

NOTE: SEE SHEET 1A FOR PLAN SHEET LAYOUT AT TIME OF INVESTIGATION

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

| | | | |
|-----------|-----------------------------|-----------------|--------------|
| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
| N.C. | B-4276 | 1 | 14 |
| WBS NO. | F.A. PROJ. NO. | DESCRIPTION | |
| 33617.1.1 | BRSTP-73(5) | P.E. | |
| 33617.2.2 | BRSTP-73(5) | ROW & UTILITIES | |
| 33617.3.1 | BRSTP-73(5) | CONSTRUCTION | |

CONTENTS

| LINE | STATION | PLAN | PROFILE | XSECT |
|----------------|---------------------|-------|---------|--------|
| L | 10+75.00 - 27+50.00 | 4 - 5 | 6 - 7 | |
| L | 23+50.00 - 27+50.00 | | | 9 - 13 |
| DET | 12+61.69 - 25+04.76 | 4 - 5 | 8 | |
| SAMPLE RESULTS | | 14 | | |

ROADWAY
SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 33617.1.1 F.A. PROJ. BRSTP-73(5)
COUNTY STANLY
PROJECT DESCRIPTION BRIDGE NO. 33 ON NC 73 OVER
LONG CREEK

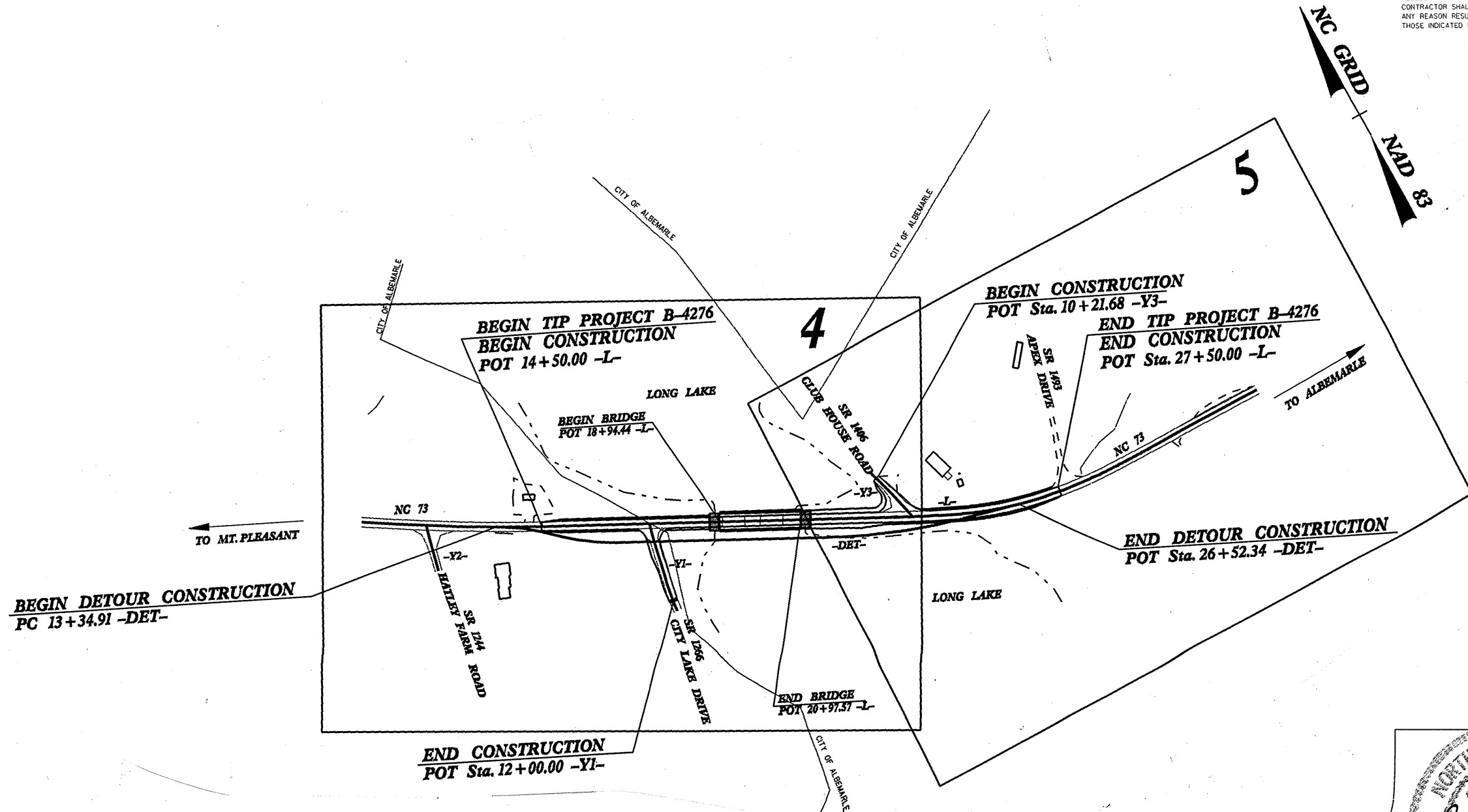
INVENTORY

CAUTION NOTICE
THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING, AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N.C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 250-4088. NEITHER THE SUBSURFACE PLANS AND REPORTS, NOR THE FIELD BORING LOGS, ROCK CORES, OR SOIL TEST DATA ARE PART OF THE CONTRACT.

GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE, THE LABORATORY SAMPLE DATA AND THE IN SITU (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION, AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

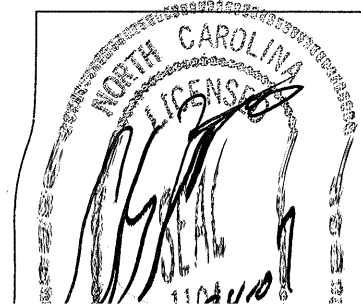
THE BIDDER OR CONTRACTOR IS CAUTIONED THAT DETAILS SHOWN ON THE SUBSURFACE PLANS ARE PRELIMINARY ONLY AND IN MANY CASES THE FINAL DESIGN DETAILS ARE DIFFERENT. FOR BIDDING AND CONSTRUCTION PURPOSES, REFER TO THE CONSTRUCTION PLANS AND DOCUMENTS FOR FINAL DESIGN INFORMATION ON THIS PROJECT. THE DEPARTMENT DOES NOT WARRANT OR GUARANTEE THE SUFFICIENCY OR ACCURACY OF THE INVESTIGATION MADE, NOR THE INTERPRETATIONS MADE, OR OPINION OF THE DEPARTMENT AS TO THE TYPE OF MATERIALS AND CONDITIONS TO BE ENCOUNTERED. THE BIDDER OR CONTRACTOR IS CAUTIONED TO MAKE SUCH INDEPENDENT SUBSURFACE INVESTIGATIONS AS HE DEEMS NECESSARY TO SATISFY HIMSELF AS TO CONDITIONS TO BE ENCOUNTERED ON THIS PROJECT. THE CONTRACTOR SHALL HAVE NO CLAIM FOR ADDITIONAL COMPENSATION OR FOR AN EXTENSION OF TIME FOR ANY REASON RESULTING FROM THE ACTUAL CONDITIONS ENCOUNTERED AT THE SITE DIFFERING FROM THOSE INDICATED IN THE SUBSURFACE INFORMATION.

CONTRACT: C201831 ID: B-4276



- PERSONNEL
- C. C. MURRAY
 - J. E. ESTEP
 - L. N. HARPER
 - C. E. BURRIS
 - M. L. SMITH
 - A. C. SMITH

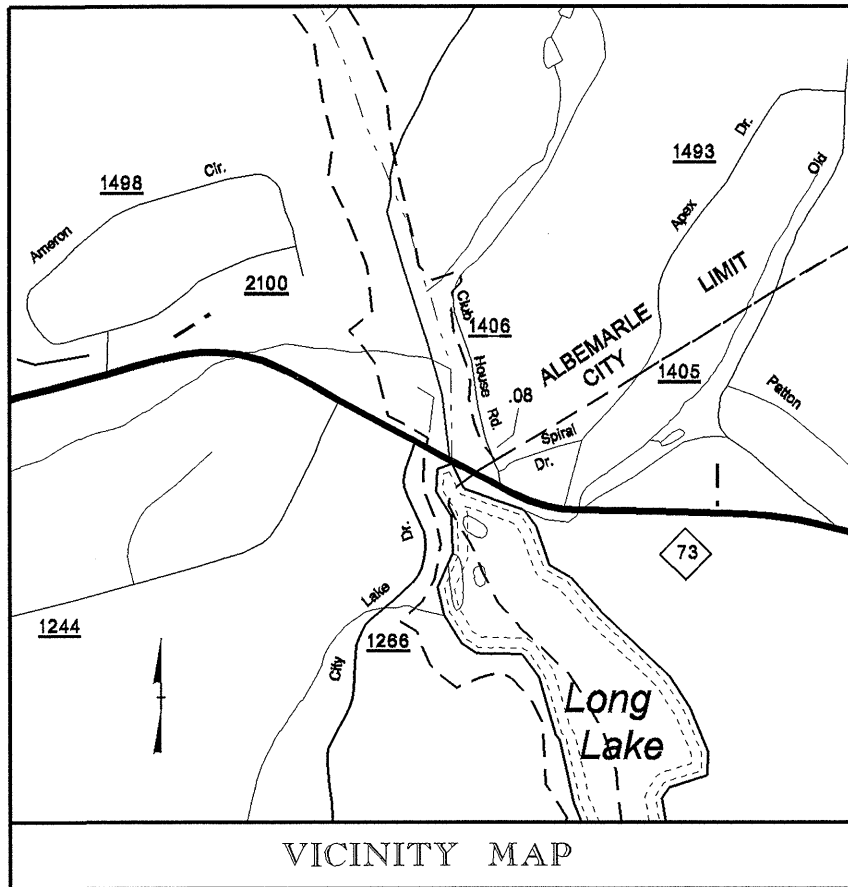
INVESTIGATED BY C. B. LITTLE
CHECKED BY C. B. LITTLE
SUBMITTED BY C. B. LITTLE
DATE MAY 2007



09/08/99

CONTRACT: TIP PROJECT B-4276

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

STANLY COUNTY

LOCATION: BRIDGE NO. 33 ON NC 73 OVER LONG CREEK

TYPE OF WORK: GRADING, PAVING, DRAINAGE, AND STRUCTURE

| | | | |
|-----------|-----------------------------|-------------|--------------|
| STATE | STATE PROJECT REFERENCE NO. | SHEET NO. | TOTAL SHEETS |
| N.C. | B-4276 | 1A | 14 |
| WBS NO. | P.A. PROJ. NO. | DESCRIPTION | |
| 33617.1.1 | BRSTP-73(5) | P.E. | |
| | | | |
| | | | |
| | | | |
| | | | |

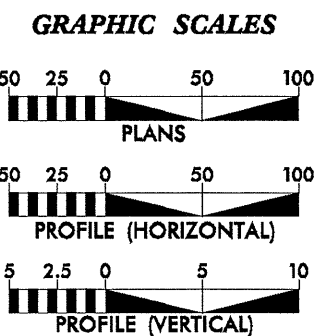
NOTES:
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD III.

THIS PROJECT IS PARTIALLY LOCATED WITHIN THE BOUNDARIES OF THE CITY OF ALBEMARLE.

NCDOT CONTACT: DOUG TAYLOR, P.E. - PROJECT ENGINEER - ROADWAY DESIGN

** DESIGN EXCEPTION REQUIRED

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



DESIGN DATA

| | |
|--------------------|-------------|
| ADT 2005 = | 10,000 |
| ADT 2025 = | 18,000 |
| DHV = | 10 % |
| D = | 60 % |
| T = | 7 % * |
| V = | 60 MPH ** |
| * TTST 4% | DUAL 3% |
| FUNCTIONAL CLASS = | URBAN MINOR |

PROJECT LENGTH

| | |
|----------------------|-------------|
| LENGTH OF ROADWAY | |
| TIP PROJECT B-4276 = | 0.279 MILES |
| LENGTH OF STRUCTURE | |
| TIP PROJECT B-4276 = | 0.038 MILES |
| TOTAL LENGTH OF | |
| TIP PROJECT B-4276 = | 0.317 MILES |

Prepared In the Office of:
WILBUR SMITH ASSOCIATES
421 FAYETTEVILLE ST. STE. 1303 RALEIGH, NC 27601 PHONE (919) 755-0583

2006 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
MAY 18, 2007

LETTING DATE:

DAVID L. WILVER, P.E.
PROJECT ENGINEER

DAVID L. WILVER, P.E.
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA

STATE HIGHWAY DESIGN ENGINEER P.E.

DATE SCALES MADE: 09/08/99

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

PROJECT REFERENCE NO. B-4276 SHEET NO. 2

Main content table with columns: SOIL DESCRIPTION, GRADATION, ROCK DESCRIPTION, TERMS AND DEFINITIONS, SOIL LEGEND AND AASHTO CLASSIFICATION, MINERALOGICAL COMPOSITION, COMPRESSION, PERCENTAGE OF MATERIAL, GROUND WATER, MISCELLANEOUS SYMBOLS, ROCK HARDNESS, SOIL MOISTURE - CORRELATION OF TERMS, PLASTICITY, COLOR, EQUIPMENT USED ON SUBJECT PROJECT, FRACTURE SPACING, BEDDING, INDURATION.

EARTHWORK BALANCE SHEET

Volumes in Cubic Yards

PROJECT **B-4276**

COUNTY Stanly

8/22/2008

SHEET 3 OF 14 SHEET

| LINE | STATION | STATION | TOTAL EXCAV. (UNCL.) | ROCK EXCAV. | UNDERCUT EXCAV. | UNSUIT. EXCAV. | SUITABLE EXCAV. | TOTAL EMB. | UNDERCUT EMB. | EARTH EMB. | EMBANK. 15% | BORROW | SUITABLE WASTE | UNSUIT. WASTE | TOTAL WASTE |
|---|---------|---------|----------------------|-------------|-----------------|----------------|-----------------|------------|---------------|------------|-------------|---------|----------------|---------------|-------------|
| -L- | 14+50 | 18+94 | 6 | - | - | - | 6 | 2,399 | | 2,399 | 2,759 | 2,753 | - | - | - |
| -Y1TEMP- | 10+57 | 12+00 | 1,267 | - | - | - | 1,267 | 827 | | 827 | 951 | - | 316 | - | 316 |
| SUBTOTAL #1 | | | 1,273 | - | - | - | 1,273 | 3,226 | - | 3,226 | 3,710 | 2,753 | 316 | - | 316 |
| -L- | 20+98 | 27+50 | 3,947 | 700 | - | - | 3,247 | 513 | | 513 | 590 | - | 3,357 | - | 3,357 |
| -Y3- | 10+22 | 11+25 | 72 | - | - | - | 72 | 14 | | 14 | 16 | - | 56 | - | 56 |
| SUBTOTAL #2 | | | 4,019 | 700 | - | - | 3,319 | 527 | - | 527 | 606 | - | 3,413 | - | 3,413 |
| -DET- | 13+34 | 18+45 | 1,226 | - | - | - | 1,226 | 1,851 | | 1,851 | 2,129 | 903 | - | - | - |
| -DET- | 18+45 | 19+50 | - | - | - | - | - | 1,685 | - | 1,685 | 1,938 | 1,938 | - | - | - |
| SUBTOTAL #3 | | | 1,226 | - | - | - | 1,226 | 3,536 | - | 3,536 | 4,067 | 2,841 | - | - | - |
| -DET- | 20+95 | 26+52 | 26 | - | - | - | 26 | 1,830 | - | 1,830 | 2,105 | 2,079 | - | - | - |
| SUBTOTAL #4 | | | 26 | - | - | - | 26 | 1,830 | - | 1,830 | 2,105 | 2,079 | - | - | - |
| -Y1- | 10+40 | 11+30 | 592 | - | - | - | 592 | 216 | - | 216 | 248 | - | 344 | - | 344 |
| REMOVE-DET- | 13+34 | 18+45 | 2,675 | - | - | - | 2,675 | - | - | - | - | - | 2,675 | - | 2,675 |
| REMOVE-DET- | 18+45 | 19+50 | 1,122 | - | - | - | 1,122 | - | - | - | - | - | 1,122 | - | 1,122 |
| SUBTOTAL #5 | | | 4,389 | - | - | - | 4,389 | 216 | - | 216 | 248 | - | 4,141 | - | 4,141 |
| REMOVE-DET- | 20+95 | 26+52 | 4,097 | - | - | - | 4,097 | - | - | - | - | - | 4,097 | - | 4,097 |
| SUBTOTAL #6 | | | 4,097 | - | - | - | 4,097 | - | - | - | - | - | 4,097 | - | 4,097 |
| PROJECT SUBTOTAL | | | 15,030 | 700 | - | - | 14,330 | 9,335 | - | 9,335 | 10,736 | 7,673 | 11,967 | - | 11,967 |
| LOSS DUE TO CLEARING AND GRUBBING | | | (750) | - | - | - | (750) | - | - | - | - | 750 | - | - | - |
| WASTE IN LIEU OF BORROW | | | - | - | - | - | - | - | - | - | - | (3,755) | (3,755) | - | (3,755) |
| SHOULDER MATERIAL | | | | | | | 750 | - | 750 | 863 | 863 | | | | |
| PROJECT TOTAL | | | 14,280 | - | - | - | 13,580 | 10,085 | - | 10,085 | 11,599 | 5,531 | | - | 8,212 |
| EST 5% TO REPLACE TOP SOIL ON BORROW | | | | | | | | | | | | 277 | | | |
| GRAND TOTAL | | | 14,280 | 700 | - | - | 13,580 | 10,085 | - | 10,085 | 11,599 | 5,808 | 8,212 | - | 8,212 |
| SAY | | | 14,300 | | | | | | | | | 5,850 | | | 8,250 |
| ROCK EMBANKMENT (-DET- CONSTRUCTION STA. 18+45 TO 19+50 AND 20+95 TO 26+52) = 4350 TONS | | | | | | | | | | | | | | | |
| ABC EMBANKMENT (-DET- CONSTRUCTION STA. 18+45 TO 19+50 AND 20+95 TO 26+52) = 1150 TONS | | | | | | | | | | | | | | | |
| DRAINAGE DITCH EXCAVATION = 20 CY | | | | | | | | | | | | | | | |
| UNDERCUT EXCAVATION = 950 CY | | | | | | | | | | | | | | | |

* EARTHWORK QUANTITIES ARE CALCULATED BY THE ROADWAY DESIGN UNIT. THESE EARTHWORK QUANTITIES ARE BASED IN PART ON SUBSURFACE DATA PROVIDED BY THE GEOTECHNICAL ENGINEERING UNIT.



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

May 9, 2007

STATE PROJECT: 33617.1.1 (B-4276)
FEDERAL PROJECT: BRSTP-73(5)
COUNTY: Stanly
DESCRIPTION: Bridge No 33 on NC 73 over Long Creek and Approaches
SUBJECT: Geotechnical Report - Inventory

PROJECT DESCRIPTION

The site is just west of the city of Albemarle on NC 73 at Long Creek, near where Long Creek becomes Long Lake. At the current water surface elevation of 465', there is 600' to 800' of water crossing along the alignment. The main channel of Long Creek is located within the span of the existing bridge, with water depths of about ten feet. Outside of the channel, water depths were typically one to two feet during the investigation. During low flow periods, these areas may be above water, although they remain soft, muddy, and wet.

The project begins approximately 491' back from the proposed bridge and ends about 649 feet beyond the proposed bridge. The proposed improvements include a bridge replacement at the current location, an on-site detour with temporary structure, and improvements for the bridge approach roadway. The Detour roadway embankments would be placed in water if the lake remains at its present level.

The following alignments were investigated:

- L- Station 10+75 to 27+50
- Y1- Station 10+00 to 11+25
- Y2- Station 10+00 to 11+09.66
- Y3- Station 10+00 to 11+50
- Detour- Station 10+90.30 to 26+45

The total length of lines investigated is 3,668 feet.

The initial field investigation was conducted in the last two weeks of March 2007. Borings were conducted with a CME-550 drill machine with an automatic hammer. Standard Penetration Tests were conducted at selected locations utilizing hollow stem augers. The soil samples were submitted to the Materials and Tests Unit for laboratory analysis. Additional probes and vane shear tests were conducted by boat.

AREAS OF SPECIAL GEOTECHNICAL INTEREST

Cut Slopes: There are several hundred feet of cut on both ends of the project where the slopes will be laid back. At the beginning of the project continuous rock is not expected but boulders may be encountered, while at the end of the project solid (non-crystalline) rock is likely. This is further discussed under *rock/weathered rock*.

Embankment in water: The lake at current level will require placement of embankment fill in water. The current plans indicate that a rock embankment will be used.

PHYSIOGRAPHY AND GEOLOGY

New London Syncline: The project lies within the boundaries of the Carolina Slate Belt and in the middle of the New London Syncline. The rock in this area, (Yadkin Formation), tends to be fractured. The common rock type is meta-sandstone and meta-mudstone of a graywacke. Depth of weathering can be highly variable.

SOIL PROPERTIES

Residual Soils

Residual soils on the project are predominantly silty clays (A-6) and clayey sandy silts (A-4). Depth of weathering is uneven but 8 to 10 feet is common.

Artificial/Roadway Fill Soils

Roadway fill soils are present along the existing roadway. The soil can be described as a reddish sandy silty clay usually (A-7) with small to cobble sized rock fragments present and coming from a near by residual soil origin. At the approaches, where the embankments are the thickest, they are 8 feet thick.

Alluvial Soils

Alluvial soils are present for about 800 feet of the project. They occur on both sides of the bridge. Depth of alluvium was found to be between several inches to 8 feet in thickness. The alluvial soils included very little sand, mostly silts, and clays. The thicker deposits are near the main channel.

In the alluvium, under the proposed detour roadway embankments, vane shear tests indicated the soil to be very weak (between 62 and 83 psf).

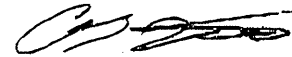
Rock/Weathered Rock

Weathered rock or possibly non-crystalline rock was *visually* noted at the beginning and end of the project during the investigation. It runs from Station 12+50 to 14+50 both sides and Station 23+50 to 27+50 left side only. The rock appears weathered and moderately fractured. A boring was made at Station 12+50/20Lt that did not achieve SPT refusal until 10 feet below grade. At the end of the project at Station 26+50/60Lt, auger refusal occurred at 8 feet above grade.

Wells

One active well is present, at about Station 25+00 -L-, 100Lt.

Respectfully submitted,



Clint Little
Regional Geological Engineer

| | |
|--|---------------------|
| PROJECT REFERENCE NO. | SHEET NO. |
| B-4276 | 4 |
| R/W SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| INCOMPLETE PLANS <small>DO NOT USE FOR ACQUISITION</small> PRELIMINARY PLANS <small>DO NOT USE FOR CONSTRUCTION</small> | |
| | |

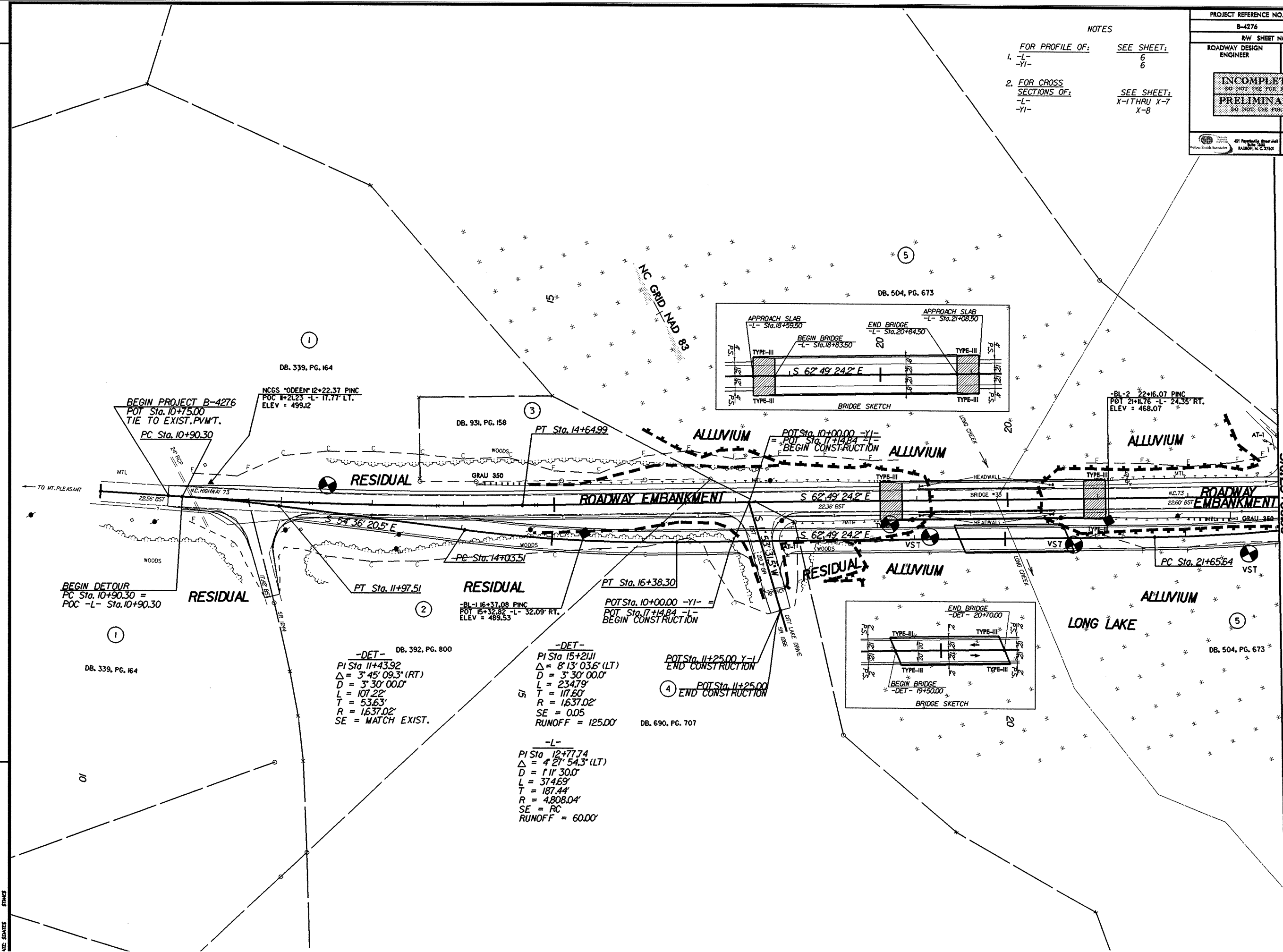
NOTES

FOR PROFILE OF: SEE SHEET:
 1. -L- 6
 -YI- 6

FOR CROSS SECTIONS OF: SEE SHEET:
 -L- X-1 THRU X-7
 -YI- X-8

REVISIONS

MATCHLINE SEE SHEET 5
Sta. 23+00.00



BEGIN PROJECT B-4276
 POT Sta. 10+75.00
 TIE TO EXIST. PVMT.
 PC Sta. 10+90.30

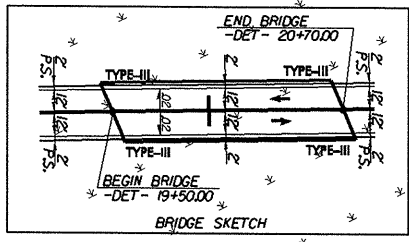
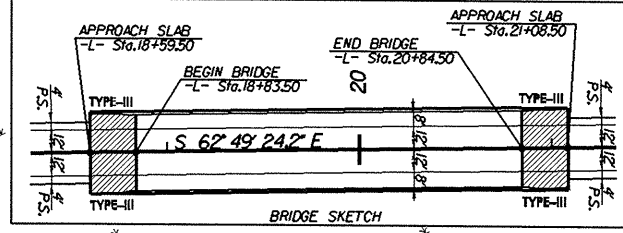
NCGS "ODEEN" 12+22.37 PINC
 POC #2123 -L- 11.77' LT.
 ELEV = 499.12

BEGIN DETOUR
 PC Sta. 10+90.30 =
 POC -L- Sta. 10+90.30

-DET- DB. 392, PG. 800
 PI Sta 11+43.92
 $\Delta = 3^{\circ} 45' 09.3" (RT)$
 $D = 3^{\circ} 30' 00.0"$
 $L = 107.22'$
 $T = 53.63'$
 $R = 1637.02'$
 SE = MATCH EXIST.

-DET-
 PI Sta 15+21.11
 $\Delta = 8^{\circ} 13' 03.6" (LT)$
 $D = 3^{\circ} 30' 00.0"$
 $L = 234.79'$
 $T = 117.60'$
 $R = 1637.02'$
 SE = 0.05
 RUNOFF = 125.00'

-L-
 PI Sta 12+77.74
 $\Delta = 4^{\circ} 27' 54.3" (LT)$
 $D = 1^{\circ} 11' 30.0"$
 $L = 374.69'$
 $T = 187.44'$
 $R = 4,808.04'$
 SE = RC
 RUNOFF = 60.00'



-BL-2 22+16.07 PINC
 POT 21+11.76 -L- 24.35' RT.
 ELEV = 468.07

PC Sta. 21+65.84

| | |
|---|---------------------|
| PROJECT REFERENCE NO. B-4276 | SHEET NO. 5 |
| RW SHEET NO. | |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| INCOMPLETE PLANS DO NOT USE FOR R.W. ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | |
| | |

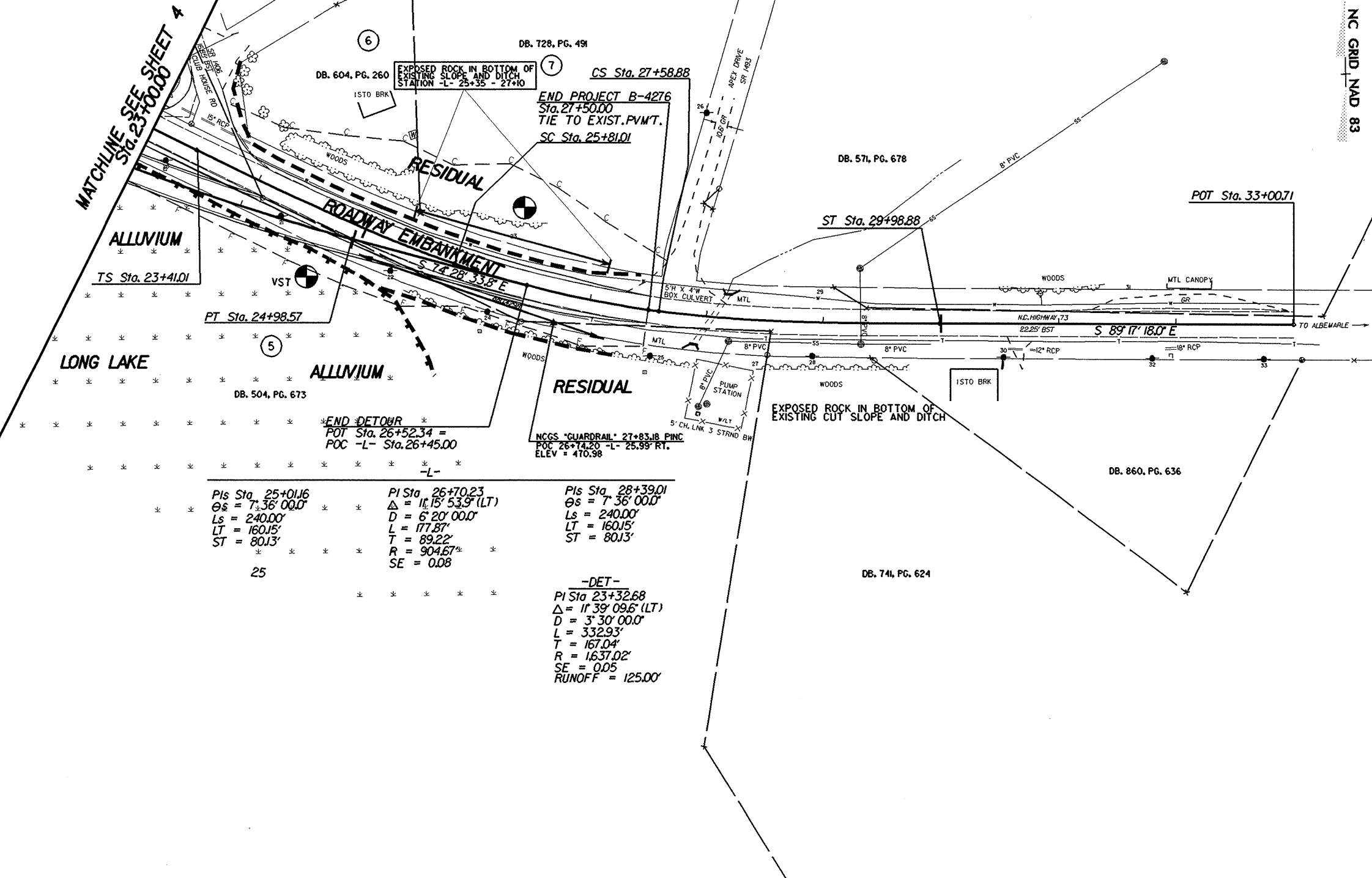
NOTES

FOR PROFILE OF: SEE SHEET:
 1. -L- 6

FOR CROSS SECTIONS OF: SEE SHEET:
 -L- X-5 THRU X-7

-BL-2 22+16.07 PING
 POT Sta. 21+16.16
 ELEV = 468.07

MATCHLINE SEE SHEET 4
 Sta. 23+00.00



| | | |
|--|---|--|
| PIs Sta. 25+01.16 $\Delta = 7' 36" 00.0"$ $L_s = 240.00'$ $LT = 160.15'$ $ST = 80.13'$ | PIs Sta. 25+70.23 $\Delta = 11' 15" 53.9" (LT)$ $D = 6' 20" 00.0"$ $L = 177.87'$ $T = 89.22'$ $R = 904.67'$ $SE = 0.08$ | PIs Sta. 28+39.01 $\Delta = 7' 36" 00.0"$ $L_s = 240.00'$ $LT = 160.15'$ $ST = 80.13'$ |
|--|---|--|

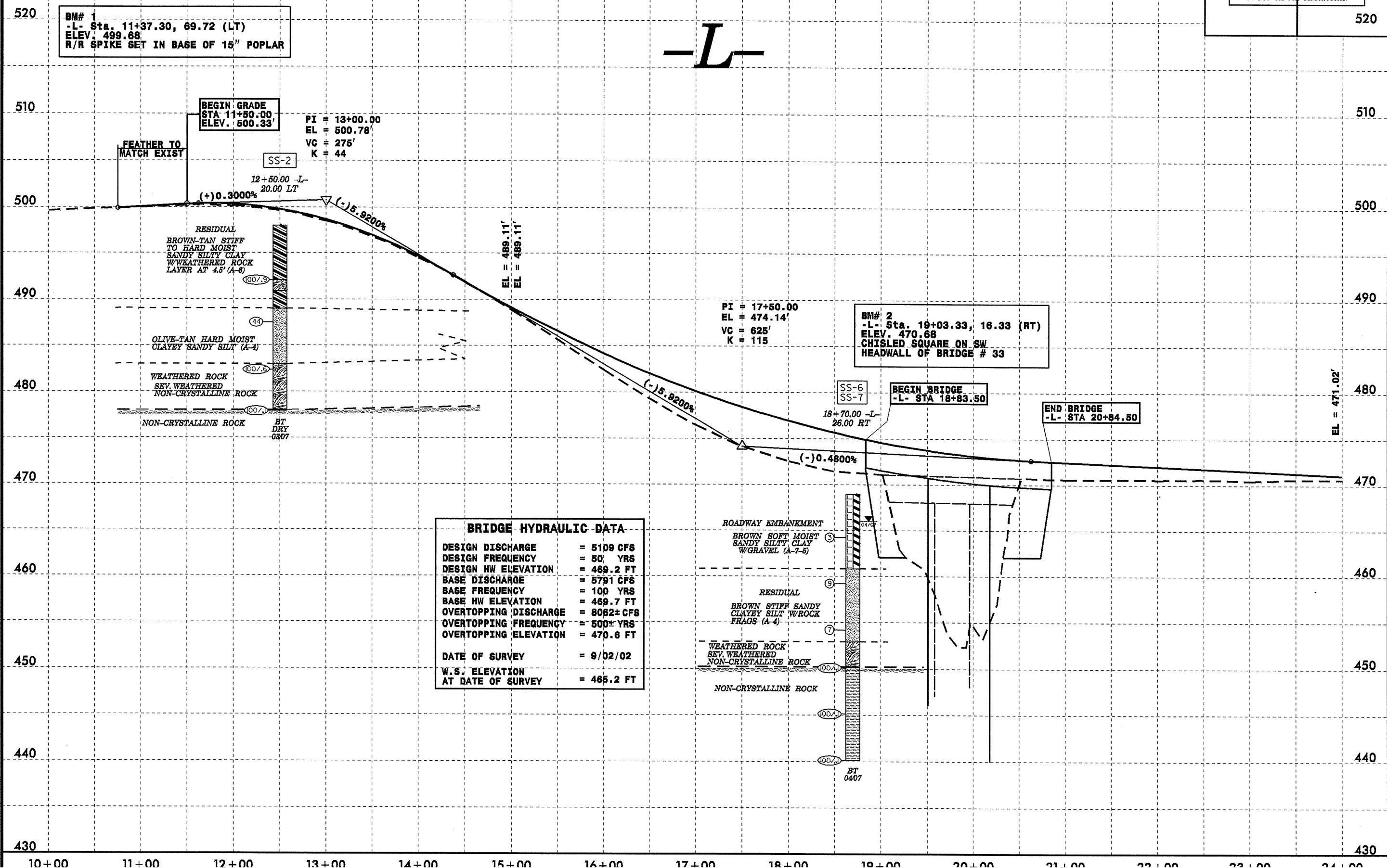
-DET-
 PI Sta. 23+32.68
 $\Delta = 11' 39" 09.6" (LT)$
 $D = 3' 30" 00.0"$
 $L = 332.93'$
 $T = 167.04'$
 $R = 1637.02'$
 $SE = 0.05$
 RUNOFF = 125.00'

REVISIONS

DATE: 08/15/11
 DRAWN BY: J. STANLEY

5/14/99
 1-JUL-2007 11:51
 \\ge221-001\work\520\geos\4276-geo-rdwy\stanly\cadd\geotech\planprof\4276-geo-pf_1_1_psh6.dgn
 AT 08:25:15

| | |
|---|-----------------------|
| PROJECT REFERENCE NO. B-4276 | SHEET NO. 6 |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION | |
| PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | |
| | 520 |



BM# 1
 -L- Sta. 11+37.30, 69.72 (LT)
 ELEV. 499.68
 R/R SPIKE SET IN BASE OF 15" POPLAR

BEGIN GRADE
 STA 11+50.00
 ELEV. 500.33'

PI = 13+00.00
 EL = 500.78'
 VC = 275'
 K = 44

FEATHER TO
 MATCH EXIST

SS-2

12+50.00 -L-
 20.00 LT

(+)0.3000%

(-)5.9200%

RESIDUAL
 BROWN-TAN STIFF
 TO HARD MOIST
 SANDY SILTY CLAY
 W/WEATHERED ROCK
 LAYER AT 4.5' (A-6)

OLIVE-TAN HARD MOIST
 CLAYEY SANDY SILT (A-4)

WEATHERED ROCK
 SEV. WEATHERED
 NON-CRYSTALLINE ROCK

NON-CRYSTALLINE ROCK

BT
 DRY
 0307

EL = 489.11'
 EL = 489.11'

PI = 17+50.00
 EL = 474.14'
 VC = 625'
 K = 115

BM# 2
 -L- Sta. 19+03.33, 16.33 (RT)
 ELEV. 470.68
 CHISELED SQUARE ON SW
 HEADWALL OF BRIDGE # 33

SS-6
 SS-7

18+70.00 -L-
 26.00 RT

BEGIN BRIDGE
 -L- STA 18+83.50

END BRIDGE
 -L- STA 20+84.50

(-)0.4800%

(-)5.9200%

| BRIDGE HYDRAULIC DATA | |
|-------------------------------------|-------------|
| DESIGN DISCHARGE | = 5109 CFS |
| DESIGN FREQUENCY | = 50' YRS |
| DESIGN HW ELEVATION | = 469.2 FT |
| BASE DISCHARGE | = 5791 CFS |
| BASE FREQUENCY | = 100 YRS |
| BASE HW ELEVATION | = 469.7 FT |
| OVERTOPPING DISCHARGE | = 8062± CFS |
| OVERTOPPING FREQUENCY | = 500± YRS |
| OVERTOPPING ELEVATION | = 470.6 FT |
| DATE OF SURVEY | = 9/02/02 |
| W.S. ELEVATION AT DATE OF SURVEY | = 465.2 FT |

ROADWAY EMBANKMENT
 BROWN SOFT MOIST
 SANDY SILTY CLAY
 W/GRAVEL (A-7-5)

RESIDUAL
 BROWN STIFF SANDY
 CLAYEY SILT W/ROCK
 FRAGS (A-4)

WEATHERED ROCK
 SEV. WEATHERED
 NON-CRYSTALLINE ROCK

NON-CRYSTALLINE ROCK

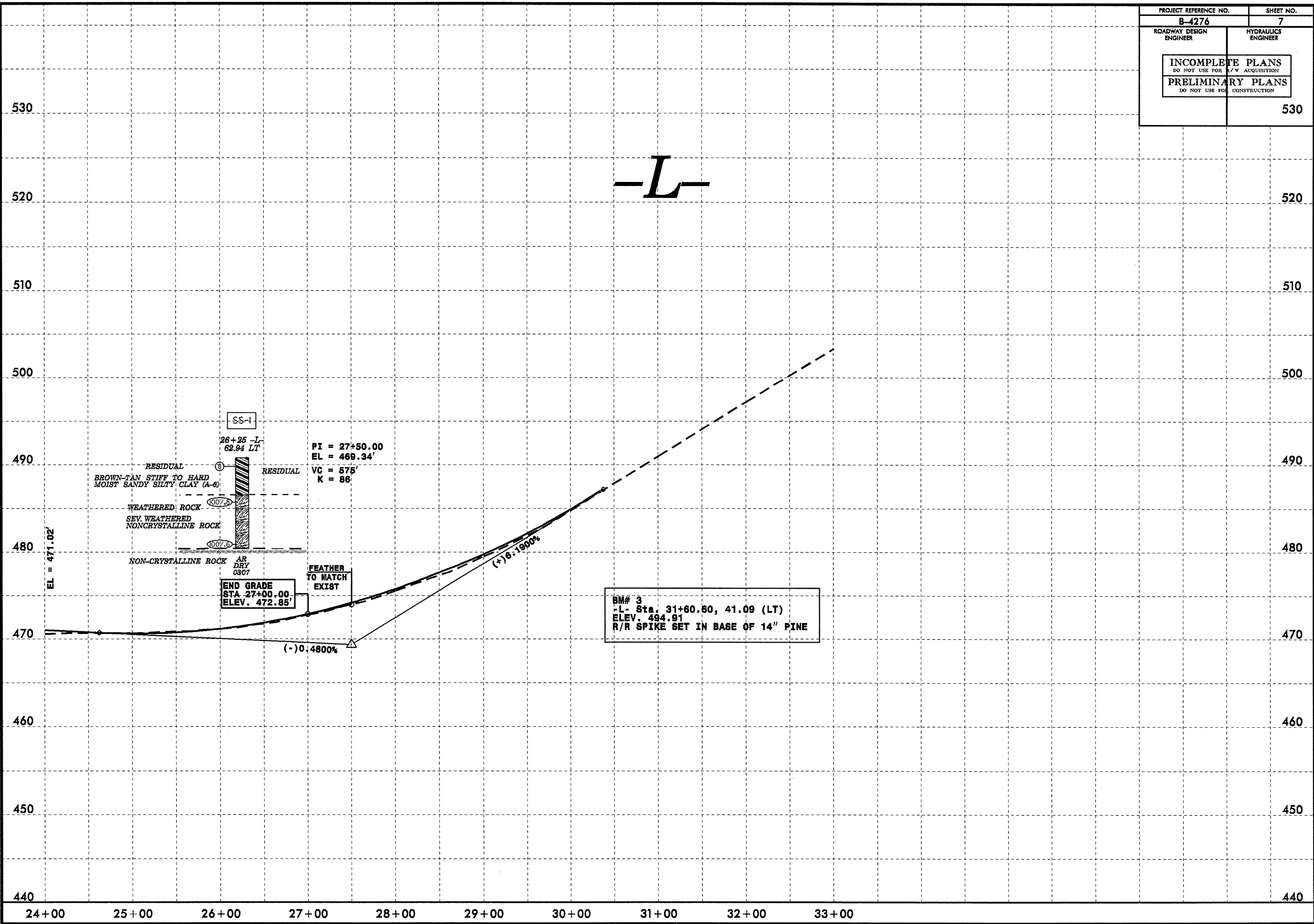
BT
 0407

EL = 471.02'

10+00 11+00 12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00 20+00 21+00 22+00 23+00 24+00

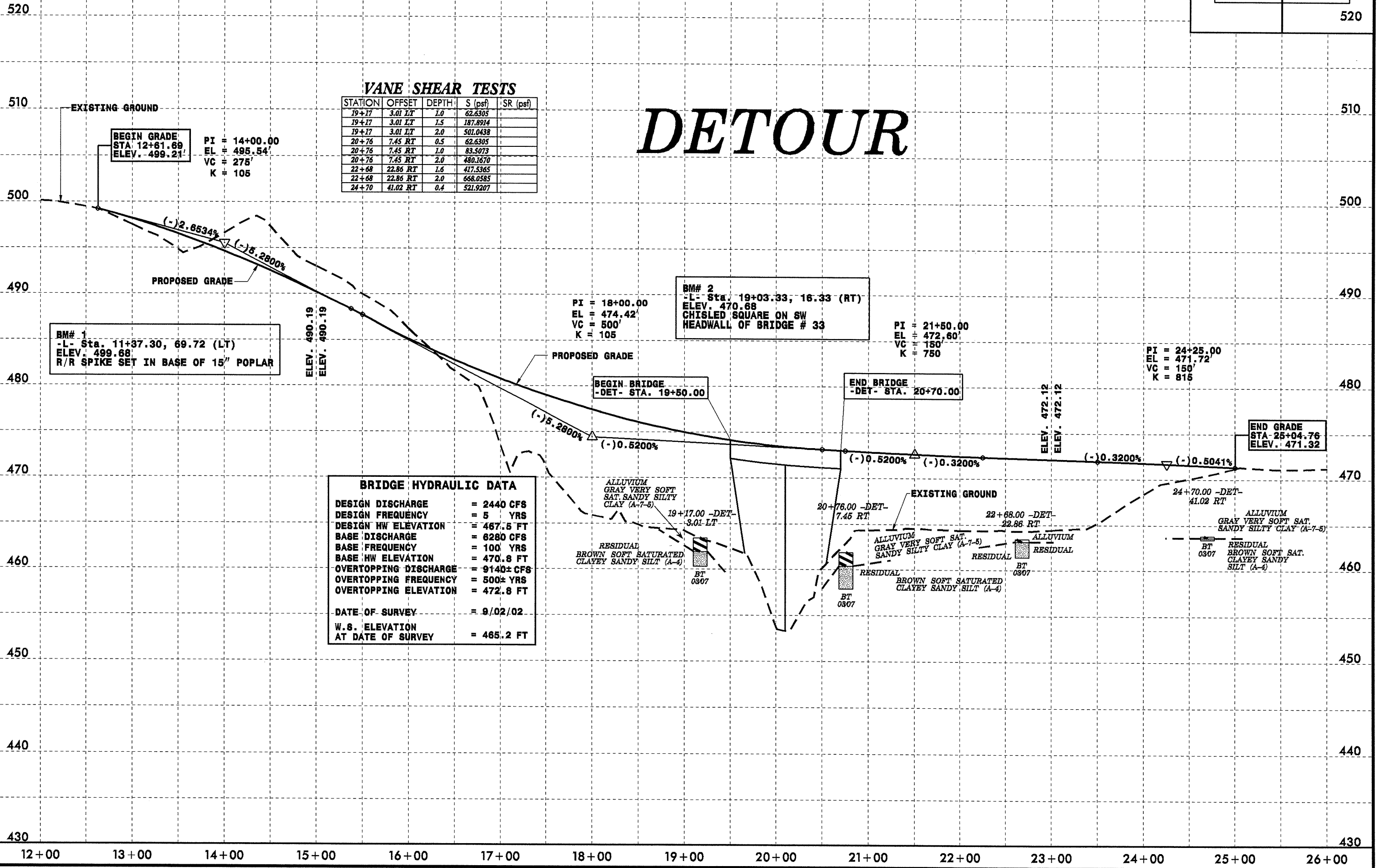
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| PROJECT REFERENCE NO. B-4276 | SHEET NO. 7 |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| INCOMPLETE PLANS DO NOT USE FOR ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | |
| | 530 |

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| PROJECT REFERENCE NO. B-4276 | SHEET NO. 8 |
| ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER |
| INCOMPLETE PLANS DO NOT USE FOR ACQUISITION | |
| PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION | |
| | 520 |



VANE SHEAR TESTS

| STATION | OFFSET | DEPTH | S (psf) | SR (psf) |
|---------|----------|-------|----------|----------|
| 19+17 | 3.01 LT | 1.0 | 62.6305 | |
| 19+17 | 3.01 LT | 1.5 | 187.8914 | |
| 19+17 | 3.01 LT | 2.0 | 501.0438 | |
| 20+76 | 7.45 RT | 0.5 | 62.6305 | |
| 20+76 | 7.45 RT | 1.0 | 83.5073 | |
| 20+76 | 7.45 RT | 2.0 | 480.1670 | |
| 22+68 | 22.86 RT | 1.6 | 417.5365 | |
| 22+68 | 22.86 RT | 2.0 | 658.0585 | |
| 24+70 | 41.02 RT | 0.4 | 521.9207 | |

DETOUR

BEGIN GRADE
 STA. 12+61.69
 ELEV. 499.21'
 PI = 14+00.00
 EL = 495.54'
 VC = 275'
 K = 105

BM# 1
 -L- Sta. 11+37.30, 69.72 (LT)
 ELEV. 499.68'
 R/R SPIKE SET IN BASE OF 15" POPLAR

PI = 18+00.00
 EL = 474.42'
 VC = 500'
 K = 105

BM# 2
 -L- Sta. 19+03.33, 16.33 (RT)
 ELEV. 470.68'
 CHISELED SQUARE ON SW
 HEADWALL OF BRIDGE # 33

PI = 21+50.00
 EL = 472.60'
 VC = 150'
 K = 750

PI = 24+25.00
 EL = 471.72'
 VC = 150'
 K = 815

BRIDGE HYDRAULIC DATA

| | |
|----------------------------------|-------------|
| DESIGN DISCHARGE | = 2440 CFS |
| DESIGN FREQUENCY | = 5 YRS |
| DESIGN HW ELEVATION | = 467.5 FT |
| BASE DISCHARGE | = 6280 CFS |
| BASE FREQUENCY | = 100 YRS |
| BASE HW ELEVATION | = 470.8 FT |
| OVERTOPPING DISCHARGE | = 9140± CFS |
| OVERTOPPING FREQUENCY | = 500± YRS |
| OVERTOPPING ELEVATION | = 472.8 FT |
| DATE OF SURVEY | = 9/02/02 |
| W.S. ELEVATION AT DATE OF SURVEY | = 465.2 FT |

ALLUVIUM
 GRAY VERY SOFT
 SAT. SANDY SILTY
 CLAY (A-7-5)

RESIDUAL
 BROWN SOFT SATURATED
 CLAYEY SANDY SILT (A-4)

ALLUVIUM
 GRAY VERY SOFT SAT.
 SANDY SILTY CLAY (A-7-5)

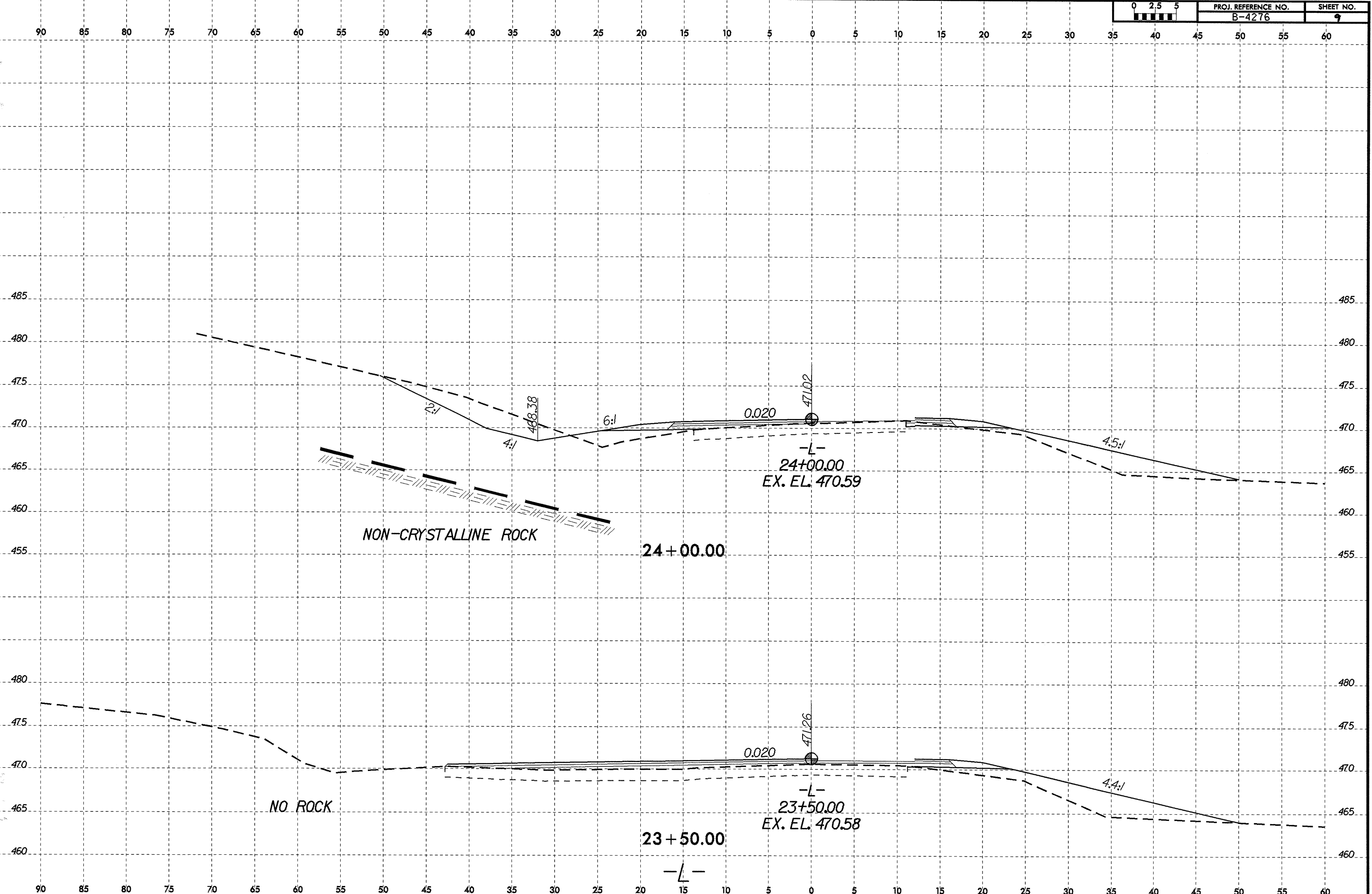
RESIDUAL
 BROWN SOFT SATURATED
 CLAYEY SANDY SILT (A-4)

ALLUVIUM
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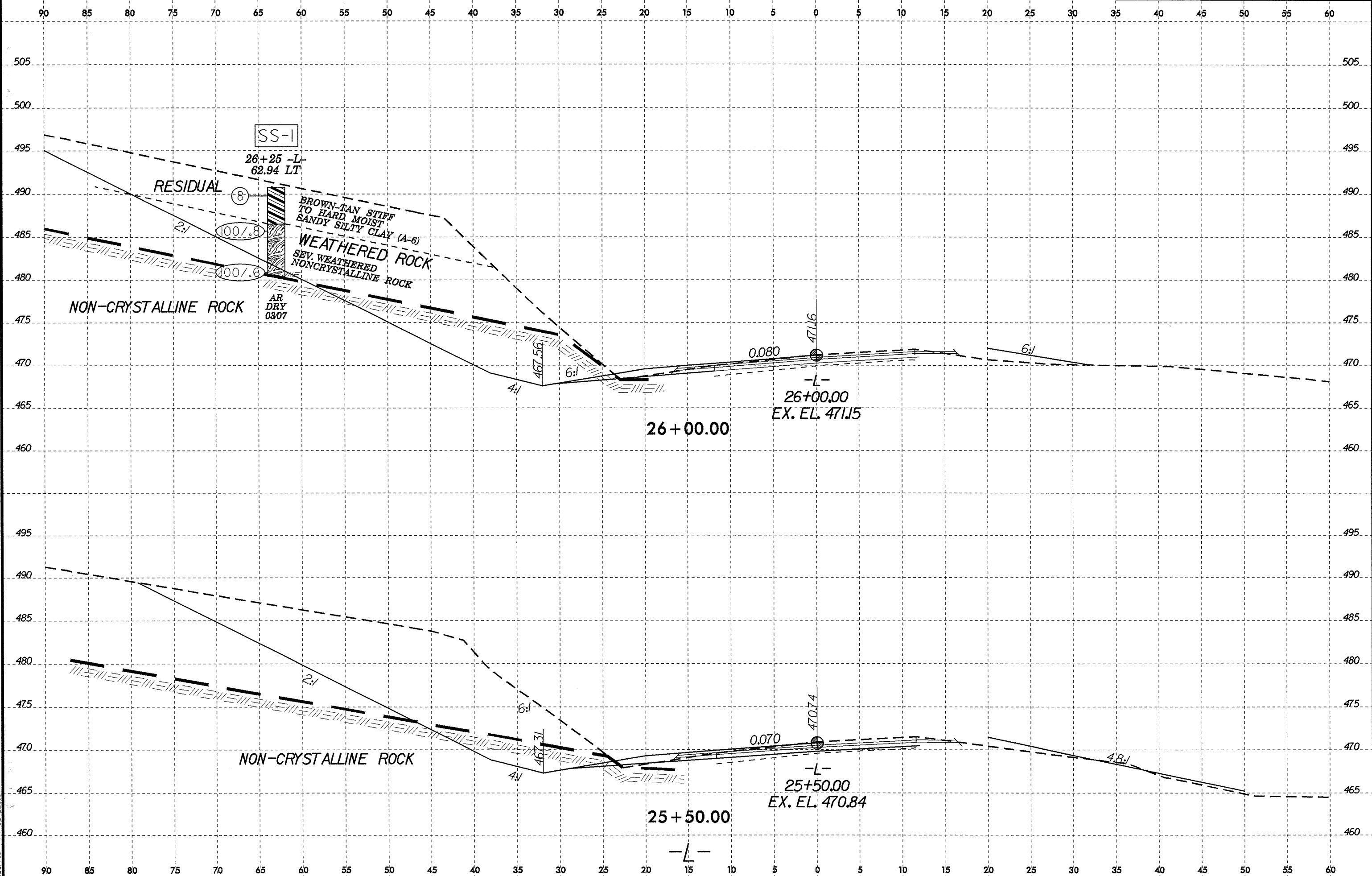
RESIDUAL
 BROWN SOFT SAT.
 CLAYEY SANDY
 SILT (A-4)

12+00 13+00 14+00 15+00 16+00 17+00 18+00 19+00 20+00 21+00 22+00 23+00 24+00 25+00 26+00

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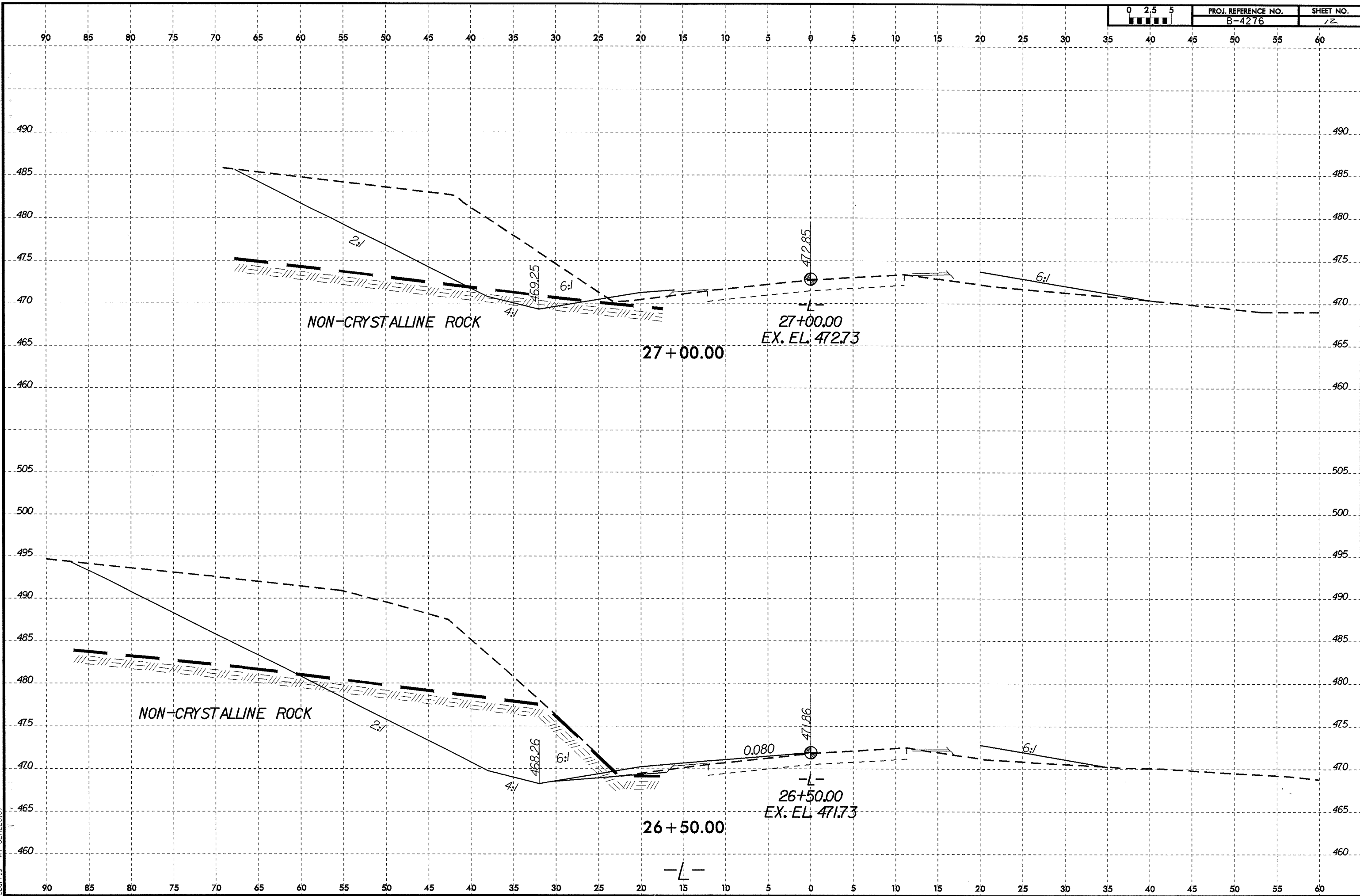


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CHURCH AT 04/22/97

08-JUN-2007 10:46
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cburns



| | | |
|---------|---------------------|-----------|
| 0 2.5 5 | PROJ. REFERENCE NO. | SHEET NO. |
| | B-4276 | 12 |

NON-CRYSTALLINE ROCK

27+00.00

472.85
-L-
27+00.00
EX. EL. 472.73

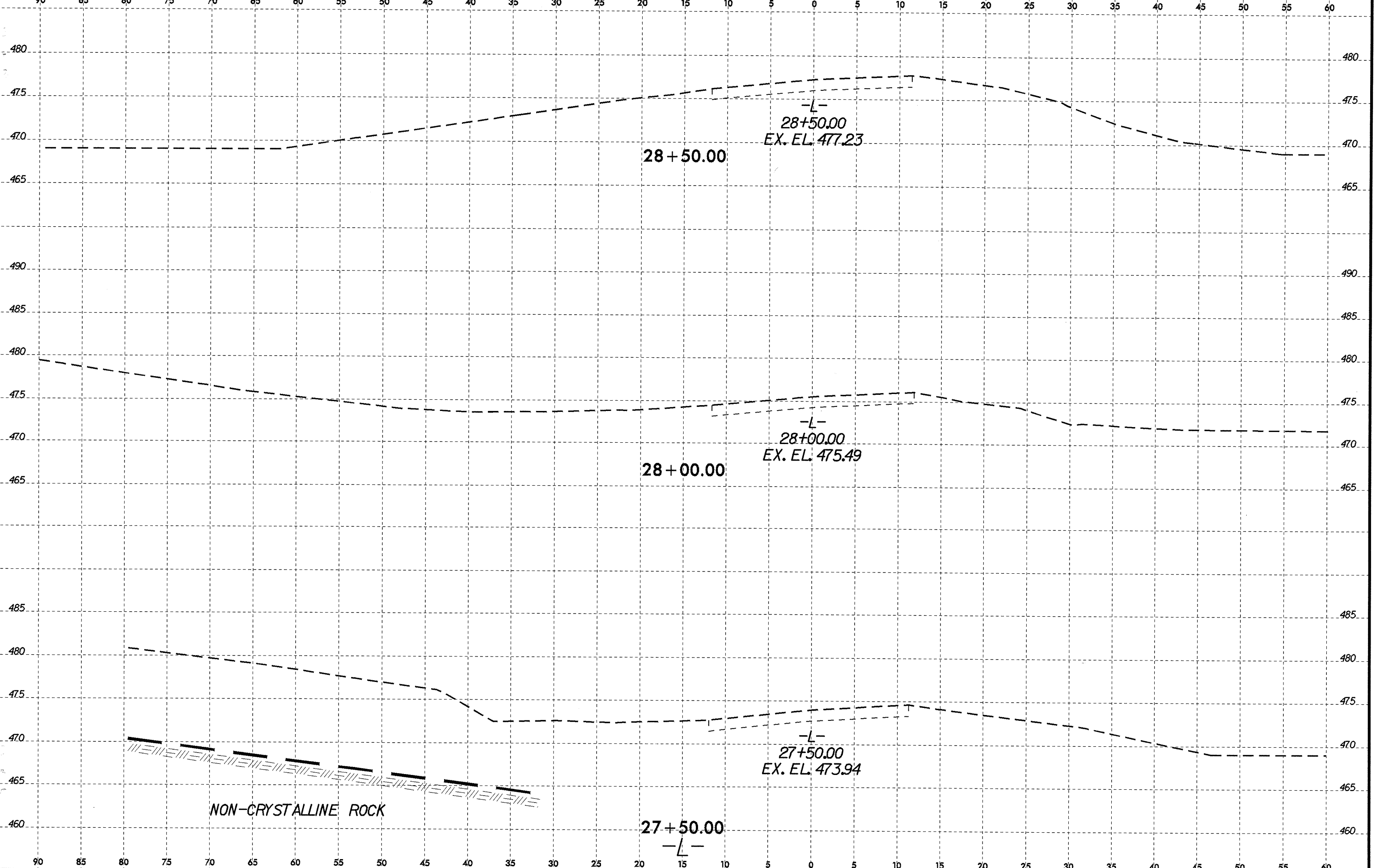
NON-CRYSTALLINE ROCK

26+50.00

471.86
-L-
26+50.00
EX. EL. 471.73

0.080

8/23/95



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cburns AL 06:22:57

SOIL TEST RESULTS

| SAMPLE NO. | OFFSET | STATION | DEPTH INTERVAL | AASHTO CLASS. | L.L. | P.I. | % BY WEIGHT | | | | % PASSING (SIEVES) | | | % MOISTURE | % ORGANIC |
|------------|--------|-----------|----------------|---------------|------|------|-------------|--------|------|------|--------------------|----|-----|------------|-----------|
| | | | | | | | C.SAND | F.SAND | SILT | CLAY | 10 | 40 | 200 | | |
| SS-1 | C/L | 26+50 -L- | 0.00-1.50 | A-6(11) | 39 | 12 | 9.5 | 5.6 | 30.5 | 54.4 | 95 | 87 | 83 | - | - |
| SS-2 | 20 LT | 12+50 -L- | 9.50-11.00 | A-4(2) | 33 | 7 | 21.8 | 28.8 | 11.2 | 38.3 | 100 | 85 | 55 | - | - |
| SS-6 | 26 RT | 18+70 -L- | 8.70-10.20 | A-4(0) | 29 | 6 | 33.6 | 14.7 | 15.4 | 36.3 | 72 | 52 | 39 | - | - |
| SS-7 | 26 RT | 18+70 -L- | 13.20-14.70 | A-4(5) | 28 | 8 | 6.0 | 23.6 | 36.2 | 34.2 | 100 | 97 | 77 | - | - |
| | | | | | | | | | | | | | | - | - |
| | | | | | | | | | | | | | | - | - |

* NOTE: Samples 3,4,5 not tested due to insufficient quantity recovered.