

New Hampshire Department of Transportation
BUREAU OF BRIDGE DESIGN
 Office Meeting Minutes – September 27, 2018

In Attendance (X):

<u>Administration</u>		<u>Consultant Section</u>			<u>In-House Design</u>	
Bob Landry	LRL	Joe Adams	JCA	X	David Scott	DLS
Lynn Paquette	LP	X Bob Juliano	RAJ		Bill Saffian	WPS
		X Mike Licciardi	MGL	X	Jason Tremblay	JAT
		X John Sargent	JAS	X	Tony Weatherbee	ANW
<u>Trainees</u>		Ron Kleiner	RLK	X	Sue Guptill	SMG
				X	Aaron Janssen	ACJ
				X	Pete Parenteau	PJP
		<u>Existing Br Section</u>		X	Angela Hubbard	ABH
		Nick Goulas	NBG	X	Chelsea Noyes	CKN
		Ken Morrison	KLM	X	Kevin Daigle	KFD
<u>Guests</u>		X John Poisson	JTP		Phil Brogan	PAB
		X Jerry Zoller	JSZ		Mark Wagner	MGW
		Laith Qurreh	LOQ	X	Jackie Hozza	JEH

Items:

1. At the next staff meeting, DLS plans to discuss getting the Bridge Management Committee together to work on a unified presentation of square foot costs for bridges. This information will be used in the FOPIS and help track the costs of the bridge throughout the life of the project.
2. At Projects Review, CMW thanked the Department for advertising \$204 million worth of projects this year.
3. The group formally known as the Estimate Review Board will now be known at the Estimate Review Committee. Information about this and other items pertaining to the ERC are located at:

S:\Global\Boards & Committees\Estimate Review Committee
4. DLS is still working on getting consultants of board for preservation projects. Once he has this information he will assign the work. This work may be assigned to the CE I - CE IVs with the CE Vs coaching them through the project development process.
5. Angie discussed partial depth deck panels. The following decisions came out of the discussion.
 - o Partial depth precast concrete panels: A design memorandum will be issued soon to implement the following changes to the deck panels:
 - The panels shall be placed directly next to each other with a maximum gap between- the panels of ¼-in due to fabrication tolerances. If the panels are placed on a curved girder the gaps become greater than ¼-in. The specification will be revised to include construction tolerances and require the gaps to be measured in the field to be no greater than 1-in., if the panels are placed on curved girders. If the bridge has curved girders, the designer shall layout the panels so the gap is not greater than 1-in. To create a smaller gap between panels on curved girders, a 4-ft. panel width can be placed between adjacent 8-ft. panels as needed. Also, panel joints shall be staggered from bay to bay. There was a discussion on the deck performance acting composite if there are large gaps between the panels since there is no continuity. Research

has shown that transverse cracks may occur, but the loads were transferred and distributed across transverse panel joints in a satisfactory manner.

- If the bridge has a phase construction joint over a girder with a top flange 14-in. or less, the interior girder deck haunch detail shall show the plywood for the phase construction along with the precast panels and the extended prestressing strands. Because the top flange is narrow, the prestressing strands overlap each other over the girder. A detail and note needs to be added directing the Contractor to cut the prestressing strands to the dimensions shown on the detail so the plywood can be placed. A new interior girder deck haunch detail will be put on the website. There was discussion if the extended strands are needed. PCI provides a guideline to extend the strands 4-in. AASHTO LRFD 9.7.4.3.2 and other research states the strands extended are not required but may help in transverse load distribution and reflective cracking. It was decided to keep the strands extended 4-in. when possible.
- *All* future projects shall show the deck and deck details with a partial depth precast panels, no option, unless the bridge geometry falls within the panel limitations listed or directed otherwise by the Bridge Design Chief. A Contractor can submit a Value Engineering Proposal if he would like to have a cast-in-place deck. This decision was made since 95% of the bridge decks have been constructed using deck panels and are required for Tier 1 and 2 overpasses bridges. It also makes the plans and design more straight forward without having an option.

The bridge shall follow the following:

- Use Item 520.7102, Concrete Bridge Deck (QC/QA) (F) - CY
- Use Item 528.51, Prestressed Concrete Deck Panels (F) – SF
- Design girder with panels.
- Show/include panels in the following on the plans:
 - Deck Section (masonry & reinforcing)
 - Interior Deck Haunch Detail
 - Shear Connector Detail
 - End Haunch Details (masonry & reinforcing)
 - Deck Overhang Details (masonry & reinforcing)
 - Bottom of Slab Elevations
 - Camber/Deflection Table
 - Layout out panels on a *new* Deck Panel Layout Plan
 - Dimension reinforcing with panels

Requirements for using partial depth precast panels must meet the following:

A. Limitations

NHDOT will allow the use of partial-depth precast/prestressed deck panels when the following requirements are met:

- Maximum girder spacing: steel beams = 10-ft. (3-m), concrete beams = 12-ft. (3.6-m)

- Minimum steel girder top flange width: 12-in. (305-mm). With a 12-in. (305-mm) top flange, the minimum distance between the deck panels is 5-in. (127-mm). If the shear connector design requires 3 studs per row, the studs will need to be staggered to meet the minimum clearance between the panels. See the Detail Sheet for a layout on how to stagger the studs.
 - Minimum distance between shear connectors and precast panel: 1-in. (25-mm)
Minimum distance between the precast panels: 5-in. (127-mm) for 12-in. (305-mm) top flange, 6-in. (150-mm) for top flanges > 12-in. (305-mm)
 - Minimum panel length (between girders): 4.5-ft. (1.37-m)
 - Maximum deck cross-slope: 6% (unless approved otherwise by the Design Chief)
 - Panels with a cross-slope > 4% shall be supported as required to prevent panel movement transverse to the girders.
 - Maximum skew of partial depth panels: 15 degrees
 - Minimum longitudinal width of skewed panel: 3-ft. (0.9-m)
 - Minimum longitudinal width of rectangle panel: 4-ft. (1.2-m)
 - Maximum longitudinal width of panel: 8-ft. (2.4-m)
 - If widening a bridge, partial-depth deck panels are not allowed in the bay adjacent to the existing structure because it is difficult to set the panels properly on the existing structure, and a CIP closure is required. Deck panels can be used on the other girders when the widening involves multiple girders.
 - For phase construction, if the differential deflection is greater than 1-in. between the phases, then a cast-in-place closure pour is required at the construction joint.
 - A minimum bridge deck thickness of 8.5-in. (216-mm): 3.5-in. (89-mm) partial depth precast deck panel and 5-in. (127-mm) CIP concrete overlay.
 - Minimum grout bed under panel: 2-in. (50-mm)
6. For expansion joints with seals in the coping, the detail is shown that the seal in the coping is bent up so that the water will stay in/along the curb line. Now that expansion joints are being placed behind the backwall, it was questioned if this portion of the joint should be tipped down away from the curb line and drain out behind the backwall. The discussion had both pros and cons. It was thought that allowing the joint to tip away would keep the joint clean and not have a pile of dirt and debris along the curb line in this area with potential for a puddle of water. It was also thought that allowing all of the water that is captured on the bridge deck to outlet at this location may cause a washout of the material behind the abutment. It was decided that for the Alstead 20817 project, which is currently out for bids, that this would be assessed during the shop drawing submittal to see if the Department wanted to try using the tip down detail in the coping.

Prepared by: jat

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