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**GENERAL NOTES**

- SEE PRINTED CONTRACT SPECIFICATIONS FOR ADDITIONAL REQUIREMENTS AND INFORMATION.
- ALL WRITTEN DIMENSIONS SUPERCEDE SCALED DIMENSIONS.
- ALL CONSTRUCTION OFFSETS ARE PERPENDICULAR TO CONSTRUCTION BASELINE UNLESS OTHERWISE NOTED.
- GRID COORDINATES REFER TO CALIFORNIA STATE PLANE COORDINATES ZONE II NAD 83, US FEET.
- ELEVATIONS ARE BASED ON THE NORTH AMERICAN VERTICAL DATUM OF 1988 (NAVD88).
- TOPOGRAPHY AT THE SITE IS BASED ON FIELD SURVEYS AND AERIAL PHOTOGRAMMETRY COMPLETED IN 2013 AND 2014.
- CONTOUR LINES IN DRAWINGS ARE AT 2 FOOT INTERVALS.
- HIGH TIDES MAY INUNDATE THE SITE. PREDICTIONS OF THE TIDES ARE PROVIDED BY THE NATIONAL OCEANIC AND ATMOSPHERIC ADMINISTRATION'S (NOAA) PORT CHICAGO TIDE STATION (STATION ID: 9415144).
- MEAN LOWER LOW WATER (MLLW) IS 1.1' (FEET) ABOVE (NAVD88).
- MEAN HIGHER HIGH WATER (MHHW) IS 6.0' (FEET) ABOVE (NAVD88).
- THE SITE IS GENERALLY PROTECTED FROM TIDAL INUNDATION BY A NATURAL MARSH RIDGE NEAR THE GRIZZLY BAY SHORELINE. THE RIDGE HAS TYPICAL TOP ELEVATIONS BETWEEN 6.2' (FEET) AND 6.5' (FEET) NAVD88.

**LEGEND**

EXISTING PAVED ROAD	
EXISTING GRAVEL ROAD	
EXISTING CONTOURS (MAJOR)	
EXISTING CONTOURS (MINOR)	
EXISTING EDGE OF WATER	
PROPOSED EARTHWORK	
CONSTRUCTION BASELINE	
CONTROL POINT	
ELEVATION CALLOUT	
GRADING FILL	
1st ORDER CHANNEL	
2nd ORDER CHANNEL	
3rd ORDER CHANNEL	
TIDE PANNES	
MARSH PONDS	
STAGING AREAS	
BOAT ROAD FILL	
MARSH RIDGE FILL	
MARSH MOUND FILL	
3rd ORDER CHANNEL EXTENSIONS (IF REQUIRED)	
AVERAGE DRAINAGE SLOPE	

# State and Federal Contractors Water Agency

## CONSTRUCTION PLANS FOR

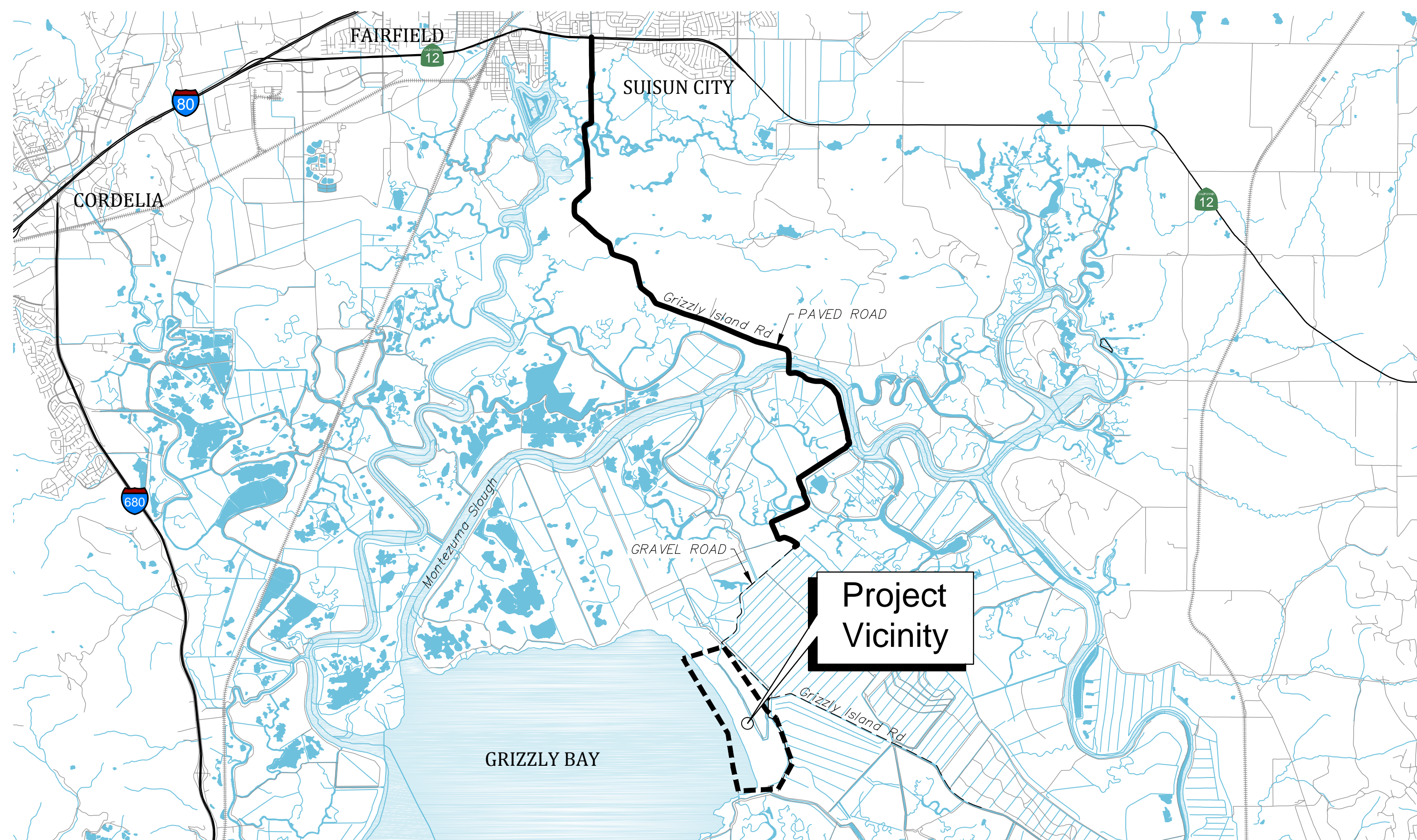
# Tule Red Tidal Restoration Project - Habitat Restoration and Earthwork Phase 1

SEC PARTS OF 04, 05, & 09 TWN 03N RGE 01W MOUNT DIABLO MERIDIAN  
JULY 2016

SOLANO COUNTY GRADING PERMIT: G2016-0004

CONTRACT DOCUMENTS  
VOLUME 2 OF 3

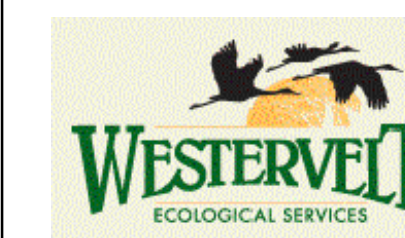
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Vicinity Map

**State and Federal Contractors**

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Mark J. Young (date)  
CALIFORNIA REGISTERED  
LICENSED LANDSCAPE ARCHITECT NO. # 4806  
Westervelt Ecological Services



**FOR BID PURPOSES ONLY** (date)  
Brian G. Wardman  
CALIFORNIA REGISTERED  
PROFESSIONAL ENGINEER NO. # 74371  
northwest hydraulic consultants



Project Location Map

Drawing Name <b>TULE RED COVER</b>	Date 11 JULY 2016
Drawing Status 100% Bid Set	Designer tvs
	Drafter tvs
	Checked bgw
	Job Number 5001024
	Sheet Number

Sheet 1 of 25

T1

**DRAINAGE NOTES**

- TWO TIDE GATES EXIST FOR CURRENT MANAGEMENT OF WATER ON THE SITE, THE NORTHERN TIDE GATE AND THE SOUTHERN TIDE GATE. THESE GATES MAY NOT BE USED TO DRAIN THE SITE ONCE GROUND DISTURBING ACTIVITIES BEGIN.
- EXCESS WATER MUST BE PUMPED OVER NOYCE SLOUGH ROAD INTO DITCHES ON THE CDFW REFUGE. THE CONTRACTOR SHALL COORDINATE DISCHARGES WITH THE ENGINEER AND CDFW. THE PUMPING MUST NOT AFFECT TRAFFIC ON NOYCE SLOUGH ROAD.

**ACCESS NOTES**

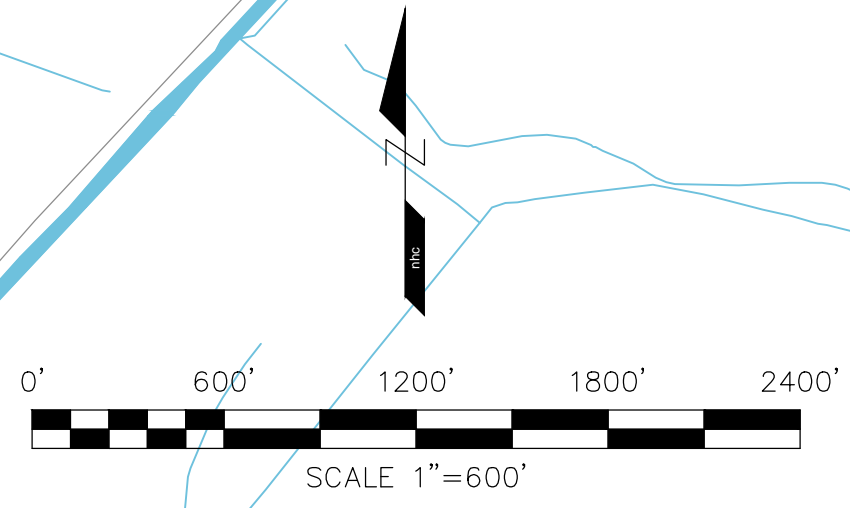
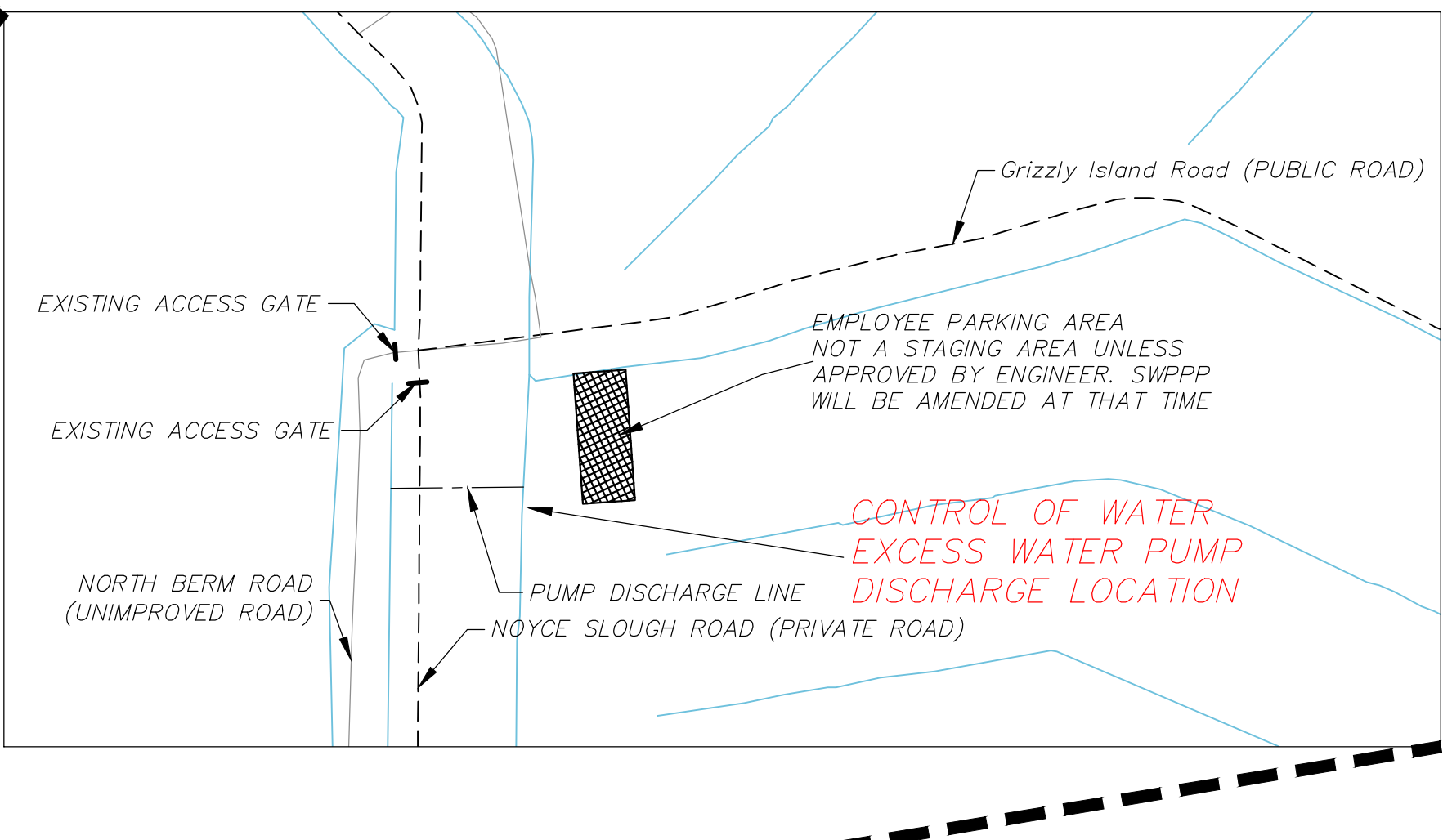
- TWO POINTS OF ACCESS TO THE MARSH PLAIN EXIST. THE FIRST IS AT THE TERMINUS OF THE NORTH BERM ROAD NEAR THE EXISTING NORTHERN TIDE GATE. THE SECOND IS NEAR THE EXISTING CLUBHOUSE AT THE EXISTING SOUTHERN TIDE GATE LOCATION. THE CONTRACTOR MAY CONSTRUCT AND USE AN OVBUILT SECTION OF THE SOUTH HABITAT BERM FOR CONSTRUCTION ACCESS.
- THE NORTH BERM ROAD IS A NARROW UNIMPROVED ROADWAY. THE CONTRACTOR MAY NOT IMPROVE THE ROADWAY FOR ACCESS.
- THE NORTH BERM ROAD MAY ONLY BE USED FOR EQUIPMENT ACCESS DURING THE LIMITED INITIAL MOBILIZATION. AFTER THE CONSTRUCTION ACCESS RAMP IS CONSTRUCTED, EQUIPMENT MAY NOT ACCESS OR EGRESS FROM THE SITE USING THE NORTH BERM ROAD. EQUIPMENT MAY NOT PARK ON THE NORTH BERM ROAD.
- ACCESS TO THE PROJECT SITE SHALL BE RESTRICTED TO THE DAYTIME HOURS BETWEEN SUNRISE AND SUNSET ON A DAY-BY-DAY BASIS.
- THE PROPOSED STAGING AREA ON THE CDFW PROPERTY MUST REMAIN ACCESSIBLE TO CDFW REFUGE STAFF. THE AREA MUST ALLOW THROUGH PASSAGE TO CDFW REFUGE STAFF.
- CDFW AND ITS CONTRACTORS, AGENTS, EMPLOYEES, REPRESENTATIVES, LICENSEES, INVITEES, AND GUESTS MAY ENTER THE PROJECT SITE AT ANYTIME TO SURVEY, INSPECT, OR PERFORM ANY AND ALL OTHER LAWFUL ACTIVITIES.
- CDFW HAS THE RIGHT TO HALT WORK AND DEMAND MITIGATION MEASURES AT ANY TIME IN THE EVENT CDFW DETERMINES THAT ANY HARM IS BEING DONE TO CDFW INFRASTRUCTURE, WORK IS IMPAIRING CDFW ACTIVITIES, OR THERE IS ANY THREAT TO THE HEALTH AND SAFETY OF CDFW VISITORS, USERS OF THE PROPERTY, OR THE ENVIRONMENT.

GRIZZLY BAY

**GRIZZLY ISLAND WILDLIFE AREA**

Site Access

Approximate Project Location



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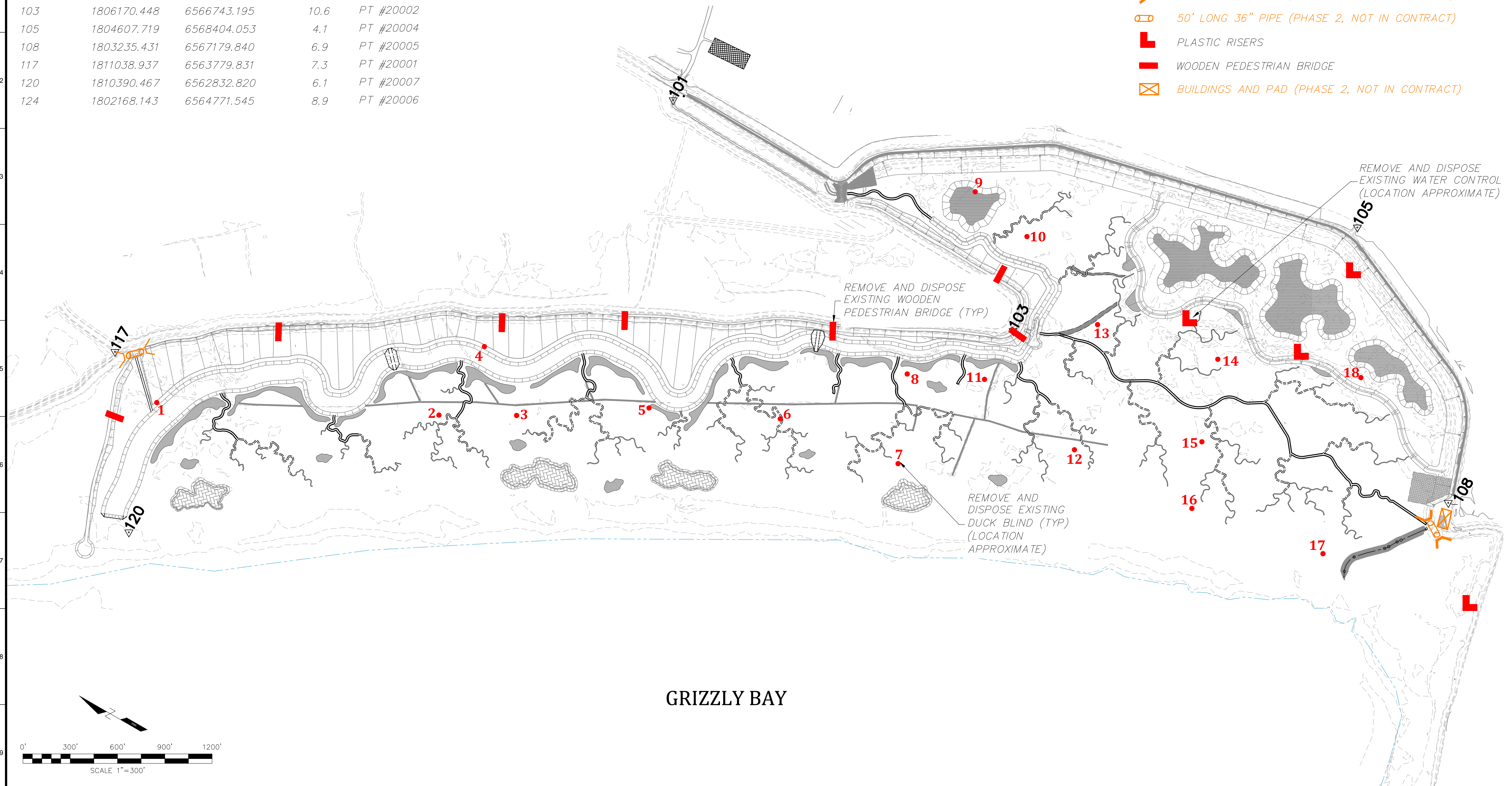
**Tule Red Tidal Restoration Project - Habitat Restoration and Earthwork**

Access Plan  
Phase 1

Job Number 5001024  
 Sheet Number  
**G1**  
 Sheet 2 of 25

CONTROL POINTS				
##	NORTHING	EASTING	ELEVATION	DESCRIPTION
101	1808770.096	6566932.313	9.2	PT #20003
103	1806170.448	6566743.195	10.6	PT #20002
105	1804607.719	6568404.053	4.1	PT #20004
108	1803235.431	6567179.840	6.9	PT #20005
117	1811038.937	6563779.831	7.3	PT #20001
120	1810390.467	6562832.820	6.1	PT #20007
124	1802168.143	6564771.545	8.9	PT #20006

KEY	
•	DUCK BLINDS IN PAIRS & SINGLES
⌋	WOODEN BULKHEAD (PHASE 2, NOT IN CONTRACT)
⌋	50' LONG 36" PIPE (PHASE 2, NOT IN CONTRACT)
⌋	PLASTIC RISERS
■	WOODEN PEDESTRIAN BRIDGE
⊠	BUILDINGS AND PAD (PHASE 2, NOT IN CONTRACT)



GRIZZLY BAY

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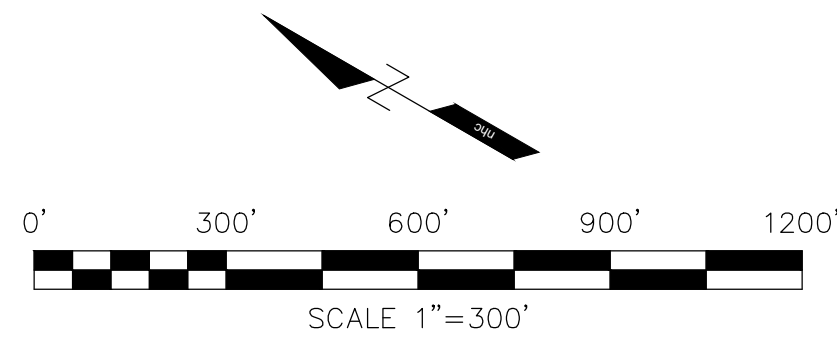
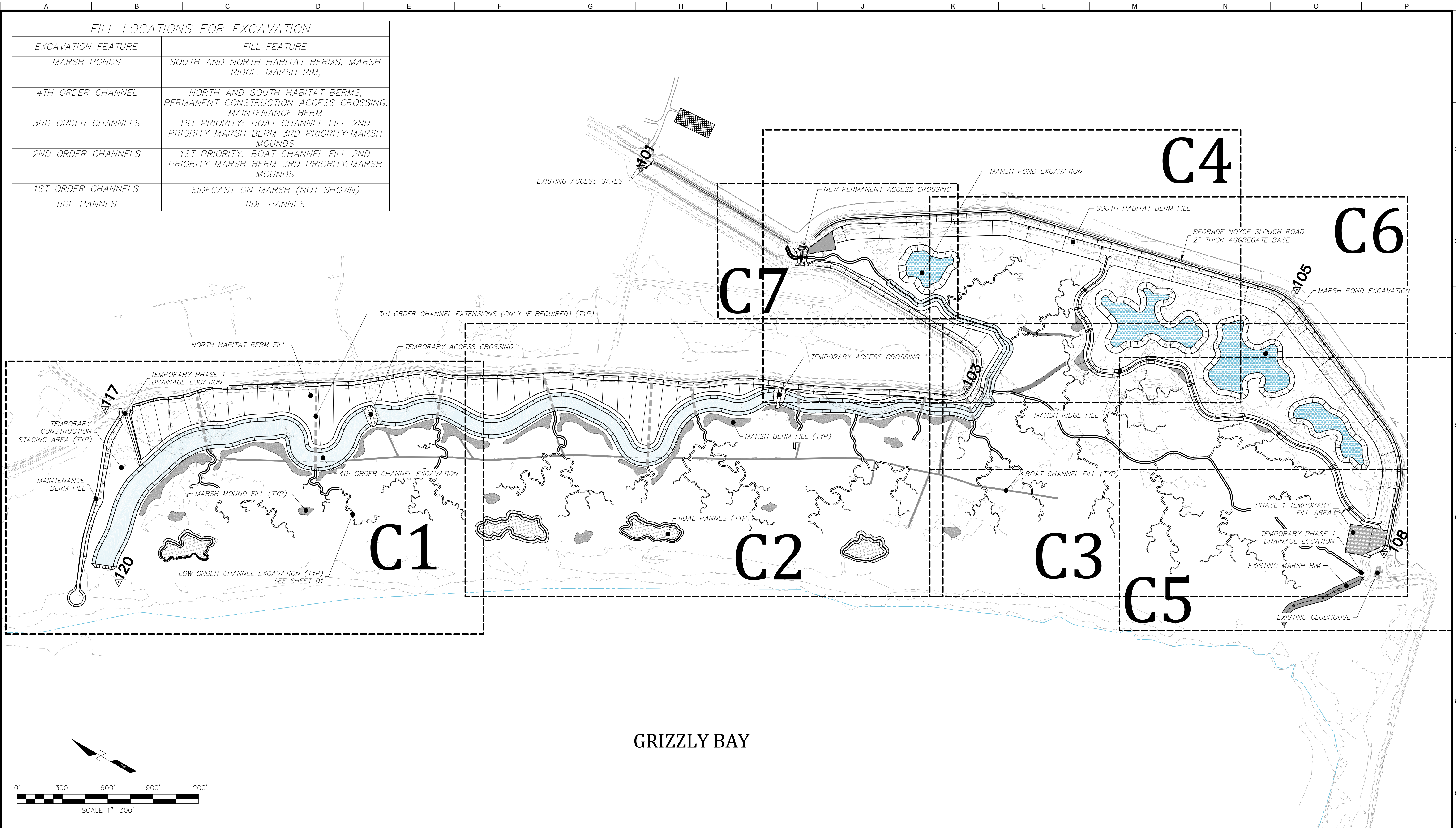


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			Plotted Scale	0 1/2 1

Tule Red Tidal Restoration Project - Habitat  
 Restoration and Earthwork  
 Project Control & Demolition Sheet  
 Phase 1

Job Number  
5001024  
 Sheet Number  
**G2**  
 Sheet 3 of 25

FILL LOCATIONS FOR EXCAVATION	
EXCAVATION FEATURE	FILL FEATURE
MARSH PONDS	SOUTH AND NORTH HABITAT BERMS, MARSH RIDGE, MARSH RIM,
4TH ORDER CHANNEL	NORTH AND SOUTH HABITAT BERMS, PERMANENT CONSTRUCTION ACCESS CROSSING, MAINTENANCE BERM
3RD ORDER CHANNELS	1ST PRIORITY: BOAT CHANNEL FILL 2ND PRIORITY MARSH BERM 3RD PRIORITY: MARSH MOUNDS
2ND ORDER CHANNELS	1ST PRIORITY: BOAT CHANNEL FILL 2ND PRIORITY MARSH BERM 3RD PRIORITY: MARSH MOUNDS
1ST ORDER CHANNELS	SIDECAST ON MARSH (NOT SHOWN)
TIDE PANNES	TIDE PANNES



GRIZZLY BAY

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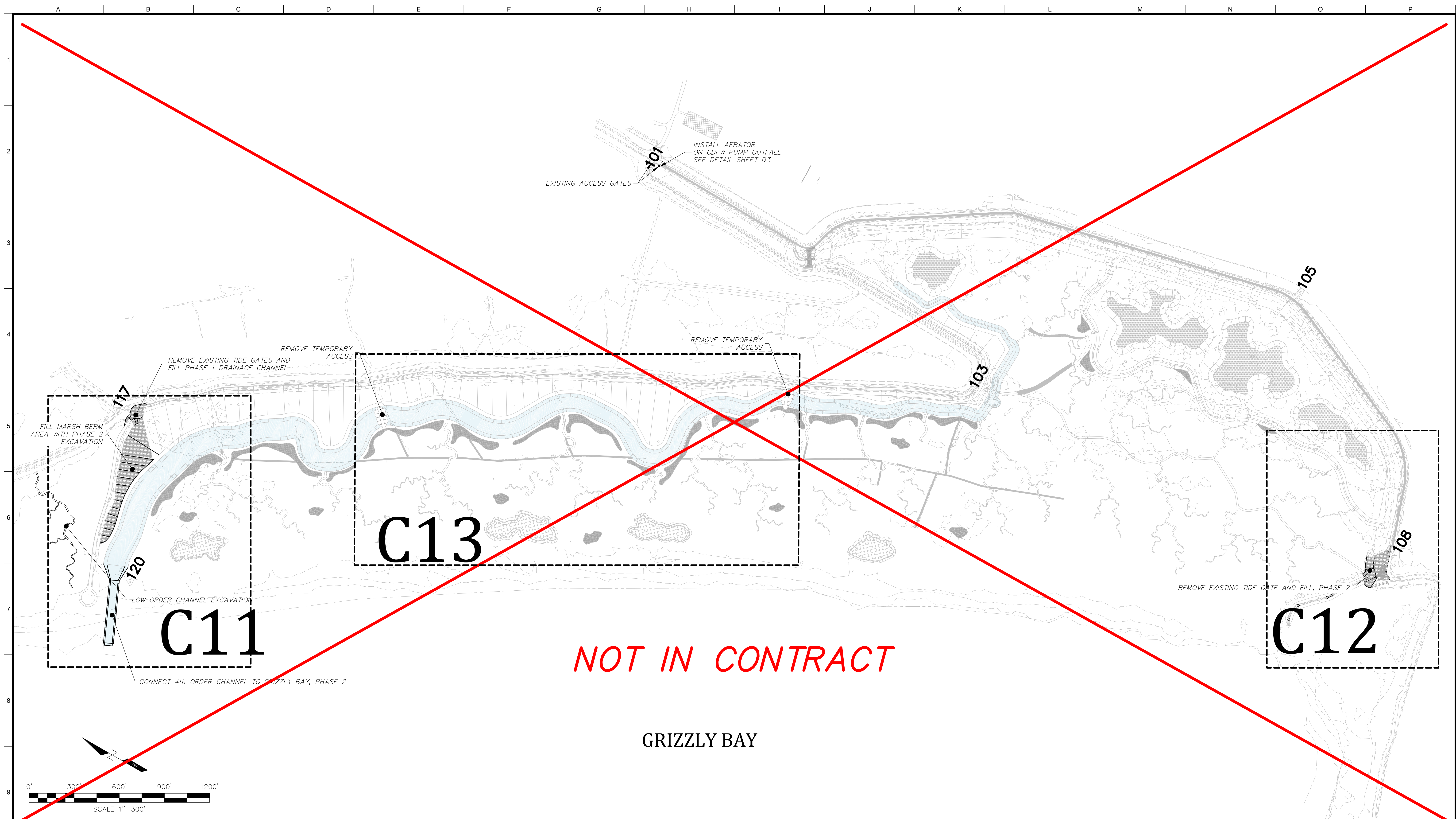
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Tule Red Tidal Restoration Project - Habitat  
 Restoration and Earthwork  
 Key Sheet  
 Phase 1

Job Number  
5001024  
 Sheet Number  
**G3**  
 Sheet 4 of 25



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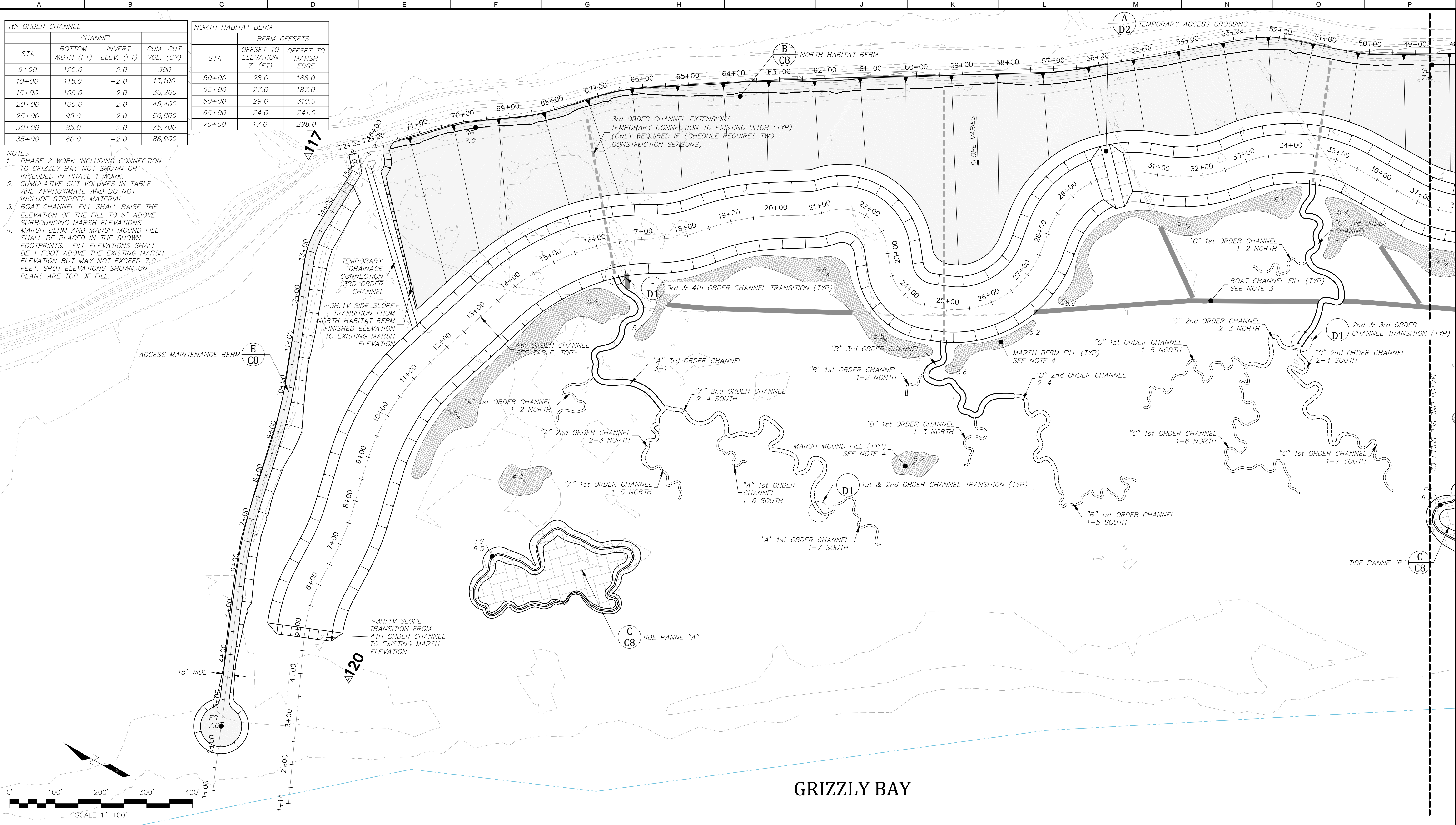
Tule Red Tidal Restoration Project - Habitat  
 Restoration and Earthwork  
 Key Sheet  
 Phase 2

Job Number  
5001024  
 Sheet Number  
**G4**  
 Sheet 5 of 25

4th ORDER CHANNEL			
STA	CHANNEL BOTTOM WIDTH (FT)	INVERT ELEV. (FT)	CUM. CUT VOL. (CY)
5+00	120.0	-2.0	300
10+00	115.0	-2.0	13,100
15+00	105.0	-2.0	30,200
20+00	100.0	-2.0	45,400
25+00	95.0	-2.0	60,800
30+00	85.0	-2.0	75,700
35+00	80.0	-2.0	88,900

NORTH HABITAT BERM		
STA	OFFSET TO ELEVATION 7' (FT)	OFFSET TO MARSH EDGE
50+00	28.0	186.0
55+00	27.0	187.0
60+00	29.0	310.0
65+00	24.0	241.0
70+00	17.0	298.0

- NOTES
- PHASE 2 WORK INCLUDING CONNECTION TO GRIZZLY BAY NOT SHOWN OR INCLUDED IN PHASE 1 WORK.
  - CUMULATIVE CUT VOLUMES IN TABLE ARE APPROXIMATE AND DO NOT INCLUDE STRIPPED MATERIAL.
  - BOAT CHANNEL FILL SHALL RAISE THE ELEVATION OF THE FILL TO 6" ABOVE SURROUNDING MARSH ELEVATIONS.
  - MARSH BERM AND MARSH MOUND FILL SHALL BE PLACED IN THE SHOWN FOOTPRINTS. FILL ELEVATIONS SHALL BE 1 FOOT ABOVE THE EXISTING MARSH ELEVATION BUT MAY NOT EXCEED 7.0 FEET. SPOT ELEVATIONS SHOWN ON PLANS ARE TOP OF FILL.



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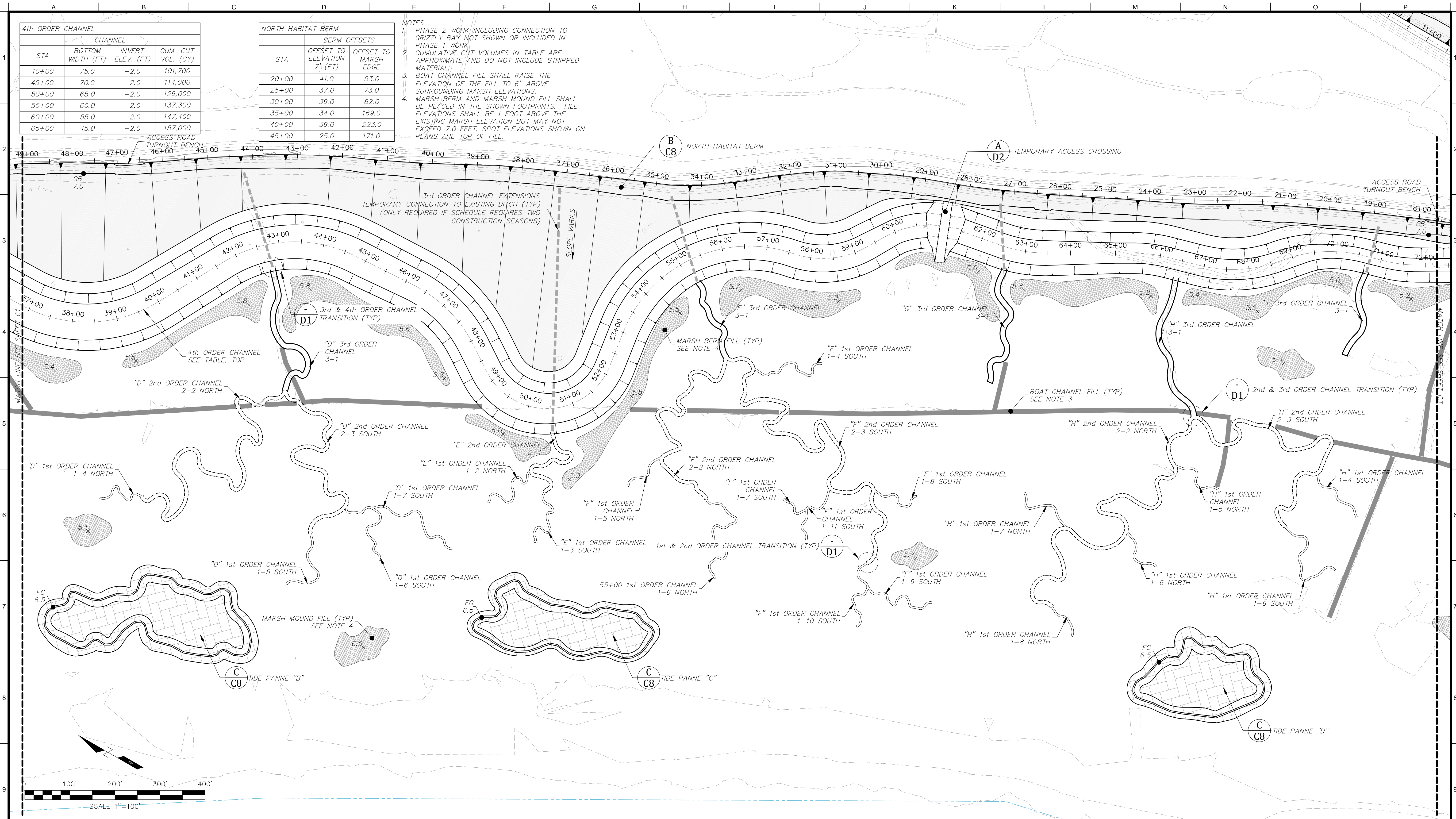
Tule Red Tidal Restoration Project - Habitat  
 Restoration and Earthwork  
 Channel Plan Sheet  
 Phase 1

Job Number  
5001024  
 Sheet Number  
**C1**  
 Sheet 6 of 25

4th ORDER CHANNEL			
STA	CHANNEL BOTTOM WIDTH (FT)	INVERT ELEV. (FT)	CUM. CUT VOL. (CY)
40+00	75.0	-2.0	101,700
45+00	70.0	-2.0	114,000
50+00	65.0	-2.0	126,000
55+00	60.0	-2.0	137,300
60+00	55.0	-2.0	147,400
65+00	45.0	-2.0	157,000

NORTH HABITAT BERM		
STA	OFFSET TO ELEVATION 7' (FT)	OFFSET TO MARSH EDGE
20+00	41.0	53.0
25+00	37.0	73.0
30+00	39.0	82.0
35+00	34.0	169.0
40+00	39.0	223.0
45+00	25.0	171.0

- NOTES
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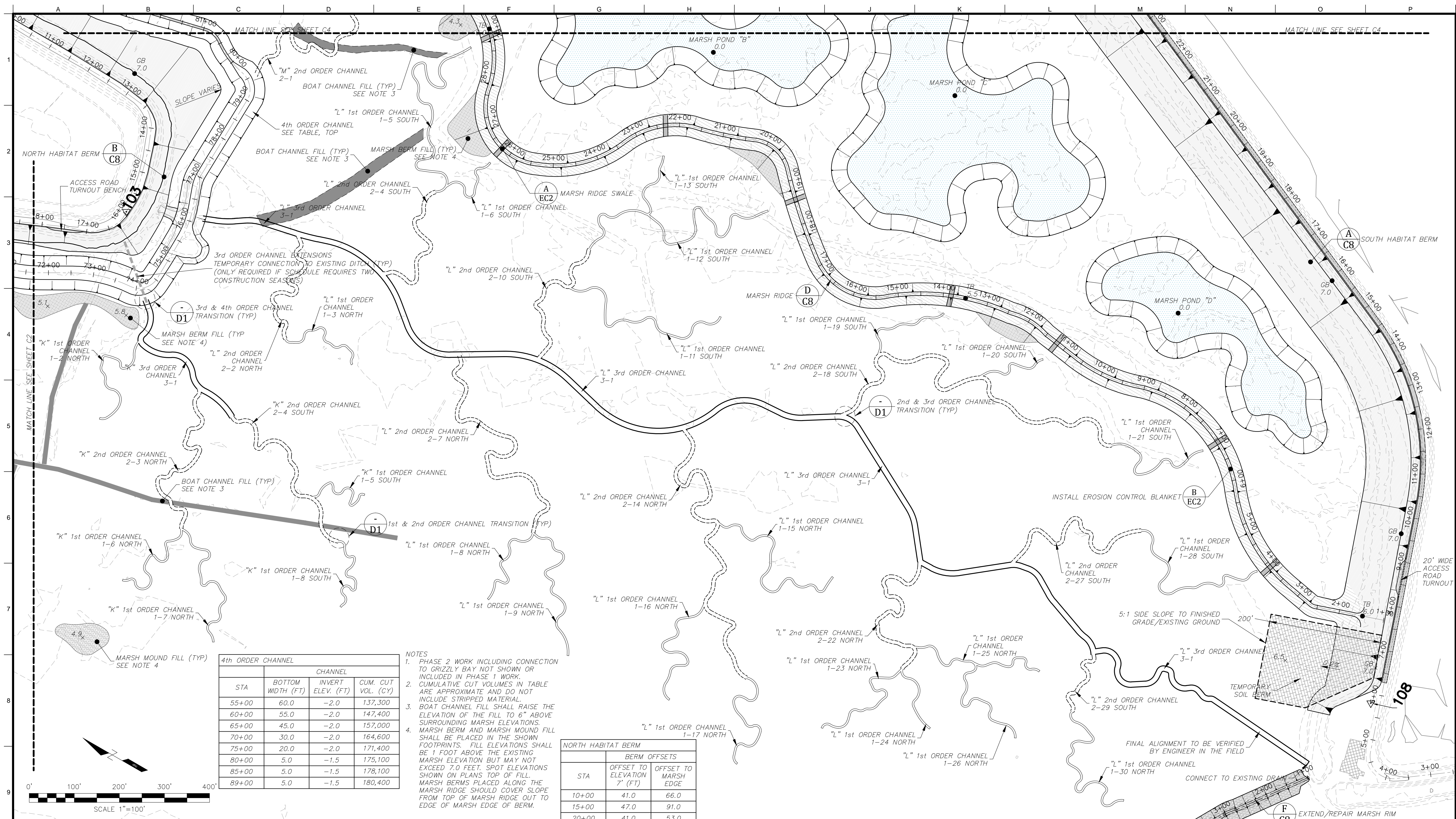
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Tule Red Tidal Restoration Project - Habitat  
 Restoration and Earthwork  
 Channel Plan Sheet  
 Phase 1

Job Number  
5001024  
 Sheet Number  
**C2**  
 Sheet 7 of 25



4th ORDER CHANNEL

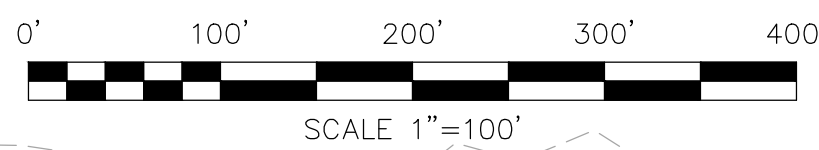
STA	BOTTOM WIDTH (FT)	INVERT ELEV. (FT)	CUM. CUT VOL. (CY)
55+00	60.0	-2.0	137,300
60+00	55.0	-2.0	147,400
65+00	45.0	-2.0	157,000
70+00	30.0	-2.0	164,600
75+00	20.0	-2.0	171,400
80+00	5.0	-1.5	175,100
85+00	5.0	-1.5	178,100
89+00	5.0	-1.5	180,400

- NOTES
1. PHASE 2 WORK INCLUDING CONNECTION TO GRIZZLY BAY NOT SHOWN OR INCLUDED IN PHASE 1 WORK.
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  - 4.

NORTH HABITAT BERM

BERM OFFSETS

STA	OFFSET TO ELEVATION 7' (FT)	OFFSET TO MARSH EDGE
10+00	41.0	66.0
15+00	47.0	91.0
20+00	41.0	53.0



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Tule Red Tidal Restoration Project - Habitat  
 Restoration and Earthwork  
 Channel Plan Sheet  
 Phase 1

Job Number  
5001024  
 Sheet Number  
**C3**  
 Sheet 8 of 25

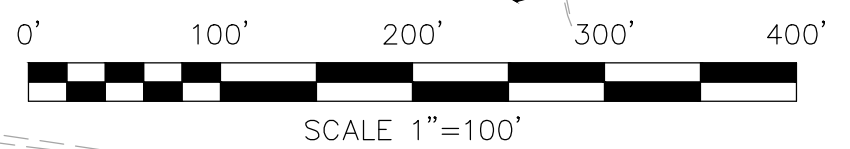
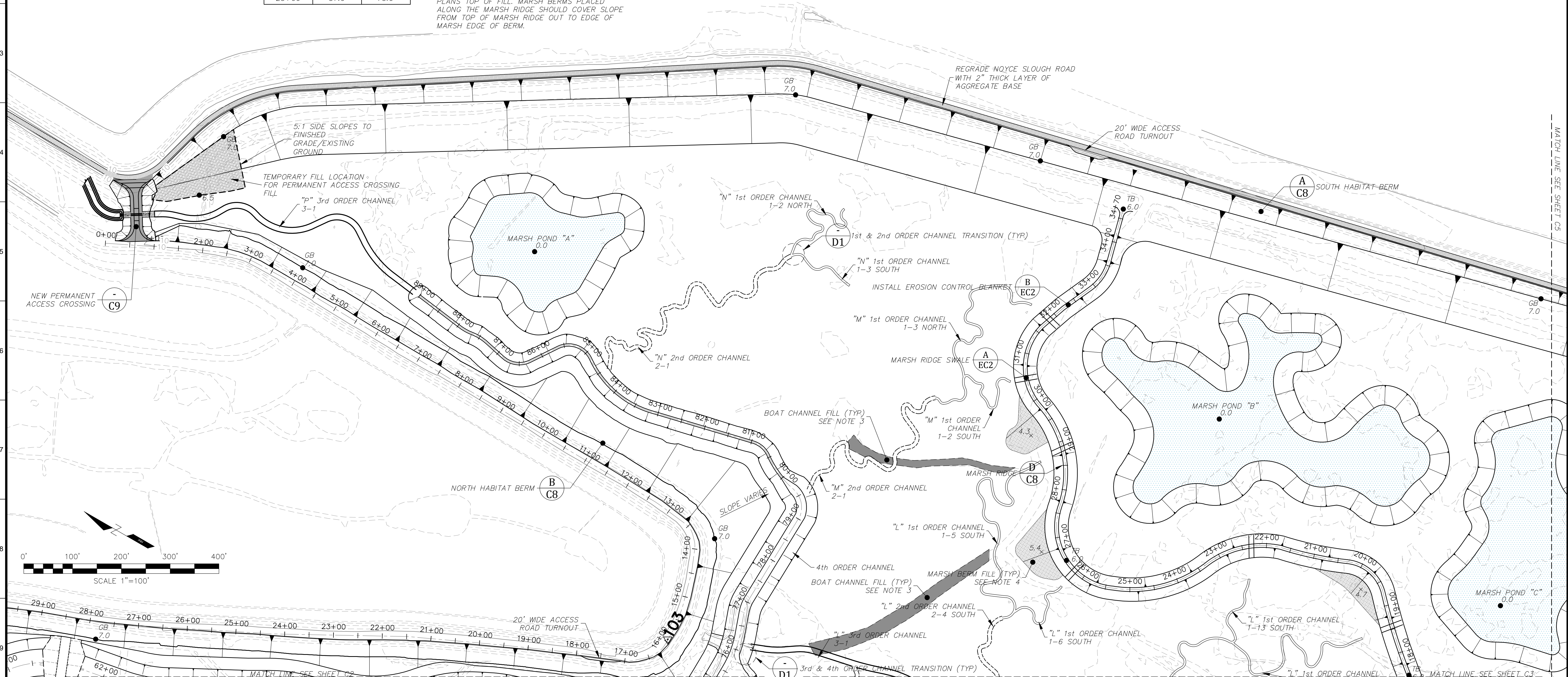


4th ORDER CHANNEL			
STA	BOTTOM WIDTH (FT)	INVERT ELEV. (FT)	CUM. CUT VOL. (CY)
70+00	30.0	-2.0	164,600
75+00	20.0	-2.0	171,400
80+00	5.0	-1.5	175,100
85+00	5.0	-1.5	178,100
89+00	5.0	-1.5	180,400

NORTH HABITAT BERM		
STA	BERM OFFSETS	
	OFFSET TO ELEVATION 7' (FT)	OFFSET TO MARSH EDGE
5+00	41.0	66.0
10+00	42.0	152.0
15+00	47.0	91.0
20+00	41.0	53.0
25+00	37.0	73.0

MARSH PONDS		
MARSH POND	AREA (SQ. FT)	CUT VOL. (CY)
A	90,800	10,700
B	224,200	22,800
C	215,350	21,500
D	113,200	10,900

- NOTES
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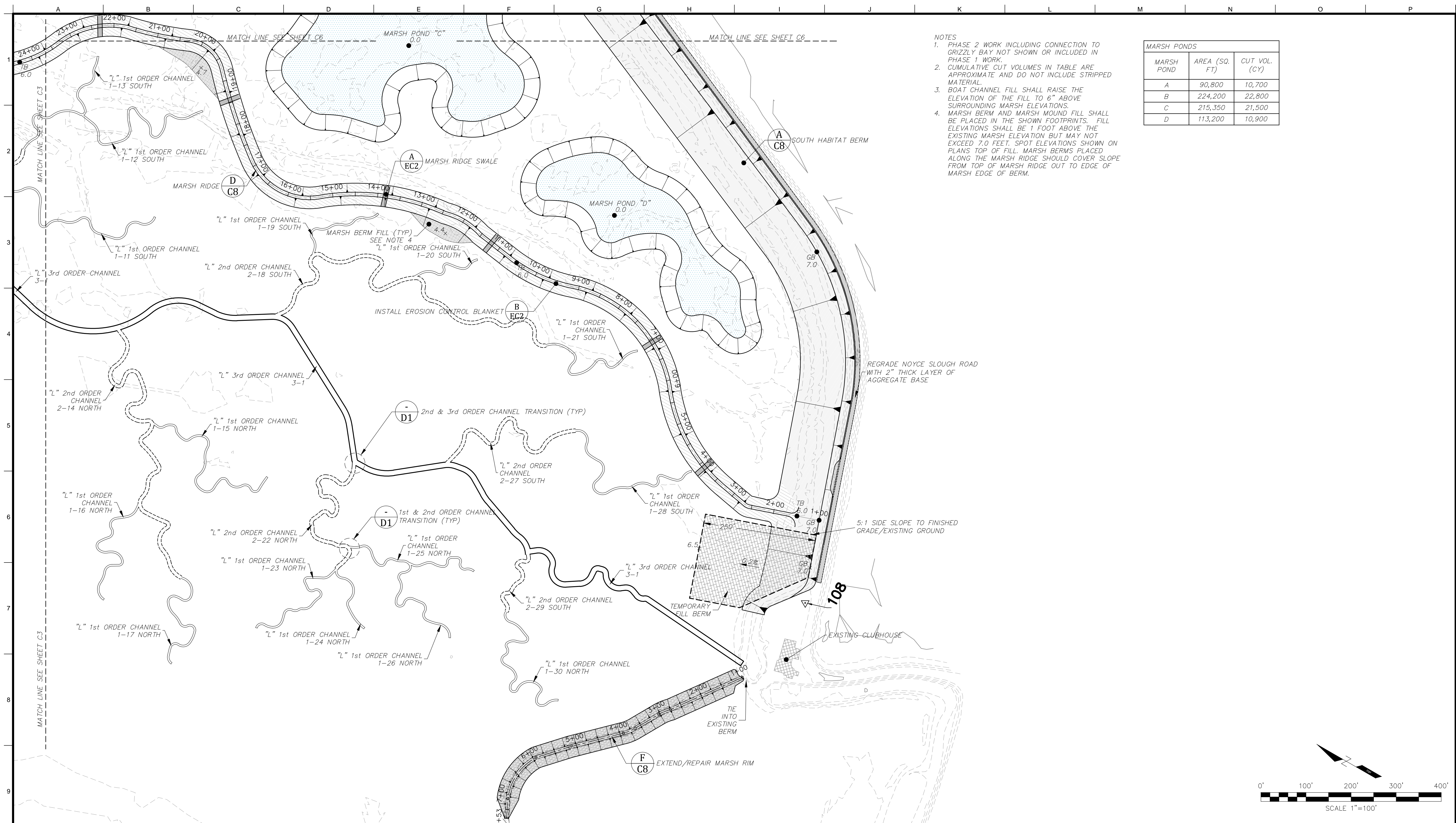
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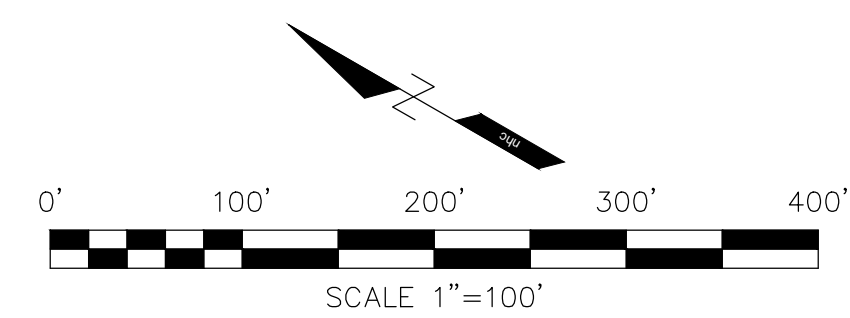
Tule Red Tidal Restoration Project - Habitat  
 Restoration and Earthwork  
 Channel Plan Sheet  
 Phase 1

Job Number  
5001024  
 Sheet Number  
**C4**  
 Sheet 9 of 25



- NOTES
1. PHASE 2 WORK INCLUDING CONNECTION TO GRIZZLY BAY NOT SHOWN OR INCLUDED IN PHASE 1 WORK.
  2. CUMULATIVE CUT VOLUMES IN TABLE ARE APPROXIMATE AND DO NOT INCLUDE STRIPPED MATERIAL.
  3. BOAT CHANNEL FILL SHALL RAISE THE ELEVATION OF THE FILL TO 6" ABOVE SURROUNDING MARSH ELEVATIONS.
  4. MARSH BERM AND MARSH MOUND FILL SHALL BE PLACED IN THE SHOWN FOOTPRINTS. FILL ELEVATIONS SHALL BE 1 FOOT ABOVE THE EXISTING MARSH ELEVATION BUT MAY NOT EXCEED 7.0 FEET. SPOT ELEVATIONS SHOWN ON PLANS TOP OF FILL. MARSH BERMS PLACED ALONG THE MARSH RIDGE SHOULD COVER SLOPE FROM TOP OF MARSH RIDGE OUT TO EDGE OF MARSH EDGE OF BERM.

MARSH POND	AREA (SQ. FT)	CUT VOL. (CY)
A	90,800	10,700
B	224,200	22,800
C	215,350	21,500
D	113,200	10,900



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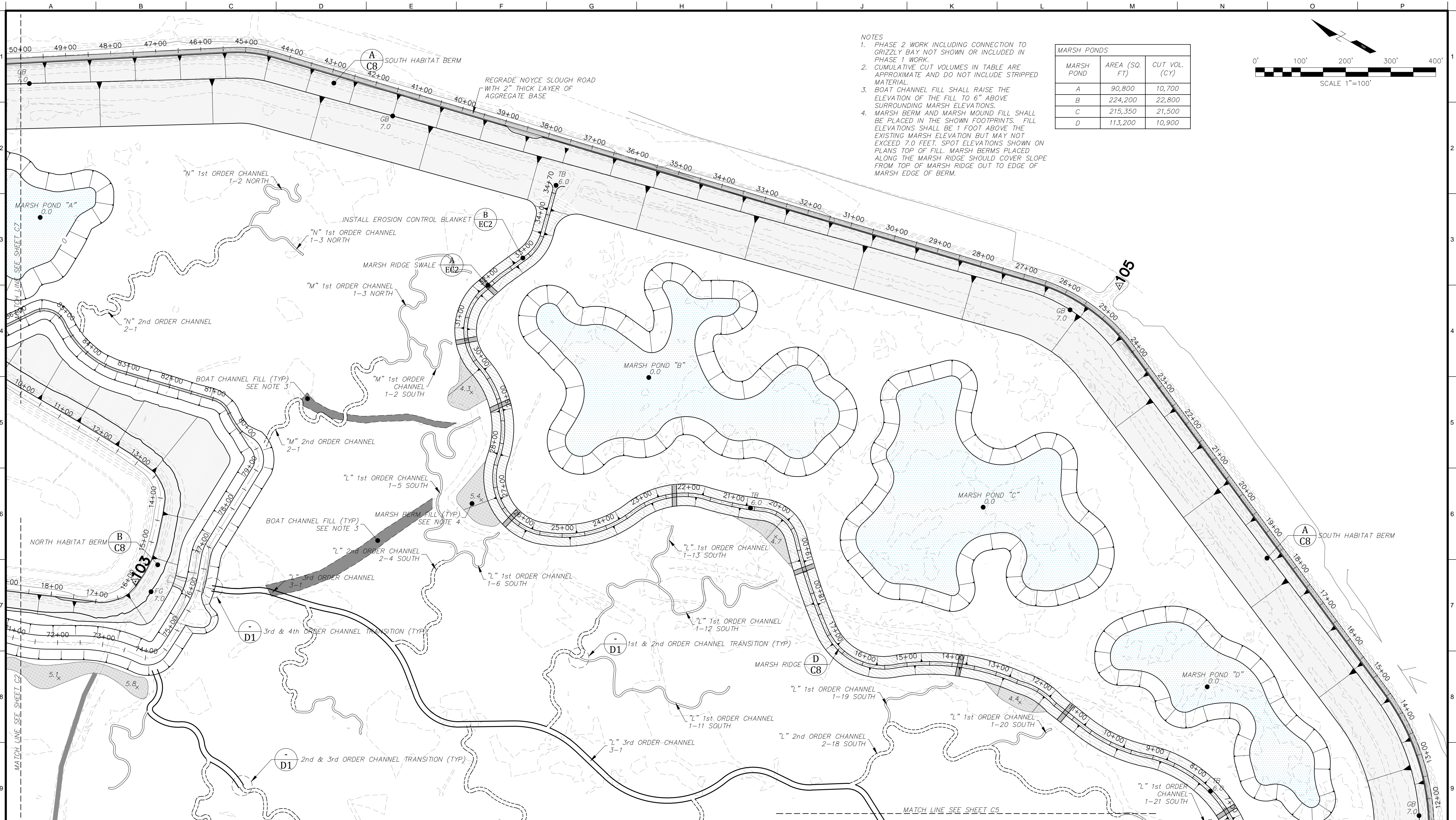
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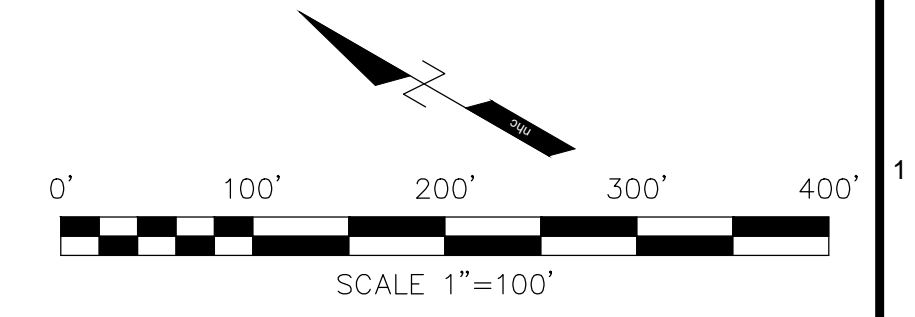
Tule Red Tidal Restoration Project - Habitat  
 Restoration and Earthwork  
 Marsh Berm & Ponds Plan Sheet  
 Phase 1

Job Number  
5001024  
 Sheet Number  
**C5**  
 Sheet 10 of 25



- NOTES**
1. PHASE 2 WORK INCLUDING CONNECTION TO GRIZZLY BAY NOT SHOWN OR INCLUDED IN PHASE 1 WORK.
  2. CUMULATIVE CUT VOLUMES IN TABLE ARE APPROXIMATE AND DO NOT INCLUDE STRIPPED MATERIAL.
  3. BOAT CHANNEL FILL SHALL RAISE THE ELEVATION OF THE FILL TO 6" ABOVE SURROUNDING MARSH ELEVATIONS.
  4. MARSH BERM AND MARSH MOUND FILL SHALL BE PLACED IN THE SHOWN FOOTPRINTS. FILL ELEVATIONS SHALL BE 1 FOOT ABOVE THE EXISTING MARSH ELEVATION BUT MAY NOT EXCEED 7.0 FEET. SPOT ELEVATIONS SHOWN ON PLANS TOP OF FILL. MARSH BERMS PLACED ALONG THE MARSH RIDGE SHOULD COVER SLOPE FROM TOP OF MARSH RIDGE OUT TO EDGE OF MARSH EDGE OF BERM.

MARSH PONDS		
MARSH POND	AREA (SQ. FT)	CUT VOL. (CY)
A	90,800	10,700
B	224,200	22,800
C	215,350	21,500
D	113,200	10,900



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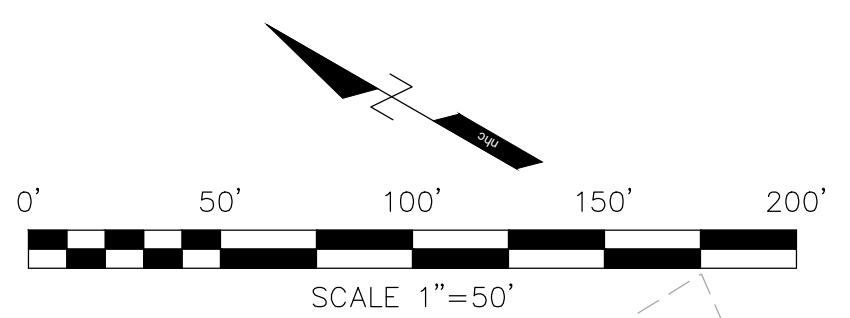
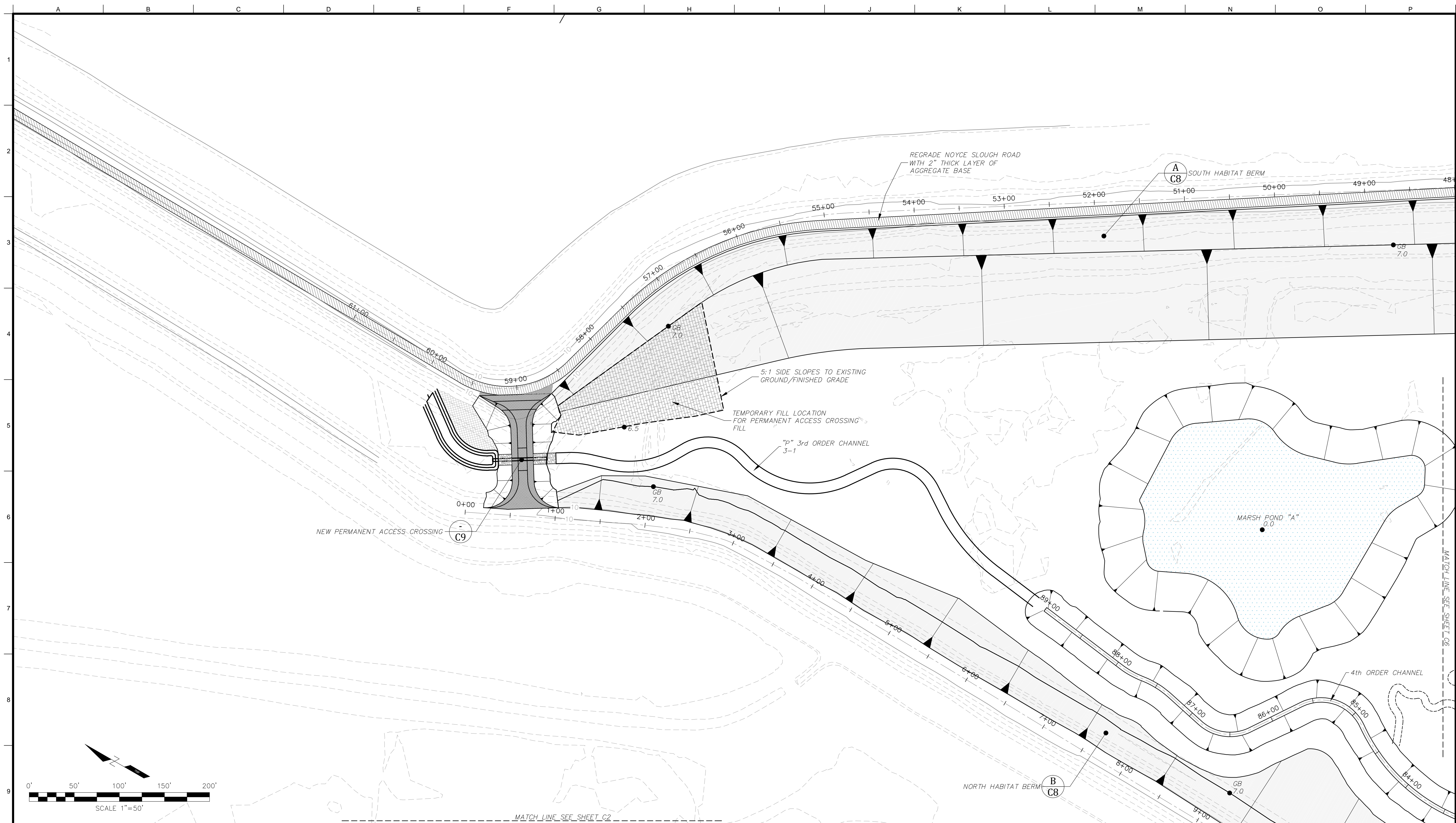
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				Plotted Scale
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Tule Red Tidal Restoration Project - Habitat  
 Restoration and Earthwork  
 Marsh Berm & Ponds Plan Sheet  
 Phase 1

Job Number  
5001024  
 Sheet Number  
**C6**  
 Sheet 11 of 25



MATCH LINE SEE SHEET C2

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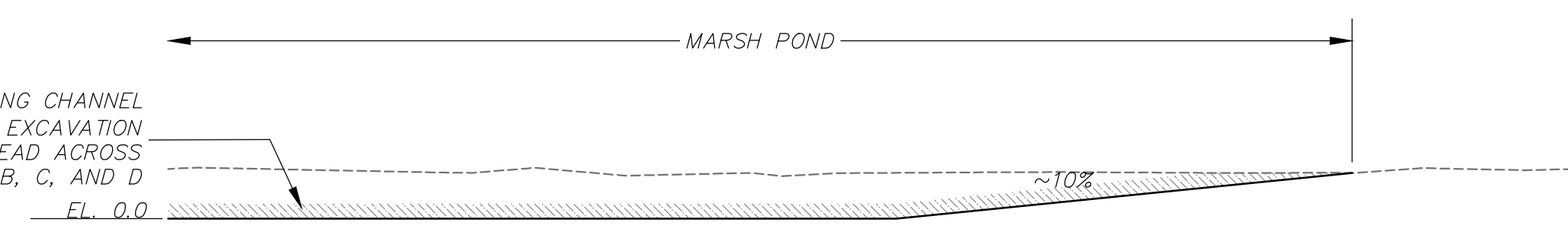


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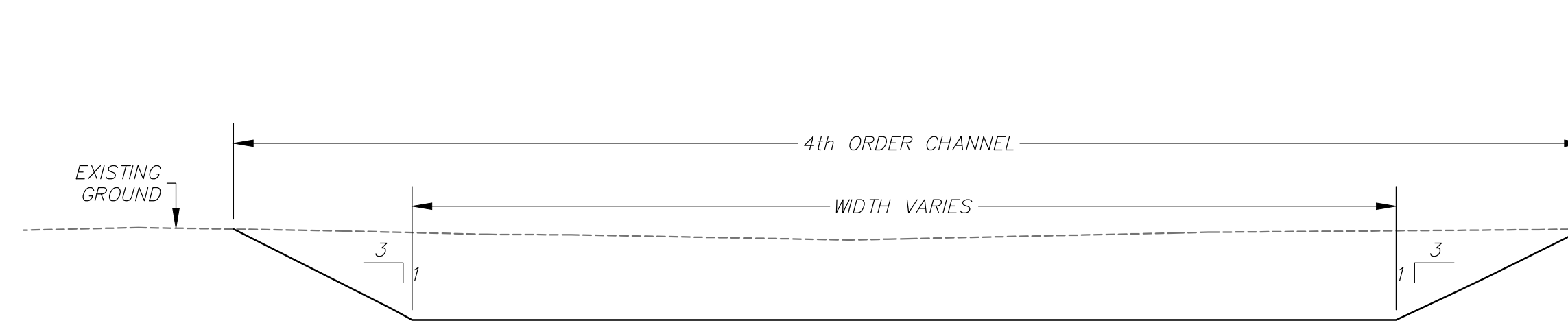
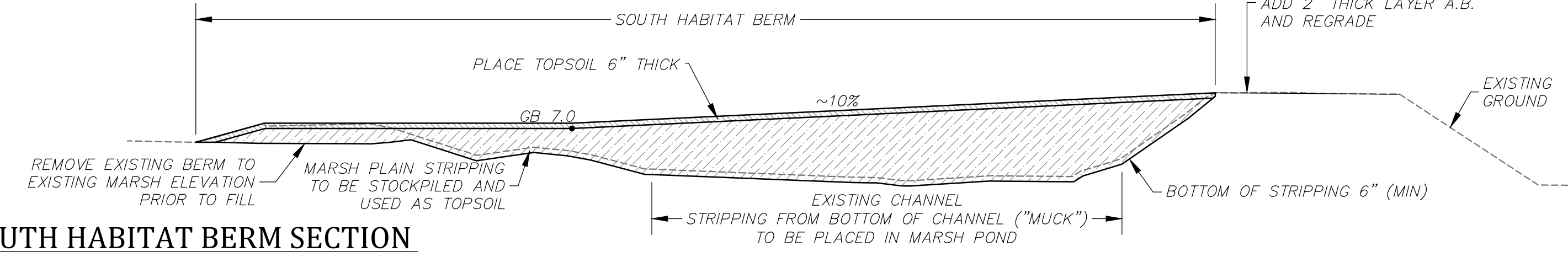
Tule Red Tidal Restoration Project - Habitat  
 Restoration and Earthwork  
 New Construction Access Crossing Plan Sheet  
 Phase 1

Job Number  
5001024  
 Sheet Number  
**C7**  
 Sheet 12 of 25

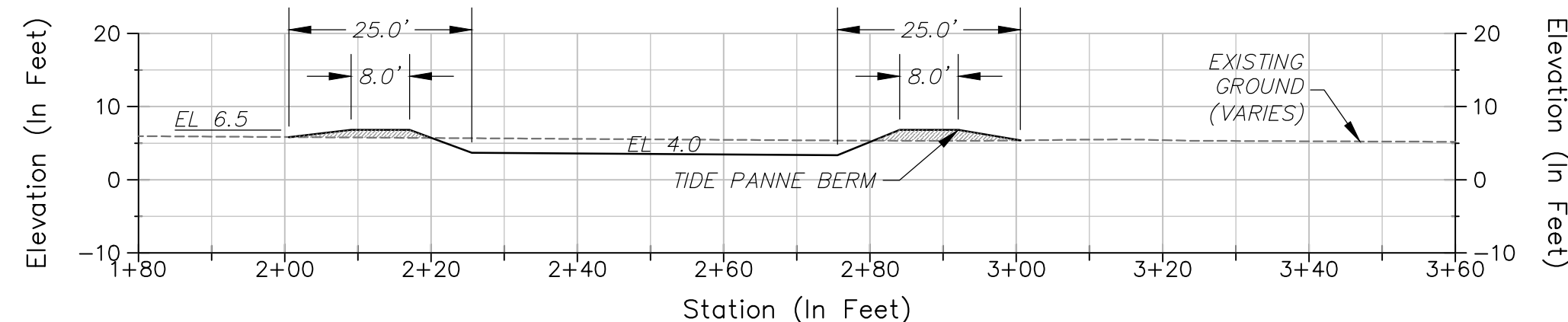
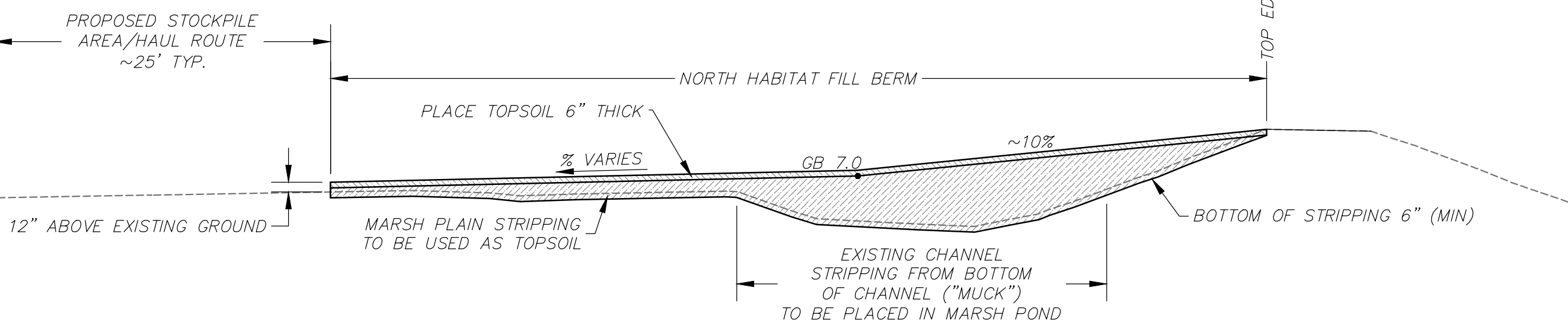
SPREAD STRIPPING FROM EXISTING CHANNEL ("MUCK"), 24" (MAX) AFTER POND EXCAVATION MUCK SHOULD BE EVENLY SPREAD ACROSS PONDS B, C, AND D  
EL. 0.0



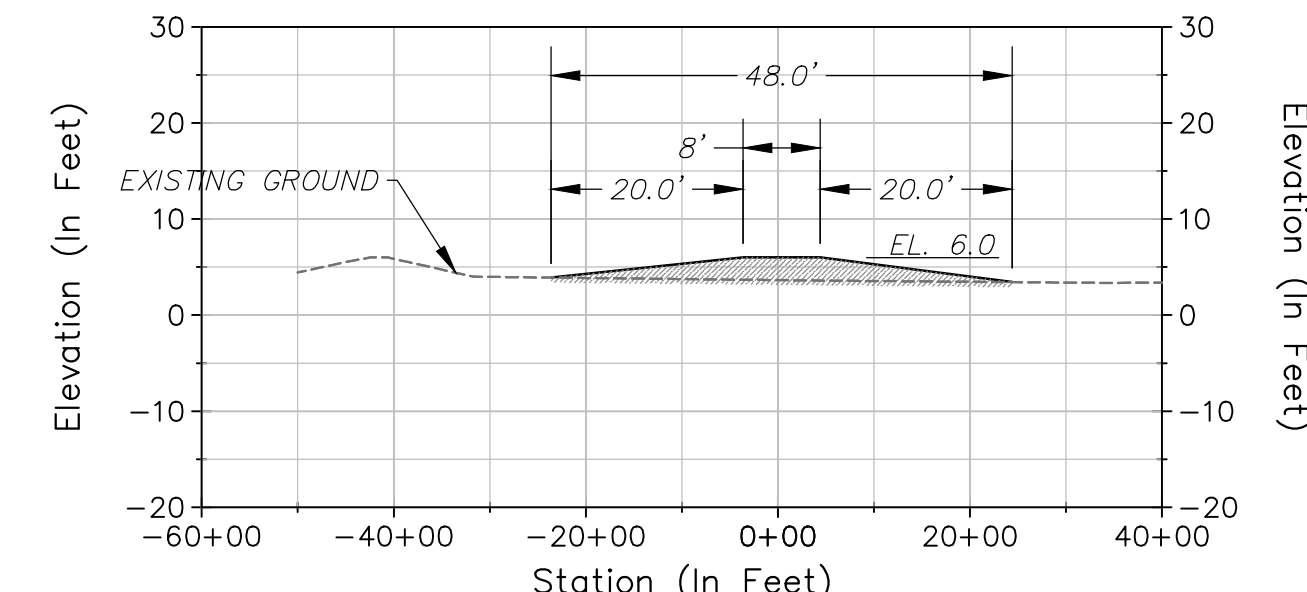
**A** TYPICAL SOUTH HABITAT BERM SECTION  
SCALE: 1"=10'



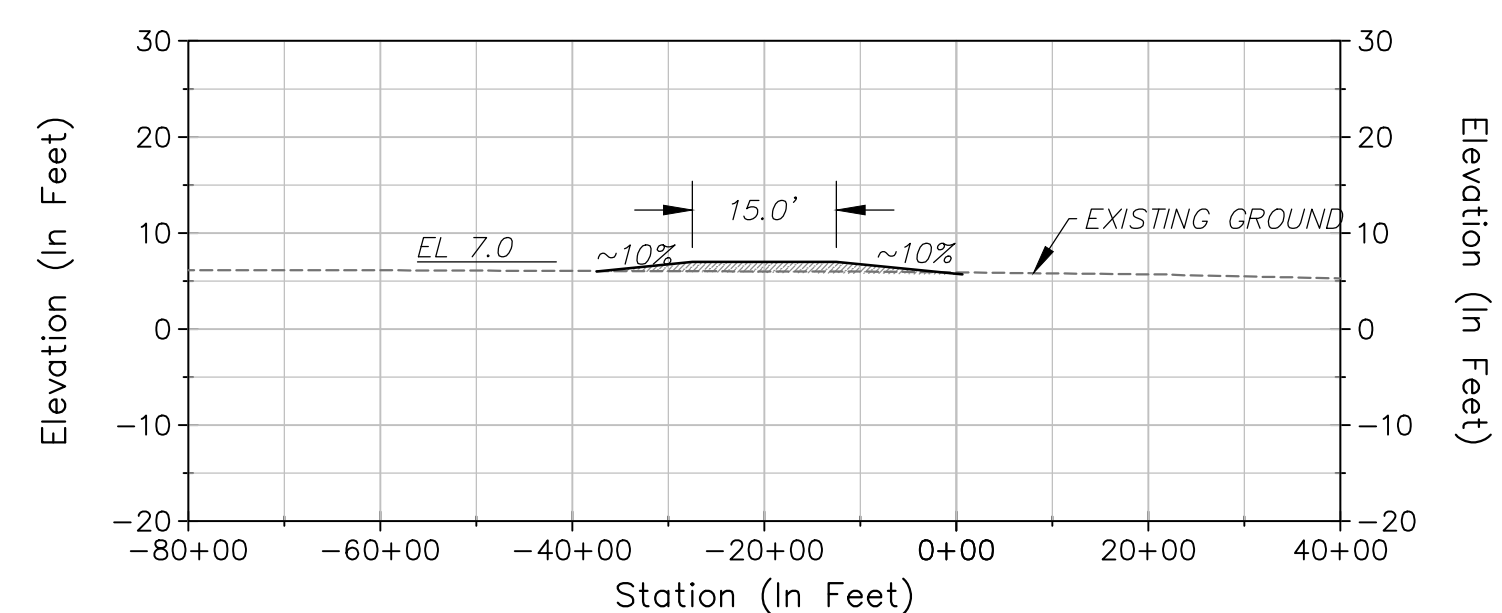
**B** TYPICAL 4th ORDER CHANNEL & NORTH HABITAT BERM SECTION  
SCALE: 1"=10'



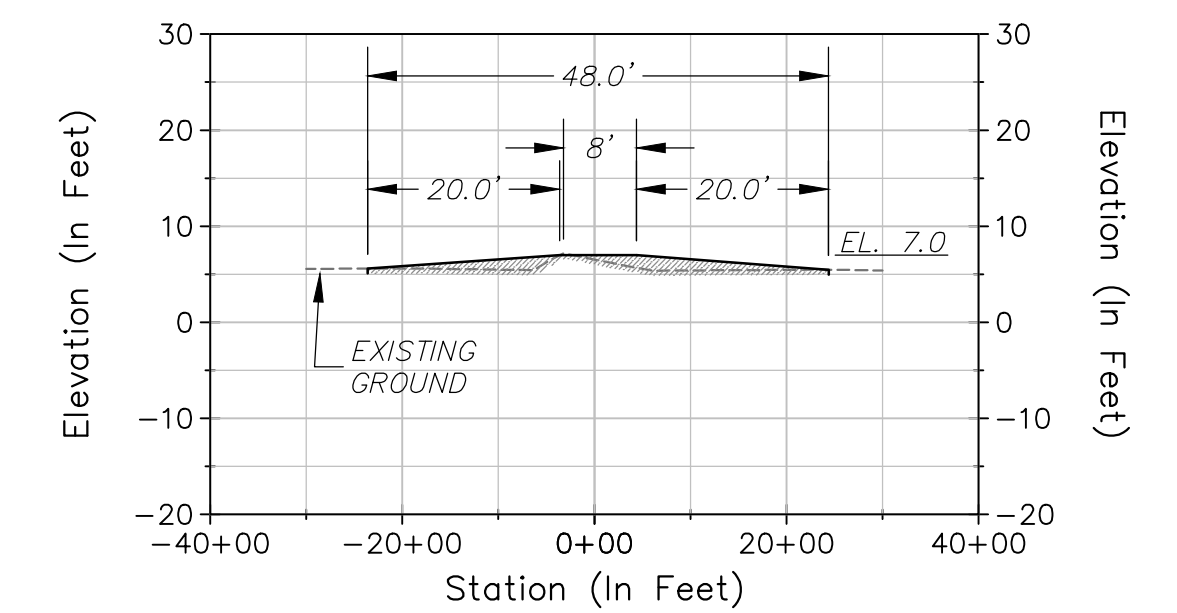
**C** TYPICAL TIDE PANNES SECTION  
SCALE: 1"=20'



**D** TYPICAL MARSH RIDGE SECTION  
SCALE: 1"=20'



**E** TYPICAL MAINTENANCE BERM SECTION  
SCALE: 1"=20'



**F** TYPICAL MARSH RIDGE SECTION  
SCALE: 1"=20'

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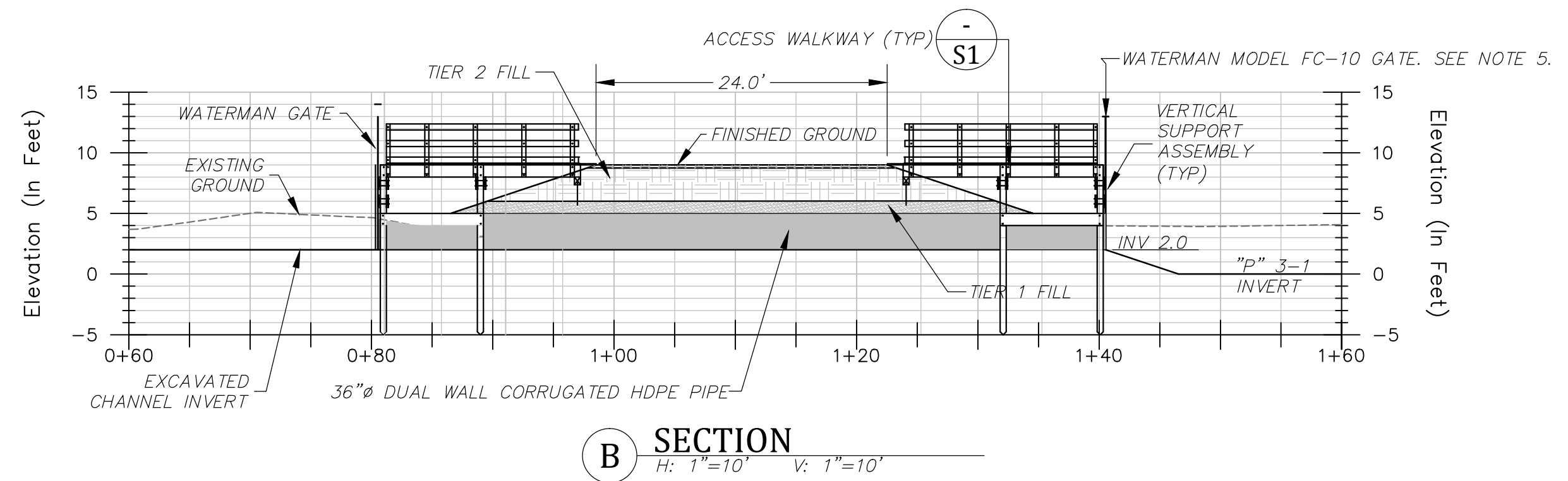
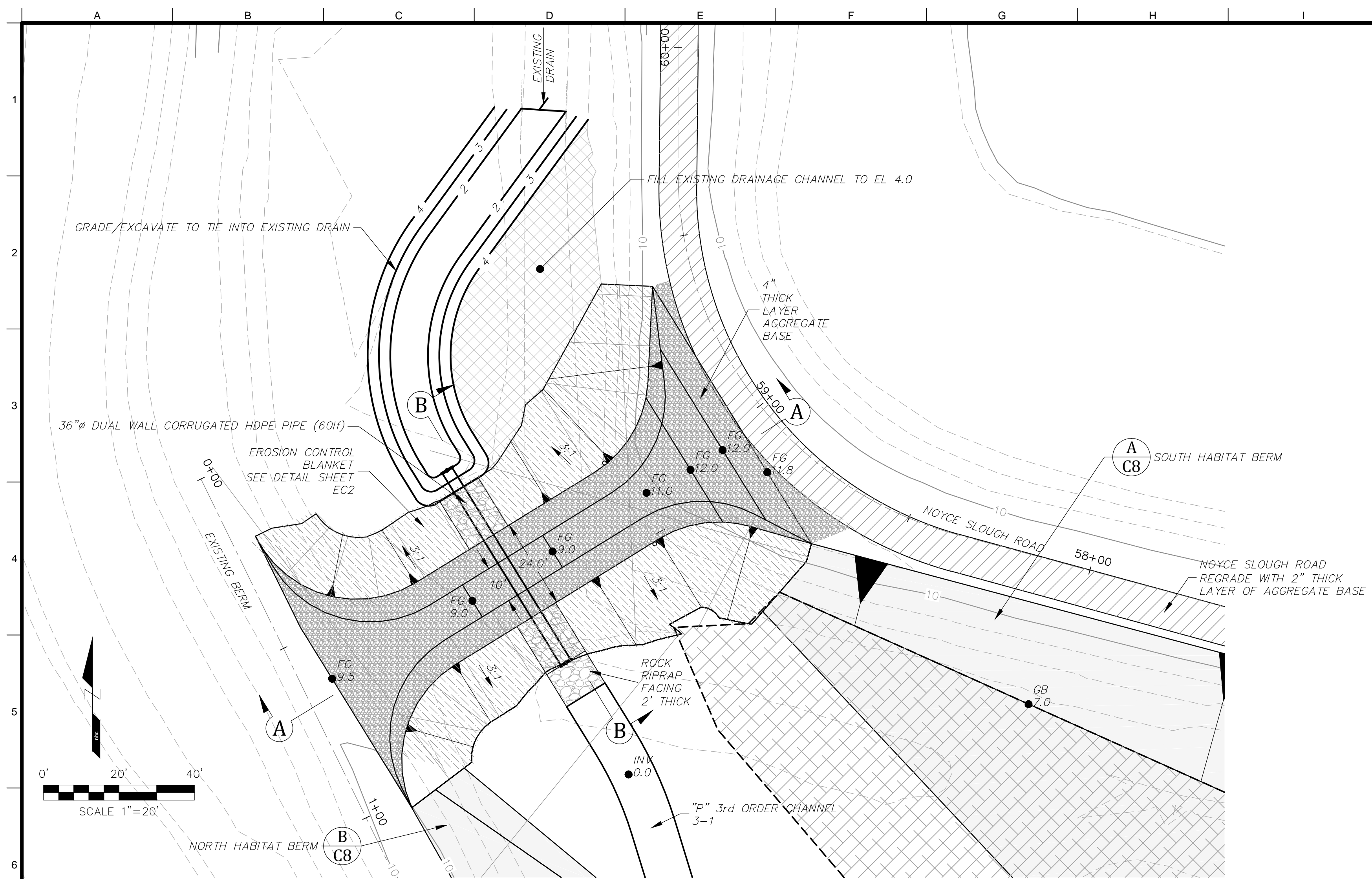
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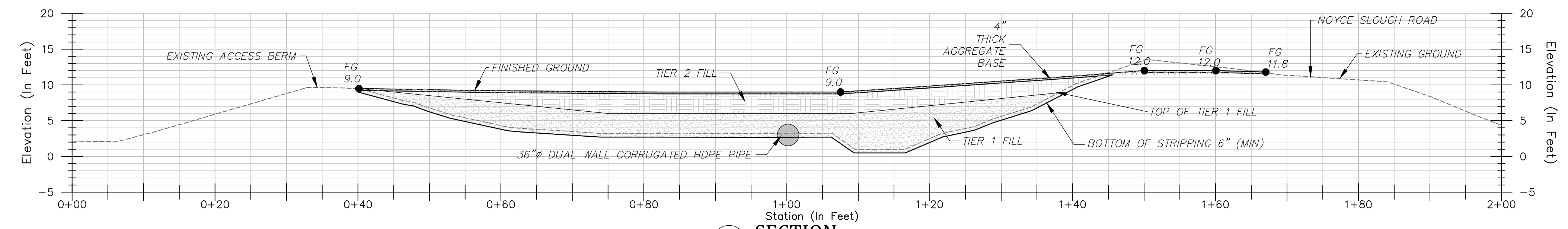
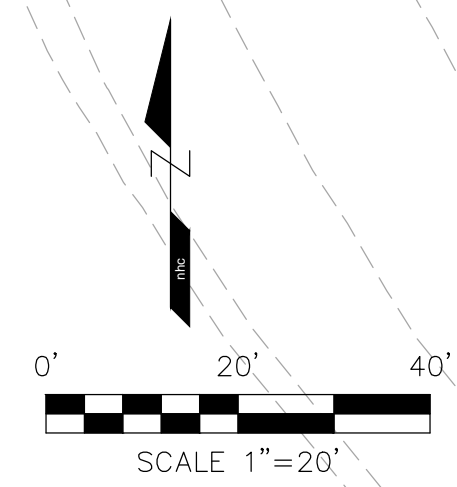
Tule Red Tidal Restoration Project - Habitat  
Restoration and Earthwork  
Typical Cross Sections Sheet  
Phase 1

Job Number  
5001024  
Sheet Number  
**C8**  
Sheet 13 of 25



- PROPOSED CROSSING CONSTRUCTION SEQUENCE:**
1. STRIP FILL AREA AND MUCK EXISTING DITCH
  2. PLACE TIER 1 FILL UP TO 3' OVER EXISTING MARSH SURFACE UP TO ELEVATION 6.0.
  3. ALLOW TIER 1 FILL TO SETTLE (APPROXIMATELY 30-60 DAYS). CLIENT'S GEOTECHNICAL ENGINEER WILL DETERMINE WHEN ADEQUATE SETTLEMENT HAS OCCURRED.
  4. PLACE TIER 2 FILL. TIER 2 FILL MAY BE REQUIRED TO BE PLACED IN LIFTS WITH TIME ALLOWED BETWEEN LIFTS FOR ADEQUATE SETTLEMENT. CLIENT'S GEOTECHNICAL ENGINEER WILL DETERMINE MAXIMUM LIFT THICKNESS AND DURATION FOR SETTLEMENT BASED OBSERVATIONS OF TIER 1 FILL AND SITE CONDITIONS DURING PLACEMENT.
  5. TRENCH FILL, INSTALL HDPE PIPE AND BACKFILL.
  6. PLACE 4" THICK AGGREGATE BASE.
  7. INSTALL ACCESS WALKWAYS (SHEET S1)
  8. INSTALL TIDE GATES (SHEET S1)

- NOTES:**
1. FILL MATERIAL SHALL COME FROM EXCAVATION OF THE 4TH ORDER CHANNEL AND/OR 3RD ORDER CHANNEL EXTENSIONS BETWEEN STATIONS 11+00 AND 31+00 OF THE 4TH ORDER CHANNEL ALIGNMENT. FILL MATERIAL SHALL BE TAKEN FROM AT LEAST 2.5 FEET BELOW EXISTING MARSH ELEVATIONS.
  2. SELECT FILL MATERIAL SHALL BE PLACED AROUND THE NORTHERN 1/4 LENGTH OF THE CULVERT. SELECT FILL SHALL BE PLACED AT LEAST 1.5 FEET THICK AROUND THE PIPE.
  3. TIDE GATES SHALL BE WATERMAN MODEL FC-10 STAINLESS STEEL GATES WITH SPIGOT BACK, HANDWHEEL LIFT, AND 106 INCH STEM LENGTH, OR APPROVED EQUAL. CONTRACTOR TO PROVIDE SUBMITTAL FOR REVIEW AND APPROVAL PER SPECIFICATION SECTION 01300.
  4. DEPENDING ON THE DURATION REQUIRED FOR SETTLEMENT OF TIER 2 LIFTS, CONSTRUCTION OF THE CROSSING MIGHT NOT BE COMPLETED IN THE FIRST CONSTRUCTION SEASON. IN THIS CASE, A TEMPORARY 36" DIAMETER HDPE PIPE 80 FEET IN LENGTH WILL BE PLACED AT THE FINAL ELEVATION AND AT A LOCATION AS DIRECTED BY THE ENGINEER PRIOR TO THE CONTRACTOR DEMOBILIZING FOR THE SEASON. THE TEMPORARY HDPE PIPE WILL NOT REQUIRE SELECT FILL OR TIDE GATES TO BE INSTALLED. THE PIPE WILL BE REMOVED AND BACKFILLED WITH APPROVED MATERIAL PRIOR TO THE COMMENCEMENT OF PLACING FILL IN THE SECOND CONSTRUCTION SEASON.



**A SECTION**  
H: 1"=10' V: 1"=10'

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			Plotted Scale	0 1/2 1

**Tule Red Tidal Restoration Project - Habitat Restoration and Earthwork**  
New Permanent Access Crossing Sheet  
Phase 1

Job Number 5001024  
Sheet Number  
**C9**  
Sheet 14 of 25

PHASE 1 - SHEET C1

CHANNEL	NAME (TYPE - ##)	3rd ORDER LENGTH	2nd ORDER LENGTH	1st ORDER LENGTH
"A"	3-1	482.5		
	1-2 NORTH			238.4
	2-3 NORTH		155.9	
	2-4 SOUTH		695.1	
	1-5 NORTH			152.4
	1-6 SOUTH			146.4
	1-7 SOUTH			247.0
TOTALS		482.5	851.0	784.2

"B"

3-1		379.4		
1-2 NORTH				80.9
1-3 NORTH				191.3
2-4			325.7	
1-5 SOUTH				317.0
TOTALS		379.4	325.7	589.2

"C"

3-1		500.9		
1-2 NORTH				189.0
2-3 NORTH			179.2	
2-4 SOUTH			418.0	
1-5 NORTH				430.3
1-6 NORTH				646.4
1-7 SOUTH				235.6
TOTALS		500.9	597.2	1501.3

PHASE 1 - SHEET C2

CHANNEL	NAME (TYPE - ##)	3rd ORDER LENGTH	2nd ORDER LENGTH	1st ORDER LENGTH
"D"	3-1	362.3		
	2-2 NORTH			899.0
	2-3 SOUTH		595.1	
	1-4 NORTH			131.8
	1-5 SOUTH			186.7
	1-6 SOUTH			232.8
	1-7 SOUTH			241.9
TOTALS		362.3	1494.1	793.2

"E"

2-1			270.2	
1-2 NORTH				188.9
1-3 SOUTH				179.1
TOTALS			270.2	368.0

"F"

3-1		204.1		
2-2 NORTH			582.5	
2-3 SOUTH			1055.3	
1-4 SOUTH				201.8
1-5 NORTH				113.4
1-6 NORTH				307.6
1-7 SOUTH				72.4
1-8 SOUTH				131.7
1-9 SOUTH				198.2
1-10 SOUTH				192.2
1-11 SOUTH				213.6
TOTALS		204.1	1637.8	1430.9

"G"

3-1		295.4		
TOTAL		295.4		

"H"

3-1		342.4		
2-2 NORTH			957.8	
2-3 SOUTH			719.2	
1-4 SOUTH				148.8
1-5 NORTH				136.6
1-6 NORTH				123.7
1-7 NORTH				153.7
1-8 NORTH				87.4
1-9 SOUTH				241.3
TOTALS		342.4	1677.0	891.5

"J"

3-1		203.6		
TOTALS		203.6		

PHASE 1 - SHEET C3

CHANNEL	NAME (TYPE - ##)	3rd ORDER LENGTH	2nd ORDER LENGTH	1st ORDER LENGTH
"K"	3-1	385.7		
	1-2 NORTH			329.2
	2-3 NORTH		478.4	
	2-4 SOUTH		461.5	
	1-5 SOUTH			209.3
	1-6 NORTH			286.9
	1-7 NORTH			373.6
	1-8 SOUTH			235.3
TOTALS		385.7	939.9	1434.3

"L"

3-1		1951.3		
2-2 NORTH			346.5	
1-3 NORTH				234.8
2-4 SOUTH			338.5	
1-5 SOUTH				636.6
1-6 SOUTH				184.3
2-7 NORTH			686.3	
1-8 NORTH				241.9
1-9 NORTH				374.6
2-10 SOUTH			359.2	
1-11 SOUTH				471.9
1-12 SOUTH				655.8
1-13 SOUTH				158.5
2-14 NORTH			840.8	
1-15 NORTH				470.8
1-16 NORTH				354.4
1-17 NORTH				335.3
2-18 SOUTH			912.7	
1-19 SOUTH				219.4
1-20 SOUTH				176.1
1-21 SOUTH				301.8
2-22 NORTH			468.9	
1-23 NORTH				327.2
1-24 NORTH				169.4
1-25 NORTH				350.9
1-26 NORTH				296.5
2-27 SOUTH			447.2	
1-28 SOUTH				360.5
2-29 SOUTH			178.2	
1-30 NORTH				438.6
TOTALS		1951.3	4578.3	6759.3

PHASE 1 - SHEET C4

CHANNEL	NAME (TYPE - ##)	3rd ORDER LENGTH	2nd ORDER LENGTH	1st ORDER LENGTH
"M"	2-1		537.3	
	1-2 SOUTH			305.7
	1-3 NORTH			411.3
TOTALS			537.3	717.0

"N"

2-1			768.7	
1-2 NORTH				284.3
1-3 SOUTH				150.0
TOTALS			768.7	434.3

"P"

3-1		632.0		
TOTALS		632.0		

~~PHASE 2 - SHEET C11~~

CHANNEL	NAME (TYPE - ##)	3rd ORDER LENGTH	2nd ORDER LENGTH	1st ORDER LENGTH
"Z"	2-1		718.6	
	1-2 NORTH			144.6
	1-3 NORTH			144.6
	1-4 NORTH			388.1
TOTALS			718.6	696.9

**NOT IN CONTRACT**

PHASE 1 TOTALS	3rd ORDER LENGTH	2nd ORDER LENGTH	1st ORDER LENGTH
TOTALS (IN LINEAR FEET)	5739.6	13677.2	15703.2

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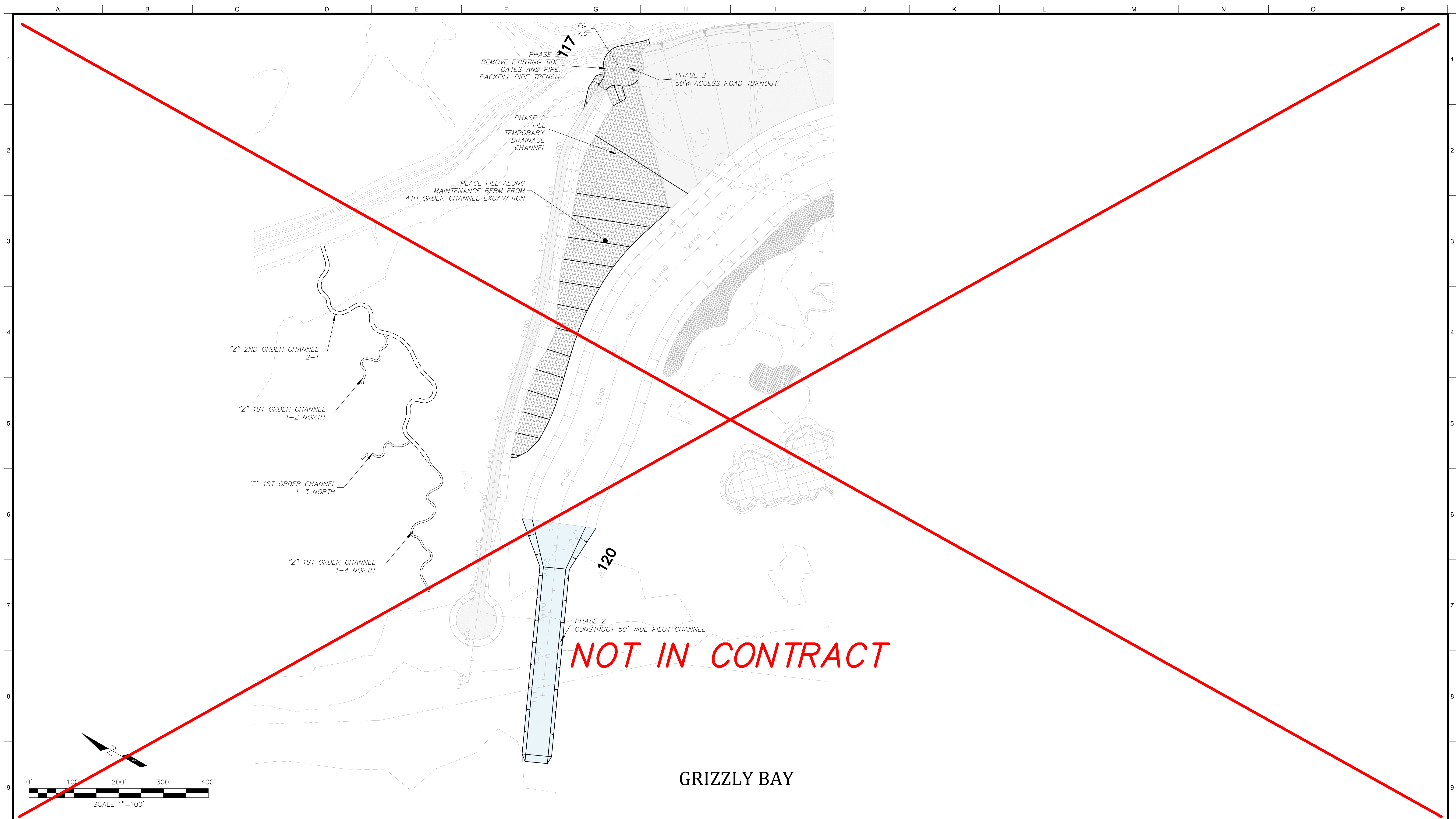
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Tule Red Tidal Restoration Project - Habitat  
 Restoration and Earthwork  
 Low Order Channel Excavation Summary  
 Phase 1

Job Number  
5001024  
 Sheet Number  
**C10**  
 Sheet 15 of 25



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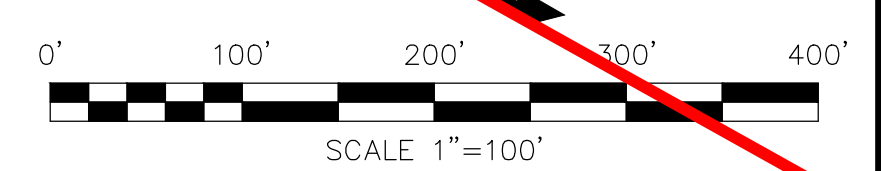
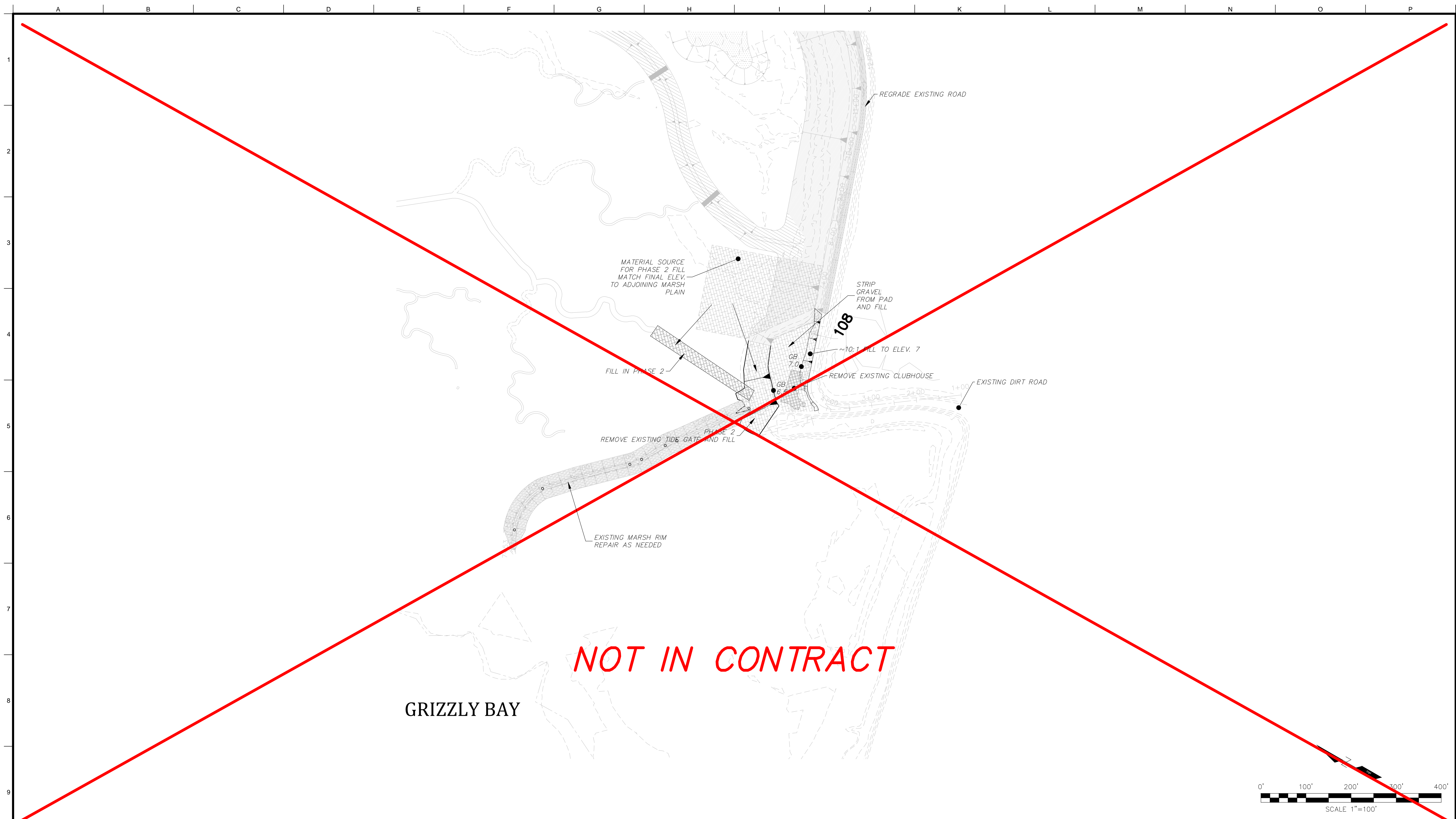


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				File Name
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				Plotted Scale
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Tule Red Tidal Restoration Project - Habitat  
 Restoration and Earthwork  
 North Project Plan Sheet  
 Phase 2

Job Number  
5001024  
 Sheet Number  
**C11**  
 Sheet 16 of 25





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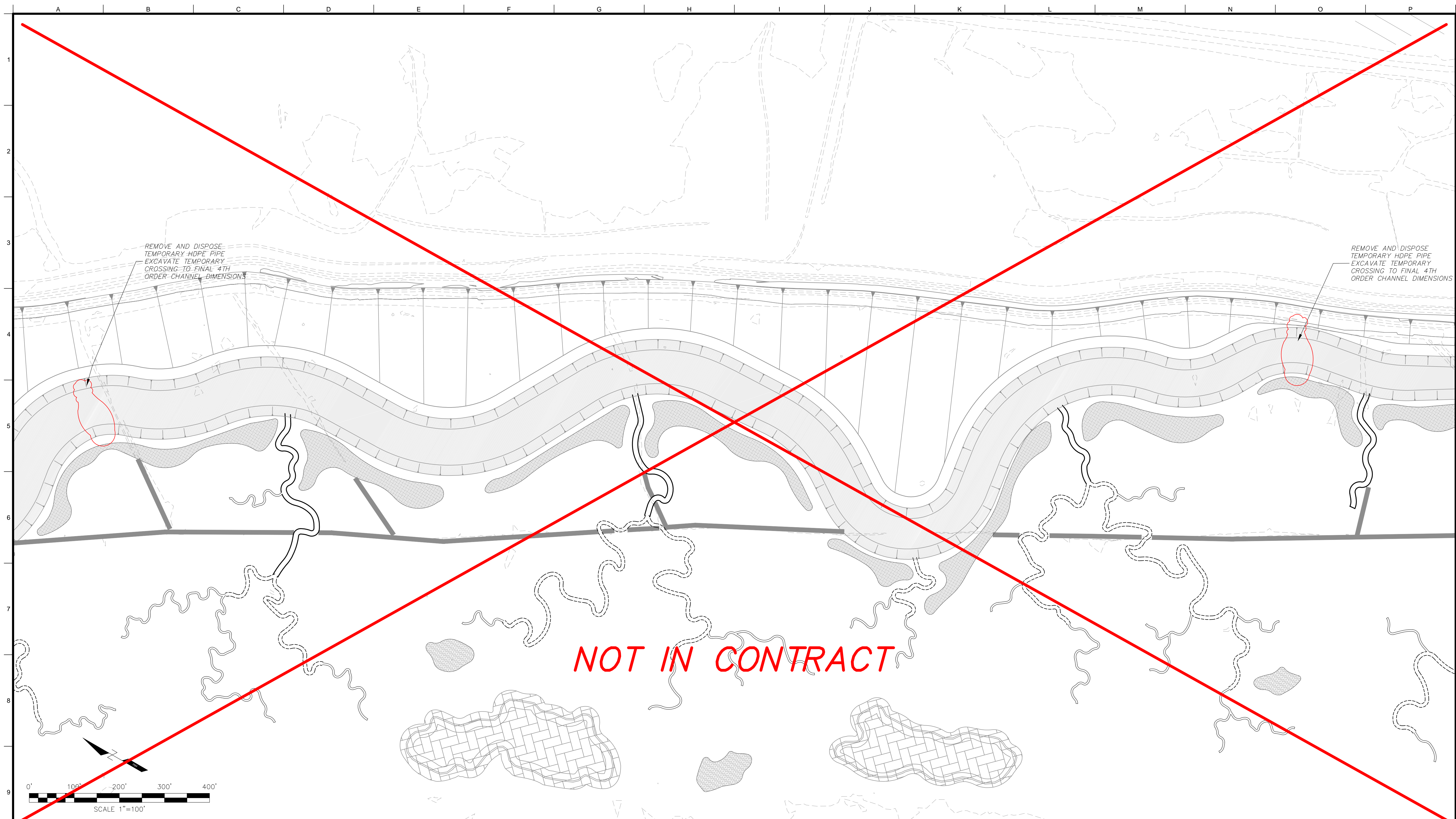
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				Plotted Scale
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Tule Red Tidal Restoration Project - Habitat  
 Restoration and Earthwork  
 South Project Plan Sheet  
 Phase 2

Job Number  
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 Sheet Number  
**C12**  
 Sheet 17 of 25



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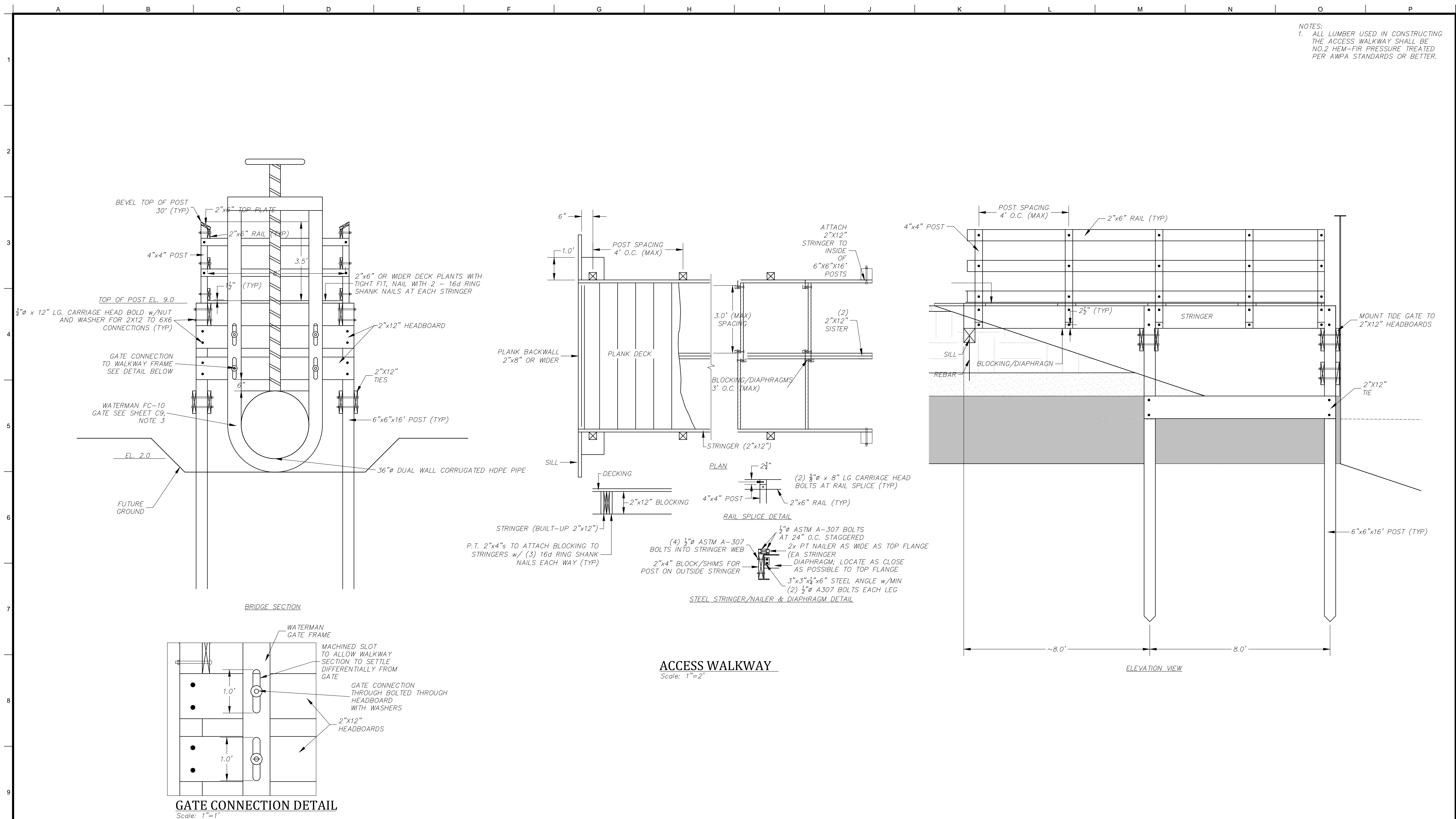


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**Tule Red Tidal Restoration Project - Habitat  
Restoration and Earthwork**  
Temporary Crossings Removal Sheet  
Phase 2

Job Number  
5001024  
Sheet Number  
**C13**  
Sheet 18 of 25

NOTES:  
 1. ALL LUMBER USED IN CONSTRUCTING THE ACCESS WALKWAY SHALL BE NO.2 HEM-FIR PRESSURE TREATED PER AWPA STANDARDS OR BETTER.



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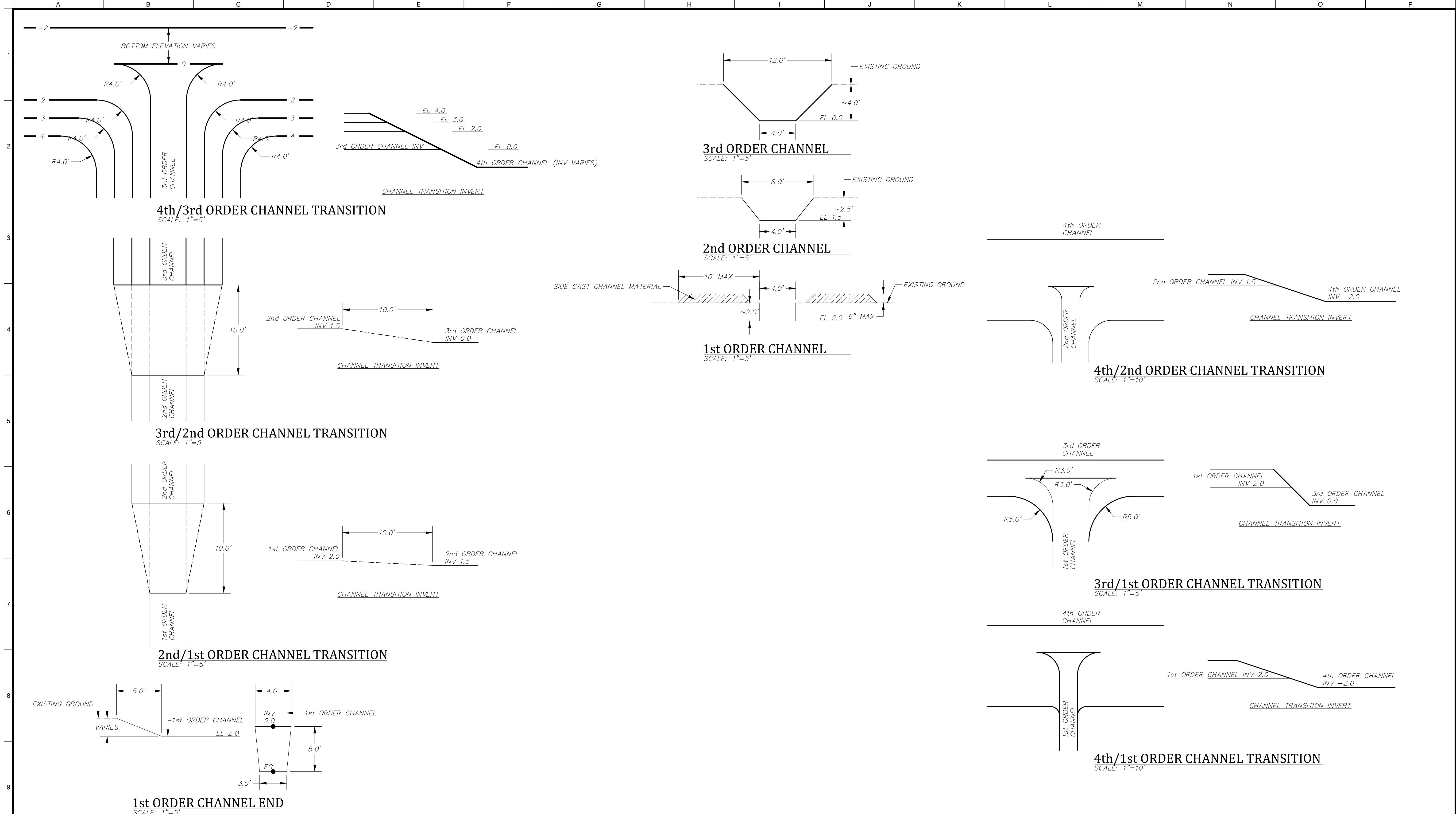
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Tule Red Tidal Restoration Project - Habitat  
 Restoration and Earthwork  
 Access Walkway Structural Sheet  
 Phase 1

Job Number  
 5001024  
 Sheet Number  
**S1**  
 Sheet 19 of 25



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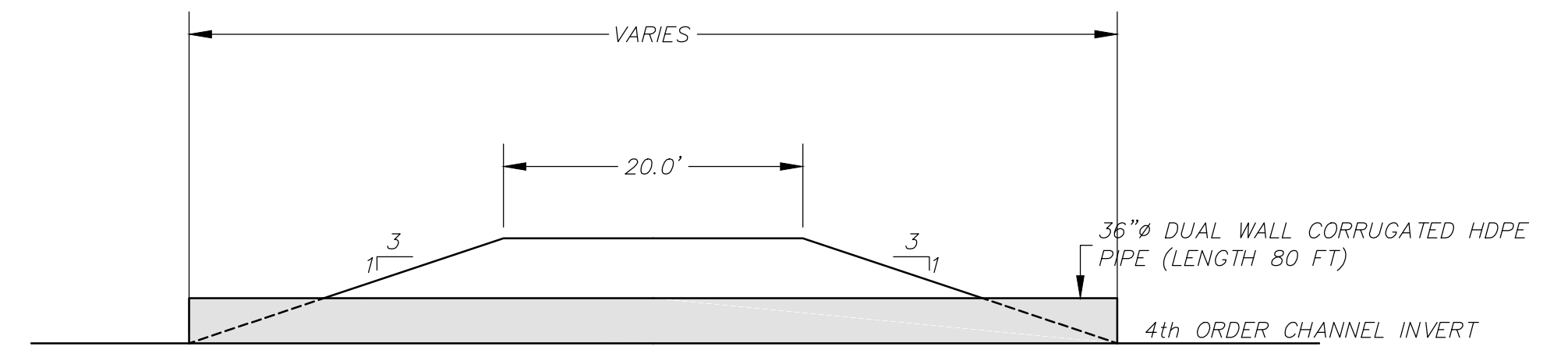
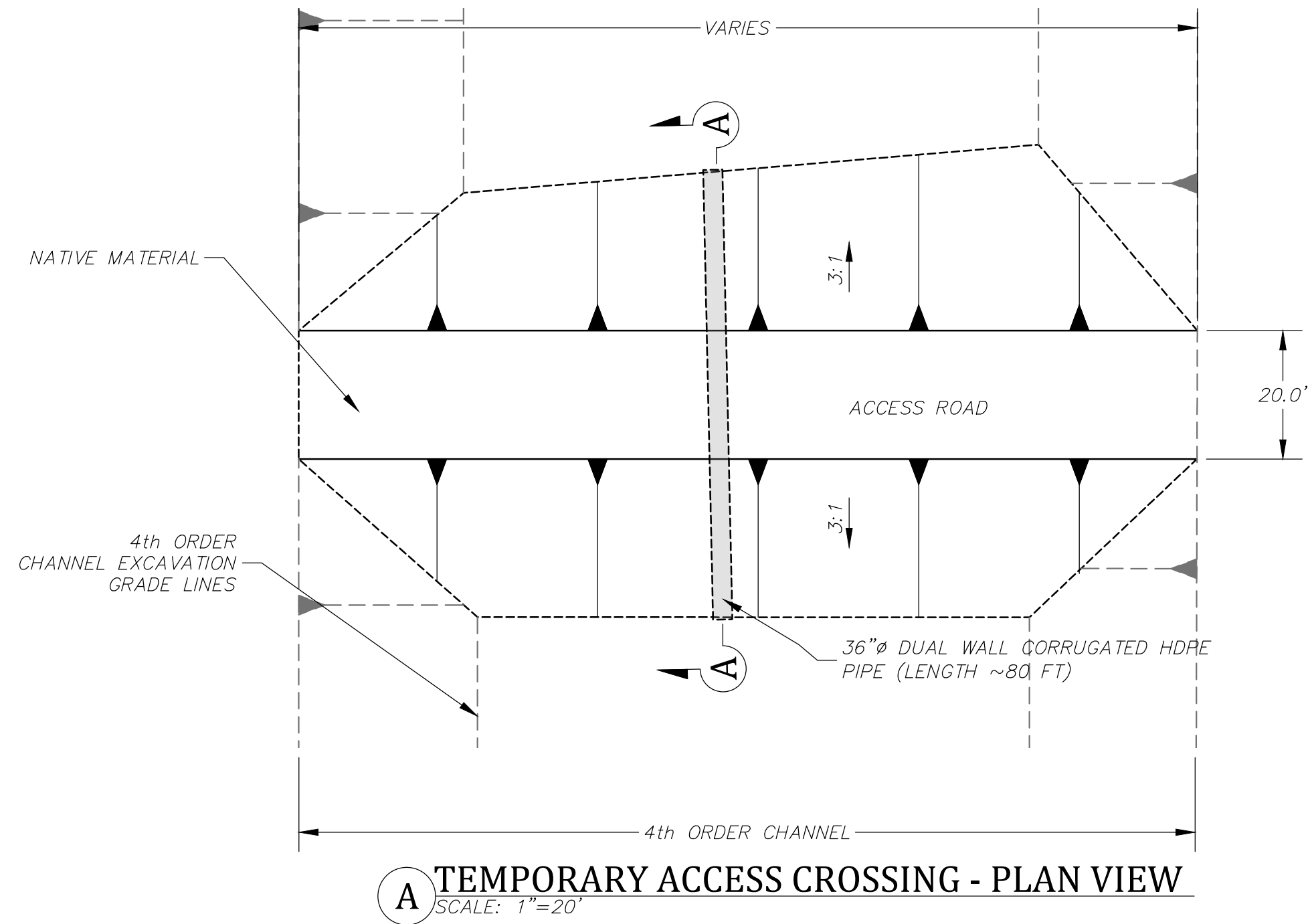
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Tule Red Tidal Restoration Project - Habitat  
 Restoration and Earthwork  
 Details Sheet  
 Phase 1

Job Number  
5001024  
 Sheet Number  
**D1**  
 Sheet 20 of 25

A B C D E F G H I J K L M N O P

1 2 3 4 5 6 7 8 9 10



**A** TEMPORARY ACCESS CROSSING - SECTION VIEW  
SCALE: 1"=10'

**A** TEMPORARY ACCESS CROSSING - PLAN VIEW  
SCALE: 1"=20'

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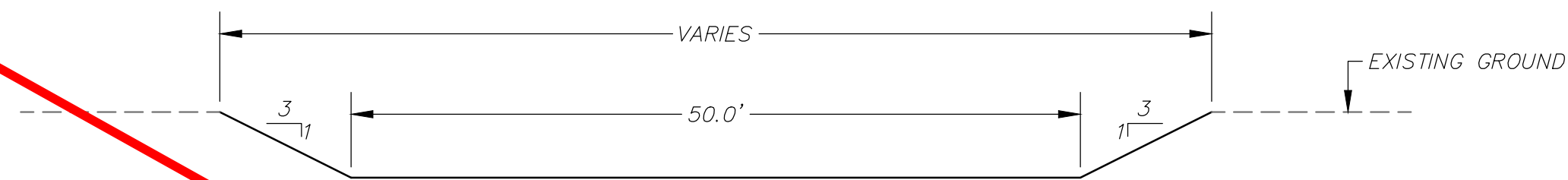
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Tule Red Tidal Restoration Project - Habitat  
Restoration and Earthwork  
Details Sheet  
Phase 1

Job Number  
5001024  
Sheet Number  
**D2**  
Sheet 21 of 25

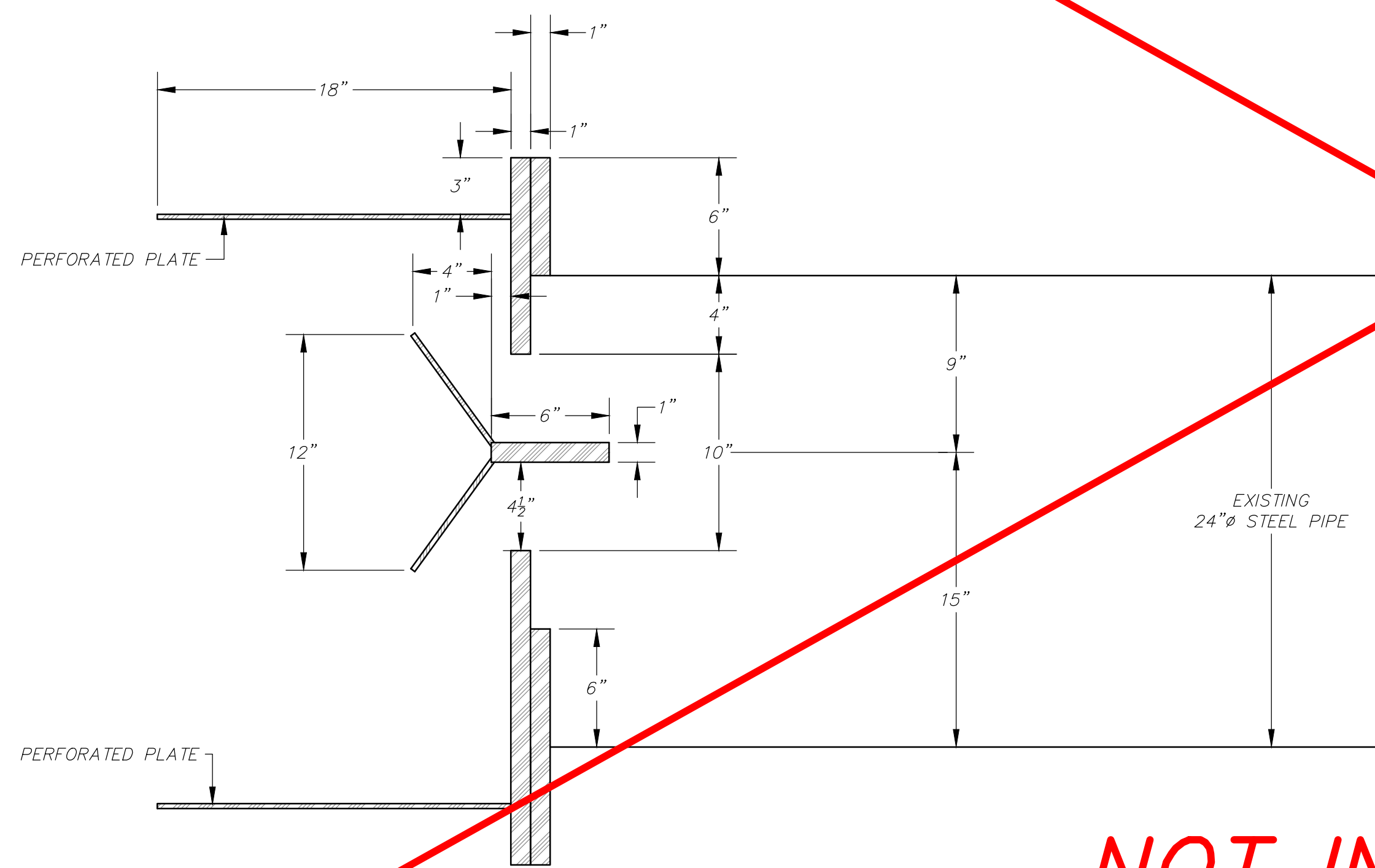
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10

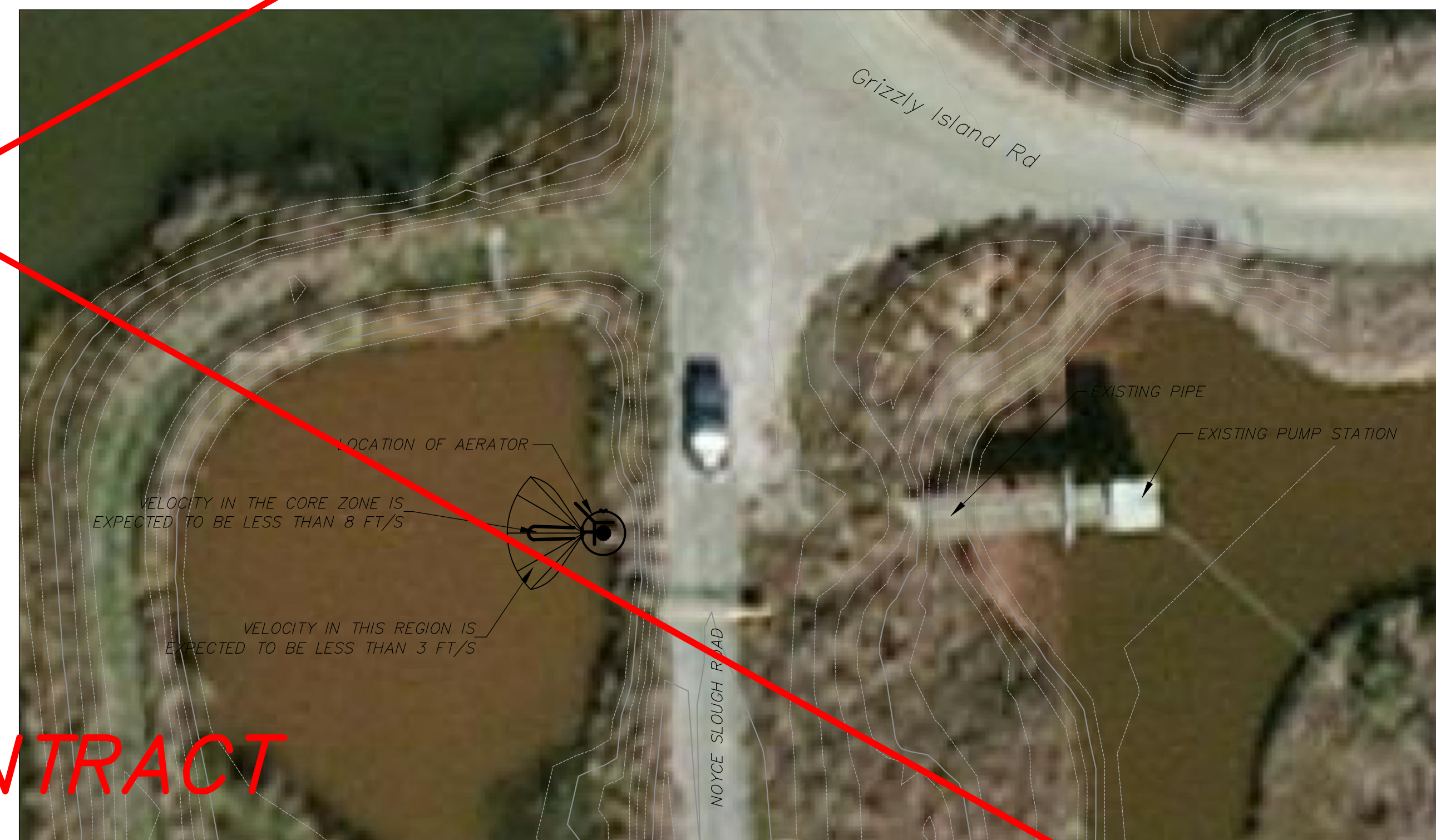


PHASE 2 PILOT CHANNEL SECTION

SCALE: 1"=10'



SCALE: 1"=6"



SCALE: 1"=20'

**NOT IN CONTRACT**

PHASE 2 CDFW PUMP OUTFALL AERATOR

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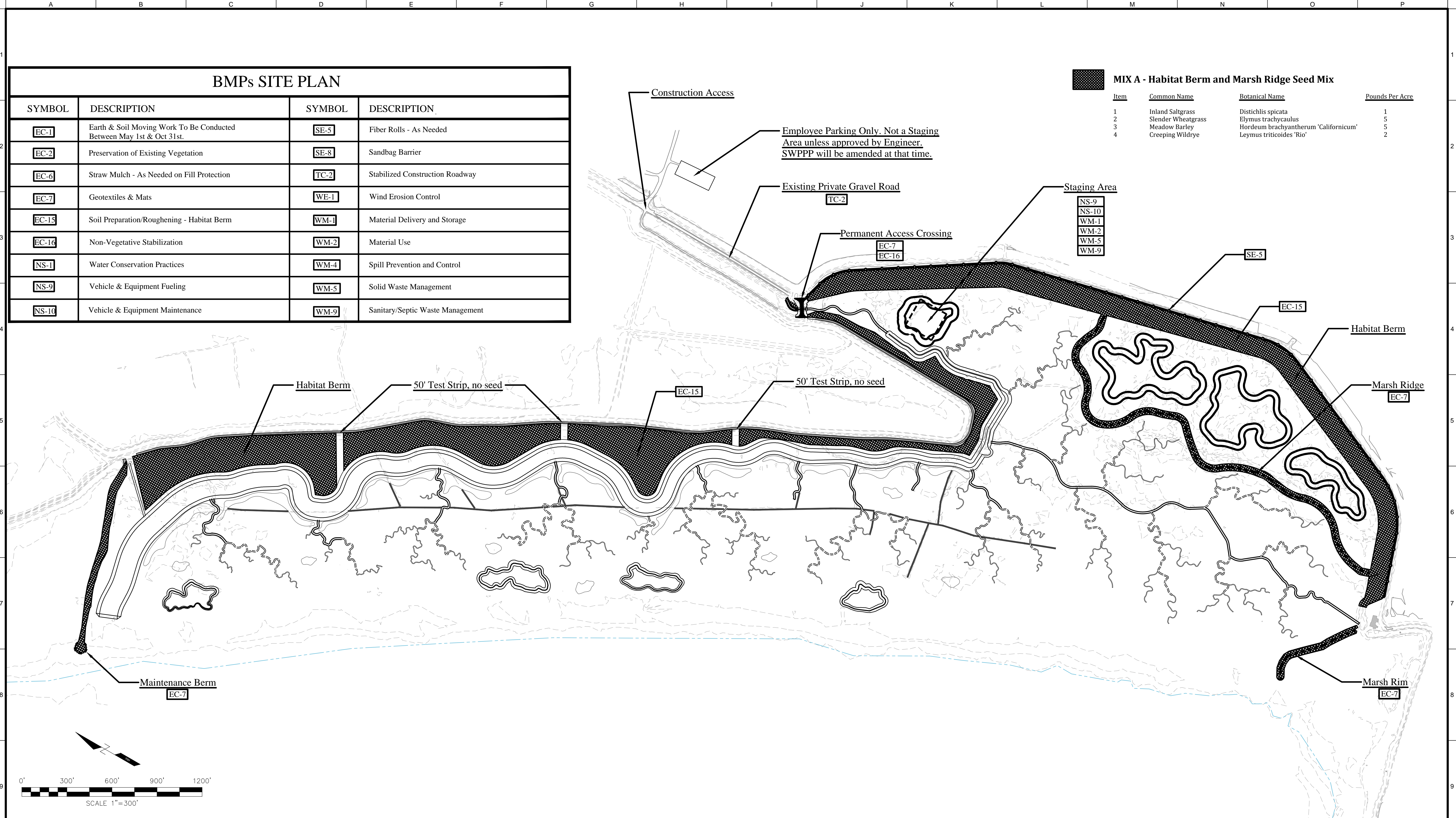
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Tule Red Tidal Restoration Project - Habitat  
 Restoration and Earthwork  
 Details Sheet  
 Phase 2

Job Number  
 5001024  
 Sheet Number  
**D3**  
 Sheet 22 of 25



### BMPs SITE PLAN

SYMBOL	DESCRIPTION	SYMBOL	DESCRIPTION
EC-1	Earth & Soil Moving Work To Be Conducted Between May 1st & Oct 31st.	SE-5	Fiber Rolls - As Needed
EC-2	Preservation of Existing Vegetation	SE-8	Sandbag Barrier
EC-6	Straw Mulch - As Needed on Fill Protection	TC-2	Stabilized Construction Roadway
EC-7	Geotextiles & Mats	WE-1	Wind Erosion Control
EC-15	Soil Preparation/Roughening - Habitat Berm	WM-1	Material Delivery and Storage
EC-16	Non-Vegetative Stabilization	WM-2	Material Use
NS-1	Water Conservation Practices	WM-4	Spill Prevention and Control
NS-9	Vehicle & Equipment Fueling	WM-5	Solid Waste Management
NS-10	Vehicle & Equipment Maintenance	WM-9	Sanitary/Septic Waste Management

**MIX A - Habitat Berm and Marsh Ridge Seed Mix**

Item	Common Name	Botanical Name	Pounds Per Acre
1	Inland Saltgrass	Distichlis spicata	1
2	Slender Wheatgrass	Elymus trachycaulus	5
3	Meadow Barley	Hordeum brachyantherum 'Californicum'	5
4	Creeping Wildrye	Leymus triticoides 'Rio'	2

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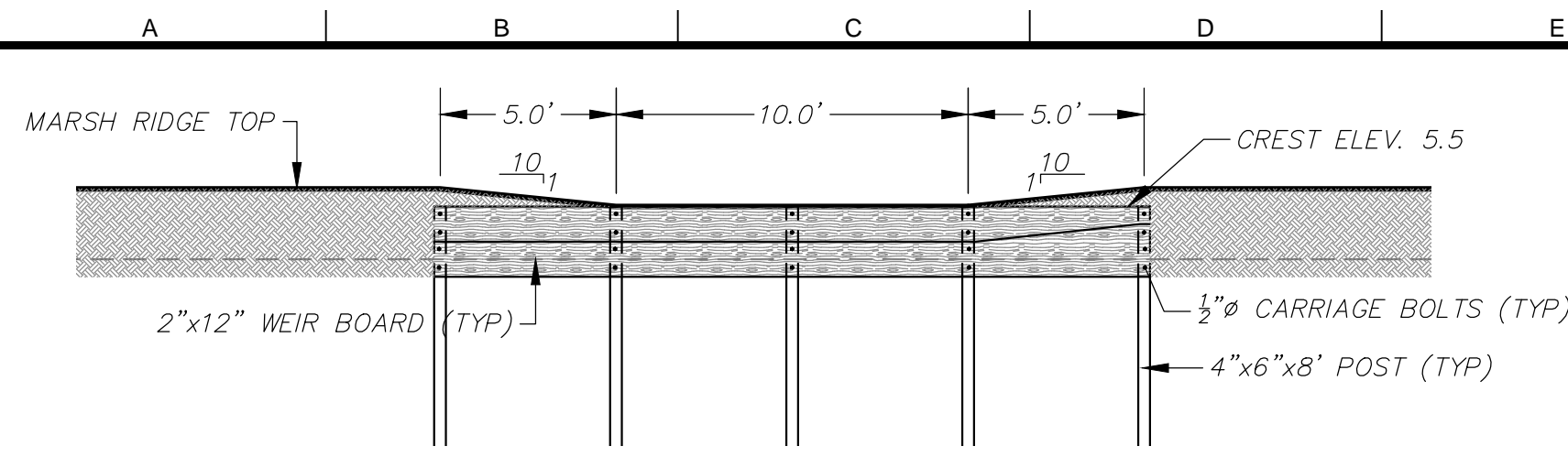
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Tule Red Tidal Restoration Project - Habitat  
 Restoration and Earthwork  
 Erosion Control Plan  
 Phase 1

Job Number  
5001024  
 Sheet Number  
**EC1**  
 Sheet 23 of 25

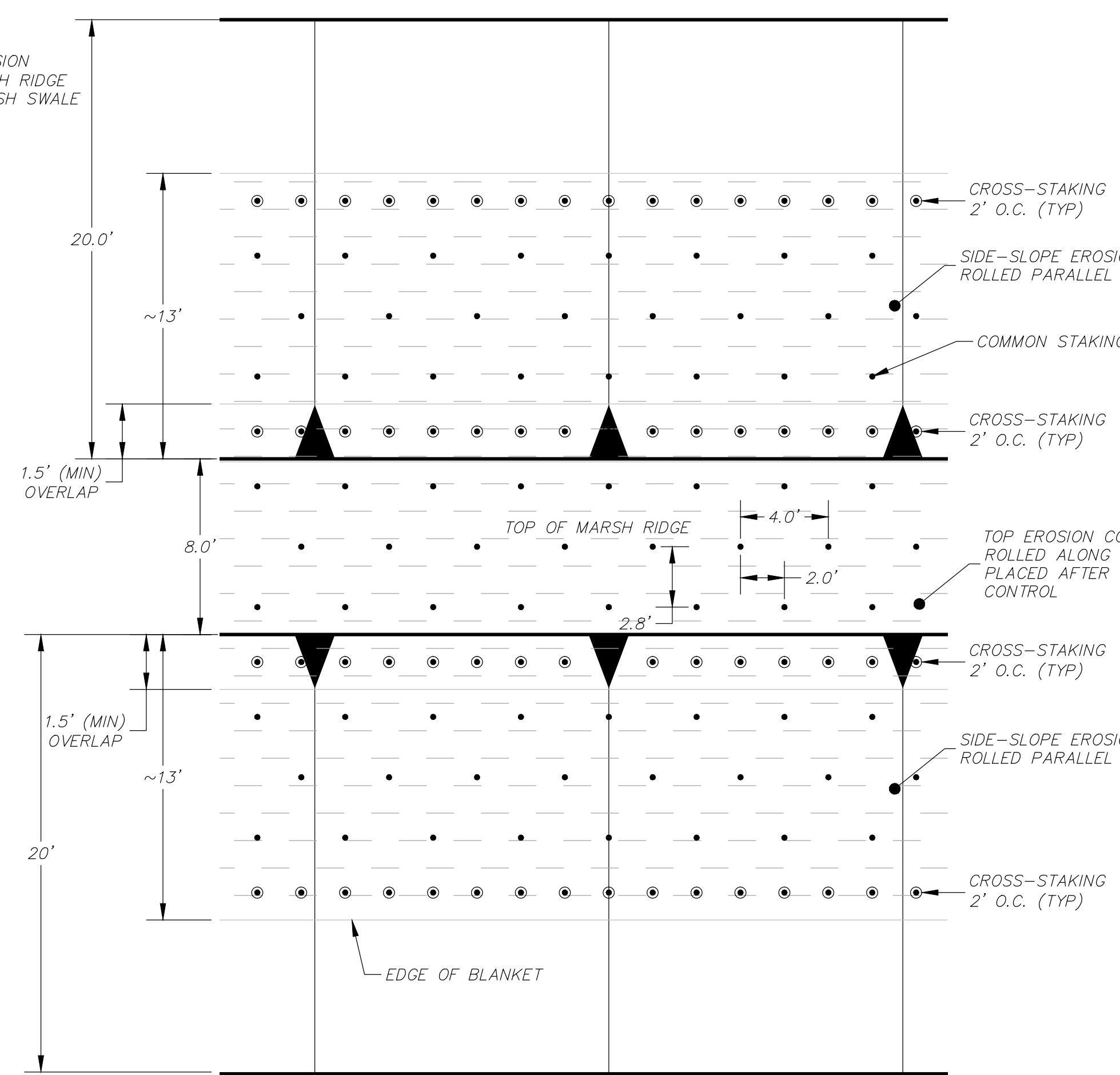
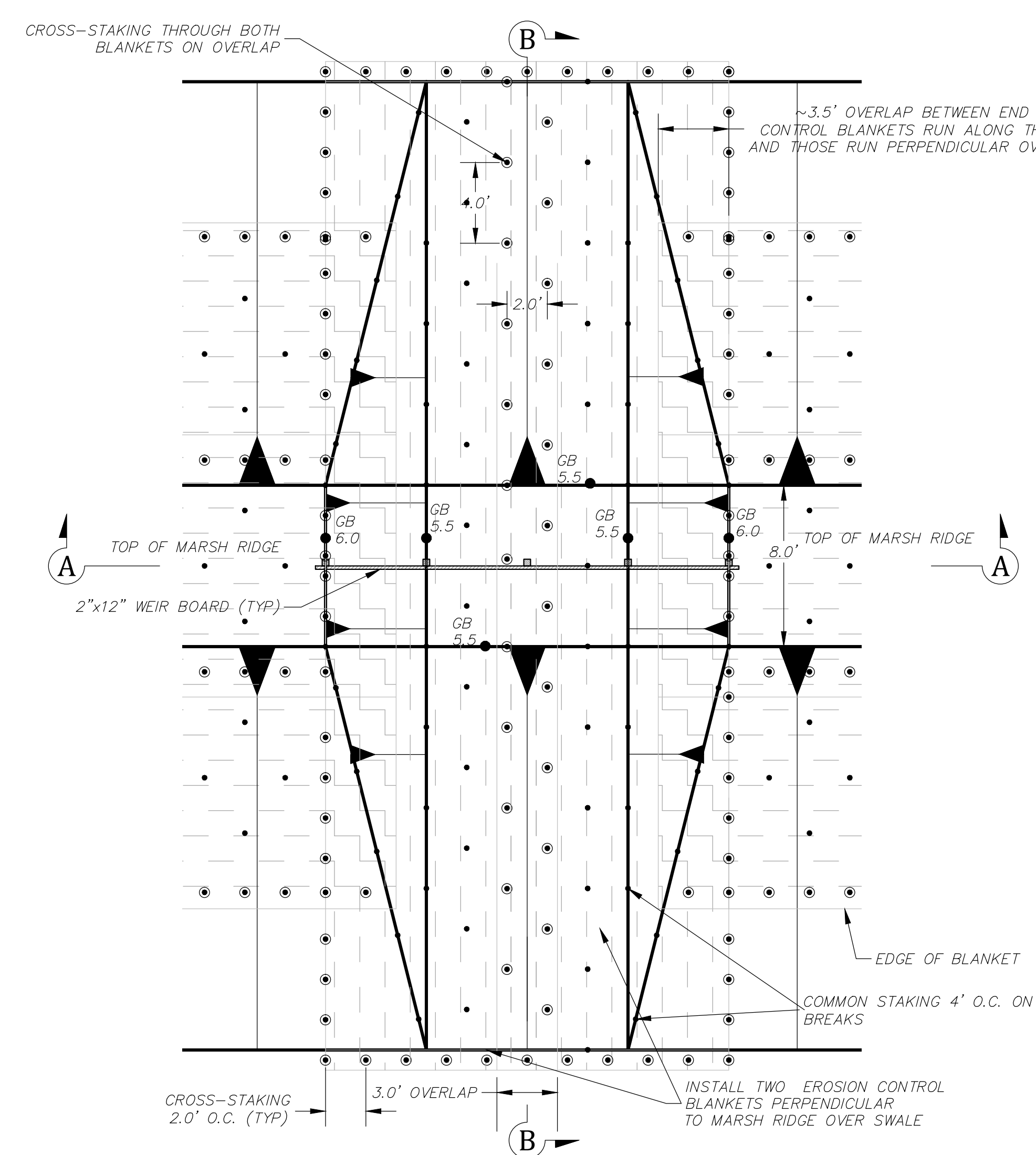
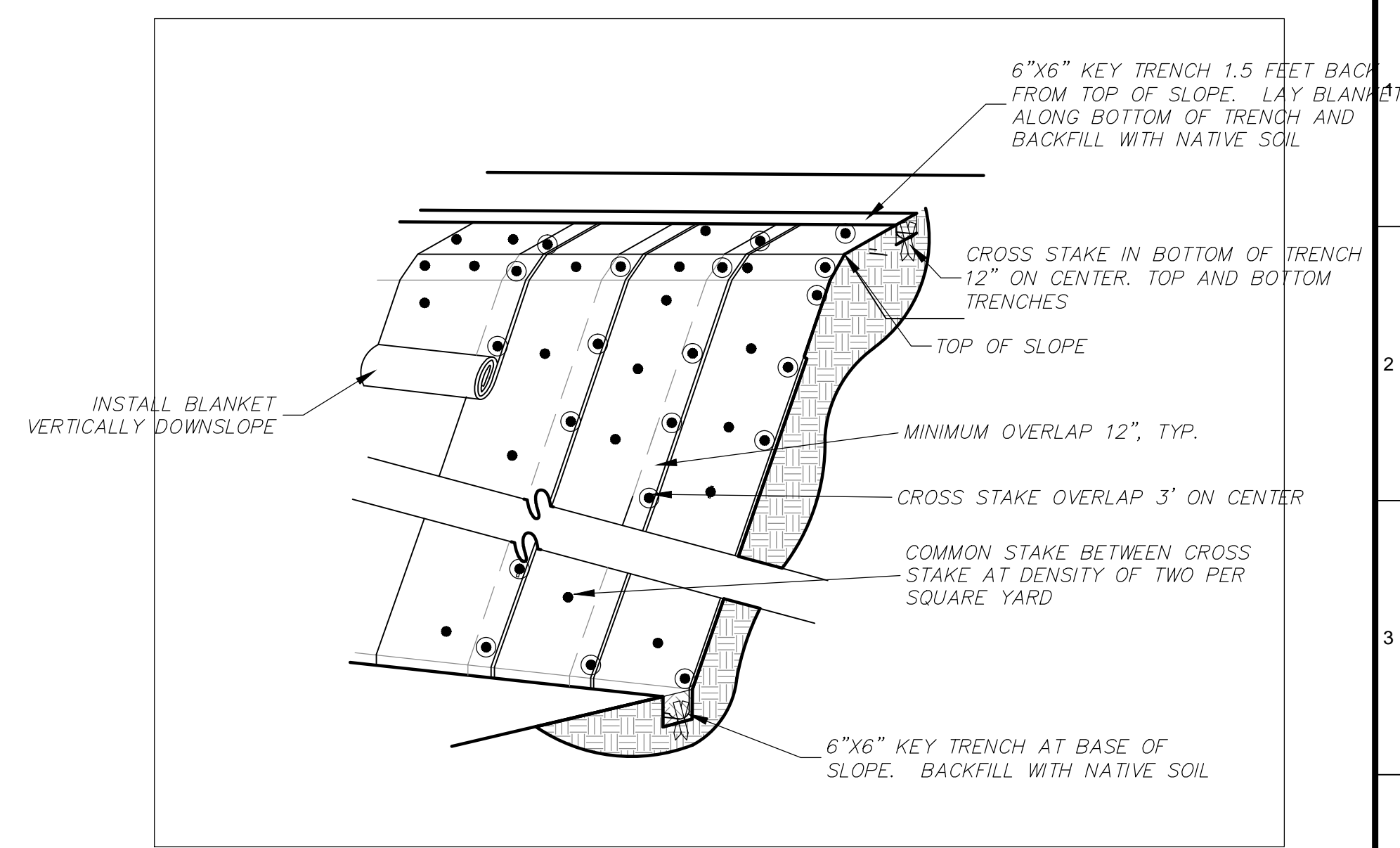
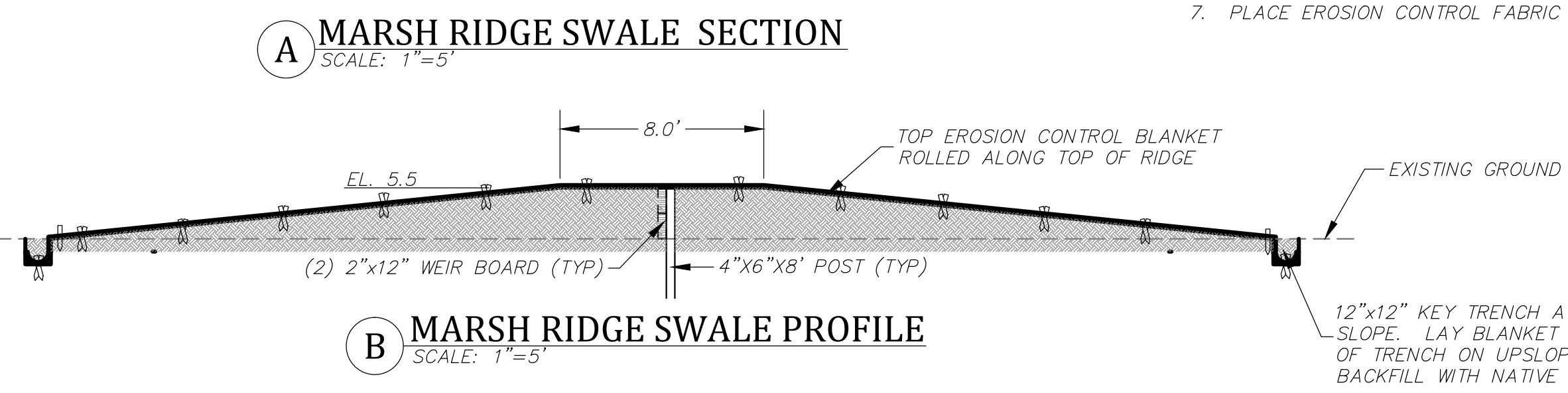


**MARSH RIDGE SWALE CONSTRUCTION SEQUENCE**

1. CONSTRUCT MARSH SWALE WITH FILL CONCURRENTLY WITH MARSH RIDGE IN ACCORDANCE WITH SPECIFICATION 02200. INSTALL WOOD WEIRS PRIOR TO PLACEMENT OF TOPSOIL AND SEEDING.
2. DRIVE IN 4"x6" POSTS TO DEPTH.
3. HAND TRENCH AND INSTALL 2"x12" TO 4"x6" POSTS.
4. BACKFILL AND COMPACT TRENCH.
5. PLACE TOPSOIL.
6. SPREAD SEED.
7. PLACE EROSION CONTROL FABRIC

**MARSH RIDGE AND MARSH RIM EROSION CONTROL FABRIC PLACEMENT**

1. THREE SEPARATE EROSION CONTROL BLANKETS WILL BE USED TO PROTECT EACH MARSH RIDGE AND MARSH BERM CROSS-SECTION. ONE BLANKET WILL BE PLACED ON EACH SIDE SLOPE, AND ONE BLANKET ROLLED DOWN THE TOP OF THE RIDGE/RIM.
2. EROSION CONTROL BLANKETS PLACED ON THE SIDE SLOPES WILL BE PLACED FIRST. THE ROLL ALONG THE TOP OF THE RIDGE WILL BE PLACED LAST AND OVERLAP THE BLANKETS ROLLED ALONG THE SIDE SLOPES.
3. BLANKETS WILL BE ROLLED LOOSELY AND THEN STAKED TO MAINTAIN GOOD GROUND CONTACT. BLANKETS SHOULD NOT BE STRETCHED.
4. THE BEGINNING OF A BLANKET ROLL WILL OVERLAP THE END OF THE LAST BLANKET ROLL BY AT LEAST 1 FOOT.
5. BLANKETS PLACED ALONG THE SIDE SLOPE AND RIDGE WILL BE PLACED BEFORE BLANKETS PLACED OVER THE MARSH SWALE. THE MARSH SWALE PROTECTION WILL OVERLAP THE ENDS OF THESE BLANKETS BY AT LEAST 1 FOOT.



**FINISHED ACCESS CROSSING/MAINTENACE BERM EROSION CONTROL**

NTS

**CROSS STAKING DETAIL**

SCALE: 1"=1"

**COMMON STAKING DETAIL**

SCALE: 1"=1"

**STRAW WATTLE DETAIL (TYP.)**

SCALE: 1"=1"

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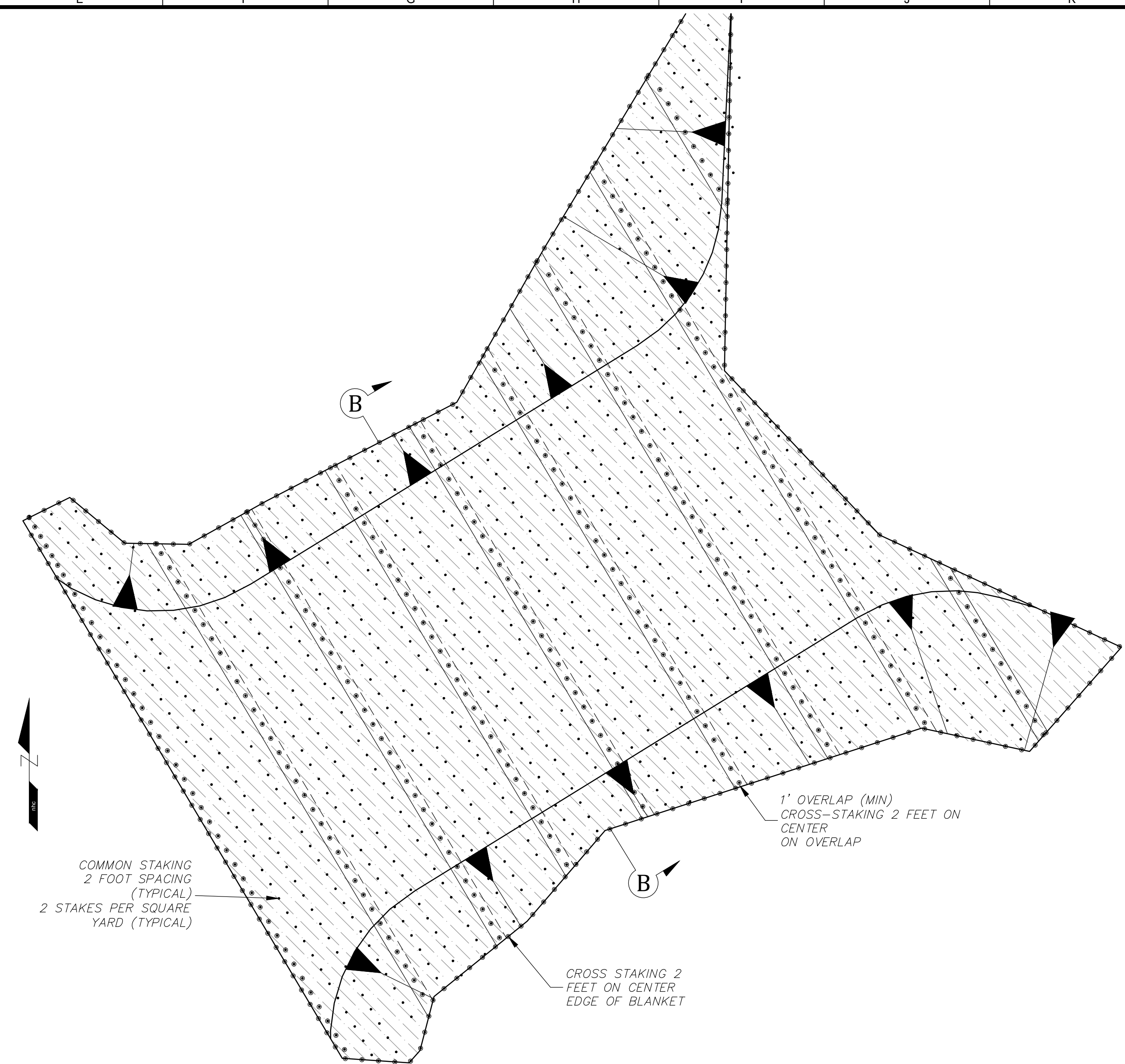
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**Tule Red Tidal Restoration Project - Habitat Restoration and Earthwork**  
 Erosion Control Details Sheet  
 Phase 1

Job Number  
5001024  
 Sheet Number  
**EC2**  
 Sheet 24 of 25



- NOTES:
1. TEMPORARY EROSION CONTROL ONLY NECESSARY IF PERMANENT ACCESS CROSSING CANNOT BE COMPLETELY CONSTRUCTED IN SINGLE CONSTRUCTION SEASON.
  2. GRADE LINES AND ELEVATIONS IN PLAN AND SECTION ARE APPROXIMATE. ACTUAL GRADES WILL VARY DEPENDING ON CONSTRUCTION SEASON WORK COMPLETION.

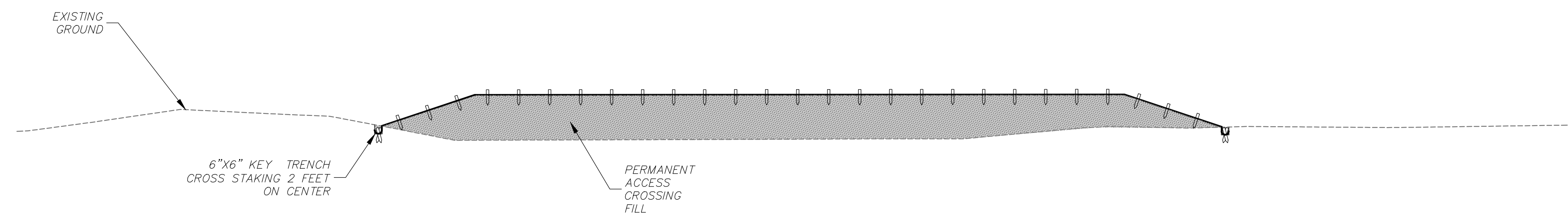


COMMON STAKING  
2 FOOT SPACING  
(TYPICAL)  
2 STAKES PER SQUARE  
YARD (TYPICAL)

1' OVERLAP (MIN)  
CROSS-STAKING 2 FEET ON  
CENTER  
ON OVERLAP

CROSS STAKING 2  
FEET ON CENTER  
EDGE OF BLANKET

**PERMANENT ACCESS CROSSING TEMPORARY EROSION CONTROL BLANKET PLAN**  
SCALE: 1"=20'



**B SECTION**  
H: 1"=10' V: 1"=10'

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**Tule Red Tidal Restoration Project - Habitat  
Restoration and Earthwork  
Temporary Erosion Control Sheet  
Permanent Access Crossing Phase 1**

Job Number  
5001024  
Sheet Number  
**EC3**  
Sheet 25 of 25