DRAFT DESIGN REPORT

March 2010

Access 390
I-390 Exit 16
Interchange Reconstruction Project

P.I.N. 4390.17
Monroe County
Town of Brighton
City of Rochester

TECHNICAL APPENDIX
TA-4.2

FLOODPLAIN EVALUATION
REPORT
New York State Department of Transportation

I-390 INTERCHANGE IMPROVEMENTS
AT ROUTE 15A AND ROUTE 15 (EXIT 16)

FLOODPLAIN EVALUATION REPORT

TOWN OF BRIGHTON, AND CITY OF ROCHESTER, MONROE COUNTY, NEW YORK
P.I.N. 4390.17.111 / March 2010
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1. Introduction

The proposed project is located in the Town of Brighton and City of Rochester, Monroe County, New York as shown in Figure 1, and addresses the corridor needs along I-390 at the Route 15 (West Henrietta Road) and Route 15A (East Henrietta Road) Interchanges. The purpose of the Floodplain Evaluation Report is to document the existing floodplains within the project area and to evaluate potential encroachments for each of the build alternatives.

I-390 traverses north-south on the west side of the City of Rochester, and serves as a major north-south highway corridor through Rochester. The project area covered in the floodplain investigation includes I-390, between West Henrietta Road/NYS Route 15 (Interchange 16A) and I-590 (Interchange 15). The project area includes portions of the Erie Canal and Allen Creek Tributary, both mapped streams in the National Flood Insurance Program (NFIP).
2. Project Description

The Null and one Build Alternative (Alternative E-2) were developed for this project. The Build Alternative is described below:

Null Alternative
The Null Alternative provides only for the continued maintenance of the project corridor. No operational or capacity improvements are proposed under this alternative.

Alternative E-2
Alternative E-2 includes a new on-ramp from Kendrick Road to I-390 northbound, a new on-ramp from West Henrietta Road to I-390 northbound and a significant realignment of the I-390 northbound ramps at East Henrietta Road (Route 15A). Alternative E-2 will include various intersection improvements throughout the project area, including the introduction of a roundabout at the intersection of Kendrick Road and East River Road. Alternative E-2 is shown on Figure A1 in Attachment A.

3. Scope

The purpose of this report is to comply with the provisions of Executive Order 11988, Flood Plain Management, as implemented in 23CFR650 Subpart A, Location and Hydraulic Design of Encroachments on Flood Plains and 6NYCRR 502, Flood Plain Management Criteria for State Projects, to determine potential impacts on Federal Emergency Management Agency (FEMA) floodplains within the project area.

4. Existing Floodplain Mapping

The existing conditions 1% annual chance floodplain boundaries, for the project area, include the NYS Erie Canal and Allen Creek Tributary, which are shown on the FIRMETTE maps in Appendix B. These maps are defined in the FEMA, Flood Insurance Study, Monroe County, New York (All Jurisdictions), August 28, 2008.

The Erie Canal is located along I-390 through the Town of Brighton while Allen Creek Tributary begins at the I-390 / 590 interchange at South Clinton Avenue and flows east. The effective FEMA Flood Insurance Study delineates the NYS Erie Canal as an approximate study (A-zone) and Allen Creek Tributary as a detailed study (AE-zone). Additionally, there is a shaded Zone-X that encompasses a significant portion of the I-390 / 590 interchange. There are no additional delineated floodplains within the project area.

The NYS Erie Canal existing condition 1% annual chance floodplain is in close proximity to Route 390 throughout the project limits. Potential significant lateral encroachments exist for the new on-ramp to I-390 Westbound and bridge widening at Kendrick Road, the I-390 lane widening between Kendrick Road and Route 15, and the new on-ramp at Route 15 and Route 15 bridge widening. The realignment of I-390 WB at East Henrietta Road is outside of any mapped floodplains.

The lane widening at the I-390/590 interchange is contained within the aforementioned shaded Zone-X and therefore is not subject the Executive Order 11988 or 6NYCRR502. Finally, there is no planned work within the Allen Creek Tributary 1% annual chance floodplain; however, the
drainage improvements within the interchange have the potential to affect the 1-% annual chance floodplain.

The shaded Zone X is contained in the upstream drainage basin for Allen Creek Tributary, an AE-Zone on the FEMA FIRM. Since the drainage ponds inside the shaded Zone-X discharge to Allen Creek Tributary, changes to the configuration and size of these ponds could affect the 1-% annual chance floodplain and the base flood elevation (BFE) on Allen Creek Tributary.

Therefore, to ensure there are no adverse impacts to Allen Creek Tributary BFEs, the proposed I-390/590 interchange improvements will require that the effective FEMA model (SWMM model) be used to determine the 1-% annual chance floodplain and BFEs for the proposed condition. Please refer to the letter(s) between NYS Department of Environmental Conservation Division of Water and NYS Department of Transportation Region 4 contained in Appendix C.

5. State and Federal Regulations

Portions of I-390, within the project limits, are located adjacent to the Barge Canal 1% annual chance flood plain and are thus defined as potential lateral encroachments. The design of lateral encroachments must comply with EO 11988, 23CFR Part 650A and NYCRR Part 502 regulations. EO 11988, dated May 24, 1977, requires each Federal agency, in carrying out its activities, to take action to reduce the risk of flood loss, minimize the impacts of floods, restore and preserve the natural and beneficial values served by flood plains, and evaluate the potential effects of any actions it may take in the flood plain so as to ensure its planning programs reflect considerations of flood hazards and flood plain management. 23CFR Part 650A, states that it is the policy of FHWA to encourage a broad and unified effort to prevent uneconomic, hazardous or incompatible use and development of the Nation’s flood plains; to avoid longitudinal encroachments where practicable; to avoid significant encroachments, where practicable; to minimize impacts of highway agency actions which adversely affect base flood plains; to restore and preserve the natural and beneficial flood plain values that are adversely impacted by highway agency actions; to avoid support of incompatible flood plain development; to be consistent with the intent of the standards and criteria of the National Flood Insurance Program, where appropriate; and to incorporate "A Unified National Program for Floodplain Management" of the Water Resources Council into FHWA procedures. The State’s Part 502 regulations are implemented to ensure that the use of State owned lands and the sighting, construction, administration and disposition of State-owned and State-financed facilities are conducted in ways that will minimize flood hazards and losses.

NYCRR Part 502.3(a) states:

"Where the administrator has not provided an FHBM or FIRM or a flood insurance study designating flood hazard area boundaries and/or base flood elevations for a particular location, any State agency proposing a project at such location shall determine, in cooperation with the department, the boundaries of flood hazard areas and base flood elevations on the basis of all pertinent information available from Federal, State or other sources"

The Erie Canal connects to the Genesee River west of the project area. The base flood elevation depicted on the Monroe County FIRM panel 332 (Appendix D) is 517.0 feet NAVD88 just downstream of the confluence of the Erie Canal with the Genesee River. The Canal is a navigable water way with a daily mean water surface elevation in the project area of 512.01
NAVD88 (512.6 BCD). Therefore, since there are no locks between the Genesee River and the easterly limit of the project area, and the slope of the Canal between the project area and the confluence is zero the BFE at the confluence of the Canal with the Genesee River is also the BFE in the project area.

6. Design Approach

To comply with the above-referenced State and Federal regulations covering both roadway encroachments and roadway overtopping, the lowest point on the proposed additional ramps and lane widening at Route 15 will be compared to the 1%-annual chance floodplain elevation. Where the potential toe of fill slopes could extend into the NYS Barge Canal Floodplain, retaining walls will be provided as necessary to keep the proposed roadway fill out of the floodplain.

7. Evaluation of Alternatives

For the build alternative E2, to avoid interruption or termination of this transportation facility that is needed for emergency vehicles and evacuation, the lowest point was compared to the BFE of 517 feet (NAVD88). The lowest point occurs at the end of the proposed on-ramp from West Henrietta Road to I-390 northbound and was determined using the TGL of 518.06 feet (NAVD88) at this location, minus the pavement cross slope of¼ inch per foot for a twelve foot lane. Therefore, the elevation at this point is 517.8 feet NAVD88 which is 0.8 feet above the base flood elevation. Therefore, adequate freeboard to account for extreme events, ice, debris and waves is not provided. However, since this is an interchange improvement project the additional lane widening and ramp construction is restricted to the limits of the existing alignment, no additional freeboard can be provided.

Where lane widening is being conducted on the Kendrick Road, East Henrietta Road and West Henrietta Road structures that pass over the Erie Canal; and that are supported on piers adjacent to or in the canal 1%-annual chance floodplain, there will be some additional encroachment resulting from widening of the existing pier to support the widened roadway. However, the encroachment will not significantly impact the floodplain or raise the 1% annual chance floodplain elevation measurably. The construction of the new overpass at West Henrietta Road will require new piers to be constructed adjacent to or in the 1-% annual chance floodplain of the Erie Canal. These piers will not significantly impact the floodplain or raise the 1%-annual chance floodplain elevation measurably.

The existing function of the 1% annual chance floodplain area will be unchanged as a result of the additional roadway and therefore does not result in an increase in the Base Flood (Q100) elevation for any of the alternatives.

8. Summary

This floodplain evaluation has considered the effects of the build alternatives in terms of encroachment, interruption, risk and impacts to natural resources, and concluded that: (1) a significant encroachment does not exist; (2) there is no significant potential for interruption or termination of a transportation facility which is needed for emergency vehicles; (3) there is no significant risk; and (4) there will be no significant impacts on natural and beneficial flood plain value.
ATTACHMENT A

FEMA FIRMETTE

Floodplain Evaluation Report
I-390 Interchange Improvements at Route 15A and 15 (Exit 16)
Town of Brighton
Monroe County
P.I.N. 4390.17.111

March 2010
ATTACHMENT B

COMMUNICATION BETWEEN NYSDEC AND NYSDOT

Floodplain Evaluation Report
I-390 Interchange Improvements at Route 15A and 15 (Exit 16)
Town of Brighton
Monroe County
P.I.N. 4390.17.111

March 2010
February 6, 2009

Mr. Howard Ressel, PE
Project Manager
New York State Department of Transportation
Region 4
1530 Jefferson Road
Rochester, NY 14623

RE: 1-390 at Interchange 16, Allen Creek Tributary Approach to Floodplain Analysis

Dear Mr. Ressel:

I’m sorry for my delayed response to your letter about the approaches to potential flood zone modifications with respect to the above project. Your letter of October 3, 2008 outlines an acceptable approach.

I have checked with FEMA Region 2 in New York City and they agreed that if the drainage analysis shows a decrease in flood elevation, flood extent or floodway outside of state owned property, they would waive the required LOMR fees. This may require the intervention of the FEMA regional office to assist with that process.

Please note that Part 502 of DEC’s regulations contains standards for state activities in the mapped floodplains. Please keep my office informed of progress and the results of any floodplain analysis associated with this work. You may contact me if you have any questions.

Sincerely,

William S. Nechamen

William S. Nechamen, CFM
Chief, Floodplain Management Section

Cc: Ken Avery, Bergmann Associates
    Paul Web, FEMA Region 2, New York City
October 3, 2008

Mr. William S. Nechamen, PE, CFM, Chief
Flood Plain Management Section and State NFIP Coordinator
New York State Department of Environmental Conservation
625 Broadway, 4th Floor
Albany, NY 12233-3507

Re: PIN 4390.17
I-390 at Rte. 15 and 15A, Int. 16
Allen Creek Tributary
Approach to Flood Plain Analysis

Dear Mr. Nechamen:

The Department is undertaking the development of a project that includes the I-390 / I-590 interchange in the Town of Brighton that will have flood plain involvement. The County-wide effective Flood Insurance Study (FIS) DFIRM map (dated August 28, 2008, Map No. 36055C0351G) of the lands covering the I-390/I-590 interchange show the interchange area as being within a Zone X that drains to a Zone AE that has been studied using detailed methods. The Department's plans call for ramp and bridge modifications that will take place within this Zone X that may affect the base flood in the downstream Zone AE.

Based on a meeting held on June 10, 2008 at Town of Brighton offices, and follow-up from review of meeting minutes (see attachment) issued subsequent to the meeting, the Department proposes to perform the drainage analysis of the project in the following manner:

1. The Department will perform the drainage analyses for the preferred alternative utilizing the SWMM model, developed by Bergmann Associates for the LOMR prepared for this portion of the Allen Creek Tributary, which included the interchange area;
2. The Department will adjust the model for any project related changes, and adjust the drainage features in the interchange (ponding area, outfall structure, etc.) as necessary to attempt to achieve a design that confines any changes in the flood plain to lands owned by the Department;
3. If the results of the drainage analyses confine the changes in the flood plain to lands owned by the Department, then no map changes would be necessary, the design would be deemed acceptable and no changes to the effective maps would be necessary;
4. If the results of the drainage analyses show an increase in flood elevations or flood extent in areas other than Department-owned property, the Department would go through the FEMA Letter of Map Change process, and pay the required fees; and
5. If the results of the drainage analyses show a decrease in flood elevation, flood extent, or floodway outside of Department-owned property, then the Department would also go through the FEMA Letter of Map Change process, however, the required fees would be waived, since the action would result in a decrease in downstream flooding.
The Department hereby requests your concurrence with this approach. Please feel free to contact me at 585-272-3372 or hressel@dot.state.ny.us if you have any questions.

Sincerely,

Howard Ressel, PE
Project Manager

Encl.
Xc: R. Cortina, Town of Brighton
M. McAnany, Bergmann Associates
K. Avery, Bergmann Associates
B. Bellan, Regional Hydraulics Engineer, Region 4
ATTACHMENT C

FEMA FIRMETTE of PANEL 332

Floodplain Evaluation Report
I-390 Interchange Improvements at Route 15A and 15 (Exit 16)
Town of Brighton
Monroe County
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