

INTRODUCTION

THIS SUBSURFACE INVESTIGATION REPORT PRESENTS THE FINDINGS OF A SUPPLEMENTAL GEOTECHNICAL INVESTIGATION PERFORMED TO CHARACTERIZE THE SUBSURFACE CONDITIONS OF THE PROPOSED US 33 MAINLINE ALIGNMENT THROUGH SOUTHERN ATHENS COUNTY. MORE SPECIFICALLY, THIS REPORT ADDRESSES THE PROJECT SEGMENT BETWEEN STA. 29+600 AND STA. 39+600, TRAVERSING THE TOWNSHIPS OF ATHENS, ALEXANDER, AND LODI. THIS IS THE NORTHERN PORTION OF THE LARGER US 33 ATHENS-DARWIN PROJECT INVOLVING A NEW "SUPER-TWO" HIGHWAY CORRIDOR THROUGH ATHENS AND MEIGS COUNTIES IN SOUTHEAST OHIO. THE PURPOSE OF THIS INVESTIGATION WAS TO PROVIDE ADDITIONAL SUBSURFACE INFORMATION ALONG THE PROPOSED US 33 CORRIDOR WHERE THE ORIGINAL ALIGNMENT AND PROFILE, SUBJECT OF RESOURCE INTERNATIONAL (R.I.) REPORT NO. W-7139, HAD BEEN CHANGED, ASSESS THEIR EMBANKMENT AND STRUCTURAL SUPPORT CAPABILITY AND SLOPE STABILITY, AND TO MAKE RECOMMENDATIONS RELATIVE TO THE DESIGN AND CONSTRUCTION OF THE PROPOSED STRUCTURES, EMBANKMENTS, CUT SLOPES, AND OTHER EARTHWORK FOR THE PROJECT.

THE SCOPE OF THIS WORK INCLUDED A REVIEW OF THE R.I. REPORT, (MUCH OF WHICH IS INCLUDED IN THIS DOCUMENT) AVAILABLE GEOLOGIC AND SOILS DATA FOR THE PROJECT AREA, A SUBSURFACE INVESTIGATION CONSISTING OF ADDITIONAL SOIL TEST BORINGS AND ASSOCIATED ROCK CORING, SELECTED LABORATORY TESTING, AND AN ENGINEERING ANALYSIS AND EVALUATION OF THE SUBSURFACE CONDITIONS ENCOUNTERED AT THE SITE. IN ADDITION, THIS REPORT INCLUDES THE WORK ASSOCIATED WITH THE CULVERT INVESTIGATION PERFORMED BY PRIME ENGINEERING GANNETT FLEMING'S WORK FOR FIVE STRUCTURES. THESE STRUCTURES ARE THE RAMP A AND RAMP B RETAINING WALLS, THE MAINLINE US 33 BRIDGE OVERPASS ABOVE ALBANY ROAD, AND THE TOWNSHIP ROUTE (TR) 55 AND TR 64 BRIDGE OVERPASSES ABOVE THE US 33 MAINLINE. DATA AND SOIL PROFILES FOR THESE STRUCTURES FOLLOW THE ROADWAY AND CULVERT INFORMATION IN THIS DOCUMENT. DETAILED INFORMATION AND DISCUSSION REGARDING THESE STRUCTURES IS AVAILABLE IN SEPARATE GEOTECHNICAL INVESTIGATION REPORTS SPECIFICALLY DEVELOPED FOR EACH STRUCTURE. THESE MAY BE OBTAINED FROM THE OHIO DEPARTMENT OF TRANSPORTATION (SEE NOTE ON THIS TITLE SHEET).

OBSERVATIONS OF THE PROJECT AND SITE GEOLOGY

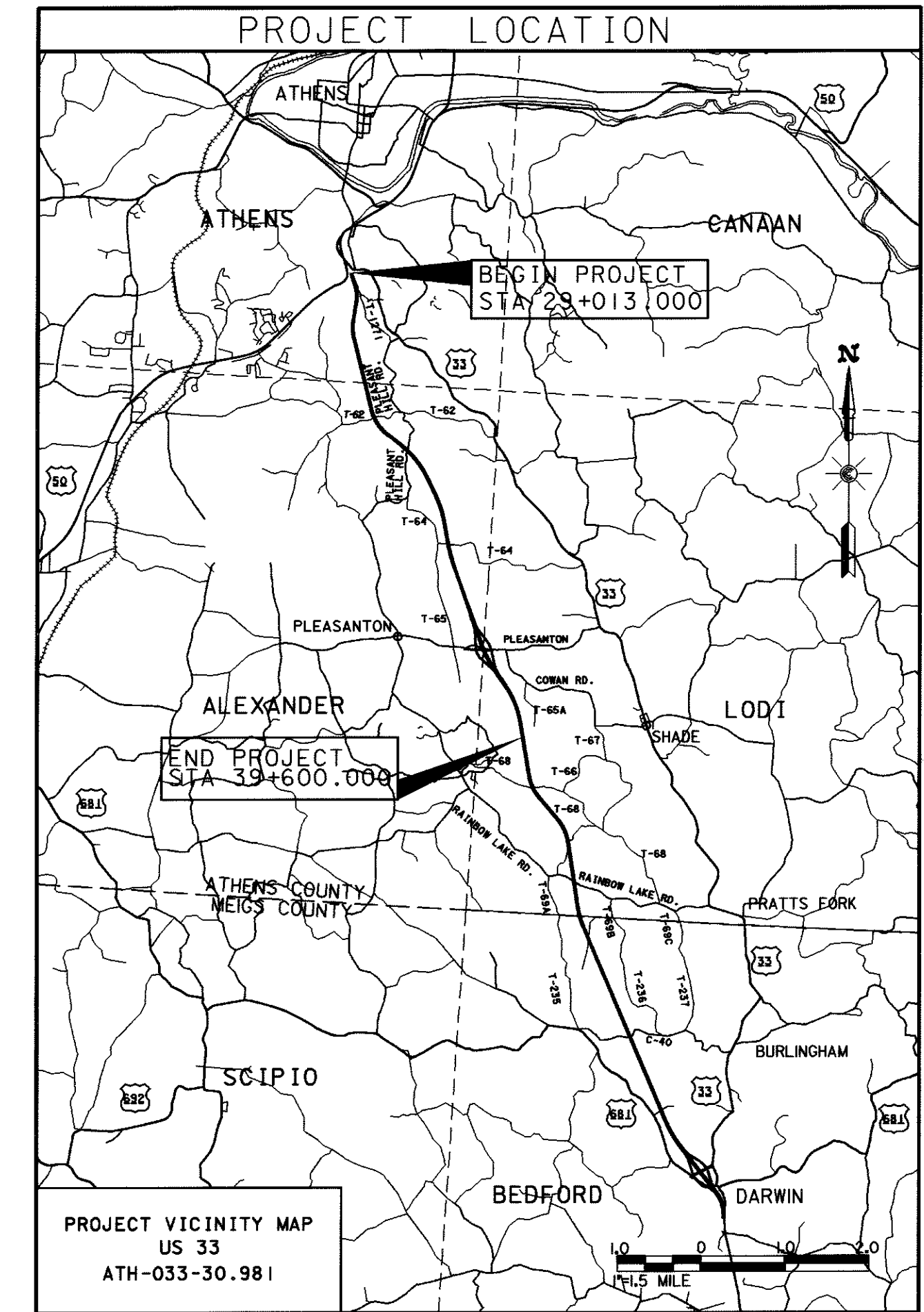
THE PROPOSED CORRIDOR FOR THE US 33 "SUPER TWO" HIGHWAY IS COMPRISED PRIMARILY OF FARMLAND AND RURAL RESIDENTIAL PROPERTY. WHILE MOST OF THE RESIDENTIAL PROPERTY IS MAINTAINED, THE FARMLAND CAN VARY BETWEEN OPEN PASTURE AND HEAVILY WOODED AREAS. FAIRLY SIGNIFICANT RELIEF IS PREVALENT ALONG THE CORRIDOR CENTERLINE AND THE PRESENT SURFACE ELEVATION CAN VARY FROM ABOUT ELEVATION 210 NEAR RICHLAND AVENUE TO ABOUT ELEVATION 298 NEAR STATION 33+300. NUMEROUS SMALL, NAMELESS CREEKS AND DRAINAGE SWALES ARE FREQUENTLY OBSERVED IN THE VALLEYS OF THIS GENERALLY WELL-DRAINED ROLLING TERRAIN. AS A CONSEQUENCE OF THIS TERRAIN AND RELIEF, RELATIVELY MASSIVE EARTHWORK IS REQUIRED, RESULTING IN DEEP CUTS AND FILLS. IN ORDER TO ACHIEVE THE DESIRED DESIGN PROFILE, SOME OF THESE CUTS AND FILLS ARE IN THE RANGE OF 30 METERS TO GREATER THAN 40 METERS IN MAGNITUDE.

THE PROJECT LIES IN A REGION PREDOMINATED BY RESIDUAL SOILS FORMED FROM PENNSYLVANIAN AGED SEDIMENTARY BEDROCK OF THE MARIETTA PLATEAU, A SUB MEMBER OF THE ALLEGHENY PLATEAU. SANDSTONE, SILTSTONE, SHALE, CLAY SHALE/MUDSTONE, ALONG WITH OCCASIONAL, DEEPER, THINLY BEDDED COAL SEAMS OF THE CONEMAUGH AND MONONGAHELA FORMATIONS DOMINATE THE BEDROCK PROFILE ALONG THE PROPOSED ROADWAY CORRIDOR. MUCH OF THE RESIDUAL SOIL MATERIAL IS COMPRISED OF CLAY AND SILTY CLAY MATERIAL DERIVED FROM THE SOFT CLAY SHALE/MUDSTONE DEPOSITS CALLED RED BEDS. THESE RED/MAROON TO VARIEGATED RED AND GRAY CLAYS AND SILTY CLAYS ARE NOTORIOUS FOR THEIR SLOPE INSTABILITY AND TENDENCY TO ERODE WHEN CUT AND EXPOSED. NUMEROUS SIGNS OF THIS BEHAVIOR CAN BE OBSERVED ALONG THE PROPOSED ALIGNMENT IN THE PASTURES, MANICURED RESIDENTIAL SLOPES, AND SOME OF THE PRESENT ROAD CUTS AROUND ATHENS, OHIO. IN THE VALLEYS, ALLUVIAL DEPOSITS ALONG THE CREEKS AND DRAINAGE SWALES WHERE INTERMITTENT FLOWS OCCUR CAN BE OBSERVED, ALONG WITH SANDSTONE AND SILTSTONE ROCK EXPOSURES IN THE BASE AND ALONG THE SIDES OF THESE CREEKS AND STREAMS. IN AREAS OF MORE PERSISTENT FLOW, GRAVEL AND BEDROCK ARE VERY PROMINENT IN THE STEEP STREAMBEDS NOTED ALONG THE PROPOSED ALIGNMENT. THE MORE PROMINENT OF THESE ROCK EXPOSURES HAVE BEEN NOTED ON THE ATTACHED SOIL PROFILE.

LEGEND FOR PROJECT; AVERAGE TEST RESULTS FOR RESOURCE INTERNATIONAL BORINGS - 133 SAMPLES TESTED

| DESCRIPTION | HRB CLASS | OHIO CLASS | % AGG. C. | % SAND | % F. SAND | % SILT | % CLAY | LIQUID LIMIT | PLASTICITY INDEX | WATER CONTENT | SAMPLES TESTED |
|-----------------------------------------------------------------------------------------------|-----------|------------|-----------|--------|-----------|--------|--------|--------------|------------------|---------------|----------------|
| GRAVEL | A-1-a | A-1-a | | | | | | | | | |
| GRAVEL WITH SAND | A-1-b | A-1-b | | 4 | 72 | -24 | | | | 11 | 1 |
| FINE SAND | A-3a | A-3a | 3 | 17 | 53 | -27 | | | | 16 | 14 |
| GRAVEL WITH SAND AND SILT | A-2-4(0) | A-2-4 | 4 | 35 | 31 | -30 | | 24 | 9 | 16 | 1 |
| SANDY SILT | A-4a(3) | A-4a | 8 | 9 | 34 | 27 | 22 | 27 | 10 | 18 | 27 |
| SILT | A-4b(8) | A-4b | 1 | 2 | 12 | 58 | 27 | | | 18 | 1 |
| SILT AND CLAY | A-6a(8) | A-6a | 6 | 6 | 20 | 38 | 30 | 32 | 14 | 21 | 21 |
| SILTY CLAY | A-6b(11) | A-6b | 8 | 5 | 16 | 34 | 37 | 37 | 19 | 20 | 23 |
| CLAY | A-7-6(19) | A-7-6 | 5 | 3 | 7 | 30 | 55 | 53 | 31 | 25 | 45 |
| SHALE | | | | | | | | | | | |
| WEATHERED SHALE | | | | | | | | | | | |
| LIMESTONE | | | | | | | | | | | |
| MUDSTONE | | | | | | | | | | | |
| INDURATED CLAY/WEATHERED MUDSTONE | | | | | | | | | | | |
| CLAY-SHALE | | | | | | | | | | | |
| INDURATED CLAY/WEATHERED CLAY-SHALE | | | | | | | | | | | |
| SILTSTONE | | | | | | | | | | | |
| WEATHERED SILTSTONE | | | | | | | | | | | |
| SANDSTONE | | | | | | | | | | | |
| WEATHERED SANDSTONE | | | | | | | | | | | |
| COAL | | | | | | | | | | | |
| ASPHALT | | | | | | | | | | | |
| SOD AND/OR TOPSOIL | | | | | | | | | | | |
| BERM MATERIAL | | | | | | | | | | | |
| SAND AND GRAVEL BASE | | | | | | | | | | | |
| DRIVE SAMPLE/GEOPROBE BORING - PLAN VIEW (ORIGINAL ROADWAY BORINGS BY RESOURCE INTERNATIONAL) | | | | | | | | | | | |
| DRIVE SAMPLE BORING - PLAN VIEW (GANNETT FLEMING) | | | | | | | | | | | |
| DRIVE SAMPLE - PLAN VIEW (CULVERT BORINGS BY PRIME ENGINEERING) | | | | | | | | | | | |
| TOP OF ROCK (CULVERT BORINGS) | | | | | | | | | | | |
| DRIVE SAMPLE/GEOPROBE BORING PLOTTED TO VERTICAL SCALE ONLY | | | | | | | | | | | |
| FREE WATER | | | | | | | | | | | |
| STATIC WATER LEVEL | | | | | | | | | | | |
| ROCK OUTCROP | | | | | | | | | | | |
| W/X/Y/Z OR W-X-Y-Z | | | | | | | | | | | |
| NUMBER OF BLOWS FOR STANDARD PENETRATION TEST | | | | | | | | | | | |
| W = NUMBER OF BLOWS FOR FIRST 15 CENTIMETERS | | | | | | | | | | | |
| X = NUMBER OF BLOWS FOR SECOND 15 CENTIMETERS | | | | | | | | | | | |
| Y = NUMBER OF BLOWS FOR THIRD 15 CENTIMETERS | | | | | | | | | | | |
| Z = NUMBER OF BLOWS FOR FOURTH 15 CENTIMETERS | | | | | | | | | | | |

NOTE: FIGURES BESIDE BORINGS INDICATE WATER CONTENT IN PERCENT. E.G. 15



NOTE

ALL AVAILABLE SOIL AND BEDROCK INFORMATION WHICH CAN BE CONVENIENTLY SHOWN ON THE SOIL PROFILE SHEETS HAS BEEN SO REPORTED. ADDITIONAL SUBSURFACE INVESTIGATIONS, SOIL TESTS, AND BEDROCK BORINGS MAY HAVE BEEN MADE TO STUDY SOME SPECIAL ASPECT OF THE PROJECT. COPIES OF THIS DATA, IF ANY, MAY BE INSPECTED IN THE DISTRICT DEPUTY DIRECTOR'S OFFICE, THE OFFICE OF MATERIALS MANAGEMENT AT 1600 WEST BROAD STREET, THE OFFICE OF ROADWAY ENGINEERING OR THE OFFICE OF STRUCTURAL ENGINEERING AT 1680 WEST BROAD STREET.

EXPLORATION

EXPLORATORY BORINGS WERE MADE BY MEANS OF A TRUCK-MOUNTED OR ATV-MOUNTED ROTARY DRILLING RIG, UTILIZING HOLLOW-STEM CONTINUOUS FLIGHT AUGERS TO ADVANCE THE HOLES IN SOIL, OR A GEOPROBE MODEL 4220, A VEHICLE-MOUNTED, HYDRAULICALLY-POWERED MACHINE THAT UTILIZES STATIC FORCE AND PERCUSSION TO ADVANCE A 122-CENTIMETER LONG BY 5.1-CENTIMETER DIAMETER SOIL SAMPLER. WHERE BORINGS EXTENDED INTO THE BEDROCK (AFTER ENCOUNTERING SPLIT-SPOON SAMPLE REFUSAL), A DOUBLE TUBE DIAMOND BIT CORE BARREL (EITHER WIRELINE OR CONVENTIONAL EQUIPMENT) WAS USED TO CORE (THE BEDROCK). CORING PRODUCED NX-SIZED (5.3-CENTIMETER DIAMETER) CORES, FROM WHICH THE TYPE OF ROCK AND ITS GEOLOGICAL CHARACTERISTICS WERE DETERMINED. RESOURCE INTERNATIONAL PERFORMED THE ORIGINAL ROADWAY BORINGS BETWEEN DECEMBER 15, 1997 AND JUNE 10, 1998. GANNETT FLEMING AND PRIME ENGINEERING PERFORMED THE ADDITIONAL ROADWAY BORINGS AND CULVERT BORINGS, RESPECTIVELY, BETWEEN MAY 24 AND OCTOBER 27, 1999.

GANNETT FLEMING
 SUITE 350
 415 EXECUTIVE PARKWAY
 WESTERVILLE, OHIO 43081

| | |
|------------|---------|
| CALCULATED | CHECKED |
| DATE | |
| REVIEWED | |
| DRAWN | MDH |

ROADWAY / CULVERT SOIL PROFILE

ATH - 33 - 30.981

1 / 05

INVESTIGATIONAL FINDINGS (ROADWAY BORINGS)

SOIL DRILLED ALONG THE ALIGNMENT IS GENERALLY BETWEEN 1.0 AND 5.0 METERS THICK, AVERAGING APPROXIMATELY 2.0 METERS THICK ON THE UPLANDS AND 3.0 METERS THICK IN THE VALLEYS. HOWEVER, THERE WERE SEVERAL LOCATIONS WHERE RESIDUAL SOILS WERE AS GREAT AS 8.0 TO 9.0 METERS THICK ON THE UPLANDS (E.G. B-52, STA. 35+000). THE TRANSITION TO BEDROCK IS NOT EASILY DISCERNABLE WHERE THE SURFACE ROCK IS SHALE, CLAY-SHALE, OR MUDSTONE. WHERE SANDSTONE, LIMESTONE, OR SILTSTONE IS THE SURFACE ROCK, TRANSITION (TO ROCK) WAS EASILY DISCERNABLE.

THE SOILS ARE ALMOST EXCLUSIVELY COHESIVE, DESCRIBED AS REDDISH BROWN CLAY (SILTY CLAY, SANDY CLAY) OF MEDIUM TO HIGH PLASTICITY (A-7-6), WITHIN THE NORTHERN HALF OF THE ALIGNMENT. SOILS BECOME MORE SANDY AND SILTY AT THE SOUTHERN END OF THE ALIGNMENT. WITHIN THE SOUTHERN QUARTER OF THE ALIGNMENT, THE SOILS ARE BEST DESCRIBED AS SANDY SILTS, SILTY SANDS, AND/OR SANDY CLAYS (A-4a) WITH SOME INTERVALS OF SILTY CLAY AND CLAY. AT THE NORTHERN END OF THE ALIGNMENT, THE SOILS ARE PREDOMINANTLY CLASSIFIED AS ODOT A-7-6 AS WELL AS A-6a, A-6b, AND VERY LITTLE A-4a.

IT IS NOTED THAT FILL, DESCRIBED AS NATIVE SOILS MIXED WITH CONSTRUCTION DEBRIS, WAS ENCOUNTERED IN THE TOP 5.0 METERS OF B-29 (ABOVE ELEVATION 262.7 METERS). HOWEVER, SINCE THE ALIGNMENT WAS SHIFTED IN THE VICINITY OF CR 21, THE AREA REPRESENTED BY B-29 IS NO LONGER WITHIN THE LIMITS OF THE PAVEMENT.

LABORATORY TESTING INDICATES THAT THE NATURAL MOISTURE CONTENTS OF THE SOIL ENCOUNTERED TO A DEPTH OF 1.5 METERS ARE TYPICALLY AT TO WELL ABOVE THEIR CORRESPONDING PLASTIC LIMITS. HOWEVER, BECAUSE OF THE HIGHLY PLASTIC NATURE OF THE CLAYS ENCOUNTERED, THE MOISTURE CONTENTS DO NOT TYPICALLY APPROACH THE SOILS' CORRESPONDING LIQUID LIMITS. SAMPLES COLLECTED DURING THE ADDITIONAL FIELDWORK TYPICALLY INDICATED MOISTURE CONTENTS RANGING FROM SLIGHTLY ABOVE TO OFTEN BELOW THE PLASTIC LIMIT. THIS IS MOST LIKELY DUE TO THE EXTENDED PERIOD OF HOT, DRY WEATHER PREVALENT AT THE TIME THE SAMPLES WERE OBTAINED. IN SOME BORINGS (I.E. 34+720, 36+660, 37+780, 38+420, 32+900, AND 34+000), THE SURFICIAL SOIL CONDITIONS WERE SO DESSICATED THAT INCREASES IN MOISTURE CONTENTS WERE NOTED WITH DEPTH. THIS IS IN GENERAL CONTRAST TO THE ORIGINAL ROADWAY BORINGS IN WHICH A DECREASE IN MOISTURE CONTENT WAS OBSERVED BELOW ABOUT 1.5 METERS DEEP. DURING BOTH INVESTIGATIONS, MOISTURE CONTENTS WERE TYPICALLY LESS THAN ABOUT 10 TO 12 % IN THE TRANSITIONAL MATERIAL (SOFT WEATHERED BEDROCK).

BEDROCK CAN BE EXPECTED IN EVERY CUT SECTION GREATER THAN 3.0 METERS. BEDROCK WITHIN THE NORTHERN THREE-QUARTERS OF THE ALIGNMENT CONSISTED PREDOMINANTLY OF SHALE, CLAY-SHALE, AND/OR MUDSTONE, PREDOMINANTLY IN POOR CONDITION. INTERBEDS OF SANDSTONE, LIMESTONE, AND SILTSTONE WERE ENCOUNTERED THROUGHOUT; SOME SECTIONS ARE QUITE MASSIVE. THE MUDSTONE AND SOME OF THE SHALE WAS FREQUENTLY SLICKENSIDED AND DETERIORATED WHEN EXPOSED TO WATER. AS MENTIONED ABOVE, WHERE THESE BEDROCKS WERE ENCOUNTERED, THE ROCK CONDITION WAS TYPICALLY SO POOR THAT IT WAS DIFFICULT TO IDENTIFY THE TRANSITION FROM SOIL TO ROCK.

INVESTIGATIONAL FINDINGS (CULVERT BORINGS)

MATERIALS ENCOUNTERED ACROSS THE PROJECT SITE CONSISTED OF GRAVEL WITH SAND (A-1-b), COARSE AND FINE SAND (A-3a), STONE FRAGMENTS WITH SAND, SILT AND CLAY (A-2-6), SANDY SILT (A-4a), SILT (A-4b), SILT AND CLAY (A-6a), SILTY CLAY (A-6b), CLAY (A-7-6) AND ELASTIC CLAY (A-7-5). THE SOIL ENCOUNTERED IN THE TEST BORINGS CONSISTED PRIMARILY OF COHESIVE AND/OR FINE GRAINED SOILS OVERLYING DECOMPOSED TO WEATHERED BEDROCK. OF THE SOIL SAMPLES TESTED FOR ATTERBERG LIMITS, 3.3 % CONTAINED MOISTURE CONTENTS EQUAL TO THEIR PLASTIC LIMITS AND 17.7% CONTAINED MOISTURE CONTENTS GREATER THAN THEIR PLASTIC LIMITS BUT LESS THAN THEIR LIQUID LIMITS. THE COHESIVE SOILS RANGED IN CONSISTENCY FROM "SOFT" TO "HARD", BUT WERE PREDOMINANTLY "VERY STIFF".

BEDROCK WAS ENCOUNTERED IN ALL OF THE TEST BORINGS. THE BEDROCK ENCOUNTERED CONSISTED OF DECOMPOSED TO WEATHERED CLAY SHALE, SANDSTONE, SILTY SHALE, SILTSTONE, LIMESTONE AND CLAY STONE. THE BEDROCK RANGED FROM VERY SOFT TO HARD WITH UNCONFINED COMPRESSIVE STRENGTHS RANGING FROM 0.508 TO 51.565 MPa OR VERY LOW TO MEDIUM STRENGTH.

GROUNDWATER WAS ENCOUNTERED DURING DRILLING IN TWO (2) OF THE TEST BORINGS ACROSS THE PROJECT SITE.

| PROJECT INDEX | | | | | |
|-----------------------|--------|-----------|---------|-----------|-------|
| STATIONS | | PLAN VIEW | PROFILE | FILL EMB. | CUT |
| FROM | TO | SHEET | SHEET | MAX. | MAX. |
| 29+500 | 30+200 | 10 | 11 | 0.7m | 24.3m |
| CROSS SECTION 29+880 | | - | 11 | - | - |
| 30+200 | 30+900 | 12 | 13 | 18.4m | 35.2m |
| 30+900 | 31+600 | 14 | 15 | 26.5m | 20.8m |
| 31+600 | 32+300 | 16 | 17 | 42.0m | 7.4m |
| 32+300 | 33+000 | 18 | 19 | 36.4m | 11.4m |
| 33+000 | 33+700 | 20 | 21 | 35.0m | 2.6m |
| 33+700 | 34+400 | 22 | 23 | 25.0m | 8.8m |
| 34+400 | 35+100 | 24 | 25 | 21.8m | 16.0m |
| 35+100 | 35+800 | 26 | 27 | 4.0m | 14.0m |
| 35+800 | 36+500 | 28 | 29 | 22.4m | 14.5m |
| 36+500 | 37+200 | 30 | 31 | 32.0m | 15.2m |
| 37+200 | 37+900 | 32 | 33 | 7.0m | 22.8m |
| 37+900 | 38+600 | 34 | 35 | 2.6m | 21.6m |
| 38+600 | 39+300 | 36 | 37 | 8.2m | 26.8m |
| 39+300 | 40+000 | 38 | 39 | 30.0m | 19.2m |
| CROSS SECTION 30+480 | | - | 40 | - | - |
| CROSS SECTION 33+300 | | - | 40 | - | - |
| CROSS SECTION 35+000 | | - | 41 | - | - |
| CROSS SECTION 38+400 | | - | 42 | - | - |
| CROSS SECTION 39+400 | | - | 43 | - | - |
| TR 55 | | - | - | - | - |
| 48+280 | 48+500 | 44 | 44 | - | - |
| CR 21 | | - | - | - | - |
| 3+005 | 3+300 | 45 | 45 | - | - |
| TR 64 | | - | - | - | - |
| 49+030 | 49+480 | 46 | 46 | - | - |
| CR 16 | | - | - | - | - |
| 50+220 | 50+520 | 47 | 47 | - | - |
| 50+520 | 50+790 | 48 | 48 | - | - |
| STRUCTURES | | | | | |
| US 33 MAINLINE | | - | - | - | - |
| BRIDGE OVERPASS | | 77 | 77 | - | - |
| TR 55 BRIDGE OVERPASS | | 78 | 78 | - | - |
| TR 64 BRIDGE OVERPASS | | 79 | 79 | - | - |
| RAMP A RETAINING WALL | | 80 | 80 | - | - |
| RAMP B RETAINING WALL | | 81 | 81 | - | - |

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GANNETT FLEMING
 SUITE 350
 415 EXECUTIVE PARKWAY
 WESTERVILLE, OHIO 43081

ROADWAY / CULVERT SOIL PROFILE

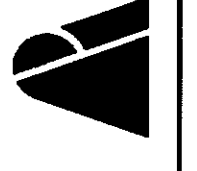
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SUMMARY OF SOIL TEST DATA

| Northing & Easting | | From To | % Agg | % C.S. | % F.S. | % Silt | % Clay | L.L | P.I | W.C. | SHTL Class. | Northing & Easting | | From To | % Agg | % C.S. | % F.S. | % Silt | % Clay | L.L | P.I | W.C. | SHTL Class. | | | | |
|--------------------|--------------------------|-----------|--------------------------------------------------------------------------------------|--------|--------|--------|--------|-----|-----|-------|-------------|--------------------|--------------------------|---------|---------------------------------------------------------|--------|------------------------------------------------------------------|--------|--------|------|-----|------|-------------|--------|------|--------|--------|
| (B-1) | 144770.015 634241.813 | 0.5-0.9 | 21 | 11 | 13 | 28 | 27 | 36 | 18 | 22 | A-6b | (B-12) | 143867.047 634210.694 | 0.3-0.8 | REDDISH-BROWN SAND, SOME SILT, TRACE CLAY, TRACE GRAVEL | | | | | | | | 17 | VISUAL | | | |
| | | 1.1-1.6 | BROWN AND GRAY TO RED CLAY, SOME TO LITTLE SILT, LITTLE SAND, TRACE GRAVEL | | | | | | | | | | | 9 | VISUAL | | | | | | | | | | | | |
| | | 1.8-2.3 | SAME AS 1.1-1.6 | | | | | | | | | | | 8 | VISUAL | | | | | | | | | | | | |
| | | 2.6-3.0 | SAME AS 1.1-1.6 | | | | | | | | | | | 8 | VISUAL | | | | | | | | | | | | |
| (B-2) | 144646.477 634282.292 | 0.5-0.9 | SAME AS 1.1-1.2 | | | | | | | | | 37 | VISUAL | (B-13) | 143700.873 634267.449 | 0-0.5 | SAME AS 1.1-1.6 | | | | | | | | 25 | VISUAL | |
| | | 1.1-1.2 | 5 | 2 | 2 | 19 | 72 | 74 | 51 | 36 | A-7-6 | 27 | VISUAL | | | | | | | | | | | | | | |
| | | 1.2-1.6 | BROWNISH-GRAY CLAYEY SILT, LITTLE SAND | | | | | | | | | | | | | 23 | A-7-6 | | | | | | | | | | |
| | | 1.8-2.3 | SAME AS 1.2-1.6 | | | | | | | | | | | | | 19 | VISUAL | | | | | | | | | | |
| | | 2.6-2.8 | BROWNISH-GRAY TO REDDISH BROWN INDURATED CLAY/WEATHERED MUDSTONE | | | | | | | | | | | | | 15 | VISUAL | | | | | | | | | | |
| (B-3) | 144458.422 634437.611 | 0-0.5 | BROWN SILTY CLAY, SOME SAND | | | | | | | | | 30 | VISUAL | (B-14) | 143601.720 634280.038 | 0-0.4 | 1 | 3 | 13 | 53 | 30 | 35 | 14 | 30 | A-6a | 30 | A-6a |
| | | 0.5-0.9 | LIGHT BROWN SANDY CLAY, SOME SILT, TRACE GRAVEL | | | | | | | | | | | | | 17 | VISUAL | | | | | | | | | | |
| | | 1.1-1.6 | BROWN SILTY CLAY, TRACE SAND, TRACE GRAVEL | | | | | | | | | | | | | 9 | VISUAL | | | | | | | | | | |
| | | 1.8-2.3 | SAME AS 1.1-1.6 | | | | | | | | | | | | | 9 | VISUAL | | | | | | | | | | |
| | | 2.6-3.1 | SAME AS 1.1-1.6 | | | | | | | | | | | | | 10 | VISUAL | | | | | | | | | | |
| (B-4) | 144471.272 634340.311 | 0.3-0.8 | SAME AS 1.8-2.3 | | | | | | | | | 7 | VISUAL | (B-15) | 143465.374 634311.724 | 0-0.5 | 14 | 7 | 21 | 35 | 23 | 35 | 14 | 26 | A-6a | 26 | A-6a |
| | | 1.1-1.6 | SAME AS 1.8-2.3 | | | | | | | | | 24 | VISUAL | | | | | | | | | | | | | | |
| | | 1.8-2.3 | 5 | 4 | 6 | 25 | 60 | 51 | 31 | 20 | A-7-6 | 22 | VISUAL | | | | | | | | | | | | | | |
| | | 2.6-3.1 | SAME AS 1.8-2.3 | | | | | | | | | 13 | VISUAL | | | | | | | | | | | | | | |
| | | 4.1-4.3 | SAME AS 5.7-6.1 | | | | | | | | | 13 | A-7-6 | | | | | | | | | | | | | | |
| (B-5) | 144354.317 634389.372 | 0.3-0.8 | BROWN SILTY CLAY, SOME SAND, LITTLE TO SOME GRAVEL (FILL) | | | | | | | | | 13 | VISUAL | (B-16) | 143358.495 634337.739 | 0-0.5 | BROWN CLAYEY SILT, SOME SAND, TRACE GRAVEL | | | | | | | | | 27 | VISUAL |
| | | 1.1-1.6 | SAME AS 0.3-0.8 | | | | | | | | | 9 | VISUAL | | | | | | | | | | | | | | |
| | | 1.8-2.3 | BROWN WEATHERED SANDSTONE | | | | | | | | | 9 | VISUAL | | | | | | | | | | | | | | |
| | | 2.6-3.1 | BROWN AND REDDISH-BROWN MUDSTONE | | | | | | | | | 9 | VISUAL | | | | | | | | | | | | | | |
| | | 4.1-4.6 | SAME AS 2.6-3.1 | | | | | | | | | 9 | VISUAL | | | | | | | | | | | | | | |
| | | 5.7-5.8 | SAME AS 2.6-3.1 | | | | | | | | | 9 | VISUAL | | | | | | | | | | | | | | |
| | | 7.2-7.3 | SAME AS 2.6-3.1 | | | | | | | | | 9 | VISUAL | | | | | | | | | | | | | | |
| | | 8.7-9.0 | SAME AS 2.6-3.1 | | | | | | | | | 9 | VISUAL | | | | | | | | | | | | | | |
| | | 10.2-10.5 | SAME AS 2.6-3.1 | | | | | | | | | 9 | VISUAL | | | | | | | | | | | | | | |
| | | 11.8-12.1 | SAME AS 2.6-3.1 | | | | | | | | | 9 | VISUAL | | | | | | | | | | | | | | |
| | | 13.3-13.4 | SAME AS 2.6-3.1 | | | | | | | | | 9 | VISUAL | | | | | | | | | | | | | | |
| (B-6) | 144366.744 634339.381 | 0-0.5 | SAME AS 0.5-0.9 | | | | | | | | | 22 | VISUAL | (B-17) | 143271.048 634359.023 | 0-0.5 | 16 | 9 | 23 | 31 | 21 | 40 | 15 | 31 | A-6b | 31 | A-6b |
| | | 0.5-0.9 | 8 | 1 | 4 | 18 | 69 | 61 | 41 | 31 | A-7-6 | 19 | VISUAL | | | | | | | | | | | | | | |
| | | 1.1-1.6 | SAME AS 0.5-0.9 | | | | | | | | | 25 | VISUAL | | | | | | | | | | | | | | |
| | | 1.8-2.3 | SAME AS 0.5-0.9 | | | | | | | | | 16 | VISUAL | | | | | | | | | | | | | | |
| | | 2.6-3.1 | SAME AS 0.5-0.9 | | | | | | | | | 11 | VISUAL | | | | | | | | | | | | | | |
| | | 4.1-4.6 | 9 | 10 | 46 | -35- | NP | NP | NP | 17 | A-3a | 10 | VISUAL | | | | | | | | | | | | | | |
| | | 5.7-6.0 | RED AND PURPLE INDURATED CLAY/MUDSTONE | | | | | | | | | 12 | VISUAL | | | | | | | | | | | | | | |
| | | 7.2-7.6 | SAME AS 5.7-6.0 | | | | | | | | | 14 | VISUAL | | | | | | | | | | | | | | |
| (B-7) | 144228.912 634432.009 | 0.3-0.8 | SAME AS 1.1-1.6 | | | | | | | | | 19 | VISUAL | (B-18) | 143164.168 634385.038 | 0-0.5 | SAME AS 0.5-0.9 | | | | | | | | | 18 | VISUAL |
| | | 1.1-1.6 | 4 | 7 | 15 | -74- | 53 | 28 | 17 | A-7-6 | 17 | VISUAL | | | | | | | | | | | | | | | |
| | | 1.8-2.3 | SAME AS 1.1-1.6 | | | | | | | | | 13 | VISUAL | | | | | | | | | | | | | | |
| | | 2.6-3.1 | BROWN CLAYEY SILT, LITTLE SAND | | | | | | | | | 9 | VISUAL | | | | | | | | | | | | | | |
| | | 4.1-4.4 | REDDISH-BROWN HIGHLY WEATHERED MUDSTONE | | | | | | | | | 9 | VISUAL | | | | | | | | | | | | | | |
| | | 5.7-6.0 | SAME AS 4.1-4.4 | | | | | | | | | 9 | VISUAL | | | | | | | | | | | | | | |
| | | 7.2-7.3 | GRAY WEATHERED SHALE | | | | | | | | | 9 | VISUAL | | | | | | | | | | | | | | |
| (B-8) | 144196.170 634325.107 | 0-0.1 | BROWN SILTY CLAY, LITTLE SAND, TRACE ORGANICS, TRACE GRAVEL (TOPSOIL) | | | | | | | | | 28 | VISUAL | (B-19) | 143018.423 634420.512 | 0-0.4 | 3 | 6 | 31 | 36 | 24 | 26 | 9 | 24 | A-4a | 24 | A-4a |
| | | 0.1-1.2 | SAME AS 1.2-2.6 | | | | | | | | | 15 | A-6b | | | | | | | | | | | | | | |
| | | 1.2-2.6 | 1 | 1 | 34 | -64- | 40 | 19 | 15 | A-6b | 13 | A-3a | | | | | | | | | | | | | | | |
| | | 2.6-3.0 | BROWNISH-GRAY WEATHERED CLAY-SHALE | | | | | | | | | 11 | VISUAL | | | | | | | | | | | | | | |
| (B-9) | 144201.968 634290.591 | 0-0.1 | BROWN SILTY CLAY, SOME SAND, TRACE ORGANICS, TRACE GRAVEL (TOPSOIL) | | | | | | | | | 19 | VISUAL | (B-20) | 142927.172 634468.453 | 0-0.5 | DARK BROWN TO REDDISH-BROWN SILTY CLAY, TRACE SAND, TRACE GRAVEL | | | | | | | | | 78 | VISUAL |
| | | 0.1-1.0 | 14 | 4 | 5 | 21 | 56 | 55 | 35 | 19 | A-7-6 | 27 | VISUAL | | | | | | | | | | | | | | |
| | | 1.0-2.6 | RED INDURATED CLAY/MUDSTONE | | | | | | | | | 14 | VISUAL | | | | | | | | | | | | | | |
| | | 2.6-2.7 | SAME AS 1.0-2.6 | | | | | | | | | 14 | VISUAL | | | | | | | | | | | | | | |
| | | 2.7-3.0 | BROWN TO GRAY CLAY-SHALE | | | | | | | | | 14 | VISUAL | | | | | | | | | | | | | | |
| (B-10) | 143998.933 634291.974 | 0-0.5 | BROWN SILTY CLAY, LITTLE TO SOME SAND, TRACE TO LITTLE GRAVEL | | | | | | | | | 30 | VISUAL | (B-21) | 142824.097 634467.811 | 0-0.5 | 9 | 10 | 31 | -50- | 32 | 14 | 22 | A-6a | 22 | A-6a | |
| | | 0.5-0.9 | SAME AS 0.0-0.5 | | | | | | | | | 23 | VISUAL | | | | | | | | | | | | | | |
| | | 1.1-1.6 | 0 | 2 | 5 | 23 | 70 | 49 | 28 | 25 | A-7-6 | 25 | VISUAL | | | | | | | | | | | | | | |
| | | 1.8-2.3 | SAME AS 1.1-1.6 | | | | | | | | | 18 | VISUAL | | | | | | | | | | | | | | |
| | | 2.6-3.1 | SAME AS 1.1-1.6 | | | | | | | | | 13 | VISUAL | | | | | | | | | | | | | | |
| | | 4.1-4.6 | BROWN AND PURPLE WEATHERED MUDSTONE | | | | | | | | | 9 | VISUAL | | | | | | | | | | | | | | |
| (B-11) | 143860.636 634270.350 | 0.3-0.8 | MOTTLED BROWN AND GRAY SILTY CLAY, SOME SAND, TRACE GRAVEL | | | | | | | | | 18 | VISUAL | (B-22) | 142690.484 634502.391 | 0-0.5 | BROWN SILTY CLAY, SOME SAND, LITTLE GRAVEL, TRACE ORGANICS | | | | | | | | | 27 | VISUAL |
| | | 1.1-1.6 | SAME AS 0.3-0.8 | | | | | | | | | 16 | VISUAL | | | | | | | | | | | | | | |
| | | 1.8-2.3 | REDDISH-BROWN SAND, LITTLE GRAVEL (WEATHERED SANDSTONE FRAGMENTS), TRACE CLAYEY SILT | | | | | | | | | 12 | VISUAL | | | | | | | | | | | | | | |
| | | 2.6-3.1 | 10 | 6 | 5 | 19 | 60 | 53 | 30 | 19 | A-7-6 | 8 | VISUAL | | | | | | | | | | | | | | |
| | | 4.1-4.4 | GRAY CLAY-SHALE | | | | | | | | | 18 | VISUAL | | | | | | | | | | | | | | |

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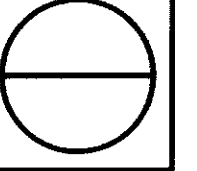


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ROADWAY / CULVERT SOIL PROFILE

ATH-33-30.981



SUMMARY OF SOIL TEST DATA

| Northing & Easting | From To | % Agg | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | SHTL Class. | | |
|---------------------------------|------------------------------------------------------------------------------------------------------------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|--------|--------|--------|------|------|------|-------------|----------------------------------------------|----------------------------------------------------------------------------------------|
| (B-49) 139824.900 636063.200 | 0-0.5 0.5-0.9 1.1-1.6 1.8-2.3 | BROWN CLAYEY SILT, LITTLE SAND | | | | | | | | | 23 15 13 15 | VISUAL VISUAL VISUAL VISUAL |
| (B-50) 139726.600 636081.500 | 0-0.5 0.5-0.9 1.1-1.5 1.8-2.3 2.6-3.1 4.1-4.6 5.6-6.1 7.2-7.6 | SAME AS 1.1-1.5 SAME AS 1.1-1.5 23 7 40 29 13 SAME AS 1.1-1.6 SAME AS 1.1-1.5 SAME AS 1.1-1.5 23 1 9 -67- 68 44 23 A-7-6 23 VISUAL 17 VISUAL 18 VISUAL 18 VISUAL | | | | | | | | | 29 26 32 23 23 17 18 18 | VISUAL VISUAL A-7-6 VISUAL VISUAL VISUAL VISUAL VISUAL |
| (B-51) 139608.700 636103.700 | 0.3-0.5 1.1-1.2 | BROWN WEATHERED SANDSTONE SAME AS 0.3-0.5 | | | | | | | | | | VISUAL VISUAL |
| (B-52) 139539.200 636159.400 | 0-0.5 0.5-0.9 1.1-1.6 1.8-2.3 2.6-3.1 4.1-4.6 5.6-6.1 7.2-7.7 8.7-8.8 | BROWN CLAYEY SILT, SOME SAND, TRACE ORGANICS SAME AS 0-0.5 REDDISH-BROWN CLAY, LITTLE SILT, TRACE SAND SAME AS 1.1-1.6 SAME AS 1.1-1.6 SAME AS 1.1-1.6 SAME AS 1.1-1.6 21 4 5 25 45 41 19 17 SAME AS 7.2-7.7 | | | | | | | | | 24 26 30 38 26 19 26 17 | VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL A-7-6 VISUAL |
| (B-53) 139413.800 636148.700 | 0-0.5 0.5-1.1 1.1-1.5 1.8-2.3 2.6-3.1 | SAME AS 0.5-1.1 0 3 22 42 33 29 13 0 1 41 30 28 SAME AS 1.1-1.5 BROWNISH-GRAY SANDY CLAY, LITTLE SILT | | | | | | | | | 24 22 16 21 18 | VISUAL A-6a VISUAL VISUAL VISUAL |
| (B-54) 139260.000 636192.600 | 0-0.5 0.5-0.9 1.1-1.6 1.8-2.0 | BROWN SANDY SILT, LITTLE CLAY SAME AS 0-0.5 0 5 34 46 15 33 12 BROWN WEATHERED SANDSTONE | | | | | | | | | 24 19 12 8 | VISUAL VISUAL A-6a VISUAL |
| (B-55) 139015.100 636291.900 | 0-0.5 0.5-1.1 1.1-1.3 | BROWN SILTY CLAY, LITTLE SAND SAME AS 0-0.5 41 9 12 16 22 37 17 20 | | | | | | | | | 24 17 20 | VISUAL VISUAL A-6b |
| (B-56) 138895.000 636360.400 | 0-0.5 0.5-0.9 1.1-1.4 1.8-2.1 2.6-2.9 4.1-4.3 5.6-5.9 7.2-7.5 8.7-9.0 10.2-10.4 | BROWN SILT, LITTLE CLAY, TRACE ORGANICS BROWN SILTY CLAY, TRACE SAND BROWN WEATHERED SANDSTONE SAME AS 1.1-1.4 SAME AS 1.1-1.4 SAME AS 1.1-1.4 BROWN INDURATED CLAY/ WEATHERED MUDSTONE SAME AS 5.6-5.9 SAME AS 5.6-5.9 SAME AS 5.6-5.9 | | | | | | | | | 27 16 | VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL |
| (B-57) 138687.400 636433.200 | 0-0.5 0.5-0.9 1.1-1.5 1.8-2.1 2.6-2.8 | BROWN SILTY CLAY, TRACE SAND SAME AS 0-0.5 SAME AS 0-0.5 BROWN WEATHERED SANDSTONE SAME AS 1.8-2.1 | | | | | | | | | 28 23 14 | VISUAL VISUAL VISUAL VISUAL |
| (B-58) 138462.600 636420.800 | 0-0.5 0.5-0.9 1.1-1.5 1.8-2.1 2.6-3.1 4.1-4.6 5.6-6.1 7.2-7.4 8.7-8.9 | SAME AS 0.5-0.9 0 7 64 -29- SAME AS 0.5-0.9 BROWN WEATHERED SANDSTONE BROWN INDURATED CLAY/ WEATHERED MUDSTONE SAME AS 2.6-3.1 SAME AS 2.6-3.1 SAME AS 2.6-3.1 | | | | | | | | | 25 18 12 12 | VISUAL A-3a VISUAL VISUAL VISUAL VISUAL VISUAL |
| (B-59) 138296.600 636527.600 | 0-1.2 1.2-1.9 | 7 4 4 37 48 43 24 11 BROWN INDURATED CLAY/ WEATHERED MUDSTONE | | | | | | | | | | A-7-6 VISUAL |
| (B-60) 138155.100 636577.200 | 0-0.5 0.5-0.9 1.1-1.7 | SAME AS 1.1-1.7 SAME AS 1.1-1.7 0 33 23 23 21 32 10 | | | | | | | | | 20 18 18 | VISUAL VISUAL A-4a |
| (B-61) 138013.500 636626.800 | 0-1.2 1.2-1.6 | REDDISH-BROWN SILTY CLAY, SOME SANDSTONE FRAGMENTS LIGHT BROWN INDURATED CLAY/ WEATHERED MUDSTONE | | | | | | | | | 20 17 | VISUAL VISUAL |
| (B-62) 137883.700 636619.300 | 0-0.5 0.5-0.9 1.1-1.5 1.8-2.3 2.6-3.1 4.1-4.6 | SAME AS 1.1-1.5 SAME AS 1.1-1.5 0 1 3 21 75 SAME AS 1.1-1.5 SAME AS 1.1-1.5 SAME AS 1.1-1.5 | | | | | | | | | 27 33 26 28 29 19 | VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL |

| Northing & Easting | From To | % Agg | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | SHTL Class. | | |
|---------------------------------|-----------------------------------------------------------------------------------------------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------|--------|--------|--------|------|------|------|-------------|----------------------------------------------|------------------------------------------------------------------------------|
| (B-63) 137692.800 636739.700 | 0-0.5 0.5-0.9 1.1-1.5 1.8-2.3 2.6-3.1 4.1-4.6 5.6-5.7 | SAME AS 1.8-2.3 SAME AS 1.8-2.3 SAME AS 1.8-2.3 1 3 25 -71- 53 29 2.6-3.1 SAME AS 1.8-2.3 SAME AS 1.8-2.3 GRAY INDURATED CLAY/ WEATHERED MUDSTONE | | | | | | | | | 28 32 30 28 23 14 | VISUAL VISUAL VISUAL A-7-6 VISUAL VISUAL VISUAL |
| (B-64) 137540.100 636799.900 | 0-0.5 0.5-0.9 1.1-1.5 1.8-2.3 | SAME AS 0.5-0.9 0 4 23 30 43 76 58 14 2 20 38 26 SAME AS 1.1-1.5 | | | | | | | | | 26 25 21 19 | VISUAL A-7-6 VISUAL VISUAL |
| (B-65) 137423.900 636858.500 | 0-0.5 0.5-0.9 1.1-1.5 1.8-2.3 2.6-3.0 | SAME AS 0.5-0.9 0 1 3 25 71 SAME AS 0.5-0.9 SAME AS 0.5-0.9 RED INDURATED CLAY/ WEATHERED MUDSTONE | | | | | | | | | 31 35 32 27 | VISUAL VISUAL VISUAL VISUAL |
| (B-66) 137334.200 636934.500 | 0-0.5 0.5-0.9 1.1-1.5 1.8-2.3 2.6-2.9 4.1-4.4 5.6-6.1 6.1-6.6 7.2-7.3 | BROWN SILTY CLAY, LITTLE SAND SAME AS 0-0.5 0 0 43 34 23 SAME AS 1.1-1.5 BROWN WEATHERED SANDSTONE SAME AS 2.6-2.9 SAME AS 2.6-2.9 SAME AS 2.6-2.9 SAME AS 2.6-2.9 | | | | | | | | | 24 23 16 10 | VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL |
| (B-67) 137203.200 636997.500 | 0-0.5 0.5-0.9 1.1-1.5 1.8-2.3 2.6-2.7 | SAME AS 0.5-0.9 0 1 6 20 73 68 44 SAME AS 0.5-0.9 SAME AS 0.5-0.9 BROWN WEATHERED SANDSTONE | | | | | | | | | 27 27 14 22 | VISUAL A-7-6 VISUAL VISUAL VISUAL |
| (B-68) 137028.000 637122.200 | 0-0.5 0.5-0.9 1.1-1.5 1.8-2.1 2.6-2.8 4.4-4.5 | 0 1 4 47 48 SAME AS 0-0.5 SAME AS 0-0.5 BROWN INDURATED CLAY/ WEATHERED MUDSTONE SAME AS 1.8-2.1 SAME AS 1.8-2.1 | | | | | | | | | 18 29 | VISUAL VISUAL VISUAL VISUAL VISUAL |
| (B-69) 136918.200 637192.000 | 0-0.5 0.5-1.1 1.1-1.5 1.8-2.3 2.6-2.9 4.1-4.4 5.6-5.9 | SAME AS 0.5-1.1 6 7 30 30 27 29 13 0 32 33 -35- RED INDURATED CLAY/ WEATHERED MUDSTONE SAME AS 2.6-2.9 SAME AS 2.6-2.9 SAME AS 2.6-2.9 | | | | | | | | | 35 24 23 | VISUAL A-6a A-3a VISUAL VISUAL VISUAL VISUAL |
| (B-70) 136798.300 637304.000 | 0-0.5 0.5-0.9 1.1-1.5 1.8-2.3 2.6-3.1 4.1-4.6 5.6-6.1 7.2-7.5 8.7-8.9 | SAME AS 0.5-0.9 0 4 58 14 24 SAME AS 0.5-0.9 BROWNISH-GRAY SILTY CLAY, TRACE SAND, TRACE GRAVEL SAME AS 1.8-2.3 SAME AS 1.8-2.3 SAME AS 1.8-2.3 BROWNISH-GRAY INDURATED CLAY/ WEATHERED MUDSTONE SAME AS 5.6-6.1 SAME AS 5.6-6.1 | | | | | | | | | 23 19 16 18 25 13 | VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL |
| (B-71) 136770.900 637256.300 | 0-0.5 0.5-0.9 1.1-1.5 1.8-2.3 2.6-3.1 4.1-4.6 5.6-6.1 7.5-7.9 | BROWN CLAY, SOME SILT, TRACE SAND SAME AS 0.5-0.9 SAME AS 4.1-4.6 SAME AS 4.1-4.6 SAME AS 4.1-4.6 0 4 23 37 36 36 15 SAME AS 4.1-4.6 SAME AS 4.1-4.6 | | | | | | | | | 25 35 31 32 33 17 28 17 | VISUAL VISUAL VISUAL VISUAL VISUAL A-6a VISUAL VISUAL |
| (B-72) 136650.200 637347.100 | 0-0.5 0.5-1.1 1.1-1.5 1.8-2.3 2.6-3.1 4.4-4.9 | SAME AS 0.5-1.1 0 1 4 42 53 58 33 SAME AS 0.5-1.1 0 1 19 35 45 46 25 SAME AS 1.8-2.3 RED INDURATED CLAY/ WEATHERED MUDSTONE | | | | | | | | | 31 27 19 22 21 | VISUAL A-7-6 VISUAL A-7-6 VISUAL VISUAL |
| (B-73) 136573.200 637423.800 | 0-0.5 0.5-0.9 1.1-1.5 1.8-2.3 2.6-3.1 4.1-4.6 5.6-6.1 7.2-7.4 | SAME AS 1.1-1.5 SAME AS 1.1-1.5 0 5 19 36 40 SAME AS 1.1-1.5 SAME AS 1.1-1.5 SAME AS 1.1-1.5 SAME AS 1.1-1.5 BROWN INDURATED CLAY/ WEATHERED MUDSTONE | | | | | | | | | 28 32 21 19 18 19 18 | VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL |

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281 ENTERPRISE DR.
WESTERVILLE, OHIO 43081
(614) 885-1959



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| CALCULATED | CHECKED |
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| DRAWN | |
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ROADWAY / CULVERT SOIL PROFILE

ATH-33-30.981

SUMMARY OF SOIL TEST DATA

| Northing & Easting | From To | % Agg | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | SHTL Class. | | |
|---------------------------------|------------------------------------------------------------------------------------------------------------|----------------------------------------------------|--------|--------|--------|--------|------|------|------|-------------|----------------------------------------------|----------------------------------------------------------------------------------------|
| (B-49) 139824.900 636063.200 | 0-0.5 0.5-0.9 1.1-1.6 1.8-2.3 | BROWN CLAYEY SILT, LITTLE SAND | | | | | | | | | 23 15 13 15 | VISUAL VISUAL VISUAL VISUAL |
| (B-50) 139726.600 636081.500 | 0-0.5 0.5-0.9 1.1-1.5 1.8-2.3 2.6-3.1 4.1-4.6 5.6-6.1 7.2-7.6 | SAME AS 1.1-1.5 | | | | | | | | | 29 26 32 23 17 18 18 | VISUAL VISUAL A-7-6 VISUAL VISUAL VISUAL VISUAL |
| (B-51) 139608.700 636103.700 | 0.3-0.5 1.1-1.2 | BROWN WEATHERED SANDSTONE | | | | | | | | | | VISUAL VISUAL |
| (B-52) 139539.200 636159.400 | 0-0.5 0.5-0.9 1.1-1.6 1.8-2.3 2.6-3.1 4.1-4.6 5.6-6.1 7.2-7.7 8.7-8.8 | BROWN CLAYEY SILT, SOME SAND, TRACE ORGANICS | | | | | | | | | 24 26 30 38 26 19 26 17 | VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL |
| (B-53) 139413.800 636148.700 | 0-0.5 0.5-1.1 1.1-1.5 1.8-2.3 2.6-3.1 | SAME AS 0.5-1.1 | | | | | | | | | 24 22 16 21 18 | VISUAL A-6a VISUAL VISUAL VISUAL |
| (B-54) 139260.000 636192.600 | 0-0.5 0.5-0.9 1.1-1.6 1.8-2.0 | BROWN SANDY SILT, LITTLE CLAY | | | | | | | | | 24 19 12 8 | VISUAL VISUAL A-6a VISUAL |
| (B-55) 139015.100 636291.900 | 0-0.5 0.5-1.1 1.1-1.3 | BROWN SILTY CLAY, LITTLE SAND | | | | | | | | | 24 17 20 | VISUAL VISUAL A-6b |
| (B-56) 138895.000 636360.400 | 0-0.5 0.5-0.9 1.1-1.4 1.8-2.1 2.6-2.9 4.1-4.3 5.6-5.9 7.2-7.5 8.7-9.0 10.2-10.4 | BROWN SILTY CLAY, TRACE ORGANICS | | | | | | | | | 27 16 | VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL |
| (B-57) 138687.400 636433.200 | 0-0.5 0.5-0.9 1.1-1.5 1.8-2.1 2.6-2.8 | BROWN SILTY CLAY, TRACE SAND | | | | | | | | | 28 23 14 | VISUAL VISUAL VISUAL VISUAL VISUAL |
| (B-58) 138462.600 636420.800 | 0-0.5 0.5-0.9 1.1-1.5 1.8-2.1 2.6-3.1 4.1-4.6 5.6-6.1 7.2-7.4 8.7-8.9 | SAME AS 0.5-0.9 | | | | | | | | | 25 18 12 12 | VISUAL A-3a VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL |
| (B-59) 138296.600 636527.600 | 0-1.2 1.2-1.9 | BROWN INDURATED CLAY/ WEATHERED MUDSTONE | | | | | | | | | 11 | A-7-6 VISUAL |
| (B-60) 138155.100 636577.200 | 0-0.5 0.5-0.9 1.1-1.7 | SAME AS 1.1-1.7 | | | | | | | | | 20 18 18 | VISUAL VISUAL A-4a |
| (B-61) 138013.500 636626.800 | 0-1.2 1.2-1.6 | REDDISH-BROWN SILTY CLAY, SOME SANDSTONE FRAGMENTS | | | | | | | | | 20 | VISUAL |
| (B-62) 137883.700 636619.300 | 0-0.5 0.5-0.9 1.1-1.5 1.8-2.3 2.6-3.1 4.1-4.6 | SAME AS 1.1-1.5 | | | | | | | | | 27 33 26 28 29 19 | VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL |

| Northing & Easting | From To | % Agg | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | SHTL Class. | | |
|---------------------------------|-----------------------------------------------------------------------------------------------|-----------------------------------|--------|--------|--------|--------|------|------|------|-------------|----------------------------------------------|----------------------------------------------------------------------------------------|
| (B-63) 137692.800 636739.700 | 0-0.5 0.5-0.9 1.1-1.5 1.8-2.3 2.6-3.1 4.1-4.6 5.6-5.7 | SAME AS 1.8-2.3 | | | | | | | | | 28 32 30 28 23 14 | VISUAL VISUAL VISUAL A-7-6 VISUAL VISUAL |
| (B-64) 137540.100 636799.900 | 0-0.5 0.5-0.9 1.1-1.5 1.8-2.3 | SAME AS 0.5-0.9 | | | | | | | | | 26 25 21 19 | VISUAL A-7-6 VISUAL VISUAL |
| (B-65) 137423.900 636858.500 | 0-0.5 0.5-0.9 1.1-1.5 1.8-2.3 | SAME AS 0.5-0.9 | | | | | | | | | 31 35 32 27 | VISUAL VISUAL VISUAL VISUAL |
| (B-66) 137334.200 636934.500 | 0-0.5 0.5-0.9 1.1-1.5 1.8-2.3 2.6-2.9 4.1-4.4 | BROWN SILTY CLAY, LITTLE SAND | | | | | | | | | 24 23 16 10 | VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL |
| (B-67) 137203.200 636997.500 | 0-0.5 0.5-0.9 1.1-1.5 1.8-2.3 2.6-2.7 | SAME AS 0.5-0.9 | | | | | | | | | 27 27 14 22 | VISUAL A-7-6 VISUAL VISUAL VISUAL |
| (B-68) 137028.000 637122.200 | 0-0.5 0.5-0.9 1.1-1.5 1.8-2.1 2.6-2.8 4.4-4.5 | SAME AS 0-0.5 | | | | | | | | | 18 29 | VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL |
| (B-69) 136918.200 637192.000 | 0-0.5 0.5-1.1 1.1-1.5 1.8-2.3 2.6-2.9 4.1-4.4 5.6-5.9 | SAME AS 0.5-1.1 | | | | | | | | | 35 24 23 | VISUAL A-6a A-3a VISUAL VISUAL VISUAL VISUAL |
| (B-70) 136798.300 637304.000 | 0-0.5 0.5-0.9 1.1-1.5 1.8-2.3 2.6-3.1 4.1-4.6 5.6-6.1 7.2-7.5 8.7-8.9 | SAME AS 0.5-0.9 | | | | | | | | | 23 19 16 18 25 13 | VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL |
| (B-71) 136770.900 637256.300 | 0-0.5 0.5-0.9 1.1-1.5 1.8-2.3 2.6-3.1 4.1-4.6 5.6-6.1 7.5-7.9 | BROWN CLAY, SOME SILT, TRACE SAND | | | | | | | | | 25 35 31 32 33 17 28 17 | VISUAL VISUAL VISUAL VISUAL VISUAL A-6a VISUAL VISUAL |
| (B-72) 136650.200 637347.100 | 0-0.5 0.5-1.1 1.1-1.5 1.8-2.3 2.6-3.1 4.4-4.9 | SAME AS 0.5-1.1 | | | | | | | | | 31 27 19 22 21 | VISUAL A-7-6 VISUAL A-7-6 VISUAL VISUAL |
| (B-73) 136573.200 637423.800 | 0-0.5 0.5-0.9 1.1-1.5 1.8-2.3 2.6-3.1 4.1-4.6 5.6-6.1 7.2-7.4 | SAME AS 1.1-1.5 | | | | | | | | | 28 32 21 19 18 19 18 | VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL |

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RESOURCE INTERNATIONAL INC.
281 ENTERPRISE DR.
WESTERVILLE, OHIO 43081
(614) 885-1959



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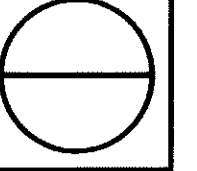
DATE

REVIEWED

DRAWN
M/D/H

ROADWAY / CULVERT SOIL PROFILE

ATH-33-30.981



SUMMARY OF SOIL TEST DATA

| | Northing & Easting | From To | % Agg | % C.S. | % F.S. | % Silt | % Clay | L.L | P.I | W.C. | SHTL Class. | | |
|--------|--------------------------|-----------|--------------------------------------------------|-----------|-----------|-----------|-----------|-----|-----|------|----------------|--------|--------|
| (B-74) | 136375.300 637474.000 | 0-0.5 | BROWN SILT, SOME CLAY, TRACE ORGANICS | | | | | | | | | 30 | VISUAL |
| | | 0.5-0.9 | BROWN SILTY CLAY, TRACE SAND | | | | | | | | | 26 | VISUAL |
| | | 1.1-1.4 | BROWN WEATHERED SANDSTONE | | | | | | | | | | VISUAL |
| | | 1.8-2.0 | SAME AS 1.1-1.4 | | | | | | | | | | VISUAL |
| (B-75) | 136222.500 637482.900 | 0-0.1 | BROWN CLAYEY SILT, SOME SAND, TRACE ORGANICS | | | | | | | | | | VISUAL |
| | | 0.1-0.9 | LIGHT BROWN SILTY CLAY, LITTLE SAND | | | | | | | | | 15 | VISUAL |
| | | 0.9-1.1 | REDDISH-BROWN INDURATED CLAY/ WEATHERED MUDSTONE | | | | | | | | | 15 | VISUAL |
| | | 1.1-1.2 | SAME AS 0.9-1.1 | | | | | | | | | 10 | VISUAL |
| (B-76) | 136130.600 637539.200 | 0-0.5 | BROWN SILTY CLAY, LITTLE SAND, TRACE GRAVEL | | | | | | | | | 25 | VISUAL |
| | | 0.5-0.9 | SAME AS 0-0.5 | | | | | | | | | 17 | VISUAL |
| | | 1.1-1.5 | SAME AS 0-0.5 | | | | | | | | | 15 | VISUAL |
| | | 1.8-2.3 | SAME AS 0-0.5 | | | | | | | | | 19 | VISUAL |
| | | 2.6-3.1 | SAME AS 0-0.5 | | | | | | | | | 28 | VISUAL |
| | | 4.1-4.5 | BROWN INDURATED CLAY/ WEATHERED MUDSTONE | | | | | | | | | | VISUAL |
| | | 5.6-5.9 | SAME AS 4.1-4.5 | | | | | | | | | | VISUAL |
| | | 7.2-7.4 | SAME AS 4.1-4.5 | | | | | | | | | | VISUAL |
| | | 8.7-8.9 | SAME AS 4.1-4.5 | | | | | | | | | | VISUAL |
| | | 10.2-10.4 | SAME AS 4.1-4.5 | | | | | | | | | | VISUAL |
| | | 11.7-11.8 | SAME AS 4.1-4.5 | | | | | | | | | | VISUAL |
| (B-78) | 135838.200 637609.200 | 0-0.5 | SAME AS 0.5-0.9 | | | | | | | | | 28 | VISUAL |
| | | 0.5-0.9 | 6 | 2 | 2 | 30 | 60 | | | | 28 | VISUAL | |
| | | 1.1-1.5 | SAME AS 0.5-0.9 | | | | | | | | | 28 | VISUAL |
| | | 1.8-2.3 | SAME AS 0.5-0.9 | | | | | | | | | 21 | VISUAL |
| | | 2.6-3.1 | SAME AS 0.5-0.9 | | | | | | | | | 17 | VISUAL |
| | | 4.1-4.4 | BROWN WEATHERED SILTSTONE | | | | | | | | | | VISUAL |
| (B-79) | 135828.200 637550.000 | 0-0.5 | BROWN CLAYEY SILT, LITTLE SAND, TRACE ORGANICS | | | | | | | | | 33 | VISUAL |
| | | 0.5-0.9 | BROWN SILTY CLAY, SOME SAND, LITTLE GRAVEL | | | | | | | | | 21 | VISUAL |
| | | 1.1-1.4 | BROWN INDURATED CLAY, WEATHERED SHALE | | | | | | | | | 15 | VISUAL |
| | | 1.8-2.0 | SAME AS 1.1-1.4 | | | | | | | | | | VISUAL |
| (B-80) | 135684.500 637599.800 | 0-0.5 | BROWN CLAYEY SILT, LITTLE SAND, TRACE ORGANICS | | | | | | | | | 27 | VISUAL |
| | | 0.5-0.9 | BROWN SANDY SILT, TRACE CLAY | | | | | | | | | 16 | VISUAL |
| | | 1.1-1.5 | SAME AS 1.1-1.5 | | | | | | | | | 14 | VISUAL |
| | | 1.8-2.1 | BROWN INDURATED CLAY/ WEATHERED SHALE | | | | | | | | | | VISUAL |
| | | 2.6-2.8 | SAME AS 1.8-2.1 | | | | | | | | | | VISUAL |
| (B-81) | 135483.100 637608.700 | 0-0.5 | SAME AS 1.1-1.7 | | | | | | | | | 27 | VISUAL |
| | | 0.5-0.9 | SAME AS 1.1-1.7 | | | | | | | | | 25 | VISUAL |
| | | 1.1-1.7 | 0 | 8 | 28 | 36 | 28 | 38 | 17 | | 26 | A-6b | |
| | | 1.8-2.3 | SAME AS 1.1-1.7 | | | | | | | | | 10 | VISUAL |
| | | 2.6-2.9 | GRAY WEATHERED SANDSTONE | | | | | | | | | | VISUAL |
| | | 3.6-3.7 | SAME AS 2.6-2.9 | | | | | | | | | | VISUAL |

| Northing & Easting | From To | % Agg | % C.S. | % F.S. | % Silt | % Clay | L.L | P.I | W.C. | SHTL Class. |
|-----------------------|---------|----------|-----------|-----------|-----------|-----------|-----|-----|------|----------------|
|-----------------------|---------|----------|-----------|-----------|-----------|-----------|-----|-----|------|----------------|



| | | | | |
|--------------|----------|------|------------|---------|
| DRAWN MDH | REVIEWED | DATE | CALCULATED | CHECKED |
| | | | | |

ROADWAY / CULVERT SOIL PROFILE

ATH-33-30.981

SUMMARY OF SOIL TEST DATA (GANNETT FLEMING)

| BORING No. | Station & Offset | Depth From To | % AGG. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | % W.C. | ODOT Class | BORING No. | Station & Offset | Depth From To | % AGG. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | % W.C. | ODOT Class | | | | |
|------------|-----------------------------------------------------------|---------------|------------------------------------------------------------|--------|--------|--------|--------|------|------|--------|------------|------------|--------------------------------------------------------------|---------------|------------------------------------------------------------|----------------------------------------------------------------|----------------------------------------------------------------|--------|--------|------|------|--------|------------|------|--------|--------|--------|
| 32+700 | | 0.00-0.61 | BROWN SILTY CLAY, TRACE ROCK FRAGMENTS | | | | | | | | | 22 | VISUAL | 37+920 | | 0.00-0.61 | LT. BROWN V. SILTY CLAY/CLAYEY SILT W/ TRACE ROOT HAIRS | | | | | | | | | 16 | VISUAL |
| | | 0.61-1.22 | 3 | 0 | 0 | | 97 | 36 | | 16 | 22 | A-6b | 0.61-1.22 | | | 0 | 1 | 5 | | 94 | 44 | | 21 | 20 | A-7-6 | | |
| | | 1.22-1.52 | 10 | 0 | 0 | 44 | 46 | | | | 20 | A-6b | 1.22-1.83 | | | 20 | 11 | 7 | | 62 | 42 | | 15 | 19 | A-7-6 | | |
| | | 1.52-1.83 | BROWN SILTY CLAY, LITTLE ROCK FRAGMENTS, TRACE SAND | | | | | | | | | 19 | VISUAL | | | 1.83-2.44 | OLIVE BROWN/BEIGE SILTY CLAY (EXTREMELY WEATHERED SHALE) | | | | | | | | | 12 | VISUAL |
| | | 1.83-2.44 | BROWN SILTY CLAY, LITTLE ROCK FRAGMENTS, TRACE SAND | | | | | | | | | 21 | VISUAL | | | 2.44-3.05 | OLIVE BROWN/BEIGE SILTY CLAY (EXTREMELY WEATHERED SHALE) | | | | | | | | | 16 | VISUAL |
| 32+900 | | 0.00-0.61 | LT. BROWN SILT/CLAYEY SILT W/ SI. STONE AND S. STONE FRAGS | | | | | | | | | 10 | VISUAL | 38+420 | | 0.00-0.61 | LT. BROWN CLAYEY SILT W/ TRACES OF ROOT HAIRS | | | | | | | | | 9 | VISUAL |
| | | 0.61-1.22 | LT. BROWN SILT/CLAYEY SILT W/ SI. STONE AND S. STONE FRAGS | | | | | | | | | 7 | VISUAL | | | 0.61-1.22 | LT. ORANGE BROWN & BEIGE W/ TR. GRAY V. SILTY CLAY/CLAYEY SILT | | | | | | | | | 31 | VISUAL |
| | | 1.22-1.83 | 0 | 0 | 0 | 100 | 48 | | | | 21 | A-7-6 | 1.22-1.83 | | | LT. ORANGE BROWN & BEIGE W/ TR. GRAY V. SILTY CLAY/CLAYEY SILT | | | | | | | | | 11 | VISUAL | |
| | | 1.83-2.44 | 2 | 0 | 0 | 24 | 74 | | | | 28 | A-7-6 | 1.83-2.13 | | | LT. ORANGE BROWN & BEIGE W/ TR. GRAY V. SILTY CLAY/CLAYEY SILT | | | | | | | | | 27 | VISUAL | |
| 33+700 | 33+735 5 M RIGHT | 0.00-0.61 | 0 | 0 | 0 | 100 | 42 | | 18 | 20 | A-7-6 | 33+800 | | 0.00-0.61 | LT. BROWN SILTY CLAY W/ TRACES OF ROOT HAIRS AND FINE SAND | | | | | | | | | 21 | VISUAL | | |
| | | 0.61-1.22 | MOTTLED BROWN SILTY CLAY W/ TRACE OXIDES | | | | | | | | | | | 16 | VISUAL | 0.61-1.22 | 2 | 0 | 0 | | 96 | 68 | | 35 | 25 | A-7-5 | |
| | | 1.22-1.83 | 0 | 0 | 0 | 48 | 52 | | | | 17 | | | A-7-6 | 1.22-1.52 | 0 | 0 | 0 | 26 | 74 | | | 24 | 24 | A-7-5 | | |
| | | 1.83-2.44 | 0 | 0 | 0 | 100 | 43 | | 22 | 18 | A-7-6 | | | 1.52-1.83 | LT. OLIVE BROWN/BEIGE SI. CLAY (EXTREMELY WEATHERED SHALE) | | | | | | | | | 8 | VISUAL | | |
| | | 2.44-3.05 | 0 | 0 | 0 | 25 | 75 | | | 15 | A-7-6 | | | 1.83-2.44 | LT. OLIVE BROWN/BEIGE SI. CLAY (EXTREMELY WEATHERED SHALE) | | | | | | | | | 11 | VISUAL | | |
| 33+900 | | 0.00-0.61 | 0 | 0 | 0 | 100 | 53 | | 27 | 20 | A-7-6 | 33+900 | | 0.00-0.61 | LT. ORANGE BROWN SILTY CLAY W/ TRACES OF ROOT HAIRS | | | | | | | | | 17 | VISUAL | | |
| | | 0.61-0.91 | 5 | 0 | 0 | 63 | 32 | | | 8 | A-4b | | | 0.61-0.91 | LT. OLIVE BROWN/BEIGE SI. CLAY (EXTREMELY WEATHERED SHALE) | | | | | | | | | 11 | VISUAL | | |
| | | 0.91-1.22 | 0 | 0 | 0 | 67 | 33 | | | 9 | A-4b | | | 1.83-2.44 | LT. OLIVE BROWN/BEIGE SI. CLAY (EXTREMELY WEATHERED SHALE) | | | | | | | | | 13 | VISUAL | | |
| | | 1.22-1.83 | 0 | 0 | 0 | 67 | 33 | | | 9 | A-4b | | | 2.44-3.05 | LT. OLIVE BROWN/BEIGE SI. CLAY (EXTREMELY WEATHERED SHALE) | | | | | | | | | 13 | VISUAL | | |
| 34+000 | | 0.00-0.61 | 25 | 0 | 0 | 32 | 43 | | | 15 | A-6a | 34+130 | | 0.00-0.61 | 4 | 0 | 0 | 48 | 48 | | | 19 | A-6a | | | | |
| | | 0.61-1.22 | 6 | | | 94 | 38 | | 14 | 14 | A-6a | | | 0.61-1.22 | 3 | 0 | 0 | 97 | 56 | | 29 | 21 | A-7-5 | | | | |
| | | 1.22-1.83 | LT. ORANGE BROWN SILTY CLAY | | | | | | | | | | | 13 | VISUAL | 1.22-1.83 | LT. OLIVE BROWN SI. CLAY W/ TRACES OF OXIDES AND SHALE FRAGS | | | | | | | | | 18 | VISUAL |
| | | 1.83-2.44 | LT. ORANGE BROWN SILTY CLAY | | | | | | | | | | | 15 | VISUAL | 1.83-2.44 | LT. OLIVE BROWN SI. CLAY W/ TRACES OF OXIDES AND SHALE FRAGS | | | | | | | | | 15 | VISUAL |
| | | 2.44-3.05 | LT. ORANGE BROWN SILTY CLAY | | | | | | | | | | | 22 | VISUAL | | | | | | | | | | | | |
| 34+650 | | 0.00-0.61 | 1 | 0 | 0 | 99 | 48 | | 23 | 25 | A-7-6 | 34+720 | | 0.00-0.61 | 0 | 0 | 0 | 61 | 39 | | 27 | 6 | 17 | A-4b | | | |
| | | 0.61-1.22 | 0 | 0 | 0 | 24 | 76 | | | 26 | A-7-6 | | | 0.61-0.91 | BROWN/LIGHT BROWN SILTY CLAY | | | | | | | | | 25 | VISUAL | | |
| | | 1.22-1.83 | MOTTLED ORANGE BROWN TO BIEGE SILTY CLAY W/ TRACE OXIDES | | | | | | | | | | | 14 | VISUAL | 0.91-1.22 | 0 | 0 | 0 | 31 | 69 | | | 29 | 29 | A-7-5 | |
| | | 1.83-2.13 | MOTTLED ORANGE BROWN TO BIEGE SILTY CLAY W/ TRACE OXIDES | | | | | | | | | | | 21 | VISUAL | 1.22-1.83 | 0 | 0 | 0 | 100 | 82 | | 49 | 31 | A-7-5 | | |
| | | 2.13-2.44 | LT. OLIVE BROWN/BEIGE SI. CLAY (EXTREMELY WEATHERED SHALE) | | | | | | | | | | | 8 | VISUAL | 1.83-2.13 | REDDISH BROWN TO RED CLAY W/ TRACES OF OXIDES | | | | | | | | | 27 | VISUAL |
| 35+000 | | 0.00-0.61 | BROWN SILTY CLAY W/ TRACES OF ROOT HAIRS | | | | | | | | | 19 | VISUAL | 36+560 | 36+590, CENTERLINE | 0.00-0.61 | LT. ORANGE BROWN TO LT. BROWN SILTY CLAY W/ TRACES OF OXIDES | | | | | | | | | 18 | VISUAL |
| | | 0.61-1.22 | 2 | 0 | 0 | 22 | 76 | | | 23 | A-7-6 | 0.61-1.22 | LT. ORANGE BROWN TO LT. BROWN SILTY CLAY W/ TRACES OF OXIDES | | | | | | | | | 9 | VISUAL | | | | |
| | | 1.22-1.83 | 0 | 0 | 0 | 100 | 47 | | 20 | 21 | A-7-6 | 1.22-1.83 | LT. OLIVE BROWN/BEIGE SILTY CLAY W/ TRACES OF OXIDES | | | | | | | | | 8 | VISUAL | | | | |
| | | 1.83-2.44 | RED TO RED W/ GRAY SILTY CLAY | | | | | | | | | 18 | VISUAL | | | 1.83-2.44 | LT. OLIVE BROWN/BEIGE SILTY CLAY W/ TRACES OF OXIDES | | | | | | | | | 11 | VISUAL |
| | | 2.44-3.05 | RED TO RED W/ GRAY SILTY CLAY | | | | | | | | | 23 | VISUAL | | | 2.44-3.05 | LT. OLIVE BROWN/BEIGE SILTY CLAY W/ TRACES OF OXIDES | | | | | | | | | 9 | VISUAL |
| 37+140 | | 0.00-0.61 | 0 | 1 | 2 | 97 | 44 | | 31 | 26 | A-7-6 | 37+660 | | 0.00-0.61 | BROWN TO LT. BROWN V. SILTY CLAY W/ TRACES OF ROOT HAIRS | | | | | | | | | 19 | VISUAL | | |
| | | 0.61-1.22 | 0 | 1 | 1 | 31 | 58 | | | 25 | A-7-6 | | | 0.61-1.22 | BROWN TO LT. BROWN V. SILTY CLAY W/ TRACES OF ROOT HAIRS | | | | | | | | | 17 | VISUAL | | |
| | | 1.22-1.83 | RED/MOTTLED RED AND YELLOW SILTY CLAY W/ TRACES OF SAND | | | | | | | | | | | 16 | VISUAL | 1.22-1.83 | 0 | 1 | 7 | 92 | 46 | | 18 | 26 | A-7-6 | | |
| | | 1.83-2.44 | RED/MOTTLED RED AND YELLOW SILTY CLAY W/ TRACES OF SAND | | | | | | | | | | | 12 | VISUAL | 1.83-2.44 | RED/MAROON W/ TRACE GRAY AND LT. ORANGE SILTY CLAY | | | | | | | | | 25 | VISUAL |
| 37+780 | | 0.00-0.61 | 0 | 3 | 51 | 45 | | | | 12 | A-4a | 37+780 | | 0.00-0.61 | BEIGE/LT. BROWN W/ TRACE DK. BROWN AND ORANGE SILTY CLAY | | | | | | | | | 14 | VISUAL | | |
| | | 0.61-1.22 | 4 | 7 | 13 | 76 | 46 | | 19 | 22 | A-7-6 | | | 0.61-1.22 | BEIGE/LT. BROWN W/ TRACE DK. BROWN AND ORANGE SILTY CLAY | | | | | | | | | 16 | VISUAL | | |
| | | 1.22-1.52 | MOTTLED OLIVE/ORANGE BROWN SILTY CLAY W/ TRACES OF OXIDES | | | | | | | | | | | 33 | VISUAL | 2.44-2.74 | RED/MAROON W/ TRACE GRAY AND LT. ORANGE SILTY CLAY | | | | | | | | | 28 | VISUAL |
| | | 1.52-1.83 | 2 | 12 | 23 | 63 | 42 | | 14 | 27 | A-7-6 | | | 2.74-3.05 | BEIGE/LT. BROWN W/ TRACE DK. BROWN AND ORANGE SILTY CLAY | | | | | | | | | 14 | VISUAL | | |
| | | 1.83-2.44 | 0 | 1 | 2 | 21 | 76 | | | 36 | A-7-6 | | | 4.11-4.56 | BEIGE/LT. BROWN W/ TRACE DK. BROWN AND ORANGE SILTY CLAY | | | | | | | | | 16 | VISUAL | | |
| 2.44-3.05 | MOTTLED OLIVE/ORANGE BROWN SILTY CLAY W/ TRACES OF OXIDES | | | | | | | | | 44 | VISUAL | | | | | | | | | | | | | | | | |

ABBREVIATIONS
 DK. = DARK
 LT. = LIGHT
 SI. = SILTY
 SA. = SANDY
 FRAGS. = FRAGMENTS

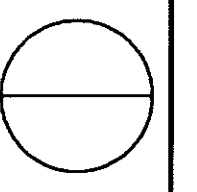
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GANNETT FLEMING
 SUITE 350
 4151 EXECUTIVE PARKWAY
 WESTERVILLE, OHIO 43081

| | |
|------------|----------|
| CALCULATED | CHECKED |
| DATE | DATE |
| REVIEWED | REVIEWED |
| DRAWN | DRAWN |

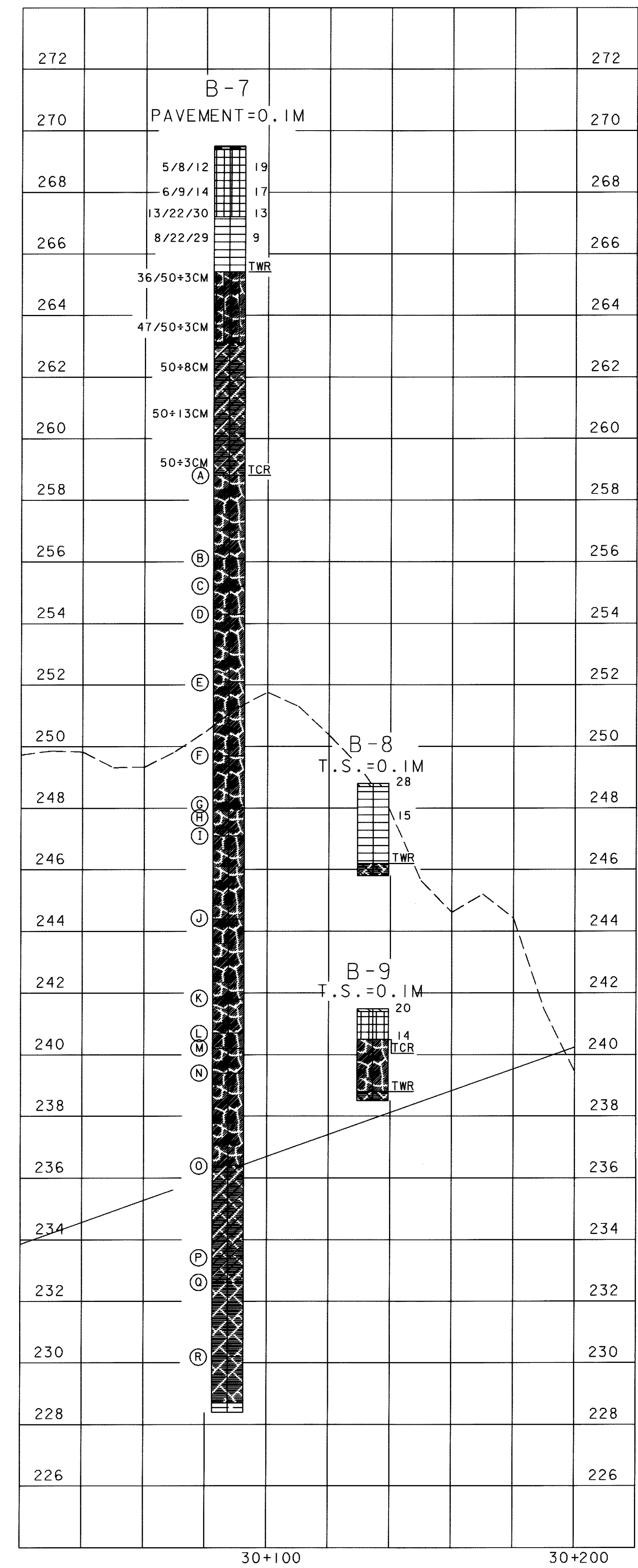
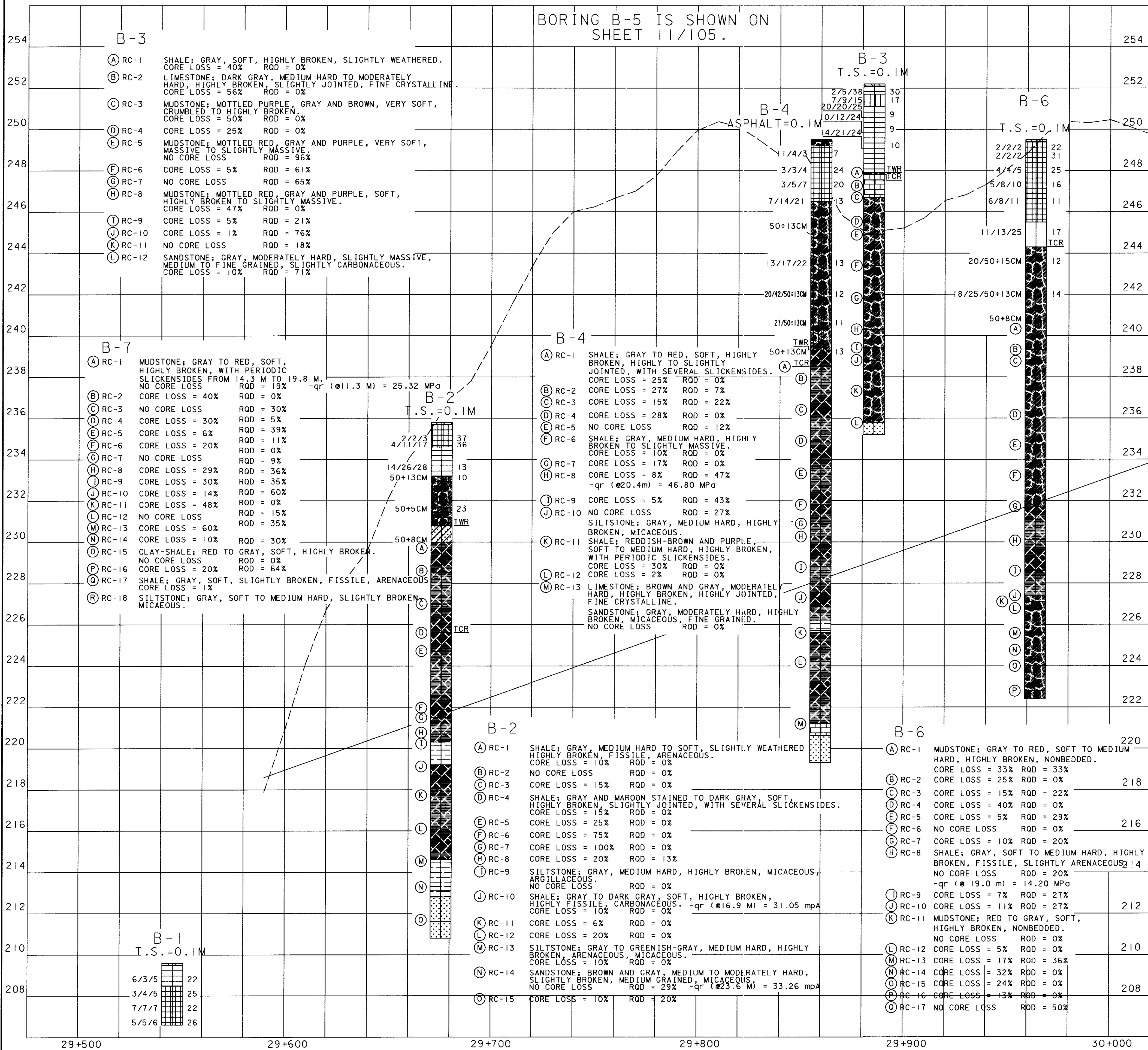
ROADWAY / CULVERT SOIL PROFILE

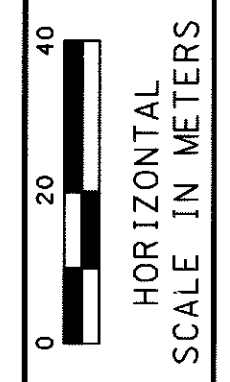
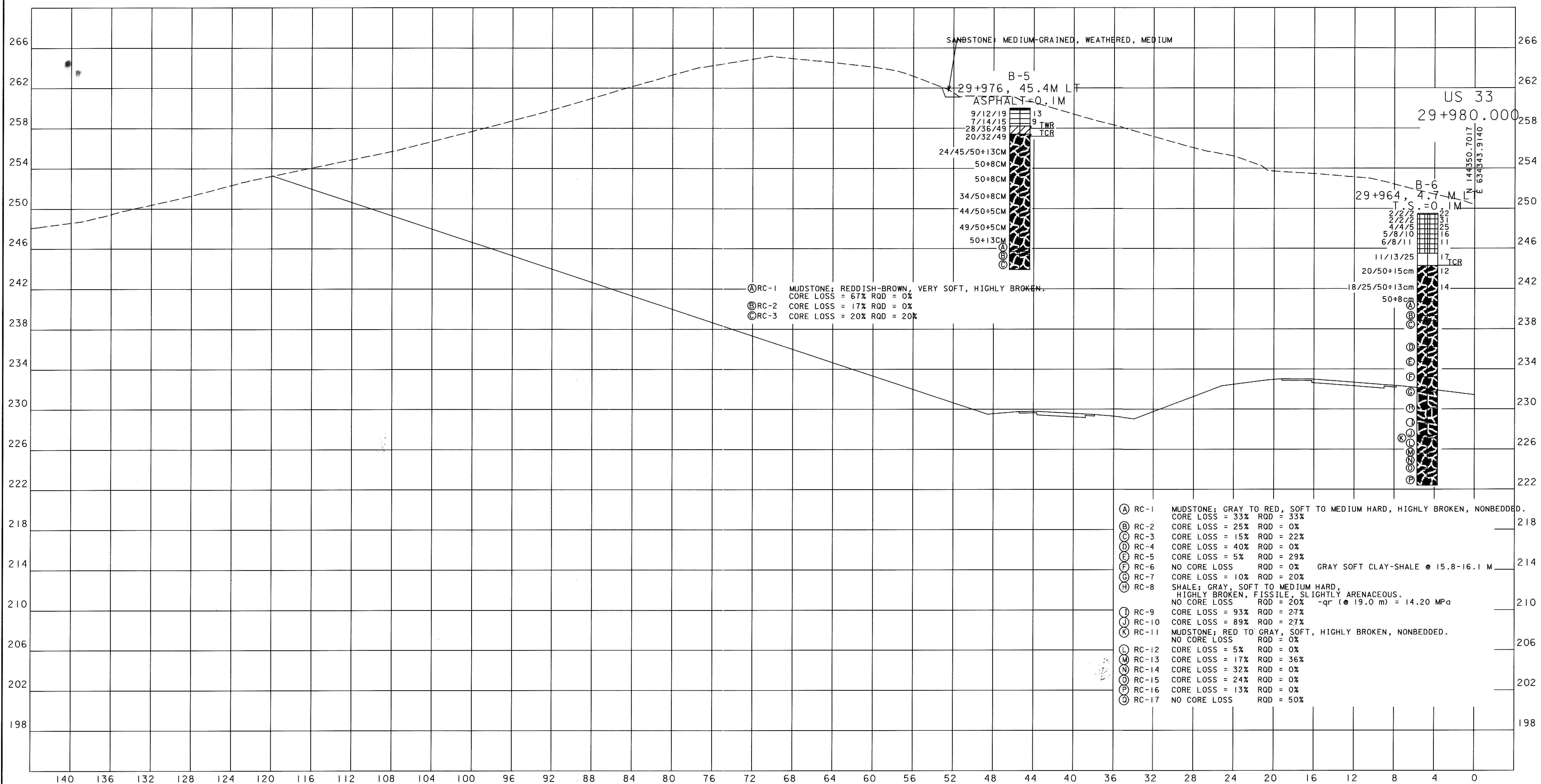
ATH-33-30.981



SUMMARY OF SOIL TEST DATA (PRIME)

| BORING No. | Station & Offset | Depth | % AGG. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | % W.C. | ODOT Class | BORING No. | Station & Offset | Depth | % AGG. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | % W.C. | ODOT Class | | | |
|--------------------|------------------|-------|---------------------------------------------------|--------|--------|--------|--------|------|------|--------|------------|--------------------|------------------|-------|-----------------------------------|--------|--------|--------|--------|------|------|--------|------------|--------|--------|--|
| Sta 30+203 | | 0.00 | 0 | 0 | 0 | * | 100 | 64 | 32 | 19 | A-7-5 | TR 64 : Sta 49+270 | | 0.30 | 0 | 1 | 9 | * | 91 | 60 | 33 | 25 | A-7-6 | | | |
| | | 0.76 | 1 | 1 | 1 | * | 97 | 47 | 23 | 13 | A-7-6 | | | 1.07 | 0 | 0 | 4 | * | 96 | 75 | 45 | 31 | A-7-5 | | | |
| | | 1.52 | Brown, decomposed SHALE | | | | | | | 11 | VISUAL | | | 1.52 | 0 | 0 | 1 | * | 99 | 57 | 23 | 30 | A-7-5 | | | |
| | | 2.29 | Brown, decomposed SHALE | | | | | | | 9 | VISUAL | | | 2.13 | 0 | 0 | 0 | * | 100 | 57 | 27 | 31 | A-7-5 | | | |
| | | 3.05 | Reddish-brown, decomposed SHALE | | | | | | | 10 | VISUAL | | | 2.90 | 1 | 0 | 1 | * | 98 | 44 | 16 | 28 | A-7-6 | | | |
| | | 4.57 | Gray, decomposed SHALE | | | | | | | 6 | VISUAL | | | 3.66 | 1 | 0 | 1 | * | 99 | 46 | 17 | 31 | A-7-6 | | | |
| | | 6.10 | Gray, decomposed SHALE | | | | | | | 8 | VISUAL | | | 4.42 | 0 | 0 | 3 | * | 96 | 45 | 18 | 29 | A-7-6 | | | |
| Sta 32+732 | | 0.30 | 1 | 2 | 24 | * | 73 | 33 | 12 | 14 | A-6a | | | 5.18 | 1 | 1 | 3 | * | 95 | 42 | 19 | 20 | A-7-6 | | | |
| | | 1.07 | 44 | 9 | 18 | * | 29 | 31 | 11 | 13 | A-2-6 | | | 6.25 | Brown, decomposed SHALE | | | | 56 | 41 | 16 | 16 | A-7-6 | | | |
| | | 1.68 | 16 | 11 | 7 | * | 65 | 37 | 21 | 10 | A-6b | | | 7.47 | Brown, highly weathered SHALE | | | | | | | 10 | VISUAL | | | |
| | | 2.74 | Gray, decomposed SHALE | | | | | | | | VISUAL | Sta 35+100 | | 0.30 | 4 | 6 | 34 | 32 | 24 | | | NP | 13 | A-4a | | |
| Sta 32+156 | | 0.00 | 11 | 4 | 21 | * | 64 | 37 | 16 | 17 | A-6b | | | 1.07 | 2 | 7 | 57 | * | 34 | | | NP | 10 | A-3a | | |
| | | 0.61 | 17 | 0 | 0 | * | 83 | 33 | 11 | 15 | A-6a | | | 1.83 | 5 | 7 | 52 | * | 36 | | | | 14 | A-4a | | |
| | | 1.22 | 18 | 5 | 24 | * | 53 | 36 | 15 | 19 | A-6a | | | 2.59 | Brown, decomposed SHALE | | | | | | | | 12 | VISUAL | | |
| | | 1.98 | 0 | 1 | 1 | * | 98 | 51 | 23 | 21 | A-7-6 | | | 4.11 | Gray, decomposed SHALE | | | | | | | | 15 | VISUAL | | |
| | | 2.74 | 1 | 1 | 1 | * | 98 | 52 | 25 | 19 | A-7-6 | | | 5.64 | Gray, decomposed SHALE | | | | | | | | 11 | VISUAL | | |
| | | 3.51 | Reddish-brown, decomposed CLAY SHALE | | | | | | | 15 | VISUAL | Sta 35+970 | | 0.30 | 9 | 5 | 18 | 32 | 36 | 28 | 9 | 13 | 20 | A-4a | | |
| | | 4.27 | Reddish-brown, decomposed CLAY SHALE | | | | | | | 14 | VISUAL | | | 1.22 | 1 | 2 | 14 | * | 83 | 48 | 26 | 10 | 20 | A-7-6 | | |
| | | 5.03 | Reddish-brown, decomposed CLAY SHALE | | | | | | | 10 | VISUAL | | | 1.83 | Brown, highly weathered SHALE | | | | | | | | 10 | VISUAL | | |
| | | 5.79 | Reddish-brown, decomposed CLAY SHALE | | | | | | | 7 | VISUAL | Sta 36+167 | | 1.83 | 6 | 4 | 2 | * | 88 | 51 | 23 | 19 | 19 | A-4a | | |
| TR 55 : Sta 48+365 | | 0.46 | 41 | 24 | 12 | * | 23 | | | 5 | A-1-b | | | 1.83 | 8 | 3 | 4 | * | 85 | 42 | 16 | 13 | 13 | A-7-6 | | |
| | | 0.76 | 41 | 10 | 7 | * | 43 | 33 | 14 | 9 | A-6a | Sta 36+750 | | 0.30 | 31 | 9 | 2 | * | 57 | 55 | 27 | 15 | 15 | A-7-6 | | |
| | | 1.22 | 0 | 1 | 2 | * | 98 | 43 | 23 | 23 | A-7-6 | | | 1.22 | Brown, decomposed SHALE | | | | | | | | | 12 | VISUAL | |
| | | 1.98 | 2 | 3 | 2 | * | 93 | 58 | 28 | 25 | A-7-5 | | | 1.98 | Brown, highly weathered SANDSTONE | | | | | | | | | 10 | VISUAL | |
| | | 2.74 | 5 | 8 | 12 | * | 76 | 51 | 20 | 16 | A-7-5 | | | 2.74 | Brown, highly weathered SANDSTONE | | | | | | | | | 15 | VISUAL | |
| | | 3.39 | 11 | 2 | 2 | * | 84 | 57 | 23 | 12 | A-7-5 | | | 4.27 | Gray, highly weathered SHALE | | | | | | | | | 10 | VISUAL | |
| | | 4.27 | Brown, highly weathered SANDSTONE | | | | | | | 10 | VISUAL | Sta 35+911 | | 0.30 | 26 | 12 | 21 | * | 41 | 27 | 10 | 18 | 18 | A-4a | | |
| Sta 32+760 | | 0.30 | 5 | 0 | 0 | * | 95 | 33 | 13 | 23 | A-6a | | | 0.76 | 56 | 18 | 14 | * | 12 | | | | 13 | A-1-b | | |
| | | 1.07 | 4 | 2 | 5 | * | 89 | 31 | 11 | 27 | A-6a | | | 1.37 | 45 | 9 | 23 | * | 22 | | | | 11 | A-1-b | | |
| | | 1.68 | 10 | 5 | 10 | * | 74 | 42 | 16 | 21 | A-7-6 | CR 16 : Sta 50+405 | | 0.30 | 3 | 10 | 24 | 37 | 26 | 27 | 5 | 17 | 20 | A-4a | | |
| | | 2.59 | 11 | 3 | 4 | * | 82 | 42 | 16 | 15 | A-7-6 | | | 1.07 | 0 | 3 | 5 | * | 92 | 41 | 16 | 20 | 20 | A-7-6 | | |
| | | 3.35 | Reddish-brown, decomposed SHALE | | | | | | | 16 | VISUAL | | | 1.52 | 10 | 0 | 0 | * | 90 | 32 | 11 | 10 | 10 | A-6b | | |
| | | 4.11 | Reddish-brown, decomposed SHALE | | | | | | | 13 | VISUAL | | | 1.98 | Brown, decomposed SHALE | | | | | | | | | 7 | VISUAL | |
| | | 4.88 | Reddish-brown, decomposed SHALE | | | | | | | 13 | VISUAL | | | 2.90 | Brown, decomposed SHALE | | | | | | | | | 7 | VISUAL | |
| | | 5.64 | Reddish-brown, decomposed SHALE | | | | | | | 12 | VISUAL | | | 4.27 | Gray, highly weathered SHALE | | | | | | | | | 3 | VISUAL | |
| | | 7.16 | Reddish-brown, decomposed SHALE | | | | | | | 9 | VISUAL | CR 16 : Sta 50+588 | | 1.07 | 0 | 3 | 14 | * | 83 | 35 | 14 | 22 | 22 | A-6a | | |
| Sta 33+003 | | 0.00 | 12 | 6 | 25 | * | 57 | 30 | 11 | 11 | A-6a | | | 1.83 | 1 | 2 | 10 | * | 87 | 42 | 21 | 22 | 22 | A-7-6 | | |
| | | 0.76 | 0 | 18 | 5 | * | 77 | 41 | 16 | 12 | A-7-6 | | | 2.59 | 3 | 5 | 18 | * | 74 | 37 | 16 | 20 | 20 | A-6a | | |
| | | 1.52 | 1 | 3 | 4 | * | 91 | 48 | 22 | 11 | A-7-6 | | | 3.35 | 0 | 1 | 4 | * | 95 | 44 | 17 | 24 | 24 | A-7-6 | | |
| | | 2.29 | 1 | 3 | 6 | * | 90 | 40 | 17 | 10 | A-6b | | | 4.11 | 0 | 0 | 0 | * | 100 | 44 | 16 | 24 | 24 | A-7-6 | | |
| | | 3.05 | Reddish-brown, decomposed SHALE | | | | | | | 8 | VISUAL | CR 16 : Sta 50+660 | | 0.30 | 0 | 1 | 13 | * | 86 | 32 | 14 | 25 | 25 | A-6a | | |
| CR 21 : Sta 3+293 | | 0.30 | 4 | 4 | 9 | * | 83 | 34 | 13 | 22 | A-6a | | | 1.07 | 6 | 0 | 0 | * | 94 | 54 | 25 | 25 | 25 | A-7-6 | | |
| | | 1.07 | 18 | 6 | 4 | * | 72 | 41 | 13 | 14 | A-7-6 | | | 1.68 | 0 | 0 | 24 | * | 76 | 40 | 19 | 21 | 21 | A-6b | | |
| | | 1.37 | Brown, decomposed SHALE | | | | | | | 11 | VISUAL | | | 2.59 | Brown, decomposed SHALE | | | | | | | | | 17 | VISUAL | |
| | | 1.83 | Brown, decomposed SHALE | | | | | | | 14 | VISUAL | | | 3.35 | Reddish-brown, decomposed SHALE | | | | | | | | | 13 | VISUAL | |
| | | 2.59 | Brown, decomposed SHALE | | | | | | | 12 | VISUAL | | | 4.11 | Reddish-brown, decomposed SHALE | | | | | | | | | 13 | VISUAL | |
| | | 4.11 | Gray, decomposed SHALE | | | | | | | 6 | VISUAL | Sta 37+540 | | 0.30 | 6 | 9 | 22 | * | 63 | 36 | 11 | 20 | 20 | A-6a | | |
| CR 21 : Sta 3+074 | | 0.61 | 23 | 11 | 14 | * | 52 | 31 | 13 | 13 | A-6a | | | 1.07 | 1 | 0 | 0 | * | 99 | 39 | 18 | 18 | 18 | A-6b | | |
| | | 1.37 | 0 | 0 | 2 | 65 | 33 | 29 | 8 | 28 | A-4b | | | 1.68 | 0 | 0 | 0 | * | 100 | 42 | 22 | 19 | 19 | A-7-6 | | |
| | | 2.29 | 13 | 10 | 6 | * | 71 | 42 | 16 | 18 | A-7-6 | | | 2.59 | 24 | 0 | 0 | 34 | 42 | 27 | 6 | 12 | 12 | A-4a | | |
| | | 2.90 | 5 | 3 | 7 | * | 85 | 43 | 22 | 23 | A-7-6 | Sta 38+050 | | 0.30 | Brown, decomposed SANDSTONE | | | | | | | | | 9 | VISUAL | |
| | | 3.66 | Brown, highly weathered SHALE | | | | | | | 6 | VISUAL | | | 1.22 | Brown, highly weathered SHALE | | | | | | | | | 14 | VISUAL | |
| | | 4.42 | Brown, decomposed SHALE | | | | | | | 7 | VISUAL | | | 1.98 | Brown, decomposed SHALE | | | | | | | | | 14 | VISUAL | |
| | | 5.94 | Gray, decomposed SHALE | | | | | | | 12 | VISUAL | | | 2.74 | Brown, decomposed SHALE | | | | | | | | | 6 | VISUAL | |
| Sta 33+727 | | 0.30 | 4 | 4 | 5 | * | 87 | 41 | 17 | 17 | A-7-6 | | | 4.27 | Gray, weathered SHALE | | | | | | | | | 2 | VISUAL | |
| | | 1.07 | 2 | 6 | 5 | * | 89 | 34 | 15 | 12 | A-6a | Sta 38+250 | | 0.30 | 7 | 3 | 10 | * | 80 | 46 | 23 | 21 | 21 | A-7-6 | | |
| | | 1.83 | Brown, decomposed SANDSTONE | | | | | | | 5 | VISUAL | | | 1.07 | 3 | 4 | 2 | * | 90 | 48 | 19 | 16 | 16 | A-7-6 | | |
| | | 2.59 | Brown, highly weathered SANDSTONE | | | | | | | 5 | VISUAL | | | 1.83 | Reddish-brown, decomposed SHALE | | | | | | | | | 15 | VISUAL | |
| Sta 33+133 | | 0.00 | 10 | 8 | 18 | * | 64 | 33 | 10 | 19 | A-4a | | | 2.74 | Reddish-brown, decomposed SHALE | | | | | | | | | 12 | VISUAL | |
| | | 0.61 | 8 | 0 | 0 | * | 92 | 29 | 10 | 14 | A-4a | | | 4.27 | Reddish-brown, decomposed SHALE | | | | | | | | | 10 | VISUAL | |
| | | 1.22 | 14 | 3 | 17 | * | 66 | 36 | 15 | 15 | A-6a | Sta 38+600 | | 0.30 | 1 | 2 | 9 | * | 88 | 45 | 22 | 17 | 17 | A-7-6 | | |
| | | 2.13 | 25 | 4 | 16 | * | 55 | 38 | 13 | 9 | A-6a | | | 0.91 | 7 | 0 | 0 | * | 93 | 53 | 21 | 18 | 18 | A-7-5 | | |
| Sta 34+425 | | 0.15 | 5 | 3 | 12 | * | 80 | 38 | 13 | 15 | A-6a | | | 1.52 | 0 | 0 | 6 | * | 94 | 43 | 21 | 18 | 18 | A-7-6 | | |
| | | 0.91 | 9 | 4 | 11 | * | 76 | 42 | 18 | 15 | A-7-6 | | | 2.29 | Brown, highly weathered SANDSTONE | | | | | | | | | 7 | VISUAL | |
| | | 1.52 | Brown, decomposed SHALE, some sandstone fragments | | | | | | | 17 | VISUAL | Sta 38+815 | | 0.30 | 13 | 10 | 14 | * | 64 | 39 | 15 | 22 | 22 | A-6a | | |
| Sta 34+736 | | 0.30 | 1 | 2 | 6 | ** | 91 | 63 | 33 | 22 | A-7-5 | | | 1.07 | Brown, highly weathered SANDSTONE | | | | | | | | | 9 | VISUAL | |
| | | 1.07 | 0 | 2 | 3 | ** | 95 | 52 | 22 | 15 | A-7-5 | | | 0.30 | Brown, highly weathered SANDSTONE | | | | | | | | | | | |
| | | 1.83 | 4 | 14 | 19 | * | 64 | 48 | 18 | 14 | A-7-5 | Sta 38+972 | | 0.30 | 0 | 1 | 3 | * | 96 | 49 | 22 | 18 | 18 | A-7-6 | | |
| | | 2.13 | Brown, highly weathered SHALE | | | | | | | 5 | VISUAL | | | 1.07 | 8 | 6 | 7 | * | 79 | 39 | 17 | 12 | 12 | A-6b | | |
| | | 2.90 | Brown, highly weathered SHALE | | | | | | | 7 | VISUAL | | | 0.30 | 0 | 0 | 2 | * | 98 | 60 | 31 | 21 | 21 | A-7-6 | | |
| | | 4.42 | Gray, highly weathered SHALE | | | | | | | 3 | VISUAL | | | 1.07 | 2 | 2 | 1 | * | 95 | 46 | 21 | 15 | 15 | A-7-6 | | |
| TR 64 : Sta 49+145 | | 0.30 | 0 | 0 | 21 | * | 79 | 39 | 20 | 19 | A-6b | | | 1.83 | Brown, decomposed SHALE | | | | | | | | | 6 | VISUAL | |
| | | 0.91 | 0 | 1 | 31 | * | 68 | 36 | 19 | 18 | A-6b | | | 2.59 | Brown, decomposed SHALE | | | | | | | | | 7 | VISUAL | |
| | | 1.52 | 0 | 0 | 32 | 22 | 46 | 27 | 9 | 22 | A-4a | Sta 39+311 | | 0.30 | 0 | 0 | 2 | * | 98 | 60 | 31 | 21 | 21 | A-7-6 | | |
| | | 2.29 | 1 | 0 | 1 | * | 97 | 51 | 26 | 22 | A-7-6 | | | 1.07 | 2 | 2 | 1 | * | 95 | 46 | 21 | 15 | 15 | A-7-6 | | |

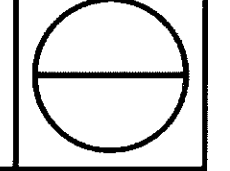


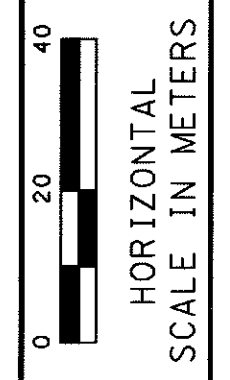
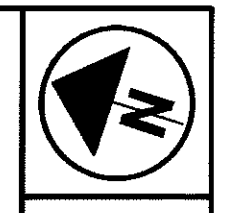


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ROADWAY CULVERT SOIL PROFILE
CROSS SECTION 29+980

ATH-33-30.981

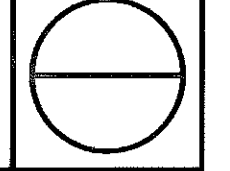


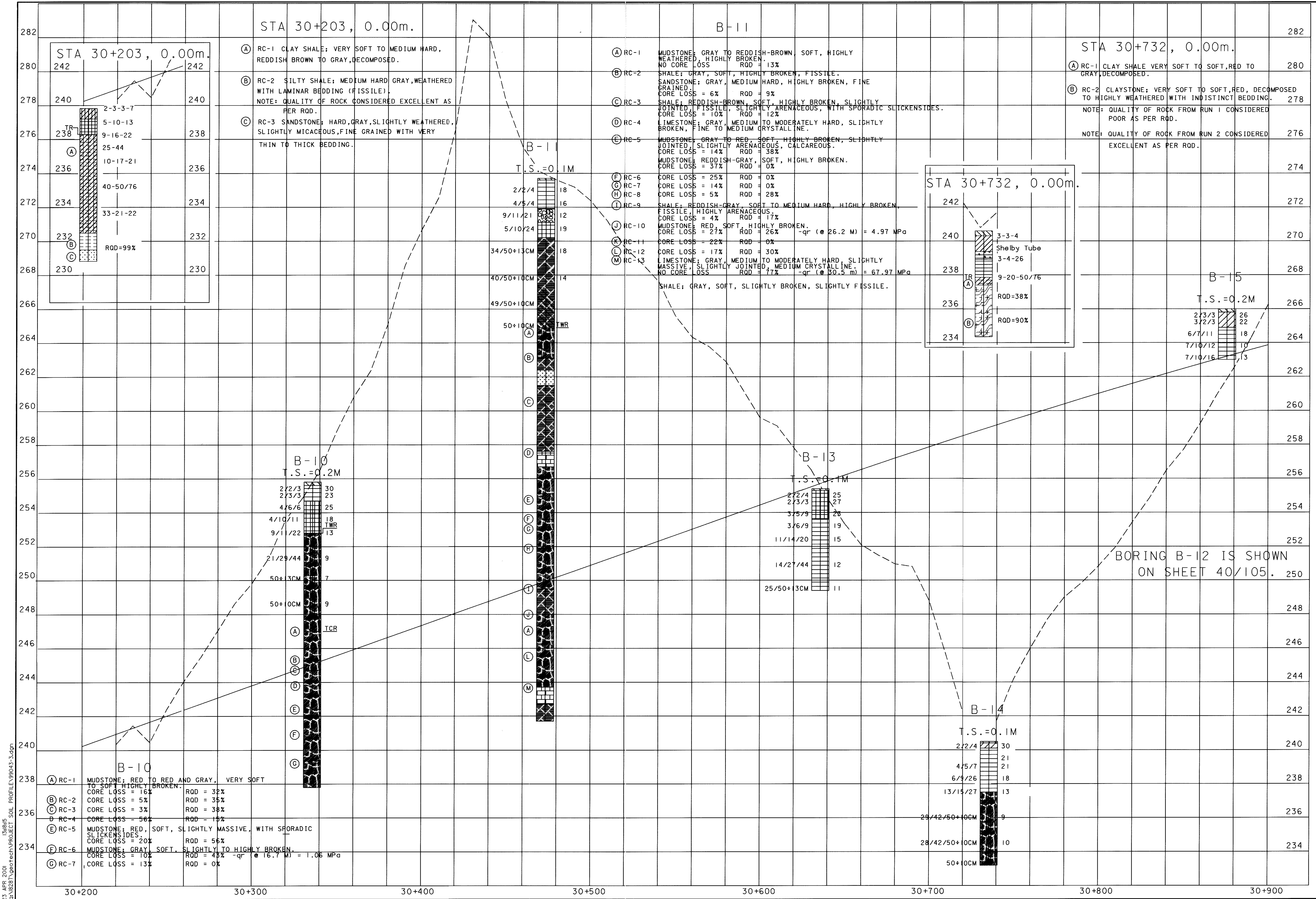


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| | | | CHECKED |
| | | | S.S.S. |

ROADWAY / CULVERT SOIL PROFILE
STA. 30+200 TO STA. 30+900

ATH-33-30.981





23 APR 2001
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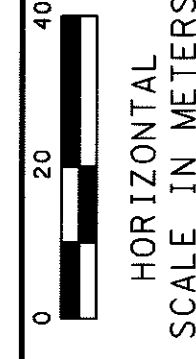
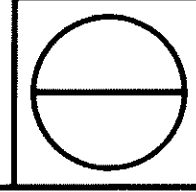
ROADWAY/CULVERT SOIL PROFILE
STA. 30+200 TO STA. 30+900

ATH-33-30.981

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| DRAWN | B. M. | REVIEWED | S. M. | DATE | 03/22/00 |
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HORIZONTAL SCALE IN METERS
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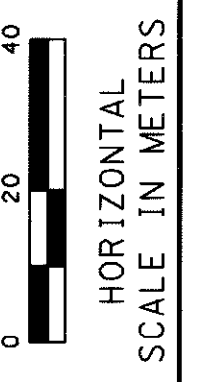
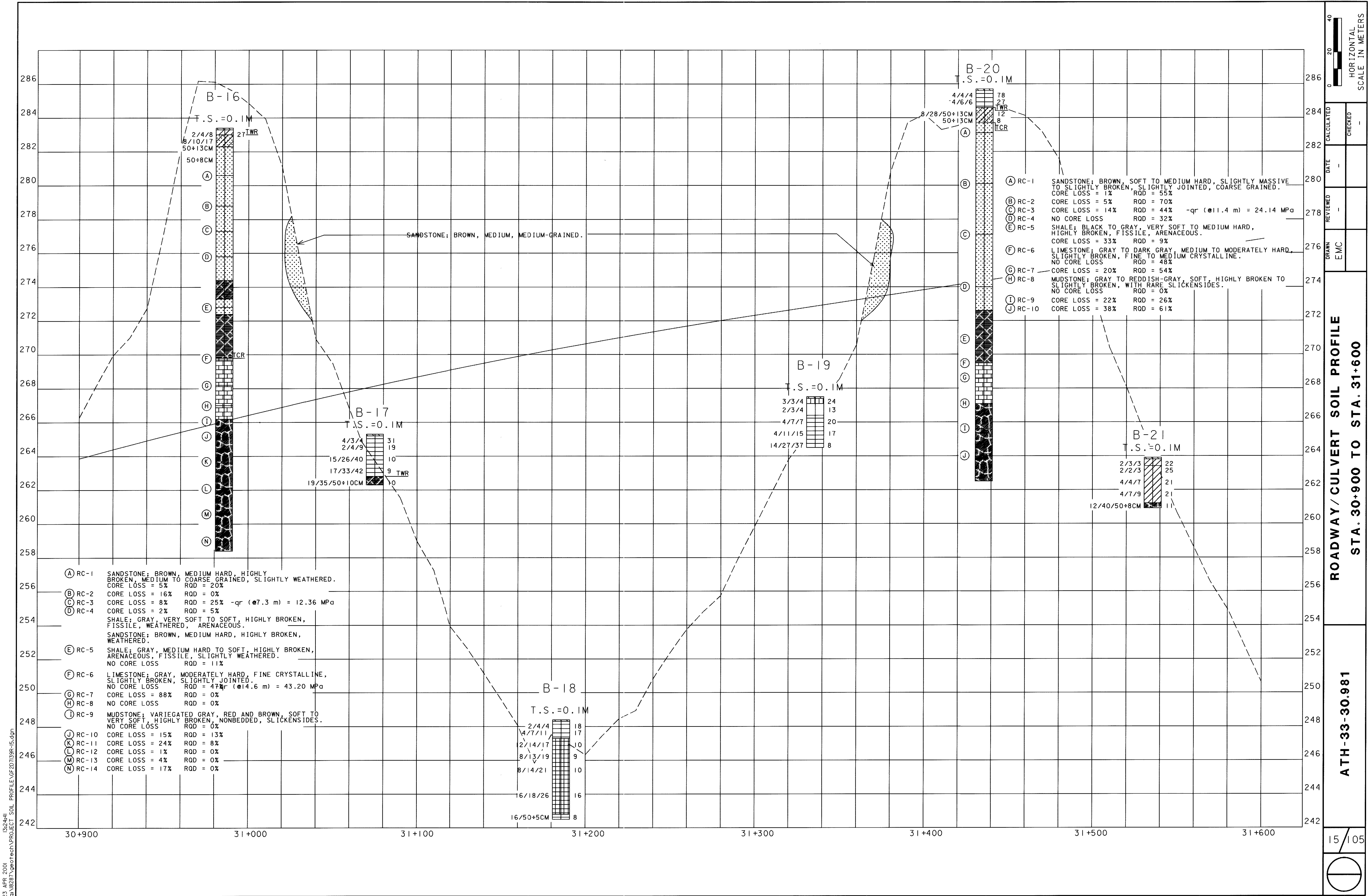
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ROADWAY / CULVERT SOIL PROFILE
STA. 30+900 TO STA. 31+600

ATH-33-30.981



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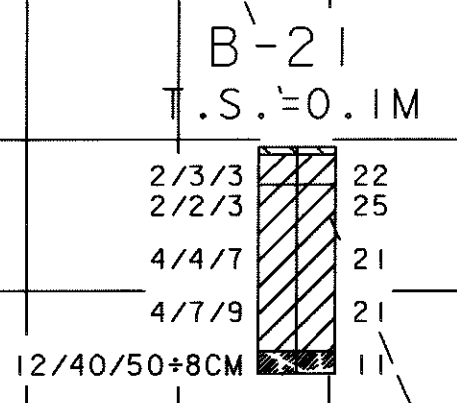
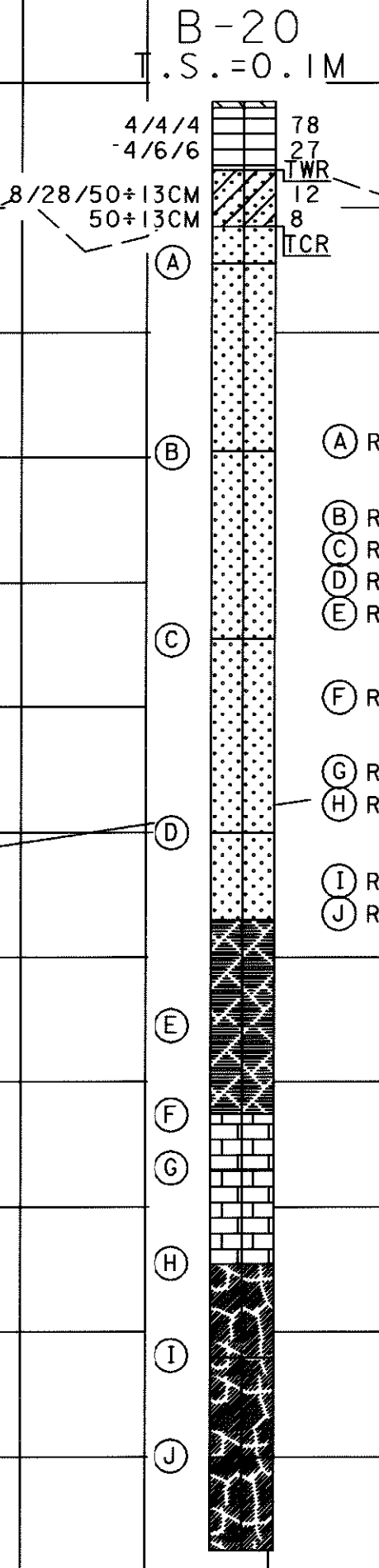
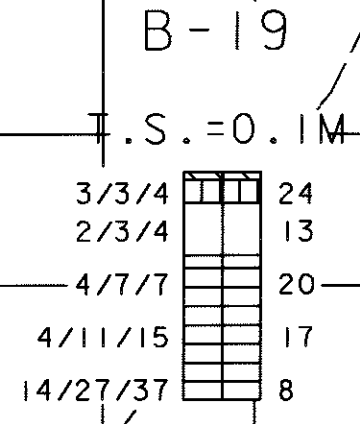
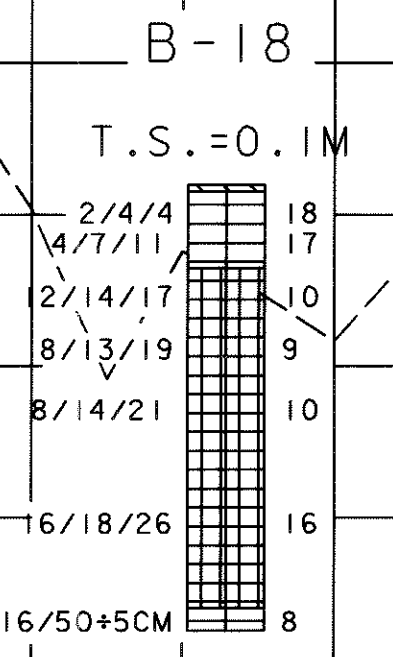
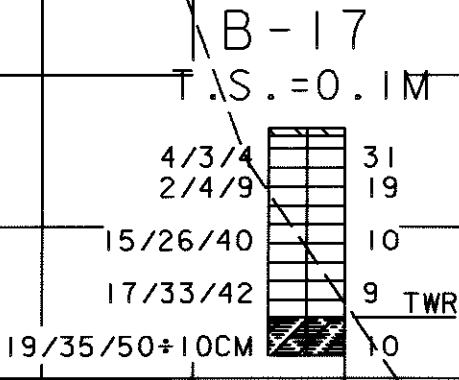
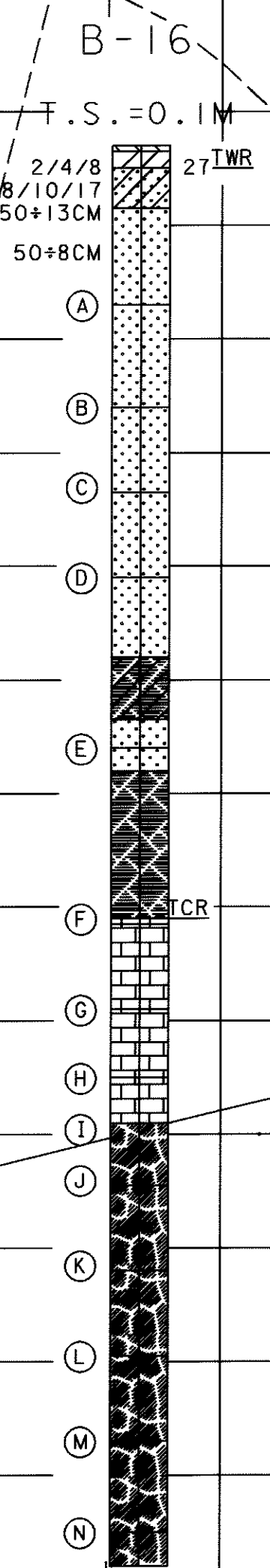
**ROADWAY/CULVERT SOIL PROFILE
STA. 30+900 TO STA. 31+600**

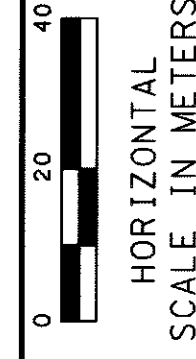
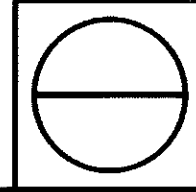
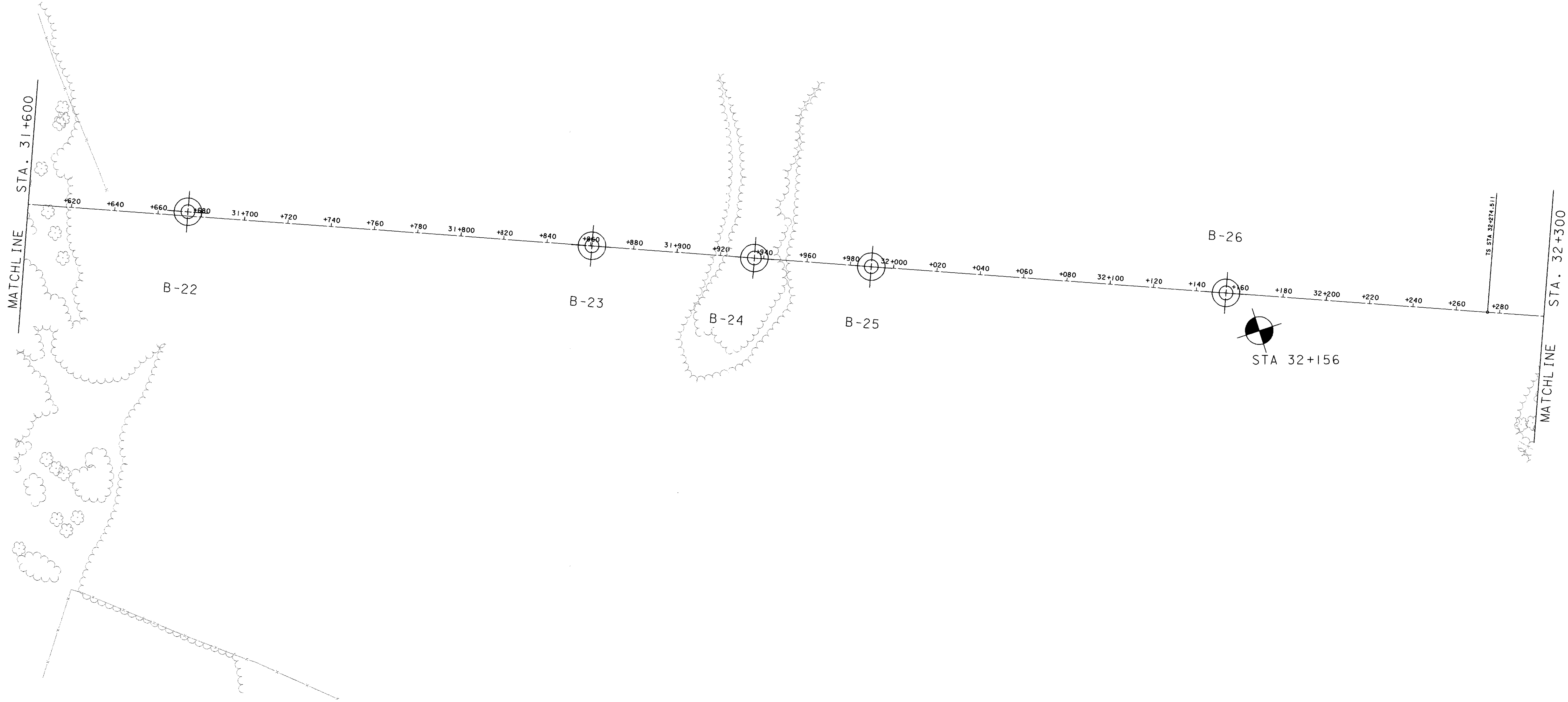
ATH-33-30.981

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- (A) RC-1 SANDSTONE; BROWN, MEDIUM HARD, HIGHLY BROKEN, MEDIUM TO COARSE GRAINED, SLIGHTLY WEATHERED. CORE LOSS = 5% RQD = 20%
- (B) RC-2 CORE LOSS = 16% RQD = 0%
- (C) RC-3 CORE LOSS = 8% RQD = 25% -qr (@7.3 m) = 12.36 MPa
- (D) RC-4 CORE LOSS = 2% RQD = 5%
- (E) RC-5 SHALE; GRAY, VERY SOFT TO SOFT, HIGHLY BROKEN, FISSILE, WEATHERED, ARENACEOUS. SANDSTONE; BROWN, MEDIUM HARD, HIGHLY BROKEN, WEATHERED. SHALE; GRAY, MEDIUM HARD TO SOFT, HIGHLY BROKEN, ARENACEOUS, FISSILE, SLIGHTLY WEATHERED. NO CORE LOSS RQD = 11%
- (F) RC-6 LIMESTONE; GRAY, MODERATELY HARD FINE CRYSTALLINE, SLIGHTLY BROKEN, SLIGHTLY JOINTED. NO CORE LOSS RQD = 47% -qr (@14.6 m) = 43.20 MPa
- (G) RC-7 CORE LOSS = 88% RQD = 0%
- (H) RC-8 NO CORE LOSS RQD = 0%
- (I) RC-9 MUDSTONE; VARIEGATED GRAY, RED AND BROWN, SOFT TO VERY SOFT, HIGHLY BROKEN, NONBEDDED, SLICKENSIDES. NO CORE LOSS RQD = 0%
- (J) RC-10 CORE LOSS = 15% RQD = 13%
- (K) RC-11 CORE LOSS = 24% RQD = 8%
- (L) RC-12 CORE LOSS = 1% RQD = 0%
- (M) RC-13 CORE LOSS = 4% RQD = 0%
- (N) RC-14 CORE LOSS = 17% RQD = 0%

- (A) RC-1 SANDSTONE; BROWN, SOFT TO MEDIUM HARD, SLIGHTLY MASSIVE TO SLIGHTLY BROKEN, SLIGHTLY JOINTED, COARSE GRAINED. CORE LOSS = 1% RQD = 55%
- (B) RC-2 CORE LOSS = 5% RQD = 70%
- (C) RC-3 CORE LOSS = 14% RQD = 44% -qr (@11.4 m) = 24.14 MPa
- (D) RC-4 NO CORE LOSS RQD = 32%
- (E) RC-5 SHALE; BLACK TO GRAY, VERY SOFT TO MEDIUM HARD, HIGHLY BROKEN, FISSILE, ARENACEOUS. CORE LOSS = 33% RQD = 9%
- (F) RC-6 LIMESTONE; GRAY TO DARK GRAY, MEDIUM TO MODERATELY HARD, SLIGHTLY BROKEN, FINE TO MEDIUM CRYSTALLINE. NO CORE LOSS RQD = 48%
- (G) RC-7 CORE LOSS = 20% RQD = 54%
- (H) RC-8 MUDSTONE; GRAY TO REDDISH-GRAY, SOFT, HIGHLY BROKEN TO SLIGHTLY BROKEN, WITH RARE SLICKENSIDES. NO CORE LOSS RQD = 0%
- (I) RC-9 CORE LOSS = 22% RQD = 26%
- (J) RC-10 CORE LOSS = 38% RQD = 61%

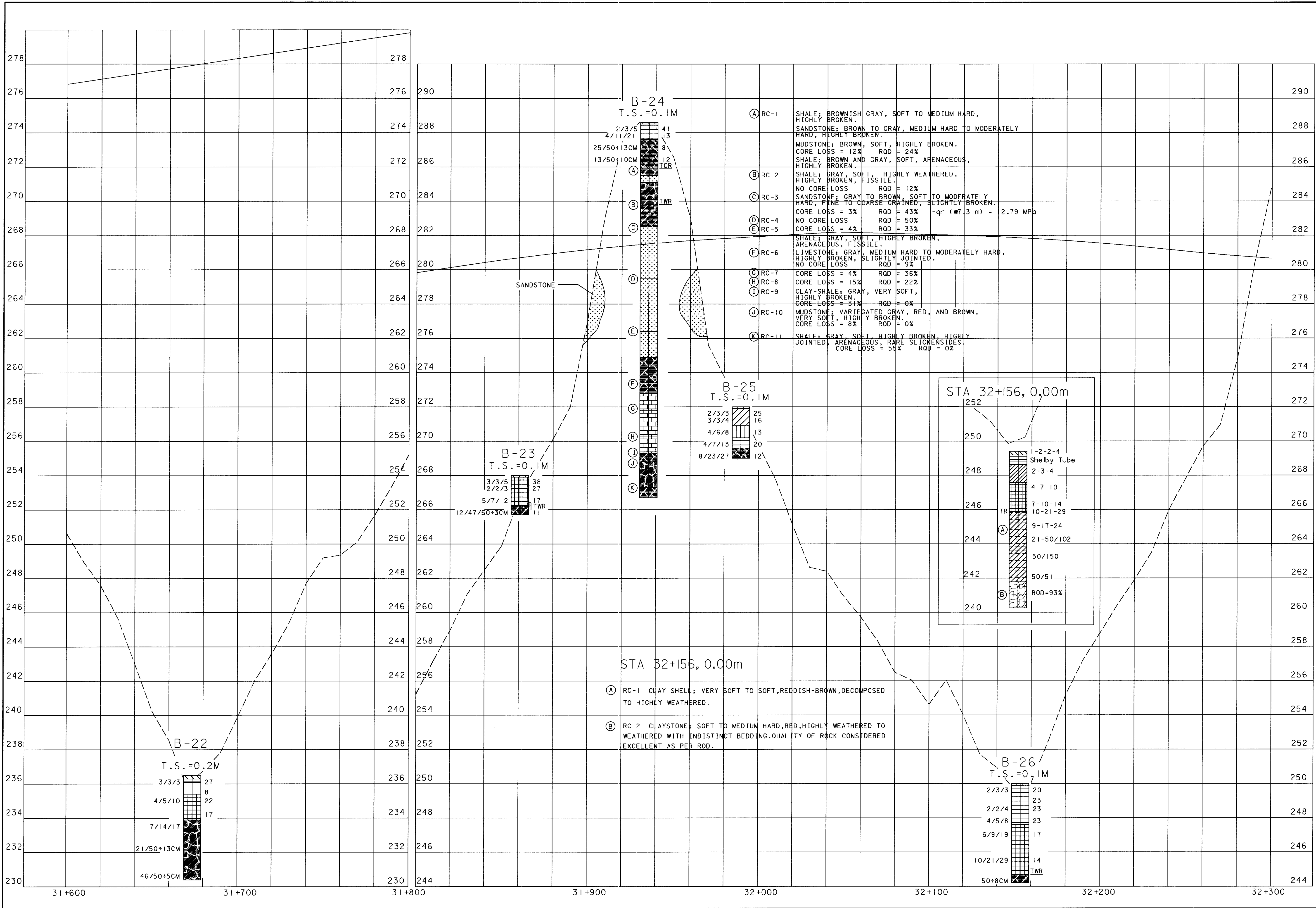




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| DRAWN | REVIEWED | DATE | CALCULATED |
| B. M. | S. M. | 03/22/00 | W. J. N. |
| | | | CHECKED |
| | | | S. S. S. |

ROADWAY / CULVERT SOIL PROFILE
STA. 31+600 TO STA. 32+300

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ROADWAY/CULVERT SOIL PROFILE
STA. 31+600 TO STA. 32+300


ATH-33-30.981

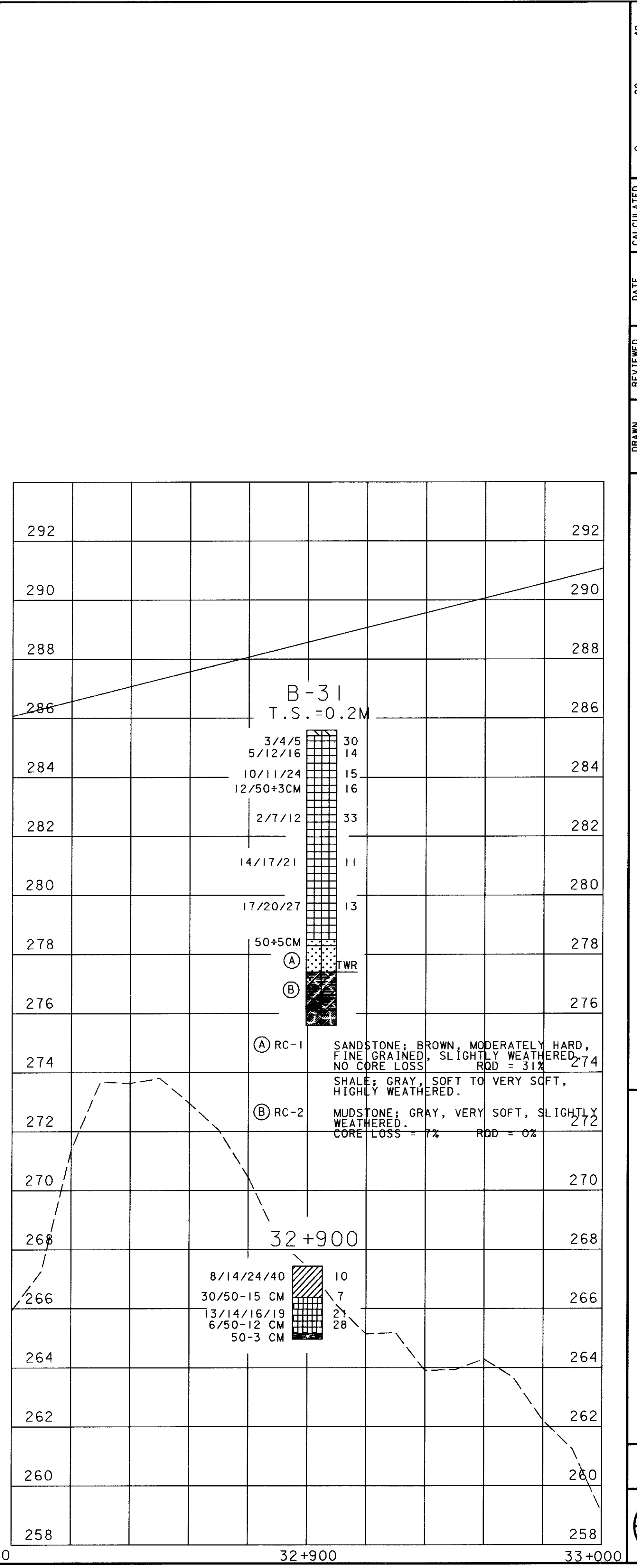
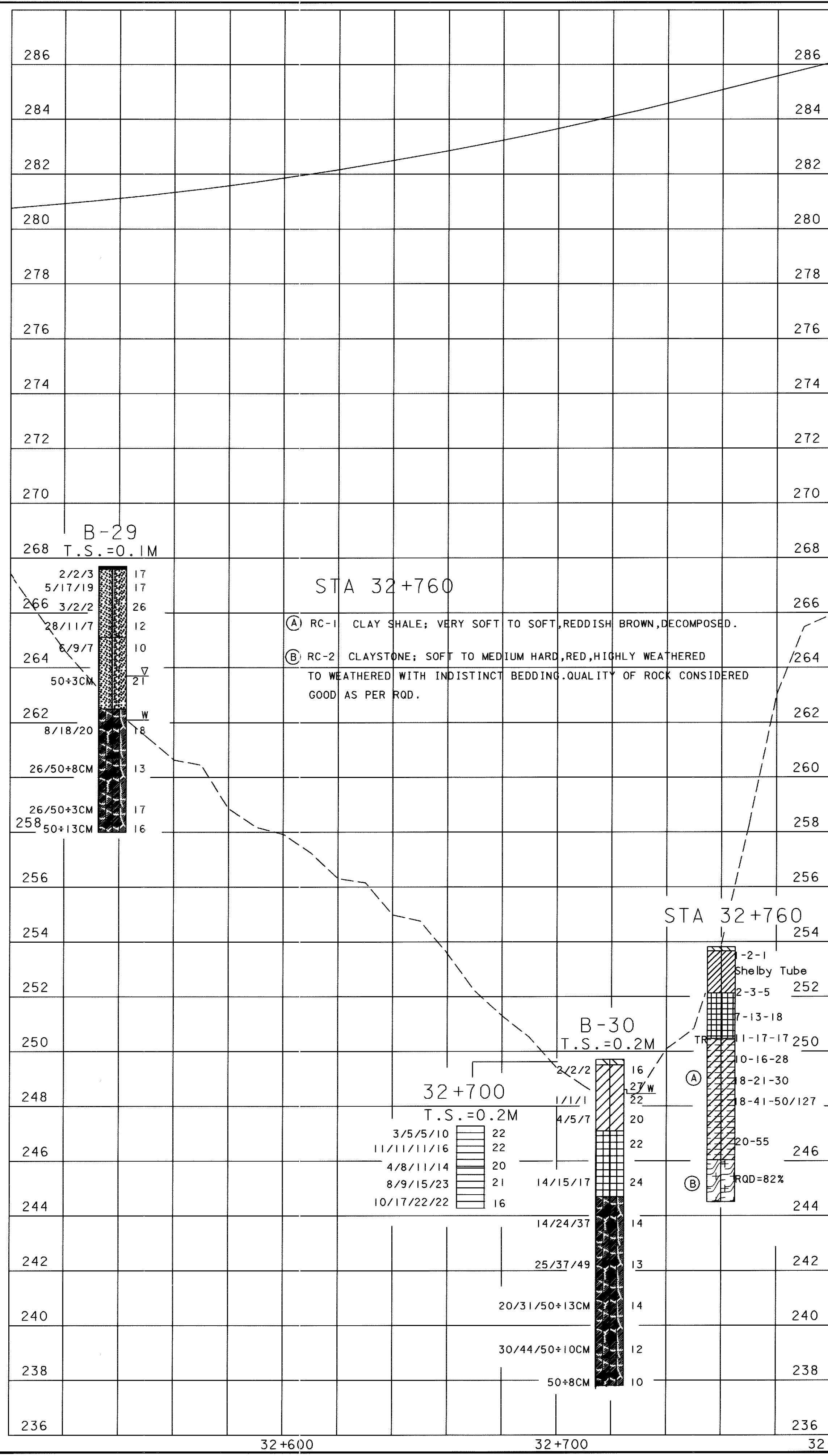
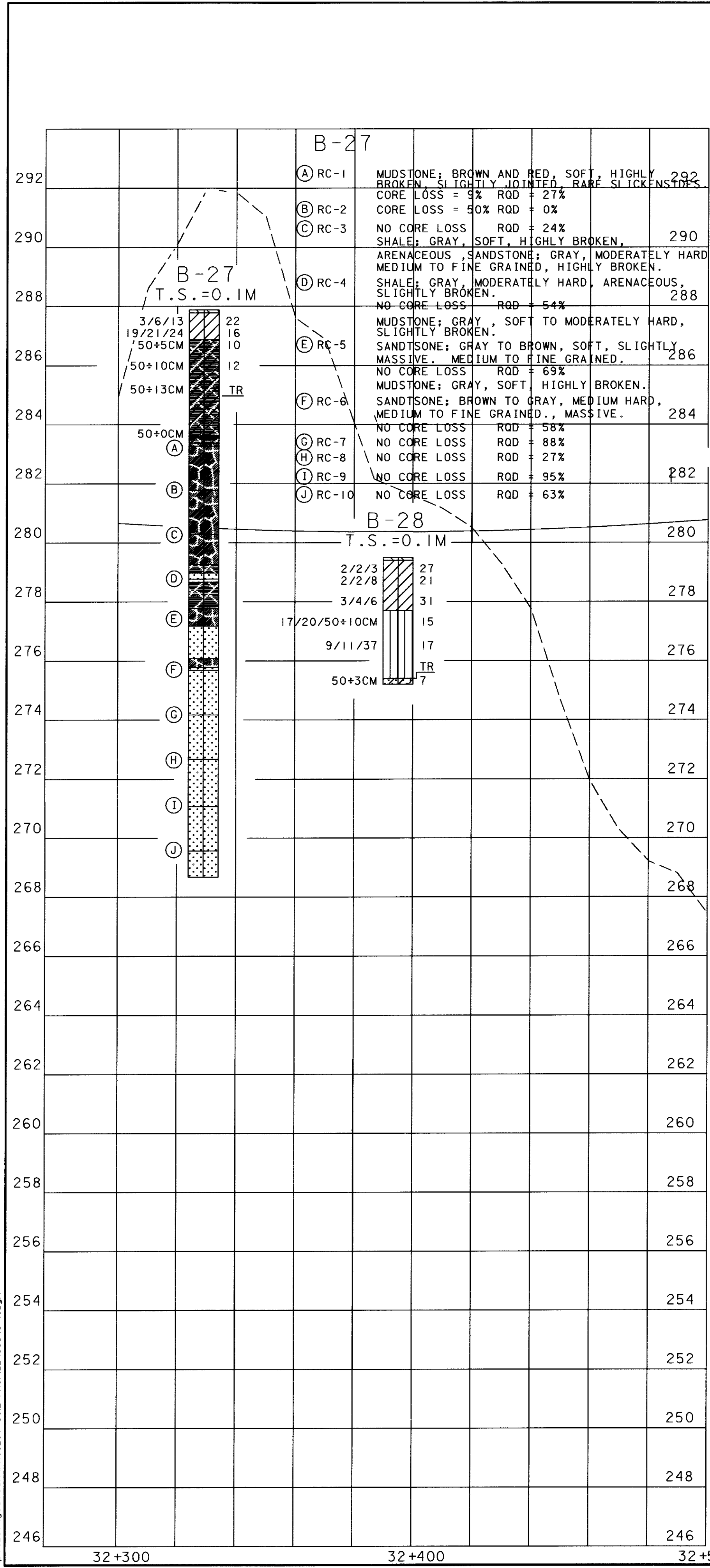
17/105

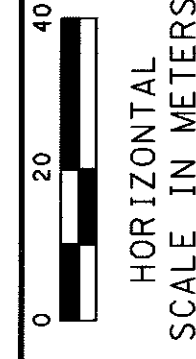
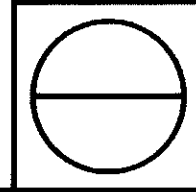
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| DRAWN | B.M. | REVIEWED | S.M. | DATE | 03/22/00 |
| CALCULATED | | | W. I. N. | | |
| CHECKED | | | S. S. S. | | |

HORIZONTAL SCALE IN METERS



| | |
|--------------------------------------------------------------------------------------------------------------------------------|------------------------|
|  0 20 40 HORIZONTAL SCALE IN METERS | CALCULATED W. J. N. |
| | DATE 03/22/00 |
| REVIEWED S. M. | CHECKED S. S. S. |
| DRAWN B. M. | |
| ROADWAY / CULVERT SOIL PROFILE STA. 32+300 TO STA. 33+000 | |
| ATH-33-30.981 | |
| 18 / 05 | |



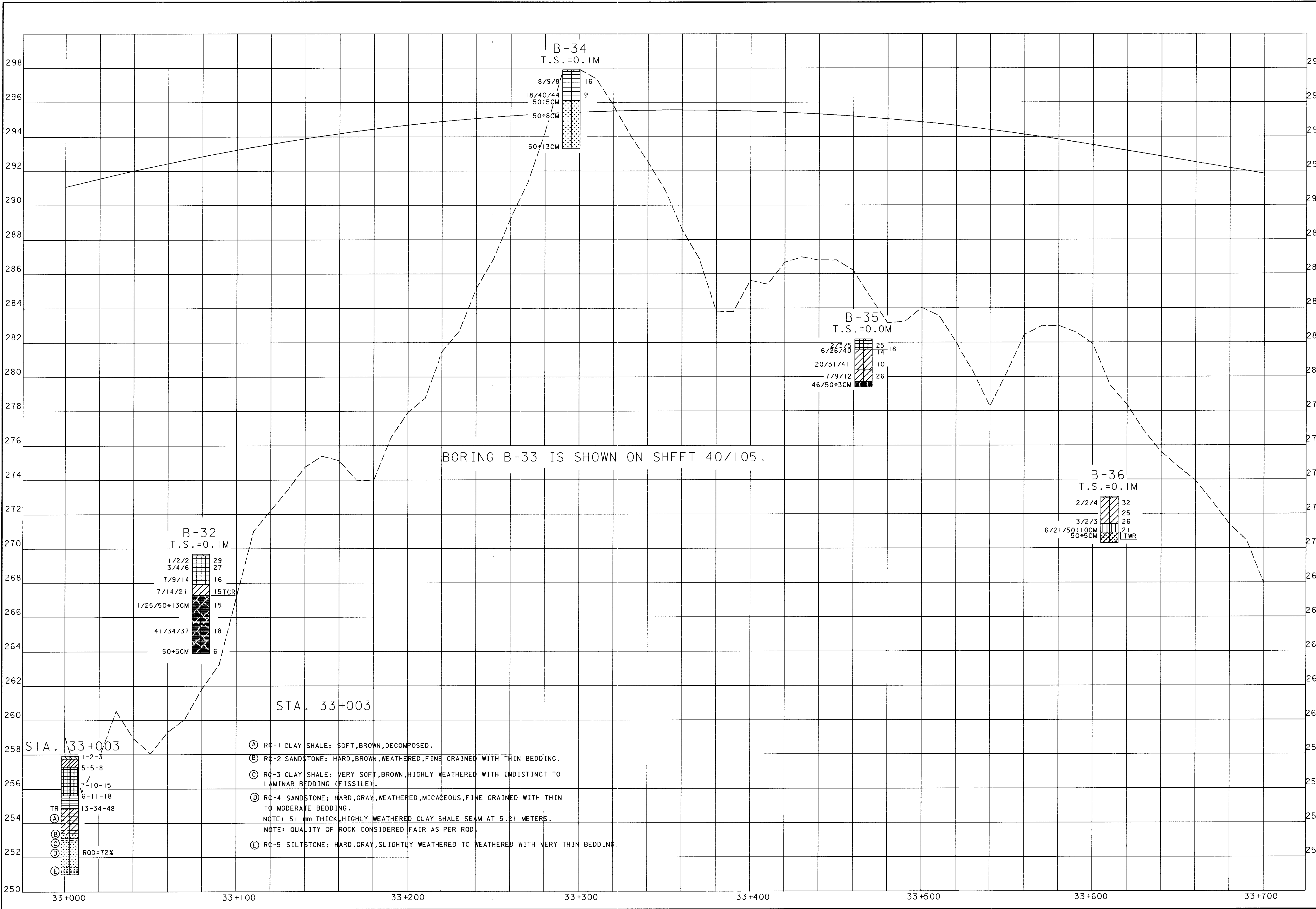


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| REVIEWED | DATE | CALCULATED |
| S.T.M. | 03/22/00 | W. I. N. |
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| | | S. S. S. |

ROADWAY / CULVERT SOIL PROFILE
STA. 33+000 TO STA. 33+700

ATH-33-30.981

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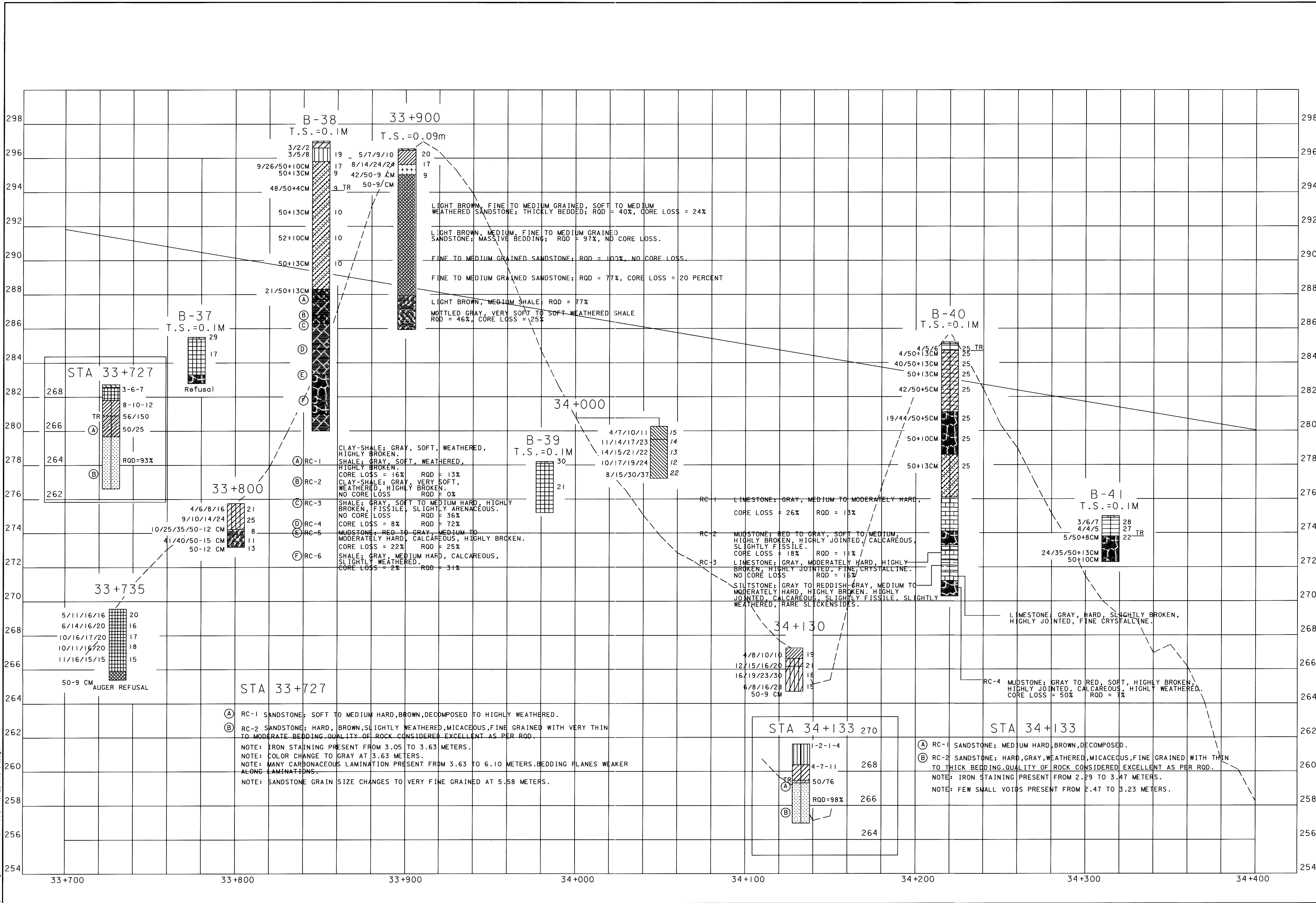


ROADWAY/CULVERT SOIL PROFILE
 STA. 33+000 TO STA. 33+700
 ATH-33-30.981
 21/105

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| SCALE IN METERS | 0 20 40 |
| HORIZONTAL | |
| W. I. N. | CHECKED |
| S. S. S. | |
| DATE | 03/22/00 |
| REVIEWED | S. M. |
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| CALCULATED | |



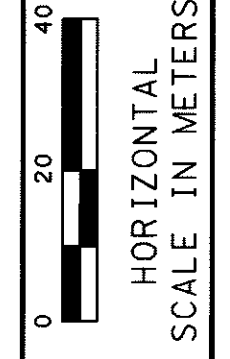
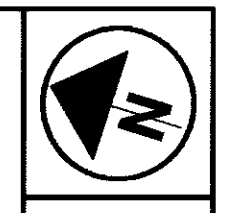
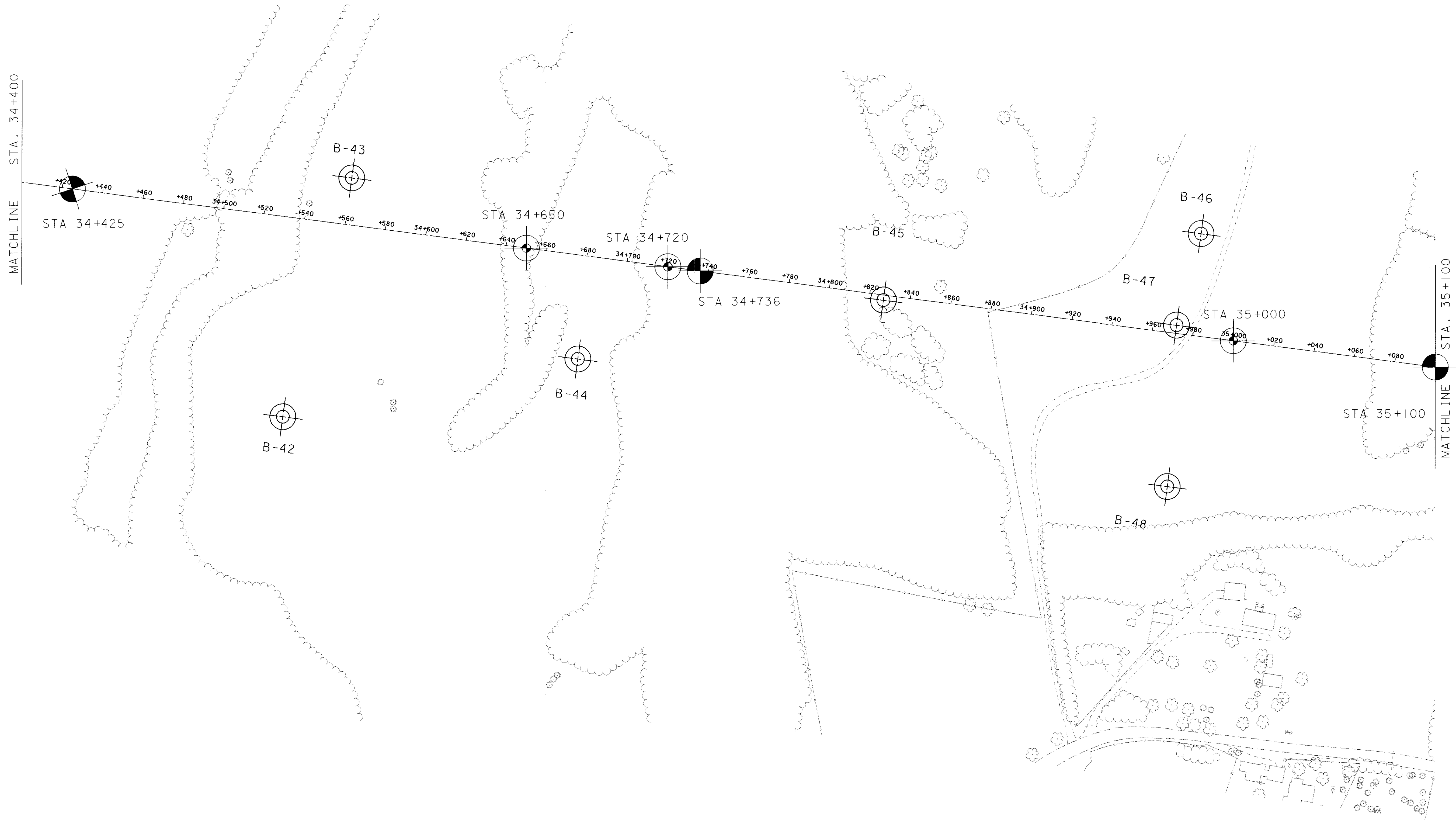
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| | 22 / 05 | | | | |



ROADWAY/CULVERT SOIL PROFILE
 STA. 33+700 TO STA. 34+400
 ATH-33-30.981

| | | | |
|-----------------|--------|----------|--------|
| SCALE IN METERS | 0 | 20 | 40 |
| HORIZONTAL | | | |
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| REVIEWED | S.M. | | |
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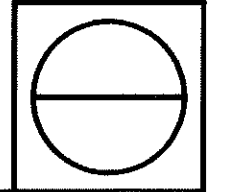
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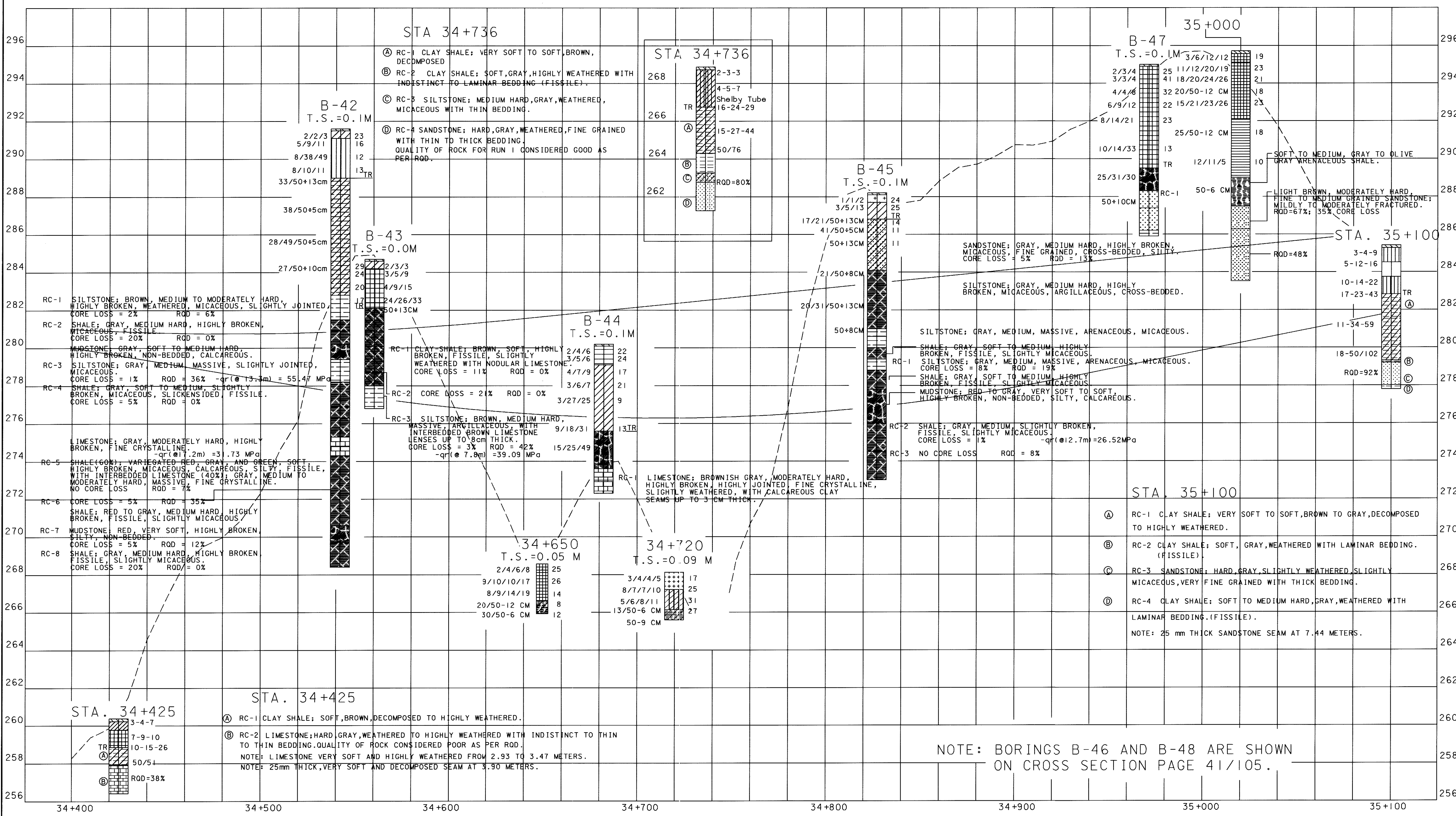


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| DRAWN B.M. | REVIEWED S.M. | DATE 03/22/00 | CALCULATED W.T.N. |
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ROADWAY/CULVERT SOIL PROFILE
STA. 34+400 TO STA. 35+100

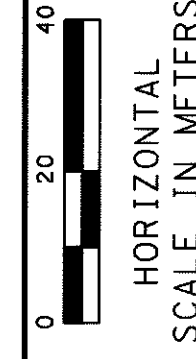
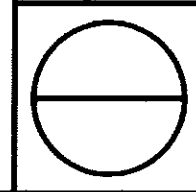
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NOTE: BORINGS B-46 AND B-48 ARE SHOWN ON CROSS SECTION PAGE 41/105.

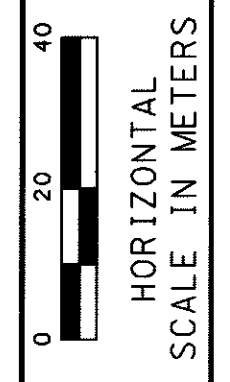
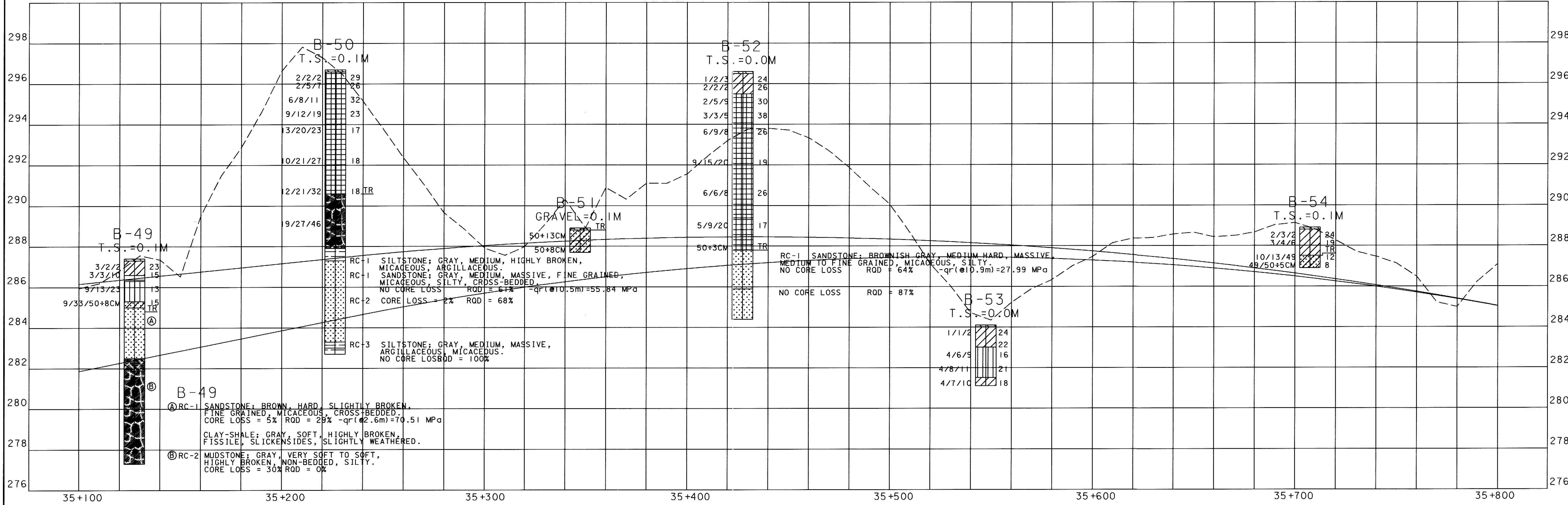


HORIZONTAL
 SCALE IN METERS

| REVIEWED | DATE | CALCULATED |
|----------|------|------------|
| EMC | - | - |
| | | CHECKED |
| | | - |

ROADWAY / CULVERT SOIL PROFILE
STA. 35+100 TO STA. 35+800

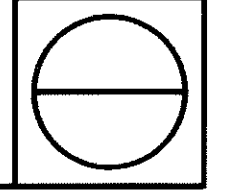
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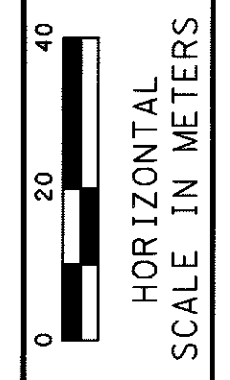
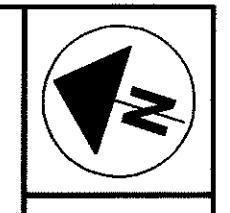
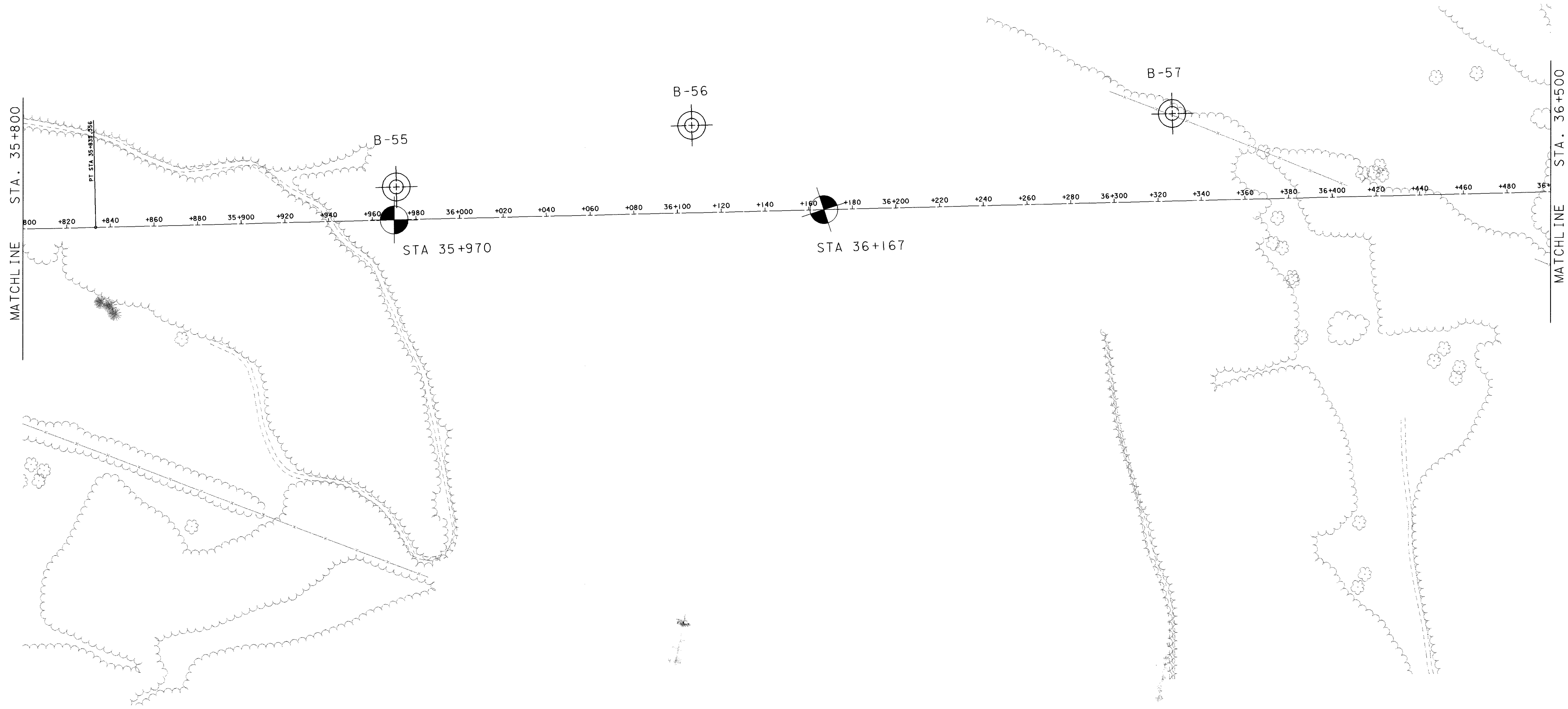


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| DATE | CALCULATED |
| REVIEWED | CHECKED |
| DRAWN | EMC |

ROADWAY / CULVERT SOIL PROFILE
STA. 35+100 TO STA. 35+800

ATH-33-30.981

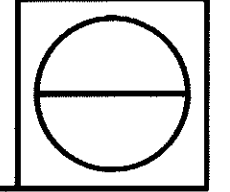


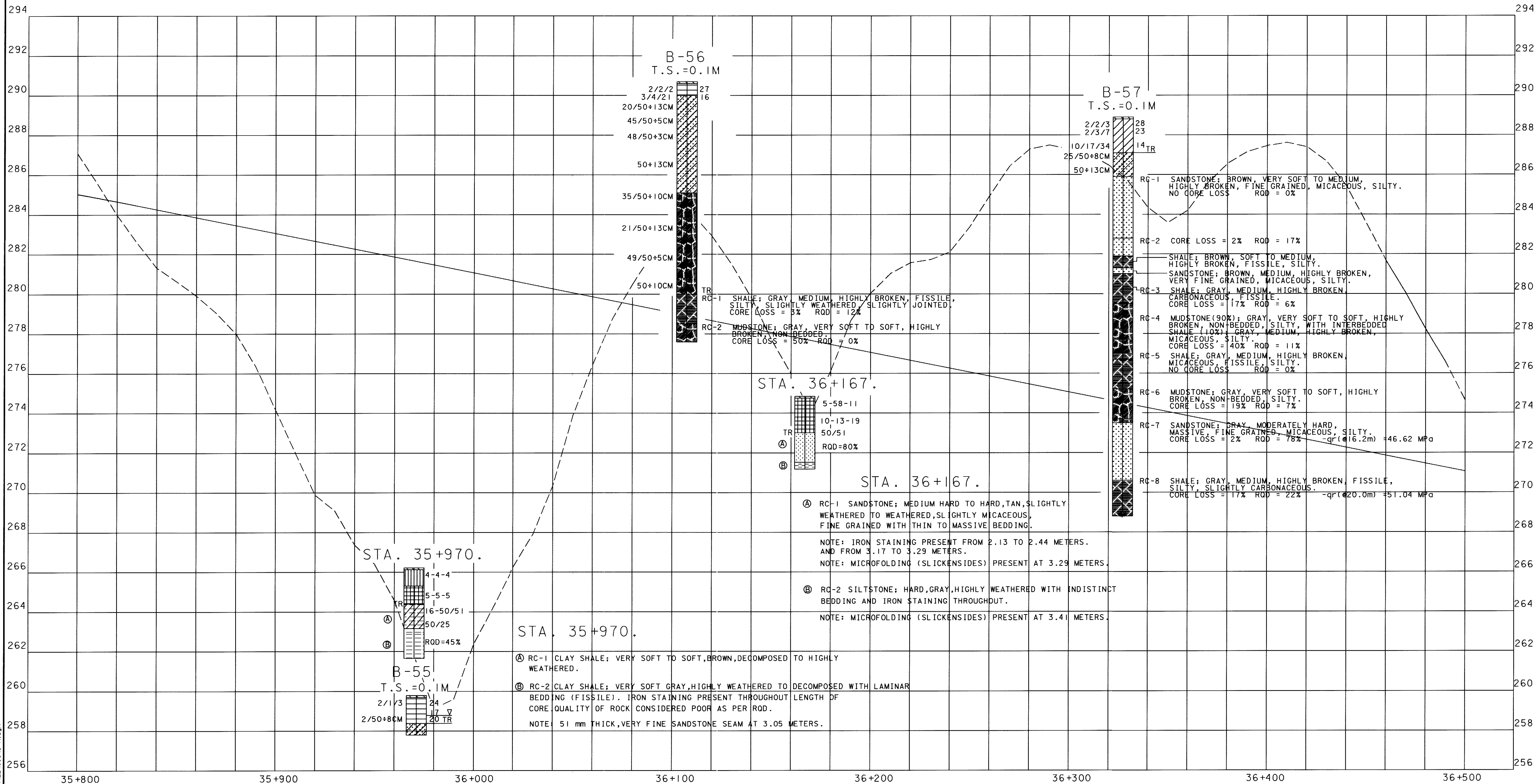



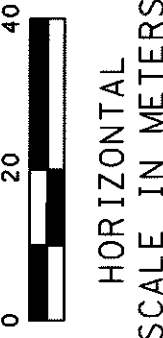
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| CALCULATED | DATE | REVIEWED | DRAWN |
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| CHECKED | | | |
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ROADWAY / CULVERT SOIL PROFILE
STA. 35+800 TO STA. 36+500

ATH-33-30.981





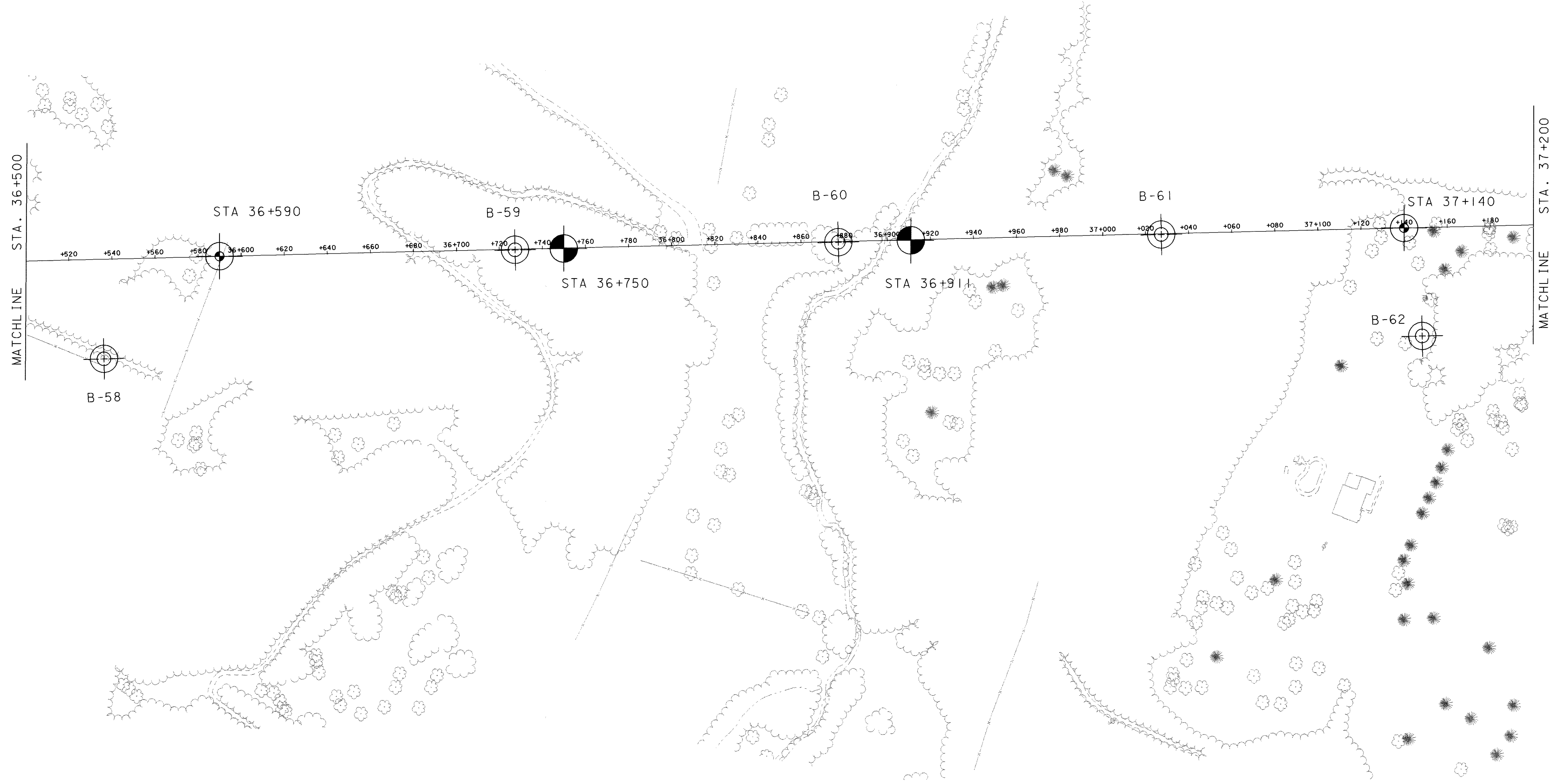
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| DRAWN | B.M. | REVIEWED | S.M. | DATE | 03/22/00 |
| CALCULATED | W.I.N. | CHECKED | S.S.S. | DATE | 03/22/00 |

ROADWAY/CULVERT SOIL PROFILE

STA. 35+800 TO STA. 36+500

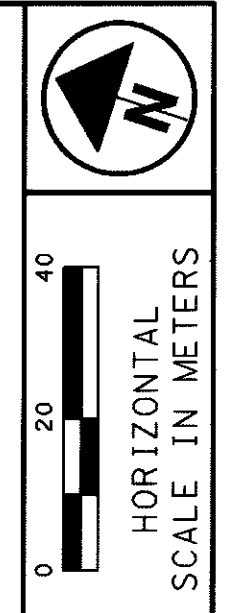
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29/105



MATCHLINE
 STA. 36+500

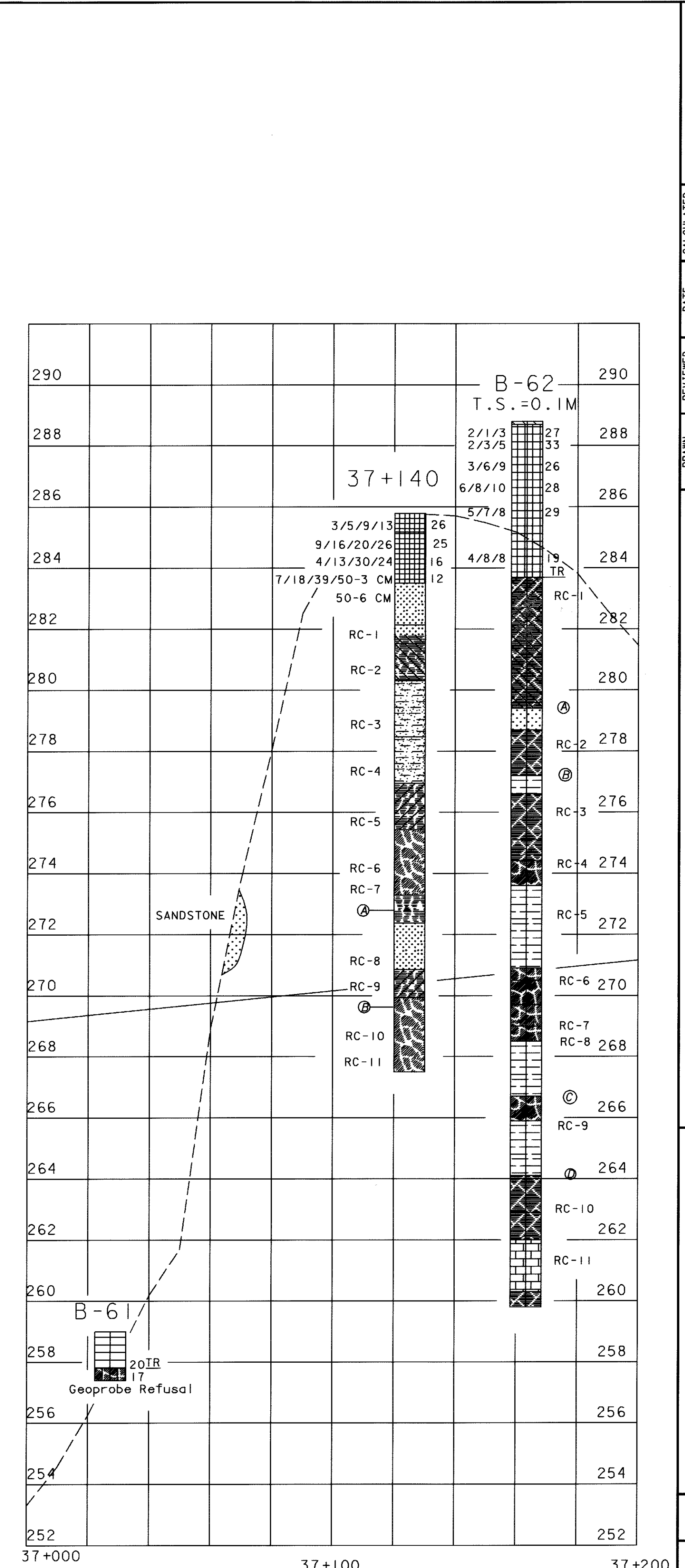
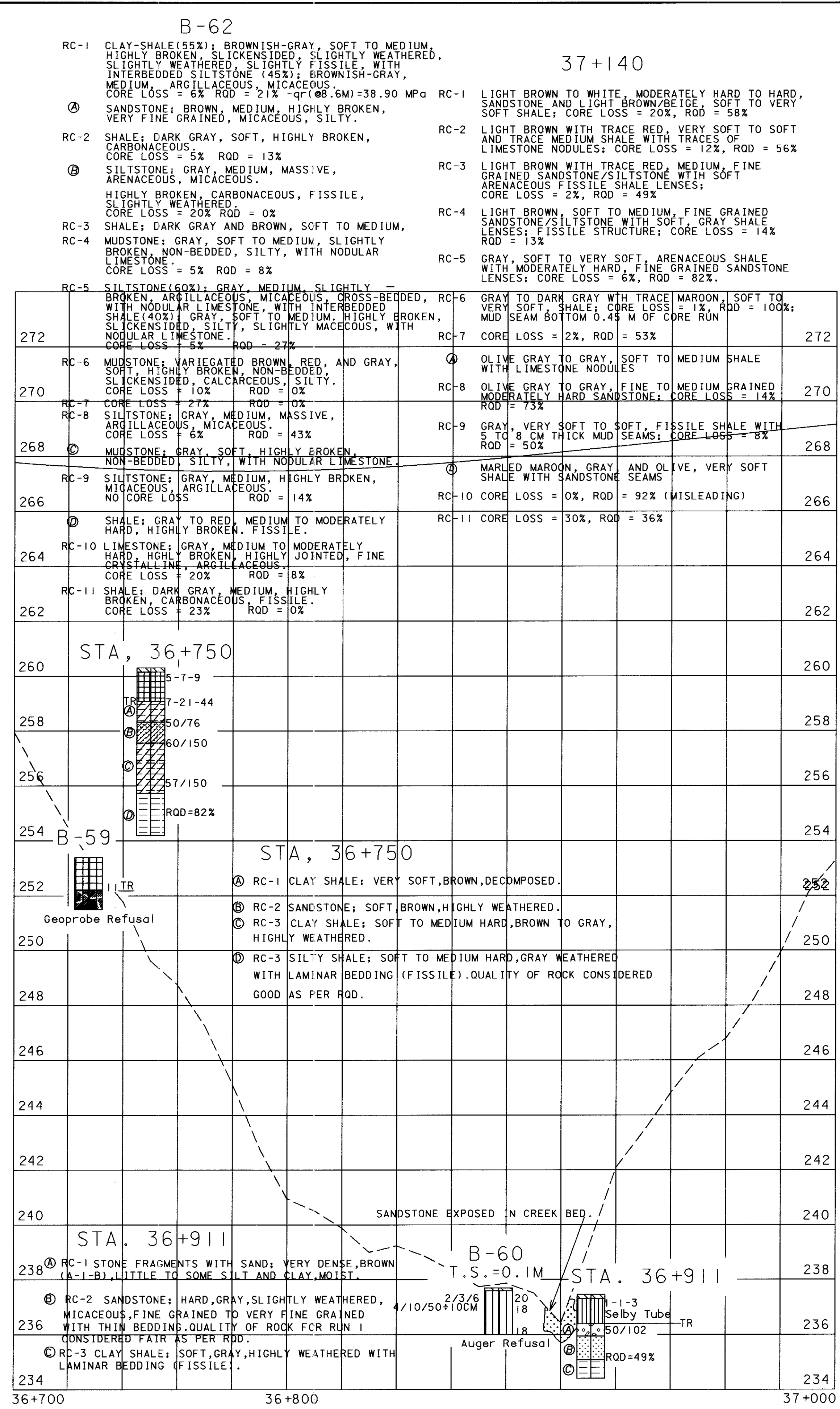
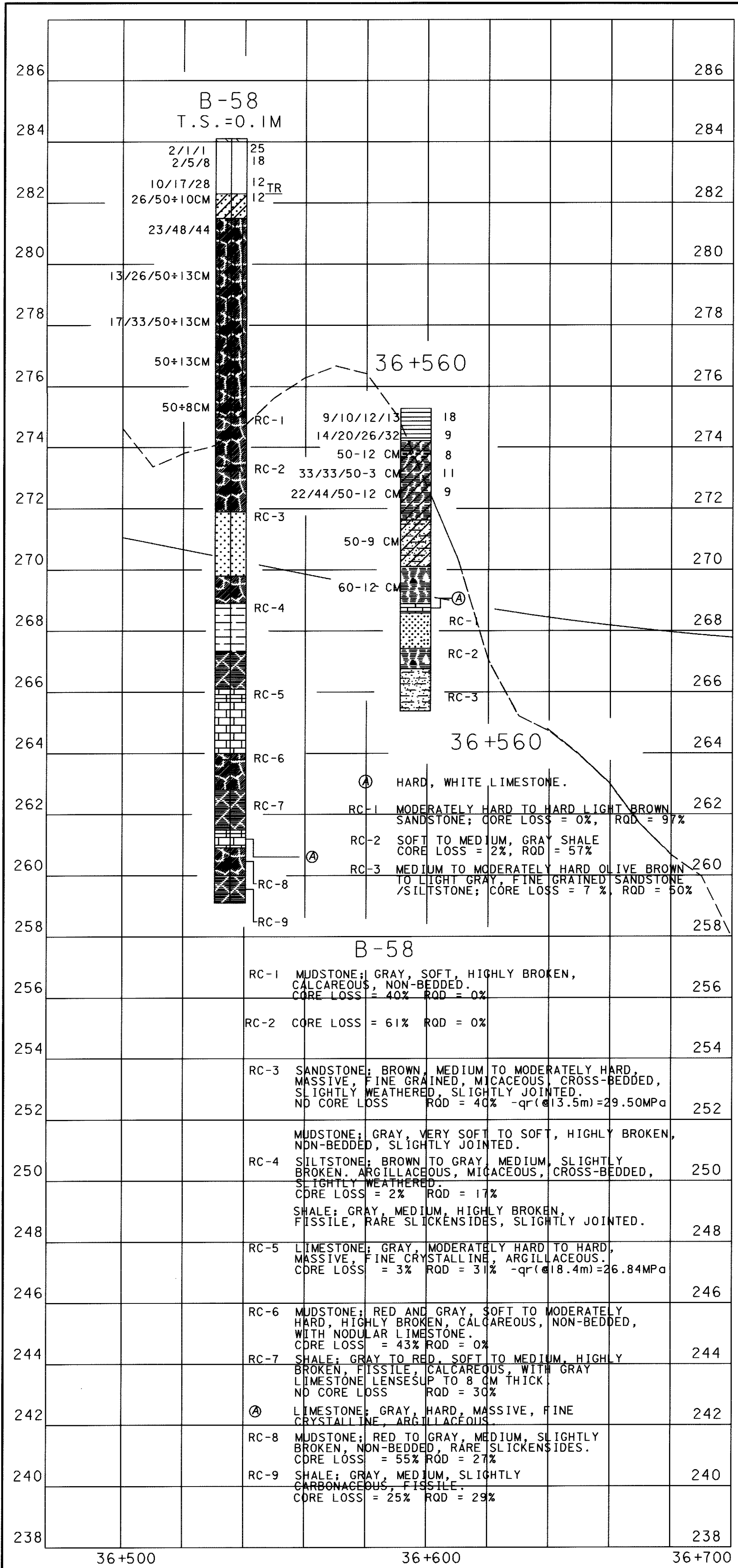
MATCHLINE
 STA. 37+200



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| DRAWN | REVIEWED | DATE | CALCULATED |
| B. M. | S. M. | 03/22/00 | W. J. N. |
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ROADWAY / CULVERT SOIL PROFILE
STA. 36+500 TO STA. 37+200

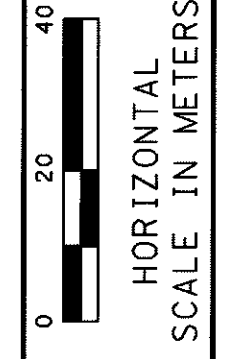
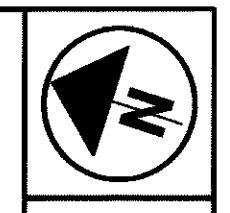
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MATCHLINE STA. 37+200

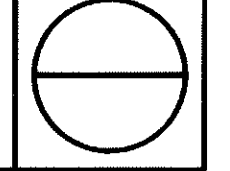
MATCHLINE STA. 37+900

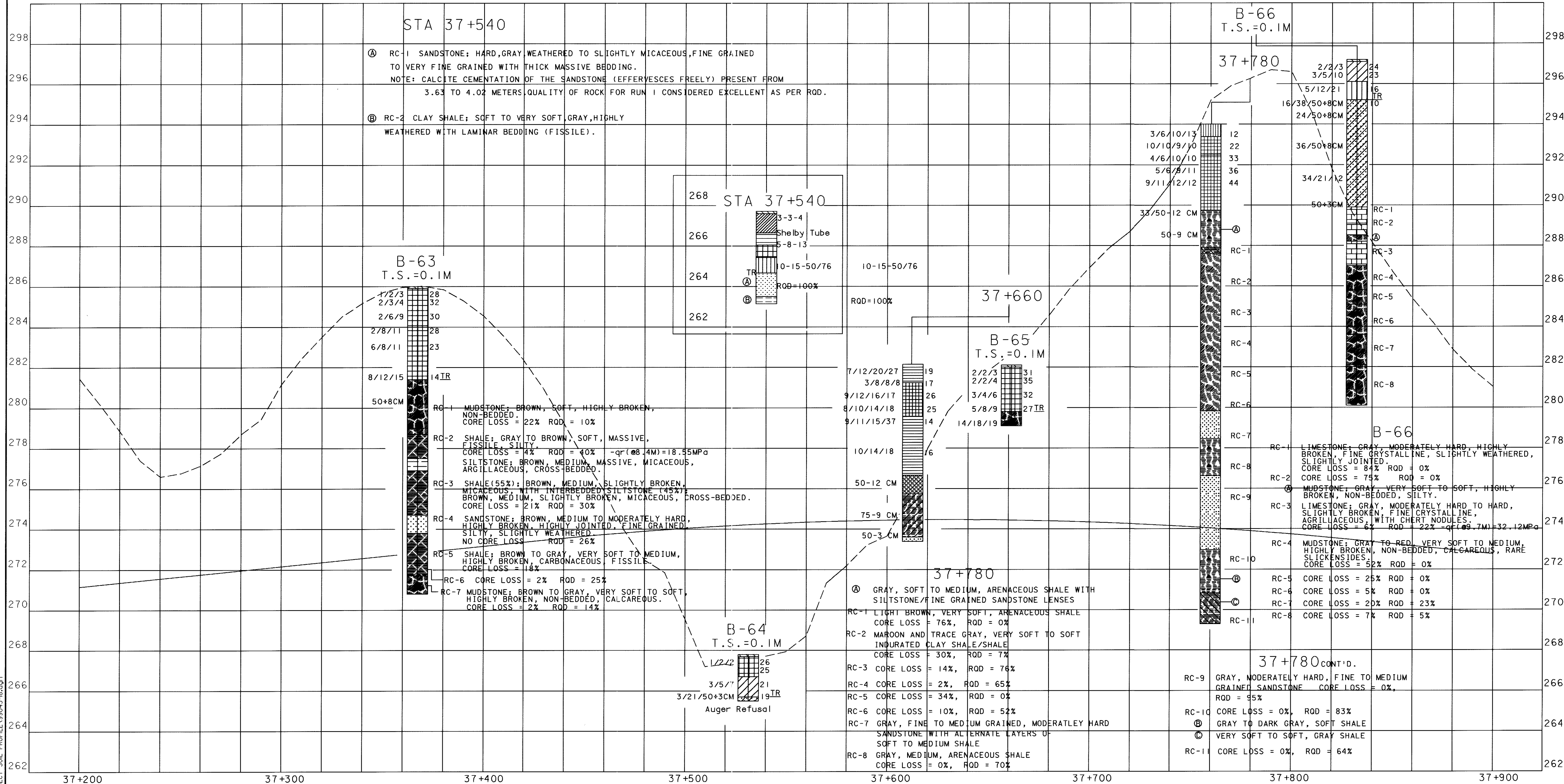


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| DRAWN | REVIEWED | DATE | CALCULATED |
| B.M. | S.M. | 03/22/00 | W.J.N. |
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ROADWAY / CULVERT SOIL PROFILE
STA. 37+200 TO STA. 37+900

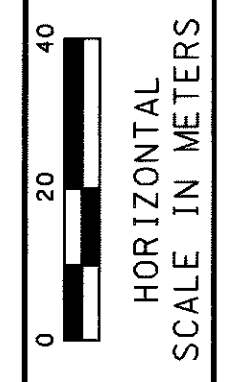
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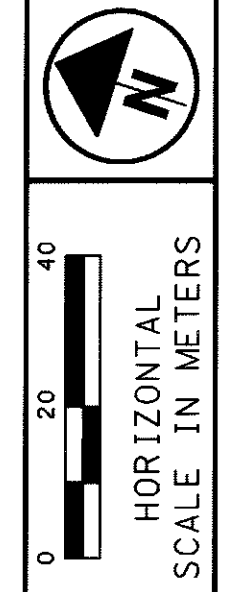
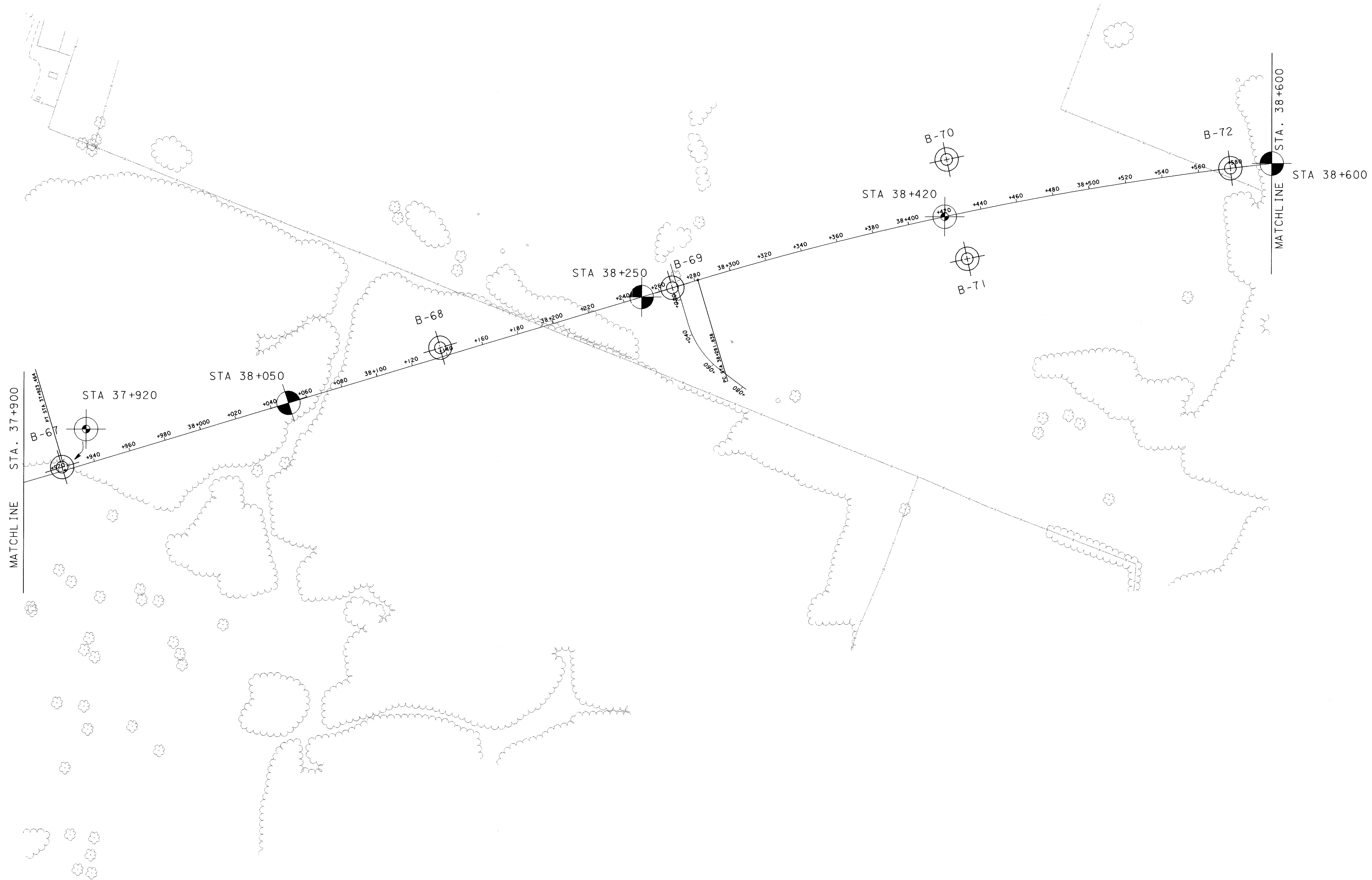


**ROADWAY/CULVERT SOIL PROFILE
STA. 37+200 TO STA. 37+900**

ATH-33-30.981

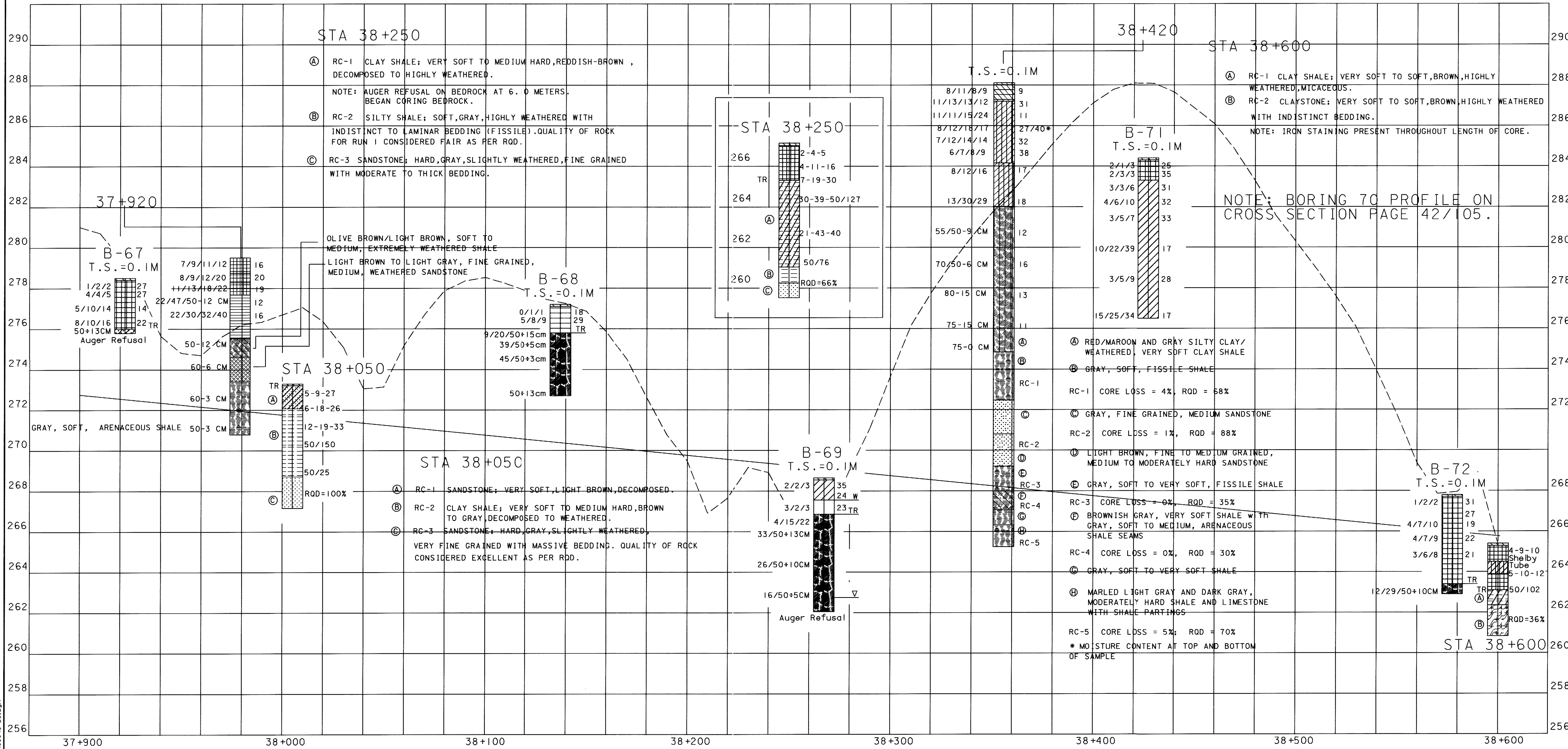


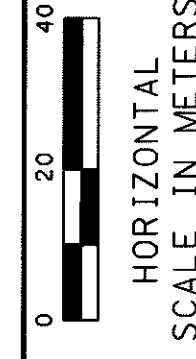
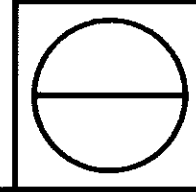
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| DATE | 03/22/00 | CALCULATED | W. I. N. |
| REVIEWED | S. M. | CHECKED | S. S. S. |
| DRAWN | B. M. | | |



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| DATE | 03/22/00 | CALCULATED | W. I. N. |
| REVIEWED | S. M. | CHECKED | S. S. S. |
| DRAWN | B. M. | | |

ROADWAY / CULVERT SOIL PROFILE
STA. 37+900 TO STA. 38+600

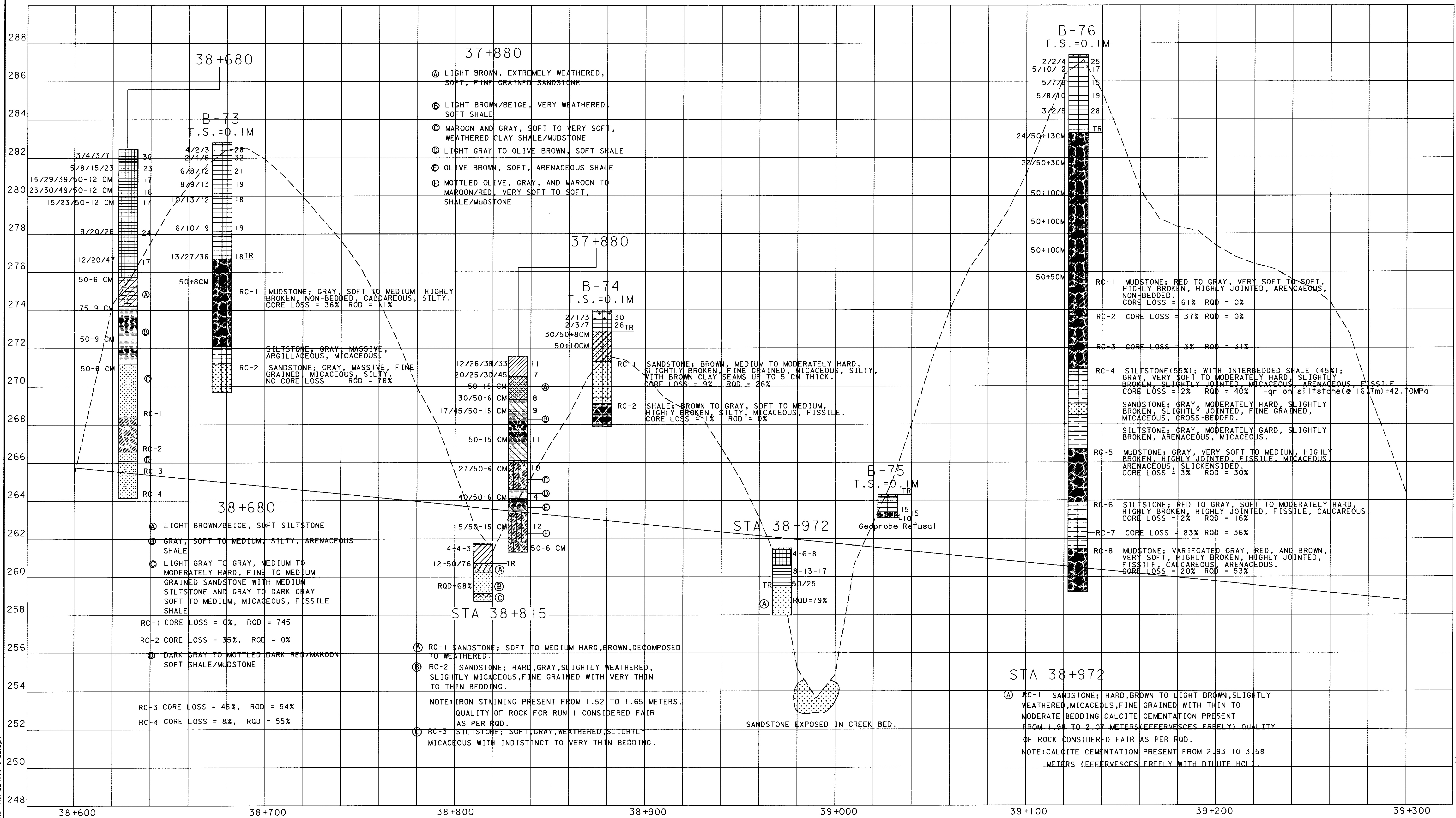




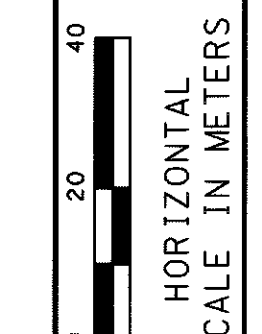
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| DRAWN B. M. | REVIEWED S. M. | DATE 03/22/00 | CALCULATED W. I. N. |
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ROADWAY / CULVERT SOIL PROFILE
STA. 38+600 TO STA. 39+300

ATH-33-30.981

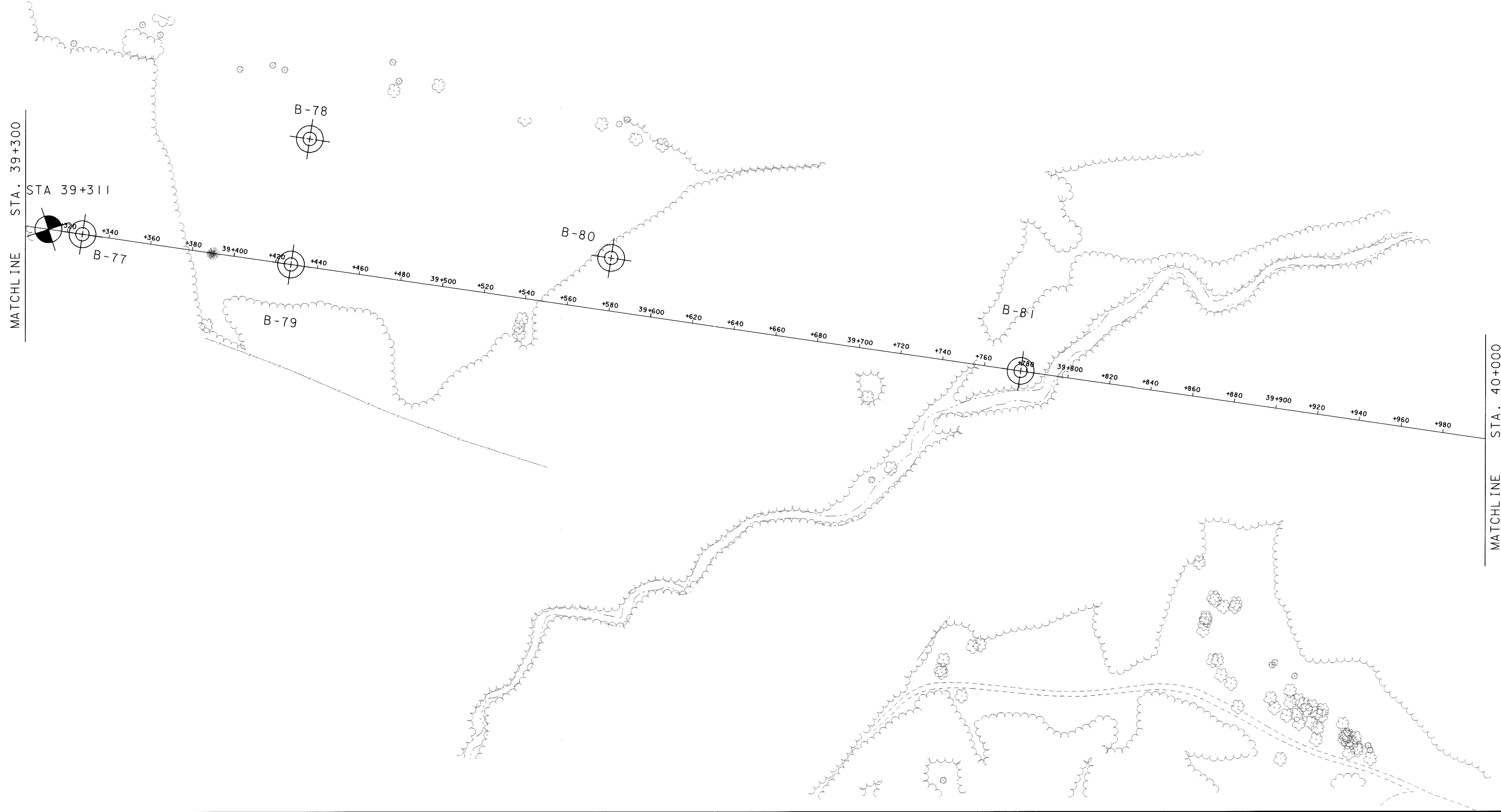


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ROADWAY / CULVERT SOIL PROFILE
 STA. 38+600 TO STA. 39+300

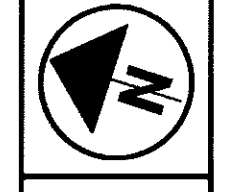
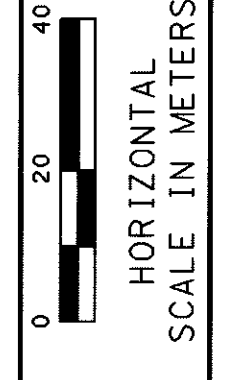
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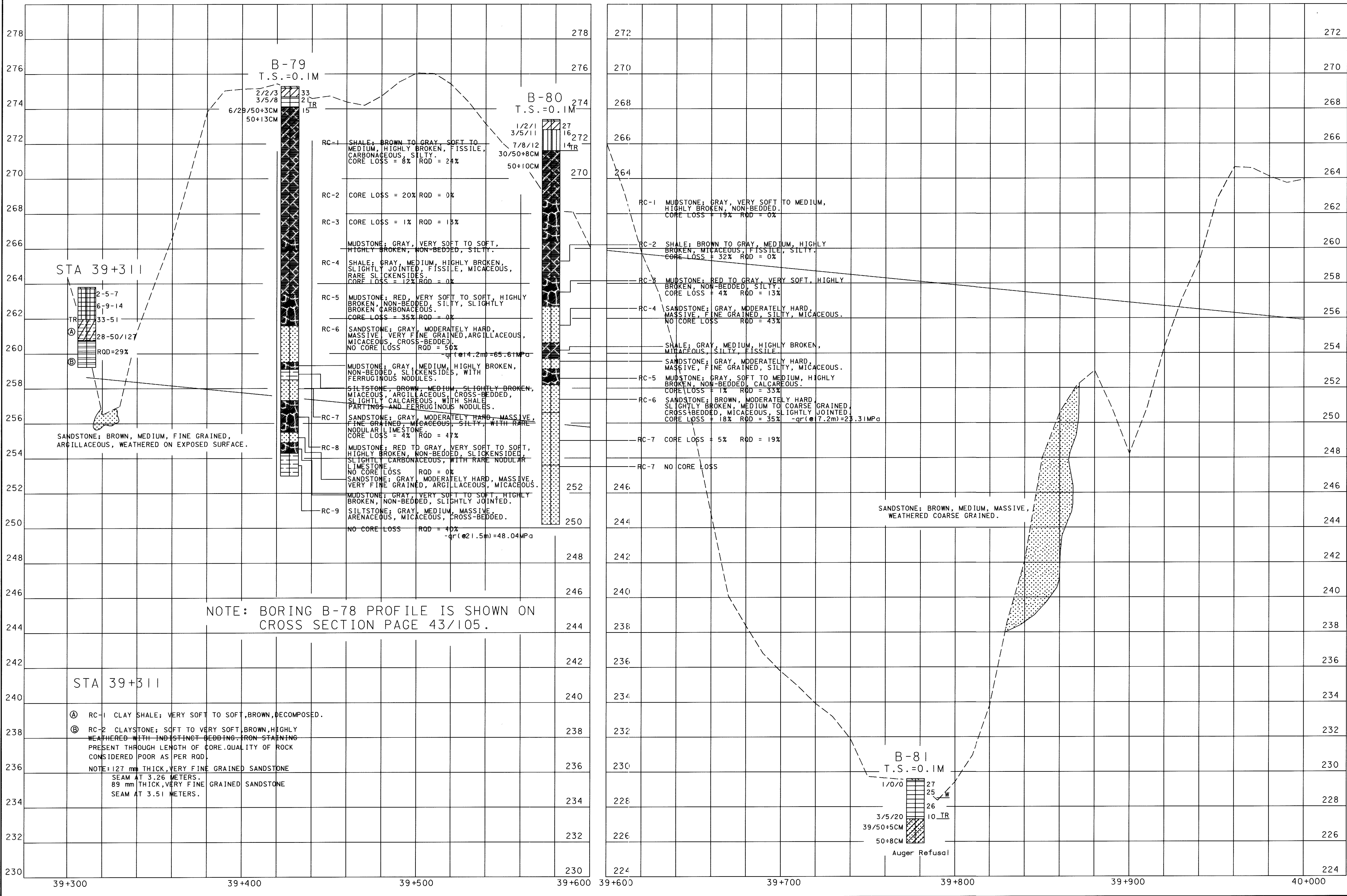
MATCHLINE STA. 39+300

MATCHLINE STA. 40+000

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| DRAWN B. M. | REVIEWED S. M. | DATE 03/22/00 | CALCULATED W. J. N. |
| | | | CHECKED S. S. S. |



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 GEOTECHNICAL PROJECT SOIL PROFILE 99043-94.dgn
 23 APR 2001



NOTE: BORING B-78 PROFILE IS SHOWN ON CROSS SECTION PAGE 43/105.

STA 39+311

- Ⓐ RC-1 CLAY SHALE; VERY SOFT TO SOFT, BROWN, DECOMPOSED.
 - Ⓑ RC-2 CLAYSTONE; SOFT TO VERY SOFT, BROWN, HIGHLY WEATHERED WITH INDISTINCT BEDDING. IRON STAINING PRESENT THROUGH LENGTH OF CORE. QUALITY OF ROCK CONSIDERED POOR AS PER ROD.
- NOTE: 127 mm THICK, VERY FINE GRAINED SANDSTONE SEAM AT 3.26 METERS.
 89 mm THICK, VERY FINE GRAINED SANDSTONE SEAM AT 3.51 METERS.

- RC-1 SHALE; BROWN TO GRAY, SOFT TO MEDIUM, HIGHLY BROKEN, FISSILE, CARBONACEOUS, SILTY. CORE LOSS = 8% ROD = 24%
- RC-2 CORE LOSS = 20% ROD = 0%
- RC-3 CORE LOSS = 1% ROD = 13%
- RC-4 MUDSTONE; GRAY, VERY SOFT TO SOFT, HIGHLY BROKEN, NON-BEDDED, SILTY.
- RC-5 SHALE; GRAY, MEDIUM, HIGHLY BROKEN, SLIGHTLY JOINTED, FISSILE, MICACEOUS, RARE SLICKENSIDES. CORE LOSS = 12% ROD = 0%
- RC-6 MUDSTONE; RED, VERY SOFT TO SOFT, HIGHLY BROKEN, NON-BEDDED, SILTY, SLIGHTLY BROKEN, CARBONACEOUS. CORE LOSS = 35% ROD = 0%
- RC-7 SANDSTONE; GRAY, MODERATELY HARD, MASSIVE, VERY FINE GRAINED, ARGILLACEOUS, MICACEOUS, CROSS-BEDDED. NO CORE LOSS ROD = 50%
- RC-8 MUDSTONE; GRAY, MEDIUM, HIGHLY BROKEN, NON-BEDDED, SLICKENSIDES, WITH FERRUGINOUS NODULES.
- RC-9 SILTSTONE; BROWN, MEDIUM, SLIGHTLY BROKEN, MICACEOUS, ARGILLACEOUS, CROSS-BEDDED, SLIGHTLY CALCAREOUS, WITH SHALE PARTINGS AND FERRUGINOUS NODULES.
- RC-7 SANDSTONE; GRAY, MODERATELY HARD, MASSIVE, FINE GRAINED, MICACEOUS, SILTY, WITH RARE NODULAR LIMESTONE. CORE LOSS = 4% ROD = 47%
- RC-8 MUDSTONE; RED TO GRAY, VERY SOFT TO SOFT, HIGHLY BROKEN, NON-BEDDED, SLICKENSIDED, SLIGHTLY CARBONACEOUS, WITH RARE NODULAR LIMESTONE. NO CORE LOSS ROD = 0%
- RC-9 SANDSTONE; GRAY, MODERATELY HARD, MASSIVE, VERY FINE GRAINED, ARGILLACEOUS, MICACEOUS.
- RC-7 MUDSTONE; GRAY, VERY SOFT TO SOFT, HIGHLY BROKEN, NON-BEDDED, SLIGHTLY JOINTED.
- RC-9 SILTSTONE; GRAY, MEDIUM, MASSIVE, ARENACEOUS, MICACEOUS, CROSS-BEDDED. NO CORE LOSS ROD = 40%

- RC-1 MUDSTONE; GRAY, VERY SOFT TO MEDIUM, HIGHLY BROKEN, NON-BEDDED. CORE LOSS = 19% ROD = 0%
- RC-2 SHALE; BROWN TO GRAY, MEDIUM, HIGHLY BROKEN, MICACEOUS, FISSILE, SILTY. CORE LOSS = 32% ROD = 0%
- RC-3 MUDSTONE; RED TO GRAY, VERY SOFT, HIGHLY BROKEN, NON-BEDDED, SILTY. CORE LOSS = 4% ROD = 13%
- RC-4 SANDSTONE; GRAY, MODERATELY HARD, MASSIVE, FINE GRAINED, SILTY, MICACEOUS. NO CORE LOSS ROD = 43%
- RC-5 SANDSTONE; GRAY, MODERATELY HARD, MASSIVE, FINE GRAINED, SILTY, MICACEOUS.
- RC-5 MUDSTONE; GRAY, SOFT TO MEDIUM, HIGHLY BROKEN, NON-BEDDED, CALCAREOUS. CORE LOSS = 1% ROD = 33%
- RC-6 SANDSTONE; BROWN, MODERATELY HARD, SLIGHTLY BROKEN, MEDIUM TO COARSE GRAINED, CROSS-BEDDED, MICACEOUS, SLIGHTLY JOINTED. CORE LOSS = 18% ROD = 35%
- RC-7 CORE LOSS = 5% ROD = 19%
- RC-7 NO CORE LOSS

SANDSTONE; BROWN, MEDIUM, MASSIVE, WEATHERED COARSE GRAINED.

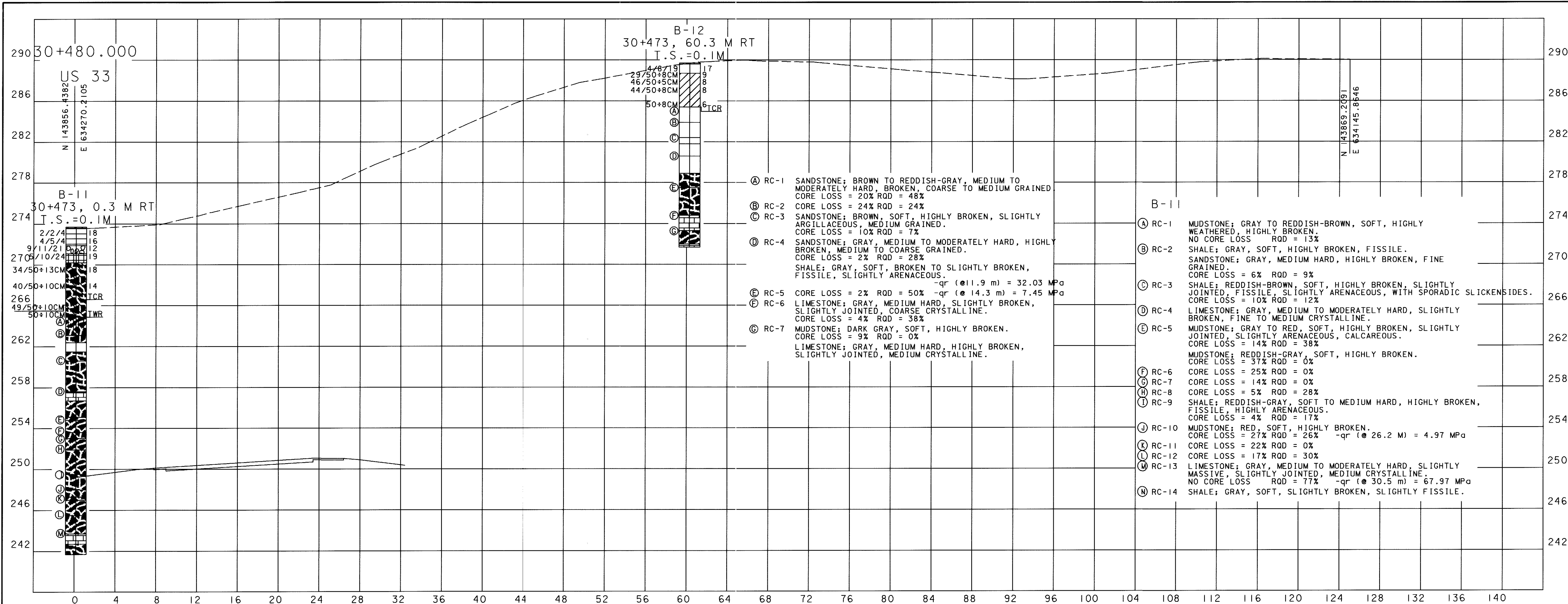
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HORIZONTAL SCALE IN METERS

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| DATE | CALCULATED | W. I. N. | CHECKED | S. S. S. |
| 03/22/00 | | | | |
| REVIEWED | S. M. | | | |
| DRAWN | B. M. | | | |

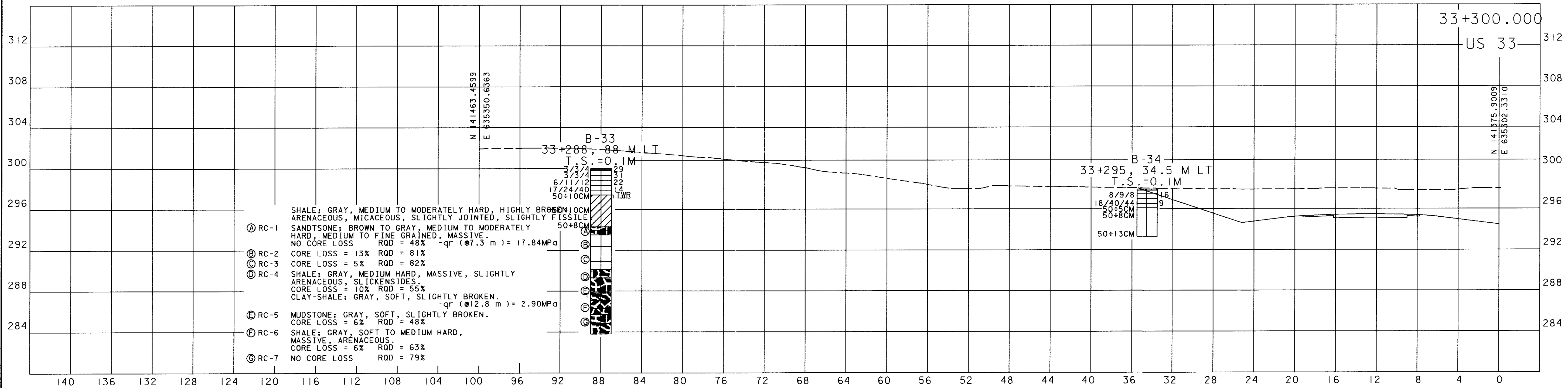
**ROADWAY/CULVERT SOIL PROFILE
 STA. 39+300 TO STA. 40+000**

ATH-33-30.981

39/105



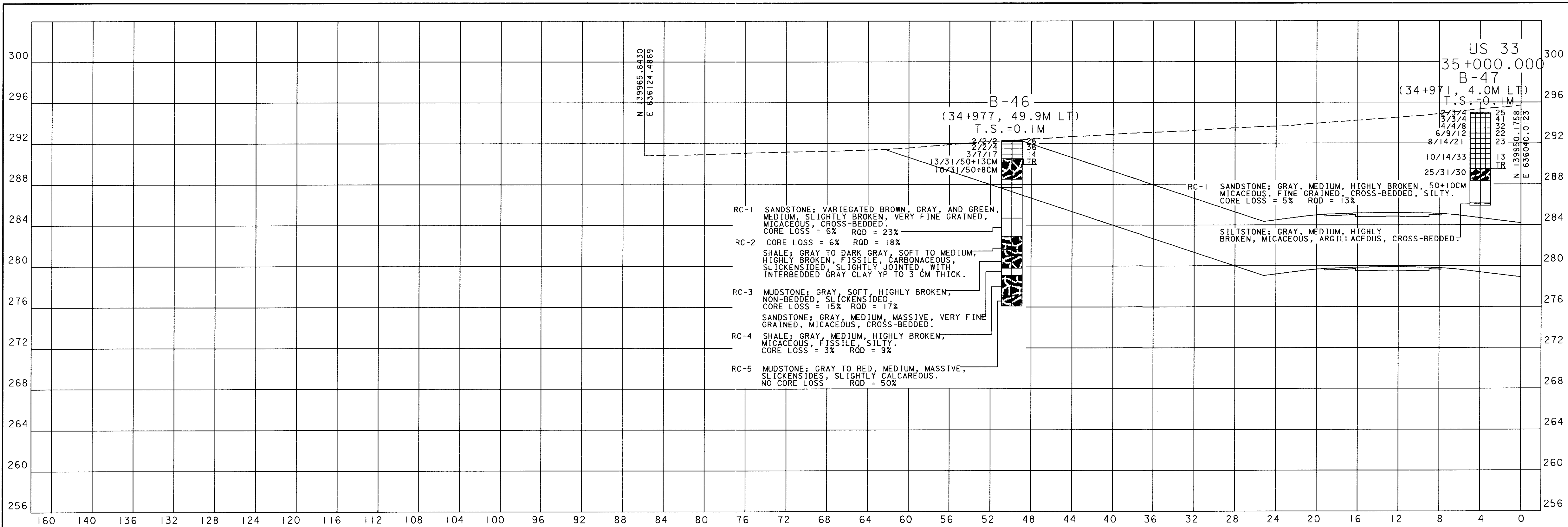
CROSS SECTION 30+480 RIGHT



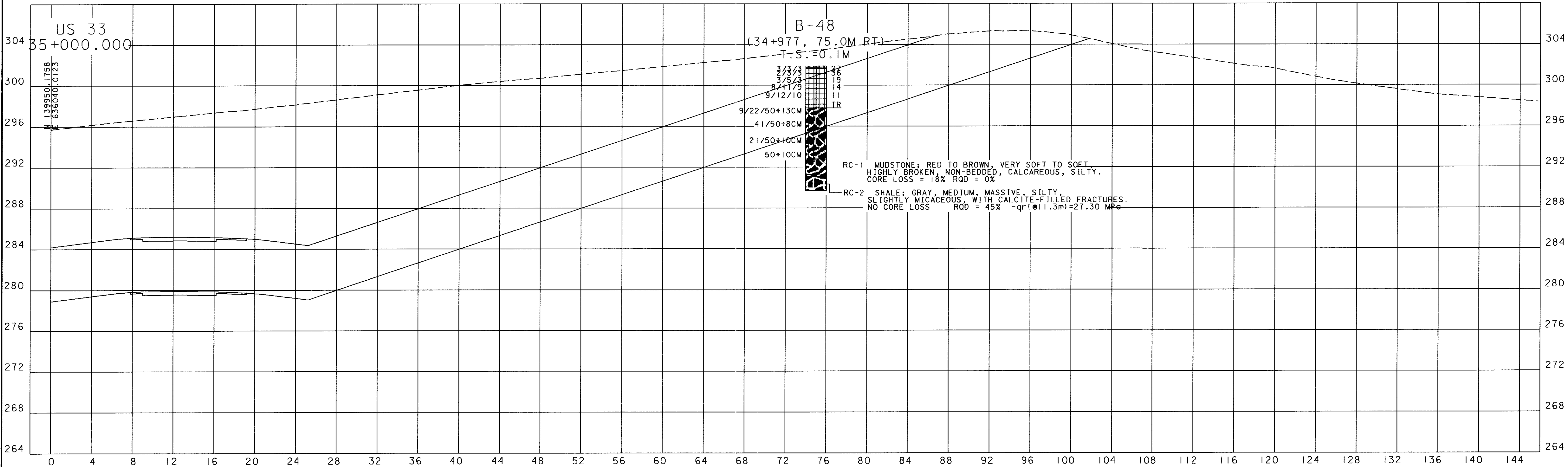
CROSS SECTION 33+300 LEFT

ROADWAY / CULVERT SOIL PROFILE
 CROSS SECTIONS 30+480 AND 33+300
 ATH -33-30.981
 40 / 105
 HORIZONTAL SCALE IN METERS
 CALCULATED
 CHECKED
 DATE
 REVIEWED
 DRAWN
 EMC

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CROSS SECTION 35+000 LEFT

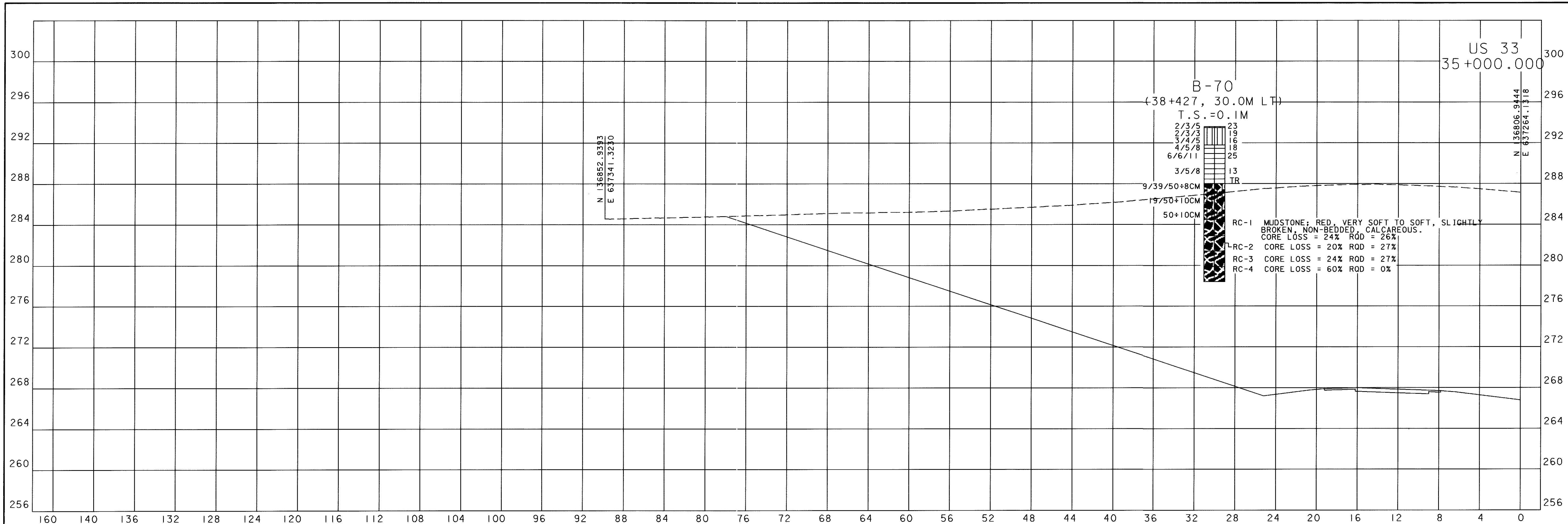


CROSS SECTION 35+000 RIGHT

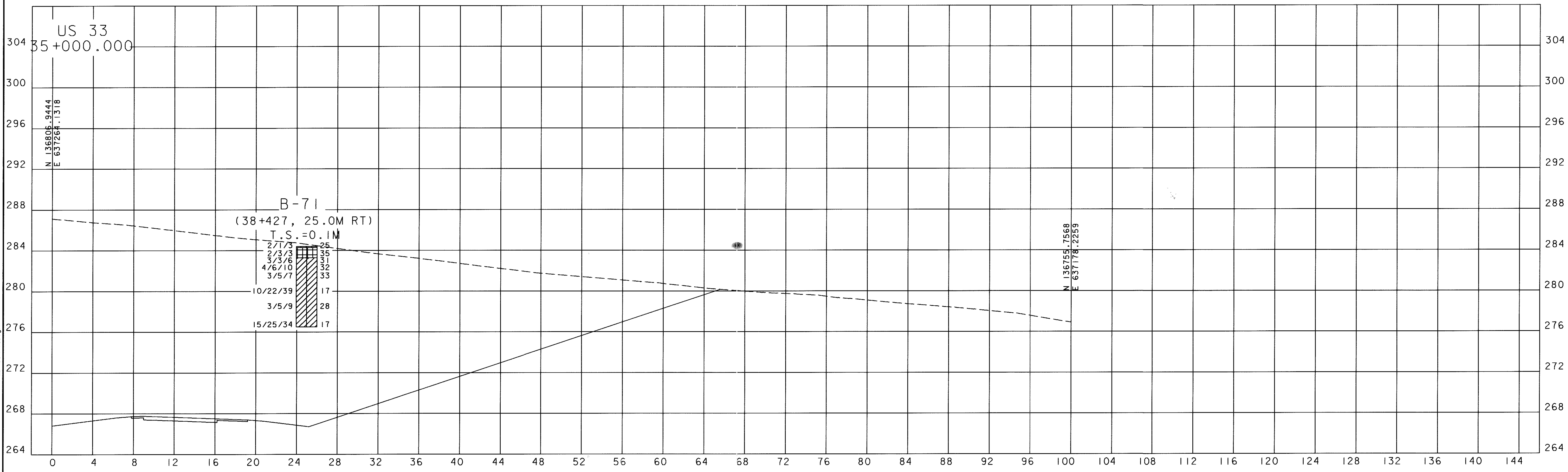
ROADWAY / CULVERT SOIL PROFILE
 CROSS SECTION 35+000 LEFT AND RIGHT
 ATH-33-30.981
 41/105

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|----------|------------|---------|
| DATE | CALCULATED | CHECKED |
| REVIEWED | | |
| DRAWN | EMC | |

HORIZONTAL SCALE IN METERS
 0 20 40



CROSS SECTION 38+400 LEFT



CROSS SECTION 38+400 RIGHT

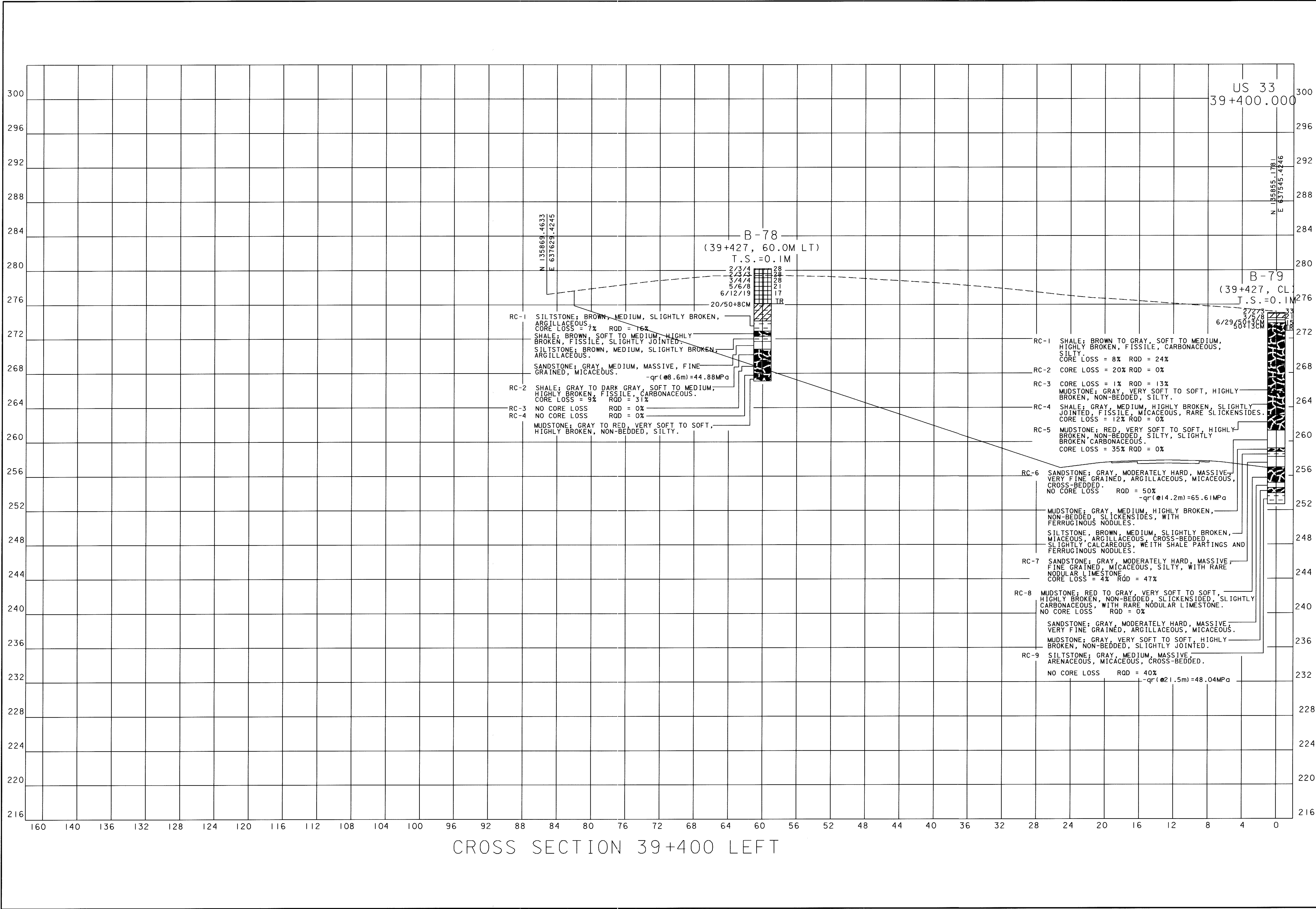


| | |
|------------|---------|
| CALCULATED | CHECKED |
| DATE | |
| REVIEWED | |
| DRAWN | EMC |

**ROADWAY / CULVERT SOIL PROFILE
CROSS SECTION 38+400 LEFT AND RIGHT**

23 APR 2001 14:52:59
G:\8281\Geotech\PROJECT SOIL PROFILE\G20139R-73.dgn

23 APR 2001 14:54:44 G:\828\geotech\PROJECT SOIL PROFILE\G207199-74.dgn



CROSS SECTION 39+400 LEFT

US 33
39+400.000

N 135869.4633
E 637629.4245

B-78
(39+427, 60.0M LT)
T.S.=0.1M

N 135855.1781
E 637545.4246

B-79
(39+427, CL)
T.S.=0.1M

RC-1 SILTSTONE; BROWN, MEDIUM, SLIGHTLY BROKEN, ARGILLACEOUS. CORE LOSS = 7% ROD = 16%
SHALE; BROWN, SOFT TO MEDIUM, HIGHLY BROKEN, FISSILE, SLIGHTLY JOINTED.
SILTSTONE; BROWN, MEDIUM, SLIGHTLY BROKEN, ARGILLACEOUS.
SANDSTONE; GRAY, MEDIUM, MASSIVE, FINE GRAINED, MICACEOUS. -qr(@8.6m)=44.88MPa

RC-2 SHALE; GRAY TO DARK GRAY, SOFT TO MEDIUM, HIGHLY BROKEN, FISSILE, CARBONACEOUS. CORE LOSS = 9% ROD = 31%

RC-3 NO CORE LOSS ROD = 0%

RC-4 NO CORE LOSS ROD = 0%

MUDSTONE; GRAY TO RED, VERY SOFT TO SOFT, HIGHLY BROKEN, NON-BEDDED, SILTY.

RC-1 SHALE; BROWN TO GRAY, SOFT TO MEDIUM, HIGHLY BROKEN, FISSILE, CARBONACEOUS, SILTY. CORE LOSS = 8% ROD = 24%

RC-2 CORE LOSS = 20% ROD = 0%

RC-3 CORE LOSS = 1% ROD = 13%

RC-4 MUDSTONE; GRAY, VERY SOFT TO SOFT, HIGHLY BROKEN, NON-BEDDED, SILTY.

RC-5 SHALE; GRAY, MEDIUM, HIGHLY BROKEN, SLIGHTLY JOINTED, FISSILE, MICACEOUS, RARE SLICKENSIDES. CORE LOSS = 12% ROD = 0%

RC-6 MUDSTONE; RED, VERY SOFT TO SOFT, HIGHLY BROKEN, NON-BEDDED, SILTY, SLIGHTLY BROKEN CARBONACEOUS. CORE LOSS = 35% ROD = 0%

RC-7 SANDSTONE; GRAY, MODERATELY HARD, MASSIVE, VERY FINE GRAINED, ARGILLACEOUS, MICACEOUS, CROSS-BEDDED. NO CORE LOSS ROD = 50% -qr(@14.2m)=65.61MPa

MUDSTONE; GRAY, MEDIUM, HIGHLY BROKEN, NON-BEDDED, SLICKENSIDES, WITH FERRUGINOUS NODULES.

SILTSTONE; BROWN, MEDIUM, SLIGHTLY BROKEN, MICACEOUS, ARGILLACEOUS, CROSS-BEDDED, SLIGHTLY CALCAREOUS, WITH SHALE PARTINGS AND FERRUGINOUS NODULES.

RC-8 SANDSTONE; GRAY, MODERATELY HARD, MASSIVE, FINE GRAINED, MICACEOUS, SILTY, WITH RARE NODULAR LIMESTONE. CORE LOSS = 4% ROD = 47%

RC-9 MUDSTONE; RED TO GRAY, VERY SOFT TO SOFT, HIGHLY BROKEN, NON-BEDDED, SLICKENSIDED, SLIGHTLY CARBONACEOUS, WITH RARE NODULAR LIMESTONE. NO CORE LOSS ROD = 0%

SANDSTONE; GRAY, MODERATELY HARD, MASSIVE, VERY FINE GRAINED, ARGILLACEOUS, MICACEOUS.

MUDSTONE; GRAY, VERY SOFT TO SOFT, HIGHLY BROKEN, NON-BEDDED, SLIGHTLY JOINTED.

RC-9 SILTSTONE; GRAY, MEDIUM, MASSIVE, ARENACEOUS, MICACEOUS, CROSS-BEDDED. NO CORE LOSS ROD = 40% -qr(@21.5m)=48.04MPa

DRAWN EMC

REVIEWED -

DATE -

CALCULATED -

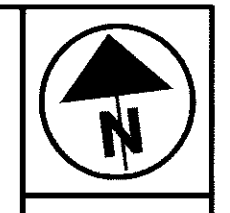
CHECKED -

HORIZONTAL SCALE IN METERS

ROADWAY / CULVERT SOIL PROFILE
CROSS SECTION 39+400 LEFT

ATH-33-30.981

43/105



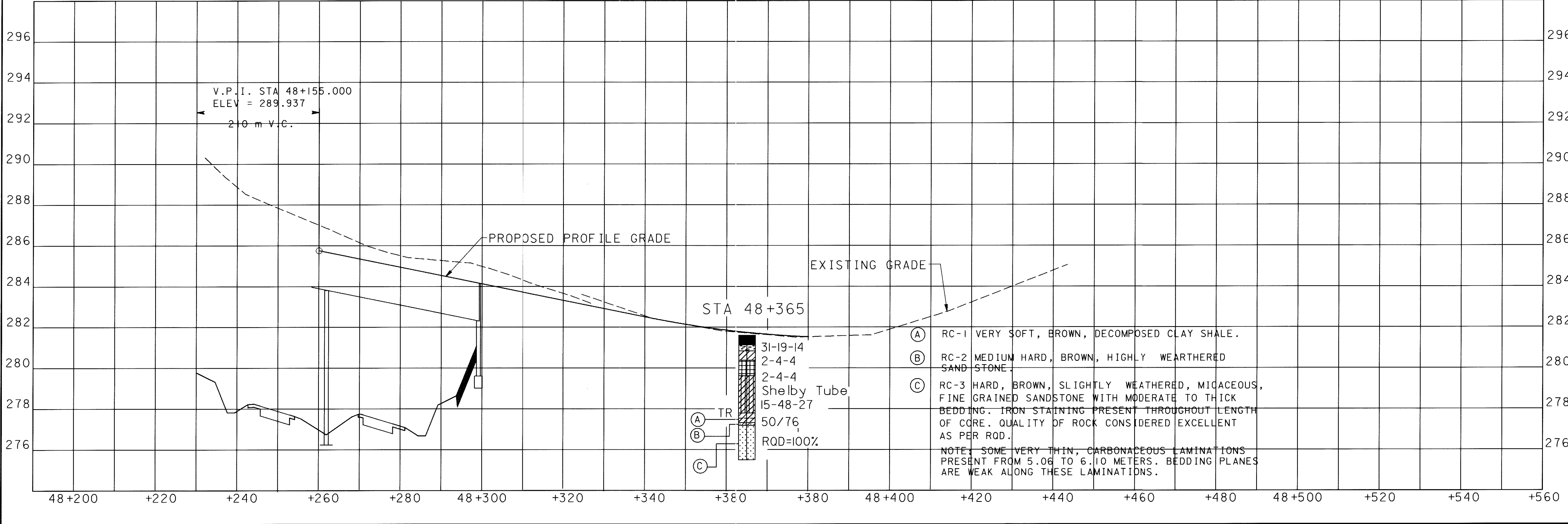
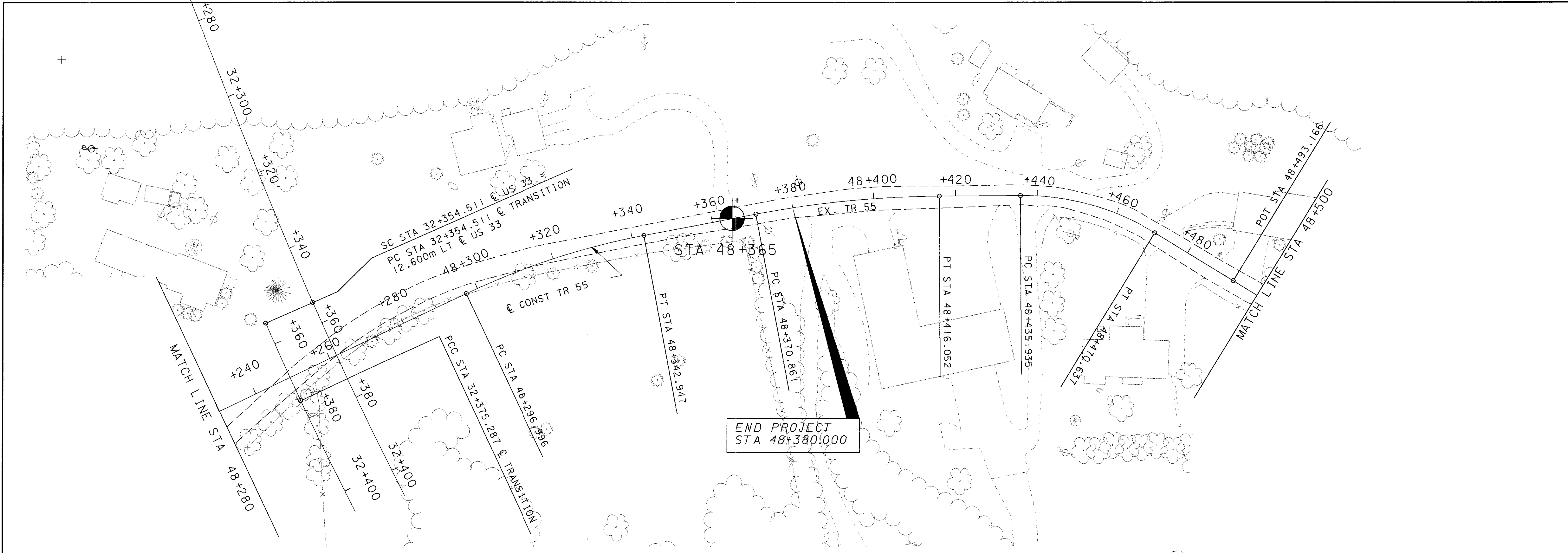
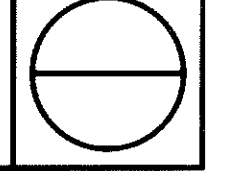
SCALE 1:500
HORIZONTAL
SCALE IN METERS

| | | | | | | | |
|-------|-------|----------|-------|------|----------|------------|----------|
| DRAWN | B. M. | REVIEWED | S. M. | DATE | 03/22/00 | CALCULATED | W. J. N. |
| | | | | | | | CHICKED |
| | | | | | | | S. S. S. |

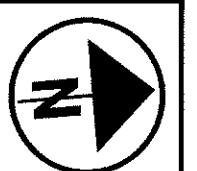
**ROADWAY / CULVERT SOIL PROFILE
TR 55 (STA. 48+280 TO STA. 48+500)**

ATH-33-30.981

44 / 105



23 APR 2001 1456f04 G:\6281\geotech\PROJECT SOIL PROFILE\99043-28.dgn



SCALE 1:500
HORIZONTAL
SCALE IN METERS

CALCULATED
W. I. N.
CHECKED
S. S. S.

DATE
03/22/00

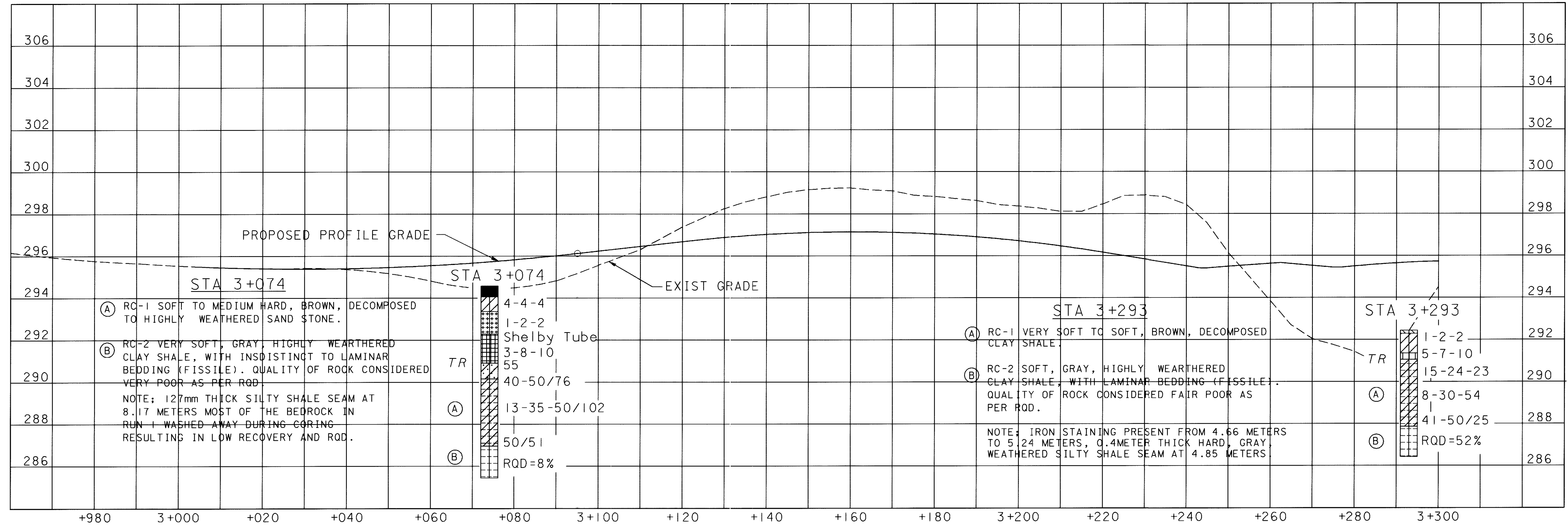
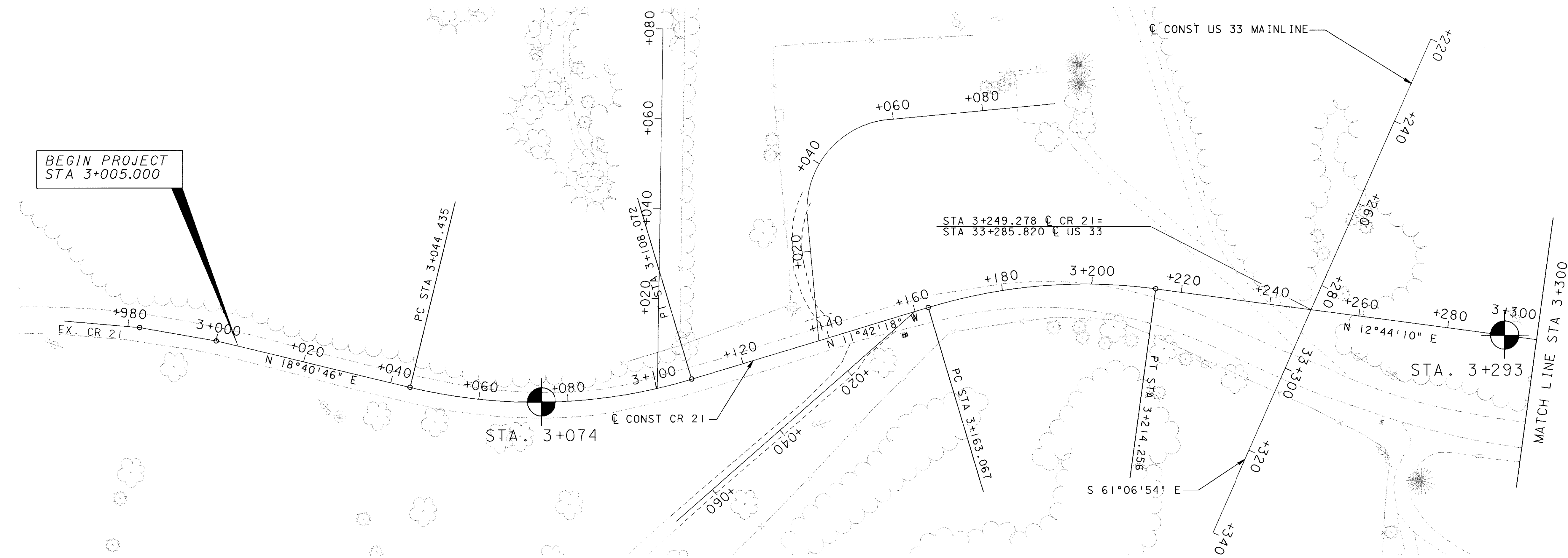
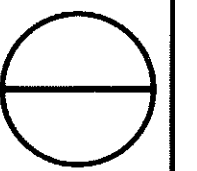
REVIEWED
S. M.

DRAWN
B. M.

ROADWAY/CULVERT SOIL PROFILE
CR 21 (STA. 3+005 TO STA. 3+300)

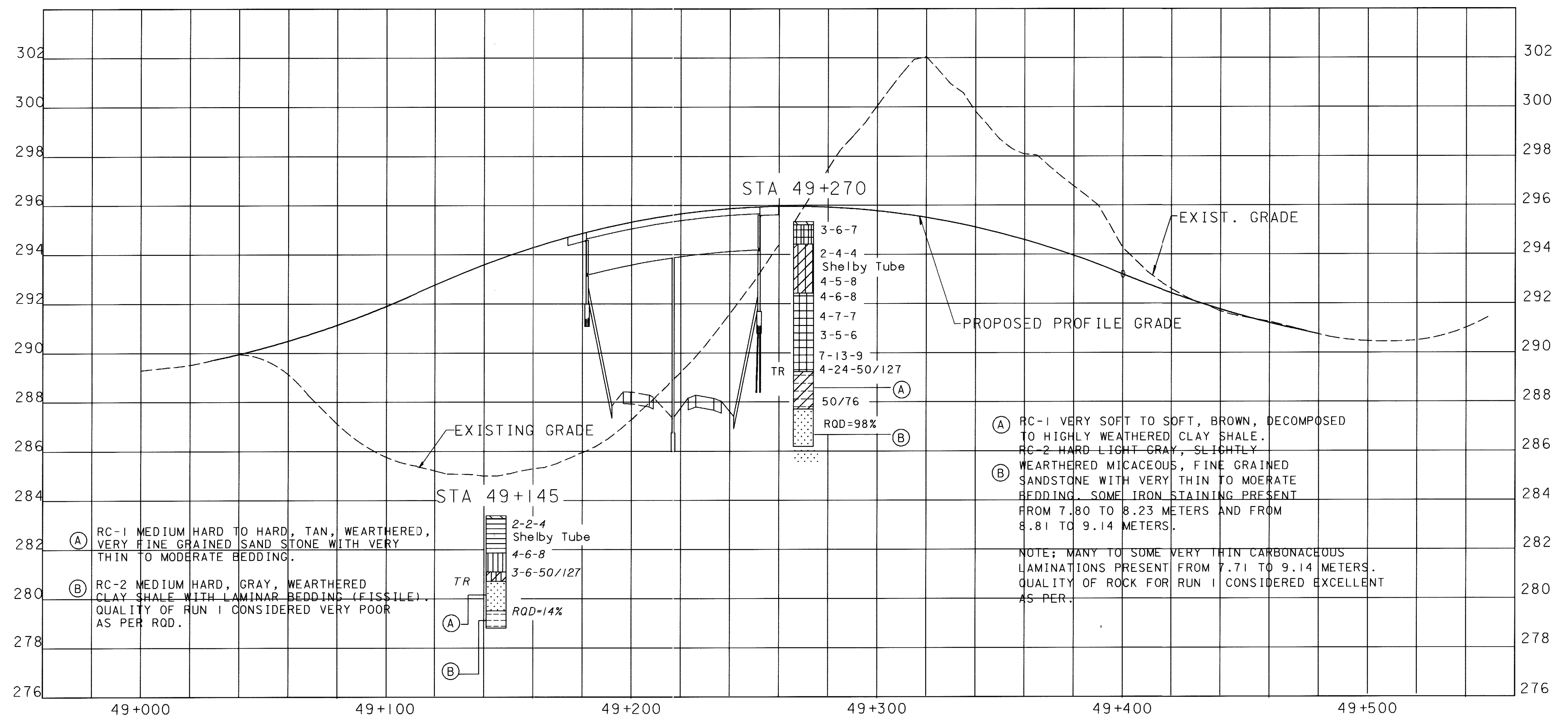
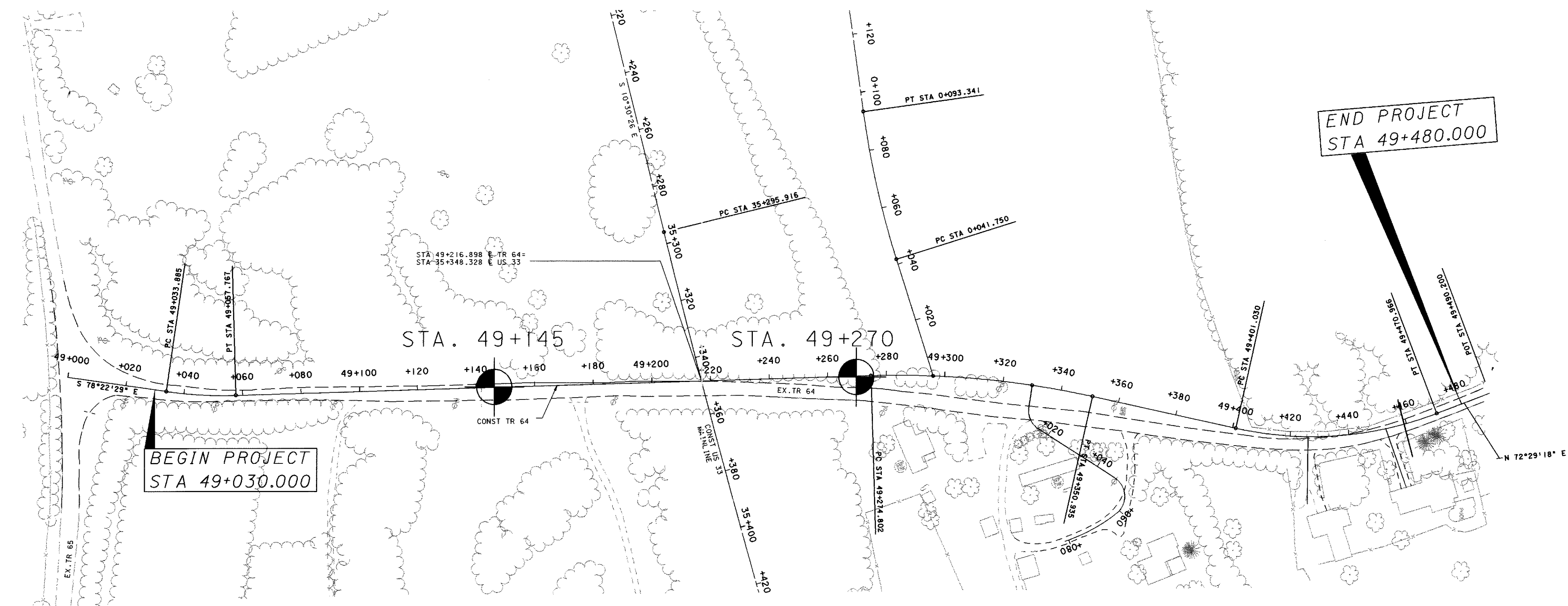
ATH-33-30.981


45 / 105



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SCALE 1:1000
 HORIZONTAL
 SCALE IN METERS

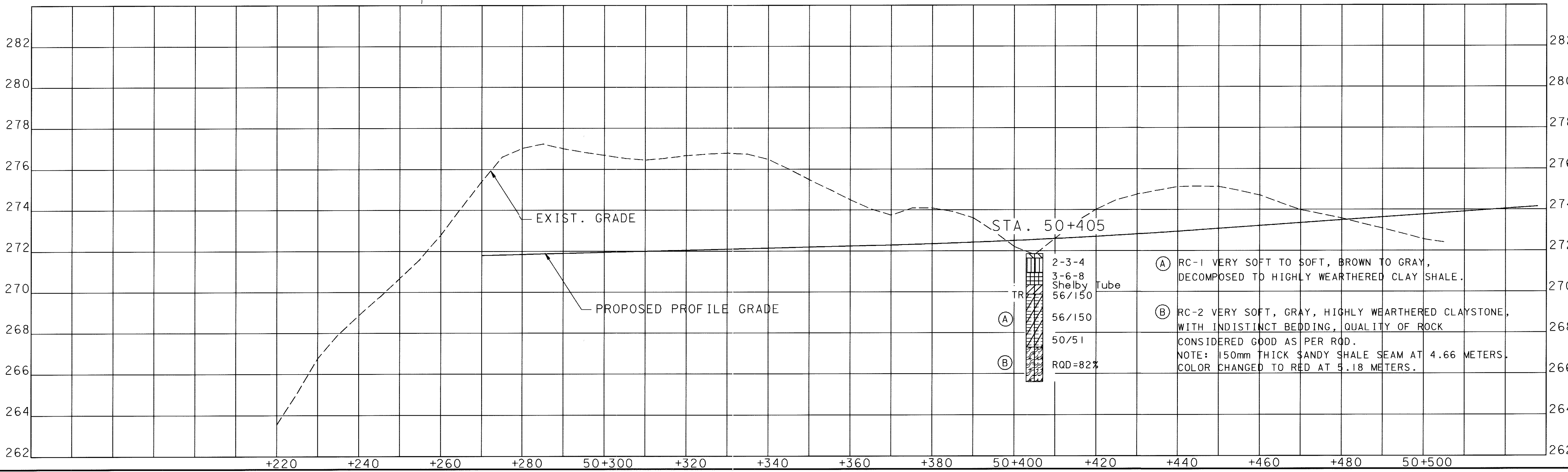
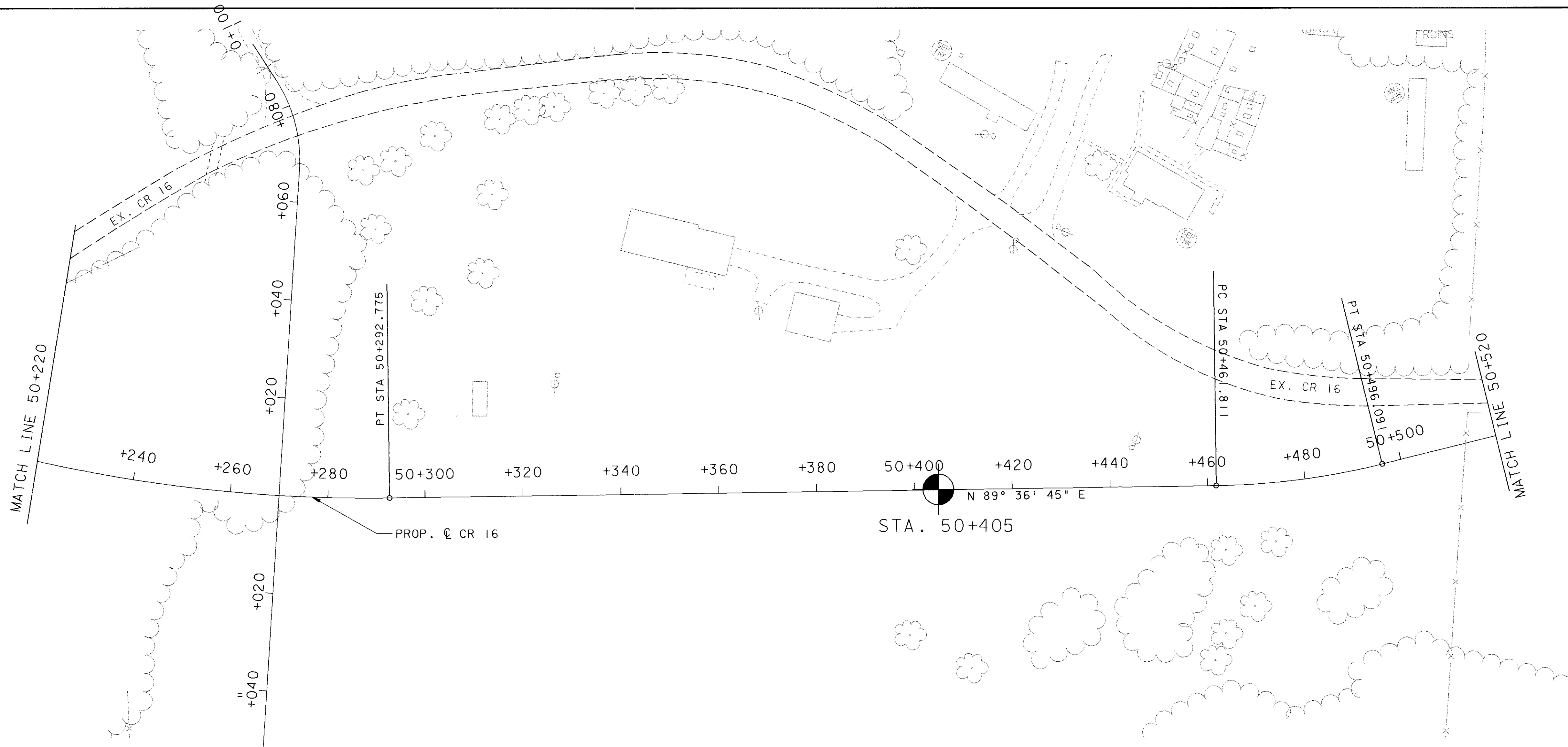
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|----------------|-------------------|------------------|------------------------|---------------------|
| DRAWN B. M. | REVIEWED S. M. | DATE 03/22/00 | CALCULATED W. J. N. | CHECKED S. S. S. |
|----------------|-------------------|------------------|------------------------|---------------------|

ROADWAY/CULVERT SOIL PROFILE
 TR 64 (STA. 49+030 TO STA. 49+480)

ATH-33-30.981

46 / 105

23 APR 2001 15:00:02
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SCALE 1:500
 HORIZONTAL
 SCALE IN METERS

| | | | | | | | | | |
|-------|------|----------|------|------|----------|------------|--------|---------|--------|
| DRAWN | B.M. | REVIEWED | S.M. | DATE | 03/22/00 | CALCULATED | W.T.N. | CHECKED | S.S.S. |
|-------|------|----------|------|------|----------|------------|--------|---------|--------|

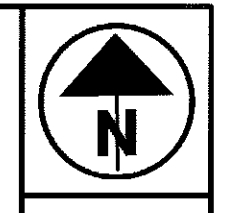
ROADWAY / CULVERT SOIL PROFILE

CR 16 (STA. 50+220 TO STA. 50+520)

ATH-33-30.981

47

105



SCALE 1:500
HORIZONTAL
SCALE IN METERS

CALCULATED
W. I. N.
CHECKED
S. S. S.

DATE
03/22/00

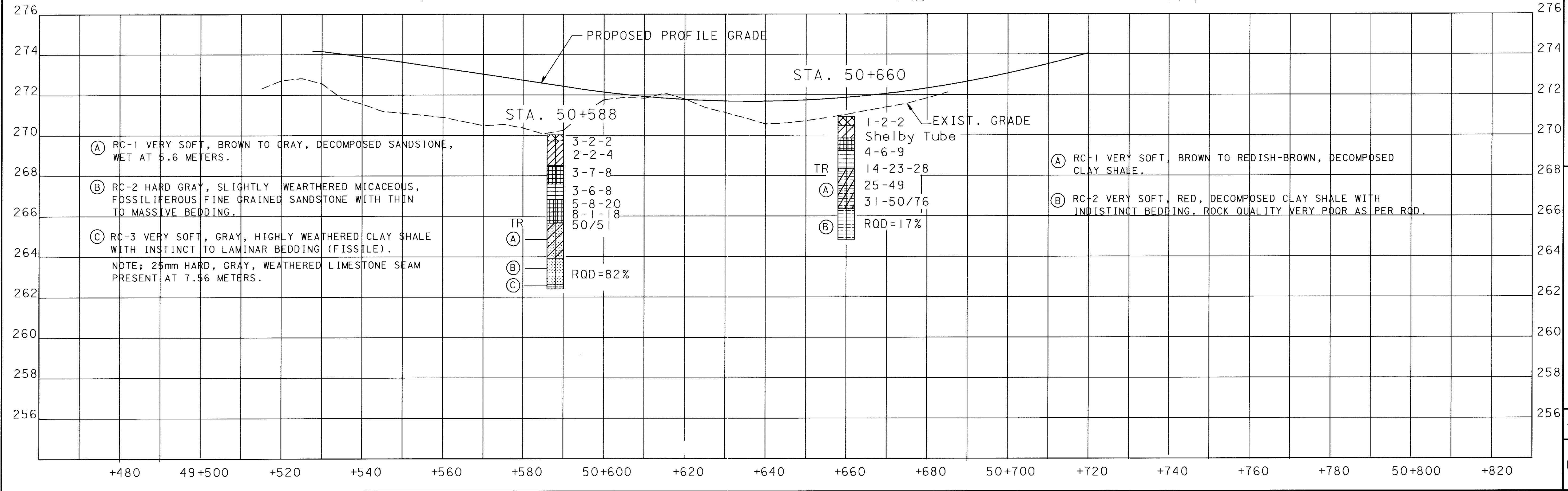
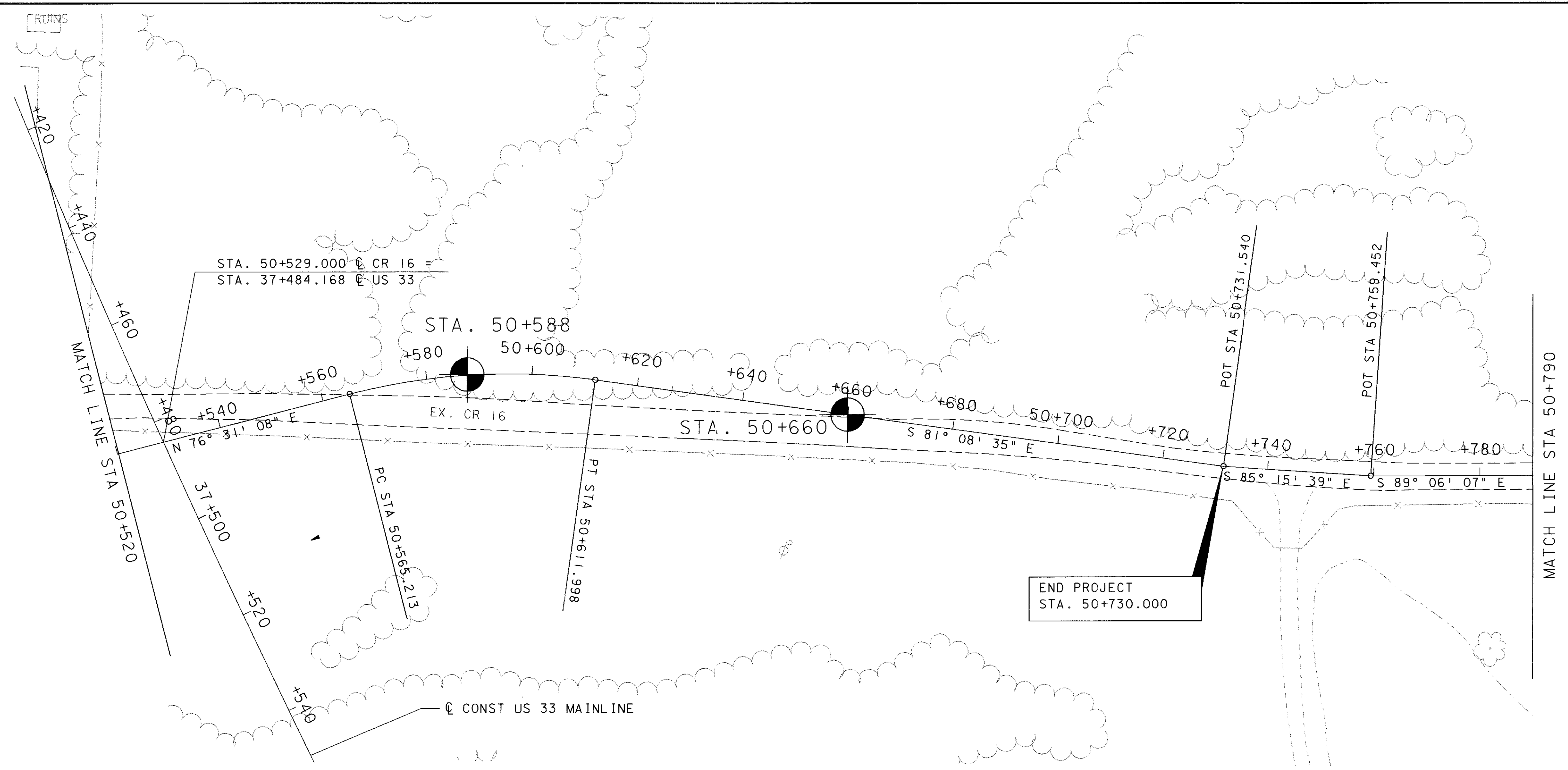
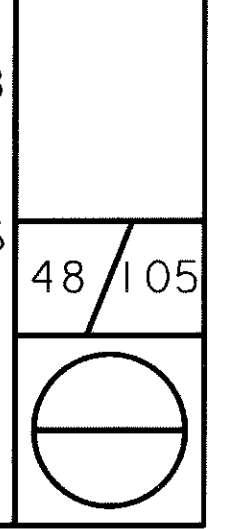
REVIEWED
S. M.

DRAWN
B. M.

**ROADWAY / CULVERT SOIL PROFILE
CR 16 (STA. 50+520 TO STA. 50+790)**

ATH-33-30.981

48 / 105



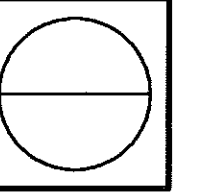
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Date Started 080499 Date Completed 080499 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. 32+700 Station & Offset Surface Elev. 249.3 m Water Elev. _____

| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|----|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | |
| 249.3 | | 3-5-5-10 | 0.27 | 0.34 | 20 cm Topsoil--Brown very silty clay w/ traces of root hairs and fine sand (CL); moist, medium stiff. qh=1.75 kg/cm ² | 1 | | | | | | | | | | 22 | |
| 248.7 | 1 | 11-11-11-16 | 0.30 | 0.30 | Brown to mottled brown w/ traces of light brown silty clay w/ traces of oxides, little to some fine sand and traces of sandstone fragments; (CL) moist, very stiff to hard. qh=3.5 kg/cm ² | 2 | 3 | 0 | 0 | 0 | 97 | 36 | 16 | 22 | A-6b | | |
| 248.1 | | 4-8-11-14 | 0.43 | 0.18 | | 3 | 10 | 0 | 0 | 44 | 46 | 0 | 0 | 20 | A-6b | | |
| 247.5 | 2 | 8-9-15-23 | 0.61 | | qh=3.0 kg/cm ² qh=1.75 kg/cm ² | 4 | | | | | | | | 21 | | | |
| 246.9 | | 10-17-22-22 | 0.43 | 0.18 | qh=1.5 kg/cm ² | 5 | | | | | | | | 16 | | | |
| 246.3 | 3 | | | | Bottom of boring @ 3.0 meters. | | | | | | | | | | | | |
| | 4 | | | | | | | | | | | | | | | | |
| | 5 | | | | | | | | | | | | | | | | |
| | 6 | | | | | | | | | | | | | | | | |
| | 7 | | | | | | | | | | | | | | | | |
| | 8 | | | | | | | | | | | | | | | | |

Date Started 080499 Date Completed 080499 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. 32+900 Station & Offset Surface Elev. 268.6 m Water Elev. _____

| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | |
| 268.6 | | 8-14-24-40 | 0.34 | 0.27 | 5 cm Topsoil--Light brown silt/clayey silt w/ little to some siltstone/fine grained sandstone fragments (ML,CL-ML); slightly moist, hard. | 1 | | | | | | | | | 10 | |
| 268.0 | 1 | 30-50/0.5 | 0.21 | 0.09 | | 2 | | | | | | | | 7 | | |
| 267.6 | | | | | Mottled brown, grayish brown and light brown silty clay w/ traces of fine sand and oxides (CL); slightly moist, hard. | 3 | 0 | 0 | 0 | | 100 | 48 | 20 | 21 | A-7-6 | |
| 267.4 | | 13-14-16-19 | 0.24 | 0.37 | qh=4.5 kg/cm ² qh=3.0 kg/cm ² | 4 | 2 | 0 | 0 | 24 | 74 | | | 28 | A-7-6 | |
| 266.8 | 2 | 6-50/0.4 | 0.18 | 0.09 | | 5 | | | | | | | | | | |
| 266.3 | | | | | Light gray medium sandstone/siltstone fragments. | 5 | | | | | | | | | | |
| 266.2 | | 50/0.1 | 0.03 | | | | | | | | | | | | | |
| 266.2 | 3 | | | | Bottom of boring @ 2.5 meters. | | | | | | | | | | | |
| | 4 | | | | | | | | | | | | | | | |
| | 5 | | | | | | | | | | | | | | | |
| | 6 | | | | | | | | | | | | | | | |
| | 7 | | | | | | | | | | | | | | | |
| | 8 | | | | | | | | | | | | | | | |

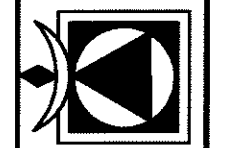


Date Started 081099 Date Completed 081099 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. 33+700 Station & Offset 33+735, Approx. 4.5 m Right Surface Elev. 267.4 m Water Elev. Not Encountered

| Elev. (m.) | Depth (m.) | Std. Pen./ ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | |
|------------|------------|----------------|-----------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|-------|-------------|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | |
| 267.4 | | 5-11-16-10 | 0.21 | 0.40 | Light brown to mottled brown very silty clay/ clayey silt with traces of fine sand and oxides (CL,CL-ML); slightly moist, very stiff to hard. qh=4.5 kg/cm ² | 1 | 0 | 0 | 0 | 100 | 42 | 18 | 20 | A-7-6 | | |
| 266.8 | 1 | 6-14-16-20 | 0.40 | 0.21 | | 2 | | | | | | | 16 | | | |
| 266.2 | | | | | qh=4.5 kg/cm ² | 3 | 0 | 0 | 0 | 48 | 52 | | 17 | A-7-6 | | |
| 265.6 | 2 | 10-16-17-20 | 0.43 | 0.18 | qh=4.5 kg/cm ² | 4 | 0 | 0 | 0 | 100 | 43 | 22 | 18 | A-7-6 | | |
| 265.0 | | 10-11-16-20 | 0.37 | 0.24 | qh=4.5 kg/cm ² | 5 | 0 | 0 | 0 | 25 | 75 | | 15 | A-7-6 | | |
| 264.8 | 3 | 11-16-15-15 | 0.34 | 0.27 | Orange brown sandy silt to silt and fine sand with traces of oxides (ML,SM); moist, dense. | | | | | | | | | | | |
| 263.8 | 4 | | | | Light brown fine-grained sandstone. | | | | | | | | | | | |
| 263.3 | | 50/0.3 | 0.03 | 0.02 | Bottom of boring @ 4.2 meters due to auger refusal. | 6 | | | | | | | | | | |
| 263.3 | | | | | | | | | | | | | | | | |
| | 5 | | | | | | | | | | | | | | | |
| | 6 | | | | | | | | | | | | | | | |
| | 7 | | | | | | | | | | | | | | | |
| | 8 | | | | | | | | | | | | | | | |

Date Started 080499 Date Completed 080499 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. 33+800 Station & Offset _____ Surface Elev. 275.5 m Water Elev. _____

| Elev. (m.) | Depth (m.) | Std. Pen./ ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | |
|------------|------------|----------------|-----------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|-------|-------------|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | |
| 275.5 | | 4-6-8-16 | 0.18 | 0.43 | 15 cm Topsoil-Light brown silty clay w/ traces of root hairs, oxides and fine sand (CH); moist, stiff to very stiff. qh=2.75 kg/cm ² | 1 | | | | | | | | 21 | A-7-5 | |
| 274.9 | 1 | 9-10-14-24 | 0.30 | 0.30 | qh=4.5 kg/cm ² | 2 | 2 | 0 | 0 | 98 | 68 | 35 | 25 | | | |
| 274.3 | | | | | qh=4.0 kg/cm ² | 3 | 0 | 0 | 0 | 26 | 74 | | 24 | A-7-5 | | |
| 274.0 | | 10-25-35-50/.4 | 0.43 | 0.15 | Light olive brown/beige silty clay w/ traces of oxides (CL); moist, hard. Laminated structure [Extremely weathered shale]. 8% moisture content in bottom of sample 3 qh=4.5 kg/cm ² | 4 | | | | | | | | | | |
| 273.7 | 2 | 41-40-50/0.5 | 0.24 | 0.21 | | 5 | | | | | | | | 13 | | |
| 273.1 | | 50/0.4 | 0.12 | 0.00 | qh=4.5 kg/cm ² | | | | | | | | | | | |
| 273.0 | 3 | | | | qh=4.5 kg/cm ² | | | | | | | | | | | |
| | | | | | Bottom of boring @ 2.6 meters. | | | | | | | | | | | |
| | 4 | | | | | | | | | | | | | | | |
| | 5 | | | | | | | | | | | | | | | |
| | 6 | | | | | | | | | | | | | | | |
| | 7 | | | | | | | | | | | | | | | |
| | 8 | | | | | | | | | | | | | | | |



CALCULATED
 DATE 1/20/00
 REVIEWED
 DRAWN MDH

ROADWAY / CULVERT SOIL PROFILE BORING LOGS

ATH - 33 - 30.981

Date Started 081099 Date Completed 081099 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. 33+900 Station & Offset Surface Elev. 296.2 m Water Elev. Not Encountered

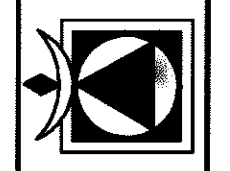
| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|-----------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|-------|-------------|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | |
| 296.2 | | 5-7-9-10 | 0.30 | 0.30 | 9 cm Topsoil--Light orange-brown silty clay w/ traces of root hairs (CH); moist, very stiff. qh=4.5+ kg/cm ² | 1 | 0 | 0 | 0 | 100 | 53 | 27 | 20 | A-7-6 | | |
| 295.6 | | | | | qh=4.5+ kg/cm ² | | | | | | | | | | | |
| 295.3 | 1 | 8-14-14-24 | 0.40 | 0.21 | 17% moisture content in top of sample 2 | 2 | 5 | 0 | 0 | 63 | 32 | | 8 | A-4b | | |
| 295.0 | | 42-50/0.3 | 0.21 | 0.03 | Light brown silt w/ traces of fine sand (SM); slightly moist, dense to very dense. | 3 | 5 | 0 | 0 | 67 | 32 | | 9 | A-4b | | |
| 294.7 | | | | | [Extremely weathered, fine grained sandstone/siltstone]; Laminated structure. | | | | | | | | | | | |
| 294.4 | 2 | 50/0.3 | 0.03 | 0.06 | qh=4.5+ kg/cm ² | 4 | | | | | | | | | | |
| | | | | | Light orange-brown, fine grained weathered sandstone. | | | | | | | | | | | |
| 293.5 | 3 | | | | Light brown, soft to medium hard, fine to medium grained sandstone, thick bedding, poor rock quality. | 5 | | | | | | | | | | |
| | 4 | 40 | 1.16 | 0.37 | | | | | | | | | | | | |
| 291.7 | | | | | Light brown, medium, fine to medium grained sandstone. [Excellent rock quality, massive bedding] qu=31.5 kg/cm ² | 6 | | | | | | | | | | |
| 291.7 | 5 | 97 | 1.52 | | | | | | | | | | | | | |
| | 6 | | | | | | | | | | | | | | | |
| 290.2 | | | | | | | | | | | | | | | | |
| | 7 | 100 | 1.52 | | | 7 | | | | | | | | | | |
| 288.7 | | | | | | | | | | | | | | | | |
| | 8 | | | | | | | | | | | | | | | |
| 288.0 | | 77 | 1.22 | 0.30 | qu=37.7 kg/cm ² | 8 | | | | | | | | | | |
| 287.6 | | | | | Light brown, medium shale; good rock | | | | | | | | | | | |

Date Started 081099 Date Completed 081099 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. 33+900 Station & Offset Surface Elev. 296.2 m Water Elev. Not Encountered

| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | |
| 287.2 | | | | | quality. (Only 18 cm of shale noted in core run 7.6 m to 9.1m) Much slower coring. | | | | | | | | | | | |
| 287.0 | | | | | Mottled gray, very soft to soft shale; fair rock quality. | 9 | | | | | | | | | | |
| | 10 | 45 | 0.70 | 0.82 | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| 285.6 | 11 | | | | Bottom of boring @ 10.6 meters. | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| | 12 | | | | | | | | | | | | | | | |
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| | 13 | | | | | | | | | | | | | | | |
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| | 14 | | | | | | | | | | | | | | | |
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| | 16 | | | | | | | | | | | | | | | |
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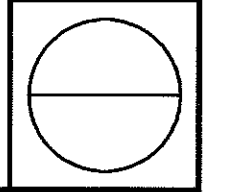
GANNETT FLEMING
 SUITE 350
 4151 EXECUTIVE PARKWAY
 WESTERVILLE, OHIO 43081



DRAWN MDH
 REVIEWED
 DATE 1/20/00
 CALCULATED
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ROADWAY / CULVERT SOIL PROFILE
 BORING LOGS

ATH-33-30.981

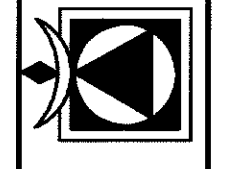


Date Started 08/1999 Date Completed 08/1999 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. 34+000 Station & Offset Surface Elev. 280.4 m Water Elev. _____

| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | |
| 280.4 | | 4-7-10-11 | 0.34 | 0.27 | Light olive brown silty clay w/ traces of oxides (CL); moist, very stiff. qh=4.5+ kg/cm ² | 1 | 25 | 0 | 0 | 32 | 43 | | | 15 | A-6a | |
| 279.8 | | | | | | | | | | | | | | | | |
| 279.7 | 1 | 11-14-17-23 | 0.21 | 0.40 | Light orange brown silty clay (CL); slightly moist, very stiff; slight laminations present; traces of limestone/chert nodules in sample #5. qh=4.5+ kg/cm ² | 2 | 6 | 0 | 0 | 94 | 38 | 14 | 14 | A-6a | | |
| 279.2 | | | | | | | | | | | | | | | | |
| 278.6 | 2 | 14-15-21-22 | 0.30 | 0.30 | | 3 | | | | | | | 13 | | | |
| 278.0 | | | | | | | | | | | | | | | | |
| 277.4 | 3 | 10-17-19-24 | 0.24 | 0.37 | | 4 | | | | | | | 15 | | | |
| | | | | | | | | | | | | | | | | |
| | | 8-15-30-37 | 0.46 | 0.15 | | 5 | | | | | | | 22 | | | |
| | | | | | Bottom of boring @ 3.0 meters. | | | | | | | | | | | |
| | 4 | | | | | | | | | | | | | | | |
| | 5 | | | | | | | | | | | | | | | |
| | 6 | | | | | | | | | | | | | | | |
| | 7 | | | | | | | | | | | | | | | |
| | 8 | | | | | | | | | | | | | | | |

Date Started 08/1999 Date Completed 08/1999 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. 34+130 Station & Offset Surface Elev. _____ Water Elev. Not Encountered

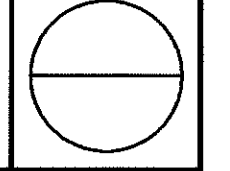
| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|-------|-------------|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | |
| 0.0 | | 4-8-10-10 | 0.40 | 0.21 | Brown w/ trace orange, very silty clay w/ traces of oxides and root hairs (CL); moist, very stiff. qh=4.5+ kg/cm ² | 1 | 4 | 0 | 0 | 48 | 48 | | | 19 | A-6a | |
| 0.6 | 1 | 12-15-16-20 | 0.30 | 0.30 | Mottled light orange-brown w/ trace gray and maroon silty clay w/ traces of oxides (CH); slightly moist, hard; slight laminations present. qh=4.5+ kg/cm ² | 2 | 3 | 0 | 0 | 97 | 56 | 29 | 21 | A-7-5 | | |
| 1.1 | | | | | | | | | | | | | | | | |
| 1.2 | 2 | 16-19-23-30 | 0.37 | 0.24 | | 3 | | | | | | | 18 | | | |
| 1.8 | | | | | | | | | | | | | | | | |
| 2.4 | 2 | 6-8-16-28 | 0.37 | 0.24 | Light olive brown silty clay w/ traces of oxides and shale fragments (CL); moist, very stiff; laminations present. qh=4.5+ kg/cm ² | 4 | | | | | | | 15 | | | |
| 2.4 | | | | | | | | | | | | | | | | |
| 2.5 | 3 | 50/0.3 | 0.03 | 0.06 | | 5 | | | | | | | | | | |
| | | | | | Soft, light olive brown, very weathered shale. | | | | | | | | | | | |
| | | | | | Bottom of boring @ 2.5 meters. | | | | | | | | | | | |
| | 4 | | | | | | | | | | | | | | | |
| | 5 | | | | | | | | | | | | | | | |
| | 6 | | | | | | | | | | | | | | | |
| | 7 | | | | | | | | | | | | | | | |
| | 8 | | | | | | | | | | | | | | | |



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| DATE | 1/20/00 |
| REVIEWED | |
| DRAWN | MDH |

ROADWAY / CULVERT SOIL PROFILE BORING LOGS

ATH-33-30.981



Date Started 080499 Date Completed 080499 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. 34+650 Station & Offset Surface Elev. 268.4 m Water Elev. Not Encountered

| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|---------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|-------|-------------|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | |
| 268.4 | | 2-4-6-8 | 0.27 | 0.34 | 5 cm Topsoil--Light orange-brown silty clay w/ traces of root hairs (CL); moist, medium stiff. qh=2.75 kg/cm ² | 1 | 1 | 0 | 0 | | 99 | 48 | 23 | 25 | A-7-6 | |
| 267.9 | | | | | | | | | | | | | | | | |
| 267.8 | 1 | 9-10-10-17 | 0.12 | 0.49 | Mottled orange brown to beige silty clay w/ trace oxides and fine sand (CL); moist, very stiff. | 2 | 0 | 0 | 0 | 24 | 76 | | 26 | A-7-6 | | |
| 267.1 | | 8-9-14-19 | 0.24 | 0.37 | qh=4.5+ kg/cm ² | 3 | | | | | | | 14 | | | |
| 266.5 | | | | | qh=3.75 kg/cm ² | | | | | | | | | | | |
| 266.4 | 2 | 20-50/0.4 | 0.24 | 0.03 | qh=3.25 kg/cm ² | 4 | | | | | | | 21 | | | |
| 265.9 | | | | | 8% moisture content in bottom of sample 4 | | | | | | | | | | | |
| 265.7 | | 30-50/0.2 | 0.09 | 0.12 | Light olive brown silty clay [Extremely weathered shale] (CL); slightly moist, hard; laminated structure. | 5 | | | | | | | 12 | | | |
| | 3 | | | | Bottom of boring @ 2.7 meters. | | | | | | | | | | | |
| | 4 | | | | | | | | | | | | | | | |
| | 5 | | | | | | | | | | | | | | | |
| | 6 | | | | | | | | | | | | | | | |
| | 7 | | | | | | | | | | | | | | | |
| | 8 | | | | | | | | | | | | | | | |

Date Started 080499 Date Completed 080499 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. 34+720 Station & Offset Surface Elev. 267.9 m Water Elev. Not Encountered

| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|-------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|-------|-------------|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | |
| 267.9 | | 3-4-4-5 | 0.30 | 0.30 | 7.5 cm Topsoil--Brown/light brown silty clay w/ traces of root hairs (CL); moist, medium stiff to stiff. qh=2.75 kg/cm ² | 1 | 0 | 0 | 0 | 61 | 39 | 27 | 6 | 17 | A-4b | |
| 267.3 | | | | | | | | | | | | | | | | |
| 267.0 | 1 | 8-7-7-10 | 0.40 | 0.21 | qh=2.25 kg/cm ² 25% moisture content in top of sample 2 | 2 | 0 | 0 | 0 | 31 | 69 | | 29 | A-7-5 | | |
| 266.7 | | | | | | | | | | | | | | | | |
| 266.1 | | 5-6-8-11 | 0.18 | 0.43 | Reddish brown to red silty clay w/ traces of oxides (CH); moist, stiff. | 3 | 0 | 0 | 0 | 100 | 82 | 49 | 31 | A-7-5 | | |
| 266.1 | | | | | qh=1.75 kg/cm ² | | | | | | | | | | | |
| 266.0 | 2 | 13-50/0.2 | 0.18 | 0.03 | qh=1.75 kg/cm ² | 4 | | | | | | | 27 | | | |
| 266.0 | | | | | qh=1.5 kg/cm ² | | | | | | | | | | | |
| 265.5 | | | | | | | | | | | | | | | | |
| 265.5 | | 50/0.3 | 0.06 | 0.03 | Light olive brown/beige soft weathered shale. | 5 | | | | | | | | | | |
| 265.4 | 3 | | | | Bottom of boring @ 2.5 meters. | | | | | | | | | | | |
| | 4 | | | | | | | | | | | | | | | |
| | 5 | | | | | | | | | | | | | | | |
| | 6 | | | | | | | | | | | | | | | |
| | 7 | | | | | | | | | | | | | | | |
| | 8 | | | | | | | | | | | | | | | |

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GANNETT FLEMING
 SUITE 350
 4151 EXECUTIVE PARKWAY
 WESTERVILLE, OHIO 43081



CALCULATED
 CHECKED

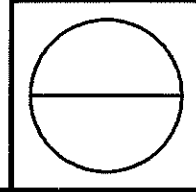
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ROADWAY / CULVERT SOIL PROFILE
 BORING LOGS

ATH-33-30.981



Date Started 072399 Date Completed 072399 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. 35+000 Station & Offset Surface Elev. 295.7 m Water Elev. Not Encountered

| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|-------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|----|-------|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | |
| 295.7 | | 3-6-12-12 | 0.30 | 0.30 | 15 cm Topsoil--Brown, very silty clay/clayey silt w/ traces of root hairs (CL,CL-ML); moist, very stiff. qh=1.75 kg/cm ² | 1 | | | | | | | | | | 19 | A-7-6 |
| 295.1 | 1 | 11-12-20-19 | 0.40 | 0.21 | Red to red w/ gray silty clay (CL); moist, hard. qh=4.5+ kg/cm ² | 2 | 2 | 0 | 0 | 22 | 76 | | | | 23 | | |
| 294.5 | | 18-20-24-26 | 0.30 | 0.30 | qh=4.5+ kg/cm ² | 3 | 0 | 0 | 0 | 100 | 47 | 20 | 21 | | | | |
| 293.9 | 2 | 20-50/0.4 | 0.21 | 0.06 | qh=4.5+ kg/cm ² | 4 | | | | | | | | | 18 | | |
| 293.3 | | 15-21-23-26 | 0.40 | 0.21 | qh=3.0 kg/cm ² | 5 | | | | | | | | | 23 | | |
| 292.1 | 4 | | | | Mottled gray and red silty clay w/ olive shale fragments (CL); slightly moist, hard; predominantly gray below 5.2 m. | 6 | 4 | 5 | 5 | 86 | 39 | 16 | 18 | | | | |
| 291.6 | | 13-18-38 | 0.37 | 0.09 | qh=2.25 kg/cm ² | 6 | | | | | | | | | | | |
| 290.3 | | | | | Olive brown w/ trace orange-brown very silty clay w/ traces of weathered shale fragments (CL); slightly moist, hard. | 7 | | | | | | | | | 10 | | |
| 290.1 | 6 | 25-50/0.4 | 0.24 | 0.03 | qh=3.25 kg/cm ² | 7 | | | | | | | | | | | |
| 289.0 | 7 | | | | Olive brown silty clay w/ traces of oxides and shale fragments (CL); slightly moist, very stiff; laminated structure. | 8 | | | | | | | | | | | |
| 288.6 | | 12-11-5 | 0.24 | 0.21 | | 8 | | | | | | | | | | | |
| 287.5 | 8 | | | | | | | | | | | | | | | | |
| 287.5 | | | | | Soft to medium hard gray/olive gray arenaceous shale. | | | | | | | | | | | | |
| 287.1 | | 50/0.2 | 0.06 | 0.00 | | 9 | | | | | | | | | | | |

Date Started 072399 Date Completed 072399 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. 35+000 Station & Offset Surface Elev. 295.7 m Water Elev. Not Encountered

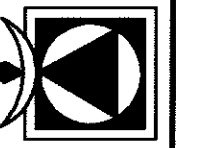
| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|-------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | |
| 286.3 | | | | | Light brown, moderately hard, fine to medium grained sandstone; fair to poor rock quality. Auger refusal @ 10.1m. | | | | | | | | | | | |
| 285.7 | 10 | | | | | 10 | | | | | | | | | | |
| 285.1 | | 67 | 0.40 | 0.21 | | | 10 | | | | | | | | | |
| 285.1 | 11 | | | | Loss of drillwater between core run intervals. | | | | | | | | | | | |
| 284.3 | | 48 | 1.40 | 0.12 | qu=116.9 kg/cm ² | 11 | | | | | | | | | | |
| 284.3 | 12 | | | | | 11 | | | | | | | | | | |
| 283.6 | | | | | Bottom of boring @ 12.2 meters. | | | | | | | | | | | |
| | 13 | | | | | | | | | | | | | | | |
| | 14 | | | | | | | | | | | | | | | |
| | 15 | | | | | | | | | | | | | | | |
| | 16 | | | | | | | | | | | | | | | |
| | 17 | | | | | | | | | | | | | | | |

Date Started 08/19/99 Date Completed 08/19/99 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. 36+560 Station & Offset 36+560, 30m up station Surface Elev. Water Elev. Not Encountered

| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|----|----|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | |
| 0.0 | | 9-10-12-13 | 0.06 | 0.55 | 7.5 cm Topsoil-light orange-brown to light brown silty clay w/ traces of oxides (CL); slightly moist, very stiff to hard. qh=4.5+ kg/cm ² | 1 | | | | | | | | | | 18 | |
| 0.6 | 1 | 14-20-26-32 | 0.37 | 0.24 | qh=4.5+ kg/cm ² | 2 | | | | | | | | | | 9 | |
| 1.1 | | 50/0.4 | 0.06 | 0.06 | Light olive brown/beige silty clay w/ traces of oxides (CL); slightly moist, hard [extremely weathered shale]; laminated structure. | 3 | | | | | | | | | | 8 | |
| 1.2 | 2 | 33-33-50/0.1 | 0.24 | 0.09 | | 4 | | | | | | | | | | | 11 |
| 1.8 | | 22-44-50/0.4 | 0.27 | 0.15 | | 5 | | | | | | | | | | | 9 |
| 2.4 | 3 | | | | | | | | | | | | | | | | |
| 3.7 | 4 | | | | Very soft light brown fine grained sandstone/siltstone. | | | | | | | | | | | | |
| 4.1 | | 50/0.3 | 0.00 | 0.09 | Olive gray to gray soft shale. | 6 | | | | | | | | | | | |
| 5.2 | 5 | | | | | | | | | | | | | | | | |
| 5.6 | 6 | 60/0.4 | 0.12 | 0.00 | | 7 | | | | | | | | | | | |
| 6.6 | 7 | 97 | 0.91 | | Hard white limestone and moderately hard to hard light brown sandstone; excellent rock quality; limestone from 6.6 m to 6.9 m. | 8 | | | | | | | | | | | |
| 7.5 | 8 | | | | Moderately hard to hard gray, fine grained sandstone w/ limestone nodules and soft to medium hard shale; fair rock quality. qu=246.7 kg/cm ² | | | | | | | | | | | | |
| 8.0 | | 57 | 1.49 | 0.03 | | 9 | | | | | | | | | | | |
| 8.7 | | | | | | | | | | | | | | | | | |

Date Started 08/19/99 Date Completed 08/19/99 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. 36+560 Station & Offset 36+560, 30m up station Surface Elev. Water Elev. Not Encountered

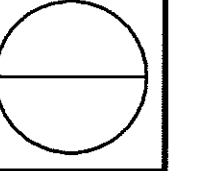
| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | |
| 9.0 | | 50 | 0.85 | 0.06 | Soft to medium gray shale; fair rock quality. qu=107.6 kg/cm ² | 10 | | | | | | | | | | |
| 9.3 | 10 | | | | Medium to moderately hard olive brown, fine grained sandstone/siltstone; fair rock quality. - light gray, fine grained sandstone/ siltstone w/ shale partings in bottom 15 cm. | | | | | | | | | | | |
| 9.9 | | | | | Bottom of boring @ 9.9 meters. | | | | | | | | | | | |
| | 11 | | | | | | | | | | | | | | | |
| | 12 | | | | | | | | | | | | | | | |
| | 13 | | | | | | | | | | | | | | | |
| | 14 | | | | | | | | | | | | | | | |
| | 15 | | | | | | | | | | | | | | | |
| | 16 | | | | | | | | | | | | | | | |
| | 17 | | | | | | | | | | | | | | | |



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| CALCULATED | CHECKED |
| DATE | DATE |
| 1/20/00 | |
| REVIEWED | |
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ROADWAY / CULVERT SOIL PROFILE BORING LOGS

ATH-33-30.981

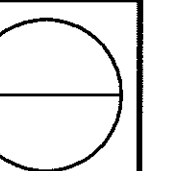


Date Started 080399 Date Completed 080399 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. 37+140 Station & Offset Surface Elev. Water Elev. Not Encountered

| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | |
|------------|------------|----------------|-----------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|-------|-------------|--|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | |
| 0.0 | | 3-5-9-13 | 0.37 | 0.24 | 10 cm Topsoil-- Red to mottled red and maroon silty clay w/ traces of sand and oxides (CL); moist, stiff. qh=4.0 kg/cm ² | 1 | 0 | 1 | 1 | | 97 | 44 | 31 | 26 | A-7-6 | | |
| 0.6 | 1 | 9-16-20-26 | 0.34 | 0.27 | Red/mottled red and yellow silty clay w/ traces of sand (CL); slightly moist to moist, hard. qh=4.5 kg/cm ² | 2 | 0 | 0 | 1 | 31 | 68 | | 25 | A-7-6 | | | |
| 1.2 | | 4-13-30-24 | 0.34 | 0.27 | qh=4.5 kg/cm ² | 3 | | | | | | | 16 | | | | |
| 1.8 | 2 | 7-18-39-50/0.1 | 0.30 | 0.18 | qh=4.5 kg/cm ² | 4 | | | | | | | 12 | | | | |
| 2.3 | | 50/0.2 | 0.03 | 0.03 | Light brown, medium to moderately hard sandstone. Auger refusal @ 3.7 meters. | 5 | | | | | | | | | | | |
| 2.4 | 3 | | | | | | | | | | | | | | | | |
| 3.7 | 4 | 58 | 0.49 | 0.12 | Light brown to white moderately hard to hard sandstone and soft to very soft light brown/beige shale. Fair rock quality; sandstone layer approx. 20 cm thick in core run; medium hard arenaceous shale at bottom of run (4.2 m deep). | 6 | | | | | | | | | | | |
| 4.3 | | | | | | | | | | | | | | | | | |
| 4.6 | 5 | 56 | 1.07 | 0.15 | Light brown with trace red, very soft to soft w/ trace medium shale w/ traces of limestone nodules. Fair rock quality; medium to moderately hard fine grained, light brown sandstone at 5.3 m in core run. | 7 | | | | | | | | | | | |
| 5.5 | 6 | | | | qu (shale)=43.1 kg/cm ² | | | | | | | | | | | | |
| 6.4 | 7 | 49 | 1.80 | 0.03 | Light brown w/ trace red, medium fine grained sandstone/siltstone w/ soft arenaceous fissile shale lenses; moderately hard, fine to medium grained sandstone seam at 7.2 m. | 8 | | | | | | | | | | | |
| 7.3 | | | | | qu (siltstone)=173.3 kg/cm ² | | | | | | | | | | | | |
| 8.2 | 8 | 13 | 1.31 | 0.21 | Light brown, soft to medium, fine grained sandstone/siltstone w/ soft gray shale lenses- fissile structure; very poor rock quality; shale at 7.8 m. | 9 | | | | | | | | | | | |
| | | | | | qu (shale)=51.5 kg/cm ² | | | | | | | | | | | | |

Date Started 080399 Date Completed 080399 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. 37+140 Station & Offset Surface Elev. Water Elev. Not Encountered

| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | |
| 8.8 | | | | | Very soft, to soft gray arenaceous shale w/ moderately hard fine grained sandstone lenses; good rock quality; sandstone (15 cm thick) at 9.9 m. | 10 | | | | | | | | | | | |
| 9.1 | 10 | 82 | 1.43 | 0.09 | qu (shale)=12.7 kg/cm ² | | | | | | | | | | | | |
| 10.4 | 11 | | | | Very soft, gray to dark gray w/ trace maroon shale; rock quality misleadingly high; more soil-like mud seam from 11.9 m to 12.3 m. | 11 | | | | | | | | | | | |
| 11.9 | 12 | | | | | | | | | | | | | | | | |
| 12.5 | 13 | 53 | 1.49 | 0.03 | Soft to medium, olive gray to gray shale w/ limestone nodules. Fair rock quality. qu=118.3 kg/cm ² | 12 | | | | | | | | | | | |
| 13.4 | 14 | | | | Olive gray to gray, fine to medium grained, moderately hard sandstone; fair to good rock quality. Mud lens at top of core run. | 13 | | | | | | | | | | | |
| | 15 | | | | | | | | | | | | | | | | |
| 14.9 | | | | | Very soft to soft, fissile, gray shale (w/ 5 cm to 7.5 cm thick mud seams); fair to poor rock quality. | 14 | | | | | | | | | | | |
| 15.8 | 16 | 50 | 1.40 | 0.12 | Very soft, marled maroon, gray, and olive shale; poor rock quality; light gray fine sandstone seam at 16.0 m; maroon w/ trace gray and olive coloring below 16.5 m. | 15 | | | | | | | | | | | |
| 16.5 | 17 | 92 | 0.91 | | qu=15.3 kg/cm ² | | | | | | | | | | | | |
| 16.8 | | | | | | | | | | | | | | | | | |
| 17.4 | | 36 | 0.64 | 0.27 | | 16 | | | | | | | | | | | |



Date Started 080399 Date Completed 080399 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. 37+140 Station & Offset Surface Elev. Water Elev. Not Encountered

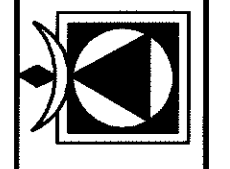
| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|---------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|--|--|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | | | |
| 18.3 | | | | | Bottom of boring @ 18.3 meters. | | | | | | | | | | | | | | |
| | 19 | | | | | | | | | | | | | | | | | | |
| | 20 | | | | | | | | | | | | | | | | | | |
| | 21 | | | | | | | | | | | | | | | | | | |
| | 22 | | | | | | | | | | | | | | | | | | |
| | 23 | | | | | | | | | | | | | | | | | | |
| | 24 | | | | | | | | | | | | | | | | | | |
| | 25 | | | | | | | | | | | | | | | | | | |
| | 26 | | | | | | | | | | | | | | | | | | |

Date Started 072799 Date Completed 072799 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. 37+660 Station & Offset Surface Elev. 282.5 m Water Elev. Not Encountered

| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|--|--|--|-------|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | | | | |
| 282.5 | | 7-12-20-27 | 0.21 | 0.40 | 5 cm Topsoil--Brown to light brown very silty clay/clayey silt w/ trace root hairs (CL,CL-ML); moist, very stiff. qh=1.75 kg/cm ² | 1 | | | | | | | | | | | | | | |
| 281.9 | | | | | | | | | | | | | | | | | | | | |
| 281.6 | 1 | 3-8-8-8 | 0.03 | 0.58 | Red/maroon w/ trace gray and light orange silty clay (CL); moist, very stiff. | 2 | | | | | | | | | | | | | | |
| 281.2 | | | | | | | | | | | | | | | | | | | | |
| 280.6 | 2 | | | | qh=3.0 kg/cm ² | 3 | | 1 | 7 | 92 | 46 | 18 | 26 | | | | | | | A-7-6 |
| 280.0 | | | | | qh=3.25 kg/cm ² | 4 | | | | | | | | | | | | | | |
| 279.9 | | | | | qh=2.0 kg/cm ² | 5 | | | | | | | | | | | | | | |
| 279.7 | 3 | 9-11-15-37 | 0.43 | 0.18 | 4% moisture content in bottom of sample 5 Beige/light brown w/ trace darker brown and orange silty clay (CL); moist, very stiff. Clayey silt seam w/ some fine sand noted in sample #6; oxide stains noted in sample #6. | | | | | | | | | | | | | | | |
| 278.4 | 4 | | | | qh=2.5 kg/cm ² | | | | | | | | | | | | | | | |
| | | 10-14 | 0.30 | 0.15 | qh=1.25 kg/cm ² | 6 | | | | | | | | | | | | | | |
| 277.0 | | | | | | | | | | | | | | | | | | | | |
| 276.8 | 6 | 50/0.4 | 0.06 | 0.06 | Medium, weathered, light brown to gray, fine grained sandstone. | 7 | | | | | | | | | | | | | | |
| 276.1 | 7 | | | | Soft, gray arenaceous shale. | | | | | | | | | | | | | | | |
| 275.3 | 8 | 75/0.3 | 0.09 | | | 8 | | | | | | | | | | | | | | |
| 273.9 | | | | | | | | | | | | | | | | | | | | |
| 273.8 | | 50/0.2 | 0.03 | 0.03 | Medium to moderately hard, gray, fine to medium grained sandstone. | 9 | | | | | | | | | | | | | | |

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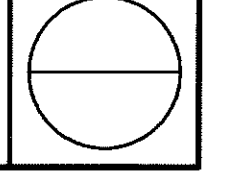
GANNETT FLEMING
 SUITE 350
 415 EXECUTIVE PARKWAY
 WESTERVILLE, OHIO 43081



CHECKED
 CALCULATED
 DATE 1/20/00
 REVIEWED
 DRAWN MDH

ROADWAY / CULVERT SOIL PROFILE BORING LOGS

ATH-33-30.981

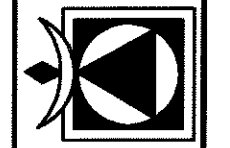


Date Started 072799 Date Completed 072799 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. 37+660 Station & Offset Surface Elev. 282.5 m Water Elev. Not Encountered

| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|--------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|--|--|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | | | |
| 273.7 | | | | | Bottom of boring @ 8.8 meters. | | | | | | | | | | | | | | |
| | 10 | | | | | | | | | | | | | | | | | | |
| | 11 | | | | | | | | | | | | | | | | | | |
| | 12 | | | | | | | | | | | | | | | | | | |
| | 13 | | | | | | | | | | | | | | | | | | |
| | 14 | | | | | | | | | | | | | | | | | | |
| | 15 | | | | | | | | | | | | | | | | | | |
| | 16 | | | | | | | | | | | | | | | | | | |
| | 17 | | | | | | | | | | | | | | | | | | |

Date Started 072299 Date Completed 072299 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. 37+780 Station & Offset 37+780, 20 m right Surface Elev. 292.5 m Water Elev. Not Encountered

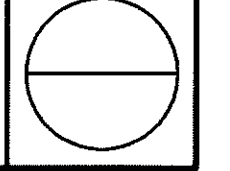
| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|----|--|-------|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | | | |
| 292.5 | | 3-6-10-13 | 0.46 | 0.15 | 3 cm Topsoil--Light brown clayey fine sand and silt little oxides (SM-ML); moist, very stiff. qh=4.25 kg/cm ² | 1 | 0 | 3 | 51 | | 45 | | | | 12 | | | | A-4a |
| 291.9 | 1 | 10-10-9-10 | 0.34 | 0.27 | Light brown clayey silt w/ little to some sand and traces of oxides (ML/CL); moist, very stiff qh=2.25 kg/cm ² | 2 | 4 | 7 | 13 | | 76 | 46 | 19 | 22 | | | | | A-7-6 |
| 291.3 | | 4-6-10-10 | 0.49 | 0.12 | | 3 | 2 | 12 | 23 | | 63 | 42 | 14 | 27 | | | | | A-7-6 |
| 290.7 | 2 | 5-6-9-11 | 0.52 | 0.09 | 33% moisture in top of sample 3 | 4 | 0 | 1 | 2 | 21 | 76 | | | | | | 36 | | A-7-6 |
| 290.1 | 3 | 9-11-12-12 | 0.52 | 0.09 | Mottled olive brown and orange brown silty clay w/ traces of oxide stains (CL); moist, very stiff. Slightly higher plasticity below 2.4 m deep w/ increased moisture. qh=3.0 kg/cm ² | 5 | | | | | | | | | | | 44 | | |
| 288.4 | 4 | | | | qh=4.0 kg/cm ² | | | | | | | | | | | | | | |
| 288.2 | 5 | 33.5/0.4 | 0.12 | 0.00 | qh=2.75 kg/cm ² | 6 | | | | | | | | | | | | | |
| 286.9 | 6 | 50/0.3 | 0.00 | 0.09 | Soft to medium hard gray arenaceous shale w/ siltstone/fine grained sandstone lenses. | 7 | | | | | | | | | | | | | |
| 286.7 | 8 | 0 | 0.18 | 0.43 | | 8 | | | | | | | | | | | | | |
| 286.4 | 7 | | | | Light brown, very soft arenaceous shale. | | | | | | | | | | | | | | |
| 286.1 | 9 | 7 | 1.07 | 0.46 | Maroon and trace gray, very soft to soft indurated clay/shale. Very poor to good rock quality; laminated structure below 7.9 m; marled coloring in 'rock' core sample; increased red/ maroon and gray marbling 13.1m to 14.0 m. | 9 | | | | | | | | | | | | | |
| 284.6 | 8 | | | | | | | | | | | | | | | | | | |
| 284.3 | 10 | 76 | 1.31 | 0.21 | qu=30.0 kg/cm ² | 10 | | | | | | | | | | | | | |



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| CHECKED | CALCULATED |
| DATE | 1/20/00 |
| REVIEWED | |
| DRAWN | MDH |

ROADWAY / CULVERT SOIL PROFILE BORING LOGS

ATH-33-30.981



Date Started 072299 Date Completed 072299 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. 37+780 Station & Offset 37+780, 20 m right Surface Elev. 292.5 m Water Elev. Not Encountered

| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|--|--|--|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | | | | |
| 283.1 | | | | | | | | | | | | | | | | | | | | |
| 282.5 | 10 | 65 | 1.49 | 0.03 | qu=9.6 kg/cm ² | 11 | | | | | | | | | | | | | | |
| 281.8 | | | | | qu=24.0 kg/cm ² | | | | | | | | | | | | | | | |
| 281.5 | 11 | | | | | | | | | | | | | | | | | | | |
| 280.0 | | | | | | | | | | | | | | | | | | | | |
| 279.7 | 12 | 0 | 1.01 | 0.52 | | 12 | | | | | | | | | | | | | | |
| 278.5 | | | | | | | | | | | | | | | | | | | | |
| 278.3 | 13 | 52 | 1.37 | 0.15 | qu=123.7 kg/cm ² | 13 | | | | | | | | | | | | | | |
| 277.0 | | | | | | | | | | | | | | | | | | | | |
| 275.4 | 14 | | | | Gray, fine to medium grained, moderately hard sandstone w/ alternate layers of soft to medium shale. Sandstone and shale layers 13 cm to 20 cm in thickness. Good rock quality. qu=203.9 kg/cm ² | 14 | | | | | | | | | | | | | | |
| 275.1 | 15 | 72 | 1.28 | 0.24 | | | | | | | | | | | | | | | | |
| | | | | | Gray, medium arenaceous shale. Good rock quality. | | | | | | | | | | | | | | | |
| | 16 | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | 17 | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | 18 | 70 | 1.52 | | | 15 | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | 19 | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | 20 | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | 21 | | | | Soft, gray to dark gray shale. Fair rock quality. | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | 22 | | | | qu=86.1 kg/cm ² | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | 23 | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | 24 | | | | Very soft to soft, gray shale. Fair rock quality. | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | 25 | | | | qu=11.4 kg/cm ² | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | 26 | | | | Bottom of boring @ 24.7 meters. | | | | | | | | | | | | | | | |

Date Started 072299 Date Completed 072299 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. 37+780 Station & Offset 37+780, 20 m right Surface Elev. 292.5 m Water Elev. Not Encountered

| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|-----------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|--|--|--|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | | | | |
| 273.9 | | | | | about 17.7 m. Dark striations noted in sandstone. Mud seam noted at about 20.1. Good to excellent rock quality. | | | | | | | | | | | | | | | |
| 273.3 | 19 | | | | | | | | | | | | | | | | | | | |
| | | | | | qu=481.8 kg/cm ² | | | | | | | | | | | | | | | |
| | 20 | 83 | 3.05 | | | 17 | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | 21 | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | 22 | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | 23 | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | 24 | | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | | |
| | 25 | | | | | | | | | | | | | | | | | | | |
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| | 26 | | | | | | | | | | | | | | | | | | | |

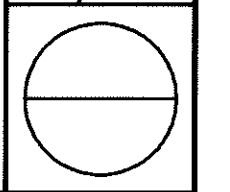
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GANNETT FLEMING
 SUITE 350
 415 EXECUTIVE PARKWAY
 WESTERVILLE, OHIO 43081

DRAWN MDH
 REVIEWED 1/20/00
 CALCULATED
 CHECKED

ROADWAY / CULVERT SOIL PROFILE BORING LOGS

ATH-33-30.981



Date Started 072799 Date Completed 072799 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. 37+920 Station & Offset Surface Elev. 279.5 m Water Elev. Not Encountered

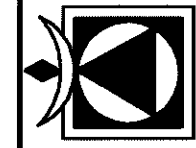
| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|----|-------|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | |
| 279.5 | | 7-9-11-2-12 | 0.37 | 0.24 | Light brown very silty clay/clayey silt w/ traces of root hairs (CL,CL-ML); very stiff, moist. qh=2.5 kg/cm ² | 1 | | | | | | | | | | 16 | |
| 278.9 | | | | | | | | | | | | | | | | | |
| 278.8 | 1 | 8-9-12-20 | 0.18 | 0.43 | Light brown very silty clay/clayey silt w/ traces of root hairs (CL,CL-ML); very stiff, moist. qh=4.0 kg/cm ² | 2 | 0 | 1 | 5 | 94 | 44 | 21 | 20 | | | | A-7-6 |
| 278.3 | | | | | Reddish brown w/ trace light brown silty clay (CL); moist, very stiff. | | | | | | | | | | | | |
| 277.7 | 2 | 11-12-18-22 | 0.40 | 0.21 | Mottled light brown/beige w/ trace gray and orange very silty clay/clayey silt w/ silt lenses and oxides (CL,CL-ML); slightly moist, hard. qh=2.5 kg/cm ² | 3 | 20 | 11 | 7 | 62 | 42 | 15 | 19 | | | | A-7-6 |
| 277.1 | | 22-47-50/0.4 | 0.37 | 0.06 | | 4 | | | | | | | | | | 12 | |
| 277.1 | 3 | 22-30-32-40 | 0.40 | 0.21 | Olive brown/beige silty clay w/ traces of oxides (CL); slightly moist, hard. --Laminated structure, slickensides [extremely weathered shale]. Sample crumbles. qh=4.5 kg/cm ² | 5 | | | | | | | | | | 16 | |
| 275.6 | 4 | | | | | | | | | | | | | | | | |
| 275.4 | | 50/0.4 | 0.09 | 0.03 | Extremely weathered, soft to medium, olive brown/light brown shale. | 6 | | | | | | | | | | | |
| 274.7 | 5 | | | | Light brown to light gray, fine grained, medium sandstone. | | | | | | | | | | | | |
| 273.9 | 6 | 60/0.2 | 0.03 | 0.03 | | 7 | | | | | | | | | | | |
| 272.8 | 7 | | | | Soft gray arenaceous shale. | | | | | | | | | | | | |
| 272.4 | | 60/0.1 | 0.03 | 0.00 | | 8 | | | | | | | | | | | |
| 270.9 | 8 | | | | | | | | | | | | | | | | |
| 270.9 | | 50/0.1 | 0.03 | 0.00 | Bottom of boring @ 8.7 meters. | 9 | | | | | | | | | | | |

Date Started 071499 Date Completed 071499 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. 38+420 Station & Offset Surface Elev. 288.1m Water Elev. Not Encountered

| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|----|-------|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | |
| 288.1 | | 8-11-8-9 | 0.15 | 0.46 | 9 cm Topsoil--Light brown clayey silt w/ traces of root hairs (CL); slightly moist, very stiff. | 1 | | | | | | | | | | 9 | |
| 287.5 | | | | | | | | | | | | | | | | | |
| 287.2 | 1 | 11-13-13-12 | 0.37 | 0.24 | Light orange brown and beige w/ trace gray, very silty clay/clayey silt (CL); slightly moist, very stiff. Traces of oxide stains in sample 4. qh=4.5 kg/cm ² | 2 | | | | | | | | | | 31 | |
| 286.9 | | | | | | | | | | | | | | | | | |
| 286.3 | 2 | 11-11-15-24 | 0.03 | 0.58 | Light orange brown and beige w/ trace gray, very silty clay/clayey silt (CL); slightly moist, very stiff. Traces of oxide stains in sample 4. qh=4.5+ kg/cm ² | 3 | | | | | | | | | | 11 | |
| 285.6 | | 8-12-18-17 | 0.40 | 0.21 | 27% moisture content in top of sample 4 | 4 | 0 | 1 | 5 | 94 | 78 | 37 | 40 | | | | A-7-5 |
| 285.0 | 3 | 7-12-14-14 | 0.46 | 0.15 | Increased moisture noted in field at sample 5 qh=2.75 kg/cm ² | 5 | | | | | | | | | | 32 | |
| 284.1 | 4 | 6-7-8-9 | 0.40 | 0.21 | qh=2.75 kg/cm ² | 6 | 0 | 0 | 1 | 99 | 68 | 35 | 38 | | | | A-7-5 |
| 284.0 | | 8-12-16 | 0.46 | | Red/maroon and trace gray silty clay (CL); moist, very stiff to hard. qh=4.5+ kg/cm ² | 7 | 14 | 11 | 4 | 27 | 44 | | 17 | | | | A-7-5 |
| 282.4 | 6 | 13-30-29 | 0.24 | 0.21 | qh=4.5+ kg/cm ² | 8 | | | | | | | | | | 18 | |
| 280.9 | 8 | 55-50/0.3 | 0.21 | 0.03 | qh=4.5+ kg/cm ² | 9 | | | | | | | | | | 12 | |
| 279.4 | | 70-50/0.2 | 0.15 | 0.06 | qh=4.5+ kg/cm ² | 10 | | | | | | | | | | 16 | |

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GANNETT FLEMING
 SUITE 350
 415 EXECUTIVE PARKWAY
 WESTERVILLE, OHIO 43081



DRAWN MDH
 REVIEWED
 DATE 1/20/00
 CALCULATED
 CHECKED

ROADWAY / CULVERT SOIL PROFILE BORING LOGS

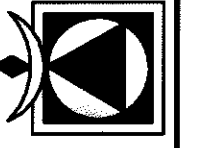
ATH-33-30.981

Date Started 071499 Date Completed 071499 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. 38+420 Station & Offset Surface Elev. 288.1m Water Elev. Not Encountered

| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|----------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|--|----|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | | | |
| 278.3 | 10 | | | | Isolated sandstone lens. | | | | | | | | | | | | | | |
| 277.9 | | 80/0.5 | 0.15 | | Maroon/red and gray in sample 11w/ slightly laminated structure. | 11 | | | | | | | | | | | | 13 | |
| 277.1 | 11 | | | | Isolated sandstone lens. | | | | | | | | | | | | | | |
| 276.3 | 12 | 75/0.5 | 0.15 | | | 12 | | | | | | | | | | | | 11 | |
| 274.8 | 13 | | | | | | | | | | | | | | | | | | |
| 274.7 | | 75/0.0 | 0.00 | 0.15 | Soft gray shale; fair rock qualities. Spoon refusal at 13.3 m. | 13 | | | | | | | | | | | | | |
| 273.0 | 14 | 68 | 1.52 | | | 14 | | | | | | | | | | | | | |
| 272.4 | 15 | | | | | | | | | | | | | | | | | | |
| 271.3 | 16 | | | | Gray, fine grained, medium sandstone. Good rock quality. | | | | | | | | | | | | | | |
| 270.8 | 17 | 88 | 3.02 | 0.03 | | 15 | | | | | | | | | | | | | |
| | | | | | qu=739.3 kg/cm ² | | | | | | | | | | | | | | |
| | | | | | Light brown, fine to medium grained, medium to moderately hard sandstone. Good rock quality. | | | | | | | | | | | | | | |

Date Started 071499 Date Completed 071499 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. 38+420 Station & Offset Surface Elev. 288.1m Water Elev. Not Encountered

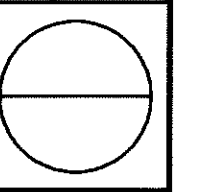
| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|-----------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|--|--|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | | | |
| 269.9 | | | | | | | | | | | | | | | | | | | |
| 269.5 | | | | | qu=233.5 kg/cm ² | | | | | | | | | | | | | | |
| 269.2 | 19 | 35 | 1.98 | | Soft to very soft, gray shale; poor rock quality. | 16 | | | | | | | | | | | | | |
| 268.0 | 20 | | | | | | | | | | | | | | | | | | |
| 267.0 | 21 | 30 | 0.91 | | Very soft, brownish gray shale (36%) w/ soft to medium, gray arenaceous shale seams (64%); poor rock quality. | 17 | | | | | | | | | | | | | |
| 266.3 | 22 | 70 | 1.74 | 0.09 | Soft to very soft, gray shale. | | | | | | | | | | | | | | |
| 265.2 | 23 | | | | Moderately hard, marled, gray shale and limestone w/ shale partings; fair to good rock quality. qu=146.2 kg/cm ² | 18 | | | | | | | | | | | | | |
| | 24 | | | | | | | | | | | | | | | | | | |
| | 25 | | | | | | | | | | | | | | | | | | |
| | 26 | | | | Bottom of boring @ 22.8 meters. | | | | | | | | | | | | | | |



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|------------|---------|
| CALCULATED | CHECKED |
| DATE | 1/20/00 |
| REVIEWED | |
| DRAWN | MDH |

ROADWAY / CULVERT SOIL PROFILE BORING LOGS

ATH-33-30.981

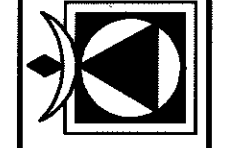


Date Started 052499 Date Completed 052599 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. 38+680 Station & Offset Surface Elev. 282.4 m Water Elev. Not Encountered

| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|---------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|-------|-------------|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | |
| 282.4 | | 3-4-3-7 | 0.40 | 0.21 | 5 cm Topsoil--Reddish brown silty clay w/ traces of root hairs (CL); moist, medium stiff. qh=2.25 kg/cm ² | 1 | 0 | 0 | 1 | 24 | 75 | | | 36 | A-7-6 | |
| 281.8 | | | | | | | | | | | | | | | | |
| 281.4 | 1 | 5-8-15-23 | 0.55 | 0.06 | Reddish brown to red silty clay w/ trace light gray marbling (CL); slightly moist, very stiff. qh=4.5+ kg/cm ² | 2 | 1 | 3 | 4 | 92 | 44 | 21 | 23 | A-7-6 | | |
| 281.2 | | | | | | | | | | | | | | | | |
| 280.6 | 2 | 15-29-39-50/4 | 0.49 | 0.09 | Red w/ trace gray silty clay (CL); slightly moist, hard. Traces of slickensides, yellow coloring noted in sample #4. | 3 | | | | | | | 17 | | | |
| 280.0 | | | | | | | | | | | | | | | | |
| 280.0 | | 23-30-49-50/4 | 0.46 | 0.12 | qh=4.5+ kg/cm ² | 4 | | | | | | | 16 | | | |
| 280.0 | | | | | | | | | | | | | | | | |
| 280.0 | 3 | 15-23-50/0.4 | 0.30 | 0.12 | qh=4.5+ kg/cm ² | 5 | | | | | | | 17 | | | |
| 278.5 | | | | | | | | | | | | | | | | |
| 278.3 | 4 | | | | | | | | | | | | | | | |
| 278.3 | | 9-20-26 | 0.43 | 0.03 | Dark red/maroon and gray silty clay (CL); moist, hard. Traces of beige and yellow in sample #7. | 6 | | | | | | | 24 | | | |
| 278.3 | 5 | | | | qh=2.25 kg/cm ² | | | | | | | | | | | |
| 276.8 | 6 | 12-20-47 | 0.46 | | qh=4.25 kg/cm ² | 7 | | | | | | | 17 | | | |
| 275.7 | 7 | | | | Soft, light brown/beige siltstone (fragments). | | | | | | | | | | | |
| 275.3 | | 50/0.2 | 0.03 | 0.03 | | 8 | | | | | | | | | | |
| 274.2 | 8 | | | | | | | | | | | | | | | |
| 274.2 | | | | | Soft to medium, gray silty, arenaceous shale (fragments in spoon). | | | | | | | | | | | |
| 273.7 | | 75/0.3 | 0.06 | 0.03 | | 9 | | | | | | | | | | |

Date Started 052499 Date Completed 052599 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. 38+680 Station & Offset Surface Elev. 282.4 m Water Elev. Not Encountered

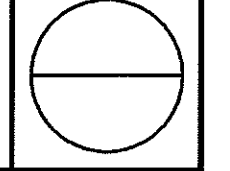
| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | |
| | | | | | | | | | | | | | | | | |
| | 10 | | | | | | | | | | | | | | | |
| 272.2 | | 50/0.3 | 0.09 | | | 10 | | | | | | | | | | |
| | | | | | | | | | | | | | | | | |
| 271.1 | | | | | Medium to moderately hard, gray sandstone. Auger refusal @ 12.2 m. | | | | | | | | | | | |
| 270.7 | 12 | 50/0.2 | 0.00 | 0.06 | | 11 | | | | | | | | | | |
| 270.2 | | | | | | | | | | | | | | | | |
| | 13 | 74 | 1.83 | | Light gray to gray, moderately hard, fine to medium grained sandstone (50%), gray, medium siltstone (20%), and gray to dark gray, soft to medium, fissile, micaceous shale (good rock quality). Thin laminations noted in siltstone. | 12 | | | | | | | | | | |
| 268.4 | 14 | | | | | | | | | | | | | | | |
| 268.4 | 15 | 0 | 1.22 | 0.63 | Dark gray to mottled dark red/maroon soft shale/mudstone; laminated structure in gray shale, lack of bedding in red mudstone/shale; very poor rock quality. | 13 | | | | | | | | | | |
| 266.6 | 16 | | | | | | | | | | | | | | | |
| 266.5 | | | | | | | | | | | | | | | | |
| 266.1 | | 54 | 1.13 | 0.00 | Gray, fine grained, medium to moderately hard sandstone (possibly calcareous); fair rock quality. | 14 | | | | | | | | | | |
| 265.4 | 17 | | | | Gray to light gray, medium to moderately hard, calcareous sandstone; cemented; fair rock quality. | | | | | | | | | | | |
| | | 55 | 1.22 | 0.05 | | 15 | | | | | | | | | | |



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| CALCULATED | CHECKED |
| DATE | 1/20/00 |
| REVIEWED | |
| DRAWN | MDH |

ROADWAY / CULVERT SOIL PROFILE BORING LOGS

ATH-33-30.981

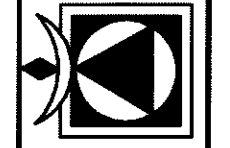


Date Started 052499 Date Completed 052599 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. 38+680 Station & Offset Surface Elev. 282.4 m Water Elev. Not Encountered

| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|---------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|--|--|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | | | |
| 264.1 | | | | | Bottom of boring @ 18.3 meters. | | | | | | | | | | | | | | |
| | 19 | | | | | | | | | | | | | | | | | | |
| | 20 | | | | | | | | | | | | | | | | | | |
| | 21 | | | | | | | | | | | | | | | | | | |
| | 22 | | | | | | | | | | | | | | | | | | |
| | 23 | | | | | | | | | | | | | | | | | | |
| | 24 | | | | | | | | | | | | | | | | | | |
| | 25 | | | | | | | | | | | | | | | | | | |
| | 26 | | | | | | | | | | | | | | | | | | |

Date Started 072899 Date Completed 072899 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. 38+880 Station & Offset Surface Elev. 271.3 m Water Elev. Not Encountered

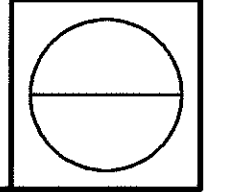
| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|-------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|---|---|---|------|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | | | | |
| 271.3 | | 12-29-38-33 | 0.27 | 0.34 | 7.5 cm Topsoil--Light brown clayey silt w/ little to some fine sand (ML/CL); slightly moist, dense to very dense. | 1 | 5 | 9 | 24 | 62 | 34 | 12 | 11 | | | | | | A-6a | |
| 270.7 | | | | | qh=4.0 kg/cm ² | 2 | | | | | | | | | | | | | | |
| 270.2 | 1 | 20-25-30-45 | 0.37 | 0.24 | Light brown, extremely weathered, fine grained, soft sandstone (fragments). | 3 | | | | | | | | | | | | | | |
| 270.1 | | 50/0.5 | 0.09 | 0.06 | | 4 | | | | | | | | | | | | | | |
| 269.5 | 2 | 30-50/0.2 | 0.18 | 0.03 | Soft, light brown/beige, very weathered shale. Olive brown below 3.7 m; gray below 4.9m. | 5 | | | | | | | | | | | | | | |
| 269.0 | | | | | | 6 | | | | | | | | | | | | | | |
| 268.8 | 3 | 17-45-50/0.5 | 0.34 | 0.12 | | 7 | | | | | | | | | | | | | | |
| 267.2 | 4 | 50/0.5 | 0.12 | 0.03 | Maroon and gray, very soft to soft, weathered clay shale. | 8 | | | | | | | | | | | | | | |
| 265.8 | 5 | | | | | 7 | | | | | | | | | | | | | | |
| 265.6 | 6 | 27-50/0.2 | 0.18 | 0.03 | Light gray to olive brown, soft shale. | 9 | | | | | | | | | | | | | | |
| 264.3 | 7 | 40-50/0.2 | 0.18 | 0.03 | | 8 | | | | | | | | | | | | | | |
| 263.8 | 8 | | | | Olive brown, soft, arenaceous shale. | | | | | | | | | | | | | | | |
| 263.1 | | | | | Mottled olive, gray, and maroon, very soft to soft shale. | 9 | | | | | | | | | | | | | | |
| 262.6 | | 15-50/0.5 | 0.21 | 0.09 | | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | |



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| CALCULATED | CHECKED |
| DATE | 1/20/00 |
| REVIEWED | |
| DRAWN | MDH |

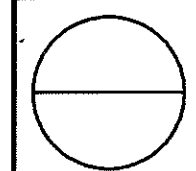
ROADWAY / CULVERT SOIL PROFILE BORING LOGS

ATH-33-30.981



Date Started 072899 Date Completed 072899 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. 38+880 Station & Offset _____ Surface Elev. 271.3 m Water Elev. Not Encountered

| Elev. (m.) | Depth (m.) | Std. Pen./ ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | |
|----------------|---------------|-------------------|--------------|--------------|--------------------------------------|---------------|--------------------------|-----------|-----------|-----------|-----------|------|------|------|----------------|---|---|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | |
| 261.5 | 10 | | | | Maroon/red, soft to very soft shale. | | | | | | | | | | | | |
| 261.1 261.0 | | 50/0.2 | 0.06 | 0.00 | Bottom of boring @ 10.3 meters. | 10 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 | 0 |
| | 11 | | | | | | | | | | | | | | | | |
| | 12 | | | | | | | | | | | | | | | | |
| | 13 | | | | | | | | | | | | | | | | |
| | 14 | | | | | | | | | | | | | | | | |
| | 15 | | | | | | | | | | | | | | | | |
| | 16 | | | | | | | | | | | | | | | | |
| | 17 | | | | | | | | | | | | | | | | |



State of Ohio
Department of Transportation
Division of Highways
Testing Laboratory
LOG OF BORING

Project: ATH-33-30.981
Location: Athens County, Athens, Ohio

Date Started 10/25/99
Date Completed 10/25/99
Sampler Type SS
Casing Length 1.52m
Dia. 51mm
Water Elev. m
Boring No. Station & Offset Sta 30+203, 0.00 m Surface Elev. 239.810m

| Elev. (m) | Depth (m) | Std. Pen./ ROD | Rec. (m) | Loss (m) | Description | Physical Characteristics | | | | | OOOT Class | | |
|-----------|-----------|----------------|----------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|------|------|------|------|------------|------|--------|
| | | | | | | Agg. | C.S. | F.S. | Shif | Clay | | L.L. | P.I. |
| 239.81 | 0 | 2-3-3-7 | | | Medium stiff, reddish brown ELASTIC CLAY (A-7-5), moist. | 0 | 0 | 0 | 100* | 64 | 32 | 19 | A-7-5 |
| 239.20 | 1 | 5-10-13 | | | Very stiff, reddish brown CLAY (A-7-6), trace rock fragments, trace sand, moist. | 1 | 1 | 1 | 97* | 47 | 23 | 13 | A-7-6 |
| 238.29 | 2 | 9-16-22 | | | Very soft to medium hard, reddish brown to gray, decomposed CLAY SHALE | -- | -- | -- | -- | -- | -- | -- | VISUAL |
| | | 25-44 | | | | -- | -- | -- | -- | -- | -- | -- | VISUAL |
| | | 10-17-21 | | | | -- | -- | -- | -- | -- | -- | -- | VISUAL |
| | | 4 | | | | -- | -- | -- | -- | -- | -- | -- | VISUAL |
| | | 40-50/76 | | | | -- | -- | -- | -- | -- | -- | -- | VISUAL |
| 232.49 | 7 | ROD = 9% | 1.85 | 0.03 | Notes: Auger refusal on bedrock at 7.32 meters. Began coring bedrock. Medium hard, gray, weathered SILTY SHALE with laminar bedding (fissile). | | | | | | | | |
| 231.49 | 8 | | | | Notes: Quality of rock considered excellent as per ROD. Used Shelby Tube sample. Very soft, slightly weathered, silty, silty-sandstone, fine grained SANDSTONE with very thin to thick bedding. | | | | | | | | |
| 230.82 | | | | | TERMINATION DEPTH = 8.39 METERS | | | | | | | | |

Particle Sizes: Agg > 2.00mm, Coarse Sand = 2.00-0.42mm, Fine Sand = 0.42-0.074mm, Silt = 0.074-0.005mm, Clay < 0.005mm (*Indicates silt & clay combined)

State of Ohio
Department of Transportation
Division of Highways
Testing Laboratory
LOG OF BORING

Project: ATH-33-30.981
Location: Athens County, Athens, Ohio

Date Started 10/25/99
Date Completed 10/25/99
Sampler Type SS
Casing Length 1.52m
Dia. 51mm
Water Elev. m
Boring No. Station & Offset Sta 30+332, 0.00 m Surface Elev. 240.572m

| Elev. (m) | Depth (m) | Std. Pen./ ROD | Rec. (m) | Loss (m) | Description | Physical Characteristics | | | | | OOOT Class | | |
|-----------|-----------|----------------|----------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|------|------|------|------|------------|------|--------|
| | | | | | | Agg. | C.S. | F.S. | Shif | Clay | | L.L. | P.I. |
| 240.57 | 0 | 3-3-4 | | | TOPSOIL | | | | | | | | |
| 240.27 | 1 | Shelby Tube | | | Medium stiff, brown SILT AND CLAY (A-6a), some sand, trace to and rock fragments, moist. | 1 | 2 | 24 | 73* | 33 | 12 | 14 | A-6a |
| 239.35 | | | | | | | | | | | | | |
| 238.90 | 2 | 3-4-26 | | | Loose, brown SILTY FRAGMENTS WITH SAND, SILT AND CLAY (A-2-6), moist (Shelby Tube sample). | 44 | 9 | 18 | 29* | 31 | 11 | 13 | A-2-6 |
| | | | | | Very stiff, brown SILTY CLAY (A-4b), little rock fragments, little sand, moist. | 16 | 11 | 7 | 65* | 37 | 16 | 10 | A-4b |
| 237.83 | 3 | 9-20-50/76 | | | Very soft to soft, red to gray, decomposed CLAY SHALE | -- | -- | -- | -- | -- | -- | -- | VISUAL |
| 237.37 | 4 | ROD = 3% | 1.28 | 0.24 | Notes: Auger refusal on bedrock at 3.20 meters. Began coring bedrock. Very soft to soft, red, decomposed to highly weathered CLAYSTONE with indistinct bedding. | | | | | | | | |
| | | | | | Notes: Quality of rock from Run 1 considered poor as per ROD. | | | | | | | | |
| | | ROD = 9% | 1.32 | 0.00 | Notes: Quality of rock from Run 2 considered excellent as per ROD. | | | | | | | | |
| 234.32 | 6 | | | | TERMINATION DEPTH = 6.25 METERS | | | | | | | | |

Particle Sizes: Agg > 2.00mm, Coarse Sand = 2.00-0.42mm, Fine Sand = 0.42-0.074mm, Silt = 0.074-0.005mm, Clay < 0.005mm (*Indicates silt & clay combined)

State of Ohio
Department of Transportation
Division of Highways
Testing Laboratory
LOG OF BORING

Project: ATH-33-30.981
Location: Athens County, Athens, Ohio

Date Started 10/11/99
Date Completed 10/11/99
Sampler Type SS
Casing Length 1.52m
Dia. 51mm
Water Elev. 248.89m
Boring No. Station & Offset Sta 32+156, 0.00 m Surface Elev. 249.198m

| Elev. (m) | Depth (m) | Std. Pen./ ROD | Rec. (m) | Loss (m) | Description | Physical Characteristics | | | | | OOOT Class | | |
|-----------|-----------|-------------------|----------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|------|------|------|------|------------|------|--------|
| | | | | | | Agg. | C.S. | F.S. | Shif | Clay | | L.L. | P.I. |
| 249.20 | 0 | 1-2-2-4 | | | TOPSOIL | | | | | | | | |
| 248.98 | 1 | Shelby Tube | | | SOFT, brown SILTY CLAY (A-6b), some sand, little rock fragments, moist. | 11 | 4 | 21 | 64* | 37 | 16 | 17 | A-6b |
| 248.44 | | | | | Medium stiff, brown SILT AND CLAY (A-6a), some sand, little rock fragments, moist. | 17 | 0 | 0 | 83* | 33 | 11 | 15 | A-6a |
| | | 2-3-4 | | | Very stiff, reddish-brown CLAY (A-7-6), trace sand, no trace rock fragments, moist. | 18 | 5 | 24 | 53* | 36 | 15 | 19 | A-6a |
| 247.37 | 2 | 4-7-10 | | | Very soft to soft, reddish-brown CLAY (A-7-6), trace sand, no trace rock fragments, moist. | 0 | 1 | 1 | 98* | 51 | 23 | 21 | A-7-6 |
| | | 7-10-14 | | | | 1 | 1 | 1 | 98* | 52 | 25 | 19 | A-7-6 |
| 245.69 | 4 | 10-21-29 | | | Very soft to soft, reddish-brown, decomposed to highly weathered CLAY SHALE | -- | -- | -- | -- | -- | -- | -- | VISUAL |
| | | 9-11-24 | | | | -- | -- | -- | -- | -- | -- | -- | VISUAL |
| | | 21-50/102 | | | | -- | -- | -- | -- | -- | -- | -- | VISUAL |
| | | 50/150 | | | | -- | -- | -- | -- | -- | -- | -- | VISUAL |
| 241.58 | 8 | 50/51 ROD = 9% | 1.52 | 0.00 | Notes: Auger refusal on bedrock at 7.62 meters. Began coring bedrock. Soft to medium hard, red, highly weathered to weathered CLAYSTONE with indistinct bedding. Quality of rock considered excellent as per ROD. | | | | | | | | |
| 240.05 | 9 | | | | TERMINATION DEPTH = 9.14 METERS | | | | | | | | |

Particle Sizes: Agg > 2.00mm, Coarse Sand = 2.00-0.42mm, Fine Sand = 0.42-0.074mm, Silt = 0.074-0.005mm, Clay < 0.005mm (*Indicates silt & clay combined)

State of Ohio
Department of Transportation
Division of Highways
Testing Laboratory

Date Started 10/11/99 Sampler Type SS Dia. 51mm Water Elev. 253.51m
Date Completed 10/11/99 Casing Length 1.52m Dia. 83mm

Project: ATH-33-30.981
Project No.: 99043
Location: Athens County, Athens, Ohio

| Boring No. | Elev. (m) | Depth (m) | Std. Rod Pen./ Rec. (m) | Loss (m) | Description | Sample No. | Physical Characteristics | | | | | | OOOT Class | | |
|------------|-----------|-----------|-------------------------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------------|------|--------|
| | | | | | | | % Agg | % C.S. | % F.S. | % Silt | % Clay | L.L. | | P.I. | W.C. |
| | 253.81 | 0 | | | TOPSOIL | | | | | | | | | | |
| | 253.66 | 1 | 1-2-1 | | SOFT, brown SILTY AND CLAY (A-6a), trace rock fragments, moist. | 1 | 5 | 0 | 0 | -- | 95 * | 33 | 13 | 23 | A-6a |
| | 252.14 | 2 | Shelby Tube | | | ST | 4 | 2 | 5 | -- | 89 * | 31 | 11 | 27 | A-6a |
| | 250.46 | 3 | 2-3-5 | | Medium stiff to hard, reddish-brown CLAY (A-7-6), little rock fragments, little to trace sand, moist to wet. | 3 | 10 | 5 | 10 | -- | 74 * | 42 | 16 | 21 | A-7-6 |
| | | 4 | 7-13-18 | | | 4 | 11 | 3 | 4 | -- | 82 * | 42 | 16 | 15 | A-7-6 |
| | | 5 | 11-17-17 | | Very soft to soft, reddish brown, decomposed CLAY SHALE. | 5 | -- | -- | -- | -- | -- | -- | -- | 16 | VISUAL |
| | | 6 | 10-16-28 | | | 6 | -- | -- | -- | -- | -- | -- | -- | 13 | VISUAL |
| | | 7 | 18-21-30 | | | 7 | -- | -- | -- | -- | -- | -- | -- | 13 | VISUAL |
| | | 8 | 18-41-50/127 | | | 8 | -- | -- | -- | -- | -- | -- | -- | 12 | VISUAL |
| | 246.04 | 8 | ROD = 82% | 1.52 | Note: Auger refusal on bedrock at 7.77 meters. Began coring bedrock. SOFT to medium hard, red, highly weathered to weathered SANDSTONE with indistinct bedding. Quality of rock considered good as per ROD. | Run 1 | -- | -- | -- | -- | -- | -- | -- | 9 | VISUAL |
| | 244.52 | 9 | | | TERMINATION DEPTH = 9.30 METERS | | | | | | | | | | |

Particle Sizes: Agg => 2.00mm, Coarse Sand = 2.00-0.42mm, Fine Sand = 0.42-0.074mm, Silt = 0.074-0.005mm, Clay =< 0.005mm (*Indicates silt & clay combined)

State of Ohio
Department of Transportation
Division of Highways
Testing Laboratory

Date Started 10/26/99 Sampler Type SS Dia. 51mm Water Elev. m
Date Completed 10/26/99 Casing Length 1.52m Dia. 83mm

Project: ATH-33-30.981
Project No.: 99043
Location: Athens County, Athens, Ohio

| Boring No. | Elev. (m) | Depth (m) | Std. Rod Pen./ Rec. (m) | Loss (m) | Description | Sample No. | Physical Characteristics | | | | | | OOOT Class | | |
|------------|-----------|-----------|-------------------------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------------|------|--------|
| | | | | | | | % Agg | % C.S. | % F.S. | % Silt | % Clay | L.L. | | P.I. | W.C. |
| | 257.30 | 0 | | | TOPSOIL | | | | | | | | | | |
| | 257.14 | 1 | 1-2-3 | | MEDIUM STIFF, BROWN SILT AND CLAY (A-6a), some sand, little rock fragments, moist | 1 | 12 | 6 | 25 | -- | 51 * | 30 | 11 | 11 | A-6a |
| | 257.29 | 1 | 5-5-8 | | Stiff to very stiff, brown to gray CLAY (A-7-6), some to trace sand, no to trace rock fragments, moist. | 2 | 0 | 18 | 5 | -- | 77 * | 41 | 16 | 12 | A-7-6 |
| | 255.61 | 2 | 7-10-15 | | | 3 | 1 | 3 | 4 | -- | 91 * | 48 | 22 | 11 | A-7-6 |
| | 254.85 | 3 | 6-11-18 | | Very stiff, brown SILTY CLAY (A-6b), trace sand, trace rock fragments, moist. | 4 | 1 | 3 | 6 | -- | 90 * | 40 | 17 | 10 | A-6b |
| | | 4 | 13-34-48 | | Soft, brown, decomposed CLAY SHALE. | 5 | -- | -- | -- | -- | -- | -- | -- | 8 | VISUAL |
| | 253.32 | 5 | ROD = 72% | 2.32 | Note: Auger refusal on bedrock at 4.57 meters. Began coring bedrock. Hard, brown, weathered, fine grained SANDSTONE with thin bedding. Very soft, brown, highly weathered CLAY SHALE with indistinct to minor bed partings. Hard, gray, weathered, micaceous, fine grained SANDSTONE with thin to moderate bedding. Note: 51mm thick, highly weathered clay shale seam at 5.21 meters. Note: Quality of rock considered fair as per ROD. | Run 1 | | | | | | | | | |
| | 251.46 | 6 | | | Hard, gray, slightly weathered to weathered SILTSTONE with very thin to thin bedding. | | | | | | | | | | |
| | 251.01 | 6 | | | TERMINATION DEPTH = 6.89 METERS | | | | | | | | | | |

Particle Sizes: Agg => 2.00mm, Coarse Sand = 2.00-0.42mm, Fine Sand = 0.42-0.074mm, Silt = 0.074-0.005mm, Clay =< 0.005mm (*Indicates silt & clay combined)

State of Ohio
Department of Transportation
Division of Highways
Testing Laboratory

Date Started 10/14/99 Sampler Type SS Dia. 51mm Water Elev. 268.42m
Date Completed 10/14/99 Casing Length 1.52m Dia. 83mm

Project: ATH-33-30.981
Project No.: 99043
Location: Athens County, Athens, Ohio

| Boring No. | Elev. (m) | Depth (m) | Std. Rod Pen./ Rec. (m) | Loss (m) | Description | Sample No. | Physical Characteristics | | | | | | OOOT Class | | |
|------------|-----------|-----------|-------------------------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------------|------|--------|
| | | | | | | | % Agg | % C.S. | % F.S. | % Silt | % Clay | L.L. | | P.I. | W.C. |
| | 268.73 | 0 | | | TOPSOIL | | | | | | | | | | |
| | 268.57 | 1 | 3-6-7 | | STIFF, brown CLAY (A-7-6), trace rock fragments, trace sand, moist. | 1 | 4 | 4 | 5 | -- | 87 * | 41 | 17 | 17 | A-7-6 |
| | 267.81 | 2 | 8-10-12 | | Very stiff, brown SILT AND CLAY (A-6a), little sand, trace rock fragments, moist. | 2 | 2 | 6 | 5 | -- | 89 * | 34 | 15 | 12 | A-6a |
| | 266.90 | 3 | 56/150 | | SOFT to medium hard, brown, decomposed to highly weathered SANDSTONE. | 3 | -- | -- | -- | -- | -- | -- | -- | 5 | VISUAL |
| | 265.68 | 4 | 50/25 | | | 4 | -- | -- | -- | -- | -- | -- | -- | 5 | VISUAL |
| | | 5 | ROD = 93% | 2.90 | Note: Auger refusal on bedrock at 3.05 meters. Began coring bedrock. Hard, brown, slightly weathered, micaceous, fine grained SANDSTONE with very thin to moderate bedding. Quality of rock considered excellent as per ROD. Note: Iron staining present from 3.05 to 3.63 meters. Note: Color change to gray at 3.63 meters. Note: Many carbonaceous lamination present from 3.63 to 6.10 meters. Bedding planes weaker along laminations. | Run 1 | | | | | | | | | |
| | 262.63 | 6 | | | Note: Sandstone grain size changes to very fine grained at 5.58 meters. TERMINATION DEPTH = 6.10 METERS | | | | | | | | | | |

Particle Sizes: Agg => 2.00mm, Coarse Sand = 2.00-0.42mm, Fine Sand = 0.42-0.074mm, Silt = 0.074-0.005mm, Clay =< 0.005mm (*Indicates silt & clay combined)

State of Ohio
Department of Transportation
Division of Highways
Testing Laboratory

Date Started 10/26/99 Sampler: Type SS Dia. 51mm Water Elev. m
Date Completed 10/26/99 Casing: Length 1.52m Dia. 83mm

Project: ATH-33-30.981
Project No.: 99043
Location: Athens County, Athens, Ohio

| Elev. (m) | Depth (m) | Sta. Pen./ Rod | Rec. (m) | Loss (m) | Description | Physical Characteristics | | | | | | 000T Class | | |
|-----------|-----------|--------------------|----------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------|--------|--------|--------|------|------------|------|------|
| | | | | | | % Agg | % C.S. | % F.S. | % Silt | % Clay | L.L. | | P.I. | W.C. |
| 269.60 | 0 | 1-2-1 | | | Soft, brown SANDY SILT (A-4a), some sand, trace rock fragments, moist. | 10 | 8 | 18 | -- | 64 * | 33 | 10 | 19 | A-4a |
| 268.38 | | Sheby Tube | | | | | | | | | | | | |
| 267.47 | 2 | 4-7-11 | | | Soft to very stiff SILT AND CLAY (A-6a), some sand, little to some rock fragments, moist. | 8 | 0 | 0 | -- | 92 * | 29 | 10 | 14 | A-4a |
| 267.31 | 3 | 50/76 ROD = 98% | 2.35 | 0.00 | Medium hard, brown, decomposed SANDSTONE. Note: Auger refusal on bedrock at 2.29 meters. Began coring bedrock. Hard, gray, weathered, micaceous, fine grained SANDSTONE with thin to thick bedding. Quality of rock considered excellent as per ROD. Note: Iron staining present from 2.29 to 3.47 meters. Note: Few small voids present from 2.47 to 3.23 meters. | 14 | 3 | 17 | -- | 66 * | 36 | 15 | 15 | A-6a |
| 264.97 | 4 | | | | Run 1 | 25 | 4 | 16 | -- | 55 * | 38 | 13 | 9 | A-6a |

TERMINATION DEPTH = 4.63 METERS

Particle Sizes: Agg => 2.00mm, Coarse Sand = 2.00-0.42mm, Fine Sand = 0.42-0.074mm, Silt = 0.074-0.005mm, Clay =< 0.005mm (*Indicates silt & clay combined)

State of Ohio
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Division of Highways
Testing Laboratory

Date Started 10/27/99 Sampler: Type SS Dia. 51mm Water Elev. m
Date Completed 10/27/99 Casing: Length 1.52m Dia. 83mm

Project: ATH-33-30.981
Project No.: 99043
Location: Athens County, Athens, Ohio

| Elev. (m) | Depth (m) | Sta. Pen./ Rod | Rec. (m) | Loss (m) | Description | Physical Characteristics | | | | | | 000T Class | | |
|-----------|-----------|--------------------|----------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------|--------|--------|--------|------|------------|------|--------|
| | | | | | | % Agg | % C.S. | % F.S. | % Silt | % Clay | L.L. | | P.I. | W.C. |
| 260.33 | 0 | 3-4-7 | | | TOPSOIL | 5 | 3 | 12 | -- | 80 * | 38 | 13 | 15 | A-6a |
| 259.77 | | 7-9-10 | | | Very stiff, brown SILT AND CLAY (A-7-6), little sand, trace rock fragments, moist. | 9 | 4 | 11 | -- | 76 * | 42 | 18 | 15 | A-7-6 |
| 258.86 | 2 | 10-15-26 | | | Soft, brown, decomposed to highly weathered CLAY SHALE. | -- | -- | -- | -- | -- | -- | -- | 17 | VISUAL |
| 257.94 | 3 | 50/51 ROD = 38% | 1.52 | 0.00 | Note: Auger refusal on bedrock at 2.44 meters. Began coring bedrock. Hard, gray, weathered to highly weathered LIMESTONE with indistinct to thin bedding. Quality of rock considered poor as per ROD. Note: Limestone very soft and highly weathered from 2.33 to 3.47 meters. | -- | -- | -- | -- | -- | -- | -- | -- | VISUAL |
| 256.42 | | | | | Run 1 | -- | -- | -- | -- | -- | -- | -- | -- | VISUAL |

TERMINATION DEPTH = 3.96 METERS

Particle Sizes: Agg => 2.00mm, Coarse Sand = 2.00-0.42mm, Fine Sand = 0.42-0.074mm, Silt = 0.074-0.005mm, Clay =< 0.005mm (*Indicates silt & clay combined)

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Department of Transportation
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Testing Laboratory

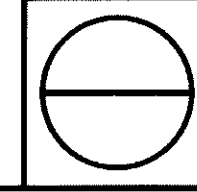
Date Started 10/12/99 Sampler: Type SS Dia. 51mm Water Elev. m
Date Completed 10/12/99 Casing: Length 1.52m Dia. 83mm

Project: ATH-33-30.981
Project No.: 99043
Location: Athens County, Athens, Ohio

| Elev. (m) | Depth (m) | Sta. Pen./ Rod | Rec. (m) | Loss (m) | Description | Physical Characteristics | | | | | | 000T Class | | |
|-----------|-----------|-------------------------|----------|----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------|--------|--------|--------|------|------------|------|--------|
| | | | | | | % Agg | % C.S. | % F.S. | % Silt | % Clay | L.L. | | P.I. | W.C. |
| 268.88 | 0 | 2-3-3 | | | TOPSOIL | 1 | 2 | 6 | -- | 91 * | 63 | 33 | 22 | A-7-5 |
| 268.73 | | 4-5-7 | | | Medium stiff to stiff, brown ELASTIC CLAY (A-7-5), trace to no rock fragments, trace to some sand, moist. | 0 | 2 | 3 | -- | 95 * | 52 | 22 | 15 | A-7-5 |
| 266.74 | 2 | Shelby Tube 16-24-29 | | | Very soft to soft, brown, decomposed to highly weathered CLAY SHALE. | 4 | 14 | 19 | -- | 64 * | 48 | 18 | 14 | A-7-5 |
| | 3 | 15-27-44 | | | | -- | -- | -- | -- | -- | -- | -- | 5 | VISUAL |
| | 4 | | | | | -- | -- | -- | -- | -- | -- | -- | 7 | VISUAL |
| 264.31 | 5 | 50/76 ROD = 80% | 3.05 | 0.00 | Note: Auger refusal on bedrock at 4.57 meters. Began coring bedrock. Soft, gray, highly weathered CLAY SHALE with indistinct to laminar bedding (fissile). | -- | -- | -- | -- | -- | -- | -- | 3 | VISUAL |
| 263.27 | | | | | Medium hard, gray, weathered, micaceous SILTSTONE with thin bedding. | | | | | | | | | |
| 262.78 | | | | | Hard, gray, weathered, fine grained SANDSTONE with thin to thick bedding. | | | | | | | | | |
| | 7 | | | | Quality of rock for Run 1 considered good as per ROD. | | | | | | | | | |

TERMINATION DEPTH = 7.62 METERS

Particle Sizes: Agg => 2.00mm, Coarse Sand = 2.00-0.42mm, Fine Sand = 0.42-0.074mm, Silt = 0.074-0.005mm, Clay =< 0.005mm (*Indicates silt & clay combined)



State of Ohio
Department of Transportation
Division of Highways
Testing Laboratory
LOG OF BORING

Date Started 10/12/99 Station Sta 35+100, 0.00 m Project: ATH-33-30.981
Date Completed 10/12/99 Casing Length 1.52m Dia. 51mm Water Elev. 284.81m Location: Athens County, Athens, Ohio
Project No.: 99043
Location: Athens County, Athens, Ohio

| Elev. (m) | Depth (m) | Std. Pen./ ROD | Rec. (m) | Loss (m) | Description | Sample No. | Physical Characteristics | | | | | | OOOT Class | | | | |
|-----------|-----------|----------------|----------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------------|------|--------|--|--|
| | | | | | | | % Agg | % C.S. | % F.S. | % Silt | % Clay | L.L. | | P.I. | W.C. | | |
| 285.42 | 0 | | | | | | | | | | | | | | | | |
| 285.27 | | 3-4-9 | | | TOPSOIL Medium dense, brown SANDY SILT (A-4a), some clay, trace rock fragments, moist. | 1 | 4 | 6 | 34 | 32 | 24 | -- | -- | 13 | A-4a | | |
| 284.51 | | 5-12-16 | | | Medium dense, brown COARSE AND FINE SAND (A-3a), some silt and clay, trace rock fragments, moist. | 2 | 2 | 7 | 57 | -- | 34* | -- | -- | 10 | A-3a | | |
| 283.74 | | 10-14-22 | | | Dense, brown SANDY SILT (A-4a), little clay, trace rock fragments, moist. | 3 | 5 | 7 | 52 | -- | 36* | -- | -- | 14 | A-4a | | |
| 282.83 | | 17-23-43 | | | Very soft to soft, brown to gray, decomposed to highly weathered CLAY SHALE. | 4 | -- | -- | -- | -- | -- | -- | -- | 12 | VISUAL | | |
| | | 11-34-59 | | | | 5 | -- | -- | -- | -- | -- | -- | -- | 15 | VISUAL | | |
| 279.32 | | 18-50/102 | 1.52 | 0.00 | Note: Auger refusal on bedrock at 6.10 meters. Began coring bedrock. Soft, gray, weathered CLAY SHALE with laminar bedding (Fissile). Hard, gray, slightly weathered, slightly micaceous, very fine grained SANDSTONE with thick bedding. | 6 | -- | -- | -- | -- | -- | -- | -- | 11 | VISUAL | | |
| 279.20 | | ROD = 92% | | | | Run 1 | | | | | | | | | | | |
| 278.01 | | | | | Soft to medium hard, gray, weathered CLAY SHALE with laminar bedding (Fissile). Note: 25 mm thick sandstone seam at 1.44 meters. TERMINATION DEPTH = 7.62 METERS | | | | | | | | | | | | |
| 277.80 | | | | | | | | | | | | | | | | | |

Particle Sizes: Agg => 2.00mm, Coarse Sand = 2.00-0.42mm, Fine Sand = 0.42-0.074mm, Silt = 0.074-0.005mm, Clay =< 0.005mm (*Indicates silt & clay combined)

State of Ohio
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Testing Laboratory
LOG OF BORING

| Elev. (m) | Depth (m) | Std. Pen./ ROD | Rec. (m) | Loss (m) | Description | Sample No. | Physical Characteristics | | | | | | OOOT Class | | | |
|-----------|-----------|----------------|----------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------------|-------|--------|--|
| | | | | | | | % Agg | % C.S. | % F.S. | % Silt | % Clay | L.L. | | P.I. | W.C. | |
| 266.22 | 0 | | | | | | | | | | | | | | | |
| 266.13 | | 4-4-4 | | | TOPSOIL Medium stiff, brown SANDY SILT (A-4a), some clay, trace rock fragments, moist. | 1 | 9 | 5 | 18 | 32 | 36 | 28 | 9 | 13 | A-4a | |
| 265.31 | | 5-5-5 | | | Stiff, brown CLAY (A-7-6), little sand, trace rock fragments, moist. | 2 | 1 | 2 | 14 | -- | 83* | 48 | 26 | A-7-6 | | |
| 264.39 | | 16-50/51 | | | Very soft to soft, brown, decomposed to highly weathered CLAY SHALE. | 3 | -- | -- | -- | -- | -- | -- | -- | 10 | VISUAL | |
| 263.17 | | 50/25 | 1.31 | 0.21 | Note: Auger refusal on bedrock at 3.05 meters. Began coring bedrock. Very soft, gray, highly weathered to decomposed CLAY SHALE with laminar bedding (Fissile). Iron staining present throughout length of core. Quality bedrock considered possible at 3.05 meters. Note: 51mm thick, very fine grained sandstone seam at 3.05 meters. | 4 | -- | -- | -- | -- | -- | -- | -- | -- | VISUAL | |
| 261.65 | | | | | TERMINATION DEPTH = 4.57 METERS | Run 1 | | | | | | | | | | |

Particle Sizes: Agg => 2.00mm, Coarse Sand = 2.00-0.42mm, Fine Sand = 0.42-0.074mm, Silt = 0.074-0.005mm, Clay =< 0.005mm (*Indicates silt & clay combined)

State of Ohio
Department of Transportation
Division of Highways
Testing Laboratory
LOG OF BORING

| Elev. (m) | Depth (m) | Std. Pen./ ROD | Rec. (m) | Loss (m) | Description | Sample No. | Physical Characteristics | | | | | | OOOT Class | | | |
|-----------|-----------|----------------|----------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------------|------|--------|--|
| | | | | | | | % Agg | % C.S. | % F.S. | % Silt | % Clay | L.L. | | P.I. | W.C. | |
| 274.84 | 0 | | | | | | | | | | | | | | | |
| 274.75 | | 5-50-11 | | | TOPSOIL Very stiff to hard, brown CLAY (A-7-6), trace rock fragments, trace sand, moist. | 1 | 6 | 4 | 2 | -- | 88* | 51 | 23 | 19 | A-7-6 | |
| | | 10-13-19 | | | | 2 | 8 | 3 | 4 | -- | 85* | 42 | 16 | 13 | A-7-6 | |
| 273.01 | | 50/51 | 1.43 | 0.09 | Medium hard to hard, tan, slightly weathered to weathered, slightly micaceous, fine grained SANDSTONE with thin to massive bedding. Note: Auger refusal on bedrock at 2.13 meters. Began coring bedrock. Note: Iron staining present from 2.13 to 2.44 meters. | 3 | -- | -- | -- | -- | -- | -- | -- | -- | VISUAL | |
| 271.52 | | ROD = 80% | | | Note: Iron staining present from 3.17 to 3.29 meters. Note: Microfolding (slickensides) present at 3.29 meters. | Run 1 | | | | | | | | | | |
| 271.18 | | | | | Hard, gray, highly weathered SILTSTONE with distinct bedding and iron staining throughout. Note: Microfolding (slickensides) present at 3.41 meters. TERMINATION DEPTH = 3.66 METERS | | | | | | | | | | | |

Particle Sizes: Agg => 2.00mm, Coarse Sand = 2.00-0.42mm, Fine Sand = 0.42-0.074mm, Silt = 0.074-0.005mm, Clay =< 0.005mm (*Indicates silt & clay combined)

State of Ohio
Department of Transportation
Division of Highways
Testing Laboratory

Date Started 10/13/99 Date Completed 10/13/99
Sampler Type SS Dia. 51mm
Casing Length 1.52m Dia. 83mm
LOG OF BORING Water Elev. 260.20m

Project: ATH-33-30.981
Project No.: 99043
Location: Athens County, Athens, Ohio

| Elev. (m) | Depth (m) | Std. Pen./ Rod | Station & Offset | Rec. (m) | Loss (m) | Description | Sample No. | Physical Characteristics | | | | | | 000T Class | | | |
|-----------|-----------|---------------------|--------------------------|----------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------------|------|--------|--|
| | | | | | | | | % Agg | % C.S. | % F.S. | % Silt | % Clay | L.L. | | P.I. | W.C. | |
| 260.30 | 0 | | Sta 36+150, 80.00 m L.T. | | | | | | | | | | | | | | |
| 260.15 | 0 | | | | | TOP SOIL | | | | | | | | | | | |
| 259.08 | 1 | 5-7-9 | | | | Very stiff, brown CLAY (A-7-6), some rock fragments, little sand, moist. | 1 | 31 | 9 | 2 | -- | 57* | 55 | 27 | 15 | A-7-6 | |
| 258.32 | 2 | 7-21-44 | | | | Very soft, brown, decomposed CLAY SHALE. | 2 | -- | -- | -- | -- | -- | -- | -- | 14 | VISUAL | |
| 257.56 | 3 | 50/76 | | | | Soft, brown, highly weathered SANDSTONE. | 3 | -- | -- | -- | -- | -- | -- | -- | 5 | VISUAL | |
| | 4 | 60/150 | | | | Soft to medium hard, brown to gray, highly weathered CLAY SHALE. | 4 | -- | -- | -- | -- | -- | -- | -- | 9 | VISUAL | |
| 255.73 | 5 | 57/150 ROD = 82% | | 1.40 | 0.12 | Note: Auger refusal on bedrock at 4.57 meters. Began coring bedrock. Soft, to medium hard, gray, weathered SILTY SHALE with laminar bedding (fissile). Quality of rock considered good as per ROD. | 5 Run 1 | -- | -- | -- | -- | -- | -- | -- | 7 | VISUAL | |
| 254.20 | 6 | | | | | TERMINATION DEPTH = 6.10 METERS | | | | | | | | | | | |

Particle Sizes: Agg > 2.00mm, Coarse Sand = 2.00-0.42mm, Fine Sand = 0.42-0.074mm, Silt = 0.074-0.005mm, Clay < 0.005mm (*Indicates silt & clay combined)

State of Ohio
Department of Transportation
Division of Highways
Testing Laboratory

Date Started 10/13/99 Date Completed 10/13/99
Sampler Type SS Dia. 51mm
Casing Length 1.52m Dia. 83mm
LOG OF BORING Water Elev. 236.85m

Project: ATH-33-30.981
Project No.: 99043
Location: Athens County, Athens, Ohio

| Elev. (m) | Depth (m) | Std. Pen./ Rod | Station & Offset | Rec. (m) | Loss (m) | Description | Sample No. | Physical Characteristics | | | | | | 000T Class | | | |
|-----------|-----------|----------------------|--------------------|----------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------------|------|-------|--|
| | | | | | | | | % Agg | % C.S. | % F.S. | % Silt | % Clay | L.L. | | P.I. | W.C. | |
| 237.46 | 0 | | Sta 36+911, 0.00 m | | | | | | | | | | | | | | |
| 237.31 | 0 | | | | | TOP SOIL | | | | | | | | | | | |
| 236.39 | 1 | 1-1-3 Shelby Tube | | | | Soft, brown SANDY SILT (A-4a), some rock fragments, little clay, moist. | 1 | 26 | 12 | 21 | -- | 41* | 27 | 10 | 18 | A-4a | |
| 235.94 | 2 | 50/102 ROD = 49% | | 1.37 | 0.15 | Very dense, brown SILTstone fragments with SAND (A-1-b), little to some organic material on bedrock at 1.52 meters. Began coring bedrock. Note: Auger refusal on bedrock at 1.52 meters. Hard, gray, slightly weathered, micaceous, fine grained to very fine grained SANDSTONE with thin bedding. | 3 Run 1 | 56 | 18 | 14 | -- | 12* | -- | -- | 13 | A-1-b | |
| 235.08 | 3 | | | | | Quality of rock for Run 1 considered fair as per ROD. Soft, gray, highly weathered CLAY SHALE with laminar bedding (fissile). | 4 | 45 | 9 | 23 | -- | 22* | -- | -- | 11 | A-1-b | |
| 234.41 | 3 | | | | | TERMINATION DEPTH = 3.05 METERS | | | | | | | | | | | |

Particle Sizes: Agg > 2.00mm, Coarse Sand = 2.00-0.42mm, Fine Sand = 0.42-0.074mm, Silt = 0.074-0.005mm, Clay < 0.005mm (*Indicates silt & clay combined)

State of Ohio
Department of Transportation
Division of Highways
Testing Laboratory

Date Started 10/16/99 Date Completed 10/16/99
Sampler Type SS Dia. 51mm
Casing Length 1.52m Dia. 83mm
LOG OF BORING Water Elev. 267.41m

Project: ATH-33-30.981
Project No.: 99043
Location: Athens County, Athens, Ohio

| Elev. (m) | Depth (m) | Std. Pen./ Rod | Station & Offset | Rec. (m) | Loss (m) | Description | Sample No. | Physical Characteristics | | | | | | 000T Class | | | |
|-----------|-----------|---------------------------|--------------------|----------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------------|------|-------|--|
| | | | | | | | | % Agg | % C.S. | % F.S. | % Silt | % Clay | L.L. | | P.I. | W.C. | |
| 267.72 | 0 | | Sta 37+540, 0.00 m | | | | | | | | | | | | | | |
| 267.60 | 0 | | | | | TOP SOIL | | | | | | | | | | | |
| 266.65 | 1 | 3-3-4 Shelby Tube | | | | Medium stiff, brown SILT and CLAY (A-6a), some sand, trace rock fragments, moist. | 1 | 6 | 9 | 22 | -- | 63* | 36 | 11 | 20 | A-6a | |
| 266.04 | 2 | 5-8-13 | | | | Stiff, brown SILTY CLAY (A-6b), trace rock fragments, moist. | ST | 1 | 0 | 0 | -- | 99* | 39 | 18 | 18 | A-6b | |
| 265.43 | 3 | 10-15-50/76 ROD = 100% | | 1.52 | 0.00 | Very stiff, brown CLAY (A-7-6), moist. | 4 | 0 | 0 | 0 | -- | 100* | 42 | 22 | 19 | A-7-6 | |
| 264.67 | 4 | | | | | Very stiff, brown SANDY SILT (A-4a) and clay, some rock fragments, moist. | 4 | 24 | 0 | 0 | 34 | 42 | 27 | 6 | 12 | A-4a | |
| 263.51 | 4 | | | | | Note: Auger refusal on bedrock at 3.05 meters. Began coring bedrock. Hard, gray, weathered to slightly weathered, slightly micaceous, fine grained to very fine grained SANDSTONE with thick to massive bedding. Note: Calcite cementation of the sandstone (effervesces freely) present from 3.63 to 4.02 meters. | Run 1 | | | | | | | | | | |
| 263.15 | 4 | | | | | Quality of rock for Run 1 considered excellent as per ROD. Soft, very soft, gray, highly weathered CLAY SHALE with laminar bedding (fissile). | | | | | | | | | | | |
| 263.15 | 4 | | | | | TERMINATION DEPTH = 4.57 METERS | | | | | | | | | | | |

Particle Sizes: Agg > 2.00mm, Coarse Sand = 2.00-0.42mm, Fine Sand = 0.42-0.074mm, Silt = 0.074-0.005mm, Clay < 0.005mm (*Indicates silt & clay combined)

State of Ohio
Department of Transportation
Division of Highways
Testing Laboratory
LOG OF BORING

Date Started 10/16/99 Sampler Type SS Dia. 51mm Water Elev. 271.56m
Date Completed 10/16/99 Casing Length 1.52m Dia. 83mm

Project: ATH-33-30.981
Project No.: 99043
Location: Athens County, Athens, Ohio

| Boring No. | Elev. (m) | Depth (m) | Std. Rod | Pen./Rod | Station & Offset | | Loss (m) | Rec. (m) | Description | Sample No. | Physical Characteristics | | | | | | 000T Class | |
|------------|-----------|-----------|----------|---------------------|------------------|----------|----------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|-------|--------|--------|------|------------|------|
| | | | | | Sta | Pen./Rod | | | | | Sta | Offset | % Agg | % C.S. | % F.S. | Silt | | Clay |
| | 273.30 | 0 | | | | | | | TOPSOIL | | | | | | | | | |
| | 273.20 | | | 5-9-27 | | | | | Very soft, light brown, decomposed SANDSTONE. | | | | | | | | | |
| | 272.08 | 2 | | 6-18-26 | | | | | Very soft to medium hard, brown to gray, decomposed to weathered CLAY SHALE. | 2 | | | | | | | | 14 |
| | | 3 | | 12-19-33 | | | | | | 3 | | | | | | | | 14 |
| | | 4 | | 50/150 | | | | | | 4 | | | | | | | | 6 |
| | 266.72 | 5 | | 50/25 ROD = 100% | | | 1.55 | 0.00 | Note: Auger refusal bedrock at 4.57 meters. Began coring bedrock. Hard gray, slightly weathered, very fine grained SANDSTONE with massive bedding. Quality of rock considered excellent as per ROD. | 5 | | | | | | | | 2 |
| | 261.17 | 6 | | | | | | | TERMINATION DEPTH = 6.13 METERS | | | | | | | | | |

Particle Sizes: Agg => 2.00mm, Coarse Sand = 2.00-0.42mm, Fine Sand = 0.42-0.074mm, Silt = 0.074-0.005mm, Clay =< 0.005mm (*Indicates silt & clay combined)

State of Ohio
Department of Transportation
Division of Highways
Testing Laboratory
LOG OF BORING

Date Started 10/16/99 Sampler Type SS Dia. 51mm Water Elev. m
Date Completed 10/16/99 Casing Length 1.52m Dia. 83mm

Project: ATH-33-30.981
Project No.: 99043
Location: Athens County, Athens, Ohio

| Boring No. | Elev. (m) | Depth (m) | Std. Rod | Pen./Rod | Station & Offset | | Loss (m) | Rec. (m) | Description | Sample No. | Physical Characteristics | | | | | | 000T Class | |
|------------|-----------|-----------|----------|--------------------|------------------|----------|----------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|-------|--------|--------|------|------------|-------|
| | | | | | Sta | Pen./Rod | | | | | Sta | Offset | % Agg | % C.S. | % F.S. | Silt | | Clay |
| | 267.14 | 0 | | | | | | | TOPSOIL | | | | | | | | | |
| | 267.02 | | | 2-4-5 | | | | | Stiff to very stiff, reddish-brown CLAY (A-7-6), little to trace rock fragments, moist. | 1 | 7 | 3 | 10 | 80 * | 46 | 23 | 21 | A-7-6 |
| | | 1 | | 4-11-16 | | | | | | 2 | 3 | 4 | 2 | 90 * | 48 | 19 | 16 | A-7-6 |
| | 265.31 | 2 | | 7-19-30 | | | | | Very soft to medium hard, reddish-brown, decomposed to highly weathered CLAY SHALE. | 3 | | | | | | | | 15 |
| | | 3 | | 30-39-50/127 | | | | | | 4 | | | | | | | | 12 |
| | | 4 | | 21-43-40 | | | | | | 5 | | | | | | | | 10 |
| | | 5 | | | | | | | | | | | | | | | | |
| | 261.04 | 6 | | 50/76 ROD = 66% | | | 1.45 | 0.08 | Note: Auger refusal on bedrock at 6.10 meters. Began coring bedrock. soft clay, highly weathered SILTY SHALE with indistinct to laminar bedding. Quality of rock for run considered fair as per ROD. | 6 | | | | | | | | |
| | 260.25 | 7 | | | | | | | Hard gray, slightly weathered, fine grained SANDSTONE with moderated to thick bedding. | Run 1 | | | | | | | | |
| | 259.52 | | | | | | | | TERMINATION DEPTH = 7.82 METERS | | | | | | | | | |

Particle Sizes: Agg => 2.00mm, Coarse Sand = 2.00-0.42mm, Fine Sand = 0.42-0.074mm, Silt = 0.074-0.005mm, Clay =< 0.005mm (*Indicates silt & clay combined)

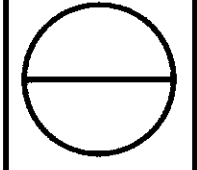
State of Ohio
Department of Transportation
Division of Highways
Testing Laboratory
LOG OF BORING

Date Started 10/16/99 Sampler Type SS Dia. 51mm Water Elev. m
Date Completed 10/16/99 Casing Length 1.52m Dia. 83mm

Project: ATH-33-30.981
Project No.: 99043
Location: Athens County, Athens, Ohio

| Boring No. | Elev. (m) | Depth (m) | Std. Rod | Pen./Rod | Station & Offset | | Loss (m) | Rec. (m) | Description | Sample No. | Physical Characteristics | | | | | | 000T Class | |
|------------|-----------|-----------|----------|-------------|------------------|----------|----------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|-------|--------|--------|------|------------|-------|
| | | | | | Sta | Pen./Rod | | | | | Sta | Offset | % Agg | % C.S. | % F.S. | Silt | | Clay |
| | 265.40 | 0 | | | | | | | TOPSOIL | | | | | | | | | |
| | 265.28 | | | 4-9-10 | | | | | Very stiff, light brown CLAY (A-7-6), little to trace sand, trace to no rock fragments, moist. | 1 | 1 | 2 | 9 | 88 * | 45 | 22 | 17 | A-7-6 |
| | 264.48 | 1 | | Shelby Tube | | | | | Very stiff, brown ELASTIC CLAY (A-7-5), trace rock fragments, moist. | ST | 7 | 0 | 0 | 93 * | 53 | 21 | 18 | A-7-5 |
| | 263.87 | 2 | | 5-10-12 | | | | | Very stiff, light brown CLAY (A-7-6), trace sand, moist. | 3 | 0 | 0 | 6 | 94 * | 43 | 21 | 18 | A-7-6 |
| | 263.11 | | | 50/102 | | | | | Very soft to soft, brown, highly weathered, micaceous CLAY SHALE. | 4 | | | | | | | | 7 |
| | 262.35 | 3 | | ROD = 36% | | | 1.22 | 0.30 | Note: Auger refusal on bedrock at 3.05 meters. Began coring bedrock. Very soft to soft, brown, highly weathered CLAYSTONE with indistinct bedding. | Run 1 | | | | | | | | |
| | 260.83 | 4 | | | | | | | Note: Iron staining present throughout length of core. | | | | | | | | | |
| | | | | | | | | | TERMINATION DEPTH = 4.57 METERS | | | | | | | | | |

Particle Sizes: Agg => 2.00mm, Coarse Sand = 2.00-0.42mm, Fine Sand = 0.42-0.074mm, Silt = 0.074-0.005mm, Clay =< 0.005mm (*Indicates silt & clay combined)



State of Ohio
Department of Transportation
Division of Highways
Testing Laboratory

Date Started 10/17/99 Date Completed 10/17/99 Station & Offset Sta 38+815, 0.00 m
 Sampler Type SS Casing Length 1.52m Dia. 51mm Water Elev. m
 LOG OF BORING Project: ATH-33-30.981 Location: Athens County, Athens, Ohio

| Boring No. | Elev. (m) | Depth (m) | Std. Pen./ROD | Rec. (m) | Loss (m) | Description | Physical Characteristics | | | | | | | 000T Class | | | |
|------------|-----------|-----------|-----------------------|----------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------|--------|--------|--------|------|------|------------|------|--|--------|
| | | | | | | | % Agg | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | | W.C. | | |
| | 261.78 | 0 | | | | TOPSOIL | | | | | | | | | | | |
| | 261.69 | | 4-4-3 | | | Medium stiff, brown SILTY SAND AND CLAY (A-6a), some sand, little rock fragments, moist. | 13 | 10 | 14 | -- | 64 * | 39 | 15 | 22 | | | A-6a |
| | 260.71 | | | | | Soft to medium hard, brown, decomposed to weathered SANDSTONE. | -- | -- | -- | -- | -- | -- | -- | 9 | | | VISUAL |
| | 260.26 | | 12-50/76 ROD = 68% | 1.52 | 0.00 | Note: Auger refusal on bedrock at 1.52 meters. Began coring bedrock. Hard, gray, slightly weathered, slightly micaceous, fine grained SANDSTONE with very thin to thin bedding. Note: Iron staining present from 1.52 to 1.65 meters. Quality of rock for Run considered fair as per ROD. | Run 1 | | | | | | | | | | |
| | 259.13 | | | | | Soft, gray, weathered, slightly micaceous SILTSTONE with indistinct to very thin bedding. | | | | | | | | | | | |
| | 258.73 | | | | | TERMINATION DEPTH = 3.05 METERS | | | | | | | | | | | |

Particle Sizes: Agg => 2.00mm, Coarse Sand = 2.00-0.42mm, Fine Sand = 0.42-0.074mm, Silt = 0.074-0.005mm, Clay =< 0.005mm (*Indicates silt & clay combined)

State of Ohio
Department of Transportation
Division of Highways
Testing Laboratory

Date Started 10/17/99 Date Completed 10/17/99 Station & Offset Sta 38+972, 0.00 m
 Sampler Type SS Casing Length 1.52m Dia. 51mm Water Elev. m
 LOG OF BORING Project: ATH-33-30.981 Location: Athens County, Athens, Ohio

| Boring No. | Elev. (m) | Depth (m) | Std. Pen./ROD | Rec. (m) | Loss (m) | Description | Physical Characteristics | | | | | | | 000T Class | | | |
|------------|-----------|-----------|--------------------|----------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------|--------|--------|--------|------|------|------------|------|--|-------|
| | | | | | | | % Agg | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | | W.C. | | |
| | 261.52 | 0 | | | | TOPSOIL | | | | | | | | | | | |
| | 261.43 | | 4-6-8 | | | Stiff, brown CLAY (A-7-6), trace sand, moist. | 0 | 1 | 3 | -- | 96 * | 49 | 22 | 18 | | | A-7-6 |
| | 260.61 | | 8-13-17 | | | Very stiff to hard, brown SILTY CLAY (A-6b), little sand, trace rock fragments, moist. | 8 | 6 | 7 | -- | 79 * | 39 | 17 | 12 | | | A-6b |
| | 259.54 | | 50/25 ROD = 79% | 1.55 | 0.00 | Note: No recovery for Sample 3. Auger refusal on bedrock at 1.98 meters. Began coring bedrock. Hard, brown to light brown, slightly weathered, micaceous, fine grained SANDSTONE with thin to moderate bedding. Calcite cementation present from 1.98 to 2.07 meters (effervesces freely). Quality of rock considered fair as per ROD. Note: Calcite cementation present from 2.03 to 3.54 meters (effervesces freely with dilute HCl). | Run 1 | | | | | | | | | | |
| | 257.98 | | | | | TERMINATION DEPTH = 3.54 METERS | | | | | | | | | | | |

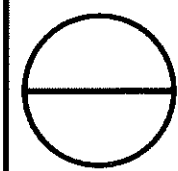
Particle Sizes: Agg => 2.00mm, Coarse Sand = 2.00-0.42mm, Fine Sand = 0.42-0.074mm, Silt = 0.074-0.005mm, Clay =< 0.005mm (*Indicates silt & clay combined)

State of Ohio
Department of Transportation
Division of Highways
Testing Laboratory

Date Started 10/17/99 Date Completed 10/17/99 Station & Offset Sta 39+311, 0.00 m
 Sampler Type SS Casing Length 1.52m Dia. 51mm Water Elev. 263.51m
 LOG OF BORING Project: ATH-33-30.981 Location: Athens County, Athens, Ohio

| Boring No. | Elev. (m) | Depth (m) | Std. Pen./ROD | Rec. (m) | Loss (m) | Description | Physical Characteristics | | | | | | | 000T Class | | | |
|------------|-----------|-----------|-----------------------|----------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|--------------------------|--------|--------|--------|--------|------|------|------------|------|--|--------|
| | | | | | | | % Agg | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | | W.C. | | |
| | 263.81 | 0 | | | | TOPSOIL | | | | | | | | | | | |
| | 263.72 | | 2-5-7 | | | Stiff to very stiff, brown CLAY (A-7-6), trace rock fragments, trace sand, moist. | 0 | 0 | 2 | -- | 98 * | 60 | 31 | 21 | | | A-7-6 |
| | 261.98 | | 6-9-14 | | | Very soft to soft, brown, decomposed CLAY SHALE. | 2 | 2 | 1 | -- | 95 * | 46 | 21 | 15 | | | A-7-5 |
| | 260.76 | | 33-51 | | | | -- | -- | -- | -- | -- | -- | -- | 6 | | | VISUAL |
| | 259.24 | | 28-50/27 ROD = 29% | 1.43 | 0.09 | Note: Auger refusal on bedrock at 3.05 meters. Began coring bedrock soft to very soft, brown, highly weathered CLAYSTONE with indistinct bedding. Iron staining present throughout length of core. Quality of rock considered poor as per ROD. Note: 87 mm thick, very fine grained sandstone seam at 3.26 meters. Note: 89 mm thick, very fine grained sandstone seam at 3.51 meters. | Run 1 | | | | | | | | | | |
| | 259.24 | | | | | TERMINATION DEPTH = 4.57 METERS | | | | | | | | | | | |

Particle Sizes: Agg => 2.00mm, Coarse Sand = 2.00-0.42mm, Fine Sand = 0.42-0.074mm, Silt = 0.074-0.005mm, Clay =< 0.005mm (*Indicates silt & clay combined)



State of Ohio
 Department of Transportation
 Division of Highways
 Testing Laboratory
 LOG OF BORING

Date Started 10/12/99 Station & Offset CR 16+Sta 50+405, 0.00 m Surface Elev. 271.856m
 Date Completed 10/12/99 Sampler Type SS Dia. 51mm Water Elev. 271.55m
 Casing Length 83mm

| Boring No. | Elev. (m) | Depth (m) | Std. Pen./ROD | Station & Offset | | Loss (m) | Rec. (m) | Description | Sample No. | Physical Characteristics | | | | | OOOT Class | | | |
|------------|-----------|-----------|--------------------|------------------|--------|----------|----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------------|------|------|--------|
| | | | | CR | 16+Sta | | | | | % Agg | % C.S. | % F.S. | % Silt | % Clay | | L.L. | P.I. | W.C. |
| 1 | 271.86 | 0 | | | | | | TOPSOIL Medium stiff, brown SANDY SILT (A-4a), some clay, trace rock fragments, trace roots, moist. | 1 | 3 | 10 | 24 | 37 | 26 | 27 | 5 | 17 | A-4a |
| 2 | 270.94 | | 2-3-4 | | | | | Stiff, brown CLAY (A-7-6), trace sand, moist. | 2 | 0 | 3 | 5 | -- | 92 * | 41 | 16 | 20 | A-7-6 |
| 3 | 270.33 | | 3-6-8 | | | | | Stiff, brown, SILT AND CLAY (A-6a), trace rock fragments, moist. | ST | 10 | 0 | 0 | -- | 90 * | 32 | 11 | 10 | A-6a |
| 4 | 269.87 | 2 | 56/160 | | | | | Very soft to soft, brown to gray, decomposed to highly weathered CLAY SHALE. | 4 | -- | -- | -- | -- | -- | -- | -- | 7 | VISUAL |
| 5 | 269.11 | 3 | 56/160 | | | | | | 5 | -- | -- | -- | -- | -- | -- | -- | 7 | VISUAL |
| 6 | 267.28 | 5 | 50/51 ROD = 82% | | | 0.09 | 1.58 | Note: Auger refusal on bedrock at 4.67 meters. Began coring bedrock. Very soft to soft, gray, highly weathered CLAY SHALE with indistinct bedding. Quality of rock considered good as per ROD. Note: 150 mm thick sandy shale seam at 4.66 meters. Note: Color change to red at 5.18 meters. | 6 | -- | -- | -- | -- | -- | -- | -- | 3 | VISUAL |
| 7 | 265.61 | 6 | | | | | | TERMINATION DEPTH = 6.25 METERS | Run 1 | | | | | | | | | |

Particle Sizes: Agg => 2.00mm, Coarse Sand = 2.00-0.42mm, Fine Sand = 0.42-0.074mm, Silt = 0.074-0.005mm, Clay =< 0.005mm (*indicates silt & clay combined)

State of Ohio
 Department of Transportation
 Division of Highways
 Testing Laboratory
 LOG OF BORING

| Boring No. | Elev. (m) | Depth (m) | Std. Pen./ROD | Station & Offset | | Loss (m) | Rec. (m) | Description | Sample No. | Physical Characteristics | | | | | OOOT Class | | | |
|------------|-----------|-----------|--------------------|------------------|--------|----------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------------|------|------|--------|
| | | | | CR | 16+Sta | | | | | % Agg | % C.S. | % F.S. | % Silt | % Clay | | L.L. | P.I. | W.C. |
| 1 | 270.01 | 0 | | | | | | BERM MATERIAL | 1 | -- | -- | -- | -- | -- | -- | -- | -- | VISUAL |
| 2 | 268.49 | | 3-2-2 | | | | | Soft to medium stiff, brown to gray SILTY AND CLAY (A-6a), little sand, moist. | 2 | 0 | 3 | 14 | -- | 83 * | 35 | 14 | 22 | A-6a |
| 3 | 267.57 | 2 | 3-7-8 | | | | | Stiff, brown CLAY (A-7-6), trace rock fragments, little sand, moist. | 3 | 1 | 2 | 10 | -- | 87 * | 42 | 21 | 22 | A-7-6 |
| 4 | 266.81 | 3 | 3-6-8 | | | | | Stiff, brown to gray SILTY CLAY (A-6b), trace rock fragments, some sand, moist. | 4 | 3 | 5 | 18 | -- | 74 * | 37 | 16 | 20 | A-6b |
| 5 | 266.37 | 4 | 5-8-20 | | | | | Very stiff, reddish-brown CLAY (A-7-6), trace rock fragments, little sand, moist. | 5 | 0 | 1 | 4 | -- | 95 * | 44 | 17 | 24 | A-7-6 |
| 6 | 263.92 | 6 | 8-1-18 | | | | | | 6 | 0 | 0 | 0 | -- | 100 * | 44 | 16 | 24 | A-7-6 |
| 7 | 262.61 | 7 | 50/51 ROD = 82% | | | 0.21 | 1.31 | Very soft, brown to gray, decomposed SANDSTONE, wet at 5.67 meters. Note: Auger refusal on bedrock at 6.10 meters. Began coring bedrock. Very soft, gray, highly weathered CLAY SHALE with massive bedding. SANDSTONE with thin to massive bedding. | 7 | -- | -- | -- | -- | -- | -- | -- | -- | VISUAL |
| 8 | 262.39 | 8 | | | | | | Very soft, gray, highly weathered CLAY SHALE with indistinct to laminar bedding (fissile). Very soft, gray, highly weathered, gray, weathered limestone seam present at 7.56 meters. TERMINATION DEPTH = 7.82 METERS | Run 1 | | | | | | | | | |

Particle Sizes: Agg => 2.00mm, Coarse Sand = 2.00-0.42mm, Fine Sand = 0.42-0.074mm, Silt = 0.074-0.005mm, Clay =< 0.005mm (*indicates silt & clay combined)

State of Ohio
 Department of Transportation
 Division of Highways
 Testing Laboratory
 LOG OF BORING

| Boring No. | Elev. (m) | Depth (m) | Std. Pen./ROD | Station & Offset | | Loss (m) | Rec. (m) | Description | Sample No. | Physical Characteristics | | | | | OOOT Class | | | |
|------------|-----------|-----------|-----------------------|------------------|--------|----------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------------|------|------|--------|
| | | | | CR | 16+Sta | | | | | % Agg | % C.S. | % F.S. | % Silt | % Clay | | L.L. | P.I. | W.C. |
| 1 | 270.36 | 0 | | | | | | BERM MATERIAL | 1 | 0 | 1 | 13 | -- | 86 * | 32 | 14 | 25 | A-6a |
| 2 | 269.50 | | 1-2-2 | | | | | Soft, brown SILT AND CLAY (A-6a), little sand, moist. | ST | 6 | 0 | 0 | -- | 94 * | 54 | 25 | 25 | A-7-6 |
| 3 | 269.28 | 2 | Shelby Tube | | | | | Soft, brown CLAY (A-7-6), moist. (Shelby Tube Sample) | 3 | 0 | 0 | 24 | -- | 76 * | 40 | 19 | 21 | A-6b |
| 4 | 268.37 | 3 | 4-6-9 | | | | | Stiff, brown SILTY CLAY (A-6b), some sand, moist. | 4 | -- | -- | -- | -- | -- | -- | -- | 17 | VISUAL |
| 5 | 266.39 | 4 | 14-23-28 | | | | | Very soft, brown to reddish-brown, decomposed CLAY SHALE. | 5 | -- | -- | -- | -- | -- | -- | -- | 13 | VISUAL |
| 6 | 264.86 | 5 | 25-49 | | | | | | 6 | -- | -- | -- | -- | -- | -- | -- | 13 | VISUAL |
| 7 | 264.86 | 6 | 31-50/76 ROD = 17% | | | 0.18 | 1.34 | Note: Auger refusal on bedrock at 4.57 meters. Began coring bedrock. Very soft, red, decomposed CLAY SHALE with indistinct bedding. Rock quality very poor as per ROD. | Run 1 | | | | | | | | | |
| 8 | 264.86 | 7 | | | | | | TERMINATION DEPTH = 6.10 METERS | | | | | | | | | | |

Particle Sizes: Agg => 2.00mm, Coarse Sand = 2.00-0.42mm, Fine Sand = 0.42-0.074mm, Silt = 0.074-0.005mm, Clay =< 0.005mm (*indicates silt & clay combined)

State of Ohio
Department of Transportation
Division of Highways
Testing Laboratory

Date Started 10/14/99
Date Completed 10/14/99
Sampler: Type SS Dia. 51mm
Casing: Length 1.52m Dia. 83mm
LOG OF BORING
Water Elev. m

Project: ATH-33-30.981
Project No.: 99043
Location: Athens County, Athens, Ohio

| Boring No. | Elev. (m) | Depth (m) | Sta. Pen./ ROD | Rec. (m) | Loss (m) | Description | Sample No. | Physical Characteristics | | | | | | 000T Class | | | |
|------------|------------------|-----------|-------------------|----------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------------|------|------|--------|
| | | | | | | | | % Agg | % C.S. | % F.S. | % Silt | % Clay | L.L. | | P.I. | W.C. | |
| | 294.58 | 0 | | | | ASPHALT | | | | | | | | | | | |
| | 294.06 | | 4-4-4 | | | Medium stiff, brown SILT AND CLAY (A-6a), some rock fragments, some sand, moist. | 1 | 23 | 11 | 14 | -- | 52 * | 31 | 13 | 13 | | A-6a |
| | 293.36 | | 1-2-2 | | | Soft, brown SILT (A-4b), some clay, trace sand, moist. | 2 | 0 | 0 | 2 | 65 | 33 | 29 | 8 | 28 | | A-4b |
| | 292.29 | | Shelby Tube | | | Very stiff, brown CLAY (A-7-6), little sand, trace rock fragments, moist. | ST | 13 | 10 | 6 | -- | 71 * | 42 | 16 | 18 | | A-7-6 |
| | 290.92 | | 3-8-10 | | | Soft to medium hard, brown, decomposed to highly weathered SANDSTONE. | 4 | 5 | 3 | 7 | -- | 85 * | 43 | 22 | 23 | | A-7-6 |
| | 290.16 | | 40-50/76 | | | Very soft, brown to gray, highly weathered to decomposed CLAY SHALE. | 5 | -- | -- | -- | -- | -- | -- | -- | 6 | | VISUAL |
| | | | | | | | 6 | -- | -- | -- | -- | -- | -- | -- | 7 | | VISUAL |
| | | | | | | | 7 | -- | -- | -- | -- | -- | -- | -- | 12 | | VISUAL |
| | 286.96 286.87 | | 50/51 ROD = 8% | 0.55 | 0.38 | Note: Auger refusal on bedrock at 7.62 meters. Began coring bedrock. Soft, gray, highly weathered SILTY SHALE with indistinct to laminar bedding (fissile). Note: Very soft, highly weathered CLAY SHALE with indistinct to laminar bedding (fissile). Auger refusal on bedrock at 7.62 meters. Began coring bedrock. Note: 127 mm Thick silt shale seam at 8.17 meters. Note: Most of the bedrock in Run 1 washed away during coring resulting in low recovery of ROD. TERMINATION DEPTH = 9.14 METERS | 8 Run 1 | -- | -- | -- | -- | -- | -- | -- | -- | -- | VISUAL |

Particle Sizes: Agg => 2.00mm, Coarse Sand = 2.00-0.42mm, Fine Sand = 0.42-0.074mm, Silt = 0.074-0.005mm, Clay =< 0.005mm (*Indicates silt & clay combined)

State of Ohio
Department of Transportation
Division of Highways
Testing Laboratory

Date Started 10/14/99
Date Completed 10/14/99
Sampler: Type SS Dia. 51mm
Casing: Length 1.52m Dia. 83mm
LOG OF BORING
Water Elev. m

Project: ATH-33-30.981
Project No.: 99043
Location: Athens County, Athens, Ohio

| Boring No. | Elev. (m) | Depth (m) | Sta. Pen./ ROD | Rec. (m) | Loss (m) | Description | Sample No. | Physical Characteristics | | | | | | 000T Class | | | |
|------------|------------------|-----------|-----------------------|----------|----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|---------------|--------------------------|--------|--------|--------|--------|------|------------|------|------|---------------------------|
| | | | | | | | | % Agg | % C.S. | % F.S. | % Silt | % Clay | L.L. | | P.I. | W.C. | |
| | 292.43 292.28 | | 1-2-2 | | | TOPSOIL Soft, brown SILT AND CLAY (A-6a), trace rock fragments, little sand, moist. | 1 | 4 | 4 | 9 | -- | 83 * | 34 | 13 | 22 | | A-6a |
| | 291.36 291.06 | | 5-7-10 | | | Very stiff, brown CLAY (A-7-6), little rock fragments, trace sand, moist. Very soft to soft, brown, decomposed CLAY SHALE. | 2A 2B 3 | 18 | 6 | 4 | -- | 72 * | 41 | 13 | 14 | | A-7-6 VISUAL VISUAL |
| | | | 8-30-54 | | | | 4 | -- | -- | -- | -- | -- | -- | -- | 14 | | VISUAL |
| | | | 41-50/25 ROD = 52% | 1.52 | 0.00 | Note: Auger refusal on bedrock at 4.57 meters. Began coring bedrock. Soft, gray, highly weathered CLAY SHALE with laminar bedding (fissile). Quality of rock considered fair as per ROD. Note: No staining present from 4.66 meters to 5.24 meters. Note: 0.40 meter thick hard, gray, weathered silty shale seam at 4.85 meters. TERMINATION DEPTH = 6.10 METERS | 5 Run 1 | -- | -- | -- | -- | -- | -- | -- | 6 | | VISUAL |

Particle Sizes: Agg => 2.00mm, Coarse Sand = 2.00-0.42mm, Fine Sand = 0.42-0.074mm, Silt = 0.074-0.005mm, Clay =< 0.005mm (*Indicates silt & clay combined)

State of Ohio
Department of Transportation
Division of Highways
Testing Laboratory

Date Started 10/15/99
Date Completed 10/15/99
Sampler: Type SS Dia. 51mm
Casing: Length 1.52m Dia. 83mm
LOG OF BORING
Water Elev. 279.92m

Project: ATH-33-30.981
Project No.: 99043
Location: Athens County, Athens, Ohio

| Boring No. | Elev. (m) | Depth (m) | Sta. Pen./ ROD | Rec. (m) | Loss (m) | Description | Sample No. | Physical Characteristics | | | | | | 000T Class | | | |
|------------|------------------|-----------|---------------------|----------|----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|----------|---------|----------|--------------|----------|------------|--------|------|---------------|
| | | | | | | | | % Agg | % C.S. | % F.S. | % Silt | % Clay | L.L. | | P.I. | W.C. | |
| | 281.60 | | | | | ASPHALT | | | | | | | | | | | |
| | 281.14 280.84 | | 31-19-14 | | | ROAD BASE | 1A 1B | 41 41 | 24 10 | 12 7 | -- -- | 23 * 43 * | -- 33 | -- 14 | 5 9 | | A-1-b A-6a |
| | 280.38 | | 2-4-4 | | | Very stiff, brown SILT AND CLAY (A-6a) and rock fragments, little sand, moist. Medium stiff, brown CLAY (A-7-6), trace sand, moist. | 2 | 0 | 1 | 2 | -- | 98 * | 43 | 23 | 23 | | A-7-6 |
| | 279.62 | | 2-4-4 | | | Medium stiff, brown ELASTIC CLAY (A-7-5), trace to little rock fragments Trace sand, moist. | 3 | 2 | 3 | 2 | -- | 93 * | 58 | 28 | 25 | | A-7-5 |
| | 277.79 | | Shelby Tube | | | | ST | 5 | 8 | 12 | -- | 76 * | 51 | 20 | 16 | | A-7-5 |
| | 277.33 277.16 | | 15-48-27 | | | Very soft, brown, decomposed CLAY SHALE. | 5 | 11 | 2 | 2 | -- | 84 * | 57 | 23 | 12 | | A-7-5 |
| | | | 50/76 ROD = 100% | 1.68 | 0.00 | Medium hard, brown, highly weathered SANDSTONE. Note: Auger refusal on bedrock at 4.42 meters. Began coring bedrock. Quality of rock considered fair as per ROD. SANDSTONE with moderate to thick bedding. Iron staining present throughout length of core. Quality of rock considered excellent as per ROD. Note: Some very thin, carbonaceous laminations present from 5.06 to 6.10 meters. Bedding planes are weak along these laminations. TERMINATION DEPTH = 6.10 METERS | 6 Run 1 | -- | -- | -- | -- | -- | -- | -- | 10 | | VISUAL |

Particle Sizes: Agg => 2.00mm, Coarse Sand = 2.00-0.42mm, Fine Sand = 0.42-0.074mm, Silt = 0.074-0.005mm, Clay =< 0.005mm (*Indicates silt & clay combined)

State of Ohio
Department of Transportation
Division of Highways
Testing Laboratory
LOG OF BORING

Date Started 10/13/99 Sampler: Type SS Dia. 51mm Water Elev. m
Date Completed 10/13/99 Casing: Length 1.52m Dia. 83mm
Project: ATH-33-30.981
Project No.: 99043
Location: Athens County, Athens, Ohio

| Elev. (m) | Depth (m) | Std. Pen./ ROD | Station & Offset | Loss (m) | Rec. (m) | Description | Sample No. | Physical Characteristics | | | | | 000T Class | | | | |
|-----------|-----------|----------------|--------------------------|----------|----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|------|--------|--------|------------|------|------|-------|--|
| | | | | | | | | % Agg | % C.S. | F.S. | % Silt | % Clay | | L.L. | P.I. | W.C. | |
| 283.38 | 0 | | IR64: Sta 49+145, 0.00 m | | | TOPSOIL | | | | | | | | | | | |
| 283.26 | 1 | 2-2-4 | Shelby Tube | | | Medium stiff, brown SILTY CLAY (A-6b), some sand, moist. | 1 | 0 | 0 | 21 | -- | 79 * | 39 | 20 | 19 | A-6b | |
| 281.86 | 2 | 4-6-8 | | | | Stiff, brown SANDY SILT (A-4a) and clay, moist. | 3 | 0 | 0 | 31 | -- | 68 * | 36 | 19 | 18 | A-6b | |
| 281.10 | 3 | 3-6-50/127 | | | | Stiff, brown CLAY (A-7-6), trace rock fragments, trace sand, moist. | 4 | 0 | 0 | 32 | -- | 46 | 27 | 9 | 22 | A-4a | |
| 280.70 | 3 | ROD = 14% | | 0.00 | 1.52 | Medium hard to hard, tan, weathered, very fine grained SANDSTONE with very thin to moderate bedding. Note: Auger refusal on bedrock at 3.05 meters. Began coring bedrock. | Run 1 | 1 | 0 | 1 | -- | 97 * | 51 | 26 | 22 | A-7-5 | |
| 279.51 | 4 | | | | | Medium hard, gray, weathered CLAY SHALE with laminar bedding (fissile). Quality of Run 1 considered very poor as per ROD. | | | | | | | | | | | |
| 276.81 | | | | | | TERMINATION DEPTH = 4.57 METERS | | | | | | | | | | | |

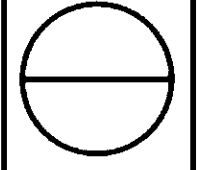
Particle Sizes: Agg => 2.00mm, Coarse Sand = 2.00-0.42mm, Fine Sand = 0.42-0.074mm, Silt = 0.074-0.005mm, Clay =< 0.005mm (*Indicates silt & clay combined)

State of Ohio
Department of Transportation
Division of Highways
Testing Laboratory
LOG OF BORING

Date Started 10/13/99 Sampler: Type SS Dia. 51mm Water Elev. m
Date Completed 10/13/99 Casing: Length 1.52m Dia. 83mm
Project: ATH-33-30.981
Project No.: 99043
Location: Athens County, Athens, Ohio

| Elev. (m) | Depth (m) | Std. Pen./ ROD | Station & Offset | Loss (m) | Rec. (m) | Description | Sample No. | Physical Characteristics | | | | | 000T Class | | | | |
|-----------|-----------|----------------|--------------------------|----------|----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|------|--------|--------|------------|------|------|--------|--|
| | | | | | | | | % Agg | % C.S. | F.S. | % Silt | % Clay | | L.L. | P.I. | W.C. | |
| 295.33 | 0 | | IR64: Sta 49+270, 0.00 m | | | TOPSOIL | | | | | | | | | | | |
| 295.21 | 1 | 3-6-7 | | | | Stiff, brown CLAY (A-7-6), trace sand, moist. | 1 | 0 | 1 | 9 | -- | 91 * | 60 | 33 | 25 | A-7-6 | |
| 294.41 | 2 | 2-4-4 | Shelby Tube | | | Medium stiff to stiff, brown ELASTIC CLAY (A-7-5), trace sand, moist. | 2 | 0 | 0 | 4 | -- | 96 * | 75 | 45 | 31 | A-7-5 | |
| | 2 | 4-5-8 | | | | | ST | 0 | 0 | 1 | -- | 99 * | 57 | 23 | 30 | A-7-5 | |
| 292.43 | 3 | 4-6-8 | | | | Stiff to hard, brown CLAY (A-7-6), no to trace rock fragments, trace to sand, moist. | 4 | 0 | 0 | 0 | -- | 100 * | 57 | 27 | 31 | A-7-5 | |
| | 4 | 4-7-7 | | | | | 5 | 1 | 0 | 1 | -- | 98 * | 44 | 16 | 28 | A-7-6 | |
| | 5 | 3-5-6 | | | | | 6 | 0 | 0 | 1 | -- | 99 * | 46 | 17 | 31 | A-7-6 | |
| | 6 | 7-13-9 | | | | | 7 | 0 | 0 | 3 | -- | 96 * | 45 | 18 | 29 | A-7-6 | |
| 289.23 | 7 | 4-24-50/127 | | | | Very soft to soft, brown, decomposed to highly weathered CLAY SHALE. | 8 | 1 | 1 | 3 | -- | 95 * | 42 | 19 | 20 | A-7-6 | |
| | 8 | | | | | | 9A | 8 | 27 | 10 | -- | 56 * | 41 | 16 | 16 | A-7-6 | |
| | 9 | | | | | | 9B | -- | -- | -- | -- | -- | -- | -- | 10 | VISUAL | |
| 287.71 | 8 | 50/76 | | 0.00 | 1.52 | Note: Auger refusal on bedrock at 4.57 meters. Began coring bedrock with right gray, stringy weathered, micaceous, fine grained SANDSTONE with thin to moderate bedding. Note: Many to some very thin carbonaceous laminations present from 1.80 to 9.14 meters. Quality of rock for Run 1 considered excellent as per ROD. | 10 | -- | -- | -- | -- | -- | -- | -- | 5 | VISUAL | |
| 286.19 | 9 | | | | | TERMINATION DEPTH = 9.14 METERS | Run 1 | | | | | | | | | | |

Particle Sizes: Agg => 2.00mm, Coarse Sand = 2.00-0.42mm, Fine Sand = 0.42-0.074mm, Silt = 0.074-0.005mm, Clay =< 0.005mm (*Indicates silt & clay combined)



SUMMARY OF SOIL TEST DATA (GANNETT FLEMING)

| BORING No. | Station & Offset | Depth From To | % AGG. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | % W.C. | ODOT Class | DESCRIPTION | ODOT Class |
|------------|-----------------------------------------------------------|---------------|------------------------------------------------------------------------|--------|--------|--------|--------|------|------|--------|------------|-------------|------------|
| RA-1 | 29+505 | 0.00-0.61 | FILL: MOTTLED BROWN SILTY CLAY WITH SAND AND ROCK FRAGMENTS | | | | | | | | 10 | VISUAL | |
| | | 1.22-1.83 | BROWN SANDY SILT, SOME CLAY, LITTLE GRAVEL | | | | | | | | 15 | VISUAL | |
| | | 1.83-2.13 | BROWN CLAY, SOME SILT, TRACE SAND | | | | | | | | 23 | VISUAL | |
| | | 2.13-2.44 | 0 | 0 | 0 | 41 | 59 | | | | 25 | A-7-6 | |
| | | 2.44-3.05 | 0 | 0 | 1 | 42 | 57 | | | | 31 | A-7-6 | |
| | | 4.11-4.42 | BROWN/ORANGE BROWN AND GRAY SILTY CLAY W/ OXIDES AND FINE SAND | | | | | | | | 15 | VISUAL | |
| | | 4.42-4.57 | BROWN/ORANGE BROWN AND GRAY SILTY CLAY W/ OXIDES AND FINE SAND | | | | | | | | 18 | VISUAL | |
| | | 5.64-6.25 | BROWN/ORANGE BROWN AND GRAY SILTY CLAY W/ OXIDES AND FINE SAND | | | | | | | | 26 | VISUAL | |
| 7.16-7.43 | GRAY SILTY CLAY/EXTREMELY WEATHERED SHALE | | | | | | | | 11 | VISUAL | | | |
| RA-2 | 29+515 5 M LEFT | 0.00-0.61 | FILL: BROWN/ORANGE BROWN SI. CLAY W/ SAND, GRAVEL, AND ROOT HAIRS. | | | | | | | | 9 | VISUAL | |
| | | 0.61-1.22 | FILL: BROWN/ORANGE BROWN SI. CLAY W/ SAND, GRAVEL, AND ROOT HAIRS. | | | | | | | | 12 | VISUAL | |
| | | 1.22-1.52 | FILL: BROWN/ORANGE BROWN SI. CLAY W/ SAND, GRAVEL, AND ROOT HAIRS. | | | | | | | | 16 | VISUAL | |
| | | 1.52-1.83 | FILL: BROWN/ORANGE BROWN SI. CLAY W/ SAND, GRAVEL, AND ROOT HAIRS. | | | | | | | | 19 | VISUAL | |
| | | 1.83-2.44 | FILL: BROWN/ORANGE BROWN SI. CLAY W/ SAND, GRAVEL, AND ROOT HAIRS. | | | | | | | | 22 | VISUAL | |
| | | 2.44-2.74 | FILL: BROWN/ORANGE BROWN SI. CLAY W/ SAND, GRAVEL, AND ROOT HAIRS. | | | | | | | | 22 | VISUAL | |
| | | 2.74-3.05 | 0 | 0 | 16 | 83 | 33 | 17 | | | 23 | A-6b | |
| | | 4.11-4.42 | 9 | 3 | 17 | 29 | 41 | | | | 21 | A-6b | |
| | | 4.42-4.57 | MOTTLED DARK BROWN AND GRAY SILTY CLAY W/ SANDSTONE FRAGS. | | | | | | | | 14 | VISUAL | |
| | | 5.64-6.10 | MOTTLED DARK BROWN AND GRAY SILTY CLAY W/ SANDSTONE FRAGS. | | | | | | | | 17 | VISUAL | |
| 7.16-7.43 | GRAY DECOMPOSED CLAY SHALE | | | | | | | | 14 | VISUAL | | | |
| RA-3 | 29+550 5 M RIGHT | 0.00-0.61 | BROWN W/ LT. GRAY SI. CLAY W/ TR. SAND, OXIDES AND ROCK FRAGS. | | | | | | | | 19 | VISUAL | |
| | | 0.61-1.22 | BROWN W/ LT. GRAY SI. CLAY W/ TR. SAND, OXIDES AND ROCK FRAGS. | | | | | | | | 18 | VISUAL | |
| | | 1.22-1.83 | BROWN W/ LT. GRAY SI. CLAY W/ TR. SAND, OXIDES AND ROCK FRAGS. | | | | | | | | 14 | VISUAL | |
| | | 1.83-2.44 | BROWN W/ LT. GRAY SI. CLAY W/ TR. SAND, OXIDES AND ROCK FRAGS. | | | | | | | | 19 | VISUAL | |
| | | 2.44-3.05 | BROWN/ORANGE BROWN SILTY CLAY W/ TRACES OF FINE SAND AND OXIDES | | | | | | | | 24 | VISUAL | |
| | | 4.11-4.57 | 18 | 12 | 18 | 23 | 29 | | | | 22 | A-6a | |
| | | 5.64-6.10 | BROWN DECOMPOSED CLAY SHALE | | | | | | | | 10 | VISUAL | |
| | | 8.69-8.90 | GRAY DECOMPOSED CLAY SHALE | | | | | | | | 12 | VISUAL | |
| RA-4 | 29+555 | 0.00-0.61 | FILL: BROWN/LT. BROWN SI. CLAY AND SAND W/ GRAVEL AND ROCK FRAGS. | | | | | | | | 16 | VISUAL | |
| | | 0.61-1.22 | 13 | 6 | 10 | 70 | 38 | 19 | | | 15 | A-6b | |
| | | 1.22-1.83 | 27 | 6 | 12 | 21 | 34 | | | | 14 | A-6b | |
| | | 1.83-2.44 | BROWN AND GRAY TO GRAY SILTY CLAY | | | | | | | | 17 | VISUAL | |
| | | 2.44-2.74 | BROWN AND GRAY SILT AND CLAY | | | | | | | | 26 | VISUAL | |
| | | 2.74-3.05 | BROWN AND GRAY SILT AND CLAY WITH SAND SEAMS | | | | | | | | 26 | VISUAL | |
| | | 4.11-4.57 | 0 | 0 | 25 | 74 | 33 | 15 | | | 22 | A-6a | |
| | | 5.64-6.10 | BROWN AND GRAY SILT AND CLAY, SOME SAND | | | | | | | | 17 | VISUAL | |
| 7.16-7.28 | BROWN SILTY CLAY, SOME SAND, TRACE SANDSTONE FRAGMENTS | | | | | | | | 12 | VISUAL | | | |
| TR55-1 | 48+215 | 0.00-0.61 | 1 | 1 | 1 | 97 | 69 | 38 | | 18 | A-7-5 | | |
| | | 0.61-1.22 | RED/MAROON AND LIGHT BEIGE CLAY W/ TRACES OF SAND AND ROOT HAIR | | | | | | | | 10 | VISUAL | |
| | | 1.22-1.83 | 9 | 3 | 3 | 41 | 44 | | | | 10 | A-7-6 | |
| | | 1.83-2.44 | LIGHT OLIVE/BEIGE SILTY CLAY W/ TRACES OF OXIDE STAINS | | | | | | | | 9 | VISUAL | |
| | | 2.44-3.05 | RED/MAROON AND OLIVE SILTY CLAY W/ TRACES OF OXIDE STAINS | | | | | | | | 10 | VISUAL | |
| | | 4.11-4.42 | RED/MAROON AND OLIVE SILTY CLAY W/ TRACES OF OXIDE STAINS | | | | | | | | 9 | VISUAL | |
| 4.42-4.57 | RED/MAROON AND OLIVE SILTY CLAY W/ TRACES OF OXIDE STAINS | | | | | | | | 14 | VISUAL | | | |
| TR55-2 | 48+240 | 0.30-0.91 | LIGHT OLIVE BROWN/BEIGE SILTY CLAY W/ SILTSTONE/SANDSTONE FRAGS. | | | | | | | | 7 | VISUAL | |
| | | 2.13-2.40 | LIGHT BROWN/BEIGE EXTREMELY WEATHERED SILTSTONE/ARENACEOUS SHALE | | | | | | | | 9 | VISUAL | |
| | | 2.74-3.01 | 1 | 5 | 5 | 34 | 55 | | | | 13 | A-7-6 | |
| TR55-3 | 48+260 | 0.30-0.91 | 0 | 1 | 1 | 25 | 73 | | | 31 | A-7-6 | | |
| | | 0.91-1.52 | 7 | 2 | 3 | 88 | 42 | 21 | | | 30 | A-7-6 | |
| | | 1.52-2.13 | 12 | 10 | 5 | 24 | 49 | | | | 22 | A-7-6 | |
| | | 2.13-2.44 | 1 | 4 | 4 | 90 | 48 | 20 | | | 18 | A-7-6 | |
| | | 2.44-2.74 | RED AND YELLOW SILTY CLAY WITH TRACES OF SAND | | | | | | | | 13 | VISUAL | |
| | | 2.74-3.01 | LIGHT BROWN WEATHERED SILTSTONE/FINE GRAINED SANDSTONE | | | | | | | | 7 | VISUAL | |
| 4.11-4.32 | LIGHT BROWN, HIGHLY WEATHERED SANDSTONE | | | | | | | | 5 | VISUAL | | | |
| TR55-4 | 48+280 | 0.30-0.91 | 0 | 1 | 1 | 88 | 63 | 34 | | 36 | A-7-6 | | |
| | | 0.91-1.52 | 0 | 1 | 1 | 23 | 76 | | | 23 | A-7-6 | | |
| | | 1.52-2.13 | 2 | 2 | 2 | 94 | 42 | 21 | | | 18 | A-7-6 | |
| | | 2.13-2.74 | LIGHT YELLOWISH BROWN AND RED SILTY CLAY W/ TRACES OF SAND | | | | | | | | 20 | VISUAL | |
| | | 2.74-3.35 | LIGHT YELLOWISH BROWN AND RED SILTY CLAY W/ TRACES OF SAND | | | | | | | | 17 | VISUAL | |
| | | 4.11-4.35 | DARK GRAY WEATHERED ARENACEOUS SHALE | | | | | | | | 9 | VISUAL | |
| TR55-5 | 48+300 | 0.30-0.91 | ORANGE BROWN W/ RED AND GRAY SILTY CLAY W/ OXIDES AND FINE SAND | | | | | | | | 26 | VISUAL | |
| | | 0.91-1.52 | 5 | 10 | 9 | 19 | 56 | | | | 23 | A-7-6 | |
| | | 1.52-2.13 | OLIVE BROWN TO OLIVE SILTY CLAY W/ TRACES OF OXIDES | | | | | | | | 7 | VISUAL | |
| | | 2.13-2.74 | OLIVE BROWN TO OLIVE SILTY CLAY W/ TRACES OF OXIDES | | | | | | | | 8 | VISUAL | |
| | | 4.11-4.25 | GRAY, WEATHERED SHALE | | | | | | | | 4 | VISUAL | |
| | | 4.25-4.38 | GRAY, WEATHERED SHALE | | | | | | | | 6 | VISUAL | |
| | | 5.64-5.88 | GRAY, HIGHLY WEATHERED CLAY SHALE | | | | | | | | 9 | VISUAL | |
| | | 7.16-7.55 | LT. BROWN SA. SILT W/ OXIDES (EXTREMELY WEATHERED SILTSTONE/SANDSTONE) | | | | | | | | 11 | VISUAL | |
| TR64-1 | 49+180 | 0.00-0.61 | FILL: BROWN/LIGHT BROWN TO BEIGE SILTY CLAY W/ OXIDES AND SAND | | | | | | | | 16 | VISUAL | |
| | | 0.61-1.22 | FILL: BROWN/LIGHT BROWN TO BEIGE SILTY CLAY W/ OXIDES AND SAND | | | | | | | | 17 | VISUAL | |
| | | 1.22-1.52 | FILL: ORANGE BROWN SILT AND SAND W/ TRACES OF OXIDES | | | | | | | | 17 | VISUAL | |
| | | 1.52-1.83 | 0 | 1 | 10 | 56 | 33 | 26 | 7 | | 26 | A-4b | |
| | | 1.83-2.44 | 3 | 4 | 13 | 45 | 35 | | | | 29 | A-4a | |
| | | 4.11-4.57 | 2 | 1 | 28 | 69 | 39 | 21 | | | 18 | A-6b | |
| | | 5.64-6.07 | LT. BROWN W/ GRAY VERY SILTY CLAY/CLAYEY SILT W/ ROCK FRAGS. | | | | | | | | 16 | VISUAL | |
| | | 7.16-7.43 | GRAY TO OLIVE GRAY SILTY CLAY AND SHALE | | | | | | | | 12 | VISUAL | |

ABBREVIATIONS
 DK. = DARK
 LT. = LIGHT
 SI. = SILTY
 SA. = SANDY
 FRAGS. = FRAGMENTS

| BORING No. | Station & Offset | Depth From To | % AGG. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | % W.C. | ODOT Class | DESCRIPTION | ODOT Class |
|------------|--------------------------------------------------------------------|---------------|--------------------------------------------------------------------|--------|--------|--------|--------|------|------|--------|------------|-------------|------------|
| TR64-2 | 49+195 | 0.00-0.61 | FILL: BROWN/ORANGE BROWN SI. CLAY W/ SAND, GRAVEL AND OXIDE TRACES | | | | | | | | 12 | VISUAL | |
| | | 0.61-1.22 | 9 | 7 | 36 | 20 | 27 | | | | 13 | A-6a | |
| | | 1.22-1.83 | 8 | 4 | 33 | 38 | 17 | | NP | | 11 | A-4a | |
| | | 1.83-2.44 | 17 | 7 | 6 | 41 | 29 | | | | 11 | A-4a | |
| | | 2.44-3.05 | LIGHT OLIVE BROWN AND ORANGE BROWN SILTY CLAY | | | | | | | | 13 | VISUAL | |
| 4.11-4.51 | OLIVE TO GRAY SILTY CLAY (EXTREMELY WEATHERED SHALE) | | | | | | | | 15 | VISUAL | | | |
| TR64-3 | 49+215 | 0.30-0.69 | LIGHT BROWN SILTY SAND W/ SANDSTONE FRAGMENTS | | | | | | | | 12 | VISUAL | |
| TR64-4 | 49+240 | 0.30-0.91 | LIGHT ORANGE BROWN W/ LIGHT GRAY SILTY CLAY W/ TRACES OF OXIDES | | | | | | | | 19 | VISUAL | |
| | | 0.91-1.37 | LIGHT ORANGE BROWN W/ LIGHT GRAY SILTY CLAY W/ TRACES OF OXIDES | | | | | | | | 10 | VISUAL | |
| | | 1.37-1.61 | LIGHT OLIVE BROWN TO OLIVE SILTY CLAY | | | | | | | | 7 | VISUAL | |
| TR64-5 | 49+260 | 0.30-0.91 | RED W/ ORANGE-BROWN AND GRAY SILTY CLAY W/ TRACES OF OXIDES | | | | | | | | 31 | VISUAL | |
| | | 0.91-1.52 | 0 | 1 | 2 | 30 | 66 | | | | 28 | A-7-6 | |
| | | 1.52-2.13 | 0 | 1 | 8 | 91 | 42 | 15 | | | 27 | A-7-6 | |
| | | 2.13-2.74 | RED W/ TRACE GRAY SILTY CLAY | | | | | | | | 26 | VISUAL | |
| | | 2.74-3.35 | RED W/ TRACE GRAY SILTY CLAY | | | | | | | | 23 | VISUAL | |
| | | 4.11-4.52 | GRAY CLAY, SOME SILT, TRACE SAND | | | | | | | | 12 | VISUAL | |
| RAW-2 | 1+365 | 0.00-0.61 | MOTTLED RED, BROWN, AND LT. BROWN SI. CLAY W/ SANDSTONE FRAGS. | | | | | | | | 9 | VISUAL | |
| RAW-3 | 1+400 | 0.00-0.61 | 2 | 1 | 2 | 95 | 42 | 19 | | 12 | A-7-6 | | |
| | | 0.61-1.13 | MOTTLED GRAY W/ MAROON SI. CLAY W/ LIMESTONE NODULE FRAGMENTS | | | | | | | | 8 | VISUAL | |
| | | 1.22-1.31 | GRAY W/ OLIVE BROWN SILTY CLAY | | | | | | | | 4 | VISUAL | |
| | | 1.83-1.95 | GRAY WEATHERED ARENACEOUS SHALE | | | | | | | | 4 | VISUAL | |
| 2.44-2.68 | GRAY WEATHERED ARENACEOUS SHALE | | | | | | | | 3 | VISUAL | | | |
| RAW-4 | 1+430 | 0.00-0.61 | 7 | 4 | 4 | 23 | 62 | | | 16 | A-7-6 | | |
| | | 0.61-1.22 | FILL: GRAYISH BROWN SILTY CLAY, W/ BLACK AND GRAY SHALE FRAGS. | | | | | | | | 14 | VISUAL | |
| | | 1.22-1.58 | 1 | 2 | 3 | 94 | 45 | 20 | | | 11 | A-7-6 | |
| | | 1.83-2.07 | DARK OLIVE GRAY TO GRAY SILTY CLAY | | | | | | | | 8 | VISUAL | |
| 2.44-2.65 | GRAY, EXTREMELY WEATHERED ARENACEOUS SHALE | | | | | | | | 7 | VISUAL | | | |
| RAW-5 | 1+470 | 0.00-0.61 | FILL: BROWNISH GRAY SI. CLAY W/ SAND, GRAVEL, AND ORGANIC FIBERS | | | | | | | | 13 | VISUAL | |
| | | 0.61-1.22 | FILL: BROWNISH GRAY SI. CLAY W/ SAND, GRAVEL, AND ORGANIC FIBERS | | | | | | | | 11 | VISUAL | |
| | | 1.22-1.83 | FILL: BROWNISH GRAY SI. CLAY W/ SAND, GRAVEL, AND ORGANIC FIBERS | | | | | | | | 12 | VISUAL | |
| | | 1.83-2.19 | 0 | 2 | 4 | 30 | 64 | | | | 12 | A-7-6 | |
| | | 2.44-2.68 | 3 | 7 | 5 | 86 | 41 | 19 | | | 10 | A-7-6 | |
| 4.11-4.29 | OLIVE BROWN, WEATHERED SHALE | | | | | | | | 5 | VISUAL | | | |
| RAW-6 | 1+510 7 M RIGHT | 0.00-0.61 | 25 | 9 | 13 | 20 | 33 | | | 12 | A-7-6 | | |
| | | 0.61-1.22 | FILL: MOTTLED BROWN AND GRAY SI. CLAY W/ SAND AND ROCK FRAGMENTS | | | | | | | | 11 | VISUAL | |
| | | 1.22-1.83 | 26 | 7 | 8 | 59 | 41 | 19 | | | 15 | A-7-6 | |
| | | 1.83-2.44 | FILL: MOTTLED BROWN AND GRAY SI. CLAY W/ SAND AND ROCK FRAGMENTS | | | | | | | | 13 | VISUAL | |
| 2.44-3.05 | FILL: MOTTLED BROWN AND GRAY SI. CLAY W/ SAND AND ROCK FRAGMENTS | | | | | | | | 11 | VISUAL | | | |
| RAW-8 | 1+400 15 M RIGHT | 0.00-0.61 | FILL: GRAY, OLIVE, AND RED SI. CLAY W/ SHALE FRAGS. AND ORGANICS | | | | | | | | 13 | VISUAL | |
| | | 0.61-1.22 | 2 | 1 | 3 | 28 | 66 | | | | 19 | A-7-6 | |
| | | 1.22-1.64 | MOTTLED GRAY W/ BROWN TO DARK GRAY SILTY CLAY | | | | | | | | 11 | VISUAL | |
| 2.44-2.65 | GRAY ARENACEOUS SHALE | | | | | | | | 8 | VISUAL | | | |
| RAW-9 | 1+450 15 M RIGHT | 0.00-0.61 | FILL: BROWN AND OLIVE BROWN SI. CLAY W/ TRACES OF ORGANIC FIBERS | | | | | | | | 13 | VISUAL | |
| | | 0.61-1.22 | 4 | 0 | 3 | 93 | 52 | 21 | | | 15 | A-7-5 | |
| | | 1.22-1.83 | OLIVE TO OLIVE AND DARK GRAY SILTY CLAY | | | | | | | | 11 | VISUAL | |
| | | 1.83-2.04 | OLIVE TO OLIVE AND DARK GRAY SILTY CLAY | | | | | | | | 10 | VISUAL | |
| 2.44-2.56 | OLIVE TO OLIVE AND DARK GRAY SILTY CLAY | | | | | | | | 9 | VISUAL | | | |
| RAW-10 | 1+495 23 M RIGHT | 0.00-0.61 | FILL: BROWN, OLIVE, AND GRAY SI. CLAY W/ SAND AND SHALE FRAGMENTS | | | | | | | | 14 | VISUAL | |
| | | 0.61-1.22 | FILL: BROWN, OLIVE, AND GRAY SI. CLAY W/ SAND AND SHALE FRAGMENTS | | | | | | | | 9 | VISUAL | |
| | | 1.22-1.83 | FILL: BROWN, OLIVE, AND GRAY SI. CLAY W/ SAND AND SHALE FRAGMENTS | | | | | | | | 8 | VISUAL | |
| | | 1.83-2.44 | FILL: BROWN, OLIVE, AND GRAY SI. CLAY W/ SAND AND SHALE FRAGMENTS | | | | | | | | 14 | VISUAL | |
| | | 2.44-3.05 | FILL: BROWN, OLIVE, AND GRAY SI. CLAY W/ SAND AND SHALE FRAGMENTS | | | | | | | | 15 | VISUAL | |
| | | 4.11-4.29 | 16 | 6 | 8 | 36 | 33 | | | | 13 | A-6a | |
| 5.64-6.10 | FILL: LT. BROWN/BROWN SI. CLAY, W/ ROCK FRAGS., SAND, AND ORGANICS | | | | | | | | 18 | VISUAL | | | |
| RBW-1 | 29+280 5M LEFT | 0.00-0.52 | FILL: BROWN AND GRAY SI. CLAY W/ SAND, GRAVEL, AND SHALE FRAGS. | | | | | | | | 8 | VISUAL | |
| | | 0.61-0.73 | FILL: BROWN AND GRAY SI. CLAY W/ SAND, GRAVEL, AND SHALE FRAGS. | | | | | | | | 4 | VISUAL | |
| | | 1.22-1.83 | 40 | 7 | 11 | 43 | 31 | 10 | | | 9 | A-4a | |
| | | 2.44-3.05 | 4 | 4 | 7 | 37 | 49 | | | | 16 | A-6b | |
| | | 4.11-4.54 | LT. BROWN W/ TRACE GRAY SA. SILT AND CLAY W/ TRACES OF ROCK FRAGS. | | | | | | | | 12 | VISUAL | |
| 7.16-7.72 | DARK GRAY, WEATHERED SHALE | | | | | | | | 9 | VISUAL | | | |
| RBW-2 | 29+330 7M LEFT | 0.00-0.61 | FILL: LIGHT BROWN SI. SAND W/ SANDSTONE FRAGMENTS AND GRAVEL | | | | | | | | 9 | VISUAL | |
| | | 0.61-1.22 | FILL: BROWN AND GRAY SANDSTONE AND SHALE FRAGMENTS | | | | | | | | 7 | VISUAL | |
| | | 1.83-2.13 | FILL: GRAY SHALE/CLAY SHALE FRAGMENTS | | | | | | | | 8 | VISUAL | |
| | | 2.13-2.44 | 23 | 13 | 10 | 20 | 34 | | | | 17 | A-6b | |
| | | 2.44-2.53 | FILL: BROWN AND GRAY, SI. SAND W/ SANDSTONE/CLAY SHALE FRAGS. | | | | | | | | 10 | VISUAL | |
| | | 4.11-4 | | | | | | | | | | | |

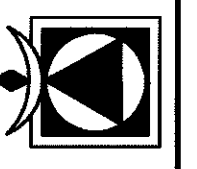
SUMMARY OF SOIL TEST DATA (GANNETT FLEMING)

| BORING No. | Station & Offset | Depth From To | % AGG. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | % W.C. | ODOT Class | |
|------------|---------------------------------------------------------------------|---------------|----------------------------------------------------------------------|-----------|--------|--------|--------|------|------|--------|------------|--------|
| RBW-3 | 29+380 8M LEFT | 0.00-0.61 | FILL: MOTTLED BROWN/LT. BROWN, GRAY AND RED SI. CLAY, W/ ROCK FRAGS. | | | | | | | | 11 | VISUAL |
| | | 0.61-1.22 | FILL: MOTTLED BROWN/LT. BROWN, GRAY AND RED SI. CLAY, W/ ROCK FRAGS. | | | | | | | | 9 | VISUAL |
| | | 1.22-1.52 | FILL: MOTTLED BROWN/LT. BROWN, GRAY AND RED SI. CLAY, W/ ROCK FRAGS. | | | | | | | | 10 | VISUAL |
| | | 1.52-1.83 | 25 | 5 | 5 | 66 | 38 | 16 | | | 13 | A-6b |
| | | 1.83-2.44 | FILL: MOTTLED BROWN/LT. BROWN, GRAY AND RED SI. CLAY, W/ ROCK FRAGS. | | | | | | | | 16 | VISUAL |
| | | 2.44-3.05 | FILL: MOTTLED BROWN/LT. BROWN, GRAY AND RED SI. CLAY, W/ ROCK FRAGS. | | | | | | | | 13 | VISUAL |
| | | 4.11-4.42 | LT. BROWN AND TRACE RED SI. CLAY W/ TRACES OF OXIDES | | | | | | | | 15 | VISUAL |
| | | 4.42-4.57 | 5 | 9 | 3 | 83 | | 55 | 25 | | 28 | A-7-5 |
| | | 5.64-6.00 | 0 | 1 | 1 | 34 | 64 | | | | 13 | A-7-6 |
| | | RBW-4 | 29+430 10M LEFT | 0.00-0.61 | 34 | 13 | 12 | 20 | 21 | | | 9 |
| 0.61-1.00 | FILL: MOTTLED BROWN/LT. BROWN AND BEIGE SI. CLAY W/ SAND AND GRAVEL | | | | | | | | 9 | VISUAL | | |
| 1.00-1.22 | FILL: MOTTLED BROWN/LT. BROWN AND BEIGE SI. CLAY W/ SAND AND GRAVEL | | | | | | | | 8 | VISUAL | | |
| 1.22-1.46 | FILL: MOTTLED BROWN/LT. BROWN AND BEIGE SI. CLAY W/ SAND AND GRAVEL | | | | | | | | 8 | VISUAL | | |
| 1.46-1.83 | OLIVE, EXTREMELY WEATHERED, SOFT SHALE | | | | | | | | 9 | VISUAL | | |
| 1.83-2.44 | RED/MAROON, EXTREMELY WEATHERED, SOFT SHALE | | | | | | | | 10 | VISUAL | | |
| 2.44-2.56 | OLIVE, SOFT WEATHERED SHALE | | | | | | | | 10 | VISUAL | | |
| 2.56-2.68 | GRAY, SOFT TO VERY SOFT WEATHERED SHALE | | | | | | | | 16 | VISUAL | | |
| 4.11-4.57 | OLIVE/OLIVE GRAY, SOFT TO MEDIUM HARD SHALE | | | | | | | | 11 | VISUAL | | |
| RBW-5 | 29+470 10M LEFT | 0.00-0.39 | FILL: MOTTLED LT. BROWN/OLIVE SI. CLAY W/ SAND, ROCK FRAGS. AND WOOD | | | | | | | | 7 | VISUAL |
| | | 0.39-1.22 | LIGHT BROWN SILTY CLAY, SOME ROCK FRAGMENTS, LITTLE SAND | | | | | | | | 13 | VISUAL |
| | | 1.22-1.52 | 7 | 3 | 33 | 56 | 31 | 12 | | | 21 | A-6a |
| | | 1.52-1.83 | 7 | 6 | 31 | 27 | 29 | | | | 22 | A-6a |
| | | 1.83-2.13 | POSS. FILL: BROWN W/ ORANGE BROWN SILT AND CLAY W/ SAND AND OXIDES | | | | | | | | 22 | VISUAL |
| | | 2.13-2.44 | 2 | 7 | 40 | 26 | 25 | 25 | 5 | | 18 | A-4a |
| | | 2.44-2.74 | 6 | 0 | 0 | 50 | 40 | | | | 19 | A-4b |
| | | 2.74-3.05 | GRAY SA. CLAY W/ TRACES OF SANDSTONE FRAGS. | | | | | | | | 19 | VISUAL |
| | | 4.11-4.42 | DARK GRAY SI. CLAY W/ SILT PARTINGS; TRACES OF MOLLUSK SHELLS | | | | | | | | 23 | VISUAL |
| | | 4.42-4.73 | DARK GRAY SI. CLAY W/ SILT PARTINGS; TRACES OF MOLLUSK SHELLS | | | | | | | | 18 | VISUAL |
| | | 5.64-5.79 | OLIVE GRAY AND GRAY SI. CLAY (EXTREMELY WEATHERED SHALE) | | | | | | | | 10 | VISUAL |

ABBREVIATIONS

DK. = DARK SA. = SANDY
 LT. = LIGHT FRAGS. = FRAGMENTS
 SI. = SILTY

GANNETT FLEMING
 SUITE 350
 451 EXECUTIVE PARKWAY
 WESTERVILLE, OHIO 43081

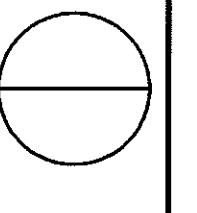


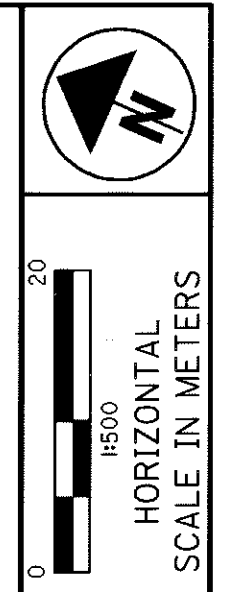
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ROADWAY / CULVERT SOIL PROFILE

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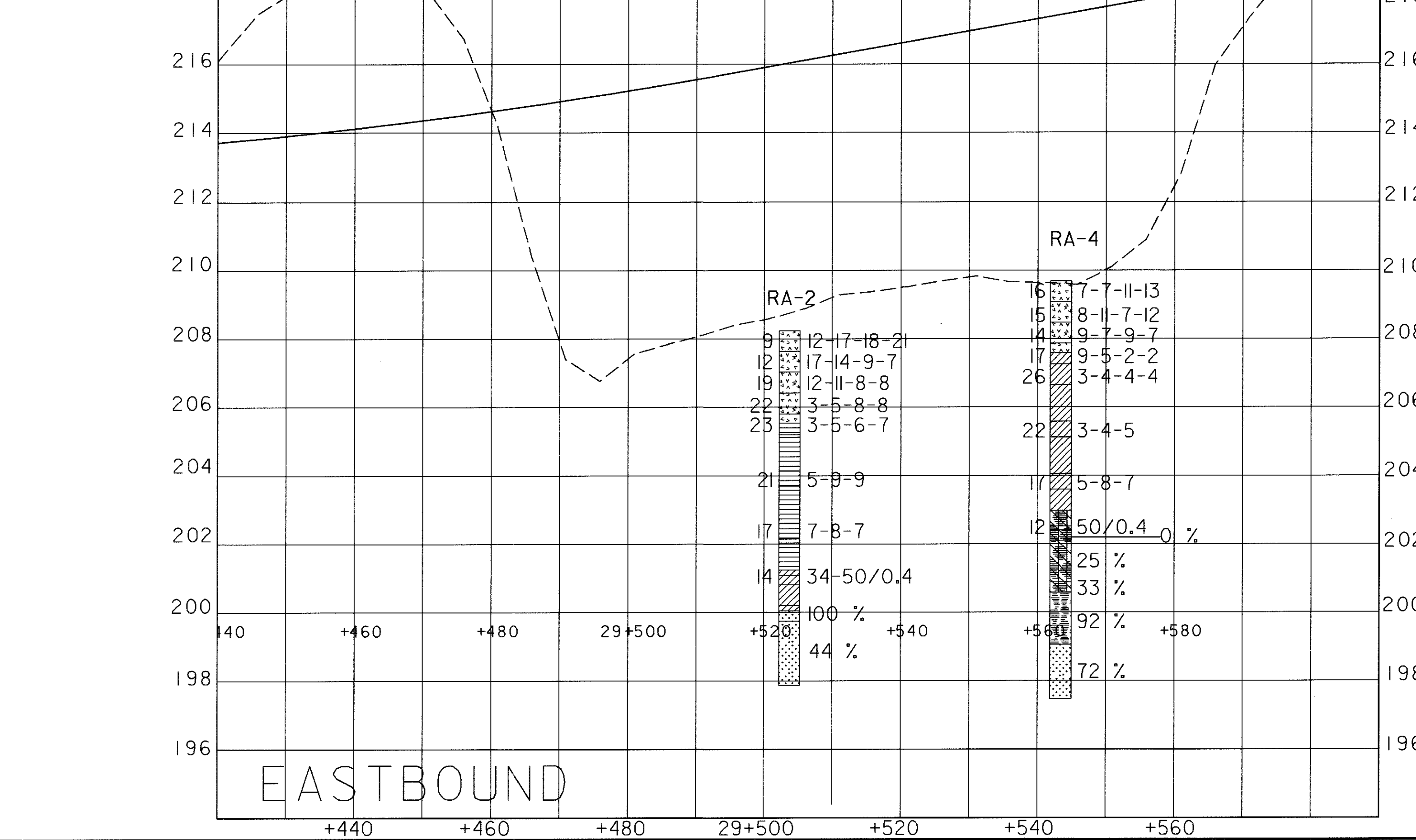
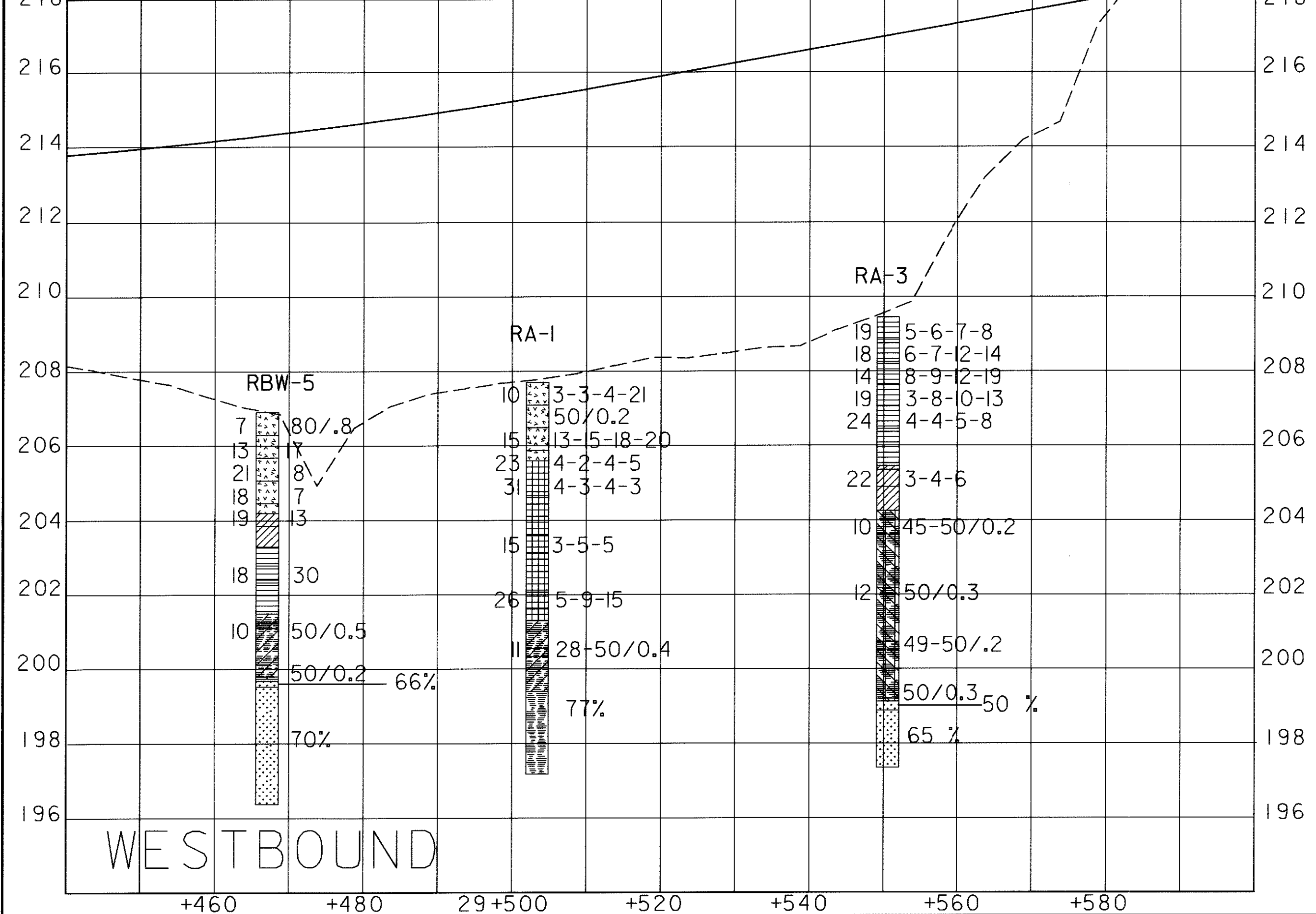
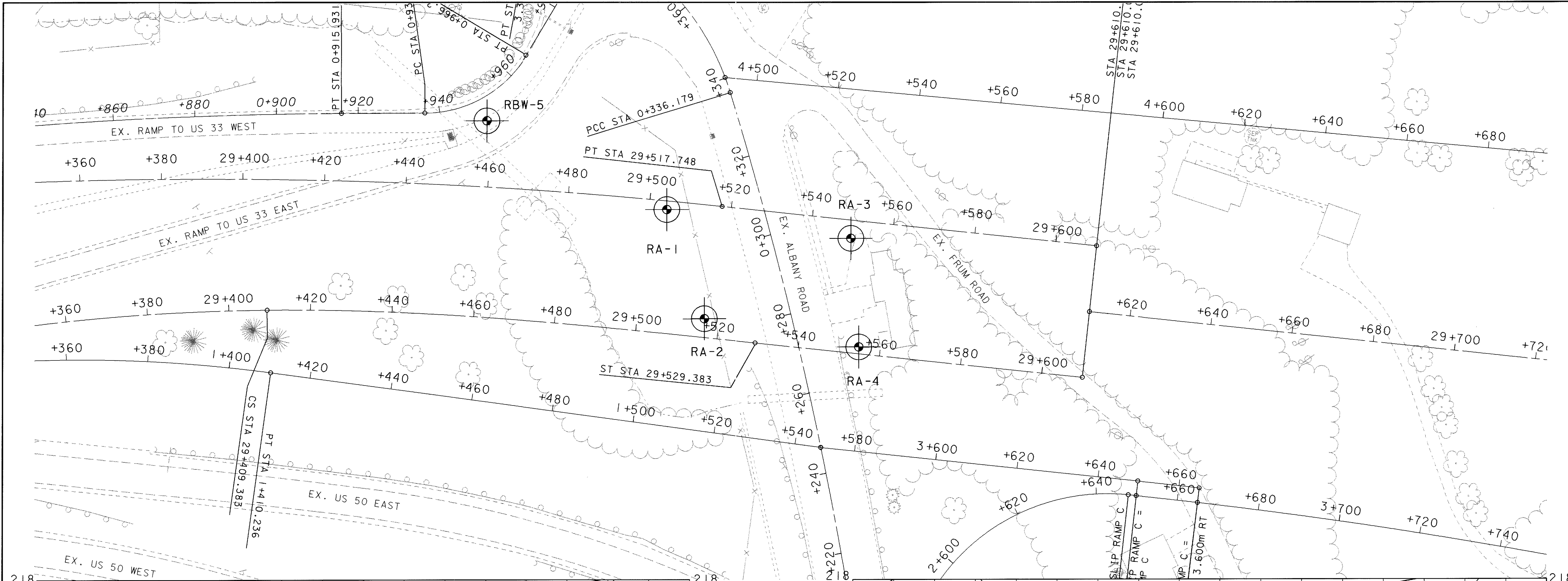




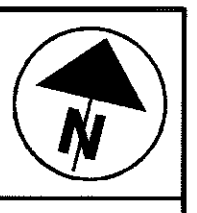
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**US 33 MAINLINE BRIDGE OVERPASS
BORING LOCATIONS AND SOIL PROFILE**

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DATE 4/20/01
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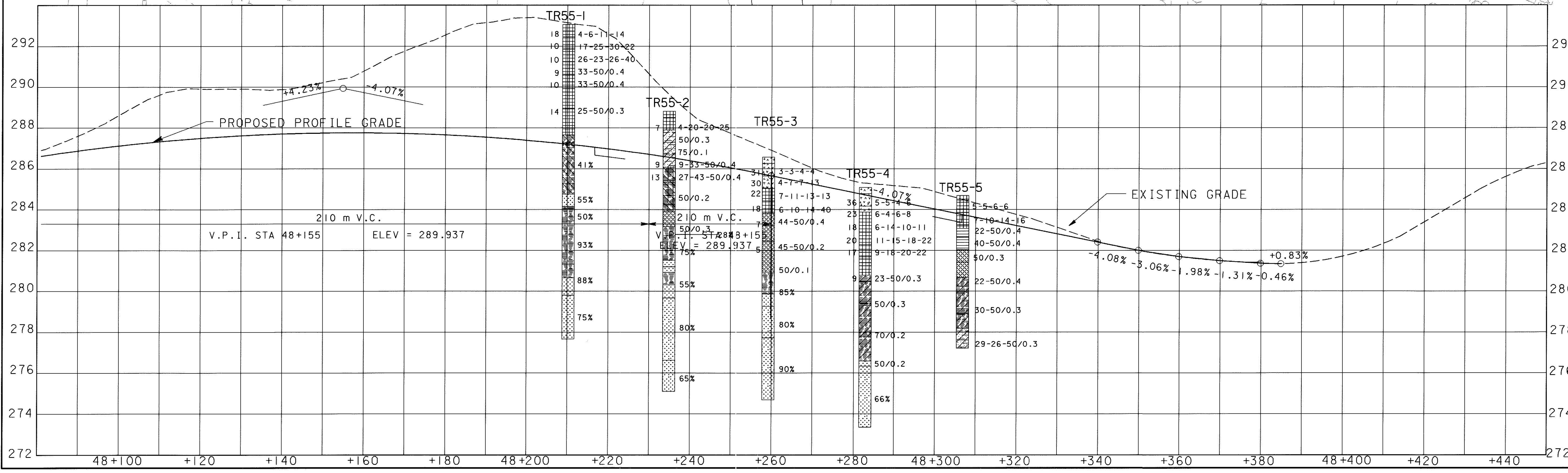
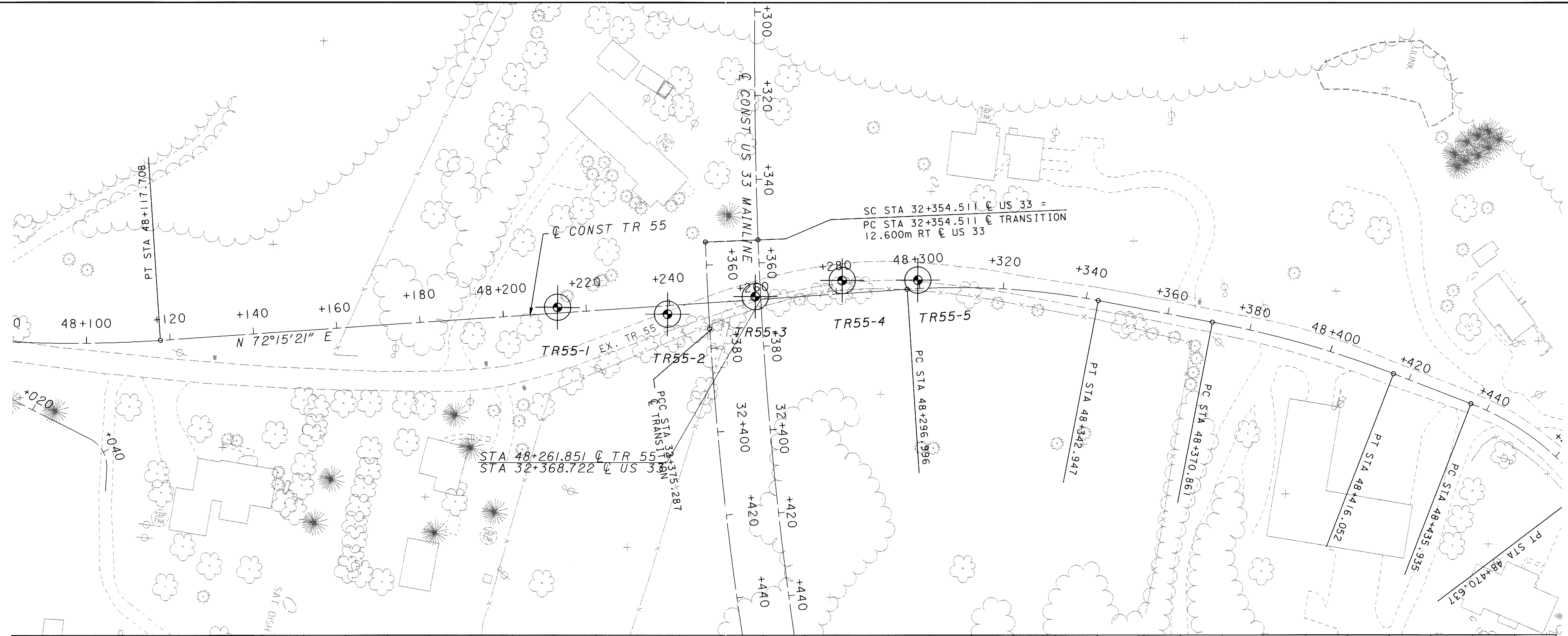
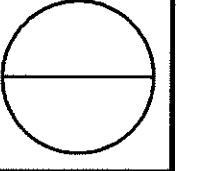
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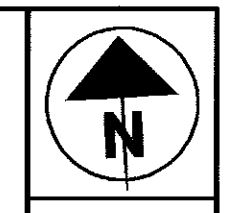
**TR 55 BRIDGE OVERPASS
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78/105



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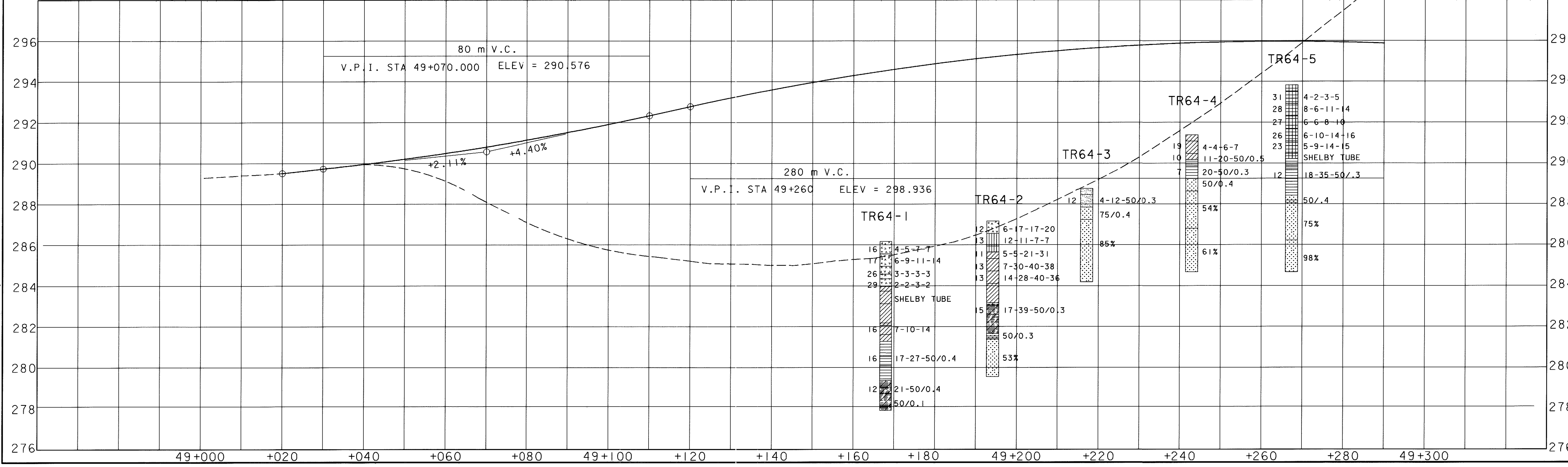
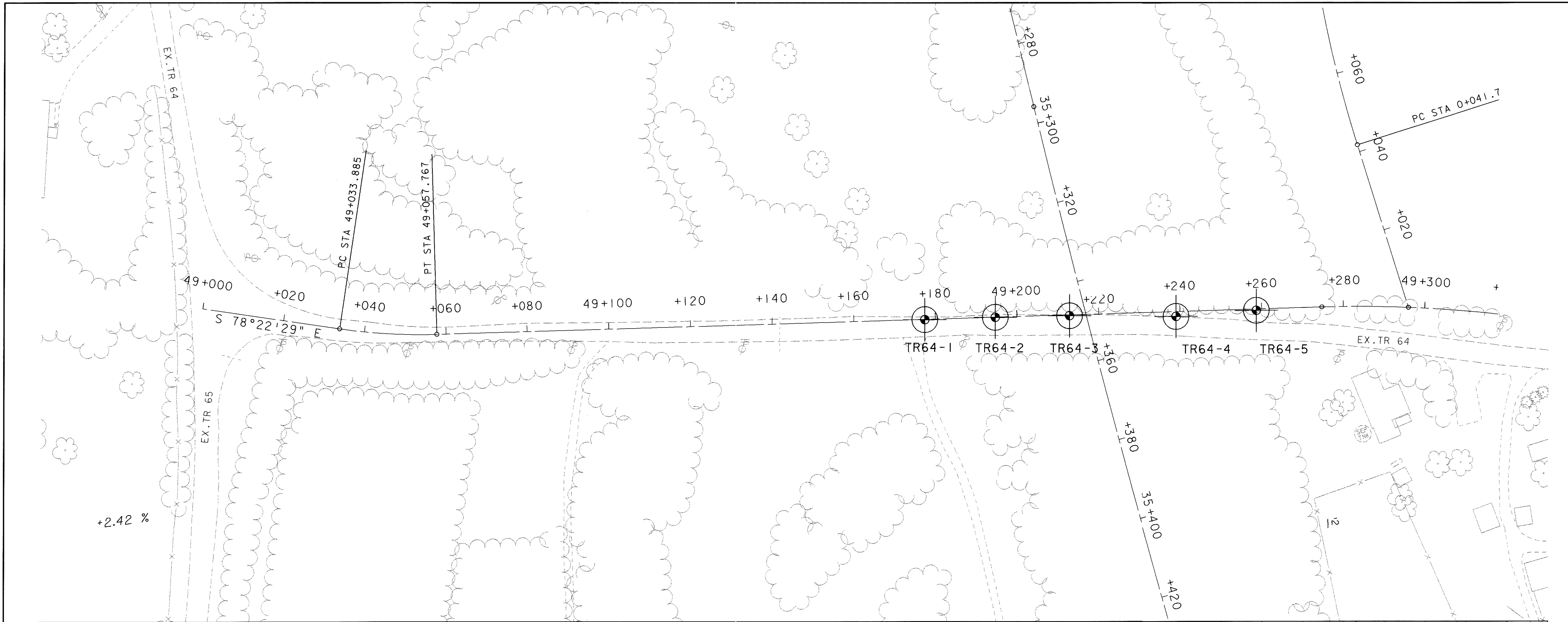
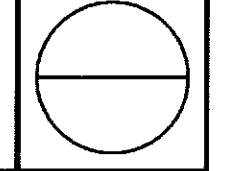
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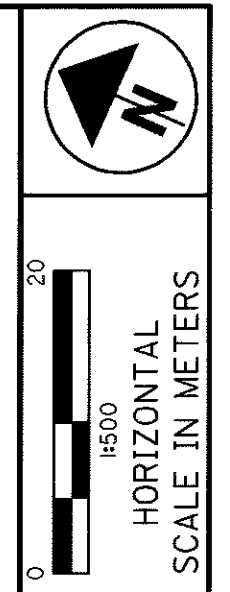
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79/105



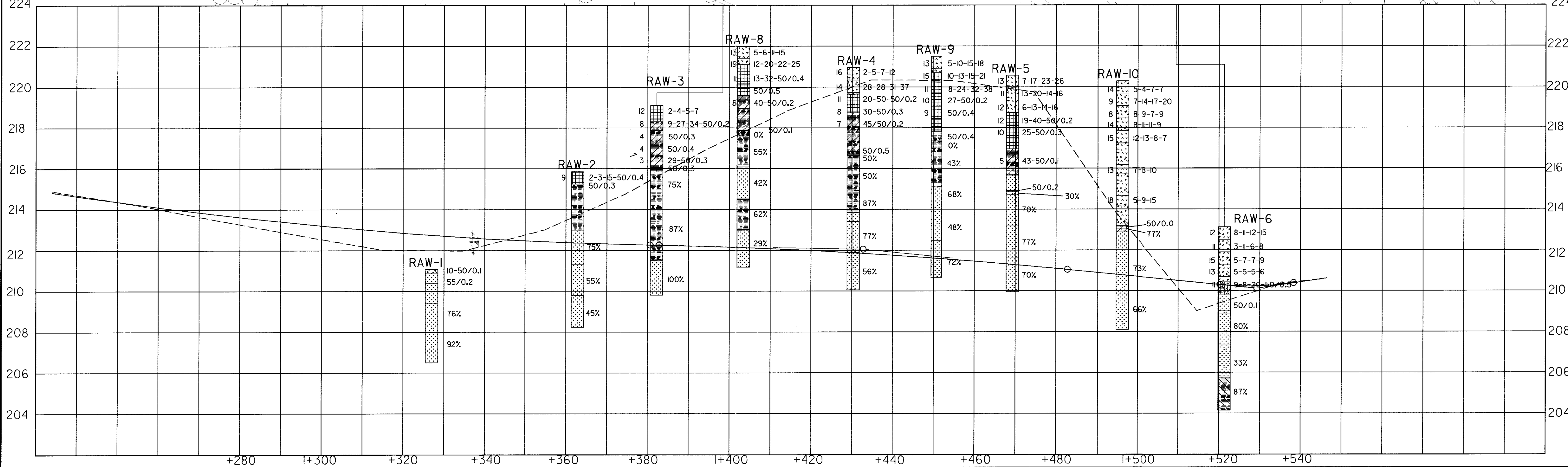
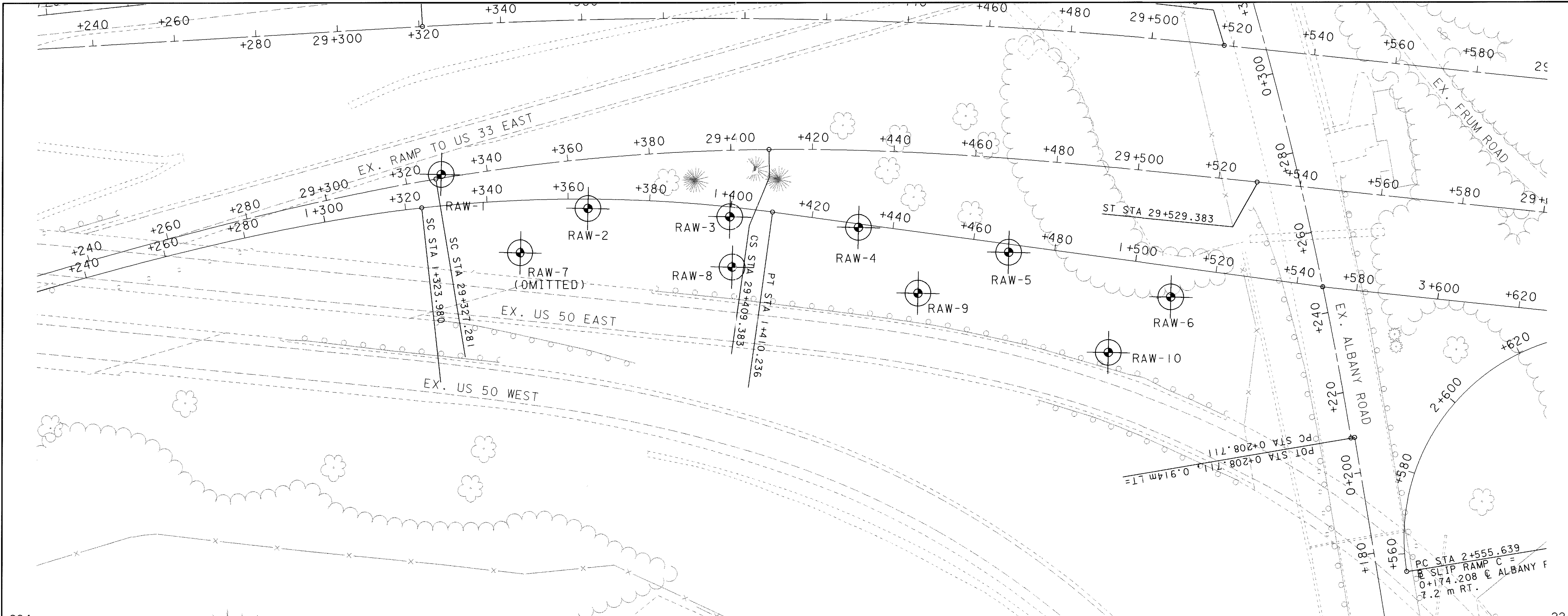
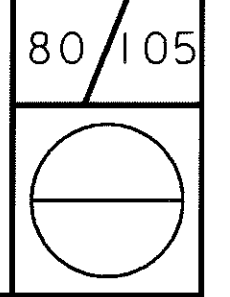
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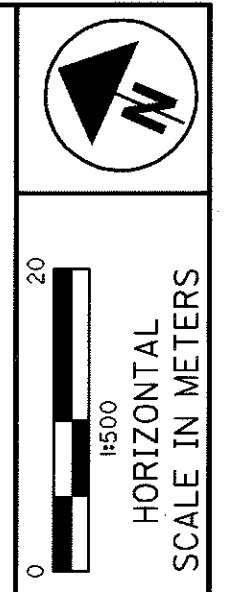
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| DATE 4/20/01 | |
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RAMP A RETAINING WALL BORING LOCATIONS AND SOIL PROFILE

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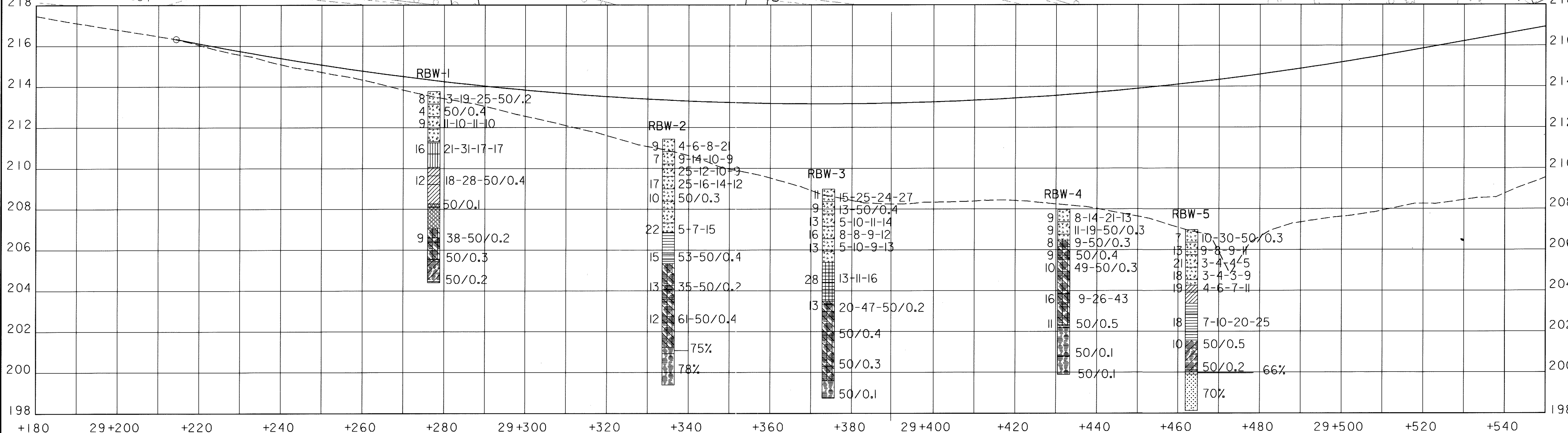
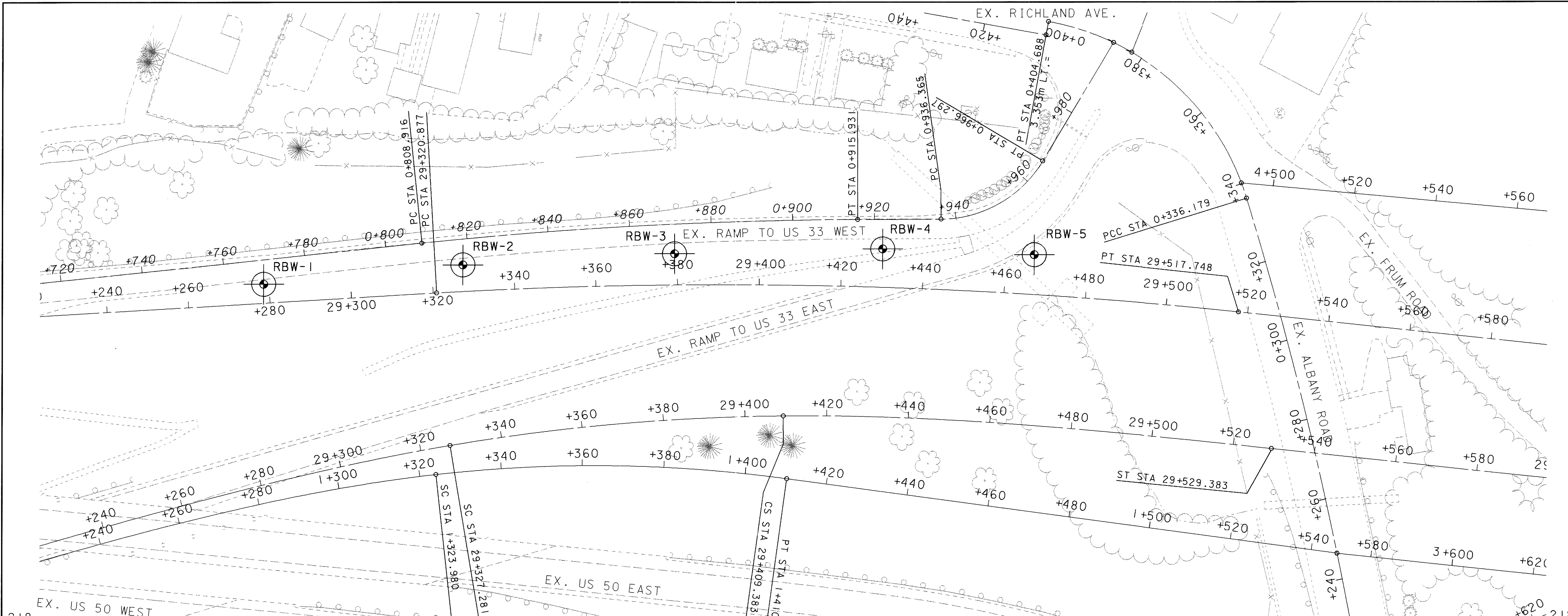
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RAMP B RETAINING WALL BORING LOCATIONS AND SOIL PROFILE

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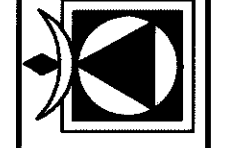
Date Started 072099 Date Completed 072099 Sampler: Type Split Spoon Dia. 5 cm.
 Boring No. RA-1 Station & Offset Surface Elev. 207.9 m Water Elev. 202.6 m

| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|-----------------------------------------------------------------------------------------------------------------------|----------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|----|----|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | |
| 207.9 | | 3-3-4-21 | 0.34 | 0.27 | 8 cm of Topsoil--fill-mottled brown silty clay w/ sand and rock/gravel fragments; slightly moist. | 1 | | | | | | | | | | | 10 |
| 207.3 | 1 | 50/0.2 | 0.00 | 0.06 | | qh=4.5+ kg/cm2 | 2 | | | | | | | | | | |
| 206.7 | | | | | qh=4.5+ kg/cm2 | 3 | | | | | | | | | | 15 | |
| 206.1 | 2 | 13-15-18-20 | 0.27 | 0.34 | qh=1.5+ kg/cm2 | 4 | 0 | 0 | 0 | 41 | 59 | 0 | 0 | 23 | 4-7-6 | | |
| 205.8 | | 4-2-4-5 | 0.30 | 0.30 | Brown/orange brown and trace gray silty clay w/ traces of oxides and fine sand (CL); moist, medium stiff. | 5 | 0 | 0 | 1 | 42 | 57 | 0 | 0 | 31 | 4-7-6 | | |
| 205.5 | 3 | 4-3-4-3 | 0.40 | 0.21 | | qh=0.5 kg/cm2 | | | | | | | | | | | |
| 204.3 | 4 | | | | Traces of weathered sandstone and gravel noted at 3.7 meters. | | | | | | | | | | | | |
| 203.8 | | 3-5-5 | 0.30 | 0.30 | qh=2.25 kg/cm2 | 6 | | | | | | | | | | 15 | |
| 202.3 | 6 | 5-9-15 | 0.24 | 0.37 | qh=1.25 kg/cm2 | 7 | | | | | | | | | | 26 | |
| 201.5 | 7 | | | | Gray silty clay/extremely weathered shale (CL); moist, hard. Slight laminations present. Auger refusal at 8.2 meters. | | | | | | | | | | | | |
| 200.8 | | 28-50/0.4 | 0.24 | 0.03 | qh=4.0 kg/cm2 | 8 | | | | | | | | | | 11 | |
| 199.6 | | | | | Interbedded gray, soft to medium hard shale (70%) and hard, light gray cemented | | | | | | | | | | | | |
| 199.1 | | | | | | | | | | | | | | | | | |

Date Started 072099 Date Completed 072099 Sampler: Type Split Spoon Dia. 5 cm.
 Boring No. RA-1 Station & Offset Surface Elev. 207.9 m Water Elev. 202.6 m

| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|--------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | |
| 198.2 | | 77 | 1.98 | 0.15 | sandstone (30%); good rock quality. qu=274.3 kg/cm2 | 9 | | | | | | | | | | |
| 197.4 | 10 | | | | | | qu=50.8 kg/cm2 | | | | | | | | | |
| | 11 | | | | Bottom of boring at 10.5 meters. | | | | | | | | | | | |
| | 12 | | | | | | | | | | | | | | | |
| | 13 | | | | | | | | | | | | | | | |
| | 14 | | | | | | | | | | | | | | | |
| | 15 | | | | | | | | | | | | | | | |
| | 16 | | | | | | | | | | | | | | | |
| | 17 | | | | | | | | | | | | | | | |

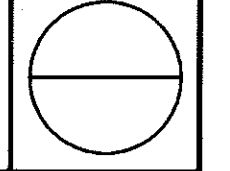
GANNETT FLEMING
 SUITE 350
 4151 EXECUTIVE PARKWAY
 WESTERVILLE, OHIO 43081



| | |
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| CALCULATED | CHECKED |
| DATE | DATE |
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| DRAWN | MDH |

**FOUNDATION SOIL PROFILE
 BORING LOGS**

ATH-33-30.981



Date Started 072099 Date Completed 072099 Sampler: Type Split Spoon Dia. 5 cm.
 Boring No. RA-2 Station & Offset Surface Elev. 208.4 m Water Elev. 203.9 m

| Elev. (m.) | Depth (m.) | Std. Pen./ RQD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | |
|------------|------------|----------------|-----------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|------|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | |
| 208.4 | | 12-17-18-21 | 0.30 | 0.30 | Fill-mottled brown to orange-brown silty clay w/ sand, gravel, and traces of root hairs; slightly moist to moist. Increase in moisture w/ traces of sandstone fragments and oxides below 1.5 m. | 1 | | | | | | | | | | | 9 |
| 207.8 | 1 | 17-14-9-7 | 0.46 | 0.15 | | 2 | | | | | | | | | | | 12 |
| 207.2 | | | | | qh=4.5 kg/cm2 | | | | | | | | | | | | |
| 206.9 | | 12-11-8-8 | 0.46 | 0.15 | qh=4.5+ kg/cm2 | 3 | | | | | | | | | | | 19 |
| 206.6 | 2 | | | | qh=1.5 kg/cm2 | | | | | | | | | | | | |
| 206.0 | | 3-5-8-8 | 0.40 | 0.21 | qh=0.75 kg/cm2 | 4 | | | | | | | | | | | 22 |
| 205.7 | 3 | 3-5-6-7 | 0.40 | 0.21 | qh=0.75 kg/cm2 | 5 | 0 | 0 | 17 | 83 | 33 | 17 | 23 | | | | A-6b |
| 204.3 | | | | | Dark brown w/ trace gray silty clay w/ traces of fine sand and root fibers (CL); moist, medium stiff to stiff. | | | | | | | | | | | | |
| 204.2 | 5 | 5-9-9 | 0.40 | 0.06 | qh=0.75 kg/cm2 | 6 | 9 | 3 | 17 | 29 | 41 | | | | | | A-6b |
| 202.8 | 6 | 7-8-7 | 0.30 | 0.15 | Mottled dark brown and gray silty clay w/ little sandstone fragments (CL); moist, very stiff. | 7 | | | | | | | | | | | 17 |
| 201.4 | 7 | | | | qh=3.5 kg/cm2 | | | | | | | | | | | | |
| 201.3 | 8 | 34-50/0.4 | 0.27 | | Gray silty clay w/ traces of sandstone fragments (CL); moist, hard. Auger refusal at 8.2 m. | 8 | | | | | | | | | | | 14 |
| 200.2 | | 100 | 0.46 | | Hard light gray cemented sandstone; excellent rock quality. qu=362.2 kg/cm2 | 9 | | | | | | | | | | | |
| 199.8 | | | | | Interbedded soft to medium hard gray shale | | | | | | | | | | | | |

Date Started 072099 Date Completed 072099 Sampler: Type Split Spoon Dia. 5 cm.
 Boring No. RA-2 Station & Offset Surface Elev. 208.4 m Water Elev. 203.9 m

| Elev. (m.) | Depth (m.) | Std. Pen./ RQD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | |
|------------|------------|----------------|-----------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | |
| | | 44 | 1.31 | 0.37 | and cemented hard light gray fine to medium grained sandstone; poor rock quality. qu=591.3 kg/cm2 (note: Lost part of rock core sample back in boring - measured RQD is lower than in-situ value). | 10 | | | | | | | | | | | |
| 198.1 | 10 | | | | Bottom of boring at 10.4 meters. | | | | | | | | | | | | |
| | 11 | | | | | | | | | | | | | | | | |
| | 12 | | | | | | | | | | | | | | | | |
| | 13 | | | | | | | | | | | | | | | | |
| | 14 | | | | | | | | | | | | | | | | |
| | 15 | | | | | | | | | | | | | | | | |
| | 16 | | | | | | | | | | | | | | | | |
| | 17 | | | | | | | | | | | | | | | | |

GANNETT FLEMING
 SUITE 350
 4151 EXECUTIVE PARKWAY
 WESTERVILLE, OHIO 43081

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 DATE 1/20/00
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 DRAWN MDH
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FOUNDATION SOIL PROFILE
 BORING LOGS

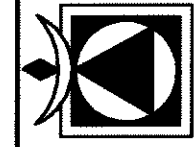
ATH-33-30.981

Date Started 080299 Date Completed 080299 Sampler: Type Split Spoon Dia. 5 cm.
 Boring No. RA-3 Station & Offset Surface Elev. 209.5 m Water Elev.

| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|----|------|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | |
| 209.5 | | | | | 12 cm. Gravel--Brown w/ trace light gray silty clay w/ traces of sandstone and shale fragments, sand and oxides (CL); moist, very stiff. qh=2.0 kg/cm2 | 1 | | | | | | | | | | 19 | A-6a |
| 209.3 | | 5-6-7-8 | 0.18 | 0.43 | | 2 | | | | | | | | | | 18 | |
| 208.8 | 1 | 6-7-12-14 | 0.27 | 0.34 | Brown w/ trace light gray silty clay w/ traces of sandstone and shale fragments, sand, and oxides (CL); moist, very stiff. | 3 | | | | | | | | | | 14 | |
| 208.2 | | 8-9-12-19 | 0.18 | 0.43 | qh=3.75 kg/cm2 | 4 | | | | | | | | | | 19 | |
| 207.6 | 2 | 3-8-10-13 | 0.30 | 0.30 | qh=4.0 kg/cm2 | 5 | | | | | | | | | | 24 | |
| 207.0 | | 4-4-5-8 | 0.46 | 0.15 | Mottled brown and orange-brown silty clay w/ traces of fine sand and oxides (CL); moist, medium stiff. qh=3.0 kg/cm2 | 6 | 18 | 12 | 18 | 23 | 29 | | | | | 22 | |
| 205.5 | 4 | | | | Grayish brown silty clay w/ traces of gray sandstone fragments and fine sand (CL); moist, medium stiff. qh=1.5 kg/cm2 | 7 | | | | | | | | | | 10 | |
| 205.3 | | 3-4-6 | 0.27 | 0.18 | | 8 | | | | | | | | | | 12 | |
| 204.3 | | | | | Very soft to soft brown shale. | 9 | | | | | | | | | | | |
| 203.8 | 6 | 45-50/0.2 | 0.18 | 0.03 | | | | | | | | | | | | | |
| 202.8 | | | | | Soft to very soft black shale. | | | | | | | | | | | | |
| 202.3 | 7 | 50/0.3 | 0.06 | 0.03 | | | | | | | | | | | | | |
| 201.2 | 8 | | | | Soft to very soft gray shale. | | | | | | | | | | | | |
| 200.8 | | 49-50/0.2 | 0.15 | 0.06 | | | | | | | | | | | | | |

Date Started 080299 Date Completed 080299 Sampler: Type Split Spoon Dia. 5 cm.
 Boring No. RA-3 Station & Offset Surface Elev. 209.5 m Water Elev.

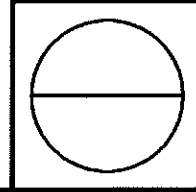
| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | |
| 199.2 | | 50/0.3 | 0.06 | 0.03 | | 10 | | | | | | | | | | |
| 199.1 | | 50 | 0.12 | 0.08 | | 11 | | | | | | | | | | |
| 198.9 | 11 | | | | Light gray moderately hard, fine to medium grained sandstone w/ soft to medium gray arenaceous shale seams; fair rock quality. Limestone seam at 11.7 m. qu=406.2 kg/cm2 | 12 | | | | | | | | | | |
| 197.4 | 12 | 65 | 1.40 | 0.12 | | | | | | | | | | | | |
| | | | | | Bottom of boring at 12.1 meters . | | | | | | | | | | | |
| | 13 | | | | | | | | | | | | | | | |
| | 14 | | | | | | | | | | | | | | | |
| | 15 | | | | | | | | | | | | | | | |
| | 16 | | | | | | | | | | | | | | | |
| | 17 | | | | | | | | | | | | | | | |



DATE 1/20/00
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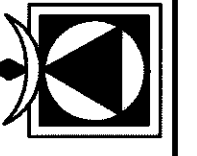


Date Started 080299 Date Completed 080299 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. RA-4 Station & Offset Surface Elev. 209.7 m Water Elev.

| Elev. (m.) | Depth (m.) | Std. Pen./RQD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|------|------|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | |
| 209.7 | | 7-7-11-13 | 0.27 | 0.34 | 15 cm. of Topsoil--fill-mottled brown and light brown silty clay and sand w/ traces of gravel and rock fragments; brick/concrete fragments noted above about 61 cm. qh=1.5 kg/cm2 | 1 | | | | | | | | | | 16 | A-6b |
| 209.1 | 1 | 8-11-7-12 | 0.15 | 0.46 | | 2 | 13 | 6 | 10 | | 71 | 38 | 19 | 15 | | | |
| 208.5 | | | | | qh=4.5+ kg/cm2 | | | | | | | | | | | A-6b | |
| | | 9-7-9-7 | 0.30 | 0.30 | qh=4.25 kg/cm2 | 3 | 27 | 6 | 12 | 21 | 34 | | | 14 | | | |
| 207.9 | 2 | | | | qh=4.5+ kg/cm2 | | | | | | | | | | | A-6a | |
| 207.6 | | 9-5-2-2 | 0.09 | 0.52 | | 4 | | | | | | | | 17 | | | |
| 207.3 | | | | | Brown and gray to gray silty clay (CL); moist to very moist, medium stiff [alluvium]. Predominantly brown w/ traces of gray sandstone fragments and oxides in sample #6. Stiff at sample #7. | | | | | | | | | | | A-6a | |
| 207.0 | 3 | 3-4-4-4 | 0.46 | 0.15 | | 5 | | | | | | | | 26 | | | |
| | | | | | qh=1.5 kg/cm2 | | | | | | | | | | | A-6a | |
| | 4 | | | | qh=1.0 kg/cm2 | | | | | | | | | | | | |
| 205.6 | | 3-4-5 | 0.40 | 0.06 | | 6 | | | 25 | 75 | 33 | 15 | 22 | | | | |
| | 5 | | | | | | | | | | | | | | | | |
| 204.1 | 6 | 5-8-7 | 0.34 | 0.12 | | 7 | | | | | | | | 17 | | | |
| | | | | | | | | | | | | | | | | | |
| 203.0 | 7 | | | | Soft to very soft black shale; poor rock quality. | | | | | | | | | | | | |
| 202.6 | | 50/0.4 | 0.12 | 0.00 | | 8 | | | | | | | | 12 | | | |
| 202.4 | | 0 | 0.00 | 0.30 | | 9 | | | | | | | | | | | |
| 202.1 | | | | | | | | | | | | | | | | | |
| 202.0 | 8 | | | | qu=26.4 kg/cm2 | | | | | | | | | | | | |
| 201.8 | | 25 | 0.30 | 0.91 | Very soft brown-gray to gray shale; poor to very poor rock quality. | 10 | | | | | | | | | | | |
| 200.9 | | | | | | | | | | | | | | | | | |

Date Started 080299 Date Completed 080299 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. RA-4 Station & Offset Surface Elev. 209.7 m Water Elev.

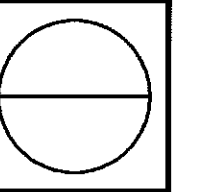
| Elev. (m.) | Depth (m.) | Std. Pen./RQD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|------|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | |
| 200.6 | | 33 | 0.18 | 0.12 | Very soft, mottled brown and gray to gray arenaceous shale w/ limestone nodules; excellent rock quality (bottom 18 cm of rock sample is light gray sandstone). qu (sandstone) = 408.7 kg/cm2 note: RQD is misleadingly high, most of the shale sample is more like a hard soil. | 11 | | | | | | | | | | A-6b |
| | 10 | 92 | 1.49 | 0.03 | | 12 | | | | | | | | | | |
| 199.2 | | | | | Moderately hard to hard, fine to medium grained, light gray sandstone w/ isolated soft shale lenses and limestone nodules; thickly bedded; good rock quality. | | | | | | | | | | | A-6b |
| 199.1 | 11 | | | | | 13 | | | | | | | | | | |
| | 12 | 72 | 1.46 | 0.06 | | | | | | | | | | | | |
| 197.6 | | | | | Bottom of boring at 12.2 meters. | | | | | | | | | | | |
| | 13 | | | | | | | | | | | | | | | |
| | 14 | | | | | | | | | | | | | | | |
| | 15 | | | | | | | | | | | | | | | |
| | 16 | | | | | | | | | | | | | | | |
| | 17 | | | | | | | | | | | | | | | |



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FOUNDATION SOIL PROFILE
 BORING LOGS

ATH-33-30.981

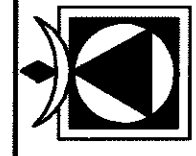


Date Started 071699 Date Completed 071699 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. TR 55-1 Station & Offset Surface Elev. 292.9 m Water Elev. _____

| Elev. (m.) | Depth (m.) | Std. Pen./RQD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|-------|-------------|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | |
| 292.9 | | 4-6-II-14 | 0.18 | 0.43 | 5 cm Topsoil--red/maroon and light beige clay w/ traces of sand and root hairs (CH); slightly moist, very stiff to hard; predominantly red w/ trace yellow in sample #3. qh=4.5+ kg/cm2 | 1 | 1 | 1 | 1 | 97 | 69 | 38 | 18 | A-7-5 | | |
| 292.3 | 1 | 17-25-30-22 | 0.46 | 0.15 | | 2 | | | | | | | 10 | | | |
| 291.7 | | 26-23-26-40 | 0.40 | 0.21 | qh=4.0 kg/cm2 | 3 | 9 | 3 | 3 | 41 | 44 | | 10 | A-7-6 | | |
| 291.1 | 2 | 33-50/0.4 | 0.18 | 0.09 | qh=4.5+ kg/cm2 | 4 | | | | | | | 9 | | | |
| 290.8 | | 33-50/0.4 | 0.24 | 0.03 | Light olive/beige silty clay w/ traces of oxide stains (CL); slightly moist, hard. | 5 | | | | | | | 10 | | | |
| 290.5 | 3 | | | | qh=3.5 kg/cm2 | | | | | | | | | | | |
| 290.2 | | | | | Red/maroon and olive silty clay w/ traces of oxide stains (CL); slightly moist, hard; laminated structure. | | | | | | | | | | | |
| 288.8 | 4 | 25-50/0.3 | 0.24 | 0.00 | qh=4.5+ kg/cm2 | 6 | | | | | | | 14 | | | |
| | 5 | | | | Harder drilling below about 5.2 meters | | | | | | | | | | | |
| 287.5 | 6 | | | | Interbedded gray and red/maroon soft shale w/ hard, white limestone and moderately hard sandstone lenses; limestone and sandstone lenses up to around 2" thick; poor rock quality. | 7 | | | | | | | | | | |
| | 7 | | | | | | | | | | | | | | | |
| 285.5 | 8 | | | | Indurated clay shale (10% RQD). | | | | | | | | | | | |
| 284.9 | | 55 | 1.22 | 0.30 | Very soft, dark maroon/gray shale. | 8 | | | | | | | | | | |
| 284.6 | | | | | Light brown, moderately hard, fine grained sandstone. | | | | | | | | | | | |

Date Started 071699 Date Completed 071699 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. TR 55-1 Station & Offset Surface Elev. 292.9 m Water Elev. _____

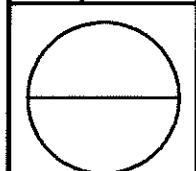
| Elev. (m.) | Depth (m.) | Std. Pen./RQD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|--------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | |
| 284.0 | | 50 | 0.61 | | Soft to medium gray shale; fair rock quality. | 9 | | | | | | | | | | |
| 283.8 | | | | | | | | | | | | | | | | |
| 283.3 | 10 | | | | Mud seam with sandstone lenses noted at 9.1 meters deep; lost water circulation - core run cut short (0.6 meters) | | | | | | | | | | | |
| | | 93 | 1.98 | 0.15 | Soft to moderately hard, gray arenaceous shale (83%) with moderately hard siltstone (17%) lenses; excellent rock quality. | 10 | | | | | | | | | | |
| 281.2 | 12 | | | | qu=200.2 kg/cm2 | | | | | | | | | | | |
| 280.5 | 13 | 88 | 1.52 | | Gray moderately hard to hard sandstone; dark striations evident in sample; good rock quality; massive bedding. qu=626.5 kg/cm2 | 11 | | | | | | | | | | |
| 279.7 | | | | | | | | | | | | | | | | |
| | 14 | | | | | | | | | | | | | | | |
| 278.6 | 15 | 75 | 2.13 | | qu=261.9 kg/cm2 | 12 | | | | | | | | | | |
| 277.6 | 16 | | | | Bottom of boring @ 15.4 meters. | | | | | | | | | | | |
| | 17 | | | | | | | | | | | | | | | |



DATE 1/20/00
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FOUNDATION SOIL PROFILE
 BORING LOGS

ATH-33-30.981



Date Started 071799 Date Completed 071799 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. TR 55-3 Station & Offset Surface Elev. 286.7 m Water Elev.

| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|----------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|----|-------|-------|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | | | |
| 286.7 | | | | | 5 cm Asphalt--Probable fill-brown silty clay w/ traces of fine sand and oxides; moist. | | | | | | | | | | | | | | |
| 286.4 | | 3-3-4-4 | 0.37 | 0.24 | | 1 | 0 | 1 | 1 | 25 | 73 | | | | | 31 | | A-7-6 | |
| 285.8 | 1 | | | | qh=2.25 kg/cm2 | | | | | | | | | | | | | | |
| 285.8 | 1 | 4-7-7-13 | 0.24 | 0.37 | qh=2.75 kg/cm2 | 2 | 7 | 2 | 3 | 0 | 88 | 42 | 21 | | 30 | | A-7-6 | | |
| 285.2 | 2 | 7-11-13-13 | 0.30 | 0.30 | Red and yellow silty clay w/ traces of sand (CL); moist, very stiff. | 3 | 12 | 10 | 5 | 24 | 49 | | | | 22 | | A-7-6 | | |
| 284.6 | | | | | qh=2.75+ kg/cm2 | | | | | | | | | | | | | | |
| 284.3 | | 6-10-14-40 | 0.52 | 0.09 | qh=3.0 kg/cm2 | 4 | 1 | 4 | 4 | 0 | 90 | 48 | 20 | | 18 | | A-7-6 | | |
| 284.0 | | | | | qh=4.5+ kg/cm2 | | | | | | | | | | | | | | |
| 283.7 | 3 | 44-50/0.4 | 0.27 | | Soft to medium siltstone/fine grained sandstone fragments. | 5 | | | | | | | | | 7 | | | | |
| 282.6 | 4 | | | | Medium hard light brown sandstone (fragments). | | | | | | | | | | | | | | |
| 282.6 | | 45-50/0.2 | 0.18 | 0.03 | | 6 | | | | | | | | | 5 | | | | |
| 281.2 | | | | | | | | | | | | | | | | | | | |
| 281.1 | 6 | 50/0.1 | 0.03 | 0.00 | Gray sandstone (fragments sampled); spoon refusal. | 7 | | | | | | | | | | | | | |
| 280.9 | | | | | 15 cm run to 5.8 m - Brown siltstone/fine grained sandstone recovered. | | | | | | | | | | | | | | |
| 280.0 | 7 | 85 | 1.62 | 0.06 | Medium hard, gray arenaceous (sandy) shale; medium bedded, good rock quality. | 8 | | | | | | | | | | | | | |
| 279.7 | | | | | Medium to moderately hard gray, medium grained sandstone. | | | | | | | | | | | | | | |
| 279.4 | 8 | 80 | 1.52 | | Medium to moderately hard brown sandstone; thickly bedded, excellent rock quality. | 9 | | | | | | | | | | | | | |
| 277.9 | | | | | | | | | | | | | | | | | | | |

Date Started 071799 Date Completed 071799 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. TR 55-3 Station & Offset Surface Elev. 286.7 m Water Elev.

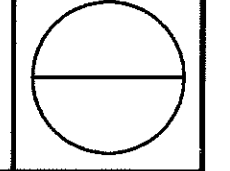
| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|-----------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|--|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | | |
| | 10 | | | | | 10 | | | | | | | | | | | | |
| 276.2 | 11 | 90 | 2.99 | 0.06 | Moderately hard gray sandstone; excellent rock quality, thickly bedded. qu=246.7 kg/cm2 | | | | | | | | | | | | | |
| 274.8 | 12 | | | | Bottom of boring @ 11.9 meters. | | | | | | | | | | | | | |
| | 13 | | | | | | | | | | | | | | | | | |
| | 14 | | | | | | | | | | | | | | | | | |
| | 15 | | | | | | | | | | | | | | | | | |
| | 16 | | | | | | | | | | | | | | | | | |
| | 17 | | | | | | | | | | | | | | | | | |



DATE 1/20/00
 DRAWN MDH
 REVIEWED
 CALCULATED
 CHECKED

FOUNDATION SOIL PROFILE
 BORING LOGS

ATH-33-30.981



Date Started 071799 Date Completed 071799 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. TR 55-4 Station & Offset Surface Elev. 285.0 m Water Elev.

| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|--|--|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | | | |
| 285.0 | | | | | 5 cm Asphalt--Probable fill-red Clay w/ traces of sandstone fragments and oxides; moist. | | | | | | | | | | | | | | |
| 284.7 | | 5-5-4-6 | 0.37 | 0.24 | | 1 | 0 | 1 | 1 | | 98 | 63 | 34 | 36 | A-7-6 | | | | |
| 284.1 | 1 | | | | qh=2.25 kg/cm2 | | | | | | | | | | | | | | |
| 283.8 | | 6-4-6-8 | 0.30 | 0.30 | | 2 | 0 | 1 | 1 | 23 | 76 | | | 23 | A-7-6 | | | | |
| 283.5 | | | | | Possible fill-mottled brown and red silty clay w/ traces of sand (CL); moist, stiff. | | | | | | | | | | | | | | |
| 282.9 | | 6-14-10-11 | 0.43 | 0.18 | | 3 | 2 | 2 | 2 | | 94 | 42 | 21 | 18 | A-7-6 | | | | |
| 282.6 | | | | | qh=4.5+ kg/cm2 | | | | | | | | | | | | | | |
| 282.3 | | 11-15-18-22 | 0.55 | 0.06 | | 4 | | | | | | | | 20 | | | | | |
| 282.3 | | | | | Light yellowish brown and red silty clay w/ traces of sand (CL); slightly moist, hard. | | | | | | | | | | | | | | |
| 280.9 | | 9-18-20-22 | 0.37 | 0.24 | Dark maroon to gray seam around 3.7 m. | 5 | | | | | | | | 17 | | | | | |
| 280.7 | | | | | qh=4.5+ kg/cm2 | | | | | | | | | | | | | | |
| 280.9 | | 23-50/0.3 | 0.21 | 0.03 | | 6 | | | | | | | | 9 | | | | | |
| 280.7 | | | | | Soft, gray to dark gray arenaceous shale. | | | | | | | | | | | | | | |
| 279.4 | | | | | | | | | | | | | | | | | | | |
| 279.4 | 6 | 50/0.3 | 0.09 | | | 7 | | | | | | | | | | | | | |
| 277.8 | | | | | | | | | | | | | | | | | | | |
| 277.8 | | 70/0.2 | 0.06 | 0.00 | | 8 | | | | | | | | | | | | | |
| 276.5 | | | | | | | | | | | | | | | | | | | |
| 276.4 | | 50/0.2 | 0.06 | 0.00 | Light brown, moderately hard, fine grained sandstone, massive light brown sandstone. | 9 | | | | | | | | | | | | | |

Date Started 071799 Date Completed 071799 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. TR 55-4 Station & Offset Surface Elev. 285.0 m Water Elev.

| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|---------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|--|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | | |
| 276.3 | | | | | | | | | | | | | | | | | | |
| 275.2 | 10 | | | | Moderately hard, light gray fine grained sandstone; fair rock quality; clay seam at 11.4 m. qu = 117.1 kg/cm2 | 10 | | | | | | | | | | | | |
| | | 66 | 2.29 | 0.76 | | | | | | | | | | | | | | |
| | 11 | | | | Note: Lifter in core barrel became binded in casing, resulting in core loss as sample was retrieved. | | | | | | | | | | | | | |
| 273.3 | 12 | | | | Bottom of boring @ 11.7 meters. | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | 13 | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | 14 | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | 15 | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | 16 | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | |
| | 17 | | | | | | | | | | | | | | | | | |

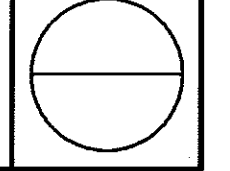
23 APR 2001 16:04:10 c:\18287\geotech\PROJECT_SOIL_PROFILE\GANNETTLOGS.dgn

GANNETT FLEMING
 SUITE 350
 415 EXECUTIVE PARKWAY
 WESTERVILLE, OHIO 43081

CALCULATED
 DATE 1/20/00
 REVIEWED
 DRAWN MDH
 CHECKED

FOUNDATION SOIL PROFILE
 BORING LOGS

ATH-33-30.981



Date Started 071699 Date Completed 071699 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. TR 55-5 Station & Offset Surface Elev. 284.7 m Water Elev. _____

| Elev. (m.) | Depth (m.) | Std. Pen./ ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | | | |
|------------|------------|----------------|-----------|-----------|------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|--|--|-------|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | | | |
| 284.7 | | | | | 7.5 cm Pavement--mottled orange-brown w/ trace red and gray silty clay w/ traces of oxides and fine sand (CL); moist, stiff. | | | | | | | | | | | | | | |
| 284.4 | | | | | | | | | | | | | | | | | | | |
| 284.1 | | 5-5-6-6 | 0.40 | 0.21 | qh=1.75 kg/cm2 | 1 | | | | | | | | | | | | | |
| 283.7 | 1 | | | | | | | | | | | | | | | | | | |
| 283.4 | | 7-10-14-16 | 0.40 | 0.21 | Light orange brown Clay w/ traces of oxides (CL); moist, very stiff. | 2 | 5 | 10 | 9 | 19 | 56 | | | | | | | | A-7-6 |
| 283.1 | | | | | qh=2.25 kg/cm2 | 3 | | | | | | | | | | | | | |
| 283.1 | 2 | 22-50/0.4 | 0.27 | | Olive brown to olive silty clay w/ traces of oxides (CL); slightly moist, hard. | | | | | | | | | | | | | | |
| 282.5 | | | | | qh=4.5+ kg/cm2 | 4 | | | | | | | | | | | | | |
| 282.5 | | 40-50/0.4 | 0.21 | 0.06 | qh=4.5+ kg/cm2 | | | | | | | | | | | | | | |
| 282.1 | | | | | | | | | | | | | | | | | | | |
| 281.9 | 3 | 50/0.3 | 0.06 | 0.03 | Moderately hard sandstone rocks (fragments in sample). | 5 | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| | 4 | | | | | | | | | | | | | | | | | | |
| 280.5 | | | | | | | | | | | | | | | | | | | |
| 280.4 | | 22-50/0.4 | 0.21 | 0.06 | Soft, weathered gray shale (fragments in sample). | 6 | | | | | | | | | | | | | |
| | 5 | | | | | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| 279.0 | 6 | 30-50/0.3 | 0.24 | 0.00 | | 7 | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| 278.0 | 7 | | | | Light brown, fine sandy silt w/ traces of oxides (SM); slightly moist, hard. | | | | | | | | | | | | | | |
| 277.5 | | | | | [Extremely weathered siltstone/fine grained sandstone] | | | | | | | | | | | | | | |
| 277.1 | | 29-26-50/0.3 | 0.27 | 0.12 | | 8 | | | | | | | | | | | | | |
| | 8 | | | | Bottom of boring @ 7.6 meters. | | | | | | | | | | | | | | |

Date Started 071699 Date Completed 071699 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. TR 64-1 Station & Offset Surface Elev. 286.1m Water Elev. 280.2 m

| Elev. (m.) | Depth (m.) | Std. Pen./ ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | | | |
|------------|------------|----------------|-----------|-----------|-----------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|--|--|------|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | | | |
| 286.1 | | 4-5-7-7 | 0.30 | 0.30 | 9 cm Topsoil--fill-mottled brown/light brown to beige silty clay w/ traces of oxides and sand; moist. qh=4.5+ kg/cm2 | 1 | | | | | | | | | | | | | |
| 285.4 | | | | | | | | | | | | | | | | | | | |
| 285.4 | 1 | 6-9-11-14 | 0.40 | 0.21 | qh=4.25 kg/cm2 | 2 | | | | | | | | | | | | | |
| 284.8 | | | | | | | | | | | | | | | | | | | |
| 284.5 | | 3-3-3-3 | 0.40 | 0.21 | Fill: orange-brown silt and sand w/ traces of oxides; moist. qh=1.5 kg/cm2, w.c.= 17% | 3 | 0 | 1 | 10 | 56 | 33 | 28 | 7 | 26 | | | | | A-4b |
| 284.2 | 2 | | | | qh=1.0 kg/cm2 | | | | | | | | | | | | | | |
| 283.9 | | 2-2-3-2 | 0.40 | 0.21 | qh=0.5 kg/cm2 | 4 | 3 | 4 | 13 | 45 | 35 | | | | | | | | A-4a |
| 283.6 | | | | | | | | | | | | | | | | | | | |
| 283.6 | 3 | shelby tube | 0.61 | | Brownish gray silty clay w/ traces of wood and organic material (CL, OL); very moist, soft. | 5 | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| | 4 | | | | | | | | | | | | | | | | | | |
| 282.1 | | | | | | | | | | | | | | | | | | | |
| 281.9 | | 7-10-14 | 0.46 | | Orange-brown and trace gray silty clay w/ traces of fine sand (CL); moist, very stiff. | 6 | | | | | | | | | | | | | 18 |
| 281.2 | 5 | | | | qh=4.5 kg/cm2 | | | | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | | | |
| 280.4 | 6 | 17-27-50/0.4 | 0.43 | | Light brown w/ trace gray very silty clay/ clayey silt w/ weathered siltstone/ sandstone fragments (CL, ML); moist to very moist, hard. | 7 | | | | | | | | | | | | | 16 |
| | | | | | | | | | | | | | | | | | | | |
| 279.3 | 7 | | | | Soft, gray to olive gray silty clay (CL) and shale. | | | | | | | | | | | | | | |
| 278.9 | | 21-50/0.4 | 0.24 | 0.03 | qh=4.5+ kg/cm2 | 8 | | | | | | | | | | | | | 12 |
| | 8 | | | | | | | | | | | | | | | | | | |
| 277.8 | | 50/0.1 | 0.00 | 0.03 | Bottom of boring @ 8.3 meters. | 9 | | | | | | | | | | | | | |
| 277.8 | | | | | | | | | | | | | | | | | | | |

FOUNDATION SOIL PROFILE BORING LOGS

ATH-33-30.981

GANNETT FLEMING
 SUITE 350
 4151 EXECUTIVE PARKWAY
 WESTERVILLE, OHIO 43081

DRAWN MDH
 REVIEWED
 DATE 1/20/00
 CALCULATED
 CHECKED

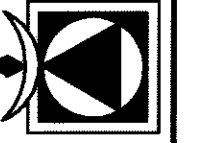
90 / 105

Date Started 071599 Date Completed 071599 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. TR 64-2 Station & Offset Surface Elev. 287.1m Water Elev.

| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|----|------|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | |
| 287.1 | | 6-17-17-20 | 0.15 | 0.46 | Probable fill-mottled brown and orange brown silty clay w/ little to some sand, traces of oxides and gravel; slightly moist. qh=4.5+ kg/cm2 | 1 | | | | | | | | | | 12 | |
| 286.5 | 1 | 12-11-7-7 | 0.37 | 0.24 | Light orange brown w/ trace gray sandy silt (ML); slightly moist to moist medium dense. qh=1.5 kg/cm2 | 2 | 9 | 7 | 36 | 20 | 27 | | | | | 13 | A-4a |
| 285.9 | | 5-5-21-31 | 0.37 | 0.24 | Light olive brown and orange brown silty clay (CL); slightly moist, hard; laminated structure; olive brown in sample #5. | 3 | 8 | 4 | 33 | 38 | 17 | | | | | 11 | A-4a |
| 285.6 | | 7-30-40-38 | 0.37 | 0.24 | | 4 | 17 | 7 | 6 | 41 | 29 | | | | | 11 | A-6a |
| 284.7 | 3 | 14-28-40-36 | 0.61 | | qh=4.5+ kg/cm2 | 5 | | | | | | | | | | 13 | |
| 283.1 | 4 | | | | | | | | | | | | | | | | |
| 283.0 | 5 | 17-39-50/0.3 | 0.34 | 0.06 | Olive to gray silty clay (CL); slightly moist, hard; [Extremely weathered shale]. qh=4.5+ kg/cm2 | 6 | | | | | | | | | | 15 | |
| 281.6 | 6 | 50/0.3 | 0.09 | | Light gray, medium hard sandstone (fragments). | 7 | | | | | | | | | | | |
| 281.5 | | | | | Light gray to gray, medium to moderately hard sandstone; fair rock quality, thickly bedded. qu=518.0 kg/cm2 | 8 | | | | | | | | | | | |
| 279.5 | 8 | 53 | 1.68 | 0.15 | | | | | | | | | | | | | |
| | | | | | Bottom of boring @ 7.6 meters. | | | | | | | | | | | | |

Date Started 071599 Date Completed 071599 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. TR 64-3 Station & Offset Surface Elev. 288.7 m Water Elev.

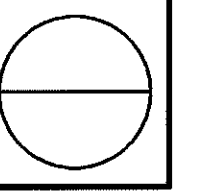
| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|----------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|----|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | |
| 288.7 | | | | | 5 cm Pavement | | | | | | | | | | | | |
| 288.4 | | 4-12-50/0.3 | 0.30 | 0.09 | Light brown silty sand w/ sandstone fragments (SM); slightly moist to moist, dense; [weathered fine grained sandstone. | 1 | | | | | | | | | | 12 | |
| 287.8 | 1 | 75/0.4 | 0.09 | 0.03 | Sandstone fragments below 0.9 m. | 2 | | | | | | | | | | | |
| 287.2 | 2 | | | | Light brown fine to medium grained, medium to moderately hard sandstone; fair to good rock quality, thick to massive bedding. qu=86.0 kg/cm2 | | | | | | | | | | | | |
| | 3 | 75 | 2.59 | 0.46 | | 3 | | | | | | | | | | | |
| | 4 | | | | | | | | | | | | | | | | |
| 284.1 | 5 | | | | Bottom of boring @ 4.6 meters. | | | | | | | | | | | | |
| | 6 | | | | | | | | | | | | | | | | |
| | 7 | | | | | | | | | | | | | | | | |
| | 8 | | | | | | | | | | | | | | | | |



| | |
|----------|---------|
| DATE | 1/20/00 |
| REVIEWED | |
| DRAWN | MDH |
| CHECKED | |

FOUNDATION SOIL PROFILE
 BORING LOGS

ATH-33-30.981

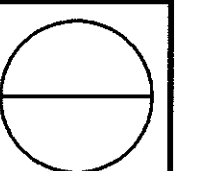


Date Started 071599 Date Completed 071599 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. TR 64-4 Station & Offset Surface Elev. 291.4 m Water Elev.

| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|--------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|--|----|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | | | |
| 291.4 | | | | | 5 cm Pavement (tar and chip) | | | | | | | | | | | | | | |
| 291.1 | | 4-4-6-7 | 0.43 | 0.18 | Light orange-brown w/ light gray silty clay w/ traces of oxides (CL); moist, medium stiff to stiff. qh=2.25 kg/cm2 | 1 | | | | | | | | | | | | 19 | |
| 290.5 | 1 | | | | | | | | | | | | | | | | | | |
| 290.2 | | 11-20-50/0.5 | 0.37 | 0.09 | qh=4.5+ kg/cm2 | 2 | | | | | | | | | | | | 10 | |
| 289.9 | | 20-50/0.3 | 0.21 | 0.03 | Light olive brown to olive silty clay (CL); slightly moist, hard. | 3 | | | | | | | | | | | | 7 | |
| 289.3 | 2 | | | | | | | | | | | | | | | | | | |
| 289.0 | | 50/0.4 | 0.09 | 0.03 | | 4 | | | | | | | | | | | | | |
| 288.7 | 3 | | | | Medium to moderately hard light brown sandstone fragments; auger refusal at 2.7 m. | | | | | | | | | | | | | | |
| | | 54 | 1.80 | 0.03 | Medium to moderately hard light brown sandstone; fair rock quality, thick to massive bedding. | 5 | | | | | | | | | | | | | |
| | 4 | | | | Darker brown striations noted in core sample. | | | | | | | | | | | | | | |
| 286.8 | 5 | | | | qu=119.2 kg/cm2 | | | | | | | | | | | | | | |
| | | 61 | 2.13 | | | 6 | | | | | | | | | | | | | |
| 284.7 | 7 | | | | Bottom of boring @ 6.7 meters. | | | | | | | | | | | | | | |
| | 8 | | | | | | | | | | | | | | | | | | |

Date Started 071599 Date Completed 071599 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. TR 64-5 Station & Offset Surface Elev. 293.8 m Water Elev.

| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|--|----|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | | |
| 293.8 | | | | | 5 cm Pavement--(tar and chip); fill-mottled brown silty clay w/ sand. | | | | | | | | | | | | | |
| 293.5 | | 4-2-3-5 | 0.30 | 0.30 | Red w/ trace orange-brown and gray silty clay w/ trace oxides (CL); moist, soft. qh=1.25 kg/cm2 | 1 | | | | | | | | | | | | 31 |
| 293.1 | 1 | | | | | | | | | | | | | | | | | |
| 292.9 | | 8-6-11-14 | 0.34 | 0.27 | Red w/ trace gray silty clay (CL); moist, hard. | 2 | 0 | 1 | 2 | 30 | 66 | | | | | | | 28 |
| 292.3 | | | | | qh=3.75 kg/cm2 | 3 | 0 | 1 | 8 | | 91 | 42 | 15 | | | | | 27 |
| 291.7 | 2 | | | | qh=2.25 kg/cm2 | | | | | | | | | | | | | |
| 291.7 | | 6-6-8-10 | 0.43 | 0.18 | qh=2.5 kg/cm2 | 4 | | | | | | | | | | | | 26 |
| 291.1 | 3 | | | | qh=2.75 kg/cm2 | 5 | | | | | | | | | | | | 23 |
| 290.5 | | | | | | | | | | | | | | | | | | |
| 290.2 | | shelby tube | 0.37 | 0.24 | | 6 | | | | | | | | | | | | |
| 289.7 | 4 | | | | Light olive brown to beige silty clay (CL); moist, hard. | | | | | | | | | | | | | |
| | | 18-35-50/0.3 | 0.37 | 0.03 | | 7 | | | | | | | | | | | | 12 |
| | 5 | | | | | | | | | | | | | | | | | |
| 288.4 | | | | | | | | | | | | | | | | | | |
| 288.2 | | 50/0.4 | 0.09 | 0.03 | Light brown to beige, medium to moderately hard, fine to medium grained sandstone w/ dark brown striations/laminations; good to excellent rock quality; massively bedded. qu=151.2 kg/cm2 | 8 | | | | | | | | | | | | |
| 288.1 | 6 | | | | | | | | | | | | | | | | | |
| | | 75 | 1.83 | | | 9 | | | | | | | | | | | | |
| | 7 | | | | | | | | | | | | | | | | | |
| 286.3 | 8 | | | | | | | | | | | | | | | | | |
| | | 98 | 1.58 | | | 10 | | | | | | | | | | | | |



Date Started 071599 Date Completed 071599 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. TR 64-5 Station & Offset _____ Surface Elev. 293.8 m Water Elev. _____

| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|--------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|--|--|--|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | | | | |
| 284.7 | | | | | Bottom of boring @ 9.2 meters. | | | | | | | | | | | | | | | |
| | 10 | | | | | | | | | | | | | | | | | | | |
| | 11 | | | | | | | | | | | | | | | | | | | |
| | 12 | | | | | | | | | | | | | | | | | | | |
| | 13 | | | | | | | | | | | | | | | | | | | |
| | 14 | | | | | | | | | | | | | | | | | | | |
| | 15 | | | | | | | | | | | | | | | | | | | |
| | 16 | | | | | | | | | | | | | | | | | | | |
| | 17 | | | | | | | | | | | | | | | | | | | |

Date Started 073099 Date Completed 073099 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. RAW-1 Station & Offset _____ Surface Elev. 211.3 m Water Elev. _____

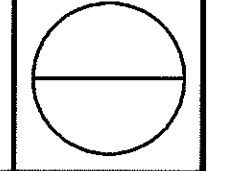
| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|--|--|--|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | | | | |
| 211.3 | | 10-50/0.1 | 0.09 | 0.09 | Fill-gravel and topsoil 18 cm. | 1 | | | | | | | | | | | | | | |
| 210.7 | 1 | 55/0.2 | 0.00 | 0.06 | Light brown, moderately hard sandstone fragments. Had to grind down to set core barrel. | 2 | | | | | | | | | | | | | | |
| 209.6 | 2 | 76 | 1.25 | 0.15 | Light brown to gray, hard, medium to coarse sandstone; good to excellent rock quality, massive bedding; light gray below about 3.5 m. qu=154.8 kg/cm ² | 3 | | | | | | | | | | | | | | |
| 208.2 | 3 | | | | | 4 | | | | | | | | | | | | | | |
| | 4 | 92 | 1.52 | | | | | | | | | | | | | | | | | |
| 206.7 | 5 | | | | Bottom of boring @ 4.6 meters. | | | | | | | | | | | | | | | |
| | 6 | | | | | | | | | | | | | | | | | | | |
| | 7 | | | | | | | | | | | | | | | | | | | |
| | 8 | | | | | | | | | | | | | | | | | | | |



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|------------|---------|
| CALCULATED | CHECKED |
| DATE | 1/20/00 |
| REVIEWED | |
| DRAWN | MDH |

**FOUNDATION SOIL PROFILE
 BORING LOGS**

ATH-33-30.981

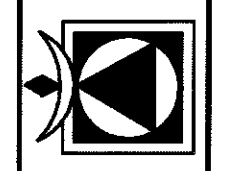


Date Started 080599 Date Completed 080599 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. RAW-2 Station & Offset Surface Elev. 216.2 m Water Elev.

| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|---|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | |
| 216.2 | | 2-3-15-50/0.4 | 0.27 | 0.30 | Mottled red and brown w/ trace light brown silty clay w/ traces of sandstone fragments (CL); moist, very stiff; gray shale noted in bottom of spoon. qh=2.25 kg/cm2 | 1 | | | | | | | | | | | 9 |
| 215.8 | | 50/0.3 | 0.03 | 0.06 | | 2 | | | | | | | | | | | |
| 215.6 | 1 | | | | Soft to medium hard gray arenaceous shale and fine grained sandstone/siltstone. Had to grind through bedrock to set core barrel at 2.9 meters. | | | | | | | | | | | | |
| | 2 | | | | | | | | | | | | | | | | |
| 213.3 | 3 | | | | Light gray fine to medium grained, medium to moderately hard sandstone; thickly bedded, good to fair rock quality. qu=522.7 kg/cm2 | | | | | | | | | | | | |
| | 4 | 75 | 1.65 | 0.00 | | 3 | | | | | | | | | | | |
| 211.9 | | | | | --trace of light brown color 4.3 m to 4.4 m deep | | | | | | | | | | | | |
| 211.6 | 5 | | | | | | | | | | | | | | | | |
| 210.9 | | 55 | 1.52 | | --trace of light brown color 5.3 m to 5.5 m deep | | | | | | | | | | | | |
| 210.1 | 6 | | | | | 4 | | | | | | | | | | | |
| 209.2 | | 45 | 1.40 | 0.12 | --light brown sandstone with "poor" rock quality below 7.0 m (final 1.5 m core run appeared to have been disturbed during drilling). | | | | | | | | | | | | |
| 208.6 | 7 | | | | | 5 | | | | | | | | | | | |
| | 8 | | | | Bottom of boring @ 7.6 meters. | | | | | | | | | | | | |

Date Started 080599 Date Completed 080599 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. RAW-3 Station & Offset Surface Elev. 219.1m Water Elev.

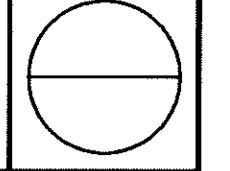
| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | |
|------------|------------|----------------|-----------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|-------|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | |
| 219.1 | | 2-4-5-7 | 0.34 | 0.27 | Mottled gray w/ trace maroon silty clay w/ traces of limestone nodule fragments (CL); moist, medium stiff. qh=4.5+ kg/cm2 | 1 | 2 | 1 | 2 | | 95 | 42 | 19 | 12 | | | A-7-6 |
| 218.5 | | | | | | 2 | | | | | | | | | | | 8 |
| 218.3 | 1 | 9-27-34-50/0.2 | 0.34 | 0.18 | Gray w/ trace olive brown silty clay (CL); slightly moist, hard. | | | | | | | | | | | | |
| 218.0 | | 50/0.3 | 0.09 | | | 3 | | | | | | | | | | | 4 |
| 217.9 | | | | | Soft, gray arenaceous shale. | | | | | | | | | | | | |
| 217.2 | 2 | 50/0.4 | 0.06 | 0.06 | | 4 | | | | | | | | | | | 4 |
| 216.6 | | 29-50/0.3 | 0.18 | 0.06 | Light brown to gray, soft to moderately hard, arenaceous shale w/ limestone nodules and moderately hard to hard, fine to medium grained, light gray sandstone w/ dark striations; good rock quality, medium to thickly bedded. | | | | | | | | | | | | |
| 216.0 | 3 | 50/0.3 | 0.09 | | | 5 | | | | | | | | | | | 3 |
| 215.9 | | | | | moderately hard shale 3.5 m to 4.3 m deep; light brown soft to medium shale in top 10 cm of core run. | | | | | | | | | | | | |
| 215.4 | 4 | 75 | 1.34 | 0.18 | | 6 | | | | | | | | | | | |
| 214.4 | | | | | qu=500.4 kg/cm2 | | | | | | | | | | | | |
| 212.7 | 5 | 87 | 3.05 | | | 7 | | | | | | | | | | | |
| 211.5 | | | | | Light gray, striated fine to medium grained, moderately hard sandstone; excellent rock quality, thickly bedded. | | | | | | | | | | | | |
| 211.3 | 6 | 100 | 1.52 | | | 8 | | | | | | | | | | | |
| | | | | | | | | | | | | | | | | | |



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| CALCULATED | CHECKED |
| DATE | 1/20/00 |
| REVIEWED | |
| DRAWN | MDH |

**FOUNDATION SOIL PROFILE
 BORING LOGS**

ATH-33-30.981



Date Started 080599 Date Completed 080599 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. RAW-3 Station & Offset _____ Surface Elev. 219.1m Water Elev. _____

| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|--------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|--|--|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | | | |
| 209.8 | | | | | Bottom of boring @ 9.3 meters. | | | | | | | | | | | | | | |
| | 10 | | | | | | | | | | | | | | | | | | |
| | 11 | | | | | | | | | | | | | | | | | | |
| | 12 | | | | | | | | | | | | | | | | | | |
| | 13 | | | | | | | | | | | | | | | | | | |
| | 14 | | | | | | | | | | | | | | | | | | |
| | 15 | | | | | | | | | | | | | | | | | | |
| | 16 | | | | | | | | | | | | | | | | | | |
| | 17 | | | | | | | | | | | | | | | | | | |

Date Started 072999 Date Completed 072999 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. RAW-4 Station & Offset _____ Surface Elev. 220.9 m Water Elev. _____

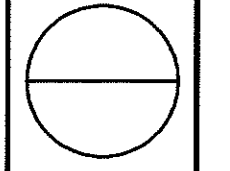
| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|--------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|----|-------|-------|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | | | | |
| 220.9 | | 2-5-7-12 | 0.30 | 0.30 | Fill-grayish brown silty clay w/ traces of black and gray shale fragments; moist. | 1 | 7 | 4 | 4 | 23 | 62 | | | | 16 | | | A-7-6 | | |
| 220.2 | | | | | qh=3.25 kg/cm2 | | | | | | | | | | | | | | | |
| | 1 | 28-28-31-37 | 0.18 | 0.43 | qh=2.5 kg/cm2 | 2 | | | | | | | | | | | 14 | | | |
| 219.6 | | | | | | | | | | | | | | | | | | | | |
| | | 20-50-50/0.2 | 0.24 | 0.12 | Dark olive gray to gray silty clay (CL); slightly moist, hard; laminated structure. | 3 | 1 | 2 | 3 | | 94 | 45 | 20 | 11 | | | | | A-7-6 | |
| 219.0 | | | | | qh=4.5+ kg/cm2 | | | | | | | | | | | | | | | |
| 218.7 | | 30-50/0.3 | 0.15 | 0.09 | Very soft to soft, gray arenaceous shale. | 4 | | | | | | | | | | | | 8 | | |
| 218.4 | | | | | | | | | | | | | | | | | | | | |
| | | 45-50/0.2 | 0.18 | 0.03 | | 5 | | | | | | | | | | | | | 7 | |
| | 3 | | | | | | | | | | | | | | | | | | | |
| | 4 | | | | | | | | | | | | | | | | | | | |
| 216.7 | | 50/0.5 | 0.09 | 0.06 | Soft to medium, gray arenaceous shale; fair rock quality, medium bedding. | 6 | | | | | | | | | | | | | | |
| 216.6 | | | | | | | | | | | | | | | | | | | | |
| 216.4 | | 50 | 0.21 | | --limestone nodules and lenses noted below about 4.6 meters. | 7 | | | | | | | | | | | | | | |
| | 5 | | | | | | | | | | | | | | | | | | | |
| | | 50 | 1.43 | 0.09 | | 8 | | | | | | | | | | | | | | |
| | 6 | | | | Moderately hard in and below sample #9. | | | | | | | | | | | | | | | |
| 214.8 | | | | | | | | | | | | | | | | | | | | |
| | 7 | 87 | 1.52 | | Medium to moderately hcrd, gray, fine grained sandstone/siltstone; thick to massive bedding; fair to good rock quality; isolated fissile lenses. | 9 | | | | | | | | | | | | | | |
| 213.8 | | | | | | | | | | | | | | | | | | | | |
| 213.3 | | | | | | | | | | | | | | | | | | | | |
| | 8 | | | | qu=277.6 kg/cm2 | | | | | | | | | | | | | | | |
| | | 77 | 1.31 | 0.21 | | 10 | | | | | | | | | | | | | | |
| 212.2 | | | | | | | | | | | | | | | | | | | | |



DRAWN: MDH
 REVIEWED:
 DATE: 1/20/00
 CALCULATED:
 CHECKED:

**FOUNDATION SOIL PROFILE
 BORING LOGS**

ATH-33-30.981

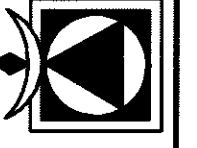


Date Started 072999 Date Completed 072999 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. RAW-4 Station & Offset Surface Elev. 220.9 m Water Elev.

| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|--------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|--|--|--|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | | | | |
| 211.8 | | | | | | | | | | | | | | | | | | | | |
| | 10 | 56 | 1.83 | | | II | | | | | | | | | | | | | | |
| 210.6 | | | | | Hard, light brown, fine to medium grained sandstone w/ dark striations; isolated fissile lenses. | | | | | | | | | | | | | | | |
| 210.0 | II | | | | Bottom of boring @ 10.9 meters. | | | | | | | | | | | | | | | |
| | 12 | | | | | | | | | | | | | | | | | | | |
| | 13 | | | | | | | | | | | | | | | | | | | |
| | 14 | | | | | | | | | | | | | | | | | | | |
| | 15 | | | | | | | | | | | | | | | | | | | |
| | 16 | | | | | | | | | | | | | | | | | | | |
| | 17 | | | | | | | | | | | | | | | | | | | |

Date Started 072899 Date Completed 072899 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. RAW-5 Station & Offset Surface Elev. 220.4 m Water Elev.

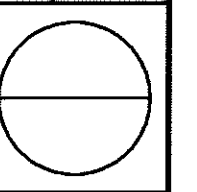
| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|--|--|--|--|-------|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | | | | | |
| 220.4 | | 7-17-23-26 | 0.21 | 0.40 | Fill: Mottled brownish gray silty clay w/ traces of sand, gravel, organic fibers and apparent coal pieces. qh=4.5 kg/cm2 | 1 | | | | | | | | | | | | | | | |
| 219.8 | 1 | 13-20-14-16 | 0.15 | 0.46 | qh=4.5+ kg/cm2 | 2 | | | | | | | | | | | | | | | II |
| 219.2 | | | | | qh=2.75 kg/cm2 | 3 | | | | | | | | | | | | | | | |
| 218.7 | | 6-13-14-16 | 0.15 | 0.46 | | 4 | | | | | | | | | | | | | | | 12 |
| 218.6 | 2 | 19-40-50/0.2 | 0.21 | 0.15 | Light brown/beige w/ trace orange silty clay w/ traces of oxides (CL); slightly moist, hard. | 4 | 0 | 2 | 4 | 30 | 64 | | | | | | | | | | A-7-6 |
| 218.0 | | 25-50/0.3 | 0.15 | 0.09 | qh=3.0 kg/cm2 | 5 | 3 | 7 | 5 | 85 | 41 | 19 | 10 | | | | | | | | A-7-6 |
| | 3 | | | | qh=4.5+ kg/cm2 | | | | | | | | | | | | | | | | |
| 216.8 | | | | | Olive brown, soft weathered shale. | | | | | | | | | | | | | | | | |
| 216.3 | | 43-50/0.1 | 0.09 | 0.09 | | 6 | | | | | | | | | | | | | | | 5 |
| 215.5 | 5 | | | | Light gray, medium hard to moderately hard, fine grained sandstone. | | | | | | | | | | | | | | | | |
| 214.8 | | 50/0.2 | 0.03 | 0.03 | | 7 | | | | | | | | | | | | | | | |
| 214.7 | 6 | 30 | 0.15 | 0.18 | | 8 | | | | | | | | | | | | | | | |
| 214.4 | | | | | Olive and light gray sandstone below 5.8 m; soft to medium hard w/ shale/clay seams. | | | | | | | | | | | | | | | | |
| | 7 | 70 | 1.52 | | | 9 | | | | | | | | | | | | | | | |
| 212.9 | | | | | Medium hard to moderately hard alternating gray to light brown, fine to medium grained sandstone; thickly to massive bedded below 7.3 m. | | | | | | | | | | | | | | | | |
| | 8 | 77 | 1.49 | 0.03 | | 10 | | | | | | | | | | | | | | | |



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| DATE | 1/20/00 |
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| DRAWN | MDH |
| CALCULATED | |
| CHECKED | |

FOUNDATION SOIL PROFILE
 BORING LOGS

ATH-33-30.981

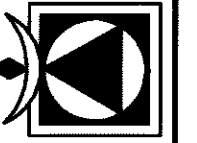


Date Started 072899 Date Completed 072899 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. RAW-5 Station & Offset Surface Elev. 220.4 m Water Elev.

| Elev. (m.) | Depth (m.) | Std. Pen./RQD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|---------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|--|--|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | | | |
| 211.3 | 10 | 70 | 1.52 | | Dark striations below 8.8 m; predominantly light gray and moderately hard below 9.1m. | 11 | | | | | | | | | | | | | |
| 209.8 | 11 | | | | Bottom of boring @ 10.6 meters. | | | | | | | | | | | | | | |
| | 12 | | | | | | | | | | | | | | | | | | |
| | 13 | | | | | | | | | | | | | | | | | | |
| | 14 | | | | | | | | | | | | | | | | | | |
| | 15 | | | | | | | | | | | | | | | | | | |
| | 16 | | | | | | | | | | | | | | | | | | |
| | 17 | | | | | | | | | | | | | | | | | | |

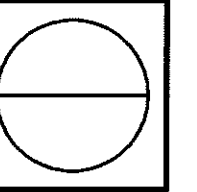
Date Started 080699 Date Completed 080699 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. RAW-6 Station & Offset Surface Elev. 213.1m Water Elev.

| Elev. (m.) | Depth (m.) | Std. Pen./RQD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|----|--|-------|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | | |
| 213.1 | | 8-11-12-15 | 0.21 | 0.40 | Fill-Mottled brown and gray silty clay w/ some sand and rock fragments; moist. | 1 | 25 | 9 | 13 | 20 | 33 | | | | | 12 | | A-7-6 |
| 212.5 | 1 | 3-11-6-8 | 0.09 | 0.52 | qh=1.75 kg/cm2 | 2 | | | | | | | | | | | | |
| 211.9 | | 5-7-7-9 | 0.34 | 0.27 | qh=2.0 kg/cm2 | 3 | 26 | 7 | 8 | | 59 | 41 | 19 | 15 | | | | A-7-6 |
| 211.3 | 2 | 5-5-5-6 | 0.21 | 0.40 | qh=2.25 kg/cm2 | 4 | | | | | | | | | | 13 | | |
| 210.7 | | | | | qh=1.75 kg/cm2 | | | | | | | | | | | | | |
| 210.4 | 3 | 9-8-20-50/0.5 | 0.34 | 0.27 | Light brown silty sand w/ little sandstone fragments (SM); moist, medium dense. | 5 | | | | | | | | | | | | |
| 209.8 | 4 | | | | Medium to moderately hard, light brown, fine to medium grained sandstone; good rock quality. | | | | | | | | | | | | | |
| 209.0 | | 50/0.1 | 0.03 | | | 6 | | | | | | | | | | | | |
| 208.9 | | | | | | | | | | | | | | | | | | |
| 208.6 | 5 | 80 | 1.52 | | qu=152.2 kg/cm2 | 7 | | | | | | | | | | | | |
| 207.2 | 6 | | | | | | | | | | | | | | | | | |
| | 7 | 33 | 0.70 | 0.82 | Poor rock quality below 6.1m; possible cavity or soft mud seam from 6.7 m to 7.2 m. | 8 | | | | | | | | | | | | |
| 205.7 | 8 | | | | Marled maroon w/ trace gray and olive, soft to very soft shale; good rock quality; medium hard at top of interval. (RQD measurement misleading) | 9 | | | | | | | | | | | | |
| 204.6 | | 87 | 1.52 | | qh=39.7 kg/cm2 | | | | | | | | | | | | | |



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| CHECKED |
| CALCULATED |
| DATE 1/20/00 |
| REVIEWED |
| DRAWN MDH |

FOUNDATION SOIL PROFILE
 BORING LOGS

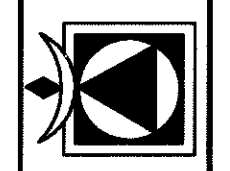


Date Started 080699 Date Completed 080699 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. RAW-6 Station & Offset Surface Elev. 213.1m Water Elev.

| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|--------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|--|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | | |
| 204.1 | | | | | Bottom of boring @ 9.0 meters. | | | | | | | | | | | | | |
| | 10 | | | | | | | | | | | | | | | | | |
| | 11 | | | | | | | | | | | | | | | | | |
| | 12 | | | | | | | | | | | | | | | | | |
| | 13 | | | | | | | | | | | | | | | | | |
| | 14 | | | | | | | | | | | | | | | | | |
| | 15 | | | | | | | | | | | | | | | | | |
| | 16 | | | | | | | | | | | | | | | | | |
| | 17 | | | | | | | | | | | | | | | | | |

Date Started 072999 Date Completed 072999 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. RAW-8 Station & Offset Surface Elev. 222.0 m Water Elev.

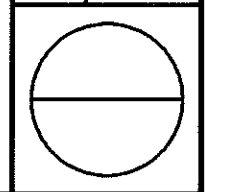
| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|----|--|-------|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | | |
| 222.0 | | 5-6-II-15 | 0.24 | 0.37 | Fill-mottled gray, olive and red silty clay w/ traces of organic fibers and shale fragments. qh=3.0 kg/cm2 | 1 | | | | | | | | | | | | |
| 221.4 | | | | | | | | | | | | | | | | | | |
| 221.1 | 1 | 12-20-22-25 | 0.30 | 0.30 | Mottled gray w/ brown to dark gray silty clay (CL); slightly moist, hard. | 2 | 2 | 1 | 3 | 28 | 66 | | | | | 19 | | A-7-6 |
| 220.8 | | 13-32-50/0.4 | 0.27 | 0.15 | | 3 | | | | | | | | | | | | |
| 220.2 | 2 | 50/0.5 | 0.06 | 0.09 | | 4 | | | | | | | | | | | | |
| 219.6 | | 40-50/0.2 | 0.12 | 0.09 | Medium, gray arenaceous shale. | 5 | | | | | | | | | | | | |
| 217.9 | | | | | | | | | | | | | | | | | | |
| 217.9 | | 50/0.1 | 0.03 | 0.06 | Soft, gray, arenaceous shale w/ limestone nodules; poor rock quality, thinly bedded. | 6 | | | | | | | | | | | | |
| 217.6 | | 0 | 0.24 | | | 7 | | | | | | | | | | | | |
| | 5 | 55 | 1.52 | | Medium to moderately hard, gray, arenaceous shale w/ limestone nodules; fair rock quality, medium bedding. | 8 | | | | | | | | | | | | |
| | | | | | qu=196.8 kg/cm2 | | | | | | | | | | | | | |
| 216.0 | | 42 | 1.40 | 0.12 | Gray, medium to moderately hard, fine grained sandstone w/ soft gray shale seams; limestone nodules below about 6.6 m; poor rock quality, medium to thick bedding. | 9 | | | | | | | | | | | | |
| 214.5 | | 62 | 1.31 | 0.21 | Medium, gray arenaceous shale and moderately hard to hard, light gray, fine to medium grained sandstone; fair rock quality, medium bedding; sandstone below about 7.9 m; mud seam at about 8.8 m. | 10 | | | | | | | | | | | | |



| | |
|------------|---------|
| CALCULATED | CHECKED |
| DATE | 1/20/00 |
| REVIEWED | |
| DRAWN | MDH |

FOUNDATION SOIL PROFILE
 BORING LOGS

ATH-33-30.981



Date Started 072999 Date Completed 072999 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. RAW-8 Station & Offset Surface Elev. 222.0 m Water Elev.

| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|--|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | | |
| 213.0 | | | | | Light gray, medium hard to moderately hard, fine to medium grained fissile sandstone w/ shale seams; poor rock quality, thin to medium bedding. | 11 | | | | | | | | | | | | |
| | 10 | 29 | 1.83 | | | | | | | | | | | | | | | |
| 211.2 | 11 | | | | Bottom of boring @ 10.9 meters. | | | | | | | | | | | | | |
| | 12 | | | | | | | | | | | | | | | | | |
| | 13 | | | | | | | | | | | | | | | | | |
| | 14 | | | | | | | | | | | | | | | | | |
| | 15 | | | | | | | | | | | | | | | | | |
| | 16 | | | | | | | | | | | | | | | | | |
| | 17 | | | | | | | | | | | | | | | | | |

Date Started 072899 Date Completed 072899 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. RAW-9 Station & Offset Surface Elev. 221.6 m Water Elev.

| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|----|-------|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | | |
| 221.6 | | 5-10-15-18 | 0.15 | 0.46 | Probable fill-mottled brown and olive brown silty clay w/ traces of organic fibers; slightly moist. qh=4.5+ kg/cm2 | 1 | | | | | | | | | | | 13 | |
| 221.0 | | | | | | | 2 | 4 | 0 | 3 | | 93 | 52 | 21 | 15 | | | A-7-5 |
| 220.8 | 1 | 10-13-15-21 | 0.34 | 0.27 | Olive to olive and dark gray silty clay (CL); slightly moist, hard. | 2 | | | | | | | | | | | | |
| 220.3 | | 8-24-32-38 | 0.27 | 0.34 | | | 3 | | | | | | | | | | | 11 |
| 219.7 | 2 | 27-50/0.2 | 0.12 | 0.09 | qh=4.5+ kg/cm2 | 4 | | | | | | | | | | | 10 | |
| 219.1 | | 50/0.4 | 0.09 | 0.03 | | | 5 | | | | | | | | | | | 9 |
| | 3 | | | | | | | | | | | | | | | | | |
| 217.9 | 4 | | | | Soft to medium, gray arenaceous shale. | | | | | | | | | | | | | |
| 217.4 | | 50/0.4 | 0.12 | | Soft to medium, gray arenaceous shale w/ traces of limestone nodules; thickly bedded, poor rock quality. | 6 | | | | | | | | | | | | |
| 217.3 | | 0 | 0.18 | | | | 7 | | | | | | | | | | | |
| 217.1 | 5 | | | | | | | | | | | | | | | | | |
| 216.1 | | 43 | 1.40 | 0.12 | qu=143.9 kg/cm2 | 8 | | | | | | | | | | | | |
| 215.6 | 6 | | | | | | | | | | | | | | | | | |
| 215.2 | 7 | 68 | 1.46 | 0.06 | Medium, fine to medium grained, gray sandstone; thickly bedded, fair to poor rock quality. -- medium to moderately hard below 7.6 m. | 9 | | | | | | | | | | | | |
| 214.1 | 8 | | | | | | 10 | | | | | | | | | | | |
| | | 48 | 1.52 | | | | | | | | | | | | | | | |

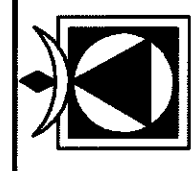


Date Started 072899 Date Completed 072899 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. RAW-9 Station & Offset Surface Elev. 221.6 m Water Elev.

| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|---------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|--|--|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | | | |
| 212.5 | | | | | Light gray, moderately hard to hard, fine to medium grained sandstone; fair rock quality, thick to massive bedding. | | | | | | | | | | | | | | |
| | 10 | 72 | 1.55 | 0.27 | -- dark striations below 9.5 m. | 11 | | | | | | | | | | | | | |
| 210.7 | 11 | | | | Bottom of boring @ 10.9 meters. | | | | | | | | | | | | | | |
| | 12 | | | | | | | | | | | | | | | | | | |
| | 13 | | | | | | | | | | | | | | | | | | |
| | 14 | | | | | | | | | | | | | | | | | | |
| | 15 | | | | | | | | | | | | | | | | | | |
| | 16 | | | | | | | | | | | | | | | | | | |
| | 17 | | | | | | | | | | | | | | | | | | |

Date Started 072999 Date Completed 072999 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. RAW-10 Station & Offset Surface Elev. 220.2 m Water Elev.

| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|---------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|--|----|------|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | | | |
| 220.2 | | 5-4-7-7 | 0.24 | 0.37 | Fill-mottled brown, olive and gray silty clay w/ trace to little fine sand and shale fragments; moist. qh=2.0 kg/cm2 | 1 | | | | | | | | | | | | 14 | |
| 219.6 | 1 | 7-14-17-20 | 0.30 | 0.30 | qh=4.5+ kg/cm2 | 2 | | | | | | | | | | | | 9 | |
| 219.0 | | 8-9-7-9 | 0.12 | 0.49 | | 3 | | | | | | | | | | | | 8 | |
| 218.4 | 2 | | | | | 4 | | | | | | | | | | | | 14 | |
| 218.1 | | 8-11-11-9 | 0.15 | 0.46 | -- black shale fragments noted in sample #4. | 4 | | | | | | | | | | | | | |
| 217.8 | | 12-13-8-7 | 0.24 | 0.37 | qh=4.25 kg/cm2 | 5 | | | | | | | | | | | | 15 | |
| 216.5 | 4 | | | | -- predominantly gray coloring below 3.7 m. | | | | | | | | | | | | | | |
| 216.1 | | 7-8-10 | 0.21 | 0.24 | qh=3.5 kg/cm2 | 6 | 16 | 6 | 8 | 36 | 33 | | | | | | | 13 | A-6a |
| 215.0 | | | | | | | | | | | | | | | | | | | |
| 214.6 | 6 | 5-9-15 | 0.30 | 0.15 | Probable fill-light brown to brown silty clay w/ traces of gray sandstone fragments, sand and organic fibers/oxides. qh=3.25 kg/cm2 | 7 | | | | | | | | | | | | 18 | |
| 213.1 | | 50/0.0 | 0.00 | | | 8 | | | | | | | | | | | | | |
| 213.0 | | 77 | 0.24 | | Marled olive brown and light gray, hard limestone; good rock quality, thin bedding. | 9 | | | | | | | | | | | | | |
| 212.8 | 8 | | | | Light brown w/ trace gray, medium to moderately hard, fine to medium grained sandstone; darker brown striations noted in sandstone; thick to massive bedding, fair to good rock quality. qu=96.6 kg/cm2 | | | | | | | | | | | | | | |



Date Started 072999 Date Completed 072999 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. RAW-10 Station & Offset Surface Elev. 220.2 m Water Elev.

| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|--------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|--|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | | |
| 210.7 | 10 | 73 | 2.74 | 0.30 | -- fissile lenses noted in core run. qu=229.1kg/cm2 | 10 | | | | | | | | | | | | |
| 209.7 | 11 | 66 | 1.62 | 0.11 | | 11 | | | | | | | | | | | | |
| 208.0 | 12 | | | | Bottom of boring @ 12.2 meters. | | | | | | | | | | | | | |
| | 13 | | | | | | | | | | | | | | | | | |
| | 14 | | | | | | | | | | | | | | | | | |
| | 15 | | | | | | | | | | | | | | | | | |
| | 16 | | | | | | | | | | | | | | | | | |
| | 17 | | | | | | | | | | | | | | | | | |

Date Started 072099 Date Completed 072099 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. RBW-1 Station & Offset Surface Elev. 213.9 m Water Elev.

| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | | |
|------------|------------|----------------|-----------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|-------------|--------|---------------------------------|---------------------------------------------------------------------------------------------------------|------|------|------|-------------|----|----|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | | |
| 213.9 | | 13-19-25-50/.2 | 0.43 | 0.09 | Fill-mottled brown and gray silty clay w/ sand, gravel, and shale fragments; slightly moist. | 1 | | | | | | | | | | | 8 | |
| 213.3 | | 50/0.4 | 0.06 | 0.06 | | 2 | | | | | | | | | | | 4 | |
| 212.8 | | 11-10-11-10 | 0.37 | 0.24 | Probable fill-mottled red and gray silty clay w/ gray sandstone fragments; moist. | 3 | 40 | 7 | 11 | | 43 | 31 | 10 | | | | 9 | |
| 212.7 | | | | | | 211.4 | | 21-31-17-17 | 0.34 | 0.27 | Mottled red and gray w/ trace yellow silty clay w/ traces of oxides (CL); moist, hard. qh=3.5 kg/cm2 | 4 | 4 | 4 | 7 | 37 | 49 | |
| 210.2 | | 18-28-50/0.4 | 0.40 | 0.03 | Light brown w/ trace gray sandy silt and clay w/ traces of weathered sandstone fragments (ML, CL-ML); moist, very dense/hard. qh=4.5 kg/cm2 | 5 | | | | | | | | | | | 12 | |
| 209.8 | | | | | | 208.4 | | 50/0.1 | 0.03 | 0.00 | Soft to medium hard light brown, fine grained sandstone. | 6 | | | | | | |
| 208.2 | | 38-50/0.2 | 0.21 | 0.34 | Soft, dark gray weathered shale; laminated structure. | 7 | | | | | | | | | | | 9 | |
| 207.2 | | | | | | 206.7 | | 205.7 | | Soft to medium hard gray shale. | 8 | | | | | | | |
| 205.2 | | 50/0.3 | 0.09 | | | | | | | | | | | | | | | |

Date Started 072099 Date Completed 072099 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. RBW-1 Station & Offset _____ Surface Elev. 213.9 m Water Elev. _____

| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|---------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|--|--|--|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | | | | |
| 203.7 | 10 | | | | | | | | | | | | | | | | | | | |
| 203.6 | | 50/0.2 | 0.06 | 0.00 | Bottom of boring @ 10.3 meters. | 9 | | | | | | | | | | | | | | |
| | 11 | | | | | | | | | | | | | | | | | | | |
| | 12 | | | | | | | | | | | | | | | | | | | |
| | 13 | | | | | | | | | | | | | | | | | | | |
| | 14 | | | | | | | | | | | | | | | | | | | |
| | 15 | | | | | | | | | | | | | | | | | | | |
| | 16 | | | | | | | | | | | | | | | | | | | |
| | 17 | | | | | | | | | | | | | | | | | | | |

Date Started 072199 Date Completed 072199 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. RBW-2 Station & Offset _____ Surface Elev. 211.6 m Water Elev. 204.2 m

| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|--|--|--|--|------|------|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | | | | | | |
| 211.6 | | 4-6-8-21 | 0.40 | 0.21 | 5 cm Topsoil--fill-light brown silty sand w/ sandstone fragments and gravel; slightly moist; cobbles/rock fragments at 1.5 m; gray shale fragments in sample #4. | 1 | | | | | | | | | | | | | | | | |
| 211.0 | 1 | 9-14-10-9 | 0.37 | 0.24 | qh=3.25 kg/cm2 | 2 | | | | | | | | | | | | | | | | |
| 210.4 | | 25-12-10-9 | 0.00 | 0.61 | | 3 | | | | | | | | | | | | | | | | |
| 209.8 | 2 | | | | qh=3.25 kg/cm2, w.c.= 8% | 4 | 23 | 13 | 10 | 20 | 34 | | | | | | | | | | A-6b | |
| 209.5 | | 25-16-14-12 | 0.43 | 0.18 | | 5 | | | | | | | | | | | | | | | | |
| 209.2 | | 50/0.3 | 0.09 | | qh=4.5 kg/cm2 | | | | | | | | | | | | | | | | | |
| 208.2 | 3 | | | | | | | | | | | | | | | | | | | | | |
| 207.5 | 4 | | | | Fill-mottled red, brown and gray silty clay w/ sand and shale fragments; moist. Light orange-brown/beige at bottom of sample. | | | | | | | | | | | | | | | | | |
| 207.3 | | 5-7-15 | 0.24 | 0.21 | | 6 | 6 | 4 | 10 | | 81 | 39 | 18 | 22 | | | | | | | A-6b | |
| 207.0 | | | | | qh=1.5 kg/cm2 qh=3.25 kg/cm2, w.c.= 17% | | | | | | | | | | | | | | | | | |
| 206.0 | 6 | 53-50/0.4 | 0.27 | | Brown silty clay w/ traces of oxides (CL); slightly moist, hard. Slightly laminated structure; orange-brown at bottom of sample. | 7 | 4 | 6 | 17 | | 73 | 40 | 17 | 15 | | | | | | | | A-6b |
| 205.5 | 7 | | | | qh=4.5+ kg/cm2 | | | | | | | | | | | | | | | | | |
| 204.4 | | | | | Very soft to soft, very weathered orange-brown to olive and gray arenaceous shale; laminated structure. | | | | | | | | | | | | | | | | | |
| 204.4 | | 35-50/0.2 | 0.18 | 0.03 | | 8 | | | | | | | | | | | | | | | | |
| 203.7 | 8 | | | | | | | | | | | | | | | | | | | | | |
| 202.9 | | | | | Very soft to soft red/maroon and gray, very weathered arenaceous shale. | | | | | | | | | | | | | | | | | |
| 202.9 | | 61-50/0.4 | 0.27 | | | 9 | | | | | | | | | | | | | | | | |

GANNETT FLEMING
 SUITE 350
 4151 EXECUTIVE PARKWAY
 WESTERVILLE, OHIO 43081

CALCULATED
 CHECKED
 DATE
 1/20/00
 REVIEWED
 DRAWN
 MDH

**FOUNDATION SOIL PROFILE
 BORING LOGS**

ATH-33-30.981

Date Started 072199 Date Completed 072199 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. RBW-2 Station & Offset Surface Elev. 211.6 m Water Elev. 204.2 m

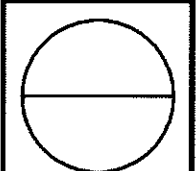
| Elev. (m.) | Depth (m.) | Std. Pen./ ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | | | | |
|------------|------------|----------------|-----------|-----------|---------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|--|--|--|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | | | | |
| 201.4 | 10 | | | | | | | | | | | | | | | | | | | |
| 201.1 | | 75 | 0.30 | | Soft to medium hard gray arenaceous shale; good rock quality; medium to thickly bedded. | 10 | | | | | | | | | | | | | | |
| 199.6 | 12 | 78 | 1.46 | 0.06 | Medium hard, gray arenaceous shale and siltstone/fine grained sandstone; good rock quality, medium to thickly bedded. qu=338.3 kg/cm2 | 11 | | | | | | | | | | | | | | |
| | 13 | | | | Bottom of boring @ 12.0 meters. | | | | | | | | | | | | | | | |
| | 14 | | | | | | | | | | | | | | | | | | | |
| | 15 | | | | | | | | | | | | | | | | | | | |
| | 16 | | | | | | | | | | | | | | | | | | | |
| | 17 | | | | | | | | | | | | | | | | | | | |

Date Started 072199 Date Completed 072199 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. RBW-3 Station & Offset Surface Elev. 209.6 m Water Elev. _____

| Elev. (m.) | Depth (m.) | Std. Pen./ ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | | | | | |
|------------|------------|----------------|-----------|-----------|-------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|--|--|--|--|-------|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | | | | | |
| 209.6 | | 15-25-24-27 | 0.52 | 0.09 | 5 cm Topsoil--fill-mottled brown/light brown and gray to red silty clay w/ traces of brown sandstone and shale fragments; slightly moist to moist. qh=4.5+ kg/cm2 | 1 | | | | | | | | | | | | | | | |
| 209.0 | | 13-50/0.4 | 0.21 | 0.06 | | 2 | | | | | | | | | | | | | | | 9 |
| 208.4 | | | | | qh=4.5+ kg/cm2 | | | | | | | | | | | | | | | | |
| 208.1 | | 5-10-11-14 | 0.37 | 0.24 | qh=4.5+ kg/cm2, w.c.= 10% | 3 | 25 | 5 | 5 | 66 | 38 | 16 | 13 | | | | | | | | A-6b |
| 207.8 | | | | | qh=3.75 kg/cm2 | | | | | | | | | | | | | | | | |
| 207.2 | | 8-8-9-12 | 0.37 | 0.24 | qh=3.5 kg/cm2 | 4 | | | | | | | | | | | | | | | 16 |
| 206.0 | | 5-10-9-13 | 0.37 | 0.24 | qh=2.5 kg/cm2 | 5 | | | | | | | | | | | | | | | 13 |
| 205.5 | | | | | Light brown and trace red silty clay w/ traces of oxides (CH); moist, very stiff. Slightly laminated structure. | | | | | | | | | | | | | | | | |
| 205.4 | | 13-11-16 | 0.34 | 0.12 | qh=2.5 kg/cm2, w.c.= 15% | 6 | 5 | 9 | 3 | 83 | 55 | 25 | 28 | | | | | | | | A-7-5 |
| 205.2 | | | | | qh=1.5 kg/cm2 | | | | | | | | | | | | | | | | |
| 204.1 | | | | | Mottled-orange-brown and red silty clay w/ traces of oxides (CL); moist, very stiff. | | | | | | | | | | | | | | | | |
| 204.0 | | 20-47-50/0.2 | 0.30 | 0.06 | Gray, silty clay (CL); slightly moist, hard. Slightly laminated, slickensided structure. [Very soft extremely weathered shale]. | 7 | 0 | 1 | 1 | 34 | 64 | | 13 | | | | | | | | A-7-5 |
| 202.5 | | | | | qh=3.5 kg/cm2 | | | | | | | | | | | | | | | | |
| 200.9 | | 50/0.3 | 0.03 | 0.06 | Red shale/hard silty clay (CL) seam noted in Sample #8 | 8 | | | | | | | | | | | | | | | |
| | | | | | | 9 | | | | | | | | | | | | | | | |

FOUNDATION SOIL PROFILE
 BORING LOGS

ATH-33-30.981



GANNETT FLEMING
 SUITE 350
 4151 EXECUTIVE PARKWAY
 WESTERVILLE, OHIO 43081

DRAWN MDH
 REVIEWED
 DATE 1/20/00
 CALCULATED
 CHECKED

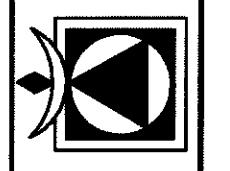
Date Started 072199 Date Completed 072199 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. RBW-3 Station & Offset Surface Elev. 209.6 m Water Elev. _____

| Elev. (m.) | Depth (m.) | Std. Pen./ ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | | | |
|----------------|------------|----------------|-----------|-----------|---------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|--|--|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | | | |
| 200.2 | 10 | | | | Soft to medium hard arenaceous shale. | | | | | | | | | | | | | | |
| 199.4 199.4 | | 50/0.1 | 0.03 | 0.00 | Bottom of boring @ 10.2 meters. | 10 | | | | | | | | | | | | | |
| | 11 | | | | | | | | | | | | | | | | | | |
| | 12 | | | | | | | | | | | | | | | | | | |
| | 13 | | | | | | | | | | | | | | | | | | |
| | 14 | | | | | | | | | | | | | | | | | | |
| | 15 | | | | | | | | | | | | | | | | | | |
| | 16 | | | | | | | | | | | | | | | | | | |
| | 17 | | | | | | | | | | | | | | | | | | |

Date Started 072199 Date Completed 072199 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. RBW-4 Station & Offset Surface Elev. 208.0 m Water Elev. 199.9 m

| Elev. (m.) | Depth (m.) | Std. Pen./ ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | |
|----------------|------------|----------------|-----------|-----------|-------------------------------------------------------------------------------------------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|----|------|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.I. | W.C. | ODOT Class. | | |
| 208.0 | | 8-14-21-13 | 0.55 | 0.06 | Fill-mottled brown/light brown and beige silty clay w/ sand and gravel/rock fragments. qh=2.75 kg/cm ² | 1 | 34 | 13 | 12 | 20 | 21 | | | | | 9 | A-6a |
| 207.4 | | 11-19-50/0.3 | 0.27 | 0.12 | qh=4.25 kg/cm ² | 2 | | | | | | | | | | 9 | |
| 206.8 | | 9-50/0.3 | 0.21 | 0.03 | | 3 | | | | | | | | | | 8 | |
| 206.5 | | | | | Olive, extremely weathered soft shale. | | | | | | | | | | | | |
| 206.2 | | 50/0.4 | 0.12 | 0.00 | Red/maroon, extremely weathered soft shale. | 4 | | | | | | | | | | 9 | |
| 205.5 | | 49-50/0.3 | 0.24 | 0.00 | | 5 | | | | | | | | | | 10 | |
| 205.2 | | | | | Olive, soft weathered shale. | | | | | | | | | | | | |
| 204.0 | | | | | | | | | | | | | | | | | |
| 203.9 | | 9-26-43 | 0.30 | 0.15 | Gray, soft to very soft weathered shale. | 6 | | | | | | | | | | 16 | |
| 202.3 | | | | | | | | | | | | | | | | | |
| 202.2 | | 50/0.5 | 0.12 | 0.03 | Olive/olive gray soft to medium hard shale. | 7 | | | | | | | | | | | |
| 200.8 | | 50/0.1 | 0.03 | 0.00 | | 8 | | | | | | | | | | | |
| 199.4 199.4 | | 50/0.1 | 0.00 | 0.03 | Bottom of boring @ 8.6 meters. | 9 | | | | | | | | | | | |

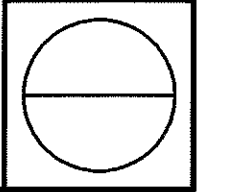
GANNETT FLEMING
 SUITE 350
 4151 EXECUTIVE PARKWAY
 WESTERVILLE, OHIO 43081



| | |
|------------|---------|
| CALCULATED | CHECKED |
| DATE | DATE |
| 1/20/00 | |
| REVIEWED | |
| DRAWN | |
| MDH | |

**FOUNDATION SOIL PROFILE
 BORING LOGS**

ATH-33-30.981

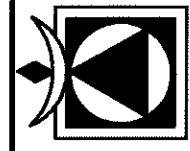


Date Started 072199 Date Completed 072299 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. RBW-5 Station & Offset Surface Elev. 207.7 m Water Elev. _____

| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|------------------------------------------------------------------------------------------------------------------------------------------------|----------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|----|------|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.L. | W.C. | ODOT Class. | | |
| 207.7 | | 10-30-50/0.3 | 0.24 | 0.15 | Fill-mottled light brown and olive silty clay w/ trace to little rock/sandstone and shale fragments, sand and wood. qh=2.75 kg/cm2 | 1 | | | | | | | | | | 7 | A-6a |
| 207.1 | 1 | 9-8-9-II | 0.52 | 0.09 | | qh=4.0 kg/cm2 | 2 | | | | | | | | | 13 | |
| 206.5 | | | | | qh=2.0 kg/cm2 | 3 | 7 | 3 | 33 | 56 | 31 | 12 | 21 | | | | |
| 206.2 | | 3-4-4-5 | 0.30 | 0.30 | Possible fill-brown w/ orange-brown silt and clay w/ little to some sand and oxides (ML,CL); moist, medium stiff to stiff. qh=1.0 kg/cm2 | 4 | 2 | 7 | 40 | 26 | 25 | 25 | 5 | 18 | | | |
| 205.9 | 2 | 3-4-3-9 | 0.46 | 0.15 | | qh=1.5 kg/cm2 | 5 | | | | | | | | 19 | | |
| 205.6 | | | | | qh=2.5 kg/cm2 | | | | | | | | | | | | |
| 205.3 | | 4-6-7-II | 0.43 | 0.18 | Traces of sandstone fragments noted in sample #5. qh=1.0 kg/cm2 | | | | | | | | | | | | |
| 205.0 | 3 | | | | | | | | | | | | | | | | |
| 204.1 | | | | | Gray sandy clay w/ traces of sandstone fragments (CL); moist to very moist, stiff. qh=1.25 kg/cm2 | | | | | | | | | | | | |
| 203.6 | 4 | | | | | | | | | | | | | | | | |
| 203.6 | | 7-10-20-25 | 0.46 | 0.15 | Dark gray silty clay w/ silt partings (CL); moist, very stiff to hard; mollusk shells noted in top part of sample. w.c.= 23% in top of sample. | 6 | | | | | | | | | 18 | | |
| 202.3 | 5 | | | | | qh=3.25 kg/cm2 | | | | | | | | | | | |
| 202.1 | | 50/0.5 | 0.12 | 0.03 | Olive gray and gray silty clay (CL); moist, hard [Extremely weathered shale]. | 7 | | | | | | | | | 10 | | |
| 200.6 | 6 | | | | | | | | | | | | | | | | |
| 200.6 | | 50/0.2 | 0.06 | 0.00 | Light gray to white, moderately hard to hard sandstone (calcareous) w/ seams of gray, soft to medium, arenaceous shale. | 8 | | | | | | | | | | | |
| 200.4 | 7 | 66 | 0.15 | | | 9 | | | | | | | | | | | |
| 198.9 | 8 | 70 | 1.46 | 0.06 | | 10 | | | | | | | | | | | |

Date Started 072199 Date Completed 072299 Sampler: Type Split Spoon Dia. 5 cm
 Boring No. RBW-5 Station & Offset Surface Elev. 207.7 m Water Elev. _____

| Elev. (m.) | Depth (m.) | Std. Pen./ROD | Rec. (m.) | Loss (m.) | Description | Sample No. | Physical Characteristics | | | | | | | | | |
|------------|------------|---------------|-----------|-----------|--------------------------------|------------|--------------------------|--------|--------|--------|--------|------|------|------|-------------|--|
| | | | | | | | % Agg. | % C.S. | % F.S. | % Silt | % Clay | L.L. | P.L. | W.C. | ODOT Class. | |
| | | | | | Bottom of boring @ 8.8 meters. | | | | | | | | | | | |
| | 10 | | | | | | | | | | | | | | | |
| | 11 | | | | | | | | | | | | | | | |
| | 12 | | | | | | | | | | | | | | | |
| | 13 | | | | | | | | | | | | | | | |
| | 14 | | | | | | | | | | | | | | | |
| | 15 | | | | | | | | | | | | | | | |
| | 16 | | | | | | | | | | | | | | | |
| | 17 | | | | | | | | | | | | | | | |



DRAWN MDH
 REVIEWED
 DATE 1/20/00
 CALCULATED
 CHECKED

FOUNDATION SOIL PROFILE
 BORING LOGS

ATH-33-30.981

