South Carolina Department of Transportation

NON-CONFIDENTIAL DESIGN-BUILD QUESTIONS
Bridge Package 20 - Contract ID 5462320 - Chesterfield, Fairfield, Lancaster, and York Counties

FINAL RFP - ROUND 3

Date Received: 10/10/2023

						SCDOT	
Question No.	Category	Section	Page / Doc No.	Question/Comment	Discipline	Response	Explanation
1	RFP	2	Page 2 / Section 2.2; Bullet 7	RFP states "*Minimal to no impacts to the accommodation on Tract 22 of the S-292 site*". Does this apply to both permanent and temporary impacts? Will SCDOT define the term *minimal* in this statement?	DM	No_Revision	Yes, this applies to temporary and permanent impacts to this potential EJ property. No impacts should occur to the parking or buildings and impacts to the driveways shall be minimized to the extent practical and shall provide the same level of access.
2	Attach_A	Exhibit 4e	3	Section 2.2.1.1 was amended to include specific hydraulic design criteria for S-292. However, the new criteria is unclear. Both scenarios mention "backwater in the model developed for Cane Creek." Is it required to develop a 2D model for Cane Creek to establish the downstream boundary condition for Bear Creek at the confluence? Typically, the downstream boundary condition is taken from the FIS and considered as a fixed or known starting water surface elevation (WSE) on the stream in question.	Hydrology	Revision	SCDOT has requested FEMA models for both Bear and Cane's Creeks to provide to teams. A 2D model is required for the Bear Creek Design but a 1D model should be used to determine the differences in backwater between FIS and SCDOT flowrates on Canes Creek. The design criteria for S-292 as it relates to backwater from Cane Creek will be based on one of the following scenarios. 1) If the backwater in the model developed for Cane Creek using SCDOT flowrates is the same as FEMA FIS backwater from Cane Creek, S-292 shall be designed for Bear Creek flow with downstream boundary condition set to normal depth for all required analyses except for overtopping, where the downstream boundary condition shall be set to the base flood elevation of Cane Creek at the downstream analysis point. 2) If the backwater in the model developed for Cane Creek using SCDOT flowrates is less than the FEMA FIS backwater from Cane Creek, S-292 shall be designed with the base flood elevation for Cane Creek used as the downstream boundary condition for all required analyses (freeboard, backwater and overtopping) needed to satisfy the SCDOT Hydraulic Design Manual and associated Hydraulic Design Bulletins.
3	Attach_A	Exhibit 4e	3	Section 2.2.1.1 was amended to include specific hydraulic design criteria for S-292. However, the new criteria is unclear. Is the "backwater" mentioned in each scenario referring to backwater imposed by the proposed bridge (i.e. proposed minus natural conditions WSEs), or is "backwater" referring to downstream boundary/starting WSEs for Bear Creek at the Cane Creek confluence?	Hydrology	No_Revision	Backwater from downstream boundary was the intent. Backwater imposed by the proposed bridge is intended to meet SCDOT No Impact requirements for Zone AE with floodway.

Post Office Box 191
Columbia, South Carolina 29202-0191

Phone: (803) 737-2314
TTY: (803) 737-3870

4	Attach_A	Exhibit 4e	3	Section 2.2.1.1 was amended to include specific hydraulic design criteria for S-292. However, the new criteria is unclear. In Scenario 1, does the language "shall be designed for Creek flow" refer to normal depth flow on Bear Creek?	Hydrology	No_Revision	Scenario 1 means that Teams would design the proposed bridge without considering the backwater from Cane's creek. The downstream boundary for design purposed would not include impacts from Cane Creek. This does refer to normal depth flow.
5	Attach_A	Exhibit 4e	3	Section 2.2.1.1 was amended to include specific hydraulic design criteria for S-292. Since the determining factor between using Scenario 1 and Scenario 2 is the comparison to "FEMA FIS backwater," what is the allowable tolerance when making the comparison?	Hydrology	No_Revision	No tolerance. If backwater is less than FEMA FIS backwater using SCDOT flowrates then design proposed bridge site using scenario 2.
5 (cont)	Attach_A	Exhibit 4e	2.2.1.1	We are unsure of the meaning of the S-292 hydraulic modeling requirements within the RFP addendum 1 Exhibit 4e Section 2.2.1.1 last bullet item. Please advise on whether the updated wording below accurately describes the intent of the RFP requirement. The design criteria for S-292 as it relates to backwater from Cane Creek will be based on one of the following scenarios. 1) If the backwater resulting from the S-292 bridge in the model developed for Cane Bear Creek using SCDOT flowrates is the same as FEMA FIS backwater from Cane Creek, S-292 shall be designed for Bear Creek flow with downstream boundary condition set to normal depth for all required analyses except for overtopping, where the downstream boundary condition shall be set to the base flood elevation of Cane Creek at the downstream analysis point. 2) If the backwater resulting from the S-292 bridge in the model developed for Cane Creek Bear Creek using SCDOT flowrates is less than the FEMA FIS backwater from Cane Creek, S-292 shall be designed with the base flood elevation for Cane Creek used as the downstream boundary condition for all required analyses (freeboard, backwater and overtopping) needed to satisfy the SCDOT Hydraulic Design Manual and associated Hydraulic Design Bulletins.	Hydrology	No_Revision	The updated language does not accurately describe the intent of the Addendum. Refer to the response to Question 5 (cont).

6				If the above interpretation is not accurate, we would otherwise expect that a separate model should be developed for Cane Creek to be compared to effective backwater reported by FEMA? If so, would SCDOT be willing to provide the effective model received from FEMA so that flow comparisons could be made directly? In either case, would the following revision be a more accurate interpretation? The design criteria for S-292 as it relates to backwater from Cane Creek will be based on one of the following scenarios. 1)If the backwater in the model developed for Cane Creek using SCDOT flowrates is the same as FEMA FIS backwater from Cane Creek, S-292 shall be designed for Bear Creek flow with downstream boundary condition set to normal depth for all required analyses except for overtopping, where the downstream boundary condition shall be set to the base flood elevation of Cane Creek at the downstream analysis point. 2)If the backwater in the model developed for Cane Creek using SCDOT flowrates is less than the FEMA FIS backwater from Cane Creek, S-292 shall be designed with the base flood elevation for Cane Creek used as the downstream boundary condition for all required analyses (freeboard, backwater and overtopping) needed to satisfy the SCDOT Hydraulic Design Manual and associated Hydraulic Design Bulletins.	Hydrology	Revision	SCDOT is working to get a model to provide to all Teams. This revised language represents the intent of the RFP Addendum.
7	Attach_A	Exhibit 4e	Page 3 / Section 2.2.1.1; Bullet 8	The RFP refers to "*the model developed for Cane Creek* ". Who is developing this model? Is SCDOT providing the model?	Hydrology	No_Revision	SCDOT has requested FEMA models for both Bear and Cane's Creeks to provide to teams.
8	Attach_A	Exhibit 4e	Page 3 / Section 2.2.1.1; Bullet 7	The RFP refers to "*the model developed for Cane Creek* ". If teams are required to develop the model, how does the department plan to maintain consistency between the three models? There is substantial work required to create a model applicable to this site which includes obtaining field surveys. If the Model for this site's section of Cane Creek will not be provided, will the SCDOT allow more time to build the model? Will additional stipend be provided to offset the cost of surveys and building the model?	Hydrology	No_Revision	SCDOT has requested FEMA models for both Bear and Cane's Creeks to provide to teams.

9	Attach_A	Exhibit 4e	Page 3 / Section 2.2.1.1; Bullet 8	The RFP refers to "*the model developed for Cane Creek* ". If the department is providing the models, can the model for Bear Creek be incorporated? Several bridges are located along Cane Creek that influence the backwater at Bear Creek. Additional surveys of Cane Creek would also be required to determine typical channel section to be used in the model.	Hydrology	No_Revision	SCDOT has requested FEMA models for both Bear and Cane's Creeks to provide to teams.
10	Attach_A	Exhibit 4e	Page 3 / Section 2.2.1.1; Bullet 8 Page 4 / Section 2.2.1.3; Bullet 4	RFP Section 2.2.1.1 states "*If the backwater in the model developed for Cane Creek using SCDOT flowrates is less than the FEMA FIS backwater, S-292 shall be designed with Cane Creek used as the downstream boundary condition for the design model* ." RFP Section 2.2.1.3 states "*Backwater from downstream is not considered to constitute pressure flow. S-292 shall be designed for the 1% AEP (100 year event) not to induce pressure flow from upstream creek flows.* " These statements are contradictory. Please clarify the intent for tailwater consideration associated with bridge pressure flow associated with setting the low chord for the 1% AEP in free flow?	Hydrology	Revision	Backwater from downstream is not considered to constitute pressure flow for situation (1) where using SCDOT's flowrates produces equal to or greater than the FEMA FIS backwater. The proposed bridge site will be designed using creek flow and disreguarding backwater conditions except when calculating overtopping.
11	RFP	8	35	Should the date shown for Submittal of Cost Proposals be Tuesday, January 30, 2024 instead of 2023 as currently shown?	Other	Revision	Yes.
12	RFP	8	35	Should the date shown for Public Announcement of Technical and Cost Propopsal Analysis be Thursday, February 1, 2024 instead of 2023 as currently shown?	Other	Revision	Yes.
13	Attach_A	Exhibit_4b	3	Section 2.1.7 was amended to state "The maximum superelevation rate permitted on cored slab and box beam superstructure type is 4%." Is it SCDOT's intent to meet the design superelevation rate for the roadway approaches and allow a reduced superelevation rate, that does not meet the design speed, across the bridge?	Roadway	No_Revision	It is SCDOT's intention to meet the design superelevation rate for non-low volume bridge replacement sites as required by the RDM and the superelevation design for the low volume bridge replacement sites will follow the Low Volume Bridge Replacement Roadway Design Criteria where "constraints of excessive costs often preclude the use of desirable superelevation rates… If the curve is to remain and minimum superelevation rates cannot be achieved, proper signing and pavement markings for the appropriate speed in accordance with the MUTCD". Specifically, S-296 will transition from 6% on the roadway to 4% for the bridge limits only to to meet the requirements of Exhibit 4b.
14	Attach_A	Exhibit_4b	Sec. 2.1.7	Please confirm that box beam / cored slab superstructures are allowed for N Plantation Road (S-292) with a 2045 Design Year AADT of 3,100vpd and Robertson Road (S-998) with a 2045 Design Year AADT of 3,000vpd.	Structures	No_Revision	Confirmed. Current/Open year ADT is used with respect to the 3000vpd BDM restriction on cored slabs and box beams.

15	Attach_A	Exhibit_4b	Sec. 2.1.7	RFP was amended to state "The maximum superelevation rate permitted on cored slab and box beam superstructure type is 4%." Does the maximum superelevation rate apply to the asphalt travel surface, the cored slabs and box beams units, or both.	Structures	No_Revision	Both.
16	Attach_A	Exhibit_4b	Page 3 / Section 2.1.7; Paragraph 4	RFP states *"The maximum superelevation rate permitted on cored slab and box beam superstructure type is 4%. Superelevation transitions are not permitted on cored slab and box beam bridges."* The existing superelevation rate on S-296 is 5.6%. Is it the department's intent for the design to transition from normal crown up to existing 5.6% super, then back down to 4% super across the bridge, then back up to 5.6% before transisioning back to normal crown? Allowing the use of cored slab and/or box beams at this location while also restricting the superelevation rates will result in the roller coaster superelevation described above and going to a different superstructure type to allow a higher super rate will raise the grade and increase adjacent impacts and project costs. Would the department consider removing the restriction for superelevations over 4% on cored slab and box beams?	Structures	No_Revision	Yes, it is the department's intent to transition to and hold 4% superelevation across the bridge on S-296. Other states also limit the superelavtion rate on cored slab and box beam bridges for both structural/durability and constructability benefits. When bearings are not level the load distribution across the bottom of the unit and the bearing pad are not even. Also, the bent caps and foundation elements need to be shifted with respect to centerline of bridge to account for the superelevation, in order to achieve the proper riding surface dimensions and plan location of the bridge. A limit on box beam and cored slab superelevation rate will likely be included in the next version of the BDM.

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Phone: (803) 737-2314
TTY: (803) 737-3870