



Maryland

Department of the Environment

Larry Hogan, Governor
Boyd K. Rutherford, Lt. Governor

Ben Grumbles, Secretary
Horacio Tablada, Deputy Secretary

May 8, 2020

Baltimore Gas and Electric Company (BGE)
c/o Daniel Yeager
Century Engineering, Inc
10710 Gilroy Rd
Hunt Valley, MD 21031

Re: Agency Interest Number: 154184
Tracking Number: 201862065
Tidal Authorization Number: 19-WQC-0026

Dear Baltimore Gas and Electric Company (BGE):

Your project did not qualify for approval under the Maryland State Programmatic General Permit (MDSPPG); therefore a separate review and issuance of the federal permit will be required by the U.S. Army Corps of Engineers. The federal permit is not attached.

Additionally, your project required a Wetlands License to be approved and issued by the Maryland Board of Public Works (BPW). The Wetlands License will be sent to you by the BPW's Wetlands Administrator.

A Nontidal Wetlands and Waterways Permit is also required for this project; the Permit will be forwarded to you under separate cover.

A project that does not qualify for approval under the MDSPPG requires an individual Water Quality Certification (WQC) to be issued by the Maryland Department of the Environment, which is attached. Please take a moment to read and review your WQC to ensure that you understand the limits of the authorized work and all of the general and special conditions.

You should not begin any work until you have obtained all necessary State, local, and federal authorizations. Please contact Matthew Wallach at matthew.wallach@maryland.gov or 410-537-3527 with any questions.

Sincerely,

A handwritten signature in black ink, appearing to read "Danielle Spendiff".

Danielle Spendiff, Chief
Western Region
Tidal Wetlands Division



STATE OF MARYLAND
DEPARTMENT OF THE ENVIRONMENT
WATER AND SCIENCE ADMINISTRATION
WATER QUALITY CERTIFICATION



19-WQC-0026

Authorization Numbers: 18-WL-1223/18-NT-0386

Tracking: 201862065

EFFECTIVE DATE: **April 1, 2020**

EXPIRATION DATE: **March 31, 2025**

CERTIFICATION HOLDER: **Baltimore Gas and Electric Company (BGE)**

ADDRESS: **1699 Leadenhall St
Baltimore, Maryland 21230**

PROJECT LOCATION: **Key Bridge between Hawkins Pt and Sollers Pt
Baltimore, MD 21201
Patapsco River Area - 02130900 in Baltimore**

Description of Certified Project: To replace the deteriorating underground 230 kV high-pressure fluid filled (HPFF) transmission cables that cross under the Patapsco River, between Hawkins Point and Sollers Point, immediately north of the FSK Bridge, with a new overhead 230 kV transmission lines, and decommission the existing terminal stations at Hawkins Point and Sollers Point. The project would involve the construction of eight monopole transmission tower structures including three land-based towers (Towers 1, 7 & 8) and five water-based towers (Towers 2, 3, 4, 5 & 6) with vessel collision protection structures across the Patapsco River. The new transmission cables would extend approximately 10,572 feet across the Patapsco between the mean high water shorelines on each side of the river. Replacement of the existing 230 kV cables would include the construction and energization of the overhead lines, which consists of six (6) double-bundle of 1.41-inch diameter conductor lines (totaling 12 lines), two (2), 0.56-inch diameter shield wires, eight (8) monopole towers including three (3) land-based towers and five (5) waterbased towers, the decommissioning of the existing 230 kV HPFF cables, and the decommissioning of the terminal stations at Hawkins Point and Sollers Point.

Nontidal wetland impacts would result from temporary site access, forest cutting and utility line maintenance clearing. The work would result in permanent conversion of approximately 18,323 square feet/0.42 acres of forested nontidal wetlands to emergent nontidal wetlands; permanent conversion of approximately 3,855 square feet/0.09 acres of scrub-shrub nontidal wetlands to emergent nontidal wetlands; and temporary impacts to approximately 20,995 square feet/0.48 acres of nontidal wetland buffer.

Tidal impacts would result from filling activities associated with access, construction of Towers 2 through 6, and associated vessel collision protection structures. The work would result in permanent impacts to approximately 2,048 square feet/0.05 acres and temporary impacts to approximately 126,870 square feet/2.91 acres of the Patapsco River. The proposed approximate 1.24 acres of water-based tower structures including vessel collision protection structures are pile supported with open frame concrete platforms.

UNDER AUTHORITY OF SECTION 401 OF THE FEDERAL WATER POLLUTION CONTROL ACT AND ITS AMENDMENTS AND IN ACCORDANCE WITH §9-313 THROUGH §9-323, INCLUSIVE, OF THE ENVIRONMENT ARTICLE, ANNOTATED CODE OF MARYLAND, THE WATER AND SCIENCE ADMINISTRATION (“ADMINISTRATION”) HAS DETERMINED THAT THE REGULATED ACTIVITY DESCRIBED IN STATE TIDAL WETLANDS LICENSE NUMBER 18-WL-1223 AND NON TIDAL LICENSE NUMBER 18-NT-0386 (“LICENSE”) WILL NOT VIOLATE MARYLAND’S WATER QUALITY STANDARDS, IF CONDUCTED IN ACCORDANCE WITH THE CONDITIONS OF THIS CERTIFICATION AND WITH ALL TERMS AND CONDITIONS OF THE TIDAL AND NON TIDAL LICENSES. A COPY OF THE LICENSES, INCLUDING APPROVED PROJECT DRAWINGS AND OTHER ATTACHMENTS, ARE ATTACHED HERETO AND IS HEREBY INCORPORATED BY REFERENCE.

THIS CERTIFICATION DOES NOT RELIEVE THE APPLICANT OF RESPONSIBILITY FOR OBTAINING ANY OTHER APPROVALS, LICENSES, OR PERMITS IN ACCORDANCE WITH FEDERAL, STATE, OR LOCAL REQUIREMENTS AND DOES NOT AUTHORIZE COMMENCEMENT OF THE PROPOSED PROJECT. A COPY OF THIS REQUIRED CERTIFICATION HAS BEEN SENT TO THE CORPS OF ENGINEERS.

THE CERTIFICATION HOLDER SHALL COMPLY WITH THE CONDITIONS LISTED BELOW.

SPECIAL CONDITIONS

- A. X The terms and conditions of Tidal Wetlands License No. 18-WL-1223 AND Nontidal Wetlands Permit No. 18-NT-0386 are hereby incorporated, by reference, into this Water Quality Certification. The Certification Holder shall comply with these conditions to ensure that the authorized activities will not result in a violation of the State's water quality standards.
- B. X The disturbance of the bottom of the water and sediment transport into adjacent State waters shall be minimized. The Permittee shall obtain and certify compliance with a grading and sediment control plan, which has been approved by the Baltimore City Department of Office of Compliance and Laboratories. The approved plans shall be available at the project site during all phases of construction.
- C. X Stormwater runoff from impervious surfaces shall be controlled to prevent the washing of debris into the waterway. The natural vegetation shall be maintained and restored when disturbed or eroded. Stormwater drainage facilities shall be designed, implemented, operated, and maintained in accordance with the applicable approving authority.
- D. X Stormwater Management Plan: The certification holder shall provide to the Administration a stormwater management plan including cross sections, and other applicable drawings which incorporates effective pollutant removal strategies in uplands to treat the required volume of runoff from impervious surfaces prior to the release of stormwater into state waters, tidal wetlands, or nontidal wetlands. There shall be no discharge of untreated stormwater to State waters and tidal and nontidal wetlands. The plan shall be provided by BGE and shall be implemented by BGE.
- E. X Nontidal Wetland/Waters Mitigation Requirement: The Permittee is required to mitigate for the permanent conversion of 18,323 square feet of forested nontidal wetlands to emergent nontidal wetlands and the permanent conversion of 3,855 square feet of scrub-shrub nontidal wetlands to emergent nontidal wetlands by creating the equivalent of at least 18,323 square feet of forested nontidal wetlands and 3,855 square feet of scrub-shrub nontidal wetlands (22,178 square feet total). The Permittee has proposed to satisfy the mitigation requirement through the purchase of 22,178 square feet

of wetland mitigation credit at the Peige Wetland Mitigation Bank, however the credits for the mitigation bank have not been released yet by the Interagency Review Team. The permittee shall provide the Mitigation and Technical Assistance Section with documentation that they have purchased available credits from the Peige Mitigation Bank and that the sponsor of the Peige Wetland Mitigation Bank is taking over the mitigation obligation, prior to regulated impacts commencing. If the mitigation bank fails to be a viable mitigation option, the permittee shall provide alternate mitigation, and a Phase II Mitigation Plan shall be submitted, finalized, and approved prior to commencing regulated impacts.

GENERAL CONDITIONS

- A. X The proposed project shall be constructed in a manner which will not violate Maryland's Water Quality Standards as set forth in COMAR 26.08.02. The applicant is to notify this Department and the Water and Science Administration's Compliance Program, at 410-537-3510, ten (10) days prior to commencing work. Verbal notification is to be followed by written notice within ten (10) days.
- B. X The proposed project shall be constructed in accordance with the approved final plan and its revisions.
- C. X 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.
- D. X 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.
- E. X The Certification Holder shall ensure the proposed project shall be constructed in accordance with the authorized plan and any authorized revisions.
- F. X The Certification Holder shall ensure that all fill and construction materials not used in the project shall be removed and disposed of in a manner which will prevent their entry into waters of this State.
- G. X The Certification Holder shall notify the Water and Science Administration, Tidal Wetlands Division and Nontidal Wetlands Division, in writing, upon transferring property ownership or responsibility for compliance with these conditions to another person. The new owner/operator shall request, in writing, transfer of this Water Quality Certification to his/her name.
- H. X The Certification Holder shall allow representatives of the Maryland Department of the Environment to inspect the authorized activities.
- I. X The Certification Holder shall ensure that a copy of this Permit, including the approved plans, is available at the site until the authorized work is complete.
- J. X The Certification does not relieve the Certification holder from the responsibility of obtaining all necessary federal, State, and local government authorizations.

K. X The Certification Holder shall comply with all Critical Area requirements and obtain all necessary authorizations from local jurisdiction. This Certification 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.

Failure to comply with these conditions shall constitute reason for suspension or revocation of the Water Quality Certification, and legal proceedings may be instituted against the Certification Holder in accordance with the Annotated Code of Maryland. In granting this certification, the Department reserves the right to inspect the operations and records regarding this project at anytime

CERTIFICATION APPROVED



D. Lee Currey, Director
Water and Science Administration

5/8/20

Date

Tracking Number: 201862065
Agency Interest Number: 154184

Effective Date: April 1, 2020

Enclosure: Executed Tidal Wetlands License No. 18-WL-1223 with all plans and attachments.

cc: WMA Inspection & Compliance Program



William Morgante, PWS
Wetlands Administrator

State of Maryland
Board of Public Works

Wetlands Administration
Post Office Box 1510 Annapolis, Maryland 21404
410-260-7791

Larry Hogan
Governor

Nancy K. Kopp
Treasurer

Peter Franchot
Comptroller

John T. Gontrum, Esq.
Executive Secretary

WETLANDS LICENSE NO. 18-1223

BALTIMORE GAS & ELECTRIC COMPANY

The Maryland Board of Public Works authorizes you to:

DECOMMISSION EXISTING 230 KV HPFF CABLES: Remove the mineral oil from the existing pipes through a fluid displacement process of air followed by water until $\geq 90\%$ of the oil is removed. Once the oil has been removed to the maximum extent possible through the fluid displacement means, the pipes will then be cut below grade, capped and abandoned in place.

TOWER TRANSMISSION CABLES: Install six (6) double bundles of 1.41-inch diameter conductor lines (totaling 12 lines) and two (2) 0.56-inch diameter shield wires extending 10,572 feet over the Patapsco River.

TOWERS with associated platform and protective dolphin impacts:

Tower 2

- Construct a 214-foot tower over a 33-foot 1-inch-long by 33-foot 1-inch-wide platform. The tower platform will be supported by eight (8), 42-inch diameter piles;
- Construct two (2) 12-foot 1-inch by 11-foot 6-inch protective dolphin structures. Each dolphin structure will be supported by four (4) 24-inch diameter piles;
- All extending a maximum of 1,648 feet channelward of the mean high water line.

Tower 3

- Construct a 380-foot tower over an irregularly shaped platform with a maximum width of 64 feet and a maximum length of 46.5 feet. The tower platform will be associated with eleven (11), 42-inch piles: one (1) test pile and ten (10) support piles;
- Construct a 7,565-square-foot protection structure, creating a 522-foot-long perimeter ring surrounding Tower 3 with a maximum width of 195 feet 1-inch and a maximum length of 138 feet 1-inch. The protective ring structure will be supported by six (6) 36-inch diameter piles and twenty-two (22) 54-inch piles;
- All extending a maximum of 3,295 feet channelward of the mean high water line.

Tower 4

- Construct a 380-foot tower over an irregularly shaped platform with a maximum width of 64 feet and a maximum length of 46.5 feet. The tower platform will be associated with twelve (12) 42-inch piles: two (2) test piles and ten (10) support piles;

- Construct a 9,368-square-foot protection structure, creating a 640-foot-long perimeter ring surrounding Tower 4 with a maximum width of 246 feet 1-inch and a maximum length of 156 feet 1-inch. The protective ring structure will be supported by six (6) 36-inch diameter piles and 20 54-inch piles. One (1) additional 54-inch pile will be driven as a test pile;
- All extending a maximum of 5,299 feet channelward of the mean high water line.

Tower 5

- Construct a 205-foot tower over a 27-foot long by 27-foot wide platform. The tower platform will be supported by eight (8) 36-inch diameter piles;
- Construct a 1,927-square-foot protection structure, creating a 244-foot-long perimeter ring surrounding Tower 5 with a maximum width of 67 feet and a maximum length of 67 feet 1-inch. The protective ring structure will be supported by twelve (12) 42-inch diameter piles;
- All extending a maximum of 3375.5 feet channelward of the mean high water line.

Tower 6

- Construct a 179-foot tower over a 33-foot 1-inch-long by 33-foot 1-inch-wide platform. The tower platform will be supported by eight (8) 42-inch diameter piles extending a maximum of 1,527 feet channelward of the mean high water line.

Patapsco River north of the Francis Scott Key Bridge from Hawkins Point to Sollers Point, Baltimore City

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]. Accordingly, the State concurs with the Licensee's certification in the Joint Permit Application that the project complies with, and will be conducted in a manner consistent with the Maryland CZMP.

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

- A. Due to the presence of multiple fish species, the Licensee shall perform no in water work from February 15 through June 15 of any year for work associated with Towers 3, 4, and 5. And no in water work from November 15 through March 1 of any year for work associated with Towers 5 and 6.
- B. The Licensee shall not perform any construction from November 15 through March 1 of any year for work associated with Towers 5 and 6 to protect wintering waterfowl.
- C. Licensee shall complete required mitigation as per Wetlands License #19-1184.
- D. Licensee shall pay the State of Maryland:
For the first five years, an annual fee of \$2.50 per linear foot for six overhead conductor lines and two overhead shield wires. At the end of the first five years and every five years thereafter,

the annual fee may be adjusted based on the United States Department of Labor's Consumer Price Index. The current yearly fee, to be billed by the MD Department of Environment, is \$370,020.

E. The Licensee will use protective measures for fish and other aquatic wildlife to the maximum extent practicable, including but not limited to the use of turbidity curtains, ramping-up construction initiation, and the using a vibratory hammer to limit noise impacts to sensitive species.

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 January 2020, 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 Inspection and Compliance Program by phone (410-537-3510) AND in writing (MDE, Inspection and Compliance Program, 1800 Washington Boulevard, Baltimore, MD 21230) of the following:
 - start date at least five business days before beginning work; and
 - completion date no more than five business days after project completion.
6. If MDE has issued a Water Quality Certification with respect to the authorized work, Licensee shall comply with all conditions of that certification.
7. Licensee shall conduct the authorized work in accordance with Critical Area Commission requirements. This License does not authorize disturbance in the Buffer. If authorized work will disturb the Buffer, Licensee shall have a Commission-approved or locally-approved Buffer Management Plan before beginning the authorized work.

"Buffer" means the 100-foot Critical Area Buffer and any expanded area that is immediately landward of the mean high water line of the tidal waters or is immediately landward of tidal wetlands. The Buffer includes expanded contiguous area if the contiguous area includes steep slopes, hydric soil, or highly erodible soil, or otherwise meets the criteria of COMAR 27.01.09.01.E(7).
"Disturbance" means any alteration or change to the land including any amount of clearing. Clearing includes vegetation removal, grading, and construction activity.
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 or State tidal waters of the U.S.
10. Licensee shall allow unfettered public use of State wetlands and 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 Inspection and 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.
20. This License expires April 1, 2023. 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

By the authority of the Board of Public Works:



John T. Gontrum,
Executive Secretary


Effective Date: April 1, 2020

Approved as: Secretary's Agenda Item 3

Board of Public Works Meeting Date: April 1, 2020

I accept this License and all its conditions.

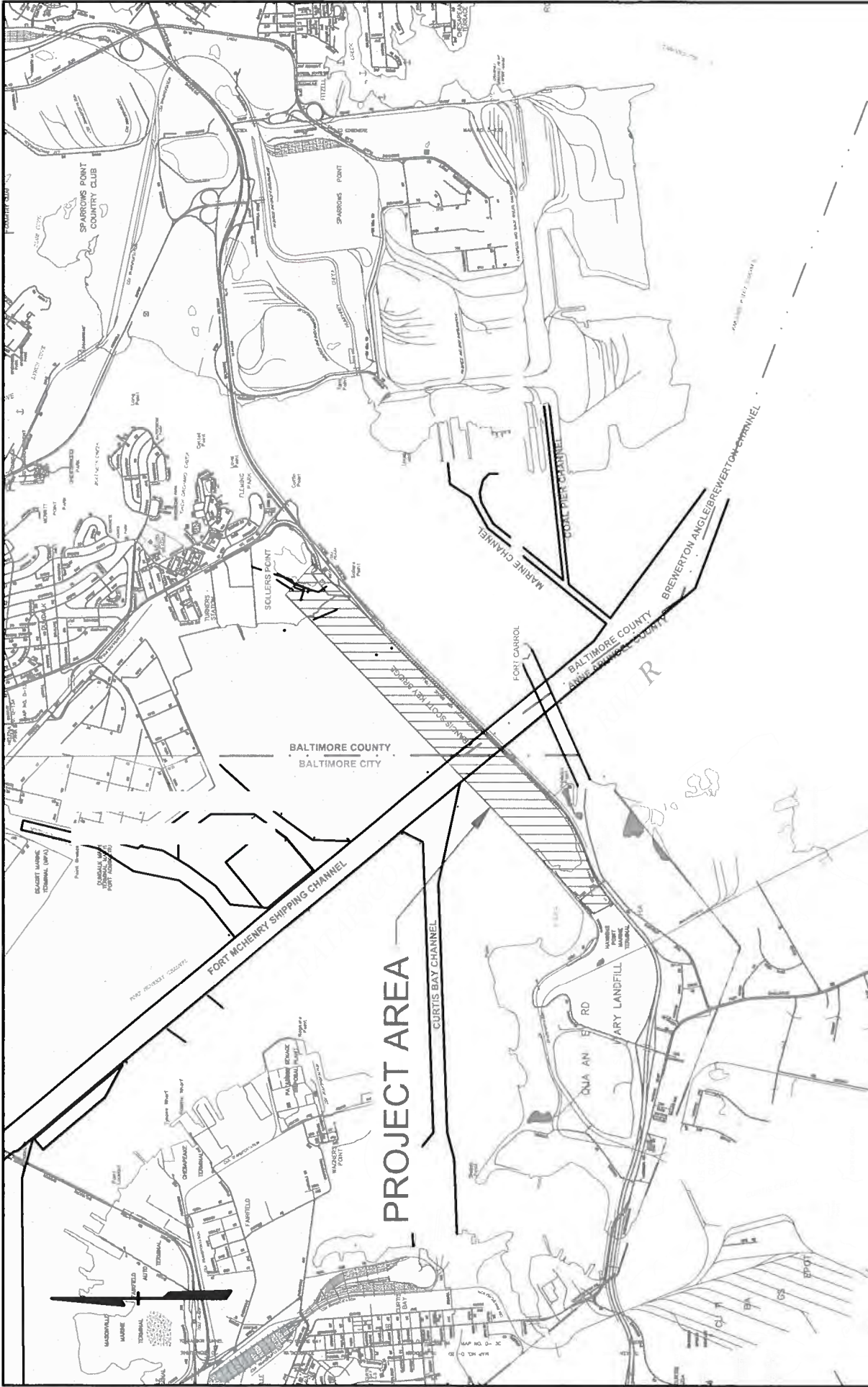
4/16/2020
Date


Licensee (Signature)

JIM BURKMAN
Name (Printed)

Principal Env. Project Mgr.
Title

JIM.BURKMAN@BSGE.COM
Email (To receive completed license.)



18wL 1223
 1541164
 4/16/16

BGE - KEY CROSSING RELIABILITY INITIATIVE
230 KV OVERHEAD TRANSMISSION LINE PROJECT

VICINITY MAP
AI #154184

Job No. 141095.00 Scale: 1" = 2,000' Date: JAN 2020 Drawn By: HK/DY SHEET 1 OF 24

MM CENTURY ENGINEERING
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 Phone: 443.589.2400 Fax: 443.589.2401
 www.centuryeng.com

--- 1' FT CONTOUR
 --- 5' FT CONTOUR
 --- PROPERTY LINE
 --- X --- EX. FENCE
 --- E --- EX. ELECTRIC LINE
 --- G --- EX. GAS LINE
 --- W --- EX. WATER LINE
 --- EX. TREELINE

--- CBCA --- CHESAPEAKE BAY CRITICAL AREA BOUNDARY (1000')


--- WB --- 25' NONTIDAL WETLAND BUFFER


 NONTIDAL WETLAND

--- MHW --- EX. MEAN HIGH WATER (MHW)

--- MLW --- EX. MEAN LOW WATER (MLW)

--- FP --- FEMA 100-YR FLOODPLAIN (TIDAL)


 100' CULTURAL RESOURCES PROTECTION AREA (NO WORK ALLOWED)

--- LOD --- LOD
 --- LOW --- PROP. LIMIT OF IN-WATER WORK


 PROP. STABILIZED CONSTRUCTION ENTRANCE

--- SF --- PROP. SILT FENCE


--- SSF --- PROP. SUPER SILT FENCE

--- O --- PROP. TURBIDITY CURTAIN AND ANCHOR BUOYS
 --- CENTERLINE OF PROPOSED ALIGNMENT


 PERMANENT WUS IMPACT (PILES AND WALERS)


 NONTIDAL WETLAND IMPACT (CONVERSION)


 TEMPORARY NONTIDAL WETLAND IMPACT


 NONTIDAL WETLAND BUFFER IMPACT

*TEMPORARY WUS IMPACT
 SEE NOTES SHEET 3 OF 22 FOR
 ESTIMATED IMPACT AREAS

BGE - KEY CROSSING RELIABILITY INITIATIVE
230 KV OVERHEAD TRANSMISSION LINE PROJECT

LEGEND
AI #154184

SHEET 2 OF 24

Job No. 141095.00 Scale: N/A Date: JAN 2020 Drawn By: HK/DY

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18 W/L 1223
 154184
 4/19/19

NOTES:

1. TOPOGRAPHY SHOWN HERE ON IS TAKEN FROM BALTIMORE COUNTY GIS, BALTIMORE CITY GIS, A LAND-BASED TOPOGRAPHIC SURVEY BY CEI IN OCTOBER 2017, AND A BATHYMETRIC SURVEY BY GAHAGAN & BYRANT ASSOC. INC, IN SEPTEMBER 2014.

2. EL. 0.0 HAS IS SET AT NADV 1988 EL. -0.61 FOR THE PURPOSE OF IMPACT CALCULATIONS.



ELEV 0.0 (NADV 1988 - EL. -0.61 FT)

-0.22 FT
MLLW (MEAN LOWER LOW WATER 1983-2001)

3. TEMPORARY WATERS OF THE U.S. IMPACTS WERE ESTIMATED BASED ON AREA WITHIN THE TURBIDITY CURTAIN AND ESTIMATED VESSEL SPUD IMPACTS.

4. SPUD IMPACT CALCULATIONS ASSUMED FOR CRANE AND MATERIAL BARGES WITH A MAXIMUM OF 255 VESSELS, A SPUD PILE OF 3' x 3', 4 SPUDS PER VESSEL AND 4 VESSEL RELOCATIONS PER MONTH. TOTALS WERE DOUBLED TO ALLOW FOR ADDITIONAL MOVES.

5. IN-WATER AREA OF WALTERS WAS CALCULATED USING THE WALTER WIDTH (1') AND DEPTH BELOW MHW OF 2.37'. THE LENGTH OF THE WALTERS IS DEPENDENT ON THE OUTSIDE PERIMETER OF THE TOWER FOUNDATION/VESSEL COLLISION PROTECTION STRUCTURES. BASED ON AGENCY COORDINATION IN OCTOBER 2018, WALTERS ARE NOT INCLUDED IN THE PERMANENT OR TEMPORARY WUS IMPACTS.

6. THE CONSTRUCTION IS PHASED AND THE TURBIDITY CURTAIN WILL BE SIZED ACCORDING TO THE ACTIVE WORK AREA AND MOVED AS NECESSARY ACCORDING TO THE PHASING OF CONSTRUCTION. THE LIMITS OF THE TURBIDITY CURTAIN SHOWN ARE FOR GRAPHICAL PURPOSES ONLY TO DEPICT THE ESTIMATED OUTER LIMITS OF THE TURBIDITY CURTAIN.

7. AN ADDITIONAL 2 SF PER PILE HAVE BEEN ADDED TO THE PERMANENT WUS IMPACTS TO ACCOUNT FOR GROUNDING AND CATHODIC PROTECTION SYSTEMS FOR EACH IN-WATER TOWER. THESE PROTECTION SYSTEMS ARE CURRENTLY UNDER DESIGN.

8. MAXIMUM CHANNELWARD ENCROACHMENT WAS MEASURED TO THE MID-POINT OF THE PATAPSCO RIVER (5,286 LF).

9. WATERWAY FILL IS CALCULATED AS THE AREA OF EACH PILE FROM MHW TO THE SURVEYED MUD LINE AT EACH PROPOSED STRUCTURE.

18 W/L 1223
154184
4-14-19

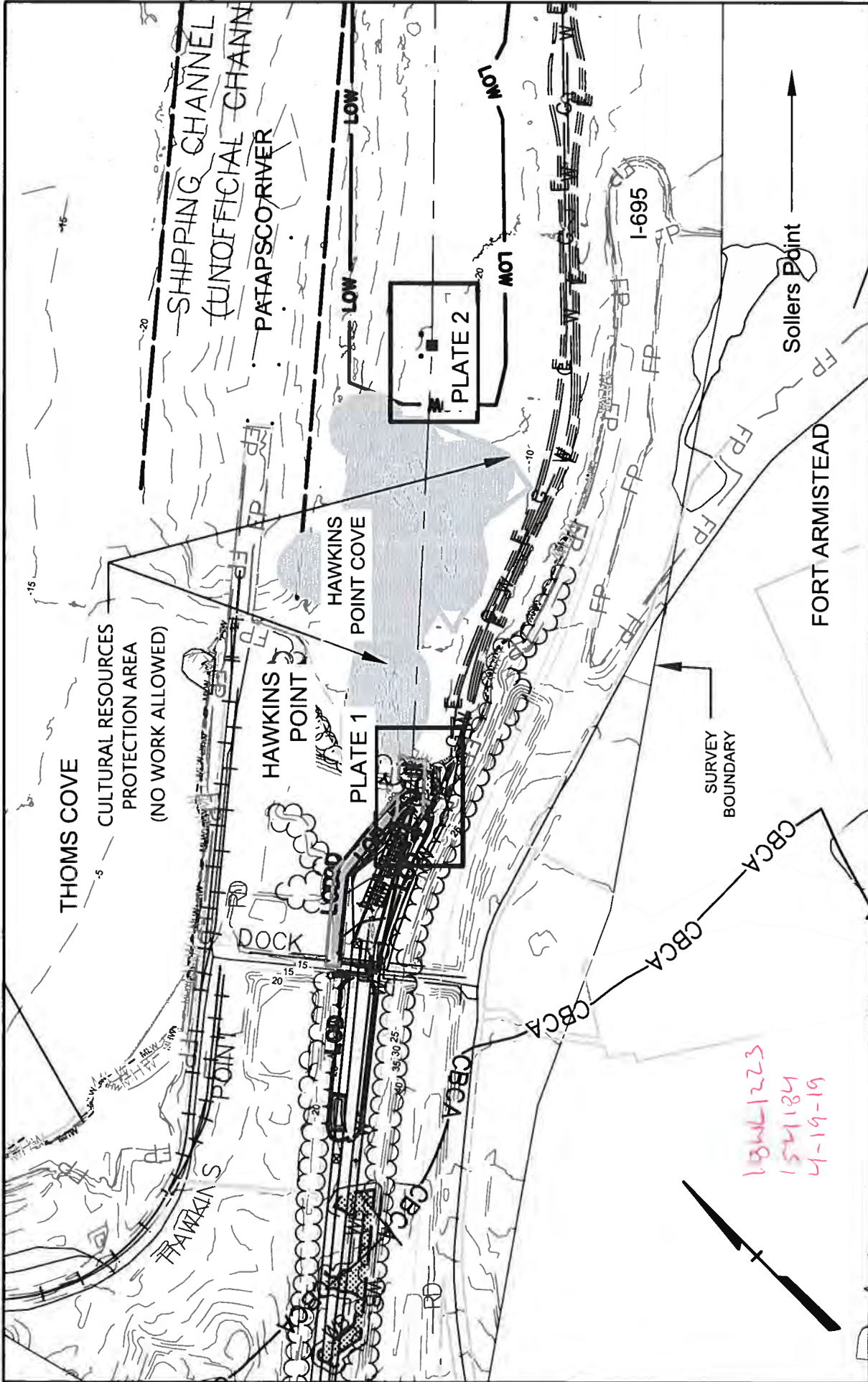
**BGE - KEY CROSSING RELIABILITY INITIATIVE
230 KV OVERHEAD TRANSMISSION LINE PROJECT**

**NOTES
AI #154184**

Job No. 141095.00 Scale: N/A Date: JAN 2020 SHEET 3 OF 24 Drawn By: HK/DY



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**BGE - KEY CROSSING RELIABILITY INITIATIVE
 230 KV OVERHEAD TRANSMISSION LINE PROJECT**

KEY MAP

AI #154184

SHEET 4 OF 24

Drawn By: HK/DY

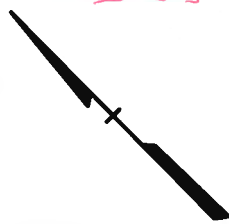
Date: JAN 2020

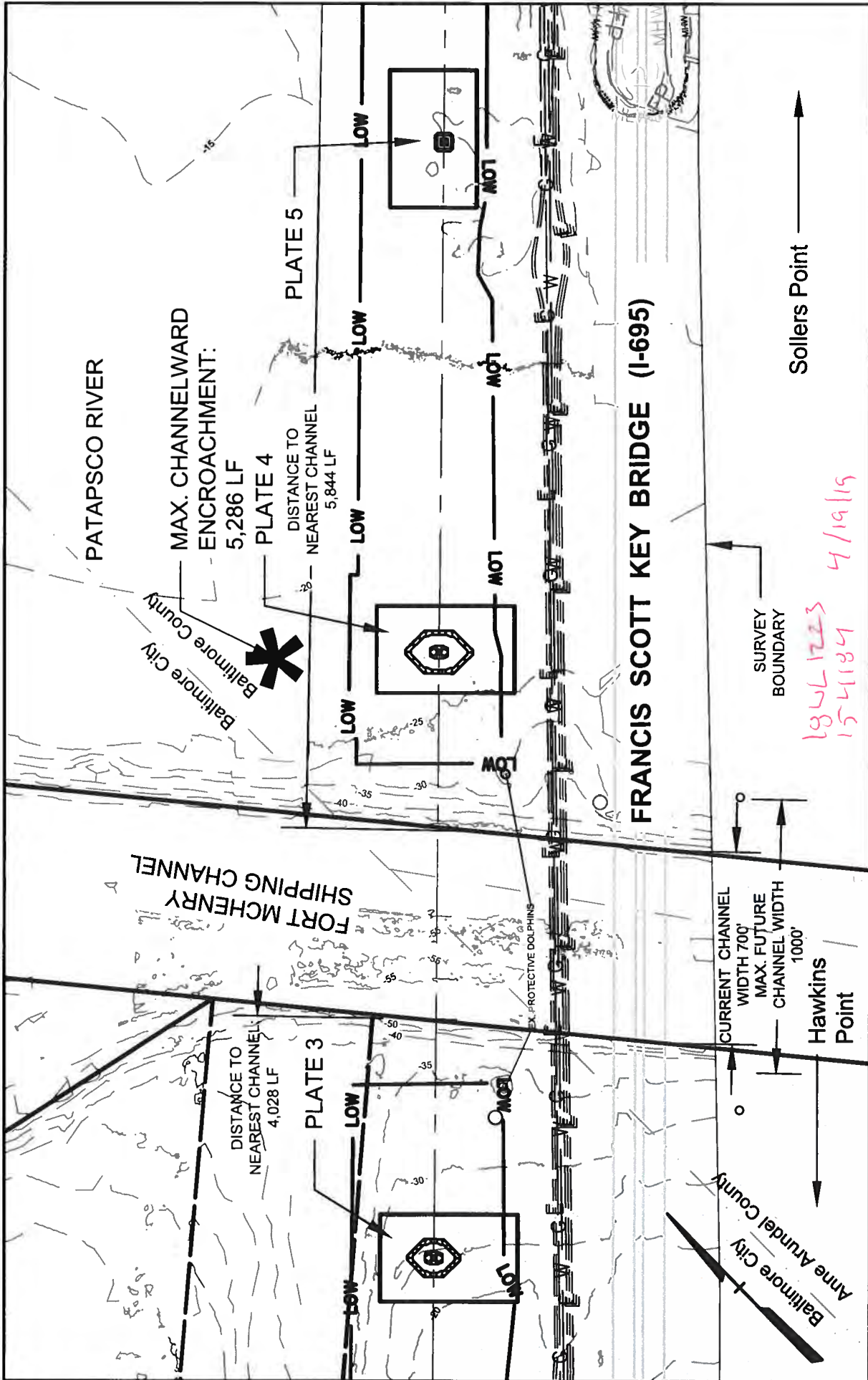
Scale: 1"=500'

Job No. 14-1095.00

MHW: 0.53' NADV88 MLW: -0.61' NADV88
 Max. Channelward Encroachment: 5,286 LF
 Distance to Opposite Shore (MHW to MHW):
 10,572 LF

Property Owner Information shown on Impact
 Plates
 Limits of In-Water Work (LOW)
 3,379,941 SF/77.59 AC
 Across All Sheets





MHW: 0.53' NADV88 MLW: -0.61' NADV88
 Max. Channelward Encroachment: 5,286 LF
 Distance to Opposite Shore (MHW to MHW):
 10,572 LF

Property Owner Information shown on impact Plates

- 3,379,941 SF/77.59 AC
- Across All Sheets

BGE - KEY CROSSING RELIABILITY INITIATIVE

230 KV OVERHEAD TRANSMISSION LINE PROJECT

KEY MAP

AI #154184

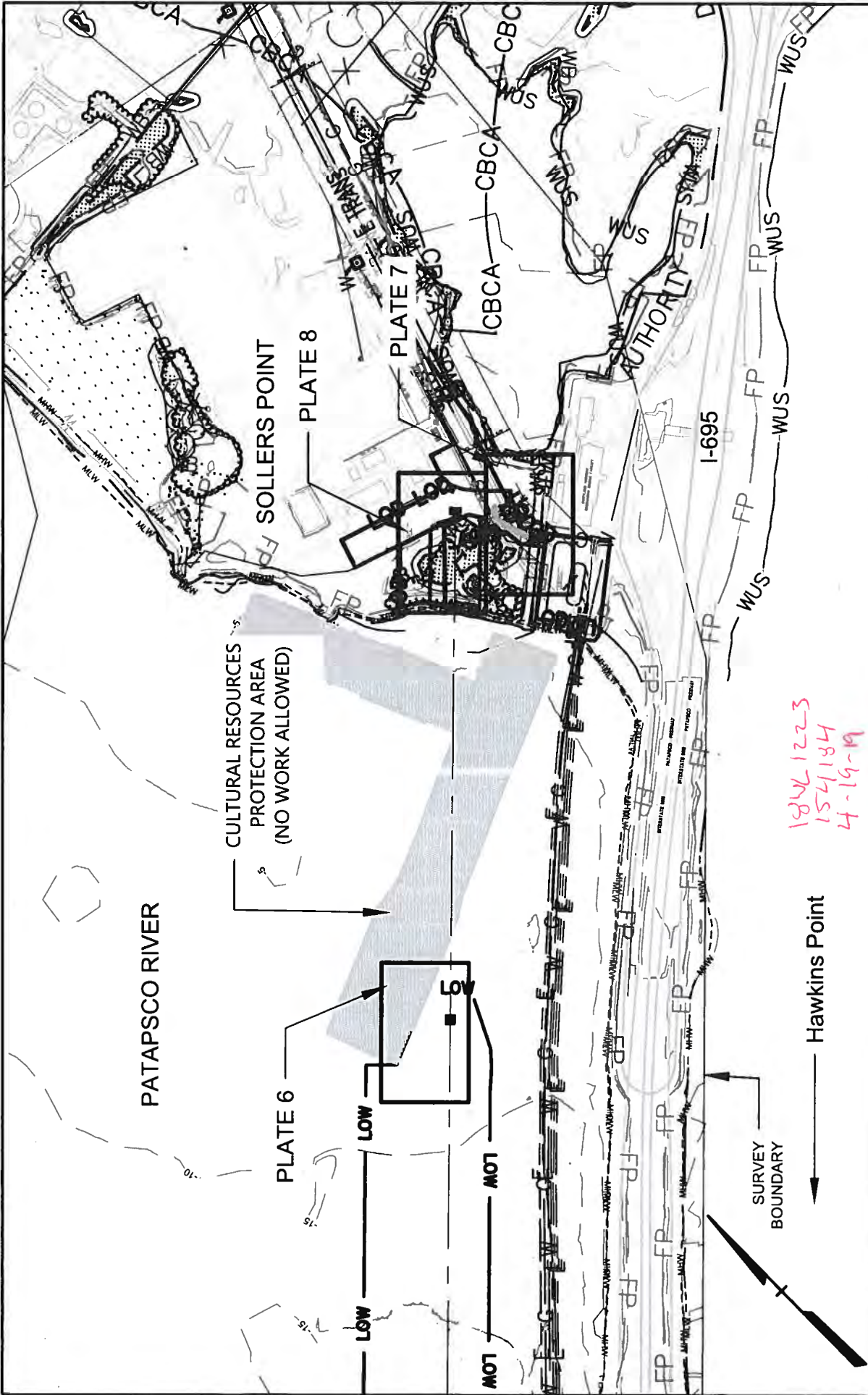
Job No. 141095.00 Scale: 1"=500' Date: JAN 2020 Drawn By: HK/DY

SHEET 5 OF 24

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MATCHLINE SEE SHEET 5 OF 24

MHW: 0.53' NADV88 MLW: -0.61' NADV88
 Max. Channelward Encroachment: 5,286 LF
 Distance to Opposite Shore (MHW to MHW):
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 Property Owner Information shown on Impact
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BGE - KEY CROSSING RELIABILITY INITIATIVE
230 KV OVERHEAD TRANSMISSION LINE PROJECT

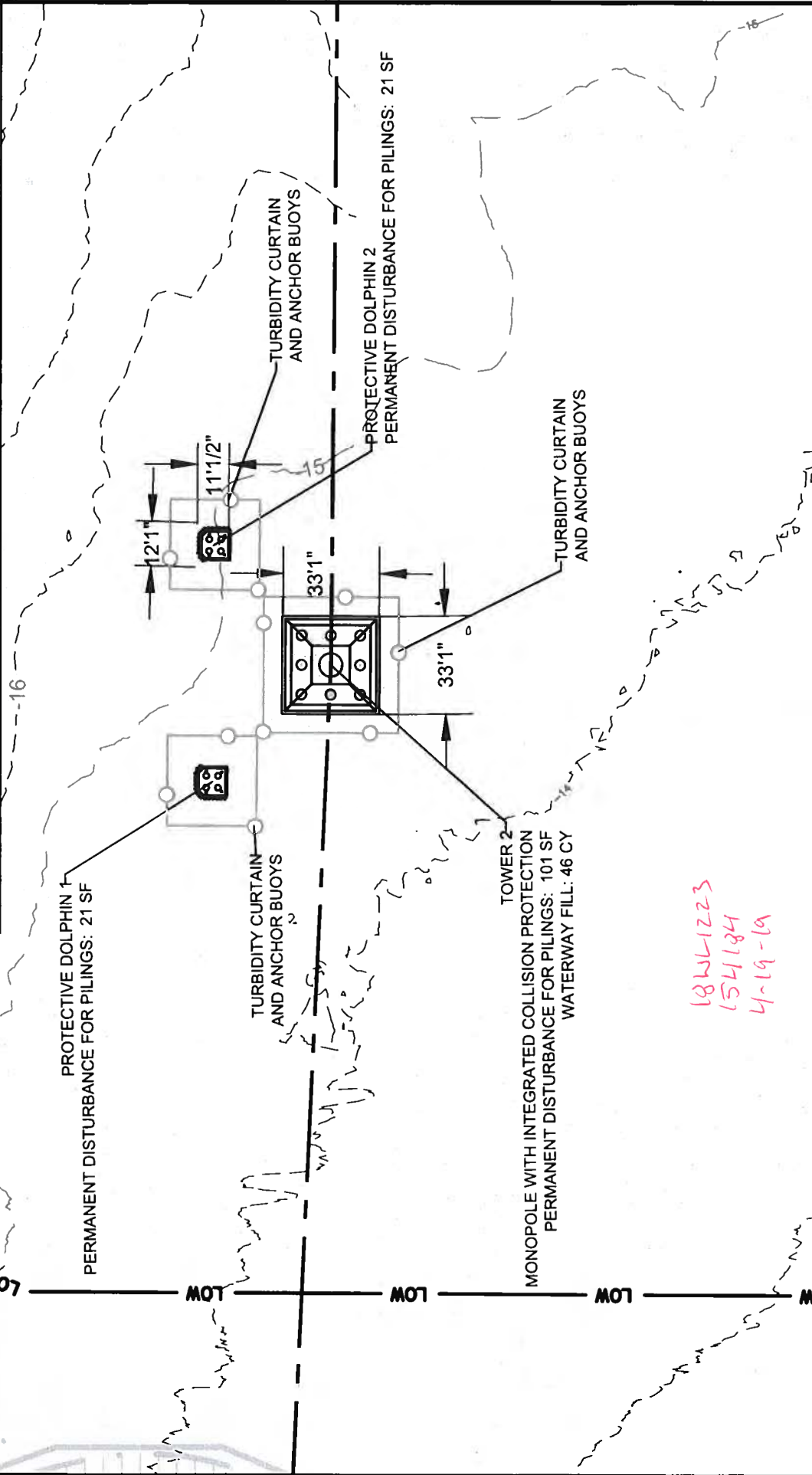
KEY MAP
AI #154184

Job No. 141095.00 Date: JAN 2020
 SHEET 6 OF 24
 Drawn By: HK/DY

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| Tower Number | Tower Type | Pile Type and Count, Each | Foundation Fill (CY) | Type of Structure Pile |
|--------------|--------------------|-------------------------------|----------------------|------------------------|
| 2 | Monopole / Dolphin | (4) - 2'-0" Φ x 5/8" Thk | 8 | Collision Protection |
| 2 | Monopole / Dolphin | (4) - 2'-0" Φ x 5/8" Thk | 8 | Collision Protection |
| 2 | Monopole | (8) - 3'-6" Φ x 5/8" Thk | 46 | Foundation |



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- PLEASE REFER TO KEY SHEETS FOR EXTENTS OF LOW.
- REFER TO NOTES SHEET FOR IMPACT CALCULATION ASSUMPTIONS.
- SEE SHEET 15 & 18 FOR STRUCTURE PROFILE.
- 3.976 SF/0.09 AC OF TEMPORARY WUS IMPACT WITHIN TURBIDITY CURTAIN
- MUDLINE AT ELEV. -15 (16 FT OF WATER)
- TOWER & DOLPHIN CONCRETE CAP: 1,362 SF

BGE - KEY CROSSING RELIABILITY INITIATIVE
230 KV OVERHEAD TRANSMISSION LINE PROJECT

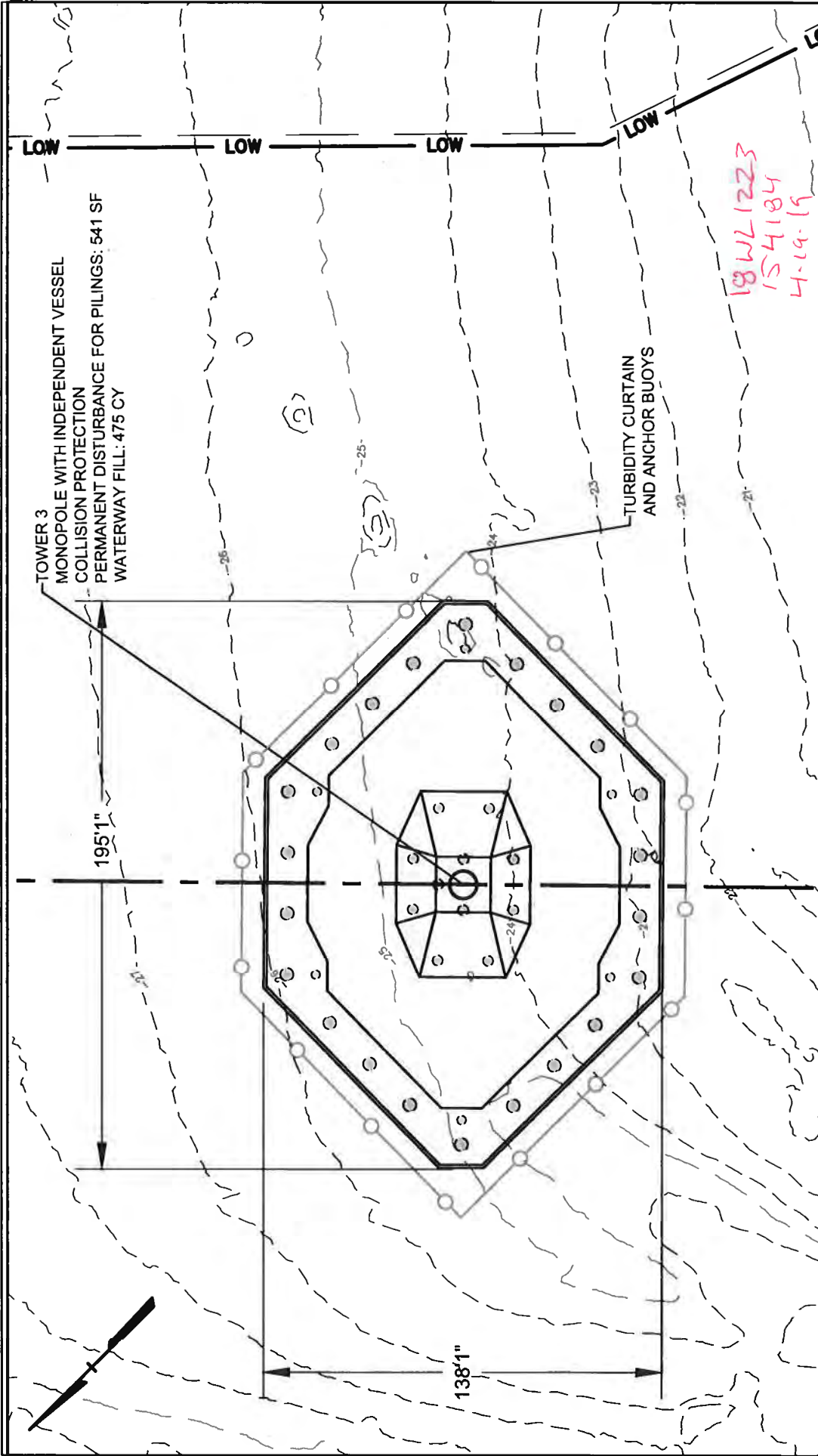
PLATE 2
AI #154184

Job No. 141095.00 Scale: 1"=50' Date: JAN 2020 Drawn By: HK/DY

SHEET 8 OF 24

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TOWER 3
 MONOPOLE WITH INDEPENDENT VESSEL
 COLLISION PROTECTION
 PERMANENT DISTURBANCE FOR PILING: 541 SF
 WATERWAY FILL: 475 CY

TURBIDITY CURTAIN
 AND ANCHOR BUOYS

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| Tower Number | Tower Type | Pile Type and Count, Each | Foundation Fill (CY) | Type of Structure Pile |
|--------------|------------|---|----------------------|------------------------|
| 3 | Monopole | (22) - 4'-6" Φ x 1 1/4" Thk (6) - 3'-0" Φ x 1" Thk | 369 | Collision Protection |
| 3 | Monopole | (11) - 3'-6" Φ x 3/4" Thk | 106 | Foundation |

BGE - KEY CROSSING RELIABILITY INITIATIVE
230 KV OVERHEAD TRANSMISSION LINE PROJECT

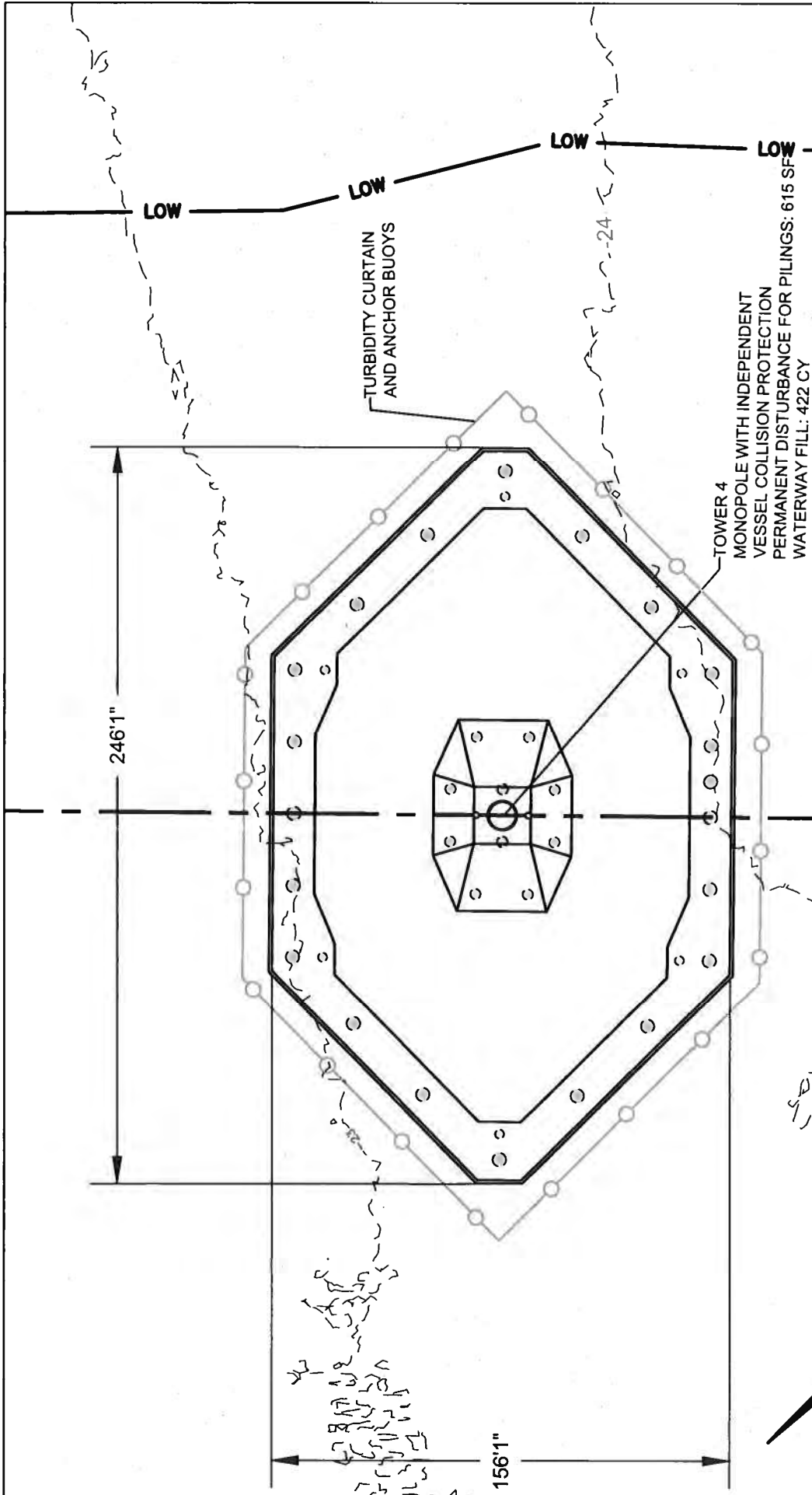
PLATE 3
AI #154184

Job No. 141095.00 Scale: 1"=50' Date: JAN 2020 Drawn By: HK/DY
 SHEET 9 OF 24

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- PLEASE REFER TO KEY SHEETS FOR EXTENTS OF LOW.
- SEE NOTES SHEET FOR IMPACT CALCULATION ASSUMPTIONS.
- SEE SHEETS 15 & 19 FOR STRUCTURE PROFILES.
- 23,397 SF/0.54 AC OF TEMPORARY WUS MUDLINE AT ELEV. -26 (27 FT OF WATER).
- CONCRETE CAP AND FENDERING: 10,235 SF AREA (L x W) OF STRUCTURE AND COLLISION PROTECTION: 26,937 SF



| Tower Number | Tower Type | Pile Type and Count, Each | Foundation Fill Each (CY) | Type of Structure | Pile |
|--------------|------------|---|---------------------------|----------------------|------|
| 4 | Monopole | (22) - 4'-6" Φ x 1 1/4" Thk (6) - 3'-0" Φ x 1" Thk | 327 | Collision Protection | |
| 4 | Monopole | (10) - 3'-6" Φ x 1" Thk (2) - 2'-0" Φ x 1/2" Thk | 95 | Foundation | |

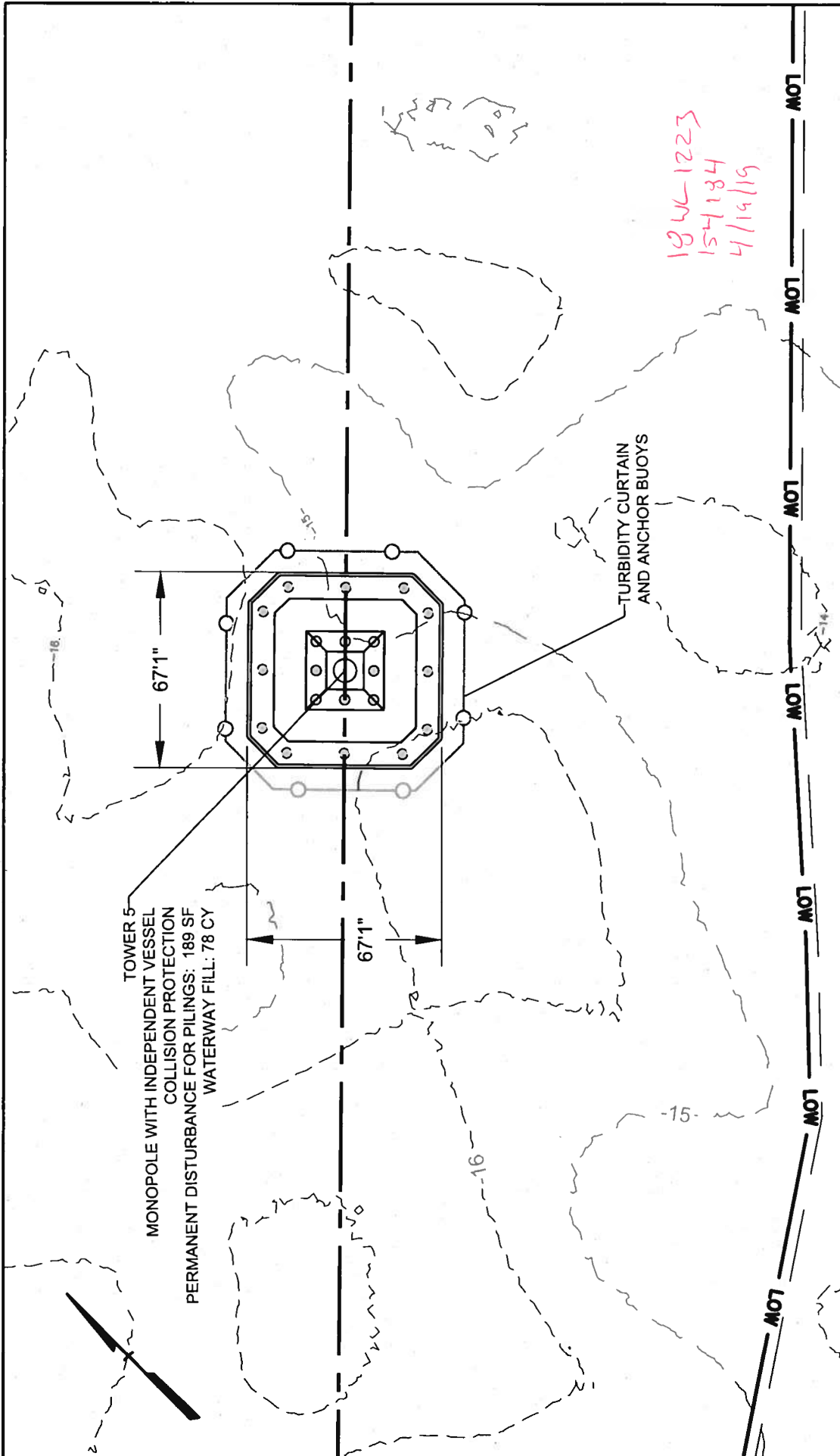
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BGE - KEY CROSSING RELIABILITY INITIATIVE
230 KV OVERHEAD TRANSMISSION LINE PROJECT
PLATE 4
AI #154184

Job No. 141095.00 Scale: 1"=50' Date: JAN 2020 Drawn By: HK/DY
 SHEET 10 OF 24

- PLEASE REFER TO KEY SHEETS FOR EXTENTS OF LOW.
- REFER TO NOTES SHEET FOR IMPACT CALCULATION ASSUMPTIONS.
- SEE SHEETS 16 & 20 FOR STRUCTURE PROFILES.
- 34,305 SF/0.79 AC OF TEMPORARY WUS IMPACT WITHIN TURBIDITY CURTAIN MUDLINE AT ELEV. -24 (25 FT OF WATER)
- CONCRETE CAP AND FENDERING: 12,038 SF
- AREA (L x W) OF STRUCTURE AND COLLISION PROTECTION: 38,409 SF



TOWER 5
 MONOPOLE WITH INDEPENDENT VESSEL
 COLLISION PROTECTION
 PERMANENT DISTURBANCE FOR PILING: 189 SF
 WATERWAY FILL: 78 CY

TURBIDITY CURTAIN
 AND ANCHOR BUOYS

1846-1223
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 4/14/19

| Tower Number | Tower Type | Pile Type and Count, Each | Foundation Fill (CY) | Type of Structure Pile |
|--------------|------------|-------------------------------|----------------------|------------------------|
| 5 | Monopole | (12) - 3'-6" Φ x 1" Thk | 64 | Collision Protection |
| 5 | Monopole | (8) - 3'-0" Φ x 5/8" Thk | 14 | Foundation |

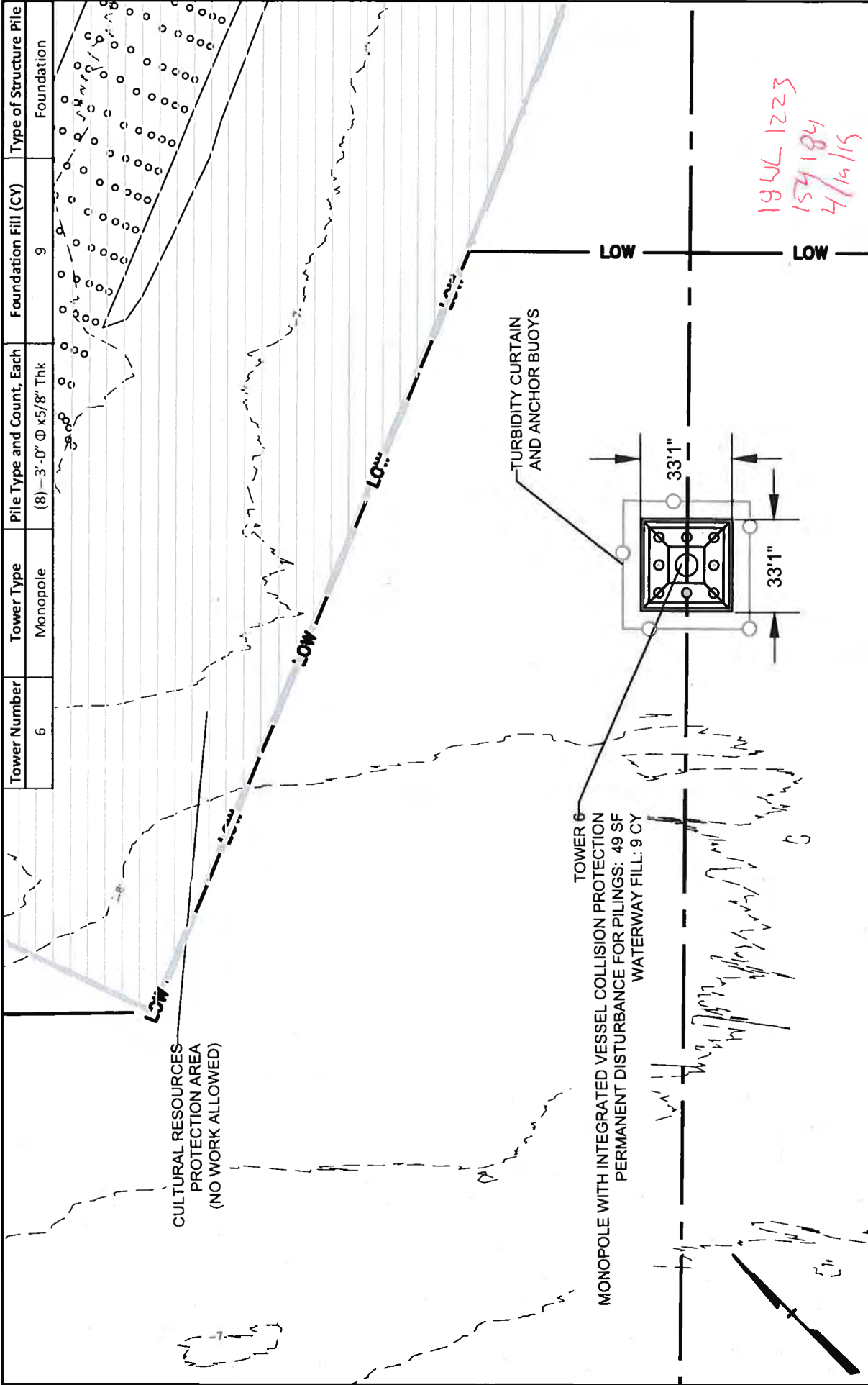
BGE - KEY CROSSING RELIABILITY INITIATIVE
230 KV OVERHEAD TRANSMISSION LINE PROJECT
PLATE 5
AI #154184

Job No. 141095.00 Scale: 1"=50' Date: JAN 2020 SHEET 11 OF 24 Drawn By: HK/DY

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- PLEASE REFER TO KEY SHEETS FOR EXTENTS OF LOW.
- REFER TO NOTES SHEET FOR IMPACT CALCULATION ASSUMPTIONS.
- SEE SHEETS 17 & 21 FOR STRUCTURE PROFILES.
- 6,186 SF/0.14 AC TEMPORARY WUS IMPACT WITHIN TURBIDITY CURTAIN.
- MUDLINE AT ELEV. -14 (15 FT OF WATER)
- AREA OF CONCRETE CAP: 2,656 SF
- AREA (L x W) OF STRUCTURE WITH COLLISION PROTECTION: 4,500 SF



| | | | | | | | | | |
|--------------|---|------------|----------|---------------------------|-------------------------------|----------------------|---|------------------------|------------|
| Tower Number | 6 | Tower Type | Monopole | Pile Type and Count, Each | (8) - 3'-0" Φ x 5/8" Thk | Foundation Fill (CY) | 9 | Type of Structure Pile | Foundation |
|--------------|---|------------|----------|---------------------------|-------------------------------|----------------------|---|------------------------|------------|

PLEASE REFER TO KEY SHEETS FOR EXTENTS OF LOW.
 REFER TO NOTES SHEET FOR IMPACT CALCULATION ASSUMPTIONS.
 SEE SHEET 17 & 18 FOR STRUCTURE PROFILES.
 2,116 SF/0.048 AC OF TEMPORARY WUS IMPACT WITHIN TURBIDITY CURTAIN.
 MUDLINE AT ELEV. -9 (10 FT OF WATER)
 AREA OF CONCRETE FOUNDATION AND FENDERING: 1,094 SF

BGE - KEY CROSSING RELIABILITY INITIATIVE
230 KV OVERHEAD TRANSMISSION LINE PROJECT

PLATE 6
AI #154184

Job No. 141095.00 Scale: 1"=50' Date: JAN 2020 Drawn By: HK/DY

SHEET 12 OF 24

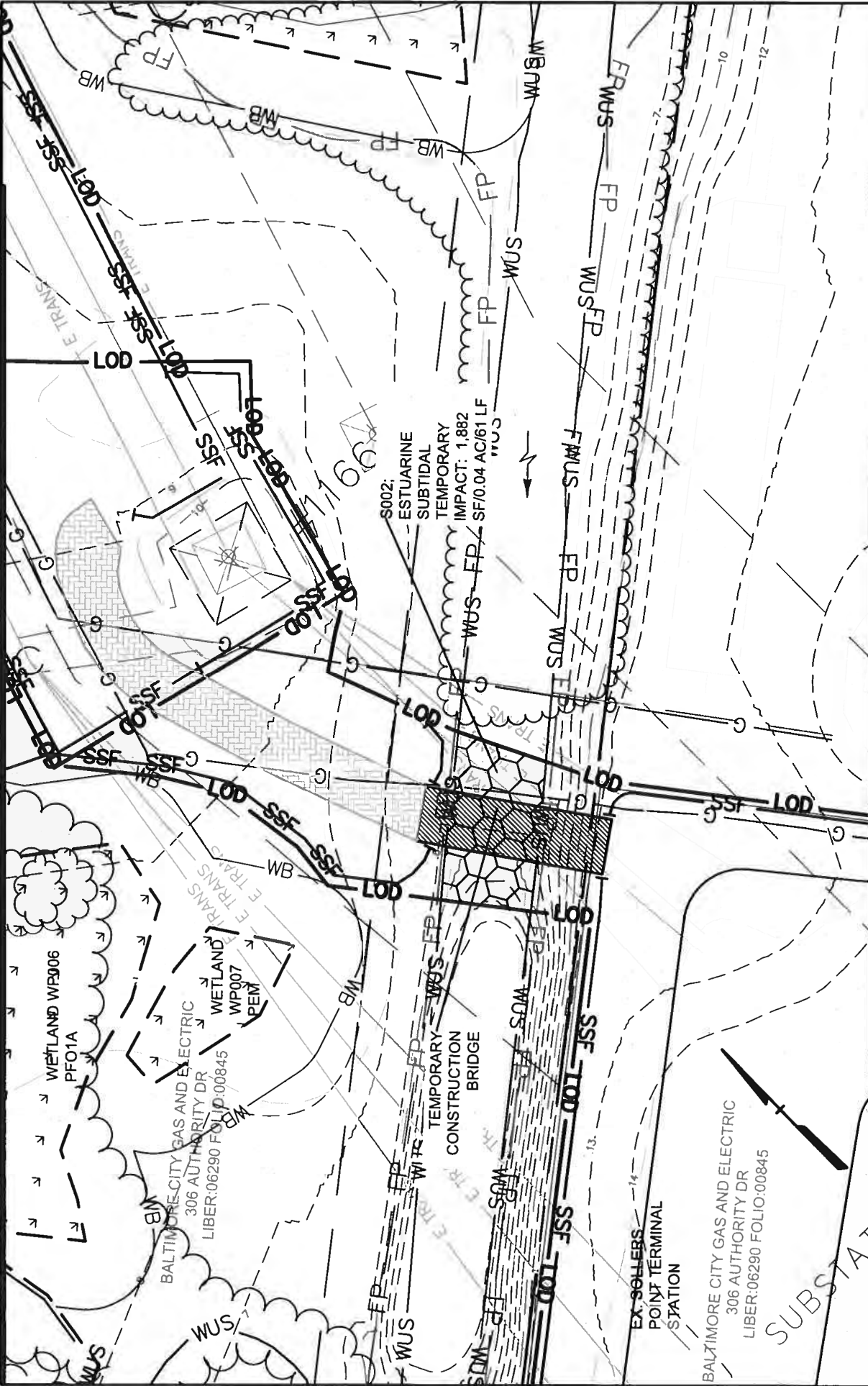
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MATCHLINE PLATE 8



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**BGE - KEY CROSSING RELIABILITY INITIATIVE
 230 KV OVERHEAD TRANSMISSION LINE PROJECT**

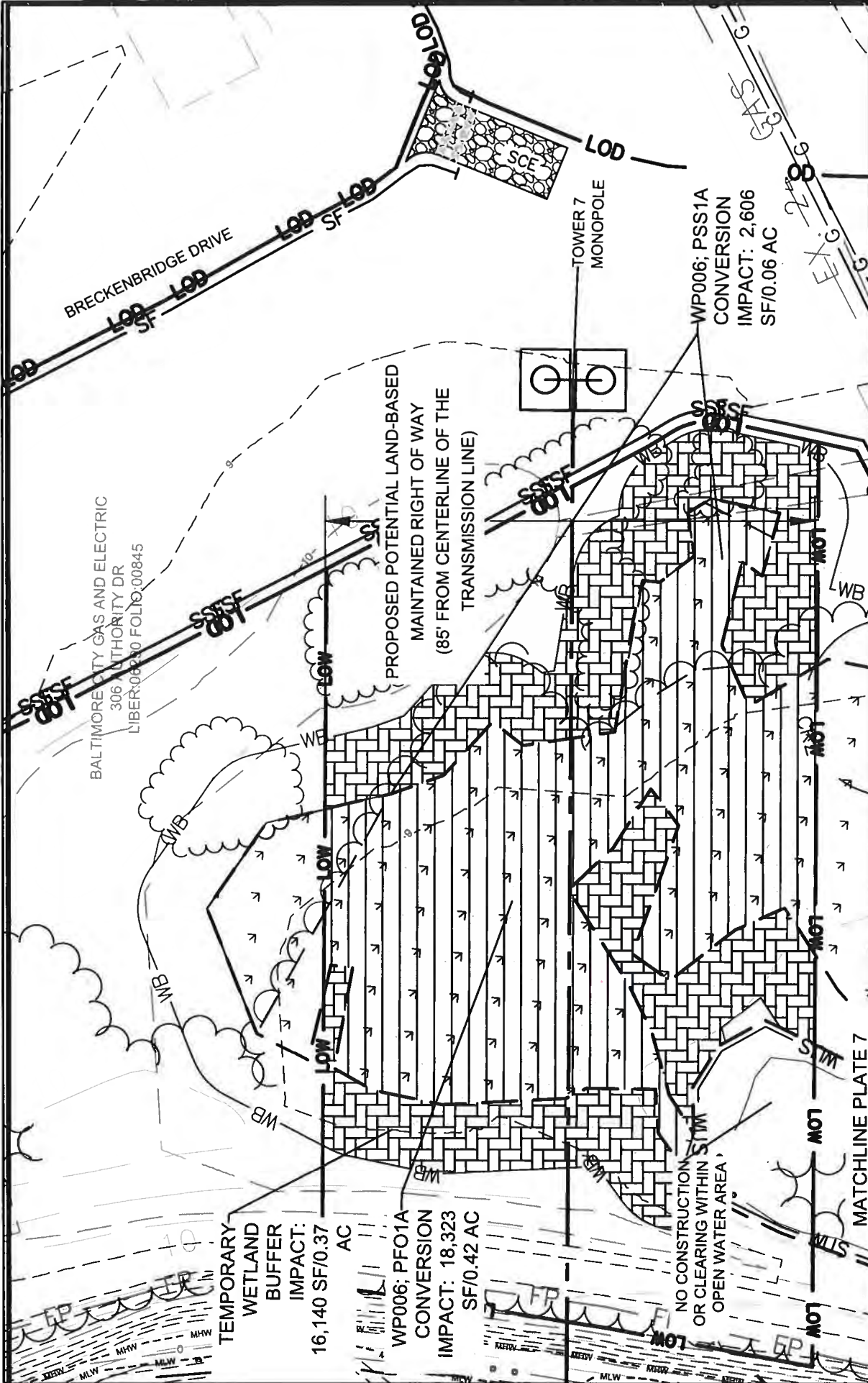
**PLATE 7
 AI #154184**

SHEET 13 OF 24
 Drawn By: HK/DY

Job No. 141095.00 Scale: 1"=50' Date: JAN 2020



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BGE - KEY CROSSING RELIABILITY INITIATIVE 230 KV OVERHEAD TRANSMISSION LINE PROJECT

PLATE 8 AI #154184

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Job No. 141095.00 Scale: 1"=50' Date: JAN 2020 Drawn By: HK/DY SHEET 14 OF 24

C1 PROFILE VIEW OF STRUCTURE - WATER DEPTH

SCALE: HORIZ: 1"=300', VERT: 1"=60'

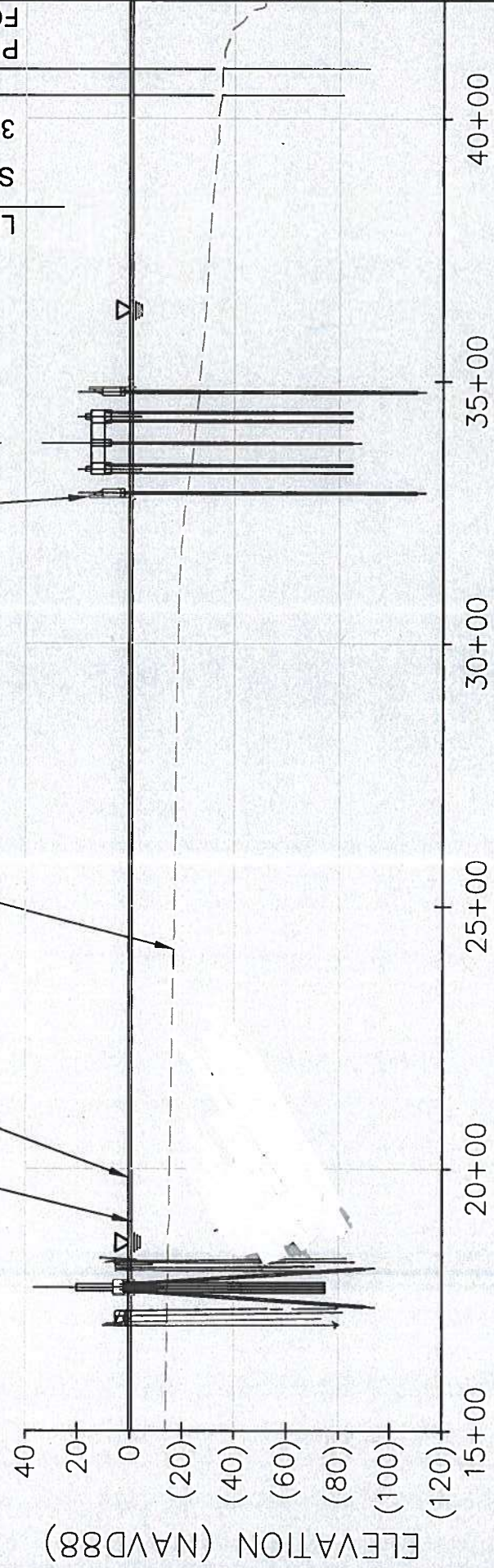
50.00' LAYBACK
 LIMIT OF WORK AREA
 STA 40+15.920
 3,831' FROM MHW
 PROP. MAX. WIDTH
 FORT MCHENRY SHIPPING CHANNEL

TOWER #2
 STA 17+73.920
 1,589' FROM MHW

TOWER #3
 STA 33+82.113
 3,197' FROM MHW

VESSEL COLLISION PROTECTION STRUCTURE
 MLW ELEV 0.00/ ELEV. -0.61 (NAVD88)
 MHW ELEV 1.14/ ELEV.0.53 (NAVD88)
 APPROXIMATE EXISTING MUDLINE

HAWKINS POINT



MATCHLINE: PLATE 10

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BGE - KEY CROSSING RELIABILITY INITIATIVE
230 KV OVERHEAD TRANSMISSION LINE PROJECT
PLATE 9: PROFILES
AI #154184
 SHEET 15 OF 24
 Job No. 141095.00 Scale: As Shown Date: JAN 2020 Drawn By: HK/DY

1864-1223
 154184
 4.19.19

C1
G-301

PROFILE VIEW OF STRUCTURE - WATER DEPTH

SCALE: HORIZ: 1"=300', VERT: 1"=60'

LIMIT OF WORK AREA
STA 441+77.92 / 4,993 FROM MHW

PROPOSED CHANNEL
1000.00'
50.00' LAYBACK

EXISTING CHANNEL
700.00'

FORT McHENRY CHANNEL

ENCROACHMENT
5'286' FROM MHW

TOWER #4
STA 55+82.113
5,175' FROM MHW

MAX. CHANNELWARD

VESSEL COLLISION PROTECTION STRUCTURE
MLW ELEV 0.00/
ELEV. -0.61 (NAVD88)

MHW ELEV 1.14/
ELEV. 0.53 (NAVD88)

APPROXIMATE EXISTING MUDLINE

MATCHLINE: PLATE 9

MATCHLINE: PLATE 11

45+00 50+00 55+00 60+00 65+00 70+00

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4.19.19

BGE - KEY CROSSING RELIABILITY INITIATIVE
230 KV OVERHEAD TRANSMISSION LINE PROJECT
PLATE 10: PROFILES
AI #154184

SHEET 16 OF 24
Date: JAN 2020
Drawn By: HK/DY

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MATCHLINE: PLATE 9

C1 PROFILE VIEW OF STRUCTURE - WATER DEPTH

SCALE: HORIZ: 1"=300', VERT: 1"=60'

G-301

LIMIT OF WORK AREA

STA 74+15.118
3,342' FROM MHW

STA 92+48.118
1,510' FROM MHW

TOWER #5

TOWER #6

VESSEL COLLISION
PROTECTION STRUCTURE

MLW ELEV 0.00/
ELEV. -0.61 (NAVD88)

MHW ELEV 1.14/ 0.53
(NAVD88)

APPROXIMATE
EXISTING MUDLINE

MATCHLINE: PLATE 10

MATCHLINE PLATE 10

SOLLERS
POINT

ELEVATION (NAVD88)



BGE - KEY CROSSING RELIABILITY INITIATIVE
230 KV OVERHEAD TRANSMISSION LINE PROJECT

PLATE 11: PROFILES

AI #154184

SHEET 17 OF 24

Drawn By: HK/DY

Date: JAN 2020

Job No. 141095.00

Scale: As Shown



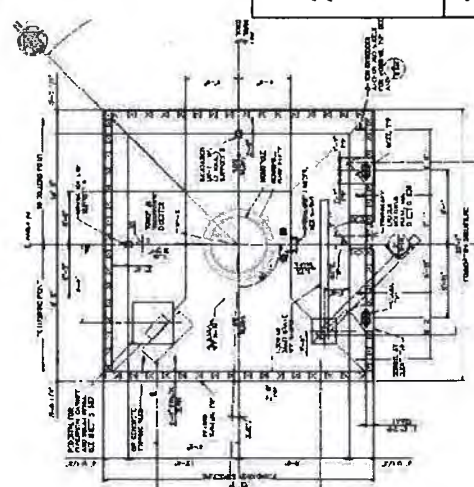
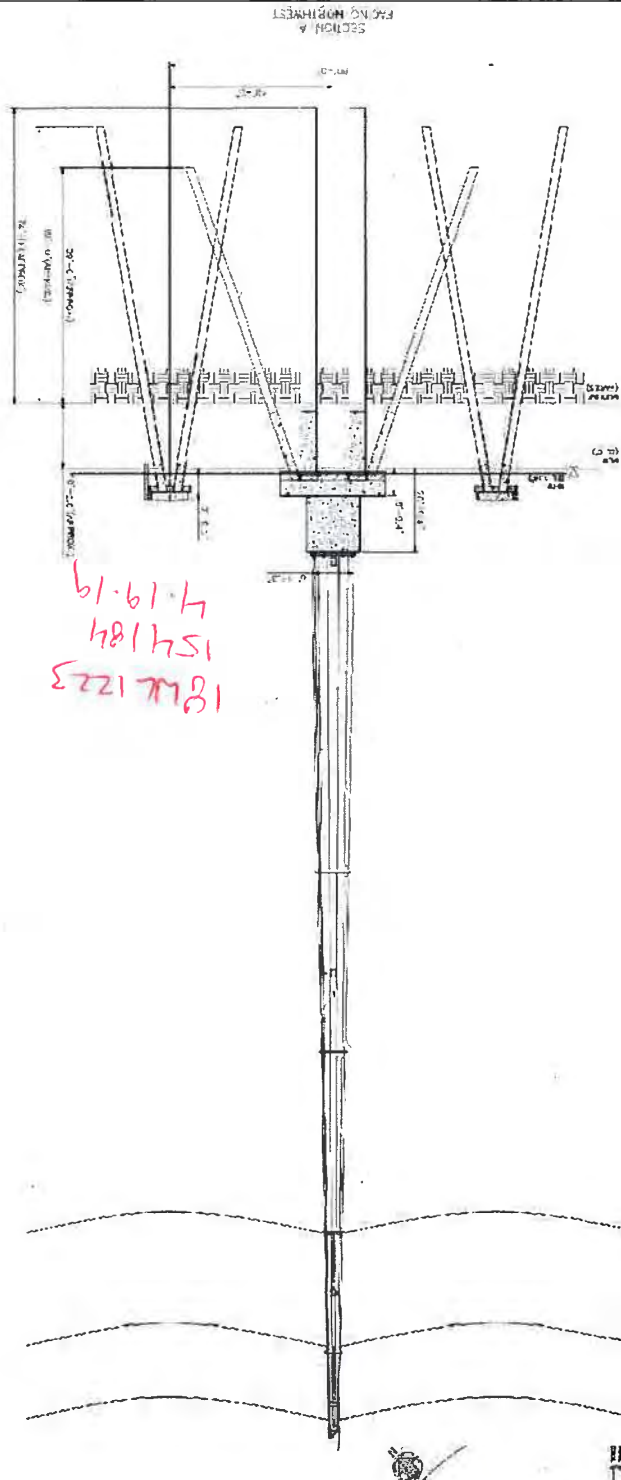
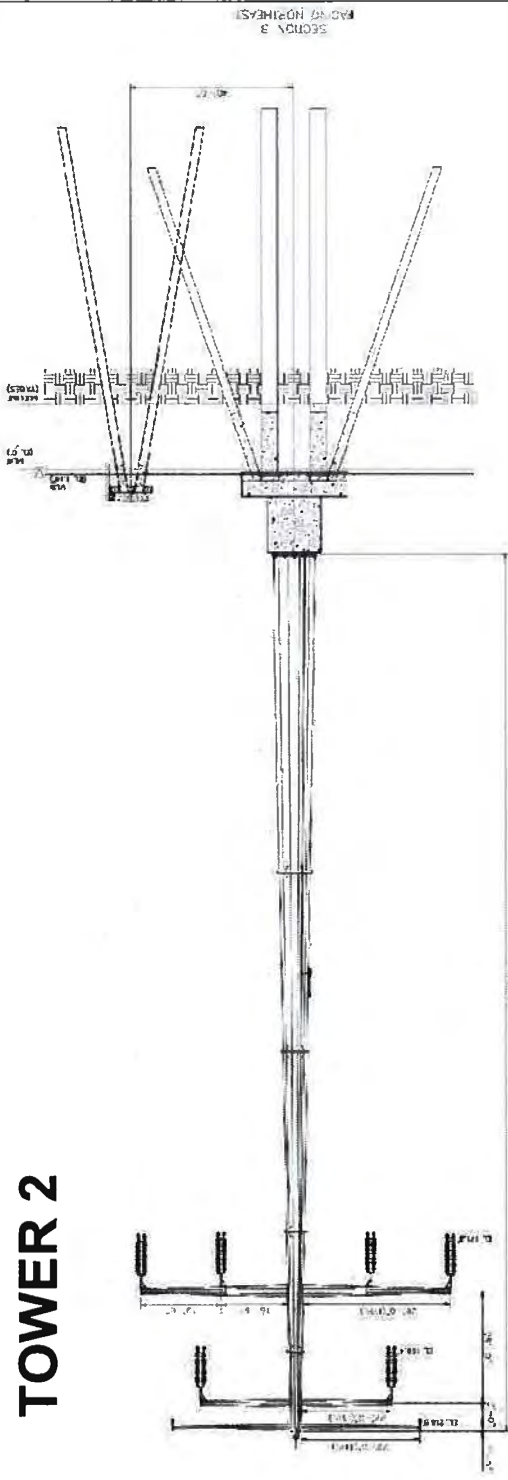
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18 WL-1223
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TOWER 2

PROFILE NOTES:

1. THE EXISTING FORT MCHENRY NAVIGATION CHANNEL IS 700' WIDE. THE CHANNEL IS AUTHORIZED TO BE 800' WIDE. THE CHANNEL WAS PLANNED FOR A 1,000' WIDTH BASED ON THE ORIGINAL FSK BRIDGE PLANS.
2. THE WATER ELEVATIONS ARE BASED ON NATIONAL OCEANIC SERVICE (NOS) STATION 857 4680 IN BALTIMORE (FORT MCHENRY), MARYLAND, PATAPSCO RIVER.
3. THE EXISTING MUDLINE IS SHOWN BASED ON "BGE_CABLE_HYDRO_BATHYM.XYZ" FILE PREPARED BY GBA, DATED SEPTEMBER 5TH, 2014.

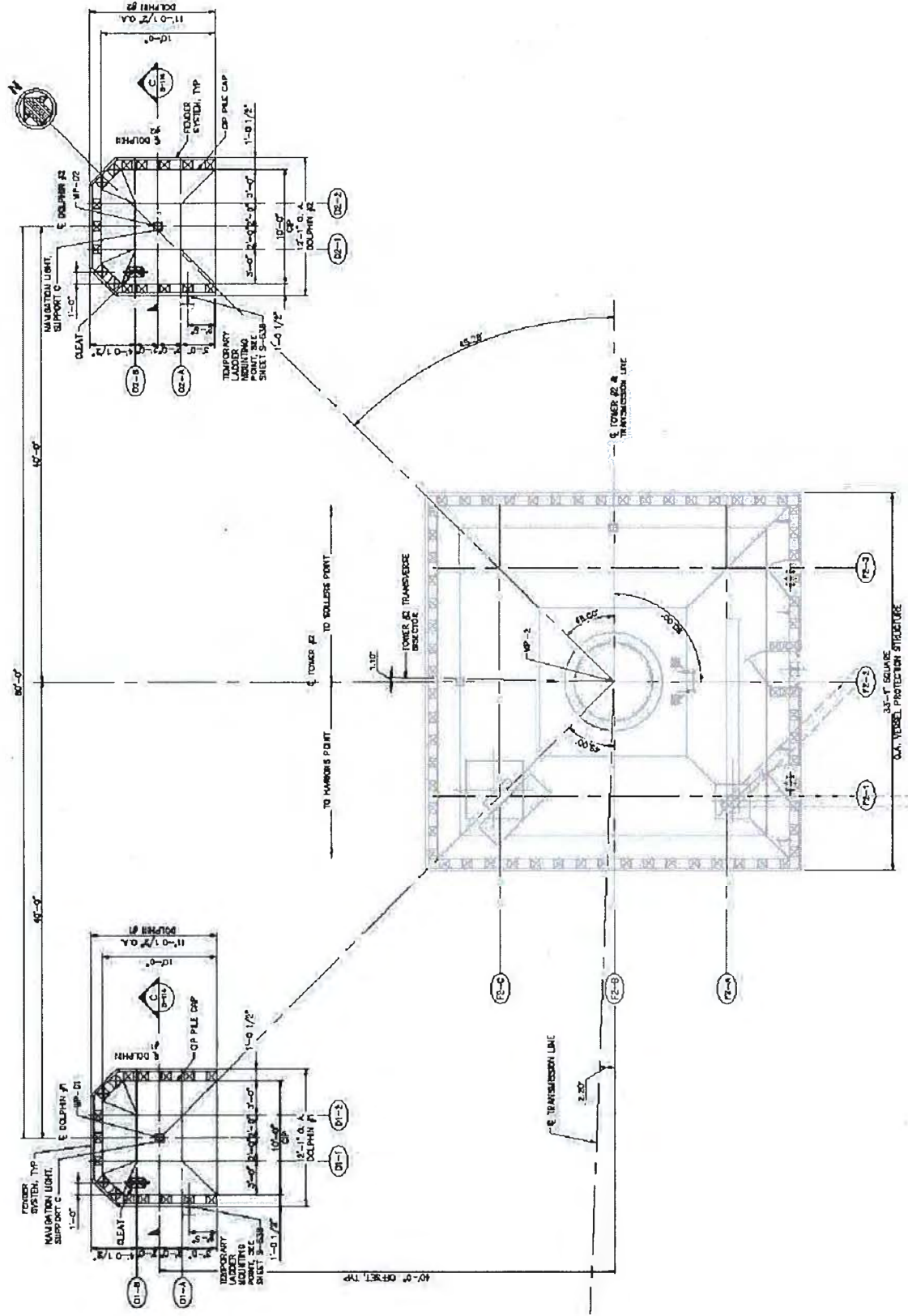


BGE - KEY CROSSING RELIABILITY INITIATIVE
230 KV OVERHEAD TRANSMISSION LINE PROJECT
PLATE 12: PROFILES
AI #154184

SHEET 18 OF 24
 Job No. 141095.00 Scale: NTS Date: JAN 2020 Drawn By: HK/DY

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DOLPHIN STRUCTURES AT TOWER 2



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BGE - KEY CROSSING RELIABILITY INITIATIVE
230 KV OVERHEAD TRANSMISSION LINE PROJECT
PLATE 13: PROFILES

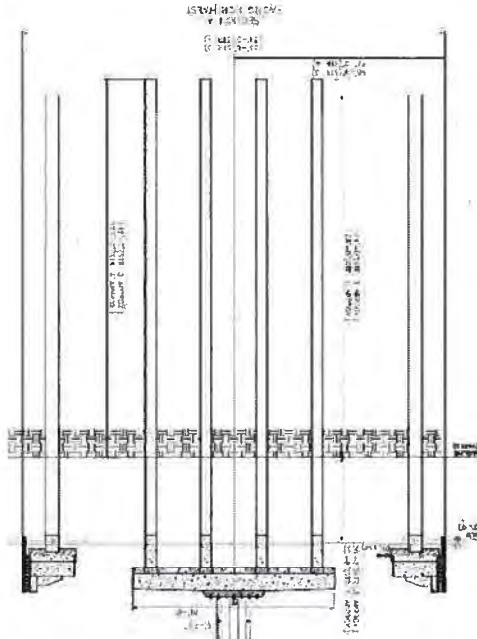
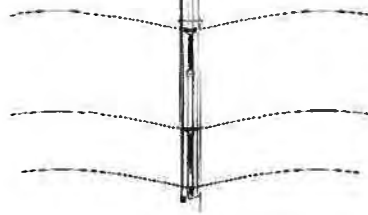
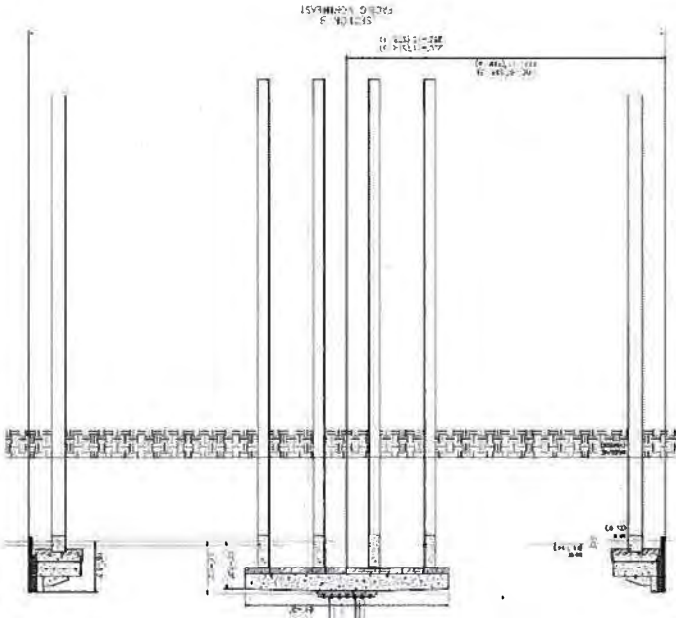
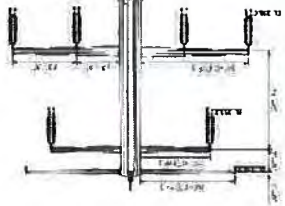
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 SHEET 19 OF 24

Job No. 141095.00 Scale: NTS Date: JAN 2020 Drawn By: HK/DY



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TOWERS 3 AND 4

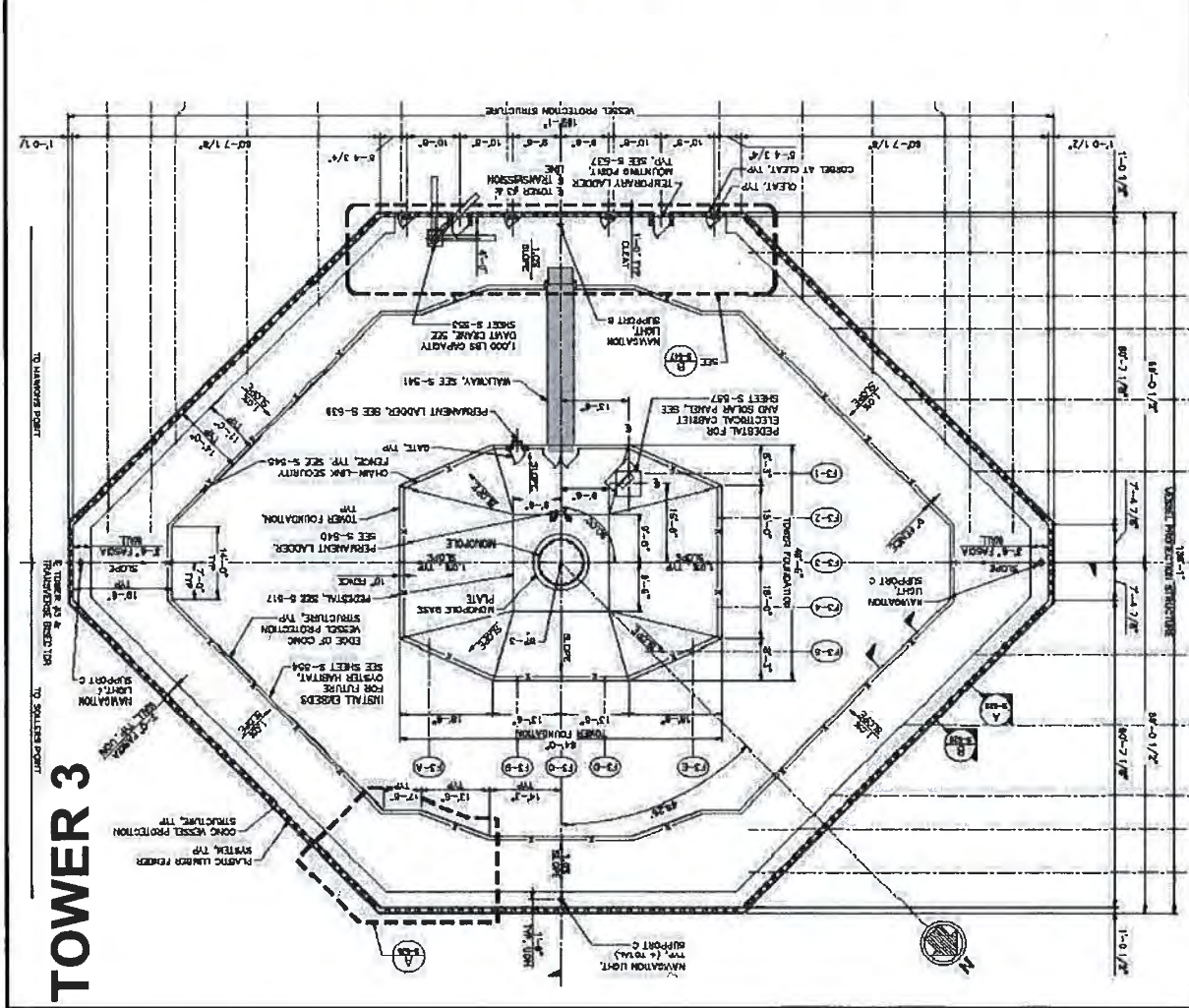
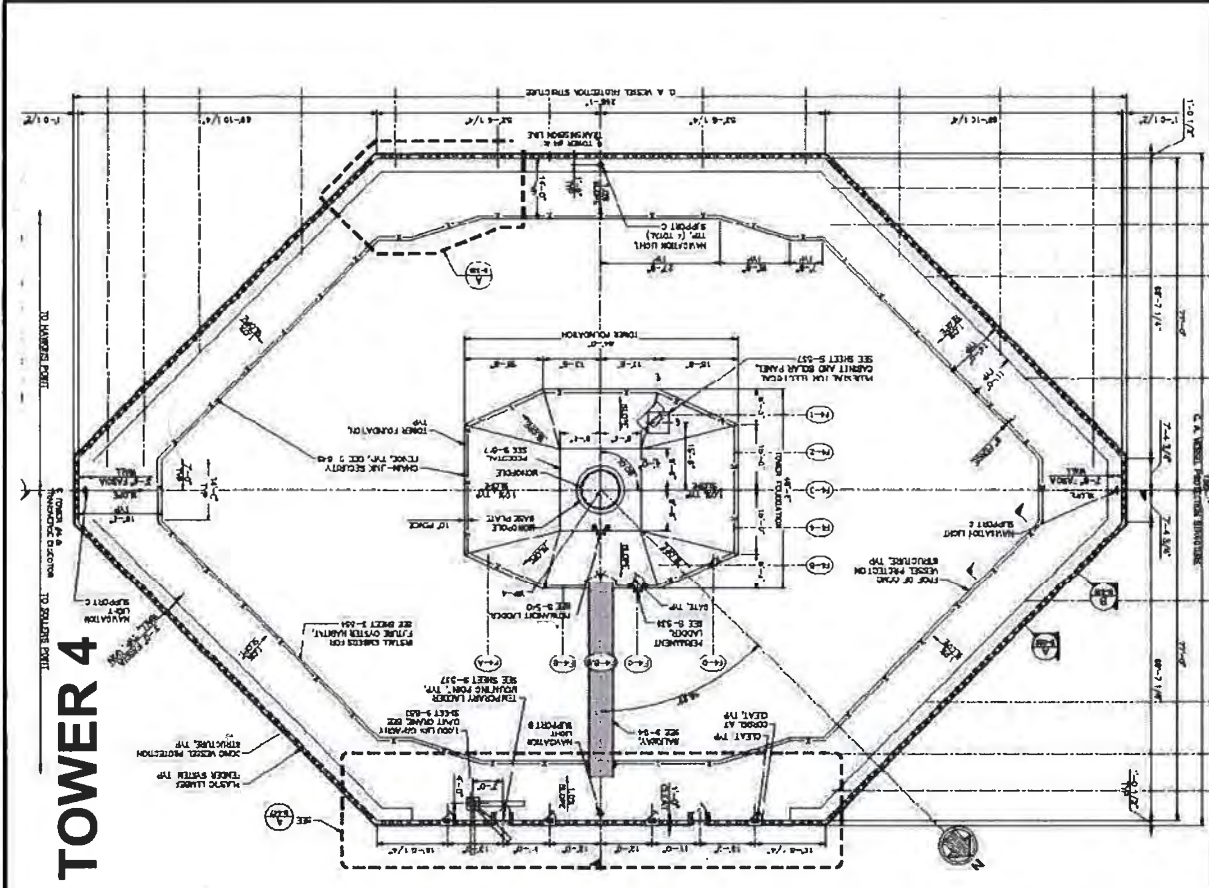


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BGE - KEY CROSSING RELIABILITY INITIATIVE
230 KV OVERHEAD TRANSMISSION LINE PROJECT
PLATE 14: PROFILES
AI #154184
 SHEET 20 OF 24
 Job No. 141095.00 Scale: NTS Date: JAN 2020 Drawn By: HK/DY

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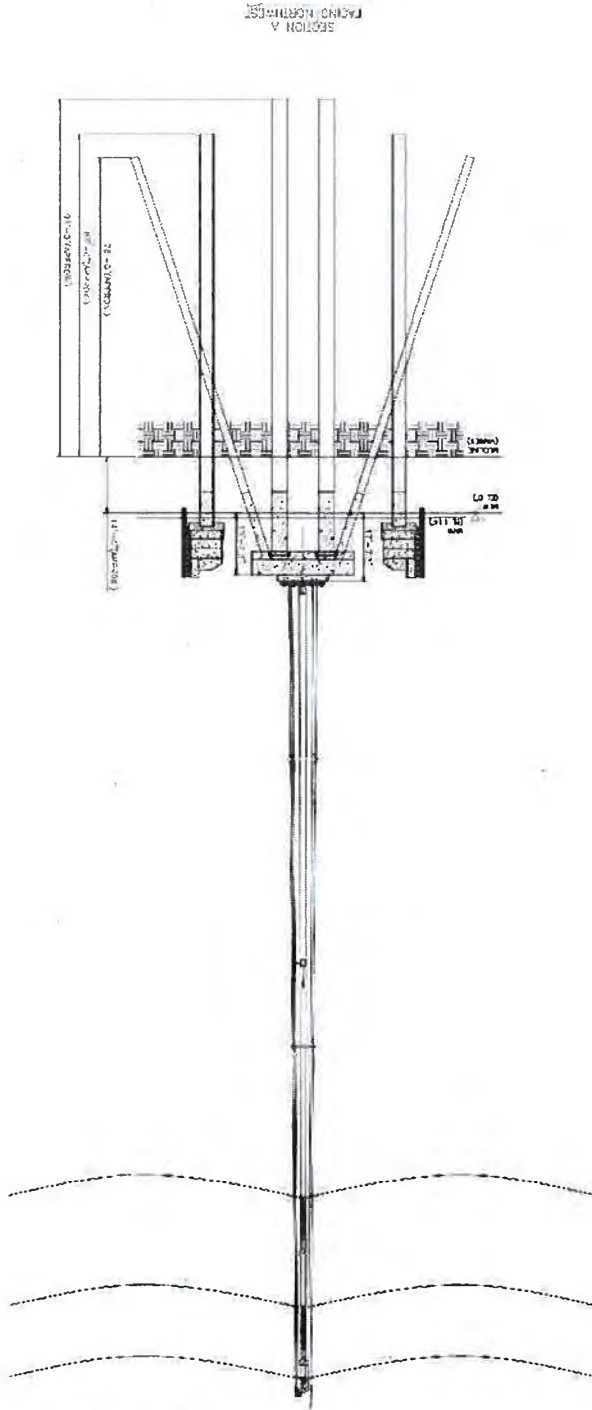
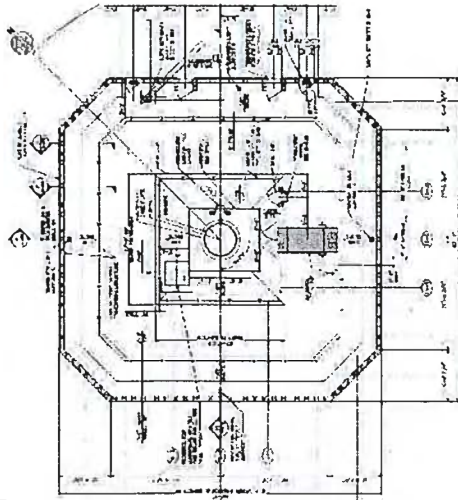
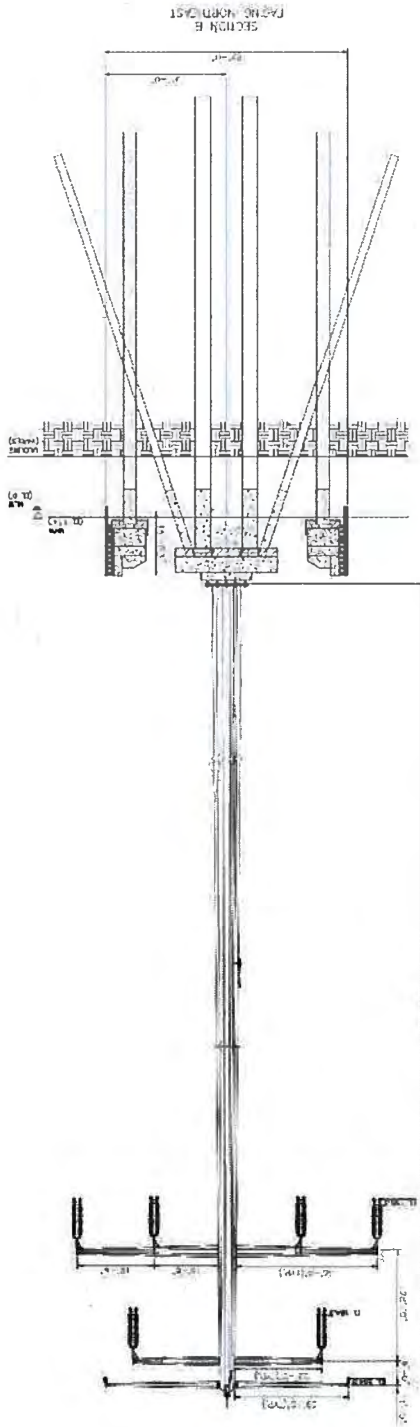
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TOWER 4

TOWER 3

TOWER 5



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**BGE - KEY CROSSING RELIABILITY INITIATIVE
230 KV OVERHEAD TRANSMISSION LINE PROJECT**

PLATE 16: PROFILES

AI #154184

SHEET 22 OF 24

Job No. 141095.00 Scale: NTS Date: JAN 2020 Drawn By: HK/DY



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IMPACT SUMMARY TABLE

| PLATE | SYSTEM | CONVERSION (PFO TO PEM) | | CONVERSION (PSS TO PEM) | | TEMPORARY WETLAND IMPACT | | TEMPORARY WETLAND BUFFER IMPACT | |
|--------|--------------------|-------------------------|------|-------------------------|------|--------------------------|-------|---------------------------------|------|
| | | SF | AC | SF | AC | SF | AC | SF | AC |
| 1 | WP001 (PSSI/PEM1A) | - | - | 1,249 | 0.03 | - | - | 4,855 | 0.11 |
| 8 | WP006 (PFO1A) | 18,323 | 0.42 | 2,606 | 0.06 | - | - | 16,140 | 0.37 |
| TOTALS | | 18,323 | 0.42 | 3,855 | 0.09 | 0 | 0.000 | 20,995 | 0.48 |

| PLATE | IMPACT DESCRIPTION | TEMPORARY WUS IMPACT | | PERMANENT WUS IMPACT | | CY |
|--------|-------------------------------|----------------------|------|----------------------|-------|-------|
| | | SF | AC | LF | AC | |
| 2 | S001-TOWER 2 | 2,116 | 0.05 | 20 | 101 | 46 |
| 2 | S001-DOLPHIN 1 | 930 | 0.02 | 20 | 21 | 8 |
| 2 | S001-DOLPHIN 2 | 930 | 0.02 | 20 | 21 | 8 |
| 3 | S001-TOWER 3 | 23,397 | 0.54 | 20 | 541 | 475 |
| 4 | S001-TOWER 4 | 34,305 | 0.79 | 20 | 615 | 422 |
| 5 | S001-TOWER 5 | 6,186 | 0.14 | 20 | 189 | 78 |
| 6 | S001-TOWER 6 | 2,116 | 0.05 | 20 | 49 | 9 |
| 7 | S002-SUBTIDAL STREAM CROSSING | 1,882 | 0.04 | 61 | - | - |
| 2-6 | SPUDS | 55,008 | 1.26 | 268 | - | - |
| TOTALS | | 126,870 | 2.91 | 469 | 1,537 | 1,046 |

* INCLUDED IN LF OF LIMIT OF WORK

† INCLUDED IN LF FOR TOWER 4

| | SF | AC | CY |
|--|-------|-------|-----|
| WALLER AREA EXTENDING INTO WATER COLUMN (ALL TOWERS) | 1,539 | 0.035 | 135 |

| | SF | AC |
|---------------|-----------|-------|
| LIMIT OF WORK | 3,379,941 | 77.59 |

AREA OF CONCRETE CAPS OVER WATER

| TOWER | AREA | |
|---------|--------|-------|
| | SF | AC |
| 2 | 1,094 | 0.025 |
| DOLPHIN | 134 | 0.003 |
| DOLPHIN | 134 | 0.003 |
| 3 | 10,235 | 0.235 |
| 4 | 12,038 | 0.276 |
| 5 | 2,656 | 0.061 |
| 6 | 1,094 | 0.025 |
| TOTALS | 27,385 | 0.629 |

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BGE - KEY CROSSING RELIABILITY INITIATIVE
230 KV OVERHEAD TRANSMISSION LINE PROJECT
PLATE 18: IMPACT TOTALS

Job No. 141095.00 Scale: N/A Date: JAN 2020 SHEET 24 OF 24
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