Elevation observations along the bottom of the bottom flange of the proposed prestressed concrete beams after the proposed superstructure is complete and without any live load or materials or equipment stored on top of the proposed superstructure. Furnish these elevations no more than 7 calendar days after completing placement of the superstructure concrete, including deck slab, sidewalks, and concrete barriers.

3. Projects with a New Steel Superstructure.

A. Elevation observations along the top and bottom of the proposed steel beams or girders after they have been erected on the abutments and piers and prior to installing

forms or reinforcement. Height measurements may be utilized to calculate bottom elevations. Compare heights to plan dimensions and report any discrepancies. Include information regarding any false decking and/or fascia walkways in place. Submit to the Engineer and obtain approval prior to beginning installation of deck formwork.

B. Elevation observations along the top of the top flange or bottom of the bottom flange of the proposed beams or girders after installing the forms and reinforcement and prior to placing the superstructure concrete. Include formwork information.

C. Elevation observations along the bottom of the bottom flange of the proposed beams or girders after the proposed superstructure is complete and without any live load or materials or equipment stored on top of the proposed superstructure. Furnish these elevations no more than 7 calendar days after completing placement of the superstructure concrete.

4. Superstructure Widening Projects. Furnish the information specified above for deck replacement projects for the existing beams or girders that will remain in place. Furnish the information specified above for projects with a new prestressed concrete superstructure or for projects with a new steel superstructure for the proposed beams or girders.

5. Submit the following information with the elevation observations for all projects:

A. False Decking.

(1) Material type(s).

(2) Material dimension(s).

(3) False decking layout.

B. Formwork.

(1) Material type(s).

(2) Material dimension(s).

(3) Formwork layout.

For elevation observations required prior to placement of forms or reinforcement, submit a complete set of elevations and other required information to the Engineer for review and approval. The Engineer will have up to 7 calendar days to review for approval, and may elect to adjust the proposed bottom of slab and screed elevations following a review of the documentation. Do not place any deck formwork prior to Engineer review and approval of the required elevation observations.

d. Measurement and Payment. The completed work, as described, will be measured as a lump sum and paid for at the contract price using the following pay item:

Pay Item	**Pay Unit**
Structure Survey During Construction (Structure Identification)	Lump Sum

Structure Survey During Construction (Structure Identification) includes all costs associated with access, coordination, traffic control, collection, and distribution of the surveyed measurements required by this special provision.

Any additional work associated with deck concrete removal to access the top flange for elevations prior to deck removal will not be paid separately but is included in payment for the deck removal pay item.

The pay item will include partial payments using the following milestone schedule.

1. Approval of all items required prior to placement of forms and reinforcement: 50 percent.

2. Acceptance of final grades after completion of superstructure concrete placement: 50 percent.