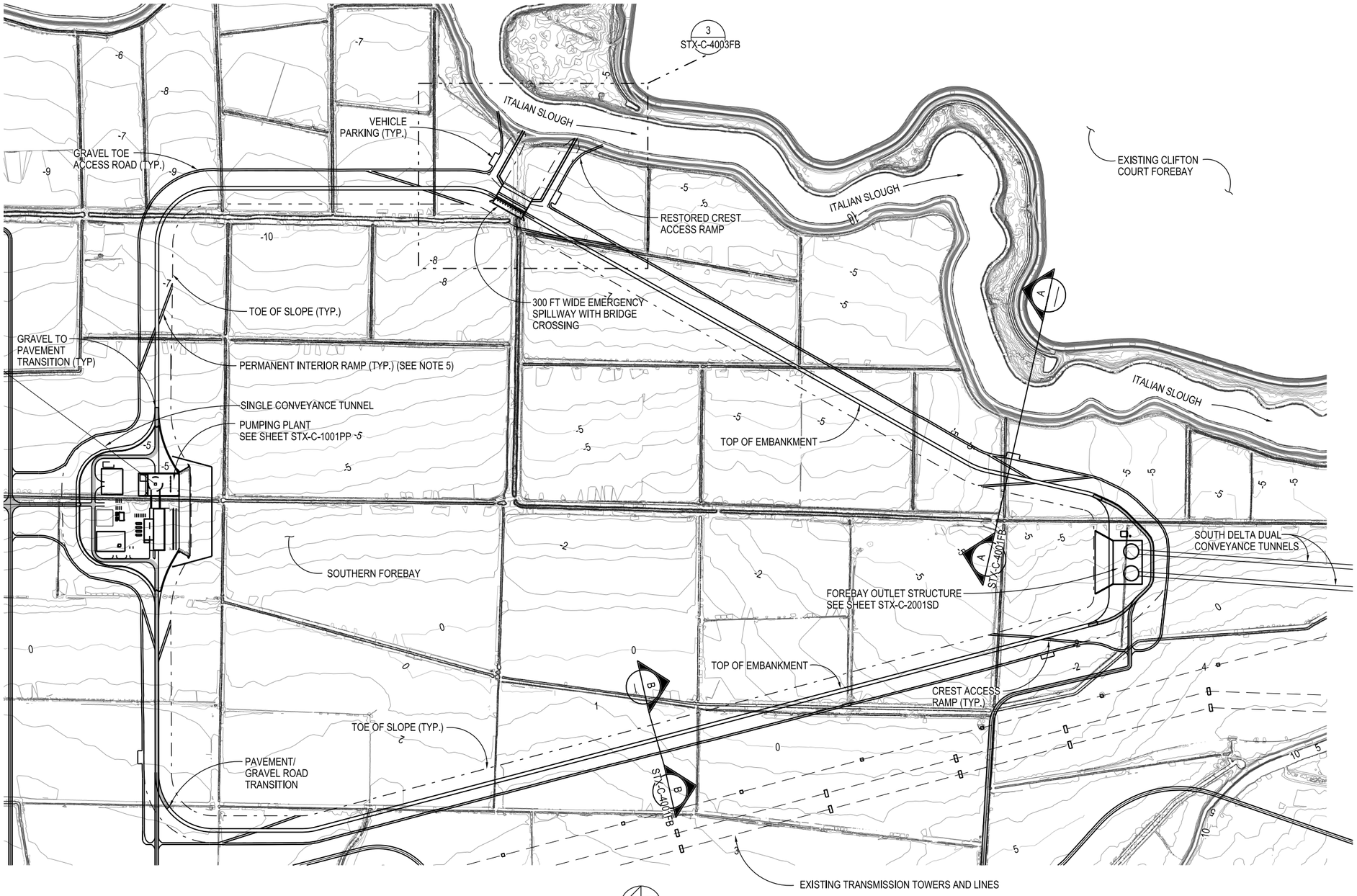


SITE PLAN
1"=500'

NOTES:

1. EMBANKMENT AND SPILLWAY FOUNDATION IMPROVEMENT PLANS AND CONCEPTUAL CONSTRUCTION SEQUENCING SHOWN ON SHEET STX-C-1003FB.
2. TOE OF SOUTHERN FOREBAY EMBANKMENT SHALL BE SET BACK AT LEAST 300 FT FROM TOE OF EXISTING LEVEE/ EMBANKMENT OR SET BACK AT LEAST 500 FT FROM EXISTING HIGH VOLTAGE TRANSMISSION LINES.
3. EXISTING IRRIGATION INFRASTRUCTURE BELOW THE FOOTPRINT OF THE EMBANKMENT SHALL BE REMOVED DURING SUBGRADE PREPARATION FOR THE EMBANKMENT CONSTRUCTION.
4. SOUTHERN FOREBAY CONFIGURATION ASSUMES A MAXIMUM STORAGE VOLUME OF 9,000 AF BETWEEN THE NORMAL OPERATING WATER LEVELS (EL. 5.5 FT TO EL. 17.5 FT). THE TOTAL STORAGE VOLUME UP TO THE SPILLWAY INVERT (EL. 5.5 FT TO EL. 21.0 FT) IS APPROXIMATELY 11,830 AF.
5. THE RESERVOIR INTERIOR ACCESS RAMPS WILL BE PAVED WITH REINFORCED CONCRETE PAVEMENT.

SOUTHERN FOREBAY

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

REV	DATE	DESCRIPTION	SUB.	APPD
	12/23/2021	FINAL DRAFT BASELINE DRAWINGS		

DESIGNED: J. PIETI
DRAWN: A. SCHULTZ
CHECKED: K. ROELL
APPROVAL RECOMMENDED
APPROVAL BY

DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

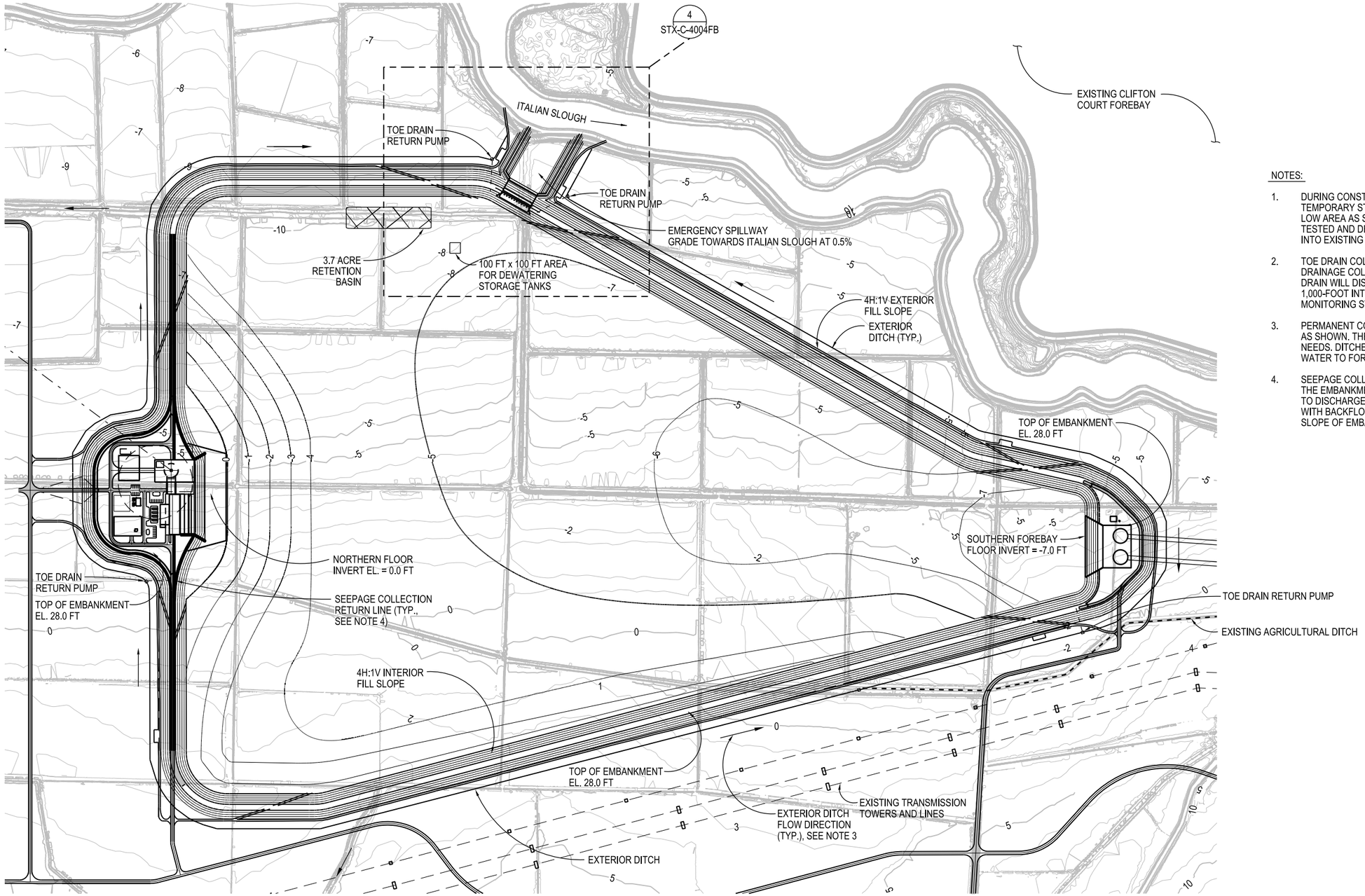
ENGINEERING PROJECT REPORT
DELTA CONVEYANCE PROJECT
SINGLE TUNNEL - CENTRAL AND EASTERN CORRIDORS

SOUTHERN FOREBAY SITE PLAN

PROJECT NO. W8X97000
SHEET NO. STX-C-1001FB
REV
SEQUENCE NO. X

STX-C-1001FB_W8X97000.dgn

PLOT DATE:11/29/2021 PLOT TIME:12:11:23 PM



NOTES:

1. DURING CONSTRUCTION, SITE DRAINAGE TO BE COLLECTED IN A TEMPORARY STORMWATER RETENTION POND LOCATED IN AN EXISTING LOW AREA AS SHOWN. DISCHARGE FROM THE BASIN TO BE LABORATORY TESTED AND DESILTED PRIOR TO BEING REUSED ON SITE OR DISCHARGED INTO EXISTING DRAINAGE DITCH INFRASTRUCTURE.
2. TOE DRAIN COLLECTION SYSTEM COMPRISED OF LATERAL PERFORATED DRAINAGE COLLECTION PIPE AS SHOWN ON SHEET STX-C-4001FB. TOE DRAIN WILL DISCHARGE TO EXTERIOR COLLECTION DITCH AT APPROXIMATE 1,000-FOOT INTERVALS VIA SOLID DISCHARGE PIPE WITH SEEPAGE MONITORING STATION.
3. PERMANENT COCNRETE LINED EXTERIOR DITCHES ARE SLOPED TO DRAIN AS SHOWN. THE DITCHES WILL BE SIZED ACCORDINGLY TO MEET DRAINAGE NEEDS. DITCHES TO DRAIN INTO PUMP VAULTS FOR RETURN OF SEEPAGE WATER TO FOREBAY. VERIFY DURING PRELIMINARY ENGINEERING.
4. SEEPAGE COLLECTION RETURN LINES TO BE BURIED SHALLOW THROUGH THE EMBANKMENT CREST WITHIN THE FREEBOARD. SEEPAGE RETURN LINE TO DISCHARGE INTO INTERIOR OF RESERVOIR AT CONCRETE OUTLET STRUCTURE WITH BACKFLOW PREVENTION DEVICE AND ENERGY DISSIPATION ON INTERIOR SLOPE OF EMBANKMENT.

0 500 1000
Scale In Feet

GRADING PLAN
1"=500'

SOUTHERN FOREBAY

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

REV	DATE	DESCRIPTION	SUB.	APPD
	12/23/2021	FINAL DRAFT BASELINE DRAWINGS		

DESIGNED: J. PIETI
DRAWN: A. SCHULTZ
CHECKED: K. ROELL
APPROVAL RECOMMENDED
APPROVAL BY

DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

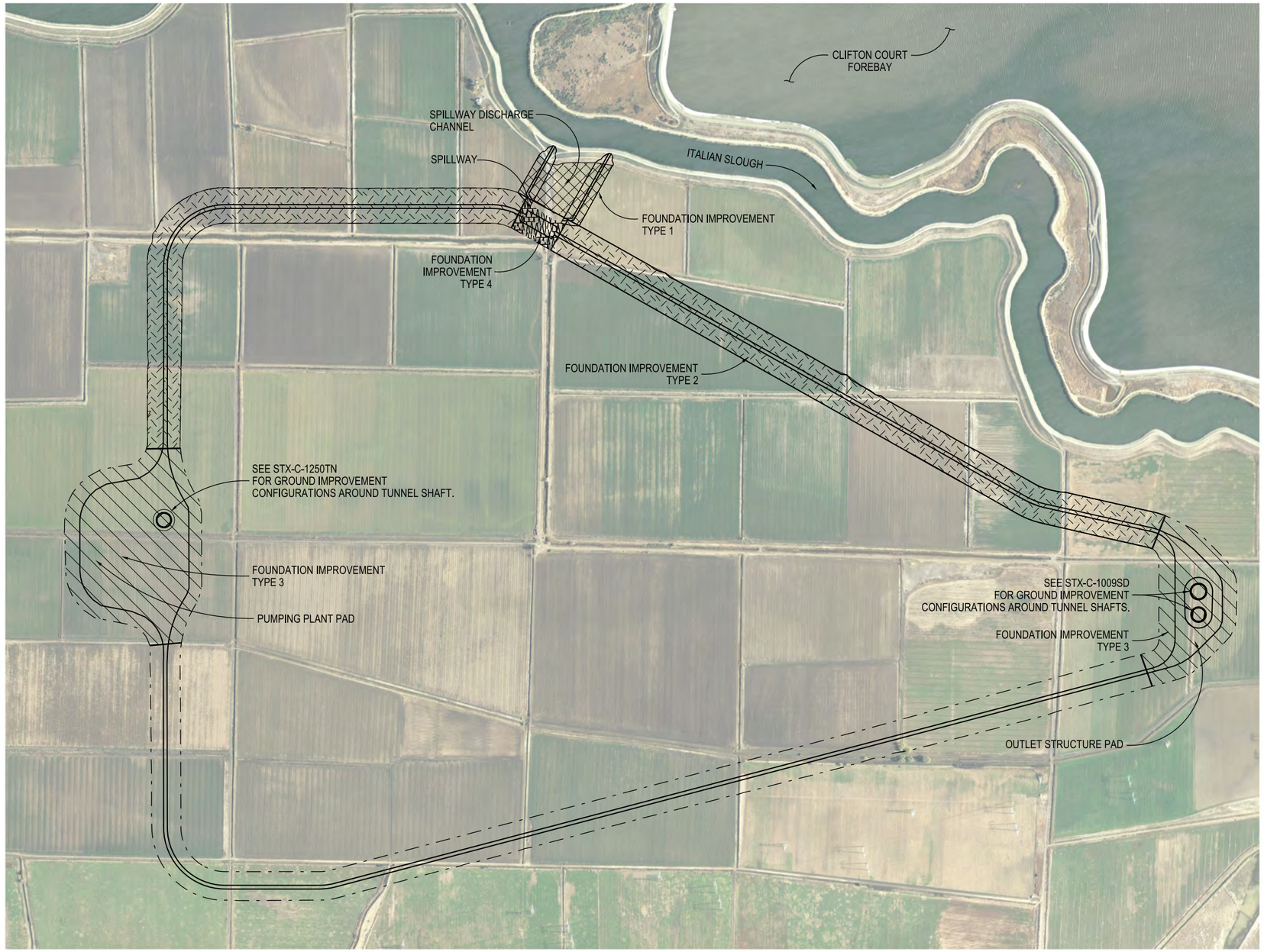
ENGINEERING PROJECT REPORT
DELTA CONVEYANCE PROJECT
SINGLE TUNNEL - CENTRAL AND EASTERN CORRIDORS

SOUTHERN FOREBAY GRADING PLAN

PROJECT NO. W8X97000
SHEET NO. STX-C-1002FB
REV
SEQUENCE NO. X

STX-C-1002FB_W8X97000.dgn

PLOT DATE:11/15/2021 PLOT TIME:4:24:27 PM



CONCEPTUAL CONSTRUCTION SEQUENCE:

1. STRIP 6 IN OF TOPSOIL OVER ENTIRE SOUTHERN FOREBAY CONSTRUCTION AREA. SEE SHEET STX-G-0090GN FOR TOPSOIL STOCKPILE AREA.

2. UNDERCUT TO 6 FT BELOW ORIGINAL GRADE WITHIN EMBANKMENT FOOTPRINT ALONG WESTERN EMBANKMENT TO GENERATE REUSABLE FILL MATERIAL. REMOVE UNSUITABLE MATERIAL (PEAT) IF ENCOUNTERED BENEATH THE PUMPING PLANT PAD AND SOUTHERN FOREBAY OUTLET STRUCTURE PAD TO EXTENT PRACTICAL WITHOUT DEWATERING OR EXCAVATION SUPPORT.

3. USE SUITABLE MATERIAL FROM UNDERCUT AND INITIAL GRADING OF FOREBAY FLOOR TO BACKFILL PUMPING PLANT PAD AND SOUTHERN FOREBAY OUTLET STRUCTURE PAD BACK TO ORIGINAL GRADE.

4. CONSTRUCT TYPE 3 CEMENT DEEP SOIL MIXING (CDSM) FOUNDATION IMPROVEMENTS BENEATH PUMPING PLANT PAD AND SOUTHERN FOREBAY OUTLET STRUCTURE PAD FROM ORIGINAL GRADE.

5. CONSTRUCT PUMPING PLANT PAD AND SOUTHERN FOREBAY OUTLET STRUCTURE PAD.

6. UNDERCUT TO 6 FT BELOW ORIGINAL GRADE IN REMAINING AREAS (ALONG EASTERN EMBANKMENT) OF EMBANKMENT FOOTPRINT TO REMOVE UNSUITABLE MATERIAL (PEAT). WASTE UNSUITABLE MATERIALS. SEE SHEET STX-C-1001FB FOR UNSUITABLE MATERIAL DISPOSAL AREA.

7. INSTALL DEWATERING WELLS AROUND PERIMETER OF SPILLWAY STRUCTURE FOUNDATION.

8. PERFORM OPEN CUT EXCAVATION BELOW SPILLWAY STRUCTURE FOUNDATION TO REMOVE ANTICIPATED PEAT/ORGANIC SOILS TO 15 FT BELOW ORIGINAL GRADE. FINAL EXCAVATION DEPTH TO BE CONFIRMED BASED ON FORTHCOMING SITE SPECIFIC SUBSURFACE DATA. BACKFILL/COMPACT WITH RTM OR SUITABLE ON-SITE FILL TO ORIGINAL GRADE.

9. INSTALL PRE-FABRICATED VERTICAL DRAINS (PVDS) AS SHOWN ON SHEET STX-C-4002FB. ADD STONE DRAINAGE LAYER ON TOP OF PVDS.

10. APPLY SURCHARGE LOADS FOR TYPE 1, TYPE 2, AND TYPE 4 FOUNDATION IMPROVEMENTS. SURCHARGE LOADS FOR THE EAST EMBANKMENT ANTICIPATED TO BE CONSTRUCTED IN THREE, 10 FT LIFTS OVER A DURATION OF 2 TO 2.5 YEARS TO ACHIEVE A FULL HEIGHT EMBANKMENT CROSS SECTION FOR APPROXIMATELY 9 MONTHS. THE TIMING OF THE THREE LIFTS AND DURATION OF THE FINAL FULL HEIGHT SURCHARGE LOAD WILL BE DEPENDENT ON THE AVAILABILITY OF REUSABLE RTM AND A FUNCTION OF ACTUAL SETTLEMENT PERFORMANCE.

11. DEGRADE SURCHARGE LOADS TO ORIGINAL GRADE AND CONSTRUCT TYPE 2 AND TYPE 4 CDSM GROUND IMPROVEMENTS.

12. RECONSTRUCT EMBANKMENT TO EL. 18 FT. CONSTRUCT SEEPAGE CUTOFF (SOIL BENTONITE) WALL FROM WORKING PLATFORM AT EL. 18 FT (SEE SHEET STX-C-4001FB FOR SEEPAGE CUTOFF WALL DETAILS).

13. COMPLETE EMBANKMENT CONSTRUCTION TO FINISHED GRADE AND COMPLETE SPILLWAY STRUCTURE AND DISCHARGE CHANNEL.

LEGEND: FOUNDATION IMPROVEMENT TYPES

- TYPE 1 - PRE-LOADING
- TYPE 2 - PRE-LOADING & 15% AREA REPLACEMENT RATIO (ARR)
- TYPE 3 - 25% ARR
- TYPE 4 - VERTICAL DRAINAGE, PRE-LOADING & 25% ARR

NOTE:
THE PROPOSED FOUNDATION IMPROVEMENT TYPES AND EXTENTS WILL BE CONFIRMED BASED ON FORTHCOMING SITE SPECIFIC SUBSURFACE DATA.

N

0 500 1000
Scale In Feet

FOUNDATION IMPROVEMENT PLAN
1"=500'

SOUTHERN FOREBAY

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

REV	DATE	DESCRIPTION	SUB.	APPD
	12/23/2021	FINAL DRAFT BASELINE DRAWINGS		

DESIGNED: C. HALL
DRAWN: A. SCHULTZ
CHECKED: K. ROELL
APPROVAL RECOMMENDED
APPROVAL BY

DCA
DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

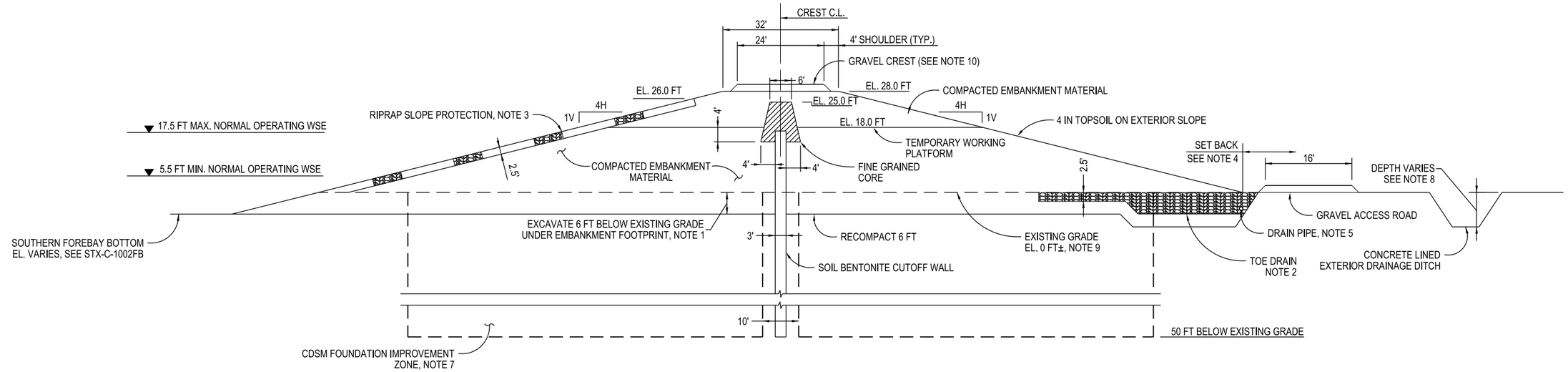
ENGINEERING PROJECT REPORT
DELTA CONVEYANCE PROJECT
SINGLE TUNNEL - CENTRAL AND EASTERN CORRIDORS

SOUTHERN FOREBAY FOUNDATION IMPROVEMENT PLAN

PROJECT NO. W8X97000
SHEET NO. STX-C-1003FB
REV
SEQUENCE NO. X

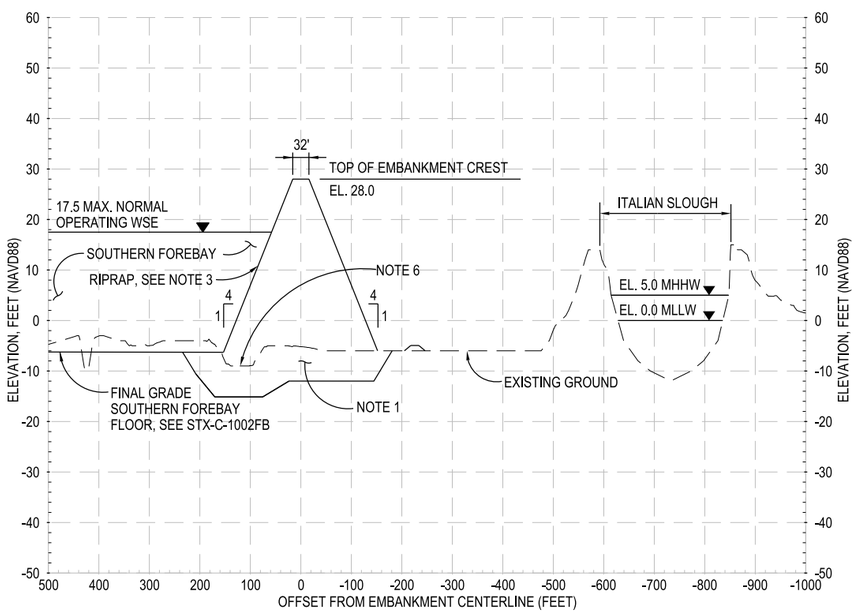
STX-C-1003FB_W8X97000.dgn

PLOT DATE:11/15/2021 PLOT TIME:4:23:51 PM



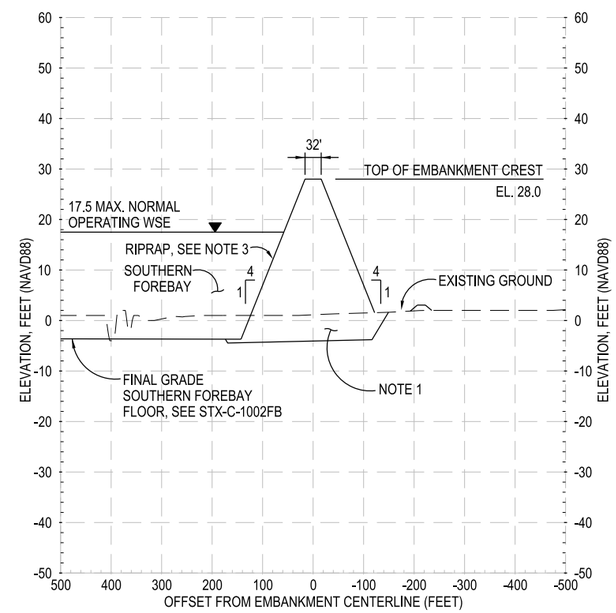
C TYPICAL EMBANKMENT CROSS SECTION
1"=15'
STX-C-1001FB

0 15 30
SCALE: 1"=15'



A-A SECTION
1"=150' H, 1"=15' V
STX-C-1001FB

0 150 300 450
HORIZONTAL SCALE: 1"=150'
0 15 30
VERTICAL SCALE: 1"=15'



B-B SECTION
1"=150' H, 1"=15' V
STX-C-1001FB

0 150 300 450
HORIZONTAL SCALE: 1"=150'
0 15 30
VERTICAL SCALE: 1"=15'

NOTES:

1. EXCAVATION OF UNSUITABLE FOUNDATION MATERIAL WILL VARY. AN AVERAGE OF 6 FT IS ASSUMED. VERIFY DURING PRELIMINARY ENGINEERING.
2. PROCESSED DRAIN MATERIAL WITH GRANULAR FILTER LAYERS.
3. PLACE RIPRAP OVER GRANULAR FILTER LAYER.
4. TOE OF EMBANKMENT SHALL BE SET BACK 300 FT FROM TOE OF EXISTING LEVEE OR SET 500 FT BACK FROM EXISTING HIGH VOLTAGE TRANSMISSION LINES.
5. PERFORATED DRAIN PIPE SHALL SLOPE TOWARD OUTLET TO BE MONITORED DURING RESERVOIR OPERATIONS.
6. EXISTING IRRIGATION INFRASTRUCTURE BELOW THE FOOTPRINT OF THE EMBANKMENT SHALL BE REMOVED DURING SUBGRADE PREPARATION FOR THE EMBANKMENT CONSTRUCTION.
7. CDSM FOUNDATION IMPROVEMENT ZONE LENGTH ESTIMATED TO BE EQUAL TO 70% OF TOE TO HEEL EMBANKMENT WIDTH. SEE SHEET STX-C-1003FB FOR FOUNDATION TREATMENT DETAILS.
8. DEPTH AND SIZE OF EXTERNAL DRAINAGE DITCHES TO BE DETERMINED DURING PRELIMINARY ENGINEERING. DITCHES WILL BE DESIGNED TO PROMOTE GRAVITY FLOW FOR COLLECTION AT THE PUMP VAULTS.
9. EXISTING GROUND WITHIN FOREBAY FOOTPRINT RANGES FROM APPROX. EL. 3 FT TO -8 FT AS SHOWN ON SHEET STX-C-1002FB.
10. LIMITED PORTIONS OF THE CREST ARE PAVED AT THE PUMPING PLANT AND OUTLET STRUCTURE. SEE SHEET STX-C-1001FB.

SOUTHERN FOREBAY

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

REV	DATE	DESCRIPTION	SUB.	APPD
	12/23/2021	FINAL DRAFT BASELINE DRAWINGS		

DESIGNED: J. PIETI
DRAWN: A. SCHULTZ
CHECKED: K. ROELL
APPROVAL RECOMMENDED
APPROVAL BY

DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

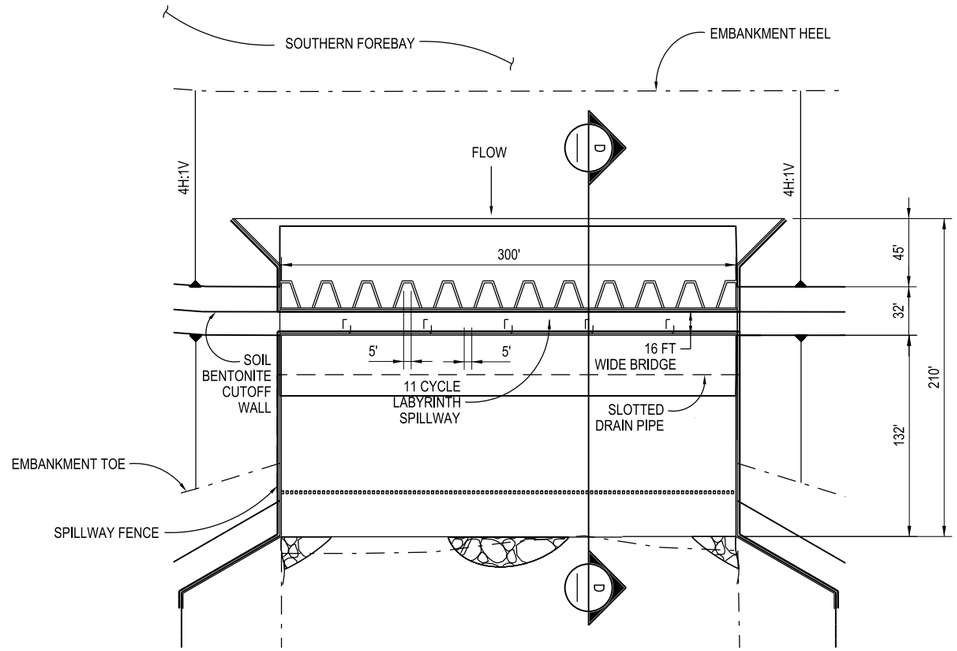
ENGINEERING PROJECT REPORT
DELTA CONVEYANCE PROJECT
SINGLE TUNNEL - CENTRAL AND EASTERN CORRIDORS

SOUTHERN FOREBAY
TYPICAL EMBANKMENT CROSS SECTION

PROJECT NO. W8X97000
SHEET NO. STX-C-4001FB
REV
SEQUENCE NO. X

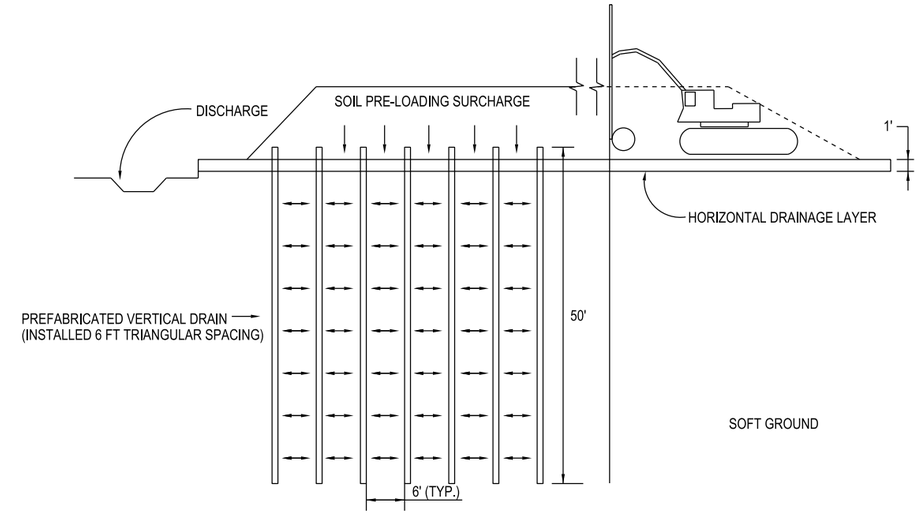
STX-C-4001FB_W8X97000.dgn

PLOT DATE:11/15/2021 PLOT TIME:4:23:14 PM

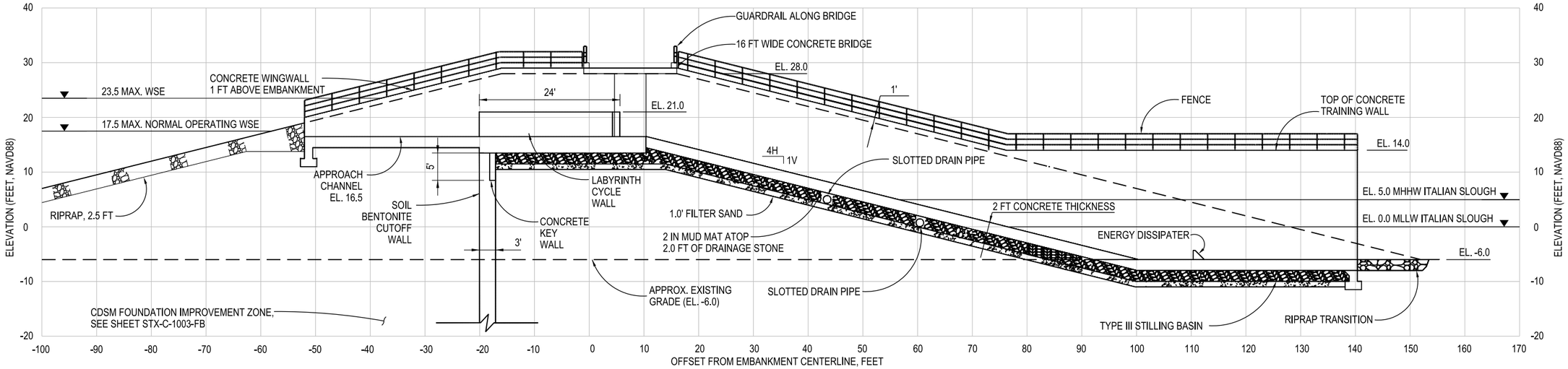


1 SPILLWAY PLAN
1"=50'

0 50 100
SCALE: 1"=50'



2 TYPICAL INSTALLATION OF PREFABRICATED VERTICAL DRAINS SECTION
NOT TO SCALE



D-D SPILLWAY SECTION
1"=10'

0 10 20
SCALE: 1"=10'

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

SOUTHERN FOREBAY

REV	DATE	DESCRIPTION	SUB.	APPD
	12/23/2021	FINAL DRAFT BASELINE DRAWINGS		

DESIGNED: P. DREW
DRAWN: A. SCHULTZ
CHECKED: K. ROELL
APPROVAL RECOMMENDED
APPROVAL BY

DELTA CONVEYANCE DESIGN & CONSTRUCTION AUTHORITY

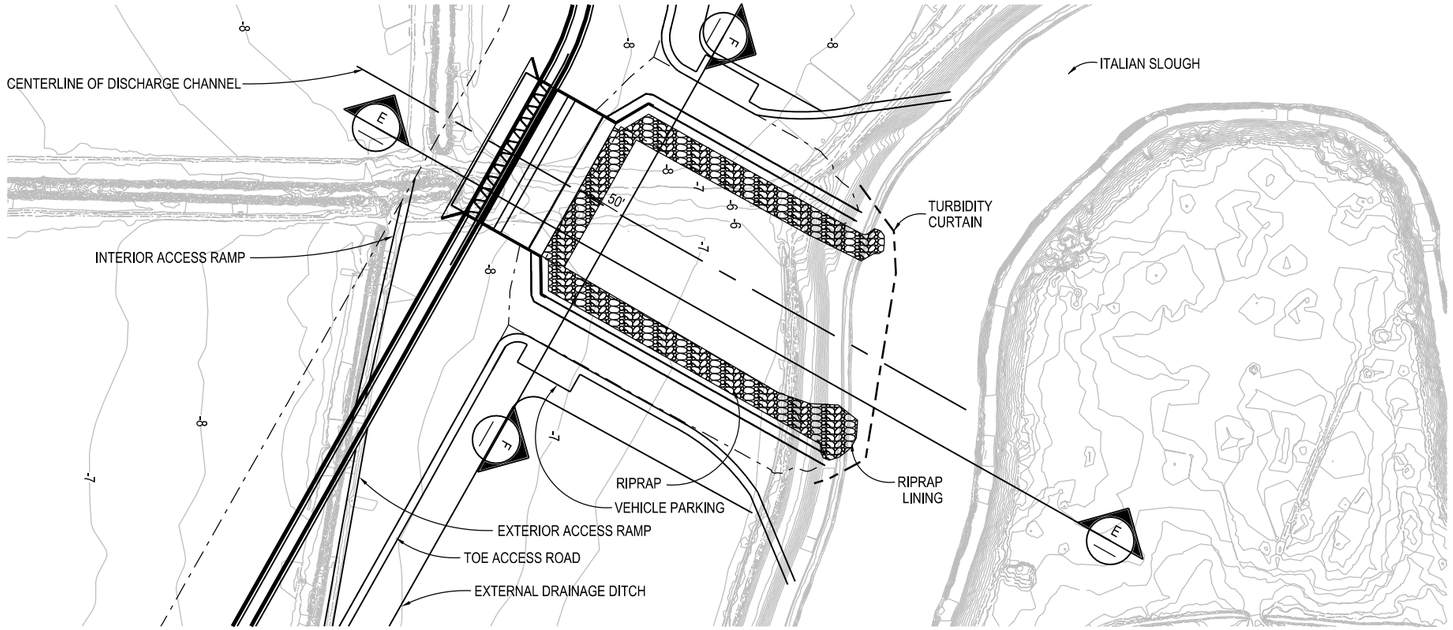
ENGINEERING PROJECT REPORT
DELTA CONVEYANCE PROJECT
SINGLE TUNNEL - CENTRAL AND EASTERN CORRIDORS

SPILLWAY STRUCTURE PLAN AND SECTION

PROJECT NO. W8X97000
SHEET NO. STX-C-4002FB
REV
SEQUENCE NO. x

STX-C-4002FB_W8X97000.dgn

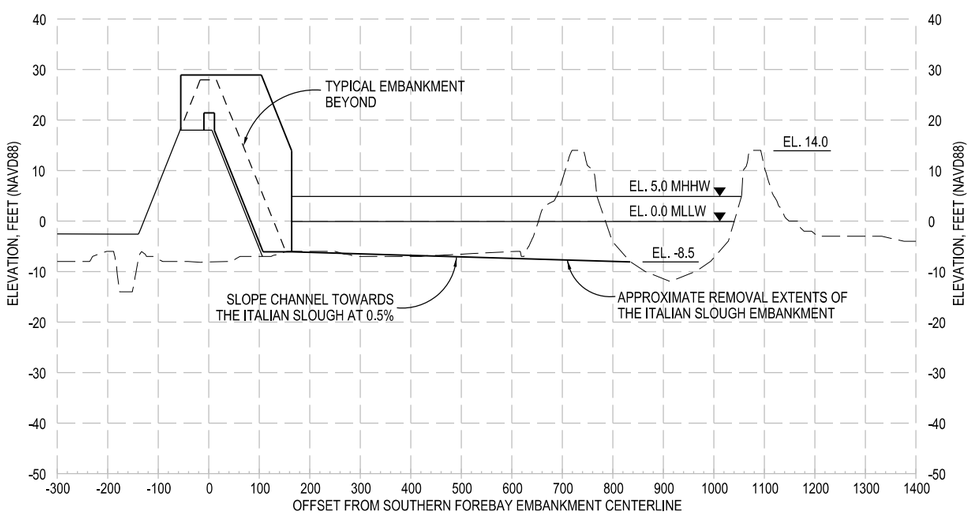
PLOT DATE:11/15/2021 PLOT TIME:4:23:14 PM



3 SPILLWAY PLAN
1"=150'
STX-C-1001FB

0 150 300 450
SCALE: 1"=150'

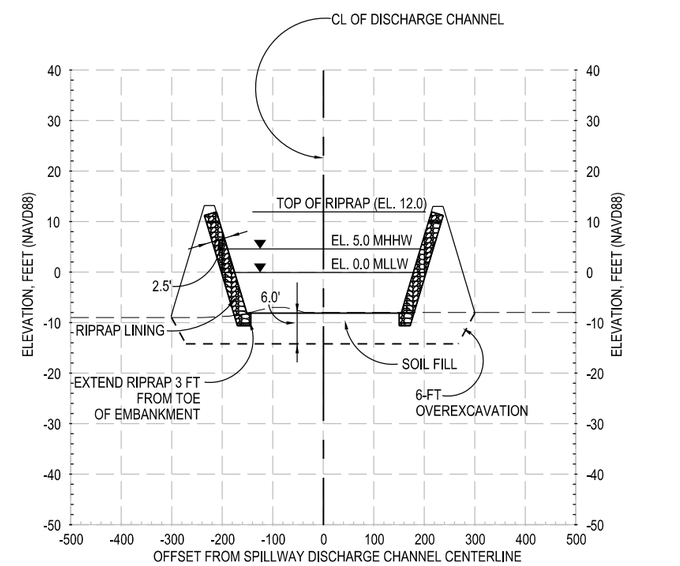
N



E-E SPILLWAY DISCHARGE CHANNEL PROFILE

0 150 300 450
HORIZONTAL SCALE: 1"=150'

0 15 30
VERTICAL SCALE: 1"=15'



F-F SPILLWAY DISCHARGE CHANNEL SECTION

0 150 300 450
HORIZONTAL SCALE: 1"=150'

0 15 30
VERTICAL SCALE: 1"=15'

SOUTHERN FOREBAY

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

REV	DATE	DESCRIPTION	SUB.	APPD
	12/23/2021	FINAL DRAFT BASELINE DRAWINGS		

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DRAWN: A. SCHULTZ
CHECKED: K. ROELL
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SPILLWAY DISCHARGE CHANNEL PLAN AND SECTION

PROJECT NO. W8X97000
SHEET NO. STX-C-4003FB
REV
SEQUENCE NO. X

STX-C-4003FB_W8X97000.dgn

PLOT DATE:2021\11\15 PLOT TIME:7:26:08 PM

SUGGESTED CONSTRUCTION SEQUENCE:

1. 6 IN OF TOPSOIL STRIPPING OVER SPILLWAY DISCHARGE AREA.

2. EXCAVATE TO 6 FT BELOW ORIGINAL GRADE. WASTE UNSUITABLE MATERIAL.

3. SURCHARGE DISCHARGE CHANNEL EMBANKMENTS WITH SUITABLE FILL OVER 2 - 2.5 YEAR PERIOD USING MULTIPLE PLACEMENT LIFTS TO MINIMUM EL. 14 FT. SURCHARGE DISCHARGE CHANNEL INTERIOR WITH SUITABLE FILL TO 5 FT ABOVE ORIGINAL GRADE.

4. SMOOTH GRADING OF SPILLWAY DISCHARGE EMBANKMENT AND CHANNEL INTERIOR TO MATCH DESIGN CONFIGURATION WITH CONNECTION TO EXISTING ITALIAN SLOUGH LEVEE.

5. PLACE RIPRAP ON SPILLWAY CHANNEL EMBANKMENT INTERIOR SLOPES.

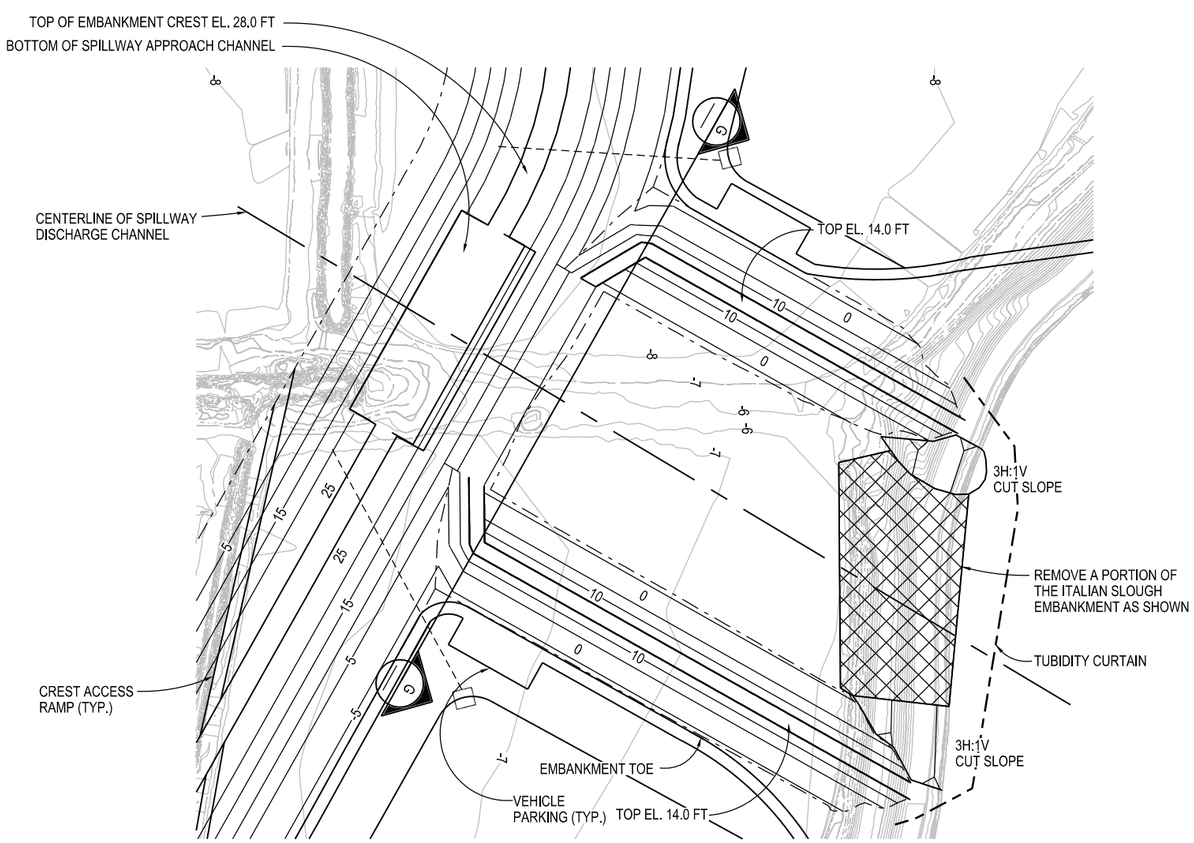
6. INSTALL THE TURBIDITY CURTAIN WITHIN THE ITALIAN SLOUGH BEYOND LIMITS OF ITALIAN SLOUGH LEVEE DEGRADE.

7. DEGRADE THE EXISTING ITALIAN SLOUGH LEVEE TO WITHIN 2-FEET OF MEAN HIGHER HIGH WATER WITHIN THE SLOUGH.

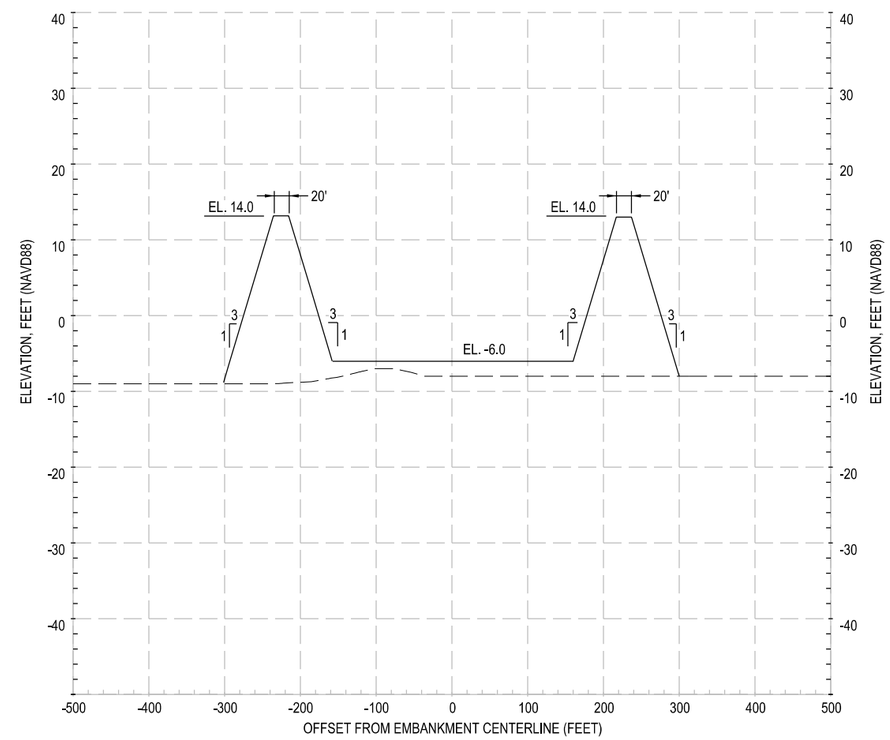
8. PUMP WATER FROM THE SLOUGH INTO THE SPILLWAY DISCHARGE CHANNEL. ONCE THE WATER LEVELS ARE EQUALIZED ON BOTH SIDES OF THE LEVEE, BEGIN REMOVAL OF THE REMAINING ITALIAN SLOUGH LEVEE TO THE GRADES INDICATED BELOW.

9. PLACE THE RIPRAP LINING ON EACH SIDE OF THE OPENING THROUGH THE LEVEE AS INDICATED ON SHEET STX-C-4003FB.

10. REMOVE TURBIDITY CURTAIN.



4 SPILLWAY GRADING
1"=100'
STX-C-1001FB



G-G SPILLWAY DISCHARGE CHANNEL SECTION

0 100 200 300
HORIZONTAL SCALE: 1"=100'

0 10 20
VERTICAL SCALE: 1"=10'

0 100 200 300
Scale In Feet

SOUTHERN FOREBAY

VERIFY SCALE
BAR IS ONE INCH ON ORIGINAL DRAWING.
0 1"

REV	DATE	DESCRIPTION	SUB.	APPD
	12/23/2021	FINAL DRAFT BASELINE DRAWINGS		

DESIGNED: P. DREW
DRAWN: A. SCHULTZ
CHECKED: K. ROELL
APPROVAL RECOMMENDED
APPROVAL BY

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ENGINEERING PROJECT REPORT
DELTA CONVEYANCE PROJECT
SINGLE TUNNEL - CENTRAL AND EASTERN CORRIDORS

SPILLWAY DISCHARGE CHANNEL
GRADING PLAN AND SECTION

PROJECT NO. W8X97000
SHEET NO. STX-C-4004FB
REV X
SEQUENCE NO.

STX-C-4004FB_W8X97000.dgn

PLOT DATE:2021\11\15 PLOT TIME:7:18:18 PM