STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

August 1, 2007

U. S. Army Corps of Engineers
Regulatory Field Office
6508 Falls of Neuse Road
Raleigh, NC 27615

ATTN: Mr. Monte Matthews
NCDOT Coordinator

SUBJECT: **Clean Water Act Section 404 and 401 Individual Permit Applications** for the Proposed Visitor Center-Rest Station in Wilkes County. Federal Project No. NHS-421(32), WBS Element 36401.1.1, T.I.P. No. K-4703, Division 11.

REFERENCE: Nationwide Permit 23 Application, dated May 21, 2007.

Dear Mr. Matthews:

The North Carolina Department of Transportation (NCDOT) proposes to construct a new rest station in Wilkes County. The proposed project is located to the North of US 421 between NC Highway 115 and NC Highway 18.

The purpose of this letter is to revise the permit application submitted May 21, 2007, submit the final design, and to request approval for an USACE CWA Section 404 Individual Permit and a Section 401 Water Quality Certification. Included in this application package are the following: (1) ENG Form 4345, (2) property owner address labels, (3) North Carolina Ecosystem Enhancement Program (EEP) acceptance letter, (4) permit drawings, (5) a set of half size plans, and (6) a copy of a letter from SHPO.

PROJECT SCHEDULE
For construction purposes, the proposed rest area will be constructed in one section. This project has a let date of November 20, 2007 and a review date of October 2, 2007.

Purpose and Need: The main purpose of the proposed project is to replace the old rest station bypassed by the construction on the new US 421.

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
PROJECT DEVELOPMENT AND ENVIRONMENTAL ANALYSIS
1598 MAIL SERVICE CENTER
RALEIGH NC 27699-1548

TELEPHONE: 919-715-1334
FAX: 919-715-5501

WEBSITE: WWW.NCDOT.ORG

LOCATION:
2728 CAPITAL BLVD
SUITE 240
RALEIGH, NC 27604

Summary of Impacts: The proposed project is in the Yadkin River Basin, Hydrologic Unit 03040101. Impacts on jurisdictional areas from the proposed project consist of a total of 657 feet of stream impacts.

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 576 feet of stream impacts. Mitigation is not proposed for 81 feet of stream impacts at Site 1A due to the lack of sufficient aquatic habitat as determined during a site visit with the agencies on July 5, 2007.

NEPA DOCUMENT STATUS

A Programmatic Categorical Exclusion (CE) was approved by the Federal Highway Administration (FHWA) on February 24, 2006 for K-4703. The PCE has been revised by NCDOT and was sent to FHWA for approval and signature. When the document is signed a copy will be sent to the regulatory agencies.

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.

ALTERNATIVES CONSIDERED

Two alternative sites were evaluated for this project, Site 2 and Site 3. Site 3 was chosen as the preferred alternative for the following reasons.

- Site #2 would not provide enough spacing to provide a safe weaving area between the on-ramp from NC 115 and the off-ramp to the rest area.
- Construction of the off-ramp for Site 2 would require filling of the pond.

RESOURCE STATUS

Wetlands:
No wetlands occur within the project area.

Streams:
Stream impacts occur at 4 sites. Impacts to streams occur within HUC 03040101 of the Yadkin River Basin. Table 1 is a list of surface water impacts including stream name, type of structure, amount of impacts, mitigation required, DWQ stream index number, and DWQ classification. No designated Outstanding Resource Waters (ORW), High Quality Waters (HQW), Water Supply I (WS-I), Water Supply II (WS-II) or 303(d)

waters occur within 1.0 miles of the project study area. No waters classified trout waters by the NC Wildlife Resources Commission will be impacted by this project.

Table 1 – K-4703 Surface Water Impacts

Site	Stream Name and Intermittent (I) or Perennial (P)	Structure/ Size Type	Permanent Impacts	Mitigation Required	DWQ Index number	DWQ Class
1	UT1A to Little Cub Creek(P)	48" CSP	115	115	12-41-1-(2)	C
1	UT1B to Little Cub Creek(I)	8" CSP	81	0	12-41-1-(2)	C
2	UT2 to Little Cub Creek(P)	8" to 36" CSP	278	278	12-41-1-(2)	C
3	UT3 to Little Cub Creek(P)	60	124	124	12-41-1-(2)	C
4	UT4 to Little Cub Creek(P)	42	59	59	12-41-1-(2)	C
Total			**657**	**576**		

STREAM IMPACT DESCRIPTIONS

A site by site description of wetland and stream impacts is included below. Design details are included on the attached permit drawings and half size plans.

Site 1: The construction of the acceleration lane will require the extension of the existing pipe with a 48-inch corrugated steel pipe. Extension of the pipe will result in approximately 115 feet of impacts to UT 1A. The placement of an 8-inch corrugated steel pipe will also result in 81 feet of stream impacts to UT 1B. Impacts to UT 1B were determined to not require mitigation during the site visit with Monte Matthews of the USACE and Sue Homewood of DWQ on July 5, 2007.

A design that included using a drop inlet box to reduce impacts was evaluated for this site. However, due to two sharp bends in the existing channel, the determination was made that this design would erode the stream banks and would become a long-term maintenance problem.

Site 2: The construction of the exit ramp will require the placement of an 8-inch corrugated steel pipe that will increase in size to a 36-inch corrugated steel pipe in UT 2. Stream impacts will total approximately 278 feet.

Site 3: The construction of the deceleration lane will require the extension of the existing pipe with a 60-inch corrugated metal pipe. Extension of the pipe will result in approximately 124 feet of stream impacts to UT 3. The existing channel makes two sharp bends; therefore the bends will be removed to prevent erosion of the stream banks. NCDOT also proposes to install a constructed riffle, cross vane, rock seal, and natural rock energy dissipator to prevent any erosion of the stream banks downstream of the pipe outlet.

Site 4: The construction of the deceleration lane will require the extension of the existing 42-inch corrugated metal pipe and will result in approximately 59 feet of stream impacts to UT 4. The existing pipe at this site is perched. A riprap protection outlet pad will be used at this site to protect the stream banks.

FEDERALLY-PROTECTED SPECIES

Plants and animals with federal classifications of Endangered, Threatened, Proposed Endangered, and Proposed Threatened are protected under provisions of Section 7 and Section 9 of the Endangered Species Act of 1973, as amended. As of May 10, 2007, the Fish and Wildlife Service (FWS) lists one federally protected species for Wilkes County, the bog turtle. No biological conclusion is required for the bog turtle because it is listed as threatened due to similarity of appearance.

CULTURAL RESOURCES

Historic Architecture:

There are no structures over 50 years of age within the study area; therefore the project would not impact any historic properties.

Archaeology:

An archaeology survey was conducted for the project and no archaeological sites were identified during this survey. The SHPO concurred that the project would have no impact on any archaeology sites in the attached letter dated March 2006.

FEMA COMPLIANCE

This project will have no impacts on the 100-year floodplain.

UTILITY IMPACTS

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

ESSENTIAL FISH HABITAT

The project will not have any impacts on any essential fish habitat.

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.
- No borrow or waste areas will be located in wetland areas without a permit from the USACE.

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 2:1 side slopes in jurisdictional areas.
- Strict adherence to the procedures contained in Best Management Practices for Protection of Surface Waters, 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 waters of the U.S.
- Clearing and grubbing activities will be minimized to reduce impacts to riparian buffers.

Site Specific Minimization Measures

- The original design for extending the perched pipe at Site 4 that included a rock energy dissipator, constructed riffle, cross vane, and rock seal has been revised. The design at Site 4 was revised to include a drop inlet box, reducing impacts by 59 feet.

Cost Prohibitive Avoidance and Minimization

To avoid and minimize impacts at Sites 1, 3 and 4, construction of a rock retaining wall or using rock plating with 1:1.5 side slopes on the acceleration and deceleration lanes was evaluated during the design stage of this project. Cost estimates for using rock plating ranged from $273,000 to $364,000. Cost estimates for a rock retaining wall were approximately $1,335,000. Both options were determined to be cost prohibitive.

Compensatory Mitigation:

The construction of the K-4703 will result in 576 ft of stream impacts that will require mitigation within the Yadkin River Basin at a ratio of 1:1, as determined by Monte Matthews of the USACE during the site visit on July 5, 2007.

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 576 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 for the above-described activities for the proposed TIP project K-4703. A copy of this permit application will be posted on the NCDOT website at: *http://www.ncdot.org/doh/preconstruct/pe/neu/permit.html*. NCDOT requests a 15-day public notice period for this project.

Section 401 Permit: Application is hereby made for a 401 Water Quality Certification the DWQ for the above-described activities.

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,

E.L. Lupke

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

GT/bmf
cc: w/attachment
Mr. John Hennessy, NCDWQ (5 Copies)
Ms. Marla Chambers, NCWRC
Mr. Victor Barbour, P.E. Project Services
Dr. David Chang, P.E., Hydraulics
Mr. Heath Slaughter, Div 11 DEO
Ms. Marella Buncick, USFWS
Mr. Mark Staley, Roadside Environmental
Mr. Greg Perfetti, P.E., Structure Design
Mr. Michael Pettyjohn, P.E. Division 11 Engineer

w/o attachment
Mr. Art McMillan, P.E., Highway Design
Mr. Majed Alghandour, P. E., Prog. and TIP
Mr. Ryan White, E.I.T., PDEA
Mr. Jay Bennett, P.E., Roadway Design
Mr. Scott McLendon, USACE, Wilmington
Ms. Beth Harmon, EEP
Mr. Todd Jones, NCDOT External Audit Branch

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

OMB APPROVAL NO. 0710-003

PRIVACY ACT STATEMENT

Authority: 33 USC 401, Section 10; 1413, Section 404. Principal Purpose: These laws require permits authorizing activities in, or affecting, navigable waters of the United States; the discharge of dredged or fill material into waters of the United States, and the transportation of dredged material for the purpose of dumping it into ocean waters. Routine uses: Information provided on this form will be used in evaluating the application for a permit. Disclosure: Disclosure of requested information is voluntary. If information is not provided, however, the permit application cannot be processed 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 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	8. AUTHORIZED AGENT'S NAME & TITLE (an agent is not required)
NCDOT	
6. APPLICANT'S ADDRESS 1598 Mail Service Center Raleigh, NC 27699	**9. AGENT'S ADDRESS**
7. APPLICANT'S PHONE NUMBERS WITH AREA CODE a. Residence b. Business 919-715-1488	**10. AGENT'S PHONE NUMBERS WITH 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 DATE

NAME, LOCATION, AND DESCRIPTION OF PROJECT OR ACTIVITY

12. PROJECT NAME OR TITLE (see instructions)

K-4703- US 421 Rest Station

13. NAME OF WATERBODY, IF KNOWN (if applicable)	14. PROJECT STREET ADDRESS (if applicable)
UTs to Little Cub Creek	
15. LOCATION OF PROJECT Wilkes (COUNTY) NC (STATE)	

16. OTHER LOCATION DESCRIPTIONS, IF KNOWN (see instructions)

17. DIRECTIONS TO THE SITE

The project is located north of US 421 between NC Highway 115 and NC Highway 18

18. NATURE OF ACTIVITY (Description of project, include all features)

Construction of a new rest area

19. PROJECT PURPOSE (Describe the reason or purpose of the project, see instructions)

To replace the one closed with the construction of New US 421

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

20. REASON(S) FOR DISCHARGE

Extension of three existing pipes and placement of one new pipe for the construction of acceleration and deceleration lanes to access the proposed rest area.

21. TYPE(S) OF MATERIAL BEING DISCHARGED AND THE AMOUNT OF EACH TYPE IN CUBIC YARDS

Corrugated steel pipes

22. SURFACE AREA IN ACRES OF WETLANDS OR OTHER WATERS FILLED (see instructions)

657 feet of stream impacts

23. IS ANY PORTION OF THE WORK ALREADY COMPLETE? YES ○ NO ◉ IF YES, DESCRIBE THE 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)

Lester Wilfong, Jr
252 E Edgewood Mill Road
Wilkesboro, NC 28697

Bessie Harris, et al
C/O Mary Smith
675 Camp Joe Harris Rd
N. Wilkesboro, NC 28659

James Wilson Harris
1195 Camp Joe Harris Rd.
N. Wilkesboro, NC 28659

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 will fully 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.

Lester Wilfong, Jr.
252 E. Edgewood Mill Road
Wilkesboro, NC 28697

James Wilson Harris
1195 Camp Joe Harris Road
N. Wilkesboro, NC 28659

Bessie Harris, et al
C/O Mary Smith
675 Camp Joe Harris Rd.
N. Wilkesbor, NC 28659

North Carolina Department of Cultural Resources

State Historic Preservation Office

Peter B. Sandbeck, Administrator

Michael F. Easley, Governor
Lisbeth C. Evans, Secretary
Jeffrey J. Crow, Deputy Secretary

Office of Archives and History
Division of Historical Resources
David Brook, Director

March 30, 2006

MEMORANDUM

TO: Greg Thorpe, Ph.D., Director
Project Development and Environmental Analysis Branch
NCDOT Division of Highways

FROM: Peter Sandbeck PBS for Peter Sandbeck

SUBJECT: Categorical Exclusion for New Rest Area to Replace Bypassed Rest Area on Old US 421, K-4703, Wilkes County, ER 05-0302

Thank you for your letter of March 3, 2006, transmitting the Categorical Exclusion (CE) for the above project. We believe the CE adequately addresses our concerns for historic resources.

The above comments are made pursuant to Section 106 of the National Historic Preservation Act and the Advisory Council on Historic Preservation's Regulations for Compliance with Section 106 codified at 36 CFR Part 800.

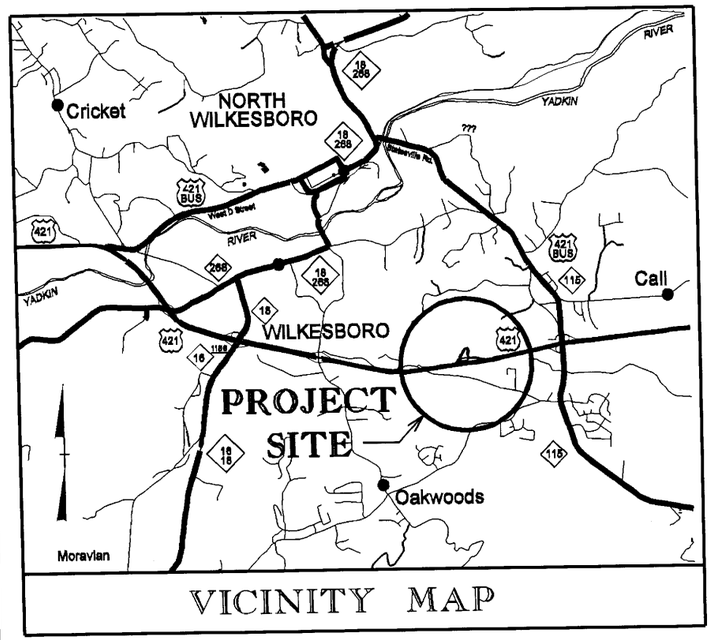
Thank you for your cooperation and consideration. If you have questions concerning the above comment, please contact Renee Gledhill-Earley, environmental review coordinator, at 919/733-4763. In all future communication concerning this project, please cite the above-referenced tracking number.

cc: Mary Pope Furr, NCDOT
Matt Wilkerson, NCDOT

TIP PROJECT: K-4703

CONTRACT: C201679

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

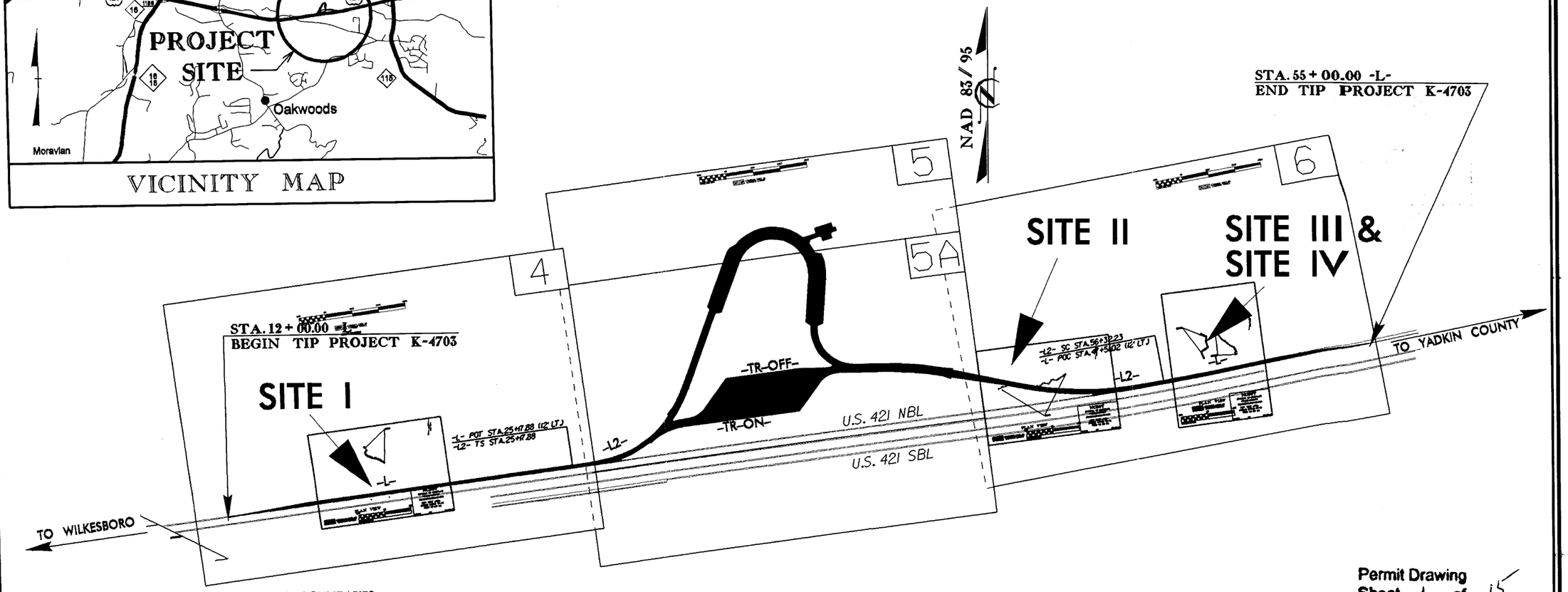
WILKES COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	K-4703	1	
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
36401.1.1	NHS-421(32)	PE	

LOCATION: NEW REST AREA – NORTHBOUND US 421 WEST OF NC 115

TYPE OF WORK: GRADING, PAVING, AND DRAINAGE

WETLAND PERMIT DRAWINGS 01/09/07



THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES

NOTE: CLEARING ON THIS PROJECT SHOULD BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD ____

Permit Drawing
Sheet 1 of 15

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 2007 =	1000
ADT 2030 =	1500
DHV =	11 %
D =	100 %
T =	32% *
V =	20MPH
FUNC. CLASS. =	REST AREA
* TTST 28%	DUAL 4%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT K-4703 = 0.981 MILES

TOTAL LENGTH OF TIP PROJECT K-4703 = 0.981 MILES

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

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: N/A

LETTING DATE: SEPTEMBER 18, 2007

ROGER D. THOMAS, P.E.
PROJECT ENGINEER

MICHAEL W. LITTLE, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER P.E.

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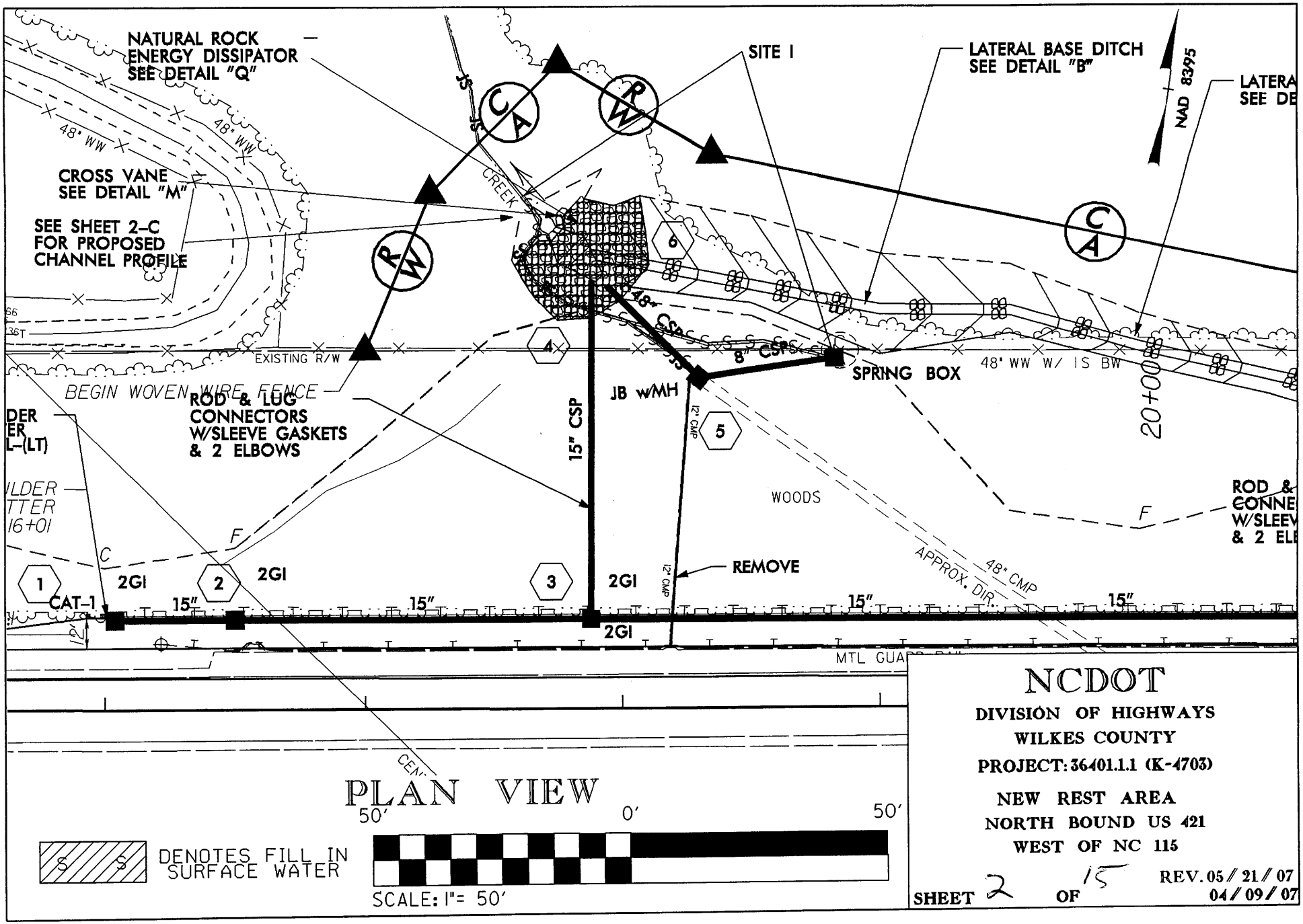


NCDOT

DIVISION OF HIGHWAYS

WILKES COUNTY

PROJECT: 36401.1.1 (K-4703)

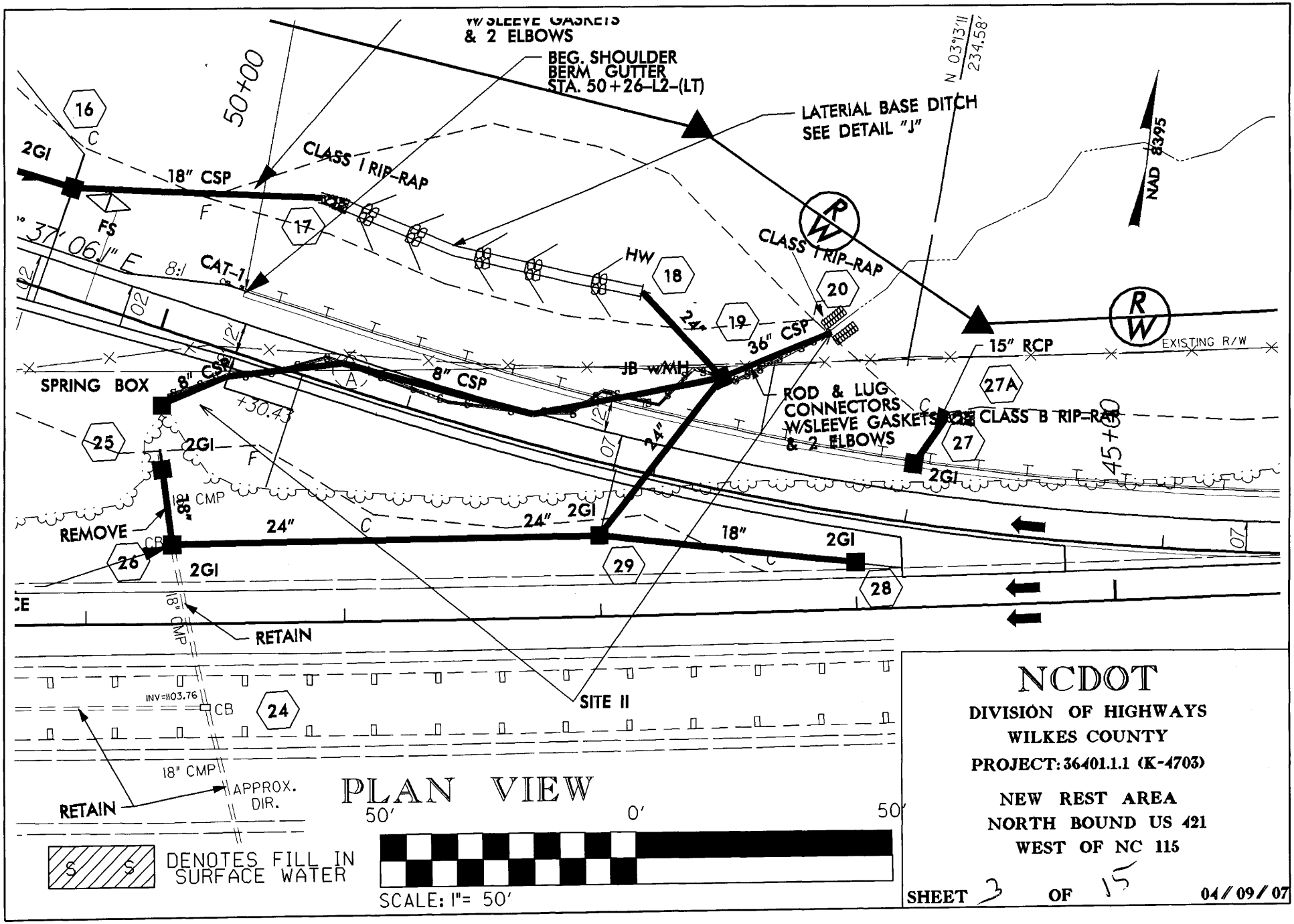
NEW REST AREA

NORTH BOUND US 421

WEST OF NC 115

SHEET 2 **OF** 15

REV. 05/21/07
04/09/07

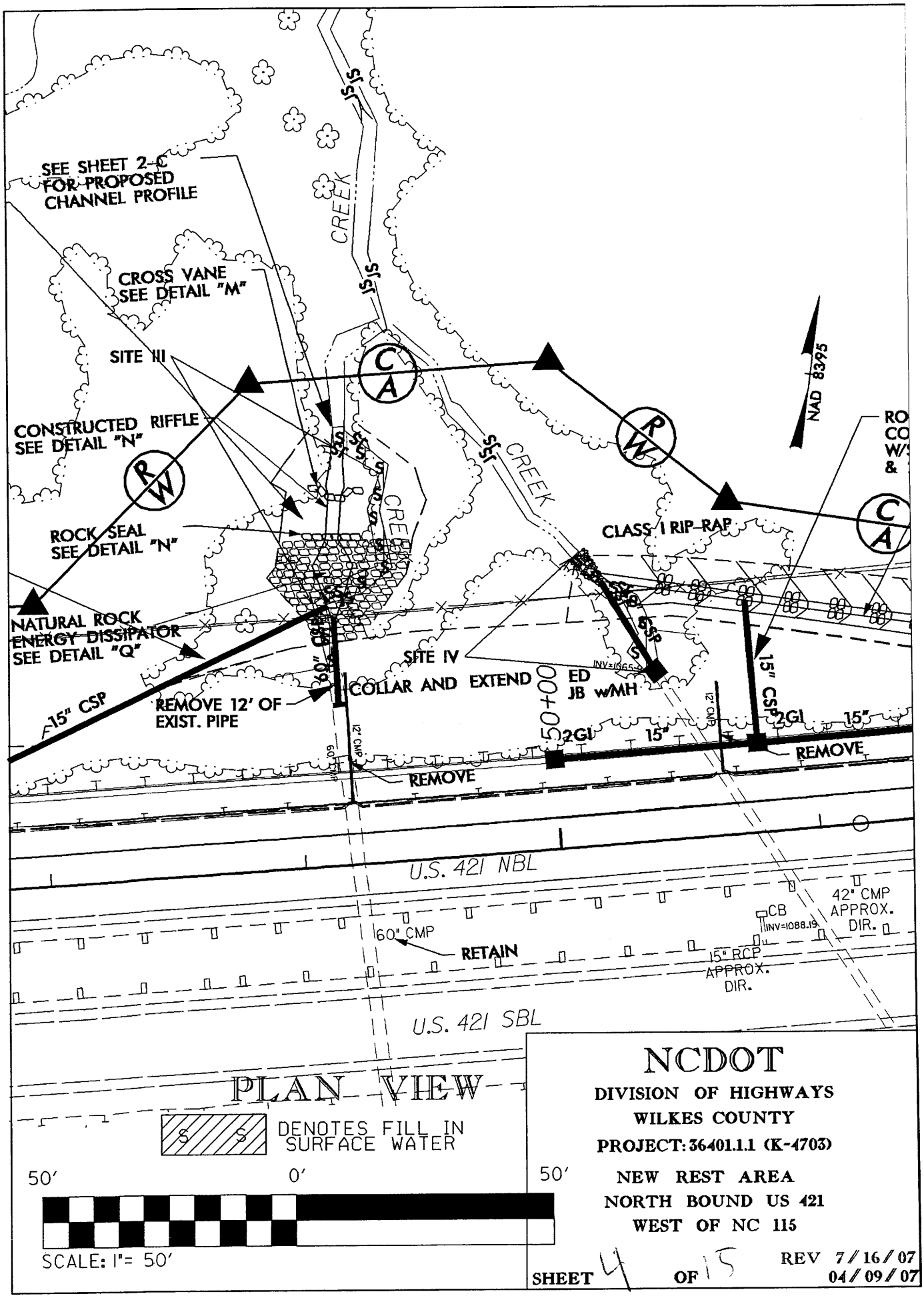


NCDOT

DIVISION OF HIGHWAYS
WILKES COUNTY
PROJECT: 36401.1.1 (K-4703)

NEW REST AREA
NORTH BOUND US 421
WEST OF NC 115

SHEET 3 **OF** 15 **04/09/07**



NCDOT

DIVISION OF HIGHWAYS

WILKES COUNTY

PROJECT: 36401.1.1 (K-4703)

NEW REST AREA

NORTH BOUND US 421

WEST OF NC 115

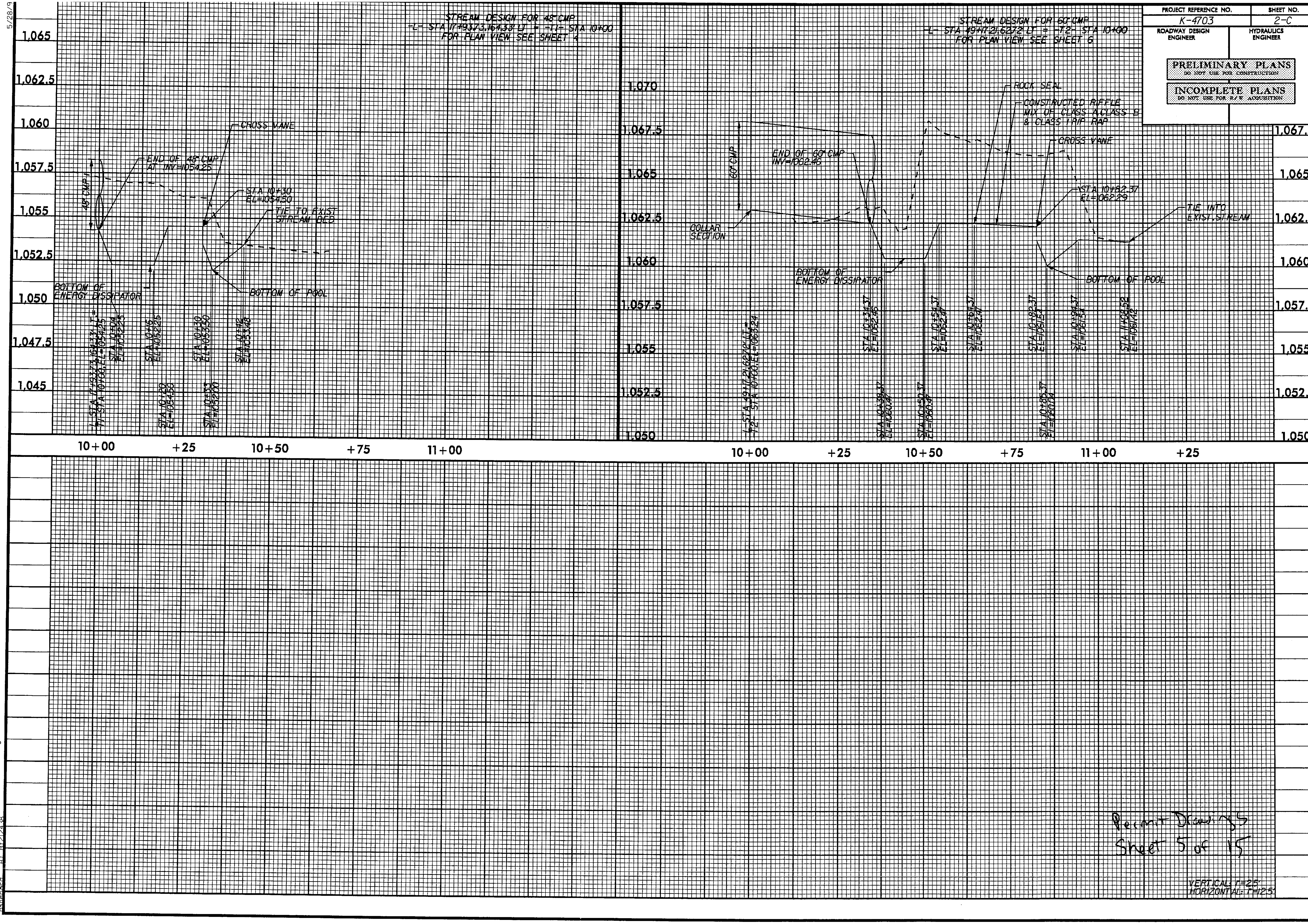
SHEET 4 OF 15

REV 7/16/07
04/09/07

PROJECT REFERENCE NO.	SHEET NO.
K-4703	2-C
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION



Permit Drawings
Sheet 5 of 15

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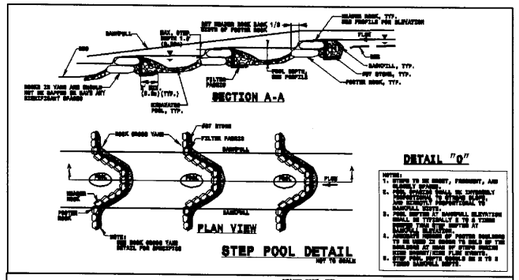
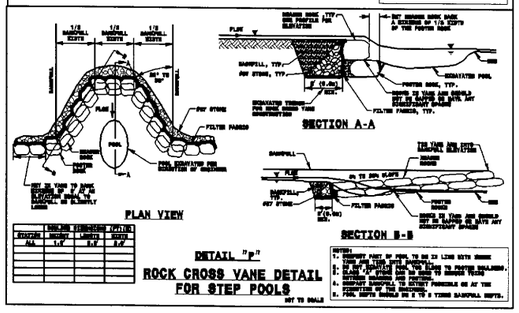
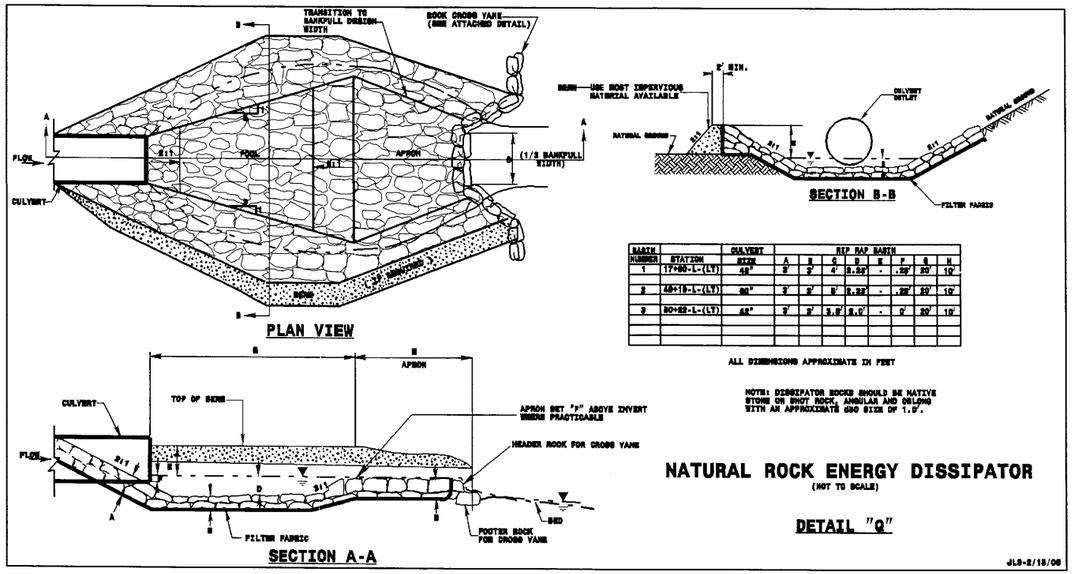
PROJECT REFERENCE NO.	SHEET NO.
K-4703	2-D
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

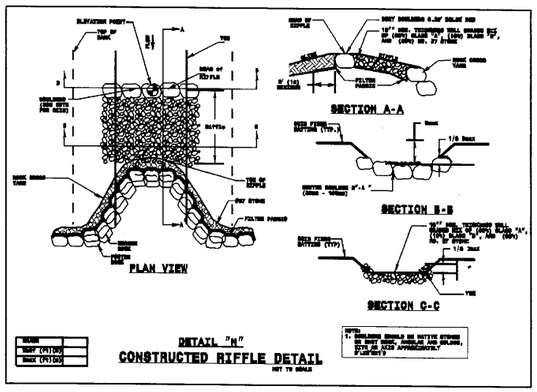
REVISIONS

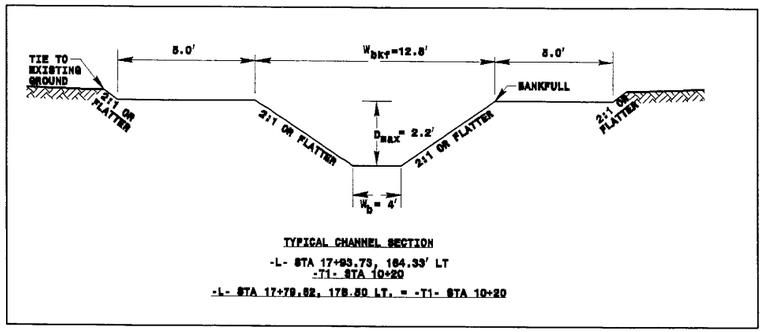


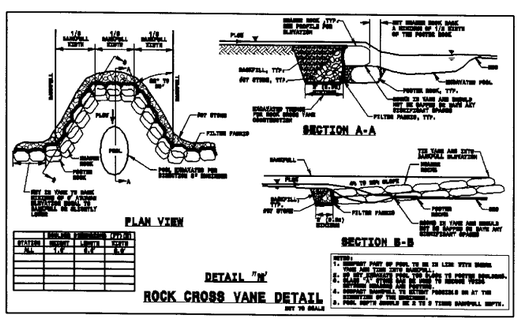


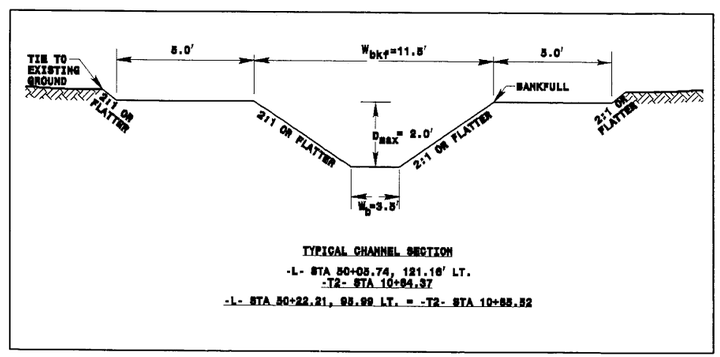


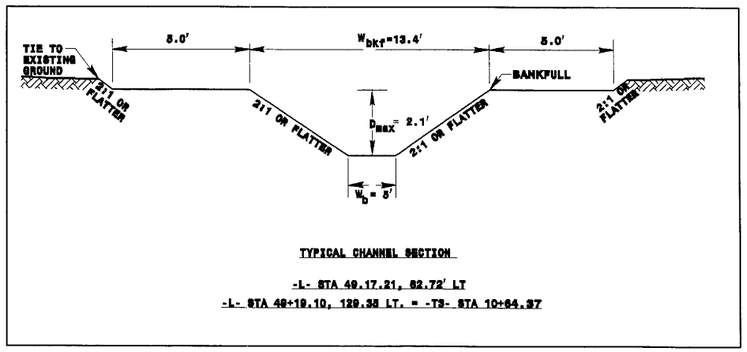
BASIN NUMBER	STATION	CULVERT SIZE	RIP RAP BASIN A	B	C	D	E	F	S	N
1	17+90-L-(LT)	48"	9'	9'	4'	8.52'	-	.02'	20'	10'
2	48+18-L-(LT)	60"	9'	9'	8'	8.52'	-	.02'	20'	10'
3	80+22-L-(LT)	48"	9'	9'	8.5'	8.0'	-	0'	20'	10'



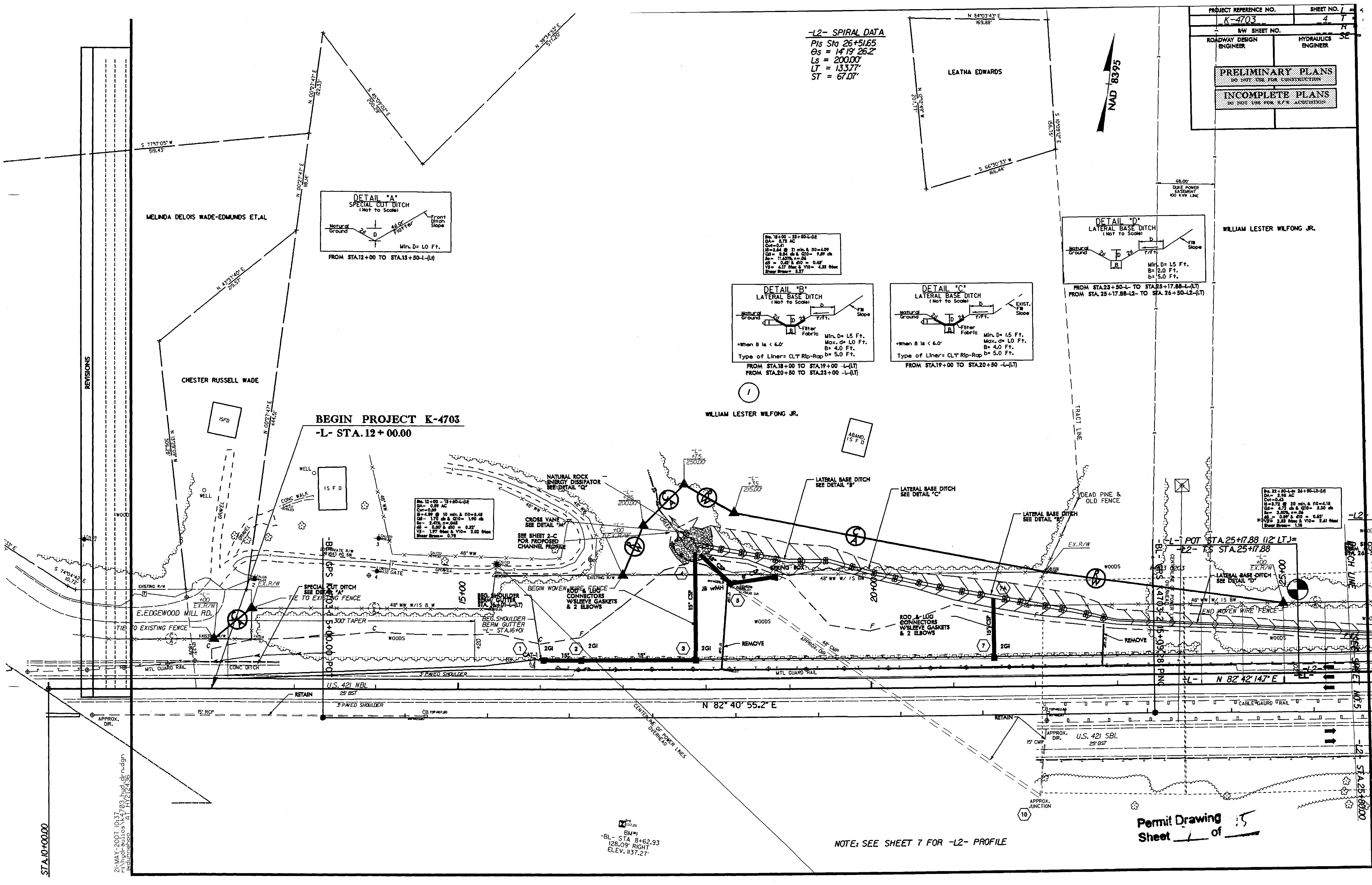




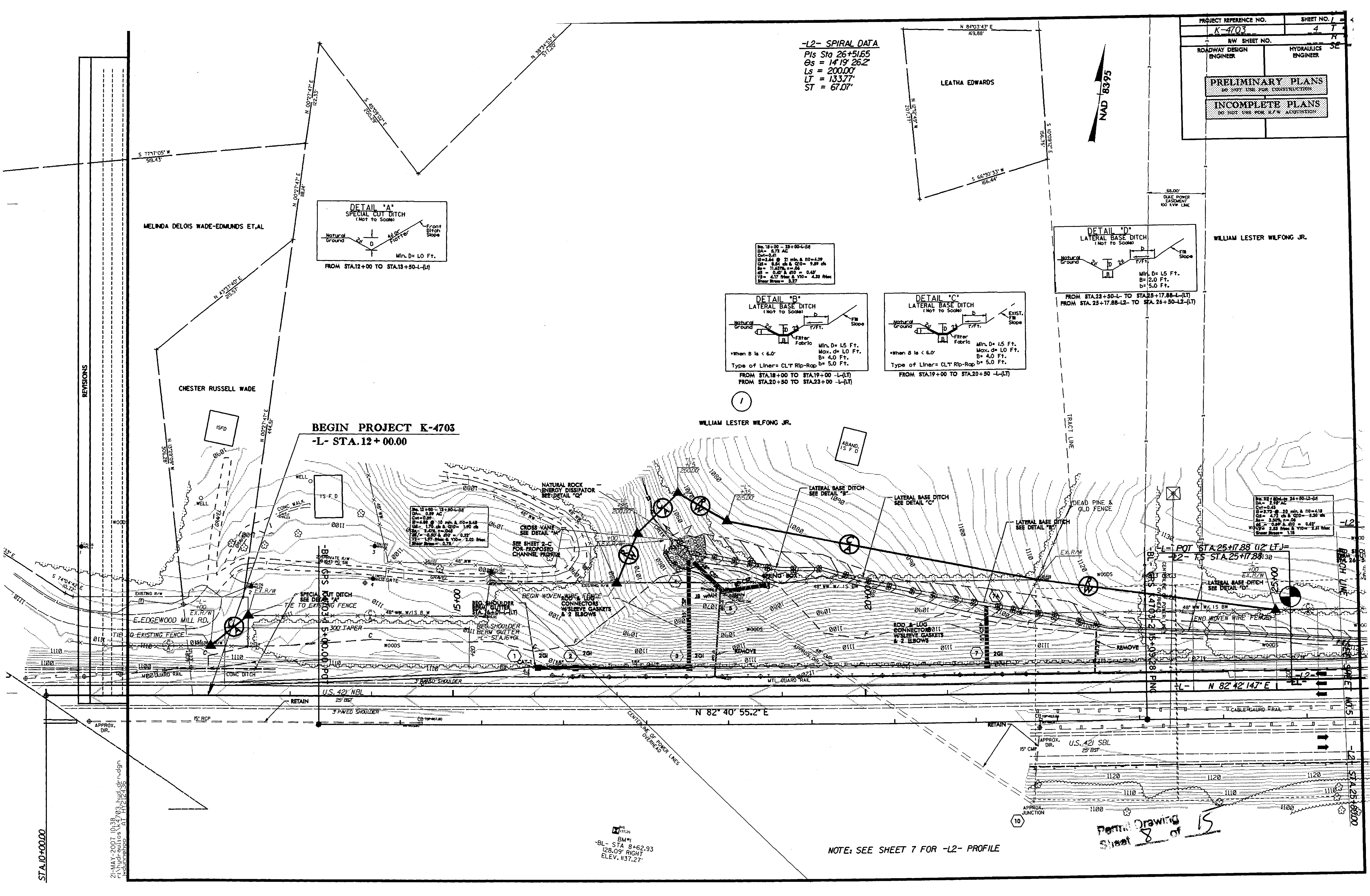


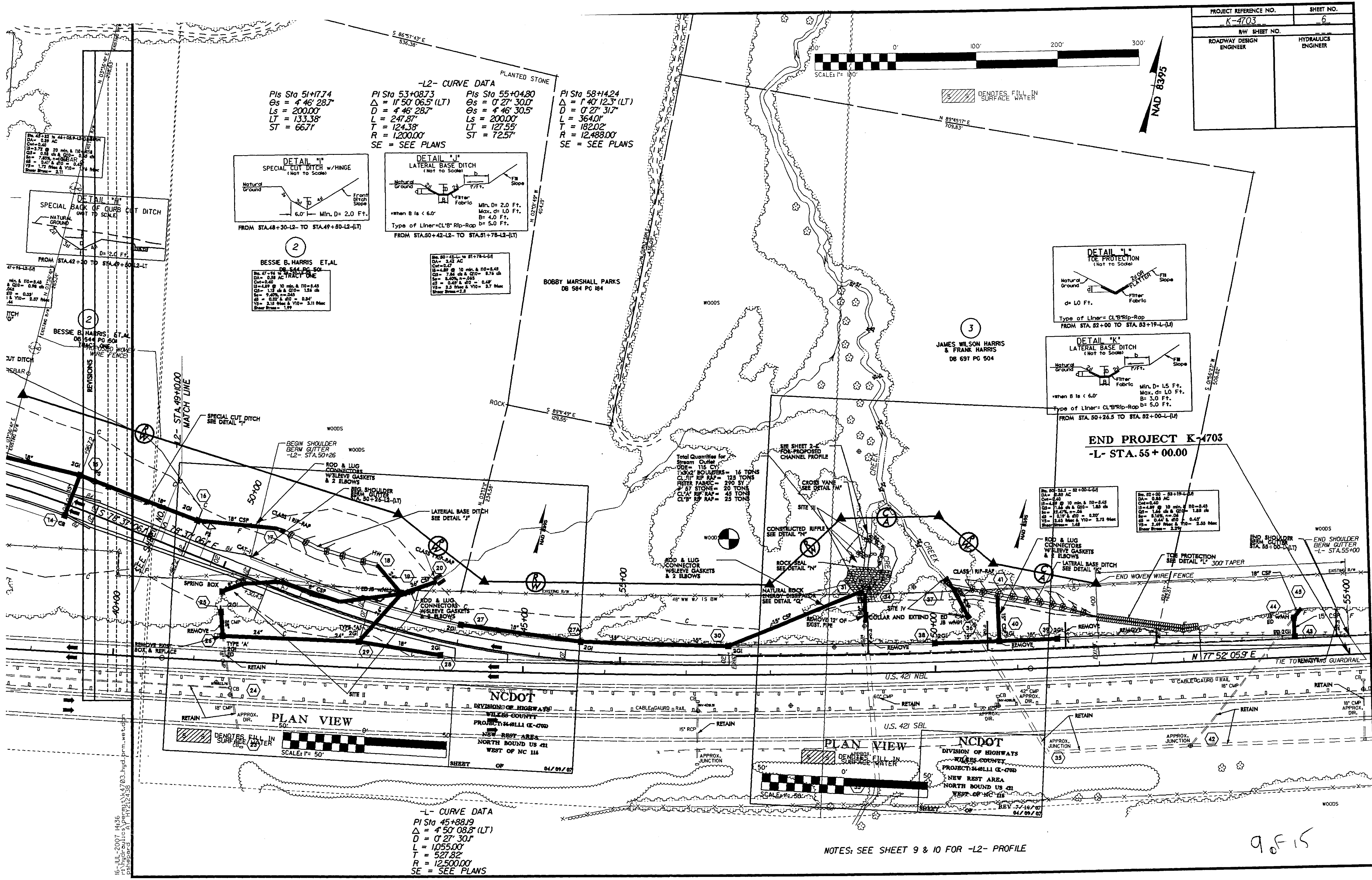


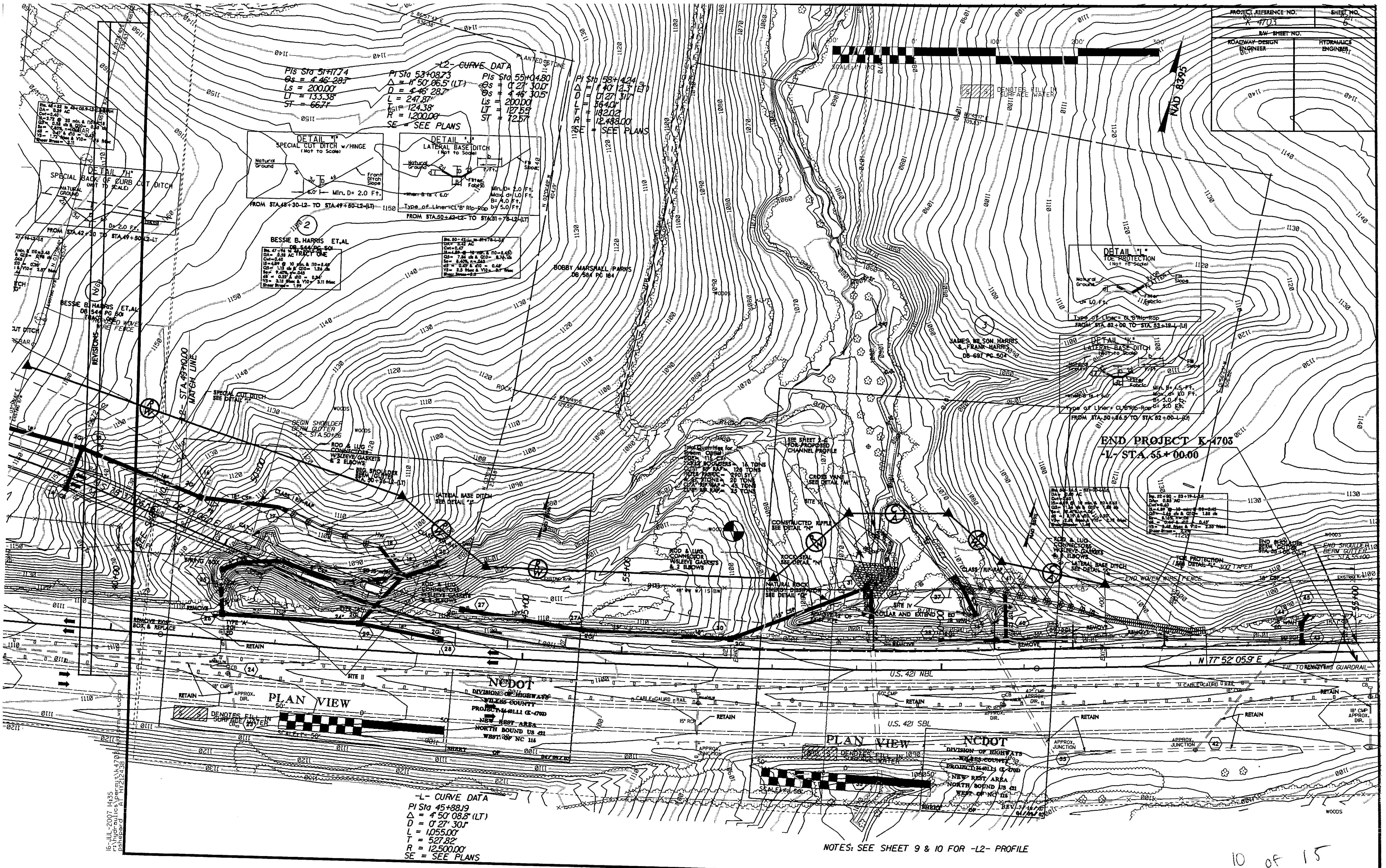
Permit Drawing
Sheet 6 of 15



PROJECT REFERENCE NO.
SHEET NO.
K-4703
4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
-L2- SPIRAL DATA
PIs Sta 26+51.65
Θs = 14°19' 26.2"
Ls = 200.00'
LT = 133.77'
ST = 67.07'
NAD 83/95
LEATHA EDWARDS
MELINDA DELOIS WADE-EDMUNDS ET.AL
CHESTER RUSSELL WADE
WILLIAM LESTER WILFONG JR.
REVISIONS
DETAIL "A"
SPECIAL CUT DITCH
(Not to Scale)
Min. D= 1.0 Ft.
FROM STA.12+00 TO STA.13+50-L-(LT)
DETAIL "B"
LATERAL BASE DITCH
(Not to Scale)
Min. D= 1.5 Ft.
Max. d= 1.0 Ft.
B= 4.0 Ft.
b= 5.0 Ft.
Type of Liner= CL"I" Rip-Rap
FROM STA.18+00 TO STA.19+00 -L-(LT)
FROM STA.20+50 TO STA.23+00 -L-(LT)
DETAIL "C"
LATERAL BASE DITCH
(Not to Scale)
Min. D= 1.5 Ft.
Max. d= 1.0 Ft.
B= 4.0 Ft.
b= 5.0 Ft.
Type of Liner= CL"I" Rip-Rap
FROM STA.19+00 TO STA.20+50 -L-(LT)
DETAIL "D"
LATERAL BASE DITCH
(Not to Scale)
Min. D= 1.5 Ft.
B= 2.0 Ft.
b= 5.0 Ft.
FROM STA.23+50-L- TO STA.25+17.88-L-(LT)
FROM STA. 25+17.88-L2- TO STA. 26+50-L2-(LT)
BEGIN PROJECT K-4703
-L- STA. 12+00.00
NATURAL ROCK ENERGY DISSIPATOR SEE DETAIL "Q"
CROSS VANE SEE DETAIL "M"
SEE SHEET 2-C FOR PROPOSED CHANNEL PROFILE
LATERAL BASE DITCH SEE DETAIL "B"
LATERAL BASE DITCH SEE DETAIL "C"
DEAD PINE & OLD FENCE
SPECIAL CUT DITCH SEE DETAIL "A"
TIE TO EXISTING FENCE
E.EDGEWOOD MILL RD.
BEGIN WOVEN WIRE FENCE
ROD & LUG CONNECTORS W/SLEEVE GASKETS & 2 ELBOWS
END WOVEN WIRE FENCE
-L- POT STA.25+17.88 (12' LT)=
-L2- TS STA.25+17.88
U.S. 421 NBL
U.S. 421 SBL
N 82° 40' 55.2" E
N 82° 42' 14.7" E
RETAIN
REMOVE
CENTERLINE OF POWER LINES OVERHEAD
BM#1
-BL- STA 8+62.93
128.09' RIGHT
ELEV. 1137.27'
NOTE: SEE SHEET 7 FOR -L2- PROFILE
Permit Drawing
Sheet 1 of 15
STA.10+00.00
21-MAY-2007 10:37
r:\hydraulics\k4703_hyd_drn.dgn


PROJECT REFERENCE NO.
SHEET NO.
K-4703
4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
NAD 83/95
-L2- SPIRAL DATA
PIs Sta 26+51.65
Θs = 14°19' 26.2"
Ls = 200.00'
LT = 133.77'
ST = 67.07'
LEATHA EDWARDS
MELINDA DELOIS WADE-EDMUNDS ET.AL
CHESTER RUSSELL WADE
WILLIAM LESTER WILFONG JR.
DETAIL "A"
SPECIAL CUT DITCH
(Not to Scale)
Natural Ground
Front Ditch Slope
Min. D= 1.0 Ft.
FROM STA.12+00 TO STA.13+50-L-(LT)
DETAIL "B"
LATERAL BASE DITCH
(Not to Scale)
Filter Fabric
Fill Slope
*When B is < 6.0'
Min. D= 1.5 Ft.
Max. d= 1.0 Ft.
B= 4.0 Ft.
b= 5.0 Ft.
Type of Liner= CL"I" Rip-Rap
FROM STA.18+00 TO STA.19+00 -L-(LT)
FROM STA.20+50 TO STA.23+00 -L-(LT)
DETAIL "C"
LATERAL BASE DITCH
(Not to Scale)
Exist. Fill Slope
Min. D= 1.5 Ft.
Max. d= 1.0 Ft.
B= 4.0 Ft.
b= 5.0 Ft.
Type of Liner= CL"I" Rip-Rap
FROM STA.19+00 TO STA.20+50 -L-(LT)
DETAIL "D"
LATERAL BASE DITCH
(Not to Scale)
Fill Slope
Min. D= 1.5 Ft.
B= 2.0 Ft.
b= 5.0 Ft.
FROM STA.23+50-L- TO STA.25+17.88-L-(LT)
FROM STA. 25+17.88-L2- TO STA. 26+50-L2-(LT)
DUKE POWER EASEMENT 100 KVW LINE
TRACT LINE
BEGIN PROJECT K-4703
-L- STA.12+00.00
NATURAL ROCK ENERGY DISSIPATOR SEE DETAIL "Q"
CROSS VANE SEE DETAIL "M"
SEE SHEET 2-C FOR PROPOSED CHANNEL PROFILE
LATERAL BASE DITCH SEE DETAIL "B"
LATERAL BASE DITCH SEE DETAIL "C"
LATERAL BASE DITCH SEE DETAIL "B"
LATERAL BASE DITCH SEE DETAIL "D"
DEAD PINE & OLD FENCE
-L- POT STA.25+17.88 (12' LT)=
-L2- TS STA.25+17.88
SPECIAL CUT DITCH SEE DETAIL "A"
TIE TO EXISTING FENCE
E.EDGEWOOD MILL RD.
300' TAPER
BEG. SHOULDER BERM GUTTER -L- STA.16+01
BEGIN WOVEN WIRE FENCE
ROD & LUG CONNECTORS W/SLEEVE GASKETS & 2 ELBOWS
END WOVEN WIRE FENCE
SPRING BOX
REMOVE
RETAIN
U.S. 421 NBL
U.S. 421 SBL
N 82° 40' 55.2" E
N 82° 42' 14.7" E
MTL. GUARD RAIL
CABLE GAURD RAIL
CENTERLINE OF POWER LINES OVERHEAD
BM#1
-BL- STA 8+62.93
128.09' RIGHT
ELEV. 1137.27'
NOTE: SEE SHEET 7 FOR -L2- PROFILE
STA.10+00.00
Permit Drawing
Sheet 8 of 15
REVISIONS
21-MAY-2007 10:38


PROJECT REFERENCE NO.
SHEET NO.
K-4703
6
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
SCALE: 1" = 100'
DENOTES FILL IN SURFACE WATER
NAD 83/95
-L2- CURVE DATA
PIs Sta 51+17.74
Θs = 4° 46' 28.7"
Ls = 200.00'
LT = 133.38'
ST = 66.71'
PI Sta 53+08.73
Δ = 11° 50' 06.5" (LT)
D = 4° 46' 28.7"
L = 247.87'
T = 124.38'
R = 1,200.00'
SE = SEE PLANS
PIs Sta 55+04.80
Θs = 0° 27' 30.0"
Θs = 4° 46' 30.5"
Ls = 200.00'
LT = 127.55'
ST = 72.57'
PI Sta 58+14.24
Δ = 1° 40' 12.3" (LT)
D = 0° 27' 31.7"
L = 364.01'
T = 182.02'
R = 12,488.00'
SE = SEE PLANS
PLANTED STONE
DETAIL "I"
SPECIAL CUT DITCH w/HINGE
(Not to Scale)
FROM STA.48+30-L2- TO STA.49+50-L2-(LT)
DETAIL "J"
LATERAL BASE DITCH
(Not to Scale)
Min. D= 2.0 Ft.
Max. d= 1.0 Ft.
B= 4.0 Ft.
b= 5.0 Ft.
Type of Liner= CL"B" Rip-Rap
FROM STA.50+42-L2- TO STA.51+78-L2-(LT)
DETAIL "H"
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)
BESSIE B. HARRIS ET.AL
DB 544 PG 501
TRACT ONE
BOBBY MARSHALL PARKS
DB 584 PG 184
WOODS
JAMES WILSON HARRIS
& FRANK HARRIS
DB 697 PG 504
DETAIL "L"
TOE PROTECTION
(Not to Scale)
d= 1.0 Ft.
Type of Liner= CL"B" Rip-Rap
FROM STA. 52+00 TO STA. 53+19-L-(LT)
DETAIL "K"
LATERAL BASE DITCH
(Not to Scale)
Min. D= 1.5 Ft.
Max. d= 1.0 Ft.
B= 3.0 Ft.
b= 5.0 Ft.
Type of Liner= CL"B" Rip-Rap
FROM STA. 50+26.5 TO STA. 52+00-L-(LT)
END PROJECT K-4703
-L- STA. 55+00.00
-L2- STA.49+10.00
MATCH LINE
SPECIAL CUT DITCH SEE DETAIL "I"
BEGIN SHOULDER BERM GUTTER -L2- STA.50+26
LATERAL BASE DITCH SEE DETAIL "J"
Total Quantities for Stream Outlet
SEE SHEET 2-E FOR PROPOSED CHANNEL PROFILE
CROSS VANE SEE DETAIL "M"
CONSTRUCTED RIFFLE SEE DETAIL "N"
ROCK SEAL SEE DETAIL "N"
NATURAL ROCK ENERGY DISSIPATOR SEE DETAIL "Q"
LATERAL BASE DITCH SEE DETAIL "K"
TOE PROTECTION SEE DETAIL "L" 300' TAPER
END WOVEN WIRE FENCE
END SHOULDER BERM GUTTER -L- STA.55+00
CREEK
U.S. 421 NBL
U.S. 421 SBL
N 77° 52' 05.9" E
PLAN VIEW
SCALE: 1" = 50'
NCDOT
DIVISION OF HIGHWAYS
WILKES COUNTY
NEW REST AREA
NORTH BOUND US 421
WEST OF NC 116
-L- CURVE DATA
PI Sta 45+88.19
Δ = 4° 50' 08.8" (LT)
D = 0° 27' 30.1"
L = 1,055.00'
T = 527.82'
R = 12,500.00'
SE = SEE PLANS
NOTES: SEE SHEET 9 & 10 FOR -L2- PROFILE
9 of 15


PROJECT REFERENCE NO. K-4703
SHEET NO. 6
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
NAD 83/95
DENOTES FILL IN SURFACE WATER
-L2- CURVE DATA
PI Sta 51+17.74
Θs = 4°46'28.7"
Ls = 200.00'
LT = 133.38'
ST = 66.71'
PI Sta 53+08.73
Δ = 11°50'06.5" (LT)
D = 4°46'28.7"
L = 247.87'
T = 124.38'
R = 1,200.00'
SE = SEE PLANS
PIs Sta 55+04.80
Θs = 0°27'30.0"
Θs = 4°46'30.5"
Ls = 200.00'
LT = 127.55'
ST = 72.57'
PI Sta 58+42.4
Δ = 1°40'12.3" (LT)
D = 0°27'31.7"
L = 364.0'
T = 182.02'
R = 12,488.00'
SE = SEE PLANS
DETAIL "H" SPECIAL BACK OF CURB CUT DITCH (NOT TO SCALE)
FROM STA.42+30 TO STA.49+50-L2-LT
DETAIL "I" SPECIAL CUT DITCH w/HINGE (Not to Scale)
FROM STA.48+30-L2- TO STA.49+50-L2-(LT)
DETAIL "J" LATERAL BASE DITCH (Not to Scale)
Min. D= 2.0 Ft. Max. d= 1.0 Ft. B= 4.0 Ft. b= 5.0 Ft.
Type of Liner= CL'B' Rip-Rap
FROM STA.50+42-L2- TO STA.51+78-L2-(LT)
DETAIL "L" TOE PROTECTION (Not to Scale)
Type of Liner= CL'B' Rip-Rap
FROM STA. 52+00 TO STA. 53+19-L-(LT)
DETAIL "K" LATERAL BASE DITCH (Not to Scale)
Min. D= 1.5 Ft. Max. d= 1.0 Ft. B= 3.0 Ft. b= 5.0 Ft.
Type of Liner= CL'B' Rip-Rap
FROM STA. 50+86.5 TO STA. 52+00-L-(LT)
BESSIE B. HARRIS ET.AL DB 544 PG 501 TRACT ONE
BOBBY MARSHALL PARKS DB 584 PG 164
JAMES WILSON HARRIS & FRANK HARRIS DB 697 PG 504
-L2- STA.49+10.00 MATCH LINE
END PROJECT K-4703
-L- STA 55+00.00
SEE SHEET 2-C FOR PROPOSED CHANNEL PROFILE
CROSS VANE SEE DETAIL "M"
CONSTRUCTED RIFFLE SEE DETAIL "N"
ROCK SEAL SEE DETAIL "N"
NATURAL ROCK ENERGY DISSIPATOR SEE DETAIL "O"
TOE PROTECTION SEE DETAIL "L"
END SHOULDER BERM GUTTER
BEGIN SHOULDER BERM GUTTER L2- STA.50+26
LATERAL BASE DITCH SEE DETAIL "J"
ROD & LUG CONNECTORS W/SLEEVE GASKETS & 2 ELBOWS
N 77°52'05.9" E
U.S. 421 NBL
U.S. 421 SBL
PLAN VIEW
NCDOT DIVISION OF HIGHWAYS WILKES COUNTY PROJECT: 34401.1.1 (K-4703) NEW REST AREA NORTH BOUND US 421 WEST OF NC 115
-L- CURVE DATA
PI Sta 45+88.19
Δ = 4°50'08.8" (LT)
D = 0°27'30.1"
L = 1,055.00'
T = 527.82'
R = 12,500.00'
SE = SEE PLANS
NOTES: SEE SHEET 9 & 10 FOR -L2- PROFILE
10 of 15

8/23/2

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	K-4703	X-21

290 280 270 260 250 240 230 220 210 200 190 180 170 160 150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10

1140 1130 1120 1110 1100 1090 1080

L2 STA 50+12.55
.01 .01
5.93:1
1101.72
FILL IN SURFACE WATER
41+50.00

L2 STA 49+69.18
.02 .02
3:1 6:1 3:1
1115.02
1108.50
41+00.00

L2 STA 49+16.81
.012 .012
2:1 6:1 4:1
1117.62
1109.49
40+50.00

Permit Drawing Sheet 15 of 15

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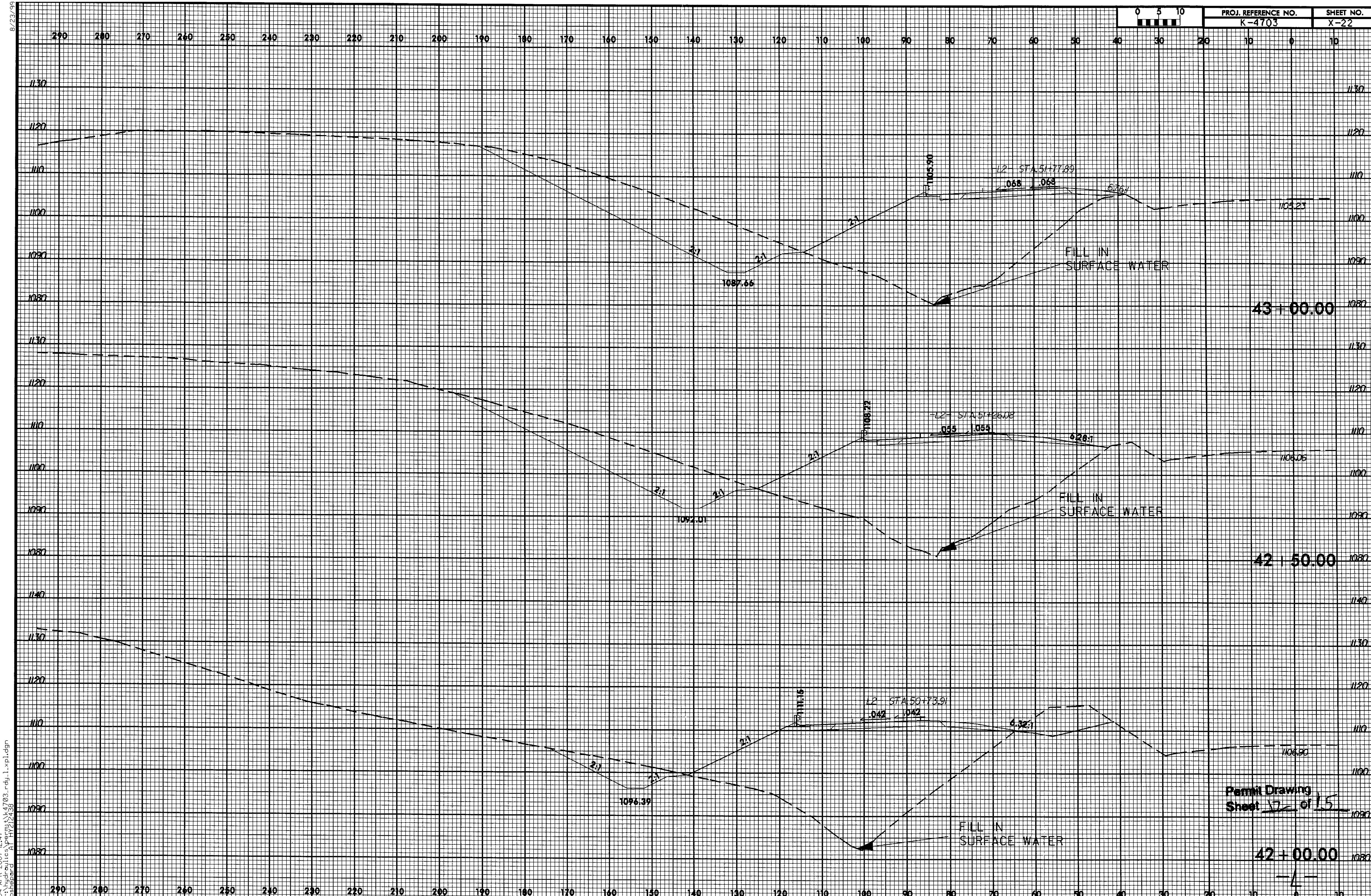
pshepard
AT HY212438

PROJ. REFERENCE NO.	SHEET NO.
K-4703	X-22



Permit Drawing
Sheet 12 of 15

-L-

8/23/99

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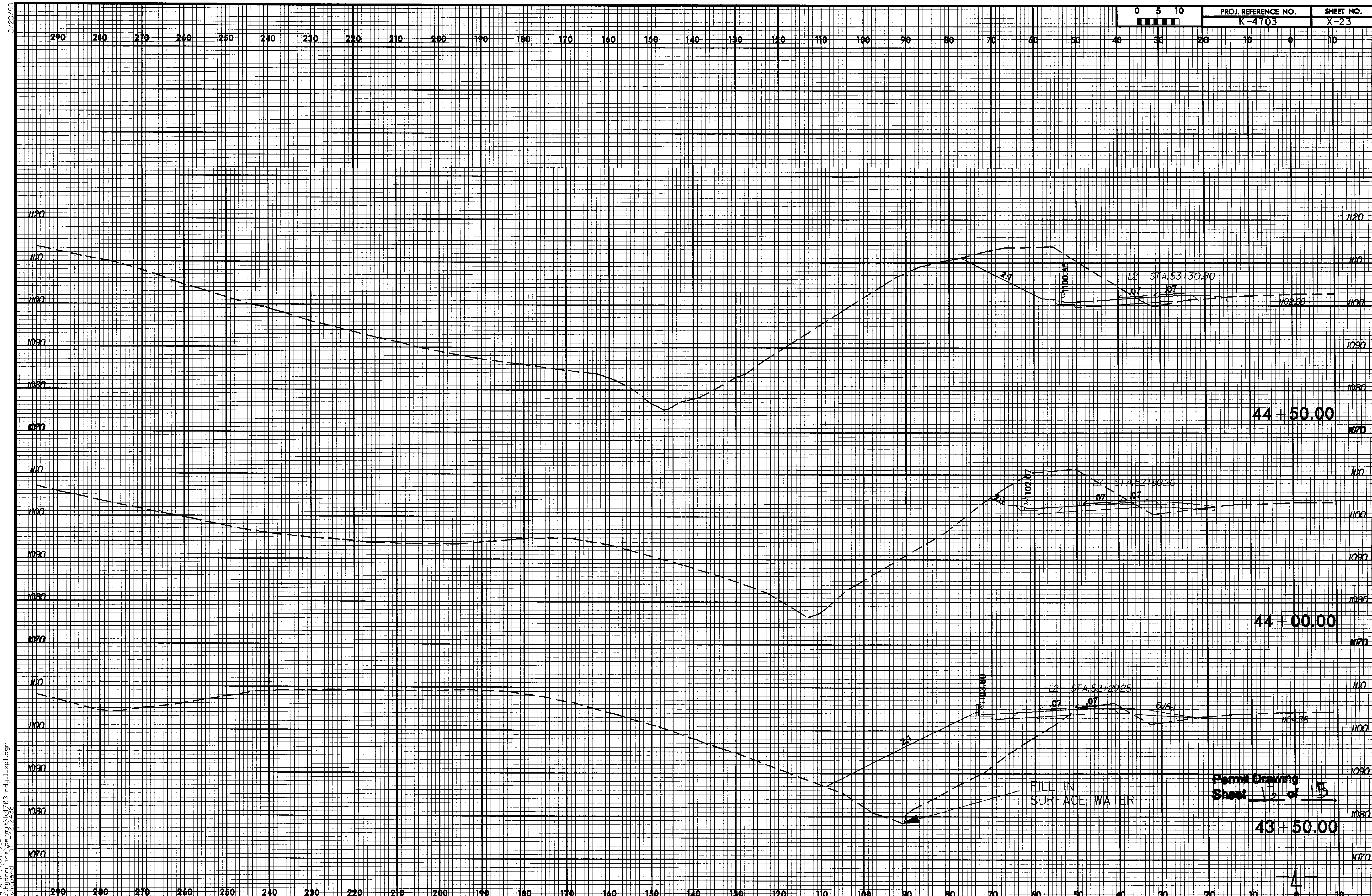

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pshepard AT HY212438

PROPERTY OWNERS

NAMES AND ADDRESSES

PARCEL NO.	NAMES	ADDRESSES
(1)	Lester Wilfong, Jr.	252 E. Edgewood Mill Rd. Wilkesboro, N.C. 228697
(2)	Bessie Harris, et al C/O Mary Smith	675 Camp Joe Harris Rd. N. Wilkesboro, N.C. 28659
(3)	James Wilson Harris	1195 Camp Joe Harris Rd. N. Wilkesboro, N.C. 28659

NCDOT

DIVISION OF HIGHWAYS

WILKES COUNTY

PROJECT: 36401.1.1 (K-4703)

NEW REST AREA

NORTH BOUND US 421

WEST OF NC 115

04/09/07

WETLAND PERMIT IMPACT SUMMARY

			WETLAND IMPACTS					SURFACE WATER IMPACTS				
Site No.	Station (From/To)	Structure Size / Type	Permanent Fill In Wetlands (ac)	Temp. Fill In Wetlands (ac)	Excavation in Wetlands (ac)	Mechanized Clearing in Wetlands (ac)	Hand Clearing in Wetlands (ac)	Permanent SW impacts (ac)	Temp. SW impacts (ac)	Existing Channel Impacts Permanent (ft)	Existing Channel Impacts Temp. (ft)	Natural Stream Design (ft)
I	17+60 to	48" CSP								115		
	18+82 -L- LT	8"CSP TO JB								81		
II	41+30 TO	8" CSP TO								278		
	43+93 -L- LT	36" CSP										
III	49+14 TO	60" CSP								124		
	49+43 -L- LT											
IV	49+77 TO	42" CSP								59		
	50+43 -L- LT											
TOTALS:										657		

NC DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS

WILKES COUNTY
WBS - 36401.1.1 (K-4703)

SHEET 15 of 15 REV. 07/19/07

ATN Revised 3/31/05

TIP PROJECT: K-4703

CONTRACT: C201679

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

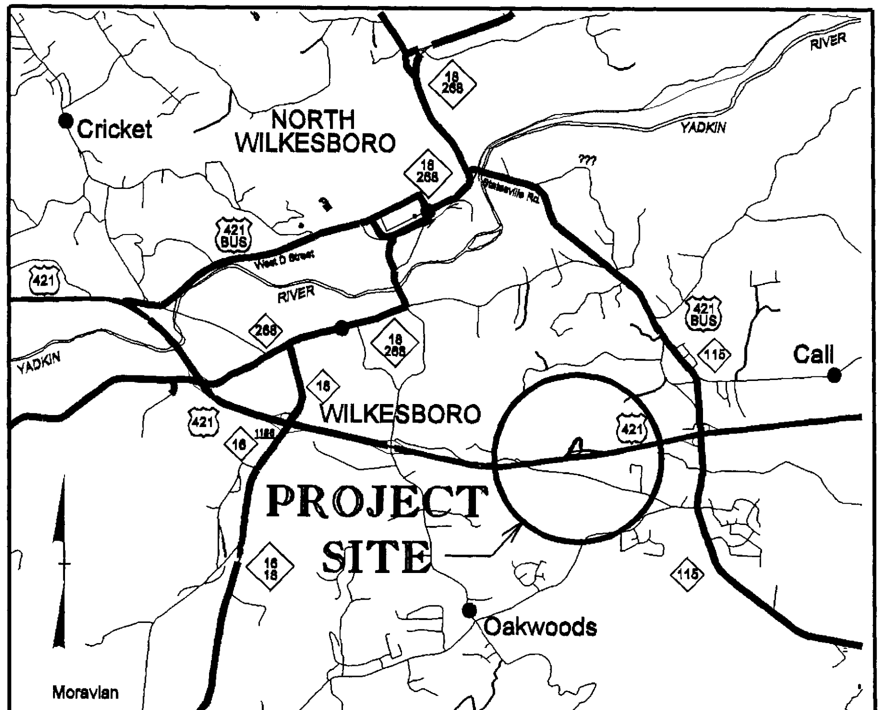
WILKES COUNTY

LOCATION: NEW REST AREA - NORTHBOUND US 421 WEST OF NC 115

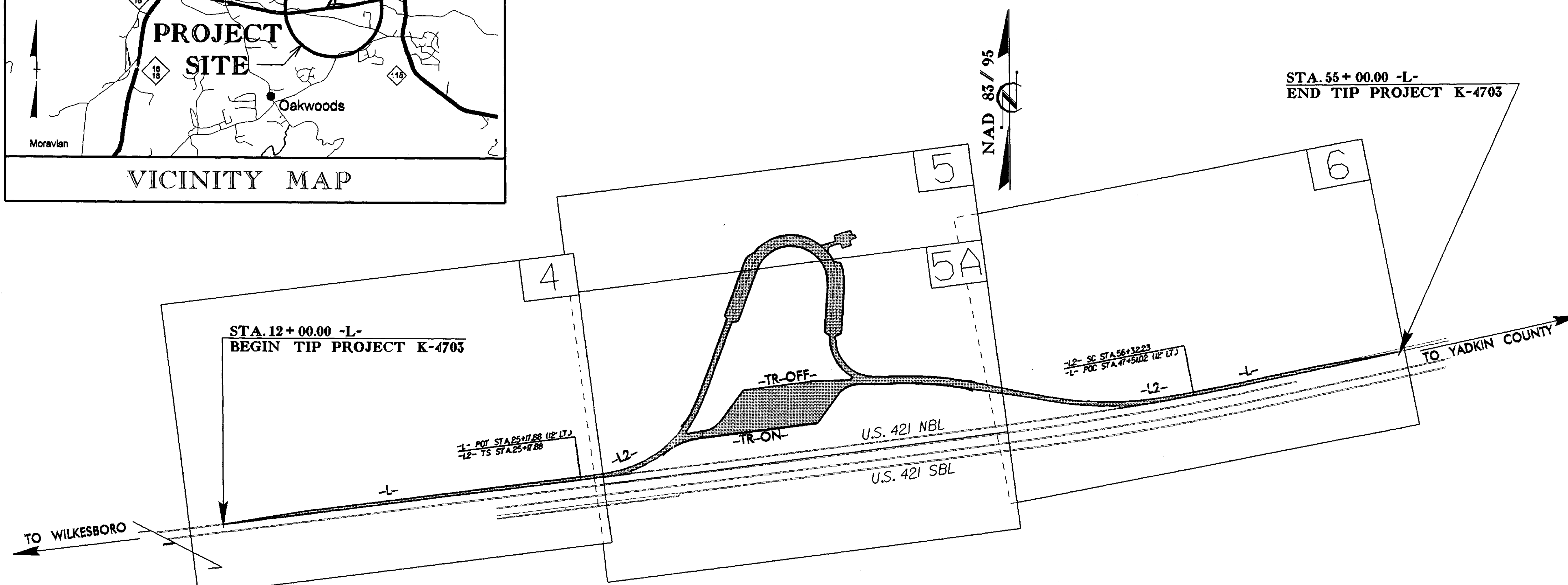
TYPE OF WORK: GRADING, PAVING, AND DRAINAGE

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	K-4703	1	

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
36401.1.1	NHS-421(32)	PE



VICINITY MAP



THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES

NOTE: CLEARING ON THIS PROJECT SHOULD BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD ____

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 2007 =	1000
ADT 2030 =	1500
DHV =	11 %
D =	100 %
T =	32% *
V =	20MPH
FUNC. CLASS. =	REST AREA
* TTST 28%	DUAL 4%

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT K-4703 = 0.981 MILES

TOTAL LENGTH OF TIP PROJECT K-4703 = 0.981 MILES

Prepared In the Office of:

DIVISION OF HIGHWAYS

1000 Birch Ridge Dr.
Raleigh, NC 27610

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: N/A

LETTING DATE: SEPTEMBER 18, 2007

ROGER D. THOMAS, P.E.
PROJECT ENGINEER

MICHAEL W. LITTLE, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

P.E.
SIGNATURE:

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE OF NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

P.E.
STATE HIGHWAY DESIGN ENGINEER

6/2/99

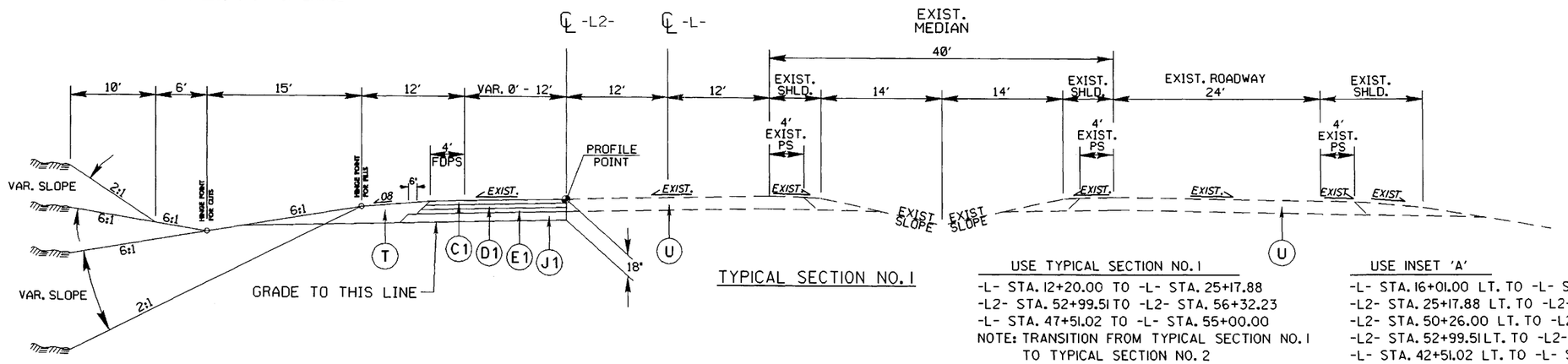
PROJECT REFERENCE NO.	SHEET NO.
K-4703	2
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PAVEMENT SCHEDULE

C1	PROP. APPROX. 3" ASPHALT CONCRETE SURFACE COURSE, TYPE S9.5B, AT AN AVERAGE RATE OF 168 LBS. PER SQ. YARD. IN EACH OF TWO LAYERS.	R1	2'-6" CONCRETE CURB & GUTTER
D1	PROP. APPROX. 4" ASPHALT CONCRETE INTERMEDIATE COURSE, TYPE I19.0B, AT AN AVERAGE RATE OF 456 LBS. PER SQ. YARD.	R2	CONCRETE SHOULDER BERM GUTTER
E1	PROP. APPROX. 3" ASPHALT CONCRETE BASE COURSE, TYPE B25.0B, AT AN AVERAGE RATE OF 342 LBS. PER SQ. YARD.	T	EARTH MATERIAL
J1	PROP. 8" AGGREGATE BASE COURSE	U	EXISTING PAVEMENT
J2	PROP. VAR. DEPTH AGGREGATE BASE COURSE		

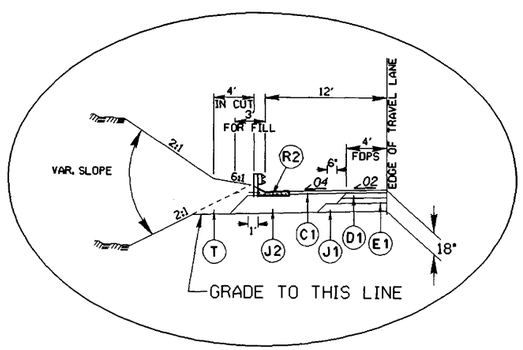
NOTE: PAVEMENT EDGE SLOPES ARE 1:1 UNLESS SHOWN OTHERWISE



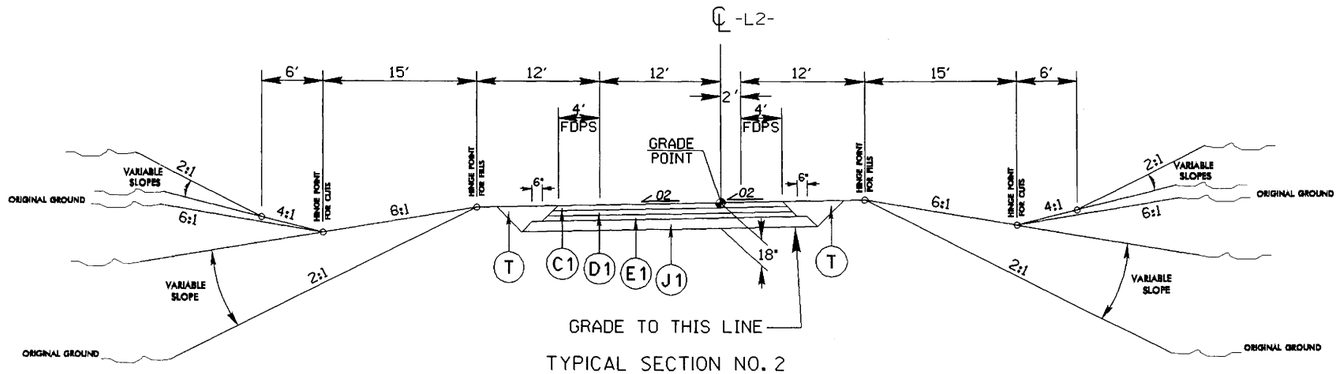
TYPICAL SECTION NO. 1

USE TYPICAL SECTION NO. 1
-L- STA. 12+20.00 TO -L- STA. 25+17.88
-L2- STA. 52+99.51 TO -L2- STA. 56+32.23
-L- STA. 47+51.02 TO -L- STA. 55+00.00
NOTE: TRANSITION FROM TYPICAL SECTION NO. 1 TO TYPICAL SECTION NO. 2
-L2- STA. 25+17.88 TO -L2- STA. 27+36.67

USE INSET 'A'
-L- STA. 16+01.00 LT. TO -L- STA. 25+17.88 LT.
-L2- STA. 25+17.88 LT. TO -L2- STA. 26+56.00 LT.
-L2- STA. 50+26.00 LT. TO -L2- STA. 52+99.51 LT.
-L2- STA. 52+99.51 LT. TO -L2- STA. 56+32.23 LT.
-L- STA. 42+51.02 LT. TO -L- STA. 55+00.00 LT.



INSET 'A'



TYPICAL SECTION NO. 2

USE TYPICAL SECTION NO. 2
-L2- STA. 27+36.67 TO -L2- STA. 28+27.39
-L2- STA. 50+30.43 TO -L2- STA. 52+99.51

NOTE: TRANSITION FROM TYPICAL SECTION NO. 2 TO TYPICAL SECTION NO. 3
-L2- STA. 28+27.39 TO -L2- STA. 29+50.00

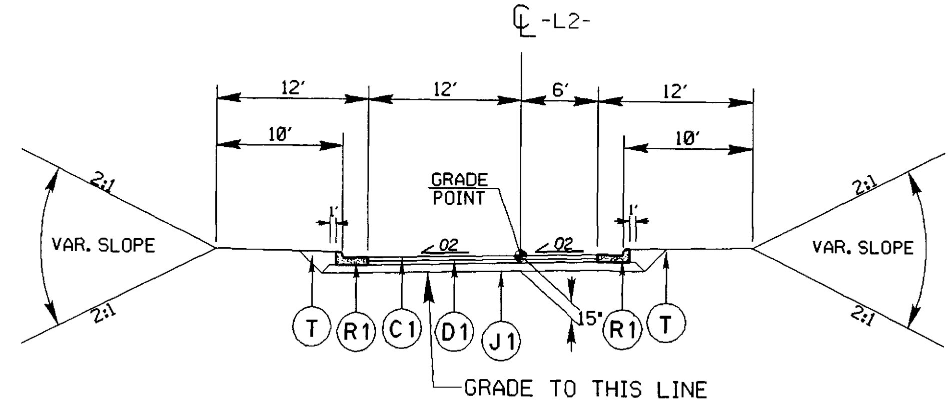
10-APR-2007 11:11
I:\projects\k-4703_rdy_typ.dgn
$$$$USERNAME$$$$

PROJECT REFERENCE NO.	SHEET NO.
K-4703	2-A
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

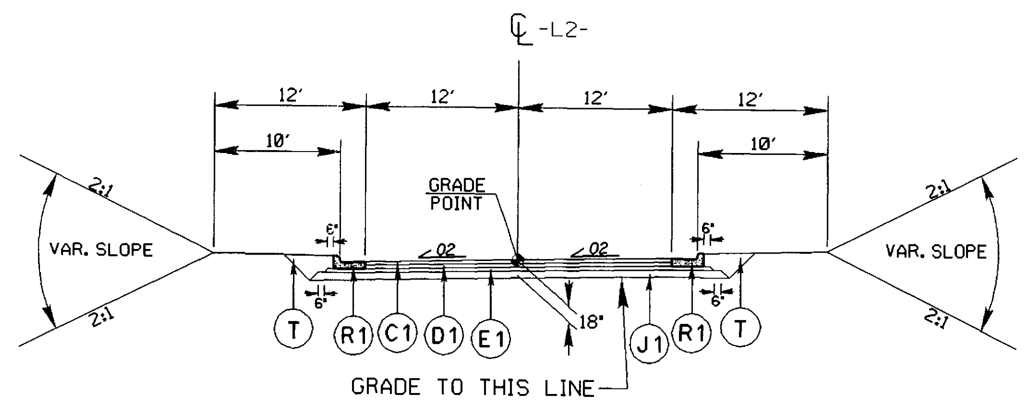
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PAVEMENT SCHEDULE	
C1	3" S9.5B
D1	4" I19.0B
E1	3" B25.0B
J1	8" ABC
J2	VAR. ABC
R1	2'-6" CONC. C&G
R2	CONC. SBG
T	EARTH MATERIAL



TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3
-L2- STA. 29+50.00 TO -L2- STA. 33+88.32
-L2- STA. 42+10.33 TO -L2- STA. 43+80.00



TYPICAL SECTION NO. 4

USE TYPICAL SECTION NO. 4
-L2- STA. 43+80.00 TO -L2- STA. 48+30.37

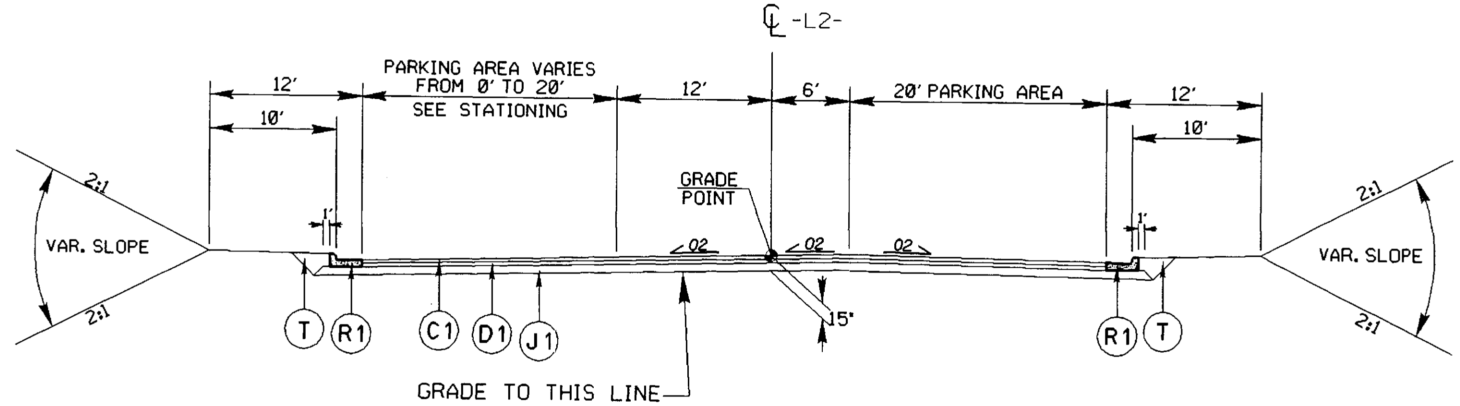
NOTE: TRANSITION FROM TYPICAL SECTION NO. 4 TO TYPICAL SECTION NO. 2
-L2- STA. 48+30.37 TO -L2- STA. 50+30.43

PROJECT REFERENCE NO.	SHEET NO.
K-4703	2-B
ROADWAY DESIGN ENGINEER	PAVEMENT DESIGN ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

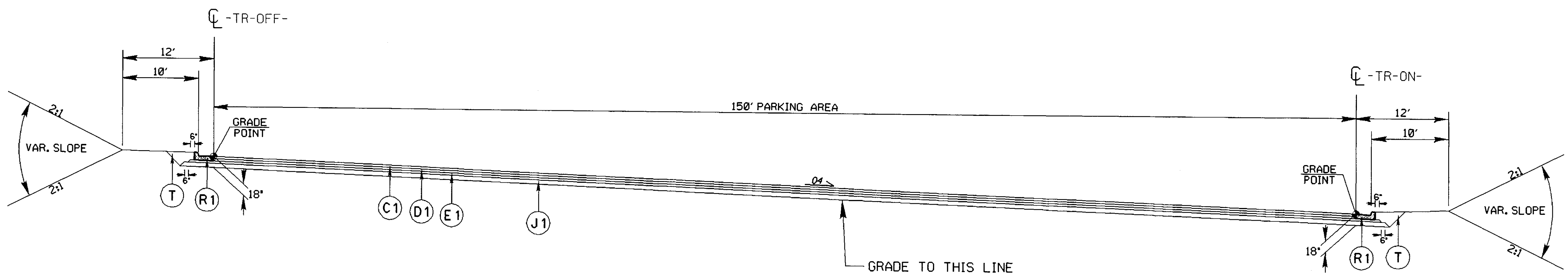
PAVEMENT SCHEDULE	
C1	3" S9.5B
D1	4" I19.0B
E1	3" B25.0B
J1	8" ABC
R1	2'-6" CONC. C&G
T	EARTH MATERIAL



TYPICAL SECTION NO. 5

USE TYPICAL SECTION NO. 5

-L2- STA. 33+88.32 TO -L2- STA. 36+13.87 (12' PARKING AREA ON LEFT)
-L2- STA. 36+13.87 TO -L2- STA. 39+67.92 (0' PARKING AREA ON LEFT)
-L2- STA. 39+67.92 TO -L2- STA. 42+10.33 (20' PARKING AREA ON LEFT)



TYPICAL SECTION NO. 6

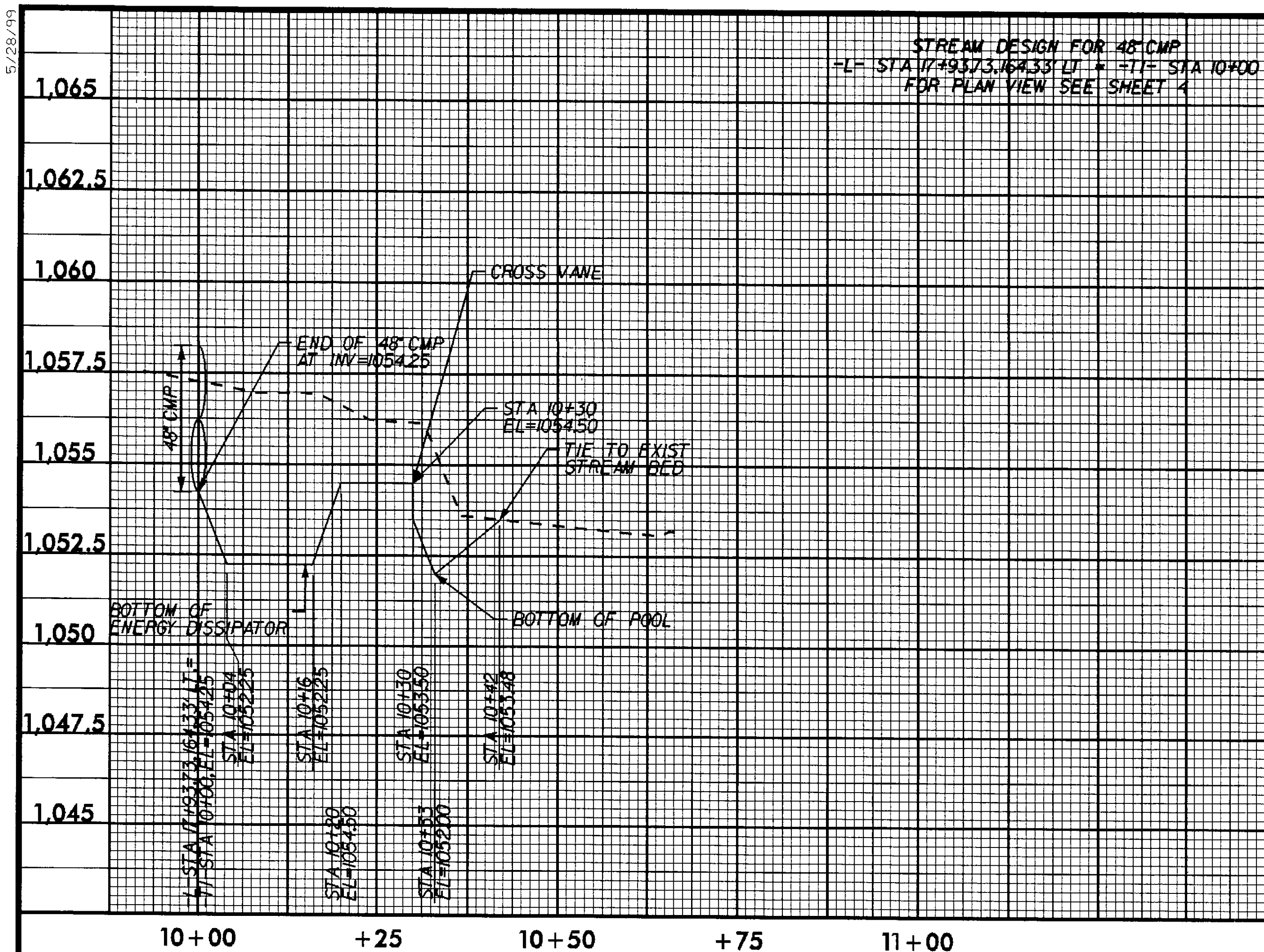
USE TYPICAL SECTION NO. 6

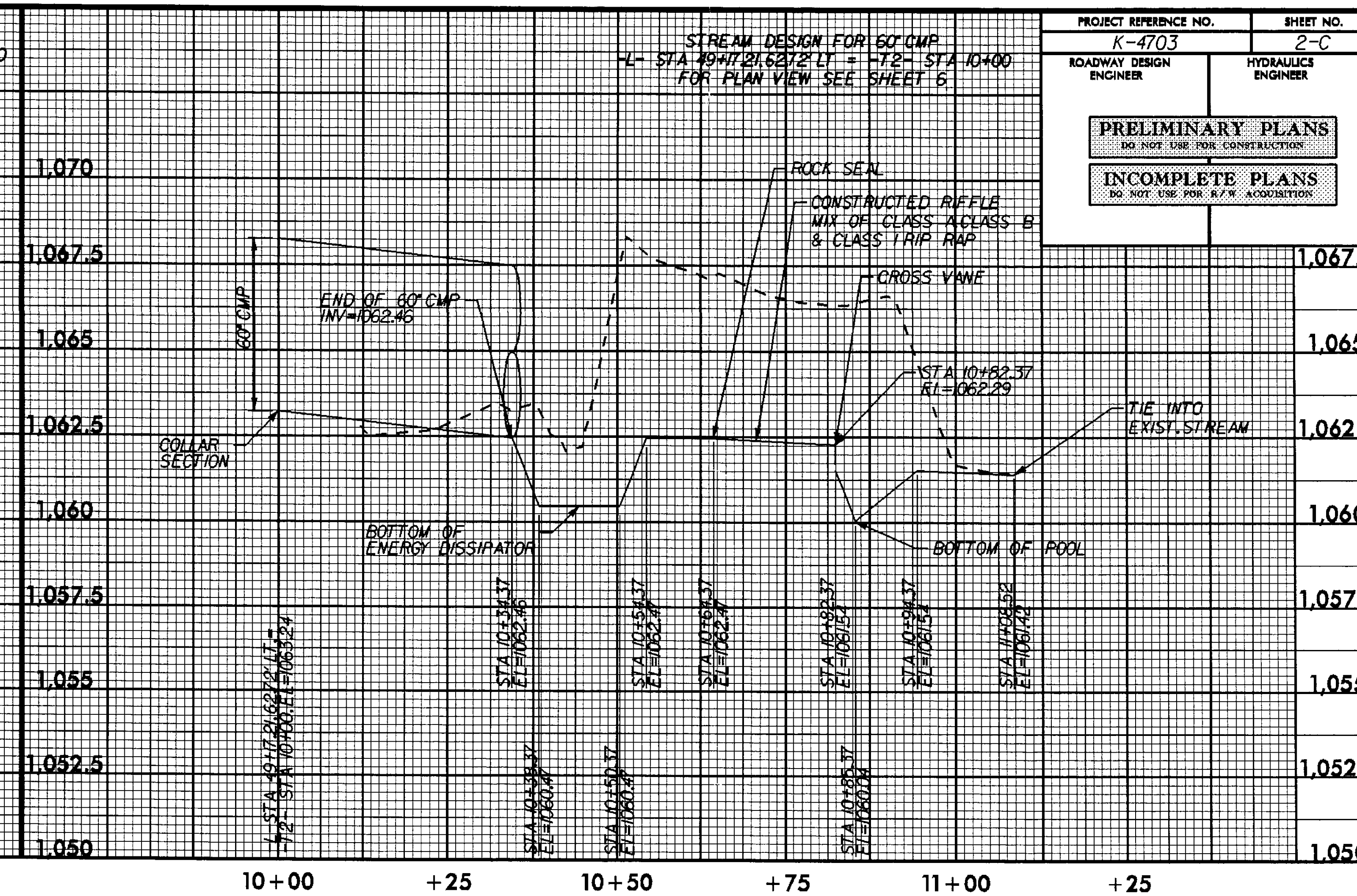
-TR-ON- STA. 13+29.35 TO -TR-ON- STA. 15+79.35

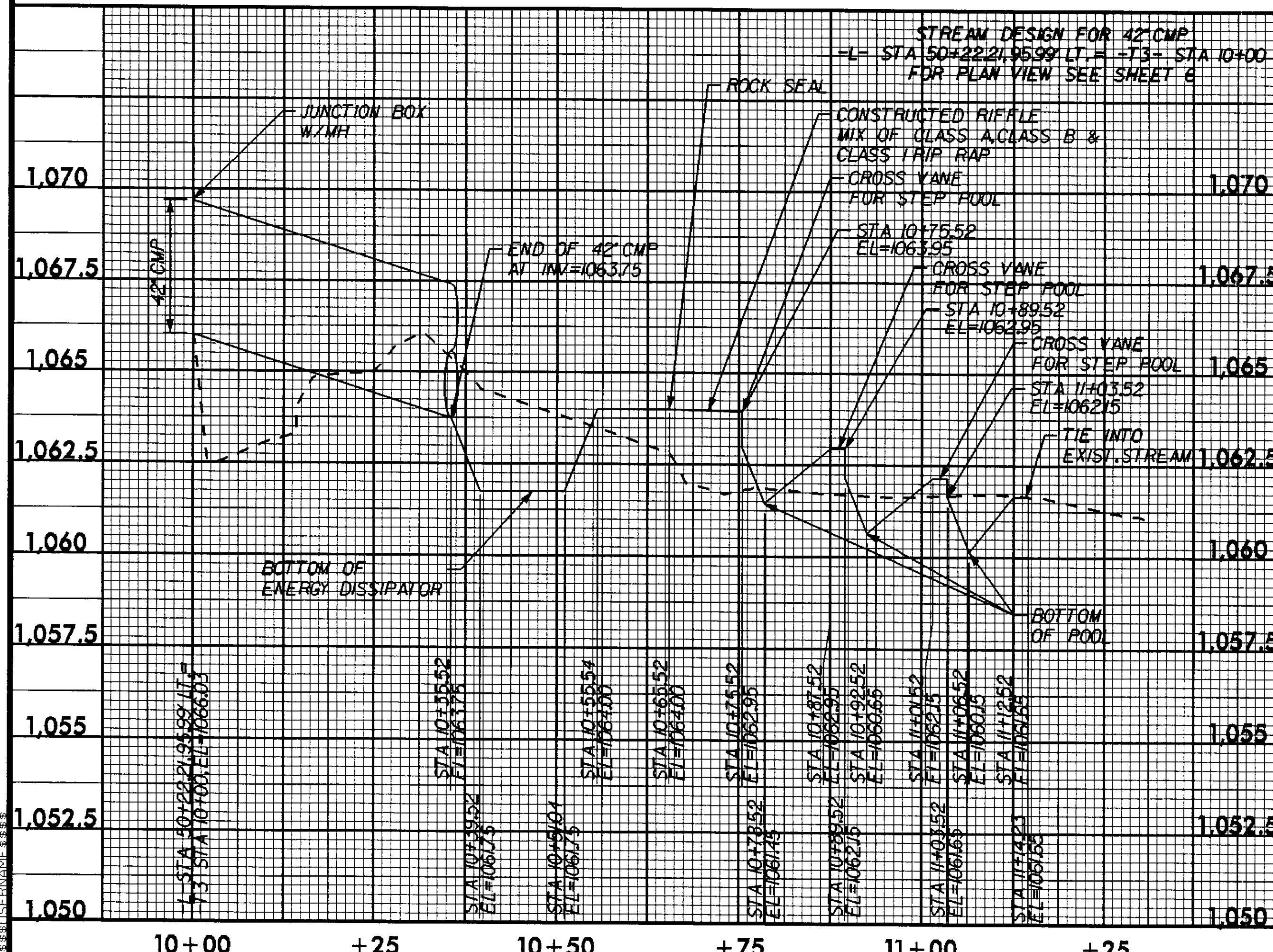
PROJECT REFERENCE NO.	SHEET NO.
K-4703	2-C
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION



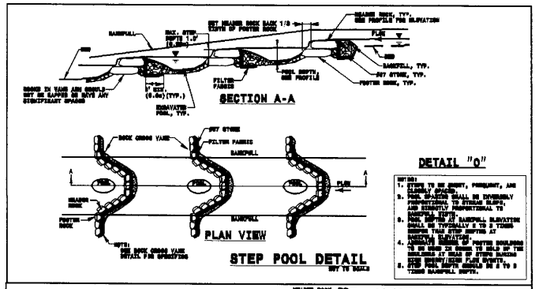


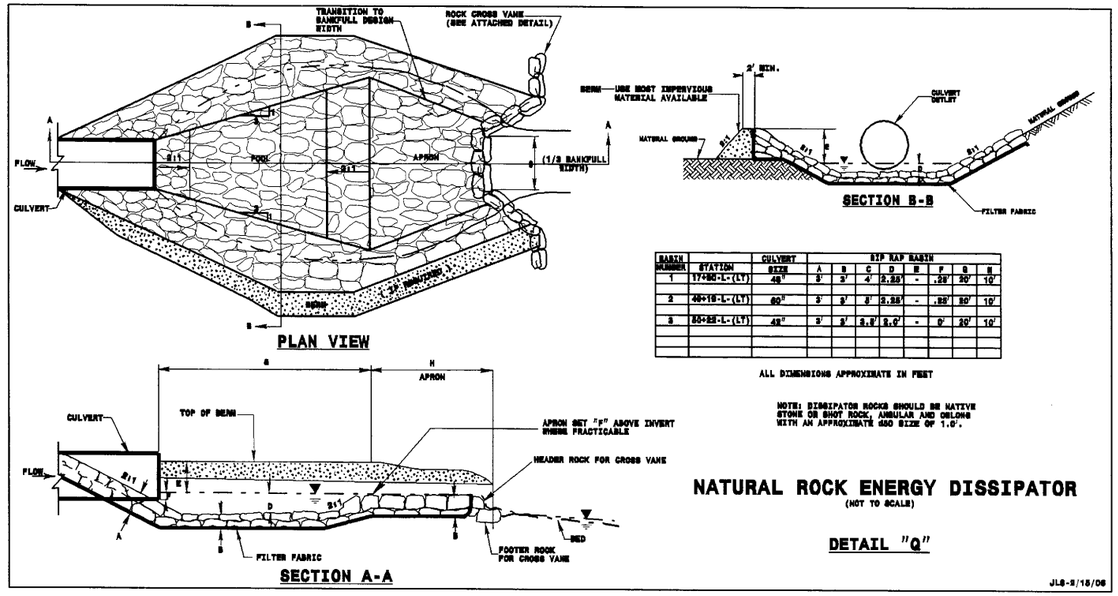


VERTICAL: 1"=25'
HORIZONTAL: 1"=12.5'

PROJECT REFERENCE NO.	SHEET NO.
K-4703	2-D
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

REVISIONS

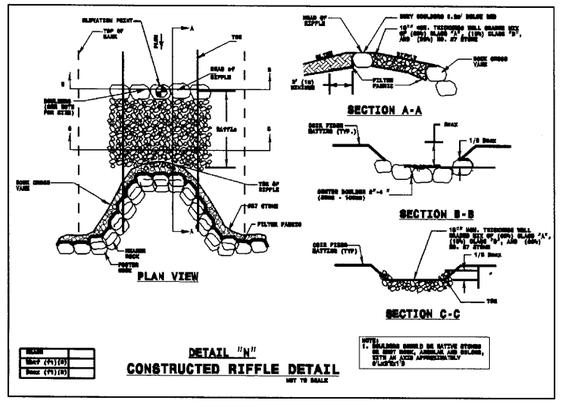


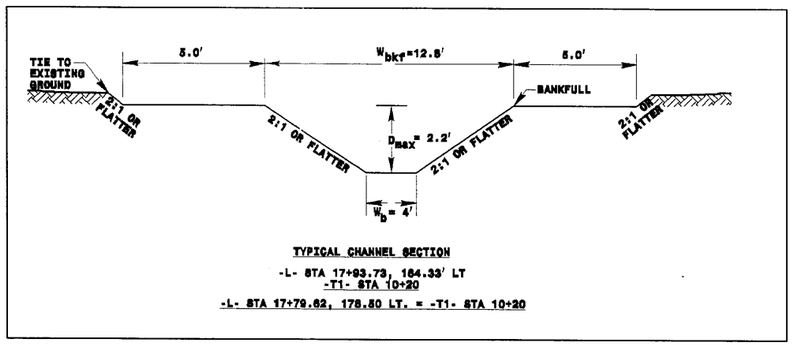


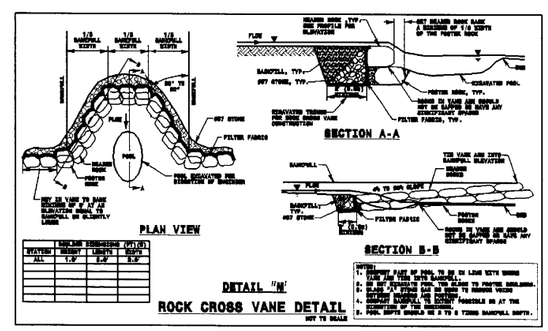
BASIN NUMBER	STATION	CULVERT SIZE	RIP RAP BASIN A	B	C	D	E	F	G	H
1	17+80-L-(LT)	48"	3'	3'	4'	2.58'	-	.28'	20'	10'
2	49+18-L-(LT)	60"	3'	3'	5'	2.58'	-	.82'	20'	10'
3	80+28-L-(LT)	42"	3'	3'	3.5'	2.0'	-	0'	20'	10'

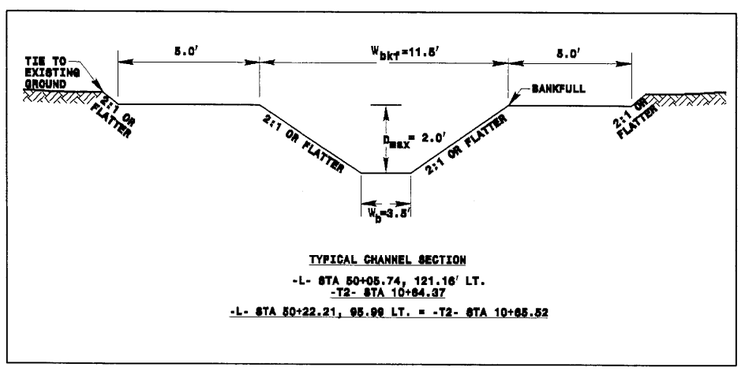
ALL DIMENSIONS APPROXIMATE IN FEET

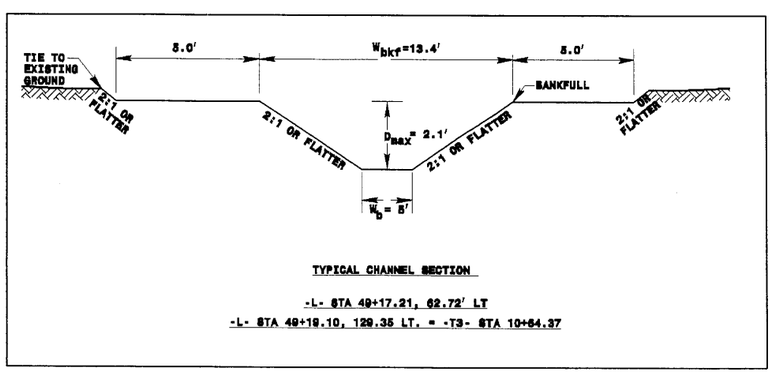
NOTE: DISSIPATOR ROCKS SHOULD BE NATIVE STONE OR SHOT ROCK, ANGULAR AND OBLONG WITH AN APPROXIMATE d50 SIZE OF 1.0'.





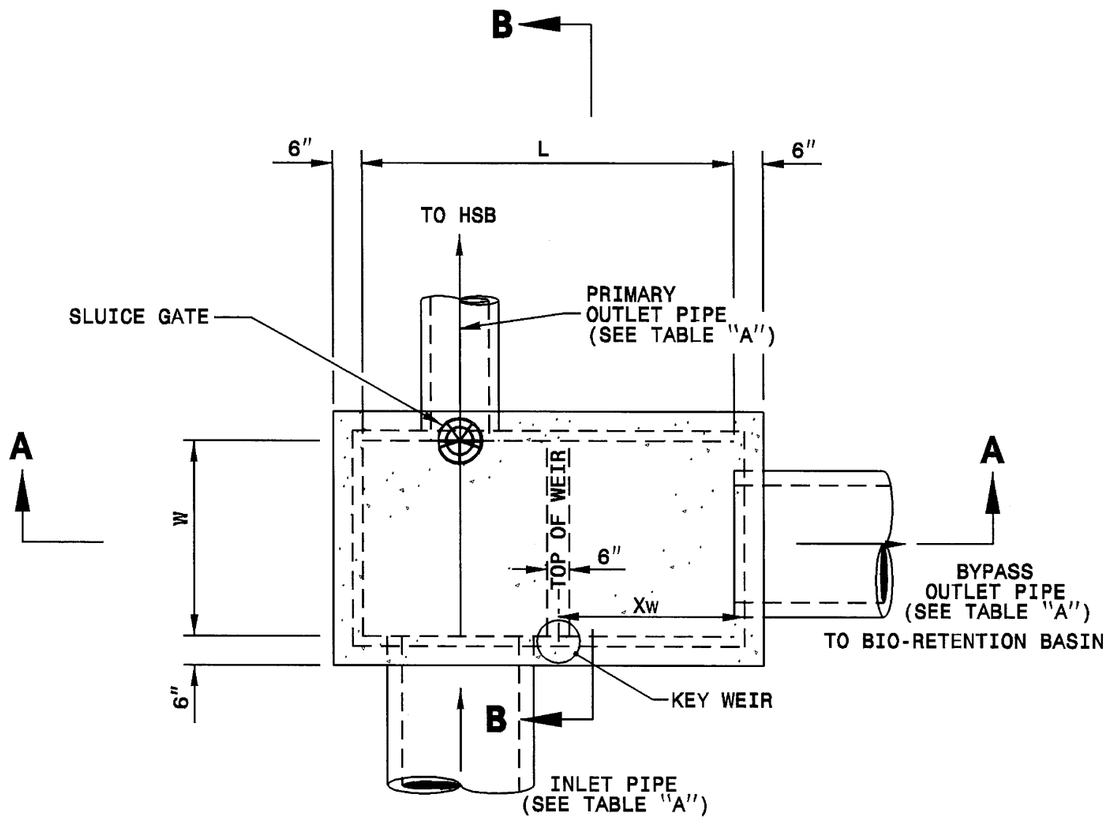




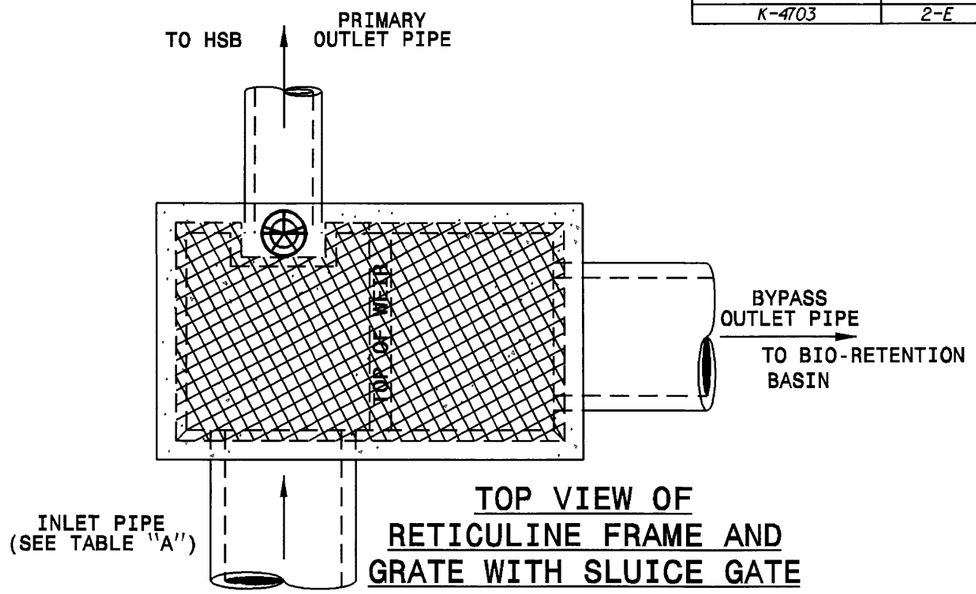


5/14/99

PROJECT REFERENCE NO.	SHEET NO.
K-4703	2-E



PLAN VIEW



TOP VIEW OF RETICULINE FRAME AND GRATE WITH SLUICE GATE

TABLE "A"

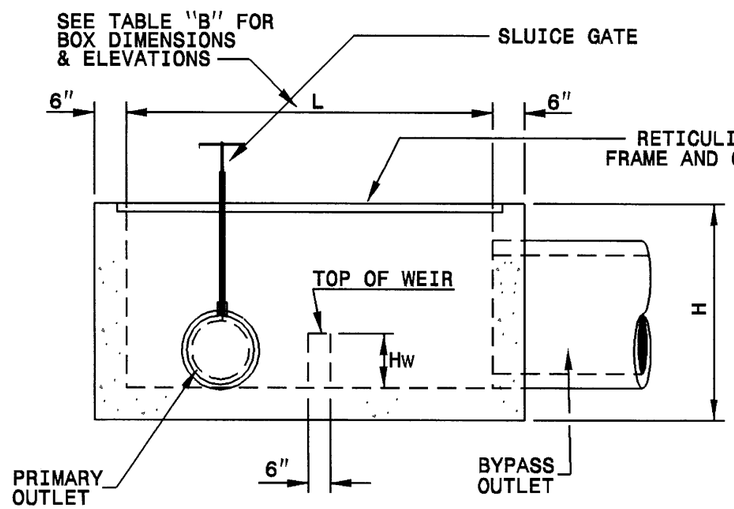
PIPE SIZE AND INVERT ELEVATION

BASIN	INLET PIPE DIA.	PRIMARY OUTLET PIPE DIA.	SECONDARY OUTLET PIPE DIA.	INLET PIPE INV. ELEV.	PRIMARY OUTLET PIPE INV. ELEV.	SECONDARY OUTLET PIPE INV.ELEV.	CONCRETE QTY. (YD.^{3})
Sta. 29+88-L2-	24"	18"	24"	1126.59'	1126.59'	1126.59'	3.2
(44.47 Lt)							

TABLE "B"

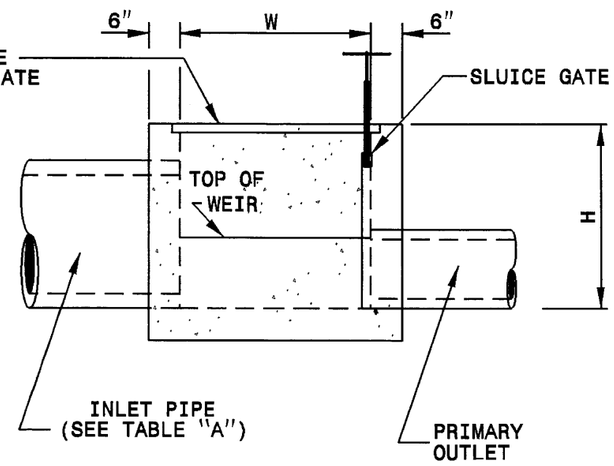
BOX AND WEIR SIZE & INVERT ELEVATION

BASIN	BOX DIMENSIONS			BOX INVERT ELEV.	TOP OF BOX INVERT ELEV.	WEIR HEIGHT (Hw)	WEIR LOCATION (Xw)
	L	W	H				
Sta. 29+88-L2-	8'	4'	5.21'	1126.59'	1131.80'	18"	4'
(44.47 Lt)							



NOTE: (SEE TABLE "B" FOR WEIR HEIGHT & LOCATION)

VIEW A-A



VIEW B-B

NOTES:

USE CLASS 'B' CONCRETE THROUGHOUT.

PLACE STEPS IN ALL STRUCTURES OVER 3' IN HEIGHT IN ACCORDANCE WITH STD.NO. 840.66. (12" ON CENTERS)

RETICULINE FRAMES AND GRATES TO BE APPROVED BY THE ENGINEER.

USE REBAR PLACEMENT AND QUANTITIES AS SHOWN BY THE ENGINEER.

USE REBAR PLACEMENT AS SHOWN IN STD.NO. 840.31.

PROJECT SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

SPLITTER BOX DETAILS

ORIGINAL BY:	TSpell	DATE:	Jan.16,2006
MODIFIED BY:	jwdunnehoo	DATE:	2-19-07
CHECKED BY:		DATE:	
FILE SPEC.:	r:\hydraulics\k4703_splitter box.dgn		

10-APR-2007 11:20
r:\hydraulics\k4703_r-dy_2e.dgn
$$$$USERNAME$$$$

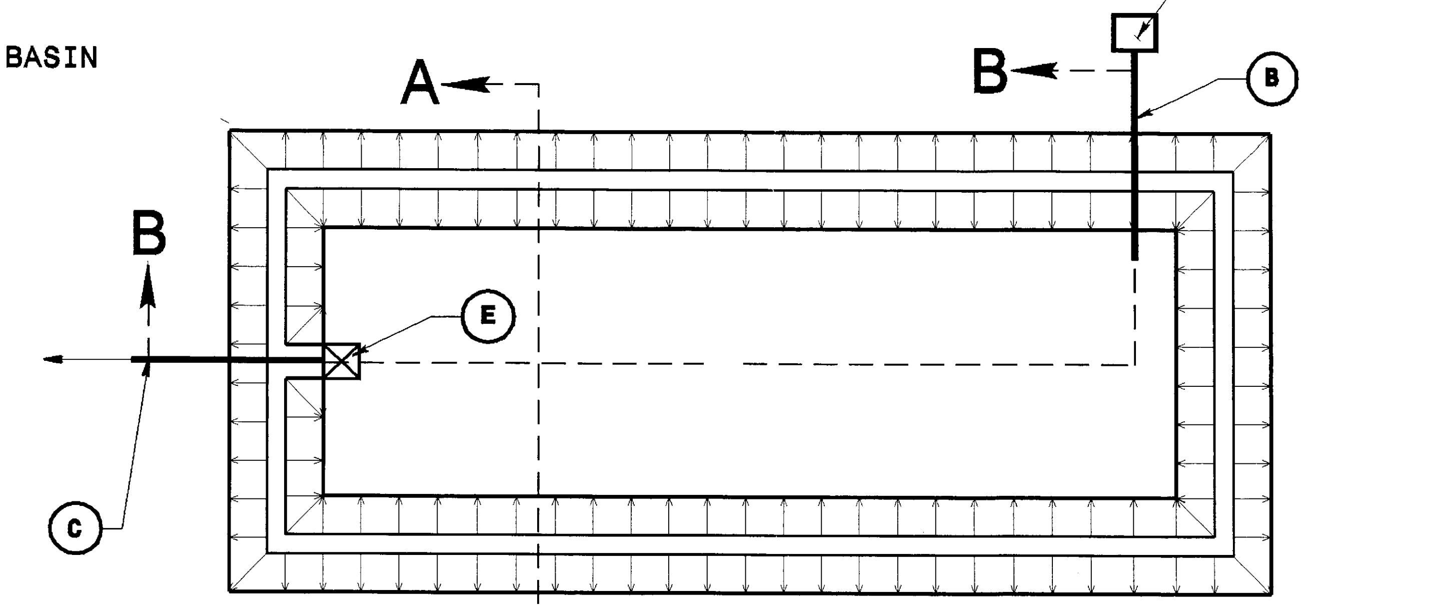
PROJECT REFERENCE NO.	SHEET NO.
K-4703	2-F

HAZARDOUS SPILL BASIN DETAIL

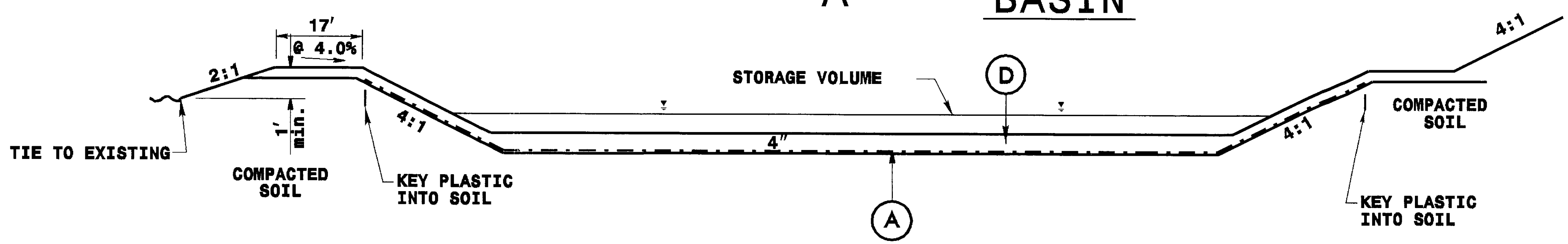
Sta. 30+30-L2-(93′Lt)

MATERIALS	
(A)	10MM IMPERVIOUS PLASTIC
(B)	18″ RCP INLET PIPE
(C)	24″ RCP OUTFALL PIPE
(D)	TOP SOIL AND BERMUDA SOD
(E)	OUTLET CONTROL STRUCTURE (SEE SPECIAL DETAIL)
(F)	CLASS B RIP RAP

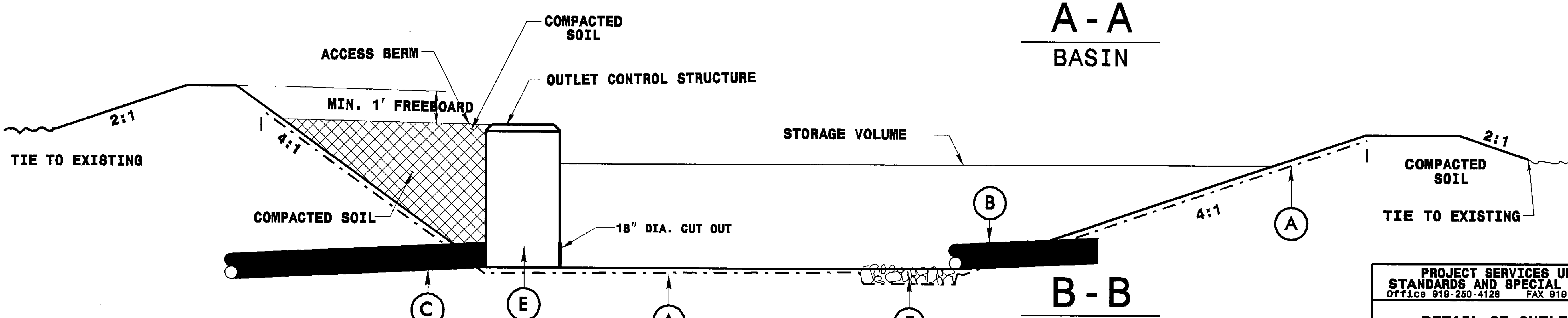
NOTE:
SEE PLAN SHEET #5 FOR SHAPE AND SIZE OF BASIN
SURFACE AREA AT ELEV. 1126 = 1784 SF.
SURFACE AREA AT ELEV. 1129 = 4115 SF.



BASIN



A-A
BASIN



B-B
BASIN

TYPICAL SECTIONS

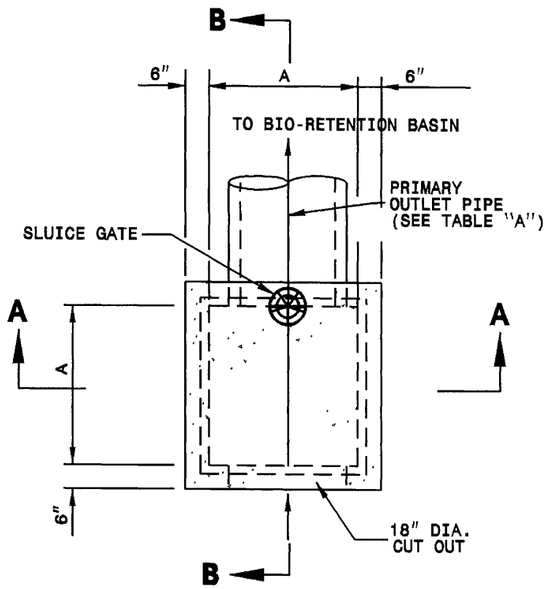
*NOT TO SCALE

PROJECT SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

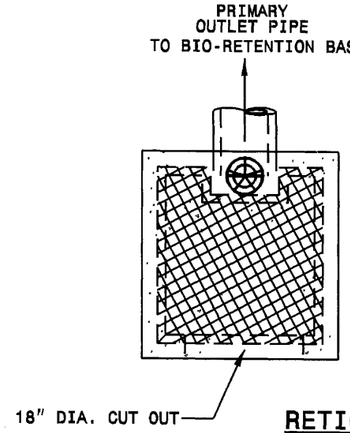
DETAIL OF OUTLET HAZARDOUS SPILL BASIN

ORIGINAL BY: ______ DATE: ______
MODIFIED BY: jwdunnehoo DATE: 2-19-07
CHECKED BY: ______ DATE: ______
FILE SPEC.: k4703_hazardous spill retention basin.dgn

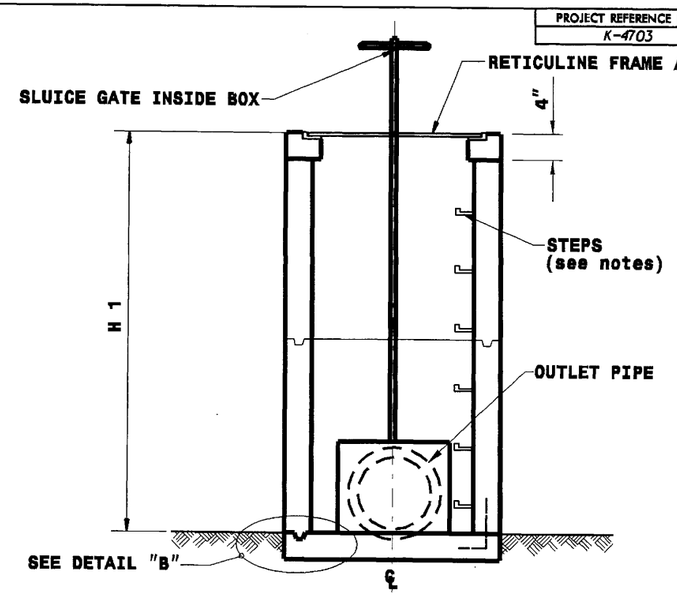
PROJECT REFERENCE NO.	SHEET NO.
K-4703	2-G



PLAN VIEW



TOP VIEW OF RETICULINE FRAME AND GRATE WITH SLUICE GATE



VIEW A-A

TABLE "A"

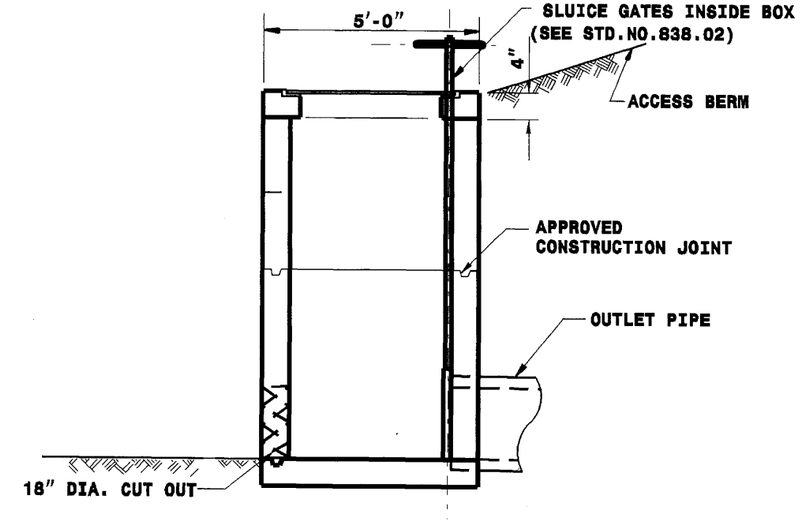
MINIMUM DIMENSIONS FOR OUTLET CONTROL STRUCTURE

BASIN	OUTLET PIPE D	OUTLET PIPE INVERT	BOX HEIGHT H1	TOP OF GRATE ELEV.	18" CUT OUT INVERT		POOL BASIN ELEV.
Sta. 30+30-L2- (93'Lt)	18"	1126.0	3.0	1129.0	1126.0		1126.0

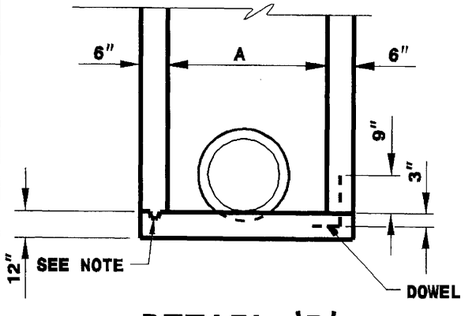
PIPE D	"A"	BARS-X		BARS-Y		"F"	TOTAL CONCRETE QUANTITIES
		QTY.	LENGTH	QTY.	LENGTH		
18"	4'-0"	6	6'-5"	6	6'-5"	5'-0"	1.9 CU.YDS.

GENERAL NOTES:

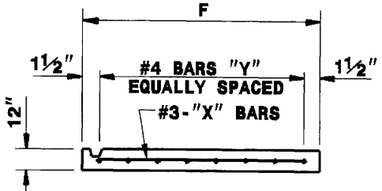
* CHANGES IN ELEVATIONS MUST BE APPROVED BY THE ENGINEER.
* CLASS 'B' CONCRETE TO BE USED THROUGHOUT. PRECAST CONCRETE STRUCTURES TO BE SUBMITTED FOR APPROVAL.
* OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2 INCH KEYWAY, OR #4 BAR DOWELS AT 12 INCH CENTERS, AS DIRECTED BY THE ENGINEER.
* FORMS ARE TO BE USED FOR THE CONSTRUCTION OF THE BOTTOM SLAB.
* IF REINFORCED CONCRETE PIPE IS SET IN BASE SLAB OF BOX, ADD TO BASE AS SHOWN ON STANDARD 840.00.
* ALL DRAWDOWN STRUCTURES OVER 3 FEET IN DEPTH TO BE PROVIDED WITH STEPS 12 INCH ON CENTERS. STEPS SHALL BE INSTALLED IN ACCORDANCE WITH STANDARD 840.66.
* FOR 8'-0" IN HEIGHT OR LESS USE 8 INCH WALLS AND BOTTOM SLAB. OVER 8'-0" IN HEIGHT USE 12" WALLS TO 6'-0" FROM TOP OF WALL AND USE 8 INCH THICK WALLS FOR THE REMAINING 6'-0". ADJUST QUANTITIES ACCORDINGLY
* RETICULINE FRAME AND GRATE TO BE APPROVED BY THE ENGINEER..



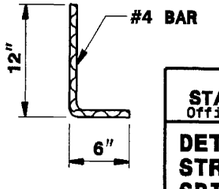
VIEW B-B



DETAIL 'B'



BOTTOM SLAB



DOWEL

PROJECT SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

DETAIL OF OUTLET CONTROL STRUCTURE FOR HAZARDOUS SPILL BASIN

ORIGINAL BY: _____ DATE: _____
MODIFIED BY: jwdunnehoo DATE: 2-19-07
CHECKED BY: _____ DATE: _____
FILE SPEC.: k4703_hazardous spill retention basin.dgn

10-APR-2007 11:20
C:\projects\k4703_rdy_2f_g.dgn
$$$$USERNAME$$$$

5/28/99

PROJECT REFERENCE NO.	SHEET NO.
K-4703	2-H

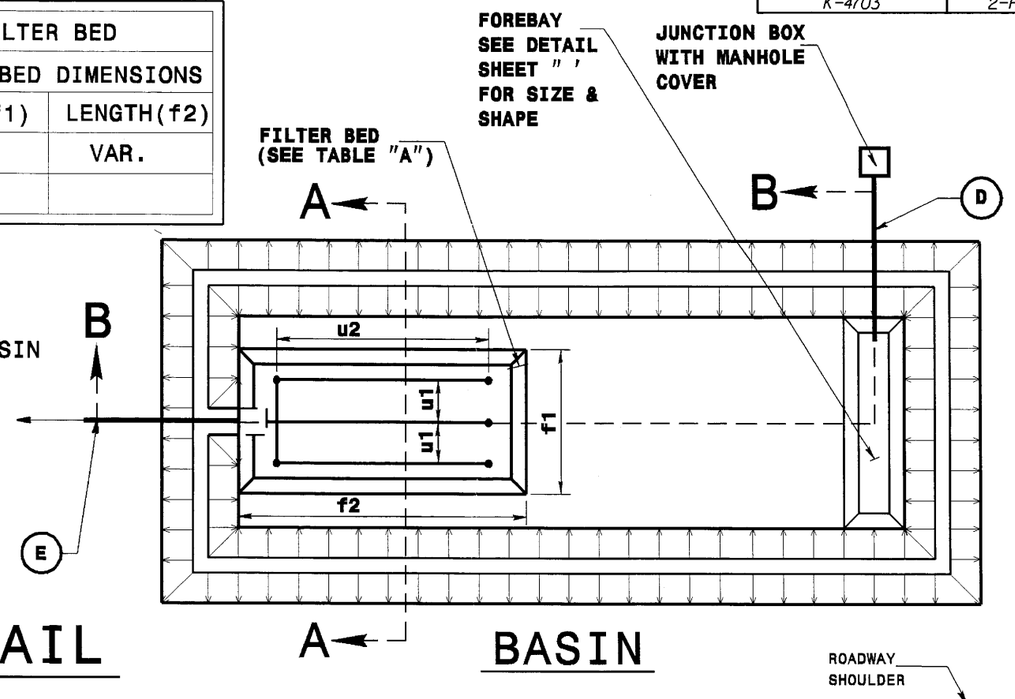
MATERIALS

A	200 ST GEOTEXTILE FABRIC
B	POLYPROPYLENE WOVEN MONOFILAMENT GEOTEXTILE FABRIC
C	
D	24" RCP INLET PIPE
E	24" RCP OUTFALL PIPE
F	6" PERFORATED HDPE D/W W/ FILTER SOCK
G	6" HDPE N12 D/W SOLID CLEANOUT PIPE
H	PRECAST DI BOX (SEE BOX SUMMARY)
I	ENGINEERED SOIL (SAND 70%, EXCAVATED MATERIAL 30%)
J	12 MONTH AGED HARDWOOD MULCH
K	CLASS B RIP RAP
L	WASH STONE NO. 57 AS PER NCDOT SPEC.

DIMENSIONS FOR UNDERDRAIN PIPE & FILTER BED				
BASIN	UNDERDRAIN DIMENSIONS		FILTER BED DIMENSIONS	
	SPACING(u1)	LENGTH(u2)	WIDTH(f1)	LENGTH(f2)
WESTBOUND	24 FT.	VAR.	VAR.	VAR.

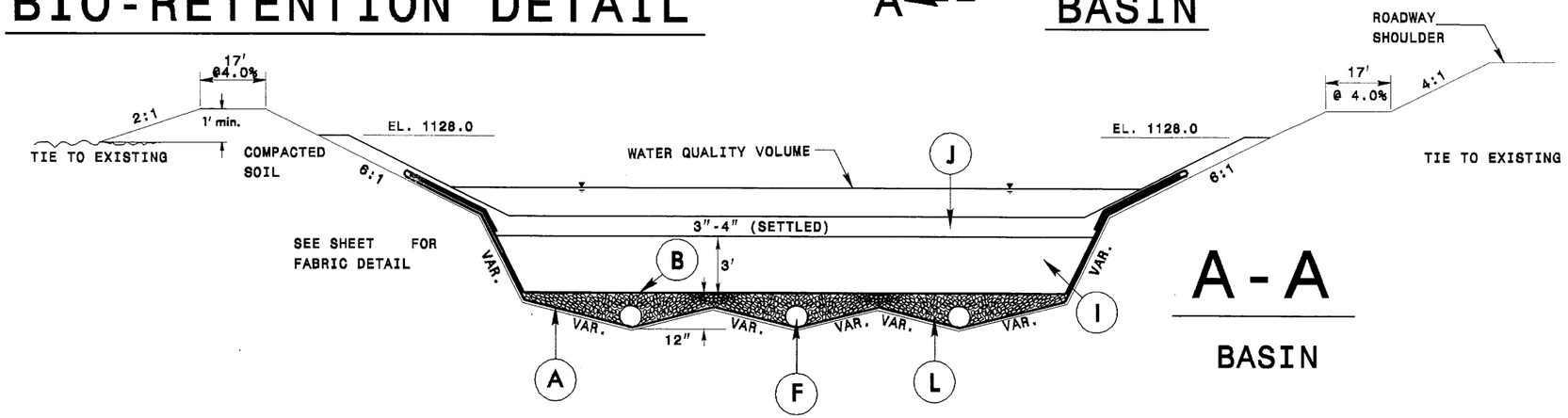
TABLE"A"

NOTE:
SEE PLAN SHEET #5 FOR SHAPE AND SIZE OF BASIN AND LENGTH OF UNDERDRAIN PIPES.
ENGINEERED SOIL SURFACE AREA AT ELEV. 1125.5 = 12094 SF.



BIO-RETENTION DETAIL

BASIN



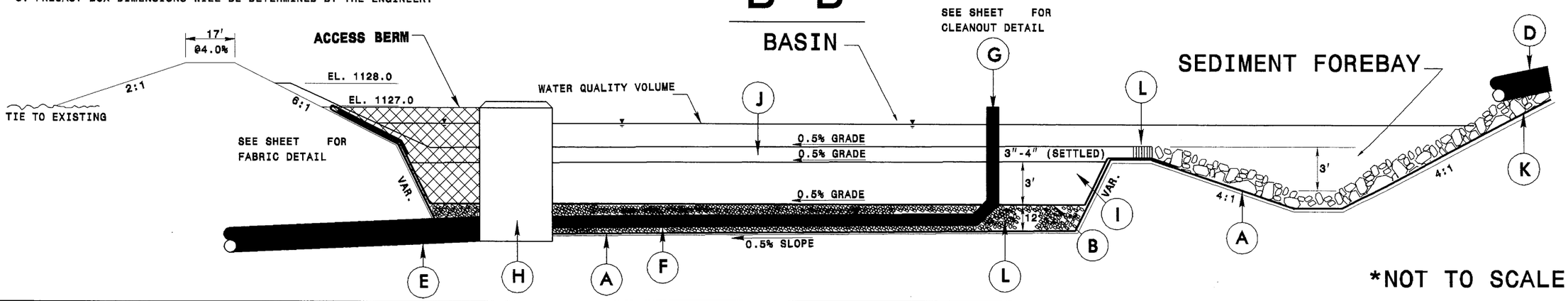
A-A

BASIN

NOTES
1. ENTIRE BASIN AND SEDIMENT FOREBAY WILL BE LINED WITH FILTER FABRIC (TYPE 200ST).
2. BASIN AND FOREBAY DIMENSIONS WILL VARY (AS DIRECTED BY THE ENGINEER).
3. PRECAST BOX DIMENSIONS WILL BE DETERMINED BY THE ENGINEER.

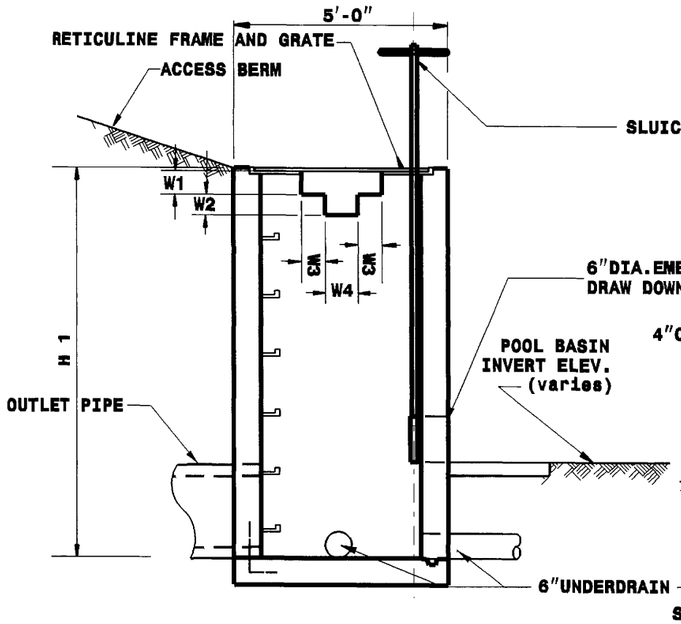
B-B

BASIN

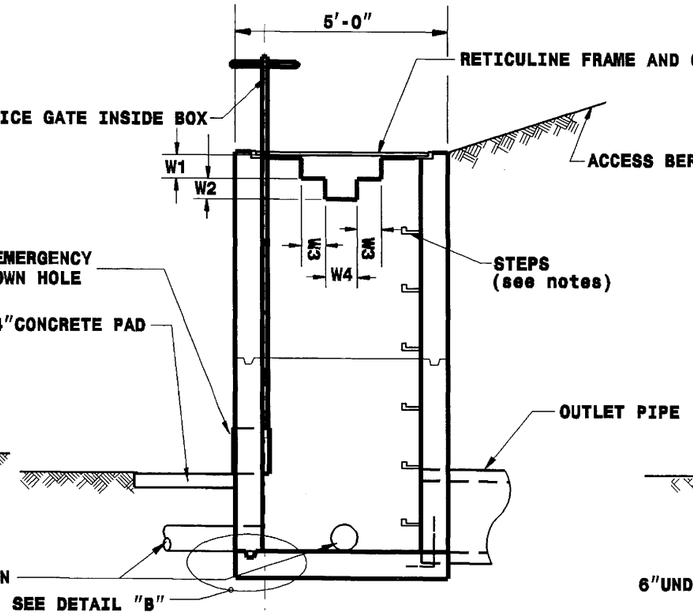


*NOT TO SCALE

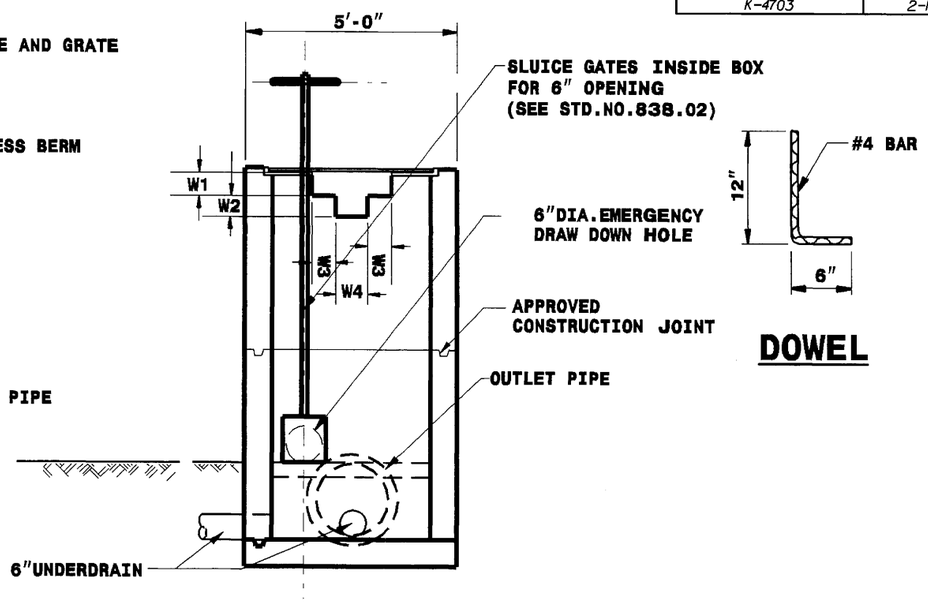
PROJECT REFERENCE NO.	SHEET NO.
K-4703	2-1



STRUCTURE SIDE 1



STRUCTURE SIDE 2



STRUCTURE FRONT

DOWEL

TABLE "A"

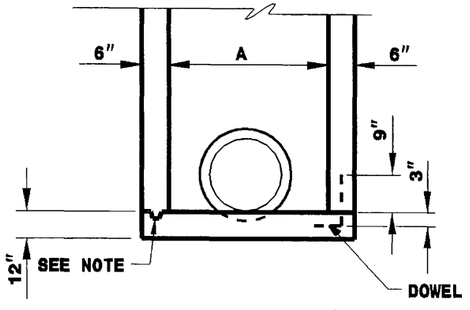
MINIMUM DIMENSIONS FOR OUTLET CONTROL STRUCTURE

BASIN	PIPE D	OUTLET PIPE INVERT	BOX HEIGHT H1	TOP OF GRATE ELEV.	UNDER DRAIN INVERT	ORFICE PLATE OPENING INVERT	POOL BASIN ELEV. @ PAD ELEV.	WEIR DIMENSIONS					
								W1	W2	W3	W4	W1 EL	W2 EL
Sta. 33+18-L2- (174 Lt)	24"	1120.27'	6.56'	1126.83'	1120.52'		1124.61'	0.50'	0.50'	0.90'	1.20'	1125.5'	1126.0'

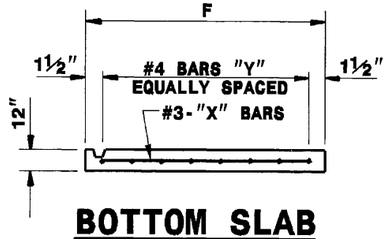
PIPE D	"A"	BARS-X		BARS-Y		"F"	TOTAL CONCRETE QUANTITIES
		QTY.	LENGTH	QTY.	LENGTH		
24"	4'-0"	6	6'-5"	6	6'-5"	5'-0"	4.4 CU.YDS.

GENERAL NOTES:

* CHANGES IN ELEVATIONS MUST BE APPROVED BY THE ENGINEER.
* CLASS 'B' CONCRETE TO BE USED THROUGHOUT. PRECAST CONCRETE STRUCTURES TO BE SUBMITTED FOR APPROVAL.
* OPTIONAL CONSTRUCTION - MONOLITHIC POUR, 2 INCH KEYWAY, OR #4 BAR DOWELS AT 12 INCH CENTERS, AS DIRECTED BY THE ENGINEER.
* FORMS ARE TO BE USED FOR THE CONSTRUCTION OF THE BOTTOM SLAB.
* IF REINFORCED CONCRETE PIPE IS SET IN BASE SLAB OF BOX, ADD TO BASE AS SHOWN ON STANDARD 840.00.
* ALL DRAWDOWN STRUCTURES OVER 3 FEET IN DEPTH TO BE PROVIDED WITH STEPS 12 INCH ON CENTERS. STEPS SHALL BE INSTALLED IN ACCORDANCE WITH STANDARD 840.66.
* FOR 8'-0" IN HEIGHT OR LESS USE 8 INCH WALLS AND BOTTOM SLAB. OVER 8'-0" IN HEIGHT USE 12" WALLS TO 6'-0" FROM TOP OF WALL AND USE 8 INCH THICK WALLS FOR THE REMAINING 6'-0". ADJUST QUANTITIES ACCORDINGLY
* RETICULINE FRAME AND GRATE TO BE APPROVED BY THE ENGINEER..



DETAIL 'B'



BOTTOM SLAB

PROJECT SERVICES UNIT
STANDARDS AND SPECIAL DESIGN
Office 919-250-4128 FAX 919-250-4119

DETAIL OF OUTLET CONTROL STRUCTURE FOR BIO-RETENTION BASIN

ORIGINAL BY:		DATE:	
MODIFIED BY:	jwdunnehoo	DATE:	2-19-07
CHECKED BY:		DATE:	
FILE SPEC.:	c:\hydraulics\k4703_bio-retention_typ.dgn		

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c:\projects\PDS1\k4703_rdy_2h_1.dgn
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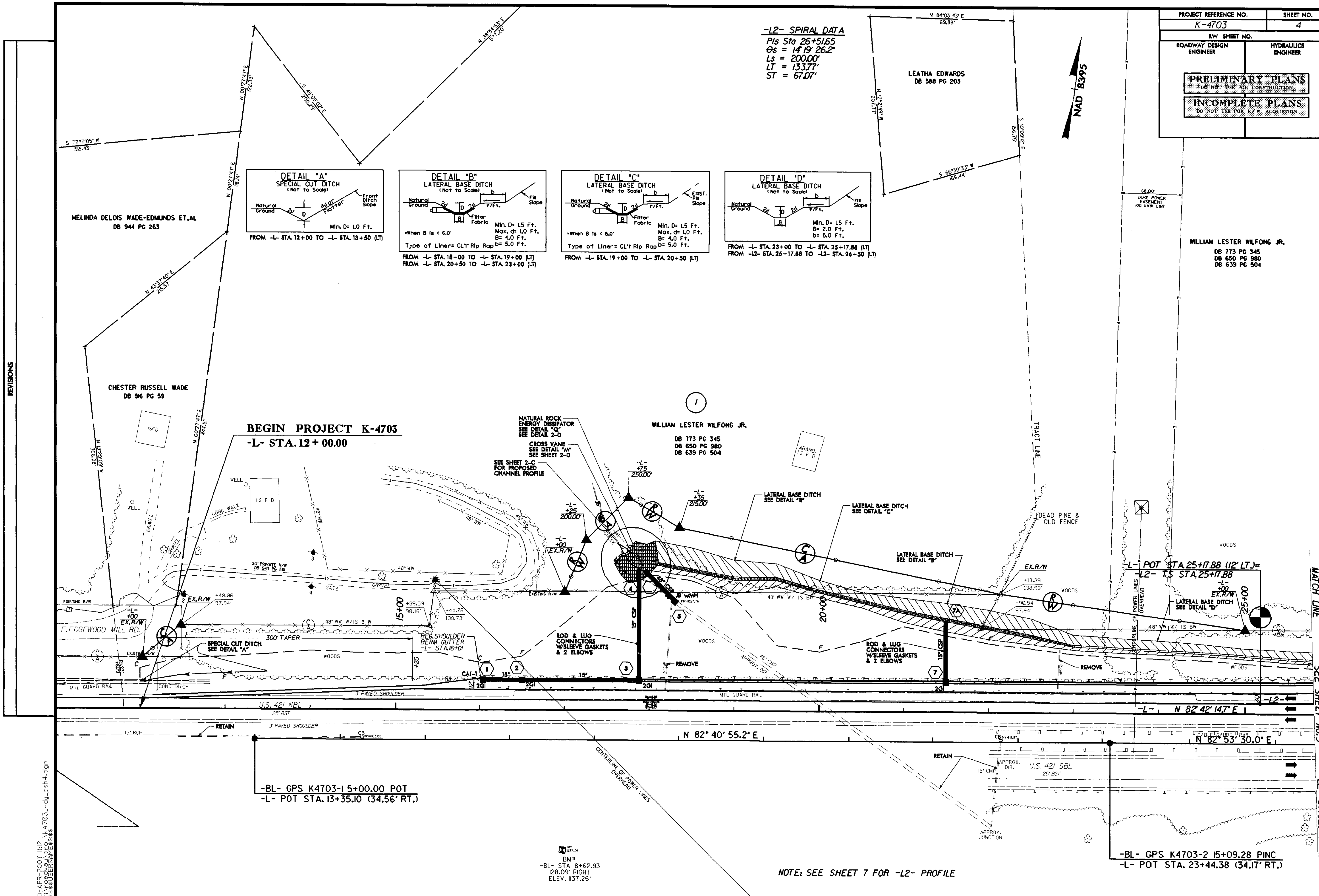
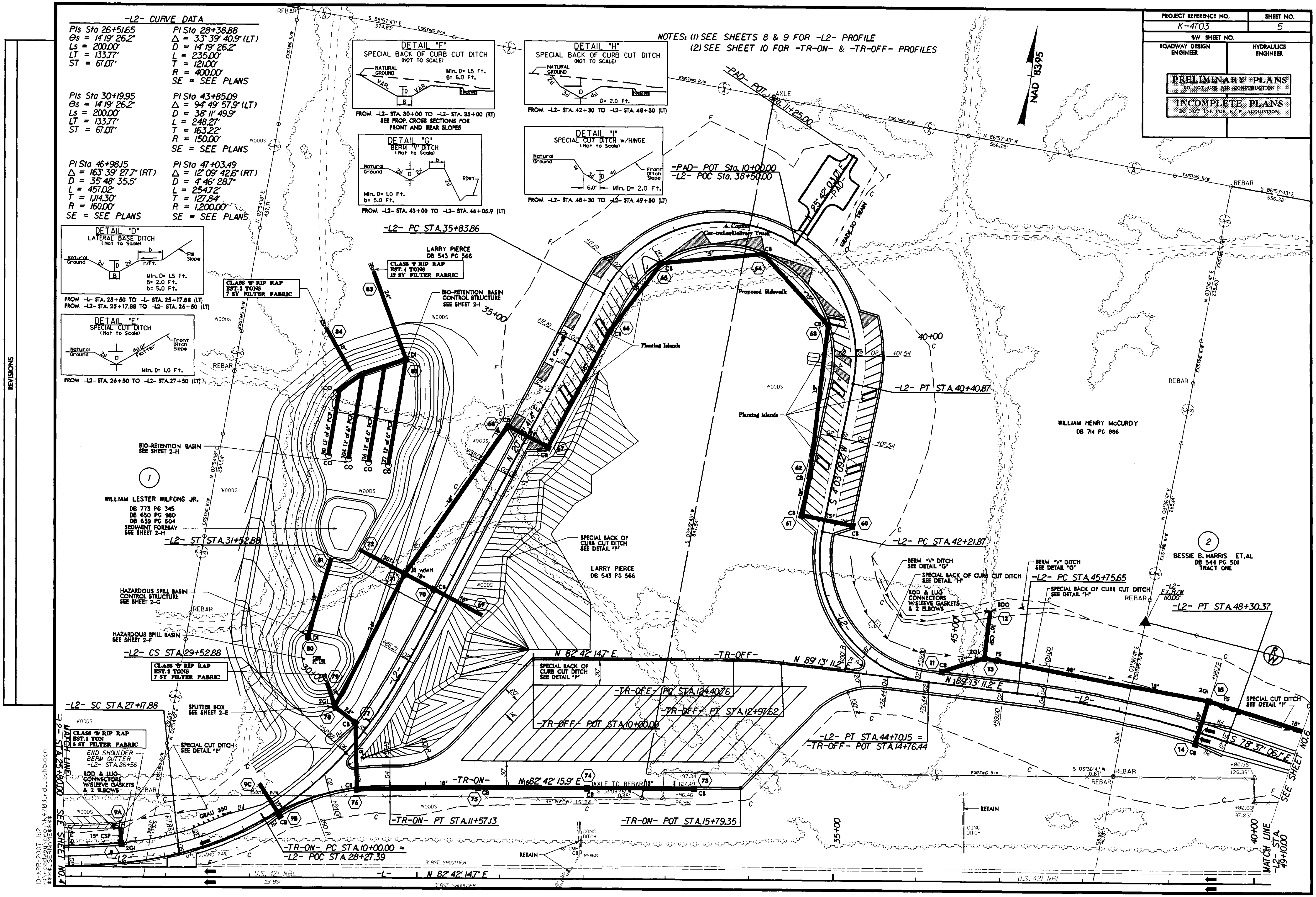


PROJECT REFERENCE NO. K-4703
SHEET NO. 4
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
-L2- SPIRAL DATA
PIs Sta 26+51.65
Θs = 14°19' 26.2"
Ls = 200.00'
LT = 133.77'
ST = 67.07'
NAD 83/95
LEATHA EDWARDS
DB 588 PG 203
MELINDA DELOIS WADE-EDMUNDS ET.AL
DB 944 PG 263
WILLIAM LESTER WILFONG JR.
DB 773 PG 345
DB 650 PG 980
DB 639 PG 504
CHESTER RUSSELL WADE
DB 916 PG 59
DETAIL "A"
SPECIAL CUT DITCH
(Not to Scale)
Min. D= 1.0 Ft.
FROM -L- STA. 12+00 TO -L- STA. 13+50 (LT)
DETAIL "B"
LATERAL BASE DITCH
(Not to Scale)
Min. D= 1.5 Ft.
Max. d= 1.0 Ft.
B= 4.0 Ft.
b= 5.0 Ft.
*When B is < 6.0'
Type of Liner= CL"I" Rip Rap
FROM -L- STA. 18+00 TO -L- STA. 19+00 (LT)
FROM -L- STA. 20+50 TO -L- STA. 23+00 (LT)
DETAIL "C"
LATERAL BASE DITCH
(Not to Scale)
Min. D= 1.5 Ft.
Max. d= 1.0 Ft.
B= 4.0 Ft.
b= 5.0 Ft.
*When B is < 6.0'
Type of Liner= CL"I" Rip Rap
FROM -L- STA. 19+00 TO -L- STA. 20+50 (LT)
DETAIL "D"
LATERAL BASE DITCH
(Not to Scale)
Min. D= 1.5 Ft.
B= 2.0 Ft.
b= 5.0 Ft.
FROM -L- STA. 23+00 TO -L- STA. 25+17.88 (LT)
FROM -L2- STA. 25+17.88 TO -L2- STA. 26+50 (LT)
BEGIN PROJECT K-4703
-L- STA. 12 + 00.00
NATURAL ROCK ENERGY DISSIPATOR
SEE DETAIL "Q"
SEE DETAIL 2-D
CROSS VANE
SEE DETAIL "M"
SEE SHEET 2-D
SEE SHEET 2-C FOR PROPOSED CHANNEL PROFILE
LATERAL BASE DITCH SEE DETAIL "B"
LATERAL BASE DITCH SEE DETAIL "C"
LATERAL BASE DITCH SEE DETAIL "D"
DEAD PINE & OLD FENCE
TRACT LINE
DUKE POWER EASEMENT 100 KVW LINE
-L- POT STA. 25+17.88 (12' LT.)=
-L2- T.S STA. 25+17.88
MATCH LINE
SEE SHEET NO. 5
-L2- STA. 25+80.00
E. EDGEWOOD MILL RD.
SPECIAL CUT DITCH SEE DETAIL "A"
300' TAPER
BEG. SHOULDER BERM GUTTER -L- STA. 16+01
ROD & LUG CONNECTORS W/SLEEVE GASKETS & 2 ELBOWS
U.S. 421 NBL
U.S. 421 SBL
MTL GUARD RAIL
CONC DITCH
3' PAVED SHOULDER
N 82° 40' 55.2" E
N 82° 42' 14.7" E
N 82° 53' 30.0" E
-BL- GPS K4703-1 5+00.00 POT
-L- POT STA. 13+35.10 (34.56' RT.)
-BL- GPS K4703-2 15+09.28 PINC
-L- POT STA. 23+44.38 (34.17' RT.)
BM#1
-BL- STA 8+62.93
128.09' RIGHT
ELEV. 1137.26'
CENTERLINE OF POWER LINES OVERHEAD
NOTE: SEE SHEET 7 FOR -L2- PROFILE
REVISIONS



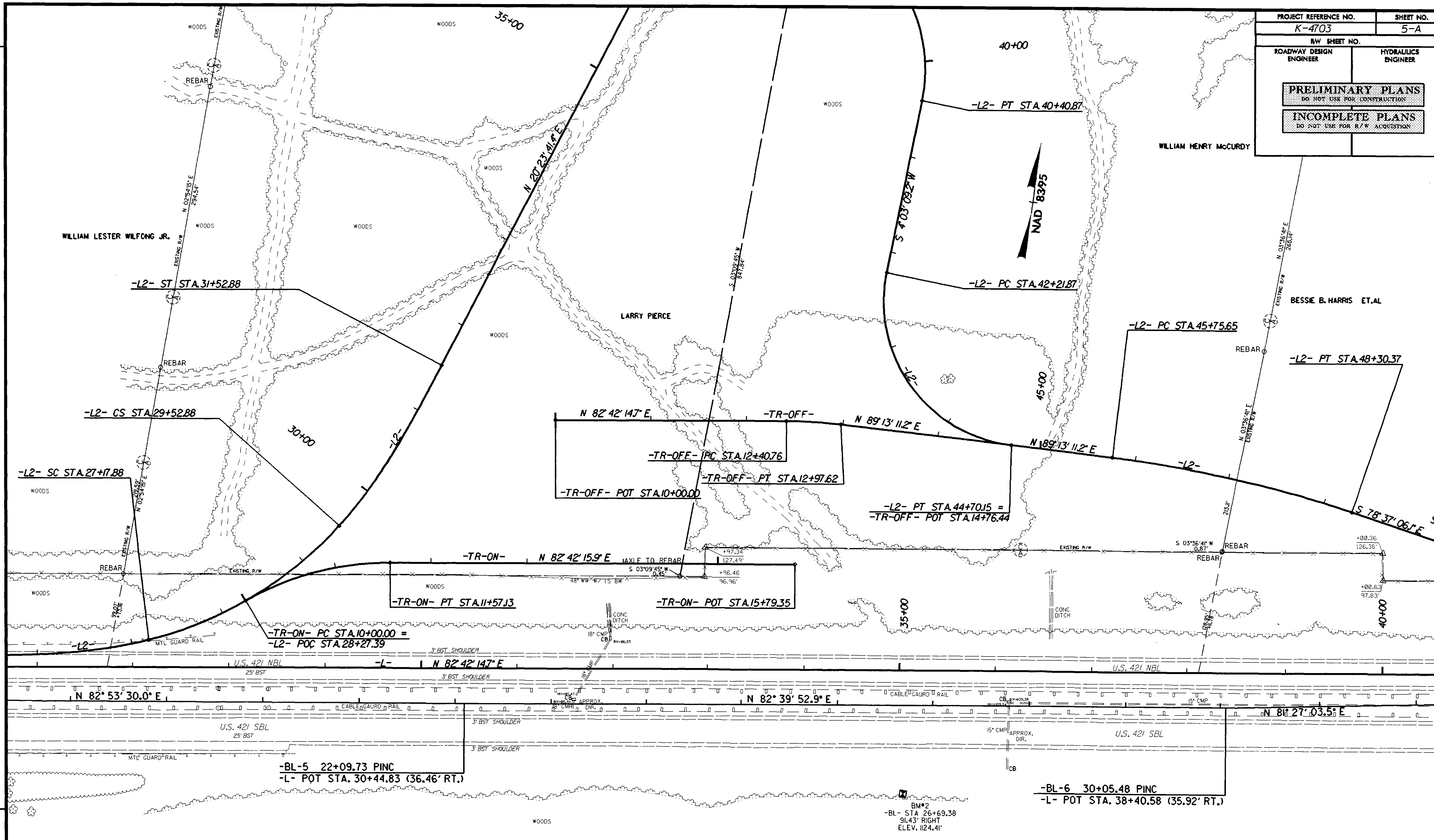
PROJECT REFERENCE NO. K-4703
SHEET NO. 5
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
NOTES: (1) SEE SHEETS 8 & 9 FOR -L2- PROFILE
(2) SEE SHEET 10 FOR -TR-ON- & -TR-OFF- PROFILES
NAD 83/95
-L2- CURVE DATA
PIs Sta 26+51.65
θs = 14° 19' 26.2"
Ls = 200.00'
LT = 133.77'
ST = 67.07'
PI Sta 28+38.88
Δ = 33° 39' 40.9" (LT)
D = 14° 19' 26.2"
L = 235.00'
T = 121.00'
R = 400.00'
SE = SEE PLANS
PIs Sta 30+19.95
θs = 14° 19' 26.2"
Ls = 200.00'
LT = 133.77'
ST = 67.07'
PI Sta 43+85.09
Δ = 94° 49' 57.9" (LT)
D = 38° 11' 49.9"
L = 248.27'
T = 163.22'
R = 150.00'
SE = SEE PLANS
PI Sta 46+98.15
Δ = 163° 39' 27.7" (RT)
D = 35° 48' 35.5"
L = 457.02'
T = 1,114.30'
R = 160.00'
SE = SEE PLANS
PI Sta 47+03.49
Δ = 12° 09' 42.6" (RT)
D = 4° 46' 28.7"
L = 254.72'
T = 127.84'
R = 1,200.00'
SE = SEE PLANS
DETAIL "D"
LATERAL BASE DITCH
(Not to Scale)
Min. D= 1.5 Ft.
B= 2.0 Ft.
b= 5.0 Ft.
FROM -L- STA. 23+50 TO -L- STA. 25+17.88 (LT)
FROM -L2- STA. 25+17.88 TO -L2- STA. 26+50 (LT)
DETAIL "E"
SPECIAL CUT DITCH
(Not to Scale)
Min. D= 1.0 Ft.
FROM -L2- STA. 26+50 TO -L2- STA. 27+50 (LT)
DETAIL "F"
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)
Min. D= 1.5 Ft.
B= 6.0 Ft.
FROM -L2- STA. 30+00 TO -L2- STA. 35+00 (RT)
SEE PROP. CROSS SECTIONS FOR FRONT AND REAR SLOPES
DETAIL "G"
BERM 'V' DITCH
(Not to Scale)
Min. D= 1.0 Ft.
b= 5.0 Ft.
FROM -L2- STA. 43+00 TO -L2- STA. 46+05.9 (LT)
DETAIL "H"
SPECIAL BACK OF CURB CUT DITCH
(NOT TO SCALE)
D= 2.0 Ft.
FROM -L2- STA. 42+30 TO -L2- STA. 48+30 (LT)
DETAIL "I"
SPECIAL CUT DITCH w/HINGE
(Not to Scale)
Min. D= 2.0 Ft.
FROM -L2- STA. 48+30 TO -L2- STA. 49+50 (LT)
-PAD- POT Sta. 11+25.00
-PAD- POT Sta. 10+00.00
-L2- POC Sta. 38+50.00
-L2- PC STA. 35+83.86
LARRY PIERCE
DB 543 PG 566
CLASS 'B' RIP RAP
EST. 4 TONS
12 SY FILTER FABRIC
CLASS 'B' RIP RAP
EST. 3 TONS
7 SY FILTER FABRIC
BIO-RETENTION BASIN CONTROL STRUCTURE
SEE SHEET 2-I
BIO-RETENTION BASIN
SEE SHEET 2-H
WILLIAM LESTER WILFONG JR.
DB 773 PG 345
DB 650 PG 980
DB 639 PG 504
SEDIMENT FOREBAY
SEE SHEET 2-H
-L2- ST STA. 31+52.88
HAZARDOUS SPILL BASIN CONTROL STRUCTURE
SEE SHEET 2-G
HAZARDOUS SPILL BASIN
SEE SHEET 2-F
-L2- CS STA. 29+52.88
CLASS 'B' RIP RAP
EST. 2 TONS
7 SY FILTER FABRIC
-L2- SC STA. 27+17.88
SPLITTER BOX
SEE SHEET 2-E
CLASS 'B' RIP RAP
EST. 1 TON
4 SY FILTER FABRIC
SPECIAL CUT DITCH
SEE DETAIL "E"
END SHOULDER BERM GUTTER
-L2- STA. 26+56
ROD & LUG CONNECTORS W/SLEEVE GASKETS & 2 ELBOWS
MATCH LINE -L2- STA. 25+80.00
SEE SHEET NO. 4
SPECIAL BACK OF CURB CUT DITCH
SEE DETAIL "F"
LARRY PIERCE
DB 543 PG 566
4 Combo Car-trailer/Delivery Truck
Proposed Sidewalk
Planting Islands
-L2- PT STA. 40+87
WILLIAM HENRY McCURDY
DB 714 PG 886
-L2- PC STA. 42+21.87
BERM "V" DITCH
SEE DETAIL "G"
SPECIAL BACK OF CURB CUT DITCH
SEE DETAIL "H"
ROD & LUG CONNECTORS W/SLEEVE GASKETS & 2 ELBOWS
-L2- PC STA. 45+75.65
BESSIE B. HARRIS ET.AL
DB 544 PG 501
TRACT ONE
-L2- PT STA. 48+30.37
SPECIAL CUT DITCH
SEE DETAIL "I"
N 89° 13' 11.2" E
N 82° 42' 14.7" E
-TR-OFF-
-TR-OFF- PC STA. 12+40.76
-TR-OFF- PT STA. 12+97.62
-TR-OFF- POT STA. 10+00.00
-L2- PT STA. 44+70.15 =
-TR-OFF- POT STA. 14+76.44
S 78° 37' 06.1" E
MATCH LINE -L2- STA. 49+10.00
SEE SHEET NO. 6
-TR-ON-
N 82° 42' 15.9" E
-TR-ON- PT STA. 11+57.13
-TR-ON- POT STA. 15+79.35
-TR-ON- PC STA. 10+00.00 =
-L2- POC STA. 28+27.39
RETAIN
CONC DITCH
U.S. 421 NBL
-L- N 82° 42' 14.7" E
3' BST SHOULDER
25' BST
WOODS
REBAR
EXISTING R/W
REVISIONS
10-APR-2007 11:12

PROJECT REFERENCE NO.	SHEET NO.
K-4703	5-A
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

REVISIONS



WILLIAM LESTER WILFONG JR.
LARRY PIERCE
WILLIAM HENRY McCURDY
BESSIE B. HARRIS ET.AL
NAD 83/95
-L2- ST STA.31+52.88
-L2- CS STA.29+52.88
-L2- SC STA.27+17.88
-L2- PT STA.40+40.87
-L2- PC STA.42+21.87
-L2- PC STA.45+75.65
-L2- PT STA.48+30.37
N 20°23'41.4" E
S 4°03'09.2" W
-TR-OFF- PC STA.12+40.76
-TR-OFF- PT STA.12+97.62
-TR-OFF- POT STA.10+00.00
-L2- PT STA.44+70.15 =
-TR-OFF- POT STA.14+76.44
N 82°42'14.7" E
N 89°13'11.2" E
S 78°37'06.1" E
-TR-ON-
N 82°42'15.9" E
-TR-ON- PT STA.11+57.13
-TR-ON- POT STA.15+79.35
-TR-ON- PC STA.10+00.00 =
-L2- POC STA.28+27.39
U.S. 421 NBL
U.S. 421 SBL
N 82°53'30.0" E
N 82°39'52.9" E
N 81°27'03.5" E
-BL-5 22+09.73 PINC
-L- POT STA. 30+44.83 (36.46' RT.)
-BL-6 30+05.48 PINC
-L- POT STA. 38+40.58 (35.92' RT.)
BM*2
-BL- STA 26+69.38
91.43' RIGHT
ELEV. 1124.41'

-L2- CURVE DATA

PIs Sta 26+51.65	PI Sta 28+38.88	PIs Sta 30+19.95
θs = 14°19'26.2"	Δ = 33°39'40.9" (LT)	θs = 14°19'26.2"
Ls = 200.00'	D = 14°19'26.2"	Ls = 200.00'
LT = 133.77'	L = 235.00'	LT = 133.77'
ST = 67.07'	T = 121.00'	ST = 67.07'
	R = 400.00'	
	SE = SEE PLANS	
PI Sta 43+85.09	PI Sta 46+98.15	PI Sta 47+03.49
Δ = 94°49'57.9" (LT)	Δ = 163°39'27.7" (RT)	Δ = 12°09'42.6" (RT)
D = 38°11'49.9"	D = 35°48'35.5"	D = 4°46'28.7"
L = 248.27'	L = 457.02'	L = 254.72'
T = 163.22'	T = 1,114.30'	T = 127.84'
R = 150.00'	R = 160.00'	R = 1,200.00'
	SE = SEE PLANS	

-TR-ON- CURVE DATA

PI Sta 10+80.41
Δ = 30°00'37.0" (RT)
D = 19°05'54.9"
L = 157.13'
T = 80.41'
R = 300.00'
SE = SEE PLANS

-TR-OFF- CURVE DATA

PI Sta 12+69.22
Δ = 6°30'56.5" (RT)
D = 11°27'33.0"
L = 56.86'
T = 28.46'
R = 500.00'
SE = SEE PLANS

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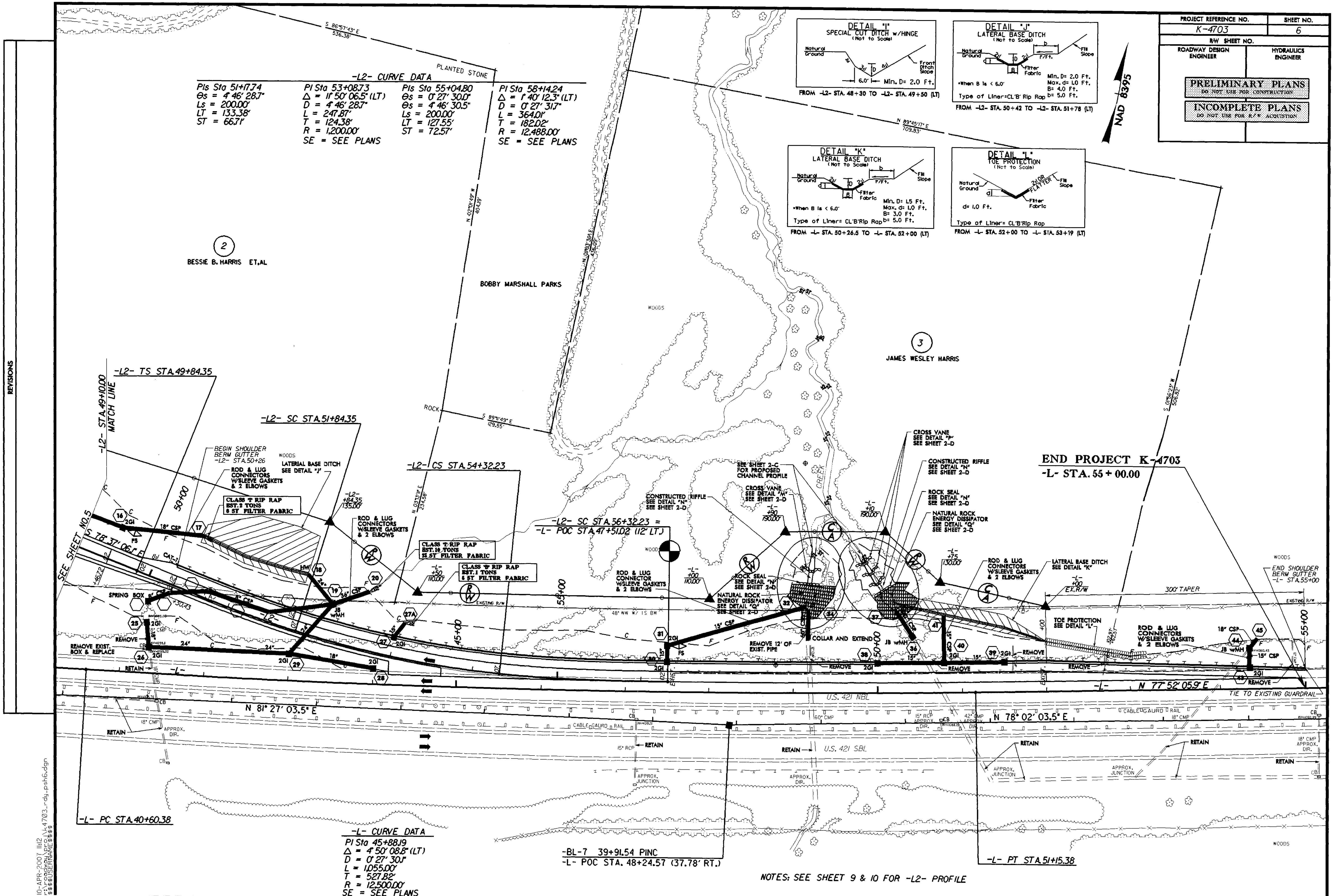

PROJECT REFERENCE NO.
K-4703
SHEET NO.
6
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
NAD 83/95
REVISIONS
DETAIL "I"
SPECIAL CUT DITCH w/HINGE
(Not to Scale)
FROM -L2- STA. 48+30 TO -L2- STA. 49+50 (LT)
DETAIL "J"
LATERAL BASE DITCH
(Not to Scale)
Type of Liner=CL'B' Rip Rap
FROM -L2- STA. 50+42 TO -L2- STA. 51+78 (LT)
DETAIL "K"
LATERAL BASE DITCH
(Not to Scale)
Type of Liner= CL'B'Rip Rap
FROM -L- STA. 50+26.5 TO -L- STA. 52+00 (LT)
DETAIL "L"
TOE PROTECTION
(Not to Scale)
Type of Liner= CL'B'Rip Rap
FROM -L- STA. 52+00 TO -L- STA. 53+19 (LT)
-L2- CURVE DATA
PIs Sta 51+17.74
Θs = 4° 46' 28.7"
Ls = 200.00'
LT = 133.38'
ST = 66.71'
PI Sta 53+08.73
Δ = 11° 50' 06.5" (LT)
D = 4° 46' 28.7"
L = 247.87'
T = 124.38'
R = 1,200.00'
SE = SEE PLANS
PIs Sta 55+04.80
Θs = 0° 27' 30.0"
Θs = 4° 46' 30.5"
Ls = 200.00'
LT = 127.55'
ST = 72.57'
PI Sta 58+14.24
Δ = 1° 40' 12.3" (LT)
D = 0° 27' 31.7"
L = 364.01'
T = 182.02'
R = 12,488.00'
SE = SEE PLANS
BESSIE B. HARRIS ET.AL
BOBBY MARSHALL PARKS
JAMES WESLEY HARRIS
-L2- TS STA.49+84.35
-L2- SC STA.51+84.35
-L2- CS STA.54+32.23
-L2- SC STA.56+32.23 =
-L- POC STA.47+51.02 (12' LT.)
-L2- STA.49+10.00 MATCH LINE
SEE SHEET NO.5
END PROJECT K-4703
-L- STA. 55 + 00.00
U.S. 421 NBL
U.S. 421 SBL
N 81° 27' 03.5" E
N 78° 02' 03.5" E
N 77° 52' 05.9" E
TIE TO EXISTING GUARDRAIL
-L- PC STA.40+60.38
-L- CURVE DATA
PI Sta 45+88.19
Δ = 4° 50' 08.8" (LT)
D = 0° 27' 30.1"
L = 1,055.00'
T = 527.82'
R = 12,500.00'
SE = SEE PLANS
-BL-7 39+91.54 PINC
-L- POC STA. 48+24.57 (37.78' RT.)
-L- PT STA.51+15.38
NOTES: SEE SHEET 9 & 10 FOR -L2- PROFILE

5/14/99

PROJECT REFERENCE NO.	SHEET NO.
K-4703	7

ROADWAY DESIGN ENGINEER

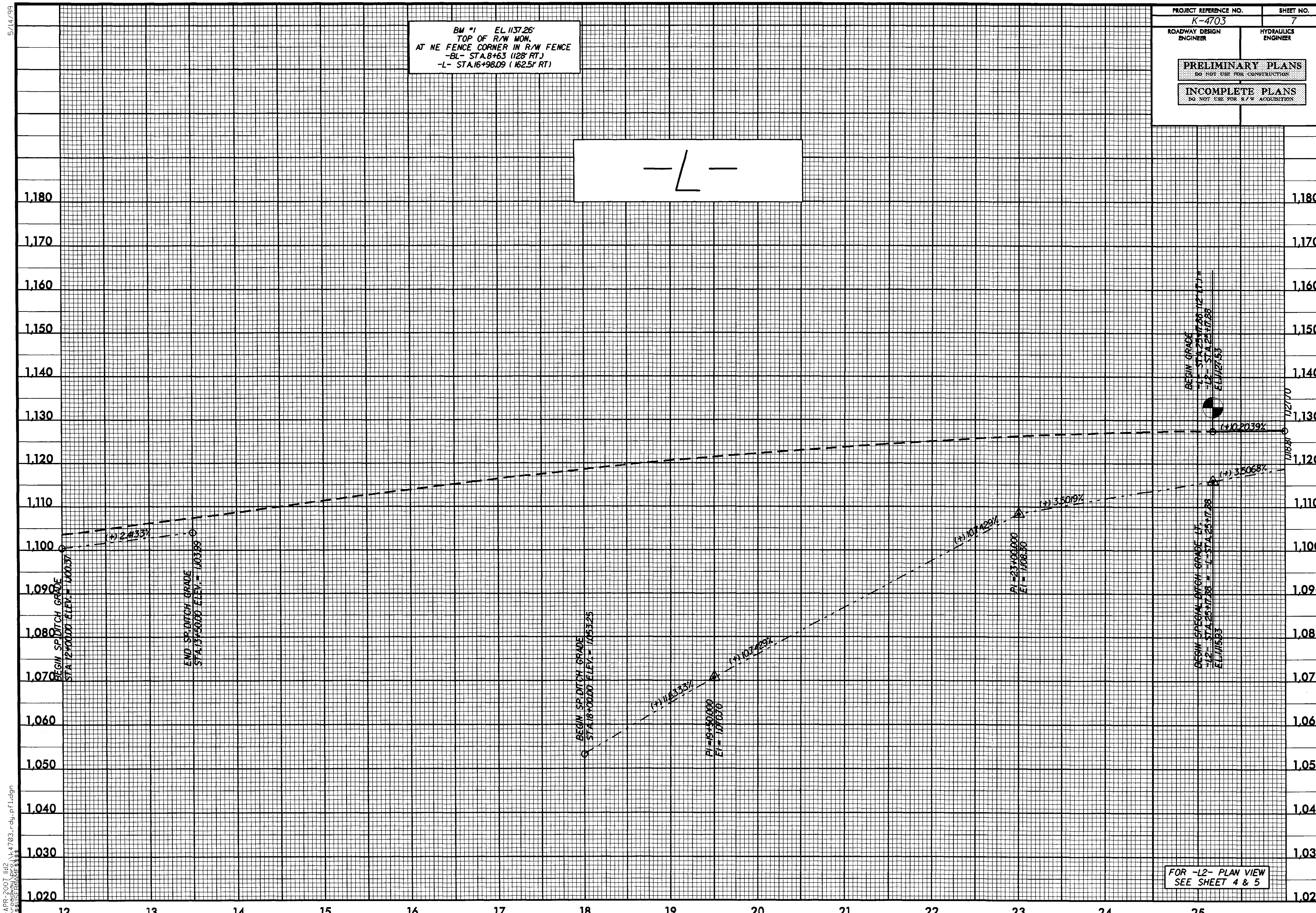
HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

BM #1 EL. 1137.26'
TOP OF R/W MON.
AT NE FENCE CORNER IN R/W FENCE
-BL- STA. 8+63 (128' RT.)
-L- STA. 16+98.09 (162.51' RT)

-L-



1,180
1,170
1,160
1,150
1,140
1,130
1,120
1,110
1,100
1,090
1,080
1,070
1,060
1,050
1,040
1,030
1,020
12
13
14
15
16
17
18
19
20
21
22
23
24
25
BEGIN SP. DITCH GRADE
STA. 12+00.00 ELEV. = 1100.37
(+) 2.4133%
END SP. DITCH GRADE
STA. 13+50.00 ELEV. = 1103.99
BEGIN SP. DITCH GRADE
STA. 18+00.00 ELEV. = 1053.25
(+) 11.6333%
PI = 19+50.000
EL = 1070.70
(+) 10.7429%
(+) 10.7429%
PI = 23+00.000
EL = 1108.30
(+) 3.5019%
(+) 3.5068%
BEGIN SPECIAL DITCH GRADE LT.
-L2- STA. 25+17.88 = -L- STA. 25+17.88
EL. 1115.93
BEGIN GRADE
-L- STA. 25+17.86 (12' LT) =
-L2- STA. 25+17.88
EL. 1127.53
(+) 0.2039%
1127.70
1118.81
FOR -L2- PLAN VIEW
SEE SHEET 4 & 5

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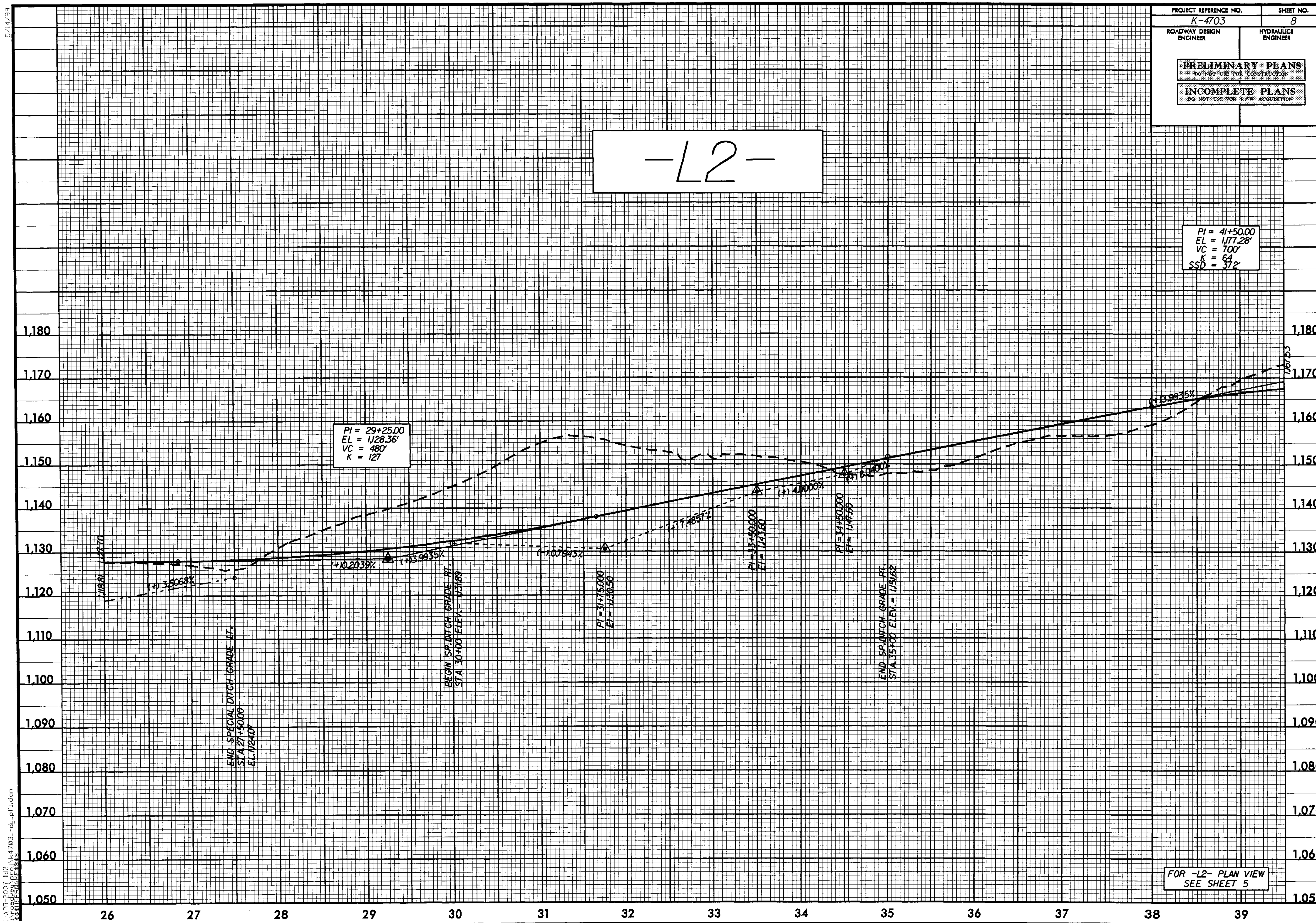

PROJECT REFERENCE NO.
K-4703
SHEET NO.
8
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
-L2-
PI = 41+50.00
EL = 1177.28'
VC = 700'
K = 64
SSD = 372'
PI = 29+25.00
EL = 1128.36'
VC = 480'
K = 127
(+) 3.5068%
(+)0.2039%
(+)3.9935%
(-) 0.7943%
(+) 1.4857%
(+) 4.0000%
(+) 8.0400%
(+)3.9935%
END SPECIAL DITCH GRADE LT.
STA.27+50.00
EL.1124.07
BEGIN SP. DITCH GRADE RT.
STA 30+00 ELEV. = 1131.89
PI = 31+75.000
EI = 1130.50
PI = 33+50.000
EI = 1143.50
PI = 34+50.000
EI = 1147.50
END SP. DITCH GRADE RT.
STA. 35+00 ELEV. = 1151.62
1118.81
1127.70
1167.53
1,180
1,170
1,160
1,150
1,140
1,130
1,120
1,110
1,100
1,090
1,080
1,070
1,060
1,050
26
27
28
29
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31
32
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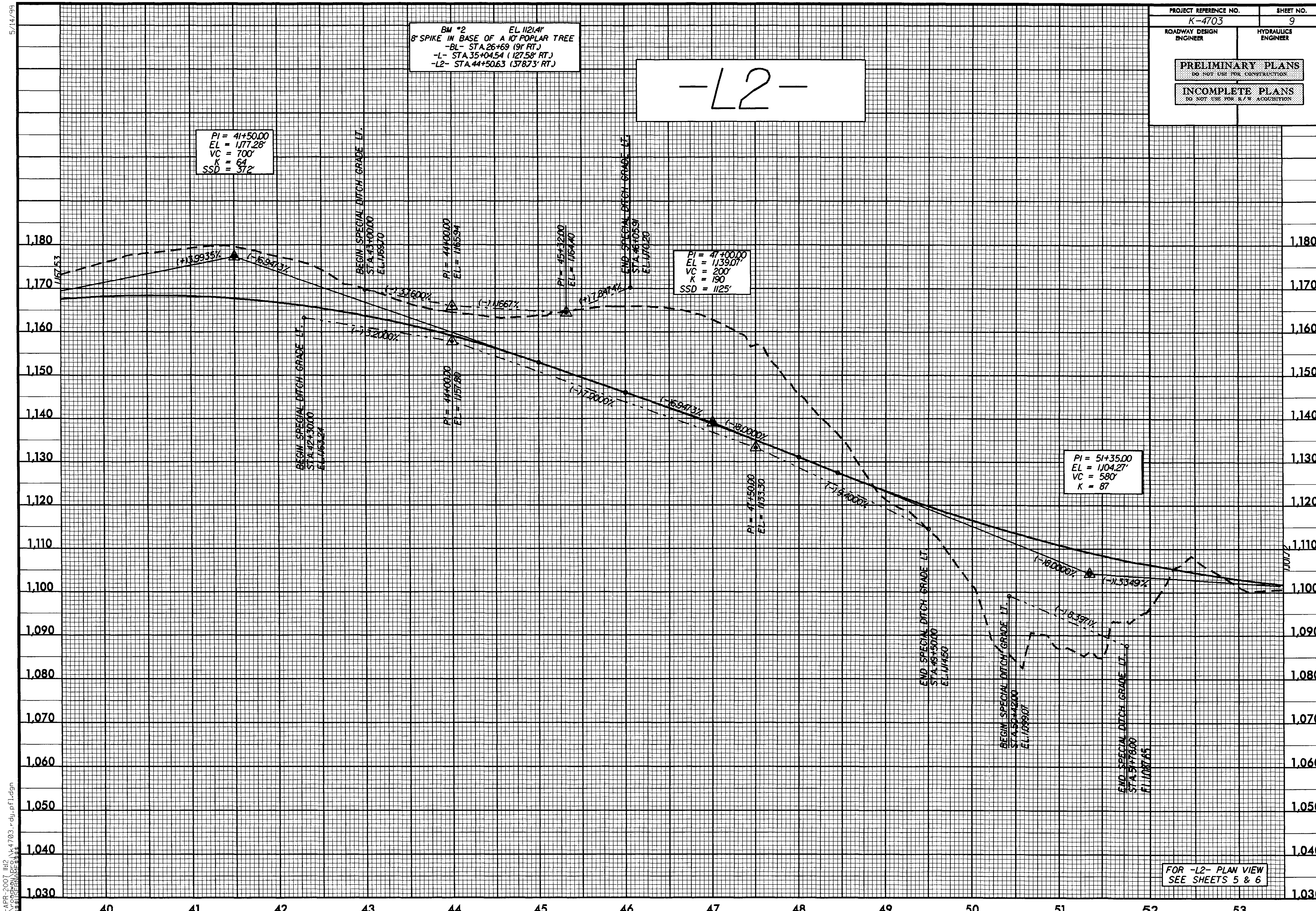
39
FOR -L2- PLAN VIEW
SEE SHEET 5
5/14/99

PROJECT REFERENCE NO.	SHEET NO.
K-4703	9
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

-L2-



BM #2 EL 1121.41'
8" SPIKE IN BASE OF A 10" POPLAR TREE
-BL- STA.26+69 (91' RT.)
-L- STA.35+04.54 (127.58' RT.)
-L2- STA.44+50.63 (378.73' RT.)
PI = 41+50.00
EL = 1177.28'
VC = 700'
K = 64
SSD = 372'
PI = 47+00.00
EL = 1139.07'
VC = 200'
K = 190
SSD = 1125'
PI = 51+35.00
EL = 1104.27'
VC = 580'
K = 87
BEGIN SPECIAL DITCH GRADE LT. STA.43+00.00 EL.1169.70
PI = 44+00.00 EL = 1165.94
PI = 45+32.00 EL = 1164.40
END SPECIAL DITCH GRADE LT. STA.46+05.91 EL.1170.20
BEGIN SPECIAL DITCH GRADE LT. STA.42+30.00 EL.1163.24
PI = 44+00.00 EL = 1157.80
PI = 47+50.00 EL = 1133.30
END SPECIAL DITCH GRADE LT. STA.49+50.00 EL.1114.50
BEGIN SPECIAL DITCH GRADE LT. STA.50+42.00 EL.1099.07
END SPECIAL DITCH GRADE LT. STA.51+78.00 EL.1087.65
(+)3.9935%
(-)6.9403%
(-)3.3600%
(-)1.1667%
(+)7.8474%
(-)5.2000%
(-)7.0000%
(-)6.9403%
(-)8.0000%
(-)9.4000%
(-)8.0000%
(-)1.3349%
(-)8.3971%
1167.53
1101.72
1,180
1,170
1,160
1,150
1,140
1,130
1,120
1,110
1,100
1,090
1,080
1,070
1,060
1,050
1,040
1,030
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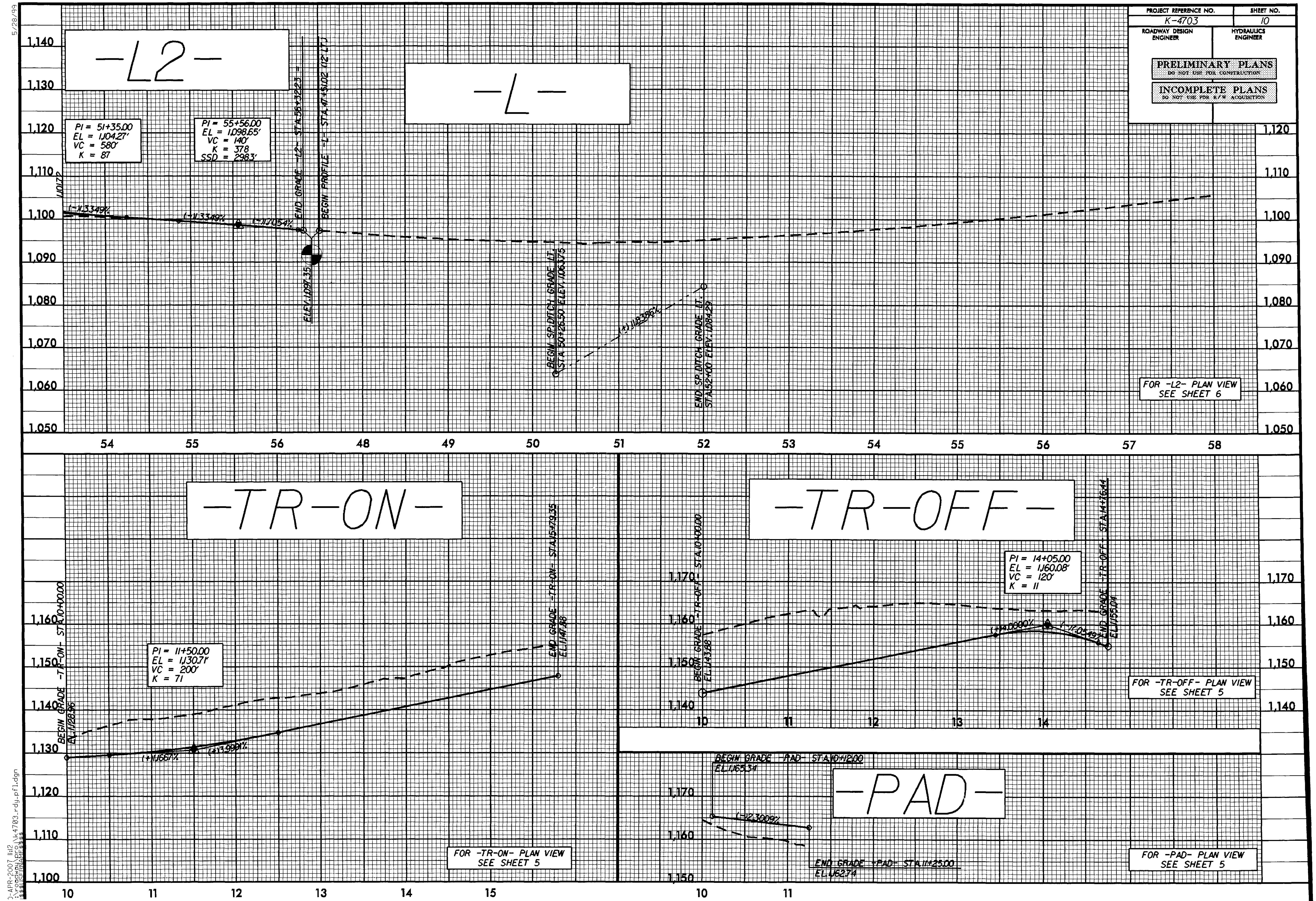
FOR -L2- PLAN VIEW SEE SHEETS 5 & 6



PROJECT REFERENCE NO.
K-4703
SHEET NO.
10
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
-L2-
-L-
PI = 51+35.00
EL = 1,104.27'
VC = 580'
K = 87
PI = 55+56.00
EL = 1,098.65'
VC = 140'
K = 378
SSD = 2983'
END GRADE -L2- STA.56+32.23
BEGIN PROFILE -L- STA.47+51.02 1/2 LT.
ELEV.1,097.35
(-)1.3349%
(-)1.3349%
(-)1.7054%
BEGIN SP.DITCH GRADE LT.
STA 50+26.50 ELEV.1,063.75
(+)1.8396%
END SP.DITCH GRADE LT.
STA.52+00 ELEV.1,084.29
FOR -L2- PLAN VIEW
SEE SHEET 6
-TR-ON-
BEGIN GRADE -TR-ON- STA.10+00.00
EL.1,128.96
PI = 11+50.00
EL = 1,130.71'
VC = 200'
K = 71
(+)1.1667%
(+)3.9991%
END GRADE -TR-ON- STA.15+79.35
EL.1,147.88
FOR -TR-ON- PLAN VIEW
SEE SHEET 5
-TR-OFF-
BEGIN GRADE -TR-OFF- STA.10+00.00
EL.1,143.38
PI = 14+05.00
EL = 1,160.08'
VC = 120'
K = 11
(+)4.0600%
(-)1.0549%
END GRADE -TR-OFF- STA.14+76.44
EL.1,155.04
FOR -TR-OFF- PLAN VIEW
SEE SHEET 5
-PAD-
BEGIN GRADE -PAD- STA.10+12.00
EL.1,165.34
(-)2.3009%
END GRADE -PAD- STA.11+25.00
EL.1,162.74
FOR -PAD- PLAN VIEW
SEE SHEET 5
5/28/99