

Alternative Technical Concept

BRIDGE SPAN RATIOS

ATC No.: 2

Type: Alternative design

Date: 2/11/25

1. Description: The project Scope of Services, Section 18.2 specifies the proposed structures as three-span continuous steel beam with composite concrete deck on cap and column piers and semi-integral or integral abutments. The center span will accommodate five 12' lanes and 4' shoulders, while the east end span accommodates a proposed sidewalk.

Section 18.2 General Requirements states that the ratio of the length of the end spans to the intermediate span must be a minimum of 0.65. This ATC proposes the use of a ratio less than the specified 0.65, while still meeting the uplift requirements.

It shall be shown by calculations that uplift of the beams will not occur during all stages of construction and in-service condition. Uplift calculations shall be based on the following conditions:

- Tie-down(s), counterweight(s), and/or temporary support(s) will not be used to resist uplift.
- Approach slabs shall not be used to resist uplift.
- Concrete below the deck shall not be used to resist uplift.

- Uplift due to the self-weight of the beam alone (during construction) shall also be prevented.
- A concrete placement sequence shall be provided in the plans, if necessary to prevent uplift during construction of the deck.

2. Deviation: This ATC requests deviation from Scope of Services Section 18.2 General Requirements.

Below are specific sections of the Scope of Services which are inconsistent with the proposed ATC, as well as proposed language for the referenced section:

Scope of Services Section 18.2 – General Requirements – Bridge Type – Paragraph 2:

Inconsistent Language: “The ratio of the length of the end spans to the intermediate span must be a minimum of 0.65.”

Proposed Language: Remove “The ratio of the length of the end spans to the intermediate span must be a minimum of 0.65.” from Section 18.2

3. Usage: This ATC would be utilized to design the proposed three-span steel beam structures with shorter end span lengths. There would be no added scope language. All related requirements of the scope, BDM and AASHTO (including preventing uplift at the abutments) will be met. Tension members or tie-downs will not be required to balance uplift.

4. Maintenance of Traffic Impacts: This ATC proposes a reduced length of structure, reducing

overall construction schedule and impacts on the travelling public.

5. Maintenance: The proposed structure would be shorter than that required by the current scope, reducing future structure maintenance time and costs.

6. History: End spans shorter than 0.65 of main span are regularly used on ODOT projects to minimize structure length, with 0.55 typically the lower bound that would not require tension members or tie-downs at the abutments to accommodate uplift.

7. Inspection: The proposed ATC does not require any atypical testing or inspection during construction. The shorter overall structure length will require less inspection over it’s design life.

