State of Maryland
Board of Public Works
Wetlands Administration
80 Calvert Street, Room 117, Annapolis, Maryland 21401
410-260-7791

Wes Moore
Governor

Dereck E. Davis
Treasurer

Brooke Lierman
Comptroller

William Morgante, PWS
Wetlands Administrator

John T. Gontrum, Esq.
Executive Secretary

WETLANDS LICENSE NO. 24-0757(R1)
MARYLAND TRANSPORTATION AUTHORITY

A modification (pursuant to COMAR 23.02.04.17.B.(1)) was made to the original license. Changes to original license language are shown with a strikethrough, and revisions shown with bold type.

The Maryland Board of Public Works authorizes you to:

I. Rebuild the Francis Scott Key Bridge **260 feet to the east of the original bridge alignment** ~~within the same alignment~~ within MDTA's existing right-of-way (ROW), extending approximately 1 mile over the Patapsco River. The bridge will be constructed to current design standards and consist of four 12-foot wide lanes, with two 10-foot wide outside shoulders and two-4-foot wide inside shoulders and will have an air draft of approximately 230 feet over the 800-foot-wide authorized Fort McHenry Navigation Channel and will result in 9.50 acres of coverage over the Patapsco, ~~12.71~~ **0.56** acres of permanent impact to State Tidal Wetlands, and ~~9.19~~ **5.98** acres of temporary construction impacts to State Tidal Wetlands. The ~~12.71~~ **0.56** acres of permanent impacts include the following:

a ~~8,736-square foot (0.2 acre) piers~~ **Six main span bridge piers supported on 130 (96-inch) piles resulting in 6,536 square feet of impact**;

b ~~Three 5,600-square foot (0.13 acre) piers with six~~ **Six main span pier protection fender structures supported on 278 (96-inch) piles resulting in 13,974 square feet of impact** ~~4,418-square-foot (0.10 acre) associated dolphins~~

c Four bridge piers supported on 72 (48-inch) piles resulting in 904 square feet of impact;

d c ~~Two 96,768-square foot (2.22 acres) piers with associated stone fill;~~ **One bridge pier supported on 30 (48)-inch) piles resulting in 377 square feet of impact**;

e ~~d~~ ~~Two piers with associated fill totaling 264,560 square feet (6.07 acres) to support the 550-foot tall bridge towers and bridge span over the federal channel.~~ **One bridge pier foundation, on the bottom, resulting in 2,592 square feet of impact.**

The ~~9.19~~ **5.98** acres of temporary impact include the following:

f ~~e~~ ~~Approximately 400,000 square feet of temporary trestle on each shoreline that includes marine access piers on each shoreline and multiple finger piers along the trestle~~ **149,466 square feet (3.43 acres) of temporary trestle providing construction access from Sollers Point and 111,120 square feet (2.55 acres) of temporary trestle providing access from Hawkins Point each with multiple finger piers along the trestle**;

g ~~f~~ 1,200 36-inch temporary trestle piles;

h ~~g~~ 300 36-inch temporary mooring/template piles.

This License does not comment or opine on the full environmental impact of the allision, collapse of the Key Bridge, and subsequent activities, which remain subject to further investigation and are the subject of ongoing litigation.

Patapsco River, Francis Scott Key Bridge, Baltimore City and Dundalk, Baltimore and Anne Arundel Counties, Maryland

Issuance of this Tidal Wetlands License constitutes the State's determination that the authorized activities are consistent with the Maryland Coastal Zone Management Program (CZMP), as required by Section 307 of the Federal Coastal Zone Management Act of 1972, as amended [16 U.S.C. §1456]. Accordingly, the State concurs with the Licensee's certification in the Joint Permit Application that the project complies with and will be conducted in a manner consistent with the Maryland CZMP.

THIS LICENSE AUTHORIZES YOU TO PERFORM THE WORK ONLY IF YOU COMPLY WITH THE FOLLOWING SPECIAL CONDITIONS:

A. To protect important aquatic species in tidal waters, pile driving activities are prohibited between February 15 and June 15, inclusive of any year, unless specifically approved by the Tidal Wetlands Division (Division). If any in-water pile driving activities are requested during the restriction period, the Licensee shall coordinate with the Division and the Maryland Department of Natural Resources (DNR) for avoidance and minimization measures and shall receive approval from the Division prior to commencement of the activity.
B. To minimize disturbance to the wintering and staging waterfowl areas in tidal waters as depicted on Attachment I, in-water work is prohibited from November 15 through March 1 inclusive, of any year, unless specifically approved by the Division. If any in-water work is requested during the restriction period, the Licensee shall coordinate with the Division and DNR for avoidance and minimization measures and shall receive approval from the Division prior to the commencement of the activity.
C. If any mooring, pile driving, and in-water work overlap within the Fort Carroll Sensitive Species Project Review Area (SSPRA) as depicted in Attachment I, the Licensee shall coordinate with the Division and DNR's Environmental Review Program for minimization and avoidance measures and shall receive approval from the Division prior to commencement of the activity.
D. To protect **Fort Carroll Oyster Sanctuary and Oyster Restoration Sites** ~~Natural Oyster Bars (NOBs)~~, the Licensee shall not conduct in-water work within **the** 1,500**-foot Buffer** (500 yards) of the edge of ~~NOBs~~ ~~**or**~~ **oyster sanctuaries and the Oyster Restoration Sites** located within the Fort Carroll SSPRA as depicted in Attachment I during the periods of June 1 through September 30 and December 16 through March 14 inclusive, of any year, unless specifically approved by the Division. **This time of year restriction has been waived for geotechnical borings, test piles, trestle construction, and new bridge construction through March 15, 2027 within the Oyster Sanctuary and Oyster Restoration Sites** ~~**or NOB**~~ **1500-foot Buffer*;* however, no bottom disturbing activities shall be conducted within the boundaries of the Fort Carroll Oyster Sanctuary and Oyster Restoration Sites** ~~***or NOBs***~~ ~~**(natural oyster bar areas**~~ **identified on Attachment I) during the time of year restriction.** If any **additional** in-water work is required during the restriction period, the Licensee shall coordinate with the Division and DNR **ERP** for avoidance and minimization measures and shall receive approval from the Division prior to the commencement of the activity
E. Avoidance and minimization of impacts to tidal wetlands shall be emphasized throughout the remainder of the design and construction process.

F. Tidal In-Water Construction Plan (TIWC Plan): No activity that impacts regulated tidal resources shall commence prior to the Division's approval of a TIWC Plan. The TIWC Plan shall be submitted for review and approval at least 30 days prior to the commencement of any work authorized under this License. The Licensee shall implement and comply with the TIWC plan in accordance with the approved plan. The TIWC Plan shall ensure consistency with License conditions and water quality regulations. The TIWC Plan shall include detailed support for the implementation of appropriate practices to protect water quality, marine life, and estuarine habitat, and mitigation/recovery plans for unavoidable/unexpected impacts, and address the following at a minimum:

i. The use of best management practices to protect water quality, marine life, and habitat during and after construction such as bubble curtains and other applicable best management practices;

ii. Pile driving shall be performed in a manner that allows for a zone of passage to exist in the river at all times, **or as indicated in the approved TIWC Plan,** to allow migrating, resting, or foraging fish to continue their behaviors while the project is ongoing. Time of work restrictions **shall be** developed in consultation with the Division and DNR;

iii. Hold Points:

1. The TIWC Plan shall stipulate conditions leading to "hold points," which would stop pile driving, or other in-water work injurious to marine life until coordination has occurred with DNR's Environmental Review Program if any of the following is observed during or immediately (approximately 1 hour) after pile driving activity related to hammer activities:
   (a) Presence of ~~dolphin,~~ sea turtle, or sturgeon within the injury or behavioral modification zone- as shown in the approved TIWC Plan;
   (b) One stunned or dead sturgeon and/or dolphin;
   (c) Ten stunned or dead game fish or species considered to be in need of conservation per pile location, including all Striped Bass, Alewife, Blueback Herring, American Shad, and others as identified by DNR;
   (d) 40 stunned or dead non-game fish per pile location.
2. The TIWC Plan shall include detailed provisions for the required monitoring of the presence of dolphins, sea turtles, and sturgeon and for documenting and reporting injury or death in accordance with the above requirements. If any of the above are observed, the Licensee shall contact the DNR Environmental Review Program within 1 business day for agency coordination and adaptive management.
3. The Licensee shall submit a weekly report to the Division and DNR while in-water tidal construction activities are ongoing summarizing the work and documenting the total injured/killed fish, including species and size of all injured/killed fish, approximate location relative to where the pile driving or noise-generating activity was occurring, and time/date. A final report summarizing the fish kills associated with construction shall be submitted to the Division within 60 days of completion of the construction.
4. The TIWC Plan shall detail coordination and approval procedures for the release of hold points.
5. **The TIWC Plan shall detail provisions for dolphin protection in accordance with the Marine Mammal Protection Act and any Incidental Harassment Authorizations issued by NOAA Fisheries.**

iv. Noise management including provisions ~~for a "zone of safe fish passage," and~~ for the reduction of in-water noise;

v. Construction plans for in-water work shall be submitted for review and receive approval from the Division prior to the start of construction for each plan set and shall follow the submittal requirements listed under Special Condition 13;

vi. The Licensee shall comply with all approved plans, best management practices, and avoidance measures, and the project shall comply with all relevant water quality standards listed in COMAR at all times;

vii. The TIWC Plan can only be modified upon approval by the Division;

viii. Process for submission, agency review, and approval of in-water construction plans, revisions, and, if necessary, permit modifications.

G. The Licensee shall provide compensation for fish mortality. The Licensee shall provide payment into a Special Fund as designated by DNR. Monetary values associated with fish kills shall be evaluated in accordance with the Fish Mortality Mitigation Cost Table depicted in Attachment II.

H. Water Quality Monitoring Plan (WQM Plan):
Ensure water quality standards are maintained in tidal waters during the duration of the Project.

a. No activity that impacts tidal regulated resources shall commence prior to the Division's approval of a WQM Plan. The WQM Plan shall be submitted at least 30 days prior to the commencement of any work authorized under this License. The Licensee shall implement and comply with the WQM plan in accordance with the approved plan. The WQM Plan shall ensure consistency with the conditions of this License.

b. The WQM Plan shall contain the water quality criteria and benchmarks for which the Project shall be monitored and documented to ensure consistency with the requirements of the Clean Water Act, COMAR 26.08.02, and conditions in this License, including, at minimum, applicable total suspended solids/turbidity, temperature, dissolved oxygen, conductivity, salinity, and pH criteria.

c. The WQM Plan shall also contain monitoring methodology, monitoring locations, reporting schedule(s), quality assurance/quality control procedures, and corrective action plans.

d. The WQM Plan can only be modified upon approval by the Division.

I. **Significant**/Severe Weather and Flood Action Plan (SWFA Plan):
Ensure water quality standards are maintained during significant weather events.:

a. No activity that impacts regulated resources shall commence prior to the Division's approval of a SWFA Plan. The SWFA Plan shall be submitted at least 30 days prior to the commencement of any work authorized under this License. The Licensee shall implement and comply with the SWFA plan in accordance with the approved plan. The SWFA Plan shall ensure consistency with these License conditions.

b. The SWFA Plan shall include the following:

ix. Weather and the possibility of a rainfall/wind event shall be monitored on a daily basis, seven days a week through the National Oceanic and Atmospheric Administration. When a significant weather event is forecast, appropriate actions shall be taken to protect water quality including review and repair of erosion and sediment control measures, securing all equipment, addressing material storage and stockpile areas, and other sources of potential pollution. A significant weather event is a greater than 50 percent chance of 1 inch or more rainfall forecast during a 24-hour period within the watershed or probability of gale force winds.

x. Storm surges - Identify and address areas susceptible to storm surge and make provisions to remove materials, equipment, and other potential contaminants prior to inundation.

xi. No equipment, construction materials, or hazardous materials, including fuel for equipment and pumps, shall be stored within the 100-year floodplain unless otherwise approved.

c. The SWFA Plan can only be modified upon approval by the Division.

J. Prior to the start of construction, the Licensee shall retain a minimum of one qualified full-time Independent Environmental Monitor (IEM) who is independent of the Licensee, design consultants, and construction contractors working on the project. The Licensee shall retain an IEM(s) to assess compliance with all conditions of this License and other applicable permits and environmental regulations. The Licensee shall develop a project-specific IEM Manual detailing all IEM responsibilities and procedures and submit the manual to the Division for review and approval prior to implementation. The Division shall be provided the opportunity to review the qualifications of the IEM(s) proposed by the Licensee and provide concurrence that the candidate is qualified to perform the IEM role. More than one IEM may be needed to adequately staff the project depending on schedule and construction phasing. The IEM(s) shall

a. Review design submittals and construction activities for compliance with all conditions of this License and other applicable permits and environmental regulations;

b. Report findings directly and concurrently to the Division and the USACE, notifying them and the Licensee immediately of any reported or observed violations or noncompliance issues within the terms or conditions of this License, or approved plans and specifications;

c. Assist with and verify the Licensee's monitoring of potential impacts on aquatic life resulting from construction activities.

d. Document impacts to regulated resources by developing and maintaining a detailed tracking list of impacted resources;

e. Assist with the identification of ongoing opportunities for further avoidance and minimization of impacts to regulated environmental resources and protection of water quality;

f. Assist with the identification of any marine life injuries related to construction activities.

K. Construction Plans

Submit approved plans impacting tidal wetlands before construction. Each plan submission shall include a brief summary of avoidance and minimization efforts, or, for plans that have been previously reviewed by the Division, a summary of plan changes related to regulated resources. Ensure water quality standards are maintained during significant weather events.:

a. Stormwater Management (SWM) Plan: Submit the final SWM Plans to the Division prior to beginning SWM construction activities. The final stamped plans, and any proposed modifications to those plans, shall be submitted to the Division.

i. No SWM structures shall be placed in any tidal wetlands.

b. Erosion and Sediment Control Plan: Submit the approved construction plans and subsequent modifications to the Division.

c. Approved Plans: The Licensee shall develop and maintain a searchable database of approved plans (including all revisions) for use by the Division and other agencies. The database must segregate the latest approved plans from previous versions so that reviewing personnel can reliably determine the most current plans.

L. A pre-construction meeting shall be held with the Division, MDE Compliance Program, the USACE, MDTA, the IEM, BPW Wetlands Administration, other agency stakeholders as available, and MDTA's primary contractors and subcontractors to provide the opportunity for all to review and discuss the construction plans and license conditions. All meeting participants shall be notified of this meeting a minimum of 14 days prior to the date of the meeting.

M. The Licensee shall install appropriate hazard notification, visibility, and safety requirements on all temporary pilings, temporary structures, or monitoring devices in tidal waters.

N. The use of barges, trestles, or other structures and equipment by the Licensee shall not impede the free flow of navigation on the Patapsco River unless approved by the U.S. Coast Guard.

O. The Licensee shall not allow debris or construction material to enter any tidal wetlands. The Licensee shall implement best management practices and measures such as suspended netting, skip pans, and containment barges to minimize the quantity of material entering these waterways. The Licensee shall immediately remove all debris inadvertently introduced into tidal wetlands as a result of any construction activity. Debris shall be disposed of at an approved upland disposal **s**ite and in a manner that does not adversely impact surface or subsurface flow into or out of tidal wetlands.

P. The Licensee shall submit a General Discharge Permit application (Maryland General Permit No.15-MM) to the Water and Science Administration, Industrial Discharge Permits Division for review and approval, as determined necessary by MDE, prior to the commencement of work at the facility related to the use of any on-site concrete batch facility. The Licensee shall send confirmation of the determination to the Division by MDE's Industrial Discharge Permits Division.

Q. The Licensee shall obtain approval from MDE for any proposed dredging activities prior to conducting any dredging by submitting a modification to the tidal wetlands license. When applying for authorization from MDE for dredging, the Licensee shall provide detailed information on any proposed dredging method and locations including dredge area, volume of material, and proposed depths, to MDE. The biological, chemical, and physical characteristics of proposed dredging material and sites shall be evaluated and submitted to MDE in a sampling plan for review and approval before starting dredging activities.

R. Mitigation is required for impacts related to the permanent fill placed in State tidal wetlands in accordance with COMAR 26.24. The Licensee shall submit the proposed mitigation plan to MDE and BPW Wetlands Administration once the final design has been determined and the final permanent impacts have been identified for review and approval. The Licensee shall implement the mitigation plan in accordance with the approved plan and schedule.

S. The Licensee shall remove all temporary structures from tidal wetlands, or cut at least two feet below the mean mudline, within 6 months following completion of construction under the subject license **and the demolition work under the associated Wetlands License 24-WL-0653.**

THIS LICENSE AUTHORIZES YOU TO PERFORM THE WORK ONLY IF YOU COMPLY WITH THE FOLLOWING STANDARD CONDITIONS:

1. Licensee shall conduct the authorized work in accordance with the plans and drawings dated as accepted by MDE on ~~November 4, 2024~~ **October 1, 2025**, which are hereby incorporated into this License.
2. Until the authorized work is complete, Licensee shall have available at the site a copy of this License including the plans and drawings.

3. This License constitutes Maryland's authorization to conduct the authorized work under the State Tidal Wetlands Law. This License does not bestow any other federal, State, or local government authorization.
4. Licensee shall have all proposed work above Mean High Water reviewed and authorized by the local county Department of Planning and Zoning or applicable agency.
5. Licensee shall notify MDE's Compliance Program by BOTH phone AND in writing of the following:
   (a) start date at least five business days before beginning work; and
   (b) completion date no more than five business days after project completion.
   Central Division: 410-537-3510 1800 Washington Blvd, Baltimore, MD 21230
6. Licensee shall comply with any regulations, conditions, or instructions issued by MDE, including any Water Quality Certification issued with respect to the authorized work.
7. Licensee shall conduct the authorized work in accordance with Critical Area Commission requirements. This License does not authorize disturbance in the Buffer. If authorized work will disturb the Buffer, Licensee shall have a Commission-approved or locally approved Buffer Management Plan before beginning the authorized work.
   "Buffer" means the 100-foot Critical Area Buffer and any expanded area that is immediately landward of the mean high-water line of the tidal waters or is immediately landward of tidal wetlands. The Buffer includes expanded contiguous area if the contiguous area includes steep slopes, hydric soil, or highly erodible soil, or otherwise meets the criteria of COMAR 27.01.09.01.E(7). "Disturbance" means any alteration or change to the land including any amount of clearing. Clearing includes vegetation removal, grading, and construction activity. **The Commission and MDTA have developed a Memorandum of Understanding (MOU) approving the Key Bridge Rebuild. All activities within the Critical Area and Critical Area Buffer will be performed in accordance with the MOU.**
8. Licensee may not fill, dredge, or otherwise alter or destroy tidal marsh or its vegetation unless this License specifically authorizes the activity.
9. Licensee may not stockpile material in State tidal wetlands/State tidal waters of the U.S.
10. Licensee shall allow unfettered public use of State wetlands/State tidal waters of the U.S. **unless approved by the U.S. Coast Guard for safety reasons.**
11. This License does not transfer a property interest of the State.
12. Licensee shall file a Miss Utility ticket for the proposed work at least 10 days before beginning work. *Miss Utility***:** 800-257-7777
13. Licensee shall ensure that structures (for example, piers and piles) removed from the site are taken to an upland disposal facility approved by MDE's Compliance Program.
14. If the authorized work impacts more than 5,000 square feet or includes 100 or more cubic yards of fill, Licensee shall conduct the authorized work in accordance with a locally approved Soil Erosion and Sediment Control Plan.
15. If the authorized work is not performed by the property owner, all work performed under this Tidal Wetlands License shall be conducted by a marine contractor licensed by the Marine Contractors Licensing Board (MCLB) in accordance with Title 17 of the Environment Article of Annotated Code of Maryland. A list of licensed marine contactors may be obtained by contacting the MCLB at *410-537-3249,* by email at MDE.MCLB@maryland.gov or by accessing the Maryland Department of the Environment, Environmental Boards webpage.
16. Licensee shall allow State officials and employees to make inspections at reasonable times and cooperate with those inspections.

17. This License is granted only to the Licensee. Licensee may transfer the license only with written approval from the Board of Public Works. If the Board of Public Works approves the transfer, the transferee is subject to all License terms and conditions.
18. Licensee shall indemnify, defend, and save harmless the State of Maryland, its officials, officers, and employees from and against any and all liability, suits, claims, and actions of whatever kind, caused by or arising from, the work this License authorizes.
19. The Board of Public Works or its Wetlands Administrator may modify, suspend, or revoke this License in its reasonable discretion. Licensee shall promptly comply upon notice of any such action
20. This License expires February 12, 2028.
    If the authorized work is not completed by the expiration date, all activity must stop.
    Note: A three-year license may be renewed for one additional three-year term if the Licensee requests an extension before the expiration date and all other conditions are met. A six-year license may not be renewed; instead, Licensee must reapply to MDE for a new license. Contact the Board of Public Works to determine if this License may be extended.
    Board of Public Works: 410-260-7791
21. In conducting work authorized under this license, licensee may not cause injury to private property; invade the rights of others; or infringe any federal, state, or local laws or regulations.
22. Licensee shall maintain any authorize structure in good condition and perform the authorized activity in a workmanlike manner in accordance with this license.
23. In conducting work authorized under this license, licensee shall eliminate or minimize adverse effects on fish, wildlife, and the natural environment.

By the authority of the Board of Public Works:

DocuSigned by:
William Morgante
D1F6E3178FDB4B0...

William Morgante
Wetlands Administrator

Effective Date: February 12, 2025
Approved as: Secretary's Agenda Item 8
Board of Public Works Meeting Date: October 1, 2025

I accept this License and all its conditions.

10/17/2025
Date

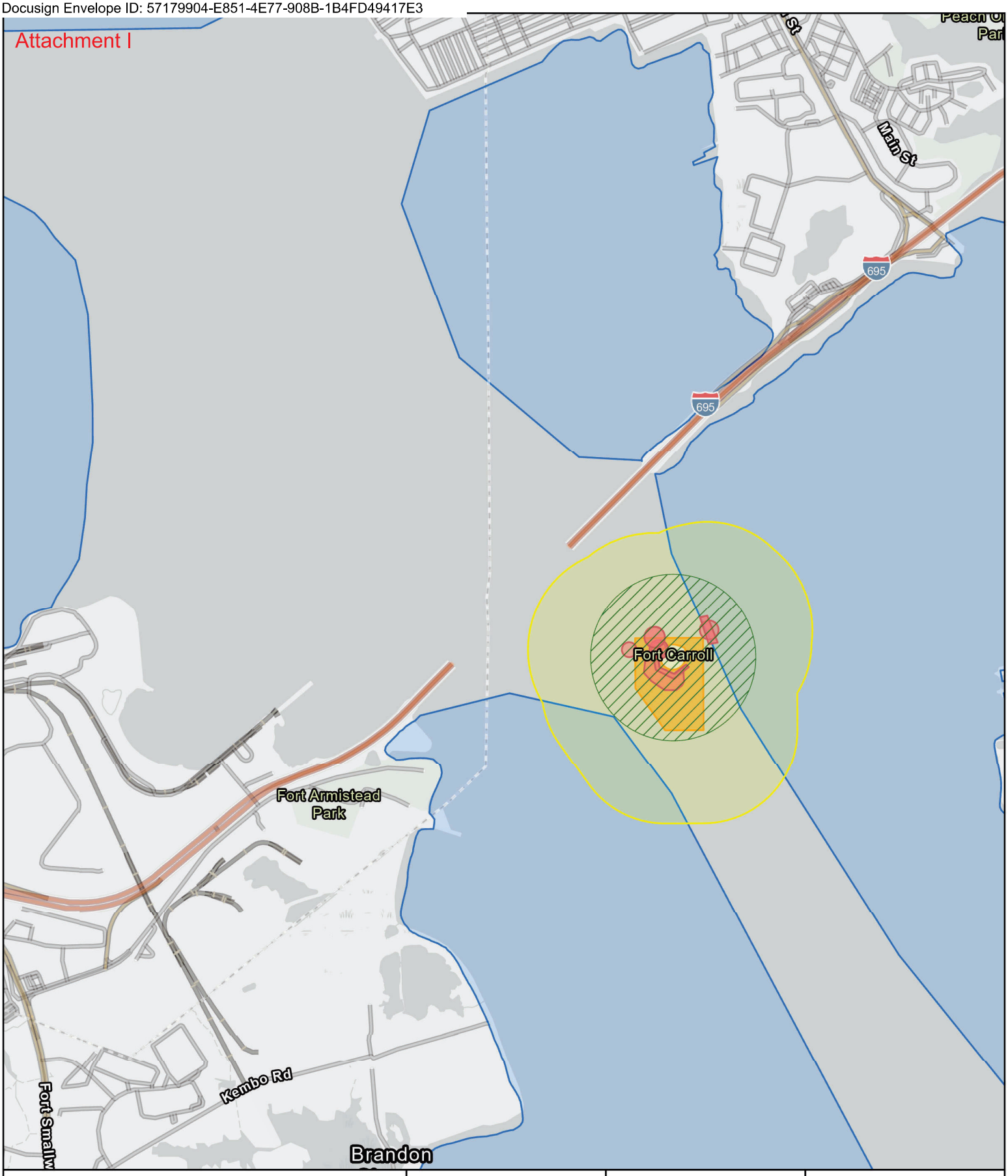
Signed by:
Brian Wolfe
63175F2A5AFA460...
Licensee (Signature)

Brian Wolfe
Name (Printed)

Director of Project Development
Title

bwolfe3@mdta.state.md.us
Email (to receive completed license)

Attachment I



Oyster Restoration Sites
Fort Carroll Oyster Sanctuary
Oyster Habitat 1500ft Buffer
Waterfowl Areas
Sensitive Species Project Review Area

N

0 1,000 2,000 ft

MDTA Maryland Transportation Authority

MDOT Maryland Department of Transportation State Highway Administration

Francis Scott Key Bridge Rebuild

Tidal Wetland Wildlife Protection Areas

July 2025

Attachment II
Fish Mortality Mitigation Cost Table

	Prices as of March 2022						Prices in COMAR 08.02.09.01					
	Under 4"	4"-6"	6"-8"	8"-10"	10"-12"	12"+ price/lb	Under 4"	4"-6"	6"-8"	8"-10"	10"-12"	12"+ price/lb
Bass, Largemouth	1.75	2.45	3.85	5.60	7.00	8.75	0.50	0.70	1.10	1.60	2.00	2.50
Bass, Striped*	2.63	4.38	6.13	7.88	10.50	17.50	0.75	1.25	1.75	2.25	3.00	5.00
Bluefish	1.75	2.98	4.03	5.25	7.00	11.73	0.50	0.85	1.15	1.50	2.00	3.35
Catfish, Bullheads	0.35	0.70	1.05	1.40	1.75	1.75	0.10	0.20	0.30	0.40	0.50	0.50
Catfish, Channel, White	0.53	0.88	1.23	1.58	1.93	3.50	0.15	0.25	0.35	0.45	0.55	1.00
Catfish, Blue, Flathead	Invasive						0.00	0.00	0.00	0.00	0.00	0.00
Crappie, Black, White	0.70	1.40	2.10	3.50	5.25	8.75	0.20	0.40	0.60	1.00	1.50	2.50
Croaker	0.53	1.05	1.58	2.10	2.63	2.63	0.15	0.30	0.45	0.60	0.75	0.75
Drum, Black, Red	1.75	2.98	4.03	5.25	7.00	11.73	0.50	0.85	1.15	1.50	2.00	3.35
Eel, American	0.18	0.35	1.05	1.05	1.05	1.75	0.05	0.10	0.30	0.30	0.30	0.50
Herring*	0.35	0.70	1.05	1.75	2.63	1.75	0.10	0.20	0.30	0.50	0.75	0.50
Menhaden	0.35	0.70	1.05	1.75	2.63	1.75	0.10	0.20	0.30	0.50	0.75	0.50
Perch, White	0.53	0.88	1.23	1.58	1.93	2.28	0.15	0.25	0.35	0.45	0.55	0.65
Perch, Yellow	0.53	0.88	1.23	1.58	1.93	2.28	0.15	0.25	0.35	0.45	0.55	0.65
Seatrout, all species	0.88	1.58	2.28	3.15	3.85	5.25	0.25	0.45	0.65	0.90	1.10	1.50
Shad, American*	0.35	0.70	1.05	1.75	2.10	2.98	0.10	0.20	0.30	0.50	0.60	0.85
Shad, Hickory*	0.35	0.70	1.05	1.75	2.10	2.98	0.10	0.20	0.30	0.50	0.60	0.85
Shad, Gizzard	0.07	0.14	0.21	0.28	0.35	0.53	0.02	0.04	0.06	0.08	0.10	0.15
Snakehead	Invasive						0.00	0.00	0.00	0.00	0.00	0.00
Spot	0.53	1.05	1.58	2.10	2.63	2.63	0.15	0.30	0.45	0.60	0.75	0.75
Sturgeon*						175.00						50.00
Sunfish, all species	0.70	1.23	3.50	6.13	10.50	10.50	0.20	0.35	1.00	1.75	3.00	3.00
	Under 4"		Over 4"				Under 4"		Over 4"			
Forage fish, shiners, daces, silversides, anchovies, etc.*	$3.50/thousand		$7/thousand				$1/thousand		$2/thousand			
	Under 5"		Over 5"				Under 5"		Over 5"			
Blue Crabs, Hard*	.87/each		1.74/each				.25/each		.50/each			
	Under 3.5"		Over 3.5"				Under 3.5"		Over 3.5"			
Blue Crabs, Soft, Peeler*	.87/each		1.74/each				.25/each		.50/each			
Soft-shell Clams	$70/bushel						$20/bushel					
Hard-shell Clams	.70/each						.20/each					
Oysters	$52.50/bushel						$15/bushel					
Grass Shrimp	$14/gallon						$4/gallon					
Diamondback Terrapins*	$3.49/pound						$1/pound					
Notes:												
COMAR values have been adjusted to reflect the cumulative rate of inflation from 1980 to March 2022 which is just under 250%												
https://www.usinflationcalculator.com/?mc_cid=1603cc288f&mc_eid=740ba2c29d												
Edited/Proposed by Jim Thompson 05.04.2022												

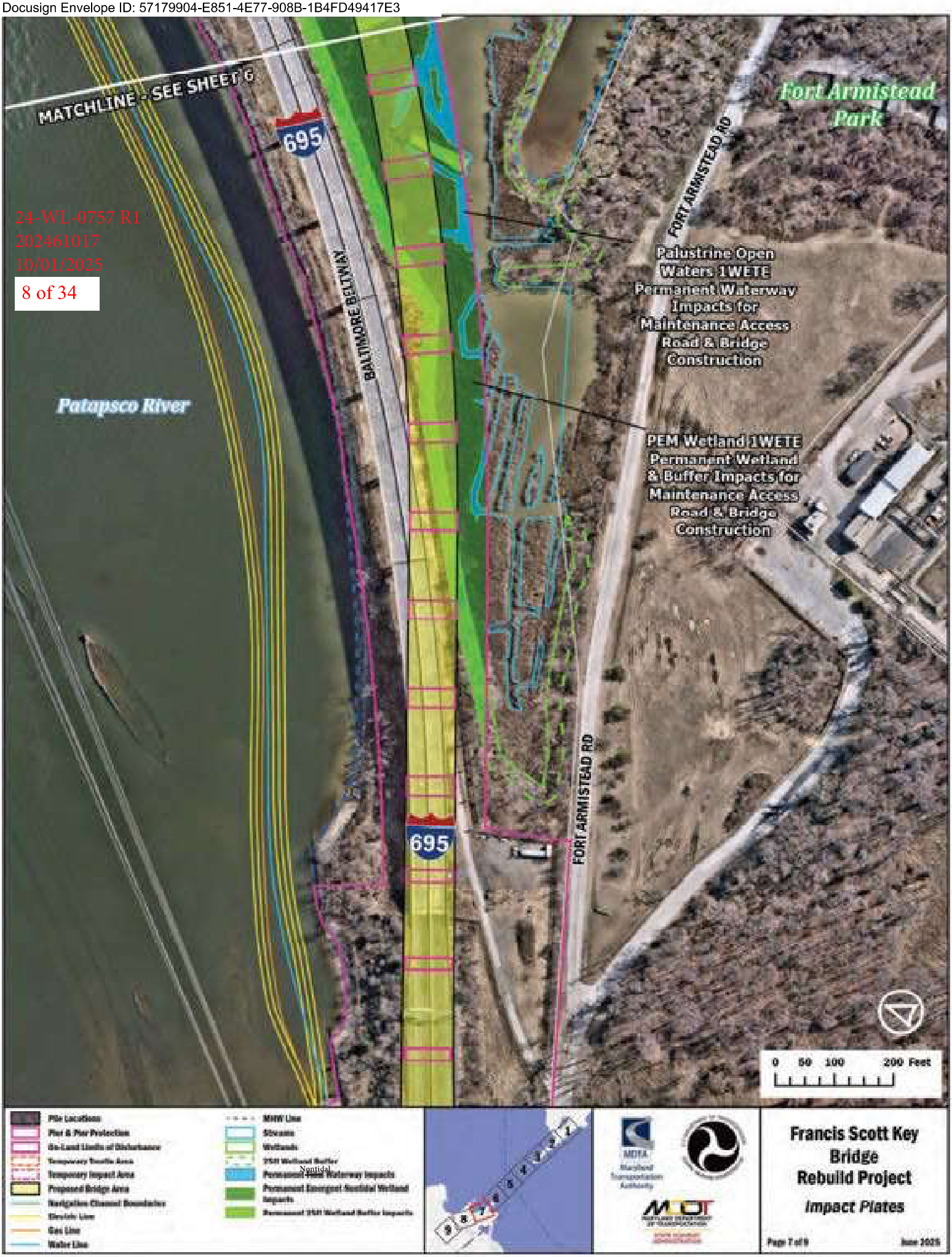
KEY BRIDGE REBUILD

Maryland Transportation Authority
MDTA

FSK Bridge Rebuild Project

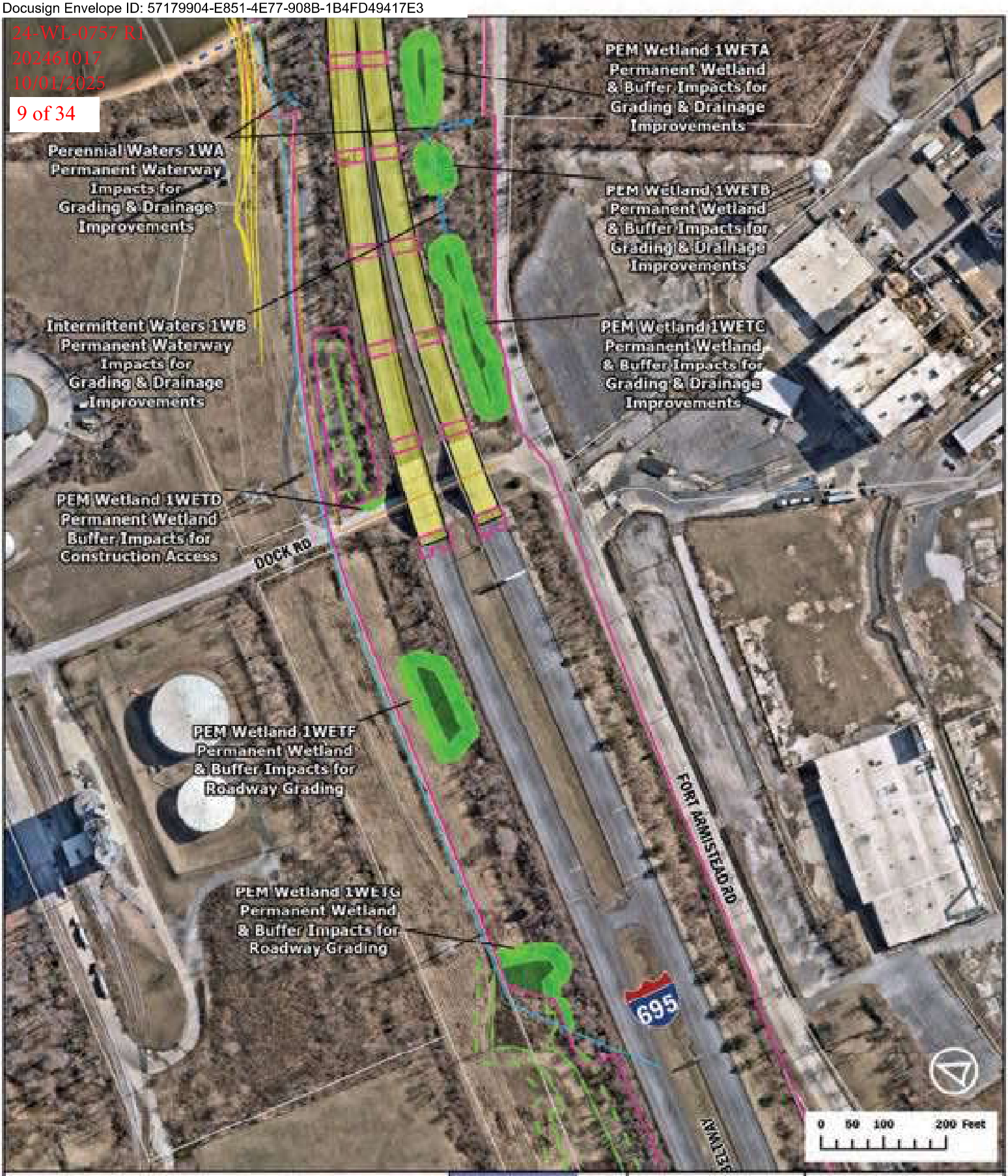
Appendix A: Project Vicinity Map

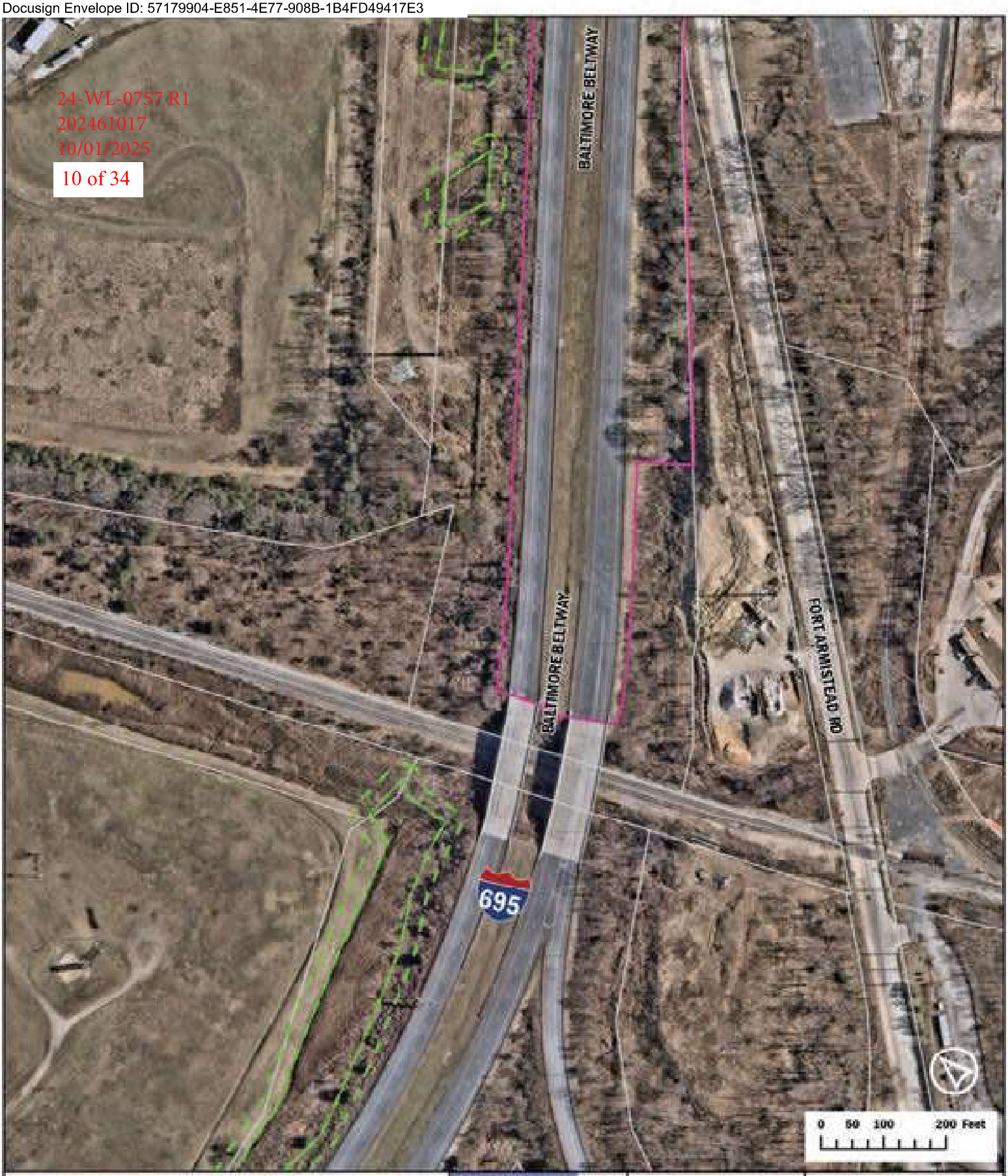
Baltimore City, Baltimore County, and Anne Arundel County, Maryland
June 2025



24-WL-0757 R1
202461017
10/01/2025

8 of 34



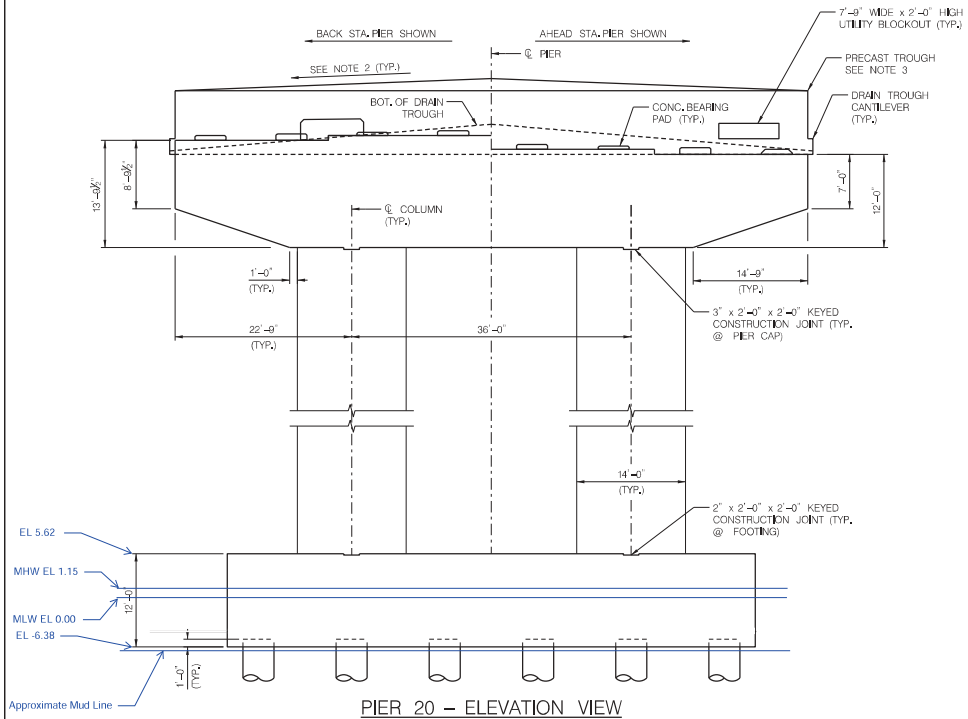


FOR INFORMATION ONLY

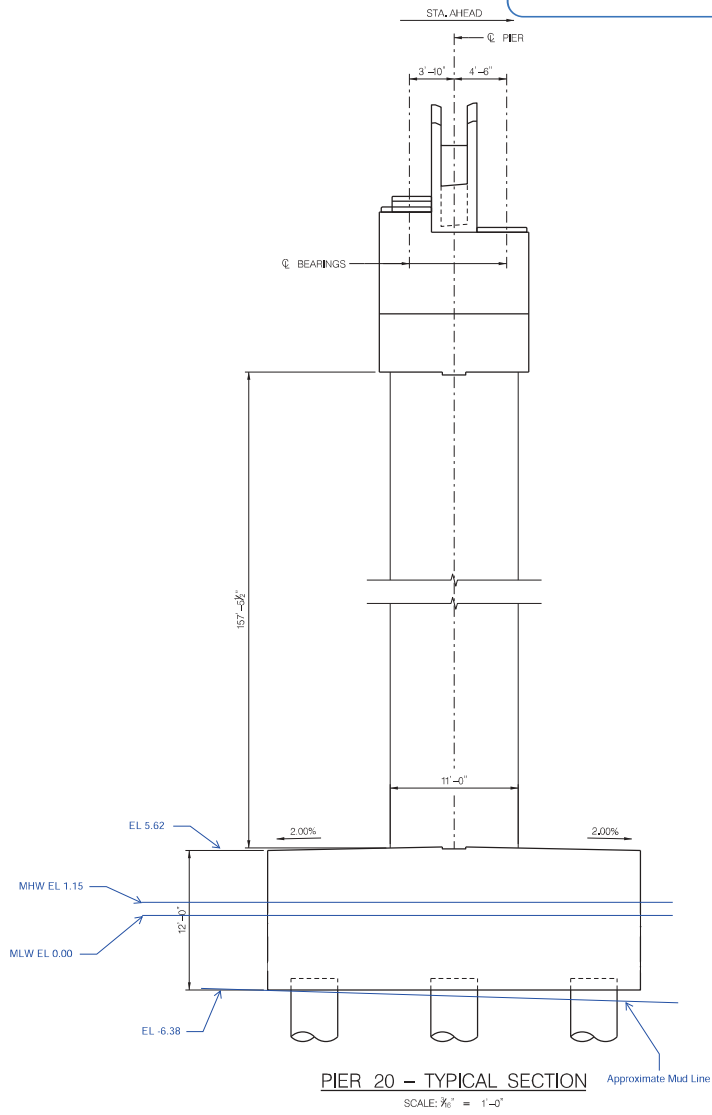
Pier 20 - Typical Section

24-WL-0757 R1
202461017
10/01/2025

11 of 34



PIER 20 – ELEVATION VIEW
SCALE: ⅜" = 1'-0"



PIER 20 – TYPICAL SECTION
SCALE: ⅜" = 1'-0"

SOUTH APPROACH MARINE

BY: Kevin.Maylum

Kiewit

QR CODE | PE STAMP | PE STAMP

Maryland Transportation Authority
Engineering Division

ADDENDUMS & REVISIONS			
NO.	DESCRIPTION	BY	DATE
A	PROOF OF CONCEPT SUBMISSION	KBC	01/03/2025
B	50% DESIGN & BCC IFE SUBMISSION	KBC	04/18/2025

FRANCIS SCOTT KEY BRIDGE REPLACEMENT I-695/MD 695 OVER THE PATAPSCO RIVER-BALTIMORE HARBOR
BALTIMORE CITY, BALTIMORE COUNTY & ANNE ARUNDEL COUNTY
PIER PLAN AND ELEVATION - PIER 20

DESIGNED BY KBC	DRAWN BY EJE	CHECKED BY AVM
CONST. REVIEW BY	DATE APRIL 2025	SCALE

CONTRACT NO. KB-4903-0000
DRAWING NO. STR-004-PR-001
SHEET NO. 12 OF 62

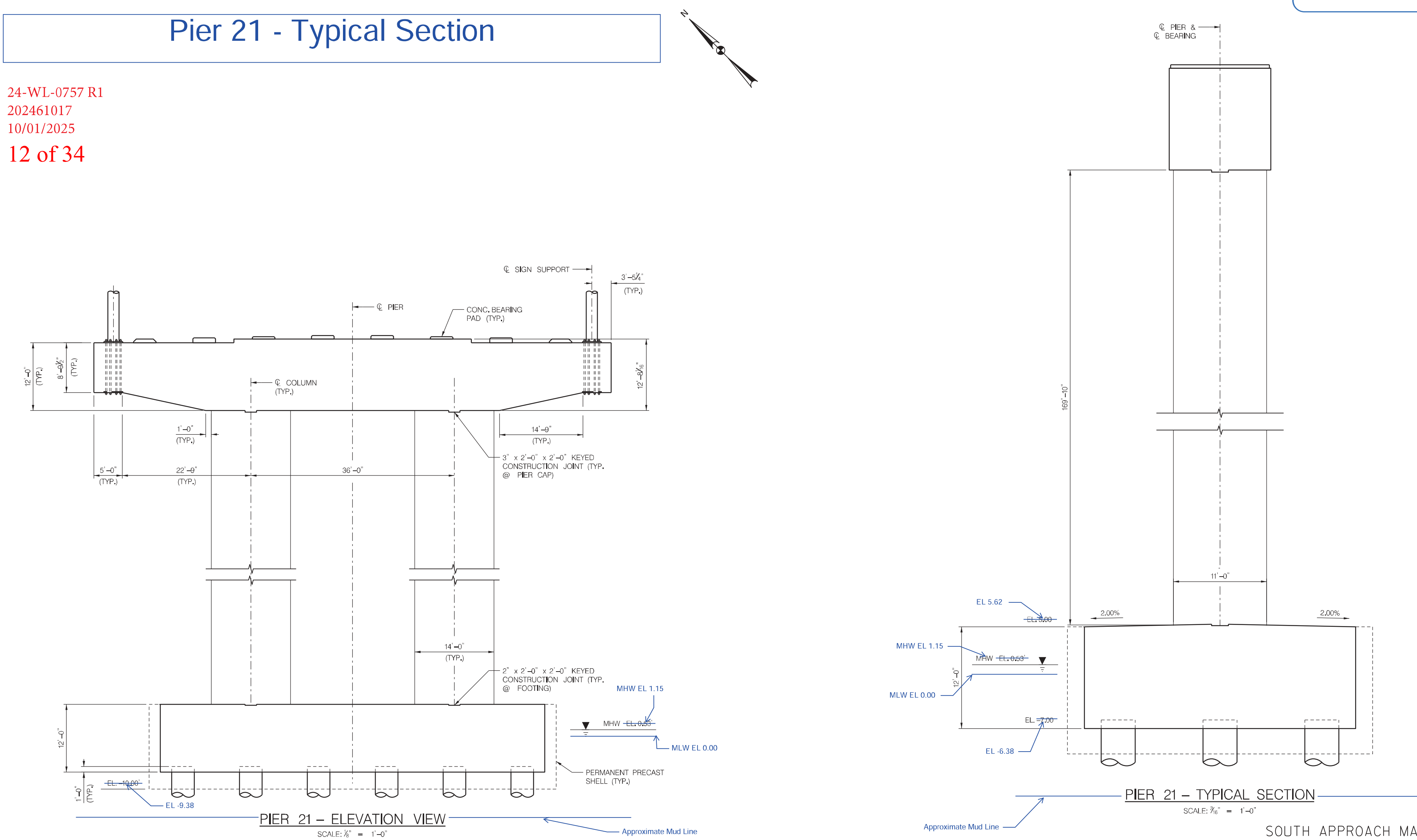
PLOTTED: 8/8/2025
FILE: pw:\\Kiewitpw.bentley.com:kiewit-pw-03\Documents\Projects\MD\Francis Scott Key Bridge Replacement\30 Estimate\07 STR\CAD\Sheets\4_South Approach Marine\STR-004-PR01_FSK.dgn

DRAFT PRE-DECISIONAL/CONFIDENTIAL

FOR INFORMATION ONLY

Pier 21 - Typical Section

24-WL-0757 R1
202461017
10/01/2025



N
℄ SIGN SUPPORT
3'-5¼" (TYP.)
℄ PIER
CONC. BEARING PAD (TYP.)
12'-0" (TYP.)
8'-6½" (TYP.)
12'-8⁷⁄₁₆"
℄ COLUMN (TYP.)
1'-0" (TYP.)
14'-9" (TYP.)
3" x 2'-0" x 2'-0" KEYED CONSTRUCTION JOINT (TYP. @ PIER CAP)
5'-0" (TYP.)
22'-9" (TYP.)
36'-0"
14'-0" (TYP.)
2" x 2'-0" x 2'-0" KEYED CONSTRUCTION JOINT (TYP. @ FOOTING)
MHW EL 1.15
MLW EL 0.00
12'-0"
1'-0" (TYP.)
EL -9.38
PERMANENT PRECAST SHELL (TYP.)
PIER 21 – ELEVATION VIEW
SCALE: ⅛" = 1'-0"
Approximate Mud Line
℄ PIER & ℄ BEARING
169'-10"
11'-0"
EL 5.62
2.00%
2.00%
MHW EL 1.15
MLW EL 0.00
12'-0"
EL -6.38
PIER 21 – TYPICAL SECTION
SCALE: ³⁄₁₆" = 1'-0"
Approximate Mud Line

SOUTH APPROACH MARINE

Kiewit

QR CODE | PE STAMP | PE STAMP

Maryland Transportation Authority
Engineering Division

ADDENDUMS & REVISIONS

NO.	DESCRIPTION	BY	DATE
A	PROOF OF CONCEPT SUBMISSION	KBC	01/03/2025
B	50% DESIGN & BCC IFE SUBMISSION	KBC	04/18/2025

FRANCIS SCOTT KEY BRIDGE REPLACEMENT I-695/MD 695 OVER THE PATAPSCO RIVER-BALTIMORE HARBOR

BALTIMORE CITY, BALTIMORE COUNTY & ANNE ARUNDEL COUNTY

PIER PLAN AND ELEVATION - PIER 21

DESIGNED BY KBC | DRAWN BY EJE | CHECKED BY AVM
CONST. REVIEW BY | DATE APRIL 2025 | SCALE

CONTRACT NO. KB-4903-0000
DRAWING NO. STR-004-PR-002
SHEET NO. 13 OF 62

BY: Kevin.Maytum

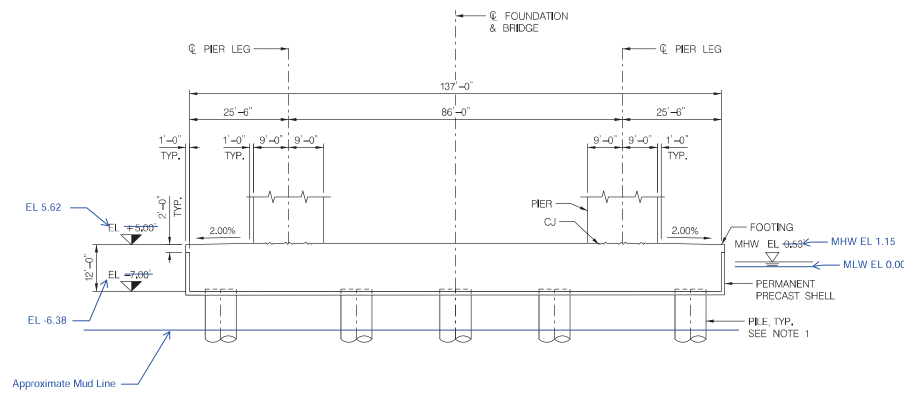
PLOTTED: 6/6/2025

DRAFT PRE-DECISIONAL/CONFIDENTIAL

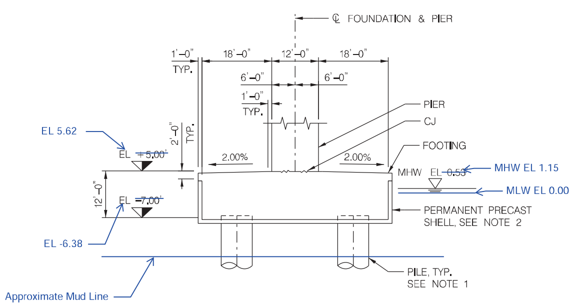
FOR INFORMATION ONLY

24-WL-0757 R1
202461017
10/01/2025

Pier 22 - Typical Section



TRANSVERSE ELEVATION
SCALE: 1/16" = 1'-0"



LONGITUDINAL ELEVATION
SCALE: 1/16" = 1'-0"

MAIN SPAN

BY: Christopher.Jensen1 –

Kiewit

QR CODE | PE STAMP | PE STAMP

MDTA
Maryland Transportation Authority
Engineering Division

ADDENDUMS & REVISIONS

NO.	DESCRIPTION	BY	DATE
A	ISSUED FOR ESTIMATE SUBMISSION	EAA	01/03/2025
B	OPCC ISSUED FOR ESTIMATING - REVISION 01	EAA	01/23/2025
C	PROOF OF CONCEPT SUBMISSION	SG	01/31/2025
D	BCC ISSUED FOR ESTIMATING	GM	04/18/2025
E	50% DESIGN SUBMISSION	SG	

FRANCIS SCOTT KEY BRIDGE REPLACEMENT I-695/MD 695 OVER THE PATAPSCO RIVER-BALTIMORE HARBOR

BALTIMORE CITY, BALTIMORE COUNTY & ANNE ARUNDEL COUNTY

MAIN SPAN BRIDGE - SUBSTRUCTURE - PIER P22 & P27 - FOUNDATION - DIMENSIONS

DESIGNED BY SG | DRAWN BY ROW | CHECKED BY
CONST. REVIEW BY | DATE JANUARY 2025 | SCALE AS NOTED

CONTRACT NO. KB-4903-0000
DRAWING NO. STR-001-FD-121
SHEET NO. 15 OF 117

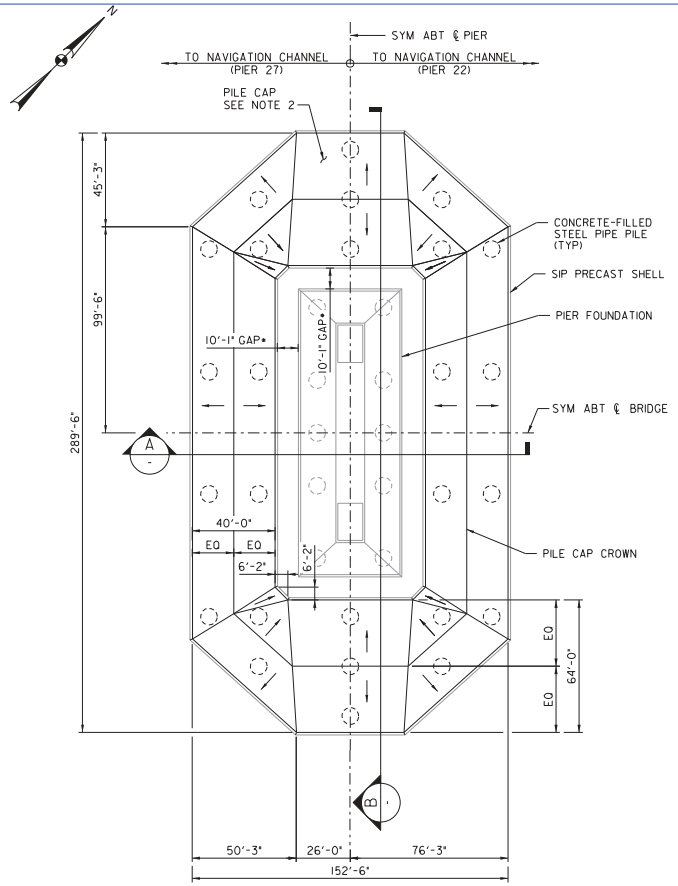
PLOTTED: 6/5/2025
FILE: pw:\\kiewitus-pw.bentley.com:kiewitus-pw-03\Documents\Projects\MD\Francis Scott Key Bridge Replacement\30 Estimate\07 STR\CAD\Sheets\1_Main Span\p\BR-FD121_FSK.dgn

DRAFT PRE-DECISIONAL/CONFIDENTIAL

Pier 22 Pier Protection - Typical Section

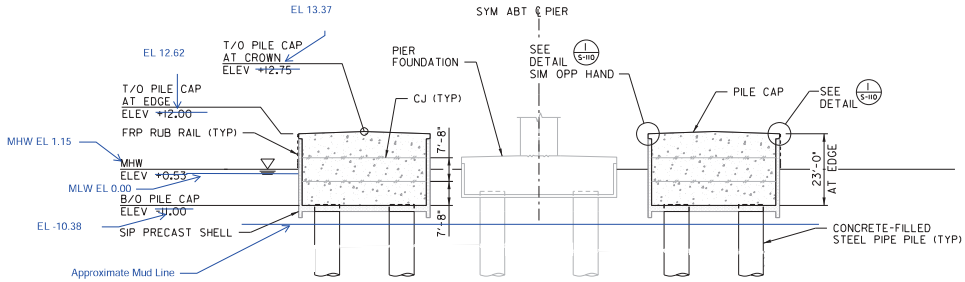
24-WL-0757 R1
202461017
10/01/2025
14 of 34

NOTES:
1. FOR GENERAL NOTES, SEE DRAWING NO. STR-008-GN-004.
2. PILE CAPS AT PIERS 22 AND 27 SHALL BE DESIGNATED AS MASS CONCRETE.



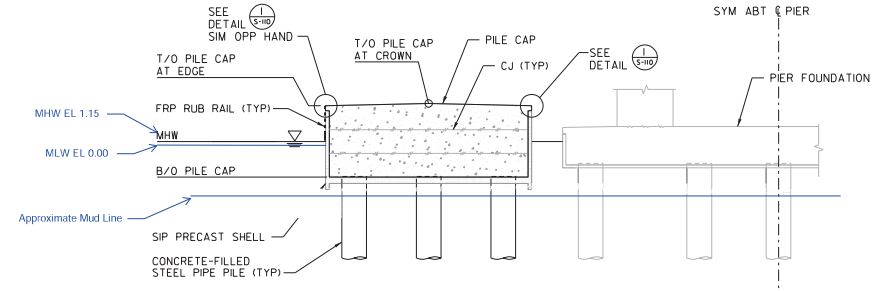
PLAN - PIERS 22 & 27

SCALE: 1" =30'
(PIER 22 SHOWN, PIER 27 SIM)
(RUB RAIL NOT SHOWN)
* AVAILABLE GAP ASSUMING 1'-2" THICK SIP PRECAST SHELL



SECTION A

SCALE: 1" =20'



SECTION B

SCALE: 1" =20'

MAIN SPAN & APPROACH PIER PROTECTION

BY: JAET

Kiewit

QR CODE | PE STAMP | PE STAMP

Maryland Transportation Authority
Engineering Division

ADDENDUMS & REVISIONS			
NO.	DESCRIPTION	BY	DATE
A	OPCC ISSUED FOR ESTIMATING	MTWY	1/3/2025
B	OPCC ISSUED FOR ESTIMATING - REVISION 01	MTWY	1/17/2025
C	PROOF OF CONCEPT	MTWY	2/21/2025
D	BCC TFE SUBMISSION	MTWY	4/18/2025
E	BCC TFE SUBMISSION - REVISION 01	MTWY	5/9/2025
F	50% DESIGN SUBMISSION	MTWY	8/7/2025

FRANCIS SCOTT KEY BRIDGE REPLACEMENT I-695/MD 695 OVER THE PATAPSCO RIVER-BALTIMORE HARBOR
BALTIMORE CITY, BALTIMORE COUNTY & ANNE ARUNDEL COUNTY
FENDER LAYOUT & DETAILS - TRANSITION PIERS 22 & 27

DESIGNED BY MTWY | DRAWN BY MDMQ/JAET | CHECKED BY
CONST. REVIEW BY | DATE AUGUST 2025 | SCALE AS NOTED

CONTRACT NO. KB-4903-0000
DRAWING NO. STR-008-S-113
SHEET NO. 22 OF 40

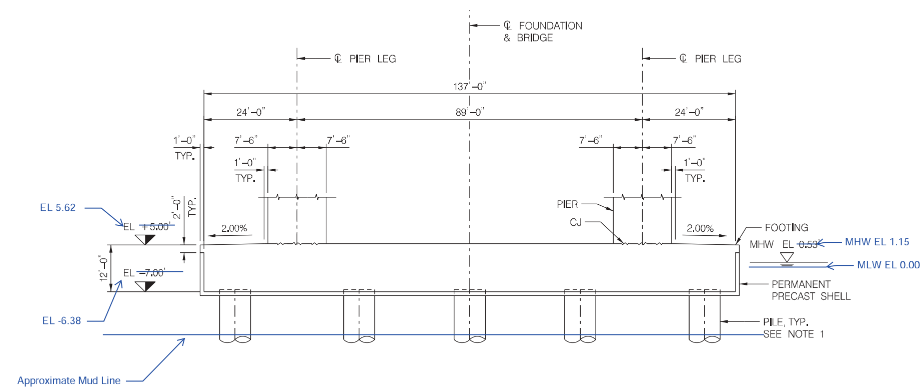
PLOTTED: 8/5/2025
FILE: pw:\\kiewitcorp.com\dav\projects\MDTFrancisScottKeyBridgeReplacement\30 Estimate\33 MAR\CADS\sheets\STR-008-S-113_FSK.dgn

DRAFT PRE-DECISIONAL/CONFIDENTIAL

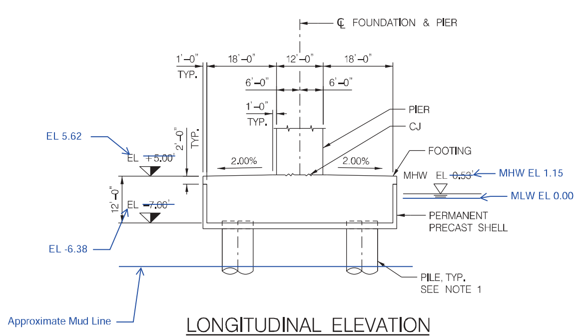
FOR INFORMATION ONLY

Pier 23 - Typical Section

24-WL-0757 R1
202461017
10/01/2025



TRANSVERSE ELEVATION
SCALE: 1/16" = 1'-0"



LONGITUDINAL ELEVATION
SCALE: 1/16" = 1'-0"

MAIN SPAN

BY: Christopher.Jensen1 –

Kiewit

QR CODE | PE STAMP | PE STAMP

MDTA
Maryland Transportation Authority
Engineering Division

ADDENDUMS & REVISIONS

NO.	DESCRIPTION	BY	DATE
A	ISSUED FOR ESTIMATE SUBMISSION	EAA	01/03/2025
B	OPCC ISSUED FOR ESTIMATING - REVISION 01	EAA	01/23/2025
C	PROOF OF CONCEPT SUBMISSION	SG	01/31/2025
D	BCC ISSUED FOR ESTIMATING	GM	04/18/2025
E	50% DESIGN SUBMISSION	SG	

FRANCIS SCOTT KEY BRIDGE REPLACEMENT I-695/MD 695 OVER THE PATAPSCO RIVER-BALTIMORE HARBOR

BALTIMORE CITY, BALTIMORE COUNTY & ANNE ARUNDEL COUNTY

MAIN SPAN BRIDGE - SUBSTRUCTURE - PIER P23 & P26 - FOUNDATION - DIMENSIONS

DESIGNED BY SG | DRAWN BY ROW | CHECKED BY
CONST. REVIEW BY | DATE JANUARY 2025 | SCALE AS NOTED

CONTRACT NO. KB-4903-0000
DRAWING NO. STR-001-FD-131
SHEET NO. 21 OF 117

PLOTTED: 6/6/2025
FILE: pw:\\kiewitus-pw.bentley.com:kiewitus-pw-03\Documents\Projects\MD Francis Scott Key Bridge Replacement\30 Estimate\07 STR CAD\Sheets\1_Main Span\p\BR-FD131_FSK.dgn

DRAFT PRE-DECISIONAL/CONFIDENTIAL

Docusign Envelope ID: 57179904-E851-4E77-908B-1B4FD49417E3

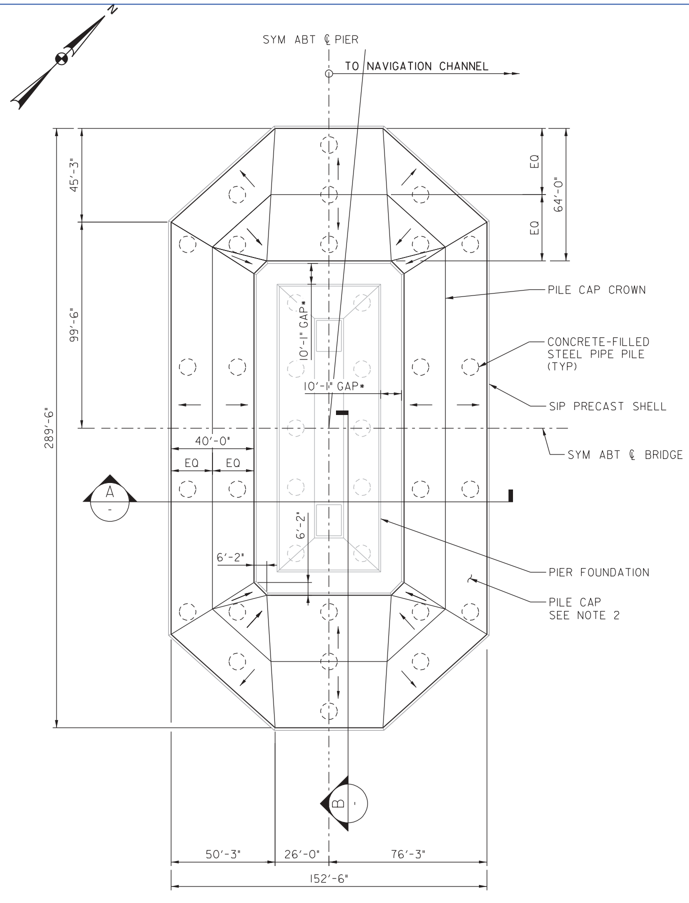
Pier 23 Pier Protection - Typical Section

24-WL-0757 R1
202461017
10/01/2025

16 of 34

NOTES:

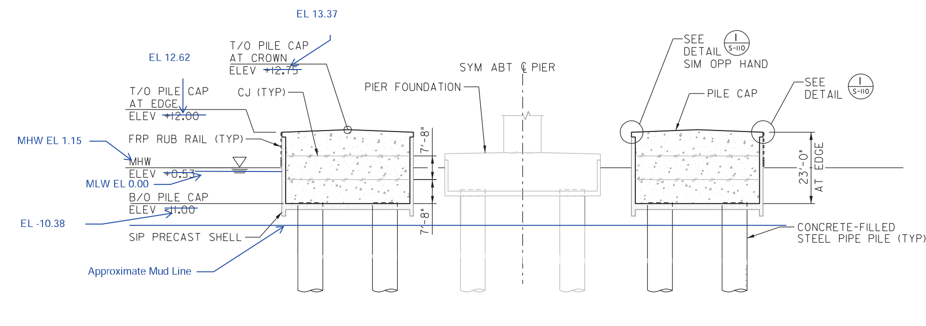
1. FOR GENERAL NOTES, SEE DRAWING NO. STR-008-GN-004.
2. PILE CAPS AT PIERS 23 AND 26 SHALL BE DESIGNATED AS MASS CONCRETE.



PLAN - PIER 23

SCALE: 1" =30'
(RUB RAIL NOT SHOWN)

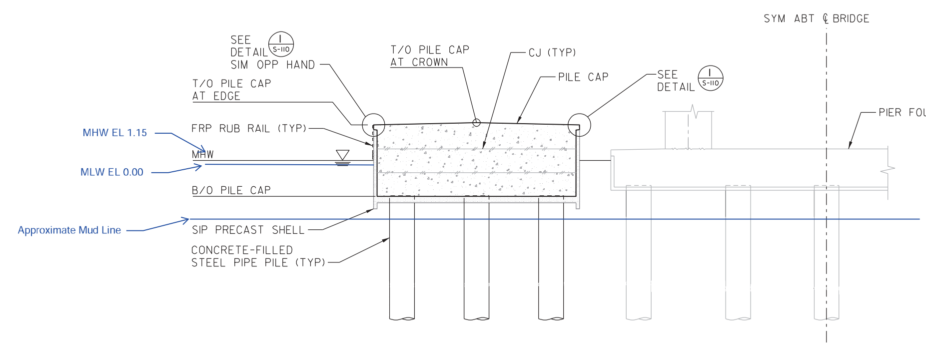
• AVAILABLE GAP ASSUMING 1'-2" THICK SIP PRECAST SHELL



EL 13.37
EL 12.62
T/O PILE CAP AT CROWN ELEV +12.75
T/O PILE CAP AT EDGE ELEV +12.00
CJ (TYP)
PIER FOUNDATION
SYM ABT ℄ PIER
SEE DETAIL 1 S-110 SIM OPP HAND
PILE CAP
SEE DETAIL 1 S-110
MHW EL 1.15
FRP RUB RAIL (TYP)
MHW ELEV +0.53
MLW EL 0.00
B/O PILE CAP ELEV -1.00
EL -10.38
SIP PRECAST SHELL
Approximate Mud Line
7'-8"
7'-8"
23'-0" AT EDGE
CONCRETE-FILLED STEEL PIPE PILE (TYP)

SECTION A

SCALE: 1" =20'



SYM ABT ℄ BRIDGE
SEE DETAIL 1 S-110 SIM OPP HAND
T/O PILE CAP AT CROWN
CJ (TYP)
PILE CAP
SEE DETAIL 1 S-110
T/O PILE CAP AT EDGE
PIER FOUNDATION
MHW EL 1.15
FRP RUB RAIL (TYP)
MHW
MLW EL 0.00
B/O PILE CAP
Approximate Mud Line
SIP PRECAST SHELL
CONCRETE-FILLED STEEL PIPE PILE (TYP)

SECTION B

SCALE: 1" =20'

MAIN SPAN & APPROACH PIER PROTECTION

Kiewit

QR CODE | PE STAMP | PE STAMP

Maryland Transportation Authority
Engineering Division

ADDENDUMS & REVISIONS

NO.	DESCRIPTION	BY	DATE
A	OPCC ISSUED FOR ESTIMATING	MTWY	1/3/2025
B	OPCC ISSUED FOR ESTIMATING - REVISION 01	MTWY	1/17/2025
C	PROOF OF CONCEPT	MTWY	2/21/2025
D	BCC IFE SUBMISSION	MTWY	4/18/2025
E	BCC IFE SUBMISSION - REVISION 1	MTWY	5/9/2025
F	50% DESIGN SUBMISSION	MTWY	8/7/2025

FRANCIS SCOTT KEY BRIDGE REPLACEMENT I-695/MD 695 OVER THE PATAPSCO RIVER-BALTIMORE HARBOR

BALTIMORE CITY, BALTIMORE COUNTY & ANNE ARUNDEL COUNTY

FENDER LAYOUT & DETAILS - TIEDOWN PIERS 23 & 26 - 1

DESIGNED BY MTWY | DRAWN BY MDMQ/JAET | CHECKED BY
CONST. REVIEW BY | DATE AUGUST 2025 | SCALE AS NOTED

CONTRACT NO. KB-4903-0000
DRAWING NO. STR-008-S-111
SHEET NO. 20 OF 40

BY: JAET -

PLOTTED: 8/1/2025

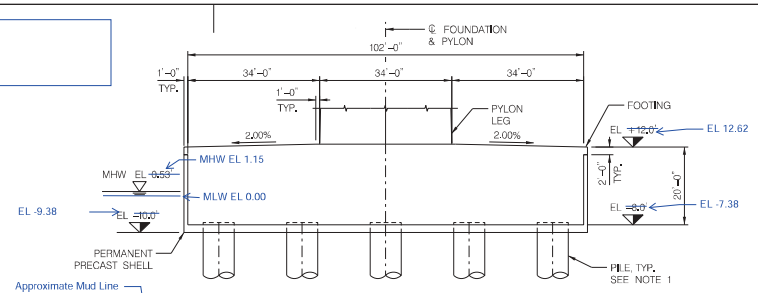
DRAFT PRE-DECISIONAL/CONFIDENTIAL

FOR INFORMATION ONLY

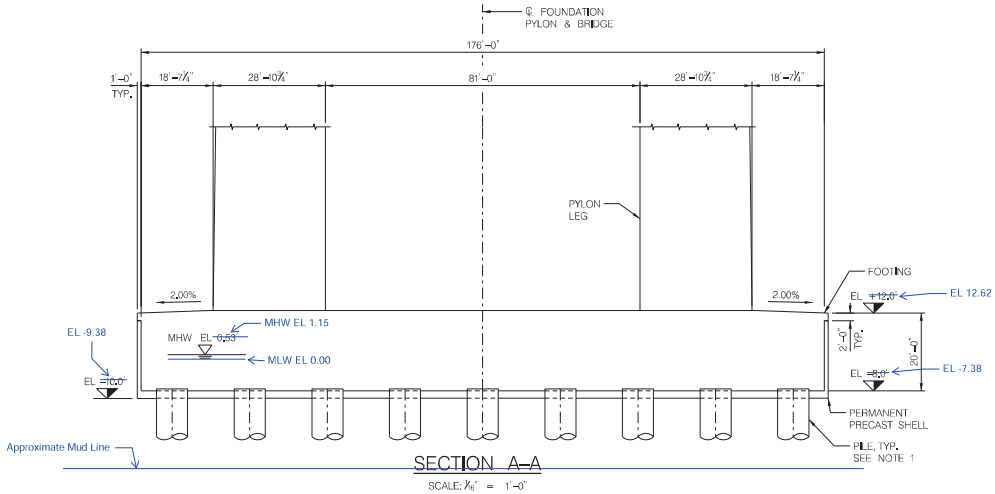
Pier 24 - Typical Section

24-WL-0757 R1
202461017
10/01/2025

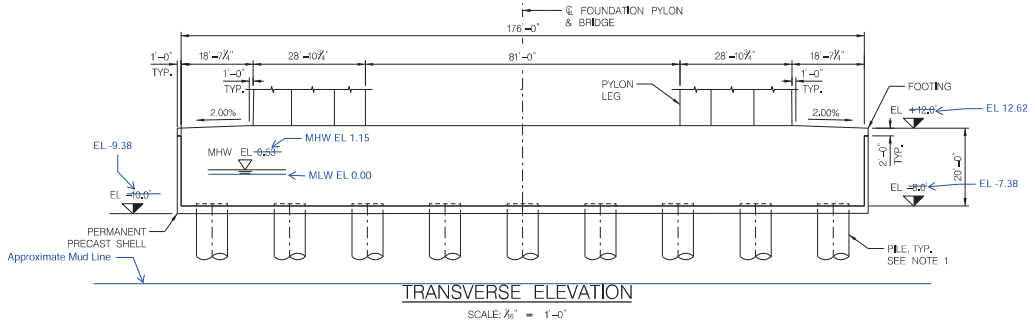
17 of 34



LONGITUDINAL ELEVATION
SCALE: 1/16" = 1'-0"



SECTION A-A
SCALE: 1/16" = 1'-0"



TRANSVERSE ELEVATION
SCALE: 1/16" = 1'-0"

MAIN SPAN

BY: Christopher.Jensen1

Kiewit

QR CODE | PE STAMP | PE STAMP

Maryland Transportation Authority
Engineering Division

ADDENDUMS & REVISIONS			
NO.	DESCRIPTION	BY	DATE
A	ISSUED FOR ESTIMATE SUBMISSION	EAA	01/03/2025
B	OPCC ISSUED FOR ESTIMATING - REVISION 01	EAA	01/23/2025
C	PROOF OF CONCEPT SUBMISSION	SG	01/31/2025
D	BCC ISSUED FOR ESTIMATING	GM	04/18/2025
E	50% DESIGN SUBMISSION	SG	

FRANCIS SCOTT KEY BRIDGE REPLACEMENT I-695/MD 695 OVER THE PATAPSCO RIVER-BALTIMORE HARBOR

BALTIMORE CITY, BALTIMORE COUNTY & ANNE ARUNDEL COUNTY

MAIN SPAN BRIDGE - SUBSTRUCTURE - PYLON P24 & P25 - FOUNDATION - DIMENSIONS

DESIGNED BY SG	DRAWN BY ROW	CHECKED BY
CONST. REVIEW BY	DATE JANUARY 2025	SCALE AS NOTED

CONTRACT NO. KB-4903-0000
DRAWING NO. STR-001-FD-141
SHEET NO. 28 OF 117

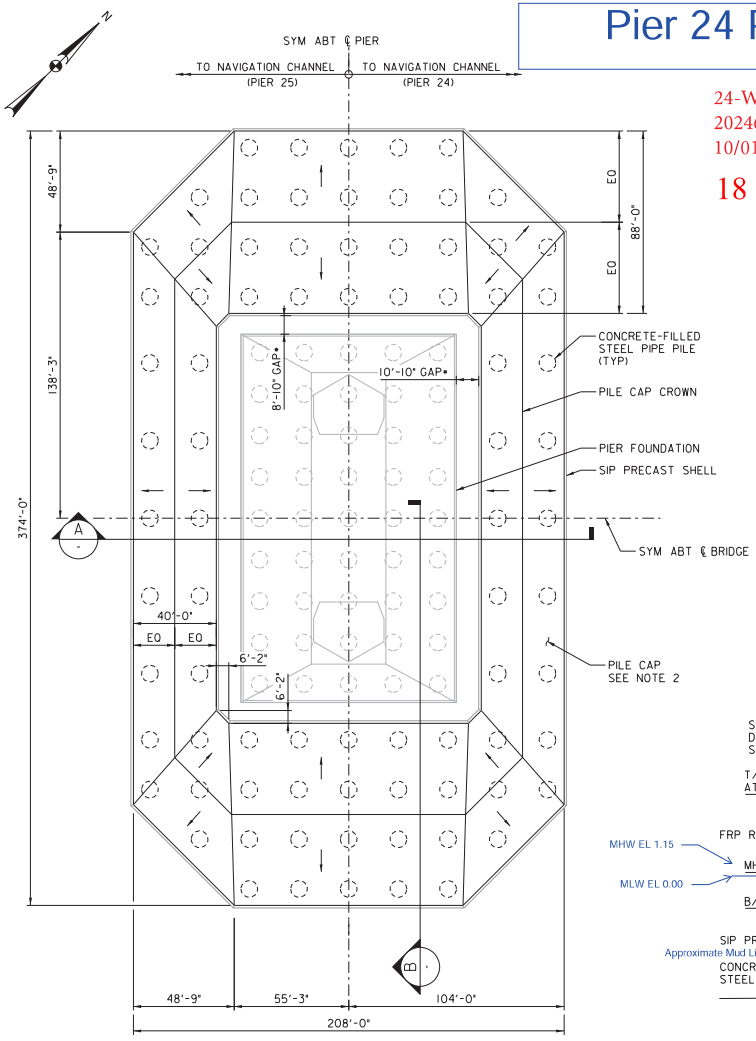
PLOTTED: 8/5/2025
FILE: pw://Kiewit.pwcloud.bentley.com/d/w/Documents/Projects/MD Francis Scott Key Bridge Replacement/30 Estimate/07 STR/CAD/Sheets/1_Main Span/STR-D141_FSK.dgn

DRAFT PRE-DECISIONAL/CONFIDENTIAL

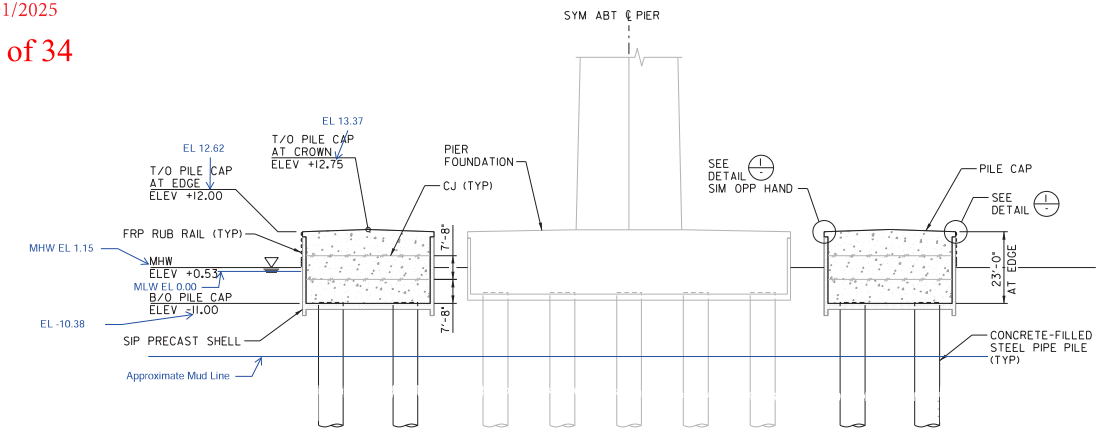
Pier 24 Pier Protection - Typical Section

24-WL-0757 R1
202461017
10/01/2025

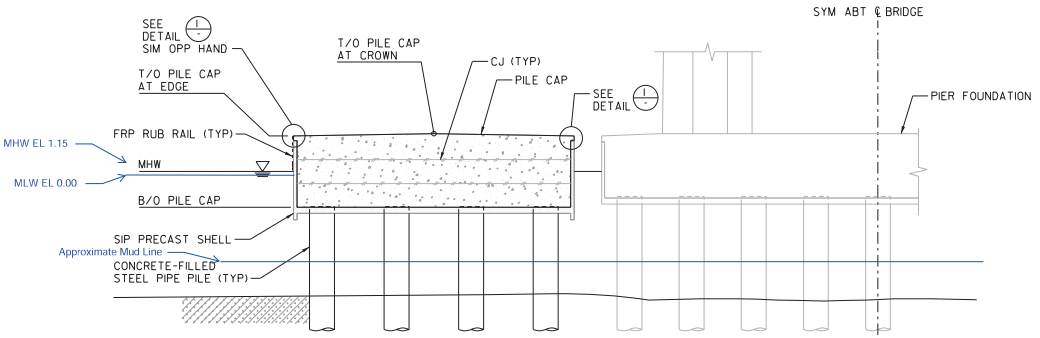
18 of 34



PLAN - PIERS 24 & 25
SCALE: 1" =30'
(PIER 24 SHOWN, PIER 25 SIM)
(RUB RAIL NOT SHOWN)
*AVAILABLE GAP ASSUMING 1'-2" THICK SIP PRECAST SHELL



SECTION A
SCALE: 1" =20'



SECTION B
SCALE: 1" =20'

MAIN SPAN & APPROACH PIER PROTECTION

Kiewit

QR CODE | PE STAMP | PE STAMP

Maryland Transportation Authority
Engineering Division

ADDENDUMS & REVISIONS			
NO.	DESCRIPTION	BY	DATE
A	OPCC ISSUED FOR ESTIMATING	MTWY	1/3/2025
B	OPCC ISSUED FOR ESTIMATING - REVISION 01	MTWY	1/17/2025
C	PROOF OF CONCEPT	MTWY	2/21/2025
D	BCC ITE SUBMISSION	MTWY	4/18/2025
E	BCC ITE SUBMISSION - REVISION 01	MTWY	5/9/2025
F	50% DESIGN SUBMISSION	MTWY	8/7/2025

FRANCIS SCOTT KEY BRIDGE REPLACEMENT I-695/MD 695 OVER THE PATAPSCO RIVER-BALTIMORE HARBOR
BALTIMORE CITY, BALTIMORE COUNTY & ANNE ARUNDEL COUNTY
FENDER LAYOUT & DETAILS - MAIN PIERS 24 & 25

DESIGNED BY MTWY | DRAWN BY MDMO/JAET | CHECKED BY
CONST. REVIEW BY | DATE AUGUST 2025 | SCALE AS NOTED

CONTRACT NO. KB-4903-0000
DRAWING NO. STR-008-S-110
SHEET NO. 19 OF 40

BY: JAET

PLOTTED: 8/5/2025
FILE: pw:\\kiewitcorp.pwcglobal.com\kiewit\projects\MDTA\Documents\Projects\MDTA Francis Scott Key Bridge Replacement\30 Estimate\33 MAR\CADS\sheets\BRK-110_FSK.dgn

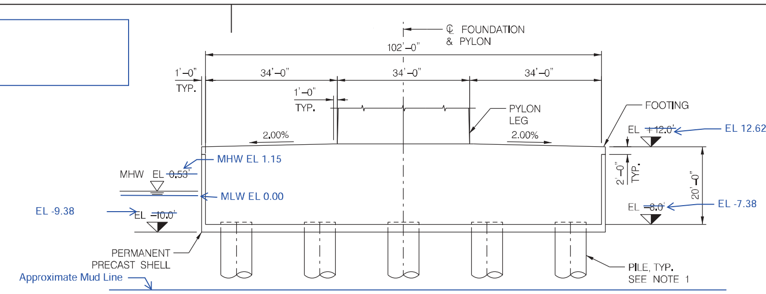
DRAFT PRE-DECISIONAL/CONFIDENTIAL

Docusign Envelope ID: 57179904-E851-4E77-908B-1B4FD49417E3

FOR INFORMATION ONLY

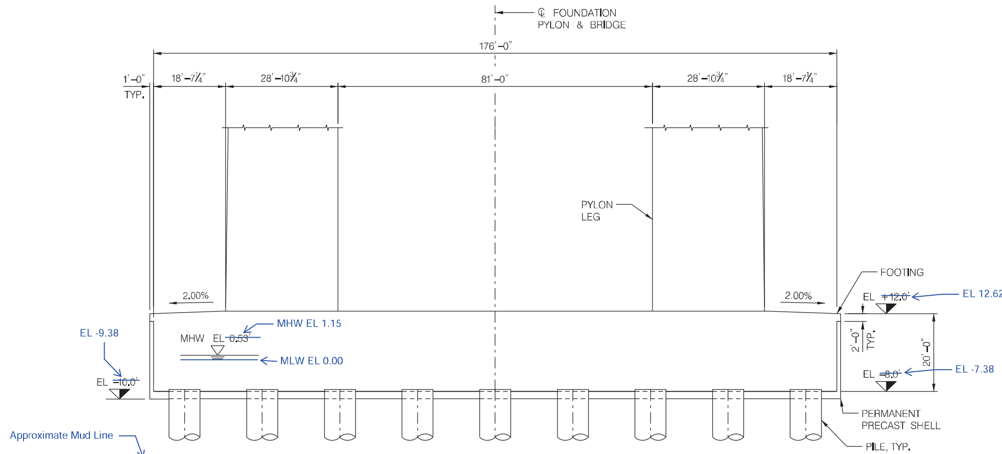
Pier 25 - Typical Section

24-WL-0757 R1
202461017
10/01/2025
19 of 34



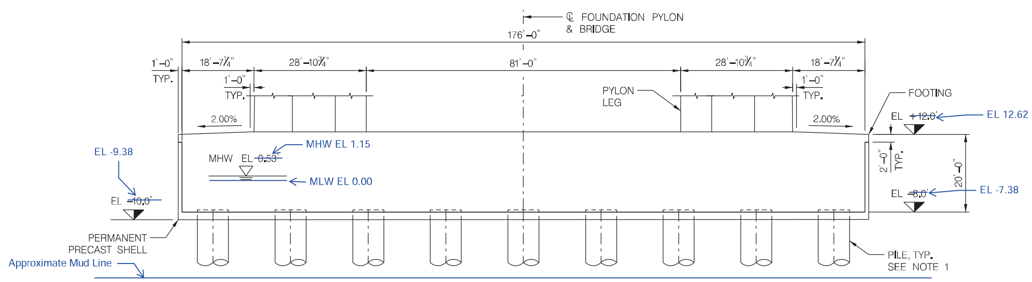
LONGITUDINAL ELEVATION

SCALE: 1/16" = 1'-0"



SECTION A-A

SCALE: 1/16" = 1'-0"



TRANSVERSE ELEVATION

SCALE: 1/16" = 1'-0"

MAIN SPAN

BY: Christopher.Jensen1 –

Kiewit

QR CODE | PE STAMP | PE STAMP

MDTA
Maryland Transportation Authority
Engineering Division

ADDENDUMS & REVISIONS

NO.	DESCRIPTION	BY	DATE
A	ISSUED FOR ESTIMATE SUBMISSION	EAA	01/03/2025
B	OPCC ISSUED FOR ESTIMATING – REVISION 01	EAA	01/23/2025
C	PROOF OF CONCEPT SUBMISSION	SG	01/31/2025
D	BCC ISSUED FOR ESTIMATING	GM	04/18/2025
E	50% DESIGN SUBMISSION	SG	

FRANCIS SCOTT KEY BRIDGE REPLACEMENT I-695/MD 695 OVER THE PATAPSCO RIVER-BALTIMORE HARBOR

BALTIMORE CITY, BALTIMORE COUNTY & ANNE ARUNDEL COUNTY

MAIN SPAN BRIDGE - SUBSTRUCTURE - PYLON P24 & P25 - FOUNDATION - DIMENSIONS

DESIGNED BY SG | DRAWN BY ROW | CHECKED BY
CONST. REVIEW BY | DATE JANUARY 2025 | SCALE AS NOTED

CONTRACT NO. KB-4903-0000
DRAWING NO. STR-001-FD-141
SHEET NO. 28 OF 117

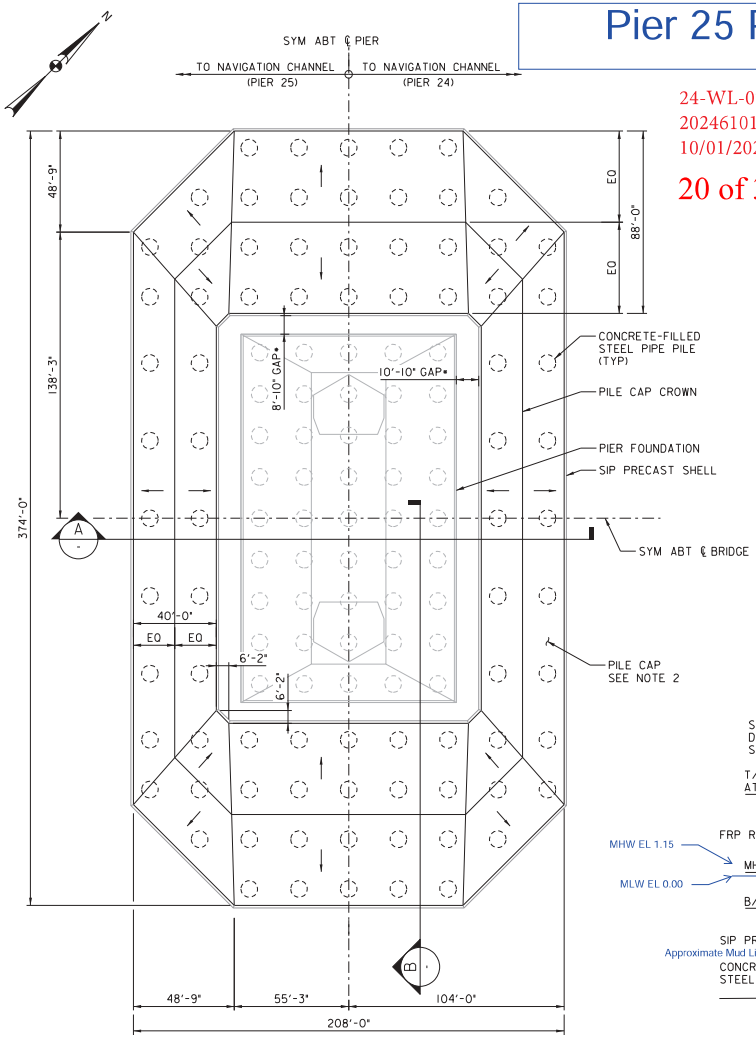
PLOTTED: 6/5/2025
FILE: pw:\\kiewitus-pw.bentley.com:kiewitus-pw-03\Documents\Projects\MD\Francis Scott Key Bridge Replacement\30 Estimate\07 STR\CAD\Sheets\1_Main Span\p\BR-FD141_FSK.dgn

DRAFT PRE-DECISIONAL/CONFIDENTIAL

Pier 25 Pier Protection - Typical Section

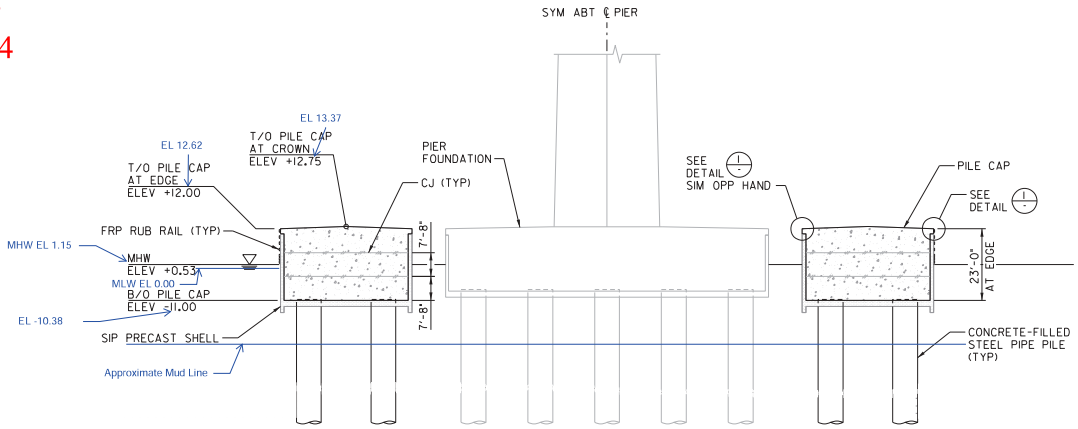
24-WL-0757 R1
202461017
10/01/2025

20 of 34



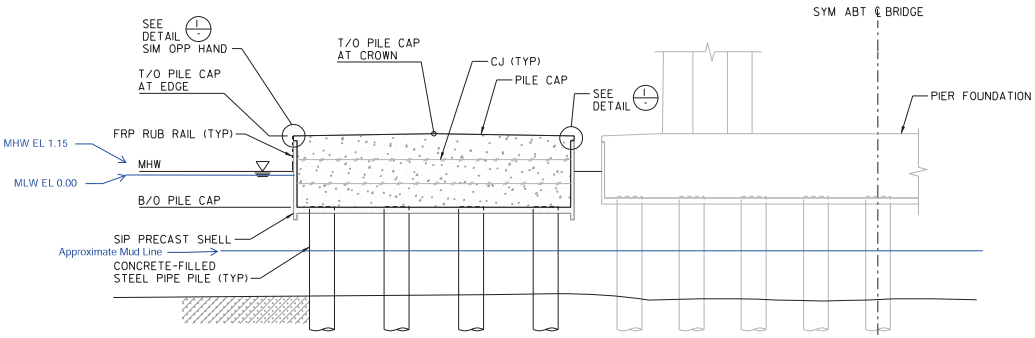
PLAN - PIERS 24 & 25

SCALE: 1" =30'
(PIER 24 SHOWN, PIER 25 SIM)
(RUB RAIL NOT SHOWN)
*AVAILABLE GAP ASSUMING 1'-2" THICK SIP PRECAST SHELL



SECTION A

SCALE: 1" =20'



SECTION B

SCALE: 1" =20'

MAIN SPAN & APPROACH PIER PROTECTION

Kiewit

QR CODE | PE STAMP | PE STAMP

Maryland Transportation Authority
Engineering Division

ADDENDUMS & REVISIONS			
NO.	DESCRIPTION	BY	DATE
A	OPCC ISSUED FOR ESTIMATING	MTWY	1/3/2025
B	OPCC ISSUED FOR ESTIMATING - REVISION 01	MTWY	1/17/2025
C	PROOF OF CONCEPT	MTWY	2/21/2025
D	BCC ITE SUBMISSION	MTWY	4/18/2025
E	BCC ITE SUBMISSION - REVISION 01	MTWY	5/9/2025
F	50% DESIGN SUBMISSION	MTWY	8/7/2025

FRANCIS SCOTT KEY BRIDGE REPLACEMENT I-695/MD 695 OVER THE PATAPSCO RIVER-BALTIMORE HARBOR
BALTIMORE CITY, BALTIMORE COUNTY & ANNE ARUNDEL COUNTY
FENDER LAYOUT & DETAILS - MAIN PIERS 24 & 25

DESIGNED BY MTWY | DRAWN BY MDMO/JAET | CHECKED BY
CONST. REVIEW BY | DATE AUGUST 2025 | SCALE AS NOTED

CONTRACT NO. KB-4903-0000
DRAWING NO. STR-008-S-110
SHEET NO. 19 OF 40

BY: JAET

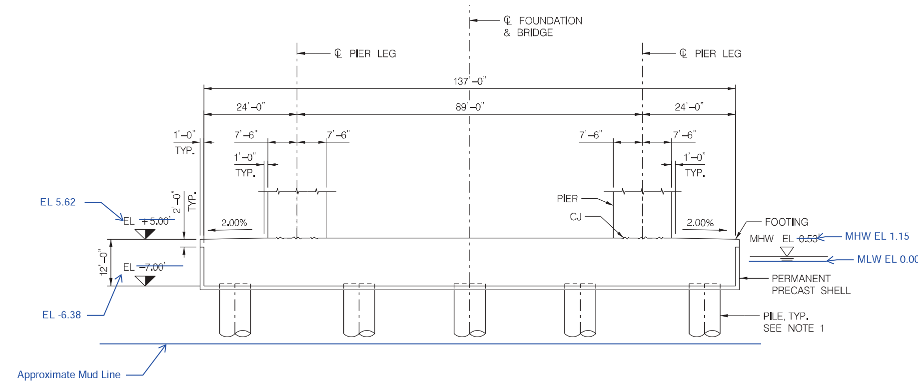
PLOTTED: 8/5/2025

DRAFT PRE-DECISIONAL/CONFIDENTIAL

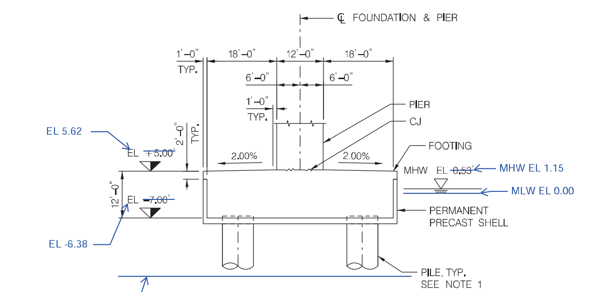
FOR INFORMATION ONLY

Pier 26 - Typical Section

24-WL-0757 R1
202461017
10/01/2025
21 of 34



TRANSVERSE ELEVATION
SCALE: 1/16" = 1'-0"



LONGITUDINAL ELEVATION
SCALE: 1/16" = 1'-0"

MAIN SPAN

BY: Christopher.Jensen1 –

Kiewit

QR CODE | PE STAMP | PE STAMP

MDTA
Maryland Transportation Authority
Engineering Division

ADDENDUMS & REVISIONS

NO.	DESCRIPTION	BY	DATE
A	ISSUED FOR ESTIMATE SUBMISSION	EAA	01/03/2025
B	OPCC ISSUED FOR ESTIMATING - REVISION 01	EAA	01/23/2025
C	PROOF OF CONCEPT SUBMISSION	SG	01/31/2025
D	BCC ISSUED FOR ESTIMATING	GM	04/18/2025
E	50% DESIGN SUBMISSION	SG	

FRANCIS SCOTT KEY BRIDGE REPLACEMENT I-695/MD 695 OVER THE PATAPSCO RIVER-BALTIMORE HARBOR

BALTIMORE CITY, BALTIMORE COUNTY & ANNE ARUNDEL COUNTY

MAIN SPAN BRIDGE - SUBSTRUCTURE - PIER P23 & P26 - FOUNDATION - DIMENSIONS

DESIGNED BY SG | DRAWN BY ROW | CHECKED BY
CONST. REVIEW BY | DATE JANUARY 2025 | SCALE AS NOTED

CONTRACT NO. KB-4903-0000
DRAWING NO. STR-001-FD-131
SHEET NO. 21 OF 117

PLOTTED: 6/6/2025
FILE: pw:\\kiewitus-pw.bentley.com:kiewitus-pw-03\Documents\Projects\MD\Francis Scott Key Bridge Replacement\30 Estimate\07 STR\CAD\Sheets\1_Main Span\p\BR-FD131_FSK.dgn

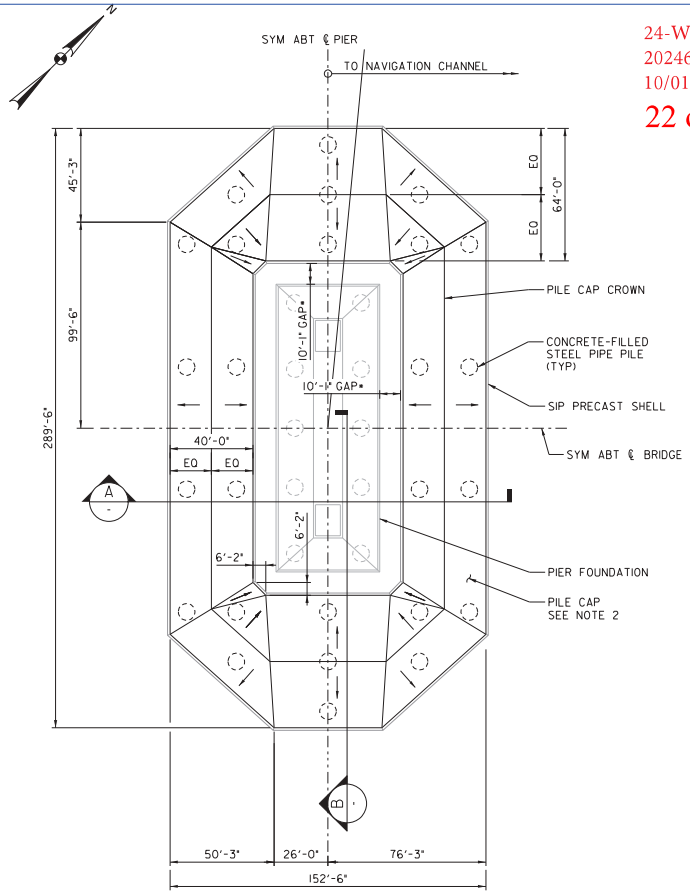
DRAFT PRE-DECISIONAL/CONFIDENTIAL

Pier 26 Pier Protection - Typical Section

24-WL-0757 R1
202461017
10/01/2025

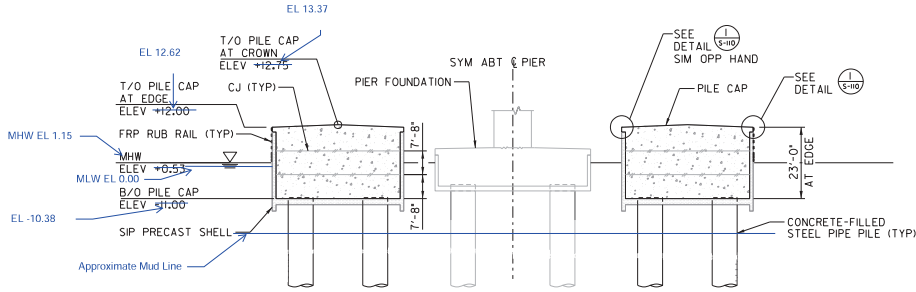
NOTES:

1. FOR GENERAL NOTES, SEE DRAWING NO. STR-008-GN-004.
2. PILE CAPS AT PIERS 23 AND 26 SHALL BE DESIGNATED AS MASS CONCRETE.



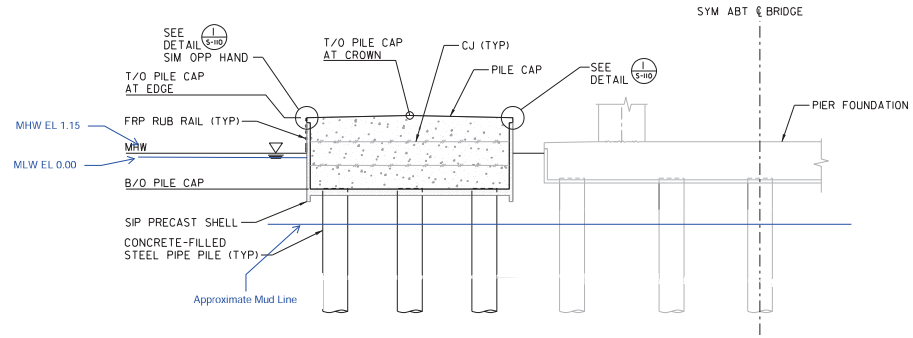
PLAN - PIER 23

SCALE: 1" =30'
(RUB RAIL NOT SHOWN)
* AVAILABLE GAP ASSUMING 1'-2" THICK SIP PRECAST SHELL



SECTION A

SCALE: 1" =20'



SECTION B

SCALE: 1" =20'

MAIN SPAN & APPROACH PIER PROTECTION

BY: JAET

Kiewit

QR CODE | PE STAMP | PE STAMP

Maryland Transportation Authority
Engineering Division

ADDENDUMS & REVISIONS			
NO.	DESCRIPTION	BY	DATE
A	OPCC ISSUED FOR ESTIMATING	MTWY	1/3/2025
B	OPCC ISSUED FOR ESTIMATING - REVISION 01	MTWY	1/17/2025
C	PROOF OF CONCEPT	MTWY	2/21/2025
D	BCC TFE SUBMISSION	MTWY	4/18/2025
E	BCC TFE SUBMISSION - REVISION 1	MTWY	5/9/2025
F	50% DESIGN SUBMISSION	MTWY	8/7/2025

FRANCIS SCOTT KEY BRIDGE REPLACEMENT I-695/MD 695 OVER THE PATAPSCO RIVER-BALTIMORE HARBOR

BALTIMORE CITY, BALTIMORE COUNTY & ANNE ARUNDEL COUNTY

FENDER LAYOUT & DETAILS - TIEDOWN PIERS 23 & 26 - 1

DESIGNED BY	DRAWN BY	CHECKED BY
MTWY	MDMC/JAET	
CONST. REVIEW BY	DATE	SCALE
	AUGUST 2025	AS NOTED

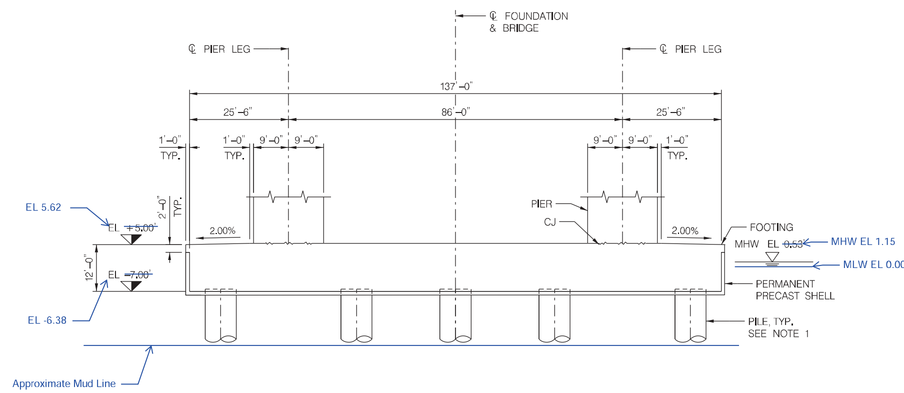
CONTRACT NO. KB-4903-0000
DRAWING NO. STR-008-S-111
SHEET NO. 20 OF 40

PLOTTED: 8/5/2025
FILE: pw:\\kiewitpw.pwcglobal.com\kiewit\projects\MD\Francis Scott Key Bridge Replacement\30 Estimate\33 MAR\CADS\sheets\BR\K-111_FSK.dgn

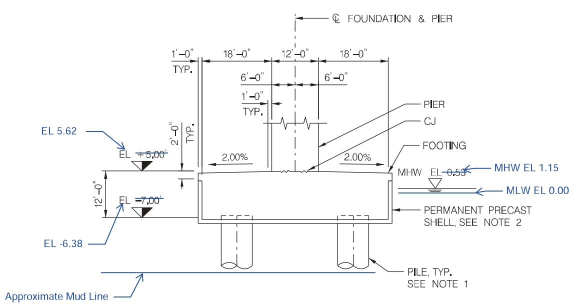
DRAFT PRE-DECISIONAL/CONFIDENTIAL

Pier 27 - Typical Section

24-WL-0757 R1
202461017
10/01/2025



TRANSVERSE ELEVATION
SCALE: 1/16" = 1'-0"



LONGITUDINAL ELEVATION
SCALE: 1/16" = 1'-0"

MAIN SPAN

BY: Christopher.Jensen1

Kiewit

QR CODE | PE STAMP | PE STAMP

MDTA
Maryland Transportation Authority
Engineering Division

ADDENDUMS & REVISIONS

NO.	DESCRIPTION	BY	DATE
A	ISSUED FOR ESTIMATE SUBMISSION	EAA	01/03/2025
B	OPCC ISSUED FOR ESTIMATING - REVISION 01	EAA	01/23/2025
C	PROOF OF CONCEPT SUBMISSION	SG	01/31/2025
D	BCC ISSUED FOR ESTIMATING	GM	04/18/2025
E	50% DESIGN SUBMISSION	SG	

FRANCIS SCOTT KEY BRIDGE REPLACEMENT I-695/MD 695 OVER THE PATAPSCO RIVER-BALTIMORE HARBOR
BALTIMORE CITY, BALTIMORE COUNTY & ANNE ARUNDEL COUNTY
MAIN SPAN BRIDGE - SUBSTRUCTURE - PIER P22 & P27 - FOUNDATION - DIMENSIONS

DESIGNED BY SG | DRAWN BY ROW | CHECKED BY
CONST. REVIEW BY | DATE JANUARY 2025 | SCALE AS NOTED

CONTRACT NO. KB-4903-0000
DRAWING NO. STR-001-FD-121
SHEET NO. 15 OF 117

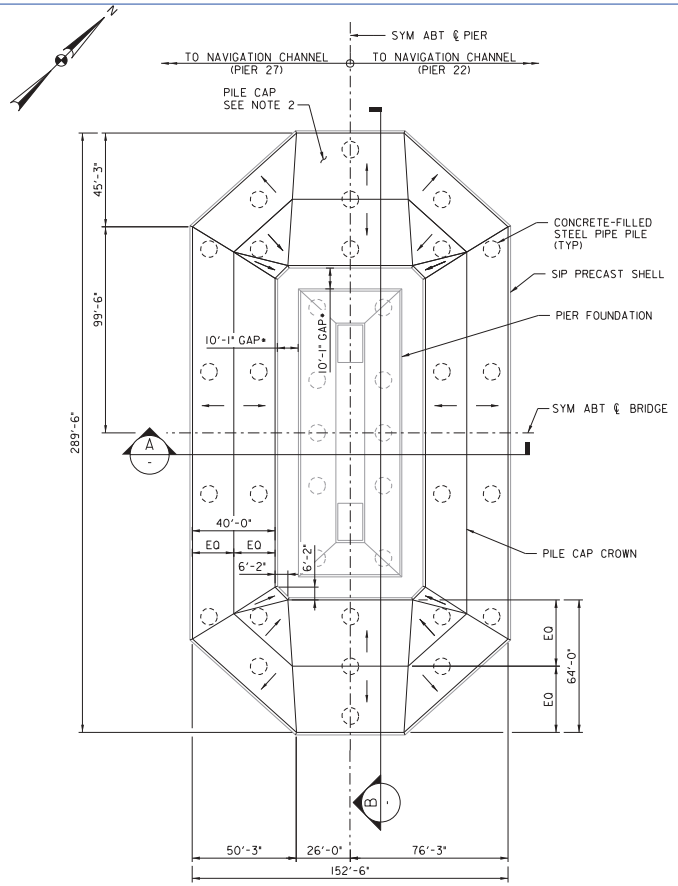
PLOTTED: 6/5/2025
FILE: pw:\\kiewitbus-pw.bentley.com:kiewitbus-pw-03\Documents\Projects\MD\Francis Scott Key Bridge Replacement\30 Estimate\07 STR\CAD\Sheets\1_Main Spans\BR-FD121_FSK.dgn

Pier 27 Pier Protection - Typical Section

24-WL-0757 R1
202461017
10/01/2025

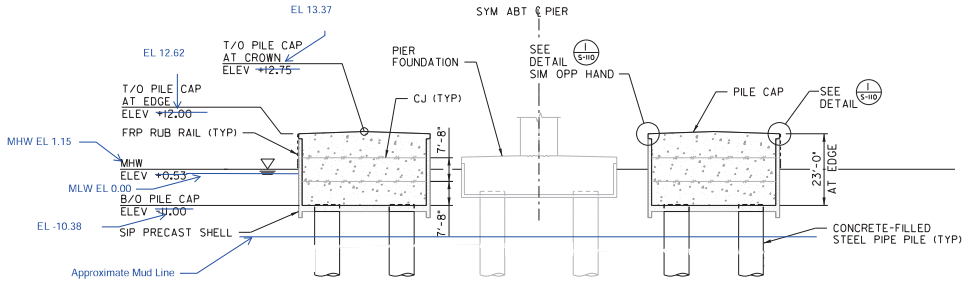
NOTES:

1. FOR GENERAL NOTES, SEE DRAWING NO. STR-008-GN-004.
2. PILE CAPS AT PIERS 22 AND 27 SHALL BE DESIGNATED AS MASS CONCRETE.



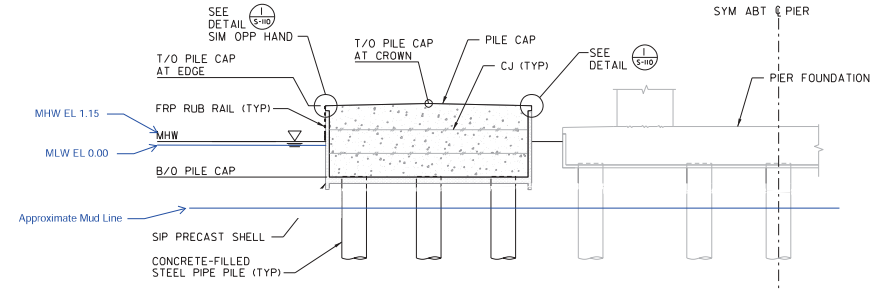
PLAN - PIERS 22 & 27

SCALE: 1" =30'
(PIER 22 SHOWN, PIER 27 SIM)
(RUB RAIL NOT SHOWN)
* AVAILABLE GAP ASSUMING 1'-2" THICK SIP PRECAST SHELL



SECTION A

SCALE: 1" =20'



SECTION B

SCALE: 1" =20'

MAIN SPAN & APPROACH PIER PROTECTION

BY: JAET

Kiewit

QR CODE | PE STAMP | PE STAMP

Maryland Transportation Authority
Engineering Division

ADDENDUMS & REVISIONS			
NO.	DESCRIPTION	BY	DATE
A	OPCC ISSUED FOR ESTIMATING	MTWY	1/3/2025
B	OPCC ISSUED FOR ESTIMATING - REVISION 01	MTWY	1/17/2025
C	PROOF OF CONCEPT	MTWY	2/21/2025
D	BCC IFE SUBMISSION	MTWY	4/18/2025
E	BCC IFE SUBMISSION - REVISION 01	MTWY	5/9/2025
F	50% DESIGN SUBMISSION	MTWY	8/7/2025

FRANCIS SCOTT KEY BRIDGE REPLACEMENT I-695/MD 695 OVER THE PATAPSCO RIVER-BALTIMORE HARBOR

BALTIMORE CITY, BALTIMORE COUNTY & ANNE ARUNDEL COUNTY

FENDER LAYOUT & DETAILS - TRANSITION PIERS 22 & 27

DESIGNED BY MTWY	DRAWN BY MDMO/JAET	CHECKED BY
CONST. REVIEW BY	DATE AUGUST 2025	SCALE AS NOTED

CONTRACT NO. KB-4903-0000
DRAWING NO. STR-008-S-113
SHEET NO. 22 OF 40

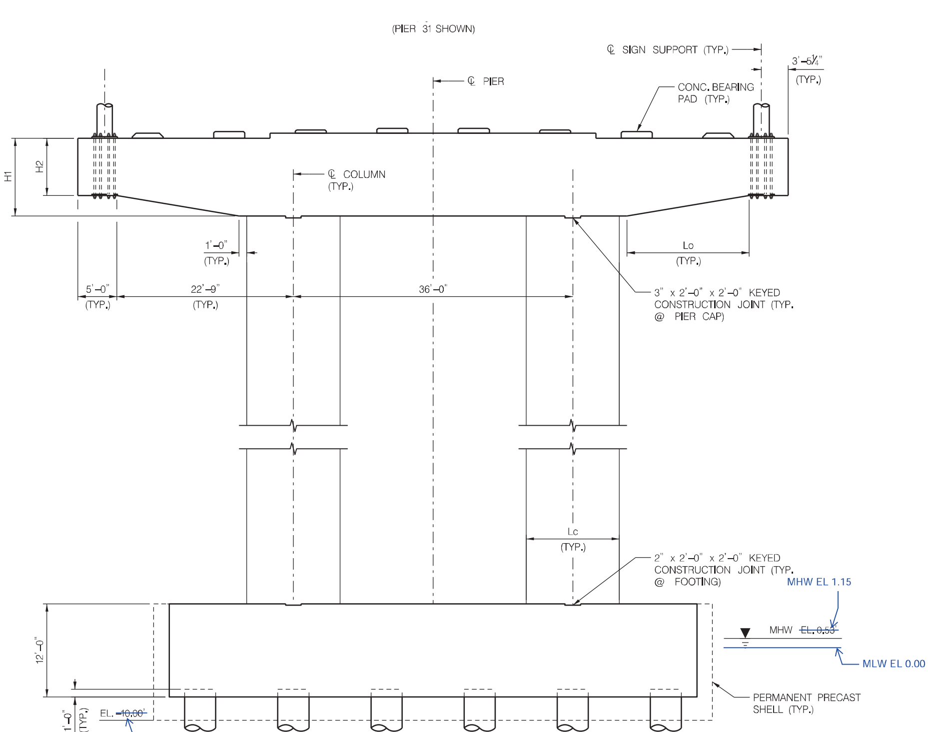
PLOTTED: 8/5/2025
FILE: pw:\\kiewitpw.pwcglobal.com\kiewit\projects\MDTA Francis Scott Key Bridge Replacement\30 Estimate\33 MAR\CADS\sheets\STR-008-S-113_FSK.dgn

Docusign Envelope ID: 57179904-E851-4E77-908B-1B4FD49417E3

FOR INFORMATION ONLY

Pier 28 - Typical Section

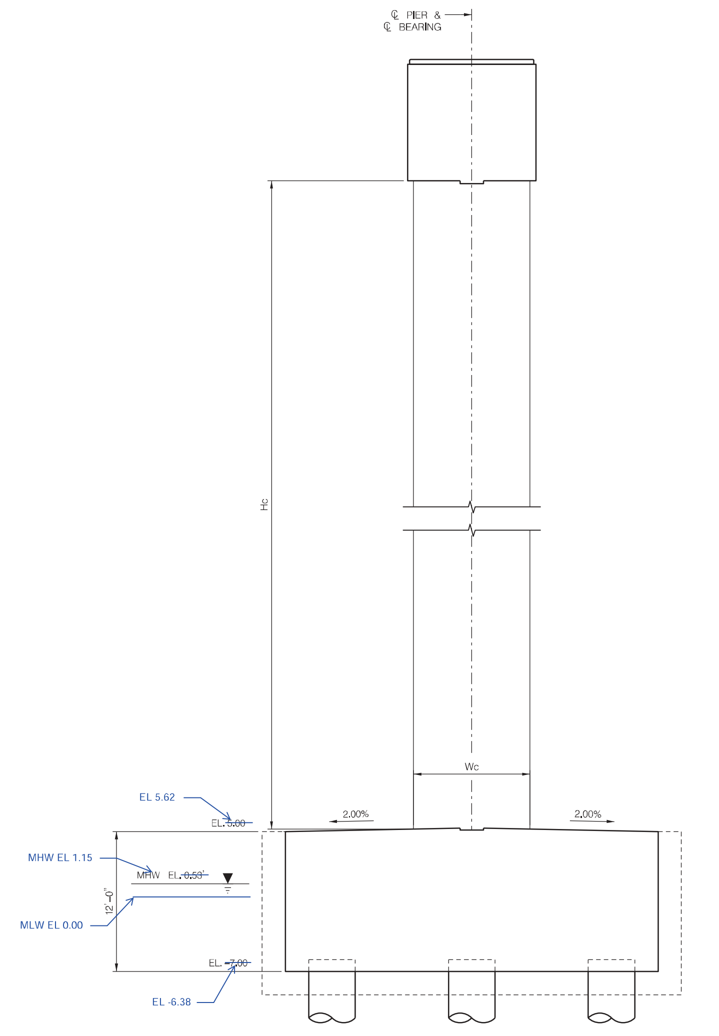
24-WL-0757 R1
202461017
10/01/2025



(PIER 31 SHOWN)
℄ SIGN SUPPORT (TYP.)
3'-6¾" (TYP.)
℄ PIER
CONC. BEARING PAD (TYP.)
H1
H2
℄ COLUMN (TYP.)
1'-0" (TYP.)
Lo (TYP.)
5'-0" (TYP.)
22'-9" (TYP.)
36'-0"
3" x 2'-0" x 2'-0" KEYED CONSTRUCTION JOINT (TYP. @ PIER CAP)
Lc (TYP.)
2" x 2'-0" x 2'-0" KEYED CONSTRUCTION JOINT (TYP. @ FOOTING)
MHW EL 1.15
MHW
MLW EL 0.00
12'-0"
PERMANENT PRECAST SHELL (TYP.)
1'-0" (TYP.)
EL -9.38
Approximate Mud Line

PIERS 28 AND 31 – ELEVATION VIEW

SCALE: ⅜" = 1'-0"
(PIER 31 SHOWN)



PIERS 28 AND 31 – TYPICAL SECTION

SCALE: ⅜" = 1'-0"
(PIER 31 SHOWN)

NORTH APPROACH MARINE

Kiewit

QR CODE | PE STAMP | PE STAMP

Maryland Transportation Authority
Engineering Division

ADDENDUMS & REVISIONS

NO.	DESCRIPTION	BY	DATE
A	PROOF OF CONCEPT SUBMISSION	KBC	01/03/2025
B	50% DESIGN & BCC IFE SUBMISSION	KBC	04/18/2025

FRANCIS SCOTT KEY BRIDGE REPLACEMENT I-695/MD 695 OVER THE PATAPSCO RIVER-BALTIMORE HARBOR

BALTIMORE CITY, BALTIMORE COUNTY & ANNE ARUNDEL COUNTY

PIER PLAN AND ELEVATION - PIERS 28 & 31

CONTRACT NO. KB-4903-0000
DRAWING NO. STR-002-PR-001

DESIGNED BY KBC | DRAWN BY EJE | CHECKED BY AVM
CONST. REVIEW BY | DATE APRIL 2025 | SCALE
SHEET NO. 15 OF 85

BY: Kevin.Maytum

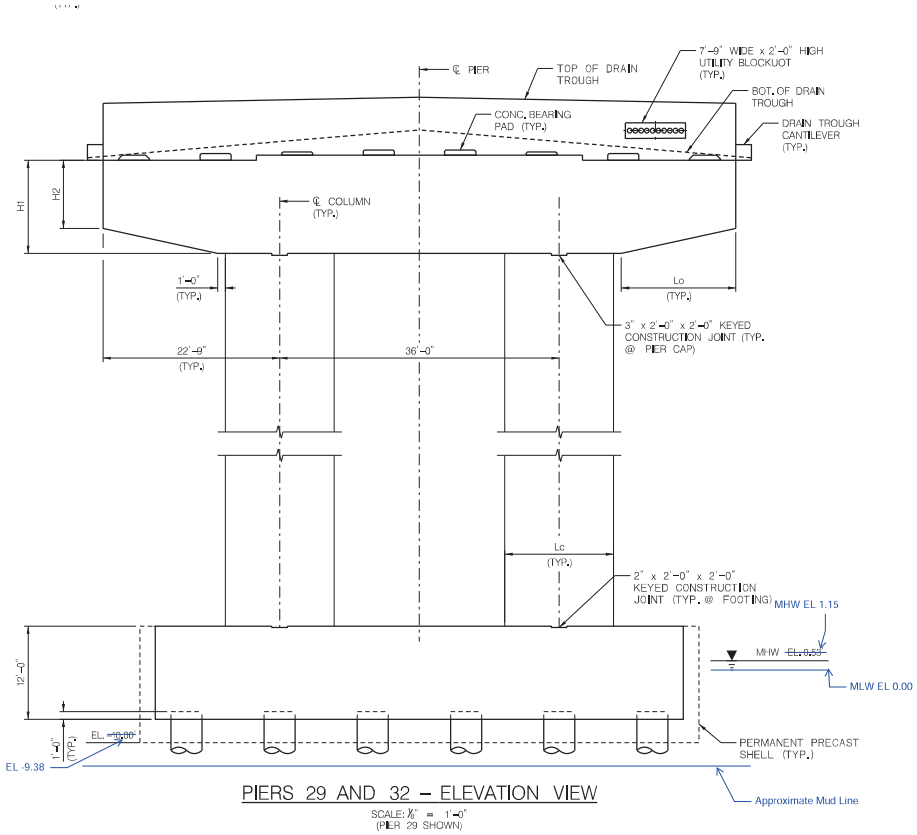
PLOTTED: 6/6/2025

DRAFT PRE-DECISIONAL/CONFIDENTIAL

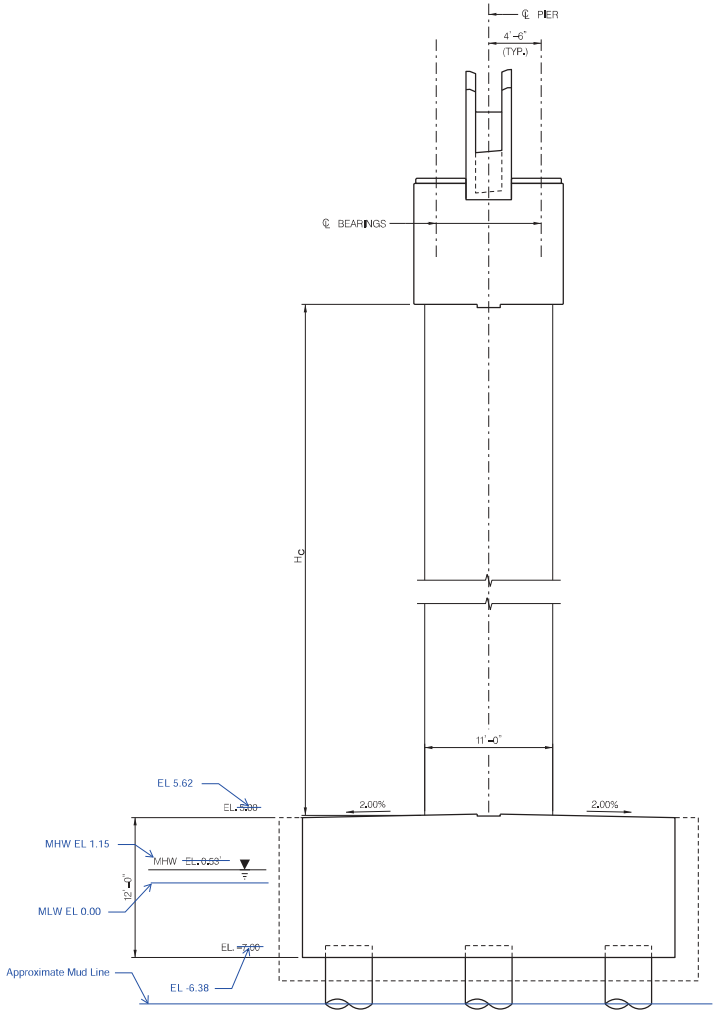
FOR INFORMATION ONLY

Pier 29 - Typical Section

24-WL-0757 R1
202461017
10/01/2025



PIERS 29 AND 32 – ELEVATION VIEW
SCALE: ½" = 1'-0"
(PIER 29 SHOWN)



PIERS 29 AND 32 – TYPICAL SECTION
SCALE: ½" = 1'-0"
(PIER 29 SHOWN)

NORTH APPROACH MARINE

BY: Kevin.Maylum

Kiewit

QR CODE | PE STAMP | PE STAMP

Maryland Transportation Authority
Engineering Division

ADDENDUMS & REVISIONS			
NO.	DESCRIPTION	BY	DATE
A	PROOF OF CONCEPT SUBMISSION	KBC	01/03/2025
B	50% DESIGN & BCC IFE SUBMISSION	KBC	04/18/2025

FRANCIS SCOTT KEY BRIDGE REPLACEMENT I-695/MD 695 OVER THE PATAPSCO RIVER-BALTIMORE HARBOR
BALTIMORE CITY, BALTIMORE COUNTY & ANNE ARUNDEL COUNTY
PIER PLAN AND ELEVATION - PIERS 29 & 32

CONTRACT NO. KB-4903-0000
DRAWING NO. STR-002-PR-002
SHEET NO. 16 OF 85

DESIGNED BY KBC | DRAWN BY EJE | CHECKED BY AVM
CONST. REVIEW BY | DATE APRIL 2025 | SCALE

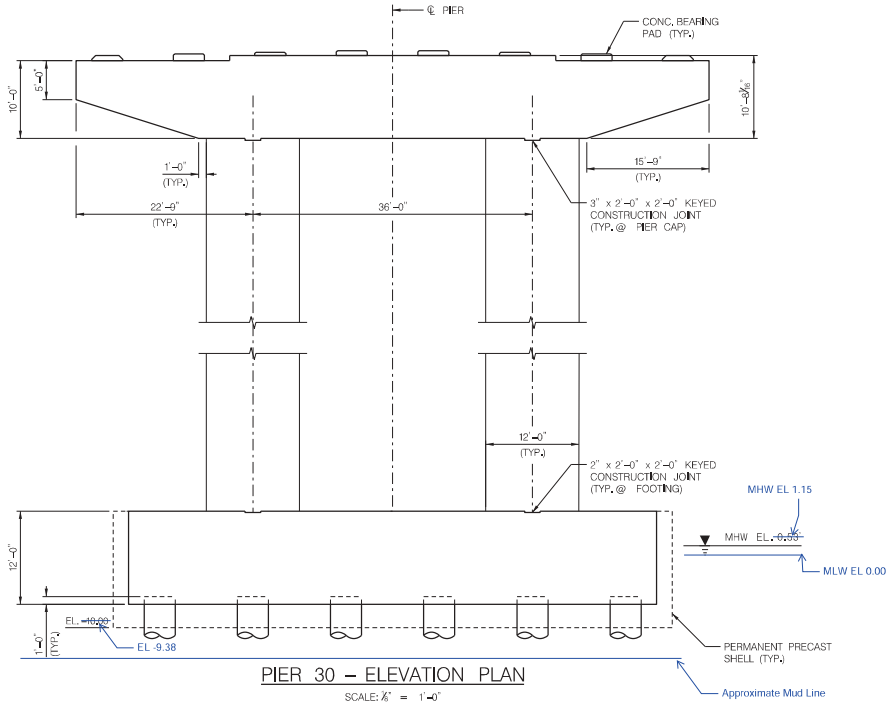
PLOTTED: 8/8/2025
FILE: pw://Kiewit.pwcentral.com/kiewit/projects/4003/Documents/Projects/MD Francis Scott Key Bridge Replacement/30 Estimate/07 STR/CAD/Sheets/2_North Approach Marine/STR-002-PR-R02_FSK.dgn

FOR INFORMATION ONLY

Pier 30 - Typical Section

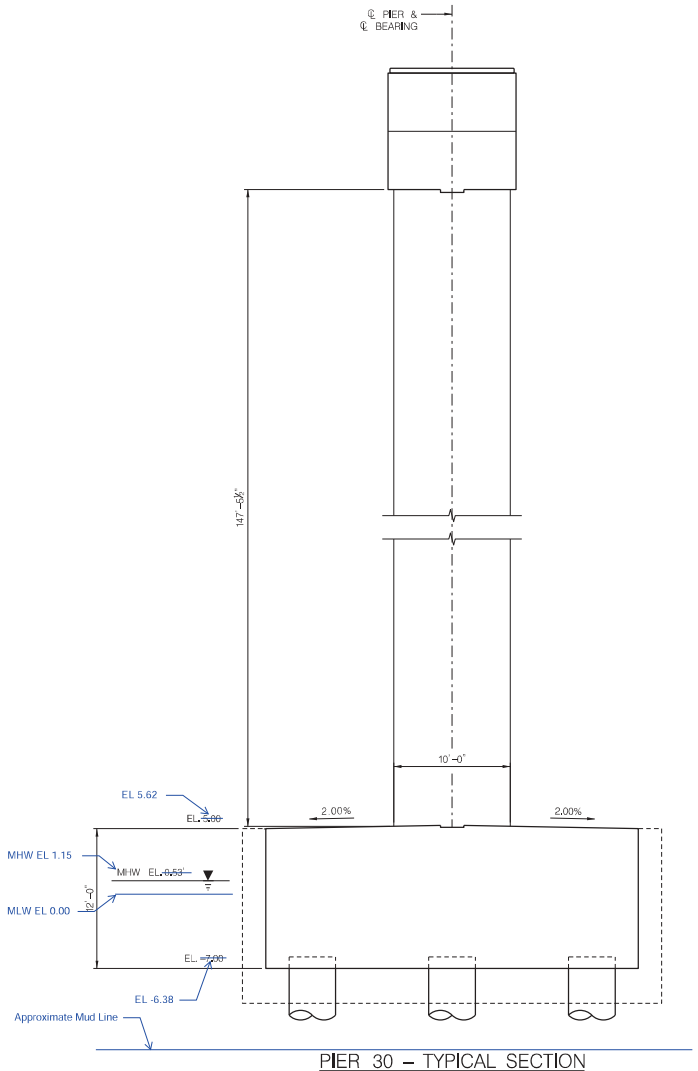
24-WL-0757 R1
202461017
10/01/2025

27 of 34



PIER 30 – ELEVATION PLAN

SCALE: ⅛" = 1'-0"



PIER 30 – TYPICAL SECTION

SCALE: ⅛" = 1'-0"

NORTH APPROACH MARINE

BY: Kevin.Maylum

Kiewit

QR CODE | PE STAMP | PE STAMP

Maryland Transportation Authority
Engineering Division

ADDENDUMS & REVISIONS			
NO.	DESCRIPTION	BY	DATE
A	PROOF OF CONCEPT SUBMISSION	KBC	01/03/2025
B	50% DESIGN & BCC IFE SUBMISSION	KBC	04/18/2025

FRANCIS SCOTT KEY BRIDGE REPLACEMENT I-695/MD 695 OVER THE PATAPSCO RIVER-BALTIMORE HARBOR

BALTIMORE CITY, BALTIMORE COUNTY & ANNE ARUNDEL COUNTY

PIER PLAN AND ELEVATION - PIER 30

DESIGNED BY KBC	DRAWN BY EJE	CHECKED BY AVM
CONST. REVIEW BY	DATE APRIL 2025	SCALE

CONTRACT NO. KB-4903-0000
DRAWING NO. STR-002-PR-003
SHEET NO. 17 OF 85

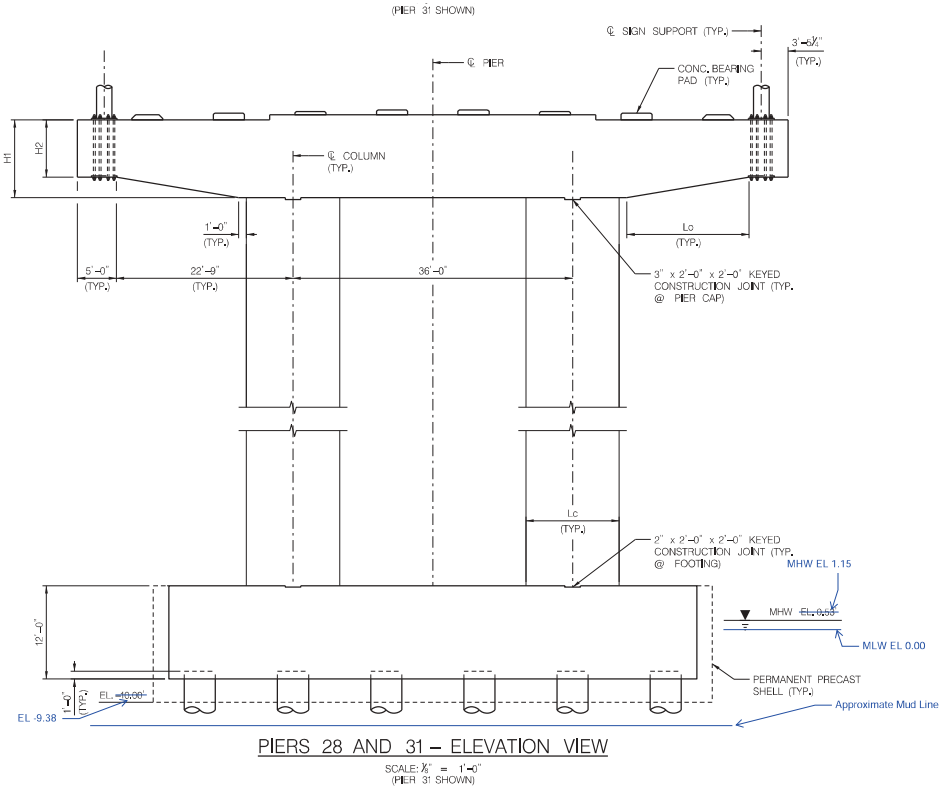
PLOTTED: 8/8/2025
FILE: pw://klaw.bentley.com:klaw-4/Documents/Projects/MD Francis Scott Key Bridge Replacement/30 Estimate/07 STR/CAD/Sheets/2_North Approach Marine/STR-002-PR03_FSK.dgn

FOR INFORMATION ONLY

Pier 31 - Typical Section

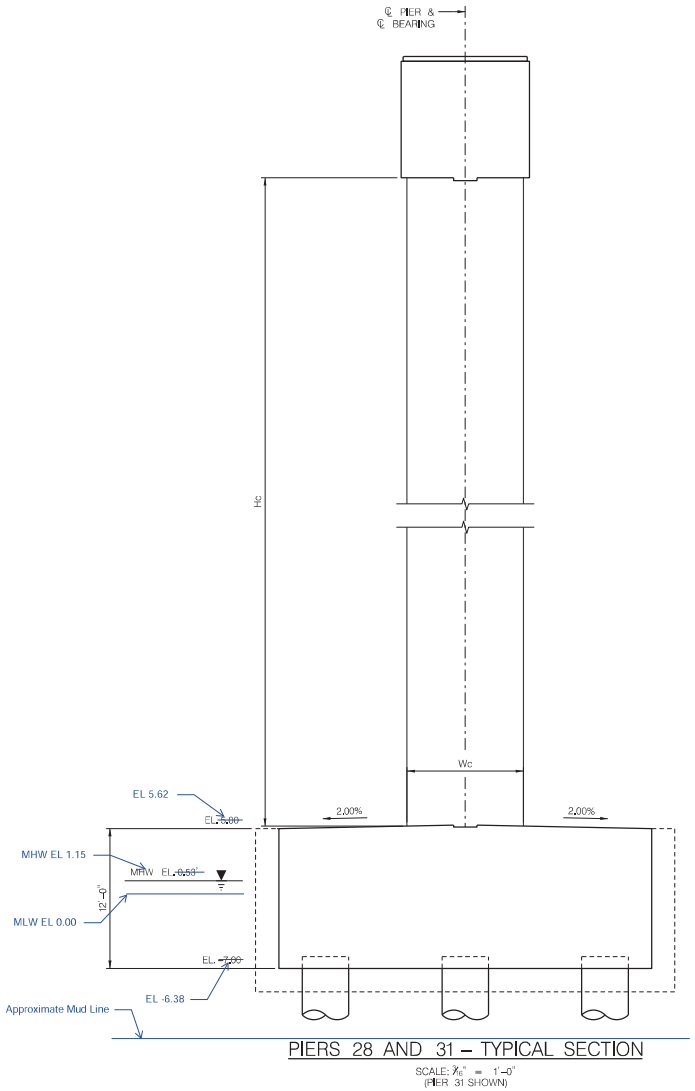
24-WL-0757 R1
202461017
10/01/2025

28 of 34



PIERS 28 AND 31 – ELEVATION VIEW

SCALE: ⅛" = 1'-0"
(PIER 31 SHOWN)



PIERS 28 AND 31 – TYPICAL SECTION

SCALE: ⅛" = 1'-0"
(PIER 31 SHOWN)

NORTH APPROACH MARINE

BY: Kevin.Maylum

Kiewit

QR CODE | PE STAMP | PE STAMP

Maryland Transportation Authority
Engineering Division

ADDENDUMS & REVISIONS			
NO.	DESCRIPTION	BY	DATE
A	PROOF OF CONCEPT SUBMISSION	KBC	01/03/2025
B	50% DESIGN & BCC IFE SUBMISSION	KBC	04/18/2025

FRANCIS SCOTT KEY BRIDGE REPLACEMENT I-695/MD 695 OVER THE PATAPSCO RIVER-BALTIMORE HARBOR

BALTIMORE CITY, BALTIMORE COUNTY & ANNE ARUNDEL COUNTY

PIER PLAN AND ELEVATION - PIERS 28 & 31

DESIGNED BY KBC	DRAWN BY EJE	CHECKED BY AVM
CONST. REVIEW BY	DATE APRIL 2025	SCALE

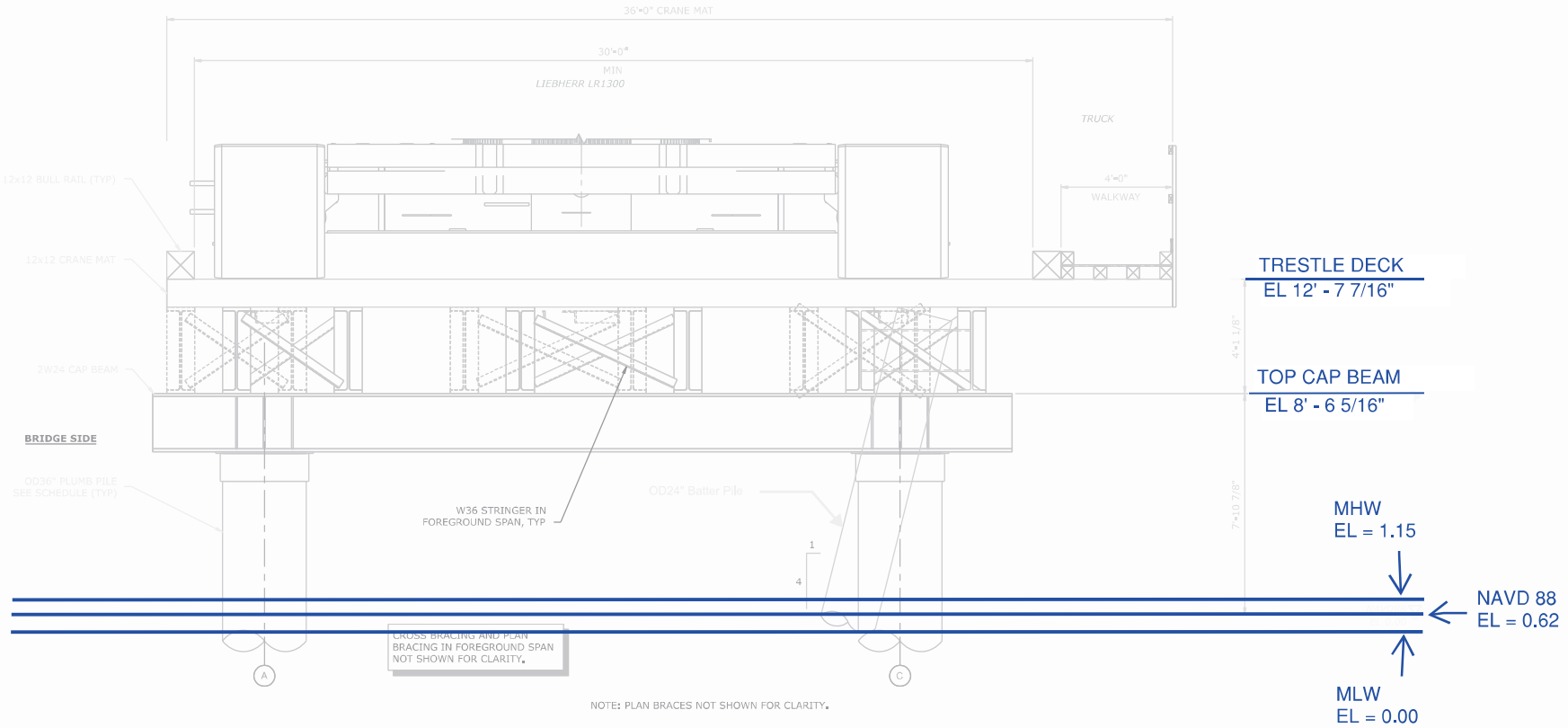
CONTRACT NO. KB-4903-0000
DRAWING NO. STR-002-PR-001
SHEET NO. 15 OF 85

PLOTTED: 8/8/2025
FILE: pw://Kiewit.pwcentral.com/kiewit/projects/4103/Documents/Projects/MD Francis Scott Key Bridge Replacement/30 Estimate/07 STR/CAD/Sheets/2_North Approach Marine/STR-002-PR01_FSK.dgn

DRAFT PRE-DECISIONAL/CONFIDENTIAL

Temporary Trestle - 2-Pile Typical Section

24-WL-0757 R1
202461017
10/01/2025
29 of 34



NOTE: PLAN BRACES NOT SHOWN FOR CLARITY.

TYPICAL SECTION

SCALE: 1/2" = 1'-0"

SEE TYPICAL SUPERSTRUCTURE PLAN FOR STRINGER PACK, CAP BEAM, AND PILE HORIZONTAL DIMENSIONS

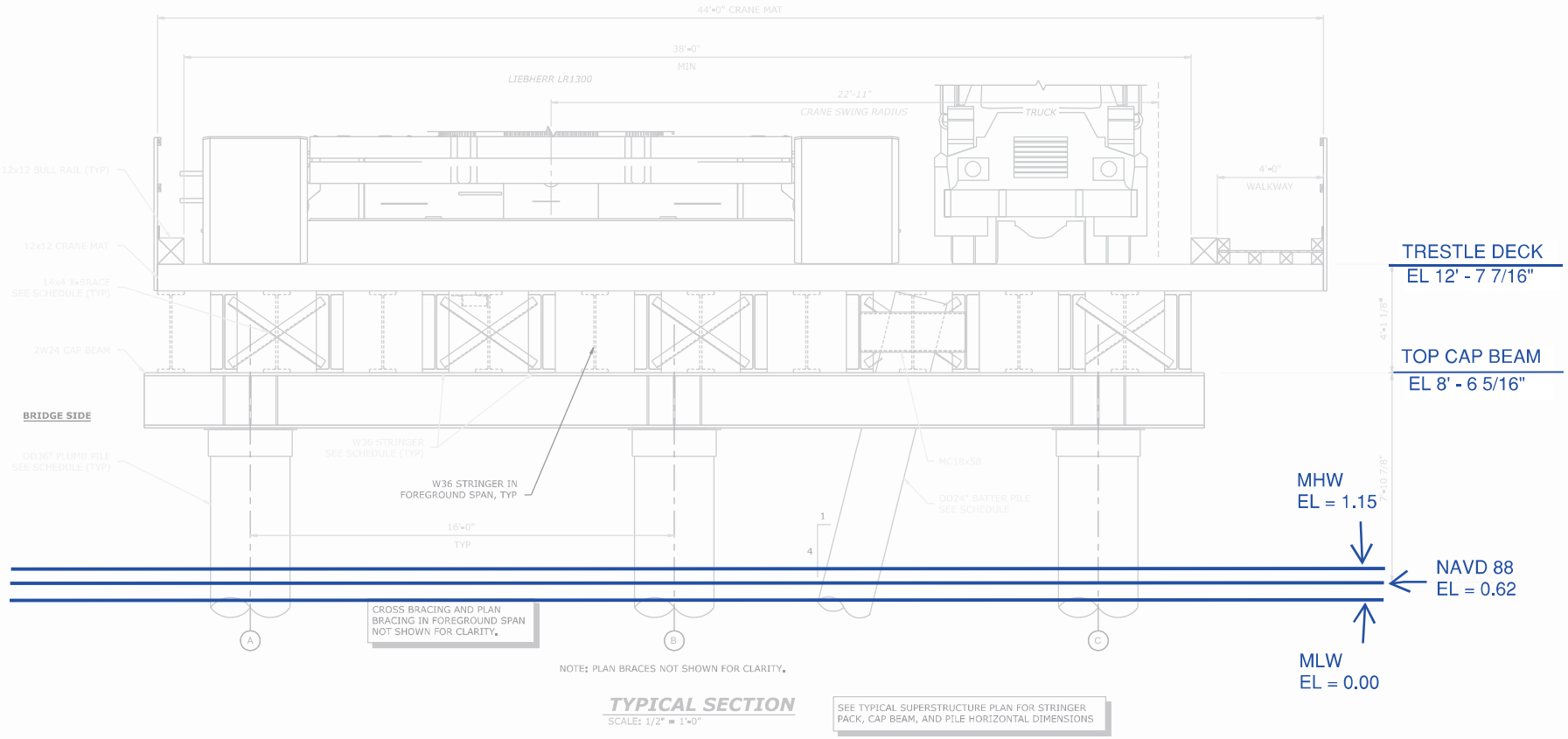
PRELIMINARY - NOT FOR CONSTRUCTION

MARK	DATE	DESCRIPTION	DRWN	DESG	CHKD

Kiewit

PROJECT: FRANCIS SCOTT KEY BRIDGE REPLACEMENT
LOCATION: BALTIMORE, MD
TSCD RISK: HIGH
PROJECT TASK: CRANE TRESTLE
JOB-TASK NO: 24-227-522.01.02
SHEET TITLE: TYPICAL SUPERSTRUCTURE SECTION
SHEET ID: TW104

Temporary Trestle - 3-Pile Typical Section



TYPICAL SECTION
SCALE: 1/2" = 1'-0"

SEE TYPICAL SUPERSTRUCTURE PLAN FOR STRINGER PACK, CAP BEAM, AND PILE HORIZONTAL DIMENSIONS

MARK	DATE	DESCRIPTION	DRWN	DESG	CHKD

Kiewit

PROJECT: FRANCIS SCOTT KEY BRIDGE REPLACEMENT
LOCATION: BALTIMORE, MD
TSCD RISK: HIGH
PROJECT TASK: CRANE TRESTLE
JOB-TASK NO: 24-227-522.01.02
SHEET TITLE: TYPICAL SUPERSTRUCTURE SECTION
SHEET ID: TW103

Impact Summary Table						
Francis Scott Key Bridge Rebuild Project - Modification #2						
Resource Type	**Previously Requested/Authorized Impacts***		**Impact Changes Requested**		**Modified Total Impacts**	
	Permanent	Temporary	Permanent	Temporary	Permanent	Temporary
Tidal Waterway	553,820 SF / 12.71 AC	10,605 SF / 0.25 AC	-529,437 SF / -12.15 AC	0 SF / 0.00 AC	24,383 SF / 0.56 AC	10,605 SF / 0.25 AC
Perennial Waterway	0 LF / 0 SF	85 LF / 246 SF	112 LF / 337 SF	-85 LF / -246 SF	112 LF / 337 SF	0 LF / 0 SF
Intermittent Waterway	0 LF / 0 SF	187 LF / 599 SF	187 LF / 599 SF	-187 LF / -599 SF	187 LF / 599 SF	0 LF / 0 SF
Nontidal Open Water	0 SF / 0.00 AC	0 SF / 0.00 AC	19,571 SF / 0.45 AC	0 SF / 0.00 AC	19,571 SF / 0.45 AC	0 SF / 0.00 AC
Emergent Nontidal Wetland	4,336 SF / 0.1 AC	6,628 SF / 0.16 AC	131,453 SF / 3.02 AC	-6,628 SF / -0.16 AC	135,789 SF / 3.12 AC	0 SF / 0 AC
25-ft Nontidal Wetland Buffer	14,415 SF / 0.34 AC	32,186 SF / 0.74 AC	87,266 SF / 2.00 AC	-32,186 SF / -0.74 AC	101,681 SF / 2.34 AC	0 SF / 0 AC

**Impacts to nontidal resources were requested in the original Application but have not yet been authorized*

Francis Scott Key Bridge Rebuild Project - Impacts by Resource - July 2025						
Resource ID	**Resource Classification**	**Permanent Impact (SF)**	**Temporary Impact (SF)**	**Permanent Impact (LF)**	**Temporary Impact (LF)**	**Plate Number**
2WETD	PEM	674	-	-	-	2
2WETD Buffer	25ft Wetland Buffer	4,780	-	-	-	2
Patapsco River	Tidal Waters	24,383	10,605	-	-	3-6
1WETA	PEM	1,006	-	-	-	8
1WETA Buffer	25ft Wetland Buffer	7,380	-	-	-	8
1WA	Perennial Waters	337	-	112	-	8
1WB	Intermittent Waters	599	-	187	-	8
1WETB	PEM	166	-	-	-	8
1WETB Buffer	25ft Wetland Buffer	3,832	-	-	-	8
1WETC	PEM	2,253	-	-	-	8
1WETC Buffer	25ft Wetland Buffer	15,057	-	-	-	8
1WETD Buffer	25ft Wetland Buffer	681	-	-	-	8
1WETE	POW Waters	19,571	-	-	-	6-7
1WETE	PEM	124,822	-	-	-	7
1WETE Buffer	25ft Wetland Buffer	54,704	-	-	-	7
1WETF	PEM	3,662	-	-	-	8
1WETF Buffer	25ft Wetland Buffer	9,638	-	-	-	8
1WETG	PEM	3,206	-	-	-	8
1WETG Buffer	25ft Wetland Buffer	5,609	-	-	-	8

Francis Scott Key Bridge Rebuild Project - Impacts by Activity - July 2025						
Activity	**Previously Requested/Authorized Impacts* - Permanent**	**Previously Requested/Authorized Impacts* - Temporary**	**Changes in Permanent Impact**	**Changes in Temporary Impact**	**Modified Total Permanent Impact**	**Modified Total Temporary Impact**
Bridge replacement (including piles, pier foundations, and pier protection)	12.71 AC - Tidal Patapsco River	N/A	-12.15 AC	N/A	0.56 AC	N/A
Temporary trestle (1200 - 36-inch piles)	N/A	9.19 AC - Above Tidal Patapsco River 8,484 SF -Tidal Waters Impact	N/A	-3.21 AC - Above Tidal Patapsco River 0 SF - Tidal Waters Impact	N/A	5.98 AC - Above Tidal Patapsco River 8,484 SF -Tidal Waters Impact
Mooring/template Piles (300 - 36-inch piles)	N/A	2,121 SF - Tidal Waters Impact	N/A	0 SF - Tidal Waters Impact	N/A	2,121 SF - Tidal Waters Impact
Roadway grading, drainage improvements, reconfiguration of existing roadway approaches	4,336 SF - Nontidal Wetlands 14.415 SF - 25-ft Nontidal Wetland Buffer	6,628 SF - Nontidal Wetlands 32,186 SF - 25-ft Nontidal Wetland Buffer 272 LF (845 SF) - Nontidal tributaries	+131,453 SF - Nontidal Wetlands +87,266 SF - 25-ft Nontidal Wetland Buffer +299 LF (936 SF) - Nontidal tributaries +19,571 SF (0.45 AC) - Nontidal Open Water	-6,628 SF - Nontidal Wetlands -32,186 SF - 25-ft Nontidal Wetland Buffer -272 LF(845 SF) - Nontidal tributaries	135,789 SF - Nontidal Wetlands 101,681 SF - 25-ft Nontidal Wetland Buffer 299 LF (936 SF) - Nontidal tributaries 19,571 SF (0.45 AC) - Nontidal Open Water	0

**Impacts to nontidal resources were requested in the original Application but have not yet been authorized*

Francis Scott Key Bridge Rebuild Project - Tidal Waters Impacts by Bridge Pier - July 2025											
Pier/ Fender #	Foundation Position	Fender Type	Fender Position	Impact Requiring Mitigation				Total Impact Area			
				Piers (SF)	Fenders (SF)	Total (SF)	Total (Acres)	Piers (SF)	Fenders (SF)	Total (SF)	Total (Acres)
20	SUBMERGED	RUB RAIL	ATTACHED	2,592.00	0.00	2,592.00	0.0595	2,592.00	0.00	2,592.00	0.0595
21	FLOATING	RUB RAIL	ATTACHED	226.19	0.00	226.19	0.0052	2,592.00	0.00	2,592.00	0.0595
22	FLOATING	CONCRETE	FLOATING	502.65	1,306.90	1,809.56	0.0415	7,332.00	30,500.00	37,832.00	0.8685
23	FLOATING	CONCRETE	FLOATING	502.65	1,306.90	1,809.56	0.0415	7,332.00	30,500.00	37,832.00	0.8685
24	FLOATING	CONCRETE	FLOATING	2,261.95	4,021.24	6,283.19	0.1442	19,080.00	51,200.00	70,280.00	1.6134
25	FLOATING	CONCRETE	FLOATING	2,261.95	4,021.24	6,283.19	0.1442	19,080.00	51,200.00	70,280.00	1.6134
26	FLOATING	CONCRETE	FLOATING	502.65	2,010.62	2,513.27	0.0577	7,332.00	30,500.00	37,832.00	0.8685
27	FLOATING	CONCRETE	FLOATING	502.65	1,306.90	1,809.56	0.0415	7,332.00	30,500.00	37,832.00	0.8685
28	FLOATING	RUB RAIL	ATTACHED	376.99	0.00	376.99	0.0087	6,992.00	0.00	6,992.00	0.1605
29	FLOATING	RUB RAIL	ATTACHED	226.19	0.00	226.19	0.0052	2,592.00	0.00	2,592.00	0.0595
30	FLOATING	RUB RAIL	ATTACHED	226.19	0.00	226.19	0.0052	2,592.00	0.00	2,592.00	0.0595
31	FLOATING	RUB RAIL	ATTACHED	226.19	0.00	226.19	0.0052	2,592.00	0.00	2,592.00	0.0595
					TOTAL	**24,382.09**	**0.5597**		**TOTAL**	**311,840.00**	**7.1589**

Notes:
1. Impacts calculated from plans dated 6/06/2025, and surveyed bathymetry
2. Submerged position indicates the element is touching the river bottom
3. Floating position indicates the element is supported of piles above the river bottom
3. Attached position indicates the fender is attached to the pier foundation above the river bottom