

Maritime Work Plan for the High-Rise Bridge Construction

Version 6, 10/3/2018



I-64 Southside Widening & High Rise Bridge, Phase 1 Chesapeake, Virginia

Design-Build Project

State Project No.: 0064-131-811, P101, R201, C501, B662-B670, D637, D638

Federal Project No. NHPP-064-3(488)



Contract ID Number: C00106692DB93

Maritime Work Plan for the Construction of the High-Rise Bridge
I-64 Widening and High-Rise Bridge Project
October 3, 2018 - Version 6

GPC will be constructing the new High-Rise Bridge across the Elizabeth River south of the existing bridge. Our approach to construct the work builds upon the planning and outreach previously performed by VDOT. The Communication Plan is included in this Work Plan which has been developed with input from stakeholders to ensure the impacts to the users of the navigational channel are minimized. This Work Plan Includes: *a Navigational Channel Impact Plan and Communication Plan*

The intent of this narrative is to provide an overview of the elements that will be constructed, and the equipment/access required to construct each element. Included in the narrative is a brief description of the elements with graphics to depict the general sequence of work. This Work Plan includes the following Sections:

- CHANNEL LAYOUT
- IN WATER WORKPLAN
- CHANNEL EVALUATION PLAN
- COMMUNICATION PLAN

I. CHANNEL LAYOUT

The Layout of the proposed bridge, fender system, and navigation channel is shown on the attached Exhibits Fender layout and Channel Sections. The following changes will be necessary:

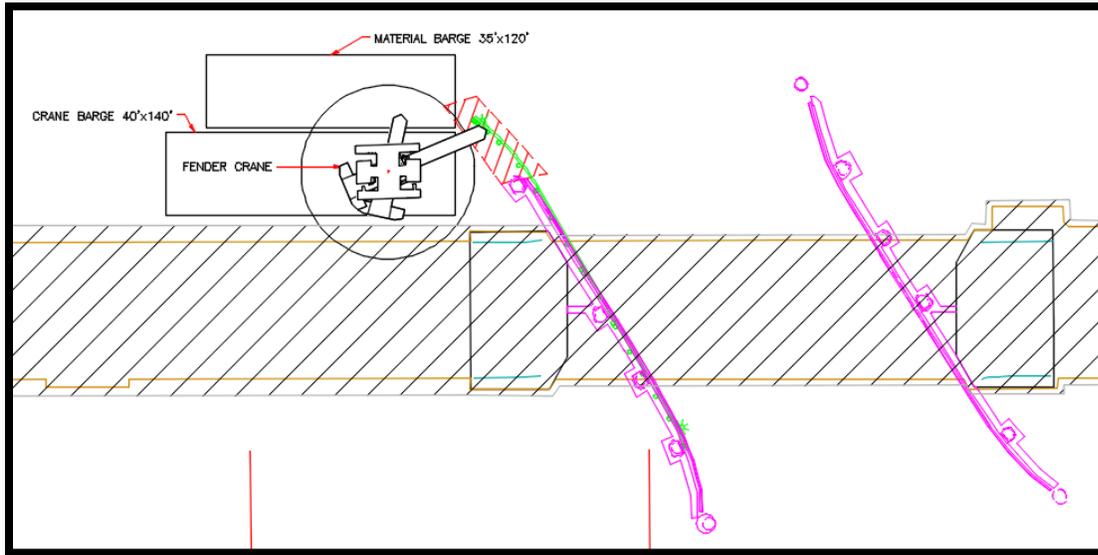
1. The new fender alignment on the northeast quadrant of the bridge crossing will be farther to the east than the existing Fender System.
2. The Navigation Channel to the south of the Bridge will be narrowed to accommodate the new Bridge crossing.

II. IN WATER WORK PLAN

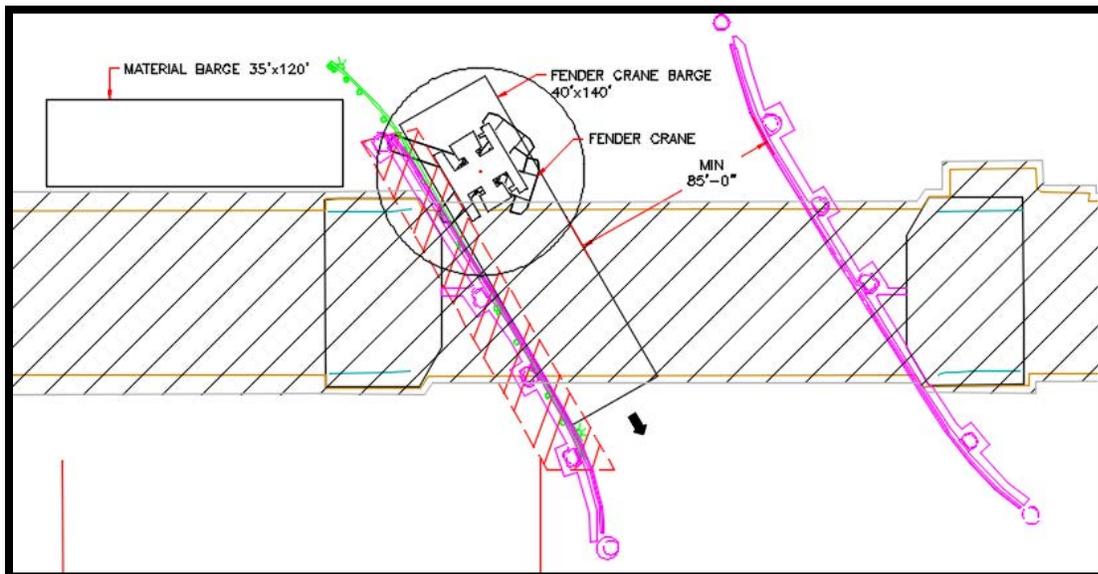
There are 15 piers that will support the bridge in the Elizabeth River and a new fender system. The elements of work that are required to construct the new bridge are as follows:

- Remove and replace the existing fender system
- Substructure
 - Pile driving
 - Pile cap construction
 - Column construction
 - Cap construction
- Superstructure
 - Beam erection

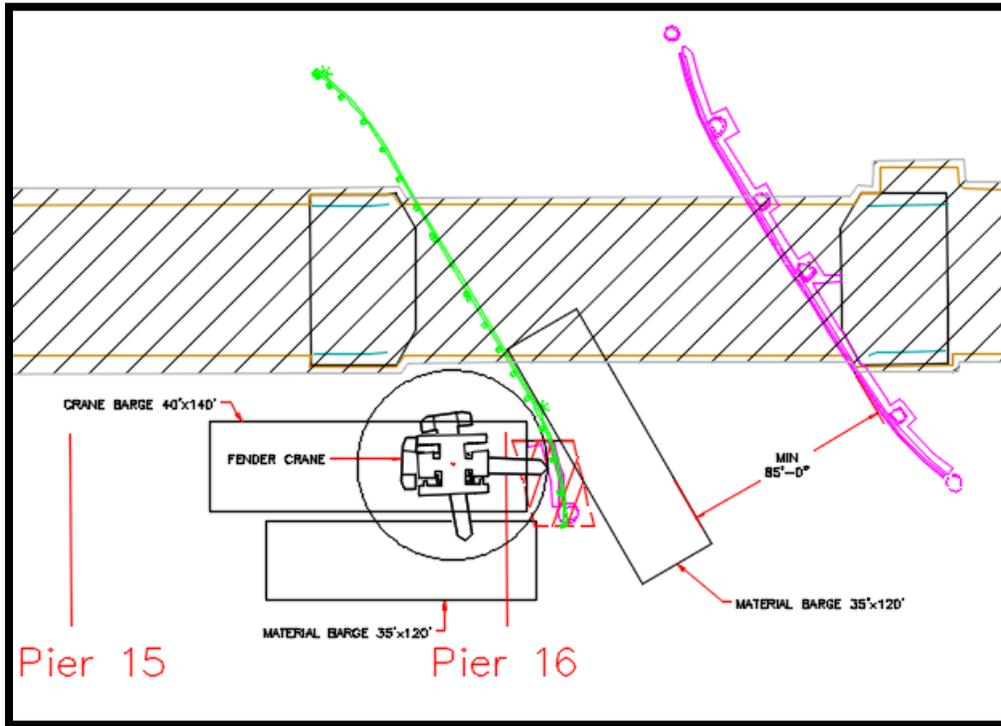
Stage 1: All work to be performed outside channel. Remove existing fender and replace with new.



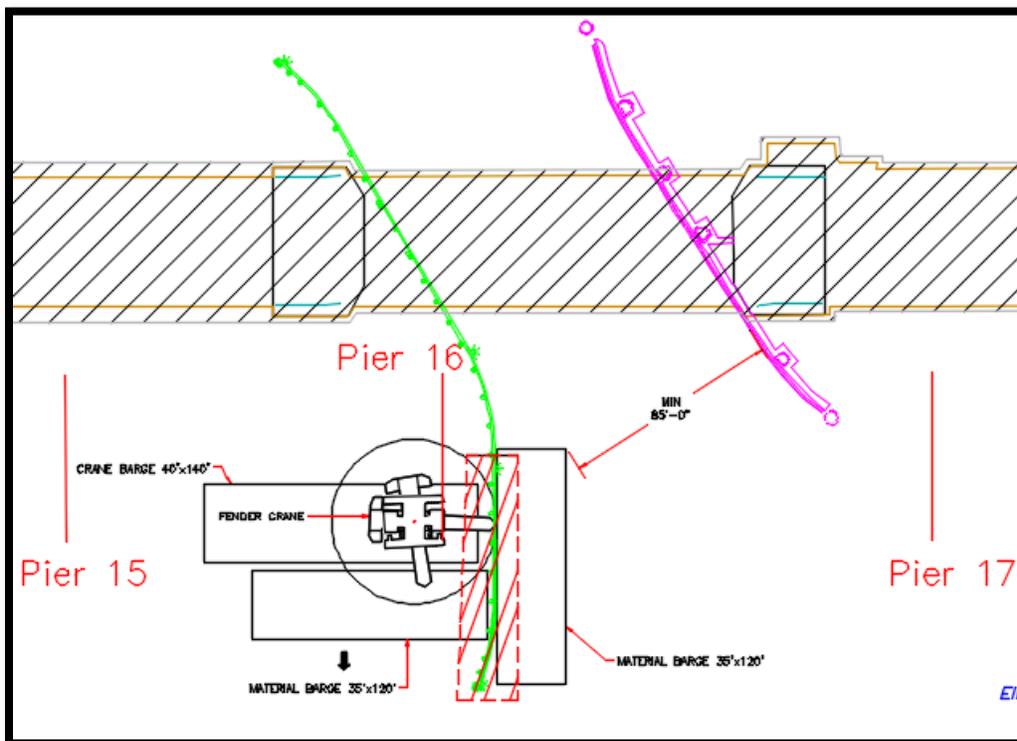
Stage 2: Work performed inside channel. Leave minimum 85' clear channel at all times. In emergency situations the operation can evacuate the channel within 2 hours. When coordinated with the appropriate agencies the channel can be evacuated and temporary pier protection installed in 4 hours.



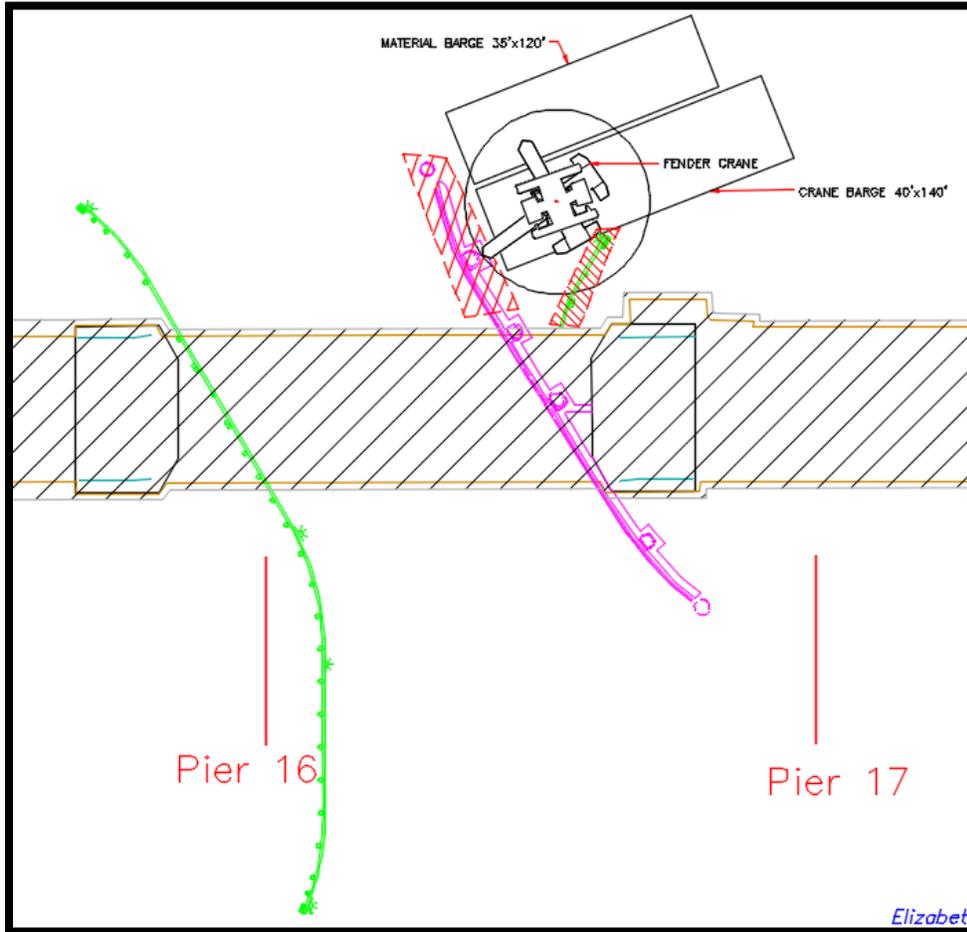
Stage 3: All work to be performed outside channel. Remove existing fender and replace with new.



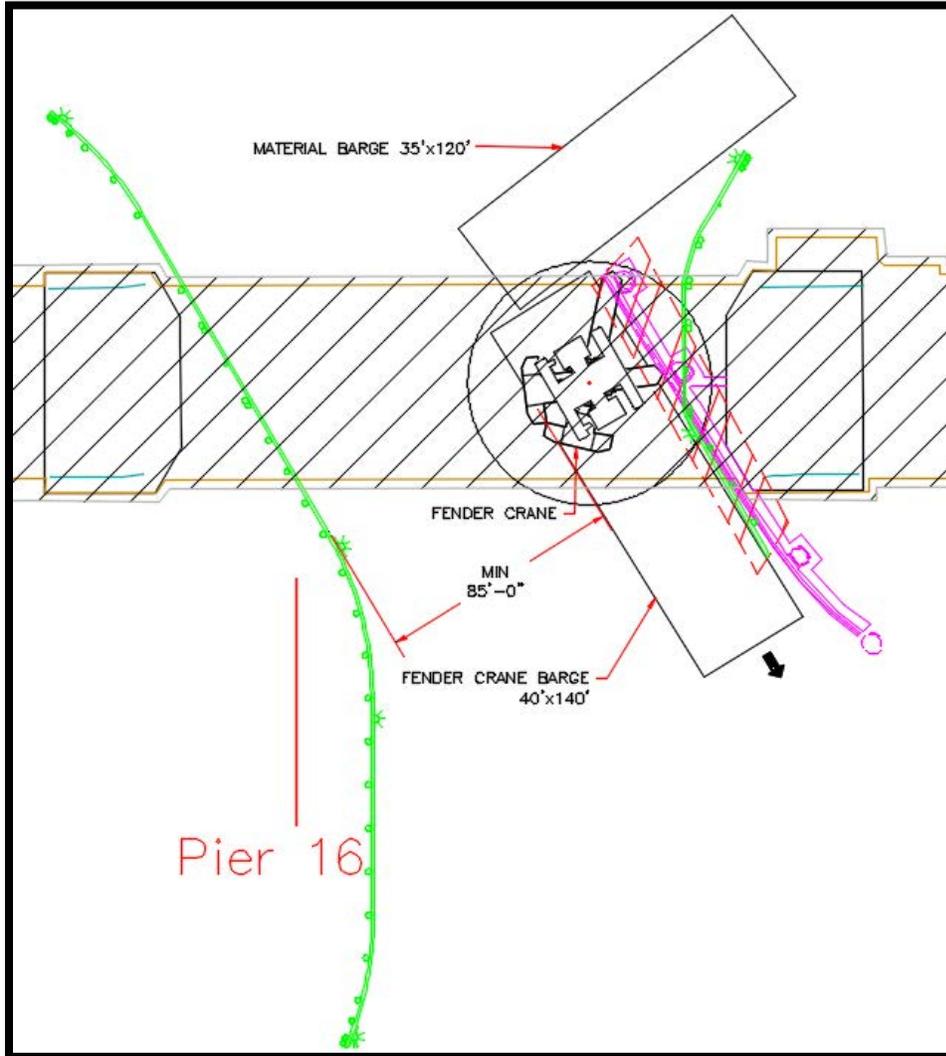
Stage 4: All work performed outside channel. Remove existing fender and replace with new.



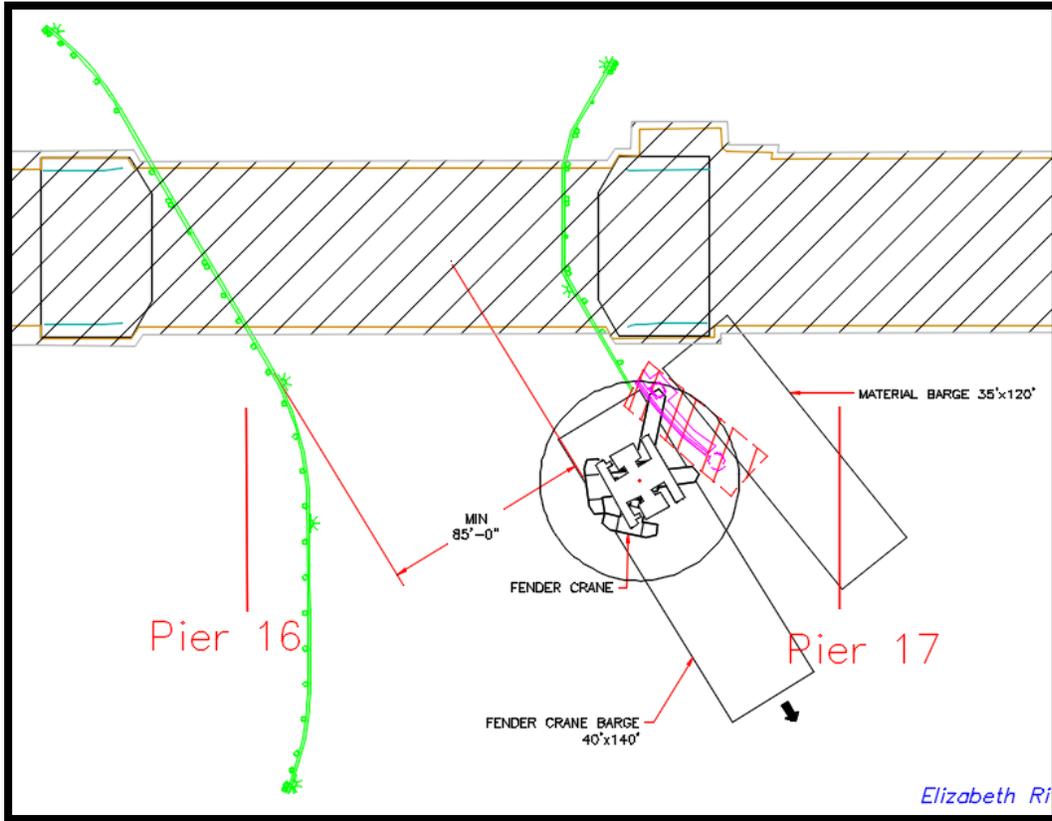
Stage 5: All work to be performed outside channel. Remove existing fender and replace with new.



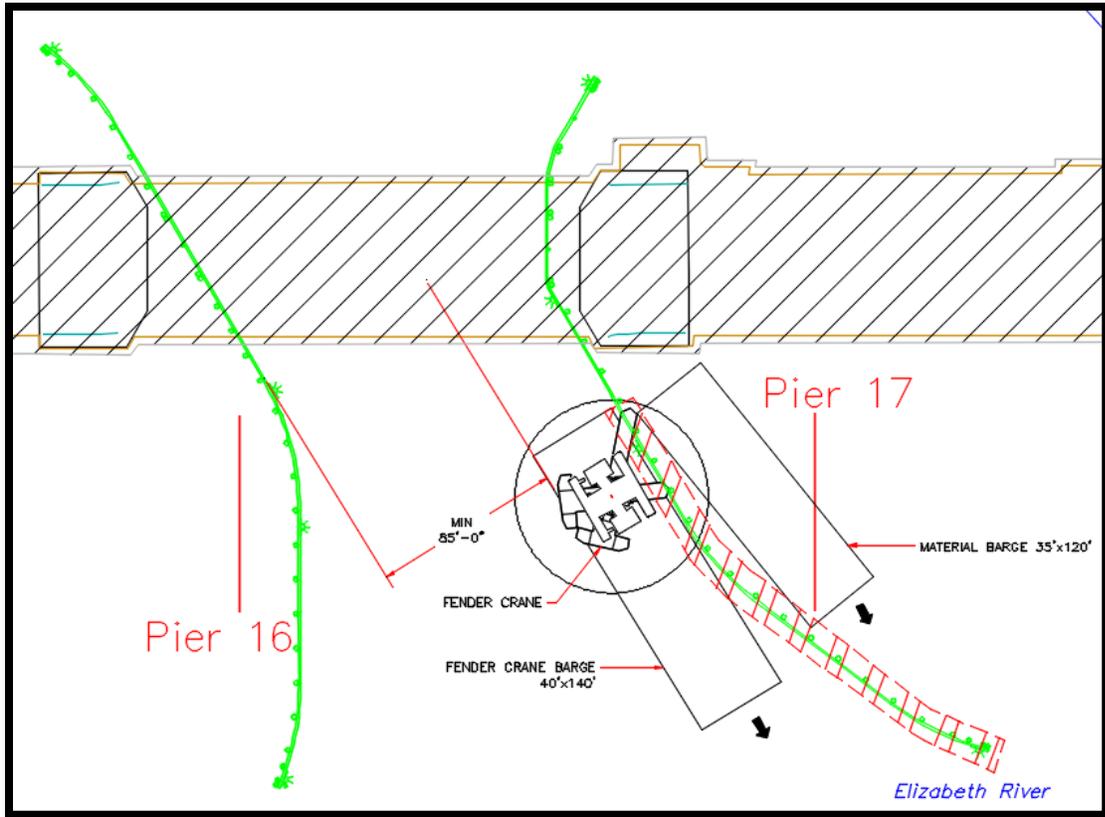
Stage 6: Work performed inside channel. Leave minimum 85' clear channel at all times. In emergency situations the operation can evacuate the channel within 2 hours. When coordinated with the appropriate agencies the channel can be evacuated and temporary pier protection installed in 4 hours.



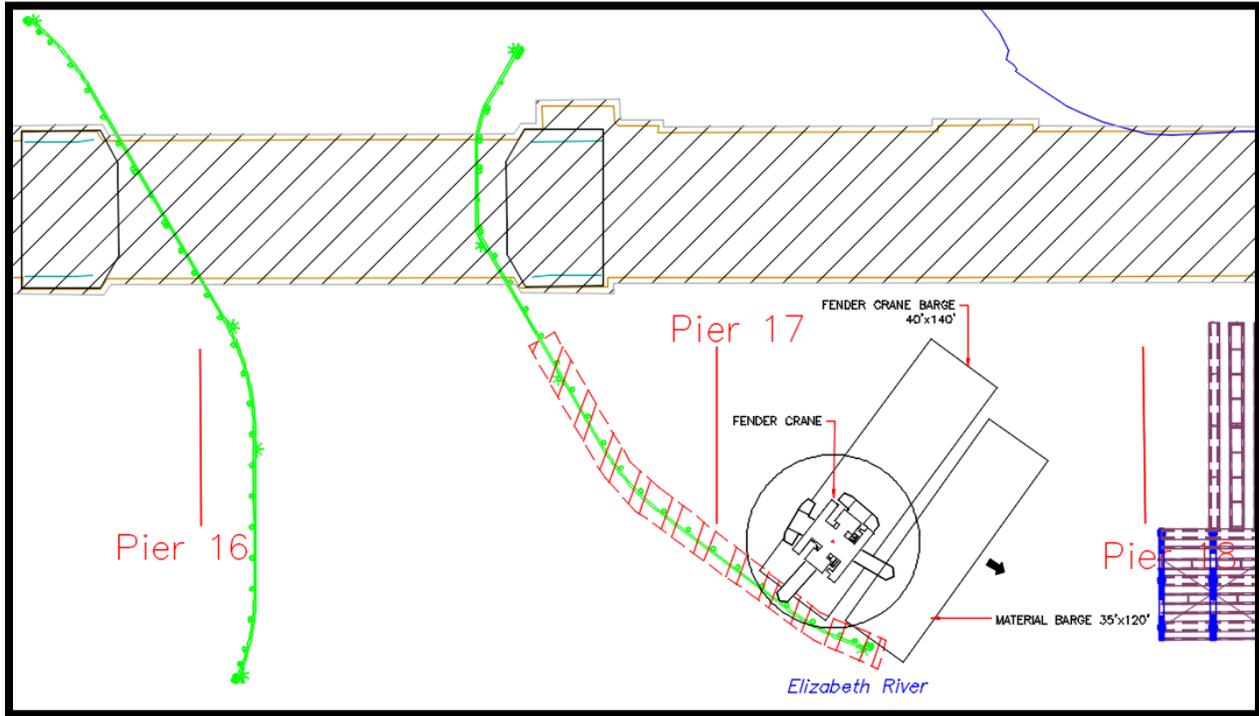
Stage 7: Work to be performed inside/outside channel. Leave minimum 85' clear channel at all times. In emergency situations the operation can evacuate the channel within 2 hours. When coordinated with the appropriate agencies the channel can be evacuated and temporary pier protection installed in 4 hours.



Stage 8: Work performed inside channel. Leave minimum 85' clear channel at all times. In emergency situations the operations can evacuate the channel within 2 hours. When coordinated with the appropriate agencies the channel can be evacuated and pier protection installed within 4 hours.



Stage 9: All work to be performed outside channel. Remove existing fender and replace with new.



Clearing the Channel in Emergencies:

During the fender removal and replacement sequence, communication with the stakeholders will be critical. The Communication Plan for this critical operation is detailed in Section IV below. In emergencies, the navigation channel can be cleared within 2 hours without temporary pier protection installed. If temporary pier protection is required for the passing vessel, GPC will install temporary rails and evacuate the channel within 4 hours.

Access to Bridge Construction Work:

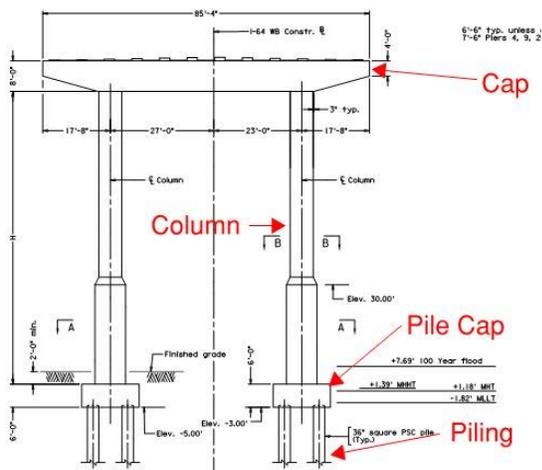
Access to work will be from temporary trestles constructed at the west and east shores in shallow water locations or from crane and material barges in the deeper water. Barge movements will be coordinated and will not occupy the navigational channel except for the fender sequence as depicted above and the structural steel in the navigational channel as depicted below. Material deliveries and equipment barges will cross the channel (east/west direction) and through the navigational channel to access a work location but will not be stationary in the channel.



Proposed West Trestle: Trestle to access first 5 piers on the shallow west shore.

Proposed East Trestle: Trestle to allow for water access and to aid in the erection of the east river span.

Bridge Substructure



The bridge substructure consists of the piling, pile caps, columns and caps. There is a total of 15 piers located in the waterway. The 5 piers located in the shallow water off of the West shore will be accessed with a temporary trestle that will be utilized for material transport and crane access. The trestle will consist of temporary driven steel pipe piles and support steel beams and timber mats to allow crane access

The figure to the left represents the typical substructure elements located in the Elizabeth River. These elements include 66" concrete piles, concrete pile cap, concrete columns and a concrete cap.

Piling

The piling in the river will be 66" concrete piles. The piles will be driven with a hydraulic hammer with a crane on a barge. All work will be done outside of the navigational channel. Piers located adjacent to the newly constructed fenders will be performed behind the fender system. The piles will be delivered via material barge. A floating template will be utilized to position the piles in the proper location. The template will be secured in place with spuds to ensure minimal movement to meet the pile tolerances. Each pier has either 6 or 8 - 66" pile per pier. The crane and material barge will always work outside of the navigational channel. Temporary moorings will be located where possible to secure the material barges. The locations will be coordinated with the permitting agencies and the stakeholders. The pile will be lifted off of the material barge, placed in the template and driven to the depth identified in the final design drawings.



Pile Driving: The figure above depicts a crane on a barge with an adjacent material barge. The crane will spud down adjacent to the pier and set the pile template. The piles will be driven and the barge will move to the next pier and repeat.

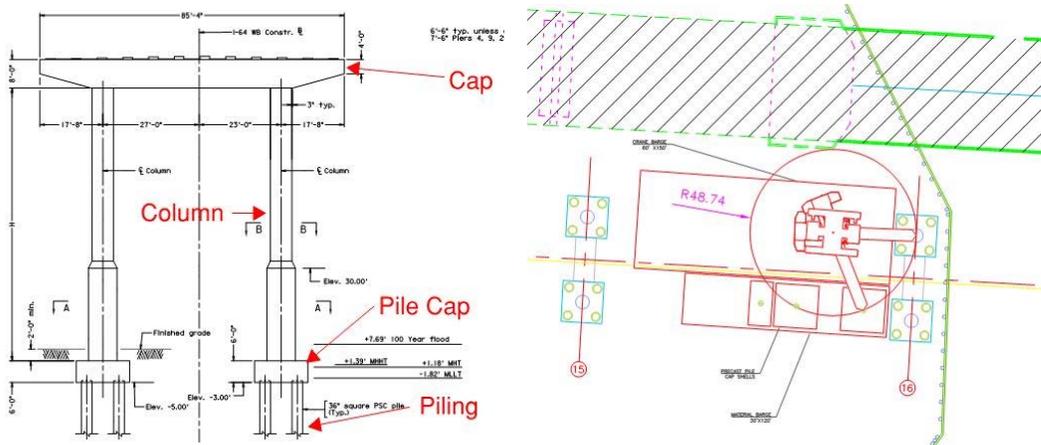
Pile Caps/Columns/Caps

Following the installation of the 66" piles, a crane on a barge will be mobilized to prepare and set the precast pile cap forms. All work will be done outside the navigational channel. Support collars will be placed on the driven piles to support the precast pile cap forms.

The cap forms will be set on the piles and the "tub" will be pumped dry to allow for construction activities to commence. Reinforcing steel will be placed and concrete will be placed in each precast cap form. The precast pile cap forms will remain in place as part of the structure.

Following the pile cap construction, the column work will commence. Each column will require up to 3 lifts to construct to full height due to the distance from the top of the pile cap to the pier cap. For each lift, a pre-tied rebar cage will be set in place and the formwork will be installed and secured. The concrete placement for each column will follow and the forms will be stripped once the concrete reaches the required strength. This cycle will be continued until the pier has reached the full height to the bottom of the pier cap.

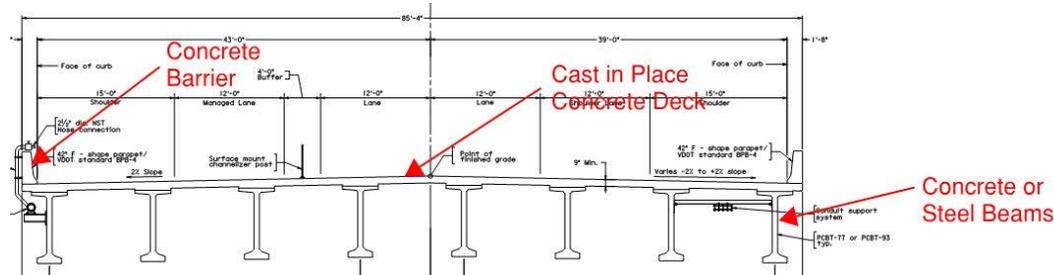
The pier cap activities will take place following the completion of the column construction at each pier. For the cap construction, a form will be placed on top of the columns to support the concrete placement. A pre-tied rebar cage will be set inside the forms by the support crane. Concrete will be placed in the cap form. The forms will be removed and relocated to the next pier once the required strength has been met.



Pile Caps/Columns/Caps: The figure to the left depicts the typical pier configuration with the pile cap, column and cap. The figure on the right depicts a typical crane on a barge with an adjacent material barge for the pile cap, column and cap work in the substructure. The crane will spud down adjacent to the pier and set forms and place concrete. There will be two substructure cranes as depicted on the right to allow 2 piers to be worked on at the same time.

Superstructure

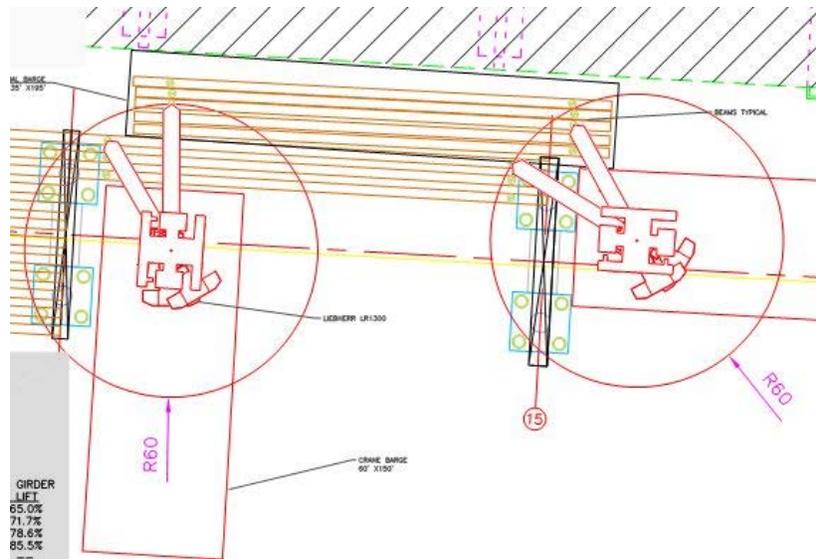
The bridge superstructure consists of the precast concrete and steel beams, cast in place concrete decks and cast in place concrete barrier.



Superstructure: The figure above depicts a typical superstructure element for the High-Rise Bridge. Depicted above is precast girders, cast in place concrete deck and concrete barrier.

Beam Erection

The beams over the navigational channel and each adjacent span are steel girders. The remaining beams are precast concrete girders. The erection of the beams outside of the navigational channel will not impact the maritime traffic. Each beam will be brought in via a material barge. Due to the size and weight of these beams each beam will required a two crane pick to set the beam in place on top of the pier caps. There are 8 girders in each span. The operation will start on the East shore and work towards the West shore.



Precast Beam Erection: The figure above depicts a typical beam erection sequence with 2 cranes on a barge. All work will be outside of the channel except for the span over the navigational channel as identified above.

Erection of the girders over the navigational channel will require a closure of the channel for safety reasons. There are 8 beams directly over the navigational channel and 16 Beams that cantilever over the navigational channels. Spans that cantilever over the navigation channel are shown in blue in figure 3 below, spans directly over the channel are shown in Red in Figure 3 below

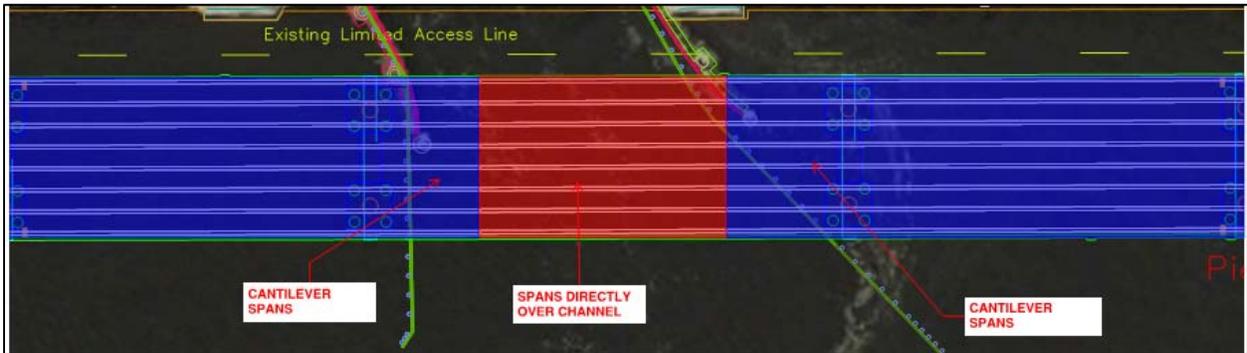
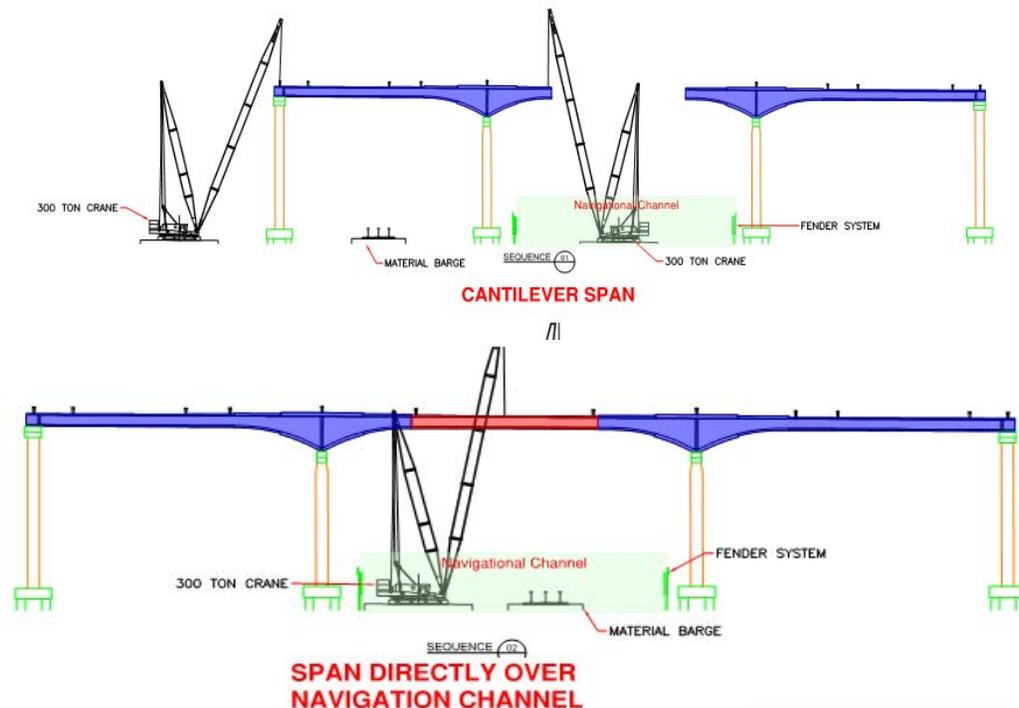
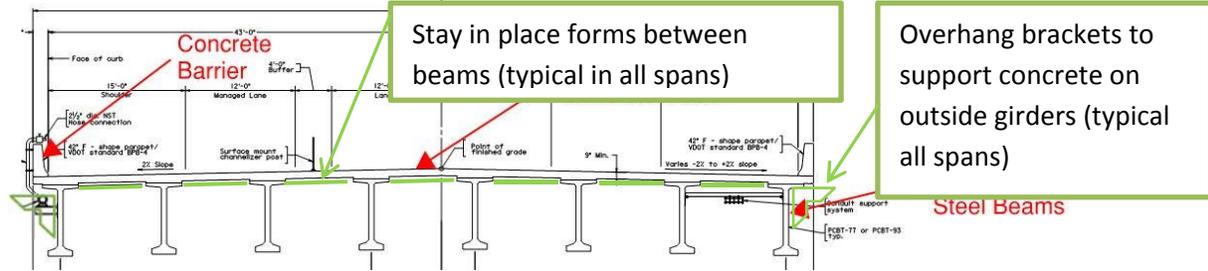


Figure 3- Spans over the Navigational Channel

The Beams that cantilever over the navigational channel will be erected in pairs, there is a total of 8 Pairs (16 beams) this will take approximately 2 hours to erect each pair. The Beams directly over the navigation channel will take approximately 2 hours to erect and secure each beam. There is a total of 8 beams. Coordination with the stakeholders will be done for all navigation channel impacts. Due to the weight of the beams a 2 crane pick is required for the cantilevered spans. Beam erection over the navigation channel is depicted below.



Cast in Place Decks



Superstructure: The figure above depicts a typical superstructure element for the High-Rise Bridge. Depicted above is precast girders, cast in place concrete deck and concrete barrier.

Once the beams are set, stay in place (SIP) forms will be installed between the girders to create a working platform for the reinforcing steel installation. Overhang brackets will be utilized to support the concrete that extends past of the beams on the outside girders. Reinforcing steel will be placed on each span and concrete deck will be poured.

Following the cast in place deck pour, cast in place concrete barrier will be placed on the outside edges of the deck. Reinforcing steel will be placed and formwork will be installed. Concrete will be poured, and the forms will be removed following the required concrete cure.

III. NAVIGATION CHANNEL IMPACT PLAN

The navigation channel will be impacted for the installation of the Fender System and the Erection of the Main Steel Beams. All impacts to the Navigation Channel will be coordinated with the US Coast Guard and Virginia Maritime Association (VMA) as early as possible as part of the overall project schedule which will be updated as described below.

FENDER INSTALLATION

The Navigation Channel will be occupied for the installation of fenders as described in the work plan above. A minimum of 85 feet of channel width will remain clear at all times. If necessary, the channel can be evacuated as described below.

- Channel will be evacuated within a maximum of 2 hours for emergencies
- Channel will be evacuated within a maximum of 4 hours to install Pier Protection

ERECTION OF MAIN STEEL BEAMS

The Navigation Channel will need to be closed as described below for the placement of the Main Steel Beams coordination with the stakeholder will be done.

SPANS CANTILEVER OVER NAVIGATIONAL CHANNEL

- Navigation channel will need to be closed for 2 Hours per pair and a total of 8 Pairs (16 Beams)

SPAN OVER NAVIGATION CHANNEL

- Eight (8) girders at 2 hours each
- Navigation channel will need to be closed for 2 Hours for each girder

LIGHTING DURING CONSTRUCTION

All vessels and barges will be lighted to meet or exceed Coast Guard requirements. Additionally, GPC will take care to position temporary construction work lighting so that it is directed away from boat operators in the navigation channels. GPC will request feedback via radio from any boat captains passing through while construction operations are lighted at night and adjust light positioning accordingly.

IV. COMMUNICATION PLAN

Purpose - This communications plan has been developed to establish communication protocols to be used during the in-water work to be completed associated with the High-Rise Bridge Project.

Daily phone call - GPC will call the U.S. Coast Guard, Sector Hampton Roads – Waterways Management Duty Phone at the beginning and end of every shift that GPC will be performing construction operations on the water. The call will be placed whether or not work is planned within the navigation channel.

US Coast Guard Duty Phone: (757) 374-3408

Initial Notice to Mariners – An initial Notice to Mariners (NTM) will be provided to the Virginia Maritime Association (VMA), the Coast Guard Sector Hampton Roads and Fifth Coast Guard District (DPW) approximately one month prior to the start of construction. The purpose of the initial Notice to Mariners is to inform the maritime community that the High Rise Bridge construction project is near and help all Elizabeth River users get information about the upcoming project. The initial Notice to Mariners will include:

1. On-Site Project Superintendent contact information including phone number
2. A general description of the project and the work to be constructed in the river
3. Long-range project schedule
4. Plan sheets illustrating construction location and project scope
5. Names of Vessels to be working in the area as available.
6. NOAA Chart #

Notices to Mariners for Critical Operations – GPC will provide the Virginia Maritime Association (VMA) the Coast Guard Sector Hampton Roads, Fifth Coast Guard District (DPW), and other stakeholders additional Notices to Mariners at least 7 days prior to any work that is anticipated to impact the navigational channel. The purpose of the Notices to Mariners for critical operations is to minimize any impact to the maritime community when High Rise Bridge work requires vessels to occupy the channel (such as fender construction and girder erection described above). These Notices to Mariners will include:

1. On-Site Project Superintendent contact information including phone number
2. A description of the operation in the channel
3. A schedule of the operation in the channel
4. Drawings illustrating the construction location
5. Names of Vessels to be working in the area as available.
6. NOAA Chart #
7. Any Marine Safety Bulletins issued by the Coast Guard

NTM Points of Contact – The Notices to Mariners described above will be sent by e-mail to the following recipients:

- Virginia Maritime Association – Contact David White: david@vamaritime.com
- Coast Guard Sector Hampton Roads – Contact: HamptonRoadsWaterways@uscg.mil
- Fifth Coast Guard District (DPW) – Contacts: Ward.B.Posey@uscg.mil, and cgd5waterways@uscg.mil
- US Army Corps of Engineers – Contact: eric.c.legaspi@usace.army.mil
- City of Chesapeake – Contact Michael Boron: mboron@CityOfChesapeake.Net
- Cottrell Contracting – Contact Joe Polis: jpolis@cottrellcontracting.com
 - (757) 547-9611
- Ireland Marine – Contact Jimmy Ireland: jimmyireland@hotmail.com
 - (757) 287-8997
- Dismal Swamp Canal Welcome Center – Contact Dona Stewart: dscwelcomecenter@camdencountync.ngov
 - 1-877-771-8333
- Dismal Swamp State Park – Contact Lisa Doepker: lisa.doepker@ncparks.gov
 - 1-252-771-6593
- Norfolk Dredging – Contact Lucas Diton: lditon@norfolkdredging.com
 - (757) 286-5930
 - The following addresses will also be copied:
 - pknowles@norfolkdredging.com, Ktwiford@norfolkdredging.com, mhaderty@norfolkdredging.com, snewton@norfolkdredging.com, plougheed@norfolkdredging.com

These contacts will also be notified by e-mail if a notice needs to be updated due to circumstances such as changes in schedule.

Monthly Progress Updates – GPC will provide the Virginia Maritime Association (VMA), the Coast Guard Sector Hampton Roads, and the City of Chesapeake Dept of Public Works (Local Sponsor) monthly updates on bridge construction throughout the project. The update will include a “look-ahead” schedule so that interested parties will know GPC’s plan for construction

Radio Communication - Tug vessels will monitor marine radio VHF 13 & 16 during construction hours.

Work Team Contact Information:

GPC will maintain a cell phone specifically for continuous availability in case of emergency. This phone will remain on-call during non-work hours should the Coast Guard or other authority need contact project personnel for any reason.

- Primary Point of Contact for Contractor 24/7: **Cell (757) 408-6746**
- Additional 24/7 Emergency Contacts in case of primary phone failure:
 - Cell (845) 661-0382
 - Cell (804) 640-2293

In case of emergency, an on-scene individual will contact 911 for emergencies on land or the U.S. Coast Guard for maritime emergencies. The USCG Sector Hampton Roads Command Center can be reached on VHF Channel 16 or by telephone at (757) 483-8567

Communication with Locks and Bridges – GPC will contact the Great Bridge Lock, Deep Creek Lock and Gilmerton Bridge operators via marine radio VHF 13 during critical operations (channel impacts during fender construction and girder erection) so that the lock and bridge operators can alert captains to the work in the channel. Great Bridge and Deep Creek Lock operators can alert northbound captains and Gilmerton Bridge operators can alert southbound captains.

Safety Boats – Safety Boats will monitor river traffic during working hours to intercept any wayward pleasure craft in the vicinity of the work area.

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PLAN
HRB 01

PRELIMINARY

DRAWN	STA	DATE	06APR2018	REV.	DESCRIPTION	BY	DATE
DESIGNED		DATE		0	PRELIMINARY	STA	06APR2018
CHECKED		DATE					
APPROVED		DATE					



I-64 SOUTHSIDE WIDENING &
HIGH RISE BRIDGE PHASE 1
VDOT PROJECT: 0064-131-811
CHESAPEAKE, VA

HIGH RISE BRIDGE
OVERVIEW

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