Every Day Counts

Case Study Number and Description: CS #3 –Replacement Bridge Serving as Ingress/Egress Route to Major Port

	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 a precast segmental replacement bridge constructed in balanced cantilever similar to the existing structure 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 consider both a precast footing and C.I.P footing for the prefabricated alternate.
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. Also back wall would likely have to be C.I.P. to allow tendon access.
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 to reduce weight. Designed to be connected to precast cap and footing components using grouted rebar couplers.
6.	Prefabricated Pier Cap	NA	NA	Does not apply with precast segmental option.
7.	Prefabricated Prestressed Deck Units (w/o beams)	NA	NA	Does not apply.
8.	Prefabricated Full-Depth Deck Panels (w/ beams)	NA	NA	Does not apply with precast segmental option.

9.	Prefabricated Complete Superstructure	No	No	Not deemed to be practical option given vertical profile of proposed high level structure and limited access.
	In this section, include project constraints and user impact considerations:			
	Detour Routes: For the purpose of this Case Study, it is assumed that the bridge is the only way into and out of the sea port. Construction Impacts Cruise Line Departures: Construction traffic delays could likely impact Cruise Line traffic, especially departures trying to catch cruise ships. Construction Impacts on Commerce: Construction traffic delays could likely impact truck traffic to distribute goods that are off-loaded at the port. Phased Construction: The existing bridge consists of three lanes in each direction. Due to existing site constraints, a replacement structure would have to be constructed using phase construction on the existing alignment. Therefore during Phase I, all traffic would have to be moved onto one-half of the existing structure. However, the existing structure would only be able to accommodate two lanes of traffic in each direction. Bridge Demolition: Generally demolishing an existing beam type bridge would require a minimum of 2-3 day duration per span or slightly longer for continuous spans. The duration for demolishing a segmental bridge constructed in balanced cantilever however may take as long as 8 to 10 days per span. A bridge of this type is typically demolished in reverse order than it was constructed utilizing temporary stability towers. Water Access: It is assumed that the water depths at the site would allow full barge access from shoreline to shoreline. Labor and Insurance Costs: Savings associated with labor rates and insurance costs for reduced time working from a barge on a large water project should be considered in the direct costs associated with the prefabricated alternate. Seagrass Impacts: Assume that any seagrass impacts, if they exist would be similar for both the conventional and prefabricated alternates.			