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NCC LAND USE

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Christopher A. Coons
County Executive



Charles L. Baker
General Manager

Department of Land Use

103-059-183

WKH/File

SAS

REP

DJS

March 14, 2005

Joy Ford
Environmental Section
DelDOT, Planning Division
By telefax

Re: Floodplain Application No. 20050111 - DelDOT I-95 Expansion - Revised
Submission Received 03/03/05 -- Floodplain of Christina Creek

I have reviewed floodplain application and concluded the following:

1. The scope of work consists includes filling within the FEMA delineated flood fringe to widen the existing roadway; no land disturbing activity is proposed in the FEMA delineated floodway. The use is designated in the Unified Development Code table 40.10.210 as "I" Environmental Impact.
2. The fill in the flood fringe is specifically subject to UDC Section 40.10.3134. The following have been determined from the application:
 - a. the computations provided indicate that there will be no increase in flood water elevation as a result of fill placement;
 - b. there will be significant loss of flood storage volume;
 - c. fill placement shall comply with the requirements of UDC Section 40.10.314.E; and
 - d. the project will not alter the extent of the regulated floodway and flood fringe.

DelDOT will assume responsibility for the adequacy fill placement to withstand the erosive forces associated with a 100-year storm event as well as implementation of sediment control practices as required under the Delaware Sediment and Stormwater Regulations.

The Department approves this application. Please contact me at 395-5472 with any questions.

Respectfully,

Hap Ryan, P.E.
Civil Engineer II

Copy to: Bob Palmer, RK&K



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Klepper
& Kahl, LLP

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Emeritus

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February 28, 2005

Mr. Harry Ryan
Civil Engineer II
New Castle County Department of Land Use
87 Reads Way
New Castle, DE 19720

Reference: **I-95 Widening
FEMA Floodplain/Floodway Modeling**

Dear Mr. Ryan:

In accordance with our recent discussions, Rummel, Klepper & Kahl, LLP has conducted the hydraulic analyses, using the available existing FEMA Floodway model (dated 1984) for the Christina River, to determine the impact of the above referenced proposed project on the FEMA 100-year floodplain and the FEMA designated floodway at the I-95 crossing of the Christina River located west of Route 141.

The proposed project includes widening the existing I-95 bridge over the Christina River and the approach roadway by approximately 30 feet. As indicated in our December 15, 2004 letter to you, the existing pier bents will be extended to accommodate the widened roadway. No additional piers will be added and the bridge waterway opening will remain the same, therefore, no additional fill will be added into the floodway.

The current FEMA Floodway model for the Christina River at this location indicates that the floodway width through the I-95 bridge is the same as the waterway opening (216 feet). Beyond the bridge, the fill slopes of the widened I-95 will not encroach upon the FEMA-designated floodway. *Therefore, this project will not introduce any new fill within the floodway of the Christina River.*

Using hard copy printouts of the current FEMA floodplain and floodway models for input, we have created electronic versions and have run duplicate current FEMA models on our computer system. Comparisons of the results are shown on the attached Table 1. As shown in this table, the results are very close, with a difference in water surface elevations of no more than 0.01 foot and no differences in the floodway widths.

We subsequently ran the proposed condition floodplain and floodway HEC-2 models to reflect the wider bridge and additional fill within the floodplain. The reach lengths at the I-95 bridge (HEC-2 Cross-Section 27039) were increased from 149 feet (existing bridge width) to 179 feet to match the proposed bridge width. The reach lengths upstream and downstream of the bridge were adjusted accordingly. Table 2 lists the reach lengths in the existing and proposed models. The XKOR coefficient for the proposed model was increased from 1.56 to 1.57 to account for the additional friction loss through the wider bridge. The only FEMA cross-section that would be affected by the proposed roadway widening is Cross-Section 24590. This cross-section was revised in the proposed models to reflect this additional fill in the floodplain.

The results of the proposed modeling are shown in Table 3. The results show that the proposed construction will neither increase the floodplain elevations nor floodway widths. This is due to the minimal amount of fill in the floodplain compared to the total available existing waterway area of the floodplain. In addition, the increased

Mr. Hap Ryan
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width of the bridge has negligible impacts on the water surface elevations upstream of the bridge.

In conclusion, there will be no filling within the floodway and the little amount of additional fill within the floodplain does not impact the floodplain elevations. This project, therefore, should meet FEMA criteria and not require a Letter of Map Revision.

We are including with this submittal a copy of the existing FEMA Flood Insurance Rate Map with the locations of the HEC-2 cross-sections shown; printouts of the duplicate and proposed HEC-2 models; Tables 1, 2 and 3 showing the comparisons between the current, duplicate and proposed models; and plots of the HEC-2 cross-sections.

If you have questions or comments concerning this submittal, please do not hesitate to contact me at (410) 728-2900.

Very truly yours,

RUMMEL, KLEPPER & KAHL, LLP



Seyed A. Saadat, P.E.
Associate,
Water Resources Engineering

cc: Terry Fulmer (DeIDOT);
Bill Hellmann (RK&K);
Owen Perry (RK&K);
Bob Palmer (RK&K);

SAS:djs
Encl.

Justin Reel

From: Eugene Bosley [ebosley@rkkengineers.com]
Sent: Tuesday, April 10, 2007 10:00 AM
To: nbergeron@rkkengineers.com
Cc: 'Carey Webb'; 'Justin Reel'; ssaadat@rkkengineers.com; rpalmer@rkkengineers.com
Subject: RE: Turnpike - New Castle County Floodplain permit
Attachments: DelTpk Floodplain Permit & Approval Letters.pdf

Nancy,

A permit was indeed required, as portions of the road fill lie within the Christina River floodplain. After some back-and-forth with NCC, Bob P. submitted (Seyed signed) the final application 2/28/05, and NCC/Hap Ryan approved it on 3/14/05. The application letter and faxed approval letter are attached.

Seyed has a full copy of the approved application materials in his files; I suspect Bob P. may have one as well as the original hardcopy of the approval. Note that item 2(b) in the approval letter has an obvious typo...it should read "there will be no significant loss of flood storage volume".

I pasted the relevant section of NCC Unified Development Code below my signature, including 40.10.314.E in green, to which Hap refers in his letter. We address those requirements automatically through normal design and construction practice.

Please call or email with any questions.

Thanks,

Gene

SECTION 40.10.314 FILLING IN THE FLOODPLAIN

Where permitted by Table 40.10.210 or as approved as a Beneficial Use, the following criteria shall apply to all land disturbing activities in the floodplain:

A. No fill shall be permitted in the floodplain; however, the Department may approve development or structures in the Zone AE floodfringe for approved uses listed as permitted in Table 40.10.210. To determine the impact of fill on the community, the floodplain permit application must include a detailed hydrologic and hydraulic study using methodologies and study parameters for the flow rates and incorporate existing and proposed cross sections accepted by FEMA. The applicant must secure a Conditional Letter of Map Revision from FEMA before the Department issues its approval. In addition, a registered professional engineer shall prepare the design specifications and plans for submission and certify that the structures are designed to withstand the hydrostatic and hydrodynamic forces anticipated during the one hundred (100) year flood event.

B. In Zone A floodplain, Zone AE floodfringe areas, and nondelineated floodplain areas no land disturbing activity will be approved unless the applicant demonstrates that the activity, when combined with all other existing and proposed land uses, will not increase the water surface elevation of the one hundred (100) year flood at any point in the community.

4/10/2007

C. No proposal to fill shall result in a net loss of floodplain storage on the subject parcel(s).

D. The total area of floodplain on a parcel(s) shall not be reduced by more than ten (10) percent in conjunction with channel improvements, flood storage, and detention which would have the effect of reducing the floodplain elevation.

E. All filling shall meet the following construction requirements:

1. The fill shall be protected against erosion by riprap, vegetative cover, sheet piling, or other approved practices to prevent erosion.

2. The fill shall be clean and compacted to minimize erosion potential. Grading shall meet the requirements of Chapter 12 of the New Castle County Code (Drainage).

3. Hydraulic openings, where not subject to state or federal design criteria, shall be designed to convey the one hundred (100) year flow unimpeded in conformance with Chapter 6 of the New Castle County Code.

F. Any filling in the FEMA floodplain in conflict with the FEMA FIRM panel, whether previously authorized or unauthorized, shall not be recognized by the Department until FEMA certifies a new floodplain limit so that no development occurs in violation of this chapter.

G. Where homes existing as of the date of adoption of this Article can be protected from existing flooding conditions by filling and grading activity not exceeding twenty (20) cubic yards per lot, such filling may be permitted by the Department provided all the requirements of Section 40.10.314 D above are met.

(Amended September 22, 1998 by Ordinance 98-080; amended October 5, 2004 by Ordinance 04-058; amended September 26, 2006 by Ordinance 06-060)

From: Nancy Bergeron [mailto:nbergeron@rkkengineers.com]
Sent: Tuesday, April 10, 2007 8:54 AM
To: rpalmer@rkkengineers.com; 'Gene Bosley'
Cc: 'Carey Webb'; 'Justin Reel'
Subject: Turnpike - New Castle County Floodplain permit

Hi Bob and Gene

We received a call from Darren O'Neill this morning asking about the status of the NCC Floodplain permit. Could either of you please provide the status? I'm not sure if a floodplain permit is even required for this construction.

Thanks
Nancy

Nancy Bergeron, P.E.
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4/10/2007

