
MEMORANDUM

TO: AECOM
FROM: NTM ENGINEERING, INC.
SUBJECT: I-80 H&H RESULTS FOR ALTERNATIVE 2D
DATE: 5/23/2019
CC:

I-80 ALTERNATIVE 2D

Pocono Creek

The Alternative 2D plans for the Ramp I refinements were provided by AECOM on May 6, 2019. The proposed Ramp I refinements for Alternative 2D includes shifting the 304 interchange to the northeast. The shift moves the I-80 mainline roadway closer to Pocono Creek, and also pushes Ramp I to the north side of the creek. Ramp I will be a high flyover ramp with more than 50 feet above Pocono Creek; therefore, the deck will not have an effect in the hydraulics. However, the flyover ramp will include several piers located in the floodplain and floodway of Pocono Creek. In addition, the new location of the I-80 mainline will include a retaining wall on the north side to minimize the amount of fill placed on the floodplain of Pocono Creek.

Pocono Creek is located in a FEMA detailed study area with a floodway. Any encroachments into the floodway of Pocono Creek that result in water surface elevation increases above 0.00 feet will require a Conditional Letter of Map Revision (CLOMR) from FEMA.

The Pocono Creek hydraulic model developed for the 2015 Alternatives Analysis was used to approximate the impacts of the Ramp I pier locations and I-80 mainline retaining wall accordingly. The Ramp I piers and I-80 mainline retaining wall results in water surface elevation increases up to 0.4 feet for the 100-year event. These water surface elevation increases will tie in at FEMA cross section AL, located at the upstream limit of the hydraulic model. The water surface elevation increases do not impact any structures located in the floodplain. However, since the proposed Ramp I flyover structure and I-80 mainline retaining wall encroach into the FEMA floodway the water surface elevation increases will require a CLOMR.

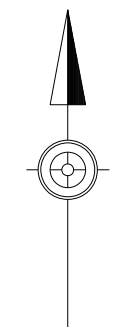
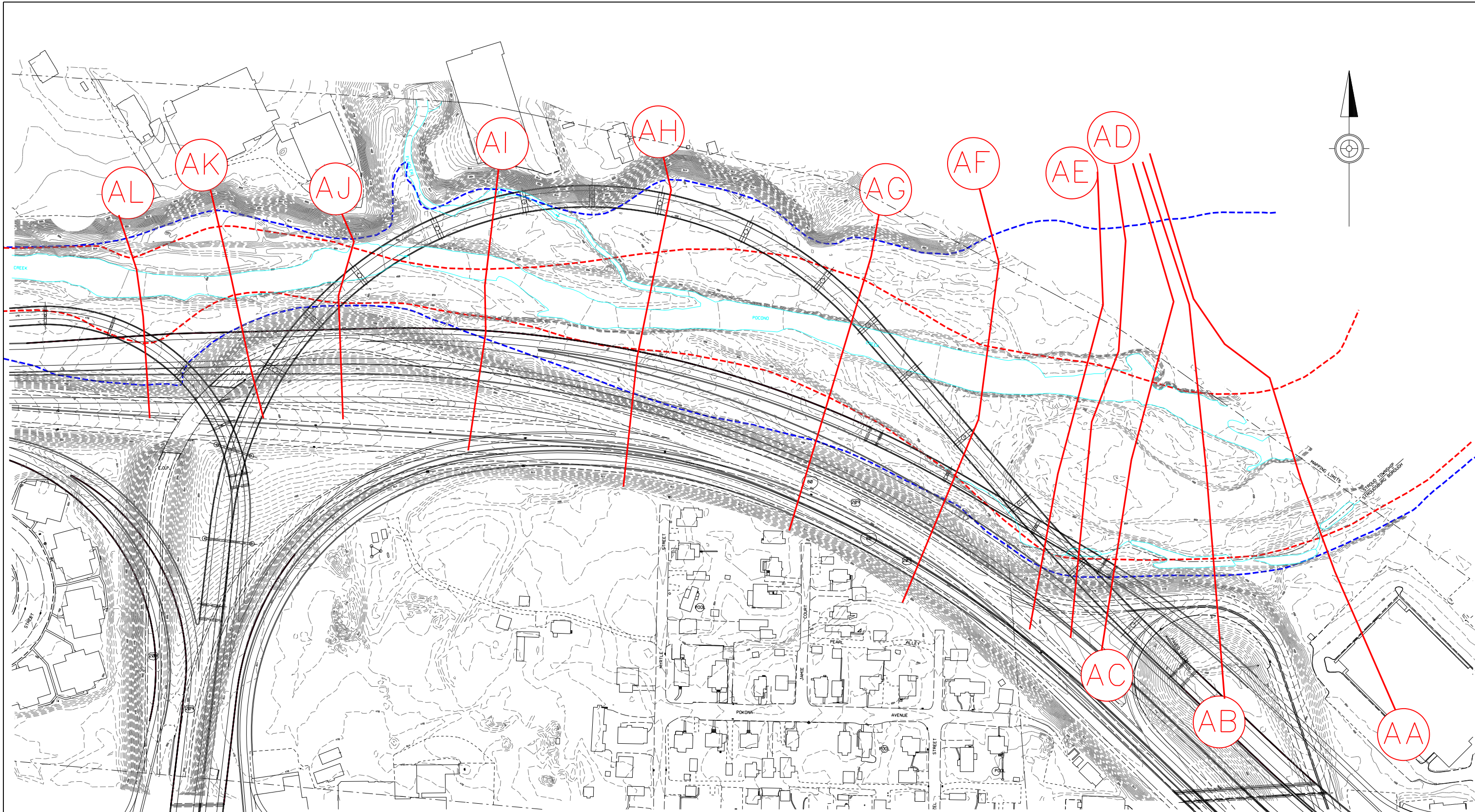
Water surface elevations at the FEMA hydraulic cross sections upstream and downstream of the Ramp I flyover are compared with existing conditions in [Table 1](#).

Table 1: Pocono Creek Existing vs. Alternative 2D FEMA 100-year Water Surface Elevations

HEC-RAS Cross Section	FEMA Cross Section	Water Surface Elevations		Difference (Ex-Alt.D)
		Existing	Alternative D	
13729.02	AL	470.6	470.6	0.0
13530.63	AK	469.8	470.1	+0.3
13277.34	AJ	466.5	466.9	+0.4
12696.80	AI	463.4	463.6	+0.2
12615.64	AH	461.0	461.2	+0.2
12184.32	AG	457.0	457.3	+0.3
11877.70	AF	454.4	454.6	+0.2
11640.95	AE	453.0	453.1	+0.1
11573.87	AD	452.7	452.8	+0.1
11473.29	AC	452.0	452.0	0.0
11321.97	AB	451.0	451.0	0.0
11141.87	AA	448.7	448.7	0.0

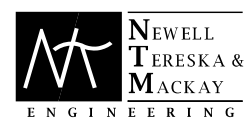
Based on the hydraulic model results using the current proposed configuration, a CLOMR would be required. If a CLOMR is needed, the map revision would need to extend upstream until no increase is found. Any impacts of the water surface elevation increase would need to be documented including any structures affected by the increase. It is possible that no configuration will eliminate the increases in water surface elevation. To possibly eliminate increases, or at least lower water surface elevations, it is recommended to reduce the proposed pier size and avoid piers in the channel or low overbank areas, if possible. Aside from circular columns, oblong piers oriented in the direction of flow could be used if the width in direction of flow can be reduced from the current size. Currently, several piers are located within the channel banks or in overbank areas of higher velocities that raise water surface elevations for Pocono Creek.

It should be noted that the current FEMA data was utilized in the analysis. This data will need to be refined for the PE analysis including incorporating more accurate cross sections based on survey and LiDAR data, correcting the location of Manning n values, etc. The more accurate analysis will produce different results than what is determined in this alternatives analysis; however, it will not affect the conclusions in this memo.



LEGEND

- - FEMA FLOODPLAIN
- - FEMA FLOODWAY
- (AA) - FEMA HYDRAULIC CROSS-SECTION
- - EDGE OF WATER



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I-80 OVER POCONO CREEK
EXISTING AND ALTERNATIVE 2D
HYDRAULIC CROSS-SECTION MAP
COUNTY: MONROE
MUNICIPALITY: STROUD