

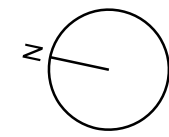
PLATE NUMBER	PLATE TITLE
CLEAR CREEK	
PLATE 1	CLEAR CREEK - GENERAL PLAN & ELEVATION
PLATE 2	CLEAR CREEK - T-WALL SECTIONS
PLATE 3	CLEAR CREEK - FLOODWALL - PLAN AND ELEVATION
PLATE 4	CLEAR CREEK - FLOODGATE - TOP PLAN - OPEN
PLATE 5	CLEAR CREEK - FLOODGATE - TOP PLAN - CLOSED
PLATE 6	CLEAR CREEK - FLOODGATE - FOUNDATION PLAN
PLATE 7	CLEAR CREEK - FLOODGATE - MONOLITH PLAN
PLATE 8	CLEAR CREEK - FLOODGATE - GATE LEAF UPPER AND BOTTOM PLAN
PLATE 9	CLEAR CREEK - FLOODGATE - GATE LEAF - SECTION AND ISOMETRIC
PLATE 10	CLEAR CREEK - FLOODGATE - MONOLITH SECTION
PLATE 11	CLEAR CREEK - FLOODGATE - MECHANICAL OPERATOR
PLATE 12	CLEAR CREEK - PUMP STATION - PLAN
PLATE 13	CLEAR CREEK - PUMP STATION - SECTION
PLATE 14	CLEAR CREEK - PUMP STATION - FOUNDATION PLAN
PLATE 15	CLEAR CREEK - PUMP STATION - UPSTREAM ELEVATION
PLATE 16	CLEAR CREEK - PUMP STATION - DOWNSTREAM ELEVATION
PLATE 17	CLEAR CREEK - PUMP STATION - SINGLE LINE DIAGRAM
PLATE 18	CLEAR CREEK - FLOODGATE - SINGLE LINE DIAGRAM
DICKINSON BAYOU	
PLATE 19	DICKINSON BAYOU - GENERAL PLAN
PLATE 20	DICKINSON BAYOU - T-WALL SECTIONS
PLATE 21	DICKINSON BAYOU - FLOODWALL - PLAN AND ELEVATION
PLATE 22	DICKINSON BAYOU - FLOODGATE - TOP PLAN - OPEN
PLATE 23	DICKINSON BAYOU - FLOODGATE - TOP PLAN - CLOSED
PLATE 24	DICKINSON BAYOU - FLOODGATE - FOUNDATION PLAN
PLATE 25	DICKINSON BAYOU - FLOODGATE - MONOLITH PLAN
PLATE 26	DICKINSON BAYOU - FLOODGATE - GATE LEAF UPPER AND BOTTOM PLAN
PLATE 27	DICKINSON BAYOU - FLOODGATE - GATE LEAF SECTION AND ISOMETRIC
PLATE 28	DICKINSON BAYOU - FLOODGATE - MONOLITH SECTION
PLATE 29	DICKINSON BAYOU - FLOODGATE - MECHANICAL OPERATOR
PLATE 30	DICKINSON BAYOU - PUMP STATION - PLAN
PLATE 31	DICKINSON BAYOU - PUMP STATION - SECTION
PLATE 32	DICKINSON BAYOU - PUMP STATION - FOUNDATION PLAN
PLATE 33	DICKINSON BAYOU - PUMP STATION - UPSTREAM ELEVATION
PLATE 34	DICKINSON BAYOU - PUMP STATION - DOWNSTREAM ELEVATION
PLATE 35	DICKINSON BAYOU - PUMP STATION - SINGLE LINE DIAGRAM
PLATE 36	DICKINSON BAYOU - FLOODGATE - SINGLE LINE DIAGRAM
GALVESTON ISLAND	
PLATE 37	GALVESTON ISLAND PUMP STATIONS - VICINITY PLAN
GALVESTON ISLAND SITE 1	
PLATE 38	GALVESTON ISLAND - PUMP STATION 1 - GENERAL PLAN
PLATE 39	GALVESTON ISLAND - PUMP STATION 1 - PLAN
PLATE 40	GALVESTON ISLAND - PUMP STATION 1 - SECTION
GALVESTON ISLAND SITE 2	
PLATE 41	GALVESTON ISLAND - PUMP STATION 2 - GENERAL PLAN
PLATE 42	GALVESTON ISLAND - PUMP STATION 2 - PLAN
PLATE 43	GALVESTON ISLAND - PUMP STATION 2 - SECTION
PLATE 44	GALVESTON ISLAND - PUMP STATION 2- UPSTREAM ELEVATION
PLATE 45	GALVESTON ISLAND - PUMP STATION 2 - DOWNSTREAM ELEVATION
GALVESTON ISLAND SITE 3	
PLATE 46	GALVESTON ISLAND - PUMP STATION 3 - GENERAL PLAN
PLATE 47	GALVESTON ISLAND - PUMP STATION 3 - PLAN
PLATE 48	GALVESTON ISLAND - PUMP STATION 3 - SECTION
GALVESTON ISLAND SITE 4	
PLATE 49	GALVESTON ISLAND - PUMP STATION 4 - GENERAL PLAN
PLATE 50	GALVESTON ISLAND - PUMP STATION 4 - PLAN
PLATE 51	GALVESTON ISLAND - PUMP STATION 4 - SECTION
GALVESTON ISLAND ELECTRICAL	
PLATE 52	GALVESTON ISLAND PUMP STATION 1 - SINGLE LINE DIAGRAM
PLATE 53	GALVESTON ISLAND PUMP STATION 2 - SINGLE LINE DIAGRAM
PLATE 54	GALVESTON ISLAND PUMP STATION 3 - SINGLE LINE DIAGRAM
PLATE 55	GALVESTON ISLAND PUMP STATION 4 - SINGLE LINE DIAGRAM

INDEX

COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY

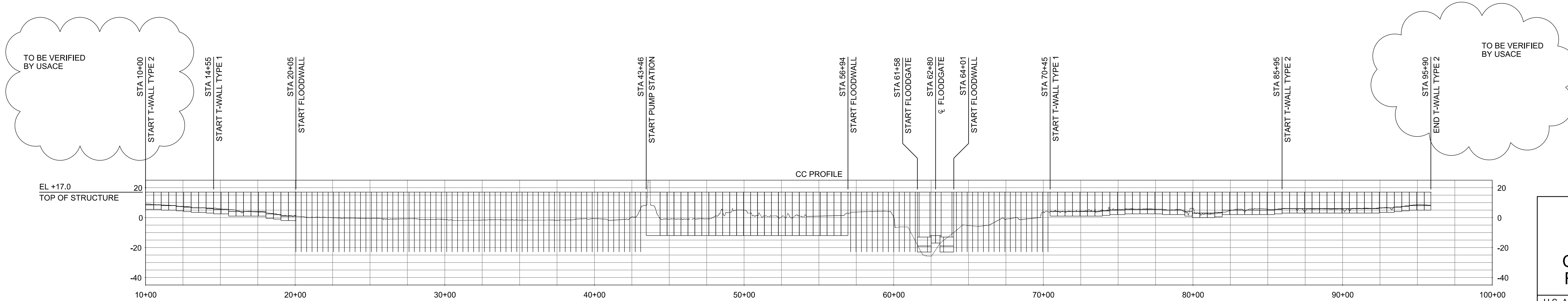
U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

ENGINEERING APPENDIX
DATED:
NOVEMBER 9, 2018
TETRA TECH, INC.



CLEAR CREEK - GENERAL PLAN

SCALE: 1" = 400'



ELEVATION VIEW

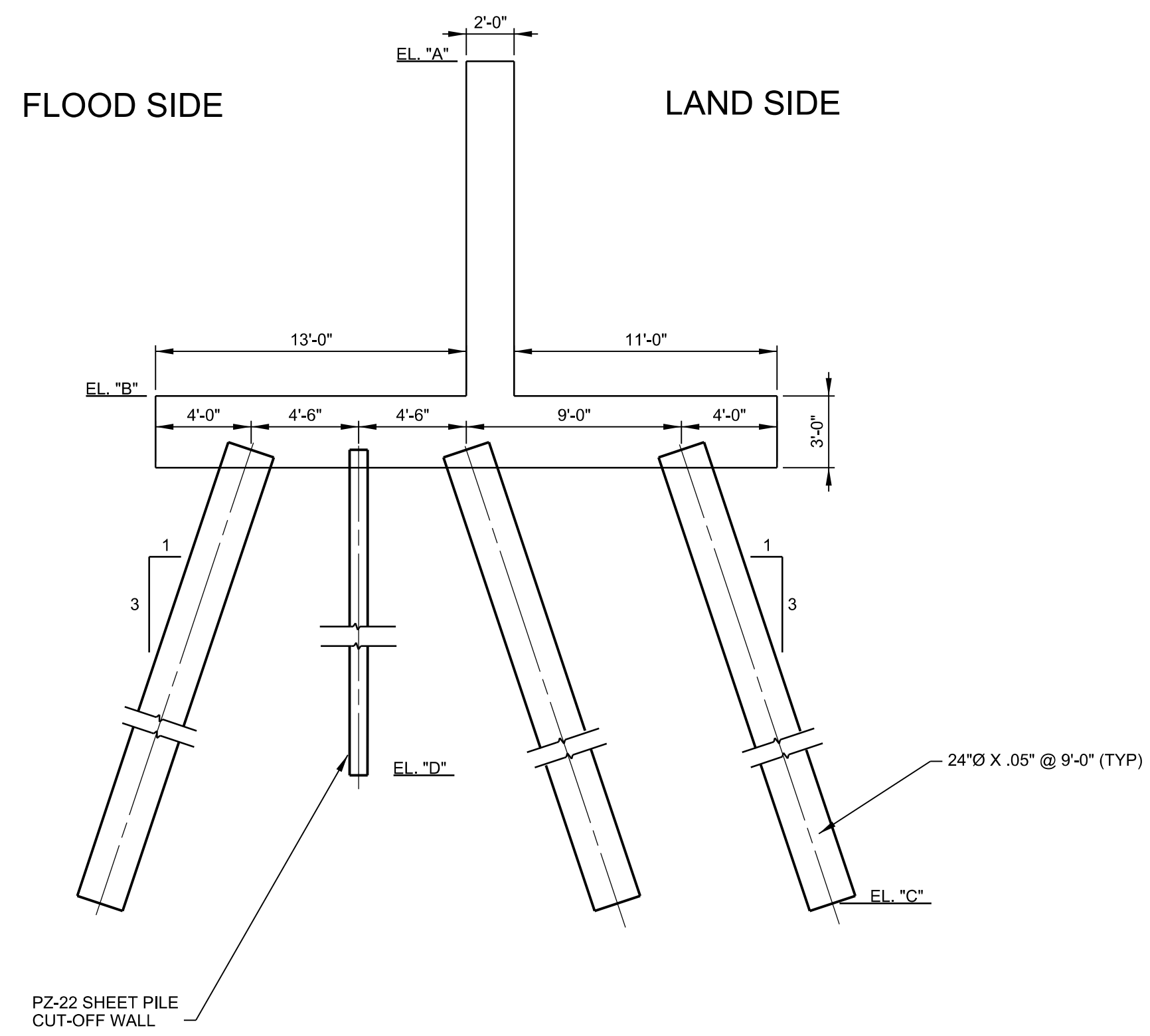
SCALE: 1" = 400' HORIZONTAL, 1"=40' VERTICAL



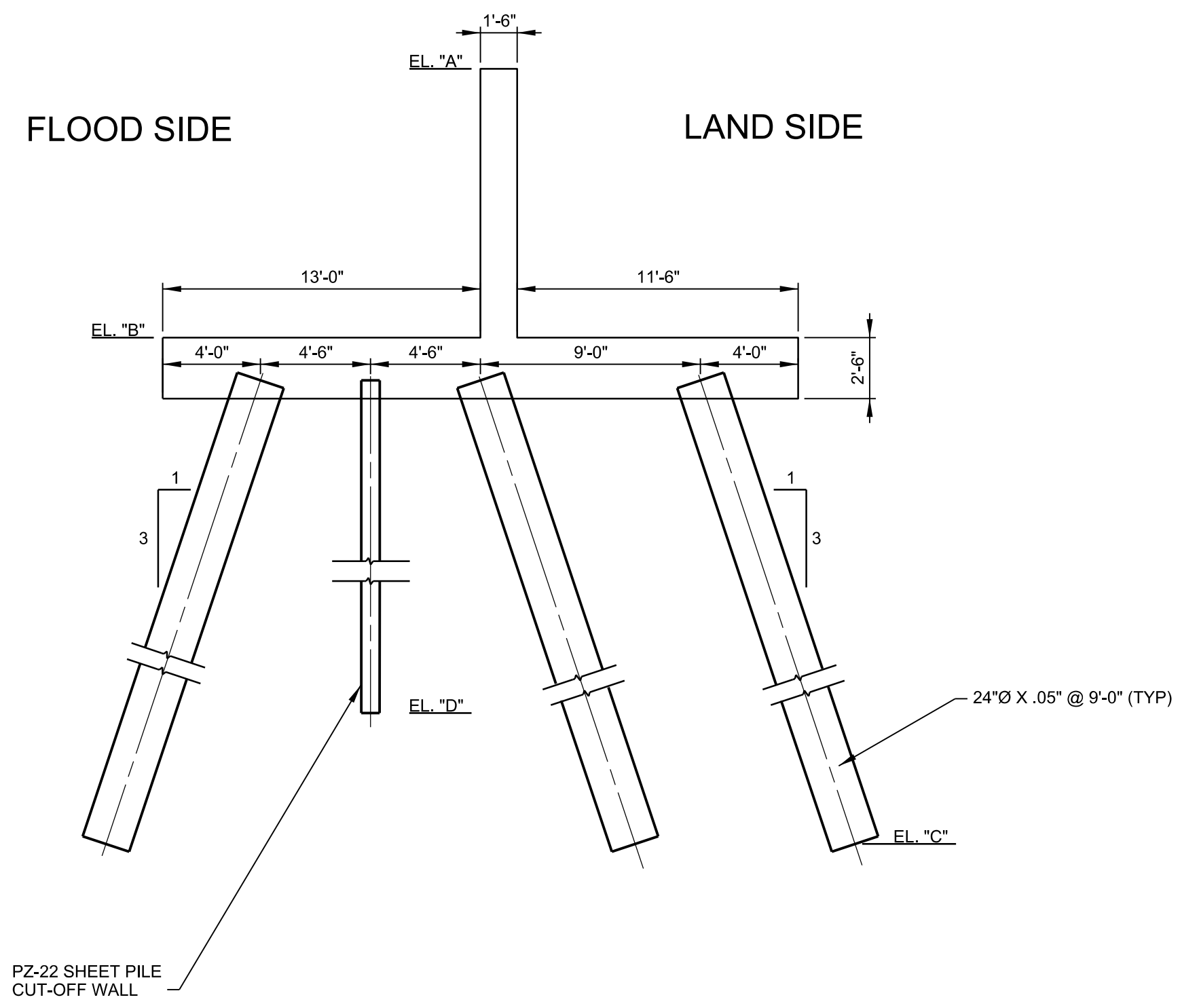
**CLEAR CREEK
GENERAL PLAN & ELEVATION**
**COASTAL TEXAS PROTECTION AND
RESTORATION FEASIBILITY STUDY**

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

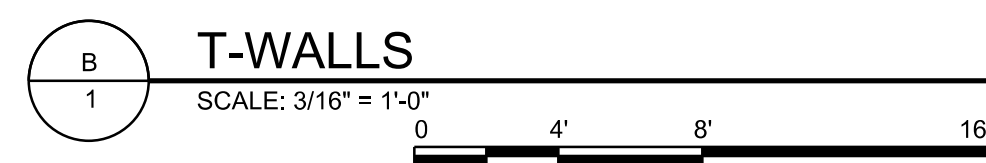
ENGINEERING APPENDIX
DATED:
NOVEMBER 9, 2018
TETRA TECH, INC.



TYPE 1



TYPE 2



LOCATION	TYPE	"A"	"B"	"C"	"D"
STA 10+00 TO STA 14+55	2	17.0	6.0	-51.5	-6.5
STA 14+55 TO STA 20+05	1	17.0	3.0	-60.0	-10.0
STA 70+45 TO STA 85+95	1	17.0	3.0	-60.0	-10.0
STA 85+95 TO STA 95+90	2	17.0	6.0	-51.5	-6.5

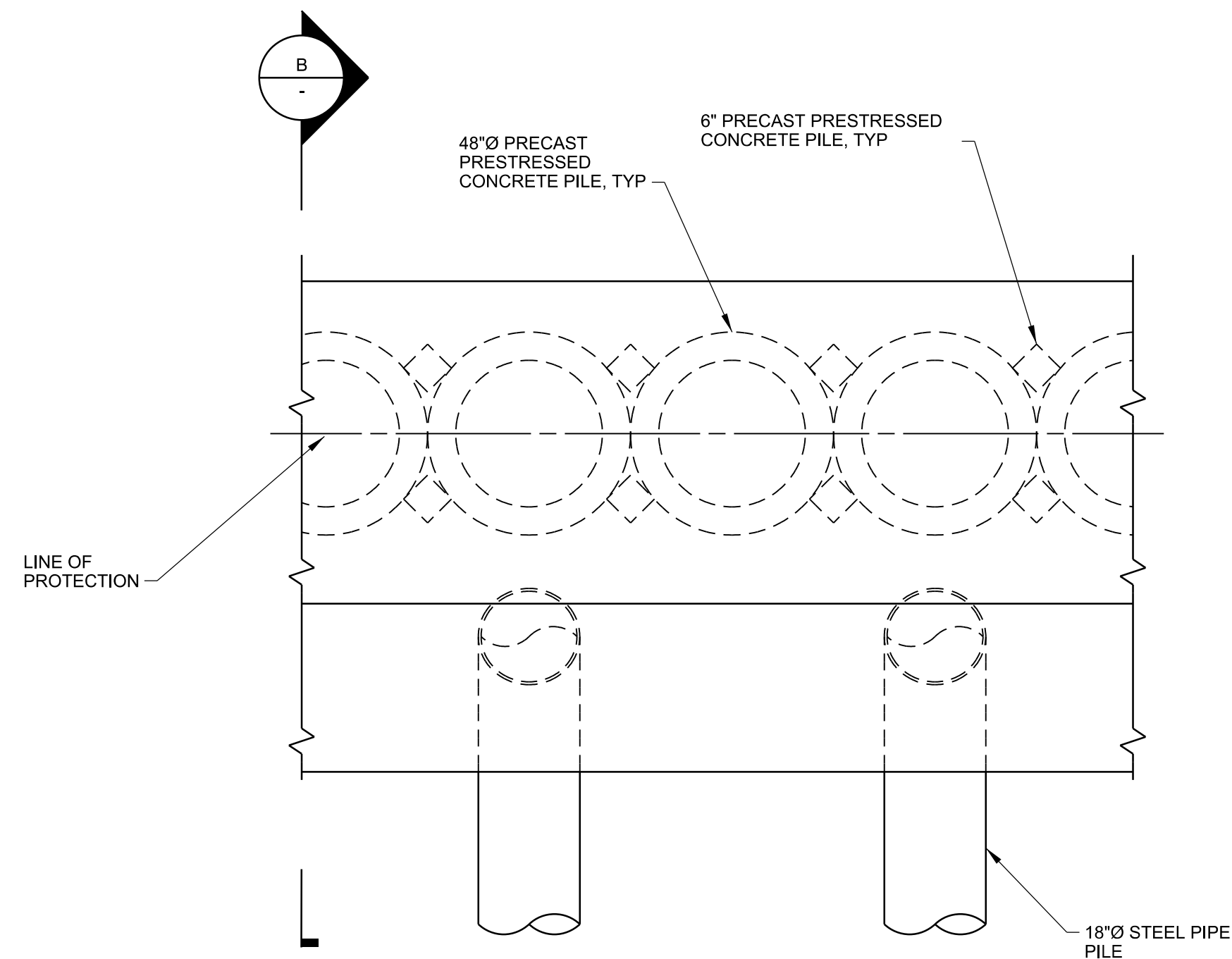
NOTES:

1. ALL CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4,000 PSI.
2. SHEET PILES SHALL MEET THE REQUIREMENTS OF ASTM A328.
3. ALL PIPE PILES SHALL MEET THE REQUIREMENTS OF ASTM A252 GRADE 3.

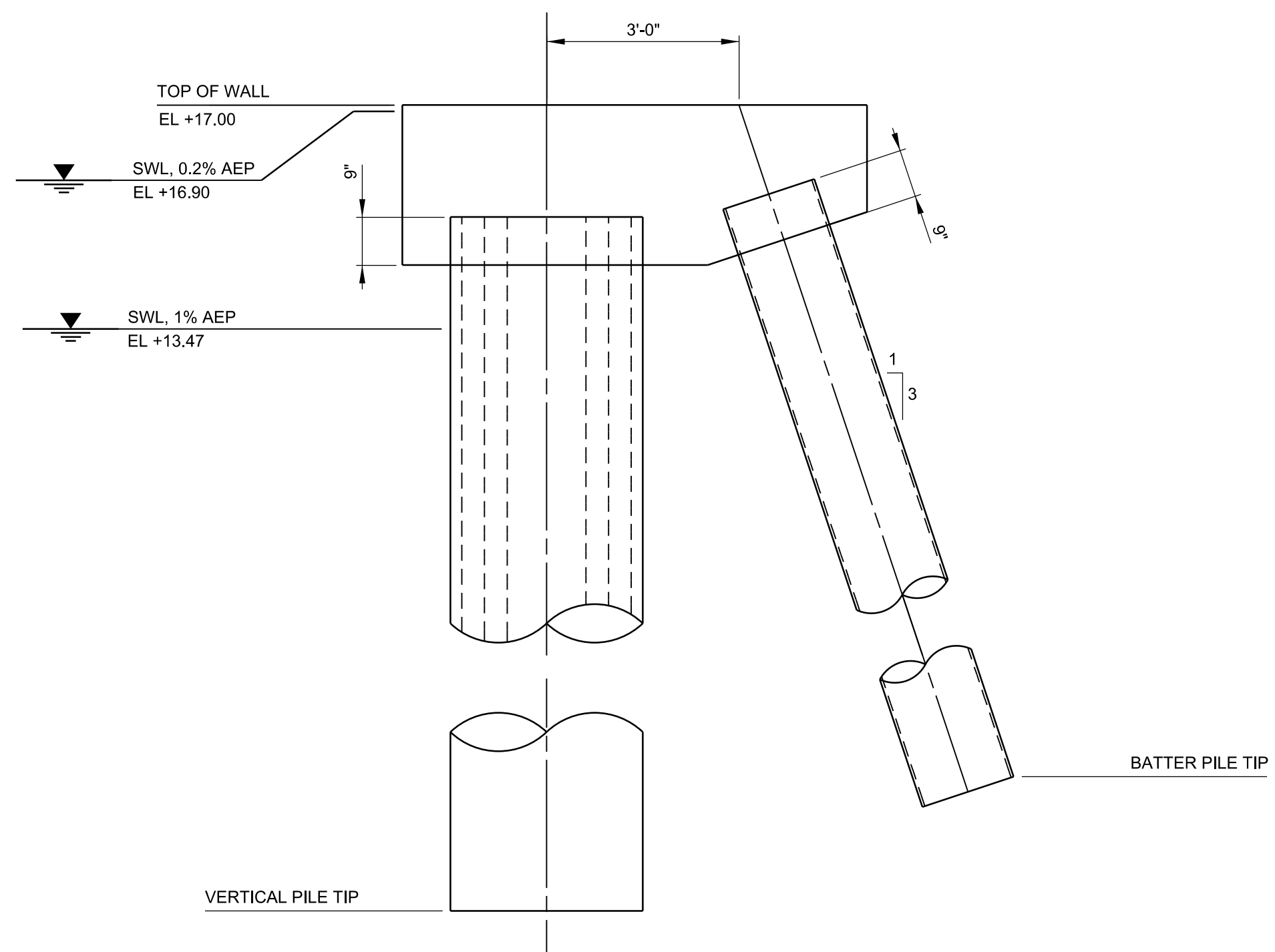
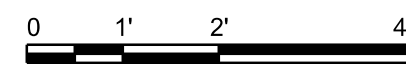
CLEAR CREEK
T-WALL
SECTIONS
COASTAL TEXAS PROTECTION AND
RESTORATION FEASIBILITY STUDY

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

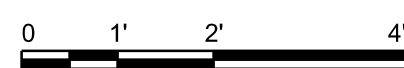
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DATED:
NOVEMBER 9, 2018
TETRA TECH, INC.



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



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

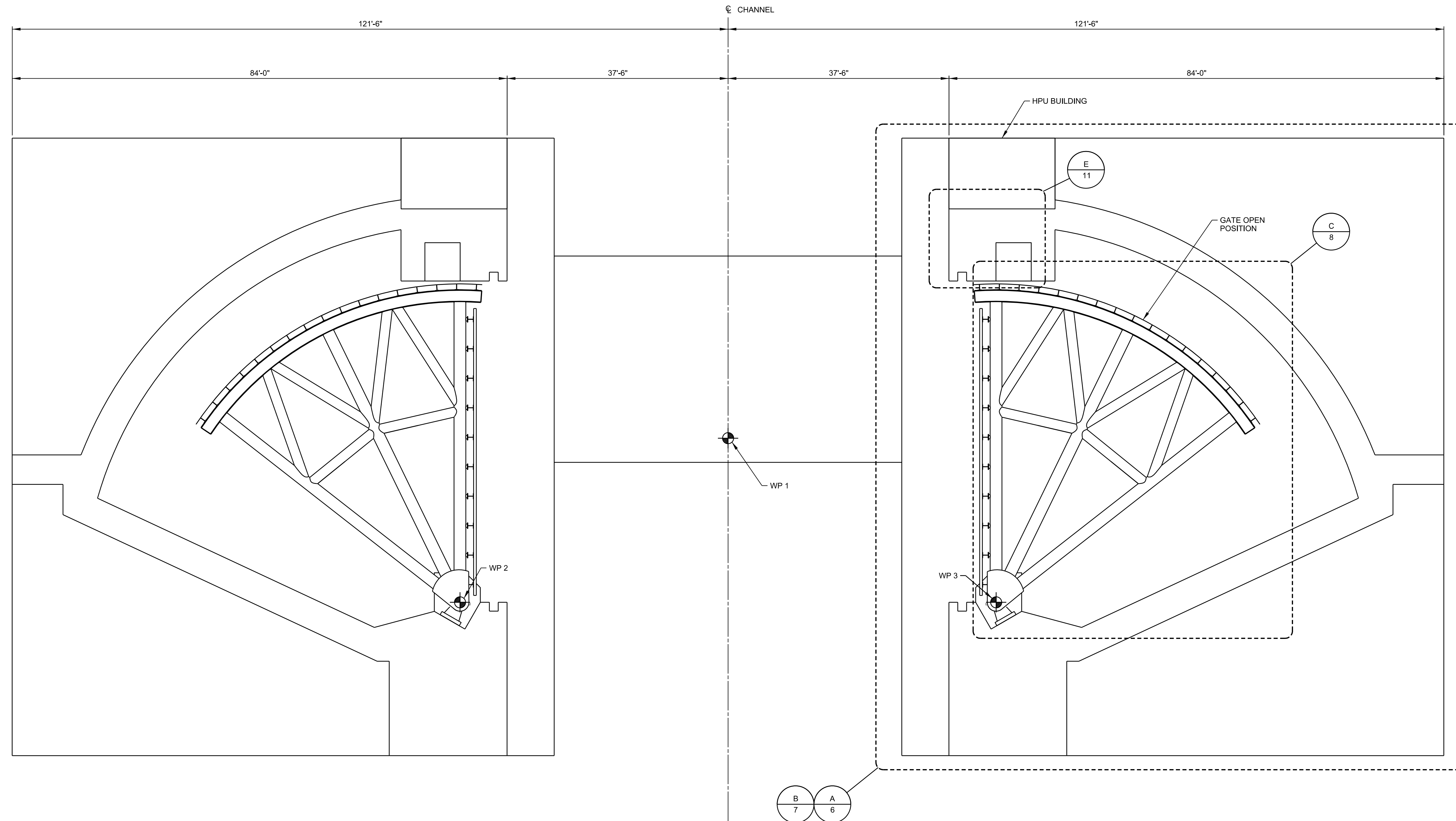
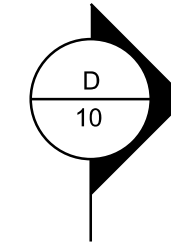
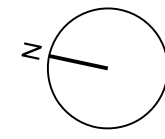


LOCATION	VERTICAL PILE TIP EL	BATTER PILE TIP EL
STA 20+05 TO STA 43+46	-70	-98
STA 56+94 TO STA 61+58	-70	-98
STA 64+01 TO STA 70+45	-70	-98

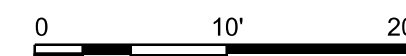
CLEAR CREEK
FLOODWALL
PLAN AND ELEVATION
COASTAL TEXAS PROTECTION AND
RESTORATION FEASIBILITY STUDY

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

ENGINEERING APPENDIX
DATED:
NOVEMBER 9, 2018
TETRA TECH, INC.



CLEAR CREEK FLOODGATE TOP PLAN - OPEN
 SCALE: 1" = 10'

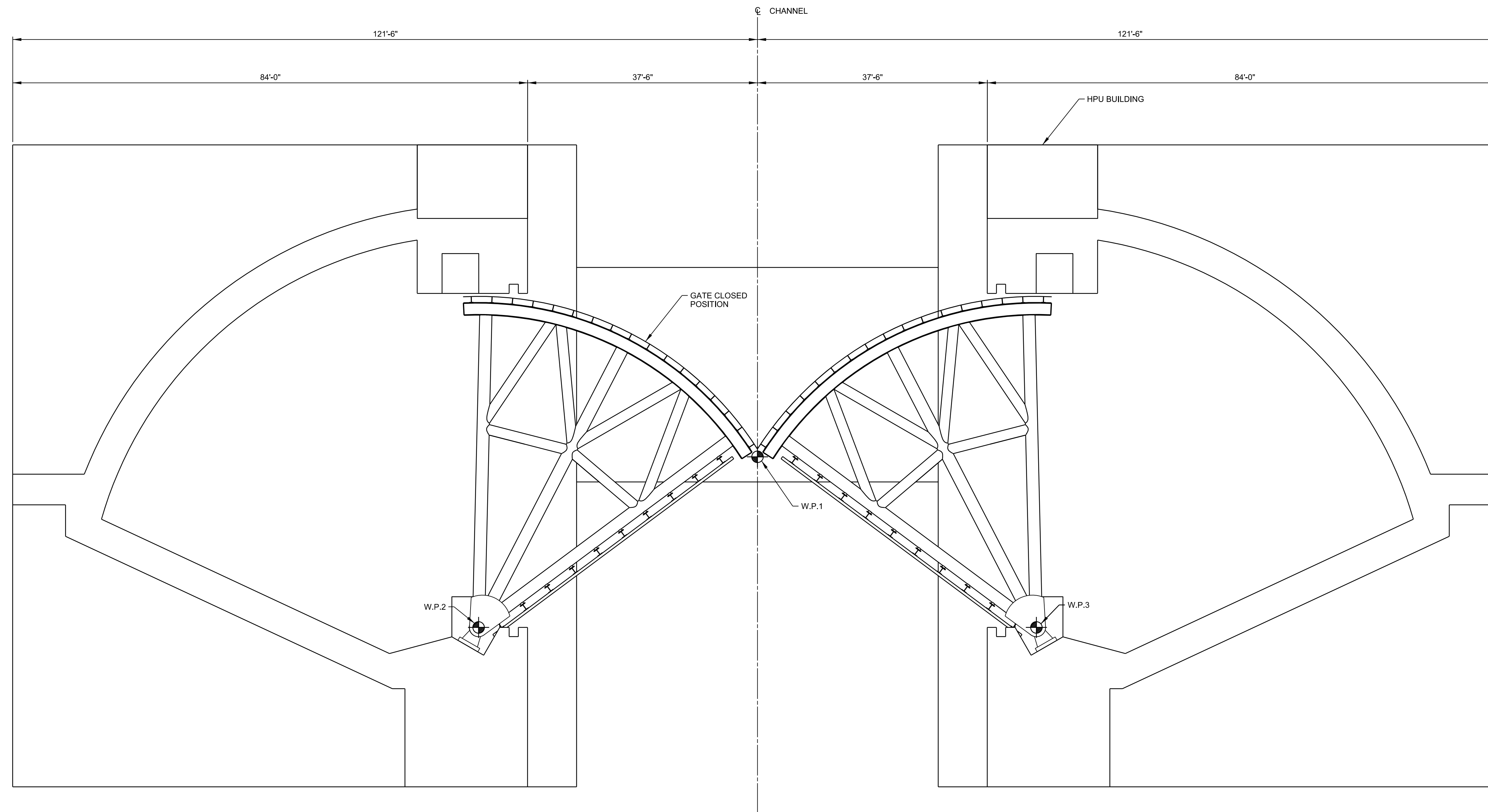
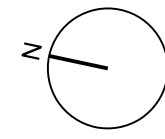


CLEAR CREEK
 FLOODGATE TOP PLAN
 OPEN

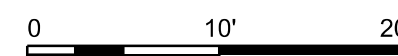
**COASTAL TEXAS PROTECTION AND
 RESTORATION FEASIBILITY STUDY**

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

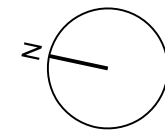
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 DATED:
 NOVEMBER 9, 2018
 TETRA TECH, INC.



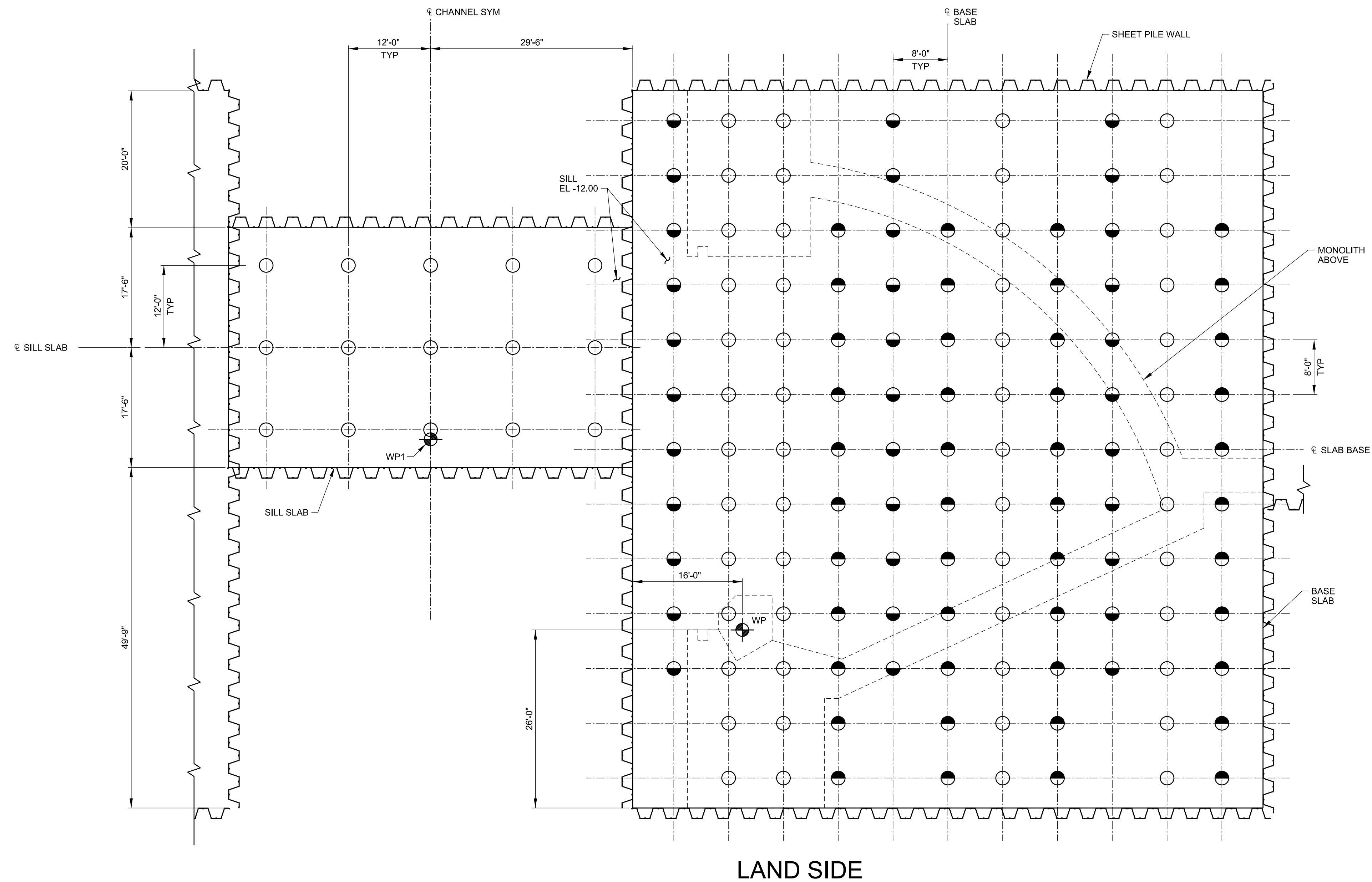
C
1
CLEAR CREEK FLOODGATE TOP PLAN - CLOSED
SCALE: 1" = 10'



CLEAR CREEK
FLOODGATE TOP PLAN
CLOSED
COASTAL TEXAS PROTECTION AND
RESTORATION FEASIBILITY STUDY
U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS
ENGINEERING APPENDIX
DATED:
NOVEMBER 9, 2018
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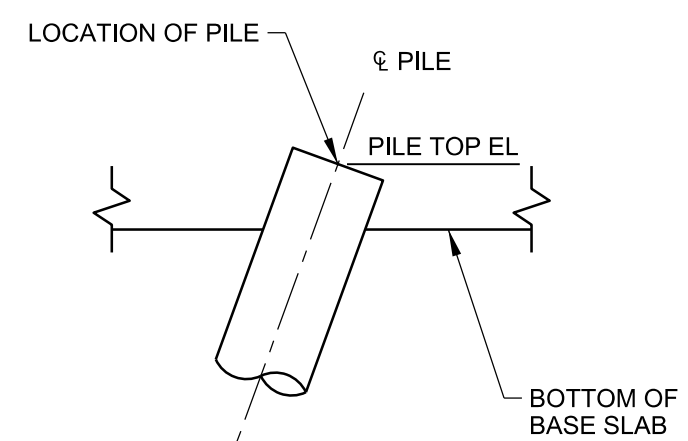
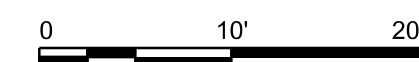


FLOOD SIDE



LAND SIDE

FOUNDATION PLAN @ EL. -12.00
SCALE: 1"=10'



PILE HEAD DETAIL
SCALE: NTS

- LEGEND:
- PIPE PILE BATTERED AT 3V:1H IN DIRECTION OF SOLID HATCHING
 - VERTICAL PILE

DESCRIPTION	TOP EL.	TIP EL.	BAT (V:H)
VERTICAL PILES	-16.25	-97.0	N/A
BATTERED PILES	-16.25	-97.0	3:1
SHEET PILE	-12.0	-61.0	N/A

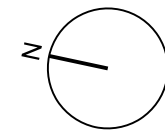
NOTES:

1. ALL PILES SHALL BE 24" DIA STEEL PIPE.
2. UNLESS NOTED OTHERWISE, ALL PILES SHALL HAVE TENSION CONNECTORS.

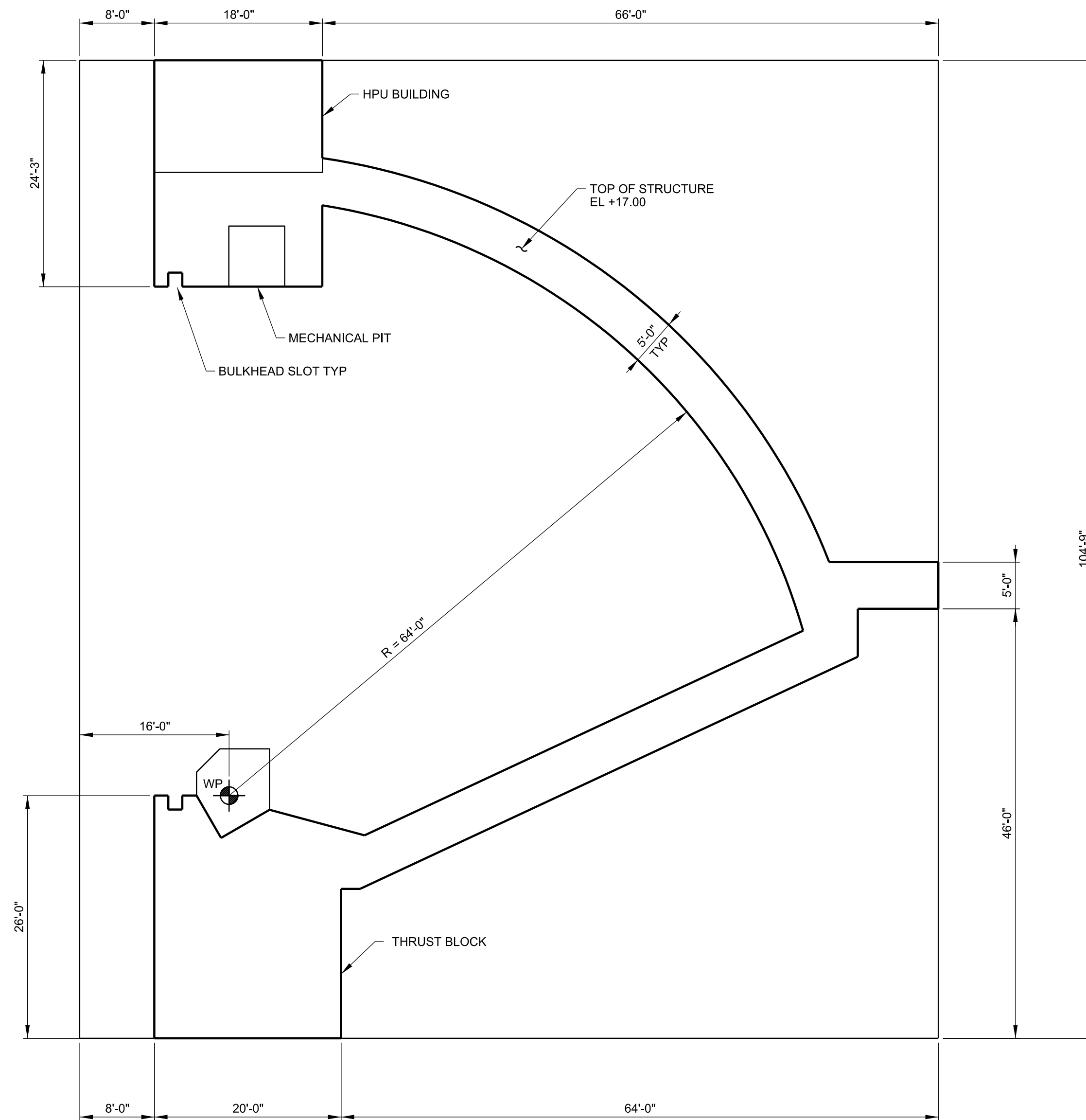
CLEAR CREEK
FLOODGATE
FOUNDATION PLAN
COASTAL TEXAS PROTECTION AND
RESTORATION FEASIBILITY STUDY

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

ENGINEERING APPENDIX
DATED:
NOVEMBER 9, 2018
TETRA TECH, INC.



CHANNEL SYM



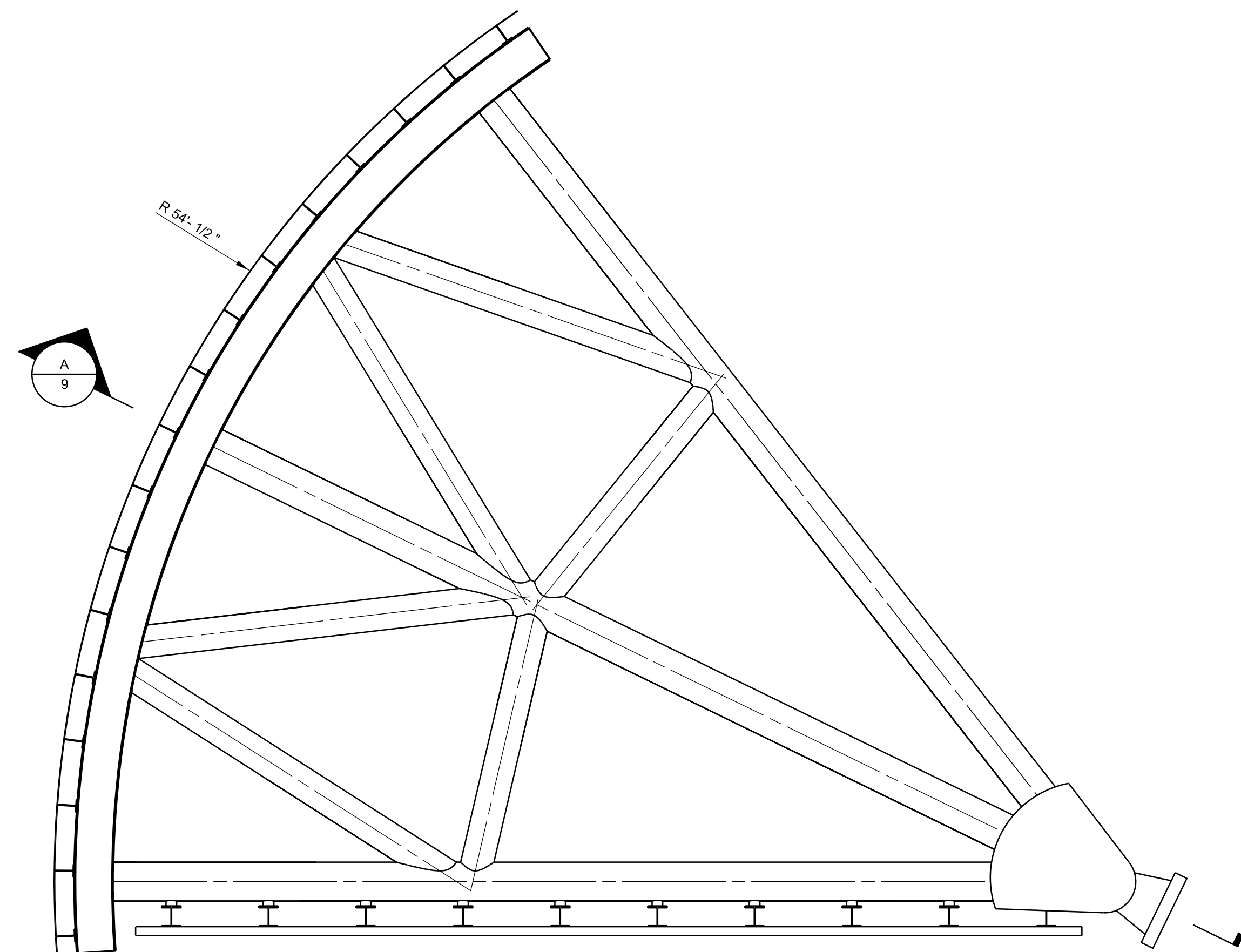
B
4
MONOLITH PLAN
SCALE: 1" = 10'
0 10' 20'

CLEAR CREEK
FLOODGATE
MONOLITH PLAN

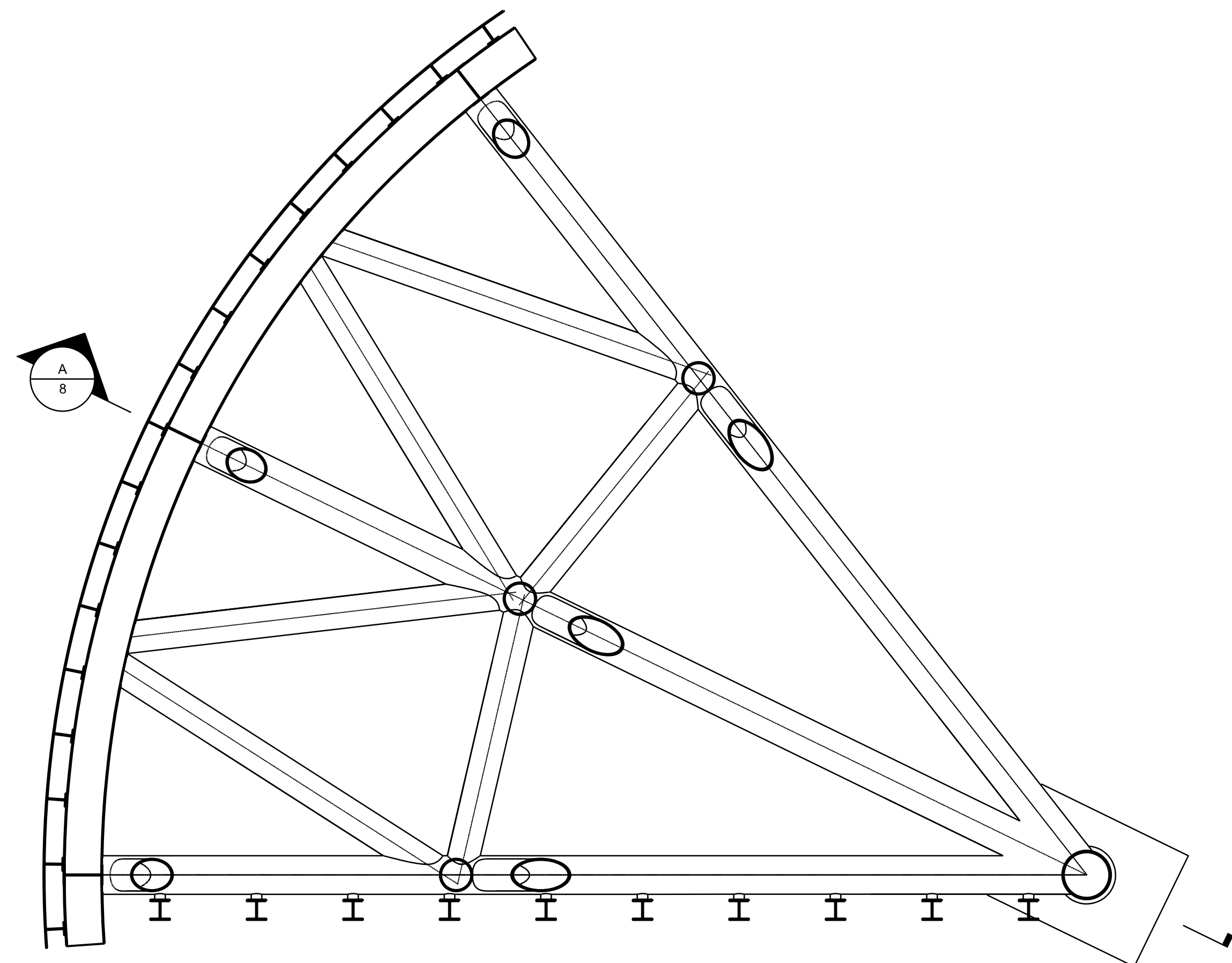
**COASTAL TEXAS PROTECTION AND
RESTORATION FEASIBILITY STUDY**

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

ENGINEERING APPENDIX
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NOVEMBER 9, 2018
TETRA TECH, INC.



c
4
GATE LEAF UPPER FRAME PLAN
 SCALE: 3/16" = 1'-0"

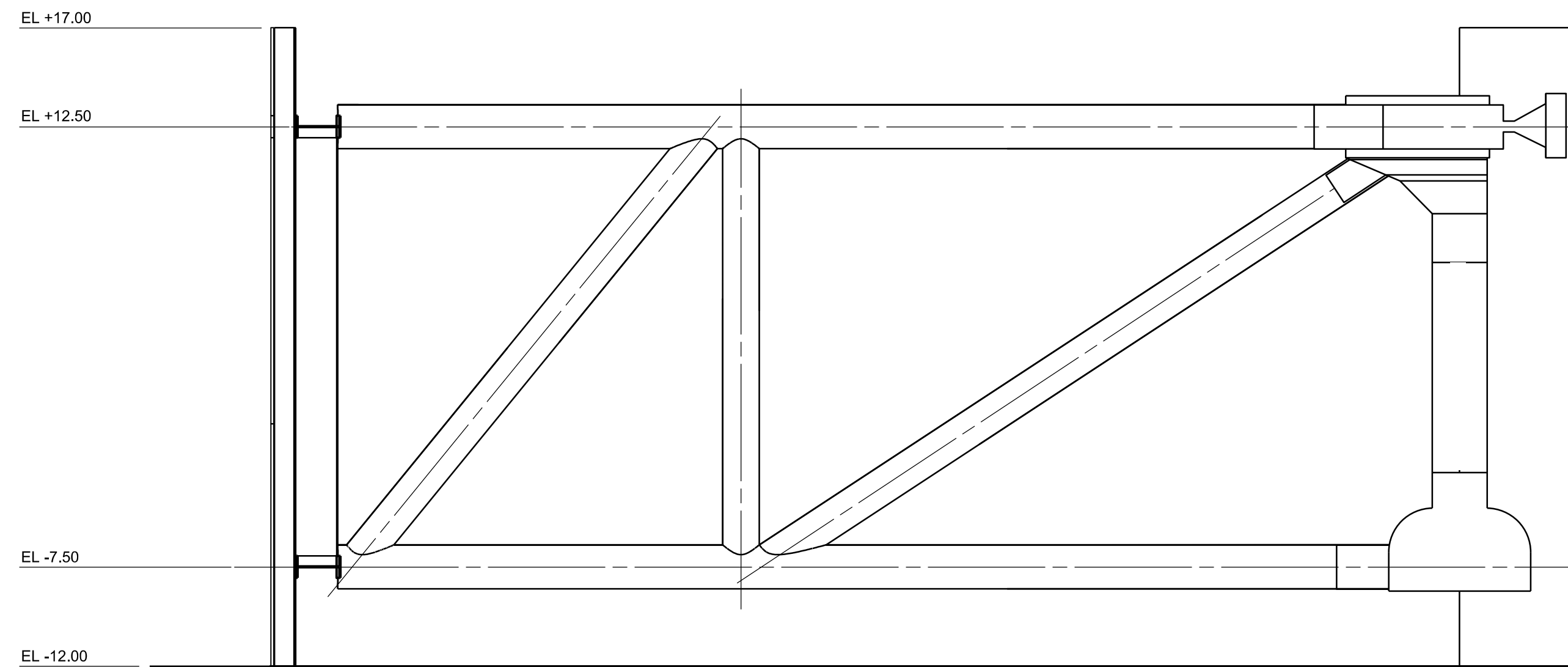


GATE LEAF BOTTOM FRAME PLAN
 SCALE: 3/16" = 1'-0"

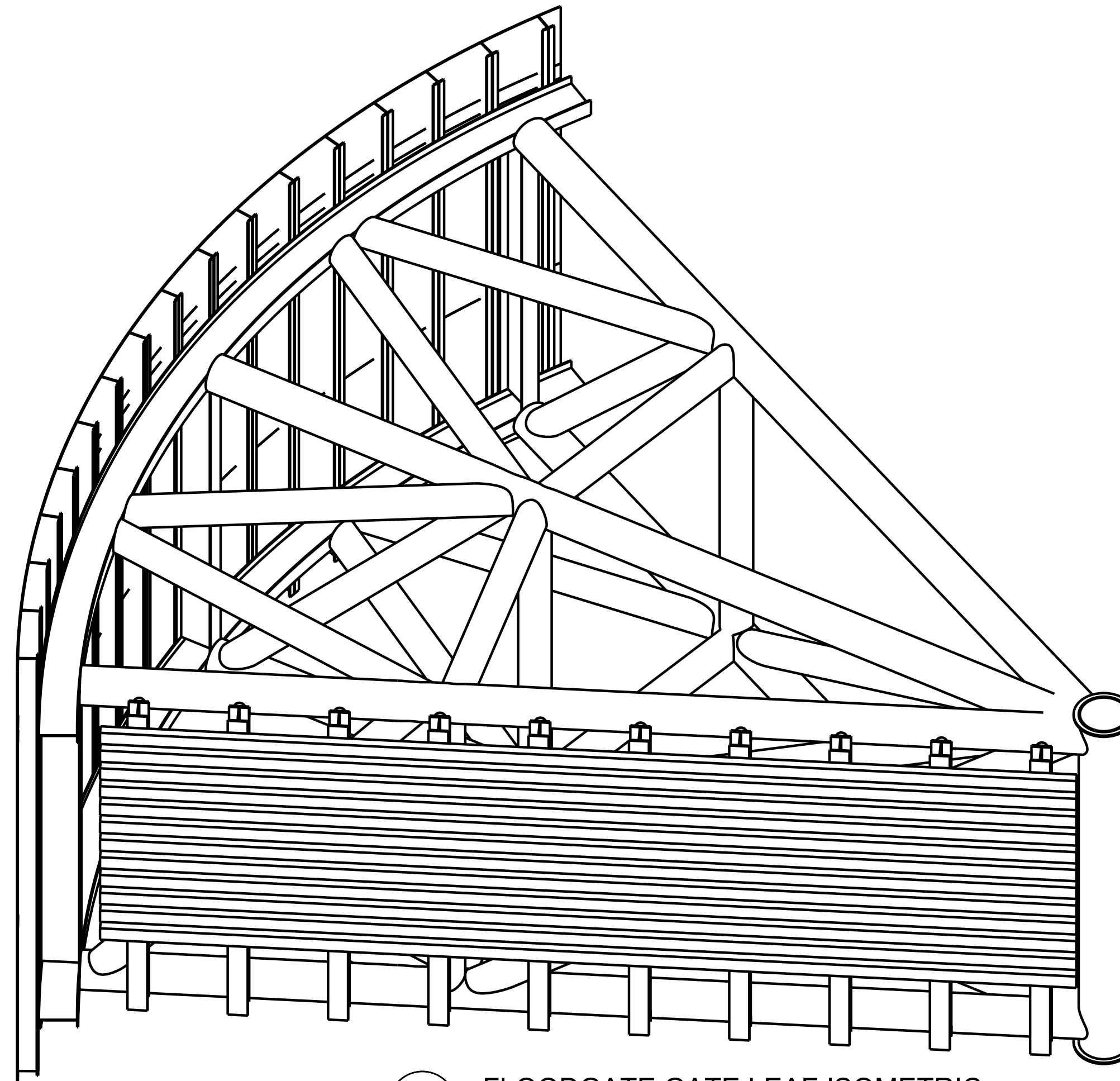
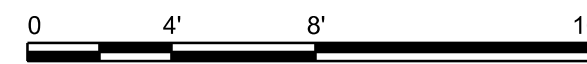
**CLEAR CREEK
 FLOODGATE
 GATE LEAF UPPER AND BOTTOM PLAN
 COASTAL TEXAS PROTECTION AND
 RESTORATION FEASIBILITY STUDY**

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

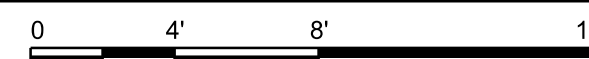
ENGINEERING APPENDIX
 DATED:
 NOVEMBER 9, 2018
 TETRA TECH, INC.



A
8
FLOODGATE GATE LEAF SECTION
 SCALE: 3/16" = 1'-0"



A
8
FLOODGATE GATE LEAF ISOMETRIC
 SCALE: 3/16" = 1'-0"



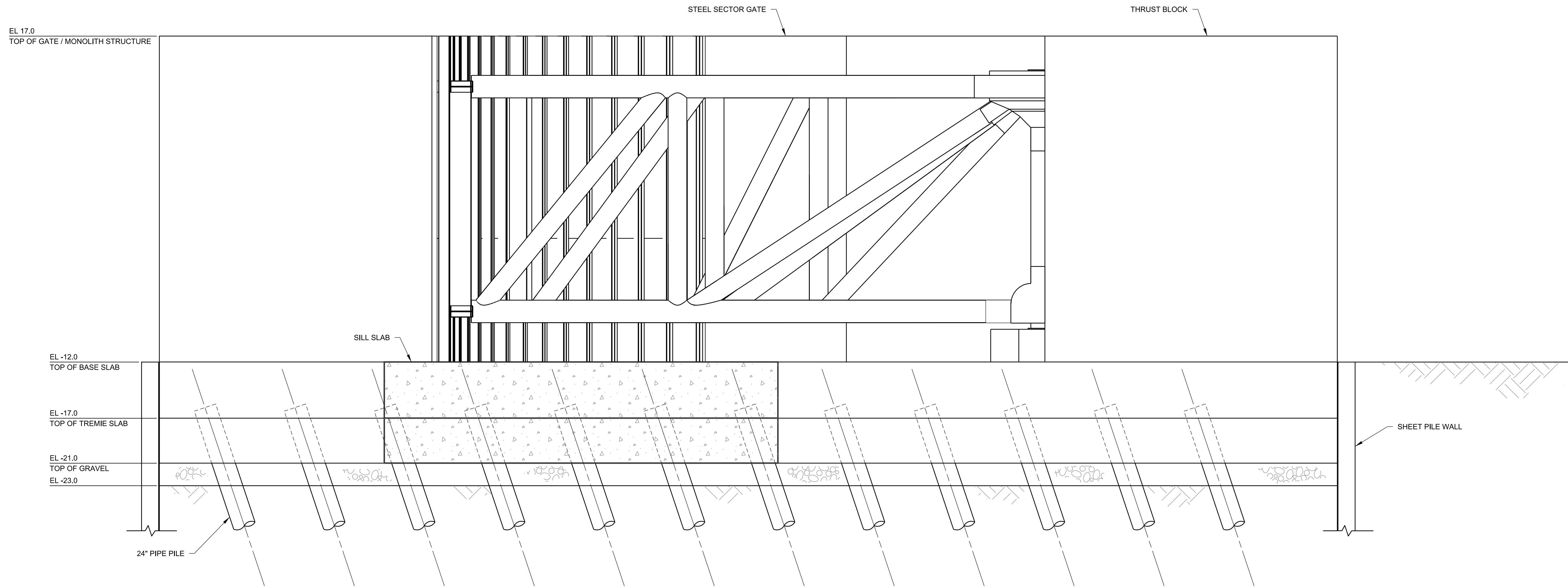
CLEAR CREEK FLOODGATE
 GATE LEAF
 SECTION & ISOMETRIC
**COASTAL TEXAS PROTECTION AND
 RESTORATION FEASIBILITY STUDY**

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

ENGINEERING APPENDIX
 DATED:
 NOVEMBER 9, 2018
 TETRA TECH, INC.

FLOOD SIDE

LAND SIDE



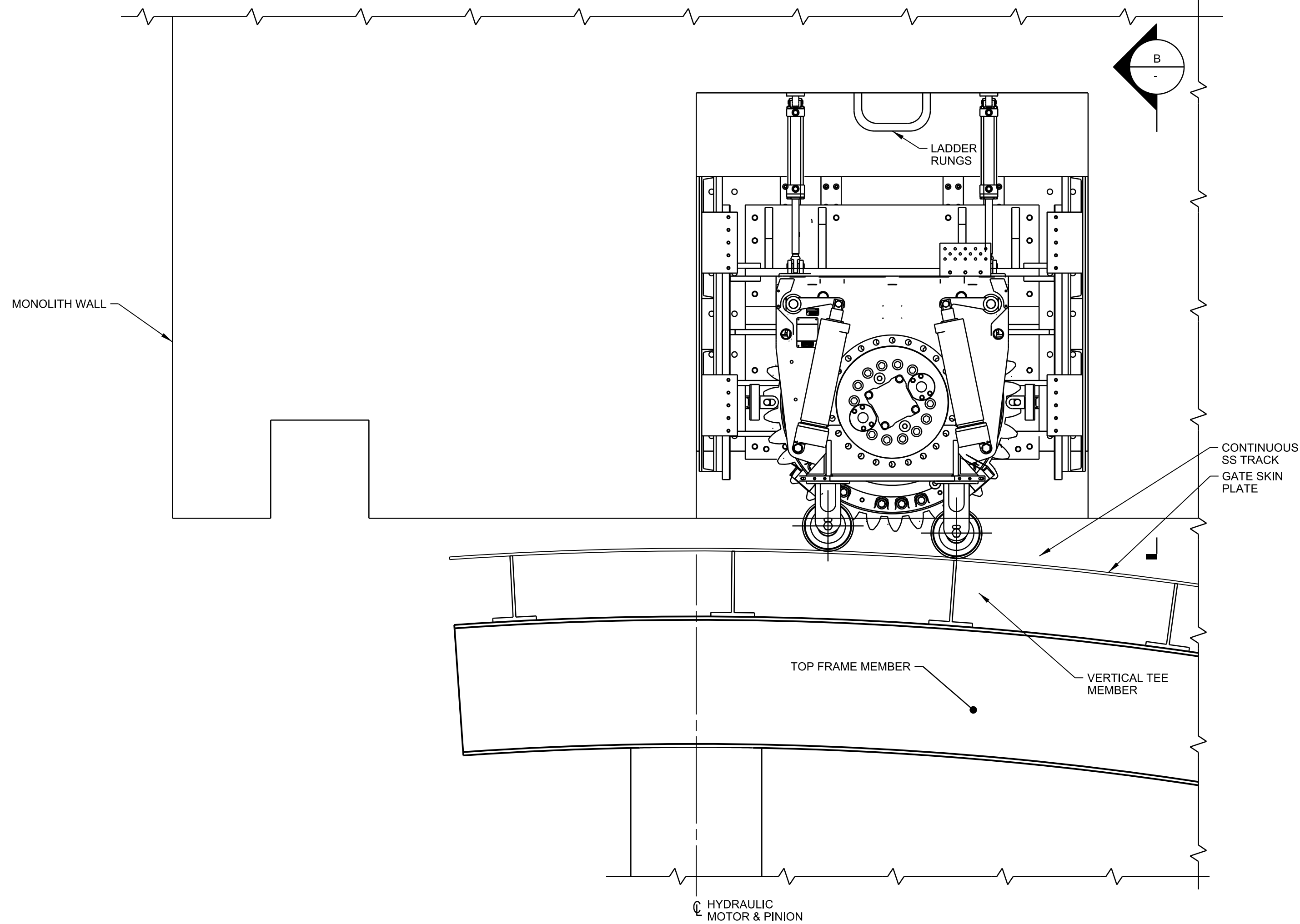
D
4
SECTION
SCALE: 1" = 5'-0"
0 5' 10'

CLEAR CREEK
FLOODGATE
MONOLITH SECTION

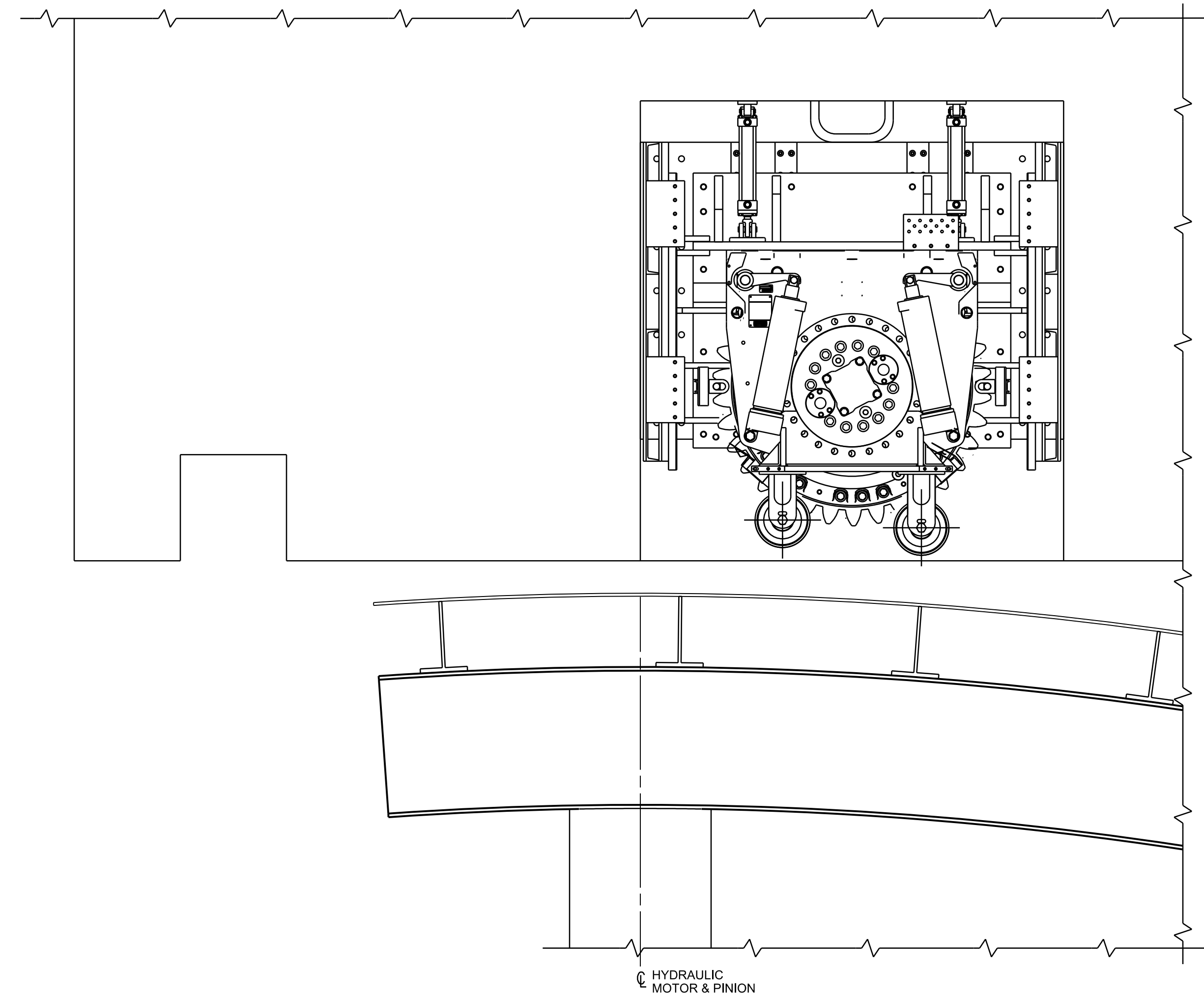
**COASTAL TEXAS PROTECTION AND
RESTORATION FEASIBILITY STUDY**

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

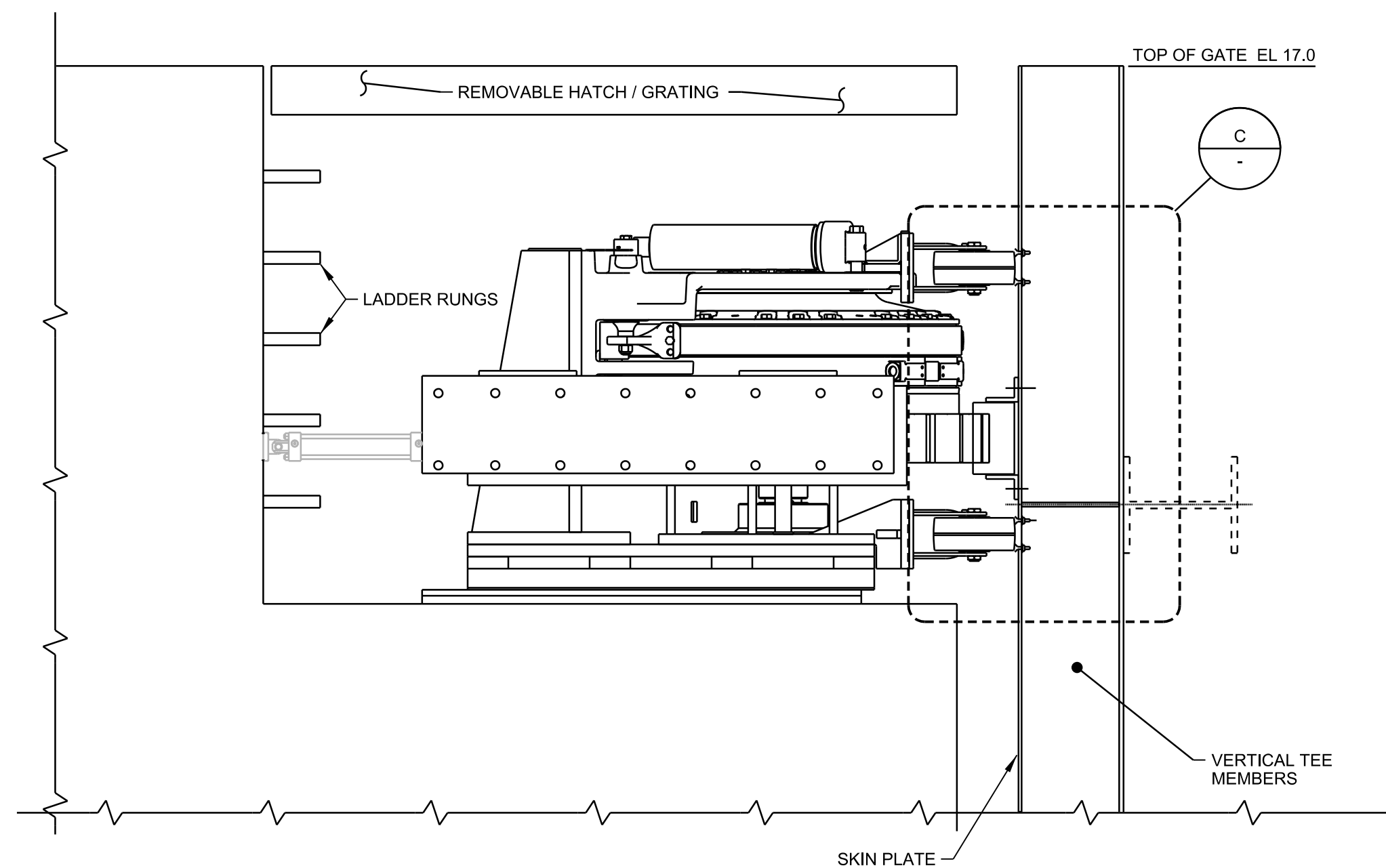
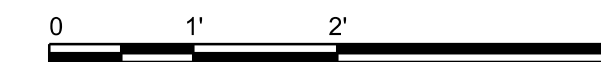
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NOVEMBER 9, 2018
TETRA TECH, INC.



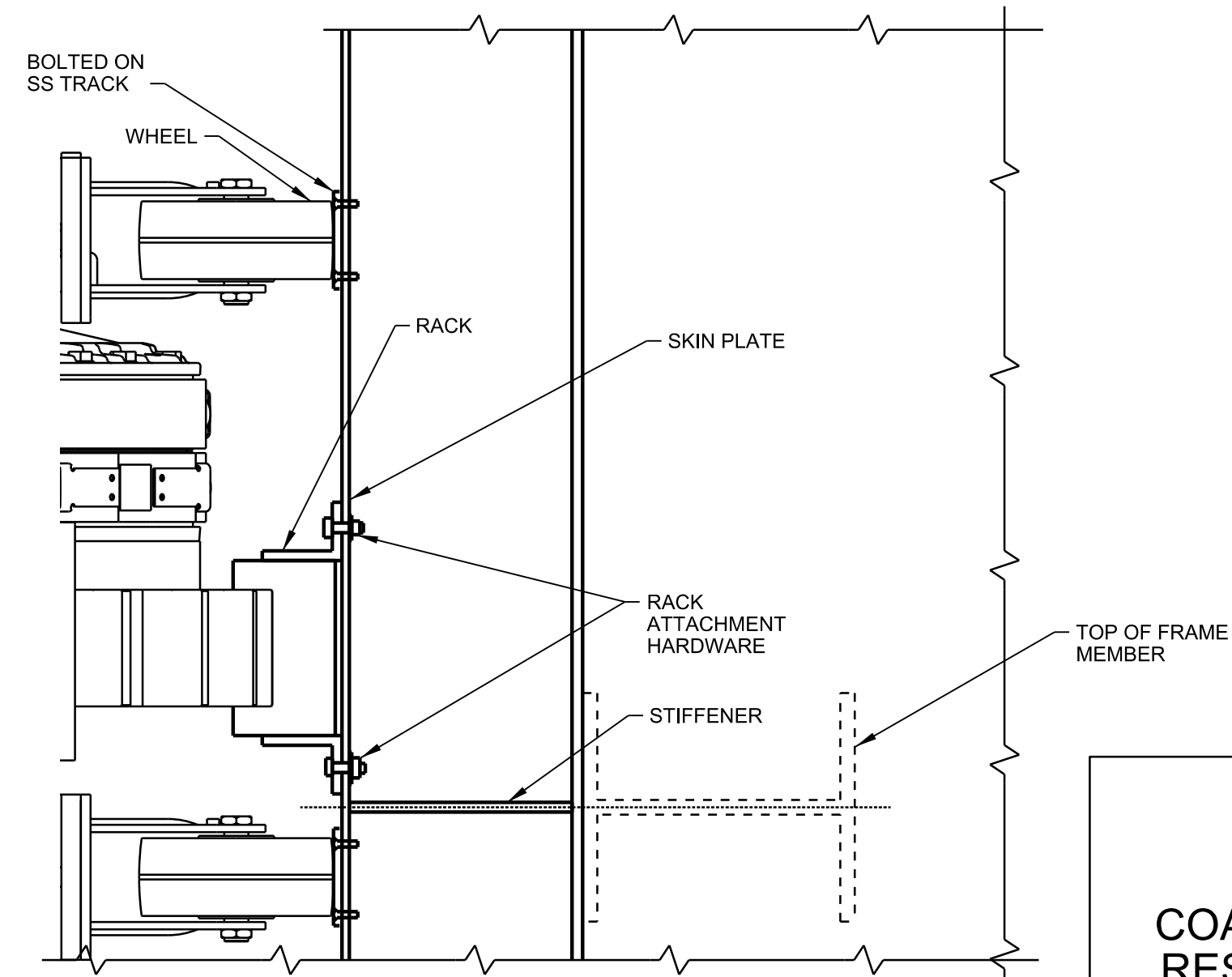
E
4
OPERATOR IN EXTENDED POSITION
SCALE: 3/4" = 1'-0"



A
-
OPERATOR IN RETRACTED POSITION
SCALE: 3/4" = 1'-0"



B
-
SECTION
SCALE: 3/4" = 1'-0"



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



CLEAR CREEK
FLOODGATE
MECHANICAL OPERATOR
**COASTAL TEXAS PROTECTION AND
RESTORATION FEASIBILITY STUDY**

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

ENGINEERING APPENDIX
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TETRA TECH, INC.

31 BAYS @ 46'-5" SPAN = 1438'-11"

20'-0" 55'-0"

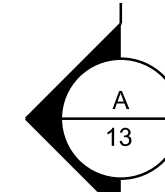
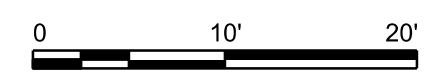
SAFE HOUSE/CONTROL ROOM

20'-9 1/8" 10'-9 1/2"

EQ TYP EQ TYP

46'-5" TYP 23'-2 1/2"

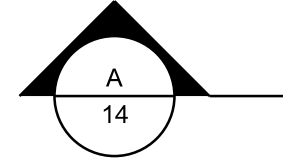
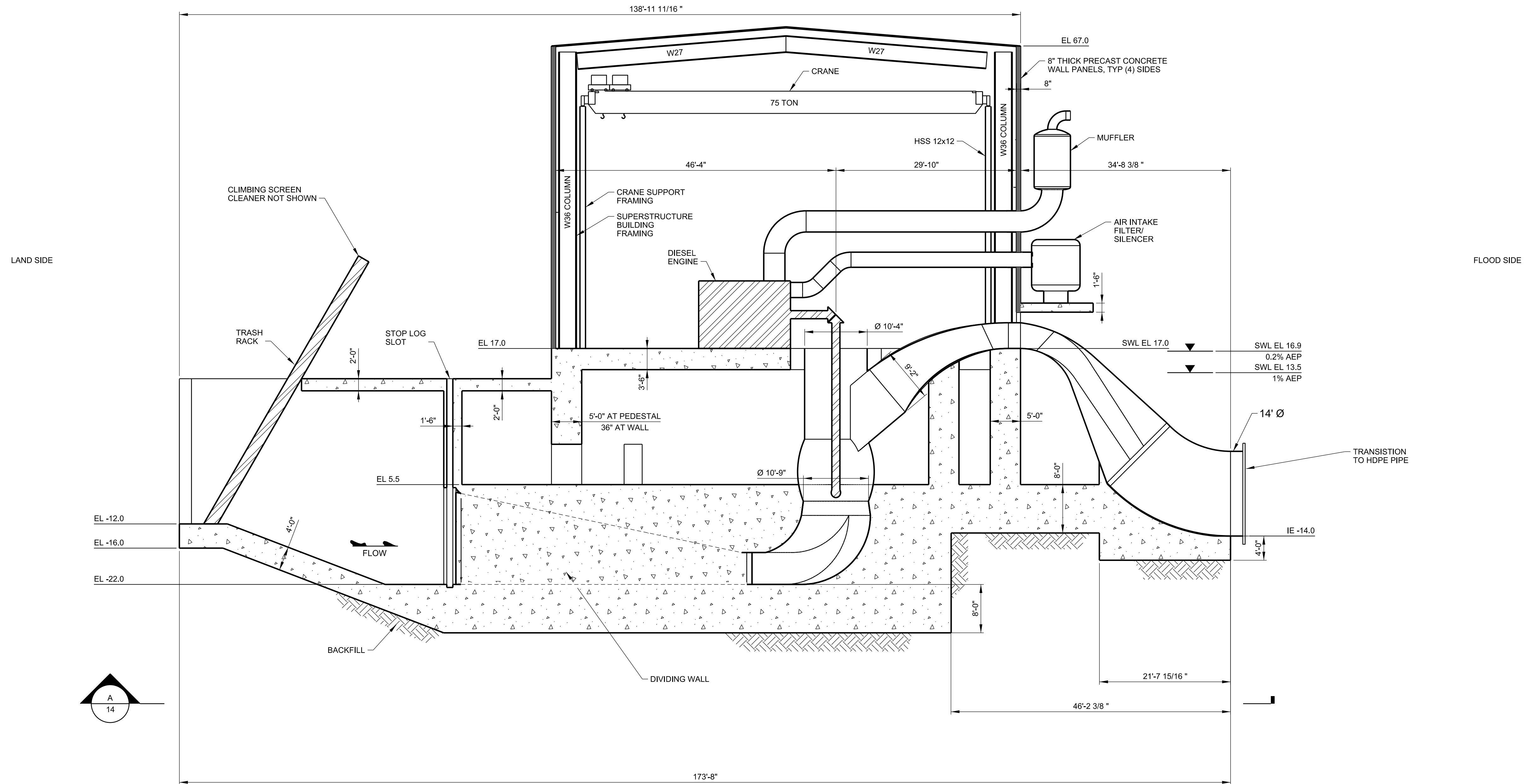
D 1 CLEAR CREEK PUMP STATION - PLAN SCALE: 1" = 10'



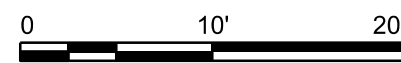
CLEAR CREEK PUMP STATION PLAN
COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

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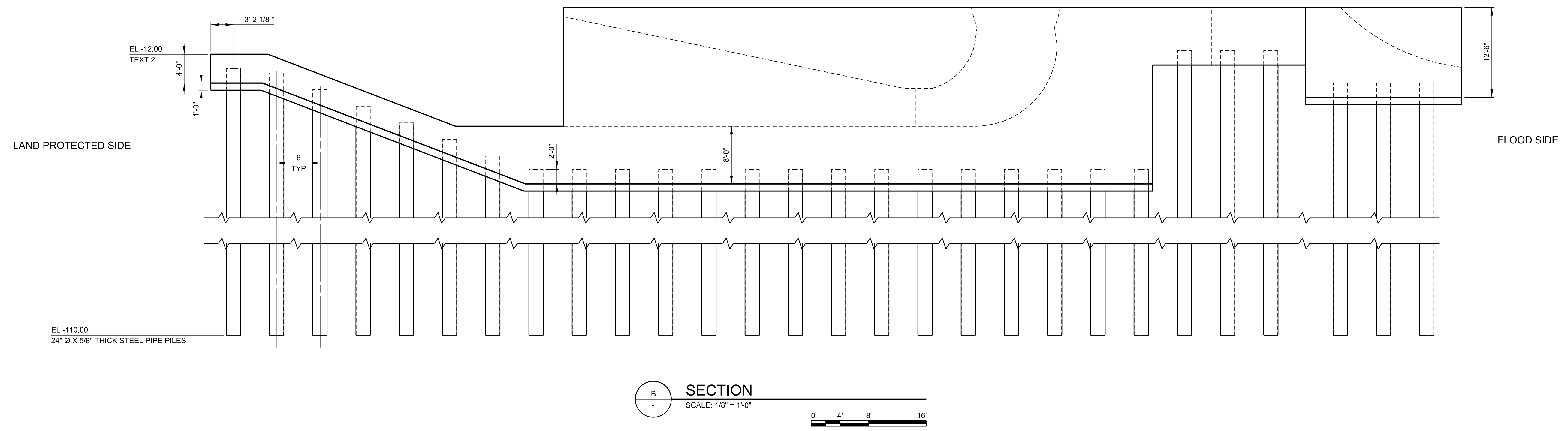
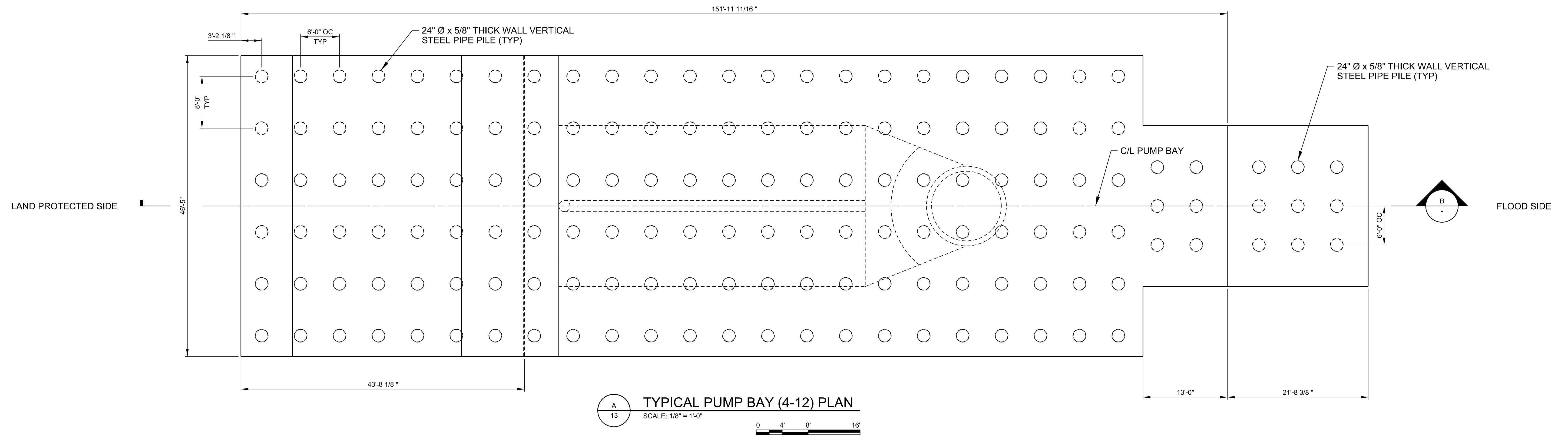

CLEAR CREEK PUMP STATION - SECTION
 SCALE: 1" = 10'



CLEAR CREEK PUMP STATION
 SECTION

**COASTAL TEXAS PROTECTION AND
 RESTORATION FEASIBILITY STUDY**
 U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

 ENGINEERING APPENDIX
 DATED:
 NOVEMBER 9, 2018
 TETRA TECH, INC.



- NOTES:**
1. ALL PILES ARE 24"Ø. FOR FURTHER DETAILS, SEE CONTRACT SPECIFICATIONS
 2. MUD SLAB IS 2500 PSI LEAN CONCRETE 12" THICKNESS

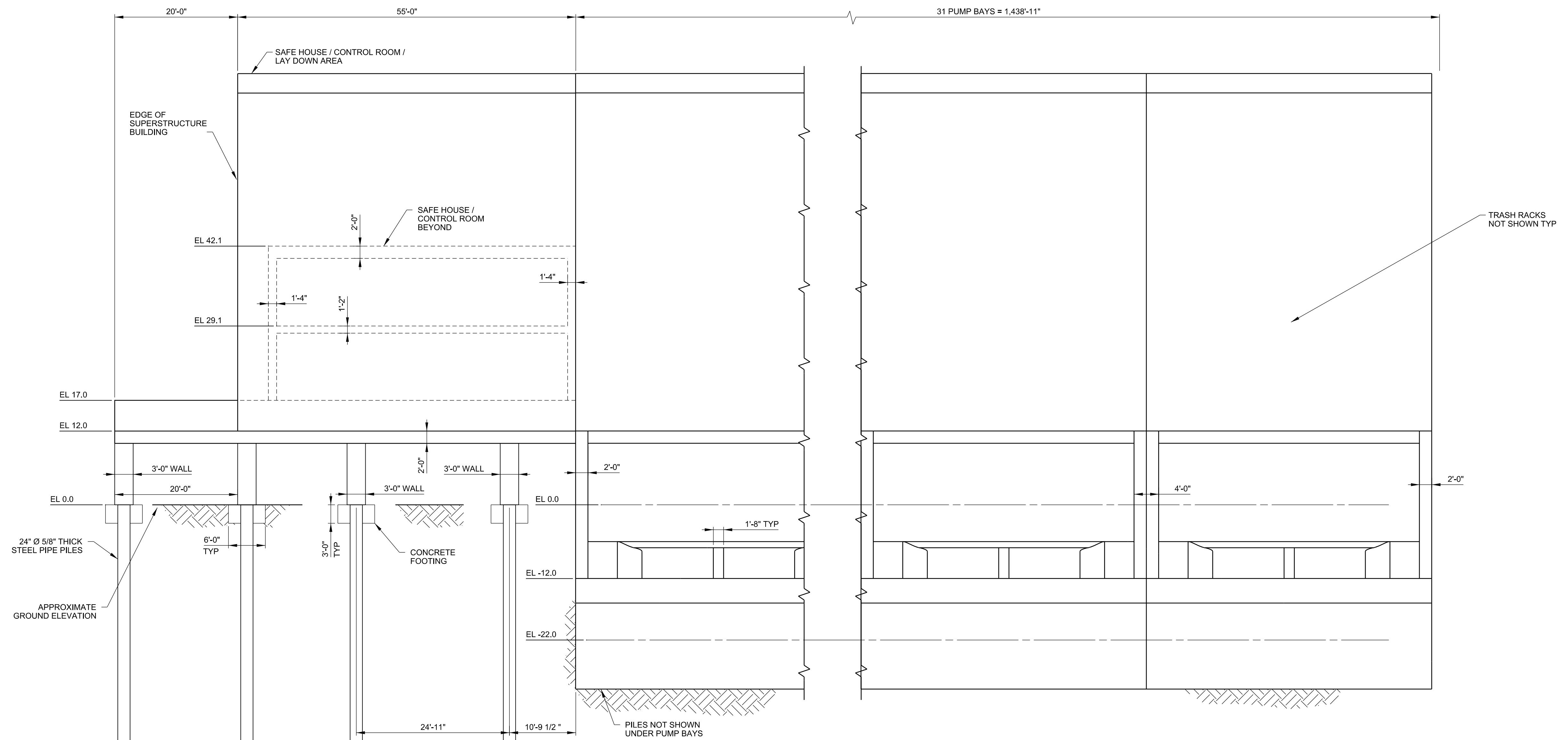
7. 1' HORIZONTAL TOLERANCE ON PUMP STATION PIPE PILE AND EXCAVATE AROUND PILE AND INCREASE FOOTING THICKNESS FOR VERTICAL TOLERANCE

**CLEAR CREEK PUMP STATION
FOUNDATION PLAN**

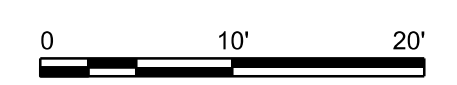
**COASTAL TEXAS PROTECTION AND
RESTORATION FEASIBILITY STUDY**

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

ENGINEERING APPENDIX
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TETRA TECH, INC.



B
13
CLEAR CREEK PUMP STATION - LAND SIDE ELEVATION
SCALE: 1" = 10'



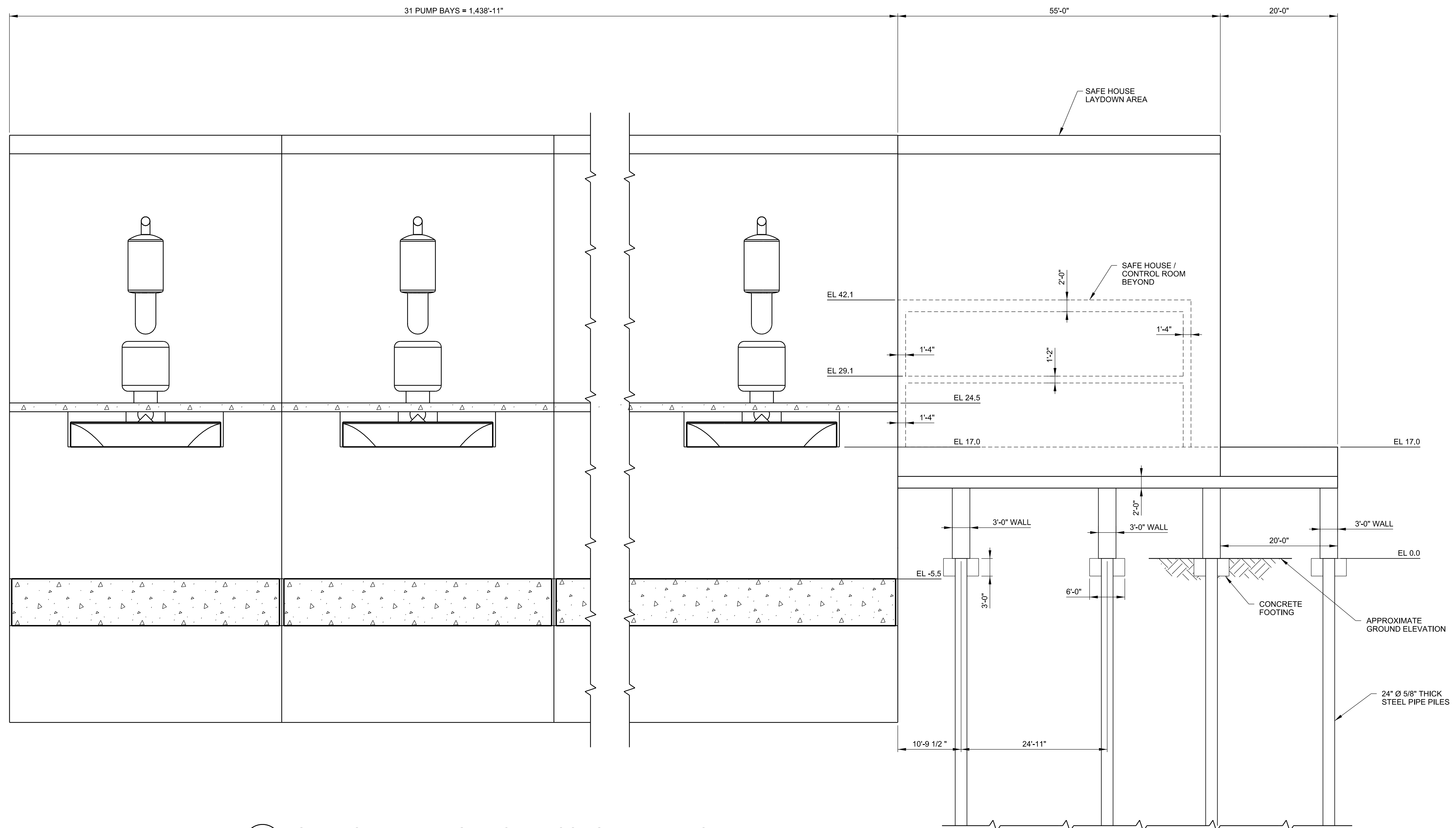
EL -80.00
24" Ø 5/8" THICK STEEL PIPE PILES @ 6'-0" O.C.
UNDER SAFE HOUSE SUPERSTRUCTURE BUILDING

CLEAR CREEK PUMP STATION
UPSTREAM ELEVATION

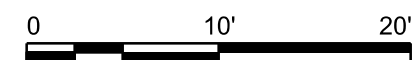
**COASTAL TEXAS PROTECTION AND
RESTORATION FEASIBILITY STUDY**

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

ENGINEERING APPENDIX
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NOVEMBER 9, 2018
TETRA TECH, INC.



C
13 CLEAR CREEK PUMP STATION - FLOOD SIDE ELEVATION
SCALE: 1" = 10'

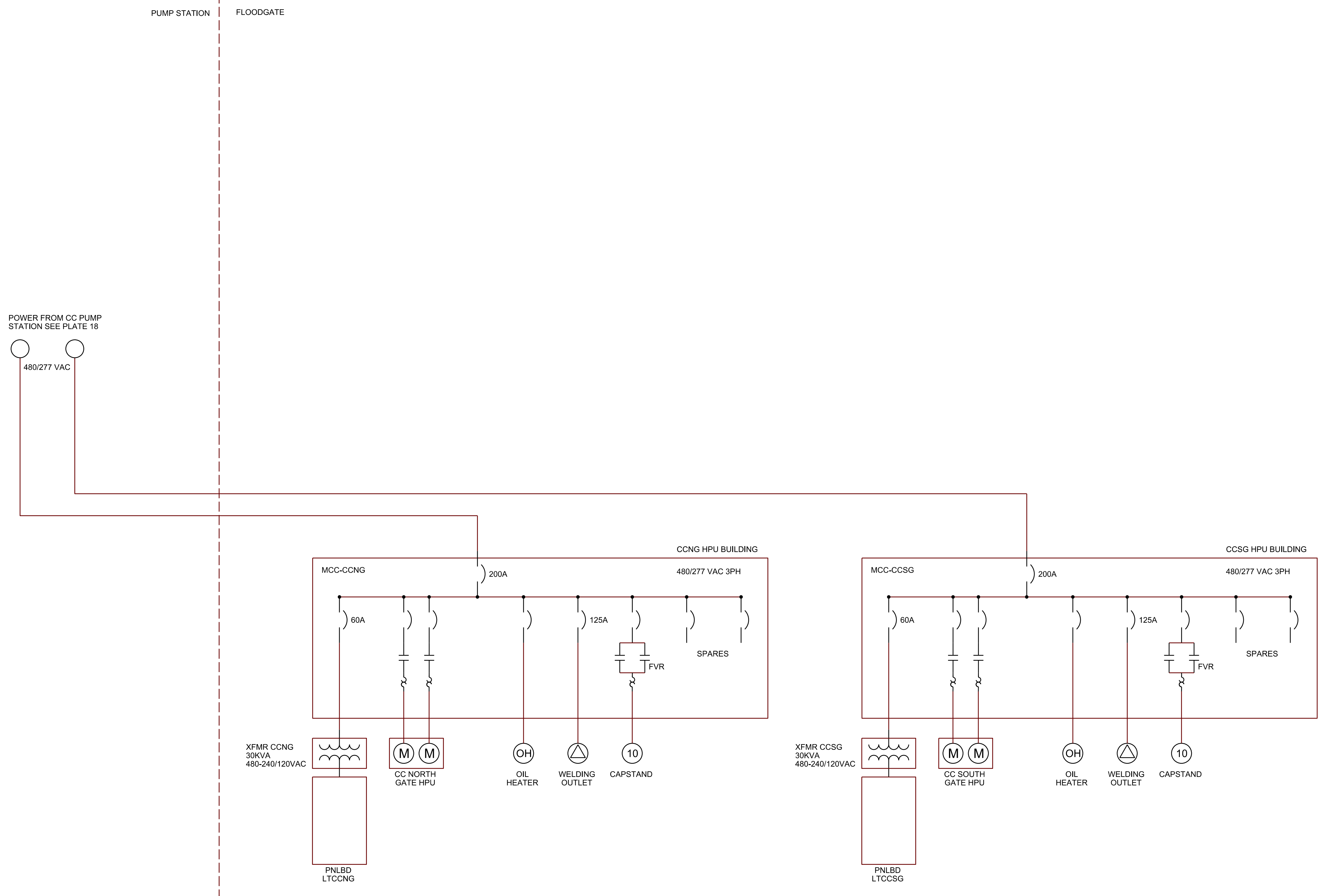


EL -80.00
24" Ø 5/8" THICK STEEL PIPE PILES @ 6'-0" O.C.
UNDER SAFE HOUSE SUPERSTRUCTURE BUILDING

CLEAR CREEK
PUMP STATION
DOWNSTREAM ELEVATION
COASTAL TEXAS PROTECTION AND
RESTORATION FEASIBILITY STUDY

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

ENGINEERING APPENDIX
DATED:
NOVEMBER 9, 2018
TETRA TECH, INC.



LEGEND
 CC - CLEAR CREEK
 NG - NORTH GATE
 SG - SOUTH GATE

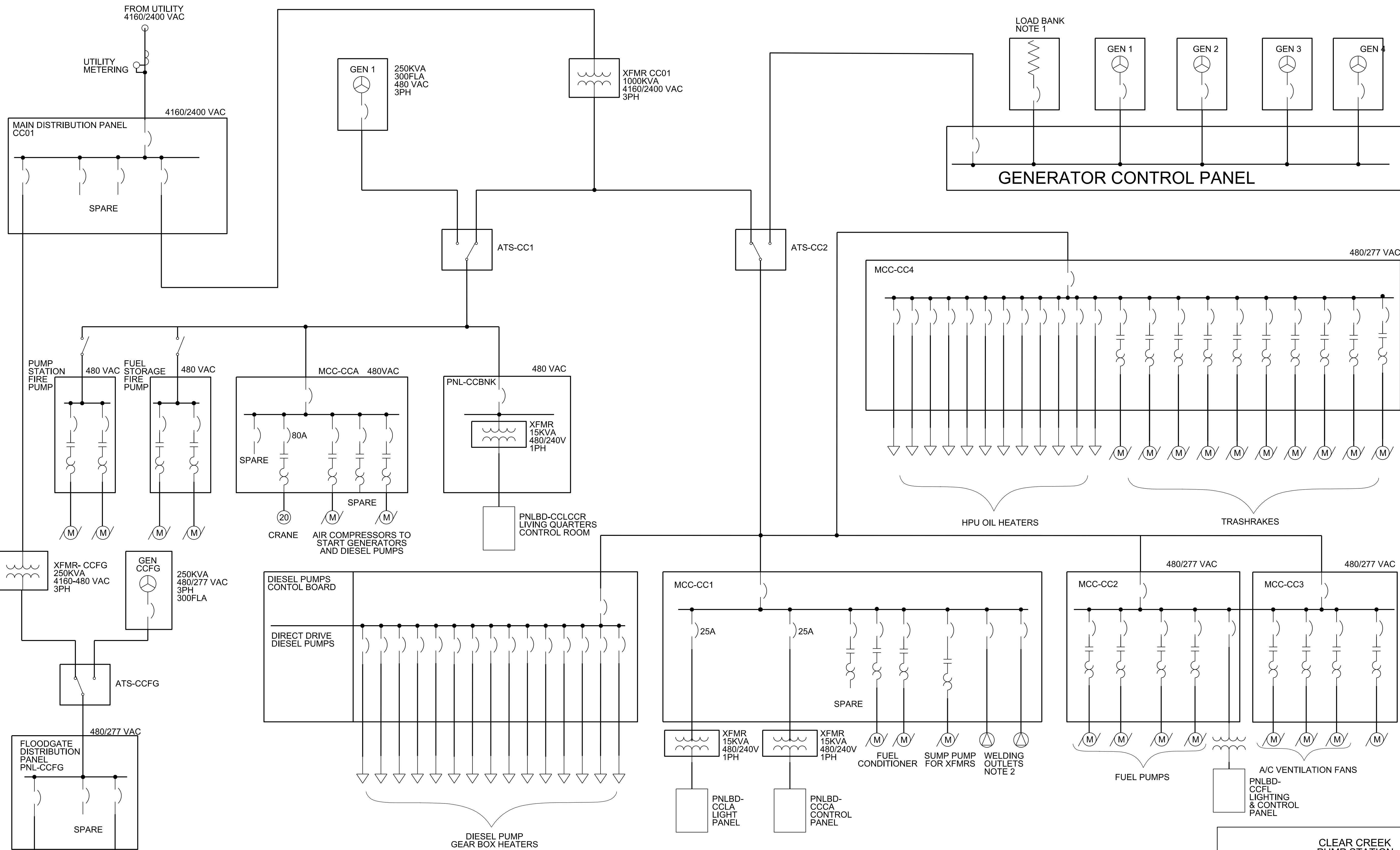
CLEAR CREEK FLOODGATE - SINGLE LINE DIAGRAM
 SCALE: NTS

**CLEAR CREEK FLOODGATE
SINGLE LINE DIAGRAM**

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%OPTIONAL VALUE 1%

NORTH FLOODGATE 480/277 VAC SEE PLATE 17
 SOUTH FLOODGATE 480/277 VAC SEE PLATE 17

- NOTES:**
- LOAD BANK TO BE FURNISHED WITH GENERATORS
 - ONE OUTLET PER PUMP, ONE OUTLET FOR EVERY 2 TRASHRAKES

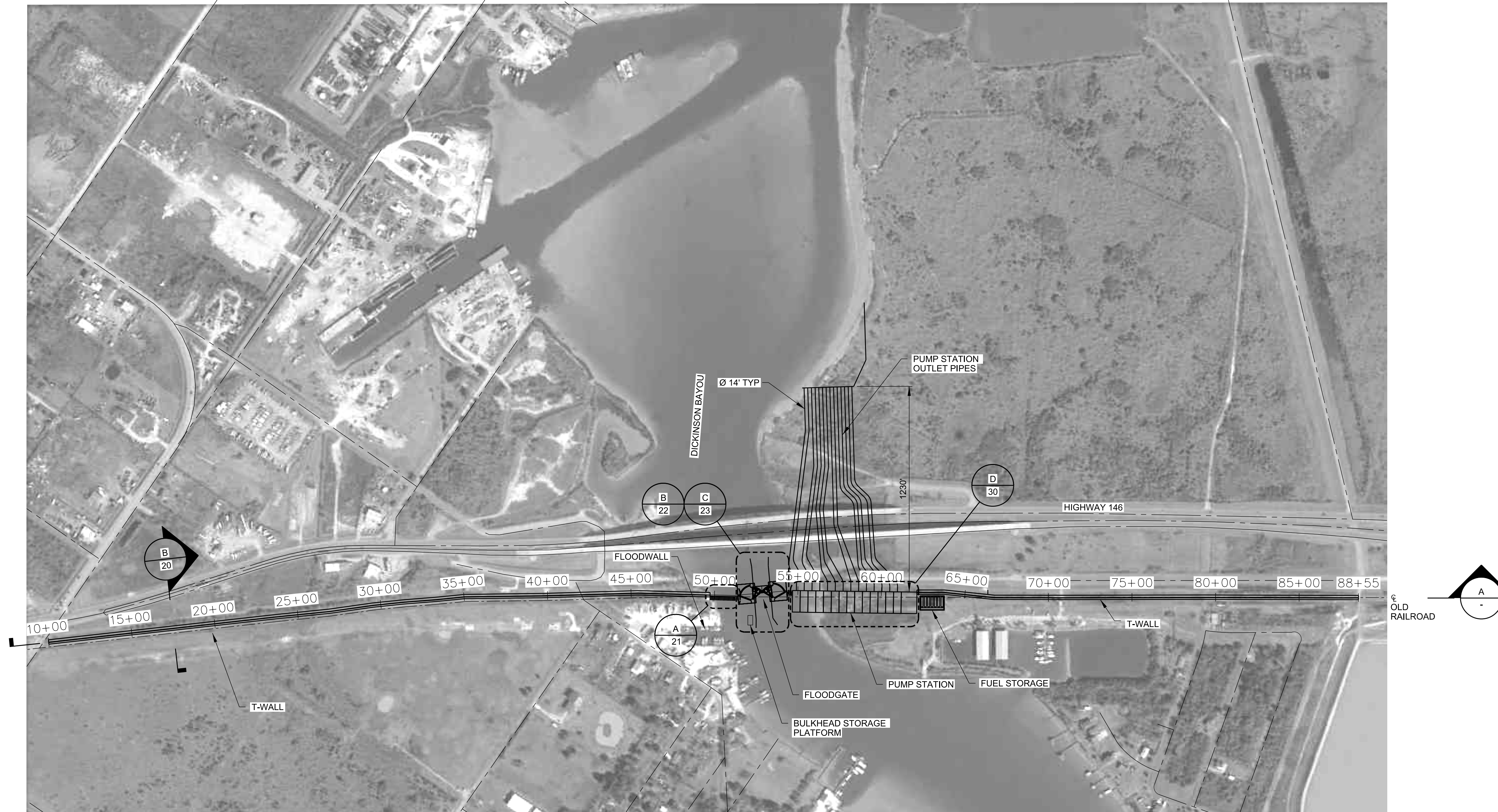
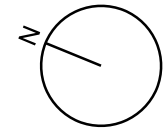
CLEAR CREEK PUMP STATION - SINGLE LINE DIAGRAM
 SCALE: NTS

**CLEAR CREEK PUMP STATION
 SINGLE LINE DIAGRAM**

COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY

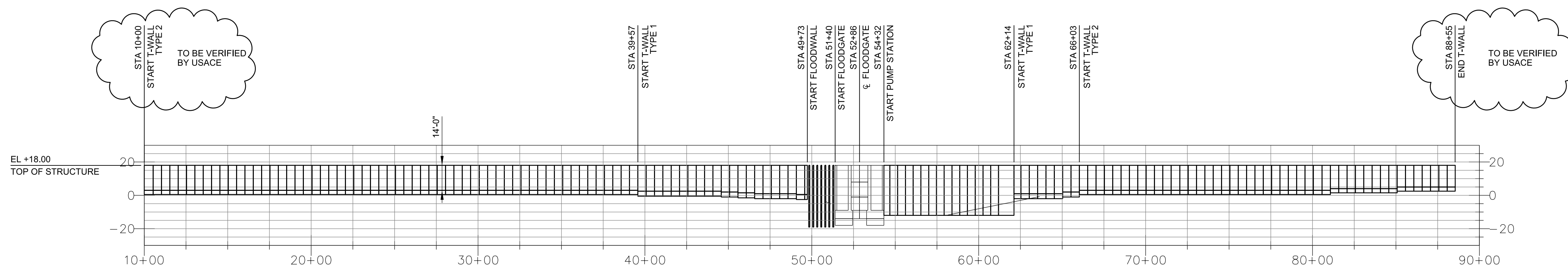
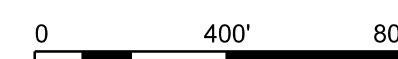
U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

ENGINEERING APPENDIX
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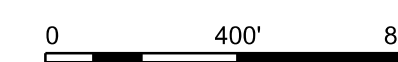
DICKINSON BAYOU - GENERAL PLAN

SCALE: 1" = 400'



ELEVATION VIEW

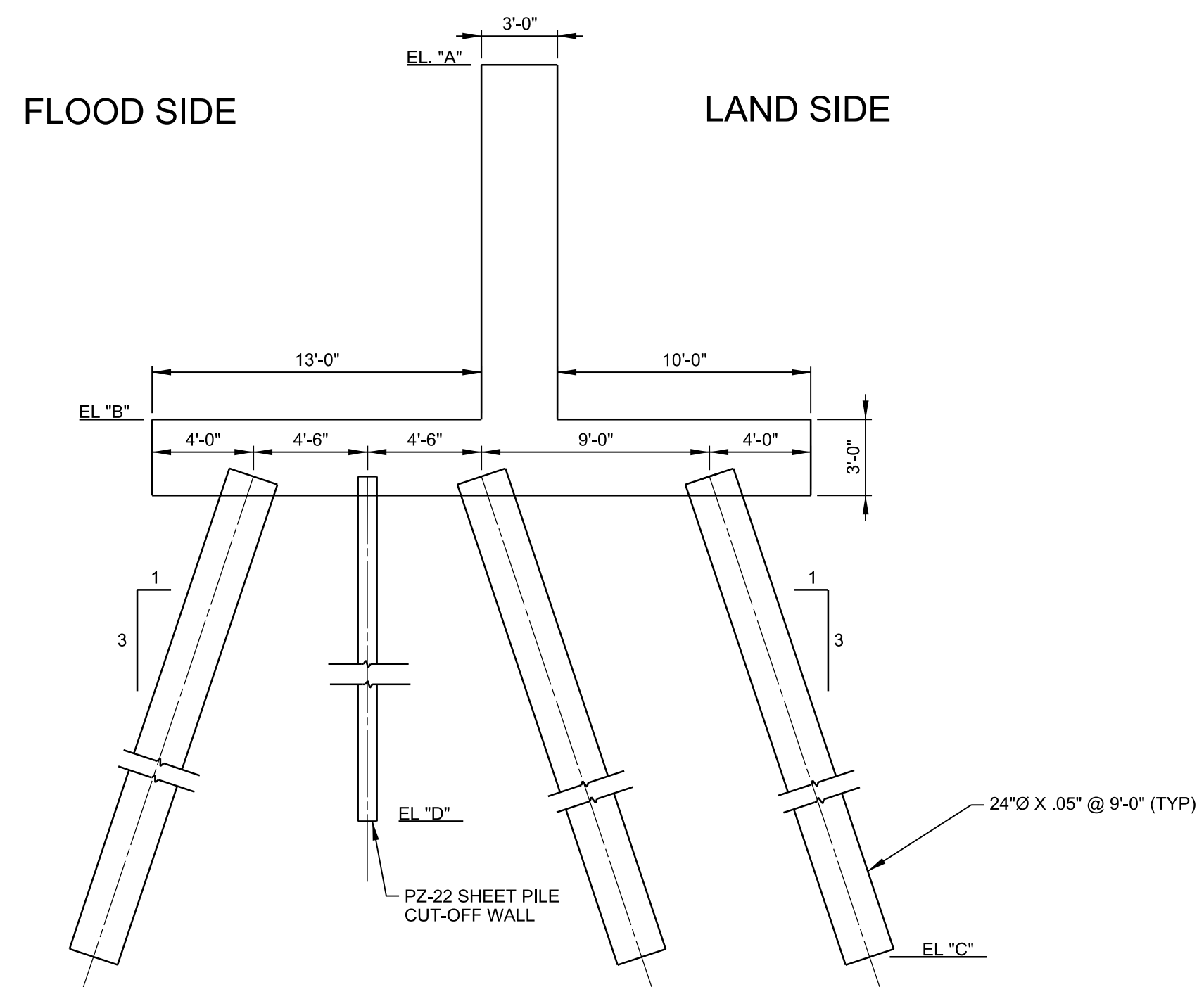
SCALE: 1" = 400'



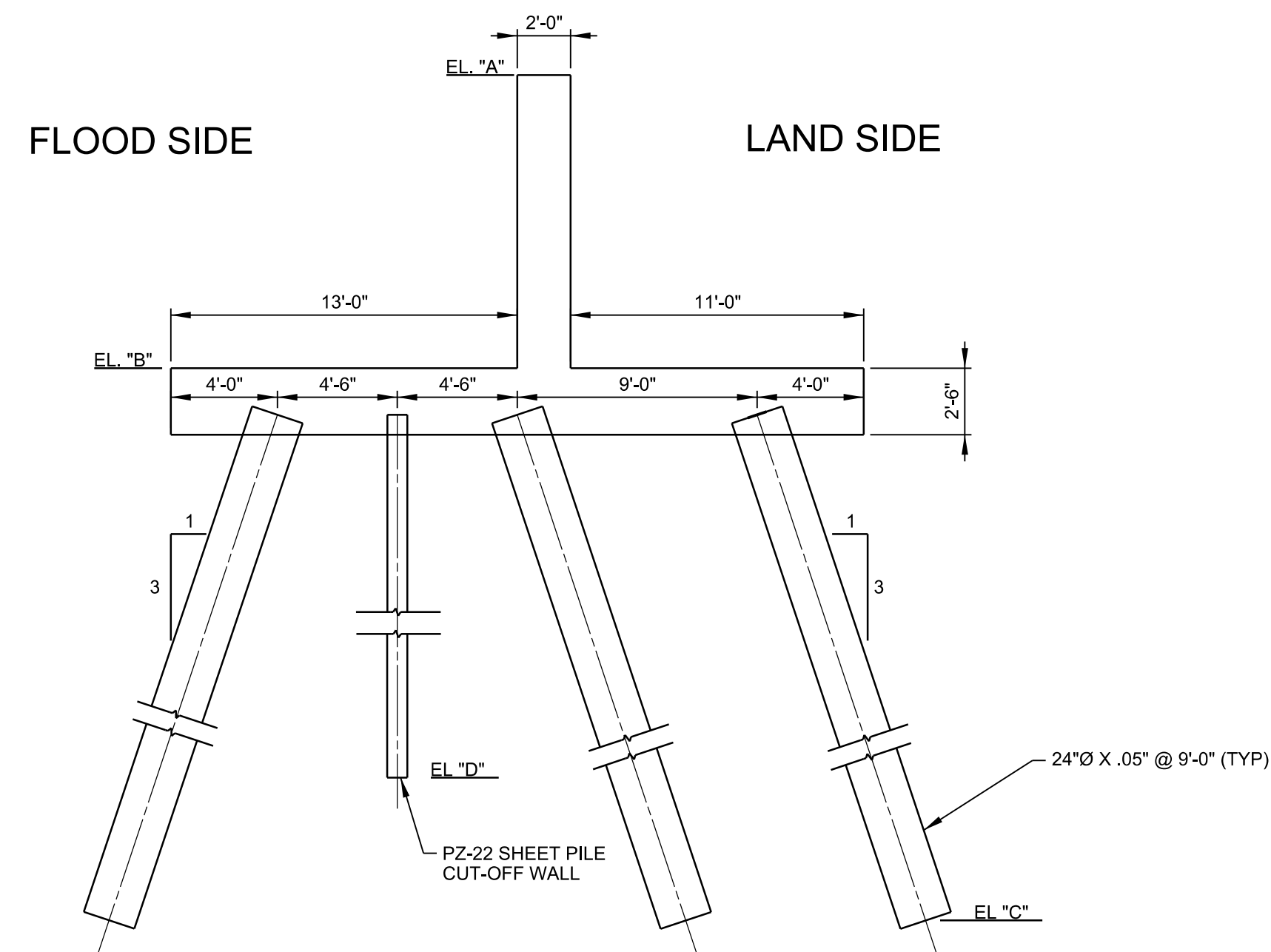
**DICKINSON BAYOU
GENERAL PLAN AND ELEVATION
COASTAL TEXAS PROTECTION AND
RESTORATION FEASIBILITY STUDY**

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

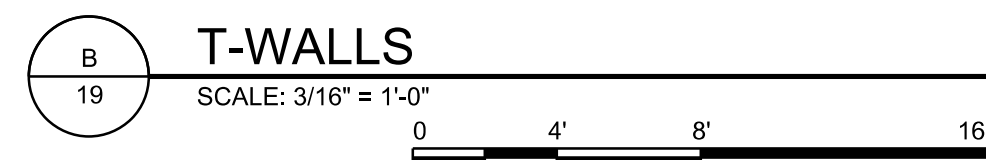
ENGINEERING APPENDIX
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TETRA TECH, INC.



TYPE 1



TYPE 2



LOCATION	TYPE	"A"	"B"	"C"	"D"
STA 10+00 TO STA 39+57	1	18.0	1.0	-67.0	-12.0
STA 39+57 TO STA 49+73	2	18.0	3.0	-63.0	-9.5
STA 62+12 TO STA 66+03	2	18.0	3.0	-63.0	-9.5
STA 66+03 TO STA 88+55	1	18.0	1.0	-67.0	-12.0

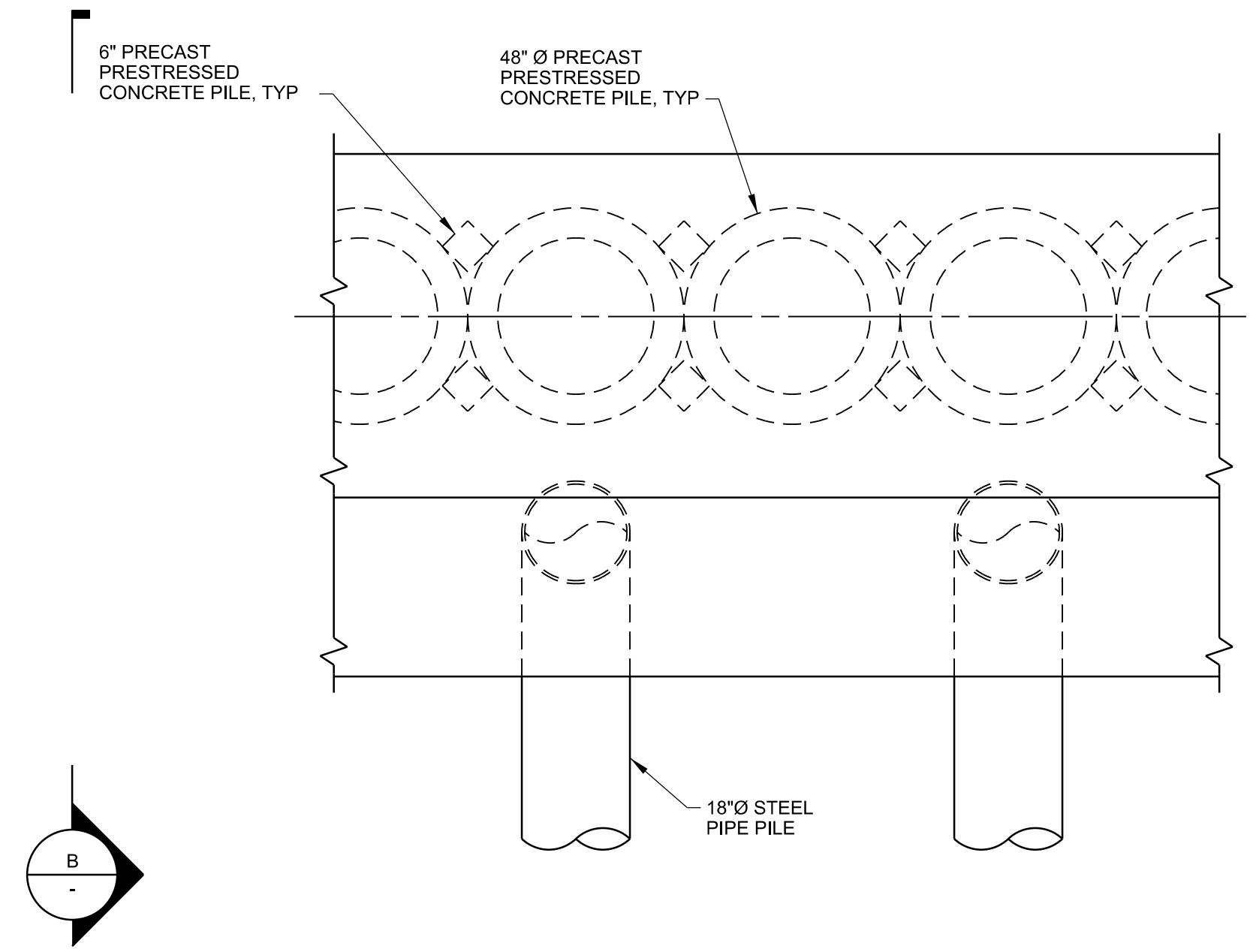
NOTES:

1. ALL CONCRETE SHALL HAVE A MINIMUM 28 DAY COMPRESSIVE STRENGTH OF 4,000 PSI.
2. SHEET PILES SHALL MEET THE REQUIREMENTS OF ASTM A328.
3. ALL PIPE PILES SHALL MEET THE REQUIREMENTS OF ASTM A252 GRADE 3.

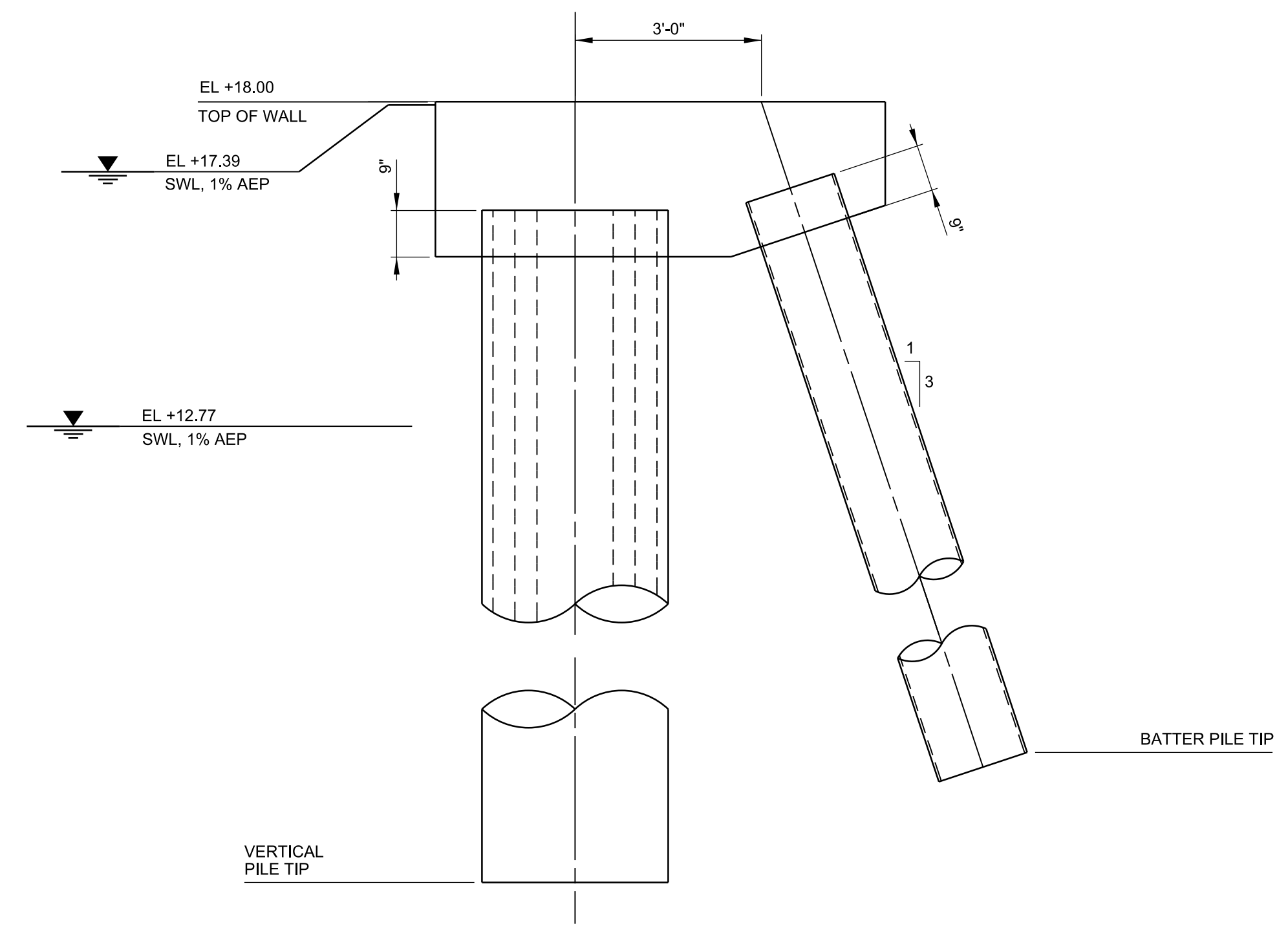
DICKINSON BAYOU
 T-WALL
 SECTIONS
**COASTAL TEXAS PROTECTION AND
 RESTORATION FEASIBILITY STUDY**

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

ENGINEERING APPENDIX
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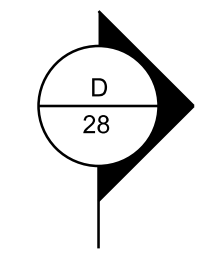
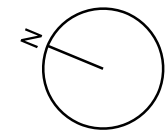
PLAN
SCALE: 1/2" = 1'-0"
0 1' 2' 4'



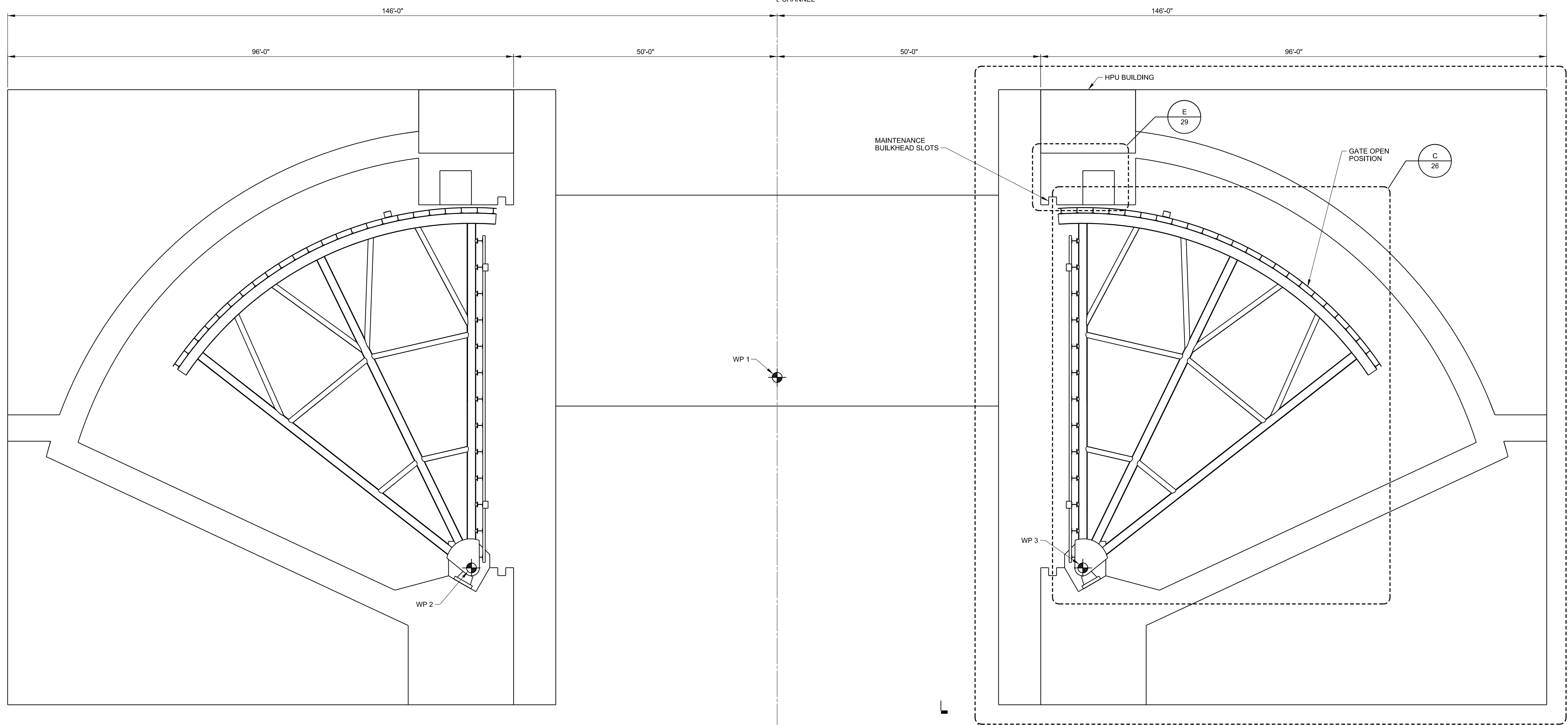
SECTION
SCALE: 1/2" = 1'-0"
0 1' 2' 4'

LOCATION	VERTICAL PILE TIP EL	BATTER PILE TIP EL
STA 30+20 TO STA 31+63	-59	-79

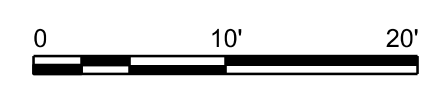
DICKINSON BAYOU
FLOODWALL
PLAN AND ELEVATION
**COASTAL TEXAS PROTECTION AND
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U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS
ENGINEERING APPENDIX
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TETRA TECH, INC.



CHANNEL



DICKINSON BAYOU FLOODGATE TOP PLAN - OPEN
 SCALE: 1" = 10'

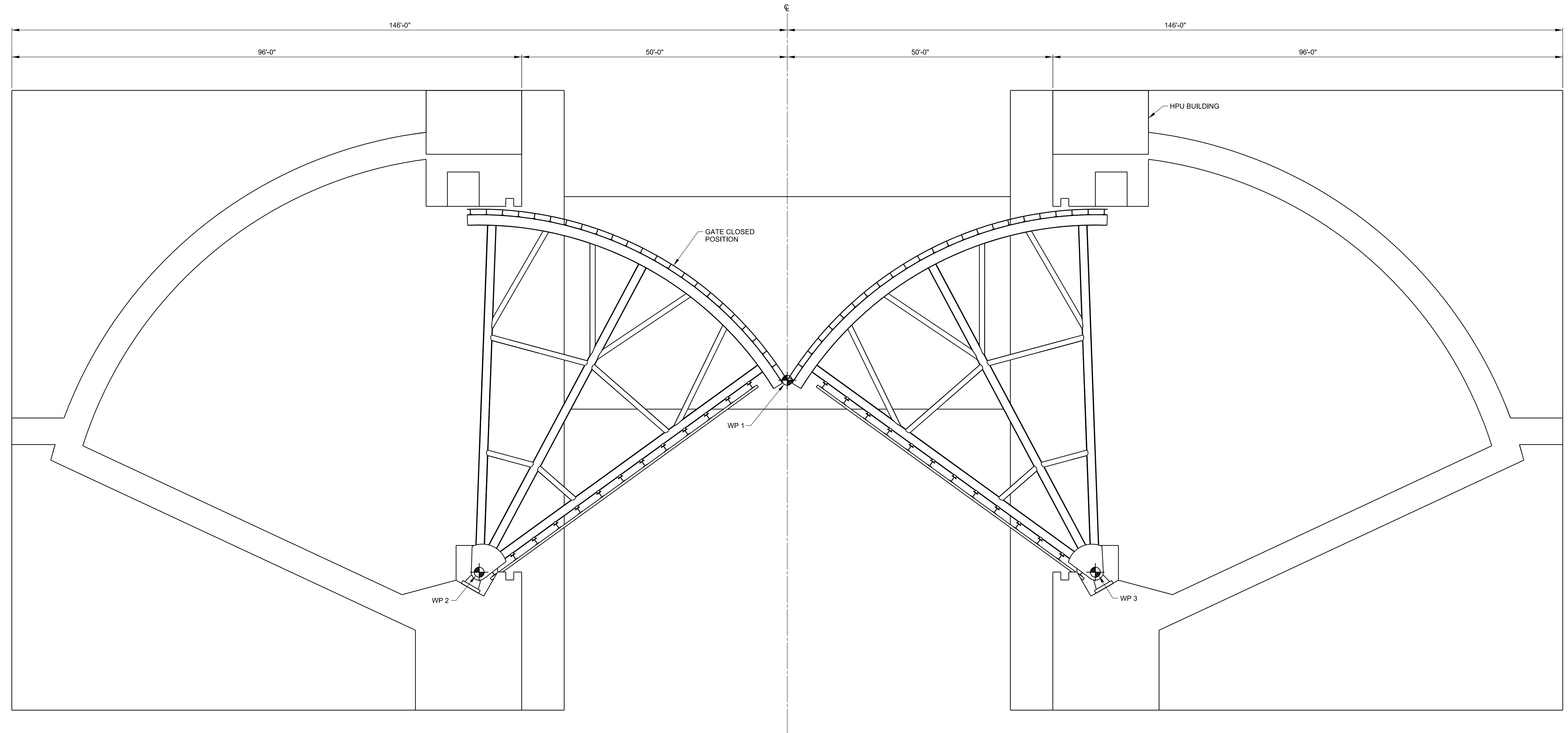
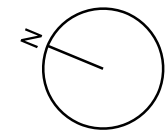


DICKINSON BAYOU
 FLOODGATE TOP PLAN
 OPEN

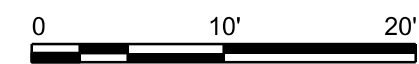
**COASTAL TEXAS PROTECTION AND
 RESTORATION FEASIBILITY STUDY**

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

ENGINEERING APPENDIX
 DATED:
 NOVEMBER 9, 2018
 TETRA TECH, INC.



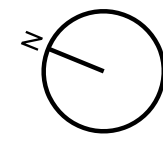
DICKINSON BAYOU FLOODGATE TOP PLAN - CLOSED
SCALE: 1" = 10'



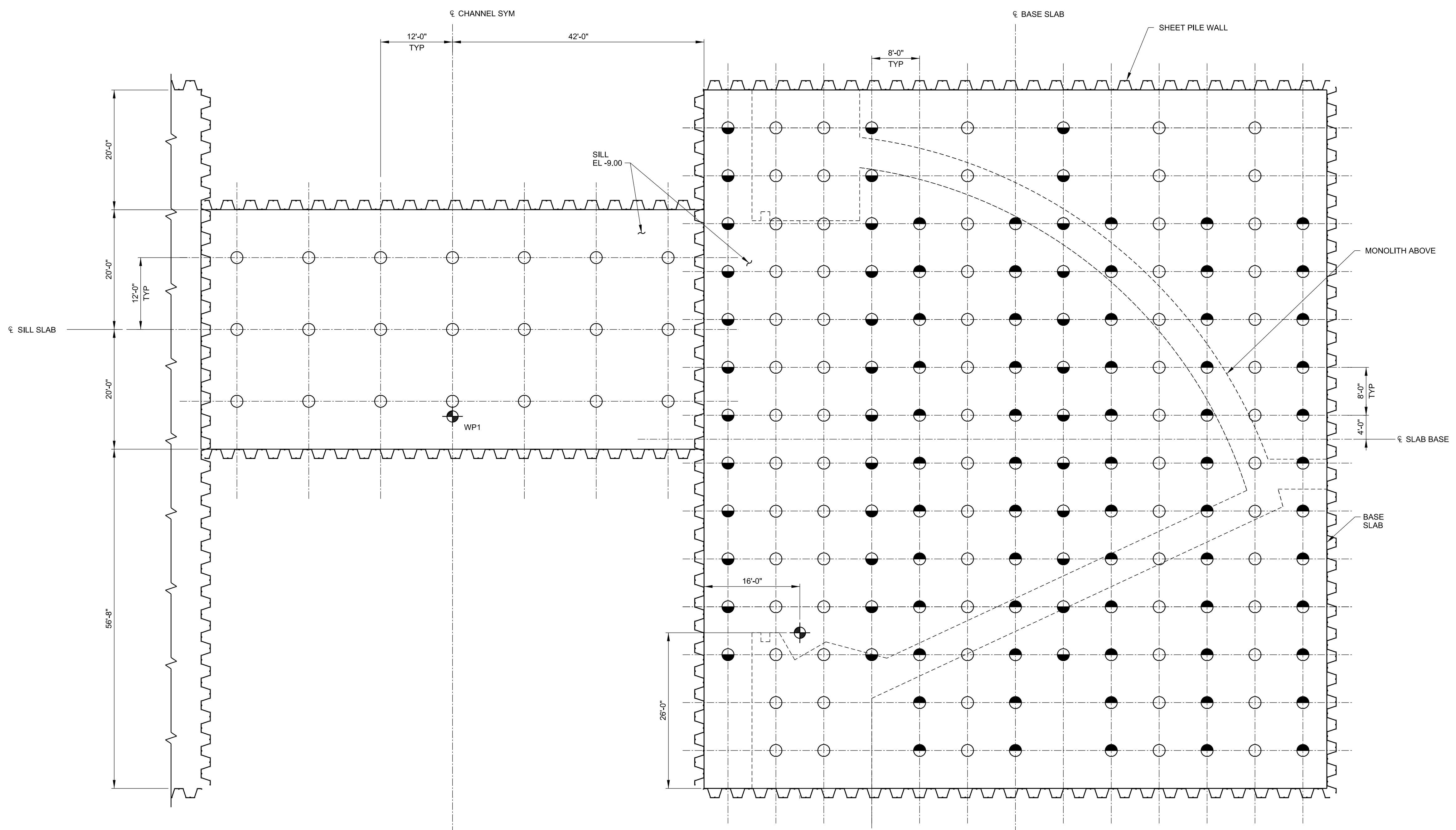
DICKINSON BAYOU
FLOODGATE TOP PLAN
CLOSED
**COASTAL TEXAS PROTECTION AND
RESTORATION FEASIBILITY STUDY**

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

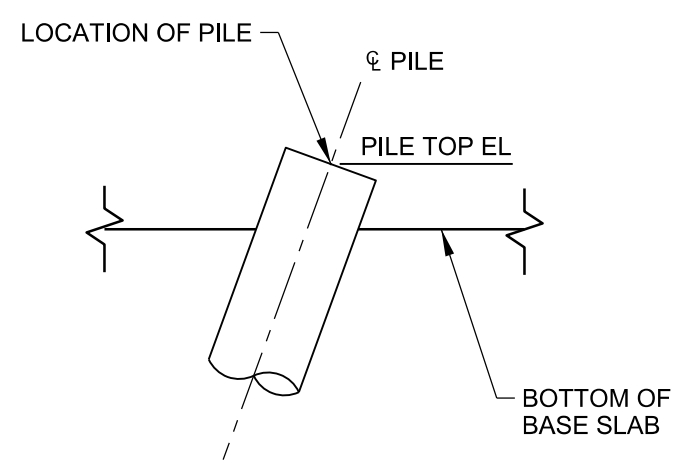
ENGINEERING APPENDIX
DATED:
NOVEMBER 9, 2018
TETRA TECH, INC.



FLOOD SIDE

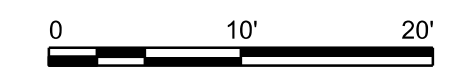


LAND SIDE



PILE HEAD DETAIL
SCALE: NTS

FOUNDATION PLAN @ EL -9.00
SCALE: 1" = 10'



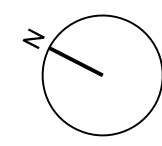
DESCRIPTION	TOP EL	TIP EL	BAT (V:H)
VERTICAL PILES	-13.25	-84.0	N/A
BATTERED PILES	-13.25	-84.0	3:1
SHEET PILE	-9.0	-58.0	N/A

- LEGEND:**
- PIPE PILE BATTERED AT 3V:1H IN DIRECTION OF SOLID HATCHING
 - VERTICAL PILE

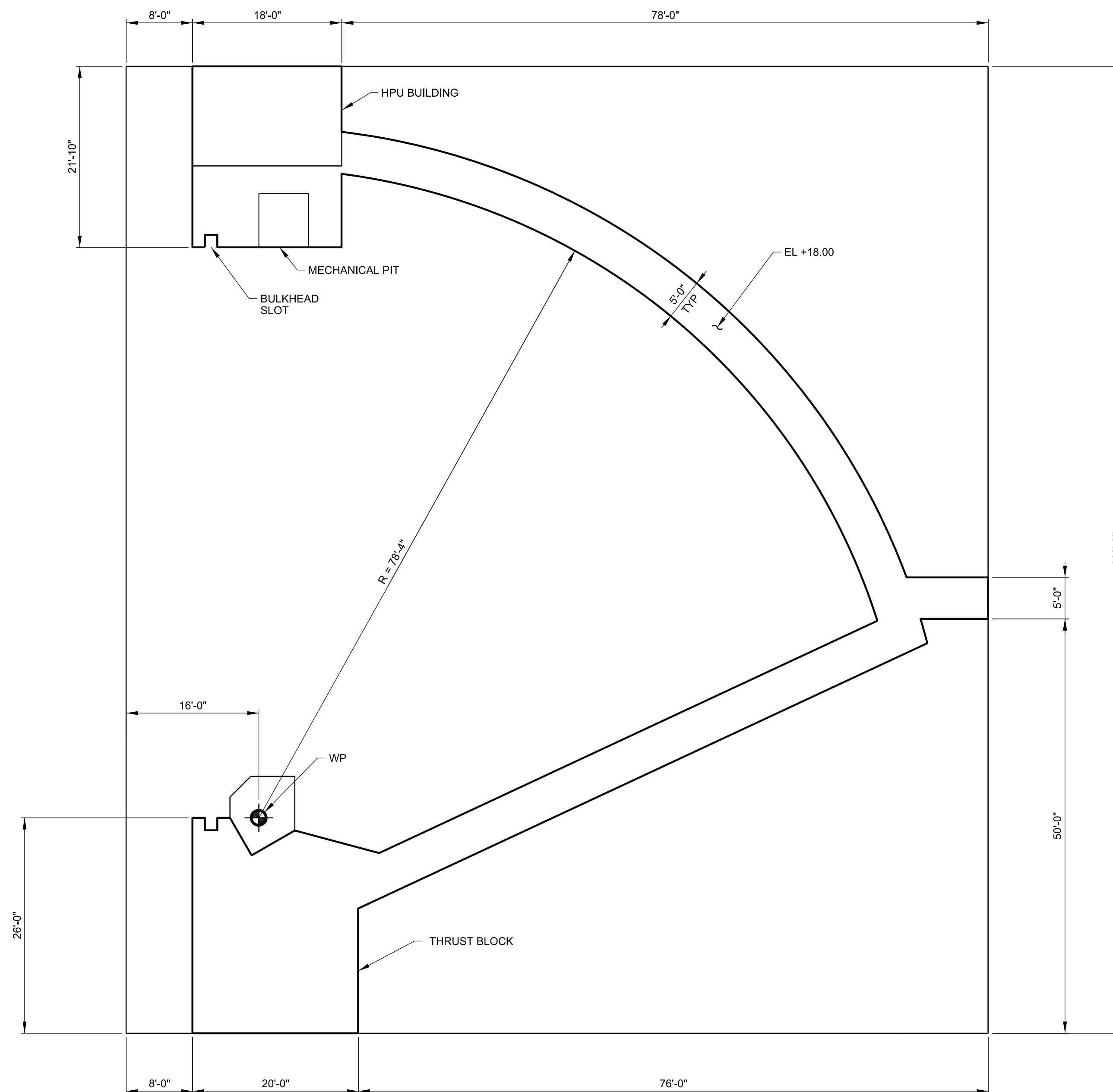
- NOTES:**
1. ALL PILES SHALL BE 24" DIA. STEEL PIPE.
 2. UNLESS NOTED OTHERWISE, ALL PILES SHALL HAVE TENSION CONNECTORS.

DICKINSON BAYOU
FLOODGATE
FOUNDATION PLAN
COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY
U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

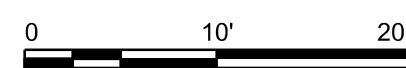
ENGINEERING APPENDIX
DATED:
NOVEMBER 9, 2018
TETRA TECH, INC.



CHANNEL SYM



MONOLITH PLAN
SCALE: 1" = 10'

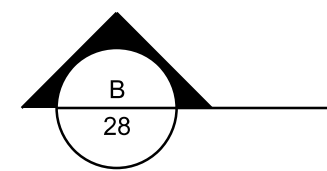
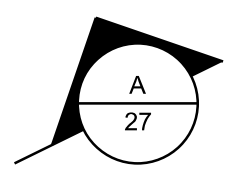
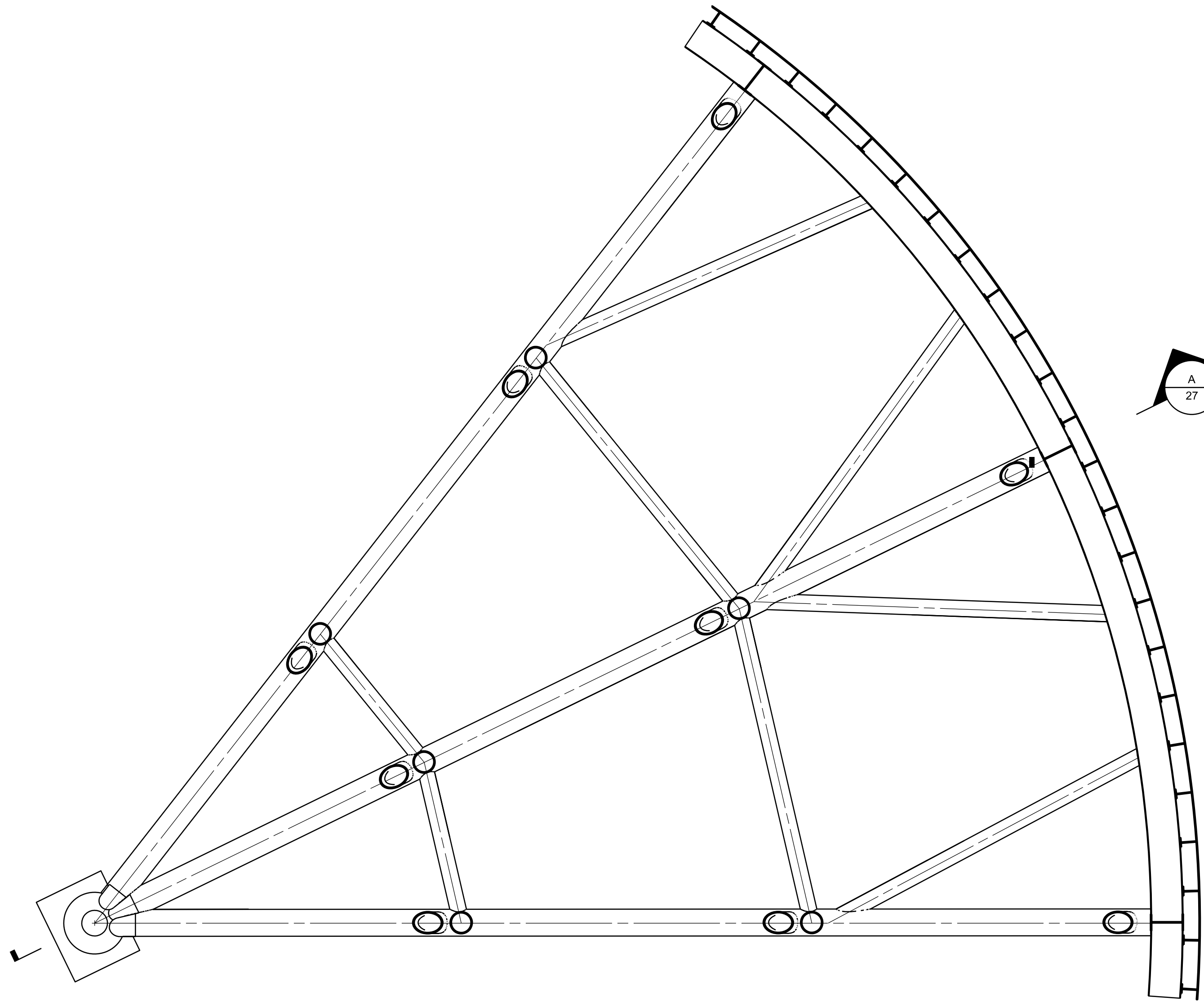
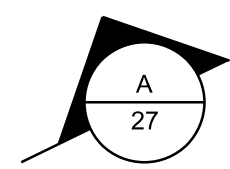
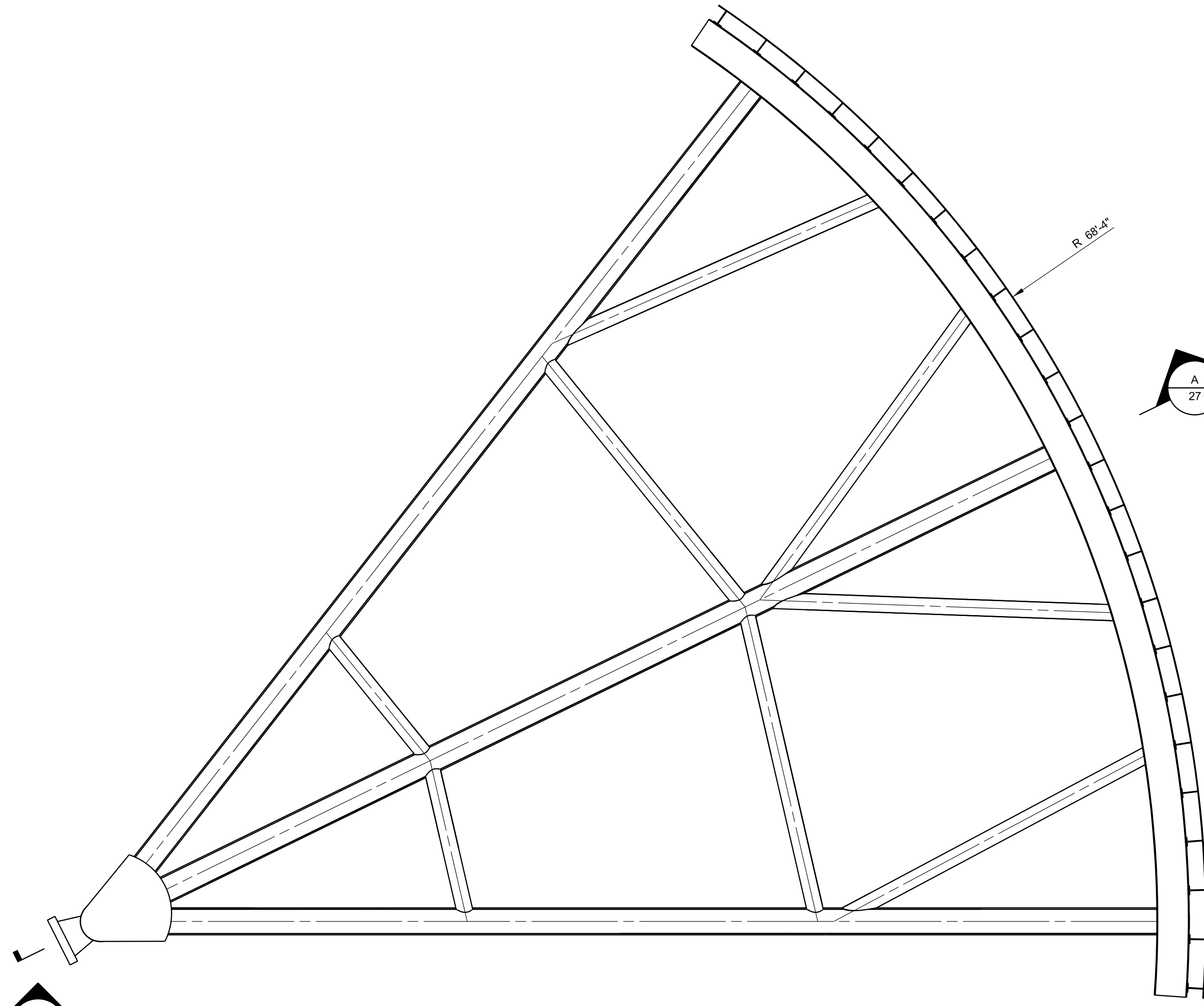
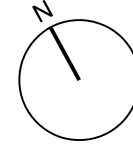


DICKINSON BAYOU
FLOODGATE
MONOLITH PLAN

**COASTAL TEXAS PROTECTION AND
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U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

ENGINEERING APPENDIX
DATED:
NOVEMBER 9, 2018
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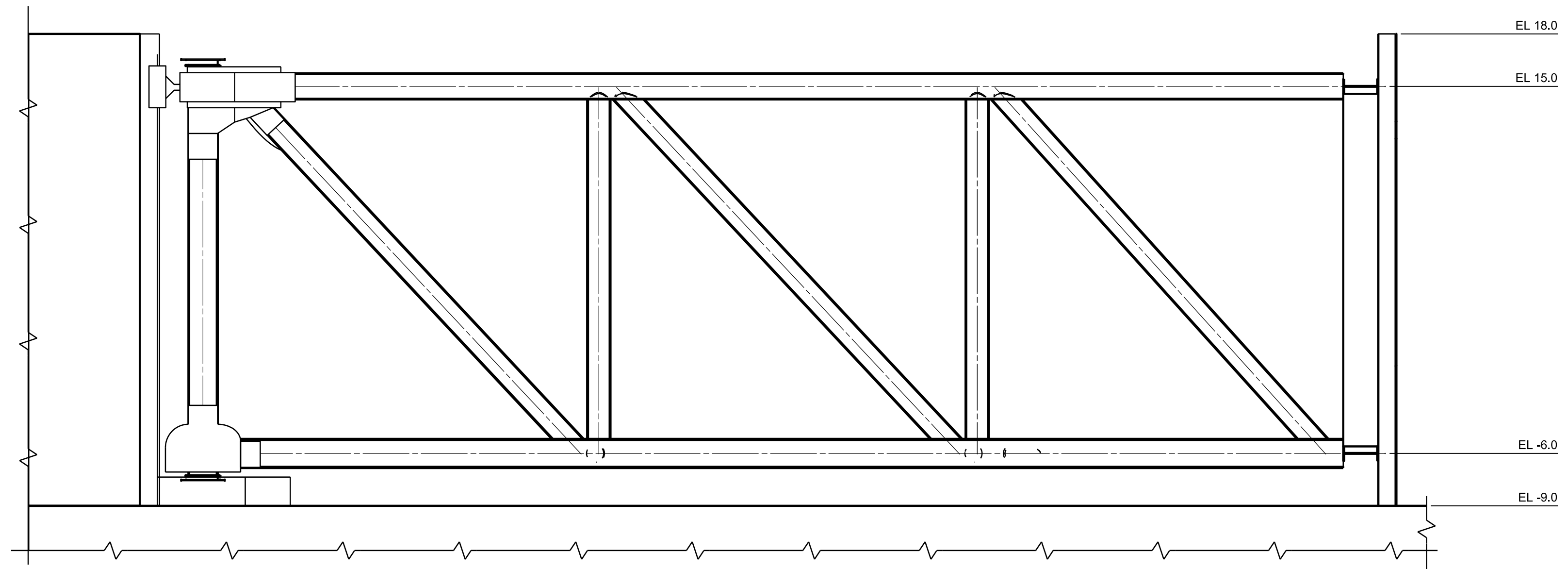
GATE LEAF UPPER PLAN
SCALE: 3/16" = 1'-0"
0 4' 8' 16'

GATE LEAF BOTTOM PLAN
SCALE: 3/16" = 1'-0"
0 4' 8' 16'

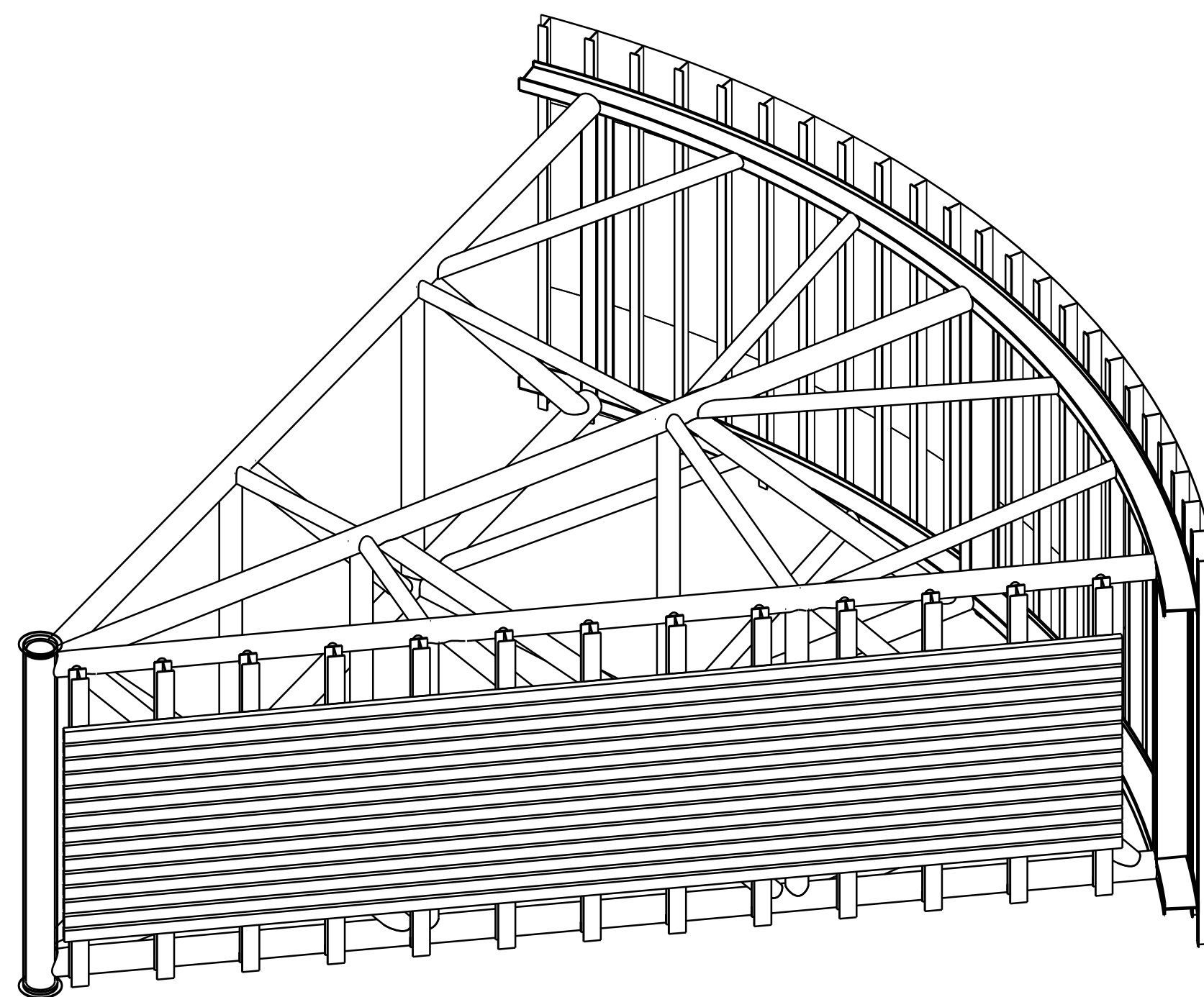
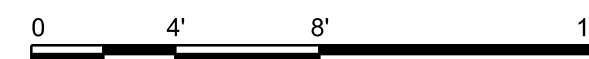
DICKINSON BAYOU
FLOODGATE
GATE LEAF UPPER AND BOTTOM PLAN
COASTAL TEXAS PROTECTION AND
RESTORATION FEASIBILITY STUDY

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

ENGINEERING APPENDIX
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NOVEMBER 9, 2018
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A
26 FLOODGATE GATE LEAF SECTION
SCALE: 3/16" = 1'-0"



B
- FLOODGATE GATE LEAF ISOMETRIC
SCALE: NTS

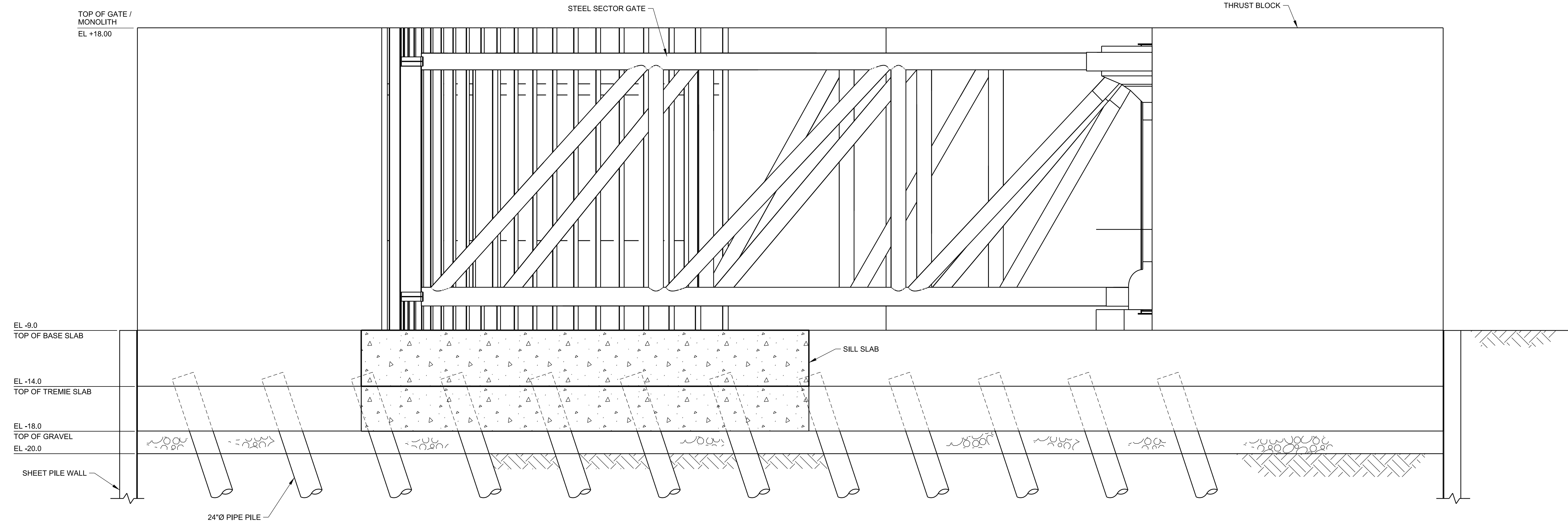
DICKINSON BAYOU
FLOODGATE GATE LEAF
SECTION & ISOMETRIC
COASTAL TEXAS PROTECTION AND
RESTORATION FEASIBILITY STUDY

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

ENGINEERING APPENDIX
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NOVEMBER 9, 2018
TETRA TECH, INC.

FLOOD SIDE

LAND SIDE



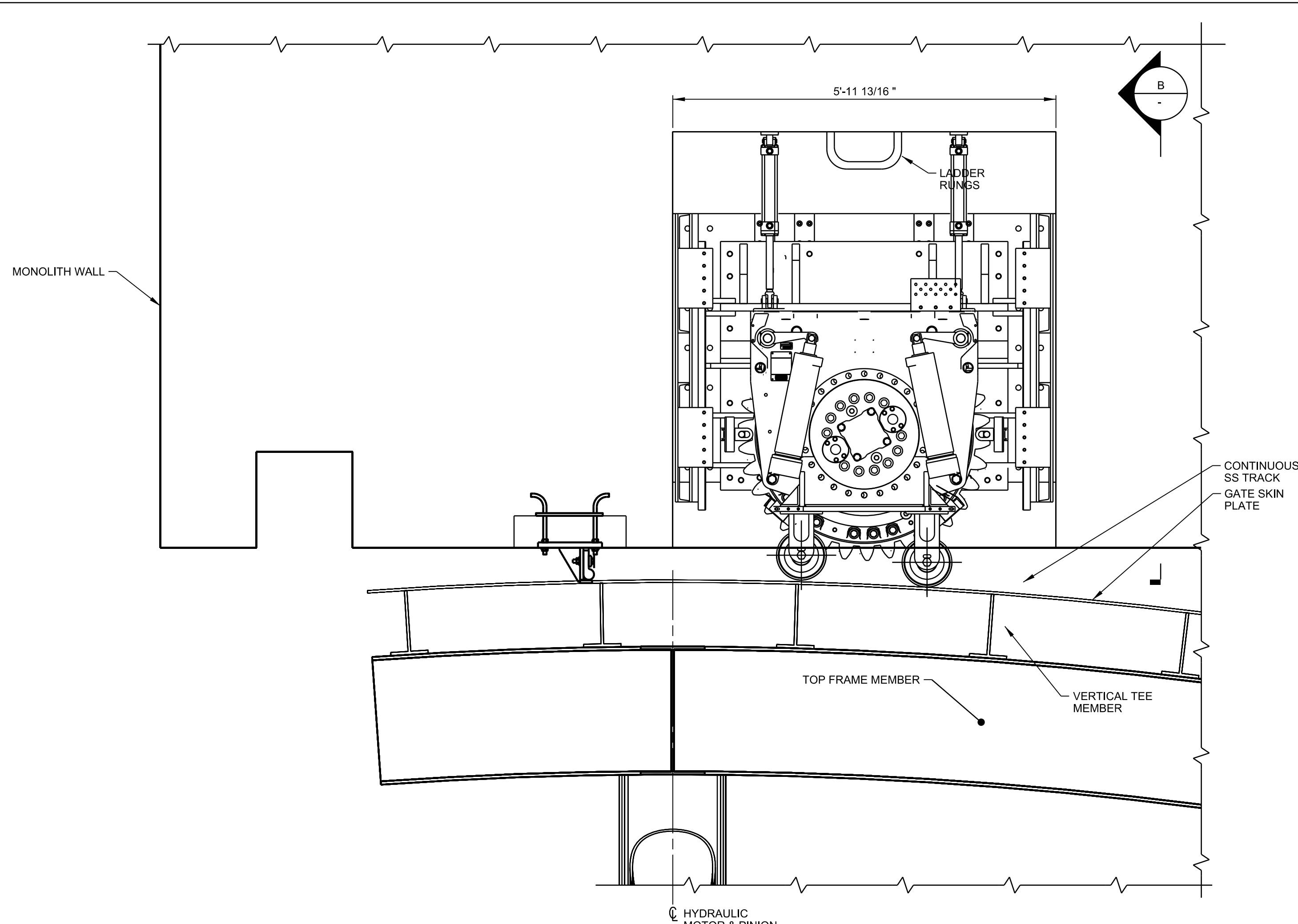
D
22 SECTION
SCALE: 1" = 5'

DICKINSON BAYOU
FLOODGATE
MONOLITH SECTION

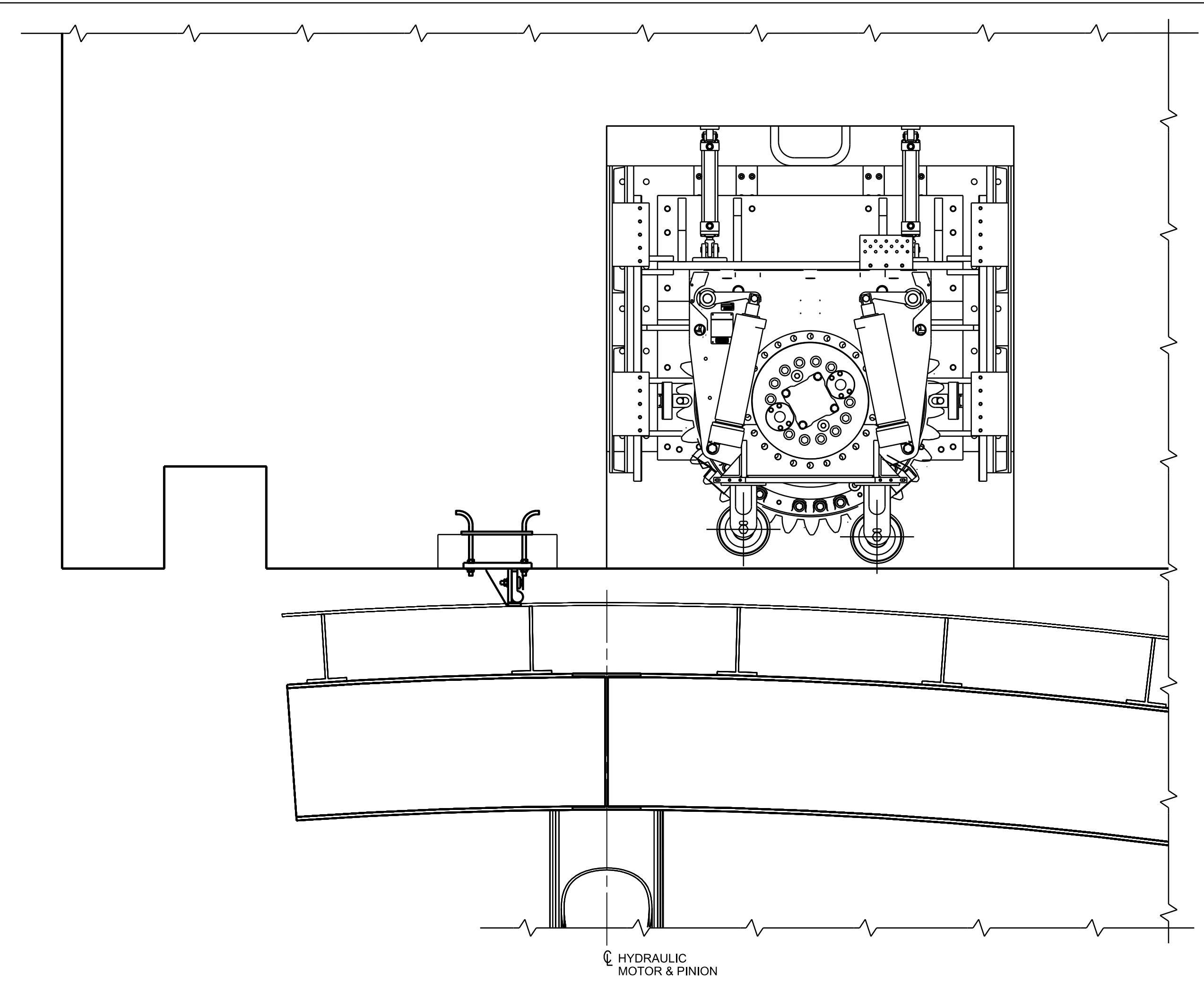
**COASTAL TEXAS PROTECTION AND
RESTORATION FEASIBILITY STUDY**

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

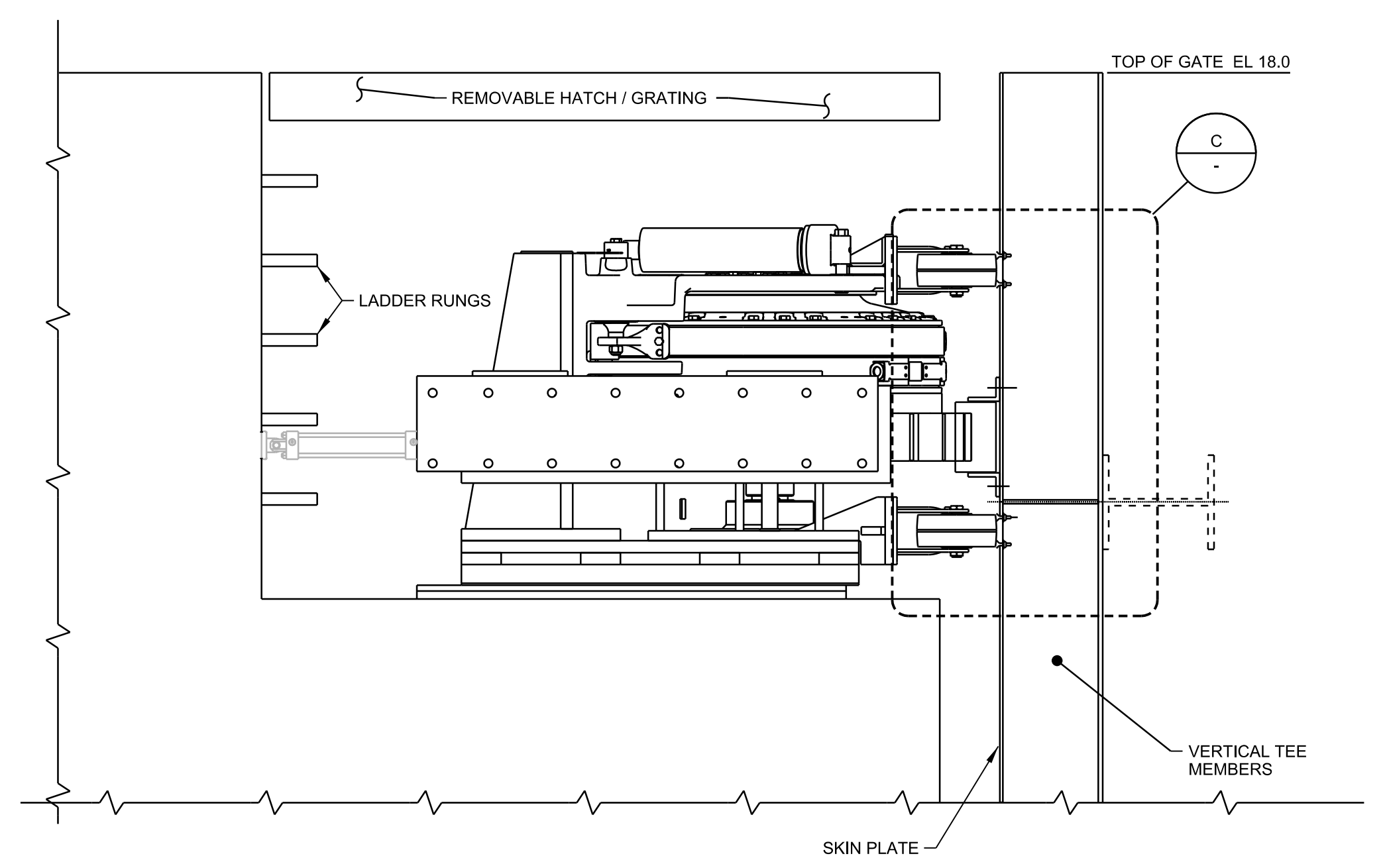
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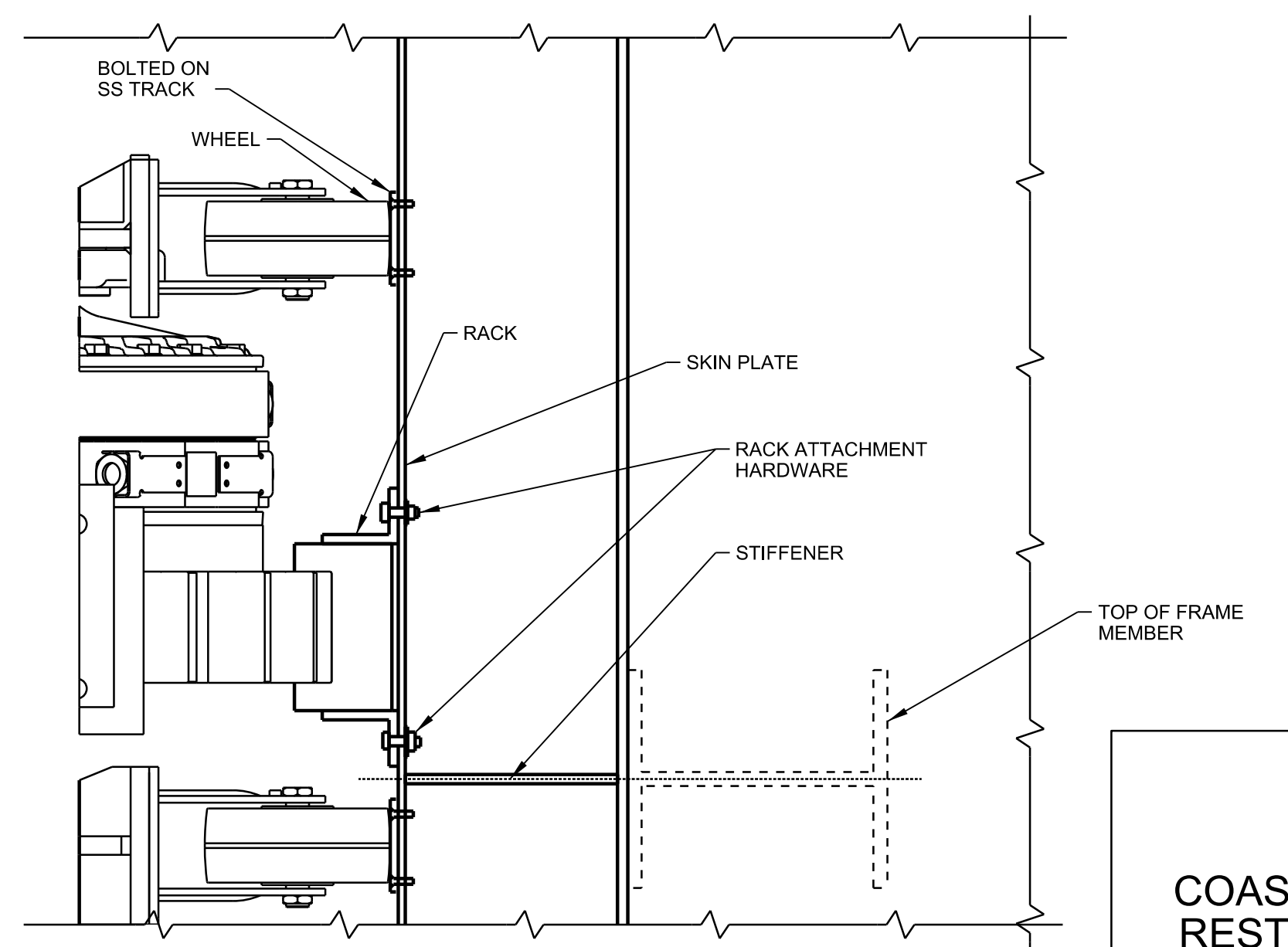
E
22
OPERATOR IN EXTENDED POSITION
SCALE: 3/4" = 1'-0"
0 1' 2' 4'



A
OPERATOR IN RETRACTED POSITION
SCALE: 3/4" = 1'-0"
0 1' 2' 4'



B
SECTION
SCALE: 3/4" = 1'-0"
0 1' 2' 4'



C
DETAIL
SCALE: 1 1/2" = 1'-0"
0 6" 1' 2'

DICKINSON BAYOU
FLOODGATE
MECHANICAL OPERATOR
**COASTAL TEXAS PROTECTION AND
RESTORATION FEASIBILITY STUDY**
U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS
ENGINEERING APPENDIX
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31 BAYS @ 46'-5" SPAN = 1438'-11"

20'-0" 55'-0"

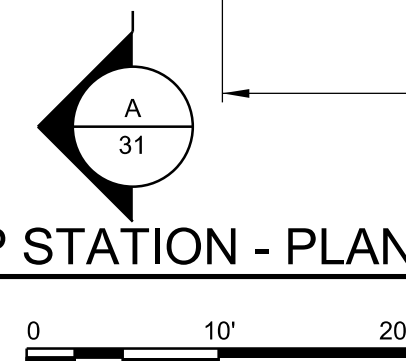
SAFE HOUSE/CONTROL ROOM

20'-9 1/8" 10'-9 1/2"

EQ TYP EQ TYP

46'-5" TYP 23'-2 1/2"

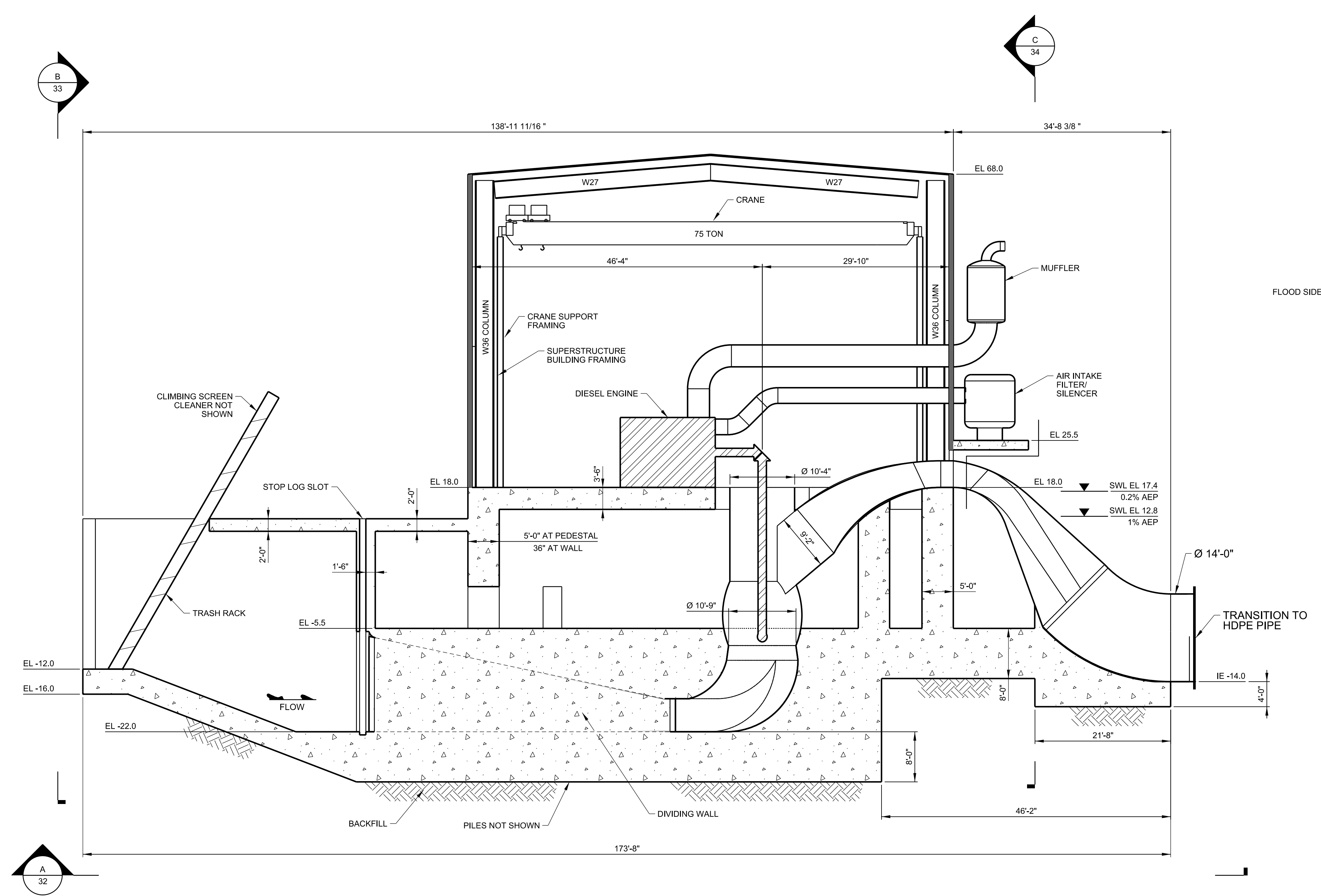
D 19 DICKINSON BAYOU PUMP STATION - PLAN SCALE: 1" = 10'



DICKINSON BAYOU PUMP STATION PLAN
COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

ENGINEERING APPENDIX
DATED:
NOVEMBER 9, 2018
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NOTES:
 1. WATER LEVELS SHOWN ARE 90% CONFIDENCE LEVEL, 2085.

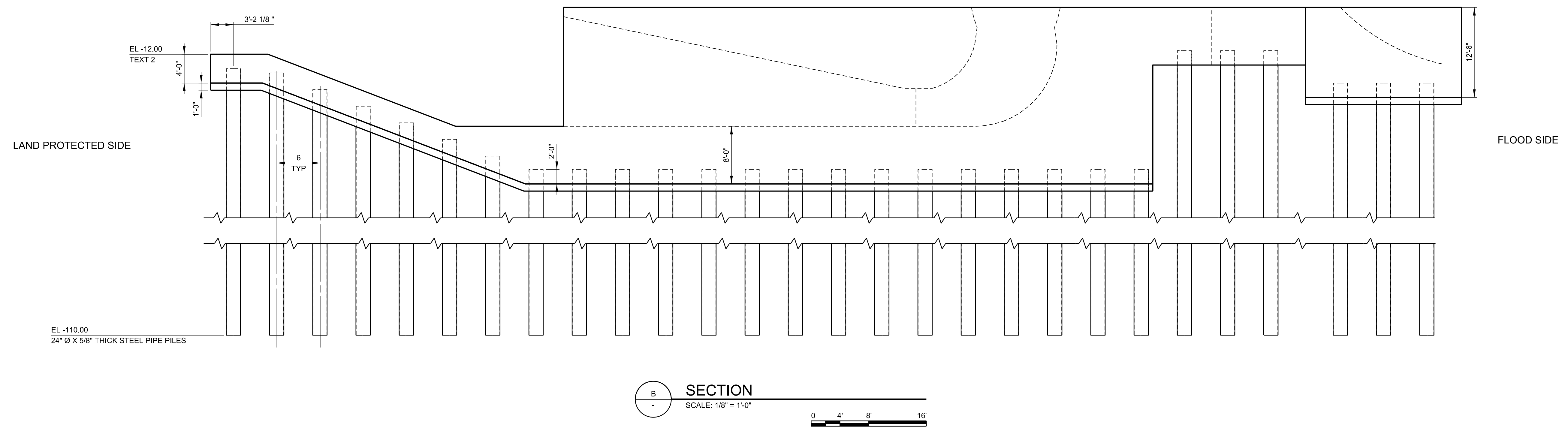
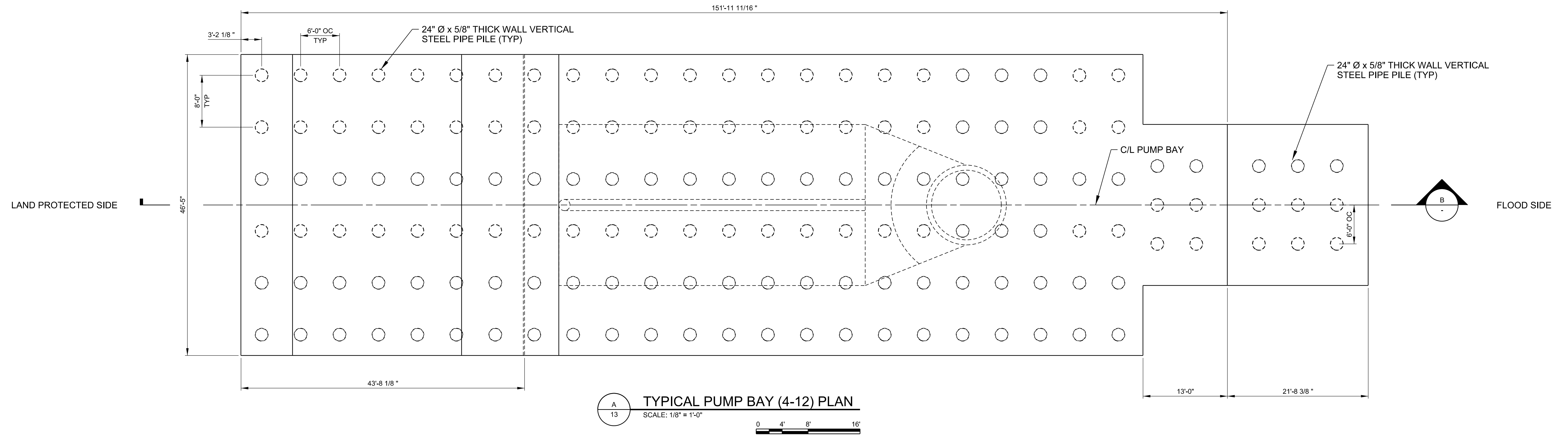
DICKINSON BAYOU PUMP STATION - SECTION
 SCALE: 1" = 10'
 0 10' 20'

DICKINSON BAYOU PUMP STATION
SECTION

**COASTAL TEXAS PROTECTION AND
RESTORATION FEASIBILITY STUDY**

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

ENGINEERING APPENDIX
 DATED:
 NOVEMBER 9, 2018
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- NOTES:
1. ALL PILES ARE 24"Ø. FOR FURTHER DETAILS, SEE CONTRACT SPECIFICATIONS
 2. MUD SLAB IS 2500 PSI LEAN CONCRETE 12" THICKNESS

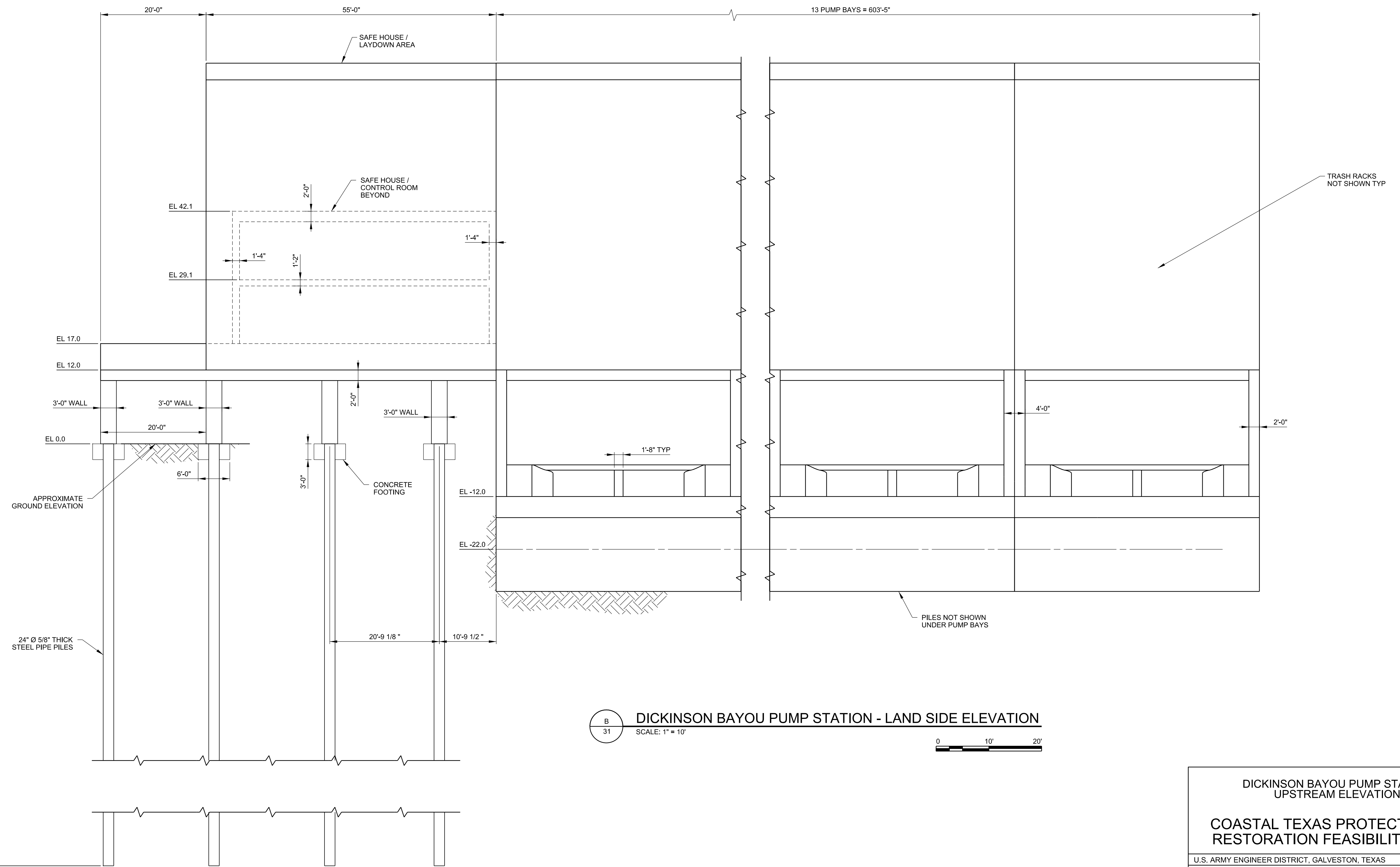
7. 1" HORIZONTAL TOLERANCE ON PUMP STATION PIPE PILE AND EXCAVATE AROUND PILE AND INCREASE FOOTING THICKNESS FOR VERTICAL TOLERANCE

DICKINSON BAYOU PUMP STATION
FOUNDATION PLAN

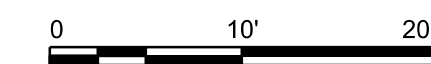
COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

ENGINEERING APPENDIX
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NOVEMBER 9, 2018
TETRA TECH, INC.



DICKINSON BAYOU PUMP STATION - LAND SIDE ELEVATION
 SCALE: 1" = 10'



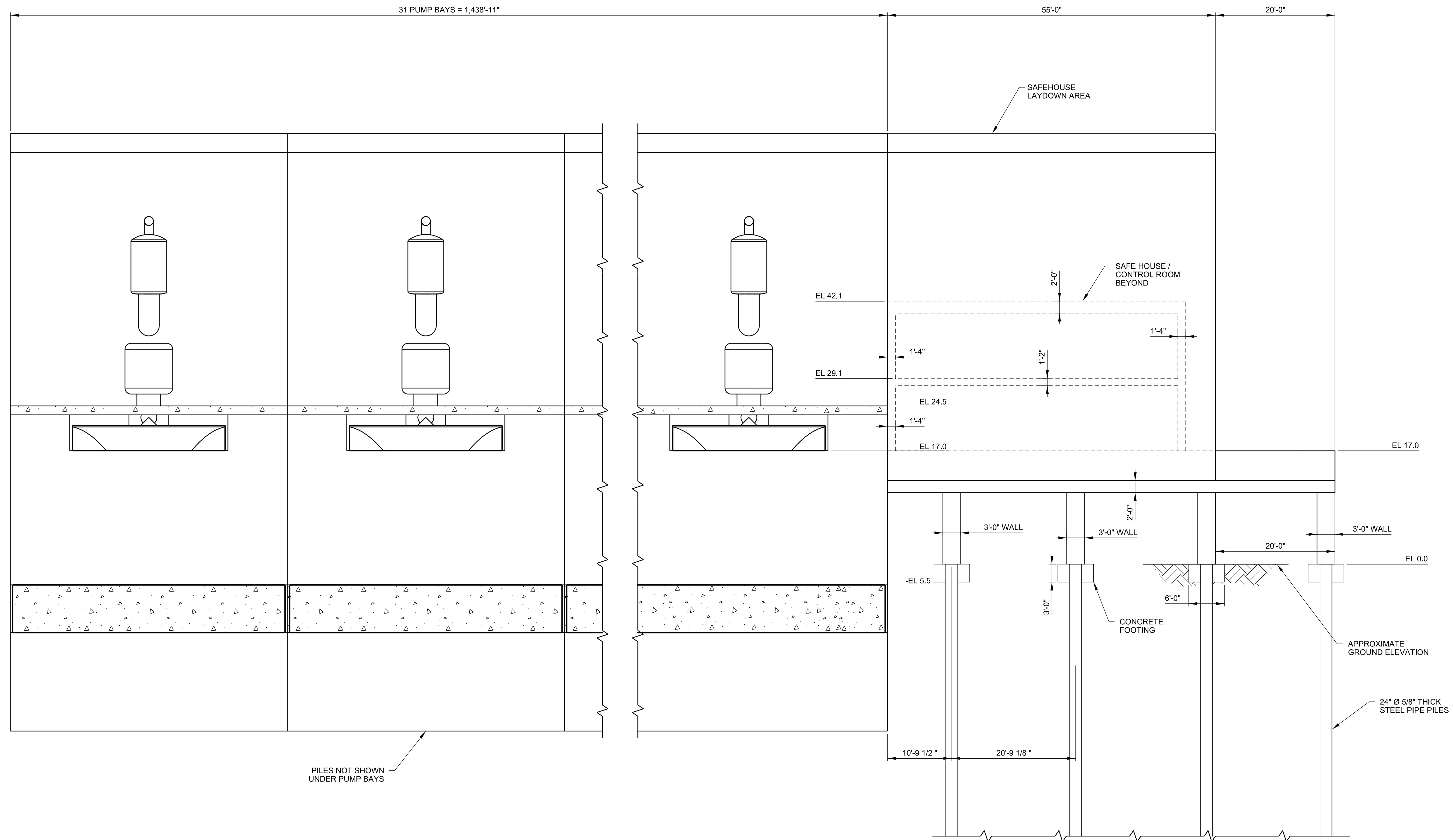
EL -80.00
 24" Ø 5/8" THICK STEEL PIPE PILES @ 6'-0" O.C.
 UNDER SAFE HOUSE SUPERSTRUCTURE BUILDING

**DICKINSON BAYOU PUMP STATION
 UPSTREAM ELEVATION**

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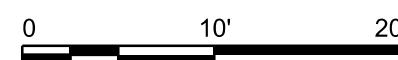


PILES NOT SHOWN
UNDER PUMP BAYS

EL -80.00
24" Ø 5/8" THICK STEEL PIPE PILES @ 6'-0" O.C.
UNDER SAFE HOUSE SUPERSTRUCTURE BUILDING

DICKINSON BAYOU PUMP STATION - FLOOD SIDE (DOWNSTREAM) ELEVATION

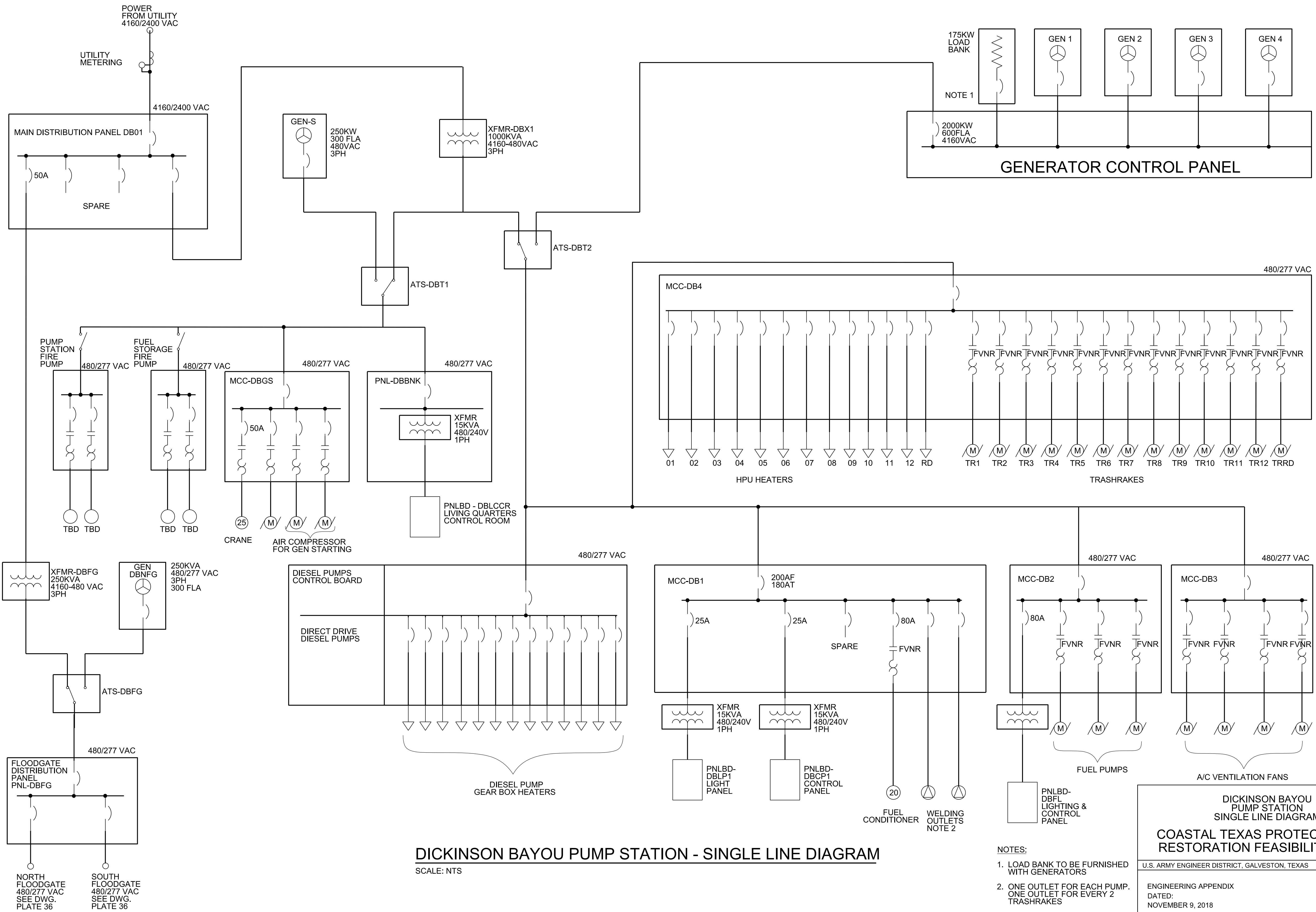
SCALE: 1" = 10'



DICKINSON BAYOU
PUMP STATION
DOWNSTREAM ELEVATION
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RESTORATION FEASIBILITY STUDY**

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ENGINEERING APPENDIX
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DICKINSON BAYOU PUMP STATION - SINGLE LINE DIAGRAM
 SCALE: NTS

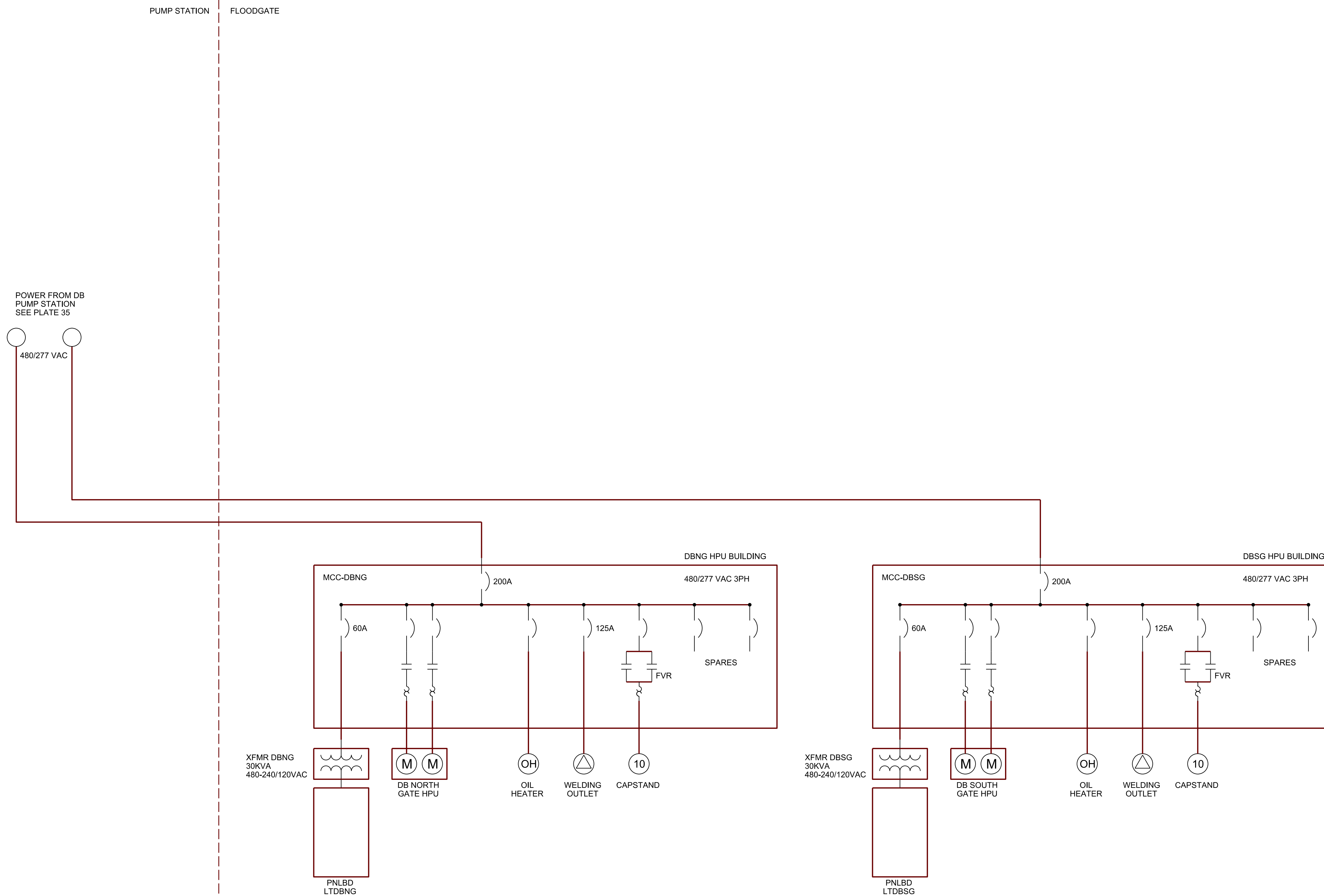
NOTES:

1. LOAD BANK TO BE FURNISHED WITH GENERATORS
2. ONE OUTLET FOR EACH PUMP. ONE OUTLET FOR EVERY 2 TRASHRAKES

DICKINSON BAYOU PUMP STATION SINGLE LINE DIAGRAM
COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

ENGINEERING APPENDIX
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DICKINSON BAYOU - FLOODGATE - SINGLE LINE DIAGRAM

SCALE: NTS

LEGEND

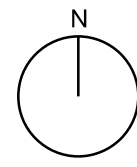
DB - DICKINSON BAYOU
 NG - NORTH GATE
 SG - SOUTH GATE

DICKINSON BAYOU
 FLOODGATE
 SINGLE LINE DIAGRAM

**COASTAL TEXAS PROTECTION AND
 RESTORATION FEASIBILITY STUDY**

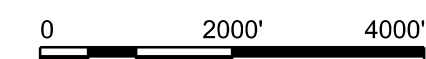
U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

ENGINEERING APPENDIX
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 NOVEMBER 9, 2018
 TETRA TECH, INC.



GALVESTON ISLAND - VICINITY PLAN

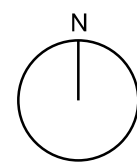
SCALE: 1" = 2000'



**GALVESTON ISLAND
PUMP STATIONS
VICINITY PLAN**
**COASTAL TEXAS PROTECTION AND
RESTORATION FEASIBILITY STUDY**

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

ENGINEERING APPENDIX
DATED:
NOVEMBER 9, 2018
TETRA TECH, INC.



1
39



OFFATTS
BAYOU



GALVESTON ISLAND PUMP STATION 1

KEYPLAN

G11
37

GALVESTON ISLAND PUMP STATION 1 - GENERAL PLAN

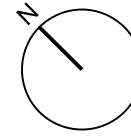
SCALE: 1" = 200'

0 200' 400'

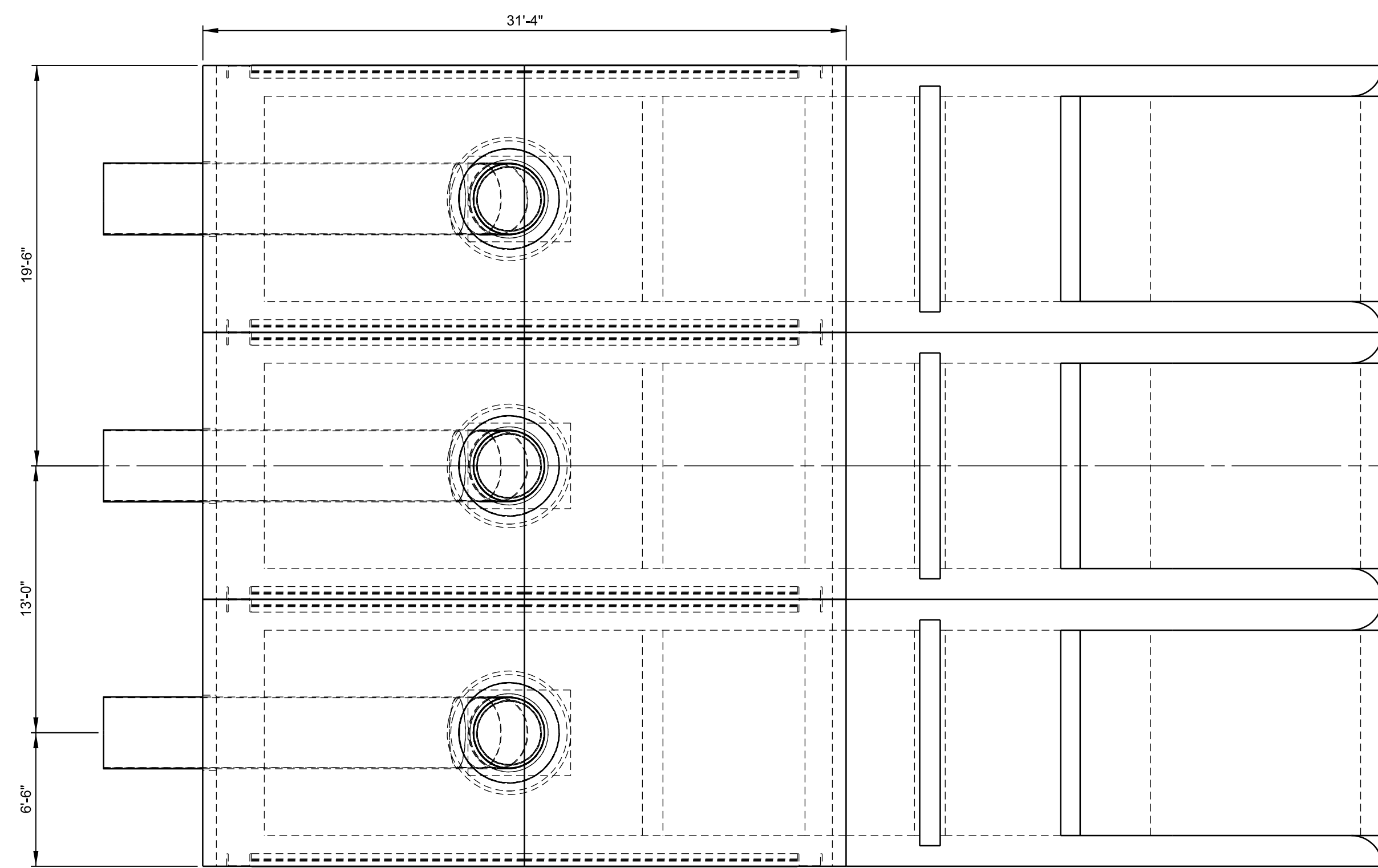
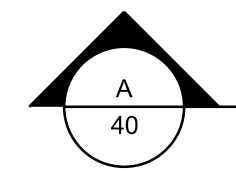
GALVESTON ISLAND
PUMP STATION 1
GENERAL PLAN
**COASTAL TEXAS PROTECTION AND
RESTORATION FEASIBILITY STUDY**

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

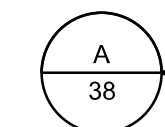
ENGINEERING APPENDIX
DATED:
NOVEMBER 9, 2018
TETRA TECH, INC.



GALVESTON BAY SIDE

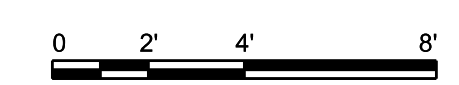


OFFATTS BAYOU SIDE



GALVESTON ISLAND - PUMP STATION 1 - PLAN

SCALE: 3/16" = 1'-0"



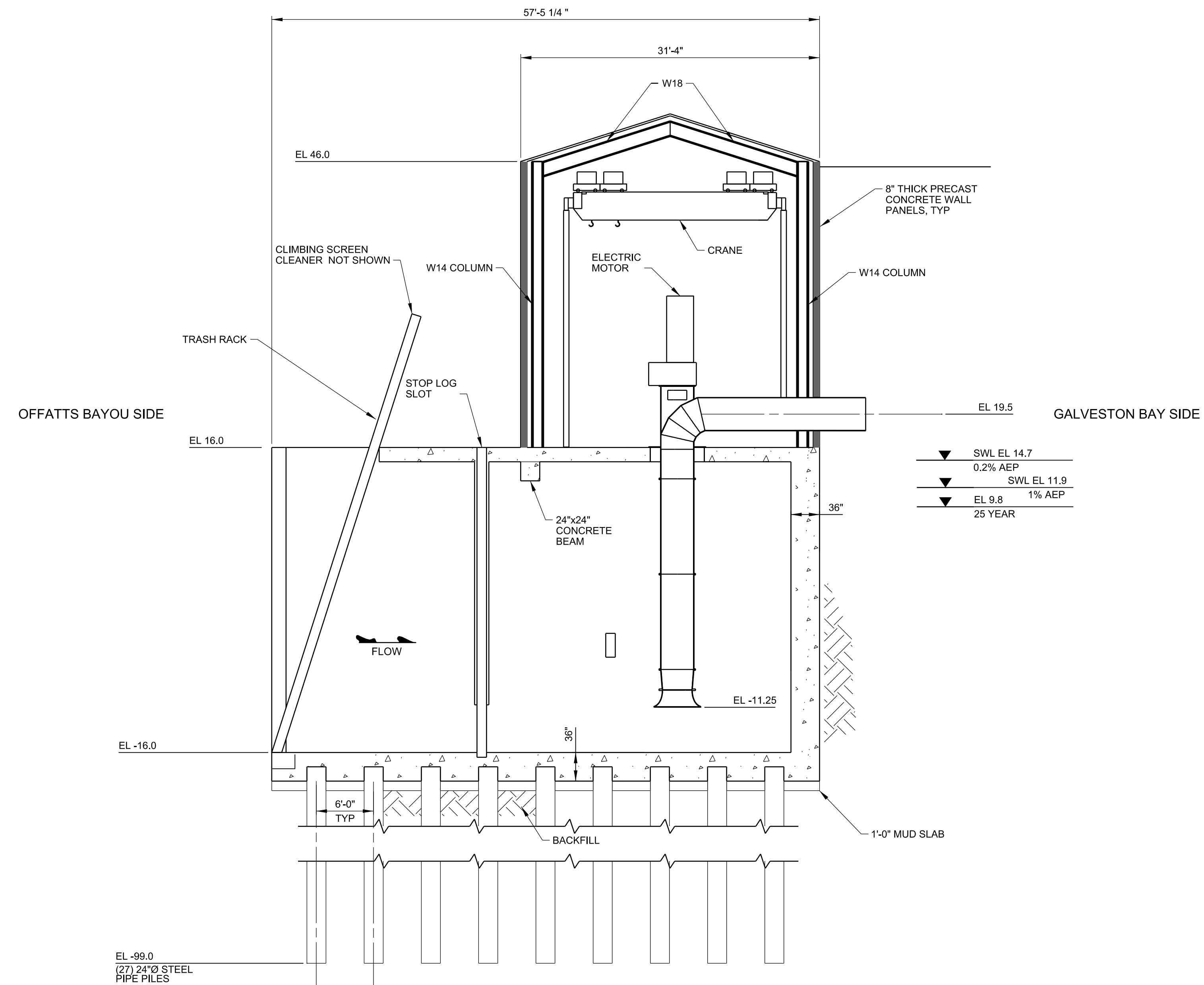
GALVESTON ISLAND
PUMP STATION 1
PLAN
**COASTAL TEXAS PROTECTION AND
RESTORATION FEASIBILITY STUDY**

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

ENGINEERING APPENDIX
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NOVEMBER 9, 2018
TETRA TECH, INC.

NOTES:

1. ALL PILES ARE 24"Ø.
2. MUD SLAB IS 2500 PSI LEAN CONCRETE, 12" THICKNESS.

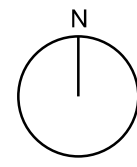


A
39 GALVESTON ISLAND PUMP STATION 1 - SECTION
SCALE: 1/8" = 1'-0"

GALVESTON ISLAND
PUMP STATION 1
SECTION
**COASTAL TEXAS PROTECTION AND
RESTORATION FEASIBILITY STUDY**

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

ENGINEERING APPENDIX
DATED:
NOVEMBER 9, 2018
TETRA TECH, INC.



KEYPLAN



G12
37

GALVESTON ISLAND PUMP STATION 2 - GENERAL PLAN

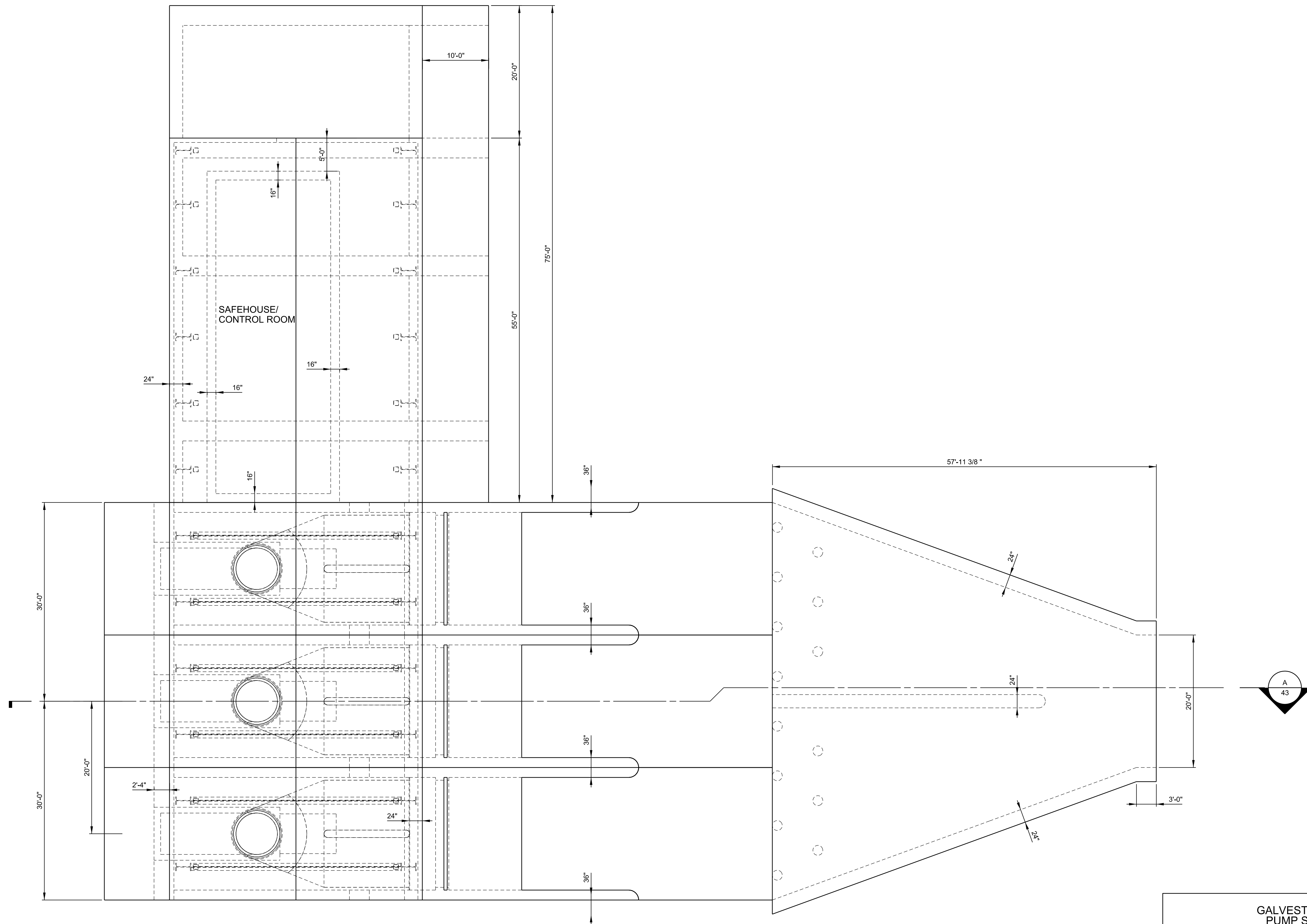
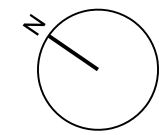
SCALE: 1" = 200'



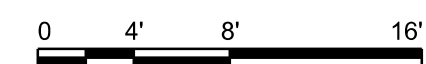
**GALVESTON ISLAND
PUMP STATION 2
GENERAL PLAN**
**COASTAL TEXAS PROTECTION AND
RESTORATION FEASIBILITY STUDY**

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

ENGINEERING APPENDIX
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NOVEMBER 9, 2018
TETRA TECH, INC.

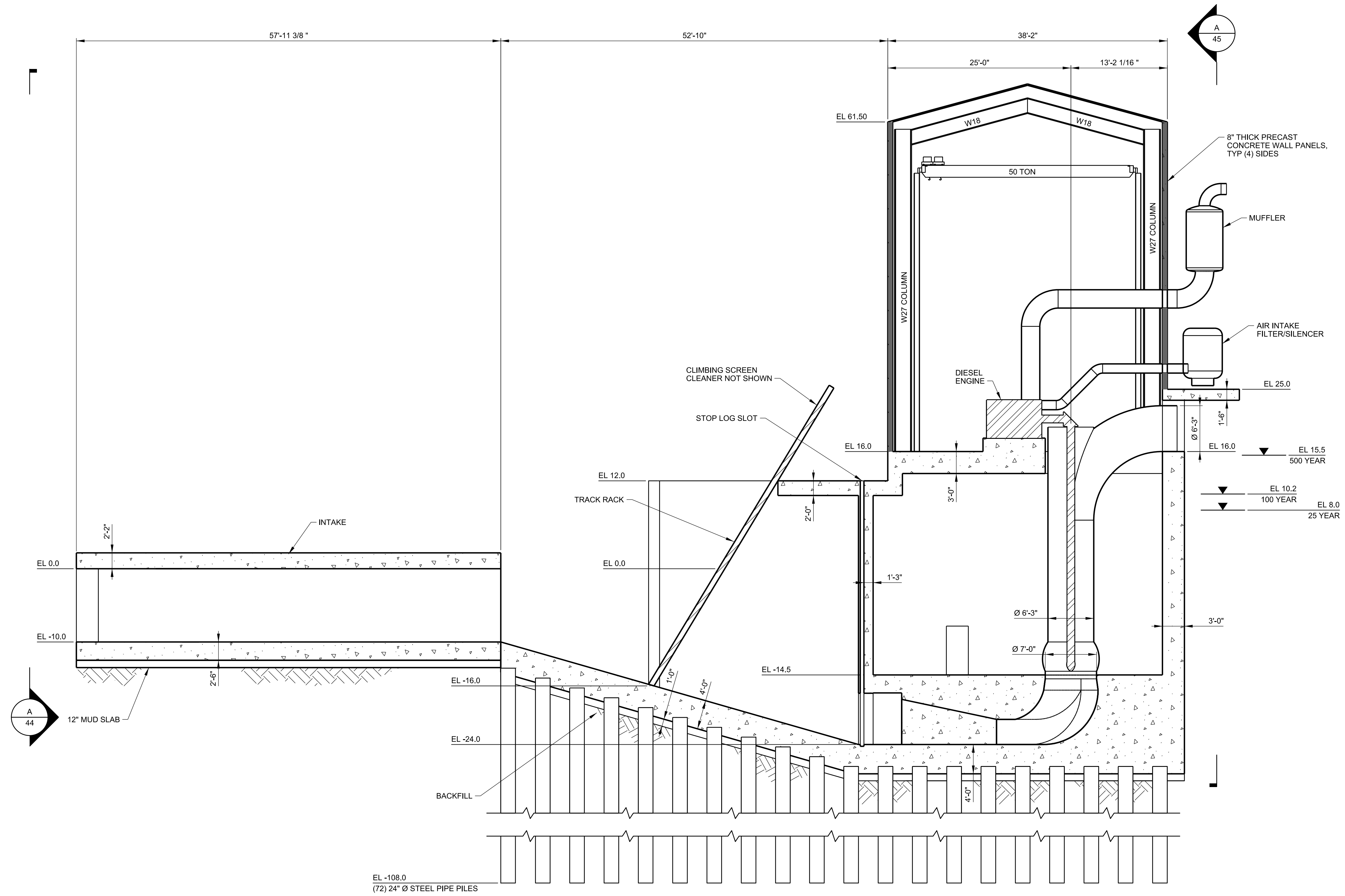


A
41 GALVESTON ISLAND PUMP STATION 2 - PLAN
SCALE: 1/8" = 1'-0"

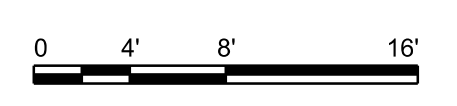


GALVESTON ISLAND
PUMP STATION 2
PLAN
COASTAL TEXAS PROTECTION AND
RESTORATION FEASIBILITY STUDY
U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

ENGINEERING APPENDIX
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NOVEMBER 9, 2018
TETRA TECH, INC.



GALVESTON ISLAND PUMP STATION 2 - SECTION
 SCALE: 1/8" = 1'-0"

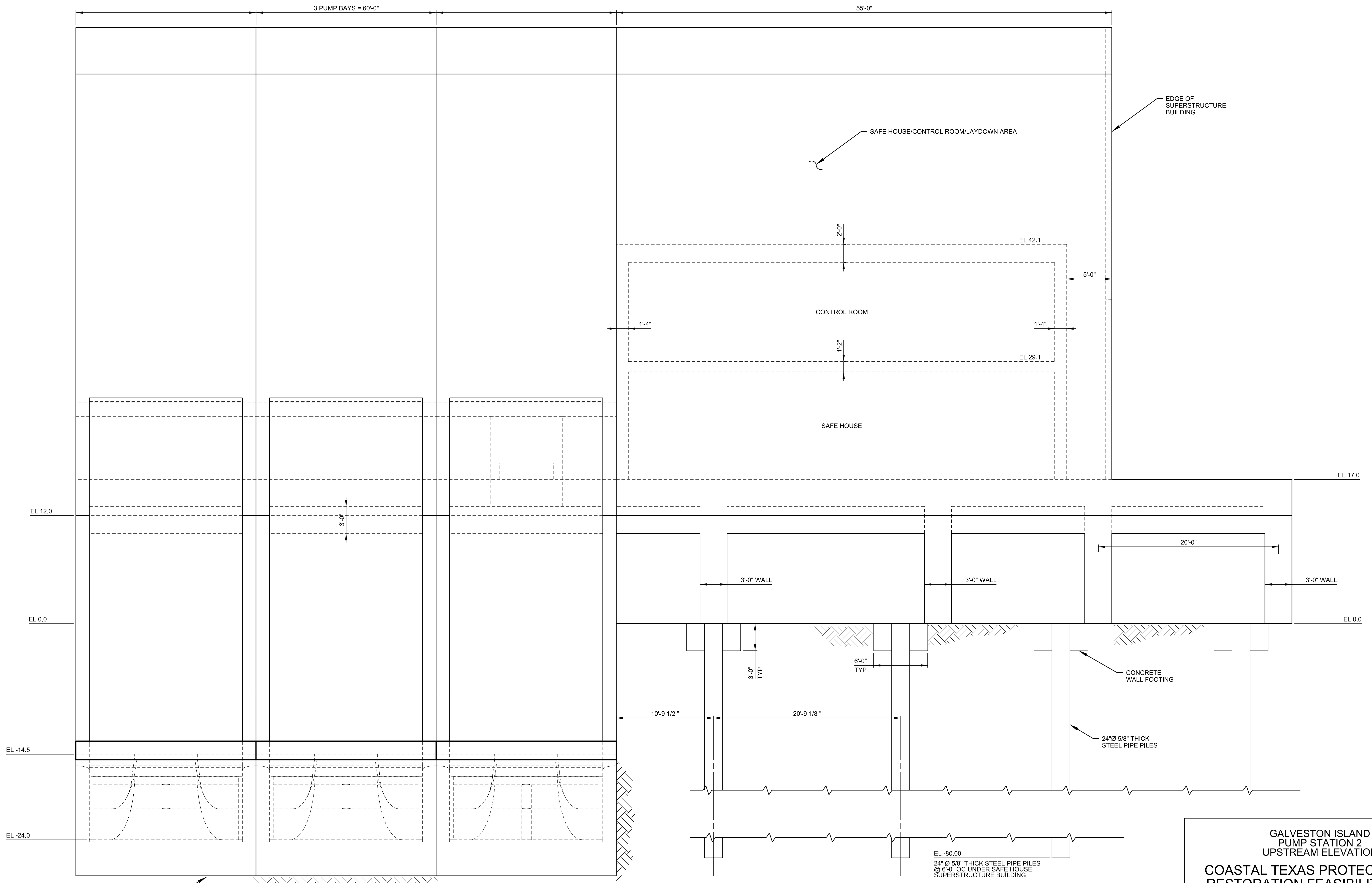


GALVESTON ISLAND
 PUMP STATION 2
 SECTION

COASTAL TEXAS PROTECTION AND
 RESTORATION FEASIBILITY STUDY

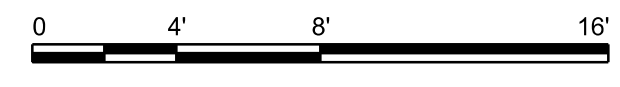
U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

ENGINEERING APPENDIX
 DATED:
 NOVEMBER 9, 2018
 TETRA TECH, INC.



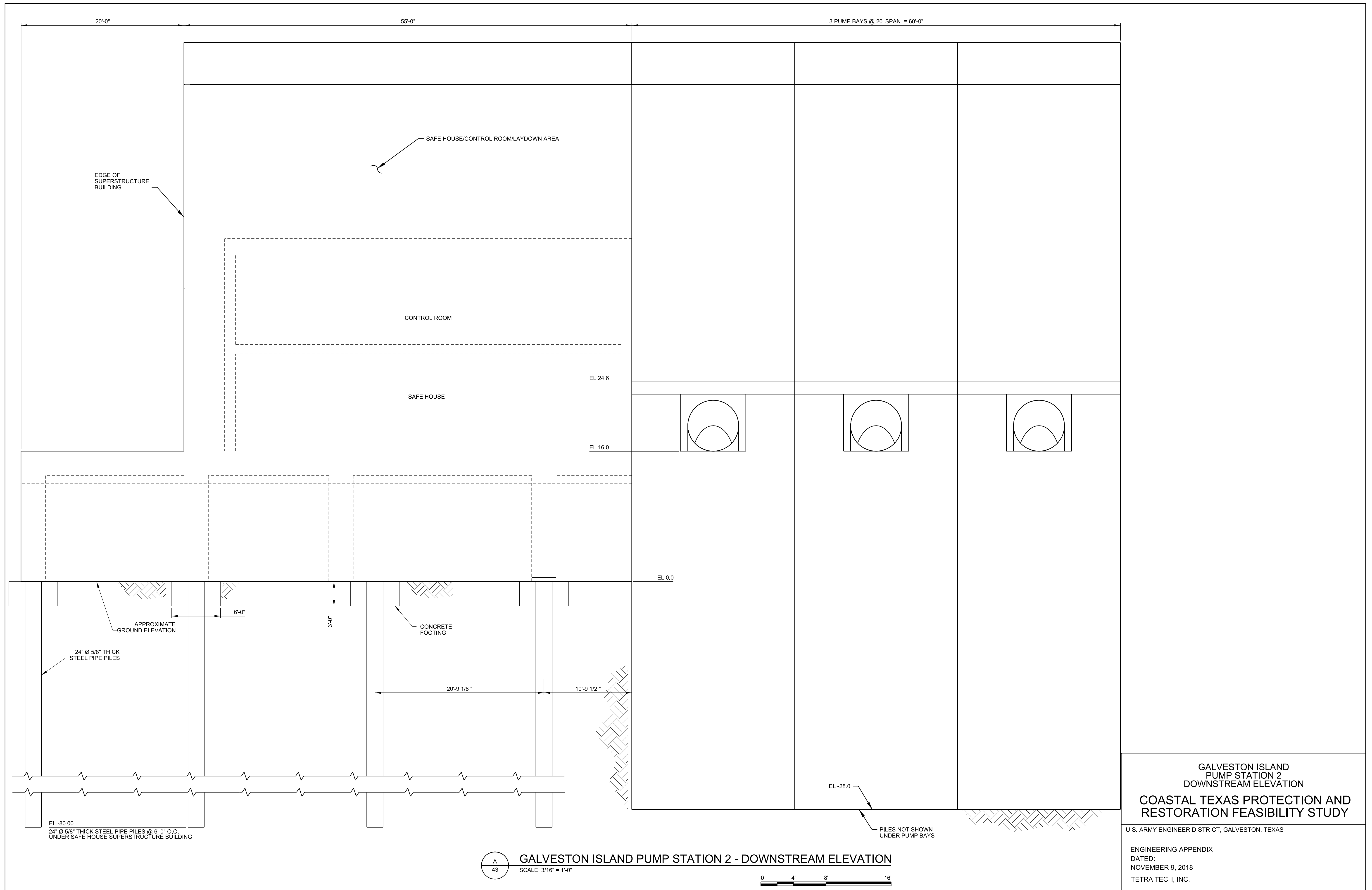
PILES NOT SHOWN UNDER PUMP BAYS

A
43 GALVESTON ISLAND PUMP STATION 2 - UPSTREAM ELEVATION
SCALE: 3/16" = 1'-0"



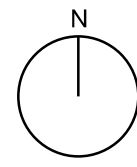
GALVESTON ISLAND
PUMP STATION 2
UPSTREAM ELEVATION
**COASTAL TEXAS PROTECTION AND
RESTORATION FEASIBILITY STUDY**
U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

ENGINEERING APPENDIX
DATED:
NOVEMBER 9, 2018
TETRA TECH, INC.



GALVESTON ISLAND
 PUMP STATION 2
 DOWNSTREAM ELEVATION
**COASTAL TEXAS PROTECTION AND
 RESTORATION FEASIBILITY STUDY**
 U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

ENGINEERING APPENDIX
 DATED:
 NOVEMBER 9, 2018
 TETRA TECH, INC.



GALVESTON ISLAND PUMP STATION 3

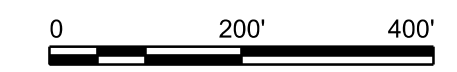


KEYPLAN

G13
37

GALVESTON ISLAND PUMP STATION 3 - GENERAL PLAN

SCALE: 1" = 200'

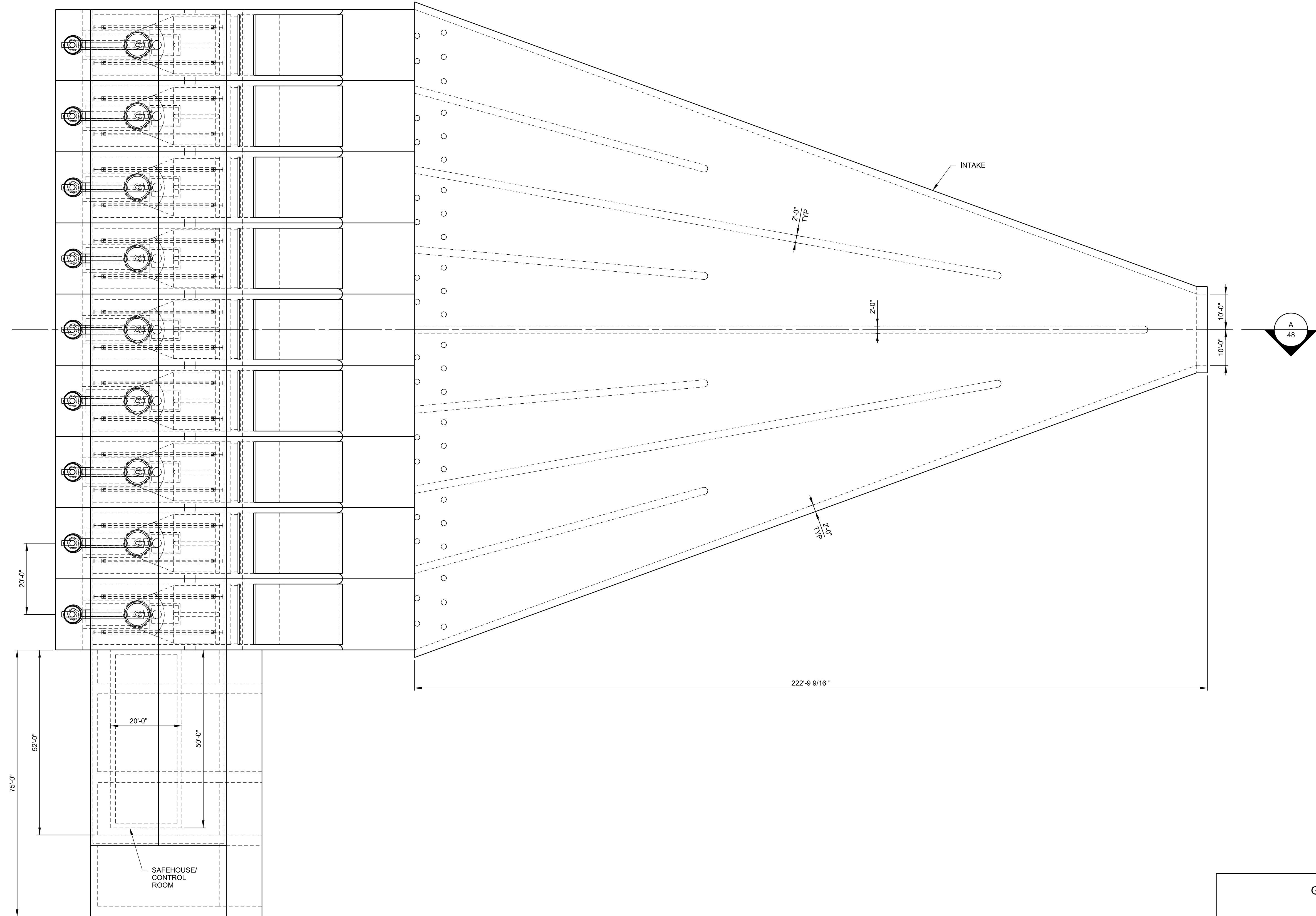
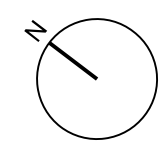


1
47

GALVESTON ISLAND
PUMP STATION 3
GENERAL PLAN
**COASTAL TEXAS PROTECTION AND
RESTORATION FEASIBILITY STUDY**

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

ENGINEERING APPENDIX
DATED:
NOVEMBER 9, 2018
TETRA TECH, INC.



20'-0"

75'-0"

52'-0"

20'-0"

50'-0"

SAFEHOUSE/
CONTROL
ROOM

INTAKE

2'-0"
TYP

2'-0"

2'-0"
TYP

222'-9 9/16"

A
48

A
46

GALVESTON ISLAND PUMP STATION 3 - PLAN

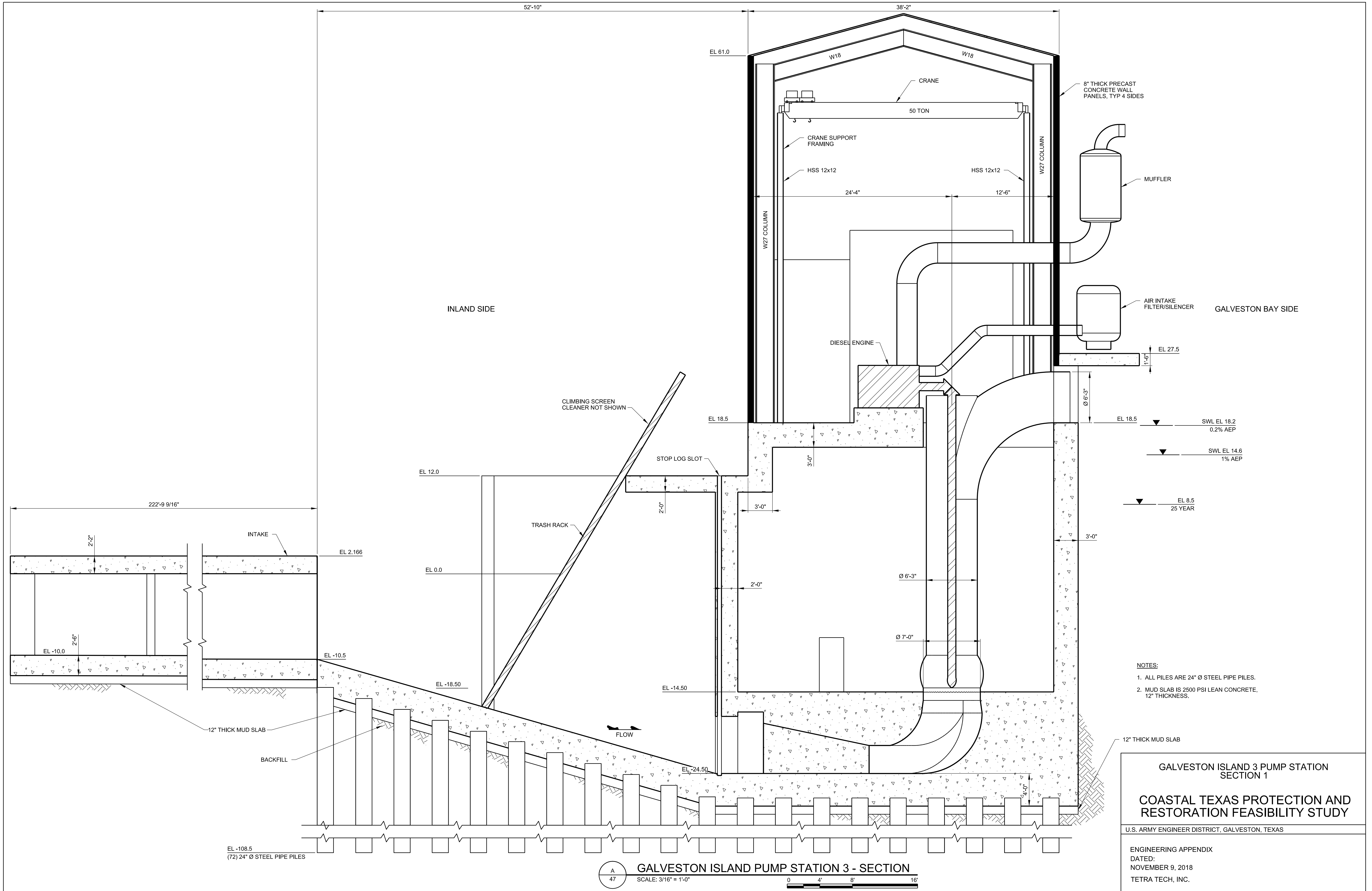
SCALE: 1" = 15'



GALVESTON ISLAND
PUMP STATION 3
PLAN
COASTAL TEXAS PROTECTION AND
RESTORATION FEASIBILITY STUDY

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

ENGINEERING APPENDIX
DATED:
NOVEMBER 9, 2018
TETRA TECH, INC.



- NOTES:
1. ALL PILES ARE 24" Ø STEEL PIPE PILES.
 2. MUD SLAB IS 2500 PSI LEAN CONCRETE, 12" THICKNESS.

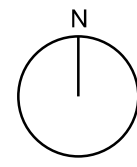
GALVESTON ISLAND 3 PUMP STATION
SECTION 1

**COASTAL TEXAS PROTECTION AND
RESTORATION FEASIBILITY STUDY**

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

ENGINEERING APPENDIX
DATED:
NOVEMBER 9, 2018
TETRA TECH, INC.

GALVESTON ISLAND PUMP STATION 3 - SECTION
SCALE: 3/16" = 1'-0"



KEYPLAN



G14
37

GALVESTON ISLAND PUMP STATION 4 - GENERAL PLAN

SCALE: 1" = 200'

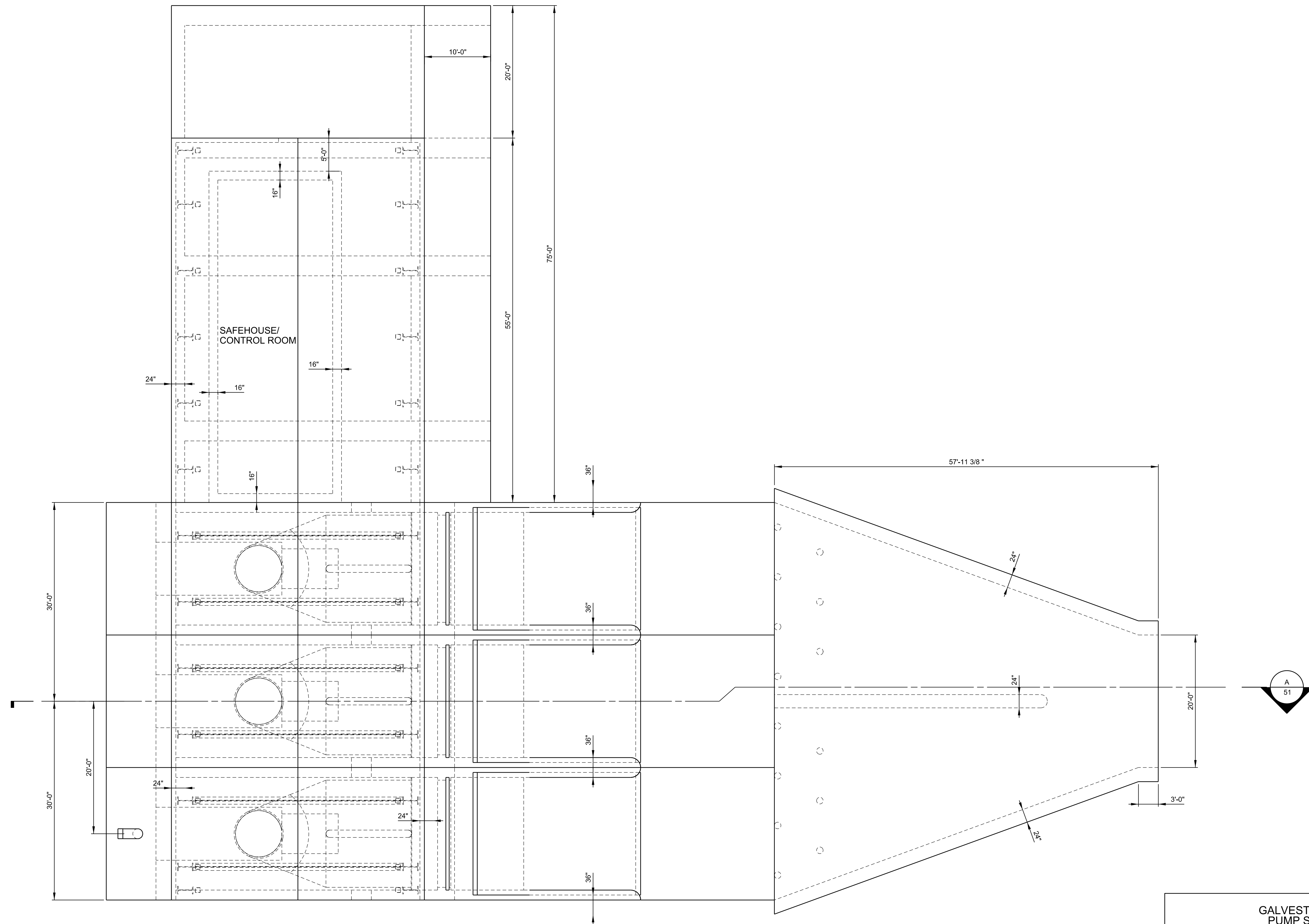
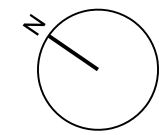


GALVESTON ISLAND
PUMP STATION 4
GENERAL PLAN

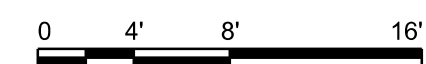
**COASTAL TEXAS PROTECTION AND
RESTORATION FEASIBILITY STUDY**

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

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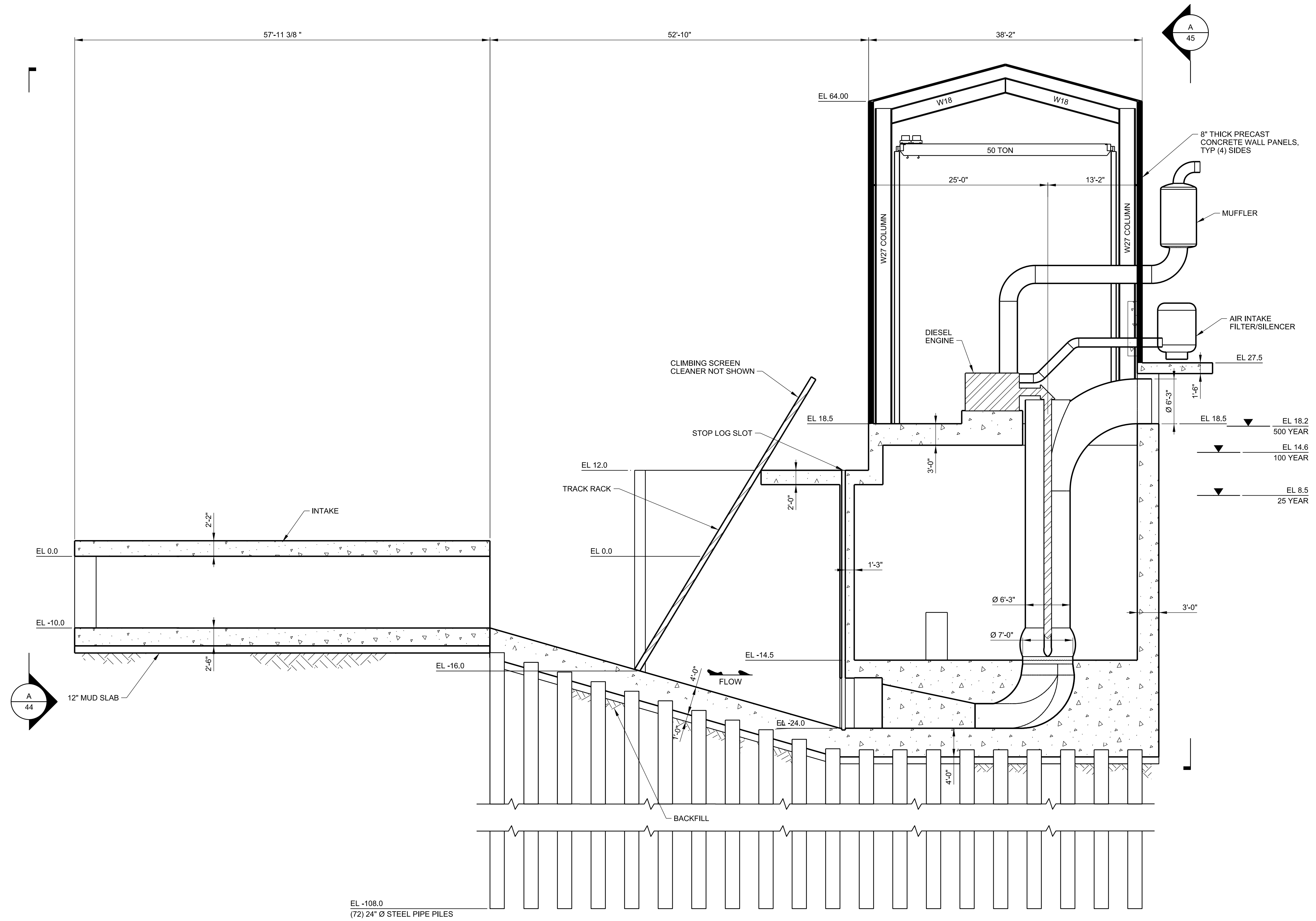
A
50 GALVESTON ISLAND PUMP STATION 4 - PLAN
SCALE: 1/8" = 1'-0"



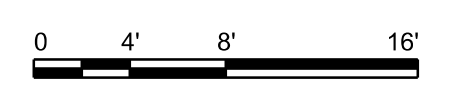
GALVESTON ISLAND
PUMP STATION 4
PLAN
COASTAL TEXAS PROTECTION AND
RESTORATION FEASIBILITY STUDY

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

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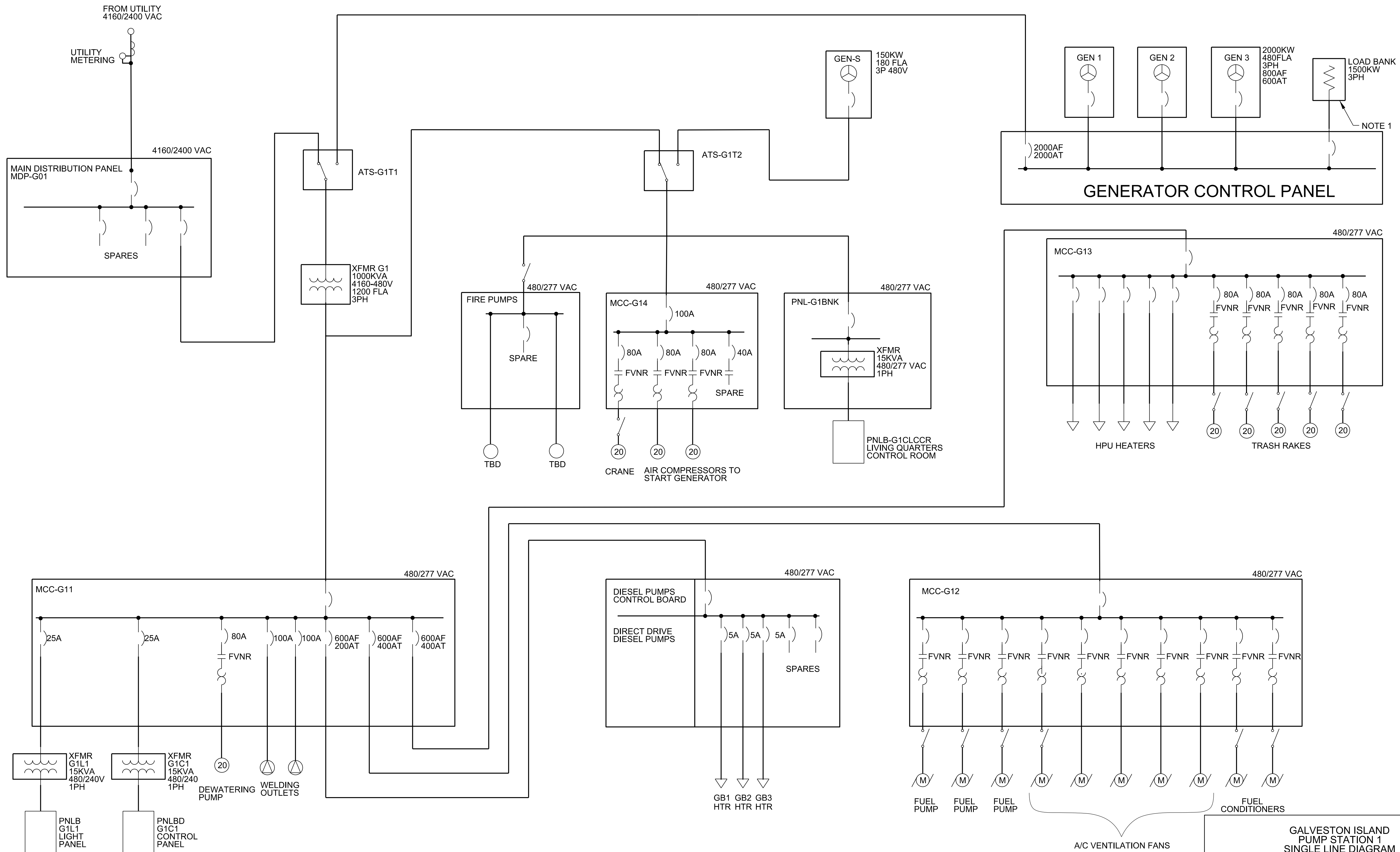


GALVESTON ISLAND PUMP STATION 4 - SECTION
 SCALE: 1/8" = 1'-0"



GALVESTON ISLAND
 PUMP STATION 4
 SECTION
**COASTAL TEXAS PROTECTION AND
 RESTORATION FEASIBILITY STUDY**
 U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

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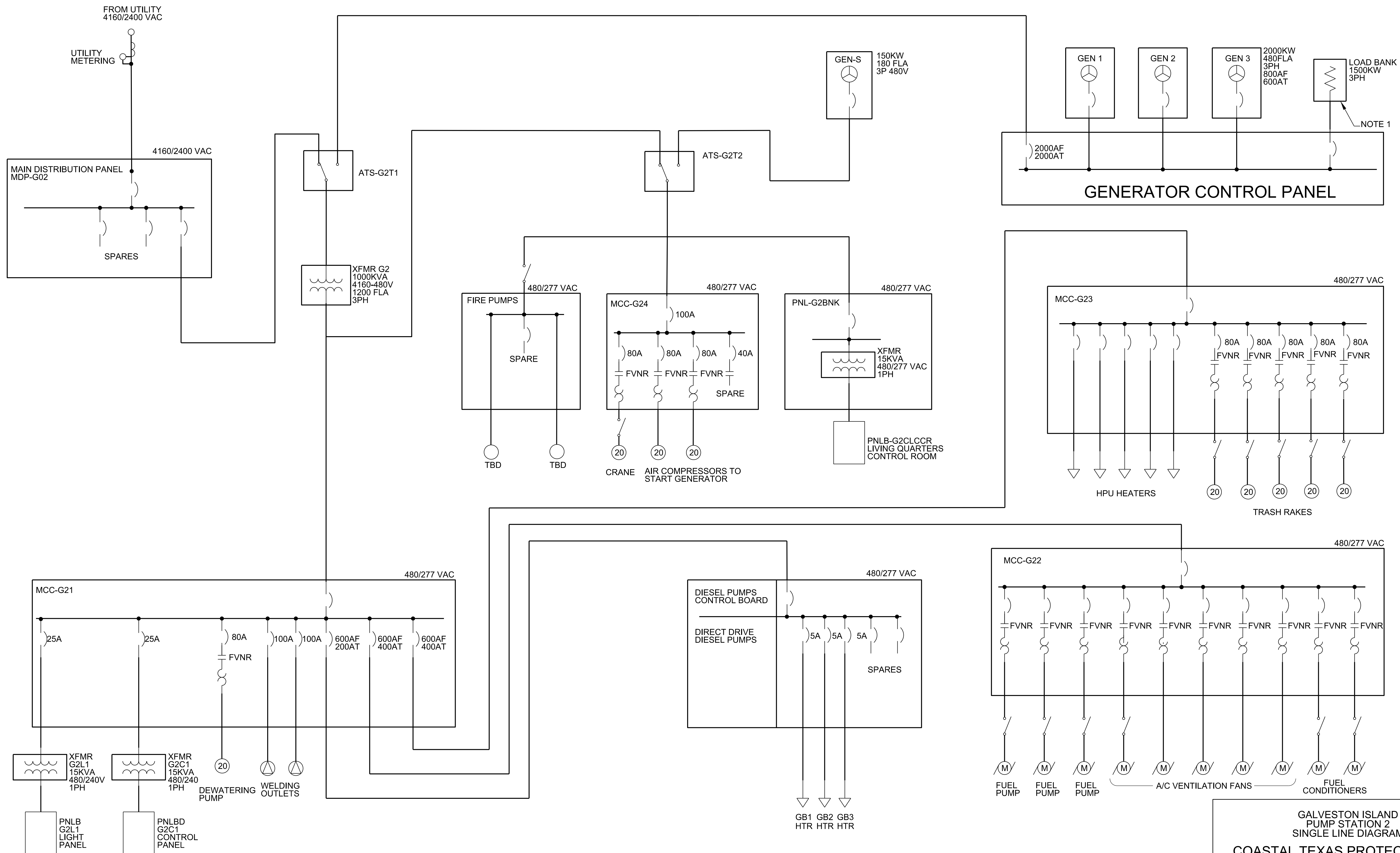
%OPTIONAL VALUE 1%

GALVESTON PUMP STATION 1 - SINGLE LINE DIAGRAM
SCALE: NTS

NOTES:
1. LOAD BANK TO BE FURNISHED WITH GENERATORS.

GALVESTON ISLAND
PUMP STATION 1
SINGLE LINE DIAGRAM
COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY
U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

ENGINEERING APPENDIX
DATED:
NOVEMBER 9, 2018
TETRA TECH, INC.



GALVESTON PUMP STATION 2 - SINGLE LINE DIAGRAM

SCALE: NTS

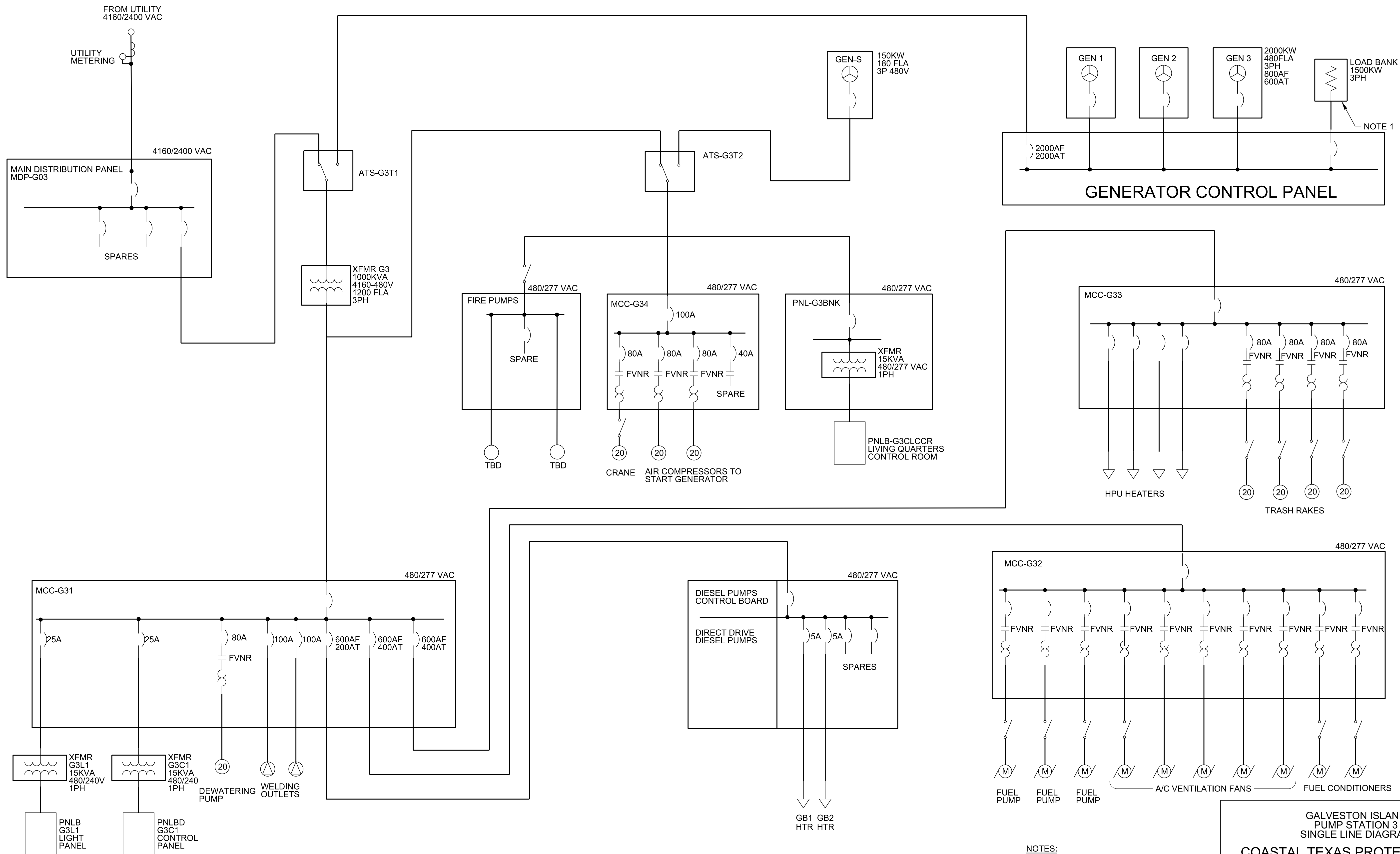
NOTES:

1. LOAD BANK TO BE FURNISHED WITH GENERATORS.

GALVESTON ISLAND
PUMP STATION 2
SINGLE LINE DIAGRAM
COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

ENGINEERING APPENDIX
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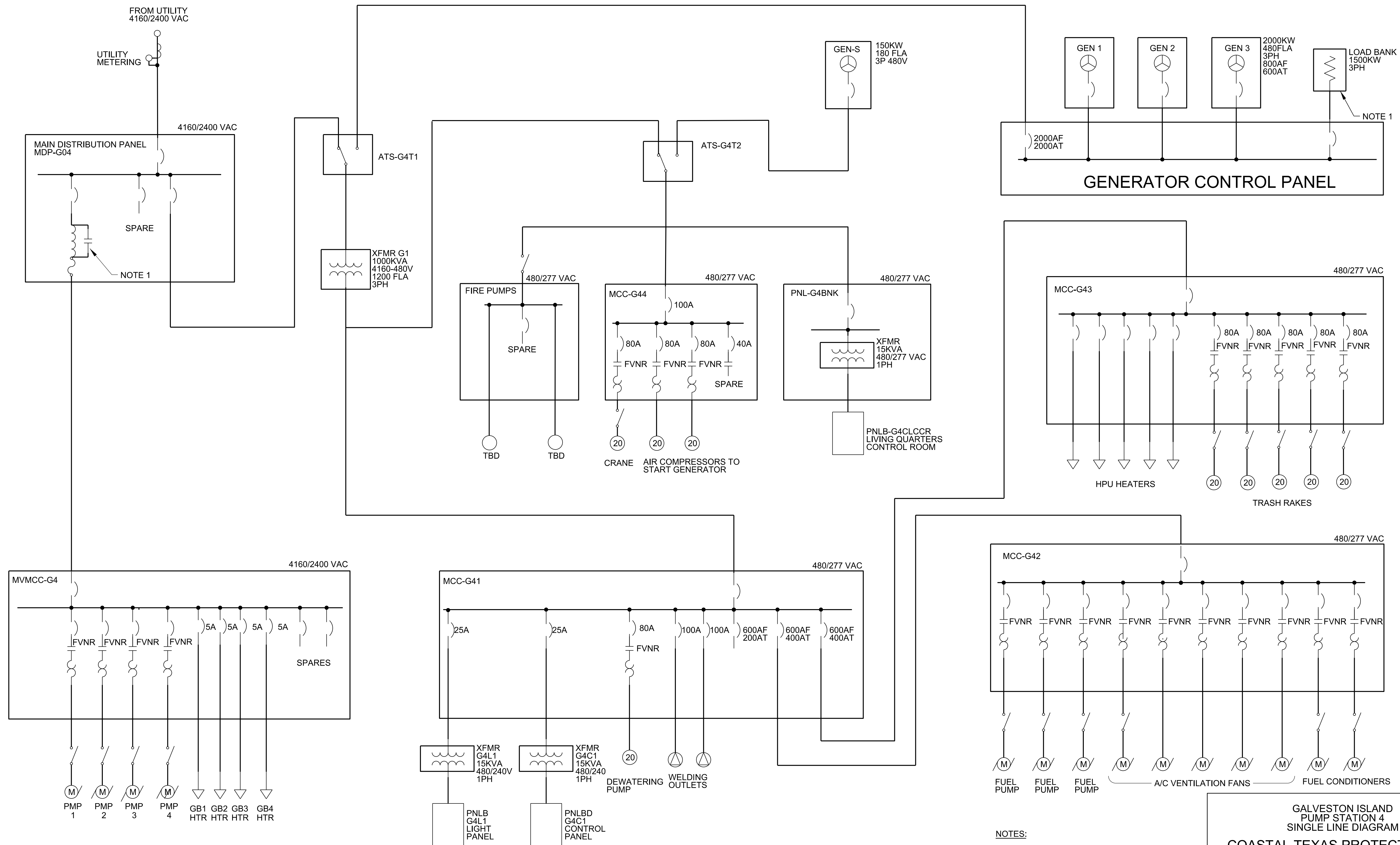


GALVESTON PUMP STATION 3 - SINGLE LINE DIAGRAM
 SCALE: NTS

- NOTES:**
 1. LOAD BANK TO BE FURNISHED WITH GENERATORS.

GALVESTON ISLAND
 PUMP STATION 3
 SINGLE LINE DIAGRAM
COASTAL TEXAS PROTECTION AND RESTORATION FEASIBILITY STUDY
 U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

ENGINEERING APPENDIX
 DATED:
 NOVEMBER 9, 2018
 TETRA TECH, INC.



GALVESTON PUMP STATION 4 - SINGLE LINE DIAGRAM

SCALE: NTS

- NOTES:**
- LOAD BANK TO BE FURNISHED WITH GENERATORS.
 - HARMONICS/TRANSIENTS FILTERING AND ISOLATION.

**GALVESTON ISLAND
PUMP STATION 4
SINGLE LINE DIAGRAM**

**COASTAL TEXAS PROTECTION AND
RESTORATION FEASIBILITY STUDY**

U.S. ARMY ENGINEER DISTRICT, GALVESTON, TEXAS

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