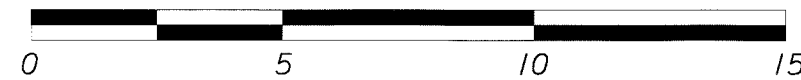


LOCATION MAP

LATITUDE: N40°00'11" LONGITUDE: W83°07'50"
SCALE IN KILOMETERS



LEGEND FOR PROJECT AVERAGE RESULTS OF TESTS - 87 SAMPLES TESTED

DESCRIPTION	ODOT CLASS	% AGG.	% C.SAND	% F.SAND	% SILT	% CLAY	LIQUID LIMIT	PLASTICITY INDEX	WATER CONTENT	SAMPLES TESTED
GRAVEL WITH SAND	A-1-b(0)	0	4	72	24	---	---	---	11	1
GRAVEL WITH SAND AND SILT	A-2-4(0)	12	19	40	29	---	---	---	16	3
GRAVEL WITH SAND, SILT, AND CLAY	A-2-6(I)	21	17	34	13	15	28	13	22	1
FINE SAND	A-3	VISUAL CLASSIFICATION								
COARSE AND FINE SAND	A-3a(0)	4	18	51	27	---	---	---	16	12
SANDY SILT	A-4a(2)	3	10	39	28	20	22	7	17	23
SILT	A-4b(8)	0	4	13	61	22	29	10	22	3
SILT AND CLAY	A-6a(7)	4	8	22	35	31	30	13	19	10
SILTY CLAY	A-6b(II)	5	6	17	34	38	37	19	19	13
CLAY	A-7-6(16)	5	4	7	32	52	48	26	23	21
WEATHERED CLAYSTONE/CLAY SHALE	---	VISUAL CLASSIFICATION								
WEATHERED MUDSTONE	---	VISUAL CLASSIFICATION								
WEATHERED SILTSTONE	---	VISUAL CLASSIFICATION								
WEATHERED SANDSTONE	---	VISUAL CLASSIFICATION								
WEATHERED SHALE	---	VISUAL CLASSIFICATION								
SANDSTONE	---	VISUAL CLASSIFICATION								
SHALE	---	VISUAL CLASSIFICATION								
SILTSTONE	---	VISUAL CLASSIFICATION								
CLAYSTONE/CLAY SHALE	---	VISUAL CLASSIFICATION								
MUDSTONE	---	VISUAL CLASSIFICATION								
COAL	---	VISUAL CLASSIFICATION								
LIMESTONE	---	VISUAL CLASSIFICATION								

- FREE WATER
- STATIC WATER LEVEL
- WATER CONTENT NEARLY EQUAL TO OR GREATER THAN LIQUID LIMIT
- INDICATES A NON PLASTIC MATERIAL WITH A HIGH WATER CONTENT
- TR TOP OF ROCK
- AUGER BORING - PLAN VIEW
- DRIVE SAMPLE AND/OR CORE BORING - PROFILE VIEW

NUMBER OF BLOWS FOR "STANDARD PENETRATION" TEST
 X=NUMBER OF BLOWS FOR FIRST .15 METERS
 Y=NUMBER OF BLOWS FOR SECOND .15 METERS
 Z=NUMBER OF BLOWS FOR THIRD .15 METERS
 W.O.H. WEIGHT OF HAMMER

NOTE: FIGURES BESIDE BORINGS INDICATE WATER CONTENT IN PERCENT e.g. 15

NOTES

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 1980 WEST BROAD STREET.

INTRODUCTION

THIS REPORT CONSISTS OF THE SOILS INVESTIGATION OF A 10.3-KILOMETER SECTION OF THE USR 33 RELOCATION, LINKING THE PROPOSED FOUR-LANE EXTENSION OF USR 33 FROM ATHENS TO SHADE WITH THE EXISTING FOUR-LANE PORTION OF USR 33 AT DARWIN. THE NORTHERN HALF OF THE ALIGNMENT IS WITHIN ATHENS COUNTY IN LODI TOWNSHIP. THE SOUTHERN HALF OF THE ALIGNMENT IS WITHIN BEDFORD TOWNSHIP IN MEIGS COUNTY.

THE RESULTS OF THE FOUR-LANE EXTENSION OF USR 33 FROM ATHENS TO SHADE ARE PRESENTED IN A SEPARATE REPORT BY OTHERS.

MAXIMUM PROPOSED CUTS AND FILL EMBANKMENTS ARE SHOWN IN THE PROJECT INDEX ON THE FOLLOWING SHEET. PLEASE NOTE THAT THESE QUANTITIES ARE BASED ON THE FOUR-LANE CROSS SECTIONS. IT IS UNDERSTOOD THAT INITIALLY ONLY TWO LANES OF THE PROPOSED HIGHWAY WILL BE CONSTRUCTED.

GEOLOGY AND OBSERVATIONS OF THE PROJECT

BOTH ATHENS COUNTY AND MEIGS COUNTY LIE ENTIRELY WITHIN THE UNGLACIATED SECTION OF THE ALLEGHENY PLATEAU. THE AREA IS MATURELY DISSECTED, WELL-DRAINED AND IS CHARACTERIZED BY STEEP SIDES, "V" SHAPED VALLEYS AND NARROWLY ROUNDED HILLTOPS. ELEVATIONS ALONG THE ALIGNMENT RANGE FROM APPROXIMATELY 200 METERS AT THE SOUTHERN MOST PORTION, AT DARWIN, TO APPROXIMATELY 293 METERS IN SOUTHERN ATHENS COUNTY.

THE UPLANDS ARE COVERED WITH A THIN LAYER OF RESIDUAL SOILS; SOILS FORMED IN PLACE BY THE DISINTEGRATION AND DECOMPOSITION OF ROCKS AND THE CONSEQUENT WEATHERING OF THE MINERAL MATERIALS. SOILS CONSIST PREDOMINANTLY OF SANDS AND CLAYS, VERY SIMILAR TO THE SHALES, MUDSTONES, AND SANDSTONES ON WHICH THEY LIE. THE TRANSITION TO BEDROCK IS VERY SUBTLE, AND IN MOST CASES, NOT CLEARLY IDENTIFIABLE, UNLESS THE PARENT ROCK IS SANDSTONE, SILTSTONE, OR LIMESTONE.

SOILS IN THE VALLEYS ARE GENERALLY DESCRIBED AS COLLUVIAL (CONSISTING OF ALLUVIAL IN PART) SOILS OVERLYING RESIDUAL SOILS. COLLUVIAL SOILS (COLLUVIUM) ARE LOOSE AND INCOHERENT DEPOSITS TYPICALLY FOUND AT THE FOOT OF A SLOPE OR CLIFF, BROUGHT THERE CHIEFLY BY GRAVITY. ALLUVIAL SOILS (ALLUVIUM) ARE (INTERMIXED) WATER-LAID DEPOSITS. TYPICALLY, SOILS IN THE VALLEY RUN DEEPER THAN ON THE SLOPES AND HILLTOPS, HOWEVER, THE SOILS ARE SIMILAR TO THOSE ON THE HILLS, CONSISTING PREDOMINANTLY OF SAND AND CLAY, AND THE TRANSITION TO BEDROCK IS EQUALLY DIFFICULT TO IDENTIFY.

BOTH ATHENS AND MEIGS COUNTIES, ALONG THE ALIGNMENT, ARE COMPRISED OF BEDROCK OF PENNSYLVANIA AGE. THE ROCK STRATA IN THIS AREA OF SOUTHEASTERN OHIO DIPS GENTLY TO THE EAST-SOUTHEAST AT A RATE OF APPROXIMATELY 6 METERS PER KILOMETER.

THE BEDROCK WAS DEPOSITED UNDER REGULAR SUCCESSION OF VARYING ENVIRONMENTAL CONDITIONS THAT WERE REPEATED MANY TIMES. AS A RESULT, THE ROCKS SHOW A DEFINITE SUCCESSION OF STRATA REPRESENTING ONE SEQUENCE OF CHANGING SEDIMENTARY CONDITIONS. A SEQUENCE OF STRATA MATCHING ONE DEPOSITIONAL CYCLE IS TERMED A CYCLOTHEM. CYCLOTHEMS ARE TYPICALLY ASSOCIATED WITH UNSTABLE SHELF OR INTERIOR BASIN CONDITIONS IN WHICH ALTERNATE MARINE TRANSGRESSIONS AND REGRESSIONS OCCUR. THE NON-MARINE SEDIMENTS OCCUR IN THE LOWER HALF OF THE CYCLOTHEM AND THE MARINE SEDIMENTS IN THE UPPER HALF. IN OHIO, EACH CYCLOTHEM IS USUALLY DEFINED AS THE SERIES BETWEEN A COAL-TO-COAL INTERVAL. THE LITHOLOGY OF THE ROCKS THAT COMPRISE THE PENNSYLVANIA SYSTEM IN OHIO CONSIST OF ALTERNATING CLAY, COAL, SHALE, LIMESTONE AND SANDSTONE BEDS. THESE BEDS LACK A REAL PERSISTENCE AND VARY GREATLY IN THICKNESS OVER A SHORT DISTANCE.

THE LAND USAGE ALONG THE ENTIRE ALIGNMENT IS GENERALLY DESCRIBED AS ALTERNATING FOREST AND PASTURE WITH VERY FEW CULTIVATED FIELDS. TYPICALLY, THE VALLEYS AND STEEPLY SLOPING HILLS ARE TREE COVERED, AND THE FLATTER SIDEHILLS AND HILLTOPS ARE PASTURE. BECAUSE OF THE RELIEF, THE AREA IS WELL DRAINED WITH CREEKS AT THE BOTTOM OF EVERY VALLEY AND DRAINAGE PATHS DOWN THE SIDES OF MOST OF THE HILLS. PRATTS FORK IS THE LARGEST WATER CROSSING FOR THE ALIGNMENT, LOCATED AT STATION 39+800. THE VALLEY IN THIS VICINITY CREATES SIDEHILL FILLS FOR THE SECTION BETWEEN STATIONS 39+700 AND 40+000. DRAINAGE PATHS ARE EASILY IDENTIFIABLE BY THE EROSION OF THE EASILY ERODIBLE SURFICIAL RED CLAYS AND/OR MUDSTONE/SHALE. THE ALIGNMENT IS TRAVERSED SEVERAL TIMES, TYPICALLY ALONG RIDGE TOPS, BY COUNTY AND TOWNSHIP ROADS, WITH RURAL RESIDENCES AND FARMS SCATTERED THROUGHOUT.

SOME SIGNS OF SMALL SURFICIAL SLUMPS HAVE BEEN OBSERVED ON THE STEEP SLOPES AND NEAR THE VALLEY BOTTOMS, ALONG CREEK BEDS. HOWEVER, THIS IS GENERALLY RESTRICTED TO THE AREA NORTH OF STATION 42+800. SANDSTONE OUTCROPS WERE FREQUENTLY OBSERVED ON THE STEEP SLOPES. EXPOSED RED SOILS AND ROCK (RED BEDS) IN THE VALLEYS AND ON THE SLOPES SHOWING EVIDENCE OF SEVERE DECOMPOSITION FROM EROSION HAVE BEEN REPORTED NORTH OF THE PROJECT AREA.

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.

BORINGS WITH A "B" PREFIX WERE DRILLED BY RESOURCE INTERNATIONAL, INC. BETWEEN DECEMBER 15, 1997 AND JUNE 10, 1998 AND INCLUDE ALL GEOPROBE HOLES. BORINGS WITH AN "R" OR "SB" PREFIX WERE DRILLED BY DODSON-STILSON, INC. BETWEEN FEBRUARY 15, 1999 AND JULY 6, 2000.

INVESTIGATIONAL FINDINGS

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 9.0 METERS THICK ON THE UPLANDS (E.G. B-83). 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 PREDOMINANTLY COHESIVE, DESCRIBED AS CLAY (A-7-6), SILTY CLAY (A-6b), SILT AND CLAY (A-6a), AND SANDY SILT (A-4a). IN THE SOUTHERN HALF OF THE ALIGNMENT AND IN THE RIVER VALLEYS, THE SOILS BECOME MORE GRANULAR.

IT WAS VERY COMMON, IN THE VALLEYS OF THE SOUTHERN HALF OF THE ALIGNMENT, TO ENCOUNTER VERY LOOSE SAND, EXHIBITING HIGH MOISTURE CONTENTS, INTERBEDDED WITH SOFT CLAYS. THIS IS BEST IDENTIFIED IN B-128 (STATION+ 45+627), WHERE 8.7 METERS OF VERY LOOSE WATER BEARING SAND WITH SOFT CLAY INTERBEDS WAS ENCOUNTERED. SIMILAR TYPES OF SOILS WERE ALSO ENCOUNTERED IN B-154 (2.7 METERS) AND B-156 (3.8 METERS).

LABORATORY TESTING INDICATES THAT THE NATURAL MOISTURE CONTENTS OF THE SOIL ENCOUNTERED TO A DEPTH OF 1.5 METERS ARE TYPICALLY AT OR BELOW 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. ALSO WITHIN THIS SURFACE DEPTH, MANY NON-PLASTIC SOILS WITH HIGH MOISTURE CONTENTS (>20%) WERE ENCOUNTERED, SUCH AS B-136, B-142, AND B-146. VALLEY BORINGS, INCLUDING B-128, B-129, B-149, B-154, AND B-156 EXHIBITED RELATIVELY THICK INTERVALS (>1.5 METERS) OF NON-PLASTIC SOILS WITH HIGH MOISTURE CONTENTS AND/OR COHESIVE SOILS AT OR NEAR THEIR CORRESPONDING LIQUID LIMITS. WITH THE EXCEPTION OF A FEW BORINGS (I.E., B-128), MOISTURE CONTENTS TYPICALLY DECREASE BELOW THE SURFICIAL 1.5 METERS, DOWN TO TYPICALLY LESS THAN 10% IN THE TRANSITIONAL MATERIAL (SOFT WEATHERED BEDROCK).

BEDROCK CAN BE EXPECTED IN EVERY CUT SECTION GREATER THAN 3.0 METERS. BEDROCK WITHIN THE NORTHERN HALF OF THE ALIGNMENT CONSISTED PREDOMINANTLY OF SHALE, CLAYSTONE, 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 SHALE WAS OCCASIONALLY SLICKENSIDED. 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.

IN THE SOUTHERN HALF OF THE ALIGNMENT, MUCH OF THE BEDROCK ENCOUNTERED CONSISTED OF MEDIUM TO MODERATELY HARD SANDSTONE AND SILTSTONE WITH VERY SOFT TO SOFT SHALE, CLAYSTONE, AND MUDSTONE INTERBEDS OF VARYING THICKNESSES. THE SANDSTONE IS SOMEWHAT FRIABLE (POORLY CEMENTED). MUCH OF THE SANDSTONE AND SILTSTONE IS IN FAIR TO GOOD CONDITION, AS EXHIBITED BY THE RODS, HOWEVER, SEVERAL SANDSTONE SECTIONS EXHIBITED VERY POOR RODS. IN MOST OF THESE CASES, THE SANDSTONE WAS IN VERY THIN CHIPS, COMMONLY REFERRED TO AS THE POKER CHIP PHENOMENON. THIS IS POSSIBLY A RESULT OF WETTING AND DRYING THE ROCK, CAUSING SHRINKAGE. THE SHALE, CLAY-SHALE AND MUDSTONE ARE ALL TYPICALLY OF POOR QUALITY. THE MUDSTONE AND SHALE WERE OCCASIONALLY SLICKENSIDED AND DETERIORATED WHEN EXPOSED TO WATER. VERY FEW, THIN, LIMESTONE INTERBEDS, TYPICALLY LESS THAN 1.0 METER THICK, WERE ENCOUNTERED.

THIN LAYERS OF COAL, GENERALLY LESS THAN A METER THICK, WERE ENCOUNTERED THROUGHOUT THE PROJECT, BUT WERE MORE PREDOMINANT SOUTH OF STATION 48+600.

WITH THE EXCEPTION OF THE PRATTS FORK AND SHADE RIVER VALLEYS, GROUNDWATER IN ATHENS AND MEIGS COUNTIES IS SCARCE AT BEST. FEW PERCHED LENSES OF GROUNDWATER WERE ENCOUNTERED DURING THE DRILLING PROCESS WITHIN THE SOIL. THE MOST NOTABLE GROUNDWATER CONDITION ENCOUNTERED WAS IN B-128, WHERE WATER-BEARING SAND CAUSED HEAVING OF SAND (UNDER HYDROSTATIC PRESSURE) IN THE AUGERS DURING THE DRILLING PROCESS. GROUNDWATER WAS ENCOUNTERED WITHIN THE SANDSTONE BEDROCK IN B-151, AT ELEVATION 226.4 METERS. IT IS NOTED THAT, SINCE THIS BEDROCK WAS AUGERED FULL DEPTH, NOT REQUIRING THE USE OF WATER, GROUNDWATER COULD BE IDENTIFIED WITHIN THE ROCK. TYPICALLY, WITHIN THE ROCK, IT WAS IMPOSSIBLE TO IDENTIFY GROUNDWATER SINCE WATER WAS BEING USED DURING THE CORING PROCESS. GROUNDWATER FOR THE AREA CAN BE FOUND IN ALTERNATING LAYERS OF SHALE AND THIN SANDSTONE WITH YIELDS OF LESS THAN 1.0 GALLON PER MINUTE. GROUNDWATER CAN BE EXPECTED IN THE VALLEYS, OVERLYING IMPERVIOUS BEDROCK.

CALCULATED
RS
CHECKED
DAA

SOIL PROFILE

ATH-33-40.981

2 / 132

700
949

PROJECT INDEX					
FROM	TO	PLAN VIEW SHEET	PROFILE SHEET	CUT MAX. (m.)	FILL EMB. MAX. (m.)
U.S. 33 MAINLINE					
39 + 430	39 + 770	16	17	18.0	14.6
39 + 770	40 + 110	18	19	19.6	14.7
40 + 110	40 + 450	21	22	8.6	21.6
40 + 450	40 + 790	23	24	17.2	14.8
40 + 790	41 + 130	25	26	6.4	20.4
41 + 130	41 + 470	28	29	13.4	11.3
41 + 470	41 + 810	30	31	30.0	4.0
41 + 810	42 + 150	33	34	21.4	16.3
42 + 150	42 + 490	36	37	11.2	9.6
42 + 490	42 + 830	38	39	6.8	32.3
42 + 830	43 + 170	40	41	7.4	33.5
43 + 170	43 + 510	42	43	11.1	10.0
43 + 510	43 + 850	45	46	6.2	38.0
43 + 850	44 + 190	47	48	16.7	32.3
44 + 190	44 + 530	49	50	16.4	31.5
44 + 530	44 + 870	51	52	24.0	20.4
44 + 870	45 + 210	53	54	23.0	27.2
45 + 210	45 + 550	56	57	16.3	18.8
45 + 550	45 + 890	58	59	17.0	13.3
45 + 890	46 + 230	61	62	22.4	14.2
46 + 230	46 + 570	64	65	25.0	4.2
46 + 570	46 + 910	67	68	10.9	4.4
46 + 910	47 + 250	70	71	11.8	7.0
47 + 250	47 + 590	73	74	13.2	11.4
47 + 590	47 + 930	75	76	8.0	14.5
47 + 930	48 + 270	77	78	10.2	12.3
48 + 270	48 + 610	79	80	14.6	3.5
48 + 610	48 + 950	82	83	17.2	11.5
48 + 950	49 + 290	85	86	30.2	4.0
49 + 290	49 + 630	88	89	11.7	2.5
49 + 630	49 + 890.950	90	91	5.0	1.6
TR 68 (RIGHT OF MAINLINE)					
1 + 000	1 + 220	92	92	2.0	5.6
TR 68 (LEFT OF MAINLINE)					
2 + 000	2 + 094.570	93	93	1.7	0.2
TR 67					
1 + 000	1 + 140	94	94	2.0	5.2
CR 89					
1 + 908.418	2 + 150	95	95	3.7	2.1
2 + 150	2 + 410	96	96	3.0	8.1
2 + 410	2 + 608.091	97	97	1.0	1.5
TR 412					
11 + 000	11 + 230	98	98	5.5	0.5
11 + 230	11 + 500	99	99	4.8	3.4
11 + 500	11 + 607.637	101	101	3.0	0.6
TR 243 (RIGHT OF MAINLINE)					
0 + 007.500	0 + 162	102	102	5.3	0.2
TR 243 (LEFT OF MAINLINE)					
0 + 000	0 + 180	103	103	2.6	1.0
SR 681 (AT GRADE)					
50 + 901.011	51 + 150	104	104	4.2	4.0
51 + 150	51 + 400	105	105	6.5	8.1
51 + 400	51 + 650	106	106	10.6	4.8
51 + 650	51 + 799.983	107	107	3.0	1.8
OLD US 33 (AT GRADE)					
46 + 000	46 + 250	108	108	16.8	3.0
46 + 250	46 + 438	109	109	1.9	1.4

NOTE: THE ABOVE QUANTITIES ARE BASED ON FOUR-LANE CROSS SECTIONS.

CROSS SECTION INDEX		
ROADWAY	STATION	SHEET
U.S. 33 MAINLINE	39+636.470	110
	40+020	111
	40+700	112
	41+600	113
	41+900	114
	43+220	115
	43+900	116
	44+920	117
	45+040	118
	45+120	119
	45+400	120
	45+800	121
	45+900	122
	46+520	123
	46+860	124
	47+060	125
	48+380	126
	48+480	127
	49+020	128
49+180	129	
49+260	130	
CR 89	2+360	131
SR 681 (AT GRADE)	51+240	132

CALCULATED
T.A.H.
CHECKED
D.A.A.

SOIL PROFILE

ATH-33-40.981

SUMMARY OF SOIL TEST DATA
U.S. ROUTE 33 MAINLINE

BORINGS DRILLED BY RESOURCE INTERNATIONAL, INC.

* DENOTES SAMPLE TAKEN AT OR NEAR GRADE.

	Northing & Easting	From To	% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L	P.I	W.C.	ODOT Class.		Northing & Easting	From To	% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L	P.I	W.C.	ODOT Class.						
(B-81)	135483.100 637608.700	0-0.5 0.5-0.9 1.1-1.7 1.8-2.3 2.6-2.9 3.6-3.7	SAME AS 1.1-1.7 SAME AS 1.1-1.7 0 8 28 36 28 38						17	27 25 26 10	VISUAL VISUAL A-6b VISUAL VISUAL VISUAL	(B-91)	134401.400 638162.700	0-0.5 0.5-0.9 1.1-1.5 1.8-2.3 2.6-2.9 4.1-4.4 5.7-5.9	BROWN SILTY CLAY, SOME SAND, TRACE GRAVEL SAME AS 0-0.5 SAME AS 0-0.5 SAME AS 0-0.5 SAME AS 0-0.5 GRAY WEATHERED SANDSTONE SAME AS 4.1-4.4								22 21 15 16 11 7 5	VISUAL VISUAL VISUAL VISUAL VISUAL* VISUAL* VISUAL					
(B-82)	135236.700 637650.600	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	BROWN SANDY SILT, SOME CLAY, TRACE GRAVEL SAME AS 1.8-2.3 SAME AS 1.8-2.3 2 2 67 -29- BROWN WEATHERED SANDSTONE SAME AS 2.6-3.1 BROWN TO RED INDURATED CLAY/ WEATHERED MUDSTONE SAME AS 5.6-6.1							22 18 14 14 12 12 12	VISUAL VISUAL VISUAL A-3a VISUAL VISUAL VISUAL VISUAL	(B-92)	134245.300 638290.700	0-1.2 1.2-1.8	BROWN-GRAY CLAY, SOME SILT, LITTLE SAND SAME AS 0-1.2										19	VISUAL VISUAL			
(B-83)	135042.200 637696.100	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	BROWN CLAYEY SILT, SOME SAND RED CLAY, LITTLE SILT, TRACE SAND SAME AS 0.5-0.9 REDDISH-BROWN SANDY CLAY, SOME SILT SAME AS 1.8-2.3 SAME AS 1.8-2.3 SAME AS 1.8-2.3 SAME AS 7.2-7.6 1 2 6 47 44 38 18							27 32 22 26 25 29 29 17	VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL A-6b	(B-93)	134144.700 638294.900	0-0.1 0.1-0.3 0.3-0.6	DARK BROWN-GRAY CLAYEY SILT, LITTLE ORGANICS, TRACE SAND BROWN SILTY CLAY, SOME SAND, TRACE GRAVEL BROWN WEATHERED SANDSTONE										35 20	VISUAL VISUAL VISUAL			
(B-84)	134940.800 637738.400	0-0.5 0.5-0.9 1.1-1.5 1.8-2.3 2.6-3.1 4.2-4.3	SAME AS 0.5-0.9 1 2 7 38 52 SAME AS 0.5-0.9 SAME AS 0.5-0.9 SAME AS 0.5-0.9 GRAY WEATHERED SANDSTONE							14 18 15 13 9	VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL	(B-94)	134184.300 638387.300	0-0.1 0.1-1.8	DARK BROWN CLAYEY SILT, LITTLE ORGANICS, TRACE SAND 0 1 8 41 50										30 28	VISUAL VISUAL			
(B-85)	134817.900 637750.900	0-0.5 0.5-0.7 1.1-1.2 1.8-1.9	BROWN SAND AND GRAVEL, SOME SILT LIGHT BROWN WEATHERED SANDSTONE SAME AS 0.5-0.7 SAME AS 0.5-0.7							12 8 5 5	VISUAL VISUAL VISUAL VISUAL	(B-95)	133967.400 638390.100	0-0.5 0.5-0.9 1.1-1.6 1.8-2.3 2.6-2.8	BROWN SANDY SILT, TRACE CLAY BROWN SILTY CLAY, TRACE SAND SAME AS 0.5-0.9 BROWN INDURATED CLAY/ WEATHERED MUDSTONE SAME AS 1.8-2.3											26 17 12 12	VISUAL VISUAL VISUAL VISUAL VISUAL		
(B-86)	134828.600 637803.800	0-1.2 1.2-1.3 1.3-1.5	LIGHT BROWNISH-GRAY SILTY CLAY, LITTLE SAND SAME AS 0-1.2 BROWN-GRAY INDURATED CLAY/ WEATHERED MUDSTONE							15 10	VISUAL VISUAL VISUAL	(B-96)	133823.600 638498.600	0-0.1 0.1-0.9 0.9-1.7	BROWN SANDY CLAY, SOME ORGANICS, LITTLE SILT BROWN SILTY CLAY, SOME SAND, TRACE GRAVEL BROWN SANDY CLAY, LITTLE SILT, TRACE GRAVEL										31 23 17	VISUAL VISUAL VISUAL			
(B-87)	134749.400 637864.800	0-0.2 0.2-1.6	DARK BROWN CLAYEY SILT, SOME SAND BROWN-GRAY CLAY, SOME SILT, LITTLE SAND							26 24	VISUAL VISUAL	(B-97)	133685.300 638409.000	0-0.5 0.5-0.9 1.1-1.5 1.8-2.3 2.6-3.1 4.1-4.3 5.6-5.8 7.2-7.4	BROWN SILTY SAND, TRACE CLAY SAME AS 0-0.5 RED, GREEN, BROWN, & PURPLE INDURATED CLAY/WEATHERED MUDSTONE SAME AS 1.1-1.5 SAME AS 1.1-1.5 SAME AS 1.1-1.5 GRAY LEACHED LIMESTONE GRAY INDURATED CLAY/ WEATHERED MUDSTONE											16 9	VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL		
(B-88)	134590.900 637895.100	0-0.5 0.5-0.9 1.1-1.5 1.8-2.1 2.6-2.8 4.1-4.3 5.6-6.0 7.2-7.4 8.7-9.1 10.2-10.4	BROWN SANDY CLAY, SOME SILT SAME AS 0-0.5 SAME AS 0-0.5 BROWN WEATHERED SANDSTONE SAME AS 1.8-2.1 SAME AS 1.8-2.1 GRAY INDURATED CLAY/ WEATHERED MUDSTONE BROWN WEATHERED SILTSTONE GRAY WEATHERED SHALE GRAY WEATHERED MUDSTONE							14 16 14 10 10 9 9 9 9	VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL	(B-98)	133579.400 638467.100	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 15 3 5 34 43 48 27 SAME AS 0.5-0.9 BROWN INDURATED CLAY/ WEATHERED MUDSTONE SAME AS 1.8-2.3													37 26 15	VISUAL A-7-6 VISUAL VISUAL* VISUAL
(B-89)	134612.600 637981.900	0-0.5 0.5-0.9 1.1-1.5 1.8-2.1 2.6-2.7	BROWN SILTY CLAY, SOME SAND, LITTLE GRAVEL SAME AS 0-0.5 REDDISH-BROWN INDURATED CLAY/ WEATHERED MUDSTONE SAME AS 1.1-1.5 BROWN WEATHERED SANDSTONE							20 20 15 8 3	VISUAL VISUAL VISUAL VISUAL VISUAL	(B-99)	133420.200 638484.000	0-0.5 0.5-1.1 1.1-1.5 1.8-2.3 2.6-3.1 4.1-4.2	BROWN-GRAY SILTY CLAY, LITTLE SAND, TRACE GRAVEL SAME AS 0-0.5 SAME AS 0-0.5 SAME AS 0-0.5 SAME AS 0-0.5 BROWN WEATHERED SANDSTONE												27 21 21	VISUAL VISUAL VISUAL VISUAL VISUAL	
(B-90)	134612.600 638018.700	0-0.5 0.5-0.9 1.1-1.4 1.8-2.0	BROWN-GRAY SILTY CLAY, SOME SAND SAME AS 0-0.5 BROWN WEATHERED SANDSTONE SAME AS 1.1-1.4							19 23 7 7	VISUAL VISUAL VISUAL VISUAL	(B-100)	133285.600 638508.700	0-0.5 0.5-0.9 1.1-1.5 1.8-2.3 2.6-3.1 4.1-4.6 5.6-5.9 7.2-7.4 8.7-8.9 10.2-10.4	BROWN SILTY CLAY, LITTLE SAND, TRACE GRAVEL BROWN-GRAY TO RED INDURATED CLAY/ WEATHERED MUDSTONE SAME AS 0.5-0.9 SAME AS 0.5-0.9 SAME AS 0.5-0.9 SAME AS 0.5-0.9 SAME AS 0.5-0.9 SAME AS 0.5-0.9 SAME AS 0.5-0.9 SAME AS 0.5-0.9												23 23 23 23 23 23 23 23 23	VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL	
												(B-101)	133159.400 638496.600	0.3-0.8 1.1-1.5 1.8-2.3 2.6-2.7	MOTTLED RED & GRAY SILTY CLAY, LITTLE SAND SAME AS 0.3-0.8 11 8 20 38 23 28 10 BROWN WEATHERED SANDSTONE													16 15 9	VISUAL VISUAL A-4a VISUAL

CALCULATED
TAH
CHECKED
DAA

SOIL PROFILE

ATH-33-40.981

**SUMMARY OF SOIL TEST DATA
U.S. ROUTE 33 MAINLINE**

BORINGS DRILLED BY RESOURCE INTERNATIONAL, INC.
* DENOTES SAMPLE TAKEN AT OR NEAR GRADE.

	Northing & Easting	From To	% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L	P.I	W.C.	ODOT Class.		Northing & Easting	From To	% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L	P.I	W.C.	ODOT Class.	
(B-102)	133039.100 638549.700	0-0.5 0.5-0.9 1.1-1.5 1.8-2.3 2.6-3.1 4.1-4.6 5.6-6.1 7.2-7.5 8.6-8.7	SAME AS 4 1	3		40	52			27 23 16 16 20	VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL* VISUAL VISUAL VISUAL		(B-114A)	131732.600 639023.500	0-0.5 0.5-0.9 1.1-1.5 1.8-2.1 2.6-2.8	BROWN SILTY CLAY, SOME SAND, TRACE GRAVEL SAME AS 0-0.5 SAME AS 0-0.5 BROWN & GRAY WEATHERED SANDSTONE SAME AS 1.8-2.1							23 20 14	VISUAL VISUAL VISUAL VISUAL
(B-103)	132861.600 638523.000	0-0.6 0.6-1.2								23	VISUAL VISUAL		(B-115)	131546.800 639021.000	0-0.5 0.5-1.8 1.8-3.0	DARK BROWN SILTY CLAY, SOME SAND, TRACE GRAVEL 19 11 17 -53- REDDISH-BROWN CLAYEY SILT, SOME SAND, TRACE GRAVEL							26 26 19	VISUAL VISUAL VISUAL
(B-104)	132684.900 638556.600	0-0.5 0.5-0.9 1.1-1.5 1.8-2.3 2.6-3.1 4.4-4.6	SAME AS 3 1	15	33	48				20 17 18 13 14 6	VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL		(B-116)	131450.600 639127.100	0-0.5 0.5-0.9 1.1-1.5 1.8-2.3 2.6-3.1 4.1-4.6 5.6-5.9 7.2-7.5 8.7-8.9 10.2-10.4 11.7-11.9	BROWN SILTY CLAY, LITTLE SAND, TRACE GRAVEL SAME AS 0-0.5 BROWN TO RED INDURATED CLAY/WEATHERED MUDSTONE SAME AS 1.1-1.5 SAME AS 1.1-1.5 SAME AS 1.1-1.5 SAME AS 1.1-1.5 SAME AS 1.1-1.5 SAME AS 1.1-1.5 SAME AS 1.1-1.5 SAME AS 1.1-1.5							18 15 12 11 10	VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL
(B-105)	132604.200 638631.800	0-0.5 0.5-0.9 1.1-1.5 1.8-2.3 2.6-3.1 4.1-4.4	SAME AS 0 16	47						15 14 14	VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL		(B-117)	131296.300 639126.600	0-0.1 0.1-1.5 1.5-2.0 2.0-2.3 2.3-3.0	DARK BROWN CLAYEY SILT, SOME SAND, TRACE ORGANICS SAME AS 1.5-2.0 8 0 6 -86- SAME AS 1.5-2.0 BROWN WEATHERED SANDSTONE							25 19 19 19 16	VISUAL VISUAL VISUAL VISUAL VISUAL
(B-106)	132439.400 638641.500	0-0.1 0.1-0.6	0 9	68	17	6				8	A-3a VISUAL		(B-118)	131187.900 639173.600	0-0.1 0.1-1.8	BROWN CLAYEY SILT, SOME SAND, TRACE GRAVEL, TRACE ORGANICS BROWN SANDY CLAY, SOME SILT, TRACE GRAVEL							24 22	VISUAL VISUAL
(B-107)	132330.200 638742.300	0-0.5 0.5-0.9 1.1-1.5 1.8-2.3 2.6-3.1 4.1-4.6 5.6-5.9 7.2-7.5 8.7-9.0 9.6-9.9	SAME AS 29 30							20 29 30 19	VISUAL VISUAL VISUAL* VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL		(B-119)	131006.500 639207.200	0-0.5 0.5-0.9 1.1-1.5 1.8-2.3 2.6-3.1 4.1-4.6 5.7-5.8	REDDISH-BROWN CLAY, SOME SILT, LITTLE SAND SAME AS 0-0.5 REDDISH-BROWN INDURATED CLAY/WEATHERED MUDSTONE 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 WEATHERED SANDSTONE							29 31	VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL
(B-108)	132291.000 638650.300	0-0.5 0.5-0.9 1.1-1.5 1.8-2.3 2.6-3.1 4.1-4.2 5.6-5.7	REDDISH-BROWN 31 SAME AS 0-0.5 23 SAME AS 0-0.5 26							24 31 23 26	VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL		(B-120)	130911.800 639291.000	0-0.5 0.5-0.9 1.1-1.5 1.8-2.3 2.6-3.1 4.1-4.4 5.6-6.0 7.2-7.4 8.7-8.9 10.2-10.5 11.7-11.9	BROWN SANDY SILT, LITTLE CLAY SAME AS 0-0.5 BROWN SILTY CLAY, TRACE SAND REDDISH-BROWN INDURATED CLAY/WEATHERED MUDSTONE SAME AS 1.8-2.3 SAME AS 1.8-2.3 SAME AS 1.8-2.3 SAME AS 1.8-2.3 SAME AS 1.8-2.3 SAME AS 1.8-2.3							19 16 13	VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL
(B-109)	132310.600 638696.300	0-0.5 0.5-0.9 1.1-1.5 1.8-2.1 2.6-2.9 4.1-4.4 5.6-6.1 7.2-7.3 8.7-8.8	BROWN SILTY CLAY, LITTLE SAND SAME AS 21 26							21 26	VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL* VISUAL		(B-121)	130764.500 639353.600	0-1.2 1.2-1.7	REDDISH-BROWN CLAY, SOME SILT, LITTLE SAND LIGHT BROWNISH-GRAY INDURATED CLAY, WEATHERED MUDSTONE							22 9	VISUAL VISUAL
(B-110)	132126.500 638774.500	0-0.5 0.5-0.9 1.1-1.5 1.8-2.0 2.6-2.8 4.1-4.3	BROWN SILTY CLAY, SOME SAND BROWN SILTY SAND BROWN WEATHERED SANDSTONE SAME AS 1.8-2.0 SAME AS 1.8-2.0 SAME AS 1.8-2.0							20 13	VISUAL VISUAL* VISUAL VISUAL VISUAL VISUAL		(B-123)	130591.396 639506.659	0-0.5 0.5-0.9 1.1-1.6 1.8-2.3 2.6-3.1 4.1-4.6 5.7-6.1 7.2-7.5 8.7-8.8	SAME AS 1.8-2.3 SAME AS 1.8-2.3 0 2 3 -95- 34 17 REDDISH-BROWN INDURATED CLAY/WEATHERED MUDSTONE SAME AS 2.6-3.1 SAME AS 2.6-3.1 SAME AS 2.6-3.1 SAME AS 2.6-3.1 SAME AS 2.6-3.1							31 27 22 16 15 13 15 6	VISUAL VISUAL VISUAL A-6b VISUAL VISUAL VISUAL VISUAL
(B-111)	131988.500 638833.200	0-0.5 0.5-0.9 1.1-1.3 1.8-2.0 2.6-2.8 4.1-4.3 5.6-5.8 7.2-7.4 8.7-9.1 9.6-9.8	SAME AS 1 2	12	58	27				21 18 11 11 9	VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL* VISUAL VISUAL VISUAL		(B-124)	130562.053 639439.637	0-0.5 0.5-0.9 1.1-1.6 1.8-2.3 2.6-2.8	BROWN CLAY, SOME SILT, LITTLE TO TRACE SAND SAME AS 0.0-0.5 SAME AS 0.0-0.5 SAME AS 0.0-0.5 BROWN SHALE							32 29 19 11	VISUAL VISUAL VISUAL VISUAL
(B-112)	131832.100 638899.700	0-0.7 0.7-1.2								14	VISUAL VISUAL		(B-125)	130542.491 639393.623	0-0.5 0.5-0.9 1.1-1.6 1.8-2.0 2.6-2.8	SAME AS 0.5-0.9 1 2 27 33 37 29 14 BROWN WEATHERED SANDSTONE SAME AS 1.1-1.6 SAME AS 1.1-1.6							29 16	VISUAL A-6a VISUAL VISUAL
(B-113)	131665.200 638916.300	0-0.7 0.7-1.6 1.6-1.8								17 17 51	VISUAL VISUAL VISUAL		(B-126)	130362.252 639468.074	0-0.5 0.5-1.1 1.1-1.6 1.8-2.0 2.6-3.1 3.4-3.5	SAME AS 0.5-1.1 1 8 25 21 45 34 20 SAME AS 0.5-1.1 SAME AS 0.5-1.1 3 1 5 26 65 44 24 GRAY WEATHERED SANDSTONE							18 21 20 22 21	VISUAL A-6b VISUAL VISUAL A-7-6 VISUAL
(B-114)	131684.800 638962.300	0-0.6 0.6-1.5 1.5-1.6								27 10 22	VISUAL VISUAL VISUAL													

CALCULATED
TAH
CHECKED
DAA

SOIL PROFILE

ATH-33-40.981

SUMMARY OF SOIL TEST DATA
U.S. ROUTE 33 MAINLINE

BORINGS DRILLED BY RESOURCE INTERNATIONAL, INC.

NP SHOWN IN LIQUID LIMIT AND PLASTICITY INDEX COLUMNS INDICATES MATERIAL IS NON-PLASTIC.

	Northing & Easting	From To	% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	ODOT Class.		Northing & Easting	From To	% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	ODOT Class.		
(B-127)	130191.568 639598.227	0.3-0.8 1.1-1.6 1.8-2.3 2.6-3.1 4.1-4.6 5.7-6.0 7.2-7.3	8 SAME AS 0.3-0.8 BROWN TO GRAY ARENACEOUS WEATHERED SHALE SAME AS 1.8-2.3 SAME AS 1.8-2.3 SAME AS 1.8-2.3 SAME AS 1.8-2.3	13 18		-61-		38	19	16 10	A-6b VISUAL VISUAL VISUAL VISUAL VISUAL	(B-141)	128784.330 640191.047	0.3-0.8 1.1-1.3 1.8-2.0	BROWN HIGHLY WEATHERED SANDSTONE WITH SILTY CLAY INTERBEDS							11	VISUAL VISUAL VISUAL		
(B-128)	130101.909 639635.257	0-0.5 0.5-1.1 1.1-1.6 1.8-2.3 2.6-3.1 4.1-4.6 5.7-6.1 7.2-7.6 8.7-9.2 10.5-11.0	SAME AS 0.5-1.1 0 SAME AS 0.5-1.1 SAME AS 0.5-1.1 0 GRAY SAND, TRACE SILT GRAY SILTY CLAY, TRACE SAND BROWN SAND SAME AS 10.5-11.0 23	11 46 43				35	15	26 25 25 24 22 29 27 22 13	VISUAL A-6a VISUAL VISUAL A-4a VISUAL VISUAL VISUAL A-6b	(B-142)	128629.446 640261.239	0-0.5 0.5-0.9 1.1-1.6 1.8-2.1	2 19 0	49	13	17						23 15 14 10	VISUAL A-3a VISUAL A-3a
(B-129)	129912.782 639650.462	0-0.5 0.5-1.1 1.1-1.6 1.8-2.3 2.6-3.1 4.1-4.4 5.7-5.8	SAME AS 0.5-1.1 2 SAME AS 0.5-1.1 2 GRAY WEATHERED MUDSTONE SAME AS 2.6-3.1 SAME AS 2.6-3.1	11 55		-32-		26	10	27 21 25 20 10	VISUAL VISUAL VISUAL A-4a VISUAL VISUAL	(B-143)	128553.600 640337.139	0-0.5 0.5-0.9 1.1-1.6 1.8-2.3 2.6-2.7	9 6	18		-67-	30	13			27 22 18 19	VISUAL A-6a VISUAL VISUAL VISUAL	
(B-130)	129917.851 639713.504	0-0.5 0.5-0.9 1.1-1.6 1.8-2.3 2.6-3.0	SAME AS 0.5-0.9 1 2 SAME AS 0.5-0.9 SAME AS 0.5-0.9 SAME AS 0.5-0.9	5 25 67				66	44	22 31 22 18 14	VISUAL A-7-6 VISUAL VISUAL VISUAL	(B-144)	128411.184 640360.868	0-0.5 0.5-0.9 1.1-1.6 1.8-2.3 2.6-3.0	22 4	6	31	37	41	22		27 25 27 29 25	VISUAL A-7-6 VISUAL VISUAL VISUAL		
(B-131)	129882.196 639782.993	0-0.5 0.5-0.9 1.1-1.3	BROWN SILTY CLAY, LITTLE SAND SAME AS 0.0-0.5 BROWN SANDSTONE							24 22 8	VISUAL VISUAL VISUAL	(B-145)	128314.725 640413.720	0-0.5 0.5-0.9 1.1-1.6 1.8-2.3 2.6-2.7	13 3	20	28	36			24 20 19 13 8	VISUAL VISUAL VISUAL VISUAL VISUAL			
(B-132)	129825.822 639752.628	0-0.5 0.5-0.9 1.1-1.3	BROWN SILTY CLAY, LITTLE SAND SAME AS 0.0-0.5 RED AND BROWN WEATHERED SANDSTONE							21 11	VISUAL VISUAL VISUAL	(B-146)	128187.583 640493.258	0-0.5 0.5-0.9 1.1-1.6 1.9-2.0	5 6	38	33	18	NP	NP	21 16 14 5	A-4a VISUAL VISUAL VISUAL			
(B-133)	129779.229 639745.270	0-0.5 0.5-0.9 1.1-1.6 1.8-2.3 2.6-2.7	BROWN SILTY SAND, TRACE CLAY SAME AS 0.0-0.5 BROWN WEATHERED SANDSTONE SAME AS 1.1-1.6 SAME AS 1.1-1.6							17 15	VISUAL VISUAL VISUAL VISUAL	(B-147)	128073.940 640574.984	0-0.5 0.5-0.9 1.1-1.6 1.8-2.1	4 9	38	31	18			22 15 12 9	VISUAL A-4a VISUAL VISUAL			
(B-134)	129706.500 639740.332	0-0.5 0.5-0.9 1.1-1.6 1.8-2.4 2.6-3.1 4.1-4.6 5.6-5.8	SAME AS 0.5-0.9 4 35 SAME AS 0.5-0.9 0 3 SAME AS 1.8-2.4 SAME AS 1.8-2.4 GRAY SHALE	31 -30-				24	9	17 16 19 29 25 13	VISUAL A-2-4 VISUAL A-7-6 VISUAL VISUAL	(B-148)	127947.519 640673.054	0-0.5 0.5-0.9 1.1-1.6 1.8-2.0	BROWN SANDY CLAY, SOME SILT, TRACE SAND SAME AS 0.0-0.5 BROWN SILT, TRACE CLAY, TRACE SAND BROWN SANDSTONE							22 20 13 8	VISUAL VISUAL VISUAL VISUAL		
(B-135)	129568.141 639862.175	0-0.5 0.5-0.9 1.1-1.4 1.8-2.0	BROWN SILT AND CLAY, LITTLE SAND SAME AS 0.0-0.5 LIGHT BROWN CLAY-SHALE SAME AS 1.1-1.4							34 21	VISUAL VISUAL VISUAL VISUAL	(B-149)	127824.846 640730.283	0-0.5 0.5-1.1 1.1-1.5 1.8-2.3 2.6-2.8	1 13 36	28	22	20	7		42 18 17 19 8	VISUAL A-4a VISUAL A-4a VISUAL			
(B-136)	129478.282 639967.747	0-0.5 0.5-0.9 1.1-1.6 1.8-2.3 2.6-2.9 4.1-4.4	SAME AS 0.5-0.9 37 20 9 SAME AS 0.0-0.5 VARIEGATED BROWN, RED, AND GRAY WEATHERED MUDSTONE SAME AS 1.1-1.6 SAME AS 1.1-1.6 SAME AS 1.1-1.6	9 -34-				NP	NP	23 10	A-3a VISUAL VISUAL VISUAL VISUAL	(B-150)	127687.642 640925.371	0-0.5 0.5-0.9 1.1-1.6 1.8-2.3 2.6-2.9 4.4-4.7	0 9	42	24	25			26 16 21 11 9	VISUAL VISUAL VISUAL A-1b VISUAL			
(B-137)	129392.130 639882.672	0-0.5 0.5-0.9 1.1-1.6 1.8-2.3 2.6-3.1	SAME AS 0.5-0.9 10 1 2 45 42 SAME SA 0.5-0.9 BROWN HIGHLY WEATHERED SANDSTONE SAME AS 1.8-2.3					37	19	32 27 28	VISUAL A-6b VISUAL VISUAL VISUAL	(B-151)	127663.118 640893.770	0-0.5 0.5-0.9 1.1-1.6 1.8-2.1 2.6-2.9 4.4-4.7	0 9	42	24	25			21 12 20 8 9	VISUAL VISUAL VISUAL VISUAL VISUAL			
(B-138)	129273.649 639987.372	0-0.5 0.5-0.9 1.1-1.6	5 19 26 -50- BROWN HIGHLY WEATHERED SANDSTONE	41 51				25 46	2	27 23 12	VISUAL A-7-6 VISUAL	(B-152)	127536.717 640991.866	0-0.5 0.5-0.9 1.1-1.4 1.8-2.3 2.6-3.1 4.1-4.4	0 47 33		-20-			17 10 7 9 9 10	VISUAL A-3a VISUAL VISUAL VISUAL VISUAL				
(B-139)	129119.547 640059.404	0-0.5 0.5-0.9 1.1-1.6 1.8-2.3 2.6-3.1 4.1-4.6	SAME AS 0.5-0.9 6 5 47 -42- SAME AS 0.5-0.9 0 7 67 -26- SAME AS 1.8-2.3 BROWN SILTY CLAY, LITTLE SAND					NP	NP	20 15 15 10 7 18	VISUAL A-4a VISUAL VISUAL VISUAL VISUAL	(B-153)	127407.994 641046.195	0-0.5 0.5-0.9 1.1-1.6 1.8-2.4 2.6-2.9	0 33 4	54		-13-	43	25	39 26 24 6	VISUAL A-3a VISUAL A-7-6 VISUAL			
(B-140)	128997.562 640104.744	0-0.5 0.5-0.9 1.1-1.6 1.8-2.0	SAME AS 0.5-0.9 1 53 -45- BROWN WEATHERED SANDSTONE SAME AS 1.1-1.6							20 18 14	VISUAL VISUAL VISUAL	(B-154)	127369.931 641127.633	0-0.5 0.5-0.9 1.1-1.6 1.8-2.1 2.1-2.2 2.6-2.9	0 18 23	33	33	26			22 15 13 11 13 9	VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL			

CALCULATED
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SOIL PROFILE

ATH-33-40.981

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SUMMARY OF SOIL TEST DATA

U.S. ROUTE 33 MAINLINE

BORINGS DRILLED BY RESOURCE INTERNATIONAL, INC.

	Northing & Easting	From To	% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L	P.I	W.C.	ODOT Class.		
(B-156)	127283.915 641188.058	0-0.5	SAME AS 0.5-0.9								24	VISUAL	
		0.5-0.9	7	23	35	17	18				21	A-3a	
		1.1-1.6	SAME AS 0.5-0.9									24	VISUAL
		1.8-2.2	BROWN AND GRAY SILTY CLAY, LITTLE SAND									22	VISUAL
		2.6-3.1	GRAY SANDY SILT, TRACE CLAY									22	VISUAL
		4.1-4.2	GRAY SANDSTONE									VISUAL	
(B-157)	127196.370 641333.790	0-0.5	SAME AS 0.5-0.9								10	VISUAL	
		0.5-0.9	15	5	22	38	20				23	A-4a	
		1.1-1.6	SAME AS 0.5-0.9									18	VISUAL
		1.8-2.2	BROWN SANDY CLAY, SOME SILT, TRACE GRAVEL									20	VISUAL
		2.6-3.0	SAME AS 1.8-2.2									7	VISUAL
(B-158)	127157.112 641285.619	0-0.5	BROWN SILTY CLAY, SOME SAND								23	VISUAL	
		0.5-0.9	BROWN SILTY SAND, LITTLE CLAY									16	VISUAL
		1.1-1.6	9	8	3	-80-	50	28			24	A-7-6	
		1.8-2.3	BLACK COAL										VISUAL
		2.6-3.0	GRAY MUDSTONE									11	VISUAL
(B-159)	127107.549 641222.649	0-0.5	37	1	3	10	49				35	VISUAL	
		0.5-0.9	SAME AS 0.0-0.5									28	VISUAL
		1.1-1.6	BROWN AND GRAY CLAYEY SILT, TRACE SAND									11	VISUAL
		1.8-2.0	BROWN SANDSTONE									22	VISUAL
(B-160)	127022.596 641360.884	0-0.5	SAME AS 0.5-1.0								20	VISUAL	
		0.5-1.0	4	17	34	16	29	29	14		19	A-6a	
		1.1-1.6	0	5	31	-64-	32	18			20	A-6b	
		1.8-2.3	SAME AS 1.1-1.6									18	VISUAL
		2.6-3.1	BROWN WEATHERED SILTSTONE									5	VISUAL
		4.5-4.9	SAME AS 2.6-3.1										VISUAL
(B-161)	126879.544 641390.959	0-0.5	BROWN SILTY CLAY, SOME SAND, TRACE GRAVEL								26	VISUAL	
		0.5-0.9	BROWN SAND, SOME SILT, TRACE CLAY, TRACE GRAVEL									21	VISUAL
		1.1-1.6	0	18	57	-25-					20	A-3a	
		1.8-2.3	BROWN SANDY CLAY, LITTLE SILT, TRACE SAND, TRACE GRAVEL									21	VISUAL
		2.6-2.7	GRAY WEATHERED SANDSTONE									6	VISUAL

CALCULATED	TAH	CHECKED	DAA
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SOIL PROFILE

ATH-33-40.981

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**SUMMARY OF SOIL TEST DATA
U.S. ROUTE 33 MAINLINE**

* DENOTES SAMPLE TAKEN AT OR NEAR GRADE.

Boring	Station & Offset	Depth From To	% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	% W.C.	ODOT Class	Boring	Station & Offset	Depth From To	% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	% W.C.	ODOT Class	Boring	Station & Offset	Depth From To	% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	% W.C.	ODOT Class																	
R-49	41+833.94	0.0 - 0.15	TOPSOIL										VISUAL	SB-47	43+418.97	0.0 - 0.09	TOPSOIL										VISUAL	SB-44	44+420.41	0.0 - 0.18	TOPSOIL										VISUAL											
	76.00 m Rt.	0.15 - 3.05	SEVERELY WEATHERED RED CLAYSTONE										VISUAL*		27.13 m Rt.	0.09 - 2.44	0	5	60	20	15	19	3	16	A-3a		6.09 m Rt.	0.18 - 1.83	BROWN COARSE AND FINE SAND, VISUAL										A-3a													
		3.05 - 4.69	GRAYISH BROWN CLAYSTONE										VISUAL		2.44 - 4.57	BROWN AND GRAY SILTY CLAY, VISUAL										A-6b		1.83 - 4.11	GRAY AND BROWN SILT AND CLAY, VISUAL										A-6a													
		4.69 - 7.44	GRAY SILTSTONE										VISUAL		4.57 - 5.79	GRAY SHALE										VISUAL		4.11 - 4.57	SEVERELY WEATHERED GRAY SHALE										VISUAL													
		7.44 - 11.95	GRAY CLAYSTONE										VISUAL		5.79 - 9.60	GRAY SANDSTONE										VISUAL		4.57 - 6.83	DARK GRAY SHALE										VISUAL													
		11.95 - 20.54	GRAY SILTSTONE										VISUAL															6.83 - 7.32	BLACK SHALE AND COAL										VISUAL													
		20.54 - 23.16	GRAY SANDSTONE										VISUAL	SB-48	43+420.59	0.0 - 0.30	TOPSOIL										VISUAL		7.32 - 8.08	GRAY SHALE										VISUAL												
													18.58 m Lt.	0.30 - 1.68	BROWN SANDY SILT, VISUAL										A-4a		8.08 - 9.60	GRAY LIMESTONE										VISUAL														
R-50	41+880.66	0.0 - 0.6	TOPSOIL										VISUAL		1.68 - 2.44	BROWN COARSE AND FINE SAND, VISUAL										A-3a		9.60 - 10.36	GRAY SHALE										VISUAL													
	37.62 m Lt.	0.06 - 1.07	ORANGISH BROWN SILT AND CLAY, VISUAL										A-6a		2.44 - 3.66	BROWN AND GRAY SILTY CLAY, VISUAL										A-6b		10.36 - 11.13	GRAY AND RED CLAYSTONE										VISUAL													
		1.07 - 4.27	SEVERELY WEATHERED BROWN SHALE										VISUAL		3.66 - 3.96	DARK BROWN SILT AND CLAY, VISUAL										A-6a		11.13 - 11.89	GRAY SHALE										VISUAL													
		4.27 - 4.88	BROWN SILTSTONE										VISUAL		3.96 - 6.10	SEV. WEATHERED GRAYISH BROWN SILTSTONE										VISUAL																										
		4.88 - 16.46	RED AND BROWN CLAYSTONE										VISUAL*		6.10 - 6.95	GRAY SILTSTONE										VISUAL	R-58	44+860.13	0.0 - 0.08	TOPSOIL										VISUAL												
		16.46 - 17.40	BROWN SANDSTONE										VISUAL		6.95 - 8.32	GRAY AND DARK GRAY SANDSTONE										VISUAL		28.49 m Rt.	0.08 - 0.91	13	0	2	25	60	51	31	24	A-7-6		0.91 - 1.68	BROWN GRAVEL WITH SAND AND SILT, VISUAL										A-2-4	
		17.40 - 19.45	GRAY CLAYSTONE										VISUAL		8.32 - 8.78	GRAY SILTSTONE										VISUAL			1.68 - 3.81	LIGHT BROWN SILT AND CLAY, VISUAL										A-6a												
		19.45 - 20.73	GRAY SANDSTONE										VISUAL																3.81 - 4.57	BROWN SILT AND CLAY, VISUAL										A-6a												
R-51	42+579.97	0.0 - 0.15	TOPSOIL										VISUAL	R-54	43+620.08	0.0 - 0.18	TOPSOIL										VISUAL		4.57 - 7.62	GRAY SANDSTONE										VISUAL												
	0.08 m Lt.	0.15 - 1.68	BROWN SANDY SILT, VISUAL										A-4a		Centerline	0.18 - 0.91	0	0	35	26	39	38	23	19	A-6b			0.91 - 1.37	BROWN SANDY SILT, VISUAL										A-4a													
		1.68 - 3.05	SEVERELY WEATHERED BROWN SANDSTONE										VISUAL			0.91 - 1.37	SEVERELY WEATHERED BROWN SANDSTONE										VISUAL*		11.89 - 13.41	RED AND GRAY CLAYSTONE										VISUAL*												
		3.05 - 4.88	BROWN SANDSTONE										VISUAL															13.41 - 17.22	GRAY SILTSTONE										VISUAL													
		4.88 - 7.41	BROWN CLAYSTONE										VISUAL	SB-46	43+776.49	0.0 - 0.25	TOPSOIL										VISUAL																									
		7.41 - 8.84	GRAY CLAYSTONE										VISUAL		Centerline	0.25 - 0.91	DARK BROWN SILT AND CLAY, VISUAL										A-6a	R-60	44+919.65	0.0 - 0.91	33	16	28	16	7	22	6	16	A-2-4		0.91 - 1.67	GRAY COARSE AND FINE SAND, VISUAL										A-3a
		8.84 - 9.11	BROWN SANDSTONE										VISUAL			0.91 - 1.68	BR. GRAVEL WITH SAND, SILT, AND CLAY, VISUAL										A-2-6		53.53 m Lt.	0.91 - 1.67	SEVERELY WEATHERED GRAY CLAYSTONE										VISUAL											
		9.11 - 9.39	GRAY CLAYSTONE										VISUAL			1.68 - 2.44	GRAY AND BROWN SANDY SILT, VISUAL										A-4a			1.67 - 3.20	SEVERELY WEATHERED GRAY CLAYSTONE										VISUAL											
		9.39 - 11.52	GRAY SANDSTONE										VISUAL			2.44 - 3.96	GRAY SILT AND CLAY, VISUAL										A-6a			3.20 - 3.47	SEVERELY WEATHERED RED AND GRAY SHALE										VISUAL											
		11.52 - 12.62	GRAY LIMESTONE										VISUAL			3.96 - 4.88	GRAY ROCK FRAGMENTS WITH CLAY										VISUAL																									
		12.62 - 13.11	BROWN SANDSTONE										VISUAL			4.88 - 5.49	GRAY SILT AND CLAY, VISUAL										A-6a	R-59	44+920.13	0.0 - 0.10	TOPSOIL										VISUAL											
														5.49 - 6.10	SEVERELY WEATHERED RED CLAYSTONE										VISUAL		37.85 m Lt.	0.10 - 0.91	0	10	42	23	25	24	9	18	A-4a		0.91 - 2.44	BROWN SILT AND CLAY, VISUAL										A-6a		
R-52	42+659.82	0.0 - 0.20	TOPSOIL										VISUAL																2.44 - 5.00	SEVERELY WEATHERED GRAY CLAYSTONE										VISUAL												
	124.13 m Rt.	0.20 - 0.91	BROWN AND GRAY SANDY SILT, VISUAL										A-4a*	R-55	43+904.98	0.0 - 0.09	TOPSOIL										VISUAL																									
		0.91 - 2.29	SEVERELY WEATHERED BROWN SHALE										VISUAL		0.02 m Rt.	0.09 - 1.68	3	2	2	26	67	55	31	23	A-7-6																											
		2.29 - 6.74	BROWN SANDSTONE										VISUAL			1.68 - 2.44	BROWN SANDY SILT, VISUAL										A-4a	SB-43	44+946.93	0.0 - 0.25	TOPSOIL										VISUAL											
		6.74 - 9.25	LIGHT GRAY LIMESTONE										VISUAL			2.44 - 3.47	SEVERELY WEATHERED BROWN SANDSTONE										VISUAL		1.82 m Rt	0.25 - 2.44	BROWN SILT AND CLAY, VISUAL										A-6a											
		9.25 - 9.94	BROWN CLAYSTONE										VISUAL																																							
		9.94 - 15.24	BROWN SANDSTONE										VISUAL																																							
		15.24 - 20.79	BROWN AND GRAY SANDSTONE										VISUAL	R-56	43+905.00	0.0 - 0.24	TOPSOIL										VISUAL			2.44 - 3.35	GRAY AND BROWN SILTY CLAY, VISUAL										A-6b											
		20.79 - 21.43	GRAY SILTSTONE										VISUAL		50.03 m Rt.	0.24 - 0.91	1	6	41	17	35	36	18	18	A-6b			3.35 - 3.96	BROWNISH GRAY SANDY SILT, VISUAL										A-4a													
		21.43 - 22.86	BLACK CARBONACEOUS SHALE										VISUAL			0.91 - 3.20	GRAY SILT AND CLAY, VISUAL										A-7-6			3.96 - 6.10	SEVERELY WEATHERED GRAY CLAYSTONE										VISUAL											
														3.20 - 3.96	GRAY SILT, VISUAL										A-4b																											
														3.96 - 4.54	GRAY SILT AND CLAY, VISUAL										A-6a	R-63	45+019.99	0.0 - 0.06	TOPSOIL										VISUAL													
SB-50	42+765.34	0.0 - 0.08	TOPSOIL										VISUAL																																							
	0.62 m Rt.	0.08 - 1.83	15	9	9	27	40	41	21	16	A-7-6	SB-45	43+927.02	0.0 - 0.30	TOPSOIL										VISUAL			37.85 m Lt.	0.10 - 0.91	1	17	37	26	19	19	4	15	A-4a		0.91 - 1.67	BROWN COARSE AND FINE SAND, VISUAL										A-3a	
		1.83 - 2.59	SEVERELY WEATHERED BROWN AND GRAY SILTSTONE										VISUAL		2.77 m Lt.	0.30 - 0.91	2	3	4	21	70	57	31	29	A-7-6			1.67 - 2.68	SEVERELY WEATHERED BROWN SANDSTONE										VISUAL													
		2.59 - 6.49	SEVERELY WEATHERED BROWN SANDSTONE										VISUAL			0.91 - 1.68	BROWN SILTY CLAY, VISUAL										A-6b																									
														1.68 - 2.44	SEVERELY WEATHERED BROWN SILTSTONE										VISUAL	R-64	45+020.00	0.0 - 0.06	TOPSOIL										VISUAL													
SB-49	43+054.84	0.0 - 0.08	TOPSOIL										VISUAL																																							
	3.70 m Lt.	0.08 - 0.91	BR. GRAVEL WITH SAND, SILT, AND CLAY, VISUAL										A-2-6			2.44 - 3.05	SEVERELY WEATHERED BROWN SANDSTONE										VISUAL			0.06 - 0.91	7 11 23 30 29 41 18 25										A-7-6											
		0.91 - 1.37	BROWN SILT, VISUAL										A-4b			3.05 - 7.32	GRAY SANDSTONE										VISUAL			0.91 - 1.62	SEVERELY WEATHERED GRAY CLAYSTONE										VISUAL											
		1.37 - 2.13	LIGHT BROWN COARSE AND FINE SAND, VISUAL										A-3c			7.32 - 7.50	COAL										VISUAL																									
		2.13 - 2.71	GRAY LIMESTONE										VISUAL			7.50 - 12.34	DARK GRAY AND BLACK SHALE										VISUAL	R-61	45+039.80	0.0 - 0.06	TOPSOIL										VISUAL											
		2.71 - 9.75	BROWN, DARK BROWN, AND GRAY SANDSTONE										VISUAL			12.34 - 13.41	DARK GRAY CLAYSTONE										VISUAL		28.65 m Lt.	0.06 - 0.92	BROWN SILT AND CLAY, VISUAL										A-6a											
R-53	43+090.00	0.0 - 0.09	TOPSOIL										VISUAL	R-57	44+310.00	0.0 - 0.12	TOPSOIL										VISUAL			2.44 - 4.57	SEVERELY WEATHERED GRAY CLAYSTONE										VISUAL											
	Centerline	0.09 - 0.91	BROWN SILT AND CLAY, VISUAL										A-6a		Centerline	0.12 - 1.68	3	7	7	52	31	39	17	9	A-6b*			4.57 - 10.36	RED, GRAY, AND BROWN CLAYSTONE										VISUAL*													
		0.91 - 2.44	BROWN SILT AND CLAY, VISUAL										A-7-6			1.68 - 2.44	GRAY SILT AND CLAY, VISUAL										A-6a																									
		2.44 - 3.78	BROWN SILT AND CLAY, VISUAL										A-6a			2.44 - 3.20	BROWN AND GRAY SILT AND CLAY, VISUAL										A-6a																									
														3.20 - 3.96	GRAY SILT AND CLAY, VISUAL										A-6a																											
														3.96 - 5.00	SEVERELY WEATHERED GRAY CLAYSTONE										VISUAL																											

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SUMMARY OF SOIL TEST DATA

U.S. ROUTE 33 MAINLINE

* DENOTES SAMPLE TAKEN AT OR NEAR GRADE.

NOTE: NP SHOWN IN LIQUID LIMIT AND PLASTICITY INDEX COLUMNS INDICATES MATERIAL IS NON-PLASTIC.

Boring	Station & Offset	Depth From To	% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	% W.C.	ODOT Class	Boring	Station & Offset	Depth From To	% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	% W.C.	ODOT Class	Boring	Station & Offset	Depth From To	% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	% W.C.	ODOT Class																																																																																																																											
R-62	45+040.16 61.75 m Lt.	0.0 - 0.08 0.08 - 0.91 0.91 - 3.05 3.05 - 6.31 6.31 - 9.24 9.24 - 10.67 10.67 - 11.52 11.52 - 12.28 12.28 - 14.17 14.17 - 18.59	TOPSOIL BROWN SILT AND CLAY, VISUAL BROWN SILTSTONE BROWN SANDSTONE SEVERELY WEATHERED GRAY CLAYSTONE GRAY SILTSTONE REDDISH BROWN CLAYSTONE GRAY LIMESTONE GRAY SILTSTONE REDDISH BROWN CLAYSTONE								VISUAL A-6a VISUAL* VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL	R-69	45+805.25 27.86 m Rt.	0.0 - 0.05 0.05 - 0.92 0.92 - 1.19 1.19 - 2.71 2.71 - 3.44	TOPSOIL 7 14 24 38 17 32 13 16 GRAY AND DARK GRAY SILT AND CLAY, VISUAL GRAY COARSE AND FINE SAND, VISUAL SEV. WEATHERED BROWN AND GRAY CLAYSTONE											VISUAL A-6a A-6a A-3a VISUAL	R-74	46+375.29 50.07 m Rt.	0.0 - 0.40 0.40 - 1.68 1.68 - 3.96 3.96 - 4.72 4.72 - 5.33 5.33 - 6.10 6.10 - 7.56 7.56 - 9.66 9.66 - 9.94 9.94 - 10.58 10.58 - 14.26 14.26 - 15.24 15.24 - 16.00 16.00 - 17.25 17.25 - 22.04 22.04 - 22.86 22.86 - 25.91	TOPSOIL REDDISH BROWN SILTY CLAY, VISUAL BROWN SILTY CLAY, VISUAL SEV. WEATHERED DARK BROWN SANDSTONE SEVERELY WEATHERED GRAY LIMESTONE GRAY LIMESTONE BROWN SANDSTONE GRAY SANDSTONE GRAY CLAYSTONE GRAY SILTSTONE GRAY CLAYSTONE GRAY LIMESTONE BROWN CLAYSTONE BROWN SANDSTONE LIGHT GRAY LIMESTONE BROWN AND GRAY SANDSTONE LIGHT GRAY LIMESTONE BROWN AND GRAY SANDSTONE										VISUAL A-6b A-6b VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL* VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL	R-70	45+860.02 0.03 m Lt.	0.0 - 0.10 0.10 - 0.92 0.92 - 3.05 3.05 - 5.24 5.24 - 6.49 6.49 - 7.62 7.62 - 8.84	TOPSOIL DARK BROWN GRAVEL WITH SAND AND SILT, VISUAL SEV. WEATHERED BROWN AND GRAY SANDSTONE BROWN AND GRAY SANDSTONE GRAY SANDSTONE COAL AND CARBONACEOUS SHALE GRAY SANDSTONE									VISUAL A-2-4 VISUAL VISUAL* VISUAL VISUAL VISUAL	R-71	45+899.81 28.09 m Lt.	0.0 - 0.13 0.13 - 0.92 0.92 - 1.52 1.52 - 2.50 2.50 - 4.27 4.27 - 5.03 5.03 - 7.25 7.25 - 15.33 15.33 - 15.54 15.54 - 15.85 15.85 - 16.55 16.55 - 17.47 17.47 - 19.87 19.87 - 22.37 22.37 - 22.52 22.52 - 24.08	TOPSOIL BROWN SILT AND CLAY, VISUAL SEVERELY WEATHERED BROWN SANDSTONE LIGHT GRAY SANDSTONE GRAY LIMESTONE BROWN SANDSTONE LIGHT GRAY LIMESTONE BROWN AND GRAY SANDSTONE GRAY CLAYSTONE GRAY SILTSTONE BROWN AND GRAY SANDSTONE GRAY SANDSTONE BROWN AND GRAY SANDSTONE GRAY SANDSTONE COAL GRAY SANDSTONE										VISUAL A-6a A-6a VISUAL VISUAL VISUAL VISUAL VISUAL* VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL	R-72	45+899.94 48.58 m Lt.	0.0 - 0.33 0.33 - 0.55 0.55 - 0.92 0.92 - 3.05 3.05 - 15.24 15.24 - 22.46 22.46 - 23.77	TOPSOIL BROWN SILTY CLAY, VISUAL BROWN COARSE AND FINE SAND, VISUAL SEVERELY WEATHERED BROWN SANDSTONE BROWN SANDSTONE BROWN AND GRAY SANDSTONE GRAY SANDSTONE									VISUAL A-6b A-3a VISUAL VISUAL* VISUAL VISUAL	R-73	46+110.02 0.18 m Lt.	0.0 - 0.36 0.36 - 0.91 0.91 - 1.68 1.68 - 3.20 3.20 - 4.57 4.57 - 5.33 5.33 - 11.89	TOPSOIL 0 12 47 22 19 20 5 13 BROWN COARSE AND FINE SAND, VISUAL SEVERELY WEATHERED BROWN SANDSTONE SEV. WEATHERED DARK BROWN SANDSTONE BROWN SILTSTONE GRAY SANDSTONE									VISUAL A-4a A-3a VISUAL VISUAL VISUAL VISUAL* VISUAL	R-75	46+521.02 28.91 m Rt.	0.0 - 0.37 0.37 - 1.68 1.68 - 2.90 2.90 - 3.20 3.20 - 3.96 3.96 - 4.57 4.57 - 5.39 5.39 - 6.22 6.22 - 8.23 8.23 - 9.78 9.78 - 11.89	TOPSOIL BROWN SILT AND CLAY, VISUAL RED AND BROWN SILTY CLAY, VISUAL BROWN SILT, VISUAL SEVERELY WEATHERED BROWN SILTSTONE SEVERELY WEATHERED BROWN SANDSTONE BROWN SANDSTONE GRAY SANDSTONE BROWN AND GRAY SANDSTONE LIGHT GRAY SANDSTONE LIGHT GRAY LIMESTONE									VISUAL A-6a A-6b A-4b VISUAL VISUAL VISUAL VISUAL VISUAL VISUAL* VISUAL	R-76	46+520.00 53.00 m Rt.	0.0 - 0.38 0.38 - 3.96 3.96 - 4.72 4.72 - 5.49 5.49 - 6.40 6.40 - 7.32	TOPSOIL REDDISH BROWN COARSE AND FINE SAND, VISUAL BROWN SILTY CLAY, VISUAL BROWN SILT AND CLAY, VISUAL SEVERELY WEATHERED BROWN SHALE SEVERELY WEATHERED BROWN SANDSTONE BROWN AND GRAY SANDSTONE									VISUAL A-3a* A-6b A-6a VISUAL VISUAL VISUAL	R-77	46+550.36 Centerline	0.0 - 0.40 0.40 - 0.92 0.92 - 2.44 2.44 - 4.18	TOPSOIL 0 3 52 22 23 22 7 17 0 4 60 21 15 22 3 11 SEVERELY WEATHERED BROWN SANDSTONE									VISUAL A-4a A-4a VISUAL*	R-78	46+570.00 23.00 m Lt.	0.0 - 0.38 0.38 - 0.91 0.91 - 1.68 1.68 - 4.21	TOPSOIL 2 12 57 -29- NP NP 11 SEVERELY WEATHERED BROWN SILTSTONE SEVERELY WEATHERED BROWN SANDSTONE									VISUAL A-3a VISUAL VISUAL	R-80	46+860.00 28.00 m Rt.	0.0 - 0.12 0.12 - 0.92 0.92 - 3.97 3.97 - 6.10 6.10 - 7.77 6.86 - 11.92 7.77 - 11.89 11.89 - 13.41	TOPSOIL BROWN SANDY SILT, VISUAL BROWN COARSE AND FINE SAND, VISUAL SEVERELY WEATHERED BROWN SANDSTONE BROWN SANDSTONE BROWN CLAYSTONE BROWN AND GRAY CLAYSTONE GRAY SILTSTONE									VISUAL A-4a A-3a VISUAL VISUAL VISUAL VISUAL* VISUAL VISUAL

CALCULATED
MRS
CHECKED
DAA

SOIL PROFILE

ATH-33-40.981

10/132

708
949

SUMMARY OF SOIL TEST DATA
U.S. ROUTE 33 MAINLINE

* DENOTES SAMPLE TAKEN AT OR NEAR GRADE.

NOTE: NP SHOWN IN LIQUID LIMIT AND PLASTICITY INDEX COLUMNS INDICATES MATERIAL IS NON-PLASTIC.

Boring	Station & Offset	Depth From To	% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	% W.C.	ODOT Class	Boring	Station & Offset	Depth From To	% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	% W.C.	ODOT Class	Boring	Station & Offset	Depth From To	% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	% W.C.	ODOT Class												
R-79	46+860.00	0.0 - 0.09	TOPSOIL										VISUAL	SB-37	47+749.13	0.0 - 0.33	TOPSOIL										VISUAL	R-91	48+379.99	0.0 - 0.09	TOPSOIL										VISUAL						
	51.99 m Rt.	0.09 - 0.43	BROWN SILT AND CLAY, VISUAL										A-6a*		0.27 m Lt.	0.33 - 1.83	BROWN AND RED SILT AND CLAY, VISUAL										A-6a		10.00 m Lt.	0.09 - 0.91	0	9	50	23	18	17	7	13	A-4a								
		0.43 - 0.92	BROWN SILT, VISUAL										A-4b			1.83 - 2.44	LIGHT BROWN COARSE AND FINE SAND, VISUAL										A-3a			0.91 - 1.68	BROWN COARSE AND FINE SAND, VISUAL										A-3a						
		0.92 - 6.10	SEVERELY WEATHERED BROWN SANDSTONE										VISUAL			2.44 - 3.05	SEV. WEATHERED LIGHT BROWN SANDSTONE										VISUAL			1.68 - 4.42	SEVERELY WEATHERED BROWN SILTSTONE										VISUAL						
		6.10 - 6.86	BROWN SANDSTONE										VISUAL			3.05 - 5.64	LIGHT BROWN SANDSTONE										VISUAL			4.42 - 7.62	GRAY SANDSTONE										VISUAL						
		11.92 - 13.41	GRAY SILTSTONE										VISUAL															7.62 - 16.46	BROWN SANDSTONE										VISUAL*								
SB-40	46+898.31	0.0 - 0.11	TOPSOIL										VISUAL	R-85	47+840.04	0.0 - 0.34	TOPSOIL										VISUAL	R-93	48+478.12	0.0 - 0.46	TOPSOIL										VISUAL						
	4.16 m Lt.	0.11 - 0.91	BROWN SILT, VISUAL										A-4b		65.12 m Lt.	0.34 - 0.61	BROWN SILT AND CLAY, VISUAL										A-6a*		29.38 m Rt.	0.46 - 1.07	BROWN AND GRAY COARSE AND FINE SAND, VISUAL										A-3a						
		0.91 - 1.98	BROWN AND GRAY SILTY CLAY, VISUAL										A-6b			0.61 - 0.91	BROWN SILT AND CLAY, VISUAL										A-6a			1.07 - 1.16	SEVERELY WEATHERED BROWN SANDSTONE										VISUAL						
		1.98 - 3.05	BROWN SHALE										VISUAL			0.91 - 2.44	BROWN SILT AND CLAY, VISUAL										A-6a																				
		3.05 - 5.18	BROWN AND GRAY SANDSTONE										VISUAL			2.44 - 3.05	SEVERELY WEATHERED BROWN SANDSTONE										VISUAL																				
R-82	47+052.36	0.0 - 0.09	AGGREGATE BASE										VISUAL	R-86	47+939.99	0.0 - 0.40	TOPSOIL										VISUAL	R-94	48+619.91	0.0 - 0.15	TOPSOIL										VISUAL						
	42.45 m Lt.	0.09 - 1.37	0	8	12	51	29	29	10	20	A-4b*		45.01 m Lt.	0.40 - 0.91	BROWN SILT AND CLAY, VISUAL										A-6a*		Centerline	0.15 - 1.83	0 18 45 21 16 20 6 15										A-4a								
		1.37 - 3.05	BROWN AND GRAY SHALE										VISUAL			0.91 - 1.68	REDDISH BROWN SILTY CLAY, VISUAL										A-6b			1.83 - 3.20	BROWN COARSE AND FINE SAND, VISUAL										A-3a						
		3.05 - 5.73	BROWN SANDSTONE										VISUAL			1.68 - 2.44	RED. BRN. AND LT. BROWN SILT AND CLAY, VISUAL										A-6a			3.20 - 7.01	SEVERELY WEATHERED GRAY SILTSTONE										VISUAL*						
		5.73 - 6.34	BROWN AND GRAY SHALE										VISUAL			2.44 - 3.05	SEV. WEATHERED LIGHT BROWN SILTSTONE										VISUAL			7.01 - 7.62	COAL										VISUAL						
		6.34 - 7.25	BROWN SANDSTONE										VISUAL			3.05 - 4.11	SEV. WEATHERED LIGHT BROWN SANDSTONE										VISUAL			7.62 - 8.81	SEVERELY WEATHERED GRAY SILTSTONE										VISUAL						
		7.25 - 10.58	GRAY AND BROWN CLAYSTONE										VISUAL			4.11 - 4.33	GRAY SANDSTONE										VISUAL																				
		10.58 - 13.41	GRAY SILTSTONE										VISUAL			4.33 - 6.10	BROWN SANDSTONE										VISUAL																				
R-81	47+059.94	0.0 - 0.06	AGGREGATE BASE										VISUAL	R-87	48+100.02	0.0 - 0.24	TOPSOIL										VISUAL	SB-35	48+676.95	0.0 - 0.38	TOPSOIL										VISUAL						
	1.11 m Rt.	0.06 - 1.52	SEV. WEATHERED LIGHT BROWN SANDSTONE										VISUAL		0.07 m Lt.	0.24 - 0.91	DARK BROWN COARSE AND FINE SAND, VISUAL										A-3a		Centerline	0.38 - 0.91	GRAY SILT AND CLAY, VISUAL										A-6a						
		1.52 - 5.49	BROWN SANDSTONE										VISUAL			0.91 - 3.05	SEVERELY WEATHERED BROWN SANDSTONE										VISUAL			0.91 - 1.92	GRAY SANDY SILT, VISUAL										A-4a						
		5.49 - 7.32	GRAY AND RED CLAYSTONE										VISUAL*			3.05 - 11.89	BROWN SANDSTONE										VISUAL*			1.92 - 2.44	GRAY AND BROWN SILTY CLAY, VISUAL										A-6b						
		7.32 - 10.03	GRAY SILTSTONE										VISUAL																2.44 - 3.20	SEVERELY WEATHERED GRAY SILTSTONE										VISUAL							
		10.03 - 11.58	GRAY SANDSTONE										VISUAL															3.20 - 4.97	SEVERELY WEATHERED GRAY SHALE										VISUAL								
SB-39	47+143.36	0.0 - 0.37	TOPSOIL										VISUAL	R-88	48+194.71	0.0 - 0.09	TOPSOIL										VISUAL	R-95	48+780.84	0.0 - 3.20	BROWN GRAVEL WITH SAND, VISUAL										A-1-b						
	1.12 m Rt.	0.37 - 0.91	BROWN SILT AND CLAY, VISUAL										A-6a		34.22 m Rt.	0.09 - 0.91	0	2	14	74	10	NP	NP	29	A-4b		30.34 m Lt.	3.20 - 4.57	SEVERELY WEATHERED BROWN SANDSTONE										VISUAL								
		0.91 - 1.83	BROWN AND GRAY SILT AND CLAY, VISUAL										A-6a			0.91 - 1.68	0 19 43 22 16 19 6 17										A-4a			4.57 - 17.92	BROWN SANDSTONE										VISUAL*						
		1.83 - 5.58	SEV. WD. BROWN AND LIGHT GRAY SANDSTONE										VISUAL			1.68 - 2.44	GRAY COARSE AND FINE SAND, VISUAL										A-3a			17.92 - 18.62	COAL										VISUAL						
R-83	47+179.92	0.0 - 0.37	TOPSOIL										VISUAL			2.44 - 3.20	SEVERELY WEATHERED GRAY SHALE										VISUAL			18.62 - 19.05	GRAY CLAYSTONE										VISUAL						
	0.32 m Rt.	0.37 - 0.92	BROWN AND GRAY SILT AND CLAY, VISUAL										A-6a			3.20 - 7.01	SEVERELY WEATHERED GRAY CLAYSTONE										VISUAL			19.05 - 19.48	GRAY LIMESTONE										VISUAL						
		0.92 - 4.42	BROWNISH GRAY SILT AND CLAY, VISUAL										A-6a*			7.01 - 8.35	SEV. WEATHERED GRAY AND DARK GRAY SHALE										VISUAL			19.48 - 22.86	GRAY CLAYSTONE										VISUAL						
		4.42 - 6.25	SEV. WEATHERED BROWNISH GRAY SHALE										VISUAL															22.86 - 23.90	BROWN SANDSTONE										VISUAL								
		6.25 - 8.78	GRAY SANDSTONE										VISUAL															23.90 - 25.60	GRAY, RED, AND BROWN CLAYSTONE										VISUAL								
R-84	47+200.08	0.0 - 0.21	TOPSOIL										VISUAL	R-89	48+229.28	0.0 - 0.12	TOPSOIL										VISUAL	SB-30	48+840.60	0.0 - 0.25	TOPSOIL										VISUAL						
	28.06 m Lt.	0.21 - 0.92	BROWN SILT AND CLAY, VISUAL										A-6a		0.39 m Rt.	0.12 - 0.91	BROWN SILT AND CLAY, VISUAL										A-6a		5.80 m Rt.	0.25 - 2.59	BROWN SILT AND CLAY, VISUAL										A-6a						
		0.92 - 1.68	BROWN COARSE AND FINE SAND, VISUAL										A-3a			0.91 - 3.96	BROWN COARSE AND FINE SAND, VISUAL										A-3a			2.59 - 3.35	BROWN SANDY SILT, VISUAL										A-4a						
		1.68 - 4.73	BROWN SANDSTONE										VISUAL			3.96 - 7.62	SEVERELY WEATHERED BROWN SANDSTONE										VISUAL			3.35 - 4.27	SEVERELY WEATHERED GRAY SHALE										VISUAL						
		4.73 - 6.10	SEVERELY WEATHERED GRAY CLAYSTONE										VISUAL			7.62 - 9.54	SEVERELY WEATHERED DARK GRAY SHALE										VISUAL			4.27 - 4.88	DARK BROWN SANDY SILT, VISUAL										A-4a						
		6.10 - 8.23	GRAY CLAYSTONE										VISUAL															4.88 - 5.36	BROWN SANDSTONE										VISUAL								
		8.23 - 13.41	GRAY SANDSTONE										VISUAL*															5.36 - 6.13	GRAY LIMESTONE										VISUAL								
		13.41 - 14.33	BROWN AND GRAY SANDSTONE										VISUAL															6.13 - 8.08	GRAY SANDSTONE										VISUAL								
SB-38	47+610.18	0.0 - 0.14	TOPSOIL										VISUAL	R-90	48+259.95	0.0 - 0.15	TOPSOIL										VISUAL	SB-26	48+860.00	0.0 - 0.20	TOPSOIL										VISUAL						
	2.09 m Rt.	0.14 - 0.70	BROWN SILT AND CLAY, VISUAL										A-6a		27.98 m Lt.	0.15 - 0.91	ORANGISH BROWN SANDY SILT, VISUAL										A-4a		19.50 m Lt.	0.20 - 3.66	DARK BROWN SILT AND CLAY, VISUAL										A-6a						
		0.70 - 1.19	BROWN COARSE AND FINE SAND, VISUAL										A-3a			0.91 - 3.96	SEV. WEATHERED ORANGE AND GRAY SHALE										VISUAL			3.66 - 4.42	SEVERELY WEATHERED GRAY SHALE										VISUAL						
		1.19 - 3.35	BROWN FINE SAND, VISUAL										A-3			3.96 - 12.50	BROWN SANDSTONE										VISUAL*			4.42 - 4.63	GRAY FINE GRAINED SANDSTONE										VISUAL						
		3.35 - 4.57	SEVERELY WEATHERED GRAY SANDSTONE										VISUAL															4.63 - 5.18	LIGHT GRAY LIMESTONE										VISUAL								
		4.57 - 7.68	GRAY SANDSTONE										VISUAL															5.18 - 7.99	GRAY SANDSTONE										VISUAL								
		7.68 - 7.77	COAL										VISUAL																																		
		7.77 - 7.89	DARK GRAY UNDERCLAY										VISUAL																																		
		7.89 - 8.23	DARK GRAY SHALE										VISUAL																																		

CALCULATED
MRS
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DAA

SOIL PROFILE

ATH-33-40.981

SUMMARY OF SOIL TEST DATA
U.S. ROUTE 33 MAINLINE

* DENOTES SAMPLE TAKEN AT OR NEAR GRADE.

NOTE: NP SHOWN IN LIQUID LIMIT AND PLASTICITY INDEX COLUMNS INDICATES MATERIAL IS NON-PLASTIC

Boring	Station & Offset	Depth From To	% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	ODOT Class	Boring	Station & Offset	Depth From To	% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L.	P.I.	W.C.	ODOT Class			
SB-33	48+922.57 19.52 m Rt.	0.0 - 0.46	TOPSOIL									VISUAL	R-100	49+265.95 101.88 m Rt.	0.0 - 0.34	TOPSOIL									VISUAL	
		0.46 - 0.91	BROWN SILTY CLAY, VISUAL									A-6b			0.34 - 0.91	BROWN SILT AND CLAY, VISUAL									A-6a	
		0.91 - 1.98	RED AND GRAY CLAY, VISUAL									A-7-6			0.91 - 3.05	SEVERELY WEATHERED LIGHT BROWN SILTSTONE									VISUAL*	
		1.98 - 4.57	SEVERELY WEATHERED BROWN SHALE									VISUAL			3.05 - 4.54	BROWN SILTSTONE									VISUAL	
		4.57 - 7.32	BROWN SHALE									VISUAL			4.54 - 5.70	BROWN SANDSTONE									VISUAL	
SB-29	48+940.13 7.11 m Lt.	0.0 - 0.40	TOPSOIL									VISUAL	R-99	49+267.17 34.50 m Rt.	0.0 - 0.15	TOPSOIL									VISUAL	
		0.40 - 0.91	BROWN SILT AND CLAY, VISUAL									A-6a			0.15 - 0.61	8	19	30	29	14	NP	NP	14	A-4a		
		0.91 - 1.83	BROWN AND RED SILTY CLAY, VISUAL									A-6b			0.61 - 1.22	BROWN COARSE AND FINE SAND, VISUAL									A-3a	
		1.83 - 2.44	RED CLAY, VISUAL									A-7-6			1.22 - 1.68	SEV. WEATHERED LIGHT BROWN AND GRAY SHALE									VISUAL	
		2.44 - 3.20	SEVERELY WEATHERED BROWN SHALE									VISUAL			1.68 - 3.05	SEV. WEATHERED LIGHT BROWN SANDSTONE									VISUAL	
		3.20 - 3.96	SEV. WEATHERED PURPLE AND BROWN CLAYSTONE									VISUAL			3.05 - 10.70	BROWN AND LIGHT GRAY SANDSTONE									VISUAL	
		3.96 - 7.41	GRAY SHALE									VISUAL			10.70 - 11.06	COAL									VISUAL	
		7.41 - 8.02	RED CLAYSTONE									VISUAL			11.06 - 11.13	GRAY SANDSTONE									VISUAL	
		8.02 - 9.94	GRAY SHALE									VISUAL			11.13 - 12.04	GRAY SILTSTONE									VISUAL	
		9.94 - 10.36	RED CLAYSTONE									VISUAL			12.04 - 12.80	COAL									VISUAL	
R-97	49+001.73 105.42 m Rt.	0.0 - 0.37	TOPSOIL									VISUAL	R-101	49+379.86 64.96 m Rt.	0.0 - 0.37	TOPSOIL									VISUAL	
		0.37 - 0.91	BROWN COARSE AND FINE SAND, VISUAL									A-3a			0.37 - 0.91	BROWN COARSE AND FINE SAND, VISUAL									A-3a*	
		0.91 - 2.29	SEVERELY WEATHERED BROWN SANDSTONE									VISUAL			0.91 - 3.05	SEV. WEATHERED BROWN AND GRAY SANDSTONE									VISUAL	
		2.29 - 3.96	SEVERELY WEATHERED BROWN SILTSTONE									VISUAL			3.05 - 4.48	BROWN AND GRAY SANDSTONE									VISUAL	
		3.96 - 4.72	SEVERELY WEATHERED DARK BROWN CLAYSTONE									VISUAL			4.48 - 5.79	DARK GRAY SILTSTONE									VISUAL	
		4.72 - 5.33	SEVERELY WEATHERED GRAY SILTSTONE									VISUAL			5.79 - 6.86	BROWN SANDSTONE									VISUAL	
		5.33 - 5.94	SEVERELY WEATHERED DARK GRAY SHALE									VISUAL			6.86 - 7.32	GRAY SILTSTONE									VISUAL	
		5.94 - 9.51	GRAY CLAYSTONE									VISUAL			7.32 - 7.99	COAL									VISUAL	
		9.51 - 10.36	GRAY SILTSTONE									VISUAL			7.99 - 13.41	GRAY CLAYSTONE									VISUAL	
		10.36 - 10.82	BROWN SILTSTONE									VISUAL			13.41 - 18.29	RED, BROWN, AND GRAY CLAYSTONE									VISUAL	
		10.82 - 15.24	BROWN SANDSTONE									VISUAL*			18.29 - 21.03	GRAY SILTSTONE									VISUAL	
		15.24 - 21.79	LIGHT BROWN SANDSTONE									VISUAL			21.03 - 22.56	GRAY CLAYSTONE									VISUAL	
		21.79 - 22.86	BROWN CLAYSTONE									VISUAL														
22.86 - 24.84	DARK GRAY CLAYSTONE									VISUAL																
24.84 - 30.48	BROWN SANDSTONE									VISUAL																
30.48 - 32.77	GRAY SANDSTONE									VISUAL																
32.77 - 34.44	DARK GRAY CLAYSTONE									VISUAL																
34.44 - 35.05	COAL									VISUAL																
35.05 - 43.13	GRAY CLAYSTONE									VISUAL																
43.13 - 43.89	GRAY SANDSTONE									VISUAL																
43.89 - 46.94	GRAY CLAYSTONE									VISUAL																
R-98	49+176.75 43.42 m Rt.	0.0 - 0.30	TOPSOIL									VISUAL														
		0.30 - 0.91	BROWN COARSE AND FINE SAND, VISUAL									A-3a														
		0.91 - 3.05	SEVERELY WEATHERED BROWN SANDSTONE									VISUAL														
		3.05 - 7.32	BROWN SANDSTONE									VISUAL														
		7.32 - 8.05	GRAY SILTSTONE									VISUAL														
		8.05 - 8.63	COAL									VISUAL														
		8.63 - 13.41	GRAY SILTSTONE									VISUAL														
		13.41 - 14.94	RED, BROWN, AND GRAY CLAYSTONE									VISUAL*														
SB-34	49+180.00 Centerline	0.0 - 0.08	TOPSOIL									VISUAL														
		0.08 - 0.76	BROWN AND GRAY SANDY SILT, VISUAL									A-4a														
		0.76 - 1.07	COAL									VISUAL														
		1.07 - 1.83	DARK GRAY SILT AND CLAY, VISUAL									A-6a														
		1.83 - 6.10	SEVERELY WEATHERED GRAY CLAYSTONE									VISUAL														
		6.10 - 7.62	RED AND GRAY CLAYSTONE									VISUAL														
		7.62 - 10.18	GRAY, BROWN RED, AND BLACK CLAYSTONE									VISUAL*														
10.18 - 13.59	GRAY SANDSTONE									VISUAL																

CALCULATED
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SOIL PROFILE

ATH-33-40.981

12 / 132

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**SUMMARY OF SOIL TEST DATA
SIDE ROADS**

* DENOTES SAMPLE TAKEN AT OR NEAR GRADE.

Boring	Northing & Easting	From To	% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L	P.I	W.C.	ODOT Class.	Boring	Northing & Easting	From To	% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L	P.I	W.C.	ODOT Class.		
TR 243 (Right of Mainline)												SR 681 (At Grade)													
R-16	0+080.70, 1.35 m Rt.	0.00 - 0.15 0.15 - 2.71	AGGREGATE BASE		SEVERELY WEATHERED BROWN SANDSTONE						VISUAL*	R-22	51+049.22, 2.27 m Rt.	0.00 - 0.24 0.24 - 3.05	ASPHALT CONCRETE AND AGGREGATE BASE		SEVERELY WEATHERED BROWN SHALE						VISUAL VISUAL*		
R-17	0+161.09, 1.62 m Lt.	0.00 - 0.12 0.12 - 2.87	AGGREGATE BASE		SEVERELY WEATHERED BROWN SANDSTONE						VISUAL VISUAL*	R-23	51+169.26, 0.84 m Lt.	0.00 - 0.37 0.37 - 2.13 2.13 - 3.20 3.20 - 4.88 4.88 - 5.85 5.85 - 8.02	7	9	11	30	43	45	21	21		VISUAL A-7-6 A-6b A-3a A-4a VISUAL	
R-81	47+059.94, 1.11 m Lt (US 33)	0.00 - 0.06 0.06 - 1.52 1.52 - 5.49 5.49 - 7.32 7.32 - 10.03 10.03 - 11.58	AGGREGATE BASE		SEVERELY WEATHERED BROWN SANDSTONE BROWN SANDSTONE GRAY AND RED CLAYSTONE GRAY SILTSTONE GRAY SANDSTONE							VISUAL VISUAL VISUAL VISUAL* VISUAL VISUAL	R-34	51+245.99, 32.02 m Rt.	0.00 - 0.21 0.21 - 1.83 1.83 - 2.71 2.71 - 3.41	TOPSOIL		BROWN SANDY SILT (VISUAL) GRAY SILT AND CLAY (VISUAL) GRAY SHALE FRAGMENTS							VISUAL A-4a A-6a VISUAL
TR 243 (Left of Mainline)												R-24	51+246.00, 3.00 m Rt.	0.00 - 0.24 0.24 - 4.11 4.11 - 5.09	TOPSOIL		BROWN SILT AND CLAY (VISUAL) SEVERELY WEATHERED GRAY SHALE						VISUAL A-6a VISUAL		
R-20	0+035.62, 0.49 m Rt.	0.00 - 0.40 0.40 - 1.07 1.07 - 3.05	TOPSOIL		BROWN AND GRAY CLAY (VISUAL) SEVERELY WEATHERED BROWN AND GRAY SHALE						VISUAL* A-7-6 VISUAL	R-25	51+288.77, 1.34 m Lt.	0.00 - 0.46 0.46 - 3.20	ASPHALT CONCRETE AND AGGREGATE BASE		SEVERELY WEATHERED BROWN SHALE							VISUAL VISUAL	
R-21	0+129.81, 2.70 m Rt.	0.00 - 0.30 0.30 - 0.76 0.76 - 2.68	TOPSOIL		AGGREGATE BASE SEVERELY WEATHERED LIGHT BROWN SHALE						VISUAL* VISUAL VISUAL	R-26	51+410.24, 19.49 m Rt.	0.00 - 0.30 0.30 - 1.07 1.07 - 2.59 2.59 - 4.39	AGGREGATE BASE		BROWN COARSE AND FINE SAND (VISUAL) BROWN SILT AND CLAY (VISUAL) SEVERELY WEATHERED BROWN SHALE							VISUAL A-3a A-6a VISUAL	
												R-27	51+490.55, 21.21 m Lt.	0.00 - 0.21 0.21 - 3.51 3.51 - 4.88 4.88 - 7.77 7.77 - 8.53 8.53 - 13.26 13.26 - 13.56 13.56 - 14.17 14.17 - 15.24	TOPSOIL		SEVERELY WEATHERED BROWN SANDSTONE SEVERELY WEATHERED BLACK SHALE SEVERELY WEATHERED GRAY SHALE GRAY LIMESTONE GRAY CLAYSTONE COAL BLACK SHALE GRAY SILTSTONE							VISUAL VISUAL VISUAL VISUAL VISUAL* VISUAL VISUAL VISUAL	
												R-28	51+619.60, 2.45 m Lt.	0.00 - 0.27 0.27 - 0.91 0.91 - 3.05	ASPHALT CONCRETE AND AGGREGATE BASE		POSSIBLE FILL: BROWN SANDY SILT (VISUAL) BROWN SANDY SILT (VISUAL)							VISUAL A-4a A-4a	
												R-29	51+696.59, 2.71 m Lt.	0.00 - 0.37 0.37 - 1.68 1.68 - 2.59 2.59 - 3.05	ASPHALT CONCRETE AND AGGREGATE BASE		BROWN SILTY CLAY (VISUAL) BROWN SANDY SILT (VISUAL)		52	30	20			VISUAL A-7-6* A-6b A-4a	

CALCULATED
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SOIL PROFILE

ATH-33-40.981

**SUMMARY OF SOIL TEST DATA
SIDE ROADS**

* DENOTES SAMPLE TAKEN AT OR NEAR GRADE.

Boring	Northing & Easting	From To	% Agg	% C.S.	% F.S.	% Silt	% Clay	L.L	P.I	W.C.	ODOT Class.	
Old US 33 (At Grade)												
R-27	46+027.22, 36.29 m Lt.	0.00 - 0.21	TOPSOIL									VISUAL
		0.21 - 3.51	BROWN SANDSTONE									VISUAL
		3.51 - 4.88	BLACK SHALE									VISUAL
		4.88 - 7.77	SEVERELY WEATHERED GRAY SHALE									VISUAL
		7.77 - 8.53	SEVERELY WEATHERED GRAY LIMESTONE									VISUAL
		8.53 - 13.26	GRAY CLAYSTONE									VISUAL*
		13.26 - 13.56	COAL									VISUAL
		13.56 - 14.17	BLACK SHALE									VISUAL
		14.17 - 15.24	GRAY SILTSTONE									VISUAL
R-30	46+069.98, 0.01 m Lt.	0.00 - 0.15	TOPSOIL									VISUAL
		0.15 - 1.07	0	20	37	19	24	23	9	14	A-4a	
		1.07 - 7.62	SEVERELY WEATHERED REDDISH BROWN SANDSTONE									VISUAL
		7.62 - 8.38	SEVERELY WEATHERED GRAY SHALE									VISUAL
		8.38 - 10.00	GRAY SILTSTONE									VISUAL
		10.00 - 10.52	COAL									VISUAL
		10.52 - 10.97	GRAY SILTSTONE									VISUAL
		10.97 - 13.41	GRAY LIMESTONE									VISUAL
		13.41 - 17.25	RED AND GRAY SILTSTONE									VISUAL*
		17.25 - 17.86	COAL									VISUAL
		17.86 - 19.20	DARK GRAY CLAYSTONE									VISUAL
R-31A	46+192.35, 13.05 m Rt.	0.00 - 0.37	TOPSOIL									VISUAL
		0.37 - 1.07	BROWN SANDY SILT (VISUAL)									A-4a
		1.07 - 5.64	SEVERELY WEATHERED BROWN SANDSTONE									VISUAL*
		5.64 - 6.00	SEVERELY WEATHERED GRAY SHALE									VISUAL
R-33	46+341.84, 3.27 m Lt.	0.00 - 0.24	ASPHALT CONCRETE									VISUAL*
		0.24 - 1.83	2	3	14	33	48	48	28	22	A-7-6	
		1.83 - 3.05	BROWN SILT AND CLAY (VISUAL)									A-6a

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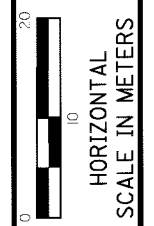
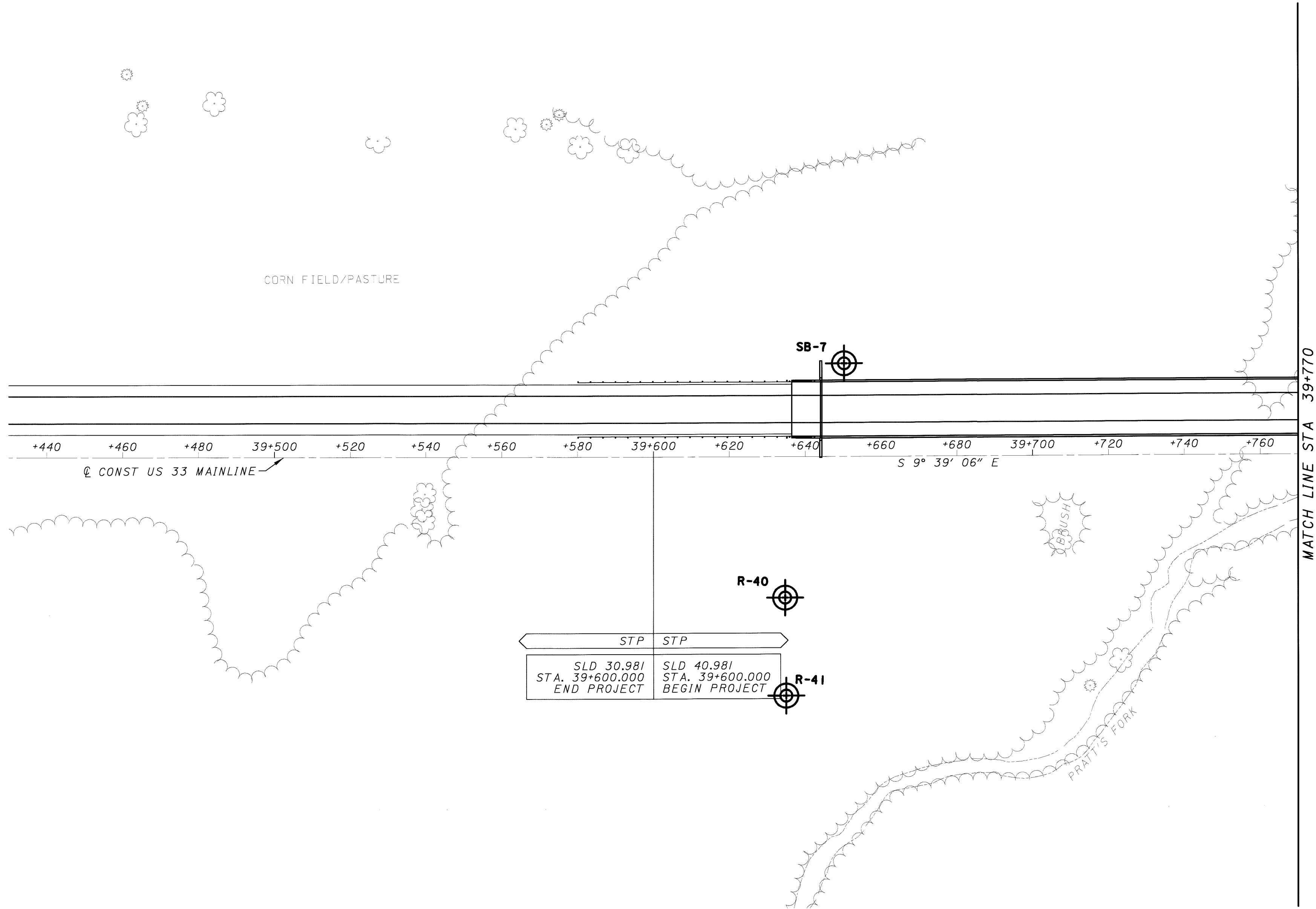
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SOIL PROFILE
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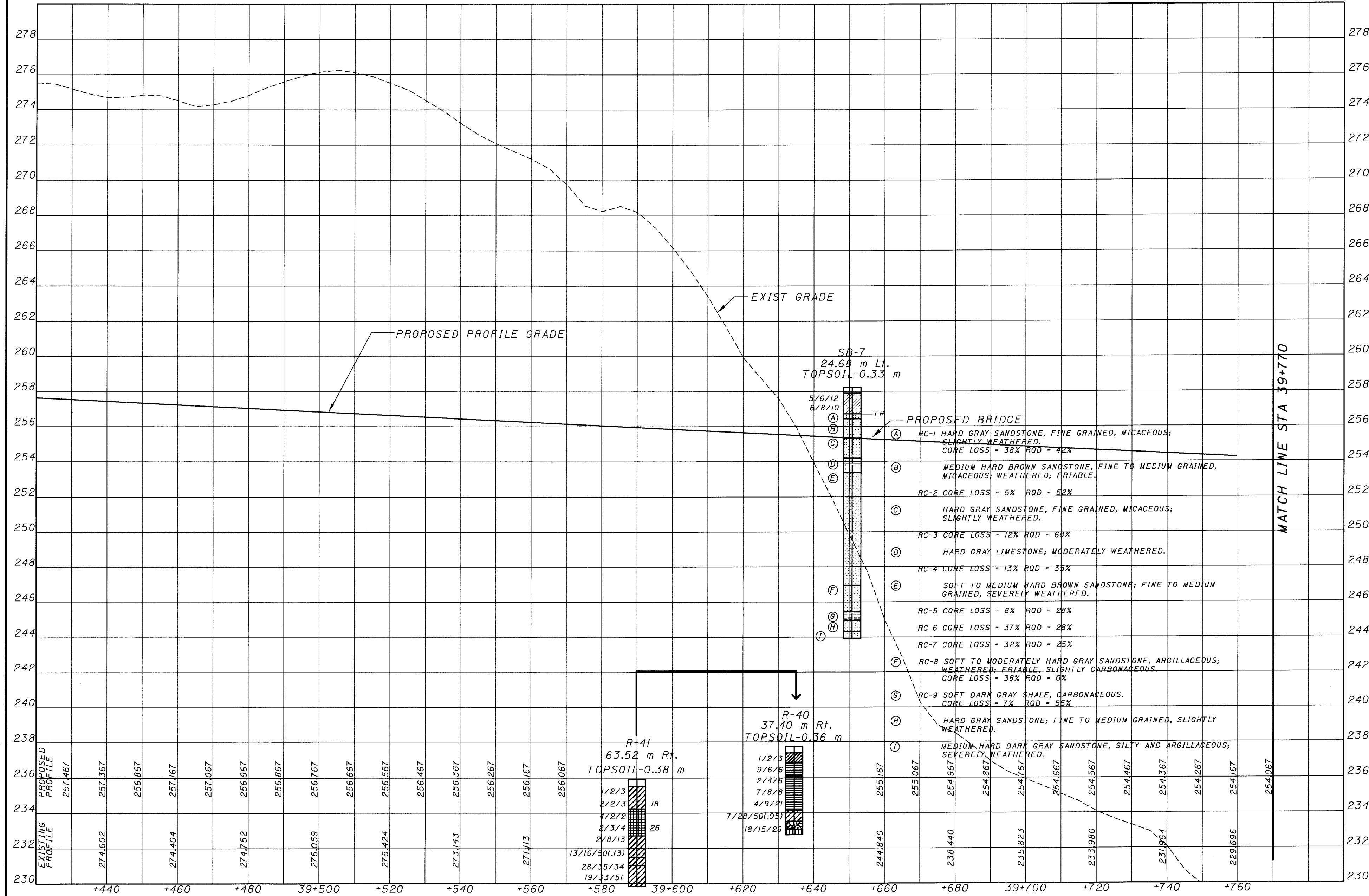
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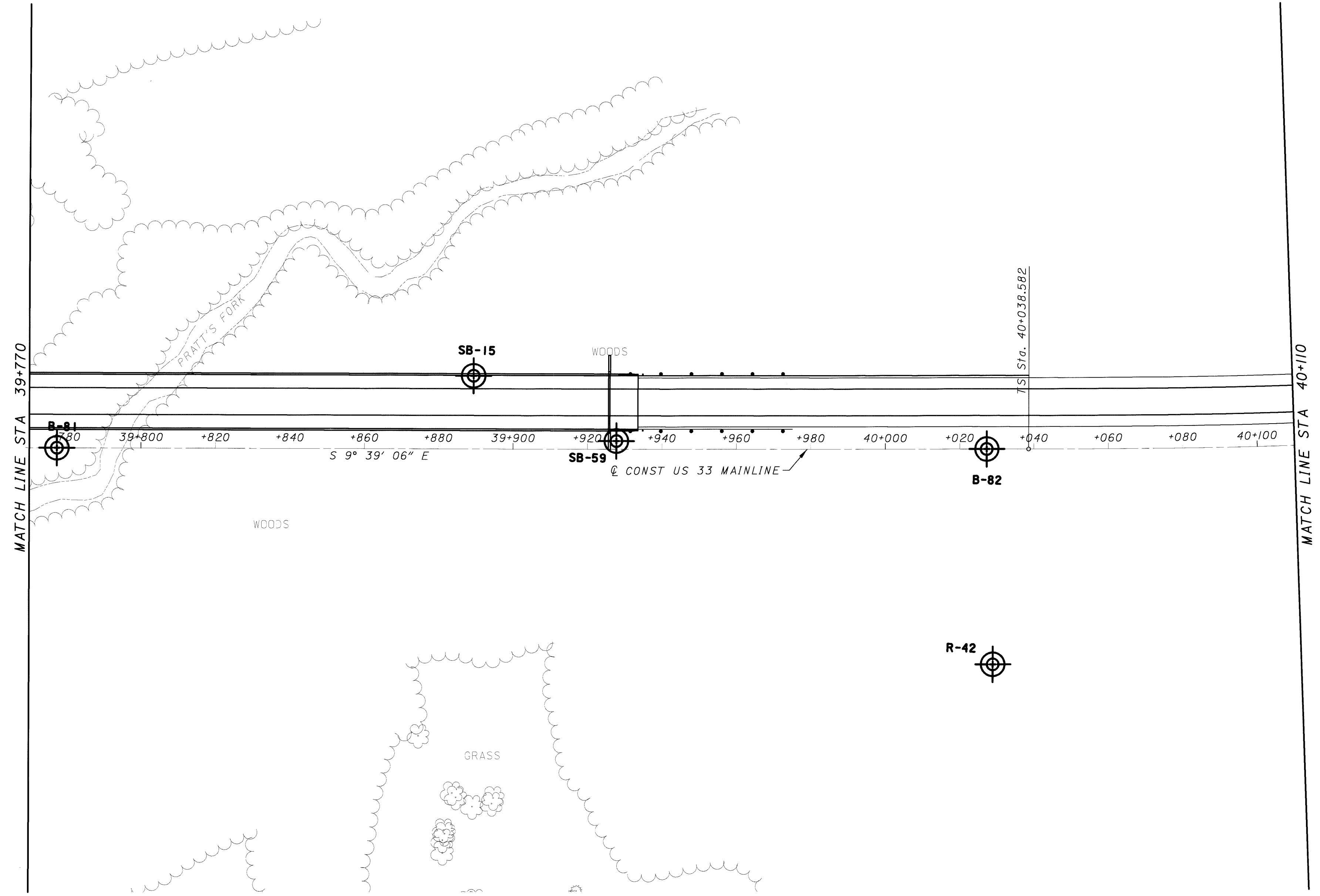
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STA. 39+430 TO STA. 39+770**

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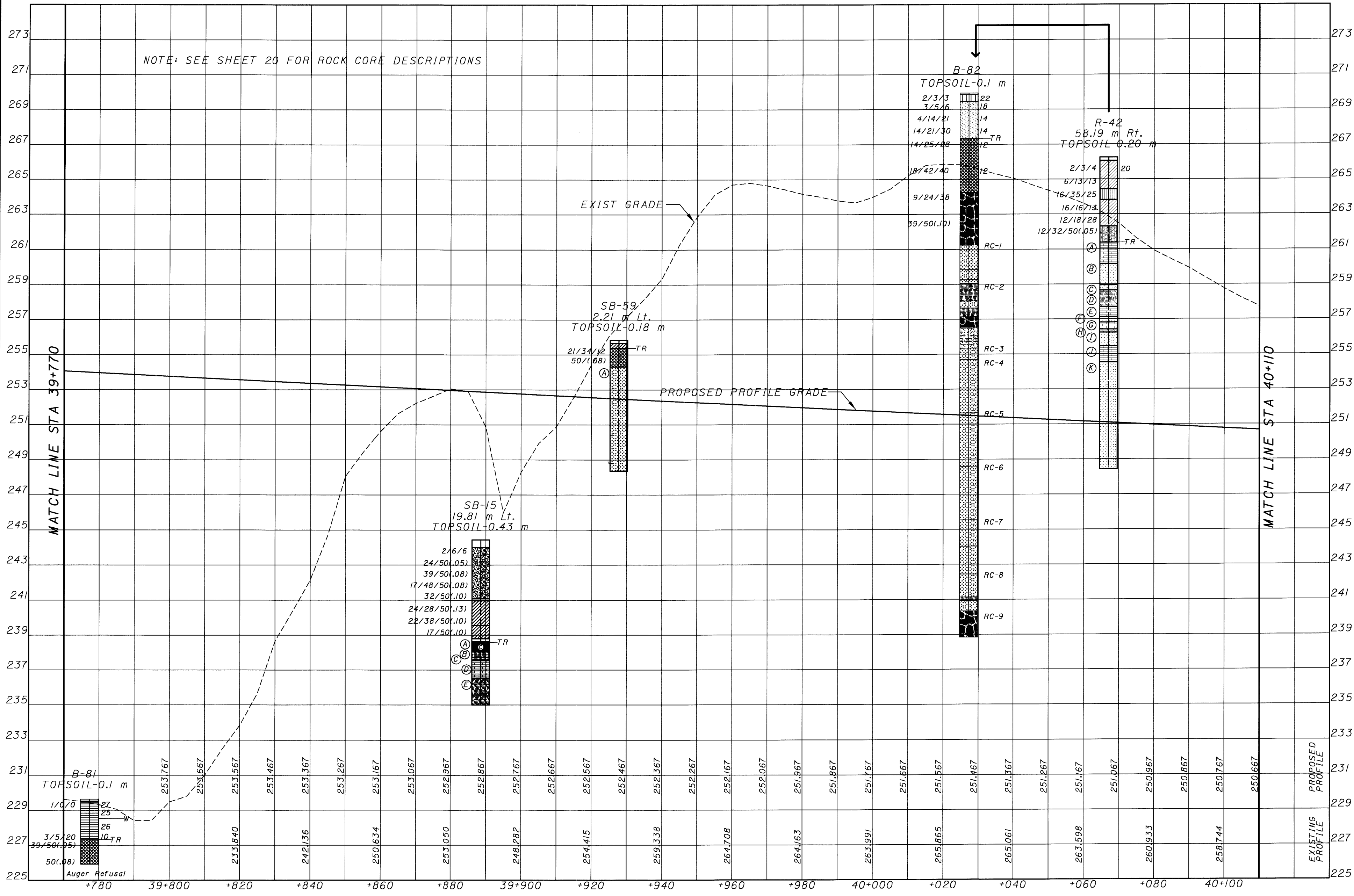
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SCALE IN METERS

SOIL PROFILE
STA. 39+770 TO STA. 40+110

ATH-33-40.981

SOIL PROFILE
STA. 39+770 TO STA. 40+110

ATH-33-40.981



NOTE: SEE SHEET 20 FOR ROCK CORE DESCRIPTIONS

MATCH LINE STA 39+770

MATCH LINE STA 40+110

EXIST GRADE

PROPOSED PROFILE GRADE

B-82
TOPSOIL-0.1 m
2/3/13 22
3/5/16 18
4/14/21 14
14/21/30 14
14/25/28 12
18/42/40 12
9/24/38
39/50(.10)

R-42
58.19 m Rt.
TOPSOIL 0.20 m
2/3/14 20
6/13/13
16/35/25
16/16/13
12/18/28
12/32/50(.05)

SB-59
2.21 m Lt.
TOPSOIL-0.18 m
21/34/12 TR
50/108

SB-15
19.81 m Lt.
TOPSOIL-0.43 m
2/6/6
24/50(.05)
39/50(.08)
17/48/50(.08)
32/50(.10)
24/28/50(.13)
22/38/50(.10)
17/50(.10)

B-81
TOPSOIL-0.1 m
1/0/0 27
25
26
3/5/20 10 TR
39/50(.95)
50(.08)
Auger Refusal

EXISTING PROFILE
PROPOSED PROFILE

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SB-15

- (A) RC-1 VERY SOFT BLACK COAL; CORE LOSS.
CORE LOSS = 100% RQD = 0%
- (B) RC-2 SOFT DARK GRAY SHALE, CARBONACEOUS;
WEATHERED; LOSS.
CORE LOSS = 5% RQD = 55%
- (C) MEDIUM HARD GRAY SHALE, CALCAREOUS;
WEATHERED; BROKEN.
- (D) HARD GRAY LIMESTONE; MODERATELY WEATHERED.
- (E) RC-3 SOFT GRAY CLAYSTONE, CALCAREOUS; WEATHERED.
CORE LOSS = 28% RQD = 58%

SB-59

- (A) RC-1 MEDIUM HARD TO HARD BROWN SANDSTONE, FINE TO
COARSE GRAINED, MICACEOUS.
CORE LOSS = 15% RQD = 76%
- RC-2 CORE LOSS = 3% RQD = 97%
- RC-3 NO CORE LOSS RQD = 98%

B-82

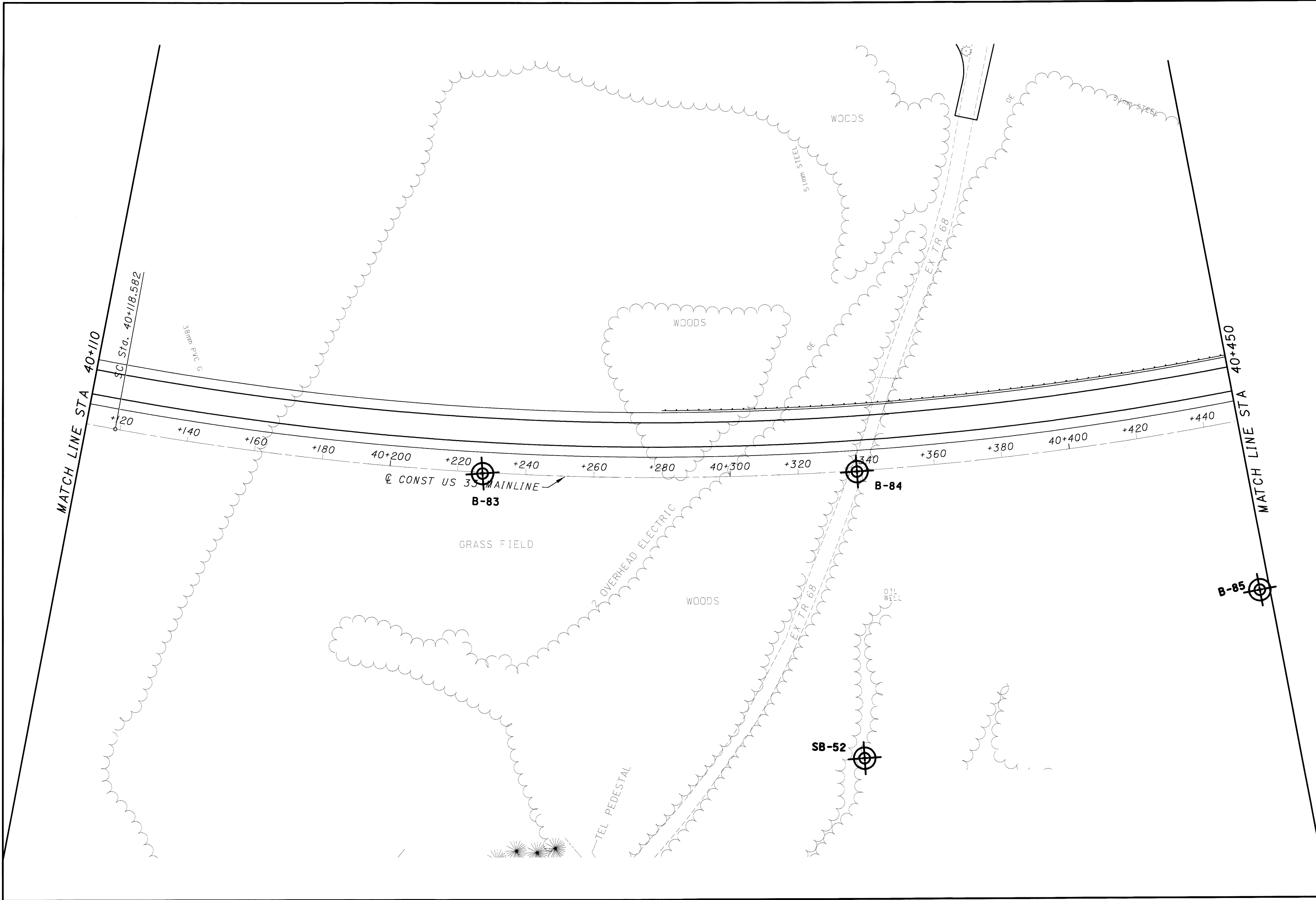
- RC-1 SANDSTONE; BROWN, MEDIUM HARD, SLIGHTLY BROKEN,
SLIGHTLY JOINTED, MEDIUM GRAINED, CALCAREOUS,
MODERATELY WEATHERED.
CORE LOSS = 4% RQD = 34%
- SANDSTONE; GRAY, MEDIUM TO MODERATELY HARD, MASSIVE,
FINE GRAINED, MICACEOUS.
- RC-2 SHALE; GRAY, VERY SOFT TO SOFT, HIGHLY BROKEN,
HIGHLY JOINTED, ARENACEOUS, FISSILE.
CORE LOSS = 3% RQD = 8%
- SANDSTONE; GRAY, MEDIUM TO MODERATELY HARD, SLIGHTLY
BROKEN, SLIGHTLY JOINTED, MICACEOUS.
- SHALE; GRAY, VERY SOFT TO SOFT, HIGHLY BROKEN,
HIGHLY JOINTED, ARENACEOUS, FISSILE.
- MUDSTONE; GRAY, SOFT TO VERY SOFT, HIGHLY BROKEN,
HIGHLY JOINTED, SILTY.
- RC-3 SILTSTONE; GRAY, SOFT, MASSIVE.
CORE LOSS = 17% RQD = 66%
- RC-4 SANDSTONE; BROWN, MEDIUM TO MODERATELY HARD, MASSIVE,
COARSE GRAINED.
NO CORE LOSS RQD = 92%
- RC-5 NO CORE LOSS RQD = 97%
- RC-6 NO CORE LOSS RQD = 82%
- RC-7 SANDSTONE; GRAY, MODERATELY HARD, SLIGHTLY BROKEN TO
MASSIVE, SLIGHTLY JOINTED, COARSE GRAINED,
CROSS-BEDDED, CARBONACEOUS, MICACEOUS.
NO CORE LOSS RQD = 44%
- RC-8 CORE LOSS = 14% RQD = 50%
- SHALE; BLACK, SOFT, HIGHLY BROKEN, FISSILE,
SLICKENSIDED, CARBONACEOUS, FOSSILIFEROUS.
- SANDSTONE; GRAY, MODERATELY HARD, SLIGHTLY BROKEN,
SLIGHTLY JOINTED, CARBONACEOUS, LAMINATED,
MICACEOUS.
- RC-9 MUDSTONE; GRAY, SOFT TO VERY SOFT, HIGHLY
BROKEN, HIGHLY JOINTED, FISSILE, CARBONACEOUS,
LAMINATED SPARSELY FOSSILIFEROUS.
CORE LOSS = 11% RQD = 15%

R-42

- (A) RC-1 HARD GRAY LIMESTONE; WEATHERED TO MODERATELY
WEATHERED; CONTAINS MICACEOUS ARENACEOUS LAMINAE.
CORE LOSS = 13% RQD = 87%
- RC-2 CORE LOSS = 10% RQD = 68%
- (B) HARD GRAY SANDSTONE; WEATHERED; CONTAINS LIMESTONE
CLASTS.
- RC-3 NO CORE LOSS RQD = 20%
- (C) HARD GRAY SILTSTONE, MICACEOUS; WEATHERED.
- (D) SOFT GRAY CLAYSTONE; SEVERELY WEATHERED.
- (E) HARD GRAY LIMESTONE, ARGILLACEOUS; WEATHERED; PYRITIC.
- RC-4 NO CORE LOSS RQD = 88%
- (F) HARD BROWN SANDSTONE, ARGILLACEOUS; WEATHERED;
CONTAINS CLAY LAMINAE.
- (G) HARD GRAY LIMESTONE; WEATHERED.
- (H) VERY SOFT BROWN CLAYSTONE, MICACEOUS; SEVERELY
WEATHERED.
- (I) RC-5 MEDIUM HARD BROWN SANDSTONE; MODERATELY WEATHERED.
NO CORE LOSS RQD = 85%
- (J) HARD GRAY LIMESTONE; BROWN LAMINATIONS; SLIGHTLY
WEATHERED.
- (K) RC-6 MEDIUM HARD TO SOFT BROWN SANDSTONE, MICACEOUS;
LAMINATED; SEVERELY WEATHERED; VERY BROKEN.
CORE LOSS = 3% RQD = 0%
- RC-7 CORE LOSS = 15% RQD = 22%
- RC-8 NO CORE LOSS RQD = 15%
- RC-9 CORE LOSS = 15% RQD = 7%

SOIL PROFILE
STA. 39+770 TO STA. 40+110

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SCALE IN METERS

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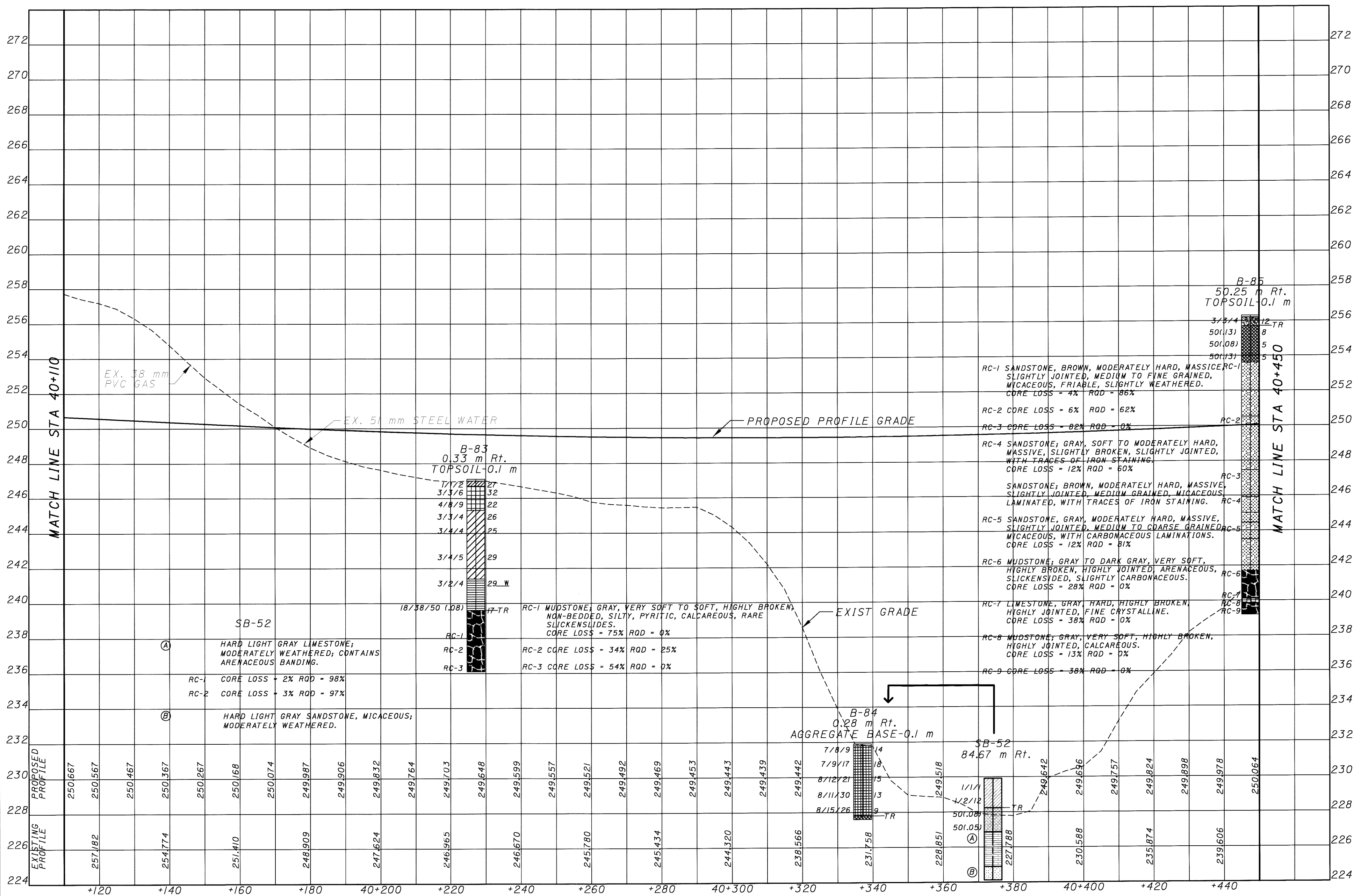
SOIL PROFILE
STA. 40+110 TO STA. 40+450

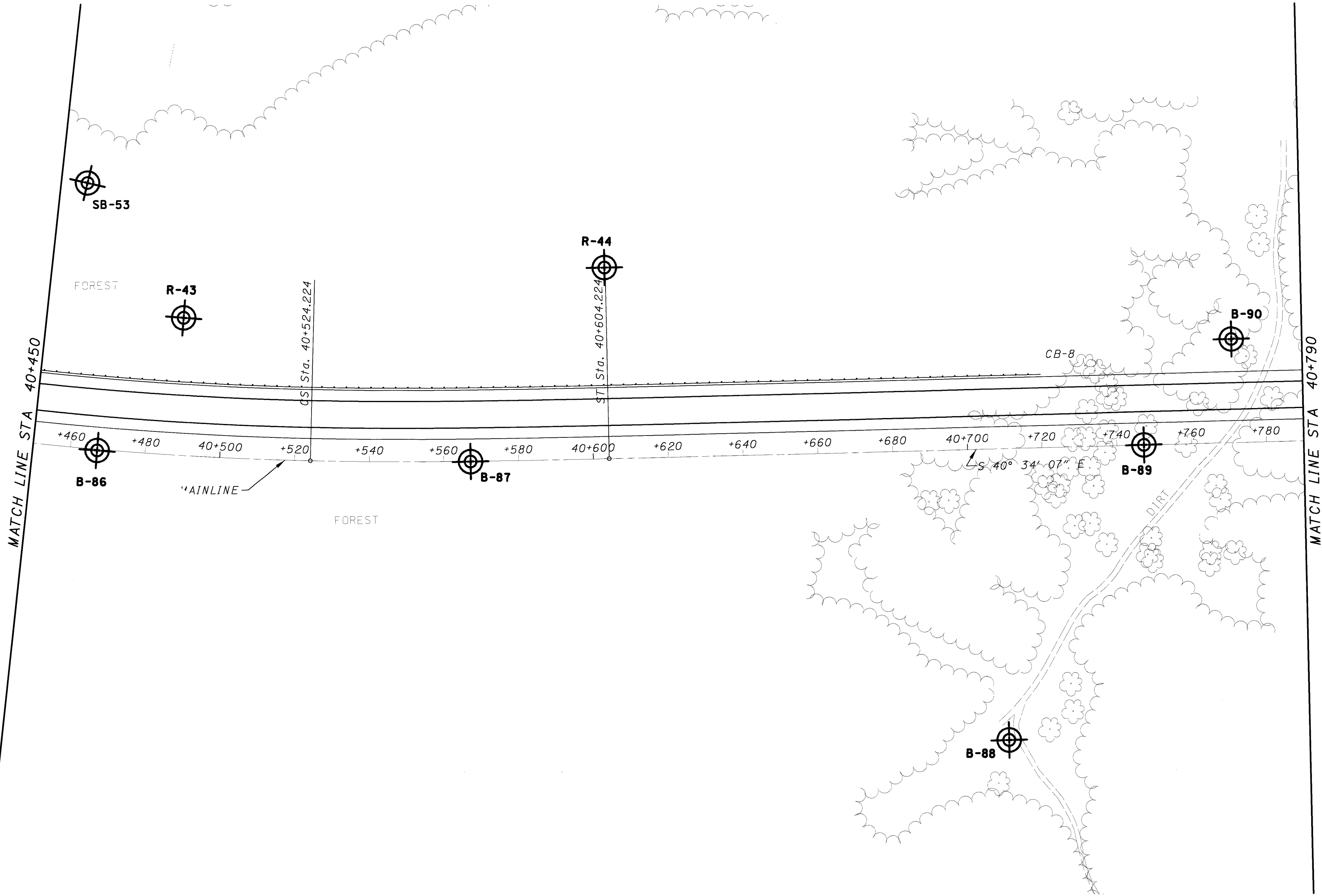
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SOIL PROFILE
STA. 40+110 TO STA. 40+450

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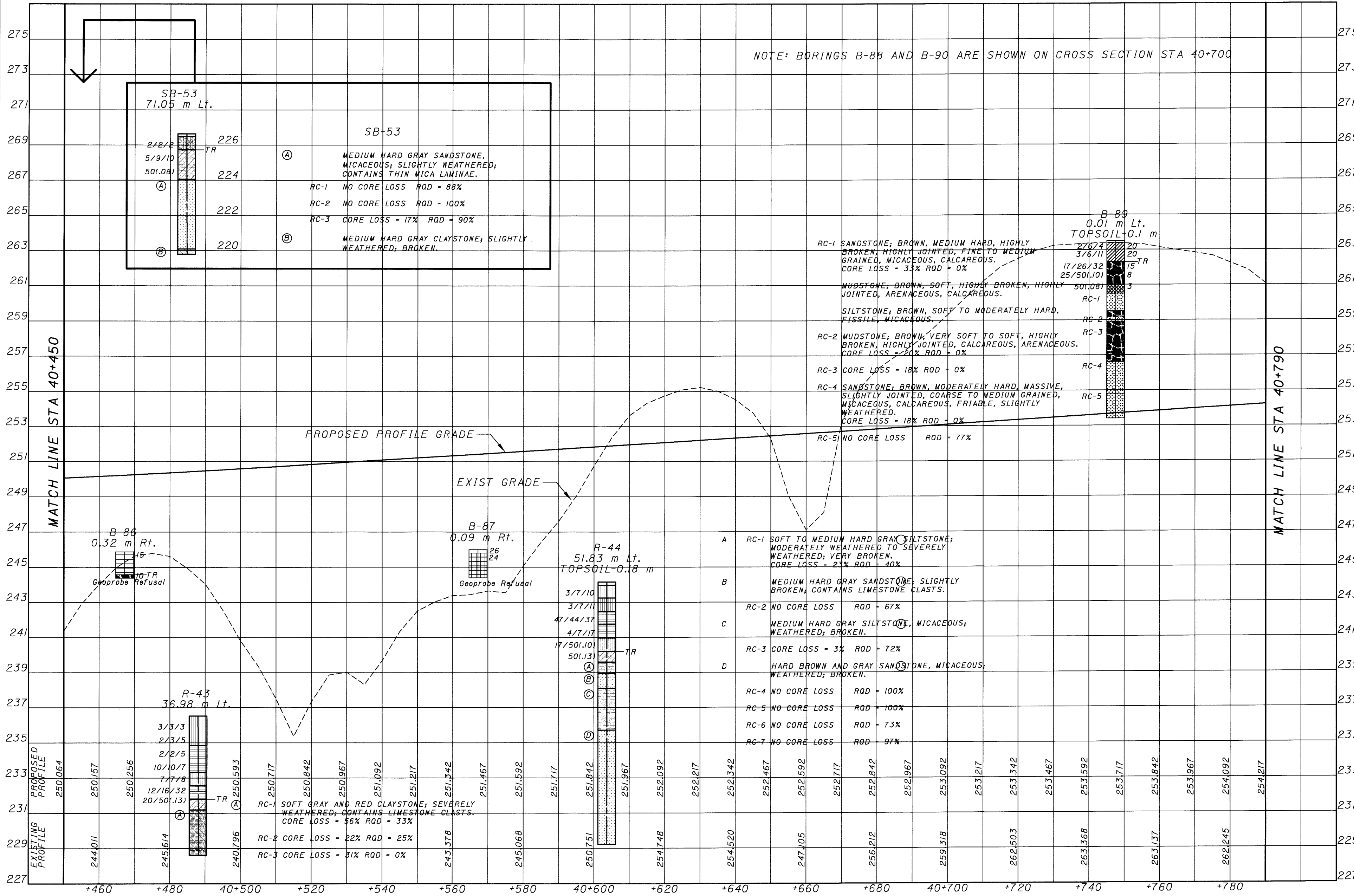


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SOIL PROFILE
STA. 40+450 TO STA. 40+790

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STA. 40+450 TO STA. 40+790

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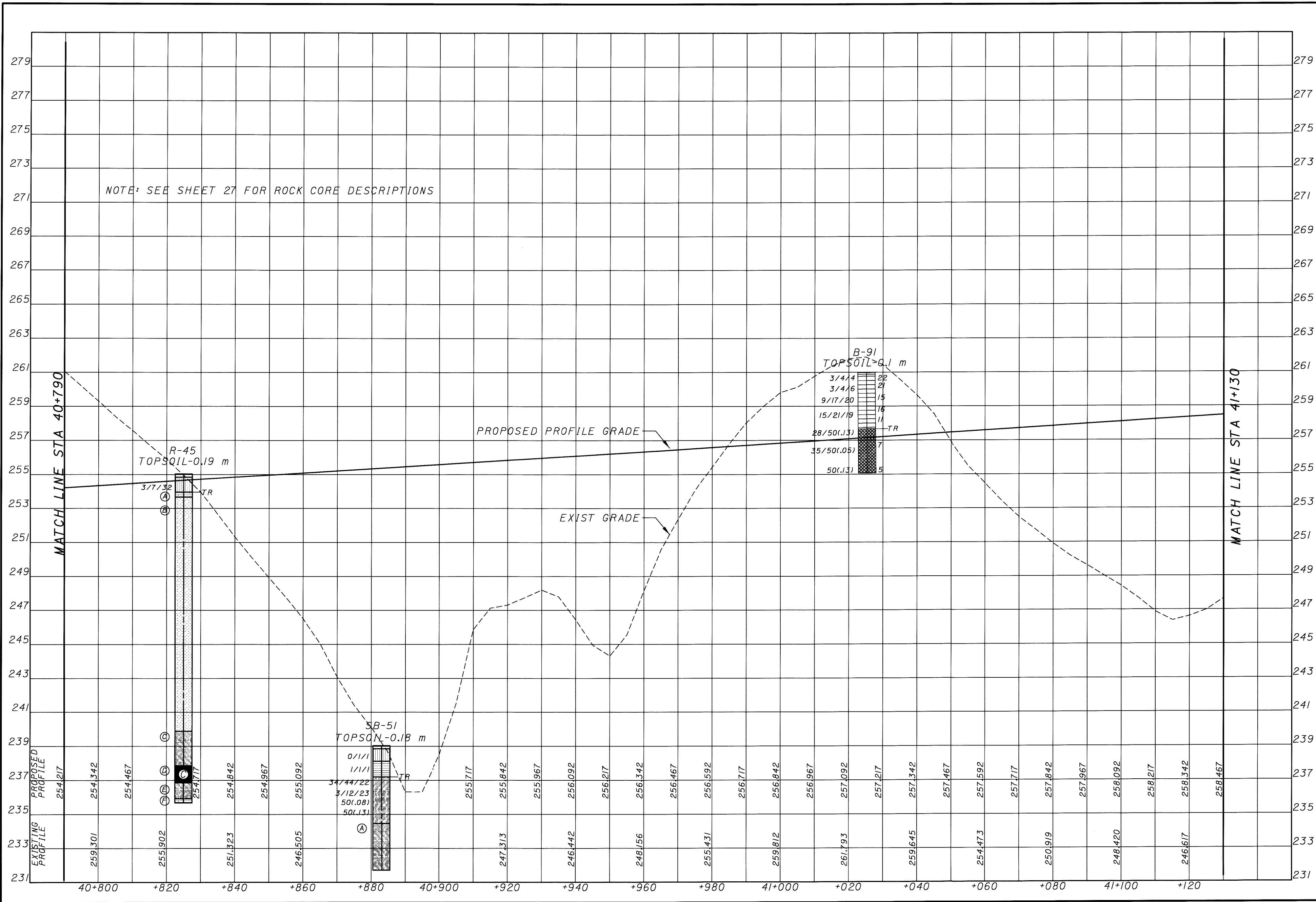


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SOIL PROFILE
STA. 40+790 TO STA. 41+130

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R-45

- Ⓐ RC-1 HARD GRAY LIMESTONE; WEATHERED.
CORE LOSS - 10% RQD - 28%
- Ⓑ MEDIUM HARD BROWN SANDSTONE, MICACEOUS;
WEATHERED; BROKEN.
RC-2 NO CORE LOSS RQD - 10%
RC-3 NO CORE LOSS RQD - 32%
RC-4 CORE LOSS - 3% RQD - 32%
RC-5 CORE LOSS - 15% RQD - 0%
RC-6 CORE LOSS - 8% RQD - 8%
RC-7 CORE LOSS - 37% RQD - 0%
RC-8 CORE LOSS - 3% RQD - 15%
RC-9 CORE LOSS - 2% RQD - 48%
RC-10 CORE LOSS - 17% RQD - 28%
- Ⓒ VERY SOFT DARK GRAY CLAYSTONE; SEVERELY
WEATHERED.
RC-11 CORE LOSS - 3% RQD - 50%
- Ⓓ SOFT BLACK COAL; WEATHERED WITH CARBONACEOUS
SHALES.
RC-12 NO CORE LOSS RQD - 47%
- Ⓔ MEDIUM HARD GRAY CLAYSTONE; WEATHERED.
- Ⓕ HARD GRAY LIMESTONE; WEATHERED; BROKEN.

SB-51

- Ⓐ SOFT GRAY CLAYSTONE, MICACEOUS;
WEATHERED; SLIGHTLY CALCAREOUS.
RC-1 CORE LOSS - 25% RQD - 14%
RC-2 CORE LOSS - 7% RQD - 28%

SOIL PROFILE
STA. 40+790 TO STA. 41+130

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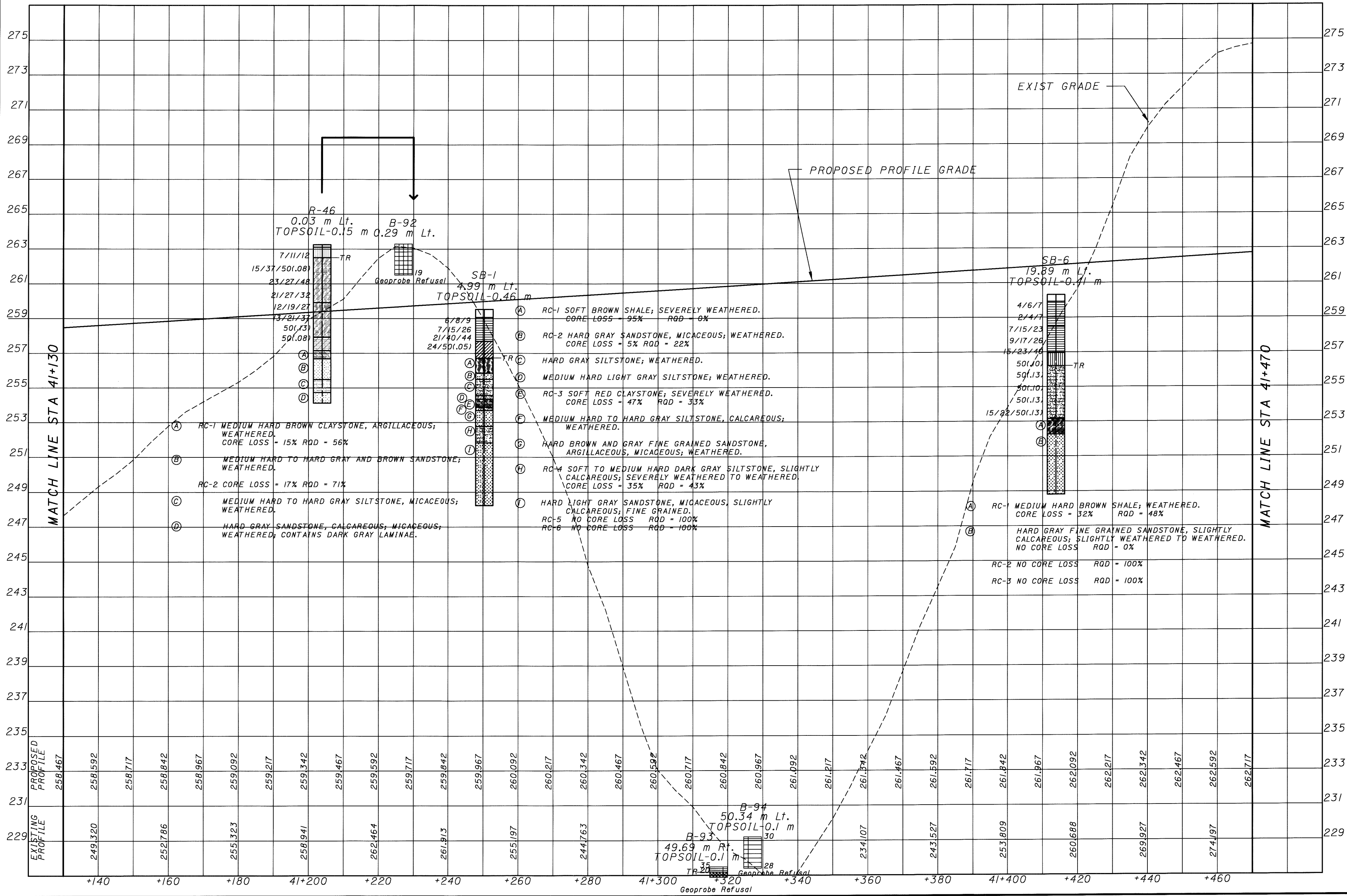
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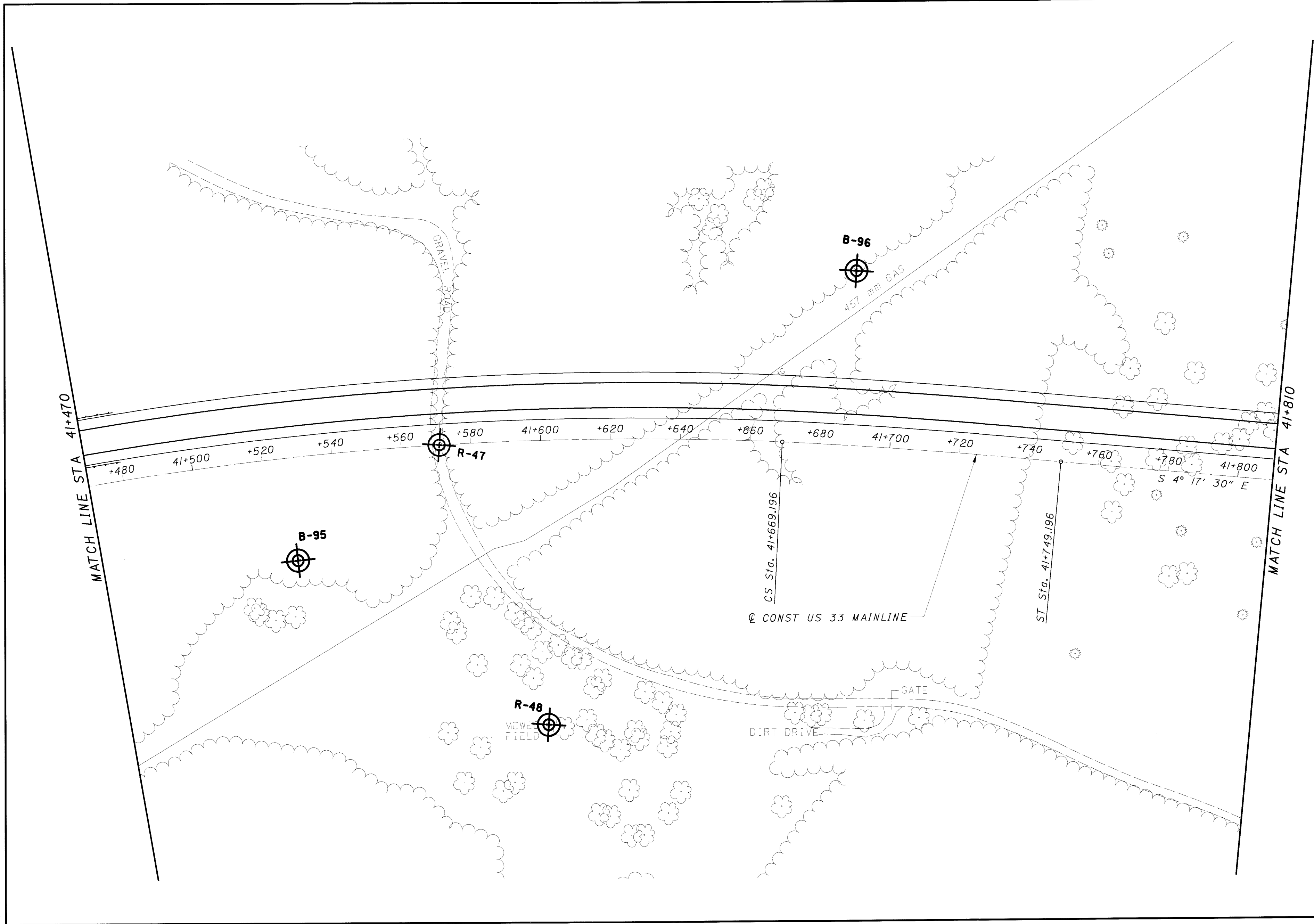
**SOIL PROFILE
STA. 41+130 TO STA. 41+470**

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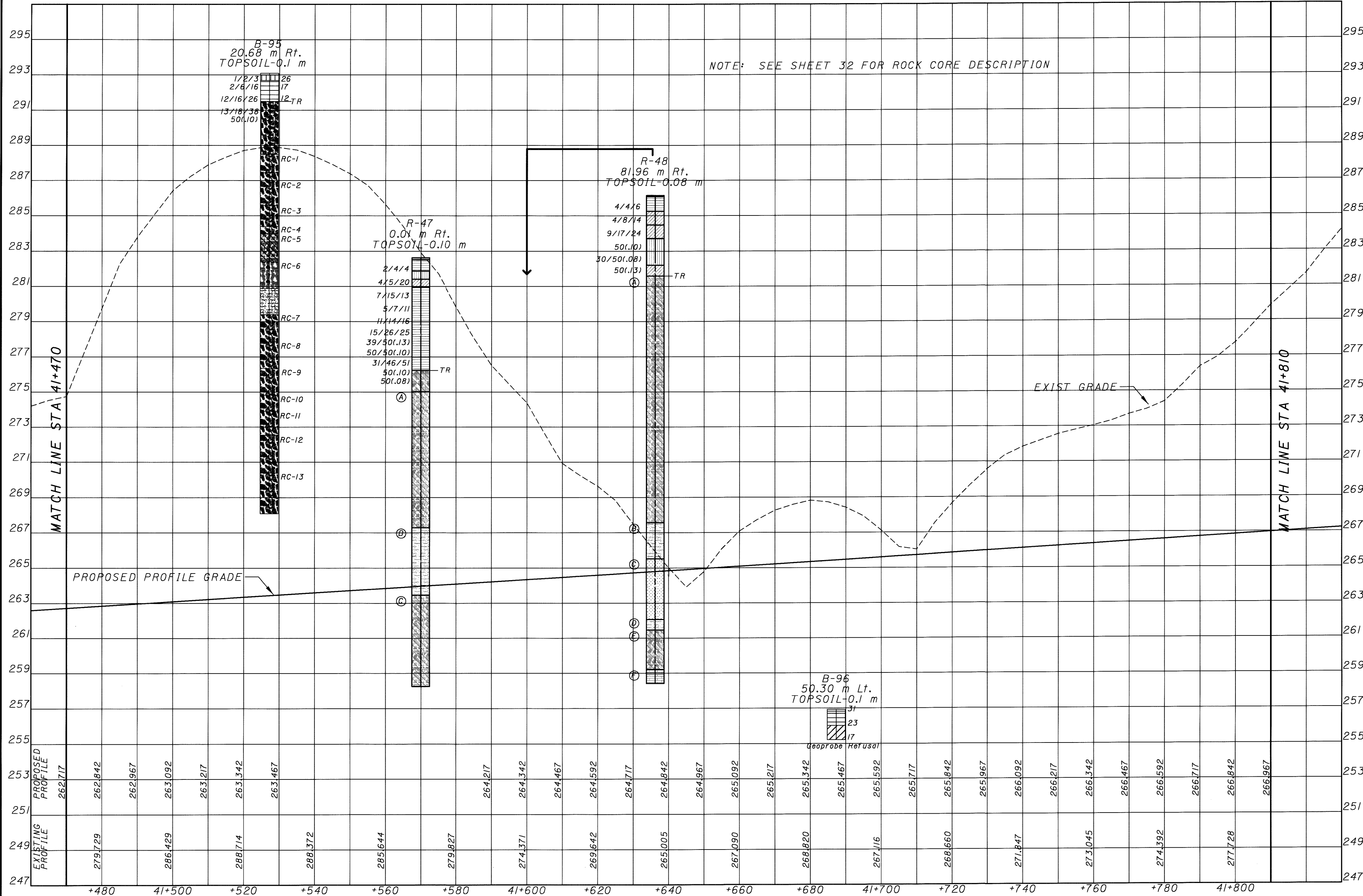
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SOIL PROFILE	
STA. 41+470 TO STA. 41+810	
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SCALE IN METERS

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**SOIL PROFILE
 STA. 41+470 TO STA. 41+810**

ATH-33-40.981

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R-47

- (A) RC-1 SOFT RED CLAYSTONE; MODERATELY WEATHERED; VERY BROKEN.
CORE LOSS - 12% RQD - 45%
- RC-2 CORE LOSS - 20% RQD - 50%
- RC-3 CORE LOSS - 18% RQD - 28%
- RC-4 CORE LOSS - 7% RQD - 90%
- RC-5 CORE LOSS - 7% RQD - 77%
- RC-6 NO CORE LOSS RQD - 0%
- (B) MEDIUM HARD GRAY SILTSTONE, MICACEOUS; WEATHERED.
NO CORE LOSS RQD - 100%
- RC-7 NO CORE LOSS RQD - 100%
- RC-8 NO CORE LOSS RQD - 100%
- (C) MEDIUM HARD GRAY CLAYSTONE; WEATHERED; CONTAINS LIMESTONE CLASTS AND ARENACEOUS LAYERS.
NO CORE LOSS RQD - 100%
- RC-9 NO CORE LOSS RQD - 100%
- RC-10 NO CORE LOSS RQD - 100%
- RC-11 CORE LOSS - 5% RQD - 95%

R-48

- (A) RC-1 SOFT BROWN AND RED CLAYSTONE; MODERATELY WEATHERED.
CORE LOSS - 58% RQD - 0%
- RC-2 CORE LOSS - 2% RQD - 43%
- RC-3 CORE LOSS - 10% RQD - 73%
- RC-4 NO CORE LOSS RQD - 85%
- RC-5 NO CORE LOSS RQD - 78%
- RC-6 CORE LOSS - 12% RQD - 80%
- RC-7 CORE LOSS - 7% RQD - 87%
- RC-8 CORE LOSS - 12% RQD - 87%
- RC-9 CORE LOSS - 15% RQD - 83%
- RC-10 NO CORE LOSS RQD - 90%
- (B) RC-11 MEDIUM HARD GRAY SILTSTONE, MICACEOUS; WEATHERED; CONTAINS LIMESTONE BEDDING.
NO CORE LOSS RQD - 93%
- RC-12 NO CORE LOSS RQD - 100%
- (C) HARD GRAY SANDSTONE, MICACEOUS; THIN BEDDED; WEATHERED; CONTAINS OCCASIONAL LIMESTONE LAMINATIONS; SLIGHTLY PYRITIC; FINE-GRAINED.
NO CORE LOSS RQD - 100%
- RC-13 NO CORE LOSS RQD - 100%
- RC-14 NO CORE LOSS RQD - 100%
- (D) MEDIUM HARD TO HARD GRAY SILTSTONE, MICACEOUS; WEATHERED.
NO CORE LOSS RQD - 100%
- (E) RC-15 MEDIUM HARD GRAY CLAYSTONE; WEATHERED; CONTAINS LIMESTONE CLASTS.
NO CORE LOSS RQD - 100%
- RC-16 NO CORE LOSS RQD - 100%
- (F) HARD GRAY LIMESTONE; ARGILLACEOUS; WEATHERED; CONTAINS SILTSTONE LAMINATIONS.

B-95

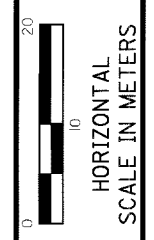
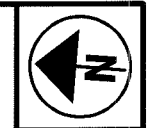
- RC-1 MUDSTONE; VARIEGATED BROWN, GRAY AND RED, VERY SOFT TO MEDIUM HARD, HIGHLY BROKEN, SLIGHTLY JOINTED, CALCAREOUS, NON-BEDDED, SILTY, SLIGHTLY WEATHERED.
CORE LOSS - 40% RQD - 0%
- RC-2 CORE LOSS - 59% RQD - 0%
- RC-3 CORE LOSS - 51% RQD - 0%
- RC-4 CORE LOSS - 33% RQD - 0%
- RC-5 CLAYSHALE; BROWN, SOFT, HIGHLY BROKEN, FISSILE, SLICKENSIDED, SLIGHTLY WEATHERED.
CORE LOSS - 10% RQD - 0%
- RC-6 SHALE; GRAY, MEDIUM HARD, HIGHLY BROKEN, SILTY, FISSILE, RARE SLICKENSIDES, SLIGHTLY WEATHERED.
NO CORE LOSS RQD - 31%
- SILTSTONE; GRAY, MEDIUM HARD, MASSIVE, MICACEOUS, ARGILLACEOUS.
- RC-7 MUDSTONE; VARIEGATED RED, GRAY AND PURPLE, VERY SOFT TO SOFT, HIGHLY BROKEN, NON-BEDDED, SILTY, CALCAREOUS, SLICKENSIDED.
CORE LOSS - 2% RQD - 0%
- RC-8 CORE LOSS - 2% RQD - 23%
- RC-9 NO CORE LOSS RQD - 18%
- RC-10 CORE LOSS - 27% RQD - 14%
- RC-11 CORE LOSS - 4% RQD - 9%
- RC-12 CORE LOSS - 24% RQD - 8%
- RC-13 CORE LOSS - 5% RQD - 52%

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SOIL PROFILE
STA. 41+470 TO STA. 41+810

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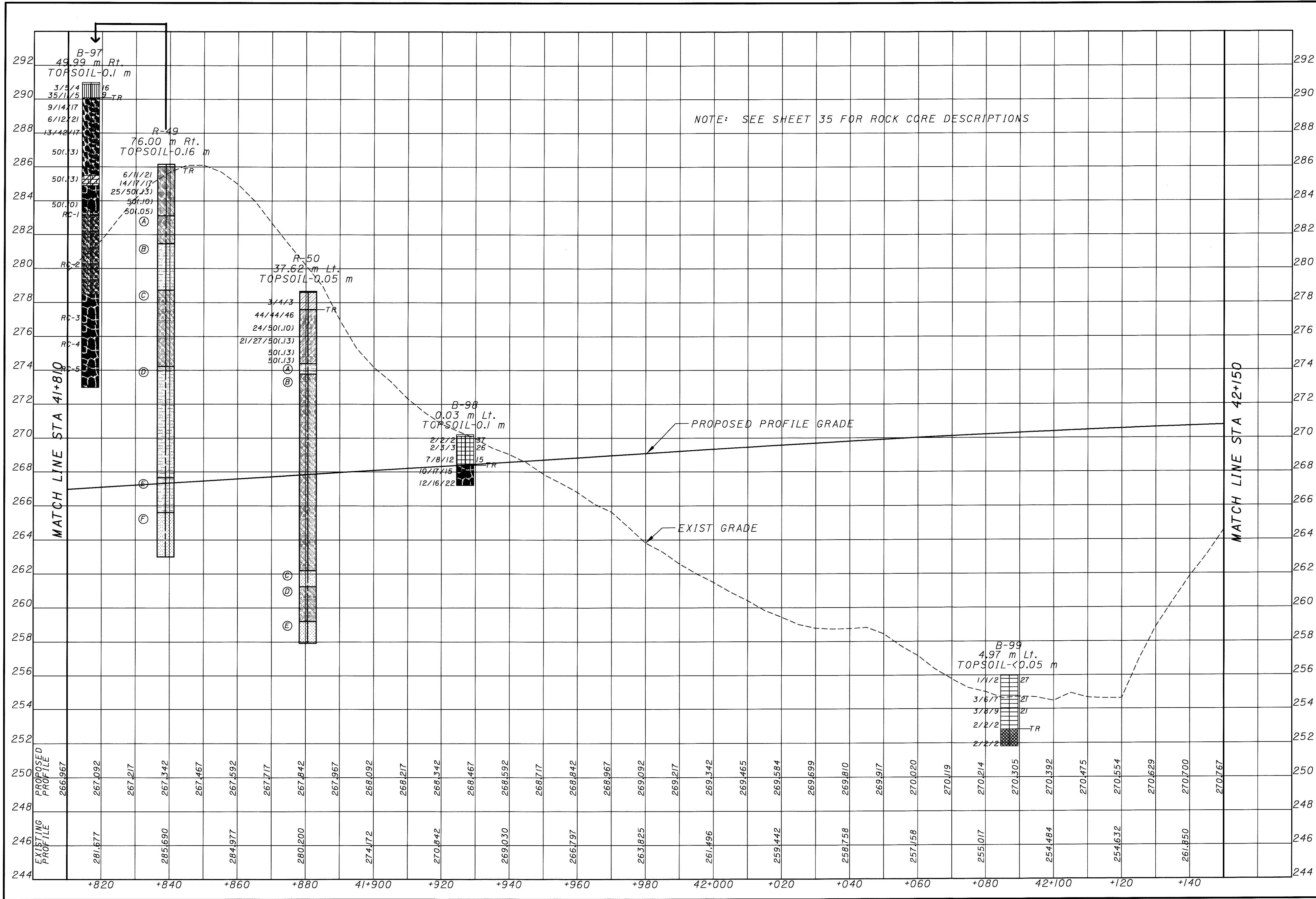
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B-97
 RC-1 CLAYSHALE; GRAY, SOFT, HIGHLY BROKEN, FISSILE, SLIGHTLY MICACEOUS, WITH INTERBEDDED GRAY, MEDIUM LIMESTONE LENSES UP TO 5 CM THICK.
 CORE LOSS = 8% RQD = 14%

RC-2 CORE LOSS = 2% RQD = 20%

RC-3 MUDSTONE; GRAY, SOFT TO MEDIUM, MASSIVE, CALCAREOUS, NON-BEDDED, SLICKENSIDED.
 NO CORE LOSS RQD = 52%

RC-4 NO CORE LOSS RQD = 17%

RC-5 CORE LOSS = 75% RQD = 44%

R-49

(A) RC-1 SOFT GRAYISH BROWN CLAYSTONE, CALCAREOUS, WEATHERED, BROKEN.
 CORE LOSS = 50% RQD = 8%

RC-2 CORE LOSS = 15% RQD = 35%

(B) MEDIUM HARD GRAY SILTSTONE WITH LIMESTONE CLASTS, WEATHERED, BROKEN, WITH RUST STAINING.
 RC-3 CORE LOSS = 15% RQD = 77%

RC-4 CORE LOSS = 28% RQD = 35%

(C) SOFT GRAY CLAYSTONE; WEATHERED TO SEVERELY WEATHERED.
 RC-5 NO CORE LOSS RQD = 70%

RC-6 NO CORE LOSS RQD = 65%

RC-7 NO CORE LOSS RQD = 48%

(D) MEDIUM HARD GRAY SILTSTONE, MICACEOUS; SEVERELY WEATHERED.
 RC-8 CORE LOSS = 20% RQD = 72%

RC-9 CORE LOSS = 27% RQD = 30%

RC-10 NO CORE LOSS RQD = 78%

(E) MEDIUM HARD GRAY SILTSTONE, CALCAREOUS, ARGILLACEOUS, CONTAINS LIMESTONE CLASTS, WEATHERED.
 RC-11 NO CORE LOSS RQD = 92%

RC-12 CORE LOSS = 5% RQD = 83%

RC-13 NO CORE LOSS RQD = 97%

(F) HARD GRAY SANDSTONE; FINE GRAINED, SLIGHTLY ARGILLACEOUS, MODERATELY WEATHERED.
 RC-14 NO CORE LOSS RQD = 100%

R-50

(A) RC-1 SOFT TO MEDIUM HARD BROWN SILTSTONE; WEATHERED; BROKEN.
 CORE LOSS = 12% RQD = 28%

(B) SOFT BROWN CLAYSTONE; WEATHERED TO SEVERELY WEATHERED; VERY BROKEN.
 RC-2 CORE LOSS = 60% RQD = 13%

RC-3 CORE LOSS = 3% RQD = 77%

RC-4 NO CORE LOSS RQD = 65%

RC-5 NO CORE LOSS RQD = 92%

RC-6 CORE LOSS = 23% RQD = 28%

RC-7 CORE LOSS = 45% RQD = 7%

RC-8 CORE LOSS = 38% RQD = 20%

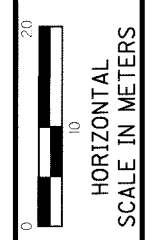
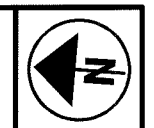
(C) RC-9 SOFT BROWN SANDSTONE; WEATHERED.
 CORE LOSS = 42% RQD = 0%

(D) SOFT GRAY CLAYSTONE; WEATHERED.
 RC-10 NO CORE LOSS RQD = 43%

(E) MEDIUM HARD GRAY SANDSTONE, FINE GRAINED, MICACEOUS, WEATHERED.
 RC-11 CORE LOSS = 2% RQD = 83%

SOIL PROFILE
 STA. 41+810 TO STA. 42+150

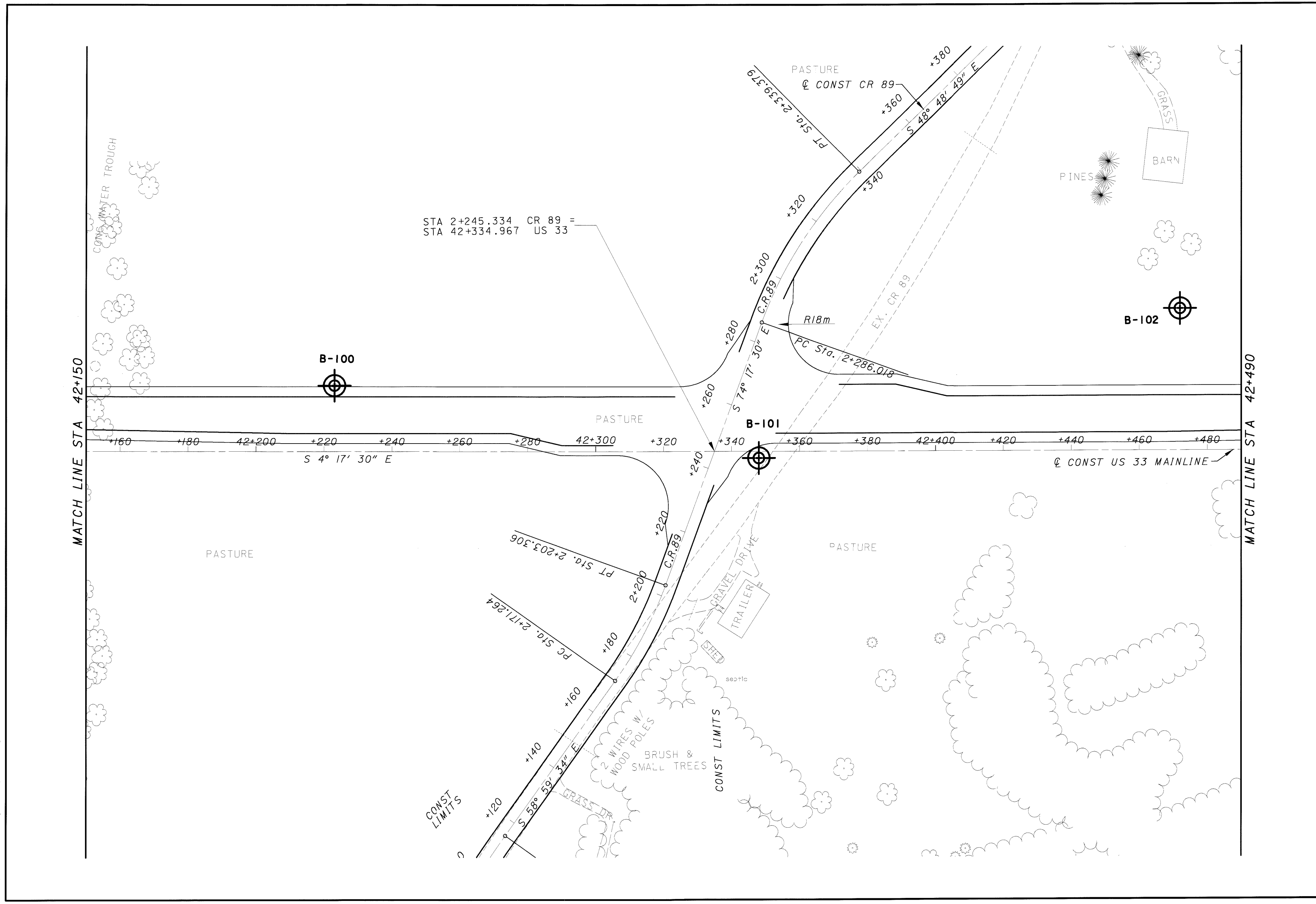
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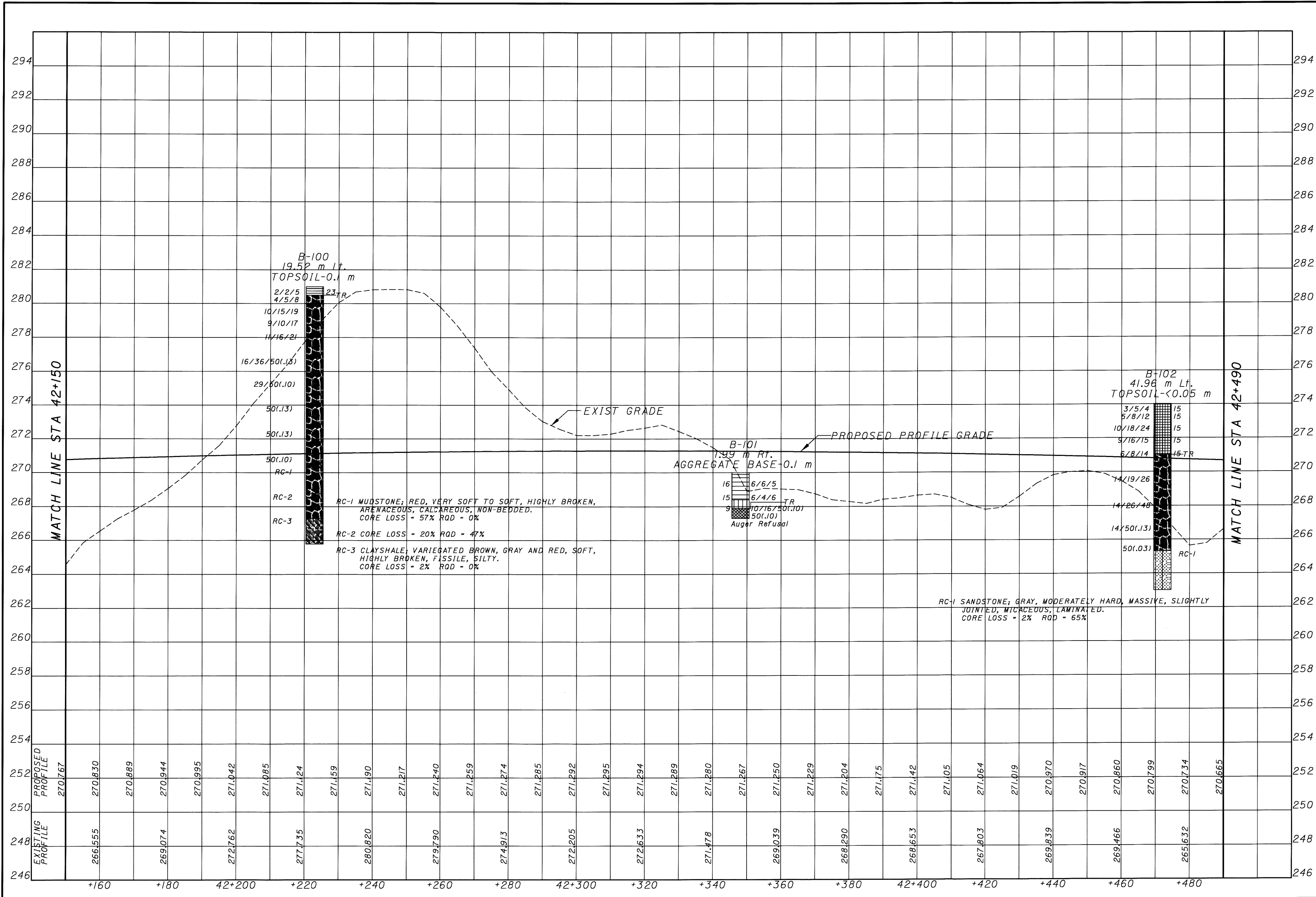
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SOIL PROFILE
STA. 42+150 TO STA. 42+490

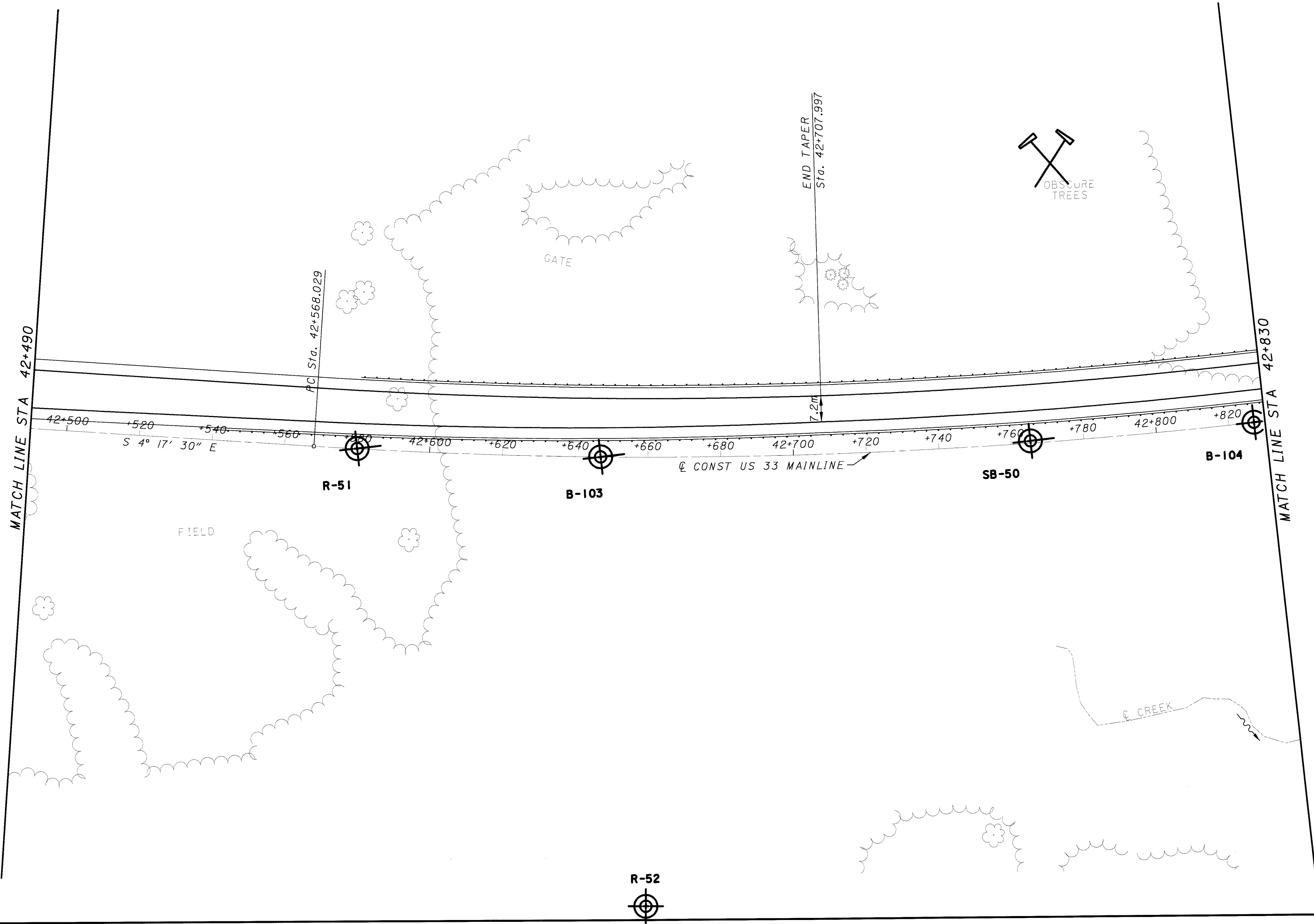
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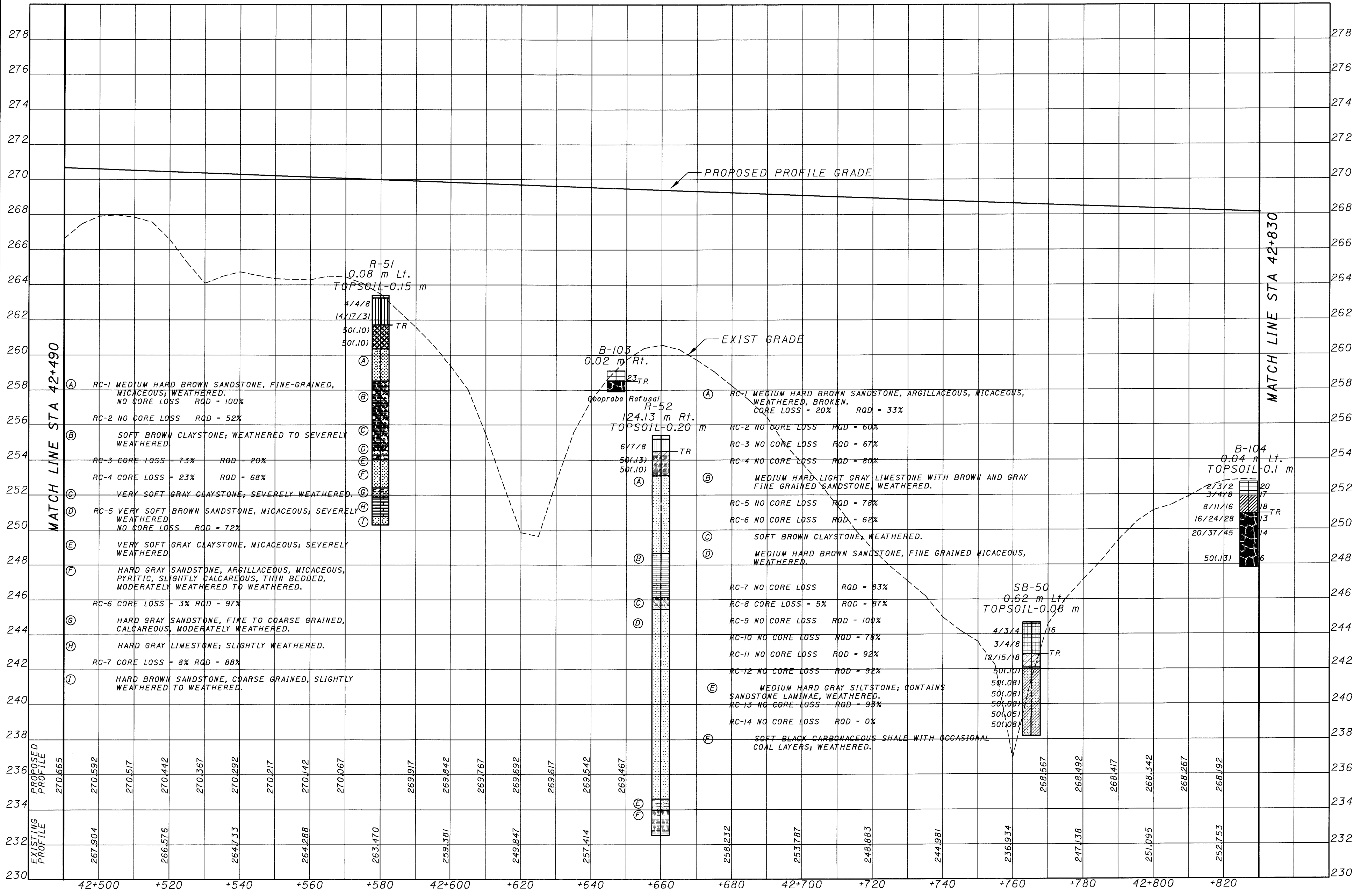
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SOIL PROFILE			
STA. 42+490 TO STA. 42+830			
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**SOIL PROFILE
STA. 42+490 TO STA. 42+830**

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B-105



SB-49



B-106



R-53

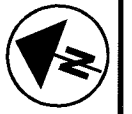
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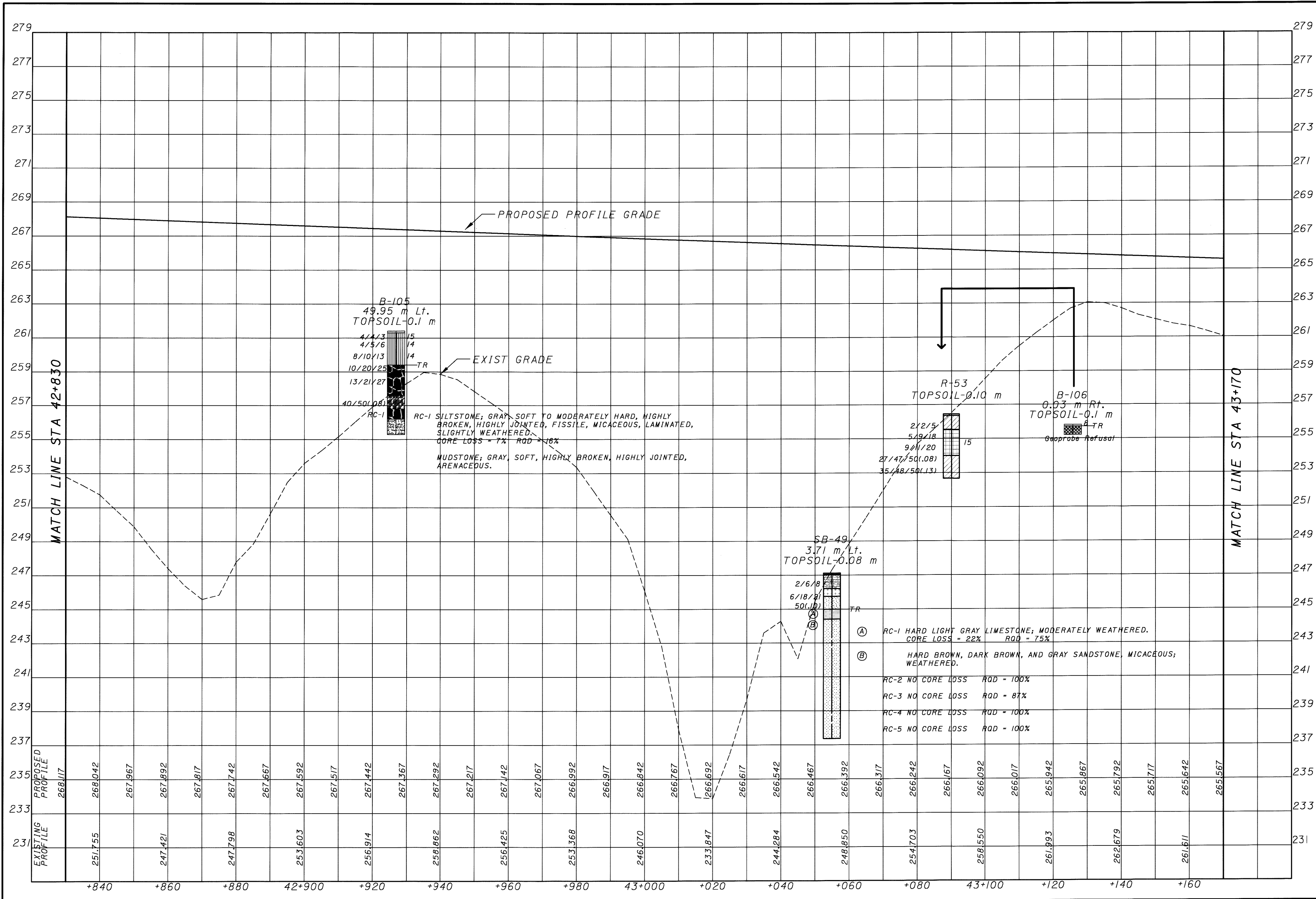
SOIL PROFILE
STA. 42+830 TO STA. 43+170

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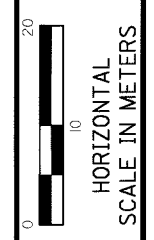
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SOIL PROFILE
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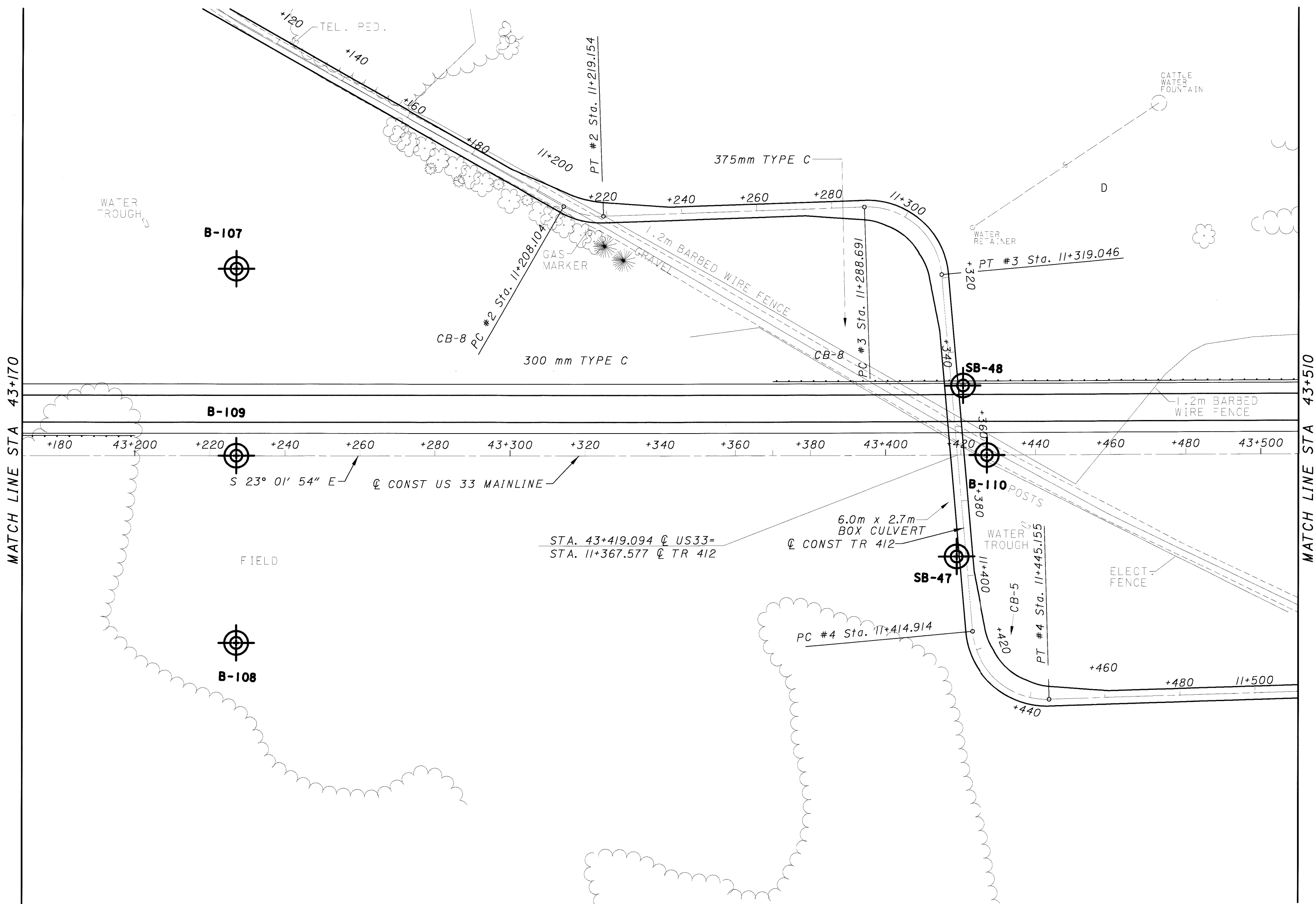
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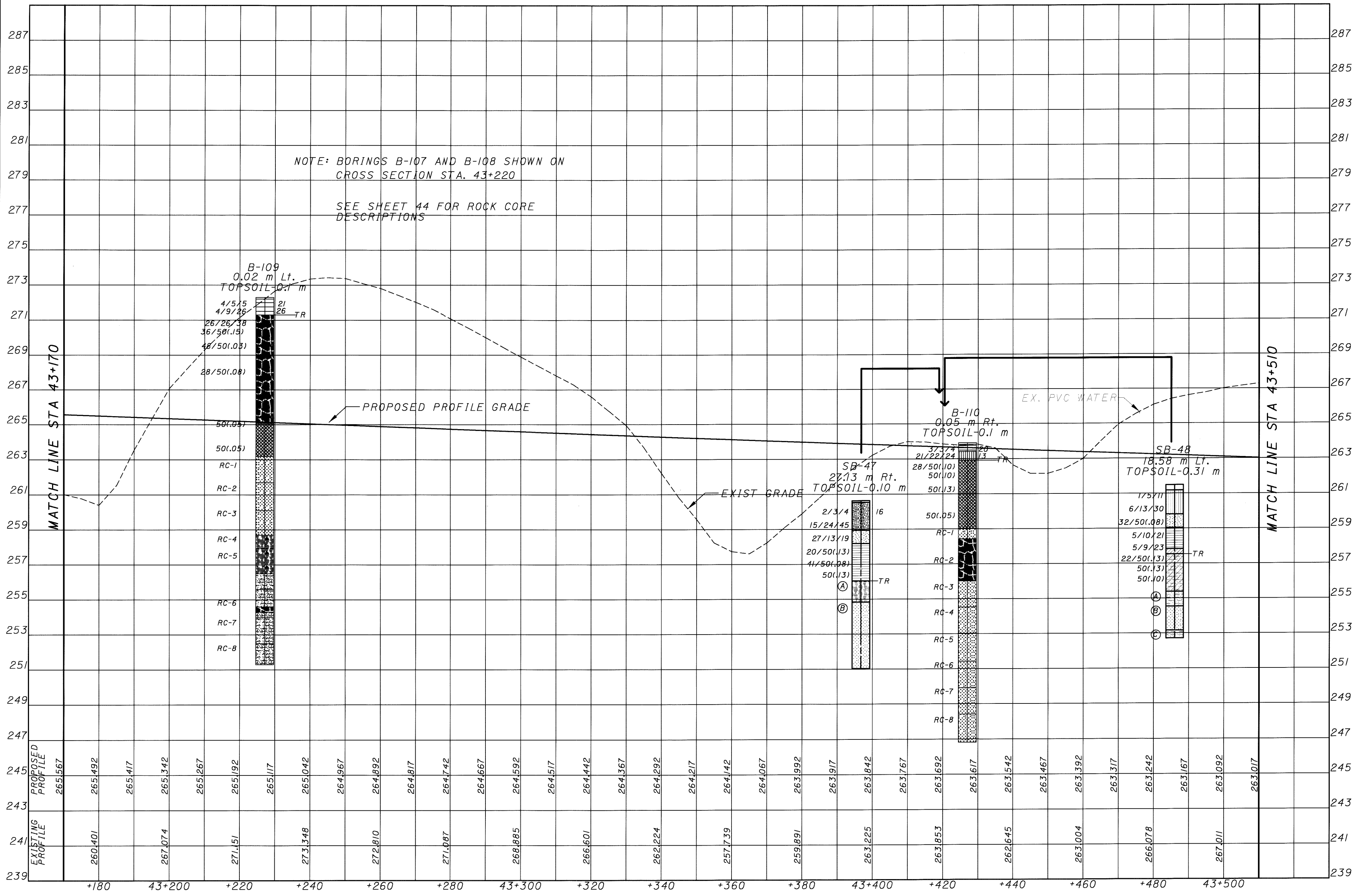
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SOIL PROFILE
STA. 43+170 TO STA. 43+510

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B-109
 RC-1 SANDSTONE; BROWN TO GRAY, SOFT TO MEDIUM, SLIGHTLY
 BROKEN, MEDIUM GRAINED, CROSS-BEDDED, MICACEOUS.
 CORE LOSS = 2% RQD = 15%

RC-2 NO CORE LOSS RQD = 52%

RC-3 CORE LOSS = 2% RQD = 40%

RC-4 SHALE; DARK GRAY, MEDIUM, HIGHLY BROKEN, CARBONACEOUS,
 FISSILE, SILTY
 NO CORE LOSS RQD = 15%

RC-5 SILTSTONE; GRAY, MEDIUM HARD, MASSIVE, SLIGHTLY
 MICACEOUS.
 CORE LOSS = 1% RQD = 52%

RC-6 SILTSTONE; GRAY, MEDIUM, MASSIVE, SLIGHTLY MICACEOUS,
 INTERBEDDED MUDSTONE; GRAY, SOFT TO MEDIUM, HIGHLY
 BROKEN.
 CORE LOSS = 1% RQD = 53%

RC-7 SILTSTONE; GRAY, MEDIUM, HIGHLY BROKEN, ARGILLACEOUS,
 MICACEOUS.
 CORE LOSS = 1% RQD = 0%

RC-8 NO CORE LOSS RQD = 0%

B-110
 RC-1 SANDSTONE; BROWN, SOFT, MASSIVE, SLIGHTLY JOINTED,
 COARSE GRAINED, MICACEOUS, INTERBEDDED MUDSTONE; GRAY
 VERY SOFT TO SOFT, HIGHLY BROKEN, HIGHLY JOINTED,
 ARENACEOUS.
 CORE LOSS = 2% RQD = 42%

RC-2 MUDSTONE; GRAY, VERY SOFT TO SOFT, HIGHLY BROKEN, HIGHLY
 JOINTED, ARENACEOUS.
 NO CORE LOSS RQD = 29%

RC-3 SANDSTONE; GRAY, MODERATELY HARD, MASSIVE, SLIGHTLY
 JOINTED, FINE GRAINED, MICACEOUS, LAMINATED.
 CORE LOSS = 3% RQD = 84%

RC-4 CORE LOSS = 5% RQD = 92%

RC-5 CORE LOSS = 2% RQD = 50%

RC-6 SANDSTONE; BROWN, MODERATELY HARD, HIGHLY BROKEN,
 HIGHLY GRAINED, COARSE GRAINED, CALCAREOUS, MICACEOUS,
 ARGILLACEOUS.
 NO CORE LOSS RQD = 0%

RC-7 CORE LOSS = 2% RQD = 19%

RC-8 CORE LOSS = 2% RQD = 0%

SB-47
 (A) RC-1 MEDIUM HARD GRAY SHALE; WEATHERED TO SEVERELY
 WEATHERED.
 CORE LOSS = 7% RQD = 88%

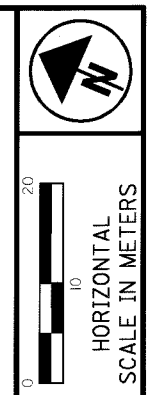
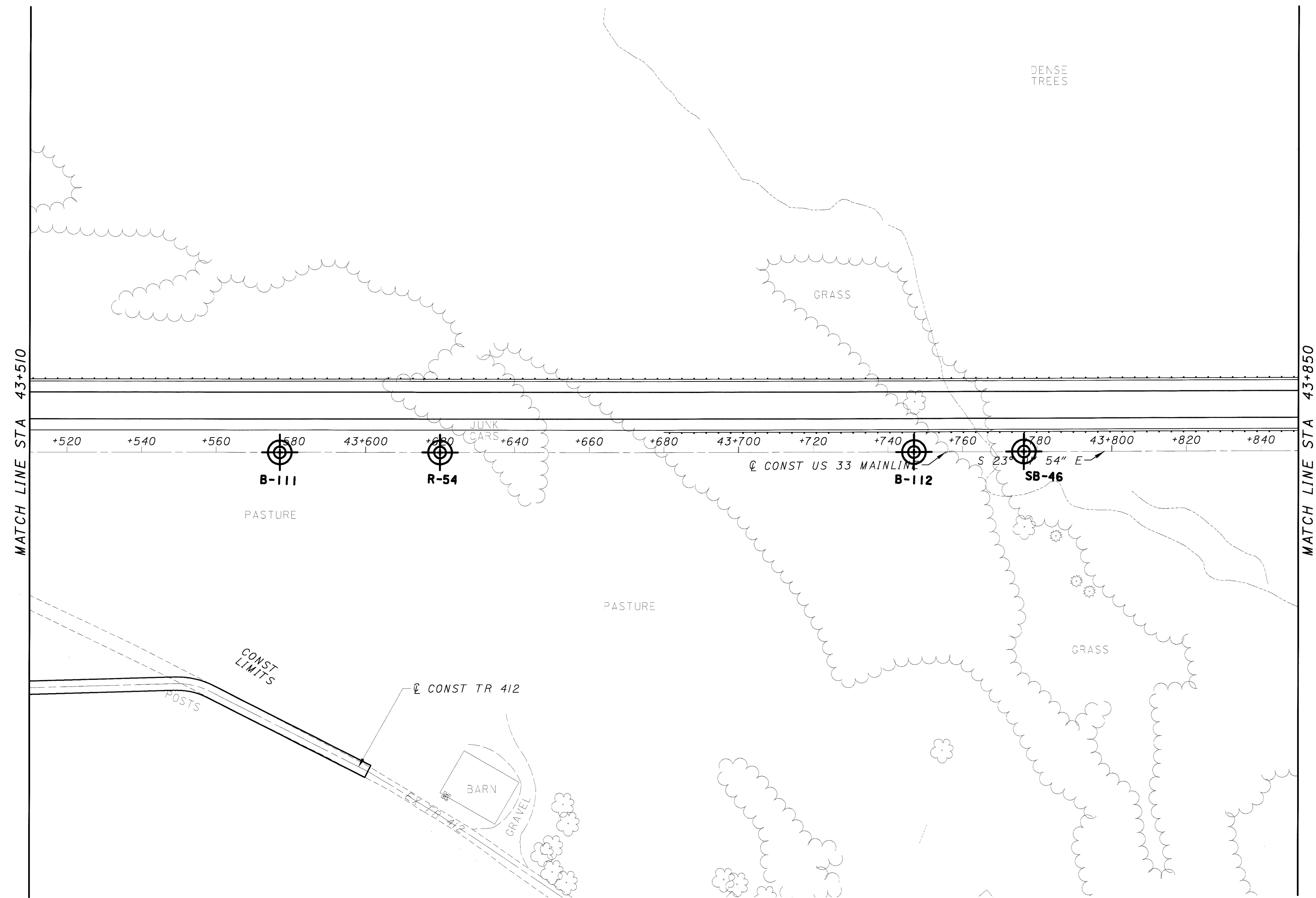
(B) HARD GRAY SANDSTONE, MICACEOUS; WEATHERED.
 RC-2 NO CORE LOSS RQD = 100%

SB-48
 (A) RC-1 MEDIUM HARD GRAY SILTSTONE, ARENACEOUS.
 CORE LOSS = 4% RQD = 91%

(B) HARD GRAY AND DARK GRAY SANDSTONE, ARGILLACEOUS,
 MICACEOUS; WEATHERED TO MODERATELY WEATHERED.
 RC-2 NO CORE LOSS RQD = 100%

(C) MEDIUM HARD GRAY SILTSTONE, MICACEOUS; WEATHERED.

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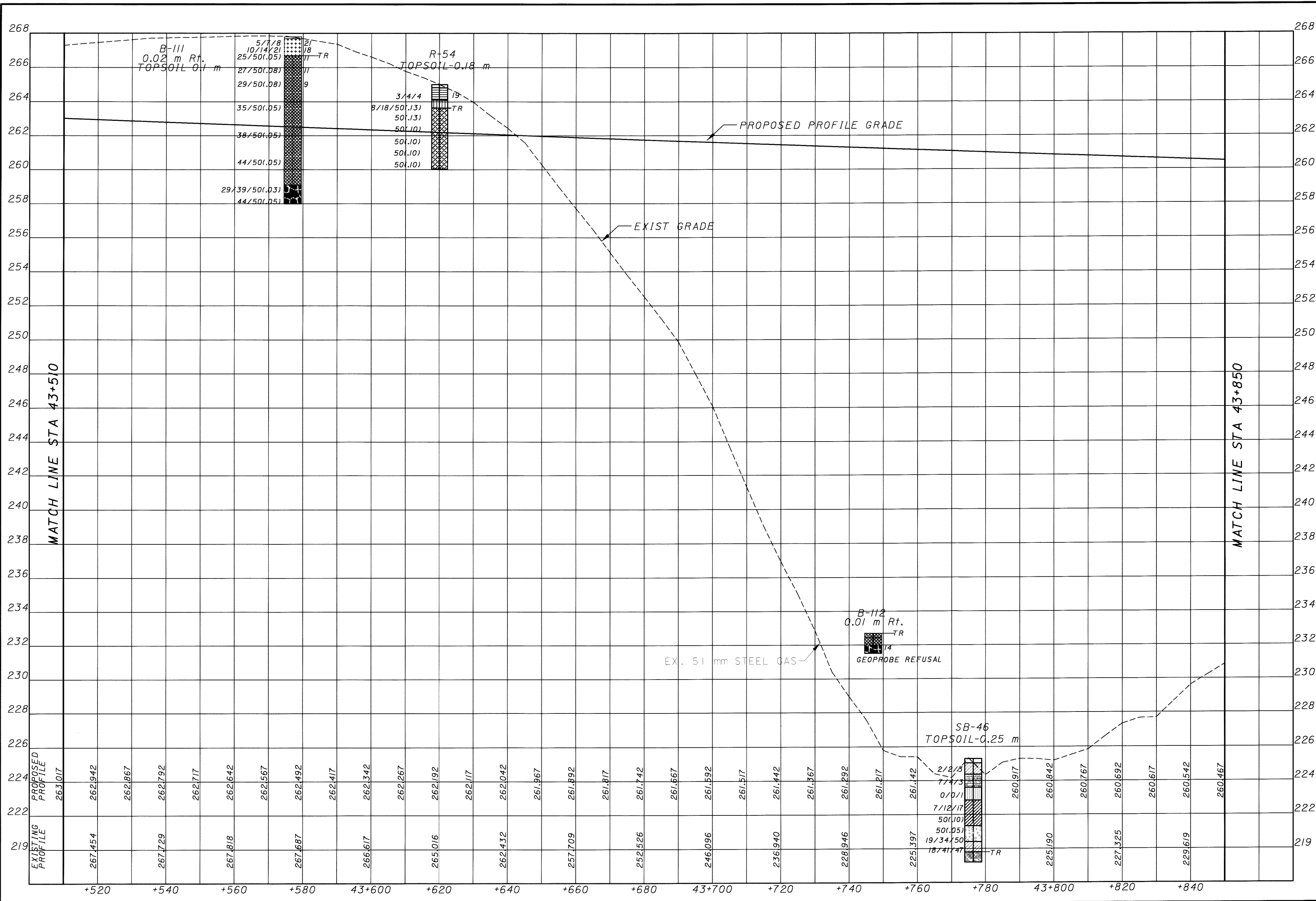


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SOIL PROFILE
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SOIL PROFILE
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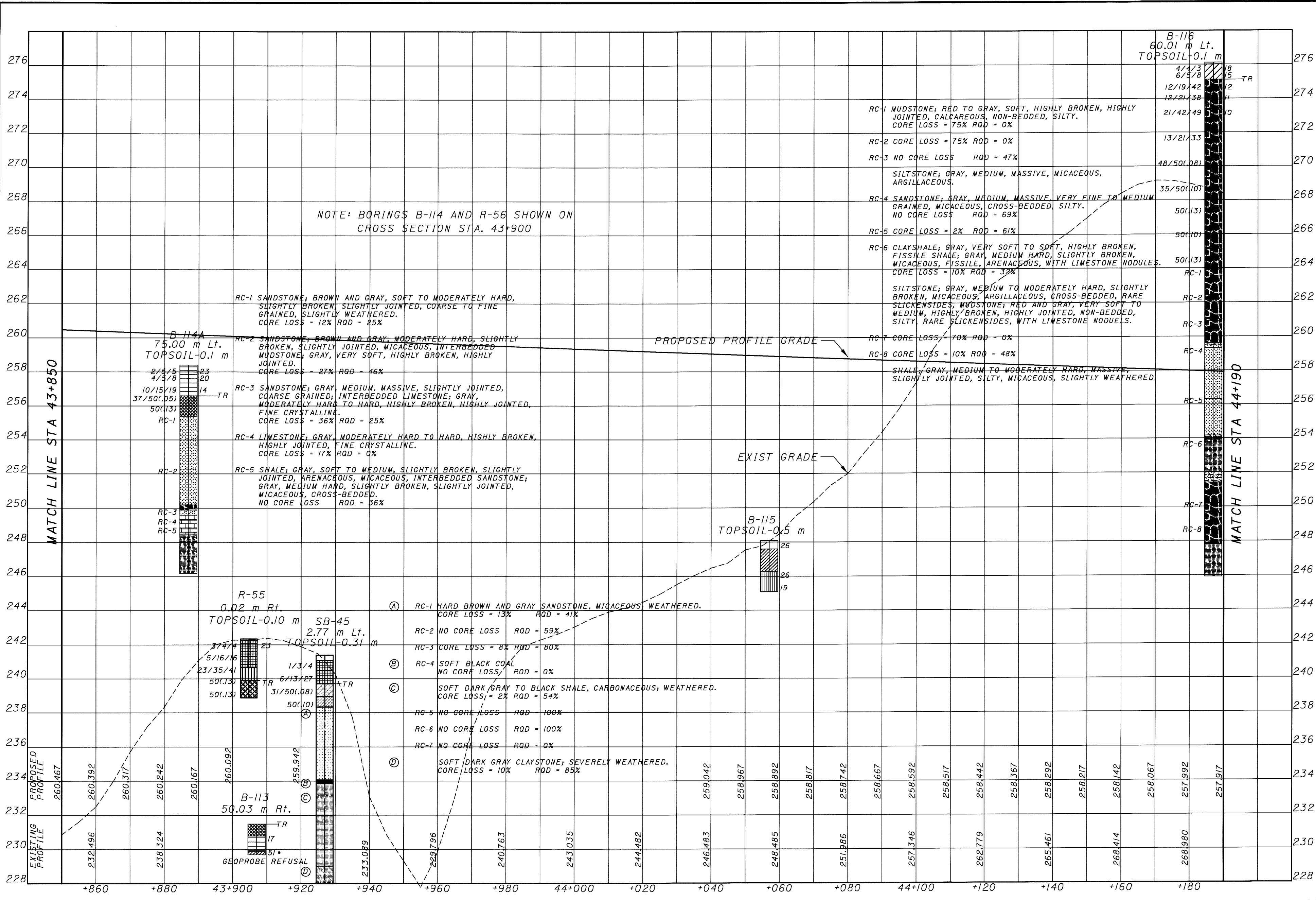
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SOIL PROFILE
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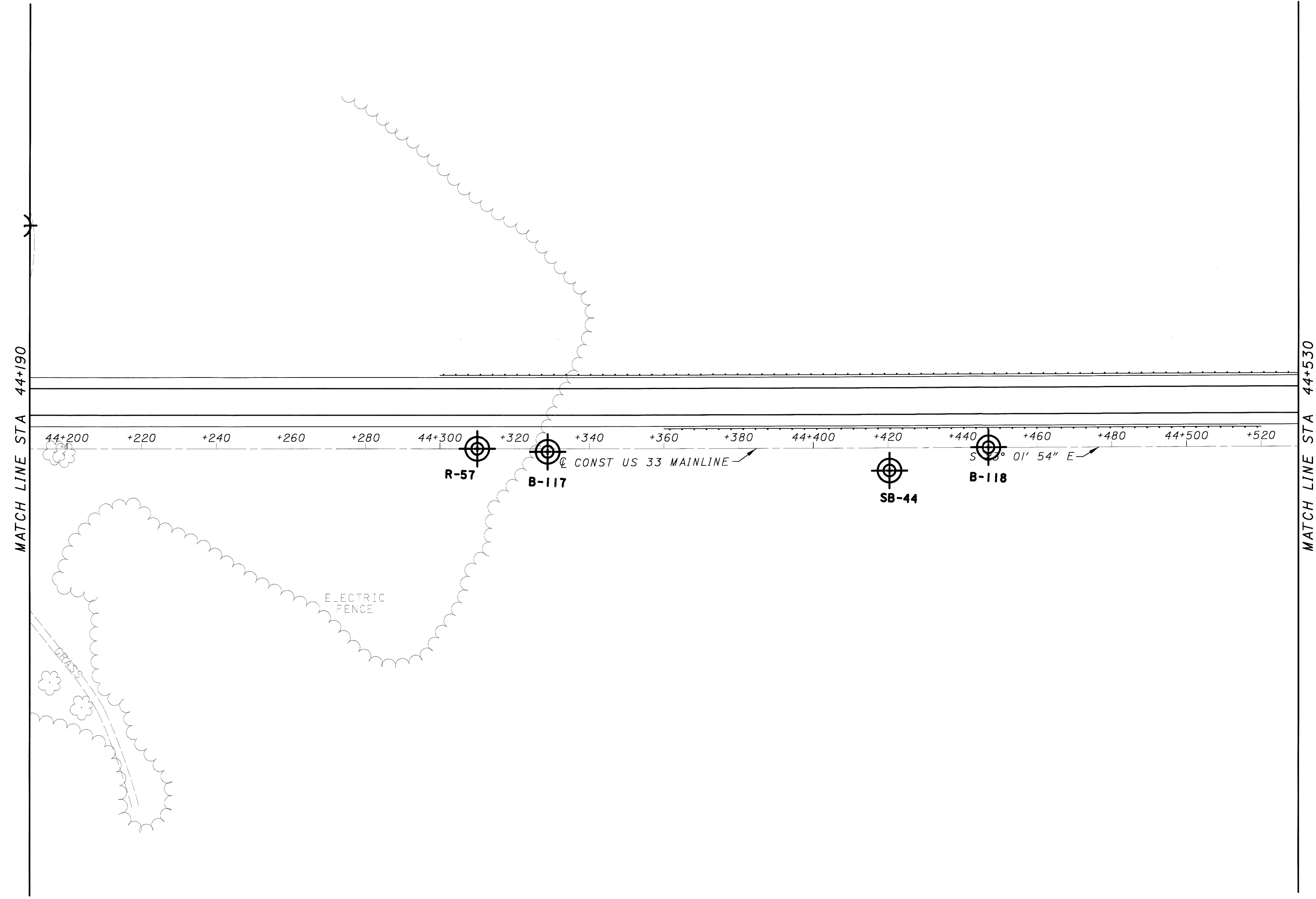
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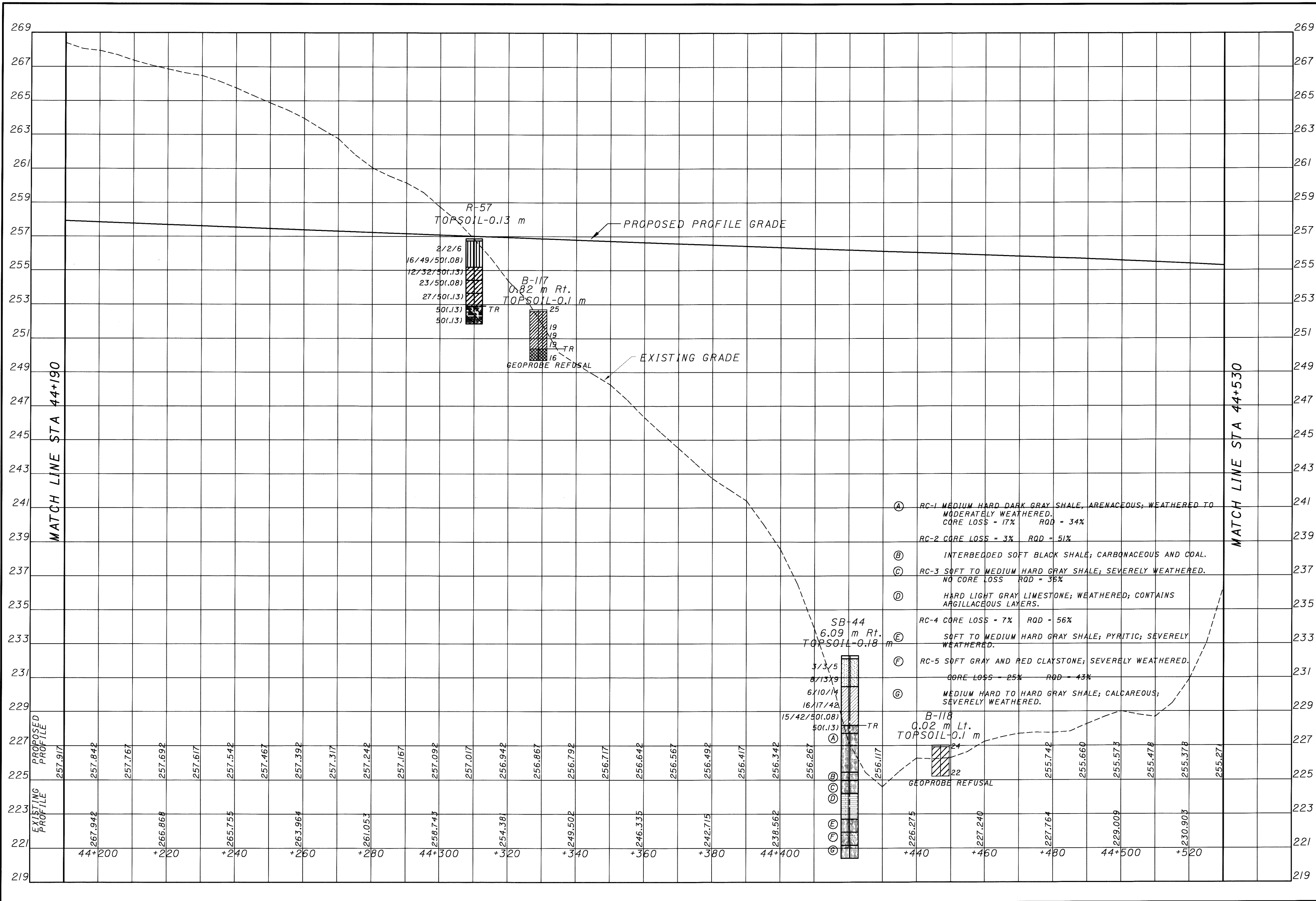
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SOIL PROFILE
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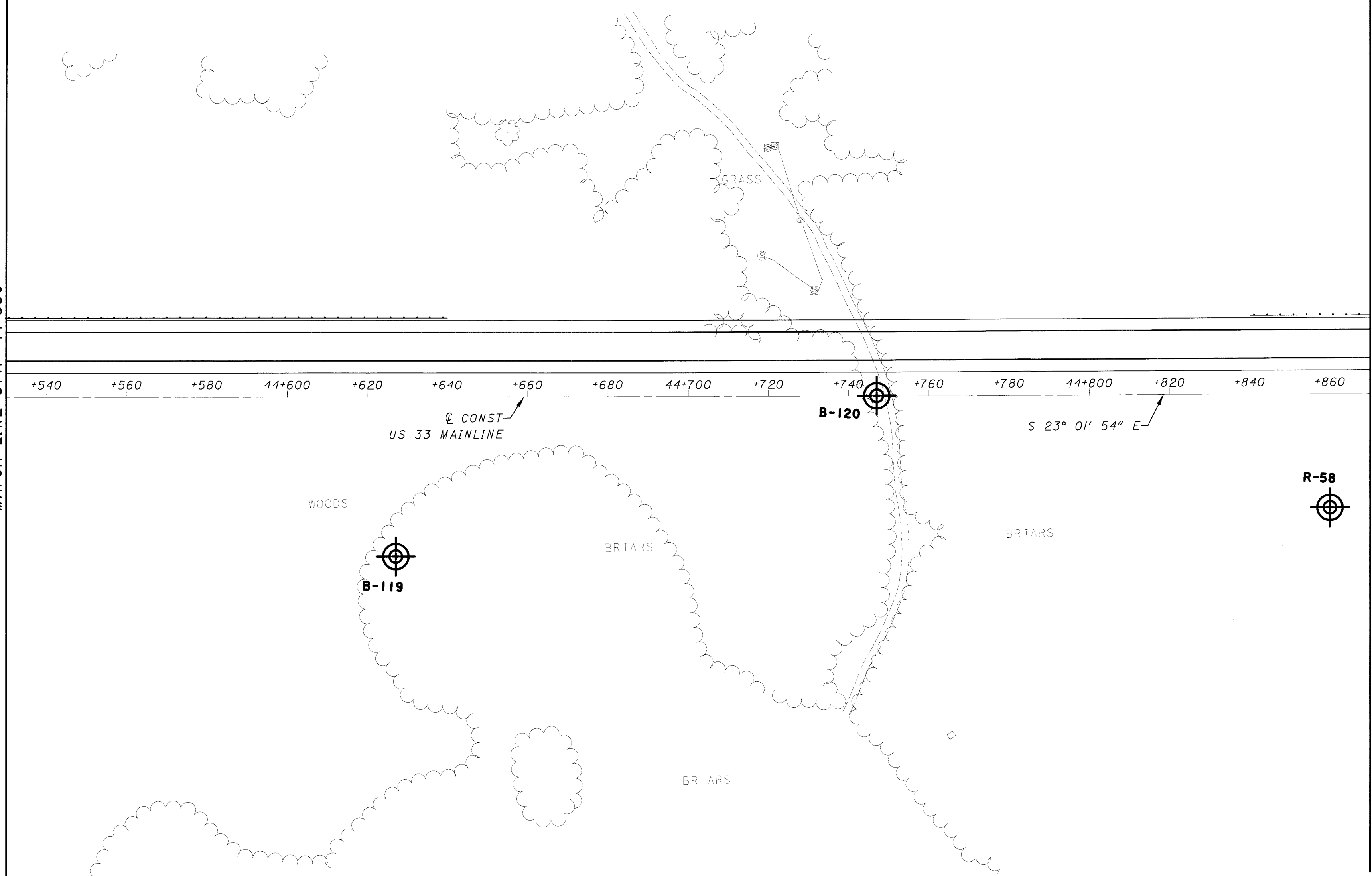
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MATCH LINE STA 44+530

+540 +560 +580 44+600 +620 +640 +660 +680 44+700 +720 +740 +760 +780 44+800 +820 +840 +860



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SOIL PROFILE
STA. 44+530 TO STA. 44+870

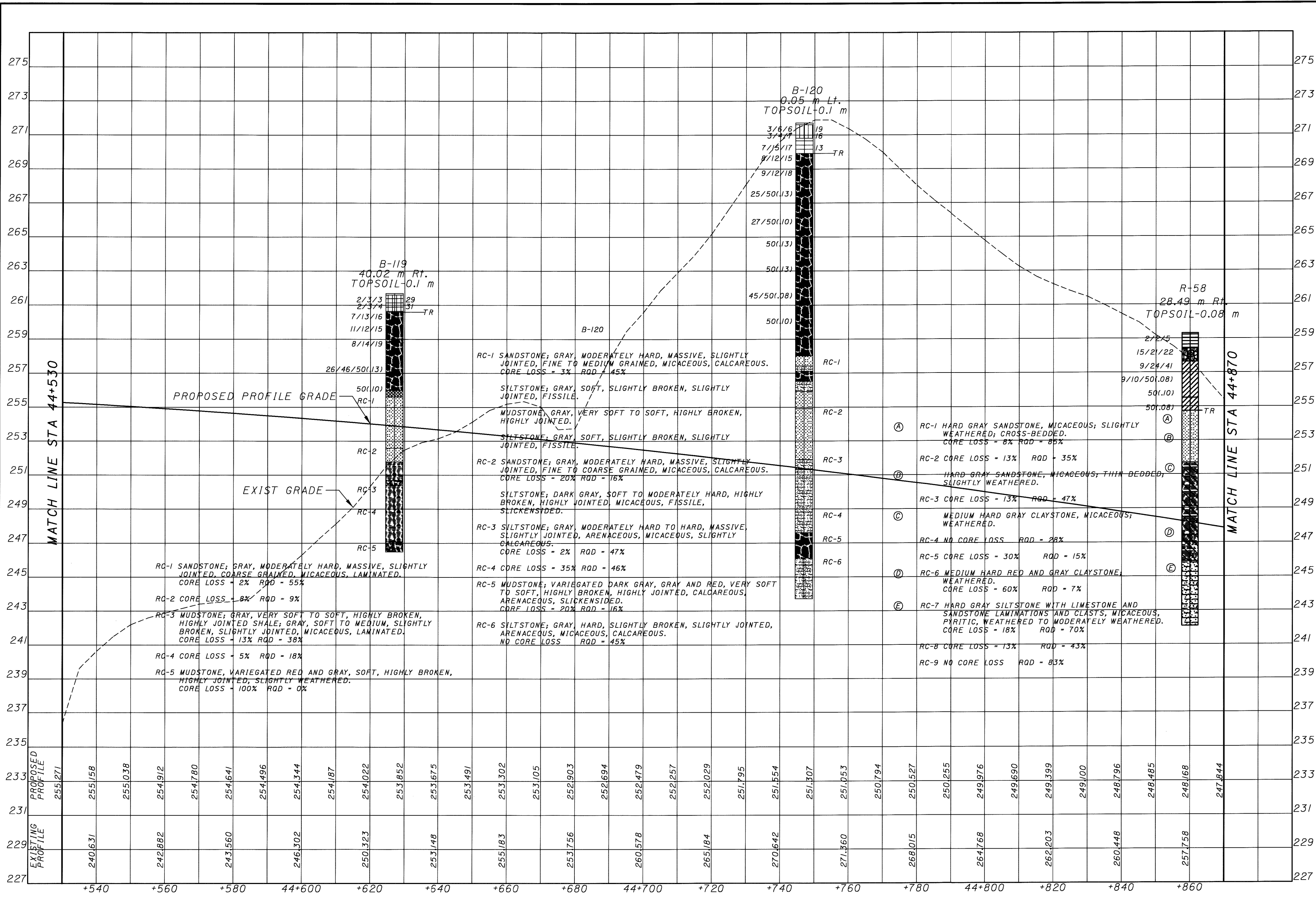
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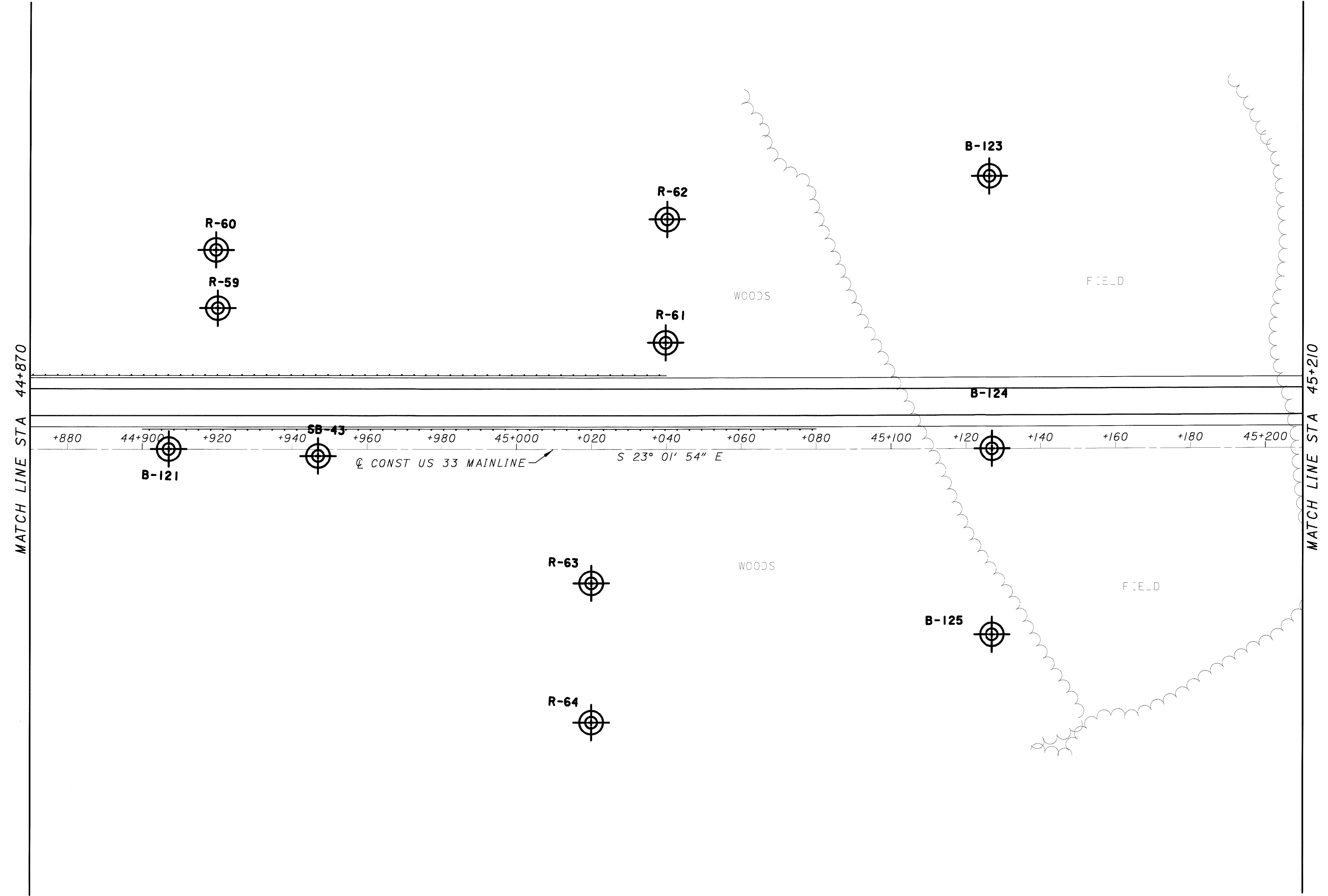
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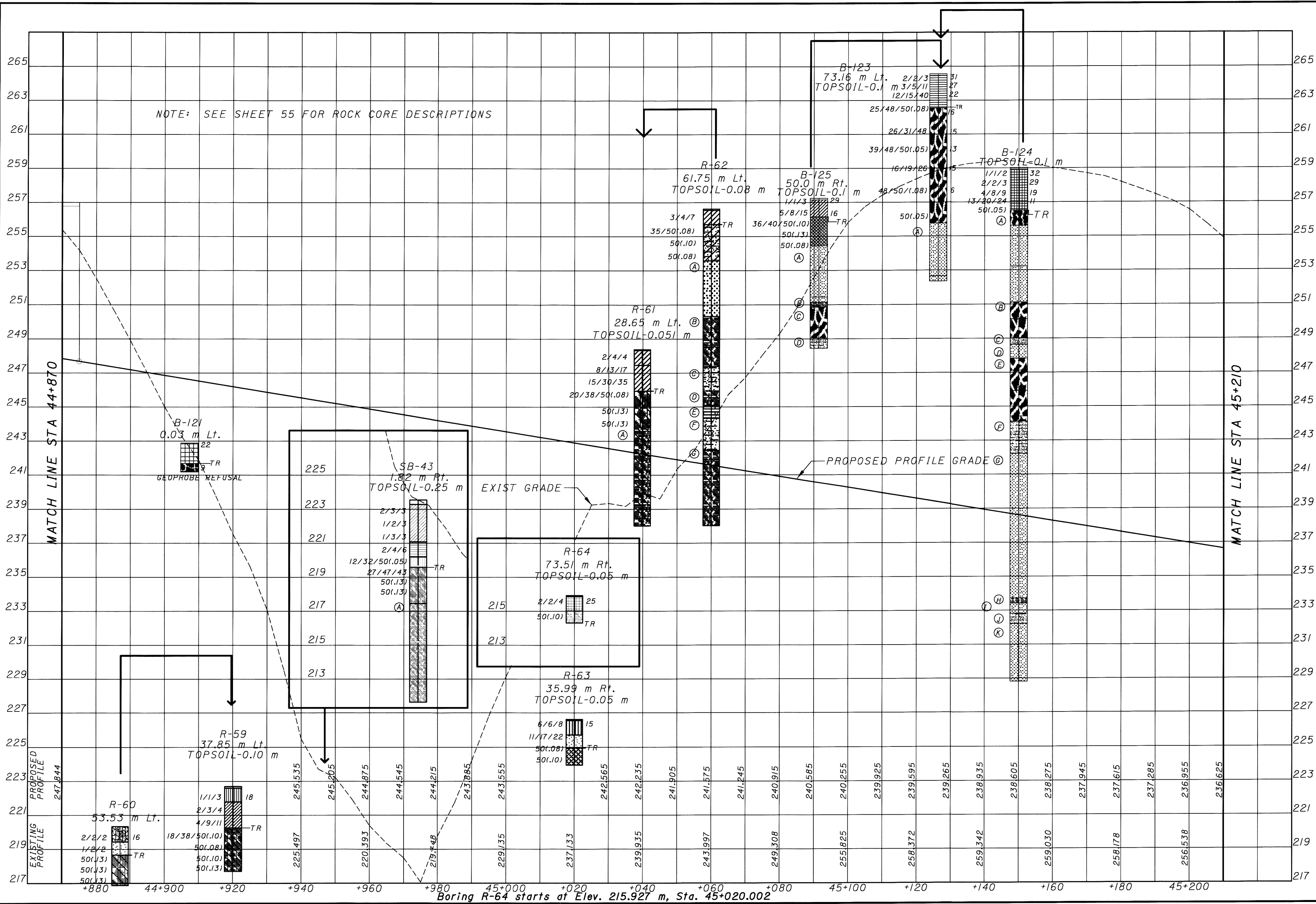
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SB-43

- (A) RC-1 MEDIUM HARD GRAY, RED, AND BROWN CLAYSTONE, PYRITIC, MICACEOUS, SLIGHTLY CALCAREOUS; CONTAINS OCCASIONAL LIMESTONE LENSES, SEVERELY WEATHERED.
CORE LOSS - 13% RQD - 36%
- RC-2 NO CORE LOSS RQD = 60%
- RC-3 CORE LOSS - 23% RQD - 52%

R-62

- (A) RC-1 SOFT BROWN SANDSTONE, MICACEOUS; MODERATELY WEATHERED; SLIGHTLY BROKEN TO MASSIVE.
CORE LOSS - 17% RQD - 67%
- RC-2 CORE LOSS - 18 RQD - 80%
- RC-3 CORE LOSS - 10% RQD - 38%
- (B) VERY SOFT GRAY CLAYSTONE; WEATHERED; SLIGHTLY BROKEN; OCCASIONALLY CALCAREOUS IN SMALL BANDS.
- RC-4 NO CORE LOSS RQD - 40%
- RC-5 CORE LOSS - 25% RQD - 27%
- (C) SOFT GRAY SILTSTONE, MICACEOUS; WEATHERED; BROKEN-SLIGHTLY BROKEN.
- RC-6 CORE LOSS - 57% RQD - 0%
- (D) SOFT REDDISH BROWN CLAYSTONE; SEVERELY WEATHERED; VERY BROKEN.
- RC-7 NO CORE LOSS RQD - 77%
- (E) MEDIUM HARD GRAY LIMESTONE; WEATHERED; SLIGHTLY BROKEN.
- (F) MEDIUM HARD GRAY SILTSTONE, MICACEOUS, LAMINATED, WEATHERED, SLIGHTLY BROKEN.
- RC-8 CORE LOSS - 27% RQD - 10%
- (G) SOFT REDDISH BROWN CLAYSTONE, CALCAREOUS; SEVERELY WEATHERED; VERY BROKEN; CONTAINS COARSE SAND AND GRAVEL CLASTS.
- RC-9 CORE LOSS - 38% RQD - 0%
- RC-10 CORE LOSS - 80% RQD - 7%
- RC-11 CORE LOSS - 38% RQD - 17%

B-123

- (A) RC-1 SANDSTONE; GRAY, MEDIUM, MASSIVE, FINE GRAINED, MICACEOUS, SLIGHTLY WEATHERED.
CORE LOSS - 5% RQD - 63%
- RC-2 NO CORE LOSS RQD - 100%

B-125

- (A) RC-1 SANDSTONE; BROWN, SOFT TO MEDIUM HARD, HIGHLY BROKEN, FINE TO MEDIUM GRAINED, SILTY, FRIABLE, MICACEOUS.
CORE LOSS - 5% RQD - 0%
- (B) RC-2 CLAYSHALE; BROWN, SOFT, HIGHLY BROKEN, SILTY.
CORE LOSS - 39% RQD - 0%
- (C) MUDSTONE; GREENISH GRAY, VERY SOFT TO SOFT, HIGHLY BROKEN, NON-BEDDED, SLIGHTLY JOINTED.
- (D) RC-3 SILTSTONE; GRAY, MEDIUM HARD, HIGHLY BROKEN, ARGILLACEOUS, CROSS-BEDDED, PYRITIC.
NO CORE LOSS RQD - 0%

R-61

- (A) RC-1 SOFT RED, GRAY, AND BROWN CLAYSTONE, MICACEOUS, SEVERELY WEATHERED, ARENACEOUS, CONTAINS LIMESTONE, SILTSTONE, AND SANDSTONE CLASTS.
CORE LOSS - 21% RQD - 25%
- RC-2 CORE LOSS - 62% RQD - 12%
- RC-3 CORE LOSS - 50% RQD - 0%
- RC-4 CORE LOSS - 68% RQD - 0%

B-124

- (A) RC-1 SHALE; BROWN, SOFT, HIGHLY BROKEN, MICACEOUS, SILTY.
SANDSTONE; BROWN AND GRAY, MEDIUM HARD, HIGHLY BROKEN, FINE GRAINED, MICACEOUS, SLIGHTLY WEATHERED.
NO CORE LOSS RQD - 18%
- RC-2 CORE LOSS - 3% RQD - 20%
- (B) RC-3 MUDSTONE; GRAY, VERY SOFT TO SOFT, HIGHLY BROKEN, NON-BEDDED, SILTY, WITH GRAY CLAY SEAMS UP TO 10 CM THICK.
CORE LOSS - 4% RQD - 16%
- (C) SILTSTONE; GRAY, MEDIUM, MICACEOUS, SLIGHTLY BROKEN.
- (D) RC-4 SANDSTONE; GRAY, MEDIUM, MASSIVE, FINE GRAINED, CROSS-BEDDED, MICACEOUS.
NO CORE LOSS RQD - 41%
- (E) RC-5 MUDSTONE; VARIEGATED GRAY, RED, AND PURPLE, VERY SOFT TO SOFT, HIGHLY BROKEN, NON-BEDDED, SLIGHTLY CALCAREOUS, WITH LIMESTONE NODULES.
CORE LOSS - 67% RQD - 0%
- RC-6 CORE LOSS - 10% RQD - 0%
- RC-7 CORE LOSS - 44% RQD - 0%
- RC-8 CORE LOSS - 10% RQD - 38%
- (F) RC-9 SILTSTONE; GRAY, MEDIUM HARD, MASSIVE, MICACEOUS, ARGILLACEOUS, WITH LIMESTONE NODULES.
NO CORE LOSS RQD - 67%
- (G) SANDSTONE; GRAY, MEDIUM TO MODERATELY HARD, FINE GRAINED, MICACEOUS, SILTY.
- RC-10 SANDSTONE; BROWN TO GRAY, MODERATELY HARD, MASSIVE, FINE TO COARSE GRAINED, MICACEOUS, SLIGHTLY WEATHERED, WITH LIMESTONE NODULES.
NO CORE LOSS RQD - 70%
- RC-11 NO CORE LOSS RQD - 60%
- RC-12 CORE LOSS - 5% RQD - 68%
- (H) SHALE; BROWN, SOFT TO MEDIUM, HIGHLY BROKEN, SILTY, SLIGHTLY JOINTED.
- (I) SANDSTONE; GRAY, MEDIUM, MASSIVE, FINE GRAINED, MICACEOUS, CROSS-BEDDED.
- (J) RC-13 SILTSTONE; GRAY, MEDIUM, MICACEOUS, ARGILLACEOUS, SLIGHTLY BROKEN.
CORE LOSS - 2% RQD - 38%
- (K) SANDSTONE; BROWN TO LIGHT GRAY, MEDIUM TO MODERATELY HARD, SLIGHTLY BROKEN, COARSE GRAINED, MICACEOUS, SLIGHTLY JOINTED, WITH INTERBEDDED LIGHT GRAY CLAY SEAMS UP TO 10 CM THICK.
- RC-14 CORE LOSS - 5% RQD - 48%

SOIL PROFILE STA. 44+870 TO STA. 45+210

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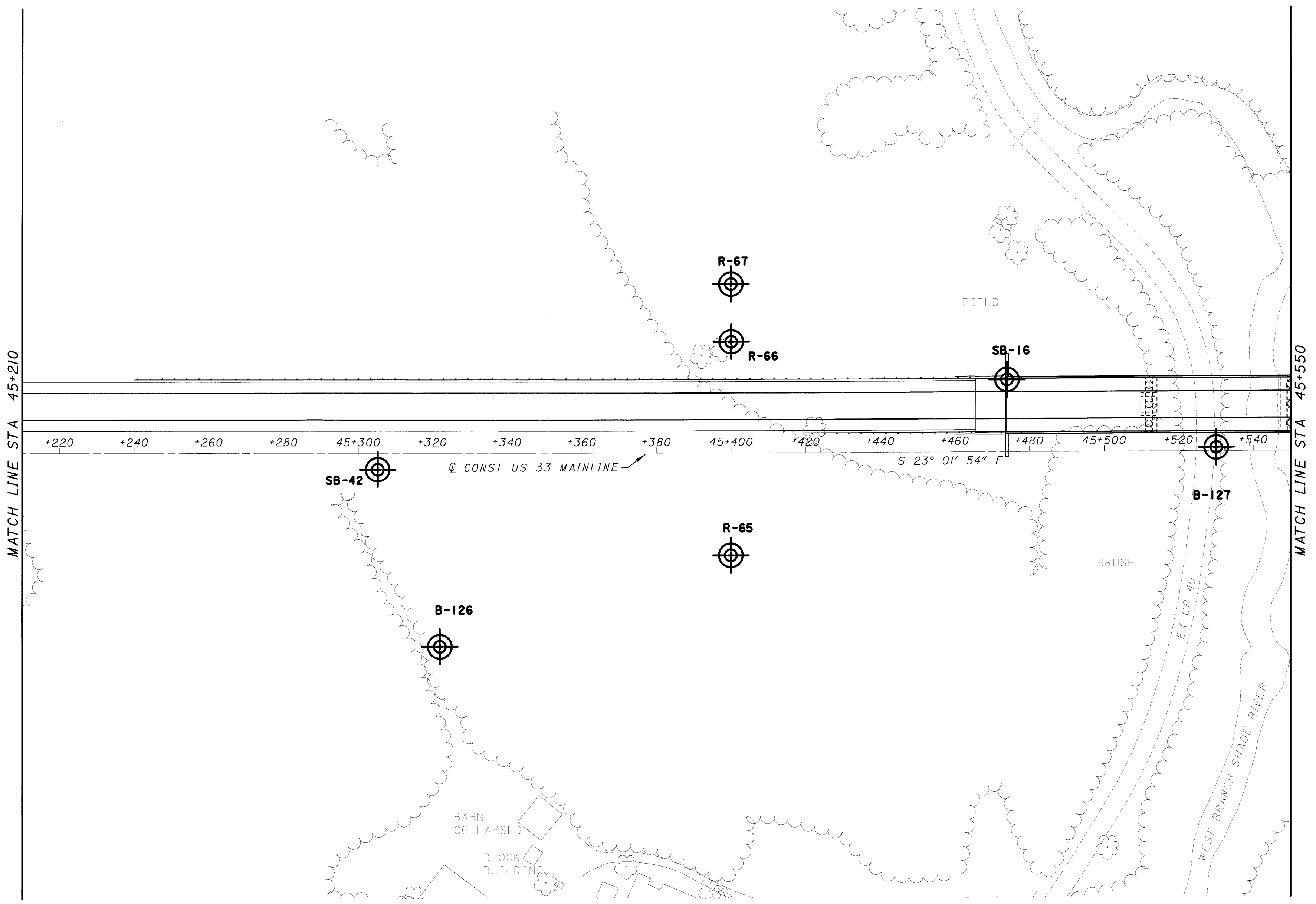
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SOIL PROFILE
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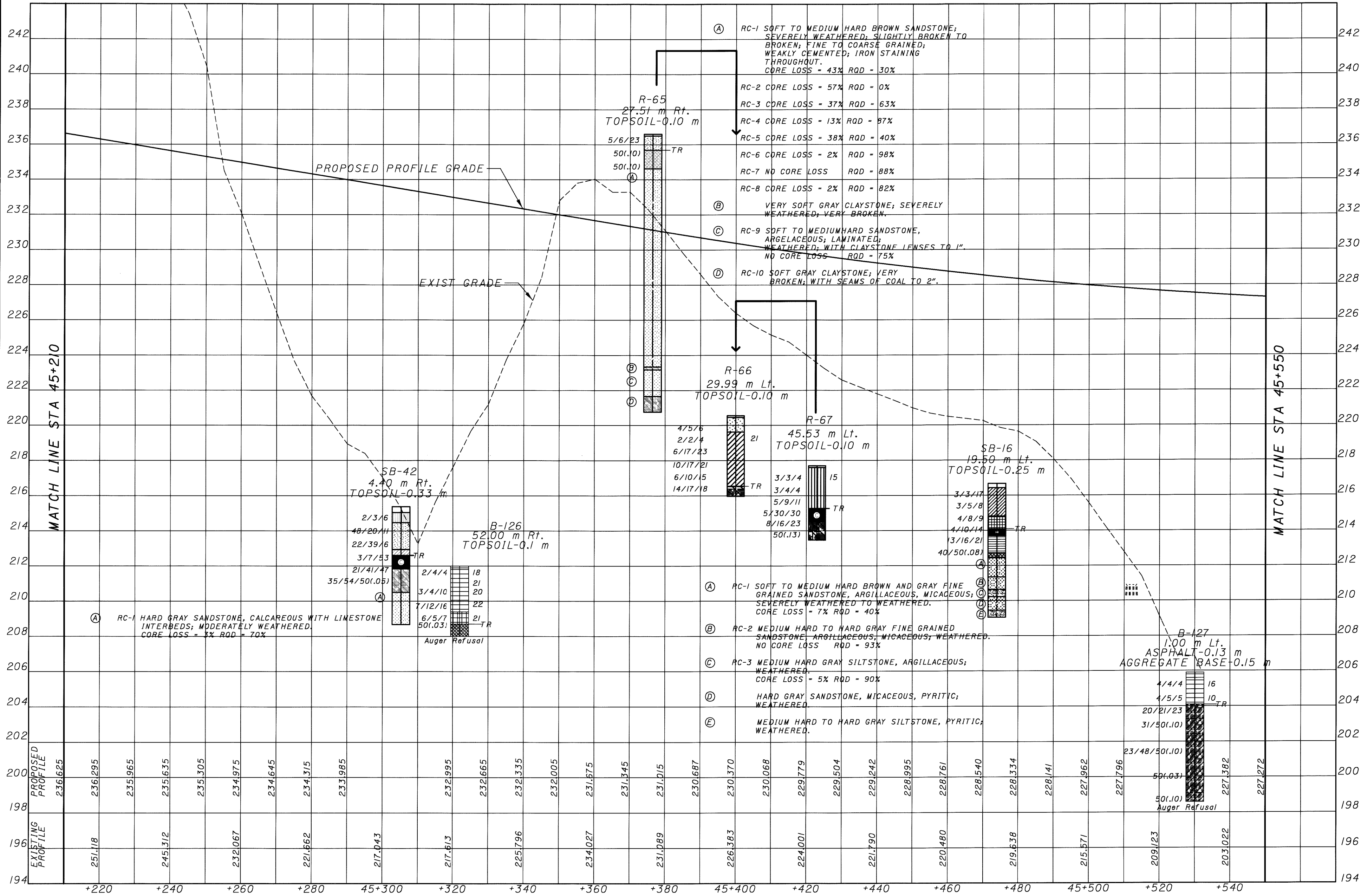
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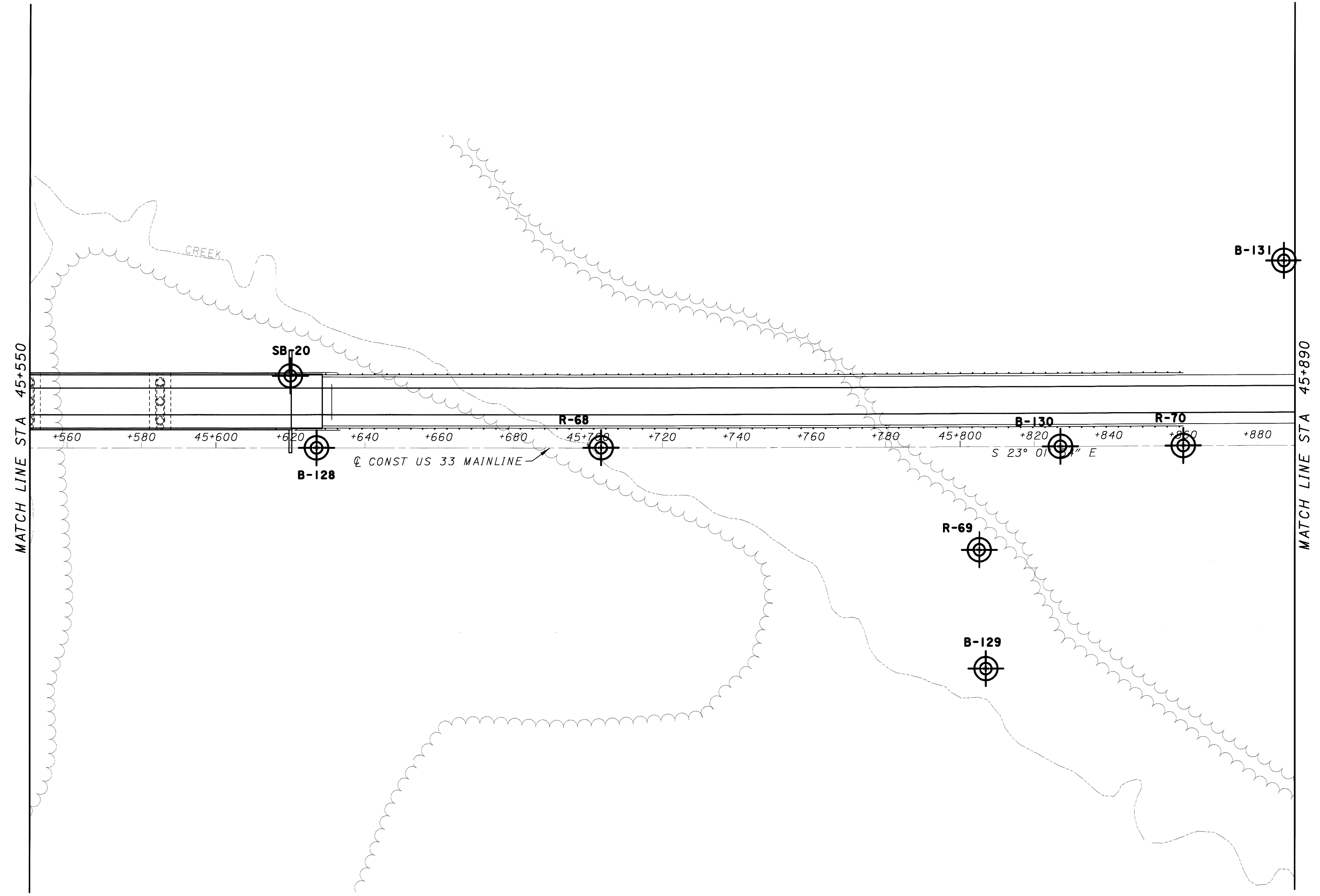
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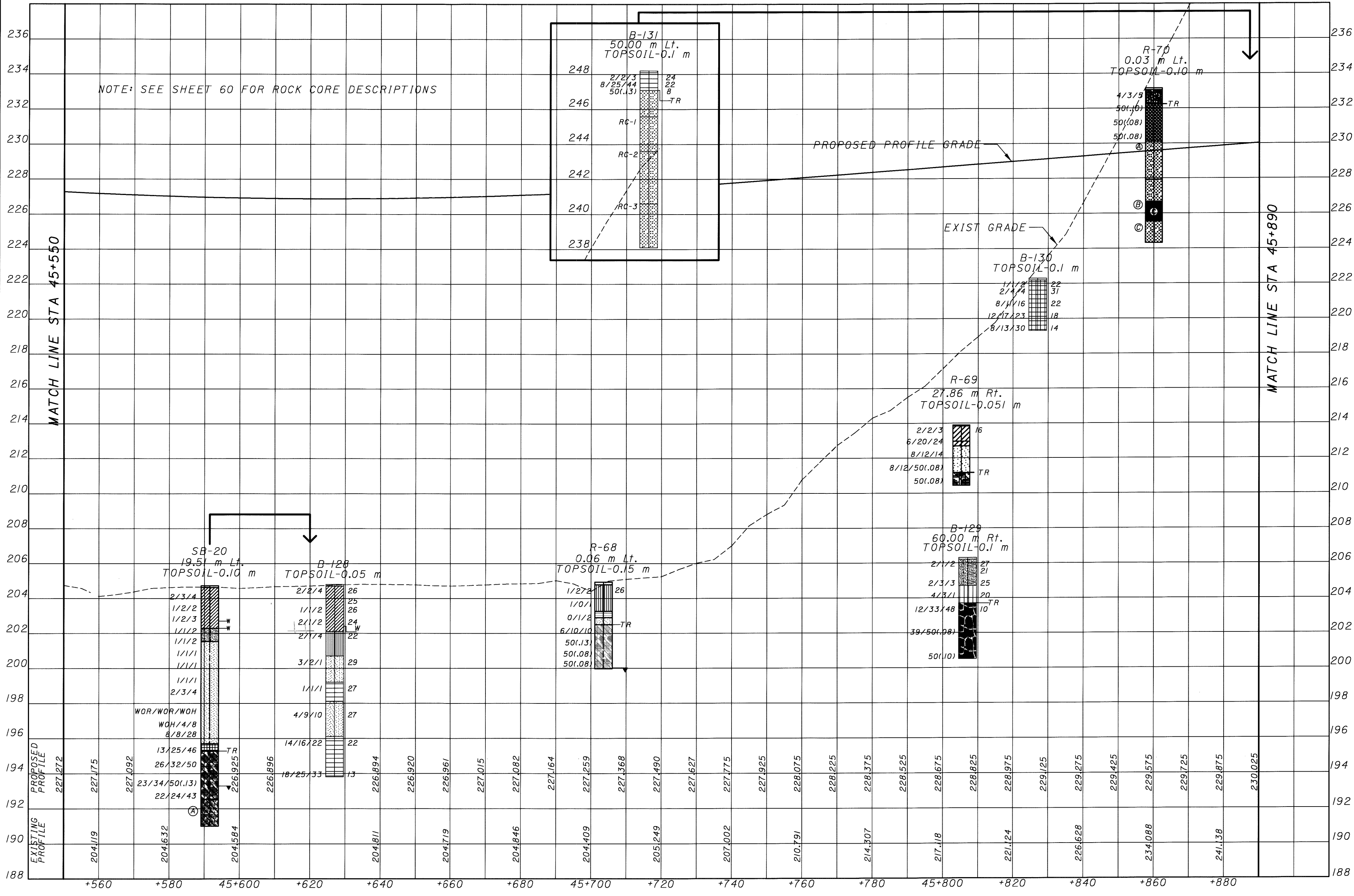
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SOIL PROFILE
STA. 45+550 TO STA. 45+890

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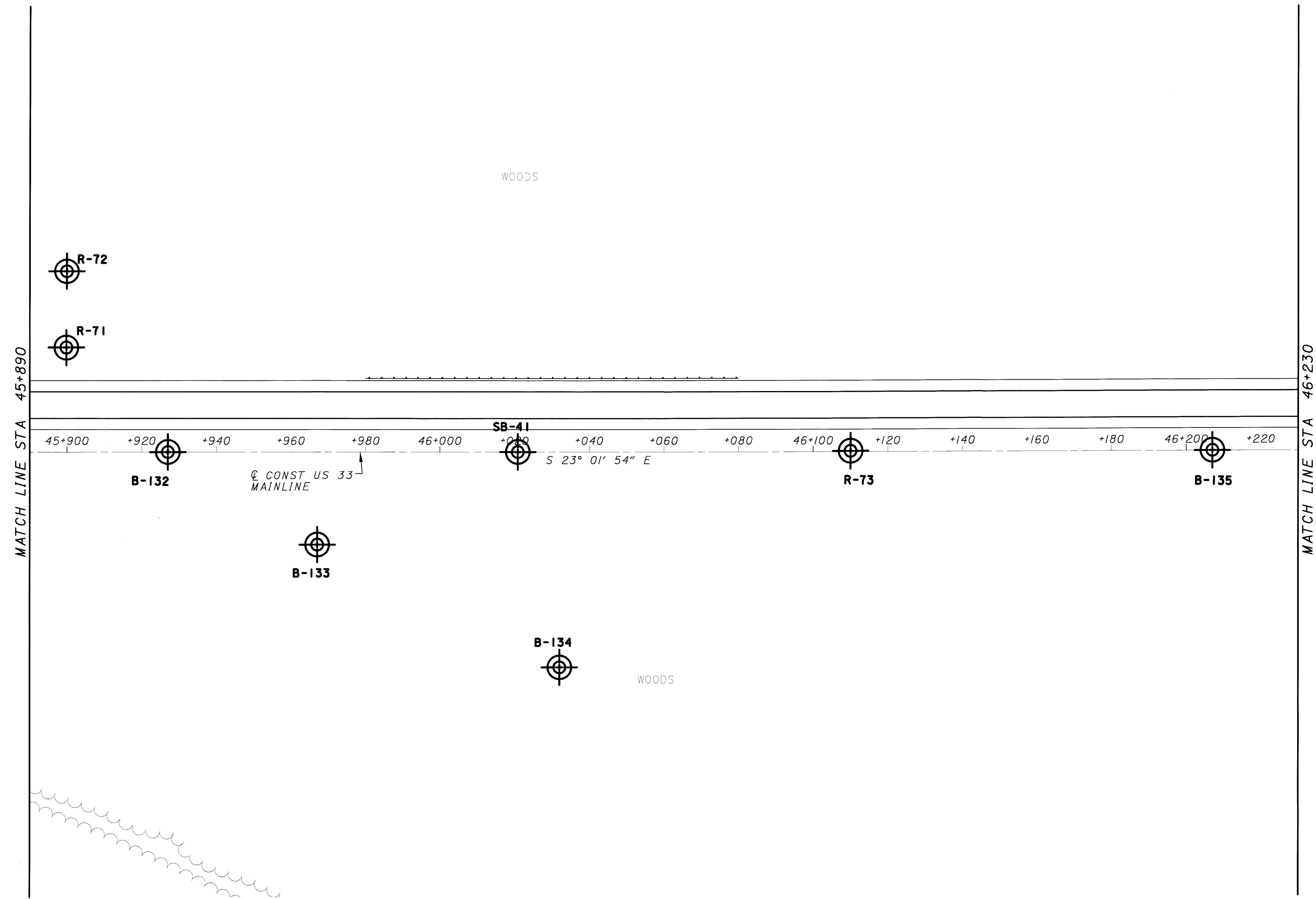
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SB-20
RC-1 SOFT TO MEDIUM HARD RED, GRAY AND BROWN
CLAYSTONE.
CORE LOSS - 42% RQD - 22%

R-70
Ⓐ RC-1 MEDIUM HARD TO HARD BROWN AND GRAY
SANDSTONE, MICACEOUS, WEATHERED,
SLIGHTLY BROKEN.
CORE LOSS - 6% RQD - 94%
RC-2 NO CORE LOSS RQD - 92%
Ⓑ MEDIUM HARD GRAY SANDSTONE;
MODERATELY WEATHERED, CONTAINS COAL
BLOSSOMS, POORLY CEMENTED.
RC-3 NO CORE LOSS RQD - 77%
Ⓒ RC-4 SOFT BLACK COAL AND CARBONACEOUS SHALE,
VERY BROKEN, WEATHERED.
CORE LOSS - 10% RQD - 33%
RC-5 CORE LOSS - 5% RQD - 87%
Ⓓ HARD GRAY SANDSTONE, MICACEOUS,
MODERATELY WEATHERED, CONTAINS THIN
DARK GRAY LAMINAE.

B-131
RC-1 SANDSTONE; BROWN, MODERATELY HARD, MASSIVE, MEDIUM TO
COARSE GRAINED, MICACEOUS.
NO CORE LOSS RQD - 77%
RC-2 NO CORE LOSS RQD - 78%
RC-3 NO CORE LOSS RQD - 92%

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SOIL PROFILE
STA. 45+890 TO STA. 46+230

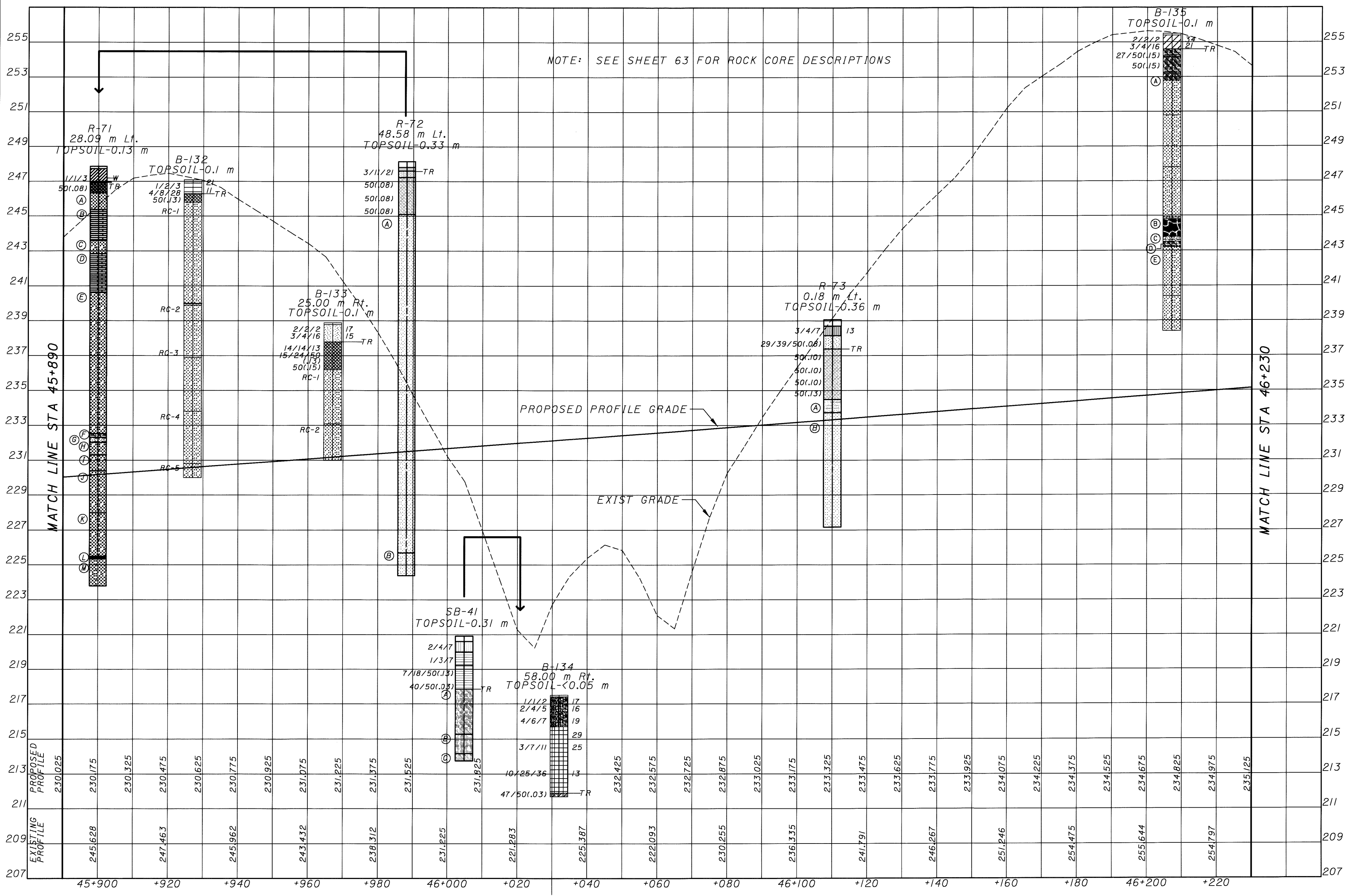
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SOIL PROFILE
STA. 45+890 TO STA. 46+230

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NOTE: SEE SHEET 63 FOR ROCK CORE DESCRIPTIONS



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R-71

- (A) RC-1 MEDIUM HARD TO HARD, LIGHT GRAY SANDSTONE, CALCAREOUS, MICACEOUS, WEATHERED. CORE LOSS - 8% RQD - 92%
- (B) HARD, GRAY LIMESTONE, SLIGHTLY MICACEOUS, WEATHERED TO MODERATELY WEATHERED.
RC-2 NO CORE LOSS RQD - 100%
- (C) RC-3 MEDIUM HARD TO HARD, BROWN SANDSTONE, MICACEOUS, MODERATELY WEATHERED, SLIGHTLY BROKEN. NO CORE LOSS RQD - 100%
- (D) HARD, LIGHT GRAY LIMESTONE, SLIGHTLY MICACEOUS, MODERATELY WEATHERED TO WEATHERED, CONTAINS BROWN AND GRAY MICACEOUS SANDSTONE LAYERS.
RC-4 CORE LOSS - 30% RQD - 70%
- (E) RC-5 MEDIUM HARD TO HARD, BROWN AND GRAY SANDSTONE, MICACEOUS, SLIGHTLY BROKEN, CONTAINS LIMESTONE CLASTS. NO CORE LOSS RQD - 100%
- RC-6 NO CORE LOSS RQD - 100%
- RC-7 NO CORE LOSS RQD - 100%
- RC-8 NO CORE LOSS RQD - 90%
- RC-9 NO CORE LOSS RQD - 100%
- RC-10 NO CORE LOSS RQD - 100%
- (F) SOFT TO MEDIUM HARD, GRAY CLAYSTONE, WEATHERED.
- (G) MEDIUM HARD, GRAY SILTSTONE, WEATHERED.
- (H) HARD, GRAY, FINE GRAINED SANDSTONE, MICACEOUS, WEATHERED.
- (I) RC-11 HARD, GRAY, FINE GRAINED SANDSTONE, MICACEOUS, MODERATELY WEATHERED. CORE LOSS - 2% RQD - 92%
- (J) MEDIUM HARD, BROWN AND GRAY, SANDSTONE, MICACEOUS, WEATHERED, BROKEN.
RC-12 NO CORE LOSS RQD - 90%
- RC-13 NO CORE LOSS RQD - 88%
- (K) HARD, GRAY SANDSTONE, ARGILLACEOUS, MICACEOUS, WEATHERED.
RC-14 NO CORE LOSS RQD - 87%
- (L) SOFT, BLACK COAL, WITH CARBONACEOUS SHALE, MODERATELY WEATHERED.
- (M) RC-15 HARD, GRAY SANDSTONE, ARGILLACEOUS, MICACEOUS, WEATHERED. NO CORE LOSS RQD - 100%

SB-41

- (A) RC-1 SOFT GRAY AND RED CLAYSTONE; SEVERELY WEATHERED; BROKEN. CORE LOSS - 83% RQD - 0%
- RC-2 CORE LOSS - 50% RQD - 28%
- (B) SOFT TO MEDIUM HARD GRAY SHALE; SEVERELY WEATHERED; CONTAINS CALCAREOUS BANDING.
RC-3 CORE LOSS - 20% RQD - 76%
- (C) SOFT RED AND GRAY CLAYSTONE; SEVERELY WEATHERED.

R-72

- (A) RC-1 MEDIUM HARD TO HARD, BROWN AND GRAY, SANDSTONE, MICACEOUS, ARGILLACEOUS, CONTAINS DARK BROWN LAMINAE AND CLAYSTONE CLASTS, MODERATELY WEATHERED. CORE LOSS - 4% RQD - 96%
- RC-2 NO CORE LOSS RQD - 100%
- RC-3 NO CORE LOSS RQD - 100%
- RC-4 NO CORE LOSS RQD - 92%
- RC-5 CORE LOSS - 5% RQD - 95%
- RC-6 CORE LOSS - 3% RQD - 97%
- RC-7 NO CORE LOSS RQD - 100%
- RC-8 NO CORE LOSS RQD - 87%
- RC-9 NO CORE LOSS RQD - 82%
- RC-10 NO CORE LOSS RQD - 85%
- RC-11 CORE LOSS - 8% RQD - 83%
- RC-12 CORE LOSS - 5% RQD - 90%
- RC-13 NO CORE LOSS RQD - 97%
- (B) MEDIUM HARD TO HARD, GRAY SANDSTONE, CONTAINS BLACK CARBONIFEROUS SHALE LAMINAE, MICACEOUS, WEATHERED.
RC-14 NO CORE LOSS RQD - 100%

R-73

- (A) RC-1 SOFT TO MEDIUM HARD BROWN SILTSTONE, MICACEOUS, ARGILLACEOUS, WEATHERED, VERY BROKEN. CORE LOSS - 15% RQD - 29%
- (B) HARD GRAY SANDSTONE, MICACEOUS, WEATHERED.
RC-2 NO CORE LOSS RQD - 100%
- RC-3 NO CORE LOSS RQD - 100%
- RC-4 NO CORE LOSS RQD - 100%
- RC-5 NO CORE LOSS RQD - 100%
- RC-6 CORE LOSS - 3% RQD - 95%

B-135

- RC-1 SANDSTONE; BROWN AND GRAY, MEDIUM TO MODERATELY HARD, SLIGHTLY BROKEN, MEDIUM TO COARSE GRAINED, MICACEOUS, CROSS-BEDDED, FRIABLE. CORE LOSS - 5% RQD - 31%
- RC-2 CORE LOSS - 3% RQD - 28%
- RC-3 CORE LOSS - 3% RQD - 11%
- RC-4 CORE LOSS - 100% RQD - 0%
- RC-5 MUDSTONE; GRAY, VERY SOFT, HIGHLY BROKEN, NON-BEDDED, SILTY, SLICKENSIDED, WITH RARE CHERT NODULES. CORE LOSS - 4% RQD - 0%
- SILTSTONE; GRAY, MEDIUM, HIGHLY BROKEN, MICACEOUS.
- CLAYSHALE; BROWN, SOFT, HIGHLY BROKEN, SILTY, SLIGHTLY MICACEOUS.
- RC-6 SANDSTONE; BROWN, MEDIUM, MASSIVE, FINE TO MEDIUM GRAINED, CROSS-BEDDED, SLIGHTLY FRIABLE. NO CORE LOSS RQD - 29%
- RC-7 CORE LOSS - 7% RQD - 64%

B-132

- RC-1 SANDSTONE; LIGHT BROWN, MEDIUM HARD, MASSIVE, MEDIUM GRAINED, FRIABLE, CROSS-BEDDED, SLIGHTLY WEATHERED, SLIGHTLY JOINTED. CORE LOSS - 5% RQD - 75%
- RC-2 CORE LOSS - 3% RQD - 66%
- RC-3 SANDSTONE; GRAY TO BROWN, MODERATELY HARD, MASSIVE, FINE TO COARSE GRAINED, MICACEOUS, CROSS-BEDDED. CORE LOSS - 1% RQD - 80%
- RC-4 CORE LOSS - 1% RQD - 71%
- RC-5 CORE LOSS - 1% RQD - 70%
- RC-6 CORE LOSS - 16% RQD - 35%

B-133

- RC-1 SANDSTONE; BROWN, MEDIUM HARD, HIGHLY BROKEN. CORE LOSS - 40% RQD - 0%
- RC-2 SANDSTONE; BROWN, MEDIUM HARD, HIGHLY BROKEN, MEDIUM GRAINED, MICACEOUS, WITH HIGHLY WEATHERED SILTSTONE LENSES UP TO 1 CM THICK. CORE LOSS - 52% RQD - 0%

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SOIL PROFILE
STA. 45+890 TO STA. 46+230

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MATCH LINE STA 46+230

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B-136

WOODS

R-74

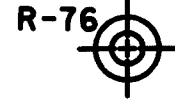


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WOODS



R-75



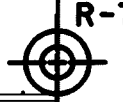
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B-138



R-77



R-78

MATCH LINE STA 46+570

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SOIL PROFILE
STA. 46+230 TO STA. 46+570

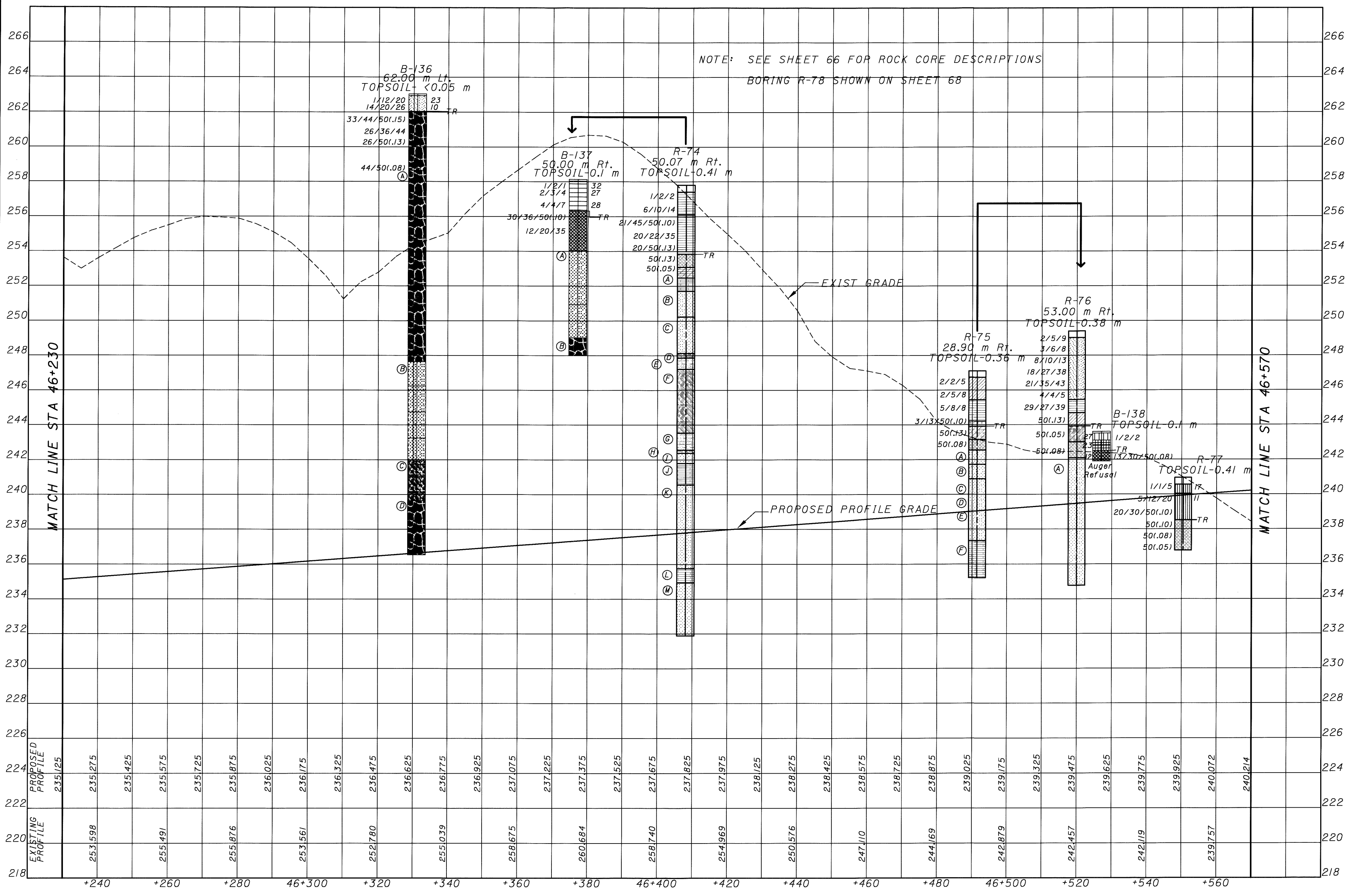
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SOIL PROFILE
STA. 46+230 TO STA. 46+570

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- R-74
- (A) RC-1 HARD GRAY LIMESTONE, SLIGHTLY WEATHERED
CORE LOSS - 30% RQD - 60%
 - (B) RC-2 HARD BROWN SANDSTONE, MICACEOUS, SLIGHTLY WEATHERED TO WEATHERED.
NO CORE LOSS RQD - 100%
 - (C) HARD GRAY SANDSTONE, MICACEOUS, MODERATELY WEATHERED TO WEATHERED.
RC-3 NO CORE LOSS RQD - 100%
RC-4 CORE LOSS - 5% RQD - 80%
 - (D) VERY SOFT TO SOFT GRAY CLAYSTONE, SLIGHTLY WEATHERED TO WEATHERED.
 - (E) SOFT TO MEDIUM HARD GRAY SILTSTONE, SLIGHTLY WEATHERED TO WEATHERED; BROKEN.
 - (F) MEDIUM HARD GRAY CLAYSTONE, MODERATELY WEATHERED; CONTAINS ARENACEOUS LAYERS.
RC-5 CORE LOSS - 8% RQD - 80%
RC-6 CORE LOSS - 73% RQD - 0%
RC-7 CORE LOSS - 3% RQD - 73%
 - (G) MEDIUM HARD TO HARD GRAY SILTSTONE, WEATHERED.
 - (H) RC-8 MEDIUM HARD BROWN CLAYSTONE, MODERATELY WEATHERED
NO CORE LOSS RQD - 97%
 - (I) MEDIUM HARD TO HARD BROWN SANDSTONE, SLIGHTLY MICACEOUS; MODERATELY WEATHERED TO WEATHERED.
 - (J) HARD LIGHT GRAY LIMESTONE, SLIGHTLY WEATHERED.
RC-9 NO CORE LOSS RQD - 100%
 - (K) HARD BROWN AND GRAY SANDSTONE, MICACEOUS, MODERATELY WEATHERED; CONTAINS DARK BROWN LAMINAE.
RC-10 CORE LOSS - 3% RQD - 97%
RC-11 CORE LOSS - 2% RQD - 98%
RC-12 NO CORE LOSS RQD - 100%
 - (L) HARD LIGHT GRAY LIMESTONE, CONTAINS CLAYSTONE CLASTS.
 - (M) RC-13 MEDIUM HARD BROWN AND GRAY SANDSTONE, MICACEOUS.
CORE LOSS - 2% RQD - 98%
RC-14 CORE LOSS - 2% RQD - 98%

- B-136
- (A) RC-1 MUDSTONE; VARIEGATED RED, BROWN, AND GRAY, VERY SOFT TO MEDIUM, HIGHLY BROKEN, NON-BEDDED, SILTY, CALCAREOUS, SLIGHTLY JOINTED, WITH RARE NODULAR LIMESTONE.
CORE LOSS - 23% RQD - 0%
RC-2 CORE LOSS - 2% RQD - 0%
RC-3 CORE LOSS - 56% RQD - 0%
RC-4 CORE LOSS - 78% RQD - 0%
RC-5 CORE LOSS - 40% RQD - 0%
RC-6 CORE LOSS - 28% RQD - 0%
RC-7 CORE LOSS - 90% RQD - 0%
RC-8 CORE LOSS - 12% RQD - 0%
RC-9 NO CORE LOSS RQD - 0%
RC-10 CORE LOSS - 4% RQD - 8%
 - (B) RC-11 SANDSTONE; BROWN TO GRAY, MEDIUM, MASSIVE, FINE TO MEDIUM GRAINED, CROSS-BEDDED, MICACEOUS, SLIGHTLY, FRIABLE.
NO CORE LOSS RQD - 80%
RC-12 CORE LOSS - 4% RQD - 35%
RC-13 NO CORE LOSS RQD - 33%
RC-14 CORE LOSS - 4% RQD - 27%
 - (C) RC-15 CLAYSHALE; GRAY, SOFT TO MEDIUM HARD, HIGHLY BROKEN, SILTY, SLIGHTLY PYRITIC, WITH INTERBEDDED GRAY, MODERATELY HARD, SILTSTONE LENSES UP TO 8 CM THICK.
NO CORE LOSS RQD - 16%
RC-16 CORE LOSS - 50% RQD - 0%
 - (D) RC-17 MUDSTONE; RED AND GRAY, VERY SOFT TO MEDIUM HARD, HIGHLY BROKEN, CALCAREOUS, NON-BEDDED, SLICKENSIDED, SILTY.
CORE LOSS - 42% RQD - 0%
RC-18 NO CORE LOSS RQD - 0%
RC-19 CORE LOSS - 75% RQD - 0%
RC-20 CORE LOSS - 5% RQD - 0%

- B-137
- (A) RC-1 SANDSTONE; BROWN TO GRAY, MEDIUM, MASSIVE, MEDIUM GRAINED, MICACEOUS, CROSS-BEDDED, FRIABLE.
CORE LOSS - 1% RQD - 64%
RC-2 NO CORE LOSS RQD - 62%
 - (B) MUDSTONE; GRAY, VERY SOFT TO SOFT, HIGHLY BROKEN, MICACEOUS, SLIGHTLY PYRITIC.
- R-76
- (A) RC-1 MEDIUM HARD BROWN AND GRAY SANDSTONE, MODERATELY WEATHERED, CONTAINS DARK BROWN LAMINAE AND CLAYSTONE CLASTS.
CORE LOSS - 4% RQD - 94%
RC-2 NO CORE LOSS RQD - 100%
RC-3 NO CORE LOSS RQD - 100%
RC-4 NO CORE LOSS RQD - 100%
RC-5 NO CORE LOSS RQD - 100%
- R-75
- (A) RC-1 MEDIUM HARD BROWN SANDSTONE, MICACEOUS, MODERATELY WEATHERED TO WEATHERED, CONTAINS DARK BROWN LAMINAE.
CORE LOSS - 6% RQD - 94%
 - (B) MEDIUM HARD TO HARD GRAY SANDSTONE, CALCAREOUS, MODERATELY WEATHERED, SLIGHTLY MICACEOUS.
RC-2 NO CORE LOSS RQD - 100%
 - (C) HARD BROWN AND GRAY SANDSTONE, MICACEOUS, MODERATELY WEATHERED.
RC-3 NO CORE LOSS RQD - 100%
 - (D) HARD LIGHT GRAY SANDSTONE, CALCAREOUS, MODERATELY WEATHERED, MICACEOUS.
 - (E) MEDIUM HARD LIGHT GRAY SANDSTONE, MICACEOUS, WEATHERED.
 - (F) HARD LIGHT GRAY LIMESTONE, MICACEOUS, MODERATELY WEATHERED.
RC-4 NO CORE LOSS RQD - 97%

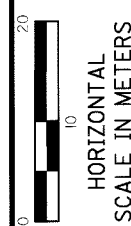
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SOIL PROFILE
STA. 46+230 TO STA. 46+570

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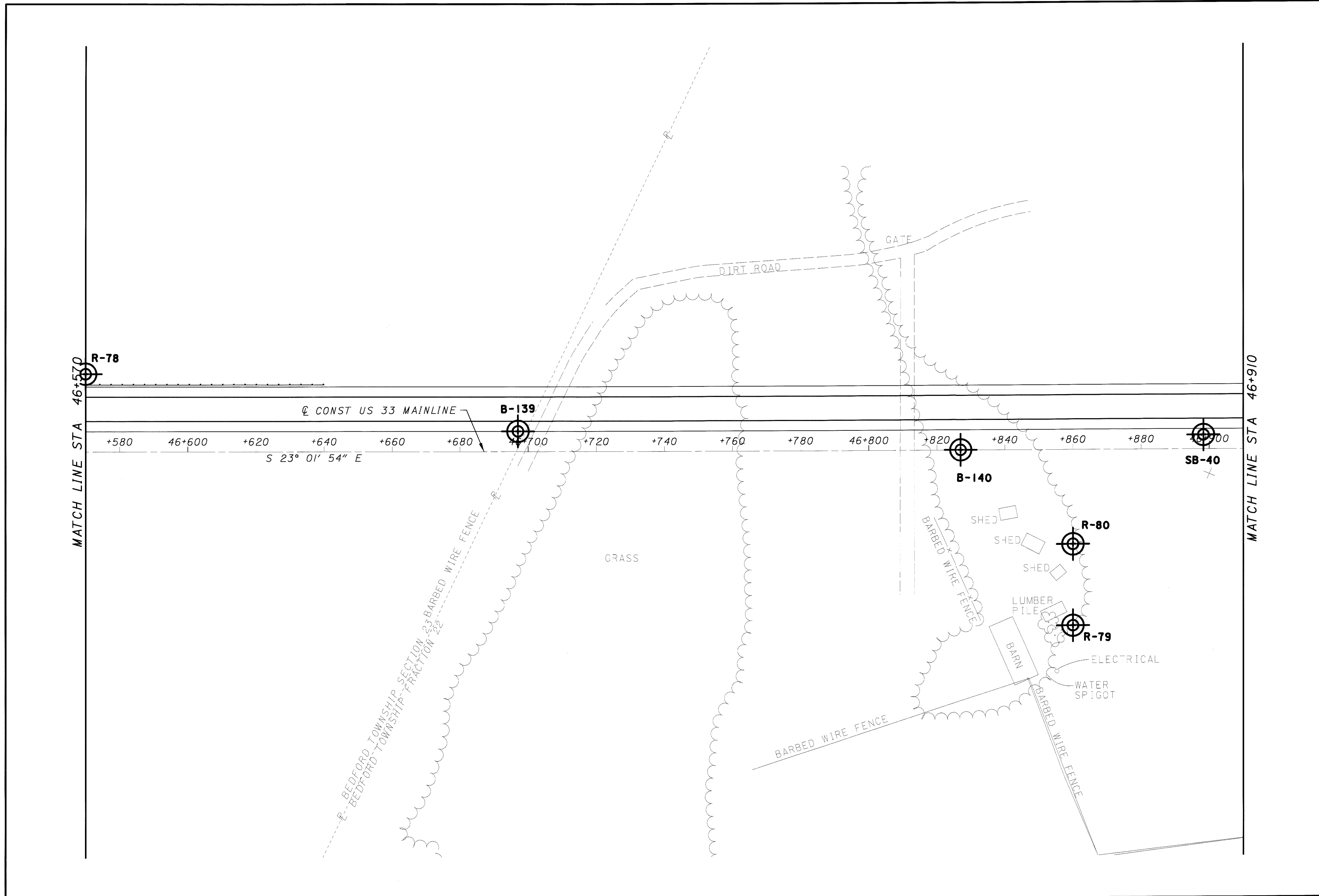
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SOIL PROFILE
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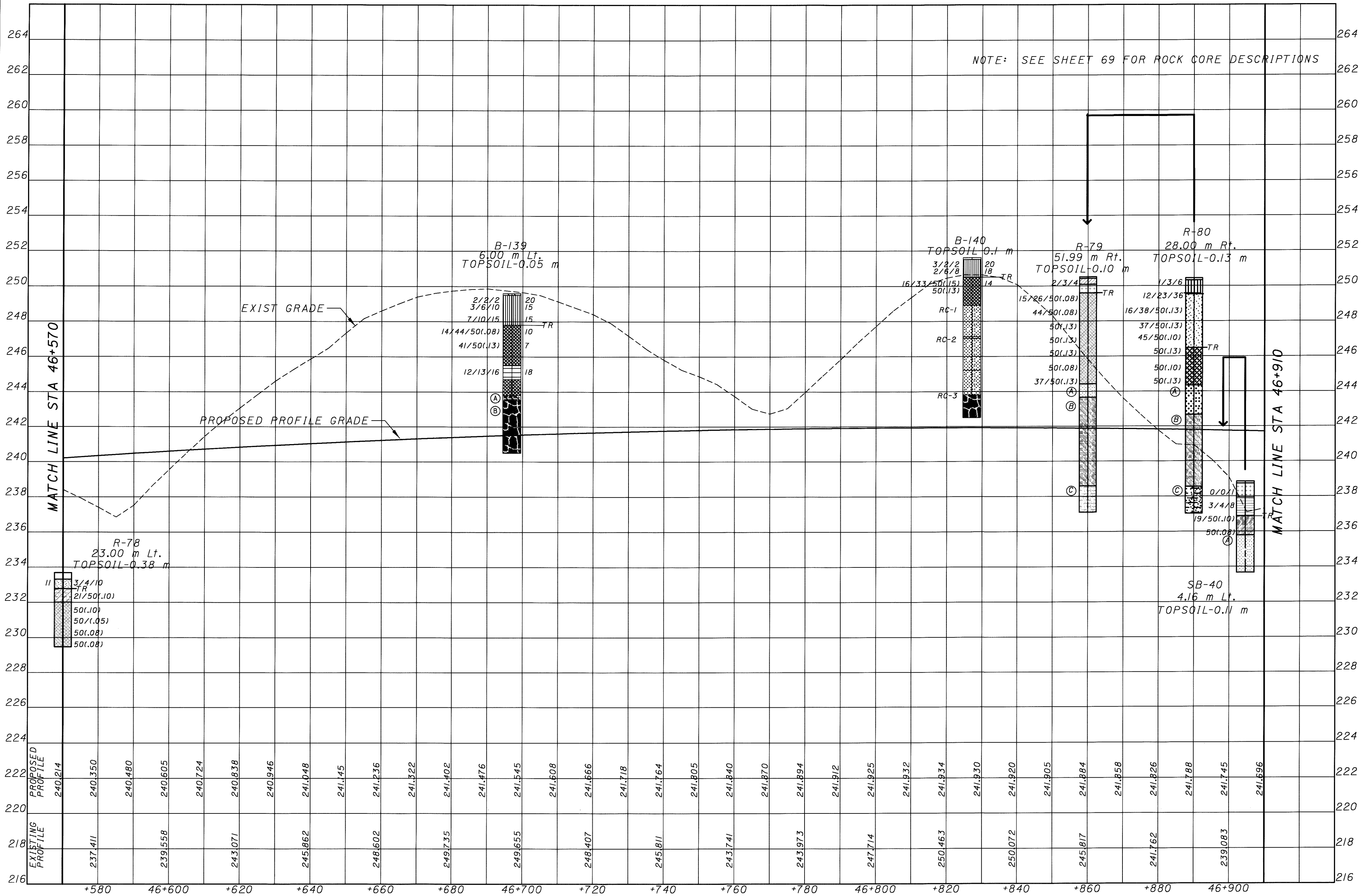
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SOIL PROFILE
STA. 46+570 TO STA. 46+910

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NOTE: SEE SHEET 69 FOR ROCK CORE DESCRIPTIONS



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SB-40
 (A) RC-1 HARD BROWN AND GRAY SANDSTONE, MICACEOUS;
 WEATHERED TO MODERATELY WEATHERED.
 CORE LOSS - 29% RQD - 17%
 RC-2 NO CORE LOSS RQD - 60%

R-79
 (A) RC-1 MEDIUM HARD BROWN SANDSTONE, MICACEOUS,
 WEATHERED.
 CORE LOSS - 23% RQD - 67%
 (B) SOFT BROWN CLAYSTONE, SEVERLY WEATHERED.
 RC-2 CORE LOSS - 20% RQD - 60%
 RC-3 CORE LOSS - 52% RQD - 20%
 RC-4 CORE LOSS - 67% RQD - 0%
 (C) RC-5 MEDIUM HARD GRAY SILTSTONE WITH
 INTERBEDDED, SANDSTONE, WEATHERED.
 NO CORE LOSS RQD - 100%

R-80
 (A) RC-1 MEDIUM HARD, BROWN SANDSTONE, MICACEOUS,
 WEATHERED.
 CORE LOSS - 12% RQD - 88%
 RC-2 CORE LOSS - 22% RQD - 62%
 (B) SOFT, BROWN AND GRAY CLAYSTONE, WEATHERED
 TO SEVERELY WEATHERED.
 RC-3 CORE LOSS - 58% RQD - 0%
 RC-4 CORE LOSS - 60% RQD - 0%
 (C) RC-5 MEDIUM HARD, GRAY SILTSTONE, SLIGHTLY
 MICACEOUS, WEATHERED.
 NO CORE LOSS RQD - 100%

B-139
 (A) RC-1 CLAY-SHALE; GRAY, SOFT, HIGHLY BROKEN,
 SILTY, MICACEOUS, SLIGHTLY WEATHERED.
 CORE LOSS - 21% RQD - 0%
 (B) MUDSTONE, RED AND GRAY, VERY SOFT TO
 SOFT, HIGHLY BROKEN, NON-BEDDED, SILTY,
 WITH NODULAR LIMESTONE.
 RC-2 CORE LOSS - 60% RQD - 0%
 RC-3 CORE LOSS - 50% RQD - 0%
 RC-4 CORE LOSS - 68% RQD - 0%
 RC-5 CORE LOSS - 40% RQD - 0%

B-140
 RC-1 SANDSTONE; BROWN TO DARK BROWN, MEDIUM,
 FINE GRAINED, SLIGHTLY BROKEN, MICACEOUS.
 CORE LOSS - 25% RQD - 36%
 RC-2 SANDSTONE; GRAY, HARD, MASSIVE, FINE
 GRAINED, CALCAREOUS, MICACEOUS.
 NO CORE LOSS RQD - 70%
 SANDSTONE; DARK BROWN TO BROWN, MEDIUM
 TO MODERATELY HARD, SLIGHTLY BROKEN,
 SLIGHTLY JOINTED, FINE TO MEDIUM
 GRAINED, MICACEOUS, CROSS-BEDDED,
 SLIGHTLY CARBONACEOUS.
 RC-3 MUDSTONE; BROWNISH GRAY, SOFT, HIGHLY
 BROKEN, NON-BEDDED, SILTY.
 NO CORE LOSS RQD - 24%

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SOIL PROFILE
 STA. 46+570 TO STA. 46+910

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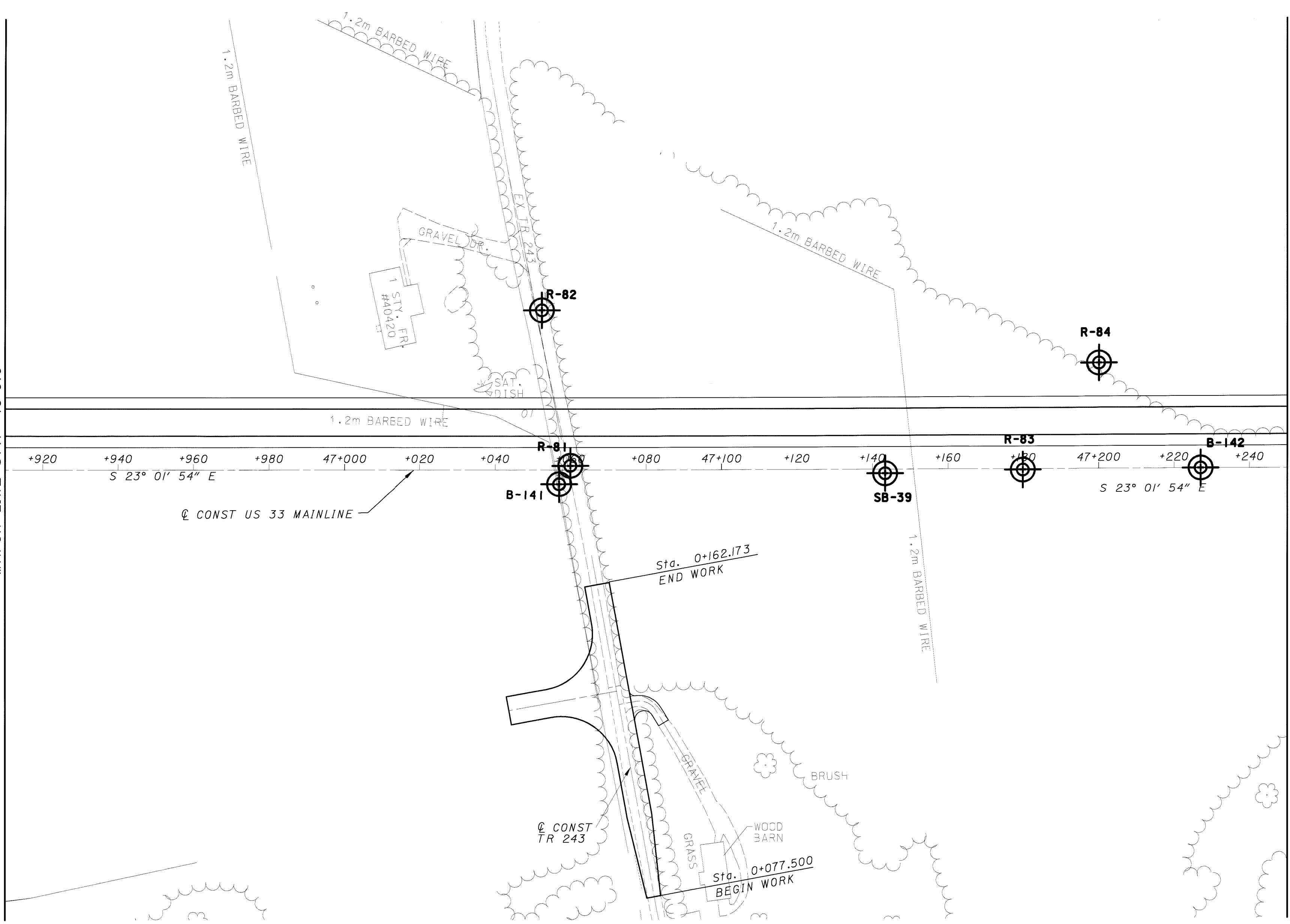
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SOIL PROFILE
STA. 46+910 TO STA. 47+250

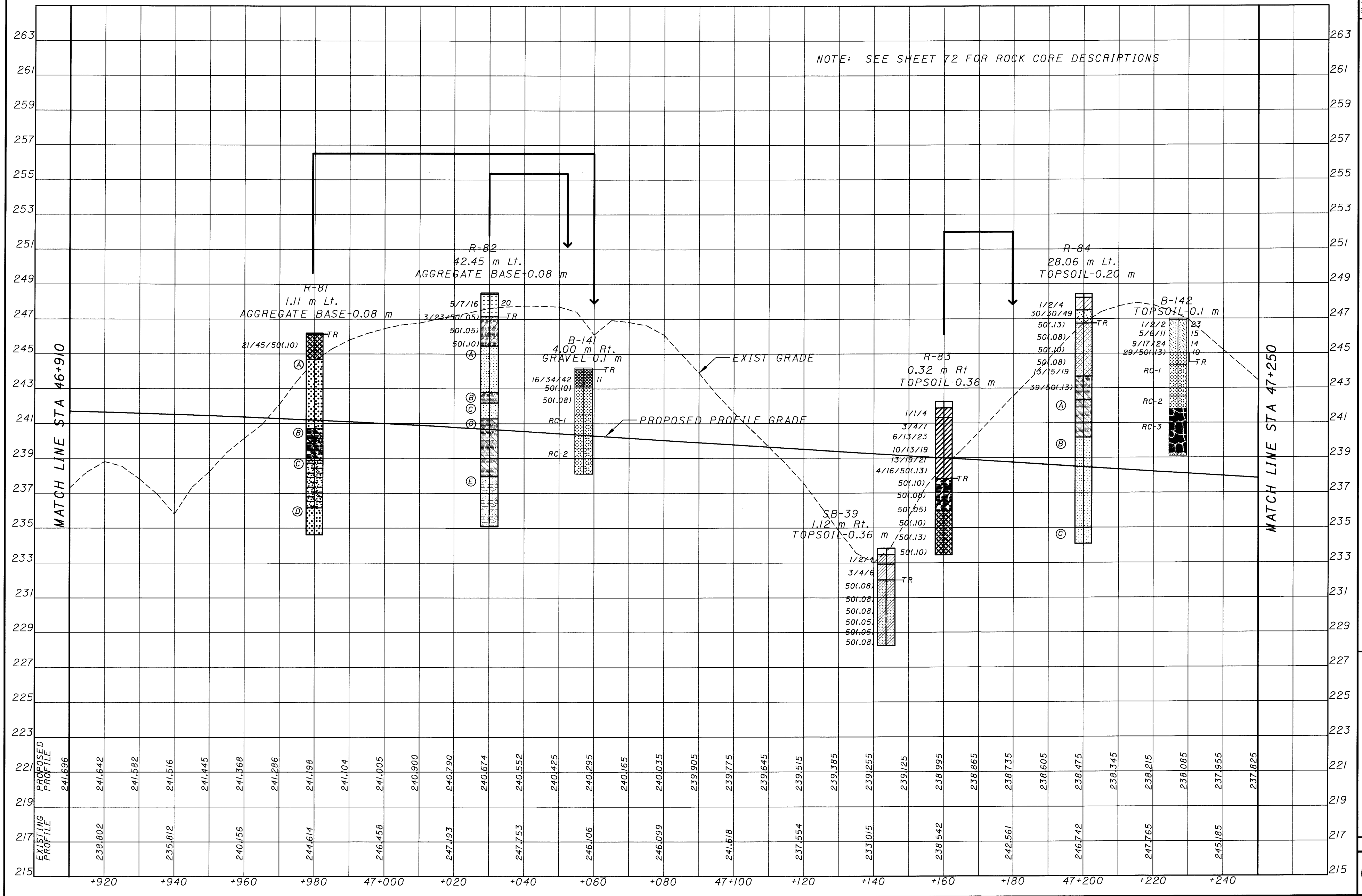
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MATCH LINE STA 46+910

MATCH LINE STA 47+250



NOTE: SEE SHEET 72 FOR ROCK CORE DESCRIPTIONS



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R-81

(A) RC-1 SOFT TO MEDIUM HARD BROWN SANDSTONE, POORLY CEMENTED, MICACEOUS, SEVERELY WEATHERED WITH DECOMPOSED LAYERS.
CORE LOSS - 36% RQD - 29%

RC-2 CORE LOSS - 100% RQD - 0%

RC-3 CORE LOSS - 13% RQD - 43%

(B) RC-4 SOFT GRAY AND RED CLAYSTONE, CONTAINS SILTSTONE AND LIMESTONE CLASTS, WEATHERED.
CORE LOSS - 53% RQD - 0%

RC-5 CORE LOSS - 27% RQD - 10%

(C) SOFT TO MEDIUM HARD GRAY SILTSTONE, MICACEOUS, BROKEN, CONTAINS CALCAREOUS BANDING, WEATHERED.

RC-6 NO CORE LOSS RQD - 17%

(D) RC-7 HARD, GRAY SANDSTONE, MICACEOUS, PYRITIC, SLIGHTLY CALCAREOUS WITH ARGILLACEOUS INTERBEDS, WEATHERED TO SLIGHTLY WEATHERED.
NO CORE LOSS RQD - 88%

B-141

RC-1 SANDSTONE; BROWN, SOFT, HIGHLY BROKEN, VERY FINE GRAINED, SILTY, MICACEOUS, FRIABLE.
CORE LOSS - 4% RQD - 0%

RC-2 SANDSTONE; DARK BROWN, MEDIUM, SLIGHTLY BROKEN, MICACEOUS, CROSS-BEDDED.
CORE LOSS - 17% RQD - 45%

R-82

(A) RC-1 SOFT BROWN SANDSTONE, MICACEOUS, WEATHERED TO SEVERELY WEATHERED.
CORE LOSS - 90% RQD - 0%

RC-2 CORE LOSS - 28% RQD - 0%

(B) SOFT GRAY CLAYSTONE, SLIGHTLY CALCAREOUS, SEVERELY WEATHERED, VERY BROKEN.

RC-3 NO CORE LOSS RQD - 10%

(C) SOFT BROWN SANDSTONE, MICACEOUS; SEVERELY WEATHERED.

(D) SOFT GRAY AND BROWN CLAYSTONE, SLIGHTLY CALCAREOUS, SEVERELY WEATHERED, VERY BROKEN.

RC-4 CORE LOSS - 58% RQD - 0%

RC-5 CORE LOSS - 28% RQD - 25%

RC-6 CORE LOSS - 2% RQD - 67%

(E) MEDIUM HARD GRAY SILTSTONE, SLIGHTLY MICACEOUS; WEATHERED; CONTAINS ARGILLACEOUS AND ARENACEOUS LAYERS.

RC-7 NO CORE LOSS RQD - 100%

B-142

RC-1 SANDSTONE; BROWN, MEDIUM HARD, HIGHLY BROKEN, FINE TO MEDIUM GRAINED, MICACEOUS, CROSS-BEDDED, FRIABLE.
CORE LOSS - 5% RQD - 0%

RC-2 MUDSTONE; GRAY, VERY SOFT TO SOFT, HIGHLY BROKEN, SILTY, NON-BEDDED.
NO CORE LOSS RQD - 0%

RC-3 SILTSTONE; GRAY, MEDIUM HARD, MASSIVE, ARENACEOUS, MICACEOUS, CROSS-BEDDED.
NO CORE LOSS RQD - 7%

R-84

(A) RC-1 SOFT GRAY CLAYSTONE; WEATHERED.
CORE LOSS - 6% RQD - 63%

RC-2 CORE LOSS - 5% RQD - 82%

(B) SOFT TO MEDIUM HARD GRAY SANDSTONE, ARGILLACEOUS, SLIGHTLY MICACEOUS, WEATHERED.

RC-3 NO CORE LOSS RQD - 100%

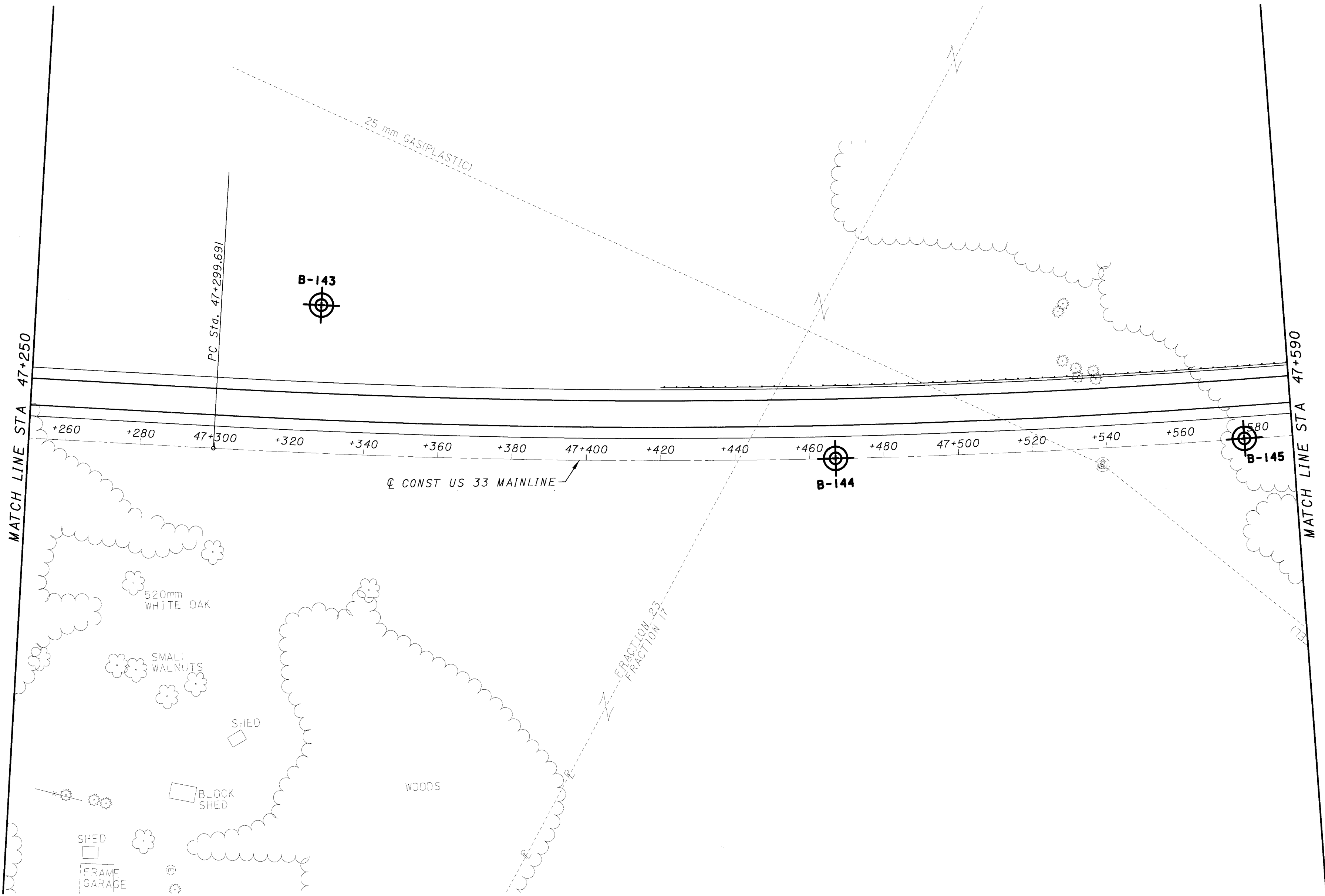
RC-4 CORE LOSS - 3% RQD - 98%

(C) RC-5 SOFT BROWN AND GRAY SANDSTONE, ARGILLACEOUS, MICACEOUS; WEATHERED; BROKEN; CONTAINS LIMESTONE CLASTS.
NO CORE LOSS RQD - 89%

SOIL PROFILE
STA. 46+910 TO 47+250

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Scale bar: 0, 10, 20 meters.

HORIZONTAL SCALE IN METERS

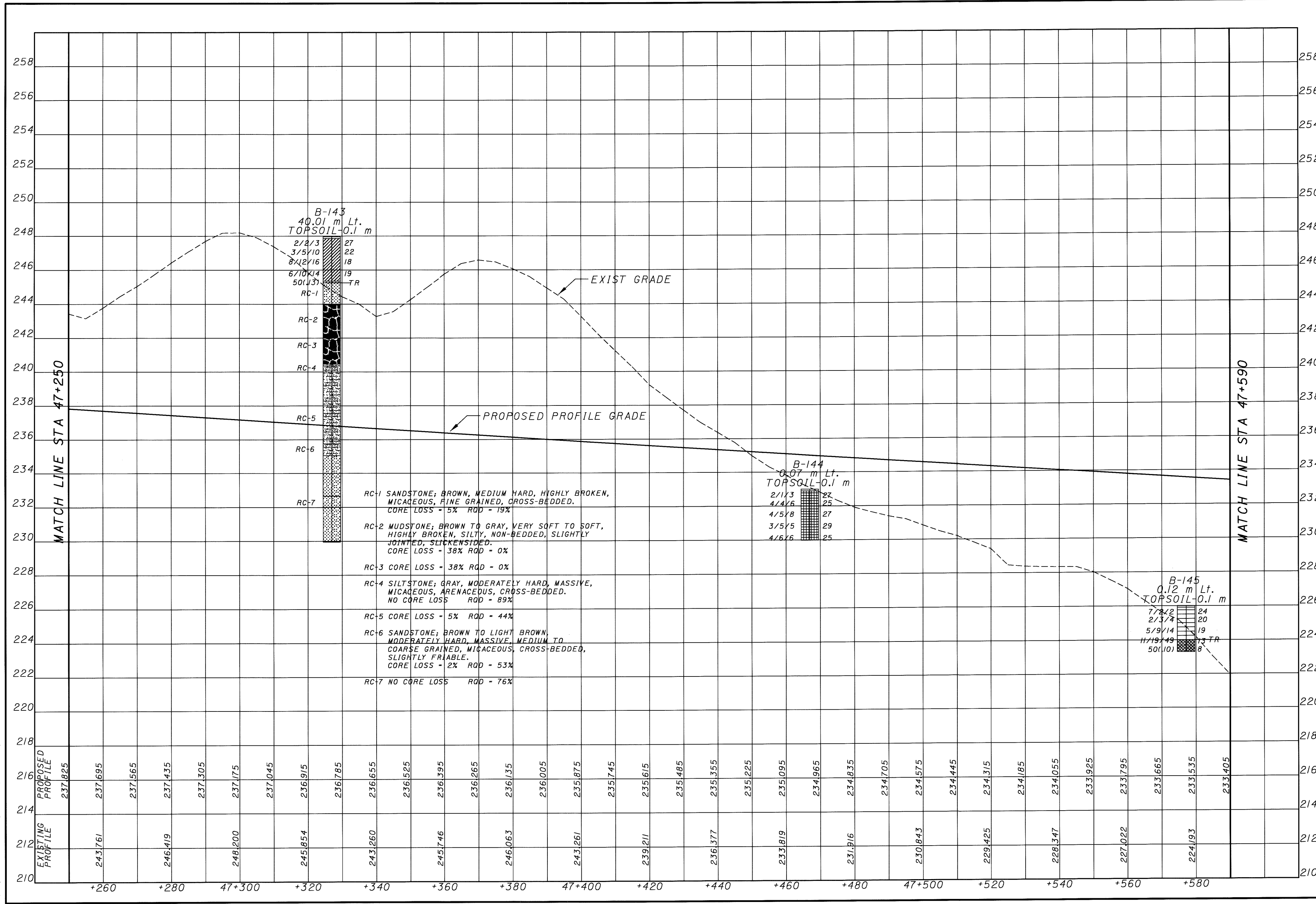
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SOIL PROFILE
STA. 47+250 TO STA. 47+590

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**SOIL PROFILE
STA. 47+250 TO STA. 47+590**

ATH-33-40.981



B-143
40.01 m Lt.
TOPSOIL-0.1 m
2/2/3 27
3/5/10 22
8/12/16 18
6/10/14 19
50(13) TR

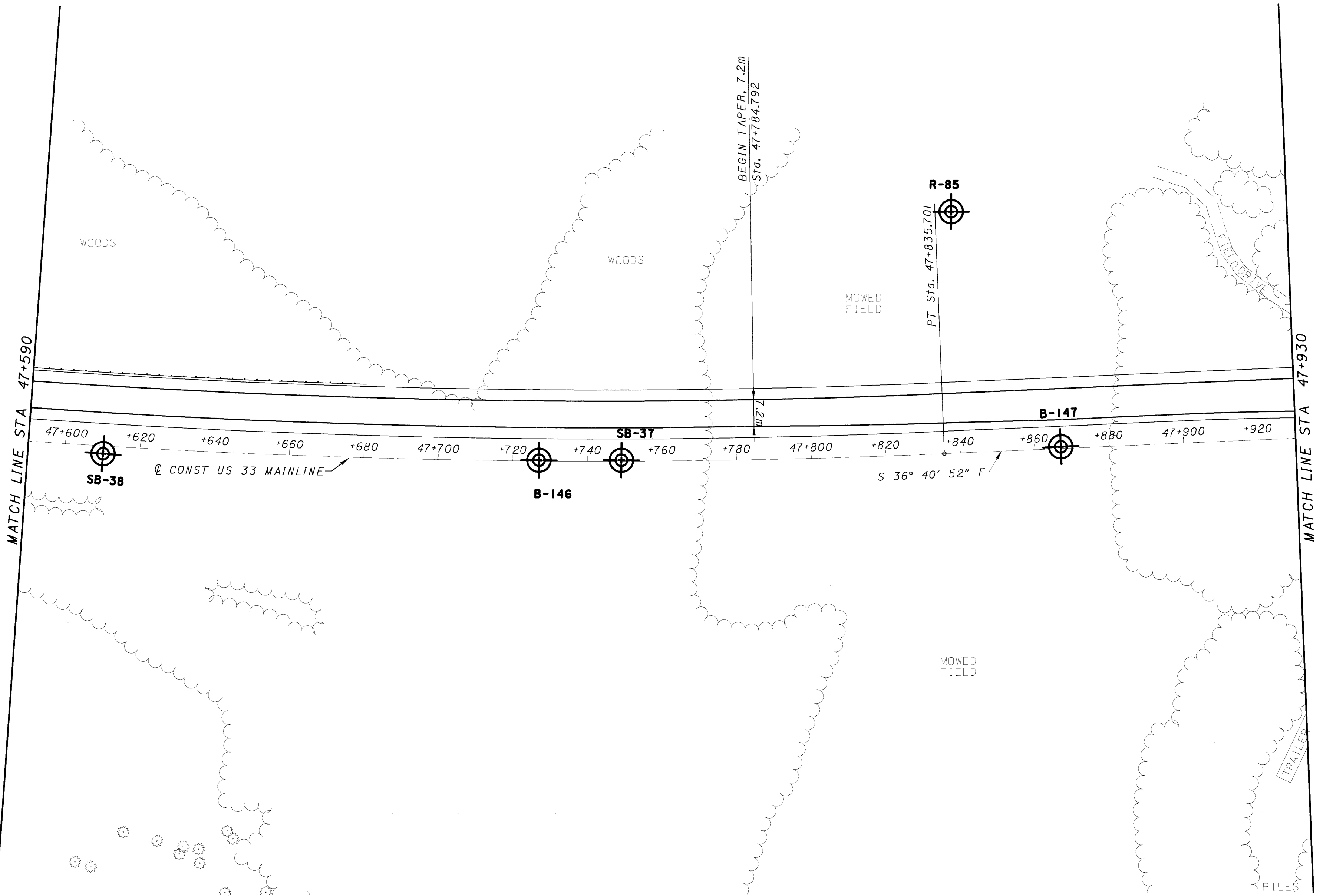
B-144
0.07 m Lt.
TOPSOIL-0.1 m
2/1/3 27
4/4/6 25
4/5/8 27
3/5/5 29
4/6/6 25

B-145
0.12 m Lt.
TOPSOIL-0.1 m
7/2/2 24
2/3/4 20
5/9/14 19
11/19/19 13 TR
50(10) 8

- RC-1 SANDSTONE; BROWN, MEDIUM HARD, HIGHLY BROKEN, MICACEOUS, FINE GRAINED, CROSS-BEDED. CORE LOSS - 5% RQD - 19%
- RC-2 MUDSTONE; BROWN TO GRAY, VERY SOFT TO SOFT, HIGHLY BROKEN, SILTY, NON-BEDED, SLIGHTLY JOINTED, SLICKENSIDED. CORE LOSS - 38% RQD - 0%
- RC-3 CORE LOSS - 38% RQD - 0%
- RC-4 SILTSTONE; GRAY, MODERATELY HARD, MASSIVE, MICACEOUS, ARENACEOUS, CROSS-BEDED. NO CORE LOSS RQD - 89%
- RC-5 CORE LOSS - 5% RQD - 44%
- RC-6 SANDSTONE; BROWN TO LIGHT BROWN, MODERATELY HARD, MASSIVE, MEDIUM TO COARSE GRAINED, MICACEOUS, CROSS-BEDED, SLIGHTLY FRIABLE. CORE LOSS - 2% RQD - 53%
- RC-7 NO CORE LOSS RQD - 76%

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SCALE IN METERS

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SOIL PROFILE
STA. 47+590 TO STA. 47+930

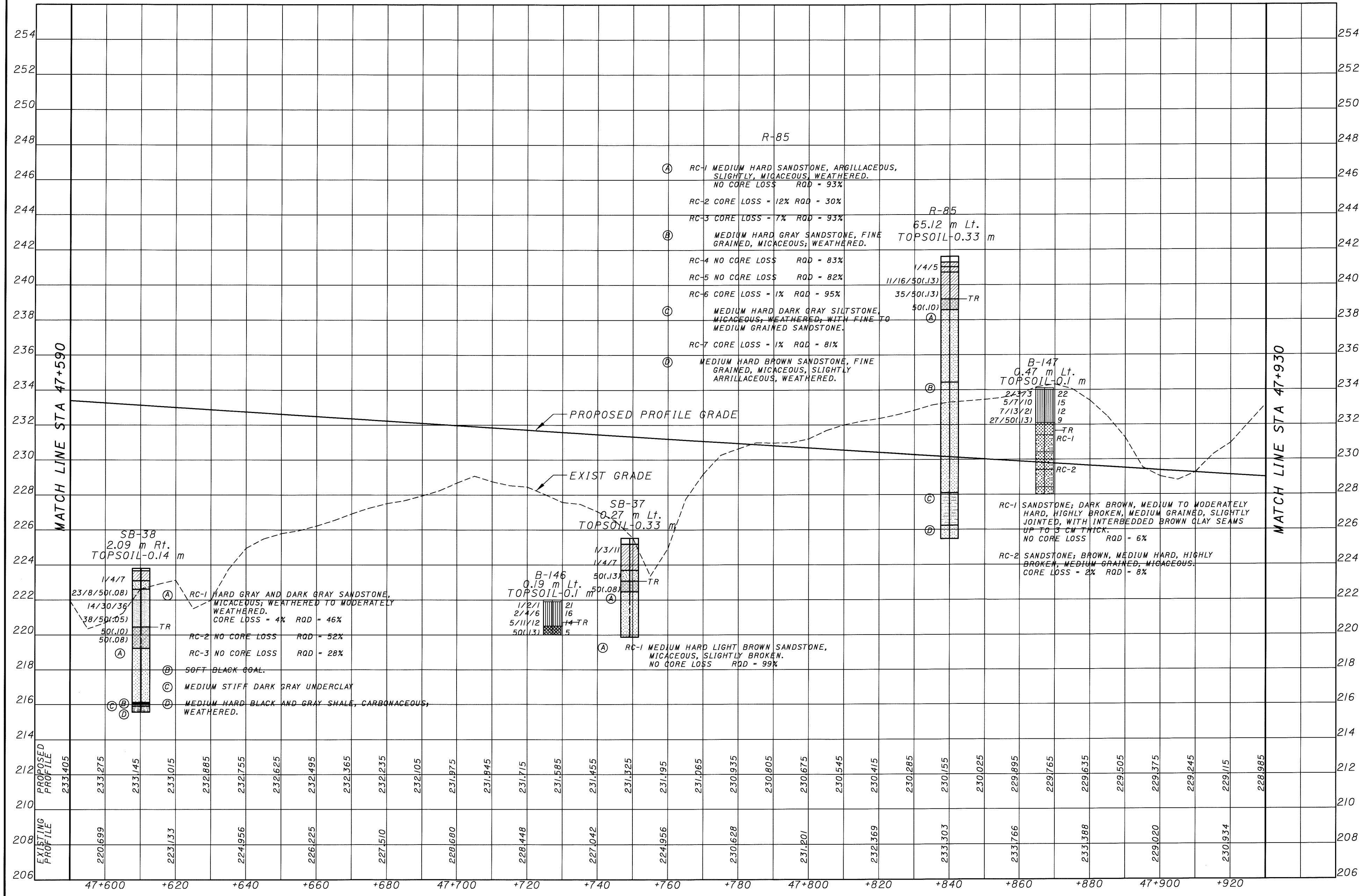
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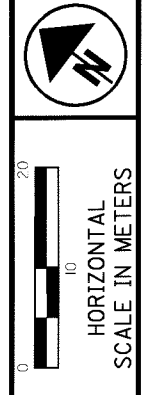
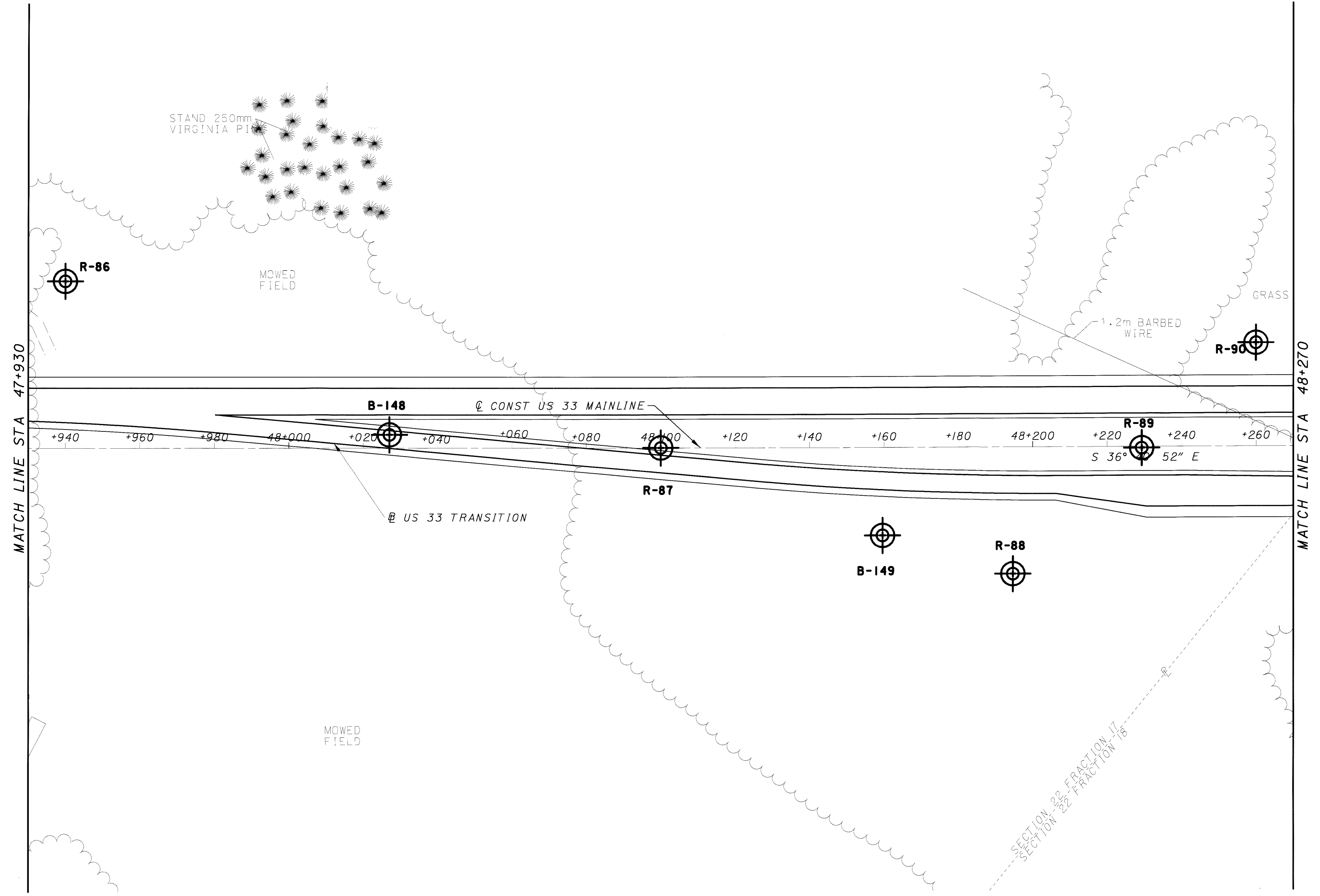
SOIL PROFILE
STA. 47+590 TO STA. 47+930

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CALCULATED	RS
CHECKED	DAA

SOIL PROFILE
STA. 47+930 TO STA. 48+270

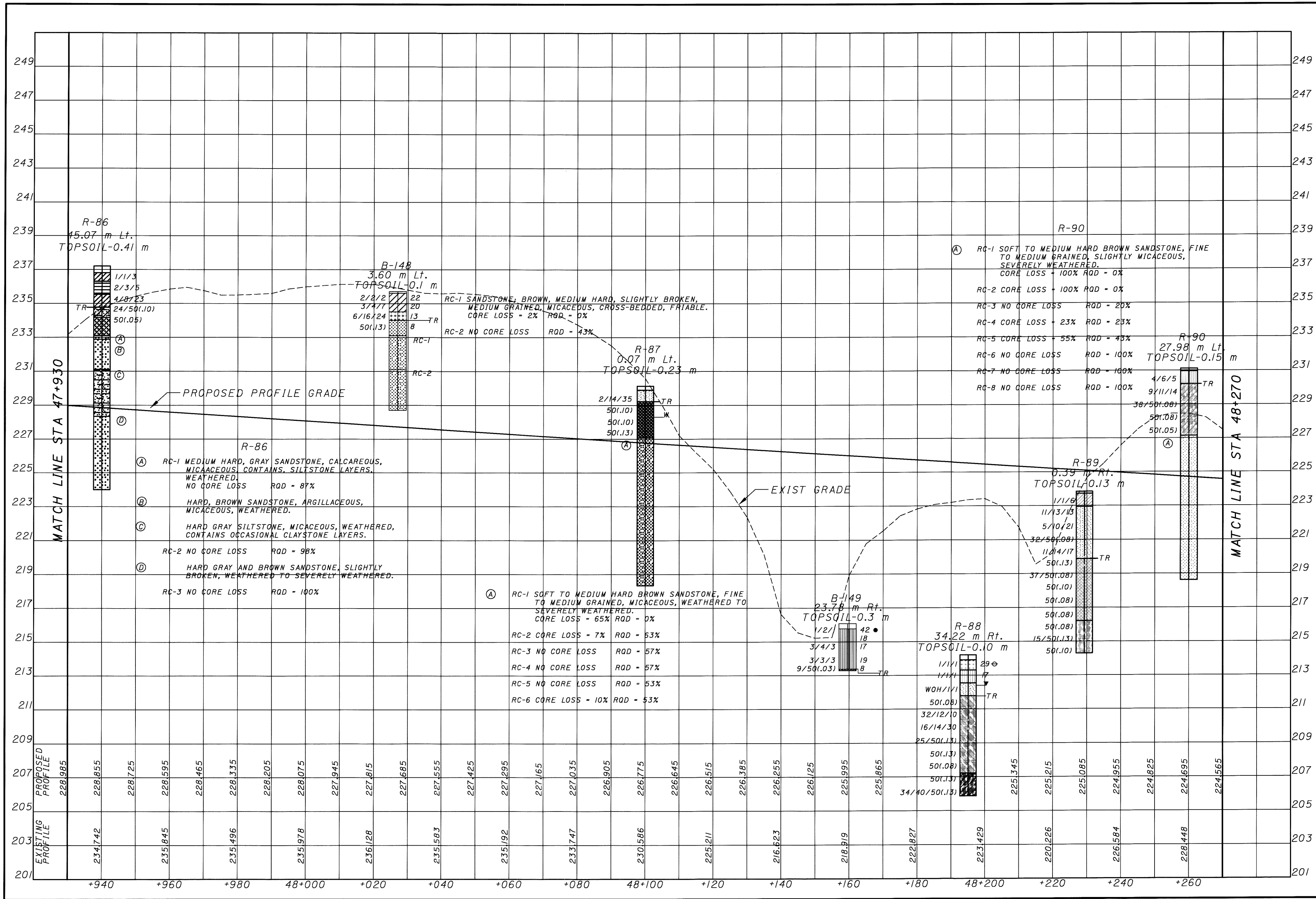
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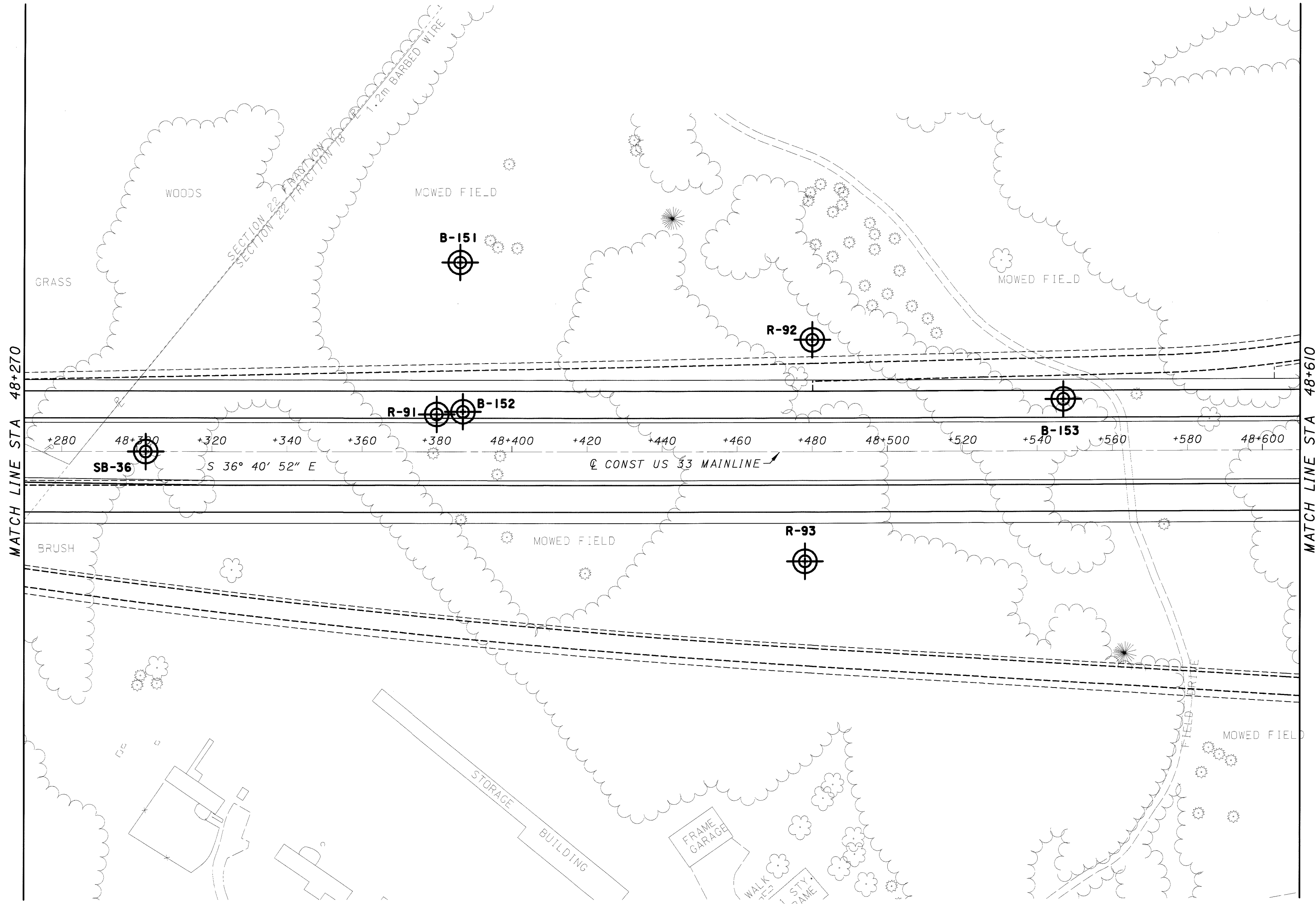
SOIL PROFILE
STA. 47+930 TO STA. 48+270

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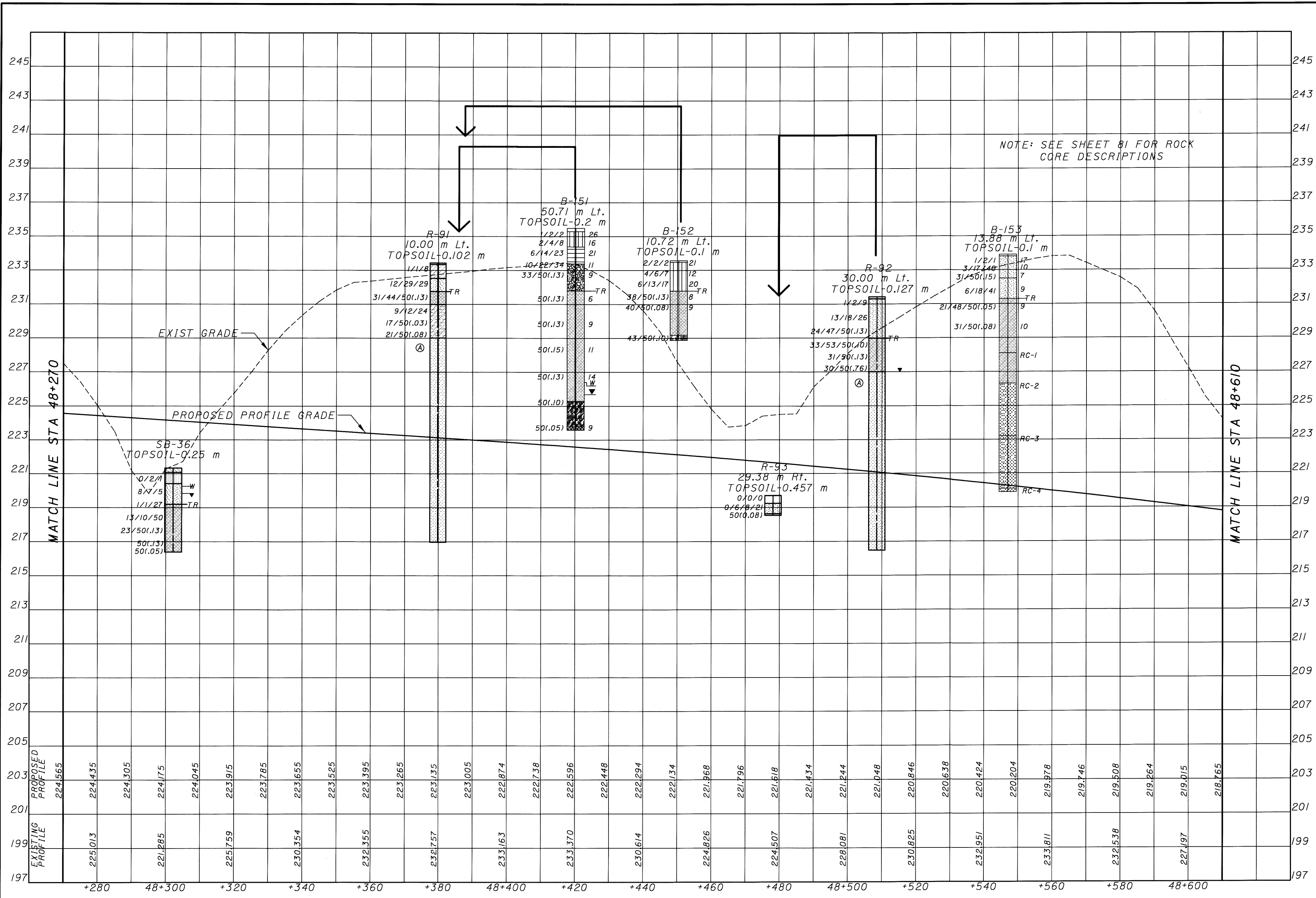
SOIL PROFILE
STA. 48+270 TO STA. 48+610

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R-91
 Ⓐ RC-1 HARD, GRAY, SANDSTONE, ARGILLACEOUS, FINE TO VERY FINE
 GRAINED, MICACEOUS, WEATHERED.
 NO CORE LOSS RQD = 88%
 RC-2 NO CORE LOSS RQD = 100%
 RC-3 NO CORE LOSS RQD = 100%
 RC-4 NO CORE LOSS RQD = 100%
 RC-5 NO CORE LOSS RQD = 98%

R-92
 Ⓐ RC-1 MEDIUM HARD, BROWN SANDSTONE, SLIGHTLY BROKEN,
 ARGILLACEOUS, WTH.
 CORE LOSS = 19% RQD = 76%
 RC-2 NO CORE LOSS RQD = 100%
 RC-3 NO CORE LOSS RQD = 100%
 RC-4 NO CORE LOSS RQD = 100%

B-153
 RC-1 SANDSTONE; BROWN, VERY SOFT, HIGHLY BROKEN, MEDIUM
 GRAINED, SILTY, MICACEOUS, FRIABLE, WEATHERED.
 NO CORE LOSS RQD = 0%
 RC-2 SANDSTONE; BROWN, VERY SOFT TO SOFT, HIGHLY
 BROKEN, MEDIUM GRAINED, MICACEOUS, FRIABLE.
 CORE LOSS = 33% RQD = 0%
 RC-3 SANDSTONE; BROWN, MEDIUM, HIGHLY BROKEN,
 MICACEOUS, FRIABLE, SLIGHTLY WEATHERED.
 CORE LOSS = 18% RQD = 0%
 RC-4 CORE LOSS = 35% RQD = 0%

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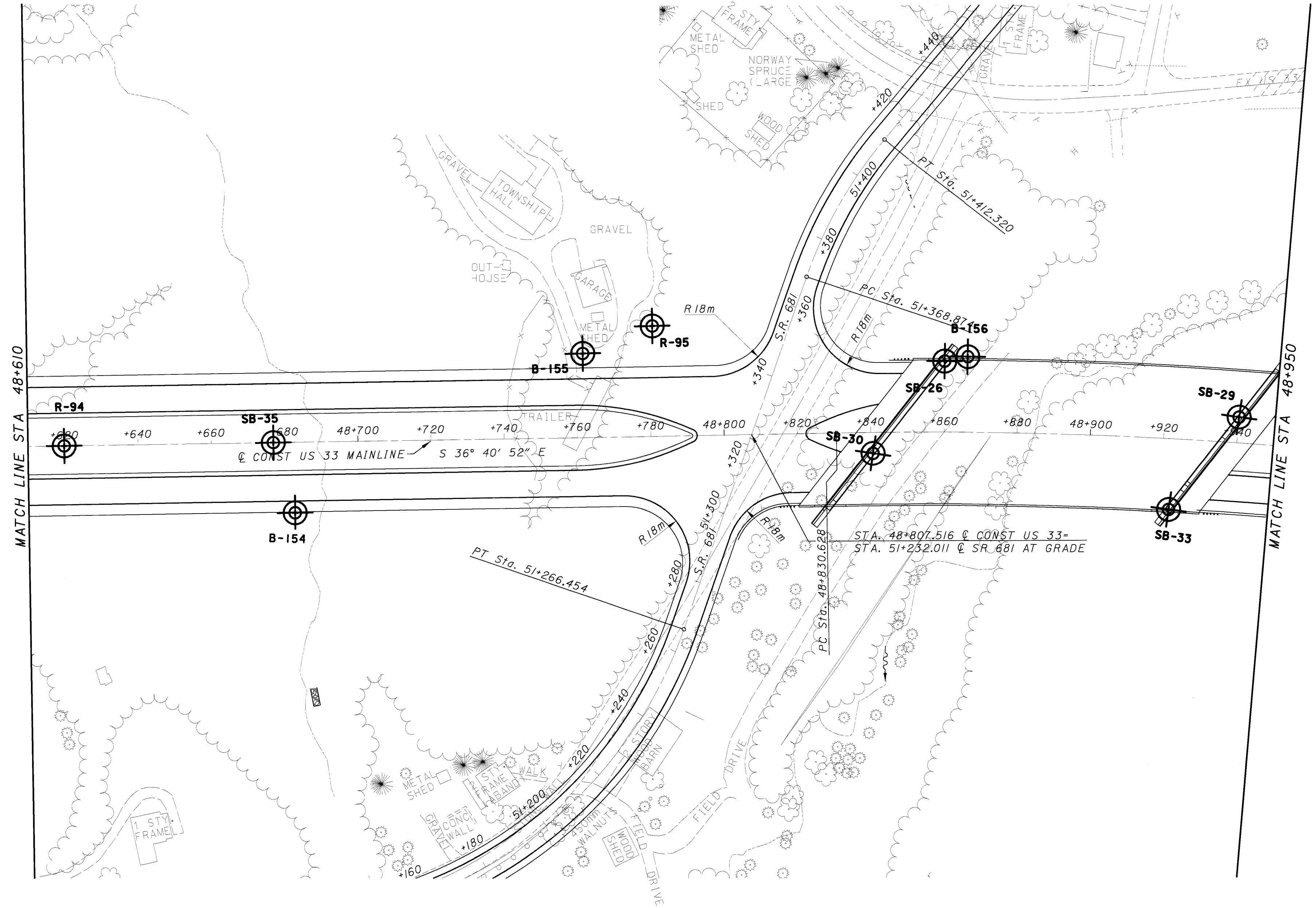
SOIL PROFILE
 STA. 48+270 TO STA. 48+610

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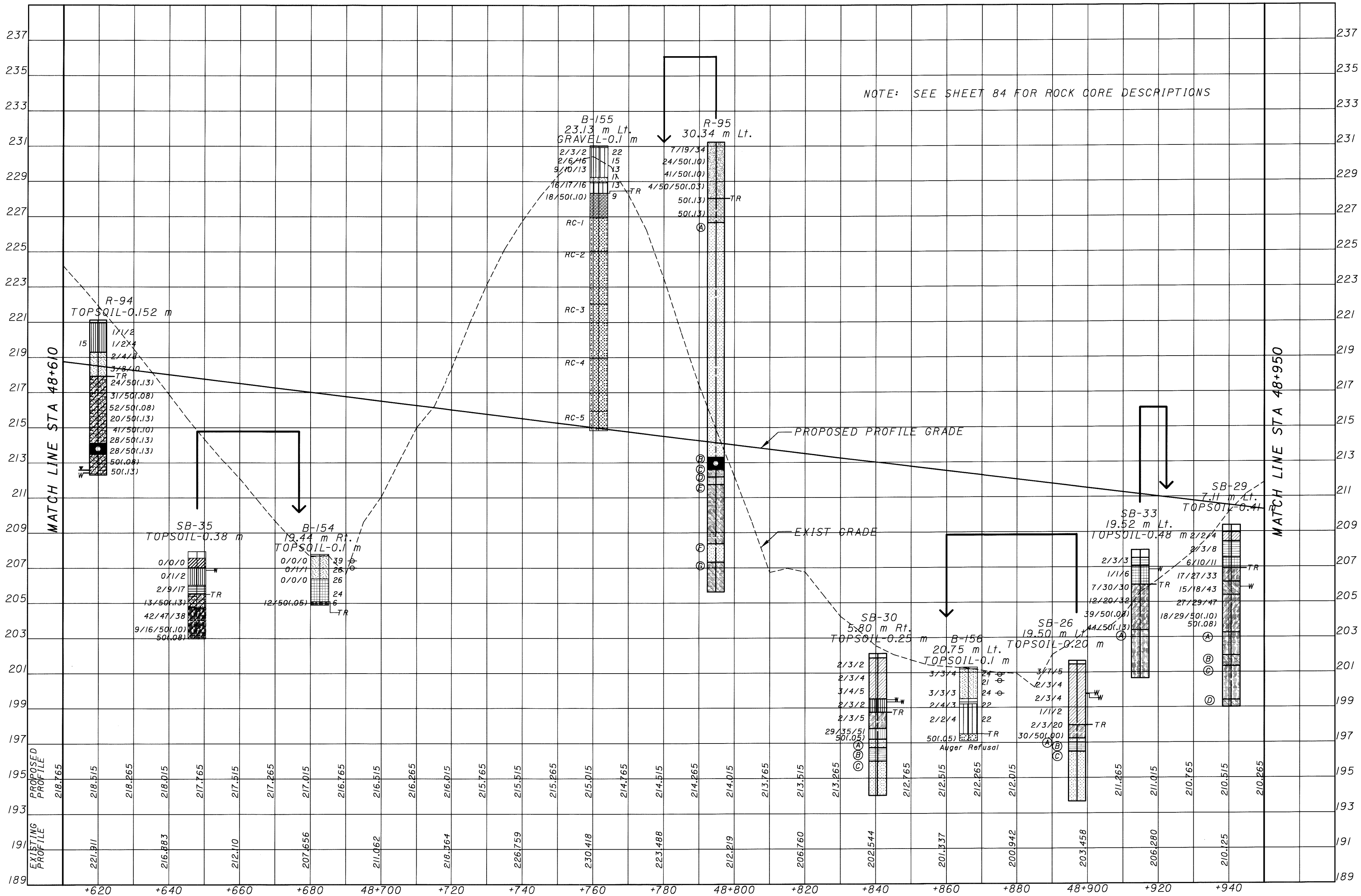
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HORIZONTAL
SCALE IN METERS

SOIL PROFILE
STA. 48+610 TO STA. 48+950

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SOIL PROFILE
STA. 48+610 TO STA. 48+950

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R-95

- (A) RC-1 MEDIUM HARD BROWN SANDSTONE, MICACEOUS; POORLY CEMENTED; BROKEN; WEATHERED; CONTAINS ARGILLACEOUS CLASTS; FRIABLE.
CORE LOSS-14% RQD-86%
- RC-2 CORE LOSS-5% RQD-90%
- RC-3 CORE LOSS-15% RQD-85%
- RC-4 CORE LOSS-5% RQD-68%
- RC-5 NO CORE LOSS RQD-100%
- RC-6 CORE LOSS-7% RQD-93%
- RC-7 CORE LOSS-1% RQD-87%
- (B) RC-8 SOFT BLACK COAL, WEATHERED.
CORE LOSS-12% RQD-22%
- (C) SOFT GRAY CLAYSTONE, WEATHERED TO SLIGHTLY WEATHERED.
- (D) MEDIUM HARD TO HARD GRAY LIMESTONE, WEATHERED.
- (E) RC-9 SOFT GRAY CLAYSTONE, SLIGHTLY MICACEOUS; CONTAINS SILTSTONE CLASTS; SLIGHTLY WEATHERED.
CORE LOSS-80% RQD-0%
- RC-10 CORE LOSS-0% RQD-88%
- (F) RC-11 VERY SOFT BROWN SANDSTONE, POORLY CEMENTED; WEATHERED.
CORE LOSS-68% RQD-8%
- (G) RC-12 SOFT GRAY, RED, AND BROWN CLAYSTONE, SLIGHTLY MICACEOUS; ARENACEOUS.
NO CORE LOSS RQD-95%

B-155

- RC-1 SANDSTONE; BROWN, MEDIUM, SLIGHTLY BROKEN, COARSE TO MEDIUM GRAINED, CROSS-BEDDED, FRIABLE.
CORE LOSS-1% RQD = 22%
- RC-2 CORE LOSS = 11% RQD = 25%
- RC-3 SANDSTONE; BROWN TO GRAY, MEDIUM, MASSIVE, MEDIUM TO COARSE GRAINED, MICACEOUS, CROSS-BEDDED, FRIABLE.
NO CORE LOSS RQD = 47%
- RC-4 CORE LOSS = 10% RQD = 42%
- RC-5 NO CORE LOSS RQD = 21%

SB-26

- (A) RC-1 MEDIUM HARD GRAY FINE GRAINED SANDSTONE, MICACEOUS; WEATHERED.
NO CORE LOSS RQD = 100%
- (B) HARD LIGHT GRAY LIMESTONE, MICACEOUS, ARENACEOUS; WEATHERED TO SLIGHTLY WEATHERED.
- (C) RC-2 NO CORE LOSS RQD = 100%
MEDIUM HARD TO HARD GRAY FINE TO MEDIUM GRAINED SANDSTONE, MICACEOUS; WEATHERED TO SLIGHTLY WEATHERED.

SB-29

- (A) RC-1 SOFT TO MEDIUM HARD GRAY SHALE, ARENACEOUS; WEATHERED.
CORE LOSS = 48% RQD = 38%
- (B) RC-2 SOFT TO MEDIUM HARD RED CLAYSTONE; WEATHERED
NO CORE LOSS RQD = 95%
- (C) MEDIUM HARD GRAY SHALE, ARENACEOUS; WEATHERED.
- (D) RC-3 NO CORE LOSS RQD = 100%
SOFT TO MEDIUM HARD RED CLAYSTONE; WEATHERED TO SEVERELY WEATHERED.

SB-30

- (A) RC-1 MEDIUM HARD BROWN SANDSTONE; SEVERELY WEATHERED.
NO CORE LOSS RQD = 67%
- (B) HARD GRAY LIMESTONE, ARENACEOUS; SLIGHTLY WEATHERED.
- (C) RC-2 NO CORE LOSS RQD = 92%
HARD GRAY SANDSTONE; WEATHERED TO SLIGHTLY WEATHERED.
- RC-3 NO CORE LOSS RQD = 100%

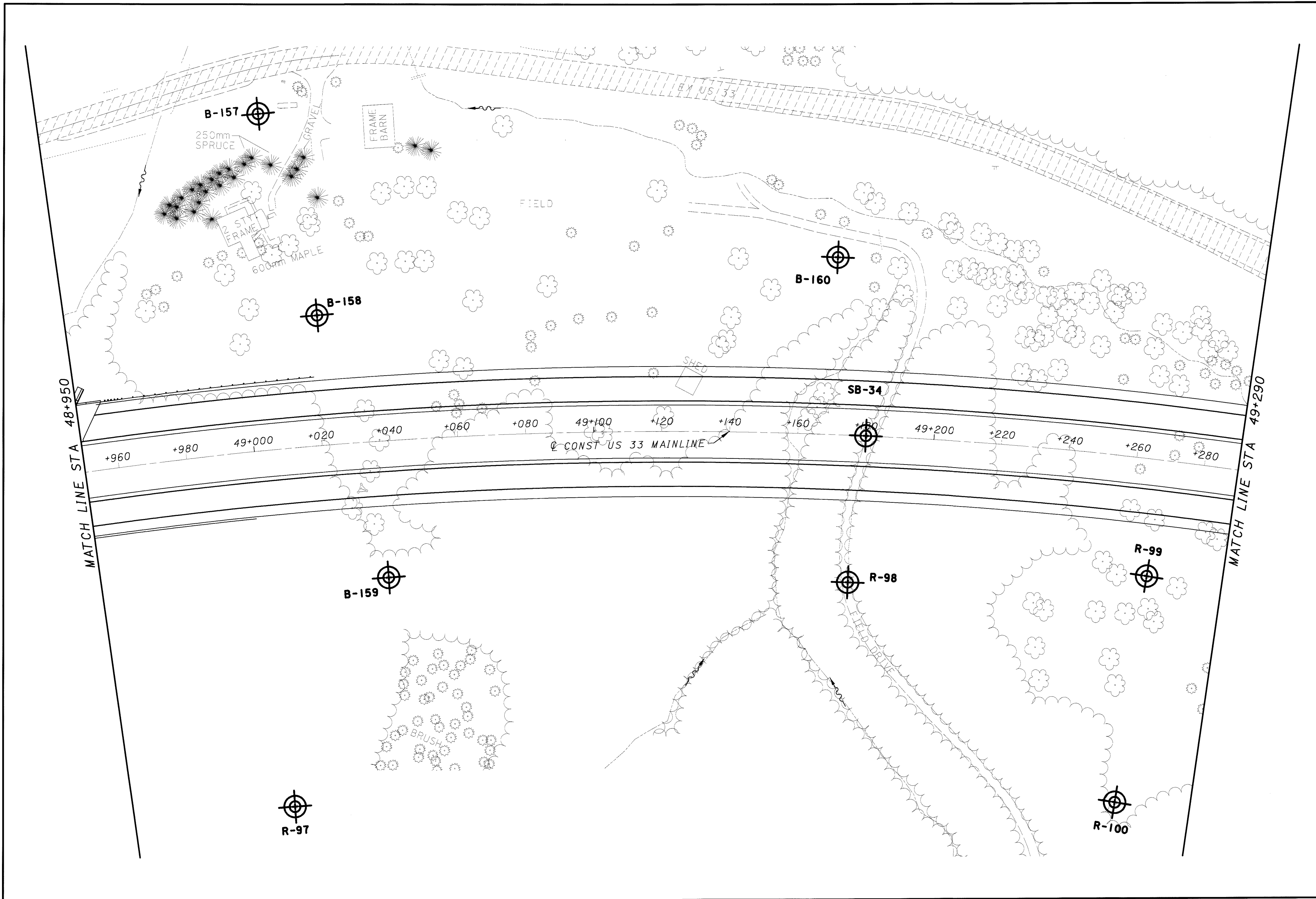
SB-33


- (A) RC-1 SOFT TO MEDIUM HARD BROWN SHALE; SEVERELY WEATHERED TO WEATHERED.
CORE LOSS = 38% RQD = 63%
- RC-2 NO CORE LOSS RQD = 100%

SOIL PROFILE
STA. 48+610 TO STA. 48+950

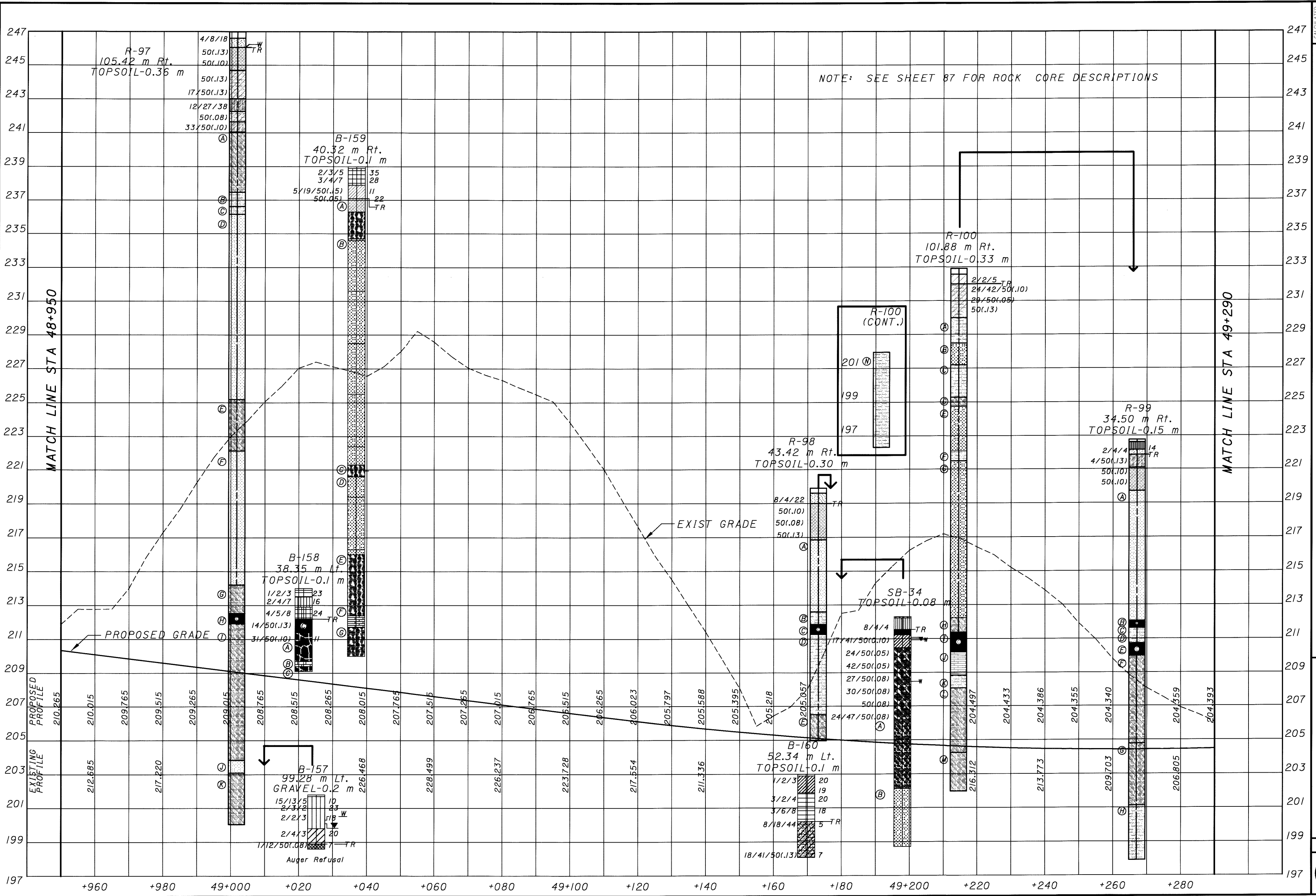
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HORIZONTAL SCALE IN METERS	
CALCULATED	CHECKED
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SOIL PROFILE	
STA. 48+950 TO STA. 49+290	
85	132
783	949

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NOTE: SEE SHEET 87 FOR ROCK CORE DESCRIPTIONS

MATCH LINE STA 48+950

MATCH LINE STA 49+290

EXISTING PROFILE

PROPOSED GRADE

EXIST GRADE

CALCULATED
DC
CHECKED
DAA

ATH-33-40.981

86/132

784
949

SOIL PROFILE
STA. 48+950 TO STA. 49+290

B-158

- (A) RC-1 MUDSTONE, GRAY, SOFT, HIGHLY BROKEN, NON-BEDDED, SILTY. CORE LOSS - 70% RQD - 0%
- (B) Limestone; GRAY, MODERATELY HARD, HIGHLY BROKEN, FINE CRYSTALLINE, SLIGHTLY JOINTED.
- (C) RC-2 MUDSTONE; GRAY, SOFT, HIGHLY BROKEN, NON-BEDDED, SILTY. CORE LOSS - 50% RQD - 0%

R-100

- (A) RC-1 MEDIUM HARD, BROWN SILTSTONE, MICACEOUS, ARENACEOUS, WEATHERED TO SEVERELY WEATHERED. CORE LOSS - 19% RQD - 75%
- RC-2 NO CORE LOSS RQD - 100%
- (B) HARD, BROWN SANDSTONE, MICACEOUS, VERY THIN BEDDED, SLIGHTLY BROKEN, WEATHERED.
- (C) MEDIUM HARD, GRAY SILTSTONE WITH CLAYSTONE INTERBEDS, SLIGHTLY MICACEOUS, WEATHERED.
- RC-3 CORE LOSS - 1% RQD - 99%
- (D) SOFT, BROWN CLAYSTONE, SEVERELY WEATHERED.
- (E) HARD, BROWN, GRAY, AND LIGHT GRAY, SANDSTONE, FINE TO COARSE GRAINED, CALCAREOUS, SLIGHTLY MICACEOUS, WEATHERED TO SLIGHTLY WEATHERED.
- (F) RC-4 HARD, BROWN AND GRAY SANDSTONE, FINE TO MEDIUM GRAINED, POORLY CEMENTED, SLIGHTLY BROKEN WITH RUST STAINING. NO CORE LOSS RQD - 94%
- (G) HARD, LIGHT GRAY AND BROWN, SANDSTONE, FINE TO MEDIUM GRAINED, POORLY CEMENTED, MICACEOUS, WEATHERED.
- RC-5 NO CORE LOSS RQD - 95%
- RC-6 NO CORE LOSS RQD - 100%
- RC-7 NO CORE LOSS RQD - 78%
- (H) MEDIUM HARD, DARK GRAY CLAYSTONE, PYRITIC, SEVERELY WEATHERED.
- (I) SOFT BLACK COAL.
- RC-8 CORE LOSS - 17% RQD - 33%
- (J) HARD GRAY LIMESTONE, ARGILLACEOUS, BROKEN WITH CLAY, WEATHERED.
- RC-9 NO CORE LOSS RQD - 37%
- (K) RC-10 MEDIUM HARD, GRAY SILTSTONE, SLIGHTLY CARBONACEOUS, WEATHERED. NO CORE LOSS RQD - 95%
- (L) SOFT, GRAY CLAYSTONE, BROKEN, CONTAINS LIMESTONE CLASTS, SEVERELY WEATHERED.
- RC-11 CORE LOSS - 38% RQD - 23%
- (M) RC-12 MEDIUM HARD, GRAY, RED, DARK GRAY, AND BROWN CLAYSTONE, SLIGHTLY BROKEN, WEATHERED. CORE LOSS - 13% RQD - 78%
- RC-13 CORE LOSS - 17% RQD - 65%
- (N) MEDIUM HARD, GRAY SILTSTONE, MICACEOUS, CONTAINS LIMESTONE CLASTS, WEATHERED.
- RC-14 CORE LOSS - 8% RQD - 92%
- RC-15 CORE LOSS - 4% RQD - 94%

SB-34

- (A) RC-1 SOFT TO MEDIUM HARD RED AND GRAY CLAYSTONE, ARENACEOUS; SEVERELY WEATHERED. CORE LOSS - 8% RQD - 80%
- RC-2 CORE LOSS - 7% RQD - 88%
- RC-3 NO CORE LOSS RQD - 100%
- (B) RC-4 MEDIUM HARD GRAY SANDSTONE, ARGILLACEOUS; SEVERELY WEATHERED. NO CORE LOSS RQD - 100%

B-159

- (A) RC-1 SHALE; BROWN, MEDIUM, HIGHLY BROKEN, MICACEOUS, SILTY. CORE LOSS - 18% RQD - 0%
- (B) RC-2 SANDSTONE; BROWN TO LIGHT GRAY, MODERATELY HARD TO HARD, MASSIVE, MEDIUM TO COARSE GRAINED, MICACEOUS, CROSS-BEDDED. NO CORE LOSS RQD - 65%
- RC-3 NO CORE LOSS RQD - 87%
- RC-4 NO CORE LOSS RQD - 88%
- RC-5 CORE LOSS - 8% RQD - 44%
- (C) RC-6 SHALE; GRAY TO DARK GRAY, SOFT TO VERY SOFT, HIGHLY BROKEN, CARBONACEOUS, SLICKENSIDED, SPARELY FOSSILIFEROUS. CORE LOSS - 1% RQD - 53%
- (D) RC-7 SANDSTONE; BROWN TO GRAY, MEDIUM TO MODERATELY HARD, MASSIVE, MEDIUM GRAINED, MICACEOUS, CROSS-BEDDED, SLIGHTLY WEATHERED. CORE LOSS - 1% RQD - 68%
- (E) RC-8 SHALE; GRAY, MEDIUM, HIGHLY BROKEN, CARBONACEOUS, PYRITIC, SLICKENSIDED, SPARELY FOSSILIFEROUS. NO CORE LOSS RQD - 25%
- RC-9 CORE LOSS - 20% RQD - 7%
- (F) LIMESTONE; GRAY, HIGHLY BROKEN, FINE CRYSTALLINE, SLIGHTLY JOINTED.
- (G) RC-10 SHALE(60%); GRAY, MEDIUM, HIGHLY BROKEN, CALCAREOUS, SLIGHTLY JOINTED, WITH INTERBEDDED LIMESTONE(40%); GRAY, MEDIUM, HIGHLY BROKEN, FINE CRYSTALLINE, ARGILLACEOUS, SLIGHTLY JOINTED. CORE LOSS - 20% RQD - 0%
- RC-11 NO CORE LOSS RQD - 0%

R-99

- (A) RC-1 MEDIUM HARD, BROWN AND LIGHT GRAY SANDSTONE, MICACEOUS, WEATHERED. CORE LOSS - 10 RQD - 90%
- RC-2 NO CORE LOSS RQD - 100%
- RC-3 NO CORE LOSS RQD - 93%
- RC-4 CORE LOSS - 20% RQD - 53%
- (B) SOFT BLACK COAL, BROKEN.
- (C) HARD GRAY SANDSTONE, PYRITIC, SLIGHTLY WEATHERED.
- (D) MEDIUM HARD GRAY SILTSTONE, PYRITIC, MICACEOUS, WEATHERED.
- RC-5 NO CORE LOSS RQD - 47%
- (E) SOFT BLACK COAL, BROKEN.
- (F) RC-6 SOFT TO MEDIUM HARD GRAY CLAYSTONE, SLIGHTLY MICACEOUS, WEATHERED TO SEVERELY WEATHERED. CORE LOSS - 62% RQD - 25%
- RC-7 CORE LOSS - 3% RQD - 42%
- RC-8 NO CORE LOSS RQD - 70%
- (G) RC-9 SOFT TO MEDIUM HARD, RED AND GRAY CLAYSTONE, WEATHERED. CORE LOSS - 5% RQD - 95%
- RC-10 CORE LOSS - 47% RQD - 53%
- RC-11 CORE LOSS - 5% RQD - 45%
- RC-12 MEDIUM HARD GRAY SILTSTONE, BROKEN, WEATHERED TO SLIGHTLY WEATHERED. CORE LOSS - 5% RQD - 94%

R-97

- (A) RC-1 SOFT TO MEDIUM HARD GRAY CLAYSTONE, SLIGHTLY WEATHERED TO WEATHERED, BROKEN. CORE LOSS - 33% RQD - 67%
- RC-2 CORE LOSS - 55% RQD - 0%
- RC-3 NO CORE LOSS RQD - 75%
- (B) MEDIUM HARD GRAY SILTSTONE, MICACEOUS, WEATHERED, CONTAINS LIMESTONE CLASTS.
- (C) RC-4 MEDIUM HARD BROWN SILTSTONE, ARENACEOUS, MICACEOUS, SLIGHTLY CALCAREOUS, WEATHERED. NO CORE LOSS RQD - 100%
- (D) MEDIUM HARD TO HARD BROWN SANDSTONE, MICACEOUS.
- RC-5 NO CORE LOSS RQD - 100%
- RC-6 NO CORE LOSS RQD - 100%
- RC-7 NO CORE LOSS RQD - 99%
- (E) MEDIUM HARD BROWN CLAYSTONE, ARENACEOUS, WEATHERED, BROKEN.
- RC-8 NO CORE LOSS RQD - 98%
- (F) RC-9 HARD BROWN AND GRAY SANDSTONE, MICACEOUS, WEATHERED. NO CORE LOSS RQD - 100%
- RC-10 NO CORE LOSS RQD - 100%
- RC-11 NO CORE LOSS RQD - 90%
- (G) MEDIUM HARD DARK GRAY CLAYSTONE, PYRITIC, BROKEN, WEATHERED TO SLIGHTLY WEATHERED.
- (H) SOFT TO MEDIUM HARD BLACK COAL, WEATHERED.
- (I) RC-12 MEDIUM HARD GRAY CLAYSTONE, BROKEN FRACTURES, CALCAREOUS, ARENACEOUS, WEATHERED, CONTAINS LIMESTONE CLASTS. NO CORE LOSS RQD - 81%
- RC-13 NO CORE LOSS RQD - 93%
- RC-14 CORE LOSS - 3% RQD - 91%
- (J) HARD GRAY SANDSTONE, MICACEOUS, ARGILLACEOUS, PYRITIC, WEATHERED.
- (K) RC-15 MEDIUM HARD GRAY CLAYSTONE, MICACEOUS, BROKEN, SLIGHTLY WEATHERED TO WEATHERED, CONTAINS CLAY SEAMS THROUGHOUT. CORE LOSS - 1% RQD - 95%

R-98

- (A) RC-1 SOFT TO MEDIUM HARD BROWN SANDSTONE, POORLY CEMENTED, MICACEOUS, WEATHERED TO SEVERELY WEATHERED. NO CORE LOSS RQD - 100%
- RC-2 NO CORE LOSS RQD - 100%
- (B) RC-3 MEDIUM HARD GRAY SILTSTONE, ARGILLACEOUS, WEATHERED. CORE LOSS - 7% RQD - 100%
- (C) SOFT BLACK COAL.
- (D) RC-4 MEDIUM HARD GRAY SILTSTONE, WEATHERED, SLIGHTLY BROKEN, CONTAINS ROCK CLASTS.
- (E) RC-5 SOFT TO MEDIUM HARD RED, BROWN, GRAY CLAYSTONE, SLIGHTLY WEATHERED.

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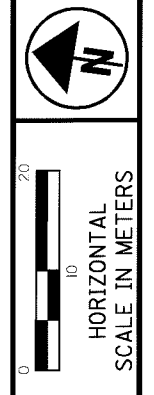
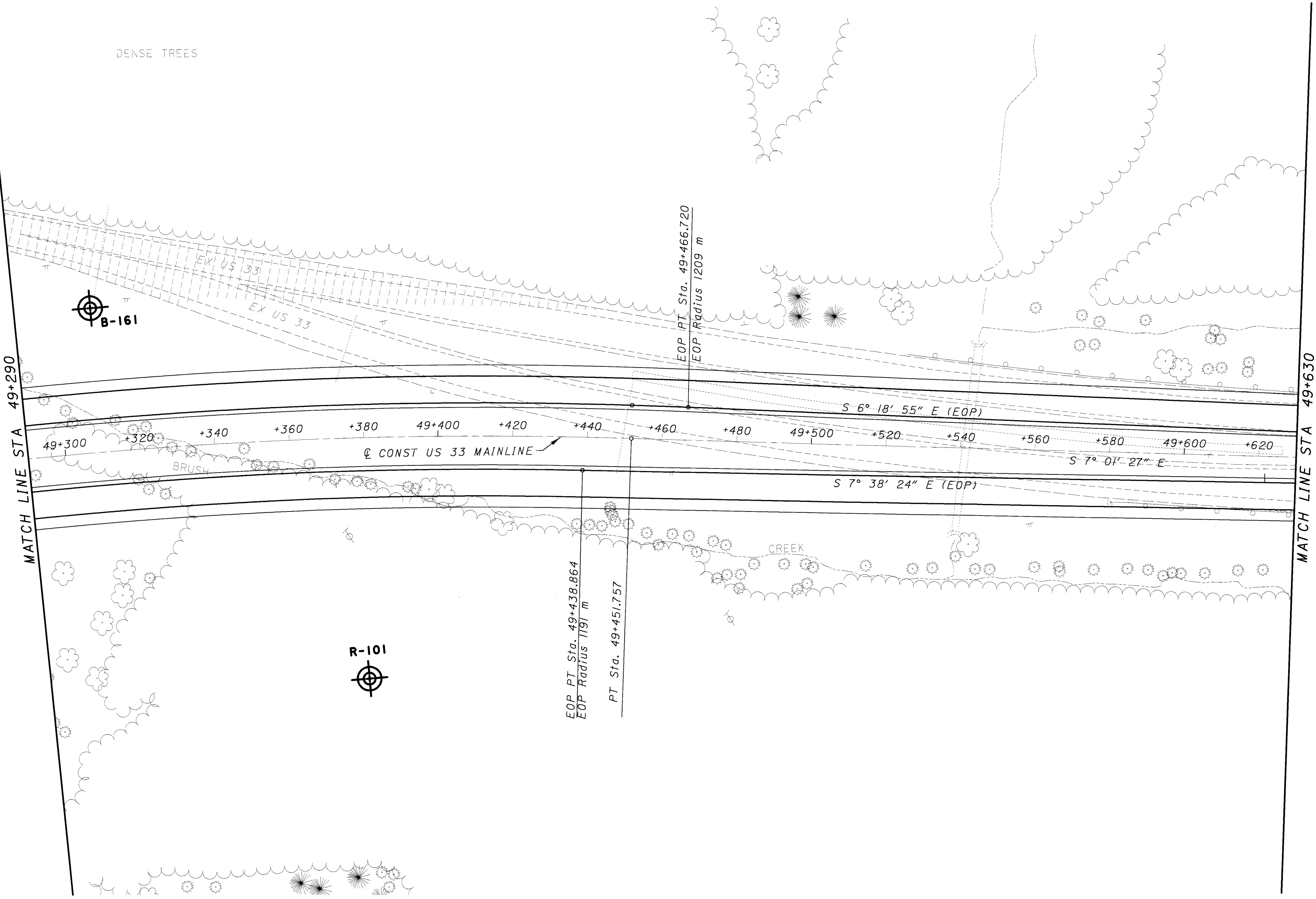
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STA. 48+950 TO STA. 49+290

ATH-33-40.981

87 / 132

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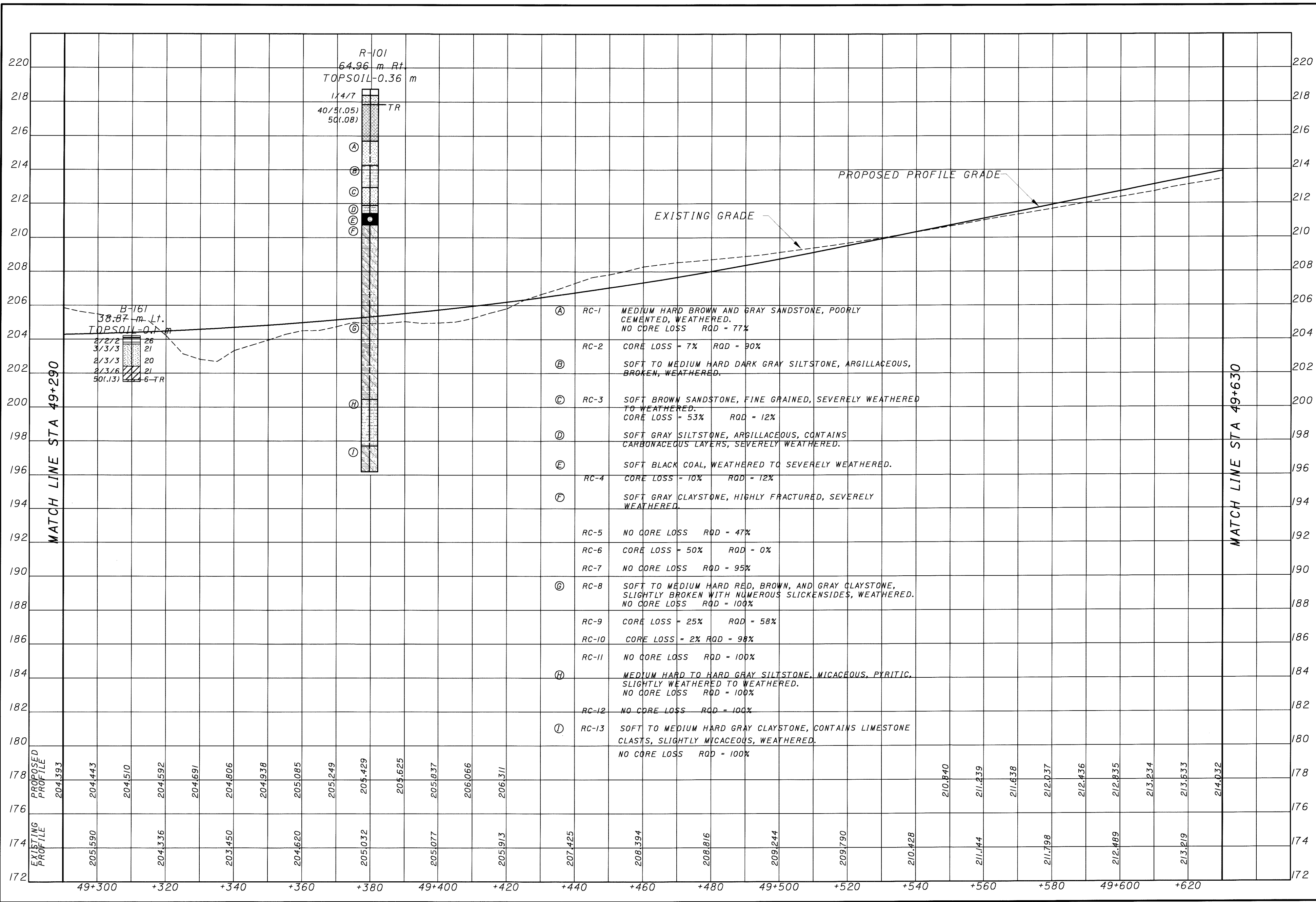


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SOIL PROFILE
STA. 49+290 TO STA. 49+630

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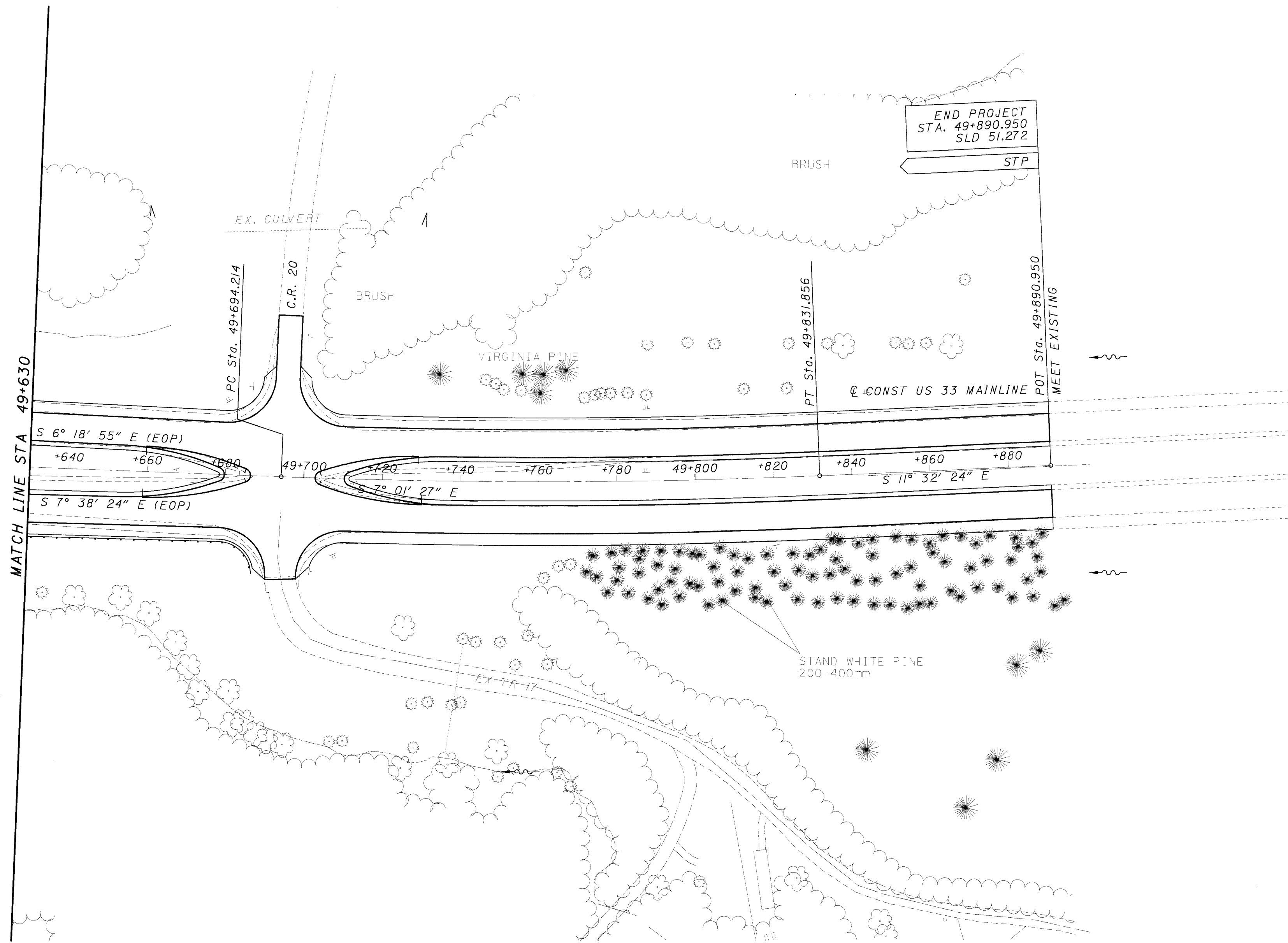
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MATCH LINE STA 49+630

END PROJECT
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SLD 51.272

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HORIZONTAL
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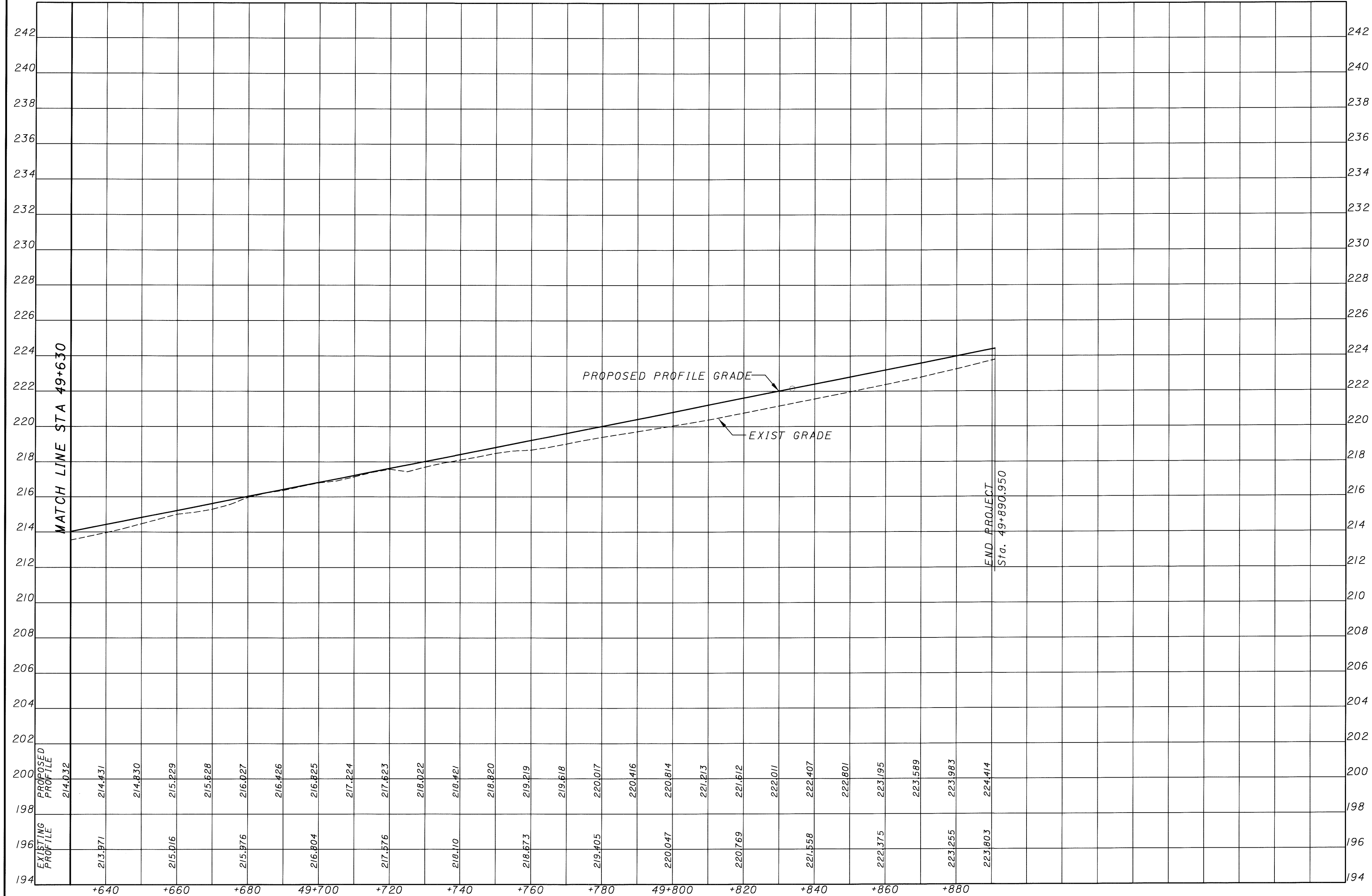
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STA. 49+630 TO STA. 49+890.950

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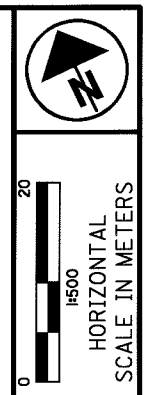
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SOIL PROFILE
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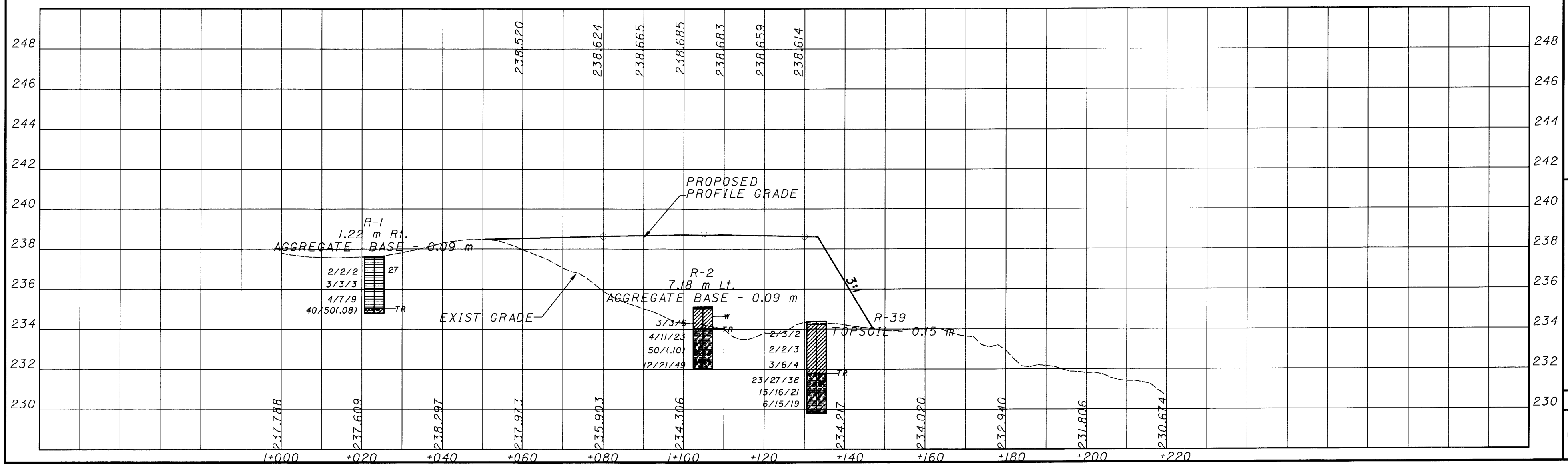
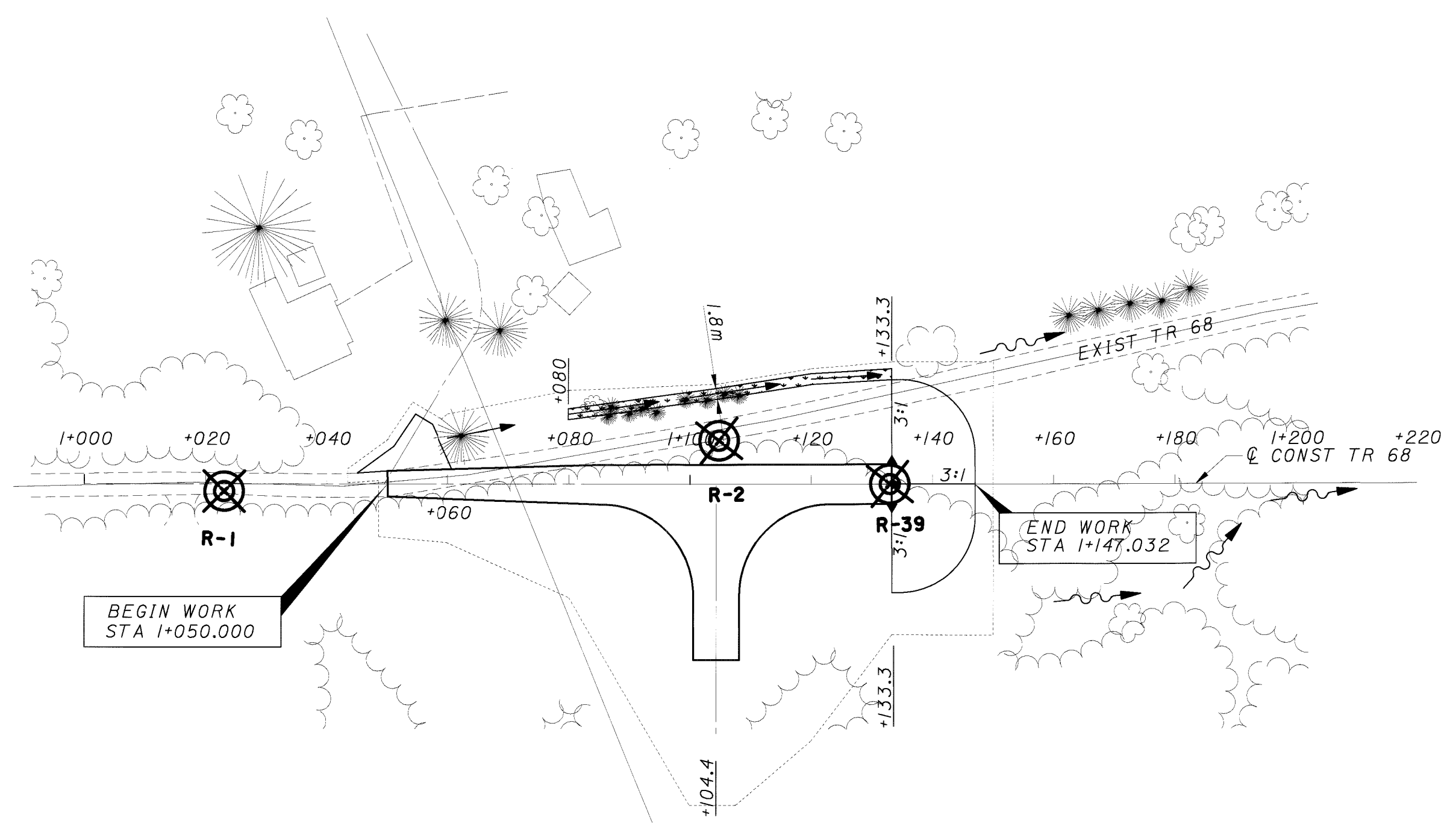


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SOIL PROFILE
TR 68 STA 1+000 TO STA 1+220

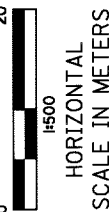
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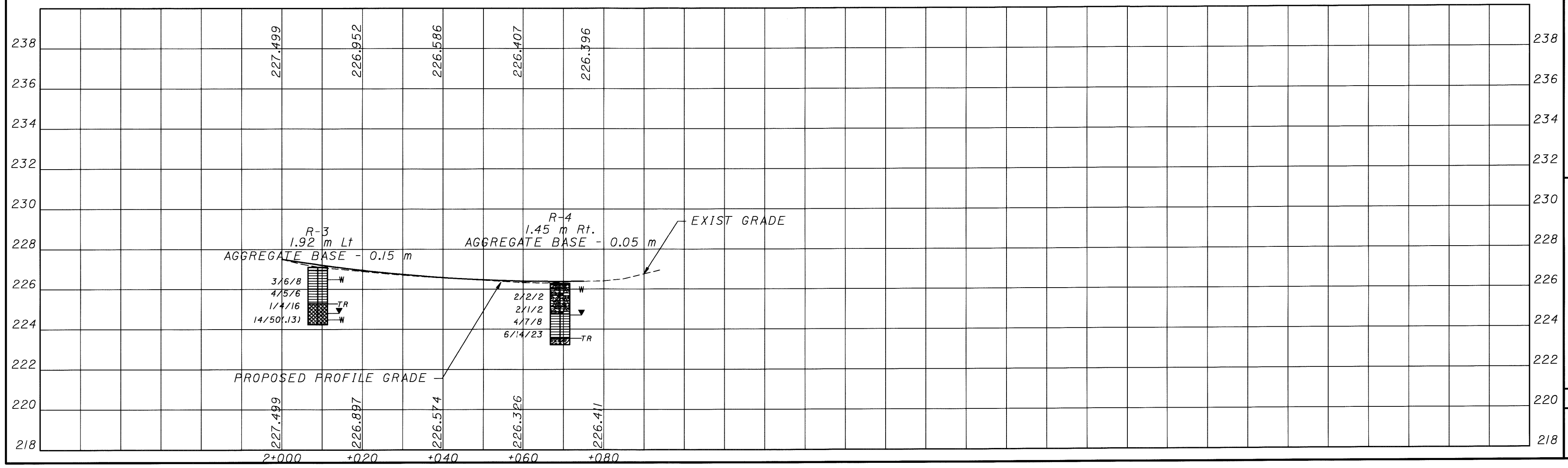
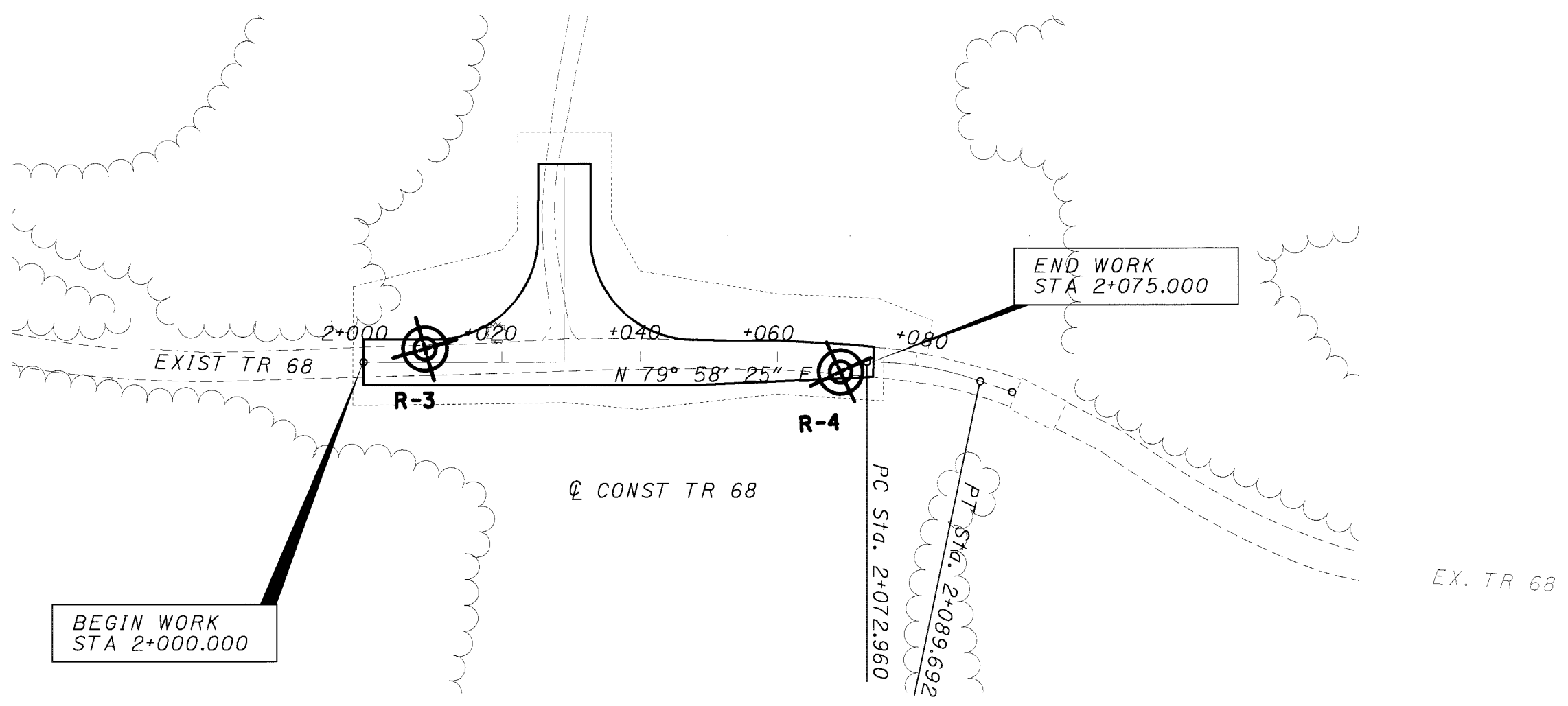
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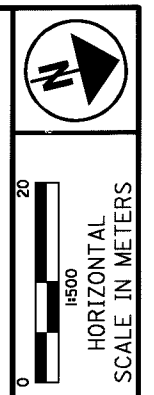
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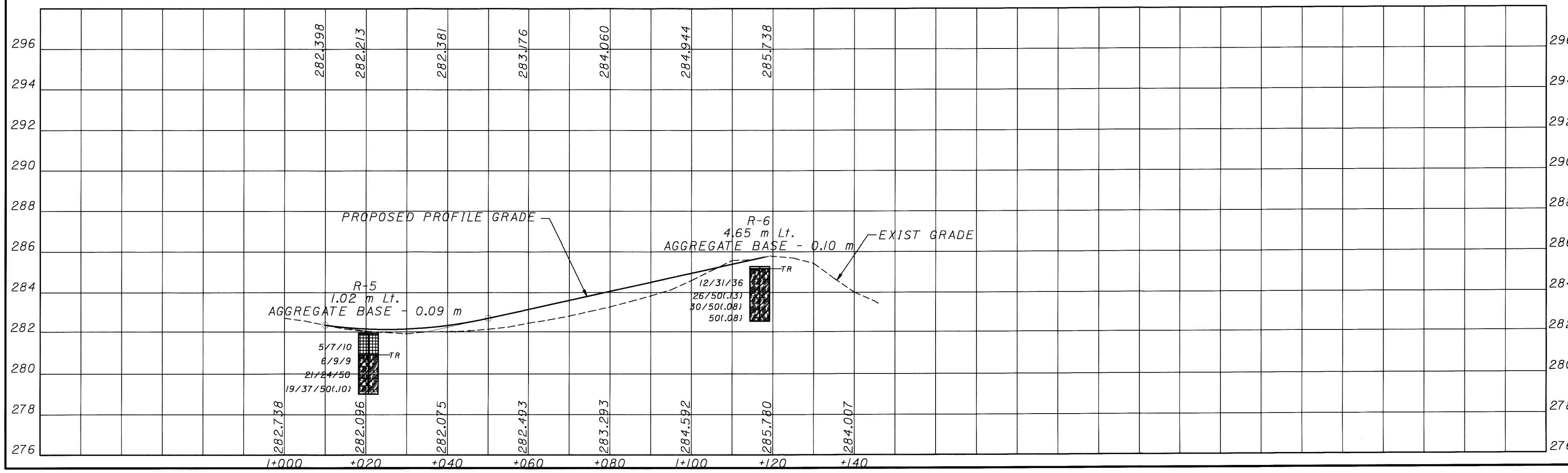
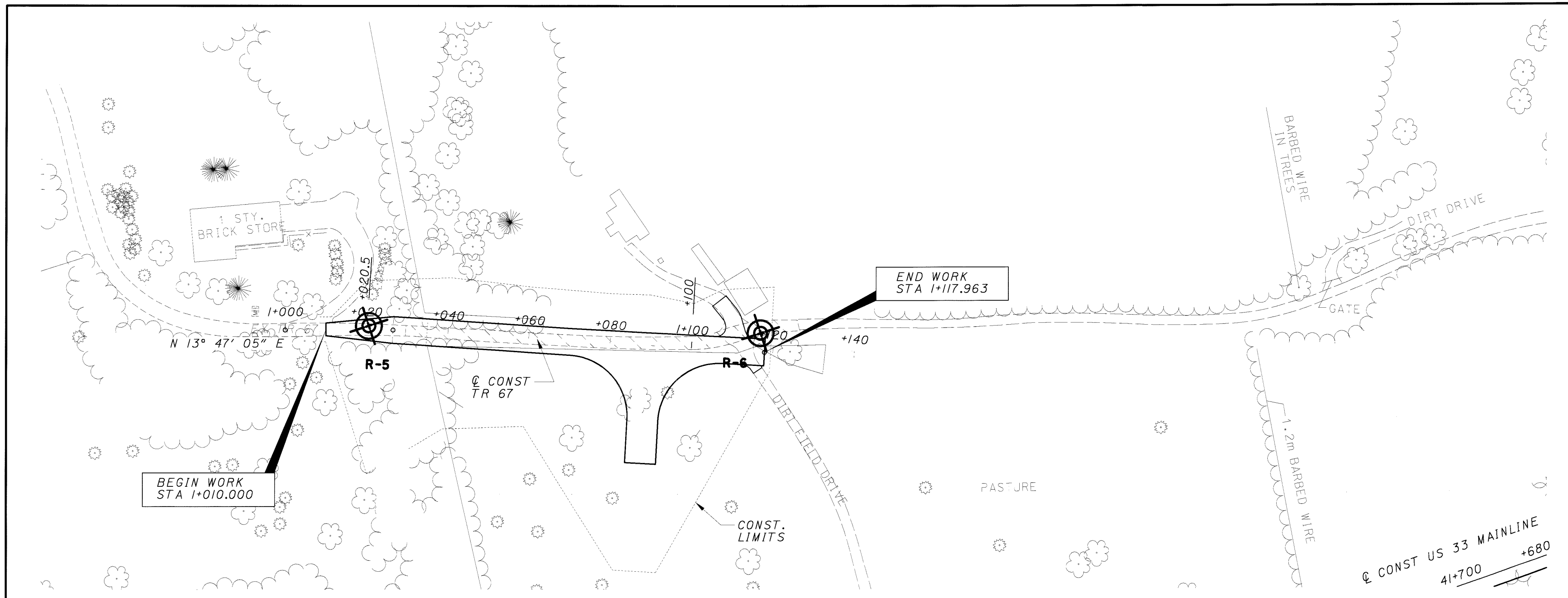


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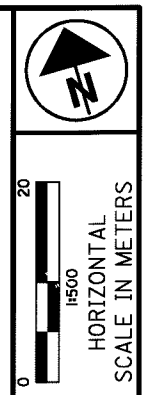
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TR 67 STA 1+000 TO STA 1+140

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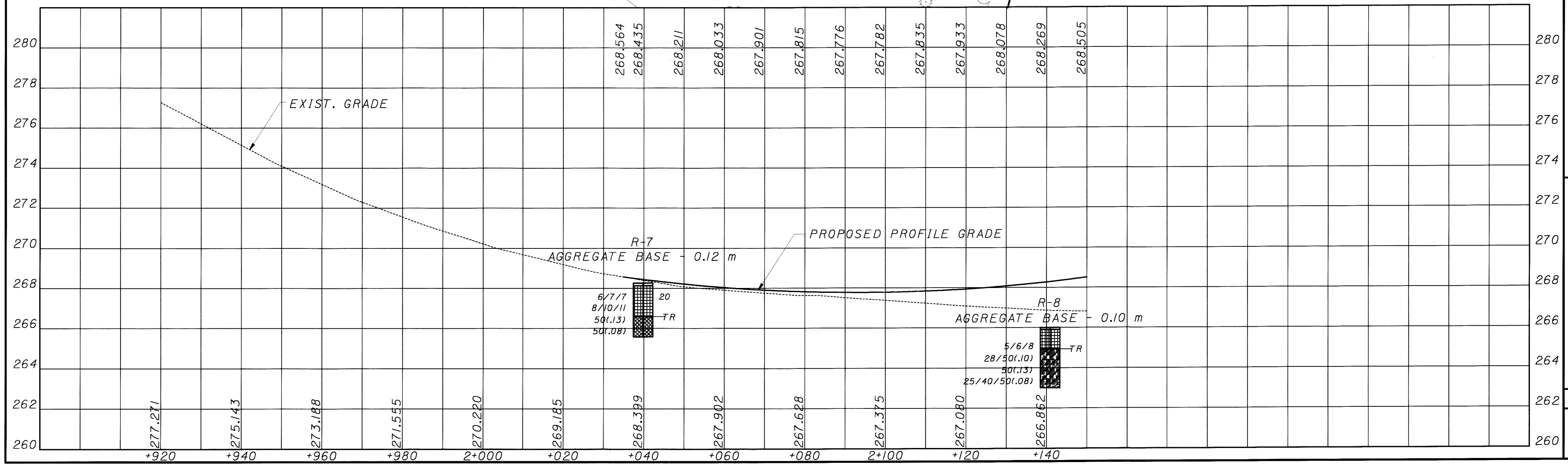
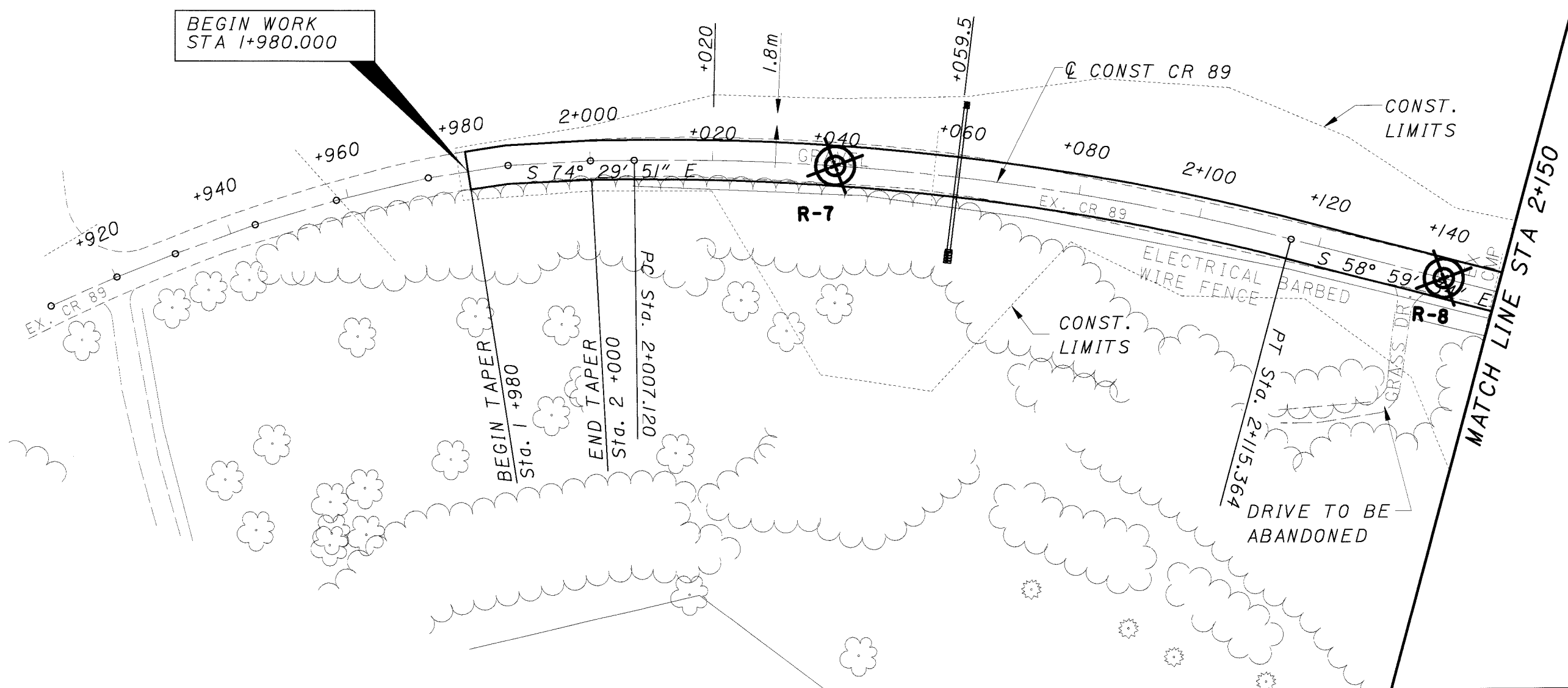


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CR 89 STA 1+908.418 TO STA 2+150

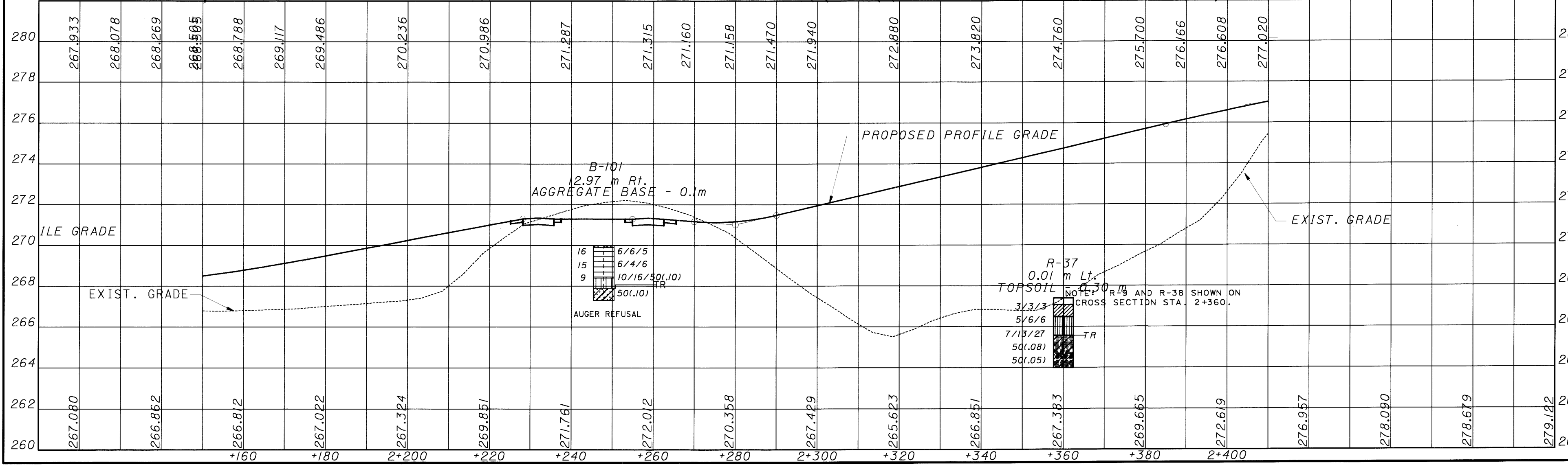
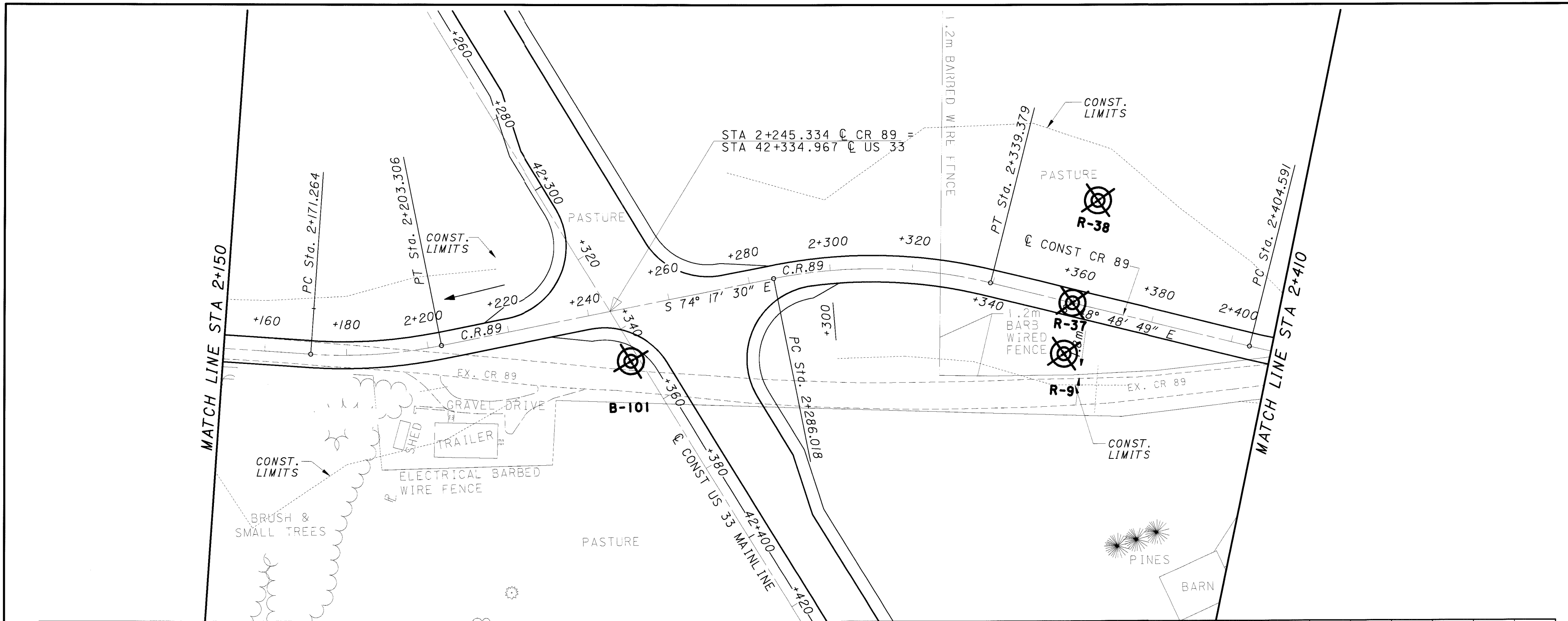
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**CR 89 SOIL PROFILE
 STA 2+150 TO STA 2+410**

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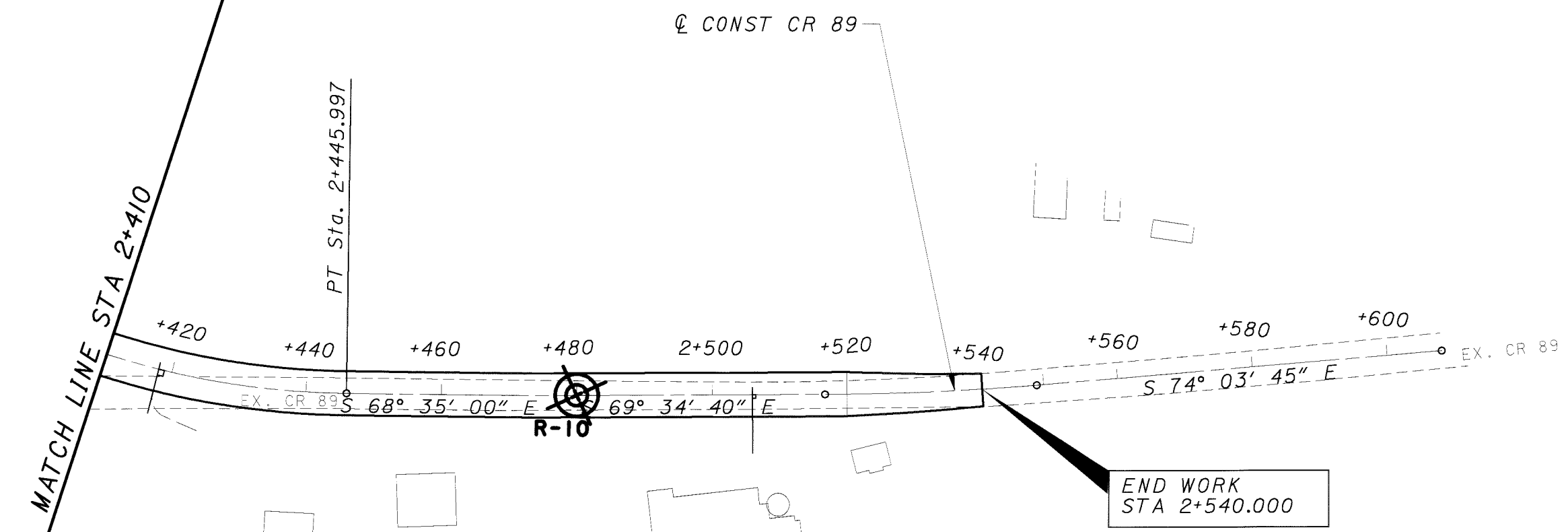
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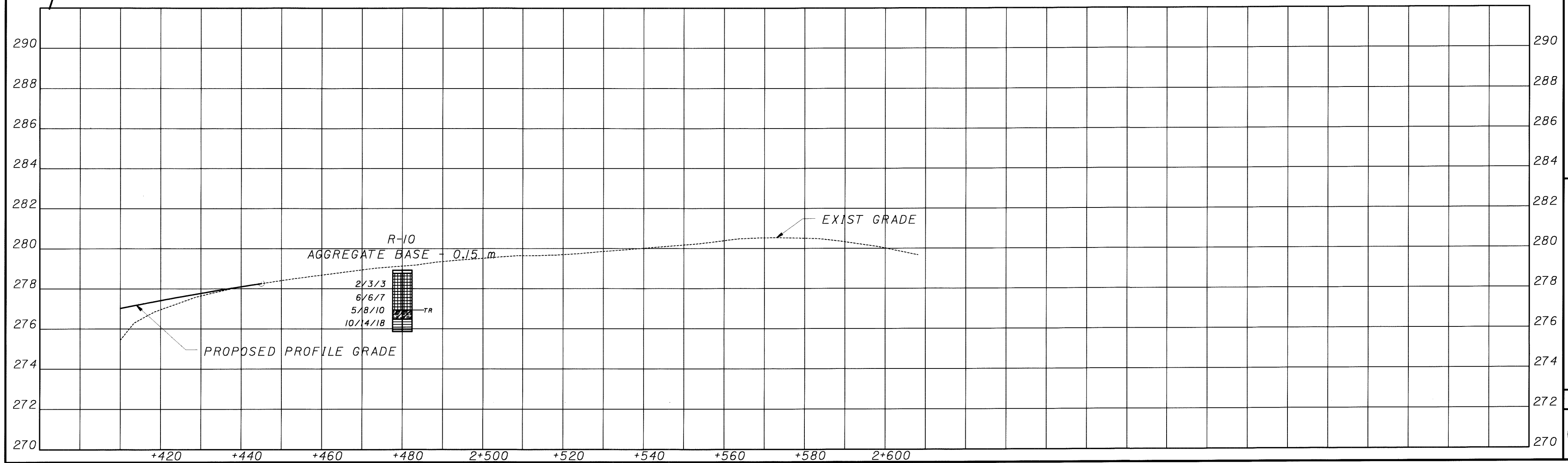
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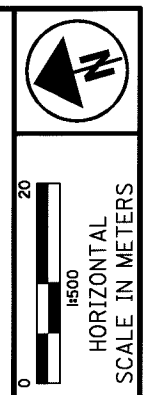
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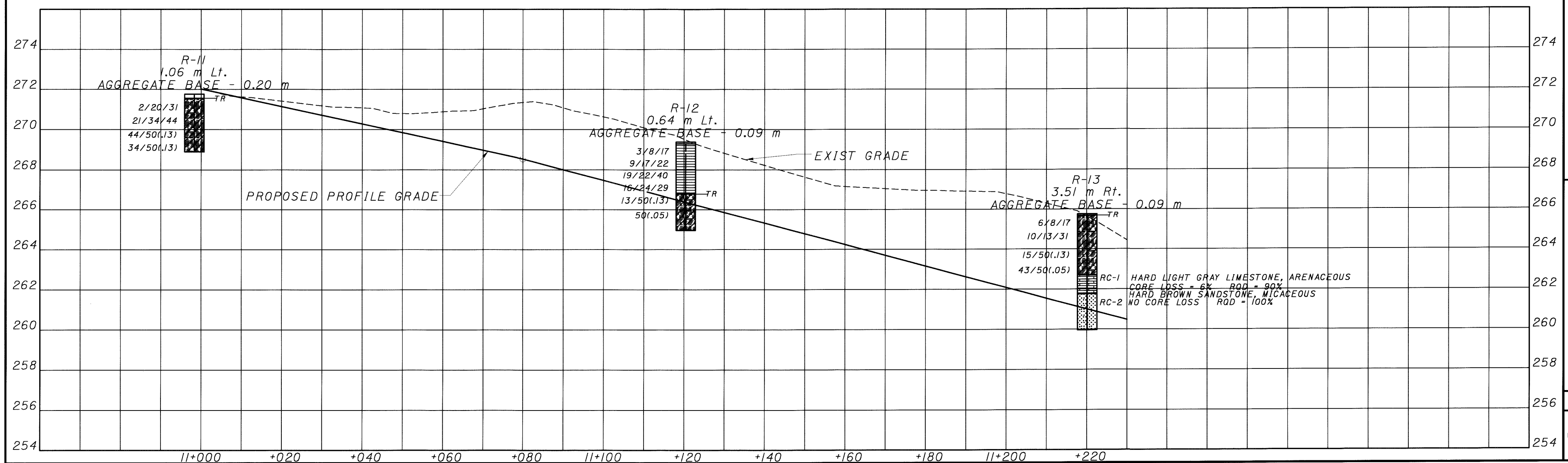
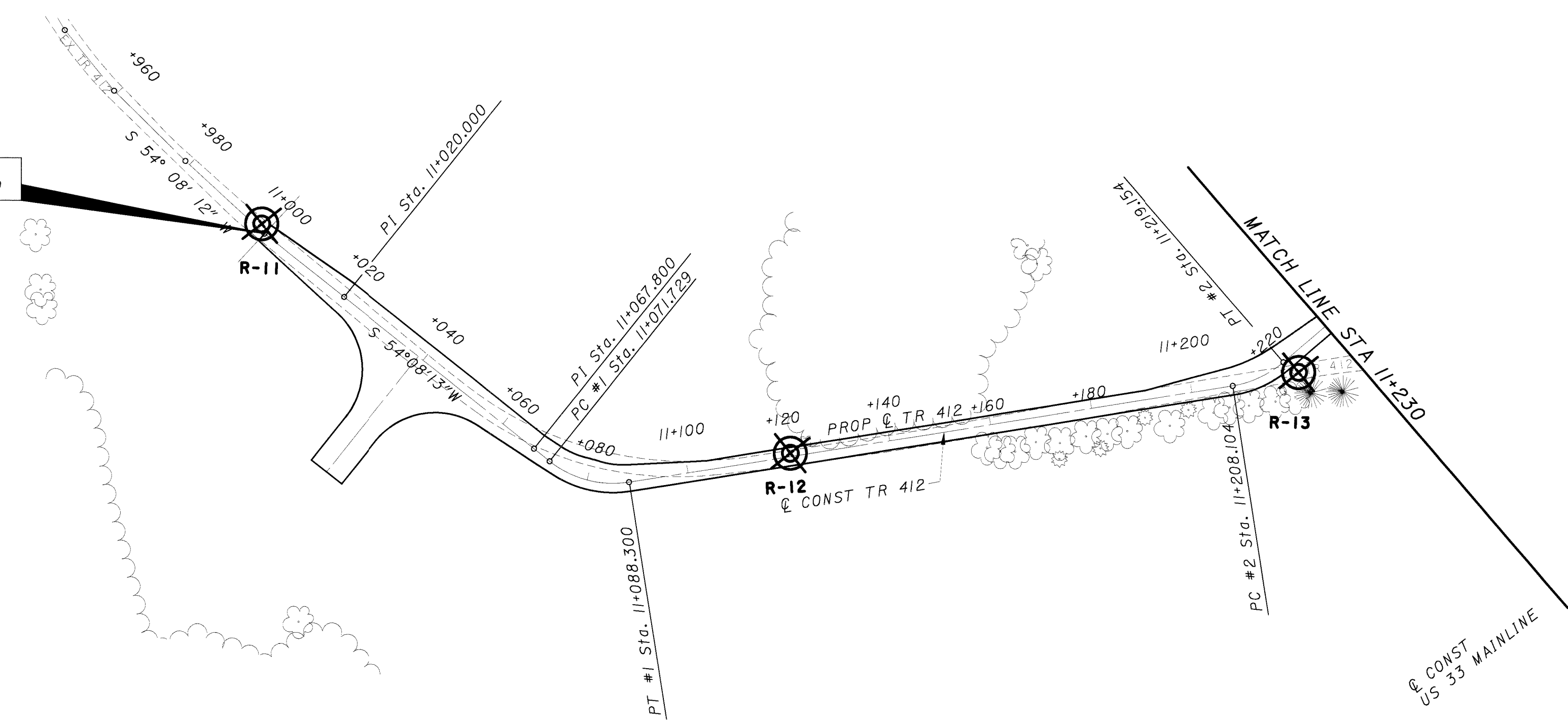
HORIZONTAL SCALE IN METERS

SOIL PROFILE
TR 412 STA 11+000 TO STA 11+230

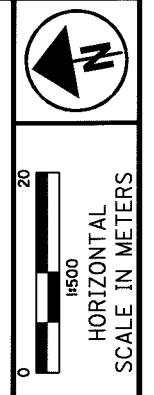
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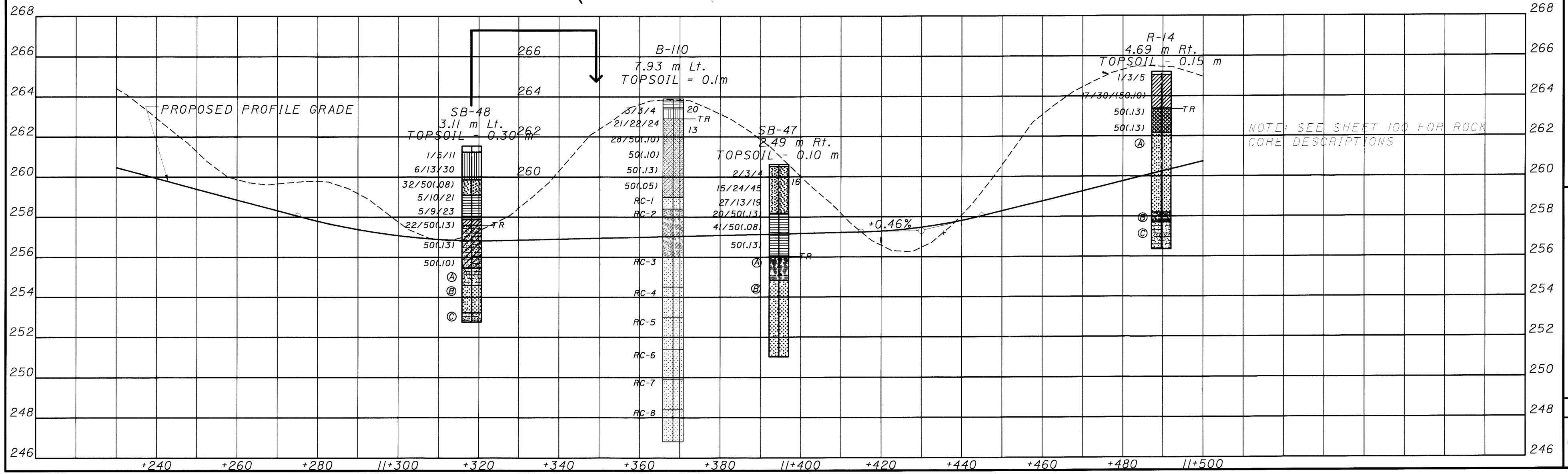
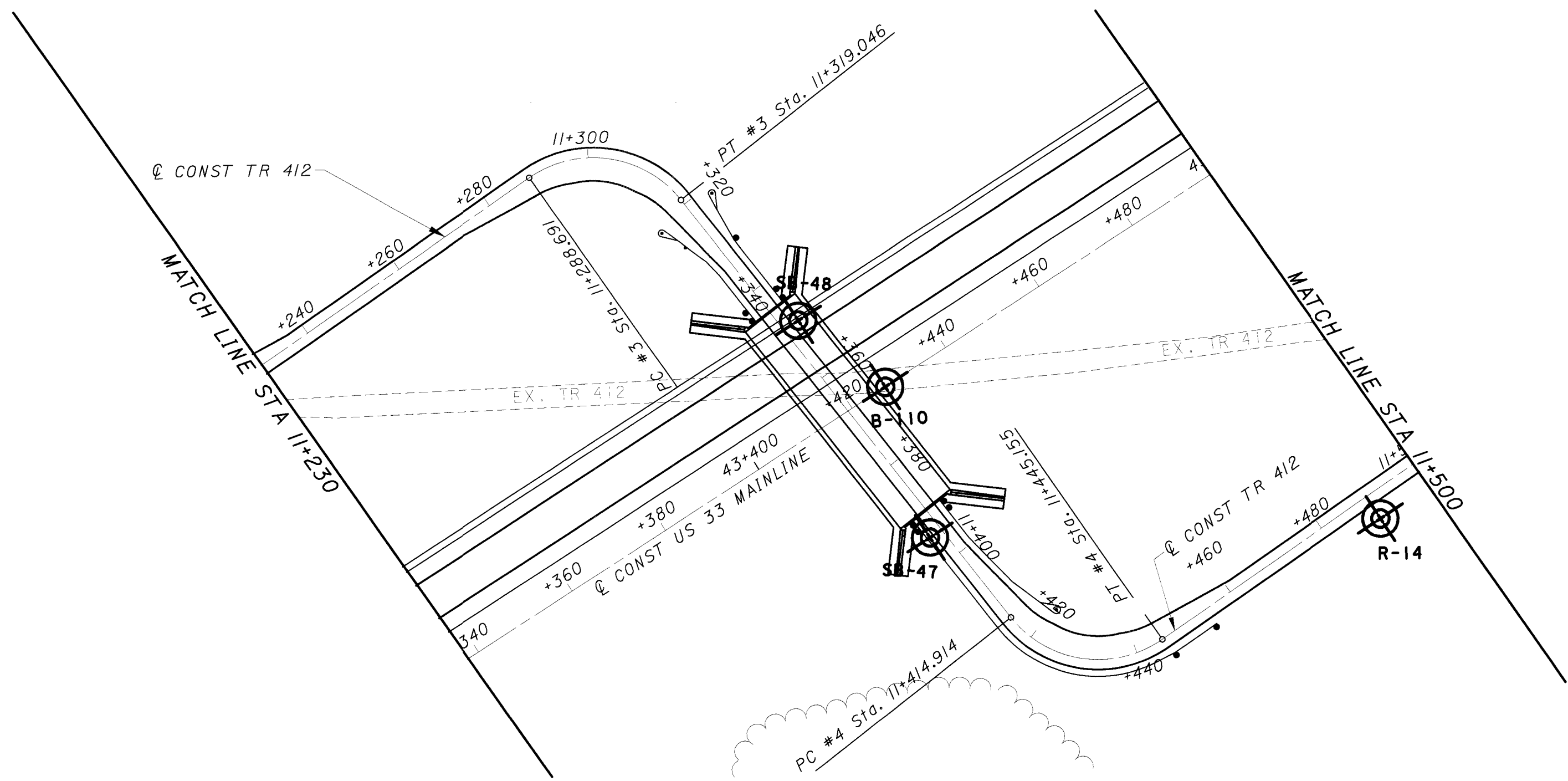
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SOIL PROFILE
TR 412 STA 11+230 TO STA 11+500

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NOTE: SEE SHEET 100 FOR ROCK CORE DESCRIPTIONS

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B-110

- RC-1 SANDSTONE; BROWN, SOFT, MASSIVE, SLIGHTLY JOINTED, COARSE GRAINED, MICACEOUS, INTERBEDDED MUDSTONE; GRAY VERY SOFT TO SOFT, HIGHLY BROKEN, HIGHLY JOINTED, ARENACEOUS.
CORE LOSS - 2% RQD - 42%
- RC-2 MUDSTONE; GRAY, VERY SOFT TO SOFT, HIGHLY BROKEN, HIGHLY JOINTED, ARENACEOUS.
NO CORE LOSS RQD - 29%
- RC-3 SANDSTONE; GRAY, MODERATELY HARD, MASSIVE, SLIGHTLY JOINTED, FINE GRAINED, MICACEOUS, LAMINATED.
CORE LOSS - 3% RQD - 84%
- RC-4 CORE LOSS - 5% RQD - 92%
- RC-5 CORE LOSS - 2% RQD - 50%
- RC-6 SANDSTONE; BROWN, MODERATELY HARD, HIGHLY BROKEN, HIGHLY GRAINED, COARSE GRAINED, CALCAREOUS, MICACEOUS, ARGILLACEOUS.
NO CORE LOSS RQD - 0%
- RC-7 CORE LOSS - 2% RQD - 19%
- RC-8 CORE LOSS - 2% RQD - 0%

R-14

- Ⓐ RC-1 HARD BROWN SANDSTONE, MICACEOUS
CORE LOSS - 13% RQD - 88%
- RC-2 NO CORE LOSS RQD - 92%
- Ⓑ RC-3 SOFT GRAY CLAYSTONE
NO CORE LOSS RQD - 100%
- Ⓒ MEDIUM HARD GRAY SILTSTONE, MICACEOUS

SB-47

- Ⓐ RC-1 MEDIUM HARD GRAY SHALE; WEATHERED TO SEVERELY WEATHERED.
CORE LOSS - 7% RQD - 88%
- Ⓑ HARD GRAY SANDSTONE, MICACEOUS; WEATHERED.
RC-2 NO CORE LOSS RQD - 100%

SB-48

- Ⓐ RC-1 MEDIUM HARD GRAY SILTSTONE, ARENACEOUS.
CORE LOSS - 4% RQD - 91%
- Ⓑ HARD GRAY AND DARK GRAY SANDSTONE, ARGILLACEOUS, MICACEOUS; WEATHERED TO MODERATELY WEATHERED.
RC-2 NO CORE LOSS RQD - 100%
- Ⓒ MEDIUM HARD GRAY SILTSTONE, MICACEOUS; WEATHERED.



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SOIL PROFILE
TR 412 STA 11+230 TO STA 11+500

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