



William Morgante, PWS
Wetlands Administrator

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

John T. Gontrum, Esq.
Executive Secretary

WETLANDS LICENSE NO. 24-0653
MARYLAND TRANSPORTATION AUTHORITY

The Maryland Board of Public Works authorizes you to:

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

Patapsco River, Francis Scott Key Bridge, Baltimore City and County, 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, as required by Section 307 of the Federal Coastal Zone Management Act of 1972, as amended [16 U.S.C. §1456].

**THIS LICENSE AUTHORIZES YOU TO PERFORM THE WORK ONLY IF YOU
COMPLY WITH THE FOLLOWING SPECIAL CONDITION(S):**

- A. 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.
- B. 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.
- C. The Licensee shall strictly manage and maintain all in-water BMPs to minimize sedimentation during blasting activities.
- D. The Licensee shall remove all debris with a minimum size of 10 inches in diameter or greater that is on the substrate surface or within two feet below the mudline.
- E. The Licensee shall document the location, size and depth of any remaining bridge debris material using side scan sonar, any debris deeper than two feet below the mudline may be left in place.
- F. 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.

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- G. If the remnants from piers 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.
- H. The Licensee shall use appropriate BMPs that are identified in the *“Proposed Best Management Practices for Francis Scott Key Bridge Pier Demolition to be permitted under MDE Tidal Wetland License 24-WL-0653 (adapted from NMFS/GARFO BMP Manual)”*.
- I. If any mooring activities overlap within the Fort Carroll Sensitive Species Project Review Area (SSPRA) area, 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.
- J. 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.
- K. 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 Aquatic Species Mortality Mitigation Cost Table.

**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 July 12, 2024, 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. The Critical Area Commission and MDTA have developed a Memorandum of Understanding approving the Key Bridge Rebuild and requiring Commission review prior to buffer disturbance. In accordance with the MOU, any anticipated Buffer disturbance shall be reviewed by the Critical Area Commission per the requirements of linear projects in Intensely Developed Area before commencement of land disturbing activity.
“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

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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.

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.
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 contractors 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. September 13, 2027.
20. This License expires
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.

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- 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

September 13, 2024
Effective Date:
Approved as: Secretary’s Agenda Item: 5
Board of Public Works Meeting Date: September 11, 2024

I accept this License and all its conditions.

9/13/2024
Date

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

Brian wolfe
Name (Printed)

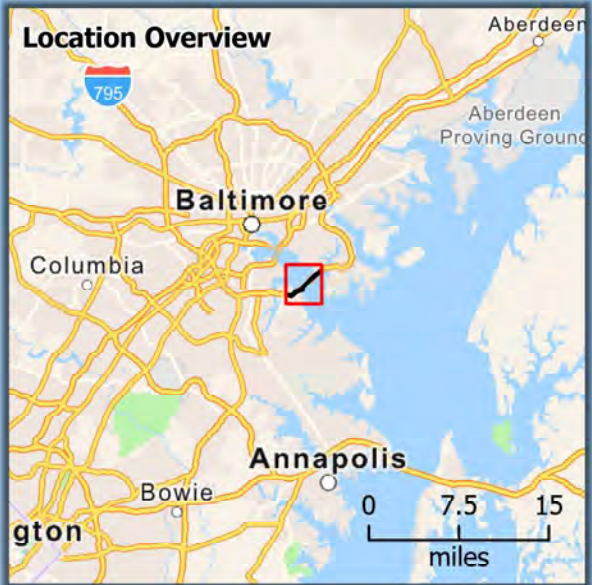
Director of Project Development
Title

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

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

		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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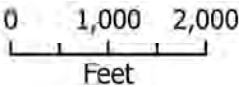
Francis Scott Key Bridge Rebuild Project

Vicinity Map

Baltimore City and Baltimore County, Maryland
June 2024



- Study Area
- County Boundaries



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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

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**Remainder of FSK Bridge Demolition Procedure,
MDTA Contract No. KB-4903-0000, Baltimore City and County, MD**

- 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

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**Remainder of FSK Bridge Demolition Procedure,
MDTA Contract No. KB-4903-0000, Baltimore City and County, MD**

- 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.

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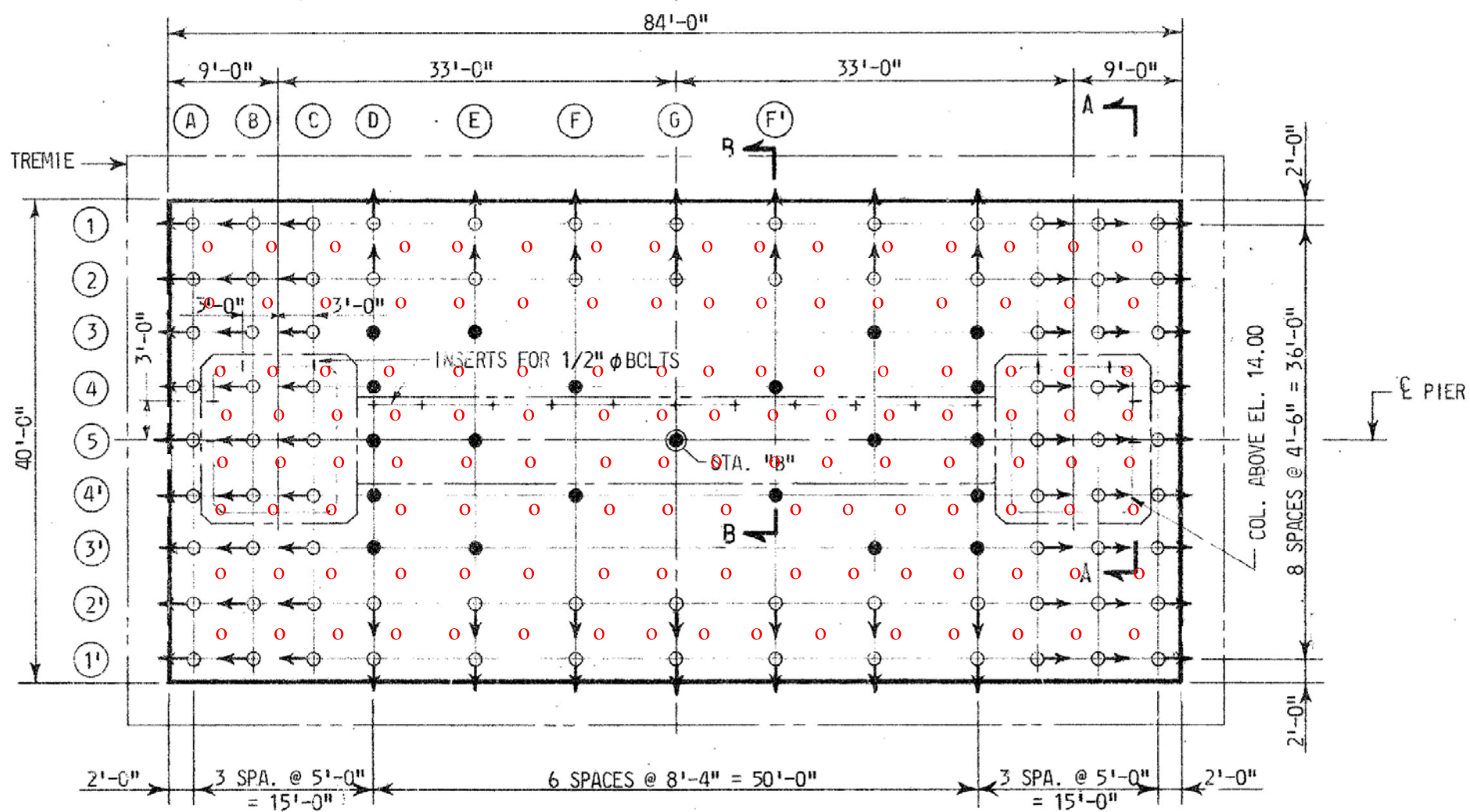
Piers 19-21 Blast Parameters

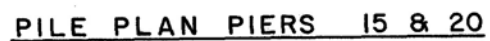
	<u>P19</u>	<u>P20</u>	<u>P21</u>
Number of holes	180	126	163
Hole depth (ft)	36	34	34
Hole diameter(in)	2.75	2.75	2.75
Spacing(ft)	5	4.5	4.5
Burden(ft)	4.5	4.5	4.5
Number of holes	180	126	163
Max. decks per hole	2	2	2
Max. explosives /delay(lb)	30	24	26
Approx. Total explosive(lb)	5500	3000	4300
Average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

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

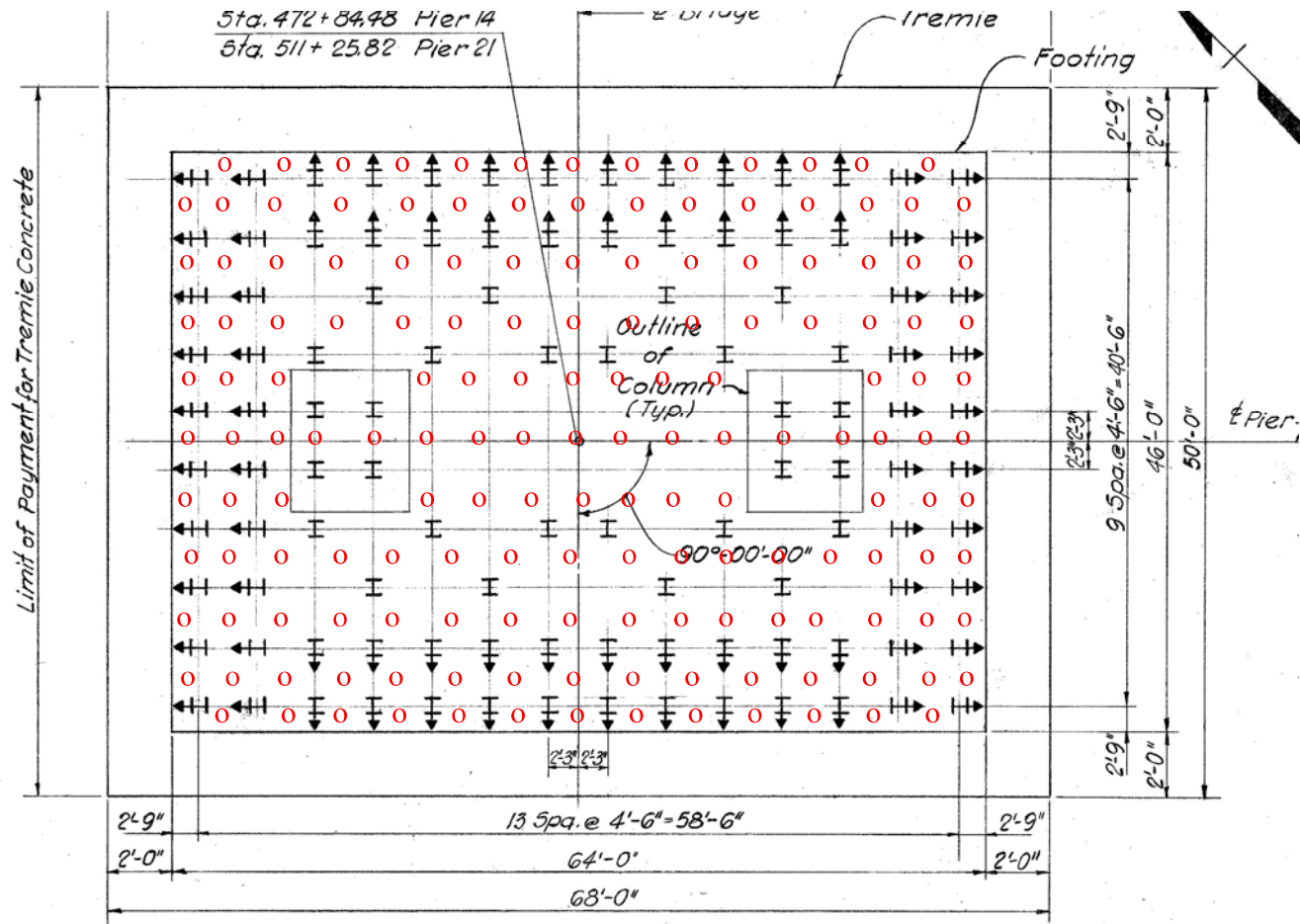
Structure	Distance(ft)	lb/delay	K =	24.2	160	240	300
Pier 19	~230	30		0.061	0.405	0.607	0.795
Pier 20	~230	24		0.051	0.338	0.508	0.635
Pier 21	~230	26		0.058	0.383	0.574	0.718

** 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).





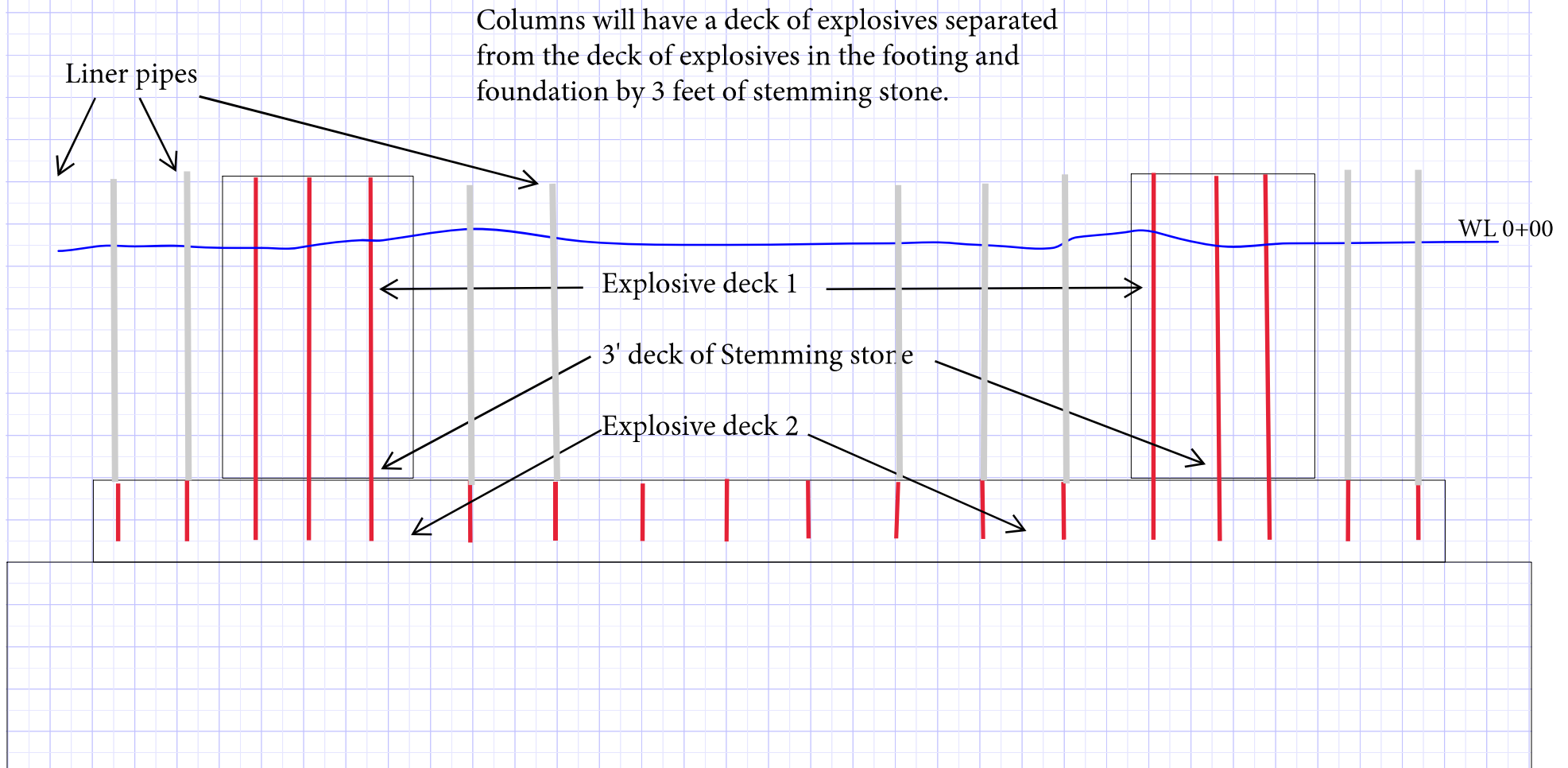
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PILE PLAN PIERS 14 & 21

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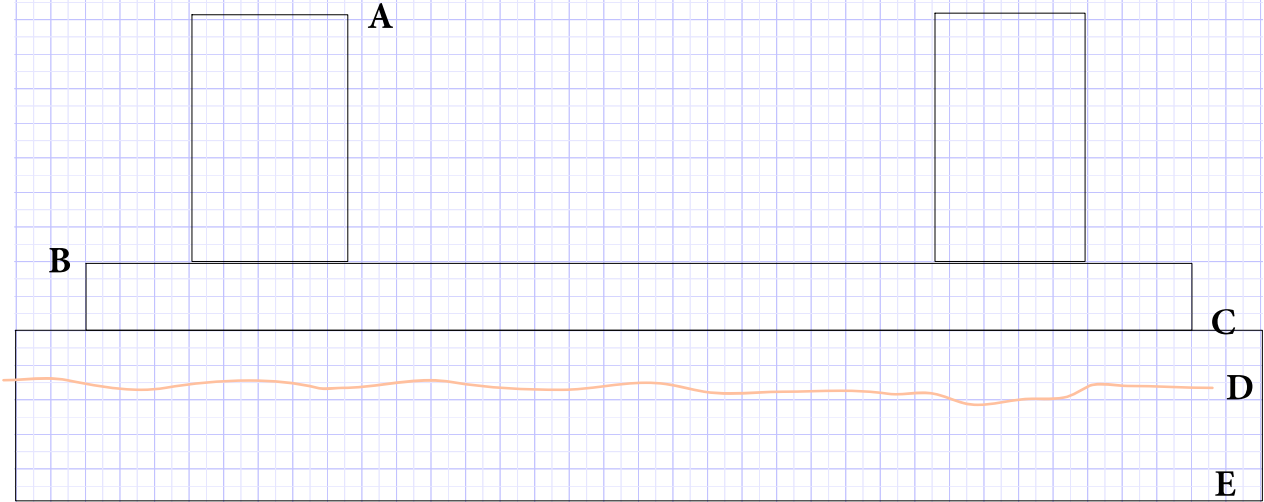
Typical cross sectional view of drilled piers



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 built)
P19 = -25
P20 = -24
P21 = -24

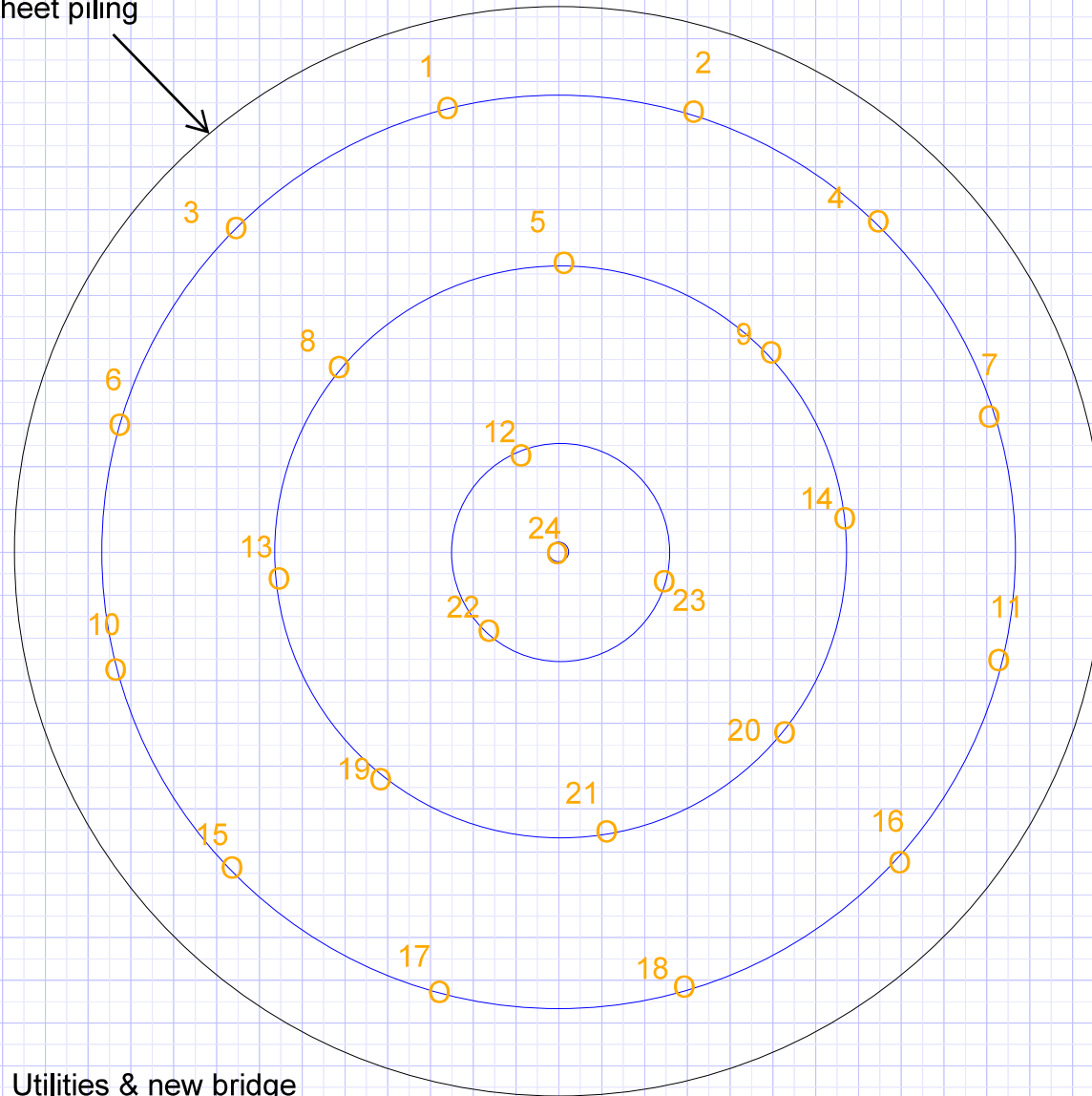
E - Bottom of foundation
P19 = -35
P20 = -26
P21 = -36

DOLPHIN B

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Sheet piling

Hydro tower

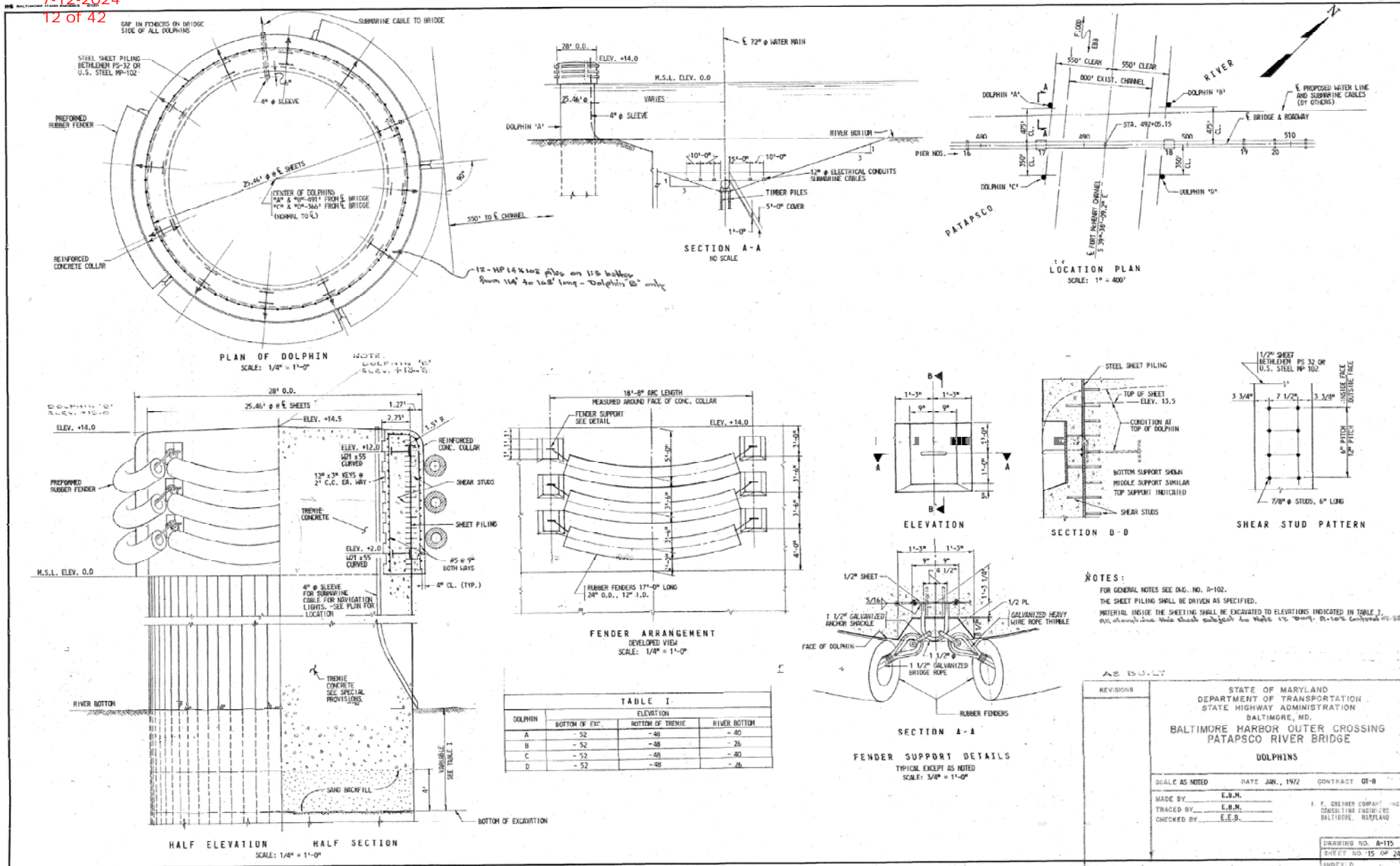


Utilities & new bridge

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 - Dynamax 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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AS BUILT

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 07-6

MADE BY: E.B.M.
TRACED BY: E.B.M.
CHECKED BY: E.E.B.

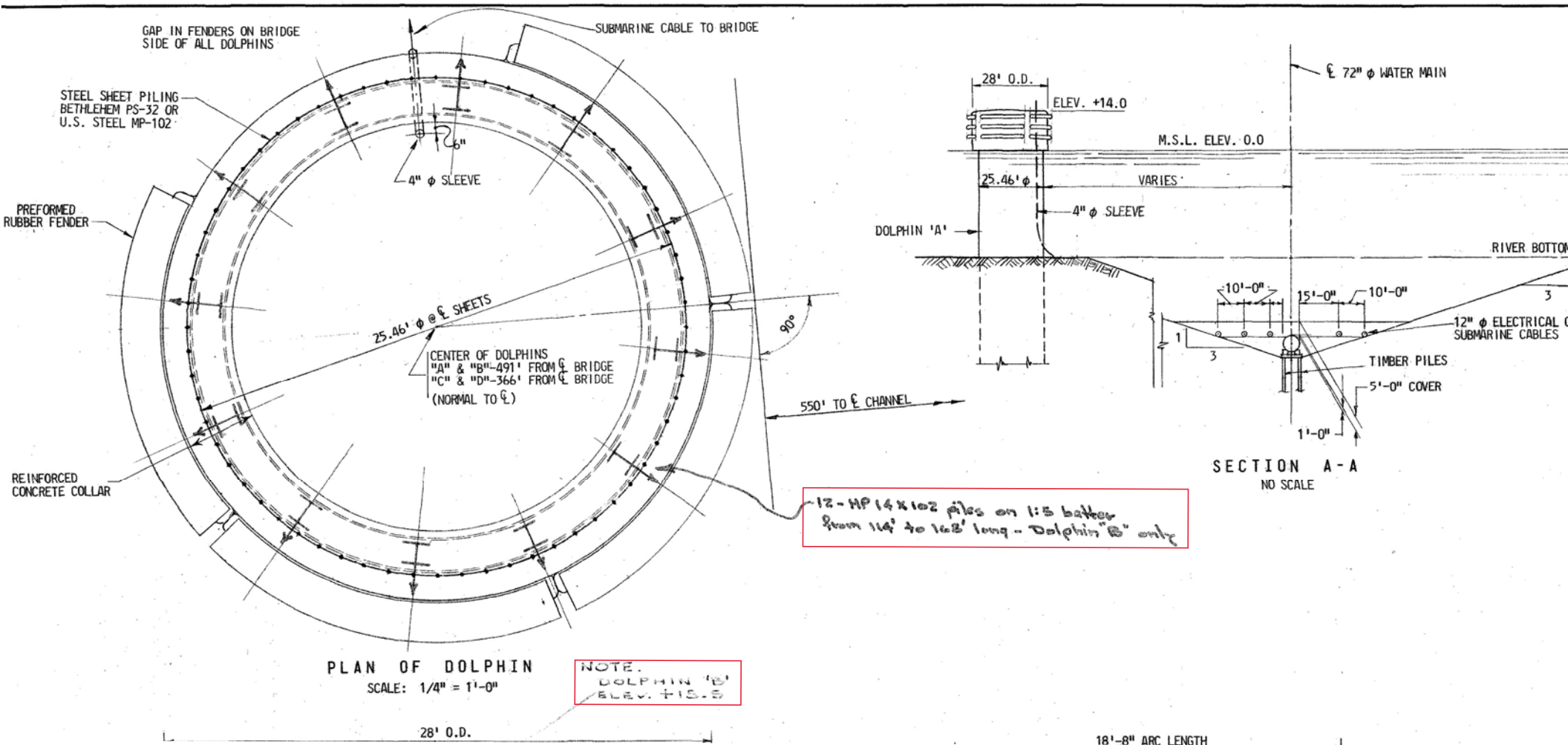
J. F. GREINER COMPANY, INC.
DESIGN ENGINEER
BALTIMORE, MARYLAND

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

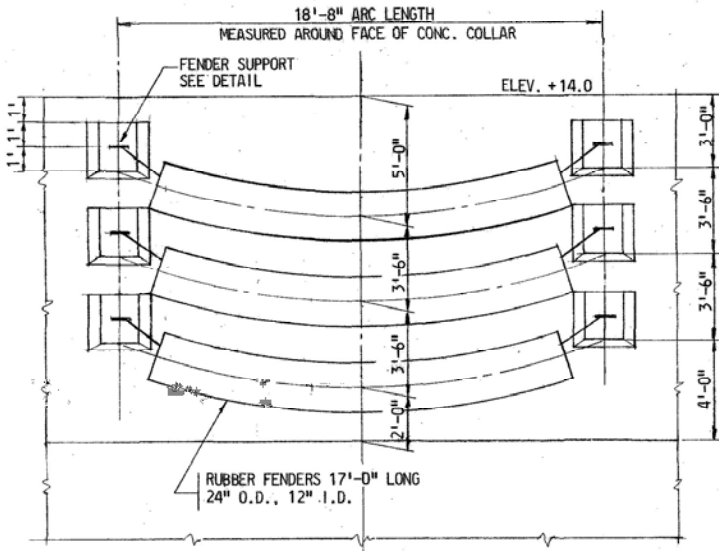
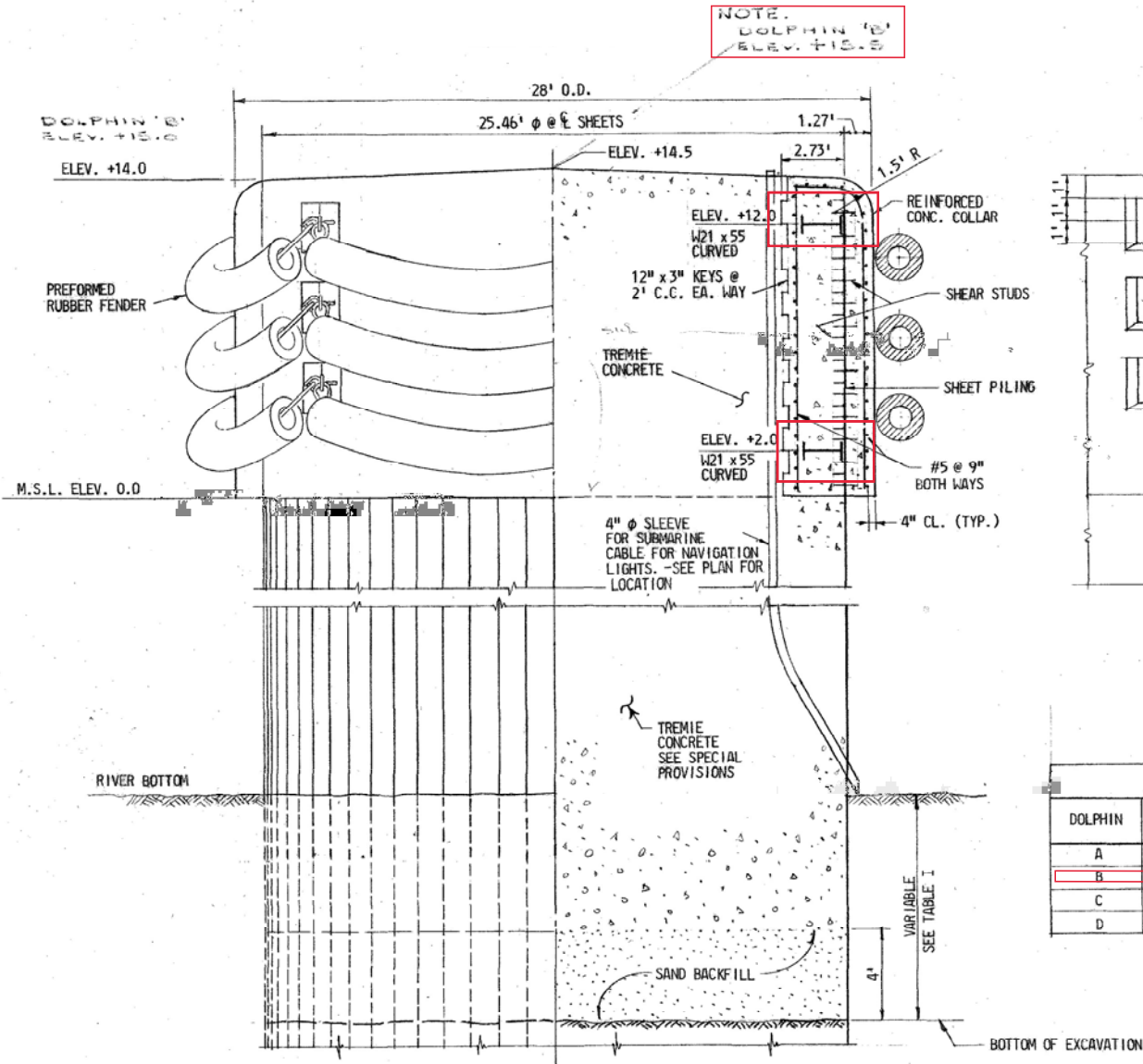
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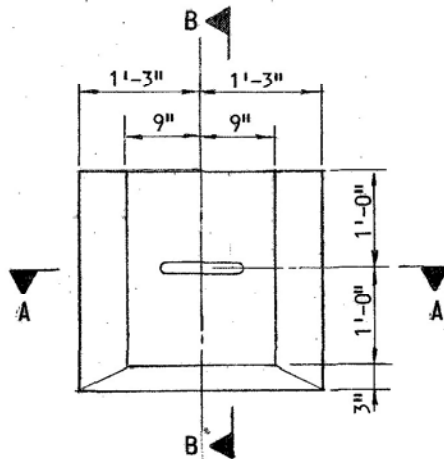
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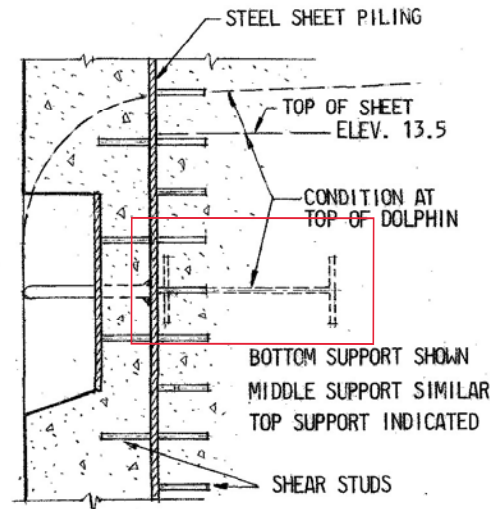
FENDER ARRANGEMENT
DEVELOPED VIEW
SCALE: 1/4" = 1'-0"

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

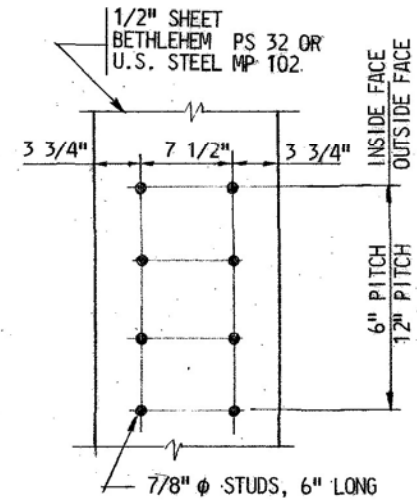
24-WL-0653
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7-12-2024
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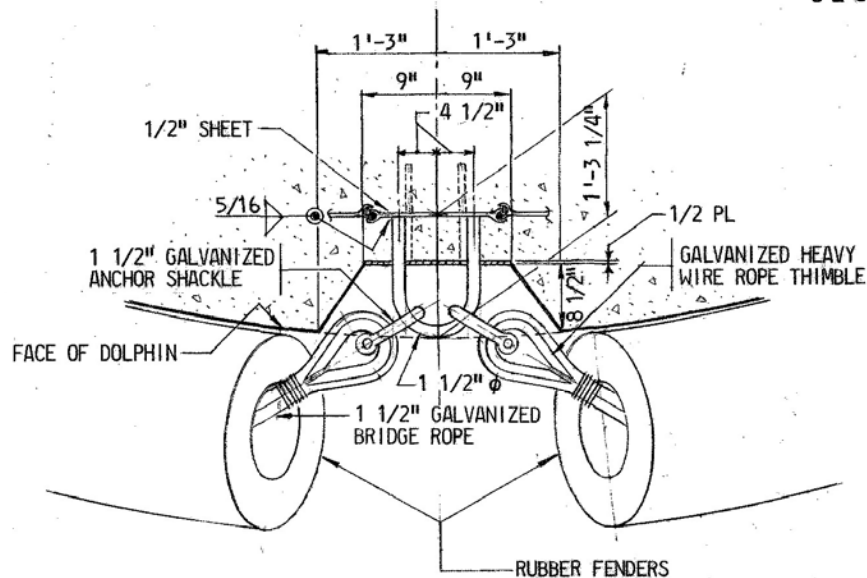
ELEVATION



SECTION B-B



SHEAR STUD PATTERN



SECTION A-A

NOTES:

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

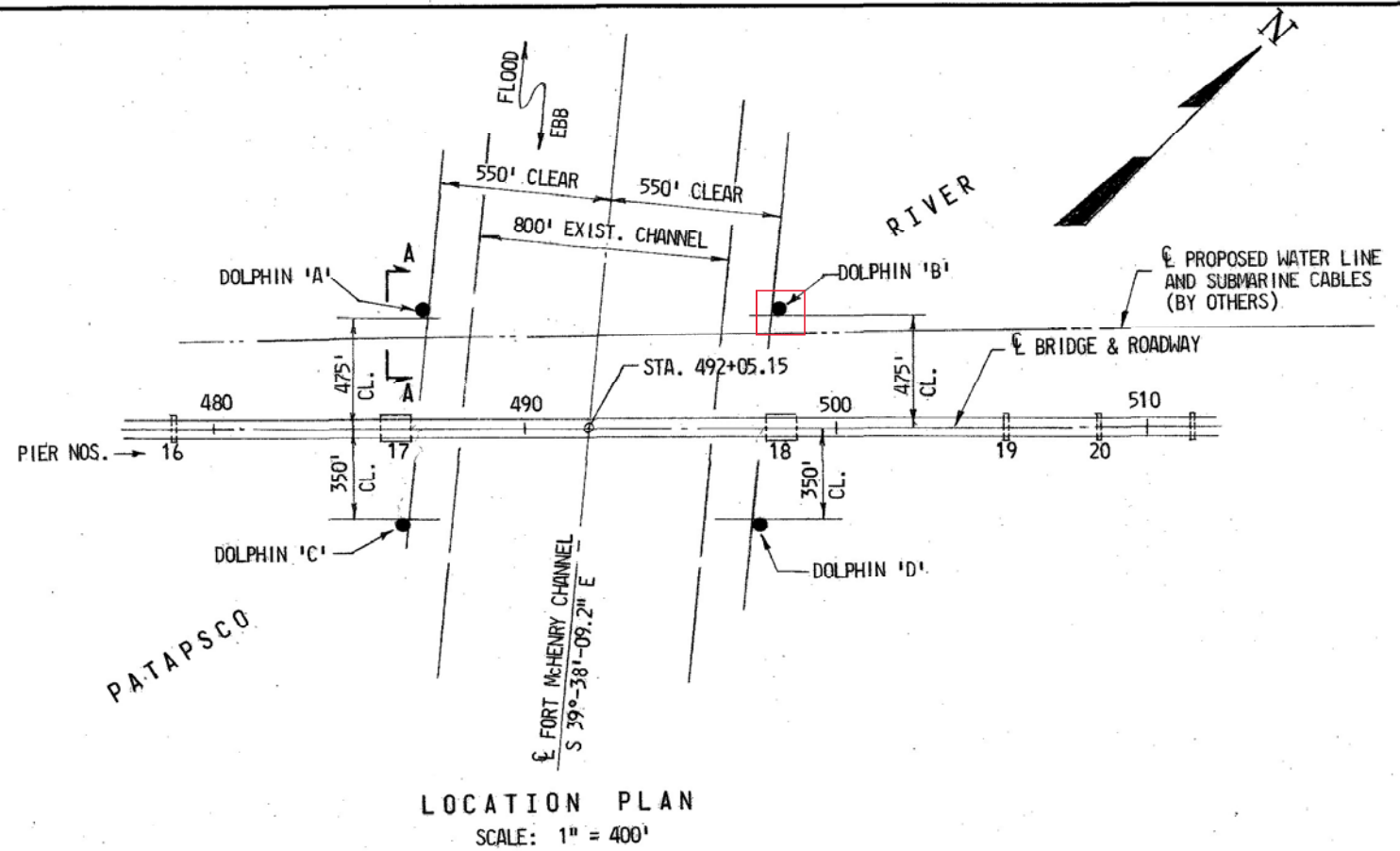
THE SHEET PILING SHALL BE DRIVEN AS SPECIFIED.

MATERIAL INSIDE THE SHEETING SHALL BE EXCAVATED TO ELEVATIONS INDICATED IN TABLE I.
All elevations this sheet subject to Note 12 DWG. A-102 Control 01-249.

AS BUILT

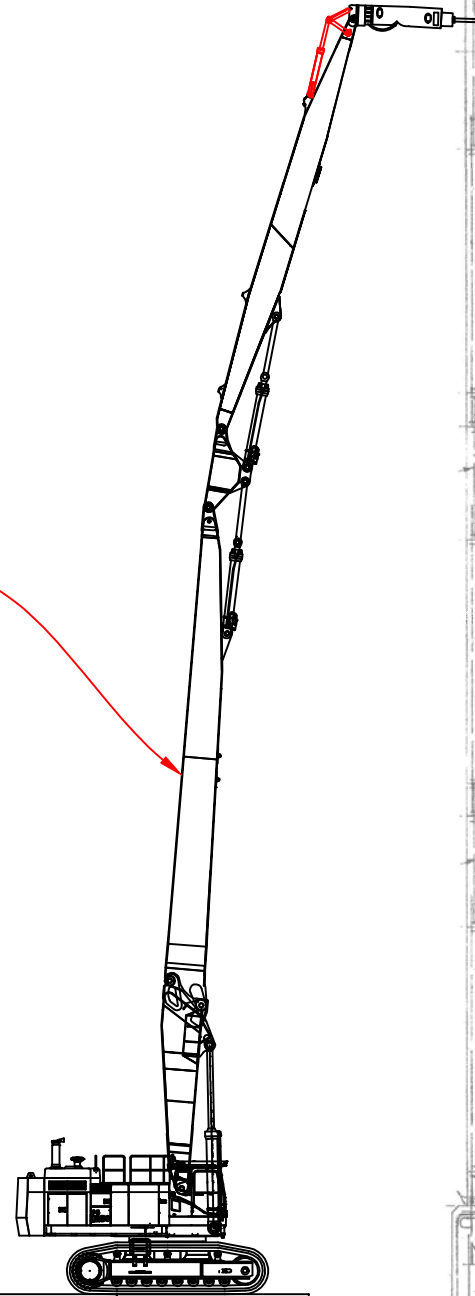
REVISIONS	STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION BALTIMORE, MD. BALTIMORE HARBOR OUTER CROSSING

24-WL-0653
202460906
7-12-2024
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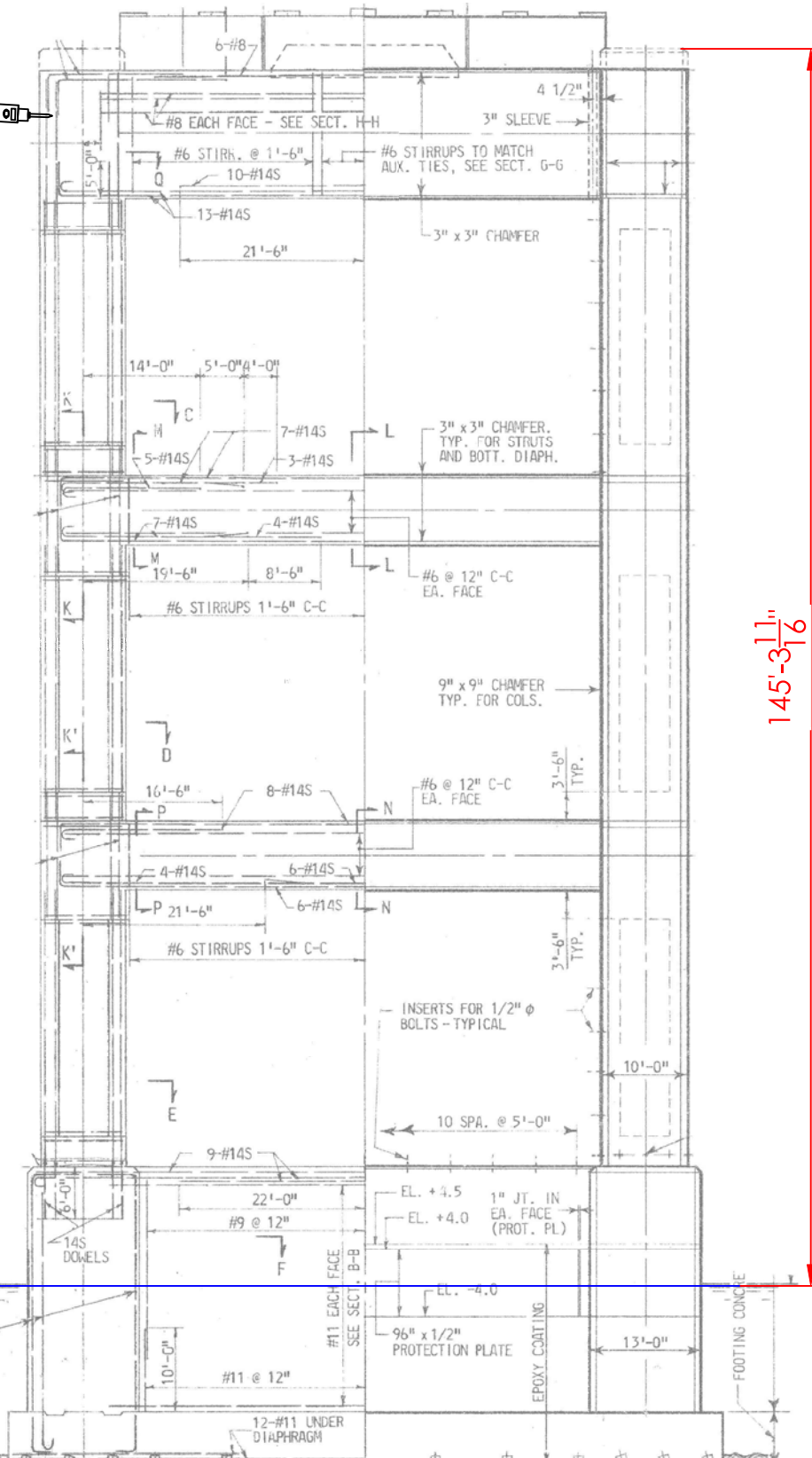


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20240906
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HIGH REACH
EXCAVATOR WITH
150' OF REACH



SCALE 1" = 20'



145'-3¹¹/₁₆"

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
CHECKER
SUPERVISOR

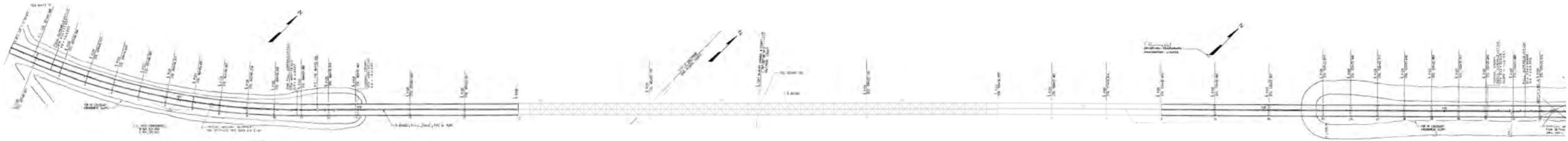
4	
3	
2	
1	
0	
NO.	DATE

FRANCIS SCOTT KEY BRIDGE
REMAINING DEMOLITION
PIER 16 SHOWN

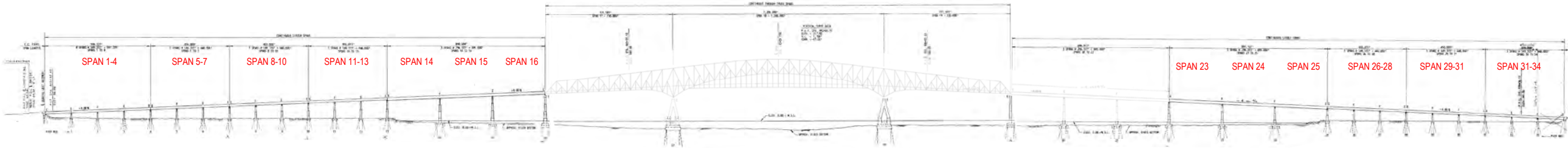
PIER REMOVAL
HAMMERING

DWG. NO.
D-1

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202460906
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PLAN



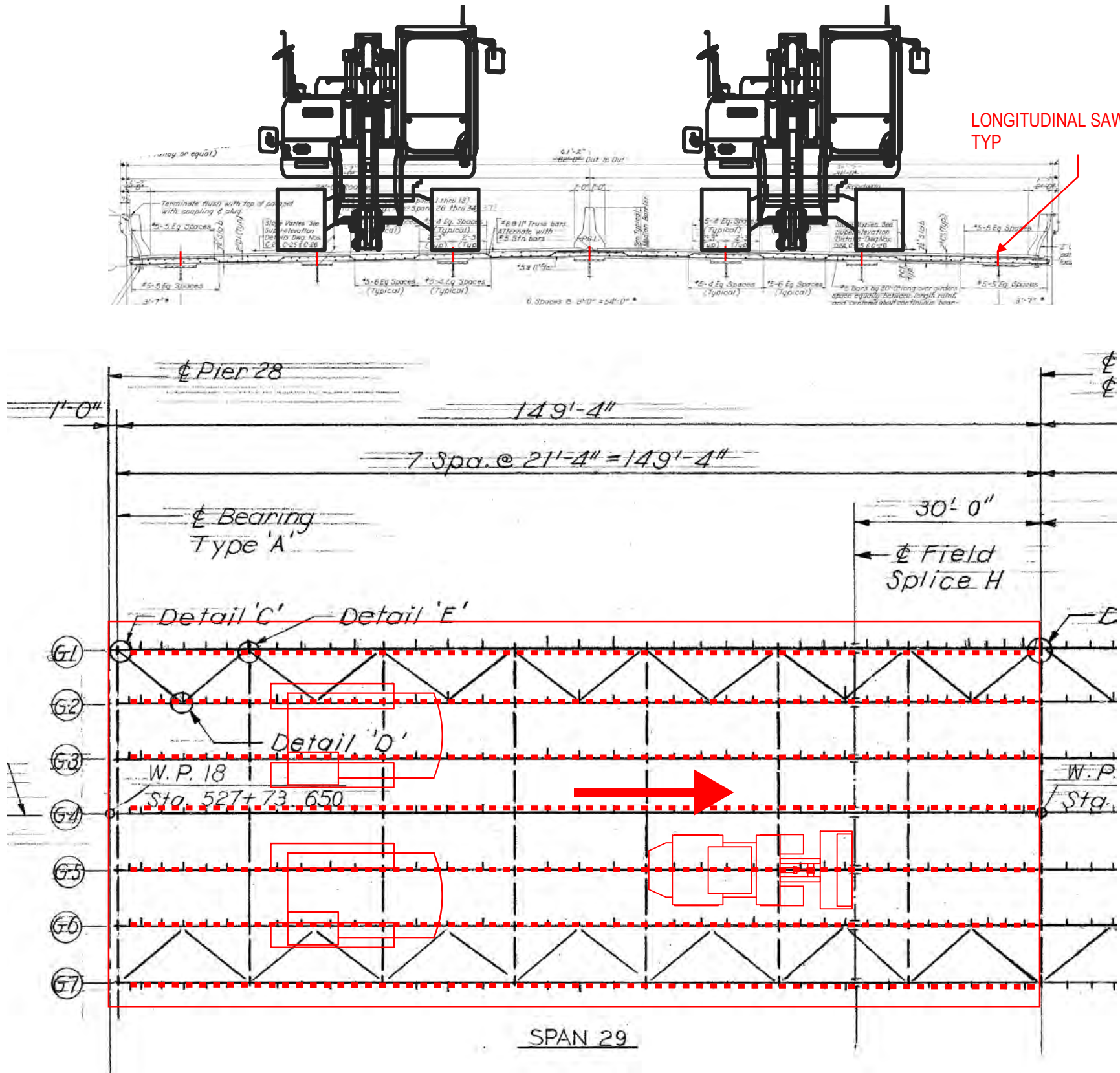
ELEVATION

PRELIMINARY
NOT FOR CONSTRUCTION

△			
△			
△			
NO.	DATE	REMARKS	BY

GENERAL LAYOUT KEY BRIDGE DEMOLITION	
	DRAWN BY CHK'D BY
	DATE
	SHEET NO.

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202460906
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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

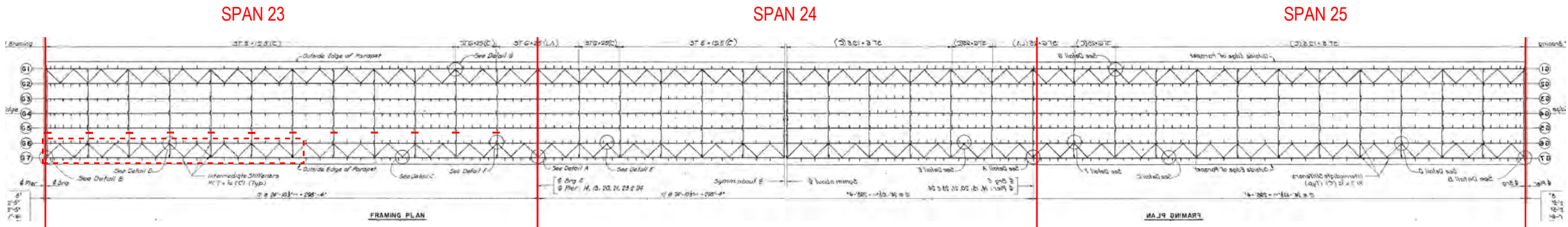
PRELIMINARY
NOT FOR CONSTRUCTION

△			
△			
△			
NO.	DATE	REMARKS	BY

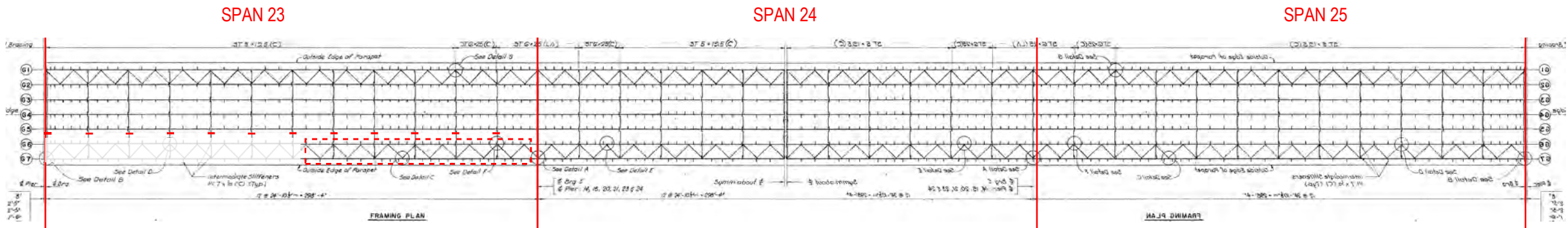
GENERAL DECK DEMOLITION KEY BRIDGE DEMOLITION	
	DRAWN BY CHK'D BY
	DATE
	SHEET NO.
PROJECT	

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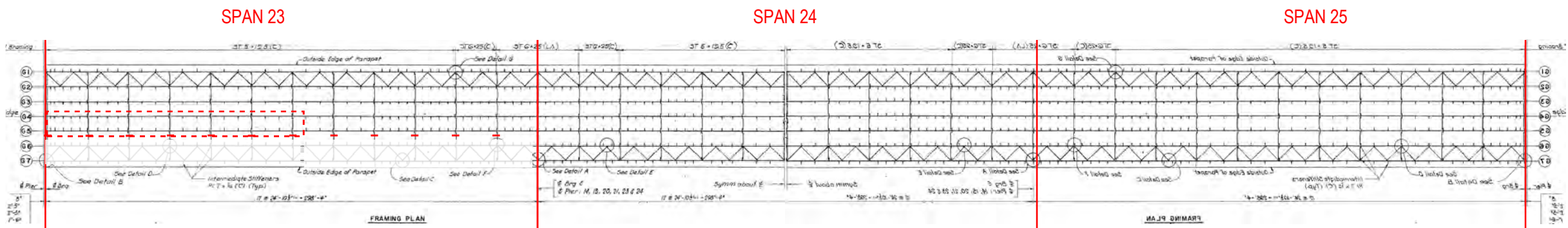
STEP 1 -
CUT CROSSFRAMES BETWEEN G6 & G5
HOIST G6&G7. APPROX WT = 100 TNS



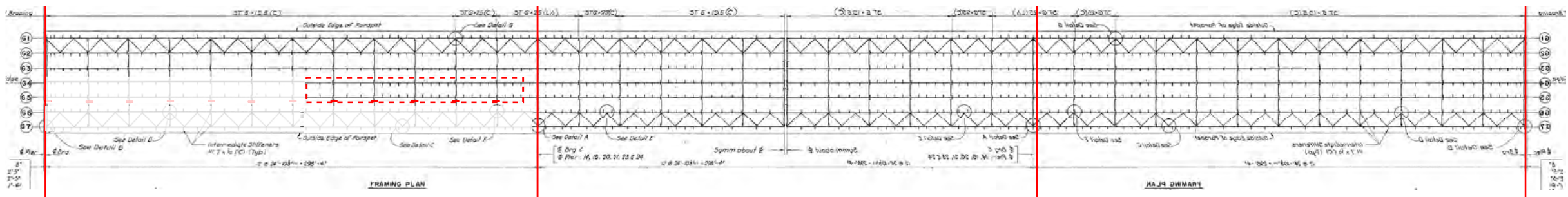
STEP 2 -
CUT CROSSFRAMES BETWEEN G6 & G5
HOIST G6&G7. APPROX WT = 75 TNS



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



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



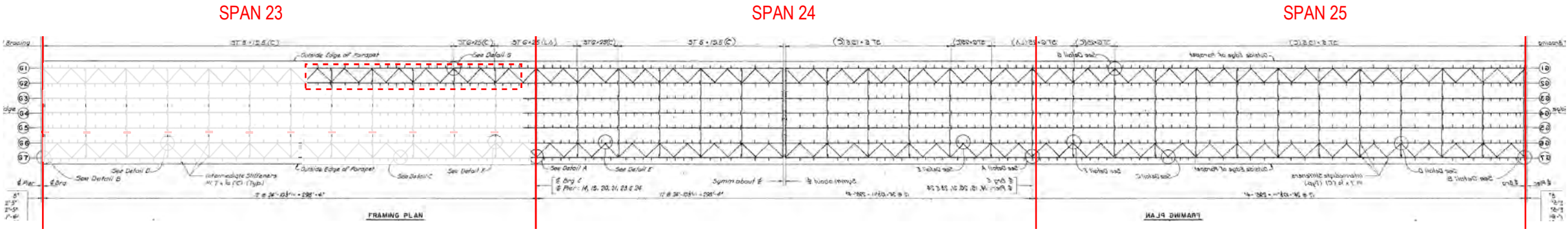
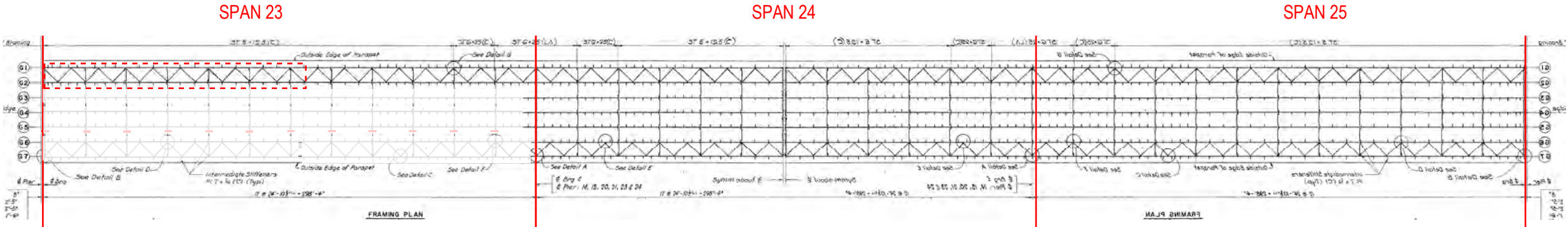
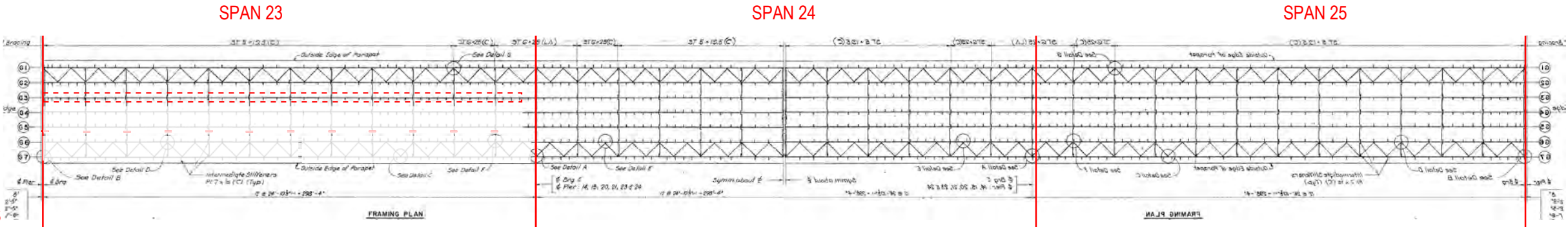
24-WL-0653
202460906
7-12-2024
21 of 42
STEP 5 -
RIG TO G3 WITH SPREADER
CUT CROSSFRAMES BETWEEN G3 & G2
HOIST G3. APPROX WT = 90 TNS

MAY ALSO TAKE PARTIAL LENGTH AND
KEEP CONNECTED WITH CROSSFRAMES

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

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

REPEAT SAME STEPS FOR SPAN 24

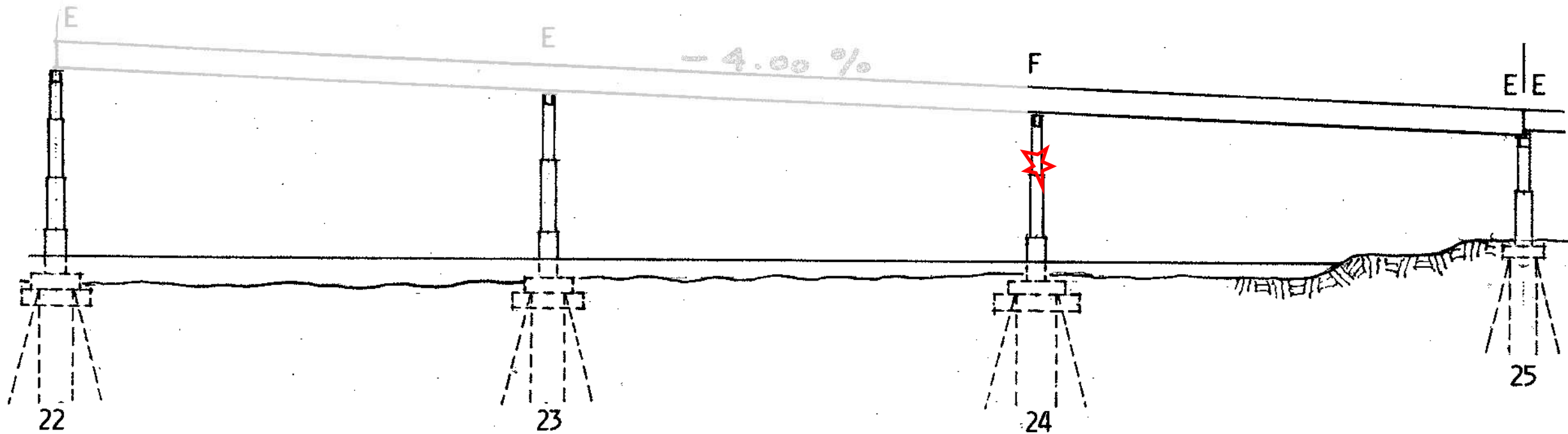
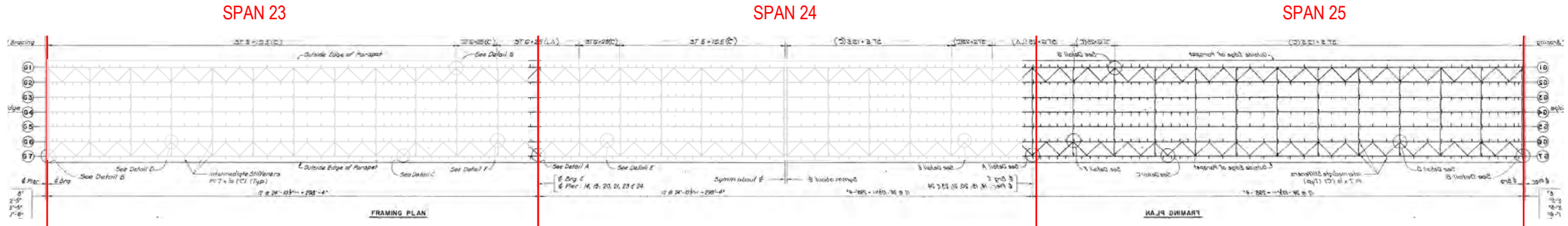


PRELIMINARY
NOT FOR CONSTRUCTION

△			
△			
△			
NO.	DATE	REMARKS	BY

STEEL DEMOLITION SPANS 23-25 KEY BRIDGE DEMOLITION	
PROJECT	DRAWN BY CHK'D BY
	DATE
	SHEET NO.

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

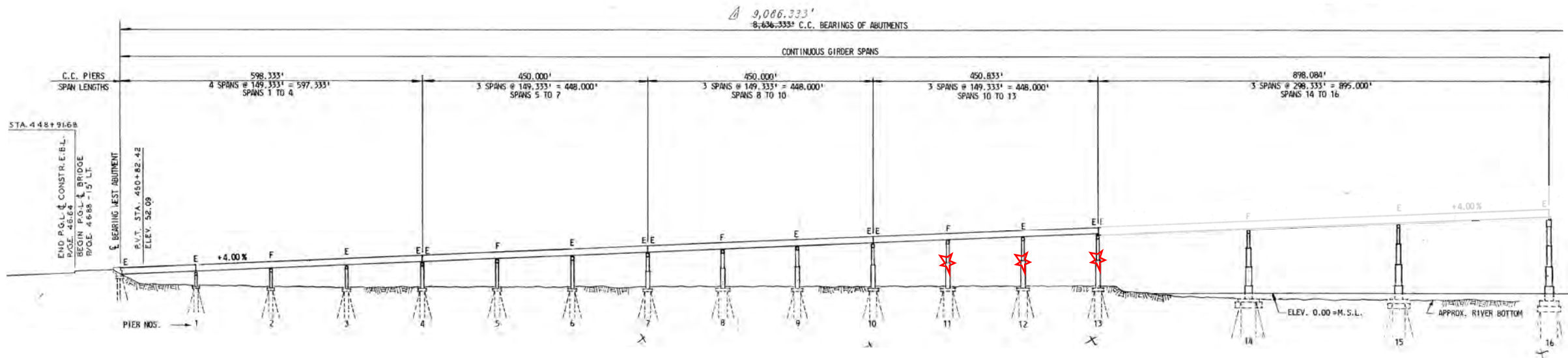


PRELIMINARY
NOT FOR CONSTRUCTION

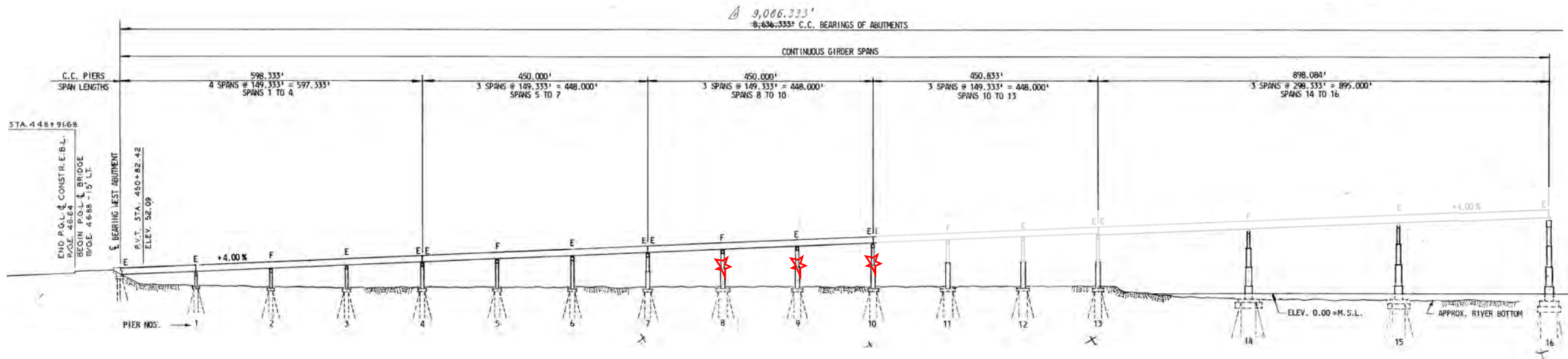
△			
△			
△			
NO.	DATE	REMARKS	BY

STEEL DEMOLITION SPANS 23-25 KEY BRIDGE DEMOLITION	
PROJECT	DRAWN BY CHK'D BY
	DATE
	SHEET NO.

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



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

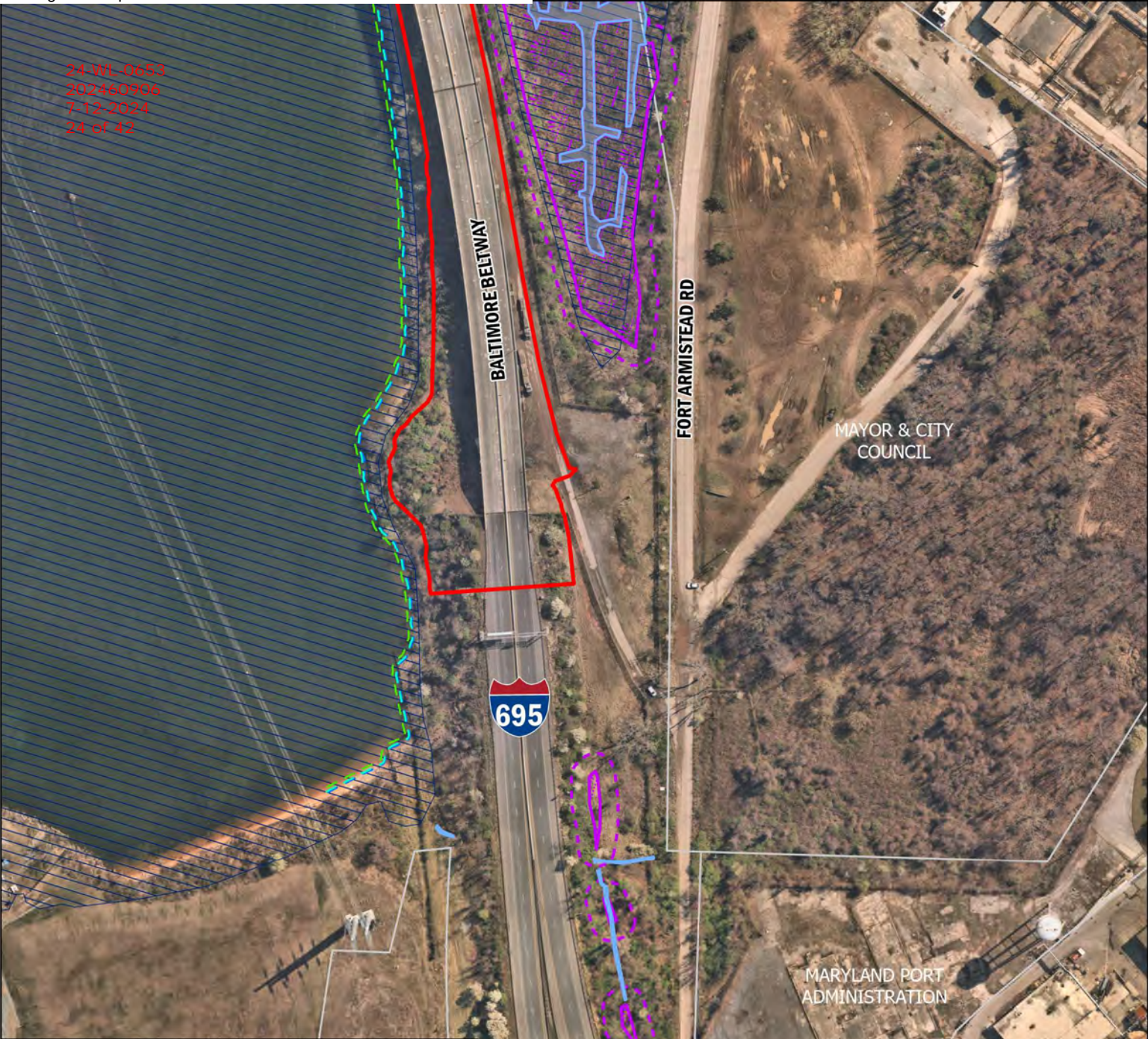
REPEAT FOR ALL REMAINING
APPROACH SPANS

SIMILAR FOR SPANS 26 - 34

PRELIMINARY
NOT FOR CONSTRUCTION

△			
△			
△			
NO.	DATE	REMARKS	BY

STEEL DEMOLITION SPANS 1-13 KEY BRIDGE DEMOLITION	
	DRAWN BY CHK'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

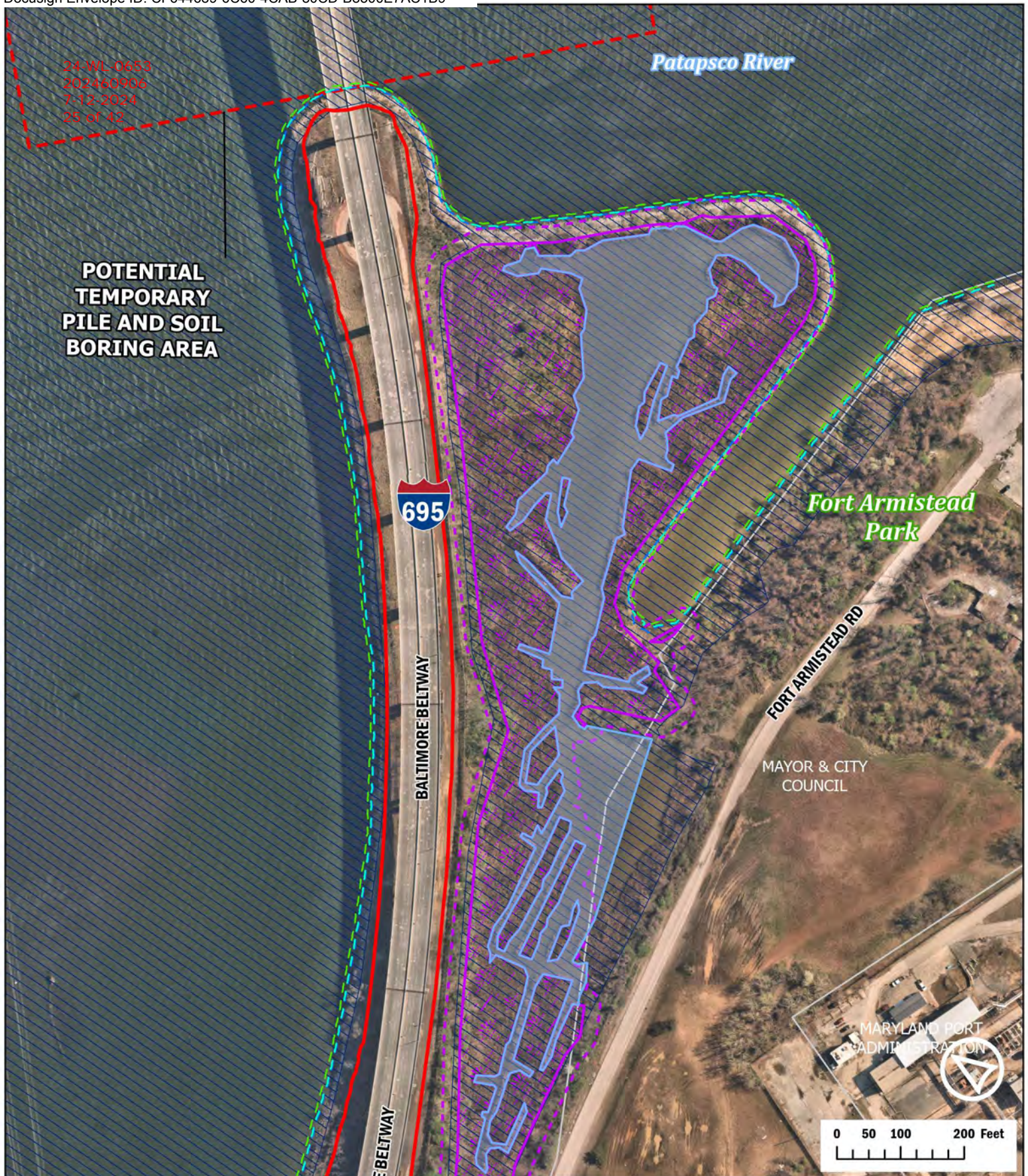


Maryland
Transportation
Authority

STATE HIGHWAY
ADMINISTRATION

**Francis Scott Key
Bridge
Demolition
Impact Plates**

Page 1 of 6 July 2024

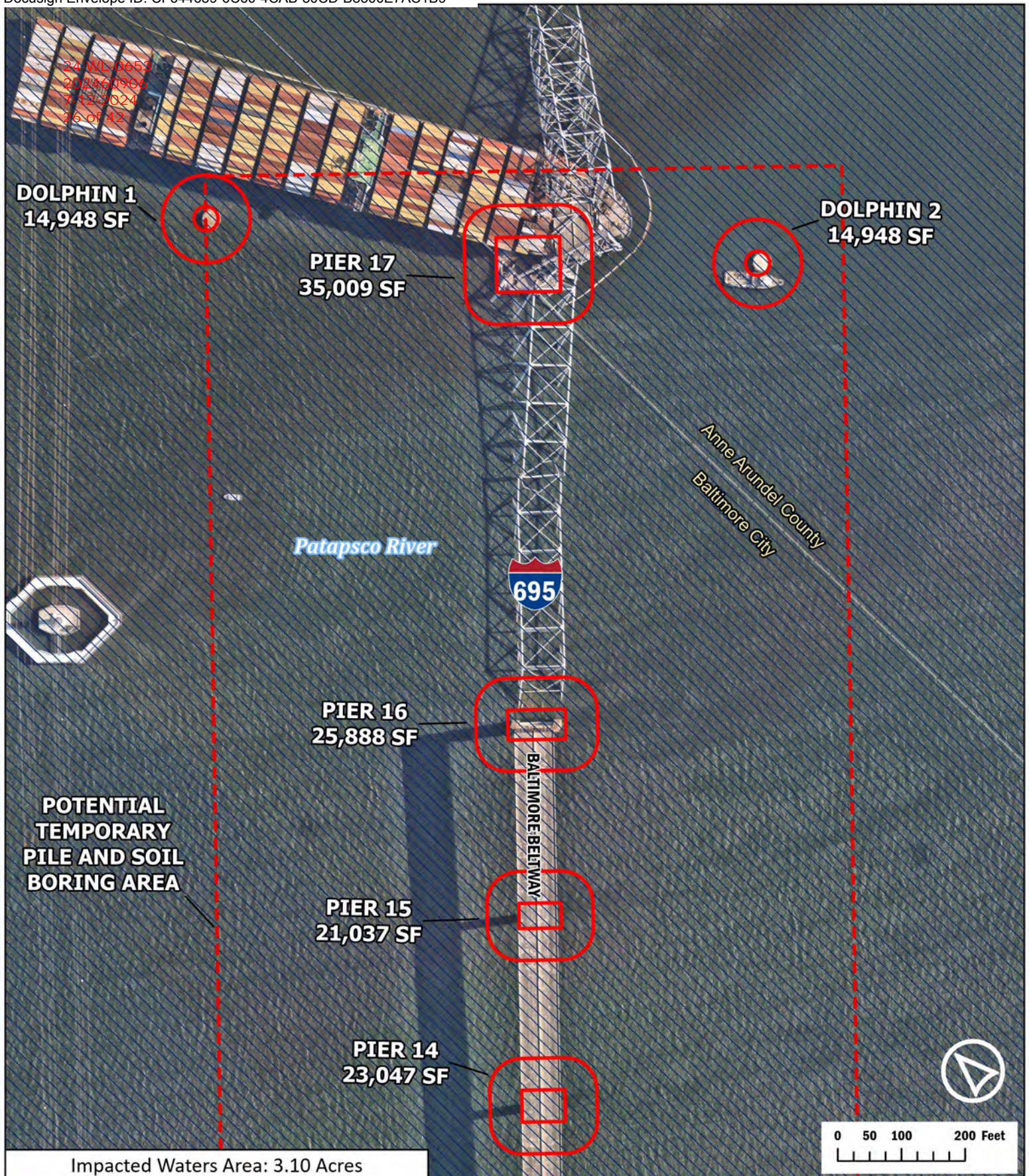


- | | | | |
|--|-------------------------------|--|----------------------|
| | Limits of Disturbance | | Approximate MLW Line |
| | Potential Temporary Pile Area | | MHHW Line |
| | Streams | | MHW Line |
| | Wetlands | | Property Parcels |
| | 25ft Wetland Buffer | | Municipal Boundaries |
| | 100-Year Floodplain | | |
- Piles and borings authorized in 24-WL-0607**



Francis Scott Key Bridge Demolition Impact Plates

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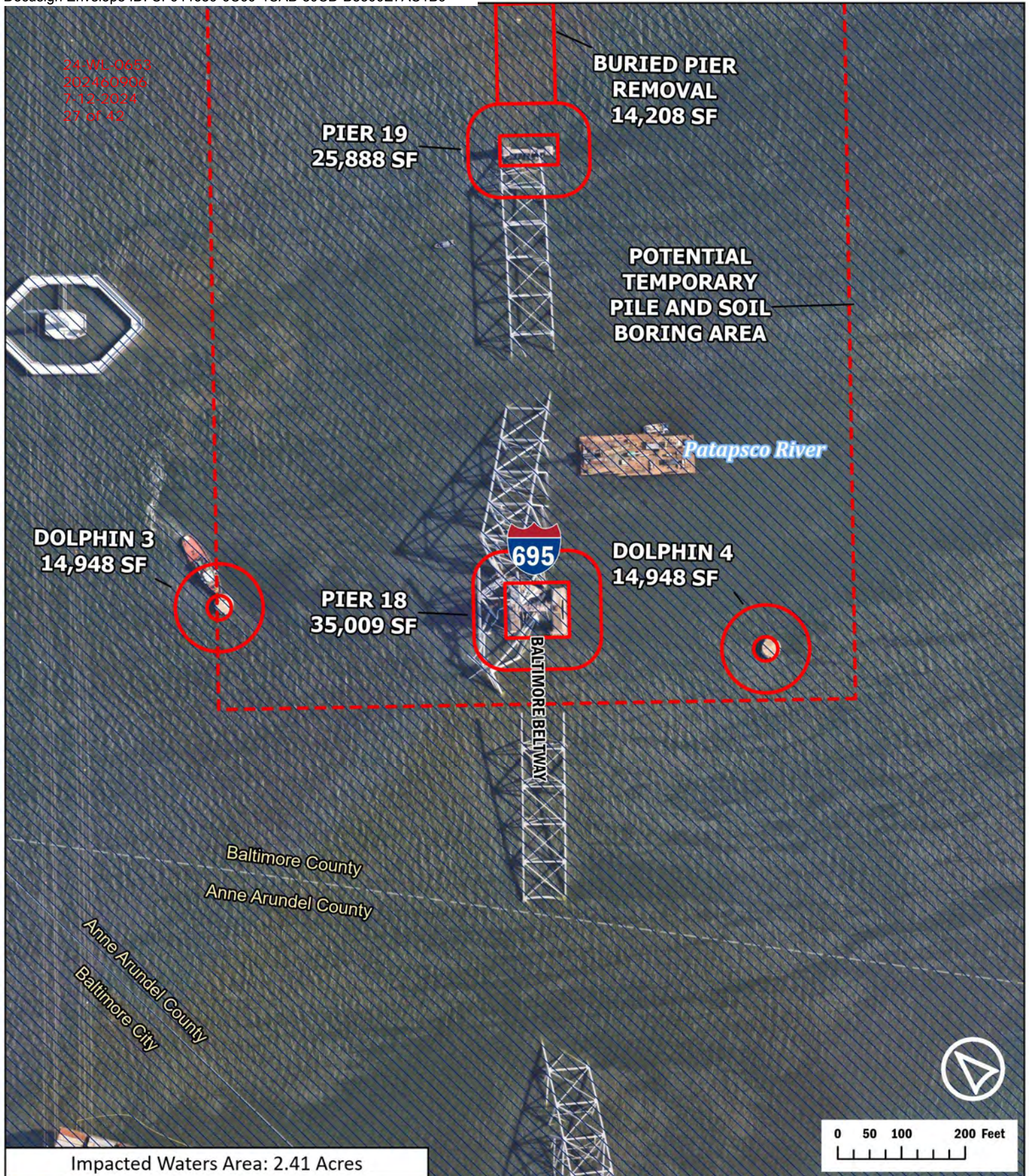


Impacted Waters Area: 3.10 Acres

- | | |
|-------------------------------|----------------------|
| Limits of Disturbance | Approximate MLW Line |
| Potential Temporary Pile Area | MHHW Line |
| Streams | MHW Line |
| Wetlands | Property Parcels |
| 25ft Wetland Buffer | Municipal Boundaries |
| 100-Year Floodplain | |
- Piles and borings
authorized in 24-WL-0607



**Francis Scott Key
Bridge
Demolition
Impact Plates**

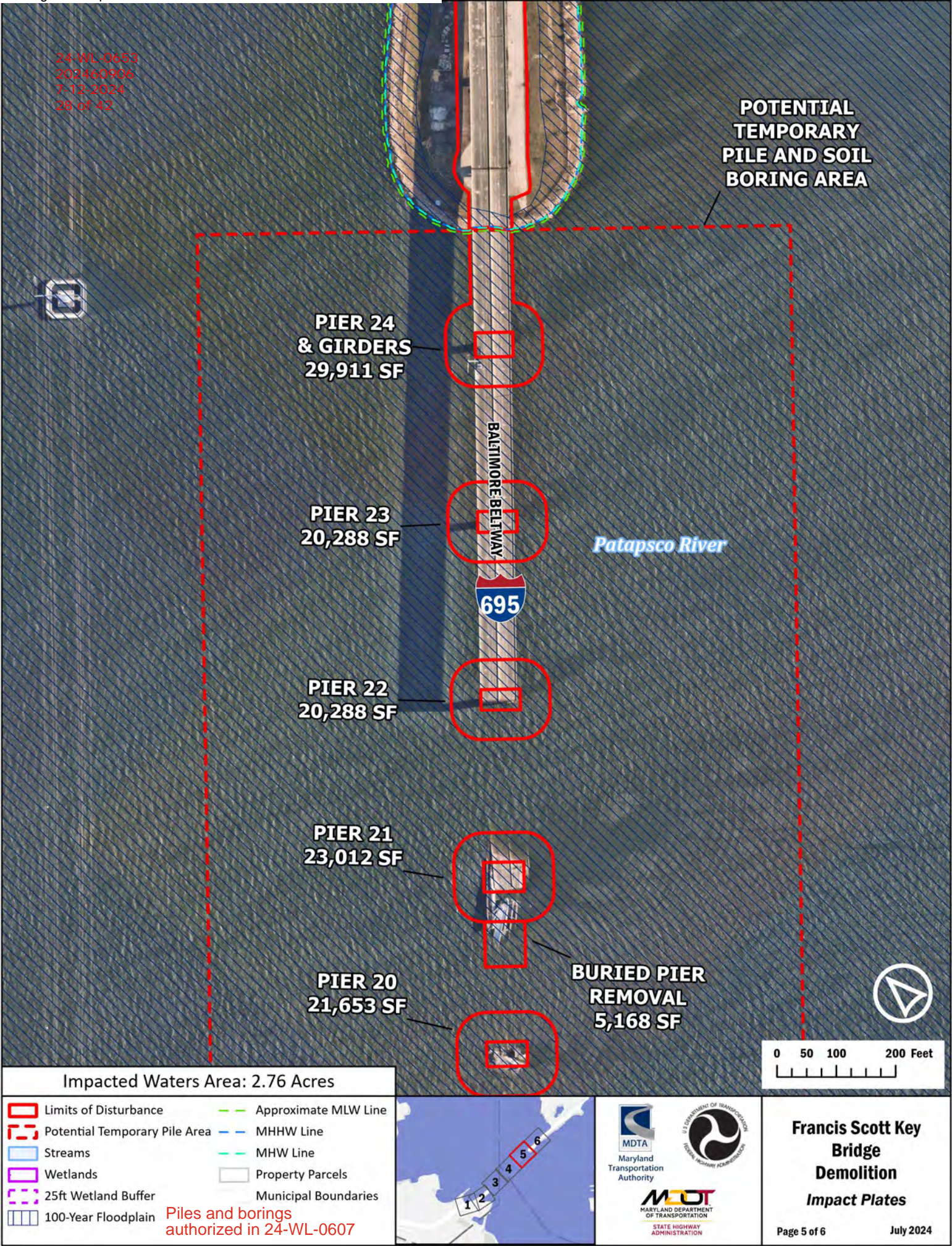


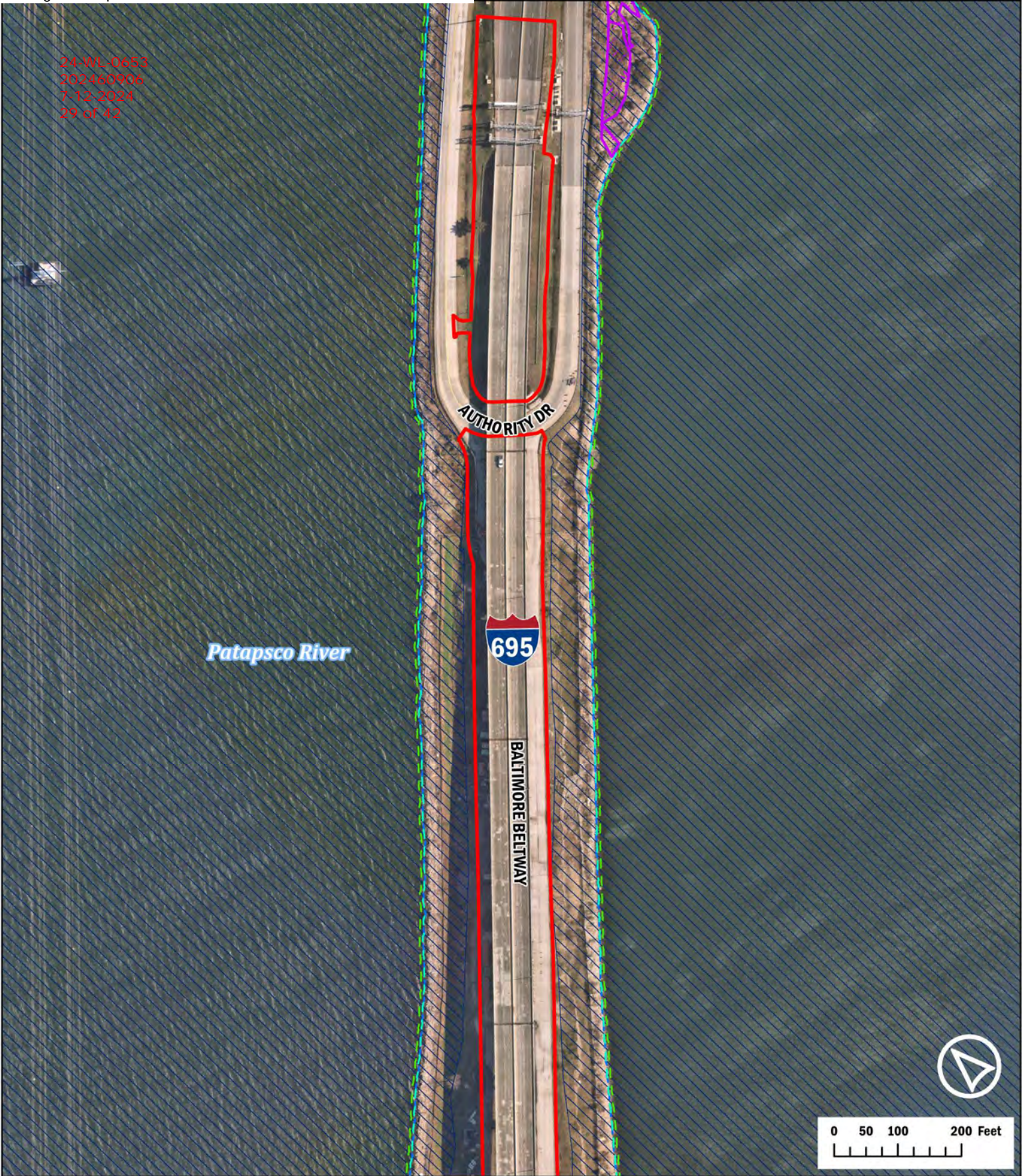
Impacted Waters Area: 2.41 Acres

- | | |
|-------------------------------|----------------------|
| Limits of Disturbance | Approximate MLW Line |
| Potential Temporary Pile Area | MHHW Line |
| Streams | MHW Line |
| Wetlands | Property Parcels |
| 25ft Wetland Buffer | Municipal Boundaries |
| 100-Year Floodplain | |
- Piles and borings authorized in 24-WL-0607



Francis Scott Key Bridge Demolition Impact Plates





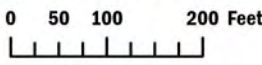
24-WL-0653
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Patapsco River

AUTHORITY DR

695

BALTIMORE BELTWAY



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



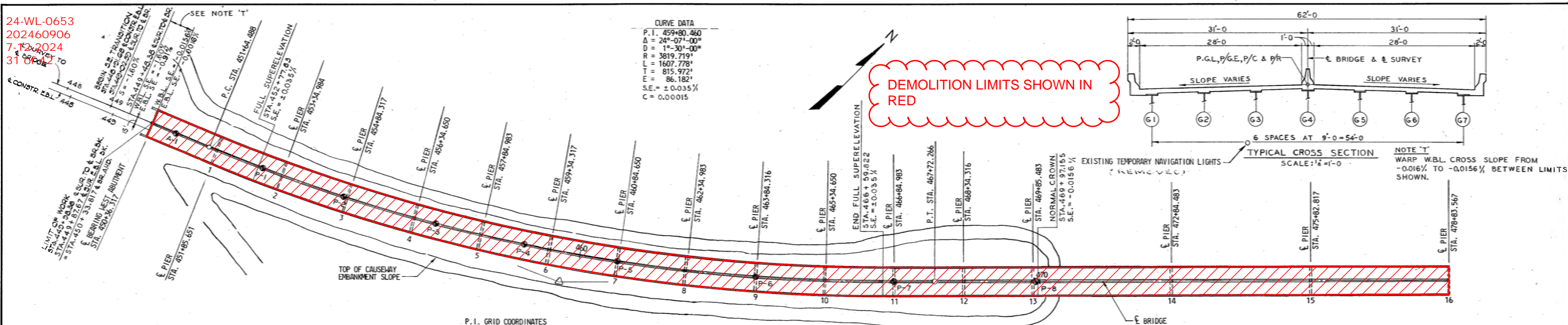
Maryland
Transportation
Authority

MARYLAND DEPARTMENT
OF TRANSPORTATION
STATE HIGHWAY
ADMINISTRATION

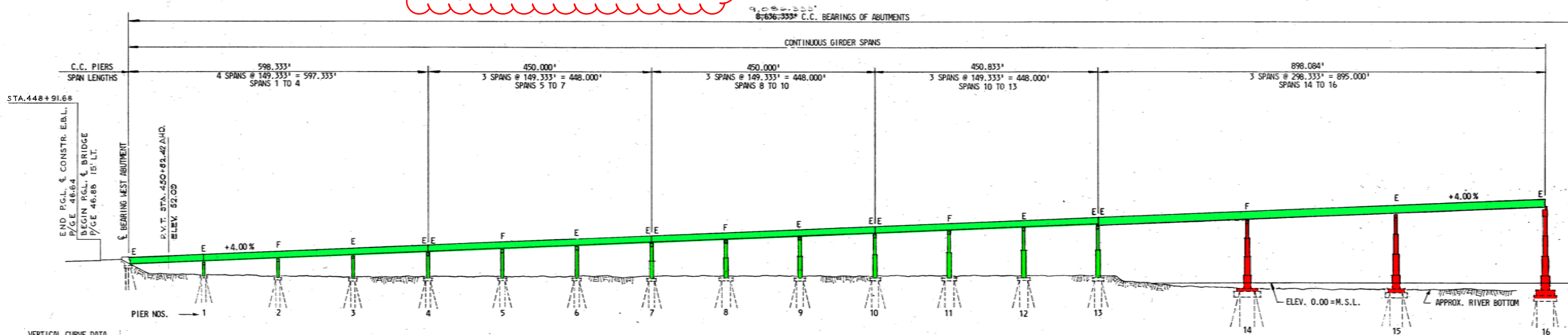
**Francis Scott Key
Bridge
Demolition
Impact Plates**

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PORTIONS OF BRIDGE HIGHLIGHTED IN GREEN TO BE DEMOLISHED UNDER EMERGENCY AUTHORIZATION.



AS 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 & ELEVATION I**

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

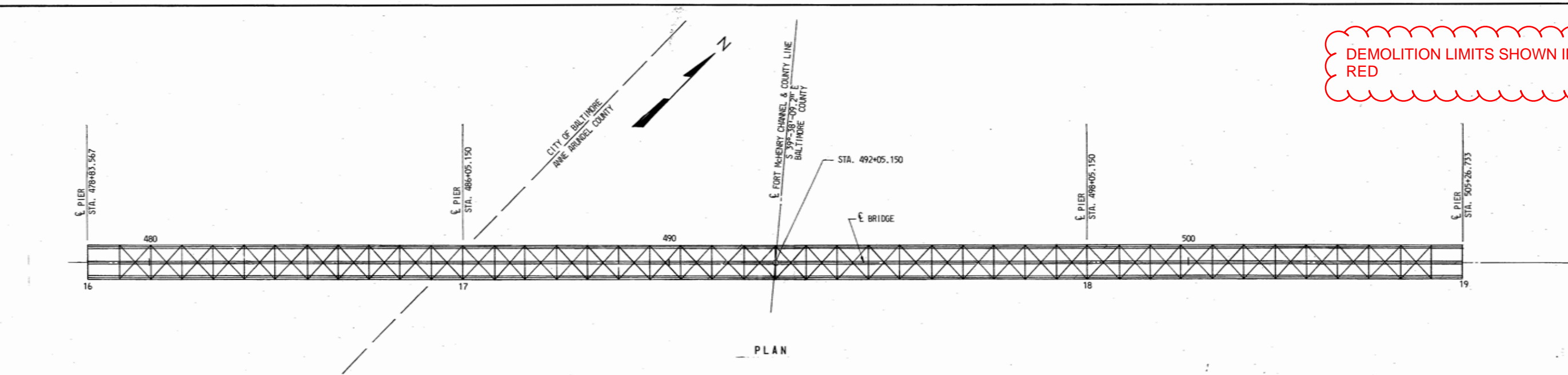
MADE BY: ERA	ZOLLMAN ASSOC. INC. AND SINGSTAD, KEHART NOVEMBER AND HURKA A JOINT VENTURE Baltimore, Md.
TRACED BY: ERA	
CHECKED BY: SJS	

DRAWING NO. C-3
SHEET NO. OF
INDEXED

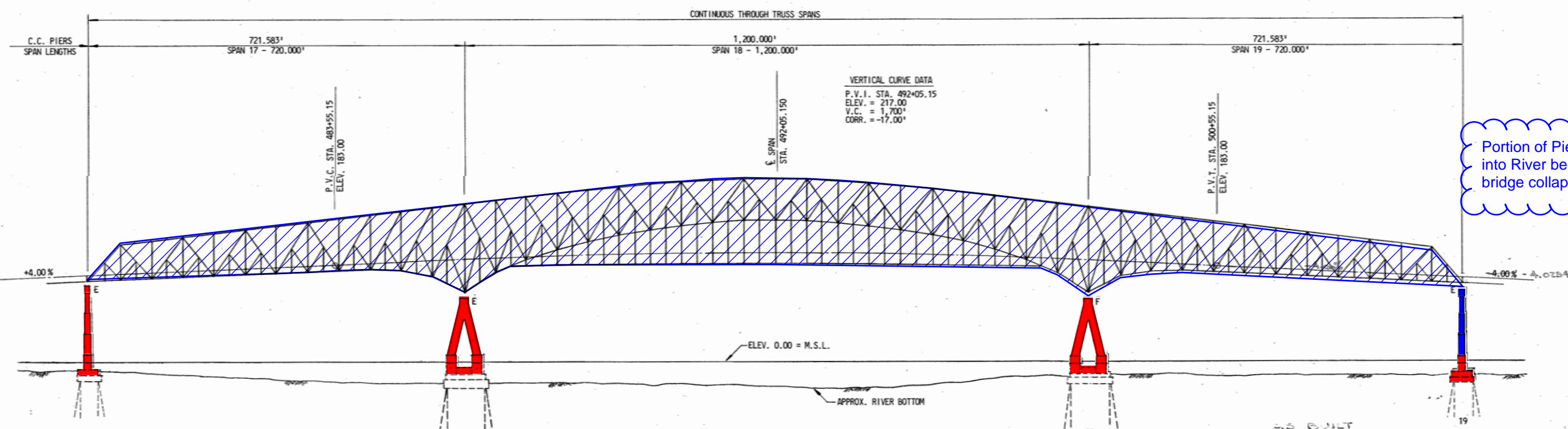
File No. Pocket No. Folder No.

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DEMOLITION LIMITS SHOWN IN RED



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



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

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.

SALVAGE OPERATIONS FOR CONTINUOUS TRUSS SPANS BY OTHERS

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

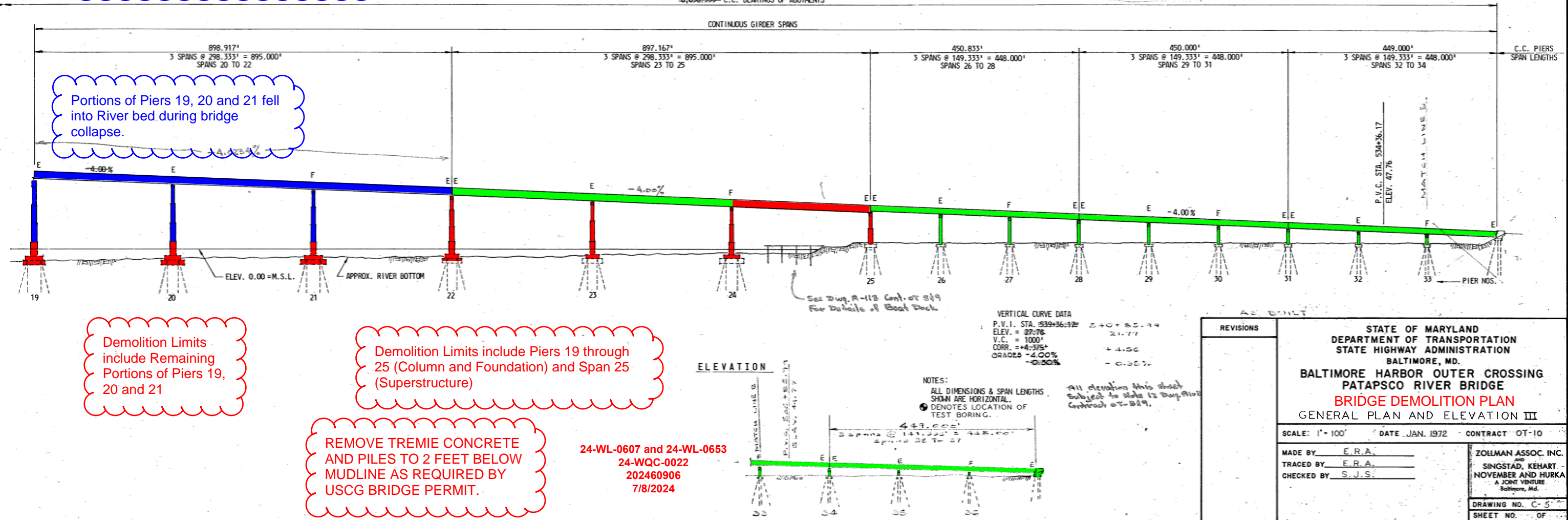
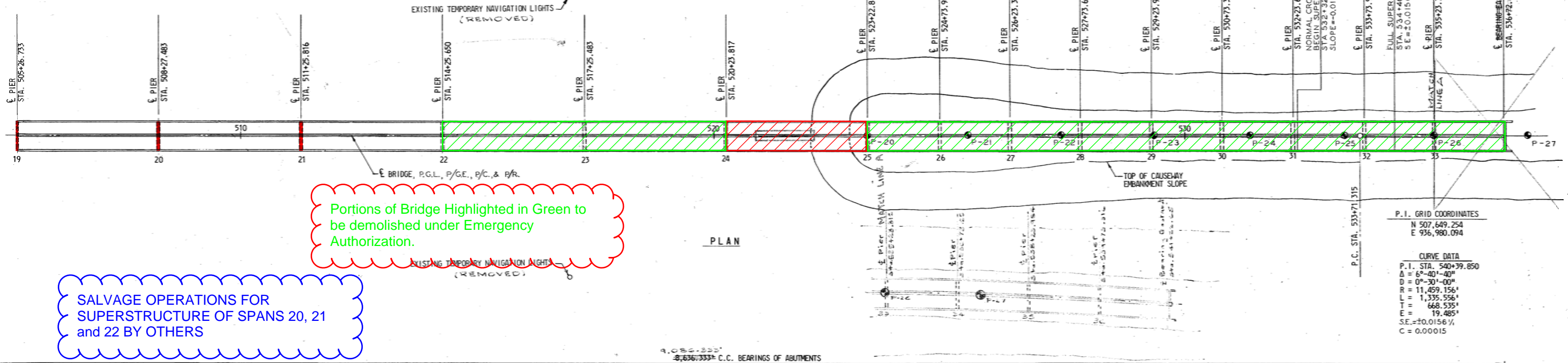
NOTE:
ALL DIMENSIONS & SPAN LENGTHS SHOWN ARE HORIZONTAL.
All elevations this sheet subject to Note 12 Dwg. 9-102 Contract 07-519.

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 07-10	
MADE BY: E.R.A. TRACED BY: E.R.A. CHECKED BY: S.J.S.	ZOLLMAN ASSOC. INC. AND SINGSTAD, KEHA NOVEMBER AND DECEMBER A JOINT VENTURE Baltimore, Md.
DRAWING NO. C-2 SHEET NO. OF INDEXED	

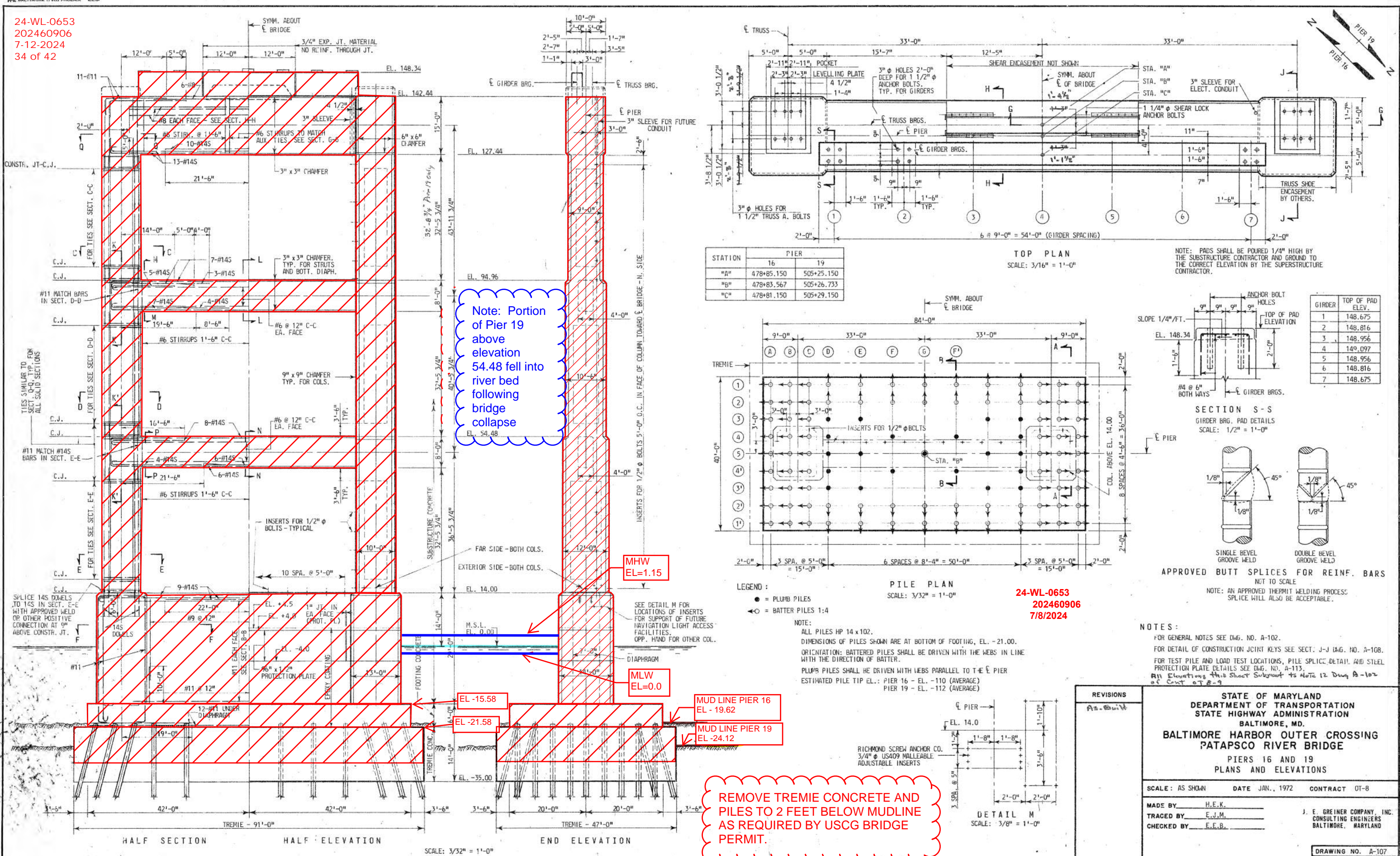
File No Pocket No Folder No

24-WL-0653
20240906
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DEMOLITION LIMITS SHOWN IN RED



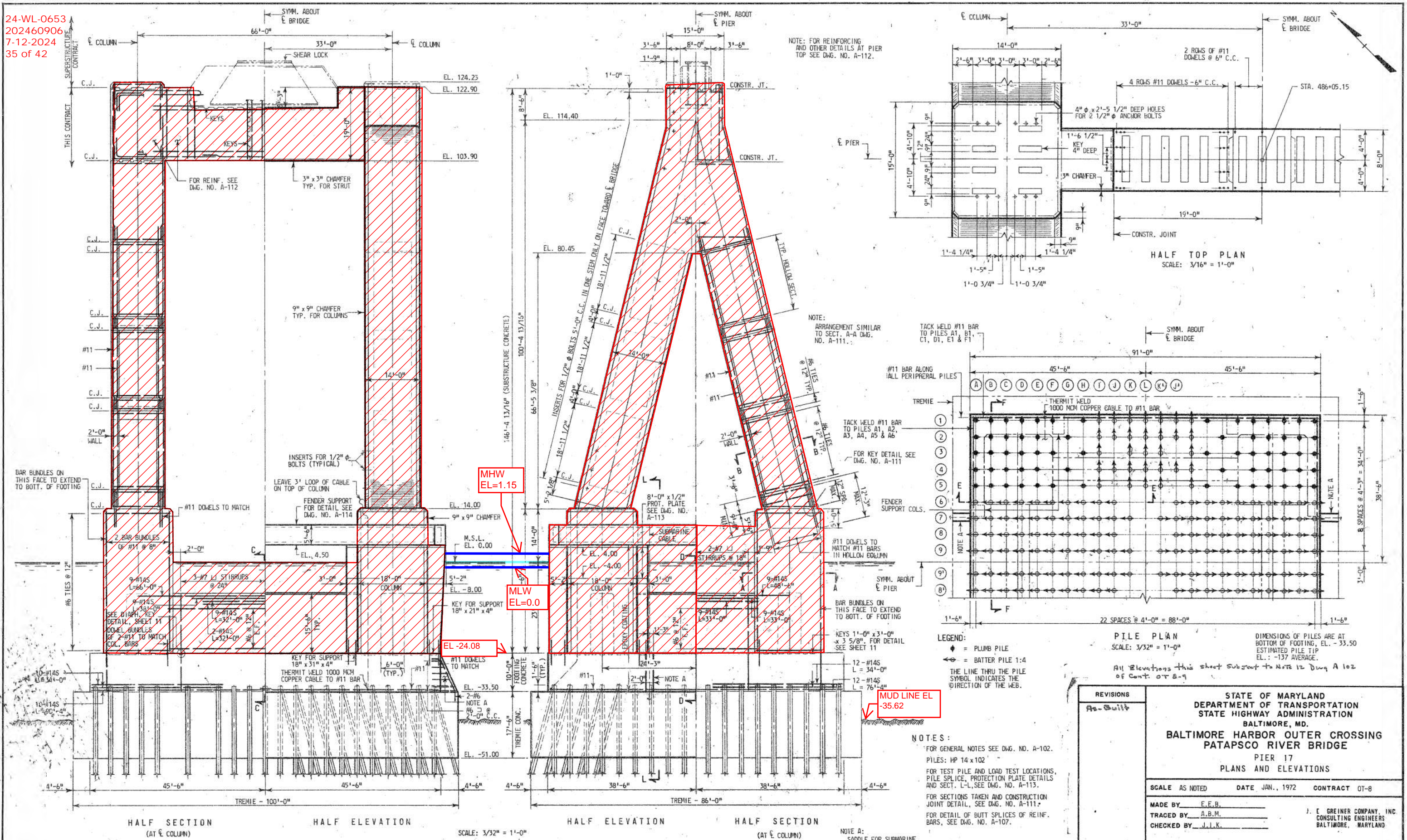
24-WL-0653
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ALL MARKUP ELEVATIONS
RELATIVE TO MLW = 0.0

File No. Pocket No. Folder No.

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ALL MARKUP ELEVATIONS
RELATIVE TO MLW = 0.0

REVISIONS	STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION BALTIMORE, MD.		
As-Built	BALTIMORE HARBOR OUTER CROSSING PATAPSCO RIVER BRIDGE PIER 17 PLANS AND ELEVATIONS		
SCALE AS NOTED		DATE JAN., 1972	CONTRACT OT-8
MADE BY <u>E.E.B.</u>		J. E. GREINER COMPANY, INC. CONSULTING ENGINEERS BALTIMORE, MARYLAND	
TRACED BY <u>A.B.M.</u>			
CHECKED BY <u>J.L.K.</u>			
		DRAWING NO. A-109 SHEET NO. 9 OF 24 INDEXED	

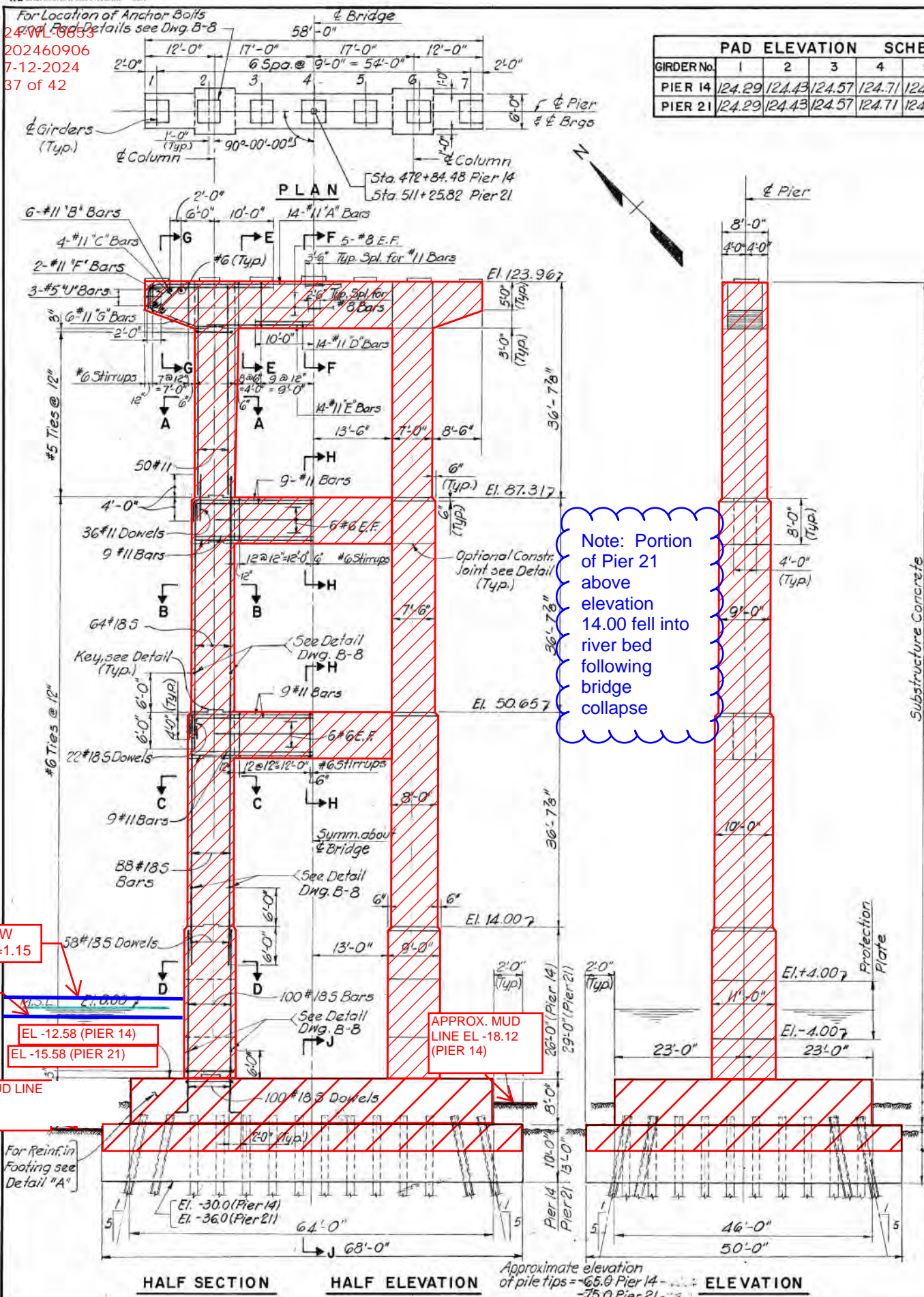
File No. Pocket No. Folder No.



FOR GENERAL NOTES SEE DWG. NO. A-102.
PILES: HP 14 x 102
FOR TEST PILE AND LOAD TEST LOCATIONS
PILE SECTION, 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.

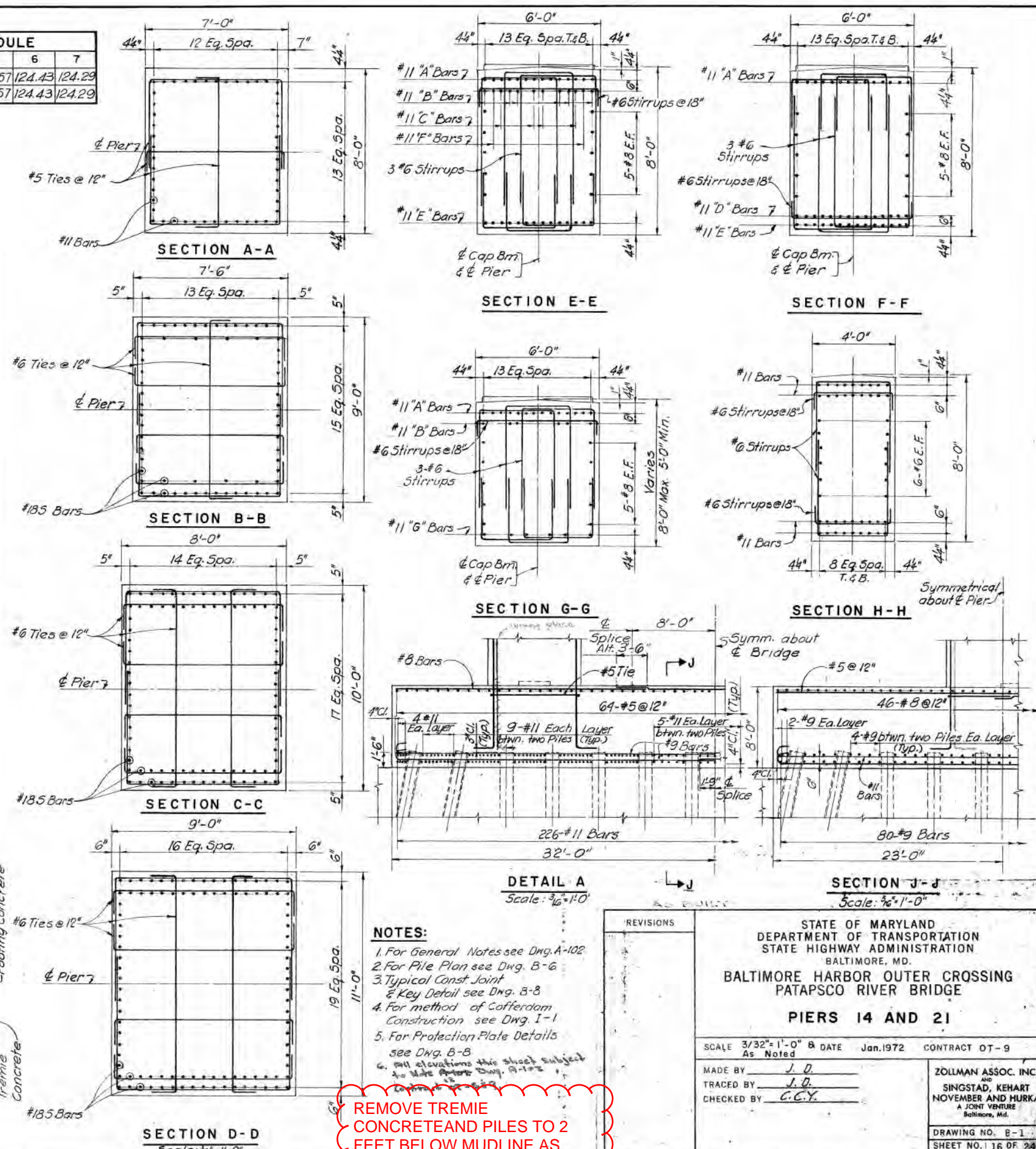
REVISIONS	STATE OF MARYLAND DEPARTMENT OF TRANSPORTATION STATE HIGHWAY ADMINISTRATION BALTIMORE, MD. BALTIMORE HARBOR OUTER CROSSING PATAPSCO RIVER BRIDGE PIER 18 PLANS AND ELEVATIONS
As-Built	SCALE AS NOTED DATE JAN., 1972 CONTRACT OT-8
	MADE BY <u>E.E.B.</u> TRACED BY <u>A.B.M.</u> CHECKED BY <u>J.I.K.</u>
	J. E. GREINER COMPANY, INC. CONSULTING ENGINEERS BALTIMORE, MARYLAND
	DRAWING NO. A-110 SHEET NO. 10 OF 24 INDEXED

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202460906
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PAD ELEVATION SCHEDULE							
GIRDER No.	1	2	3	4	5	6	7
PIER 14	24.29	24.43	24.57	24.71	24.57	24.43	24.29
PIER 21	24.29	24.43	24.57	24.71	24.57	24.43	24.29

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

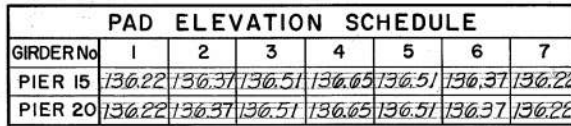


- NOTES:**
1. For General Notes see Dwg. A-102
 2. For Pile Plan see Dwg. B-6
 3. Typical Const. Joint & Key Detail see Dwg. B-8
 4. For method of Cofferdam Construction see Dwg. I-1
 5. For Protection Plate Details see Dwg. B-8
 6. All elevations this sheet subject to later change Dwg. A-102

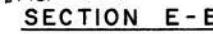
REMOVE TREMIE CONCRETE AND PILES TO 2 FEET BELOW MUDLINE AS REQUIRED BY USCG BRIDGE DEDMIT

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" & DATE Jan. 1972	CONTRACT OT-9	
MADE BY J. D.	ZOLLMAN ASSOC. INC.	
TRACED BY J. D.	SINGSTAD, KEHART NOVEMBER AND HURKA A JOINT VENTURE Baltimore, Md.	
CHECKED BY C.C.Y.	DRAWING NO. B-1 SHEET NO. 16 OF 24 INDEXED	
File No. _____ Pocket No. _____ Folder No. _____		

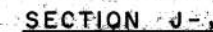
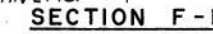
ALL MARKUP ELEVATIONS
RELATIVE TO MLW = 0.0



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



Scale: $\frac{1}{16}'' = 1'-0''$



Scale: $\frac{3}{16}'' = 1'-0''$

- 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		
	PIERS 15 AND 20		
	SCALE 3/32"=1'-0" A As Noted	DATE Jan. 1972	CONTRACT OT-9
	MADE BY <u>O.S.</u> TRACED BY <u>O.S.</u> CHECKED BY <u>C.C.Y.</u>	ZOLLMAN ASSOC. INC. AND SINGSTAD, KEHART NOVEMBER AND HURKA A JOINT VENTURE Baltimore, Md.	
	DRAWING NO. B-2 SHEET NO. 17 OF 24		
File No.	Packet No.	Folder No.	INDEXED

ALL MARKUP ELEVATIONS
RELATIVE TO MLW = 0.0

24 FOR 10657
20 \$ Add 0.06
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Location of Anchor Bolts
Details see Dwg. B-3

Bridge

53'-0"

12'-0" 17'-0" 17'-0" 12'-0"

2'-0" 2'-0" 2'-0" 2'-0"

65pa. @ 9'-0" = 54'-0"

6'-0" (Typ)

Girder (Typ)

Pier

Column

90°00'00"

514+25.65

PLAN

Legend:

- GIRD
- BRC
- BRC

[illegible]

Diagram illustrating the ELEVATION of a pile cap and substructure. Key dimensions and components are labeled:

- Top Section:** Pier, 7'-0" width, 3'-6" side offsets.
- Substructure Concrete:** 10'-0" (Typ.) height, 15'-6" width at base, 7'-0" width at top.
- Protection Plate:** 4'-0" (Typ.) height, 8'-0" (Typ.) width.
- Footing Concrete:** 15'-6" width at base, 31'-0" width at top.
- Piles:** 15 piles, 15'-6" diameter, 2'-0" (Typ.) height.
- Other Labels:** Tremie Concrete, Approx. of pile, ELEVATION.

Approximate elevation
of pile tips - 72.0.

7'-0"

4'-2"

12 Eq. Spa.

4'-2"

4'-2"

7'-0"

12 Eq. Spa.

4'-2"

#5 Ties @ 12" (Typ)

4 Pier

#11 Bars

SECTION A-A

8'-0"

4 1/2"

16 Eq. Spa.

4 1/2"

9'-0"

18 Eq. Spa.

#5 Ties (Typ)

E Pier

1

2

Hand-drawn diagram of a rectangular pier. The overall dimensions are 10'-0" wide by 22' Eq. Spa. high. The width is divided into three sections: 5 1/2" on the left, 20' Eq. Spa. in the middle, and 5 1/2" on the right. The height is divided into three sections: 5 1/2" at the top, 20' Eq. Spa. in the middle, and 5 1/2" at the bottom. The diagram shows a grid of reinforcement bars. A note "5Ties (Typ)" points to the vertical bars. A note "Ø Pier" points to the horizontal bars. The top and bottom edges are marked with a series of dots, indicating a specific reinforcement pattern.

6'-0"

4 1/4" 13 Eq. Spa. T. & B. 4 1/4"

#11 "A" Bars

#11 "B" Bars ?

#11 "C" Bars ?

#11 "F" Bars ?

3-#6

5 stirrups (Typ)

#11 "E" Bars

5'-6" E.F.

8'-0"

Cap. Bm.

Hand-drawn cross-section diagram of a reinforced concrete column. The diagram shows a square column with a width of 6'-0" and a height of 5#6 E.F. (Effective Length). The column is reinforced with #11 'A' Bars (top), #11 'B' Bars (bottom), and #11 'G' Bars (sides). Stirrups are provided at 18" intervals. The top and bottom reinforcement is 4'-4" wide, and the side reinforcement is 4'-4" wide. The effective length is 5#6 E.F. (Effective Length). The column is labeled 'Varies' on the right side.

[illegible]

6'-0"

44"

13 Eq. Spa.
T. & B.

44"

#11 A Bars

Stirrups @ 18"

#6 Stirrups

Stirrups @ 18"

#11 D Bars

#11 E Bars

44"

5 #6 F.F.

8'-0"

6"

6'-0"

44"

Symmetrical about C/Pile

8'-0"

29 #10 Bars

5 #11 Bars (Btwn. Piles Typ)

3 #11 Bars

#11 Bars

36 #11 Bars

15'-6"

4" C.

11"

11'9"

4.5 splice

11'9"

Bars (Btwn. Piles)

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. of 249.

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 $3/32" = 1'-0"$ 8 As Noted	DATE Jan. 1972 CONTRACT OT.-9
	MADE BY <u>R. R.</u> TRACED BY <u>R. R.</u> CHECKED BY <u>C.C.Y.</u>	ZOLLMAN ASSOC. INC. AND SINGSTAD, KEHART NOVEMBER AND HURKA A JOINT VENTURE Baltimore, Md.
		DRAWING NO. 8-3
		SHEET NO. 18 OF 24
		INDEXED

MLW
FL 22

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



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 No. 829.

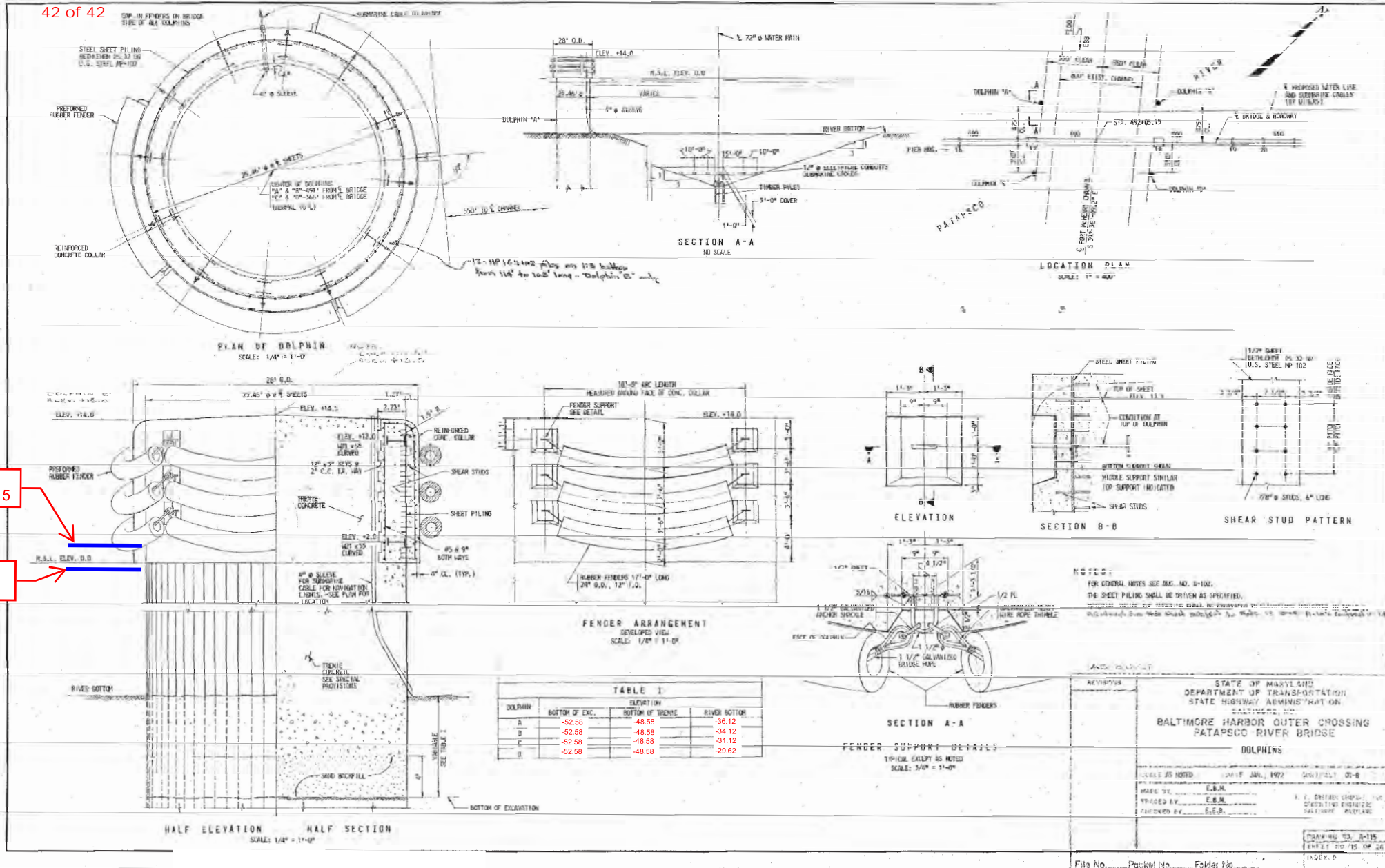


Approximate elevation
of pile tips = ~~-105.0~~ -116.3

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 24	
	SCALE $\frac{3}{32}"=1'-0"$ & As Noted	DATE Jan. 1972 CONTRACT OT-9
	MADE BY <u>O.S.</u> TRACED BY <u>O.S.</u> CHECKED BY <u>C.C.Y.</u>	ZOLLMAN ASSOC., INC. AND SINGSTAD, KEHART NOVEMBER AND HURD A JOINT VENTURE Baltimore, Md. DRAWING NO. 8-5 SHEET NO. 20 OF 2 INDEXED

24-WL-0653
202460906
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ALL MARKUP ELEVATIONS
RELATIVE TO MLW = 0.0