



U.S. Army Corps  
of Engineers  
Baltimore District

# Public Notice

In Reply to Application Number  
CENAB-OPR-MN 2018-62065-M07 (BGE Key Crossing  
Reliability Initiative / 230 kV Overhead  
Transmission Line)

PN 19-32

Comment Period: May 28, 2019 to June 28, 2019

---

**THE PURPOSE OF THIS PUBLIC NOTICE IS TO SOLICIT COMMENTS FROM THE PUBLIC REGARDING THE WORK DESCRIBED BELOW. NO DECISION HAS BEEN MADE AS TO WHETHER OR NOT A PERMIT WILL BE ISSUED AT THIS TIME.**

This District has received an application for a Department of the Army permit pursuant to **Section 10 of the Rivers and Harbors Act of 1899 and/or Section 404 of the Clean Water Act (33. U.S.C. 1344)** as described below:

**APPLICANT:** Mr. Jim Burkman  
Baltimore Gas & Electric Company  
1699 Leadenhall Street  
Baltimore, Maryland 21230

**WATERWAY AND LOCATION OF THE PROPOSED WORK:** The proposed project is located in the Patapsco River, north of the Francis Scott Key (FSK) Bridge from Hawkins Point to Sollers Point, Anne Arundel County, Baltimore County and Baltimore City, Maryland.

**PROPOSED WORK AND PURPOSE:** The applicant proposes 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) water-based towers, the decommissioning of the existing 230 kV HPFF cables, and the decommissioning of the terminal stations at Hawkins Point and Sollers Point.

Tidal impacts would result from filling activities associated with access, construction of Towers 2 through 6, and associated vessel collision protection structures. The maximum vertical sag clearance of the transmission lines above mean high water would be approximately 231 feet between Towers 3 and 4. 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 as described below:

- Tower 2 consists of a 220-foot tall tower over a 29-foot 9-inch by 29-foot 9-inch platform by 20-foot 9.4-inch high platform, and two 12-foot by 12-foot protective dolphins;
- Tower 3 consists of a 380-foot tall tower over a 81.5-foot by 64-foot by 17-foot 7.3-inch high platform, and an 11-foot wide protection structure surrounding the entire platform creating a perimeter ring structure with a maximum length of 201 feet and a maximum width of 134 feet;
- Tower 4 consists of a 380-foot tall tower over a 81.5-foot by 64-foot by 17-foot 7.3-inch high platform and an 11-foot wide protection structure surrounding the entire platform creating a perimeter ring structure with a maximum length of 256 feet and a maximum width of 154 feet;
- Tower 5 consists of a 205-foot tall tower over a 29-foot 9-inch by 29-foot 9-inch platform by 20-foot 9.4-inch high platform and an 11-foot wide protection structure surrounding the entire platform creating a perimeter ring structure with a maximum length of 62 feet and a width of 62 feet; and
- Tower 6 consists of a 184-foot 8-inch tall tower over a 26-foot by 26-foot platform by 20-foot 9.4-inch high platform.

Nontidal wetland impacts would result from site access, clearing, grading, and construction of land-based Towers 1, 7 and 8. The work would result in permanent conversion to approximately 22,259 square feet/0.51 acres of forested nontidal wetlands to emergent nontidal wetlands; permanent conversion to approximately 4,608 square feet/0.11 acres of scrub-shrub nontidal wetlands to emergent nontidal wetlands; and temporary impacts to approximately 142 square feet of scrub-shrub nontidal wetlands.

The purpose of the project is to construct overhead 230 kV transmission lines within the Anne Arundel County, Baltimore County and Baltimore City area. All work will be completed in accordance with the enclosed plans dated April 2019. If you have any questions concerning this matter, please contact Ms. Maria N. Teresi, CENAB-OPR-M, 2 Hopkins Plaza, Baltimore, Maryland, 21201 or [maria.teresi@usace.army.mil](mailto:maria.teresi@usace.army.mil)



As part of the planning process for the proposed projects, steps were taken to ensure avoidance and minimization of impacts to waters of the United States to the maximum extent practicable. Several design iterations have identified a minimization of impacts to aquatic resources. Through preapplication consultation with the agencies, the applicant has reduced the permanent impacts to tidal waters by 7% and nontidal wetlands by 28%. Compensatory mitigation is being proposed by the applicant for the impacts associated with the proposed fill activities. Specifically, the applicant proposes to create and enhance approximately 706 linear feet of living shoreline (0.46 acres marsh creation and 0.25 acres of enhancement) at Chestnut Hill Cove in Anne Arundel County to compensate for tidal impacts, and use a pending mitigation bank to compensate for nontidal wetland impacts or use an alternative location within the watershed to create 0.70 acres of nontidal wetlands.

The decision whether to issue a permit will be based on an evaluation of the probable impacts, including cumulative impacts of the proposed activities on the public interest. That decision will reflect the national concern for both protection and utilization of important resources. The benefits, which reasonable may be expected to accrue from the proposal, must be balanced against its reasonably foreseeable detriments. All factors, which may be relevant to the proposals will be considered, including the cumulative effects thereof; among those are conservation, economic, aesthetics, general environmental concerns, wetlands, cultural values, fish and wildlife values, flood hazards, flood plain values, land use, navigation, shoreline erosion and accretion, recreation, water supply and conservation, water quality, energy needs, safety, food and fiber production, mineral needs, and consideration of property ownership and in general, the needs and welfare of the people.

The evaluation of the impacts of the work described above on the public interest will include application of the Clean Water Act 404(b)(1) Guidelines promulgated by the Administrator, U.S. Environmental Protection Agency, under authority of Section 404 of the Clean Water Act.

The Corps of Engineers is soliciting comments from the public; Federal, State, and local agencies and officials; Indian Tribes; and other interested parties in order to consider and evaluate the impacts of these proposed activities. Any comments received will be considered by the Corps of Engineers to determine whether to issue, modify, condition or deny permits for these proposals. To make this decision, comments are used to assess impacts on endangered species, historic properties, water quality, general environmental effects, and the other public interest factors listed above. Comments are used in the preparation of an Environmental Assessment and/or an Environmental Impact Statement pursuant to the National Environmental Policy Act. Comments provided will become part of the public record for these actions. Comments are also used to determine the need for a public hearing and to determine the overall public interest of the proposed activity.

Written comments concerning the work described above related to the factors listed above or other pertinent factors must be received by the District Engineer, U.S. Army



Corps of Engineers, Baltimore District, Attn: Ms. Maria N. Teresi, CENAB-OPR-M, 2 Hopkins Plaza, Baltimore, Maryland, 21201 or [maria.teresi@usace.army.mil](mailto:maria.teresi@usace.army.mil) within the comment period specified above.

**ESSENTIAL FISH HABITAT:** The Magnuson-Stevens Fishery Conservation and Management Act (MSFCMA), as amended by the Sustainable Fisheries Act of 1996 (Public Law 04-267), requires all Federal agencies to consult with the National Marine Fisheries Service (NMFS) on all actions, or proposed actions, permitted, funded, or undertaken by the agency that may adversely affect Essential Fish Habitat (EFH).

The project site lies in or adjacent to EFH as described under MSFCMA for windowpane flounder (*Scophthalmus aquosus*) juvenile and adult; blue fish (*Pomatomus saltatrix*) juvenile and adult; summer flounder (*Paralichthys dentatus*) juvenile and adult; and egg, larvae, juvenile and adult stages of red drum (*Sciaenops ocellatus*), king mackerel (*Scomberomorus cavalla*), spanish mackerel (*Scomberomorus maculatus*), and cobia (*Rachycentron canadum*), all managed species under the MSFCMA.

The project has the potential to adversely affect EFH or the species of concern by loss of spawning, nursery, forage and/or shelter habitat as described under the MSFCMA for the species and life stages identified above. This habitat consists of a mostly sand and silt substrate which does not support submerged aquatic vegetation (SAV). According to the Maryland Aquatic Siting Tool survey maps, there is no SAV within the project area. The Baltimore District has made a preliminary determination that site-specific impacts would not be substantial and an abbreviated consultation will be conducted with NMFS. No mitigative measures are recommended at this time to minimize adverse effects on EFH. This preliminary determination may be modified if additional information indicates otherwise and could change the Corps' preliminary determination.

**WATER QUALITY CERTIFICATION:** The applicant is required to obtain a water quality certification in accordance with Section 401 of the Clean Water Act from the Maryland Department of the Environment. Any written comments concerning the work described above which relate to water quality certification must be received by the Wetlands and Waterways Program, Maryland Department of the Environment, Montgomery Park Business Center, 1800 Washington Boulevard, Suite 430, Baltimore, Maryland 21230-1708 within the comment period as specified above to receive consideration. The Section 401 certifying agency has a statutory limit of one year from the date of this public notice to make its decision.

**COASTAL ZONE MANAGEMENT PROGRAMS:** Where applicable, the applicant has certified in this application that the proposed activity complies with and will be conducted in a manner consistent with the approved Coastal Zone Management (CZM) Program. By this public notice, we are requesting the State concurrence or objection to the applicant's consistency statement. MDE has a statutory limit of 6 months to make its consistency determination.

The applicant must obtain any State or local government permits which may be required.

**ENDANGERED SPECIES:** A preliminary review of this application indicates that the proposed work will not affect Federal listed threatened or endangered species or their critical habitat, pursuant to Section 7 of the Endangered Species Act, as amended. As the evaluation of this application continues, additional information may become available which could modify this preliminary determination.

**CULTURAL RESOURCES:** Review of the latest published version of the National Register of Historic Places indicates that no registered properties listed as eligible for inclusion, therein, is located at the site of the proposed work. Currently, unknown archeological, scientific, prehistoric, or historical data may be lost or destroyed by the work to be accomplished under the requested permit.

**SECTION 408:** The Corps is reviewing the proposed activity, pursuant to 33 USC 408 (Section 408). A determination has not been made at this time.

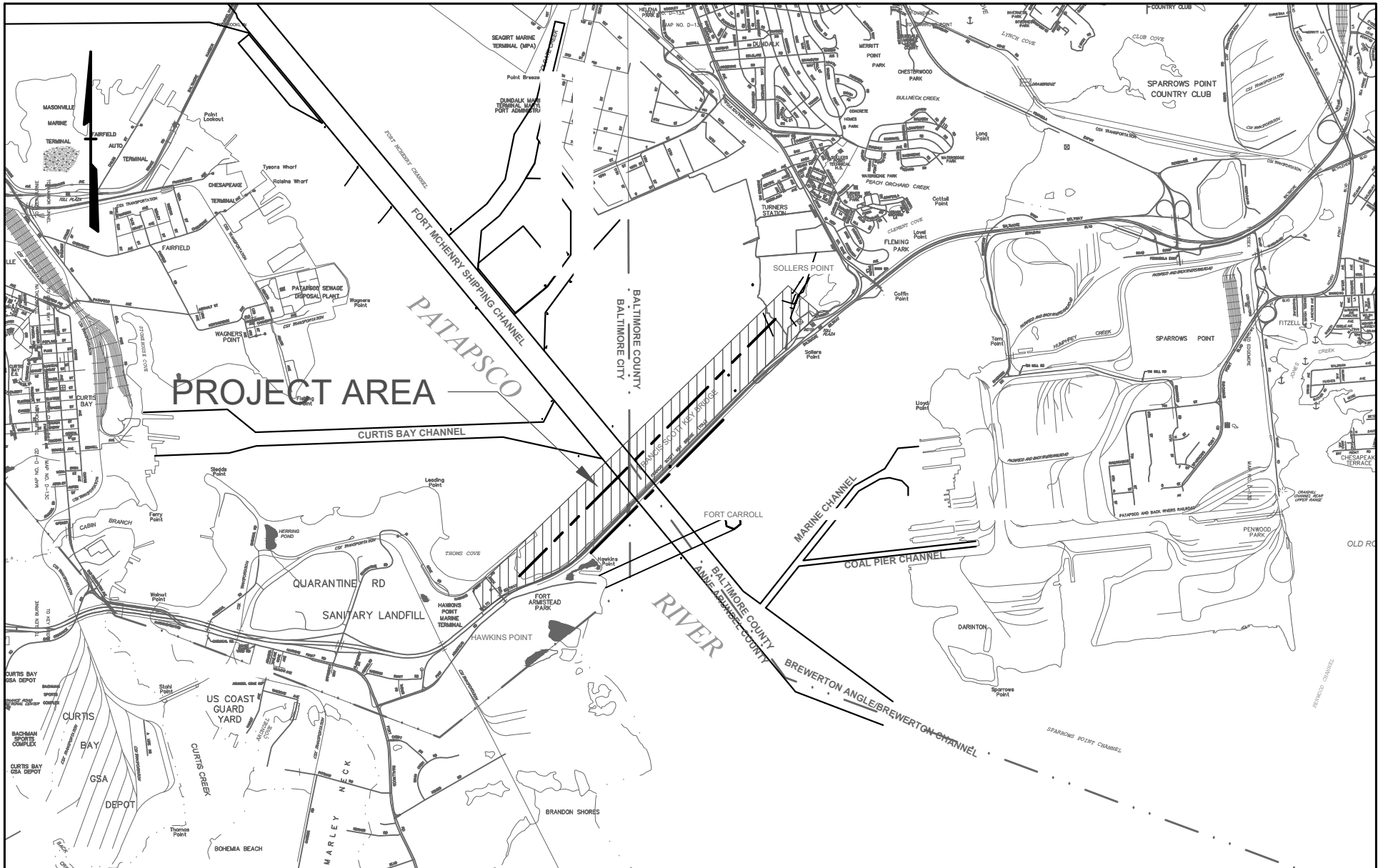
Any person who has an interest which may be adversely affected by the issuance of this permit may request a public hearing. The request, which must be in writing, must be received by the District Engineer, U.S. Army Corps of Engineers, Baltimore District, Attn: Ms. Maria N. Teresi, CENAB-OPR-M, 2 Hopkins Plaza, Baltimore, Maryland, 21201 or [maria.teresi@usace.army.mil](mailto:maria.teresi@usace.army.mil), within the comment period as specified above to receive consideration. Also, it must clearly set forth the interest which may be adversely affected by these activities and the manner in which the interest may be adversely affected.

It is requested that you communicate this information concerning the proposed work to any persons know by you to be interested and not being known to this office, who did not receive a copy of this notice.

FOR THE DISTRICT ENGINEER:

DAVIA.JOSEPH  
.P.1229279170  
Joseph P. Da'via  
Chief, Maryland Section Northern





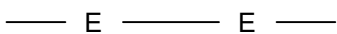
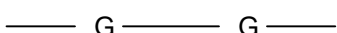





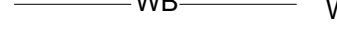



Digitally signed by  
DAVIA.JOSEPH.P.122927  
9170  
Date: 2019.05.23  
15:21:51 -04'00'




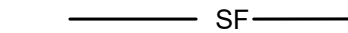









**BGE - KEY CROSSING RELIABILITY INITIATIVE**  
**230 KV OVERHEAD TRANSMISSION LINE PROJECT**  
**VICINITY MAP**  
**AI #154184**  
 SHEET 1 OF 22

Job No. 141095.00	Scale: 1" = 2,000'	Date: APRIL 2019	Drawn By: HK
-------------------	--------------------	------------------	--------------

**CENTURY**  
 ENGINEERING  
 CONSULTING ENGINEERS - PLANNERS  
 10710 Gilroy Road, Hunt Valley, MD 21031  
 Phone: 443.589.2400 Fax: 443.589.2401  
 www.centuryeng.com

-  EX. 1' FT CONTOUR
-  EX. 5' FT CONTOUR
-  PROPERTY LINE
-  EX. FENCE
-  EX. ELECTRIC LINE
-  EX. GAS LINE
-  EX. WATER LINE
-  EX. TREELINE
-  CHESAPEAKE BAY CRITICAL AREA BOUNDARY (1000')
-  25' NONTIDAL WETLAND BUFFER
-  NONTIDAL WETLAND
-  EX. MEAN HIGH WATER (MHW)
-  EX. MEAN LOW WATER (MLW)
-  FEMA 100-YR FLOODPLAIN (TIDAL)
-  100' CULTURAL RESOURCES PROTECTION AREA (NO WORK ALLOWED)

-  PROP. LIMIT OF DISTURBANCE
-  PROP. LIMIT OF IN-WATER WORK
-  PROP. STABILIZED CONSTRUCTION ENTRANCE
-  PROP. SILT FENCE
-  PROP. SUPER SILT FENCE
-  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: APRIL 2019	Drawn By: HK
-------------------	------------	------------------	--------------



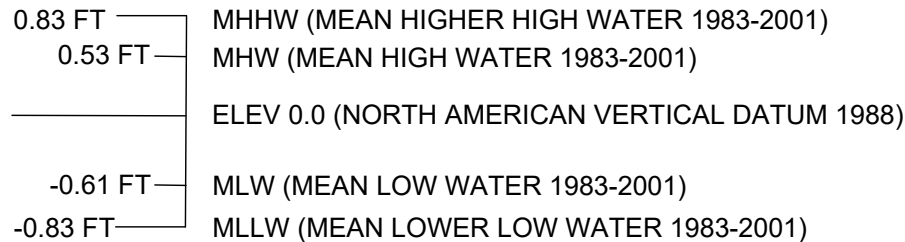
CONSULTING ENGINEERS - PLANNERS

10710 Gilroy Road, Hunt Valley, MD 21031  
Phone: 443.589.2400 Fax: 443.589.2401  
www.centuryeng.com



**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. THE VERTICAL REFERENCE FOR THIS PROJECT IS NADV88 WHICH IS 0.61 FT ABOVE MEAN LOW WATER (MLW).



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 WALERS WAS CALCULATED USING THE WALER WIDTH (1') AND DEPTH BELOW MHW OF 2.37'. THE LENGTH OF THE WALERS IS DEPENDENT ON THE OUTSIDE PERIMETER OF THE TOWER FOUNDATION/VESSEL COLLISION PROTECTION STRUCTURES. BASED ON AGENCY COORDINATION IN OCTOBER 2018, WALERS 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.

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

**NOTES**  
**AI #154184**

SHEET 3 OF 24

Job No. 141095.00

Scale: N/A

Date: APRIL 2019

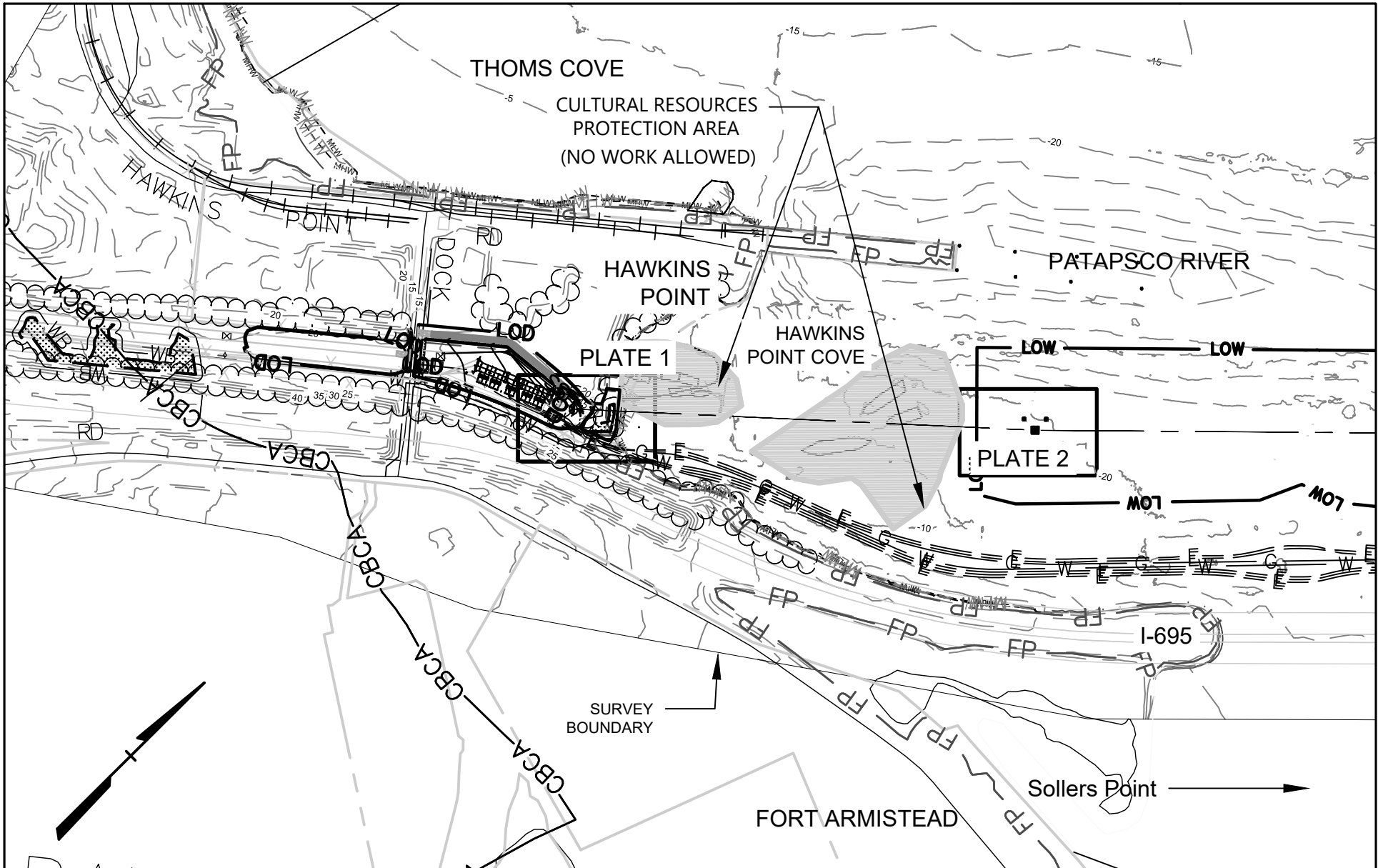
Drawn By: HK



CONSULTING ENGINEERS - PLANNERS

10710 Gilroy Road, Hunt Valley, MD 21031  
Phone: 443.589.2400 Fax: 443.589.2401  
www.centuryeng.com





MATCHLINE 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):  
 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

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

**KEY MAP**

**AI #154184**

SHEET 4 OF 24

Job No. 141095.00

Scale: 1"=500'

Date: APRIL 2019

Drawn By: HK



CONSULTING ENGINEERS - PLANNERS

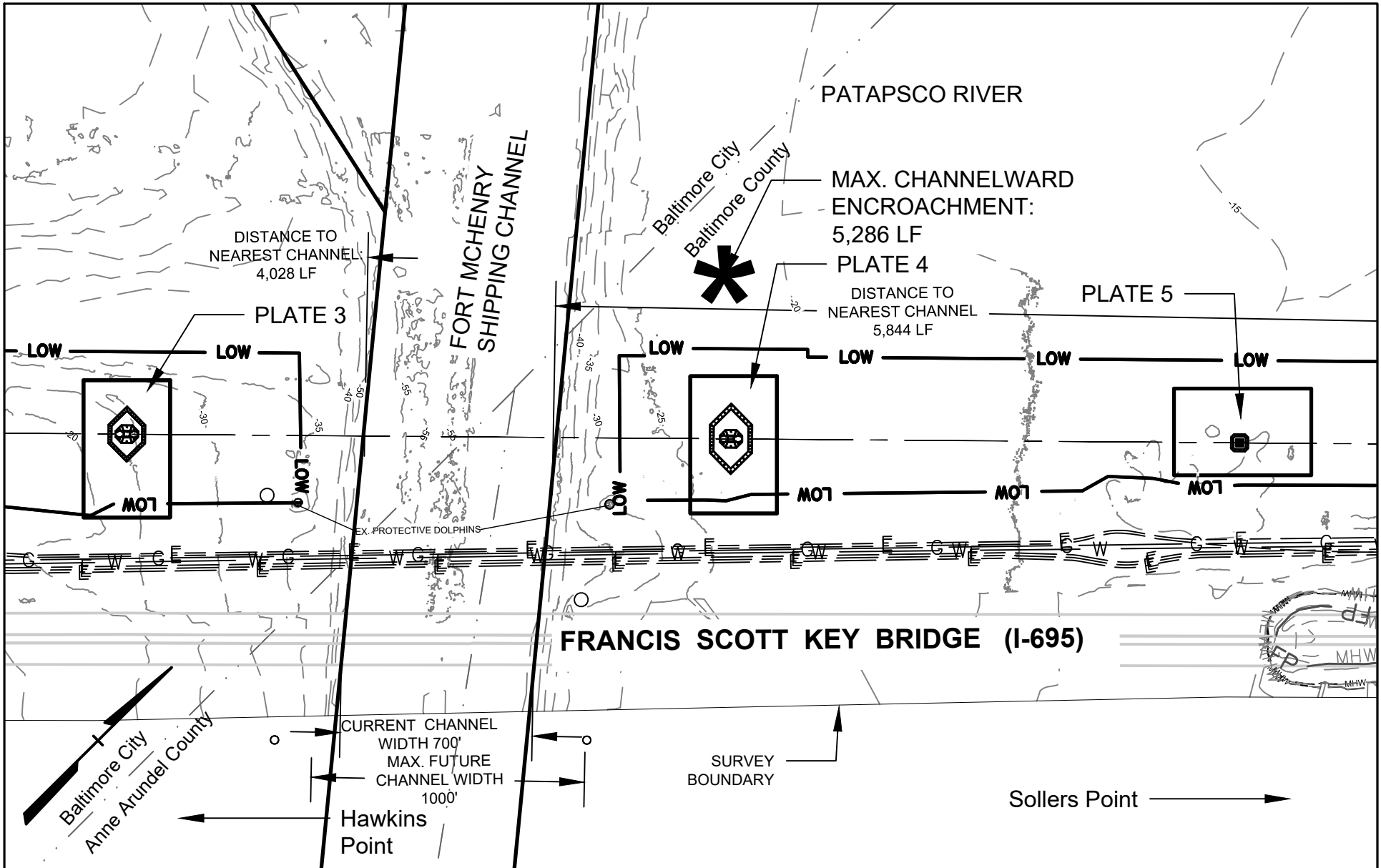
10710 Gilroy Road, Hunt Valley, MD 21031

Phone: 443.589.2400 Fax: 443.589.2401

www.centuryeng.com

MATCHLINE SEE SHEET 4 OF 24

MATCHLINE SEE SHEET 6 OF 24



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

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

**KEY MAP**

**AI #154184**

SHEET 5 OF 24

Job No. 141095.00

Scale: 1"=500'

Date: APRIL 2019

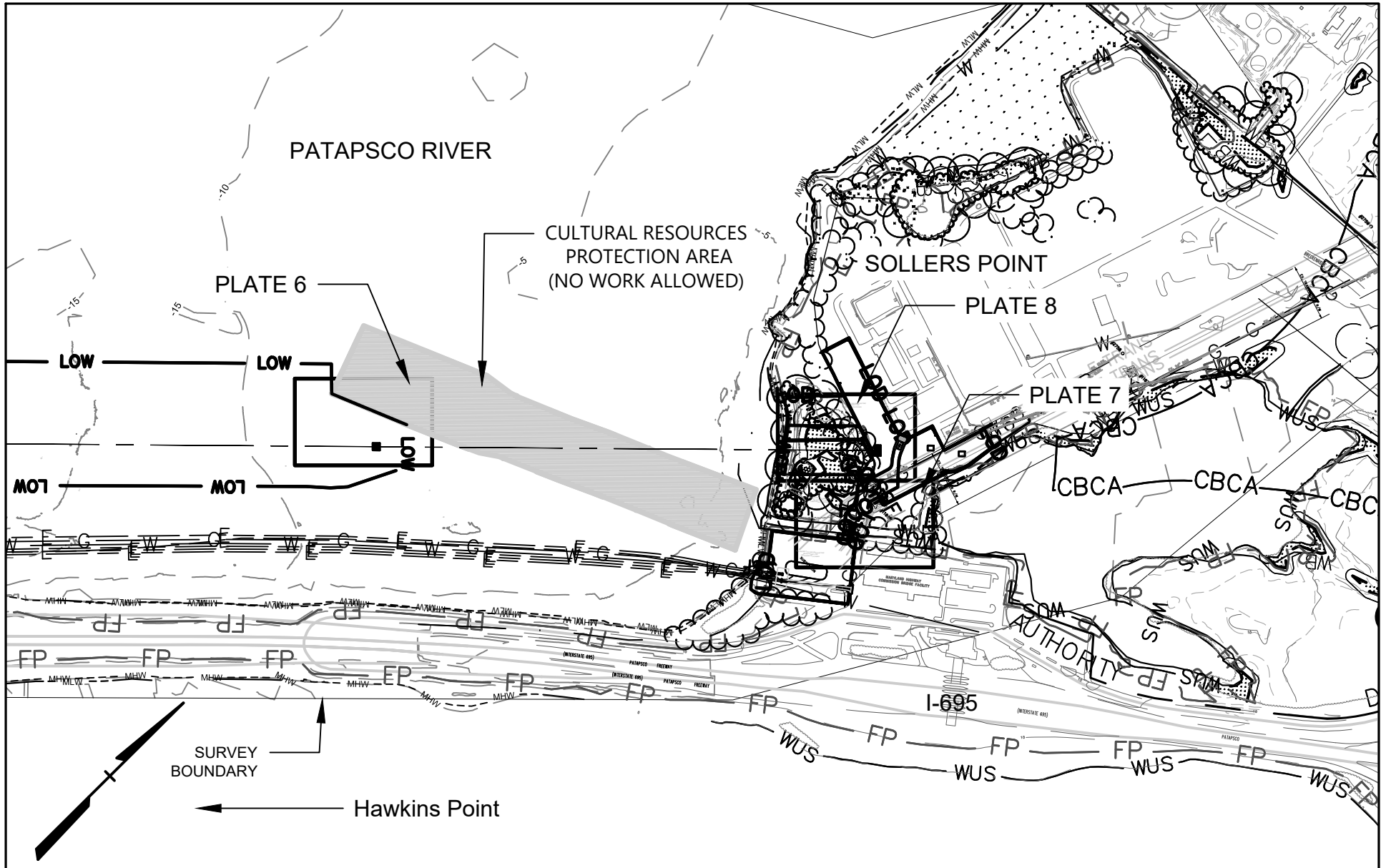
Drawn By: HK



CONSULTING ENGINEERS - PLANNERS

10710 Gilroy Road, Hunt Valley, MD 21031  
 Phone: 443.589.2400 Fax: 443.589.2401  
 www.centuryeng.com

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):  
 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

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

**KEY MAP**

**AI #154184**

SHEET 6 OF 24

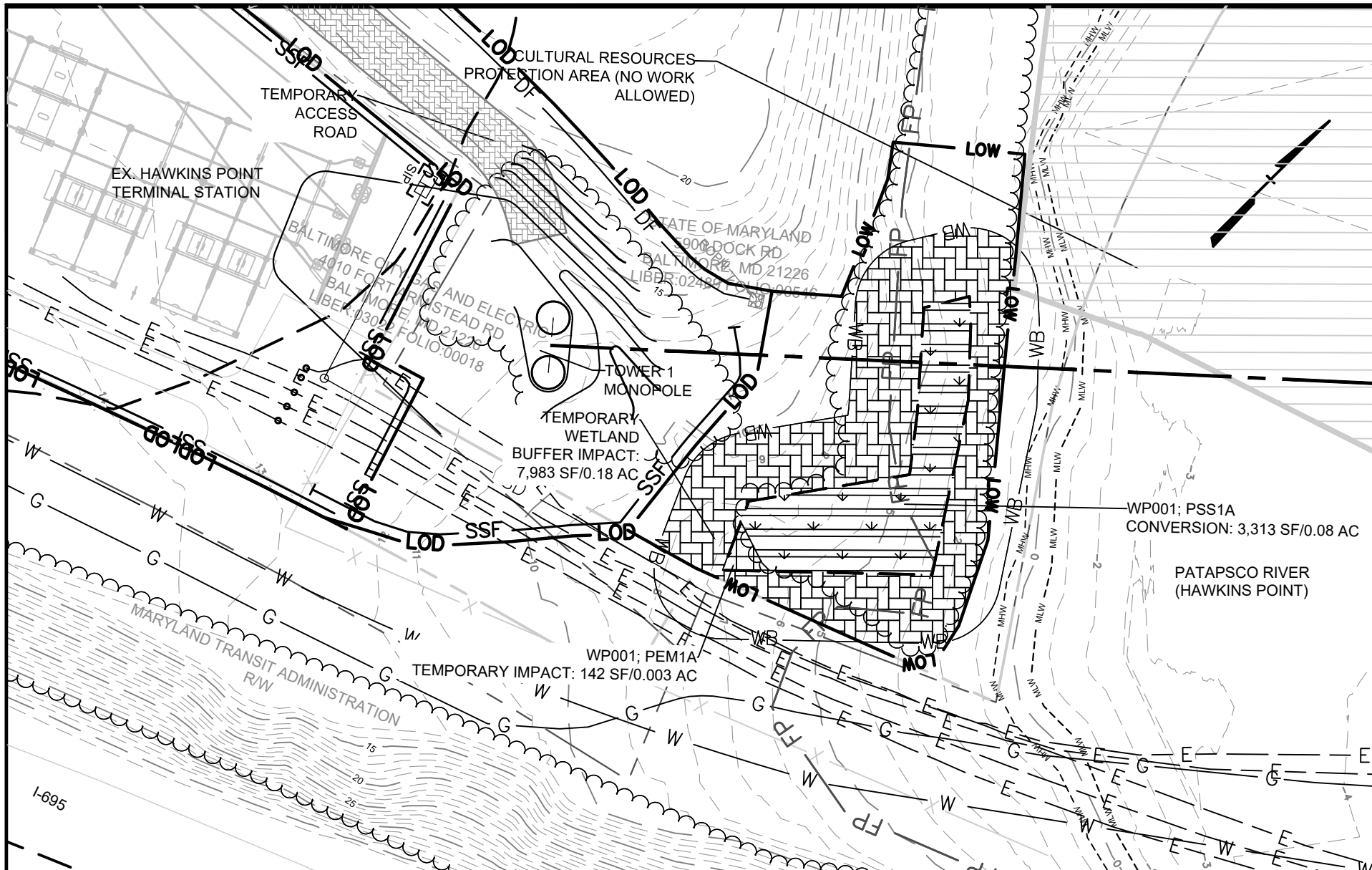
Job No. 141095.00 Scale: 1"=500' Date: APRIL 2019 Drawn By: HK



CONSULTING ENGINEERS - PLANNERS

10710 Gilroy Road, Hunt Valley, MD 21031  
 Phone: 443.589.2400 Fax: 443.589.2401  
 www.centuryeng.com





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

**PLATE 1  
AI #154184**

SHEET 7 OF 24

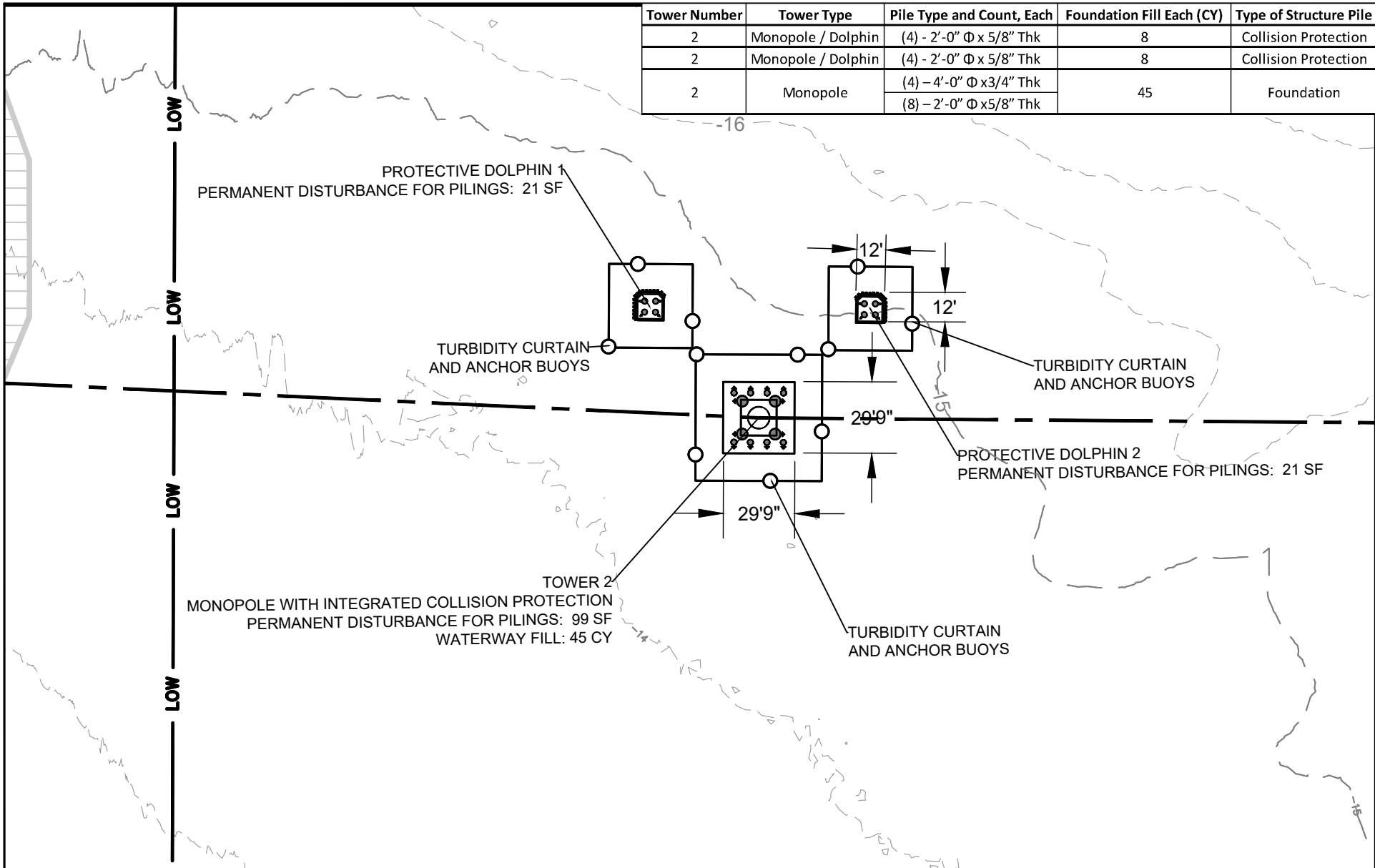
Job No. 141095.00	Scale: 1"=50'	Date: APRIL 2019	Drawn By: HK
-------------------	---------------	------------------	--------------



CONSULTING ENGINEERS - PLANNERS

10710 Gilroy Road, Hunt Valley, MD 21031  
Phone: 443.589.2400 Fax: 443.589.2401  
www.centuryeng.com

Tower Number	Tower Type	Pile Type and Count, Each	Foundation Fill Each (CY)	Type of Structure Pile
2	Monopole / Dolphin	(4) - 2'-0" $\Phi$ x 5/8" Thk	8	Collision Protection
2	Monopole / Dolphin	(4) - 2'-0" $\Phi$ x 5/8" Thk	8	Collision Protection
2	Monopole	(4) - 4'-0" $\Phi$ x 3/4" Thk	45	Foundation
		(8) - 2'-0" $\Phi$ x 5/8" Thk		



- 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)
- CONCRETE CAP AND FENDERING: 960 SF

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

**PLATE 2**

**AI #154184**

SHEET 8 OF 24

Job No. 141095.00

Scale: 1"=50'

Date: APRIL 2019

Drawn By: HK

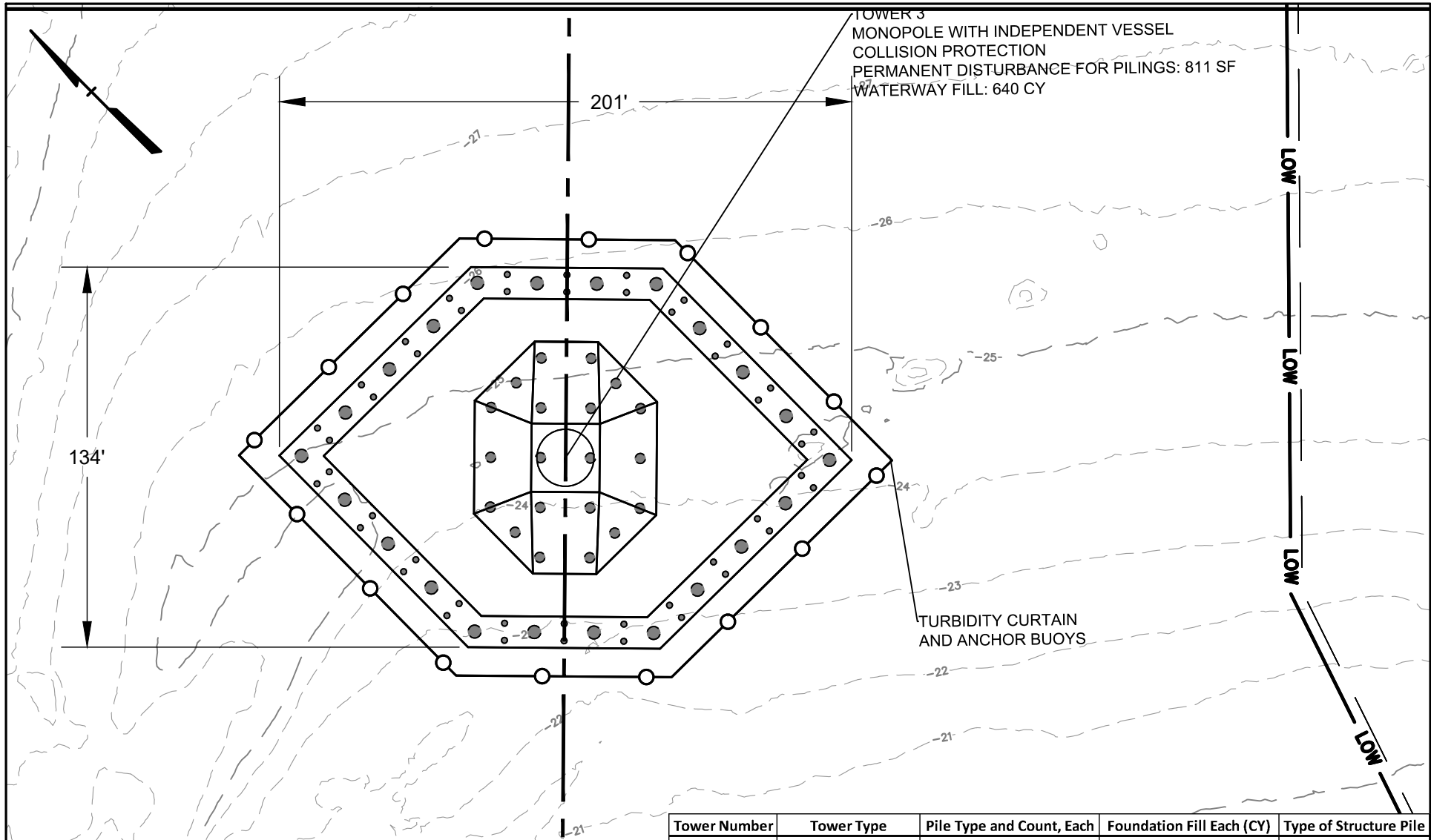


CONSULTING ENGINEERS - PLANNERS

10710 Gilroy Road, Hunt Valley, MD 21031

Phone: 443.589.2400 Fax: 443.589.2401

www.centuryeng.com



TOWER 3  
 MONOPOLE WITH INDEPENDENT VESSEL  
 COLLISION PROTECTION  
 PERMANENT DISTURBANCE FOR PILINGS: 811 SF  
 WATERWAY FILL: 640 CY

TURBIDITY CURTAIN  
 AND ANCHOR BUOYS

Tower Number	Tower Type	Pile Type and Count, Each	Foundation Fill Each (CY)	Type of Structure Pile
3	Monopole	(22) - 4'-6" $\Phi$ x 1 1/4" Thk (44) - 1'-8" $\Phi$ x 5/8" Thk	417	Collision Protection
3	Monopole	(20) - 3'-6" $\Phi$ x 3/4" Thk	193	Foundation

- 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 IMPACT WITHIN TURBIDITY CURTAIN.
- MUDLINE AT ELEV. -26 (27 FT OF WATER)
- CONCRETE CAP AND FENDERING: 10,055 SF
- AREA (L x W) OF STRUCTURE AND COLLISION PROTECTION: 26,934 SF

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

**PLATE 3  
 AI #154184**

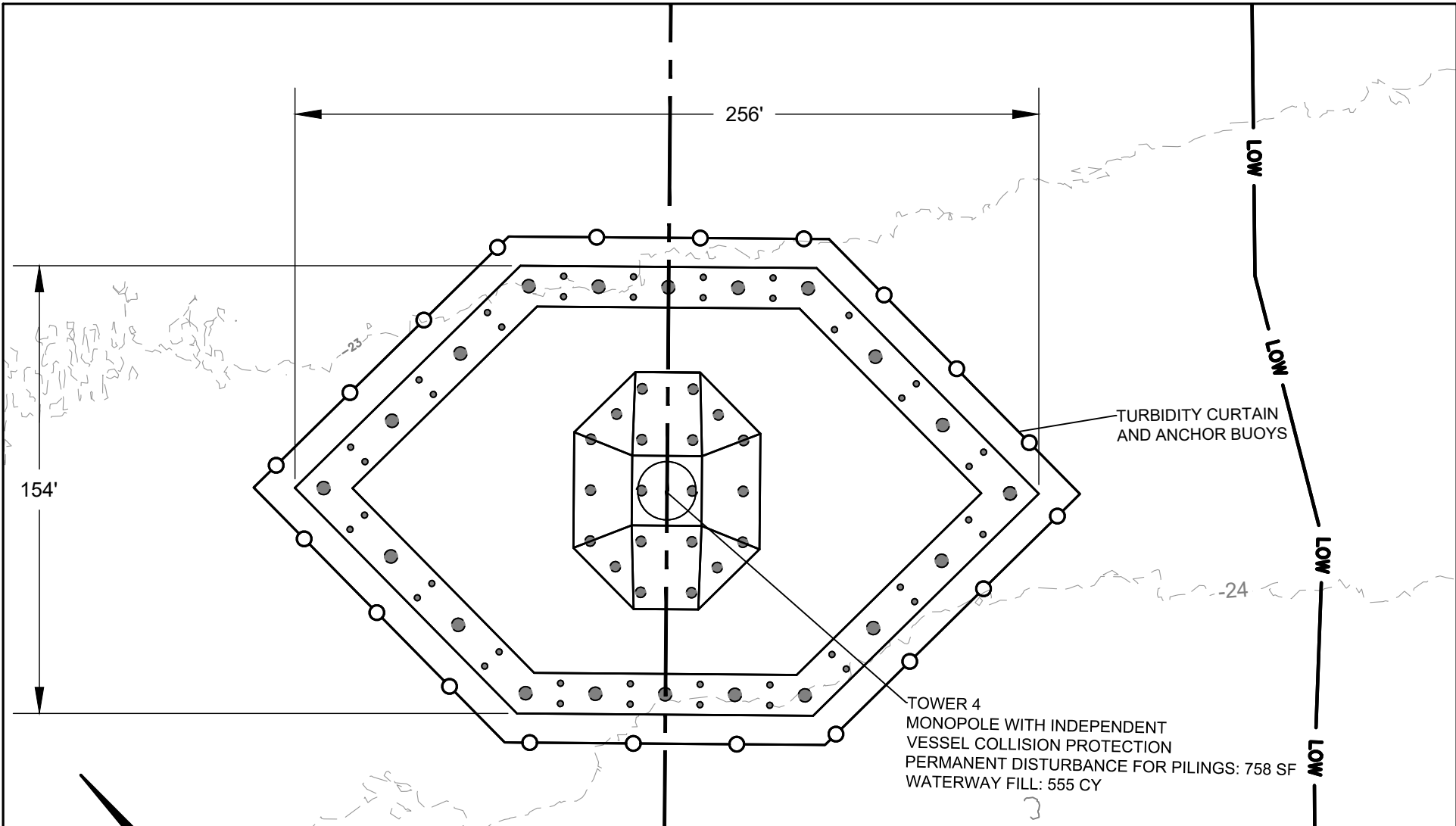
SHEET 9 OF 24

Job No. 141095.00	Scale: 1"=50'	Date: APRIL 2019	Drawn By: HK
-------------------	---------------	------------------	--------------



CONSULTING ENGINEERS - PLANNERS  
 10710 Gilroy Road, Hunt Valley, MD 21031  
 Phone: 443.589.2400 Fax: 443.589.2401  
 www.centuryeng.com





- 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: 13,221 SF
- AREA (L x W) OF STRUCTURE AND COLLISION PROTECTION: 39,424 SF

Tower Number	Tower Type	Pile Type and Count, Each	Foundation Fill Each (CY)	Type of Structure Pile
4	Monopole	(20) - 4'-6" $\Phi$ x 1 1/4" Thk	414	Collision Protection
		(40) - 1'-8" $\Phi$ x 5/8" Thk		
4	Monopole	(20) - 3'-6" $\Phi$ x 3/4" Thk	179	Foundation

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

**PLATE 4  
AI #154184**

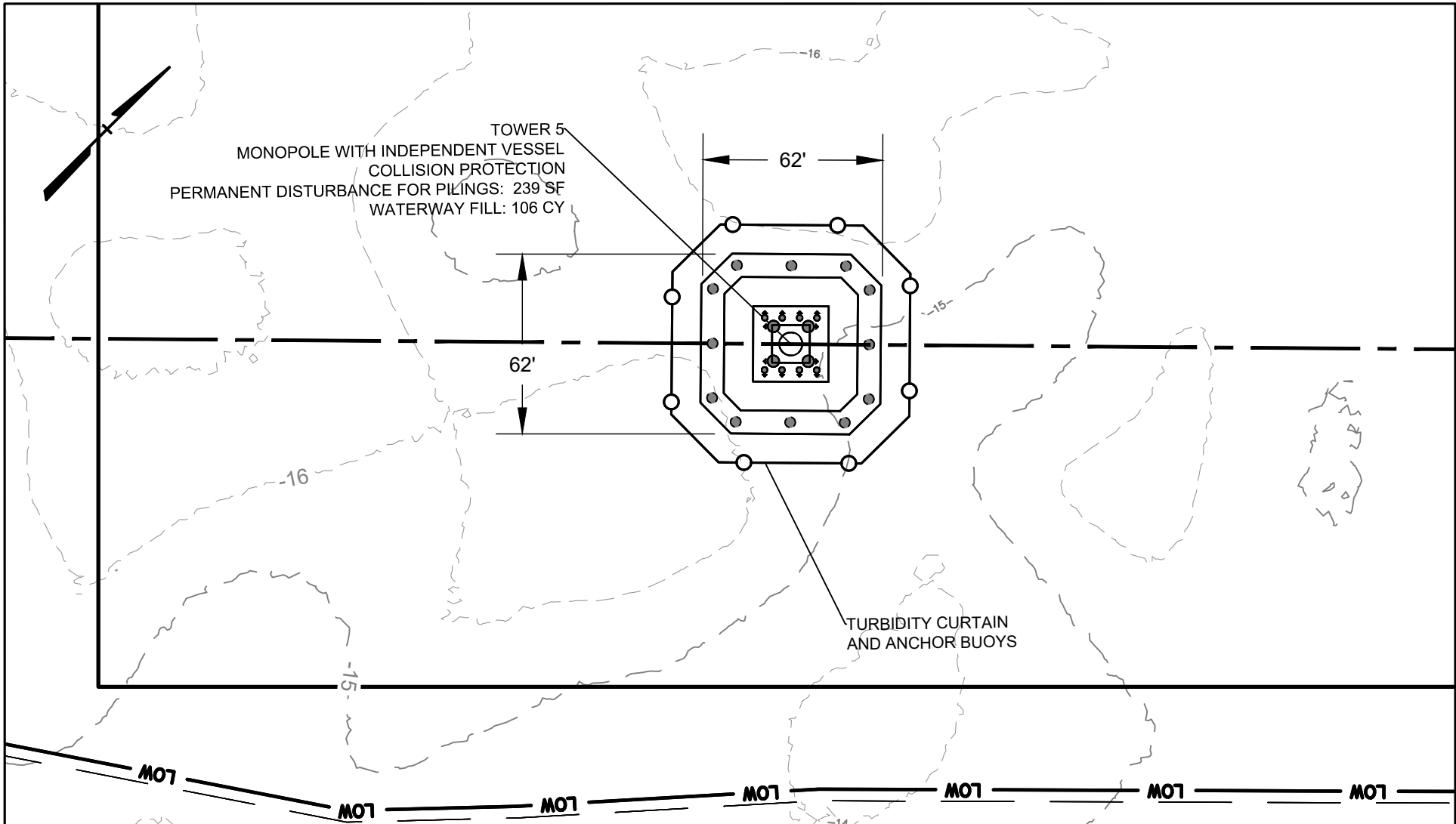
SHEET 10 OF 24

Job No. 141095.00	Scale: 1"=50'	Date: APRIL 2019	Drawn By: HK
-------------------	---------------	------------------	--------------



CONSULTING ENGINEERS - PLANNERS

10710 Gilroy Road, Hunt Valley, MD 21031  
Phone: 443.589.2400 Fax: 443.589.2401  
www.centuryeng.com



- 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: 2,476 SF
- AREA (L x W) OF STRUCTURE WITH COLLISION PROTECTION: 3,844 SF

Tower Number	Tower Type	Pile Type and Count, Each	Foundation Fill Each (CY)	Type of Structure Pile
5	Monopole	(12) - 3'-6" $\Phi$ x 3/4" Thk	64	Collision Protection
5	Monopole	(4) - 4'-0" $\Phi$ x 3/4" Thk (8) - 2'-0" $\Phi$ x 5/8" Thk	42	Foundation

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

**PLATE 5**

**AI #154184**

SHEET 11 OF 24

Job No. 141095.00

Scale: 1"=50'

Date: APRIL 2019

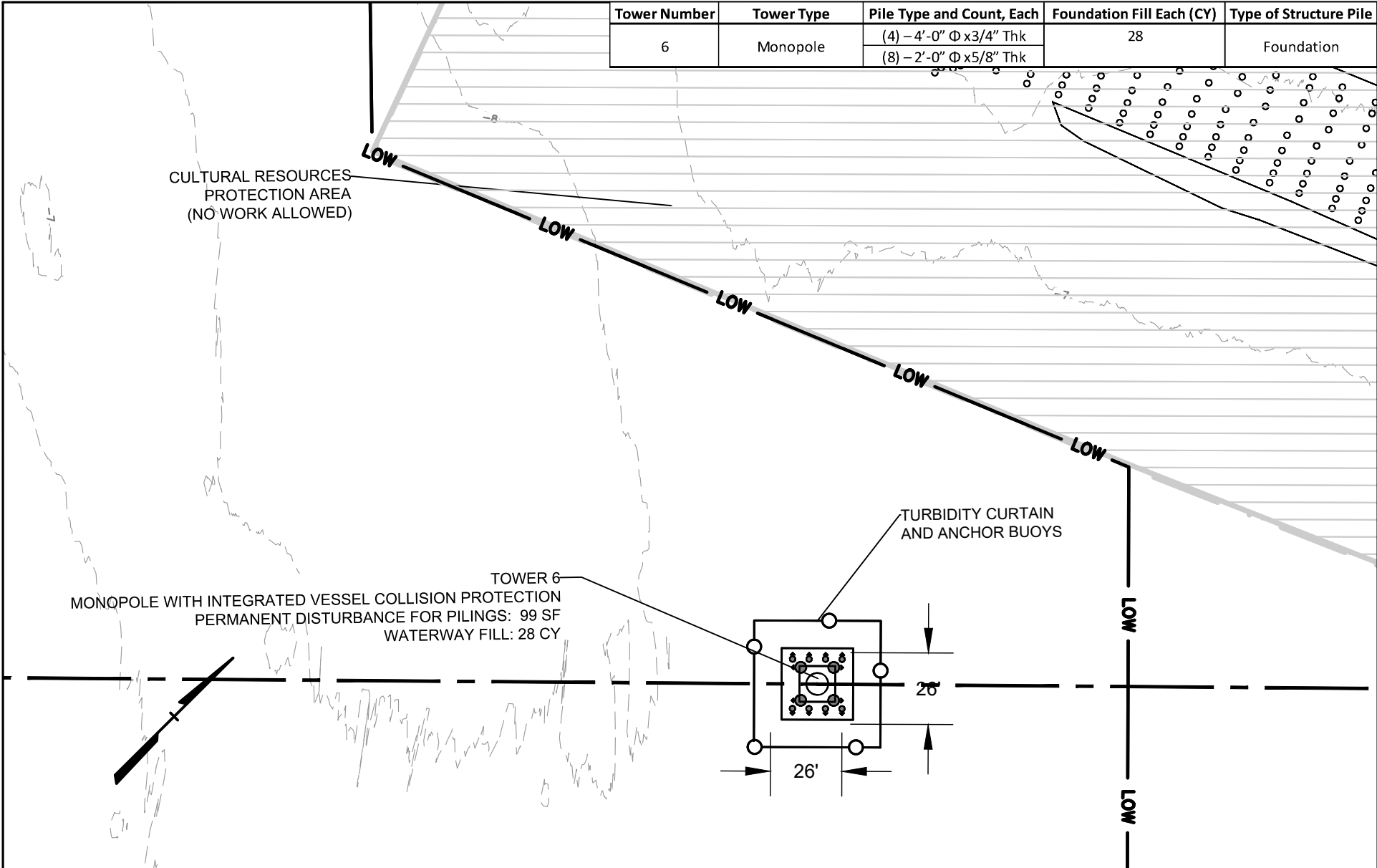
Drawn By: HK

**CENTURY**  
ENGINEERING

CONSULTING ENGINEERS - PLANNERS

10710 Gilroy Road, Hunt Valley, MD 21031  
Phone: 443.589.2400 Fax: 443.589.2401  
www.centuryeng.com

Tower Number	Tower Type	Pile Type and Count, Each	Foundation Fill Each (CY)	Type of Structure Pile
6	Monopole	(4) - 4'-0" $\Phi$ x 3/4" Thk	28	Foundation
		(8) - 2'-0" $\Phi$ x 5/8" Thk		



- 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/ 0.049 AC OF TEMPORARY WUS IMPACT WITHIN TURBIDITY CURTAIN.
- MUDLINE AT ELEV. -9 (10 FT OF WATER)
- AREA OF CONCRETE FOUNDATION AND FEDNERING: 783 SF

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

**PLATE 6**  
**AI #154184**

SHEET 12 OF 24

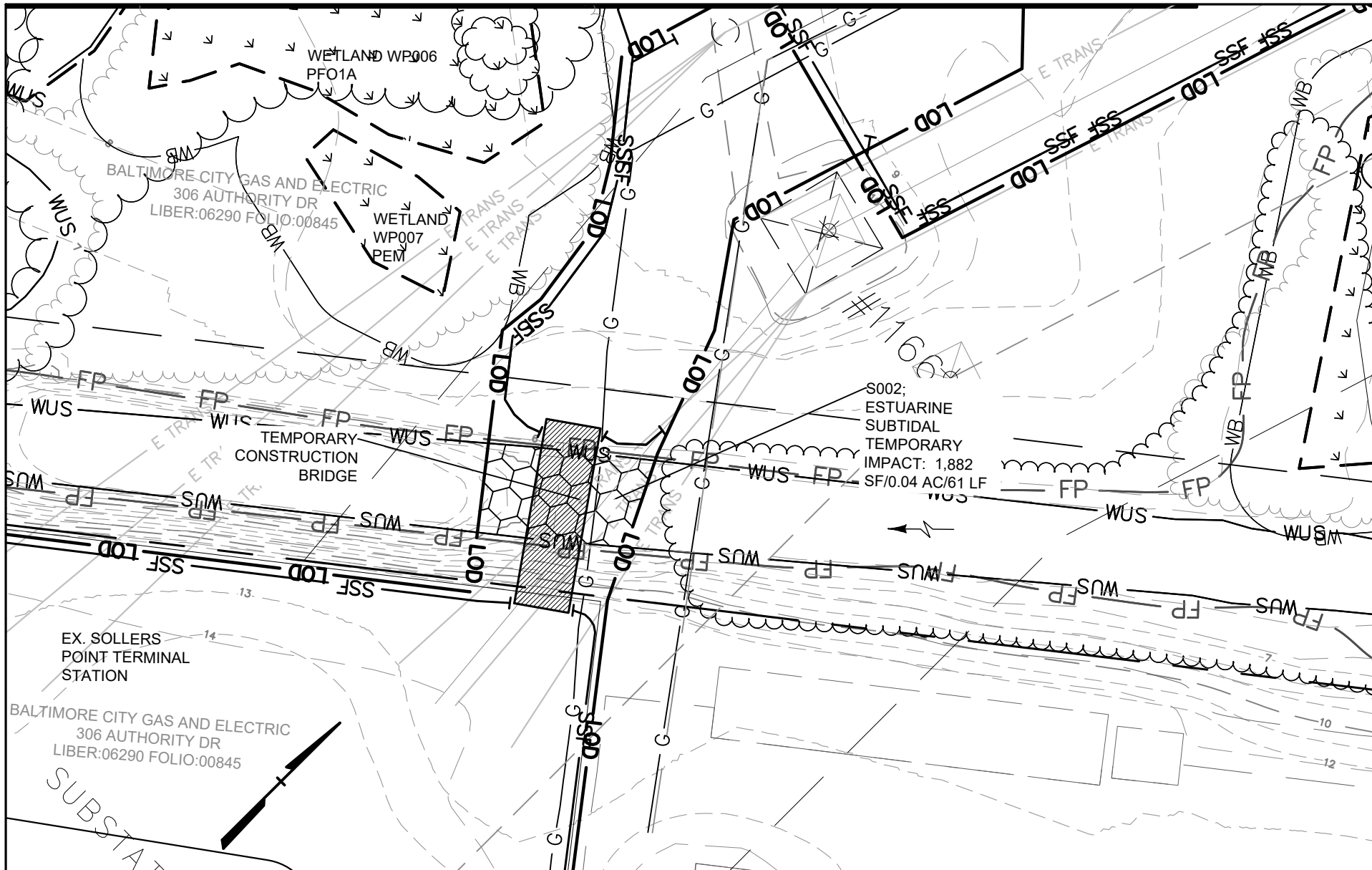
Job No. 141095.00	Scale: 1"=50'	Date: APRIL 2019	Drawn By: HK
-------------------	---------------	------------------	--------------

**CENTURY**  
ENGINEERING

CONSULTING ENGINEERS - PLANNERS

10710 Gilroy Road, Hunt Valley, MD 21031  
Phone: 443.589.2400 Fax: 443.589.2401  
www.centuryeng.com





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

**PLATE 7**

**AI #154184**

SHEET 13 OF 24

Job No. 141095.00

Scale: 1"=50'

Date: APRIL 2019

Drawn By: HK

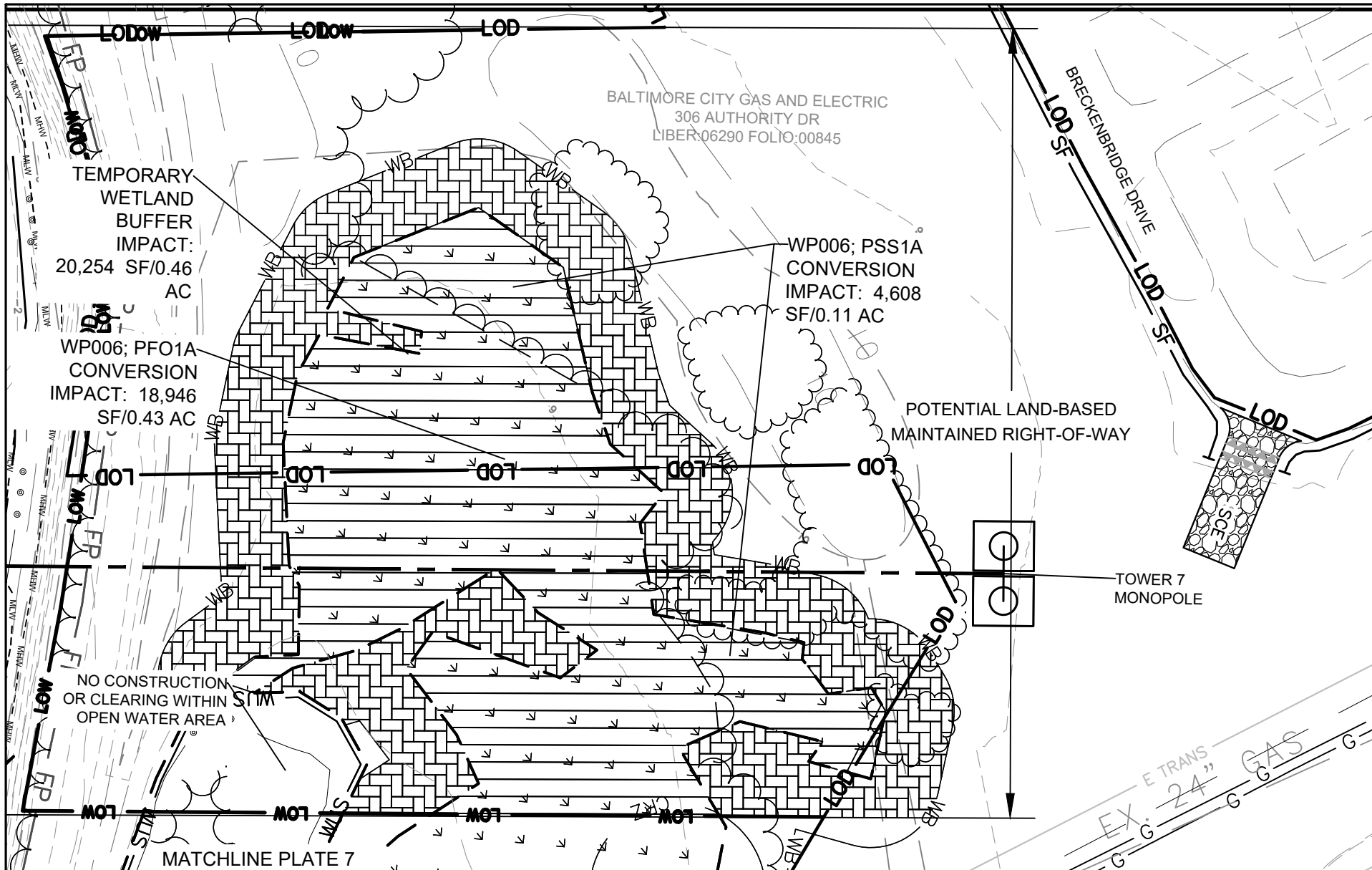


CONSULTING ENGINEERS - PLANNERS

10710 Gilroy Road, Hunt Valley, MD 21031

Phone: 443.589.2400 Fax: 443.589.2401

www.centuryeng.com



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

**PLATE 8**

**AI #154184**

SHEET 14 OF 24

Job No. 141095.00

Scale: 1"=50'

Date: APRIL 2019

Drawn By: HK



CONSULTING ENGINEERS - PLANNERS

10710 Gilroy Road, Hunt Valley, MD 21031

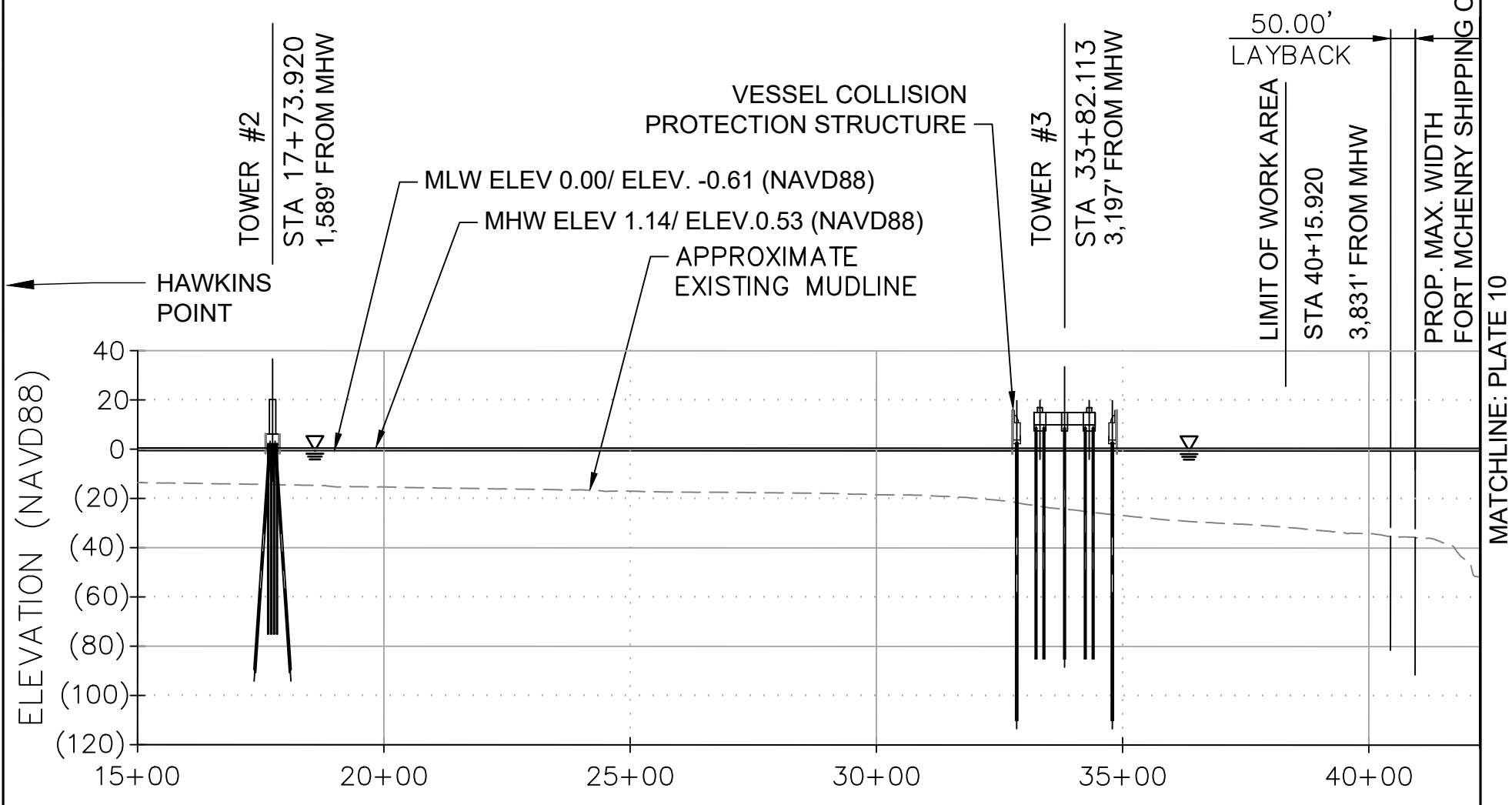
Phone: 443.589.2400 Fax: 443.589.2401

www.centuryeng.com

**C1**  
G-301

**PROFILE VIEW OF STRUCTURE - WATER DEPTH**

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



**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: APRIL 2019 Drawn By: HK

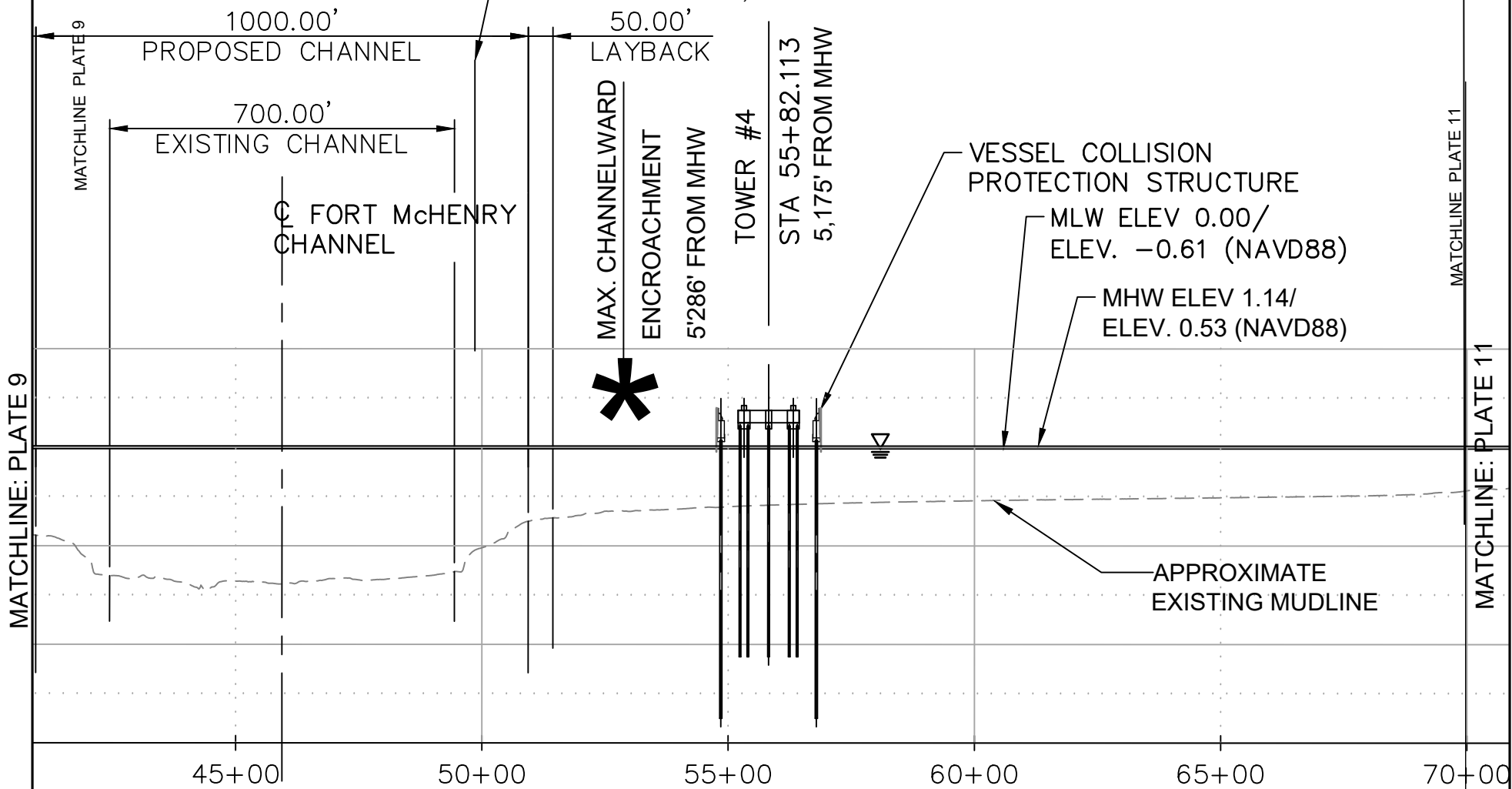
**CENTURY**  
 ENGINEERING  
 CONSULTING ENGINEERS - PLANNERS  
 10710 Gilroy Road, Hunt Valley, MD 21031  
 Phone: 443.589.2400 Fax: 443.589.2401  
 www.centuryeng.com

**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



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

**PLATE 10: PROFILES**

**AI #154184**

SHEET 16 OF 24

Job No. 141095.00

Scale: As Shown

Date: APRIL 2019

Drawn By: HK



CONSULTING ENGINEERS - PLANNERS

10710 Gilroy Road, Hunt Valley, MD 21031  
Phone: 443.589.2400 Fax: 443.589.2401  
www.centuryeng.com

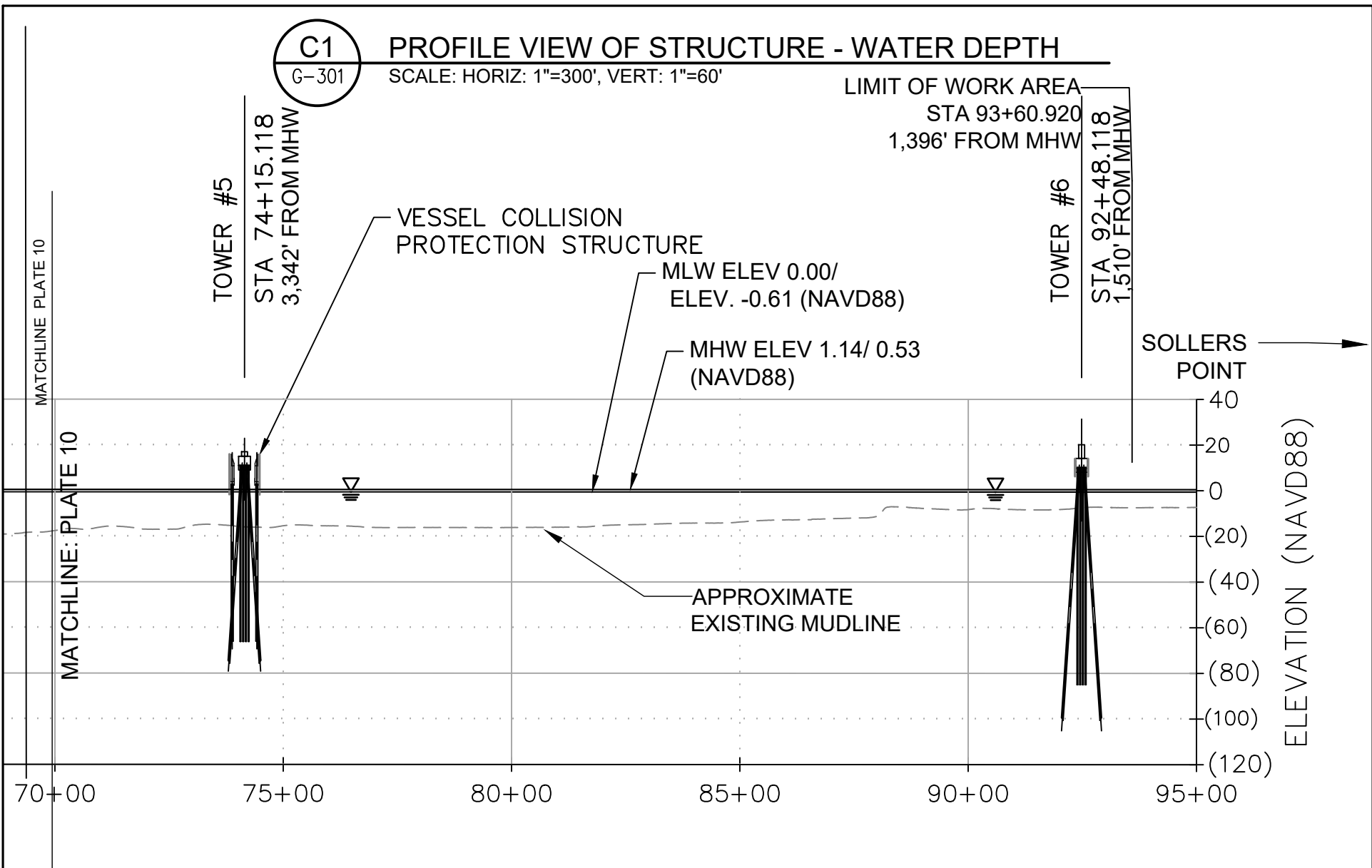


**C1**  
G-301

**PROFILE VIEW OF STRUCTURE - WATER DEPTH**

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

LIMIT OF WORK AREA  
STA 93+60.920  
1,396' FROM MHW



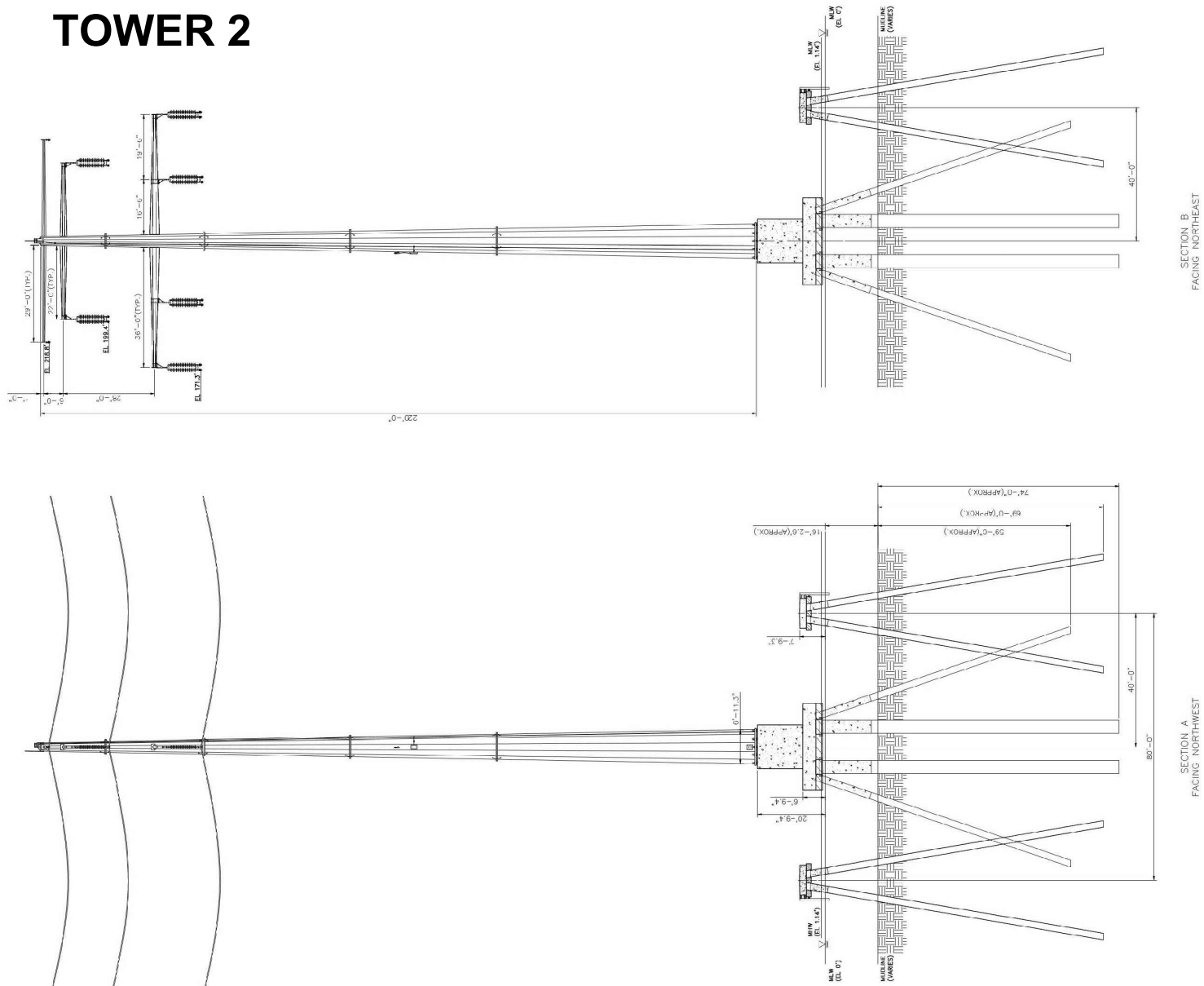
**BGE - KEY CROSSING RELIABILITY INITIATIVE**  
**230 KV OVERHEAD TRANSMISSION LINE PROJECT**  
**PLATE 11: PROFILES**  
**AI #154184** SHEET 17 OF 24  
 Job No. 141095.00 Scale: As Shown Date: APRIL 2019 Drawn By: HK

**CENTURY ENGINEERING**  
 CONSULTING ENGINEERS - PLANNERS  
 10710 Gilroy Road, Hunt Valley, MD 21031  
 Phone: 443.589.2400 Fax: 443.589.2401  
 www.centuryeng.com

**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.

**TOWER 2**



**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: As Shown

Date: APRIL 2019

Drawn By: HK



CONSULTING ENGINEERS - PLANNERS

10710 Gilroy Road, Hunt Valley, MD 21031

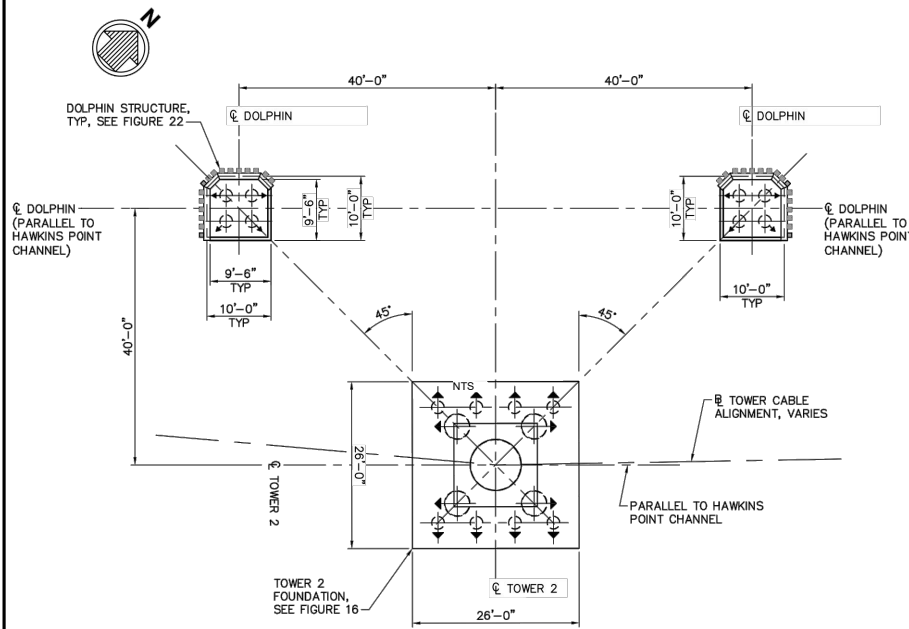
Phone: 443.589.2400 Fax: 443.589.2401

www.centuryeng.com

SECTION A  
FACING NORTHWEST

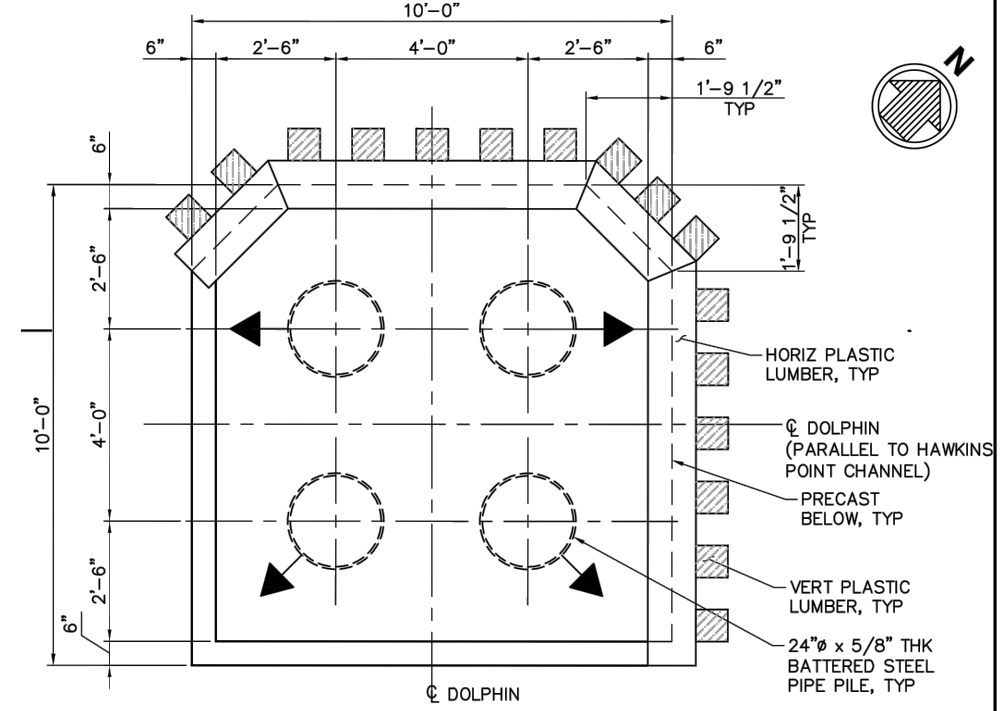
SECTION B  
FACING NORTHEAST

# DOLPHIN STRUCTURES AT TOWER 2



1 PLAN - DOLPHIN STRUCTURE ALIGNMENT  
FIG 21 SCALE: 1"=10'

1 PLAN - TYPICAL DOLPHIN STRUCTURE AT TOWER 2  
FIG 22 SCALE: 1/4"=1'-0"



NOTE:  
MIRROR UHMW-PE PANEL ABOUT  
C OF DOLPHIN FOR THE OTHER  
DOLPHIN STRUCTURE AT TOWER 2.

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

## PLATE 13: PROFILES

AI #154184

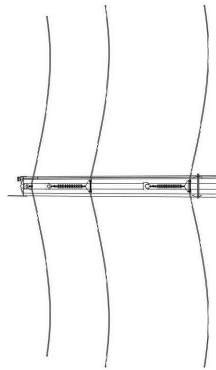
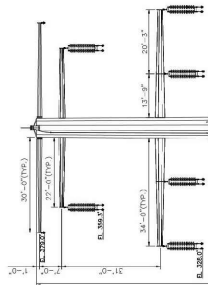
SHEET 19 OF 24

Job No. 141095.00 | Scale: As Shown | Date: APRIL 2019 | Drawn By: HK

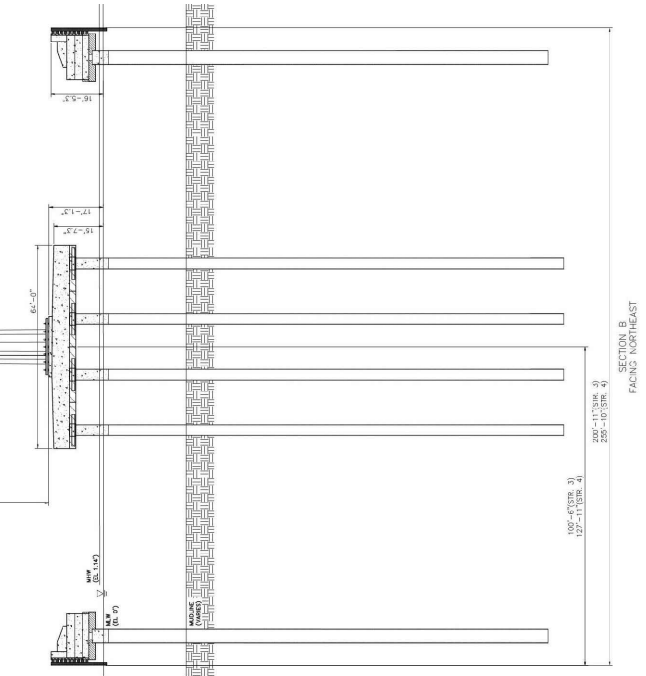


CONSULTING ENGINEERS - PLANNERS  
10710 Gilroy Road, Hunt Valley, MD 21031  
Phone: 443.589.2400 Fax: 443.589.2401  
www.centuryeng.com

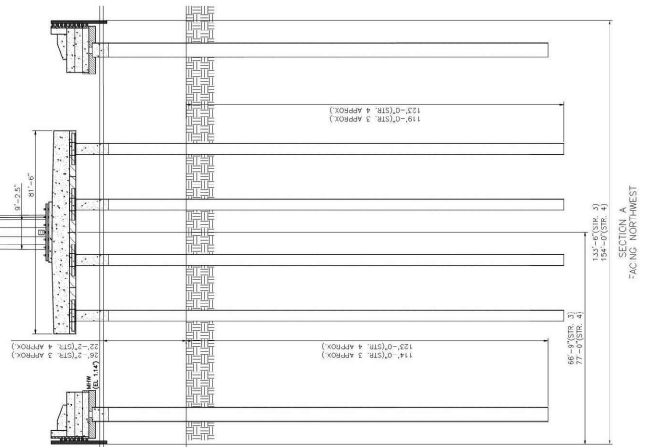
# TOWERS 3 AND 4



0'-0" (STR. 4)



SECTION B  
FACING NORTHEAST



SECTION A  
FACING NORTHWEST

**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: As Shown

Date: APRIL 2019

Drawn By: HK



CONSULTING ENGINEERS - PLANNERS

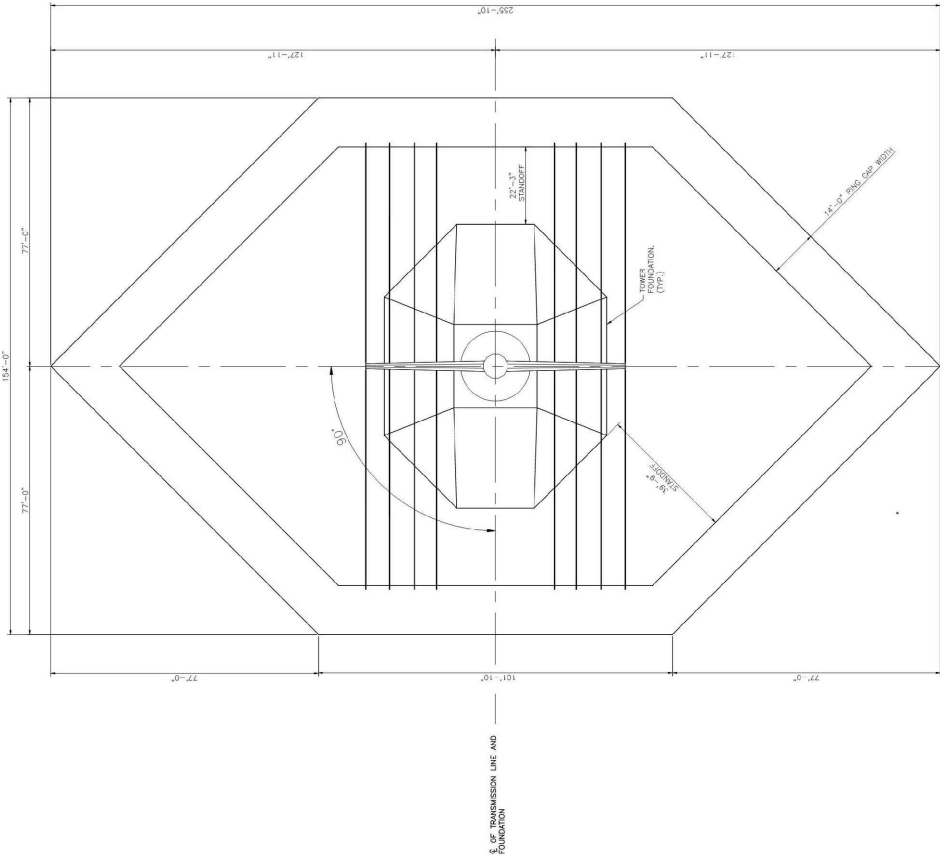
10710 Gilroy Road, Hunt Valley, MD 21031

Phone: 443.589.2400 Fax: 443.589.2401

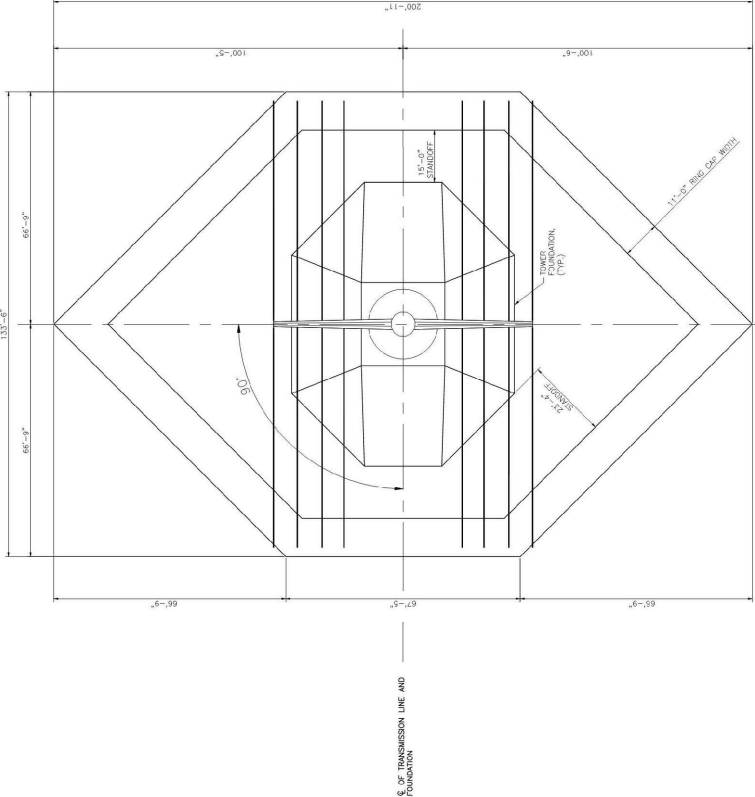
www.centuryeng.com



# TOWERS 3 AND 4



STRUCTURE 4  
E OF COLLISION PROTECTION STRUCTURE



STRUCTURE 3  
E OF COLLISION PROTECTION STRUCTURE

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

## **PLATE 15: PROFILES**

**AI #154184**

SHEET 21 OF 24

Job No. 141095.00

Scale: As Shown

Date: APRIL 2019

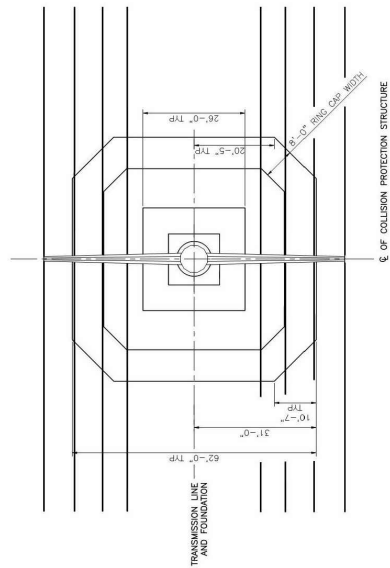
Drawn By: HK



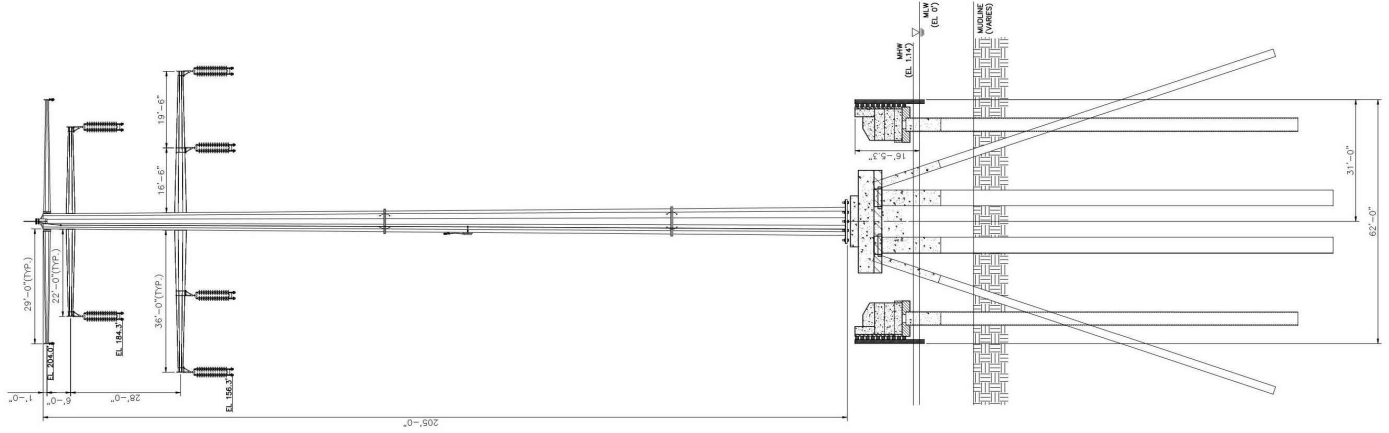
CONSULTING ENGINEERS - PLANNERS

10710 Gilroy Road, Hunt Valley, MD 21031  
Phone: 443.589.2400 Fax: 443.589.2401  
www.centuryeng.com

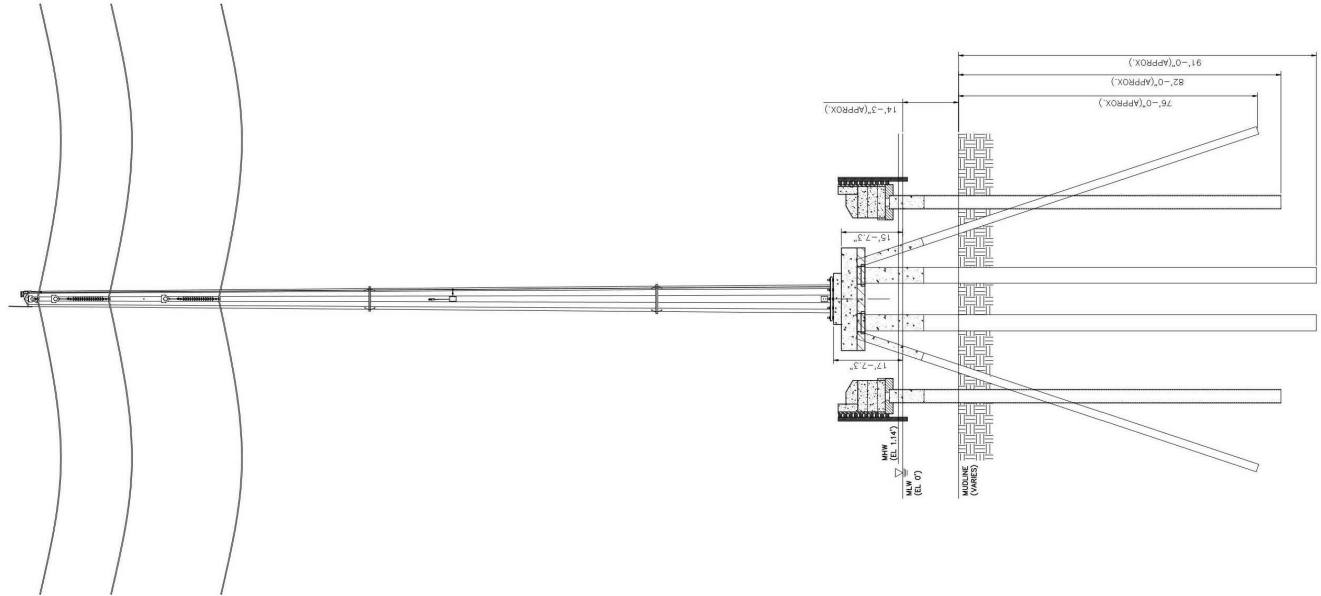
# TOWER 5



SECTION C OF COLLISION PROTECTION STRUCTURE



SECTION B  
FACING NORTHEAST



SECTION A  
FACING NORTHWEST

**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: As Shown

Date: APRIL 2019

Drawn By: HK



CONSULTING ENGINEERS - PLANNERS

10710 Gilroy Road, Hunt Valley, MD 21031

Phone: 443.589.2400 Fax: 443.589.2401

www.centuryeng.com



**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 (PSS1/PEM1A)	3,313	0.08	-	-	142	0.003	7,983	0.18
8	WP006 (PFO1A)	18,946	0.43	4,608	0.11	-	-	20,254	0.46
<b>TOTALS</b>		<b>22,259</b>	<b>0.51</b>	<b>4,608</b>	<b>0.11</b>	<b>142</b>	<b>0.003</b>	<b>28,237</b>	<b>0.65</b>

**AREA OF CONCRETE CAPS OVER WATER**

TOWER	AREA	
	SF	AC
2	764	0.018
<b>DOLPHIN</b>	98	0.002
<b>DOLPHIN</b>	98	0.002
3	10,055	0.231
4	13,221	0.304
5	2,476	0.057
6	783	0.018
<b>TOTALS</b>	<b>27,495</b>	<b>0.631</b>

PLATE	IMPACT DESCRIPTION	TEMPORARY WUS IMPACT			PERMANENT WUS IMPACT			
		SF	AC	LF	SF	AC	LF	CY
2	S001-TOWER 2	2,116	0.05	20	99	0.0023	†	45
2	S001-DOLPHIN 1	930	0.02	20	21	0.0005	†	8
2	S001-DOLPHIN 2	930	0.02	20	21	0.0005	†	8
3	S001-TOWER 3	23,397	0.54	20	811	0.0186	†	640
4	S001-TOWER 4	34,305	0.79	20	758	0.0174	256	555
5	S001-TOWER 5	6,186	0.14	20	239	0.0055	†	106
6	S001-TOWER 6	2,116	0.05	20	99	0.0023	†	28
7	S002-SUBTIDAL STREAM CROSSING	1,882	0.04	61	-	-	-	
2-8	SPUDS	55,008	1.26	268	-	-	-	
<b>TOTALS</b>		<b>126,870</b>	<b>2.91</b>	<b>469</b>	<b>2,048</b>	<b>0.05</b>	<b>256</b>	<b>1,390</b>

\* INCLUDED IN LF OF LIMIT OF WORK

† INCLUDED IN LF FOR TOWER 4

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

	SF	AC
LIMIT OF WORK	3,379,941	77.59

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

**PLATE 18: IMPACT TOTALS**

**AI #154184**

SHEET 24 OF 24

Job No. 141095.00

Scale: N/A

Date: APRIL 2019

Drawn By: HK



CONSULTING ENGINEERS - PLANNERS

10710 Gilroy Road, Hunt Valley, MD 21031  
Phone: 443.589.2400 Fax: 443.589.2401  
www.centuryeng.com