Every Day Counts

Case Study Number and Description: CS #7 – Construction of a Fairly Long Bridge Viaduct Located in the Median of an Existing Busy Roadway

	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 152'-0" span lengths; the BDR should consider FIB's or U-beams for all spans.
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	No	Based on element lifting weights and considering efficient scheduling of Contractor's crews, prefabrication of footings may not be justified. Efficient scheduling of crews is a factor because the precast footing elements could not be placed easily during the day since the cranes necessary to place the elements would require lane closures due to the narrow median width. Also see Prefabricated Pier Column comments below.
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 too small to justify precast set-up and construction learning curve.
5.	Prefabricated Pier Column	No	No	A cast-in-place pier column constructed in-situ on the side of the road using pumped concrete can be constructed either during the daytime or nighttime operations with little or no impacts to traffic. Any total precast column solution would require additional nighttime closures. Stated another way: precast pier columns could not be placed easily during the day because the cranes necessary to place the elements would require lane closures.

6.	Prefabricated Pier Cap	No	Yes	For the prefabricated alternate, the BDR should consider C.I.P. monolithic column-cap base with precast pier cap wings. Connect a short segment with a closure pour next to the pier cap base (not over traffic) and a match-cast outer face. Then fly-up the pier cap wings with the matching face and post tensioning coupler, similar to the tested segmental construction methodology. All this is done within the nighttime MOT window; traffic opens by 6 A.M.
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. Both the conventional and prefabricated alternates should consider only C.I.P. decks with S.I.P. forms.
9.	Prefabricated Complete Superstructure	No	No	The smaller economy of scale of the three-quarter mile viaduct does not sufficiently amortize the cost of specialized equipment to allow for a full-span superstructure placement concept.
	In this section, include project constraints and user impact considerations:			
	Traffic Impacts: Due to the large overhanging pier cap wings and rigorous traffic restrictions, all efforts must be made to avoid impact to the busy roadway below during daytime hours and assuring that nighttime operations are able to be completed within the MOT lane closure window. Tested Construction Methodology: Precast and construct cap wings following time-tested segmental construction methodology customized for conventional pier applications to minimize traffic disruptions. Targeted Hybrid Approach: Use a targeted precast/CIP approach where the design focuses only on the components that affect the traveling public. In that way, the benefit to the traveling public is maximized while minimizing costs, where lifting weights and equipment costs are appropriately considered, and all construction operations are performed within a series of nighttime windows assuring traffic can be released every morning safely by 6:00 AM.			