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NOTE: SEE SHEET 2A 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.            | 34182.1.4 (I-3318BB)        | 1                  | 10           |
| STATE PROJ. NO. | F.A. PROJ. NO.              | DESCRIPTION        |              |
| 34182.1.4       | IMS-095-2(119)105           | P.E.<br>RW & UTIL. |              |
|                 |                             |                    |              |
|                 |                             |                    |              |

CONTENTS

| LINE | STATION        | PLAN | XSECT |
|------|----------------|------|-------|
| -L-  | 12+88 to 37+24 | 4-6  | 7-9   |
| -Y-  | 10+15 to 18+30 | 5, 6 | 10    |

ROADWAY  
SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 34182.1.4 (I-3318BB) F.A. PROJ. IMS-095-2(119)105  
COUNTY JOHNSTON  
PROJECT DESCRIPTION REPLACE BRIDGE NOS. 114 & 116 OVER  
LITTLE RIVER

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) 707-6850. 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: ID: I-3318BB

PERSONNEL

N.D. MOHS

O.B. OTI

H.R. CONLEY

J.R. MATULA

H. L. FROATS

INVESTIGATED BY N.D. MOHS

CHECKED BY N.T. ROBERSON

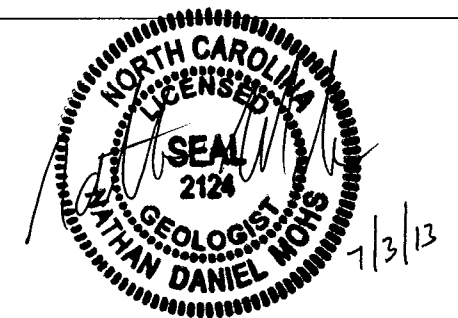
SUBMITTED BY N.T. ROBERSON

DATE JULY 2013

DRAWN BY: T.T. WALKER

NOTE - THE INFORMATION CONTAINED HEREIN IS NOT IMPLIED OR GUARANTEED BY THE N.C. DEPARTMENT OF TRANSPORTATION AS BEING ACCURATE NOR IS IT CONSIDERED TO BE PART OF THE PLANS, SPECIFICATIONS, OR CONTRACT FOR THE PROJECT.

NOTE - BY HAVING REQUESTED THIS INFORMATION THE CONTRACTOR SPECIFICALLY WAIVES ANY CLAIMS FOR INCREASED COMPENSATION OR EXTENSION OF TIME BASED ON DIFFERENCES BETWEEN THE CONDITIONS INDICATED HEREIN AND THE ACTUAL CONDITIONS AT THE PROJECT SITE.





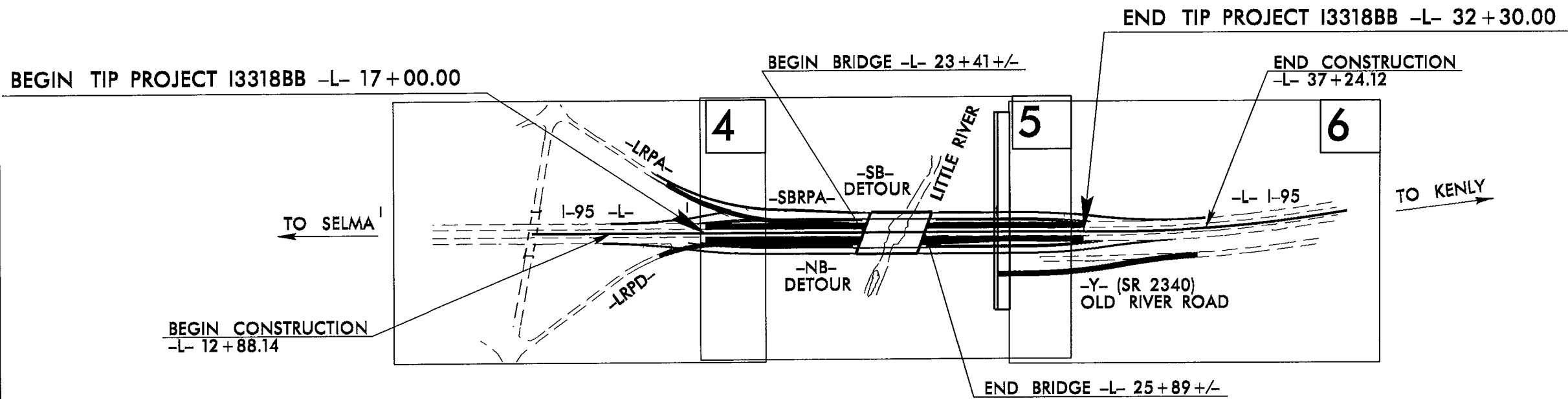
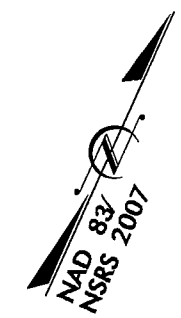
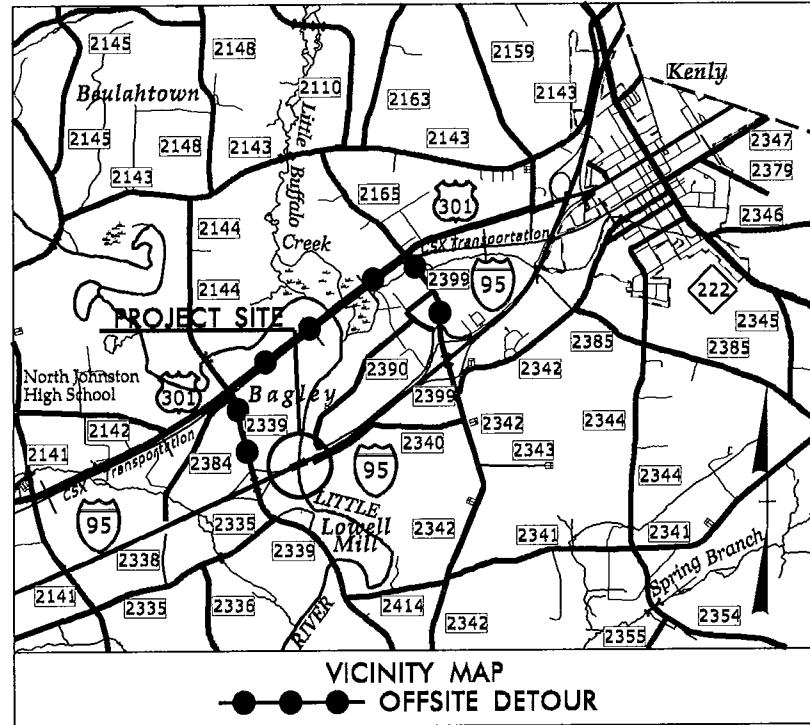
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|-----------------|-----------------------------|-------------|--------------|
| STATE           | STATE PROJECT REFERENCE NO. | SHEET NO.   | TOTAL SHEETS |
| N.C.            | I-3318BB                    | 2A          | 10           |
| STATE PROJ. NO. | F.A. PROJ. NO.              | DESCRIPTION |              |
| 34182.1.4       | IMS-095-2(119)105           | P.E.        |              |
|                 |                             |             |              |
|                 |                             |             |              |
|                 |                             |             |              |
|                 |                             |             |              |

STATE OF NORTH CAROLINA  
DIVISION OF HIGHWAYS

**JOHNSTON COUNTY**

LOCATION: REPLACE BRIDGES 114 & 116 OVER  
THE LITTLE RIVER ON I-95

TYPE OF WORK: GRADING, PAVING, RESURFACING, DRAINAGE  
AND STRUCTURES

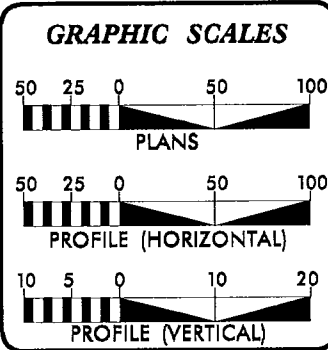


THIS IS A CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO INTERCHANGES.  
THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.  
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD \_\_\_\_\_

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

TIP PROJECT: I-3318BB

CONTRACT:



**DESIGN DATA**

|  |        |
|--|--------|
| ADT 2015 =                             | 34640  |
| ADT 2035 =                             | 40900  |
| DHV =                                  | 12 %   |
| D =                                    | 55 %   |
| T =                                    | 23 % * |
| V =                                    | 70 MPH |
| *(TTST = 19% + DUAL = 4%)              |        |
| FUNC CLASS = INTERSTATE STATEWIDE TIER |        |

**PROJECT LENGTH**

|  |          |
|--|----------|
| LENGTH OF ROADWAY TIP PROJECT I-3318BB =   | 0.243 MI |
| LENGTH OF STRUCTURE TIP PROJECT I-3318BB = | 0.047 MI |
| TOTAL LENGTH OF TIP PROJECT I-3318BB =     | 0.290 MI |

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: JUNE 20, 2014

LETTING DATE: JUNE 16, 2015

BRENDA MOORE, P.E.  
PROJECT ENGINEER

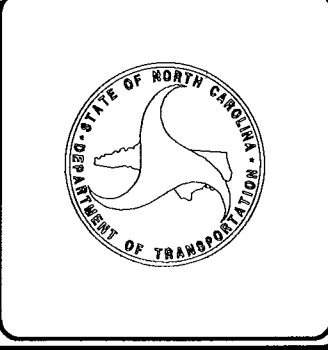
TATIA L. WHITE, P.E.  
PROJECT DESIGN ENGINEER

**HYDRAULICS ENGINEER**

SIGNATURE: \_\_\_\_\_ P.E.

**ROADWAY DESIGN ENGINEER**

SIGNATURE: \_\_\_\_\_ P.E.



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STATE OF NORTH CAROLINA  
DEPARTMENT OF TRANSPORTATION

PAT MCCRORY  
GOVERNOR

ANTHONY J. TATA  
SECRETARY

July 3, 2013

STATE PROJECT: 34182.1.4 (I-3318BB)  
FEDERAL PROJECT: IMS-095-2(119)105  
COUNTIES: Johnston  
DESCRIPTION: Replace Bridges 114 & 116 over Little River  
SUBJECT: Geotechnical Report - Inventory

**Project Description**

This project consists of grading and widening of I-95 near Bagley from SR 2339 to west of SR 2399. Approximately 0.6 miles of I-95 (-L-) will be widened to accommodate onsite detour construction and the replacement of bridges 114 and 116 over Little River. This includes improving access ramps from SR 2339 and the realignment of SR 2340 (-Y-).

The geotechnical investigation was conducted during June of 2013. Hand augers, powered auger, and SPT borings were performed at select locations along the -L- and -Y- alignments. Representative soil samples were collected for visual classification in the field and selected samples were submitted for laboratory analysis by the Materials and Tests Unit.

The following alignments, totaling 0.6 miles, were investigated. Subsurface cross sections of the following alignments are included in this report.

| <u>Line</u> | <u>Stations</u> |
|-------------|-----------------|
| -L-         | 12+88 to 37+24  |
| -Y-         | 10+15 to 18+30  |

**Physiography and Geology**

The project is located in Bagley, Johnston County, North Carolina. The terrain is gently rolling with a mix of businesses and farmland.

Geologically, the project is located within the Eastern Slate Belt, between the Piedmont and Coastal Plain Physiographic Provinces. Soils in this area consist of sands and silts derived from the weathering of metamorphosed tuffs and flows associated with ancient volcanic activity.

**Soil Properties**

Soils encountered during this investigation are separated into three categories based on their origin. They consist of roadway embankment, alluvial, and residual soils.

Roadway Embankment soils are present along the existing roadways on the project. These soils consist of primarily tan to brown, medium stiff, sandy silt (A-4).

Alluvial soils in the floodplain of Little River consist of soft, sandy silt, and loose, silty sand (A-4, A-2-4)

Residual soils consist of loose to medium dense, silty to clayey sand (A-2-4, A-2-7), and medium stiff to hard, sandy silt, clayey silt, sandy clay, and silty clay (A-4, A-5, A-6, A-7). Plastic indices range from non-plastic to 26.

**Rock Properties**

Weathered rock and crystalline rock was encountered in several borings along the project, and is of meta-volcanic origin. Weathered rock is derived from the underlying crystalline rock and ranges in depth from 8 to 14.5 feet. Crystalline rock was interpreted by SPT refusal at -L- 23+00, 83' RT.

**Groundwater**

Groundwater was encountered in several borings. Depth to groundwater ranges from 2.0 to 5.9 feet from the ground surface.

Prepared by,

Nathan Mohs, LG  
Project Geological Engineer





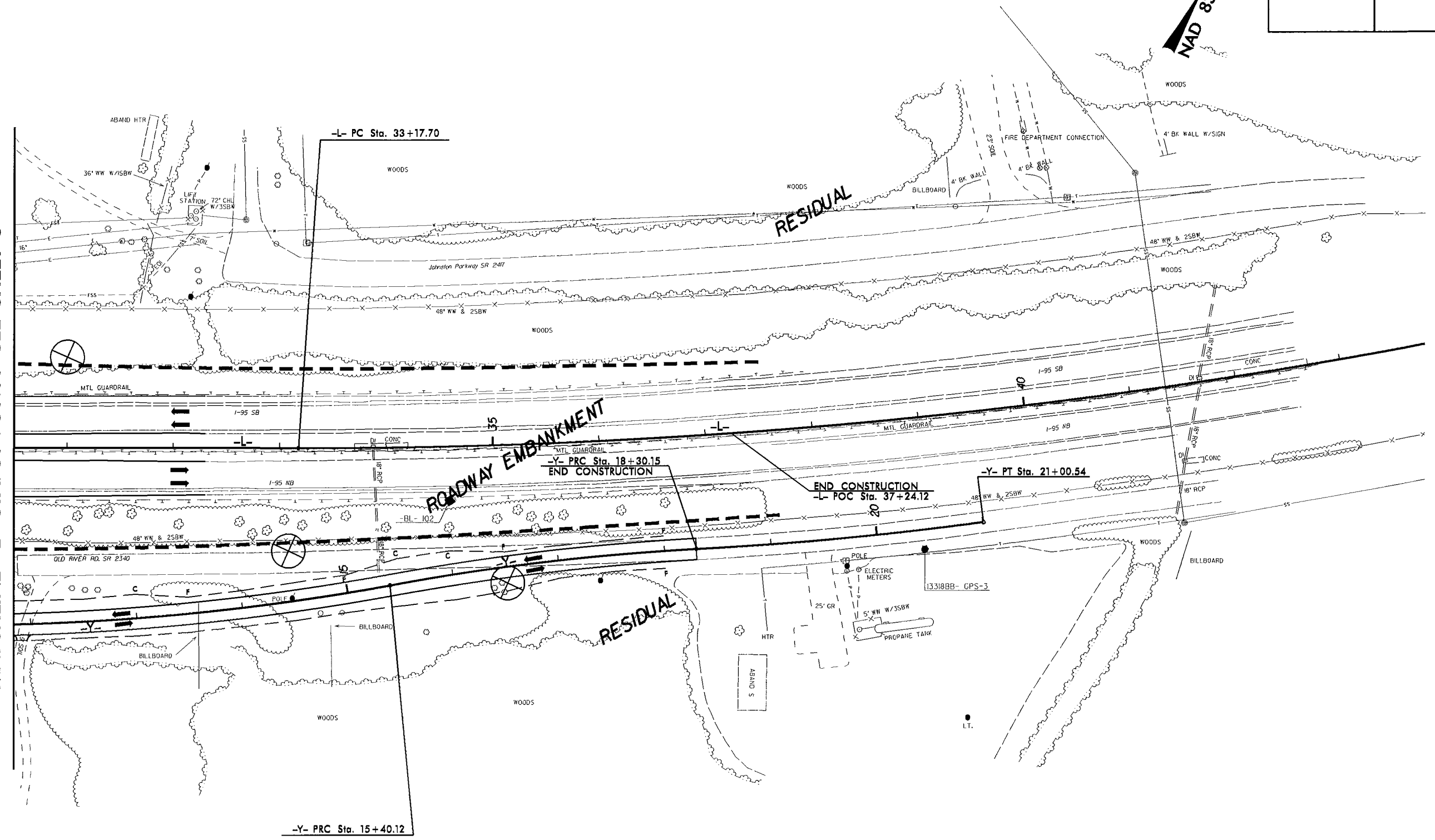
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|   |                     |
|---|---------------------|
| PROJECT REFERENCE NO.<br>1-331888                       | SHEET NO.<br>6      |
| RW SHEET NO.  |                     |
| ROADWAY DESIGN ENGINEER                                 | HYDRAULICS ENGINEER |
| <b>INCOMPLETE PLANS</b><br>DO NOT USE FOR ACQUISITION   |                     |
| <b>PRELIMINARY PLANS</b><br>DO NOT USE FOR CONSTRUCTION |                     |

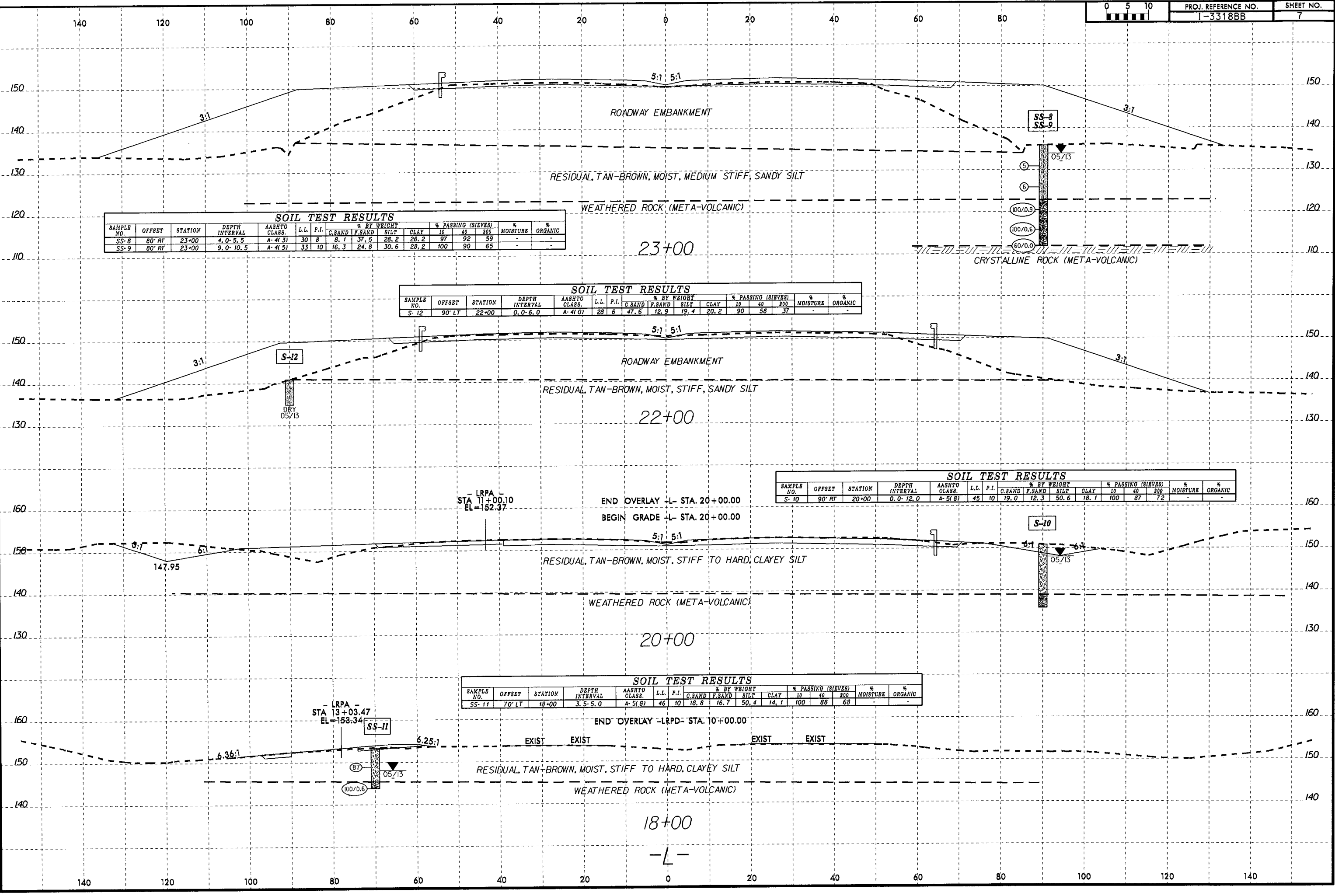
NAD 83/NRS 2007

MATCHLINE -L- STA. 30 + 50.00 SEE SHEET 5



REVISIONS





**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-8       | 80' RT | 23+00   | 4.0-5.5        | A-4(3)        | 30   | 8    | 8.1         | 37.5   | 28.2 | 26.2 | 97                 | 92 | 59  | -          | -         |
| SS-9       | 80' RT | 23+00   | 9.0-10.5       | A-4(5)        | 33   | 10   | 16.3        | 24.8   | 30.6 | 28.2 | 100                | 90 | 65  | -          | -         |

**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 |            |           |
| S-12       | 90' LT | 22+00   | 0.0-6.0        | A-4(0)        | 28   | 6    | 47.6        | 12.9   | 19.4 | 20.2 | 90                 | 58 | 37  | -          | -         |

**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 |            |           |
| S-10       | 90' RT | 20+00   | 0.0-12.0       | A-5(8)        | 45   | 10   | 19.0        | 12.3   | 50.6 | 18.1 | 100                | 87 | 72  | -          | -         |

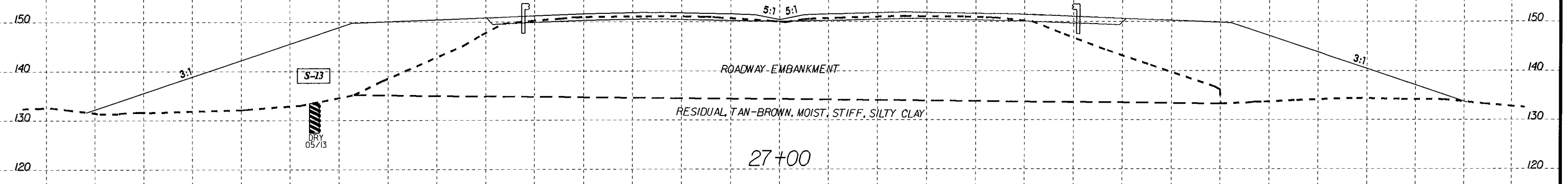
**SOIL TEST RESULTS**

| 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-11      | 70' LT | 18+00   | 3.5-5.0        | A-5(8)        | 46   | 10   | 18.8        | 16.7   | 50.4 | 14.1 | 100                | 88 | 68  | -          | -         |

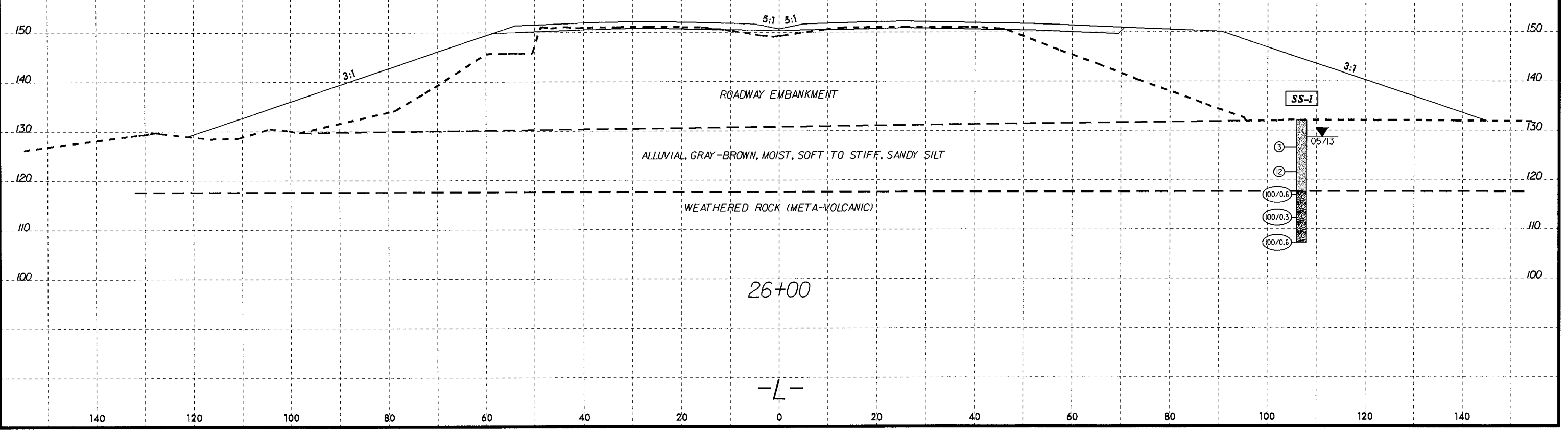
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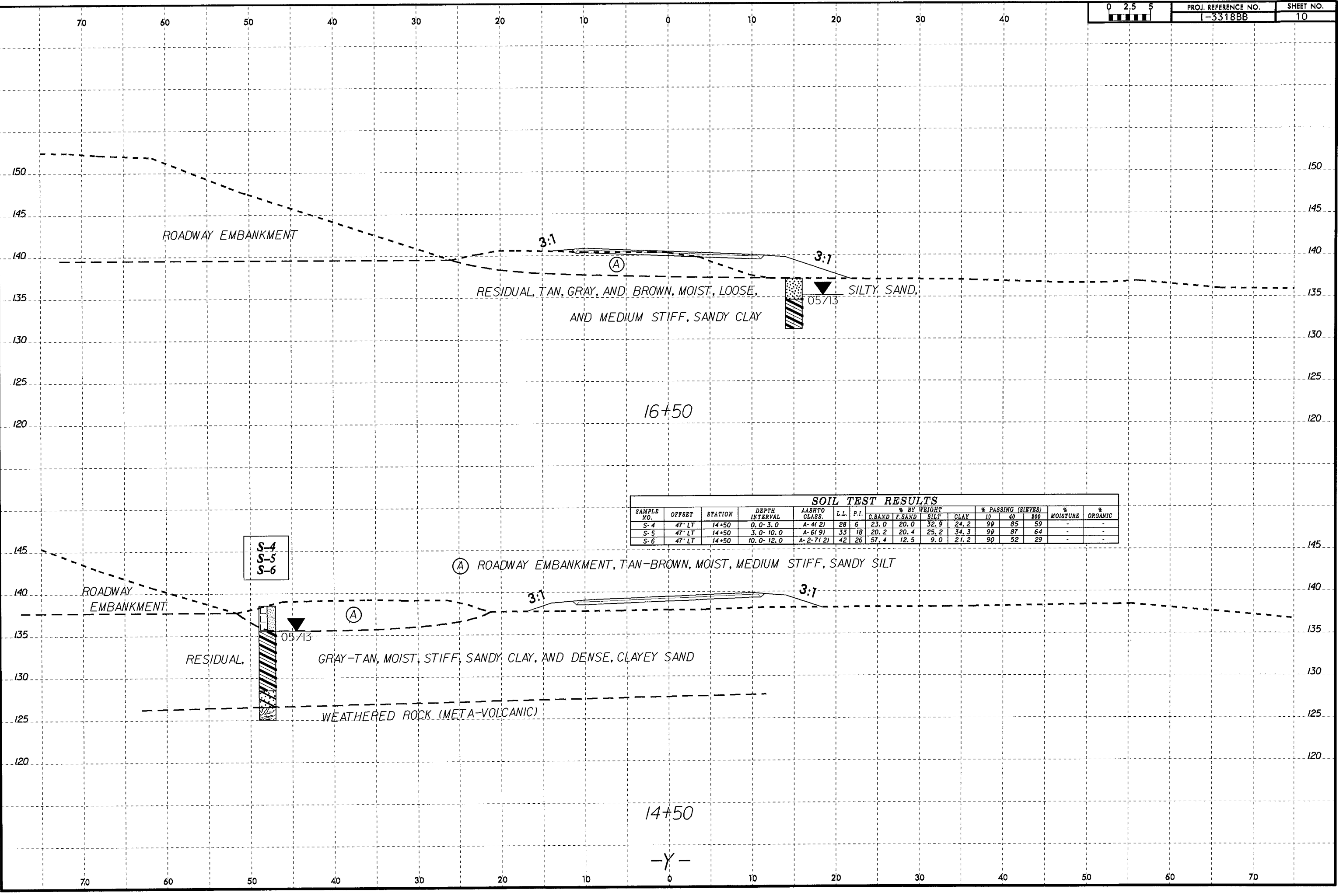
| SOIL TEST RESULTS |        |         |                |               |      |      |             |        |      |      |                    |    |     |            |           |
|-------------------|--------|---------|----------------|---------------|------|------|-------------|--------|------|------|--------------------|----|-----|------------|-----------|
| 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 | 800 |            |           |
| S-13              | 95' LT | 27+00   | 0.0-6.0        | A-7-6(11)     | 41   | 12   | 7.3         | 12.5   | 46.0 | 34.3 | 99                 | 96 | 82  | -          | -         |



| 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 | 800 |            |           |
| SS-1              | 80' RT | 26+00   | 9.5-11.0       | A-4(0)        | 25   | 4    | 27.2        | 34.5   | 24.2 | 14.1 | 91                 | 78 | 40  | -          | -         |







| 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 |            |           |
| S-4               | 47' LT | 14+50   | 0.0- 3.0       | A-4(2)        | 28   | 6    | 23.0        | 20.0   | 32.9 | 24.2 | 99                 | 85 | 59  | -          | -         |
| S-5               | 47' LT | 14+50   | 3.0- 10.0      | A-6(9)        | 33   | 18   | 20.2        | 20.4   | 25.2 | 34.3 | 99                 | 87 | 64  | -          | -         |
| S-6               | 47' LT | 14+50   | 10.0- 12.0     | A-2(71 2)     | 42   | 26   | 57.4        | 12.5   | 9.0  | 21.2 | 90                 | 52 | 29  | -          | -         |