

Every Day Counts

Case Study Number and Description: CS #6 – Construction of a Long Bridge Viaduct Located in the Median of an Existing Interstate

In this section, indicate whether prefabricated bridge components should be considered during the BDR evaluation		Conventional Alternate (yes/no/na)	Prefab. Alternate (yes/no/na)	Comments
1.	Prefabricated Beam	Yes	Yes	Given the span lengths, the BDR should consider FIB's or U-beams for all spans except for major roadway crossings for both the conventional and prefabricated alternates. Use simple-span steel for major roadway crossings. Span-by-span top-down segmental construction should also be considered for both the conventional and prefabricated alternates.
2.	Prefabricated Piles	Yes	Yes	The BDR should consider both drilled shafts and prestressed piling for both the conventional and prefabricated alternates.
3.	Precast Footing	No	Yes	BDR should evaluate a precast footing considering weight and demands, as well as, a C.I.P footing.
4.	Prefabricated Bent Cap	No	No	Not deemed to be beneficial because end bent construction is typically easy to construct in-situ and the number of components is small to justify precast set-up and construction learning curve.
5.	Prefabricated Pier Column	No	Yes	For the prefabricated alternate, the BDR should consider a precast pier column that utilizes flowable concrete mixes with embedded polystyrene blocks designed to be connected to precast cap and footing components using grouted rebar couples.
6.	Prefabricated Pier Cap	No	Yes	For the prefabricated alternate, the BDR should consider a precast pier cap that utilizes flowable concrete mixes with embedded polystyrene blocks designed to be connected to precast column components using grouted rebar couples.
7.	Prefabricated Prestressed Deck Units (w/o beams)	NA	NA	Does not apply.

8.	Prefabricated Full-Depth Deck Panels (w/ beams)	No	No	Due to untested details and construction practices in Florida, not deemed beneficial for such a large project given the risk. Long prestressed FIB's make detailing for fit-up difficult due to differential camber. Also, not beneficial if complete superstructure is cast nearby in conjunction with SPMTs. Both the conventional and prefabricated alternates should consider only C.I.P. decks with S.I.P. forms.
9.	Prefabricated Complete Superstructure	No	Yes	Most-rapid construction option.
In this section, include project constraints and user impact considerations:				
<u>Top-Down Construction</u>: Due to construction in the median, all efforts must be made to avoid impact on the adjacent interstate lanes. Additionally, the size of the project justifies the cost of the special equipment required to facilitate top-down construction. <u>Speed of Construction</u>: Precast columns and caps utilizing flowable concrete with polystyrene blocks to limit weights and rebar coupler connections facilitates rapid construction to minimize construction time in the median. <u>Prefab Complete Superstructure</u>: This is the most-rapid construction option utilizing a near-site precast yard to construct a half-width, full-span section, SPMTs to deliver it over the completed viaduct to the overhead span launcher where it is set into place.				