WATER AND SCIENCE ADMINISTRATION
TIDAL WETLANDS DIVISION

Wetland Report and Recommendation

State Wetlands Case No:

24-WL-0653

Applicant:	Maryland Transportation Authority (MDTA) C/o Brian Wolfe Director of Project Development 2310 Broening Highway Baltimore, MD 21224 bwolfe3@mdta.state.md.us	Agent:	Rummel, Klepper & Kahl, LLP C/o Justin Reel 700 East Pratt Street Suite 500 Baltimore, MD 21202 703-338-4139 jreel@rkk.com

Date Application Received: June 11, 2024 Public Notice Required? Yes

Comment Period Closing Date: August 15, 2024

Maryland Coordinates: 172339 x 440795

Location of Proposed Work: Francis Scott Key Bridge between Baltimore City and Dundalk, Baltimore County Maryland, Baltimore Harbor, Maryland 8-digit Watershed (02130903)

Purpose of Proposed Work: The purpose of the removal of the remaining Francis Scott Key Bridge structures will allow for the planning and eventual construction of a replacement bridge at this location. The purpose of the blasting activities is to remove the remaining structures in the most safe and efficient manner.

Description of Authorized Work:

- Remove the remaining four protective barrier structures (dolphins) and bridge pier structures, both above and below the water line.
    - This removal will consist of both mechanical means and the use of blasting.
    - Subaqueous blasting and blasting above the water line will be used on the remaining eleven in-water piers (piers 14 – 24) and four dolphins.
    - Remove the existing dolphins and piers to two feet below the mud line.
    - The material will be removed via barge with both clamshell and excavators and will include the removal of buried pier segments and associated structures.
    - The project will result in 8.29 acres of temporary impacts to the Patapsco River.

Waterbody: Patapsco River

Requires Water Quality Certification?: No. USACE will be issuing a Nationwide Permit for the removal activities.

Qualifies for Maryland State Programmatic General Permit?: No. USACE will be issuing a Nationwide Permit for the removal activities.

Area of Vegetated Wetland Impacts Requiring Mitigation: 0 s.f.

Area of Open Water Tidal Wetlands Requiring Mitigation: 0 s.f.

Area of Wetlands Created: 0 s.f.

Was the Applicant's Original Project Modified?: No.

Department Comment:

As required by § 5-204 (b) of the Environment Article, the Department drafted and issued a public notice by posting the public notice on its WEB site from July 15, 2024 to August 15, 2024 and publishing the public notice for the proposed project in the Baltimore Sun and Capitol Gazette on July 15, 2024 and also published in the Dundalk Eagle on July 18, 2024. In addition, the public notice was provided to adjacent property owners listed on Attachment A.

A pre-scheduled public informational hearing was held on August 1, 2024, at the Baltimore County Public Library, North Point Branch, located at 1716 Merritt Blvd., Dundalk, MD 21222. The hearing was attended by approximately 30-40 people. Of that group, 23 interested parties signed the sign in sheet, and six elected officials and/or staff attended.

The elected officials and/or staff who attended included:

- Bob Metzgar, House of Delegates, 6th District
- Robert Long, House of Delegates; 6th District
- Johnny Sailing, State Senate, 6th District
- Dana Moore, Mayor Scott, Baltimore City
- Erica Crouch, County Executive's office, Baltimore County
- Rashard Singletary, Mayor's Office of Neighborhoods, Baltimore City

Of the elected officials, comments were provided by Delegate Long, Delegate Metzgar, Senator Sailing, Ms. Crouch, and Ms. Moore spoke. No one spoke in opposition.

In addition to the elected officials, there were six citizens who spoke. No one spoke in opposition.

Following the hearing, MDE staff received emailed comments from three additional citizens and comments from the Chesapeake Bay Foundation. No one emailed in opposition.

While no one was opposed, various questions and concerns were raised relating to the process of notification for the hearing, the use of explosives, trucks and equipment, community coordination, justification for the removal of the existing structures, the project timeline, existing utilities, an alternative bridge design, legacy contamination, sediment and erosion control, protection of marine life, and recycling of the existing bridge material.

MDE staff coordinated with MDTA consultants, RKK, to answer questions and provide feedback to all the concerns. These answers have been prepared in a letter and have been attached to this R&R (Attachment B).

The Maryland Department of Natural Resources (DNR) reviewed the proposed project and determined that to ensure that impacts to natural and living resources on the project site and vicinity are first avoided and then, if unavoidable, minimized to the maximum extent possible, the Department requests that the following concerns and recommendations be fully incorporated into the review of Phase II and all the proposed activities:

- The JPA provides Conceptual Blast Plans for the piers and structures below water. DNR has the following comments regarding these procedures:
    - Other projects have utilized fish deterrent sound systems to encourage fish to leave the area prior to blasting. DNR encourages this practice to be incorporated into the blasting plans.
    - Please prioritize performing subaqueous blasting outside of the time of year restriction for the Patapsco River.
    - BMPs should be implemented to minimize sedimentation during blasting.
- The JPA provides demolition procedures for piers and structures below the water. DNR has the following comments regarding these procedures:
    - DNR is not opposed to leaving rubble or "clean" debris that is buried two or more feet below the mudline.
    - The demolition procedures do not specify the minimum size of debris that will be removed. A clamshell bucket should be used to mechanically remove rubble pieces of approximately 10 inches or greater that are on the surface or within two feet of the mudline, or coordination can occur with the interagency team to decide on a size threshold that will allow as much debris removal as possible while protecting water quality. The project team may also want to consider documenting location, size, and depth of large debris deeper than 2 feet below the mud line that it is being left in place if that can be determined from the side scan sonar data. This would serve as data for any future channel geometry changes.
    - Project sponsors should investigate additional methods of minimizing turbidity from the removal of piers and debris that are buried or resting on the bottom.
- Where presence of yellow perch has been documented in the vicinity of an instream project area, generally no instream work is permitted in Use I waters during the period of February 15 through June 15, inclusive, during any year to minimize impacts to spawning anadromous fish species, including yellow perch and resident fish species.
- If surface water intake is necessary, DNR asks that the intake have a 1mm screen and an intake velocity of no more than 0.5 cubic feet per second.
- The JPA documents note that remnants of Piers 19, 20, and 21 were snapped off during the collapse and portions of the piers are on the river bottom and may have sunk up to 30 feet below the mudline. DNR is not opposed to allowing the pieces to remain if they are greater than 2 feet below the mudline. If it is determined that these pieces need to be removed, the removal operation should occur outside of the TOYR period to protect spawning fish specified above. Project sponsors should investigate additional methods of minimizing turbidity from the removal of these piers.
- DNR requests compensation for fish mortality from subaqueous blasting. Monetary values can be based on the prices in the "Fish Mortality Mitigation Cost Table" that have been previously coordinated with the project team.

The Maryland Historical Trust reviewed that proposed project and determined that there are no historic properties affected by this undertaking.

The evaluation of this project has taken into account ecological, economic, recreational, developmental, and aesthetic considerations appropriate for this proposal as well as other requirements set forth in the Code of Maryland Regulations. To ensure that impacts to resources are avoided and minimized to the maximum extent possible and to ensure that all work is performed in accordance with critical area and local regulations, the Department has recommended a number of special conditions. Provided all general and special conditions are adhered to, the work proposed will not cause significant deleterious impacts to marsh vegetation, submerged aquatic vegetation, finfish, shellfish, or navigation.

Project Justification: In consideration of the site characteristics and the nature of the proposed work, the Department concludes that the application represents a reasonable exercise of riparian rights.

SPECIAL CONDITIONS:

A. The Maryland Department of the Environment has determined that the proposed activities comply with, and will be conducted in a manner consistent with the State's Coastal Zone Management Program, as required by Section 307 of the Federal Coastal Zone Management Act of 1972, as amended.

B. The Licensee shall comply with all Critical Area requirements and obtain all necessary authorizations from local jurisdiction. This License does not constitute authorization for disturbance in the 100-foot Critical Area Buffer. "Disturbance" in the Buffer means clearing, grading, construction activities, or removal of any size of tree or vegetation. Any anticipated Buffer disturbance requires prior written approval, before commencement of land disturbing activity, from local jurisdiction in the form of a Buffer Management Plan.

C. 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 contractors may be obtained by contacting the MCLB at 410-537- 3249, by e-mail at MDE.MCLB@maryland.gov or by accessing the Maryland Department of the Environment, Environmental Boards webpage.

D. The issuance of this license is not a validation or authorization by the Department for any of the existing structures depicted on the plan sheets on the subject property that is not part of the authorized work description, nor does it relieve the Licensee of the obligation to resolve any existing noncompliant structures and activities within tidal wetlands.

E. The Licensee shall submit a final blasting plan that includes a detailed fish deterrent sound system. The final blast plan must be submitted and reviewed by the Maryland Department of Environment Tidal Wetlands Division and Maryland Department of Natural Resources Environmental Review Program.

F. If any subaqueous blasting occurs between February 15 through June 15, inclusive during any year, the Licensee shall coordinate with DNR for minimization and avoidance measures prior to activity commencement. The Licensee shall make every effort to complete subaqueous blasting activities outside of the above TOYR.

G. The Licensee shall strictly manage and maintain all in-water BMPs to prevent sedimentation during blasting activities.

H. The Licensee shall remove all debris with a minimum size of 10 inches in diameter or greater that is on the substrate surface of within two feet below the mudline.

I. The Licensee shall document the location, size and depth using side scan sonar, any debris deeper than two feet below the mudline may be left in place.

J. If surface water intake is necessary, the Licensee shall ensure that the intake have a 1mm screen and an intake velocity of no more than 0.5 cubic feet per second.

K. If the remnants from pirs 19, 20 and 21 need to be removed from greater than two feet below the mudline, the Licensee shall remove these outside of the February 15 through June 15 time of year restriction to protect spawning anadromous fish species.

L. The Licensee shall use appropriate BMPs that are identified in the *"Proposed Best Management Practices for Francis Scott Key Bridge Demolition and Geotechnical Investigation Activities to be permitted under MDE's Emergency Authorization. (adapted from NMFS/GARFO BMP Manual)"*.

M. If any mooring activities overlap within the Fort Carroll Sensitive Species Project Review Area (SSPRA) area as depicted on Attachment C, the Licensee shall coordinate with DNR's Environmental Review Program for minimization and avoidance measures.
*The SSPRA over the Key Bridge (green oval) can be disregarded, as the nest was lost in the bridge collapse.

N. The Licensee shall submit a weekly report and a summary report at the end of blasting activities documenting total injured/killed fish observed for each species, approximate location relative to where the blasting was occurring, and time/date.

O. The Licensee shall provide compensation for fish mortality as a result of any blasting activities. The Licensee shall provide payment into a Maryland Department of Natural Resources (DNR) 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 on Attachment D.

DEPARTMENT OF THE ENVIRONMENT APPROVAL:

Matthew Wallach — 8/26/2024

Matthew F Wallach, Natural Resource Planner — DATE
Tidal Wetlands Division

Tammy Roberson — 8/26/2024

Tammy Roberson, Division Chief — DATE
Tidal Wetlands Division

8/27/24

D. Lee Currey, Director — DATE
Water and Science Administration

WETLANDS ADMINISTRATION CONCURRENCE:

William Morgante, Wetlands Administrator — DATE
Board of Public Works

Attachment A

FSK Demo Project - Adjacent Property Owner Notification Letter Mailing List

Local Government Representatives

Anne Arundel County

Mr. Steuart Pittman
County Executive
44 Calvert Street
Annapolis, MD 21401

Ms. Allison Pickard
Council Chairman
44 Calvert Street
1st Floor
Annapolis, MD 21401

Baltimore County

Mr. John Olszewski, Jr.
County Executive
400 Washington Ave
Mezzanine Level
Towson, MD 21204

Mr. Israel Patoka
Council Chairman
400 Washington Ave
Towson, MD 21204

Baltimore City

Mr. Brandon Scott
Office of the Mayor
100 Holliday Street
Baltimore, MD 21202

Mr. Nick Mosby
Council President
100 Holliday Street
Suite 400
Baltimore, MD 21202

Adjacent Property Owners

Fort Carrol LLC
C/O M. Eisenberg
2844 Old Court Road
Baltimore, MD 21208

Baltimore Gas & Electric
110 W Fayette Street
Baltimore, MD 21201

Maryland Port Authority
2700 Broening Highway
Dunmar Bld-So Ste 123
Baltimore, MD 21222

Maryland Port Administration
401 E Pratt Street
Baltimore, MD 21202

Baltimore City, Mayor & City Council
Fort Armistead Park
4000 Hawkins Point Road
Baltimore, MD 21226

Attachment B

COMMENTS RESPONSE

August 22, 2024

Re: **Maryland Transportation Authority (MDTA) Francis Scott Key Bridge Demolition**
Agency Interest Number: 4229
Tracking Number: 202460906
Tidal Authorization Number: 24-WL-0607 & 24-WL-0653
Water Quality Certification Number: 24-WQC-0022

The Maryland Department of the Environment ("MDE" or "the Department") received your comments regarding MDTA's Joint Federal/State Application for the Alteration of Any Floodplain, Waterway, Tidal or Nontidal Wetland in Maryland ("Application") received on June 11, 2024. The application proposes the demolition of the stable standing structures comprising the remaining Francis Scott Key Bridge in preparation for bridge reconstruction. The demolition will consist of two phases. The first phase, authorized in July 2025 under 24-WL-0607EX as an emergency authorization, allows for the mechanical removal of the remaining parapet, median, deck, and six remaining girders that are over water. The material will be removed by both truck and barge. This first phase of the project includes the placement of up to one hundred 36-diameter temporary piles, three temporary buoys, up to 60 soil borings/geotechnical investigations, and the following temporary investigative in-water tests: 14 test piles, six drill shaft tests, and six static load tests. The second phase, 24-WL-0653, will include the removal of the remaining four protective barrier structures (dolphins) and bridge pier structures, both above and below the water line. This removal will consist of both mechanical means and the use of blasting. Subaqueous blasting and blasting above the water line will be used on the remaining eleven in-water piers (piers 14 – 24) and four dolphins. The existing dolphins and piers will be removed to two feet below the mud line. The material will be removed via barge with both clamshell and excavators and will include the removal of buried pier segments and associated structures. The project will result in 8.29 acres of temporary impacts to the Patapsco River.

Comments were received during the Public Notice period which ended on August 15, 2024. Comments were grouped according to relevance. Those comments received specific to the subject applications are outlined below with the Department response.

1) **<u>Hearing Notice Process.</u> Comments included requests for better communication with the public about the hearing.**

<u>Department Response:</u> The Department conformed to regulatory and statutory requirements by placing the notification of the hearing in the Maryland Register on June 14, 2024, [dsd.maryland.gov/MDRIssues/5112/Assembled.aspx#_Toc168923490]. Notification of the Tidal Wetland License public hearing and the public comment period were also placed in the Baltimore Sun, Capitol Gazette, and Dundalk Eagle in the third week of July. In addition, the Department

placed the notice on MDE's website in the public notice section and in a new page dedicated to the project: https://mde.maryland.gov/programs/water/WetlandsandWaterways/Pages/FrancisScottKeyBridge.aspx
Elected officials and riparian property owners within 0.5 miles from the project site were notified by direct mail. The Department's Office of Communications also responded to press inquiries about the hearing and posted hearing information on social media.

MDTA Response: MDTA posted notification of the MDE Hearing, and live stream access on the Key Bridge Rebuild website: Equity & Environment (keybridgerebuild.com).
MDTA participated in various community events where the hearing was publicized. MDTA will expand their notification efforts for the next MDE Public Hearing for the Water Quality Certification and Tidal Wetland License for construction of a new bridge to replace the Francis Scott Key Bridge to be held on September 17th at the Community College of Baltimore County, Dundalk Campus, 7200 Sollers Point Road, Baltimore, MD 21222. MDE's notification of this meeting was posted on the Maryland Register on July 25, 2024 [dsd.maryland.gov/MDRIssues/5115/Assembled.aspx#_Toc172634600]. Newspaper notices for this hearing are scheduled the end of August or the first week in September in addition to elected officials' notifications, social media posts, and an email to the project's interested parties list. Notification letters will also be sent to riparian property owners within three miles of the Key Bridge Rebuild per MDE's requirements.

Notification of the hearing is also included on MDE's Key Bridge Rebuild project website https://mde.maryland.gov/programs/water/WetlandsandWaterways/Pages/FrancisScottKeyBridge.aspx and MDTA's Key Bridge Rebuild website https://www.keybridgerebuild.com/equity-and-environment.

2) **Explosives. Comments included concerns about use of explosives and the potential impacts to nearby homes.**

MDTA Response: Explosive demolition is the fastest and safest way to remove the existing structure and allow construction of the replacement bridge to begin. MDTA will require the Contractor to perform pre-demolition surveys of existing structures nearest to the project site and will perform vibration monitoring during blasting events. The contractor will determine the zone of potential influence from the blasting event and develop the monitoring program accordingly. The blasting event will be designed so that homes and other private structures are not within the zone of influence.

3) **Trucks and Equipment. Concerns were raised about construction truck traffic in neighborhoods and noise impacts during construction.**

MDTA Response: The contractor will be required to submit to MDTA a traffic control plan showing all access and haul routes for review and approval. To the maximum extent practicable, MDTA will restrict construction truck traffic in neighborhoods. MDTA will coordinate with potentially affected neighbors regarding expectation for noise impacts during construction.

4) **Community Coordination. Commentors expressed a desire to be included in the rebuild process.**

MDTA Response: Throughout each phase of the Key Bridge Rebuild project, MDTA will conduct engagement activities to keep the public and stakeholders informed and to facilitate the exchange

of information on key project considerations. Once the Progressive Design Build (PDB) team is selected and the contract commences, MDTA will support the PDB's outreach plan and activities. As part of the ongoing stakeholder and public engagement, the MDTA will:

- *Establish and maintain collaborative relationships with stakeholder groups. The MDTA will communicate with communities to respond to questions brought by stakeholders and the public.*

- *Provide online information. All information provided during in-person engagement will also be available online. Additionally, surveys or comment forms will be available through the project website to collect insights. Social media posts will help drive project awareness and direct people to more information or engagement opportunities.*

- *Conduct pop-up events and on-street engagement. The MDTA will conduct small-scale engagement activities that provide opportunities to inform the public and exchange information, including through surveys, while people are at places of employment, shopping, or attending community events. These activities will be conducted across the project area, and additional locations will be guided by the ongoing monitoring of participation rates.*

- *Participate in community meetings. Project Team (MDTA & PDB) will attend community meetings across the project area to provide updates on the project, share information about upcoming engagement opportunities, and collect input on key considerations and project milestones. Hold stakeholder conversations. The MDTA will participate in stakeholder conversations to accept guidance on the public engagement approach and gather input on specific aspects of the project relevant to each individual stakeholder organization.*

5) **<u>Complete Removal of Existing Structures.</u> Comments included questions asking why the existing structures could not be reused.**

<u>MDTA Response:</u> MDTA has determined that the existing structures cannot be reused to rebuild the new bridge. At its highest point, the new bridge will be approximately 45 feet higher than the existing bridge and the new bridge will also be wider than the existing bridge to accommodate full outside shoulders. The existing bridge foundations are not designed to safely accommodate the taller and wider bridge.

6) **<u>Project Schedule/Timeline.</u> Comments included questions relating to when the project will start and how long it will take.**

<u>MDTA Response:</u> Demolition activities will be initiated shortly after a progressive design builder is identified and all permits and approvals have been secured in the fall/winter of 2024. Demolition activities could take up to a year to complete. A more detailed demolition schedule and project activity timeline will be developed by the progressive design builder.

7) **<u>Protection of Existing Utilities.</u> Comments included concerns about impacts to existing utilities.**

<u>MDTA Response:</u> The contractor will be required to accurately locate all utilities prior to construction and will be responsible for protecting the utilities in place. The contractor will submit a plan to MDTA demonstrating how the utilities will be protected. MDTA anticipates that

vibration monitoring will be included in the protection plan similar to protection during BGE Transmission Line construction. The plan will be provided to the utility owner for review and additional input/requirements to ensure the utility is adequately protected.

8) **Floating Swing Bridge. One commenter suggested that a floating swing bridge could provide a cost effective and efficient replacement solution that would avoid full demolition of the existing structures since the pier bases could be reused as anchor points for the floating bridge structure and pivot points for the swing section of the bridge. The commenter indicated that the road would be closed to traffic for one hour twice a day to swing the bridge open and allow shipping movement in and out of Baltimore.**

MDTA Response: This solution does not meet the needs of either roadway users or marine traffic. Two hour-long closures of I-695 would cause unacceptable delays for roadway users. The volume of marine traffic (commercial and recreational) in and out of Baltimore could not be safely passed through the swing bridge in just two hours a day and this limitation would significantly disrupt commercial operations in the Port of Baltimore. A floating swing bridge is not an acceptable solution because of the disruptions to roadway and marine traffic.

9) ***Legacy Contamination. Comments relating to the potential presence of legacy contamination and the potential for resuspension of that material. This included requests to conduct sediment testing around the remaining bridge supports and protective barriers to assess legacy contamination; and use turbidity curtains.***

Department Response: Regarding sediment testing, the Board of Public Works provided an authorization to Maryland Port Administration (MPA) to conduct sampling at the site of the Francis Scott Key Bridge in April 2024. The results of this sampling showed no hazardous material or elevated legacy contamination; and that the material tested was consistent with material found throughout the Patapsco. The Department has been coordinating with Department of Natural Resources (DNR) and National Marine Fisheries Service (NMFS) and will require turbidity curtains based on the recommendation of these agencies. Special Condition L in the attached Report and Recommendation (R&R) for 24-WL-0653 references a BMP document that has been collaboratively created by DNR and NMFS. This document also is referenced in Special Condition I in the attached R&R for the 24-WL-0607. The Department has further coordinated with DNR on the potential impact to SAV, which is a resource of concern. It was determined that there are no SAV beds in the vicinity of the FSK Bridge. The locations of the nearest observed SAV beds in relation to the FSK Bridge location makes the proposed demolition activities less likely to affect these beds, due to both proximity and their location in relatively protected coves and upstream locations.

10) ***Sediment and Erosion Control. Comments concern relating to sediment and erosion control.***

Department Response: The Department recommends to BPW that the Licensee is required to strictly manage and maintain all above water erosion control BMPs during demolition and to all in-water BMPs, including the placement of shielding barges to prevent runoff and debris from entering surface waters and protect stream resources, to the extent possible. These appear as Special Conditions F and G in the attached R&R for 24-WL-0607. The Department recommends to BPW that the Licensee is required to strictly manage and maintain all in-water BMPs to prevent sedimentation during blasting activities. This appears as Special Condition G in the attached R&R for 24-WL-0653; MDE Sediment & Stormwater Plan Review Division also issued a permit relating to removal activities; which also contains conditions to control sediment and erosion.

11) ***Protection of Marine Life.*** ***Comments included concerns for both marine mammals and migratory fish and include request to enact appropriate time of year restrictions.***

Department Response: The Department coordinated with resource agencies including Department of Natural Resources (NDR) and National Marine Fisheries Service (NMFS). Due to this coordination, the Licenses will include conditions to protect marine life. In the attached R&R for 24-WL-0607 Special Condition H requires coordination for DNR if pile driving activity during the February 15 through June 15 time of year restriction. Special Conditions I through M all address BMPs, hold points, compensation and other requirements to protect marine lift. In the attached R&R for 24-WL-0653, Special Condition J requires 1mm mesh screens for intake, and Special Conditions E and L through O all address BMPs, compensation and other requirements to protect marine life..

12) ***Recycling of Bridge Materials.*** ***Comments received included information about recycling concrete materials into reefs.***

Department Response: While the Department does not require specific disposal locations, such as reefs, Department staff will encourage coordination between MDTA, the design-build team, and DNR on potential reefing locations for the existing concrete that will be removed.

After reviewing the proposed activities, the Department determined that MDTA is within its riparian rights to demolish the stable standing structures comprising the remaining Francis Scott Key Bridge. The Department determined that the demolition activities outlined in the two phases of the project are consistent with State law and regulations and are a reasonable exercise of the Licensee's riparian rights. The applicant has demonstrated that alternatives to the proposed demolition are not feasible, and they have committed to conducting the demolition activities using best management practices that protect both the Citizens of the State of Maryland and the marine life of the Chesapeake Bay. They have further committed to robust community engagement to address concerns of community stakeholders throughout the process. The Department has decided to send a favorable report recommending the authorization for the proposed activities to the Maryland Board of Public Works (BPW). Please be aware that this report is only a recommendation to BPW for the issuance of a Wetlands License. The BPW will make the final State decision to issue or deny the Applicant's Wetlands License. If you would like to submit comments to the BPW, please contact the Wetlands Administrator, Bill Morgante, at 410-260-7791 or bill.morgante@maryland.gov. Thank you again for your comments. If you have any questions or if I can assist you in any way, please do not hesitate to contact Matt Wallach at matthew.wallach@maryland.gov or 410-207-0893 with any questions. A copy of the signed Report and Recommendation can be found on the following website:
mde.maryland.gov/programs/water/WetlandsandWaterways/Pages/FrancisScottKeyBridge.aspx

Sincerely,

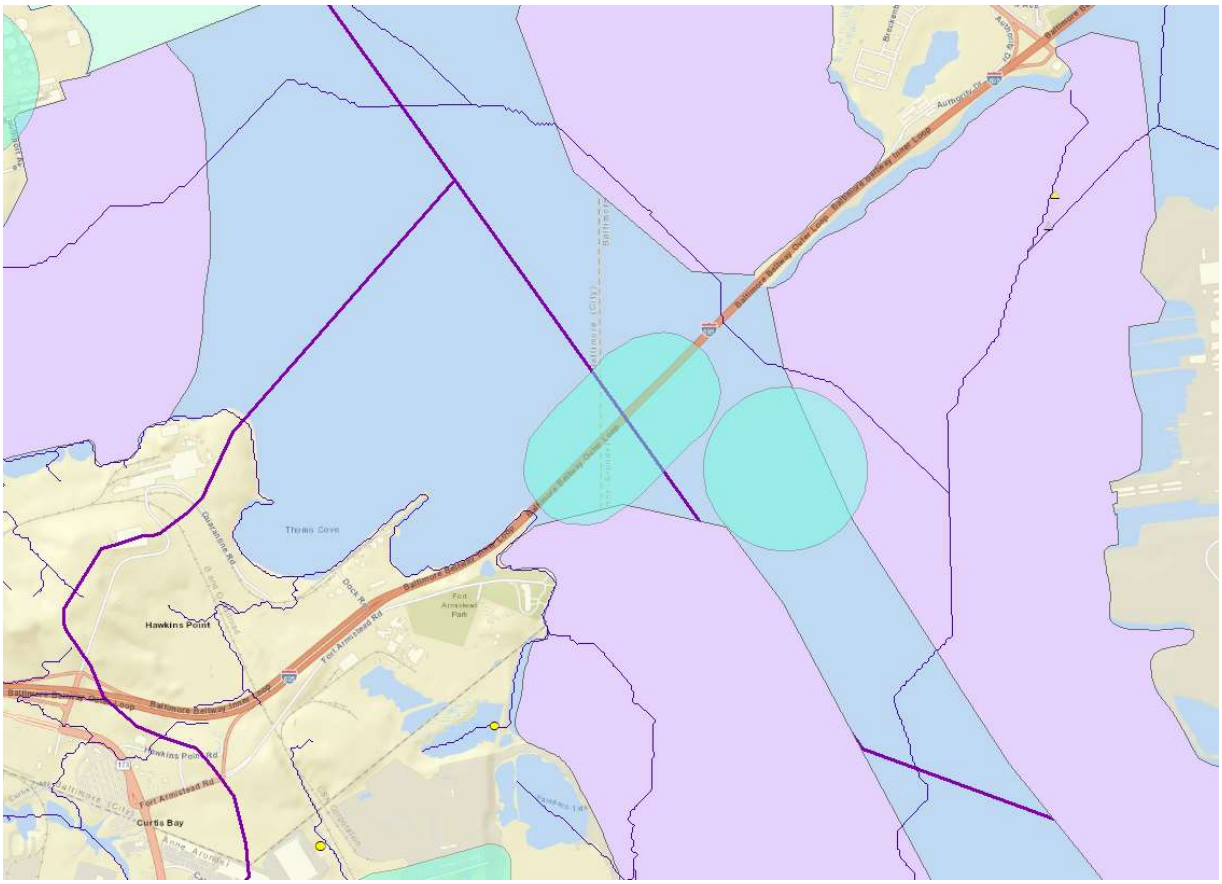
Matthew Wallach

Matthew Wallach
Tidal Wetlands Division
Maryland Department of the Environment

Cc: Bill Morgante, BPW

Attachment C:

Sensitive Species Project Review Area (SSPRA) for Fort Carroll



If any mooring, pile driving, and other demonstration activities overlap within the Fort Carroll SSPRA area depicted above, the Licensee shall coordinate with DNR for minimization and avoidance measures.

**The SSPRA over the Key Bridge (green oval) can be disregarded, as the nest was lost in the bridge collapse.*

Attachment D
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												

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MDOT MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION

MDTA Maryland Transportation Authority

Francis Scott Key Bridge Rebuild Project

Vicinity Map

Baltimore City and Baltimore County, Maryland
June 2024

N
W E
S

Study Area
County Boundaries

0 1,000 2,000
Feet

Remainder of FSK Bridge Demolition

Notes: Deck, Parapet, Median, Girder removal authorized in 24-WL-0607

Pier Above Water Removal – Piers 14 through 16 & 22 through 24

1. The portion of the piers above the water for the remaining piers (14, 15, 16, and 22, 23, 24) shall be removed using explosives.
2. The existing pier caps, columns, and struts shall be drilled to allow charges to be placed.
3. Once the charges are placed, the explosives will fail the piers and allow them to fall into the water.
4. They will be cleaned up with the portions of the piers that are below water.

Pier Below Water Removal – Piers 14 through 16 & 19 through 24

1. The portions of the existing piers that are below water (14, 15, 16, 19, 20, 21, 22, 23, and 24) shall be removed utilizing explosives.
2. The piers shall either be drilled from on top of the pier or from a barge.
3. Divers will be sent down to inspect the footing to check for any cofferdams that may have been left in place. If they are found, the sheets will be cut vertically every eight (8) feet.
4. Once the drilling is completed, the explosives will be placed and the piers will be imploded.
5. Once they are imploded, the river bottom will be cleaned up with a combination of hydraulic excavators and duty cycle cranes equipped with clamshell buckets.
6. Place material on barges and push to trestle or offloading yard.
7. Offload all the debris from the barges then move the barge back to each pier until the cleanup is complete.
8. Piers shall be removed to two (2) feet below existing mudline or as directed by the United States Coast Guard (USCG) or the United States Army Corps of Engineers (USACE). Approximate elevations of mudline:
    a. Pier 14 – EL -16
    b. Pier 15 – EL -16
    c. Pier 16 – EL -20
    d. Pier 19 – EL -25
    e. Pier 20 – EL -24
    f. Pier 21 – EL -24
    g. Pier 22 – EL -19
    h. Pier 23 – EL -13

i. Pier 24 – EL -15

9. Load concrete into trucks to be recycled at facility listed above.

Abutment Removal

1. The existing abutments and wingwalls shall be completely removed.
2. Hammer the abutments and wingwalls with a hydraulic excavator equipped with a hydraulic hammer.
3. Load concrete into trucks to be recycled at an approved facility.

Pier 18 Strut & Column Removal (Above Water)

1. The portion of Pier 18 above the water shall be removed using explosives.
2. The existing pier caps, columns, and struts shall be drilled to allow charges to be placed.
3. Once the charges are placed, the explosives will fail the piers and allow them to fall into the water.
4. They will be cleaned up with the portions of the piers that are below water.

Pier 17 & 18 Lower Strut, Column, and Footing Removal (Below Water)

1. The portions of the existing Piers 17 and 18 that are below water shall be removed utilizing explosives.
2. The piers shall either be drilled from on top of the pier or from a barge.
3. Divers will be sent down to inspect the footings/tremies to check for any cofferdams that may have been left in place. If they are found, the sheets will be cut vertically every eight (8) feet.
4. Once the drilling is completed, the explosives will be placed and the piers will be imploded.
5. Once they are imploded, the river bottom will be cleaned up with a combination of hydraulic excavators and duty cycle cranes equipped with clamshell buckets.
6. Place material on barges and push to trestle or offloading yard.
7. Offload all the debris from the barges then move the barge back to each pier until the cleanup is complete.
8. Pier 17 and 18 shall be removed to the top of the (footing) foundation concrete unless otherwise directed by MDTA.
9. Load concrete into trucks to be recycled at facility listed above.

Dolphins A, B, C, & D Removal

1. The top portion of each of the dolphins from EL 4 to EL 0 shall be hammered in place utilizing hydraulic excavators equipped with hydraulic hammers operating on barges.
2. Concrete shall fall into water and will be cleaned up after the remainder of the dolphins are removed.
3. The dolphins shall be drilled from a barge.
4. Divers will be sent down to inspect the sheets. The sheets will be cut vertically

every eight (8) feet.

5. Once the drilling is completed, the explosives will be placed and the dolphins will be imploded.
6. Once they are imploded, the river bottom will be cleaned up with a combination of hydraulic excavators and duty cycle cranes equipped with clamshell buckets.
7. Place material on barges and push to trestle or offloading yard.
8. Offload all the debris from the barges then move the barge back to each dolphin until the cleanup is complete.
9. Dolphins shall be removed to two (2) feet below existing mudline. Approximate elevations of the mudline – A & C EL -40 – B & D EL -26
10. Load concrete into trucks to be recycled at facility listed above.

Salt Shed Removal

1. The existing wood framed salt shed shall be demolished systematically starting at the top and working towards the bottom.
2. Once the upper portion is removed, any existing slabs, foundations, or sonotubes shall be removed to two (2) feet below ground level.
3. Load concrete and construction/demolition debris into trucks to be recycled at an approved facility.

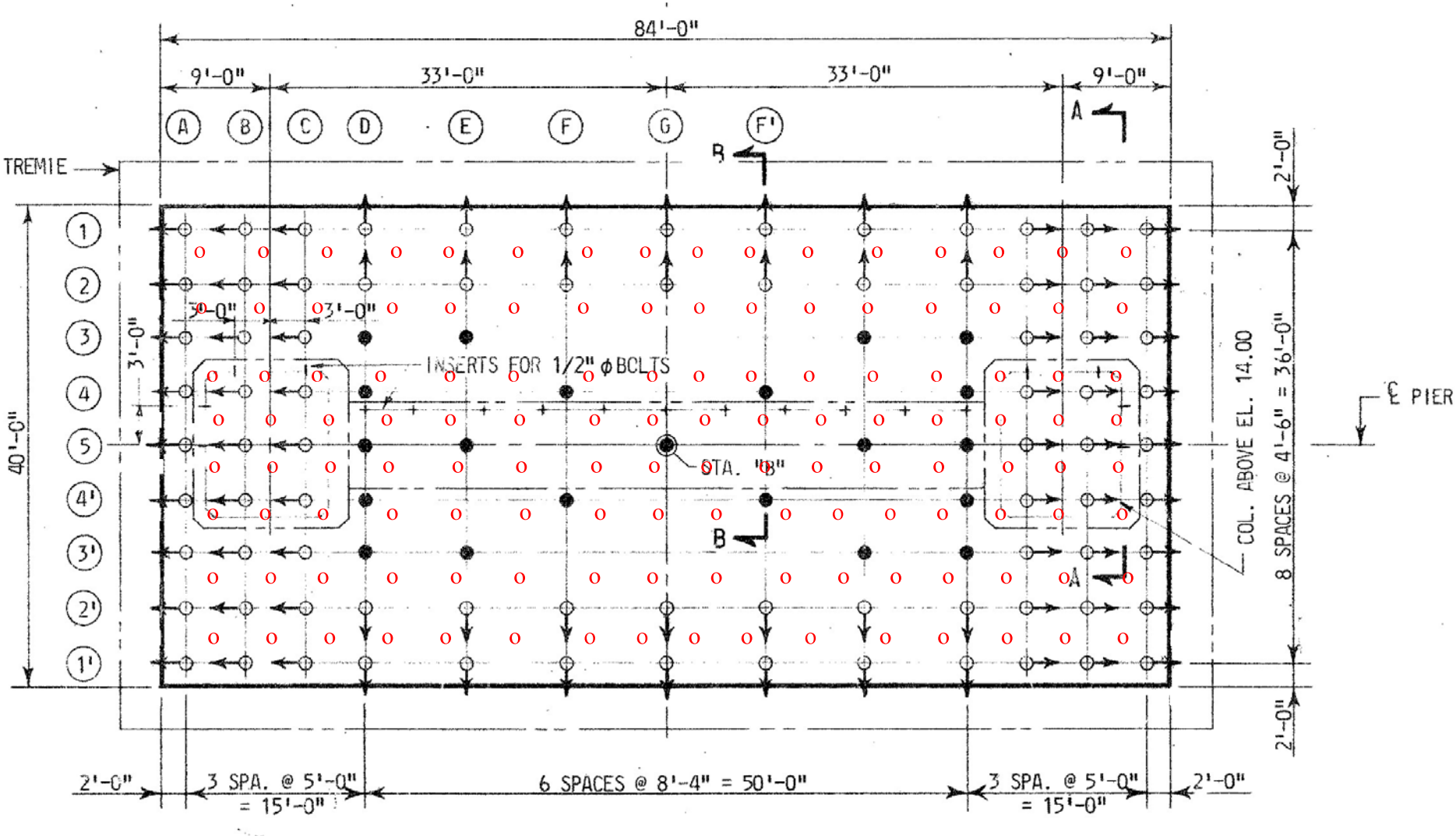
Piers 19-21 Blast Parameters

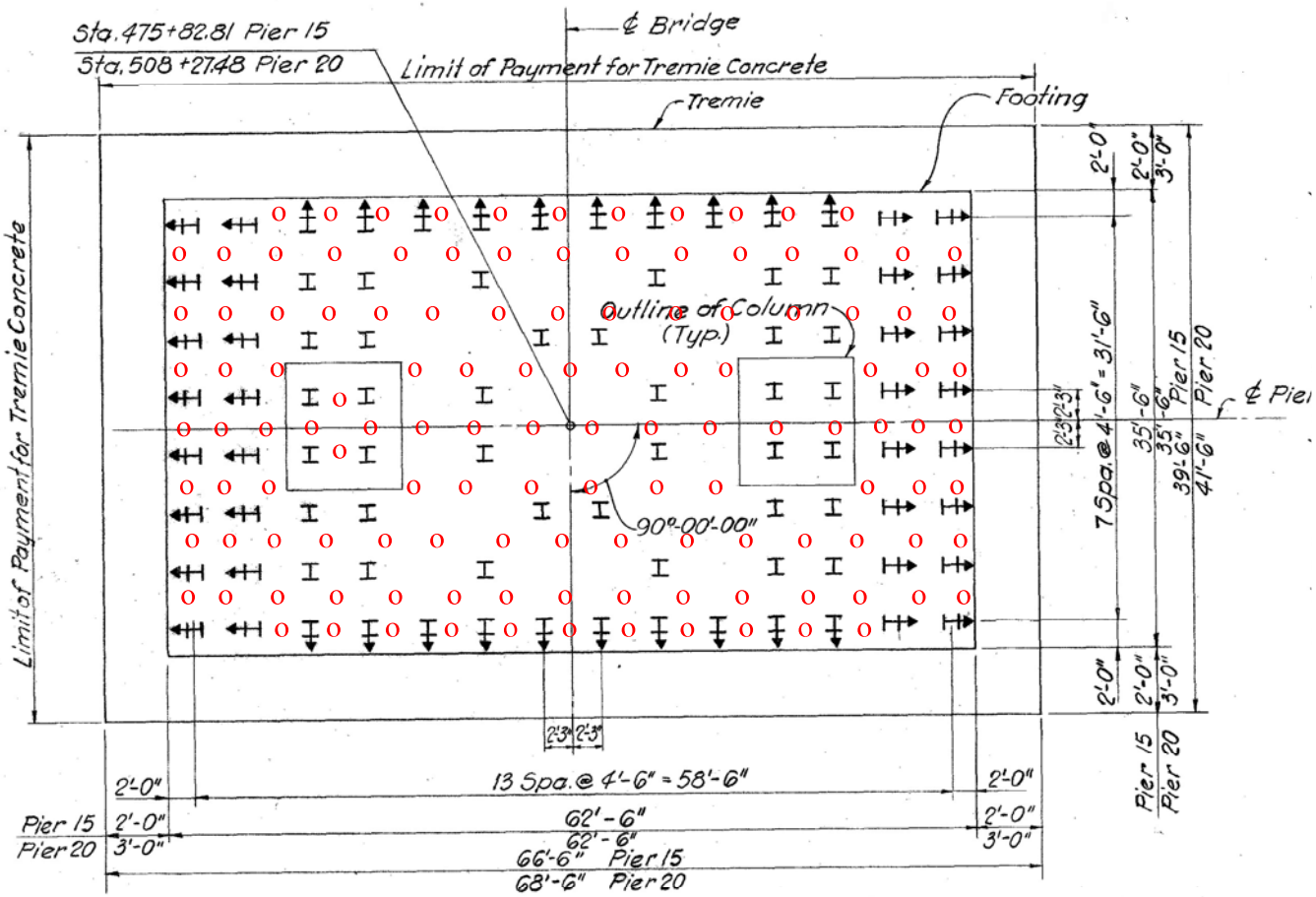
	P19	P20	P21
Number of holes	180	126	163
Hole depth (ft)	36	34	34
Hole diameter(in)	2.75	2.75	2.75
Spacing(ft)	5	4.5	4.5
Burden(ft)	4.5	4.5	4.5
Number of holes	180	126	163
Max. decks per hole	2	2	2
Max. explosives /delay(lb)	30	24	26
Approx. Total explosive(lb)	5500	3000	4300
Average powder factor	1.75	1.75	1.75
Minimum delay (ms)	9	9	9

Estimated Peak Particle Velocity (in/sec) at Utility Trench

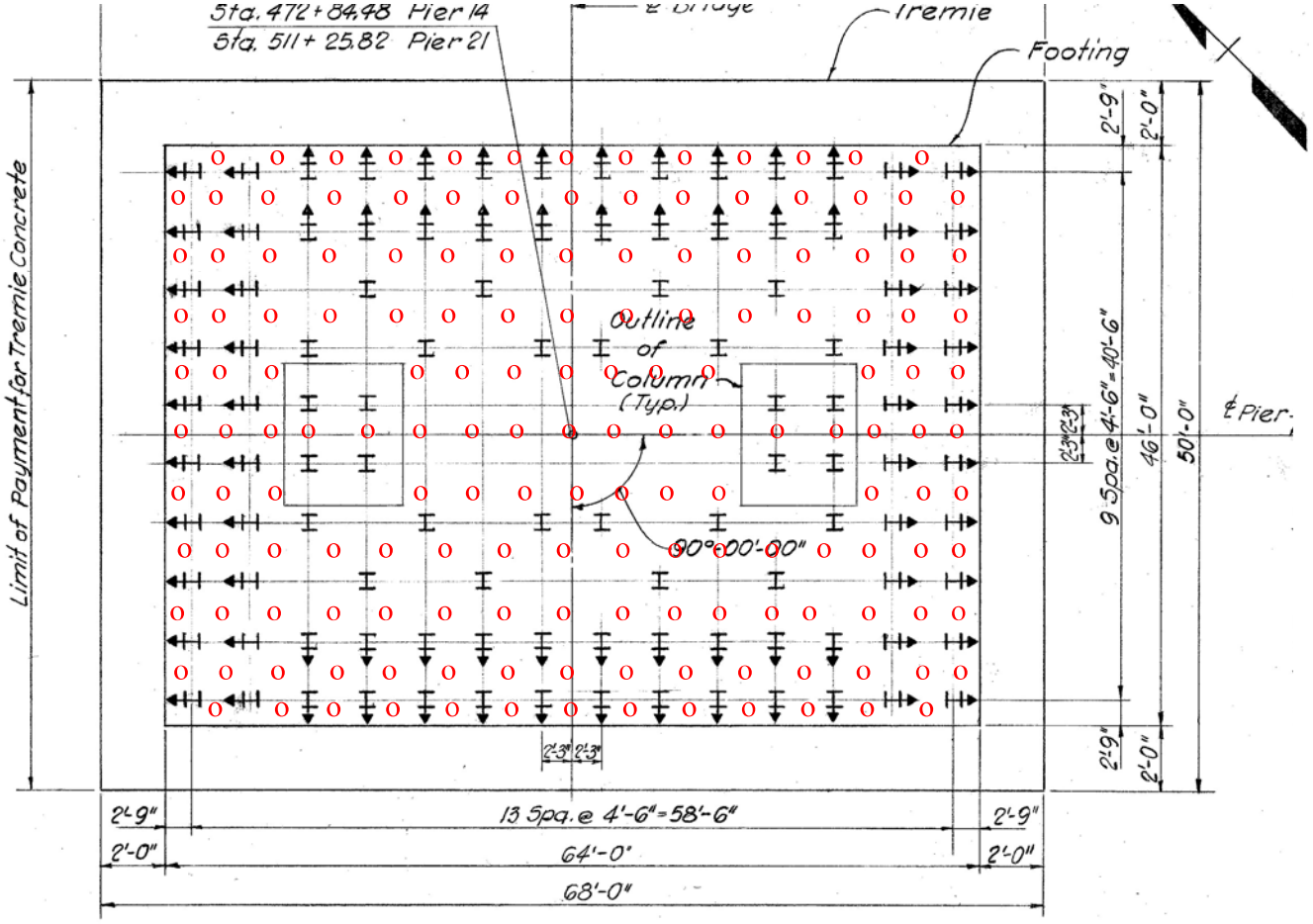
Structure	**Distance(ft)**	**lb/delay**	**K =**	**24.2**	**160**	**240**	**300**
Pier 19	~230	30		0.061	0.405	0.607	0.795
Pier 20	~230	24		0.051	0.338	0.508	0.635
Pier 21	~230	26		0.058	0.383	0.574	0.718

** K value indicates level of confinement of the blast with 24.2 being unconfined and 300 being extremely confined (as a sinking cut in solid bedrock).


84'-0"
9'-0"
33'-0"
33'-0"
9'-0"
A
B
C
D
E
F
G
F'
TREMIE
1
2
3
4
5
4'
3'
2'
1'
40'-0"
3'-0"
3'-0"
3'-0"
INSERTS FOR 1/2" ϕ BOLTS
STA. "B"
B
A
2'-0"
COL. ABOVE EL. 14.00
8 SPACES @ 4'-6" = 36'-0"
℄ PIER
2'-0"
2'-0"
3 SPA. @ 5'-0"
= 15'-0"
6 SPACES @ 8'-4" = 50'-0"
3 SPA. @ 5'-0"
= 15'-0"
2'-0"

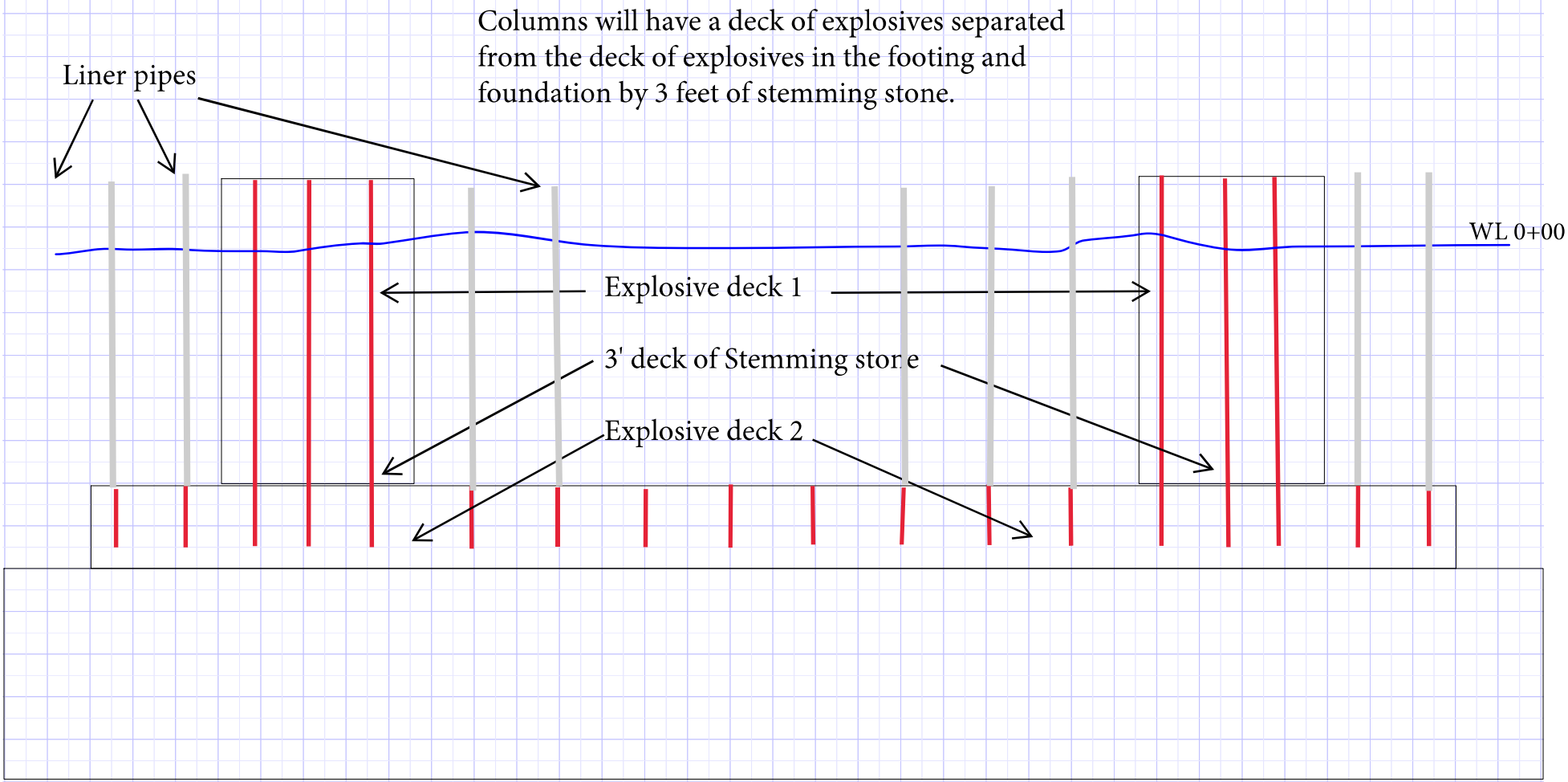


PILE PLAN PIERS 15 & 20



PILE PLAN PIERS 14 & 21

Typical cross sectional view of drilled piers



Holes in footing and foundation will be drilled using a template and casing pipes. Once the holes are drilled liner pipes will be placed in each hole to facilitate loading of explosives from above the water.

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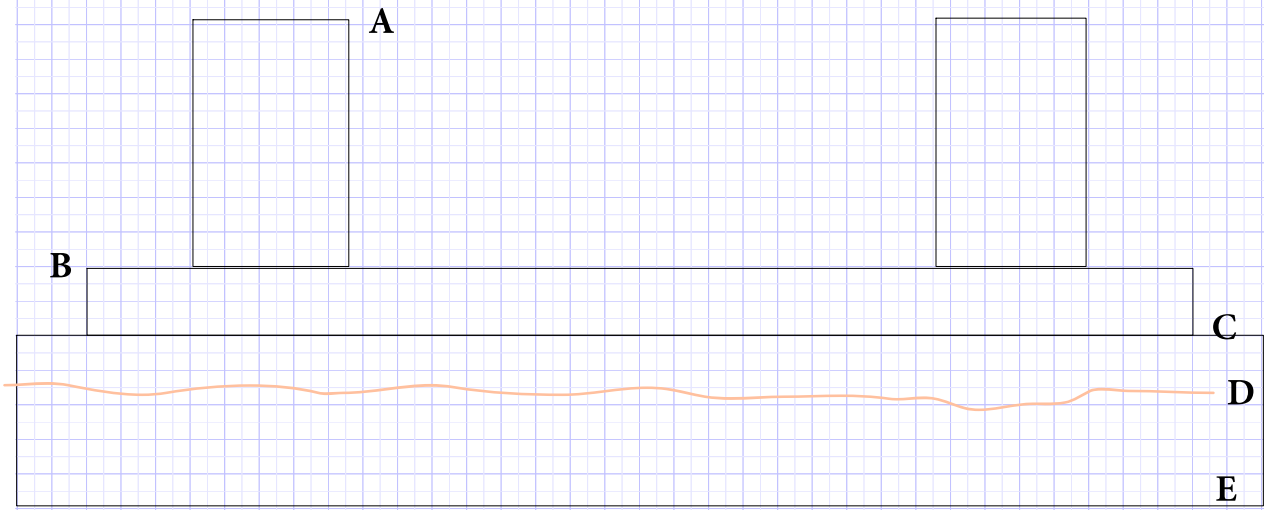
Typical Elevations



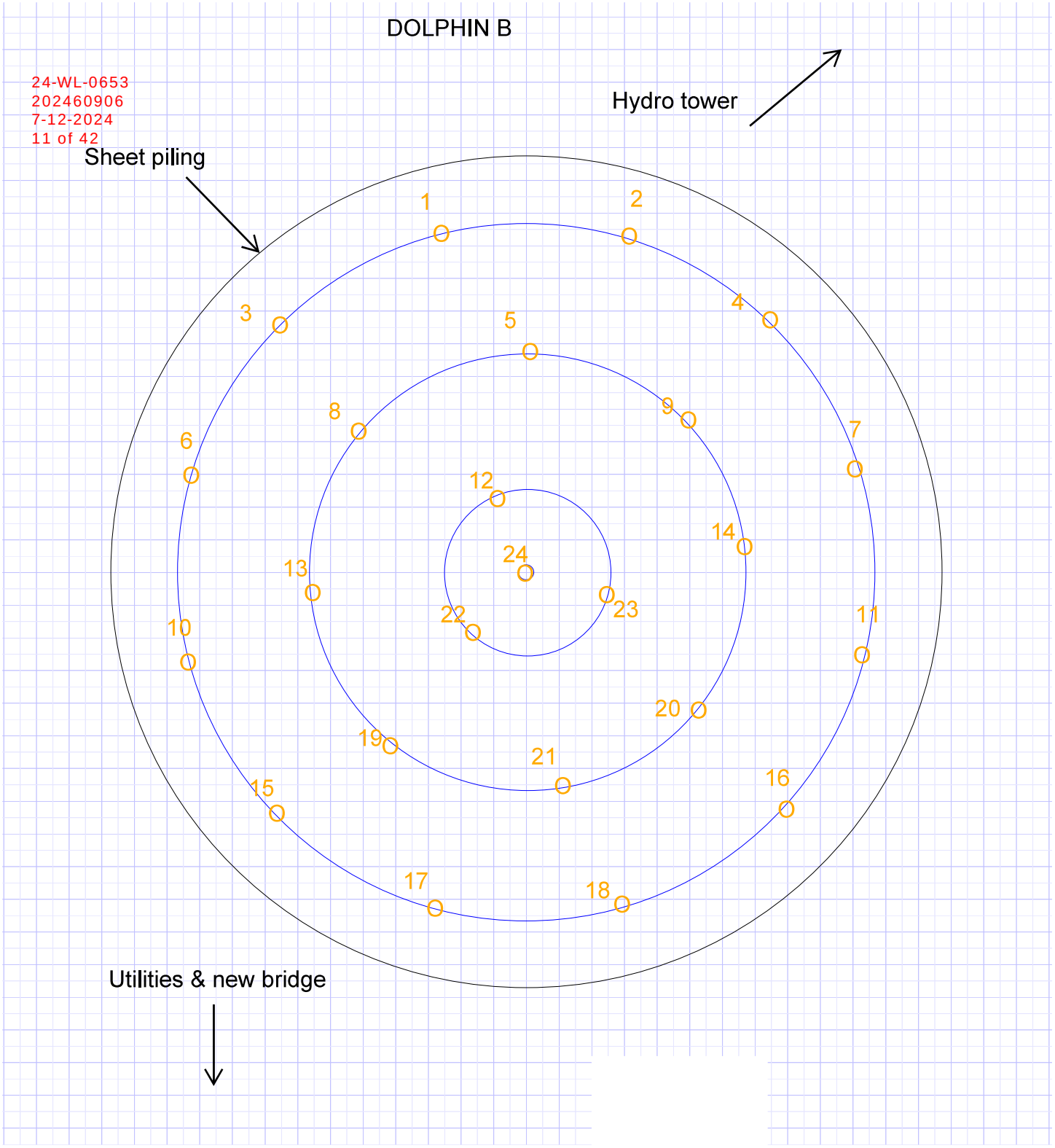
A - Top of pier
P19 = ~+4
P20 = ~+1
P21 = ~+1

B - Top of footing
P19 = -15
P20 = -15
P21 = -15

C - Top of foundation
P19 = -21
P20 = -23
P21 = -23

D - Mud line (per as builts)
P19 = -25
P20 = -24
P21 = -24

E - Bottom of foundation
P19 = -35
P20 = -26
P21 = -36



Blast Parameters

Number of holes = 24
Hole diameter = 2.75"
Hole depth = 32'
Spacing = 5.5'
Burden = 4 - 4.5'
Collar height = 4'
Explosive column = 28'
Approx. total explosives wt. = ~1123 lb
Max. explosive / delay = 47 lb
Overall powder factor = 1.8 (ranges 1 - 2)
Delay between detonations = 17ms Total shot duration = 391ms
Initiation - Nonel dual delay detonators.
Explosive - Dynomax Pro.
Shot sequence as numbered on sketch.
All explosive columns will be double primed, one detonator in bottom and one near the top for redundancy.
Sheet pile to be Pre-cut.

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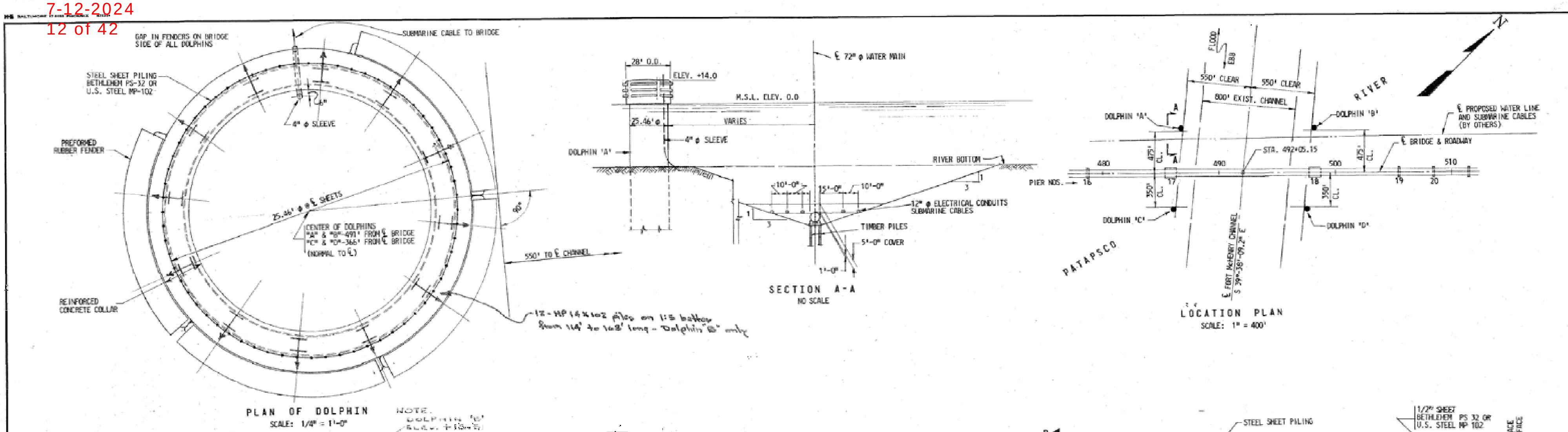
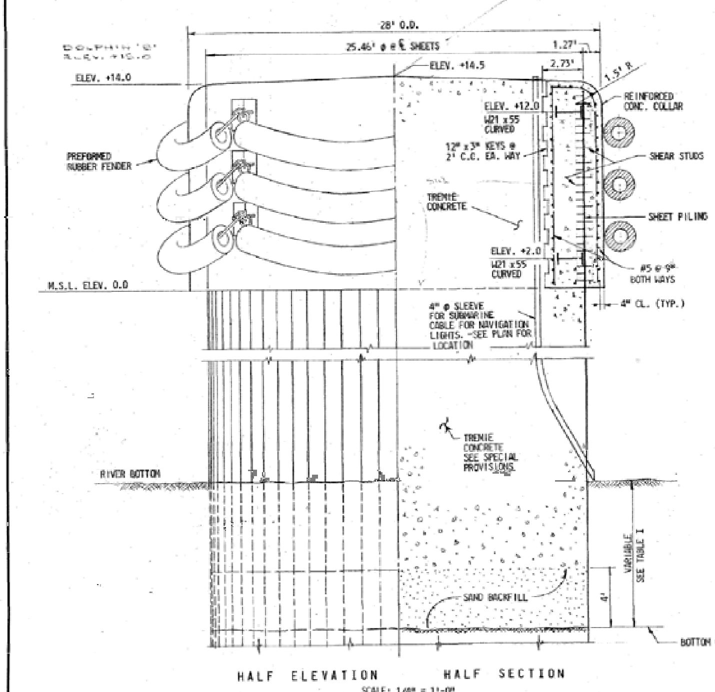
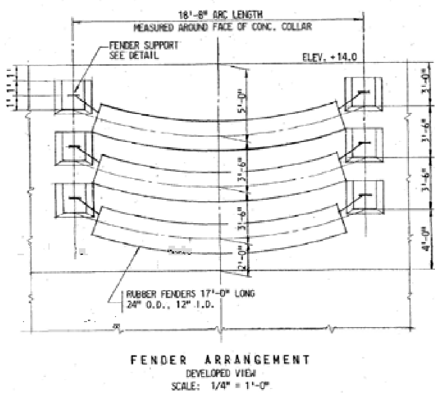






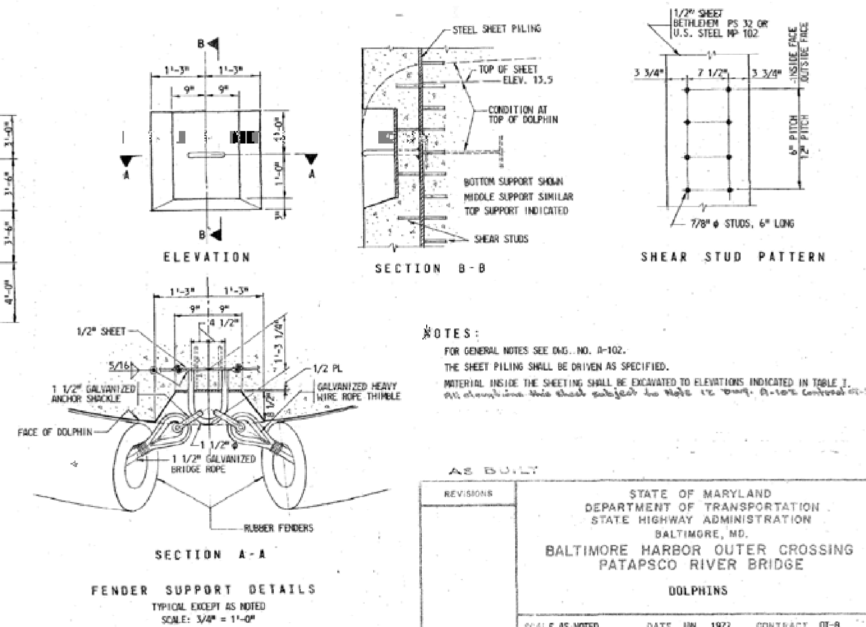


TABLE I			
DOLPHIN	ELEVATION		
	BOTTOM OF EXC.	BOTTOM OF TREMIE	RIVER BOTTOM
A	- 52	- 48	- 40
B	- 52	- 48	- 26
C	- 52	- 48	- 40
D	- 52	- 48	- 26

NOTES:

FOR GENERAL NOTES SEE DWG. NO. A-102.

THE SHEET PILING SHALL BE DRIVEN AS SPECIFIED.

MATERIAL INSIDE THE SHEETING SHALL BE EXCAVATED TO ELEVATIONS INDICATED IN TABLE I.

AS BUILT

REVISIONS

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
BALTIMORE, MD.

BALTIMORE HARBOR OUTER CROSSING
PATAPSCO RIVER BRIDGE

DOLPHINS

SCALE AS NOTED | DATE JAN., 1972 | CONTRACT OT-8

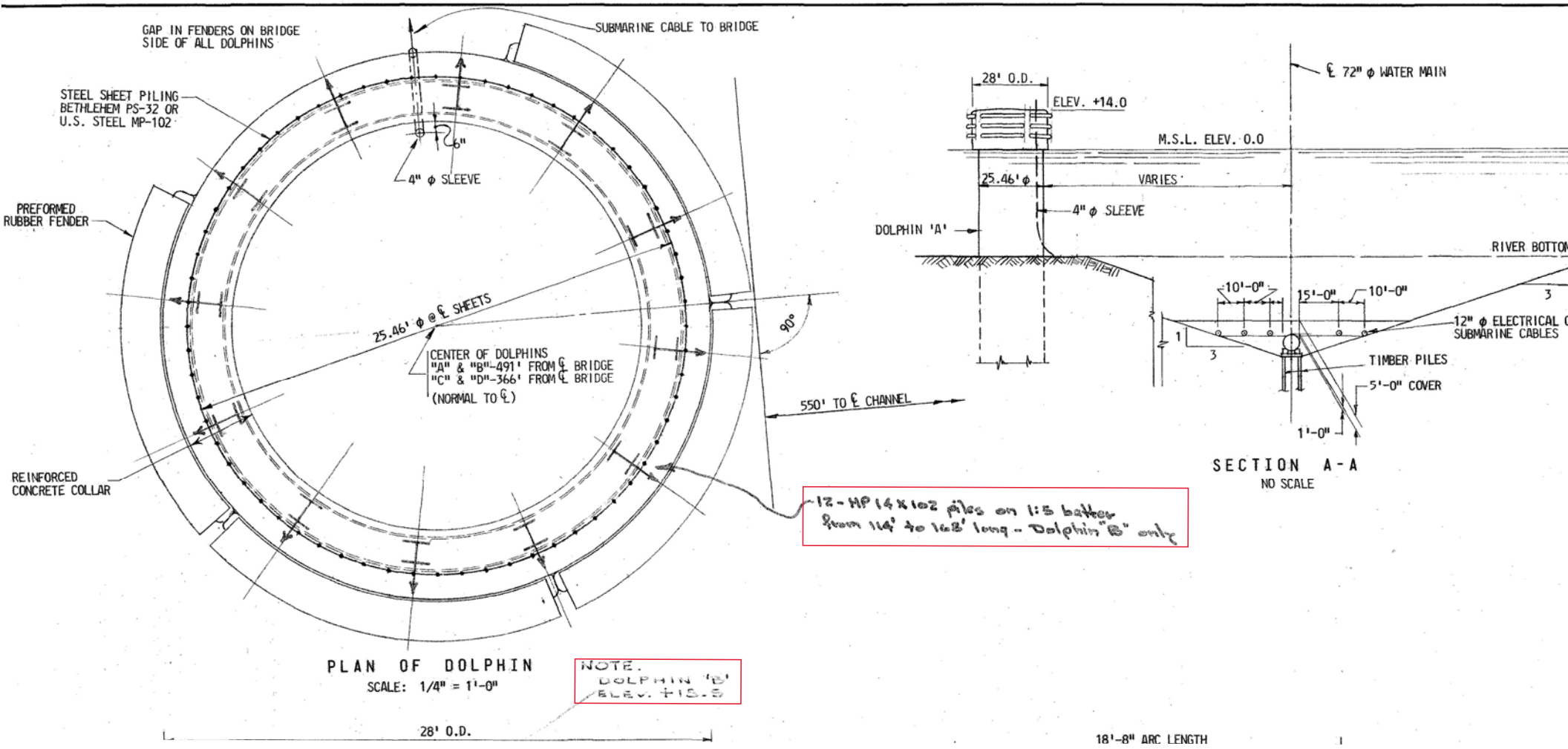
MADE BY E.B.H.
TRACED BY E.B.H.
CHECKED BY E.E.B.

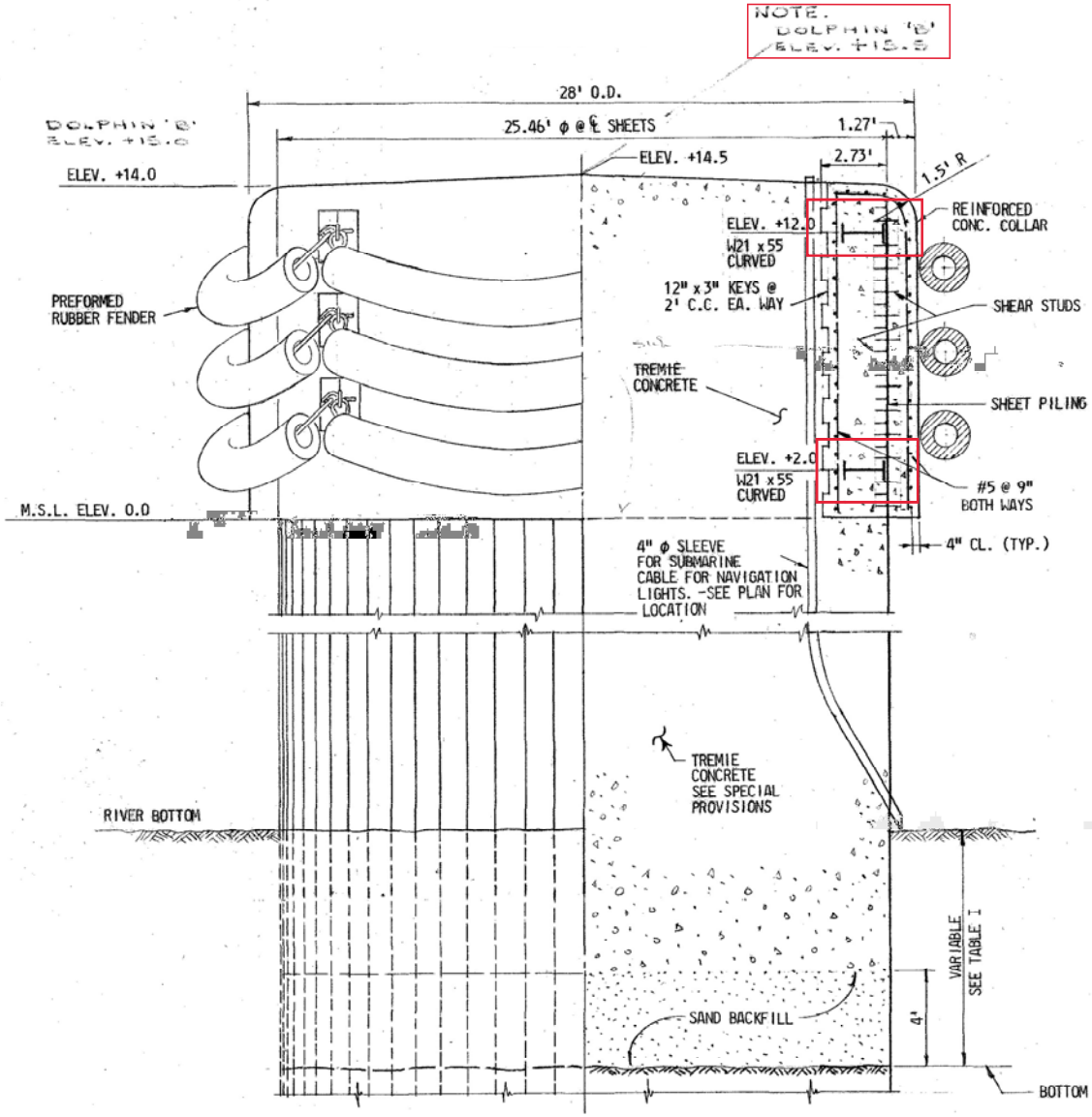
J. E. GREINER COMPANY INC.
CONSULTING ENGINEERS
BALTIMORE, MARYLAND

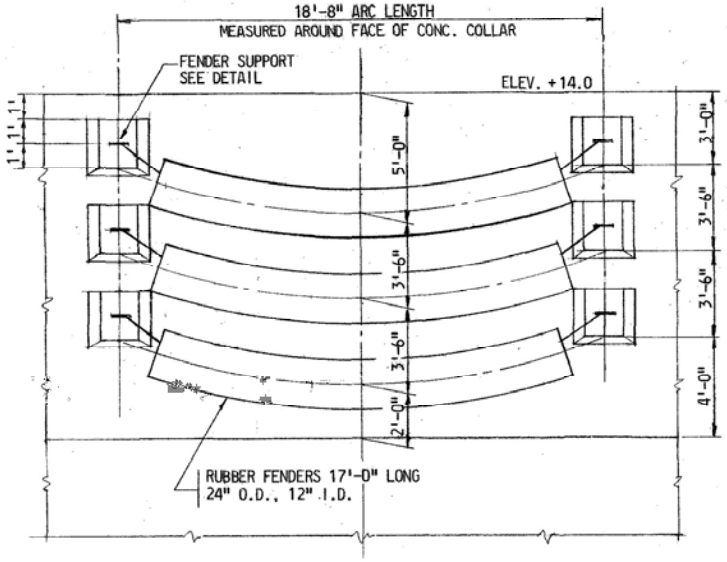
DRAWING NO. A-115
SHEET NO. 15 OF 24
INDEXED

File No.____ Pocket No.____ Folder No.____

7 0153 PHOENIX 47131•



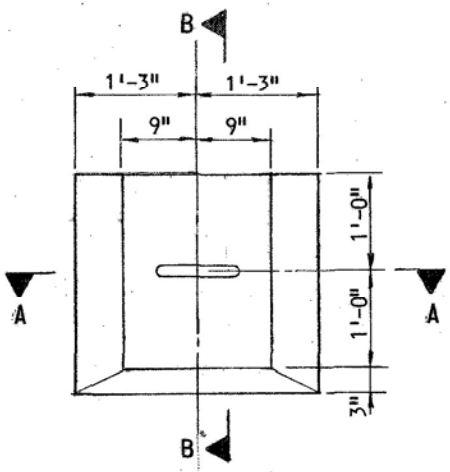




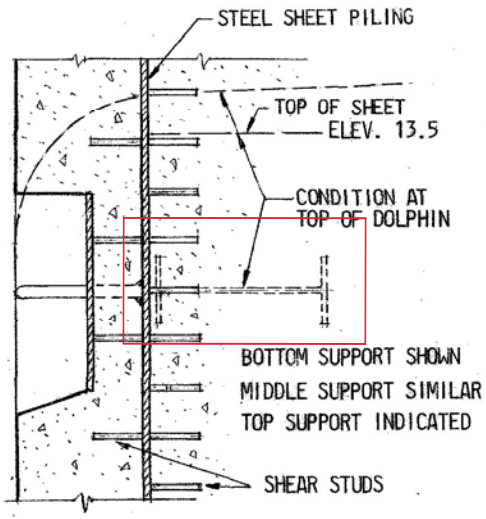
FENDER ARRANGEMENT
DEVELOPED VIEW
SCALE: 1/4" = 1'-0"

TABLE I

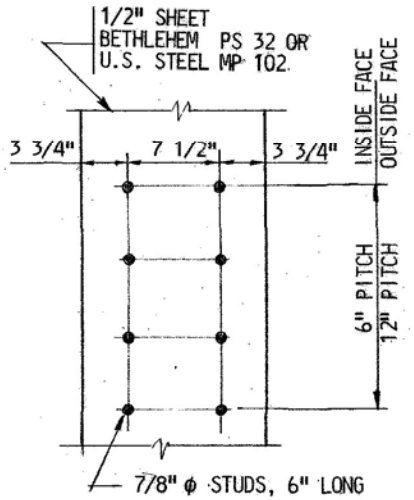
DOLPHIN	ELEVATION		
	BOTTOM OF EXC.	BOTTOM OF TREMIE	RIVER BOTTOM
A	- 52	- 48	- 40
B	- 52	- 48	- 26
C	- 52	- 48	- 40
D	- 52	- 48	- 26



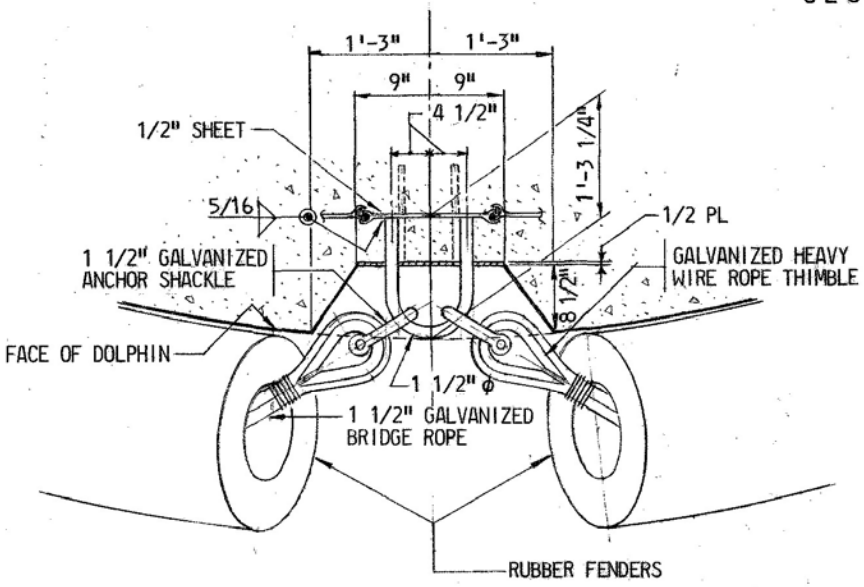
ELEVATION



SECTION B-B



SHEAR STUD PATTERN



SECTION A-A

NOTES:

FOR GENERAL NOTES SEE DWG. NO. A-102.

THE SHEET PILING SHALL BE DRIVEN AS SPECIFIED.

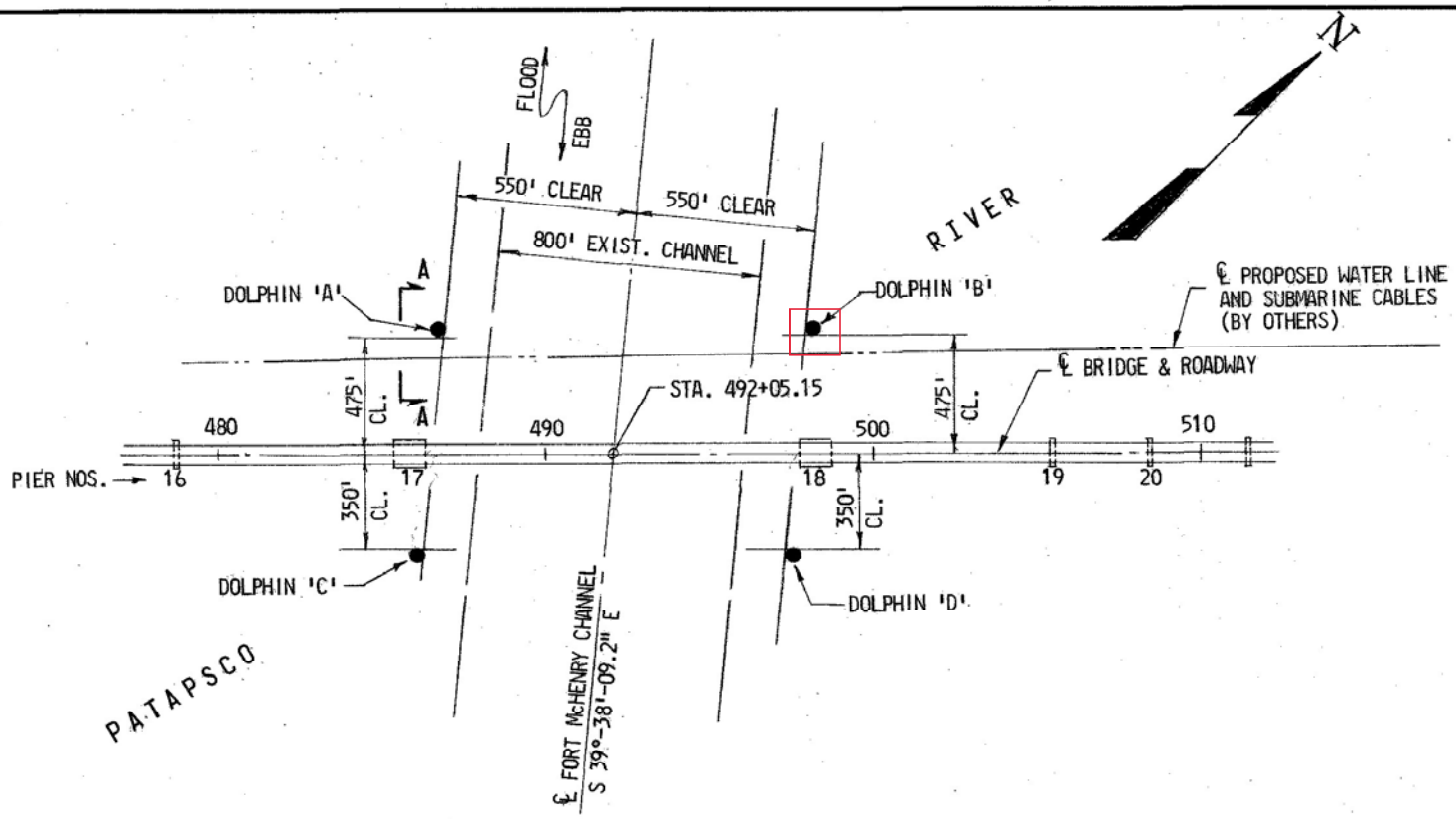
MATERIAL INSIDE THE SHEETING SHALL BE EXCAVATED TO ELEVATIONS INDICATED IN TABLE I.
All elevations this sheet subject to Note 12 Dwg. A-102 Contract ST-849.

AS BUILT

REVISIONS

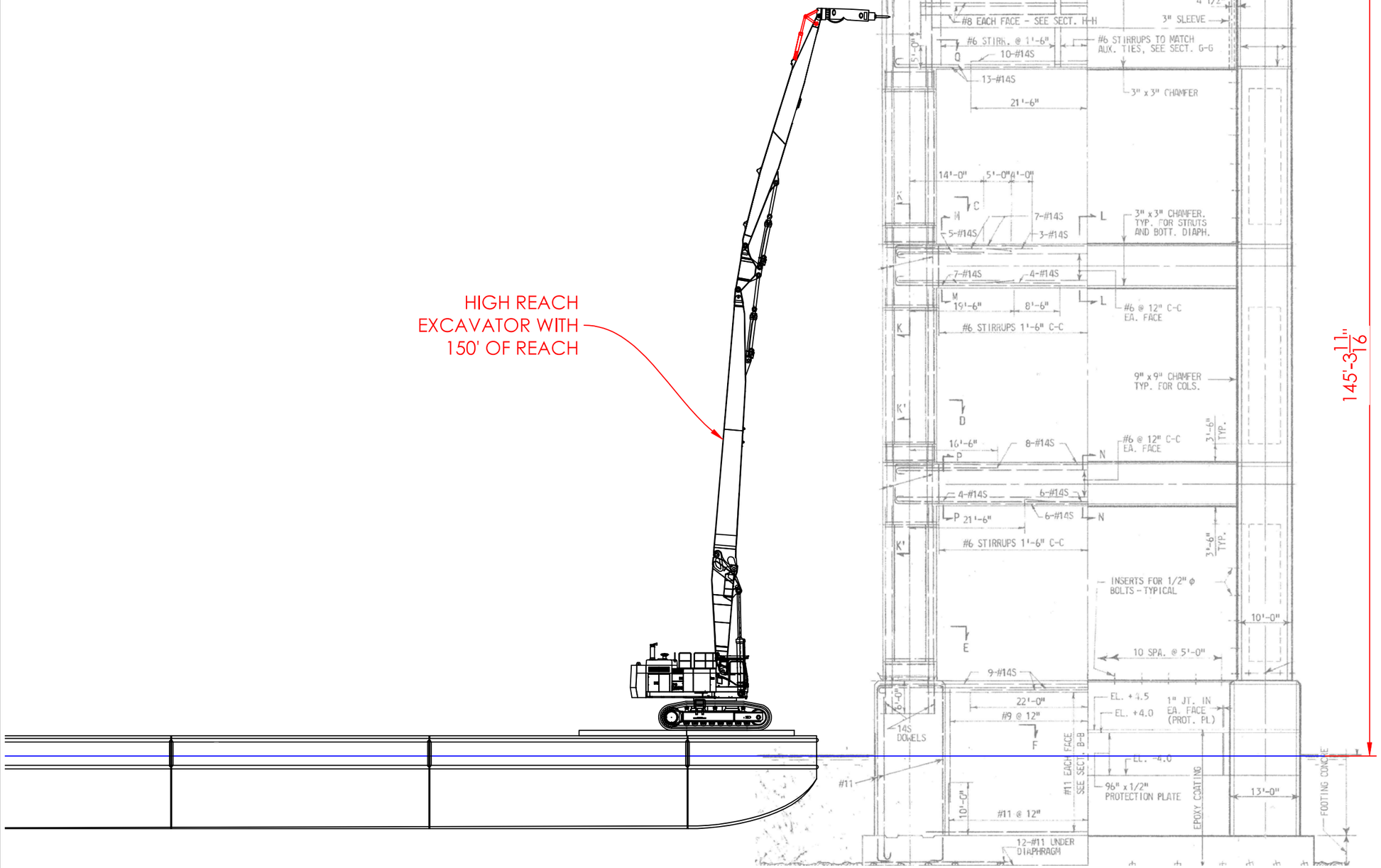
STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
BALTIMORE, MD.

BALTIMORE HARBOR OUTER CROSSING



LOCATION PLAN

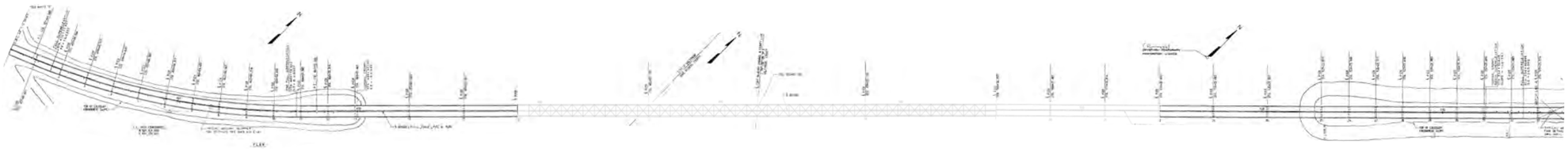
SCALE: 1" = 400'



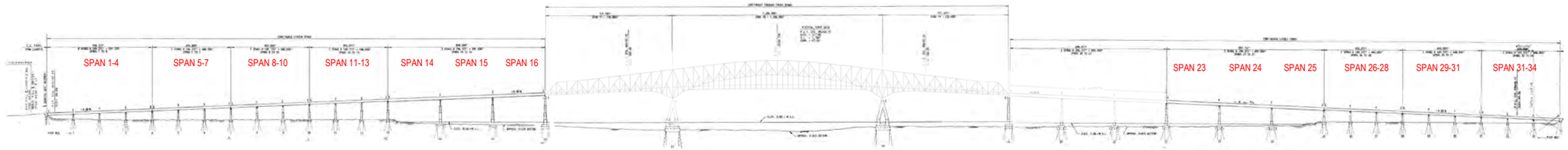
SCALE 1" = 20'

IT IS A VIOLATION OF THE PROFESSIONAL LICENSE LAW FOR ANY PERSON TO ALTER THE DRAWING IN ANY WAY, UNLESS ACTING UNDER THE DIRECTION OF A LICENSED PROFESSIONAL ENGINEER/ARCHITECT AS APPLICABLE. THE ALTERING ENGINEER/ARCHITECT SHALL AFFIX HIS/HER SEAL AND THE NOTATION 'ALTERED BY' FOLLOWED BY HIS/HER SIGNATURE AND DATE OF ALTERATION.	OWNER: MDTA 2310 BROENING HIGHWAY BALTIMORE, MD 21224	DEMOLITION CONTRACTOR:	DRAFTER		4		FRANCIS SCOTT KEY BRIDGE REMAINING DEMOLITION PIER 16 SHOWN	
			CHECKER		3			
			SUPERVISOR		2			
					1		PIER REMOVAL HAMMERING	DWG. NO. D-1
					0			
					NO.	DATE		

C:\Users\KINETIC\DEMO\Kinetic Demo Dropbox\AutoCAD\Key Bridge\Rigging.dwg



PLAN



ELEVATION

PRELIMINARY
NOT FOR CONSTRUCTION

NO.	DATE	REMARKS	BY
△			
△			
△			

GENERAL LAYOUT
KEY BRIDGE DEMOLITION

DRAWN BY CHCK'D BY

DATE

PROJECT

SHEET NO.

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202460906
7-12-2024
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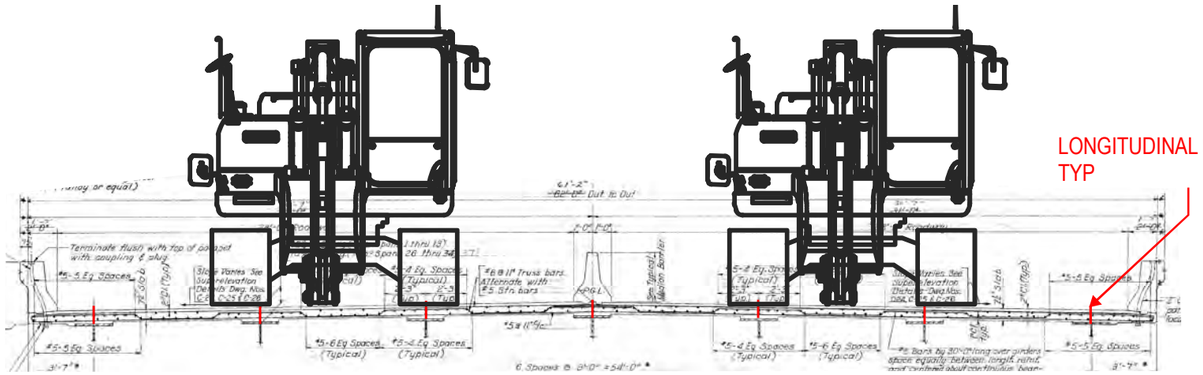
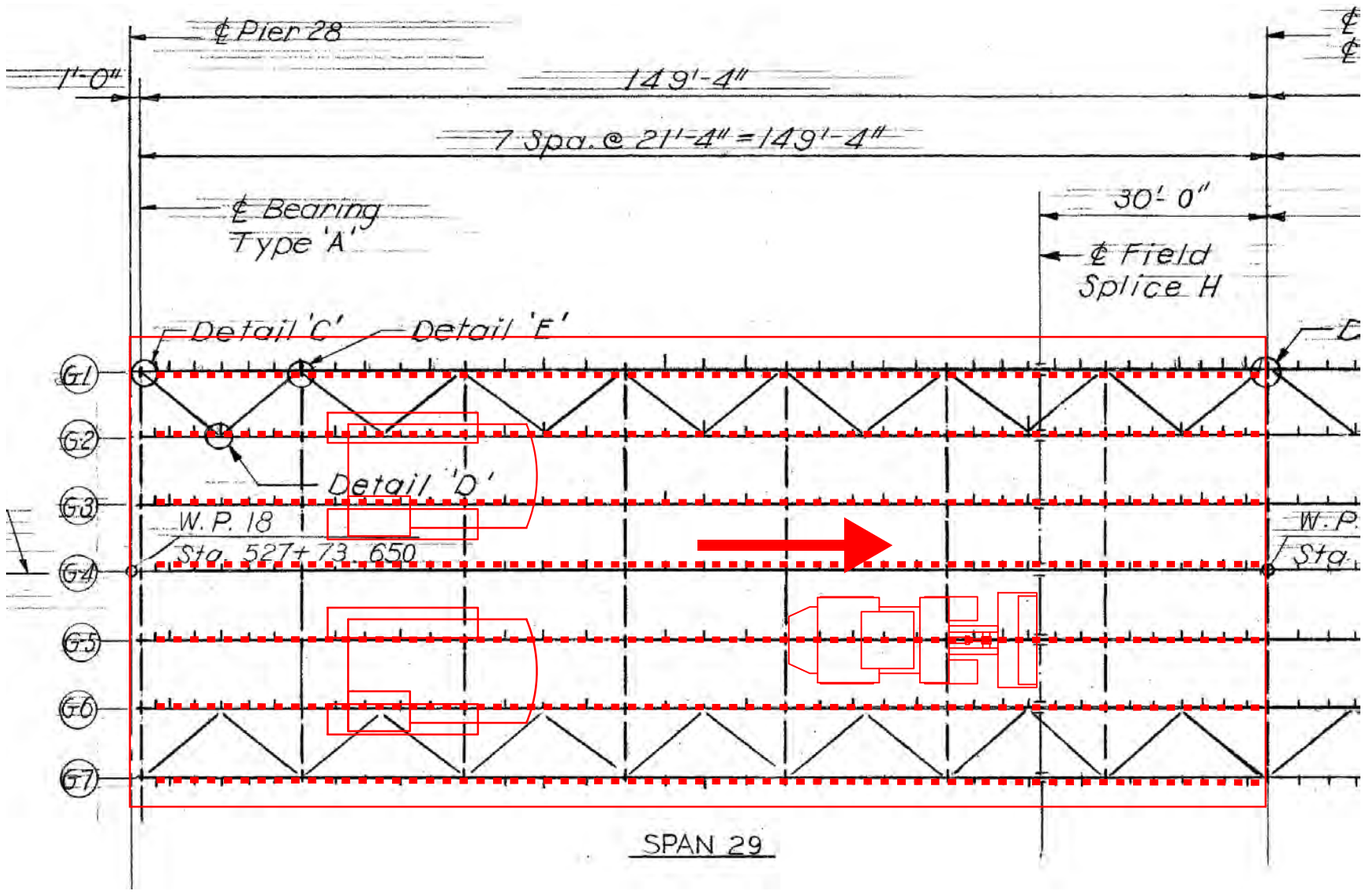


LONGITUDINAL SAW CUT, TYP



DECK DEMOLITION SEQUENCE
1. SAW AND REMOVE OVERHANG BARRIER AND DECK
2. LONGITUDINAL SAW DECK
3. WITH EXCAVATOR, PULL BACK SECTION OF DECK, CUT/BREAK REBAR, HAUL PANEL OFF DECK WITH LOADER

REPEAT FOR ENTIRE DECK

PRELIMINARY
NOT FOR CONSTRUCTION

NO.	DATE	REMARKS	BY
△			
△			
△			

GENERAL DECK DEMOLITION
KEY BRIDGE DEMOLITION

DRAWN BY CHCK'D BY

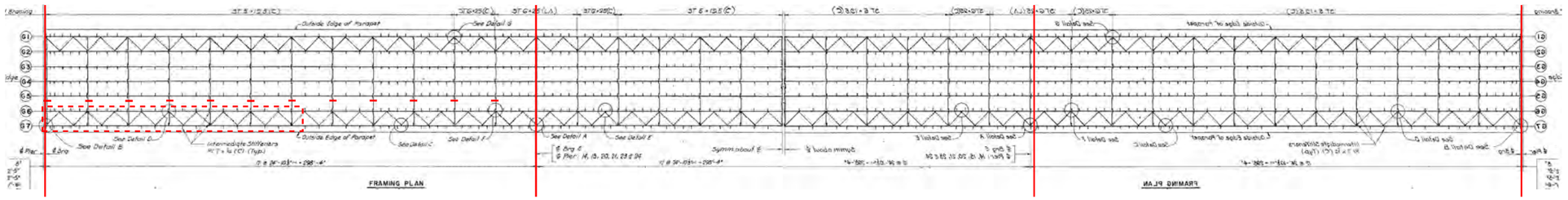
DATE

PROJECT

SHEET NO.

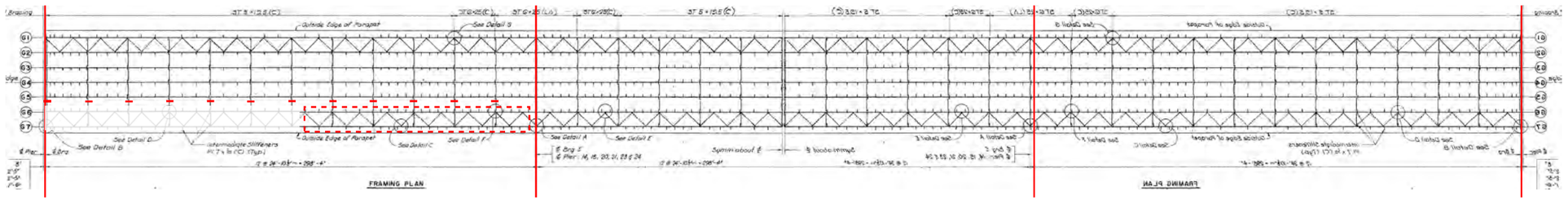
STEP 1 -
CUT CROSSFRAMES BETWEEN G6 & G5
HOIST G6&G7. APPROX WT = 100 TNS

SPAN 23 SPAN 24 SPAN 25



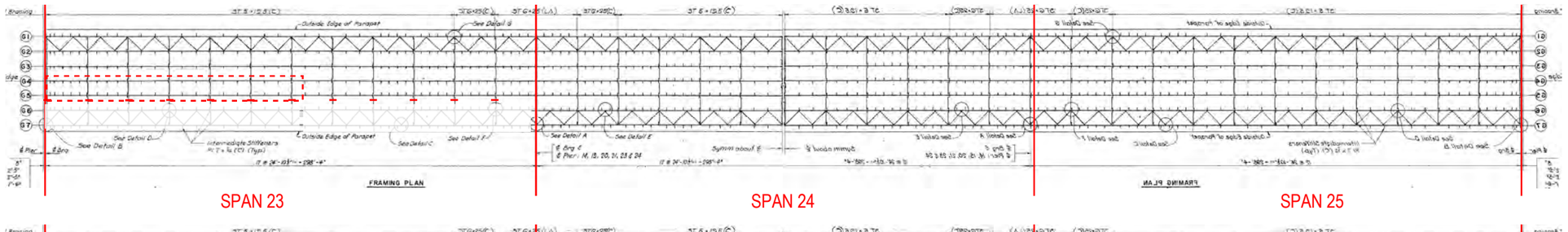
STEP 2 -
CUT CROSSFRAMES BETWEEN G6 & G5
HOIST G6&G7. APPROX WT = 75 TNS

SPAN 23 SPAN 24 SPAN 25



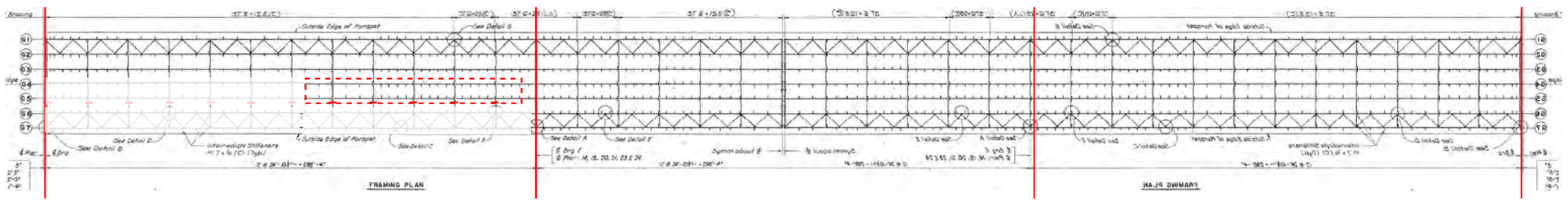
STEP 3 -
CUT CROSSFRAMES BETWEEN G3 & G4
HOIST G4&G5. APPROX WT = 100 TNS

SPAN 23 SPAN 24 SPAN 25



STEP 4 -
CUT CROSSFRAMES BETWEEN G3 & G4
HOIST G4&G5. APPROX WT = 75 TNS

SPAN 23 SPAN 24 SPAN 25



PRELIMINARY
NOT FOR CONSTRUCTION

NO.	DATE	REMARKS	BY
△			
△			
△			

STEEL DEMOLTIION SPANS 23-25
KEY BRIDGE DEMOLITION

DRAWN BY CHCK'D BY

DATE

PROJECT

SHEET NO.

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202460906
7-12-2024
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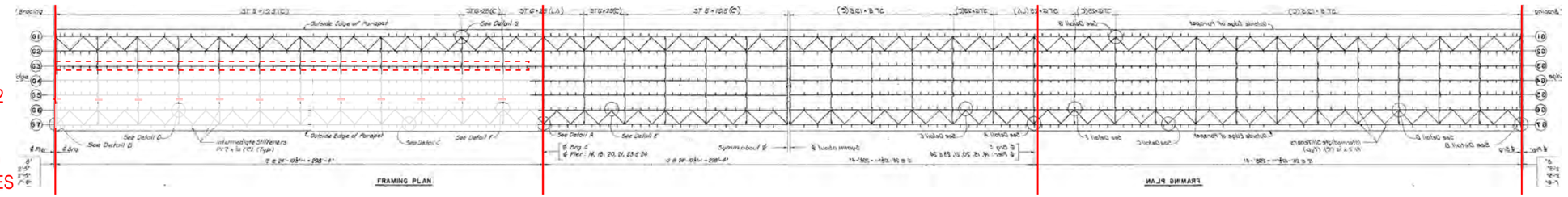
STEP 5 -
RIG TO G3 WITH SPREADER
CUT CROSSFRAMES BETWEEN G3 & G2
HOIST G3. APPROX WT = 90 TNS

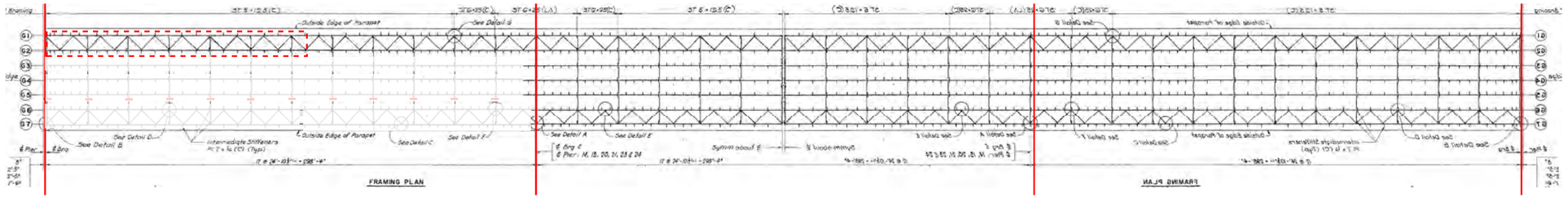
MAY ALSO TAKE PARTIAL LENGTH AND
KEEP CONNECTED WITH CROSSFRAMES

SPAN 23 SPAN 24 SPAN 25



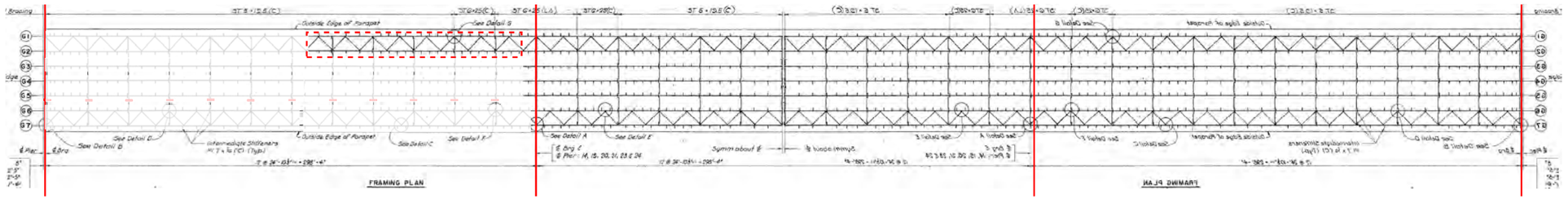
STEP 6 -
HOIST G1&G2. APPROX WT = 100 TNS

SPAN 23 SPAN 24 SPAN 25



STEP 7 -
HOIST G1&G2. APPROX WT = 75 TNS

SPAN 23 SPAN 24 SPAN 25



REPEAT SAME STEPS FOR SPAN 24

PRELIMINARY
NOT FOR CONSTRUCTION

NO.	DATE	REMARKS	BY
△			
△			
△			

STEEL DEMOLTIION SPANS 23-25
KEY BRIDGE DEMOLITION

DRAWN BY CHCK'D BY

DATE

PROJECT

SHEET NO.

24-WL-0653
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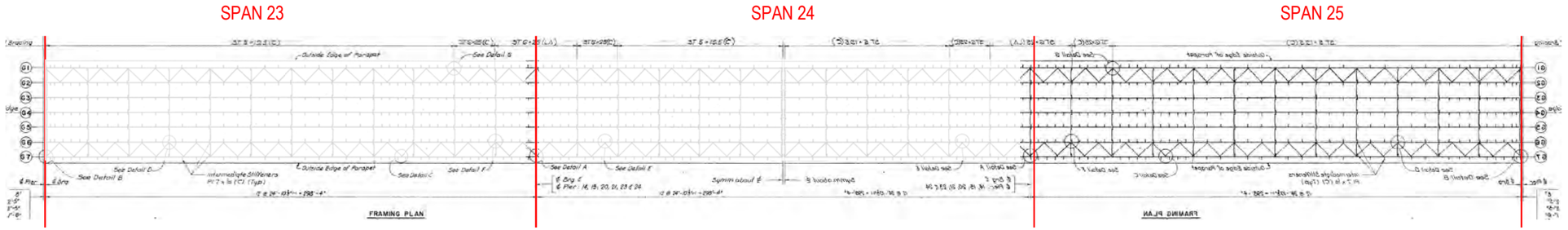
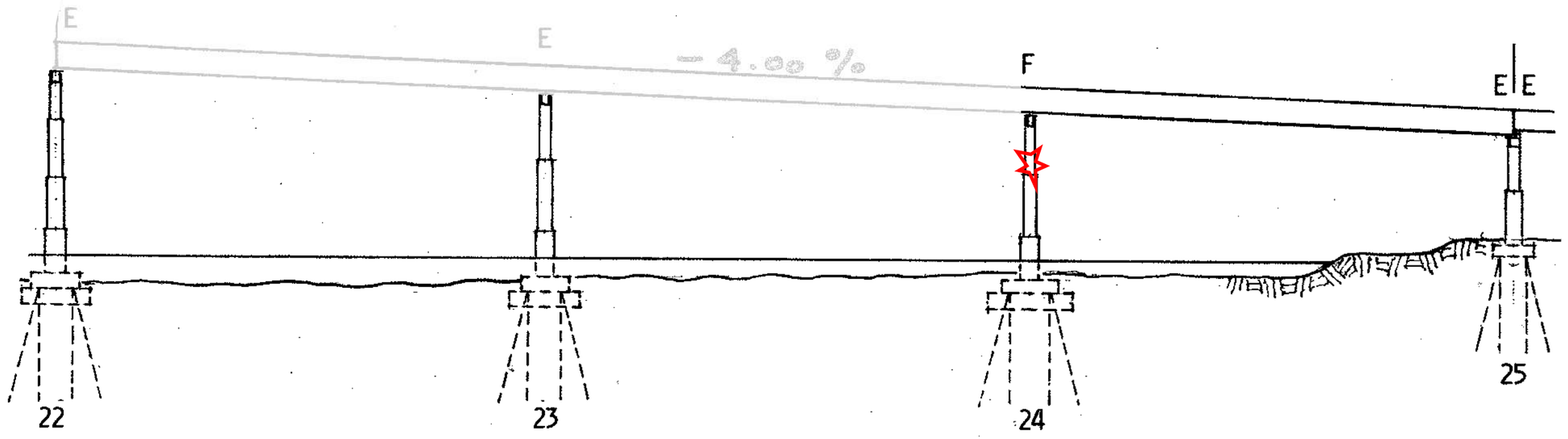
STEP 8-
BLAST PIER 24 AND DROP SPAN 25
RETRIEVE WITH DREDGE





PRELIMINARY
NOT FOR CONSTRUCTION

NO.	DATE	REMARKS	BY
△			
△			
△			

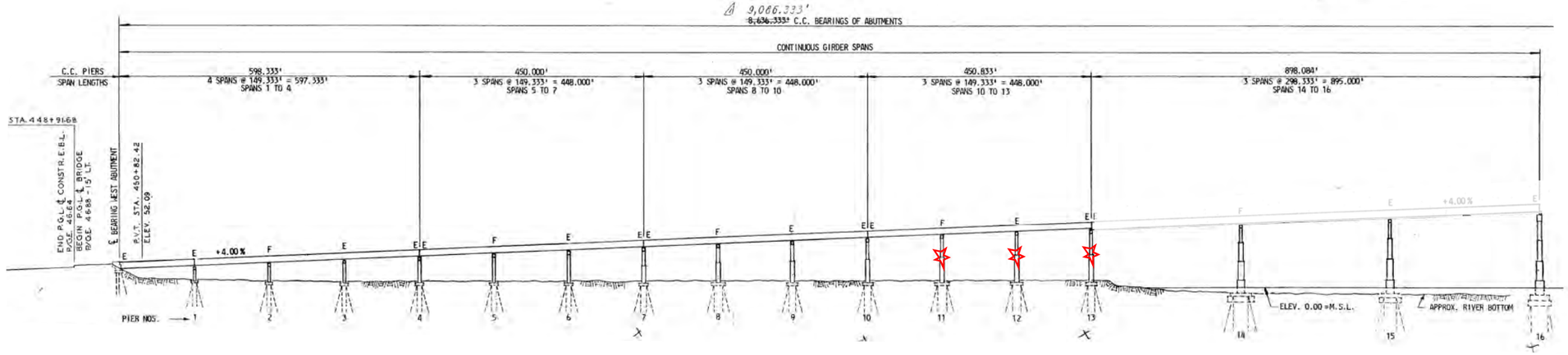
STEEL DEMOLTIION SPANS 23-25
KEY BRIDGE DEMOLITION

DRAWN BY CHCK'D BY

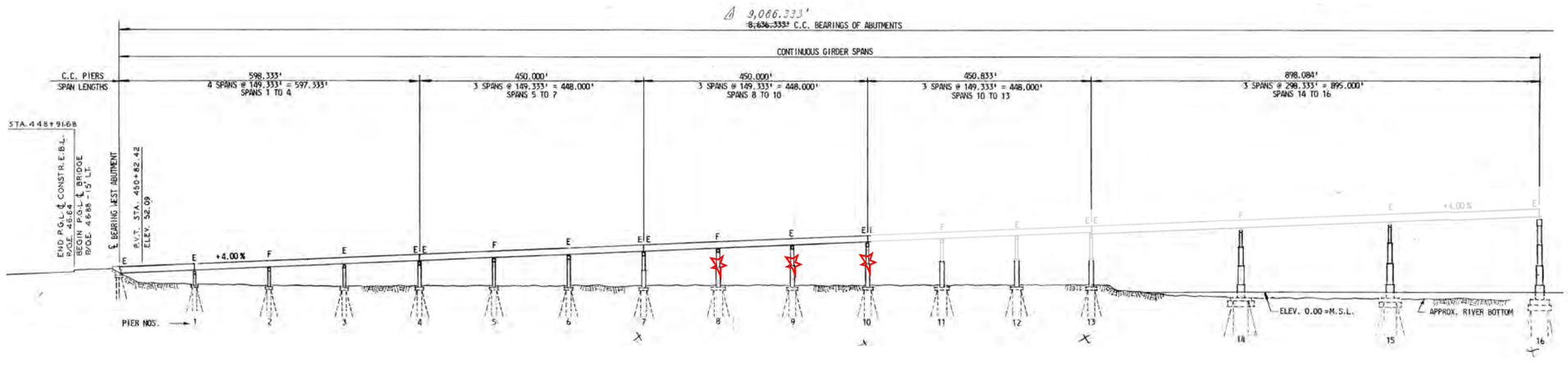
DATE

PROJECT

SHEET NO.



STEP 1
BLAST PIERS 11, 12, 13 TO
DROP SPANS 11, 12, & 13
RETRIEVE WITH DREDGE



STEP 2
BLAST PIERS 8, 9, 9 TO
DROP SPANS 8, 9, & 10
RETRIEVE WITH DREDGE

REPEAT FOR ALL REMAINING
APPROACH SPANS

SIMILAR FOR SPANS 26 - 34

PRELIMINARY
NOT FOR CONSTRUCTION

NO.	DATE	REMARKS	BY
△			
△			
△			

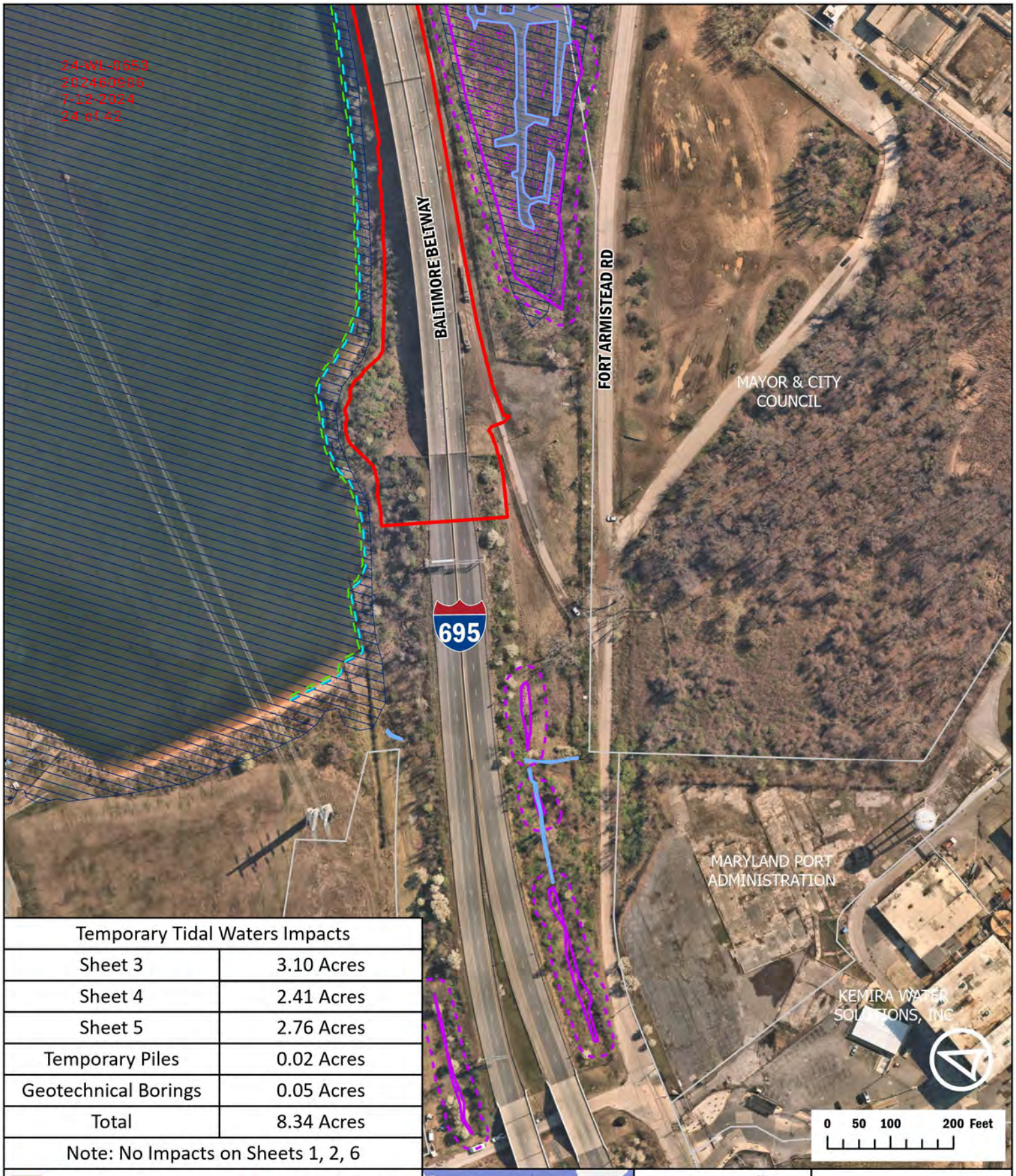
STEEL DEMOLTIION SPANS 1-13
KEY BRIDGE DEMOLITION

DRAWN BY CHCK'D BY

DATE

PROJECT

SHEET NO.



Temporary Tidal Waters Impacts	
Sheet 3	3.10 Acres
Sheet 4	2.41 Acres
Sheet 5	2.76 Acres
Temporary Piles	0.02 Acres
Geotechnical Borings	0.05 Acres
Total	8.34 Acres

Note: No Impacts on Sheets 1, 2, 6

- Limits of Disturbance
- Potential Temporary Pile Area
- Streams
- Wetlands
- 25ft Wetland Buffer
- 100-Year Floodplain
- Approximate MLW Line
- MHHW Line
- MHW Line
- Property Parcels
- Municipal Boundaries

Piles and borings authorized in 24-WL-0607

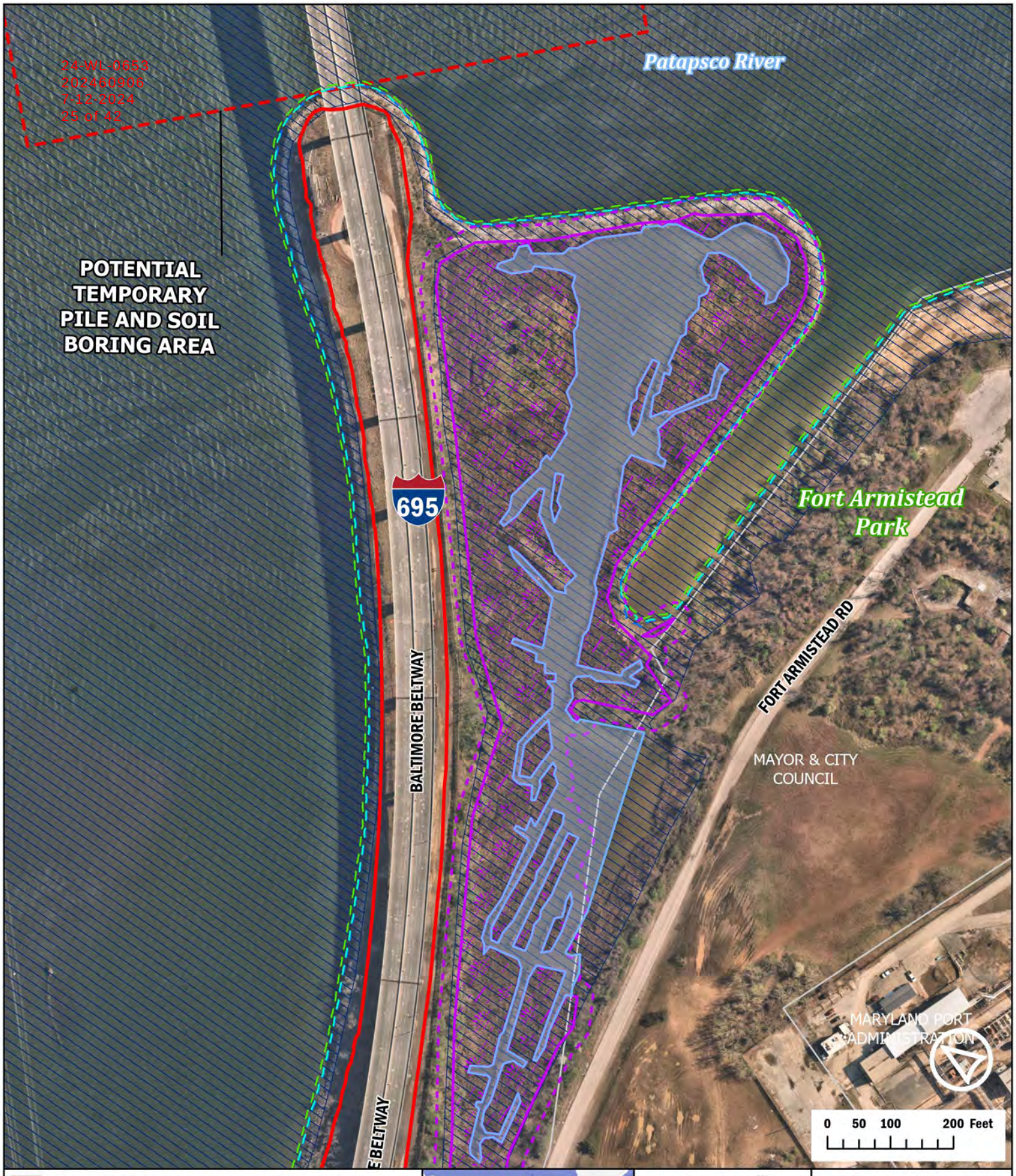
MDTA Maryland Transportation Authority

MDOT MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION

Francis Scott Key Bridge Demolition

Impact Plates

July 2024


24-WL-0653
202460906
7-12-2024
25 of 42
POTENTIAL TEMPORARY PILE AND SOIL BORING AREA
Patapsco River
695
BALTIMORE BELTWAY
FORT ARMISTEAD RD
Fort Armistead Park
MAYOR & CITY COUNCIL
MARYLAND PORT ADMINISTRATION
0 50 100 200 Feet
Limits of Disturbance
Potential Temporary Pile Area
Streams
Wetlands
25ft Wetland Buffer
100-Year Floodplain
Approximate MLW Line
MHHW Line
MHW Line
Property Parcels
Municipal Boundaries
Piles and borings authorized in 24-WL-0607
1
2
3
4
5
6
MDTA
Maryland Transportation Authority
MDOT
MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
Francis Scott Key Bridge Demolition
Impact Plates
Page 2 of 6
July 2024

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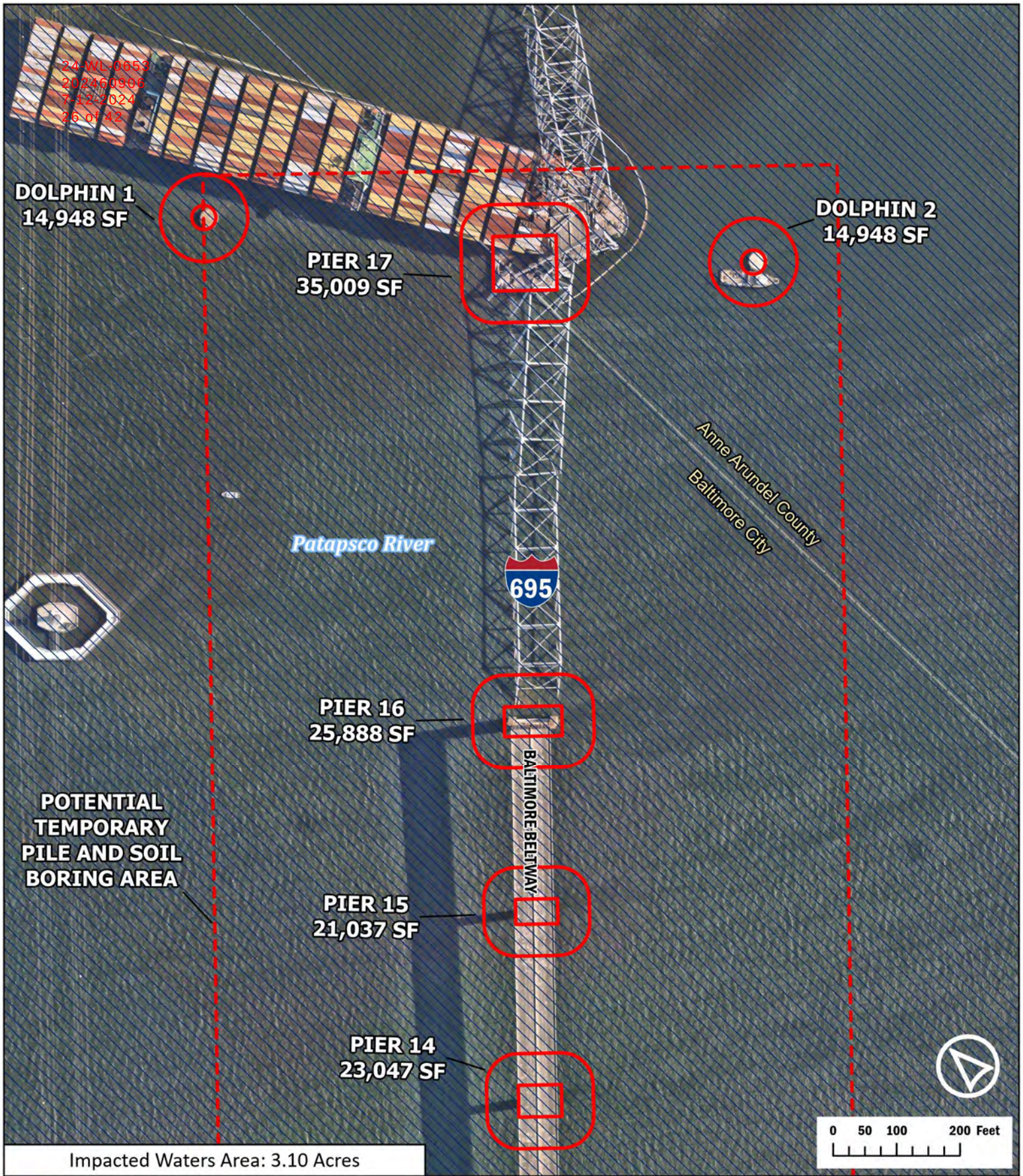


Impacted Waters Area: 3.10 Acres

- Limits of Disturbance
- Potential Temporary Pile Area
- Streams
- Wetlands
- 25ft Wetland Buffer
- 100-Year Floodplain
- Approximate MLW Line
- MHHW Line
- MHW Line
- Property Parcels
- Municipal Boundaries

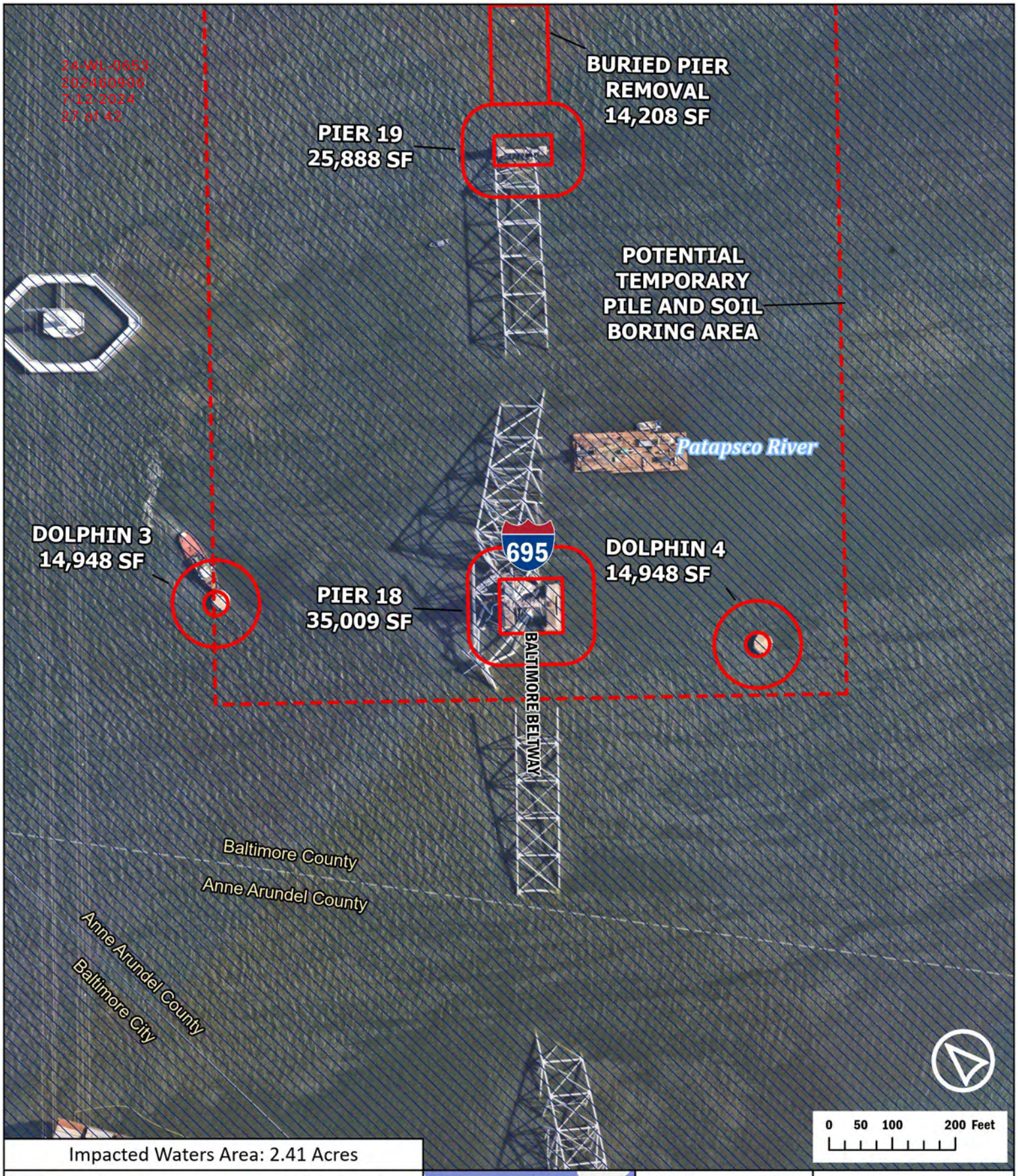
Piles and borings authorized in 24-WL-0607

MDTA Maryland Transportation Authority

MDOT MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION

Francis Scott Key Bridge Demolition

Impact Plates



Impacted Waters Area: 2.41 Acres

- Limits of Disturbance
- Potential Temporary Pile Area
- Streams
- Wetlands
- 25ft Wetland Buffer
- 100-Year Floodplain
- Approximate MLW Line
- MHHW Line
- MHW Line
- Property Parcels
- Municipal Boundaries

Piles and borings authorized in 24-WL-0607

MDTA Maryland Transportation Authority

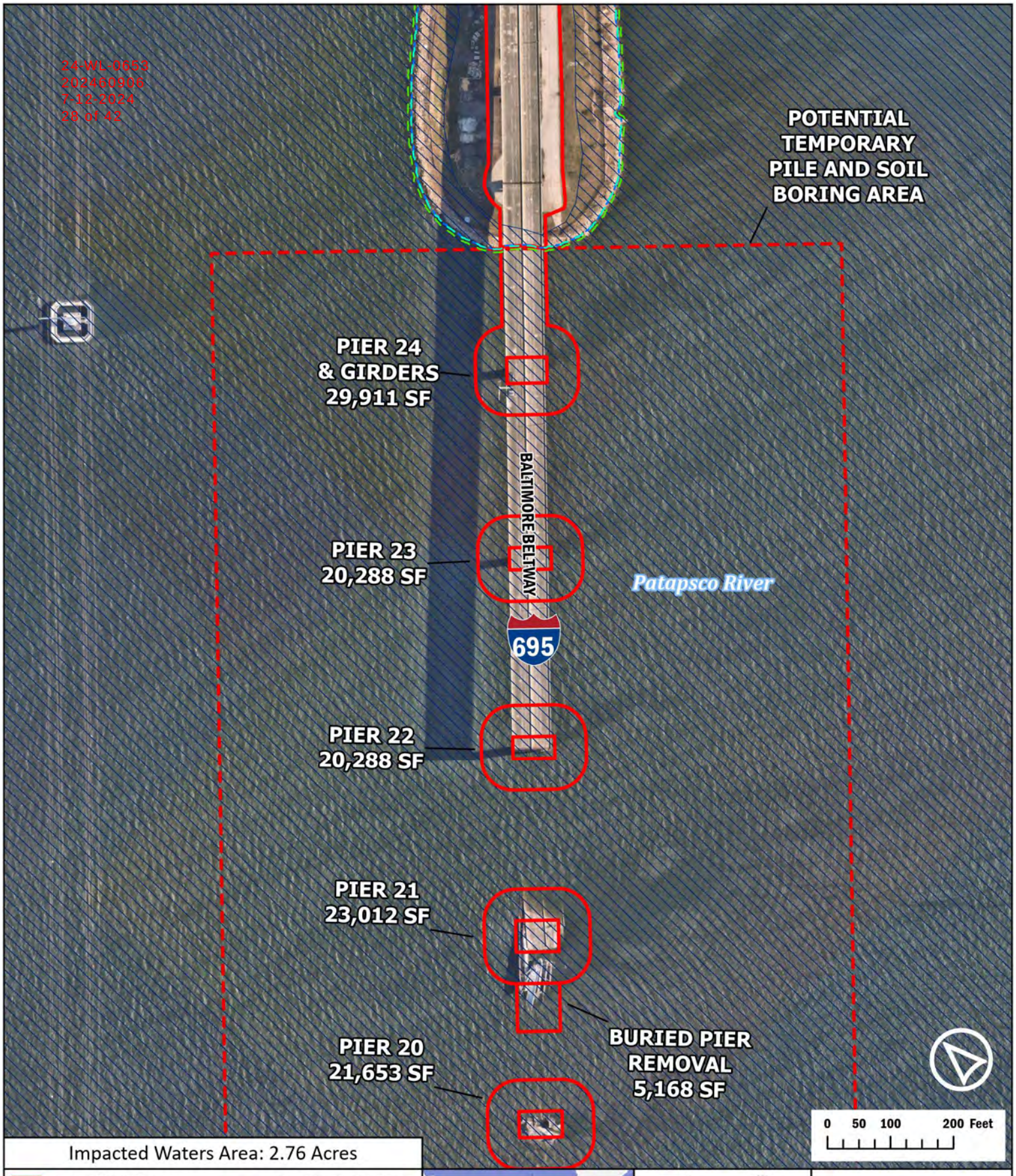
MDOT MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION

U.S. DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION

Francis Scott Key Bridge Demolition

Impact Plates

July 2024


24-WL-0653
202460906
7-12-2024
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POTENTIAL TEMPORARY PILE AND SOIL BORING AREA
PIER 24 & GIRDERS 29,911 SF
PIER 23 20,288 SF
PIER 22 20,288 SF
PIER 21 23,012 SF
PIER 20 21,653 SF
BALTIMORE BELTWAY
695
Patapsco River
BURIED PIER REMOVAL 5,168 SF
0 50 100 200 Feet
Impacted Waters Area: 2.76 Acres
Limits of Disturbance
Potential Temporary Pile Area
Streams
Wetlands
25ft Wetland Buffer
100-Year Floodplain
Approximate MLW Line
MHHW Line
MHW Line
Property Parcels
Municipal Boundaries
Piles and borings authorized in 24-WL-0607
1
2
3
4
5
6
MDTA
Maryland Transportation Authority
MDOT
MARYLAND DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
Francis Scott Key Bridge Demolition
Impact Plates
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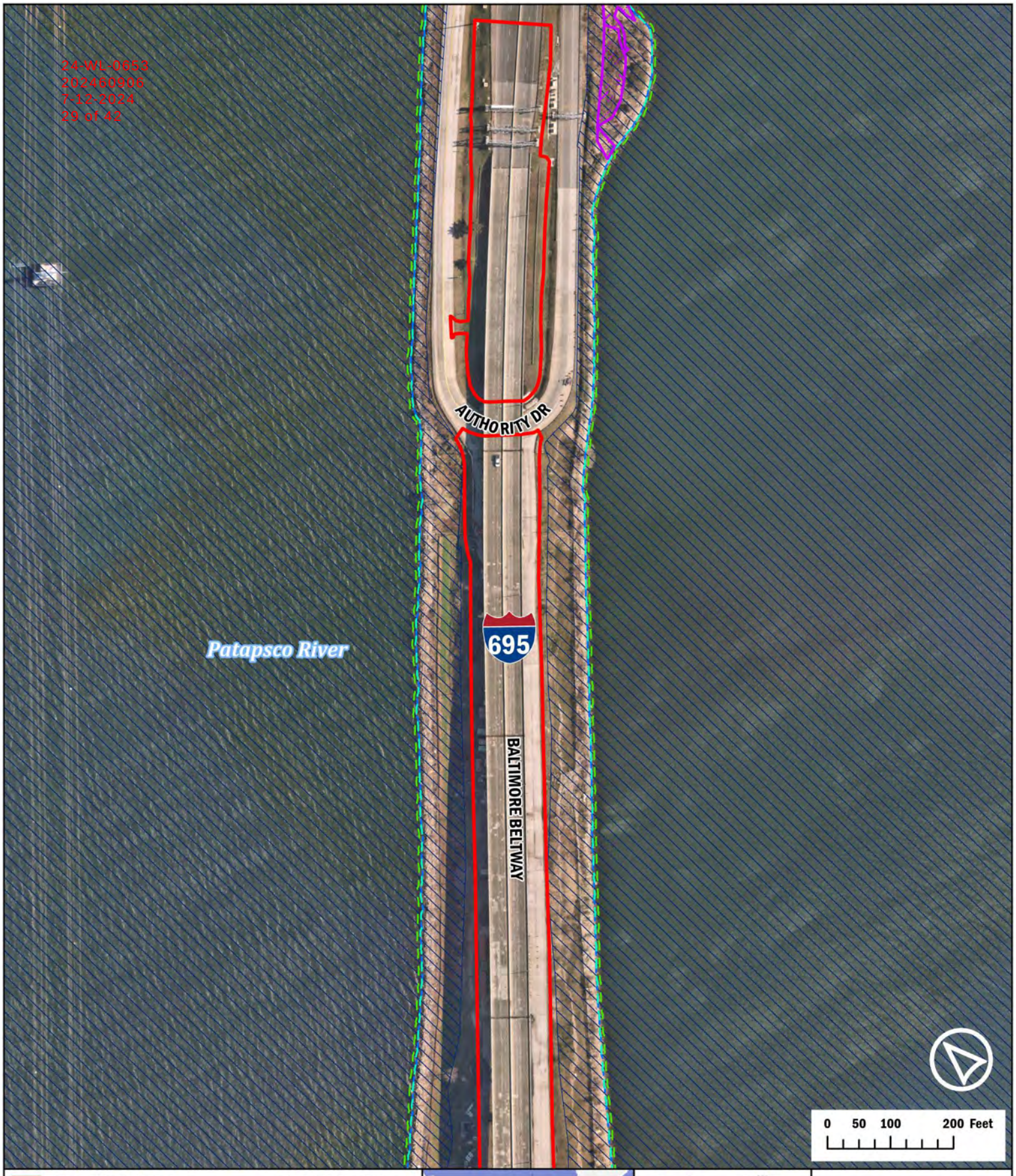
July 2024



- Limits of Disturbance
- Potential Temporary Pile Area
- Streams
- Wetlands
- 25ft Wetland Buffer
- 100-Year Floodplain
- Approximate MLW Line
- MHHW Line
- MHW Line
- Property Parcels
- Municipal Boundaries

MDTA Maryland Transportation Authority

MDOT MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION

Francis Scott Key Bridge Demolition

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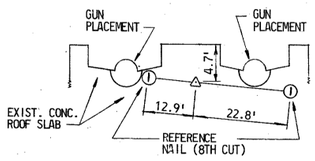
DEMOLITION LIMITS SHOWN IN RED



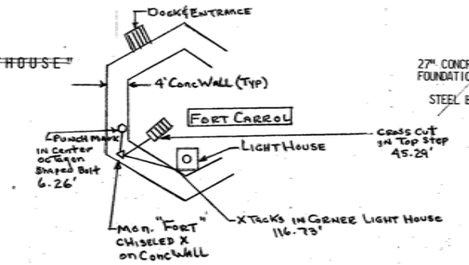
ENGINEER'S CUP TACK IN LEAD PLUG. FLUSH WITH CONC. ROOF SLAB

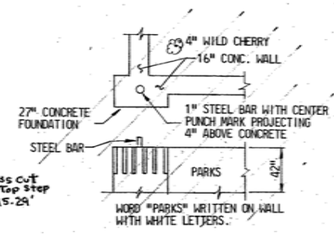
MONUMENT - "HARP"

~~CENTER OF SHARP SPIRE OF LIGHTHOUSE LOCATED ON FORT CARROLL~~
~~N 503,330.15~~
~~E 935,949.17~~

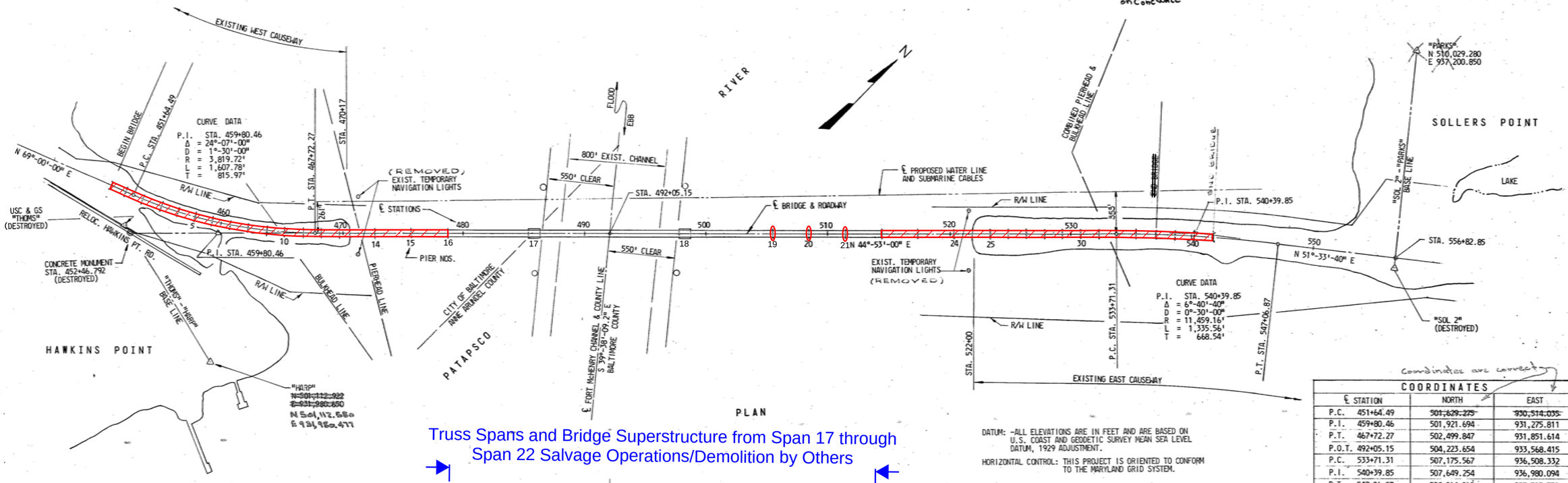
MONUMENT 'FORT'
+CUT IN TOP OF CONCRETE WALL.
BOOK # 1 PAGE 28
N 503450.84
E 935941.67

~~MONUMENT - "FORT CARROLL LIGHTHOUSE"~~



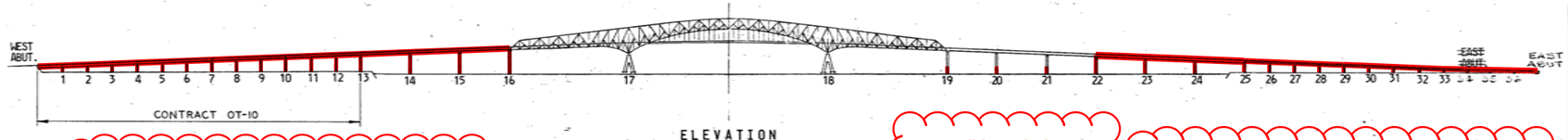


MONUMENT - "PARKS"
(DESTROYED)



PLAN

Truss Spans and Bridge Superstructure from Span 17 through Span 22 Salvage Operations/Demolition by Others



ELEVATION

Demolition Limits include Bridge Deck and Piers from West Abutment through Pier 16

REMOVE TREMIE CONCRETE AND PILES TO 2 FEET BELOW MUDLINE AS REQUIRED BY USCG BRIDGE PERMIT.

Demolition Limits include Remaining Portions of Piers 19, 20 and 21

Demolition Limits include Bridge Deck and Piers from Pier 22 to East Abutment

DATUM: -ALL ELEVATIONS ARE IN FEET AND ARE BASED ON U.S. COAST AND GEODETIC SURVEY MEAN SEA LEVEL DATUM, 1929 ADJUSTMENT.

HORIZONTAL CONTROL: THIS PROJECT IS ORIENTED TO CONFORM TO THE MARYLAND GRID SYSTEM.

Coordinates are correct

COORDINATES		
℄ STATION	NORTH	EAST
P.C. 451+64.49	~~501,629.275~~	~~930,514.035~~
P.I. 459+80.46	501,921.694	931,275.811
P.T. 467+72.27	502,499.847	931,851.614
P.O.T. 492+05.15	504,223.654	933,568.415
P.C. 533+71.31	507,175.567	936,508.332
P.I. 540+39.85	507,649.254	936,980.094
P.T. 547+06.87	508,064.869	937,503.739

AS BUILT

REVISIONS

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
BALTIMORE, MD.

BALTIMORE HARBOR OUTER CROSSING
PATAPSCO RIVER BRIDGE

BRIDGE DEMOLITION PLAN

SCALE: 1" = 400' DATE JAN. 1972 CONTRACT OT-10

MADE BY E.R.A.
TRACED BY E.R.A.
CHECKED BY S.J.S.

ZOLLMAN ASSOC. INC.
AND
SINGSTAD, KEHART NOVEMBER AND HURKA
A JOINT VENTURE
Baltimore, Md.

DRAWING NO. C-2
SHEET NO. OF

INDEXED

File No. Pocket No. Folder No.

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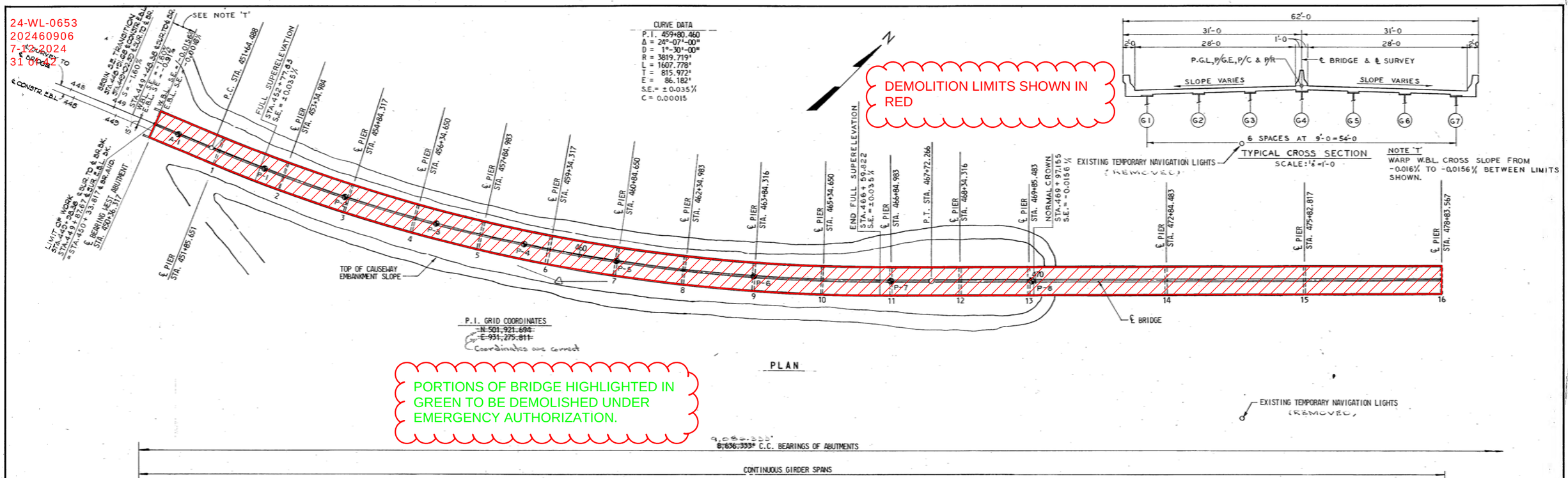

VERTICAL CURVE DATA
P.V.I. STA. 445+36.27 BK. (STA. 445+82.42 AHD.)
ELEV. = 32.09
V.C. = 1000'
CORR. = +6.825'
GRADES -1.46%
+4.00%

~~ESTIMATED~~ PILE TIP ELEVATIONS	
LOCATION	* TIP ELEVATIONS
WEST ABUTMENT	~~-23~~ -12.7
PIER 1	~~-36~~ -24.0
PIER 2	~~-35~~ -30.4
PIER 3	~~-38~~ -31.6
PIER 4	~~-40~~ -29.2
PIER 5	~~-31~~ -21.2
PIER 6	~~-32~~ -25.2
PIER 7	~~-32~~ -25.5
PIER 8	~~-32~~ -22.9
PIER 9	~~-38~~ -38.4
PIER 10	~~-49~~ -40.3
PIER 11	~~-43~~ -39.6
PIER 12	~~-42~~ -35.4
PIER 13	~~-41~~ -35.4

AS BUILTS

REVISIONS

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
BALTIMORE, MD.

BALTIMORE HARBOR OUTER CROSSING
PATAPSCO RIVER BRIDGE
BRIDGE DEMOLITION PLAN
GENERAL PLAN & ELEVATION I

SCALE: 1"=100' DATE JAN. 1972 CONTRACT OT-10

MADE BY ERA
TRACED BY ERA
CHECKED BY SJS

ZOLLMAN ASSOC. INC. AND SINGSTAD, KEHART NOVEMBER AND HURKA
A JOINT VENTURE
Baltimore, Md.

DRAWING NO. C-3
SHEET NO. OF
INDEXED

File No. Pocket No. Folder No.

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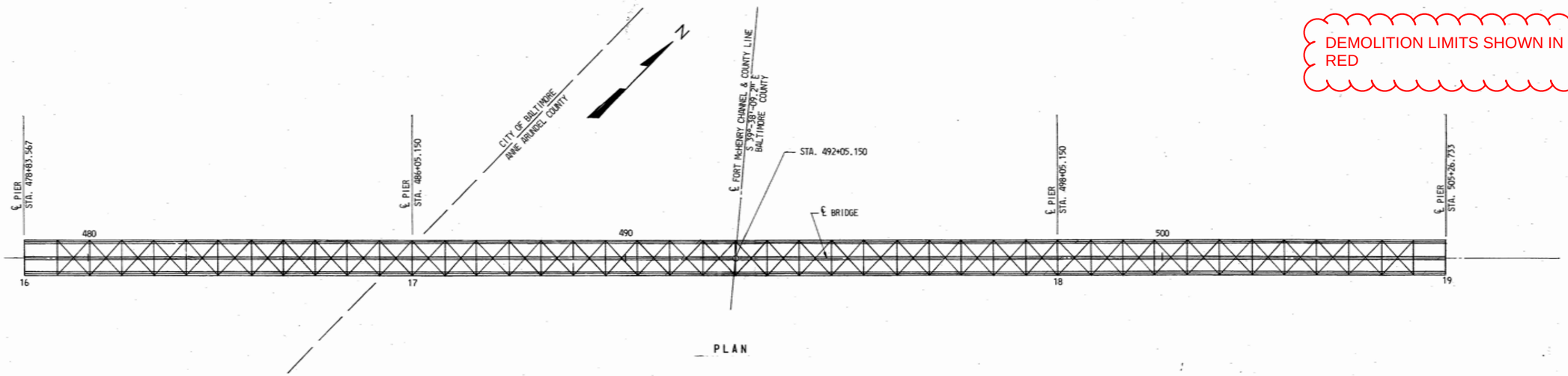
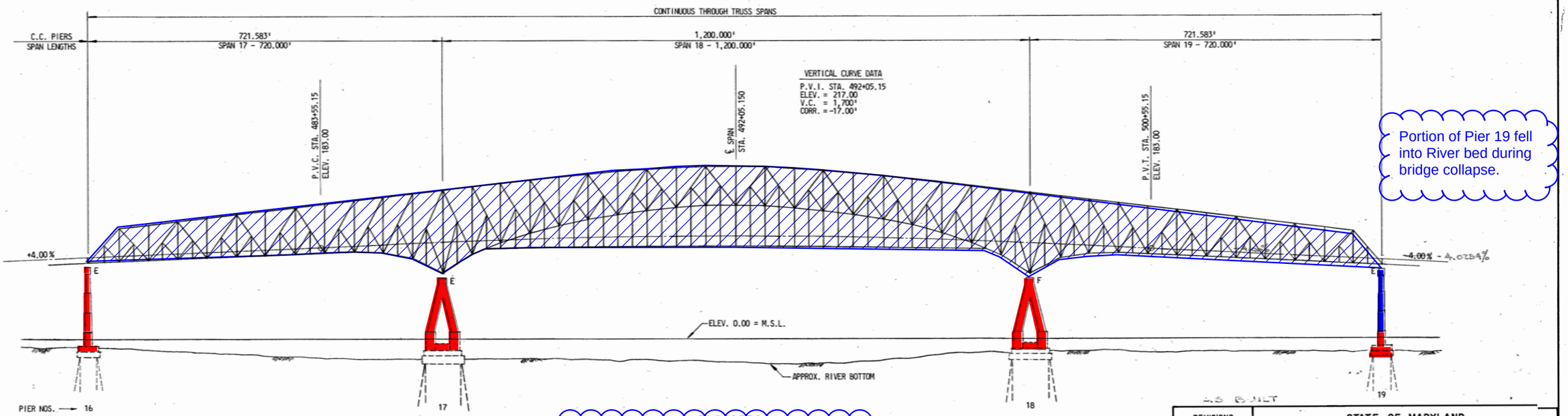
DEMOLITION LIMITS SHOWN IN RED



PLAN

9,086.333'
~~8,636.333'~~ C.C. BEARINGS OF ABUTMENTS



ELEVATION

Portion of Pier 19 fell into River bed during bridge collapse.

SALVAGE OPERATIONS FOR CONTINUOUS TRUSS SPANS BY OTHERS

REMOVE TREMIE CONCRETE AND PILES TO 2 FEET BELOW MUDLINE AS REQUIRED BY USCG, EXCEPT FOR PIERS 17 AND 18 THAT WILL BE INCORPORATED INTO PIER PROTECTION.

NOTE:
ALL DIMENSIONS & SPAN LENGTHS SHOWN ARE HORIZONTAL.
All elevations this sheet subject to revision in Dwg. No. 103 Contract CT-849.

DEMOLITION LIMITS INCLUDE PIERS 16 AND 19 (COLUMNS AND FOUNDATIONS) AND REMAINING PORTIONS OF COLUMNS ABOVE FOUNDATION CONCRETE FOR PIERS 17 and 18

U.S. BUILT

REVISIONS

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
BALTIMORE, MD.

BALTIMORE HARBOR OUTER CROSSING
PATAPSCO RIVER BRIDGE

BRIDGE DEMOLITION PLAN
GENERAL PLAN AND ELEVATION II

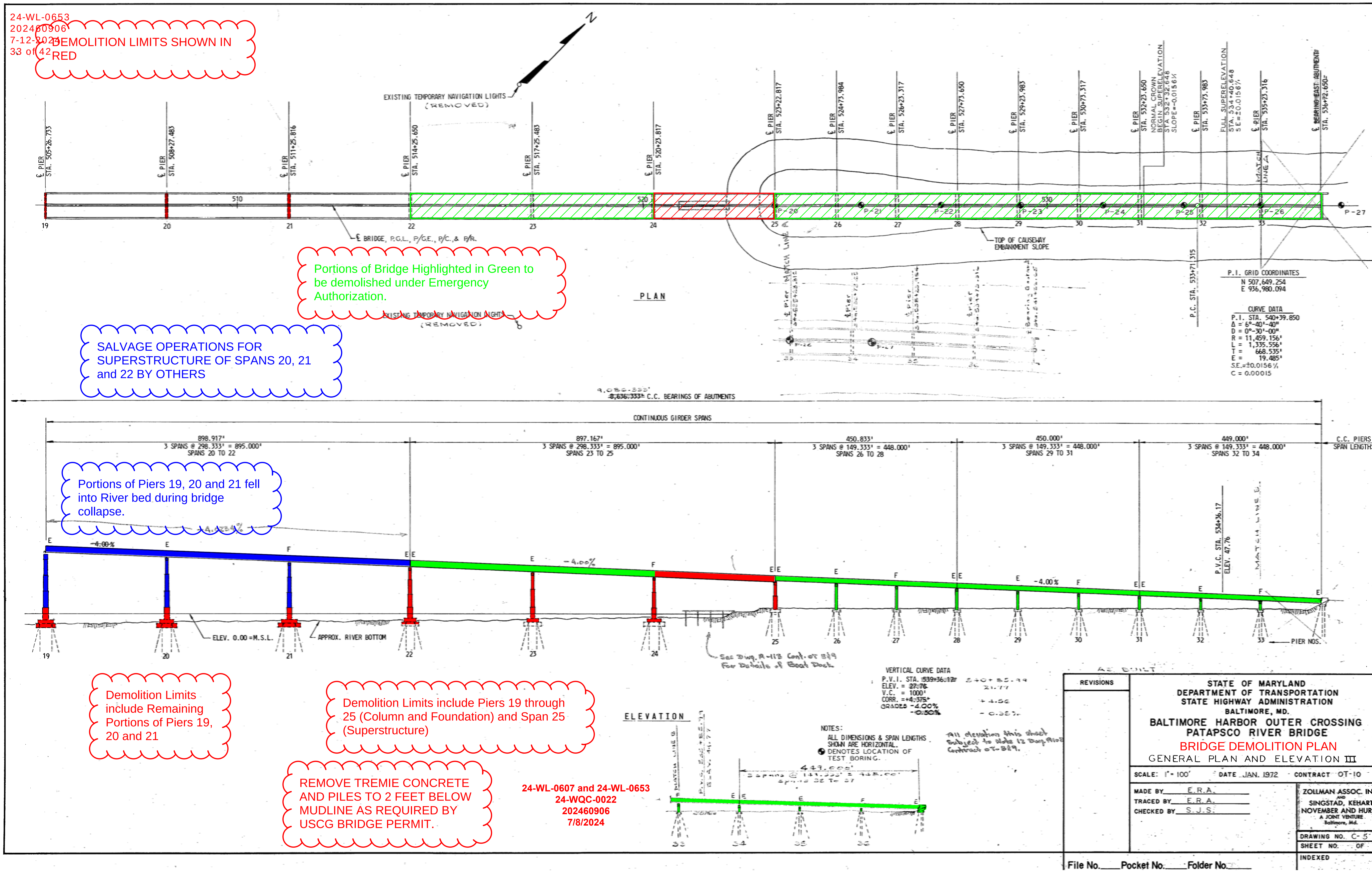
SCALE: 1"= 100' DATE JAN. 1972 CONTRACT CT-10

MADE BY E.R.A.
TRACED BY E.R.A.
CHECKED BY S.J.S.

ZOLLMAN ASSOC. AND SINGSTAD, KEHART NOVEMBER AND HIRKA INC.
A JOINT VENTURE
Baltimore, Md.

DRAWING NO. C-2
SHEET NO. OF
INDEXED

File No. Pocket No. Folder No.


24-WL-0653
202460906
7-12-2024
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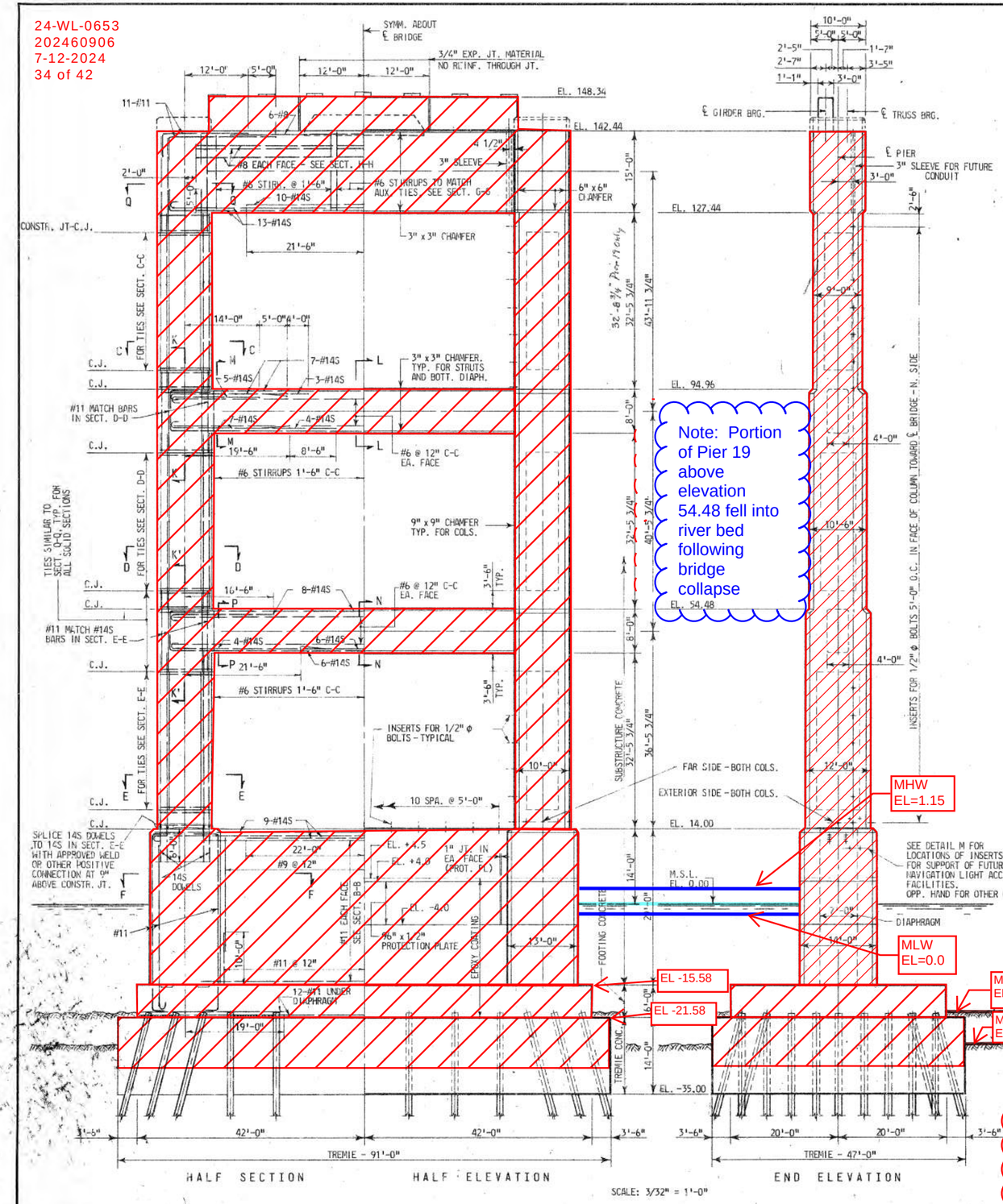
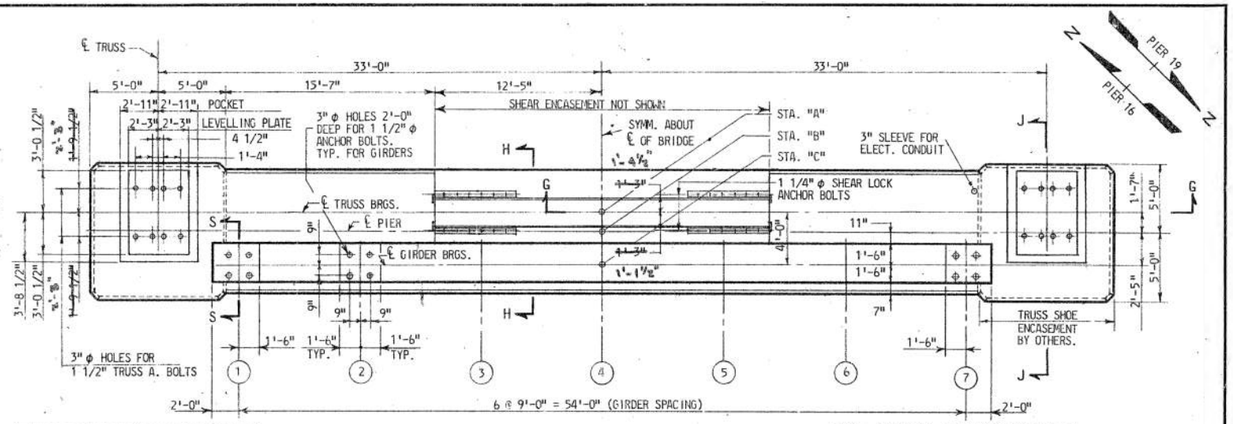
DEMOLITION LIMITS SHOWN IN RED
EXISTING TEMPORARY NAVIGATION LIGHTS (REMOVED)
Portions of Bridge Highlighted in Green to be demolished under Emergency Authorization.
SALVAGE OPERATIONS FOR SUPERSTRUCTURE OF SPANS 20, 21 and 22 BY OTHERS
PLAN
℄ BRIDGE, P.G.L., P/G.E., P/C., & P/R.
TOP OF CAUSEWAY EMBANKMENT SLOPE
P.I. GRID COORDINATES
N 507,649.254
E 936,980.094
CURVE DATA
P.I. STA. 540+39.850
C.C. BEARINGS OF ABUTMENTS
CONTINUOUS GIRDER SPANS
3 SPANS @ 298.333' = 895.000' SPANS 20 TO 22
3 SPANS @ 298.333' = 895.000' SPANS 23 TO 25
3 SPANS @ 149.333' = 448.000' SPANS 26 TO 28
3 SPANS @ 149.333' = 448.000' SPANS 29 TO 31
3 SPANS @ 149.333' = 448.000' SPANS 32 TO 34
C.C. PIERS SPAN LENGTHS
Portions of Piers 19, 20 and 21 fell into River bed during bridge collapse.
ELEV. 0.00 = M.S.L.
APPROX. RIVER BOTTOM
PIER NOS.
Demolition Limits include Remaining Portions of Piers 19, 20 and 21
Demolition Limits include Piers 19 through 25 (Column and Foundation) and Span 25 (Superstructure)
REMOVE TREMIE CONCRETE AND PILES TO 2 FEET BELOW MUDLINE AS REQUIRED BY USCG BRIDGE PERMIT.
24-WL-0607 and 24-WL-0653
24-WQC-0022
202460906
7/8/2024
ELEVATION
VERTICAL CURVE DATA
NOTES:
ALL DIMENSIONS & SPAN LENGTHS SHOWN ARE HORIZONTAL.
DENOTES LOCATION OF TEST BORING.
REVISIONS
STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
BALTIMORE, MD.
BALTIMORE HARBOR OUTER CROSSING
PATAPSCO RIVER BRIDGE
BRIDGE DEMOLITION PLAN
GENERAL PLAN AND ELEVATION III
SCALE: 1" = 100'
DATE JAN. 1972
CONTRACT OT-10
MADE BY E.R.A.
TRACED BY E.R.A.
CHECKED BY S.J.S.
ZOLLMAN ASSOC. INC.
SINGSTAD, KEHART NOVEMBER AND HURKA
A JOINT VENTURE
Baltimore, Md.
DRAWING NO. C-5
SHEET NO. OF
INDEXED
File No. Pocket No. Folder No.

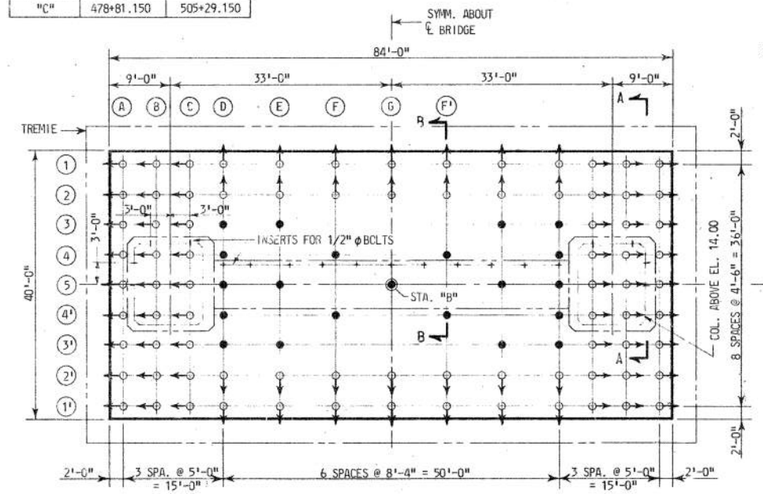


ALL MARKUP ELEVATIONS RELATIVE TO MLW = 0.0



STATION	PIER	
	16	19
"A"	478+85.150	505+25.150
"B"	478+83.567	505+26.733
"C"	478+81.150	505+29.150

NOTE: PADS SHALL BE POURED 1/4" HIGH BY THE SUBSTRUCTURE CONTRACTOR AND GROUND TO THE CORRECT ELEVATION BY THE SUPERSTRUCTURE CONTRACTOR.



LEGEND :
● = PLUMB PILES
◂○ = BATTER PILES 1:4

NOTE:
ALL PILES HP 14 x 102.
DIMENSIONS OF PILES SHOWN ARE AT BOTTOM OF FOOTING, EL. - 21.00.
ORIENTATION: BATTERED PILES SHALL BE DRIVEN WITH THE WEBS IN LINE WITH THE DIRECTION OF BATTER.
PLUMB PILES SHALL BE DRIVEN WITH WEBS PARALLEL TO THE ℄ PIER
ESTIMATED PILE TIP EL.: PIER 16 - EL. -110 (AVERAGE)
PIER 19 - EL. -112 (AVERAGE)

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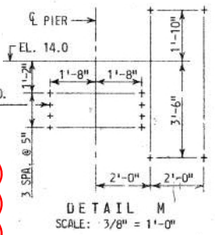
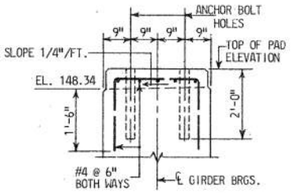
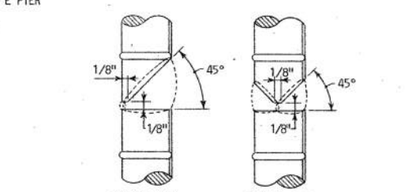
202460906
7/8/2024



REMOVE TREMIE CONCRETE AND PILES TO 2 FEET BELOW MUDLINE AS REQUIRED BY USCG BRIDGE PERMIT.



GIRDER	TOP OF PAD ELEV.
1	148.675
2	148.816
3	148.956
4	149.097
5	148.956
6	148.816
7	148.675



NOTE: AN APPROVED THERMIT WELDING PROCESS SPLICE WILL ALSO BE ACCEPTABLE.

NOTES:
FOR GENERAL NOTES SEE DWG. NO. A-102.
FOR DETAIL OF CONSTRUCTION JOINT KEYS SEE SECT. J-J DWG. NO. A-108.
FOR TEST PILE AND LOAD TEST LOCATIONS, PILE SPLICE DETAIL AND STEEL PROTECTION PLATE DETAILS SEE DWG. NO. A-113.
All Elevations this Sheet Subject to Note 12 Dwg A-102 of Cont. OT-8-9

REVISIONS
As-Built

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
BALTIMORE, MD.

BALTIMORE HARBOR OUTER CROSSING PATAPSCO RIVER BRIDGE

PIERS 16 AND 19
PLANS AND ELEVATIONS

SCALE: AS SHOWN DATE JAN., 1972 CONTRACT OT-8

MADE BY H.E.K.
TRACED BY E.J.M.
CHECKED BY E.E.B.

J. E. GREINER COMPANY, INC.
CONSULTING ENGINEERS
BALTIMORE, MARYLAND

DRAWING NO. A-107
SHEET NO. 7 OF 24
INDEXED

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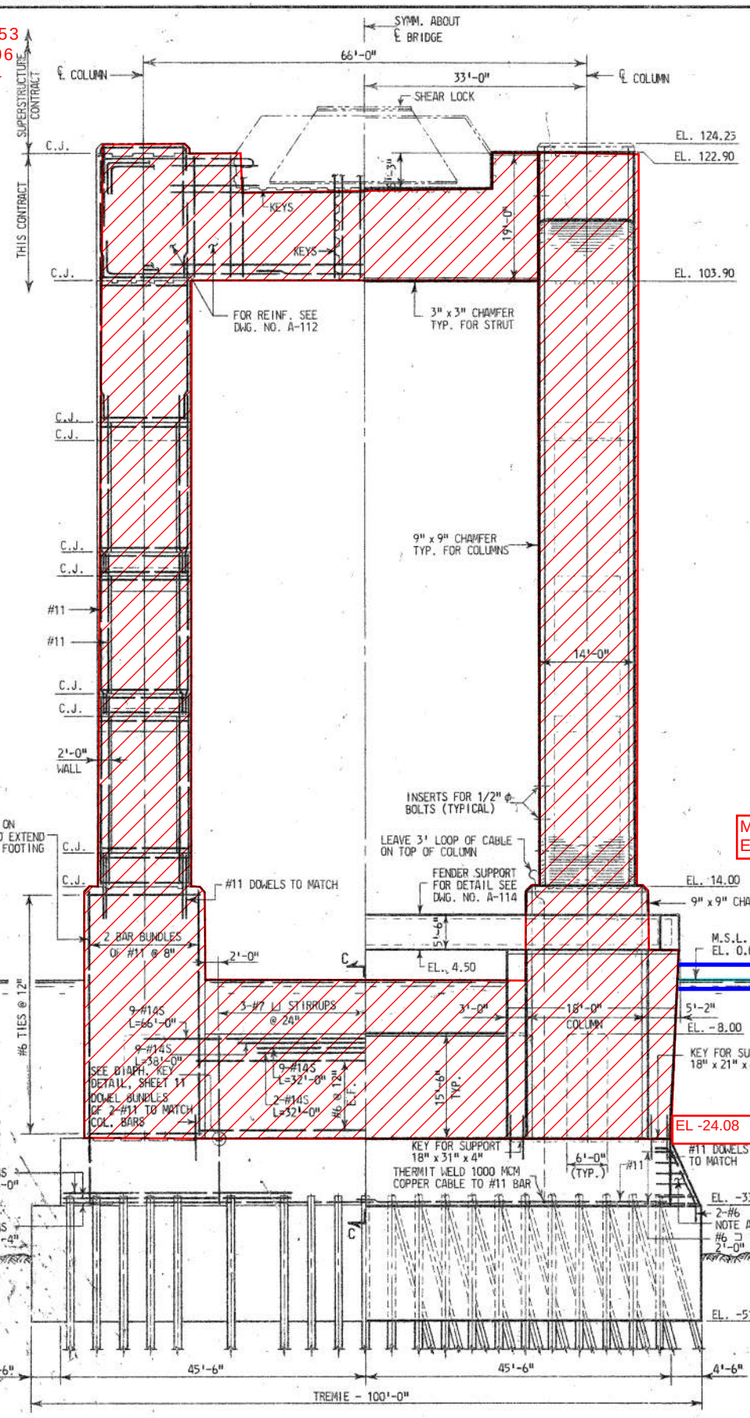

NOTES:

FOR GENERAL NOTES SEE DWG. NO. A-102.

PILES: HP 14 x 102

FOR TEST PILE AND LOAD TEST LOCATIONS, PILE SPLICE, PROTECTION PLATE DETAILS AND SECT. L-L, SEE DWG. NO. A-113.

FOR SECTIONS TAKEN AND CONSTRUCTION JOINT DETAIL, SEE DWG. NO. A-111.

FOR DETAIL OF BUTT SPLICES OF REINF. BARS, SEE DWG. NO. A-107.

NOTE A: SADDLE FOR SUBMARINE CABLE (BY OTHERS) LOCATED ON CHANNEL SIDE ONLY.

ALL MARKUP ELEVATIONS RELATIVE TO MLW = 0.0

REVISIONS
As-Built

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
BALTIMORE, MD.

BALTIMORE HARBOR OUTER CROSSING
PATAPSCO RIVER BRIDGE
PIER 17
PLANS AND ELEVATIONS

SCALE AS NOTED DATE JAN., 1972 CONTRACT OT-8

MADE BY E.E.B.
TRACED BY A.B.M.
CHECKED BY J.L.K.

J. E. GREINER COMPANY, INC.
CONSULTING ENGINEERS
BALTIMORE, MARYLAND

DRAWING NO. A-109
SHEET NO. 9 OF 24
INDEXED

File No. Pocket No. Folder No.

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202460906
7-12-2024
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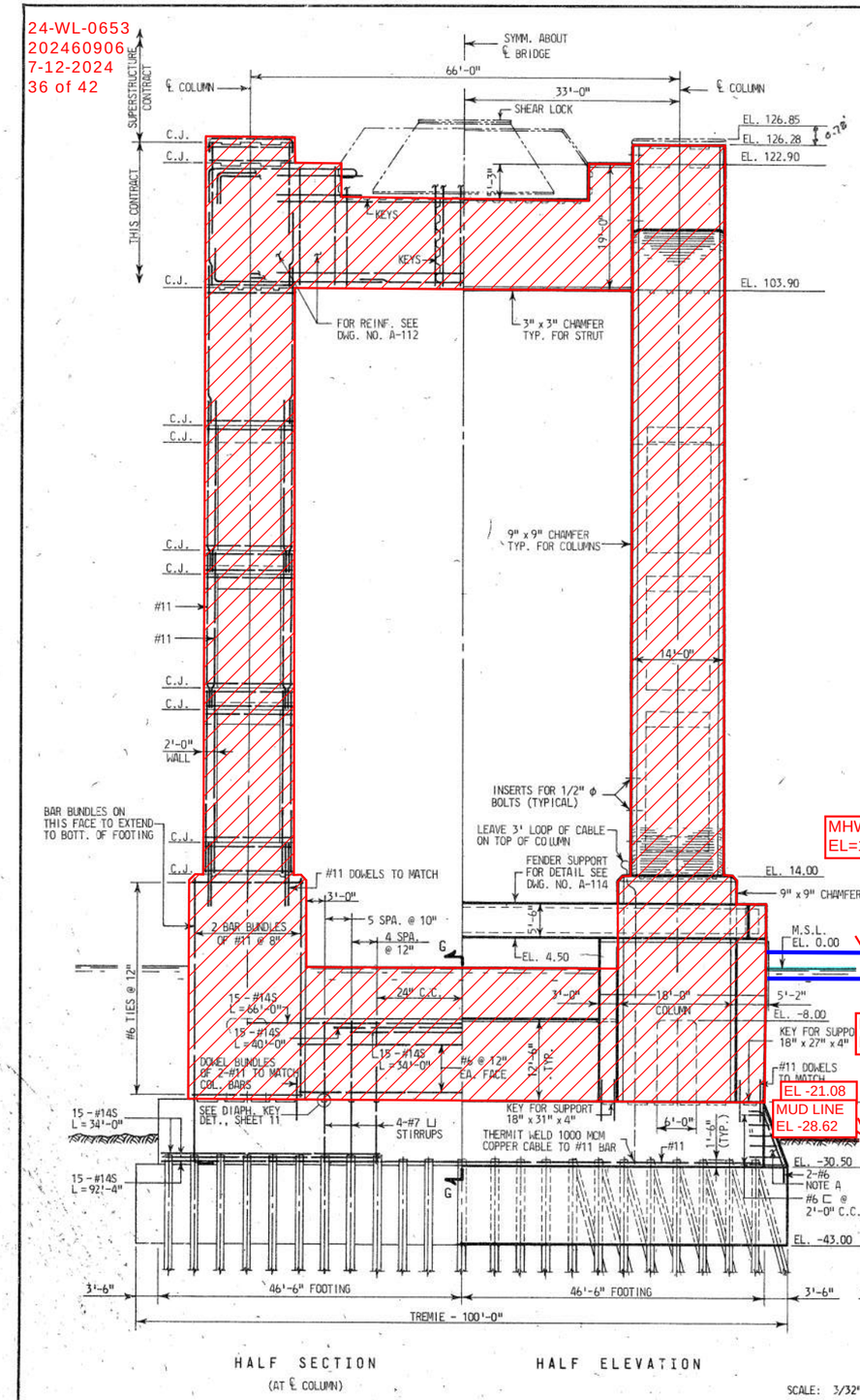
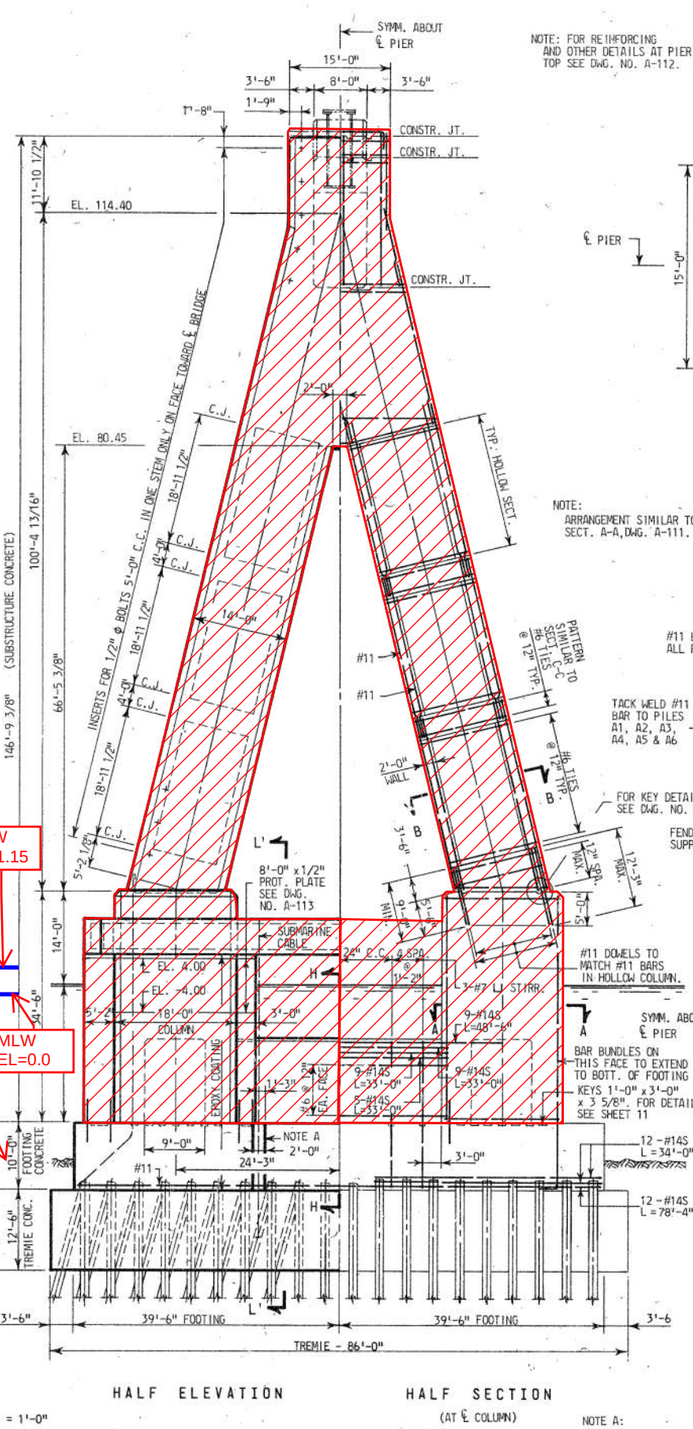
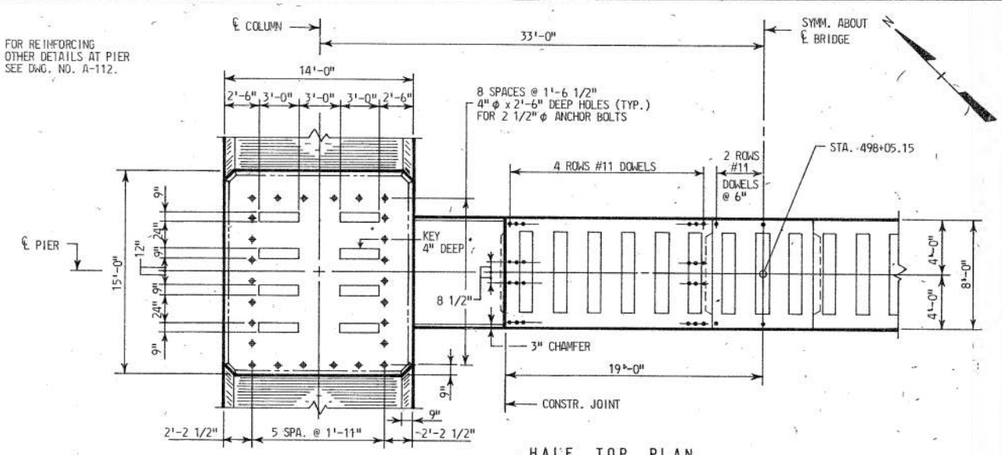
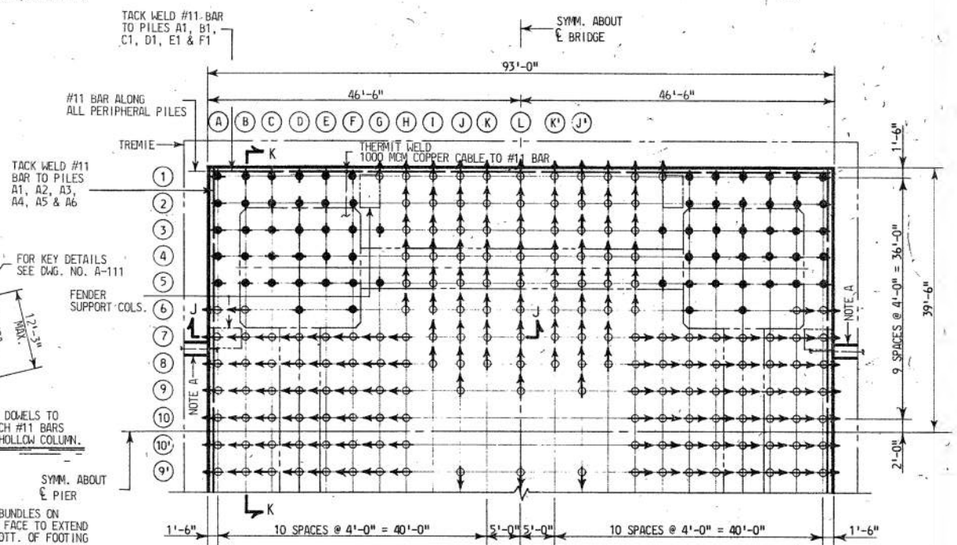




NOTE: FOR REINFORCING AND OTHER DETAILS AT PIER TOP SEE DWG. NO. A-112.



NOTE:
ARRANGEMENT SIMILAR TO SECT. A-A, DWG. A-111.



LEGEND :
♦ = PLUMB PILE
⟵ = BATTER PILE 1:4
THE LINE THRU THE PILE SYMBOL INDICATES THE DIRECTION OF THE WEB.

DIMENSIONS OF PILES ARE AT BOTTOM OF FOOTING, EL. -30.50.
ESTIMATED PILE TIP EL.: -119 AVERAGE

All Elevations this sheet Subject To Note 12 Dwg A102 of Cont. OT-8

NOTES:
FOR GENERAL NOTES SEE DWG. NO. A-102.

PILES: HP 14 x 102

FOR TEST PILE AND LOAD TEST LOCATIONS, PILE SPLICE, PROTECTION PLATE DETAILS AND SECTION L-L SEE DWG. NO. A-113.

FOR SECTIONS TAKEN AND CONSTRUCTION JOINT DETAIL, SEE DWG. NO. A-111.

FOR DETAIL OF BUTT SPLICES OF REINF. BARS, SEE DWG. NO. A-107.

REVISIONS
As-Built

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
BALTIMORE, MD.

BALTIMORE HARBOR OUTER CROSSING PATAPSCO RIVER BRIDGE

PIER 18
PLANS AND ELEVATIONS

SCALE AS NOTED DATE JAN., 1972 CONTRACT OT-8

MADE BY E.E.B.
TRACED BY A.B.M.
CHECKED BY J.I.K.

J. E. GREINER COMPANY, INC.
CONSULTING ENGINEERS
BALTIMORE, MARYLAND

DRAWING NO. A-110
SHEET NO. 10 OF 24
INDEXED

File No. Packet No. Folder No.

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202460906
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PAD ELEVATION SCHEDULE								
GIRDER No.	1	2	3	4	5	6	7
PIER 14	124.29	124.43	124.57	124.71	124.57	124.43	124.29
PIER 21	124.29	124.43	124.57	124.71	124.57	124.43	124.29

PLAN

HALF SECTION

HALF ELEVATION

ELEVATION

SECTION A-A

SECTION B-B

SECTION C-C

SECTION D-D

SECTION E-E

SECTION F-F

SECTION G-G

SECTION H-H

DETAIL A

SECTION J-J

Note: Portion of Pier 21 above elevation 14.00 fell into river bed following bridge collapse

MHW EL=1.15

MLW EL=0.0

EL -12.58 (PIER 14)

EL -15.58 (PIER 21)

APPROX. MUD LINE EL -21.62 (PIER 21)

APPROX. MUD LINE EL -18.12 (PIER 14)

ALL MARKUP ELEVATIONS RELATIVE TO MLW = 0.0

REMOVE TREMIE CONCRETEAND PILES TO 2 FEET BELOW MUDLINE AS REQUIRED BYUSCG BRIDGE PERMIT

NOTES:

1. For General Notes see Dwg. A-102
2. For Pile Plan see Dwg. B-6
3. Typical Const Joint & Key Detail see Dwg. B-8
4. For method of Cofferdam Construction see Dwg. I-1
5. For Protection Plate Details see Dwg. B-8
6. All elevations this sheet subject to Note [illegible]

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
BALTIMORE, MD.

BALTIMORE HARBOR OUTER CROSSING
PATAPSCO RIVER BRIDGE

PIERS 14 AND 21

SCALE 3/32"=1'-0" & As Noted | DATE Jan. 1972 | CONTRACT OT-9

MADE BY J.D. | TRACED BY J.D. | CHECKED BY C.C.Y.

ZOLLMAN ASSOC. INC. AND SINGSTAD, KEHART NOVEMBER AND HURKA A JOINT VENTURE Baltimore, Md.

DRAWING NO. B-1 | SHEET NO. 16 OF 24 | INDEXED

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24-CN-0053
202400906
7-12-2024
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BALTIMORE 17 8153 PHOENIX 47131

For Location of Anchor Bolts & Pad Details see Dwg. B-8

PLAN

SECTION A-A

SECTION B-B

SECTION C-C

SECTION D-D

SECTION E-E

SECTION F-F

SECTION G-G

SECTION H-H

DETAIL A

SECTION J-J

HALF SECTION HALF ELEVATION

ELEVATION

PAD ELEVATION SCHEDULE							
GIRDER No	1	2	3	4	5	6	7
PIER 15	136.22	136.37	136.51	136.65	136.51	136.37	136.22
PIER 20	136.22	136.37	136.51	136.65	136.51	136.37	136.22

Note: Portion of Pier 20 above elevation 14.00 fell into river bed following bridge collapse

MHW EL=1.15

MLW EL=0.0

EL -12.58 (PIER 15)

EL -15.58 (PIER 20)

APPROX. MUD LINE EL -19.12 (PIER 15)

APPROX. MUD LINE EL -23.12 (PIER 20)

Approximate elevation of pile tips = -75.0 Pier 15 -80.2
-89.0 -85.0 Pier 20

ALL MARKUP ELEVATIONS RELATIVE TO MLW = 0.0

REMOVE TREMIE CONCRETE AND PILES TO 2 FEET BELOW MUDLINE AS REQUIRED BY USCG BRIDGE PERMIT

NOTES:

1. For General Notes see Dwg. A-102
2. For Pile Plan see Dwg. B-6
3. For Typical Construction Joint and Key Detail see Dwg. B-8
4. For method of cofferdam Construction see Dwg. I-1
5. For Protection Plate Details see Dwg. B-8
6. All elevations this sheet subject to Note 12 Dwg. B-102 Contract DE-819.

AS BUILT

REVISIONS

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
BALTIMORE, MD.

BALTIMORE HARBOR OUTER CROSSING
PATAPSCO RIVER BRIDGE

PIERS 15 AND 20

SCALE 3/32"=1'-0" & As Noted DATE Jan.1972 CONTRACT OT-9

MADE BY O.S.
TRACED BY O.S.
CHECKED BY C.C.Y.

ZOLLMAN ASSOC. INC. AND SINGSTAD, KEHART NOVEMBER AND HURKA A JOINT VENTURE Baltimore, Md.

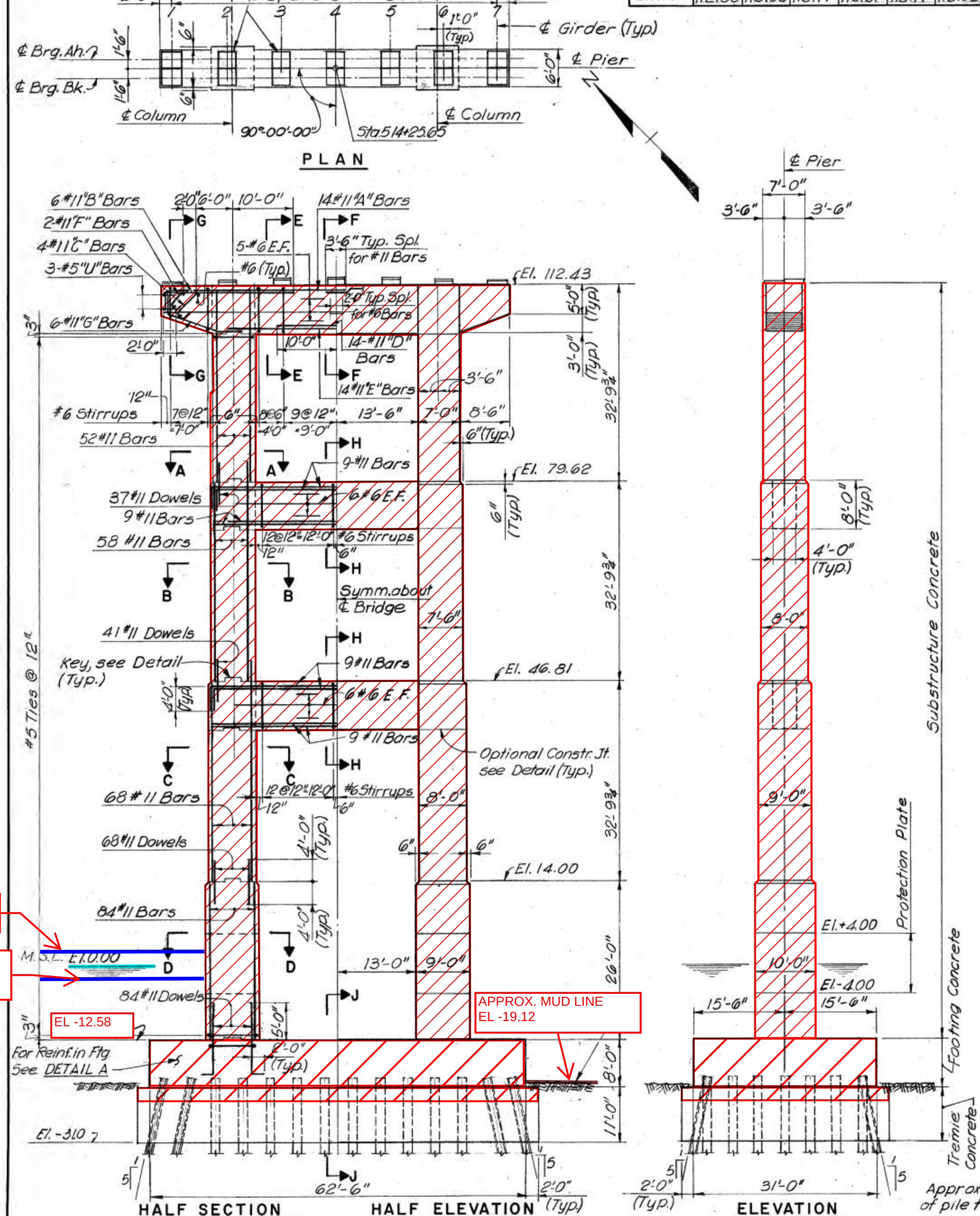
DRAWING NO. B-2
SHEET NO. 17 OF 24

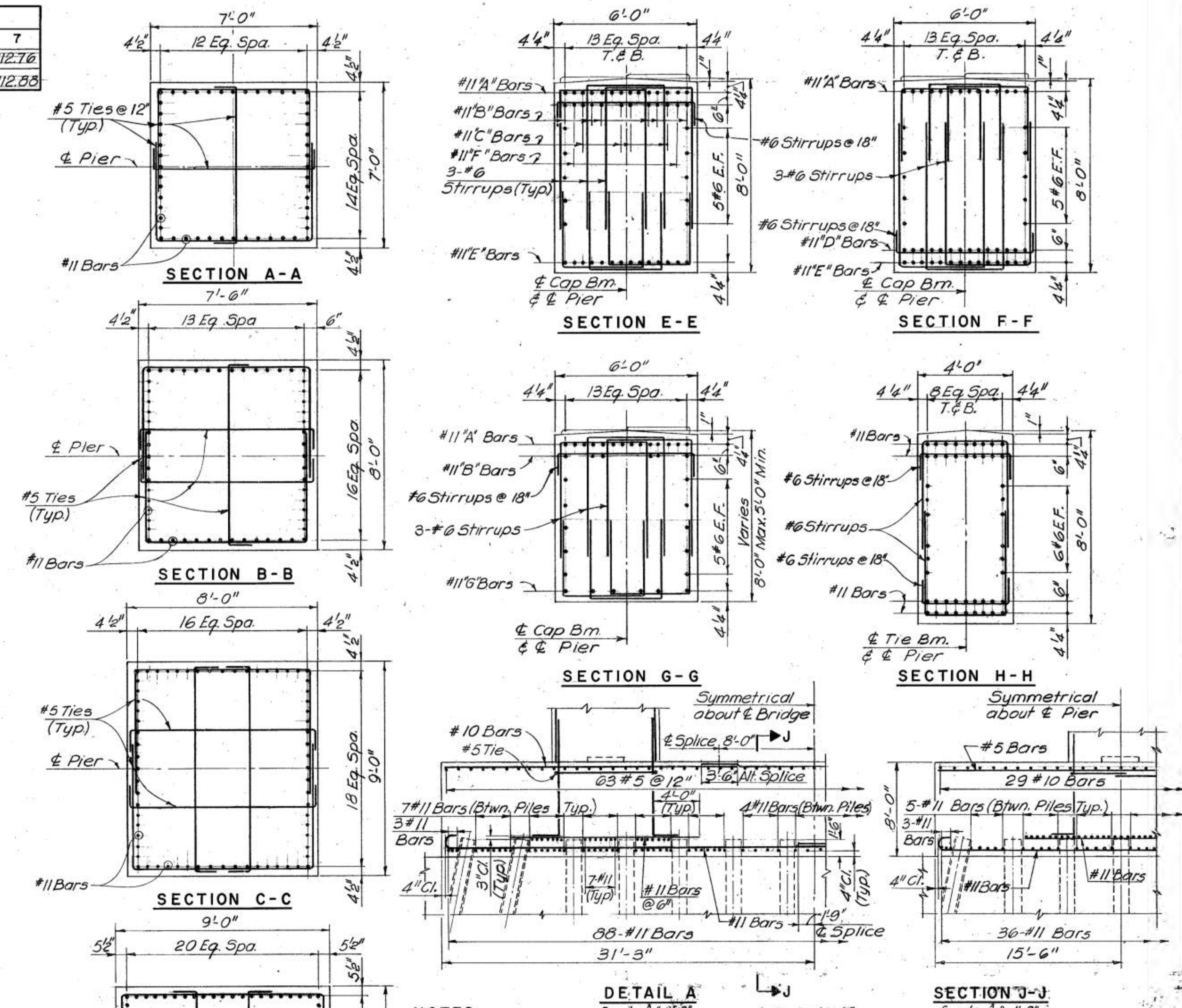
INDEXED

File No. Pocket No. Folder No.

HE BALTIMORE 17 0153 PHOENIX 47131+

PAD ELEVATION SCHEDULE							
GIRDER No.	1	2	3	4	5	6	7
BRG. Ah.	112.76	112.91	113.05	113.19	113.05	112.91	112.76
BRG. Bk.	112.88	113.03	113.17	113.31	113.17	113.03	112.88





AS BUILT

NOTES:

1. For General Notes see Dwg. A-102
2. For Pile Plan see Dwg. B-6
3. For Typical Construction Joint and Key Detail see Dwg. B-8
4. For method of cofferdam Construction see Dwg. I-1
5. For Protection Plate see Dwg. B-8
6. All elevations this sheet, subject to Note 12 Dwg. A-102 Cont. OT-339.

REMOVE TREMIE CONCRETE AND PILES TO 2 FEET BELOW MUDLINE AS REQUIRED BY USCG BRIDGE PERMIT.

REVISIONS

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
BALTIMORE, MD.

BALTIMORE HARBOR OUTER CROSSING
PATAPSCO RIVER BRIDGE

PIER 22

SCALE 3/32" = 1'-0" & As Noted | DATE Jan. 1972 | CONTRACT OT.-9

MADE BY R. R.
TRACED BY R. R.
CHECKED BY C. C. Y.

ZOLLMAN ASSOC. INC.
AND
SINGSTAD, KEHART
NOVEMBER AND HURKA
A JOINT VENTURE
Baltimore, Md.

DRAWING NO. B-3
SHEET NO. 18 OF 24
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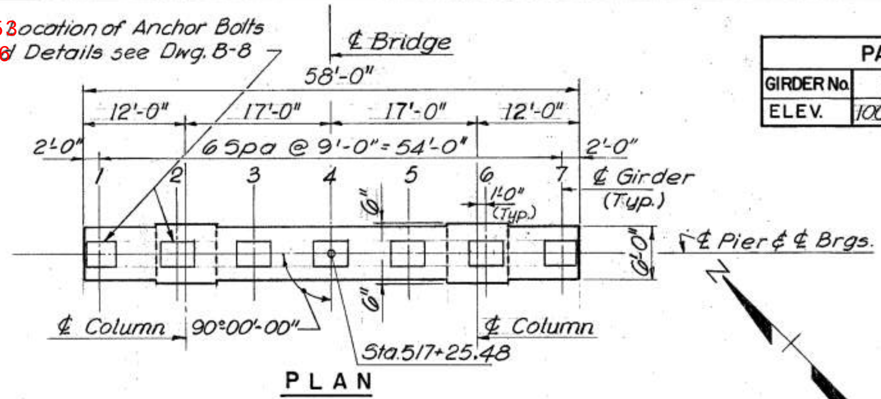
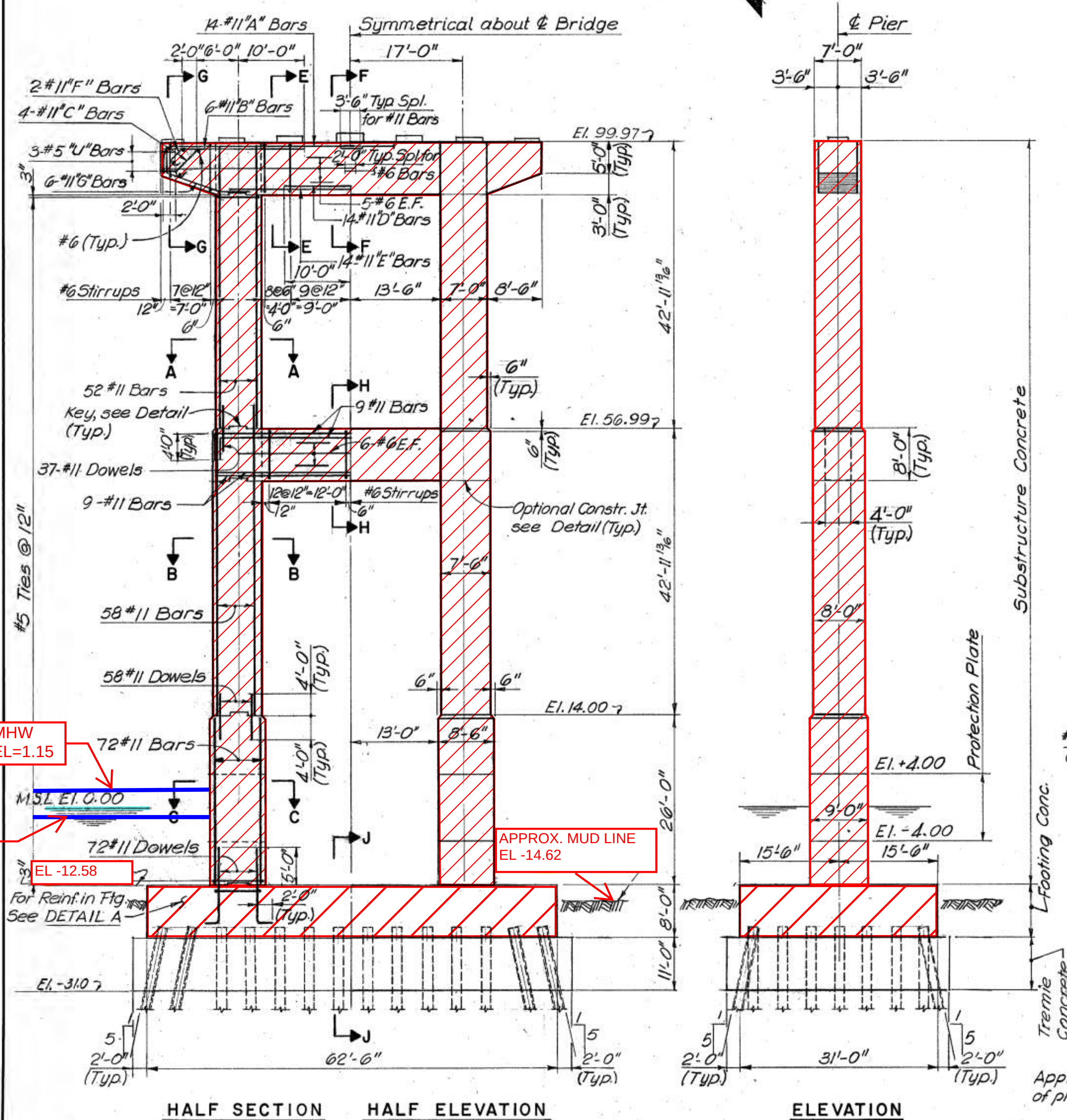
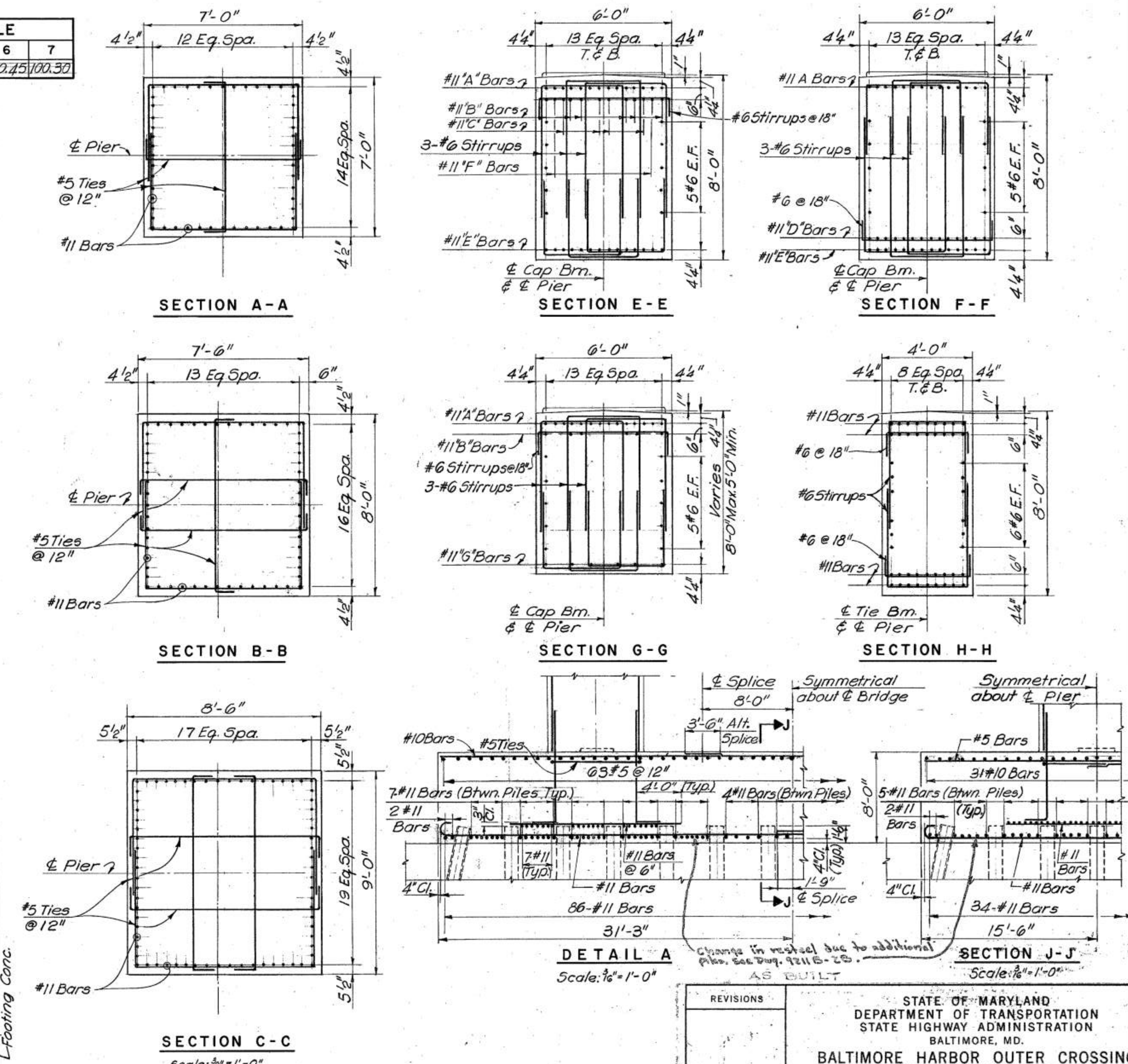
K+E BALTIMORE 17 0153 PHOENIX 47131•



PAD ELEVATION SCHEDULE

GIRDER No.	1	2	3	4	5	6	7
ELEV.	100.30	100.45	100.59	100.73	100.59	100.45	100.30





NOTES:

1. For General Notes see Dwg. A-102
2. For Pile Plan see Dwg. B-6
3. For Typical Construction Joint and Key Detail see Dwg. B-8
4. For method of cofferdam Construction see Dwg. I-1
5. For Protection Plate see Dwg. B-8
6. All elevations this sheet subject to Note 12 Dwg. A-102 Cont. OT-B19.

ALL MARKUP ELEVATIONS RELATIVE TO MLW = 0.0

REVISIONS

STATE OF MARYLAND
DEPARTMENT OF TRANSPORTATION
STATE HIGHWAY ADMINISTRATION
BALTIMORE, MD.

BALTIMORE HARBOR OUTER CROSSING
PATAPSCO RIVER BRIDGE

PIER 23

SCALE 3/32" = 1'-0" & As Noted DATE Jan. 1972 CONTRACT OT-9

MADE BY R.R.
TRACED BY R.R.
CHECKED BY C.C.Y.

ZOLLMAN ASSOC. INC. AND SINGSTAD, KEHART NOVEMBER AND HURKA
A JOINT VENTURE
Baltimore, Md.

DRAWING NO. B-4
SHEET NO. 19 OF 24
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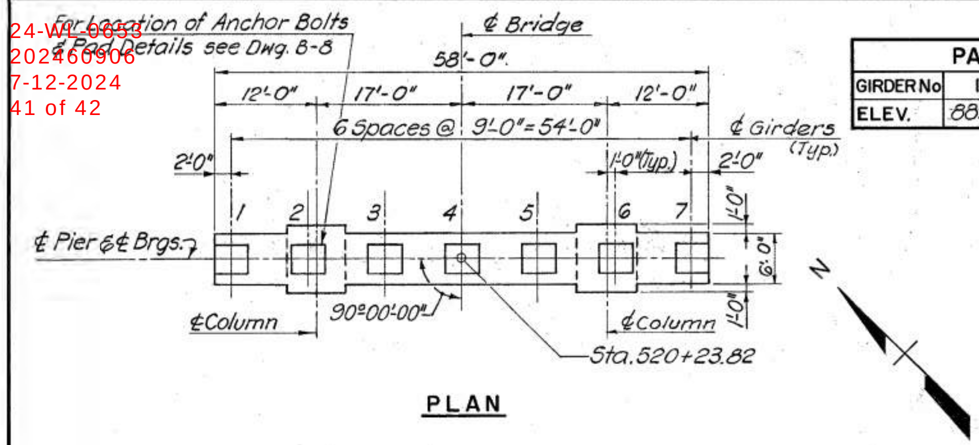
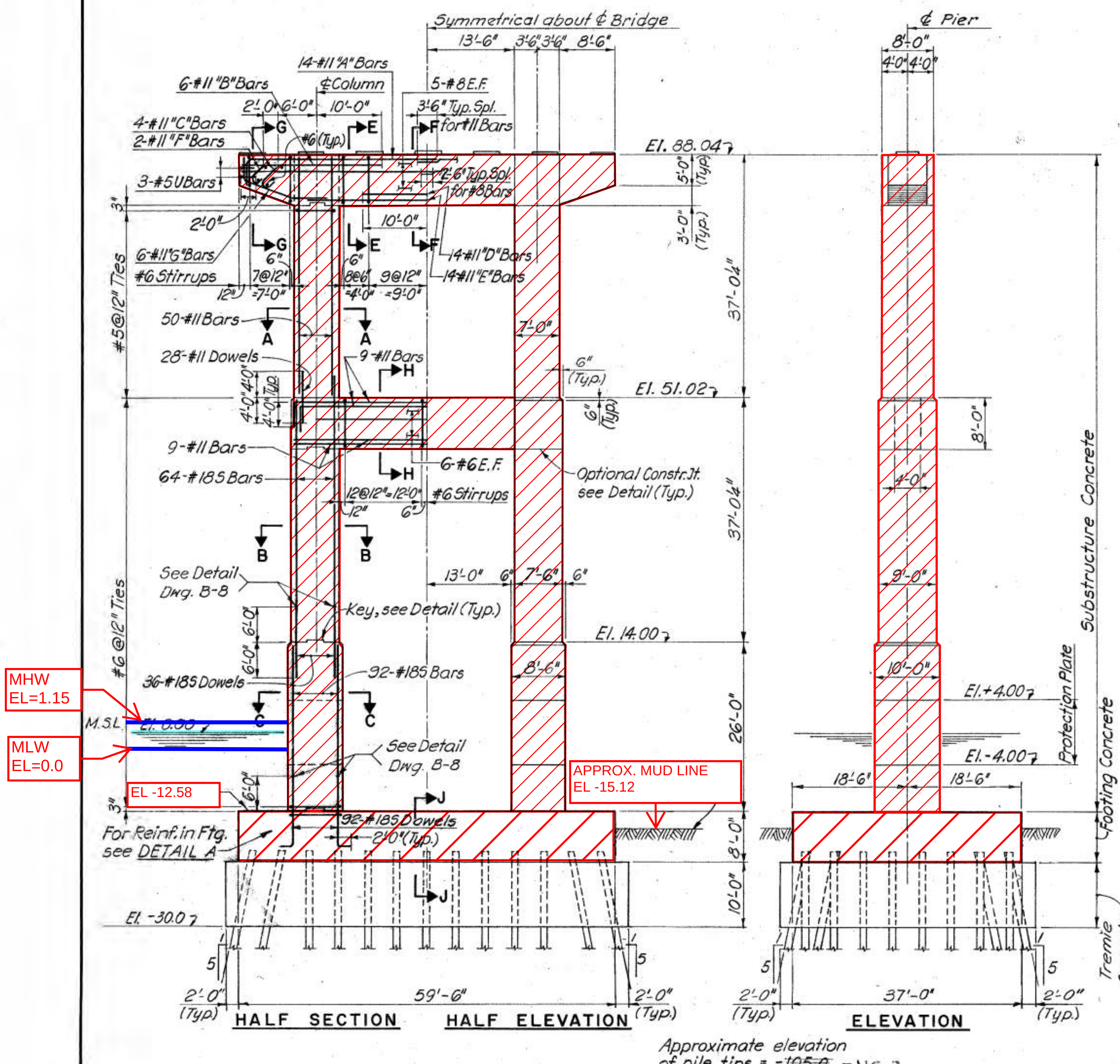
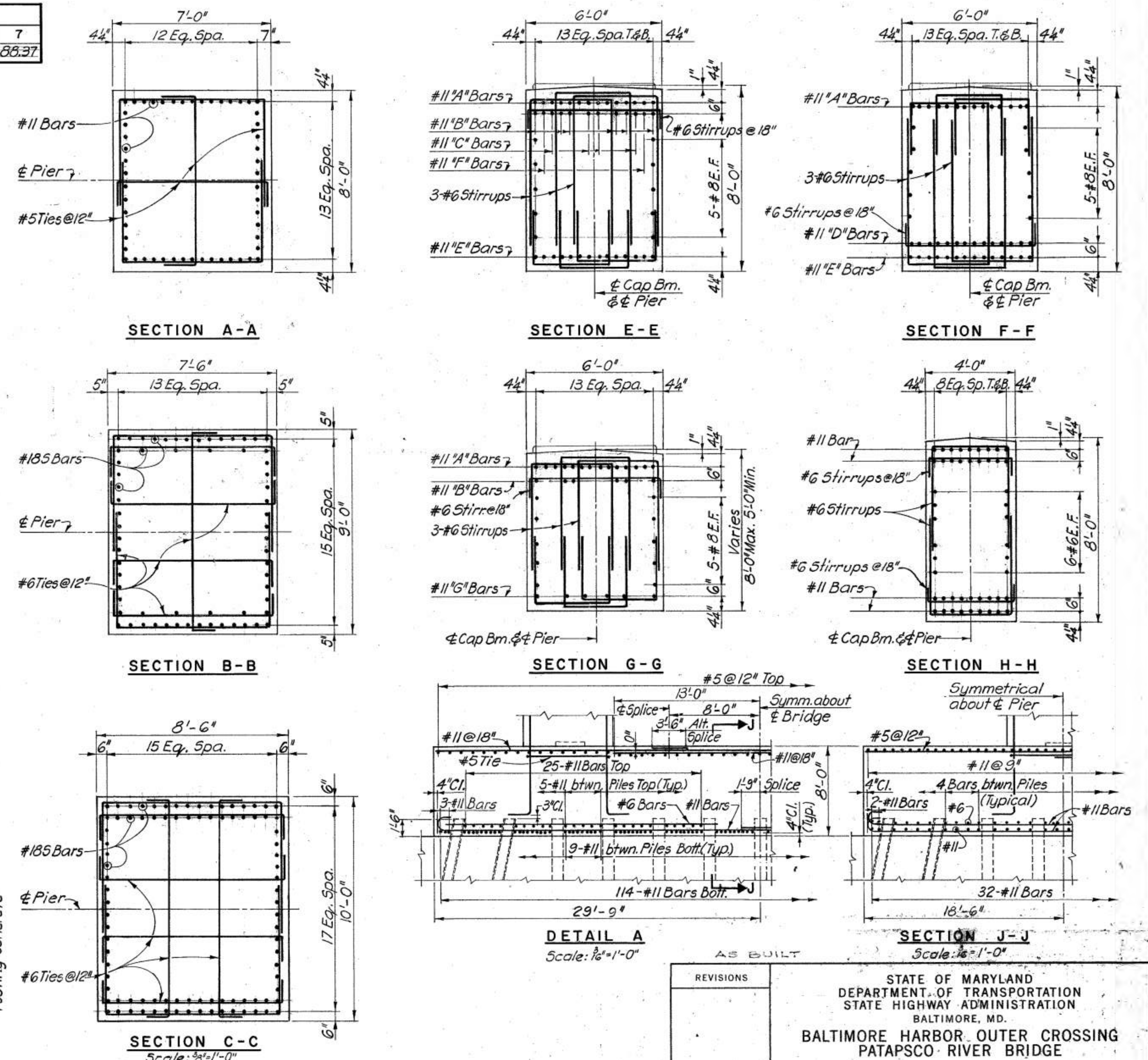
K+E BALTIMORE 17 0153 PHOENIX 47218+



PAD ELEVATION SCHEDULE

GIRDER No	1	2	3	4	5	6	7
ELEV.	88.37	88.51	88.65	88.79	88.65	88.51	88.37





NOTES:

1. For General Notes see Dwg. A-102
2. For Pile Plan see Dwg. B-6
3. For Typical Construction Joint & Key Detail see Dwg. B-8
4. For method of cofferdam Construction see Dwg. I-1
5. For Protection Plate Details see Dwg. B-8
6. All elevations this sheet subject to Note 12 Dwg. A-102 Contract 07-8?9.

ALL MARKUP ELEVATIONS RELATIVE TO MLW = 0.0

AS BUILT

REVISIONS	
	STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION BALTIMORE, MD. BALTIMORE HARBOR OUTER CROSSING PATAPSCO RIVER BRIDGE **PIER 24**

SCALE 3/32"=1'-0" & As Noted — DATE Jan. 1972 — CONTRACT 07-?-9

MADE BY O.S.
TRACED BY O.S.
CHECKED BY C.C.Y.

ZOLLMAN ASSOC. INC. AND SINGSTAD, KEHART NOVEMBER AND HURKA — A JOINT VENTURE — Baltimore, Md.

DRAWING NO. B-5
SHEET NO. 20 OF 24
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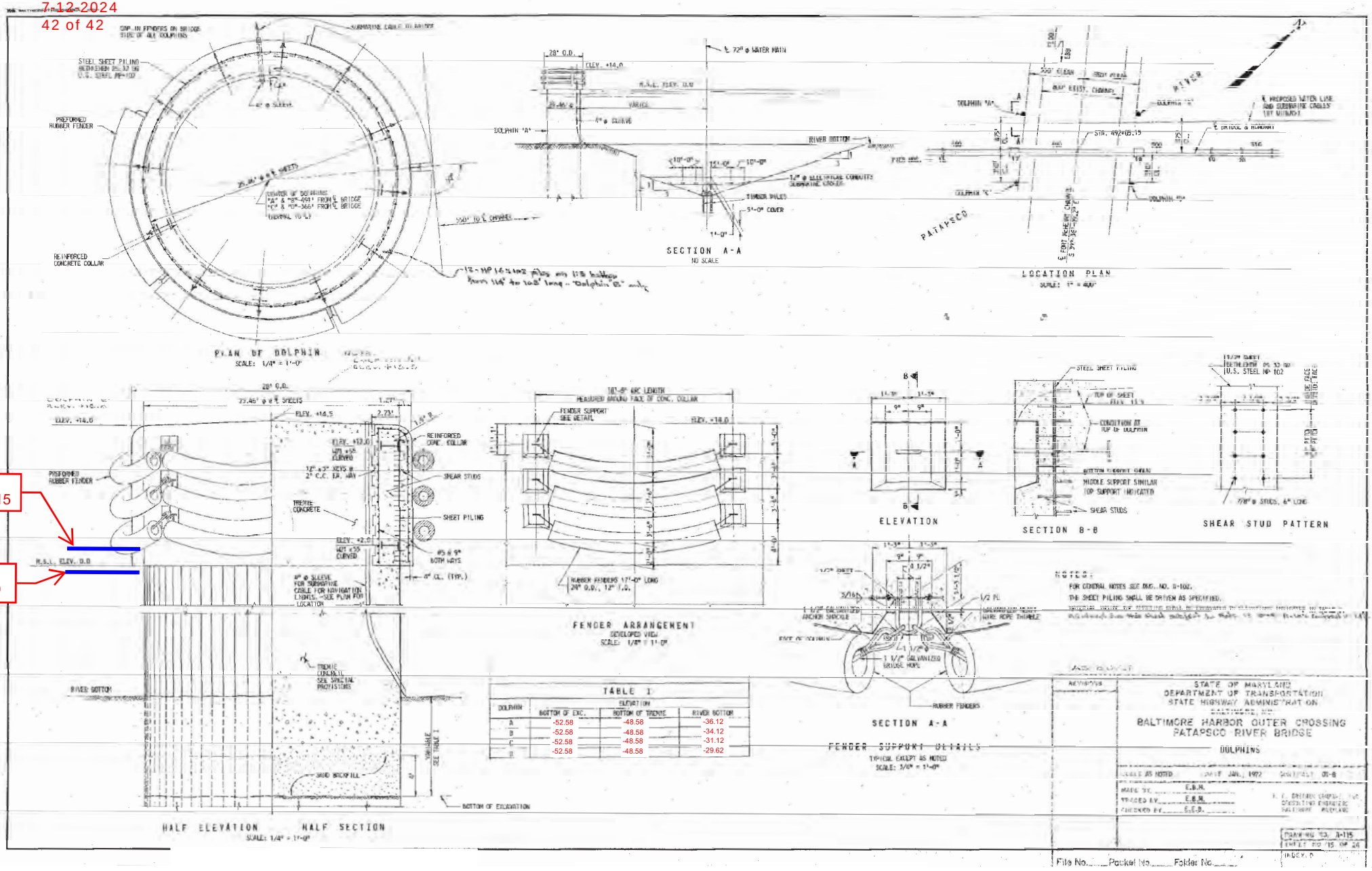

MHW EL=1.15

MLW EL=0.0

ALL MARKUP ELEVATIONS
RELATIVE TO MLW = 0.0