STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

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GOVERNOR

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SECRETARY

June 29, 2006

U. S. Army Corps of Engineers
Regulatory Field Office
Post Office Box 1890
Wilmington, NC 28402-1890

Attention: Dave Timpy
Regulatory Specialist

Subject: **Application for Section 404 permit for Second Bridge to Oak Island**, Brunswick County, State Project No. 8.2231201, Federal Aid No. STP-1105(6), TIP R-2245, Work Center 34407.1.1, Brunswick County.

Dear Sir:

The North Carolina Department of Transportation (NCDOT) proposes to construct a roadway on new location in Brunswick County, known as the second bridge to Oak Island. The proposed project starts at SR 1104 (Beach Drive) on Oak Island and will continue to NC 211, west of Southport. The proposed project consists of constructing a four-lane median divided facility on 150 feet (46 meters) of right-of-way with controlled access. The project includes replacement of the existing bridge over Davis Canal on Beach Drive and construction of a new bridge over the Atlantic Intracoastal Water Way (AIWW). Project length is approximately 4.5 miles.

The purpose of this letter is to submit this final design for approval and to request approval for a Army Section 404 Individual Permit and a Section 401 Water Quality Certification Permit. Included in this application package are the following: (1) ENG Form 4345, (2) property owner address labels, (3) Merger 01 Revised 4A, 4B, and 4C meeting minutes, (4) North Carolina Ecosystem Enhancement Program (EEP) acceptance letter, (5) permit drawings, (6) a set of half size roadway plans, (7) a copy of the USCG permit application, (8) a copy of the USFWS concurrence letter (dated November 19, 2003), and (9) a copy of the NMFS concurrence letter (dated March 24, 2004).

PROJECT SCHEDULE

For construction purposes, the second bridge to Oak Island project will be constructed in one section. This project has a production let date of December 19, 2006.

NC DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS
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Purpose and Need: The main purposes of the proposed second bridge to Oak Island is to provide traffic relief to the existing bridge to Oak Island on NC 133, decrease accident potential, and provide an additional emergency evacuation route for Oak Island.

Summary of Impacts: The proposed project is in the Lumber River Basin, Hydrologic Unit 03040207. Impacts on jurisdictional areas of the proposed project consist of a total of 21.548 acres of permanent wetland impacts. There will also be 222 linear feet of permanent jurisdictional stream impacts and 132 feet of temporary stream impacts.

Table 1: Summary of Jurisdictional Impacts (Federal Clean Water Act)			
Permanent Wetlands Impacts *	Temporary Wetlands	Permanent SW Impacts	Temporary SW Impacts
21.548 ac	0 ac	222ft (0.015 ac)	132ft (0.053 ac)

*Includes fill, excavation, mechanized clearing, and wetland drawdown from moving existing ditches

Summary of Mitigation:
The project has been designed to avoid and minimize impacts to jurisdictional areas throughout the NEPA and design processes. However, project impacts will necessitate compensatory mitigation for the unavoidable impacts. Detailed descriptions of these actions are presented in the mitigation portion of this application. The Ecosystem Enhancement Program (EEP) will provide compensatory mitigation for 21.548 acres of wetland impacts and 15 feet of stream impacts. Mitigation is not proposed for 207 feet of intermittent stream impacts due to the lack of aquatic habitat.

NEPA DOCUMENT STATUS

The Final Environmental Impact Statement (FEIS) was approved by the Federal Highway Administration (FHWA) on April 30, 2004 for R-2245. The Record of Decision (ROD) was approved on November 10, 2004. After the documents were approved, they were circulated to the resource agencies.

Net wetland impacts have increased since the FEIS was completed by 5.437 acres. Wetland impacts have changed due to the following reasons: updating of the wetland delineation, raising the road grade, adjustment of the mechanized clearing to the right-of-way and accounting for the potential draw-down of a wetland at one site due to the movement of an existing ditch. The road grade has been raised in order to provide sufficient cover on the cross pipes, and equalizer pipes. A site by site breakdown of the change in impacts and rationale for the changes are included in Table 2 below.

Table 2- Difference in Wetland Impacts Between FEIS and Final Design (ac)				
Site	FEIS Impact Total	Final Design Impacts	Impact Change	Reason For Impact Change
2	0	0.026	0.026	Increase resulted from Raising Bridge Grade to comply with DWQ Stormwater regulations
6	1.281	1.522	0.241	Increase resulted from grade change
8	0	0.066	0.066	Increase resulted from Redelineation/Reverification
9	0	0.106	0.106	Increase resulted from Redelineation/Reverification

Site	FEIS Impact Total	Final Design Impacts	Impact Change	Reason For Impact Change
10	0	0.137	0.137	Increase resulted from Redelineation/Reverification
11	1.341	1.407	0.066	Increase resulted from grade change
12	1.127	1.172	0.045	Increase resulted from grade change
13	0.055	0.07	0.015	Increase resulted from grade change
14	0.7	0.75	0.050	Increase resulted from grade change
15	0.006	0.01	0.004	Increase resulted from grade change
16	0.249	0.276	0.027	Increase resulted from grade change
17	0.348	0.365	0.017	Increase resulted from grade change
18	0.14	0.147	0.007	Increase resulted from grade change
19	1.099	1.161	0.062	Increase resulted from grade change
20	0.159	0.168	0.009	Increase resulted from grade change
21	2.426	2.773	0.347	Increase resulted from grade change
22	0	1.657	1.657	Increase resulted from Redelineation/Reverification
23	0	0.182	0.182	Increase resulted from Redelineation/Reverification
24	2.94	3.345	0.405	Increase resulted from grade change
25	2.48	2.908	0.428	Increase resulted from grade change
27	0.026	0.025	-0.001	Decrease result of Mechanized Clearing to R/W
29	0.1271	0.805	0.678	Increase as a result of Grade Change And Redelination/Reverification
30	0.761	0.984	0.223	Increase resulted from grade change
31	0	0.088	0.088	Increase resulted from Redelineation/Reverification
32	0.72	0.68	-0.040	Decrease resulted from grade change
32	0	0.671	0.671	Increase as a result of ditch draw down in wetlands
33	0.126	0.047	-0.079	Decrease resulted from grade change
Total	**16.1111**	**21.548**	**5.437**	

Stream impacts have also increased since the completion of the FEIS from 0 feet to 222 feet at two sites. Permanent stream impacts at Site 11 have increased by 207 feet. The stream at Site 11 was added to the impact sites as a result of the jurisdictional re-verification conducted in 2004. Permanent stream impacts at Site 34 have increased by 15 feet. Impacts have increased at this site because NC 211 will be widened at the intersection with proposed road project to accommodate turn lanes. The existing culvert will be extended 15 feet to accommodate the new turn lanes.

INDEPENDENT UTILITY

The subject project is in compliance with 23 CFR Part 771.111(f) which lists the Federal Highway Administration (FHWA) characteristics of independent utility of a project:

(1) The project connects logical termini and is of sufficient length to address environmental matters on a broad scope;

(2) The project is usable and a reasonable expenditure, even if no additional transportation improvements are made in the area;

(3) The project does not restrict consideration of alternatives for other reasonably foreseeable transportation improvements.

RESOURCE STATUS

Delineations:

Wetland and stream delineations for R-2245 were conducted in 2000 by Stantec Consulting using the field delineation method outlined in the *1987 Corps of Engineers Wetland Delineation Manual* (Environmental Laboratory, 1987) and verified by Mr. Scott McLendon of the USACE Wilmington Regulatory Field Office. Delineation updates were conducted by Ryan Smith of Stantec Consulting and the verification was updated by Dave Timpy of the USACE on October 26, 2004. During the update of the wetland delineation, 2.8 acres of wetlands were added to the project impacts. These sites (Sites 8, 9, 10, 22, 23, 29, 31) are listed above within Table 2.

Wetlands:

Wetland impacts occur at 27 sites within the Lumber River Basin and within Hydrologic Unit Code (HUC) 030340207. Table 3 is a list of permanent impacts to jurisdictional wetland resources (which include impacts resulting from fill, excavation, mechanized clearing, and drainage effect), wetland type, and the Cowardin description. Erosion control devices located within wetland will be placed with the mechanized clearing areas. Mechanized clearing is considered a permanent impact due the grubbing activities. Hand clearing is not considered a permanent impact because no grubbing will occur. Riprap at the ends of pipes has been calculated as permanent fill.

Table 3- R-2245 Wetland Impacts and Descriptions

Site	Tidal (CAMA) or Non-Riverine(NR) Wetland Impacts	Permanent Impacts (Acres)	Temporary Impacts (Acres)	Cowardin et al. Description
1	Tidal CAMA	0	0	EIEM1
2	Tidal CAMA	0.026	0.027	EIEM1
4	Tidal CAMA	0	0.019	EIEM1
6	NR	1.522	0	PF01
7	NR	0*	0	PF04
8	NR	0.066	0	PF04
9	NR	0.106	0	PF04
10	NR	0.137	0	PF04
11	NR	1.407	0	PF04
12	NR	1.172	0	PF04
13	NR	0.07	0	PF04
14	NR	0.75	0	PF04
15	NR	0.01	0	PF04
16	NR	0.276	0	PF04
17	NR	0.365	0	PF04
18	NR	0.147	0	PF04
19	NR	1.161	0	PF04
20	NR	0.168	0	PF04
21	NR	2.773	0	PF04
22	NR	1.657	0	PF04
23	NR	0.182	0	PF04
24	NR	3.345	0	PF04
25	NR	2.908	0	PF04
26	NR	0	0	PF04
27	NR	0.025	0	PF04

Site	Riverine(R) or Non-Riverine(NR) Wetland Impacts	Impacts (Acres)	Temporary Impacts (Acres)	Cowardin et al. Description
28	NR	0	0	PF04
29	NR	0.805	0	PF04
30	NR	0.984	0	PF04
31	NR	0.088	0	PF04
32	NR	1.351	0	PF01
33	NR	0.047	0	PF01
35	NR	0*	0	PF04
36	NR	0*	0	PF04

*Sites Deleted

Streams:
Stream impacts occur at 4 sites. Impacts to streams occur within HUC 030340207 of the Lumber River Basin. Table 4 is a list of surface water impacts including stream name, type of structure, amount of impacts, mitigation required, DWQ classification, and DWQ stream index number. Neither the AIWW nor Davis Canal are designated as a North Carolina Natural or Scenic River, or as a national Wild and Scenic River, nor is it listed as a 303(d) stream. No designated Outstanding Resource Waters (ORW), Water Supply I (WS-I), or Water Supply II (WS-II) waters occur within 3.0 miles of the project study area.

Table 4 – R-2245 Surface Water Impacts

Site	Stream Name and Intermittent (I) or Perennial (P)	Structure/ Size Type	Permanent Impacts	Mitigation Required	Temporary Impacts	DWQ Index number	DWQ Class
3 & 4	Davis Canal (P)	Bridge	0.001ac	No	0.035ac	15-25	SA HQW
5	AIWW (P)	Bridge	0 ac	NA	0 ac	15-25	SA HQW
11	UT to AIWW (I)	2 @ 60"RCP	207 ft	No	52 ft	15-25	SA HQW
34	UT to River Swamp (P)	Extent 10'x8' RCBC	15 ft	30 ft	80 ft	15-25-1-6	C Sw

WETLAND and STREAM IMPACT DESCRIPTIONS

A site by site description of wetland and stream impacts is included below.

Sites 1 and 2 (Station 15+40 to 19+80) have 0.026 acre of fill in CAMA jurisdictional coastal marsh wetlands and 0.027 acre of temporary impacts. Fill in the wetlands occurs as a result of replacing the existing bridge with a wider bridge deck and raising the final roadway grade to accommodate drainage for stormwater treatment.

Sites 3 and 4 (Station 20+70 to 22+35) have 0.019 acre of fill in CAMA jurisdictional coastal marsh wetlands and 0.001 acre of permanent fill and 0.035 acre of temporary fill in Davis Canal, a Public Trust Water. Impacts occur as a result of replacing the current 160' long, 38' wide bridge with a 165' long, 45.5' wide bridge. Traffic will use an offsite detour during construction. The current and new bridge will have 14.7 feet of navigational clearance at mean high water. The new bridge will be a 3-span cored slab bridge supported on drilled shaft piers. The new bridge will be constructed using top down construction. Permanent impacts to Davis Canal will occur from the placement of two bridge bents below mean high water and the placement of Class

II riprap on the fill slopes under the bridge. Placement of Class II riprap on the fill slopes under the bridge will also result in permanent fill in the wetlands. Placement of the Class II riprap will act as shoreline stabilization. The existing bridge will be removed without dropping components into the water.

Site 5 (Station 56+40 to 60+70) has 0.068 acre of permanent fill and 0.012 acre of temporary fill within the AIWW. The construction of the bridge over the AIWW will result in the placement of eight 5-foot diameter piers constructed using drilled shafts below mean high water level. The placement of piers below mean high water level are required to support two bridge bents. The piers will be located outside of the main channel. The 980-foot long bridge over the AIWW will be a pre-stressed concrete high-rise bridge constructed in 5-spans. The piers used for the bridge bents will be constructed from drilled shafts. Approximately 0.012 acre of temporary fill occurs as a result of the construction of two temporary work bridges and temporary bents that will be used to construct the drilled shaft piers. The work bridges are located outside of the main channel and their location is shown on pages 18, 35 and 55 of the enclosed permit drawings. An existing timber bulkhead on the southern bank of the AIWW will be relocated due to interference of the complex pile group with the bulkhead. Portions of the bulkhead will be shifted towards the AIWW a maximum of 3 feet or away from the AIWW a maximum of 3.8 feet and will result in approximately 0.056 acre of fill in the AIWW. Drawings of the proposed bulkhead are included on sheets 18 and 55 of the enclosed permit drawings and design plans.

Site 6 (Station 75+40 to 83+00) has 1.348 acres of fill and 0.174 acre of mechanized clearing within a coastal plain bottomland hardwood wetland forest. Impacts occur due to the placement of fill for the roadway and riprap at the pipe outlet. Two 42" reinforced-concrete-pipes buried 1-foot will be placed in the wetlands to maintain hydraulic connectivity on both sides of the roadway. Hand clearing will occur in 0.082 acre of wetlands to allow for construction access.

Site 7 (Station ACC2 13+65 to 14+05) Impacts at this site have been eliminated.

Sites 8, 9 and 10 (Stations 82+10 to 89+75) impacts total 0.253 acre of fill and 0.056 acre of mechanized clearing within a pocosin wetland forest. Impacts occur due to the placement of fill for the roadway. Hand clearing will occur in 0.049 acre of wetlands to allow for construction access.

Site 11 (Station 92+65 to 97+50) has 1.203 acres of fill and 0.204 acre of mechanized clearing within a pocosin wetland forest. Impacts to the intermittent UT to the AIWW include 207 feet of permanent stream impacts and 52 feet of temporary stream impacts. A determination that no mitigation would be required for impacts to this UT was made during the re-verification conducted in October 2004. Impacts occur due to the placement of fill for the roadway and placement of riprap at the pipe outlet. Two 60" reinforced-concrete cross pipes buried one foot will be placed in the UT to the AIWW and one 48" equalizer pipe buried 1-foot will be placed in the wetlands to maintain hydraulic connectivity on both sides of the roadway. Hand clearing will occur in 0.151 acre of wetlands to allow for construction access.

Sites 12 (Station 108+20 to 112+65) impacts total 1.013 acres of fill and 0.159 acre of mechanized clearing within a pocosin wetland forest. Impacts occur due to the placement of fill for the roadway. One 42" and one 48" pipe buried 1-foot will be placed in the wetlands to

maintain hydraulic connectivity on both sides of the roadway. Hand clearing will occur in 0.055 acre of wetlands to allow for construction access.

Site 13 (Station 120+85 to 123+05) impacts total 0.029 acre of fill and 0.041 acre of mechanized clearing within a pocosin wetland forest. Impacts occur due to the placement of fill for the roadway. Hand clearing will occur in 0.015 acre of wetlands to allow for construction access.

Sites 14 and 15 (Station 122+85 to 127+85) impacts total 0.672 acre of fill and 0.088 acre of mechanized clearing within a pocosin wetland forest. Impacts occur due to the placement of fill for the roadway. Hand clearing will occur in 0.037 acre of wetlands to allow for construction access.

Site 16 (Station 136+35 to 138+30) impacts total 0.231 acre of fill and 0.045 acre of mechanized clearing within a pocosin wetland forest. Impacts occur due to the placement of fill for the roadway.

Site 17 (Station 144+25 to 146+10) impacts total 0.325 acre of fill and 0.040 acre of mechanized clearing within a pocosin wetland forest. Impacts occur due to the placement of fill for the roadway. One 48" reinforced-concrete-pipe buried 1-foot will be placed in the wetlands to maintain hydraulic connectivity on both sides of the roadway. Hand clearing will occur in 0.030 acre of wetlands to allow for construction access.

Site 18 (Station 153+40 to 155+25) impacts total 0.105 acre of fill and 0.042 acre of mechanized clearing within a pocosin wetland forest. Impacts occur due to the placement of fill for the roadway. Five 60" corrugated aluminum pipes will be backfilled with 1- foot of soil and buried 1-foot under the roadway for small animal passage. Hand clearing will occur in 0.035 acre of wetlands to allow for construction access.

Site 19 (Station 159+25 to 163+65) impacts total 1.070 acres of fill and 0.091 acre of mechanized clearing within a pocosin wetland forest. Impacts occur due to the placement of fill for the roadway. Two 48" pipes will be backfilled with 1- foot of soil and buried 1-foot under the roadway for small animal passage.

Site 20 (Station 164+55 to 165+70) impacts total 0.142 acre of fill and 0.026 acre of mechanized clearing within a pocosin wetland forest. Impacts occur due to the placement of fill for the roadway. One 48" pipe will be backfilled with 1-foot of soil and buried 1-foot under the roadway for small animal passage.

Site 21 and 22 (Station 173+70 to 182 +40) impacts total 3.833 acres of fill and 0.597 acre of mechanized clearing within a pocosin wetland forest. Impacts occur due to the placement of fill for the roadway. Four 48" and one 42" pipes will be backfilled with 1-foot of soil and buried 1-foot under the roadway for small animal passage. Hand clearing will occur in 0.355 acres of wetlands to allow for construction access.

Site 23 and 24 (Station 197+05 to 209+30) impacts total 3.05 acres of fill and 0.477 acre of mechanized clearing within a pocosin wetland forest. Impacts occur due to the placement of fill

for the roadway. Four 48" pipes buried 1-foot will be placed in the wetlands to maintain hydraulic connectivity on both sides of the roadway. One 48" corrugated aluminum pipe will be backfilled with 1-foot of soil and buried 1-foot under the roadway for small animal passage. Hand clearing will occur in 0.097 acre of wetlands to allow for construction access.

Site 25 and 27 (Station 208+60 to 223+65) impacts total 2.501 acres of fill and 0.432 acre of mechanized clearing within a pocosin wetland forest. Impacts occur due to the placement of fill for the roadway. Three 48" reinforced-concrete-pipe buried 1-foot will be placed in the wetlands to maintain hydraulic connectivity on both sides of the roadway. One 48" will be backfilled with 1-foot of soil and buried 1-foot under the roadway for small animal passage. Hand clearing will occur in 0.174 acre of wetlands to allow for construction access.

Site 26 and 28 (Station 218+65 to 225+65) have 0.015 acre of hand clearing impacts within a pocosin wetland forest for the construction of 48" control-of-access fence.

Site 29 and 30 (Station 229+50 to 242+45) impacts total 1.369 acres of fill and 0.420 acre of mechanized clearing within a pocosin wetland forest. Impacts occur due to the placement of fill for the roadway. Two 48" reinforced-concrete-pipes buried 1-foot will be placed in the wetlands to maintain hydraulic connectivity on both sides of the roadway. Hand clearing will occur in 0.11 acre of wetlands to allow for construction access.

Site 31 (Station 236+55 to 237+60) impacts total 0.073 acre of fill and 0.015 acre of mechanized clearing within a pocosin wetland forest. Impacts occur due to the placement of fill for the roadway.

Site 32 and 33 (Station 245+50 to 248+30) impacts total 0.561 acre of fill and 0.166 acre of excavation within a bottomland hardwood wetland forest. The existing roadside ditch parallel to NC 211 will be moved to the south resulting in an estimated 0.671 acre of drawdown of wetland hydrology. Impacts occur due to the placement of fill for the new roadway and widening existing NC 211 to accommodate turn lanes. Hand clearing will occur in 0.050 acre to allow for construction access.

Site 34 (Station –Y7- 24+00) impacts total 15 feet of permanent channel impacts and 80 feet of temporary impacts to a perennial UT to River Swamp. Impacts will occur due to the extension of the existing 10' x 8' RCBC under NC 210 to accommodate widening for additional lanes on NC 210. The culvert will be installed using phased construction.

Site 35 and 36 (-ACC2- Station 15+45 to 21+95) Impacts at this site have been eliminated.

FEDERALLY PROTECTED SPECIES

Plants and animals with Federal classification of Endangered (E) or Threatened (T) are protected under provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. As of April 27, 2006 the U.S. Fish and Wildlife Service (FWS) lists 15 federally protected species for Brunswick County (Table 5). No changes in the county species list has occurred since the original surveys were conducted.

Biological Conclusions of No Effect have been rendered for the eastern cougar, piping plover, and the seabeach amaranth. The American alligator is listed due to similarity of appearance and thus not subject to Section 7 consultation. The FWS has concurred with the biological conclusion of "May Effect, Not Likely to Adversely Affect" for the West Indian manatee, wood stork, bald eagle, red-cockaded woodpecker, loggerhead sea turtle, green sea turtle, leatherback sea turtle, Kemp's ridley sea turtle, Cooley's meadowrue, and rough leaved loostrife. NCDOT received concurrence from FWS in the attached letter dated November 19, 2003. National Marine Fisheries Service concurred with the biological conclusion of "May Affect, Not Likely to Adversely Affect" for the shortnose sturgeon and the loggerhead sea turtle, green sea turtle, leatherback sea turtle, and the Kemp's ridley sea turtle in the attached letter dated March 24, 2004. NCDOT has agreed to follow the "Precautionary Guidelines for General Construction in Areas that may be used by the West Indian manatee in North Carolina," in order to obtain concurrence from the FWS. These biological conclusions remain valid.

Table 5. Federally Protected Species for Brunswick County

Scientific Name	Common Name	Habitat Present	Status	Biological Conclusion
Puma concolor couguar	Eastern cougar	No	E	No Effect
Trichechus manatus	West Indian manatee	Yes	E	MA-NLAA
Mycteria americana	Wood stork	Yes	E	MA-NLAA
Charadrius melodus	Piping plover	No	T	No Effect
Haliaeetus leucocephalus	Bald eagle	Yes	T	MA-NLAA
Picoides borealis	Red-cockaded woodpecker	Yes	E	MA-NLAA
Alligator mississippiensis	American alligator	NA	T(S/A)	N/A
Caratta carretta	Loggerhead sea turtle	Yes	T	MA-NLAA
Chelonia mydas	Green sea turtle	Yes	T	MA-NLAA
Dermochelys coriacea	Leatherback sea turtle	Yes	E	MA-NLAA
Lepidochelys kempii	Kemp's ridley sea turtle	Yes	E	MA-NLAA
Acipenser brevirostrum	Shortnose sturgeon	Yes	E	MA-NLAA
Thalictrum cooleyi	Cooley's meadowrue	Yes	E	MA-NLAA
Amaranthus pumilus	Seabeach amaranth	No	T	No Effect
Lysimachia asperulaefolia	Rough leaved loosestrife	Yes	E	MA-NLAA

"E" denotes Endangered.
"T" denotes Threatened.
"T (S/A)" denotes Threatened due to similarity
"MA-NLAA" denotes May Effect, Not Likely to Adversely Affect

CULTURAL RESOURCES

Historic Architecture:

Appendix A.1 of the FEIS contains a letter from the State Historic Preservation Office (SHPO), dated February 23, 1995 indicating that there are no structures over 50 years of age within the study area; therefore the project would not impact any historic architectural properties.

Archaeology:

An archaeology survey was conducted for the Preferred Alternative in 2003. No archaeological sites were identified during this survey. The SHPO concurrence letter for the archaeology survey, dated December 5, 2003, is included in Appendix A.1 of the FEIS.

FEMA COMPLIANCE

This project crosses the 100-year floodplain at AIWW and Davis Canal. The bridges have been designed to completely span the 100-year floodplain of the AIWW and Davis Canal.

UTILITY IMPACTS

There will be no proposed impacts to Waters of the U.S. due to utility construction.

ICI STUDY

An Indirect and Cumulative Impact (ICI) study for this project has been completed. The ICI study concluded that only small magnitudes of change in land use patterns between the build and the no build scenario. The small changes in land use patterns will only result in small changes to the study parameters. The parameters evaluated in the ICI study include dissolved oxygen, phosphorus, nitrogen, sediment loads, fecal coliform, and stream erosion. Copies of the ICI report will be furnished to the resource agencies upon request.

ESSENTIAL FISH HABITAT

In accordance with the Magnuson-Stevens Act of 1996 (16 U.S.C 1801 et *seq.*) an Essential Fish Habitat Assessment was prepared as part of the FEIS and can be found on pages 1-7 to 1-10. The Assessment concludes that the project will impact EFH within Davis Canal and AIWW and that impacts can be minimized following NCDOT's Best Management Practices for Protection of Surface Waters.

PROJECT COMMITMENTS

The following environmental commitments were agreed to in the NEPA-404 Merger process and their current status is listed below.

- The vertical clearance at mean high water level will be a minimum of 65 feet and the horizontal clearance will be a minimum of 90 feet. The proposed bridge will be designed and constructed so as to not interfere with the operation and maintenance of the navigation channel in the AIWW. A minimum 140 feet navigation opening, without using a fender system for vessel impact, will be provided 70 feet from the channel centerline on each side. Channel centerline coordinates will be obtained from the USACE prior to design and construction.

  -The proposed bridge over the AIWW will have 67.3 feet of vertical clearance and 90 feet of horizontal clearance. A 140 feet navigation opening without using a fender system and will provide 70 feet of clearance between the centerline of the channel and the bridge on both sides. Channel coordinates have been obtained from the USACE and are shown on the U.S. Coast Guard (USCG) application and the enclosed permit drawings. A copy of the USCG permit application is included with this cover letter.

Reword to make a sentence

- The project will have two access points between NC 211 and the new bridge over the AIWW. The northern access point will be located approximately 5,700 feet from the southern right-of-way of NC 211. This access point will be a right-in/right-out only intersection on the eastern side with no break in the median. The southern access point will be located as close to the northern terminus of the bridge over the AIWW as allowed by NCDOT design standards. These access points will be located to avoid additional wetland impacts within the NCDOT right-of-way.

  -A right-in/ right-out access will be located 5,675 feet to the south of NC 211 on the

eastern side of the roadway at Station 191+45(ACC3). A full movement access point will be located approximately 1,000 feet to the north of the proposed bridge over the AIWW at Station 73+15 (ACC1). There will be a break allowed along ACC1 at the power line at Station ACC1 30+90 to 31+60 to allow for the maintenance of the existing utility line. A gate will be constructed at this break in controlled access. An additional third, right-in/ right–out, access point on the western side of the road has been approved by the merger team located approximately 9,500 feet south of NC 211 and has been added to the plans at Station 151+55. The location of these access points is shown on the enclosed half-size design drawings. The access points are also discussed in the following section of the permit application.

- Access control will be extended for a distance of 1,500 feet along the two access roadways. A continuous fence along the roadway will also reflect control of access.
  -The enclosed half-size design drawings show that control of access will be maintained at ACC1 for 3,300 feet, ACC3 for 717 feet and ACC4 for 1428 feet.
- The State will construct a "small animal passage" pipe under the road at a point where the roadway passes between the two Carolina bays. The pipe design will be subject to approval by the NC Wildlife Resources Commission. There shall be an easement along the routes to the passageway from each Carolina bay.
  -Ten small animal passage pipes will be placed under the road between Stations 145+00 to 210+00 and are shown on the enclosed roadway plans. The pipes are 48" or 60" by 46" corrugated aluminum pipes. Revisions to the agreement to provide animal passage corridors were discussed and agreed to in the Merger Meeting held on April 11, 2006. Details on the revisions are discussed in the following section.
- For areas adjacent to High Quality Waters (HQW) or Shellfish Areas (SA), Design Standards in Sensitive Watersheds and HQW erosion control measures will be implemented.
  -Design standards for sensitive watersheds and HQW erosion control measures will be implemented at the Davis Canal, AIWW and the UT to AIWW crossing. This is a standard NCDOT commitment.
- Potential anadromous fish habitat is located within the study area. Therefore, the NCDOT guidance document, Stream Crossing Guidelines for Anadromous Fish Passage, will be adhered to for this project.
  -An in water construction moratorium from February 15 to June 30 will be followed during the construction of the bridge over the AIWW and Davis Canal.
- Coordination with the USACE will continue to minimize the impact to the Yellow Banks confined (diked) disposal area.
  -Impacts to the Yellow Banks have been minimized to the maximum extent practical.
- No borrow or waste areas will be located in wetland areas without a permit from the USACE.
  -This is a standard commitment on NCDOT projects.
- The National Ocean Service, National Geodetic Survey requires a 90-day notification for any activity that may disturb or destroy the geodetic monument located at Middleton Avenue and Oak Island Drive or the monument located near the intersection of NC 211 and SR 1500 (Midway Road). Appropriate measures will be taken to relocate the monuments if necessary.
  -NCDOT Location and surveys will contact the National Geodetic Survey 90 days prior to construction activities.
- The NCDOT will make every effort to obtain or acquire the two Carolina bays on each side of the road plus 200 feet around each bay.

A revised agreement between the NCDOT and the Merger team was made at a revised Concurrence Point 4A meeting held April 11, 2006. The revisions are discussed in the following section.

- The NCDOT agrees to replace the Middleton Avenue access point to the AIWW if the current access point cannot be maintained due to design considerations.
  -The current access point will need to be removed to construct the new bridge over the AIWW, however a new access point will be constructed following bridge construction. No additional impacts to jurisdictional resources are expected.
- Strict adherence to procedures contained in *Best Management Practices for Protection of Surface Waters* and *Stream Crossing Guidelines for Anadromous Fish Passage* as well as the NC Department of Environment and Natural Resources, Division of Land Resources Land Quality Section's *North Carolina Erosion and Sediment Control Planning and Design Manual* will aid in avoiding and minimizing impacts to water resources and aquatic communities.
  -These are standard commitments on NCDOT projects.
- Native vegetation will be planted along roadsides to deter the spread of exotic and invasive species in accordance with the FHWA guidance handbook, Roadside Use of Native Plants.
  -In riparian areas and areas adjacent to wetlands, seed mixtures including the native grasses Indian grass, little blue stem and switch grass will be used as establishment on disturbed areas.
- The use of a vacuum machine to clean up and transfer of spoil material generated during the installation of bridge piles will minimize impacts to wetlands, aquatic communities and riparian buffers.
  -Bridge piles will be installed using drilled shafts and therefore not require the use of a vacuum machine. Construction of piles using drilled shafts confines the spoil material within the shafts and will not result in a discharge in violation of applicable environmental permits.
- Clearing and grubbing activities will be minimized to reduce impacts to riparian areas.
  -No mechanized clearing will be used within any riparian areas on this project.
- Implementation of NMFS construction moratoriums and USFWS guidance will minimize direct impacts to essential fish habitat and primary nursery inhabitants.
  -An in-water construction moratorium for sturgeon (February 15-June 30), and primary nursery areas (February 15- September 30) will be observed in the AIWW and Davis Canal. The NCDOT also agrees to follow the "Precautionary Guidelines for General Construction in Areas that may be used by the West Indian Manatee in North Carolina."

REVISED CONCURRENCE POINT 4A

On April 11, 2006 a revised Concurrence Point 4A Merger Meeting was held at the Highway Building. The following revisions to project commitments were agreed upon by the Merger Team.

- Acquire three Carolina Bays.
  <u>Carolina Bay West of R-2245 (Williamson Property)</u>
  The Carolina Bay west of the proposed R-2245 roadway alignment, including park areas PR6 and PR9 with the exception of a planned Club House Amenity Center (PR7); three additional park and recreation areas PR3, PR11 & PR13; the approximately 300' wide animal corridor

leading from the bay to the Carolina Bay east of the roadway alignment; and a section of the bay east of the proposed R-2245 roadway alignment.

Carolina Bays East of R-2245 (St. James Property)
The Carolina Bay east of the proposed R-2245 roadway alignment, with the exception of existing platted lots on upland areas around the bay rim, a 300' wide animal corridor leading north to another new Carolina Bay, to also be acquired. The delineated wetland of the Carolina Bay east and north will be restricted from development through a conservation easement.

- Acquire two animal crossing easements. One approximately 300' wide connecting the two Carolina Bays, in addition to another 300' wide easement leading north from the Carolina Bay east of R-2245 to the new North Bay. NCDOT has committed to provide $100,000 per landowner to provide a minimum of at least four 60" by 46" crossings under the private development roads within the preserved wildlife corridors.

- Provide full control of access from NC 211 to the Intracoastal Waterway, except at the following street access points: -L- Station 73+15 (Full Movement), -L- Station 191+45 (Right-in/Right-out Only), and approximately -L- Station 151 +55 (Right-in/ Right-out Only). NCDOT has eliminated the western access point at -L- Station 73+15.

  The NCDOT will eliminate ACC2 from the roadway plans and the permit drawings. Due to the fact there has been previous coordination, public involvement, and the roadway plans have shown an access point to this property, the NCDOT is requesting that provisions be allowed for a future access point to be added at the ACC2 location.

  It should be noted that the future access point will be relocated to approximate L-Sta. 71+96.68 (90'Lt.) to L-Sta. 73+93.19 (85.25' Lt.). The future location of the access point has been relocated to the upland area on MAS Properties, LLC to eliminate wetland impact.

  The process for obtaining the future break in the control of access will be as follows:

  The MAS Properties, LLC property owner will obtain a written agreement from the US Army Corps of Engineers (USACE) that the access point will not create a conflict with or compromise the Yellowbanks Environmental Assessment that was issued in June 2005. After obtaining the USACE agreement, the property owner will request a break in the control of access from the NCDOT. MAS Properties, LLC will have to donate 100 feet of right of way width along the potential access roadway for a length of approximately 500 feet from the western edge of the mainline right of way for the Second Bridge to Oak Island project. This right of way will also consist of control of access limits along both sides of the potential access roadway for a distance of approximately 500 feet. After receipt of the written agreement from the USACE, and the donation of the right of way and control of access limits, the NCDOT will grant approval of the access point. The break in the control of access will not be subject to an enhancement fee.

  Maintain Control of Access by the following:

  1. The Control of Access on the NCDOT plans will be designated as "Special Control of Access" with a unique symbol, legend and note.

The road plans have been labeled with the special designation "No Revisions to the Control of Access without approval of NCDOT, FHWA, USEPA and DENR per Agreement and USACE per Permit Condition.

2. A Memorandum of Understanding (MOU) between NCDOT, USEPA, NCDENR, and FHWA will be executed. The memorandum will stipulate that any future break in the control of access would require the agreement of all the signatory parties.

The NCDOT has circulated a copy of the MOU to the signatory parties. On final approval, the signatory parties will sign the MOU.

3. A special condition will be added to any USACE permit that would perpetually prohibit any future break in the control of access without modification of the permit.

Per Discussions between the USACE and NCDOT, this commitment is no longer essential.

Negotiations to acquire the bays and the animal crossing easements with the landowners mentioned above are currently ongoing. As soon as options are signed with the landowners, they will be forwarded to the Merger Team. The language in the MOU has been agreed to by the participating parties and will be circulated to the resource agencies upon completion. The western access point located at -L- Station 73+15 has been removed from the project plans. Access will be limited to a full movement access point at -L- Station 73+15, and a right-in/ right-out only access at -L- Station 191+45, and approximately -L- Station 151 +55.

MITIGATION OPTIONS

The NCDOT is committed to incorporating all reasonable and practicable design features to avoid and minimize jurisdictional impacts, and to provide full compensatory mitigation of all remaining, unavoidable jurisdictional impacts. Avoidance measures were taken during the planning and NEPA compliance stages; minimization measures were incorporated as part of the project design.

Avoidance:

Avoidance has been employed to the maximum extent practical. All wetland areas not affected by the project will be protected from unnecessary encroachment.

General avoidance measures incorporated into the project design

- No Staging of construction equipment or storage of construction supplies will be allowed in wetlands or near surface waters. Staging areas will be determined by the contractor after the project is let.
- No borrow or waste areas will be located in wetland areas without a permit from the USACE.

Specific avoidance measures

- The roadway has been aligned to avoid and minimize impacts to the two large Carolina Bays in the project study area.

Minimization:

Minimization has been employed in the project area to the maximum extent practical. Reduction of fill-slopes at stream/wetland crossings and the selection of alternatives that will minimize wetland impacts will reduce unnecessary wetland takings.

Project Wide Minimization Measures

- Use of 3:1 side slopes in jurisdictional areas.
- All culverts will be buried a minimum of 12 inches.
- For areas adjacent to HQW or Shellfish Areas (SA), Design Standards in sensitive Watersheds and HQW erosion control measures will be implemented.
- Strict adherence to the procedures contained in Best Management Practices for Protection of Surface Waters and Stream Crossing Guidelines for Anadromous Fish Passage, as well as NC Department of Environment and Natural Resources (NCDENR), Division of Land Resources, Land Quality Section's *North Carolina Erosion and Sediment Control Planning and Design Manual* will aid in avoiding and minimizing impacts to water resources and aquatic communities.
- No Erosion control structures will be placed in wetlands.
- Clearing and grubbing activities will be minimized to reduce impacts to riparian buffers.
- NCDOT will adhere to construction moratoriums for the shortnose sturgeon (February 15-June 30) and Primary Nursery Areas (February 15 to September 30)
- NCDOT will adhere to the *Guidelines for Avoiding Impact to the West Indian Manatee.*
- NCDOT will place conservation easements on three bays adjacent to the roadway.
- NCDOT will place conservation easements on two approximately 300-foot wide wildlife corridors between the three bays.
- NCDOT will place 10 wildlife passage pipes under the proposed roadway and pay for the construction of wildlife passage pipes under the private development roads within the wildlife corridors.

Site Specific Minimization Measures

- Station 15+40 to 19+80, The fill slopes at this site have been redesigned to using engineered 1.25:1 side sloped reducing impacts to coastal wetlands from 0.261 acre to 0.026 acre.
- Station 15+40 to 19+80, The mechanized clearing has been changed from using a 10' offset width from the toe of slope to hand clearing using a 5' offset from the toe of slope.
- Station 56+40 to 60+70, A work bridge will be used for the construction of the bridge over the ICWW rather then using work causeways.
- Station 75+40 to 83+00, Two 42" reinforced-concrete-pipes buried 1-foot will be placed in the wetlands to maintain hydraulic connectivity on both sides of the roadway. The usage of hand clearing has reduced mechanized clearing impacts by 0.075 acres at this site.
- Station 82+10 to 83+00, Hand clearing in 0.014 acre of wetlands will be used instead of mechanized clearing.
- Station 88+05 to 89+75, Hand clearing in 0.035 acre of wetlands will be used instead of mechanized clearing.
- Station 92+65 to 97+50, Hand clearing in 0.151 acre of wetlands will be used instead of mechanized clearing. A 48" reinforced-concrete-pipe buried 1-foot will be placed in the wetlands to maintain hydraulic connectivity on both sides of the roadway
- Station 108+20 to 112+65, Hand clearing in 0.055 acre of wetlands will be used instead of mechanized clearing. One 48" and one 42" reinforced-concrete-pipes buried 1-foot will be placed in the wetlands to maintain hydraulic connectivity on both sides of the roadway.
- Station 120+85 to 123+05, Hand clearing in 0.015 acre of wetlands will be used instead of mechanized clearing. A 42" reinforced-concrete-pipe buried 1-foot will be placed adjacent to the wetland and will serve as a small animal passage pipe.

- Station 122+85 to 127+85, Hand clearing in 0.037 acre of wetlands will be used instead of mechanized clearing.
- Station 144+25 to 146+10, Hand clearing in 0.030 acre of wetlands will be used instead of mechanized clearing.
- Station 153+40 to 155+25, Hand clearing in 0.035 acre of wetlands will be used instead of mechanized clearing. Five 60"*46"corrugated aluminum pipes buried 1-foot will be placed adjacent to the wetland and will serve as small animal passage pipes.
- Station 159+25 to 163+65, Two 48" reinforced-concrete-pipes buried 1-foot will serve as small animal passage pipes.
- Station 164+55 to 165+70, One 48" reinforced-concrete-pipe buried 1-foot will serve as a small animal passage pipe.
- Station 173+70 to 191+85, Hand clearing in 0.347 acre of wetlands will be used instead of mechanized clearing. Four 48" pipes and one 42" pipe buried 1-foot will serve as small animal passage pipes.
- Station 197+05 to 197+70, Hand clearing in 0.008 acre of wetlands will be used instead of mechanized clearing.
- Station 198+55 to 209+30, Hand clearing in 0.089 acre of wetlands will be used instead of mechanized clearing. Four 48" pipes buried 1-foot will be placed in the wetlands to maintain hydraulic connectivity on both sides of the roadway. One 42" pipe buried 1-foot will serve as a small animal passage pipe.
- Station 208+60 to 219+90, Hand clearing in 0.167 acre of wetlands will be used instead of mechanized clearing. Three 48" pipes buried 1-foot will be placed in the wetlands to maintain hydraulic connectivity on both sides of the roadway. One 42" pipe buried 1-foot will serve as a small animal passage pipe.
- Station 218+65 to 225+65, Hand clearing in 0.022 acre of wetlands will be used instead of mechanized clearing.
- Station 229+50 to 242+45, Hand clearing in 0.110 acre of wetlands will be used instead of mechanized clearing. Two 48" pipes buried 1-foot will be placed in the wetlands to maintain hydraulic connectivity on both sides of the roadway.
- Station 245+50, Hand clearing in 0.050 acre of wetlands will be used instead of mechanized clearing.

Compensatory Mitigation:
The construction of the R-2245 will result in 21.548 acres of wetland impacts (21.522 acres of 404 Jurisdictional wetland and 0.026 acre of CAMA jurisdictional wetlands) and 15 ft of stream impacts that will require mitigation within the Lumber River Basin.

Based upon the agreements stipulated in the "Memorandum of Agreement Among the North Carolina Department of Environment and Natural Resources, the North Carolina Department of Transportation, and the U.S. Army Corps of Engineers, Wilmington District" (MOA), it is understood that the North Carolina Department of Environment and Natural Resources Ecosystem Enhancement Program (EEP), will assume responsibility for satisfying the federal Clean Water Act compensatory mitigation requirements for NCDOT projects.

The offsetting mitigation will be derived from an inventory of assets already in existence within the same 8-digit cataloguing unit. The Department has avoided and minimized impacts to

jurisdictional resources to the greatest extent possible as described above. The remaining, unavoidable impacts to 21.548 acres of jurisdictional wetlands and to 15 feet of jurisdictional streams will be offset by compensatory mitigation provided by the EEP program as noted in the enclosed EEP confirmation letter.

SUMMARY

Section 404 Permit: Application is hereby made for a Department of the Army Section 404 Individual Permit as required for the above-described activities for the proposed TIP project R-2245. A copy of this permit application will be posted on the NCDOT website at: http://www.ncdot.org/doh/preconstruct/pe/neu/permit.html

Section 401 Permit: In a separate application NCDOT will request a 401 Water Quality Certification from the Division of Water Quality.

CAMA: In a separate application, NCDOT will request a CAMA Major Development Permit for this project from the North Carolina Division of Coastal Management.

U.S. Coast Guard: In a separate application, NCDOT requested approval from the U.S. Coast Guard for the construction of the bridge over the ICWW.

Thank you for you assistance with this project. If you have any questions or need any additional information about this project, please contact Brett Feulner at (919) 715-1488.

Sincerely,

Greg Thorpe, P.E., Environmental Management Director
Project Development and Environmental Analysis Branch

GT/bmf

W/ attachment
Dr. David Chang, P.E., Hydraulics
Mr. Mark Staley, Roadside Environmental
Mr. Allen Pope, P.E., Division 3 Engineer
Mr. Mason Herndon, Division 3 DEO
Mr. Greg Perfetti, P.E., Structure Design

w/o attachment
Mr. Jay Bennett, P.E., Roadway Design
Mr. Joseph Qubain, P.E., Planning Engineer
Mr. Majed Alghandour, Prog. and TIP
Mr. Scott McLendon, USACE, Wilmington
Mr. Art McMillan, P.E., Highway Design
Mr. Carl Goode, NCDOT- HEU
Mr. Todd Jones, NCDOT, External Audit Branch

APPLICATION FOR DEPARTMENT OF THE ARMY PERMIT (33 CFR 325)

OMB APPROVAL NO. 0710-003
Expires December 31, 2004

Public reporting burden for this collection of information is estimated to average 10 hours per response, although the majority of applications should require 5 hours or less. This includes the time for reviewing instructions, searching existing data sources, gathering and maintaining the data needed, and completing and reviewing the collection of information. Send comments regarding this burden estimate or any other aspect of this collection of information, including suggestions for reducing this burden, to Department of Defense, Washington Headquarters Service Directorate of Information Operations and Reports, 1215 Jefferson Davis Highway, Suite 1204, Arlington, VA 22202-4302; and to the Office of Management and Budget, Paperwork Reduction Project (0710-0003), Washington, DC 20503. Respondents should be aware that notwithstanding any other provision of law, no person shall be subject to any penalty for failing to comply with a collection of information if it does not display a currently valid OMB control number. Please DO NOT RETURN your form to either of those addresses. Completed applications must be submitted to the District Engineer having jurisdiction over the location of the proposed activity.

PRIVACY ACT STATEMENT

Authority: Rivers and Harbors Act, Section 10, 33 USC 403: Clean Water Act, Section 404, 33 USC 1344; Marine Protection, Research and Sanctuaries Act, 33 USC 1413, Section 103. Principal Purpose: Information provided on this form will be used in evaluating the application for a permit. Routine Uses: This information may be shared with the Department of Justice and other federal, state, and local government agencies. Submission of requested information is voluntary, however, if information is not provided the permit application cannot be evaluated nor can a permit be issued.

One set of original drawings or good reproducible copies which show the location and character of the proposed activity must be attached to this application (see sample drawings and instructions) and be submitted to the District Engineer having jurisdiction over the location of the proposed activity. An application that is not completed in full will be returned.

(ITEMS 1 THRU 4 TO BE FILLED BY THE CORPS)

1. APPLICATION NO.	2. FIELD OFFICE CODE	3. DATE RECEIVED	4. DATE APPLICATION COMPLETED

(ITEMS BELOW TO BE FILLED BY APPLICANT)

5. APPLICANT'S NAME
North Carolina Department of Transportation
Project Development & Environmental Analysis

8. AUTHORIZED AGENT'S NAME AND TITLE (an agent is not required)

6. APPLICANT'S ADDRESS
1598 Mail Service Center
Raleigh, NC 27699-1548

9. AGENT'S ADDRESS

7. APPLICANT'S PHONE NOs. W/AREA CODE
a. Residence
b. Business 919-715-1488

10. AGENT'S PHONE NOs. W/AREA CODE
a. Residence
b. Business

11. **STATEMENT OF AUTHORIZATION**

I hereby authorize, _____ to act in my behalf as my agent in the processing of this application and to furnish, upon request, supplemental information in support of this permit application.

APPLICANT'S SIGNATURE

6/28/06
DATE

NAME, LOCATION, AND DESCRIPTION OR PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions
R-2245

13. NAME OF WATERBODY, IF KNOWN (if applicable)
Tributaries to the Intercoastal Waterway , Davis Canal

14. PROJECT STREET ADDRESS (if applicable)
NA

15. LOCATION OF PROJECT
Brunswick COUNTY NC STATE

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions) **Section, Township, Range, Lat/Lon, and/or Accessors's Parcel Number, for example.**

17. DIRECTIONS TO THE SITE
Please see attached vicinity map and cover letter.

18. Nature of Activity (Description of project, include all features)

Build a Second Bridge to Oak Island and the associated roadway

19. Project Purpose (Describe the reason or purpose of the project, see instructions)

Public transportation, improve safety, decrease congestion and accident potential and provide an additional emergency evacuation route

USE BLOCKS 20-22 IF DREDGED AND/OR FILL MATERIAL IS TO BE DISCHARGED

20. Reason(s) for Discharge

Construction of a new roadway that crosses several jurisdictional waters of the US

21. Type(s) of Material Being Discharged and the Amount of Each Type in Cubic Yards

Please see attached permit drawings

22. Surface Area in Acres of Wetlands or Other Waters Filled (see instructions)

Please see attached permit drawing summary sheet

23. Is Any Portion of the Work Already Complete? Yes ___ No _X___ IF YES, DESCRIBE THE COMPLETED WORK

24. Addresses of Adjoining Property Owners, Lessees, Etc., Whose Property Adjoins the Waterbody (If more than can be entered here, please attach a supplemental list).

Please see Permit Drawings.

25. List of Other Certifications or Approvals/Denials Received from other Federal, State, or Local Agencies for Work Described in This Application.

AGENCY	TYPE APPROVAL*	IDENTIFICATION NUMBER	DATE APPLIED	DATE APPROVED	DATE DENIED

* Would include but is not restricted to zoning, building, and flood plain permits

26. Application is hereby made for a permit or permits to authorize the work described in this application. I certify that the information in this application is complete and accurate. I further certify that I possess the authority to undertake the work described herein or am acting as the duly authorized agent of the applicant.

SIGNATURE OF APPLICANT _____ DATE _____ SIGNATURE OF AGENT _____ DATE _____

The application must be signed by the person who desires to undertake the proposed activity (applicant) or it may be signed by a duly authorized agent if the statement in block 11 has been filled out and signed.

18 U.S.C. Section 1001 provides that: Whoever, in any manner within the jurisdiction of any department or agency of the United States knowingly and willfully falsifies, conceals, or covers up any trick, scheme, or disguises a material fact or makes any false, fictitious or fraudulent statements or representations or makes or uses any false writing or document knowing same to contain any false, fictitious or fraudulent statements or entry, shall be fined not more than $10,000 or imprisoned not more than five years or both.

Stantec

SECOND BRIDGE TO OAK ISLAND (TIP NO. R-2245)
NEPA / 404 MERGER TEAM
MEETING FOR REVISED CONCURRENCE POINT 4A

Meeting Date: April 11, 2006

Place / Time: NCDOT Board Room, Raleigh, 9:00 am

Attendees:
Ron Sechler, NOAA Fisheries Service
Pace Wilber, NOAA Fisheries Service
Scott McLendon, US Army Corps of Engineers
Dave Timpy, US Army Corps of Engineers
Kathy Matthews, US Environmental Protection Agency
Chris Militscher, US Environmental Protection Agency
Gary Jordan, US Fish and Wildlife Service
Melba McGee, NC Department of Environment and Natural Resources
Amy Simes, NC Department of Environment and Natural Resources
Steve Sollod, NC Division of Coastal Management
Brian Wrenn, NC Division of Water Quality
John Hennessy, NC Division of Water Quality
Travis Wilson, NC Wildlife Resources Commission
Ron Lucas, Federal Highway Administration
Joe Blair, NCDOT Division 3
Mason Herndon, NCDOT Division 3
David Chang, NCDOT Hydraulics Unit
Ray Lovinggood, NCDOT Hydraulics Unit
Max Price, NCDOT Hydraulics Unit
Stacy Baldwin, NCDOT Project Development & Environmental Analysis Branch
Rob Hanson, NCDOT Project Development & Environmental Analysis Branch
Joseph Qubain, NCDOT Project Development & Environmental Analysis Branch
Greg Thorpe, NCDOT Project Development & Environmental Analysis Branch
Deborah Anderson, NCDOT Natural Environment Unit
Brett Feulner, NCDOT Natural Environment Unit
Phil Harris, NCDOT Natural Environment Unit
Elizabeth Lusk, NCDOT Natural Environment Unit
Colin Mellor, NCDOT Natural Environment Unit
Leilani Paugh, NCDOT Natural Environment Unit
Chris Rivenbark, NCDOT Natural Environment Unit
Debbie Barbour, NCDOT Preconstruction
Victor Barbour, NCDOT Project Services Unit
Doug Allison, NCDOT Right-of-Way Branch
Hugh Thompson, NCDOT Right-of-Way Branch
John Williamson, NCDOT Right-of-Way Branch
Glenn Mumford, NCDOT Roadway Design Unit
Tatia White, NCDOT Roadway Design Unit
Lonnie Brooks, NCDOT Structure Design Unit
Emily Murray, NCDOT Structure Design Unit
Ray McIntyre, NCDOT TIP Development Unit
Tyler Bray, NCDOT Transportation Planning Branch
Robert Memory, NCDOT Utilities Coordination Unit
Don Eggert, Cape Fear Rural Planning Organization
Keith Lewis, Stantec
Paul Koch, Stantec

Reference: Second Bridge to Oak Island Meeting for Revised Concurrence Point 4A

PURPOSE OF MEETING:

To reach agreement on Revised Concurrence Point 4A (Avoidance and Minimization).

ITEMS OF DISCUSSION:

The following paragraphs summarize the discussion and decisions resulting from this meeting. (See attached concurrence form for background information).

The meeting opened with a brief introduction by Dave Timpy who noted the absence of the State Historic Preservation Office (SHPO) representative and stated that the SHPO did not have any concerns about the revisions. Mr. Timpy then turned the meeting over to Joseph Qubain. Mr. Qubain explained the Revised 4A Concurrence form, which was displayed onscreen and distributed to the Merger Team, then opened the discussion for questions.

In response to a question asked by Travis Wilson, Leilani Paugh stated that animal passages under private roads within the conservation easement are included in the project. She added that $100,000 has been allocated to each of the two landowners to be used for animal passage construction. The concurrence form was revised to reflect this information.

Chris Militscher noted that the USEPA had been added as a party to the Memorandum of Understanding (MOU) and expressed concern about lots within the St. James Carolina Bay that appeared to be within wetlands. As a result of subsequent discussions, the concurrence form was revised to state that the wetlands within the St. James Carolina Bay would be restricted from development.

Mr. Militscher requested that additional parks and recreational areas shown on the Williamson Tract Master Plan be added to the conservation area. Ms. Paugh stated that she would discuss the request with the landowner, but did not anticipate a favorable response.

During the previous discussion, Mr. Timpy recalled the USACE's request for a pre-application meeting between the USACE, NCDOT, and the developers to discuss wetland impacts within the vicinity of the access points. Mr. Qubain responded that that was beyond the scope of the project and that those issues would be resolved through the developer's permitting process with the USACE. Scott McClendon stated that the USACE was concerned that the access points would generate development. Ms. Paugh noted that development is occurring in the area regardless of the project and that acquiring the conservation areas and easements is generating protection for upland areas that would not be protected under Section 404 regulations. She also noted that the Williamson Tract no-access plan has greater wetland impacts than the plan with access.

The remaining portion of the meeting focused on the southwest access (SW) at access point number two (i.e., the southernmost access point on the west side of the proposed roadway). With the addition of a right-in/right-out access on the Williamson Tract, members of the Merger Team requested that the SW access point be eliminated. The discussion of this issue spanned a large portion of the meeting, with the Merger Team breaking into several small group discussions.

The following bullets summarize the main items of discussion.

- The SW access point would provide access for a landlocked parcel owned by MAS. The parcel is currently accessed from the west by Sunset Harbor Road. Travis Wilson and Brian Wrenn [referencing the Yellow Banks Environmental Assessment] noted that MAS and Coastal Communities are the same company and reasoned

therefore that access to that parcel from the east was not needed, as it could be accessed from the Coastal Communities property.

- The USACE recommends that the access point be moved to an upland area along the USACE easement for the Yellow Banks Disposal Area. If the access point cannot be relocated, it should be eliminated.
- Greg Thorpe stated that moving the access point further south would not be an option due to proximity to the bridge.
- If the access point is eliminated, Mr. Milischer requested that the design include a U-turn opening in the median at this location.
- Debbie Barbour stated that there is a strong possibility that the SW access point can be eliminated; however, the NCDOT would like to research the history of the access point to determine its origins before making a decision to eliminate it.
- Mr. Timpy stated that the access point as designed does not meet the commitment to avoid additional wetland impacts. He also noted that the project is not removing existing access to the MAS property.
- In response to a question asked by Mr. Wilson, Ms. Paugh stated that the NCDOT would investigate the origins of the SW access point and attempt to redesign the access to avoid potential legal issues resulting from the elimination of the access point. She added that eliminating the access point after following this process would be consistent with the original commitment that the access points should be located such that there are no additional wetland impacts. If this commitment cannot be met due to the presence of wetlands, the elimination of the SW access point would be justified under this commitment.
- Mr. Timpy reiterated that the USACE recommends eliminating the SW access and proposed that the Team sign a Revised 4A form indicating as such. Should the access point be needed, the Team would reconvene to discuss.
- In response to the USACE proposal, NCDOT proposed that the access point be redesigned (shortened or lengthened, and realigned) so that it is in, and can be accessed from, entirely upland areas. NCDOT would perform wetland delineations to identify upland areas.
- In response to a request made by Mr. McClendon, Ms. Paugh stated that the Record of Decision (ROD) and public hearing mapping are documentation of the need for this access point.
- In response to a comment made by Mr. Timpy that the Merger Team not reach concurrence at that meeting, Ms. Paugh stated that a signed concurrence form would aid in negotiations with the landowners as it would demonstrate the Merger Team's willingness to move forward with the project.
- It was resolved that the concurrence form would state that NCDOT will redesign the SW access point to allow connection without incurring additional stream and wetland impacts and that NCDOT would provide rationale for the access. If either of these items cannot be accomplished, the access point would be eliminated.

The meeting also included discussions of the following items:

The Merger Team briefly discussed access control for the conservation easement, with Gary Jordan stating preference that it be fenced to deter human intrusion.

Reference: Second Bridge to Oak Island Meeting for Revised Concurrence Point 4A

Ms. Paugh informed the Team that the NCDOT proposed to reduce the length of access control on the St. James access point to the intersection with the first development street

In response to a comment by Mr. Timpy regarding the wetland delineations/jurisdictional determinations for the Williamson Tract and St. James, Mr. Qubain stated that the NCDOT would provide copies of wetland information on file.

In response to a question asked by Mr. Militscher, Ron Lucas stated that the NCDOT, Project Development would be preparing a consultation and would not be preparing a revised ROD. Mr. Militscher requested that this information be provided to the Merger Team.

CORRECTIONS & OMISSIONS: This summary is the writer's interpretation of the events, discussions, and transactions that took place during the meeting. If there are any additions and/or corrections please inform the writer in writing within seven (7) days.

Keith D. Lewis, PE
Project Manager
klewis@stantec.com

KDL/acs

Attachment: Revised Concurrence Point 4A Form
Exhibit

cc: Attendees
File

NEPA / 404 MERGER TEAM AGREEMENT
Revised CONCURRENCE POINT NO. 4A

Federal Aid Project Number:	STP-1105(6)
State Project Number:	8.2231201
TIP Number:	R-2245
TIP Description:	Second Bridge to Oak Island From SR 1104 (Beach Drive) to NC 211, Brunswick County

Background

Agreement on Concurrence Point 3 was reached on June 19, 2002. The description of the Least Environmentally Damaging Practicable Alternative (LEDPA) (Alternative B) was amended to include the acquisition of an easement connecting the two Carolina Bays with an animal crossing. Agreement on Concurrence Point 4A was reached on November 19, 2003. As part of the avoidance and minimization measures for the project, it was agreed that NCDOT would make every effort to acquire the two Carolina Bays on each side of the road plus 200 feet around each Bay and acquire a 10-foot wide conservation easement adjacent to the right-of-way on each side of the road. During the initial implementation stage, NCDOT encountered difficulty meeting these three commitments. The status of these commitments was discussed in meetings with the Merger Team on April 20, 2005, July 21, 2005, and January 19, 2006, during which NCDOT described the legal issues involved with the commitments. NCDOT proposed alternative commitments that would fulfill the intended purpose of the original commitments, but that were within the Department's statutory authority. A package was mailed to the Merger Team on February 6, 2006 that included detailed information on the proposed alternative commitments. Field meetings were held February 7 and 8, 2006 to view the proposed conservation areas. Based on the comments received on the package and negotiations with the landowners, the project commitments are described herewith.

- Acquire three Carolina Bays.

  Carolina Bay West of R-2245 (Williamson Property)

  The Carolina Bay west of the proposed R-2245 roadway alignment, including park areas PR6 and PR9 with the exception of a planned Club House/Amenity Center (PR7); three additional park and recreation area PR3, PR11 & PR13; the approximately 300' wide animal corridor leading from the bay to the Carolina Bay east of the roadway alignment; and a section of the bay east of the proposed R-2245 roadway alignment.

  Carolina Bays East of R-2245 (St. James Property)

  The Carolina Bay east of the proposed R-2245 roadway alignment, with the exception of existing platted lots on upland areas around the bay rim, a 300' wide animal corridor leading north to another new Carolina Bay, to also be acquired, with the exception of a small piece of upland. The delineated wetland of the Carolina Bay east will be restricted from development.

- Acquire two animal crossing easements. One approximately 300' wide connecting the two Carolina Bays, in addition to another 300' wide easement leading north from the Carolina Bay east of R-2245 to the new Bay. NCDOT has committed to provide $100,000 per

landowner to provide crossings under the private development roads within the preserved wildlife corridors.

- Provide full control of access from NC 211 to the Intracoastal Waterway, except at the following street access points: -L- Station 79+50 (Full Movement), -L- Station 191+45 (Right-in Right-out Only), and approximately -L- Station 151+55 (Right-in Right-out Only). NCDOT will redesign the western access point from -L- Station 79+50 to allow the landowner to connect to the access without incurring additional stream and wetland impacts. NCDOT will provide rationale for the western access. If this cannot be accomplished, this western access point will be eliminated.

  Maintain Control of Access by the following:

  1. The Control of Access on the NCDOT plans will be designated as "Special Control of Access" with a unique symbol, legend and note.
  2. A Memorandum of Understanding between NCDOT, USEPA, NCDENR, and FHWA will be executed. The memorandum will stipulate that any future break in the control of access would require the agreement of all the signatory parties.
  3. A special condition will be added to any USACE permit that would perpetually prohibit any future break in the control of access without modification of the permit.

Additional avoidance and minimization measures are attached to this concurrence form.

The Merger Team has concurred on this date of April 11, 2006 on the alternative commitments.

US Army Corps of Engineers

US Environmental Protection Agency

US Fish and Wildlife Service

National Marine Fisheries Service

NCDENR, Division of Water Quality

NCDENR, Division of Coastal Management

NCDENR, Division of Marine Fisheries

NC Wildlife Resources Commission

State Historic Preservation Office

Federal Highway Administration

NC Department of Transportation

Avoidance and Minimization Measures

Project-Specific Avoidance and Minimization Measures

Due to the large amount of wetlands within the study area, it is impossible to construct the proposed project without wetland impacts. Measures have been taken, however, to avoid and minimize these impacts to the maximum extent possible, while still effectively meeting the purpose of and need for the proposed project. Project-specific measures include the following items:

- The project right-of-way was set at 150 feet (46 meters) to avoid impacts to wetlands within the larger project corridor; and,

- The proposed alignment and resulting right-of-way was set within the corridor of the Preferred Alternative to avoid and minimize impacts.

The avoidance and minimization of potential ICIs from the proposed project were also considered during this phase of the planning process. These measures are listed below.

- Residential street access is precluded from the right-of-way of the proposed project to the planned development roads for Williamson and St. James properties. Access control would also be reflected by a continuous fence along the roadway. These measures aid in minimizing induced development along the project; and,

- The Phase II National Pollutant Discharge Elimination System (NPDES) stormwater program would be adopted and enforced by local governments for the area bound by NC 211, Sunset Harbor Road, the AIWW, and Beaver Dam Creek. The stormwater program mandates would be applied to new development within the specified area. (Brunswick County currently has a Stormwater Ordinance that it has adopted in anticipation of the Phase II NPDES regulations. This ordinance is included in the Brunswick County Commissioners' correspondence in FEIS Section 3.0.)

Avoidance and Minimization Measures for the Construction Phase

In addition to the measures above, the following avoidance and minimization procedures should be implemented during construction:

- Strict adherence to procedures contained in *Best Management Practices for Protection of Surface Waters* (NCDOT, 1997) and *Stream Crossing Guidelines for Anadromous Fish Passage* (NCDOT, 1999), as well as the NC Department of Environment and Natural Resources (NCDENR), Division of Land Resources, Land Quality Section's *North Carolina Erosion and Sediment Control Planning and Design Manual* (NCDENR, 1993) would aid in avoiding and minimizing impacts to water resources and aquatic communities;

- Native vegetation should be planted along roadsides to deter the spread of exotic and invasive species. The FHWA guidance handbook, *Roadside Use of Native Plants* (FHWA, 2002) provides information on roadside restoration and management;

- Implementing NMFS construction moratoriums and USFWS construction guidance can minimize direct impacts to essential fish habitat and primary nursery inhabitants and manatees. Table 2.7.1 contains these moratoriums;

TABLE 2.7.1
NMFS CONSTRUCTION MORATORIUMS
USFWS CONSTRUCTION GUIDANCE

SPECIES/TYPE	DATES	PRIMARY AGENCY
Sturgeon	February 1 – June 30	NMFS
Primary Nursery Areas	February 15 – September 30	NMFS/NCDMF
Manatee (in-water activities)	June – October	USFWS

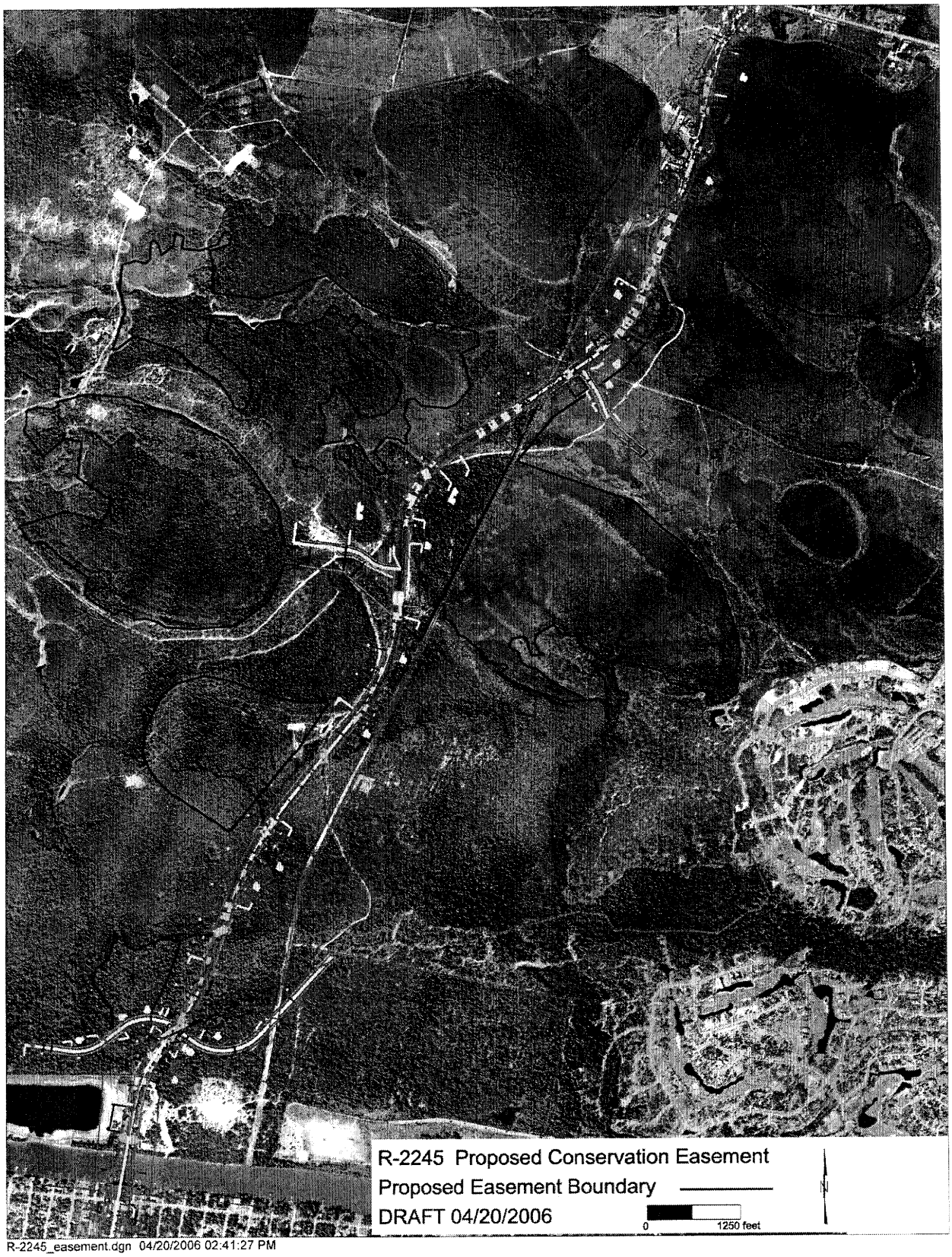
SOURCE: USACE, August 2002. http://www.saw.usace.army.mil/wetlands/Policies/MORATORIUMS8-02.pdf

- The use of a vacuum machine to clean up and transfer of spoil material generated during the installation of bridge piles can minimize impacts to wetlands, aquatic communities, and riparian buffers;

- Clearing and grubbing activities should be minimized to reduce impacts to riparian buffers;

- Judicious management of herbicides and pesticides; and,

- Litter and debris control.



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STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

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Draft Minutes of the Interagency Hydraulic Design Review
"4B" Meeting July 20, 2004

R-2445 (Second Bridge To Oak Island)
State Project 34407.1.1
New Route From SR 1104 (Beach Dr.) To NC 211
Brunswick County

Team Members: David Timpy, USACE (present)
Nikki Thompson, NCDWQ (present)
Gary Jordan-USFWS (not present)
Travis Wilson, NCWRC (present)
Chris Militscher-EPA (present)
Steve Sollod, NCDCM (present)
Bill Arrington, NCDCM (present)
Ron Schler, NMFS (not present)
Elizabeth Lusk, ONE (present)
Stacy Baldwin- PDEA (present)
Glenn Mumford- Roadway Design (present)

Participants: (See attached list)

Plan Sheet 4 & Big Davis Canal Bridge: Max Price explained that the beginning of the project was a typical beach road; i.e., water sheet flows off of the roadway and infiltrates into the sandy soils. Ditches are not typically utilized to convey water to established outfalls. Instead of ditches we propose to use drop inlets and "storm chambers" to provide temporary underground storage and infiltration of stormwater that usually occurs in the beach roadway shoulders and right of way.

This project will require CAMA Major Permit and so will therefore require a State Stormwater Permit. A pre-application consultation with regional DWQ staff will be conducted prior to final Hydraulic design and the 4C Permit Drawing Review meeting.

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RALEIGH NC

There are sliver fill areas in the coastal marsh wetlands left and right of –L- Sta. 17+00 and 20+00 (+/-) with impacts less than one acre (0.4 acres +/-). These impacts were created when the proposed grade across the Davis Canal was changed in order to drain bridge deck runoff to the north and not to the south as shown on the 25% roadway plans. Placement of infiltration basins (or other BMP devices) to the south would be impractical due to the above mentioned wetlands and would result in greater impacts. At the northern end of the bridge, it is possible to treat the stormwater runoff without wetland impacts.

A proposed location for "storm chambers" for infiltrating the deck stormwater is shown on plan sheet 5. This design will be coordinated with regional DWQ staff and finalized prior to the 4C meeting.

The question was raised if "box beams" could be used for the bridge's superstructure rather than the proposed 21" cored slabs. Box beams would allow longer spans and a reduction in the number of interior bents from four to two with the subsequent reduction in fewer drilled shaft bents. NCDOT Structure Design staff answered that box beams would necessitate raising the grade in order to preserve the vertical clearance of the existing bridge. Raising the grade would result in additional impacts to the coastal marsh. Due to additional impacts to the coastal marsh, the decision was made to use a cored slab bridge and not box beams.

NCDOT Geotechnical Unit staff stated that based on geology, drilled shaft bents would probably be the required foundation type. It was also stated that the temporary work bridges could be supported by pile bents.

Temporary work bridges will be required for construction of the new bridge. Two work bridges will be required in order to maintain a navigable channel during construction. Temporary piles will support the work bridges. The elevation and location of the work bridges will be determined during final design and presented at the 4C meeting.

Plan Sheet 5: Treatment for bridge deck storm water is envisioned as the "storm chambers" shown on the right side of the road just north of the bridge. This is an urbanized area and use of the underground infiltration storm chambers appear the more appropriate method of treating the storm water rather than an open infiltration basin.

Plan Sheet 6: Upon approval by regional DWQ staff, urbanized areas will utilize the same drop inlet and "storm chamber" infiltration concept discussed on plan sheet 4.

Plan Sheet 7 & Intracoastal Waterway Bridge: Max explained the area on the southern end of the Intracoastal Waterway (ICW) bridge has room for stormwater management. The Public Hearing map shows expected property takes for Right of Way acquisition and these parcels should provide adequate room for some type of stormwater BMP device. The design and treatment method on the northern and southern end of the Intracoastal Bridge will be coordinated with regional DWQ staff and finalized prior to the 4C meeting.

Bill Arrington of the North Carolina Division of Coastal Management requested the design maintain access to the gravel parking area and board walkway shown under the south end of the proposed ICW bridge. According to the current Bridge Survey Report, the design provides approximately 32' of vertical clearance over East Yacht Drive. No one expressed any design concerns with maintaining this access.

Dave Timpy of the US Army Corps of Engineers mentioned there is an on-going "land swap" deal in progress, involving the land developers on the north east end of the bridge and the Corps of Engineers. He couldn't say what the current status of this swap might be or how it could affect the project.

Construction of the bridge was discussed. Max Price stated barges and work bridges would probably be used for the construction. Also discussed was the use of barges that would be allowed to settle on the bottom during low tides. The elevation and location of the work bridges will be determined during final design and presented at the 4C meeting.

Max talked about the overall bridge length as shown in the previous Bridge Survey Report, dated April 3, 1998. In it, there were proposed bridge spans over the dredged spoil area for a length of greater than 250'. There is no hydraulic reason for the additional span lengths since the 100 year flood elevation is well below the elevation of the dredged spoils. Research by the Hydraulics Unit has found no evidence for the need for the additional spans. Keith Lewis of Stantec responded that sometime in the past, "someone in NCDOT wanted the bridge to cross over a portion of the dredged spoils." However, he didn't remember who it was or if there was a given reason. Nobody in the meeting expressed objection to shortening the bridge, however, coordination with the Corps of Engineers is required to determine if the additional bridge length was required for access to the spoil area.

Some members of the 4B meeting questioned if shortening the bridge would allow for shifting the access point towards the south and out of the wetland area. Glenn Mumford, NCDOT Roadway Project Engineer, showed a larger scale plan with additional wetland areas depicted. He explained the bridge probably couldn't be shorted enough to allow shifting the access road without impacting a greater area of wetlands. Complicating the design are the requirements for guardrail and tapers for a turn lane which combine to require significant distance between the end of the bridge and the access road.

John Hennessy asked if there is a moratorium on working in the water. No answer was given and John requested the answer be available for the 4C meeting.

(Subsequent to the 4B meeting and during the compilation of these minutes, reference to moratoriums was found on the "green sheets" of the Final EIS – Ed.)

A question was raised about utilities on the bridge. Max responded it is too early in the design to know.

Plan Sheet 8: Max Price explained the general roadway typical section from the northern end of the ICW bridge to the northern project terminus: Four lanes divided with a mounded grass

median and open shoulders on the outside. In tangent sections, roadway storm water would sheetflow down the grassed fill slopes, but in curves, runoff would be collected by catch basins in the median and piped to the roadway toe of slope.

Currently, the plans show the standard NCDOT rip rap outlet pad at all catch basin outlet pipes. The 2 and 10 year storm outlet velocities will be evaluated to determine the possible need for preformed scour holes. A request was made by DWQ that outlets near wetlands discharge with non-erosive velocities. The final design will address this request.

Plan Sheet 9: Max stated the access point design most likely will require changing the drainage as presently shown near the double 42" pipes.

There was discussion on the "stream" conveyed by the double 42" pipes. It shows as a "blue line" on the USGS quad map, but was not delineated as a jurisdictional stream.

Although the NCDOT standard rip rap is shown at the downstream end of the 42"pipes, rip rap will not be used unless outlet velocity dictates its use.

There was much discussion about the location, and impacts associated with the access point. There may need to be further coordination between the agencies, planning and design prior to the final design and the 4C meeting.

John Hennessy asked that all wetland information for the access points be made available for the 4C meeting.

Plan Sheet 10: The conceptual drainage plans presently show double 48" pipes to convey the "blue line" stream as shown on the USGS quad map. Mason Herndon, NCDOT Division 3 Environmental Officer, stated this is the only stream that was identified as a jurisdictional stream. It was classified as "intermittant."

It was emphasized that all fill slopes within the wetlands should be 3:1.

Plan Sheet 11: The need for rip rap at the pipe outlets will be verified once outlet velocities are checked.

Plan Sheet 12: The plans currently show a 42" pipe laid in the existing dirt logging road, maintaining the present drainage pattern. While this doesn't match the USGS quad, which shows a blue line crossing the dirt road, it is the current drainage pattern. Discussion centered on the possibility of reconnecting the two wetland areas. NCDOT will investigate if it is feasible. One possible problem would be the need to raise the roadway grade to allow placement of an adequately sized pipe. As shown, the pipe is down low in the old logging road, but reconnecting the two wetland areas would require a pipe at a higher elevation. Raising the roadway grade will impact more wetland due to the larger footprint. If the agencies see the need for a field review of this site someone from the Hydraulics Unit would like to attend.

There was discussion among the agencies that there might be a chance for on-site mitigation credits if these wetlands are reconnected. How the credits would be measured or accounted for was not determined at this time.

Plan Sheet 13: Travis Wilson (North Carolina Wildlife Resource Commission), discussed providing a small animal passage through the roadway embankment between the two Carolina Bays. The Hydraulics Unit will coordinate the size and location of the of the passage with NCWRC and USWFS prior to final design and the 4C meeting.

The status of NCDOT purchasing the two Carolina Bays was discussed. Brett Fuelner and Elizabeth Lusk of the Office of Natural Environment (ONE) replied that right of way acquisition won't begin until April or May of 2005. It was commented on that the process of acquiring the Carolina Bays could possibly begin prior to the project Right of Way acquisition. DWQ stated that they may not issue the 401 Certification if the bays are not purchased.

Plan Sheet 14: No Comments

Plan Sheet 15: Nicole Thomson requested the catch basin outlets be routed to discharge in the wetlands rather than on the upland side of the road. She explained the wetlands performed as natural filters for the stormwater running from the catch basins. She did state the outlet velocities would need to be non-erosive. Dave Timpy disagreed and requested the pipes not outlet into the wetlands. After reviewing the quad map, Max mentioned that a wetland or Carolina Bay is on the other side of the road and that consideration will be given to the above in the final design phase.

A suggestion was made to place a note on the plans indicating where the two large Carolina Bays are located and Hydraulics will do this.

Plan Sheet 16: Discussion focused on whether or not the equalizer pipes should be buried. It was decided that they should they be buried since they are in the wetlands. A note will be added to the plans so that it is clear to construction personnel that the pipes will be buried.

Plan Sheet 17: There was much discussion about the location, and impacts associated with the access point. There may need to be further coordination between the agencies, planning and design prior to the final design and the 4C meeting.

Plan Sheet 18: No Comments.

Plan Sheet 19: No Comments.

Plan Sheet 20: Hydraulics will field investigate the stream or ditch currently shown on the plans, between stations 233+00 Lt and 235+50 Lt (+/-) to determine if the drainage design requires changes.

Plan Sheets 21, 22, and 23: Max explained the existing drainage along the south side of NC-211: Ditches currently provide drainage, flowing to the west from approximately station 22+00

and flowing to the east from that same high point in the ditch. Flows to the east go to the box culvert under NC-211 and then flow north into "River Swamp." The proposed drainage design maintains the same design philosophy: lateral ditches alongside NC-211 that are approximately the same width, depth, and slope as the existing ditches. These ditches are limited in depth by the pipes and culverts they must tie to. It was determined that possible impacts to the wetlands as a result of moving the ditches should be evaluated during the final design process.

The presence of underground storage tanks on the Midway Trading Post property, located at the intersection of SR 1500 and NC-211 was discussed. Hydraulics said that while it is not shown on the half-sized plan sheets, channelization curb can be used in this area instead of roadway ditches to avoid excavation on this property outside of the existing right of way.

The existing box culvert shown on plan sheet 23 will be retained and extended.

No other comments were provided and the meeting was terminated.

ACTION ITEMS

- Hydraulics will review the drainage design and stormwater management plan with regional DWQ staff prior to the 4C meeting.
- Hydraulics will check velocities on pipe outlets near wetland areas to see if rip rap can be omitted where practical. Use of preformed scour holes will be evaluated.
- Hydraulics will check the constraints involved in connecting the wetland areas on both sides of the roadway at the existing soil road crossing on sheet 12. Required fill height over the proposed pipe and the resulting additional wetland impacts are a concern.
- Hydraulics, NCWRC, and USFWS will coordinate as to the type/size of an animal passage structure between the Carolina Bays located on sheets 13 through 15.
- Equalizer pipes will be buried in jurisdictional surface waters and wetlands.
- Roadway Design will investigate the use of channelization curb at the Midway Trading Post property.
- Roadway Design will address providing access to the gravel parking area and board walkway under the proposed ICW bridge.
- NCDOT will proceed with attempt to acquire the two large Carolina Bays located between – L- Sta. 120+50 Lt and 190+50 Rt.
- PEDA will coordinate with USACE to determine the status and affect of the "land swap" deal and southern access point involving land developers and the Corps of Engineers on the northeast end of the ICW bridge.
- Hydraulics will coordinate with USACE in determining if the area below the north end of the ICW bridge is required for spoil disposal equipment to travel from one side of the roadway to the other .
- ONE will coordinate delineation of all wetlands near access points prior to the 4C meeting.

R-2245
SECOND BRIDGE TO OAK ISLAND
MERGER PROCESS 4b MEETING
WEDNESDAY 21 JUL 04
Sign in Sheet

NAME	ORGANIZATION	PHONE NUMBER
RAY LOVINGGOOD	NCDOT HYDRAULICS	250.4100
MAX PRICE	" "	250-4100
Omar Aziz	" Str Design	250-4066
Brett Fedlner	PDEA - ONE	715-1988
Elizabeth Lusk	"	715-1444
David Smith	NCDOT Preconst	733-9425
David Chang	DOT-Hydraulics	250-4100
Emily Murray	NCDOT Str. Design	250-4068
Jamey Batts	Geotechnical Eng. Unit	~~250~~ 662-4710
David Teague	Geotechnical Eng. Unit	662-4710
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STACY BALDWIN	PDEA	733-7844 x 264
Khalid Al-AXADAR	PDEA	733-7844 x 267
Jon Weatherbee	Roadway Design	250-4016
GLENN MUMFORD	ROADWAY DESIGN	250-4016
Lisa W. Shapiro	Roadway Design	250-4016
Ron Allen	Roadway Design	250-4016
Joe Blair	DIV. 3	910-251-5724

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Draft Minutes of the Interagency Permit Drawings Review
"4C" Meeting April 20, 2005

R-2245 (Second Bridge To Oak Island)
State Project 34407.1.1
New Route From SR 1104 (Beach Dr.) To NC 211
Brunswick County

Team Members: David Timpy, USACE (present)
Gary Jordan, USFWS (present)
Travis Wilson, NCWRC (present)
Brian Wrenn, NCDWQ (present)
Chris Militscher, EPA (present)
Rob Ayers, FHWA (not present)
Bill Arrington, NCDCM (present)
Steve Sollod, NCDCM (present)
Ron Sechler, NMFS (not present)
Stacy Baldwin, PDEA (present)
Mason Herndon, Divison 3 (present)
Joe Blair, Division 3 (present)
Glenn Mumford- Roadway Design (present)
Lonnie Brooks, Structures (present)
Elizabeth Lusk, ONE (not present)

Participants: (See attached list)

General Comments:

- Dave Timpy requested an explanation for the use of rip rap as energy dissipaters in the wetlands. Max Price explained that for the cross pipes, of which there are four on the project, the outlet velocities for the 10 year storm events will be much greater than non-erosive velocities and the receiving ground structure could not withstand the high velocity. The swales where the cross pipes are located are not well defined. They have no banks, but consist of large, low areas with flat side slopes. The lack of a defined channel means the tail

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water depth is relatively low. As water flows through the pipe, it may begin at the upstream face flowing full, then the water level will drop to the "normal depth" within the pipe. As the depth drops, the velocity increases and with the quantity of flow these pipes are anticipated to convey, the velocities are high. The low tail water contributes to the problem. When the water depth in the pipe is higher than the tailwater, the velocity coming out of the pipe will be high; there is no high tailwater to buffer the flow. But with use of a rip rap energy dissipater pad, the Q2 and Q10 velocities will be non-erosive. Travis Wilson asked if the addition of parallel pipes would aid in reducing the outlet velocities to something less than an erosive velocity. Max Price answered that not a reasonable number of additional pipes would sufficiently reduce the outlet velocities to be non-erosive.

- Chris Militscher requested Q2 and Q10 flows and velocities, for pipes discharging to wetlands, be provided with the permit.

- Erosion Control devices in wetland impact areas should be described in the permit documentation. The items they will use can be placed within the mechanized cleared areas that are already delineated on the permit drawings. The impact of the devices are not to be calculated nor tabulated since the areas have already been accounted for by the mechanized clearing.

- Dave Timpy stated there is a difference between the recorded impact to wetlands in the FEIS and the NCDOT Wetland Permit Impact Summary. The current impact as determined by NCDOT is 17.81 acres (Permanent Fill In Wetlands) while the FEIS shows only 16.1 acres. Joseph Qubain of PDEA will obtain information from Stantec and coordinate with the Hydraulics Unit so site by site comparisons can be made.

- Dave Timpy requested a description of the bridge construction be placed in the written documentation portion of the permit package. The construction of the Intracoastal Waterway could effect navigation along the ICWW. He also stated a description of construction for the Davis Canal bridge also be included.

- Dave Timpy requested that the Intracoastal Waterway centerline, as supplied by the Corps of Engineers, appear on the both the plans and permit drawings.

- Dave Timpy requested NCDOT provide the community type for wetland and stream impacts.

- Bill Arrington asked NCDOT to add "Coastal Wetlands" to the Wetland Permit Impact Summary Sheets. Sites 1, 2, and 4 are the only locations of coastal wetlands.

- ONE will include a note in the permit application that rip rap at the ends of pipes in wetlands will be considered as permanent fill in wetlands.

- Max Price asked if there would be any objections to audio tape future 4c meetings. There were no objections.

Site Maps: (The 8.5in x 11in site maps created with the USGS quad maps used as a background): Dave Timpy requested a north arrow be placed on the four sheets.

Applicable Permit Plan Sheets: Dave Timpy requested tributaries crossed by the project be named and if the trib is unnamed, show on the plans the name of the first named tributary downstream.

Plan Sheet 4: Dave Timpy requested the overall length and elevation of the existing bridge over the Davis Canal be provided on either the permit drawings or the narrative.

For Sites 1 and 2, change the impact from mechanized clearing, which used a 10' offset width from the toe of slope, to "Hand Clearing". Decrease the offset from 10' to 5', as measured from the toe of slope.

Max Price requested clarification on the impact of keying in rip rap. The question: How is it measured? Should it be measured as an excavation in wetland *and* a permanent fill in wetland? Or, should the entire area, including the area keyed in, be tabulated as a permanent fill in wetland? The answer: Tabulate the final configuration. In this case, provide an area of fill in the wetland. Include the area keyed in.

Plan Sheet 7: Max Price explained relocating of the existing timber bulkhead on the southern bank of the Intracoastal Waterway will be required, due to the interference of the complex pile group with the bulkhead. The new bulkhead will be shown in the final permit drawings in plan and cross section.

Plan Sheets 8-9: Dave Timpy requested Max Price to check and verify the area of impact for Site 6. Dave calculates the area near to 0.8 acres as opposed to the 1.321 acres shown in the tables.

There was much discussion between several parties about the location of the access roads and whether or not they were to be "right in, right out" designs. It was resolved the design as shown on the plans met the commitments. The southern access point provides a full at-grade intersection with access points on both sides of the project route. The northern access point, located on the east side of the alignment, uses a "right in, right out" design. Two turn-around points are provided for this access point which will allow access for emergency vehicles while maintaining the "right in, right out" design.

Also, Allen Pope stated that DOT will not build a road within the access point areas. If a developer builds a road within the DOT Right of Way, it will be at his expense and by an encroachment permit.

Plan Sheet 12: Max Price discussed the issue of reconnecting the two wetland areas which are now divided by a logging road. Max stated it would be unfeasible to rejoin the two wetlands. The wetland on the eastern side of the road alignment is lower than the one on the western side, but the USGS quad map shows the water should flow from the east to the west. Recreating the

flow pattern would require filling the eastern side, thus burying the wetland. It would also disrupt the existing drainage pattern, which has been well established over a number of years.

Small animal passage pipe installation was discussed and it was agreed to backfill the pipes as they are installed. Backfill with soil to a depth of one foot throughout the entire length of the pipes. Joe Blair requested the plans and permit drawings include a note, in large type, stating this requirement.

Plan Sheet 16: Travis Wilson requested changing the equalizer pipe at Sta 179+00 to a small animal passage pipe.

Plan Sheet 17: Chris Militscher requested an equalizer pipe be placed within the wetland at Site 22.

Plan Sheet 18: Travis Wilson requested the equalizer pipes at stations 206+00 and 209+90 be relabeled as "Small Animal Pipe." As with the other small animal pipes, label it to be backfilled with one foot of soil and buried one foot.

Dave Timpy requested a reference note describing the extents of the wetlands.

Plan Sheet 19: For Sites 26 and 28, change the notation from "Mechanized Clearing" to "Hand Clearing."

Plan Sheet 20: Dave Timpy and Chris Militscher requested an additional equalizer pipe reconnect Sites 29 and 30.

Chris asked if the DI at station 233+00 could be piped to an upland area rather than to the wetland as currently designed. Ray Lovinggood will investigate and make the change, if possible.

Plan Sheet 21: There was much discussion about the drawdown effect to the wetland on the right side of –Y7- and the left side of –L- at Site 32. While it appears the existing ditch along the south (right) side of-Y7- (NC-211) has no drawdown effect, the team members agreed to determine the impact caused by the proposed project according to Dr. Wayne Skagg's methodology and account for the drained wetlands in the permit summary table.

Plan Sheet 23: The culvert shown on the permit drawings and roadway plan sheets is not the final design. After the permit drawings were mailed out, additional work ensued on designing a replacement culvert that can be built with staged construction. The staged construction will permit continuous two-way traffic through the project area. The final design will show a culvert with a longer length than what was shown on the drawings at this meeting. The final permit drawings will reflect the new culvert design and its impacts.

Carolina Bays, 10' conservation easement, and Animal Passage Easements

NCDOT is working on purchasing the two Carolina Bays. It is the opinion of the North Carolina Attorney's General Office that for the bays to be acquired by NCDOT, they must be purchased

and not condemned. In order to purchase, the current owner must be a willing seller and the property must have a "fair market" value. The 200' buffer for the Carolina Bays would be pursued as an "incidental purchase" to the Carolina Bays.

There was much discussion about the ability to condemn or not condemn. According to Fred Lamar of the AG office, condemnation for mitigation has not been done before. NCDOT does not have the authority. NCDOT can not condemn for offsite mitigation and this aspect of the project is similar to offsite mitigation. Nikki Thomson and Dave Timpy stated it was not mitigation but "avoidance and minimization." Representatives from NCDOT countered stating the alignment did avoid the bays and acquiring them would be for mitigation.

A question was asked if NCDOT would be allowed credit for the bays and the answer was yes, at a ratio of 10:1.

Then, Robert Hanson stated if there is a willing seller, a fair market price, and NCDOT is allowed credits, NCDOT will purchase the bays. He asked Nikki Thomson if it would be acceptable to purchase the bays if the 200' buffer around the exterior of the bays could not be bought and the answer was "yes."

Nikki Thomson clearly stated that if the bays are not purchased, there will be no permits issued for the project. Robert Hanson stated the verbiage in the concurrence points and Record of Decision was different and did not state the purchase was mandatory, but that NCDOT "...will make every effort to acquire the two Carolina bays on each side of the road plus 200 feet around each bay..."

Fred Lamar discussed the 10' conservation easement. He stated the legal opinion is that NCDOT cannot purchase this land outside of the roadway right of way then transfer the property to a third party. Options for maintaining an unbroken right of way along the project were presented by Art McMillan. They are:

- Label the roadway plans (and permit drawings) with a special label for the Right of Way line / Controlled Access lines.
- Make a provision of the permit that states any request to break the C/A fence and install a new access road will be denied by NCDOT.
- Link the requirements for refusal of all encroachment agreements with permits.
- Provide a Memorandum of Agreement (MOA) between NCDOT, DENR, USACE, and DCM.

Subsequent from the meeting, the following note has been added to the plans and is in the review process as these minutes are being prepared.

NO REVISIONS CAN BE MADE TO THE CONTROL OF ACCESS WITHOUT APPROVAL OF NCDOT, DENR, AND USACE.

Chris Militscher and others requested written proposals for the options.

For the animal crossing easements, again, Fred Lamar and Robert Hanson stated NCDOT may not be able to fulfill this comment due to the policy. It wasn't clear if it was a policy or a legal issue. What may be possible is to tie the permit to the need for the animal crossing easement. Fred didn't have an answer if condemnation was available to acquire the land. Travis Wilson will write the permit conditions requiring granting of the permit will be tied to the purchase of the animal access easements. He stated that if the bays can't be purchased, then there would be no need for the animal access easements.

The last item discussed during the meeting was a contingency plan. If the Carolina bays can't be bought, or if the 200' easement around the bays can't be purchased, or the animal access easement can't be bought, what is the contingency plan? It was noted the Record of Decision does not have a contingency plan and Alternative "B", the selected alternative, is the only option available.

1/2

HYDRAULIC DESIGN (4B) / PERMIT DRAWINGS (4C) REVIEW

Location: Location & Survey Conference Room, DOT Century Center

TIP NO: R-2245 **DATE:** 20 APR 05

COUNTY: BRUNSWICK **ROUTE:**

NAME	AGENCY/ UNIT	PHONE
Stacy Baldwin	PDEA	733-7844 x2604
Earlene Thomas	Preconstruction	715-0797
Lonnie I. Brooks	NCDOT - Structure Design	919 250 4049
Joe Blair	Div 3	910 251 5724
Joseph Qubein	PDEA	733-7844 x209
J. Todd Kennedy	PDEA/ONE	715-1458
Allen Pope	Div. 3 DOT	(910) 251-5724
Mike Robinson	Const Unit	919 522 4337
Mason Herndon	Div 3 DEO	910 251-5724
Tatia White	Roadway	919 250-4016
Jeff Walston	Roadside Env.	733-3920
Mark Staley	" "	" "
Lisa W. Shapiro	Roadway Design	919-250-4014
Glenn Mumford	Roadway Design	(919) 250-4016
Brent Fenn	DOT ONE	715-1488
CHRIS MILITSCHER	USEPA - Raleigh	856-4206
Christina Breen	NCDWQ	733 9004

2/2

(CONTINUED) TIP NO: R-2245

NAME	AGENCY/ UNIT	PHONE NO
GEOFFREY HOLMES	DOT - STRUCTURES	250-4051
Emily Murray	DOT - Structure Design	250-9067
Omar Azizi	" " "	250-4066
ART MCMICHAEL	DOT HQB	250 9001
LeiLani Paugh	NCDOT PDEA ONE	715-1457
RAY LOVINGGOOD	NCDOT HYDRAULICS	250.4100
B. II ZEAMAN	NCDOT HYDRAULICS	250-4100
DAVID CHANG	" "	"
Scott Conklin	NCDOT - AG's office	733-3316
BILL Arrington	NC DCM	252-528-0019
STEVE SOLLOD	NC DCM	919-733-2293 x230
Gary Jordan	USFWS	919-856-4520 x. 32
MAX [illegible]		
Rob Hanson	NCDOT PDEA	733-7844 x 226
FRED LAMAR	NCDOT TPAU SECTION	733-3316
Brian Wrenn	DWQ	733-5715
DAVE TIMPA	USACE	919-251-4634
Travis Wilson	NCWRC	919-528-9886
NIKKI THOMPSON	NCDWQ	919 715 3415

RECEIVED
MAR 6 2006
DIVISION OF HIGHWAYS
PDEA-OFFICE OF NATURAL ENVIRONMENT

Ecosystem Enhancement PROGRAM

February 28, 2006

Mr. Gregory J. Thorpe, Ph.D.
Environmental Management Director
North Carolina Department of Transportation, PDEA Branch
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Dear Dr. Thorpe:

Subject: EEP Mitigation Acceptance Letter:

R-2245, Second Bridge to Oak Island, Brunswick County

The purpose of this letter is to notify you that the Ecosystem Enhancement Program (EEP) will provide the required non-riverine and coastal marsh wetland and stream mitigation for the subject project. Based on the information supplied by you in letter dated January 17, 2006, the impacts are located in CU 03040207 of the Lumber River Basin of the Southern Outer Coastal Plain Eco-region (SOCP), and are as follows:

Non-Riverine Wetlands:	21.436 acres
Coastal Marsh:	0.279 acre
Stream:	34 feet

Compensatory wetland and stream mitigation for this project will be provided in accordance with the Memorandum of Agreement between the North Carolina Department of Environment and Natural Resources, the North Carolina Department of Transportation, and the U. S. Army Corps of Engineers, signed on July 22, 2003 (Tri-Party MOA). EEP commits to implementing sufficient compensatory wetland and stream mitigation to offset the impacts with this project as previously listed by the end of the MOA Year in which this project is permitted, in accordance with Section X of the Tri-Party MOA. If the above referenced impact amounts are revised, then this mitigation acceptance letter will no longer be valid and a new mitigation acceptance letter will be required from EEP.

If you have any questions or need additional information, please contact Ms. Beth Harmon at 919-715-1929.

Sincerely,

William D. Gilmore, P.E.
EEP Director

cc: Mr. Richard Spencer, USACE-Wilmington
Mr. John Hennessy, Division of Water Quality, Wetlands/401 Unit
File: R-2245

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

March 10, 2006

Commander, Fifth Coast Guard District (obr)
LANTAREA
Bridge Administration
Federal Building
431 Crawford Street
Portsmouth, VA 23704-5004

Attn: Mr. Waverly Gregory
Chief, Bridge Administration

SUBJECT: Brunswick County, Construction of a Second Bridge to Oak Island, WBS Number 34407.1.1, State Project No. 8.1570601, Federal Aid Nos. STP-1105 (6), TIP R-2245, Division 3.

Dear Mr. Gregory:

Application is hereby made by the North Carolina Department of Transportation (NCDOT) for approval by the Commandant, U.S. Coast Guard, of the location and plans to construct a new roadway on new location in Brunswick County, known as the second bridge to Oak Island. The proposed project starts at SR 1104 (Beach Drive) on Oak Island and will continue to NC 211, west of Southport. The proposed project consists of constructing a four lane median divided facility on 150 feet (46 meters) of right-of-way with controlled access. The project includes replacement of the existing Bridge No. 206 over Davis Canal (Davis Creek) on Beach Drive and construction of a new bridge over the Atlantic Intracoastal Waterway. The project length is approximately 4.5 miles.

Pursuant to the project commitment included in the Final Environmental Impact Statement (FEIS), the vertical clearance of the new bridge over the Atlantic Intracoastal Waterway at mean high water level will be a minimum of 65 feet and the horizontal clearance will be a minimum of 90 feet. A minimum 140 feet navigation opening, without using a fender system for vessel impact, will be provided 70 feet from the channel centerline on each side. The proposed bridge will be designed and constructed so as to not interfere with the operation and maintenance of the navigation channel in the Atlantic Intracoastal Waterway. Channel centerline coordinates have been obtained from the USACE. The proposed bridge will be designed for vessel impact.

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS
1548 MAIL SERVICE CENTER
RALEIGH NC 27699-1548

TELEPHONE: 919-733-3141
FAX: 919-733-9794
WEBSITE: WWW.DOH.DOT.STATE.NC.US

LOCATION:
TRANSPORTATION BUILDING
1 SOUTH WILMINGTON STREET
RALEIGH NC

Navigational lighting will be provided. The NCDOT requested Advance Approval for the proposed replacement of Bridge No. 206 over Davis Canal (Creek) in a letter to the U.S. Coast Guard dated August 30, 2005. A copy of this request letter is enclosed with this permit application.

Legal authority for the bridges is found in the General Bridge Act of 1946. Federal funds will be utilized for this project. However, the U.S. Army Corps of Engineers must approve this project under Section 404 of the Clean Water Act and Section 10 of the Rivers and Harbors Act. The N.C. Division of Water Quality must approve this project under Section 401 of the Clean Water Act. The NCDOT is preparing and will submit a Joint Permit Application for both State and Federal Permits.

The NCDOT is also required to obtain a permit from the N.C. Division of Coastal Management (NCDCM) for major development in areas of environmental concern (AECs). It is anticipated that a formal CZM consistency statement is not required from the NCDCM since their position on consistency will be part of the NCDCM's Coastal Area Management Act (CAMA) Major Development Permit. Copies of all appropriate federal and state permits will be forwarded to your office once they are obtained.

The NCDOT analyzed the potential environmental impacts of the project in an FEIS that was signed by the Federal Highway Administration (FHWA) on April 30, 2004 and Record of Decision that was signed on October 20, 2004. The FHWA has determined that this project will not have a significant effect on the human environment. The environmental impacts of the project are listed on pages 2-17 through 2-25 of the FEIS. The names and addresses of the adjacent property owners are included with this application. Also, please find enclosed four originals of the U.S. Coast Guard drawings for the project.

Please initiate review of the proposed project for authorization under an U.S. Coast Guard Permit. It is requested that any correspondence from your office regarding this project include the NCDOT TIP Number (R-2245). Should you have any questions regarding this information, please contact Mr. Brett Feulner at 919-715-1488.

Sincerely,

for Gregory J. Thorpe, Ph.D., Environmental Management Director
Project Development and Environmental Analysis Branch

Encl.: (1) Four copies of a vicinity map and drawings of the bridge.
(2) One copy of the Environmental Impact Statement and Record of Decision.
(3) Addresses of the adjacent property owners.
(4) One copy of the March 26, 2002 letter from the U.S. Coast Guard regarding the proposed vertical clearance of the bridge and responses from NCDOT.
(5) One copy of the request dated August 30, 2005 for Advance Approval for the proposed replacement of Bridge No. 206 over Davis Canal (Creek)

cc list:
w/o attachment
Mr. John Hennessy, NCDWQ
Mr. Travis Wilson, NCWRC
Ms. Becky Fox, USEPA – Whittier, NC
Mr. Ronald Mikulak, USEPA – Atlanta, GA
Mr. Clarence W. Coleman, P.E., FHWA
Mr. Gary Jordan, USFWS
Mr. Ron Sechler, NMFS
Mr. Michael Street, NCDMF
Mr. Steve Sollod, NCDCM
Mr. Bill Arrington, NCDCM
Dr. David Chang, P.E., Hydraulics
Mr. Mark Staley, Roadside Environmental
Mr. Greg Perfetti, P.E., Structure Design
Mr. H. Allen Pope, P.E., Division 3 Engineer
Mr. Mason Herndon, Division 3 Environmental Officer
Mr. Jay Bennett, P.E., Roadway Design
Mr. Majed Alghandour, P. E., Programming and TIP
Mr. Art McMillan, P.E., Highway Design
Mr. Scott McLendon, USACE, Wilmington
Mr. Joseph Qubain, P.E., PDEA
Mr. Carl Goode, PE, Human Environment Unit Head

United States Department of the Interior

FISH AND WILDLIFE SERVICE
Raleigh Field Office
Post Office Box 33726
Raleigh, North Carolina 27636-3726

November 19, 2003

Brett Feulner
North Carolina Department of Transportation
Project Development and Environmental Analysis
1548 Mail Service Center
Raleigh, North Carolina 27699-1548

Dear Mr. Feulner:

This letter is in response to your letter of November 10, 2003 which provided the U.S. Fish and Wildlife Service (Service) with the biological conclusions of the North Carolina Department of Transportation (NCDOT) for 15 federally threatened and endangered species for the proposed second bridge to Oak Island from SR 1104 (Beach Drive) to NC 211, Brunswick County, North Carolina (TIP No. R-2245). The 15 federally protected species are as follows:

Common Name	**Scientific Name**	**Biological Conclusion**
Eastern cougar	*Puma concolor couguar*	No effect
West Indian manatee	*Trichechus manatus*	MA-NLAA*
Wood stork	*Mycteria americana*	MA-NLAA
Piping plover	*Charadrius melodus*	No effect
Bald eagle	*Haliaeetus leucocephalus*	MA-NLAA
Red-cockaded woodpecker	*Picoides borealis*	MA-NLAA
American alligator	*Alligator mississippiensis*	N/A
Loggerhead sea turtle	*Caretta caretta*	MA-NLAA
Green sea turtle	*Chelonia mydas*	MA-NLAA
Leatherback sea turtle	*Dermochelys coriacea*	MA-NLAA
Kemp's ridley sea turtle	*Lepidochelys kempii*	MA-NLAA
Shortnose sturgeon	*Acipenser brevirostrum*	MA-NLAA

Cooley's meadowrue	*Thalictrum cooleyi*	MA-NLAA
Seabeach amaranth	*Amaranthus pumilus*	No effect
Rough-leaved loosestrife	*Lysimachia asperulaefolia*	MA-NLAA

*MA-NLAA - May affect, not likely to adversely affect

These comments are provided in accordance with section 7 of the Endangered Species Act (ESA) of 1973, as amended (16 U.S.C. 1531-1543).

Due to the absence of large tracts of habitat, and given the likelihood that the species has been extirpated from the area, the Service concurs that the project will have no effect on the eastern cougar.

Assuming adherence to the **Precautionary Guidelines for General Construction in Areas Which May Be Used by the West Indian Manatee in North Carolina**, the Service concurs that the project may affect, but is not likely to adversely affect the West Indian manatee.

Given the migratory nature and high mobility of the species, the Service concurs that the project may affect, but is not likely to adversely affect the wood stork.

Due to the lack of habitat, the Service concurs that the project will have no effect on the piping plover.

Based on the negative results of surveys and the urbanization of areas adjacent to potential habitat, the Service concurs that the project may affect, but is not likely to adversely affect the bald eagle.

A 1996 survey for red-cockaded woodpeckers (RCW) identified RCW activity near the project corridor. A 2000 survey revealed one active cavity tree near the corridor. A foraging analysis indicated that foraging habitat within a half mile radius of the active tree was insufficient to support an RCW colony. During aerial and ground surveys conducted June 23-25, 2003, no active cavities, abandoned cavities or active start holes were identified. The active tree previously identified in 2000 had been removed due to residential development. Based on the recent negative survey results, the Service concurs that the project may affect, but is not likely to adversely affect the red-cockaded woodpecker.

The American alligator is listed as threatened due to similarity of appearance and thus is not subject to section 7 consultation.

Due to the lack of nesting habitat within the project area, the Service concurs that the project may affect, but is not likely to adversely affect loggerhead, green, leatherback and Kemp's ridley sea turtles. However, please note that this concurrence only applies to the nesting habitat for sea turtles. The Service has jurisdiction for sea turtles only where they occur on land (i.e. nesting beaches). The National Marine Fisheries Service (NMFS) has jurisdiction for sea turtles when

they occur in water. Since potential habitat occurs for sea turtles in the Atlantic Intracoastal Waterway, the NMFS should be consulted.

Since the NMFS has complete jurisdiction for the shortnose sturgeon, the Service will not comment on this species.

Due to the lack of habitat, the Service concurs that the project will have no effect on seabeach amaranth.

Due to the negative results of plant surveys conducted June 16-18, 2003, the Service concurs that the project may affect, but is not likely to adversely affect Cooley's meadowrue and rough-leaved loosestrife.

We believe that the requirements of section 7 (a)(2) of the ESA have been satisfied. We remind you that obligations under section 7 consultation must be reconsidered if: (1) new information reveals impacts of this identified action that may affect listed species or critical habitat in a manner not previously considered in this review; (2) this action is subsequently modified in a manner that was not considered in this review; or (3) a new species is listed or critical habitat determined that may be affected by this identified action.

The Service appreciates the opportunity to review this project. If you have any questions regarding our response, please contact Mr. Gary Jordan at (919) 856-4520 (Ext. 32).

Sincerely,

Garland B. Pardue

Garland B. Pardue, Ph.D.
Ecological Services Supervisor

cc: Dave Timpy, USACE, Wilmington, NC
David Franklin, USACE, Wilmington, NC
John Hennessy, NCDWQ, Raleigh, NC
Travis Wilson, NCWRC, Creedmoor, NC
Chris Militscher, USEPA, Raleigh, NC

UNITED STATES DEPARTMENT OF COMMERCE
National Oceanic and Atmospheric Administration
NATIONAL MARINE FISHERIES SERVICE
Southeast Regional Office
9721 Executive Center Drive North
St. Petersburg, FL 33702
(727) 570-5312; Fax 570-5517
http://caldera.sero.nmfs.gov

MAR 24 2004

F/SER3:SKB

Stacy Baldwin
Project Development & Environmental Analysis Branch
North Carolina Department of Transportation
1548 Mail Service Center
Raleigh, NC 27699-1548

Dear Ms. Baldwin:

This is in response to your October 6, 2003, letter regarding the construction of a second bridge to Oak Island in Brunswick County, North Carolina (TIP No. R-2245). We have reviewed the material submitted by the North Carolina Department of Transportation (NCDOT), with respect to possible effects on the species listed and the critical habitat designated under the Endangered Species Act (ESA) under the purview of the National Marine Fisheries Service (NOAA Fisheries). This consultation is being conducted with the NCDOT as designated by the Federal Highways Administration, North Carolina Division (letter dated April 8, 2003) pursuant to 50 CFR 402.08.

Construction of the bridge to Oak Island will consist of inserting concrete piles into the substrate via either driving or jetting. Barges will be utilized in the construction. The bridge will connect S.R. 1104 to N.C. 211 by crossing over the Atlantic Intracoastal Waterway (AIWW). Project location is nearby (ca. 8½ miles) the mouth of the Cape Fear River. The endangered shortnose sturgeon (*Acipenser brevirostrum*) is known to inhabit the Cape Fear River. Four federally-protected species of sea turtles (green, *Chelonia mydas*; leatherback, *Dermochelys coriacea*; loggerhead, *Caretta caretta*; and Kemp's ridley, *Lepidochelys kempii*) are often found in the project location in the AIWW and nearby the project location in the Atlantic Ocean. Therefore, NOAA Fisheries is concerned about potential project impacts on shortnose sturgeon and sea turtles.

The NCDOT proposes and is willing to adopt the following measures to avoid harm to species in the project area:

1. In-water construction shall be conducted only between July 1 and February 14 (which is outside the anadromous fish spawning period of February 15 through June 30), to preclude adverse effects on spawning behavior and sensitive early life stages, and
2. Avoid impacts to water resources and aquatic communities by strictly adhering to guidelines described in three best management procedures *(Best Management Practices for Protection of Surface Waters*, NCDOT 1997; *Stream Crossing Guidelines for Anadromous Fish Passage*, NCDOT 1999; and *North Carolina Erosion and Sediment Control Planning and Design Manual*, NCDENR 1993) that reduce turbidity and minimize runoff.

Furthermore, construction methods used for bridges (e.g., pile driving or jetting-in, and construction barge anchoring) have not been shown to adversely affect sea turtles or shortnose sturgeon; both species are highly mobile and will likely avoid the area due to project activity and noise. Normal behavior patterns of listed species are not expected to be significantly disrupted by the proposed action as the project area is not known to serve as a feeding, breeding, migratory, or sheltering area for either sea turtles or shortnose sturgeon. Therefore, NOAA Fisheries concludes that the project, when designed to include the protective measures listed above that reduce project impacts to discountable levels by restricting in-water construction, protecting migratory pathways, and protecting water quality and clarity, is not likely to adversely affect shortnose sturgeon or listed sea turtles.

This concludes the NCDOT's consultation responsibilities with NOAA Fisheries under section 7 of the ESA for the second bridge to Oak Island project. Be advised that a new consultation must be initiated if a take occurs or new information reveals effects of the action not previously considered, or the identified action is subsequently modified in a manner that causes an effect to listed species or critical habitat in a manner or to an extent not previously considered, or if a new species is listed or critical habitat designated that may be affected by the identified action. Potential project impacts utilizing methodology not considered in the consultation will require additional ESA section 7 consultation with NOAA Fisheries' Protected Resources Division.

The action agency is also reminded, in addition to its protected species/critical habitat consultation requirements with NOAA Fisheries' Protected Resources Division pursuant to section 7 of the ESA, prior to proceeding with the proposed action the action agency must also consult with NOAA Fisheries' Habitat Conservation Division (HCD) pursuant to the Magnuson-Stevens Fishery Conservation and Management Act's requirements for essential fish habitat (EFH) consultation (16 U.S.C. 1855 (b)(2) and 50 CFR 600.905-600.930, subpart K). Consultation is not complete until EFH and ESA concerns have been addressed. If you have any questions about EFH consultation for this project, please contact Mr. Ron Sechler, HCD, at (252) 728-5090.

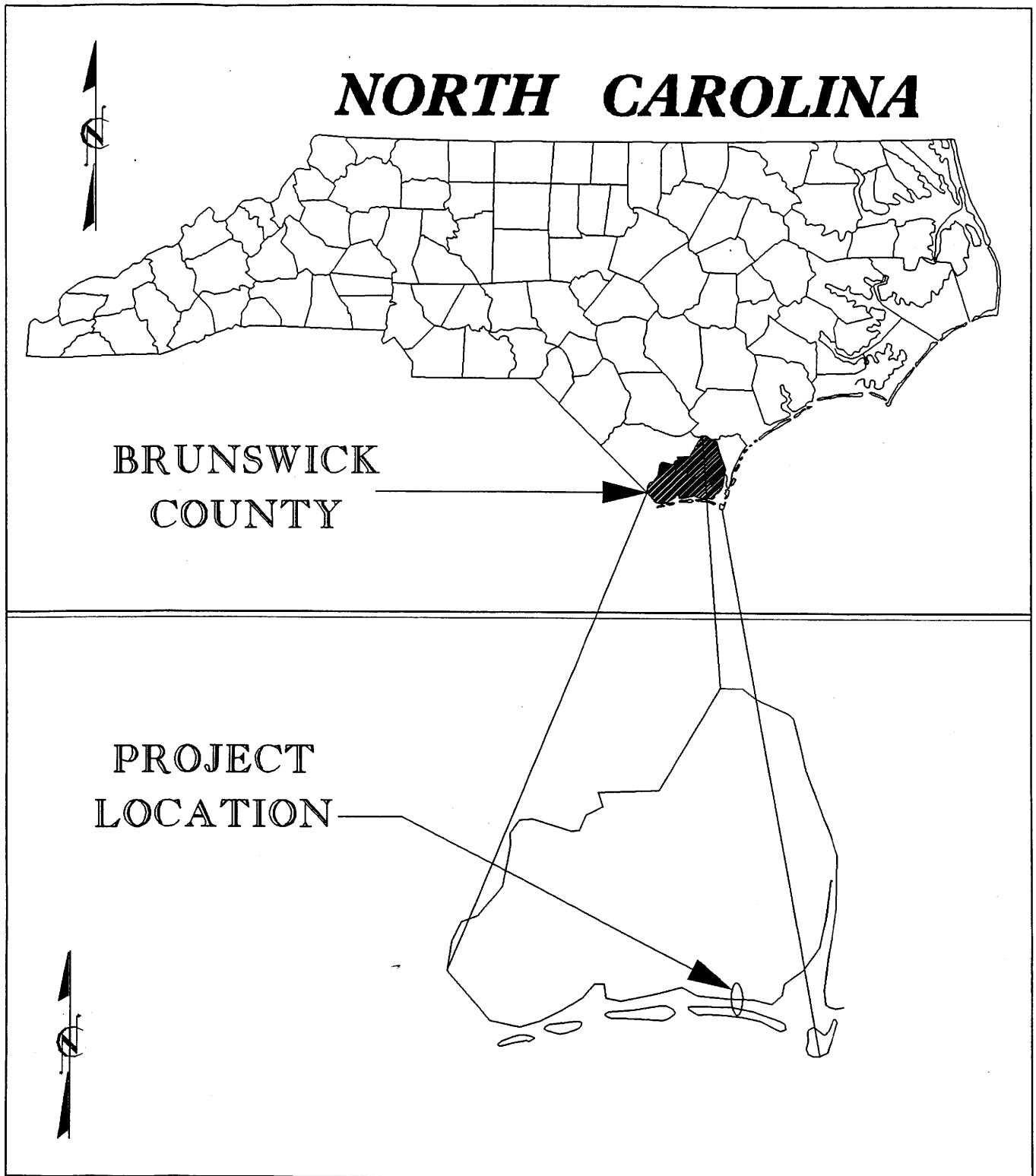
We look forward to continued cooperation with the NCDOT in conserving our endangered and threatened resources. If you have any questions, please contact Dr. Stephania Bolden, fishery biologist, at (727) 570-5312, or by e-mail at stephania.bolden@noaa.gov.

Sincerely,

for

Roy E. Crabtree, Ph.D.
Regional Administrator

cc: F/SER4 (R. Sechler)
Ref: I\SER\2004\01320
File: 1514-22.L (NCDOT)



LOCATION MAP

NCDOT

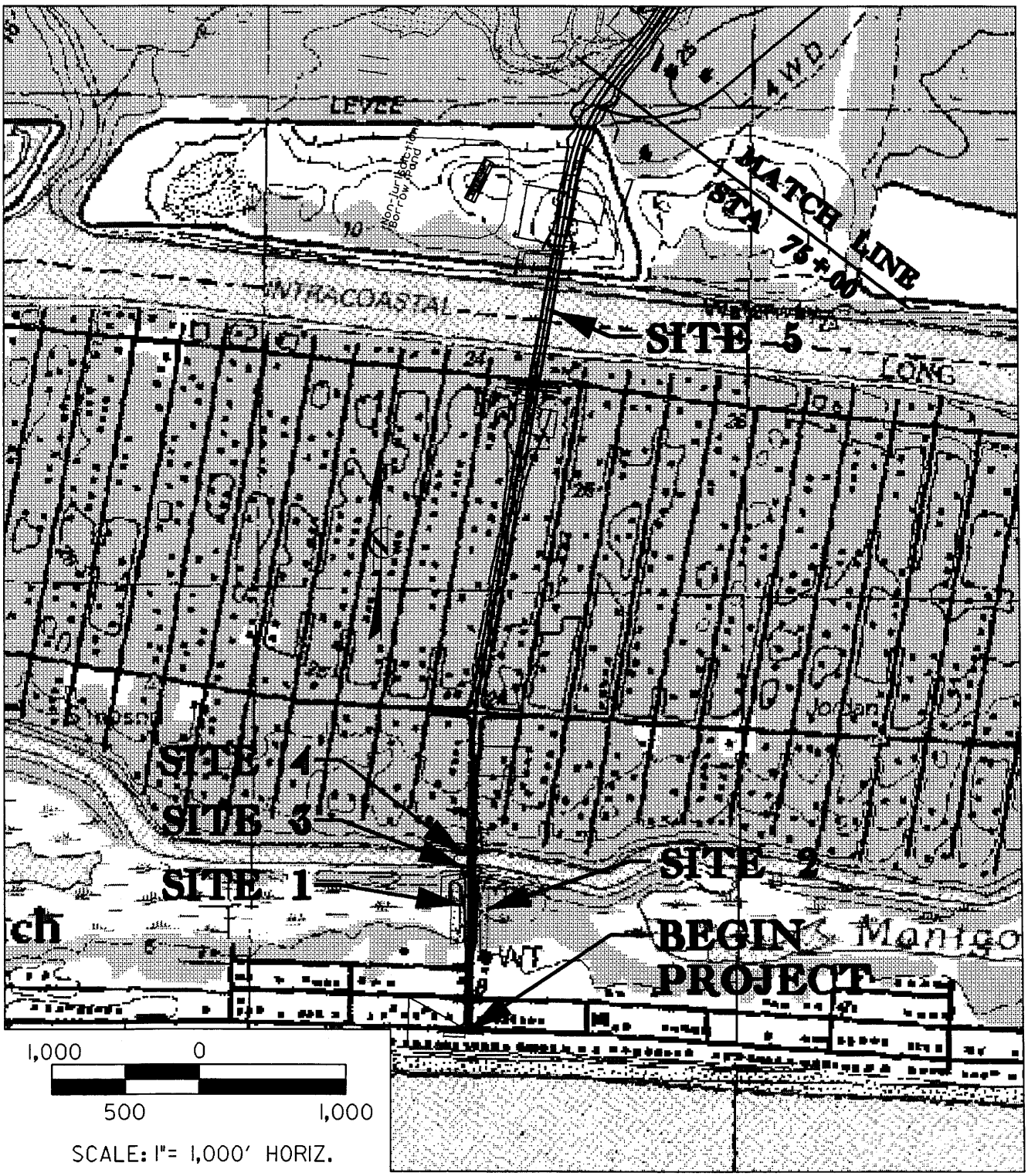
DIVISION OF HIGHWAYS

BRUNSWICK COUNTY

PROJECT 34407.1.1 (R-2245)

SECOND BRIDGE TO OAK ISLAND

SHEET 1 OF 70

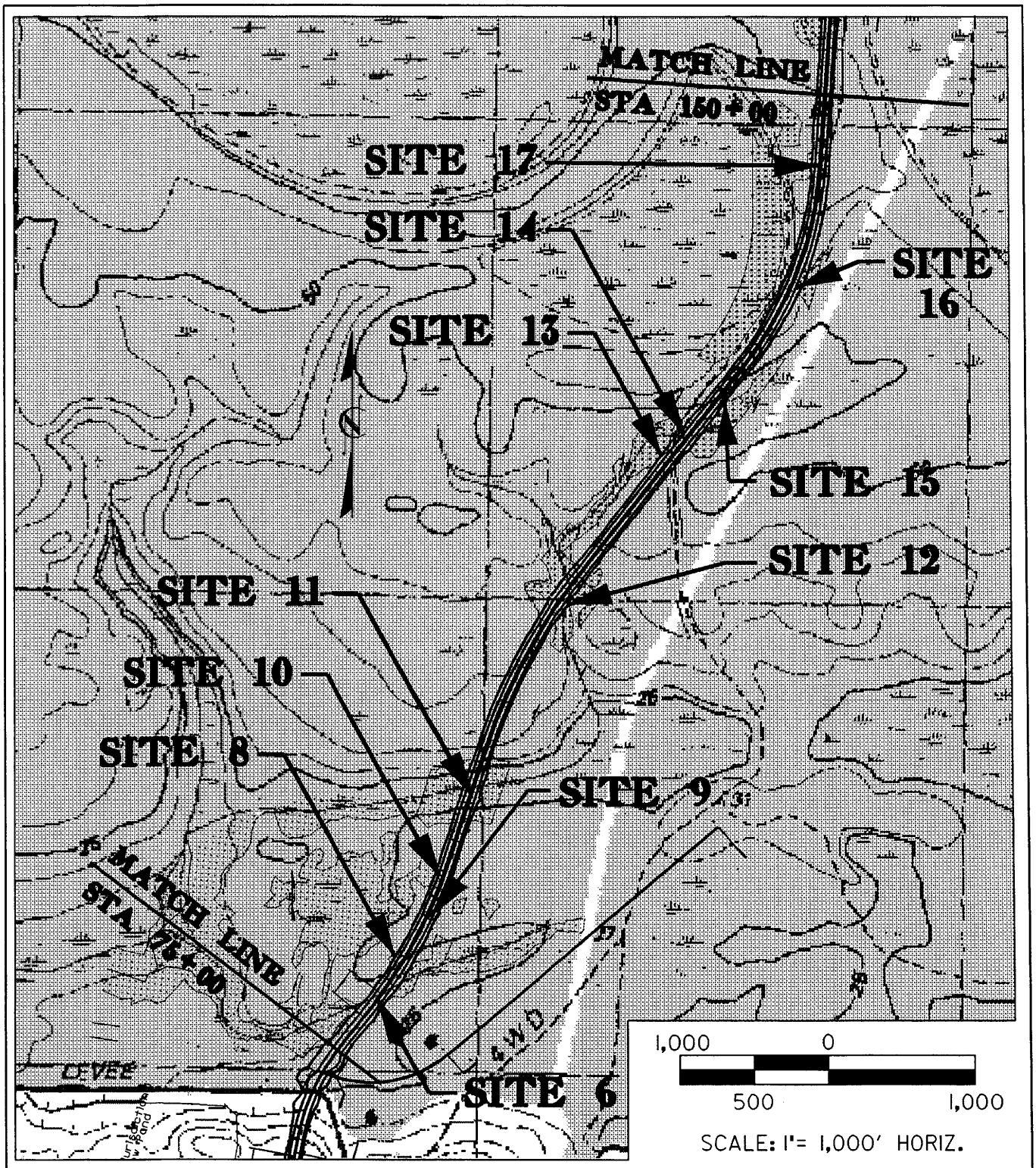


SITE MAP 1 of 4

NCDOT

DIVISION OF HIGHWAYS
BRUNSWICK COUNTY
PROJECT 34407.1.1 (R-2245)
NEW ROUTE FROM SR 1104
(BEACH DR) TO NC 211
(SECOND BRIDGE TO OAK ISLAND)

SHEET 2 **OF** 70

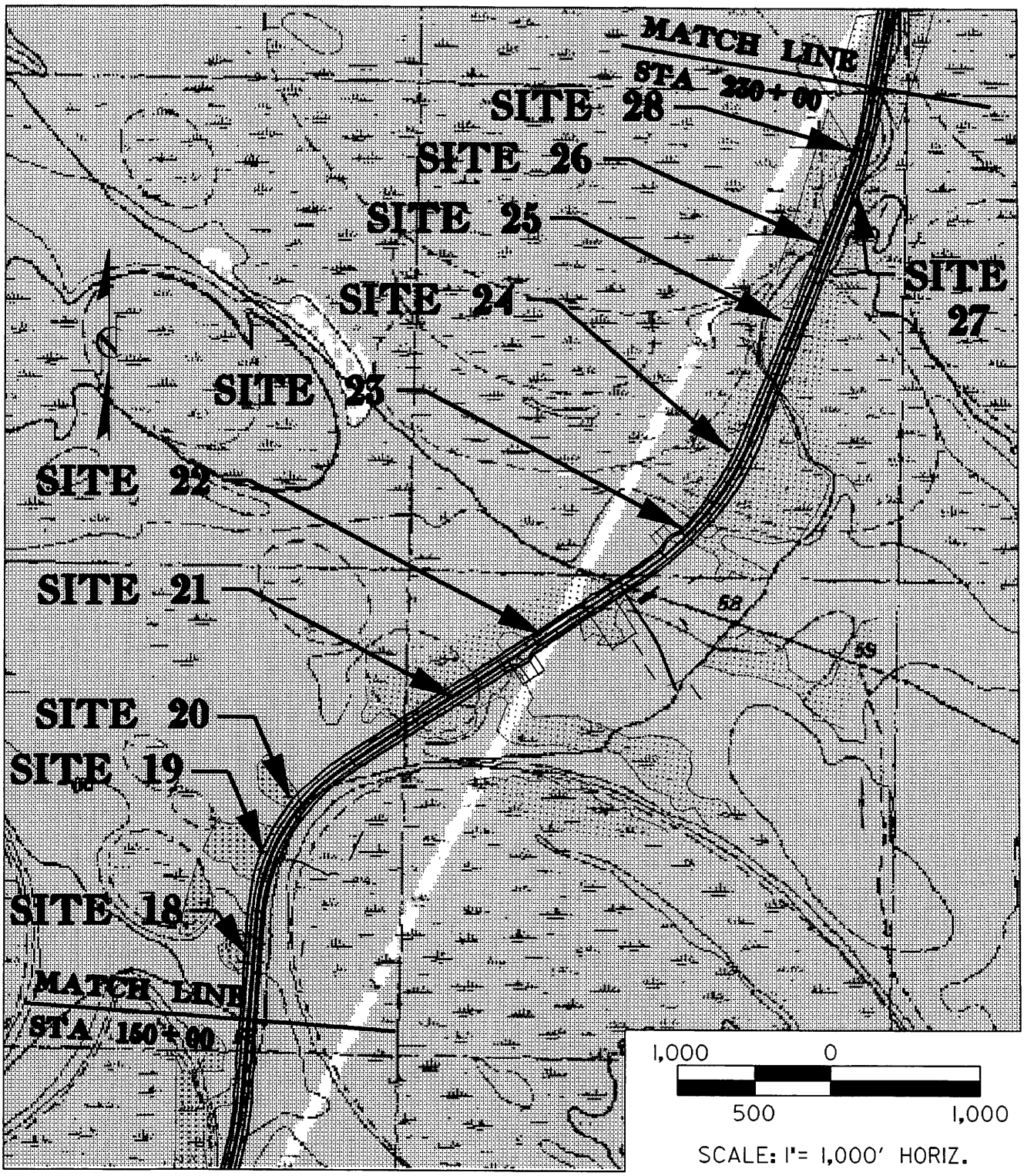


SITE MAP 2 of 4

NCDOT

DIVISION OF HIGHWAYS
BRUNSWICK COUNTY
PROJECT 34407.1.1 (R-2245)
NEW ROUTE FROM SR 1104
(BEACH DR) TO NC 211
(SECOND BRIDGE TO OAK ISLAND)

SHEET 3 **OF** 70

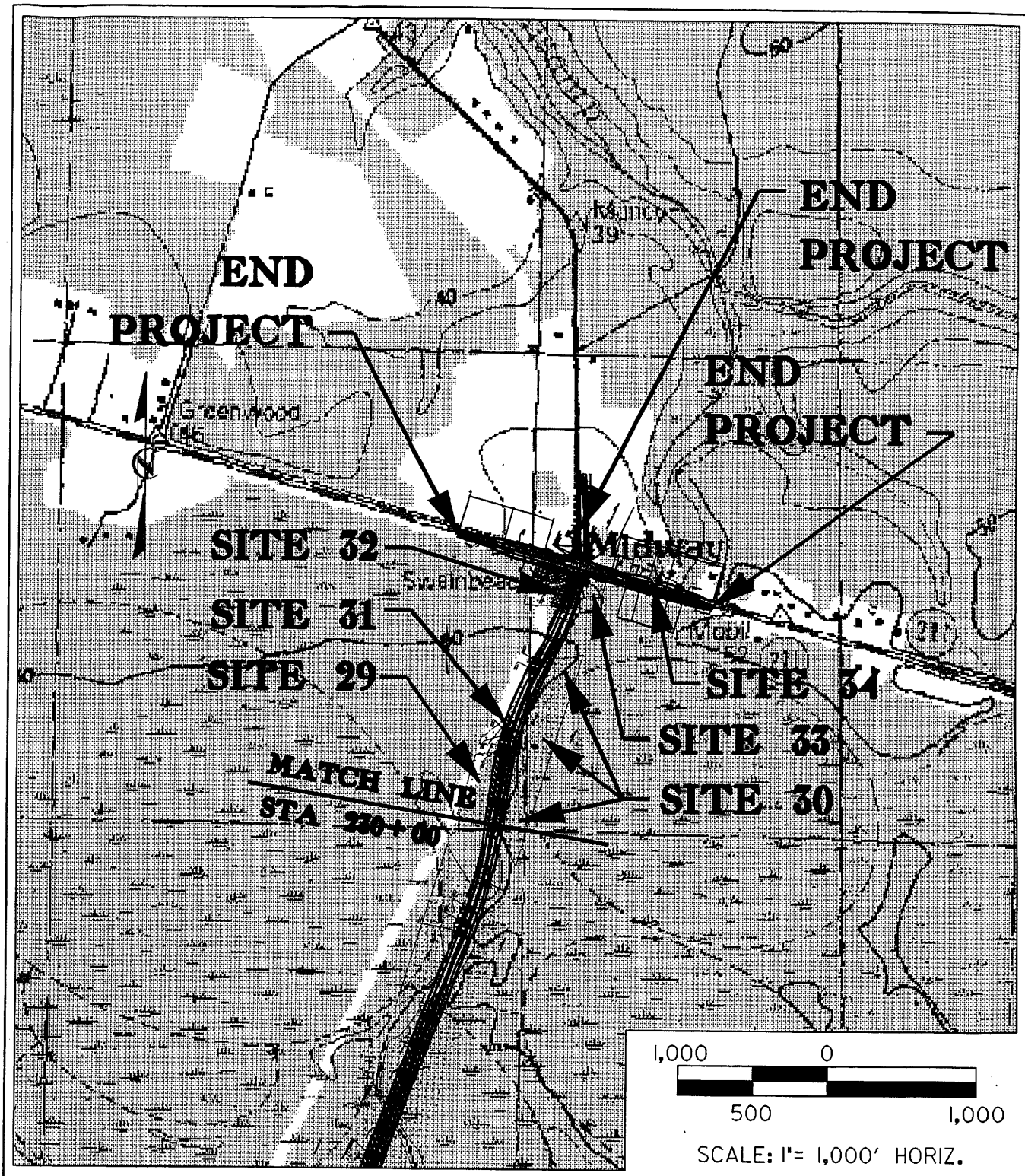


SITE MAP 3 of 4

NCDOT

DIVISION OF HIGHWAYS
BRUNSWICK COUNTY
PROJECT 34407.1.1 (R-2245)
NEW ROUTE FROM SR 1104
(BEACH DR) TO NC 211
(SECOND BRIDGE TO OAK ISLAND)

SHEET 4 **OF** 70



SITE MAP

4 of 4

NCDOT

DIVISION OF HIGHWAYS
BRUNSWICK COUNTY
PROJECT 34407.1.1 (R-2245)
NEW ROUTE FROM SR 1104
(BEACH DR) TO NC 211
(SECOND BRIDGE TO OAK ISLAND)

SHEET 5 **OF** 70

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
7	OAK ISLAND	106 EAST DOLPHIN DRIVE
	ELKS LODGE #2769	OAK ISLAND, NC 28465
8	GAYLE S. FAUCETTE, etal	418 SUNSET AVE.
		OXFORD, NC 27565
11	MARION C. DEETER	119 SE 1st STREET
		OAK ISLAND, NC 28465
80	RALPH DICKSON	3513 COUNTRY CLUB DRIVE
		GASTONIA, NC 28056
102	MILTON C. DARR	P.O. BOX 884
		OAK ISLAND, NC 28465
103	JAMES W. WRIGHT	143 MAXWELL ST.
		FAYETTEVILLE, NC 28301
106	LaDANE WILLIAMSON, etal	2618 NEW VILLAGE WAY
		WILMINGTON, NC 28405

NCDOT

DIVISION OF HIGHWAYS

BRUNSWICK COUNTY

PROJECT 34407.1.1 (R-2245)

SECOND BRIDGE TO

OAK ISLAND

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
(not numbered)	BRUNSWICK ELEC MEMBERSHIP	P.O. BOX 826 SHALLOTTE, NC 28459
107	RESERVE DEVELOPMENT CO. LLC	P.O. BOX 10879 SOUTHPORT, NC 28465
109	YOUNGS GAS & GROCERY OF WINNABOW INC.	P.O. BOX 14 WINNABOW, NC 28479
113	MIDWAY LANDING, LLC. & GROCERY OF WINNABOW INC.	??? ???
114	JAMES E. McCRACKEN, et al	3343 SOUTHPORT-SUPPLY RD BOLIVIA, NC 28422
901	NCDOT	(Formerly - CARL F. MICKEY, JR.)

NCDOT

DIVISION OF HIGHWAYS

BRUNSWICK COUNTY

PROJECT 34407.1.1 (R-2245)

SECOND BRIDGE TO

OAK ISLAND

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
1	16+00-L- +/- to	ROADWAY FILL	0.000				0.000					
	19+80 -L- +/- LT		**NO IMPACTS AT SITE 1**									
2	15+40 -L- +/- to	ROADWAY FILL	0.026	0.027								
	19+80 -L- +/- RT											
3	20+70 -L- +/- to	CLASS II RIP RAP FILL						0.001	0.029			
	21+20 -L- +/-	SLOPE PROTECTION										
*4	21+75 -L- +/- to	CLASS II RIP RAP FILL		0.019				0.000	0.006			
	22+35 -L- +/-	SLOPE PROTECTION										
5	56+40 -L- +/- to	BRIDGE OVER										
	60+70 -L- +/-	INTRACOASTAL										
		WATERWAY										
		& BULKHEAD										
6	75+40 -L- +/- to	ROADWAY FILL	1.348			0.174	0.082					
	83+00 -L- +/-											
TOTALS, This Sheet:			1.374	0.046		0.174	0.082	0.001	0.035			

Total impacts to Coastal Wetlands:	0.019 Acres

Site 3	Perm. Surface Water Impact Due to Perm. Pile Bents:	<0.001 Acres
Site 4	Perm. Surface Water Impact Due to Perm. Pile Bents:	<0.001 Acres
* Site 4	Perm. Surface Water Impact Due to Rdwy Fill:	<0.001 Acres
Site 5	Temp. Surface Water Impact Due to Temp Work Bridge	0.011 Acres
Site 5	Temp. Surface Water Impact Due to Temp Bents:	<0.001 Acres
Site 5	Perm. Surface Water Impact Due to Perm. Pile Caps:	0.056 Acres
Site 5	Perm. Surface Water Impact Due to Bulkhead:	0.012 Acres

SPECIAL EROSION CONTROL FENCE (TEMPORARY FILL) WILL BE PLACED IN SOME AREAS OF MECH. CLEARING.

ATN Revised 3/31/05

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

BRUNSWICK COUNTY
PROJECT: 34407.1.1 (R-2245)

SHEET 8 OF 70

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
*7	ACCESS ROAD 2	ACCESS RD FILL	0.000				0.000					
	13+65 to 14+05 +/-	(R/W to R/W)	**NO IMPACTS TO SITE 7**									
8	82+10 -L- +/- to	ROADWAY FILL	0.046			0.020	0.014					
	83+00 -L- +/- LT											
9	85+95 -L- +/- to	ROADWAY FILL	0.099			0.007						
	86+65 -L- +/- RT											
10	88+05 -L- +/- to	ROADWAY FILL	0.108			0.029	0.035					
	89+75 -L- +/- LT											
11	92+65 -L- +/- to	ROADWAY FILL	1.203			0.204	0.151	0.010	0.002	207	52	
	97+50 -L- +/-											
12	108+20 -L- +/- to	ROADWAY FILL	1.013			0.159	0.055					
	112+65 -L- +/-											
13	120+85 -L- +/- to	ROADWAY FILL	0.029			0.041	0.015					
	123+05 -L- +/- LT											
14	122+85 -L- +/- to	ROADWAY FILL	0.669			0.081	0.023					
	126+55 -L- +/-											
TOTALS, This Sheet:			3.167			0.541	0.293	0.010	0.002	207	52	

*NOTE: Site 7 has been deleted. It was associated with an access point on the west side of the -L- line.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

BRUNSWICK COUNTY
PROJECT: 34407.1.1 (R-2245)

SHEET 9 OF 70

ATN Revised 3/31/05

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
15	127+23 -L- +/- to	ROADWAY FILL	0.003			0.007	0.014					
	127+85 -L- +/- RT											
16	136+35 -L- +/- to	ROADWAY FILL	0.231			0.045						
	138+30 -L- +/- RT											
17	144+25 -L- +/- to	ROADWAY FILL	0.325			0.040	0.030					
	146+10 -L- +/- LT											
18	153+40 -L- +/- to	ROADWAY FILL	0.105			0.042	0.035					
	155+25 -L- +/- LT											
19	159+25 -L- +/- to	ROADWAY FILL	1.070			0.091						
	163+65 -L- +/-											
20	164+55 -L- +/- to	ROADWAY FILL	0.142			0.026						
	165+70 -L- +/- LT											
21	173+70 -L- +/- to	ROADWAY FILL	2.388			0.385	0.125					
	182+40 -L- +/-											
TOTALS, This Sheet:			4.264			0.636	0.204					

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

BRUNSWICK COUNTY
PROJECT: 34407.1.1 (R-2245)

SHEET 10 OF 70

ATN Revised 3/31/05

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
22	184+50 -L- +/- to	ROADWAY FILL	1.445			0.212	0.230					
	191+85 -L- +/-											
23	197+05 -L- +/- to	ROADWAY FILL	0.161			0.021	0.008					
	197+70 -L- +/-											
24	198+55 -L- +/- to	ROADWAY FILL	2.889			0.456	0.089					
	209+30 -L- +/-											
25	208+60 -L- +/- to	ROADWAY FILL	2.497			0.411	0.167					
	219+90 -L- +/-											
26	218+65 -L- +/- to	ROADWAY FILL					0.013					
	220+45 -L- +/- LT											
27	222+25 -L- +/- to	ROADWAY FILL	0.004			0.021	0.007					
	223+65 -L- +/- RT											
28	225+20 -L- +/- to	ROADWAY FILL					0.002					
	225+65 -L- +/- LT											
29	229+50 -L- +/- to	ROADWAY FILL	0.682			0.123	0.019					
	235+30 -L- +/-											
TOTALS, This Sheet:			7.678			1.244	0.535					

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

BRUNSWICK COUNTY
PROJECT: 34407.1.1 (R-2245)

ATN Revised 3/31/05

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
30	229+15 -L- +/- to	ROADWAY FILL	0.687			0.297	0.091					
	242+45 -L- +/-											
31	236+55 -L- +/- to	ROADWAY FILL	0.073			0.015						
	237+60 -L- +/- LT											
*32	SOUTH WEST	ROADWAY FILL	0.514		0.166							
	CORNER OF -L-											
	and NC-211											
		*Drawdown Effect	0.671									
33	SOUTH EAST	ROADWAY FILL	0.047				0.050					
	CORNER OF -L-											
	and NC-211											
34	24+00 -Y7-	10' w x 8' h RCBC						0.004	0.016	15	80	
	(NC-211)											
**35	ACCESS ROAD 2	ACCESS RD FILL	0.000				0.000					
	15+65 +/- to	(R/W to R/W)	**NO IMPACTS AT SITE 35**									
	16+45 +/-											
TOTALS, This Sheet:			1.992		0.166	0.312	0.141	0.004	0.016	15	80	

* NOTE: Area of drawdown as a result of moving existing roadway ditch: 0.671 Acres

**NOTE: Site 35 has been deleted. It was associated with an access point on the west side of the -L- line.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

BRUNSWICK COUNTY
PROJECT: 34407.1.1 (R-2245)

SHEET 12 OF 70

ATN Revised 3/31/05

WETLAND PERMIT IMPACT SUMMARY

Site No.	Station (From/To)	Structure Size / Type	WETLAND IMPACTS: Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	SURFACE WATER IMPACTS: Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
*36	ACCESS ROAD 2	ACCESS RD FILL	0.000				0.000					
	20+55 +/- to	(R/W to R/W)	**NO IMPACTS AT SITE 36**									
	21+95 +/-											
TOTALS, This Sheet:			0.000				0.000					
PROJECT TOTALS:			18.475	0.046	0.166	2.907	1.255	0.015	0.053	222	132	

**NOTE: Site 36 has been deleted. It was associated with an access point on the west side of the -L- line.

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

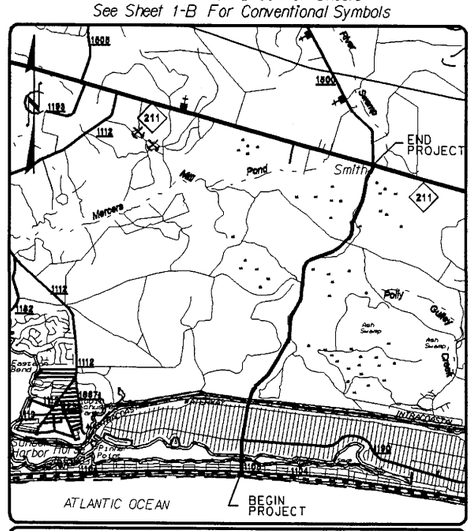
BRUNSWICK COUNTY
PROJECT: 34407.1.1 (R-2245)

ATN Revised 3/31/05

TIP PROJECT: R-2245

CONTRACT: C201550

See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BRUNSWICK COUNTY

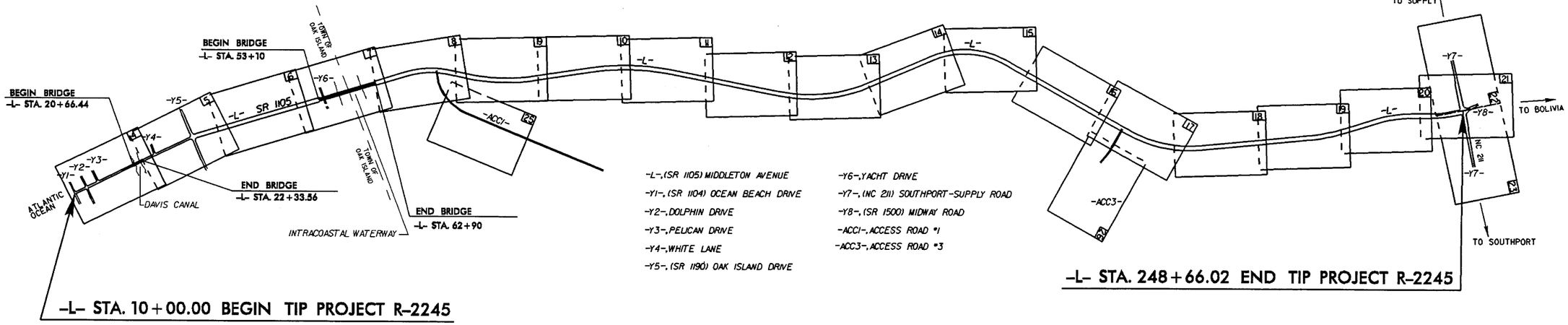
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2245	1	

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
34407.1.1	STP-1105(6)	P.E.
34407.3.1	STP-1105(7)	R/W & UTIL.

LOCATION: *NEW ROUTE FROM SR 1104 (OCEAN BEACH DRIVE) TO NC 211 (SECOND BRIDGE TO OAK ISLAND)*

TYPE OF WORK: *GRADING, PAVING, DRAINAGE, CULVERT, STRUCTURES, SIGNING AND SIGNALS*

NAD 83



-L-, (SR 1105) MIDDLETON AVENUE
-Y1-, (SR 1104) OCEAN BEACH DRIVE
-Y2-, DOLPHIN DRIVE
-Y3-, PELICAN DRIVE
-Y4-, WHITE LANE
-Y5-, (SR 1190) OAK ISLAND DRIVE
-Y6-, YACHT DRIVE
-Y7-, (NC 211) SOUTHPORT-SUPPLY ROAD
-Y8-, (SR 1500) MIDWAY ROAD
-ACC1-, ACCESS ROAD #1
-ACC3-, ACCESS ROAD #3

-L- STA. 10+00.00 BEGIN TIP PROJECT R-2245

-L- STA. 248+66.02 END TIP PROJECT R-2245

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.
A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE TOWN OF OAK ISLAND.
ACCESS IS NOT CONTROLLED FROM OCEAN BEACH DRIVE TO 835' SOUTH OF YACHT DRIVE.
ACCESS CONTROL IS LIMITED TO POINTS AS SHOWN ON THE PLANS FROM 835' SOUTH OF YACHT DRIVE TO NC 211.

Sheet 14 of 70

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

PLANS: 50 25 0 50 100
PROFILE (HORIZONTAL): 50 25 0 50 100
PROFILE (VERTICAL): 10 5 0 10 20

DESIGN DATA

ADT 2003 = 11600
ADT 2025 = 27400
DHV = 8 %
D = 55 %
T = 3 % *
V = 40-60 MPH
* TTST 1% + DUAL 2%
FUNC CLASS = RURAL COLLECTOR

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2245 = 4.303 MI

LENGTH STRUCTURES TIP PROJECT R-2245 = 0.217 MI

TOTAL LENGTH OF TIP PROJECT R-2245 = 4.520 MI

Prepared in the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: APRIL 29, 2005

LETTING DATE: AUGUST 15, 2006

GLENN W. MUMFORD, PE
PROJECT ENGINEER

SUSAN C. LANCASTER, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: P.E.

DIVISION OF HIGHWAYS STATE OF NORTH CAROLINA

STATE DESIGN ENGINEER P.E.

DEPARTMENT OF TRANSPORTATION FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR DATE

07-JUN-2006 10:47
r:\roadway\proj\r2245_rdy_tsn.dgn
rlovinggood AT HY221536

PROJECT REFERENCE NO.	SHEET NO.
R-2245	4
IMV SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS 8/17/99

SITE 1
NO IMPACTS

SITE 2
FILL IN WETLANDS
&
TEMP. FILL IN WETLANDS
OAK ISLAND ELKS LODGE #2769

SITE 3
FILL IN
SURFACE WATERS &
TEMP. FILL IN SURF. WATERS
FOR EROSION CONTROL

SITE 4
FILL IN
SURFACE WATERS,
TEMP. FILL IN SURF. WATERS &
TEMP. FILL IN COASTAL WETLANDS
FOR EROSION CONTROL

BEGIN CONSTRUCTION
-Y1- STA.10+00.00

END CONSTRUCTION
-Y1- STA.13+00.00

-Y1- POT Sta. 14+00.00

-Y2- POT Sta. 10+00.00

BEGIN CONSTRUCTION
-Y2- STA.11+00.00

END CONSTRUCTION
-Y2- STA.12+80.00

-Y2- POT Sta. 14+07.11

-Y3- POT Sta. 10+00.00

BEGIN CONSTRUCTION
-Y3- STA.11+00.00

MAINTAIN DRAINAGE FROM EAST SIDE OF GARAGE TO NORTH SIDE

MAINTAIN SURFACE DRAINAGE

CLASS II RIP RAP (NOT SHOWN TO IMPROVE CLARITY)

EXTEND RIP RAP INTO BULKHEAD

EXISTING BRIDGE
LENGTH = 160.75'
LOW CHORD = 17.36'

MEAN HIGH TIDE

MEAN HIGH TIDE

WLB

1 GINGER GRAVELL

2 KAREN K. HARRIS

3 GERALD L. GOUGER

4 MICHAEL OXFORD

5 SEAHORSE VENTURES, LLC

6 TOWN OF OAK ISLAND

7 OAK ISLAND ELKS LODGE #2769

8 GAYLE S. FAUCETTE, et al

9 TOWN OF OAK ISLAND

10 EMMETT C. GUNNERSON DB 565 PG 1055 MB 6 PG 172

11 MARION C. DEETER

GARY V. PETERSON

MATCH LINE SEE SHEET 5 -L- STA. 23+20.00

SCALE
50' 0 100'

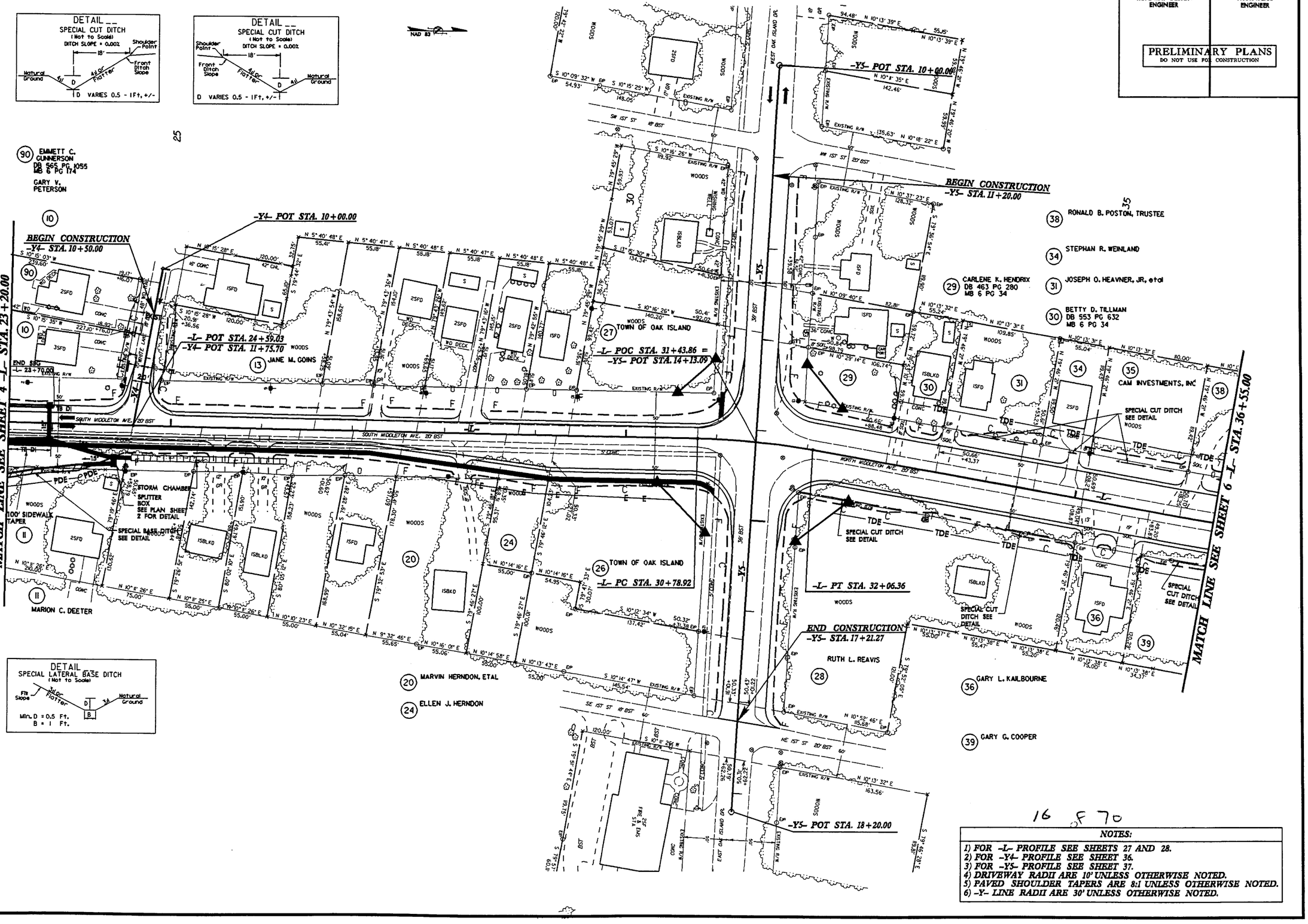
LEGEND
FILL IN SURFACE WATERS
TEMPORARY FILL IN WETLANDS
FILL IN WETLANDS

10-MAY-2006 13:22
I:\highways\permits\2245 permit psh 04.dgn
rivenscroft on HP2500

15 of 70

PROJECT REFERENCE NO.	SHEET NO.
R-2245	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



16 of 70

NOTES:

1) FOR -L- PROFILE SEE SHEETS 27 AND 28.
2) FOR -Y4- PROFILE SEE SHEET 36.
3) FOR -Y5- PROFILE SEE SHEET 37.
4) DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED.
5) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
6) -Y- LINE RADII ARE 30' UNLESS OTHERWISE NOTED.

8/17/99

04-MAY-2006 13:22
r:\hydraulics\permits\r2245 permit psh 05.dgn

PROJECT REFERENCE NO.	SHEET NO.
R-2245	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

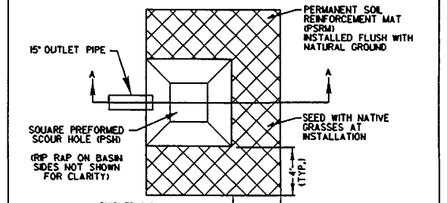
REVISIONS

11/9/05 - TLW - DESIGN REVISION, MODIFIED THE GRADE FOR -L- STA 42+80.61 TO -L- STA 70+60.00 TO PROVIDE A SYMMETRICAL GRADE ON THE INTRACOASTAL WATERWAY BRIDGE.

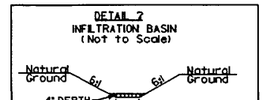
8/17/99

PREFORMED SCOUR HOLE

PLAN VIEW



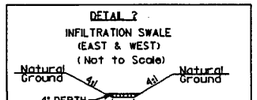
DETAIL ?
INFILTRATION BASIN
(Not to Scale)



SEE GRADING PLAN FOR DEPTH

EST. DDE: 1,005 CU. YDS.

DETAIL ?
INFILTRATION SWALE
(EAST & WEST)
(Not to Scale)



SEE GRADING PLAN FOR DEPTH

EST. DDE, WEST: 2,460 CU. YDS.
EST. DDE, EAST: 1,390 CU. YDS.

NAD 83

(41) JOHN ROACH JAMES

(40) HARMON H. JAMES, JR.

(38) RONALD B. POSTON, TRUSTEE

(49) MINDI W. SINK, ETAL

(47) ROBERT WALSER, SR.

(46) JANET H. DENNIS

(53A) DAWN T. WARRICK

(53) WILLIAM B. WARRICK

(538) DAWN T. WARRICK

(51) JOHN L. WALSER

(58) DONNA L. BROWN, ETALS

(56) ANNIE E. HAMPTON

(63) MARVIN C. MARTIN, SR.
DB 1390 PG 266
MB 6 PG 34

(62) PAUL M. SAWYER
DB 1789 PG 683
MB 6 PG 34

(60) ROBERT W. CONNER

(67) PAUL E. MOORE, JR.

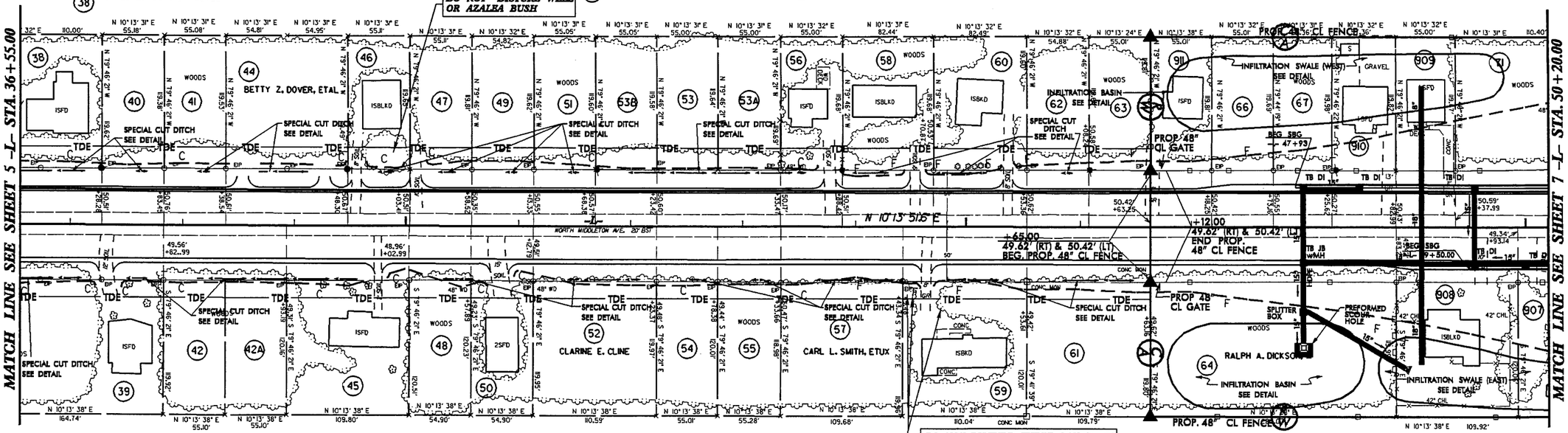
(66) FRANK LEE

(911) KEN BLACK

(71) GEORGE L. FISHER, ETAL

(909) FREDA M. RICH

(910) DOUGLASS JOHNSON



(39) GARY G. COOPER

(42) ARTHUR SKIPPER

(42A) KIMBERLY S. ANDERSON

(45) MARY W. CHURCH

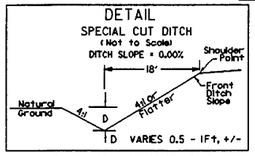
(48) H. EMANUEL GHENT

(50) DENISE M. WEST

(54) NEIL G. JESTER

(55) ANNE J. CONNER

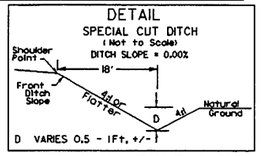
DETAIL
SPECIAL CUT DITCH
(Not to Scale)
DITCH SLOPE = 0.00%



D VARIES 0.5 - 1Ft, +/-

-L- STA 36+50 to 37+13 LT EL=24.20
-L- STA 37+58 to 37+68 LT EL=24.50
-L- STA 38+13 to 38+24 LT EL=24.60
-L- STA 38+68 to 39+12 LT EL=24.90
-L- STA 39+75 to 39+89 LT EL=25.00
-L- STA 40+28 to 40+44 LT EL=25.00
-L- STA 40+88 to 40+98 LT EL=25.00
-L- STA 41+43 to 41+53 LT EL=25.40
-L- STA 41+98 to 43+55 LT EL=25.70
-L- STA 43+97 to 44+34 LT EL=25.70
-L- STA 44+73 to 45+18 LT EL=26.20
-L- STA 45+83 to 45+93 LT EL=26.20

DETAIL
SPECIAL CUT DITCH
(Not to Scale)
DITCH SLOPE = 0.00%



D VARIES 0.5 - 1Ft, +/-

-L- STA 36+14 to 37+10 RT EL=24.20
-L- STA 37+50 to 37+68 RT EL=24.50
-L- STA 38+13 to 39+58 RT EL=24.80
-L- STA 40+33 to 40+61 RT EL=25.50
-L- STA 41+43 to 42+08 RT EL=25.60
-L- STA 42+53 to 42+63 RT EL=25.80
-L- STA 43+08 to 43+19 RT EL=26.00
-L- STA 43+64 to 44+45 RT EL=26.20
-L- STA 44+83 to 45+39 RT EL=26.50
-L- STA 45+84 to 46+48 RT EL=26.90

DO NOT DISTURB THREE OAK TREES

(59) MARSHALL R. CARROLL

(61) J. R. CORBETT

(908) KATHERINE W. HICKS

(907) DONALD W. BATCHELOR

17 of 70

NOTES:

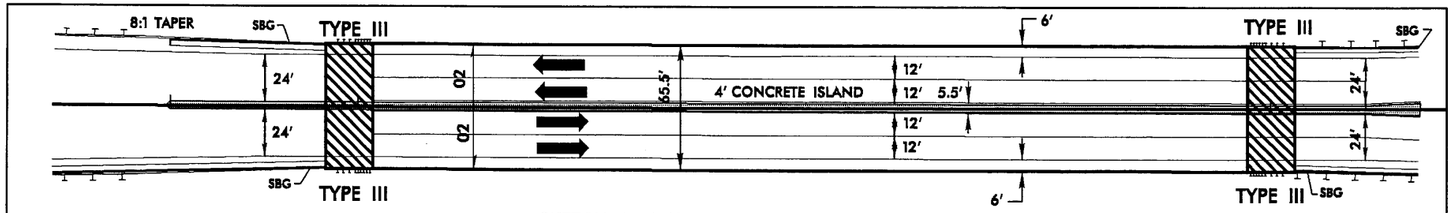
1) FOR -L- PROFILE SEE SHEET 28.
2) DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED.
3) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.

05-MAY-2006 14:07
I:\Hydraulics\Permits\R-2245 permit psh 06.dgn
rawsmond

PROJECT REFERENCE NO.	SHEET NO.
R-2245	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

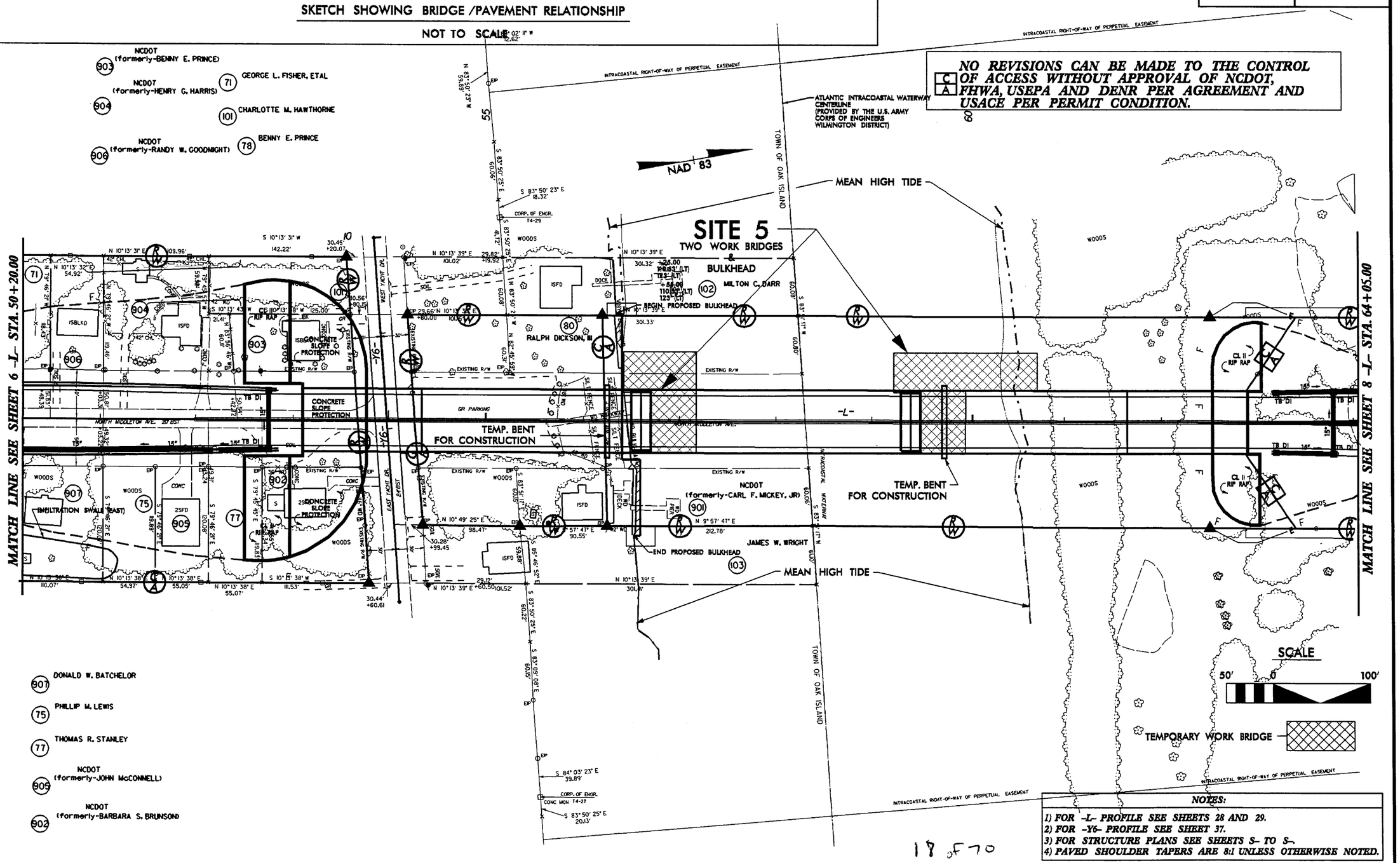
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



SKETCH SHOWING BRIDGE /PAVEMENT RELATIONSHIP

NOT TO SCALE

NO REVISIONS CAN BE MADE TO THE CONTROL OF ACCESS WITHOUT APPROVAL OF NCDOT, FHWA, USEPA AND DENR PER AGREEMENT AND USACE PER PERMIT CONDITION.



907 DONALD W. BATCHELOR

75 PHILLIP M. LEWIS

77 THOMAS R. STANLEY

905 NCDOT (formerly-JOHN McCONNELL)

902 NCDOT (formerly-BARBARA S. BRUNSOND

NOTES:

1) FOR -L- PROFILE SEE SHEETS 28 AND 29.
2) FOR -Y6- PROFILE SEE SHEET 37.
3) FOR STRUCTURE PLANS SEE SHEETS S- TO S-.
4) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.

REVISIONS

8/17/99

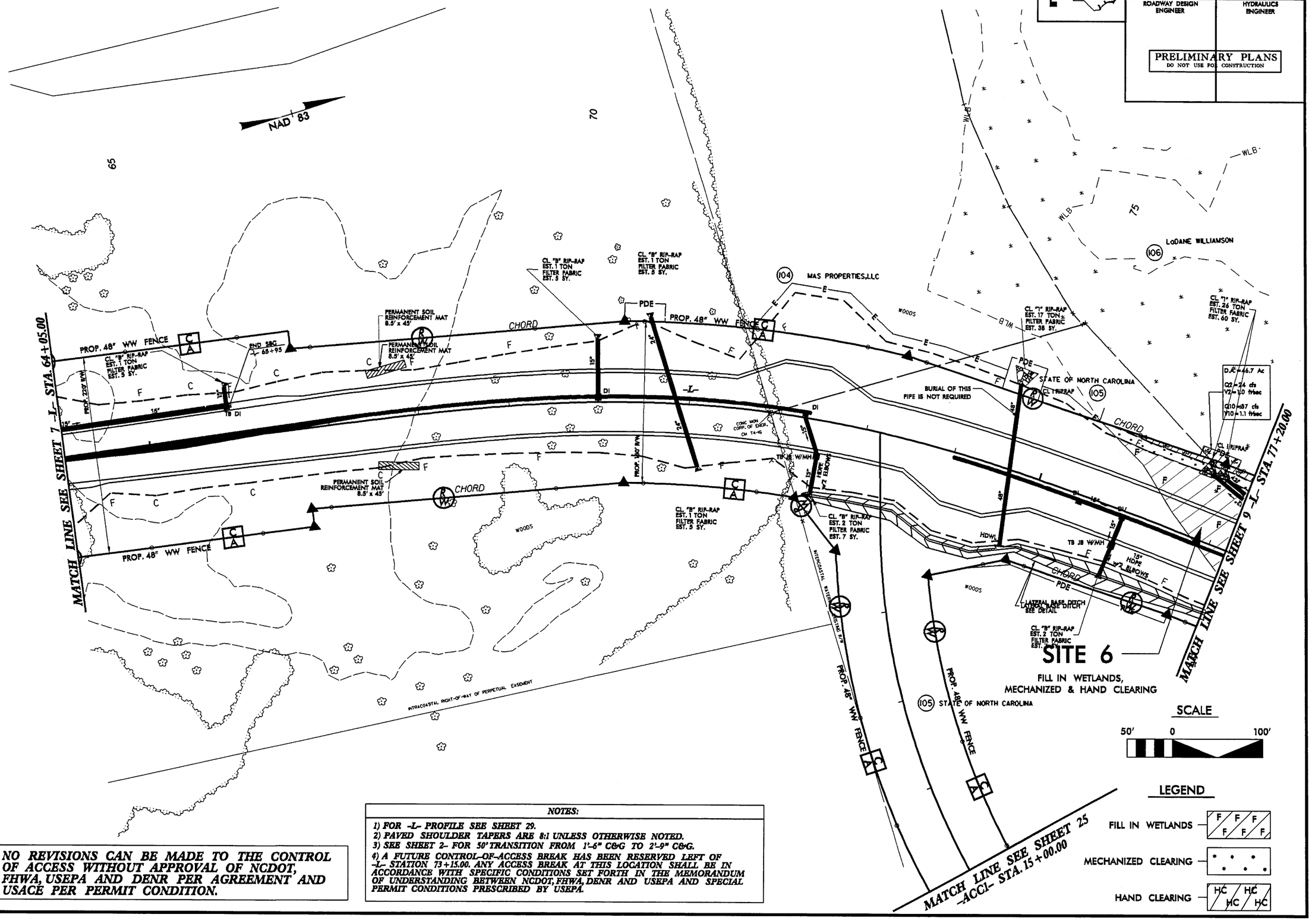
31-MAY-2006 09:48
r:\hydraulics\permits\r2245 permit psh 07.dgn
rlevinwood ... HY221536

18 of 70

PROJECT REFERENCE NO.	SHEET NO.
R-2245	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



NOTES:

1) FOR -L- PROFILE SEE SHEET 29.
2) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
3) SEE SHEET 2- FOR 50' TRANSITION FROM 1'-6" C&G TO 2'-9" C&G.
4) A FUTURE CONTROL-OF-ACCESS BREAK HAS BEEN RESERVED LEFT OF -L- STATION 73+15.00. ANY ACCESS BREAK AT THIS LOCATION SHALL BE IN ACCORDANCE WITH SPECIFIC CONDITIONS SET FORTH IN THE MEMORANDUM OF UNDERSTANDING BETWEEN NCDOT, FHWA, DENR AND USEPA AND SPECIAL PERMIT CONDITIONS PRESCRIBED BY USEPA.

C A NO REVISIONS CAN BE MADE TO THE CONTROL OF ACCESS WITHOUT APPROVAL OF NCDOT, FHWA, USEPA AND DENR PER AGREEMENT AND USACE PER PERMIT CONDITION.

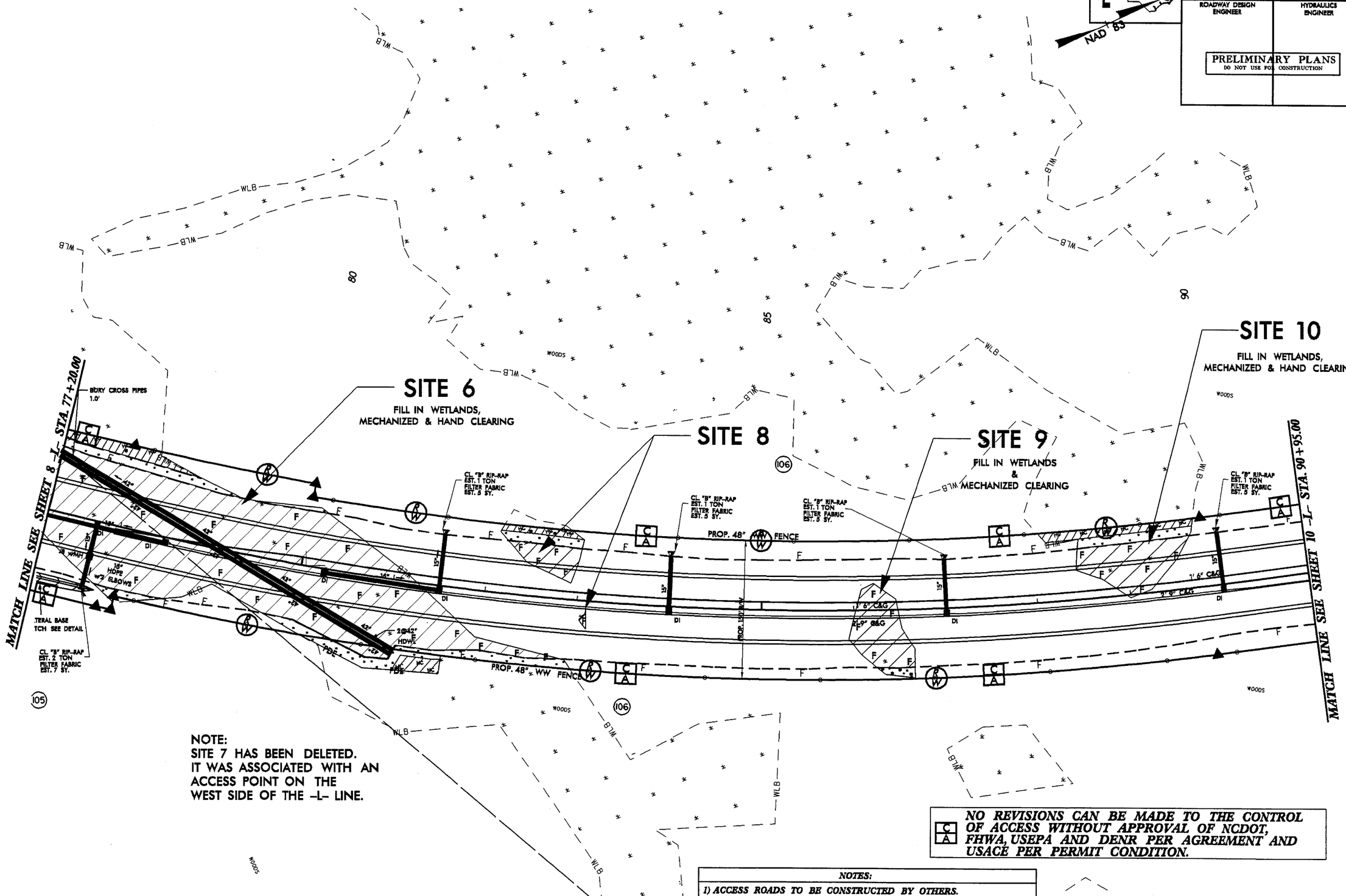
REVISIONS

06/07/06 - TLW - RIGHT-OF-WAY REVISION: ADDED ALIGNMENT -ACC1- AND ASSOCIATED RIGHT-OF-WAY; ADJUSTED TEMPORARY CONSTRUCTION EASEMENT AND PERMANENT DRAINAGE EASEMENT ON PARCELS 104 AND 105; AND ADDED PERMANENT DRAINAGE EASEMENT IN THE INTERCOASTAL WATERWAY PERPETUAL EASEMENT

07-JUN-2006 10:05
r:\hydraulics\permits\r2245 permit psh 08-rev acc2.dgn
plotscaped AT HV221536

PROJECT REFERENCE NO.	SHEET NO.
R-2245	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



NOTE:
SITE 7 HAS BEEN DELETED.
IT WAS ASSOCIATED WITH AN ACCESS POINT ON THE WEST SIDE OF THE -L- LINE.

C A — NO REVISIONS CAN BE MADE TO THE CONTROL OF ACCESS WITHOUT APPROVAL OF NCDOT, FHWA, USEPA AND DENR PER AGREEMENT AND USACE PER PERMIT CONDITION.

NOTES:
1) ACCESS ROADS TO BE CONSTRUCTED BY OTHERS.
2) FOR -L- PROFILE SEE SHEET 29.
3) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
4) SEE SHEET 2- FOR 50' TRANSITION FROM 1'-6" C&G TO 2'-9" C&G.

REVISIONS

8/17/99

31-MAY-2006 10:00
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rlowingwood AT HY221536

PROJECT REFERENCE NO.	SHEET NO.
R-2245	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NO REVISIONS CAN BE MADE TO THE CONTROL OF ACCESS WITHOUT APPROVAL OF NCDOT, FHWA, USEPA AND DENR PER AGREEMENT AND USACE PER PERMIT CONDITION.

NAD 83

REVISIONS

8/17/9

SITE 11

FILL IN WETLANDS, MECHANIZED & HAND CLEARING
&
PERMANENT SURFACE WATER IMPACTS, PERMANENT CHANNEL IMPACTS

(106) LoDANE WILLIAMSON

MATCH LINE SEE SHEET 9 -L- STA. 90+95.00

MATCH LINE SEE SHEET 11 -L- STA. 104+25.00

+88.00
59.27' (LT)
END PROP. 48" WW FENCE

+09.01
75.00' (LT)
48" WW FENCE

D.A.=187.7 Ac
Q2=57.5 cfs
V2=0.9 ft/sec
Q10=90.2 cfs
V10=1.1 ft/sec

+83.00
75.00' (LT)
48" WW FENCE

+77.05
66.18' (LT)
BEG. PROP. 48" WW FENCE

BURY CROSS PIPES 1.0'

BURY EQUALIZER PIPE 1.0'

PROP. 48" WW FENCE

2@60"

HDWL

+40.46
75.00' (RT)
48" WW FENCE

+83.99
75' (RT)
48" WW FENCE

+88.18
75' (RT)
END PROP. 48" WW FENCE

+00.66
62.78' (RT)
BEG. PROP. 48" WW FENCE

(106) LoDANE WILLIAMSON

UNNAMED JURISDICTIONAL TRIBUTARY TO INTRACOASTAL WATERWAY

WOODS

WLB

DI 18" DI

CL B RIPRAP

SCALE

50' 0 100'

LEGEND

FILL IN WETLANDS

MECHANIZED CLEARING

HAND CLEARING

NOTES:

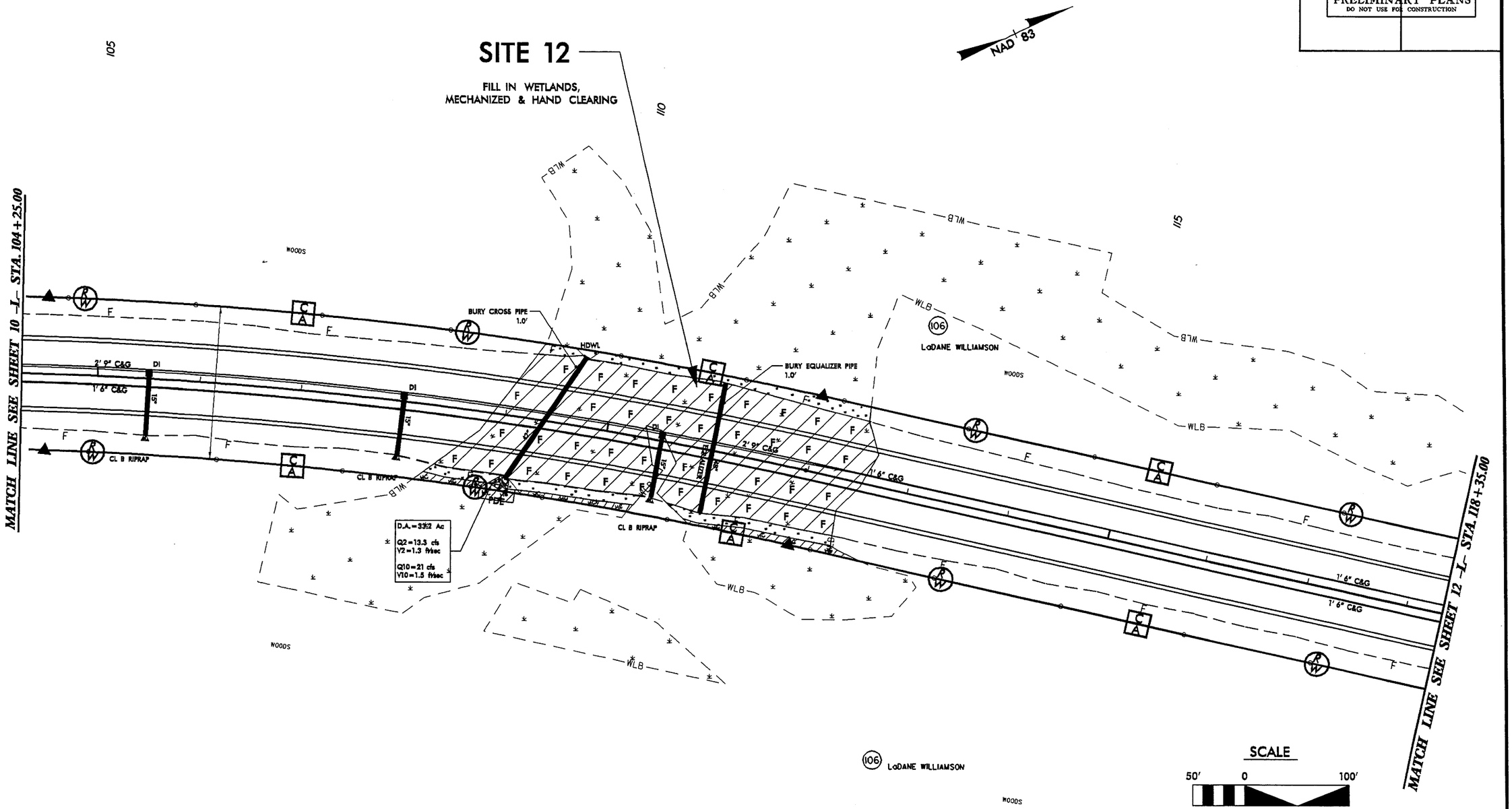
1) FOR -L- PROFILE SEE SHEETS 29 AND 30.
2) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
3) SEE SHEET 2- FOR 50' TRANSITION FROM 1'-6" C&G TO 2'-9" C&G.

04-MAY-2006 13:36
r:\Hydraulics\Permits\r2245 permit psh 10.dgn
rivenwood
$$USER$$

PROJECT REFERENCE NO.	SHEET NO.
R-2245	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



LEGEND

FILL IN WETLANDS — F F F / F F F

MECHANIZED CLEARING

HAND CLEARING — HC HC / HC HC

NO REVISIONS CAN BE MADE TO THE CONTROL OF ACCESS WITHOUT APPROVAL OF NCDOT, FHWA, USEPA AND DENR PER AGREEMENT AND USACE PER PERMIT CONDITION.

NOTES:

1) FOR -L- PROFILE SEE SHEET 30.
2) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
3) SEE SHEET 2- FOR 50' TRANSITION FROM 1'-6" C&G TO 2'-9" C&G.

REVISIONS

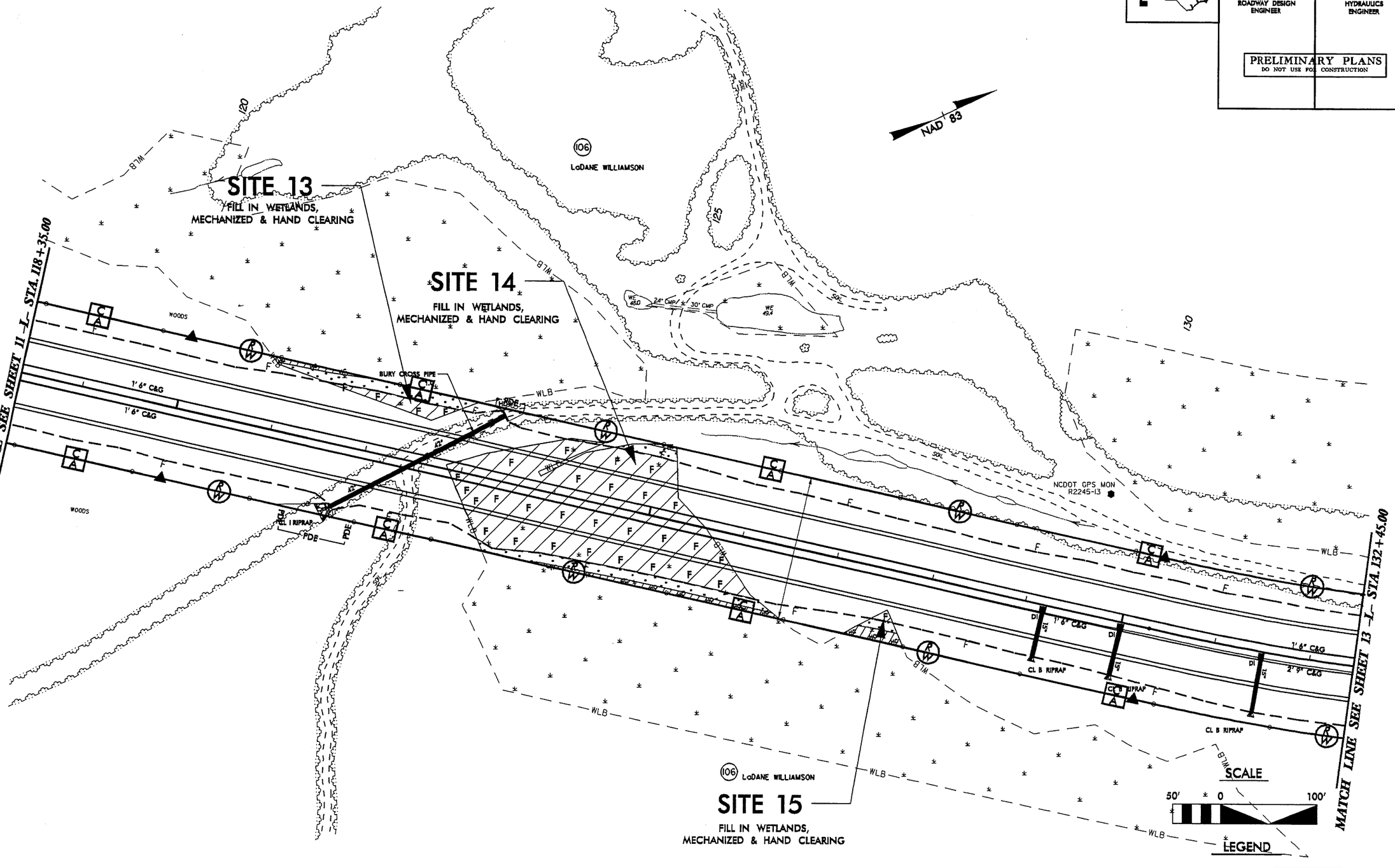
8/17/9

04-MAY-2006 13:37
r:\Hydraulics\Permits\r2245 permit psh 11.dgn
rlowgoood AT HY2215.36

PROJECT REFERENCE NO.	SHEET NO.
R-2245	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



NO REVISIONS CAN BE MADE TO THE CONTROL OF ACCESS WITHOUT APPROVAL OF NCDOT, FHWA, USEPA AND DENR PER AGREEMENT AND USACE PER PERMIT CONDITION.

NOTES:

1) FOR -L- PROFILE SEE SHEETS 30 AND 31.
2) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
3) SEE SHEET 2- FOR 50' TRANSITION FROM 1'-6" C&G TO 2'-9" C&G.

REVISIONS

8/17/9

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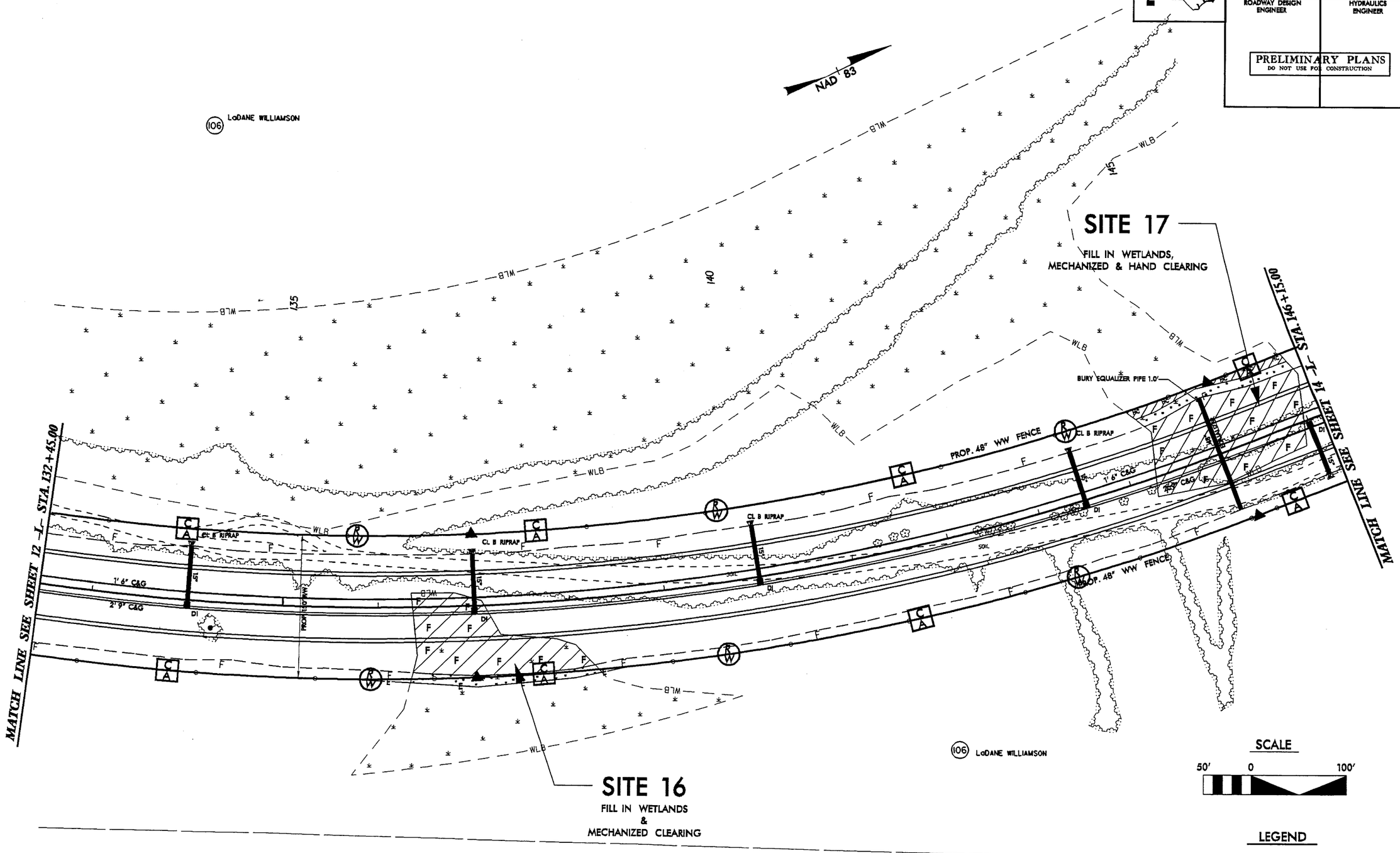
rlowgrapped 01 HY221536

PROJECT REFERENCE NO.	SHEET NO.
R-2245	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



LEGEND

FILL IN WETLANDS

MECHANIZED CLEARING

HAND CLEARING

NOTES:

1) FOR -L- PROFILE SEE SHEET 31.
2) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
3) SEE SHEET 2- FOR 50' TRANSITION FROM 1'-6" C&G TO 2'-9" C&G.

C/A NO REVISIONS CAN BE MADE TO THE CONTROL OF ACCESS WITHOUT APPROVAL OF NCDOT, FHWA, USEPA AND DENR PER AGREEMENT AND USACE PER PERMIT CONDITION.

REVISIONS

04-MAY-2006 13:38
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rlowingood AT HY221536

24 of 70

PROJECT REFERENCE NO.	SHEET NO.
R-2245	14
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83

SITE 18

FILL IN WETLANDS,
MECHANIZED & HAND CLEARING

SITE 19

FILL IN WETLANDS
&
MECHANIZED CLEARING

MATCH LINE SEE SHEET -L- STA. 146+15.00

MATCH LINE SEE SHEET 15 -L- STA. 159+50.00

150

155

WLB

WLB

WLB

WLB

105

(106) LoDANE WILLIAMSON

+05.00
75' (LT)
BEG. PROP. 48" WW FENCE

+05.00
75' (LT)
END PROP. 48" WW FENCE

PROP. 48" WW FENCE

PROP. 48" WW FENCE

PROP. 48" WW FENCE

PROP. 48" WW FENCE

PROP. 15" RCP

1' 6" C&G

2' 9" C&G

1' 6" C&G

1' 6" C&G

2GI

2GI

2GI

2GI

2GI

DI

15"

CL B RIPRAP

SOIL

SOIL

5 @ 60" x 46" CORR. ALUM. PIPE-ARCH
FOR ANIMAL PASSAGE
WITH CONTINUOUS ALUMINUM HEADWALLS
ON BOTH ENDS

BURY PIPES 1.0' AND BACKFILL
ENTIRE LENGTH OF EACH PIPE
WITH 1.0' OF SOIL

(106) LoDANE WILLIAMSON

CA *NO REVISIONS CAN BE MADE TO THE CONTROL OF ACCESS WITHOUT APPROVAL OF NCDOT, FHWA, USEPA AND DENR PER AGREEMENT AND USACE PER PERMIT CONDITON.*

NOTES:

1) FOR -L- PROFILE SEE SHEETS 31 AND 32.
2) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
3) SEE SHEET 2- FOR 50' TRANSITION FROM 1'-6" C&G TO 2'-9" C&G.

SCALE

50' 0 100'

LEGEND

FILL IN WETLANDS — F F F / F F F

MECHANIZED CLEARING

*HAND CLEARING — HC HC / HC HC

REVISIONS

8/17/9

04-MAY-2006 13:39
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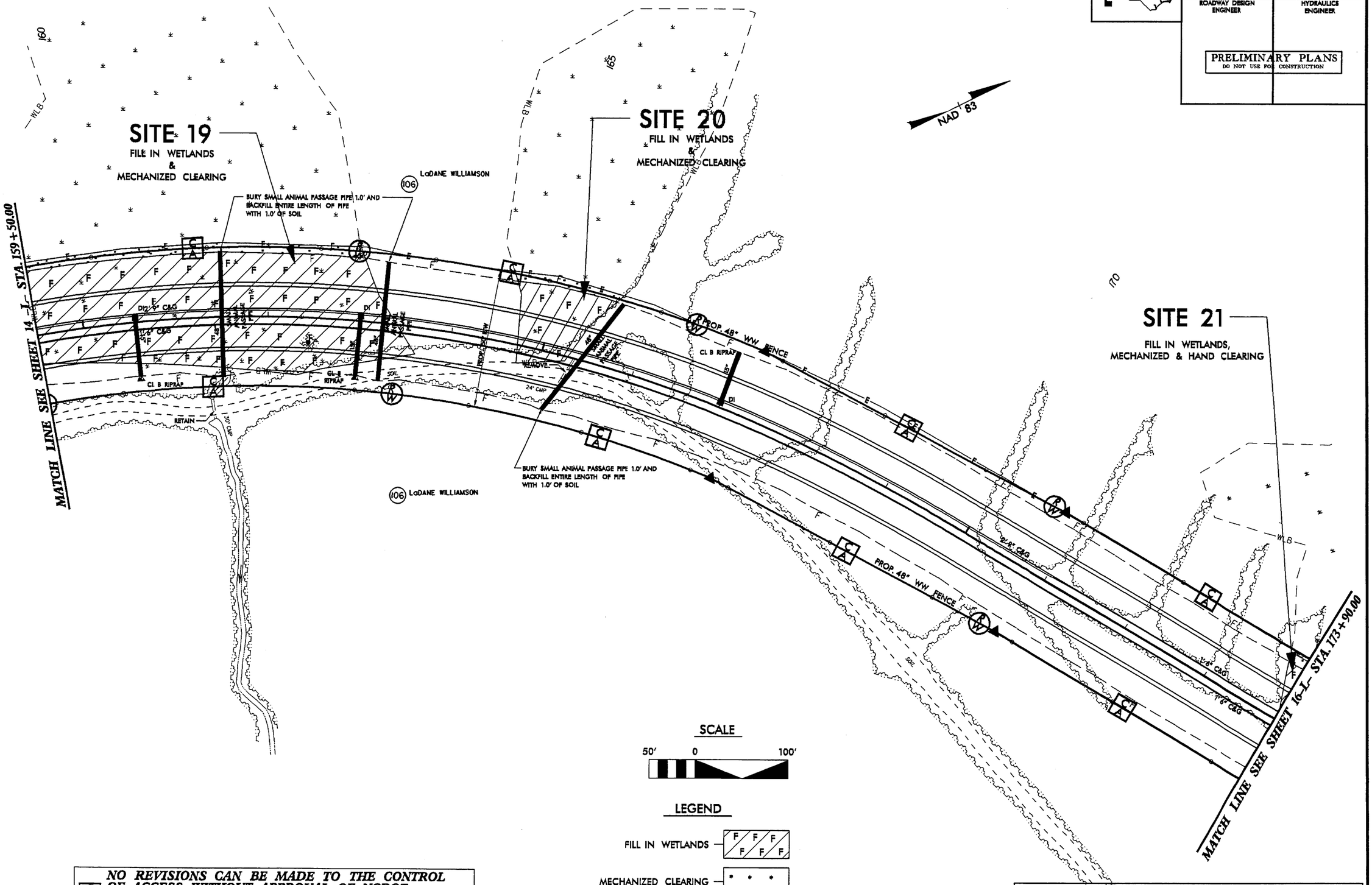
mmcdonald
User: mmcdonald

85 of 90

PROJECT REFERENCE NO.	SHEET NO.
R-2245	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



NO REVISIONS CAN BE MADE TO THE CONTROL OF ACCESS WITHOUT APPROVAL OF NCDOT, FHWA, USEPA AND DENR PER AGREEMENT AND USACE PER PERMIT CONDITION.

NOTES:

1) FOR -L- PROFILE SEE SHEET 32.
2) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
3) SEE SHEET 2- FOR 50' TRANSITION FROM 1'-6" C&G TO 2'-9" C&G.

REVISIONS

8/17/9

04-MAY-2006 13:41
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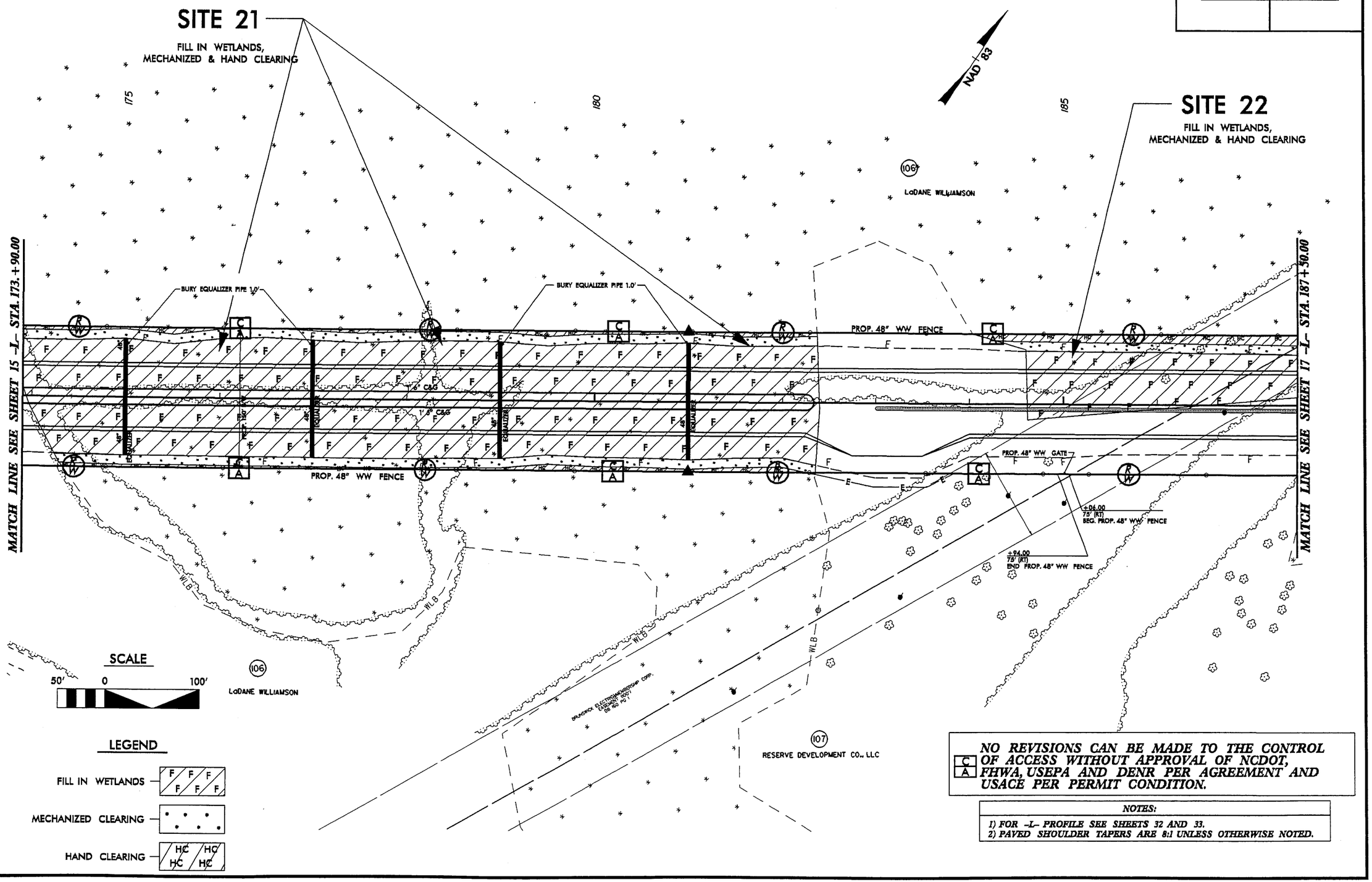
clayton.good AT HY221536

26 of 70

PROJECT REFERENCE NO.	SHEET NO.
R-2245	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



NO REVISIONS CAN BE MADE TO THE CONTROL OF ACCESS WITHOUT APPROVAL OF NCDOT, FHWA, USEPA AND DENR PER AGREEMENT AND USACE PER PERMIT CONDITION.

NOTES:

1) FOR -L- PROFILE SEE SHEETS 32 AND 33.
2) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.

REVISIONS

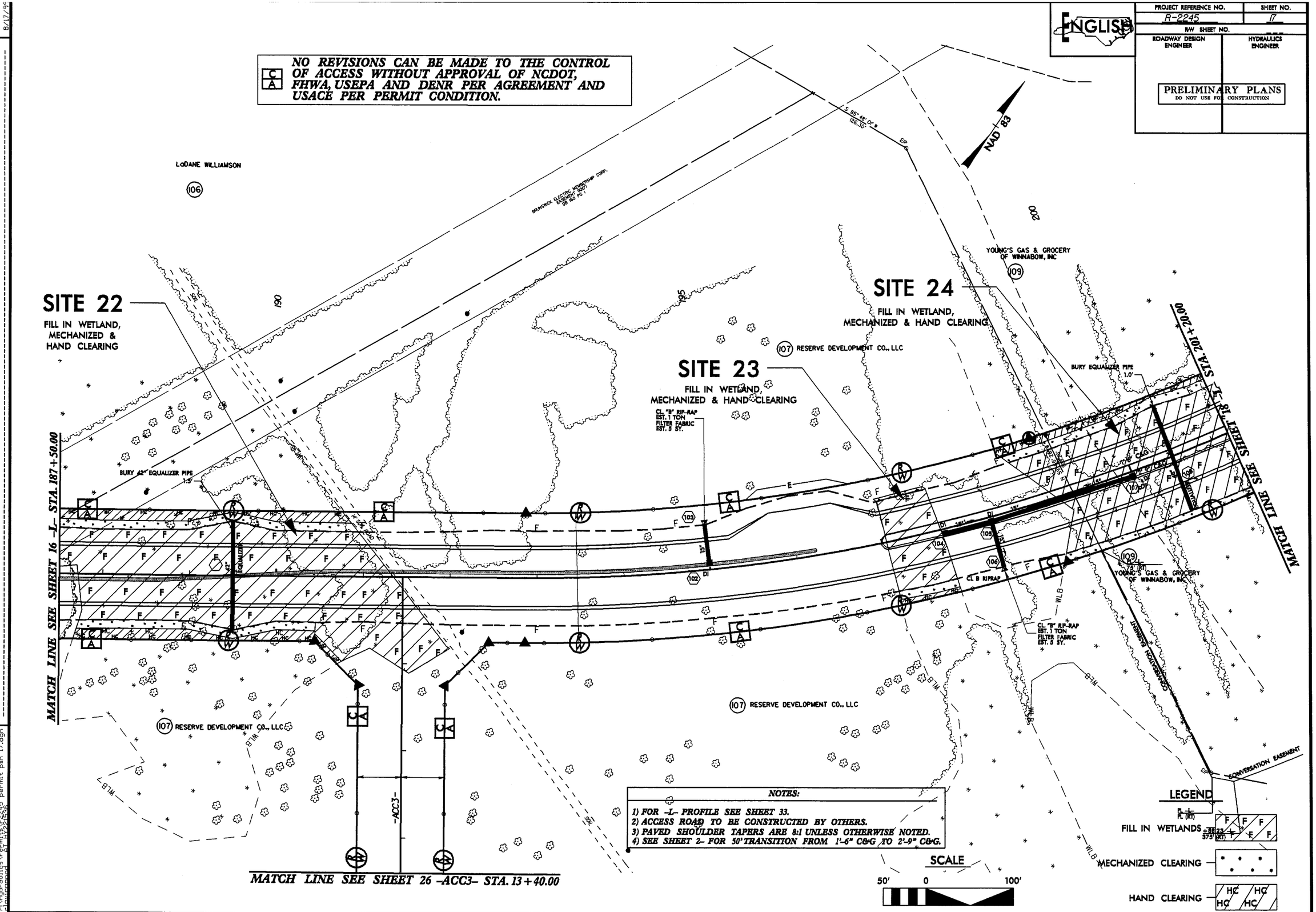
8/17/9

04-MAY-2006 13:43
r:\Hydraulics\Permits\r2245 permit psh 16.dgn
plowingpond AT HY221536

PROJECT REFERENCE NO.	SHEET NO.
R-2245	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



REVISIONS

8/17/99

24-MAY-2006 10:48
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rlewinnpoint AT HY22536

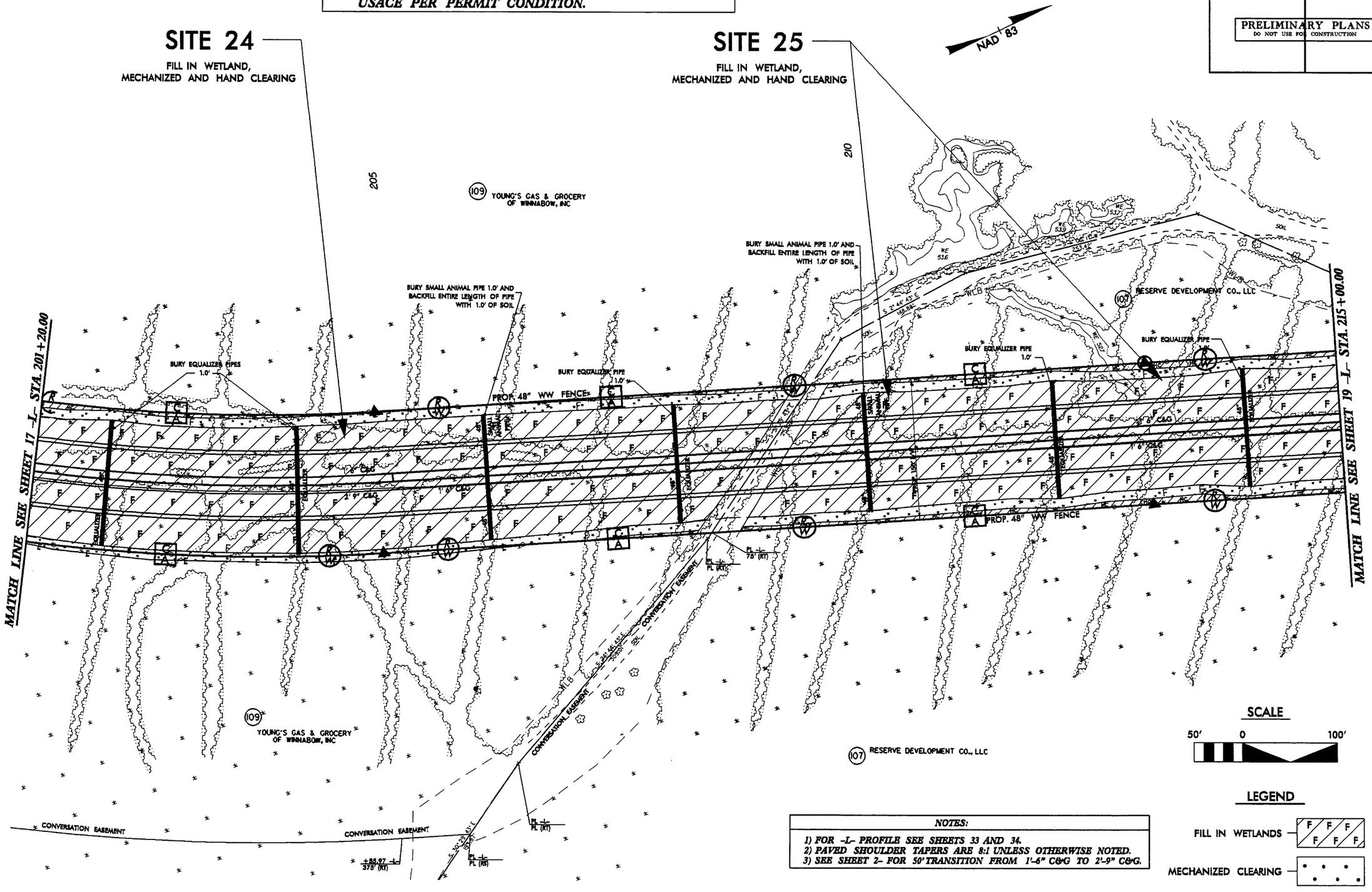
27 of 70

PROJECT REFERENCE NO.	SHEET NO.
R-2245	18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NO REVISIONS CAN BE MADE TO THE CONTROL OF ACCESS WITHOUT APPROVAL OF NCDOT, FHWA, USEPA AND DENR PER AGREEMENT AND USACE PER PERMIT CONDITION.



NOTES:

1) FOR -L- PROFILE SEE SHEETS 33 AND 34.
2) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
3) SEE SHEET 2- FOR 50' TRANSITION FROM 1'-6" C&G TO 2'-9" C&G.

REVISIONS

8/17/99

24-MAY-2006 10:49
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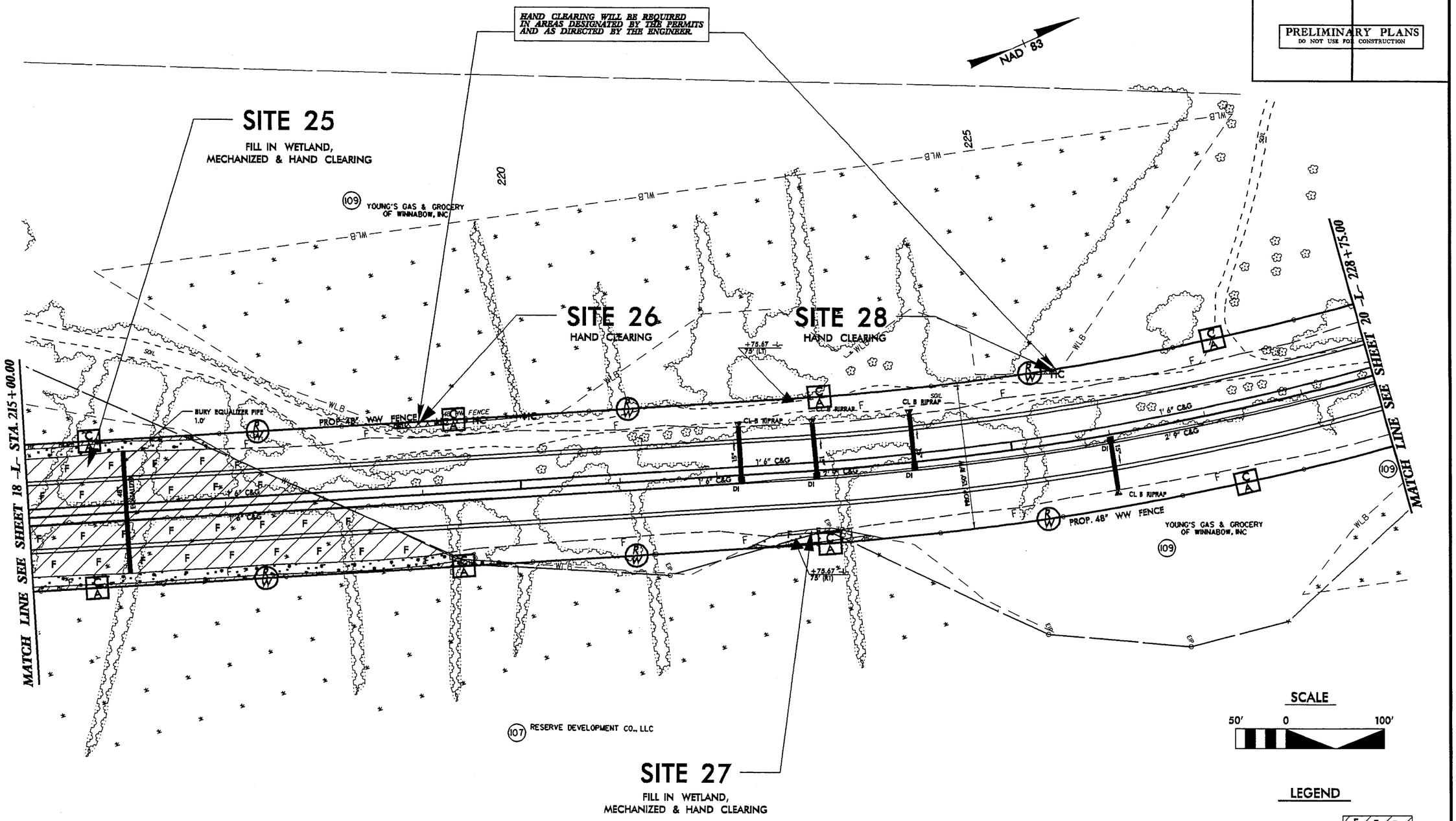
PROJECT REFERENCE NO.	SHEET NO.
R-2245	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



NO REVISIONS CAN BE MADE TO THE CONTROL OF ACCESS WITHOUT APPROVAL OF NCDOT, FHWA, USEPA AND DENR PER AGREEMENT AND USACE PER PERMIT CONDITION.

NOTES:
1) FOR -L- PROFILE SEE SHEET 34.
2) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
3) SEE SHEET 2- FOR 50' TRANSITION FROM 1'-6" C&G TO 2'-9" C&G.

REVISIONS

8/17/9

04-MAY-2006 13:46
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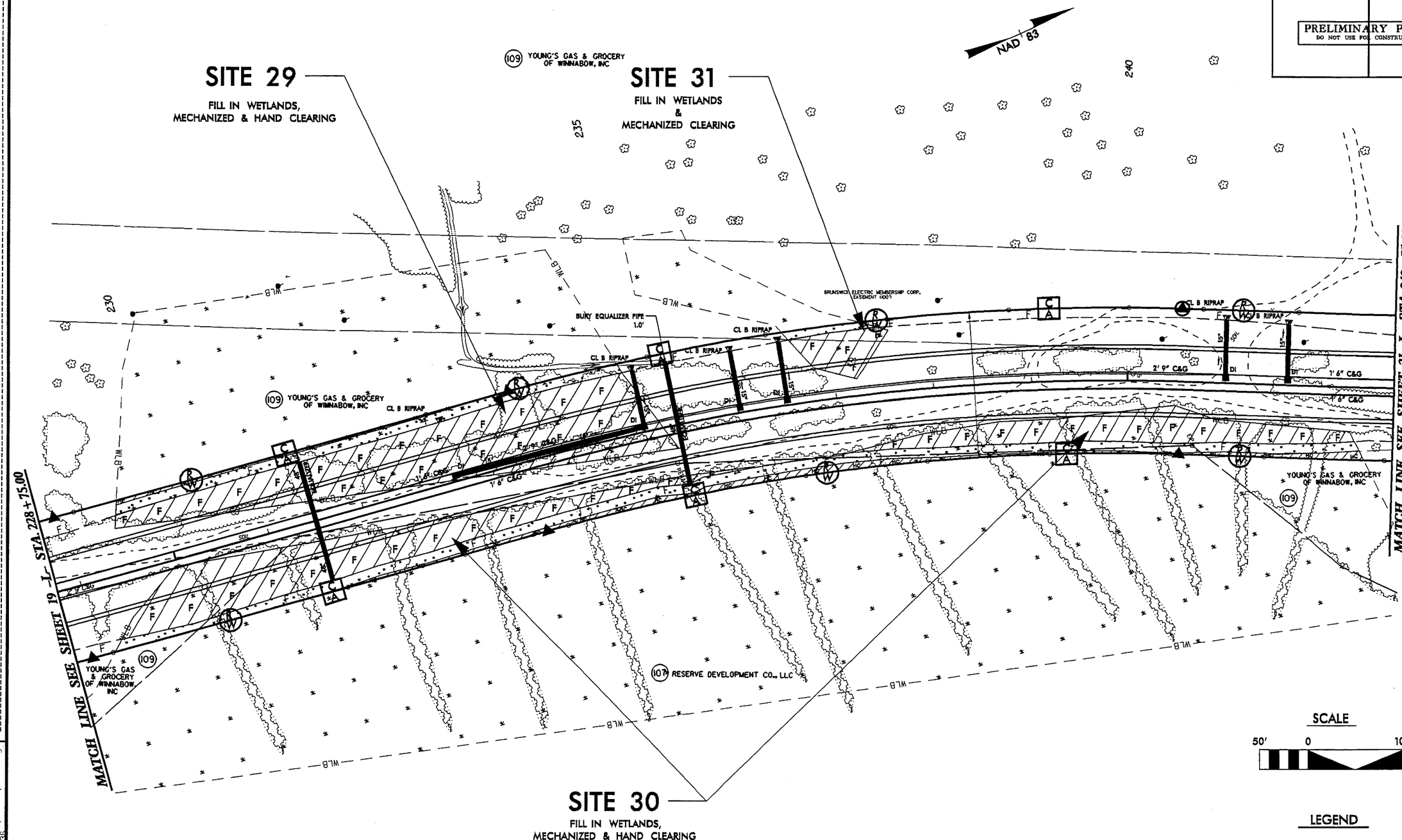
PROJECT REFERENCE NO.	SHEET NO.
R-2245	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



LEGEND

FILL IN WETLANDS — F F F F F F

MECHANIZED CLEARING

HAND CLEARING — HC HC HC HC

NO REVISIONS CAN BE MADE TO THE CONTROL OF ACCESS WITHOUT APPROVAL OF NCDOT, FHWA, USEPA AND DENR PER AGREEMENT AND USACE PER PERMIT CONDITION.

NOTES:

1) FOR -L- PROFILE SEE SHEETS 34 AND 35.
2) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
3) SEE SHEET 2- FOR 50' TRANSITION FROM 1'-6" C&G TO 2'-9" C&G.

REVISIONS

8/17/99

03-MAY-2006 11:01
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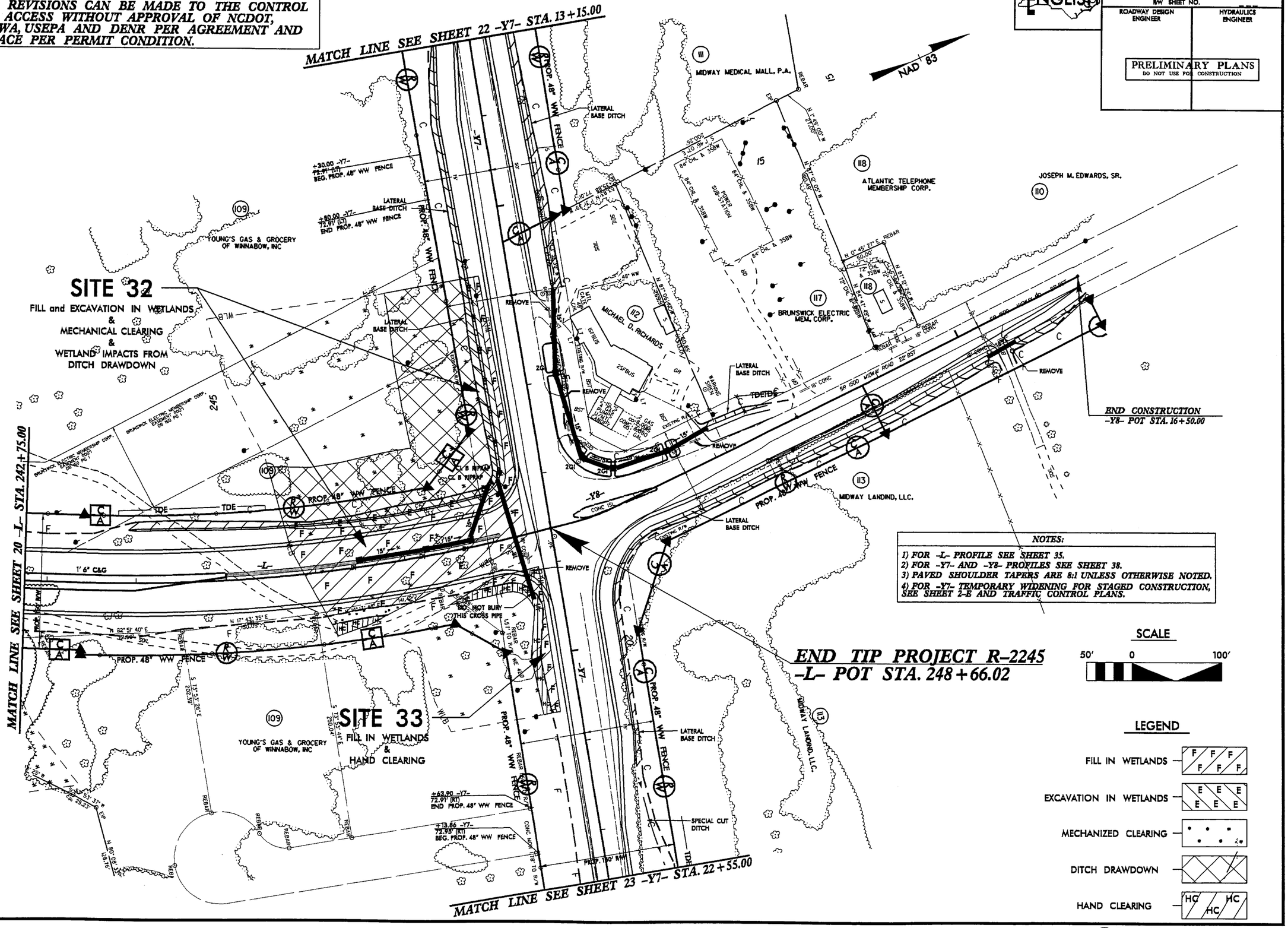
PROJECT REFERENCE NO.	SHEET NO.
R-2245	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

C A NO REVISIONS CAN BE MADE TO THE CONTROL OF ACCESS WITHOUT APPROVAL OF NCDOT, FHWA, USEPA AND DENR PER AGREEMENT AND USACE PER PERMIT CONDITION.



NOTES:

1) FOR -L- PROFILE SEE SHEET 35.
2) FOR -Y7- AND -Y8- PROFILES SEE SHEET 38.
3) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
4) FOR -Y7- TEMPORARY WIDENING FOR STAGED CONSTRUCTION, SEE SHEET 2-E AND TRAFFIC CONTROL PLANS.

SCALE

50' 0 100'

LEGEND

FILL IN WETLANDS

EXCAVATION IN WETLANDS

MECHANIZED CLEARING

DITCH DRAWDOWN

HAND CLEARING

REVISIONS

8/17/9

04-MAY-2006 13:58
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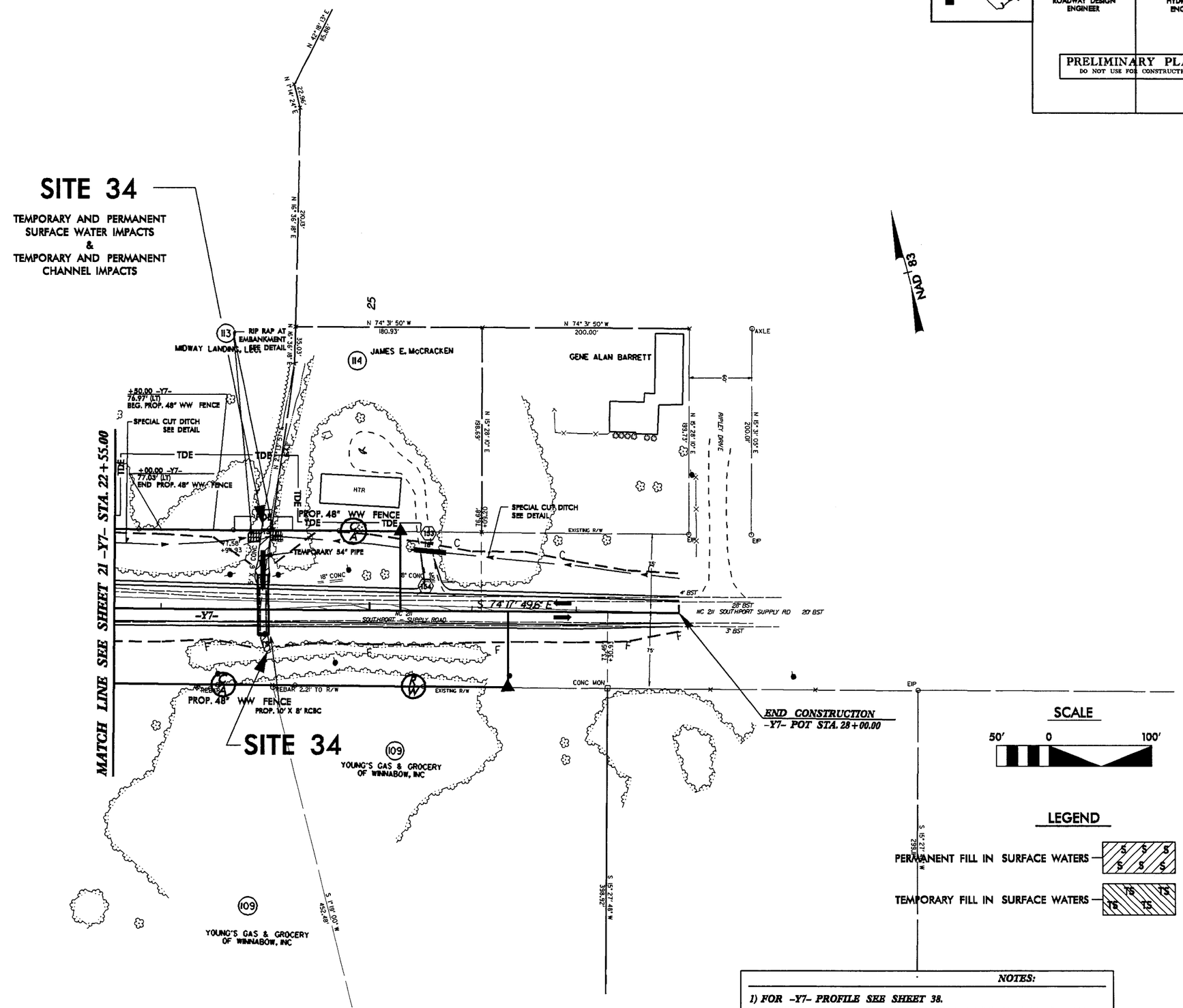
rlwiggwood ST HY221536

PROJECT REFERENCE NO.	SHEET NO.
R-2245	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



NOTES:

1) FOR -Y7- PROFILE SEE SHEET 38.
2) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
3) FOR -Y7- TEMPORARY WIDENING FOR STAGED CONSTRUCTION, SEE SHEET 2-E AND TRAFFIC CONTROL PLANS.

REVISIONS

05/19/06 - TLW - RIGHT-OF-WAY REVISION: ADDED A BREAK IN CONTROL-OF-ACCESS ON PARCEL 113 FROM -Y7- STATION 23+00 TO -Y7- STATION 23+50

8/17/99

25-MAY-2006 18:40
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rlovingood AT HY221536

PROJECT REFERENCE NO.	SHEET NO.
R-2245	27
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= N/A CFS
DESIGN FREQUENCY	= 10 YRS
DESIGN HW ELEVATION	= 6.9 FT
BASE DISCHARGE	= N/A CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 12.3 FT
OVERTOPPING DISCHARGE	= N/A CFS
OVERTOPPING FREQUENCY	= 10 YRS
OVERTOPPING ELEVATION	= 9.3 FT

℄ EL = 19.78'
℄ STATION 21+50.00 -L-
3 SPAN BRIDGE W/ 21" CORED SLABS
TOTAL LENGTH = 165'
SPAN 1 = 55'
SPAN 2 = 55'
SPAN 3 = 55'

BM #200 BOLT IN LEFT FRONT LEG OF WATER TOWER
62.10' RT. OF -L- STA 15+14.9
ELEV. = 7.95' N 6147208' E 2254632.2

PI = 13+15.00
EL = 7.23'
VC = 120'
K = 178

PI = 14+50.00
EL = 7.65'
VC = 150'
K = 143

PI = 18+60.00
EL = 10.48'
VC = 160'
K = 46

PI = 19+70.00
EL = 20.62'
VC = 252'
K = 48

(-)0.3748%
(+)0.3000%
(+)3.3435%
(+)5.5455%
(+)8.8292%
(+)0.3000%
BEGIN BRIDGE -L- STA 20+00.00
END BRIDGE -L- STA 22+65.00
BM 3
PVI DITCH GRADE RT -L- STA 22+28 EL=5.00
(+)4.38%
(+)5.70%
BEGIN DITCH GRADE RT -L- STA 22+07 EL=3.50
MHW ELEVATION 2.7'
MTL ELEVATION 0.6'
MLW ELEVATION -1.5'
FOR -L- PLAN VIEW SEE SHEET 4

BM #201RRS SET IN 10" OAK 125±FT LT OF -L- STA 24+99.53 ELEV. = 18.90' N 6246013 E 2254461.34

PI = 25+70.00
EL = 18.52'
K = 127
VC = 180'

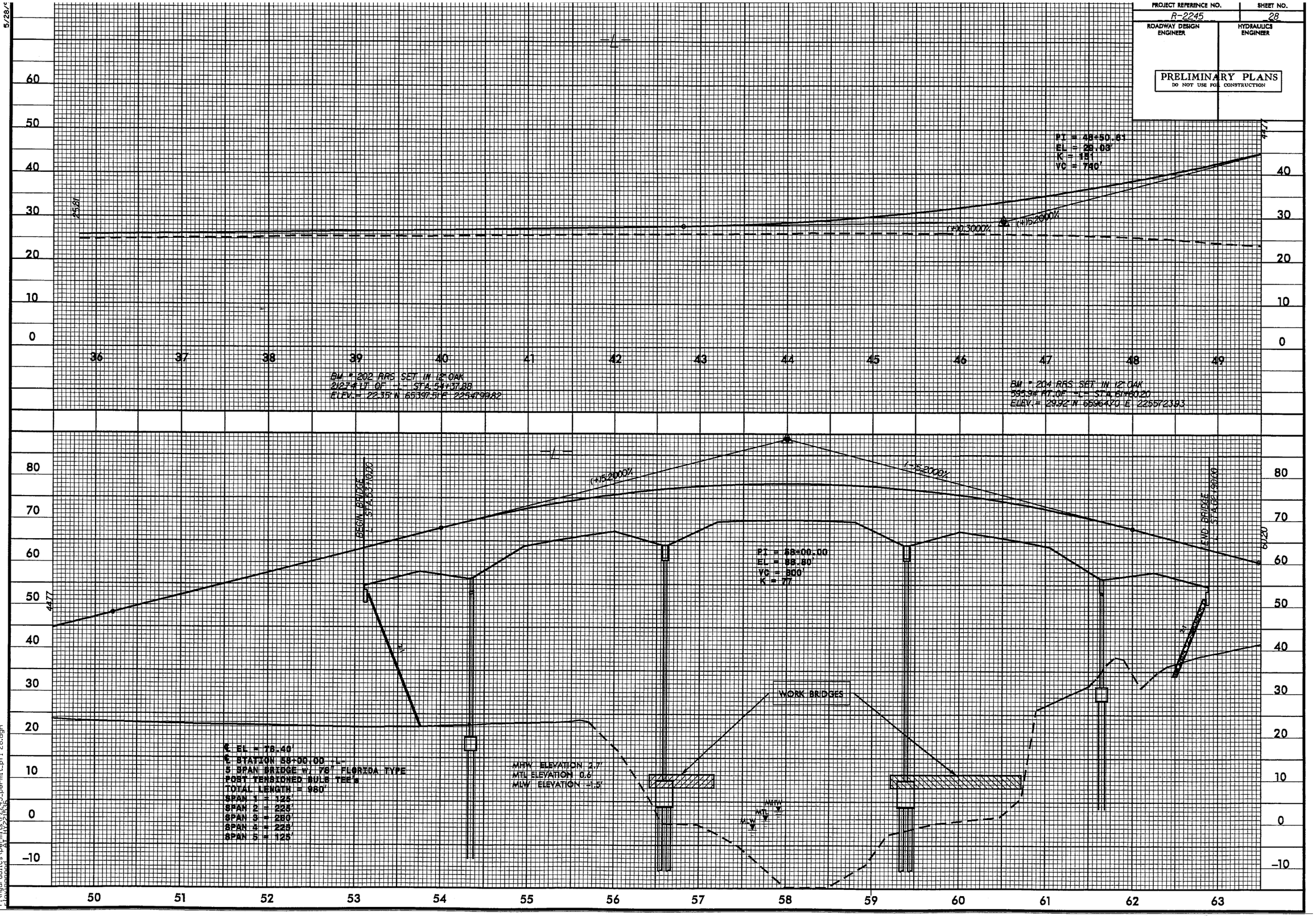
PI = 32+20.00
EL = 24.74'
K = 274
VC = 180'

(-)0.3000%
(+)0.9567%
(+)0.3000%
0.000%
(+)4.38%
BEGIN DITCH GRADE RT -L- STA 32+00 EL=22.20
END DITCH GRADE RT -L- STA 33+03 EL=22.20
END DITCH GRADE RT -L- STA 24+04 EL=17.20
FOR -L- PLAN VIEW SEE SHEETS 4 & 5
SEE SHEET 5 FOR SPECIAL CUT DITCH DETAILS

03-MAY-2006 13:05
J:\roadway\prod\R-2245_rdwy_pf1.dgn
User: dtaylor

PROJECT REFERENCE NO.	SHEET NO.
R-2245	28
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



11/9/05 - TLW - DESIGN REVISION: MODIFIED THE GRADE FROM -L- STA 42+80.61 TO -L- STA 70+60.00 TO PROVIDE A SYMMETRICAL GRADE ON THE INTRACOASTAL WATERWAY BRIDGE.

04-MAY-2006 08:41
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AT HY22536

PROJECT REFERENCE NO.	SHEET NO.
R-2245	38
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

BM 1 213 RRS SET IN 12" PINE
3509' RT OF -Y7- STA 15+24.28
ELEV.= 1433' N 819754.1E 2263288.32

-Y7-

BEGIN GRADE -Y7- STA 10+00.00 EL = 45.57

PI = 14+50.00
EL = 47.92
VC = 200'
K = 200

PI = 16+60.00
EL = 49.58
VC = 200'
K = 250

PI = 21+30.00
EL = 48.46
VC = 200'
K = 308

(+)0.3000% (-)0.4563% (-)0.4563% (+)0.3500% (+)0.3500% (-)0.3000%
0.00% (+)0.10% (+)0.23% (-)0.90%

BEGIN DITCH GRADE LT
-Y7- STA 12+75
EL=41.90

BEGIN DITCH GRADE RT
-Y7- STA 13+00
EL=41.60

END DITCH GRADE LT
-Y7- STA 16+00
EL=41.90

PI=7+95 RT
=L= STA 240+21 LT
EL=42.10

PI=9+14 LT
=L= STA 10+67 RT
EL=42.35

PI=21+38 LT
EL=44.25

4279 4284

FOR -Y7- PLAN VIEW
SEE SHEETS 21,22 & 23

10 11 12 13 14 15 16 17 18 19 20 21 22 23

-Y8-

PI = 10+65.00
EL = 46.21'
VC = 60'
K = 33

PI = 13+25.00
EL = 45.88'
VC = 100'
K = 446

PI = 16+00.00
EL = 45.73'
VC = 100'
K = 887

BEGIN GRADE -Y8- STA 8+50.00 EL = 46.29

END GRADE -Y8- STA 16+50.00 EL = 45.80

CULVERT HYDRAULIC DATA

DESIGN DISCHARGE	= 600 CFS
DESIGN FREQUENCY	= 50 YRS
DESIGN HW ELEVATION	= 259.8 FT
BASE DISCHARGE	= 750 CFS
BASE FREQUENCY	= 100 YRS
BASE HW ELEVATION	= 272.2 FT
OVERTOPPING DISCHARGE	= 815 CFS
OVERTOPPING FREQUENCY	= 100 YRS
OVERTOPPING ELEVATION	= 277.8 FT

-Y7-

PI = 25+10.30
EL = 47.31
VC = 400'
K = 308

4279 4284

(-)0.3000% (-)0.0086% (+)0.20% (+)2.40% (+)3.60%
0.90%

END DITCH GRADE LT
-Y7- STA 23+88
EL=42.00

BEGIN DITCH GRADE LT
-Y7- STA 24+05
EL=42.00

PROPOSED 10'w x 8'h RCBC

END GRADE -Y7- STA 26+50.00 EL = 50.24

PI=27+40 LT
EL=42.60

PI=27+50 LT
EL=43.90

END DITCH GRADE LT
-Y7- STA 27+75
EL=44.20

FOR -Y7- PLAN VIEW
SEE SHEET 23

-Y8-

(-)1.2700% (-)0.2058% (+)0.0018% (+)0.0130%
(-)0.20% (+)0.85%

PI=10+57 RT
=L= STA 19+44 LT
EL=42.05

BEGIN DITCH GRADE LT
-Y8- STA 12+05
EL=42.30

END DITCH GRADE LT
-Y8- STA 12+77
EL=42.20

END DITCH GRADE RT
-Y8- STA 16+50
EL=42.40

FOR -Y8- PLAN VIEW
SEE SHEET 21

23 24 25 26 27 28

03-MAY-2006 13:29
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cleyonpond AT HYDRAULICS

36-57

8/23/99

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2245	X-4

18+50.00

WETLANDS
WATERS EDGE
S.S. 6.9%
0.0200
0.0200
WETLANDS
WATERS EDGE
S.S. 4.1%

18+00.00

WETLANDS
WATERS EDGE
S.S. 5.9%
0.0200
0.0200
WETLANDS
WATERS EDGE
S.S. 4.1%

17+50.00

WETLANDS
WATERS EDGE
S.S. 6.9%
0.0200
0.0200
WATERS EDGE
WETLANDS
S.S. 4.7%

17+00.00

WETLANDS
WATERS EDGE
S.S. 6.0%
0.0200
0.0200
WETLANDS
WATERS EDGE
S.S. 4.2%

16+50.00

WETLANDS &
WATERS EDGE
S.S. 5.3%
0.0200
0.0200
WETLANDS
WATERS EDGE
S.S. 4.3%

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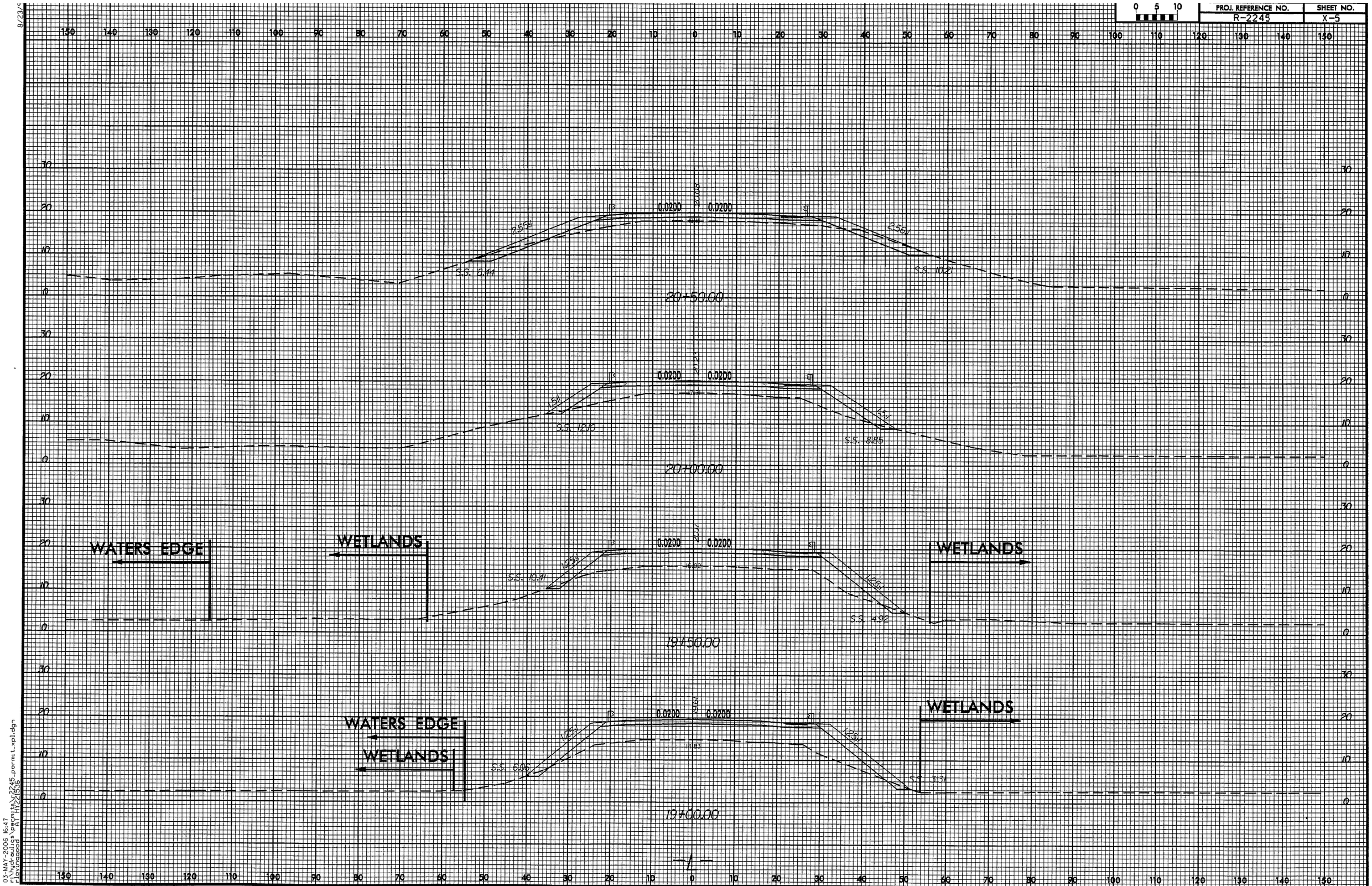
rlovingood AT HY22636

37 570



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8/23/96

PROJ. REFERENCE NO.: R-2245

SHEET NO.: X-25

WETLANDS

WETLANDS

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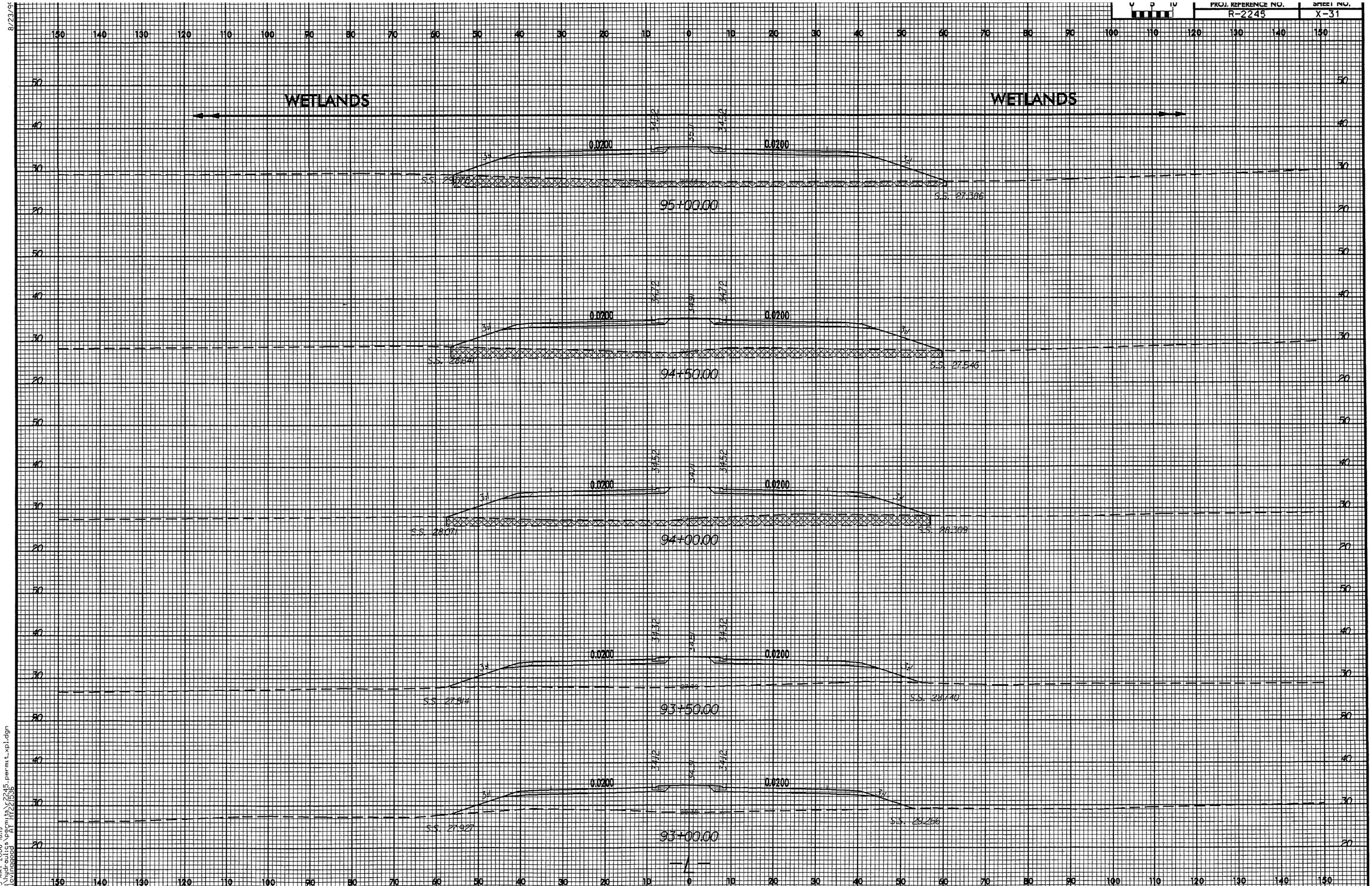
PROJ. REFERENCE NO.
R-2245
SHEET NO.
X-31
WETLANDS
WETLANDS
0.0200
0.0200
3:1
3:1
S.S. 29.075
S.S. 27.386
95+00.00
34.72
34.91
34.72
S.S. 28.641
S.S. 27.546
94+50.00
34.52
34.71
34.52
S.S. 28.071
S.S. 28.309
94+00.00
34.32
34.51
34.32
S.S. 27.814
S.S. 28.740
93+50.00
34.12
34.31
34.12
S.S. 27.927
S.S. 29.266
93+00.00
-L-
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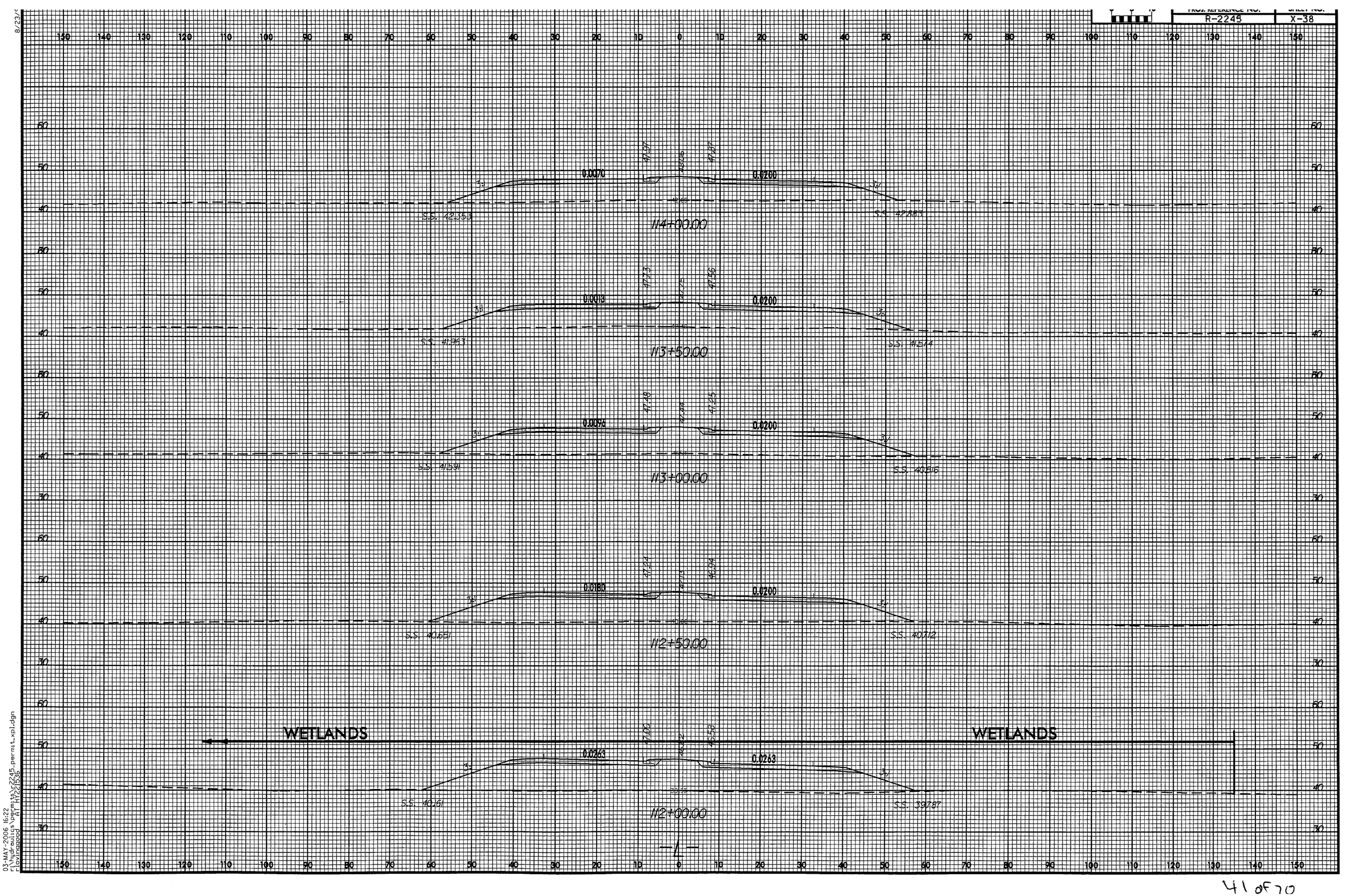
rlovingood AT HY221536



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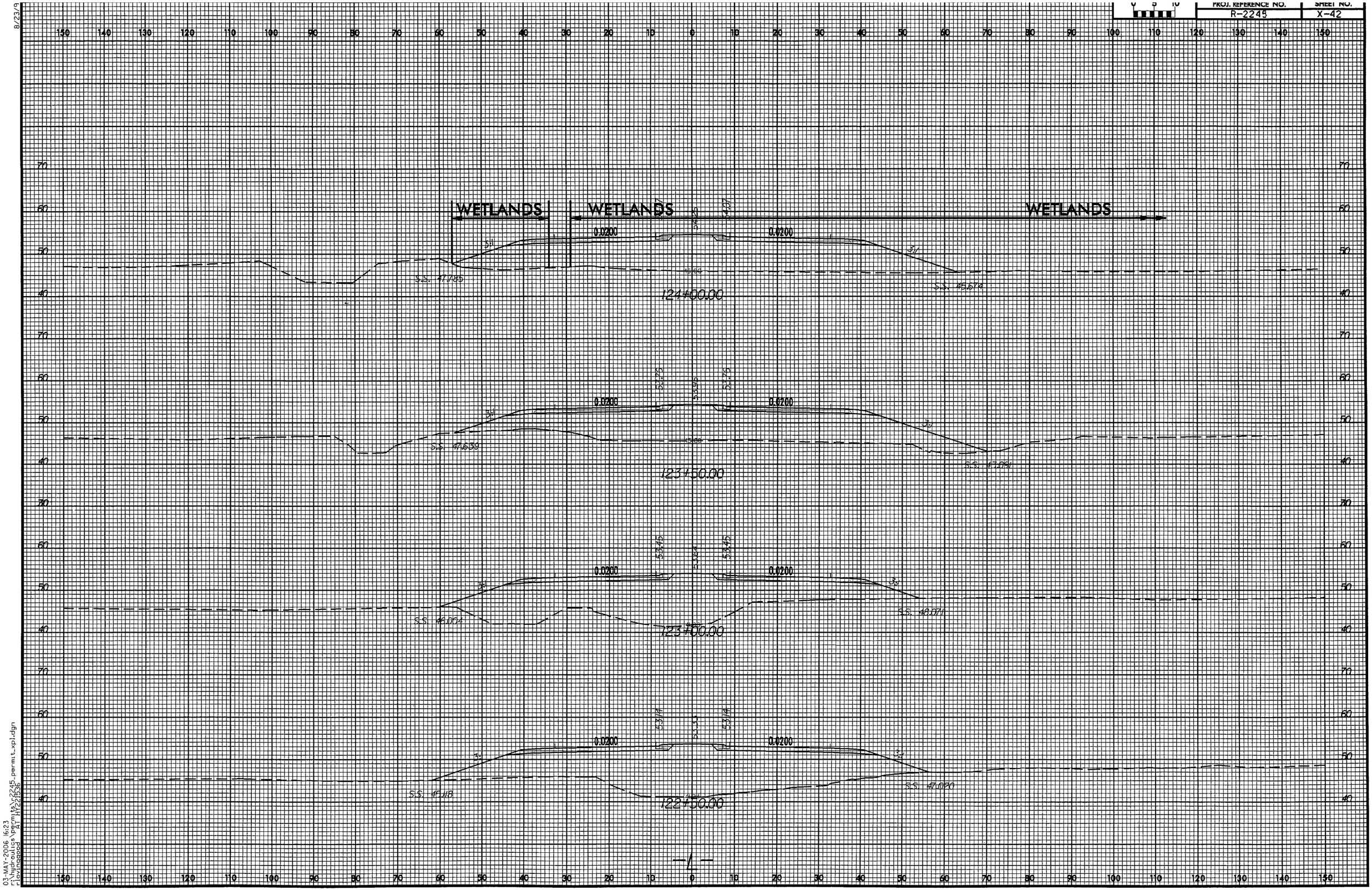
PROJ. REFERENCE NO.
R-2245
SHEET NO.
X-42
WETLANDS
WETLANDS
WETLANDS
0.0200
0.0200
3:1
3:1
S.S. 47.785
S.S. 45.674
124+00.00
53.76
53.95
53.76
0.0200
0.0200
3:1
3:1
S.S. 47.639
S.S. 47.091
123+50.00
53.45
53.64
53.45
0.0200
0.0200
3:1
3:1
S.S. 46.004
S.S. 48.071
123+00.00
53.14
53.33
53.14
0.0200
0.0200
3:1
3:1
S.S. 45.118
S.S. 47.020
122+50.00
-L-
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rlovingood AT HY22536

8/23/95

PROJ. REFERENCE NO. R-2245

SHEET NO. X-51

WETLANDS

WETLANDS

145+00.00

S.S. 60.245

S.S. 60.902

144+50.00

S.S. 60.344

S.S. 60.279

144+00.00

S.S. 60.387

S.S. 59.786

143+50.00

S.S. 60.151

S.S. 59.934

143+00.00

S.S. 59.771

S.S. 59.841

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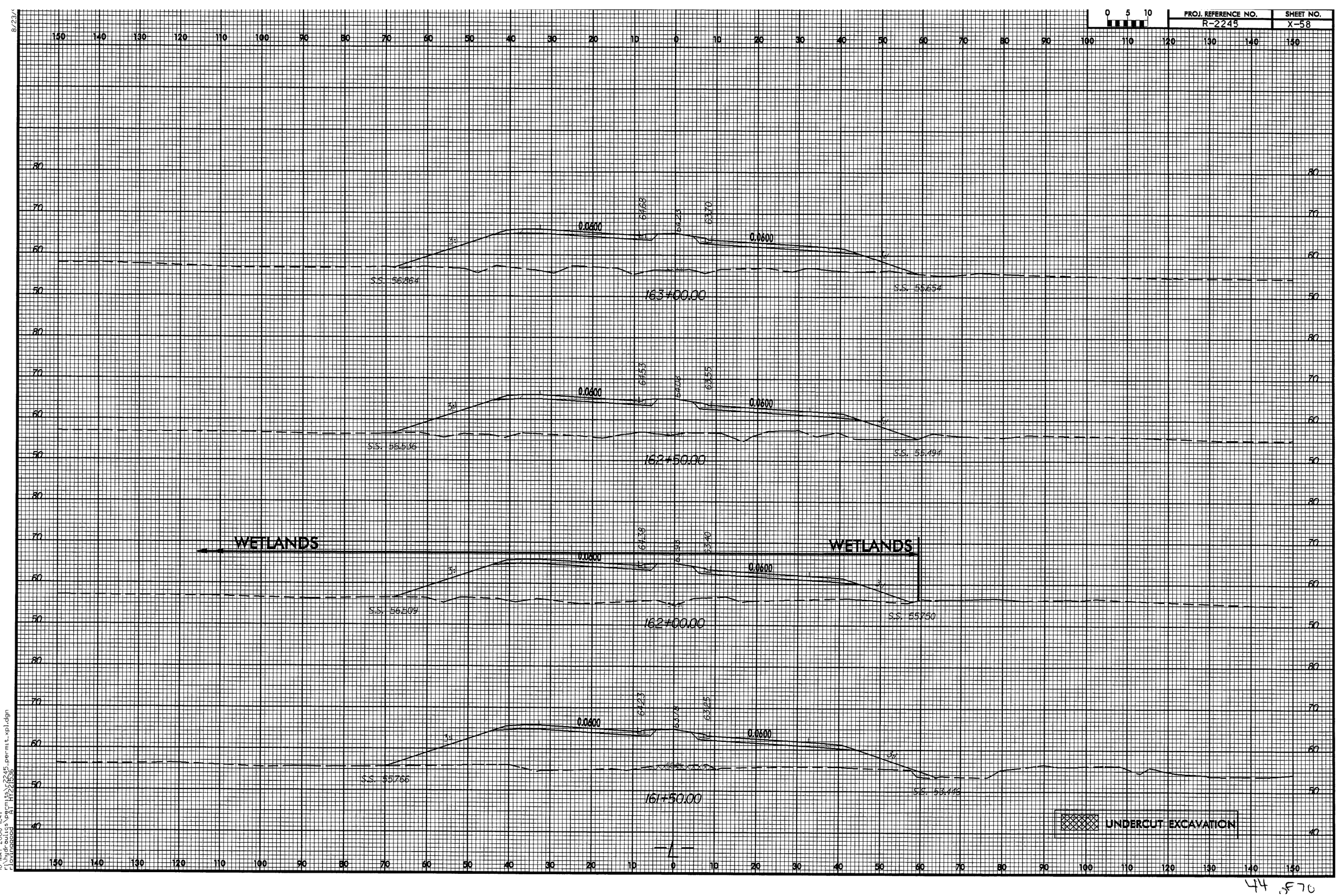
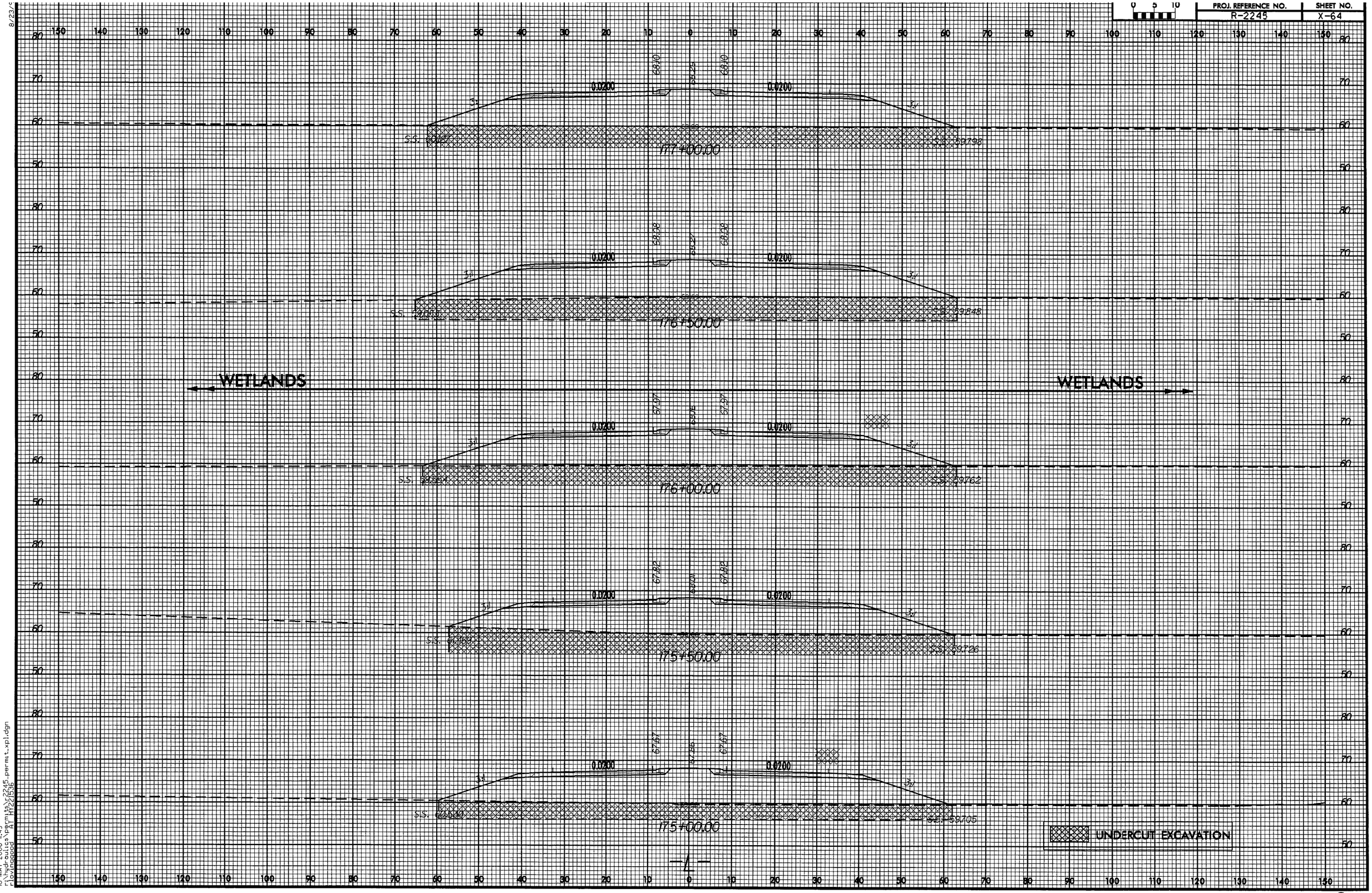
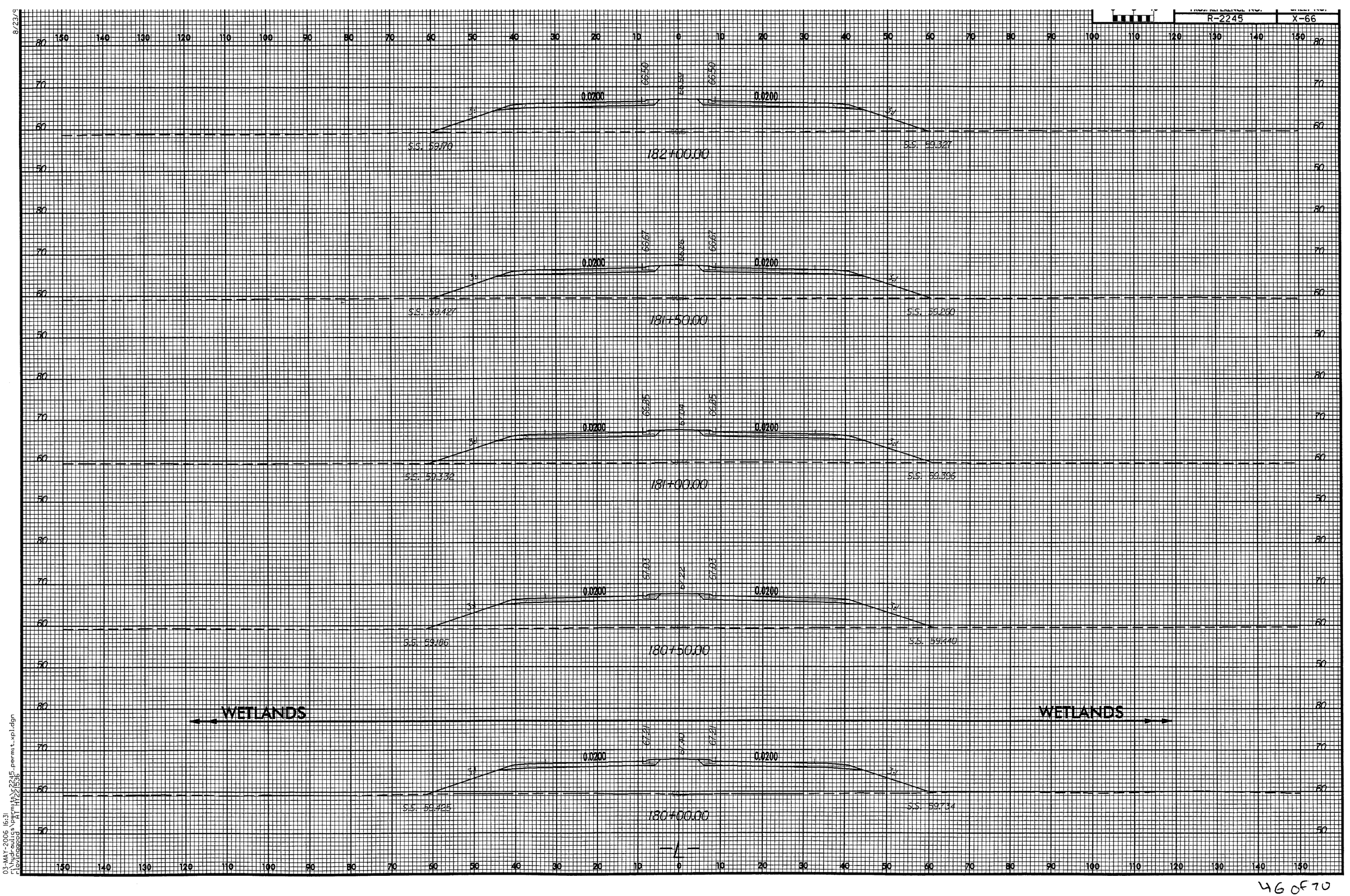
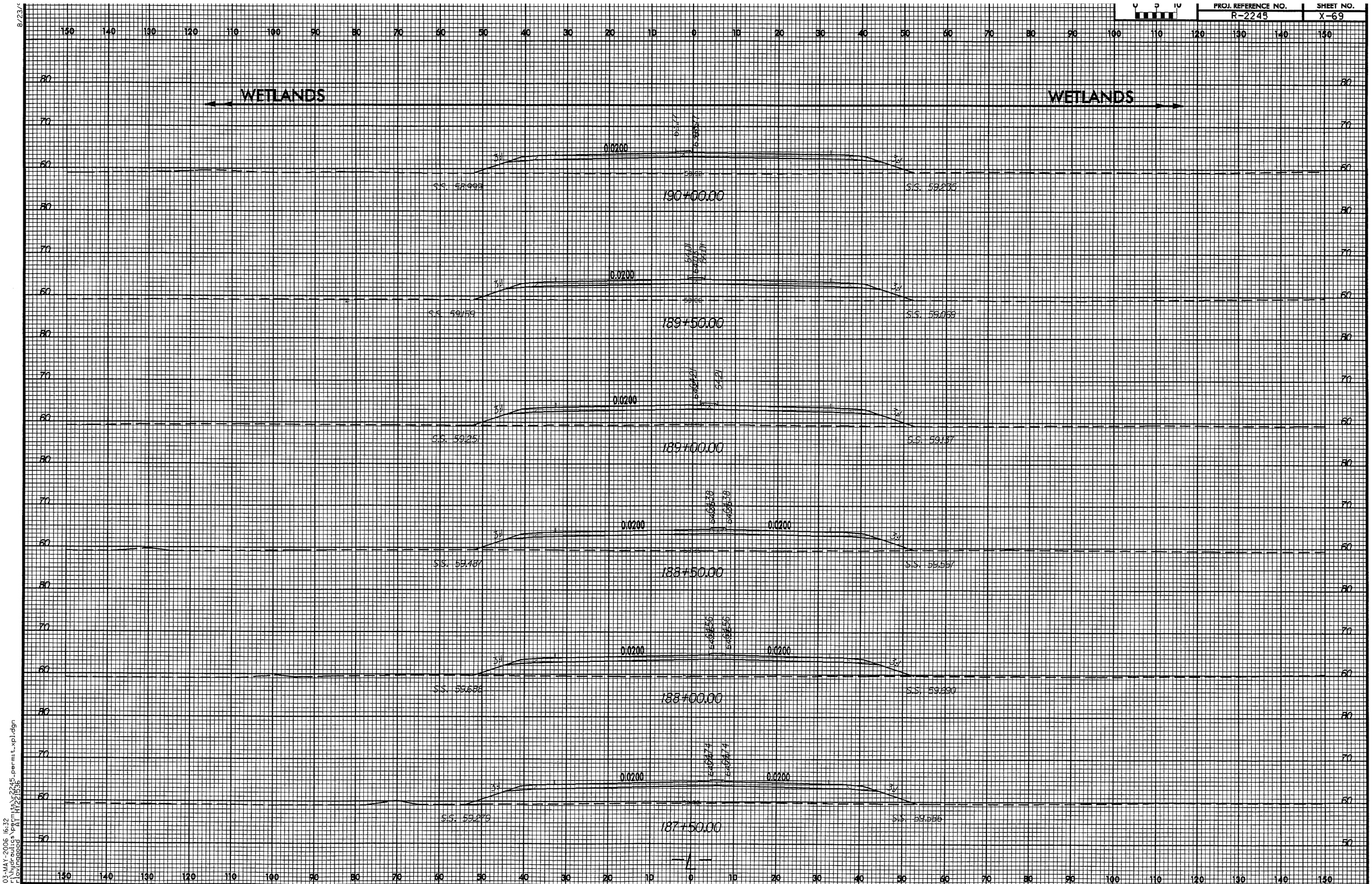
rlovingood AT HY221536

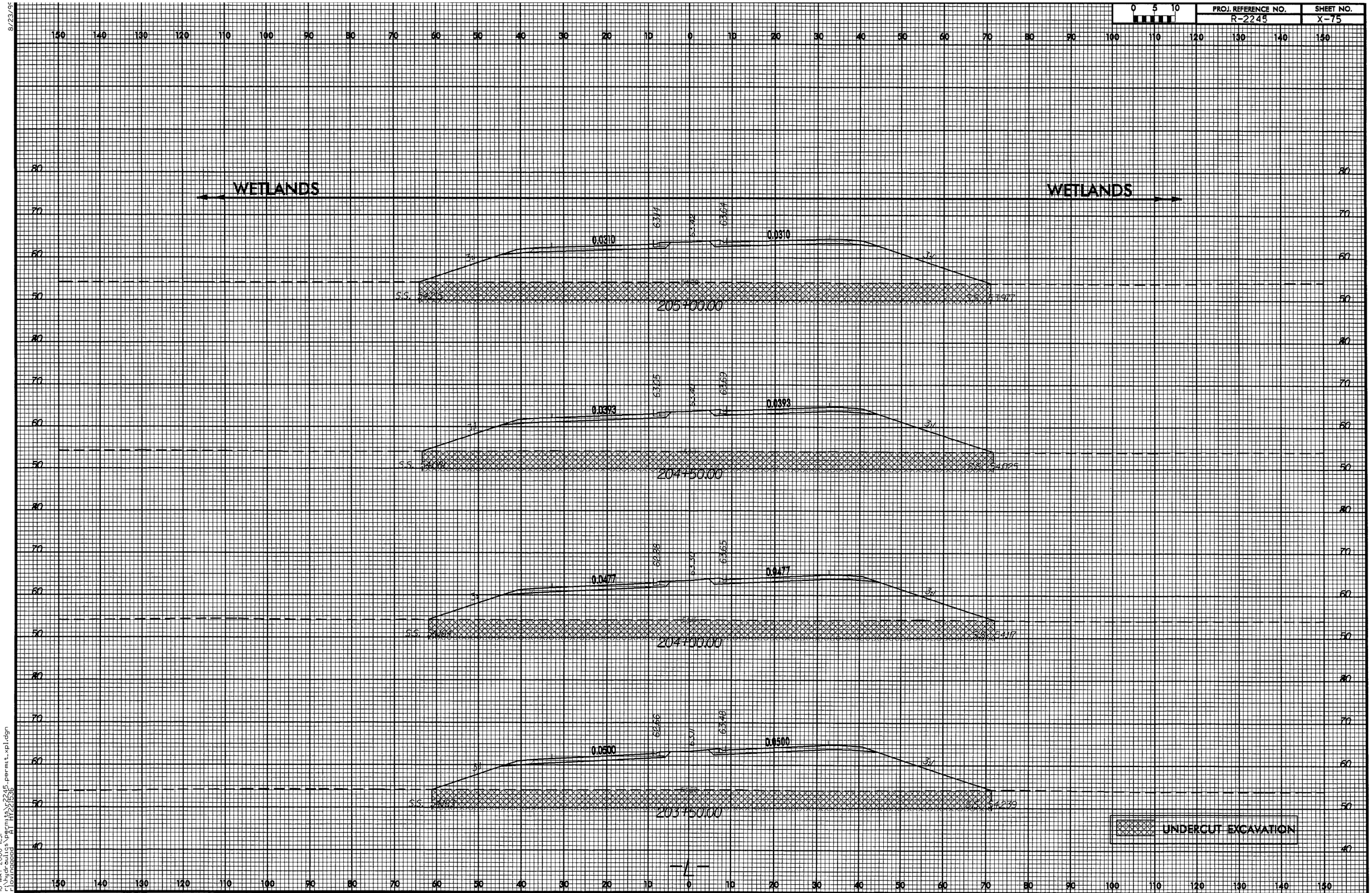


PROJ. REFERENCE NO.
R-2245
SHEET NO.
X-58
0 5 10
163+00.00
S.S. 56.864
S.S. 55.654
0.0600
0.0600
162+50.00
S.S. 56.536
S.S. 55.494
WETLANDS
WETLANDS
162+00.00
S.S. 56.509
S.S. 55.750
161+50.00
S.S. 55.766
S.S. 53.446
UNDERCUT EXCAVATION


PROJ. REFERENCE NO.
R-2245
SHEET NO.
X-64
0 5 10
177+00.00
176+50.00
176+00.00
175+50.00
175+00.00
WETLANDS
WETLANDS
0.0200
3:1
S.S. 59.798
S.S. 59.848
S.S. 59.762
S.S. 59.726
S.S. 59.705
UNDERCUT EXCAVATION
-L-


R-2245
X-66
182+00.00
S.S. 59.170
S.S. 59.327
181+50.00
S.S. 59.427
S.S. 59.260
181+00.00
S.S. 59.332
S.S. 59.396
180+50.00
S.S. 59.186
S.S. 59.440
WETLANDS
WETLANDS
180+00.00
S.S. 59.425
S.S. 59.734
0.0200
3:1
-L-


PROJ. REFERENCE NO.
R-2245
SHEET NO.
X-69
WETLANDS
WETLANDS
0.0200
S.S. 58.999
S.S. 59.235
190+00.00
0.0200
S.S. 59.159
S.S. 59.069
189+50.00
0.0200
S.S. 59.251
S.S. 59.137
189+00.00
0.0200
0.0200
S.S. 59.487
S.S. 59.567
188+50.00
0.0200
0.0200
S.S. 59.688
S.S. 59.690
188+00.00
0.0200
0.0200
S.S. 59.279
S.S. 59.586
187+50.00
-L-



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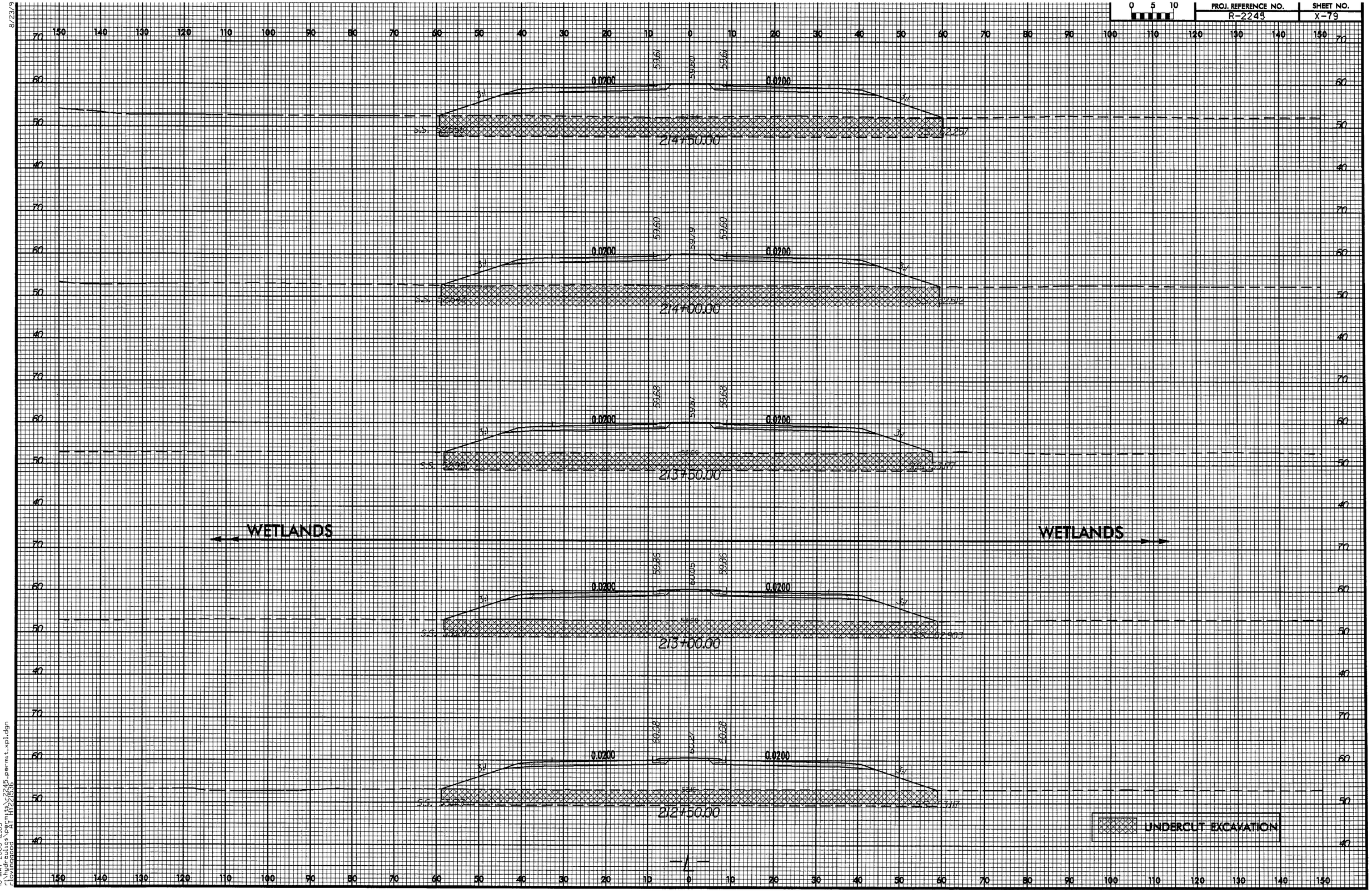
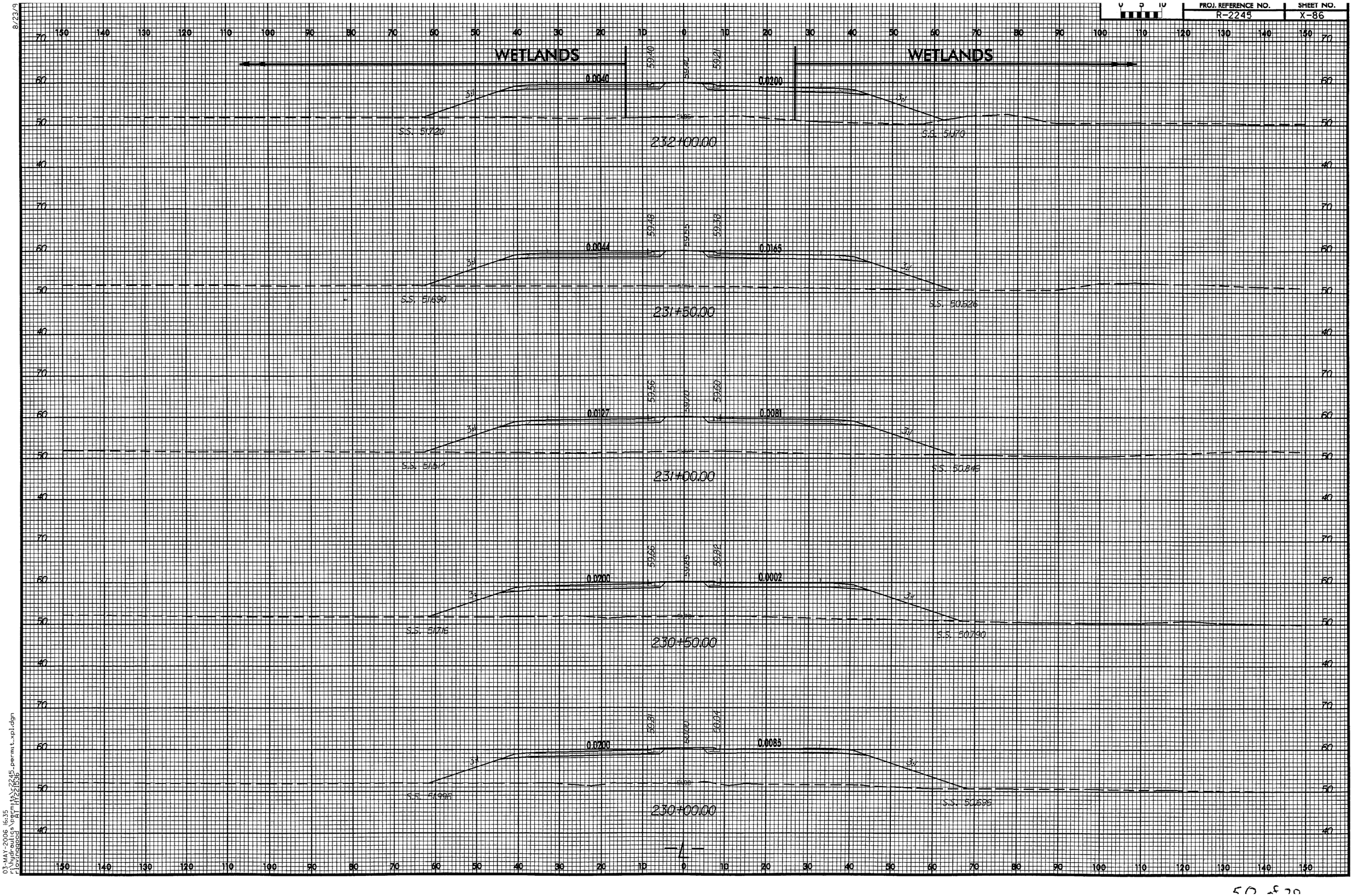
rlovingood AT HY221536



PROJ. REFERENCE NO.
R-2245
SHEET NO.
X-79
0 5 10
214+50.00
214+00.00
213+50.00
WETLANDS
WETLANDS
213+00.00
212+50.00
0.0200
3:1
S.S.
UNDERCUT EXCAVATION



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PROJ. REFERENCE NO.	SHEET NO.
R-2245	X-92

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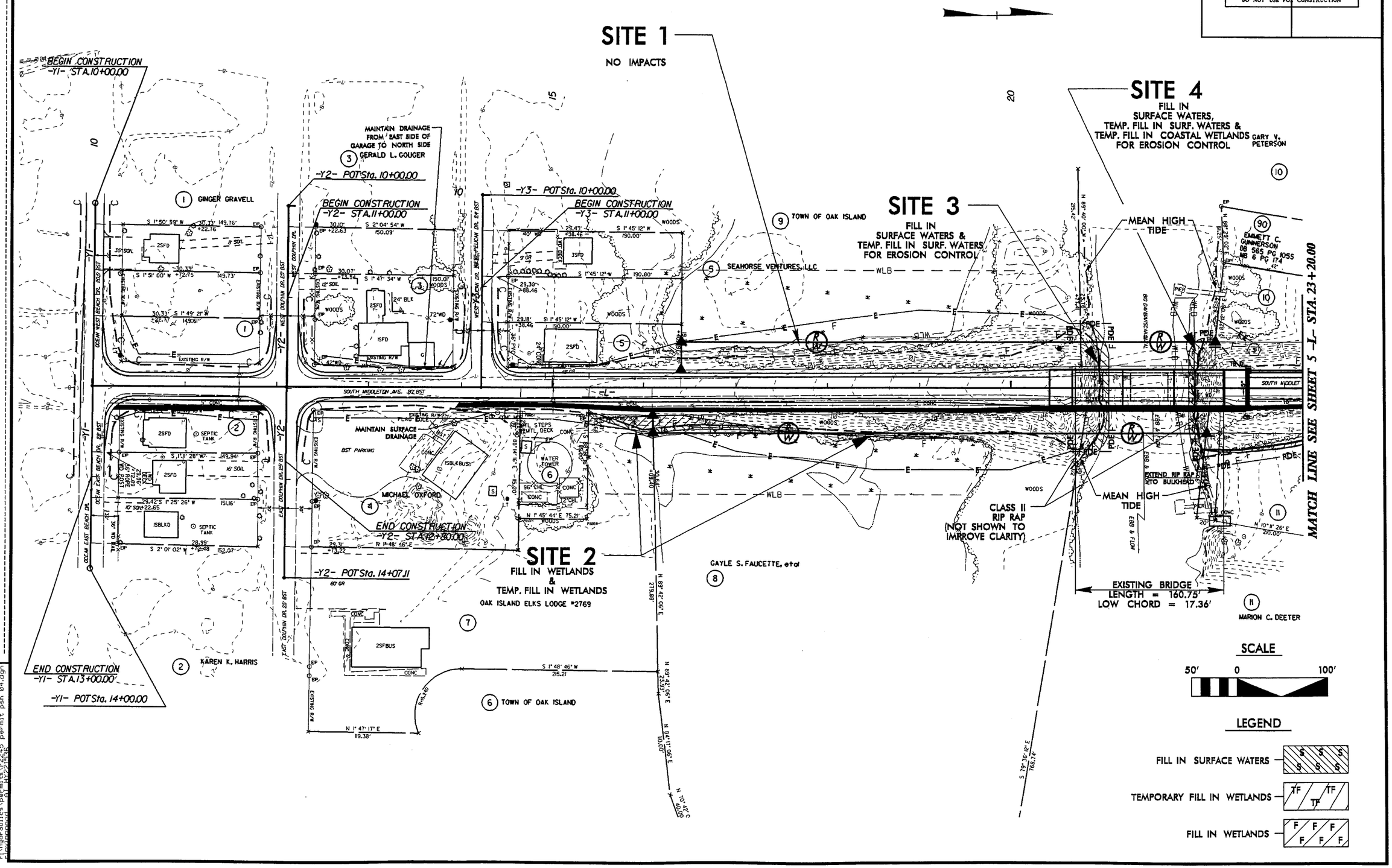
rlovingood AT HY221536

51 of 70

PROJECT REFERENCE NO.	SHEET NO.
R-2245	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



REVISIONS

8/17/9

10-MAY-2006 13:23
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ruwpond at HY2215

PROJECT REFERENCE NO.	SHEET NO.
R-2245	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

DETAIL __
SPECIAL CUT DITCH
(Not to Scale)
DITCH SLOPE = 0.00%
18'
Shoulder Point
Natural Ground
5:1
D
4:1 or Flatter
Front Ditch Slope
D VARIES 0.5 - 1Ft, +/-

DETAIL __
SPECIAL CUT DITCH
(Not to Scale)
DITCH SLOPE = 0.00%
Shoulder Point
18'
Front Ditch Slope
4:1 or Flatter
D
4:1
Natural Ground
D VARIES 0.5 - 1Ft, +/-

NAD 83

(90) EMMETT C. GUNNERSON
DB 565 PG 1055
MB 6 PG 174

GARY V. PETERSON
DB 714 PG 923
MB 6 PG 174
(10)

-Y4- POT STA. 10+00.00

BEGIN CONSTRUCTION
-Y4- STA. 10+50.00

-L- POT STA.24+39.03
-Y4- POT STA. 11+75.70

(13) JANE M. GOINS
DB 196 PG 208
MB 6 PG 174

(27) TOWN OF OAK ISLAND
DB 1413 PG 1036
MB 6 PG 39

-L- POC STA. 31+43.86 =
-Y5- POT STA. 14+13.09

-Y5- POT STA. 10+00.00

BEGIN CONSTRUCTION
-Y5- STA. 11+20.00

(38) RONALD B. POSTON, TRUSTEE
DB 1334 PG 412
MB 6 PG 34

(34) STEPHAN R. WEINLAND
DB 1995 PG 137
MB 6 PG 34

(29) CARLENE K. HENDRIX
DB 463 PG 280
MB 6 PG 34

(31) JOSEPH O. HEAVNER, JR, etal
DB 1134 PG 1029
MB 6 PG 34

(30) BETTY D. TILLMAN
DB 653 PG 632
MB 6 PG 34

(35) CAM INVESTMENTS, INC
DB 2050 PG 830
MB 6 PG 34

SPECIAL CUT DITCH SEE DETAIL

MATCH LINE SEE SHEET 4 -L- STA. 23+20.00

MATCH LINE SEE SHEET 6 -L- STA. 36+55.00

STORM CHAMBER SPLITTER BOX SEE PLAN SHEET 2 FOR DETAIL

100' SIDEWALK TAPER

SPECIAL BASE DITCH SEE DETAIL

(11) MARION C. DEETER
DB 1753 PG 233
MB 13 PG 21

(20) MARVIN HERNDON, ETAL
DB 586 PG 257
MB 13 PG 21

(24) ELLEN J. HERNDON
DB 586 PG 253
MB 13 PG 21

(26) TOWN OF OAK ISLAND
DB 1413 PG 1036
MB 6 PG 39

-L- PC STA. 30+78.92

-L- PT STA. 32+06.36

END CONSTRUCTION
-Y5- STA. 17+21.27

(28) RUTH L. REAVIS
DB 332 PG 822
DB 299 PG 797
DB 161 PG 381
DB 161 PG 383
DB 289 PG 069
MB 6 PG 34

(36) GARY L. KAILBOURNE
DB 1465 PG 487
MB 6 PG 34

(39) GARY G. COOPER
DB 1908 PG 196
DB 2038 PG 992
MB 6 PG 34

-Y5- POT STA. 18+20.00

DETAIL
SPECIAL LATERAL BASE DITCH
(Not to Scale)
FILL Slope
3:1 or FLATTER
D
4:1
Natural Ground
B
Min. D = 0.5 Ft.
B = 1 Ft.

NOTES:
1) FOR -L- PROFILE SEE SHEETS 27 AND 28.
2) FOR -Y4- PROFILE SEE SHEET 36.
3) FOR -Y5- PROFILE SEE SHEET 37.
4) DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED.
5) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
6) -Y- LINE RADII ARE 30' UNLESS OTHERWISE NOTED.

10-MAY-2006 08:11
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flowersdot on HP2250dn

PROJECT REFERENCE NO.	SHEET NO.
R-2245	6
NW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/9

REVISIONS

8/29/05 - TLW - DESIGN REVISION, MODIFIED THE GRADE FOR -L- STA. 42+80 & TO -L- STA. TO 46+00. TO PROVIDE A SYMMETRICAL GRADE ON THE INTRACOASTAL WATERWAY BRIDGE.

10-MAY-2006 08:12
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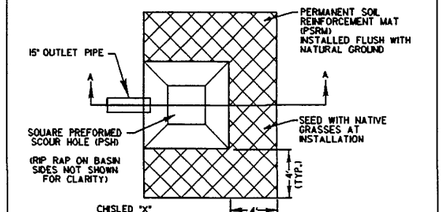
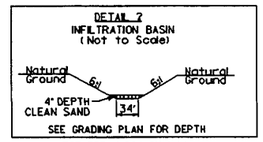
Environmental, Inc. 919-851-1666

PREFORMED SCOUR HOLE

PLAN VIEW



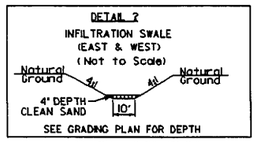
DETAIL 2
INFILTRATION BASIN
(Not to Scale)



SEE GRADING PLAN FOR DEPTH

EST. DDE: 1,005 CU. YDS.

DETAIL 2
INFILTRATION SWALE
(EAST & WEST)
(Not to Scale)



SEE GRADING PLAN FOR DEPTH

EST. DDE, WEST: 2,460 CU. YDS.
EST. DDE, EAST: 1,390 CU. YDS.

NAD 83

NAD 83

40 45 50

(49) MINDI W. SINK, ETAL
(47) ROBERT WALSER, SR.
(46) JANET H. DENNIS
(53A) DAWN T. WARRICK
(53) WILLIAM B. WARRICK
(53B) DAWN T. WARRICK
(51) JOHN L. WALSER
(58) DONNA L. BROWN, ETALS
(56) ANNIE E. HAMPTON
(63) MARVIN C. MARTIN, SR. DB 1390 PG 266 MB 6 PG 34
(62) PAUL M. SAWYER DB 1789 PG 683 MB 6 PG 34
(60) ROBERT W. CONNER
(67) PAUL E. MOORE, JR.
(66) FRANK LEE
(911) KEN BLACK
(71) GEORGE L. FISHER, ETAL
(909) FREDA M. RICH
(910) DOUGLASS JOHNSON
(41) JOHN ROACH JAMES
(40) HARMON H. JAMES, JR.
(38) RONALD B. POSTON, TRUSTEE

DO NOT DISTURB WELL OR AZALEA BUSH

MATCH LINE SEE SHEET 5

-L- STA. 36+55.00

N 10°13'31" E 110.00' | 55.18' | 55.08' | 54.81' | 54.95' | 55.11' | 55.11' | 54.82' | 55.05' | 55.05' | 55.00' | 55.00' | 55.00' | 82.44' | 82.49' | 54.88' | 55.01' | 55.01' | 55.01' | 55.01' | 55.36' | 55.00' | 110.40'

WOODS, ISFD, ISBLKD, BETTY Z. DOVER, ETAL, SPECIAL CUT DITCH SEE DETAIL, INFILTRATION BASIN SEE DETAIL, INFILTRATION SWALE (WEST) SEE DETAIL, GRAVEL, PROP. CL FENCE, PROP. 48" CL GATE, BEG. SBG 47+93, TB DI, TB-DI, TB JB wMH

N 10°13'51.6" E

+65.00 49.62' (RT) & 50.42' (LT) BEG. PROP. 48" CL FENCE

+12.00 49.62' (RT) & 50.42' (LT) END PROP 48" CL FENCE

NORTH MIDDLETON AVE. (SR 1157)

CLARINE E. CLINE, CARL L. SMITH, ETUX, RALPH A. DICKSON, III, SPLITTER BOX, PREFORMED SCOUR HOLE, INFILTRATION BASIN SEE DETAIL, INFILTRATION SWALE (EAST) SEE DETAIL, 42" CMP, 42" CHL

N 10°13'38" E 164.24' | 55.10' | 55.10' | 109.80' | 54.90' | 54.90' | 110.59' | 55.01' | 55.28' | 109.68' | 110.04' | 109.79' | 109.92'

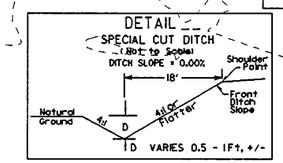
DO NOT DISTURB THREE OAK TREES

MATCH LINE SEE SHEET 7

-L- STA. 50+20.00

(39) GARY I. COOPER
(42) ARTHUR SKIPPER
(42A) KIMBERLY S. ANDERSON
(45) MARY W. CHURCH
(48) H. EMANUEL GHENT
(50) DENISE M. WEST
(54) NEIL G. JESTER
(55) ANNE J. CONNER
(59) MARSHALL R. CARROLL
(61) J. R. CORBETT
(908) KATHERINE W. HICKS
(907) DONALD W. BATCHELOR

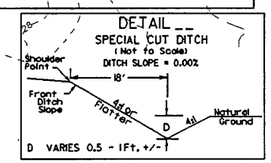
DETAIL
SPECIAL CUT DITCH
(Not to Scale)
DITCH SLOPE = 0.00%



D VARIES 0.5 - 1Ft, +/-

-L- STA 36+50 to 37+13	LT	EL=24.20
-L- STA 37+58 to 37+68	LT	EL=24.50
-L- STA 38+13 to 38+24	LT	EL=24.60
-L- STA 38+68 to 39+12	LT	EL=24.90
-L- STA 39+75 to 39+89	LT	EL=25.00
-L- STA 40+28 to 40+44	LT	EL=25.00
-L- STA 40+88 to 40+98	LT	EL=25.00
-L- STA 41+43 to 41+53	LT	EL=25.40
-L- STA 41+98 to 43+55	LT	EL=25.70
-L- STA 43+97 to 44+34	LT	EL=25.70
-L- STA 44+73 to 45+18	LT	EL=26.20
-L- STA 45+83 to 45+93	LT	EL=26.20

DETAIL
SPECIAL CUT DITCH
(Not to Scale)
DITCH SLOPE = 0.00%

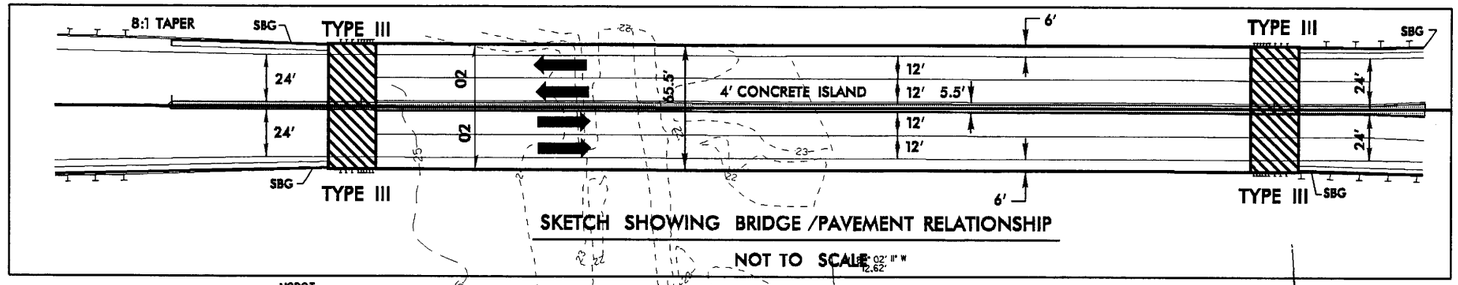


D VARIES 0.5 - 1Ft, +/-

-L- STA 36+14 to 37+10	RT	EL=24.20
-L- STA 37+50 to 37+68	RT	EL=24.50
-L- STA 38+13 to 39+58	RT	EL=24.80
-L- STA 40+33 to 40+61	RT	EL=25.50
-L- STA 41+43 to 42+08	RT	EL=25.60
-L- STA 42+53 to 42+63	RT	EL=25.80
-L- STA 43+08 to 43+19	RT	EL=26.00
-L- STA 43+64 to 44+45	RT	EL=26.20
-L- STA 44+83 to 45+39	RT	EL=26.50
-L- STA 45+84 to 46+48	RT	EL=26.90

NOTES:

1) FOR -L- PROFILE SEE SHEET 28.
2) DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED.
3) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.



SKETCH SHOWING BRIDGE /PAVEMENT RELATIONSHIP

NOT TO SCALE

PROJECT REFERENCE NO.	SHEET NO.
R-2245	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NO REVISIONS CAN BE MADE TO THE CONTROL OF ACCESS WITHOUT APPROVAL OF NCDOT, FHWA, USEPA AND DENR PER AGREEMENT AND USACE PER PERMIT CONDITION.

SITE 5
TWO WORK BRIDGES & BULKHEAD

MATCH LINE SEE SHEET 6 -L- STA. 50+20.00

MATCH LINE SEE SHEET 8 -L- STA. 64+65.00

INTRACOASTAL RIGHT-OF-WAY OF PERPETUAL EASEMENT

ATLANTIC INTRACOASTAL WATERWAY CENTERLINE (PROVIDED BY THE U.S. ARMY CORPS OF ENGINEERS WILMINGTON DISTRICT)

NAD 83

MEAN HIGH TIDE

TOWN OF OAK ISLAND

NCDOT (formerly-BENNY E. PRINCE) 903

GEORGE L. FISHER, ETAL 78

NCDOT (formerly-HENRY G. HARRIS) 904

CHARLOTTE M. HAWTHORNE 101

BENNY E. PRINCE 78

NCDOT (formerly-RANDY W. GOODNIGHT) 906

MILTON C. DARR 102

BEGIN PROPOSED BULKHEAD

RALPH DICKSON JR. 80

NCDOT (formerly-CARL F. MICKEY, JR) 901

JAMES W. WRIGHT 103

END PROPOSED BULKHEAD

DONALD W. BATCHELOR 907

PHILLIP M. LEWIS 75

THOMAS R. STANLEY 77

NCDOT (formerly-JOHN McCONNELL) 905

NCDOT (formerly-BARBARA S. BRUNSON) 902

TEMP. BENT FOR CONSTRUCTION

CONCRETE SLOPE PROTECTION

INFILTRATION SWALE (EAST)

GR PARKING

NORTH MIDDLETON AVE. (20' BST)

EAST LYON DR.

WEST LYON DR.

EXISTING R/W

CL II RIP RAP

SCALE 50' 0 40 100'

TEMPORARY WORK BRIDGE

NOTES:

1) FOR -L- PROFILE SEE SHEETS 28 AND 29.
2) FOR -Y6- PROFILE SEE SHEET 37.
3) FOR STRUCTURE PLANS SEE SHEETS S- TO S-.
4) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.

REVISIONS

8/17/99

31-MAY-2006 09:48
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(rcrommond) (1) 1:2245

55 of 70

REVISIONS	8/17/9
06-07-06 -TJW- RIGHT-OF-WAY REVISION: ADDED ALIGNMENT -ACCI- AND ASSOCIATED RIGHT-OF-WAY, ADJUSTED TEMPORARY CONSTRUCTION EASEMENT AND PERMANENT DRAINAGE EASEMENT ON PARCELS 104 AND 105 AND ADDED PERMANENT DRAINAGE EASEMENT IN THE INTERCOASTAL WATERWAY, PERPETUAL EASEMENT	

PROJECT REFERENCE NO.	SHEET NO.
R-2245	8
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83

MATCH LINE SEE SHEET 7 -L- STA. 64+05.00

MATCH LINE SEE SHEET 9 -L- STA. 77+20.00

MATCH LINE SEE SHEET 25 -ACCI- STA. 15+00.00

PROP. 48" WW FENCE

CL "B" RIP-RAP EST. 1 TON FILTER FABRIC EST. 5 SY.

CL "7" RIP-RAP EST. 17 TON FILTER FABRIC EST. 38 SY.

CL "7" RIP-RAP EST. 26 TON FILTER FABRIC EST. 60 SY.

CL "B" RIP-RAP EST. 2 TON FILTER FABRIC EST. 7 SY.

PERMANENT SOIL REINFORCEMENT MAT 8.5' x 45'

RND SRC

PDE

CHORD

LATERAL BASE DITCH SEE DETAIL

TB JB W/MH

18" HDPE W/2 ELBOWS

CONC. MON. CORS. OF ENGLISH EN-7-4-1983

LaDANE WILLIAMSON (106)

MAS PROPERTIES, LLC (104)

STATE OF NORTH CAROLINA (105)

BURIAL OF THIS PIPE IS NOT REQUIRED

INTRACOASTAL RIGHT-OF-WAY OF PERPETUAL EASEMENT

INTRACOASTAL WATERWAY

WOODS

HDWL

WLB

D.A. = 46.7 Ac
Q2 = 74 cfs
V2 = 1.0 f/sec
Q10 = 87 cfs
V10 = 1.1 f/sec

SITE 6

FILL IN WETLANDS, MECHANIZED & HAND CLEARING

SCALE

50' 0 100'

LEGEND

FILL IN WETLANDS

MECHANIZED CLEARING

HAND CLEARING

NO REVISIONS CAN BE MADE TO THE CONTROL OF ACCESS WITHOUT APPROVAL OF NCDOT, FHWA, USEPA AND DENR PER AGREEMENT AND USACE PER PERMIT CONDITION.

NOTES:

1) FOR -L- PROFILE SEE SHEET 29.
2) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
3) SEE SHEET 2- FOR 50' TRANSITION FROM 1'-6" C&G TO 2'-9" C&G.
4) A FUTURE CONTROL-OF-ACCESS BREAK HAS BEEN RESERVED LEFT OF -L- STATION 73+15.00. ANY ACCESS BREAK AT THIS LOCATION SHALL BE IN ACCORDANCE WITH SPECIFIC CONDITIONS SET FORTH IN THE MEMORANDUM OF UNDERSTANDING BETWEEN NCDOT, FHWA, DENR AND USEPA AND SPECIAL PERMIT CONDITIONS PRESCRIBED BY USEPA.

07-JUN-2006 10:05
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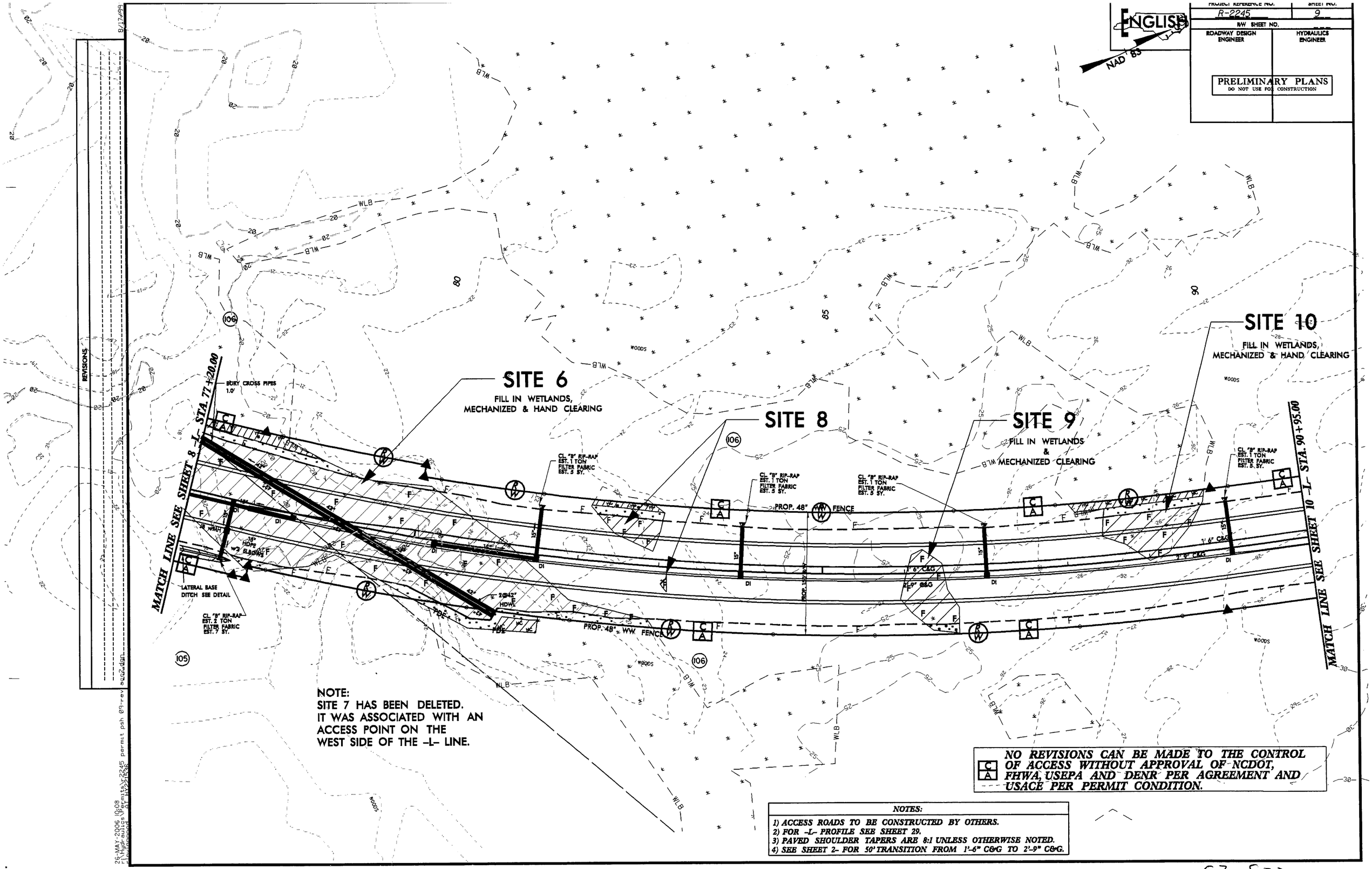
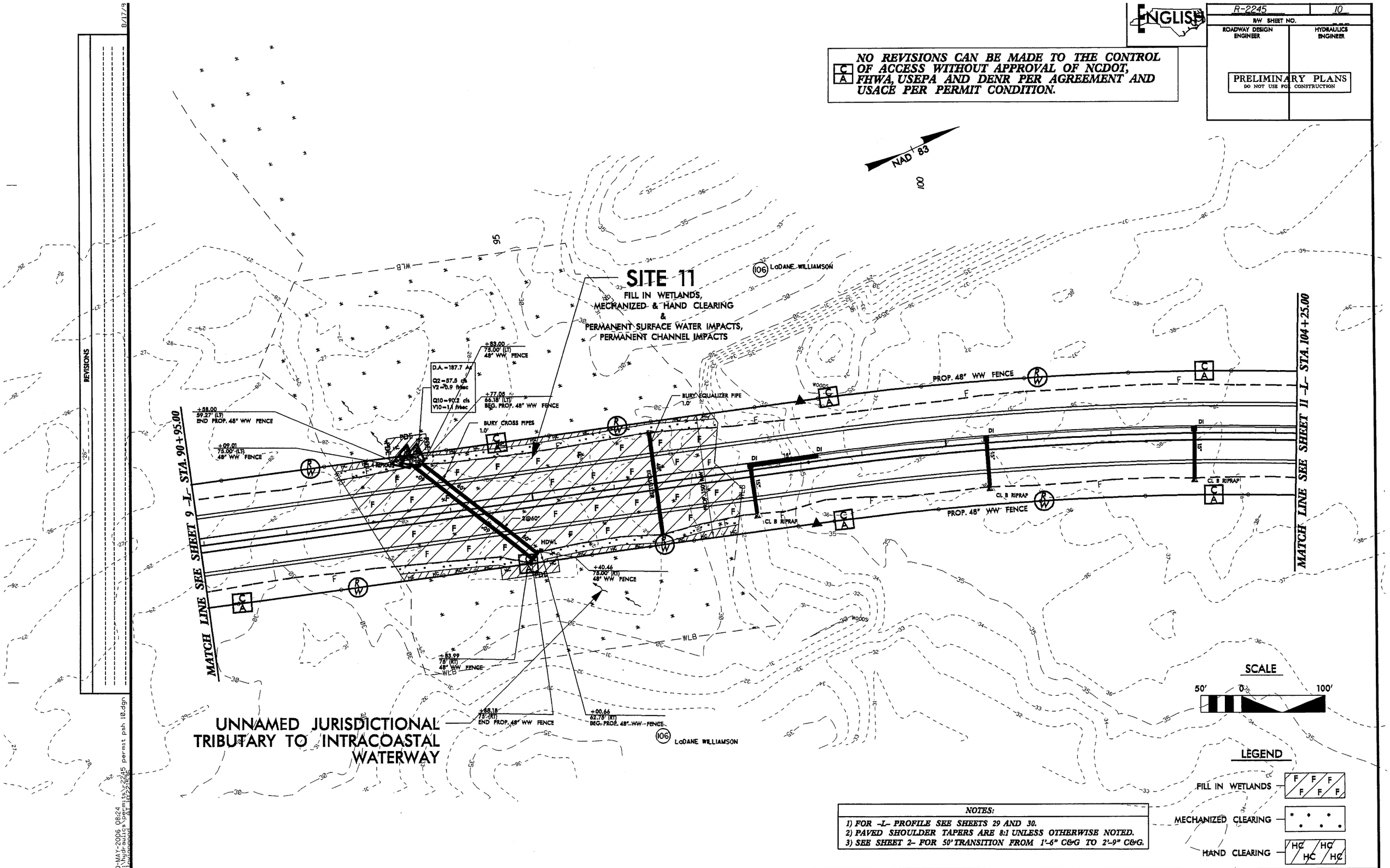


NOTE:
SITE 7 HAS BEEN DELETED.
IT WAS ASSOCIATED WITH AN ACCESS POINT ON THE WEST SIDE OF THE -L- LINE.

NO REVISIONS CAN BE MADE TO THE CONTROL OF ACCESS WITHOUT APPROVAL OF NCDOT, FHWA, USEPA AND DENR PER AGREEMENT AND USACE PER PERMIT CONDITION.

NOTES:
1) ACCESS ROADS TO BE CONSTRUCTED BY OTHERS.
2) FOR -L- PROFILE SEE SHEET 29.
3) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
4) SEE SHEET 2- FOR 50' TRANSITION FROM 1'-6" C&G TO 2'-9" C&G.



ENGLISH
R-2245
10
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
NO REVISIONS CAN BE MADE TO THE CONTROL OF ACCESS WITHOUT APPROVAL OF NCDOT, FHWA, USEPA AND DENR PER AGREEMENT AND USACE PER PERMIT CONDITION.
NAD 83
SITE 11
FILL IN WETLANDS, MECHANIZED & HAND CLEARING & PERMANENT SURFACE WATER IMPACTS, PERMANENT CHANNEL IMPACTS
106 LaDANE WILLIAMSON
MATCH LINE SEE SHEET 9 -L- STA. 90+95.00
MATCH LINE SEE SHEET 11 -L- STA. 104+25.00
D.A.=187.7 As
Q2=57.5 cfs
V2=0.9 ft/sec
Q10=90.2 cfs
V10=1.1 ft/sec
+83.00 75.00' (LT) 48" WW FENCE
+77.05 66.18' (LT) BEG. PROP. 48" WW FENCE
+58.00 59.27' (LT) END PROP. 48" WW FENCE
+09.01 75.00' (LT) 48" WW FENCE
BURY CROSS PIPES 1.0'
BURY EQUALIZER PIPE 1.0'
PROP. 48" WW FENCE
CL B RIPRAP
HDWL
2@60"
+40.46 75.00' (RT) 48" WW FENCE
+83.99 75' (RT) 48" WW FENCE
+88.18 75' (RT) END PROP. 48" WW FENCE
+00.66 62.75' (RT) BEG. PROP. 48" WW FENCE
UNNAMED JURISDICTIONAL TRIBUTARY TO INTRACOASTAL WATERWAY
SCALE
50' 0 100'
LEGEND
FILL IN WETLANDS
MECHANIZED CLEARING
HAND CLEARING
NOTES:
1) FOR -L- PROFILE SEE SHEETS 29 AND 30.
2) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
3) SEE SHEET 2- FOR 50' TRANSITION FROM 1'-6" C&G TO 2'-9" C&G.
REVISIONS
8/17/9
10-MAY-2006 08:24
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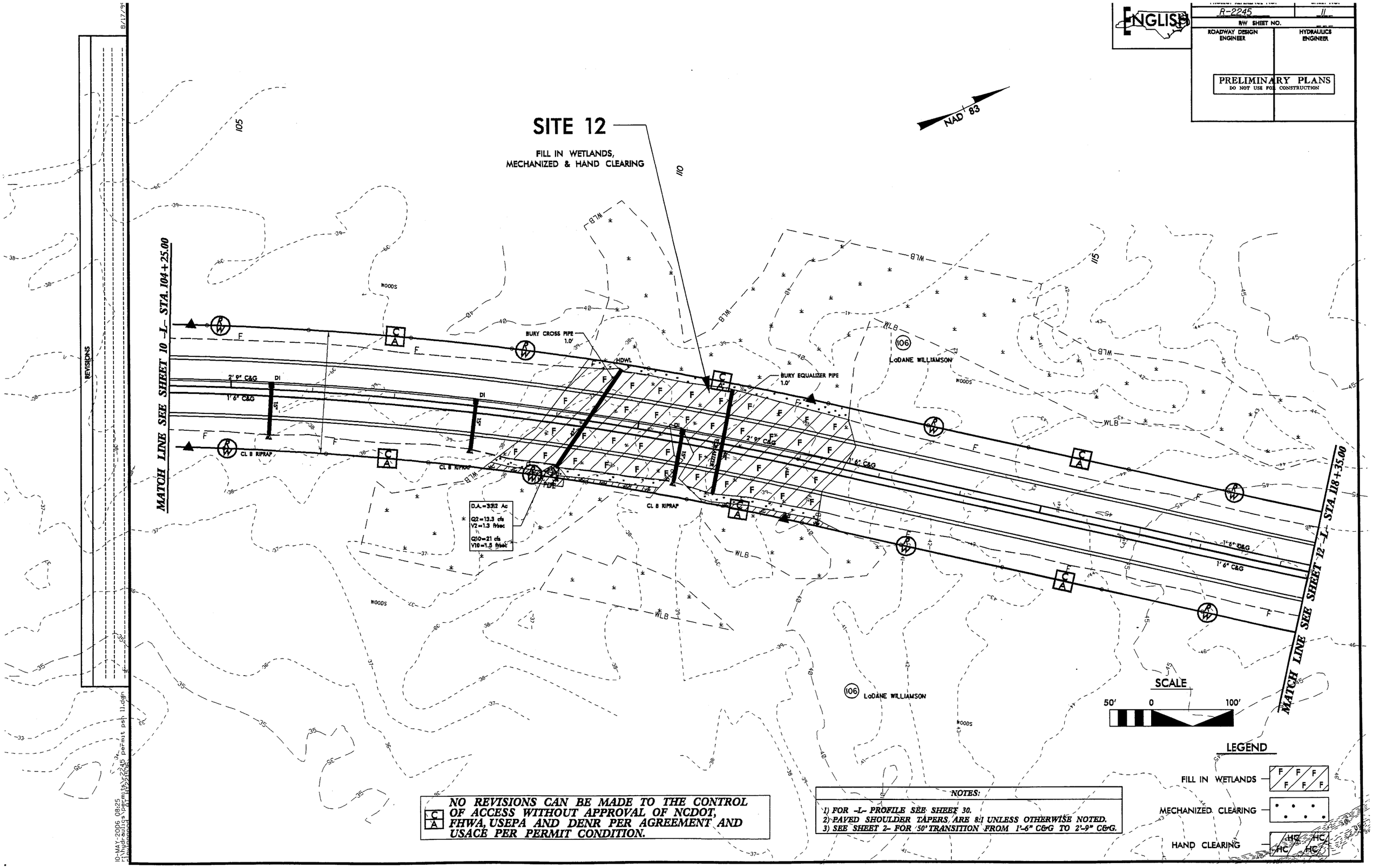
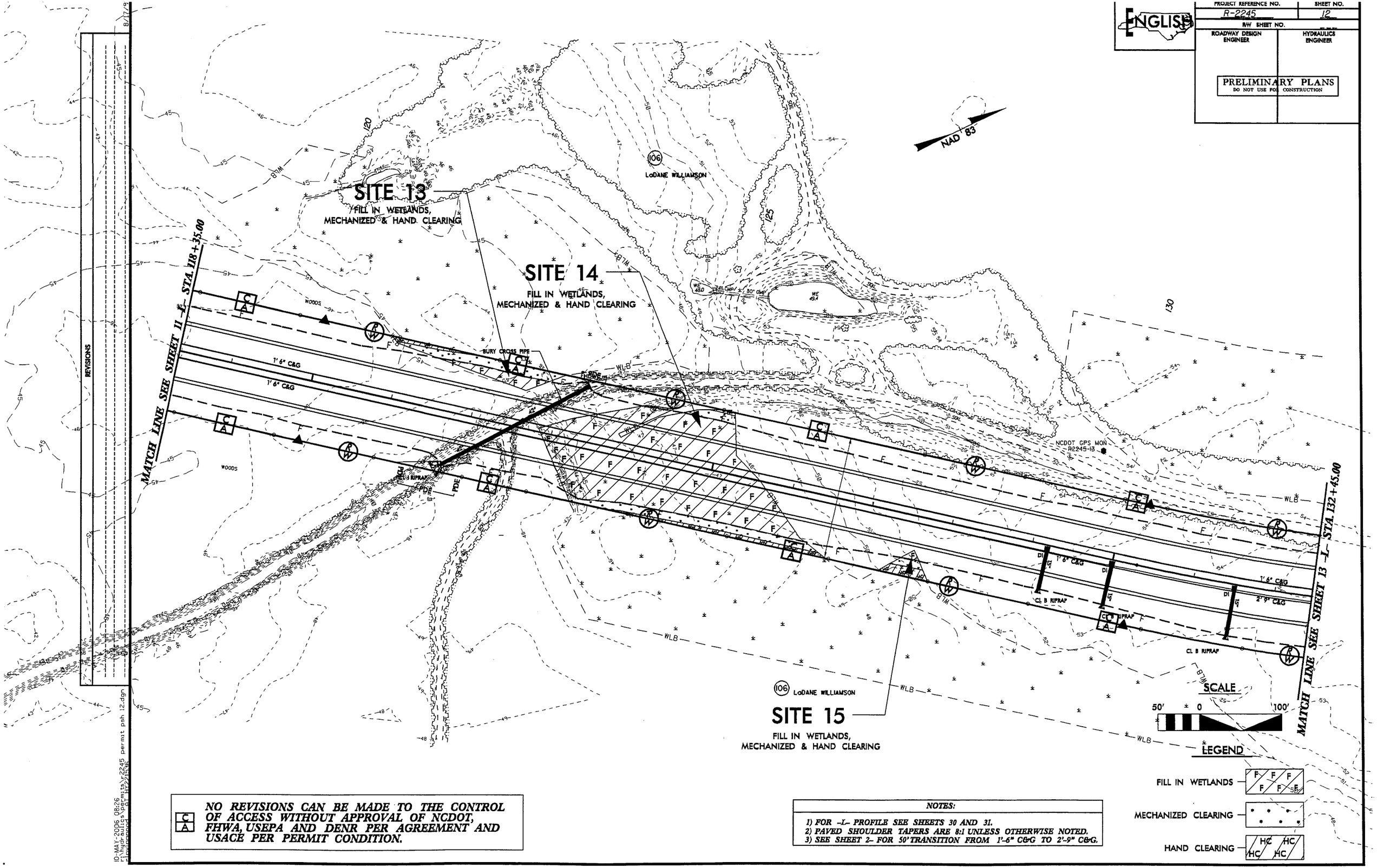


ENGLISH
R-2245
11
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
SITE 12
FILL IN WETLANDS, MECHANIZED & HAND CLEARING
NAD 83
MATCH LINE SEE SHEET 10 -L- STA. 104+25.00
MATCH LINE SEE SHEET 12 -L- STA. 118+35.00
REVISIONS
BURY CROSS PIPE 1.0'
BURY EQUALIZER PIPE 1.0'
HDWL
CL B RIPRAP
2' 9" C&G
1' 6" C&G
D.A.=33.2 Ac
Q2=13.3 cfs
V2=1.3 ft/sec
Q10=21 cfs
V10=1.5 ft/sec
LoDANE WILLIAMSON
WOODS
WLB
SCALE
50' 0 100'
LEGEND
FILL IN WETLANDS
MECHANIZED CLEARING
HAND CLEARING
NO REVISIONS CAN BE MADE TO THE CONTROL OF ACCESS WITHOUT APPROVAL OF NCDOT, FHWA, USEPA AND DENR PER AGREEMENT AND USACE PER PERMIT CONDITION.
NOTES:
1) FOR -L- PROFILE SEE SHEET 30.
2) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
3) SEE SHEET 2- FOR 50' TRANSITION FROM 1'-6" C&G TO 2'-9" C&G.
10-MAY-2006 08:25

PROJECT REFERENCE NO.	SHEET NO.
R-2245	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



NO REVISIONS CAN BE MADE TO THE CONTROL OF ACCESS WITHOUT APPROVAL OF NCDOT, FHWA, USEPA AND DENR PER AGREEMENT AND USACE PER PERMIT CONDITION.

NOTES:

1) FOR -L- PROFILE SEE SHEETS 30 AND 31.
2) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
3) SEE SHEET 2- FOR 50' TRANSITION FROM 1'-6" C&G TO 2'-9" C&G.

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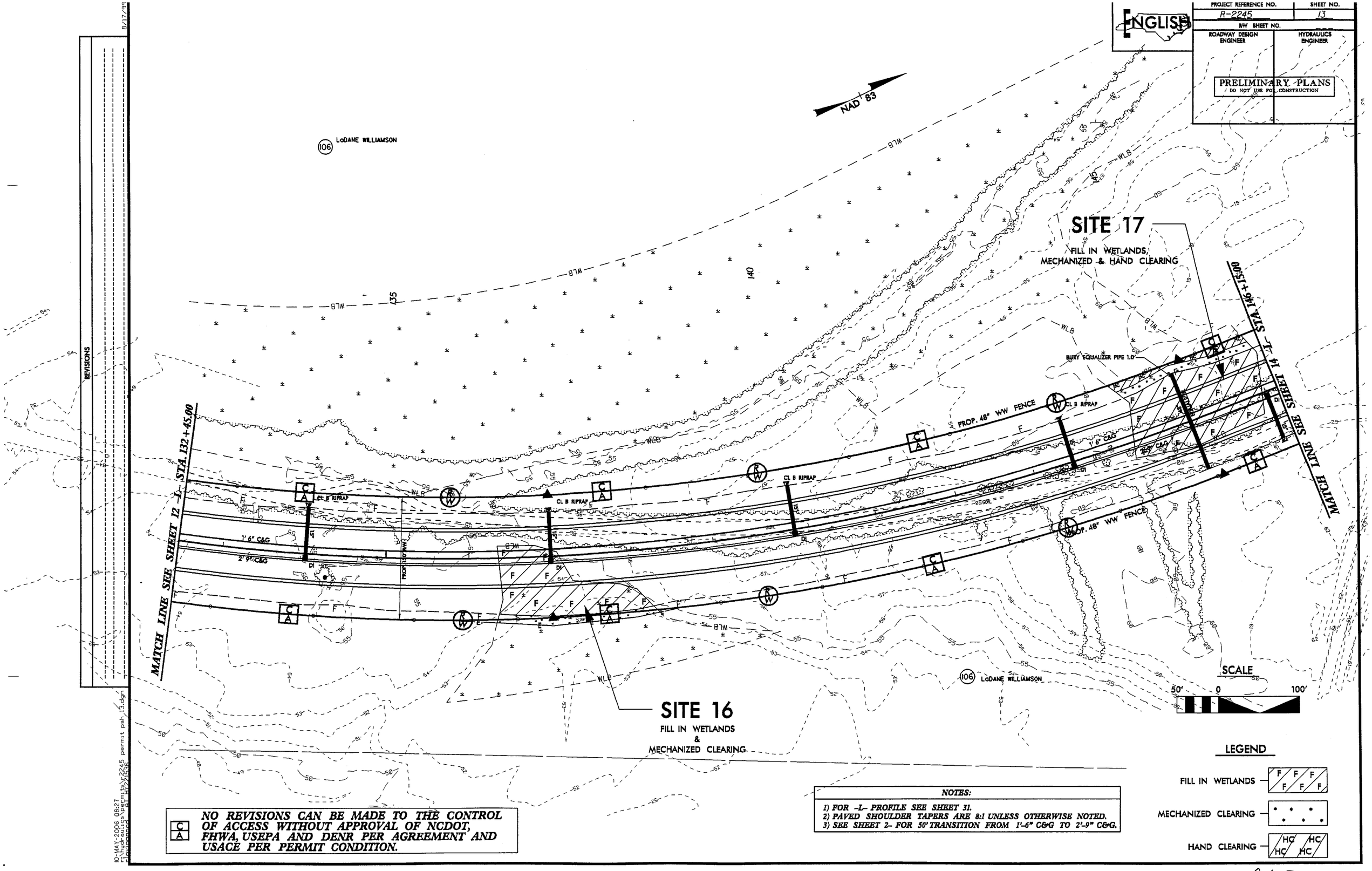

ENGLISH
PROJECT REFERENCE NO.
R-2245
SHEET NO.
13
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
NAD 83
LoDANE WILLIAMSON
SITE 17
FILL IN WETLANDS, MECHANIZED & HAND CLEARING
SITE 16
FILL IN WETLANDS & MECHANIZED CLEARING
MATCH LINE SEE SHEET 12 -L- STA. 132+45.00
MATCH LINE SEE SHEET 14 -L- STA. 146+15.00
PROP. 48" WW FENCE
CL B RIPRAP
BURY EQUALIZER PIPE 1.0'
1' 6" C&G
2' 9" C&G
SCALE
50' 0 100'
LEGEND
FILL IN WETLANDS
MECHANIZED CLEARING
HAND CLEARING
NOTES:
1) FOR -L- PROFILE SEE SHEET 31.
2) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
3) SEE SHEET 2- FOR 50' TRANSITION FROM 1'-6" C&G TO 2'-9" C&G.
NO REVISIONS CAN BE MADE TO THE CONTROL OF ACCESS WITHOUT APPROVAL OF NCDOT, FHWA, USEPA AND DENR PER AGREEMENT AND USACE PER PERMIT CONDITION.
REVISIONS
10-MAY-2006 08:27
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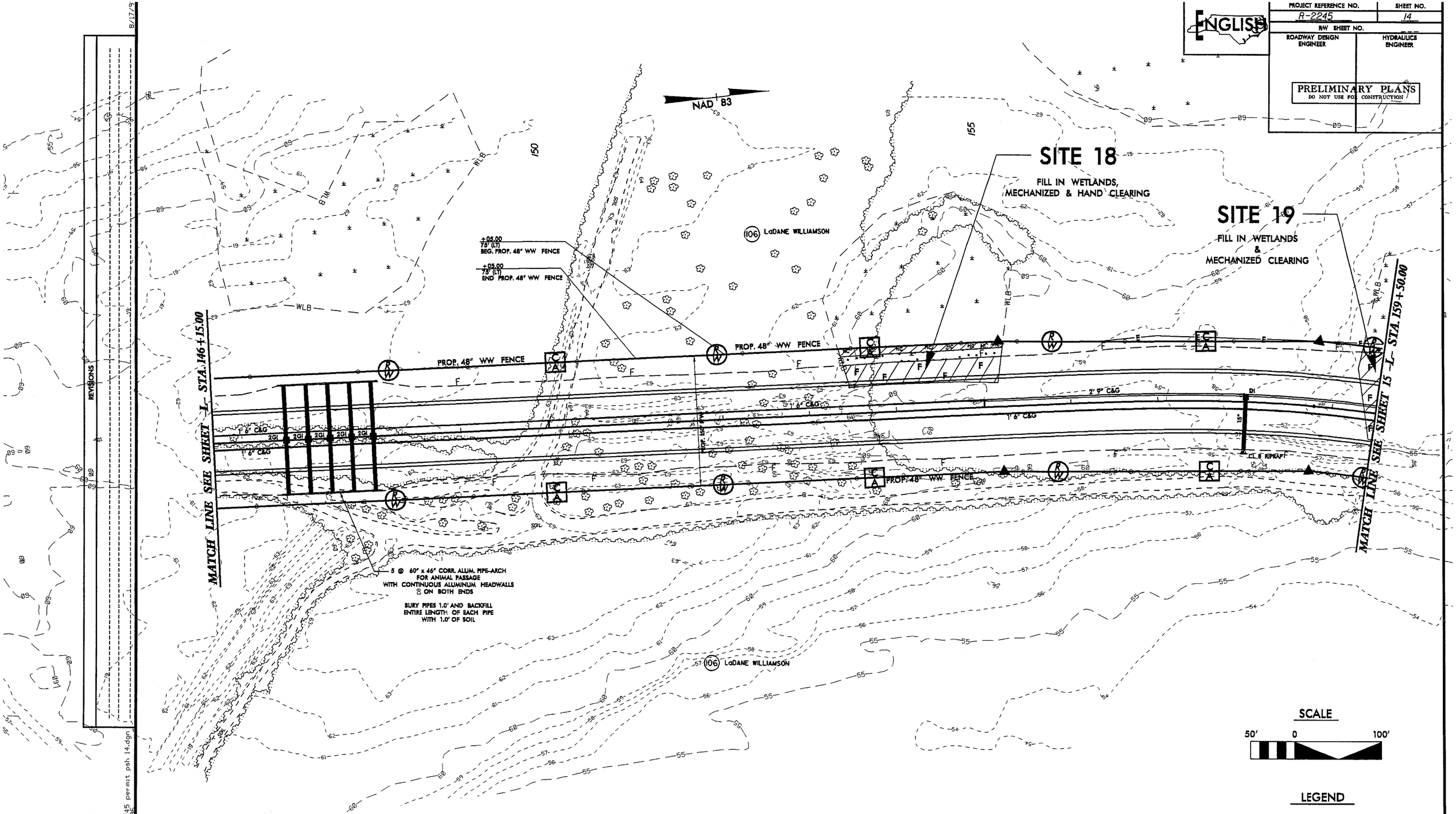
PROJECT REFERENCE NO.	SHEET NO.
R-2245	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



NOTES:

1) FOR -L- PROFILE SEE SHEETS 31 AND 32.
2) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
3) SEE SHEET 2- FOR 50' TRANSITION FROM 1'-6" C&G TO 2'-9" C&G.

C/A NO REVISIONS CAN BE MADE TO THE CONTROL OF ACCESS WITHOUT APPROVAL OF NCDOT, FHWA, USEPA AND DENR PER AGREEMENT AND USACE PER PERMIT CONDITON.

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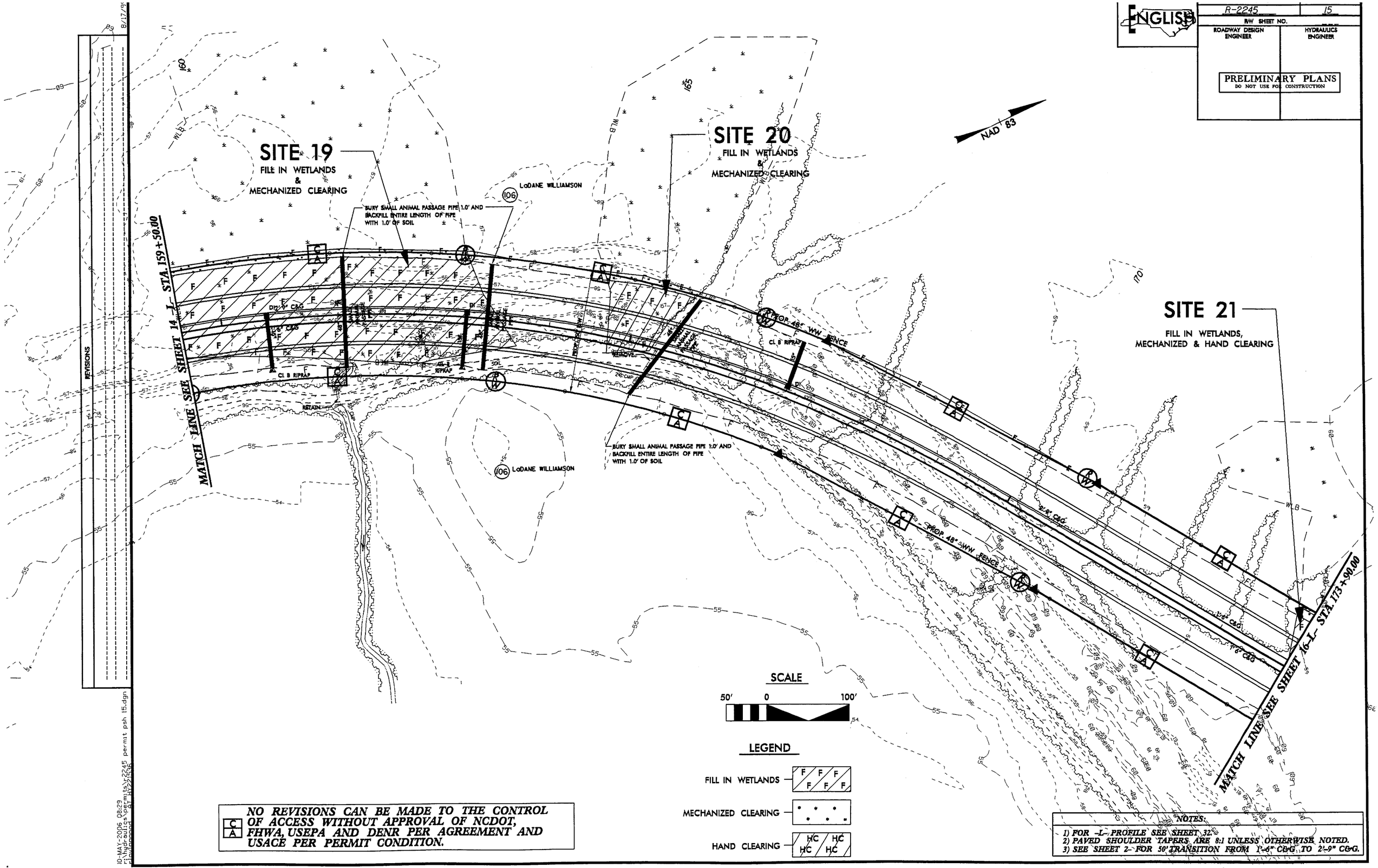
C2 of 70


ENGLISH
R-2245
15
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
NAD 83
SITE 19
FILL IN WETLANDS & MECHANIZED CLEARING
SITE 20
FILL IN WETLANDS & MECHANIZED CLEARING
SITE 21
FILL IN WETLANDS, MECHANIZED & HAND CLEARING
BURY SMALL ANIMAL PASSAGE PIPE 1.0' AND BACKFILL ENTIRE LENGTH OF PIPE WITH 1.0' OF SOIL
LaDANE WILLIAMSON
106
MATCH LINE SEE SHEET 14-L STA. 159+50.00
MATCH LINE SEE SHEET 16-L STA. 173+90.00
PROP. 48" WW FENCE
CL B RIPRAP
RETAIN
REMOVE
REVISIONS
SCALE
50' 0 100'
LEGEND
FILL IN WETLANDS
MECHANIZED CLEARING
HAND CLEARING
NO REVISIONS CAN BE MADE TO THE CONTROL OF ACCESS WITHOUT APPROVAL OF NCDOT, FHWA, USEPA AND DENR PER AGREEMENT AND USACE PER PERMIT CONDITION.
NOTES:
1) FOR -L- PROFILE SEE SHEET 32.
2) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
3) SEE SHEET 2- FOR 50' TRANSITION FROM 1'-6" C&G TO 2'-9" C&G.
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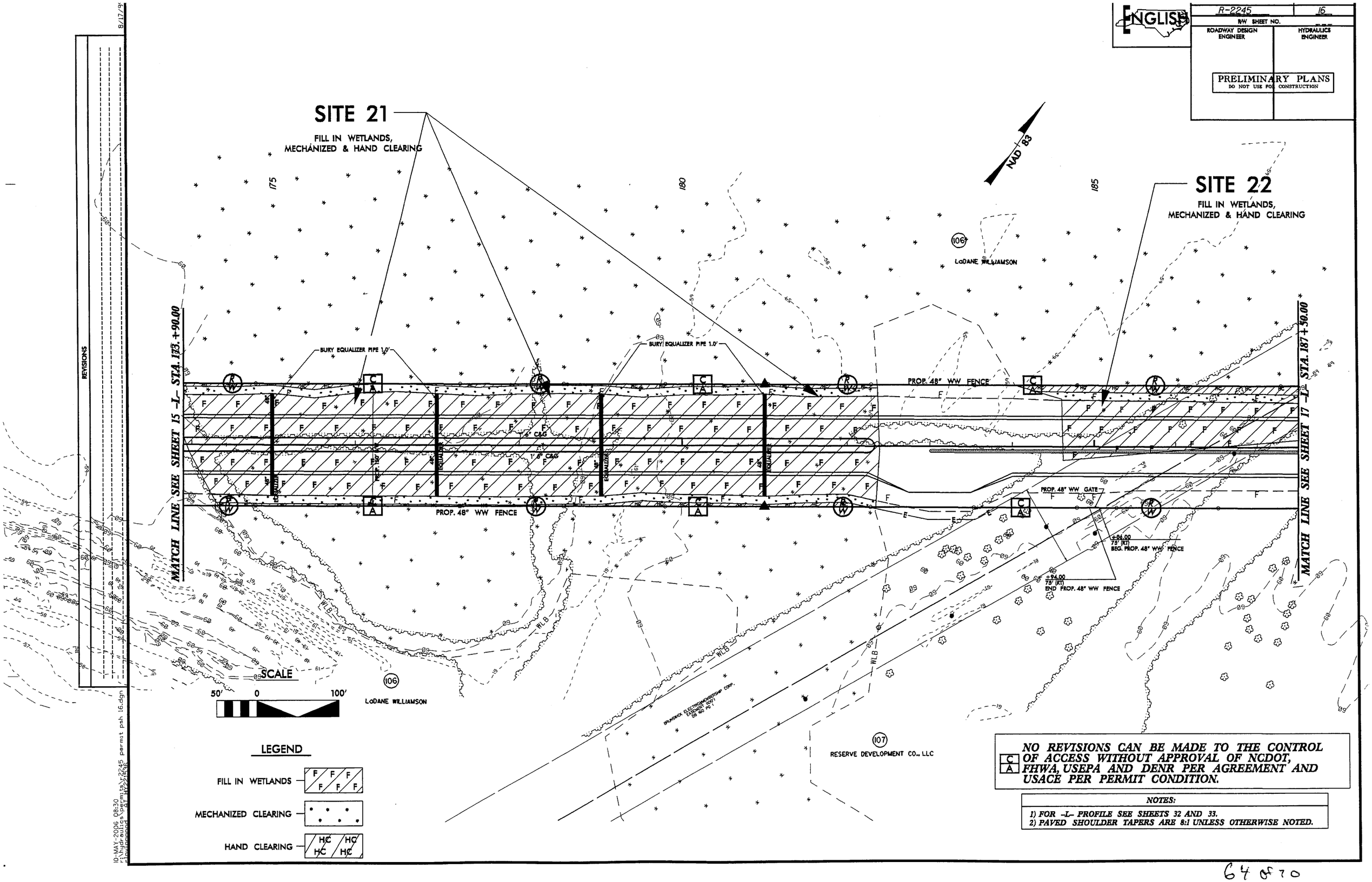

ENGLISH
R-2245
16
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
SITE 21
FILL IN WETLANDS, MECHANIZED & HAND CLEARING
SITE 22
FILL IN WETLANDS, MECHANIZED & HAND CLEARING
NAD 83
175
180
185
MATCH LINE SEE SHEET 15 -L- STA. 173+90.00
MATCH LINE SEE SHEET 17 -L- STA. 187+50.00
BURY EQUALIZER PIPE 1.0'
PROP. 48" WW FENCE
PROP. 48" WW GATE
+86.00
75' (RT)
BEG. PROP. 48" WW FENCE
+94.00
75' (RT)
END PROP. 48" WW FENCE
106
LoDANE WILLIAMSON
107
RESERVE DEVELOPMENT CO., LLC
WLB
SCALE
50'
0
100'
LEGEND
FILL IN WETLANDS
MECHANIZED CLEARING
HAND CLEARING
REVISIONS
NO REVISIONS CAN BE MADE TO THE CONTROL OF ACCESS WITHOUT APPROVAL OF NCDOT, FHWA, USEPA AND DENR PER AGREEMENT AND USACE PER PERMIT CONDITION.
NOTES:
1) FOR -L- PROFILE SEE SHEETS 32 AND 33.
2) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.

PROJECT REFERENCE NO.	SHEET NO.
R-2245	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

C A ***NO REVISIONS CAN BE MADE TO THE CONTROL OF ACCESS WITHOUT APPROVAL OF NCDOT, FHWA, USEPA AND DENR PER AGREEMENT AND USACE PER PERMIT CONDITION.***

REVISIONS 8/17/99

LoDANE WILLIAMSON (106)

BRUNSWICK ELECTRIC MEMBERSHIP CORP. EASEMENT BOOK 1001 PG 171

S. 85° 48' 01" W 126.30' EIP

NAD 83

YOUNG'S GAS & GROCERY OF WINNABOW, INC (109)

SITE 22
FILL IN WETLAND, MECHANIZED & HAND CLEARING

SITE 23
FILL IN WETLAND, MECHANIZED & HAND CLEARING

SITE 24
FILL IN WETLAND, MECHANIZED & HAND CLEARING

(107) RESERVE DEVELOPMENT CO., LLC

CL "B" RIP-RAP EST. 1 TON FILTER FABRIC EST. 5 SY.

BURY EQUALIZER PIPE 1.0'

BURY 42" EQUALIZER PIPE 1.0'

CL B RIPRAP

CL "B" RIP-RAP EST. 1 TON FILTER FABRIC EST. 5 SY.

CONSERVATION EASEMENT

MATCH LINE SEE SHEET 16 -L- STA. 187+50.00

MATCH LINE SEE SHEET 18 -L- STA. 201+20.00

MATCH LINE SEE SHEET 26 -ACC3- STA. 13+40.00

NOTES:
1) FOR -L- PROFILE SEE SHEET 33.
2) ACCESS ROAD TO BE CONSTRUCTED BY OTHERS.
3) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
4) SEE SHEET 2- FOR 50' TRANSITION FROM 1'-6" C&G TO 2'-9" C&G.

SCALE
50' 0 100'

LEGEND
- PL / PL (RT)
- FILL IN WETLANDS +223 -375 (RT)
- MECHANIZED CLEARING
- HAND CLEARING

24-MAY-2006 10:48
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dlhyatt

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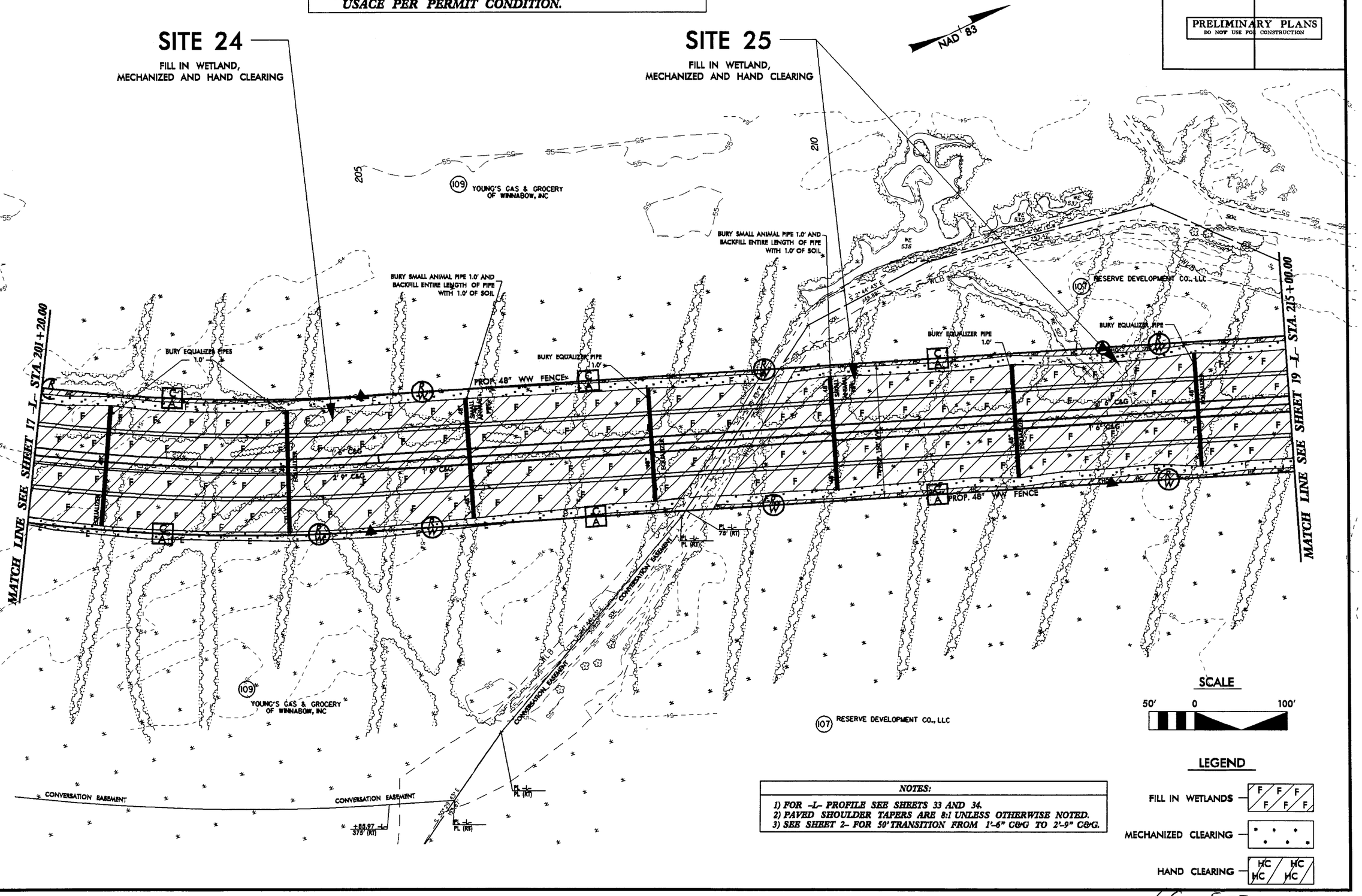
PROJECT REFERENCE NO.	SHEET NO.
R-2245	18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NO REVISIONS CAN BE MADE TO THE CONTROL OF ACCESS WITHOUT APPROVAL OF NCDOT, FHWA, USEPA AND DENR PER AGREEMENT AND USACE PER PERMIT CONDITION.



NOTES:

1) FOR -L- PROFILE SEE SHEETS 33 AND 34.
2) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
3) SEE SHEET 2- FOR 50' TRANSITION FROM 1'-6" C&G TO 2'-9" C&G.

REVISIONS

8/17/99

24-MAY-2006 10:49
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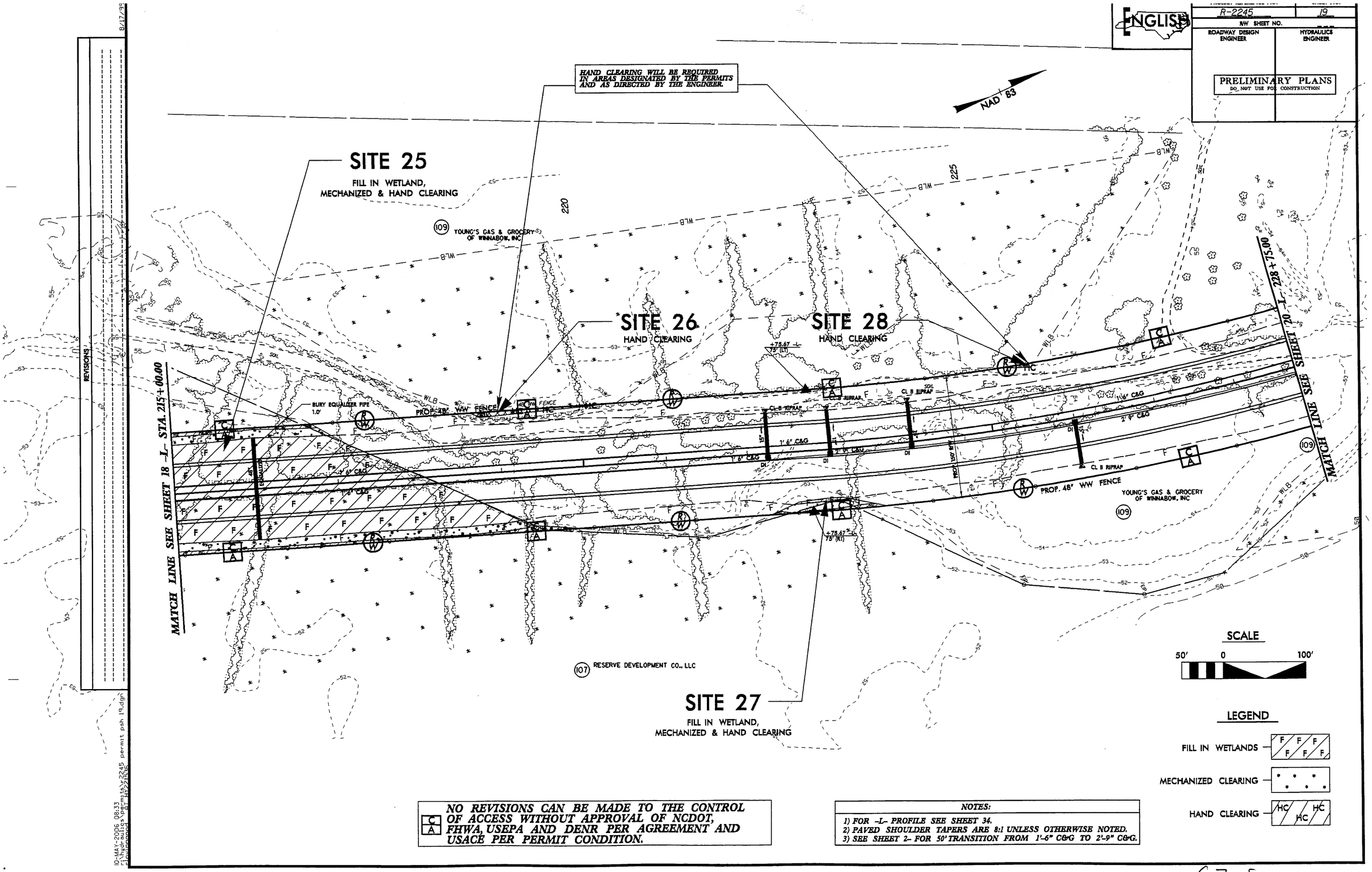

NO REVISIONS CAN BE MADE TO THE CONTROL OF ACCESS WITHOUT APPROVAL OF NCDOT, FHWA, USEPA AND DENR PER AGREEMENT AND USACE PER PERMIT CONDITION.

NOTES:

1) FOR -L- PROFILE SEE SHEET 34.
2) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
3) SEE SHEET 2- FOR 50' TRANSITION FROM 1'-6" C&G TO 2'-9" C&G.

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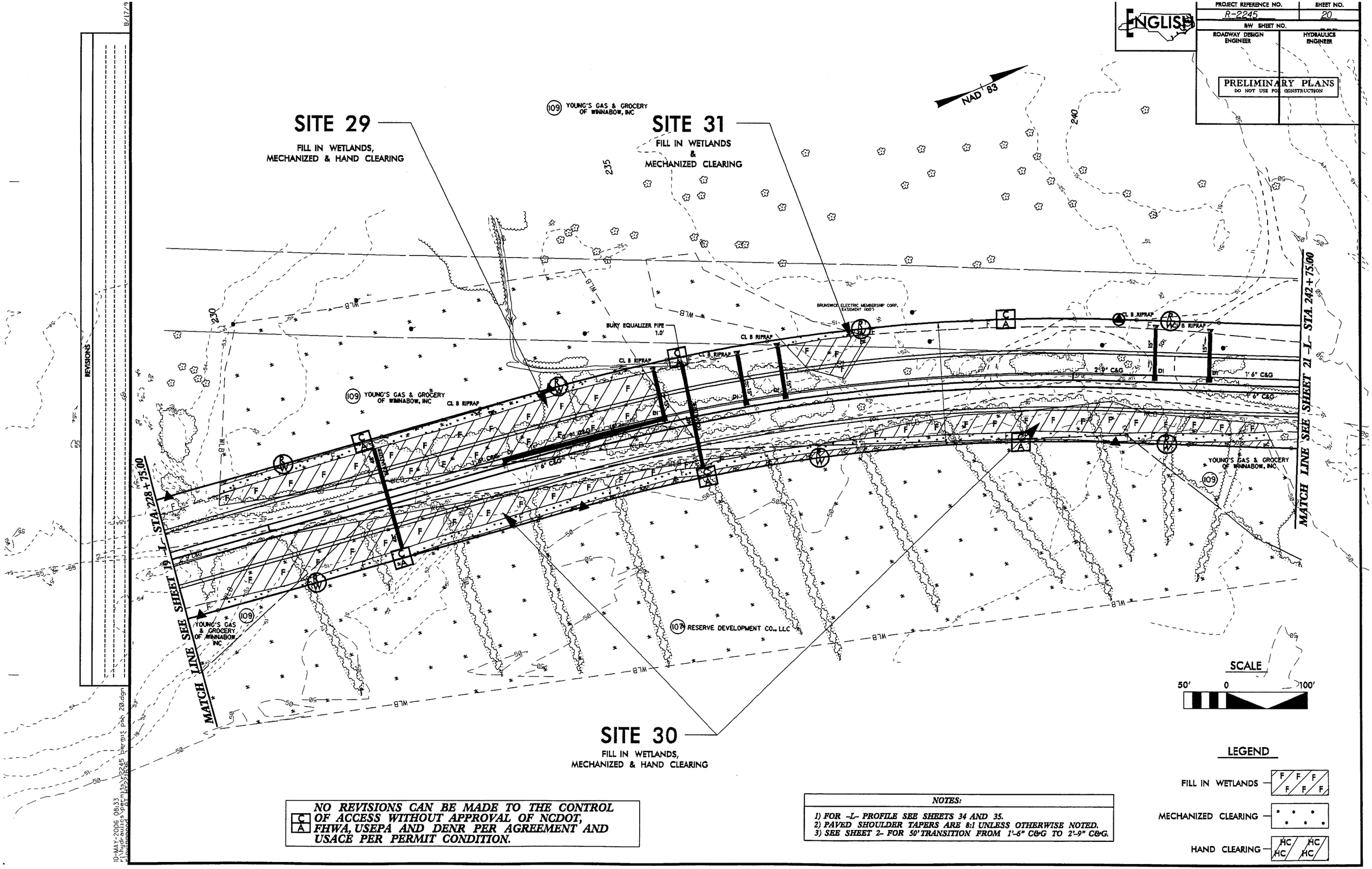
rlowinpond AT HY221536

PROJECT REFERENCE NO.	SHEET NO.
R-2245	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

ENGLISH

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



NO REVISIONS CAN BE MADE TO THE CONTROL OF ACCESS WITHOUT APPROVAL OF NCDOT, FHWA, USEPA AND DENR PER AGREEMENT AND USACE PER PERMIT CONDITION.

NOTES:

1) FOR -L- PROFILE SEE SHEETS 34 AND 35.
2) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
3) SEE SHEET 2- FOR 50' TRANSITION FROM 1'-6" C&G TO 2'-9" C&G.

REVISIONS

8/17/9

10-MAY-2006 08:33
r:\hydraulics\Permits\r2245 permit psh 20.dgn
Flowingwood AT HY221636

68 of 70

PROJECT REFERENCE NO.	SHEET NO.
R-2245	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NO REVISIONS CAN BE MADE TO THE CONTROL OF ACCESS WITHOUT APPROVAL OF NCDOT, FHWA, USEPA AND DENR PER AGREEMENT AND USACE PER PERMIT CONDITION.

MATCH LINE SEE SHEET 22 -Y7- STA. 13+15.00

NAD 83

REVISIONS 8/17/9

SITE 32
FILL and EXCAVATION IN WETLANDS
&
MECHANICAL CLEARING
&
WETLAND IMPACTS FROM DITCH DRAWDOWN

SITE 33
FILL IN WETLANDS
&
HAND CLEARING

MATCH LINE SEE SHEET 20 -L- STA. 242+75.00

MATCH LINE SEE SHEET 23 -Y7- STA. 22+55.00

END CONSTRUCTION
-Y8- POT STA. 16+50.00

END TIP PROJECT R-2245
-L- POT STA. 248+66.02

MIDWAY MEDICAL MALL, P.A.
ATLANTIC TELEPHONE MEMBERSHIP CORP.
JOSEPH M. EDWARDS, SR.
YOUNG'S GAS & GROCERY OF WINNABOW, INC
BRUNSWICK ELECTRIC MEM. CORP.
MICHAEL D. RICHARDS
MIDWAY LANDIND, LLC.
POWER SUB-STATION
LATERAL BASE DITCH
PROP. 48" WW FENCE
REMOVE
SPECIAL CUT DITCH
TDE
-L-
-Y7-
-Y8-

NOTES:
1) FOR -L- PROFILE SEE SHEET 35.
2) FOR -Y7- AND -Y8- PROFILES SEE SHEET 38.
3) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
4) FOR -Y7- TEMPORARY WIDENING FOR STAGED CONSTRUCTION, SEE SHEET 2-E AND TRAFFIC CONTROL PLANS.

SCALE
50' 0 100'

LEGEND
- FILL IN WETLANDS
- EXCAVATION IN WETLANDS
- MECHANIZED CLEARING
- DITCH DRAWDOWN
- HAND CLEARING

10-MAY-2006 08:14
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mlyndgrass

PROJECT REFERENCE NO.	SHEET NO.
R-2245	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SITE 34

TEMPORARY AND PERMANENT SURFACE WATER IMPACTS
&
TEMPORARY AND PERMANENT CHANNEL IMPACTS

REVISIONS
05/19/06 - TW - RIGHT-OF-WAY REVISION: ADDED A BREAK IN CONTROL OF ACCESS ON PARCEL 113 FROM -Y2- STATION 23+00 TO -Y7- STATION 23+50

MATCH LINE SEE SHEET 21 -Y7- STA. 22+55.00

NAD 83

113 RIP RAP AT EMBANKMENT
MIDWAY LANDING, LLC
SEE DETAIL

114 JAMES E. McCRACKEN

GENE ALAN BARRETT

AXLE

N 74° 31' 50" W
180.93'

N 74° 31' 50" W
200.00'

25

N 42° 18' 13" E
35.88'

N 1° 14' 24" E
22.96'

N 3° 49' 36" W
270.12'

N 15° 28' 00" E
186.63'

S 15° 27' 48" W
385.32'

S 15° 19' 00" W
452.48'

±30.00 -Y7-
76.97' (LT)
BEG. PROP. 48" WW FENCE

SPECIAL CUT DITCH
SEE DETAIL

TDE

±00.00 -Y7-
77.03' (LT)
END PROP. 48" WW FENCE

HTR

PROP. 48" WW FENCE
TDE

TEMPORARY 54" PIPE

18" CONC

8" CONC

SPECIAL CUT DITCH
SEE DETAIL

EXISTING R/W

EIP

17.38
+9.33

-Y7-

NC 211 SOUTHPORT SUPPLY ROAD

S 74° 17' 46" E

28' BST

NC 211 SOUTHPORT SUPPLY RD 20' BST

3' BST

CONC MON

REBAR 2.2' TO R/W

PROP. 48" WW FENCE
PROP. 10' X 8' RCBC

END CONSTRUCTION
-Y7- POT STA. 28+00.00

SITE 34

109 YOUNG'S GAS & GROCERY OF WINNABOW, INC

109 YOUNG'S GAS & GROCERY OF WINNABOW, INC

RIPLEY DRIVE

N 15° 12' 51" W
156.62'

N 15° 31' 09" W
200.00'

SCALE
50' 0 100'

LEGEND

PERMANENT FILL IN SURFACE WATERS

TEMPORARY FILL IN SURFACE WATERS

NOTES:

1) FOR -Y7- PROFILE SEE SHEET 38.
2) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
3) FOR -Y7- TEMPORARY WIDENING FOR STAGED CONSTRUCTION, SEE SHEET 2-E AND TRAFFIC CONTROL PLANS.

25-MAY-2006 18:40
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plyddgood
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70 of 70

09/08/99

TIP PROJECT: R-2245

CONTRACT: C201550

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See Sheet 1-A For Index of Sheets
See Sheet 1-B For Conventional Symbols

VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BRUNSWICK COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2245	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34407.1.1	STP-1105(6)	P.E.
34407.3.1	STP-1105(7)	R/W & UTIL.

LOCATION: NEW ROUTE FROM SR 1104 (OCEAN BEACH DRIVE) TO NC 211 (SECOND BRIDGE TO OAK ISLAND)

TYPE OF WORK: GRADING, PAVING, DRAINAGE, CULVERT, STRUCTURES, SIGNING AND SIGNALS

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.
A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE TOWN OF OAK ISLAND.
ACCESS IS NOT CONTROLLED FROM OCEAN BEACH DRIVE TO 835' SOUTH OF YACHT DRIVE.
ACCESS CONTROL IS LIMITED TO POINTS AS SHOWN ON THE PLANS FROM 835' SOUTH OF YACHT DRIVE TO NC 211.

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

50 25 0 50 100
PLANS

50 25 0 50 100
PROFILE (HORIZONTAL)

10 5 0 10 20
PROFILE (VERTICAL)

DESIGN DATA

ADT 2003 = 11600
ADT 2025 = 27400
DHV = 8 %
D = 55 %
T = 3 % *
V = 40-60 MPH
* TTST 1% + DUAL 2%
FUNC CLASS = RURAL COLLECTOR

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2245 = 4.303 MI

LENGTH STRUCTURES TIP PROJECT R-2245 = 0.217 MI

TOTAL LENGTH OF TIP PROJECT R-2245 = 4.520 MI

Prepared In the Office of:
DIVISION OF HIGHWAYS
1000 Birch Ridge Dr., Raleigh NC, 27610

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: APRIL 29, 2005

LETTING DATE: AUGUST 15, 2006

GLENN W. MUMFORD, PE
PROJECT ENGINEER

SUSAN C. LANCASTER, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

P.E.
STATE DESIGN ENGINEER

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION

APPROVED
DIVISION ADMINISTRATOR *DATE*

6/2/99

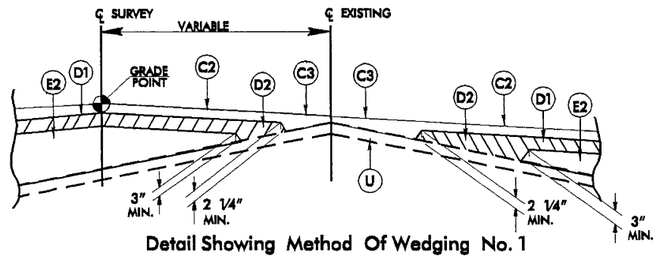
PROJECT REFERENCE NO.	SHEET NO.
R-2245	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

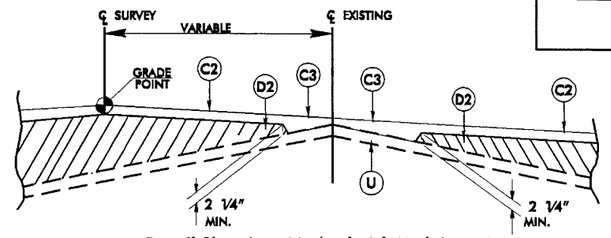
PAVEMENT SCHEDULE

C1	PROP. APPROX. 1½" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD.
C2	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YD. IN EACH OF TWO LAYERS.
C3	PROP. VAR. DEPTH ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 112 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT TO EXCEED 1½" IN DEPTH.
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
D2	PROP. VAR. DEPTH ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH, TO BE PLACED IN LAYERS NOT LESS THAN 2¼" IN DEPTH OR GREATER THAN 4" IN DEPTH.
E1	PROP. APPROX. 4" ASPHALT CONCRETE BASE COURSE, TYPE B25.0, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YD.
E2	PROP. VAR. DEPTH ASPHALT CONCRETE BASE COURSE, TYPE B25.0, AT AN AVERAGE RATE OF 114 LBS. PER SQ. YD. PER 1" DEPTH. TO BE PLACED IN LAYERS NOT LESS THAN 3" IN DEPTH OR GREATER THAN 5½" IN DEPTH.
J	PROP. 8" AGGREGATE BASE COURSE.
R1	1'-6" CONCRETE CURB AND GUTTER.
R2	2'-6" CONCRETE CURB AND GUTTER.
R3	2'-9" CONCRETE CURB AND GUTTER.
S	4" CONCRETE SIDEWALK.
U	EXISTING PAVEMENT.
T	EARTH MATERIAL.
W1	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL SHEET No. 1)
W2	VARIABLE DEPTH ASPHALT PAVEMENT (SEE STANDARD WEDGING DETAIL SHEET No. 2)

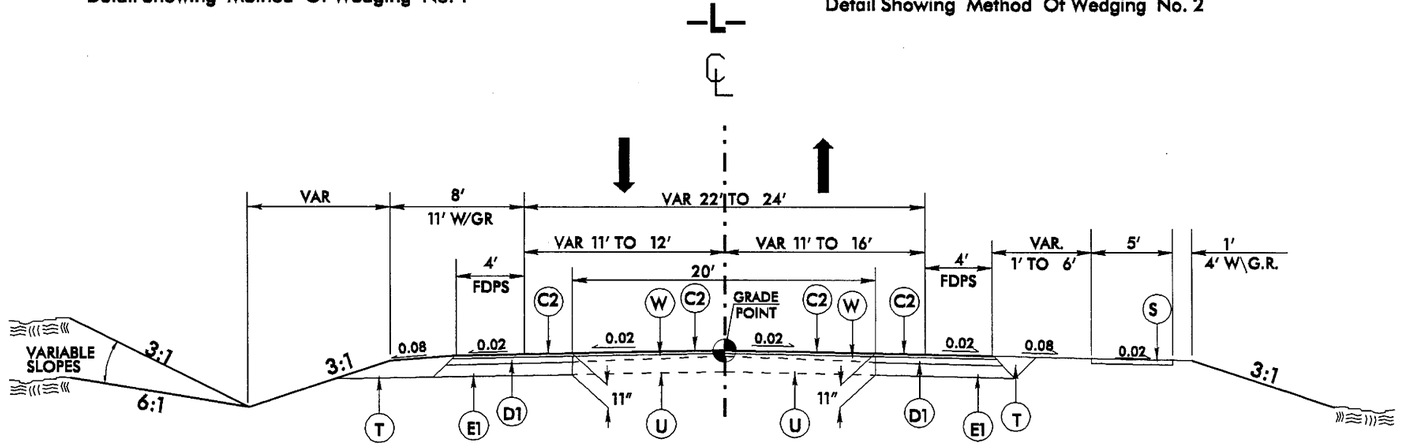
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE.



Detail Showing Method Of Wedging No. 1

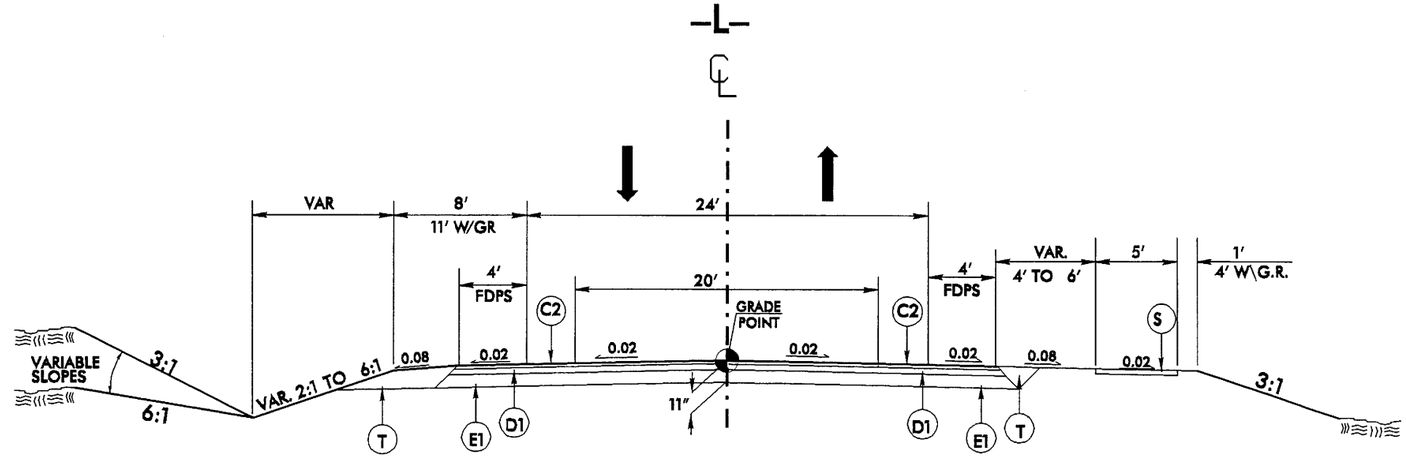


Detail Showing Method Of Wedging No. 2



TYPICAL SECTION NO. 1

–L– STA. 10+00.00 TO STA. 16+00.00
–L– STA. 23+00.00 TO STA. 27+20.00 LT.
–L– STA. 23+00.00 TO STA. 27+44.00 RT.



TYPICAL SECTION NO. 2

–L– STA. 16+00.00 TO STA. 20+68.50 +/– (BEGIN BRIDGE)
–L– STA. 22+31.50 +/– (END BRIDGE) TO 23+00.00

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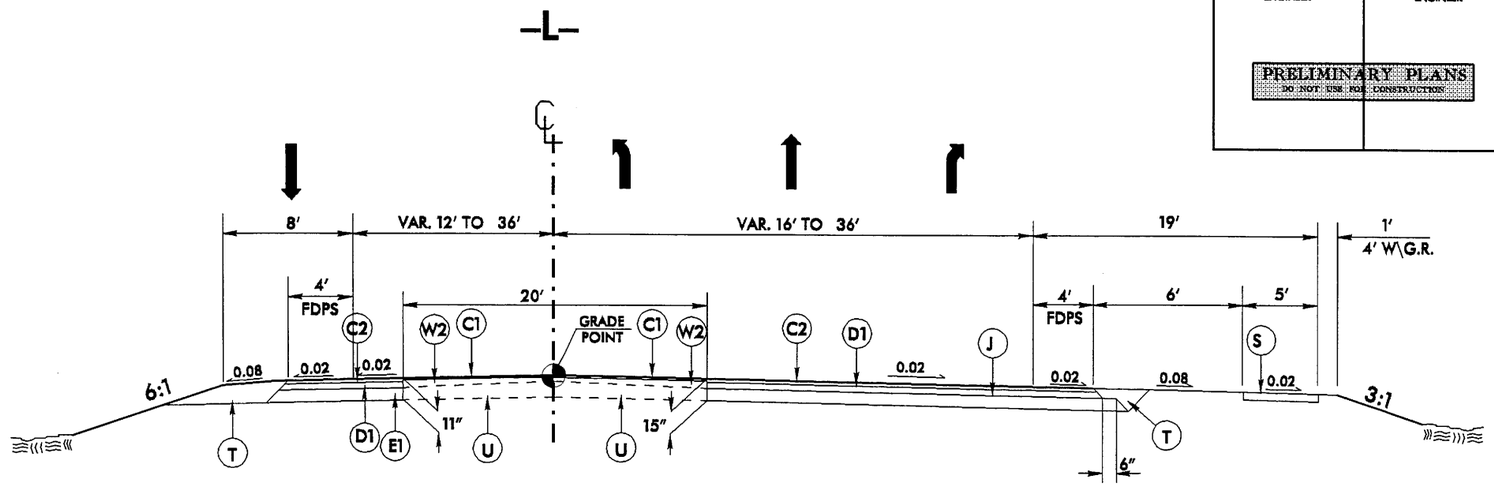
C1	1.5" S9.5B
C2	3" S9.5B
C3	VAR. S9.5B
D1	4" I19.0B
D2	VAR. I19.0B
E1	4"B25.0B
E2	VAR. B25.0B
J	8" ABC
R1	1'-6" C & G
R2	2'-6" C & G
R3	2'-9" C & G
S	4" CONC SIDEWALK
U	EXISTING PAVEMENT
T	EARTH MATERIAL
W1	WEDGING DETAIL NO. 1
W2	WEDGING DETAIL NO. 2

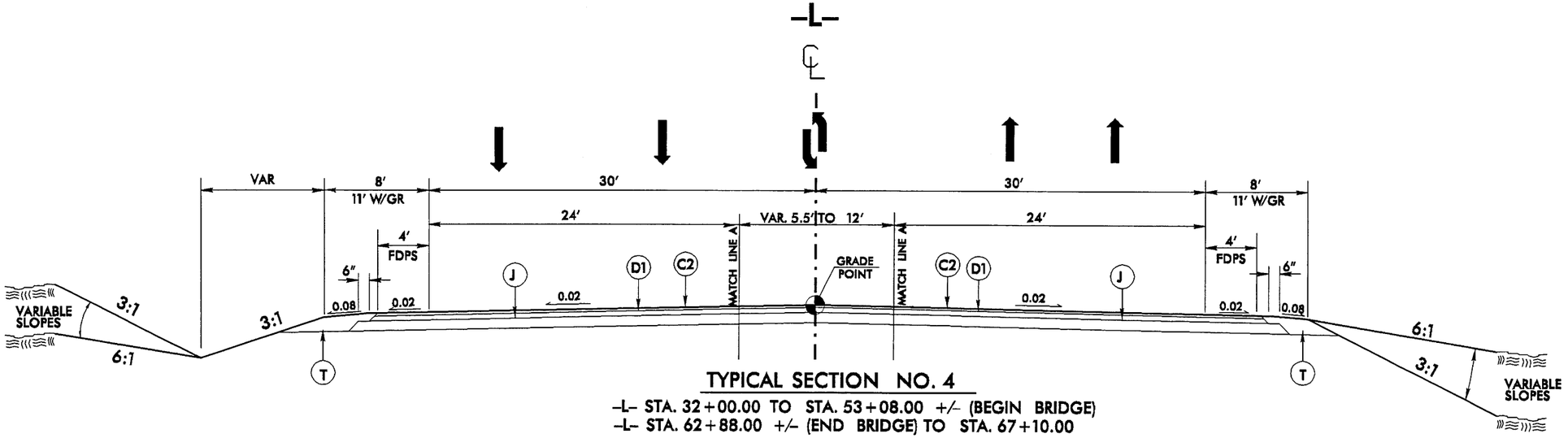
PROJECT REFERENCE NO.	SHEET NO.
R-2245	2-A
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



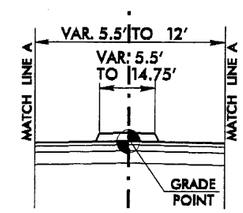
TYPICAL SECTION NO. 3

-L- STA. 27+20.00 TO STA. 32+00.00 LT.
-L- STA. 27+44.00 TO STA. 32+00.00 RT.



TYPICAL SECTION NO. 4

-L- STA. 32+00.00 TO STA. 53+08.00 +/- (BEGIN BRIDGE)
-L- STA. 62+88.00 +/- (END BRIDGE) TO STA. 67+10.00



TYPICAL SECTION NO. 4-A

-L- STA. 52+00.00 TO STA. 67+10.000

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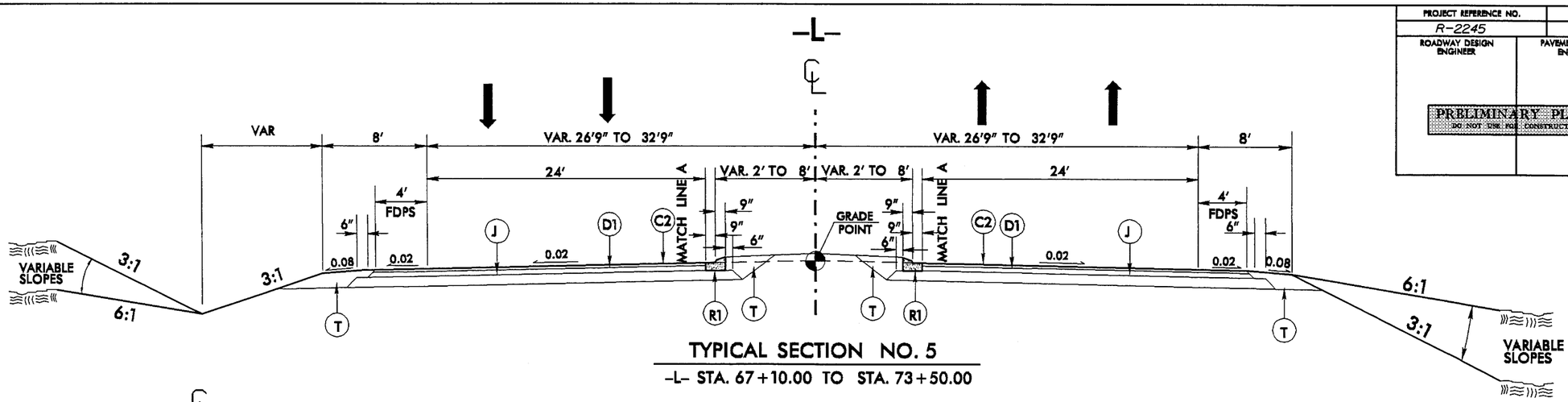
6/2/99

C1	1.5" S9.5B
C2	3" S9.5B
C3	VAR. S9.5B
D1	4" I19.0B
D2	VAR. I19.0B
E1	4"B25.0B
E2	VAR. B25.0B
J	8" ABC
R1	1'-6" C & G
R2	2'-6" C & G
R3	2'-9" C & G
S	4" CONC SIDEWALK
U	EXISTING PAVEMENT
T	EARTH MATERIAL
W1	WEDGING DETAIL NO. 1
W2	WEDGING DETAIL NO. 2

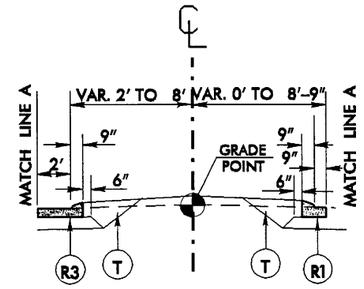
PROJECT REFERENCE NO.	SHEET NO.
R-2245	2-B
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



TYPICAL SECTION NO. 5

-L- STA. 67+10.00 TO STA. 73+50.00



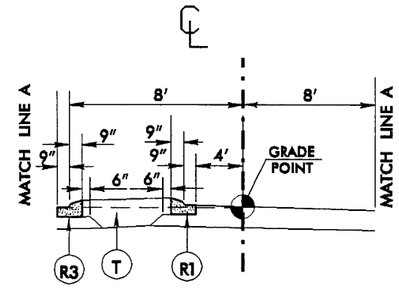
TYPICAL SECTION NO. 5A & 6A

-L- STA. 67+10.00 TO STA. 73+25.35
-L- * STA. 98+34.60 TO * STA. 111+97.79
-L- * STA. 155+18.97 TO * STA. 170+82.27
-L- * STA. 233+76.23 TO * STA. 240+54.44

REVERSE OF TYPICAL SECTION NO. 5A & 6A

-L- STA. 86+00.00 TO * STA. 89+84.04
-L- * STA. 130+29.43 TO * STA. 145+14.53
-L- STA. 197+00.00 TO * STA. 204+85.97
-L- * STA. 222+75.67 TO * STA. 228+91.24

* 50' TRANSITIION FROM 1' 6" CURB TO 2' 9" CURB BETWEEN TYPICAL 5/6 AND 5A/6A



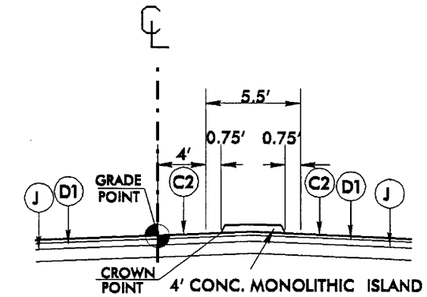
TYPICAL SECTION NO. 6B

73+50.00
245+00.00
TRANSITION FROM 73+25.35 TO TYPICAL 6B
100' TRANSITION FROM 244+00.00 TO TYPICAL 6B

REVERSE OF TYPICAL SECTION NO. 6B

85+50.00

50' TRANSITION FROM THE REVERSE TYPICAL OF 6B AND 86+00.00



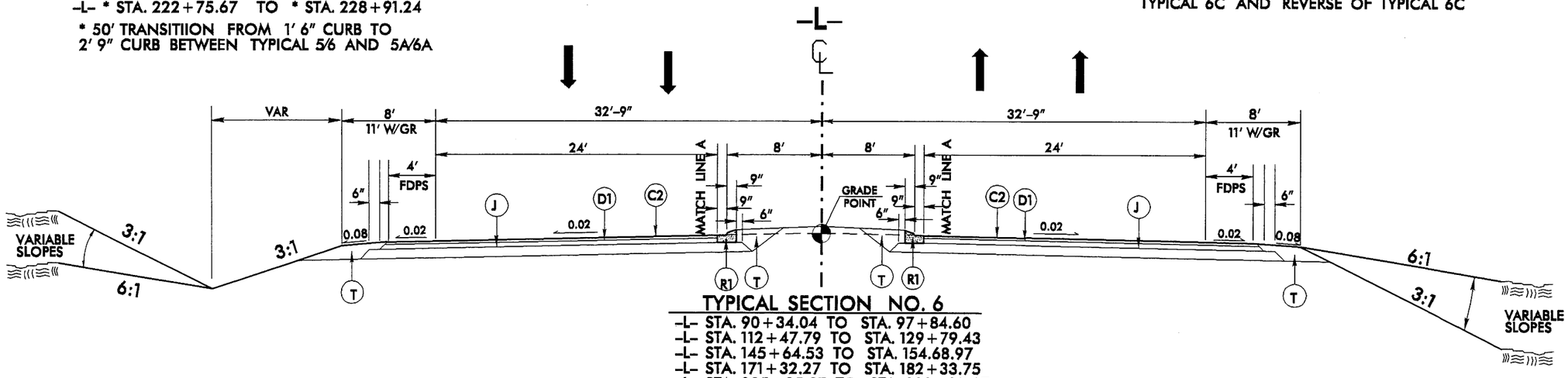
TYPICAL SECTION NO. 6C

-L- STA. 80+18.21 TO STA. 85+50.00
-L- STA. 183+00.00 TO STA. 188+62.50*

REVERSE OF TYPICAL SECTION NO. 6C

-L- STA. 73+50.00 TO STA. 78+67.85
-L- STA. 190+62.50 TO STA. 196+25.00
-L- STA. 245+00.00 TO STA.248+08.41

* 200' TRANSITIION BETWEEN TYPICAL 6C AND REVERSE OF TYPICAL 6C



TYPICAL SECTION NO. 6

-L- STA. 90+34.04 TO STA. 97+84.60
-L- STA. 112+47.79 TO STA. 129+79.43
-L- STA. 145+64.53 TO STA. 154.68.97
-L- STA. 171+32.27 TO STA. 182+33.75
-L- STA. 205+35.97 TO STA. 222+25.67
-L- STA. 229+41.24 TO STA. 233+26.23
-L- STA. 241+04.44 TO STA. 244+00.00

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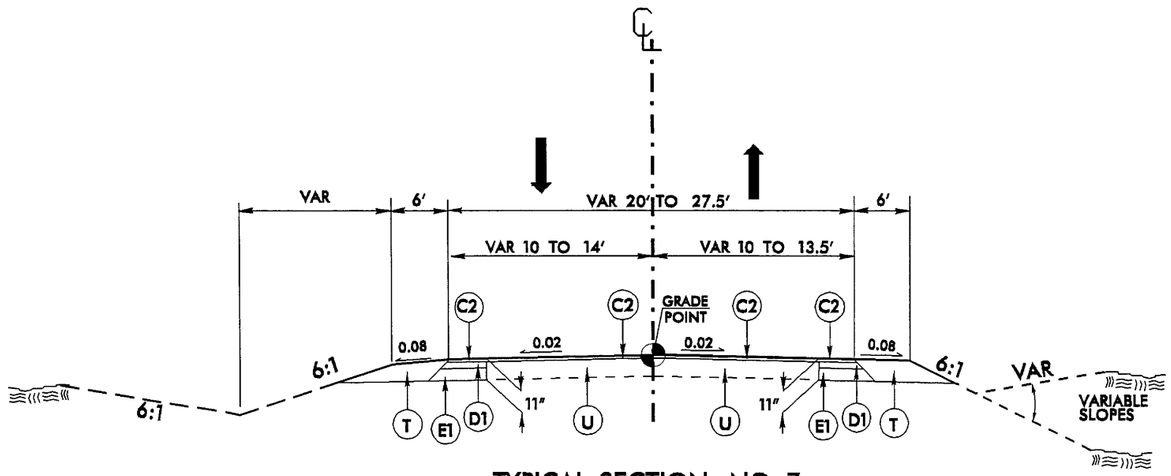
C1	1.5" SG.5B
C2	3" SG.5B
C3	VAR. SG.5B
D1	4" I19.0B
D2	VAR. I19.0B
E1	4"B25.0B
E2	VAR. B25.0B
J	8" ABC
R1	1'-6" C & G
R2	2'-6" C & G
R3	2'-9" C & G
S	4" CONC SIDEWALK
U	EXISTING PAVEMENT
T	EARTH MATERIAL
W1	WEDGING DETAIL NO. 1
W2	WEDGING DETAIL NO. 2

PROJECT REFERENCE NO.	SHEET NO.
R-2245	2-C
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

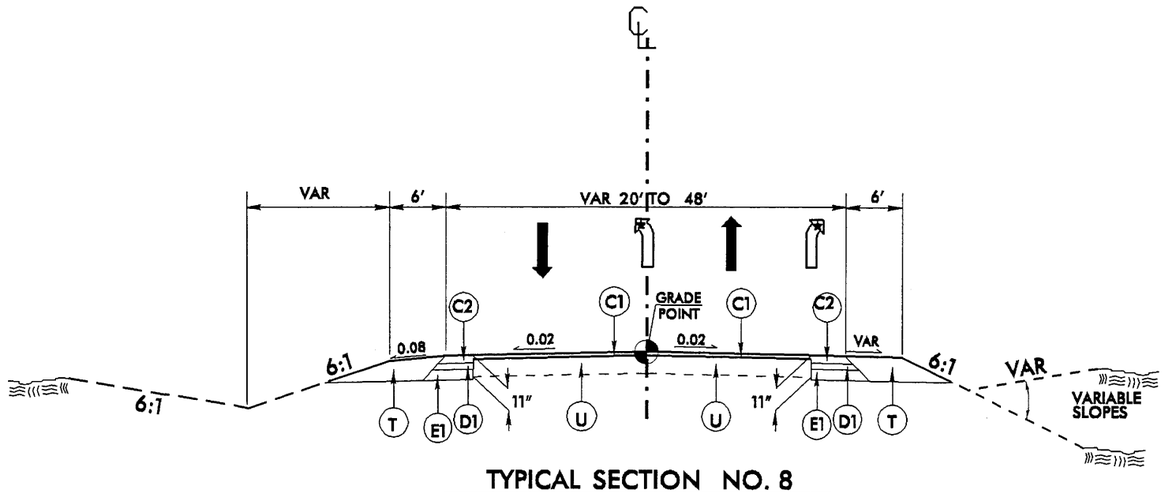
-Y1-



TYPICAL SECTION NO. 7

-Y1- STA. 10+00.00 TO STA. 13+00.00

-Y2-, -Y3-, -Y4-, -Y5-, -Y6-



TYPICAL SECTION NO. 8

-Y2- STA. 11+00.00 TO STA. 11+86.39
-Y2- STA. 12+09.39 TO STA. 12+80.00
-Y3- STA. 11+00.00 TO STA. 11+98.26
-Y4- STA. 10+50.00 TO STA. 11+63.54
-Y5- STA. 11+20.00 TO STA. 13+88.46
*-Y5- STA. 14+49.46 TO STA. 17+21.27
-Y6- STA. 10+90.00 TO STA. 12+90.00

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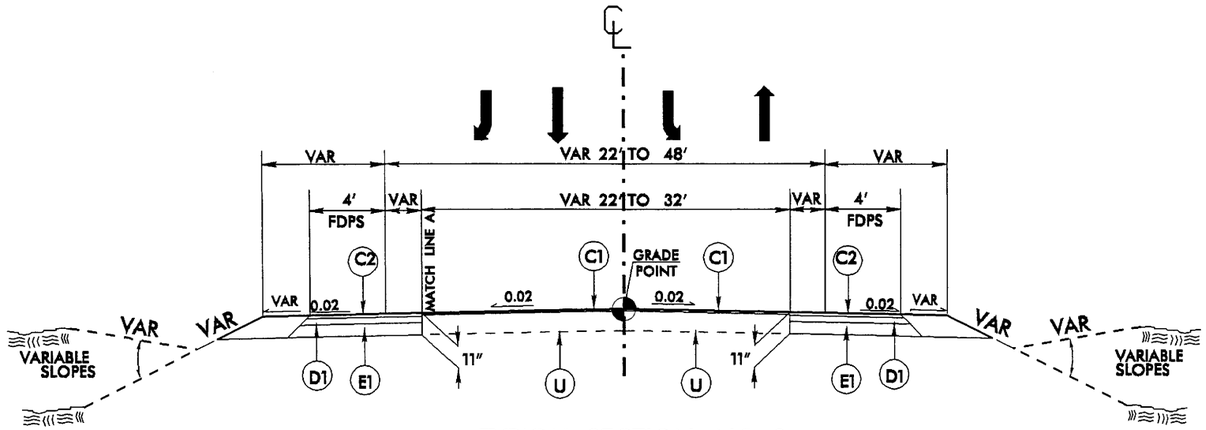
PROJECT REFERENCE NO.	SHEET NO.
R-2245	2-D
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

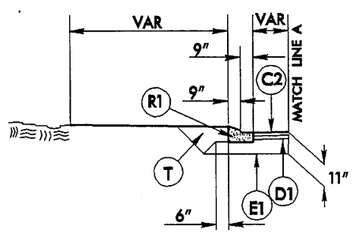
C1	1.5" B9.5B
C2	3" B9.5B
C3	VAR. B9.5B
D1	4" I19.0B
D2	VAR. I19.0B
E1	4"B25.0B
E2	VAR. B25.0B
J	8" ABC
R1	1'-6" C & G
R2	2'-6" C & G
R3	2'-9" C & G
S	4" CONC SIDEWALK
U	EXISTING PAVEMENT
T	EARTH MATERIAL
W1	WEDGING DETAIL NO. 1
W2	WEDGING DETAIL NO. 2

-Y7-, -Y8-



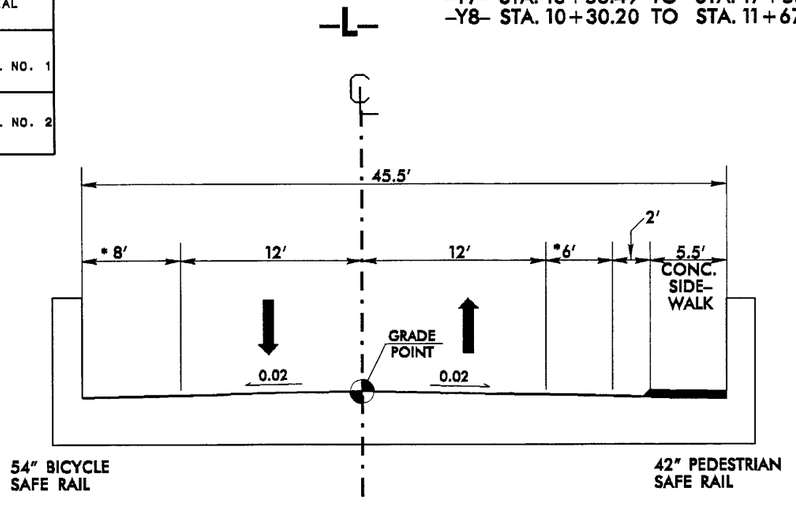
TYPICAL SECTION NO. 9

-Y7- STA. 10+00.00 TO STA. 28+00.00
-Y8- STA. 10+30.20 TO STA. 16+50.00



TYPICAL SECTION NO. 9-A

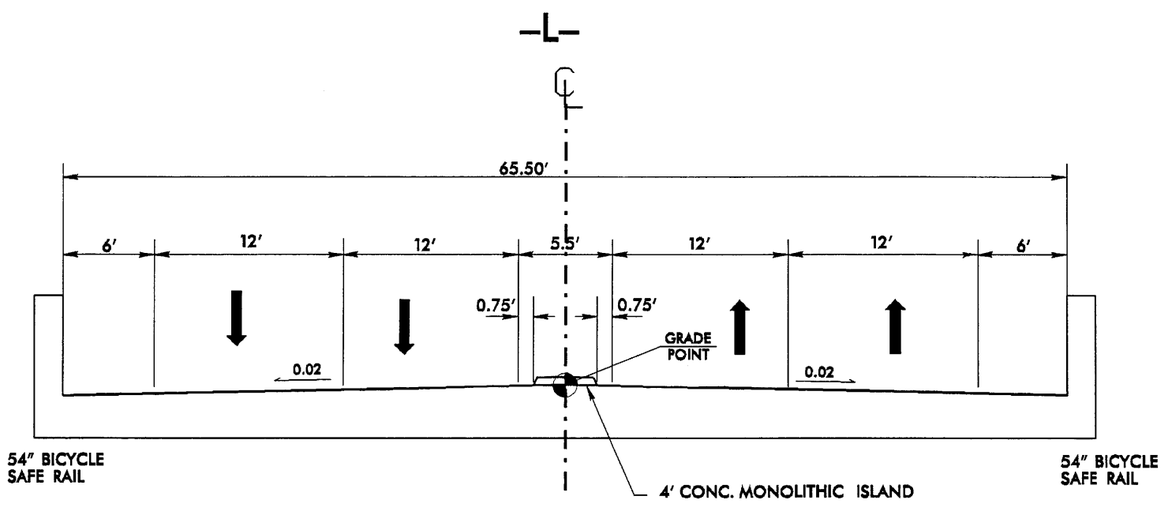
-Y7- STA. 16+58.49 TO STA. 17+53.49 LT.
-Y8- STA. 10+30.20 TO STA. 11+67.83 LT.



DAVIS CANAL BRIDGE
TYPICAL SECTION NO. 10

-L- STA. 20+68.50 +/- TO STA. 22+31.50 +/-

* ADDITIONAL BRIDGE OFFSET WIDTH REQUIRED BY HYDRAULIC DESIGN



INTRACOASTAL WATERWAY BRIDGE
TYPICAL SECTION NO. 11

-L- STA. 53+08.00 +/- TO STA. 62+88.00 +/-

6/2/99
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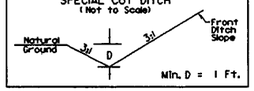
PROJECT REFERENCE NO.	SHEET NO.
R-2245	2-E
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

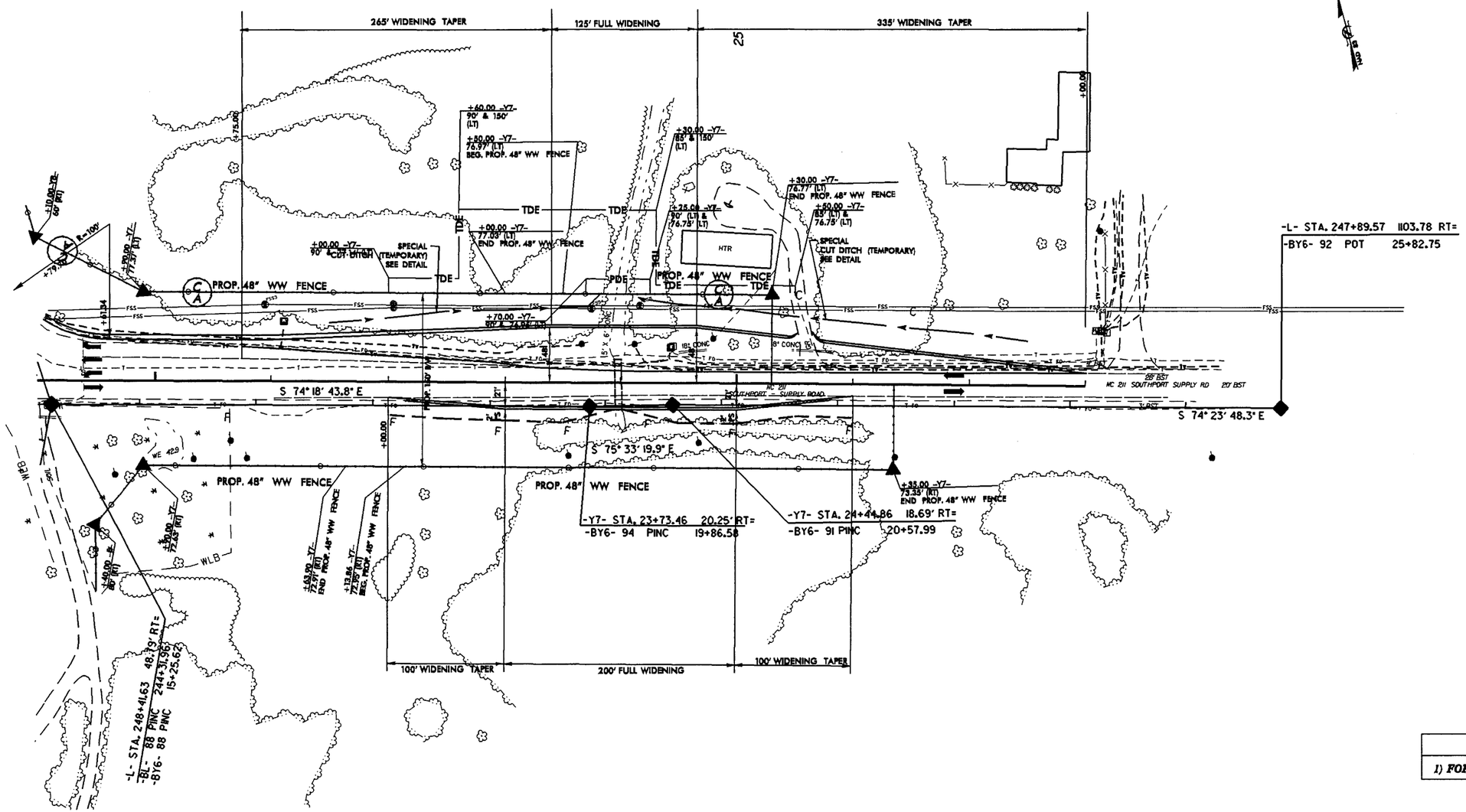
REVISIONS

8/17/99

DETAIL
SPECIAL CUT DITCH
(Not to Scale)



-Y7- STA 21+50 LT to -Y7- STA 23+85 LT
-Y7- STA 24+10 LT to -Y7- STA 27+50 LT



-L- STA. 247+89.57 1103.78 RT=
-BY6- 92 POT 25+82.75

NOTES:

1) FOR -Y7- PROFILE SEE SHEET 38

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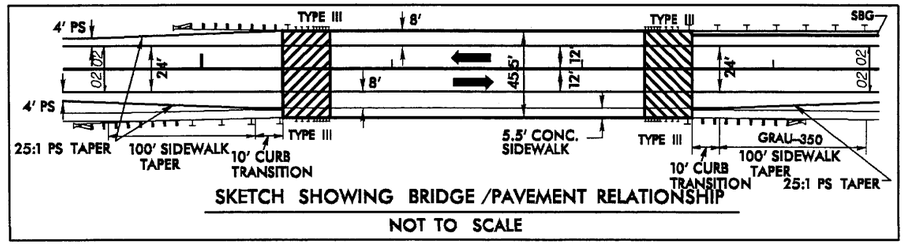
PROJECT REFERENCE NO.	SHEET NO.
R-2245	4
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/99

REVISIONS

05/26/06 - TLW- RIGHT-OF-WAY REVISION; UPDATED PROPERTY OWNER AND DEED INFORMATION ON PARCELS 1-3,5,6,8,9 AND 11; UPDATED OFFSETS ON R/W MONUMENTS AND EASEMENTS TO REFLECT FIELD SURVEYS; CORRECTED PROPERTY LINE ON PARCEL 11; AND ADDED "DO NOT DISTURB AIR PUMP" NOTE TO PARCEL 4



SKETCH SHOWING BRIDGE /PAVEMENT RELATIONSHIP

NOT TO SCALE

NAD 83

BEGIN TIP PROJECT R-2245
-L- POT Sta.. 10+00.43 =
-Y1- POT Sta. 11+99.95

BEGIN CONSTRUCTION
-Y1- STA. 10+00.00

MAINTAIN DRAINAGE FROM EAST SIDE OF GARAGE TO NORTH SIDE

(3) GERALD L. GOUGER
DB 1098 PG 122
-Y2- POT STA. 10+00.00

BEGIN CONSTRUCTION
-Y2- STA. 11+00.00

-Y3- POT STA. 10+00.00

BEGIN CONSTRUCTION
-Y3- STA. 11+00.00

HAND CLEARING WILL BE REQUIRED IN AREAS DESIGNATED BY THE PERMITS AND AS DIRECTED BY THE ENGINEER.

(9) TOWN OF OAK ISLAND
DB 1878 PG 817

BEGIN BRIDGE
-L- STA. 20+66.44

END APPROACH SLAB
-L- STA. 22+58.56

END BRIDGE
-L- STA. 22+33.56

GARY V. PETERSON
DB 714 PG 923
MB 6 PG 174
(10)

(1) GINGER GRAVELL
DB 1697 PG 240

-L- POT STA. 12+10.84 =
-Y2- POT STA. 11+97.89

BEGIN APPROACH SLAB
-L- STA. 20+41.44

(5) SEAHORSE VENTURES, LLC
DB 2173 PG 650
MB 2½ PG 262

-L- STA. 14+32.44 16.65' RT =
-BL- 51 PINC 9+11.95

CLASS II RIP RAP STRUCTURE PAY ITEM

EMMETT C. GUNNERSON
DB 565 PG 1055
MB 6 PG 174
(90)

-L- STA. 10+20.87 33.86' RT =
-BL- 47 POT 5+00.00

-L- STA. 23+20.00
SHEET 5

-Y1-

-Y2-

-Y3-

SOUTH MIDDLETON AVE. 20' BST

N 1°06'13.2" E

MATCH LINE SEE SHEET 5 -L- STA. 23+20.00

MAINTAIN SURFACE DRAINAGE

(4) MICHAEL OXFORD
DB 592 PG 494
DB 788 PG 154
MB-2 ½ PG 185

END CONSTRUCTION
-Y2- STA. 12+80.00

DO NOT DISTURB AIR PUMP

-L- POT STA. 14+21.68 =
-Y3- POT STA. 12+10.27

-Y2- POT STA. 14+07.11

WLB
BM200 ELEVATION = 7.95'
N 61472.08 E 2254632.21
L STATION 15+14.91 62.10' RIGHT
BOLT IN LEFT FRONT LEG OF WATER TOWER

GAYLE S. FAUCETTE, et al
(8) DB 1789 PG 784
MB 2½ PG 242
MB 2½ PG 186-189

HAND CLEARING WILL BE REQUIRED IN AREAS DESIGNATED BY THE PERMITS AND AS DIRECTED BY THE ENGINEER.

-L- STA. 20+38.93 =
-BL- 48 PINC 15+18.44
(13.83' RT)

(11) MARION C. DEETER
DB 1753 PG 233
MB 13 PG 21

-L- STA. 10+89.77 28.59' RT =
-BL- 50 PINC 6+68.98

END CONSTRUCTION
-Y1- STA. 13+00.00

-Y1- POT STA. 14+00.00

(2) KAREN K. HARRIS
DB 192 PG 696
MB 2½ PG 185

(7) OAK ISLAND ELKS LODGE #2769
DB 927 PG 107
DB 927 PG 113
DB 974 PG 652
DB 956 PG 799
DB 974 PG 654
MB W PG 204
MB Y PG 64

(6) TOWN OF OAK ISLAND
DB 435 PG 518
DB 1130 PG 732
MB 2 ½ PG 185
MB W PG 304
MB 18 PG 209

DETAIL
SPECIAL LATERAL BASE DITCH
(Not to Scale)

Fill Slope — 3' or Flatter — D — 3H — Natural Ground

Min. D = 0.5 Ft.
B = 1 Ft.

-L- STA 22+07 to 24+04 RT

-Y1- BEACH DR. | -Y2- DOLPHIN DR. | -Y3- PELICAN DR. | -L- MIDDLETON AVE.

2003 / 2025 ADT IN 100's

NOTES:

1) FOR -L- PROFILE SEE SHEET 27.
2) FOR -Y1-, -Y2- AND -Y3- PROFILES SEE SHEET 36.
3) FOR STRUCTURE PLANS SEE SHEETS S- TO S-.
4) DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED.
5) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
6) -Y- LINE RADII ARE 30' UNLESS OTHERWISE NOTED.
7) FOR CURB TRANSITION SEE SHEET 2-

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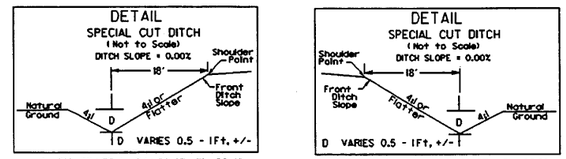
PROJECT REFERENCE NO.	SHEET NO.
R-2245	5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/99

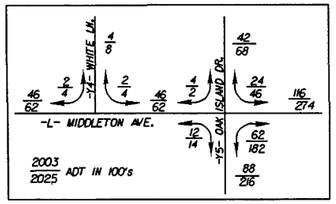
REVISIONS

05/26/06 - TLW - RIGHT-OF-WAY REVISIONS; 05/19/06 - TLW - UPDATED PROPERTY OWNER AND DEED INFORMATION ON PARCELS 11,28,29,34,35 AND 36; UPDATED OFFSETS ON RIGHT-OF-WAY MONUMENTS AND EASEMENTS TO REFLECT FIELD SURVEYS; ADDED 'DO NOT DISTURB TRANSFORMER' NOTE TO PARCEL 28; AND ADDED A DRIVEWAY TO PARCEL 25



-L- STA 33+72 to 34+38 LT EL=23.40
-L- STA 34+83 to 34+93 LT EL=23.70
-L- STA 35+38 to 36+02 LT EL=23.90
-L- STA 36+50 to 37+13 LT EL=24.20

-L- STA 32+00 to 33+18 RT EL=23.10
-L- STA 34+30 to 34+79 RT EL=23.00
-L- STA 36+14 to 37+10 RT EL=24.20



(90) EMMETT C. GUNNERSON
DB 565 PG 1055
MB 6 PG 174

GARY V. PETERSON
DB 714 PG 923
MB 6 PG 174

(10)

BM201 ELEVATION = 18.90'
N 624603.13 E 2254463.94
L STATION 24+99.53 125.17' LEFT
RRS SET IN 10" OAK

-Y4- POT STA. 10+00.00

BEGIN CONSTRUCTION
-Y4- STA. 10+50.00

-L- STA. 23+20.00

-L- POT STA. 24+59.03
-Y4- POT STA. 11+75.70

-L- STA. 4 -L- STA. 23+20.00

END SBG
-L- 23+70.00

GRAU-350

MATCH LINE SEE SHEET 4 -L-

N 1° 06' 13.2" E

SOUTH MIDDLETON AVE. 20' BST

NCGS MIDDLETON

-L- POC STA. 31+43.86 =
-YS- POT STA. 14+13.09

TOWN OF OAK ISLAND
DB 1413 PG 1036
MB 6 PG 39

(13) JANE M. GOINS
DB 196 PG 208
MB 6 PG 174

(27) TOWN OF OAK ISLAND
DB 1413 PG 1036
MB 6 PG 39

-YS- POT STA. 10+00.00

BEGIN CONSTRUCTION
-YS- STA. 11+20.00

S 86° 25' 32" E

(38) RONALD B. POSTON, TRUSTEE
DB 1334 PG 412
MB 6 PG 34

(34) STEPHAN R. WEINLAND
DB 1995 PG 137
MB 6 PG 34

(29) CARLENE K. HENDRIX
DB 463 PG 280
MB 6 PG 34

(31) JOSEPH O. HEAVNER, JR. et al
DB 1134 PG 1029
MB 6 PG 34

(30) BETTY D. TILLMAN
DB 553 PG 632
MB 6 PG 34

(35) CAM INVESTMENTS, INC
DB 2150 PG 1130
MB 6 PG 34

SPECIAL CUT DITCH
SEE DETAIL

MATCH LINE SEE SHEET 6 -L- STA. 36+55.00

STORM CHAMBER SPLITTER BOX SEE PLAN SHEET 2 FOR DETAIL

SPECIAL BASE DITCH SEE DETAIL

100' SIDEWALK TAPER

(11) MARION C. DEETER
DB 1753 PG 233
MB 13 PG 21

-L- STA. 24+63.30 20.68' RT=
-BL- 53 PINC 19+42.86

DETAIL
SPECIAL LATERAL BASE DITCH
(Not to Scale)
FW Slope
4:1 or Flatter
Natural Ground
Min. D = 0.5 Ft.
B = 1 Ft.

-L- STA 22+07 to 24+04 RT

(20) MARVIN HERNDON, ETAL
DB 586 PG 257
MB 13 PG 21

(24) ELLEN J. HERNDON
DB 586 PG 253
MB 13 PG 21

200' TAPER

DO NOT DISTURB TRANSFORMER

-L- PC STA. 30+78.92

(26) TOWN OF OAK ISLAND
DB 1413 PG 1036
MB 6 PG 39

-L- STA. 31+10.81 28.51' RT=
-BL- R2245A- 3 PINC 25+89.28
-BY4- R2245A-3 PINC 11+34.90

-L- PT STA. 32+06.36

END CONSTRUCTION
-YS- STA. 17+21.27

(28) RUTH L. REAVIS
DB 332 PG 822
DB 299 PG 797
DB 161 PG 381
DB 161 PG 383
DB 289 PG 069
MB 6 PG 34

(36) GARY L. KAILBOURNE
DB 1465 PG 487
MB 6 PG 34

(39) GARY G. COOPER
DB 1908 PG 196
DB 2038 PG 992
MB 6 PG 34

-YS- POT STA. 18+20.00

-L-
PI Sta 31+42.78
Δ = 9° 07' 38.4" (RT)
D = 7° 09' 43.1"
L = 127.44'
T = 63.86'
R = 800.00'
SE = 0.02

NOTES:

1) FOR -L- PROFILE SEE SHEETS 27 AND 28.
2) FOR -Y4- PROFILE SEE SHEET 36.
3) FOR -YS- PROFILE SEE SHEET 37.
4) DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED.
5) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
6) -Y- LINE RADII ARE 30' UNLESS OTHERWISE NOTED.

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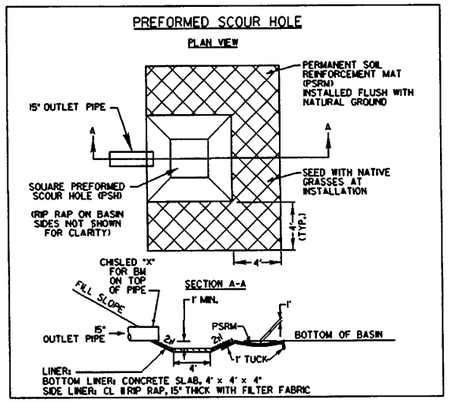
PROJECT REFERENCE NO.	SHEET NO.
R-2245	6
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

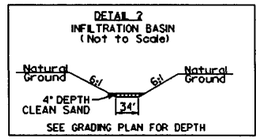
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

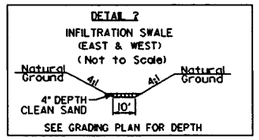
11/9/05-TLW- DESIGN REVISION: MODIFIED THE GRADE FOR -L- STA 42+80 & 61 TO -L- STA 70+60.00 TO PROVIDE A SYMMETRICAL GRADE ON THE INTRACOASTAL WATERWAY BRIDGE
05/26/06 - TLW - RIGHT-OF-WAY REVISIONS, UPDATED PROPERTY OWNER AND DEED INFORMATION ON PARCELS 44,49,54,66, AND 71; ADDED TWO DRIVEWAYS TO PARCEL 44; ADDED
DO NOT DISTURB NOTES TO PARCELS 45,46,& 59; ADDED GATES AT -L- STATION 46+71 RT. AND LT.; AND REVISED CHAIN LINK FENCE TO ENCLOSE INFILTRATION BASIN AND SWALE

8/17/99



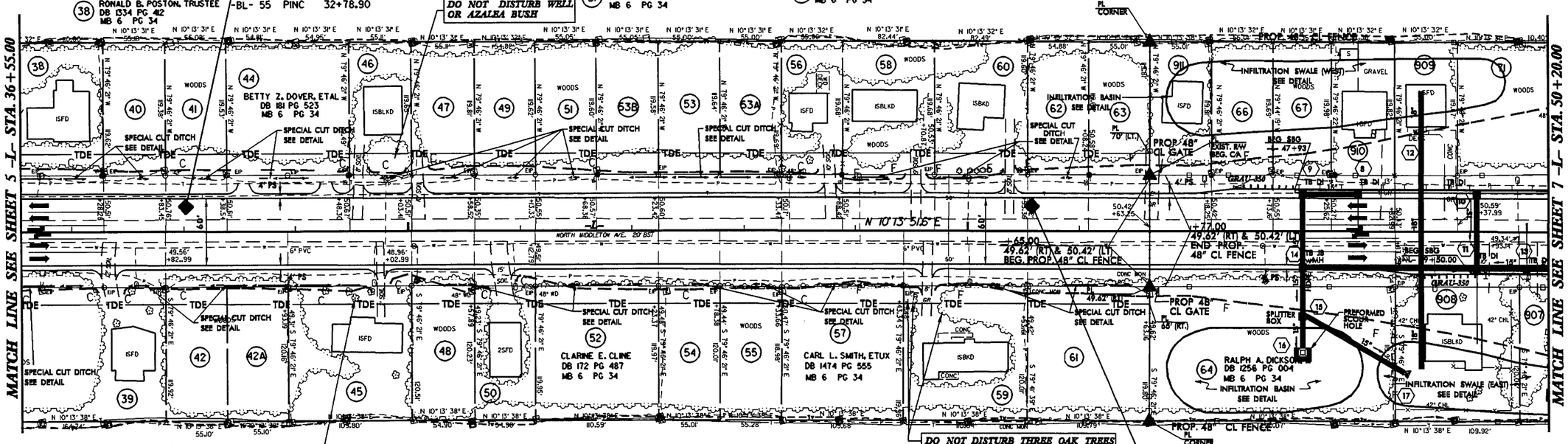


EST. DDE: 1,005 CU. YDS.



EST. DDE, WEST: 2,460 CU. YDS.
EST. DDE, EAST: 1,390 CU. YDS.

NAD 83



(38) RONALD B. POSTON, TRUSTEE DB 1334 PG 422 MB 6 PG 34

(40) HARMON H. JAMES, JR. DB 1008 PG 596 MB 6 PG 34

(41) JOHN ROACH JAMES DB 1008 PG 591 MB 6 PG 34

(44) BETTY Z. DOVER, ETAL DB 181 PG 523 MB 6 PG 34

(46) JANET H. DENNIS DB 1274 PG 803 MB 6 PG 34

(47) ROBERT WALSER, SR. DB 972 PG 965 MB 6 PG 34

(49) MINDI W. SINK, ETAL DB 1484 PG 182 MB 6 PG 34

(51) JOHN L. WALSER DB 1077 PG 630 MB 6 PG 34

(53) WILLIAM B. WARRICK DB 1658 PG 231 MB 6 PG 34

(53A) DAWN T. WARRICK DB 1658 PG 229 MB 6 PG 34

(53B) DAWN T. WARRICK DB 1658 PG 227 MB 6 PG 34

(56) ANNE E. HAMPTON DB 2072 PG 833 MB 6 PG 34

(58) DONNA L. BROWN, ETALS DB 1926 PG 862 MB 6 PG 34

(60) ROBERT W. CONNER DB 1986 PG 377 MB 6 PG 34

(62) PAUL M. SAWYER DB 1789 PG 683 MB 6 PG 34

(63) MARVIN C. MARTIN, SR. DB 1390 PG 266 MB 6 PG 34

(66) FRANK LEE DB 817 PG 476 MB 6 PG 34

(67) PAUL E. MOORE, JR. DB 1223 PG 689 MB 6 PG 34

(71) GEORGE L. FISHER, ETAL DB 1811PG 593 MB 6 PG 34

(909) FREDA M. RICH DB 1580 PG 881 MB 6 PG 34

(910) DOUGLASS JOHNSON DB 1561 PG 346 MB 6 PG 34

(911) KEN BLACK DB 1099 PG 823 MB 6 PG 34

(39) GARY G. COOPER DB 1908 PG 196 DB 2038 PG 992 MB 6 PG 34

(42) ARTHUR SKIPPER DB 1999 PG 778 MB 6 PG 34

(42A) KIMBERLY S. ANDERSON DB 1999 PG 775 MB 6 PG 34

(45) MARY W. CHURCH DB 874 PG 175 DB 845 PG 381 MB 6 PG 34

(48) H. EMANUEL GHENT DB 1249 PG 181 MB 6 PG 34

(50) DENISE M. WEST DB 1830 PG 945 MB 6 PG 34

(52) CLARINE E. CLINE DB 172 PG 487 MB 6 PG 34

(54) NEIL G. JESTER DB 2179 PG 693 MB 6 PG 34

(55) ANNE J. CONNER DB 1008 PG 606 MB 6 PG 34

(57) CARL L. SMITH, ETUX DB 1474 PG 555 MB 6 PG 34

(59) MARSHALL R. CARROLL DB 1895 PG 828 MB 6 PG 34

(61) J. R. CORBETT DB 596 PG 210 DB 596 PG 212 MB 6 PG 34

(64) RALPH A. DICKSON DB 1256 PG 004 MB 6 PG 34 INFILTRATION BASIN SEE DETAIL

(908) KATHERINE W. HICKS DB 169 PG 55 MB 6 PG 34

(907) DONALD W. BATCHELOR DB 836 PG 759 MB 6 PG 34

DETAIL
SPECIAL CUT DITCH
(Not to Scale)
DITCH SLOPE = 0.00%
Shoulder Point
18'
Front Ditch Slope
Natural Ground
4H
4H or Flatter
D
D VARIES 0.5 - 1Ft, +/-

-L- STA 36+50	to 37+13 LT	EL=24.20
-L- STA 37+58	to 37+68 LT	EL=24.50
-L- STA 38+13	to 38+24 LT	EL=24.60
-L- STA 38+68	to 39+12 LT	EL=24.90
-L- STA 39+75	to 39+89 LT	EL=25.00
-L- STA 40+28	to 40+44 LT	EL=25.00
-L- STA 40+88	to 40+98 LT	EL=25.00
-L- STA 41+43	to 41+53 LT	EL=25.40
-L- STA 41+98	to 43+55 LT	EL=25.70
-L- STA 43+97	to 44+34 LT	EL=25.70
-L- STA 44+73	to 45+18 LT	EL=26.20
-L- STA 45+83	to 45+93 LT	EL=26.20

DETAIL
SPECIAL CUT DITCH
(Not to Scale)
DITCH SLOPE = 0.00%
Shoulder Point
18'
Front Ditch Slope
Natural Ground
4H
4H or Flatter
D
D VARIES 0.5 - 1Ft, +/-

-L- STA 36+14	to 37+10 RT	EL=24.20
-L- STA 37+60	to 37+68 RT	EL=24.50
-L- STA 38+13	to 39+58 RT	EL=24.80
-L- STA 40+33	to 40+61 RT	EL=25.50
-L- STA 41+43	to 42+08 RT	EL=25.60
-L- STA 42+53	to 42+63 RT	EL=25.80
-L- STA 43+08	to 43+19 RT	EL=26.00
-L- STA 43+64	to 44+45 RT	EL=26.20
-L- STA 44+83	to 45+39 RT	EL=26.50
-L- STA 45+84	to 46+48 RT	EL=26.90

NOTES:

1) FOR -L- PROFILE SEE SHEET 28.
2) DRIVEWAY RADII ARE 10' UNLESS OTHERWISE NOTED.
3) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.

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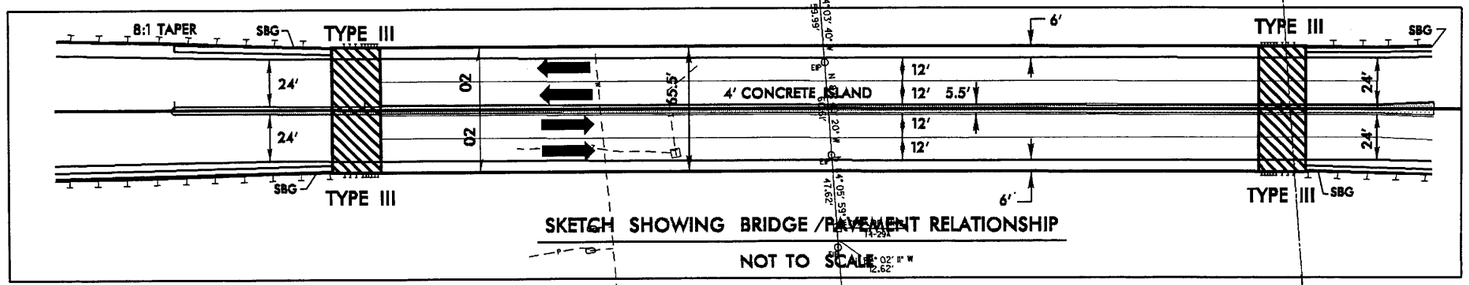
PROJECT REFERENCE NO.	SHEET NO.
R-2245	7
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/99



NAD 83

NO REVISIONS CAN BE MADE TO THE CONTROL OF ACCESS WITHOUT APPROVAL OF NCDOT, FHWA, USEPA AND DENR PER AGREEMENT AND USACE PER PERMIT CONDITION.

C
A

INTRACOASTAL RIGHT-OF-WAY OF PERPETUAL EASEMENT

NCDOT (formerly-BENNY E. PRINCE) (903) (DB 882 PG 092) (MB 6 PG 34)
NCDOT (formerly-HENRY G. HARRIS) (904) (DB 169 PG 299) (DB 149 PG 563) (DB 192 PG 677) (MB 6 PG 34)
NCDOT (formerly-RANDY W. GOODNIGHT) (906) (DB 1421 PG 137) (MB 6 PG 34)
GEORGE L. FISHER, ETAL (71) DB 1181PG 593 MB 6 PG 34
CHARLOTTE M. HAWTHORNE (101) DB 575 PG 94 MB 6 PG 34
BENNY E. PRINCE (78) DB 882 PG 92 MB 6 PG 34
GEORGE L. FISHER, ETAL DB 881 PG 593 MB 6 PG 34
NCDOT (formerly-FREDA M. RICH) (DB 1580 PG 881) (MB 6 PG 34)
NCDOT (formerly-DOUGLASS JOHNSON) (DB 1561 PG 361) (MB 6 PG 34)

PL EXIST. R/W(LT)
END PROP. 48" CL FENCE

BM202 ELEVATION = 22.35'
N 65397.51 E 2254799.82
L STATION 54+37.89 212.74' LEFT
RRS SET IN 12" OAK

+20.00 -L- (PL LT)
BEG. & END 48" CL FENCE

+45.00 158.28' (LT)
BEG. PROP. 48" CL FENCE

BEGIN BRIDGE -L- STA. 53+10.00

BEGIN APPROACH SLAB -L- STA. 52+85.00

CONCRETE SLOPE PROTECTION

CLASS II RIP RAP SEE STRUCTURE PLANS

PROP. 48" CL FENCE

-Y6- POT STA. 10+00.00

POWER BOX REPEATER

ATLANTIC INTRACOASTAL WATERWAY CENTERLINE (PROVIDED BY THE U.S. ARMY CORPS OF ENGINEERS WILMINGTON DISTRICT)

-L- STA. 50+20.00

PROP 48" CL GATE

BEGIN CONSTRUCTION -Y6- STA. 10+90.00

(102) MILTON C. DARR DB 1493 PG 222 MB 6 PG 34

BEGIN PROPOSED BULKHEAD

-L- STA. 56+36.54 = -BL- 58 PINC 51+15.47 (51.90' LT)

(80) RALPH DICKSON, III DB 879 PG 1007 MB 6 PG 34

-L- POT STA. 53+98.14 = -Y6- POT STA. 11+90.80

REMOVE EXISTING BULKHEAD

4' CONC. ISLAND

NCDOT (formerly-CARL F. MICKEY, JR) (901) (DB 1341PG 1037) (MB 6 PG 34)

JAMES W. WRIGHT (103) DB 314 PG 815 MB 6 PG 34

END PROPOSED BULKHEAD

CORNER

TOWN OF OAK ISLAND

INFILTRATION SWALE (EAST) SEE DETAIL

MATCH LINE SEE SHEET 6 -L- STA. 50+20.00

180' MEDIAN TAPER

PROP 48" CL GATE

+44.98 137.38' (RT)
END PROP. 48" CL FENCE

END CONSTRUCTION -Y6- STA. 12+90.00

-Y6- POT STA. 13+80.00

DONALD W. BATCHELOR (907) DB 836 PG 759 MB 6 PG 34
PHILLIP M. LEWIS (75) DB 1988 PG 754 MB 6 PG 34
THOMAS R. STANLEY (77) DB 989 PG 926 MB 6 PG 34
NCDOT (formerly-JOHN McCONNELL) (909) (DB 1909 PG 514) (MB 6 PG 34)
NCDOT (formerly-BARBARA S. BRUNSON) (902) (DB 1250 PG 950) (MB 6 PG 34)

CLASS II RIP RAP SEE STRUCTURE PLANS
CONCRETE SLOPE PROTECTION

-L- STA. 53+77.57 21.59' LT=
-BL-R2245A-5 PINC 48+54.74
-BY5-R2245-5 PINC 10+76.01

PL EXIST. R/W (RT)
BEG. PROP. 48" CL FENCE

-L- STA. 61+77.55 81.25' LT=
-BL- R2245A-7 PINC 56+57.27

END APPROACH SLAB -L- STA. 63+15.00

END BRIDGE -L- STA. 62+90.00

+88.00 -L- 42.75' (LT)
BEG. PROP. 48" WW FENCE

380' MEDIAN TRANSITION

CLASS II RIP RAP SEE STRUCTURE PLANS

BEG SBG -L- 63+15.00

END SBG -L- 63+85.00

BEG C/A & PROP. 48" WW FENCE 168.00 -L- 82.75' (LT)

MATCH LINE SEE SHEET 6 -L- STA. 64+05.00

-L- STA. 61+82.19 0.79' LT=
-BL- 110 PINC 57+37.87

NOTES:

1) ***FOR -L- PROFILE SEE SHEETS 28 AND 29.***
2) ***FOR -Y6- PROFILE SEE SHEET 37.***
3) ***FOR STRUCTURE PLANS SEE SHEETS S- TO S-.***
4) ***PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.***

REVISIONS
8/17/99 - STA 42+40±TO -L- STA 77+00± TO PROVIDE A SYMMETRICAL GRADE ON THE INTRACOASTAL WATERWAY
11/9/05 - TLW- REVISION REVISION: MODIFIED THE GRADE FROM STA 42+40±TO -L- STA 77+00± TO PROVIDE A SYMMETRICAL GRADE ON THE INTRACOASTAL WATERWAY
05/26/06 - TLW- REVISION: MODIFIED THE GRADE FROM STA 42+40±TO -L- STA 77+00± TO PROVIDE A SYMMETRICAL GRADE ON THE INTRACOASTAL WATERWAY
-L- STATION 52+44.98 RT. AND RIGHT-OF-WAY REVISIONS, LIBRARY OF PROPERTY OWNER AND DEED INFORMATION ON PARCELS 71,901 AND 905; ADDED GATES AT -L- STATION 52+44.98 RT. AND
-L- STATION 52+44.98 LT.; REVISED CHAIN LINK FENCE TO ENCLOSE INFILTRATION BASIN AND SWALE AND ADDED TEMPORARY CONSTRUCTION EASEMENT AROUND PROPOSED BULKHEAD

31-MAY-2006 10:44
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PROJECT REFERENCE NO.	SHEET NO.
R-2245	8
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

06/07/06 - TLW - RIGHT-OF-WAY REVISION: ADDED ALIGNMENT -ACCI- AND ASSOCIATED RIGHT-OF-WAY; ADJUSTED TEMPORARY CONSTRUCTION EASEMENT AND PERMANENT DRAINAGE EASEMENT ON PARCELS 104 AND 105; AND ADDED PERMANENT DRAINAGE EASEMENT IN THE INTERCOASTAL WATERWAY PERPETUAL EASEMENT

8/17/99

INTRACOASTAL RIGHT-OF-WAY OF PERPETUAL EASEMENT

NAD 83

65

360' MEDIAN TRANSITION

-L- STA. 65+59.43 2.78' LT=
-BL- 64 PINC 61+15.10

MATCH LINE SEE SHEET 7 -L- STA. 64+05.00

PROP. 48" WW FENCE

CL "B" RIP-RAP EST. 1 TON FILTER FABRIC EST. 5 SY.

+68.75 -L- 110' & 90' (LT)

END SBO -L- 65+95.00

PERMANENT SOIL REINFORCEMENT MAT 8.5' x 45'

CHORD

PROP. 22" RCP

1' 6" C&G

4' PS

N 10° 13' 51.6" E

+35.50

PROP. 48" WW FENCE

+68.75 110' & 90' (RT)

-L- TS STA. 66+68.75

200' MEDIAN TURN LANE TAPER

70

-L- STA. 71+53.21 41.66' LT=
-BL- 111 PINC 67+15.67

S 88° 45' 14" E 639.34'

(104) MAS PROPERTIES, LLC
DB 1536 PG 1338
MB 20 PG 450
MB R PG 279

CL "B" RIP-RAP EST. 1 TON FILTER FABRIC EST. 5 SY.

+28.75 110' (LT)

+28.75 90' (LT)

+70.00 90' (LT) 110' (LT)

PDE

PROP. 48" WW FENCE

+60.00 110' (LT)

+25.00 145' (LT)

+55.00 145' (LT)

+05.00 110' (LT)

+25.33 90' (LT)

50' TRANSITION

60' TRANSITION

L57' +92.29 MON TO CL

BURIAL OF THIS PIPE IS NOT REQUIRED

CONC. MON. CORP. OF ENGR. CM 14-16

TB JB W/MH

HDPE W/2 ELBOWS

-L- PCC STA. 73+15.00 =
-ACCI- POT STA. 10+00.00

-L- SC STA. 70+28.75

+32.82 90' (RT)

+29.34 -ACCI- 50' (RT)

-L- PCSta. 11+02.58

-L-

PI Sta 69+09.00	PI Sta 71+77.69	PI Sta 74+45.55
Θs = 7° 55' 59.7"	Δ = 13° 04' 16.1" (RT)	Θs = 7° 55' 59.7"
Ls = 360.00'	D = 4° 24' 26.5"	Ls = 360.00'
LT = 240.24'	L = 296.57	LT = 240.24'
ST = 120.22'	T = 148.93'	ST = 120.22'
	R = 1,300.00'	
	SE = 0.04	

INTRACOASTAL RIGHT-OF-WAY OF PERPETUAL EASEMENT

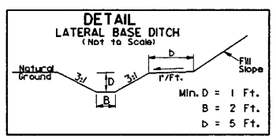
-L- STA. 73+51.74 3.41' LT=
-BL- 65 PINC 69+21.01

PROP. 48" WW FENCE

-ACCI-

PI Sta 15+43.67
Δ = 57° 44' 48.9" (LT)
D = 7° 09' 43.7"
L = 806.30'
T = 441.14'
R = 800.00'

DETAIL
LATERAL BASE DITCH
(Not to Scale)



Min. D = 1 Ft.
B = 2 Ft.
b = 5 Ft.

-L- STA 72+50 RT to -L- STA 77+88 RT

WLB

WOODS

S 85° 48' 23" W 139.77'

S 83° 55' 37" W 122.80'

S 76° 30' 08" W 131.91'

S 66° 39' 56" W 16.40'

(106) LaDAWN WILLIAMSON
DB 842 PG 233
MB 5 PG 89
MB 3 PG 90

75

-L- CS STA. 73+25.33

CL "1" RIP-RAP EST. 17 TON FILTER FABRIC EST. 38 SY.

CL "1" RIP-RAP EST. 26 TON FILTER FABRIC EST. 60 SY.

+70.00 83.42' (LT) 100' (LT) 120' (LT)

+00.00 100' (LT)

+55.00 83.57' (LT) & 100' (LT)

+85.33 90' (LT)

+40.00 84.23' (LT)

(105)

+00.00 90' & 100' (LT)

CHORD

PDE

STATE OF NORTH CAROLINA
NORTH 0.83 FT

-L- ST STA. 76+

MATCH LINE SEE SHEET 9 -L- STA. 77+20.00

+93.42 96.10' (RT)

TB JB W/MH

HDPE W/2 ELBOWS

+00.00 100' (RT)

+26.63 120.16' (RT)

LATERAL BASE DITCH SEE DETAIL

CL "B" RIP-RAP EST. 2 TON FILTER FABRIC EST. 7 SY.

+62.86 -ACCI- 50' (LT)

+85.33 100' (RT)

+85.33 90' (RT)

BM205 ELEVATION = 24.43'
N 67156.60 E 2255623.35
L STATION 74+05.64 179.51' RIGHT
RRS SET IN 24" OAK

(105) STATE OF NORTH CAROLINA
DB 615 PG 185

PROP. 48" WW FENCE

MATCH LINE SEE SHEET 25 -ACCI- STA. 15+00.00

NO REVISIONS CAN BE MADE TO THE CONTROL OF ACCESS WITHOUT APPROVAL OF NCDOT, FHWA, USEPA AND DENR PER AGREEMENT AND USACE PER PERMIT CONDITION.

NOTES:

1) FOR -L- PROFILE SEE SHEET 29.
2) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
3) SEE SHEET 2- FOR 50' TRANSITION FROM 1'-6" C&G TO 2'-9" C&G.
4) A FUTURE CONTROL-OF-ACCESS BREAK HAS BEEN RESERVED LEFT OF -L- STATION 73+15.00. ANY ACCESS BREAK AT THIS LOCATION SHALL BE IN ACCORDANCE WITH SPECIFIC CONDITIONS SET FORTH IN THE MEMORANDUM OF UNDERSTANDING BETWEEN NCDOT, FHWA, DENR AND USEPA AND SPECIAL PERMIT CONDITIONS PRESCRIBED BY USEPA.

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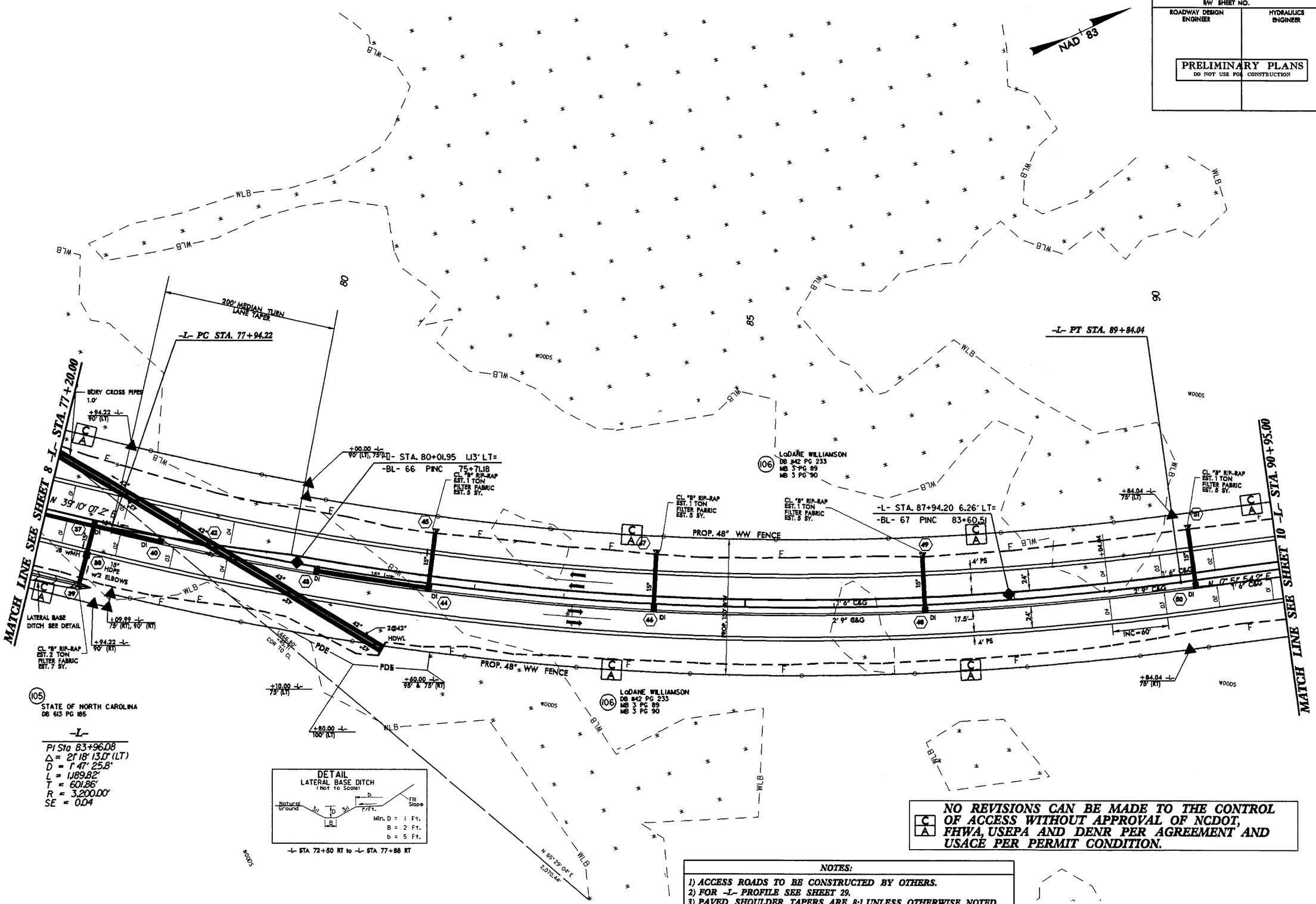
PROJECT REFERENCE NO.	SHEET NO.
R-2245	9
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



NO REVISIONS CAN BE MADE TO THE CONTROL OF ACCESS WITHOUT APPROVAL OF NCDOT, FHWA, USEPA AND DENR PER AGREEMENT AND USACE PER PERMIT CONDITION.

NOTES:

1) ACCESS ROADS TO BE CONSTRUCTED BY OTHERS.
2) FOR -L- PROFILE SEE SHEET 29.
3) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
4) SEE SHEET 2- FOR 50' TRANSITION FROM 1'-6" C&G TO 2'-9" C&G.

REVISIONS

8/17/99

31-MAY-2006 10:44
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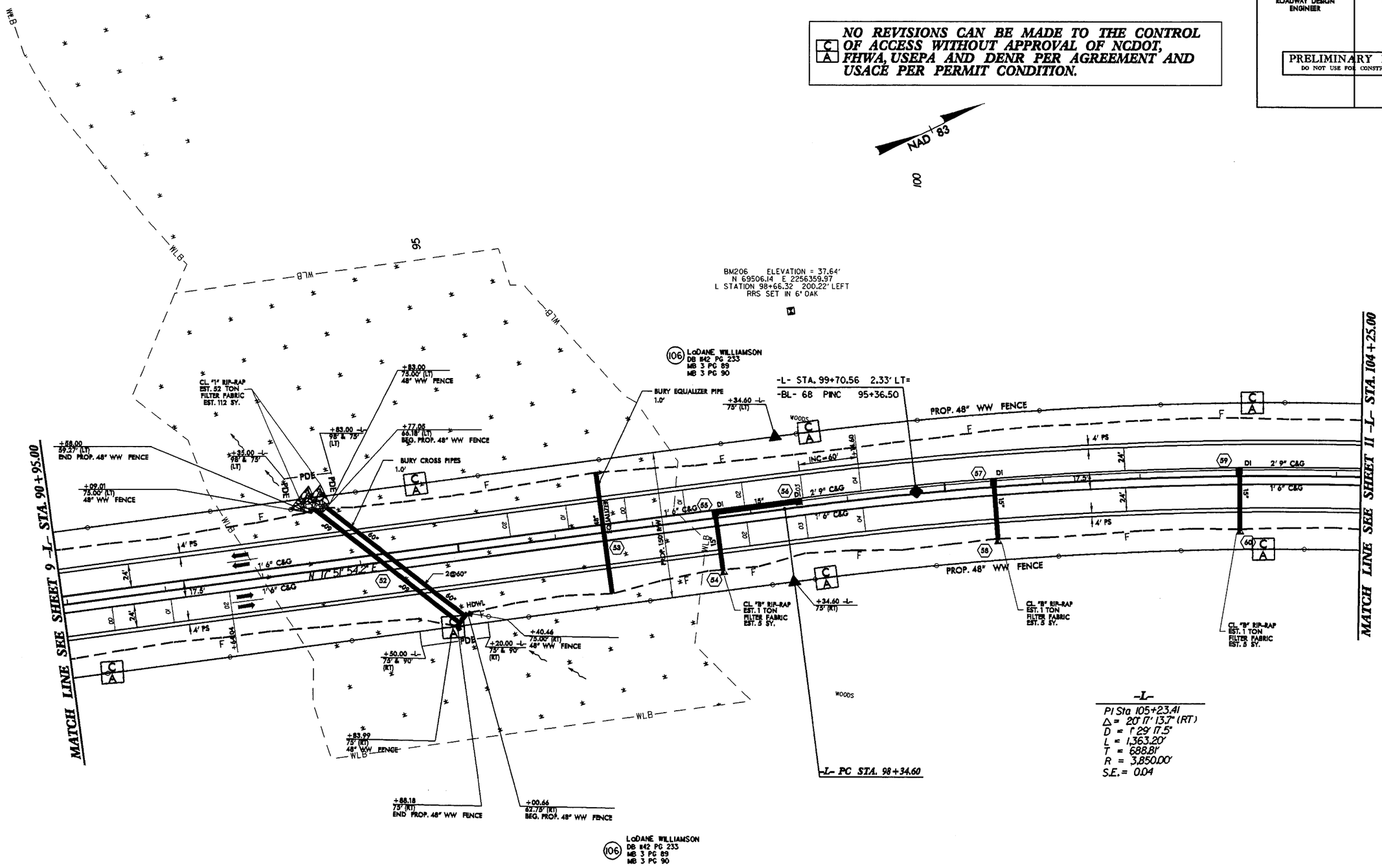
PROJECT REFERENCE NO.	SHEET NO.
R-2245	10
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NO REVISIONS CAN BE MADE TO THE CONTROL OF ACCESS WITHOUT APPROVAL OF NCDOT, FHWA, USEPA AND DENR PER AGREEMENT AND USACE PER PERMIT CONDITION.



-L-
PI Sta 105+23.41
Δ = 20° 17' 13.7" (RT)
D = 1° 29' 17.5"
L = 1,363.20'
T = 688.81'
R = 3,850.00'
S.E. = 0.04

NOTES:

1) FOR -L- PROFILE SEE SHEETS 29 AND 30.
2) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
3) SEE SHEET 2- FOR 50' TRANSITION FROM 1'-6" C&G TO 2'-9" C&G.

REVISIONS

8/17/99

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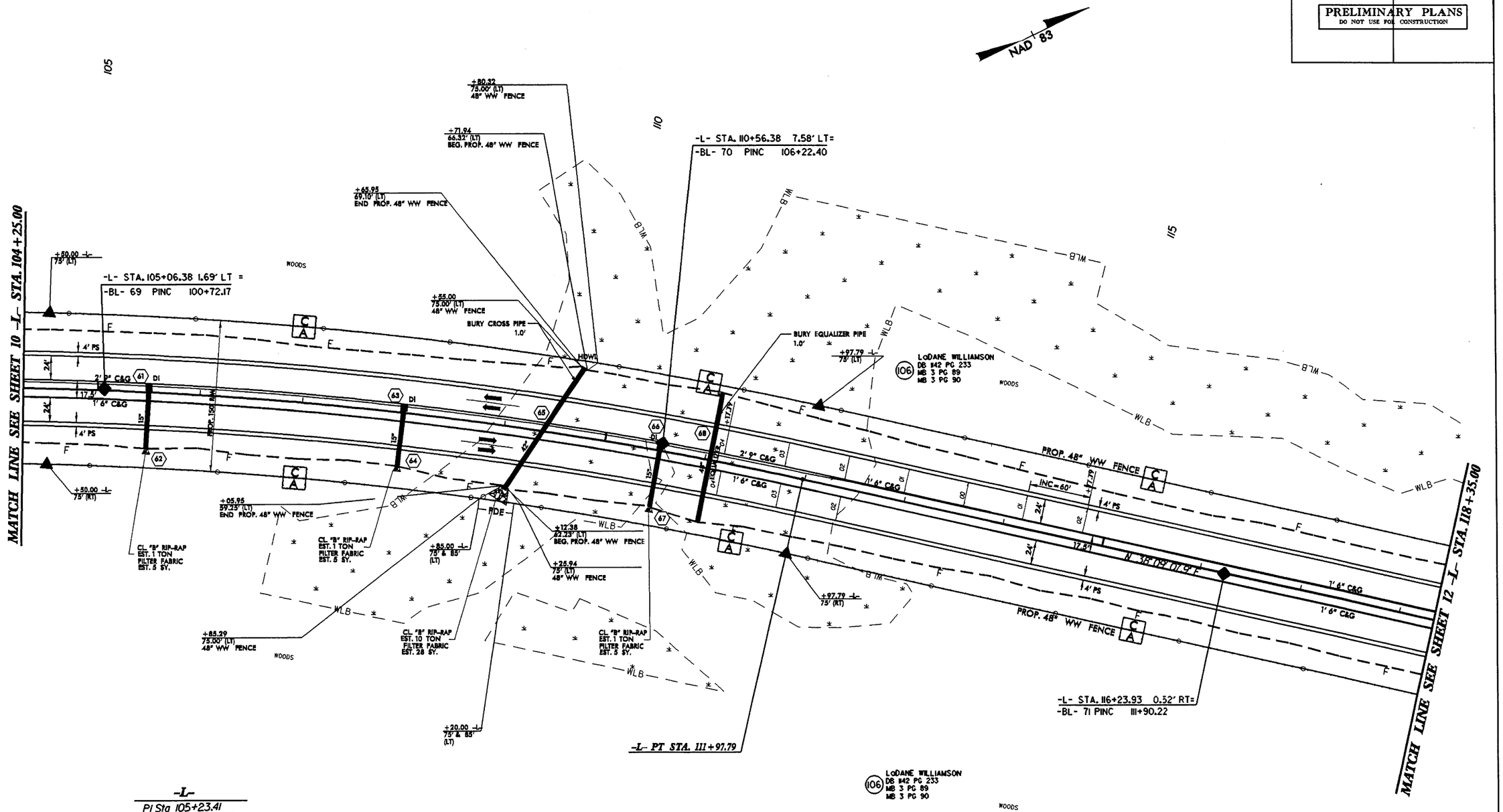
PROJECT REFERENCE NO.	SHEET NO.
R-2245	11
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



-L-
PI Sta 105+23.41
Δ = 20° 17' 13.7" (RT)
D = 1° 29' 17.5"
L = 1,363.20'
T = 688.81'
R = 3,850.00'
S.E. = 0.04

NO REVISIONS CAN BE MADE TO THE CONTROL OF ACCESS WITHOUT APPROVAL OF NCDOT, FHWA, USEPA AND DENR PER AGREEMENT AND USACE PER PERMIT CONDITION.

NOTES:

1) FOR -L- PROFILE SEE SHEET 30.
2) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
3) SEE SHEET 2- FOR 50' TRANSITION FROM 1'-6" C&G TO 2'-9" C&G.

REVISIONS

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
R-2245	12
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

8/17/99

05/19/06 - TLW- RIGHT-OF-WAY REVISION; ADDED GATE AT -L- STATION 122+58 RT.

NAD 83

MATCH LINE SEE SHEET 11 -L- STA. 118+35.00

MATCH LINE SEE SHEET 13 -L- STA. 132+45.00

LoDANE WILLIAMSON
DB 842 PG 233
MB 3 PG 89
MB 3 PG 90
(106)

+28.69
72.45' (LT)
END PROP. 48" WW FENCE

+14.31
75.00' (LT)
48" WW FENCE

+00.00 -L-
75' (LT)

+20.00 -L-
75' & 83' (RT)

+36.83
62.75' (LT)
BEG. PROP. 48" WW FENCE

+50.00 -L-
75' & 83' (RT)

+51.98
75.00' (LT)
48" WW FENCE

BURY CROSS PIPE

WOODS

4' PS

1'-6" C&G

17.5'

24"

N 34°09'07"E

+00.00 -L-
75' (RT)

+21.11
75.00' (RT)
48" WW FENCE

CL "I" RIP-RAP
EST. 13 TON
FILTER FABRIC
EST. 30 SY.

+83.30
75.00' (RT)
48" WW FENCE

+89.24
67.31' (RT)
BEG. PROP.
48" WW FENCE

+75.76
41.98' (RT)
END PROP. 48" WW FENCE

+00.00 -L-
75' & 100' (RT)

+30.00 -L-
75' & 100' (RT)

+64.00
75' (RT)
BEG. PROP.
48" WW FENCE

PROP. 48" WW GATE

+52.00
75' (RT)
END PROP.
48" WW FENCE

WE 48.0
24" CMP
30" CMP
WE 49.4

-L- STA.128+22.03 5.69' LT=
-BL- 73 PINC 123+88.36

-L- PC STA. 130+29.43

NCDOT GPS MON
R2245-13

+29.43 -L-
75' (LT)

PROP. 48" WW FENCE

PROP. 150' 8" P

1'-6" C&G

2'-9" C&G

4' PS

INC=60'

+29.43 -L-
75' (RT)

CL "B" RIP-RAP
EST. 1 TON
FILTER FABRIC
EST. 5 SY.

-L- STA. 122+65.14 1.36' RT=
-BL- 72 PINC 118+31.43

LoDANE WILLIAMSON
DB 842 PG 233
MB 3 PG 89
MB 3 PG 90
(106)

BM207 ELEVATION = 48.68'
N 71157.72 E 2258136.25
L STATION 122+20.89 416.14' RIGHT
RRS SET IN 12" PINE

-L-
PI Sta 137+94.62
Δ = 34°02'09.7" (LT)
D = 2°17'30.6"
L = 1,485.10'
T = 765.19'
R = 2,500.00'
S.E. = 0.05

WLB
WLB-
WLB
DE
PDE
HDWL
SDWL
F
C A

NO REVISIONS CAN BE MADE TO THE CONTROL OF ACCESS WITHOUT APPROVAL OF NCDOT, FHWA, USEPA AND DENR PER AGREEMENT AND USACE PER PERMIT CONDITION.

NOTES:

1) FOR -L- PROFILE SEE SHEETS 30 AND 31.
2) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
3) SEE SHEET 2- FOR 50' TRANSITION FROM 1'-6" C&G TO 2'-9" C&G.

31-MAY-2006 10:45
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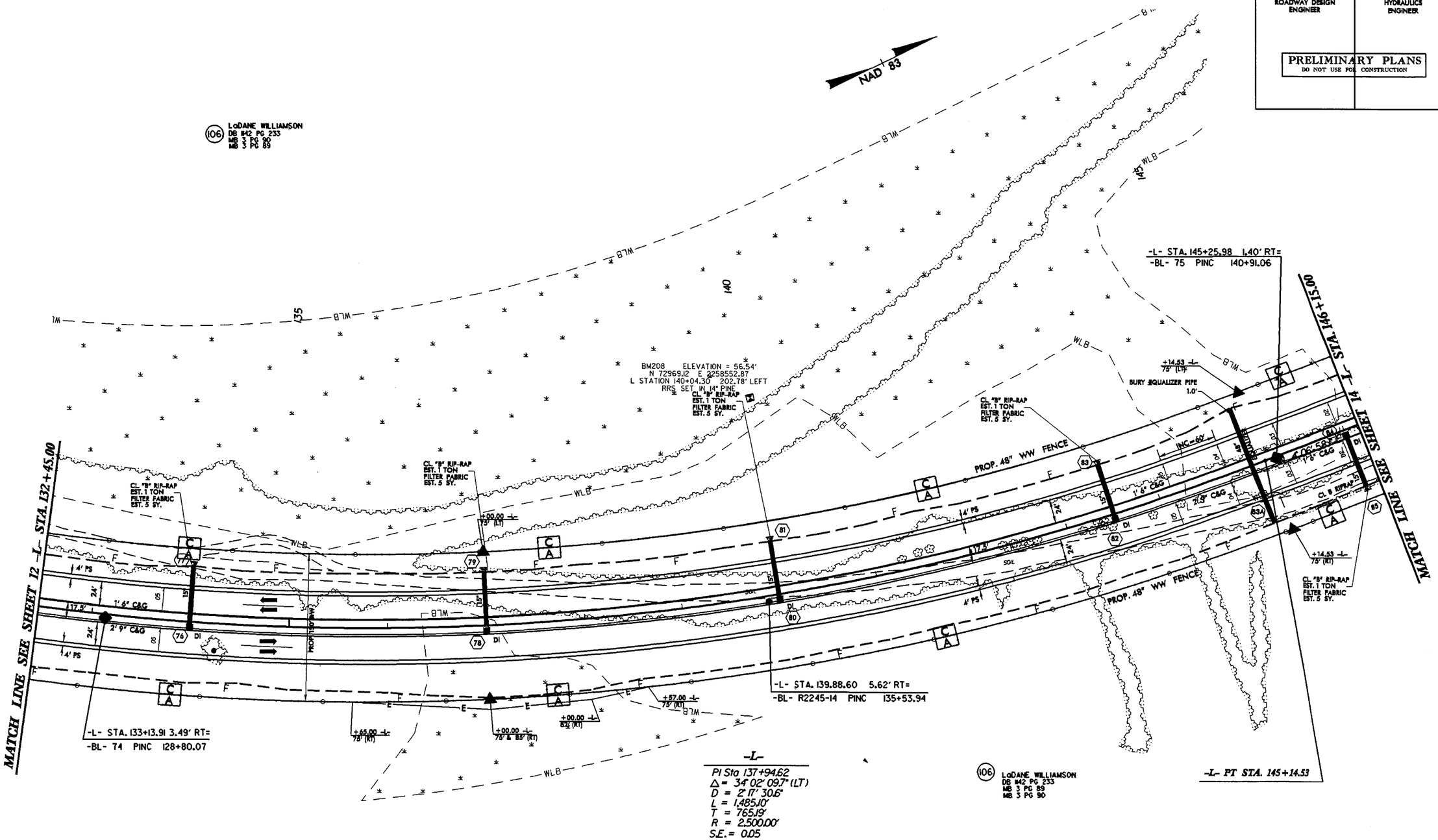
PROJECT REFERENCE NO.	SHEET NO.
R-2245	13
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



NO REVISIONS CAN BE MADE TO THE CONTROL OF ACCESS WITHOUT APPROVAL OF NCDOT, FHWA, USEPA AND DENR PER AGREEMENT AND USACE PER PERMIT CONDITION.

NOTES:

1) FOR -L- PROFILE SEE SHEET 31.
2) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
3) SEE SHEET 2- FOR 50' TRANSITION FROM 1'-6" C&G TO 2'-9" C&G.

REVISIONS

8/17/99

31-MAY-2006 10:45
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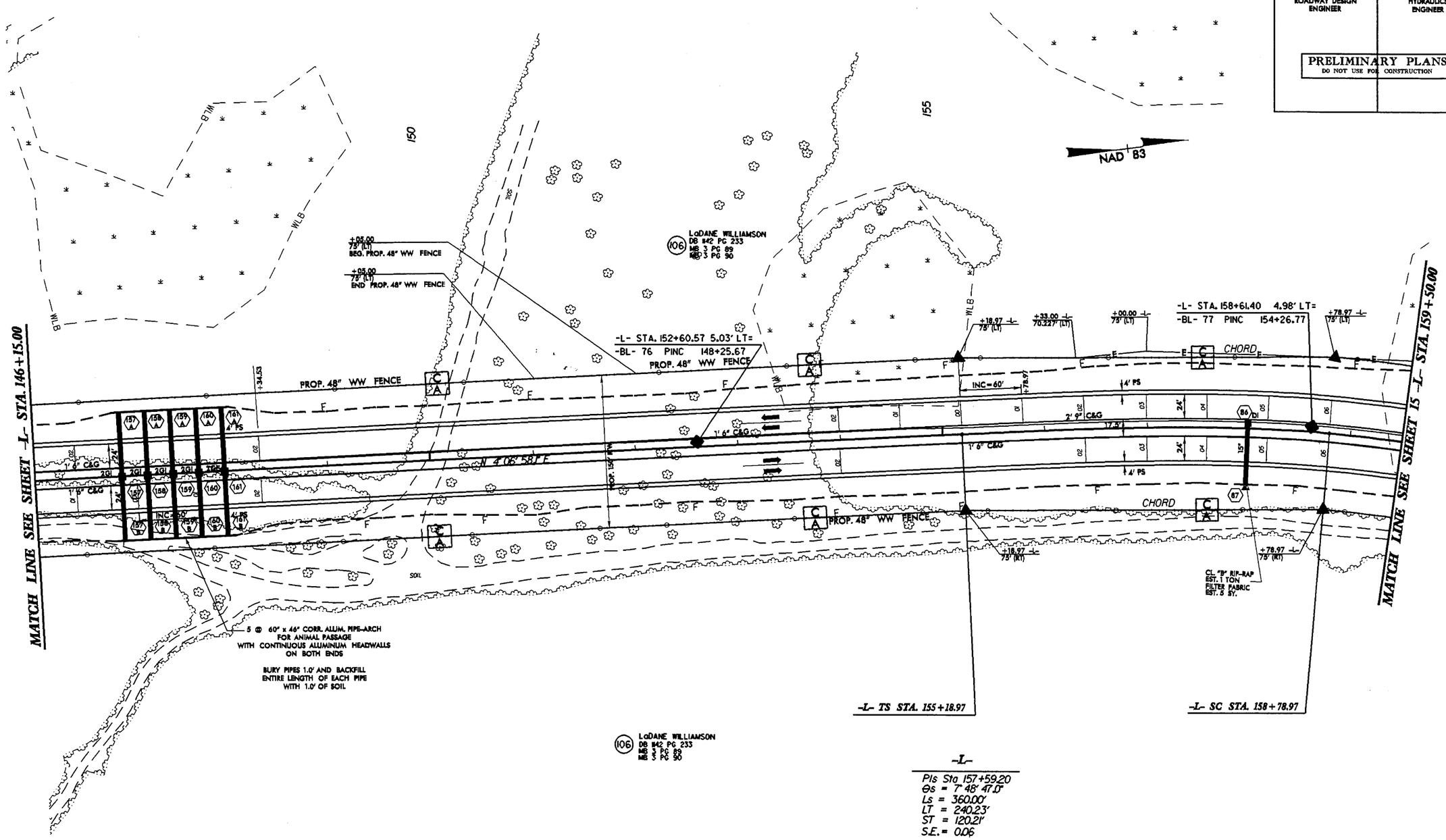
PROJECT REFERENCE NO.	SHEET NO.
R-2245	14
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



-L-

Pls Sta 157+59.20
Θs = 7° 48' 47.0"
Ls = 360.00'
LT = 240.23'
ST = 120.21'
S.E. = 0.06

NOTES:

1) FOR -L- PROFILE SEE SHEETS 31 AND 32.
2) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
3) SEE SHEET 2- FOR 50' TRANSITION FROM 1'-6" C&G TO 2'-9" C&G.

C/A NO REVISIONS CAN BE MADE TO THE CONTROL OF ACCESS WITHOUT APPROVAL OF NCDOT, FHWA, USEPA AND DENR PER AGREEMENT AND USACE PER PERMIT CONDITON.

REVISIONS

05/19/06 - TLW- RIGHT-OF-WAY REVISION: ADDED A BREAK IN THE CONTROL-OF-ACCESS ON PARCEL 106 FROM -L- STATION 151+05 TO 152+05

8/17/99

31-MAY-2006 10:45
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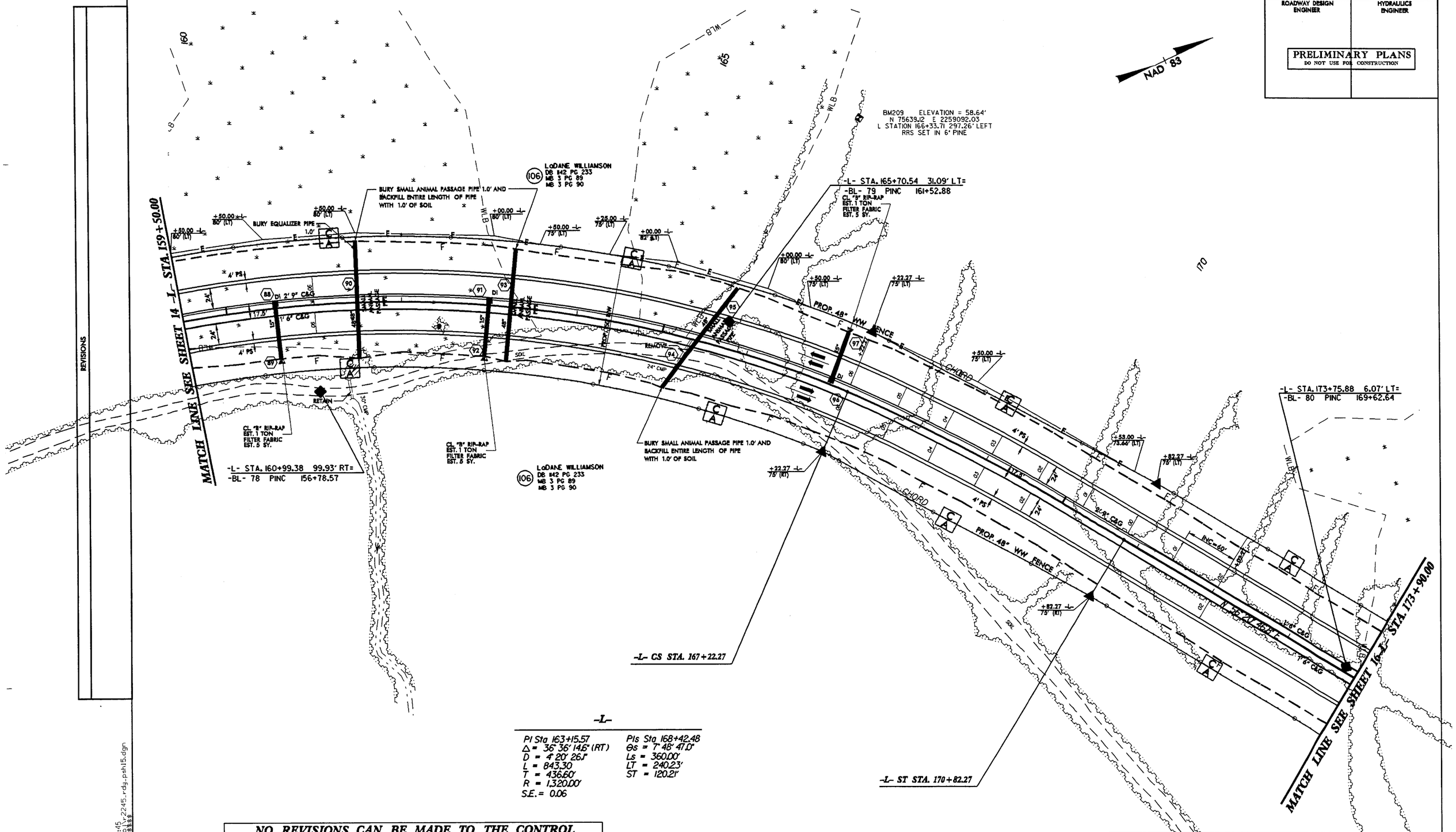
PROJECT REFERENCE NO.	SHEET NO.
R-2245	15
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



-L-

PI Sta 163+15.57	PIs Sta 168+42.48
Δ = 36° 36' 14.6" (RT)	Θs = 7° 48' 47.0"
D = 4° 20' 26.1"	Ls = 360.00'
L = 843.30	LT = 240.23'
T = 436.60'	ST = 120.21'
R = 1,320.00'	
S.E. = 0.06	

C/A NO REVISIONS CAN BE MADE TO THE CONTROL OF ACCESS WITHOUT APPROVAL OF NCDOT, FHWA, USEPA AND DENR PER AGREEMENT AND USACE PER PERMIT CONDITION.

NOTES:

1) FOR -L- PROFILE SEE SHEET 32.
2) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
3) SEE SHEET 2- FOR 50' TRANSITION FROM 1'-6" C&G TO 2'-9" C&G.

REVISIONS

8/17/99

31-MAY-2006 10:45
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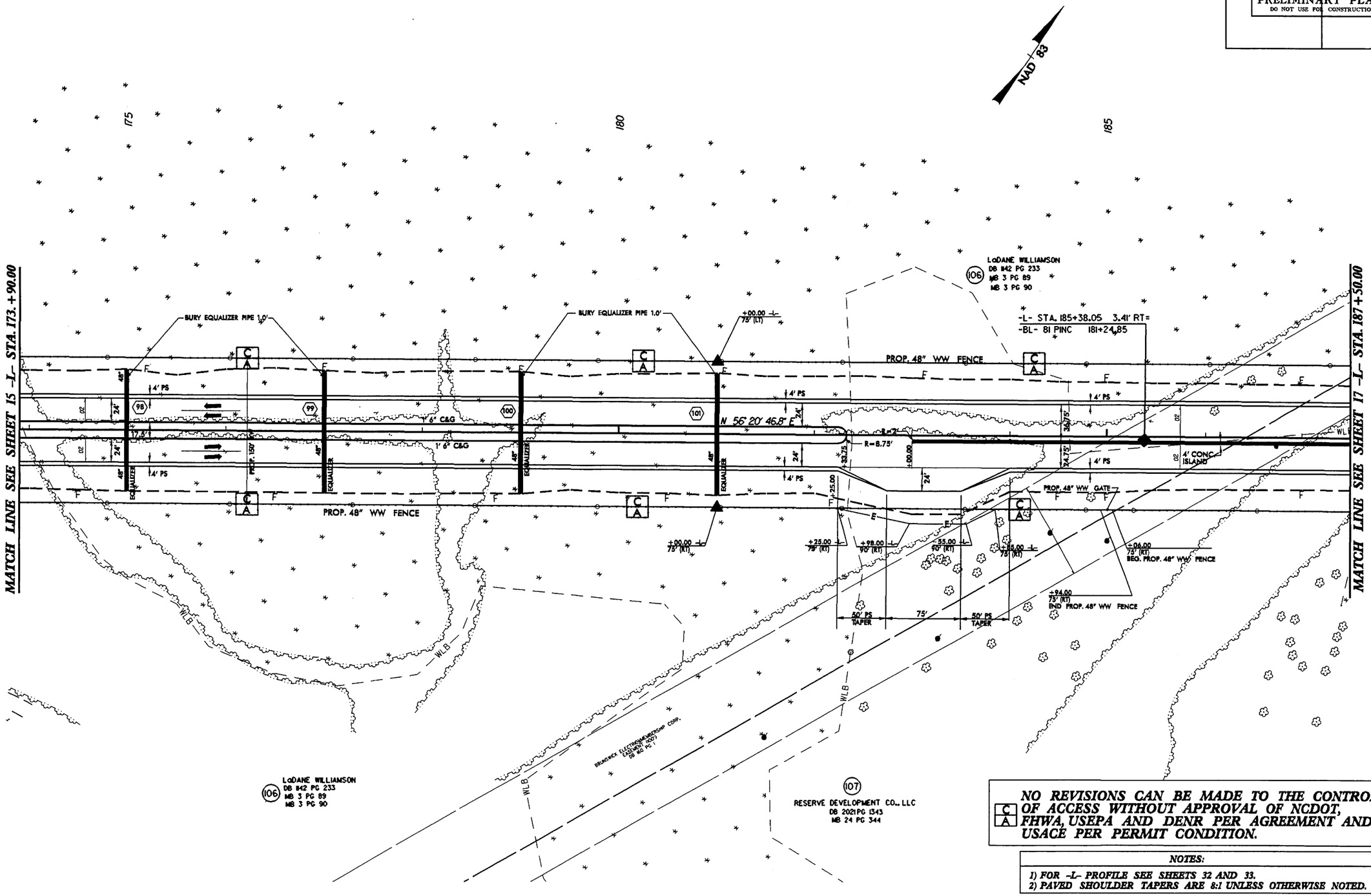
PROJECT REFERENCE NO.	SHEET NO.
R-2245	16
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



C A NO REVISIONS CAN BE MADE TO THE CONTROL OF ACCESS WITHOUT APPROVAL OF NCDOT, FHWA, USEPA AND DENR PER AGREEMENT AND USACE PER PERMIT CONDITION.

NOTES:

1) FOR -L- PROFILE SEE SHEETS 32 AND 33.
2) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.

REVISIONS

05/19/06 - TLW- RIGHT-OF-WAY REVISION: ADDED A GATE AT -L- STATION 185+00 RT.

8/17/99

31-MAY-2006 10:45
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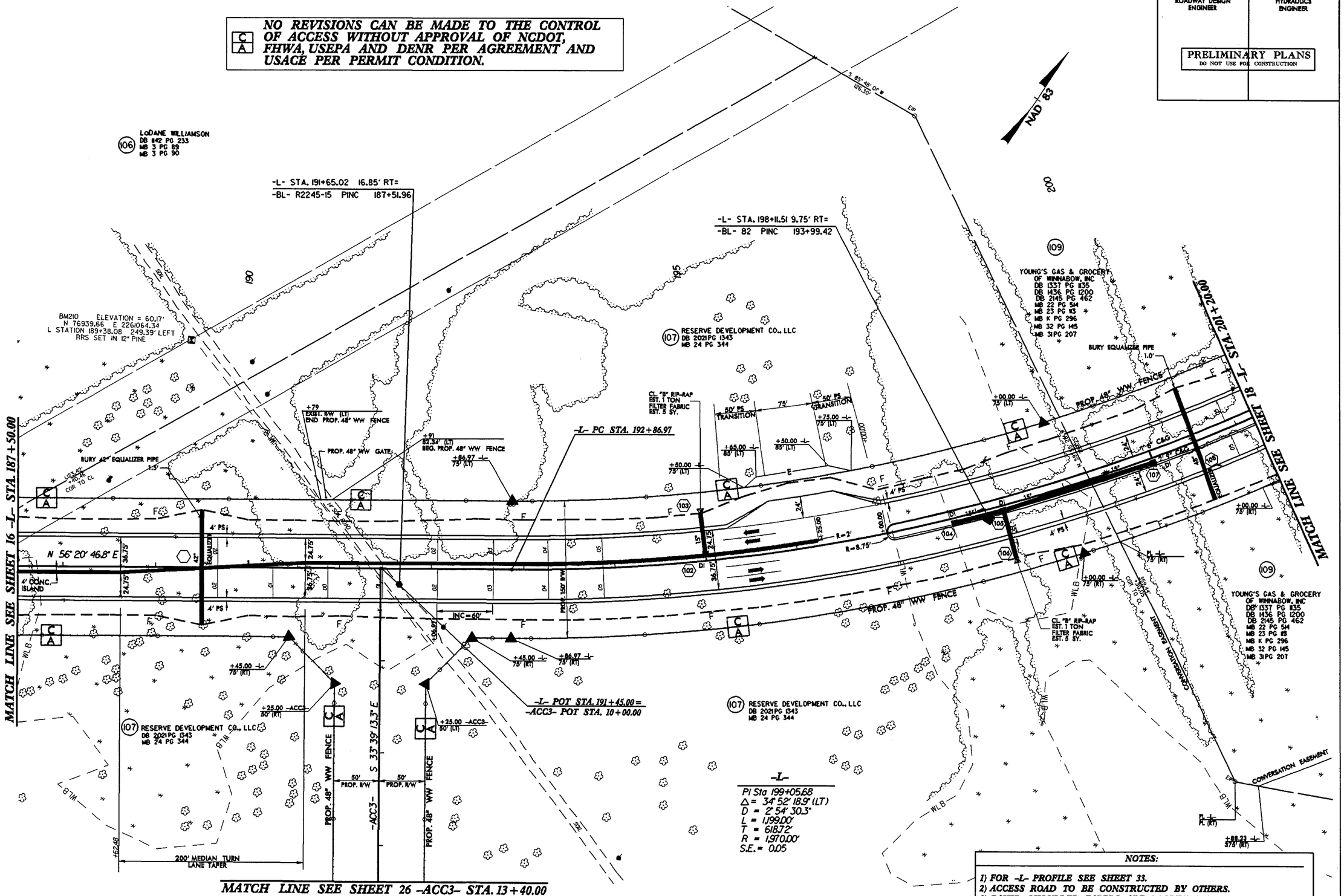
PROJECT REFERENCE NO.	SHEET NO.
R-2245	17
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NO REVISIONS CAN BE MADE TO THE CONTROL OF ACCESS WITHOUT APPROVAL OF NCDOT, FHWA, USEPA AND DENR PER AGREEMENT AND USACE PER PERMIT CONDITION.



NOTES:

1) FOR -L- PROFILE SEE SHEET 33.
2) ACCESS ROAD TO BE CONSTRUCTED BY OTHERS.
3) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
4) SEE SHEET 2- FOR 50' TRANSITION FROM 1'-6" C&G TO 2'-9" C&G.

REVISIONS

05/19/06 - TLW - RIGHT-OF-WAY REVISIONS: ADDED A GATE AT -L- STATION 190+85 LT; AND ADDED A CONSERVATION EASEMENT ON PARCEL 109

8/17/99

31-MAY-2006 10:46
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PROJECT REFERENCE NO.	SHEET NO.
R-2245	18
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NO REVISIONS CAN BE MADE TO THE CONTROL OF ACCESS WITHOUT APPROVAL OF NCDOT, FHWA, USEPA AND DENR PER AGREEMENT AND USACE PER PERMIT CONDITION.

NAD 83

-L- PT STA. 204+85.97

-L-
PI Sta 199+05.68
Δ = 34° 52' 18.9" (LT)
D = 2° 54' 30.3"
L = 1,199.00'
T = 618.72'
R = 1,970.00'
S.E. = 0.05

-L- STA. 203+26.15 1.74' RT=
-BL- 83 PINC 199+14.16

-L- STA. 208+83.17 6.79' LT=
-BL- 84 PINC 204+71.14

(109) YOUNG'S GAS & GROCERY OF WINNABOW, INC
DB 1337 PG 135
DB 1436 PG 1200
DB 2145 PG 462
MB 22 PG 514
MB 23 PG 83
MB K PG 296
MB 32 PG 145
MB 31PG 207

(107) RESERVE DEVELOPMENT CO., LLC
DB 2021PG 1343
MB 24 PG 344

BURY SMALL ANIMAL PASSAGE PIPE 1.0' AND BACKFILL ENTIRE LENGTH OF PIPE WITH 1.0' OF SOIL

BURY EQUALIZER PIPES 1.0'

BURY EQUALIZER PIPE 1.0'

PROP. 48" WW FENCE

MATCH LINE SEE SHEET 17 -L- STA. 201+20.00

MATCH LINE SEE SHEET 19 -L- STA. 215+00.00

CONVERSATION EASEMENT

BM211 ELEVATION = 55.79'
N 77905.10 E 2262583.40
L STATION 206+70.51 302.34' RIGHT
RRS SET IN 8" PINE

NOTES:

1) FOR -L- PROFILE SEE SHEETS 33 AND 34.
2) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
3) SEE SHEET 2- FOR 50' TRANSITION FROM 1'-6" C&G TO 2'-9" C&G.

REVISIONS
05/19/06 - TLW - RIGHT-OF-WAY REVISION; ADDED A CONSERVATION EASEMENT TO PARCEL 109

6/17/99

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PROJECT REFERENCE NO.	SHEET NO.
R-2245	19
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

REVISIONS

8/17/99

HAND CLEARING WILL BE REQUIRED IN AREAS DESIGNATED BY THE PERMITS AND AS DIRECTED BY THE ENGINEER.

NAD 83

-L- PC STA. 222+75.67

-L- STA. 222+09.95 1.79' RT=
-BL- 85 PINC 217+97.95

CL "B" RIP-RAP
EST. 1 TON
FILTER FABRIC
EST. 5 SY.

CL "B" RIP-RAP
EST. 1 TON
FILTER FABRIC
EST. 5 SY.

CL "B" RIP-RAP
EST. 1 TON
FILTER FABRIC
EST. 5 SY.

(109) YOUNG'S GAS & GROCERY OF WINNABOW, INC
DB 1337 PG 835
DB 1436 PG 1200
DB 2145 PG 462
MB 22 PG 514
MB 23 PG 83
MB K PG 296
MB 32 PG 145
MB 31PG 207

MATCH LINE SEE SHEET 18 -L- STA. 215+00.00

MATCH LINE SEE SHEET 20 -L- 228+75.00

BURY EQUALIZER PIPE 1.0'

PROP. 48" WW FENCE

48" EQUALIZER

4' PS

1'-6" C&G

2'-9" C&G

INC=60'

N 21° 28' 27.8" E
198.52'

S 81° 54' 46" W
165.02'

S 50° 08' 56" W
286.47'

S 29° 54' 37" W
146.62'

S 10° 17' 30" W
100.37'

+75.67 -L-
75' (RT)

(107) RESERVE DEVELOPMENT CO., LLC
DB 2021PG 1343
MB 24 PG 344

-L-
PI Sta 225+84.62
Δ = 12° 09' 43.1" (LT)
D = 1° 58' 32.6"
L = 615.57'
T = 308.95'
R = 2,900.00'
S.E. = 0.04

NO REVISIONS CAN BE MADE TO THE CONTROL OF ACCESS WITHOUT APPROVAL OF NCDOT, FHWA, USEPA AND DENR PER AGREEMENT AND USACE PER PERMIT CONDITION.

NOTES:

1) FOR -L- PROFILE SEE SHEET 34.
2) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
3) SEE SHEET 2- FOR 50' TRANSITION FROM 1'-6" C&G TO 2'-9" C&G.

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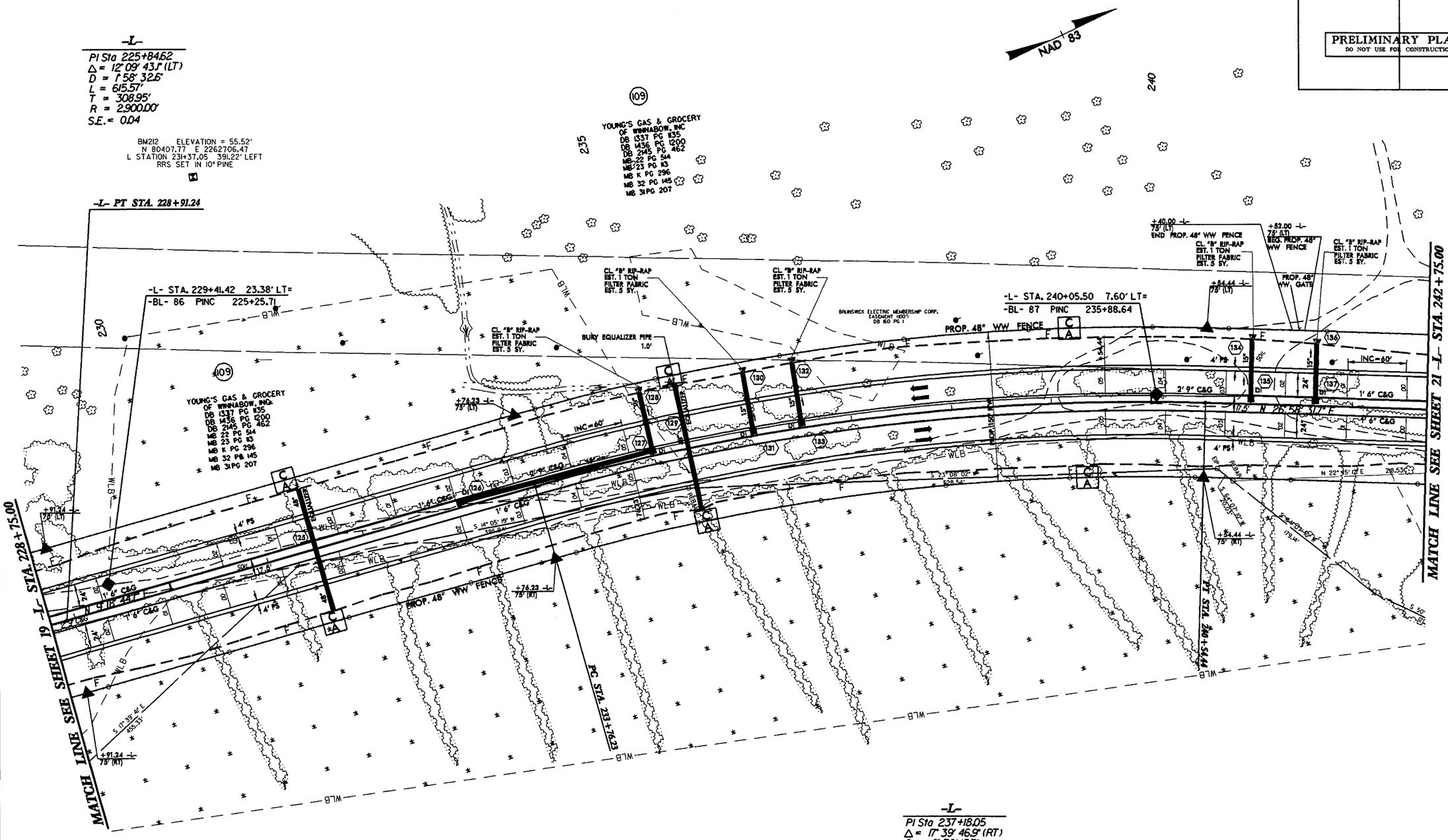
PROJECT REFERENCE NO.	SHEET NO.
R-2245	20
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



-L-
PI Sta 237+18.05
Δ = 17° 39' 46.9" (RT)
D = 2° 36' 15.7"
L = 678.21'
T = 341.82'
R = 2,200.00'
S.E. = 0.05

(107) RESERVE DEVELOPMENT CO., LLC
DB 2021 PG 1343
MB 24 PG 344

NO REVISIONS CAN BE MADE TO THE CONTROL OF ACCESS WITHOUT APPROVAL OF NCDOT, FHWA, USEPA AND DENR PER AGREEMENT AND USACE PER PERMIT CONDITION.

NOTES:

1) FOR -L- PROFILE SEE SHEETS 34 AND 35.
2) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
3) SEE SHEET 2- FOR 50' TRANSITION FROM 1'-6" C&G TO 2'-9" C&G.

REVISIONS

8/17/99

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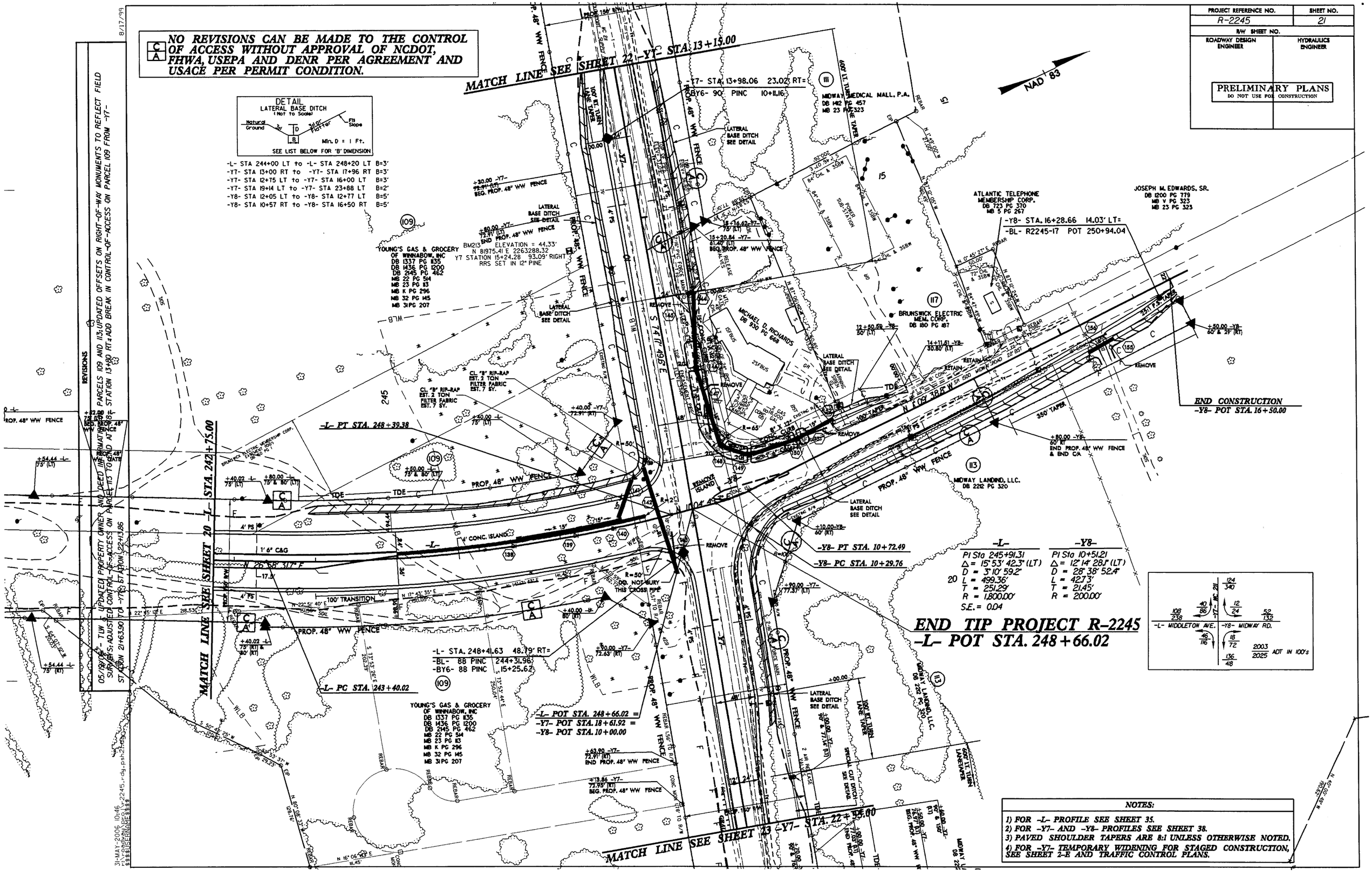
PROJECT REFERENCE NO.	SHEET NO.
R-2245	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NO REVISIONS CAN BE MADE TO THE CONTROL OF ACCESS WITHOUT APPROVAL OF NCDOT, FHWA, USEPA AND DENR PER AGREEMENT AND USACE PER PERMIT CONDITION.



NOTES:

1) FOR -L- PROFILE SEE SHEET 35.
2) FOR -Y7- AND -Y8- PROFILES SEE SHEET 38.
3) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
4) FOR -Y7- TEMPORARY WIDENING FOR STAGED CONSTRUCTION, SEE SHEET 2-E AND TRAFFIC CONTROL PLANS.

REVISIONS

05/19/06 - TUW - UPDATED PROPERTY OWNER AND DEED INFORMATION PARCELS 109 AND 113; UPDATED OFFSETS ON RIGHT-OF-WAY MONUMENTS TO REFLECT FIELD SURVEYS; ADJUSTED CONTROL-OF-ACCESS ON PARCEL 113 TO END AT 8 STATION 13+80 RT; ADD BREAK IN CONTROL-OF-ACCESS ON PARCEL 109 FROM -Y7- STATION 21+63.90 TO -Y7- STATION 22+13.86

8/17/99

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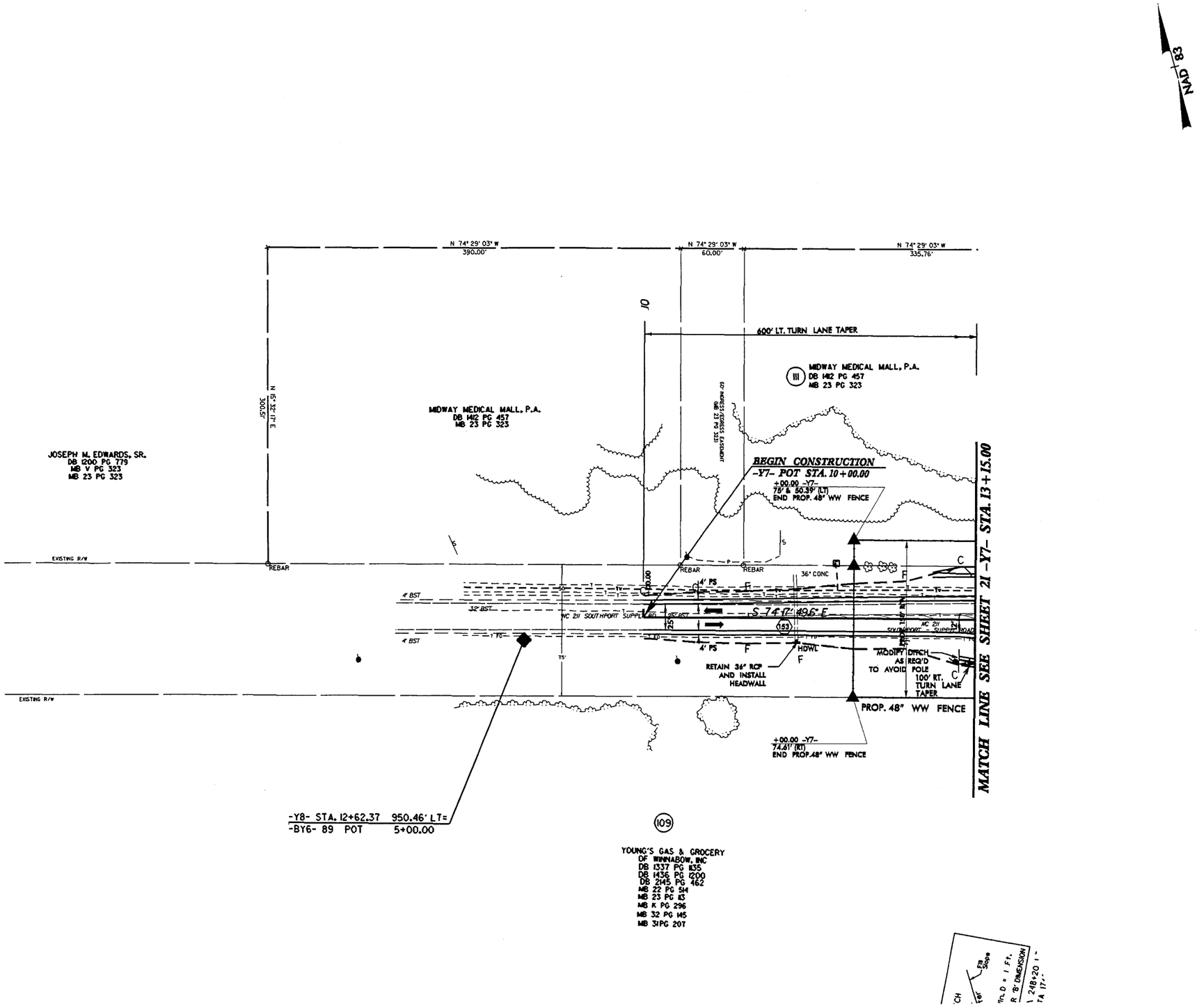
PROJECT REFERENCE NO.	SHEET NO.
R-2245	22
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



NOTES:

1) FOR -Y7- PROFILE SEE SHEET 38.
2) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.

REVISIONS

05/19/06 - TLW - RIGHT-OF-WAY REVISION: UPDATED OFFSETS ON RIGHT-OF-WAY MONUMENTS TO REFLECT FIELD SURVEYS

8/17/99

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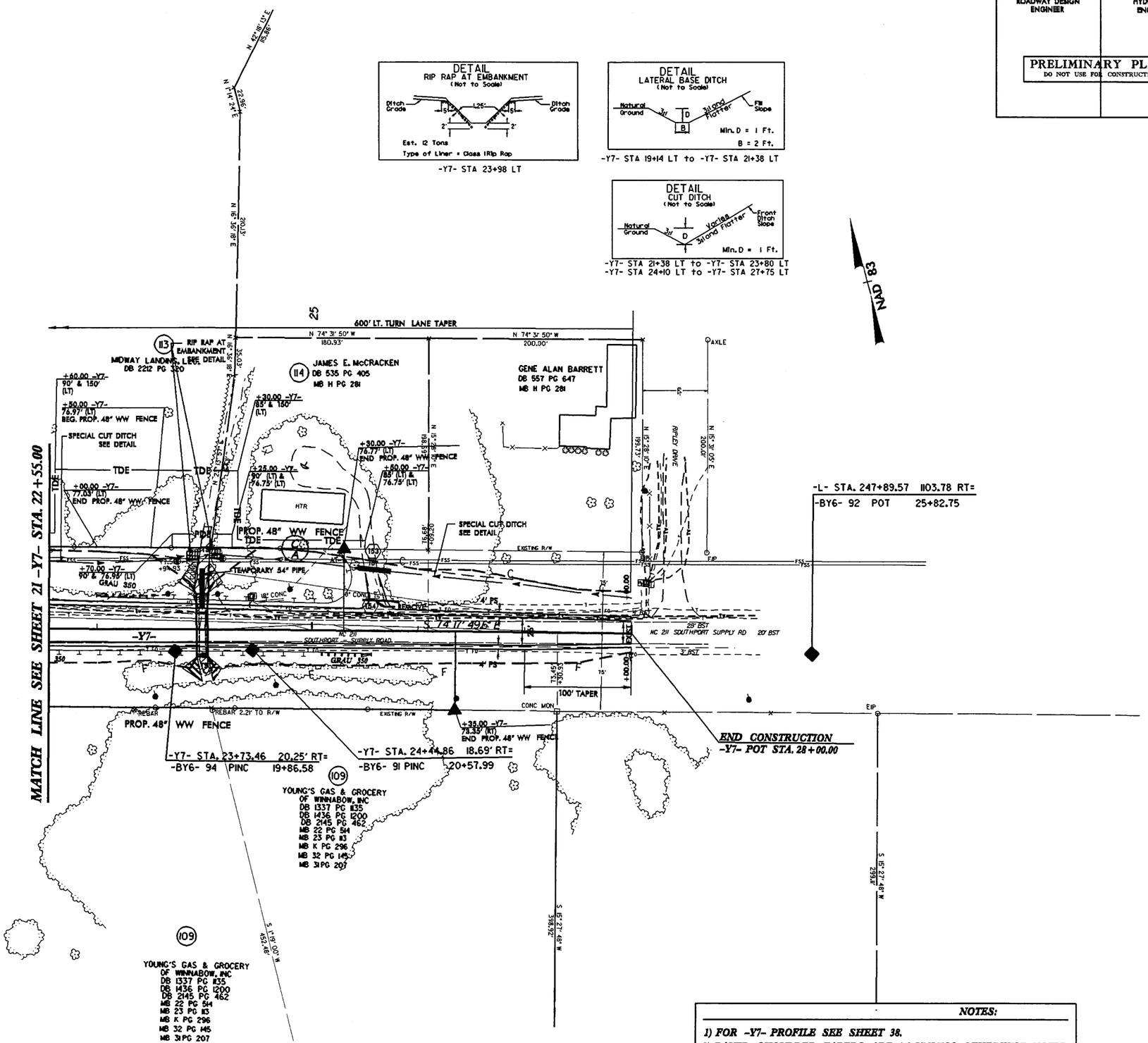
PROJECT REFERENCE NO.	SHEET NO.
R-2245	23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



NOTES:

1) FOR -Y7- PROFILE SEE SHEET 38.
2) PAVED SHOULDER TAPERS ARE 8:1 UNLESS OTHERWISE NOTED.
3) FOR -Y7- TEMPORARY WIDENING FOR STAGED CONSTRUCTION, SEE SHEET 2-E AND TRAFFIC CONTROL PLANS.

REVISIONS

05/19/06 - TLW - RIGHT-OF-WAY REVISION: ADDED A BREAK IN CONTROL-OF-ACCESS ON PARCEL 113 FROM -Y7- STATION 23+00 TO -Y7- STATION 23+50

8/17/99

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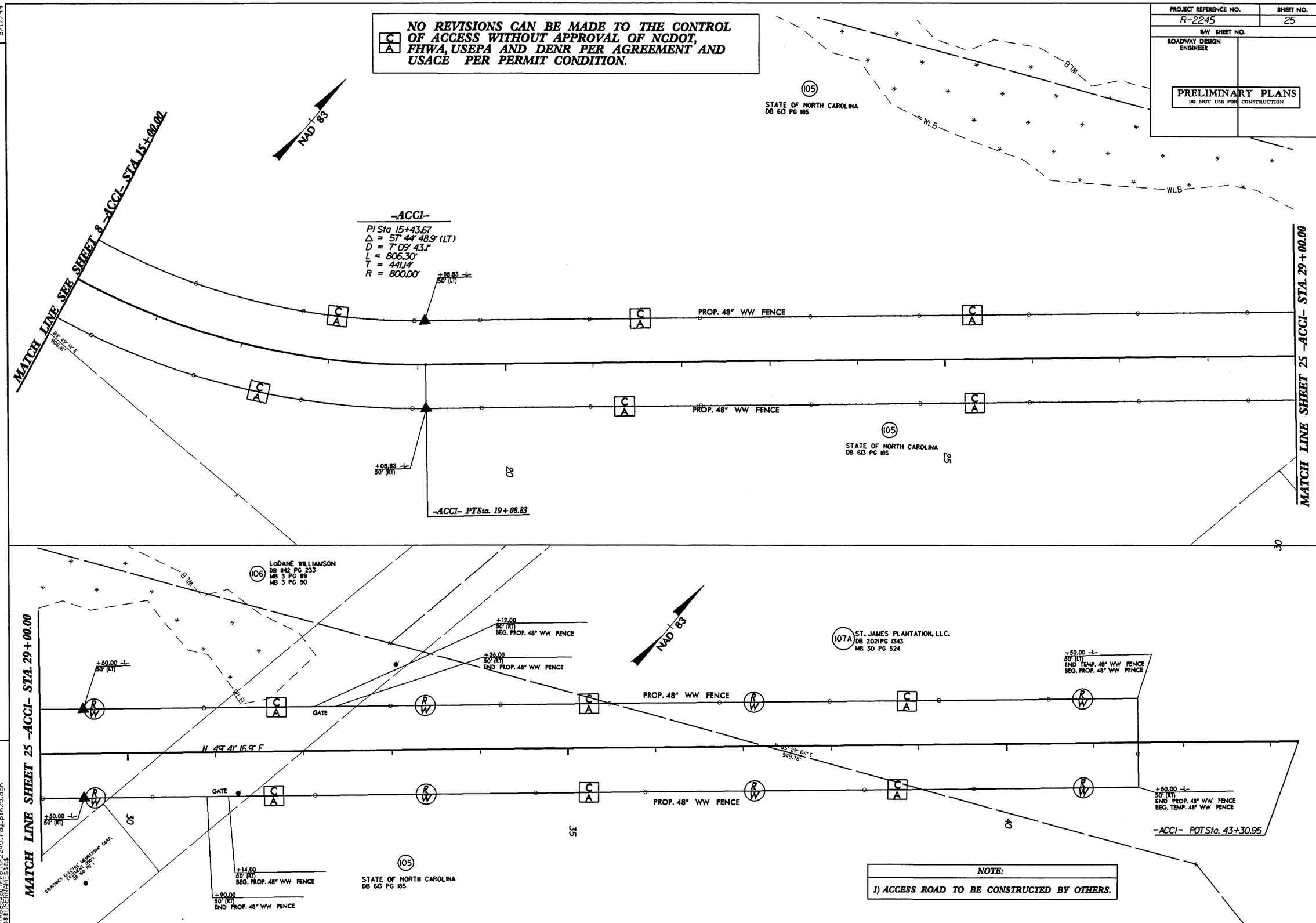
PROJECT REFERENCE NO.	SHEET NO.
R-2245	25
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NO REVISIONS CAN BE MADE TO THE CONTROL OF ACCESS WITHOUT APPROVAL OF NCDOT, FHWA, USEPA AND DENR PER AGREEMENT AND USACE PER PERMIT CONDITION.



NOTE:

1) ACCESS ROAD TO BE CONSTRUCTED BY OTHERS.

REVISIONS

05/19/06 - TLW - RIGHT-OF-WAY REVISIONS: UPDATED PROPERTY OWNER AND DEED INFORMATION ON PARCEL 107A; RE-ALIGNED AND ADJUSTED RIGHT-OF-WAY ON -ACCI-; ADDED GATES AT -ACCI- STATION 31+02 LT. AND -ACCI- STATION 31+24 RT.

8/17/99

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PROJECT REFERENCE NO.	SHEET NO.
R-2245	26
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

8/17/99

REVISIONS

05/19/06 - TLW - RIGHT-OF-WAY REVISION: ADJUSTED CONTROL-OF-ACCESS TO END AT -ACC3- STATION 18+00

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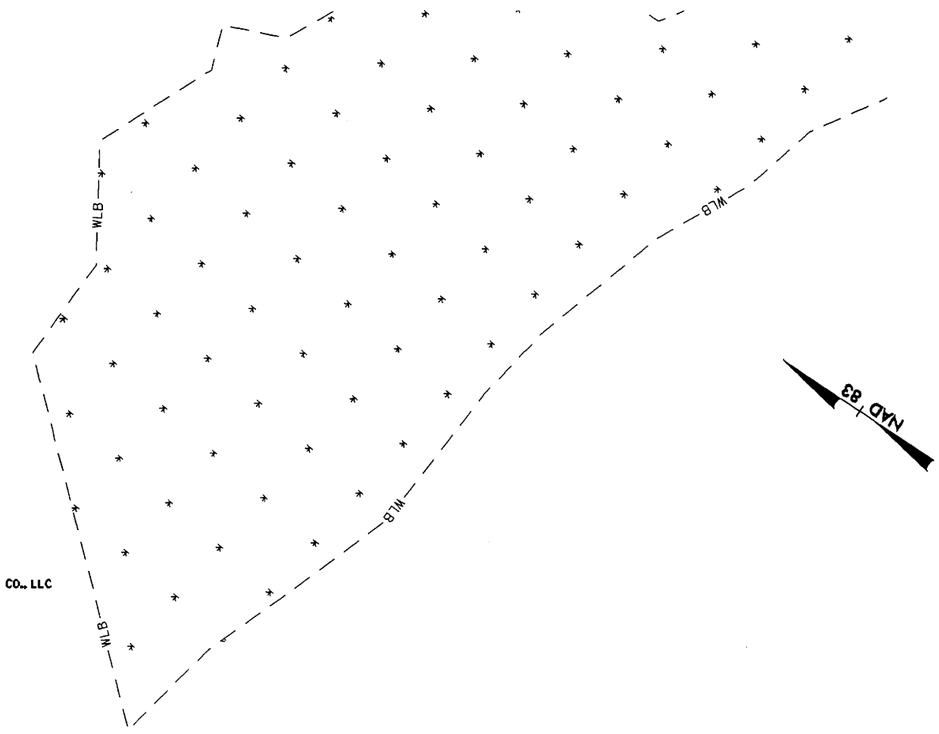
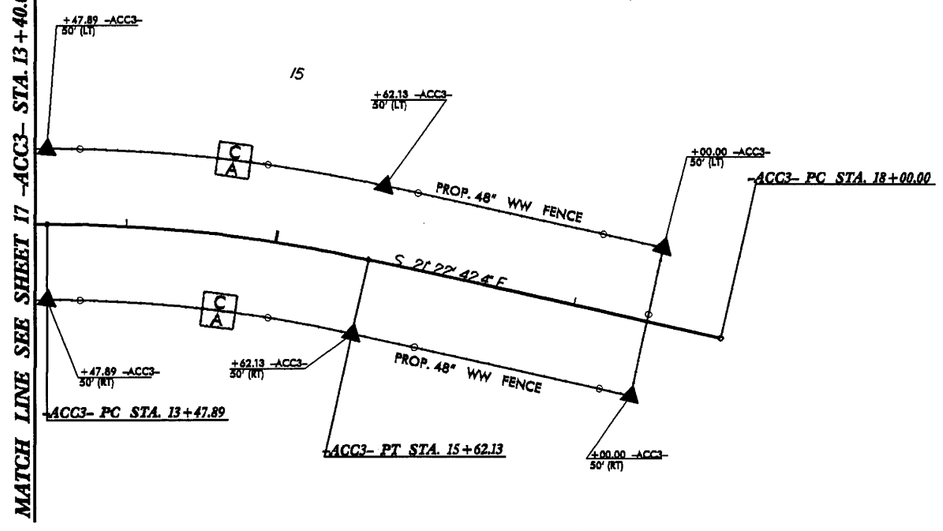
kwilliams



(107) RESERVE DEVELOPMENT CO., LLC
DB 2021PG 1343
MB 24 PG 344

-ACC3-
PI Sta 14+55.42
Δ = 12° 16' 30.9" (RT)
D = 5° 43' 46.5"
L = 214.24'
T = 107.53'
R = 1,000.00'

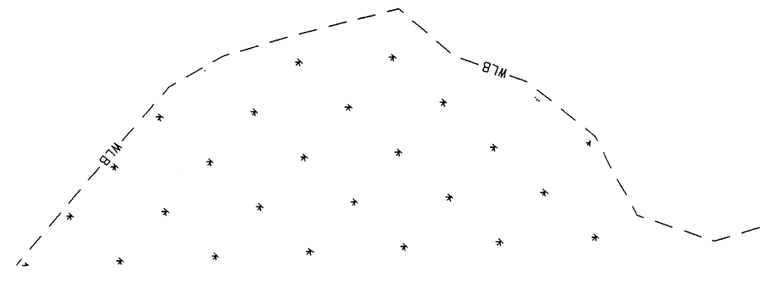


(107) RESERVE DEVELOPMENT CO., LLC
DB 2021PG 1343
MB 24 PG 344

NO REVISIONS CAN BE MADE TO THE CONTROL OF ACCESS WITHOUT APPROVAL OF NCDOT, FHWA AND DENR PER AGREEMENT AND USACE PER PERMIT CONDITON.

C A

NOTE:
1) ACCESS ROAD TO BE CONSTRUCTED BY OTHERS.



5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2245	27
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	= N/A	CFS
DESIGN FREQUENCY	= 10	YRS
DESIGN HW ELEVATION	= 6.9	FT
BASE DISCHARGE	= N/A	CFS
BASE FREQUENCY	= 100	YRS
BASE HW ELEVATION	= 12.3	FT
OVERTOPPING DISCHARGE	= N/A	CFS
OVERTOPPING FREQUENCY	= 10	YRS
OVERTOPPING ELEVATION	= 7.3	FT

℄ EL = 19.78'
℄ STATION 21+50.00 -L-
3 SPAN BRIDGE w/ 21" CORED SLABS
TOTAL LENGTH = 165'
SPAN 1 = 55'
SPAN 2 = 55'
SPAN 3 = 55'

BM #200 BOLT IN LEFT FRONT LEG OF WATER TOWER
62.10' RT. OF -L- STA. 15+14.91
ELEV.= 7.95' N 61472.08 E 2254632.21

-L-

PI = 13+10.00
EL = 7.23'
VC = 120'
K = 178

PI = 14+50.00
EL = 7.65'
VC = 150'
K = 143

PI = 16+60.00
EL = 10.48'
VC = 160'
K = 46

PI = 18+70.00
EL = 20.62'
VC = 250'
K = 49

BEGIN GRADE -L- STA 10+12.45
-Y1- STA 11+90.87 12.02 LT.
EL = 8.35'

-L- STA 12+10.00
-Y2- STA 11+99.69

-L- STA 14+21.08
-Y3- STA 12+81.27

-L- STA 22+93.38
-Y4- STA 22+73.36

BEGIN BRIDGE
-L- STA 21+72.62

END BRIDGE
-L- STA 22+73.36

9.43

-10.37146%
+0.3000%
+0.3000%
+13.445%
+13.445%
+8.292%
+8.292%
-10.3000%

MHW ELEVATION 2.7'
MTL ELEVATION 0.6'
MLW ELEVATION -1.5'

FVI DITCH GRADE RT
-L- STA 22+28
EL=5.00
+14.38%
+15.70%

BEGIN DITCH GRADE RT
-L- STA 22+07
EL=3.50

FOR -L- PLAN VIEW
SEE SHEET 4

BM • 201 RRS SET IN 10" OAK
125.17' LT OF -L- STA. 24+99.53
ELEV.= 18.90' N 62460.13 E 2254463.94

-L-

PI = 25+70.00
EL = 18.52'
K = 127
VC = 160'

-L- STA 24+39.03
-Y5- STA 24+17.50

-L- STA 30+43.35
-Y6- STA 29+11.60

PI = 32+20.00
EL = 24.74'
K = 274
VC = 180'

25.61

8.15

+14.38%

+0.3000%
+0.9567%
+0.9567%
+0.3000%

END DITCH GRADE RT
-L- STA 24+04
EL=12.70

BEGIN DITCH GRADE RT
-L- STA 32+00
EL=22.10

END DITCH GRADE RT
-L- STA 33+13
EL=22.10

FOR -L- PLAN VIEW
SEE SHEETS 4 & 5

SEE SHEET 5 FOR
SPECIAL CUT DITCH
DETAILS

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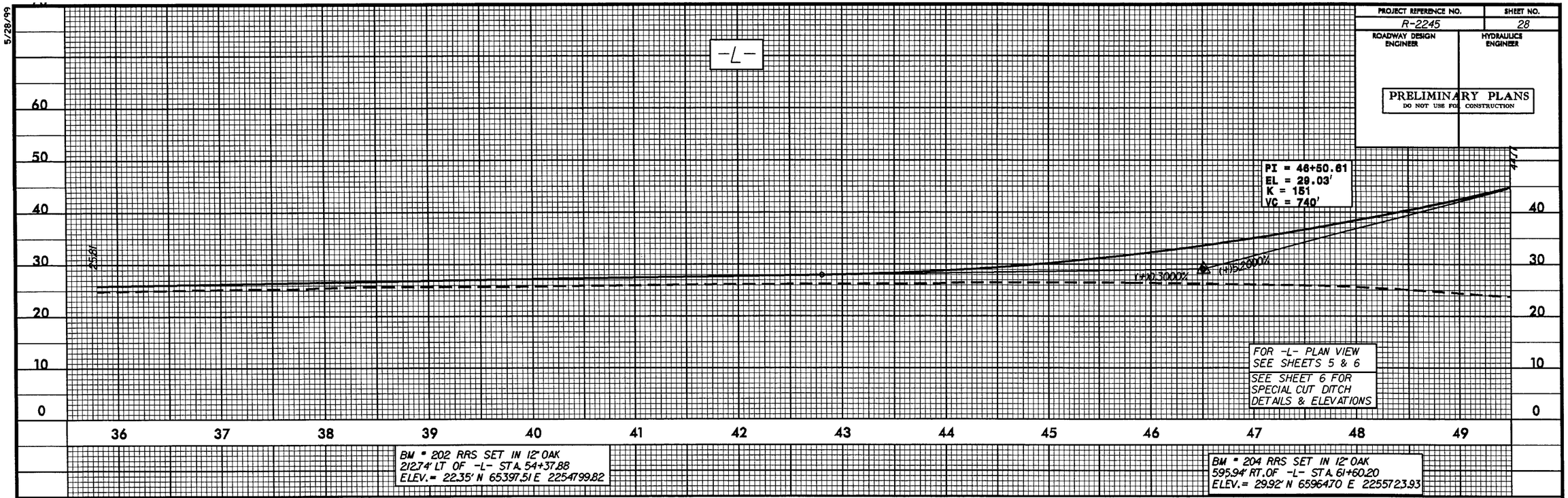
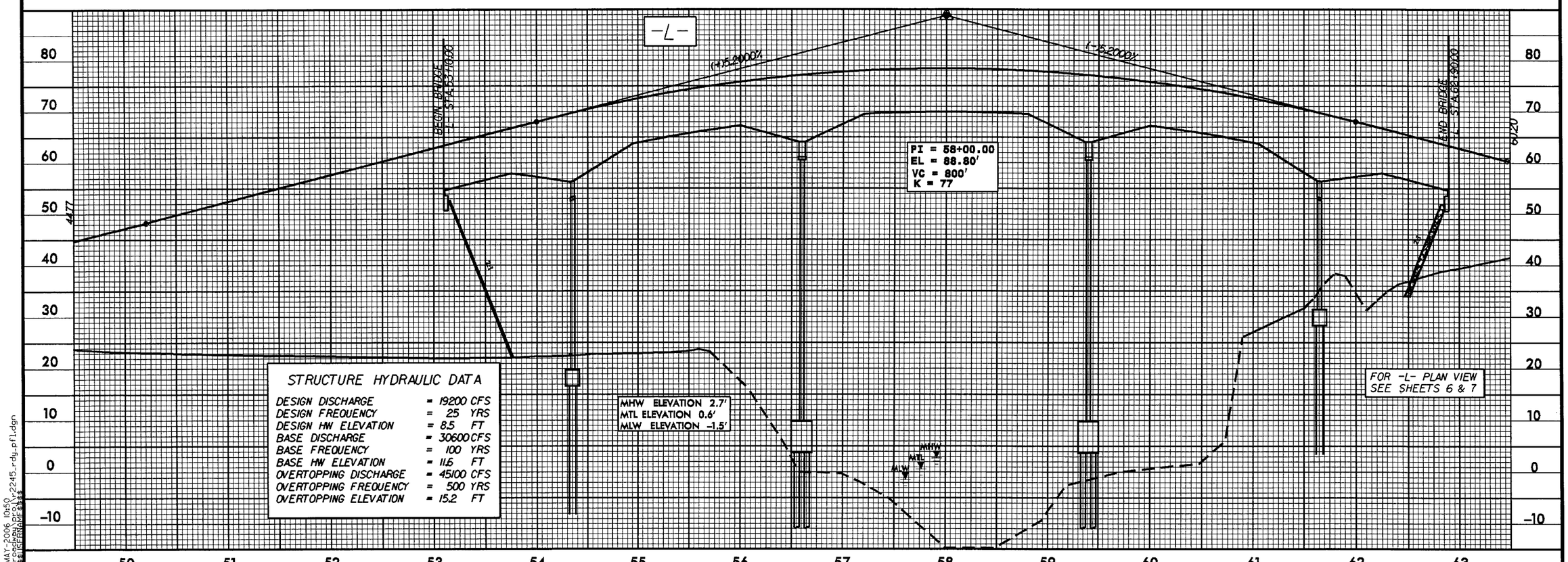
11/9/05 - TLW- DESIGN REVISION: MODIFIED THE GRADE FROM -L- STA 42+80.61 TO -L- STA 70+60.00 TO PROVIDE A SYMMETRICAL GRADE ON THE INTRACOASTAL WATERWAY BRIDGE.

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2245	28
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION





STRUCTURE HYDRAULIC DATA

DESIGN DISCHARGE	=	19200 CFS
DESIGN FREQUENCY	=	25 YRS
DESIGN HW ELEVATION	=	8.5 FT
BASE DISCHARGE	=	30600 CFS
BASE FREQUENCY	=	100 YRS
BASE HW ELEVATION	=	11.6 FT
OVERTOPPING DISCHARGE	=	45100 CFS
OVERTOPPING FREQUENCY	=	500 YRS
OVERTOPPING ELEVATION	=	15.2 FT

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11/9/05 -TLW- DESIGN REVISION: MODIFIED THE GRADE FROM -L- STA 42+80.61 TO -L- STA 70+60.00 TO PROVIDE A SYMMETRICAL GRADE ON THE INTRACOASTAL WATERWAY BRIDGE.

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2245	29
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-

BM # 205 RRS SET IN 24" OAK
179.51' RT. OF -L- STA. 74+05.64
ELEV.= 24.43' N 67156.60 E 2255623.35

PI = 66+47.29
EL = 44.74'
K = 175
VC = 600'

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.

DRAINAGE AREA	= 4.3	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 9	CFS
DESIGN HW ELEVATION	= 26.9	FT
100 YEAR DISCHARGE	= 10	CFS
100 YEAR HW ELEVATION	= 27.01	FT
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING DISCHARGE	= 44	CFS
OVERTOPPING ELEVATION	= 34.70	FT

PI = 72+80.00
EL = 33.59'
K = 258
VC = 200'

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.32

DRAINAGE AREA	= 36.1	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 55	CFS
DESIGN HW ELEVATION	= 21.99	FT
100 YEAR DISCHARGE	= 65	CFS
100 YEAR HW ELEVATION	= 22.38	FT
OVERTOPPING FREQUENCY	= 200	YRS
OVERTOPPING DISCHARGE	= 100	CFS
OVERTOPPING ELEVATION	= 23.50	FT

FOR -L- PLAN VIEW
SEE SHEETS 7.8 & 9

60.20
29.13
19.71
(-)1.76286%
(-)2.00000%
(-)10.99876%
(-)10.30%
(+)10.36%
PROP. 24" RCP
PROP. 48" RCP
-L- STA. 73+15.00
-ADC- STA. 0+00.00
BEGIN DITCH GRADE RT
-L- STA 72+50
EL=19.80
PI=74+80
EL=18.70

PIPE HYDRAULIC DATA
DRAINAGE STRUCTURE NO.42

DRAINAGE AREA	= 46.7	AC
DESIGN FREQUENCY	= 50	YRS
DESIGN DISCHARGE	= 70	CFS
DESIGN HW ELEVATION	= 23.47	FT
100 YEAR DISCHARGE	= 80	CFS
100 YEAR HW ELEVATION	= 23.77	FT
OVERTOPPING FREQUENCY	= 500	YRS
OVERTOPPING DISCHARGE	= 176	CFS
OVERTOPPING ELEVATION	= 29.49	FT

-L-

PI = 78+10.00
EL = 28.35'
VC = 300'
K = 216

29.13
33.77
19.71
(-)0.98876%
(-)1.00.1999%
(+)10.56%
TWO PROP. 42" RCP
END DITCH GRADE RT
-L- STA 77+88
EL=19.85

FOR -L- PLAN VIEW
SEE SHEETS 9 & 10
PROPOSED UNDERCUT

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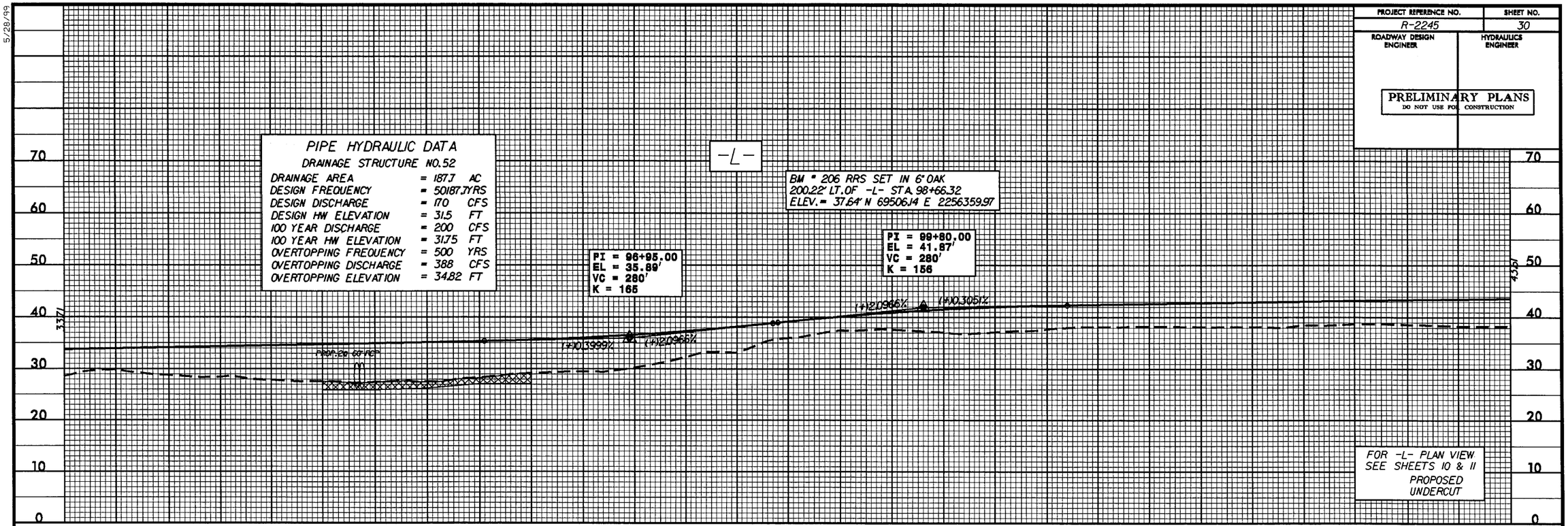
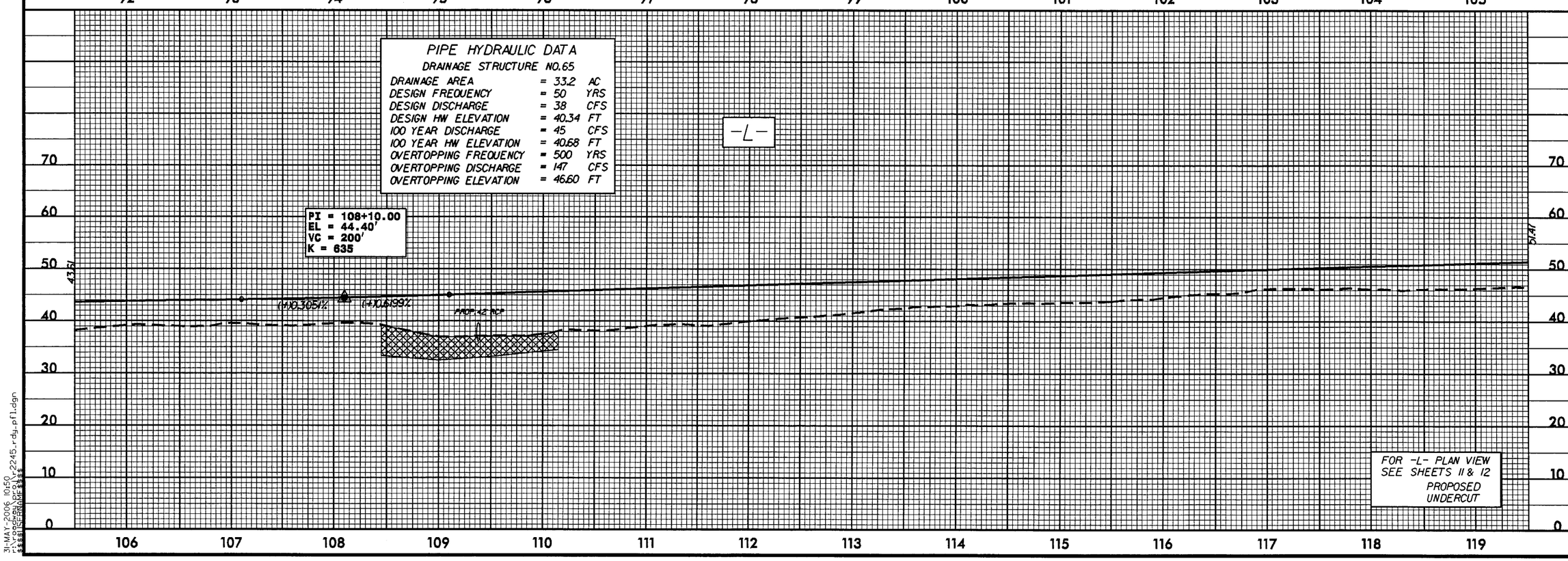
PROJECT REFERENCE NO.	SHEET NO.
R-2245	30
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION





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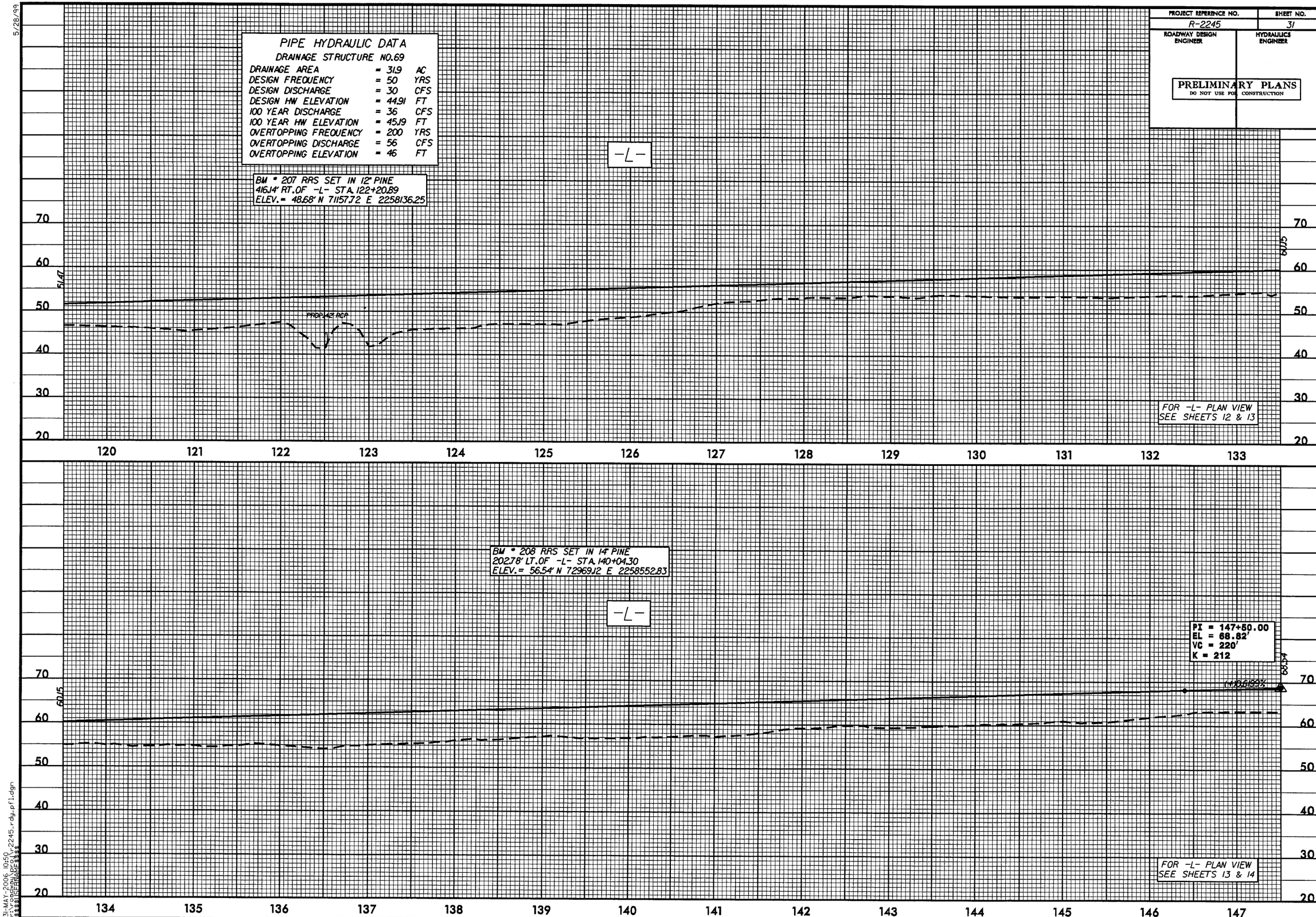
PROJECT REFERENCE NO.	SHEET NO.
R-2245	31
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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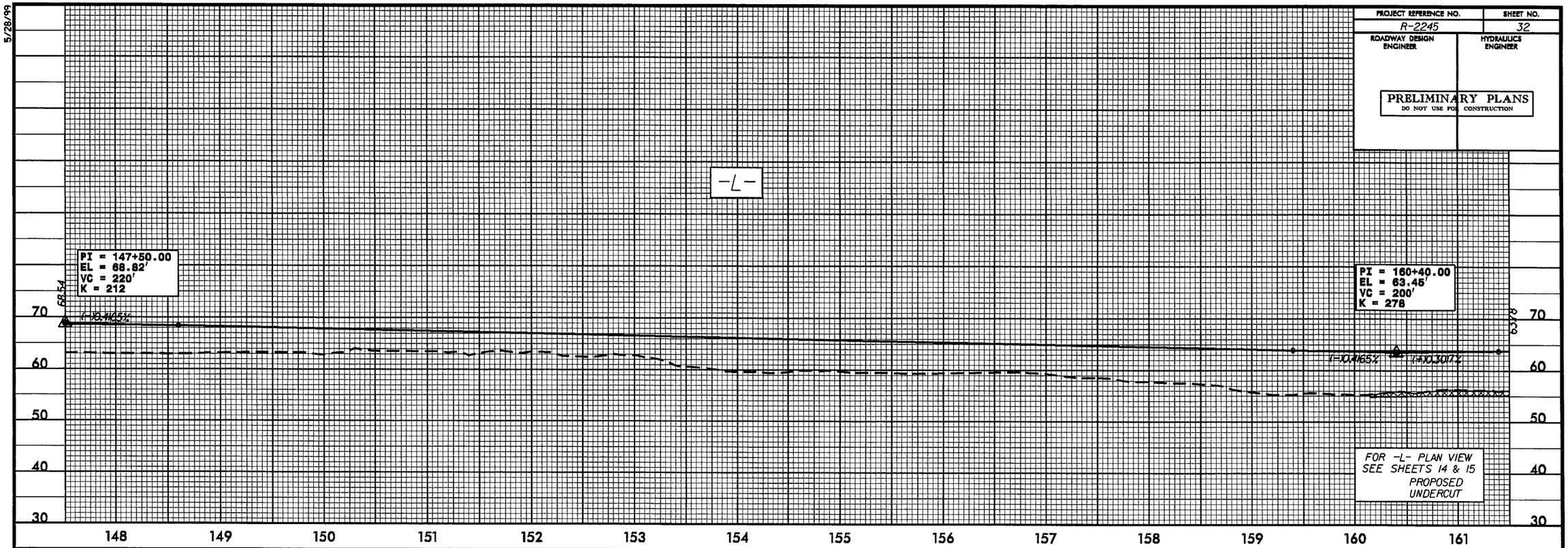
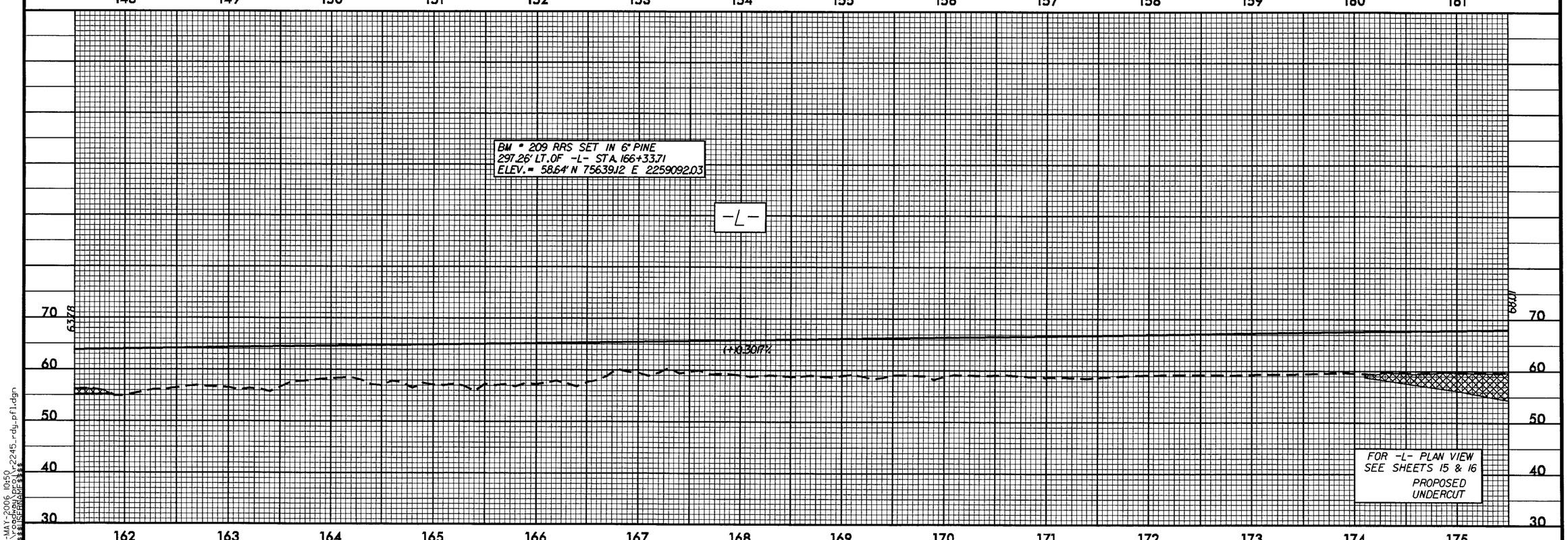
PROJECT REFERENCE NO.	SHEET NO.
R-2245	32
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION





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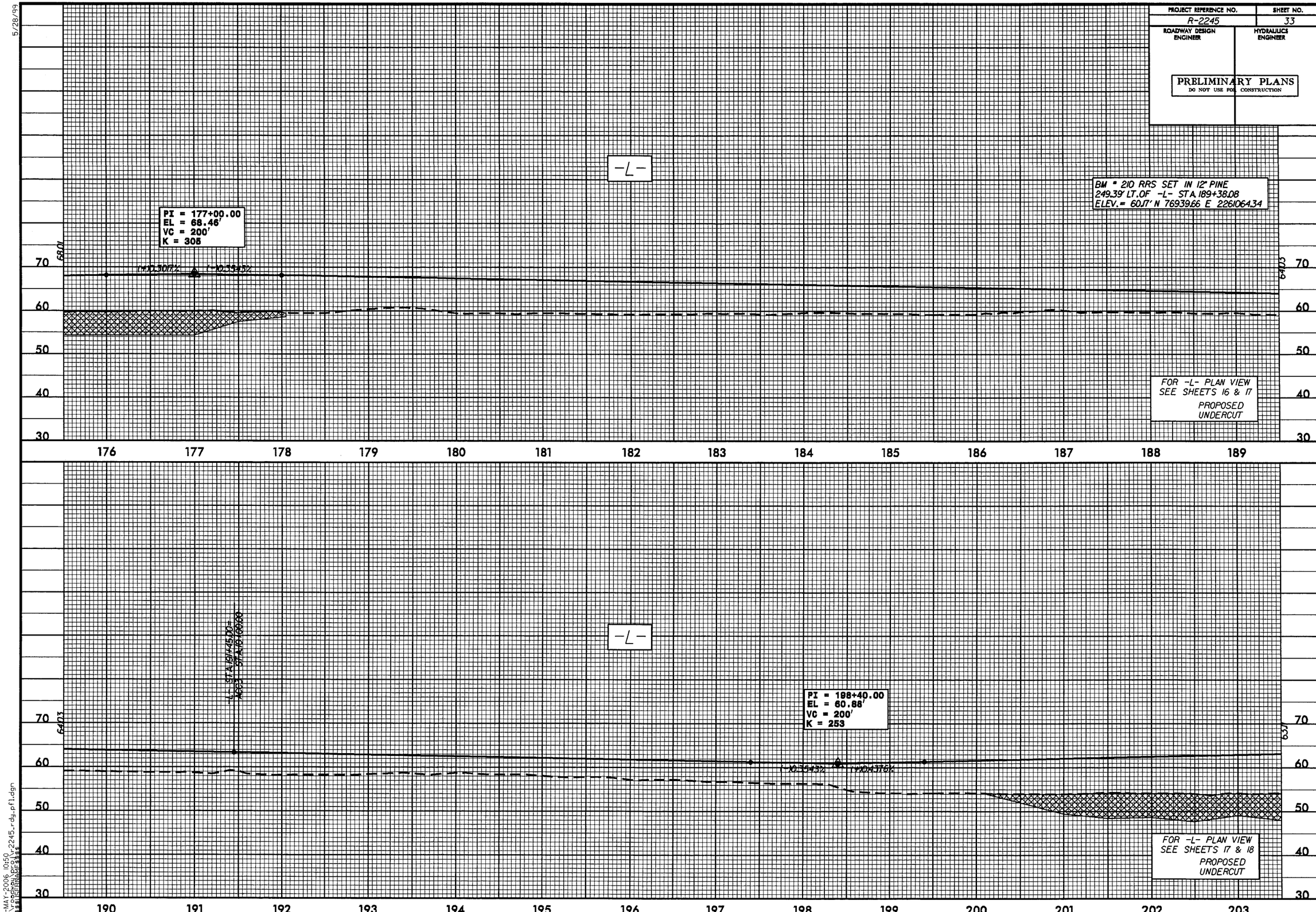
PROJECT REFERENCE NO.	SHEET NO.
R-2245	33
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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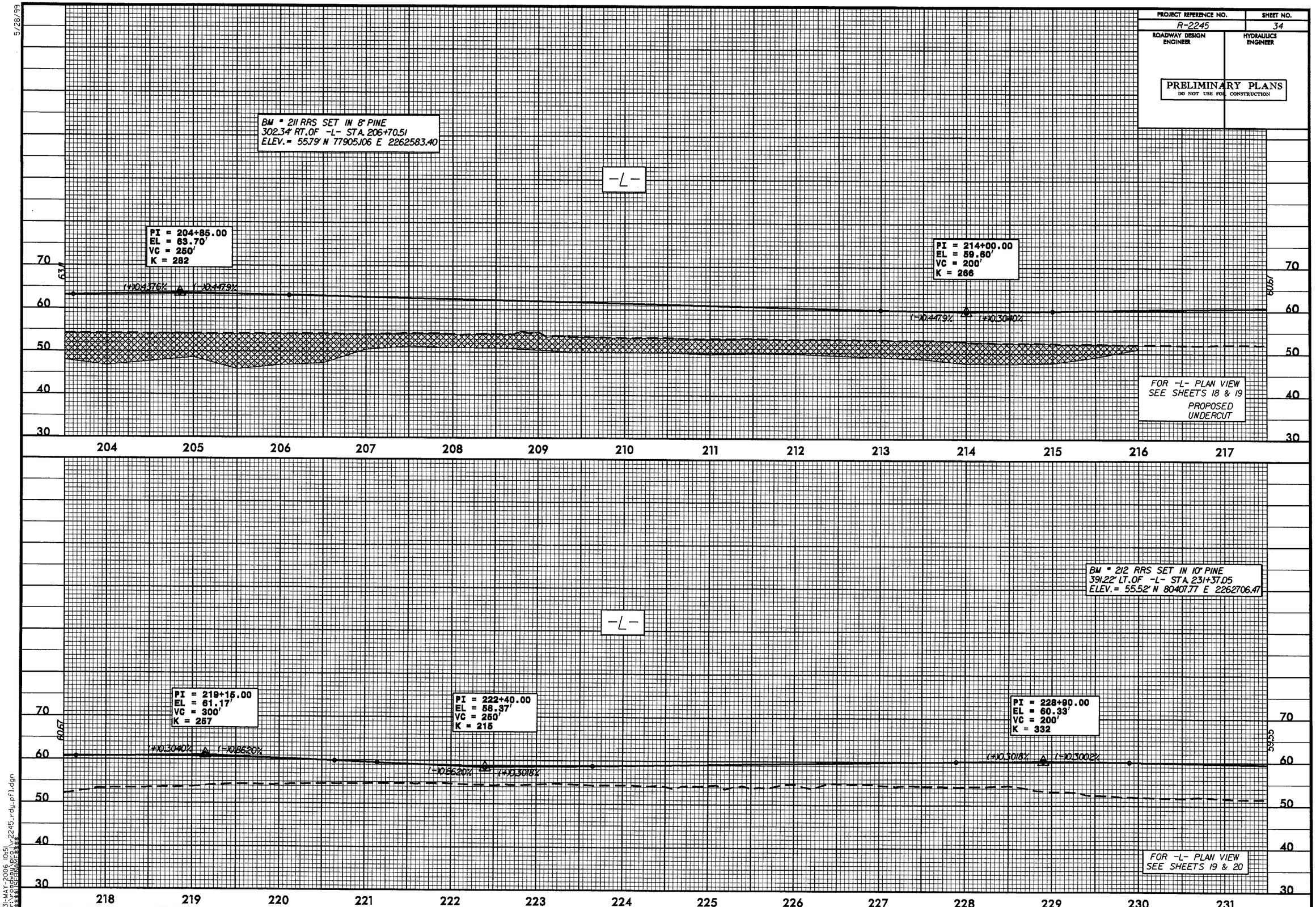
PROJECT REFERENCE NO.	SHEET NO.
R-2245	34
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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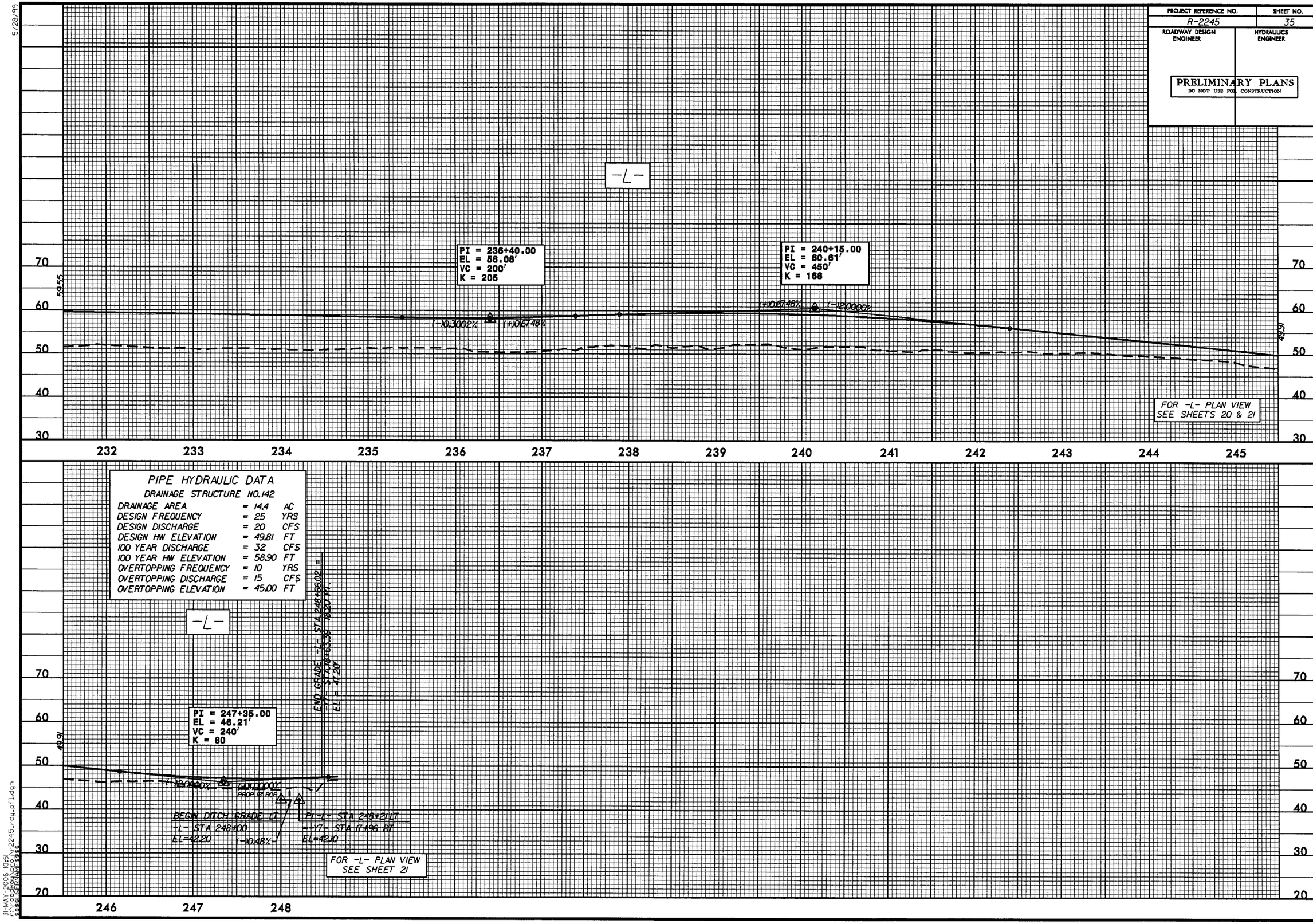
PROJECT REFERENCE NO.	SHEET NO.
R-2245	35
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2245	36
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-Y1-

PI = 11+50.00
EL = 8.43'
VC = 60'
K = 87

PI = 12+10.00
EL = 8.65'
VC = 60'
K = 83

BEGIN GRADE -Y1- STA.11+00.00 EL = 8.92

-Y1- STA.11+99.95
-L- STA.10+42.45

END GRADE -Y1- STA.12+10.00 EL = 8.52

(-)0.3252%
(+)0.3566%
(+)0.3608%

FOR -Y1- PLAN VIEW SEE SHEET 4

-Y2-

PI = 11+20.00
EL = 7.78'
K = 83
VC = 40'

PI = 11+80.00
EL = 7.30'

FOR -Y2- PLAN VIEW SEE SHEET 4

BEGIN GRADE -Y2- STA.11+00.00 EL = 7.84

END GRADE -Y2- STA.12+10.95 RT -L- STA.12+10.95 RT EL = 7.43

BEGIN GRADE -Y2- STA.12+10.84 RT -L- STA.12+10.72 RT EL = 7.43

END GRADE -Y2- STA.12+96.00 EL = 7.66

(-)0.3100%
(+)2.0000%
(+)0.7930%
(-)2.0000%
(+)0.3000%
(+)3.1%

PI = 12+16.00
EL = 7.32'
K = 3
VC = 10'

PI = 12+50.00
EL = 7.77'
K = 36
VC = 58'

-Y3-

BEGIN GRADE -Y3- STA.11+00.00 EL = 6.21

END GRADE -Y3- STA.12+98.28 -L- STA.12+79.12 RT EL = 7.11

(+)0.3000%
(+)2.0000%

PI = 11+35.00
EL = 6.10'
K = 30
VC = 70'

FOR -Y3- PLAN VIEW SEE SHEET 4

-Y4-

BEGIN GRADE -Y4- STA.10+40.00 EL = 16.85

END GRADE -Y4- STA.11+98.54 -L- STA.11+98.01 RT EL = 16.91

(+)0.5640%
(+)2.0000%

PI = 10+80.00
EL = 16.94'
K = 37
VC = 60'

FOR -Y4- PLAN VIEW SEE SHEET 5

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5/28/99

PROJECT REFERENCE NO.	SHEET NO.
R-2245	37
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-Y5-

PI = 12+25.00
EL = 23.06'
K = 110
VC = 150'

PI = 13+40.00
EL = 24.98'
K = 59
VC = 80'

PI = 14+56.46
EL = 23.15'
K = 6
VC = 14'

PI = 15+20.00
EL = 23.39'
K = 79
VC = 55'

PI = 16+21.14
EL = 23.08'
K = 99
VC = 50'

BEGIN GRADE -Y5- STA 12+27.50
EL = 27.07

END GRADE -Y5- STA 13+03.46
EL = 25.11

BEGIN GRADE -Y5- STA 14+49.46
EL = 23.29

END GRADE -Y5- STA 15+31.27
EL = 23.27

+0.3000% -0.5659% +0.3000% -12.7410% +0.3846% -0.3068% +0.1958% -12.0000%

FOR -Y5- PLAN VIEW
SEE SHEET 5

-Y6-

PI = 11+65.00
EL = 22.35'
VC = 79'
K = 136

BEGIN GRADE -Y6- STA 10+90.00
EL = 22.58

END GRADE -Y6- STA 12+90.00
EL = 22.51

+0.2945% +0.2868%

FOR -Y6- PLAN VIEW
SEE SHEET 7

-Y7- DETOUR

DESIGN IN PROGRESS

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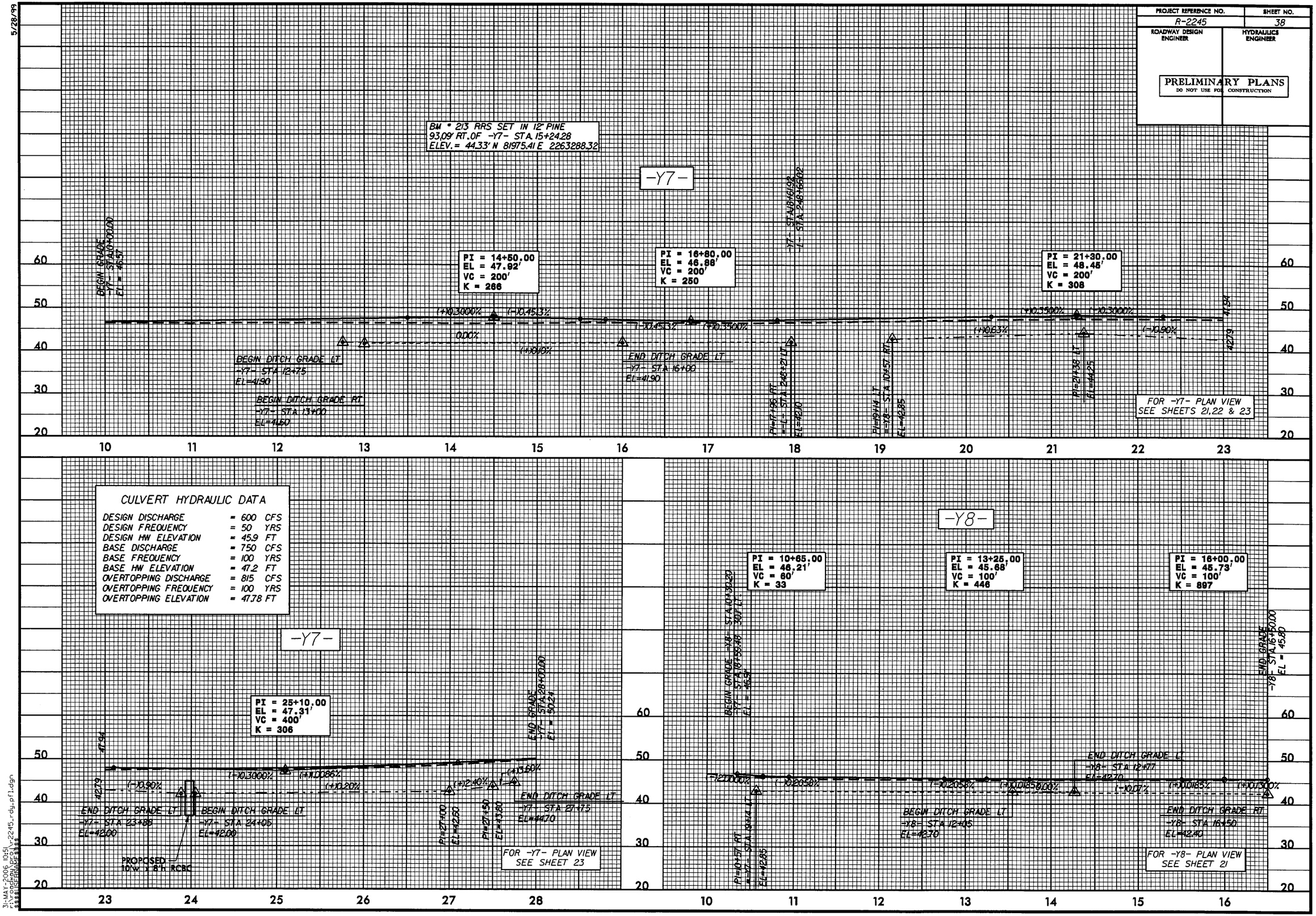
PROJECT REFERENCE NO.	SHEET NO.
R-2245	38
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



5/28/99

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