I-64 Southside Widening and High Rise Bridge Phase 1 Project

Presentation of Tide Gate Design and Construction

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Agenda

- Project Overview
- Tide Gate Purpose and Concept Development
- Tide Gate Final Design and Operation
- Tide Gate Construction
- Questions
City of Chesapeake:
From: Rotunda Avenue, 0.3 mile east of I-264 interchange at Bowers Hill
To: Battlefield Blvd, 1.0 mile east of the I-464 Interchange
Project Scope

- Widen 9 miles of I-64 in Chesapeake from 4 lanes to 6 lanes
- Add one HOT lane in each direction
- Add one shoulder lane in each direction from Rte 17 (George Washington Highway) to Rte 190 (Great Bridge Blvd) (Adds 4th lane in each direction during peak congestion periods)
- New High Rise Bridge
- Retrofit existing High Rise Bridge for 1-way traffic
- Replace Great Bridge Blvd Bridge
- Widen 6 bridges on I-64
- New Tide Gate at Gilmerton Canal
Project Scope

- 0.3 miles east of I-264
- 1.0 miles east of I-464

Tide Gate

Hampton Roads District
Gilmerton Canal and Tide Gate Location
Tide Gate Purpose and Concept Development

• Early coordination with GCA and City
  - Met with City of Chesapeake on several occasions throughout the development of the tide gate concept
  - Met with GCA on 4/6/16, 10/26/16 (at DPH) and 3/20/17 to provide updates on the project and tide gate concept

• Purpose and Need
  - Communities adjacent to the Gilmerton Canal on the north side of the interstate experience flooding during storm events that occur during high tide
  - Tide gate will help mitigate flooding in these communities during this type of storm event

• Tide Gate Limitations
  - Designed to reduce flooding during moderate storm events that occur in combination with a high tide
  - Not designed to prevent flooding during extreme storm events
Hydraulics/Drainage Approach to Tide Gate Concept

- Runoff from the widening of I-64 will be treated for water quality and water quantity in accordance with the regulations of the Virginia Stormwater Management Program, such that the proposed project:
  - Will not increase runoff into the Gilmerton Canal north of I-64
  - Will not worsen the current performance of the Gilmerton Canal

- Additional measures will be implemented to mitigate flooding adjacent to Gilmerton Canal north of I-64
  - No new pipe connections that direct drainage to box culvert
  - No drainage discharged to Gilmerton Canal north of I-64
  - Close median inlet connected to box culvert
  - Install a tide gate at the southern end of the box culvert
Hydraulic/Drainage Analyses

• VDOT carefully evaluated the stormwater situation associated with the culvert under I-64 that is part of the Gilmerton Canal.
• VDOT and City of Chesapeake engineers performed detailed hydraulic analyses of the Gilmerton Canal.
• Results demonstrated that the tide gate will reduce the severity of flooding to the north of the interstate during high tides and heavy rainfall events, and that the gate will not increase flooding to the south of the interstate.
Existing I-64 Inner Loop
Existing I-64 Outer Loop
Existing Median Inlet
Existing Box Culvert
Tidal flow

North

Existing Conditions at the Gilmerton Canal (looking toward the High Rise Bridge)
Severe storms (hurricanes and nor’easters) will cause storm surges that cause catastrophic flooding.

High tide flow

High tidal anomalies can cause nuisance flooding

Existing Conditions at the Gilmerton Canal (looking toward the High Rise Bridge)
Tide Gate Final Design and Operation

- Proposed lane and median shoulder
- New storm drain systems to collect stormwater
- Existing median inlet (not shown) removed for proposed conditions
- Piped to the south
- Tidal flow
- The proposed tide gate closes to prevent high tides from flowing upstream, while still permitting stormwater to flow downstream towards Deep Creek

Proposed Conditions at the Gilmerton Canal (looking toward the High Rise Bridge)
Tide Gate Final Design and Operation

Proposed Conditions at the Gilmerton Canal (looking toward the High Rise Bridge)

Existing Box Culvert

Nuisance tidal flooding can be controlled

Tide gate closes when high tidal anomalies occur

Tidal flow blocked

North
Tide Gate Final Design and Operation

Proposed Conditions at the Gilmerton Canal (looking toward the High Rise Bridge)

Existing Box Culvert

Tide gate opens when storm flows rise and when the tidal surface normalizes.

Stormwater flows out

Flow

North
Tide Gate Construction

EQUIPMENT

- LIEBHERR LTM 1130-5.1, 127.3’ BOOM
- DIESEL HAMMER (D19-42)
- VIBRATORY HAMMER (HPSI-150)
- KOBELCO 210 EXCAVATOR

- WILL BE USED FOR PILE DRIVING, CONCRETE OPERATIONS, SETTING THE GATE IN PLACE, ETC..
PREPRATORY WORK

- CLEAR 80’ SECTION IN DITCH

- FILL & COMPACT IN WITH DIRT AND STONE

- DRIVE SHEET PILE RETAINING WALL FOR PAD

- DRIVE SOLDIER PILE RETAINING WALL ALONG I-64
SUBSTRUCTURE

CONSISTS OF:

- 4 EA 12” PIPE PILE
- 2 CONCRETE FOOTERS
STRUCTURE

- 10'-10” X 8'-10” BOX
- 7’ WALLS
- 1’ THICK WALLS AND SLAB
TIDE GATE

- 64”W x 69”T GATE
- 70.5”W FRAME
- ANCHORED INTO SIDE OF CULVERT
Stay Informed

• Visit the project website – www.64highrise.org
  ➢ Traffic alerts
  ➢ Past presentations
  ➢ Upcoming presentations
  ➢ Project cameras showing real time activity
  ➢ FAQs
  ➢ Sign up for e-blasts

• VDOT Hampton Roads Facebook Page/Group

• Contact Information:
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Questions?