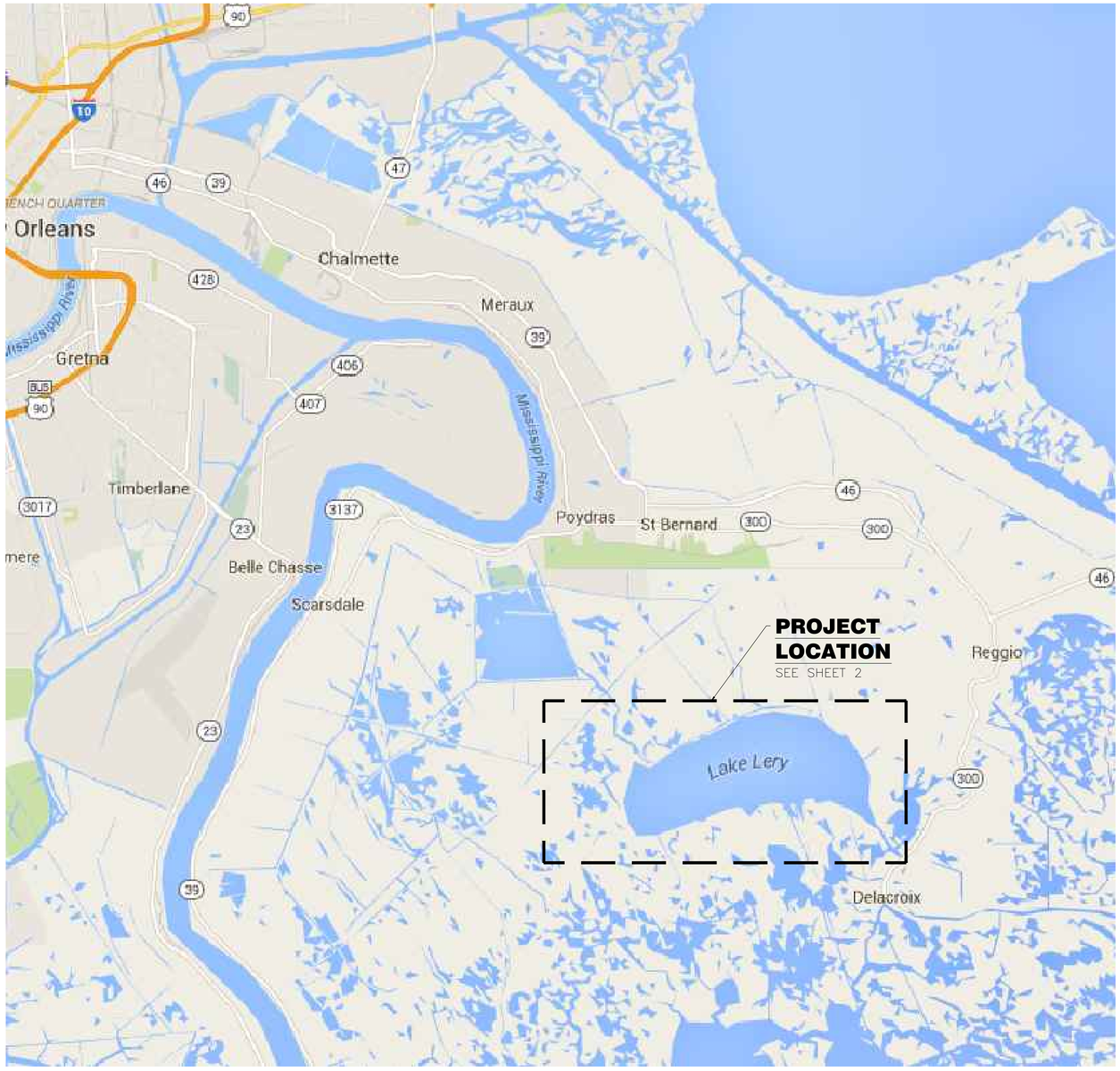


0 NOT TO SCALE

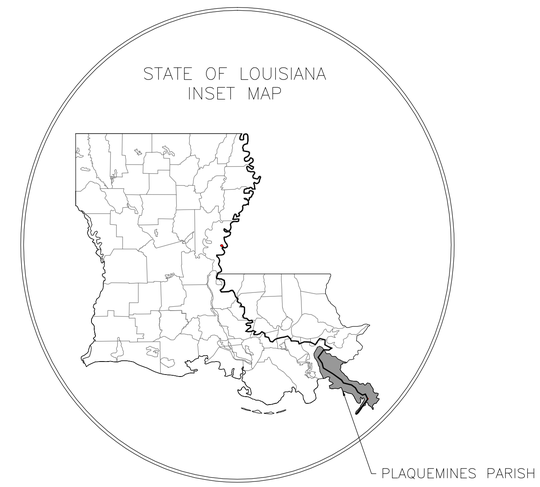
HOR. SCALE

BS-24 TERRACING & MARSH CREATION SOUTH OF BIG MAR

BUILT UNDER THE COASTAL WETLANDS PLANNING, PROTECTION, AND RESTORATION ACT PUBLIC LAW 101-646

BY THE NATURAL RESOURCES CONSERVATION SERVICE OF THE UNITED STATES DEPARTMENT OF AGRICULTURE

WITH THE ASSISTANCE OF THE U.S. FISH & WILDLIFE SERVICE



INDEX OF DRAWINGS

1. VICINITY MAP
2. PROJECT LOCATION
3. UTILITY MAP
4. ACCESS ROUTE AND LIMITS OF CONSTRUCTION
5. SITE PLAN
6. ALIGNMENT "A" PLAN AND PROFILE
7. ALIGNMENT "A" PLAN AND PROFILE
8. ALIGNMENT "A" PLAN AND PROFILE
9. ALIGNMENT "A" PLAN AND PROFILE
10. ALIGNMENT "A" PLAN AND PROFILE
11. ALIGNMENT "A" PLAN AND PROFILE
12. ALIGNMENT "A" PLAN AND PROFILE
13. ALIGNMENT "A" PLAN AND PROFILE
14. ALIGNMENT "A" PLAN AND PROFILE
15. ALIGNMENT "A" CROSS SECTIONS
16. ALIGNMENT "A" CROSS SECTIONS
17. ALIGNMENT "A" CROSS SECTIONS
18. ALIGNMENT "A" CROSS SECTIONS
19. ALIGNMENT "A" CROSS SECTIONS
20. ALIGNMENT "A" CROSS SECTIONS
21. ALIGNMENT "A" CROSS SECTIONS
22. ALIGNMENT "B" AND "C" PLAN
23. ALIGNMENT "B" AND "C' PROFILES
24. ALIGNMENT "B" CROSS SECTIONS
25. ALIGNMENT "C" CROSS SECTIONS
26. EXISTING STRUCTURE PLAN
27. PROPOSED STRUCTURE PLAN
28. CUTOFF WALL AND TOE WALL ELEVATIONS
29. SECTIONS "A-A" THRU "C-C"
30. SECTIONS "D-D" THRU "F-F"
31. PUSH PIER PLAN AND SECTION "G-G"
32. SECTIONS "H-H" AND PUSH PIER MOUNTING PLATE ASSEMBLY
33. STRUCTURE VENT PLAN, SECTIONS & ASSEMBLY DETAILS
34. CONCRETE AND SHEET PILE WALL
35. BEAM AND CONCRETE SLAB
36. DETAILS "C" THRU "D" AND TYPICAL SLAB SECTIONS
37. BEAM DETAIL ATTACHMENT
38. REINFORCEMENT TOP LAYER PLAN
39. REINFORCEMENT BOTTOM LAYER PLAN
40. REINFORCEMENT DETAILS
41. REINFORCEMENT ELEVATIONS
42. REINFORCEMENT DETAILS
43. REINFORCEMENT DETAILS AND QUANTITIES
44. TRASH RACK AND SLUICE GATE ISOMETRIC VENTS
45. TRASH RACK AND SLUICE GATE ASSEMBLY DETAILS
46. TRASH RACK DETAILS
47. GATE FRAME FLANGE ASSEMBLY AND ELEVATION VIEWS
48. SLUICE GATE ASSEMBLY AND DETAILS
49. FLAP GATE MODIFICATIONS AND DETAILS
50. WARNING SIGN AND PILE CAP DETAILS
51.–55. TEMPORARY TRAFFIC CONTROL
56.–62. HIGHWAY GUARDRAILS
63.–75. SOIL BORING LOGS

NOTICE:

72 HOURS BEFORE DIGGING CALL 1-800-272-3020 TO LOCATE UTILITY LINES

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

		Date
Designed	Chris Wheat	06/01/16
Drawn	Aaron Harper	06/01/16
Checked	Leonard Harper	06/01/16
Approved	Lonnie Harper	06/01/16

PRELIMINARY

VICINITY MAP
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 1 of 28

Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No. BS240001.dwg
Drawing No. BS-24
5/31/16 12:09 PM
Sheet 1 of 75

0 2500' 5000' 7500'

HOR. SCALE

GENERAL NOTES:

1. The Natural Resources Conservation Service does not guarantee the completeness and accuracy of ownership shown. Apparent ownership has been obtained from maps in the Office of the Parish Clerk of Court or the Tax Assessor of Calcasieu Parish. Property lines shown are approximate in nature. A formal boundary survey of the area has not been performed for this project.

2. Known pipelines and utilities are shown on the plans. It is possible that some may exist that have not been shown. The contractor shall verify utility and pipeline locations prior to construction and notify the Contracting Officer of any discrepancies with the plan.

LANDOWNERS:

1. John Cecil Reon
2. Paul Anderson Reon
3. Carolyn Sue Reon, et al
4. Rayford Gordon Aguillard, et al
5. Janelle Marie Benoit Evans
6. Victoria A. Hogan, Brenda Abate
7. Brenda Abate, Eula Mae Benoit
8. William Logan Perkins, Howard T. Young
9. Linda Faye Cuvillier Caroll
10. Charles O. Noble, et al
11. Beverly Ann Credor Young
12. Ida J. Miller, Revocable Living Trust
13. Glenn Paul Miller, et al
14. Katherine Vidrine
15. Edward Joseph Wannage, et al
16. Frederick William Wannage, Jr.
17. Tyren Andera Wannage
18. Stephen Jordan

PROJECT DESCRIPTION:

The BS–24 Terracing and Marsh Creation Project South of Big Mar project is located in the Breton Sound region of Plaquemines Parish, approximately sixteen miles southeast of New Orleans, along the western shore of Lake Lery. The project consists of building shallow water earthen terraces and creating approximately 334 acres of marsh by hydraulically dredging and pumping spoil material into the containment areas shown in these drawings. The project site is located in environmentally sensitive area and the contractor shall make every effort not to disturb any areas outside the work limits shown in the drawings. Construction practices shall also conform to the requirements of the environmental permit(s), which is included with the contract documents for review. The contractor shall develop a dredging plan as outlined in the specifications, that details the means and methods proposed to complete the work. The plan shall be reviewed and approved by the NRCS prior to the commencement of dredging activities. The contractor shall be aware of the existing pipeline infrastructure and any other potential utilities that may impact the work areas. The Special Provisions section of the project specifications outlines specific requirements the contractor must adhere to when traversing or working near pipelines. Contact information for the various pipeline companies has also been included in the specifications. Any damage to existing infrastructure or wetland areas outside the work limits resulting from the contractor's construction practices, shall be repaired/restored at the contractor's expense.

PROJECT TASKS:

- Contractor shall perform a magnetometer survey of the project area prior to any construction activities.
- Contractor shall construct approximately 69,800 linear feet of shallow water earthen terraces using insitu material.
- Contractor shall construct approximately 24,780 linear feet of earthen containment dikes to accomodate the marsh creation activities.
- Approximately 2.6 million yards (in–place measure) of hydraulically dredged material shall be pumped into the specified marsh creation areas.
- Contractor shall construct a steel bulkhead to serve as a breach closure structure along the access route.
- A proposed access route is shown herein. Contractor may dredge to the limits shown to gain site access.

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905–1079 FAX: (337) 905–1076

		Date
Designed	Chris Wheat	06/01/16
Drawn	Aaron Harper	06/01/16
Checked	Leonard Harper	06/01/16
Approved	Lonnie Harper	06/01/16

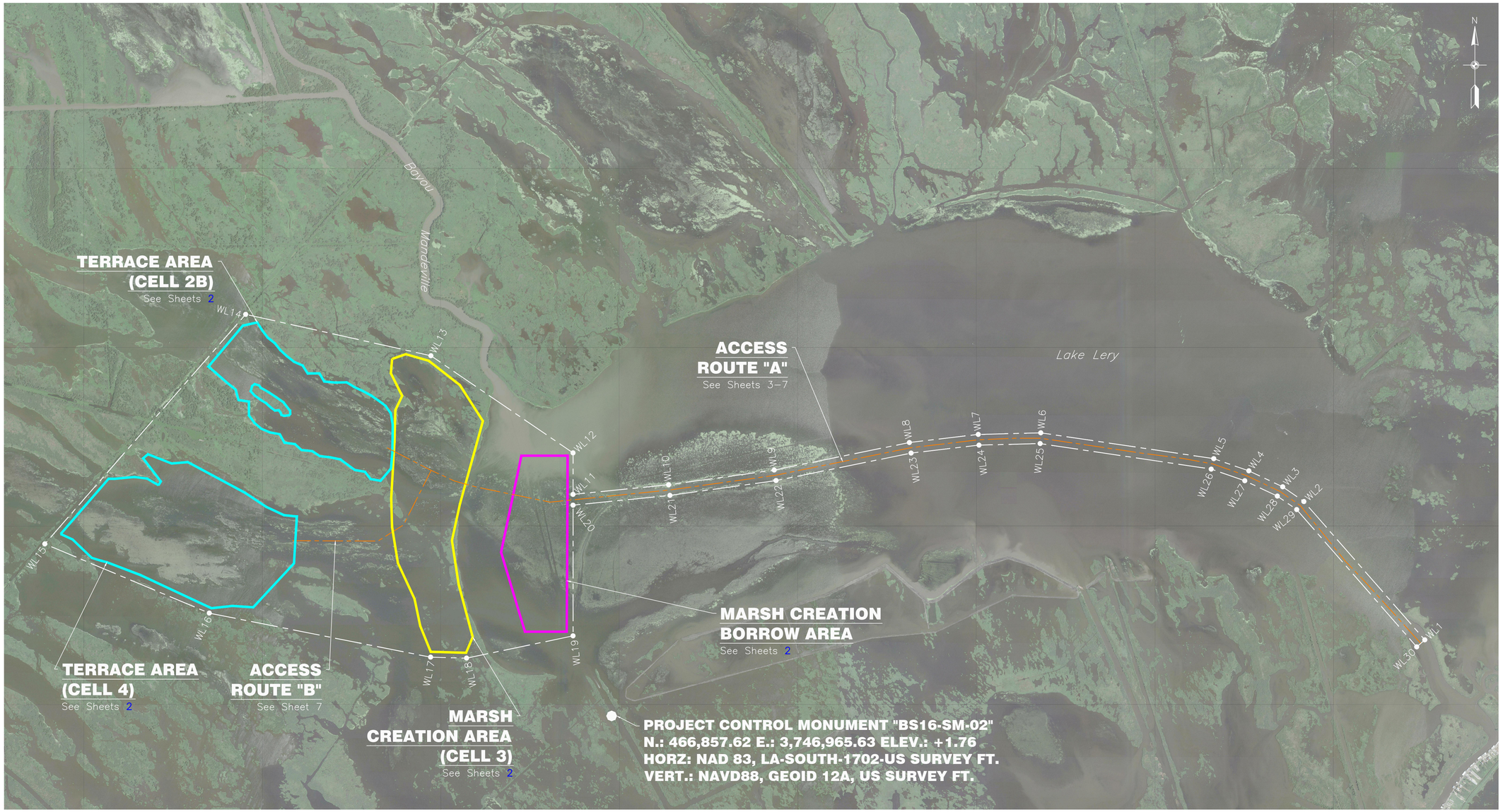
PRELIMINARY

LAND OWNERSHIP
BS–24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 2 of 28

Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.
2 BS240002 LO.dwg
Drawing No.
BS–24
6/2/16 10:56 AM
Sheet 2 of 75



GENERAL NOTES:

1. Known pipelines and utilities are shown on the plans. It is possible that some may exist that have not been shown. The contractor shall verify utility and pipeline locations prior to construction and notify the Contracting Officer of any discrepancies with the plan.
2. No dredging, anchoring, spudding, etc. shall be permitted within 50' of any pipeline.
3. Contractor shall not impact the areas outside the specified work limits.

0 1500' 3000' 4500'

HOR. SCALE

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905–1079 FAX: (337) 905–1076

WORK LIMITS DATA TABLE			WORK LIMITS DATA TABLE		
POINT NO.	NORTHING	EASTING	POINT NO.	NORTHING	EASTING
WL1	468988.53	3769738.05	WL16	469736.94	3735696.85
WL2	472863.22	3666352.08	WL17	468503.73	3741894.63
WL3	473275.29	3765758.44	WL18	468476.47	3742902.71
WL4	473722.30	3764810.73	WL19	469100.36	3745884.29
WL5	474063.67	3763828.33	WL20	472760.95	3745884.29
WL6	474787.03	3758984.06	WL21	473035.23	3748597.83
WL7	474742.42	3757232.75	WL22	473449.46	3751569.06
WL8	474515.51	3755303.30	WL23	474219.03	3755350.82
WL9	473745.29	3751518.38	WL24	474442.86	3757254.13
WL10	473333.14	3748562.02	WL25	474486.46	3758965.59
WL11	473062.47	3745884.29	WL26	473771.10	3763756.32
WL12	474225.24	3745884.29	WL27	473444.13	3764697.18
WL13	476946.52	3741903.88	WL28	473014.61	3765607.88
WL14	478106.02	3736716.59	WL29	472637.91	3766150.57
WL15	471675.25	3731092.31	WL30	468791.13	3769512.15

		Date
Designed	Chris Wheat	06/01/16
Drawn	Aaron Harper	06/01/16
Checked	Leonard Harper	06/01/16
Approved	Lonnie Harper	06/01/16

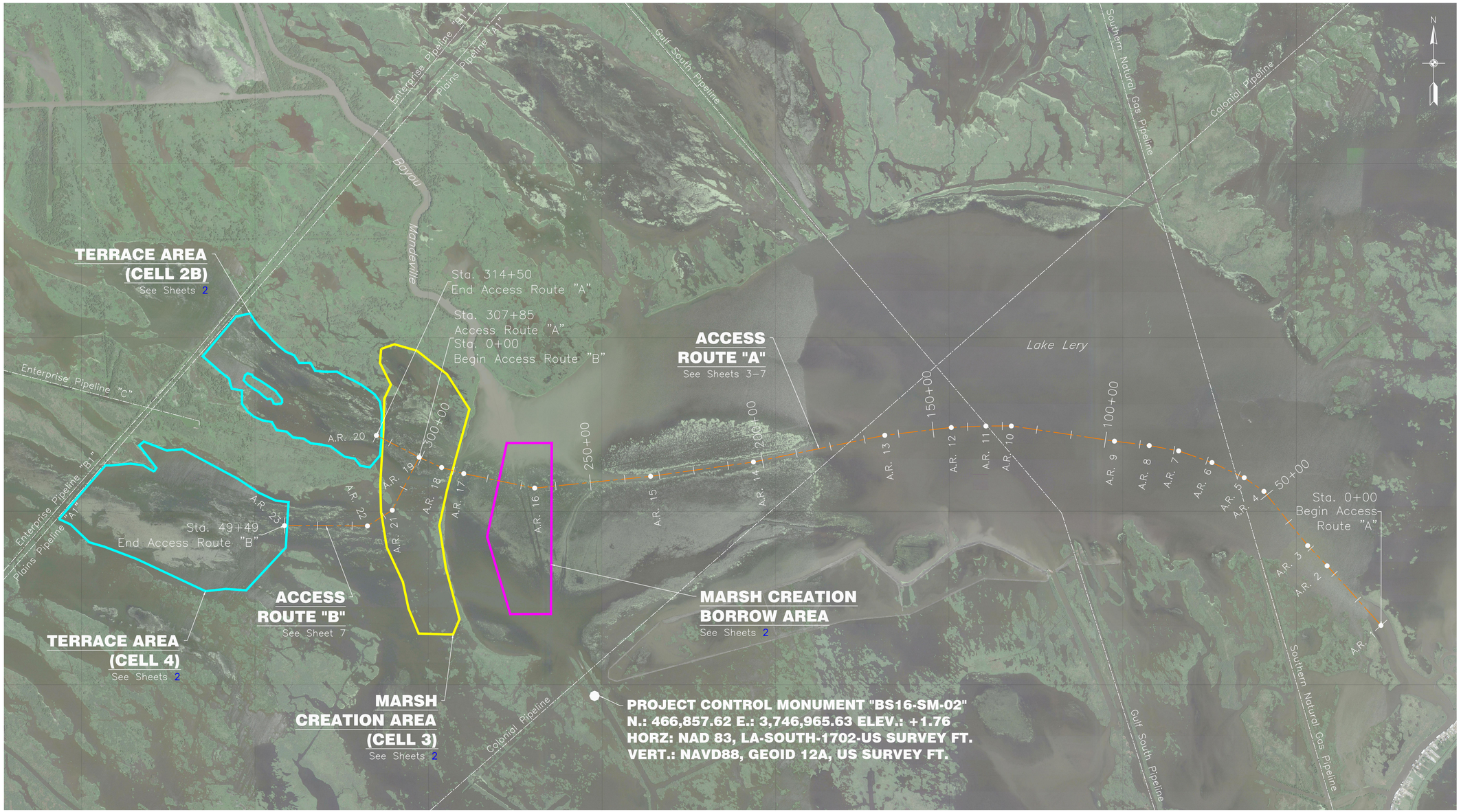
PRELIMINARY

WORK LIMITS
BS–24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 2 of 28

Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No. BS240002 WL.dwg
Drawing No. BS–24
5/31/16 1:57 PM
Sheet 2 of 75



GENERAL NOTES:

1. Known pipelines and utilities are shown on the plans. It is possible that some may exist that have not been shown. The contractor shall verify utility and pipeline locations prior to construction and notify the Contracting Officer of any discrepancies with the plan.
2. No dredging, anchoring, spudding, etc. shall be permitted within 50' of any pipeline.
3. Contractor shall not impact the areas outside the specified work limits.

0 1500' 3000' 4500'

HOR. SCALE

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905–1079 FAX: (337) 905–1076

ACCESS ROUTE DATA TABLE

POINT NO.	NORTHING	EASTING
A.R. 1	468889.83	3769625.10
A.R. 2	470607.59	3768073.69
A.R. 3	471190.01	3767514.86
A.R. 4	471970.29	3766883.09
A.R. 5	473144.95	3765683.16
A.R. 6	473583.20	3764753.96
A.R. 7	473917.38	3763792.32
A.R. 8	474072.09	3762947.31
A.R. 9	474198.84	3761945.01
A.R. 10	474636.75	3758974.82
A.R. 11	474635.42	3758240.16

ACCESS ROUTE DATA TABLE

POINT NO.	NORTHING	EASTING
A.R. 12	474592.64	3757243.44
A.R. 13	474367.27	3755327.06
A.R. 14	473597.37	3751543.72
A.R. 15	473184.18	3748579.93
A.R. 16	472846.55	3745239.64
A.R. 17	473263.37	3743198.08
A.R. 18	473439.37	3742561.05
A.R. 19	473736.00	3741911.73
A.R. 20	474364.82	3740685.25
A.R. 21	472208.58	3741138.10
A.R. 22	471755.46	3740422.01
A.R. 23	471765.57	3738032.19

		Date
Designed	Chris Wheat	06/01/16
Drawn	Aaron Harper	06/01/16
Checked	Leonard Harper	06/01/16
Approved	Lonnie Harper	06/01/16

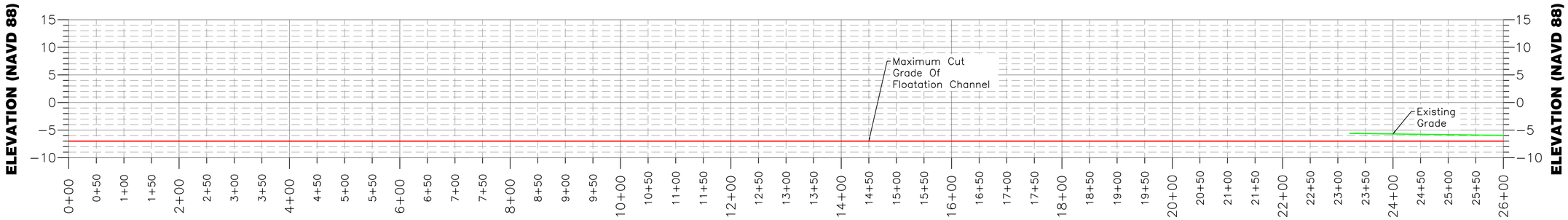
PRELIMINARY

PROJECT LOCATION
BS–24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 2 of 28

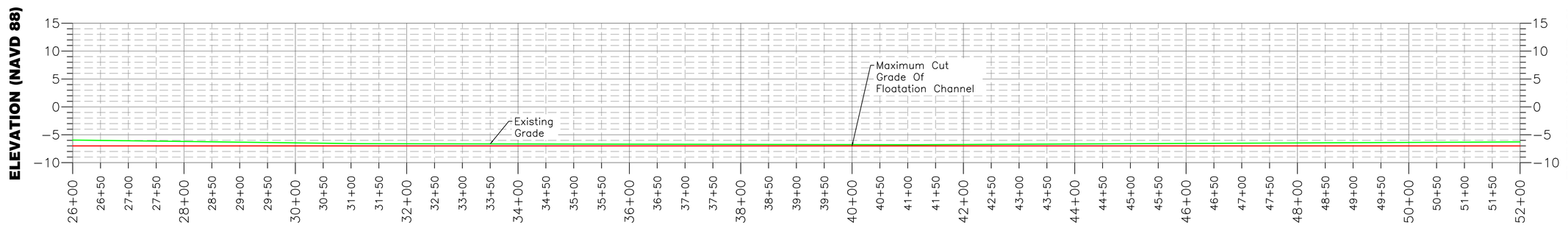
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

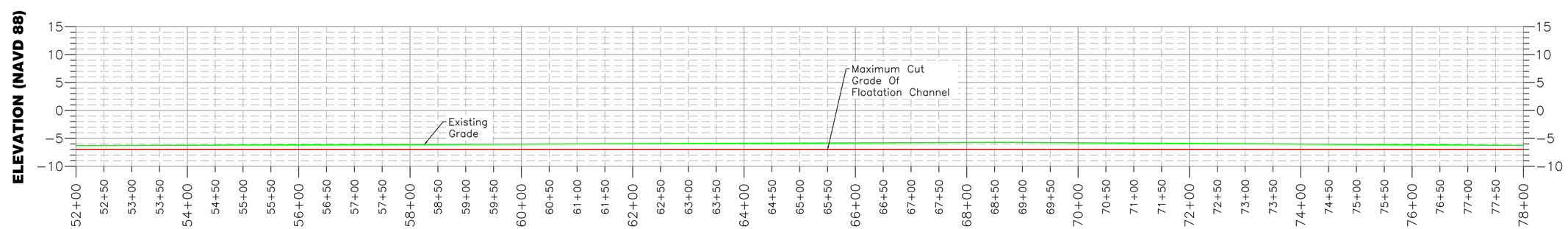
File No.
2 BS240002.dwg
Drawing No.
BS–24
5/31/16 1:55 PM
Sheet 2 of 75



ACCESS ROUTE "A" PROFILE



ACCESS ROUTE "A" PROFILE



ACCESS ROUTE "A" PROFILE

GENERAL NOTES:

1. Known pipelines and utilities are shown on the plans. It is possible that some may exist that have not been shown. The contractor shall verify utility and pipeline locations prior to construction and notify the Contracting Officer of any discrepancies with the plan.
2. No dredging, anchoring, spudding, etc. shall be permitted within 50' of any pipeline.
3. Access channel dredging shall be limited to the lines and grades shown. Contractor shall only remove the amount of material needed to provide adequate flotation for equipment necessary to complete the work.
4. Daily tidal fluctuations in the project are are minimal. Water surface elevations can range from −0.50' to +3.5' NAVD 88 and can remain at a particular elevation for an extended period of time. (i.e. days, weeks, etc.) The Louisiana Coastal Protection and Restoration Authority (CPRA) maintains a Coastwide Reference Monitoring System (CRMS Station 0117) in the project vicinity that monitors water levels, salinities, water temperature, etc. The historical water level data from the corresponding CRMS station can be accessed by visiting http://lacoast.gov/crms_viewer2/default.aspx#.

0 100' 200' 300'

HOR. SCALE

0 10' 20' 30'

VERT. SCALE

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905−1079 FAX: (337) 905−1076

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

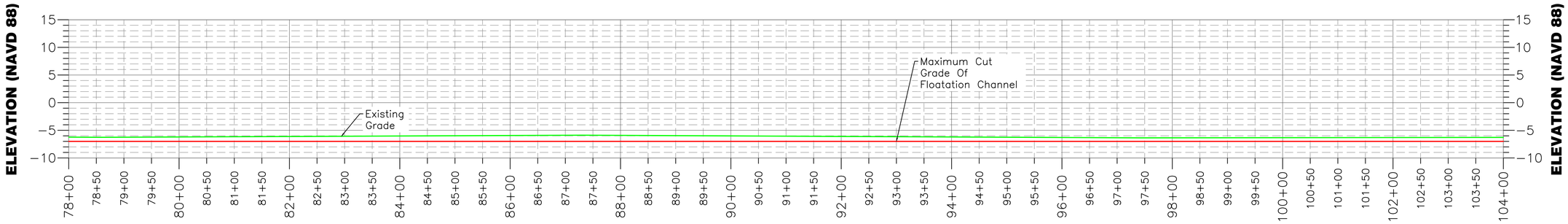
PRELIMINARY

ACCESS ROUTE "A" PROFILES
BS−24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

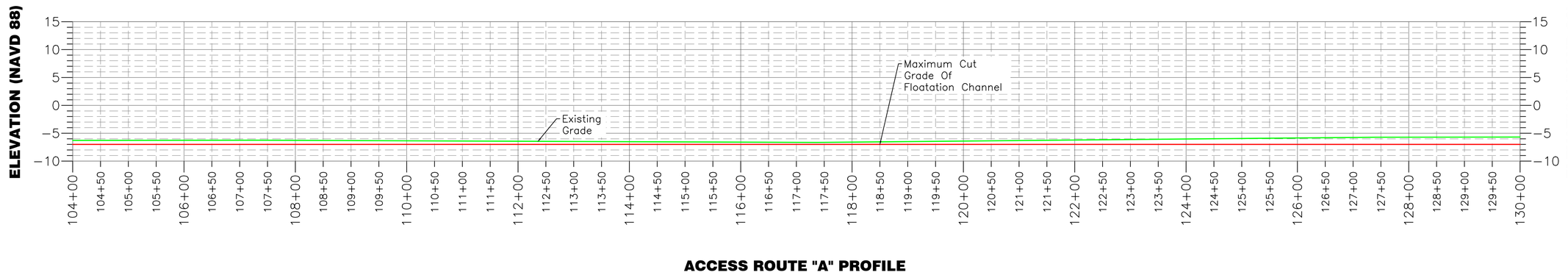
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

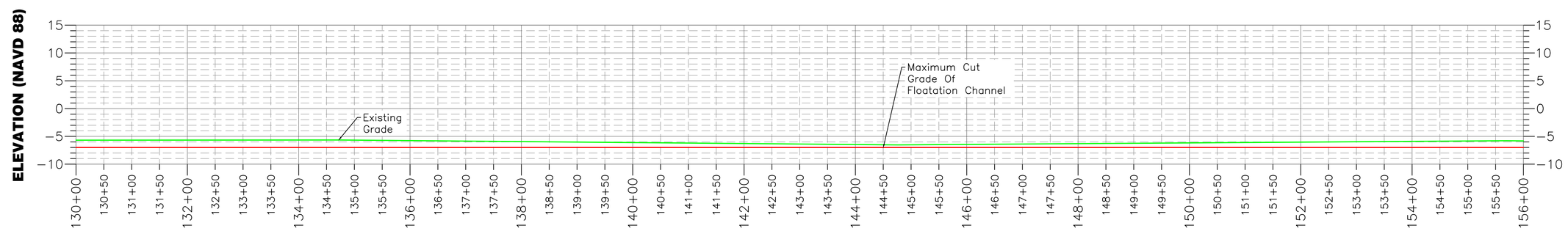
File No. BS240003 (APR 3 2016)
Drawing No. BS−24
5/31/16 11:55 AM
Sheet 11 of 75



ACCESS ROUTE "A" PROFILE



ACCESS ROUTE "A" PROFILE



ACCESS ROUTE "A" PROFILE

GENERAL NOTES:

1. Known pipelines and utilities are shown on the plans. It is possible that some may exist that have not been shown. The contractor shall verify utility and pipeline locations prior to construction and notify the Contracting Officer of any discrepancies with the plan.
2. No dredging, anchoring, spudding, etc. shall be permitted within 50' of any pipeline.
3. Access channel dredging shall be limited to the lines and grades shown. Contractor shall only remove the amount of material needed to provide adequate flotation for equipment necessary to complete the work.
4. Daily tidal fluctuations in the project are are minimal. Water surface elevations can range from −0.50' to +3.5' NAVD 88 and can remain at a particular elevation for an extended period of time. (i.e. days, weeks, etc.) The Louisiana Coastal Protection and Restoration Authority (CPRA) maintains a Coastwide Reference Monitoring System (CRMS Station 0117) in the project vicinity that monitors water levels, salinities, water temperature, etc. The historical water level data from the corresponding CRMS station can be accessed by visiting http://lacoast.gov/crms_viewer2/default.aspx#.

0 100' 200' 300'

HOR. SCALE

0 10' 20' 30'

VERT. SCALE

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905−1079 FAX: (337) 905−1076

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

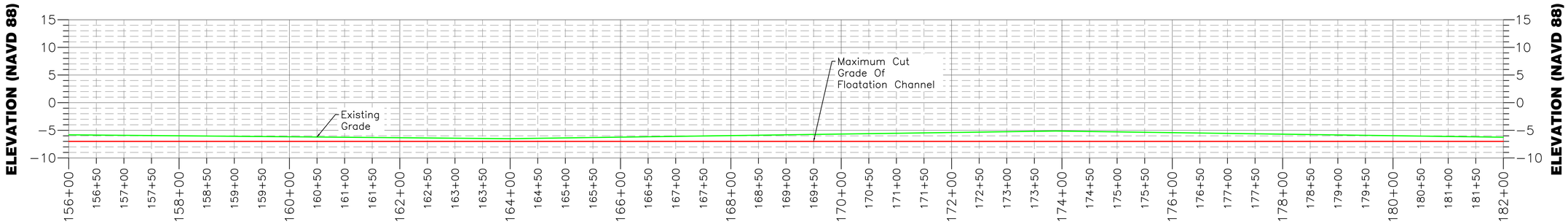
PRELIMINARY

ACCESS ROUTE "A" PROFILES
BS−24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

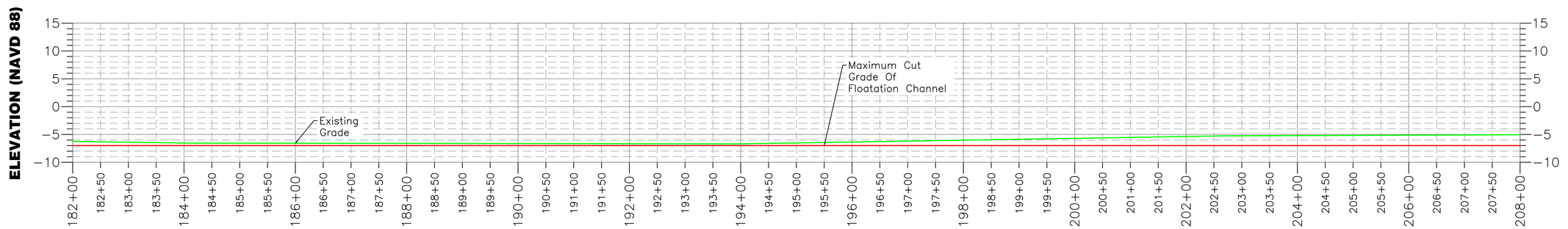
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

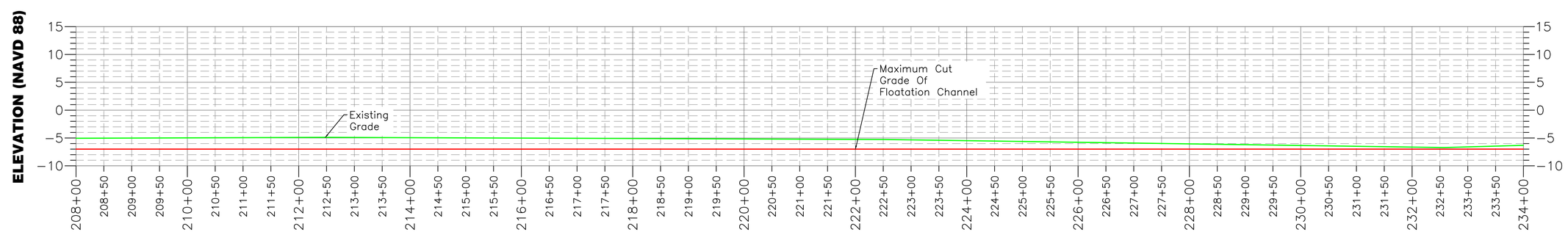
File No. *BS240003 (APR 3*
Drawing No. *BS−24*
5/31/16 11:55 AM
Sheet *11* of *75*



ACCESS ROUTE "A" PROFILE



ACCESS ROUTE "A" PROFILE



ACCESS ROUTE "A" PROFILE

GENERAL NOTES:

1. Known pipelines and utilities are shown on the plans. It is possible that some may exist that have not been shown. The contractor shall verify utility and pipeline locations prior to construction and notify the Contracting Officer of any discrepancies with the plan.
2. No dredging, anchoring, spudding, etc. shall be permitted within 50' of any pipeline.
3. Access channel dredging shall be limited to the lines and grades shown. Contractor shall only remove the amount of material needed to provide adequate flotation for equipment necessary to complete the work.
4. Daily tidal fluctuations in the project are are minimal. Water surface elevations can range from −0.50' to +3.5' NAVD 88 and can remain at a particular elevation for an extended period of time. (i.e. days, weeks, etc.) The Louisiana Coastal Protection and Restoration Authority (CPRA) maintains a Coastwide Reference Monitoring System (CRMS Station 0117) in the project vicinity that monitors water levels, salinities, water temperature, etc. The historical water level data from the corresponding CRMS station can be accessed by visiting http://lacoast.gov/crms_viewer2/default.aspx#.

0 100' 200' 300'

HOR. SCALE

0 10' 20' 30'

VERT. SCALE

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905−1079 FAX: (337) 905−1076

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

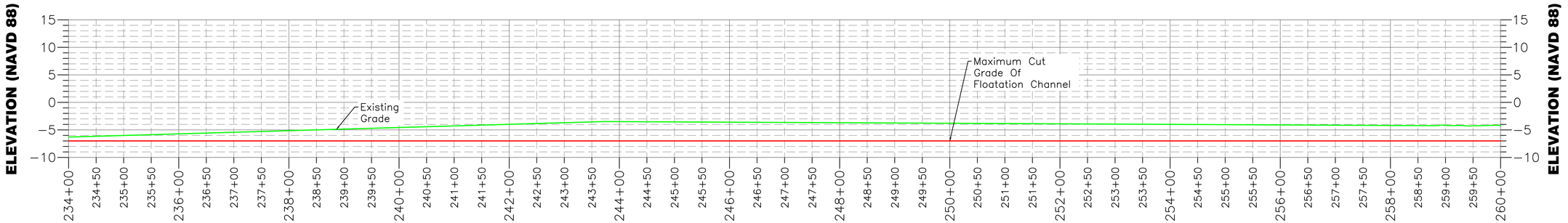
PRELIMINARY

ACCESS ROUTE "A" PROFILES
BS−24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

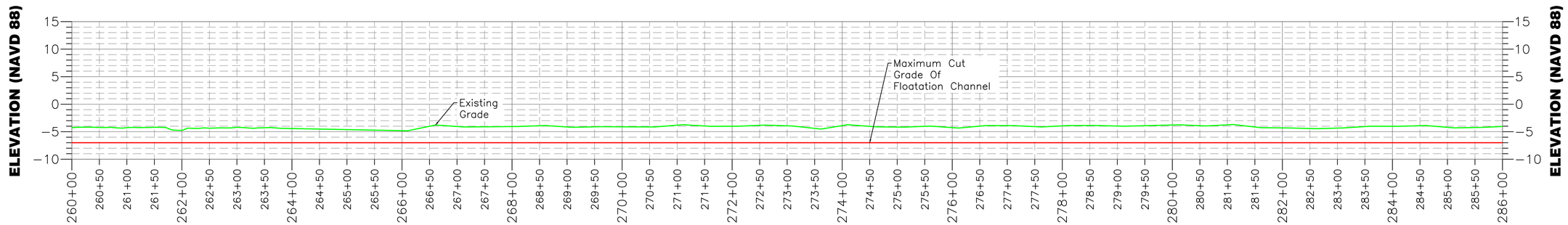
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

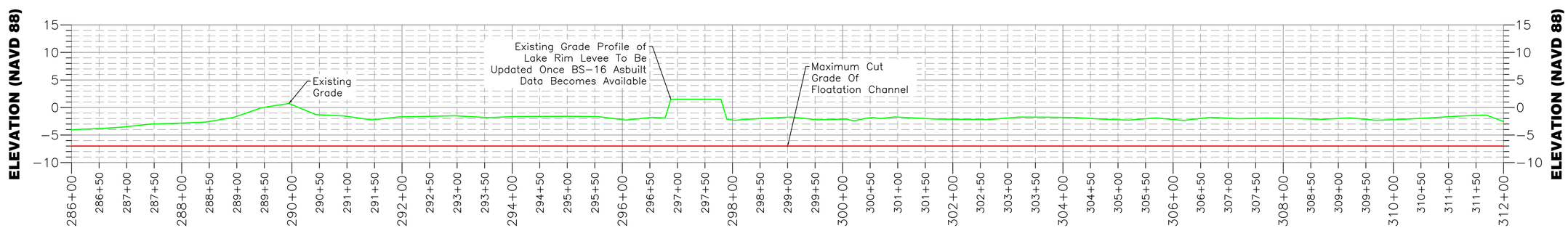
File No. BS240003 (APR 3 2016)
Drawing No. BS−24
5/31/16 11:55 AM
Sheet 11 of 75



ACCESS ROUTE "A" PROFILE



ACCESS ROUTE "A" PROFILE



ACCESS ROUTE "A" PROFILE

GENERAL NOTES:

1. Known pipelines and utilities are shown on the plans. It is possible that some may exist that have not been shown. The contractor shall verify utility and pipeline locations prior to construction and notify the Contracting Officer of any discrepancies with the plan.
2. No dredging, anchoring, spudding, etc. shall be permitted within 50' of any pipeline.
3. Access channel dredging shall be limited to the lines and grades shown. Contractor shall only remove the amount of material needed to provide adequate flotation for equipment necessary to complete the work.
4. Daily tidal fluctuations in the project are are minimal. Water surface elevations can range from −0.50' to +3.5' NAVD 88 and can remain at a particular elevation for an extended period of time. (i.e. days, weeks, etc.) The Louisiana Coastal Protection and Restoration Authority (CPRA) maintains a Coastwide Reference Monitoring System (CRMS Station 0117) in the project vicinity that monitors water levels, salinities, water temperature, etc. The historical water level data from the corresponding CRMS station can be accessed by visiting http://lacoast.gov/crms_viewer2/default.aspx#.

0 100' 200' 300'

HOR. SCALE

0 10' 20' 30'

VERT. SCALE

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

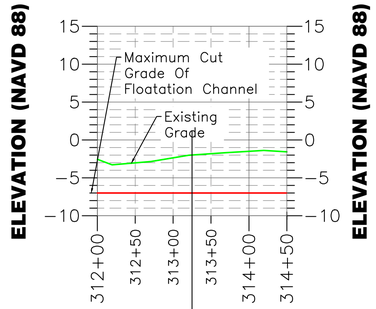
PRELIMINARY

Plaquemines Parish, Louisiana

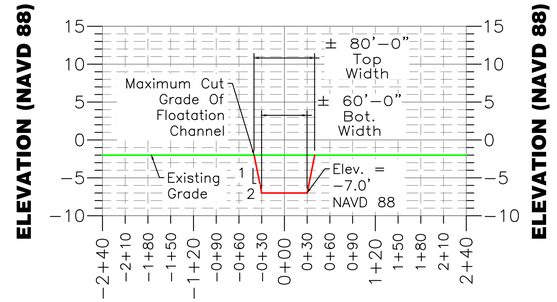
ACCESS ROUTE "A" PROFILES
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

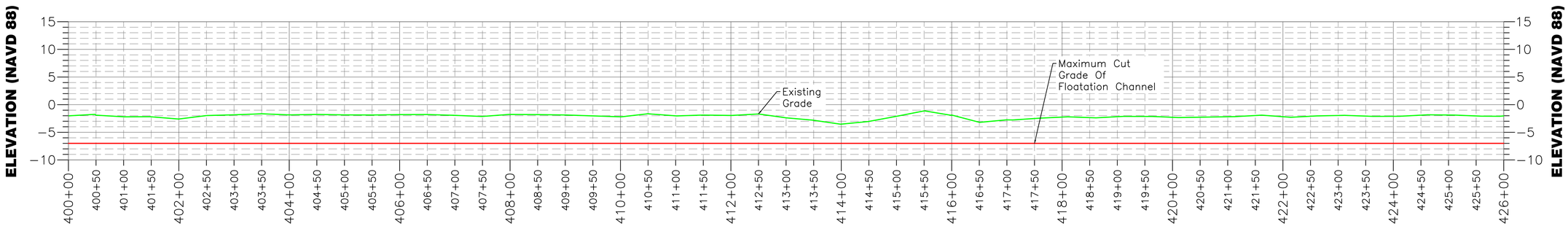
File No.
BS240003 (APR 3)
Drawing No.
BS-24
5/31/16 11:55 AM
Sheet *11* of *75*



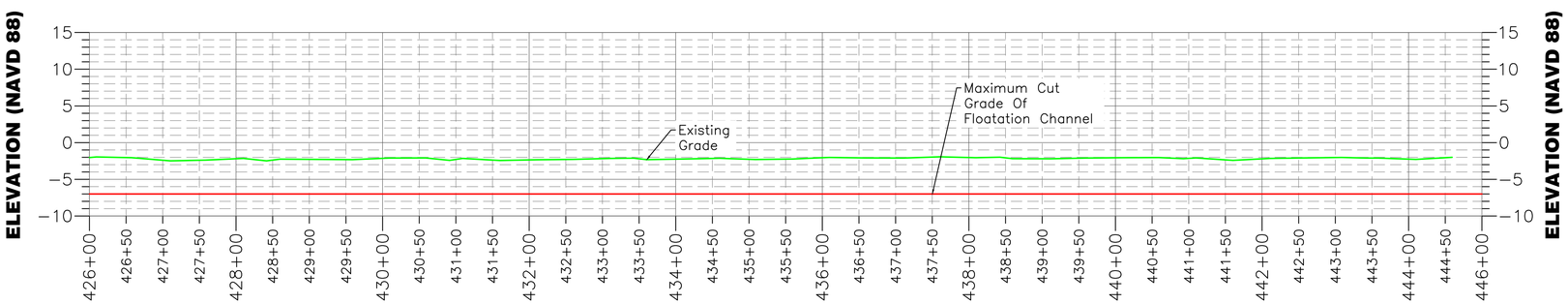
ACCESS ROUTE "A" PROFILE



TYPICAL ACCESS ROUTE CROSS SECTION



ACCESS ROUTE "B" PROFILE



ACCESS ROUTE "B" PROFILE

GENERAL NOTES:

1. Known pipelines and utilities are shown on the plans. It is possible that some may exist that have not been shown. The contractor shall verify utility and pipeline locations prior to construction and notify the Contracting Officer of any discrepancies with the plan.
2. No dredging, anchoring, spudding, etc. shall be permitted within 50' of any pipeline.
3. Access channel dredging shall be limited to the lines and grades shown. Contractor shall only remove the amount of material needed to provide adequate flotation for equipment necessary to complete the work.
4. Daily tidal fluctuations in the project are are minimal. Water surface elevations can range from –0.50' to +3.5' NAVD 88 and can remain at a particular elevation for an extended period of time. (i.e. days, weeks, etc.) The Louisiana Coastal Protection and Restoration Authority (CPRA) maintains a Coastwide Reference Monitoring System (CRMS Station 0117) in the project vicinity that monitors water levels, salinities, water temperature, etc. The historical water level data from the corresponding CRMS station can be accessed by visiting http://lacoast.gov/crms_viewer2/default.aspx#.

0 100' 200' 300'

HOR. SCALE

0 10' 20' 30'

VERT. SCALE

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905–1079 FAX: (337) 905–1076

NOTICE:

72 HOURS BEFORE DIGGING CALL 1-800-272-3020 TO LOCATE UTILITY LINES

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

PRELIMINARY

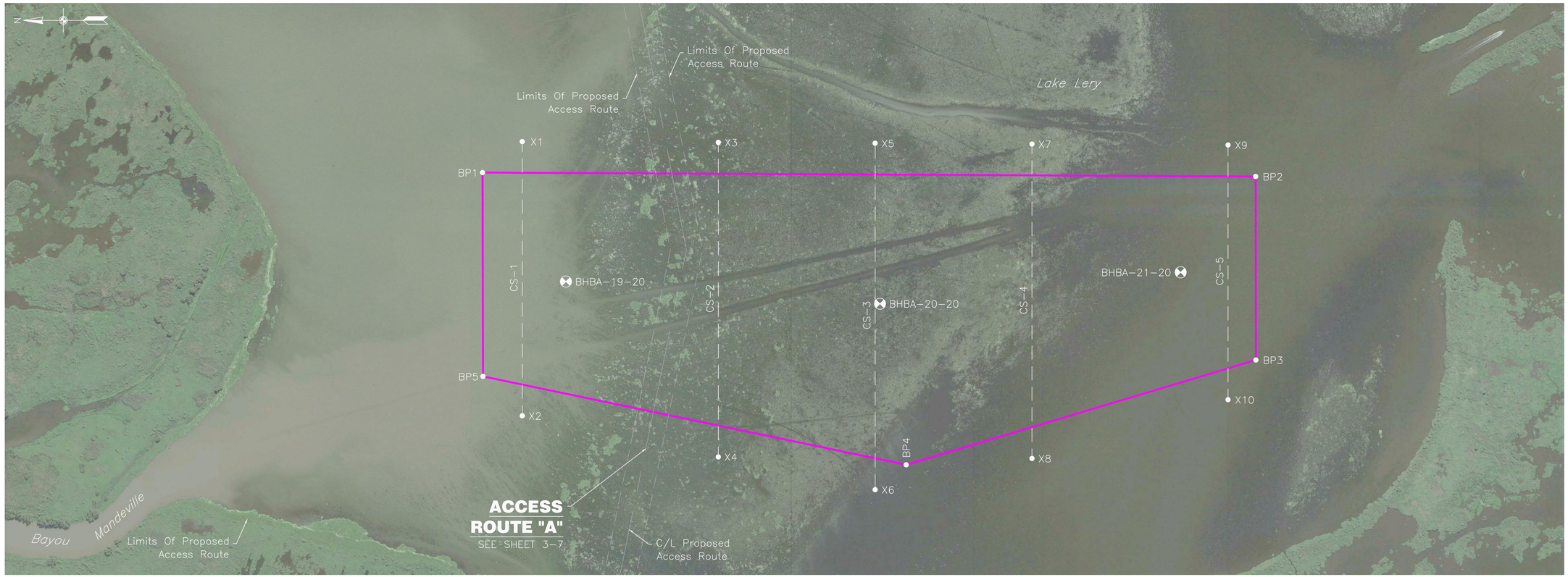
ACCESS ROUTE "A" & "B" PROFILES
BS–24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR

Page 11 of 28

Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No. BS240003 (APR 3 2016)
Drawing No. BS–24
5/31/16 11:55 AM
Sheet 11 of 75



GENERAL NOTES:

1. Known pipelines and utilities are shown on the plans. It is possible that some may exist that have not been shown. The contractor shall verify utility and pipeline locations prior to construction and notify the Contracting Officer of any discrepancies with the plan.
2. No dredging, anchoring, spudding, etc. shall be permitted within 50' of any pipeline.
3. The borrow area shown shall be the primary source for fill material used to construct the marsh creation area.
4. Dredge depth shall not exceed a bottom elevation of −15.0 feet NAVD 88 with side slopes of 2H:1V.

0 100' 200' 300'

HOR. SCALE

NOTICE:

72 HOURS BEFORE DIGGING CALL 1-800-272-3020 TO LOCATE UTILITY LINES

MARSH CREATION BORROW AREA DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
BP1	474146.09	3745734.29	P.I.
BP2	469216.99	3745709.27	P.I.
BP3	469215.66	3744538.23	P.I.
BP4	471445.20	3743869.56	P.I.
BP5	474143.11	3744433.70	P.I.

MARSH CREATION BORROW AREA SOIL BORING DATA TABLE

POINT NO.	NORTHING	EASTING
BHBA−19−20	473614.38	3745038.64
BHBA−20−20	471612.32	3744896.79
BHBA−21−20	469695.45	3745097.51

MARSH CREATION BORROW AREA CROSS SECTION DATA TABLE

POINT NO.	NORTHING	EASTING
X1	473893.00	3745932.01
X2	473893.00	3744182.40
X3	472643.00	3745926.66
X4	472643.00	3743920.02
X5	471643.00	3745921.58
X6	471643.00	3743710.92
X7	470643.00	3745916.31
X8	470643.00	3743910.15
X9	469393.00	3745910.16
X10	469393.00	3744285.04

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905−1079 FAX: (337) 905−1076

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lennie Harper	04/01/16

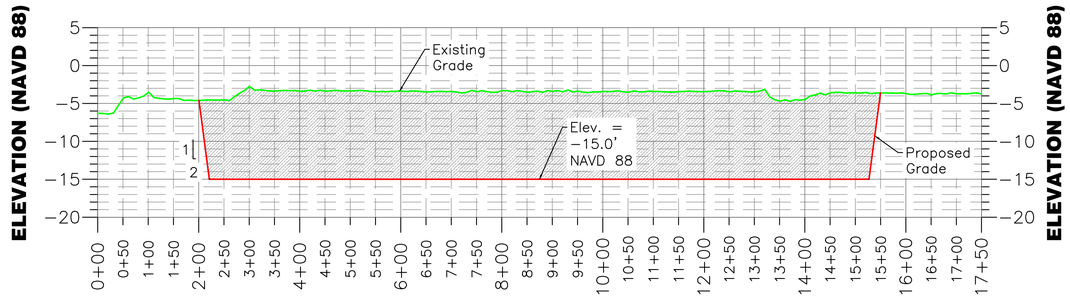
PRELIMINARY

MARSH CREATION BORROW AREA
BS−24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR

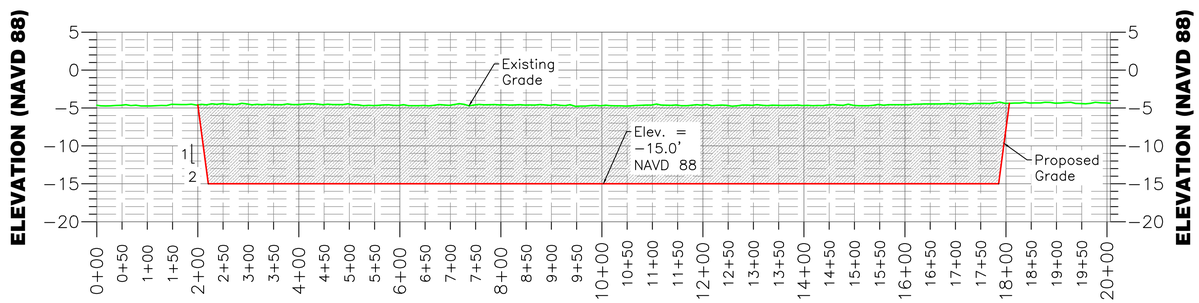
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

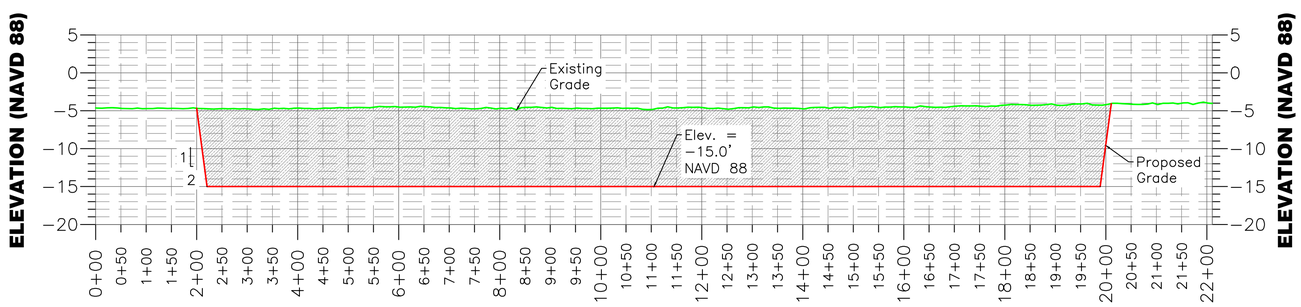
File No. 4 BS240004.dwg
Drawing No. BS−24
5/31/16 12:05 PM
Sheet 11 of 75



CROSS SECTION "CS-1"



CROSS SECTION "CS-2"



CROSS SECTION "CS-3"

0 150' 300' 450'

HOR. SCALE

0 10' 20' 30'

VERT. SCALE

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

GENERAL NOTES:

1. Known pipelines and utilities are shown on the plans. It is possible that some may exist that have not been shown. The contractor shall verify utility and pipeline locations prior to construction and notify the Contracting Officer of any discrepancies with the plan.
2. No dredging, anchoring, spudding, etc. shall be permitted within 50' of any pipeline.
3. The borrow area shown shall be the primary source for fill material used to construct the marsh creation area.
4. Dredge depth shall not exceed a bottom elevation of −15.0 feet NAVD 88 with side slopes of 2H:1V.
5. Daily tidal fluctuations in the project are are minimal. Water surface elevations can range from −0.50' to +3.5' NAVD 88 and can remain at a particular elevation for an extended period of time. (i.e. days, weeks, etc.) The Louisiana Coastal Protection and Restoration Authority (CPRA) maintains a Coastwide Reference Monitoring System (CRMS Station 0117) in the project vicinity that monitors water levels, salinities, water temperature, etc. The historical water level data from the corresponding CRMS station can be accessed by visiting http://lacoast.gov/crms_viewer2/default.aspx#.

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

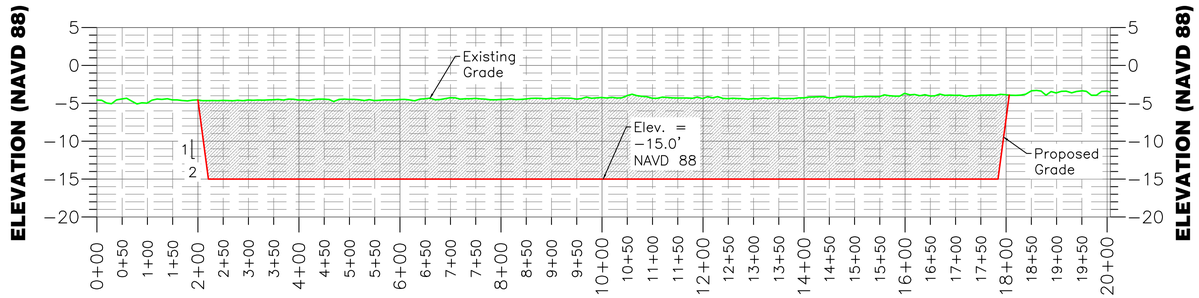
PRELIMINARY

MARSH CREATION BORROW AREA CROSS SECTIONS
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

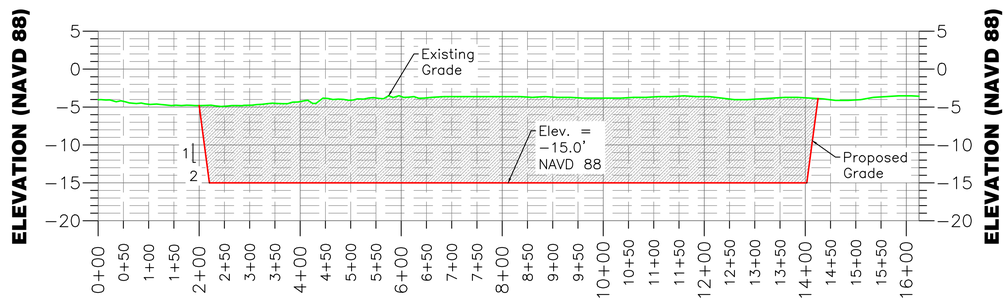
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No. *BS240004.dwg*
Drawing No. *BS-24*
5/31/16 12:05 PM
Sheet *11* of *75*



CROSS SECTION "CS-4"



CROSS SECTION "CS-5"

0 150' 300' 450'

HOR. SCALE

0 10' 20' 30'

VERT. SCALE

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

GENERAL NOTES:

1. Known pipelines and utilities are shown on the plans. It is possible that some may exist that have not been shown. The contractor shall verify utility and pipeline locations prior to construction and notify the Contracting Officer of any discrepancies with the plan.
2. No dredging, anchoring, spudding, etc. shall be permitted within 50' of any pipeline.
3. The borrow area shown shall be the primary source for fill material used to construct the marsh creation area.
4. Dredge depth shall not exceed a bottom elevation of −15.0 feet NAVD 88 with side slopes of 2H:1V.
5. Daily tidal fluctuations in the project are are minimal. Water surface elevations can range from −0.50' to +3.5' NAVD 88 and can remain at a particular elevation for an extended period of time. (i.e. days, weeks, etc.) The Louisiana Coastal Protection and Restoration Authority (CPRA) maintains a Coastwide Reference Monitoring System (CRMS Station 0117) in the project vicinity that monitors water levels, salinities, water temperature, etc. The historical water level data from the corresponding CRMS station can be accessed by visiting http://lacoast.gov/crms_viewer2/default.aspx#.

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

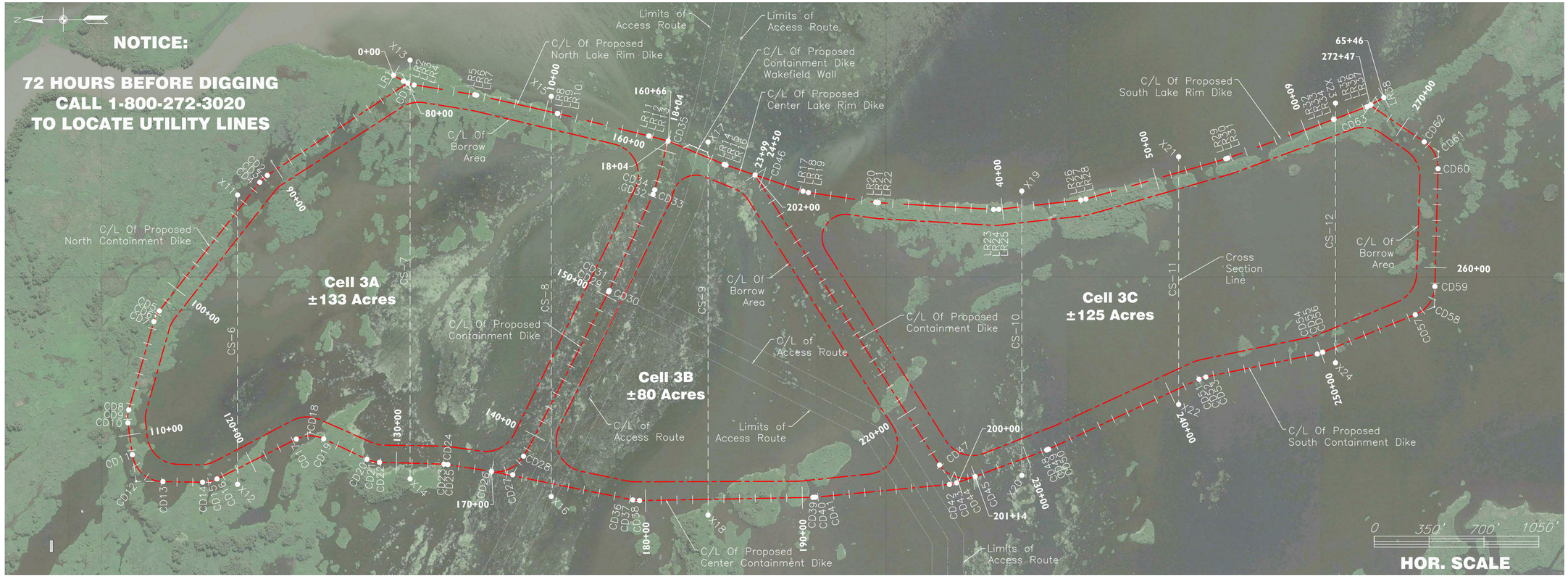
PRELIMINARY

MARSH CREATION BORROW AREA CROSS SECTIONS
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No. *BS240004.dwg*
Drawing No. *BS-24*
5/31/16 12:05 PM
Sheet *11* of *75*



LAKE RIM CONTAINMENT DIKE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
LR1	475287.79	3743373.87	
LR2	475225.18	3743337.46	P.C. – 250'
LR3	475193.14	3743318.83	P.I.
LR4	475156.56	3743312.92	P.T. – 250'
LR5	474770.34	3743250.48	P.C. – 250'
LR6	474764.16	3743249.48	P.I.
LR7	474758.05	3743248.09	P.T. – 250'
LR8	474244.22	3743131.63	P.C. – 250'
LR9	474242.41	3743131.22	P.I.
LR10	474240.60	3743130.77	P.T. – 250'
LR11	473662.49	3742988.39	P.C. – 250'
LR12	473660.71	3742987.95	P.I.
LR13	473658.94	3742987.48	P.T. – 250'
LR14	473181.82	3742806.90	P.C. – 250'
LR15	473175.46	3742804.37	P.I.
LR16	473169.02	3742802.07	P.T. – 250'
LR17	472678.89	3742636.11	P.C. – 250'
LR18	472661.72	3742630.30	P.I.
LR19	472643.79	3742627.66	P.T. – 250'

LAKE RIM CONTAINMENT DIKE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
LR20	472214.58	3742564.68	P.C. – 250'
LR21	472205.96	3742563.41	P.I.
LR22	472197.27	3742562.90	P.T. – 250'
LR23	471464.07	3742519.83	P.C. – 250'
LR24	471446.99	3742518.83	P.I.
LR25	471429.98	3742520.74	P.T. – 250'
LR26	470907.80	3742579.51	P.C. – 250'
LR27	470891.10	3742581.39	P.I.
LR28	470874.94	3742586.03	P.T. – 250'
LR29	469981.99	3742842.57	P.C. – 250'
LR30	469975.22	3742844.65	P.I.
LR31	469968.53	3742846.96	P.T. – 250'
LR32	469294.89	3743093.31	P.C. – 250'
LR33	469293.41	3743093.86	P.I.
LR34	469291.94	3743094.42	P.T. – 250'
LR35	469083.46	3743174.40	P.C. – 250'
LR36	469069.97	3743179.57	P.I.
LR37	469057.36	3743186.63	P.T. – 250'
LR38	468975.34	3743232.57	

MARSH CREATION CROSS SECT. DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
X11	476283.79	3742612.04	
X12	476283.79	3740768.35	
X13	475183.79	3743471.54	
X14	475183.79	3740803.04	
X15	474283.79	3743240.34	
X16	474283.79	3740690.64	
X17	473283.79	3742949.34	

MARSH CREATION CROSS SECT. DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
X18	473283.79	3740572.85	
X19	471283.79	3742637.20	
X20	471283.79	3740825.23	
X21	470283.79	3742855.87	
X22	470283.79	3741277.51	
X23	469283.79	3743197.54	
X24	469283.79	3741543.01	

CONTAINMENT DIKE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
CD1	475198.73	3743325.31	
CD2	476094.47	3742737.26	P.C. – 250'
CD3	476122.03	3742719.17	P.I.
CD4	476142.33	3742693.20	P.T. – 250'
CD5	476782.57	3741873.61	P.C. – 250'
CD6	476806.61	3741842.83	P.I.
CD7	476817.30	3741805.27	P.T. – 250'
CD8	476977.53	3741242.75	P.C. – 250'
CD9	476989.17	3741201.87	P.I.
CD10	476983.19	3741159.79	P.T. – 250'
CD11	476954.36	3740957.18	P.C. – 250'
CD12	476930.29	3740787.92	P.I.
CD13	476759.35	3740785.37	P.T. – 250'
CD14	476507.11	3740781.59	P.C. – 250'
CD15	476458.19	3740780.86	P.I.
CD16	476414.46	3740802.79	P.T. – 250'
CD17	475909.49	3741056.06	P.C. – 250'
CD18	475822.42	3741099.73	P.I.
CD19	475734.36	3741058.11	P.T. – 250'
CD20	475458.53	3740927.74	P.C. – 250'
CD21	475420.67	3740909.85	P.I.
CD22	475378.82	3740908.64	P.T. – 250'
CD23	474967.84	3740896.80	P.C. – 250'
CD24	474955.07	3740896.44	P.I.
CD25	474942.45	3740894.45	P.T. – 250'
CD26	474664.59	3740850.65	P.C. – 250'
CD27	474529.32	3740829.33	P.I.
CD28	474460.52	3740947.73	P.T. – 250'
CD29	473918.31	3741994.89	P.C. – 250'
CD30	473916.24	3741998.93	P.I.
CD31	473914.35	3742003.05	P.T. – 250'

CONTAINMENT DIKE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
CD32	473634.82	3742615.31	
CD33	473628.26	3742629.69	P.C. – 250'
CD34	473624.03	3742644.92	P.I.
CD35	473539.47	3742949.52	P.T. – 250'
CD36	473763.87	3740668.69	P.C. – 250'
CD37	473742.44	3740664.36	P.I.
CD38	473720.57	3740664.77	P.T. – 250'
CD39	472615.41	3740685.17	P.C. – 250'
CD40	472607.71	3740685.31	P.I.
CD41	472600.05	3740686.05	P.T. – 250'
CD42	471745.41	3740767.83	P.C. – 250'
CD43	471722.06	3740770.07	P.I.
CD44	471699.86	3740777.64	P.T. – 250'
CD45	471581.09	3740818.18	
CD46	472984.27	3742739.51	
CD47	471808.54	3740891.36	
CD48	471125.03	3740986.97	P.C. – 250'
CD49	471119.10	3740989.39	P.I.
CD50	471113.24	3740991.99	P.T. – 250'
CD51	470154.20	3741437.72	P.C. – 250'
CD52	470133.18	3741447.49	P.I.
CD53	470110.48	3741452.20	P.T. – 250'
CD54	469399.95	3741599.40	P.C. – 250'
CD55	469382.18	3741603.08	P.I.
CD56	469365.35	3741609.90	P.T. – 250'
CD57	468775.08	3741849.33	P.C. – 250'
CD58	468653.87	3741898.49	P.I.
CD59	468650.33	3742029.25	P.T. – 250'
CD60	468630.04	3742779.37	P.C. – 250'
CD61	468627.07	3742889.00	P.I.
CD62	468717.92	3742950.44	P.T. – 250'
CD63	469062.70	3743183.64	

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905–1079 FAX: (337) 905–1076

		Date
Designed	Chris Wheat	06/01/16
Drawn	Aaron Harper	06/01/16
Checked	Leonard Harper	06/01/16
Approved	Lonnie Harper	06/01/16

PRELIMINARY

MARSH CREATION AREA (CELL 3)
BS–24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.
5 BS240005
PLAN.dwg
Drawing No.
BS–24
5/31/16 12:03 PM
Sheet 11 of 75

GENERAL NOTES:

1. Containment dike borrow areas shall be located within the marsh creation areas as shown.
2. Contractor shall maintain a 35 foot wide berm between all dike toes and borrow area tops. No construction equipment shall be allowed on the berm within 15 feet of the toe of containment dikes.
3. Staff gauges shall be located at the locations shown above. Top elevation of the staff gauge post shall be set at elevation +5.5 feet NAVD 88.
4. Marsh creation cells shall be filled to an elevation of +3.25 NAVD 88 with a tolerance of +0.5 feet using hydraulically dredge spoil material from the marsh creation borrow area.
5. Containment dikes shall be constructed along the alignments shown above. Dikes shall have a crest elevation of +5.25 feet NAVD 88 and a crest width of 5 feet.
6. Containment dike along the lake rim shall have side slopes of 3H:1V, dikes in the interior marsh shall have side slopes of 5H:1V.
7. If is recommended that all dikes be constructed with a minimum of two lifts.
8. Contractor shall maintain containment dikes throughout the duration of the project. Dikes shall be inspected routinely and any deficiencies found shall be corrected immediately.

LAKE RIM CONTAINMENT DIKE DATA TABLE

POINT NO.	NORTHING	EASTING
SG-1	476643.49	3741260.42
SG-2	476539.03	3741887.29
SG-3	475875.80	3742251.35
SG-4	475212.56	3742615.41
SG-5	474549.32	3742979.47
SG-6	475980.26	3741624.48
SG-7	475317.02	3741988.54
SG-8	474653.78	3742352.60
SG-9	473990.54	3742716.66
SG-10	475421.48	3741361.66
SG-11	474758.24	3742988.39
SG-12	474095.00	3742089.78
SG-13	474862.70	3741098.85
SG-14	473642.54	3740954.61
SG-15	473538.08	3741581.48

MARSH CREATION SOIL BORING DATA TABLE

POINT NO.	NORTHING	EASTING
BHMC-01-30	476347.96	3741458.28
BHMC-02-30	474340.17	3741102.21
BHMC-03-30	470812.50	3741424.46

LAKE RIM CONTAINMENT DIKE DATA TABLE

POINT NO.	NORTHING	EASTING
SG-16	473433.62	3742208.36
SG-17	472874.84	3741945.54
SG-18	472979.30	3741318.67
SG-19	472420.52	3741055.85
SG-20	472218.46	3742220.39
SG-21	471659.68	3741957.56
SG-22	470996.44	3742321.64
SG-23	471764.14	3741330.70
SG-24	471100.90	3741694.76
SG-25	470437.66	3742058.82
SG-26	469774.43	3742422.88
SG-27	469111.19	3742786.94
SG-28	469878.89	3741796.01
SG-29	469215.65	3742160.07

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

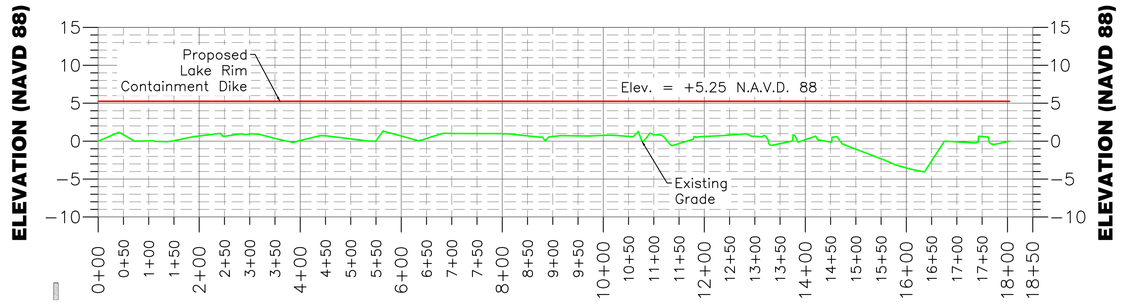
PRELIMINARY

MARSH CREATION AREA (CELL 3) SOIL BORING & STAFF GAUGE LOCATIONS
BS-24 TERRACING & MARSH CREATION SOUTH OF BIG MAR

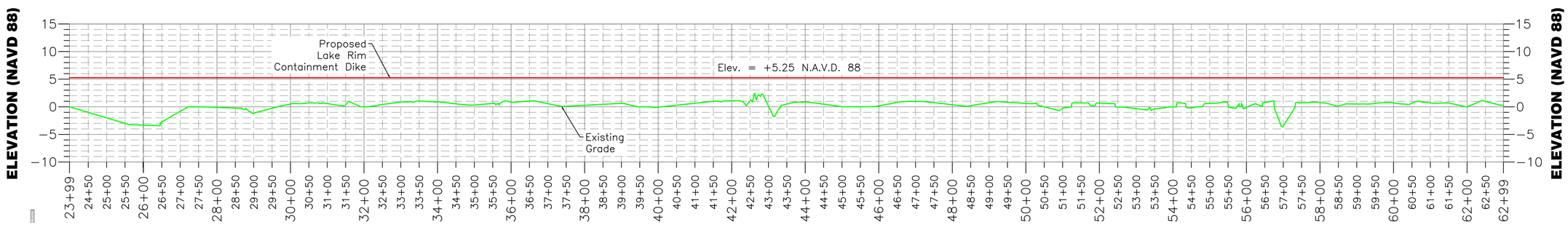
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

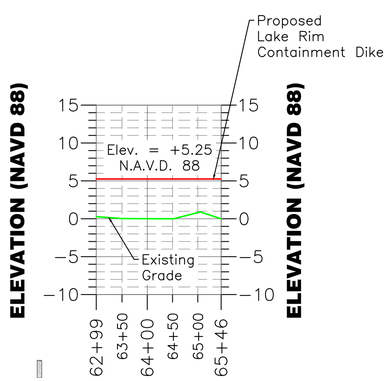
File No. 5 BS240005 PLAN.dwg
Drawing No. BS-24
5/31/16 12:03 PM



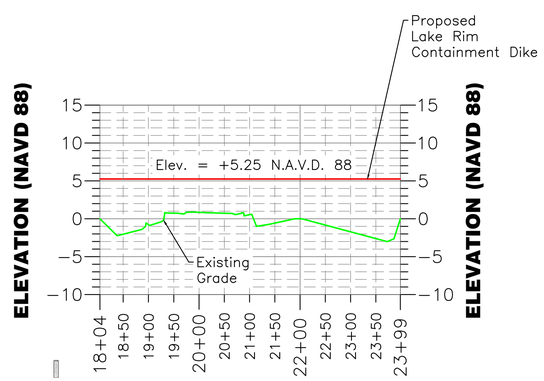
NORTH LAKE RIM CONTAINMENT DIKE (CELL 3A) PROFILE



SOUTH LAKE RIM CONTAINMENT DIKE (CELL 3C) PROFILE



SOUTH LAKE RIM CONTAINMENT DIKE (CELL 3C) PROFILE



CENTRAL LAKE RIM CONTAINMENT DIKE (CELL 3B) PROFILE

0 100' 200' 300'

HOR. SCALE

0 10' 20' 30'

VERT. SCALE

GENERAL NOTES:

1. Containment dike borrow areas shall be located within the marsh creation areas as shown.
2. Contractor shall maintain a 35 foot wide berm between all dike toes and borrow area tops. No construction equipment shall be allowed on the berm within 15 feet of the toe of containment dikes.
3. Staff gauges shall be located at the locations shown above. Top elevation of the staff gauge post shall be set at elevation +5.5 feet NAVD 88.
4. Marsh creation cells shall be filled to an elevation of +3.25 NAVD 88 with a tolerance of +0.5 feet using hydraulically dredge spoil material from the marsh creation borrow area.
5. Containment dikes shall be constructed along the alignments shown above. Dikes shall have a crest elevation of +5.25 feet NAVD 88 and a crest width of 5 feet.
6. Containment dike along the lake rim shall have side slopes of 3H:1V, dikes in the interior marsh shall have side slopes of 5H:1V.
7. If is recommended that all dikes be constructed with a minimum of two lifts.
8. Contractor shall maintain containment dikes throughout the duration of the project. Dikes shall be inspected routinely and any deficiencies found shall be corrected immediately.

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

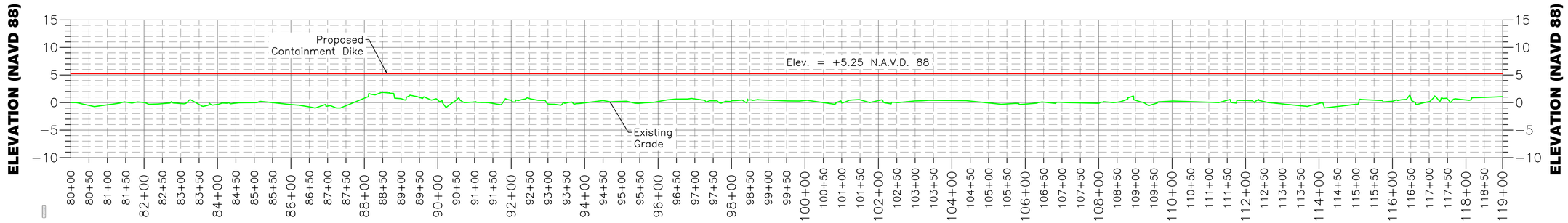
PRELIMINARY

LAKE RIM CONTAINMENT DIKE PROFILES
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

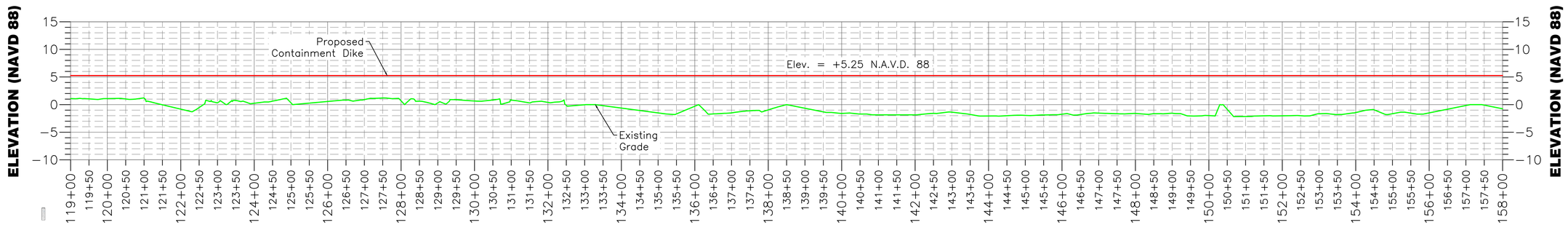
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

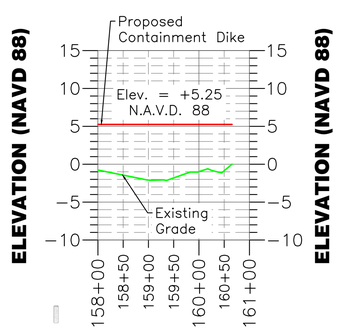
File No.
5 BS240005
PLAN.dwg
Drawing No.
BS-24
5/31/16 12:03 PM
Sheet 11 of 75



NORTH CONTAINMENT DIKE (CELL 3A) PROFILE



NORTH CONTAINMENT DIKE (CELL 3A) PROFILE



NORTH CONTAINMENT DIKE (CELL 3A) PROFILE

0 100' 200' 300'

HOR. SCALE

0 10' 20' 30'

VERT. SCALE

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

GENERAL NOTES:

1. Containment dike borrow areas shall be located within the marsh creation areas as shown.
2. Contractor shall maintain a 35 foot wide berm between all dike toes and borrow area tops. No construction equipment shall be allowed on the berm within 15 feet of the toe of containment dikes.
3. Staff gauges shall be located at the locations shown above. Top elevation of the staff gauge post shall be set at elevation +5.5 feet NAVD 88.
4. Marsh creation cells shall be filled to an elevation of +3.25 NAVD 88 with a tolerance of +0.5 feet using hydraulically dredge spoil material from the marsh creation borrow area.
5. Containment dikes shall be constructed along the alignments shown above. Dikes shall have a crest elevation of +5.25 feet NAVD 88 and a crest width of 5 feet.
6. Containment dike along the lake rim shall have side slopes of 3H:1V, dikes in the interior marsh shall have side slopes of 5H:1V.
7. If is recommended that all dikes be constructed with a minimum of two lifts.
8. Contractor shall maintain containment dikes throughout the duration of the project. Dikes shall be inspected routinely and any deficiencies found shall be corrected immediately.

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

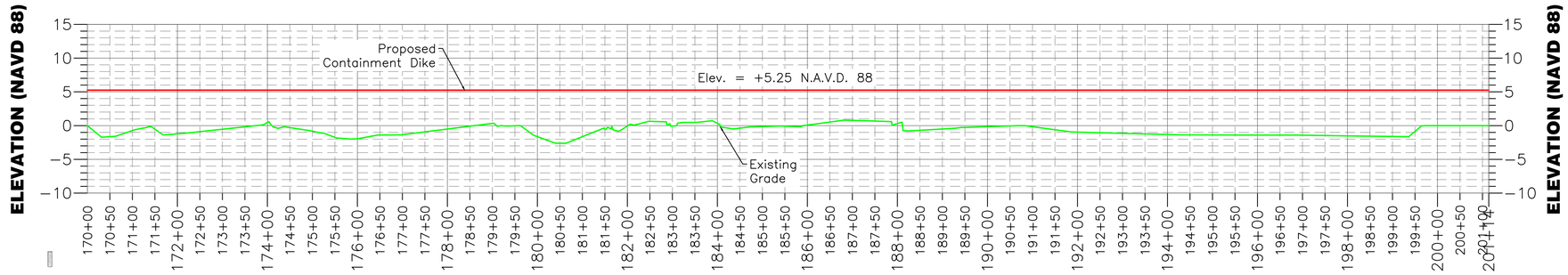
PRELIMINARY

NORTH CONTAINMENT DIKE (CELL 3A) PROFILES
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

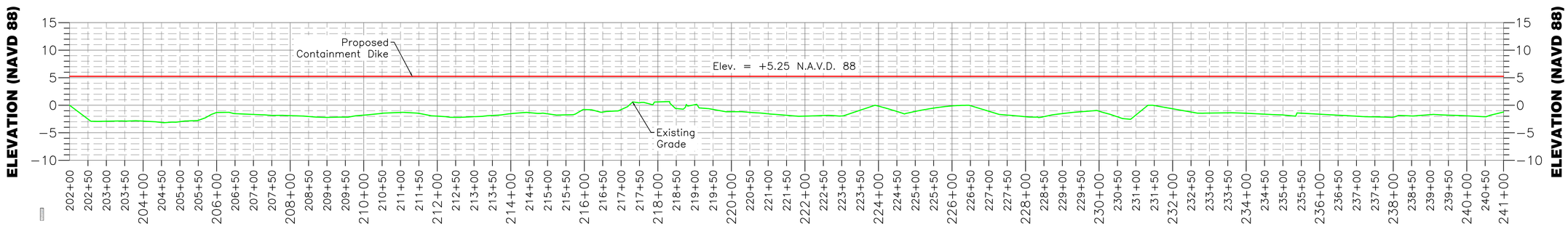
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

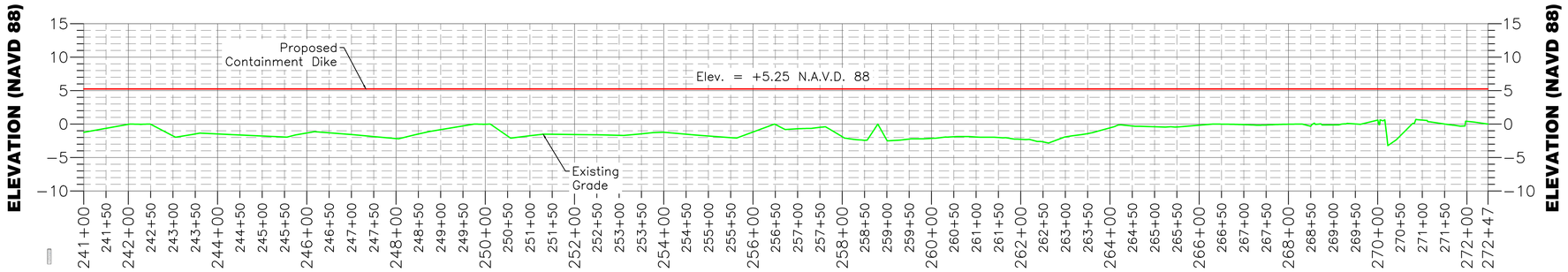
File No.
5 BS240005
PLAN.dwg
Drawing No.
BS-24
5/31/16 12:03 PM
Sheet 11 of 75



CENTRAL CONTAINMENT DIKE (CELL 3B) PROFILE



SOUTH CONTAINMENT DIKE (CELL 3C) PROFILE



SOUTH CONTAINMENT DIKE (CELL 3C) PROFILE

GENERAL NOTES:

1. Containment dike borrow areas shall be located within the marsh creation areas as shown.
2. Contractor shall maintain a 35 foot wide berm between all dike toes and borrow area tops. No construction equipment shall be allowed on the berm within 15 feet of the toe of containment dikes.
3. Staff gauges shall be located at the locations shown above. Top elevation of the staff gauge post shall be set at elevation +5.5 feet NAVD 88.
4. Marsh creation cells shall be filled to an elevation of +3.25 NAVD 88 with a tolerance of +0.5 feet using hydraulically dredge spoil material from the marsh creation borrow area.
5. Containment dikes shall be constructed along the alignments shown above. Dikes shall have a crest elevation of +5.25 feet NAVD 88 and a crest width of 5 feet.
6. Containment dike along the lake rim shall have side slopes of 3H:1V, dikes in the interior marsh shall have side slopes of 5H:1V.
7. If is recommended that all dikes be constructed with a minimum of two lifts.
8. Contractor shall maintain containment dikes throughout the duration of the project. Dikes shall be inspected routinely and any deficiencies found shall be corrected immediately.

0 100' 200' 300'
HOR. SCALE

0 10' 20' 30'
VERT. SCALE

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

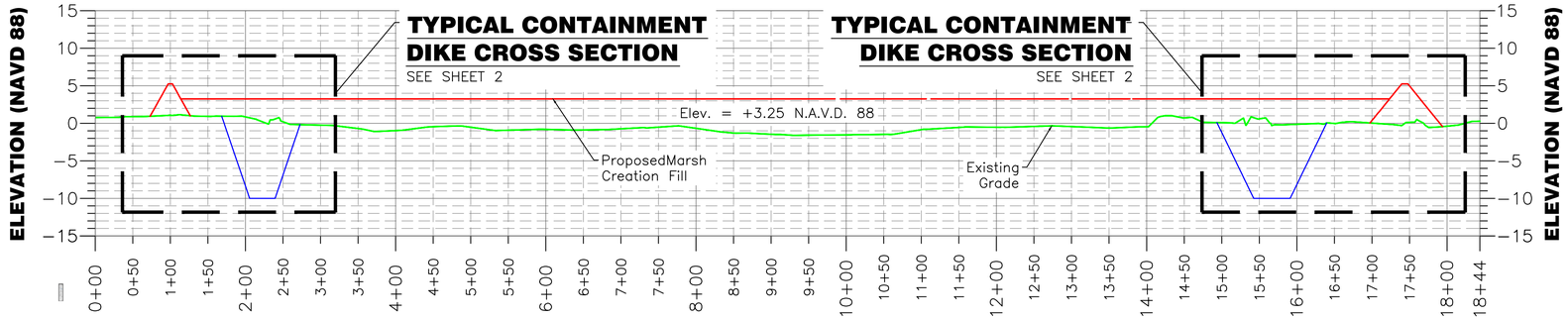
PRELIMINARY

CENTRAL & SOUTH CONTAINMENT DIKE
(CELLS 3B & 3C) PROFILES
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

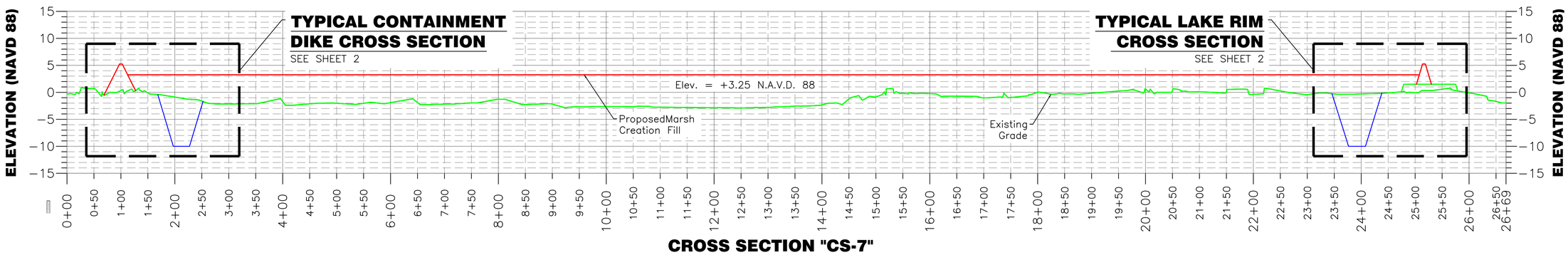
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

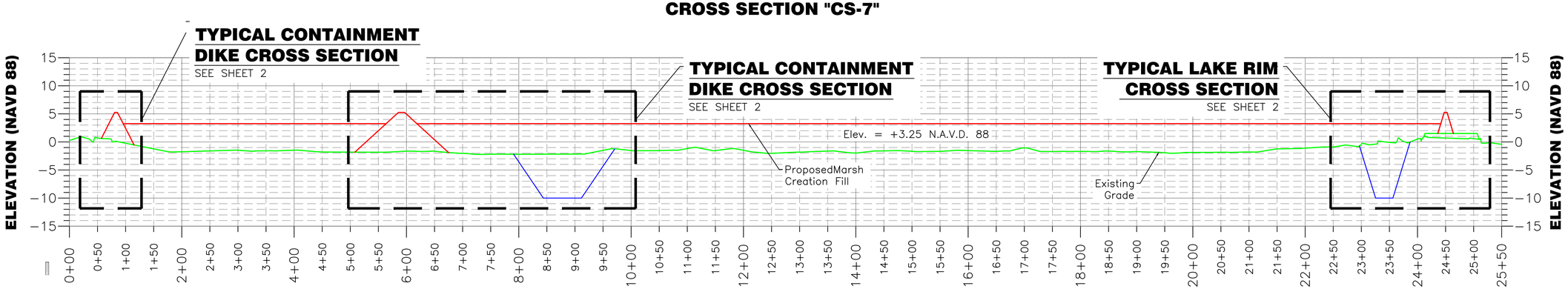
File No.
5 BS240005
Drawing No.
BS-24
5/31/16 12:03 PM
Sheet 11 of 75



CROSS SECTION "CS-6"



CROSS SECTION "CS-7"



CROSS SECTION "CS-8"

GENERAL NOTES:

1. Containment dike borrow areas shall be located within the marsh creation areas as shown.
2. Contractor shall maintain a 35 foot wide berm between all dike toes and borrow area tops. No construction equipment shall be allowed on the berm within 15 feet of the toe of containment dikes.
3. Staff gauges shall be located at the locations shown above. Top elevation of the staff gauge post shall be set at elevation +5.5 feet NAVD 88.
4. Marsh creation cells shall be filled to an elevation of +3.25 NAVD 88 with a tolerance of +0.5 feet using hydraulically dredge spoil material from the marsh creation borrow area.
5. Containment dikes shall be constructed along the alignments shown above. Dikes shall have a crest elevation of +5.25 feet NAVD 88 and a crest width of 5 feet.
6. Containment dike along the lake rim shall have side slopes of 3H:1V, dikes in the interior marsh shall have side slopes of 5H:1V.
7. If is recommended that all dikes be constructed with a minimum of two lifts.
8. Contractor shall maintain containment dikes throughout the duration of the project. Dikes shall be inspected routinely and any deficiencies found shall be corrected immediately.

0 100' 200' 300'
HOR. SCALE

0 10' 20' 30'
VERT. SCALE

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

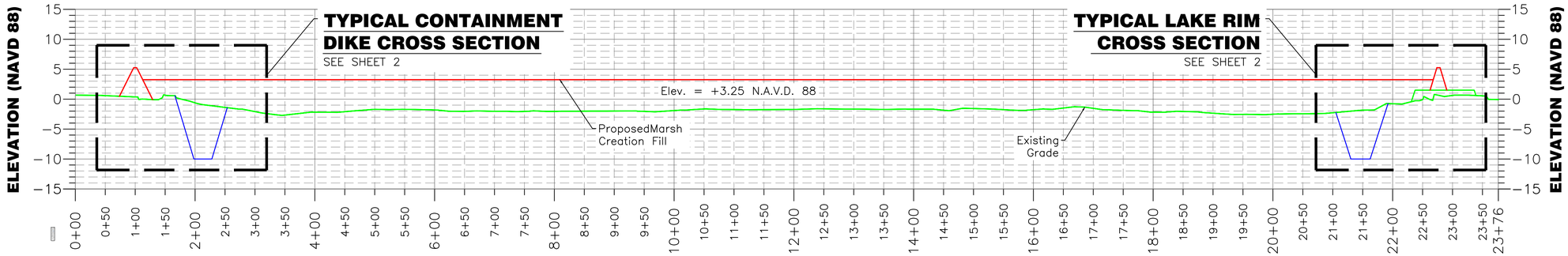
PRELIMINARY

MARSH CREATION AREA CROSS SECTIONS
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

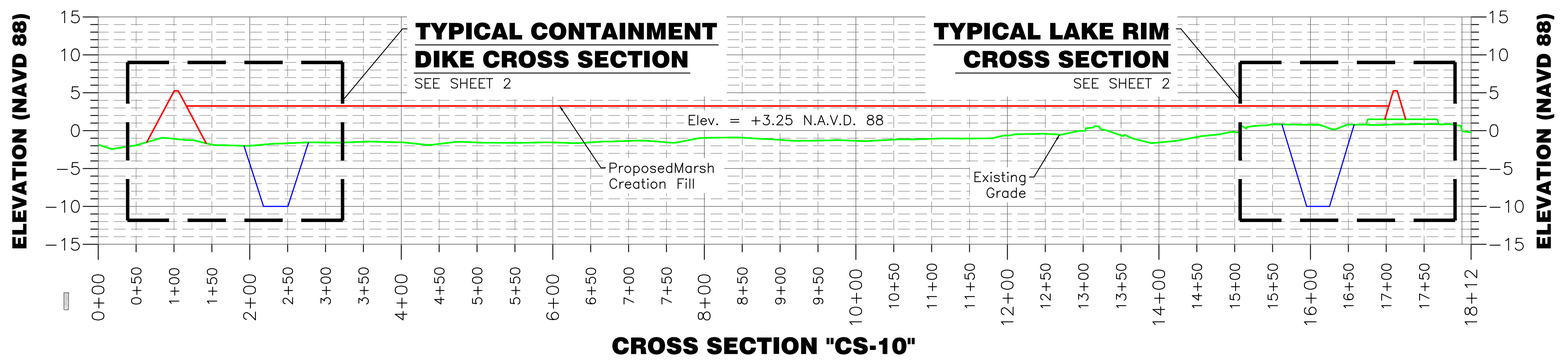
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

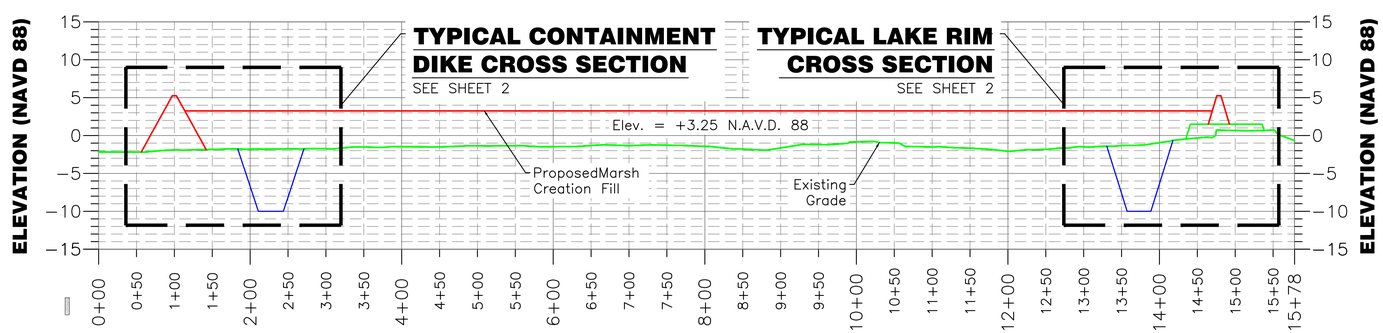
File No. 5 BS240005
Drawing No. BS-24
5/31/16 12:03 PM
Sheet 11 of 75



CROSS SECTION "CS-9"



CROSS SECTION "CS-10"



CROSS SECTION "CS-11"

GENERAL NOTES:

1. Containment dike borrow areas shall be located within the marsh creation areas as shown.
2. Contractor shall maintain a 35 foot wide berm between all dike toes and borrow area tops. No construction equipment shall be allowed on the berm within 15 feet of the toe of containment dikes.
3. Staff gauges shall be located at the locations shown above. Top elevation of the staff gauge post shall be set at elevation +5.5 feet NAVD 88.
4. Marsh creation cells shall be filled to an elevation of +3.25 NAVD 88 with a tolerance of +0.5 feet using hydraulically dredge spoil material from the marsh creation borrow area.
5. Containment dikes shall be constructed along the alignments shown above. Dikes shall have a crest elevation of +5.25 feet NAVD 88 and a crest width of 5 feet.
6. Containment dike along the lake rim shall have side slopes of 3H:1V, dikes in the interior marsh shall have side slopes of 5H:1V.
7. If is recommended that all dikes be constructed with a minimum of two lifts.
8. Contractor shall maintain containment dikes throughout the duration of the project. Dikes shall be inspected routinely and any deficiencies found shall be corrected immediately.

0 100' 200' 300'
HOR. SCALE

0 10' 20' 30'
VERT. SCALE

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

PRELIMINARY

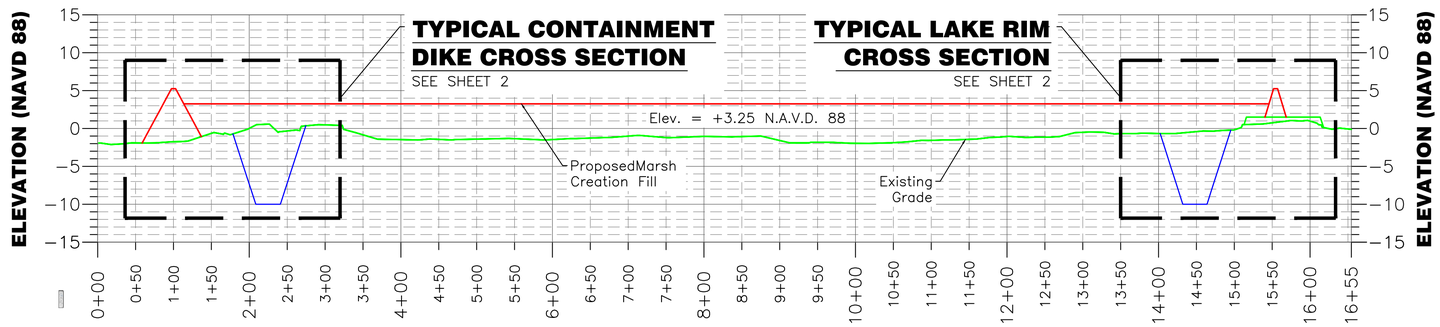
MARSH CREATION AREA CROSS SECTIONS
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.
5 BS240005
Drawing No.
BS-24

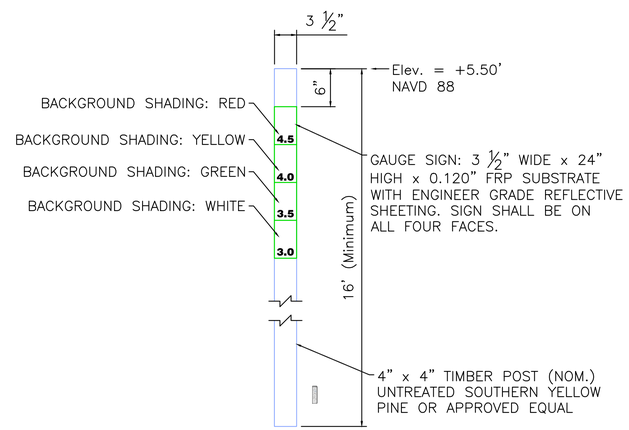
5/31/16 12:03 PM
Sheet 11 of 75



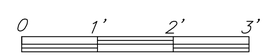
CROSS SECTION "CS-12"

HOR. SCALE

VERT. SCALE



MARSH CREATION TIDE GAUGE



HOR. SCALE

GENERAL NOTES:

1. Containment dike borrow areas shall be located within the marsh creation areas as shown.
2. Contractor shall maintain a 35 foot wide berm between all dike toes and borrow area tops. No construction equipment shall be allowed on the berm within 15 feet of the toe of containment dikes.
3. Staff gauges shall be located at the locations shown above. Top elevation of the staff gauge post shall be set at elevation +5.5 feet NAVD 88.
4. Marsh creation cells shall be filled to an elevation of +3.25 NAVD 88 with a tolerance of +0.5 feet using hydraulically dredge spoil material from the marsh creation borrow area.
5. Containment dikes shall be constructed along the alignments shown above. Dikes shall have a crest elevation of +5.25 feet NAVD 88 and a crest width of 5 feet.
6. Containment dike along the lake rim shall have side slopes of 3H:1V, dikes in the interior marsh shall have side slopes of 5H:1V.
7. If is recommended that all dikes be constructed with a minimum of two lifts.
8. Contractor shall maintain containment dikes throughout the duration of the project. Dikes shall be inspected routinely and any deficiencies found shall be corrected immediately.

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

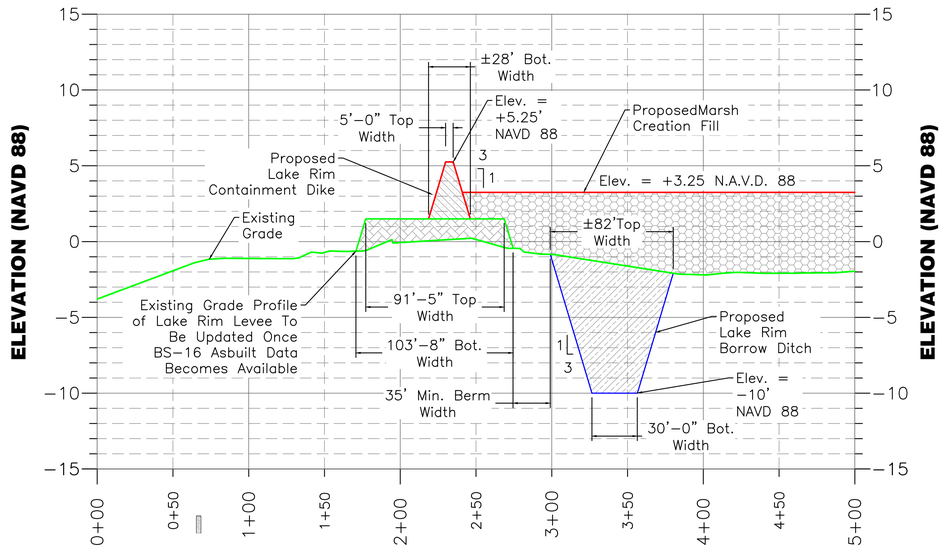
PRELIMINARY

MARSH CREATION AREA CROSS SECTIONS
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

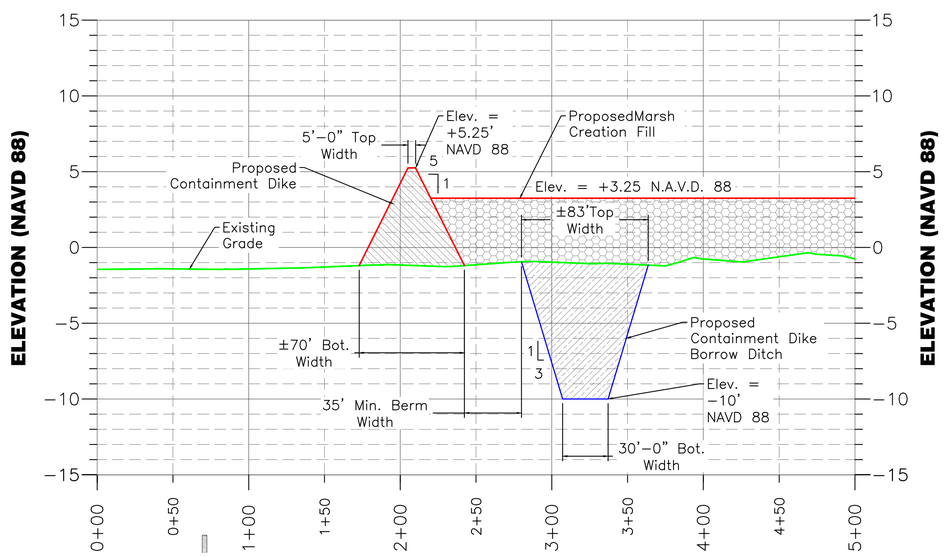
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.
5 BS240005
PLAN.dwg
Drawing No.
BS-24
5/31/16 12:03 PM
Sheet 11 of 75



TYPICAL LAKE RIM CROSS SECTION



TYPICAL CONTAINMENT DIKE CROSS SECTION (INTERIOR MARSH)

0 50' 100' 150'

HOR. SCALE

0 5' 10' 15'

VERT. SCALE

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

NOTICE:

72 HOURS BEFORE DIGGING CALL 1-800-272-3020 TO LOCATE UTILITY LINES

GENERAL NOTES:

1. Containment dike borrow areas shall be located within the marsh creation areas as shown.
2. Contractor shall maintain a 35 foot wide berm between all dike toes and borrow area tops. No construction equipment shall be allowed on the berm within 15 feet of the toe of containment dikes.
3. Staff gauges shall be located at the locations shown above. Top elevation of the staff gauge post shall be set at elevation +5.5 feet NAVD 88.
4. Marsh creation cells shall be filled to an elevation of +3.25 NAVD 88 with a tolerance of +0.5 feet using hydraulically dredge spoil material from the marsh creation borrow area.
5. Containment dikes shall be constructed along the alignments shown above. Dikes shall have a crest elevation of +5.25 feet NAVD 88 and a crest width of 5 feet.
6. Containment dike along the lake rim shall have side slopes of 3H:1V, dikes in the interior marsh shall have side slopes of 5H:1V.
7. If is recommended that all dikes be constructed with a minimum of two lifts.
8. Contractor shall maintain containment dikes throughout the duration of the project. Dikes shall be inspected routinely and any deficiencies found shall be corrected immediately.

		Date
Designed	Chris Wheat	06/01/16
Drawn	Aaron Harper	06/01/16
Checked	Leonard Harper	06/01/16
Approved	Lonnie Harper	06/01/16

PRELIMINARY

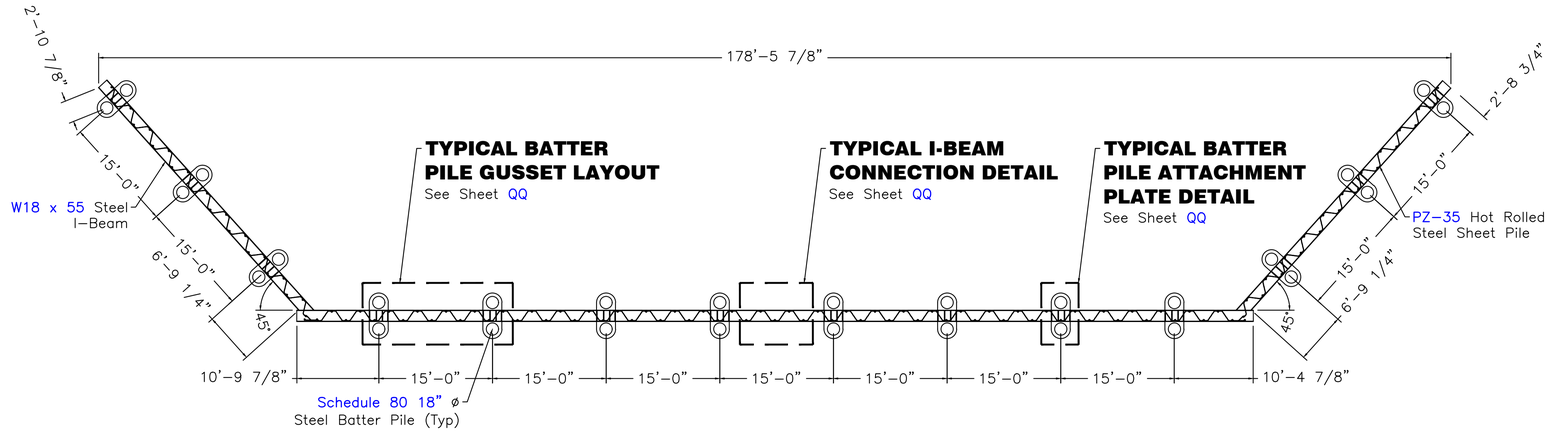
TYPICAL CONTAINMENT DIKE CROSS SECTIONS
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.
5 BS240005
Drawing No.
BS-24

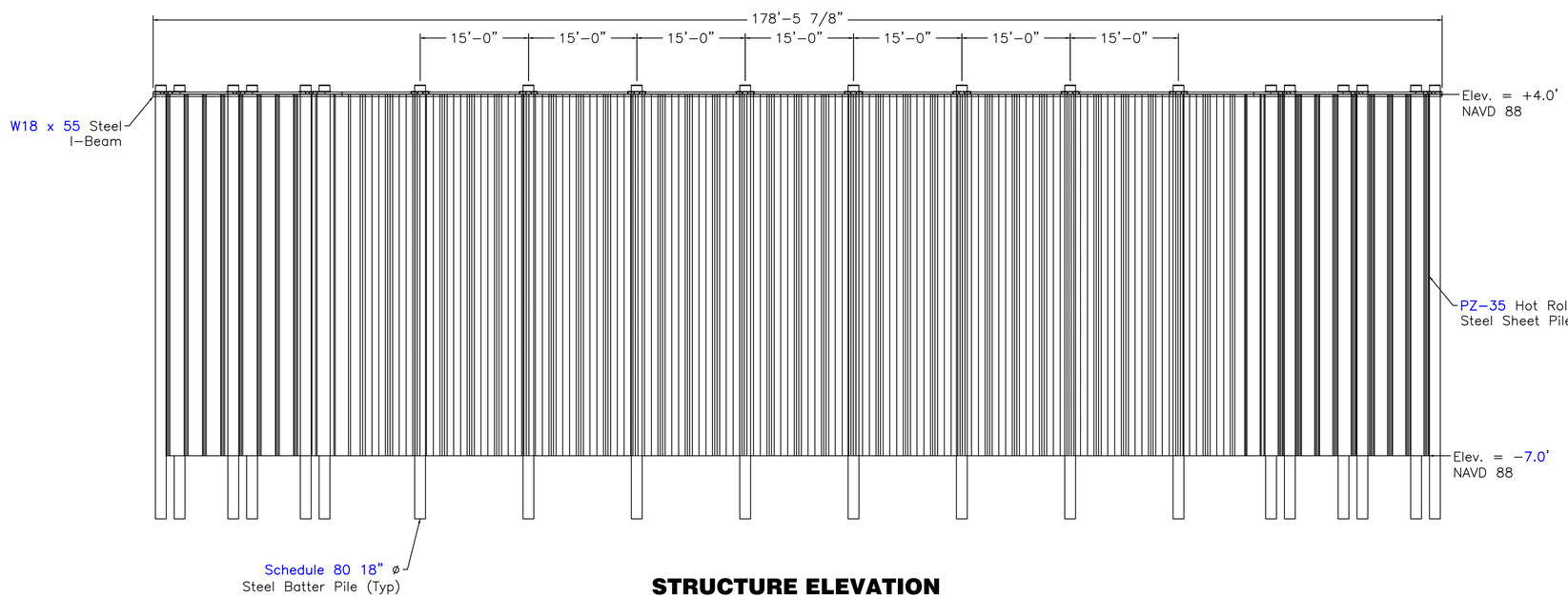
6/2/16 9:01 AM
Sheet 11 of 75



STRUCTURE PLAN

0 10' 20' 30'

HOR. SCALE



STRUCTURE ELEVATION

0 10' 20' 30'

HOR. SCALE

NOTE:

Sheet pile and batter pile design to be determined by further geotechnical analysis.

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

NOTICE:

72 HOURS BEFORE DIGGING CALL 1-800-272-3020 TO LOCATE UTILITY LINES

GENERAL NOTES:

1. Sheet piles and batter piles shall be installed to the lengths and depths shown above.
2. All sheet piles shall be painted with coal tar epoxy to elevation -16 ft. NAVD 88 prior to installation.
3. Sheet piles shall have a minimum wall thickness of 0.50 inches and a minumum section modulus of 48.5 in^3/ft.
4. Sheet piles with ball and socket joints are required and rolled sheets shall not be permitted.

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

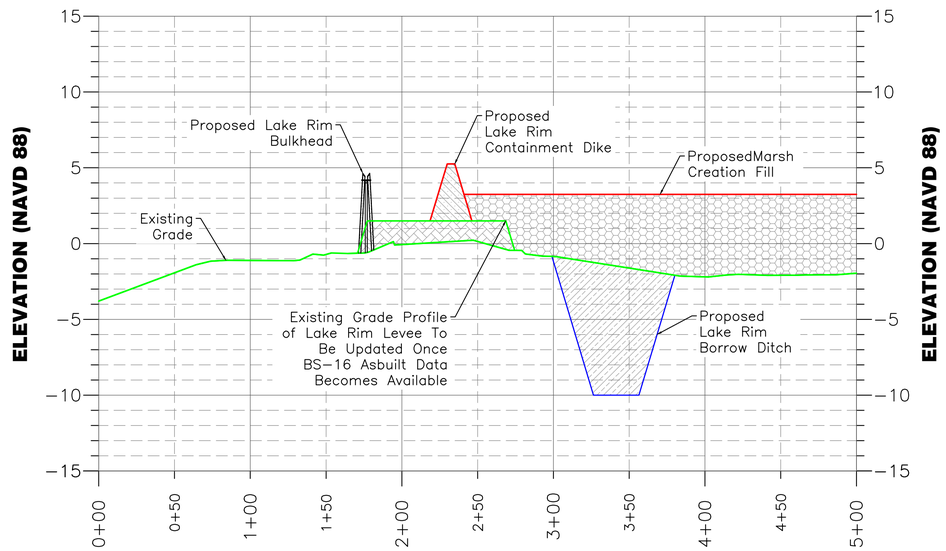
PRELIMINARY

LAKE RIM BULKHEAD PLAN & ELEVATION
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 1 of 28

Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No. 6 BS240006 STP (Drawing 2).dwg
Drawing No. BS-24
5/31/16 11:31 AM
Sheet 1 of 75



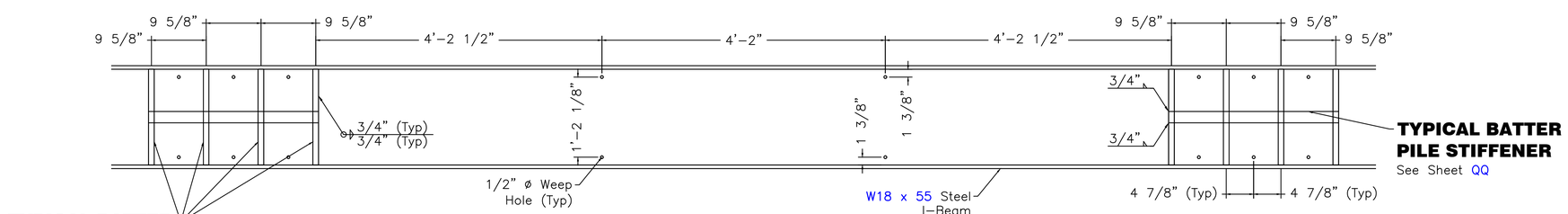
TYPICAL LAKE RIM CROSS SECTION @ STRUCTURE

0 50' 100' 150'

HOR. SCALE

0 5' 10' 15'

VERT. SCALE



TYPICAL BATTER PILE GUSSET LAYOUT

0 1' 2' 3'

HOR. SCALE

NOTE:

Sheet pile and batter pile design to be determined by further geotechnical analysis.

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

GENERAL NOTES:

1. Sheet piles and batter piles shall be installed to the lengths and depths shown above.
2. All sheet piles shall be painted with coal tar epoxy to elevation −16 ft. NAVD 88 prior to installation.
3. Sheet piles shall have a minimum wall thickness of 0.50 inches and a minumum section modulus of 48.5 in^3/ft.
4. Sheet piles with ball and socket joints are required and rolled sheets shall not be permitted.

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905−1079 FAX: (337) 905−1076

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

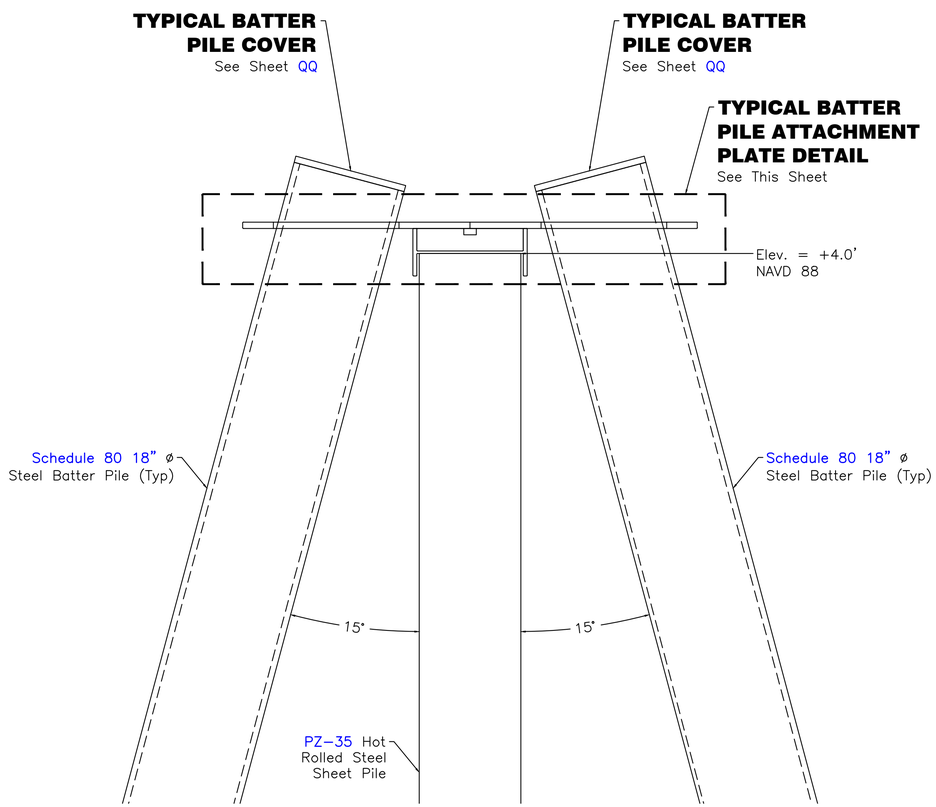
PRELIMINARY

LAKE RIM BULKHEAD PLAN & ELEVATION
BS−24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 1 of 28

Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

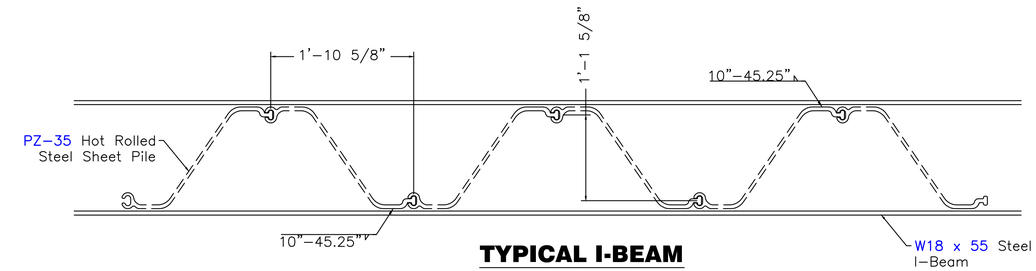
File No. 6 BS240006 STP
(Drawing No. 2)
Drawing Name: BS−24
5/31/16 11:31 AM
Sheet 1 of 75



TYPICAL SHEET PILE WALL SECTION

0 1' 2' 3'

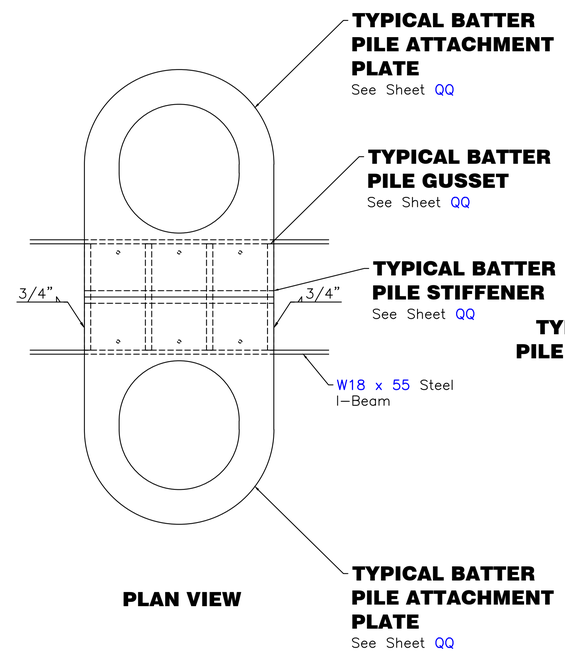
HOR. SCALE



TYPICAL I-BEAM CONNECTION DETAIL

0 1' 2' 3'

HOR. SCALE



PLAN VIEW

SECTION VIEW

TYPICAL BATTER PILE ATTACHMENT PLATE DETAIL

0 1' 2' 3'

HOR. SCALE

NOTE:

Sheet pile and batter pile design to be determined by further geotechnical analysis.

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

GENERAL NOTES:

1. Sheet piles and batter piles shall be installed to the lengths and depths shown above.
2. All sheet piles shall be painted with coal tar epoxy to elevation −16 ft. NAVD 88 prior to installation.
3. Sheet piles shall have a minimum wall thickness of 0.50 inches and a minumum section modulus of 48.5 in^3/ft.
4. Sheet piles with ball and socket joints are required and rolled sheets shall not be permitted.

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

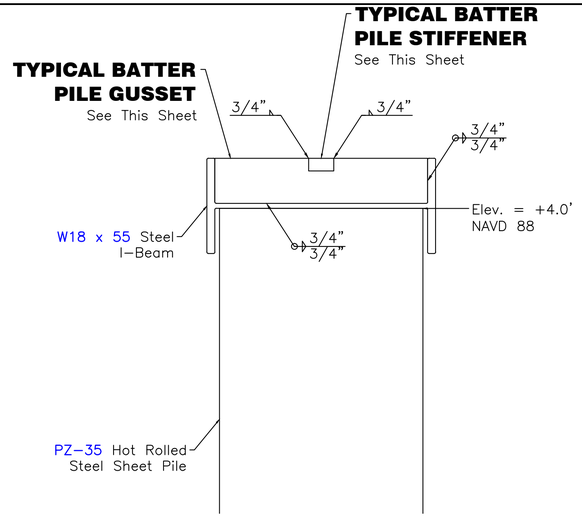
PRELIMINARY

LAKE RIM BULKHEAD SECTION & DETAILS
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 1 of 28

Plaquemines Parish, Louisiana

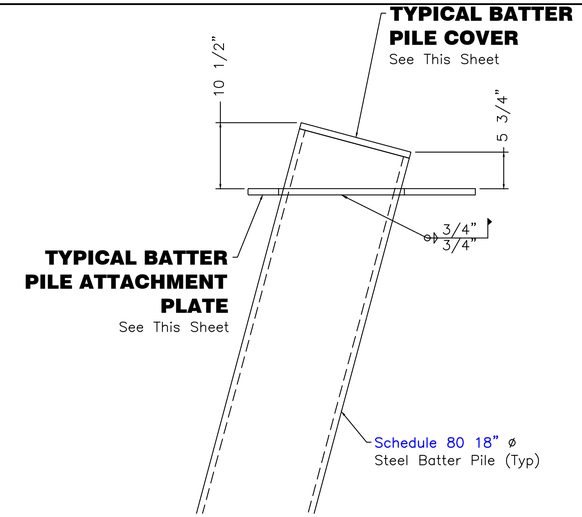
NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No. 6 BS240006 STP
(Bid Item 2) dwg
Drawing No. BS-24
5/31/16 11:31 AM
Sheet 1 of 75



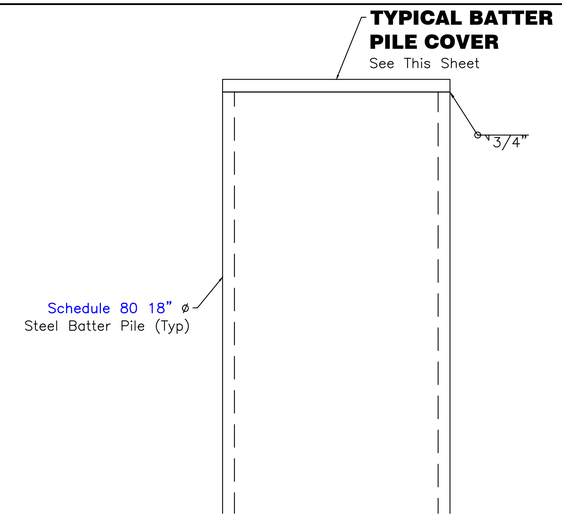
TYPICAL BATTER PILE ATTACHMENT PLATE CONNECTION

HOR. SCALE

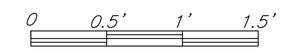


TYPICAL BATTER PILE ATTACHMENT PLATE CONNECTION

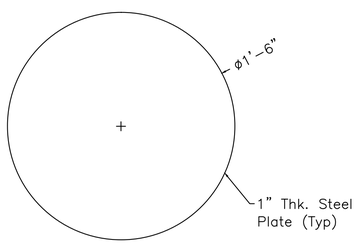
HOR. SCALE



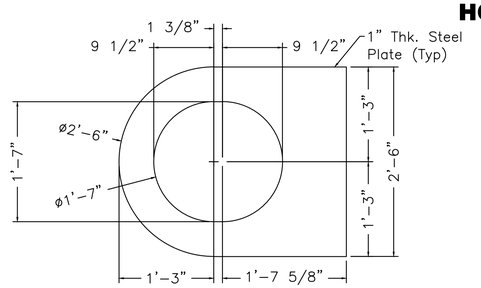
TYPICAL BATTER PILE COVER ATTACHMENT CONNECTION



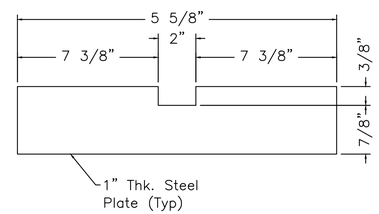
HOR. SCALE



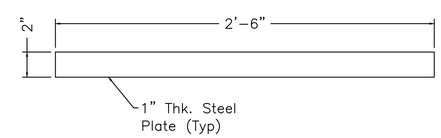
PLAN VIEW



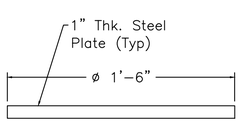
PLAN VIEW



ELEVATION VIEW

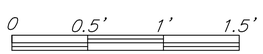


PLAN VIEW

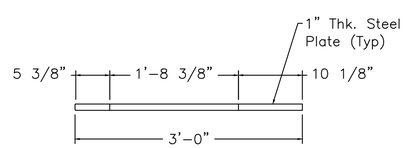


ELEVATION VIEW

TYPICAL BATTER PILE COVER



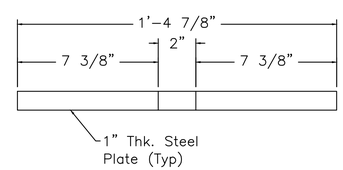
HOR. SCALE



ELEVATION VIEW

TYPICAL BATTER PILE ATTACHEMENT PLATE

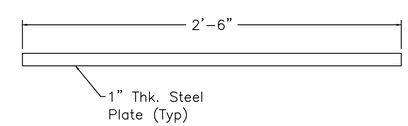
HOR. SCALE



PLAN VIEW

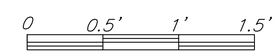
TYPICAL BATTER PILE GUSSET

HOR. SCALE



ELEVATION VIEW

TYPICAL BATTER PILE STIFFENER



HOR. SCALE

NOTE:
Sheet pile and batter pile design to be determined by further geotechnical analysis.

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

GENERAL NOTES:

1. Sheet piles and batter piles shall be installed to the lengths and depths shown above.
2. All sheet piles shall be painted with coal tar epoxy to elevation −16 ft. NAVD 88 prior to installation.
3. Sheet piles shall have a minimum wall thickness of 0.50 inches and a minumum section modulus of 48.5 in^3/ft.
4. Sheet piles with ball and socket joints are required and rolled sheets shall not be permitted.

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

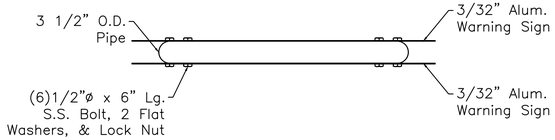
PRELIMINARY

Plaquemines Parish, Louisiana

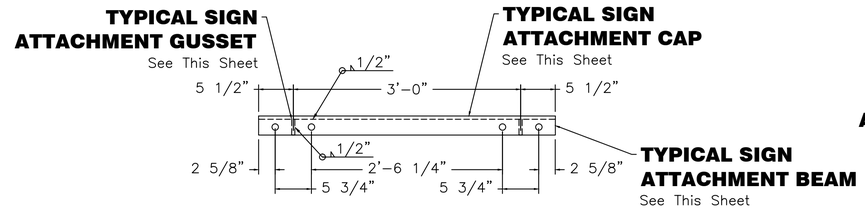
LAKE RIM BULKHEAD DETAILS
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 1 of 28

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

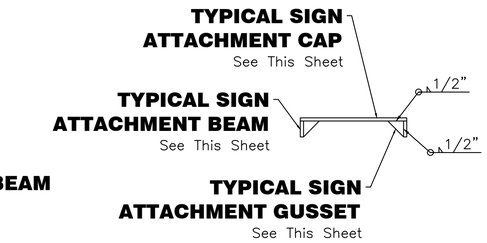
File No. 6 BS240006 STP
(Building 2) dwg
BS-24
5/31/16 11:31 AM
Sheet 1 of 75



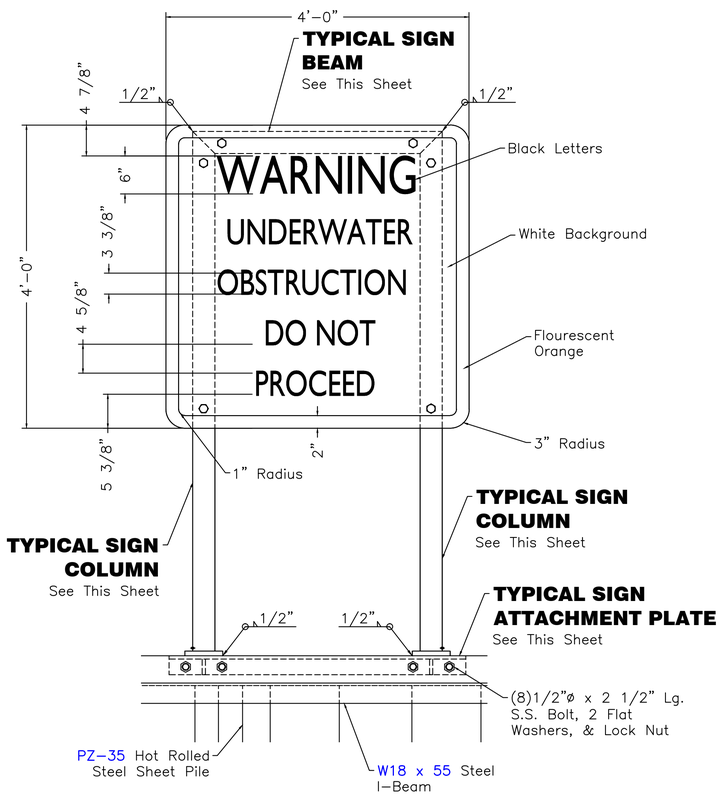
PLAN VIEW



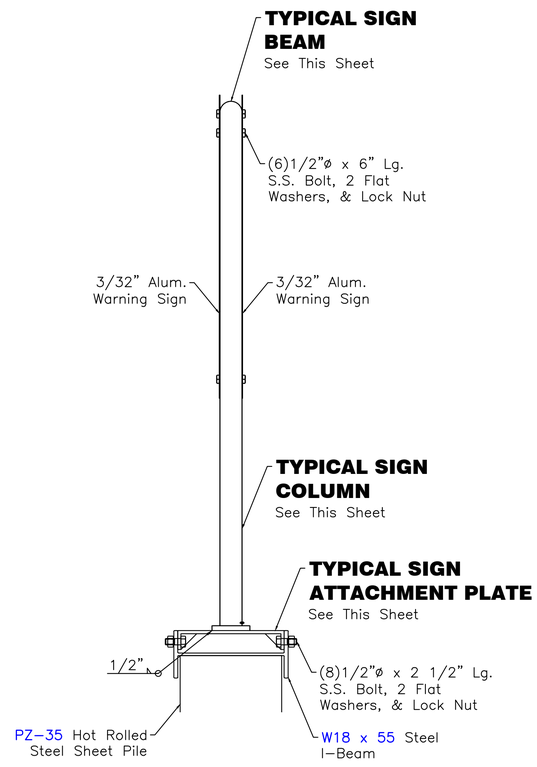
ELEVATION VIEW



SECTION VIEW

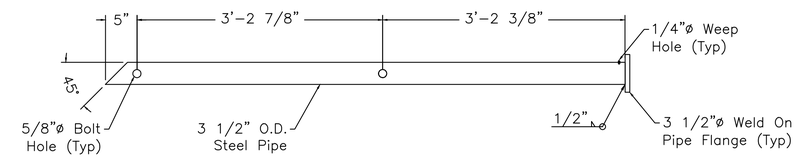


ELEVATION VIEW

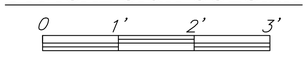


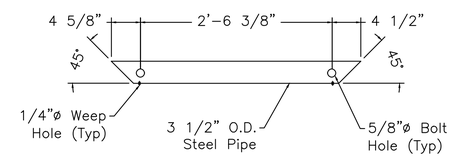
SECTION VIEW

TYPICAL SIGN ATTACHMENT PLATE

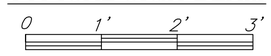


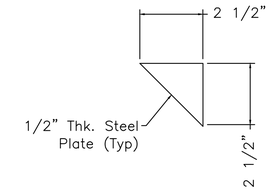
TYPICAL SIGN COLUMN



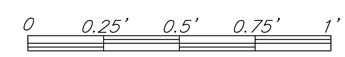


TYPICAL SIGN BEAM

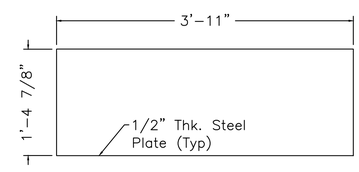


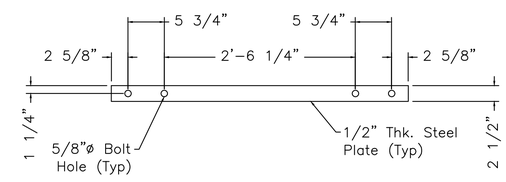


TYPICAL SIGN ATTACHMENT CAP

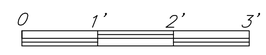


TYPICAL SIGN DETAIL

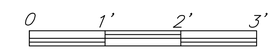




TYPICAL SIGN ATTACHMENT CAP



TYPICAL SIGN ATTACHMENT BEAM



NOTE:

Sheet pile and batter pile design to be determined by further geotechnical analysis.

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

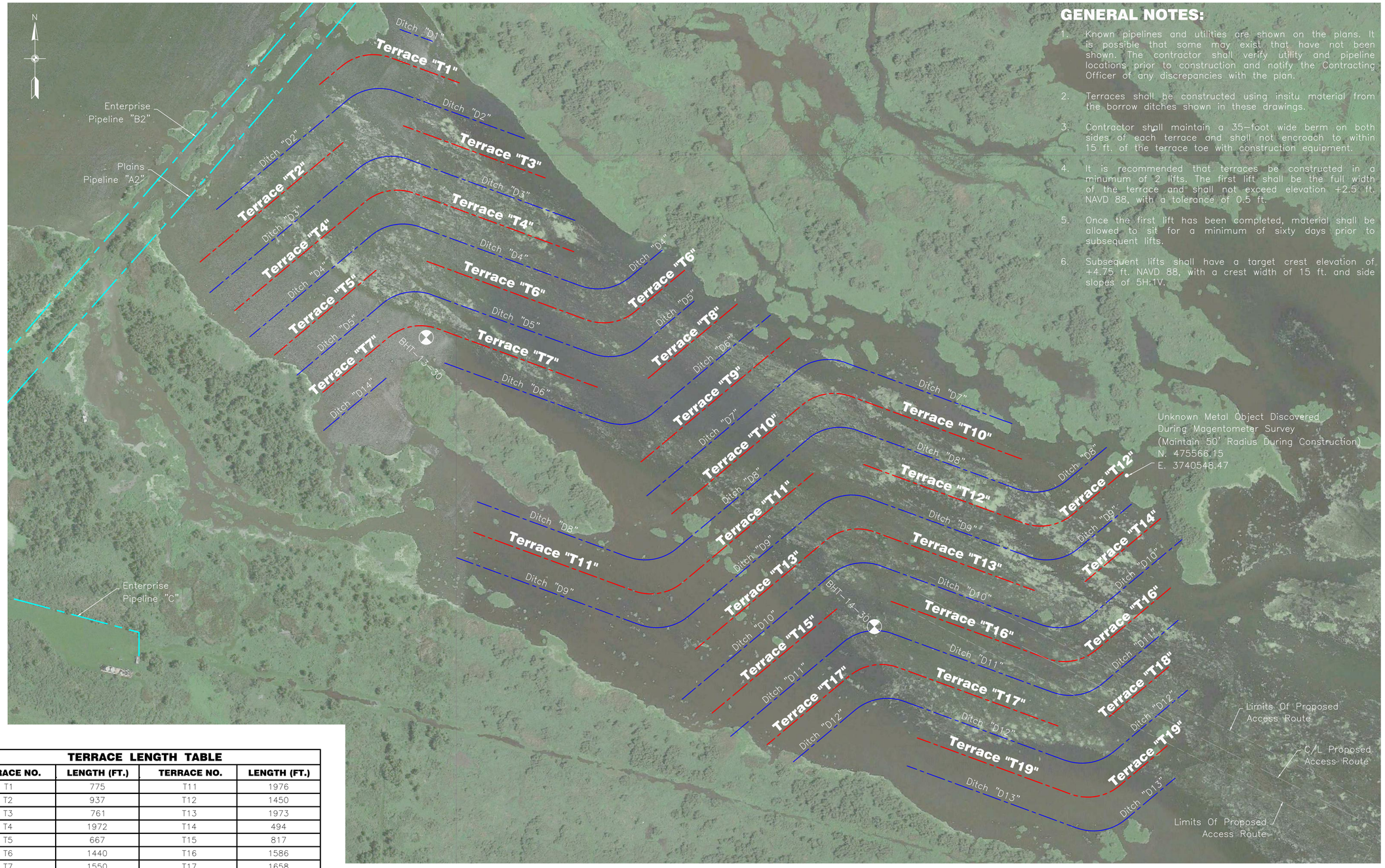
PRELIMINARY

Plaquemines Parish, Louisiana

LAKE RIM BULKHEAD SIGN DETAILS
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No. 6 BS240006 STP
(Editing 2).dwg
BS-24
5/31/16 11:31 AM
Sheet 1 of 75



GENERAL NOTES:

1. Known pipelines and utilities are shown on the plans. It is possible that some may exist that have not been shown. The contractor shall verify utility and pipeline locations prior to construction and notify the Contracting Officer of any discrepancies with the plan.
2. Terraces shall be constructed using insitu material from the borrow ditches shown in these drawings.
3. Contractor shall maintain a 35-foot wide berm on both sides of each terrace and shall not encroach to within 15 ft. of the terrace toe with construction equipment.
4. It is recommended that terraces be constructed in a minumum of 2 lifts. The first lift shall be the full width of the terrace and shall not exceed elevation +2.5 ft. NAVD 88, with a tolerance of 0.5 ft.
5. Once the first lift has been completed, material shall be allowed to sit for a minimum of sixty days prior to subsequent lifts.
6. Subsequent lifts shall have a target crest elevation of +4.75 ft. NAVD 88, with a crest width of 15 ft. and side slopes of 5H:1V.

TERRACE LENGTH TABLE

TERRACE NO.	LENGTH (FT.)	TERRACE NO.	LENGTH (FT.)
T1	775	T11	1976
T2	937	T12	1450
T3	761	T13	1973
T4	1972	T14	494
T5	667	T15	817
T6	1440	T16	1586
T7	1550	T17	1658
T8	584	T18	390
T9	975	T19	1396
T10	2032		

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

TERRACE AREA (CELL 2B) SOIL BORING DATA TABLE

POINT NO.	NORTHING	EASTING
BHT-13-30	476260.68	3737022.30
BHT-14-30	474804.04	3739278.60

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 250' 500' 750'
HOR. SCALE

		Date
Designed	Chris Wheat	06/01/16
Drawn	Aaron Harper	06/01/16
Checked	Leonard Harper	06/01/16
Approved	Lonnie Harper	06/01/16

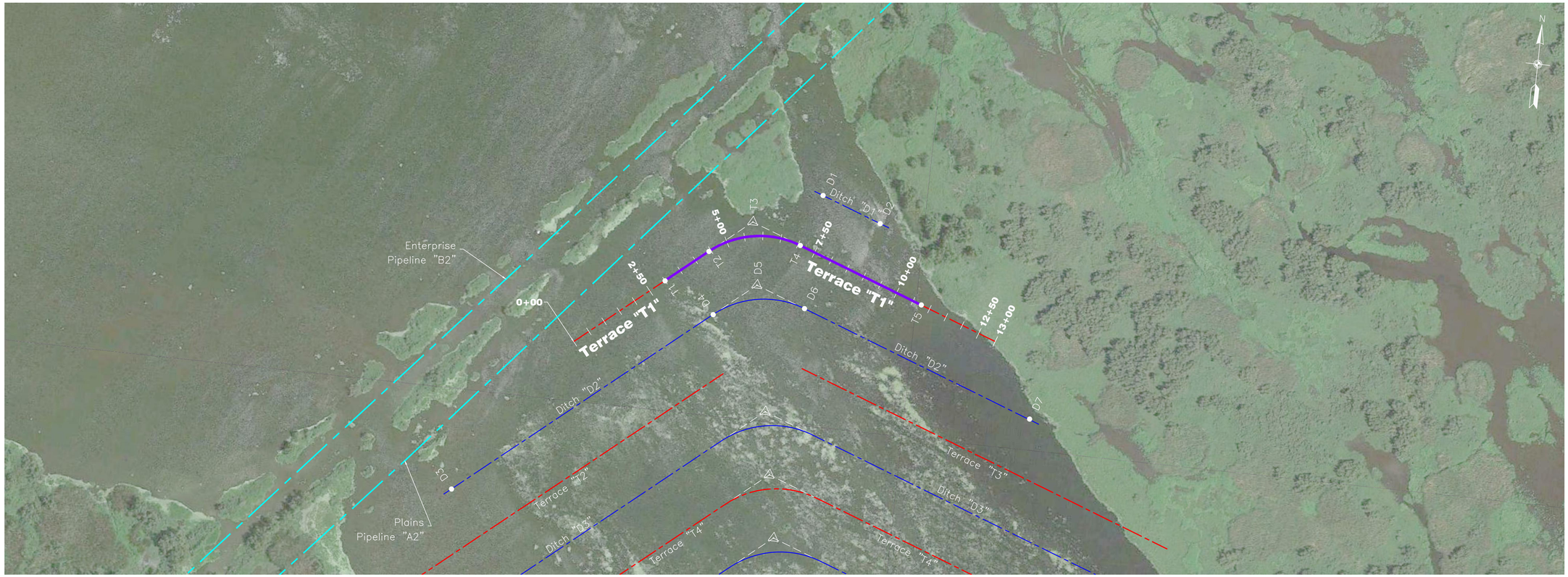
PRELIMINARY

TERRACE AREA (CELL 2B) KEY SHEET
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 3 of 28

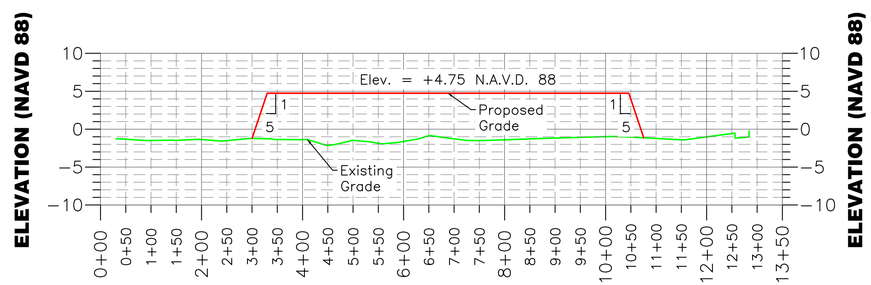
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No. BS240010 NORTH SITE.DWG
Drawing No. BS-24
5/31/16 1:49 PM
Sheet 3 of 75



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'
HOR. SCALE

0 10' 20' 30'
VERT. SCALE

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T1	477534.04	3736485.51	
T2	477626.70	3736596.44	P.C. – 250'
T3	477719.23	3736707.22	P.I.
T4	477669.56	3736842.74	P.T. – 250'
T5	477542.70	3737188.89	

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D1	477811.94	3736890.16	
D2	477752.06	3737053.54	
D3	476905.16	3735966.61	
D4	477456.06	3736626.14	P.C. – 250'
D5	477548.59	3736736.91	P.I.
D6	477498.92	3736872.44	P.T. – 250'
D7	477262.90	3737516.43	

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

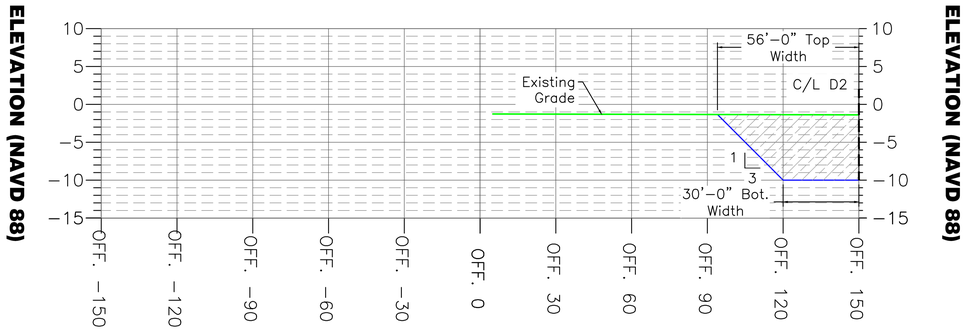
PRELIMINARY

TERRACE "T1" PLAN & PROFILE
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

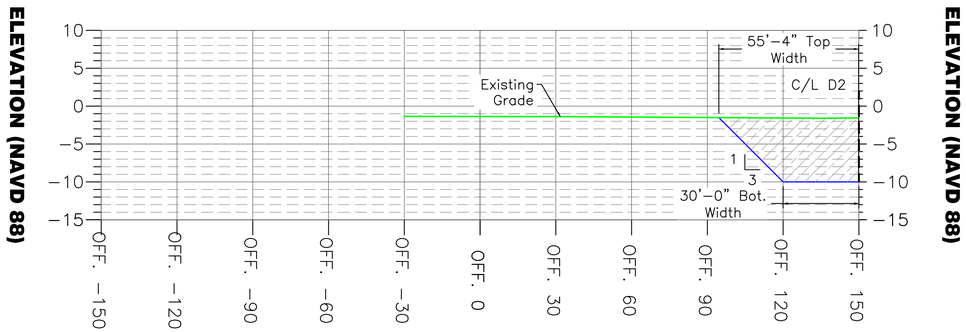
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

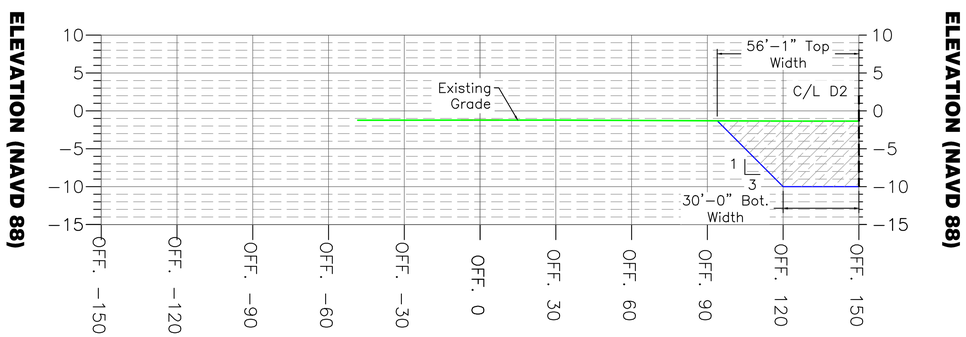
File No.
BS240010 NORTH
Site P&P.dwg
Drawing No.
BS-24
5/31/16 12:08 PM
Sheet 11 of 75



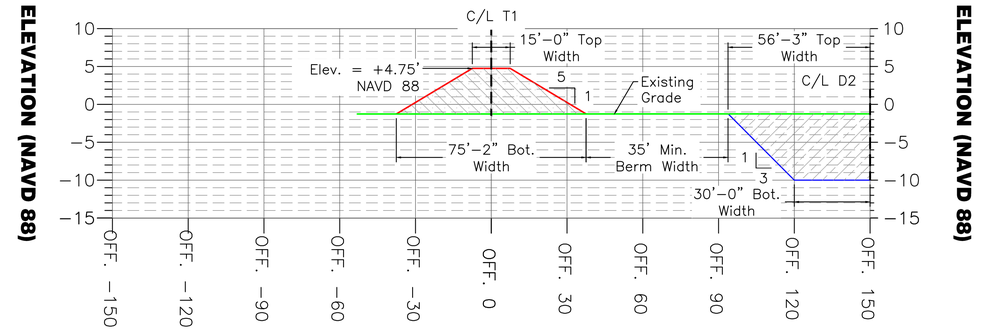
STA. 0+00



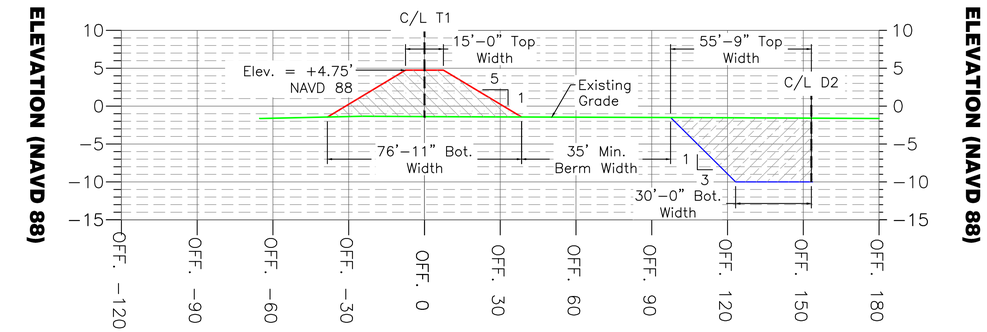
STA. 2+00



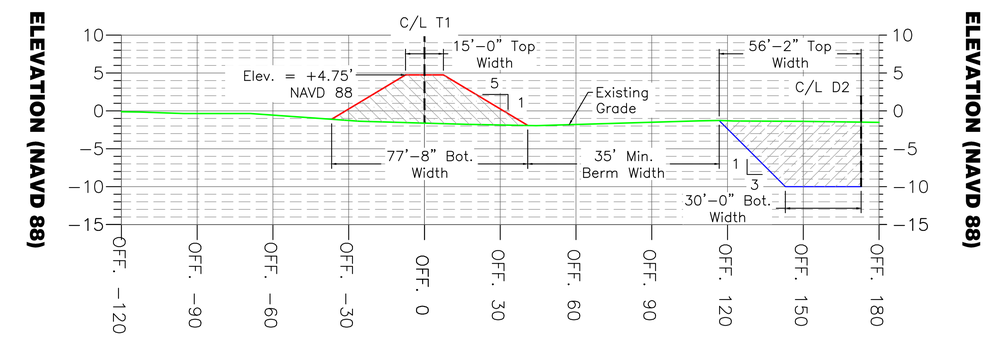
STA. 3+00



STA. 3+30



STA. 4+00



STA. 6+00

0 30' 60' 90'

HOR. SCALE

0 10' 20' 30'

VERT. SCALE

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

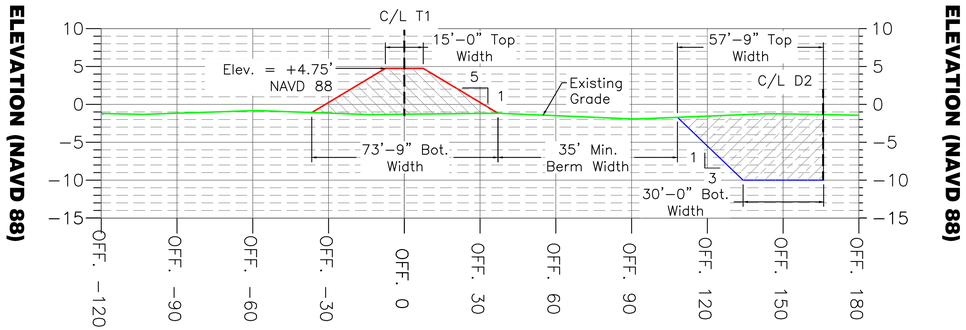
PRELIMINARY

Plaquemines Parish, Louisiana

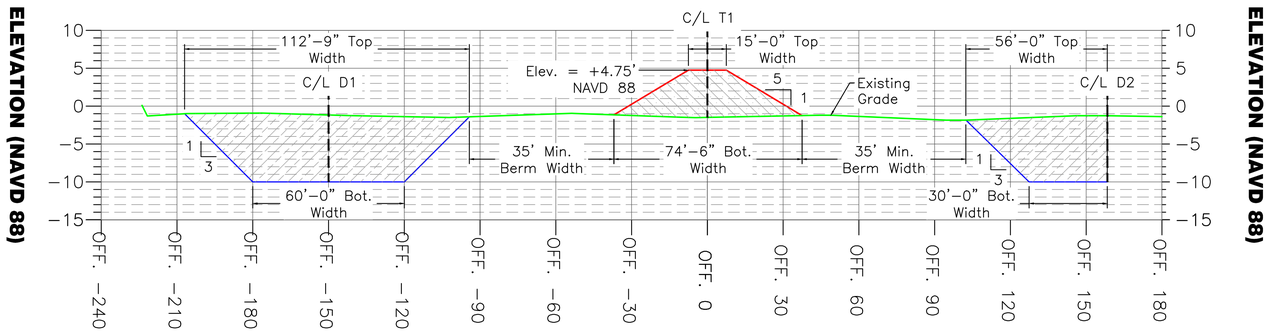
TERRACE "T1" SECTIONS
BS-24 TERRACING & MARSH CREATION SOUTH OF BIG MAR

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

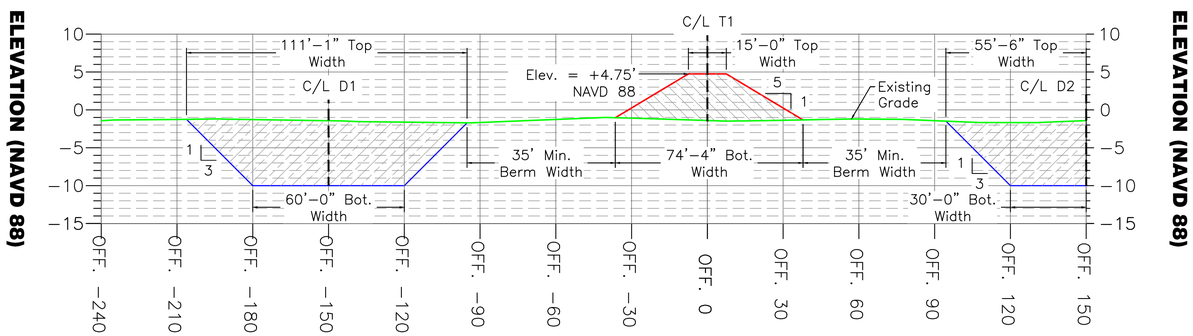
File No. 9_BS240010_NORTH SITE_SECTIONS.dwg
Drawing No. BS-24
5/31/16 1:53 PM



STA. 7+04



STA. 7+29



STA. 8+00

0 30' 60' 90'

HOR. SCALE

0 10' 20' 30'

VERT. SCALE

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

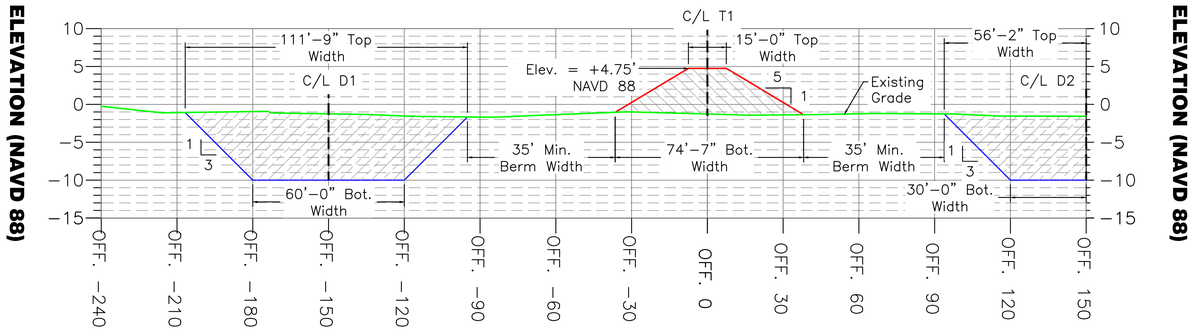
PRELIMINARY

TERRACE "T1" SECTIONS
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

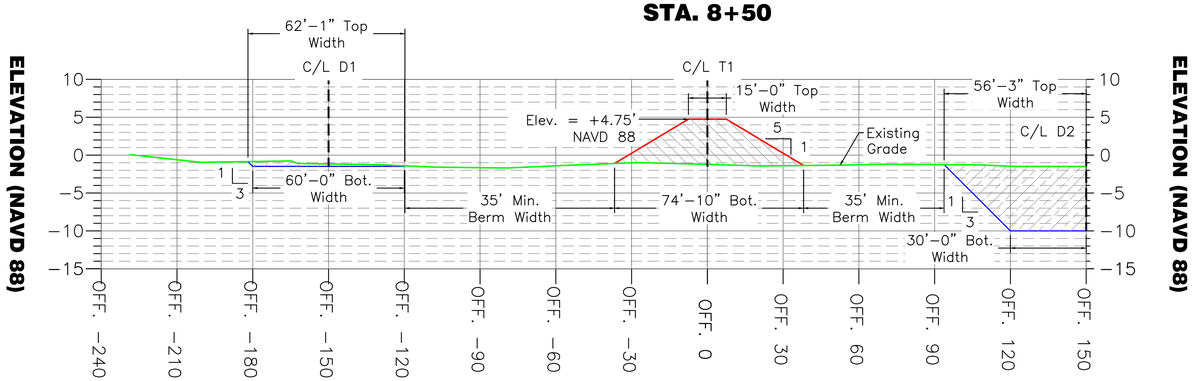
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

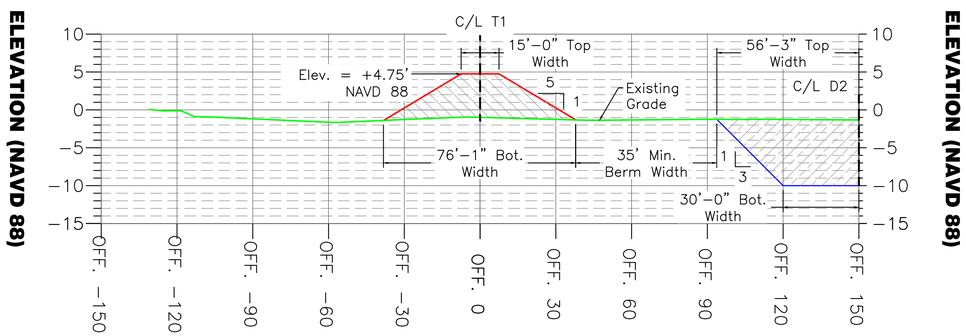
File No.
9 BS240010 NORTH SITE SECTIONS.dwg
Drawing No.
BS-24
5/31/16 1:53 PM
Sheet 11 of 75



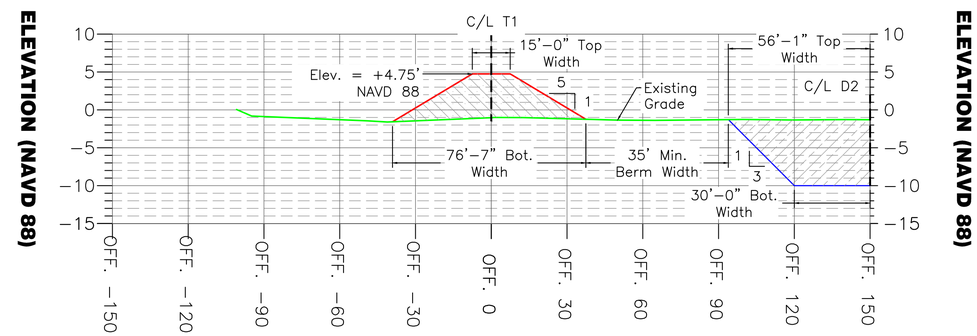
STA. 8+50



STA. 8+76



STA. 10+00



STA. 10+46

0 30' 60' 90'

HOR. SCALE

0 10' 20' 30'

VERT. SCALE

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905–1079 FAX: (337) 905–1076

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

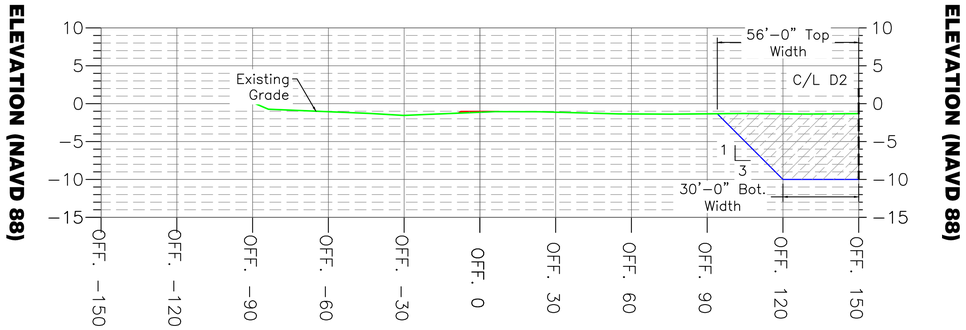
PRELIMINARY

Plaquemines Parish, Louisiana

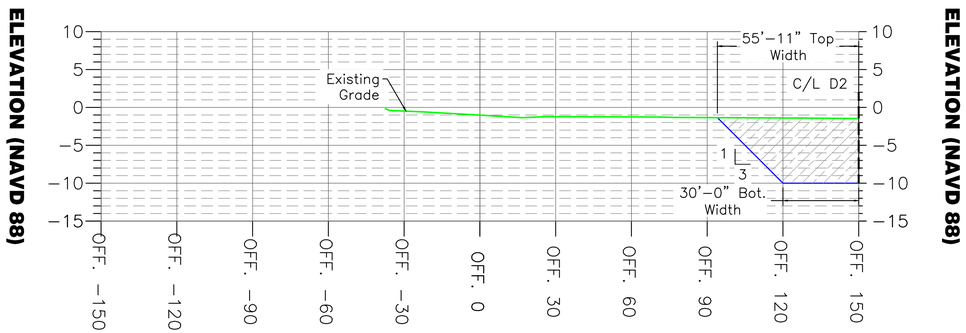
TERRACE "T1" SECTIONS
BS–24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

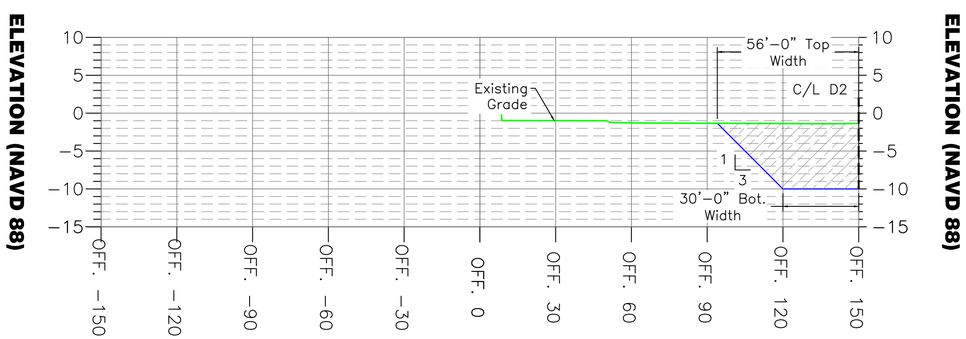
File No.
9_BS240010_NORTH SITE SECTIONS.dwg
Drawing No.
BS–24
5/31/16 1:53 PM



STA. 10+75



STA. 12+00



STA. 13+00

HOR. SCALE **VERT. SCALE**

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905−1079 FAX: (337) 905−1076

TERRACE "T1" VOLUME TABLE

STATION	CUT VOL. (CU. YD.)	FILL VOL. (CU. YD.)	CUM. CUT VOL. (CU. YD.)	CUM. FILL VOL. (CU. YD.)
0+00	0	0	0	0
2+00	2706.29	0	2706.29	0
3+00	1355.39	0	4061.68	0
3+30	414.61	150.14	4476.29	150.15
4+00	964.31	717.37	5440.59	867.52
6+00	1531.58	2135.06	6972.17	3002.58
7+04	602.84	1083.48	7575.01	4086.05
7+29	718.90	258.11	8293.92	4344.16
8+00	2929.58	728.25	11223.49	5072.41
8+50	2056.11	508.39	13279.61	5580.80
8+76	712.63	254.39	13992.23	5835.19
10+00	1765.37	1218.61	15757.60	7053.80
10+46	639.56	450.00	16397.17	7503.80
10+75	400.84	143.40	16798.01	7647.20
12+00	1715.60	3.37	18513.60	7650.46
13+00	1374.91	0	19888.51	7650.46

		Date
Designed	Chris Wheat	06/01/16
Drawn	Aaron Harper	06/01/16
Checked	Leonard Harper	06/01/16
Approved	Lonnie Harper	06/01/16

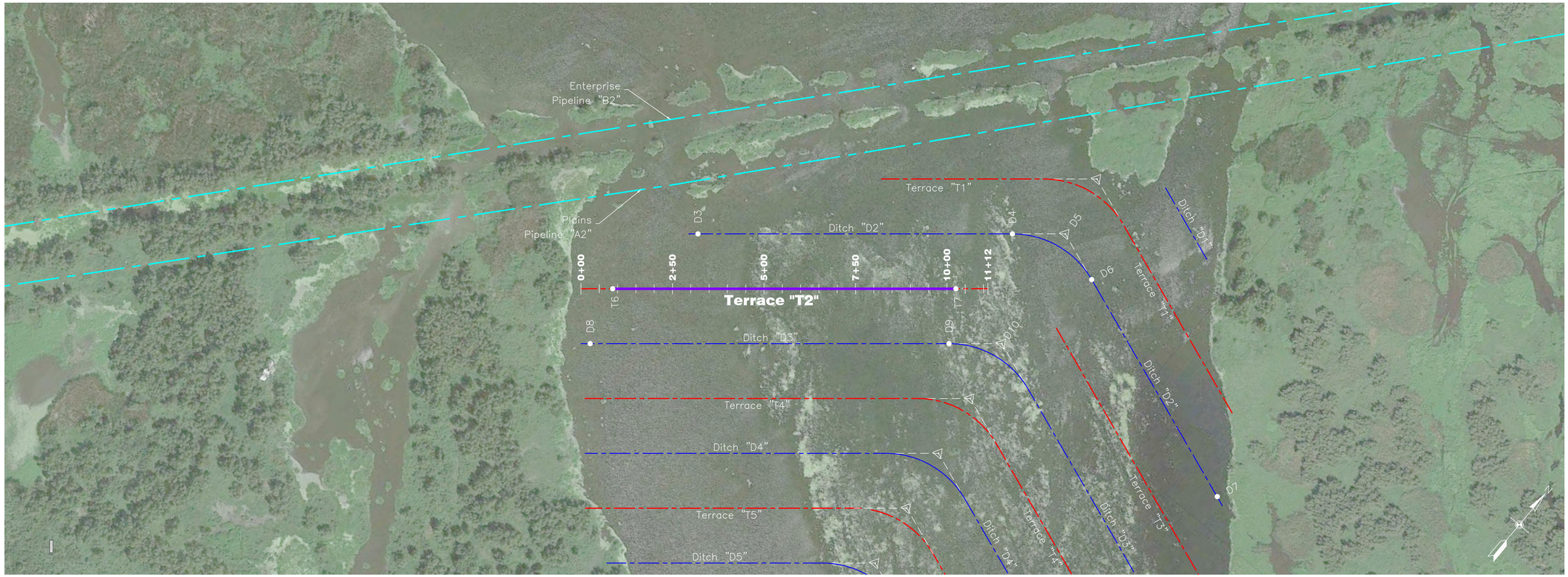
PRELIMINARY

TERRACE "T1" SECTIONS
BS−24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

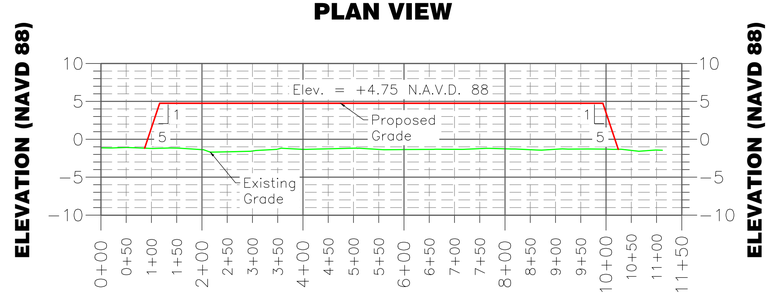
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.
9_BS240010 NORTH SITE SECTIONS.dwg
Drawing No.
BS−24
5/31/16 1:53 PM
Sheet 11 of 75



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'

HOR. SCALE

0 10' 20' 30'

VERT. SCALE

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T6	476640.72	3735884.01	
T7	477241.82	3736603.64	

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D3	476905.16	3735966.61	
D4	477456.06	3736626.14	P.C. – 250'
D5	477548.59	3736736.91	P.I.
D6	477498.92	3736872.44	P.T. – 250'
D7	477262.90	3737516.43	
D8	476486.10	3735932.89	
D9	477114.78	3736685.53	P.C. – 250'
D10	477207.31	3736796.30	P.I.

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lennie Harper	04/01/16

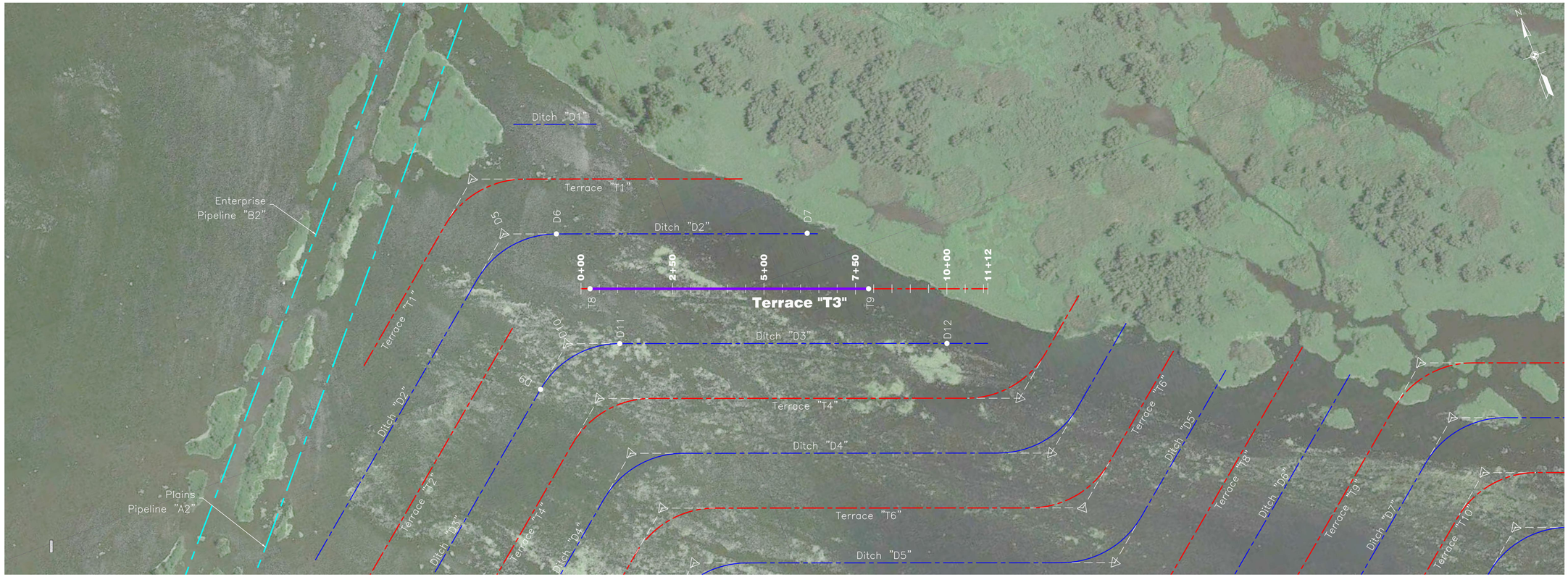
PRELIMINARY

TERRACE "T2" PLAN & PROFILE
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

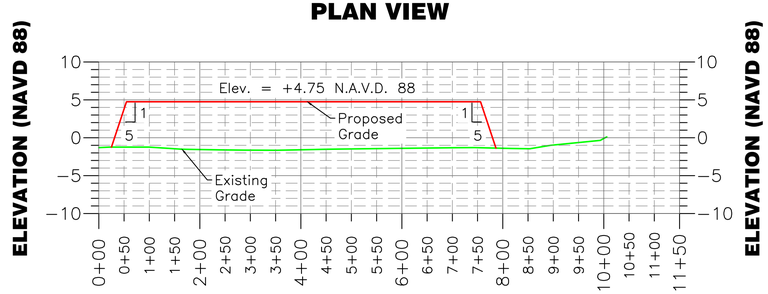
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.
BS240010 NORTH
Site P&P.dwg
Drawing No.
BS-24
5/31/16 12:08 PM
Sheet 11 of 75



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'
HOR. SCALE

0 10' 20' 30'
VERT. SCALE

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T8	477326.32	3736907.44	
T9	477064.02	3737621.81	

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D5	477548.59	3736736.91	P.I.
D6	477498.92	3736872.44	P.T. – 250'
D7	477262.90	3737516.43	
D9	477114.78	3736685.53	P.C. – 250'
D10	477207.31	3736796.30	P.I.
D11	477157.64	3736931.83	P.T. – 250'
D12	476849.98	3737771.28	

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

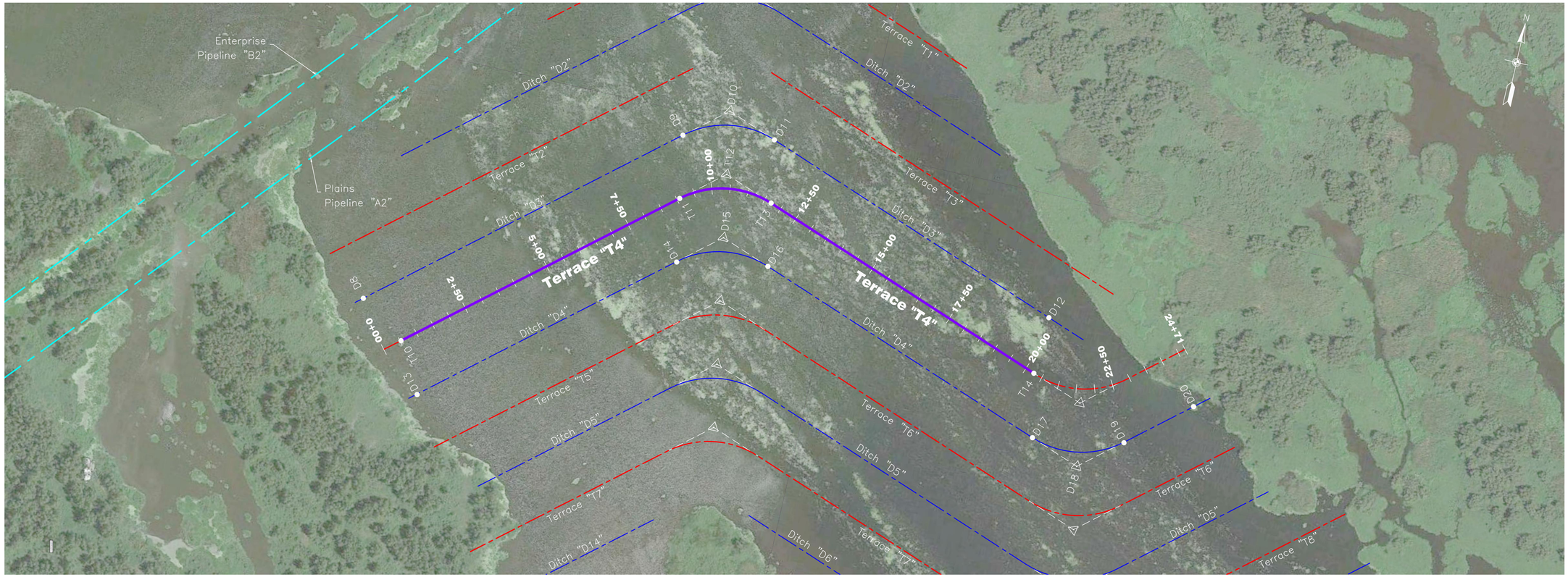
PRELIMINARY

TERRACE "T3" PLAN & PROFILE
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

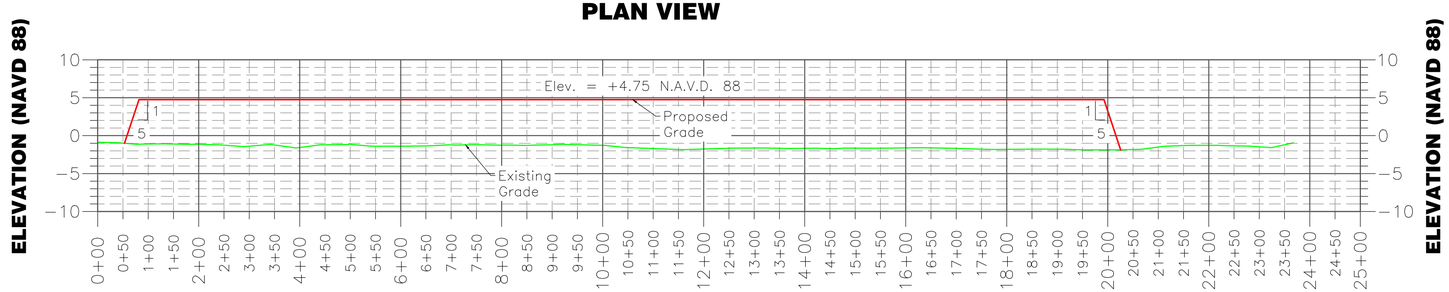
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No. BS240010 NORTH
Site P&P.dwg
Drawing: NO1
BS-24
5/31/16 12:08 PM
Sheet 11 of 75



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'

HOR. SCALE

0 10' 20' 30'

VERT. SCALE

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T10	476396.06	3736059.07	
T11	476944.14	3736715.22	P.C. – 250'
T12	477036.67	3736826.00	P.I.
T13	476987.00	3736961.52	P.T. – 250'
T14	476692.55	3737764.92	

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D8	476486.10	3735932.89	
D9	477114.78	3736685.53	P.C. – 250'
D10	477207.31	3736796.30	P.I.
D11	477157.64	3736931.83	P.T. – 250'
D12	476849.98	3737771.28	
D13	476262.98	3736133.73	
D14	476773.50	3736744.92	P.C. – 250'
D15	476866.03	3736855.69	P.I.
D16	476816.36	3736991.22	P.T. – 250'
D17	476519.96	3737799.94	P.C. – 250'
D18	476470.29	3737935.46	P.I.
D19	476562.82	3738046.24	P.T. – 250'
D20	476700.31	3738210.84	

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905–1079 FAX: (337) 905–1076

		Date
Designed	Chris Wheat	06/01/16
Drawn	Aaron Harper	06/01/16
Checked	Leonard Harper	06/01/16
Approved	Lonnie Harper	06/01/16

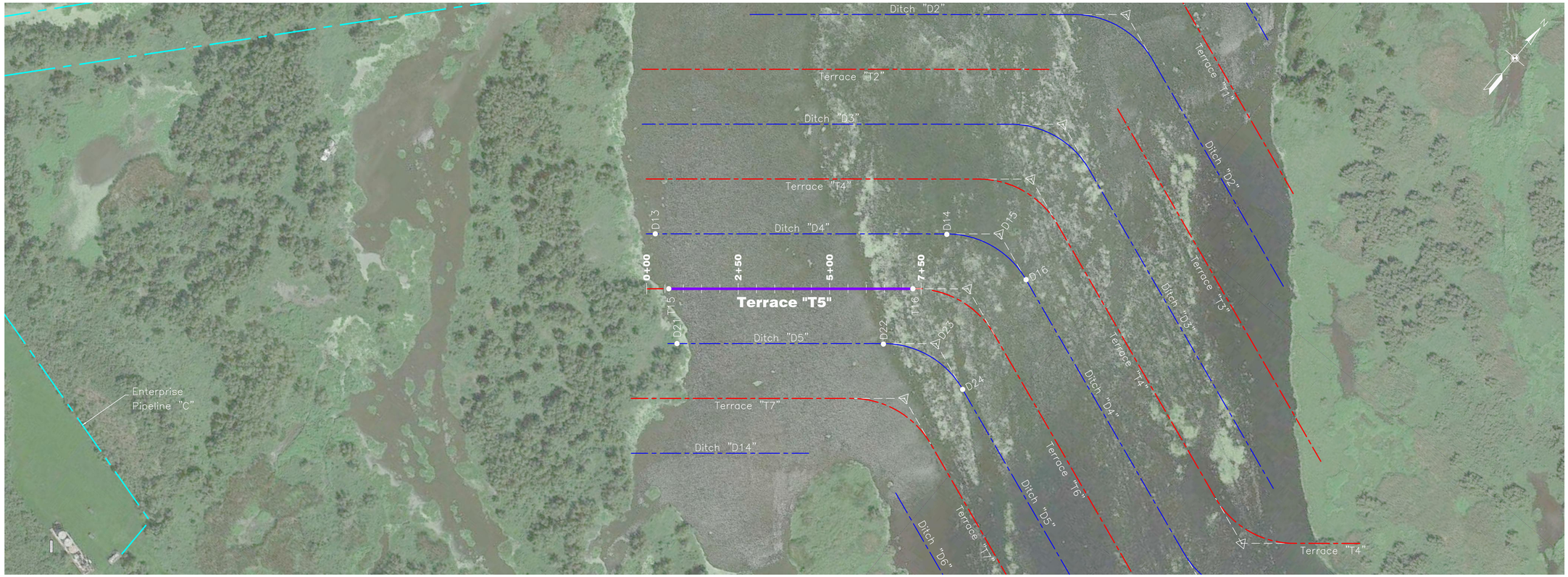
PRELIMINARY

TERRACE "T4" PLAN & PROFILE
BS–24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

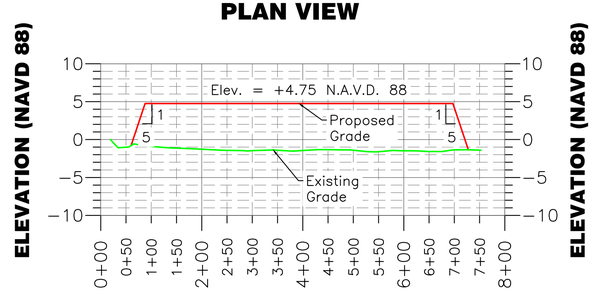
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.
BS240010 NORTH
Site P&P.dwg
Drawing No.
BS–24
5/31/16 12:08 PM
Sheet 11 of 75



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'
HOR. SCALE

0 10' 20' 30'
VERT. SCALE

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T15	476171.23	3736258.19	
T16	476598.98	3736769.98	

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D13	476262.98	3736133.73	
D14	476773.50	3736744.92	P.C. – 250'
D15	476866.03	3736855.69	P.I.
D16	476816.36	3736991.22	P.T. – 250'
D21	476070.69	3736371.50	
D22	476432.22	3736804.31	P.C. – 250'
D23	476524.75	3736915.09	P.I.
D24	476475.08	3737050.61	P.T. – 250'

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

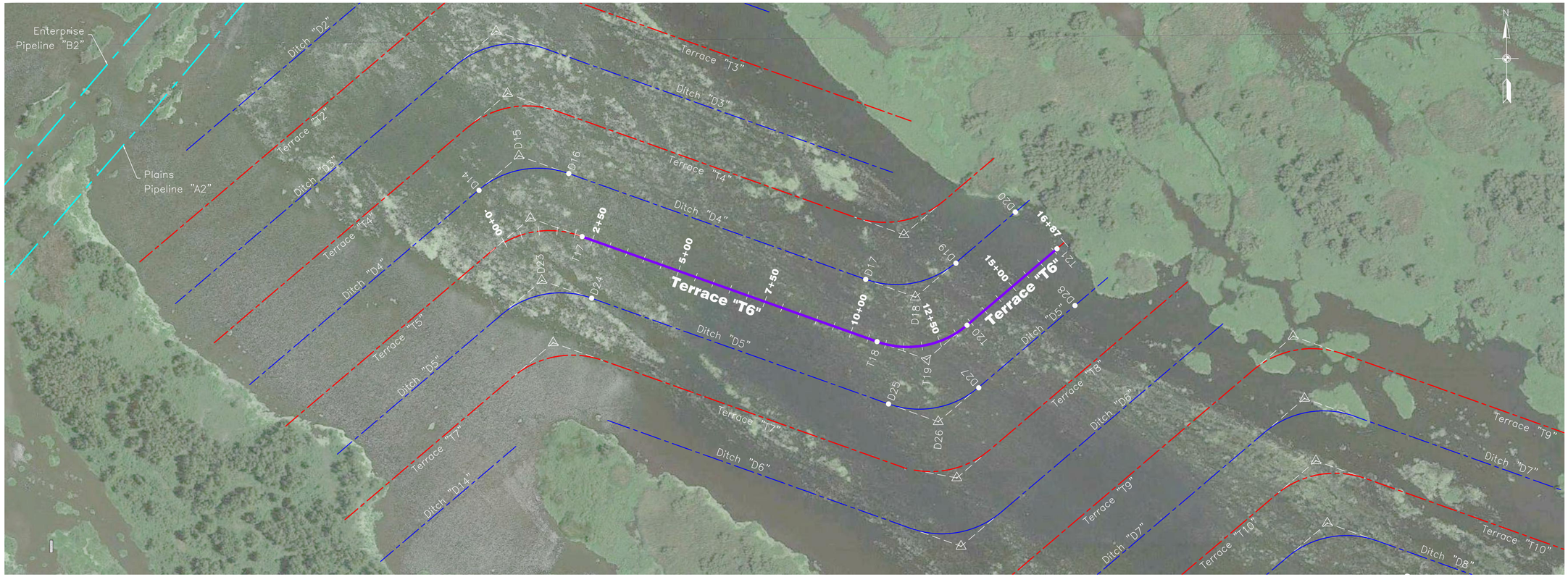
PRELIMINARY

TERRACE "T5" PLAN & PROFILE
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

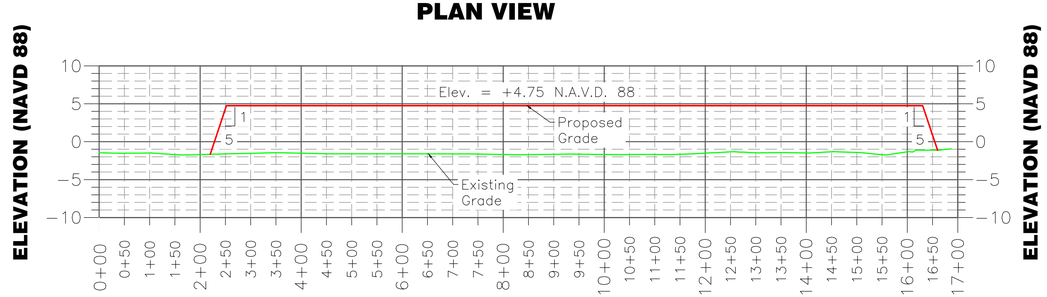
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No. BS240010 NORTH
Site P&P.dwg
Drawing No. BS-24
5/31/16 12:08 PM
Sheet 11 of 75



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'
HOR. SCALE

0 10' 20' 30'
VERT. SCALE

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T17	476643.75	3737026.29	
T18	476349.32	3737829.63	P.C. – 250'
T19	476299.65	3737965.15	P.I.
T20	476392.18	3738075.93	P.T. – 250'
T21	476599.00	3738323.53	

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D14	476773.50	3736744.92	P.C. – 250'
D15	476866.03	3736855.69	P.I.
D16	476816.36	3736991.22	P.T. – 250'
D17	476519.96	3737799.94	P.C. – 250'
D18	476470.29	3737935.46	P.I.
D19	476562.82	3738046.24	P.T. – 250'
D20	476700.31	3738210.84	
D23	476524.75	3736915.09	P.I.
D24	476475.08	3737050.61	P.T. – 250'
D25	476178.68	3737859.33	P.C. – 250'
D26	476129.01	3737994.85	P.I.
D27	476221.54	3738105.63	P.T. – 250'
D28	476443.44	3738371.28	

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905–1079 FAX: (337) 905–1076

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

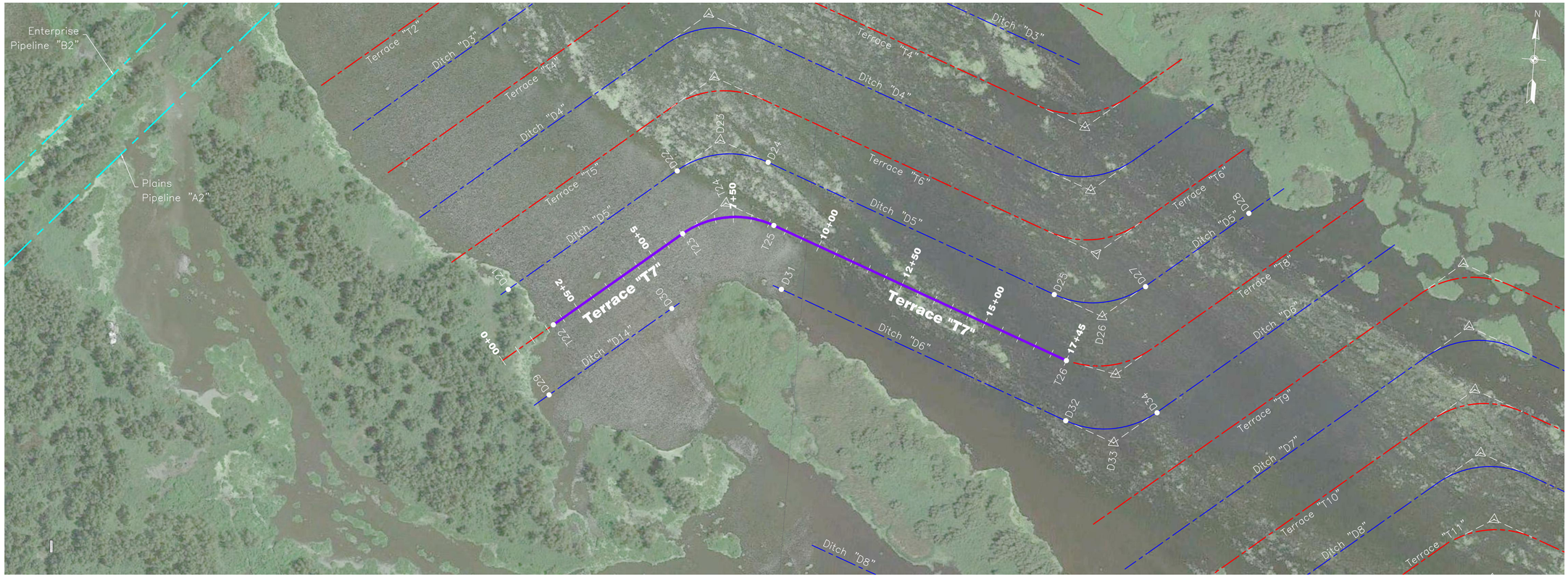
PRELIMINARY

TERRACE "T6" PLAN & PROFILE
BS–24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

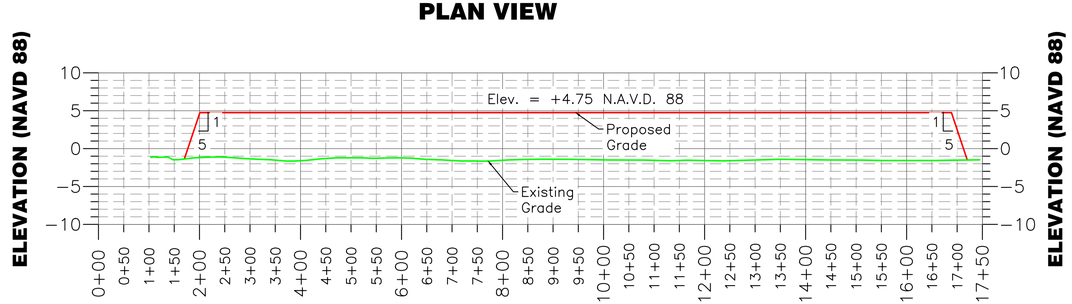
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.
BS240010 NORTH
Site P&P.dwg
Drawing No.
BS–24
5/31/16 12:08 PM
Sheet 11 of 75



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'
HOR. SCALE

0 10' 20' 30'
VERT. SCALE

TERRACE DATA TABLE			
POINT NO.	NORTHING	EASTING	RADIUS
T22	475984.42	3736502.20	
T23	476261.58	3736834.00	P.C. – 250'
T24	476354.11	3736944.78	P.I.
T25	476304.44	3737080.30	P.T. – 250'
T26	476009.92	3737883.90	

BORROW DATA TABLE			
POINT NO.	NORTHING	EASTING	RADIUS
D21	476070.69	3736371.50	
D22	476432.22	3736804.31	P.C. – 250'
D23	476524.75	3736915.09	P.I.
D24	476475.08	3737050.61	P.T. – 250'
D25	476178.68	3737859.33	P.C. – 250'
D26	476129.01	3737994.85	P.I.
D27	476221.54	3738105.63	P.T. – 250'
D28	476443.44	3738371.28	
D29	475792.37	3736506.26	
D30	476055.21	3736820.93	
D31	476131.85	3737115.31	
D32	475837.40	3737918.72	P.C. – 250'
D33	475787.73	3738054.24	P.I.
D34	475880.26	3738165.02	P.T. – 250'

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905–1079 FAX: (337) 905–1076

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

PRELIMINARY

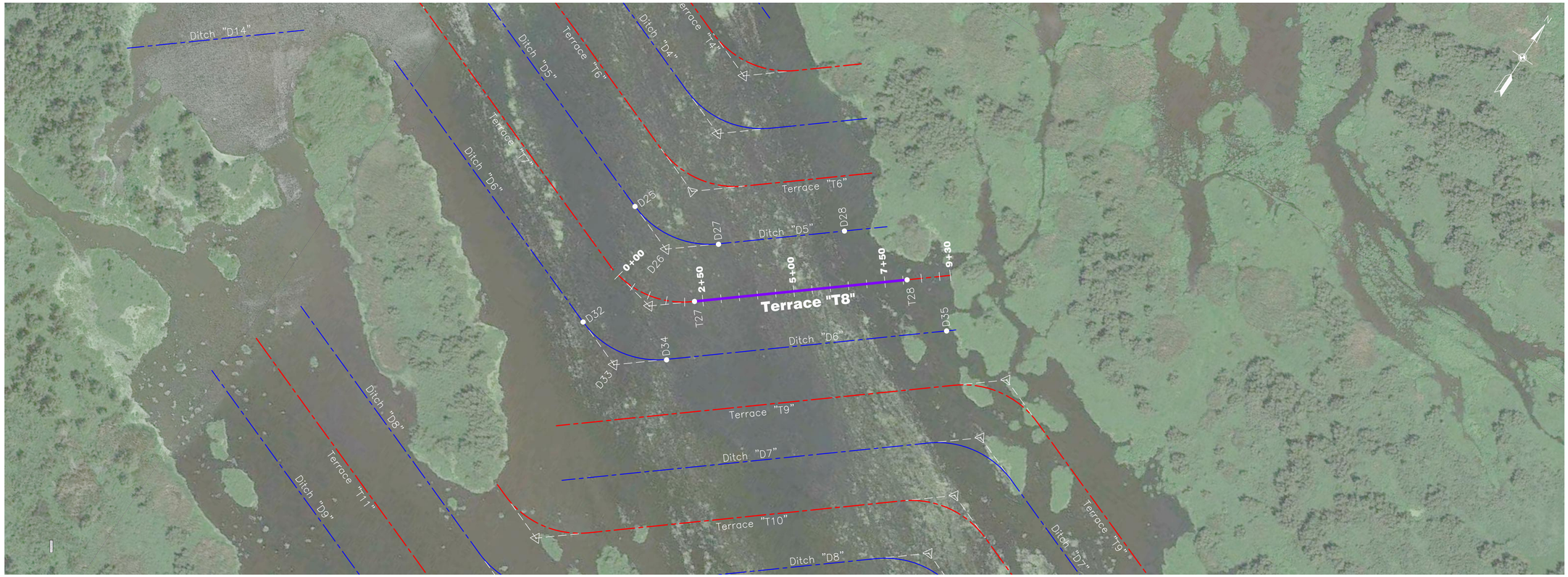
TERRACE "T7" PLAN & PROFILE
BS–24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR

Page 11 of 28

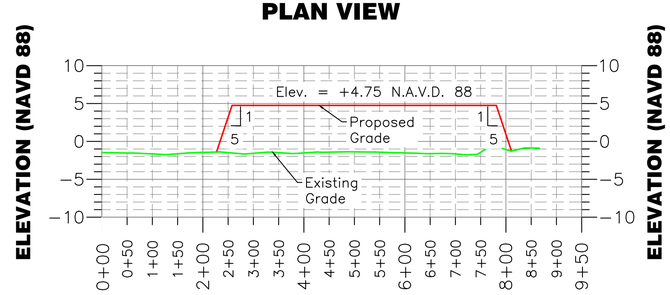
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No. BS240010 NORTH
Site P&P.dwg
Drawing No. BS–24
5/31/16 12:08 PM
Sheet 11 of 75



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'
HOR. SCALE

0 10' 20' 30'
VERT. SCALE

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T27	476054.53	3738139.67	P.T. – 250'
T28	476428.84	3738587.78	

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D25	476178.68	3737859.33	P.C. – 250'
D26	476129.01	3737994.85	P.I.
D27	476221.54	3738105.63	P.T. – 250'
D28	476443.44	3738371.28	
D32	475837.40	3737918.72	P.C. – 250'
D33	475787.73	3738054.24	P.I.
D34	475880.26	3738165.02	P.T. – 250'
D35	476373.51	3738755.53	

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

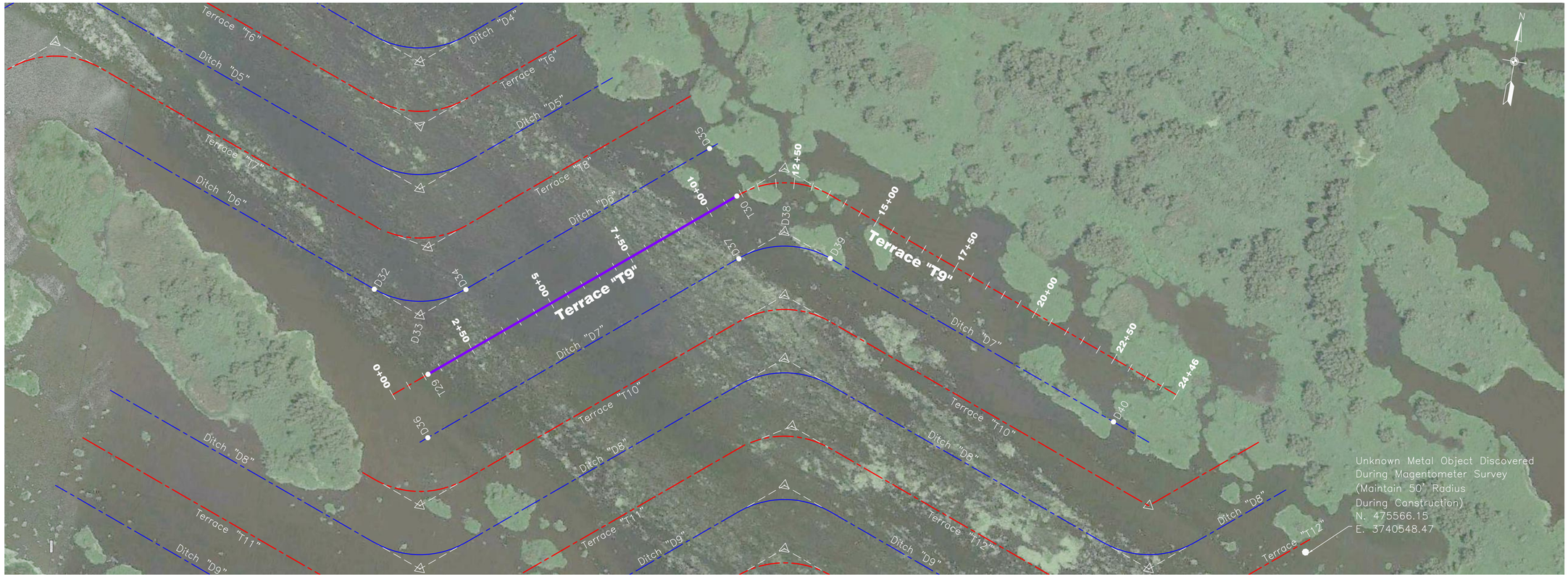
PRELIMINARY

TERRACE "T8" PLAN & PROFILE
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

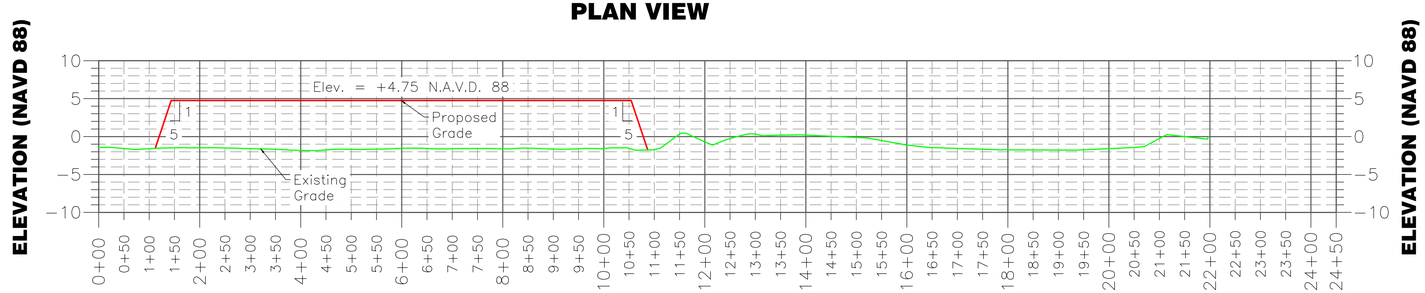
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No. BS240010 NORTH
Site P&P.dwg
Drawing No. BS-24
5/31/16 12:08 PM
Sheet 11 of 75



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'

HOR. SCALE

0 10' 20' 30'

VERT. SCALE

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T29	475633.37	3738103.43	
T30	476258.16	3738851.42	P.C. – 250'

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D32	475837.40	3737918.72	P.C. – 250'
D33	475787.73	3738054.24	P.I.
D34	475880.26	3738165.02	P.T. – 250'
D35	476373.51	3738755.53	
D36	475462.48	3738132.82	
D37	476091.15	3738885.46	P.C. – 250'
D38	476183.68	3738996.23	P.I.
D39	476134.01	3739131.75	P.T. – 250'
D40	475826.35	3739971.20	

		Date
Designed	Chris Wheat	06/01/16
Drawn	Aaron Harper	06/01/16
Checked	Leonard Harper	06/01/16
Approved	Lonnie Harper	06/01/16

PRELIMINARY

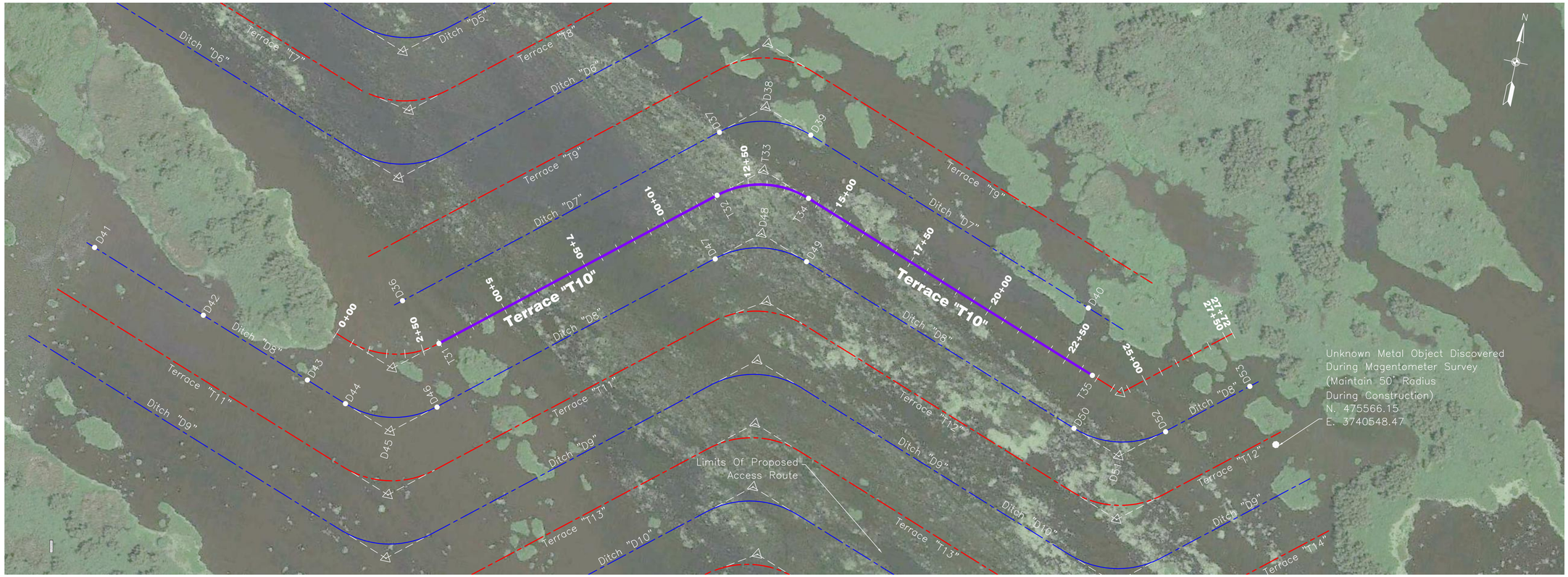
TERRACE "T9" PLAN & PROFILE
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR

Page 11 of 28

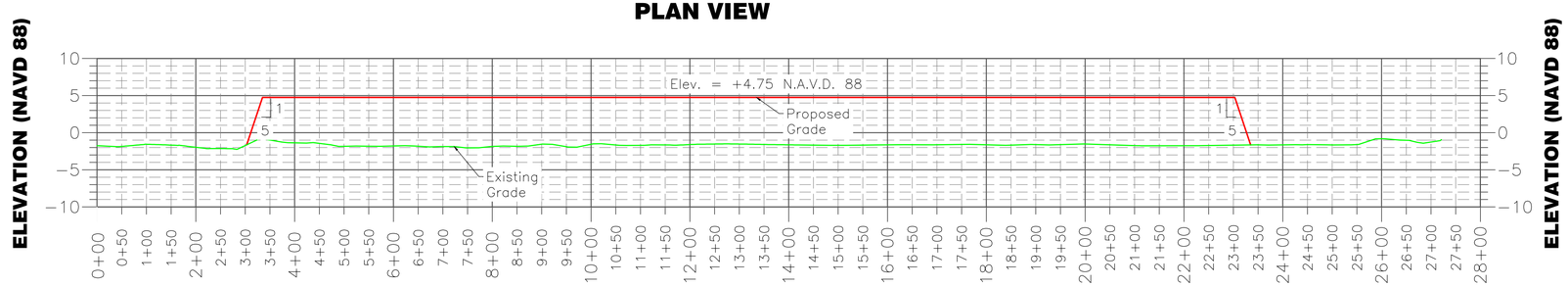
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No. BS240010 NORTH
Site P&P.dwg
Drawing No. BS-24
5/31/16 12:08 PM
Sheet 11 of 75



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'

HOR. SCALE

0 10' 20' 30'

VERT. SCALE

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D36	475462.48	3738132.82	
D37	476091.15	3738885.46	P.C. – 250'
D38	476183.68	3738996.23	P.I.
D39	476134.01	3739131.75	P.T. – 250'
D40	475826.35	3739971.20	
D41	475432.70	3737279.36	
D42	475312.26	3737607.98	
D43	475196.98	3737922.52	
D44	475154.84	3738037.50	P.C. – 250'
D45	475105.17	3738173.02	P.I.
D46	475197.70	3738283.80	P.T. – 250'
D47	475749.87	3738944.85	P.C. – 250'
D48	475842.40	3739055.62	P.I.
D49	475792.73	3739191.15	P.T. – 250'
D50	475496.33	3739999.87	P.C. – 250'
D51	475446.66	3740135.39	P.I.
D52	475539.20	3740246.16	P.T. – 250'
D53	475706.83	3740446.86	

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T31	475371.77	3738258.21	P.T. – 250'
T32	475920.47	3738915.11	P.C. – 250'
T33	476013.07	3739025.96	P.I.
T34	475963.29	3739161.54	P.T. – 250'
T35	475648.21	3740019.66	

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905–1079 FAX: (337) 905–1076

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

PRELIMINARY

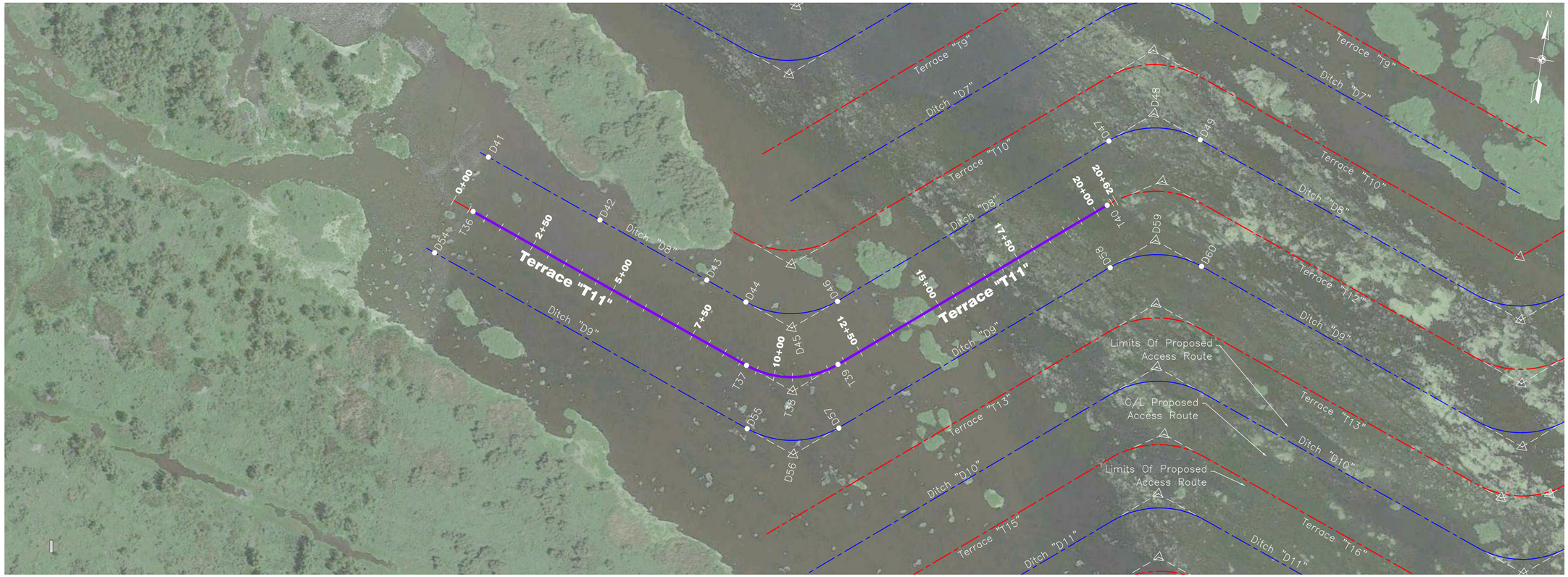
TERRACE "T10" PLAN & PROFILE
BS–24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR

Page 11 of 28

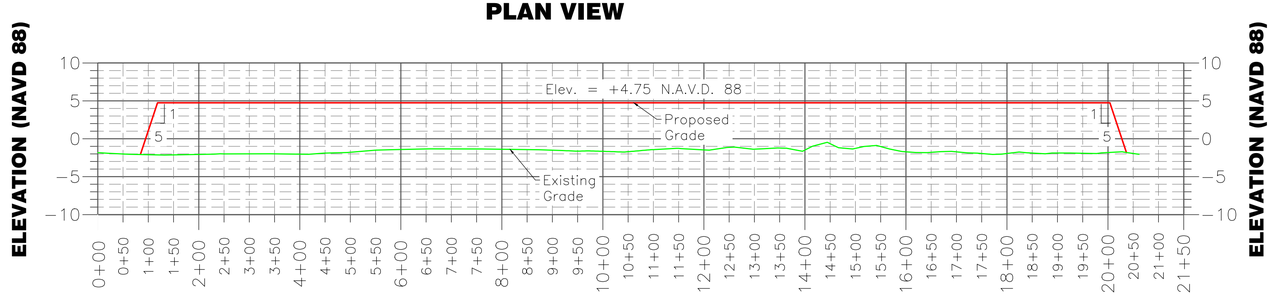
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.
BS240010 NORTH
Site P&P.dwg
Drawing No.
BS–24
5/31/16 12:08 PM
Sheet 11 of 75



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'

HOR. SCALE

0 10' 20' 30'

VERT. SCALE

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D41	475432.70	3737279.36	
D42	475312.26	3737607.98	P.C. – 250'
D43	475196.98	3737922.52	P.I.
D44	475154.84	3738037.50	P.T. – 250'
D45	475105.17	3738173.02	P.C. – 250'
D46	475197.70	3738283.80	P.I.
D47	475749.87	3738944.85	P.T. – 250'
D48	475842.40	3739055.62	
D49	475792.73	3739191.15	
D54	475151.02	3737176.12	
D55	474813.56	3738096.89	P.C. – 250'
D56	474763.89	3738232.41	P.I.
D57	474856.42	3738343.19	P.T. – 250'
D58	475408.59	3739004.24	P.C. – 250'
D59	475501.12	3739115.01	P.I.
D60	475451.45	3739250.54	P.T. – 250'

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T36	475279.27	3737262.11	
T37	474984.20	3738067.20	P.C. – 250'
T38	474934.53	3738202.72	P.I.
T39	475027.06	3738313.49	P.T. – 250'
T40	475575.01	3738969.49	

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905–1079 FAX: (337) 905–1076

		Date
Designed	Chris Wheat	06/01/16
Drawn	Aaron Harper	06/01/16
Checked	Leonard Harper	06/01/16
Approved	Lonnie Harper	06/01/16

PRELIMINARY

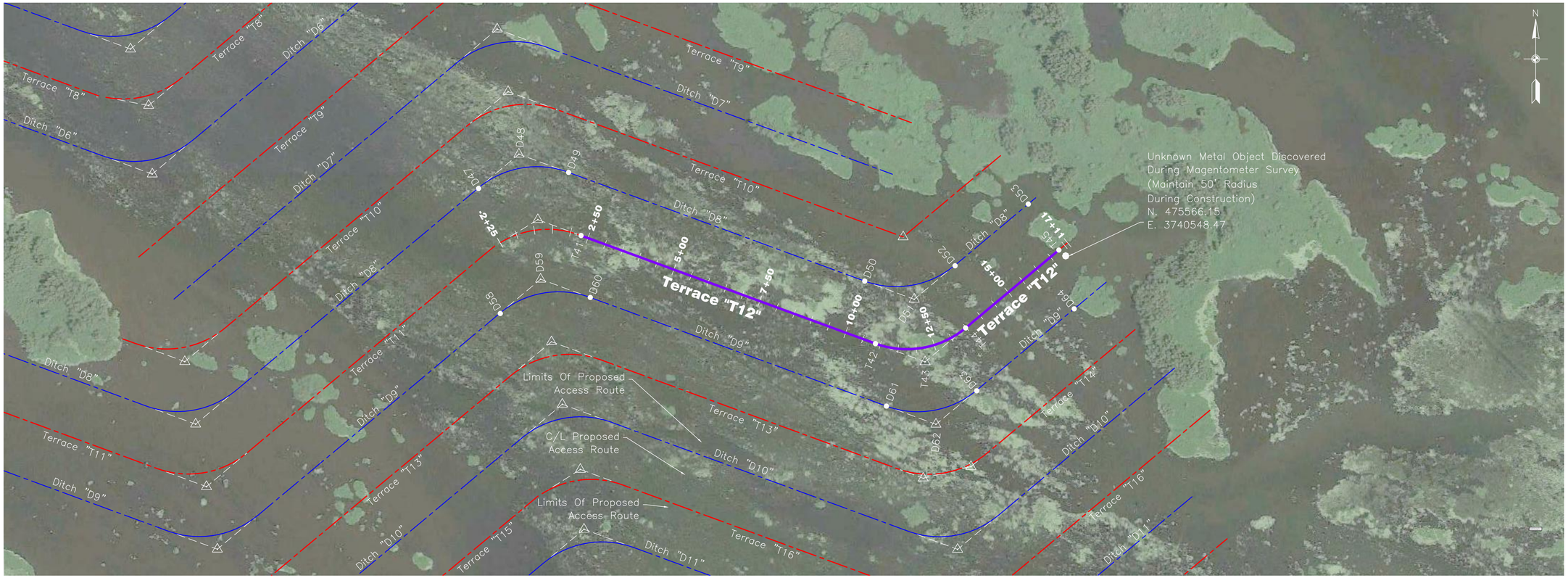
TERRACE "T11" PLAN & PROFILE
BS–24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR

Page 11 of 28

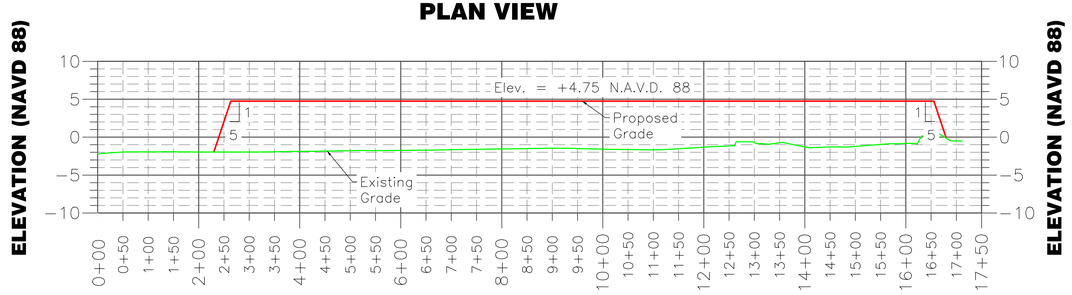
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.
BS240010 NORTH
Site P&P.dwg
Drawing No.
BS–24
5/31/16 12:08 PM
Sheet 11 of 75



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'
HOR. SCALE

0 10' 20' 30'
VERT. SCALE

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D47	475749.87	3738944.85	P.C. – 250'
D48	475842.40	3739055.62	P.I.
D49	475792.73	3739191.15	P.T. – 250'
D50	475496.33	3739999.87	P.C. – 250'
D51	475446.66	3740135.39	P.I.
D52	475539.20	3740246.16	P.T. – 250'
D53	475706.83	3740446.86	
D58	475408.59	3739004.24	P.C. – 250'
D59	475501.12	3739115.01	P.I.
D60	475451.45	3739250.54	P.T. – 250'
D61	475155.05	3740059.26	P.C. – 250'
D62	475105.38	3740194.78	P.I.
D63	475197.91	3740305.55	P.T. – 250'
D64	475420.80	3740572.39	

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T41	475620.41	3739225.43	P.T. – 250'
T42	475325.69	3740029.56	P.C. – 250'
T43	475276.02	3740165.08	P.I.
T44	475368.56	3740275.86	P.T. – 250'
T45	475581.24	3740530.48	

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

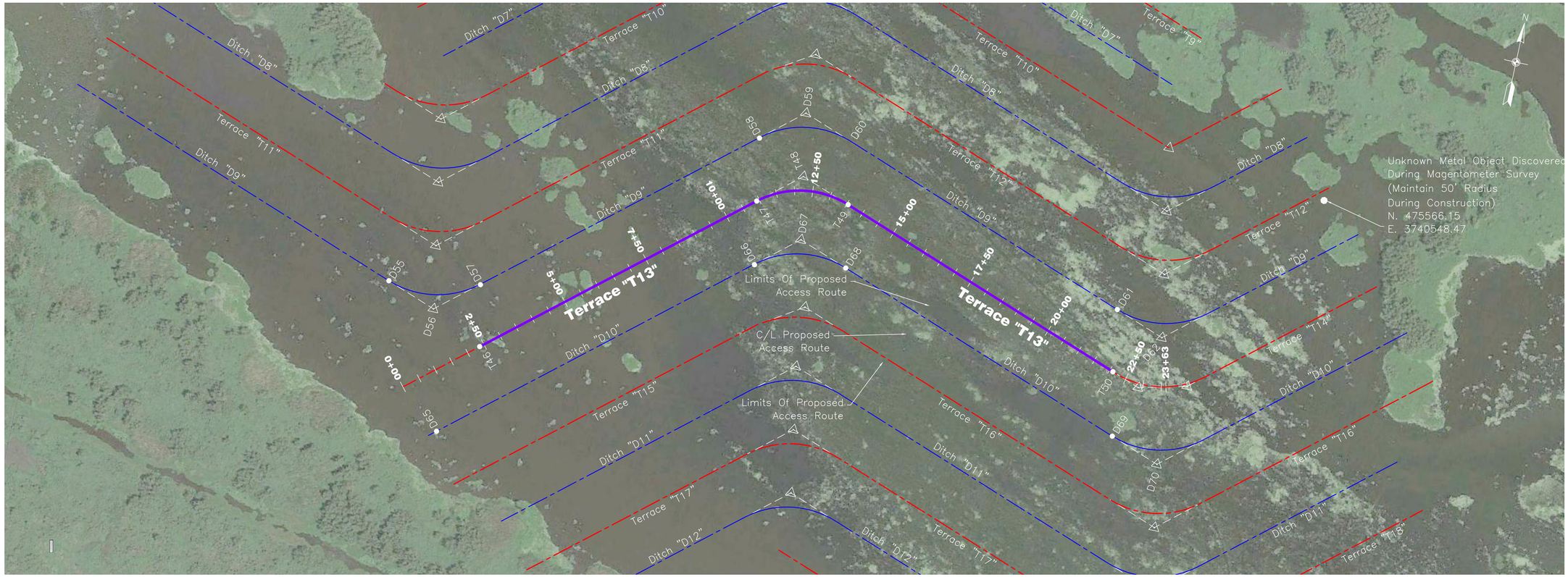
PRELIMINARY

TERRACE "T12" PLAN & PROFILE
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

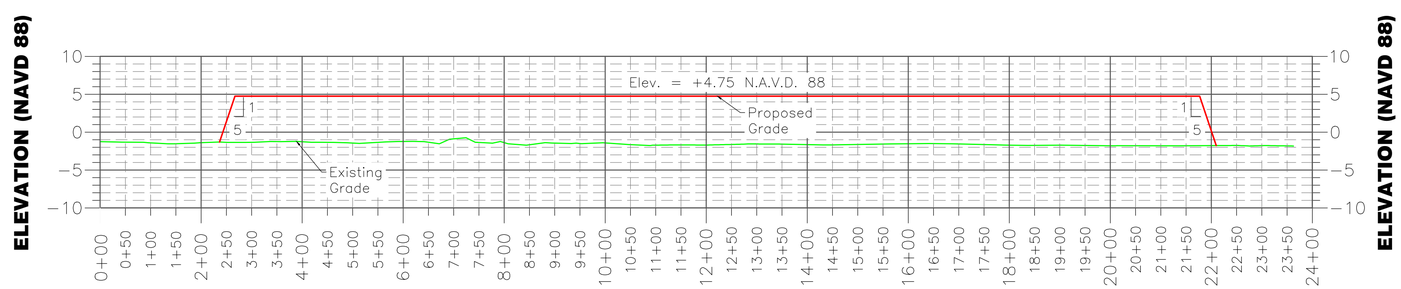
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No. BS240010 NORTH SITE P&P.dwg
Drawing No. BS-24
5/31/16 12:08 PM
Sheet 11 of 75



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'

HOR. SCALE

0 10' 20' 30'

VERT. SCALE

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D55	474813.56	3738096.89	P.C. – 250'
D56	474763.89	3738232.41	P.I.
D57	474856.42	3738343.19	P.T. – 250'
D58	475408.59	3739004.24	P.C. – 250'
D59	475501.12	3739115.01	P.I.
D60	475451.45	3739250.54	P.T. – 250'
D61	475155.05	3740059.26	P.C. – 250'
D62	475105.38	3740194.78	P.I.
D65	474438.63	3738310.99	
D66	475067.31	3739063.63	P.C. – 250'
D67	475159.84	3739174.40	P.I.
D68	475110.17	3739309.93	P.T. – 250'
D69	474813.77	3740118.65	P.C. – 250'
D70	474764.10	3740254.17	P.I.

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T46	474689.73	3738377.61	
T47	475237.95		P.C. – 250'
T48	475330.48	3739144.71	P.I.
T49	475280.81	3739280.23	P.T. – 250'
T50	474986.40	3740083.52	

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905–1079 FAX: (337) 905–1076

		Date
Designed	Chris Wheat	06/01/16
Drawn	Aaron Harper	06/01/16
Checked	Leonard Harper	06/01/16
Approved	Lonnie Harper	06/01/16

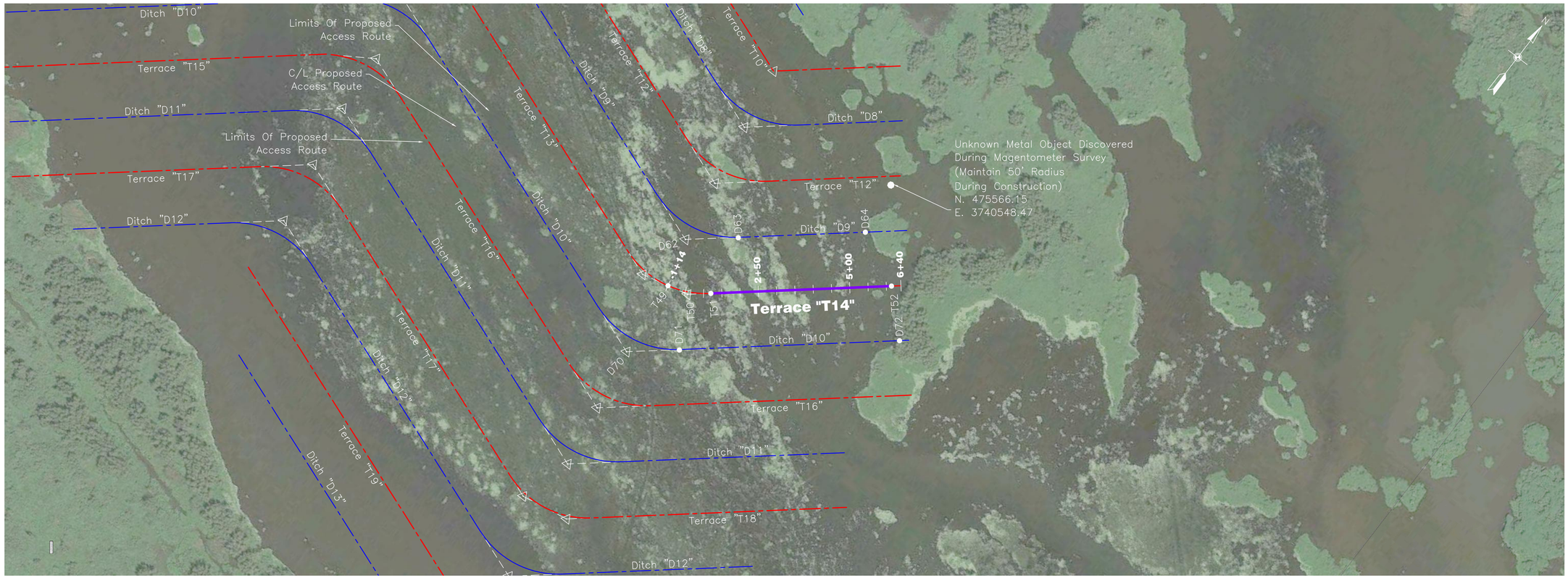
PRELIMINARY

TERRACE "T13" PLAN & PROFILE
BS–24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

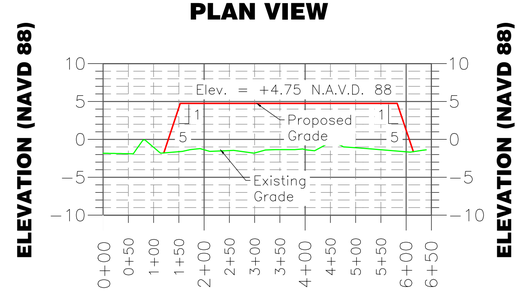
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.
BS240010 NORTH
Site P&P.dwg
Drawing No.
BS–24
5/31/16 12:08 PM
Sheet 11 of 75



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'

HOR. SCALE

0 10' 20' 30'

VERT. SCALE

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T51	475030.90	3740339.60	
T52	475347.59	3740718.73	

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D62	475105.38	3740194.78	P.I.
D63	475197.91	3740305.55	P.T. – 250'
D64	475420.80	3740572.39	
D70	474764.10	3740254.17	P.I.
D71	474856.63	3740364.95	P.T. – 250'
D72	475242.66	3740827.09	

		Date
Designed	Chris Wheat	06/01/16
Drawn	Aaron Harper	06/01/16
Checked	Leonard Harper	06/01/16
Approved	Lonnie Harper	06/01/16

PRELIMINARY

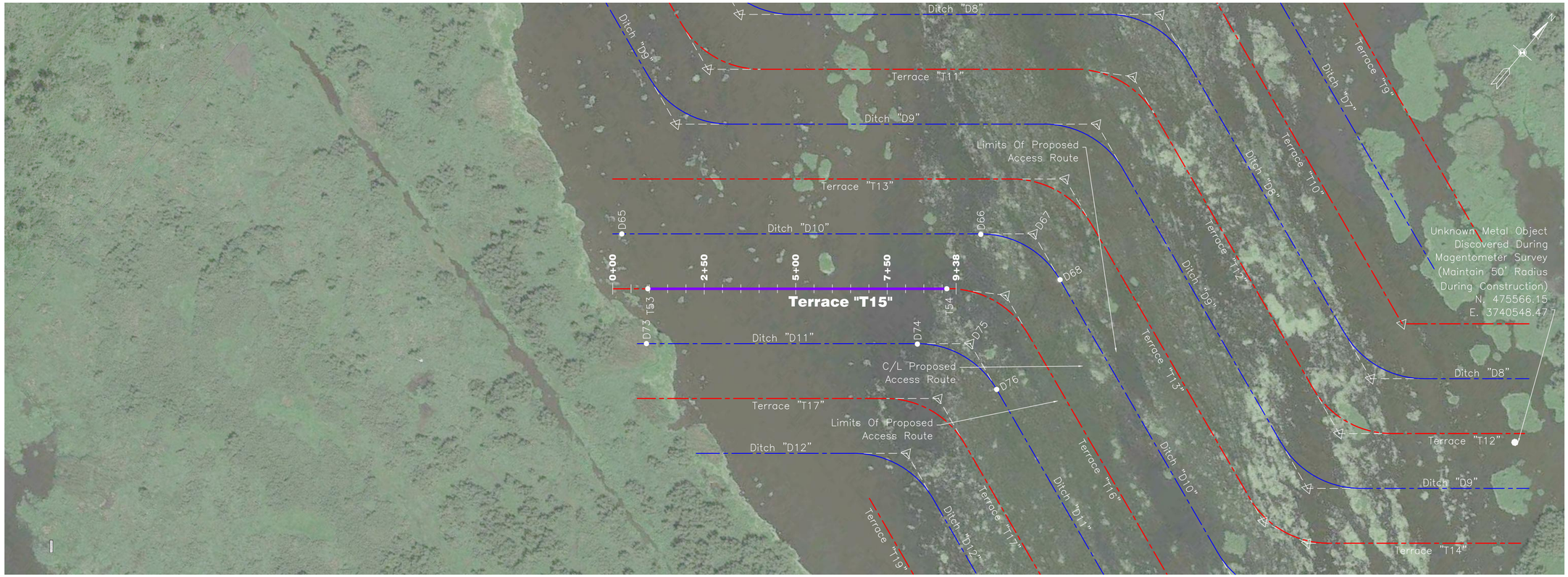
TERRACE "T14" PLAN & PROFILE
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR

Page 11 of 28

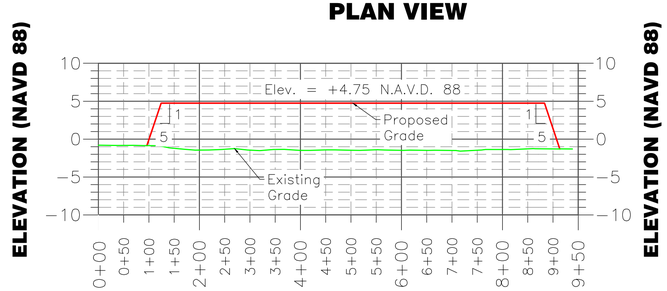
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No. BS240010 NORTH
Site P&P.dwg
Drawing No. BS-24
5/31/16 12:08 PM
Sheet 11 of 75



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'
HOR. SCALE

0 10' 20' 30'
VERT. SCALE

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T53	474369.00	3738461.61	
T54	474892.75	3739088.64	

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D65	474438.63	3738310.99	
D66	475067.31	3739063.63	P.C. – 250'
D67	475159.84	3739174.40	P.I.
D68	475110.17	3739309.93	P.T. – 250'
D73	474251.48	3738554.90	P.C. – 250'
D74	474726.03	3739123.02	P.I.
D75	474818.56	3739233.80	P.T. – 250'
D76	474768.89	3739369.32	

		Date
Designed	Chris Wheat	06/01/16
Drawn	Aaron Harper	06/01/16
Checked	Leonard Harper	06/01/16
Approved	Lonnie Harper	06/01/16

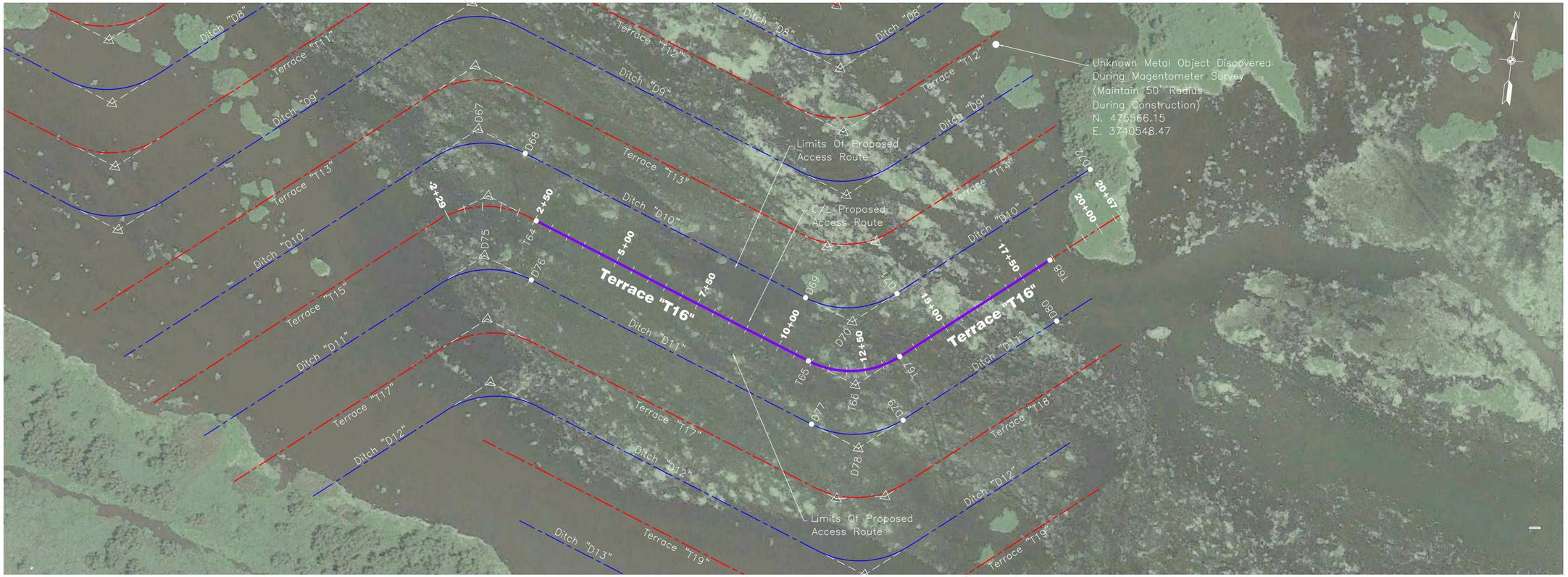
PRELIMINARY

TERRACE "T15" PLAN & PROFILE
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

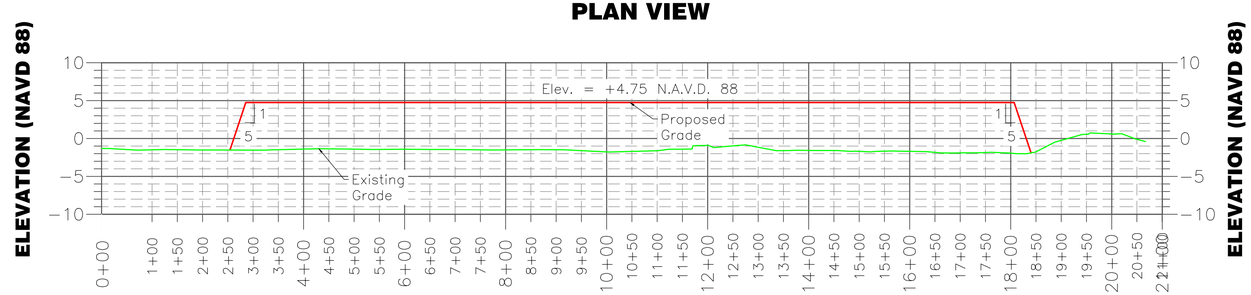
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No. BS240010 NORTH
Site P&P.dwg
Drawing No. BS-24
5/31/16 12:08 PM
Sheet 11 of 75



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'

HOR. SCALE

0 10' 20' 30'

VERT. SCALE

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T64	474930.93	3739363.10	
T65	474643.13	3740148.34	P.C. – 250'
T66	474593.46	3740283.86	P.I.
T67	474685.99	3740394.64	P.T. – 250'
T68	474998.55	3740768.83	

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D67	475159.84	3739174.40	P.I.
D68	475110.17	3739309.93	P.T. – 250'
D69	474813.77	3740118.65	P.C. – 250'
D70	474764.10	3740254.17	P.I.
D71	474856.63	3740364.95	P.T. – 250'
D72	475242.66	3740827.09	
D75	474818.56	3739233.80	P.T. – 250'
D76	474768.89	3739369.32	
D77	474472.49	3740178.04	P.C. – 250'
D78	474422.82	3740313.56	P.I.
D79	474515.35	3740424.34	P.T. – 250'
D80	474835.79	3740807.95	

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

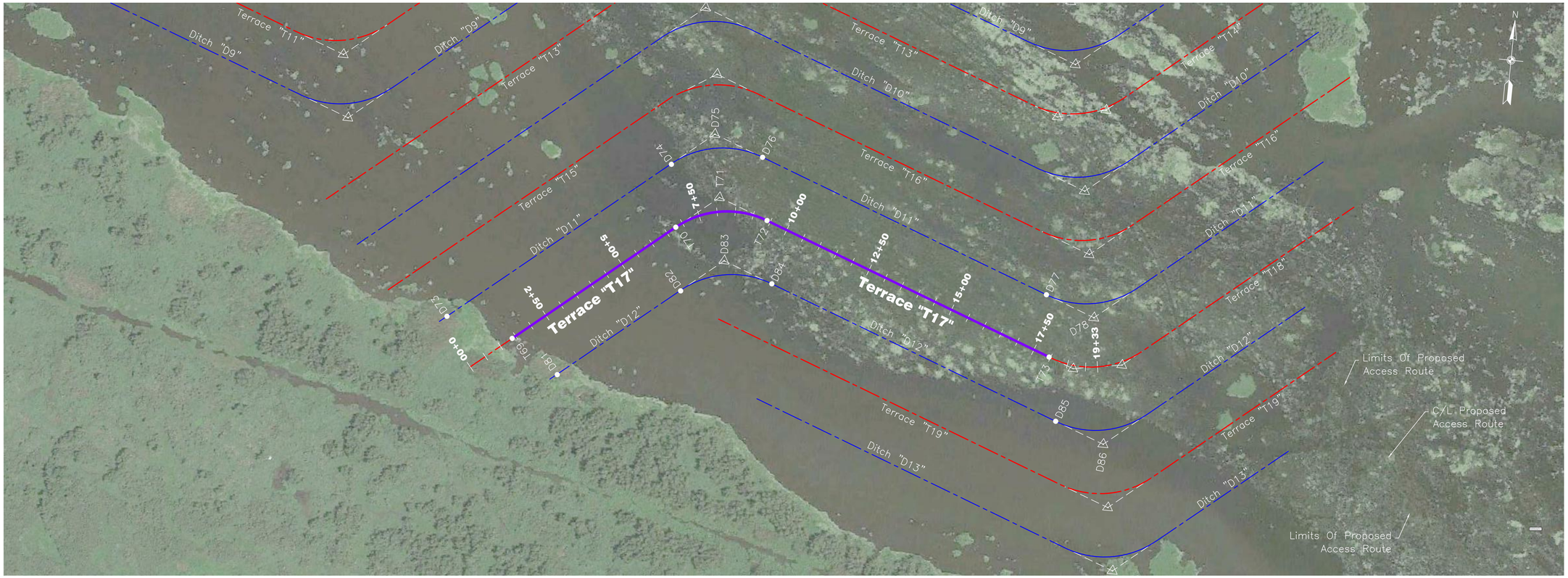
PRELIMINARY

TERRACE "T16" PLAN & PROFILE
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

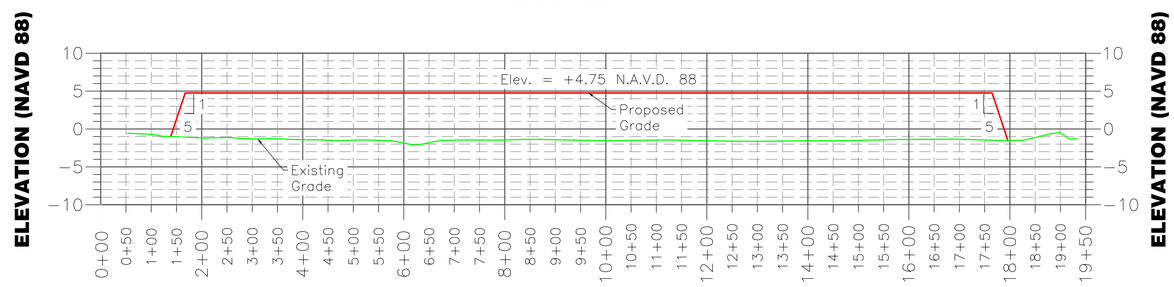
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.
BS240010 NORTH
SITE P&P.dwg
Drawing No.
BS-24
5/31/16 12:08 PM
Sheet 11 of 75



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'

HOR. SCALE

0 10' 20' 30'

VERT. SCALE

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T69	474209.14	3738738.19	
T70	474555.39	3739152.72	P.C. – 250'
T71	474647.92	3739263.49	P.I.
T72	474598.25	3739399.01	P.T. – 250'
T73	474303.80	3740202.42	

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D73	474251.48	3738554.90	P.C. – 250'
D74	474726.03	3739123.02	P.I.
D75	474818.56	3739233.80	P.T. – 250'
D76	474768.89	3739369.32	
D77	474472.49	3740178.04	P.C. – 250'
D78	474422.82	3740313.56	P.I.
D81	474122.90	3738870.49	
D82	474384.75	3739182.41	P.C. – 250'
D83	474477.28	3739293.19	P.I.
D84	474427.61	3739428.71	P.T. – 250'
D85	474131.21	3740237.43	P.C. – 250'
D86	474081.54	3740372.95	P.I.

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

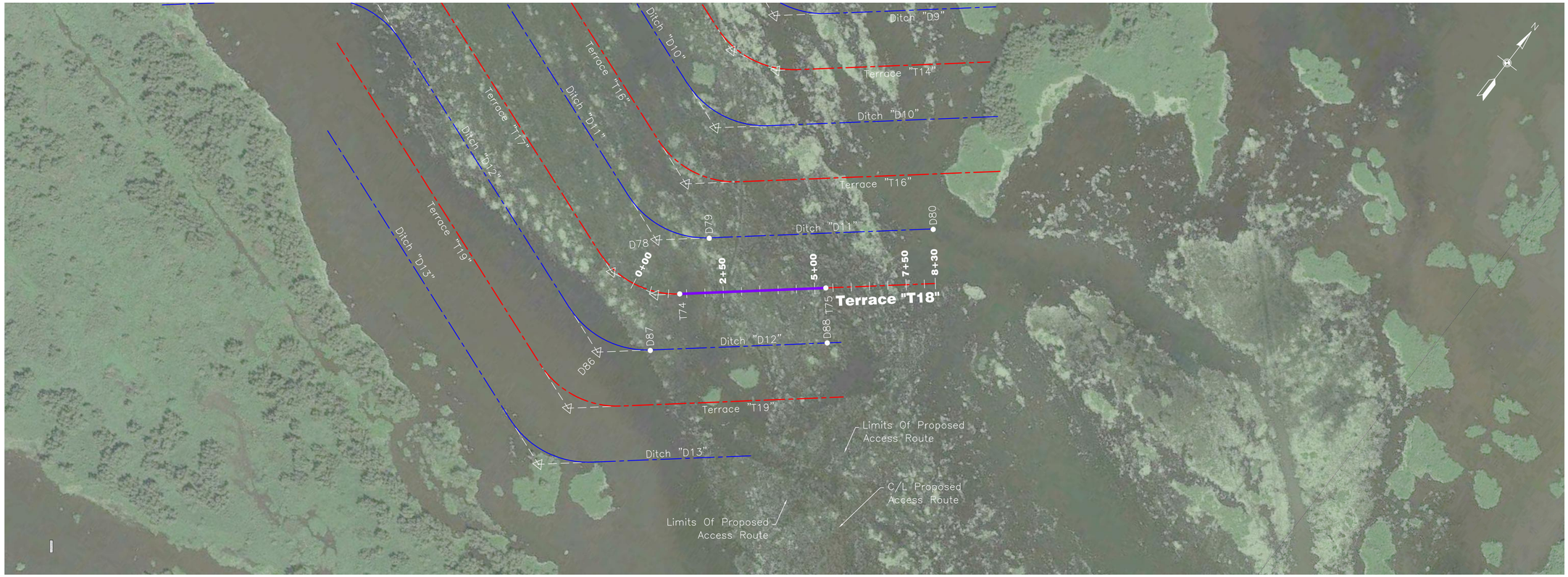
PRELIMINARY

TERRACE "T17" PLAN & PROFILE
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

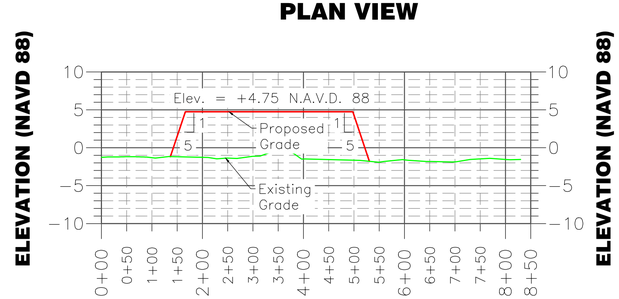
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No. BS240010 NORTH SITE P&P.dwg
Drawing No. BS-24
5/31/16 12:08 PM
Sheet 11 of 75



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'
HOR. SCALE

0 10' 20' 30'
VERT. SCALE

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T74	474350.56	3740461.02	P.T. – 250'
T75	474601.20	3740760.53	

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D78	474422.82	3740313.56	P.I.
D79	474515.35	3740424.34	P.T. – 250'
D80	474835.79	3740807.95	
D86	474081.54	3740372.95	P.I.
D87	474174.07	3740483.73	P.T. – 250'
D88	474484.43	3740855.28	

		Date
Designed	Chris Wheat	06/01/16
Drawn	Aaron Harper	06/01/16
Checked	Leonard Harper	06/01/16
Approved	Lennie Harper	06/01/16

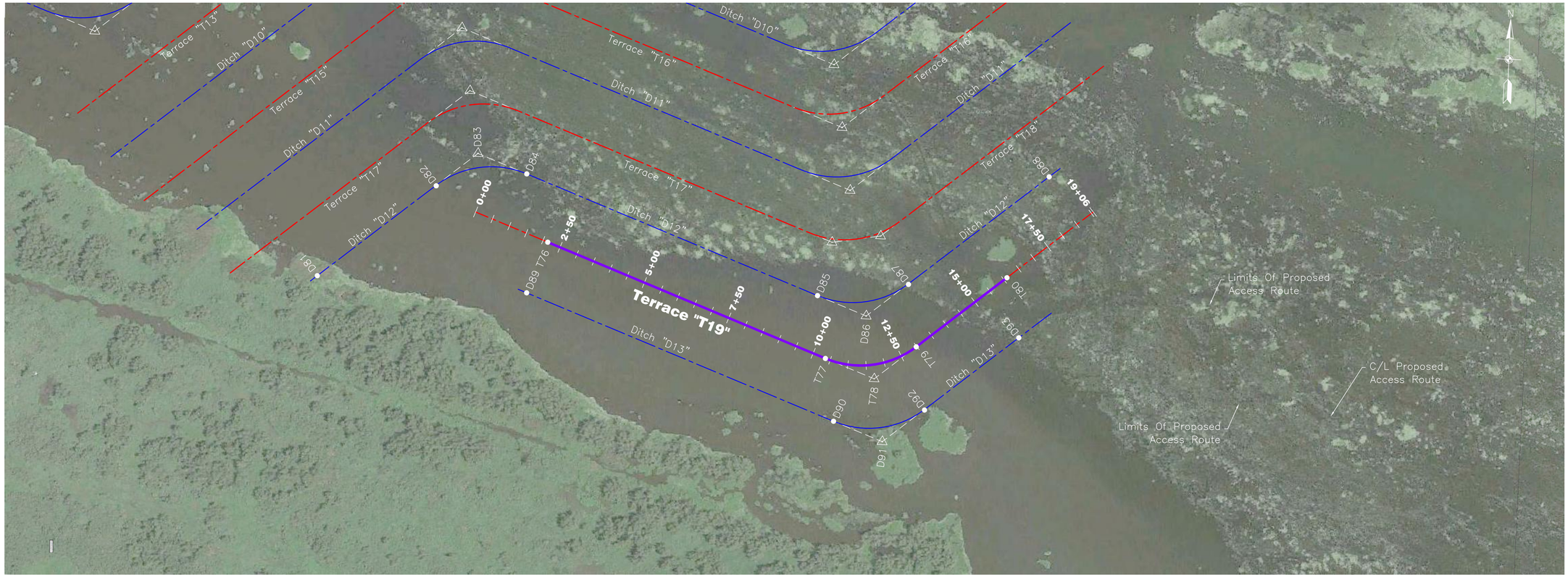
PRELIMINARY

TERRACE "T18" PLAN & PROFILE
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

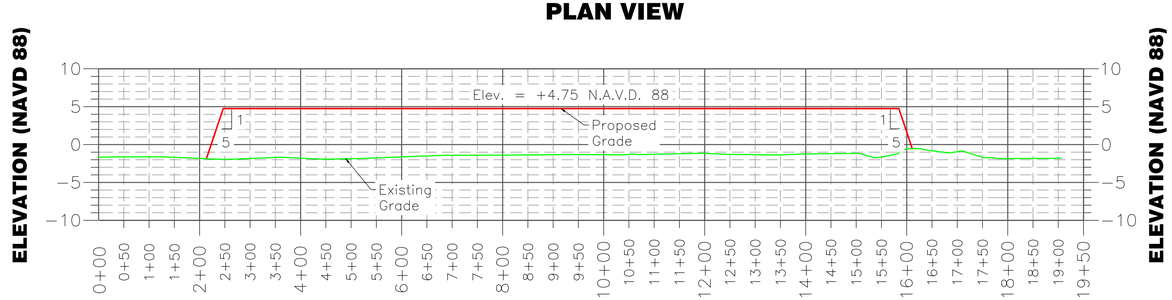
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No. BS240010 NORTH
Site P&P.dwg
Drawing No. BS-24
5/31/16 12:08 PM
Sheet 11 of 75



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'

HOR. SCALE

0 10' 20' 30'

VERT. SCALE

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T76	474243.66	3739494.72	
T77	473960.60	3740267.03	P.C. – 250'
T78	473910.88	3740402.71	P.I.
T79	474003.62	3740513.52	P.T. – 250'
T80	474203.67	3740752.55	

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D81	474122.90	3738870.49	
D82	474384.75	3739182.41	P.C. – 250'
D83	474477.28	3739293.19	P.I.
D84	474427.61	3739428.71	P.T. – 250'
D85	474131.21	3740237.43	P.C. – 250'
D86	474081.54	3740372.95	P.I.
D87	474174.07	3740483.73	P.T. – 250'
D88	474484.43	3740855.28	
D89	474102.82	3739443.10	
D90	473789.93	3740296.82	P.C. – 250'
D91	473740.26	3740432.34	P.I.
D92	473832.79	3740543.12	P.T. – 250'
D93	474041.00	3740792.38	

		Date
Designed	Chris Wheat	06/01/16
Drawn	Aaron Harper	06/01/16
Checked	Leonard Harper	06/01/16
Approved	Lonnie Harper	06/01/16

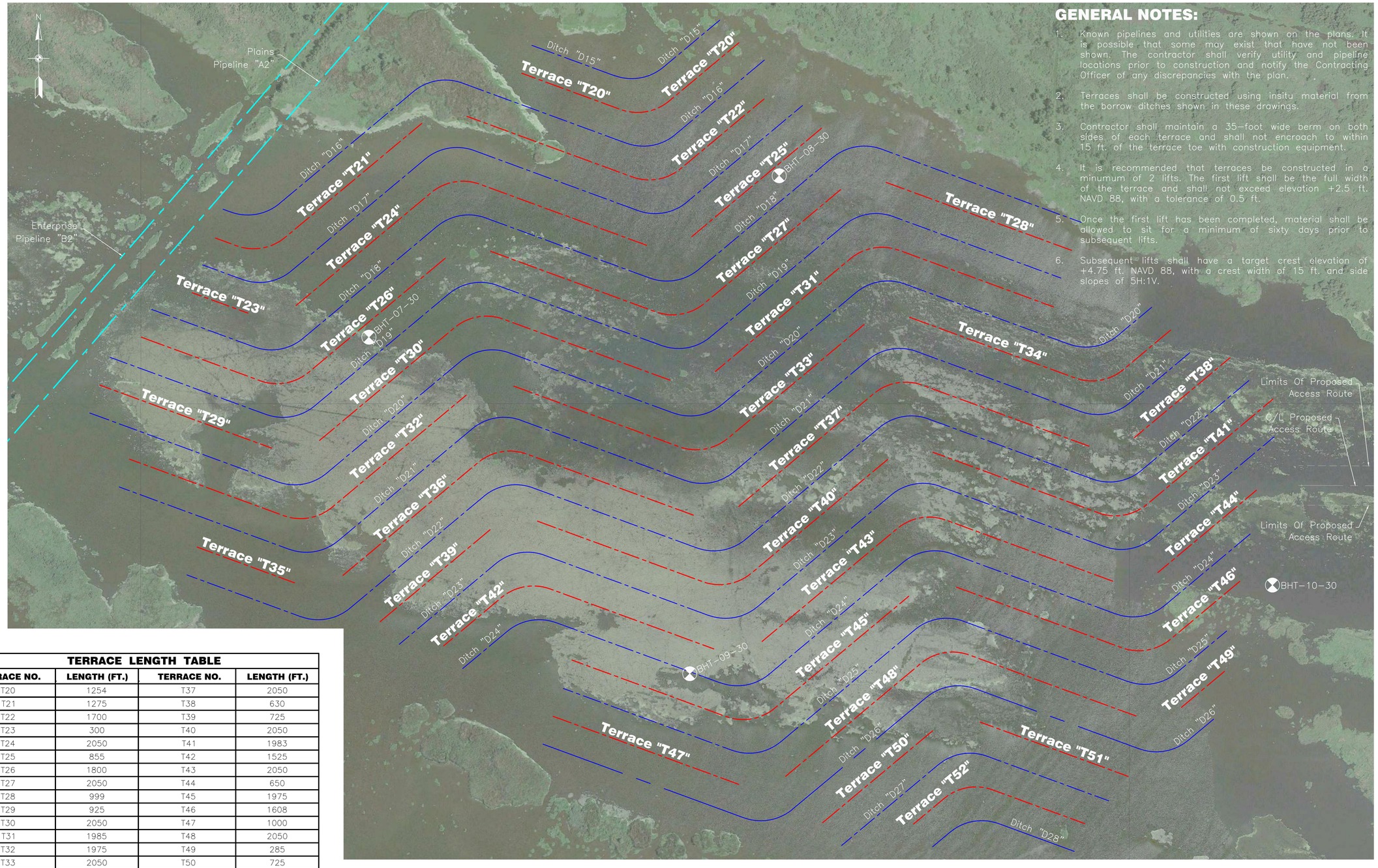
PRELIMINARY

TERRACE "T19" PLAN & PROFILE
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.
BS240010 NORTH
Site P&P.dwg
Drawing No.
BS-24
5/31/16 12:08 PM
Sheet 11 of 75



GENERAL NOTES:

1. Known pipelines and utilities are shown on the plans. It is possible that some may exist that have not been shown. The contractor shall verify utility and pipeline locations prior to construction and notify the Contracting Officer of any discrepancies with the plan.
2. Terraces shall be constructed using insitu material from the borrow ditches shown in these drawings.
3. Contractor shall maintain a 35-foot wide berm on both sides of each terrace and shall not encroach to within 15 ft. of the terrace toe with construction equipment.
4. It is recommended that terraces be constructed in a minumum of 2 lifts. The first lift shall be the full width of the terrace and shall not exceed elevation +2.5 ft. NAVD 88, with a tolerance of 0.5 ft.
5. Once the first lift has been completed, material shall be allowed to sit for a minimum of sixty days prior to subsequent lifts.
6. Subsequent lifts shall have a target crest elevation of +4.75 ft. NAVD 88, with a crest width of 15 ft. and side slopes of 5H:1V.

TERRACE LENGTH TABLE

TERRACE NO.	LENGTH (FT.)	TERRACE NO.	LENGTH (FT.)
T20	1254	T37	2050
T21	1275	T38	630
T22	1700	T39	725
T23	300	T40	2050
T24	2050	T41	1983
T25	855	T42	1525
T26	1800	T43	2050
T27	2050	T44	650
T28	999	T45	1975
T29	925	T46	1608
T30	2050	T47	1000
T31	1985	T48	2050
T32	1975	T49	285
T33	2050	T50	725
T34	1463	T51	799
T35	525	T52	957
T36	2050		

TERRACE AREA (CELL 4) SOIL BORING DATA TABLE

POINT NO.	NORTHING	EASTING
BHT-07-30	472515.07	3733328.79
BHT-08-30	473331.97	3735404.28
BHT-09-30	470812.88	3734952.01
BHT-10-30	471261.00	3737900.17

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

NOTICE:

72 HOURS BEFORE DIGGING CALL 1-800-272-3020 TO LOCATE UTILITY LINES

0 250' 500' 750'
HOR. SCALE

		Date
Designed	Chris Wheat	06/01/16
Drawn	Aaron Harper	06/01/16
Checked	Leonard Harper	06/01/16
Approved	Lonnie Harper	06/01/16

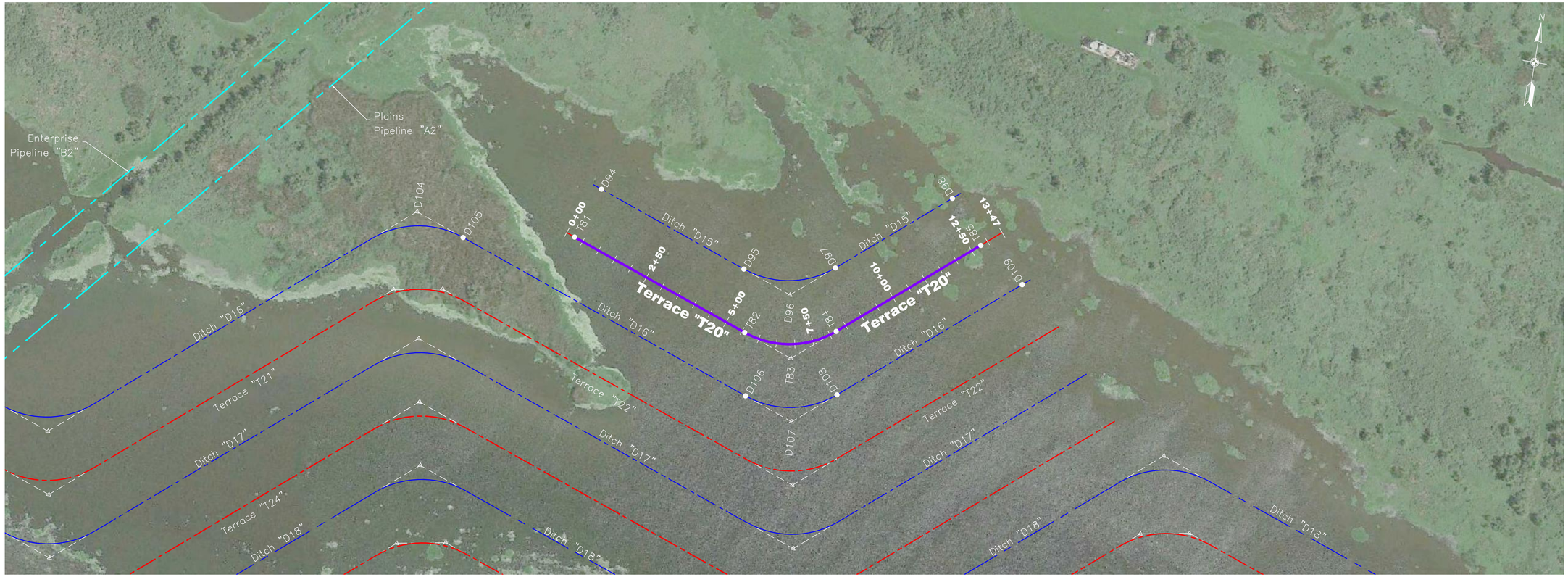
PRELIMINARY

TERRACE AREA (CELL 4) KEY SHEET
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 3 of 28

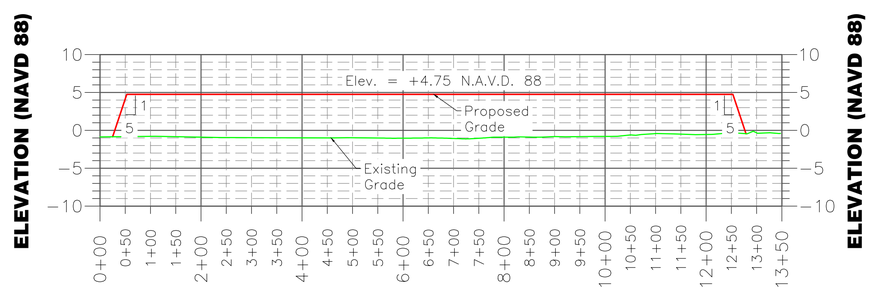
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No. 11 BS240010
Drawing No. BS-24
5/31/16 1:48 PM
Sheet 3 of 75



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'

HOR. SCALE

0 10' 20' 30'

VERT. SCALE

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T81	473850.81	3734101.50	
T82	473667.46	3734601.76	P.C. – 250'
T83	473617.79	3734737.29	P.I.
T84	473710.32	3734848.06	P.T. – 250'
T85	474004.81	3735200.62	

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D94	473991.65	3734153.11	
D95	473838.10	3734572.07	P.C. – 250'
D96	473788.43	3734707.59	P.I.
D97	473880.96	3734818.37	P.T. – 250'
D98	474119.44	3735103.87	
D104	473850.87	3733665.42	
D105	473801.20	3733800.94	
D106	473496.82	3734631.46	P.C. – 250'
D107	473447.15	3734766.98	P.I.
D108	473539.68	3734877.76	P.T. – 250'
D109	473917.07	3735329.56	

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905–1079 FAX: (337) 905–1076

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

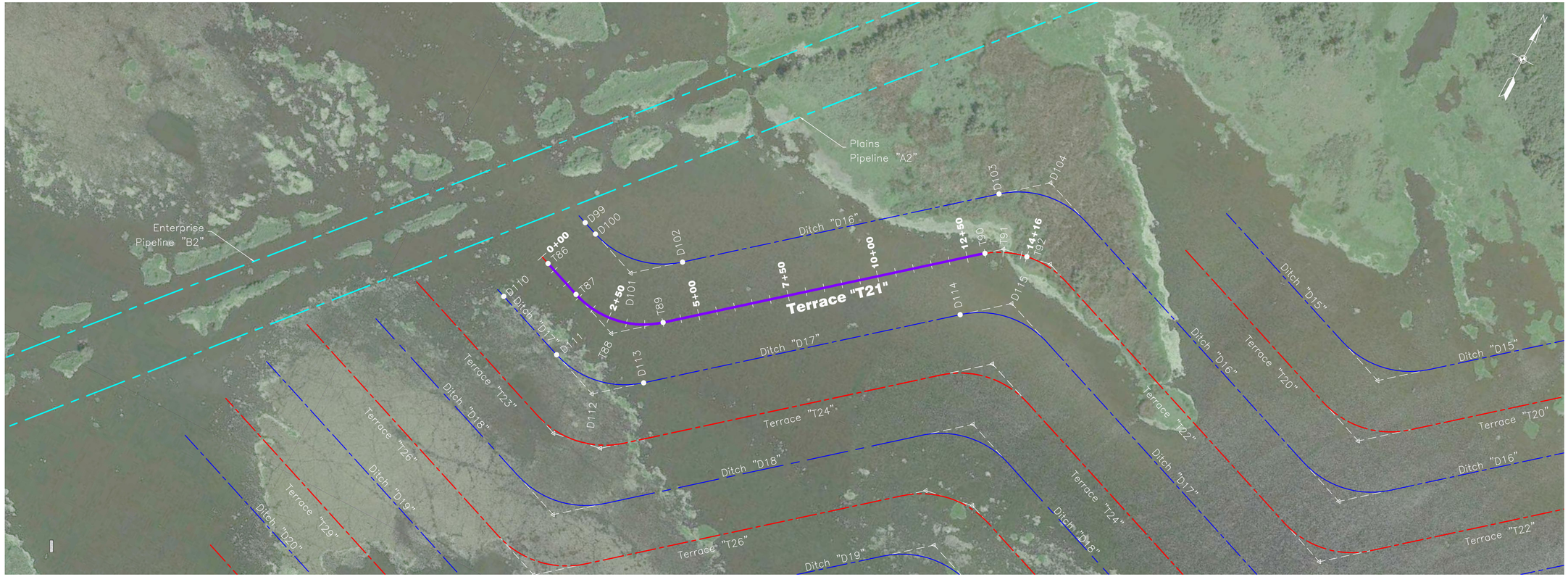
PRELIMINARY

TERRACE "T20" PLAN & PROFILE
BS–24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR

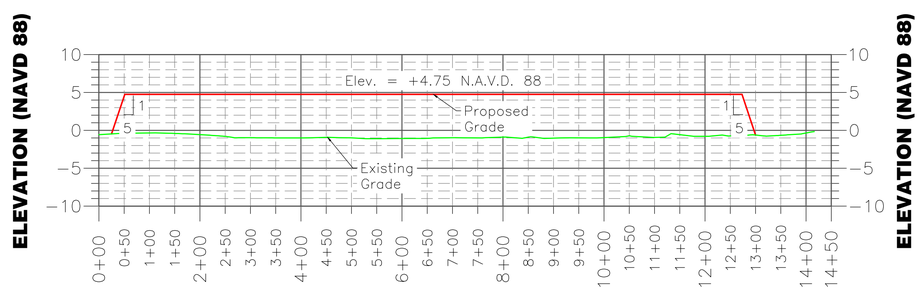
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.
10 BS240010
SOUTH.P&P.dwg
Drawing No.
BS–24
5/31/16 12:05 PM
Sheet *11* of *75*



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'
HOR. SCALE

0 10' 20' 30'
VERT. SCALE

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T86	473016.98	3732552.29	
T87	472977.80	3732659.20	P.C. – 250'
T88	472928.13	3732794.72	P.I.
T89	473020.66	3732905.49	P.T. – 250'
T90	473596.87	3733596.00	P.C. – 250'
T91	473630.65	3733635.75	P.I.
T92	473639.18	3733702.26	P.T. – 250'

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D99	473162.85	3732590.19	
D100	473148.44	3732629.50	P.C. – 250'
D101	473098.77	3732765.02	P.I.
D102	473191.30	3732875.80	P.T. – 250'
D103	473758.34	3733554.65	P.C. – 250'
D104	473850.87	3733665.42	P.I.
D110	472881.17	3732486.96	
D111	472807.16	3732688.89	P.C. – 250'
D112	472757.49	3732824.41	P.I.
D113	472850.02	3732935.19	P.T. – 250'
D114	473417.06	3733614.04	P.C. – 250'
D115	473509.59	3733724.81	P.I.

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905–1079 FAX: (337) 905–1076

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

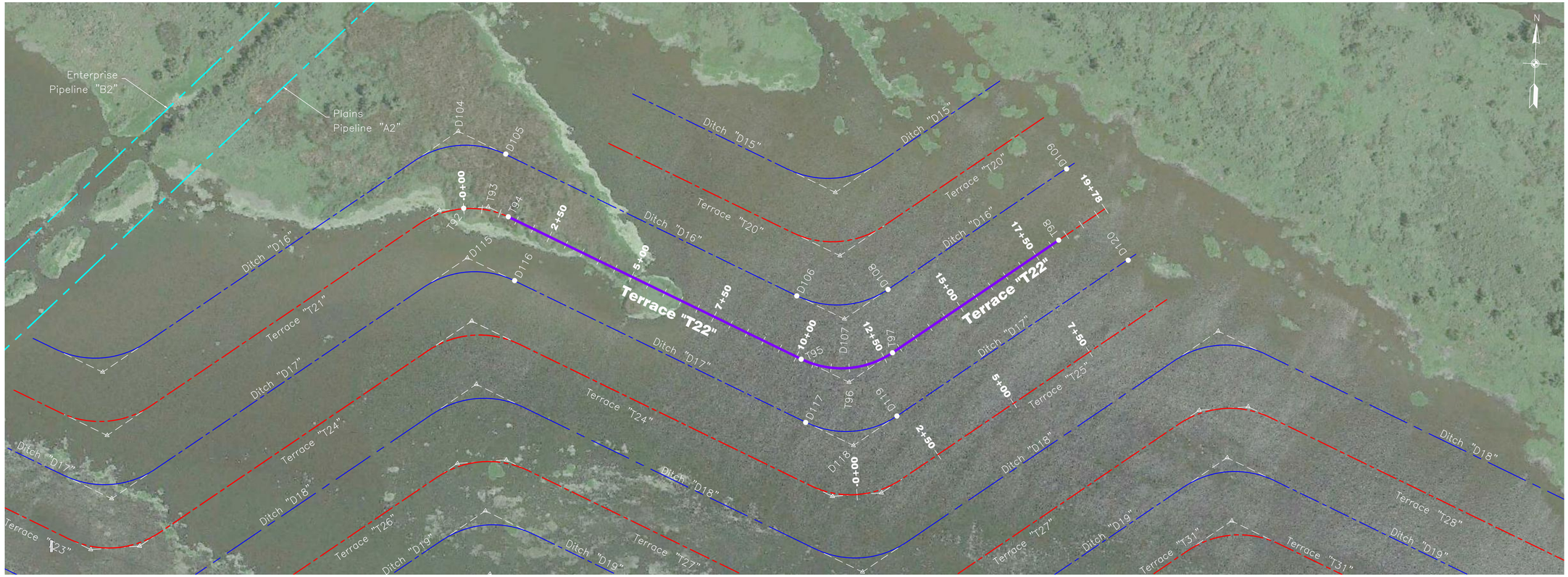
PRELIMINARY

TERRACE "T21" PLAN & PROFILE
BS–24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

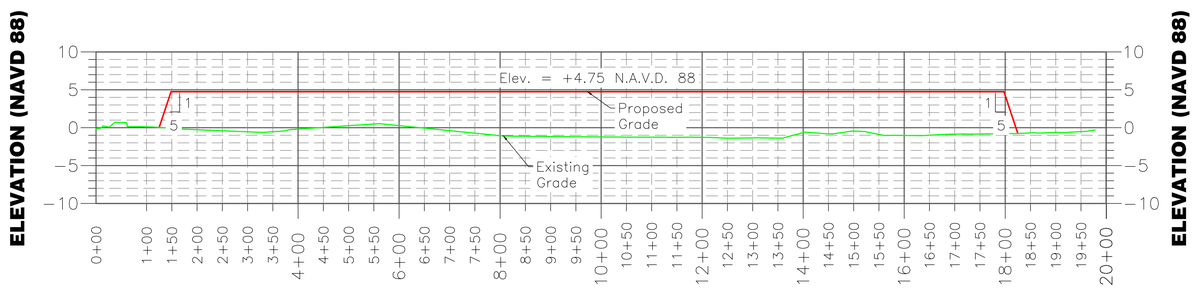
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.
10 BS240010
SOUTH_P&P.dwg
Drawing No.9
BS–24
5/31/16 12:05 PM
Sheet 11 of 75



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'

HOR. SCALE

0 10' 20' 30'

VERT. SCALE

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T92	473639.18	3733702.26	P.C. – 250'
T93	473653.62	3733767.74	P.I.
T94	473632.53	3733825.08	P.T. – 250'
T95	473326.18	3734661.15	P.C. – 250'
T96	473276.51	3734796.68	P.I.
T97	473369.04	3734907.45	P.T. – 250'
T98	473720.20	3735327.85	

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D104	473850.87	3733665.42	P.I.
D105	473801.20	3733800.94	P.T. – 250'
D106	473496.82	3734631.46	P.C. – 250'
D107	473447.15	3734766.98	P.I.
D108	473539.68	3734877.76	P.T. – 250'
D109	473917.07	3735329.56	
D115	473509.59	3733724.81	P.I.
D116	473459.92	3733860.33	P.T. – 250'
D117	473155.54	3734690.85	P.C. – 250'
D118	473105.87	3734826.37	P.I.
D119	473198.40	3734937.15	P.T. – 250'
D120	473687.22	3735522.35	

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

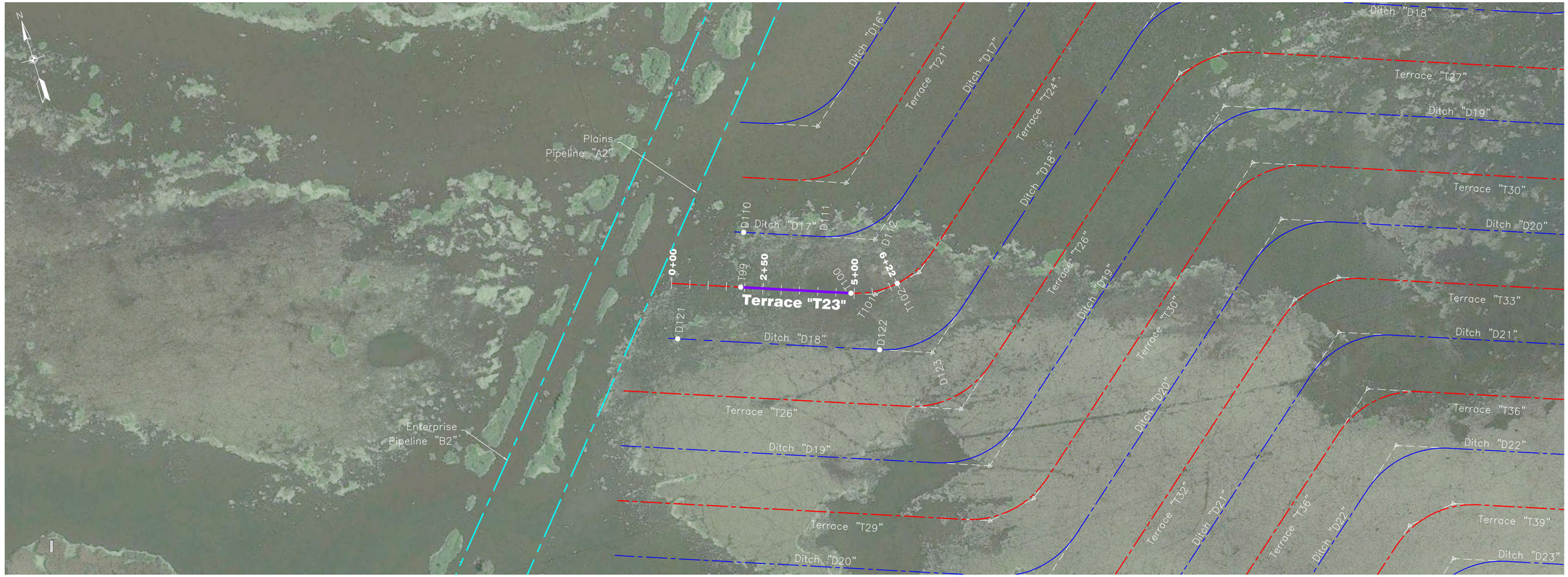
PRELIMINARY

TERRACE "T22" PLAN & PROFILE
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

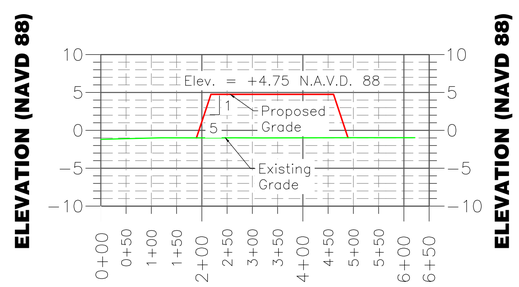
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.
10 BS240010
SOUTH_P&P.dwg
Drawing No.9
BS-24
5/31/16 12:05 PM
Sheet 11 of 75



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'
HOR. SCALE

0 10' 20' 30'
VERT. SCALE

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T99	472740.33	3732435.34	
T100	472637.10	3732717.02	P.C. – 250'
T101	472613.47	3732781.48	P.I.
T102	472624.95	3732847.48	P.T. – 250'

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D110	472881.17	3732486.96	
D111	472807.16	3732688.89	P.C. – 250'
D112	472757.49	3732824.41	P.I.
D121	472656.01	3732229.53	
D122	472465.88	3732748.28	P.C. – 250'
D123	472416.21	3732883.80	P.I.

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

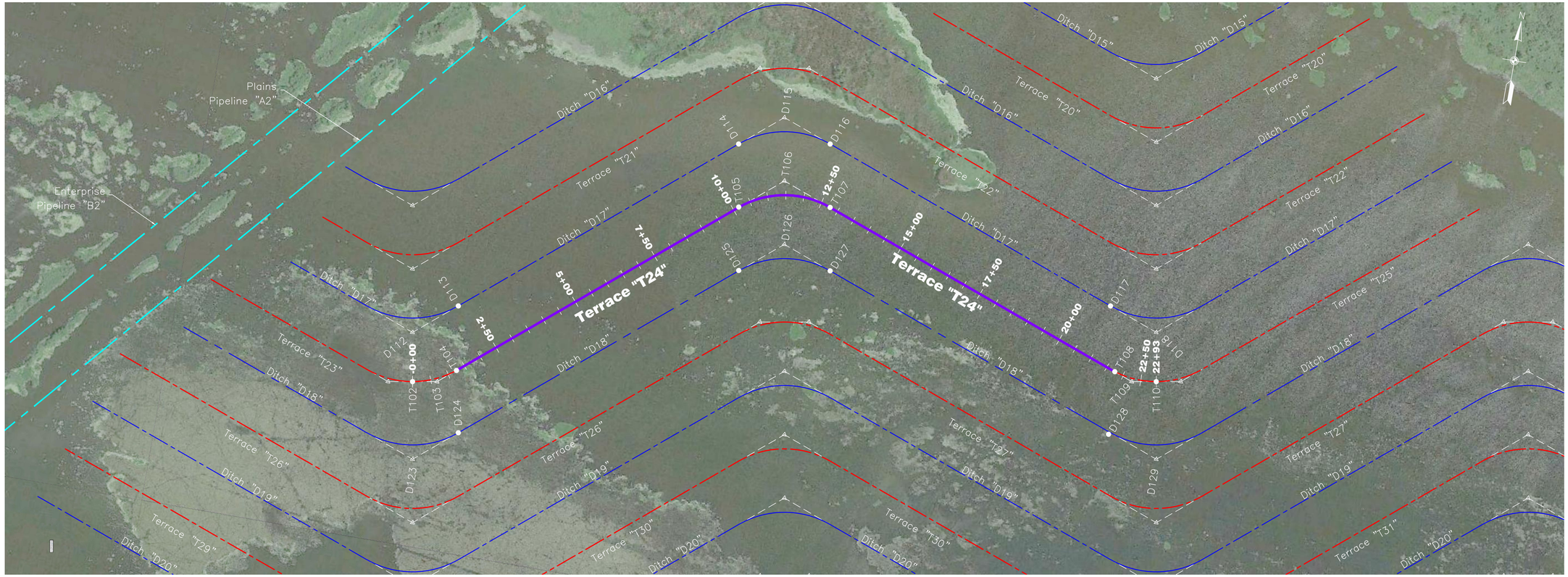
PRELIMINARY

TERRACE "T23" PLAN & PROFILE
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

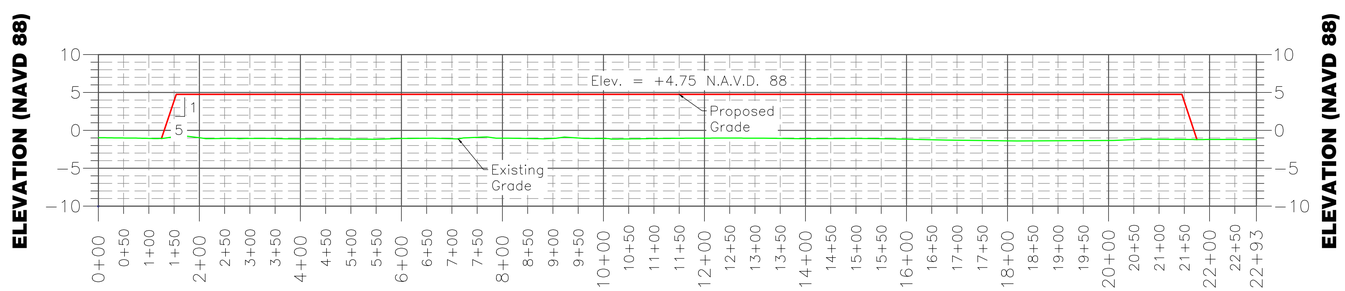
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.
10 BS240010
SOUTH.P&P.dwg
Drawing No. 9
BS-24
5/31/16 12:05 PM
Sheet 11 of 75



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'

HOR. SCALE

0 10' 20' 30'

VERT. SCALE

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T102	472624.95	3732847.48	P.C. – 250'
T103	472636.44	3732913.47	P.I.
T104	472675.65	3732960.31	P.T. – 250'
T105	473246.42	3733643.73	P.C. – 250'
T106	473338.95	3733754.51	P.I.
T107	473289.28	3733890.03	P.T. – 250'
T108	472980.67	3734733.10	P.C. – 250'
T109	472961.44	3734783.44	P.I.
T110	472973.24	3734848.92	P.T. – 250'

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D112	472757.49	3732824.41	P.I.
D113	472850.02	3732935.19	P.T. – 250'
D114	473417.06	3733614.04	P.C. – 250'
D115	473509.59	3733724.81	P.I.
D116	473459.92	3733860.33	P.T. – 250'
D117	473155.54	3734690.85	P.C. – 250'
D118	473105.87	3734826.37	P.I.
D123	472416.21	3732883.80	P.I.
D124	472508.74	3732994.58	P.T. – 250'
D125	473075.78	3733673.43	P.C. – 250'
D126	473168.31	3733784.20	P.I.
D127	473118.64	3733919.73	P.T. – 250'
D128	472814.26	3734750.24	P.C. – 250'
D129	472764.59	3734885.76	P.I.

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905–1079 FAX: (337) 905–1076

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

PRELIMINARY

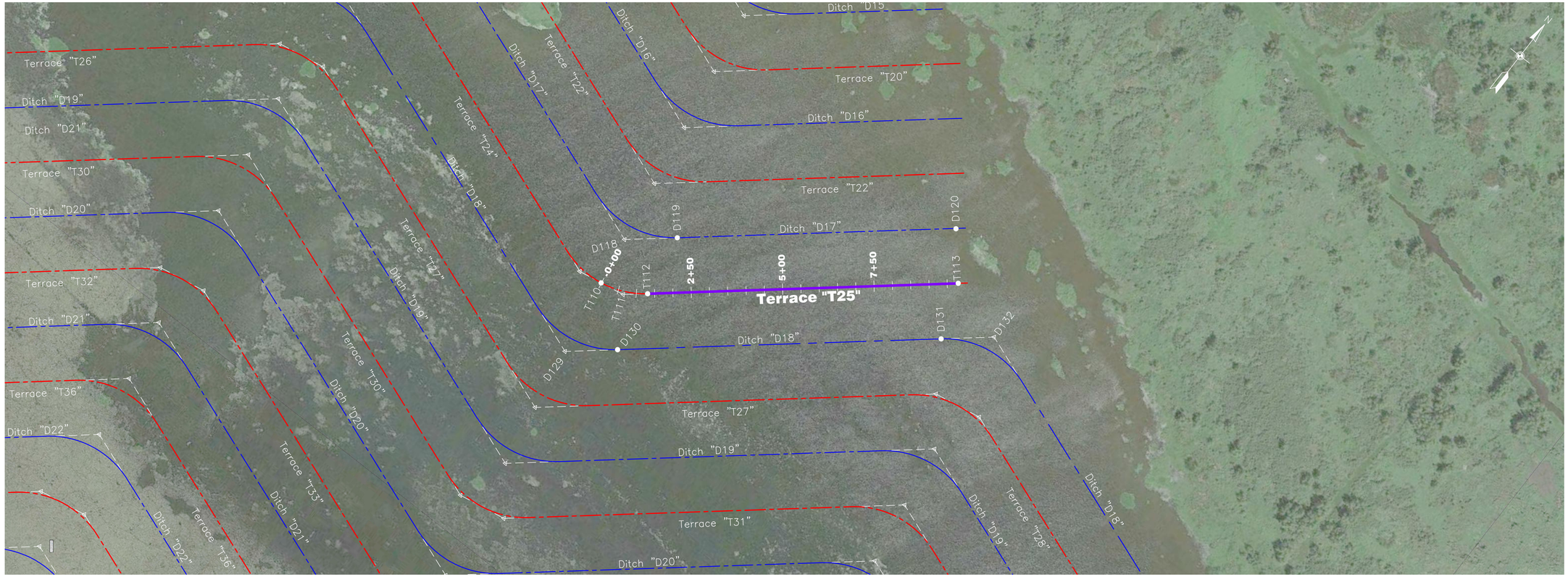
TERRACE "T24" PLAN & PROFILE
BS–24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR

Page 11 of 28

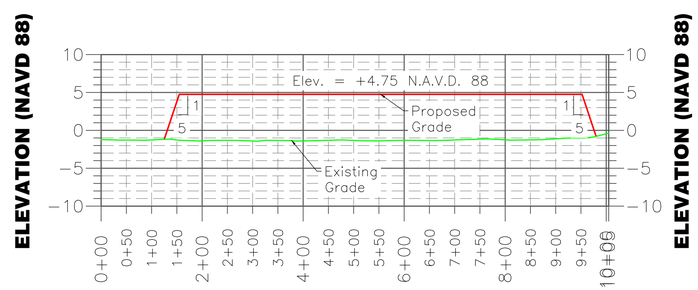
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.
10 BS240010
SOUTH.P&P.dwg
Drawing No.9
BS–24
5/31/16 12:05 PM
Sheet 11 of 75



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'
HOR. SCALE

0 10' 20'
VERT. SCALE

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T110	472973.24	3734848.92	P.C. – 250'
T111	472984.81	3734915.43	P.I.
T112	473027.76	3734966.84	P.T. – 250'
T113	473572.09	3735618.51	

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D118	473105.87	3734826.37	P.I.
D119	473198.40	3734937.15	P.T. – 250'
D120	473687.22	3735522.35	
D129	472764.59	3734885.76	P.I.
D130	472857.12	3734996.54	P.T. – 250'
D131	473424.16	3735675.39	P.C. – 250'
D132	473516.69	3735786.16	P.I.

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

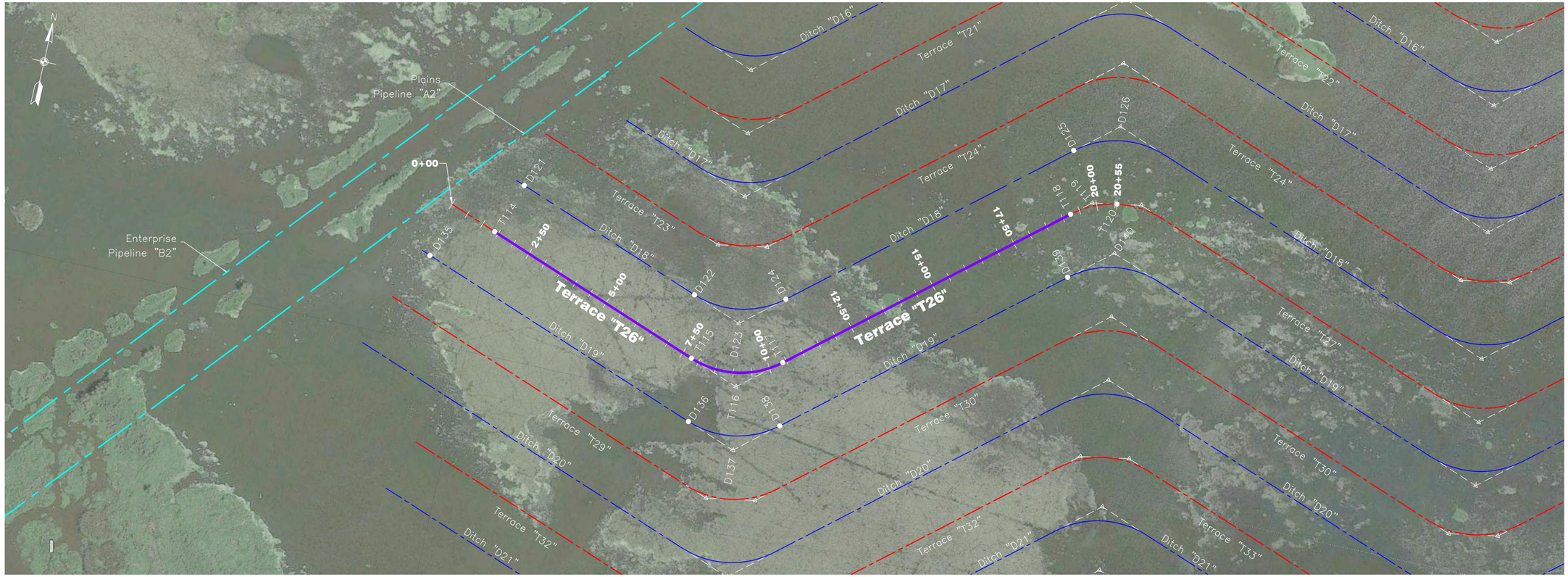
PRELIMINARY

Plaquemines Parish, Louisiana

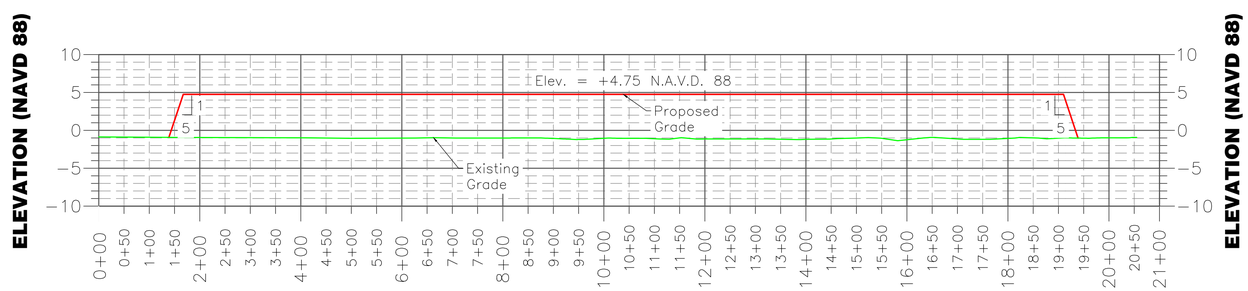
TERRACE "T25" PLAN & PROFILE
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.
10 BS240010
SOUTH_P&P.dwg
Drawing No.9
BS-24
5/31/16 12:05 PM



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'

HOR. SCALE

0 10' 20' 30'

VERT. SCALE

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T114	472515.17	3732177.91	
T115	472295.24	3732777.98	P.C. – 250'
T116	472245.57	3732913.50	P.I.
T117	472341.51	3733028.36	P.T. – 250'
T118	472905.14	3733703.12	P.C. – 250'
T119	472948.08	3733754.53	P.I.
T120	472959.57	3733820.53	P.T. – 250'

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D121	472656.01	3732229.53	
D122	472465.88	3732748.28	P.C. – 250'
D123	472416.21	3732883.80	P.I.
D124	472508.74	3732994.58	P.T. – 250'
D125	473075.78	3733673.43	P.C. – 250'
D126	473168.31	3733784.20	P.I.
D135	472413.52	3732019.35	
D136	472124.60	3732807.67	P.C. – 250'
D137	472074.93	3732943.19	P.I.
D138	472167.46	3733053.97	P.T. – 250'
D139	472734.50	3733732.82	P.C. – 250'
D140	472827.03	3733843.59	P.I.

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905–1079 FAX: (337) 905–1076

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

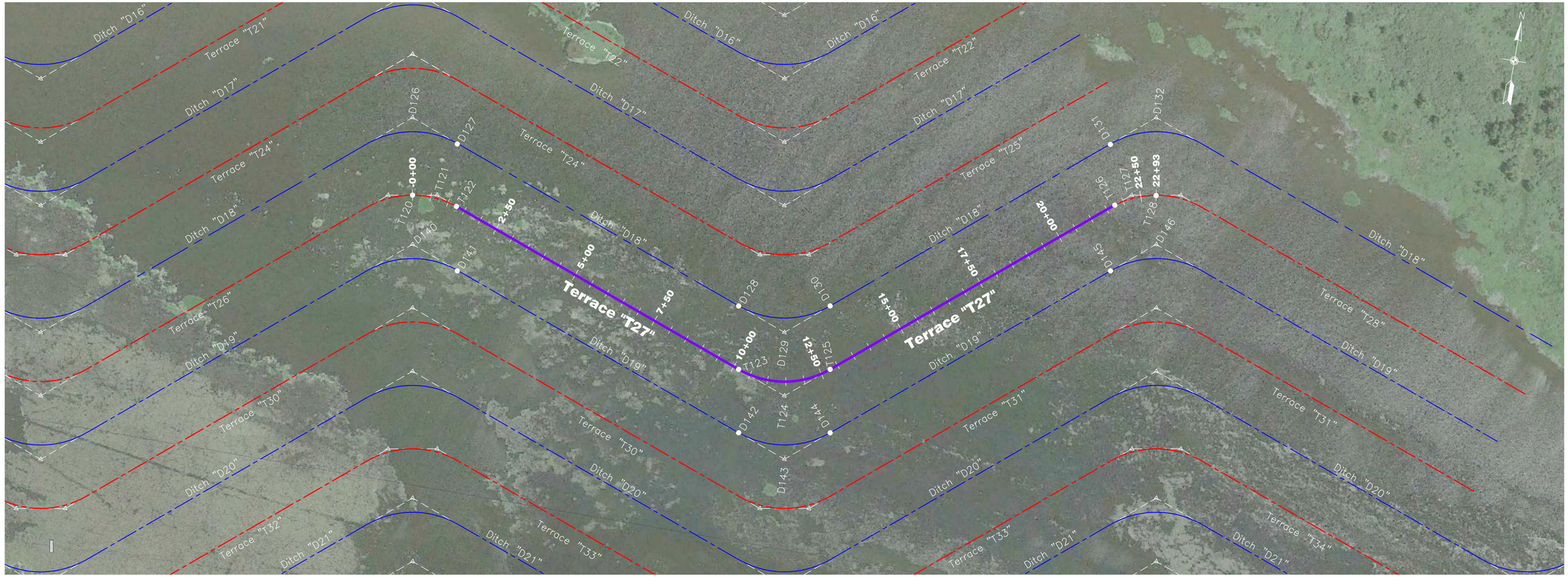
PRELIMINARY

TERRACE "T26" PLAN & PROFILE
BS–24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

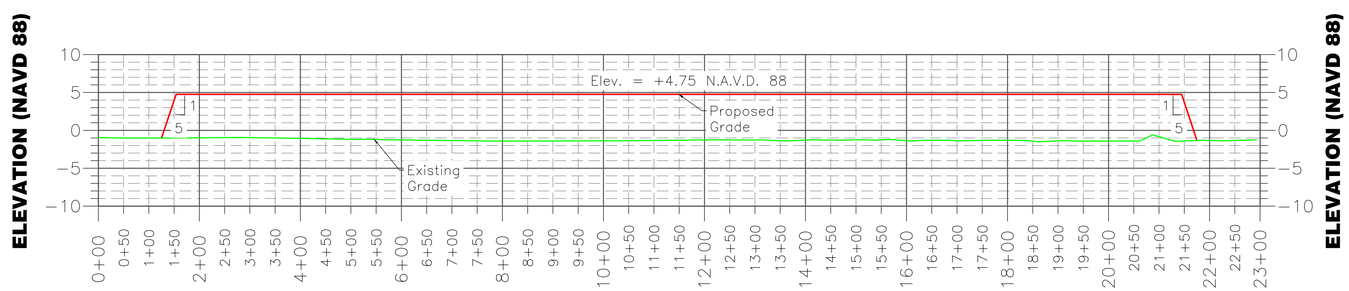
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.
10 BS240010
Drawing No.
BS–24
SOUTH_P&P.dwg
5/31/16 12:05 PM
Sheet *11* of *75*



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'

HOR. SCALE

0 10' 20' 30'

VERT. SCALE

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T120	472959.57	3733820.53	P.C. – 250'
T121	472971.05	3733886.52	P.I.
T122	472949.97	3733943.86	P.T. – 250'
T123	472643.61	3734779.94	P.C. – 250'
T124	472593.95	3734915.46	P.I.
T125	472686.48	3735026.23	P.T. – 250'
T126	473261.74	3735715.47	P.C. – 250'
T127	473296.46	3735756.49	P.I.
T128	473307.94	3735822.49	P.T. – 250'

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D126	473168.31	3733784.20	P.I.
D127	473118.64	3733919.73	P.T. – 250'
D128	472814.26	3734750.24	P.C. – 250'
D129	472764.59	3734885.76	P.I.
D130	472857.12	3734996.54	P.T. – 250'
D131	473424.16	3735675.39	P.C. – 250'
D132	473516.69	3735786.16	P.I.
D140	472827.03	3733843.59	P.I.
D141	472777.36	3733979.12	P.T. – 250'
D142	472472.97	3734809.63	P.C. – 250'
D143	472423.30	3734945.15	P.I.
D144	472515.84	3735055.93	P.T. – 250'
D145	473082.87	3735734.78	P.C. – 250'
D146	473175.41	3735845.55	P.I.

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lennie Harper	04/01/16

PRELIMINARY

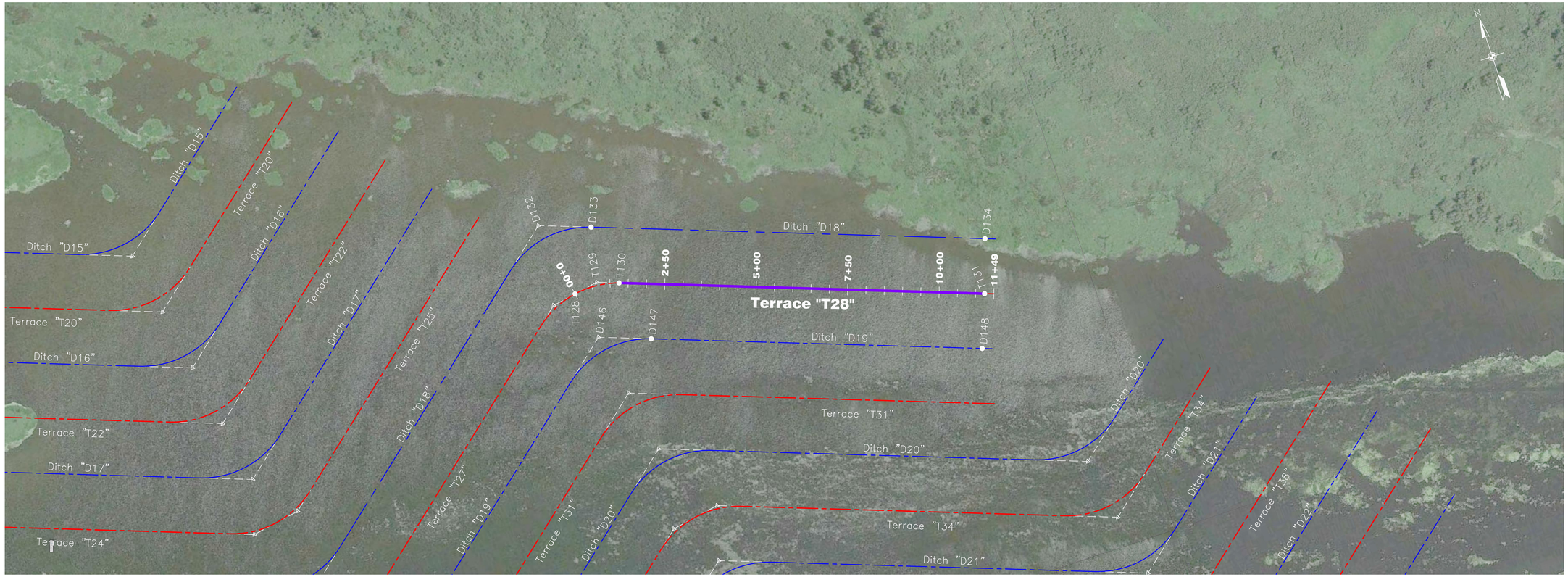
TERRACE "T27" PLAN & PROFILE
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR

Page 11 of 28

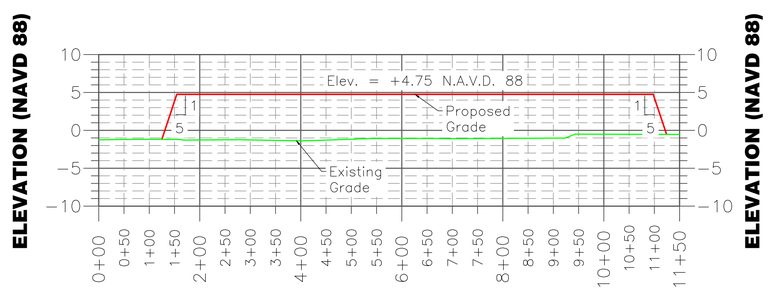
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.
10 BS240010
SOUTH.P&P.dwg
Drawing No.9
BS-24
5/31/16 12:05 PM
Sheet 11 of 75



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'
HOR. SCALE

0 10' 20' 30'
VERT. SCALE

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T128	473307.94	3735822.49	P.C. – 250'
T129	473319.43	3735888.48	P.I.
T130	473298.34	3735945.82	P.T. – 250'
T131	472954.53	3736884.11	

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D132	473516.69	3735786.16	P.I.
D133	473467.02	3735921.68	P.T. – 250'
D134	473096.49	3736932.66	
D146	473175.41	3735845.55	P.I.
D147	473125.74	3735981.07	P.T. – 250'
D148	472814.43	3736830.46	

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

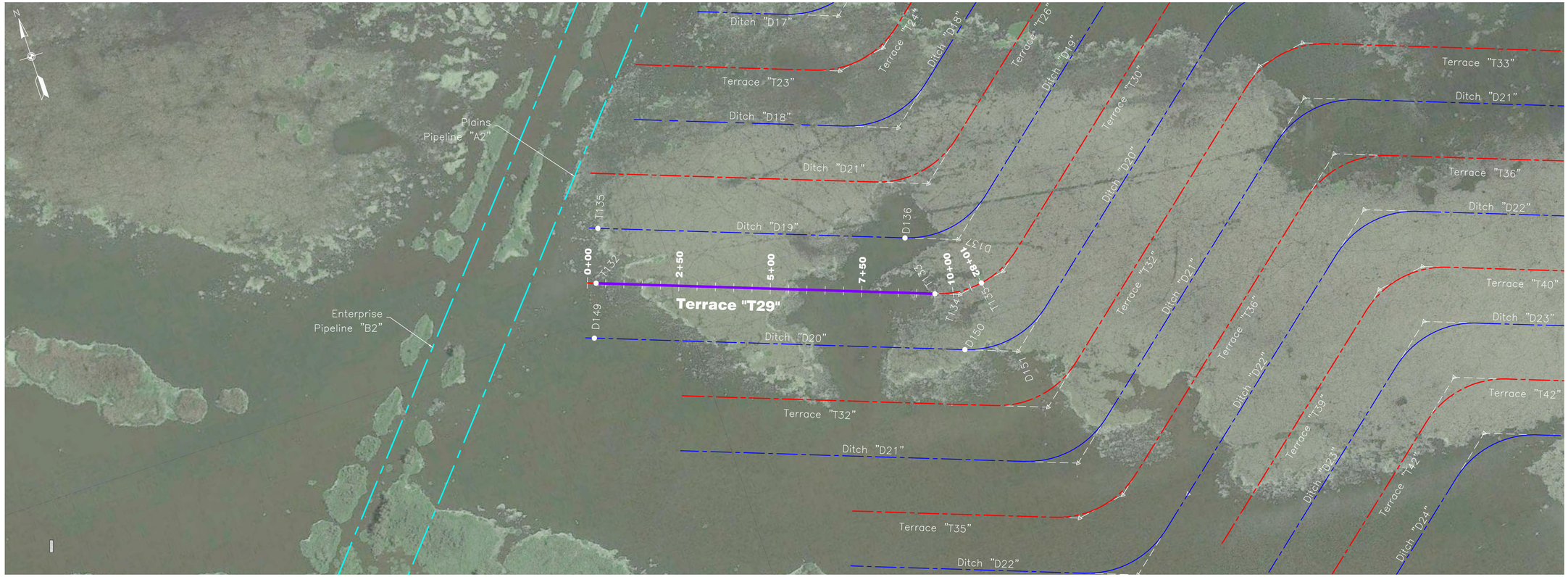
PRELIMINARY

TERRACE "T28" PLAN & PROFILE
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

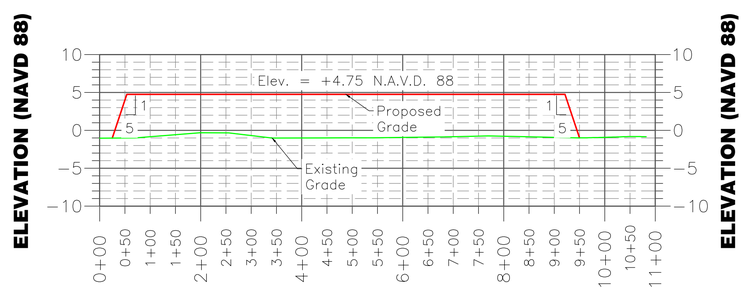
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.
10 BS240010
SOUTH_P&P.dwg
Drawing No.9
BS-24
5/31/16 12:05 PM
Sheet 11 of 75



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'
HOR. SCALE

0 10' 20' 30'
VERT. SCALE

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T132	472272.68	3731967.73	
T133	471954.37	3732836.24	P.C. – 250'
T134	471930.91	3732900.26	P.I.
T135	471942.30	3732965.74	P.T. – 250'

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D135	472413.52	3732019.35	
D136	472124.60	3732807.67	P.C. – 250'
D137	472074.93	3732943.19	P.I.
D149	472131.84	3731916.12	
D150	471783.32	3732867.06	P.C. – 250'
D151	471733.65	3733002.59	P.I.

		Date
Designed	Chris Wheat	06/01/16
Drawn	Aaron Harper	06/01/16
Checked	Leonard Harper	06/01/16
Approved	Lonnie Harper	06/01/16

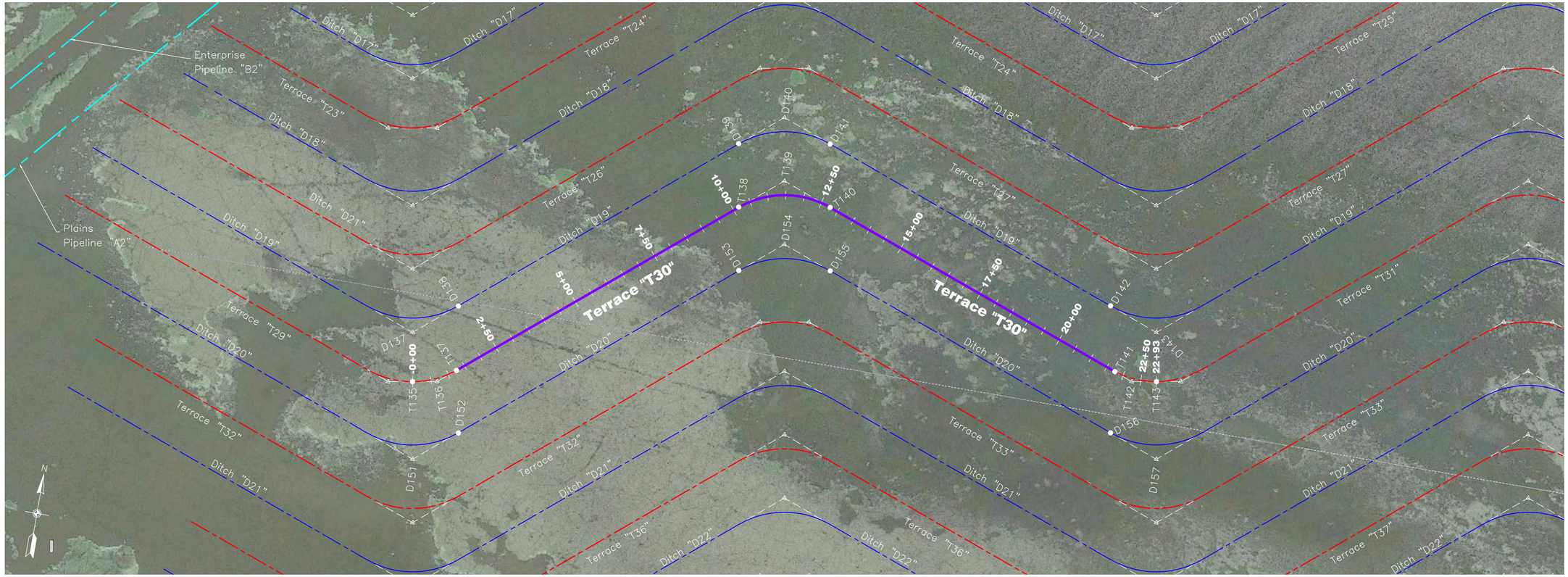
PRELIMINARY

TERRACE "T29" PLAN & PROFILE
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

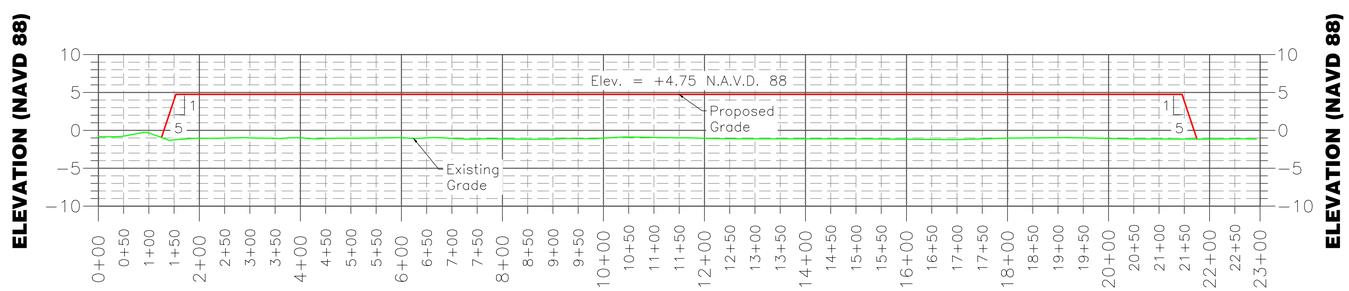
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.
10 BS240010
SOUTH_P&P.dwg
Drawing No.9
BS-24
5/31/16 12:05 PM
Sheet 11 of 75



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'

HOR. SCALE

0 10' 20' 30'

VERT. SCALE

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T135	471942.30	3732965.74	P.C. – 250'
T136	471953.88	3733032.25	P.I.
T137	471993.09	3733079.09	P.T. – 250'
T138	472563.86	3733762.51	P.C. – 250'
T139	472656.39	3733873.29	P.I.
T140	472606.72	3734008.81	P.T. – 250'
T141	472298.11	3734851.88	P.C. – 250'
T142	472279.28	3734902.22	P.I.
T143	472290.77	3734968.22	P.T. – 250'

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D137	472074.93	3732943.19	P.I.
D138	472167.46	3733053.97	P.T. – 250'
D139	472734.50	3733732.82	P.C. – 250'
D140	472827.03	3733843.59	P.I.
D141	472777.36	3733979.12	P.T. – 250'
D142	472472.97	3734809.63	P.C. – 250'
D143	472423.30	3734945.15	P.I.
D151	471733.65	3733002.59	P.I.
D152	471826.18	3733113.36	P.T. – 250'
D153	472393.22	3733792.21	P.C. – 250'
D154	472485.75	3733902.98	P.I.
D155	472436.08	3734038.51	P.T. – 250'
D156	472131.69	3734869.02	P.C. – 250'
D157	472082.02	3735004.54	P.I.

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905–1079 FAX: (337) 905–1076

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

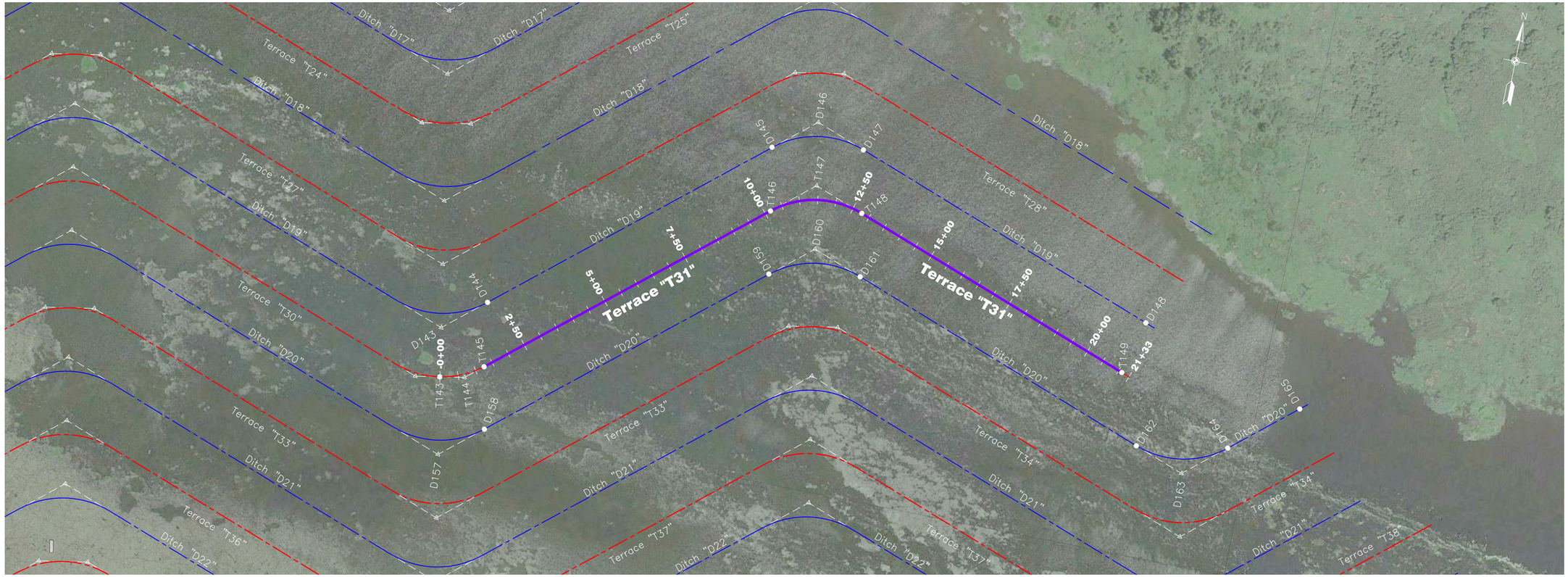
PRELIMINARY

TERRACE "T30" PLAN & PROFILE
BS–24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

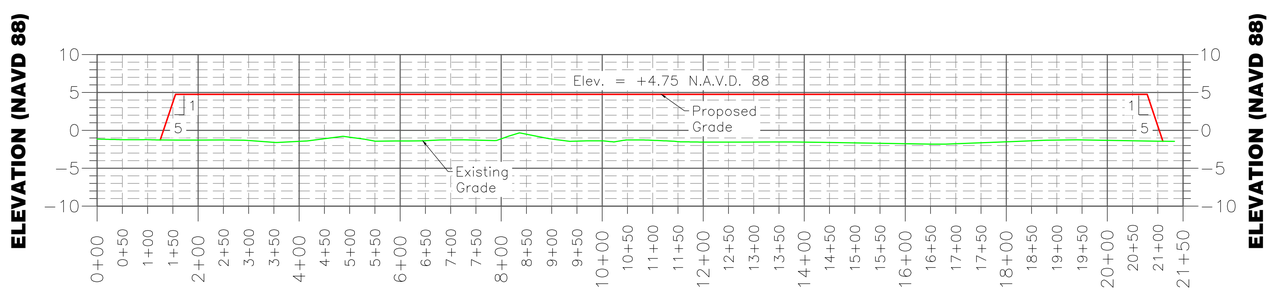
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.
10 BS240010
SOUTH.P&P.dwg
Drawing No.9
BS–24
5/31/16 12:05 PM
Sheet 11 of 75



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'

HOR. SCALE

0 10' 20' 30'

VERT. SCALE

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T143	472290.77	3734968.22	P.C. – 250'
T144	472302.25	3735034.21	P.I.
T145	472341.47	3735081.05	P.T. – 250'
T146	472912.23	3735764.47	P.C. – 250'
T147	473004.77	3735875.25	P.I.
T148	472955.10	3736010.77	P.T. – 250'
T149	472668.52	3736792.69	

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D143	472423.30	3734945.15	P.I.
D144	472515.84	3735055.93	P.T. – 250'
D145	473082.87	3735734.78	P.C. – 250'
D146	473175.41	3735845.55	P.I.
D147	473125.74	3735981.07	P.T. – 250'
D148	472814.43	3736830.46	
D157	472082.02	3735004.54	P.I.
D158	472174.55	3735115.32	P.T. – 250'
D159	472741.59	3735794.17	P.C. – 250'
D160	472834.12	3735904.94	P.I.
D161	472784.46	3736040.47	P.T. – 250'
D162	472480.07	3736870.98	P.C. – 250'
D163	472430.40	3737006.50	P.I.
D164	472522.93	3737117.28	P.T. – 250'
D165	472666.33	3737288.95	

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

PRELIMINARY

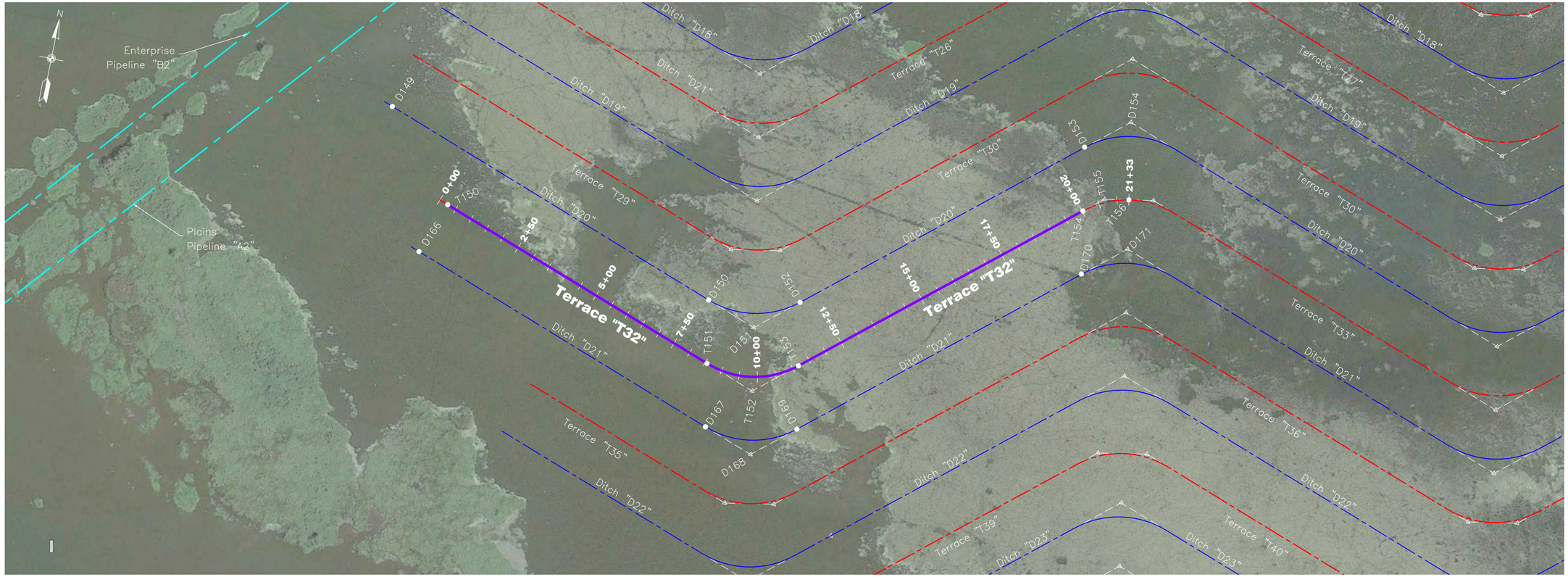
TERRACE "T31" PLAN & PROFILE
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR

Page 11 of 28

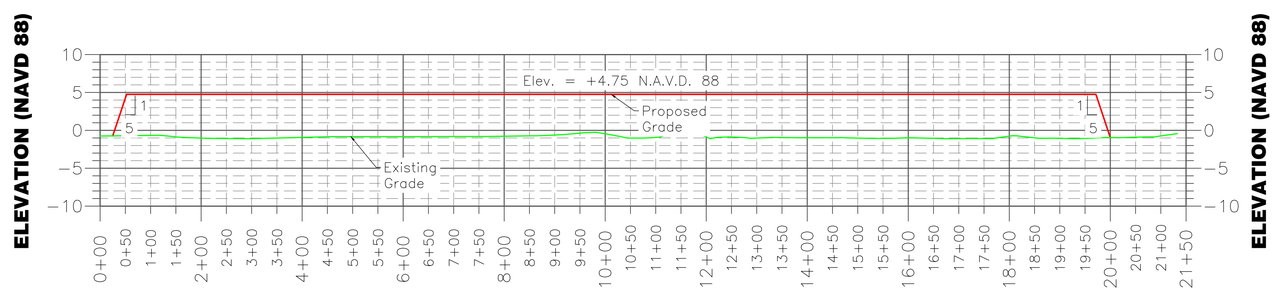
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.
10 BS240010
SOUTH_P&P.dwg
Drawing No.9
BS-24
5/31/16 12:05 PM
Sheet 11 of 75



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'

HOR. SCALE

0 10' 20' 30'

VERT. SCALE

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T150	471898.53	3732116.82	
T151	471612.68	3732116.82	P.C. – 250'
T152	471563.01	3733032.28	P.I.
T153	471655.54	3733143.06	P.T. – 250'
T154	472221.31	3733820.38	P.C. – 250'
T155	472265.52	3733873.31	P.I.
T156	472277.01	3733939.31	P.T. – 250'

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D149	472131.84	3731916.12	
D150	471783.32	3732867.06	P.C. – 250'
D151	471733.65	3733002.59	P.I.
D152	471826.18	3733113.36	P.T. – 250'
D153	472393.22	3733792.21	P.C. – 250'
D154	472485.75	3733902.98	P.I.
D166	471757.69	3732065.20	
D167	471442.04	3732926.45	P.C. – 250'
D168	471392.37	3733061.98	P.I.
D169	471484.90	3733172.75	P.T. – 250'
D170	472051.94	3733851.60	P.C. – 250'
D171	472144.47	3733962.37	P.I.

		Date
Designed	Chris Wheat	06/01/16
Drawn	Aaron Harper	06/01/16
Checked	Leonard Harper	06/01/16
Approved	Lonnie Harper	06/01/16

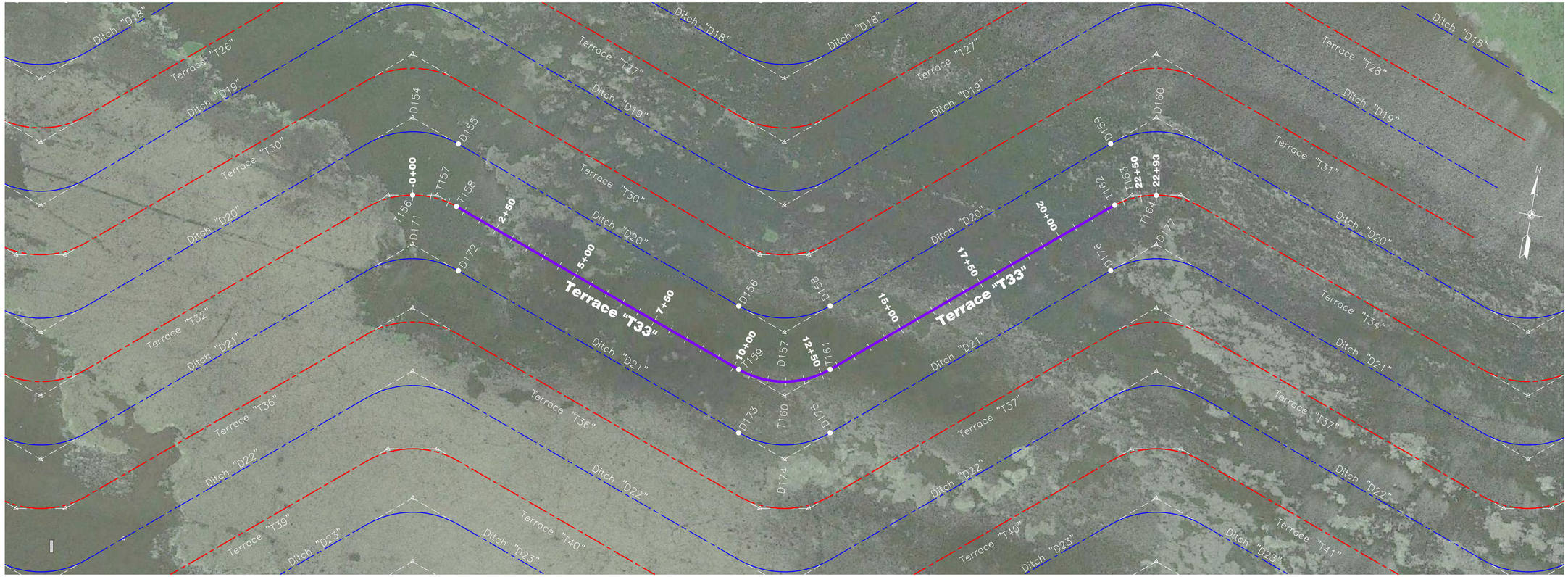
PRELIMINARY

TERRACE "T32" PLAN & PROFILE
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

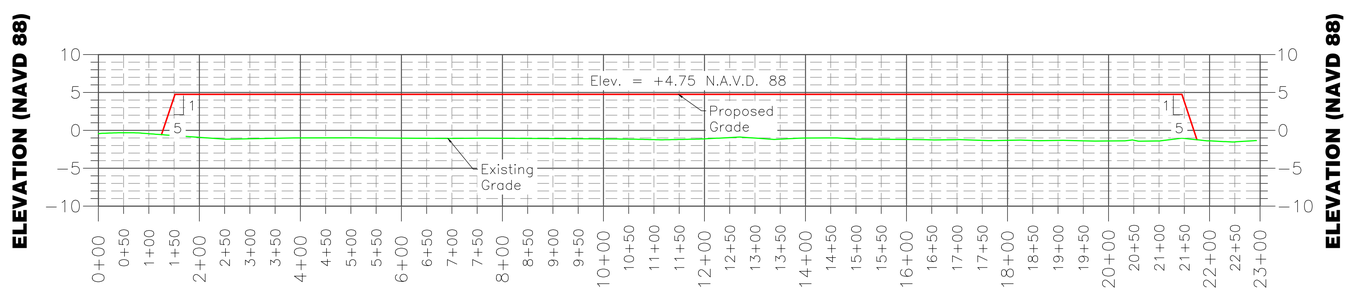
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.
10 BS240010
SOUTH_P&P.dwg
Drawing No.9
BS-24
5/31/16 12:05 PM
Sheet 11 of 75



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'

HOR. SCALE

0 10' 20' 30'

VERT. SCALE

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T156	472277.01	3733939.31	P.C. – 250'
T157	472288.49	3734005.31	P.I.
T158	472267.40	3734062.64	P.T. – 250'
T159	471961.05	3734898.72	P.C. – 250'
T160	471911.38	3735034.24	P.I.
T161	472003.91	3735145.02	P.T. – 250'
T162	472579.17	3735834.25	P.C. – 250'
T163	472613.90	3735875.27	P.I.
T164	472625.38	3735941.27	P.T. – 250'

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D154	472485.75	3733902.98	P.I.
D155	472436.08	3734038.51	P.T. – 250'
D156	472131.69	3734869.02	P.C. – 250'
D157	472082.02	3735004.54	P.I.
D158	472174.55	3735115.32	P.T. – 250'
D159	472741.59	3735794.17	P.C. – 250'
D160	472834.12	3735904.94	P.I.
D171	472144.47	3733962.37	P.I.
D172	472094.80	3734097.90	P.T. – 250'
D173	471790.41	3734928.41	P.C. – 250'
D174	471740.74	3735063.93	P.I.
D175	471833.27	3735174.71	P.T. – 250'
D176	472400.31	3735853.56	P.C. – 250'
D177	472492.84	3735964.33	P.I.

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905–1079 FAX: (337) 905–1076

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

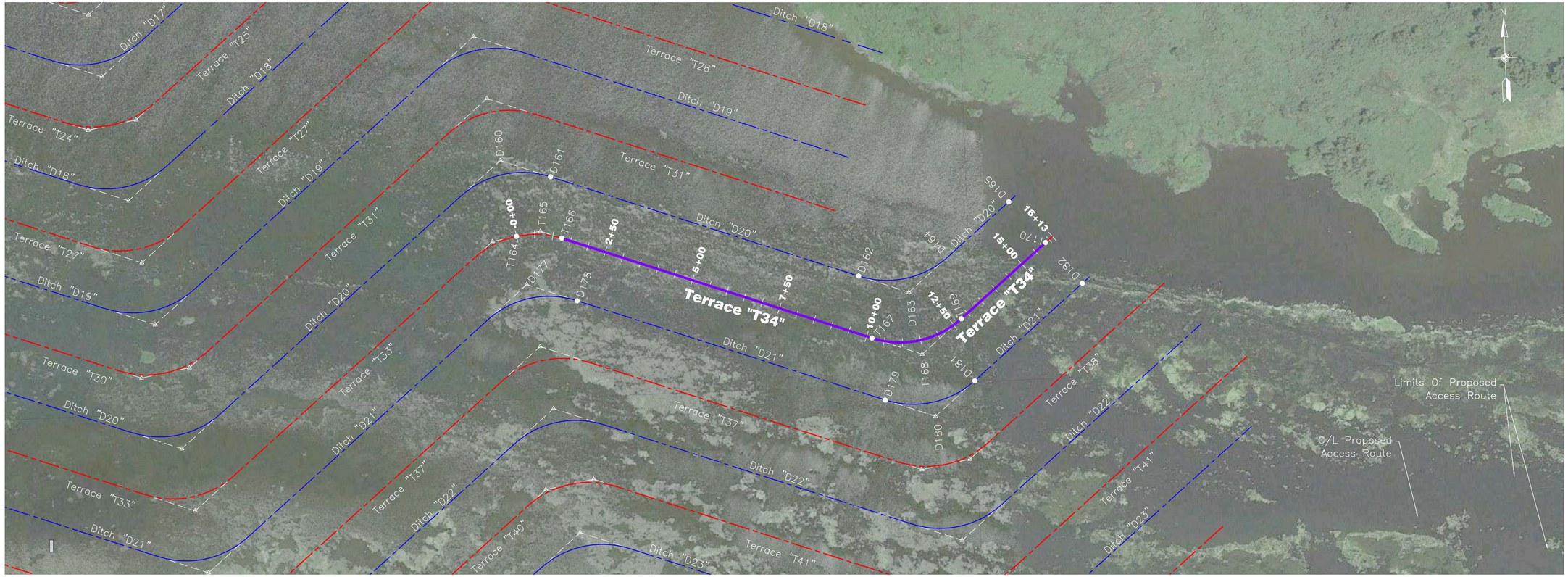
PRELIMINARY

TERRACE "T33" PLAN & PROFILE
BS–24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

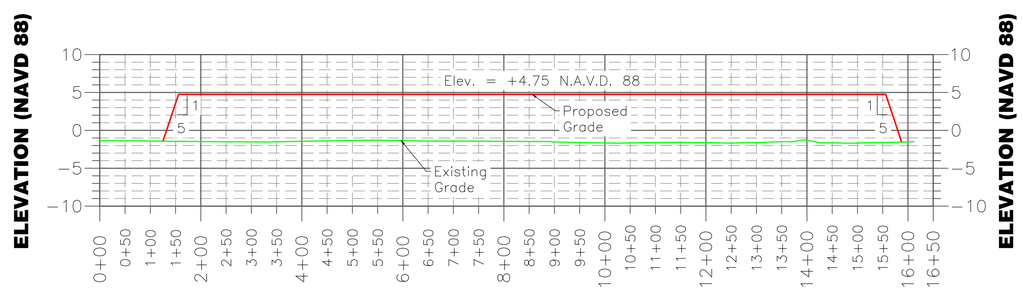
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.
10 BS240010
SOUTH.P&P.dwg
Drawing No.9
BS–24
5/31/16 12:05 PM
Sheet 11 of 75



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'

HOR. SCALE

0 10' 20' 30'

VERT. SCALE

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T164	472625.38	3735941.27	P.C. – 250'
T165	472636.87	3736007.26	P.I.
T166	472615.78	3736064.60	P.T. – 250'
T167	472309.43	3736900.68	P.C. – 250'
T168	472259.76	3737036.20	P.I.
T169	472352.29	3737146.97	P.T. – 250'
T170	472551.21	3737385.11	

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D160	472834.12	3735904.94	P.I.
D161	472784.46	3736040.47	P.T. – 250'
D162	472480.07	3736870.98	P.C. – 250'
D163	472430.40	3737006.50	P.I.
D164	472522.93	3737117.28	P.T. – 250'
D165	472666.33	3737288.95	
D177	472492.84	3735964.33	P.I.
D178	472443.17	3736099.86	P.T. – 250'
D179	472138.79	3736930.37	P.C. – 250'
D180	472089.12	3737065.89	P.I.
D181	472181.65	3737176.67	P.T. – 250'
D182	472436.09	3737481.28	

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905–1079 FAX: (337) 905–1076

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lennie Harper	04/01/16

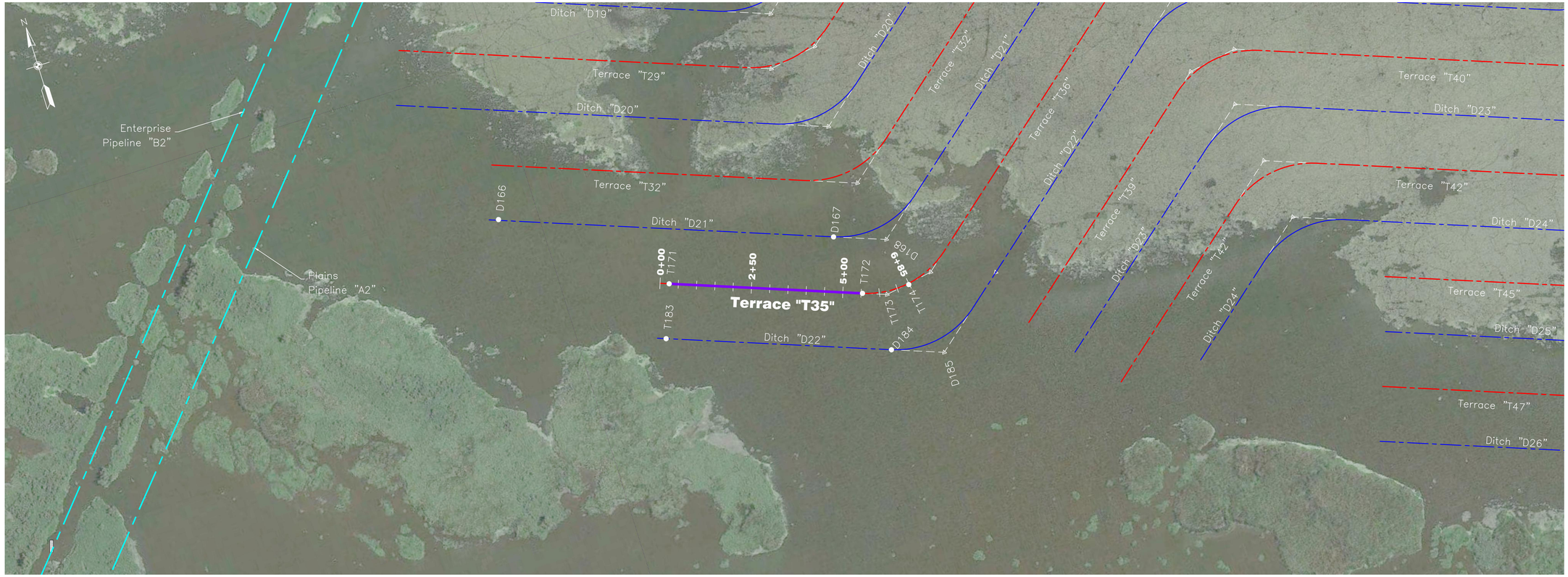
PRELIMINARY

TERRACE "T34" PLAN & PROFILE
BS–24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

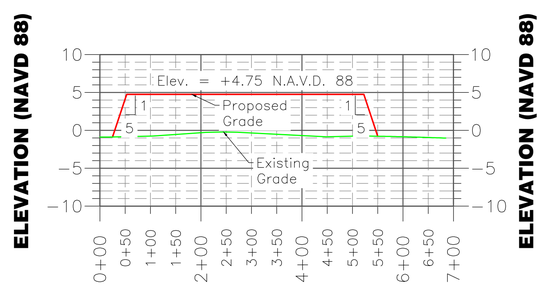
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.
10 BS240010
Drawing No.
BS–24
SOUTH_P&P.dwg
5/31/16 12:05 PM
Sheet *11* of *75*



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'
HOR. SCALE

0 10' 20' 30'
VERT. SCALE

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T171	471453.41	3732459.54	
T172	471272.74	3732952.47	P.C. – 250'
T173	471248.34	3733019.05	P.I.
T174	471259.83	3733085.04	P.T. – 250'

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D166	471757.69	3732065.20	
D167	471442.04	3732926.45	P.C. – 250'
D168	471392.37	3733061.98	P.I.
D183	471312.57	3732407.92	
D184	471100.76	3732985.84	P.C. – 250'
D185	471051.09	3733121.37	P.I.

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

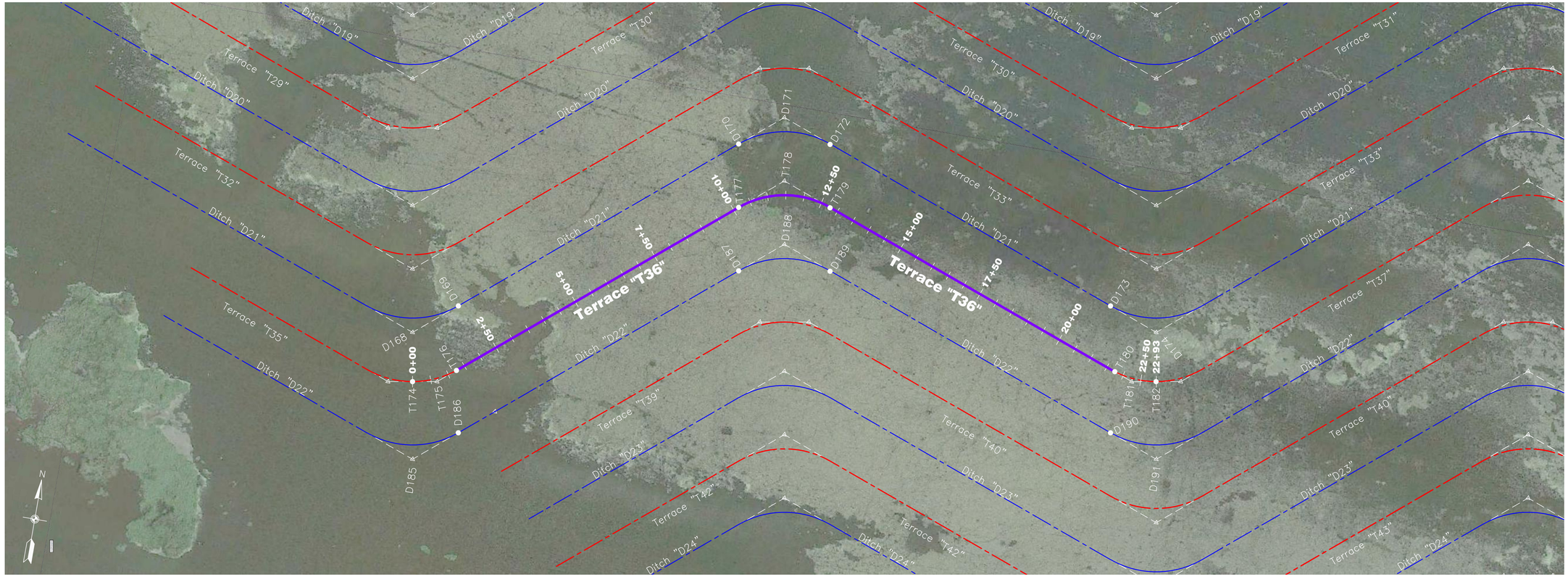
PRELIMINARY

TERRACE "T35" PLAN & PROFILE
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

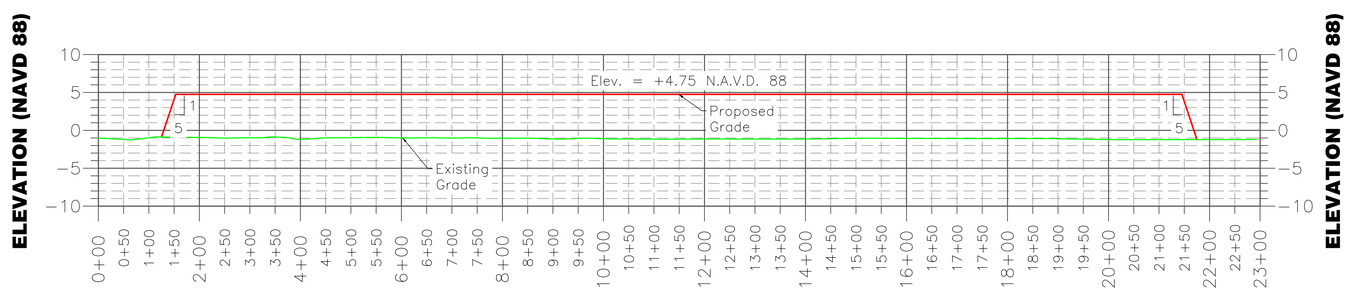
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.
10 BS240010
SOUTH.P&P.dwg
Drawing No.9
BS-24
5/31/16 12:05 PM
Sheet 11 of 75



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'

HOR. SCALE

0 10' 20' 30'

VERT. SCALE

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T174	471259.83	3733085.04	P.C. – 250'
T175	471271.31	3733151.04	P.I.
T176	471310.53	3733197.88	P.T. – 250'
T177	471881.30	3733881.29	P.C. – 250'
T178	471973.83	3733992.07	P.I.
T179	471924.16	3734127.59	P.T. – 250'
T180	471615.54	3734970.66	P.C. – 250'
T181	471596.72	3735021.00	P.I.
T182	471608.20	3735086.99	P.T. – 250'

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D168	471392.37	3733061.98	P.I.
D169	471484.90	3733172.75	P.T. – 250'
D170	472051.94	3733851.60	P.C. – 250'
D171	472144.47	3733962.37	P.I.
D172	472094.80	3734097.90	P.T. – 250'
D173	471790.41	3734928.41	P.C. – 250'
D174	471740.74	3735063.93	P.I.
D185	471051.09	3733121.37	P.I.
D186	471143.62	3733232.14	P.T. – 250'
D187	471710.66	3733910.99	P.C. – 250'
D188	471803.19	3734021.77	P.I.
D189	471753.52	3734157.29	P.T. – 250'
D190	471449.13	3734987.80	P.C. – 250'
D191	471399.46	3735123.33	P.I.

		Date
Designed	Chris Wheat	06/01/16
Drawn	Aaron Harper	06/01/16
Checked	Leonard Harper	06/01/16
Approved	Lonnie Harper	06/01/16

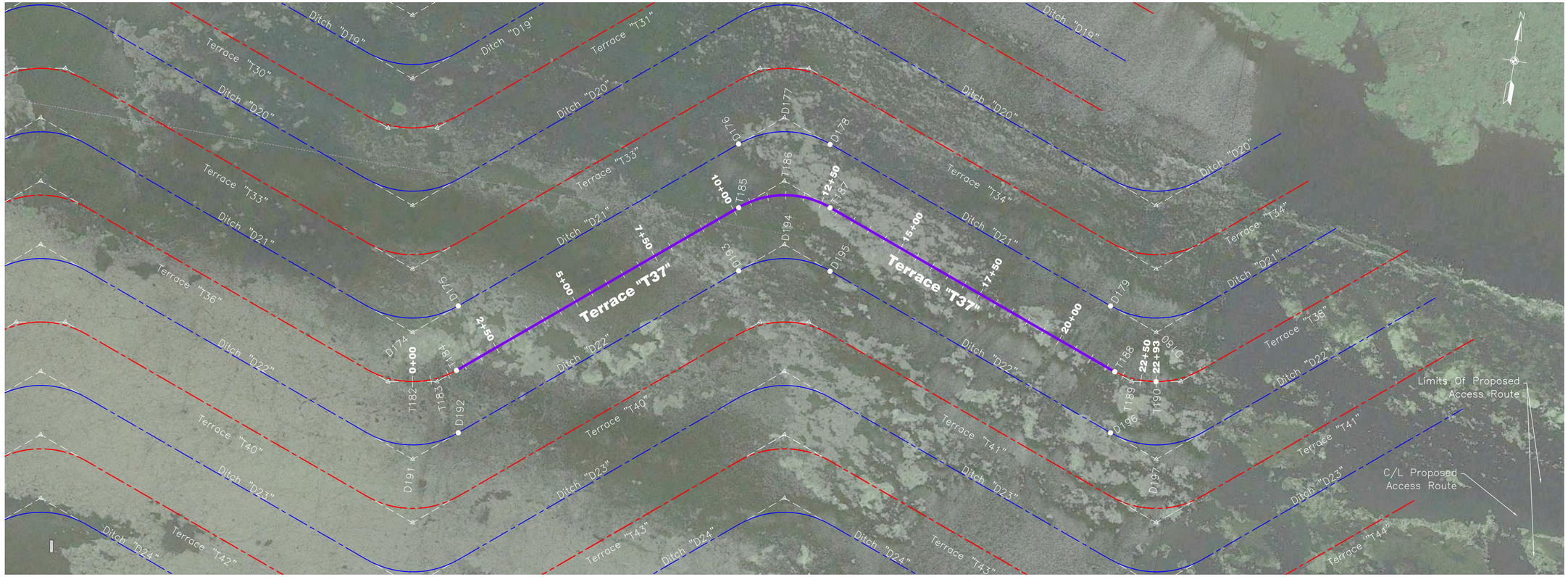
PRELIMINARY

TERRACE "T36" PLAN & PROFILE
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

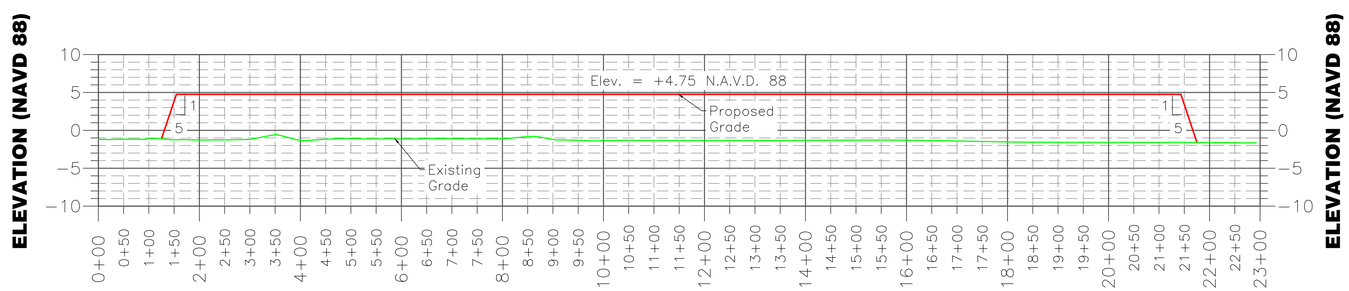
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.
10 BS240010
SOUTH P&P.dwg
Drawing No.9
BS-24
5/31/16 12:05 PM
Sheet 11 of 75



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'

HOR. SCALE

0 10' 20' 30'

VERT. SCALE

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T182	471608.20	3735086.99	P.C. – 250'
T183	471619.69	3735152.99	P.I.
T184	471658.90	3735199.83	P.T. – 250'
T185	472229.67	3735883.25	P.C. – 250'
T186	472322.20	3735994.03	P.I.
T187	472272.53	3736129.55	P.T. – 250'
T188	471963.92	3736972.62	P.C. – 250'
T189	471945.10	3737022.96	P.I.
T190	471956.58	3737088.96	P.T. – 250'

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D174	471740.74	3735063.93	P.I.
D175	471833.27	3735174.71	P.T. – 250'
D176	472400.31	3735853.56	P.C. – 250'
D177	472492.84	3735964.33	P.I.
D178	472443.17	3736099.86	P.T. – 250'
D179	472138.79	3736930.37	P.C. – 250'
D180	472089.12	3737065.89	P.I.
D191	471399.46	3735123.33	P.I.
D192	471491.99	3735234.10	P.T. – 250'
D193	472059.03	3735912.95	P.C. – 250'
D194	472151.56	3736023.72	P.I.
D195	472101.89	3736159.25	P.T. – 250'
D196	471797.51	3736989.76	P.C. – 250'
D197	471747.84	3737125.28	P.I.

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905–1079 FAX: (337) 905–1076

		Date
Designed	Chris Wheat	06/01/16
Drawn	Aaron Harper	06/01/16
Checked	Leonard Harper	06/01/16
Approved	Lonnie Harper	06/01/16

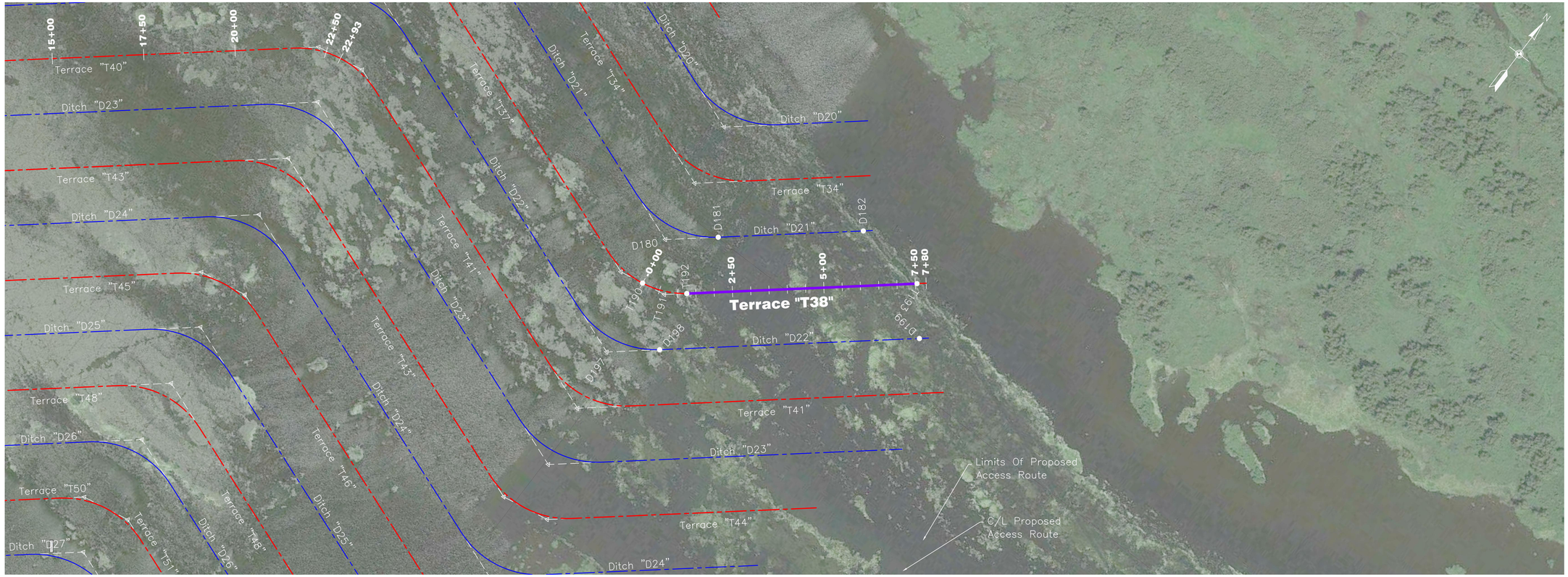
PRELIMINARY

TERRACE "T37" PLAN & PROFILE
BS–24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR

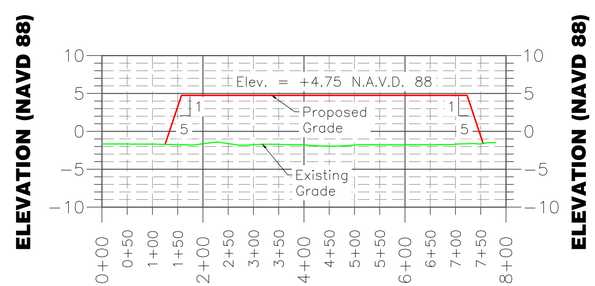
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.
10 BS240010
SOUTH.P&P.dwg
Drawing No.9
BS–24
5/31/16 12:05 PM
Sheet 11 of 75



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'

HOR. SCALE

0 10' 20' 30'

VERT. SCALE

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T190	471956.58	3737088.96	P.C. – 250'
T191	471968.06	3737154.95	P.I.
T192	472007.28	3737201.79	P.T. – 250'
T193	472410.92	3737685.13	

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D180	472089.12	3737065.89	P.I.
D181	472181.65	3737176.67	P.T. – 250'
D182	472436.09	3737481.28	
D197	471747.84	3737125.28	P.I.
D198	471840.37	3737236.06	P.T. – 250'
D199	472295.80	3737781.29	

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

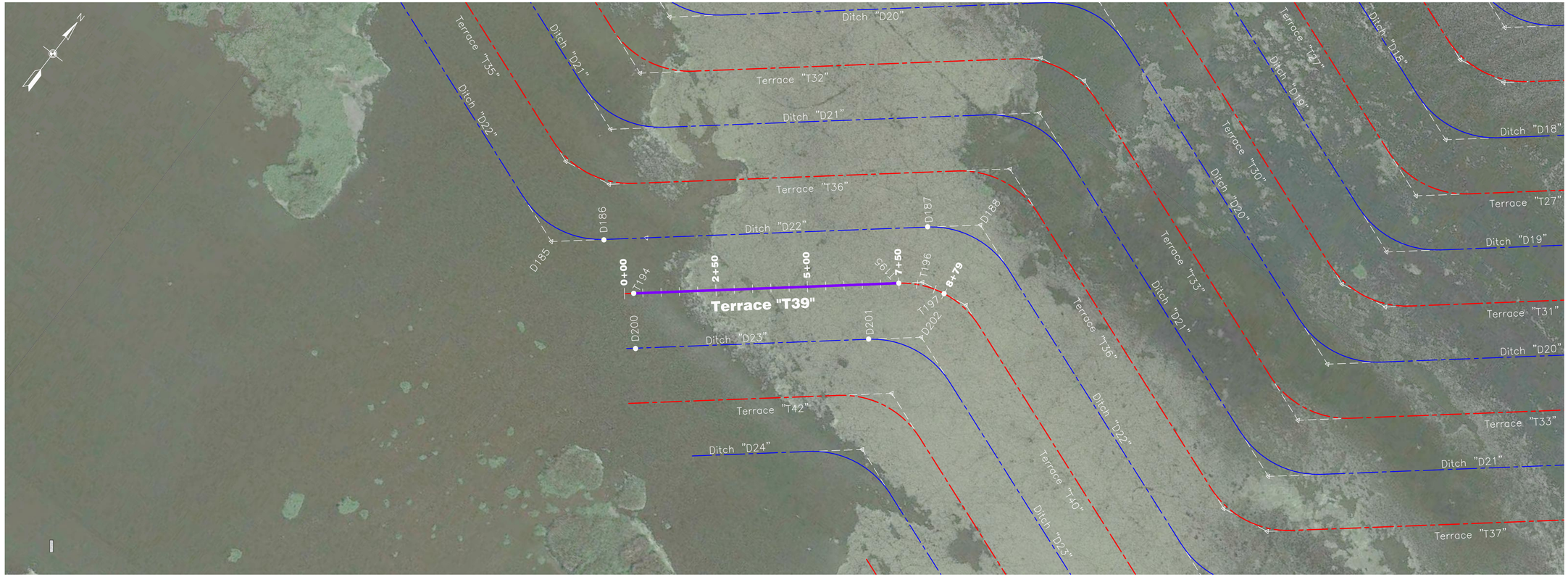
PRELIMINARY

TERRACE "T38" PLAN & PROFILE
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

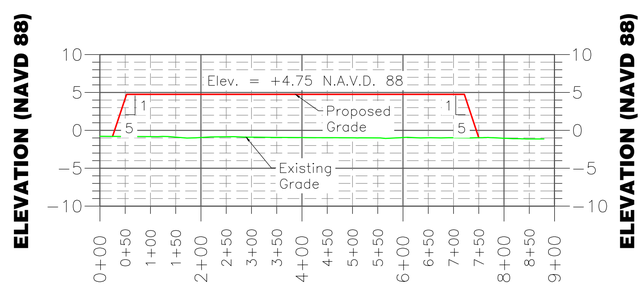
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.
10 BS240010
SOUTH.P&P.dwg
Drawing No.9
BS-24
5/31/16 12:05 PM
Sheet 11 of 75



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'

HOR. SCALE

0 10' 20' 30'

VERT. SCALE

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T194	471076.44	3733385.70	
T195	471541.21	3733942.13	P.C. – 250'
T196	471582.96	3733992.10	P.I.
T197	471594.53	3734058.61	P.T. – 250'

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D185	471051.09	3733121.37	P.I.
D186	471143.62	3733232.14	P.T. – 250'
D187	471710.66	3733910.99	P.C. – 250'
D188	471803.19	3734021.77	P.I.
D200	470961.32	3733481.86	P.T. – 250'
D201	471369.38	3733970.38	P.C. – 250'
D202	471461.91	3734081.16	P.I.

		Date
Designed	Chris Wheat	06/01/16
Drawn	Aaron Harper	06/01/16
Checked	Leonard Harper	06/01/16
Approved	Lonnie Harper	06/01/16

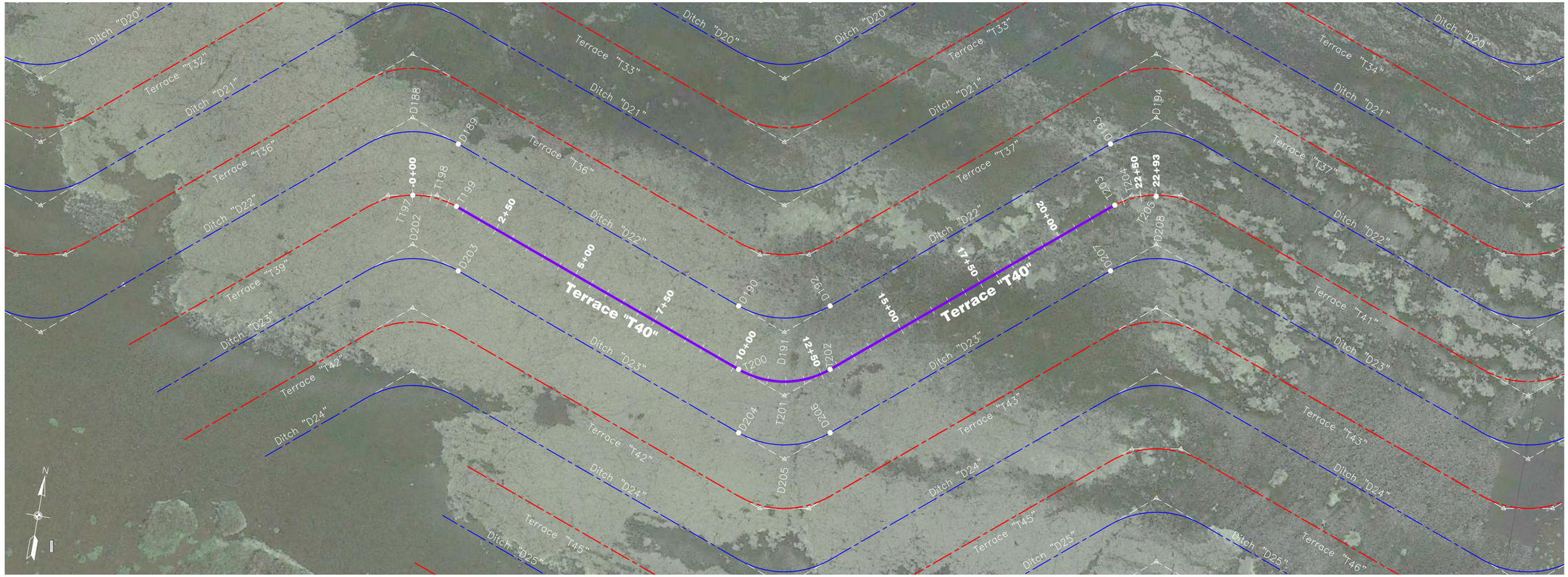
PRELIMINARY

TERRACE "T39" PLAN & PROFILE
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

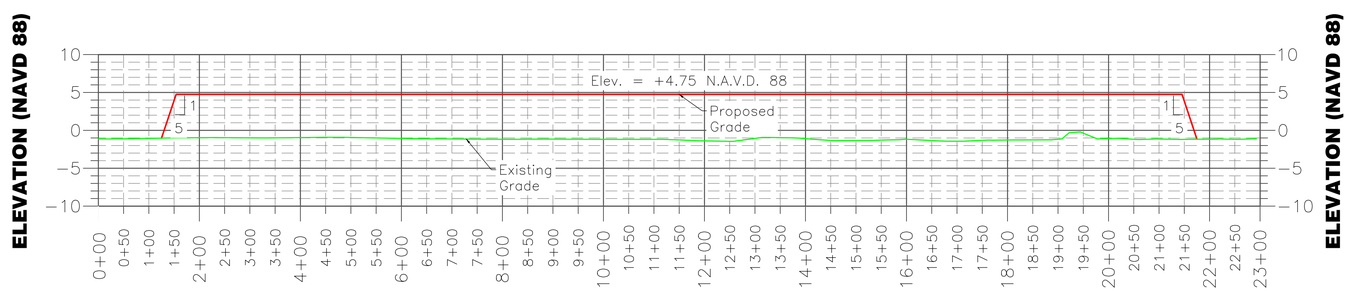
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.
10 BS240010
SOUTH_P&P.dwg
Drawing No.9
BS-24
5/31/16 12:05 PM
Sheet 11 of 75



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'

HOR. SCALE

0 10' 20' 30'

VERT. SCALE

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T197	471594.53	3734058.61	P.C. – 250'
T198	471605.93	3734124.09	P.I.
T199	471584.84	3734181.42	P.T. – 250'
T200	471278.49	3735017.50	P.C. – 250'
T201	471228.82	3735153.02	P.I.
T202	471321.35	3735263.80	P.T. – 250'
T203	471896.61	3735953.03	P.C. – 250'
T204	471931.33	3735994.05	P.I.
T205	471942.82	3736060.05	P.T. – 250'

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D188	471803.19	3734021.77	P.I.
D189	471753.52	3734157.29	P.T. – 250'
D190	471449.13	3734987.80	P.C. – 250'
D191	471399.46	3735123.33	P.I.
D192	471491.99	3735234.10	P.T. – 250'
D193	472059.03	3735912.95	P.C. – 250'
D194	472151.56	3736023.72	P.I.
D202	471461.91	3734081.16	P.I.
D203	471412.24	3734216.68	P.T. – 250'
D204	471107.85	3735047.19	P.C. – 250'
D205	471058.18	3735182.72	P.I.
D206	471150.71	3735293.49	P.T. – 250'
D207	471717.75	3735972.34	P.C. – 250'
D208	471810.28	3736083.12	P.I.

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

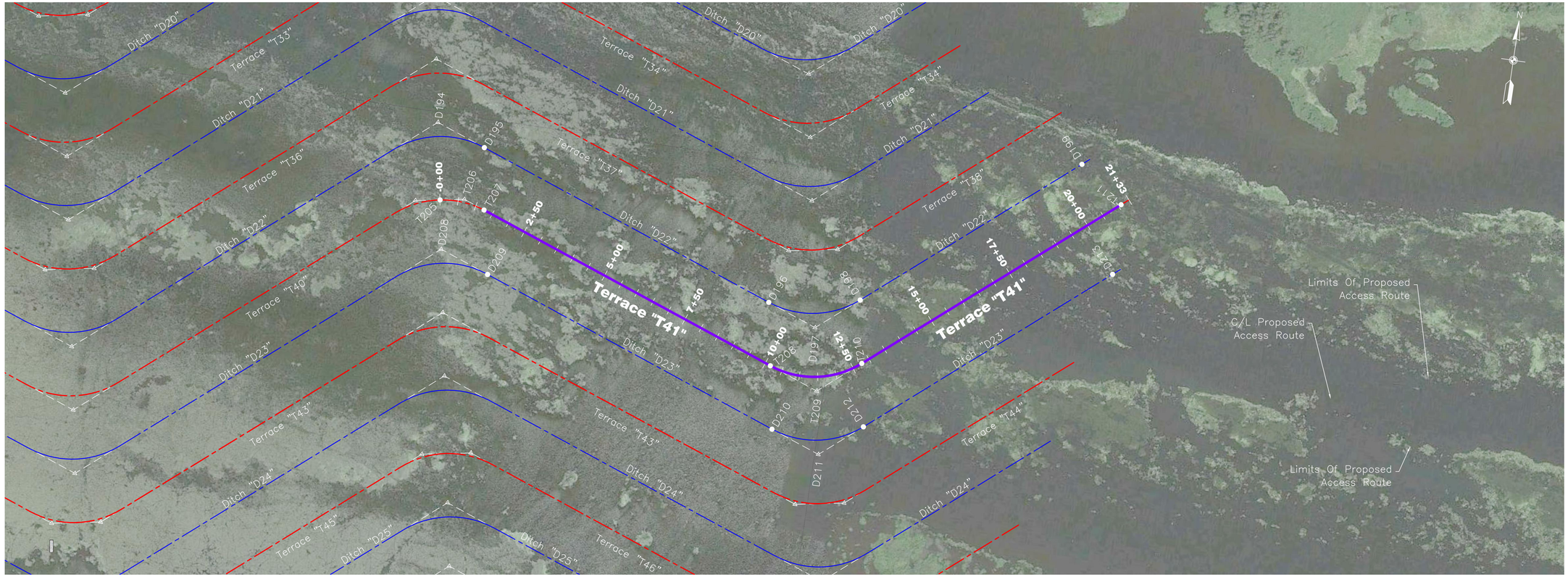
PRELIMINARY

TERRACE "T40" PLAN & PROFILE
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

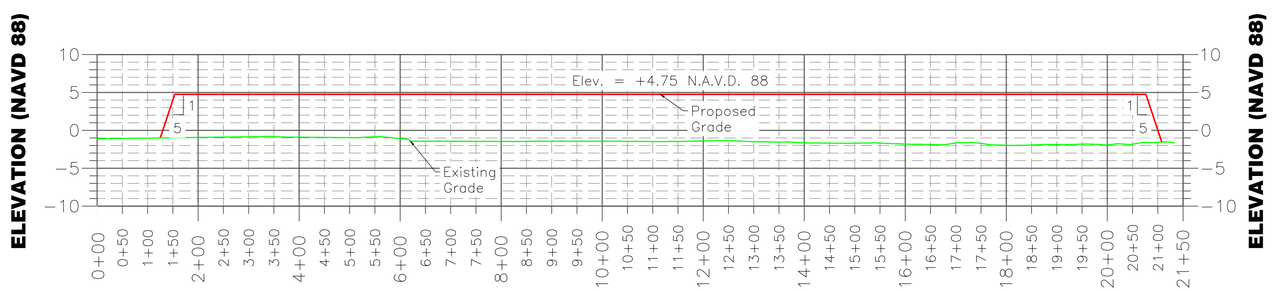
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.
10 BS240010
SOUTH.P&P.dwg
Drawing No.9
BS-24
5/31/16 12:05 PM
Sheet 11 of 75



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'

HOR. SCALE

0 10' 20' 30'

VERT. SCALE

TERRACE DATA TABLE			
POINT NO.	NORTHING	EASTING	RADIUS
T205	471942.82	3736060.05	P.C. – 250'
T206	471954.30	3736126.05	P.I.
T207	471933.22	3736183.38	P.T. – 250'
T208	471626.87	3737019.46	P.C. – 250'
T209	471577.20	3737154.98	P.I.
T210	471669.73	3737265.76	P.T. – 250'
T211	472202.23	3737903.26	

BORROW DATA TABLE			
POINT NO.	NORTHING	EASTING	RADIUS
D194	472151.56	3736023.72	P.I.
D195	472101.89	3736159.25	P.T. – 250'
D196	471797.51	3736989.76	P.C. – 250'
D197	471747.84	3737125.28	P.I.
D198	471840.37	3737236.06	P.T. – 250'
D199	472295.80	3737781.29	
D208	471810.28	3736083.12	P.I.
D209	471760.61	3736218.64	P.T. – 250'
D210	471456.23	3737049.15	P.C. – 250'
D211	471406.56	3737184.67	P.I.
D212	471499.09	3737295.45	P.T. – 250'
D213	472010.78	3737908.04	

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905–1079 FAX: (337) 905–1076

		Date
Designed	Chris Wheat	06/01/16
Drawn	Aaron Harper	06/01/16
Checked	Leonard Harper	06/01/16
Approved	Lonnie Harper	06/01/16

PRELIMINARY

TERRACE "T41" PLAN & PROFILE
BS–24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

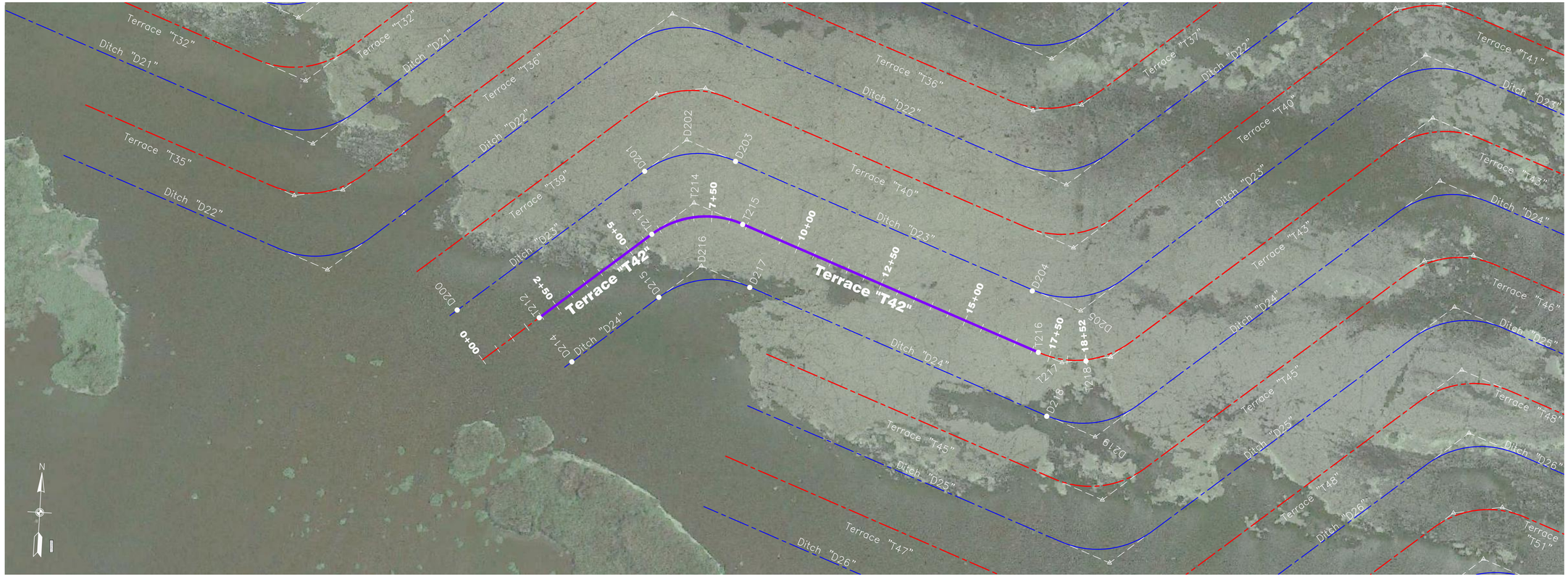
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

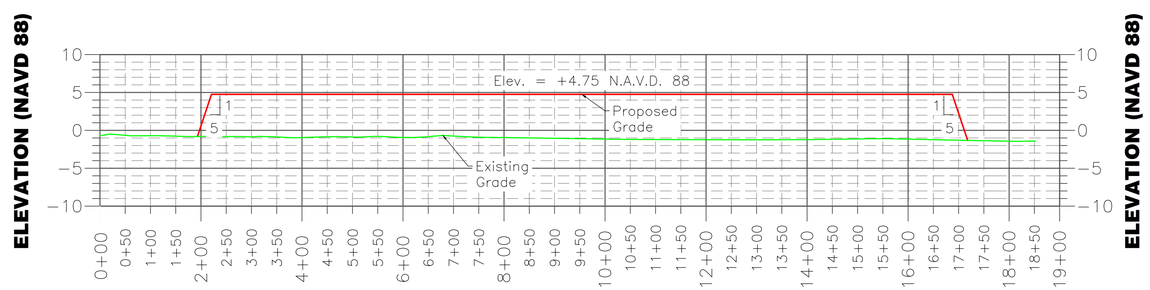
File No.

Drawing No.
BS–24

5/31/16 12:05 PM
Sheet *11* of *75*



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'

HOR. SCALE

0 10' 20' 30'

VERT. SCALE

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T212	470953.85	3733706.91	
T213	471198.73	3734000.08	P.C. – 250'
T214	471291.27	3734110.85	P.I.
T215	471241.60	3734246.37	P.T. – 250'
T216	470938.35	3735073.77	P.C. – 250'
T217	470914.16	3735139.79	P.I.
T218	470925.64	3735205.78	P.T. – 250'

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D200	470961.32	3733481.86	
D201	471369.38	3733970.38	P.C. – 250'
D202	471461.91	3734081.16	P.I.
D203	471412.24	3734216.68	P.T. – 250'
D204	471107.85	3735047.19	P.C. – 250'
D205	471058.18	3735182.72	P.I.
D214	470838.73	3733803.07	
D215	471028.09	3734029.77	P.C. – 250'
D216	471120.63	3734140.55	P.I.
D217	471070.96	3734276.07	P.T. – 250'
D218	470766.57	3735106.58	P.C. – 250'
D219	470716.90	3735242.11	P.I.

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

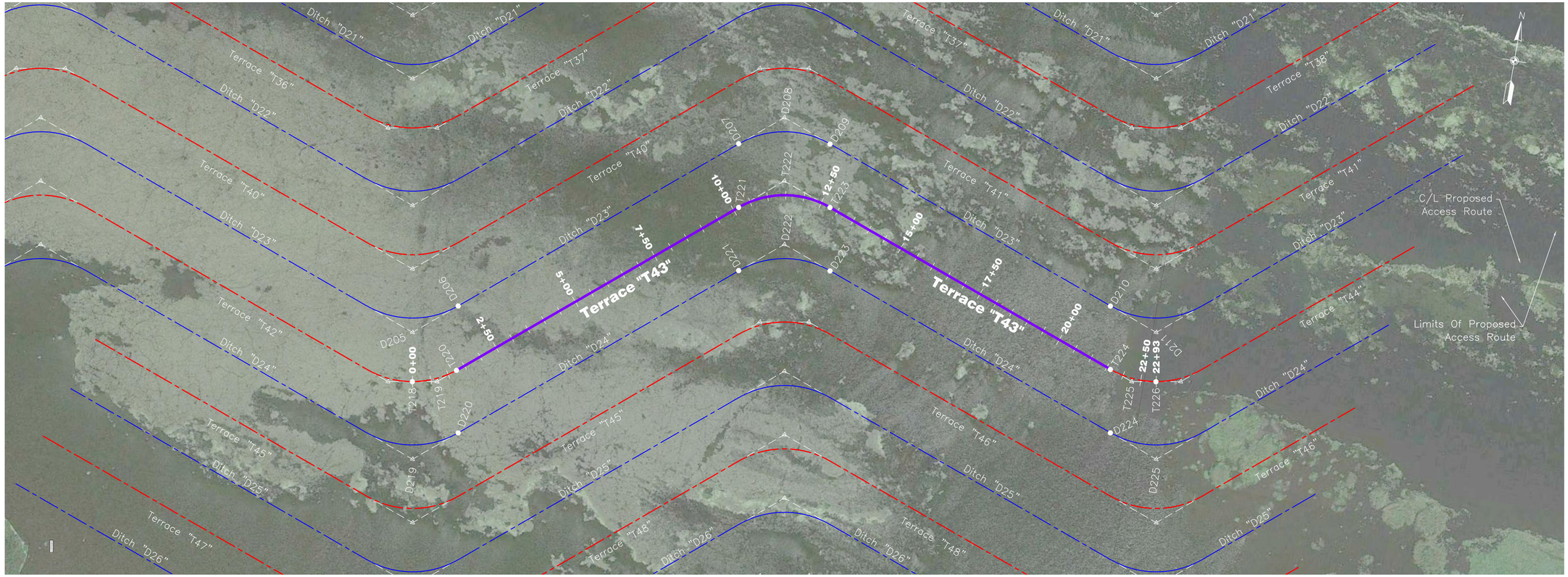
PRELIMINARY

TERRACE "T42" PLAN & PROFILE
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

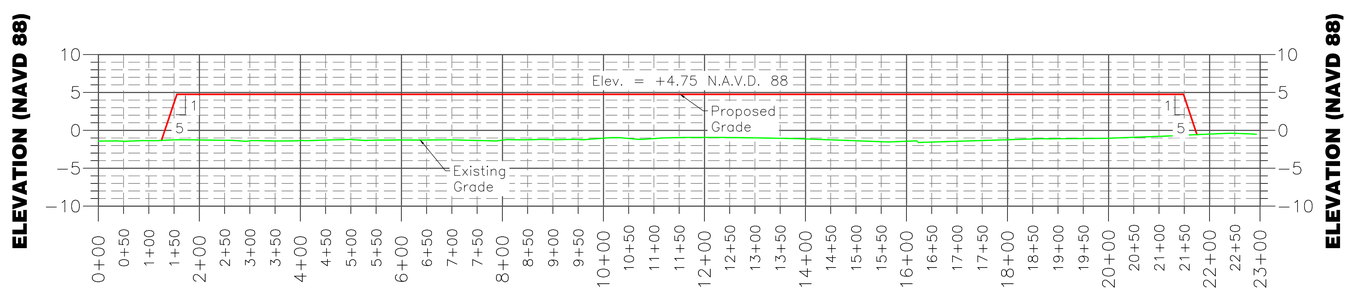
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.
10 BS240010
SOUTH_P&P.dwg
Drawing No.
BS-24
5/31/16 12:05 PM
Sheet *11* of *75*



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'

HOR. SCALE

0 10' 20' 30'

VERT. SCALE

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T218	470925.64	3735205.78	P.C. – 250'
T219	470937.13	3735271.78	P.I.
T220	470976.34	3735318.62	P.T. – 250'
T221	471547.11	3736002.03	P.C. – 250'
T222	471639.64	3736112.81	P.I.
T223	471589.97	3736248.33	P.T. – 250'
T224	471285.58	3737078.85	P.C. – 250'
T225	471262.53	3737141.74	P.I.
T226	471274.02	3737207.74	P.T. – 250'

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D205	471058.18	3735182.72	P.I.
D206	471150.71	3735293.49	P.T. – 250'
D207	471717.75	3735972.34	P.C. – 250'
D208	471810.28	3736083.12	P.I.
D209	471760.61	3736218.64	P.T. – 250'
D210	471456.23	3737049.15	P.C. – 250'
D211	471406.56	3737184.67	P.I.
D219	470716.90	3735242.11	P.I.
D220	470809.43	3735352.88	P.T. – 250'
D221	471376.47	3736031.73	P.C. – 250'
D222	471469.00	3736142.51	P.I.
D223	471419.33	3736278.03	P.T. – 250'
D224	471114.94	3737108.54	P.C. – 250'
D225	471065.27	3737244.07	P.I.

		Date
Designed	Chris Wheat	06/01/16
Drawn	Aaron Harper	06/01/16
Checked	Leonard Harper	06/01/16
Approved	Lonnie Harper	06/01/16

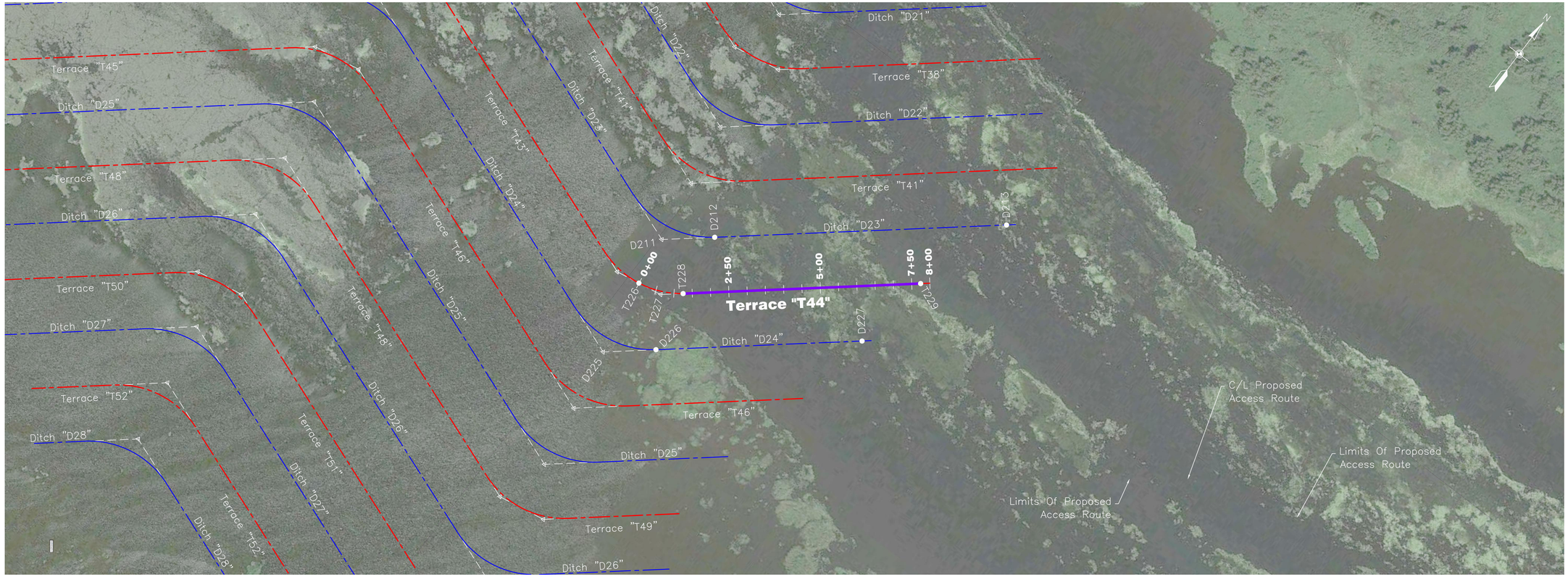
PRELIMINARY

TERRACE "T43" PLAN & PROFILE
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

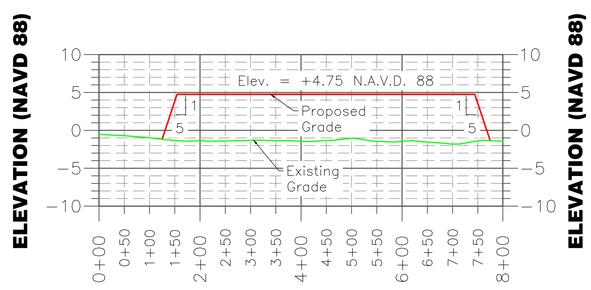
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.
10 BS240010
SOUTH.P&P.dwg
Drawing No.9
BS-24
5/31/16 12:05 PM
Sheet 11 of 75



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'

HOR. SCALE

0 10' 20' 30'

VERT. SCALE

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T226	471274.02	3737207.74	P.C. – 250'
T227	471285.50	3737273.73	P.I.
T228	471324.72	3737320.57	P.T. – 250'
T229	471741.09	3737819.15	

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D211	471406.56	3737184.67	P.I.
D212	471499.09	3737295.45	P.T. – 250'
D213	472010.78	3737908.04	
D225	471065.27	3737244.07	P.I.
D226	471157.81	3737354.84	P.T. – 250'
D227	471519.15	3737787.44	

		Date
Designed	Chris Wheat	06/01/16
Drawn	Aaron Harper	06/01/16
Checked	Leonard Harper	06/01/16
Approved	Lonnie Harper	06/01/16

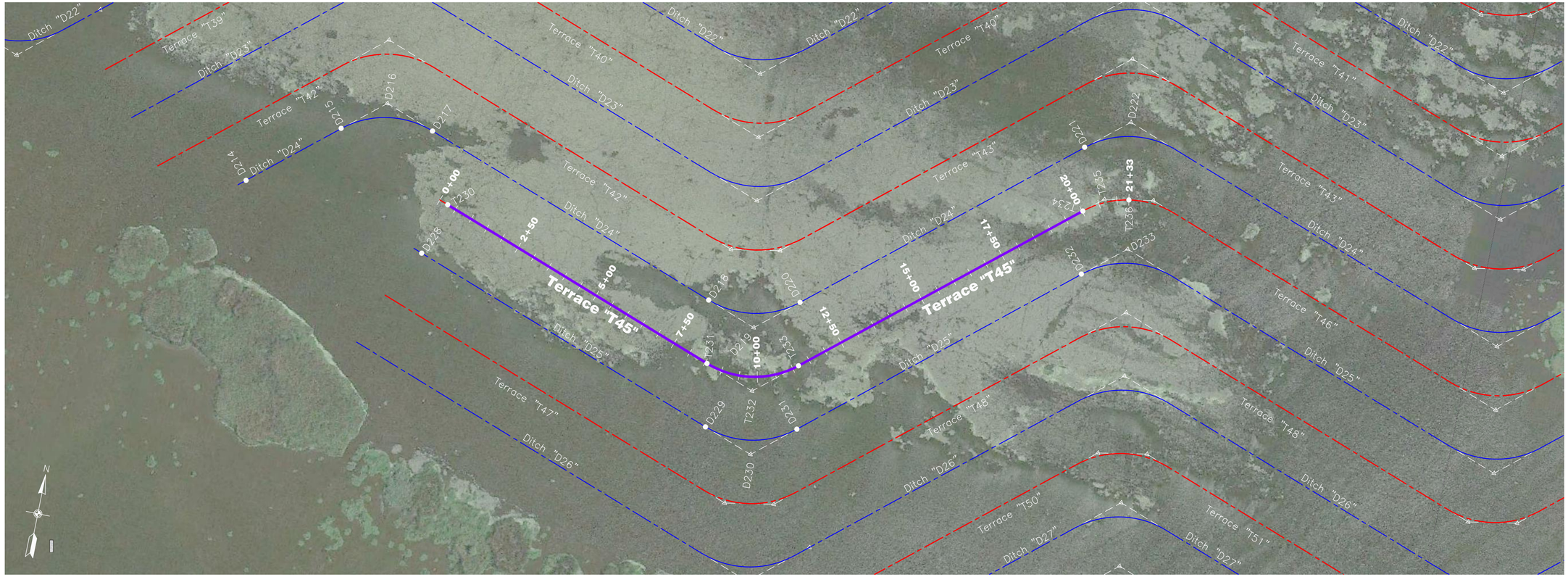
PRELIMINARY

TERRACE "T44" PLAN & PROFILE
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

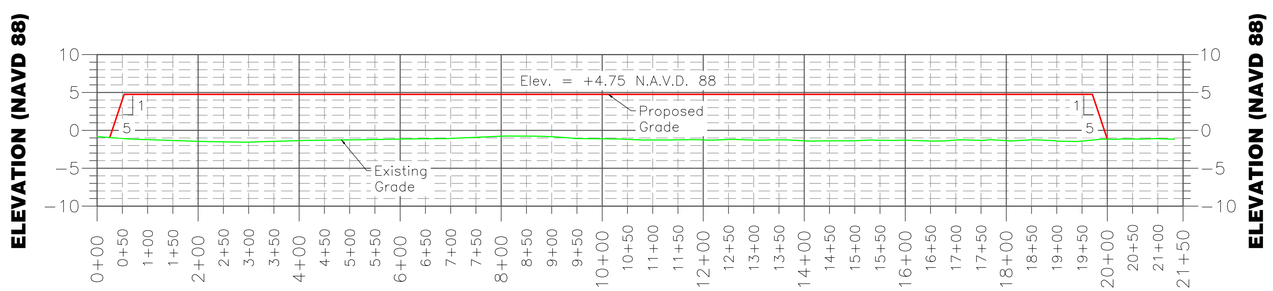
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.
10 BS240010
SOUTH_P&P.dwg
Drawing No.9
BS-24
5/31/16 12:05 PM
Sheet 11 of 75



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'

HOR. SCALE

0 10' 20' 30'

VERT. SCALE

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T230	470881.78	3734356.34	
T231	470595.93	3735136.28	P.C. – 250'
T232	470546.26	3735271.80	P.I.
T233	470638.79	3735382.58	P.T. – 250'
T234	471204.56	3736059.90	P.C. – 250'
T235	471248.77	3736112.84	P.I.
T236	471260.26	3736178.83	P.T. – 250'

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D214	470838.73	3733803.07	
D215	471028.09	3734029.77	P.C. – 250'
D216	471120.63	3734140.55	P.I.
D217	471070.96	3734276.07	P.T. – 250'
D218	470766.57	3735106.58	P.C. – 250'
D219	470716.90	3735242.11	P.I.
D220	470809.43	3735352.88	P.T. – 250'
D221	471376.47	3736031.73	P.C. – 250'
D222	471469.00	3736142.51	P.I.
D228	470738.07	3734312.56	
D229	470425.29	3735165.98	P.C. – 250'
D230	470375.62	3735301.50	P.I.
D231	470468.15	3735412.27	P.T. – 250'
D232	471035.19	3736091.12	P.C. – 250'
D233	471127.72	3736201.90	P.I.

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905–1079 FAX: (337) 905–1076

		Date
Designed	Chris Wheat	06/01/16
Drawn	Aaron Harper	06/01/16
Checked	Leonard Harper	06/01/16
Approved	Lonnie Harper	06/01/16

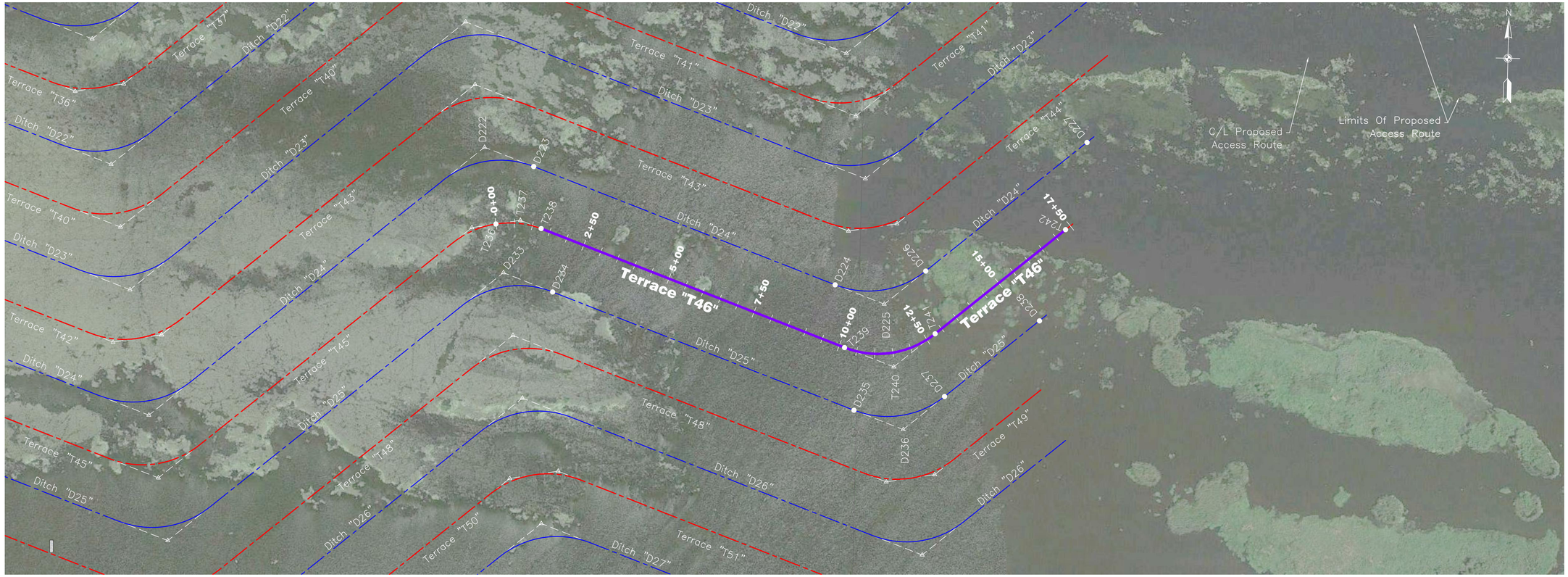
PRELIMINARY

TERRACE "T45" PLAN & PROFILE
BS–24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR

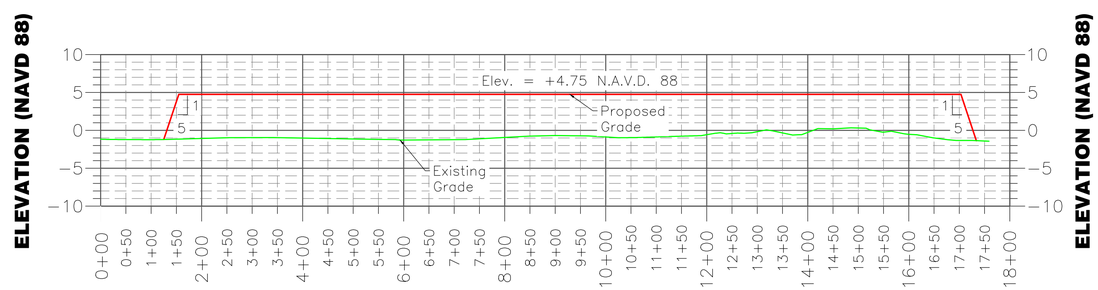
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.
10 BS240010
SOUTH_P&P.dwg
Drawing No.9
BS–24
5/31/16 12:05 PM



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'

HOR. SCALE

0 10' 20' 30'

VERT. SCALE

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T236	471260.26	3736178.83	P.C. – 250'
T237	471271.74	3736244.83	P.I.
T238	471250.66	3736302.16	P.T. – 250'
T239	470944.30	3737138.24	P.C. – 250'
T240	470894.63	3737273.76	P.I.
T241	470987.17	3737384.54	P.T. – 250'
T242	471279.74	3737734.80	

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D222	471419.33	3736278.03	P.I.
D223	471114.94	3737108.54	P.T. – 250'
D224	471065.27	3737244.07	P.C. – 250'
D225	471157.81	3737354.84	P.I.
D226	471157.81	3737354.84	P.T. – 250'
D227	471519.15	3737787.44	
D233	471127.72	3736201.90	P.I.
D234	471078.05	3736337.42	P.T. – 250'
D235	470773.66	3737167.93	P.C. – 250'
D236	470723.99	3737303.46	P.I.
D237	470816.52	3737414.23	P.T. – 250'
D238	471029.12	3737668.75	

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905–1079 FAX: (337) 905–1076

		Date
Designed	Chris Wheat	06/01/16
Drawn	Aaron Harper	06/01/16
Checked	Leonard Harper	06/01/16
Approved	Lonnie Harper	06/01/16

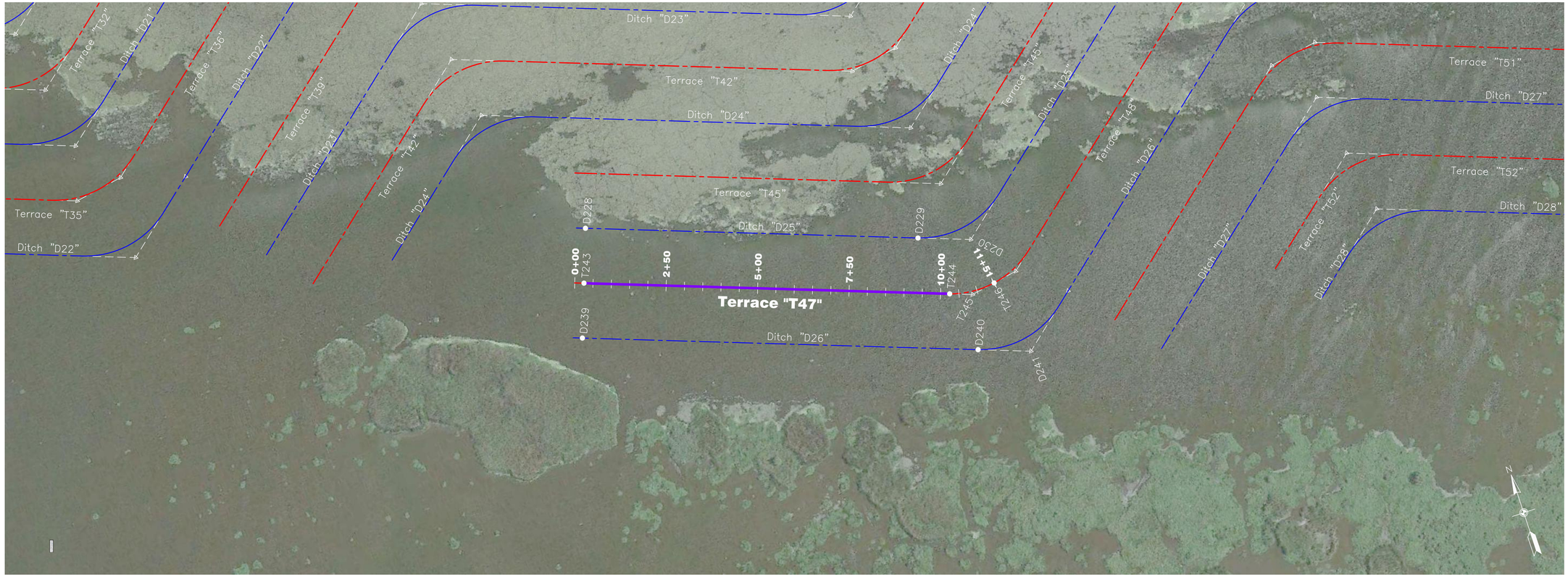
PRELIMINARY

TERRACE "T46" PLAN & PROFILE
BS–24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

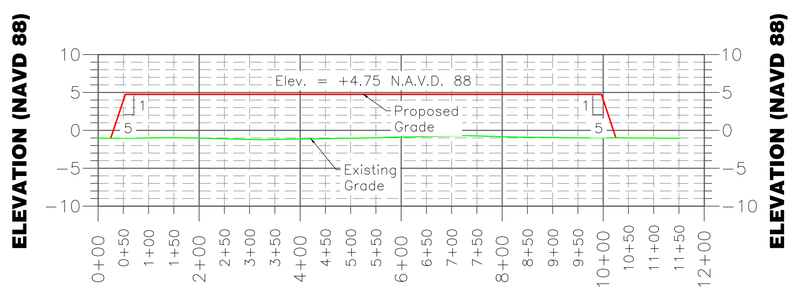
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.
10 BS240010
SOUTH_P&P.dwg
Drawing No.9
BS–24
5/31/16 12:05 PM
Sheet 11 of 75



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'
HOR. SCALE

0 10' 20' 30'
VERT. SCALE

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T243	470597.31	3734260.98	
T244	470253.15	3735199.89	P.C. – 250'
T245	470231.60	3735258.57	P.I.
T246	470243.08	3735324.56	P.T. – 250'

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D228	470738.07	3734312.56	
D229	470425.29	3735165.98	P.C. – 250'
D230	470375.62	3735301.50	P.I.
D239	470456.39	3734209.33	
D240	470084.01	3735225.37	P.C. – 250'
D241	470034.34	3735360.89	P.I.

		Date
Designed	Chris Wheat	06/01/16
Drawn	Aaron Harper	06/01/16
Checked	Leonard Harper	06/01/16
Approved	Lennie Harper	06/01/16

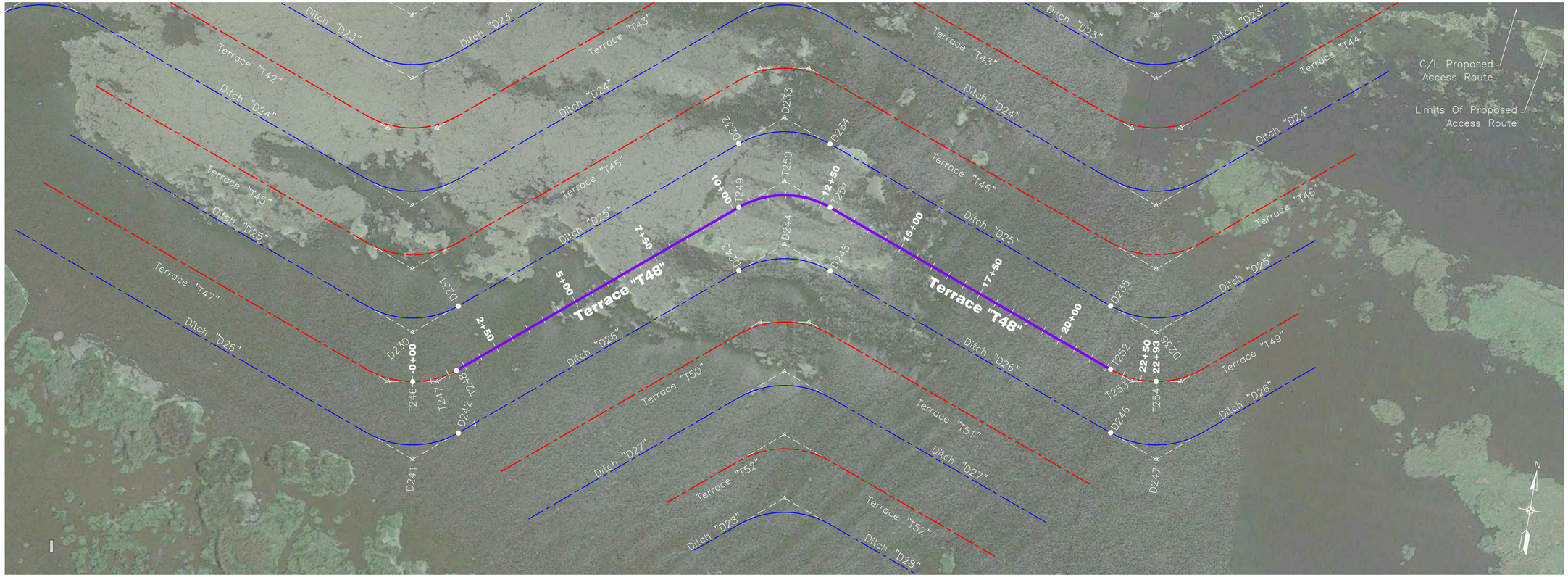
PRELIMINARY

TERRACE "T47" PLAN & PROFILE
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

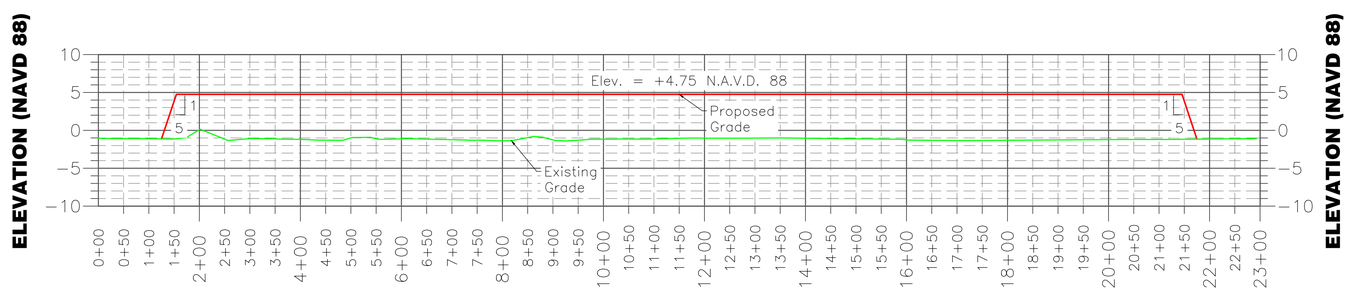
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.
10 BS240010
SOUTH_P&P.dwg
Drawing No.9
BS-24
5/31/16 12:05 PM
Sheet 11 of 75



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'

HOR. SCALE

0 10' 20' 30'

VERT. SCALE

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T246	470243.08	3735324.56	P.C. – 250'
T247	470254.57	3735390.56	P.I.
T248	470293.78	3735437.40	P.T. – 250'
T249	470864.55	3736120.82	P.C. – 250'
T250	470957.08	3736231.59	P.I.
T251	470907.41	3736367.11	P.T. – 250'
T252	470603.02	3737197.63	P.C. – 250'
T253	470579.97	3737260.53	P.I.
T254	470591.46	3737326.52	P.T. – 250'

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D230	470375.62	3735301.50	P.I.
D231	470468.15	3735412.27	P.T. – 250'
D232	471035.19	3736091.12	P.C. – 250'
D233	471127.72	3736201.90	P.I.
D234	471078.05	3736337.42	P.T. – 250'
D235	470773.66	3737167.93	P.C. – 250'
D236	470723.99	3737303.46	P.I.
D241	470034.34	3735360.89	P.I.
D242	470126.87	3735471.66	P.T. – 250'
D243	470693.91	3736150.51	P.C. – 250'
D244	470786.44	3736261.29	P.I.
D245	470736.77	3736396.81	P.T. – 250'
D246	470432.38	3737227.32	P.C. – 250'
D247	470382.71	3737362.85	P.I.

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905–1079 FAX: (337) 905–1076

		Date
Designed	Chris Wheat	06/01/16
Drawn	Aaron Harper	06/01/16
Checked	Leonard Harper	06/01/16
Approved	Lonnie Harper	06/01/16

PRELIMINARY

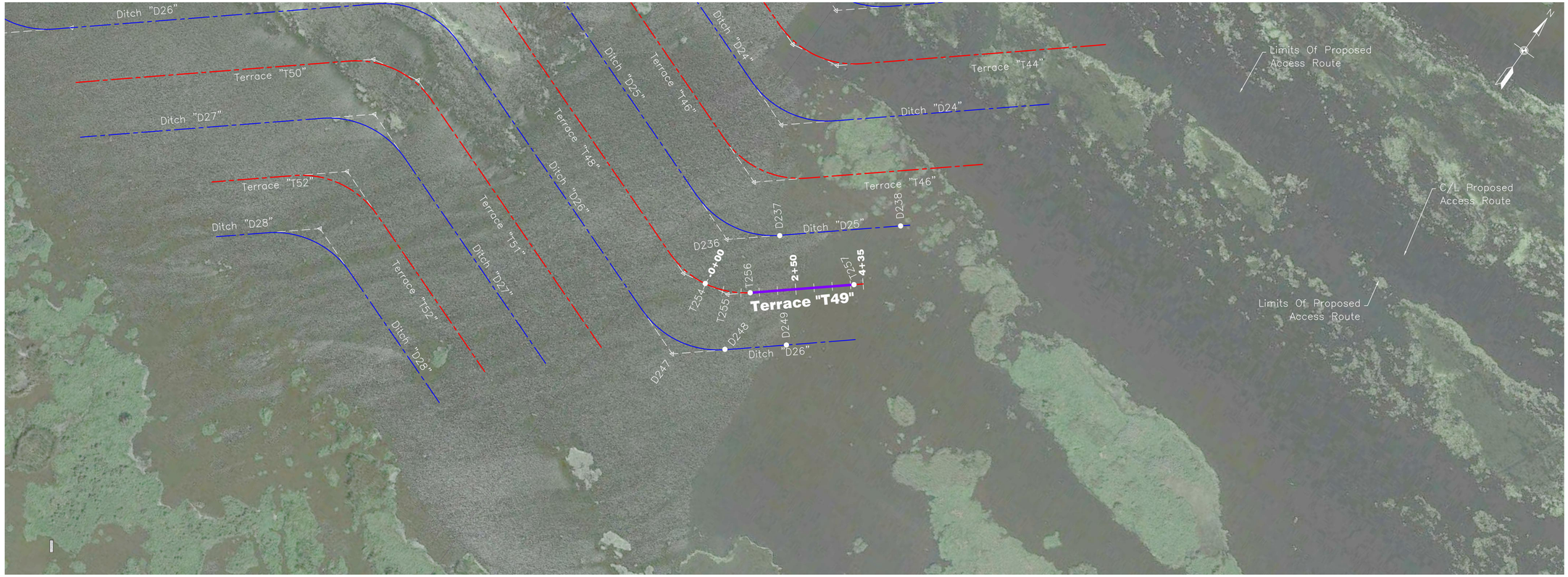
TERRACE "T48" PLAN & PROFILE
BS–24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR

Page 11 of 28

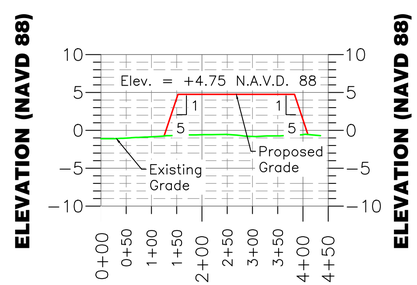
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.
10 BS240010
SOUTH.P&P.dwg
Drawing No.9
BS–24
5/31/16 12:05 PM
Sheet 11 of 75



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'
HOR. SCALE

0 10' 20' 30'
VERT. SCALE

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T254	470591.46	3737326.52	P.C. – 250'
T255	470642.16	3737439.36	P.I.
T256	470642.16	3737439.36	P.T. – 250'
T257	470824.65	3737657.94	

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D236	470723.99	3737303.46	P.I.
D237	470816.52	3737414.23	P.T. – 250'
D238	471029.12	3737668.75	
D247	470382.71	3737362.85	P.I.
D248	470475.24	3737473.62	P.T. – 250'
D249	470583.21	3737602.88	

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

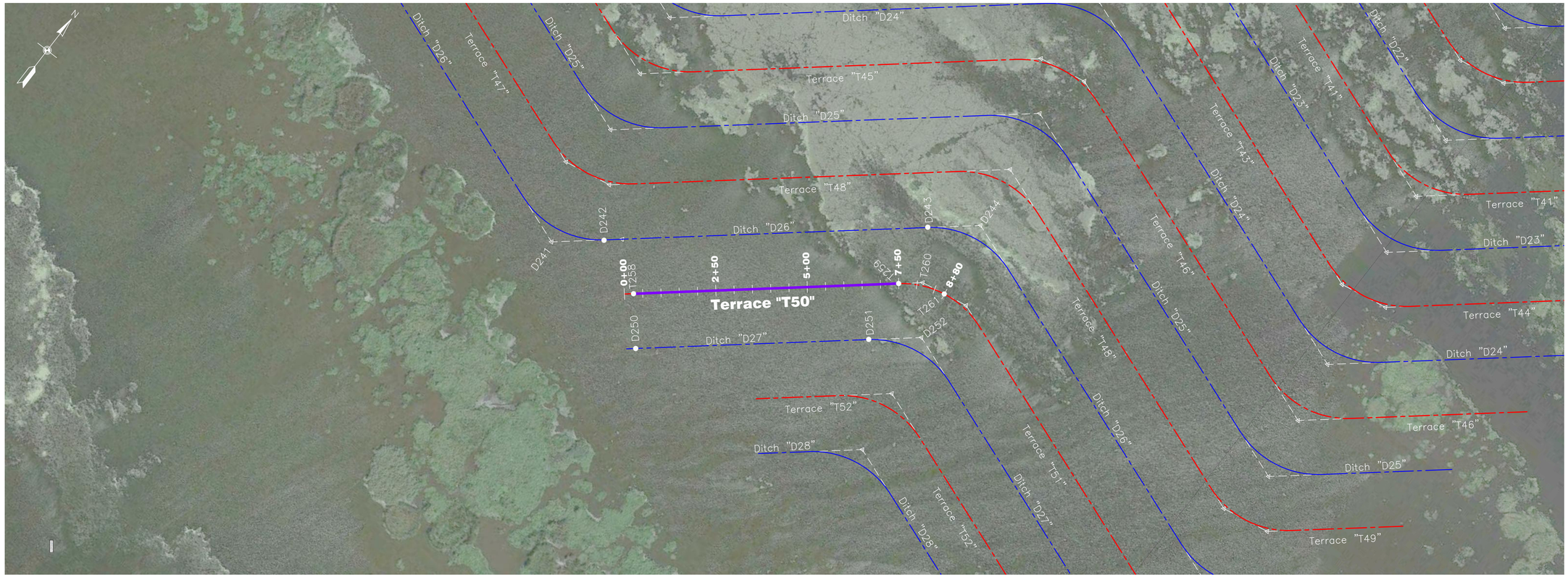
PRELIMINARY

TERRACE "T49" PLAN & PROFILE
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

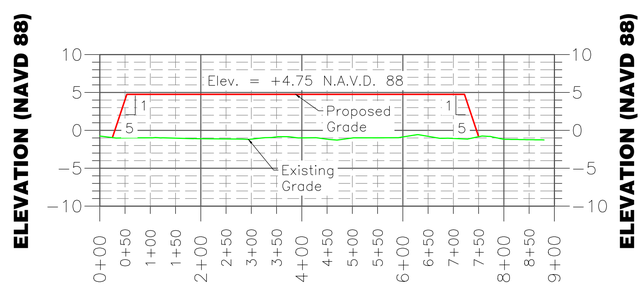
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.
10 BS240010
Drawing No.
BS-24
5/31/16 12:05 PM
Sheet *11* of *75*



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'

HOR. SCALE

0 10' 20' 30'

VERT. SCALE

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T258	470059.26	3735624.71	
T259	470524.04	3736181.13	P.C. – 250'
T260	470566.21	3736231.62	P.I.
T261	470577.70	3736297.61	P.T. – 250'

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D241	470034.34	3735360.89	P.I.
D242	470126.87	3735471.66	P.T. – 250'
D243	470693.91	3736150.51	P.C. – 250'
D244	470786.44	3736261.29	P.I.
D250	469944.14	3735720.87	
D251	470352.63	3736209.90	P.C. – 250'
D252	470445.16	3736320.68	P.I.

		Date
Designed	Chris Wheat	06/01/16
Drawn	Aaron Harper	06/01/16
Checked	Leonard Harper	06/01/16
Approved	Lonnie Harper	06/01/16

PRELIMINARY

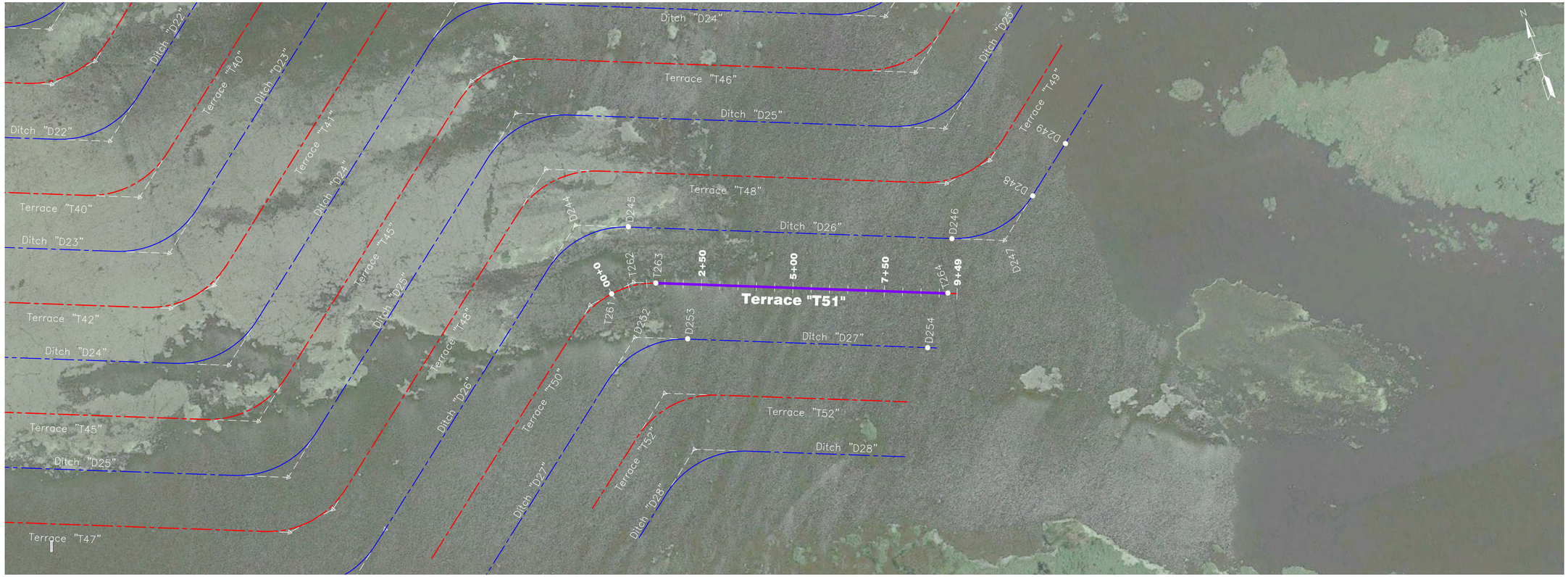
TERRACE "T50" PLAN & PROFILE
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR

Page 11 of 28

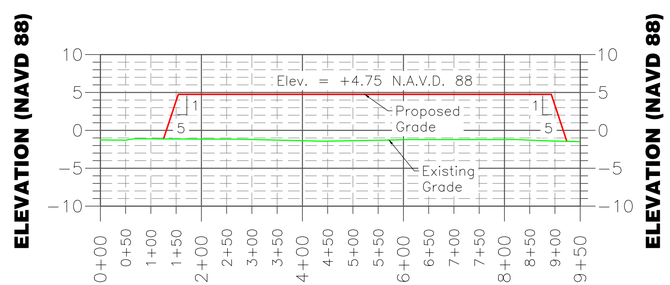
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.
10 BS240010
SOUTH.P&P.dwg
Drawing No.9
BS-24
5/31/16 12:05 PM
Sheet 11 of 75



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'

HOR. SCALE

0 10' 20' 30'

VERT. SCALE

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D244	470786.44	3736261.29	P.I.
D245	470736.77	3736396.81	P.T. – 250'
D246	470432.38	3737227.32	P.C. – 250'
D247	470382.71	3737362.85	P.I.
D248	470475.24	3737473.62	P.T. – 250'
D249	470583.21	3737602.88	
D252	470445.16	3736320.68	P.I.
D253	470395.49	3736456.20	P.T. – 250'
D254	470169.69	3737072.30	

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T261	470577.70	3736297.61	P.C. – 250'
T262	470589.18	3736363.61	P.I.
T263	470568.09	3736420.94	P.T. – 250'
T264	470293.32	3737170.86	

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905–1079 FAX: (337) 905–1076

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

PRELIMINARY

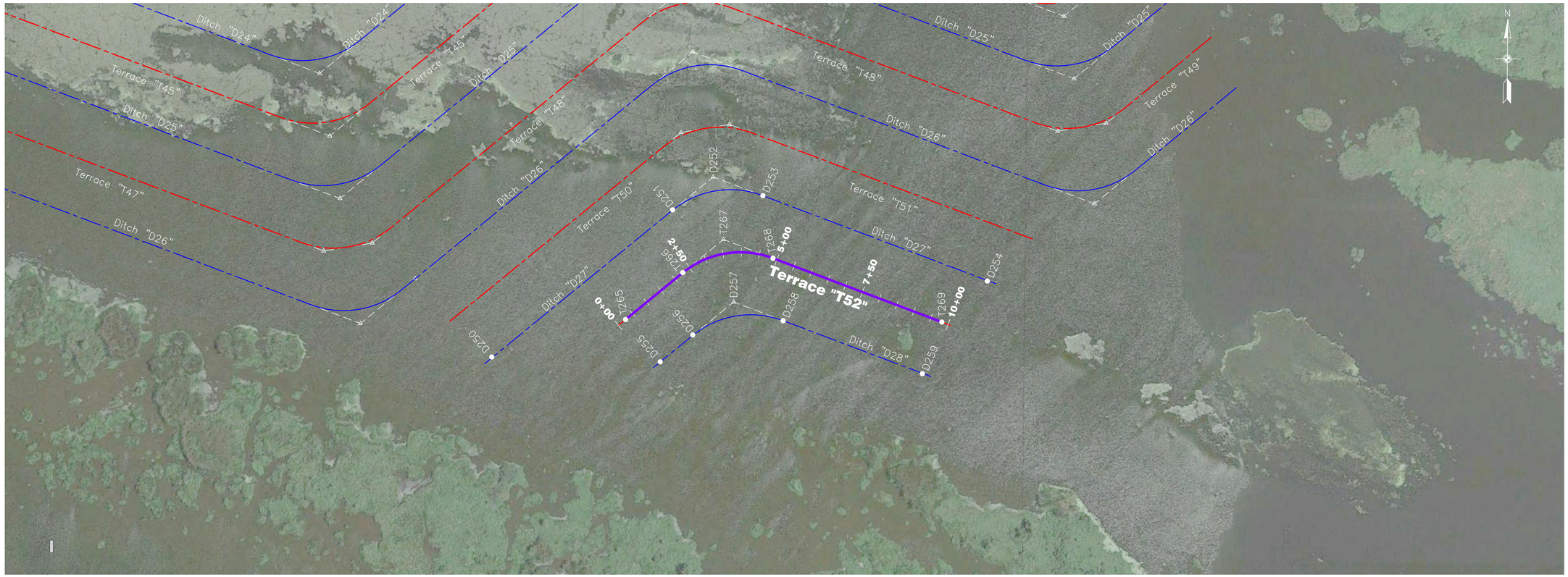
TERRACE "T51" PLAN & PROFILE
BS–24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR

Page 11 of 28

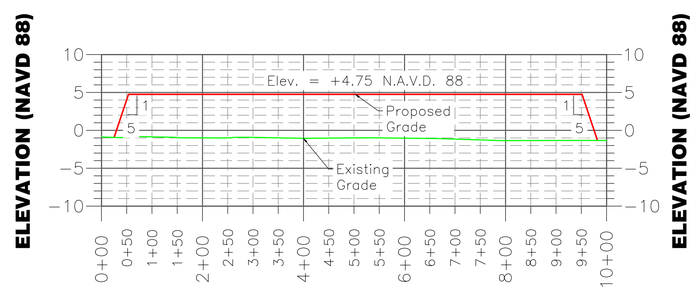
Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.
10 BS240010
SOUTH.P&P.dwg
Drawing No.9
BS–24
5/31/16 12:05 PM
Sheet 11 of 75



PLAN VIEW



PROFILE VIEW

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

0 150' 300' 450'

HOR. SCALE

0 10' 20' 30'

VERT. SCALE

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

TERRACE DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
T265	470052.88	3736085.03	
T266	470181.99	3736239.60	P.C. – 250'
T267	470274.52	3736350.37	P.I.
T268	470224.85	3736485.90	P.T. – 250'
T269	470054.96	3736949.43	

BORROW DATA TABLE

POINT NO.	NORTHING	EASTING	RADIUS
D250	469944.14	3735720.87	
D251	470352.63	3736209.90	P.C. – 250'
D252	470445.16	3736320.68	P.I.
D253	470395.49	3736456.20	P.T. – 250'
D254	470169.69	3737072.30	
D255	469937.76	3736181.19	
D256	470011.35	3736269.29	P.C. – 250'
D257	470103.88	3736380.07	P.I.
D258	470054.21	3736515.59	P.T. – 250'
D259	469914.12	3736897.81	

		Date
Designed	Chris Wheat	06/01/16
Drawn	Aaron Harper	06/01/16
Checked	Leonard Harper	06/01/16
Approved	Lonnie Harper	06/01/16

PRELIMINARY

TERRACE "T52" PLAN & PROFILE
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 11 of 28

Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.
10 BS240010
SOUTH_P&P.dwg
Drawing No.
BS-24
5/31/16 12:05 PM
Sheet *11* of *75*

Start Drilled 10/27/2010	End 10/27/2010	Total Depth (ft) 23	Logged By JPV Checked By VT	Driller: Specialized Environmental Resources, LLC	Drilling Method Rotary Wash
Surface Elevation (ft) Vertical Datum -0.2		Hammer Data N/A		Drilling Equipment Airboat Mounted Rig	
Latitude N29° 47' 39.1" Longitude W89° 52' 11.2"		System Datum Geographic NAVD88		Groundwater Date Measured / Depth to Water (ft) / Elevation (ft)	

Notes: See Figure B-1 for explanation of symbols; Cement-bentonite grout backfill full depth.

Elevation (feet)	Depth (feet)	Interval	Recovered (in)	Blowsfoot	Collected Sample	Sample Name	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Water Content, %	Dry Density, (pcf)	Compressive Strength (TSF)[1]	Confining Pressure (KSF)	Strain, %	Liquid Limit (LL), %	Plasticity Index (PI), %	Maximum Shear Strength (KSF)	Passing No. 200 Sieve, %
	0									Zero (0) ft: top of airboat deck. Approximately 3 ft. water at the time of drilling.									
										Mudline EL. -3.18 ft.									
			11			1			OH	Very soft dark brown organic clay and shells	97								
	5		15			2				Very soft dark gray organic clay	146					172	111		
			14			3				Very soft dark gray organic clay									
			17			4				Very soft dark gray organic clay	150					155	97		
	10		18			5				Very soft dark gray organic clay						180	133		
			16			6				Very soft dark gray peat	352					220	156		
	15		16			7				Very soft dark gray peat									
			20			8				Very soft gray peat with 3½" clayey sand layer	384					273	185		
			17			9				Very soft gray organic clay									
	20		16			10				Very soft gray slightly organic clay with sand streaks and lenses									

bgs = below ground surface/mudline.
*FVS = Field vane shear strength (corrected for PI)

Log of Boring BHBA-19-20

GEOENGINEERS
Project: Caernarvon/Lake Lery West Shoreline Restoration (BS-16)
Project Location: Plaquemines Parish, Louisiana
Project Number: 10883-007-01
Figure B-2
Sheet 1 of 1

Start Drilled 10/27/2010	End 10/27/2010	Total Depth (ft) 25	Logged By JPV Checked By VT	Driller: Specialized Environmental Resources, LLC	Drilling Method Rotary Wash
Surface Elevation (ft) Vertical Datum 0.7		Hammer Data N/A		Drilling Equipment Airboat Mounted Rig	
Latitude N29° 47' 19.3" Longitude W89° 52' 13.1"		System Datum Geographic NAVD88		Groundwater Date Measured / Depth to Water (ft) / Elevation (ft)	

Notes: See Figure B-1 for explanation of symbols; Cement-bentonite grout backfill full depth.

Elevation (feet)	Depth (feet)	Interval	Recovered (in)	Blowsfoot	Collected Sample	Sample Name	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Water Content, %	Dry Density, (pcf)	Compressive Strength (TSF)[1]	Confining Pressure (KSF)	Strain, %	Liquid Limit (LL), %	Plasticity Index (PI), %	Maximum Shear Strength (KSF)	Passing No. 200 Sieve, %
	0									Zero (0) ft: top of airboat deck. Approximately 5 ft. water at the time of drilling.									
										Mudline EL. -4.26 ft.									
	5		11			1			OH	Very soft dark gray organic clay	106					144	100		
			13			2				Very soft dark gray organic clay									
			14			3				Very soft dark gray organic clay	193					215	164		
	10		11			4				Very soft dark gray organic clay									
			15			5				Very soft dark gray organic clay									
	15		13			6				Very soft dark brown organic clay	105					162	121		
			13			7				Very soft gray organic clay	119					161	102		
			15			8				Very soft gray organic clay									
	20		14			9				Very soft gray organic clay	176					186	119		
						10				Very soft gray clay with organic matter (cuttings)									
	25																		

bgs = below ground surface/mudline.
*FVS = Field vane shear strength (corrected for PI)

Log of Boring BHBA-20-20

GEOENGINEERS
Project: Caernarvon/Lake Lery West Shoreline Restoration (BS-16)
Project Location: Plaquemines Parish, Louisiana
Project Number: 10883-007-01
Figure B-3
Sheet 1 of 1

Start Drilled 10/27/2010	End 10/27/2010	Total Depth (ft) 22	Logged By JPV Checked By VT	Driller: Specialized Environmental Resources, LLC	Drilling Method Rotary Wash
Surface Elevation (ft) Vertical Datum -1.4		Hammer Data N/A		Drilling Equipment Airboat Mounted Rig	
Latitude N29° 47' 0.3" Longitude W89° 52' 11.1"		System Datum Geographic NAVD88		Groundwater Date Measured / Depth to Water (ft) / Elevation (ft)	

Notes: See Figure B-1 for explanation of symbols; Cement-bentonite grout backfill full depth.

Elevation (feet)	Depth (feet)	Interval	Recovered (in)	Blowsfoot	Collected Sample	Sample Name	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Water Content, %	Dry Density, (pcf)	Compressive Strength (TSF)[1]	Confining Pressure (KSF)	Strain, %	Liquid Limit (LL), %	Plasticity Index (PI), %	Maximum Shear Strength (KSF)	Passing No. 200 Sieve, %
	0									Zero (0) ft: top of airboat deck. Approximately 2 ft. water at the time of drilling.									
										Mudline EL. -3.4 ft.									
			11			1			CL	Very soft gray slightly silty clay with organic matter	57					47	26		
	5		15			2				Very soft gray clay with organic matter									
			14			3				Very soft gray slightly silty clay with organic matter	68					48	24		
			9			4			OH	Very soft gray clay with organic matter									
	10		13			5				Very soft gray clay with organic matter	61					76	52		
			15			6			OH	Very soft gray organic clay									
	15		14			7				Very soft dark brown organic clay	148					146	81		
			14			8				Very soft dark brown organic clay									
			15			9				Very soft dark brown organic clay	196					166	99		
	20		12			19				Very soft dark brown organic clay									

bgs = below ground surface/mudline.
*FVS = Field vane shear strength (corrected for PI)

Log of Boring BHBA-21-20

GEOENGINEERS
Project: Caernarvon/Lake Lery West Shoreline Restoration (BS-16)
Project Location: Plaquemines Parish, Louisiana
Project Number: 10883-007-01
Figure B-4
Sheet 1 of 1

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

		Date
Designed	Chris Wheat	06/01/16
Drawn	Aaron Harper	06/01/16
Checked	Leonard Harper	06/01/16
Approved	Lonnie Harper	06/01/16

PRELIMINARY

MARSH CREATION BORROW AREA
SOIL BORING LOGS
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR

Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No. 12 BS240012
Drawing No. BS-24
BORING LOGS.dwg
5/31/16 11:42 AM

Start Drilled 5/15/2014	End 5/15/2014	Total Depth (ft) 32.5	Logged By / Checked By OS / VT	Driller: Specialized Environmental Resources, LLC	Drilling Method Wet Rotary
Surface Elevation (ft) / Vertical Datum	1.5 / NAVD88, GEOID 12A	Hammer Data	Safety Hammer/Cathead 140 (lbs) / 30 (in) Drop	Drilling Equipment	Airboat Mounted Rig
Latitude / Longitude	29° 48' 06.61" / 89° 52' 51.44"	System Datum	Geographic NAD83 (feet)	Groundwater: Date Measured	Depth to Water (ft) / Elevation (ft)

Notes: See Figure A-1 for explanation of symbols. Cement-bentonite grout backfill top 25 feet.

Elevation (feet)	Depth (feet)	Interval	Recovered (in)	Blowsfoot or Pocket Pen (tsf)	Collected Sample	Sample Name	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Water Content, %	Dry Density, (pcf)	Unconfined Strength (TSF)	Confining Pressure (ksf)	Strain, %	Liquid Limit, LL, %	Plasticity Index (PI), %	Undrained Shear Strength (ksf)	Passing No. 200 Sieve, %
0										Zero (0) feet at top of boat deck. Boat deck to water surface = 0.5 feet. Water depth = 2 feet. Mudline at EL. -0.96 feet									
		16				1			PT	Very soft black peat (Organic = 45.7%; Fiber = 34.8%)	586	8.1	0.03	0.06	2			0.115	
5		19				2				Very soft black peat with roots (Organic = 52.8%; Fiber = 28.5%)	988	5.5	0.07	0.06	3	828	572	0.169	
		24				3			OH	Very soft gray organic clay with sand lenses	145	35.4	0.12	0.12	7	132	85	0.167	
		26				4				Very soft brown and gray organic clay with peat (organic = 12.3%)	292	20.3	0.11	0.2	11			0.21	
10		20				5			PT	Very soft brown peat with organic clay (Organic = 38.2%; Fiber = 9.4%; SG = 1.892) (Fiber = 6.28%)	246	20.9	0.10	0.23	7	415	298	0.207	
		24				6				Very soft brown peat with organic clay	374	17.6	0.07	0.27	6				
						7			OH	Soft brown organic clay with peat	183							0.331	
15		24				8				Very soft brown and gray organic clay	116							0.241	
		24				9			CH	Very soft gray clay with organic matter	77	52.9	0.12	0.56	1	103	71	0.131	
		18				10				Very soft gray clay with organic matter and shells	102							0.165	
20		23				11				Very soft gray clay with organic matter (Fiber = 0.17%; SG = 2.749)	116	40	0.09	0.71	11	97	55	0.14	
		19				12				Very soft gray clay	76							0.159	
25		12				13				Very soft gray clay with silt lenses	92	54.1	0.11	0.99	8			0.095	
									CL										
30		22				14				Very soft gray clay with silt and silt lenses	34							0.165	

Log of Boring BHMC-01-30

GEOENGINEERS

Project: USDA/NRCS BS-24 Terracing & Marsh Creation South of Big Mar
Project Location: Plaquemines Parish, Louisiana
Project Number: 10883-020-01
Figure A-2
Sheet 1 of 1

Start Drilled 5/9/2014	End 5/9/2014	Total Depth (ft) 33	Logged By / Checked By OS / VT	Driller: Specialized Environmental Resources, LLC	Drilling Method Wet Rotary
Surface Elevation (ft) / Vertical Datum	1.2 / NAVD88, GEOID 12A	Hammer Data	Safety Hammer/Cathead 140 (lbs) / 30 (in) Drop	Drilling Equipment	Airboat Mounted Rig
Latitude / Longitude	29° 47' 46.78" / 89° 52' 55.77"	System Datum	Geographic NAD83 (feet)	Groundwater: Date Measured	Depth to Water (ft) / Elevation (ft)

Notes: See Figure A-1 for explanation of symbols. Cement-bentonite grout backfill top 25 feet.

Elevation (feet)	Depth (feet)	Interval	Recovered (in)	Blowsfoot or Pocket Pen (tsf)	Collected Sample	Sample Name	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Water Content, %	Dry Density, (pcf)	Unconfined Strength (TSF)	Confining Pressure (ksf)	Strain, %	Liquid Limit, LL, %	Plasticity Index (PI), %	Undrained Shear Strength (ksf)	Passing No. 200 Sieve, %
0										Zero (0) feet at top of boat deck. Boat deck to water surface = 0.5 feet. Water depth = 2.5 feet. Mudline at EL. -1.76 feet									
		22				1			CH	Very soft dark gray organic clay (Organic = 9.4%)	179	31.6	0.05	0.01	5	134	97	0.178	
5		20				2			CH	Very soft dark gray clay with organic matter (Organic = 5.9%; Fiber = 0.8%)	84	55.9	0.04	0.03	11			0.153	
		19				3				Very soft gray clay with organic matter (Organic = 5.7%; Fiber = 0.8%; SG = 2.69)	70	58	0.07	0.09	10	85	56	0.169	
		24				4				Very soft gray clay with organic matter	83	54	0.08	0.16	2			0.203	
		24				5				Very soft gray clay	72							0.239	
		24				6				Very soft gray clay with organic matter	89	49.5	0.1	0.32	3	90	59	0.282	
15		24				7				Very soft dark gray clay with silt lenses and shell layer	75							0.372	
		20				8				Very soft gray clay with peat	69	58.7	0.23	0.96	4			0.352	
		10				9				Very soft gray clay with shells	68					66	41	0.096	
20		22				10			CL	Very soft gray clay with silt and shells	67							0.198	
									CH										
25		24				11				Very soft gray clay with silt lenses	36	80.3	0.2	0.94	15			0.183	
30		24				12				Soft gray clay with silt lenses	34	81.3	0.32		8			0.282	

Log of Boring BHMC-02-30

GEOENGINEERS

Project: USDA/NRCS BS-24 Terracing & Marsh Creation South of Big Mar
Project Location: Plaquemines Parish, Louisiana
Project Number: 10883-020-01
Figure A-3
Sheet 1 of 1

Start Drilled 5/9/2014	End 5/9/2014	Total Depth (ft) 34.5	Logged By / Checked By OS / VT	Driller: Specialized Environmental Resources, LLC	Drilling Method Wet Rotary
Surface Elevation (ft) / Vertical Datum	0.9 / NAVD88, GEOID 12A	Hammer Data	Safety Hammer/Cathead 140 (lbs) / 30 (in) Drop	Drilling Equipment	Airboat Mounted Rig
Latitude / Longitude	29° 47' 11.82" / 89° 52' 52.82"	System Datum	Geographic NAD83 (feet)	Groundwater: Date Measured	Depth to Water (ft) / Elevation (ft)

Notes: See Figure A-1 for explanation of symbols. Cement-bentonite grout backfill top 25 feet.

Elevation (feet)	Depth (feet)	Interval	Recovered (in)	Blowsfoot or Pocket Pen (tsf)	Collected Sample	Sample Name	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Water Content, %	Dry Density, (pcf)	Unconfined Strength (TSF)	Confining Pressure (ksf)	Strain, %	Liquid Limit, LL, %	Plasticity Index (PI), %	Undrained Shear Strength (ksf)	Passing No. 200 Sieve, %
0										Zero (0) feet at top of boat deck. Boat deck to water surface = 0.5 feet. Water depth = 2 feet. Mudline at EL. -1.56 feet									
		15				1			PT	Very soft brown peat (Organic = 94.7%; Fiber = 60.3%)	966	5.9	0.07	0.06	12	602	346	0.17	
5		24				2				Very soft gray peat with organic clay and roots (Organic = 38.3%; Fiber = 18.2%)	489	12.4	0.30	0.17	14	478	276	0.215	
		24				3			CH	Very soft gray organic clay with peat and roots (Organic = 8%)	116	38.5	0.05	0.12	5			0.149	
		18				4				Very soft gray organic clay with roots	120	49.5	0.11	0.2	5	117	86	0.259	
10		20				5				Very soft dark gray organic clay with peat	196							0.396	
		24				6				Very soft dark gray organic clay with peat (Organic = 25%)	207	23.5	0.23	0.37	7			0.234	
15		24				7			PT	Very soft brown peat	310					369	201	0.43	
		24				8			CH	Very soft gray and black clay with organic matter (SG = 2.71)	106	42	0.09	0.56	9	121	86	0.189	
		18				9				Very soft gray clay with organic matter	121							0.142	
20		24				10				Very soft tan and gray clay with organic matter	89	49.5	0.13	0.75	5	88	53	0.144	
									CL										
25		24				11				Medium gray sandy clay with 3" sand layer	34	89.1	0.51	0.89	15			0.043	
									CH										
30		24				12				Very soft gray clay with sand lenses	47	75.4	0.18	1.22	6	51	17	0.169	
		24				13				Very soft gray clay with 6" sand layer	46							0.171	

Log of Boring BHMC-03-03

GEOENGINEERS

Project: USDA/NRCS BS-24 Terracing & Marsh Creation South of Big Mar
Project Location: Plaquemines Parish, Louisiana
Project Number: 10883-020-01
Figure A-4
Sheet 1 of 1

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

		Date
Designed	Chris Wheat	06/01/16
Drawn	Aaron Harper	06/01/16
Checked	Leonard Harper	06/01/16
Approved	Lonnie Harper	06/01/16

PRELIMINARY

MARSH CREATION SOIL BORING LOGS
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR

Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No. 12 BS240012
Drawing No. BS-24
BORING LOGS.dwg
5/31/16 11:42 AM
Sheet 2 of 75

Drilled Start 5/13/2014 End 5/13/2014	Total Depth (ft) 32.5	Logged By GS Checked By VT	Driller: Specialized Environmental Resources, LLC	Drilling Method Wet Rotary
Surface Elevation (ft) Vertical Datum NAVD88, GEOID 12A		Hammer Data Safety Hammer/Cathead 140 (lbs) / 30 (in) Drop	Drilling Equipment Airboat Mounted Rig	
Latitude 29° 47' 29.68" Longitude 89° 54' 24.25"		System Datum Geographic NAD83 (feet)	Groundwater: Date Measured / Depth to Water (ft) / Elevation (ft)	

Notes: See Figure A-1 for explanation of symbols. Cement-bentonite grout backfill top 25 feet.

Elevation (feet)	Depth (feet)	Interval	Recovered (in)	Blowsfoot or Pocket Pen (tsf)	Collected Sample	Sample Name	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Water Content, %	Dry Density, (pcf)	Unconfined Strength (TSF)[1]	Confining Pressure (ksf)	Strain, %	Liquid Limit, LL, %	Plasticity Index (PI), %	Unconfined Compressive Strength (ksf)	Passing No. 200 Sieve, %
										Zero (0) feet at top of boat deck Boat deck to water surface = 0.5 feet Water depth = 2 feet Mudline at EL. -1.42 feet									
		24				1			PT	Very soft brown peat (Organic = 72.1%; Fiber = 74.0%)	1244	4.3	0.06	0.03	15				0.068
	5	24				2			CH	Very soft gray organic clay with roots	178	31.6	0.13	0.06	12				0.115
		20				3				Very soft brown organic clay with peat (Organic = 22.9%)	445	13.2	0.11	0.12	8	229	137	0.165	
		14				4				Very soft brown and gray organic clay with peat	232								0.09
	10	18				5			PT	Very soft brown peat with gray organic clay	346	15.8	0.15	0.27	6	312	176	0.092	
		22				6			CH	Very soft brown and gray organic clay	198	40.6	0.17	0.37	9				0.225
	15	22				7				Very soft gray organic clay	134	34.7	0.1	0.46	6	154	90	0.108	
		24				8			CH	Very soft gray clay	133								0.146
		20				9				Very soft gray clay with organic matter	101	44	0.08	0.66	4	93	68	0.095	
	20	24				10				Very soft gray clay with silt lenses and pockets	44								0.117
									CL										
	25	14				11				Very soft gray silty clay	34								0.069
	30	20				12				Very soft gray clay with silt	45	77.2	0.13	1.22	14	44	21	0.712	

Log of Boring BHT-07-30

GEOENGINEERS

Project: USDA/NRCS BS-24 Terracing & Marsh Creation South of Big Mar
Project Location: Plaquemines Parish, Louisiana
Project Number: 10883-020-01
Figure A-11
Sheet 1 of 1

Drilled Start 5/13/2014 End 5/13/2014	Total Depth (ft) 33	Logged By GS Checked By VT	Driller: Specialized Environmental Resources, LLC	Drilling Method Wet Rotary
Surface Elevation (ft) Vertical Datum NAVD88, GEOID 12A		Hammer Data Safety Hammer/Cathead 140 (lbs) / 30 (in) Drop	Drilling Equipment Airboat Mounted Rig	
Latitude 29° 47' 37.51" Longitude 89° 54' 00.58"		System Datum Geographic NAD83 (feet)	Groundwater: Date Measured / Depth to Water (ft) / Elevation (ft)	

Notes: See Figure A-1 for explanation of symbols. Cement-bentonite grout backfill top 25 feet.

Elevation (feet)	Depth (feet)	Interval	Recovered (in)	Blowsfoot or Pocket Pen (tsf)	Collected Sample	Sample Name	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Water Content, %	Dry Density, (pcf)	Unconfined Strength (TSF)[1]	Confining Pressure (ksf)	Strain, %	Liquid Limit, LL, %	Plasticity Index (PI), %	Unconfined Compressive Strength (ksf)	Passing No. 200 Sieve, %
										Zero (0) feet at top of boat deck Boat deck to water surface = 0.5 feet Water depth = 2.5 feet Mudline at EL. -1.52 feet									
		14				1			PT	Very soft brown peat (Organic = 53.5%; Fiber = 54%)	1036	5.1	0.06	0.03	15				0.063
	5	18				2			CH	Very soft brown organic clay with peat (Organic = 12.2%; Fiber = 3.3%)	139	32.9	0.12	0.06	10				0.149
		24				3				Very soft dark gray organic clay (Organic = 14.4%)	188	27	0.09	0.12	6	196	135	0.136	
		20				4				Very soft gray organic clay	199	25.8	0.09	0.2	4				0.194
	10	16				5			CH	Very soft gray clay with organic matter	124					178	117	0.187	
		24				6			CH	Very soft dark gray organic clay	122	35.2	0.12	0.37	7				0.192
	15	20				7			CH	Very soft gray clay with organic matter	136								0.137
		24				8				Very soft gray clay	95	43.5	0.09	0.96	2	96	65	0.151	
		16				9				Very soft gray clay	89								0.047
	20	12				10				Very soft gray clay (SG = 2.688)	88	49.2	0.08	0.75	5	93	63	0.131	
									CL										
	25	20				11				Very soft gray silty clay	57								0.09
									SC										
	30	24				12				Medium-dense gray clayey sand	35	95.1	1.42	1.22	15				0.322

Log of Boring BHT-08-30

GEOENGINEERS

Project: USDA/NRCS BS-24 Terracing & Marsh Creation South of Big Mar
Project Location: Plaquemines Parish, Louisiana
Project Number: 10883-020-01
Figure A-12
Sheet 1 of 1

Drilled Start 5/12/2014 End 5/12/2014	Total Depth (ft) 33.5	Logged By GS Checked By VT	Driller: Specialized Environmental Resources, LLC	Drilling Method Wet Rotary
Surface Elevation (ft) Vertical Datum NAVD88, GEOID 12A		Hammer Data Safety Hammer/Cathead 140 (lbs) / 30 (in) Drop	Drilling Equipment Airboat Mounted Rig	
Latitude 29° 47' 12.63" Longitude 89° 54' 06.07"		System Datum Geographic NAD83 (feet)	Groundwater: Date Measured / Depth to Water (ft) / Elevation (ft)	

Notes: See Figure A-1 for explanation of symbols. Cement-bentonite grout backfill top 25 feet.

Elevation (feet)	Depth (feet)	Interval	Recovered (in)	Blowsfoot or Pocket Pen (tsf)	Collected Sample	Sample Name	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Water Content, %	Dry Density, (pcf)	Unconfined Strength (TSF)[1]	Confining Pressure (ksf)	Strain, %	Liquid Limit, LL, %	Plasticity Index (PI), %	Unconfined Compressive Strength (ksf)	Passing No. 200 Sieve, %
										Zero (0) feet top of boat deck Boat deck to water surface = 0.5 feet Water depth = 2.0 feet Mudline at EL. -1.72 feet									
		22				1			PT	Very soft brown peat	818	5.8	0.10	0.03	15				0.086
	5	22				2				Very soft brown peat with dark gray organic clay	378	15.6	0.14	0.06	14	214	144	0.169	
		20				3			CH	Very soft gray organic clay	113								
		10				4			CH	Very soft gray clay	92	48	0.08	0.12	6	93	58	0.165	
		24				5				Very soft gray clay	85	54.7	0.05	0.20	7				0.13
	10	24				6				Very soft gray clay	76	62	0.14	0.20	13	102	72	0.523	
		24				7				Very soft gray clay	67								
		24				8				Very soft gray clay	95								0.3
	15	24				9				Very soft gray clay with organic matter	70								0.388
		24				10				Very soft gray clay with organic matter	104	42.4	0.19	0.56	4				0.282
		24				11			CL	Very soft gray clay with silt lenses	62								0.194
	20	24				12				Soft gray silty clay with 1" silt layer	46								0.426
	25	24				13				Very soft gray silty clay with silt lenses	70	65.2	0.19	0.99	15				0.074
	30	16				14			SP-SM	Gray clayey sand with silt	29								0.047 45

Log of Boring BHT-09-30

GEOENGINEERS

Project: USDA/NRCS BS-24 Terracing & Marsh Creation South of Big Mar
Project Location: Plaquemines Parish, Louisiana
Project Number: 10883-020-01
Figure A-13
Sheet 1 of 1

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

		Date
Designed	Chris Wheat	06/01/16
Drawn	Aaron Harper	06/01/16
Checked	Leonard Harper	06/01/16
Approved	Lonnie Harper	06/01/16

PRELIMINARY

TERRACE FIELD SOIL BORING LOGS
BS-24 TERRACING & MARSH CREATION
SOUTH OF BIG MAR
Page 2 of 28

Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No.
12 BS240012
Drawing No.
BS-24
BORING LOGS.dwg
5/31/16 11:42 AM
Sheet 2 of 75

Drilled Start 5/16/2014 End 5/16/2014	Total Depth (ft) 33	Logged By OS Checked By VT	Driller: Specialized Environmental Resources, LLC	Drilling Method Wet Rotary
Surface Elevation (ft) Vertical Datum 1.3 NAVD88, GEOID 12A	Hammer Data Safety Hammer/Cathead 140 (lbs) / 30 (in) Drop		Drilling Equipment Airboat Mounted Rig	
Latitude 29° 47' 16.7" Longitude 89° 53' 32.55"	System Datum Geographic NAD83 (feet)		Groundwater: Date Measured / Depth to Water (ft) / Elevation (ft)	

Notes: See Figure A-1 for explanation of symbols. Cement-bentonite grout backfill top 25 feet.

Elevation (feet)	Depth (feet)	Interval	Recovered (in)	Blowsfoot or Penetrat'n (psi)	Collected Sample	Sample Name	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Water Content, %	Dry Density, (pcf)	Unconfined Compressive Strength (TSF)	Confining Pressure (ksf)	Strain, %	Liquid Limit, LL, %	Plasticity Index (PI), %	Maximum Shear Strength (ksf)	Passing No. 200 Sieve, %
	0									Zero (0) feet at top of boat deck Boat deck to water surface = 0.5 feet Water depth = 2.5 feet									
										Mudline at EL. -1.72 feet									
		16				1			PT	Very soft brown peat (Organic = 51.9%; Fiber = 56.3%)	973	6	0.03	0.13	8	579	236	0.131	
	5	20				2			OH	Very soft dark gray organic clay (Organic = 6.4%)	133	37.4	0.07	0.06	7	114	75	0.165	
		20				3				Very soft brown organic clay (Organic = 9.8%)	186	25.8		0.07				0.068	
	10	20				4				Very soft dark gray organic clay	200	27.9	0.12	0.16	4	143	94	0.108	
		22				5				Very soft dark gray organic clay	122							0.214	
		22				6			CH	Very soft gray clay	160	30.4	0.1	0.32	4			0.205	
	15	24				7			OH	Very soft gray organic clay with peat	320	19.4	0.11	0.42	5	146	92	0.151	
		20				8			CH	Very soft gray clay	99							0.09	
	20	24				9				Very soft gray clay	92							0.16	
		18				10				Very soft gray clay	87	51.1	0.07	0.71	5			0.136	
	25	24				11				Very soft gray clay with silt lenses	32							0.151	
	30	24				12			SC	Gray clayey sand with gray clay layers	32	98.7	1.28	1.18	15	30	4	0.097	

Log of Boring BHT-10-30

GEOENGINEERS

Project: USDA/NRCS BS-24 Terracing & Marsh Creation South of Big Mar
Project Location: Plaquemines Parish, Louisiana
Project Number: 10883-020-01
Figure A-14
Sheet 1 of 1

Drilled Start 12/21/2015 End 12/21/2015	Total Depth (ft) 34	Logged By DAS/KK Checked By MJK	Driller: Fauchaux	Drilling Method Wet Rotary
Surface Elevation (ft) Vertical Datum -1.5 NAVD88	Hammer Data Safety Hammer/Cathead 140 (lbs) / 30 (in) Drop		Drilling Equipment Airboat Mounted Rig	
Latitude N29° 48' 06.3" Longitude W89° 53' 41.8"	System Datum Geographic NAD83 (feet)		Groundwater: Date Measured / Depth to Water (ft) / Elevation (ft) N/A	

Notes: See Figure A-1 for explanation of symbols. Cement-bentonite grout backfill full depth.

Elevation (feet)	Depth (feet)	Interval	Recovered (in)	Blowsfoot or Penetrat'n (psi)	Collected Sample	Sample Name	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Water Content, %	Dry Density, (pcf)	Unconfined Compressive Strength (TSF)	Confining Pressure (ksf)	Strain, %	Liquid Limit, LL, %	Plasticity Index (PI), %	Maximum Shear Strength (ksf)	Passing No. 200 Sieve, %
	0									Zero (0) feet at top of boat deck Deck to water surface = 1 foot Water depth = 2 feet									
										Mudline at 3 foot depth									
		14	<0.25			1			PT	Very soft black peat with organic clay seams	469	11.5	0.06	0.72	15			.173	
	5	17	<0.25			2			OH	Very soft gray organic clay	144	36.8	0.06	0.72	8	114	87	.124	
		17	<0.25			3				Very soft gray organic clay	165	25.8						.189	
	10	17	<0.25			4			PT	Very soft black peat with clay	357	15.3				254	191	.197	
		12	<0.25			5			OH	Very soft gray organic clay with peat and 0.5-inch silty clay layer	259	20.6	0.09	0.72	13			.186	
		6	<0.25			6				Very soft dark gray organic clay	375	15.3	0.03	0.81	7				
	15	8	<0.25			7				Very soft gray organic clay with silty clay layer	196	24.9	0.07	0.92	10				
		11	0.5			8			CH	Very soft gray clay with 4-inch layer of sand with clay seams at bottom	69								
	20	7	<0.25			9			OH	Very soft dark gray organic clay with peat pockets (Specific Gravity = 2.41)	167	31.8				196	115		
		7.5	0.25			10			ML	Loose dark gray silt with sand layers and lenses	24	96.1	0.87	1.27	14				
	25									No sample recovered									
		12	1.25			11			SC	Loose gray clayey sand with 1-inch clay layer	31								36
	30	18	0.5			12				Loose gray clayey sand with sandy silt layer	31	89.6	0.30	1.9	15	28	2		

*Remolded sample used for strength testing.

Log of Boring BHT-13-30

GEOENGINEERS

Project: USDA/NRCS BS-24 Terracing & Marsh Creation South of Big Mar
Project Location: Plaquemines Parish, Louisiana
Project Number: 10883-020-02
Figure A 17
Sheet 1 of 1

Drilled Start 12/21/2015 End 12/21/2015	Total Depth (ft) 33	Logged By DAS/KK Checked By MJK	Driller: Fauchaux	Drilling Method Wet Rotary
Surface Elevation (ft) Vertical Datum -1.6 NAVD88	Hammer Data Safety Hammer/Cathead 140 (lbs) / 30 (in) Drop		Drilling Equipment Airboat Mounted Rig	
Latitude N29° 47' 51.6" Longitude W89° 53' 16.4"	System Datum Geographic NAD83 (feet)		Groundwater: Date Measured / Depth to Water (ft) / Elevation (ft) N/A	

Notes: See Figure A-1 for explanation of symbols. Cement-bentonite grout backfill full depth.

Elevation (feet)	Depth (feet)	Interval	Recovered (in)	Blowsfoot or Penetrat'n (psi)	Collected Sample	Sample Name	Water Level	Graphic Log	Group Classification	MATERIAL DESCRIPTION	Water Content, %	Dry Density, (pcf)	Unconfined Compressive Strength (TSF)	Confining Pressure (ksf)	Strain, %	Liquid Limit, LL, %	Plasticity Index (PI), %	Maximum Shear Strength (ksf)	Passing No. 200 Sieve, %
	0									Zero (0) feet at top of boat deck Deck to water surface = 1 foot Water depth = 2 feet									
										Mudline at 3 foot depth									
		14	<0.25			1			PT	Very soft black peat with clay layers	861	6.6	0.12	0.72	14			.278	
	5	8	<0.25			2				Very soft black peat	903		0.06	0.72	15	863	321	.063	
		12	<0.25			3			OH	Very soft dark gray organic clay with peat pockets (Specific Gravity = 2.28)	111	42.9	0.1	0.72	15	206	147	.103	
	10	11	<0.25			4			PT	Very soft dark gray peat	369	16.4	0.1	0.72	7			.159	
		11	<0.25			5			OH	Very soft dark gray organic clay with peat pockets	291	20	0.11	0.72	11	243	187	.147	
		11	<0.25			6				Very soft dark gray organic clay with 3-inch gray clay layer	93	40	0.07	0.81	15			.129	
	15	9	0.8			7			ML	Loose gray silt with 2-inch organic clay layer at top	29	99.5	3.43	0.92	19				90
		3	<0.25			8			CL	Very soft gray silty clay	32								
	20	<5	<0.25			9			ML	Loose gray silt	32								
		14	<0.25			10			CH	Very soft gray clay with silt pockets	65					73	47		88
	25	18	0.5			11			SP	Loose gray sand with clay pockets	24								3
	30	19	<0.25			12			SM	Loose gray silty sand with clay	32	86.1	0.38	1.67	14				50

*Remolded sample used for strength testing.

Log of Boring BHT-14-30

GEOENGINEERS

Project: USDA/NRCS BS-24 Terracing & Marsh Creation South of Big Mar
Project Location: Plaquemines Parish, Louisiana
Project Number: 10883-020-02
Figure A 18
Sheet 1 of 1

NOTICE:

72 HOURS BEFORE DIGGING
CALL 1-800-272-3020
TO LOCATE UTILITY LINES

LONNIE G. HARPER & ASSOCIATES, INC.
CIVIL ENGINEERING AND LAND SURVEYING
2746 HWY. NO. 384, BELL CITY, LOUISIANA 70630
PHONE: (337) 905-1079 FAX: (337) 905-1076

		Date
Designed	Chris Wheat	04/01/16
Drawn	Aaron Harper	04/01/16
Checked	Leonard Harper	04/01/16
Approved	Lonnie Harper	04/01/16

PRELIMINARY

TERRACE FIELD SOIL BORING LOGS

BS-24 TERRACING & MARSH CREATION SOUTH OF BIG MAR

Plaquemines Parish, Louisiana

NRCS
Natural Resources Conservation Service
United States Department of Agriculture

File No. 12 BS240012
Drawing No. BS-24
BORING LOGS.dwg
5/31/16 11:42 AM