

NOTE: SEE SHEET 2A FOR PLAN SHEET LAYOUT AT TIME OF INVESTIGATION

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

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	35609.1.1 (R-2519B)	1	485
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
		P.E.	
		RW & UTIL.	

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WERE MADE FOR THE PURPOSE OF STUDY, PLANNING, AND DESIGN, AND NOT FOR CONSTRUCTION OR PAY PURPOSES. THE VARIOUS FIELD BORING LOGS, ROCK CORES, AND SOIL TEST DATA AVAILABLE MAY BE REVIEWED OR INSPECTED IN RALEIGH BY CONTACTING THE N. C. DEPARTMENT OF TRANSPORTATION, GEOTECHNICAL ENGINEERING UNIT AT (919) 250-4086. NEITHER THE SUBSURFACE PLANS AND REPORTS, NOR THE FIELD BORING LOGS, ROCK CORES, OR SOIL TEST DATA ARE PART OF THE CONTRACT.

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

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

PERSONNEL

T B DANIEL

M M HAGER

D O CHEEK

C J COFFEY

G K ROSE

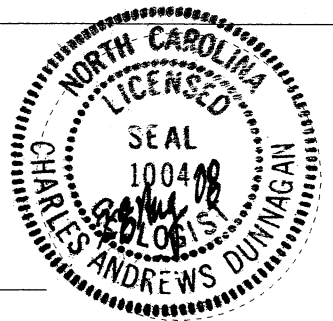
R D CHILDERS

INVESTIGATED BY C A DUNNAGAN

CHECKED BY W D FRYE, Jr

SUBMITTED BY W D FRYE, Jr

DATE September 2008



C. A. Dunnagan

ROADWAY
SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 25609.1.1 (R-2519B) F.A. PROJ. _____

COUNTY YANCEY-MITCHELL

PROJECT DESCRIPTION US-19E FROM SR-1186 IN YANCEY COUNTY

TO MULTI-LANE SECTION WEST OF SPRUCE PINE IN

MITCHELL COUNTY

INVENTORY

CONTENTS

LINE	STATION	PLAN	PROFILE	XSECT
-L-	15+68.90 - 430+34.01	4-34	-	35-402
-Y1-	10+00.00 - +/-16+00	4	-	
-Y2-	10+00.00 - 12+70.38	5	-	403-404
-Y3-	10+00.00 - 13+79.09	5-6	-	
-Y4-	10+00.00 - 14+44.49	6	-	405
-Y5-	10+00.00 - 14+15.32	6	-	406-411
-Y6-	10+00.00 - 14+93.12	6-7	-	412-425
-Y7-	10+00.00 - 15+01.73	8	-	
-Y8-	10+00.00 - 12+64.81	9	-	
-Y9-	11+83.70 - 13+00.00	9	-	
-Y10-	10+00.00 - 13+00.00	10	-	
-Y11-	10+00.00 - 12+73.5	11	-	
-Y12-	10+03.00 - 15+93.84	11	-	
-Y13-	10+00.00 - 18+29.42	12-13	-	
-Y14-	10+00.00 - 11+75.00	13	-	426
-Y15-	13+25.00 - 14+43.34	13	-	
-Y16-	10+00.00 - +/-25+00	13-14	-	427-439
-Y17-	13+50.00 - 15+80.52	14	-	
-Y18-	12+75.00 - 14+88.55	17	-	
-Y19-	10+25.00 - 12+86.27	18	-	
-Y20-	10+10.00 - 13+42.47	18	-	440
-Y21-	10+00.00 - 13+00.00	20	-	
-Y22-	10+00.00 - 13+07.58	21	-	441
-Y23-	10+00.00 - 13+65.00	21	-	
-Y24-	10+26.52 - 14+29.85	24	-	442-443
-Y25-	10+00.00 - 15+56.38	24	-	
-Y26-	10+45.40 - 13+62.30	24-25	-	
-Y27-	10+00.00 - 13+99.84	25	-	
-Y28-	11+31.62 - 12+04.00	25	-	
-Y29-	12+50.00 - 14+45.80	25	-	
-Y30-	10+00.00 - 22+01.88	25-26	-	
-Y31-	11+16.59 - 15+12.82	26	-	
-Y32-	10+56.94 - 13+27.07	26	-	
-Y33-	10+00.00 - 14+72.94	27-28	-	444
-Y34-	10+40.00 - 13+46.53	28	-	
-Y35-	11+00.00 - 12+02.88	28	-	
-Y36-	10+00.00 - 11+50.00	29	-	
-Y37-	11+00.00 - 12+53.69	33	-	
-Y38-	12+45.00 - 16+30.00	33	-	
-DR1-	10+00.00 - 11+80.18	6	-	
-DR2-	10+00.00 - 13+74.53	7	-	445-448
-DR3-	10+00.00 - 14+84.07	8	-	449
-DR4-	10+00.00 - 11+08.00	11	-	
-DR5-	10+00.00 - 11+45.31	17	-	
-DR7-	10+32.31 - 12+68.27	18	-	
-DR8-	10+00.00 - 11+60.00	18	-	450
-DR8A-	10+00.00 - 10+94.66	20	-	
-DR9-	10+50.00 - 16+36.93	21-22	-	451-453
-DR10-	10+00.00 - 13+31.36	23	-	
-DR11-	10+00.00 - 14+45.00	25	-	454-459
-DR12-	10+00.00 - 14+25.00	25	-	
-DR12A-	10+50.00 - 12+31.71	25	-	
-DR13-	10+00.00 - 12+20.00	28	-	
-DR14-	10+00.00 - 14+71.79	28	-	460-462
-DR15-	10+00.00 - 13+30.94	29	-	463-465
-DR16-	10+00.00 - 12+01.18	31	-	
-DR17-	10+00.00 - 13+20.00	32	-	466
-DR18-	10+00.00 - 13+60.00	33	-	467-468

SAMPLE RESULTS

469-475

DRAWN BY: C A DUNNAGAN

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

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

CONTRACT: ID: R-2519B

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
 DIVISION OF HIGHWAYS
 GEOTECHNICAL ENGINEERING UNIT

PROJECT REFERENCE NO. SHEET NO.
 R-2519B 2475

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION			GRADATION		ROCK DESCRIPTION		TERMS AND DEFINITIONS	
SOIL IS CONSIDERED TO BE THE UNCONSOLIDATED, SEMI-CONSOLIDATED, OR WEATHERED EARTH MATERIALS THAT CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND YIELD LESS THAN 100 BLOWS PER FOOT ACCORDING TO STANDARD PENETRATION TEST (AASHTO T206, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM, BASIC DESCRIPTIONS GENERALLY SHALL INCLUDE: CONSISTENCY, COLOR, TEXTURE, MOISTURE, AASHTO CLASSIFICATION, AND OTHER PERTINENT FACTORS SUCH AS MINERALOGICAL COMPOSITION, ANGLE, STRUCTURE, PLASTICITY, ETC. EXAMPLE: <i>VERY STIFF, GRK. SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6</i>			WELL GRADED - INDICATES A GOOD REPRESENTATION OF PARTICLE SIZES FROM FINE TO COARSE. UNIFORM - INDICATES THAT SOIL PARTICLES ARE ALL APPROXIMATELY THE SAME SIZE. (ALSO POORLY GRADED). GAP-GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES.		HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT IF TESTED, WOULD YIELD SPT REFUSAL. AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH NON-COASTAL PLAIN MATERIAL WOULD YIELD SPT REFUSAL. SPT REFUSAL IS PENETRATION BY A SPLIT SPOON SAMPLER EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS. IN NON-COASTAL PLAIN MATERIAL, THE TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF WEATHERED ROCK. ROCK MATERIALS ARE TYPICALLY DIVIDED AS FOLLOWS:		ALLUVIUM (ALLUV.) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER.	
SOIL LEGEND AND AASHTO CLASSIFICATION			ANGULARITY OF GRAINS		WEATHERED ROCK (WR)		AQUIFER - A WATER BEARING FORMATION OR STRATA.	
MINERALOGICAL COMPOSITION			COMPRESSIONIBILITY		CRYSTALLINE ROCK (CR)		ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND.	
PERCENTAGE OF MATERIAL			GROUND WATER		NON-CRYSTALLINE ROCK (NCR)		ARGILLACEOUS - APPLIED TO ALL ROCKS OR SUBSTANCES COMPOSED OF CLAY MINERALS, OR HAVING A NOTABLE PROPORTION OF CLAY IN THEIR COMPOSITION, AS SHALE, SLATE, ETC.	
MISCELLANEOUS SYMBOLS			ROCK HARDNESS		COASTAL PLAIN SEDIMENTARY ROCK (CP)		ARTESIAN - GROUND WATER THAT IS UNDER SUFFICIENT PRESSURE TO RISE ABOVE THE LEVEL AT WHICH IT IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.	
ABBREVIATIONS			FRACTURE SPACING		SOIL MOISTURE - CORRELATION OF TERMS		CALCAREOUS (CAL.C.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.	
EQUIPMENT USED ON SUBJECT PROJECT			BEDDING		PLASTICITY		COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.	
FRACTURE SPACING			INDURATION		COLOR		CORE RECOVERY (REC.) - TOTAL LENGTH OF ALL MATERIAL RECOVERED IN THE CORE BARREL DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.	
INDURATION			BENCH MARK:		TEXTURE OR GRAIN SIZE		DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK.	
BENCH MARK:			ELEVATION: FT.		U.S. STD. SIEVE SIZE OPENING (MM)		DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL.	
ELEVATION: FT.			NOTES:		GRAIN SIZE		DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH.	
NOTES:					SOIL MOISTURE SCALE (ATTERBERG LIMITS)		FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE.	
					FIELD MOISTURE DESCRIPTION		FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES.	
					GUIDE FOR FIELD MOISTURE DESCRIPTION		FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.	
					- SATURATED - (SAT.)		FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.	
					- WET - (W)		FORMATION (FM) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.	
					- MOIST - (M)		JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.	
					- DRY - (D)		LEDGE - A SHELF-LIKE RIDGE OR PROJECTION OF ROCK WHOSE THICKNESS IS SMALL COMPARED TO ITS LATERAL EXTENT.	
							LENS - A BODY OF SOIL OR ROCK THAT THINS OUT IN ONE OR MORE DIRECTIONS.	
							MOTTLED (MOT.) - IRRIGULARLY MARKED WITH SPOTS OF DIFFERENT COLORS. MOTTLING IN SOILS USUALLY INDICATES POOR AERATION AND LACK OF GOOD DRAINAGE.	
							PERCHED WATER - WATER MAINTAINED ABOVE THE NORMAL GROUND WATER LEVEL BY THE PRESENCE OF AN INTERVENING IMPERVIOUS STRATUM.	
							RESIDUAL (RES.) SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.	
							ROCK QUALITY DESIGNATION (RQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.	
							SAPROLITE (SAP.) - RESIDUAL SOIL THAT RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.	
							SILL - AN INTRUSIVE BODY OF IGNEOUS ROCK OF APPROXIMATELY UNIFORM THICKNESS AND RELATIVELY THIN COMPARED WITH ITS LATERAL EXTENT, THAT HAS BEEN EMPLACED PARALLEL TO THE BEDDING OR SCHISTOSITY OF THE INTRUDED ROCKS.	
							SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLANE.	
							STANDARD PENETRATION TEST (PENETRATION RESISTANCE) (SPT) - NUMBER OF BLOWS (N OR BPF) OF A 140 LB. HAMMER FALLING 30 INCHES REQUIRED TO PRODUCE A PENETRATION OF 1 FOOT INTO SOIL WITH A 2 INCH OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS PENETRATION EQUAL TO OR LESS THAN 0.1 FOOT PER 60 BLOWS.	
							STRATA CORE RECOVERY (SCRC) - TOTAL LENGTH OF STRATA MATERIAL RECOVERED DIVIDED BY TOTAL LENGTH OF STRATUM AND EXPRESSED AS A PERCENTAGE.	
							STRATA ROCK QUALITY DESIGNATION (SRQD) - A MEASURE OF ROCK QUALITY DESCRIBED BY TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 4 INCHES DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.	
							TOPSOIL (TS) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.	

06/08/99

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

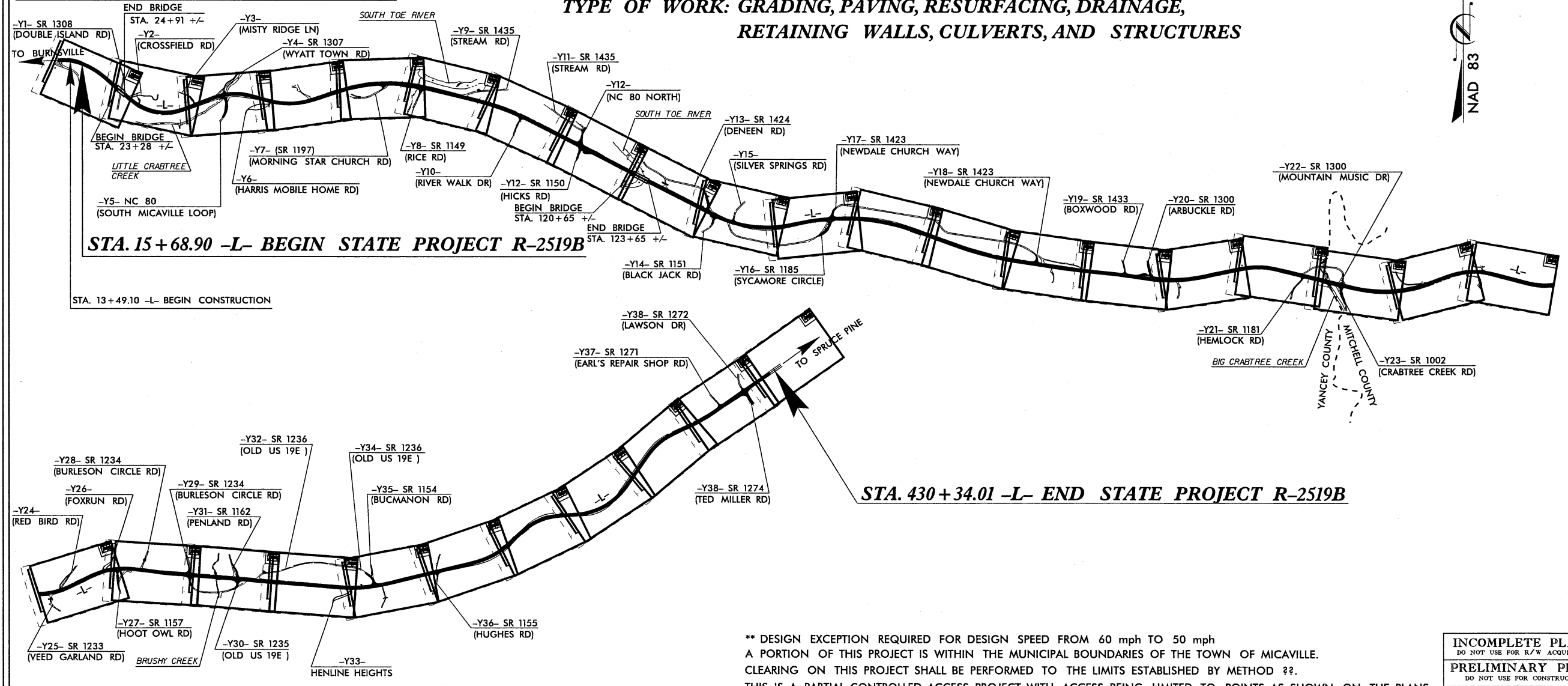
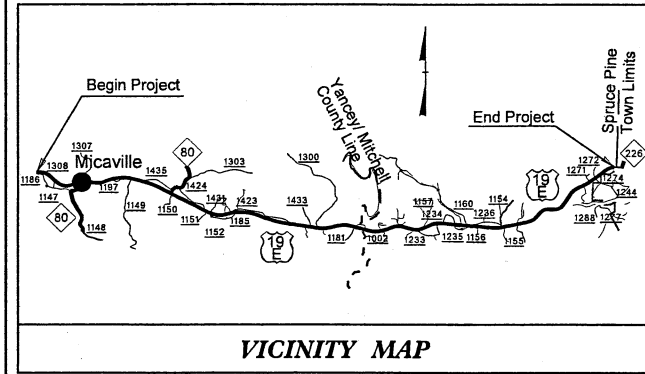
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2519B	2A	475
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
35609.1.1		PE	

YANCEY/MITCHELL COUNTIES

LOCATION: US 19E FROM SR 1186 (OLD US 19) IN
YANCEY COUNTY TO MULTI-LANE SECTION WEST
OF SPRUCE PINE IN MITCHELL COUNTY

TYPE OF WORK: GRADING, PAVING, RESURFACING, DRAINAGE,
RETAINING WALLS, CULVERTS, AND STRUCTURES

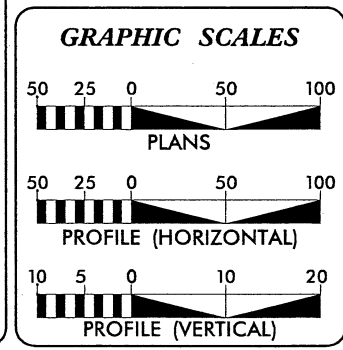
TIP PROJECT: R-2519B



** DESIGN EXCEPTION REQUIRED FOR DESIGN SPEED FROM 60 mph TO 50 mph
A PORTION OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF THE TOWN OF MICAVILLE.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD ??.
THIS IS A PARTIAL CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON THE PLANS.

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

CONTRACT:



DESIGN DATA

ADT 2010 =	12096
ADT 2030 =	18000
DHV =	11 %
D =	60 %
T =	7 % *
V =	60 MPH **
* TTST 3%	DUAL 4%

PROJECT LENGTH

LENGTH OF ROADWAY PROJECT R-2519B	=	7.765 MI
LENGTH OF STRUCTURE PROJECT R-2519B	=	0.088 MI
TOTAL LENGTH OF ROADWAY PROJECT R-2519B	=	7.853 MI
FUNCTIONAL CLASSIFICATION	=	ARTERIAL

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

2006 STANDARD SPECIFICATIONS	
RIGHT OF WAY DATE:	BRENDA MOORE, PE PROJECT ENGINEER
JULY 17, 2009	
LETTING DATE:	REKHA PATEL, PE PROJECT DESIGN ENGINEER
JULY 19, 2011	

HYDRAULICS ENGINEER

SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.

**DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA**

STATE HIGHWAY DESIGN ENGINEER P.E.

\$\$\$\$\$ SYSTEM \$\$\$\$\$\$
\$\$\$\$\$ DGN \$\$\$\$\$\$
\$\$\$\$\$ USERNAME \$\$\$\$\$\$



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

September 2, 2008

STATE PROJECT: 35609.1.1 (R-2519B)
COUNTY: Yancey/Mitchell
DESCRIPTION: US-19E from SR-1186 in Yancey County to the multi-lane section West of Spruce Pine in Mitchell County
SUBJECT: Geotechnical Report – Inventory

Project Description

This project consists of widening the existing road and straightening the alignment. The existing two-lane highway will be upgraded to a four-lane with a 20 foot median, turn lanes and other amenities. For a complete list of the survey lines investigated, please refer to the title sheet of the Inventory investigation package.

Areas of Special Geotechnical Interest

1) The following sections were found to contain rock outcrops at or above proposed grade.

<u>Line</u>	<u>Station Interval</u>
-Y5-	10+50 to 11+50, LT
-Y5-	12+15 to 12+25, LT
-L-	49+40 to 50+95, RT
-L-	55+00 to 55+50, RT
-L-	88+25 to 88+40, RT
-L-	89+05 to 89+45, RT
-L-	90+25 to 90+40, RT
-L-	91+00 to 91+30, RT
-L-	128+50 to 134+60, RT

MAILING ADDRESS:
NC DEPARTMENT OF TRANSPORTATION
GEOTECHNICAL UNIT
1589 MAIL SERVICE CENTER
RALEIGH NC 27699-1589

TELEPHONE: 919-250-4088
FAX: 919-250-4237

WEBSITE: WWW.DOH.DOT.STATE.NC.US

LOCATION:
CENTURY CENTER COMPLEX
BUILDING B
1020 BIRCH RIDGE DRIVE
RALEIGH NC 27610

3/475

<u>Line</u>	<u>Station Interval</u>
-Y16-	10+30 to 10+80, RT
-L-	159+00 to 164+10, RT
-L-	231+05 to 232+10, LT
-L-	278+10 to 278+20, LT
-L-	278+30 to 278+40, LT
-L-	278+50 to 279+30, LT
-L-	287+00 to 287+10, LT
-L-	287+20 to 287+35, LT
-L-	308+90 to 309+35, LT
-DR11-	10+90 to 13+30, RT
-L-	324+85 to 325+05, LT
-L-	325+65 to 326+35, LT
-L-	340+25 to 340+40, RT
-L-	340+90 to 341+20, RT
-L-	353+00 to 353+15, LT
-L-	423+00 to 424+45, LT

2) The following borings encountered rock at or above grade.

<u>Line</u>	<u>Station</u>
-L-	31+00, 78' RT
-L-	50+00, 225' RT
-L-	50+50, 225' RT
-L-	55+00, 165' RT
-L-	55+50, 90' RT
-L-	88+50, 100' RT
-L-	90+00, 90' RT
-L-	133+50, 240' RT
-L-	158+00, 105' RT
-L-	159+00, 135' RT
-L-	160+00, 130' RT
-L-	162+00, 98' RT
-L-	162+00, 225' RT
-L-	163+00, 115' RT
-L-	163+50, 250' RT
-L-	164+00, 115' RT
-L-	164+50, 275' RT
-L-	165+50, 90' RT
-L-	218+50, 73' LT
-L-	219+00, 100' LT
-L-	220+00, 100' LT
-L-	229+50, 85' LT
-L-	286+00, 60' LT

<u>Line</u>	<u>Station</u>
-L-	287+00, 80' LT
-L-	288+00, 90' LT
-L-	289+00, 125' LT
-L-	290+50, 135' LT
-L-	298+00, 75' LT
-L-	307+00, 65' RT
-L-	339+00, 229' RT
-L-	340+50, 185' RT
-L-	353+00, 180' LT
-L-	354+00, 200' LT
-L-	355+00, 193' LT
-L-	376+00, 150' LT
-L-	390+00, 160' LT
-L-	393+00, 120' LT
-Y5-	11+50, 75' LT
-Y5-	12+00, 40' LT
-Y5-	12+50, 65' LT
-Y6-	13+25, 8' RT
-Y6-	13+73, 3' RT
-Y16-	10+95, 40' LT
-DR11-	10+26, 7' LT
-DR11-	10+61, 24' LT
-DR11-	11+18, 13' RT

3) A pond was noted to fall within construction limits.

<u>-L- Stations</u>	<u>Offset</u>
41+15 to 41+30	1' LT to 20' LT

4) In addition to the operating gas stations noted on the plans, three more were noted in the field. Two have been converted to other businesses. The third (marked with an asterisk) is a self-service relict from the 1970's.

<u>-L- Station</u>	<u>Offset</u>
113+00	140' LT
193+50	180' LT
* 273+25	75' LT

The first two almost certainly have the underground storage tanks (UST's) still in place. At the third location, neither vent pipes nor filler caps were evident. The third location is within construction limits (cut slope).

- 5) An area of unsuitable fill material was encountered within the construction limits of the project. It is approximately 5.0 feet right to 75.0 feet left of -L- Station Interval 243+50 to 245+35. The material was apparently dumped into a low-lying area between the house and existing road (including onto the embankment). In addition to silty sand, the material contains metal and wood scraps, plastic and shingles.
- 6) Two wells were located within construction limits that were not on the plans. These are located 115 feet right of -L- Station 161+00 and 55 feet right of -L- Station 334+80. A third well, 20 feet right of -L- Station 196+65 is, in fact, a spring box with water flowing from it.
- 7) Groundwater:

Static groundwater was measured within 6.0 feet of grade at the following boring locations.

54+50, 60' LT	288+00, 50' RT
57+50, 145' RT	308+50, 75' RT
105+50, 55' RT	398+50, 57' LT
246+50, 50' LT	400+50, 56' LT
287+50, 49' RT	

Static groundwater was measured above grade at the following boring locations.

54+50, 85' RT	169+00, 70' RT
55+50, 90' RT	173+50, 105' RT
165+50, 90' RT	196+00, 110' RT
167+50, 80' RT	286+50, 73' RT

Physiography and Geology

The project corridor is moderately developed. Buildings are primarily single family dwellings interspersed with businesses.

The terrain crossed by this project ranges from flat, alluvial plains to steeply rolling uplands. The area is within the Blue Ridge Belt. The Spruce Pine vicinity is a highly mineralized area. The overall country rock, amphibolite and biotite gneisses, have been intruded by granitic pegmatites. These white to light gray bodies are host to a variety of rare and exotic minerals such as torbernite and zoisite.

Two abandoned quarry/mine sites were noted during the investigation. One is approximately 500 feet right of -L- Stations 167+00 to 169+00. The other is approximately 85 feet left of -L- Stations 392+00 to 392+50. The entrance to a large quarry (still operating) is right of -L- Station 393+00.

Soil and Rock Properties

The soil types found on this project include fills, embankment, colluvium, residuals and saprolites. The most important of the fills was noted above as an unsuitable material. The embankments are, of course, associated with the existing highway and secondary roads. The

colluvium is present over most of the upland areas of the project. It is primarily a silty clay with occasional sandy silts. The residual soils were encountered sporadically, and consisted of sandy silts. The saprolites found were almost exclusively silty sands with varying amounts of mica. Two regimes are present. The first, and most common, is a brown to black colored soil derived from gneiss. They often contain thin (< 0.25 inch) seams of manganese oxide. These seams present an almost frictionless surface, and can be a potential for failure. The second regime is light gray to white, and is derived from the pegmatites in the region.

The granitic pegmatites in this area are light gray to white, and composed primarily of feldspar and quartz with mica. Although the blow counts from Standard Penetration Tests (SPT) classify them as crystalline rock, they are generally very friable. Therefore, they should be considered as degradable crystalline rock. The gneisses are predominately amphibolite gneiss with occasional outcrops of muscovite and biotite gneisses. Weathered rock of pegmatite and gneiss were encountered. It should be noted that the term "weathered rock" does not mean that unconventional methods of excavation (e.g. explosives) won't be needed.

Groundwater Properties

Primary drainage is provided by two rivers. The first, the South Toe River, crosses -L- centerline at Station 122+00 and drains the project to approximate Station 393+00. Secondary drainage for this section is provided by Little Crabtree Creek, Long Branch and Crabtree Creek. Long Branch parallels -L- from approximate Stations 122+50 to 186+00. Drainage for the project beyond Station 393+00 is provided by North Toe River. This river is not within the project corridor.

As noted above (see Areas of Special Geotechnical Interest, Groundwater) static groundwater was recorded in several borings, near or above grade.

Water was noted flowing in the ditch right of -L- Stations 196+00 to 196+65. The source is the spring box 20 feet right of Station 196+65.

Geotechnical Descriptive Analysis

Station 15+68.9 to 44+00

The project begins with a fairly large cut in soil left of centerline. The top 5 feet is silty clay colluvium, underlain by medium dense silty sand saprolite. A minor cut is to the right of centerline. In the vicinity of the bridge over SR-1308, some alluvial material is present. This consists of very soft sandy silt with a basal gravel layer. The cut in soil left of centerline continues east of the bridge. The material being very much like that at the beginning of the project. A cut to the right of centerline also has a similar soil profile. Both cuts will encounter weathered rock.

Station 44+00 to 60+00

Embankment will be emplaced left of centerline, while a substantial cut predominates the right for most of this section. The cut will be in crystalline rock (amphibolite gneiss) with an overburden of medium dense silty sand saprolite, medium stiff clay colluvium and some silty sand fill. This cut also includes the excavation necessary for -Y6-.

Station 60+00 to 87+00

The first part of this section has cuts left and right of centerline. These will be in medium dense saprolite with a surface layer of stiff clay colluvium. A retaining wall is proposed left of Station Interval 79+00 to 87+50. To the right, a cut will involve saprolite and weathered rock.

Station 87+00 to 97+00

To the left of centerline, a minor amount of embankment is proposed for about half of this section. Minor cut is proposed for the rest. To the right, a large cut is planned. This will involve degradable crystalline rock (granitic pegmatite) and weathered rock. Competent crystalline rock may also be encountered. An overburden of medium dense saprolite and soft clay colluvium will also be involved. The rock will likely not be a factor ahead of Station 91+25. From this point to the end of the cut, medium dense saprolite and stiff clay colluvium will be encountered.

Station 97+00 to 124+00

The first part of this section is developed with houses and businesses. Throughout this interval, minor embankments to the left and shallow cuts on the right are proposed. The cuts will be medium dense saprolites and medium stiff to stiff colluvium. Some medium stiff fills will be encountered where parking lots have been constructed. From approximate Station 106+00, the vertical alignment begins its descent to the bridge spanning the South Toe River. From approximate Station 111+50, embankment is proposed for both sides of centerline.

Station 124+00 to 137+00

A retaining wall is proposed left of centerline from 125+00 to 130+00. A major cut is proposed right of approximate Stations 128+50 to 135+00. This cut will involve interlayers of crystalline rock (muscovite gneiss and amphibolite gneiss) and areas of degradable crystalline rock (granitic pegmatite). Minor amounts of weathered rock are present. An overburden of medium dense to dense saprolite is also present.

Station 137+00 to 140+50

Relatively minor cuts and embankments in this section.

Station 140+50 to 157+50

Embankment is proposed right of centerline for this section. To the left is proposed a cut. To Station 144+50, the cut will be in weathered rock with an overburden of medium dense to dense saprolite. From Station 144+50 to 150+00, the upper layer of soil is fill. The fill was emplaced as a result of grading for the structure left of Stations 149+00 to 150+00. For the remainder of this section, the cut will be in medium dense colluvium and loose saprolite.

Long Branch is within 100 feet of centerline through much of this segment.

Station 157+50 to 177+00

Relatively minor embankments and cuts are proposed left of centerline for this section. A major cut is proposed right of centerline. Degradable crystalline rock is present at the beginning of the section, but is only present for the first 100 feet or so. Between approximate Stations 159+00 to 167+25, amphibolite gneiss and biotite gneiss are present. The overburden consists of medium dense to dense saprolite, with very dense layers. A thin layer of weathered rock is present between the crystalline rock and the weathered rock. Minor amounts of colluvium were noted. Loose sandy fill is present at the ground surface between the approximate Stations 159+75 to 163+50. This was emplaced to accommodate the structures now located there. From Station 167+25, the cut will be mostly in medium dense saprolite. The boring 105 feet right of Station 173+50 encountered nothing but colluvium. This is, by far, the deepest pocket of colluvium found on the project. Long Branch is within 100 feet of centerline through most of this interval.

Station 177+00 to 216+00

This section is predominately minor cuts and some extensive embankments. The exception is a fairly extensive cut right of Station Interval 185+50 to 196+00. This cut will be almost entirely in soil, with a minor amount of weathered rock at Stations 189+00 and 194+50. The soils involved are primarily medium dense to dense saprolites with trace amounts of colluvium and fill. A retaining wall is proposed left of Station Interval 198+00 to 202+25. Water was noted flowing in the ditch right of Station Interval 196+00 and 196+65.

Station 216+00 to 223+00

This section involves cuts left and right of centerline. The cut right of -L- is a comparatively small cut involving medium dense to dense saprolites and residuals. Weathered rock will probably be encountered at or near the proposed ditchline. The cut left of centerline is more significant. At the beginning of this section, the cut will be in medium dense saprolite. By Station 218+00, weathered rock is a significant portion of the cut. And by Station 218+50, crystalline rock becomes an increasingly major factor in the cut.

Station 223+00 to 250+00

Three retaining walls are planned for this section. The first is right of Station Interval 226+50 to 230+00; the second is left of Station Interval 245+00 to 249+50; the third is right of Station Interval 246+50 to 249+25. The proposed embankments are fairly minor. A large cut section, left of centerline, begins at approximate Station 226+00 and extends to 243+00. The cut will be in soil to begin with. A surface layer of medium stiff colluvium, up to 10 feet thick, overlays the saprolite. The saprolite has densities of loose to medium dense. By -L- Station 229+75, weathered rock will be involved in the cut. Crystalline rock is in evidence by Station 231+00. A minor component is the degradable granitic pegmatite, but most of the crystalline rock is the more competent amphibolite gneiss. The pegmatite was noted in the existing cut, left of Station Interval 231+05 to 231+15. Weathered rock is also present overlaying the crystalline rock. By Station 233+50, the cut will involve soil almost exclusively. One small interval of rock was noted in the existing cut left of -L- Stations 242+80 to 242+90. Left of -L- Stations 243+50 to 245+35 was encountered highly questionable fill material. Apparently it was backfilled against

the roadway embankment, and continues out further left to beyond construction limits. In addition to soil, this material contains chunks of rotten wood, bits of plastic and metal and shingles.

Station 250+00 to 277+00

One retaining wall is proposed for this section. It is left of -L- Station Interval 273+75 to 277+00. The embankments are mostly to the right of centerline, and relatively minor. An extensive cut section runs through most of this section, left of centerline. It will be constructed almost entirely in medium dense to dense saprolite with interlayers of very dense saprolite. Occasionally, interlayers of weathered rock were encountered during drilling. A large erosional gully was noted in the existing embankment. It is right of Stations 266+40 to 266+75. It has been backfilled with boulder-sized rip-rap. The pavement in the vicinity looks fine.

Station 277+00 to 284+00

This section has cut left of centerline and embankment to the right. The cut will involve crystalline rock (muscovite gneiss) with a saprolite overburden.

Station 284+00 to 308+50

Three retaining walls are proposed within this section. One is right of -L- Stations 286+00 to 288+50; another is right of -L- Stations 305+00 to 308+50; the third is right of -DR11- Stations 10+25 to 11+25. Embankments are also scheduled for this section, primarily right of centerline. A long cut section, left of centerline, runs throughout most of this section. Crystalline rock, in the form of amphibolite gneiss, will be involved. There is also an overburden of medium dense saprolite and colluvium. Weathered rock was encountered in very minor amounts. Crystalline rock is exposed in the existing cuts sporadically throughout the section. Most of the rock is amphibolite gneiss with some minor interlayers of biotite gneiss.

Station 308+50 to 325+00

At the beginning of this interval, there is a cut section left of centerline. This will involve weathered rock and/or rock at the ditchline. Otherwise, the materials will be loose to medium dense saprolite. An occasional layer of very dense saprolite is also present. A cut section right of 308+50 to 312+50 will involve mostly soil. Fill material is present right of approximate Stations 320+00 to 325+00. This consists of very loose sand and gravel. It was emplaced on the alluvial sandy clays that border Brushy Creek. A tributary of Brushy Creek parallels centerline from 320+00 to the end (and beyond) of this section. This tributary will be a factor in construction.

Station 325+00 to 336+00

This section starts with a cut left of centerline. The cut will involve crystalline rock (amphibolite gneiss) with minor amounts of soil overburden. The cut to the right of centerline will probably involve soil with interlayers of weathered rock. The tributary of Brushy Creek mentioned above parallels centerline until approximate -L- Station 330+00, when it's outside of construction limits.

Station 336+00 to 350+00

One retaining wall is proposed for this section. It is left of Stations 341+00 to 347+00. A large cut interval right of centerline is at the beginning of this section. It will involve crystalline rock (amphibolite gneiss), some weathered rock and an overburden of medium dense to dense saprolite. Rock is exposed within the existing cut. A stream (name unknown) crosses centerline at -L- Station 346+00. Associated with this is about 5 to 10 feet of loose sand and gravel alluvium. The stream parallels centerline until Station 349+00; it will be a factor in construction.

Station 350+00 to 371+00

A retaining wall is planned for right of -L- Stations 360+50 to 363+00. Otherwise, the major portion of this section, right of centerline, will be embankment. A stream parallels centerline from Station 362+00 to beyond the end of this interval. Another crosses centerline at -L- Station 367+60. Both will be factors in construction. A long cut section dominates the left side of this interval. It will involve crystalline rock, amphibolite gneiss and granitic pegmatite. The pegmatite is friable, and in some outcrops very severely weathered. Weathered rock is present through much of this interval. The saprolite overburden consists of medium dense silty sand with traces of manganese oxide. From Station 362+00 to the end of the interval, the cut will be in saprolite. Sporadic outcrops of rock and weathered rock were noted in the existing cuts.

Station 371+00 to 389+00

The cuts within this section will primarily involve medium dense to dense saprolite. An occasional layer of very dense saprolite was encountered. Crystalline rock, amphibolite gneiss and granitic pegmatite, were also encountered. Embankment is proposed right of centerline for most of this interval.

Station 389+00 to 402+50


The major construction issues in this section are the cut left of Stations 389+00 to 394+50, and the embankment right of 394+00 to 400+00. The cut will involve mostly weathered rock with some granitic pegmatite and saprolite. The pegmatite is friable and should probably be considered as degradable. It is the subject of the large quarry whose entrance is right of -L- Station 393+70. The embankment will be emplaced on existing roadway embankment, and toe-up on stiff to very stiff colluvium. A retaining wall is proposed left of -L- Stations 398+50 to 402+50.

Station 402+50 to 430+34

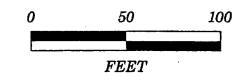
The final section of the project involves both embankments and cuts. The cut right of centerline at the beginning of this section will involve mostly weathered rock with some interlayers of dense to very dense saprolite. To the left of centerline the cut will be mostly in medium dense to dense saprolite. A moderately extensive embankment section right of Stations 411+50 to 417+00 will toe-up on medium stiff colluvium and loose to dense saprolite. Crystalline rock, interlayers

of amphibolite gneiss and granitic pegmatite, are exposed in the ditchline left of Stations 423+00 to 424+50. From approximately -L- Station 424+70 to the end of the project, construction will consist mostly of tying-in with the existing multi-lane highway.

Respectfully Submitted,

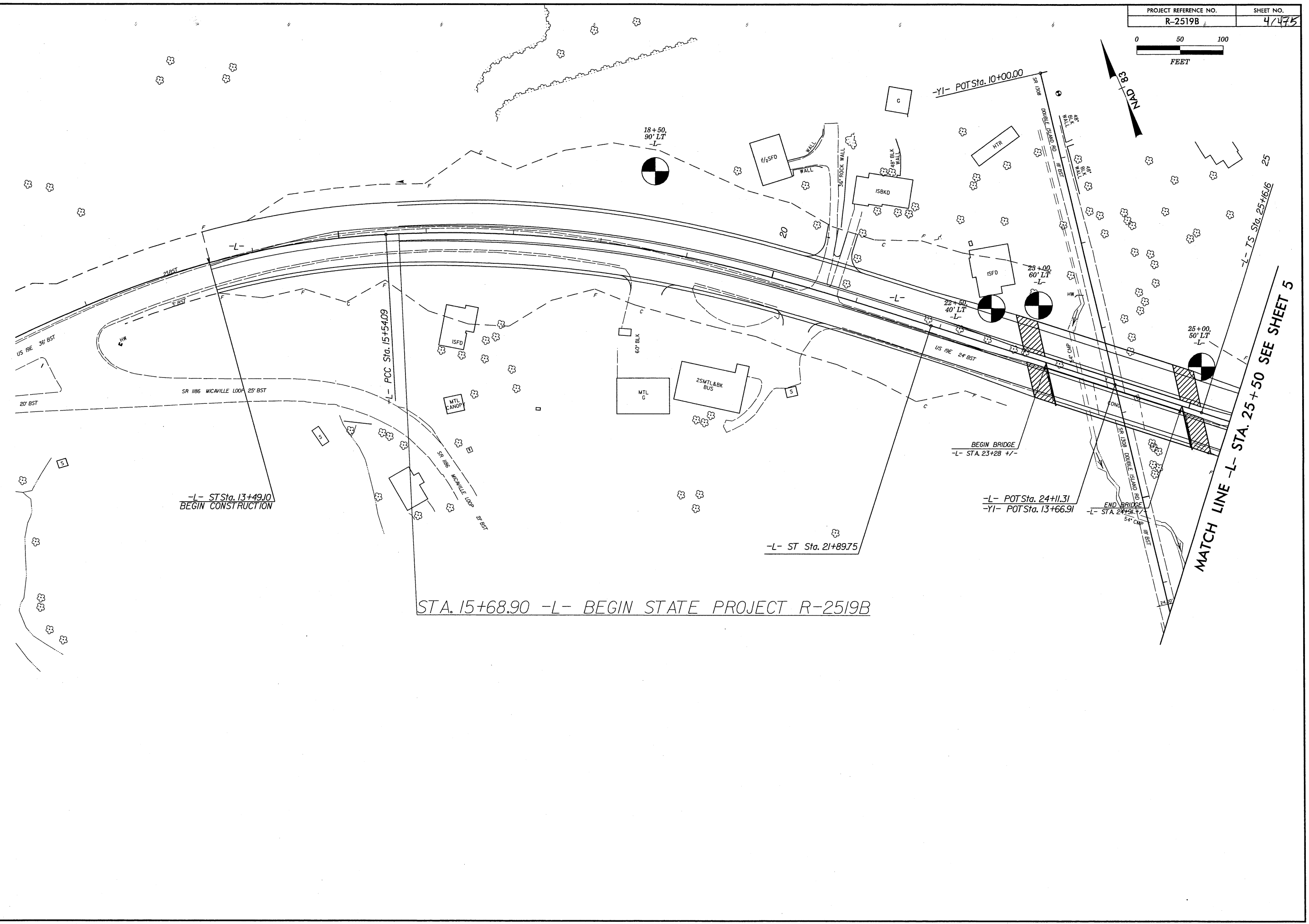


Charles A. Dunnagan, L.G.
Project Geological Engineer



8/17/99

REVISIONS



-L- ST Sta. 13+49.10
BEGIN CONSTRUCTION

-L- PCC Sta. 15+54.09

-L- ST Sta. 21+89.75

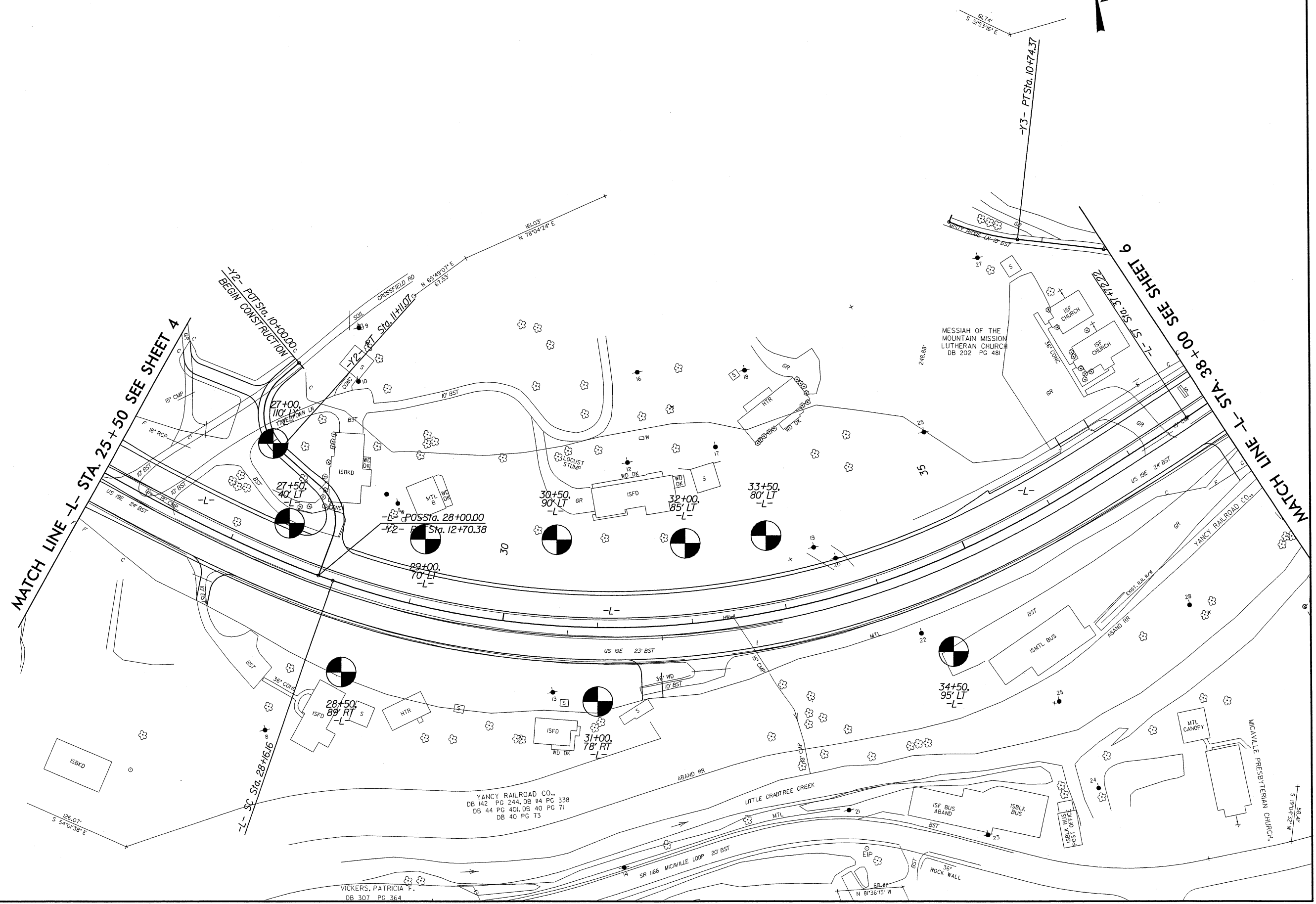
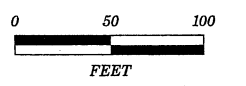
STA. 15+68.90 -L- BEGIN STATE PROJECT R-2519B

BEGIN BRIDGE
-L- STA. 23+28 +/-

-L- POT Sta. 24+11.31
-YI- POT Sta. 13+66.91

END BRIDGE
-L- STA. 24+43.4 +/-

MATCH LINE -L- STA. 25+50 SEE SHEET 5

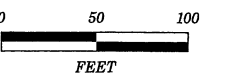


REVISIONS

8/17/09

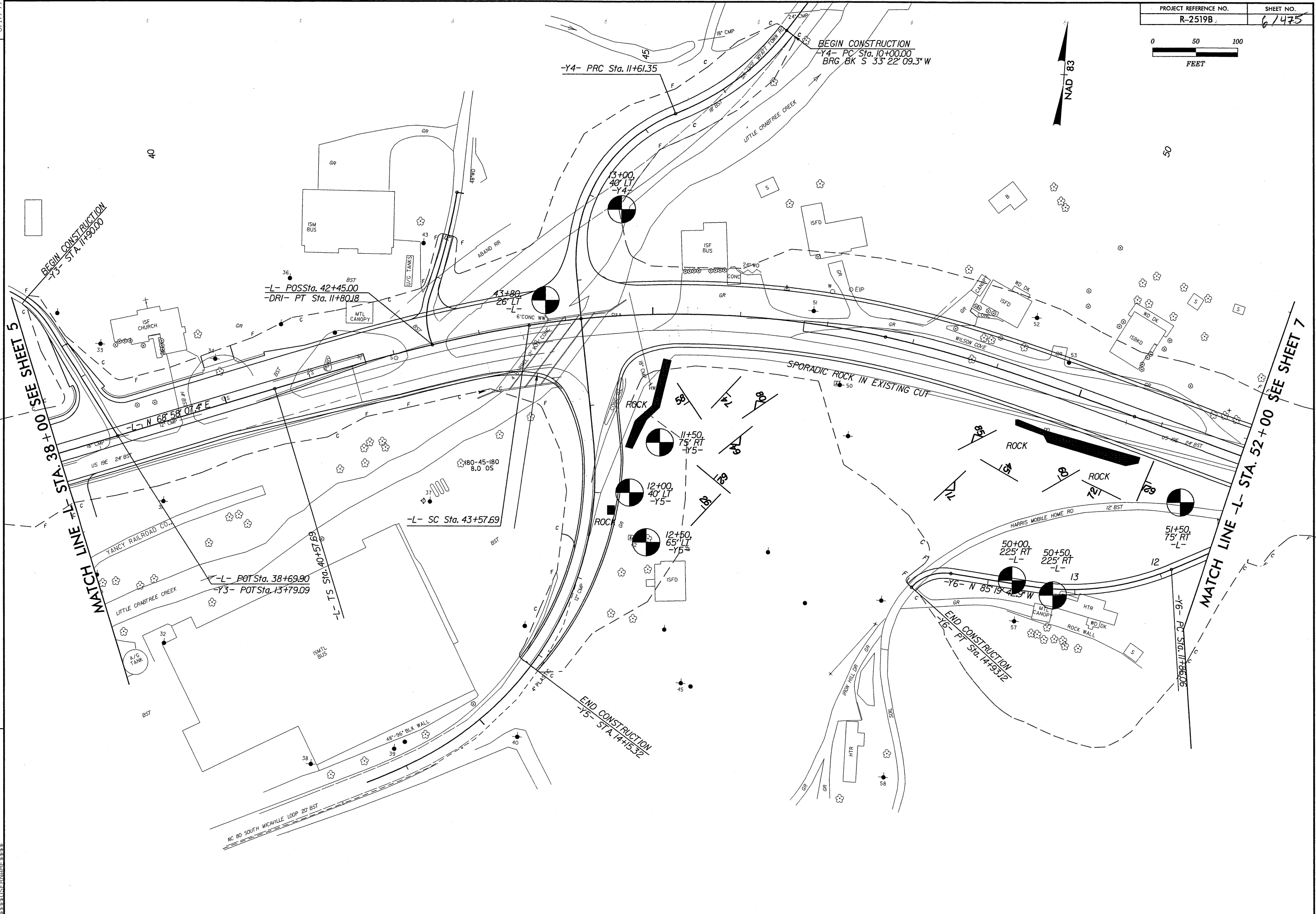
SYSTIME
DONDON
BANK

VICKERS, PATRICIA F.
DB 307 PG 364



8/17/99

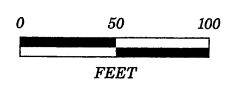
REVISIONS



MATCH LINE -L- STA. 38+00 SEE SHEET 5

MATCH LINE -L- STA. 52+00 SEE SHEET 7

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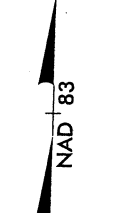
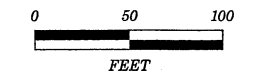


8/17/99

REVISIONS



FOR -L- PROFILE SEE SHEET 36
 FOR -Y6- PROFILE SEE SHEET 55
 FOR -DR2- PROFILE SEE SHEET 65

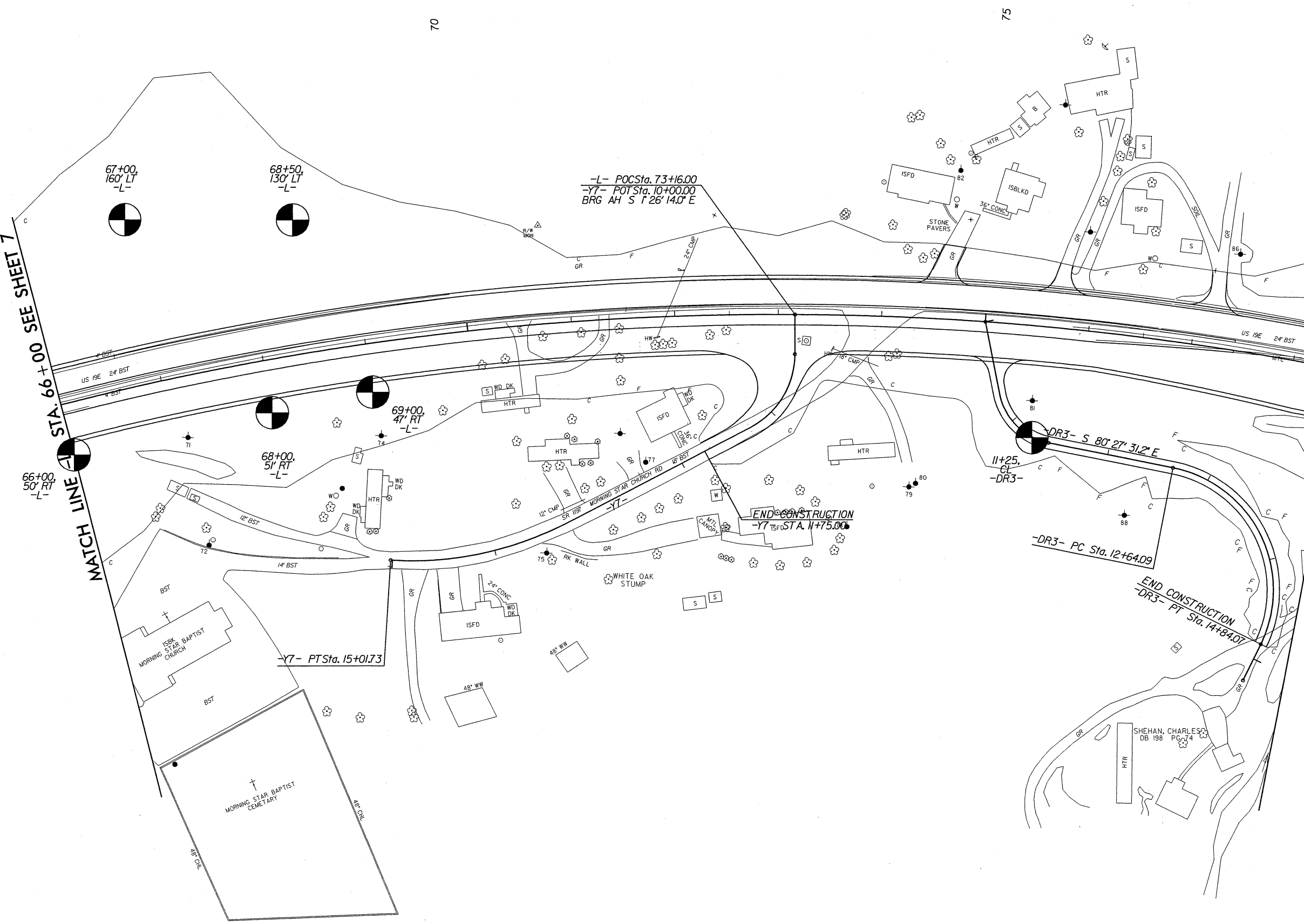


8/17/09

REVISIONS

MATCH LINE -L- STA. 66+00 SEE SHEET 7

MATCH LINE -L- STA. 78+50 SEE SHEET 9



66+00
50' RT
-L-

67+00
160' LT
-L-

68+50
130' LT
-L-

68+00
51' RT
-L-

69+00
47' RT
-L-

-L- POC Sta. 73+16.00
-Y7- POT Sta. 10+00.00
BRG AH S 1' 26' 14.0" E

END CONSTRUCTION
-Y7- PT Sta. 11+75.00

11+25
CL
-DR3-

-DR3- PC Sta. 12+64.09

END CONSTRUCTION
-DR3- PT Sta. 14+84.07

-Y7- PT Sta. 15+01.73

MORNING STAR BAPTIST
CEMETARY

SHEHAN, CHARLES
DB 198 PG 74

SYSTEMS

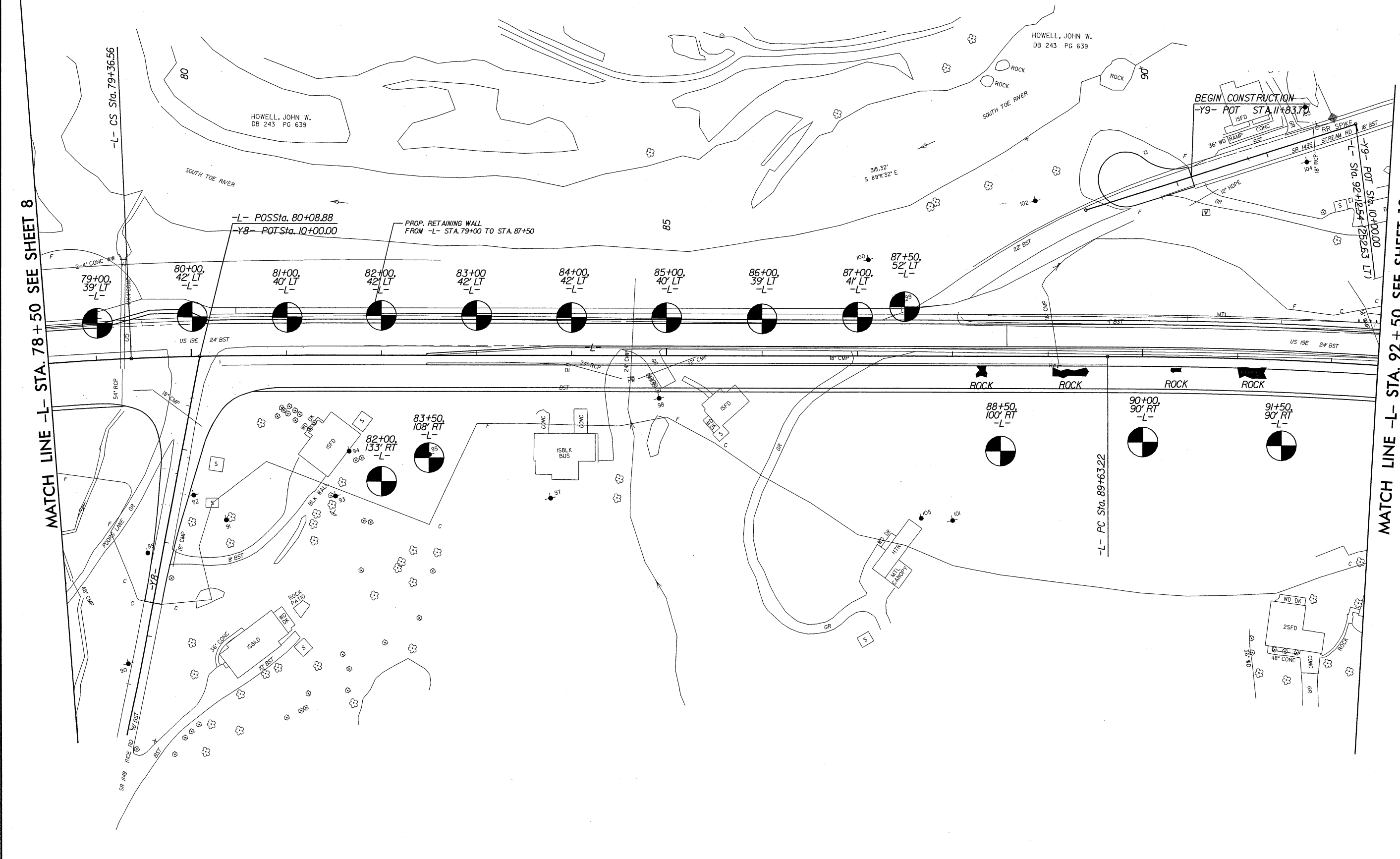


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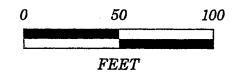
REVISIONS

MATCH LINE -L- STA. 78+50 SEE SHEET 8

MATCH LINE -L- STA. 92+50 SEE SHEET 10



*****SYSTEMTIME*****
 *****USERNAME*****

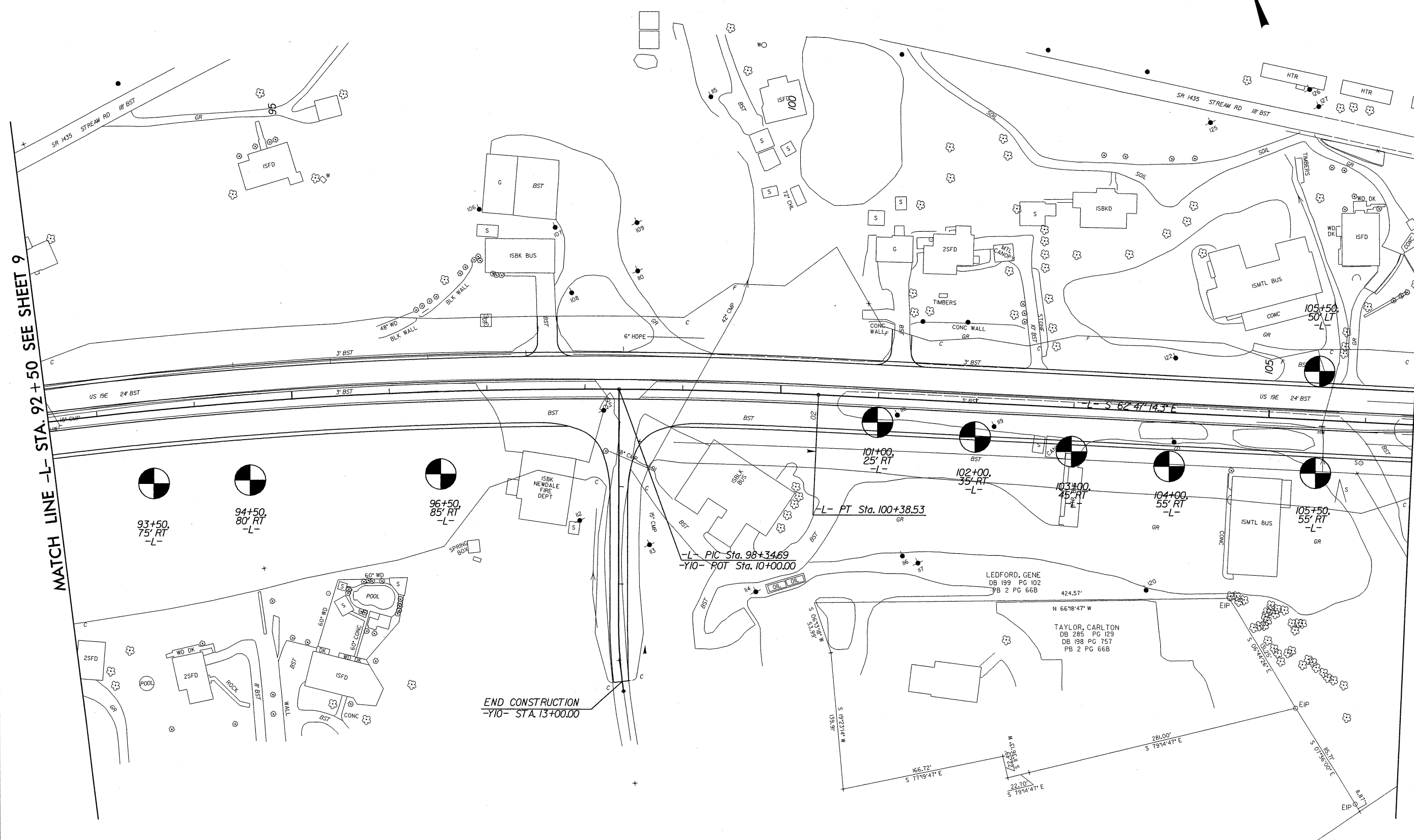


8/17/99

REVISIONS

MATCH LINE -L- STA. 92 + 50 SEE SHEET 9

MATCH LINE -L- STA. 106 + 50 SEE SHEET 11



93+50
75' RT
-L-

94+50
80' RT
-L-

96+50
85' RT
-L-

101+00
25' RT
-L-

102+00
35' RT
-L-

103+00
45' RT
-L-

104+00
55' RT
-L-

105+50
50' LT
-L-

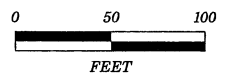
-L- PIC Sta. 98+34.69
-Y10- POT Sta. 10+00.00

-L- PT Sta. 100+38.53

LEDFORD, GENE
DB 199 PG 102
PB 2 PG 66B

TAYLOR, CARLTON
DB 285 PG 129
DB 198 PG 757
PB 2 PG 66B

END CONSTRUCTION
-Y10- STA. 13+00.00

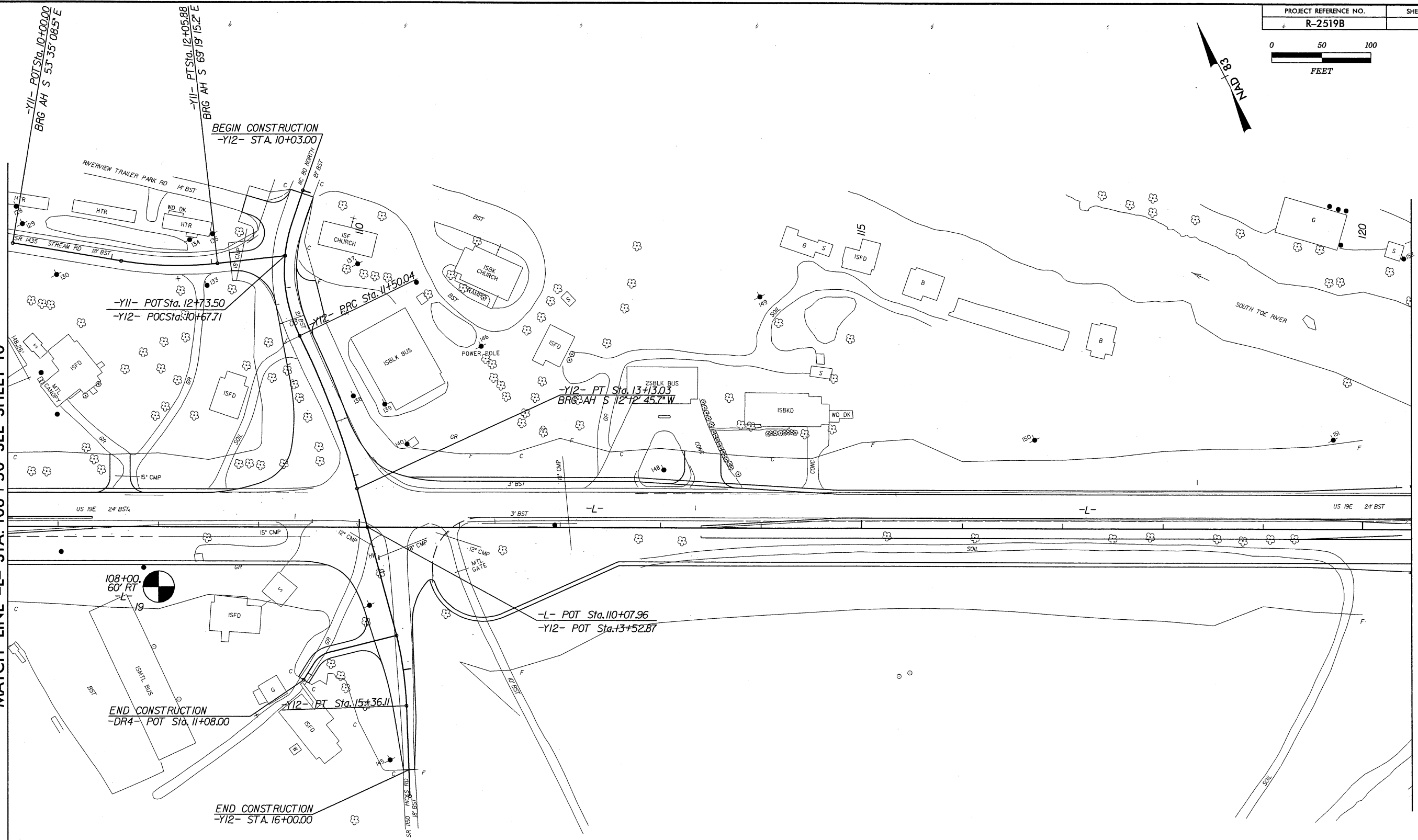


B/17/99

MATCH LINE -L- STA. 106 + 50 SEE SHEET 10

MATCH LINE -L- STA. 120 + 50 SEE SHEET 12

REVISIONS



-Y11- POT Sta. 10+00.00
BRG AH S 53° 35' 08.5" E

-Y11- POT Sta. 12+05.88
BRG AH S 69° 19' 15.2" E

BEGIN CONSTRUCTION
-Y12- STA. 10+03.00

-Y11- POT Sta. 12+73.50
-Y12- POC Sta. 10+67.71

-Y12- PRC Sta. 11+50.04

-Y12- PT Sta. 13+13.03
BRG: AH S 12° 12' 45.7" W

108+00.
60' RT

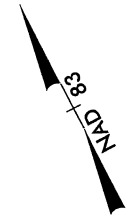
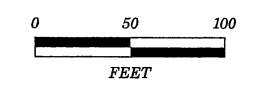
END CONSTRUCTION
-DR4- POT Sta. 11+08.00

END CONSTRUCTION
-Y12- STA. 16+00.00

-L- POT Sta. 110+07.96
-Y12- POT Sta. 13+52.87

-Y12- PT Sta. 15+36.11

SYTIME\$\$\$\$
CLOSINGS\$\$\$\$
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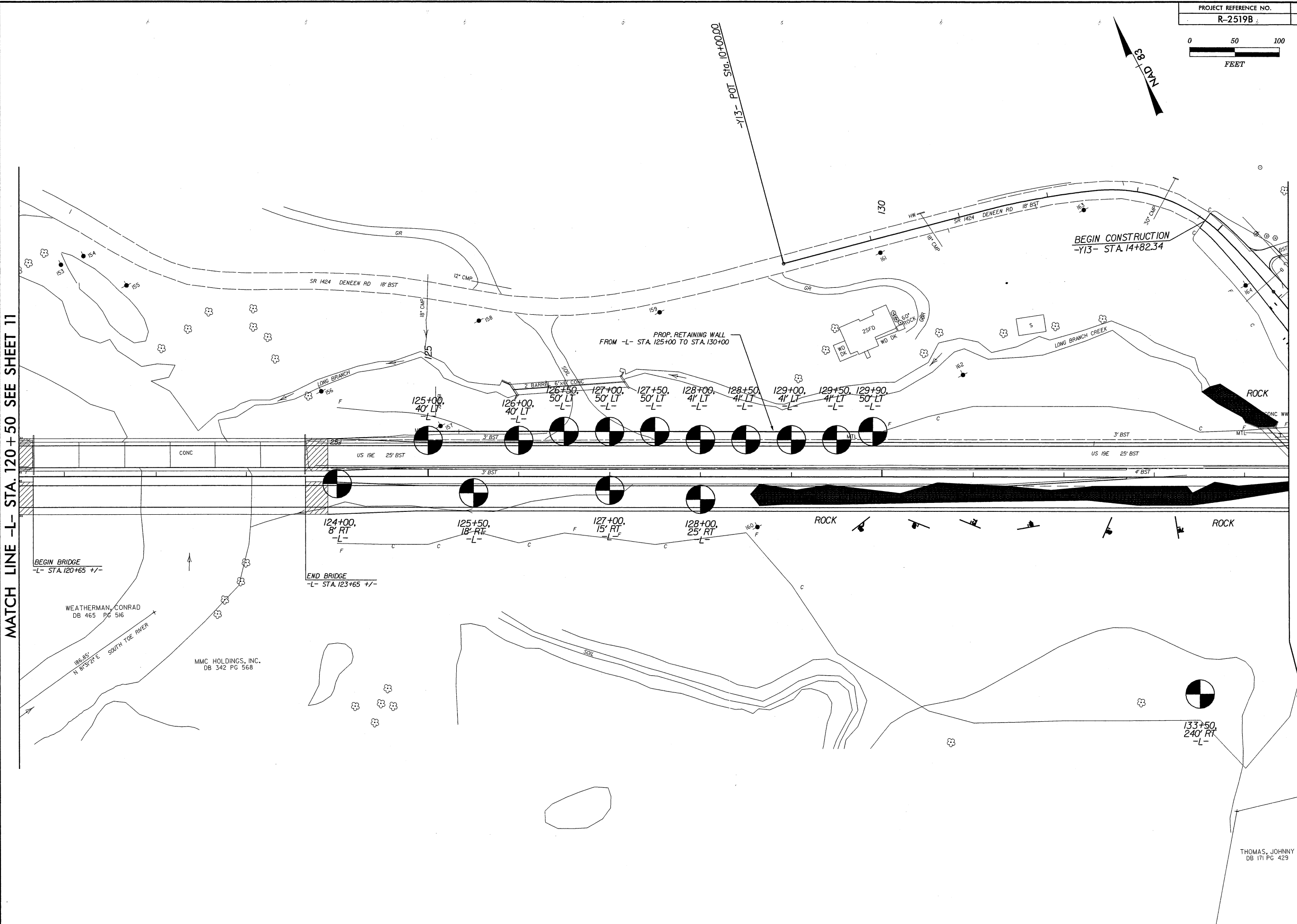


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REVISIONS

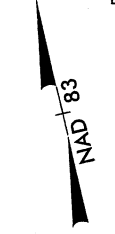
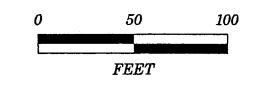
MATCH LINE -L- STA. 120 + 50 SEE SHEET 11

MATCH LINE -L- STA. 134 + 50 SEE SHEET 13

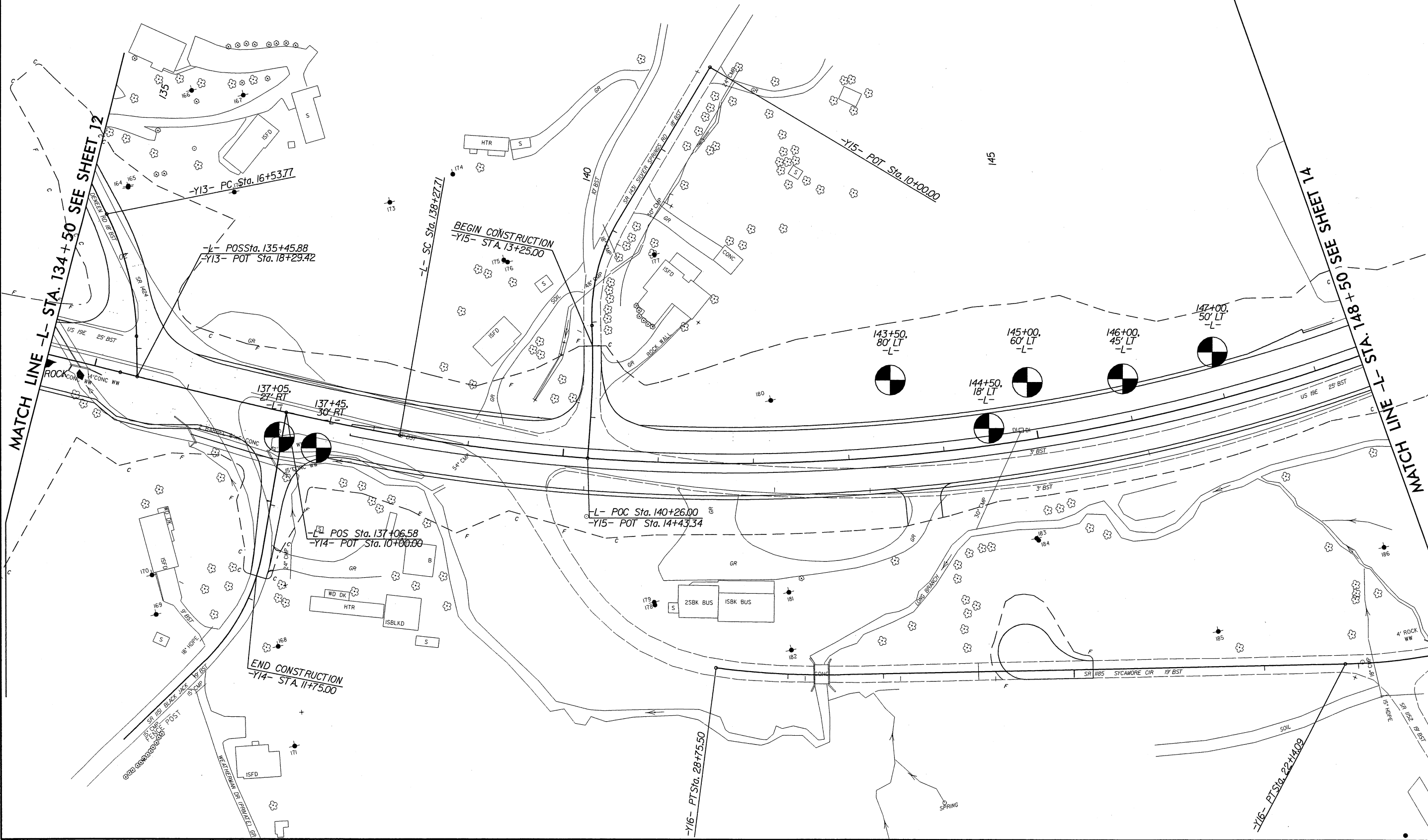


TIME

FOR -L- PROFILE SEE SHEET 39
FOR -Y13- PROFILE SEE SHEET 56



REVISIONS



MATCH LINE -L- STA. 134+50 SEE SHEET 12

MATCH LINE -L- STA. 148+50 SEE SHEET 14

-Y13- PC Sta. 16+53.77
-Y13- POT Sta. 18+29.42
-L- POS Sta. 135+45.88

BEGIN CONSTRUCTION
-Y15- STA. 13+25.00

137+05.27 RT
137+45.30 RT

-L- POS Sta. 137+06.58
-Y14- POT Sta. 10+00.00

-L- POC Sta. 140+26.00
-Y15- POT Sta. 14+43.34

143+50.80 LT

145+00.60 LT

146+00.45 LT

147+00.50 LT

144+50.18 LT

-Y16- PT Sta. 28+75.50

-Y16- PT Sta. 22+14.09

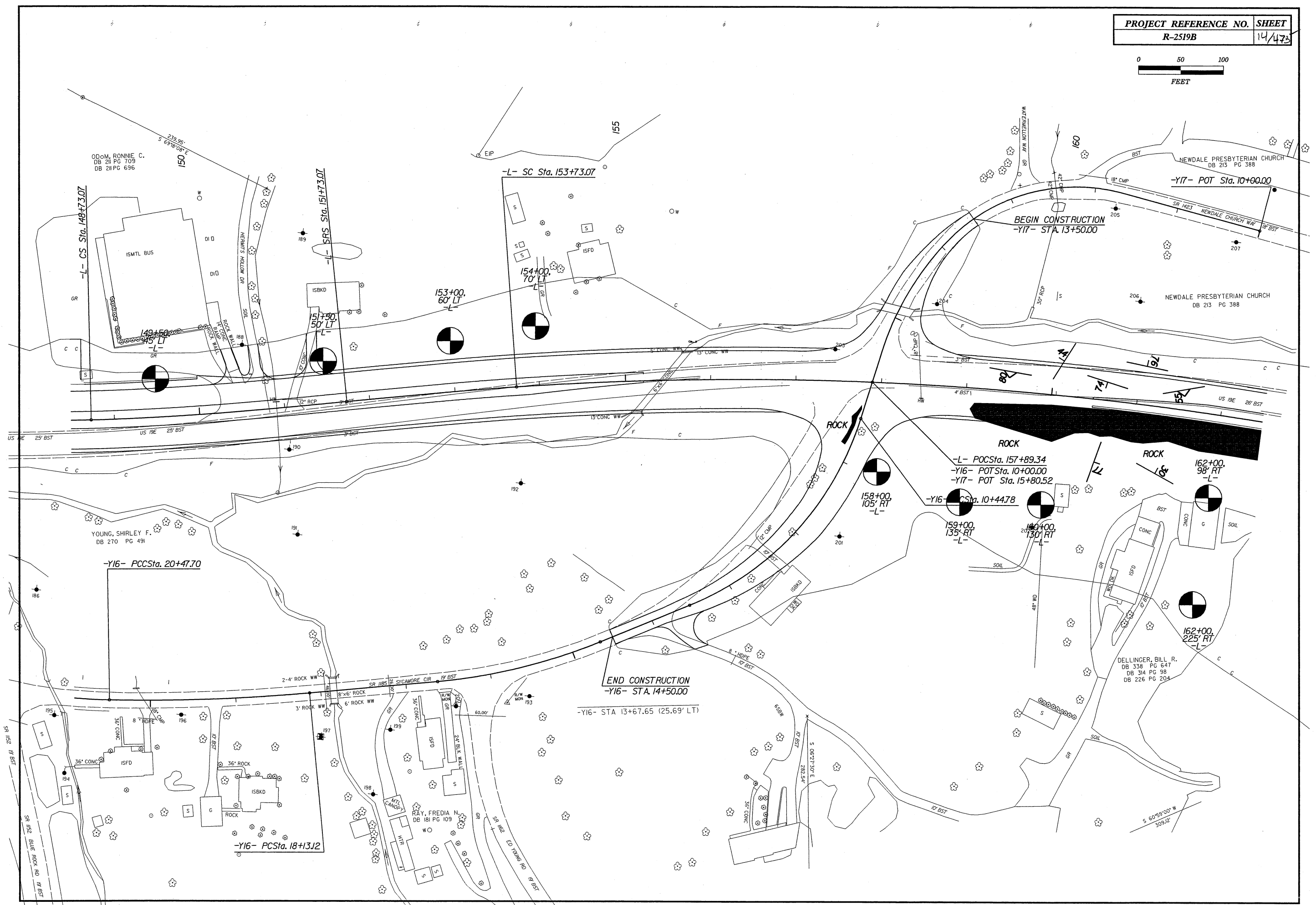
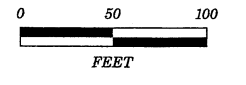
BLACK JACK POST
REINFORCED CONCRETE

WEATHERMAN DR. TYPICAL

SR 1185 SYCAMORE CIR 19' BST

SR 1182 16' BST

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ODoM, RONNIE C.
DB 211 PG 709
DB 211 PG 696

-L- CS Sta. 148+73.07

ISMTL BUS

-L- SFRS Sta. 151+73.07

-L- SC Sta. 153+73.07

153+00.
60' LT

154+00.
70' LT

151+50.
50' LT

BEGIN CONSTRUCTION
-Y17- STA. 13+50.00

NEWDALE PRESBYTERIAN CHURCH
DB 213 PG 388

-Y17- POT Sta. 10+00.00

NEWDALE PRESBYTERIAN CHURCH
DB 213 PG 388

YOUNG, SHIRLEY F.
DB 270 PG 491

-Y16- PCCSta. 20+47.70

-Y16- PCSta. 18+13.12

END CONSTRUCTION
-Y16- STA. 14+50.00

-Y16- STA 13+67.65 (25.69' LT)

ROCK

ROCK

ROCK

-L- PCCSta. 157+89.34
-Y16- POT Sta. 10+00.00
-Y17- POT Sta. 15+80.52

-Y16- CSSta. 10+44.78

158+00.
105' RT
-L-

159+00.
135' RT
-L-

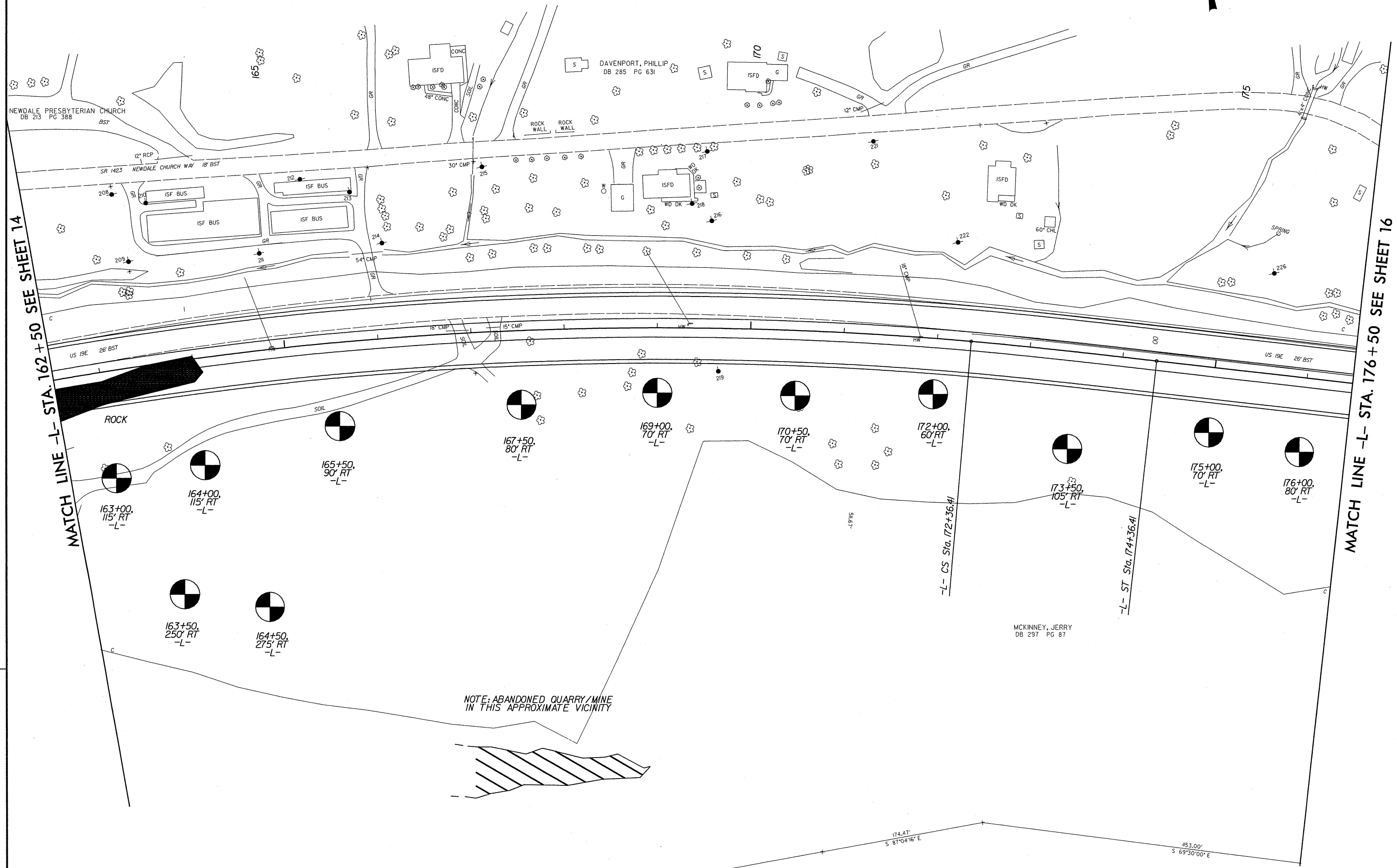
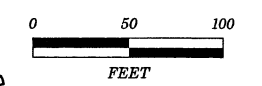
160+00.
130' RT
-L-

162+00.
98' RT
-L-

162+00.
225' RT
-L-

DELLINGER, BILL R.
DB 338 PG 647
DB 314 PG 98
DB 226 PG 204

8/17/99



MATCH LINE -L- STA. 162+50 SEE SHEET 14

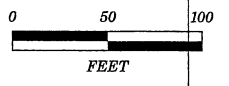
MATCH LINE -L- STA. 176+50 SEE SHEET 16

REVISIONS

NOTE: ABANDONED QUARRY/MINE IN THIS APPROXIMATE VICINITY

174.47'
S 87°04'16" E

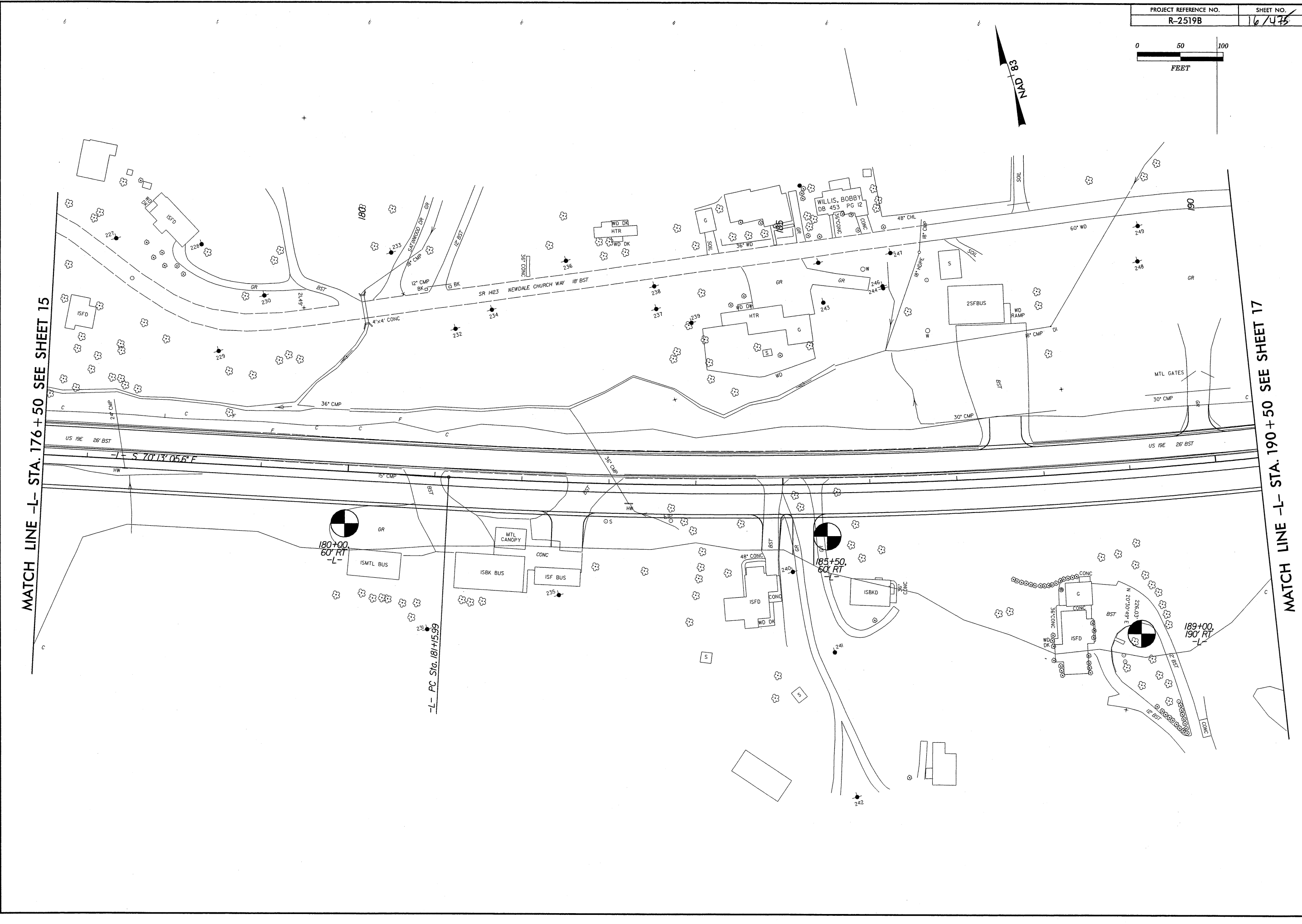
453.00'
S 69°30'00" E



REVISIONS

MATCH LINE -L- STA. 176+50 SEE SHEET 15

MATCH LINE -L- STA. 190+50 SEE SHEET 17

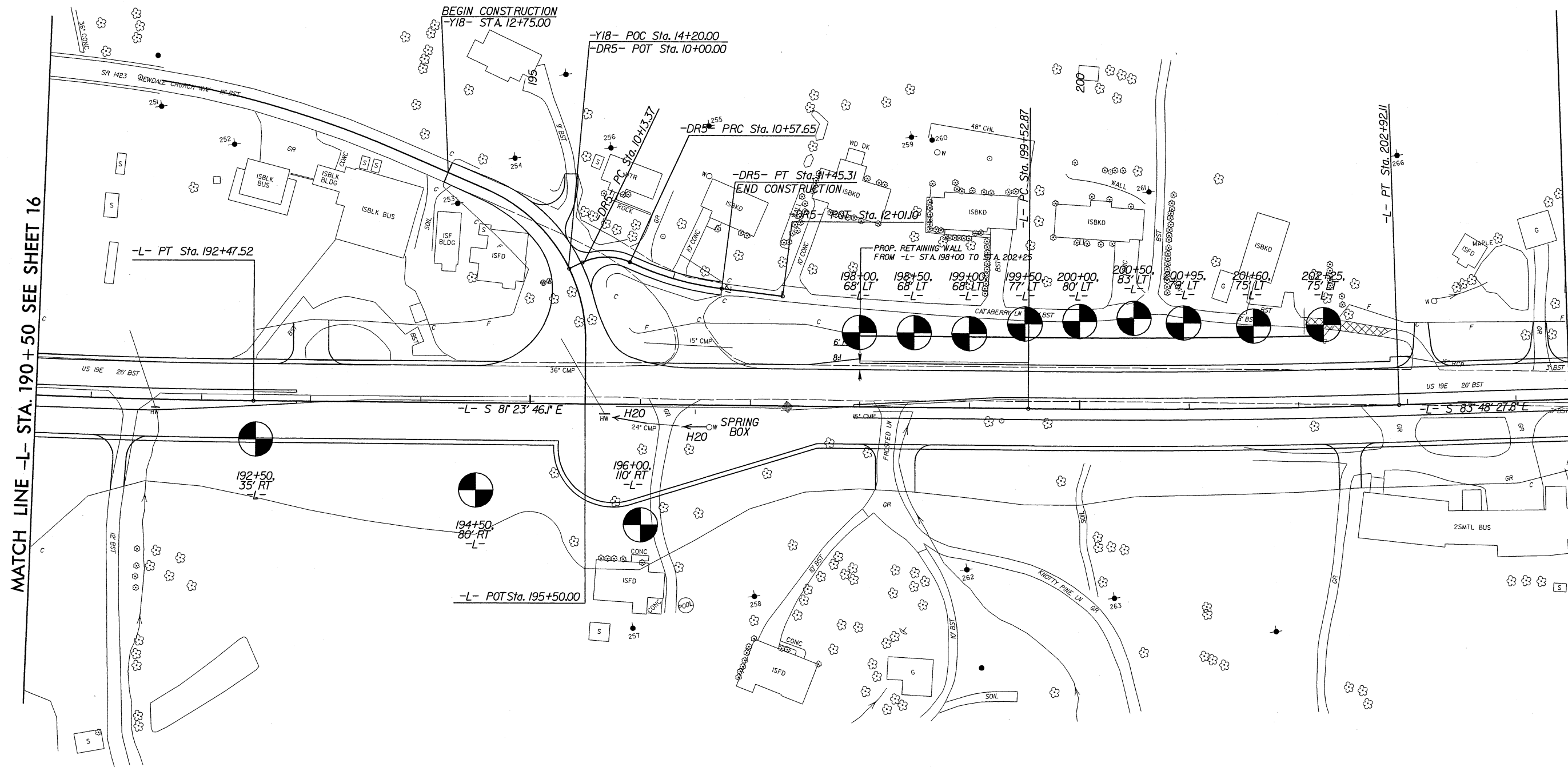
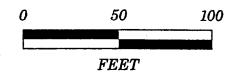


180+00. 60' RT -L-

185+50. 60' RT -L-

189+00. 190' RT -L-

-L- PC Sta. 181+15.99

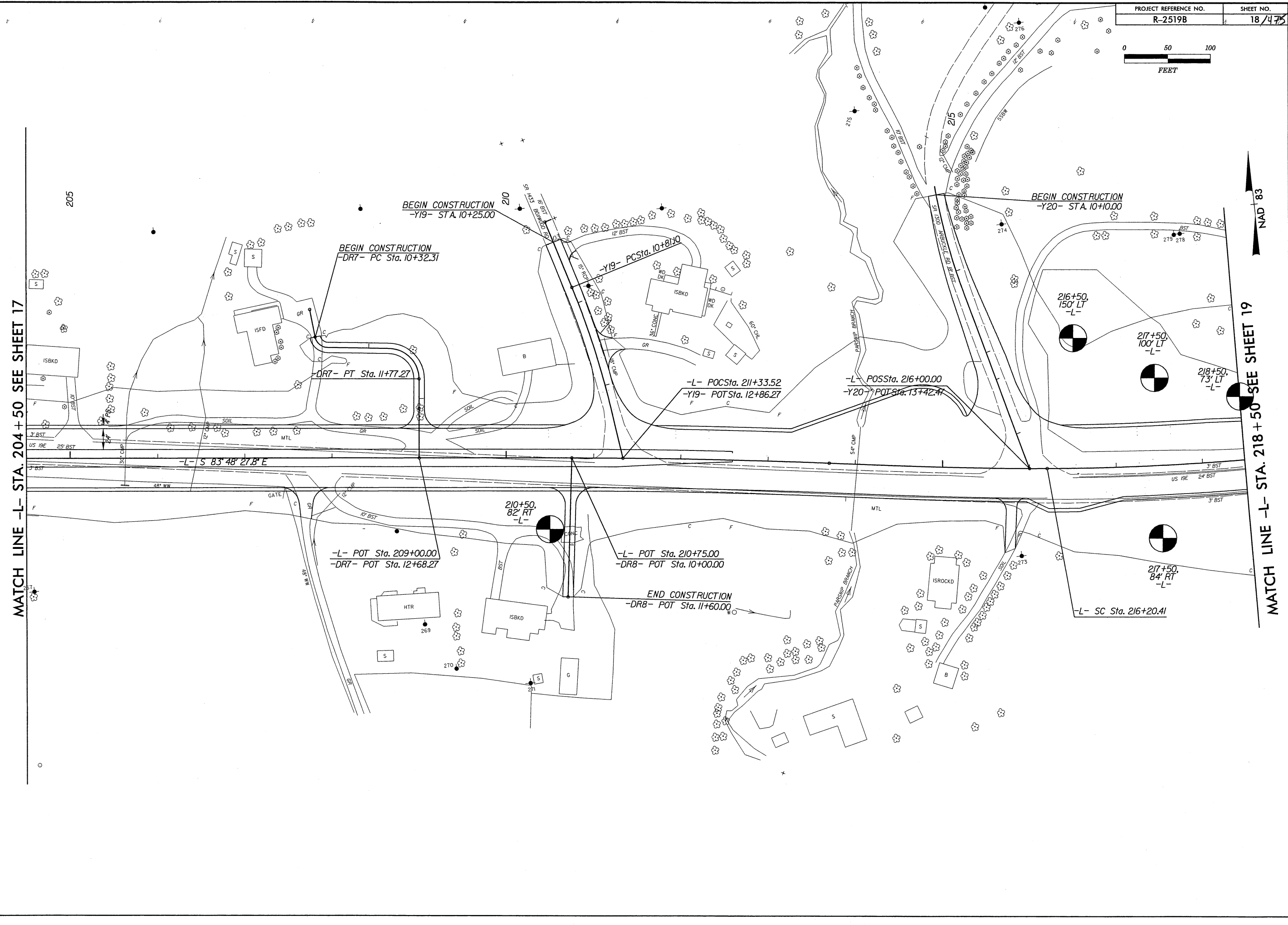
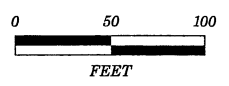


MATCH LINE -L- STA. 190 + 50 SEE SHEET 16

MATCH LINE -L- STA. 204 + 50 SEE SHEET 18

REVISIONS

\$\$\$\$\$SYTIME\$\$\$\$\$
 \$\$\$USERNAME\$\$\$

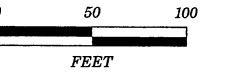


MATCH LINE -L- STA. 204 + 50 SEE SHEET 17

MATCH LINE -L- STA. 218 + 50 SEE SHEET 19

REVISIONS

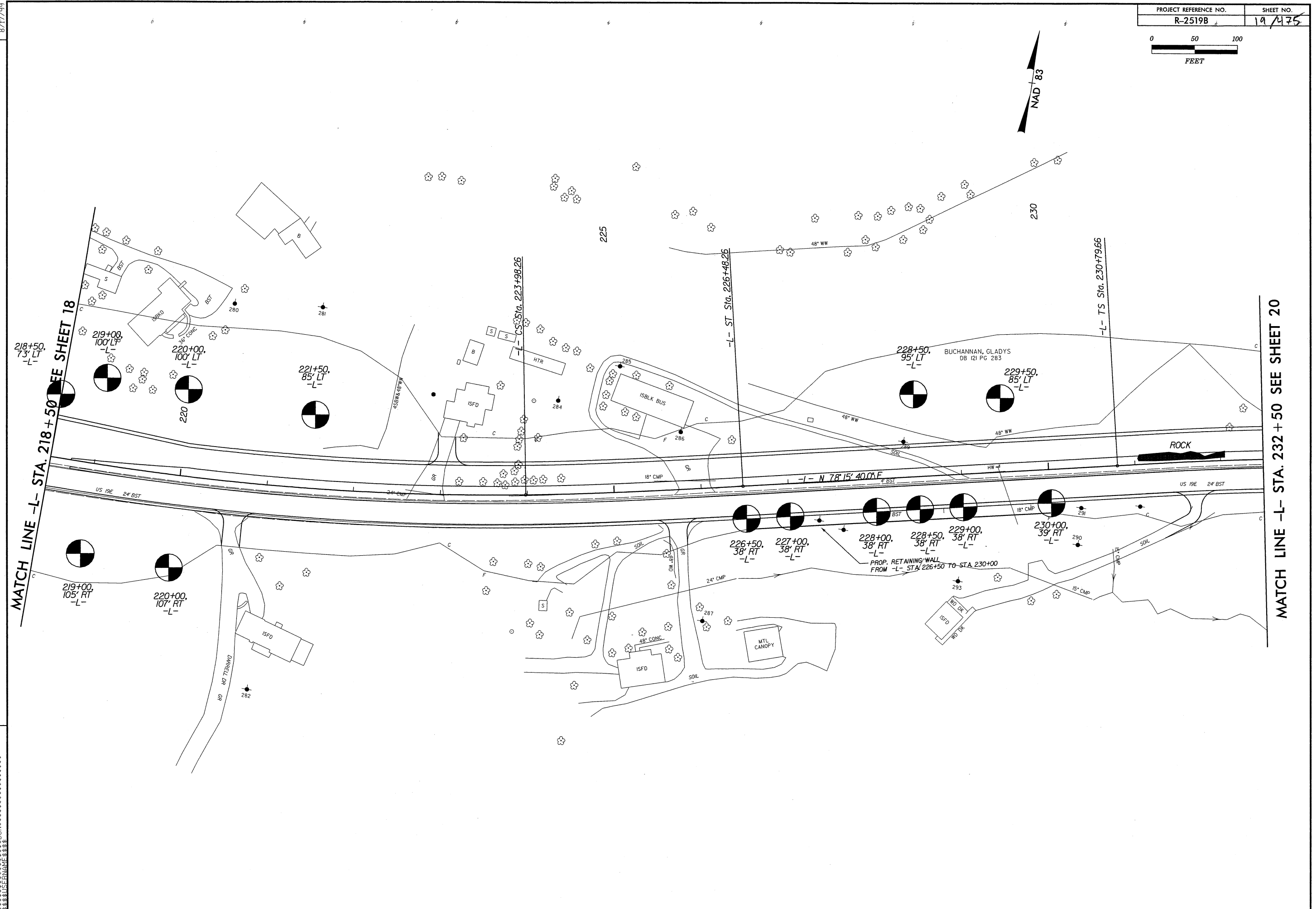
8/17/99



NAD '83

8/17/99

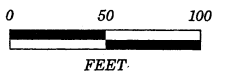
REVISIONS



MATCH LINE -L- STA. 218+50 SEE SHEET 18

MATCH LINE -L- STA. 232+50 SEE SHEET 20

SYTIME\$\$\$\$
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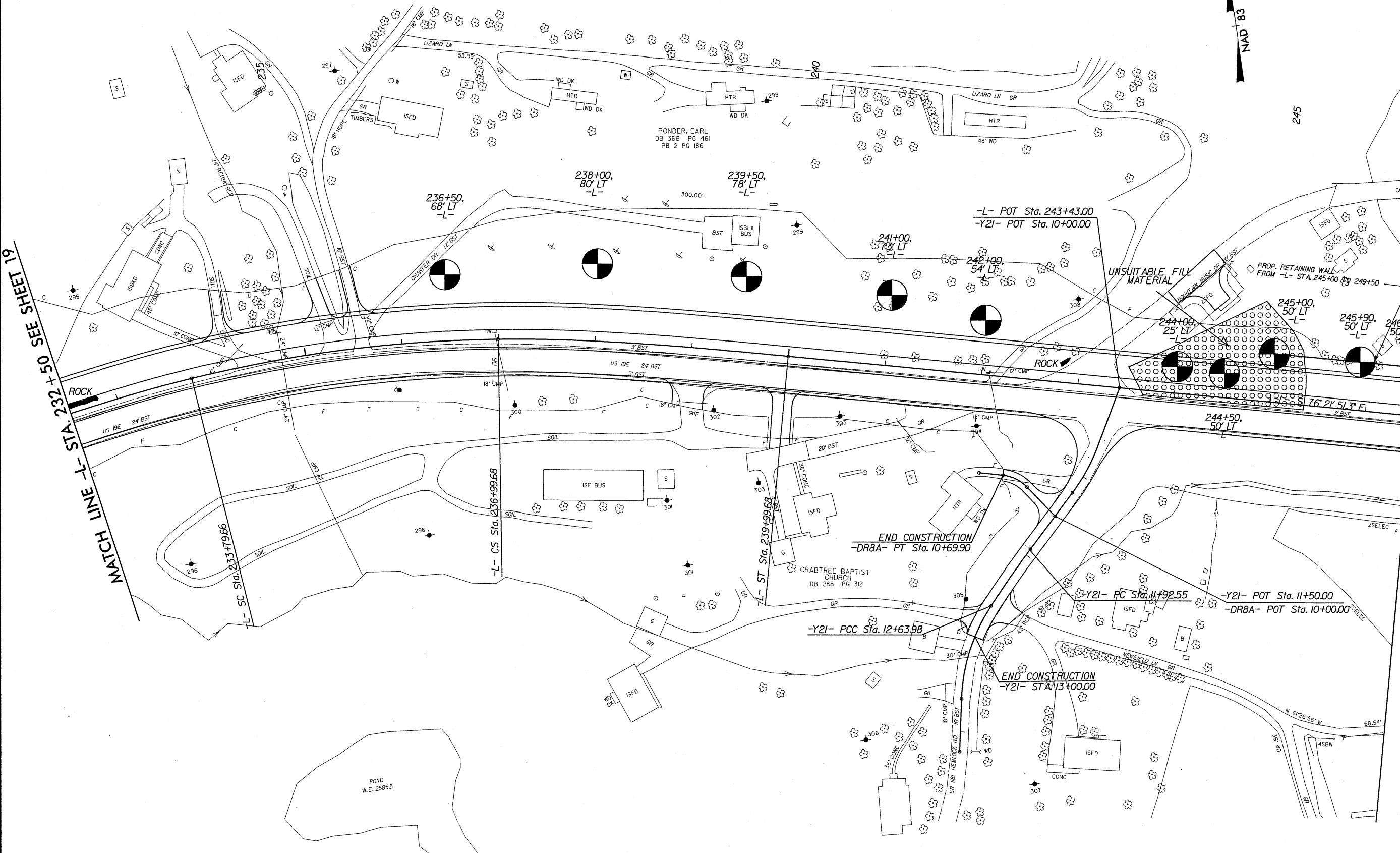


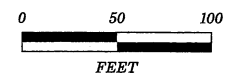
8/17/99

REVISIONS

MATCH LINE -L- STA. 232+50 SEE SHEET 19

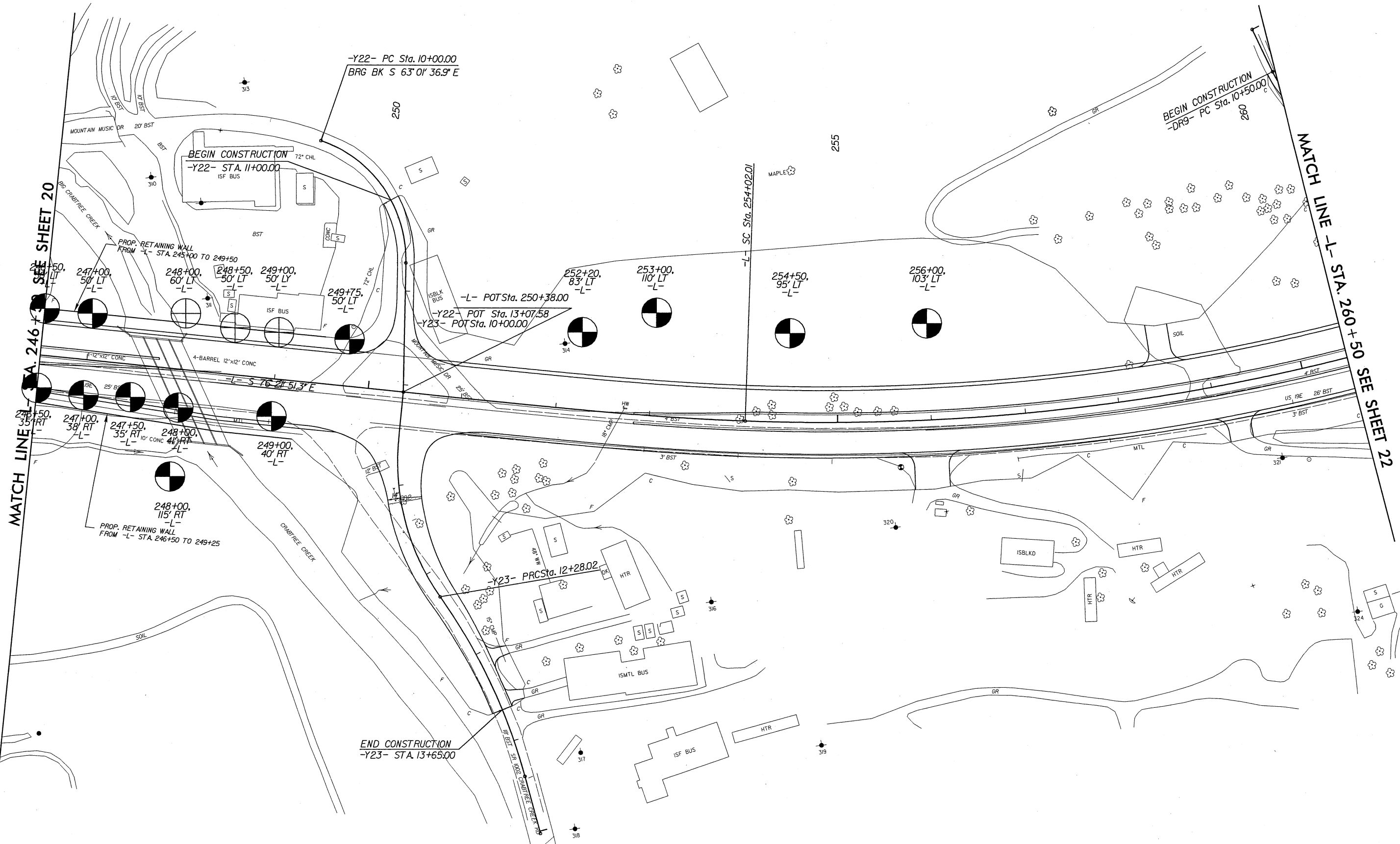
MATCH LINE -L- STA. 246+50 SEE SHEET 21



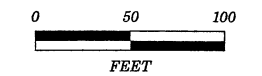


NAD 83

REVISIONS

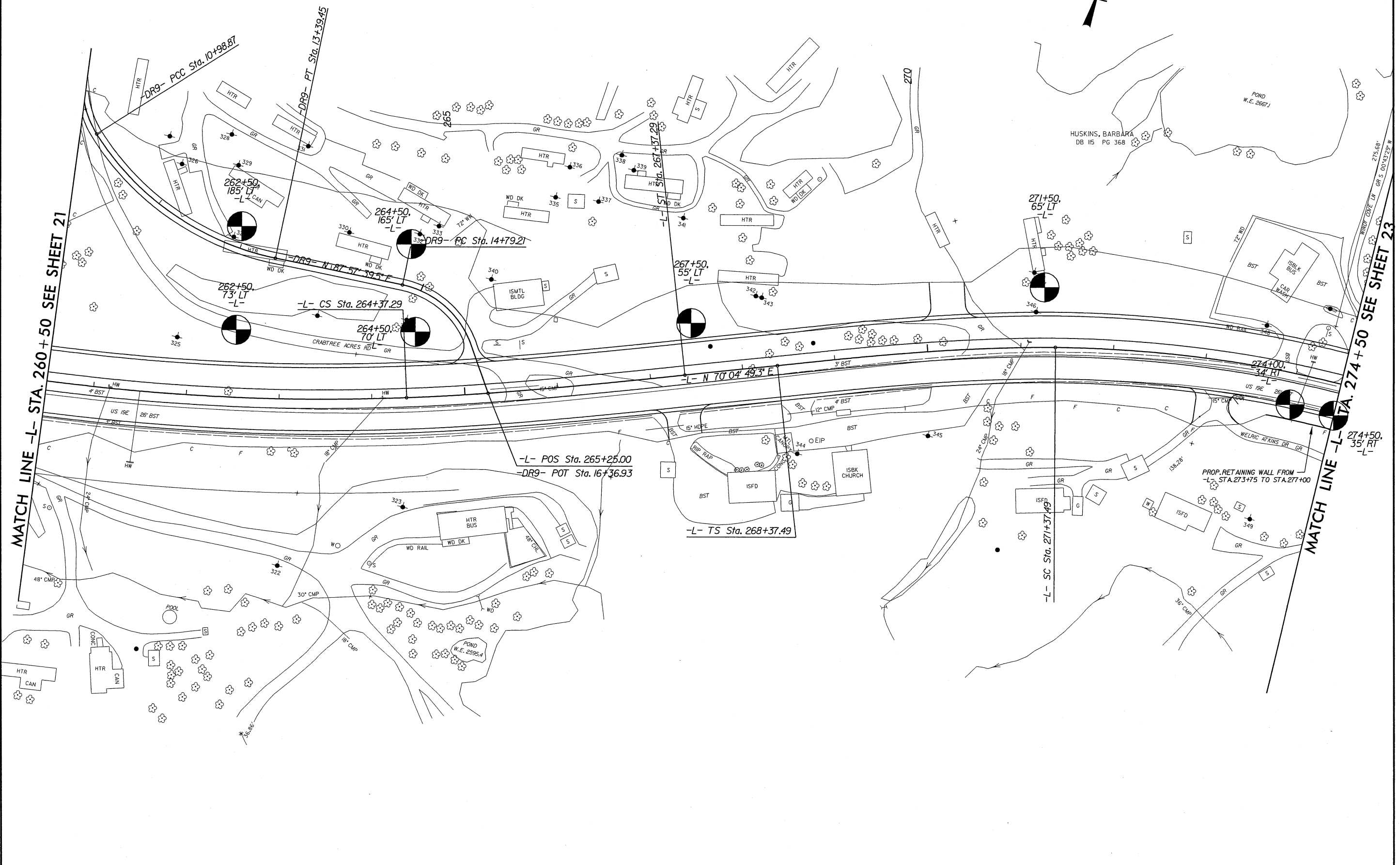


SYTIME DESIGN CONSULTANTS



8/17/99

REVISIONS



MATCH LINE -L- STA. 260+50 SEE SHEET 21

MATCH LINE -L- STA. 274+50 SEE SHEET 23

-DR9- PCC Sta. 10+98.87

-DR9- PT Sta. 13+39.45

262+50
185' LT
-L- CAN

264+50
165' LT
-L- DR9- PC Sta. 14+79.21

262+50
73' LT
-L-

-L- CS Sta. 264+37.29

264+50
70' LT

267+50
55' LT
-L-

271+50
65' LT
-L-

274+00
34' RT
-L-

-L- POS Sta. 265+25.00
-DR9- POT Sta. 16+36.93

-L- TS Sta. 268+37.49

-L- SC Sta. 271+37.49

274+50
35' RT
-L-

PROP. RETAINING WALL FROM
-L- STA. 273+75 TO STA. 277+00

HTR CAN

HTR CAN

POND
W.E. 2595.4

POND
W.E. 2657.1

HUSKINS, BARBARA
DB 115 PG 368

ISBK BUS
CAR WASH

ISBK CHURCH

ISBK

ISBK

4' BST

US IBE

28' BST

HW

-L- N 70°04'49.3" E

3' BST

4' BST

4' BST

4' BST

4' BST

4' BST

4' BST

4' BST

4' BST

48' CMP

24' CMP

30' CMP

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MATCH LINE -L- STA. 274+50 SEE SHEET 23

MATCH LINE -L- STA. 274+50 SEE SHEET 23

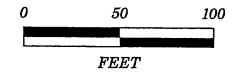
MATCH LINE -L- STA. 274+50 SEE SHEET 23

MATCH LINE -L- STA. 274+50 SEE SHEET 23

MATCH LINE -L- STA. 274+50 SEE SHEET 23

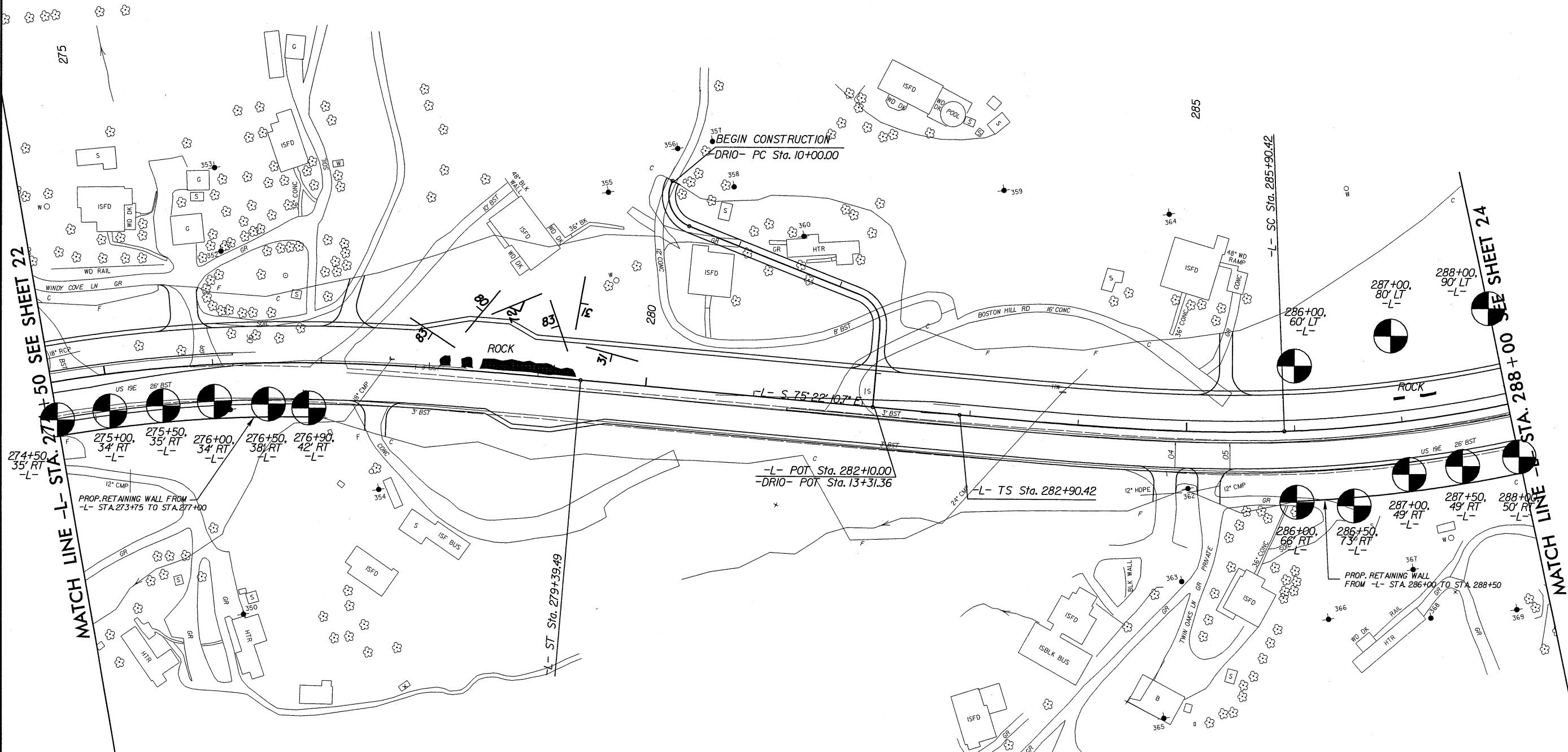
MATCH LINE -L- STA. 274+50 SEE SHEET 23

MATCH LINE -L- STA. 274+50 SEE SHEET 23



B.17/99

REVISIONS



MATCH LINE -L- STA. 274+50 SEE SHEET 22

MATCH LINE -L- STA. 288+00 SEE SHEET 24

274+50, 35' RT -L-
275+00, 34' RT -L-
275+50, 35' RT -L-
276+00, 34' RT -L-
276+50, 38' RT -L-
276+90, 42' RT -L-

287+00, 49' RT -L-
287+50, 49' RT -L-
288+00, 50' RT -L-
286+00, 66' RT -L-
286+50, 73' RT -L-

BEGIN CONSTRUCTION
DRIO- PC Sta. 10+00.00

-L- POT Sta. 282+10.00
-DRIO- POT Sta. 13+31.36

-L- TS Sta. 282+90.42

-L- SC Sta. 285+90.42

-L- ST Sta. 279+39.49

PROP. RETAINING WALL FROM
-L- STA. 273+75 TO STA. 277+00

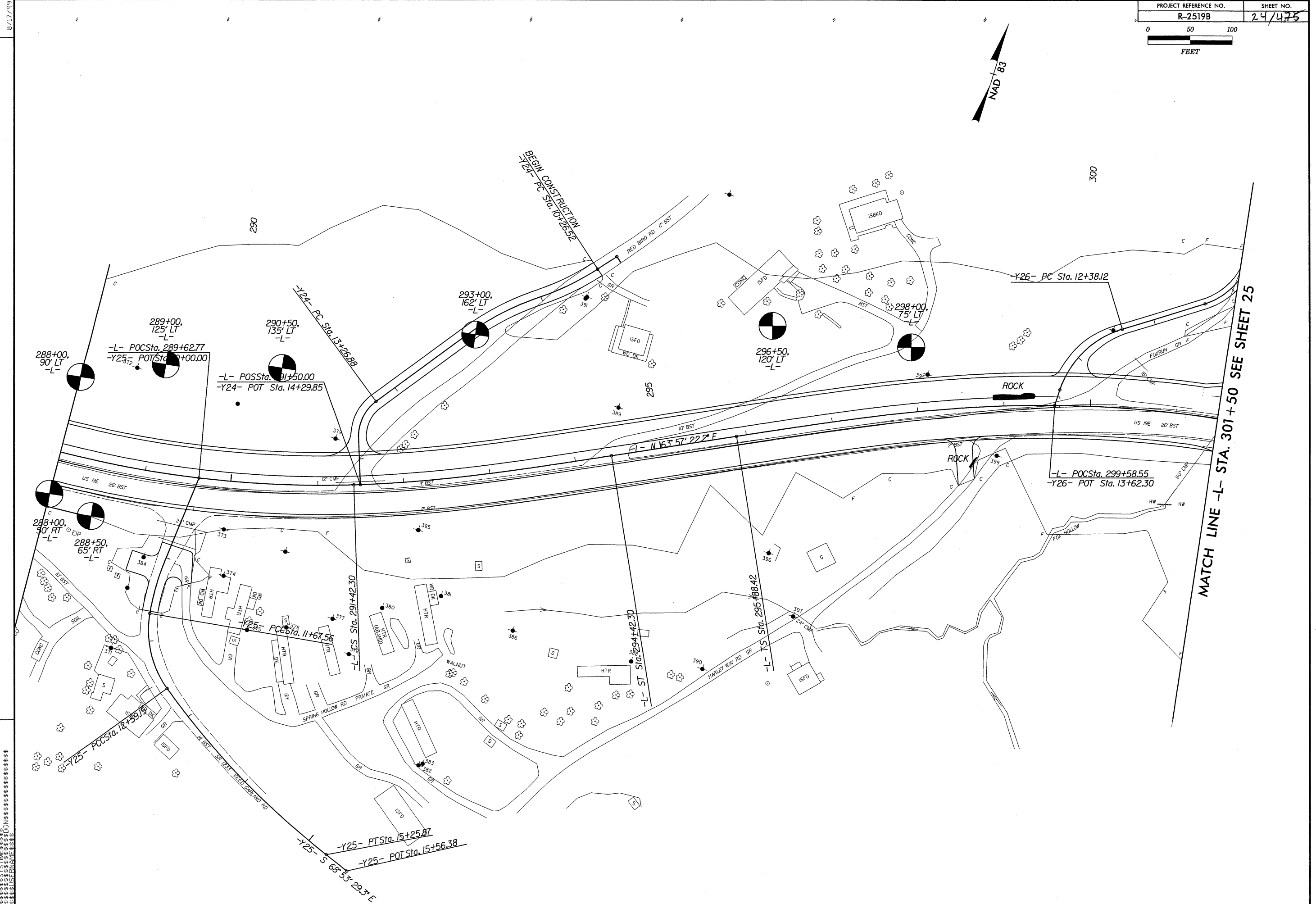
PROP. RETAINING WALL
FROM -L- STA. 286+00 TO STA. 288+50

SYTIME
LE
CON



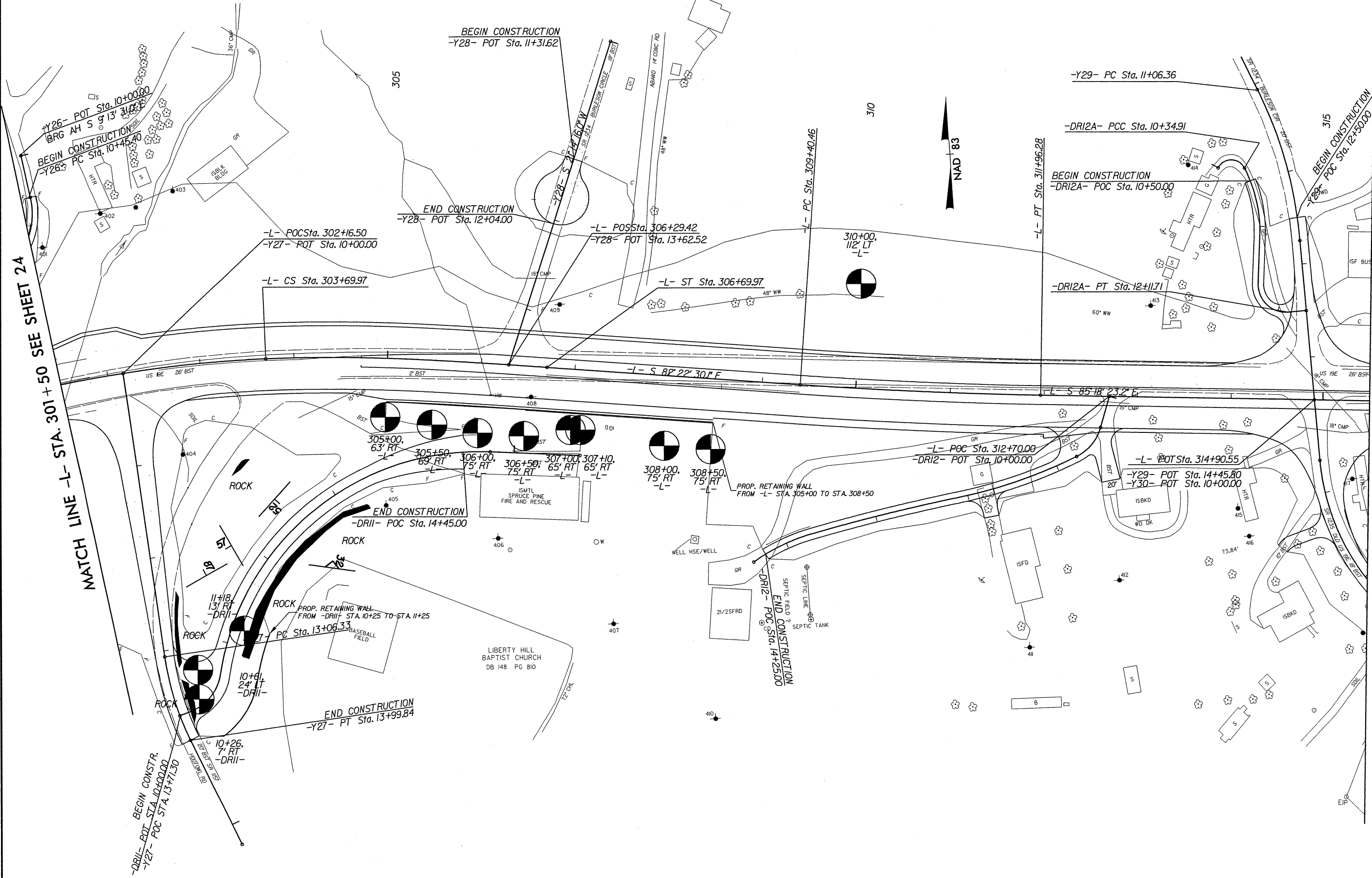
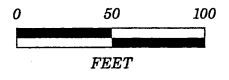
REVISIONS

8/17/99



MATCH LINE -L- STA. 301+50 SEE SHEET 25

 SYSTEMS

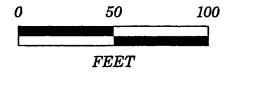


MATCH LINE -L- STA. 301+50 SEE SHEET 24

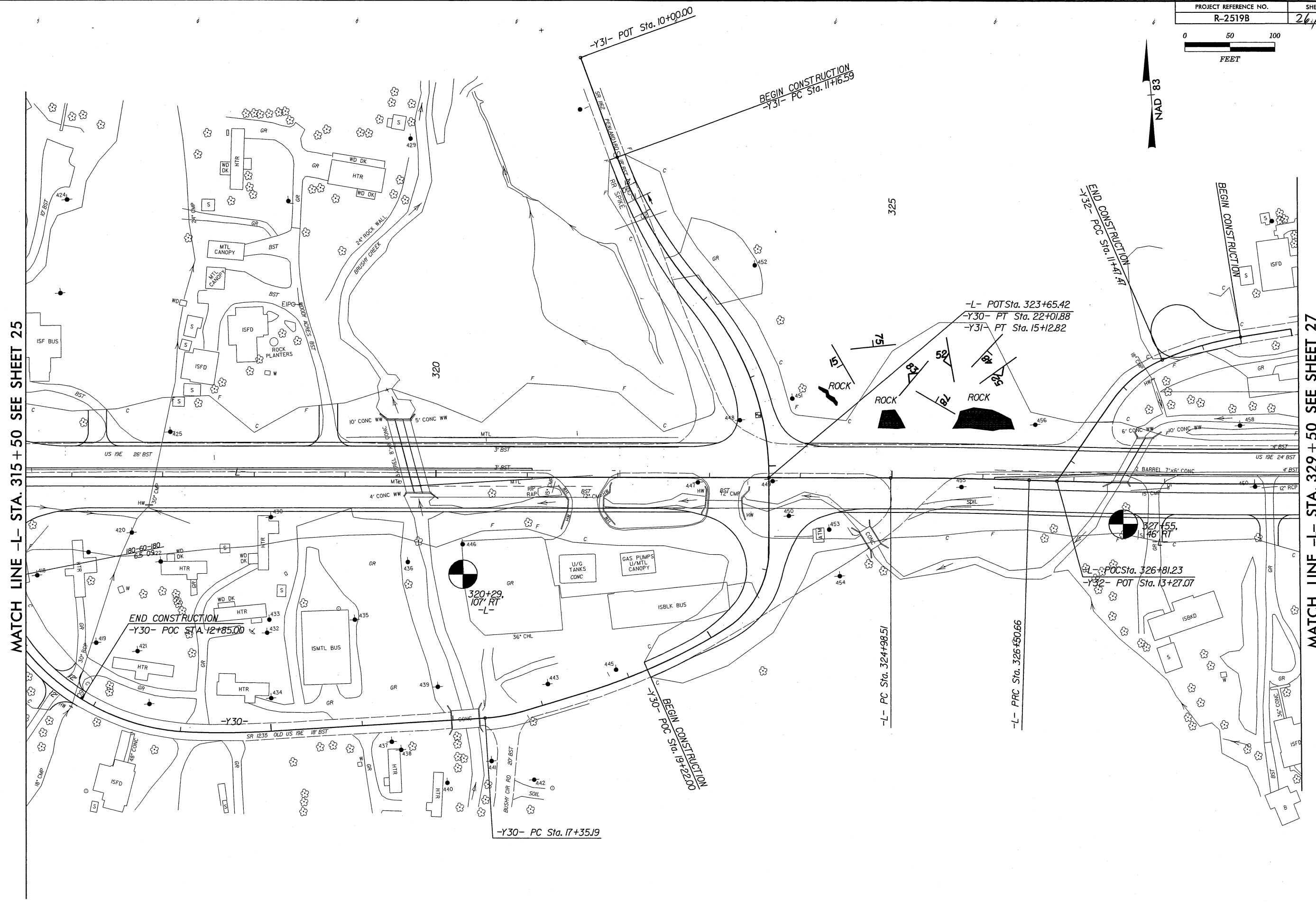
MATCH LINE -L- STA. 315+50 SEE SHEET 26

REVISIONS





NAD 83



MATCH LINE -L- STA. 315 + 50 SEE SHEET 25

MATCH LINE -L- STA. 329 + 50 SEE SHEET 27

BEGIN CONSTRUCTION
-Y31- PC Sta. 11+16.59

END CONSTRUCTION
-Y32- POC Sta. 11+47.41

-L- POT Sta. 323+65.42
-Y30- PT Sta. 22+01.88
-Y31- PT Sta. 15+12.82

END CONSTRUCTION
-Y30- POC STA. 12+85.00

BEGIN CONSTRUCTION
-Y30- POC Sta. 19+22.22

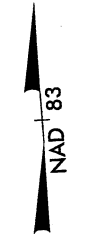
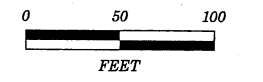
-Y30- PC Sta. 17+35.19

-L- PC Sta. 324+98.51

-L- PRC Sta. 326+50.66

-L- POC Sta. 326+81.23
-Y32- POT Sta. 13+27.07

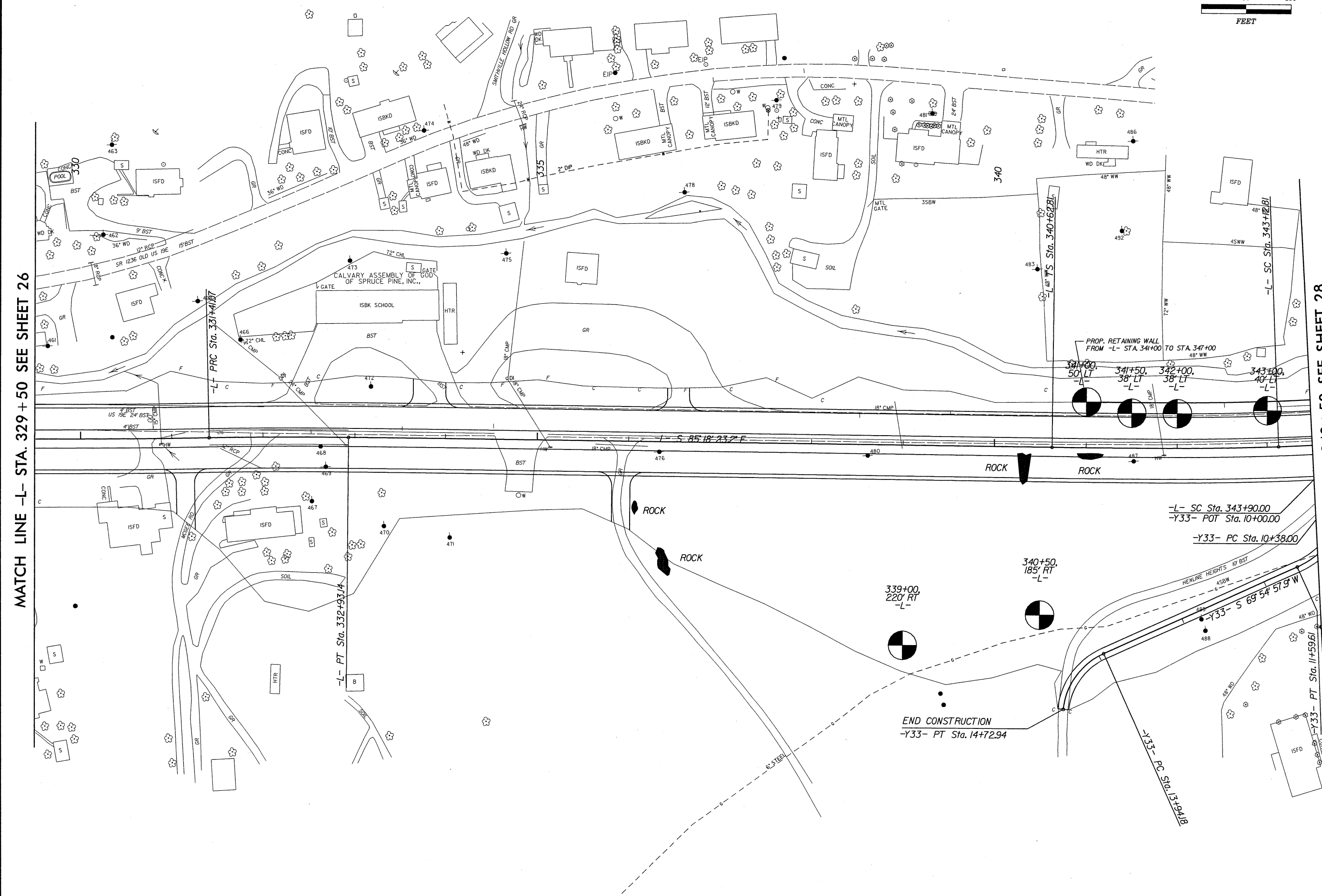
REVISIONS



MATCH LINE -L- STA. 329+50 SEE SHEET 26

MATCH LINE -L- STA. 343+50 SEE SHEET 28

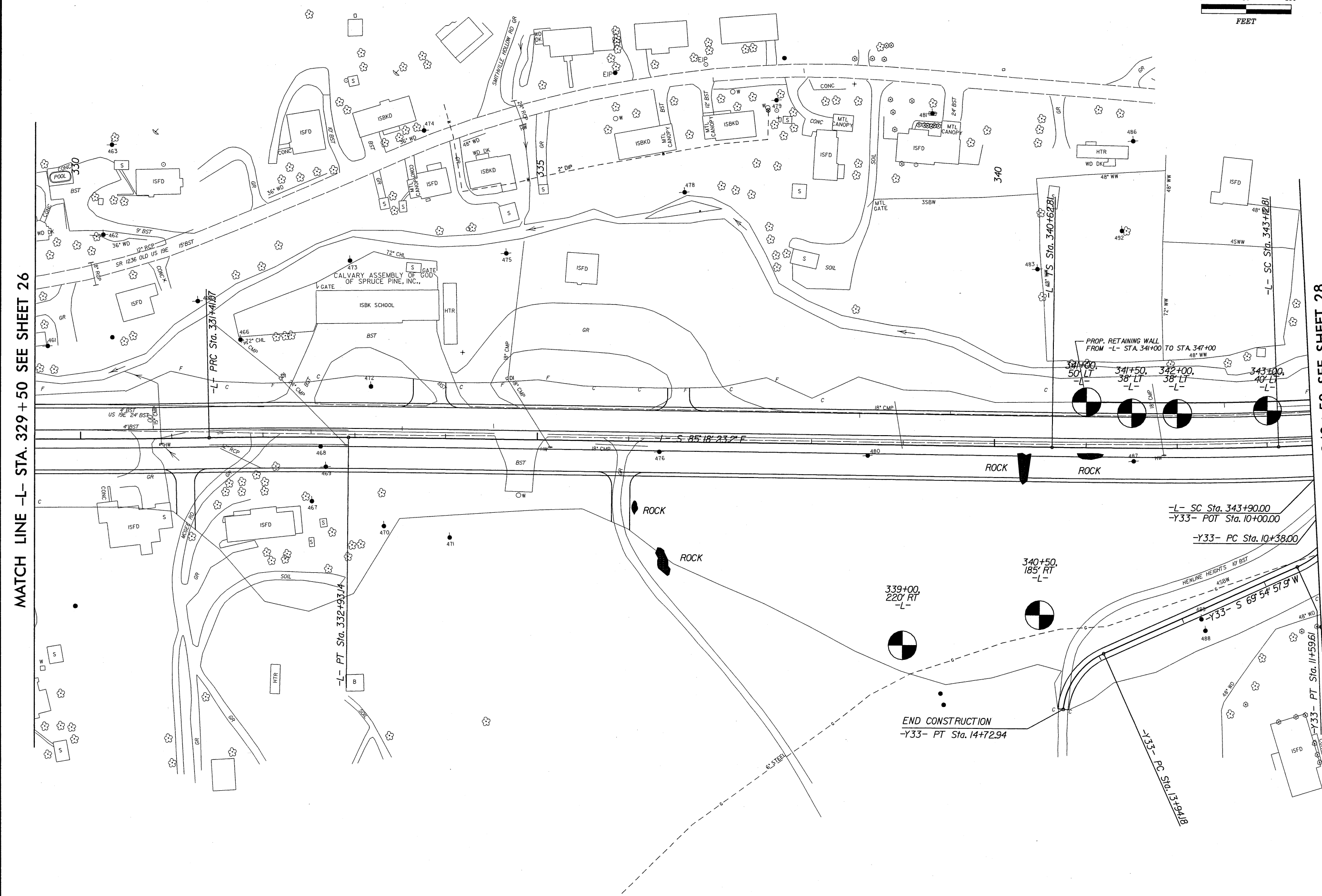
REVISIONS



MATCH LINE -L- STA. 329+50 SEE SHEET 26

MATCH LINE -L- STA. 343+50 SEE SHEET 28

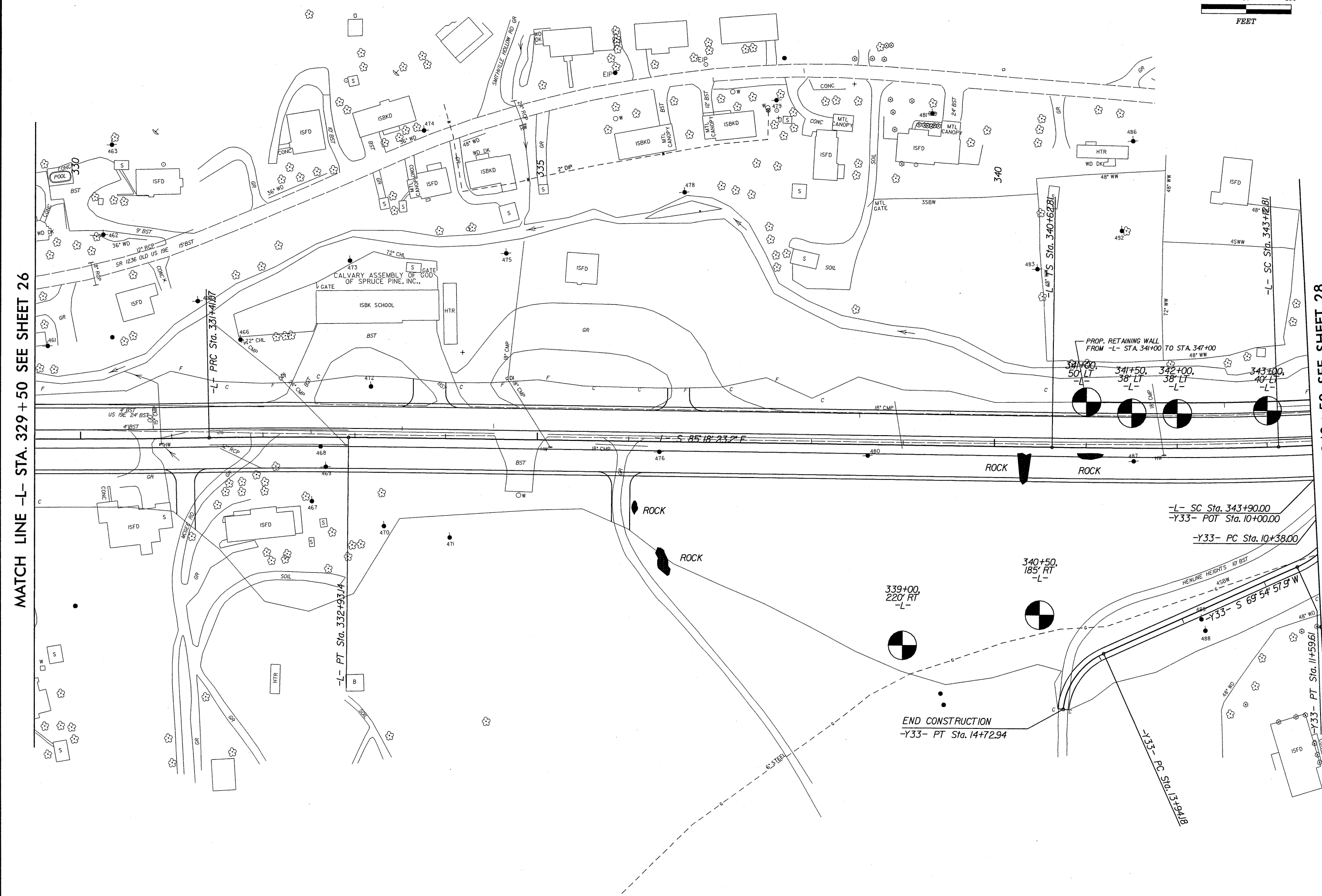
REVISIONS

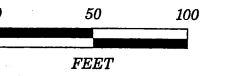


MATCH LINE -L- STA. 329+50 SEE SHEET 26

MATCH LINE -L- STA. 343+50 SEE SHEET 28

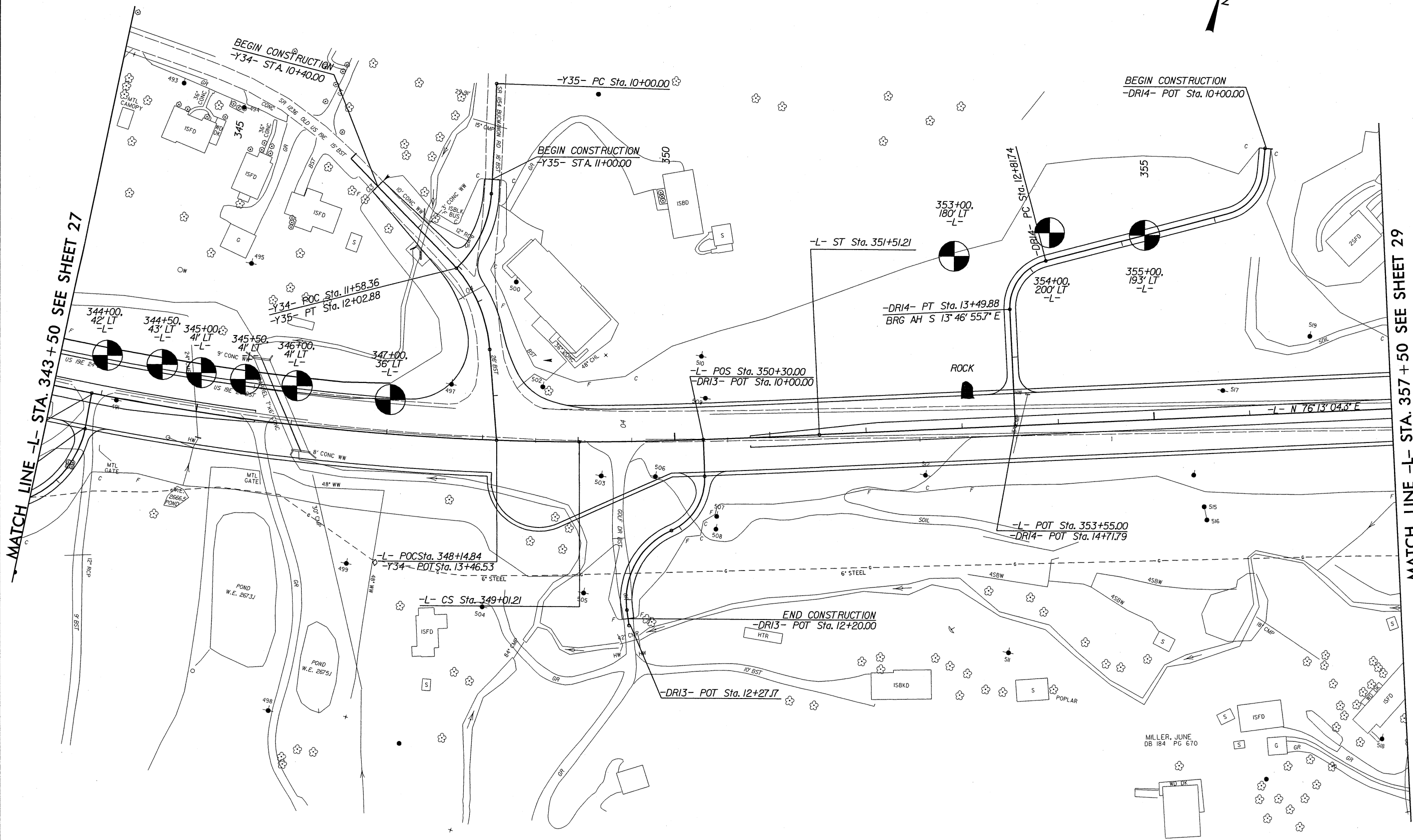
REVISIONS





8/17/99

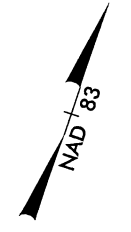
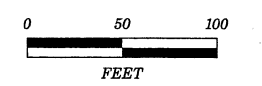
REVISIONS



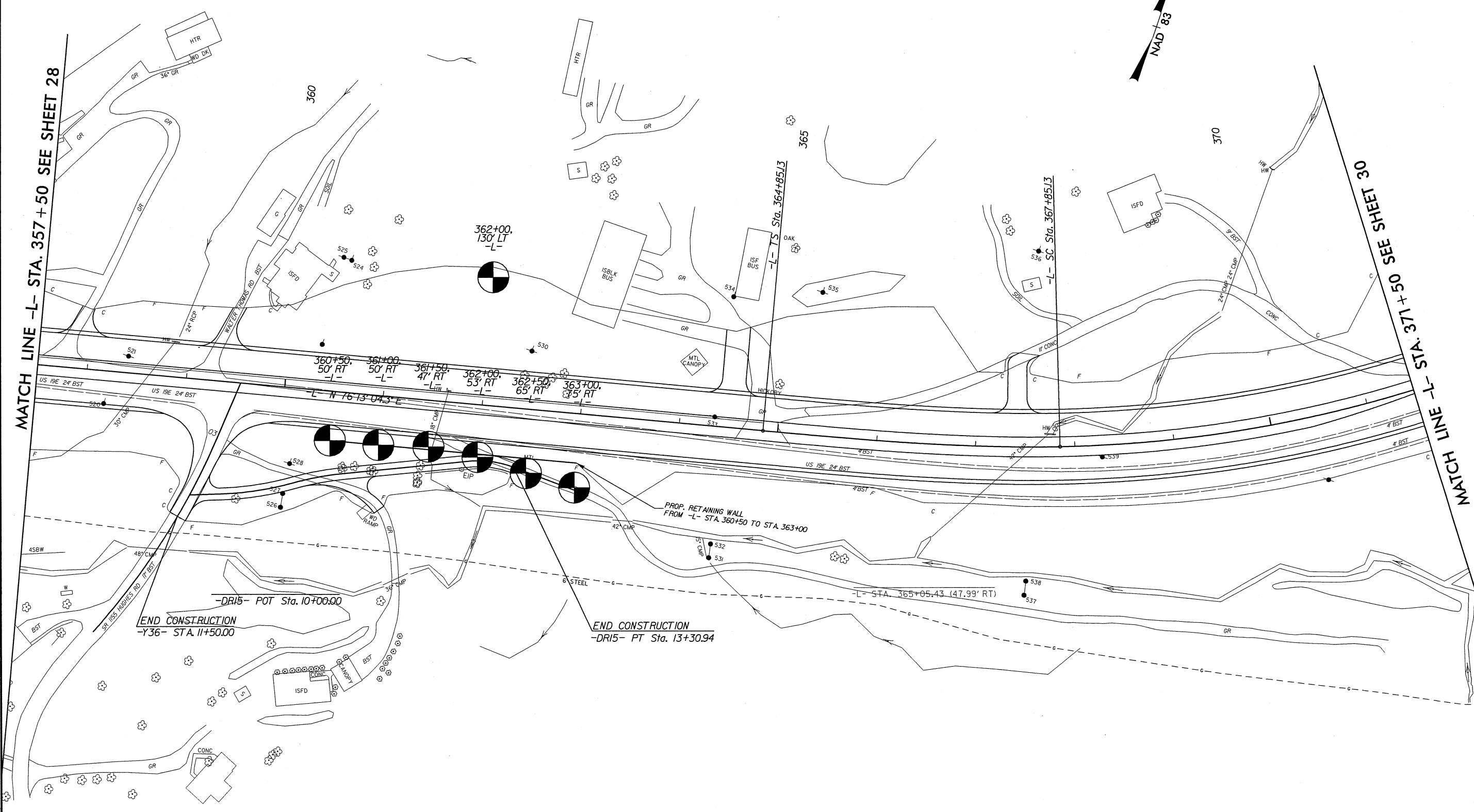
MATCH LINE -L- STA. 343 + 50 SEE SHEET 27

MATCH LINE -L- STA. 357 + 50 SEE SHEET 29

8/17/99



REVISIONS

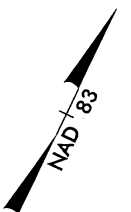
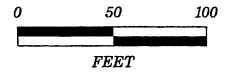


MATCH LINE -L- STA. 357 +50 SEE SHEET 28

MATCH LINE -L- STA. 371 +50 SEE SHEET 30

 SYSTEM TIME#####
 #####
 #####

PROJECT REFERENCE NO.	SHEET NO.
R-2519B	30/475



8/17/99

REVISIONS

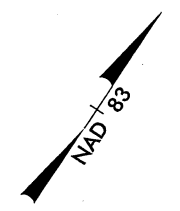
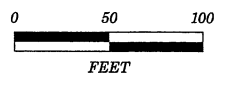


MATCH LINE -L- STA. 371 + 50 SEE SHEET 29

MATCH LINE -L- STA. 385 + 50 SEE SHEET 31

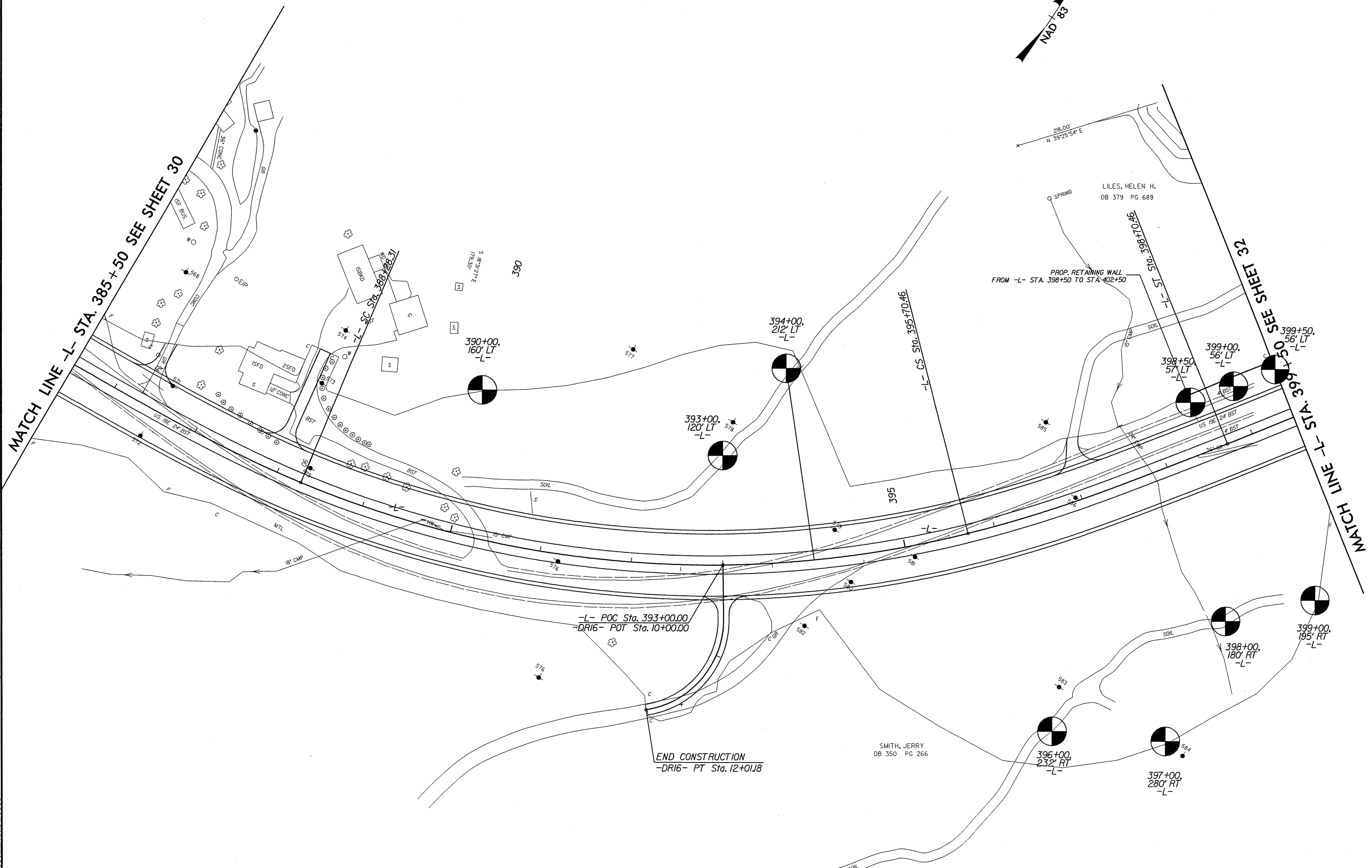
6" STEEL

SYTIME
CONDON



8/17/99

REVISIONS



MATCH LINE -L- STA. 385+50 SEE SHEET 30

MATCH LINE -L- STA. 399+50 SEE SHEET 32

-L- POC Sta. 393+00.00
-DR16- POT Sta. 10+00.00

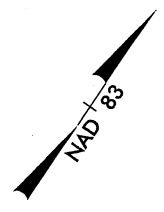
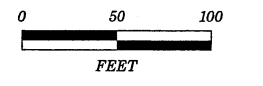
END CONSTRUCTION
-DR16- PT Sta. 12+01J8

SMITH, JERRY
DB 350 PG 266

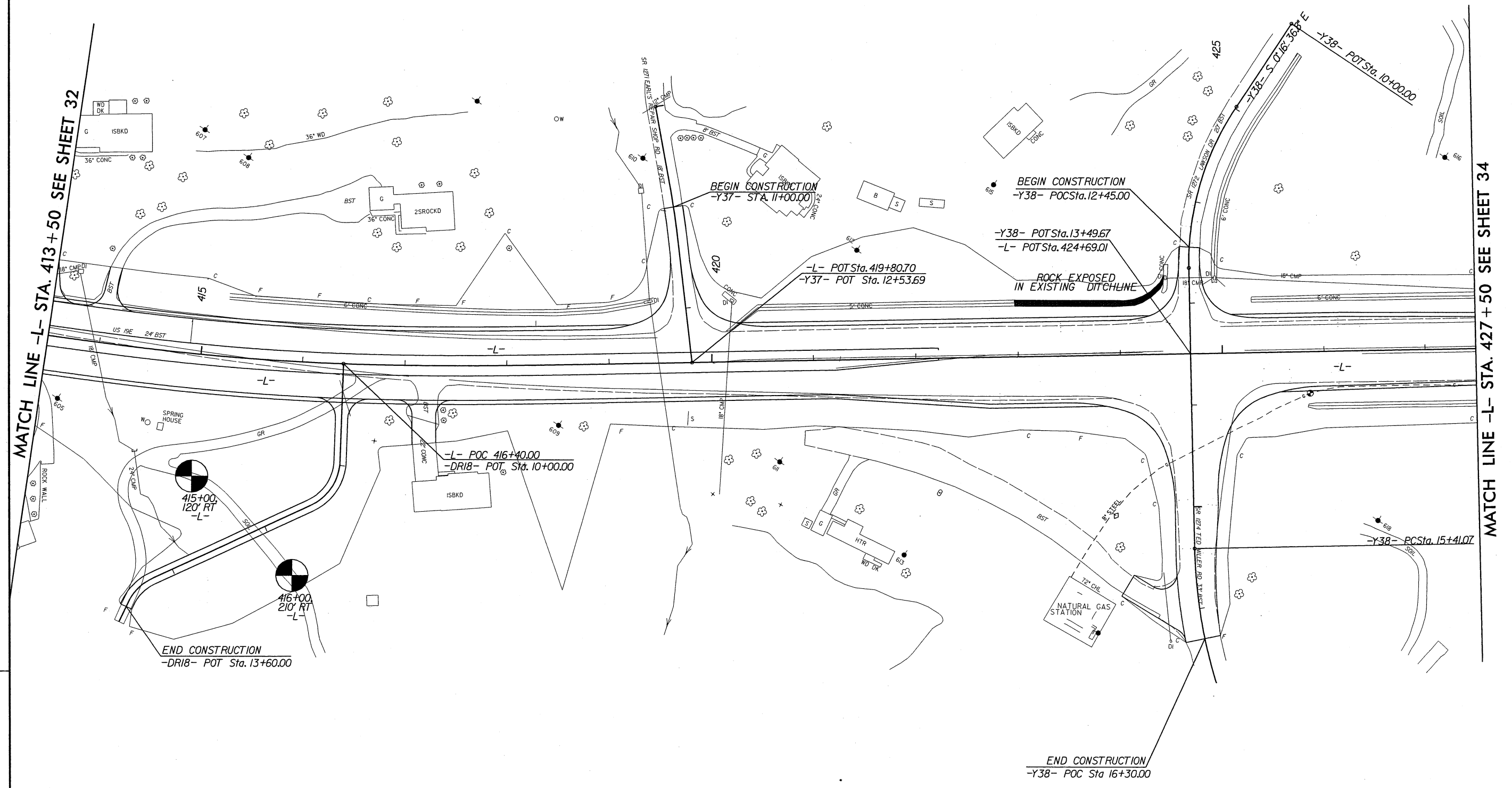
PROP. RETAINING WALL
FROM -L- STA. 398+50 TO STA. 402+50

LILES, HELEN H.
DB 379 PG 689

SYSTEMS

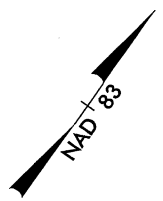
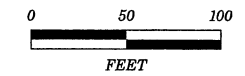


REVISIONS



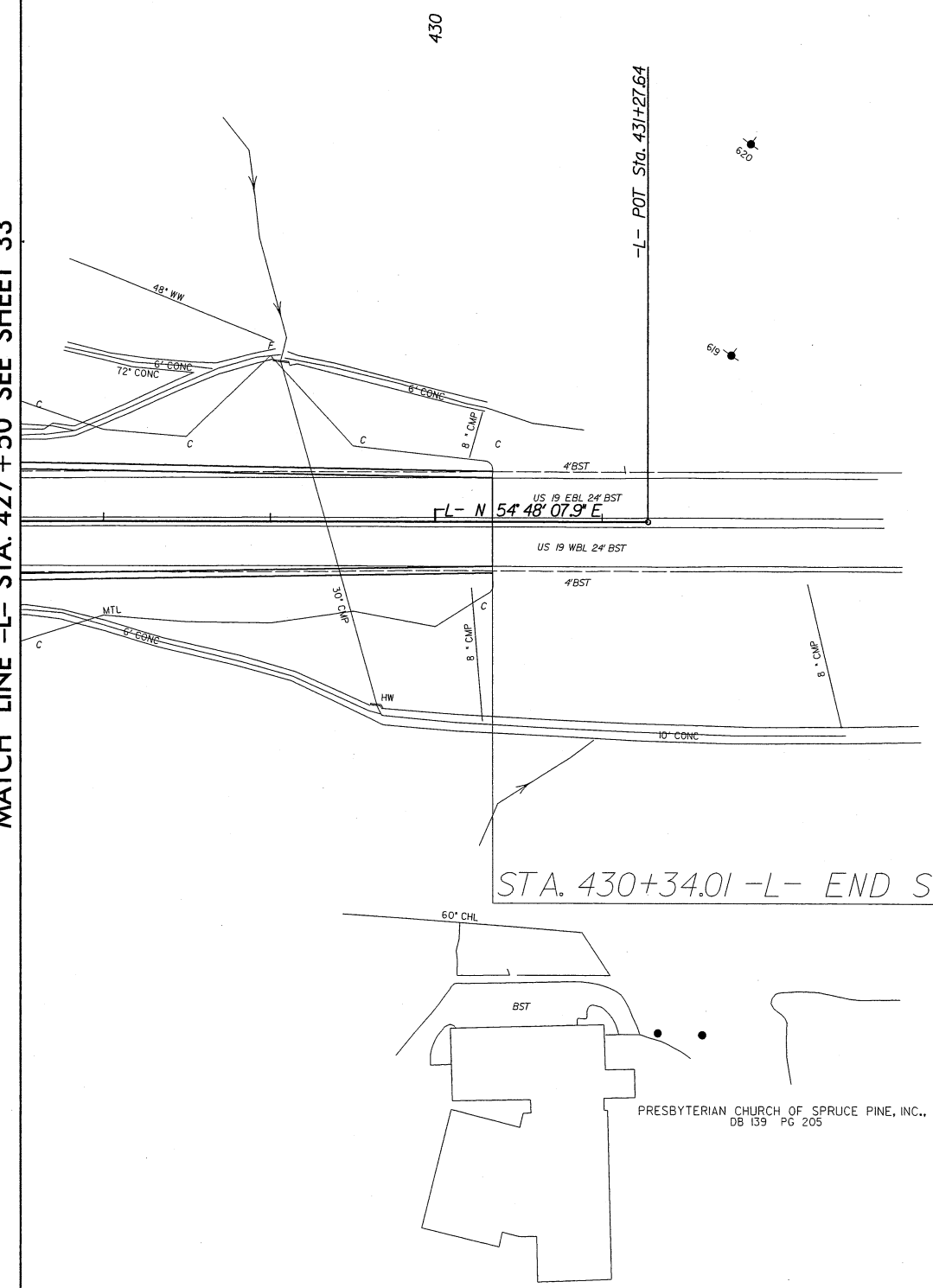
\$\$\$\$\$SYTIME\$\$\$\$\$
\$\$\$\$\$USERNAME\$\$\$\$\$

8/17/99



REVISIONS

MATCH LINE -L- STA. 427 + 50 SEE SHEET 33



430

-L- POT Sta. 431+27.64

L- N 54° 48' 07.9" E

US 19 WBL 24' BST

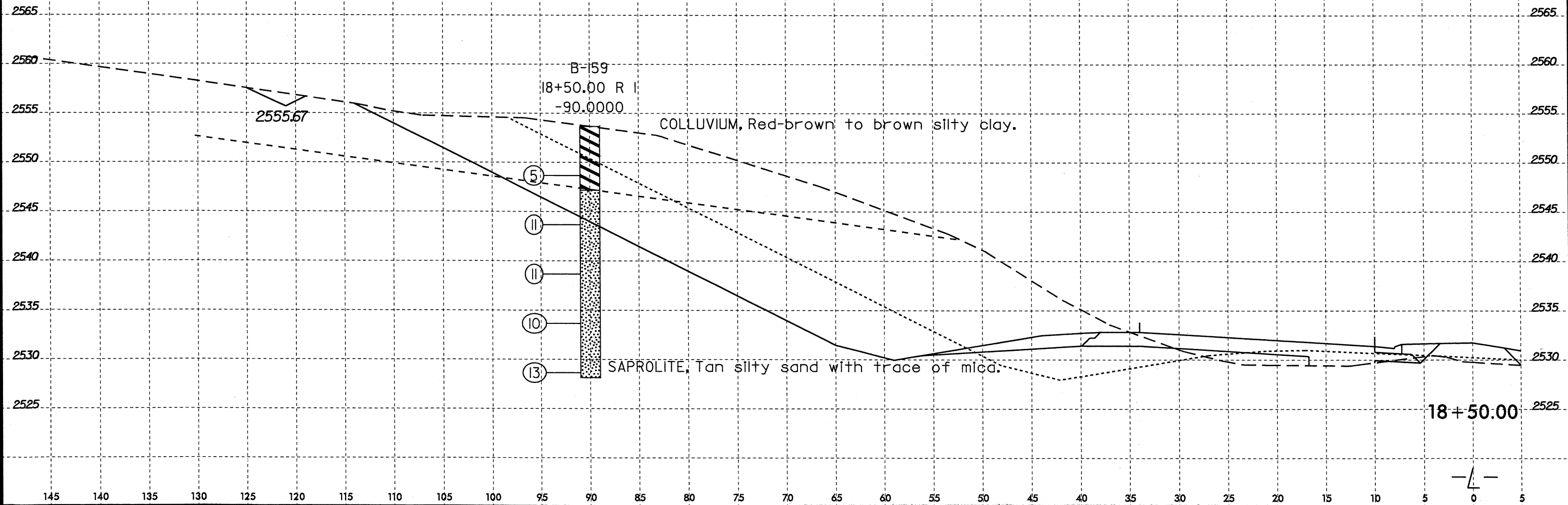
4' BST

STA. 430+34.01 -L- END STATE PROJECT R-2519B

PRESBYTERIAN CHURCH OF SPRUCE PINE, INC.,
DB 139 PG 205

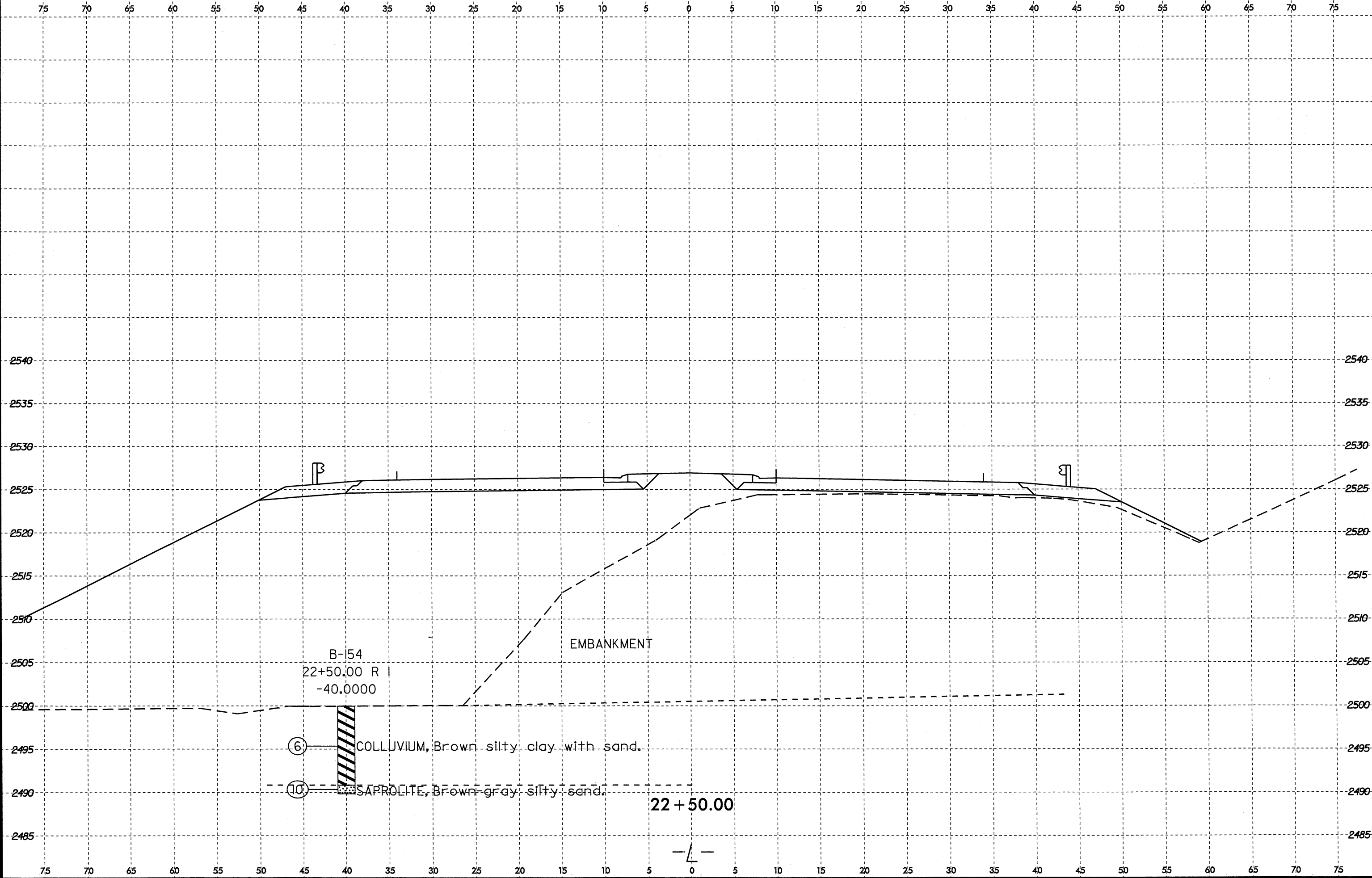
8/23/99

145 140 135 130 125 120 115 110 105 100 95 90 85 80 75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5



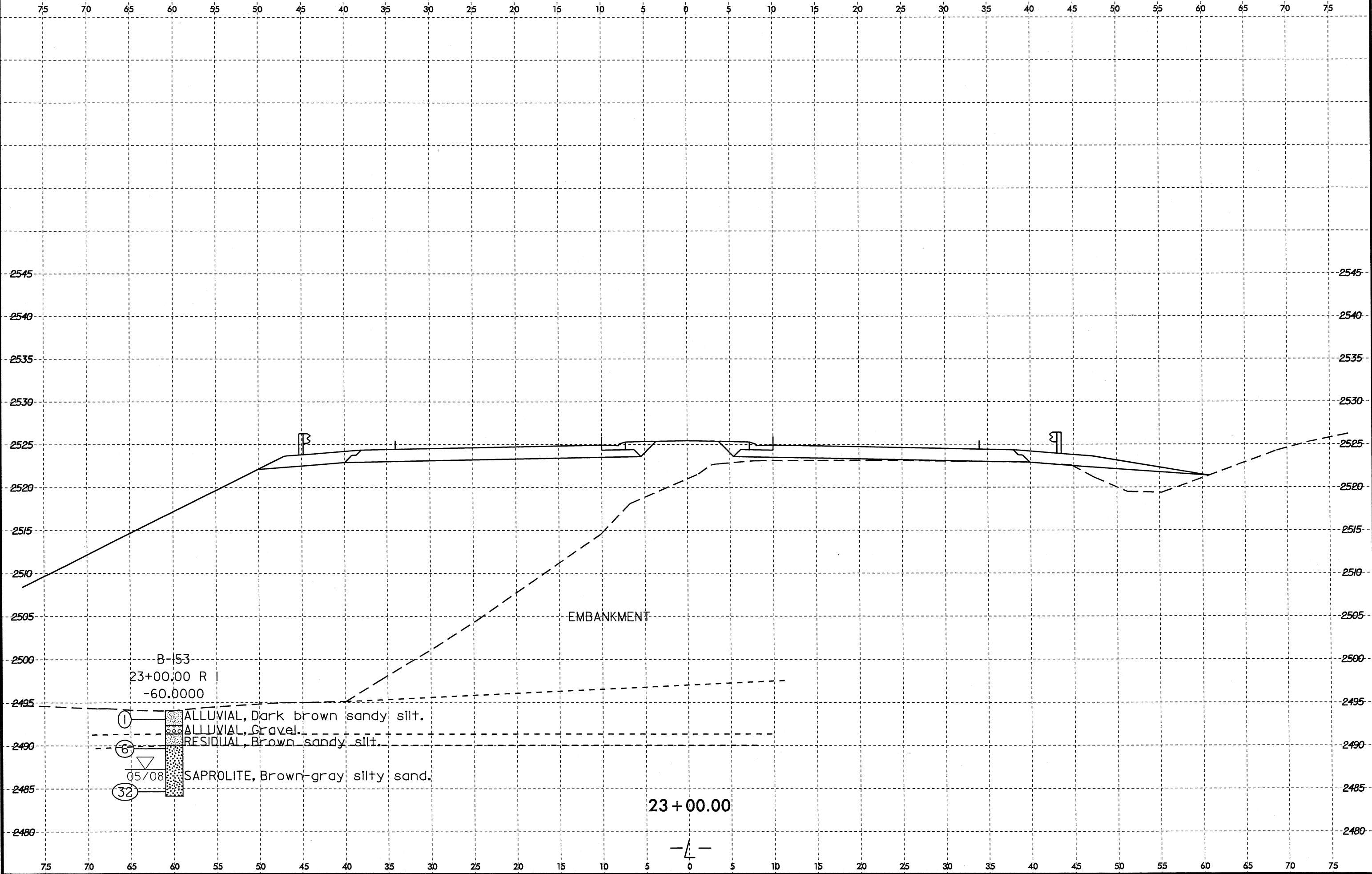
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 \$\$\$SUBSERNAME\$\$\$

8/23/99



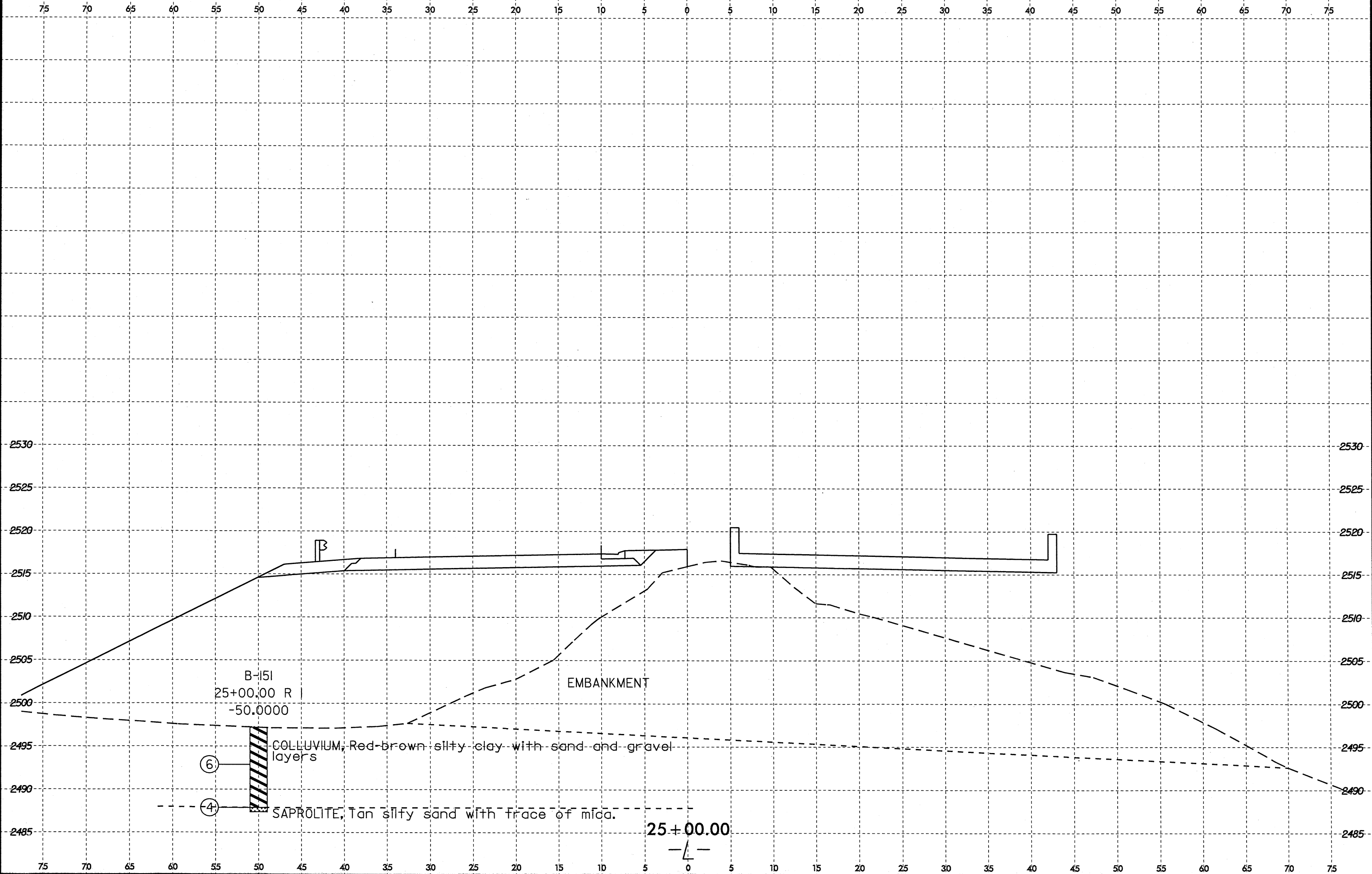
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8/23/99



19-JUN-2008 13:14
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8/23/99



19-JUN-2008 13:02
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 SUBSEQUENT CHANGES

B-151
 25+00.00 R |
 -50.0000

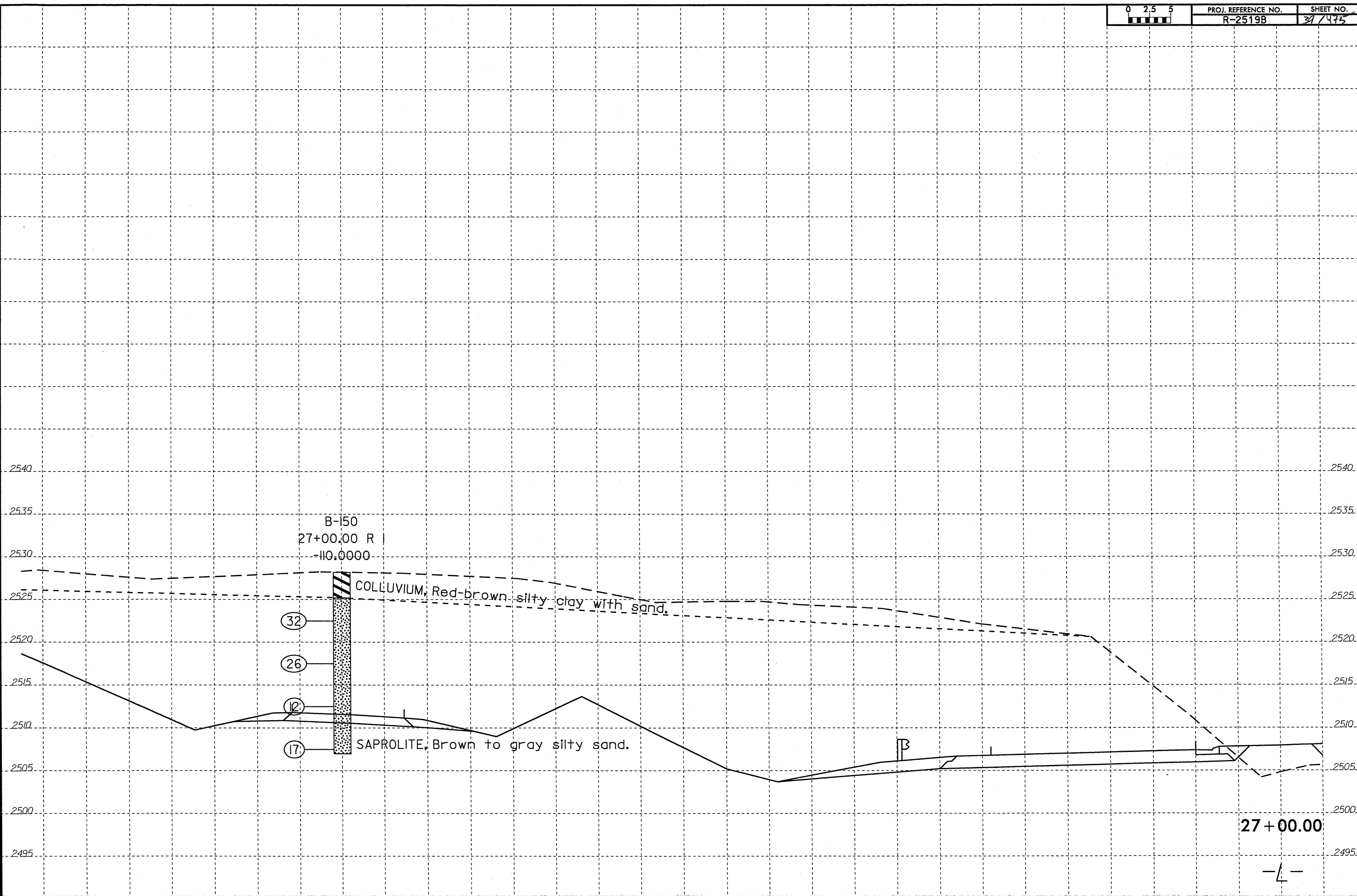
(6) COLLUVIUM, Red-brown silty clay with sand and gravel layers
 (4) SAPROLITE, Tan silty sand with trace of mica.

EMBANKMENT

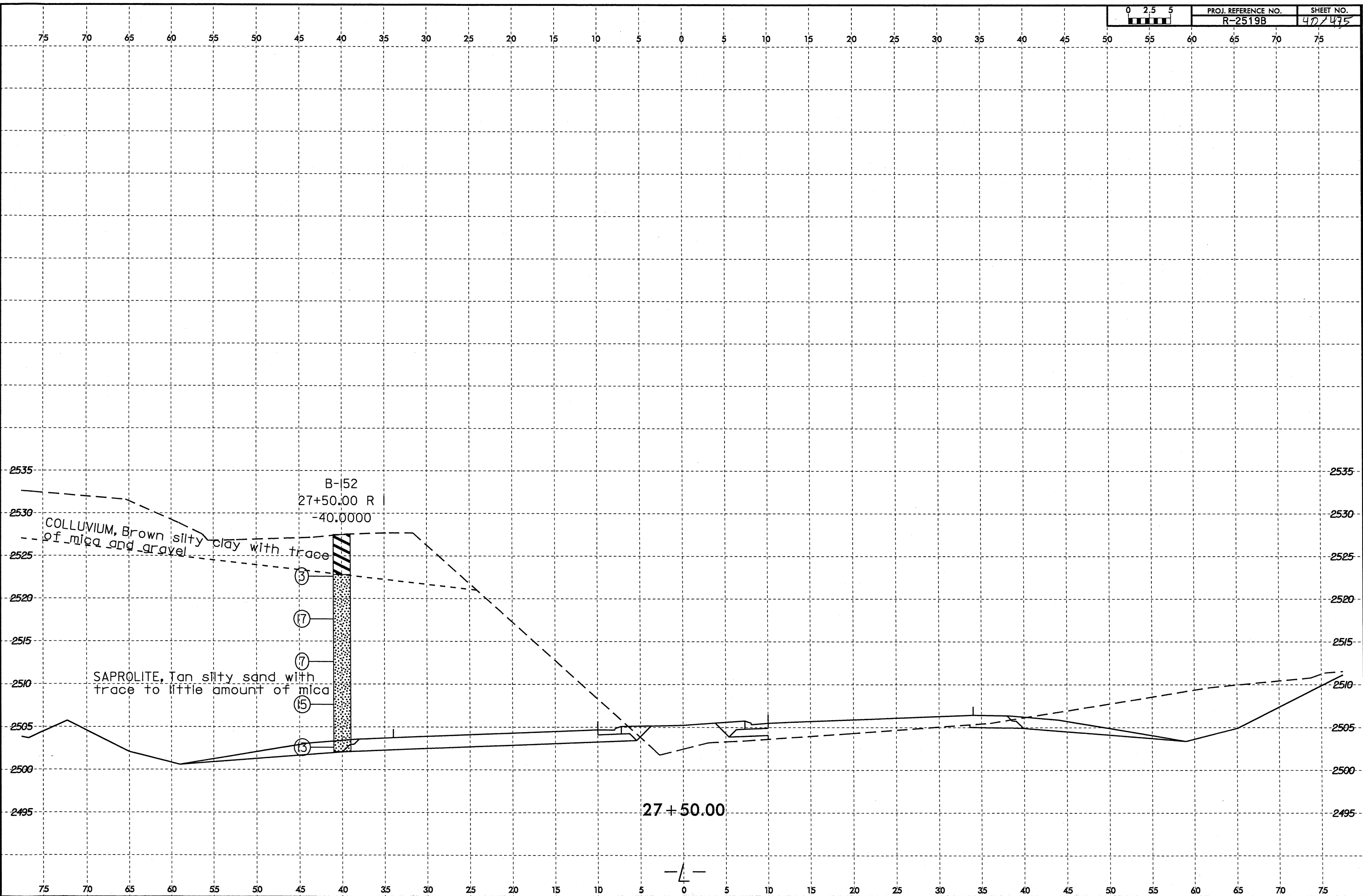
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8/23/99

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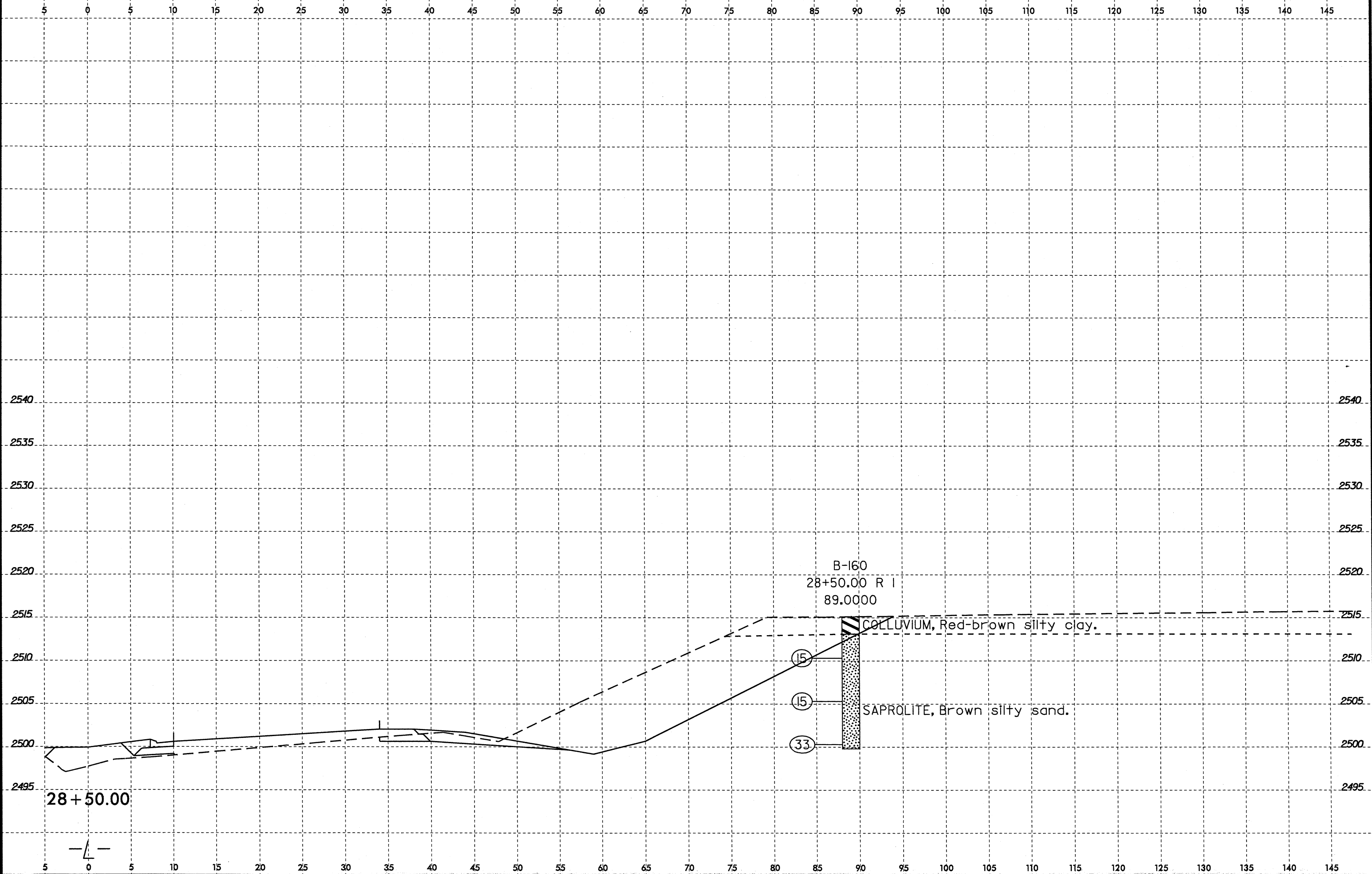


8/23/99

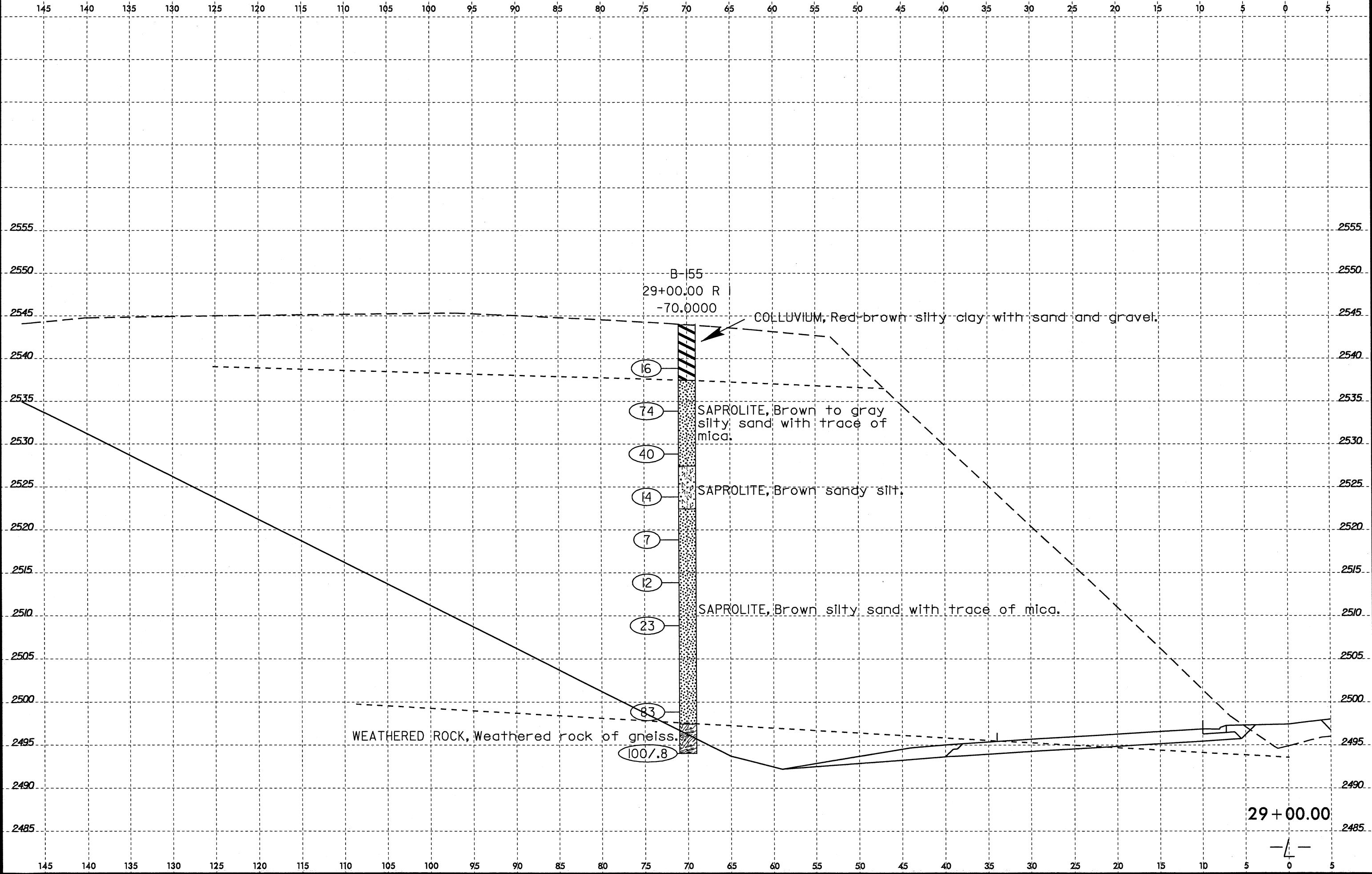


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SUBSERVANT

8/23/99
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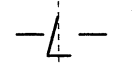


8/23/99

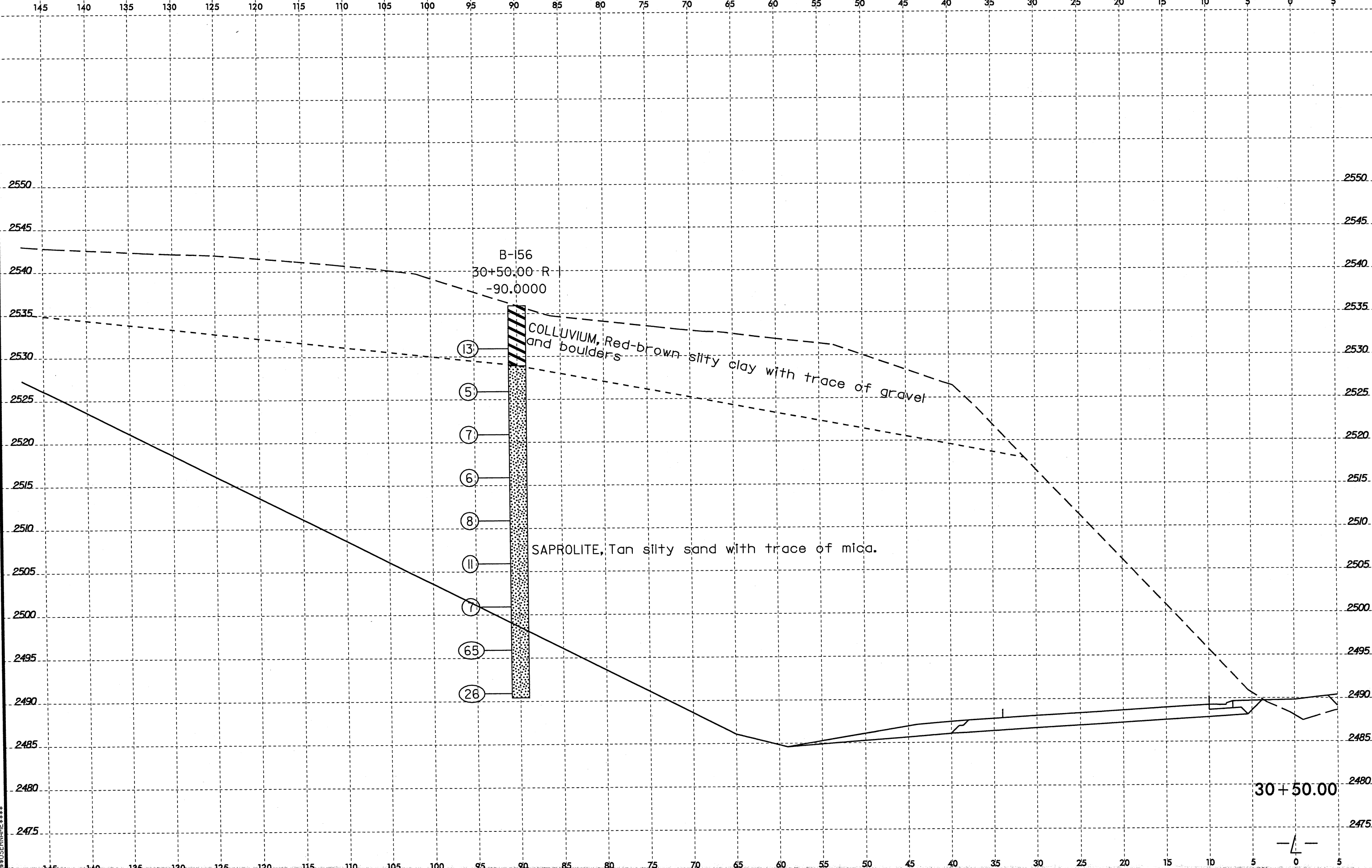


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29 + 00.00

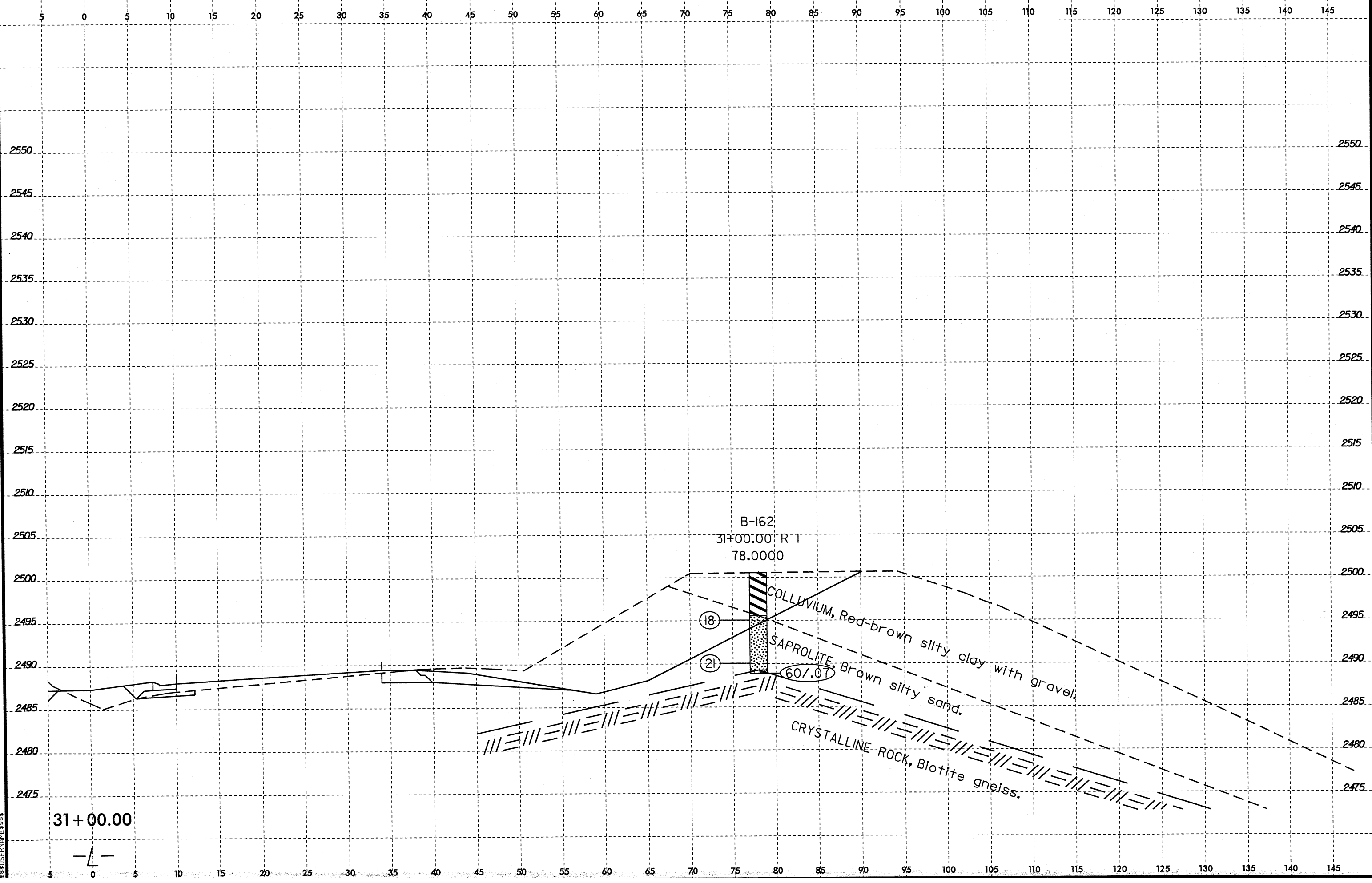


8/23/99



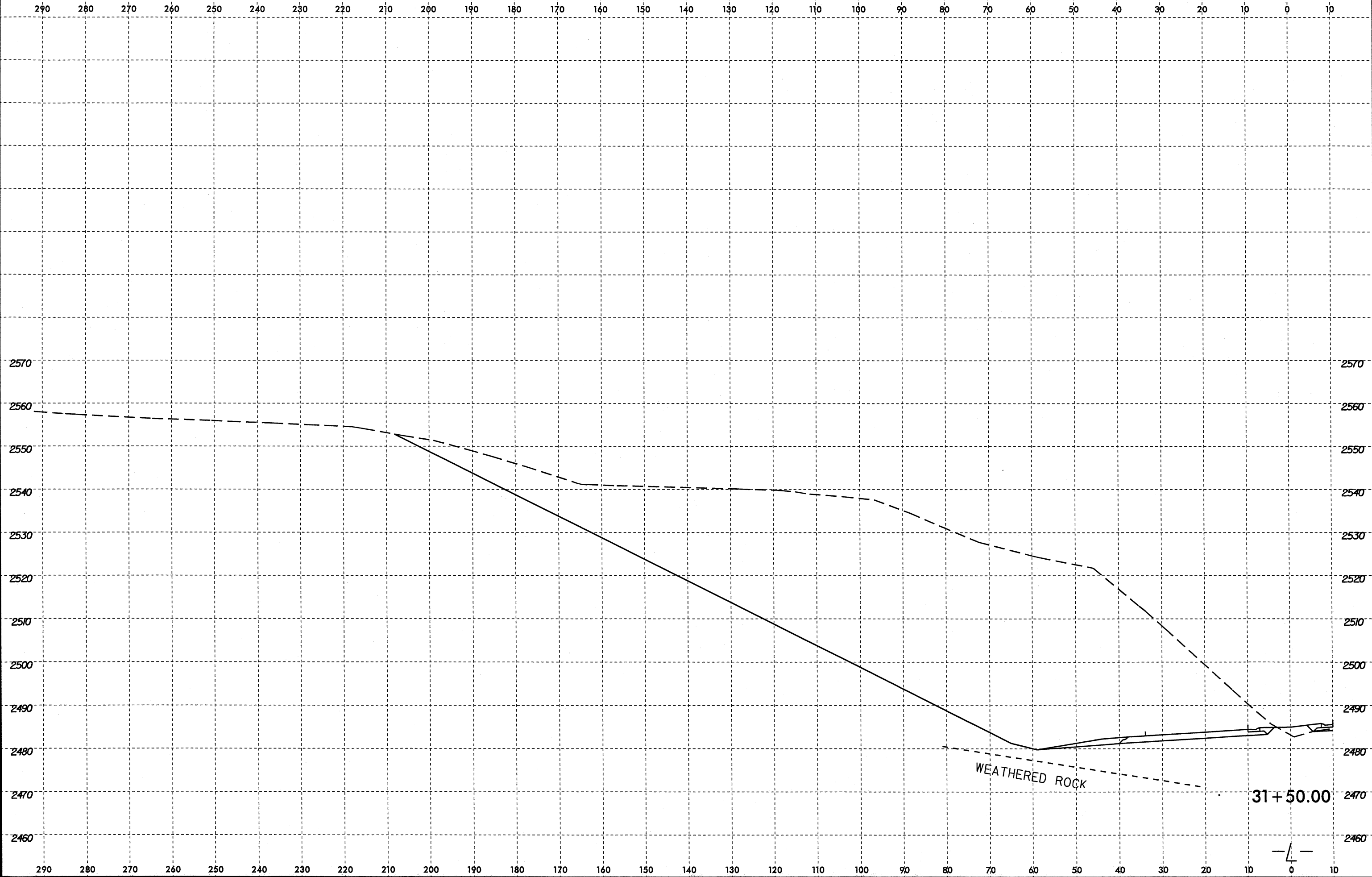
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8/23/99

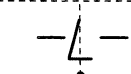


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8/23/99



5-AUG-2008 15:48
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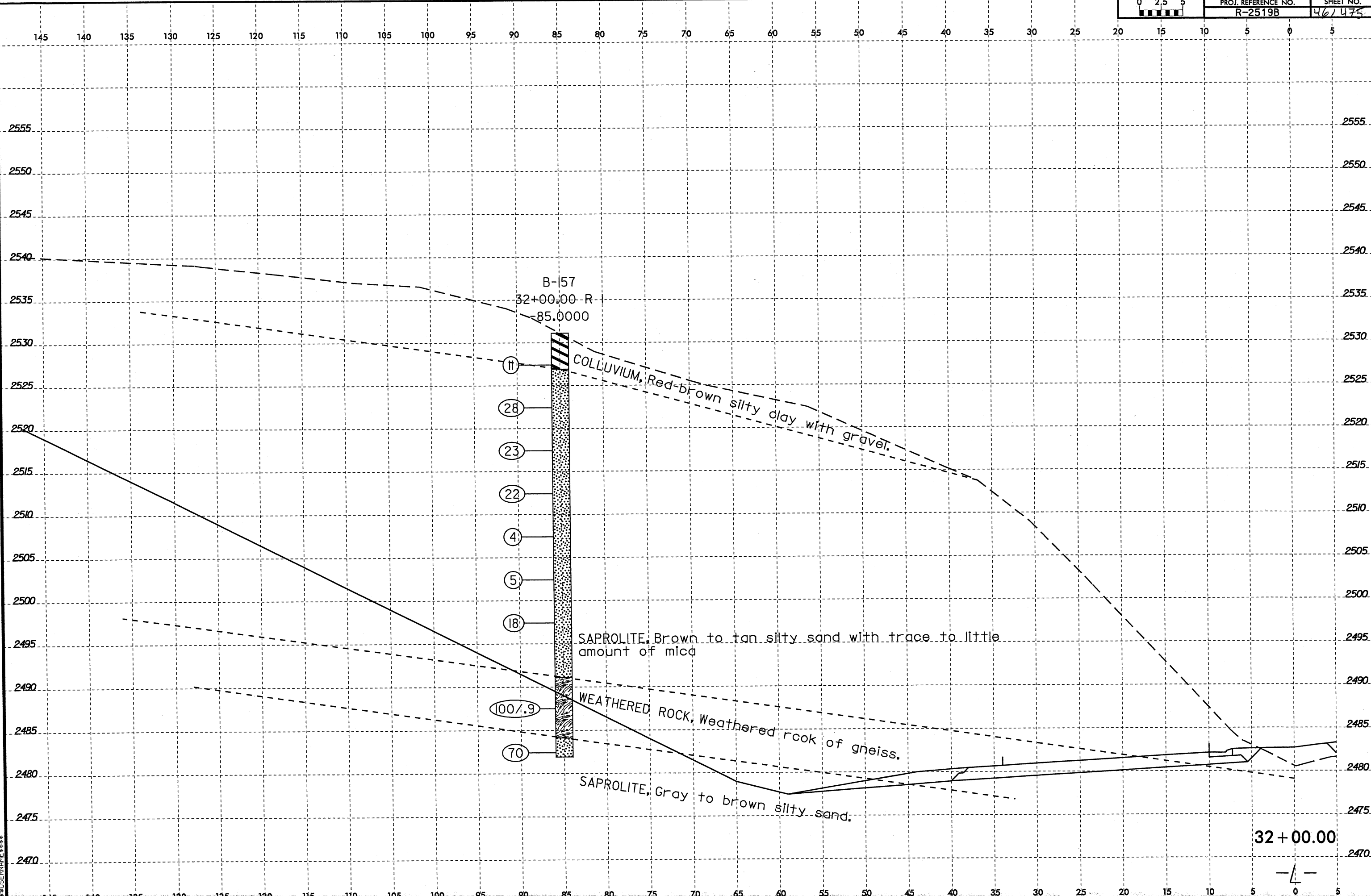


8/23/99



PROJ. REFERENCE NO. R-2519B SHEET NO. 46/475

JUL-2008 12:51 PM C:\ADD\GEO\RDY_US1\9\CADD\GEO\RDY_US1\10_10_10+00_290+00.LT.dgn



B-57
32+00.00 R
-85.0000

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- 5
- 18
- 100/9
- 70

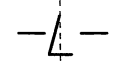
COLLUVIUM, Red-brown silty clay with gravel.

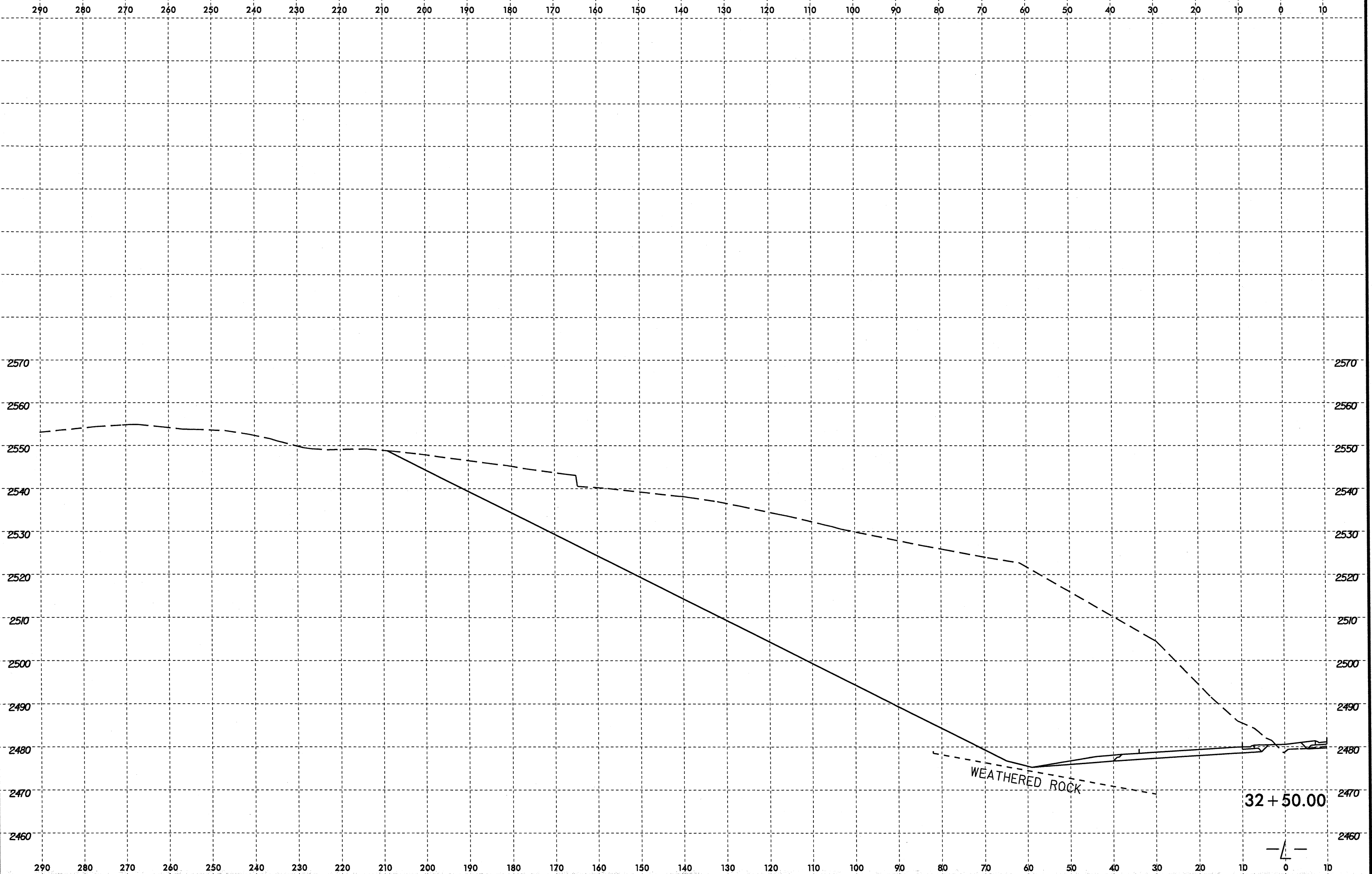
SAPROLITE, Brown to tan silty sand with trace to little amount of mica

WEATHERED ROCK, Weathered rock of gneiss.

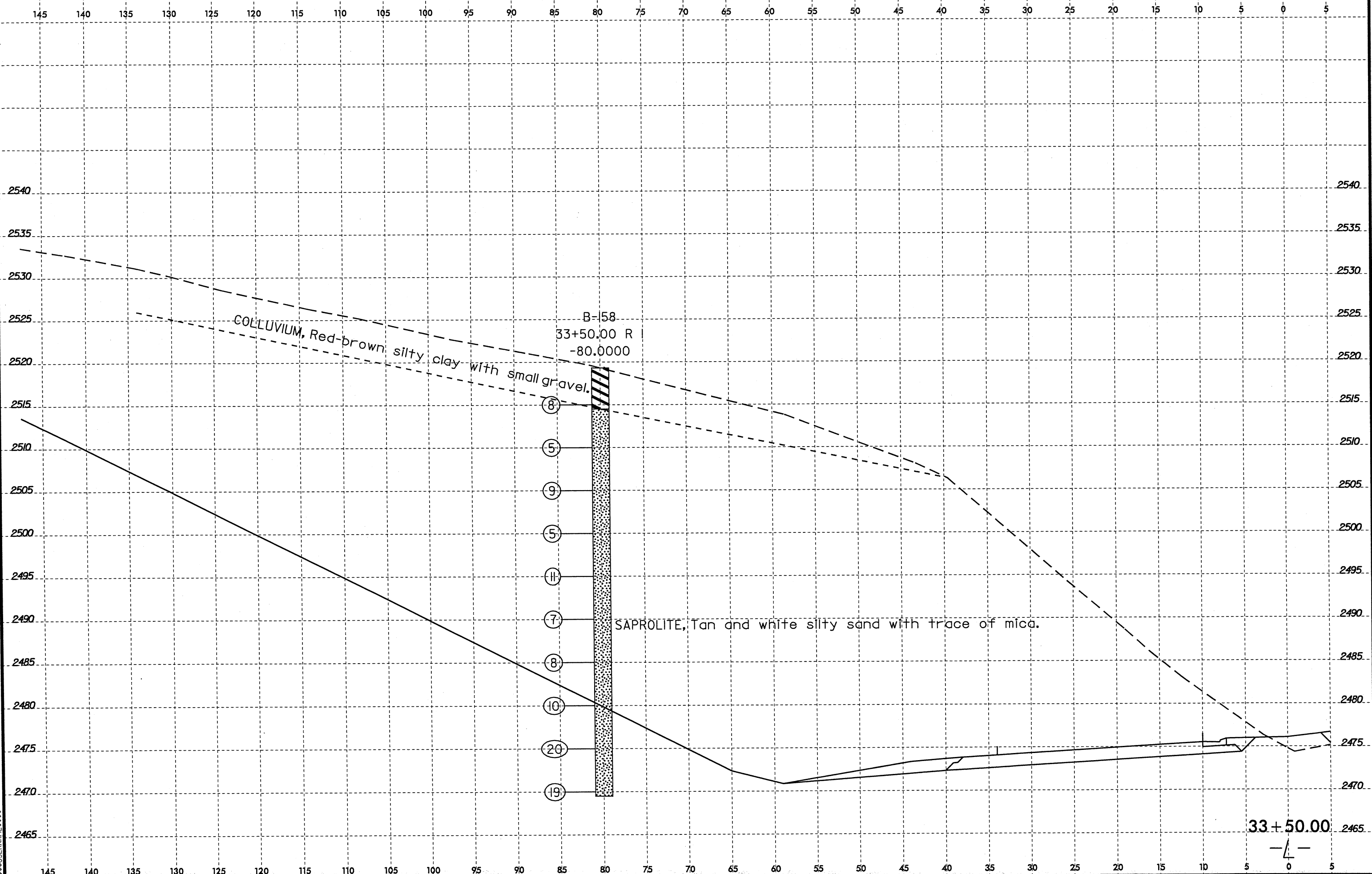
SAPROLITE, Gray to brown silty sand.

32 + 00.00



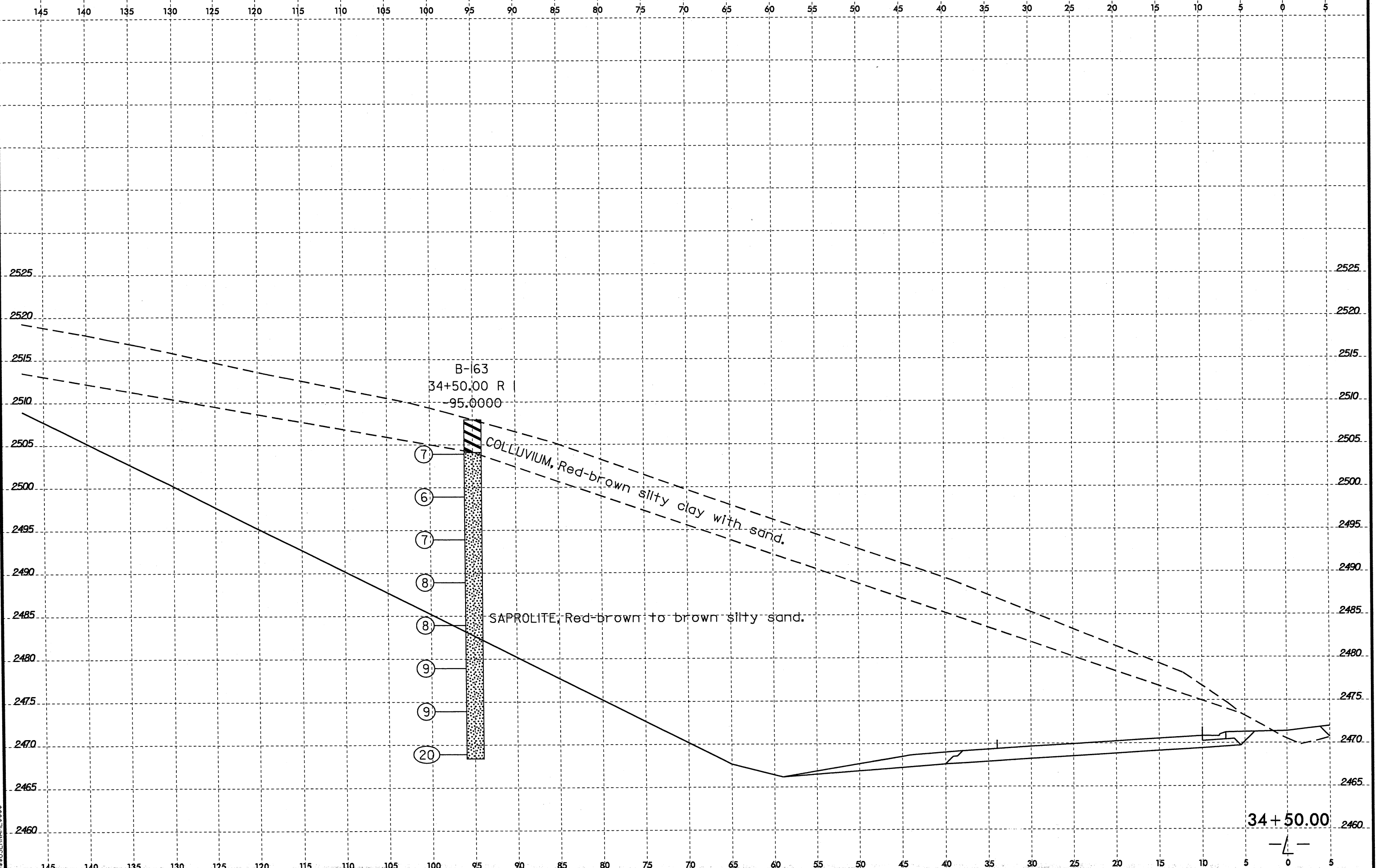


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33 + 50.00
- 1 -
2465

8/23/99
JUL-2008 1305
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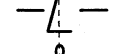
B-63
34+50.00 R |
95.0000

COLLUVIUM, Red-brown silty clay with sand.

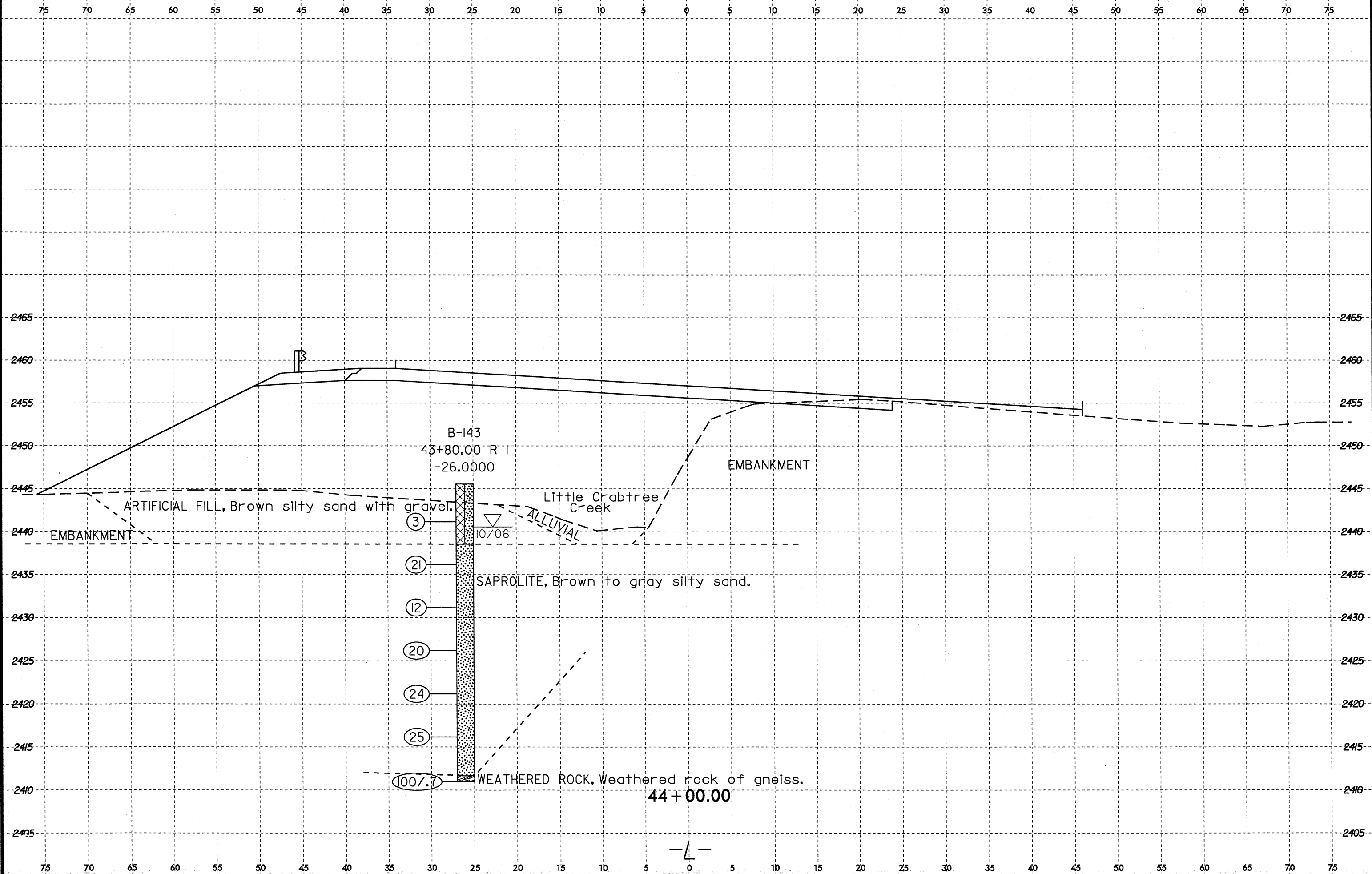
SAPROLITE, Red-brown to brown silty sand.

- (7)
- (6)
- (7)
- (8)
- (8)
- (9)
- (9)
- (20)

34 + 50.00

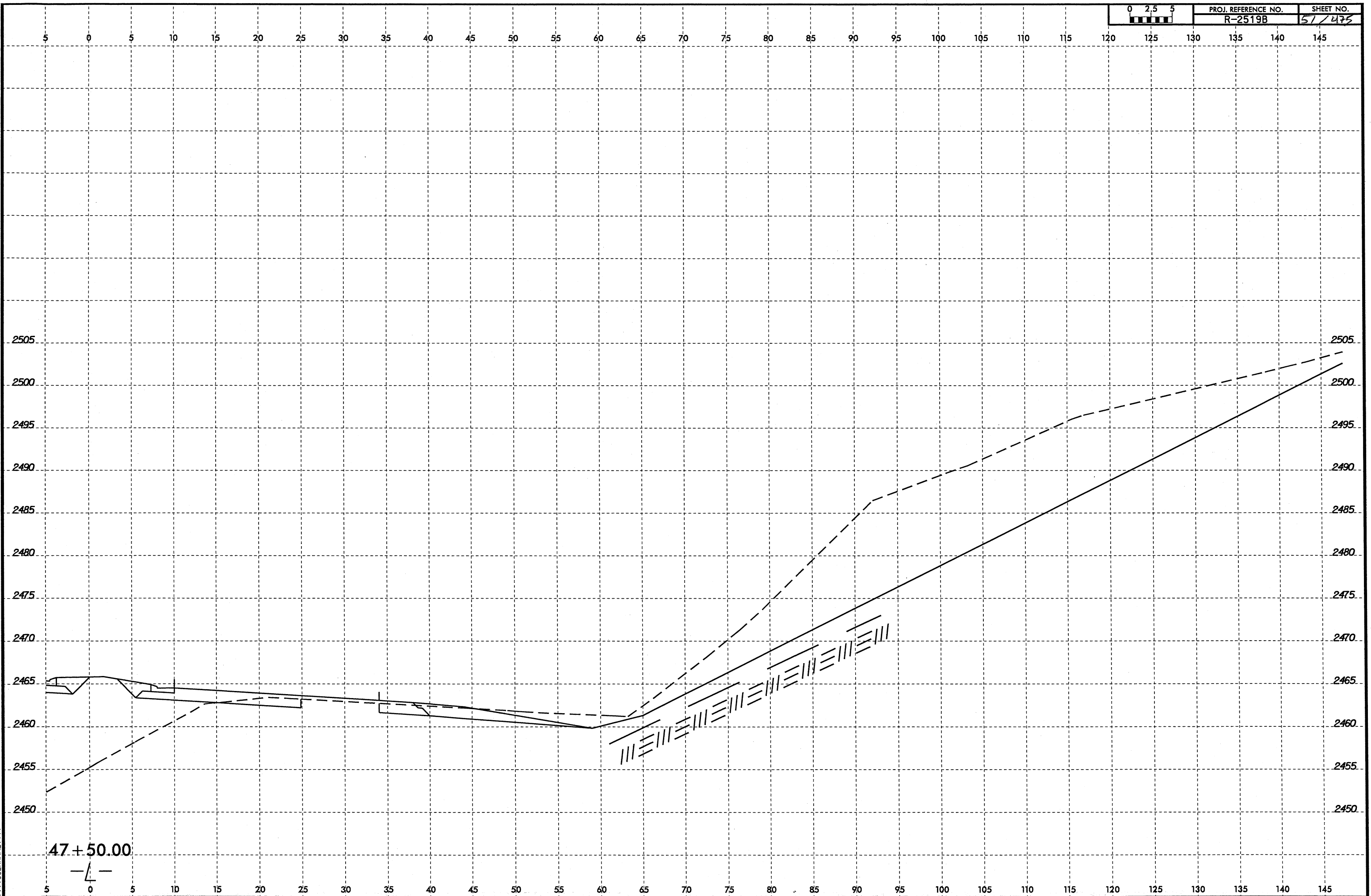


8/23/99



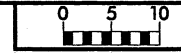
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8/23/99
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47 + 50.00
—/—

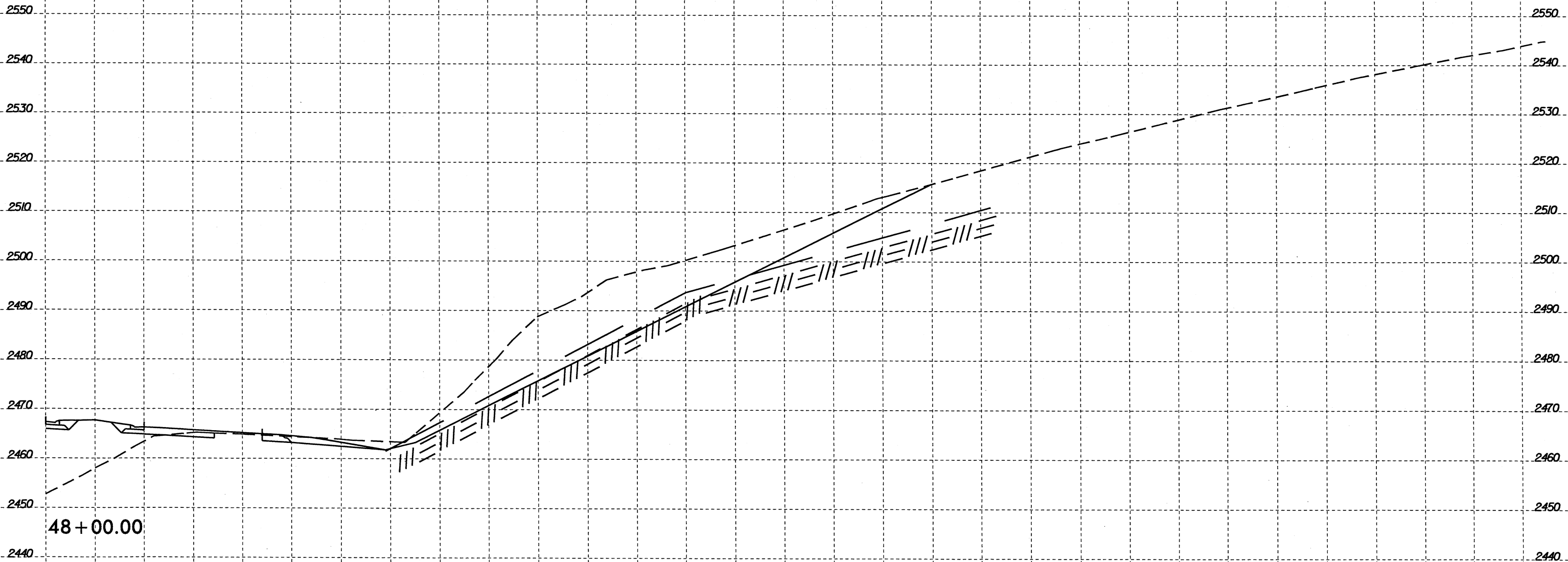
8/23/99



PROJ. REFERENCE NO.
R-2519B

SHEET NO.
52 / 475

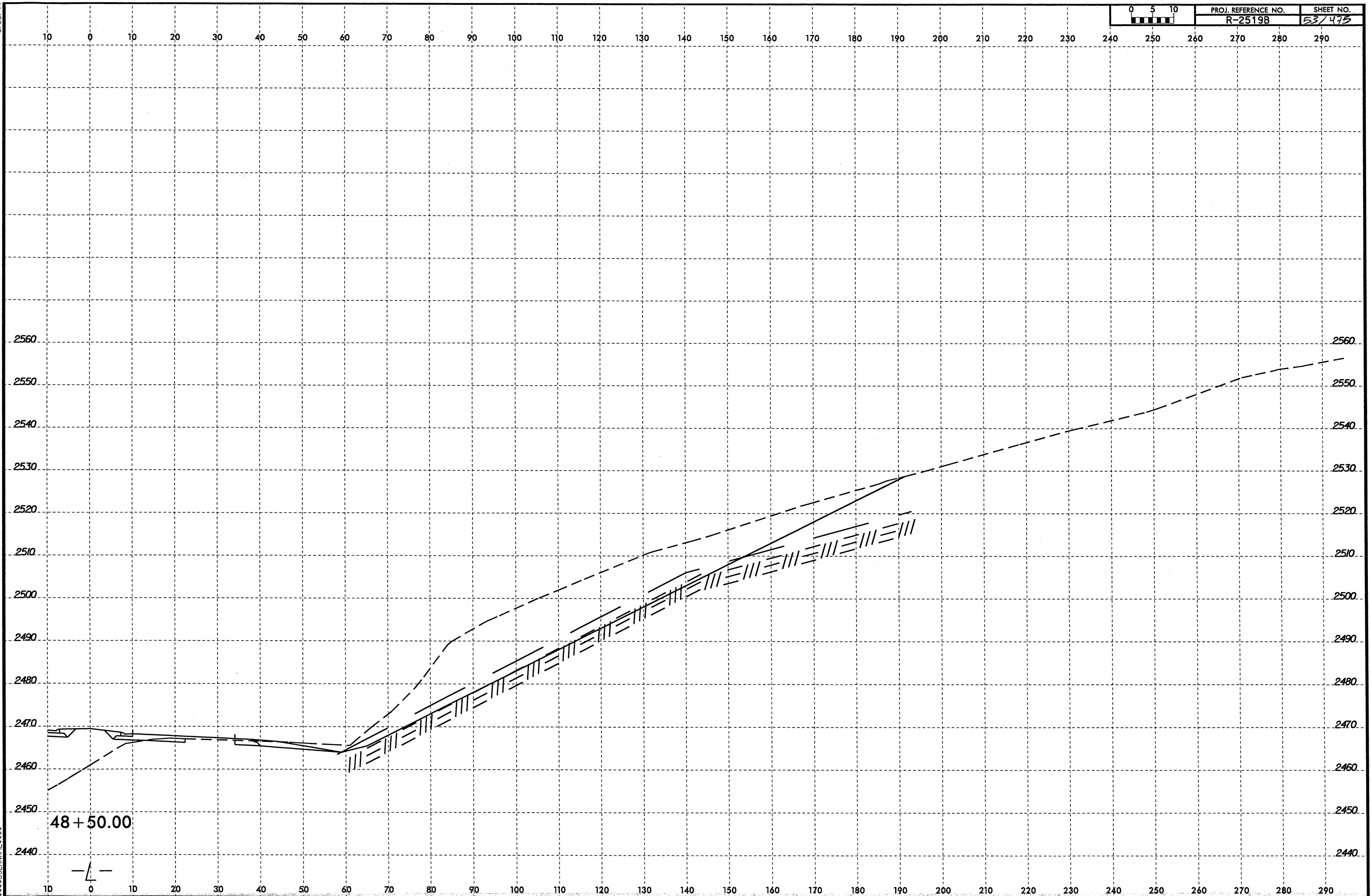
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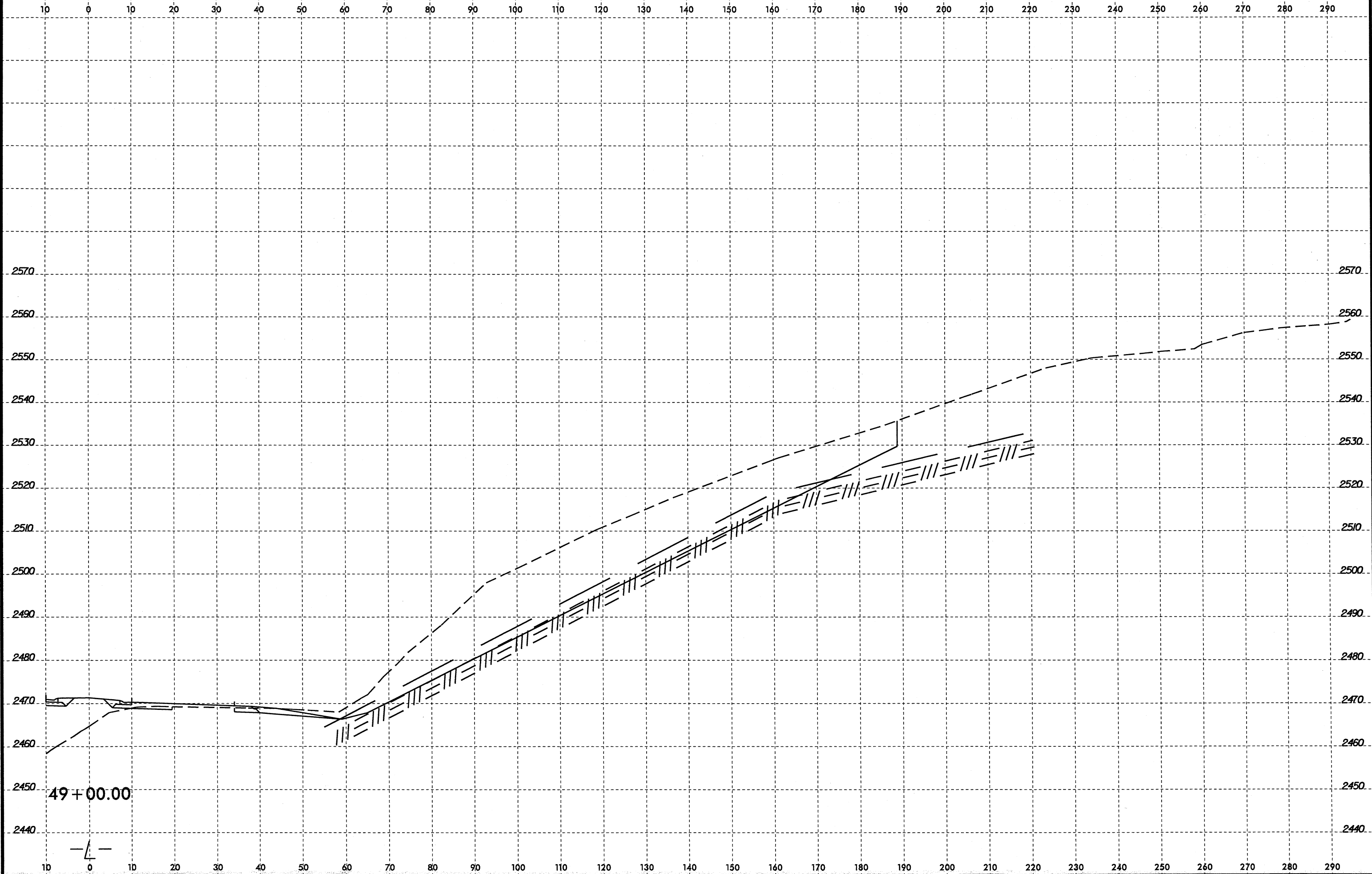
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8/23/99
21-AUG-2008 14:28
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\$\$\$\$SERVANTE\$\$\$\$

0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-2519B	53/475



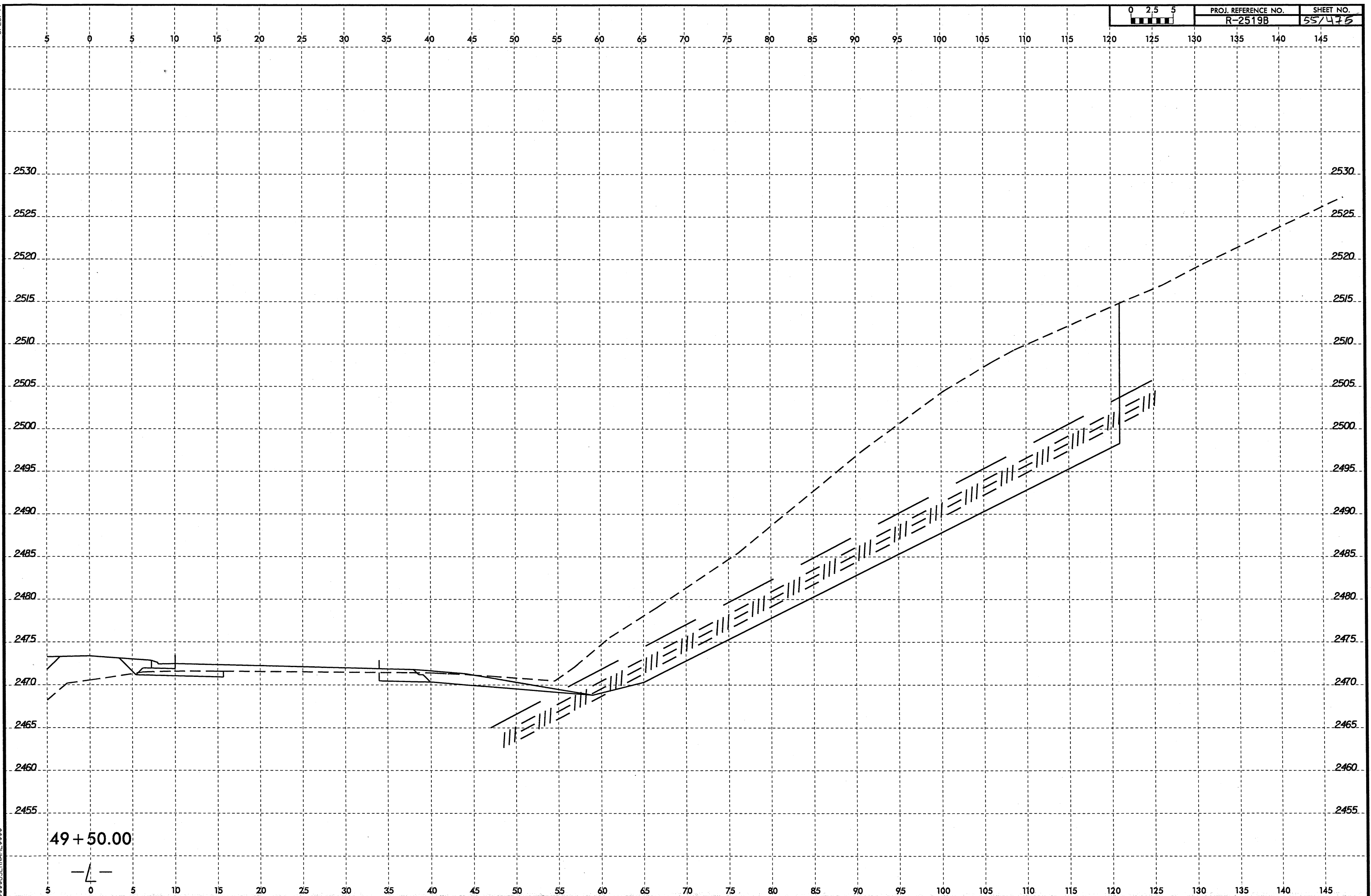
8/23/99



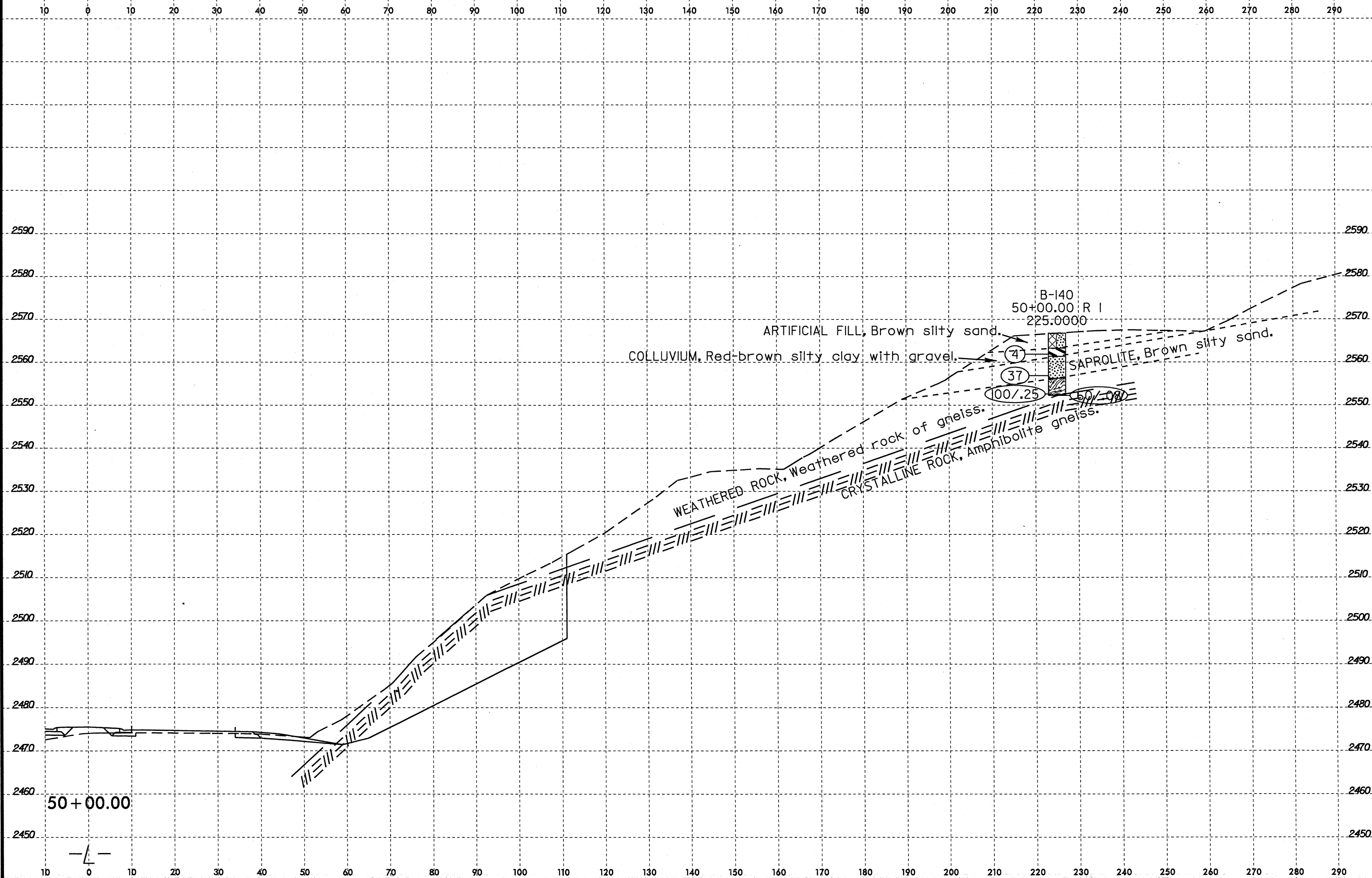
49 + 00.00

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8/23/99
21-AUG-2008 09:05
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\$\$\$\$\$US\$ENAME\$\$\$\$\$



B/23/99



50+00.00

B-140
50+00.00 R I
225.0000

ARTIFICIAL FILL, Brown silty sand.

COLLUVIUM, Red-brown silty clay with gravel.

SAPROLITE, Brown silty sand.

WEATHERED ROCK, weathered rock of gneiss.

CRYSTALLINE ROCK, Amphibolite gneiss.

74

37

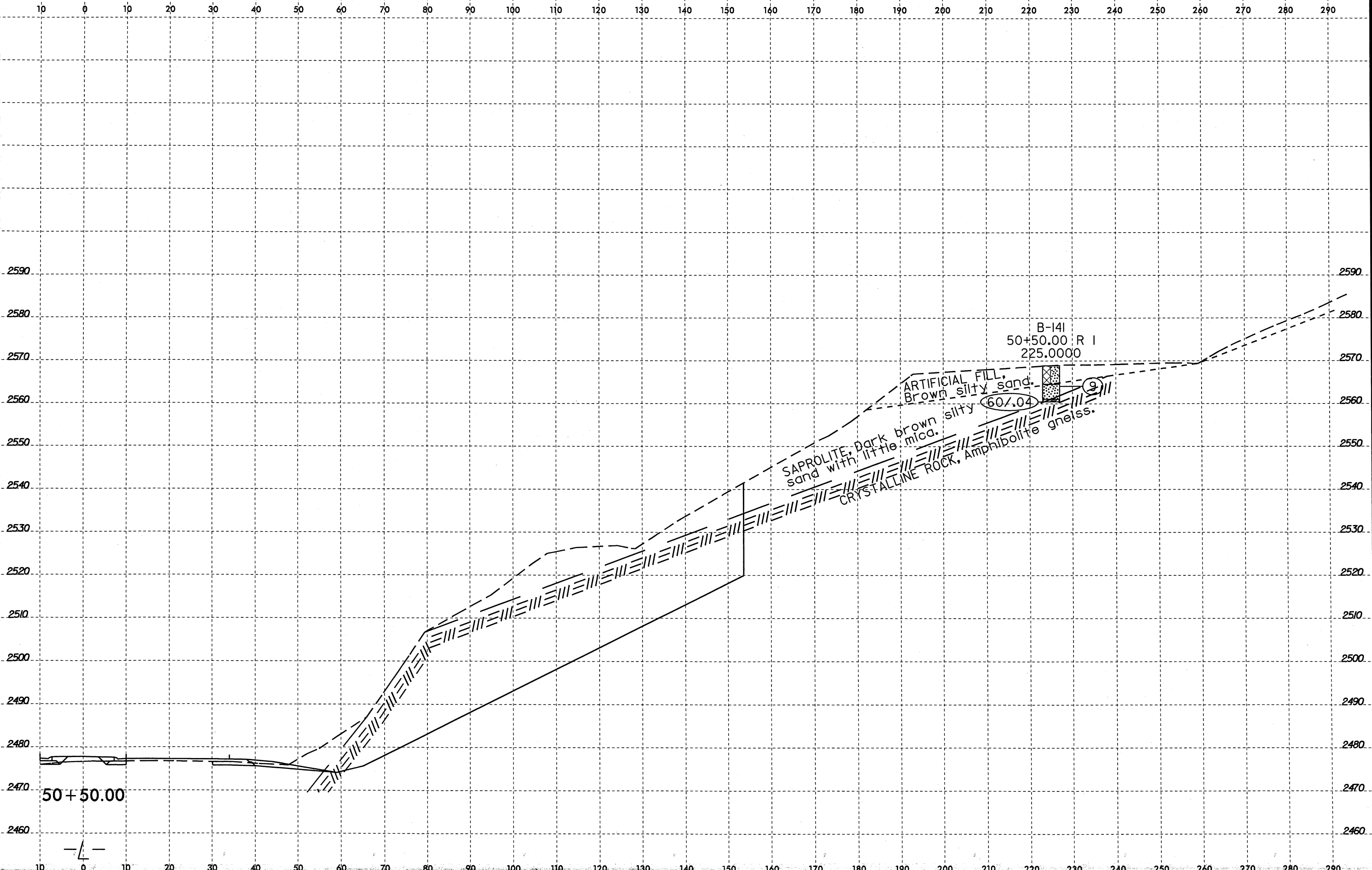
100/25

50/98

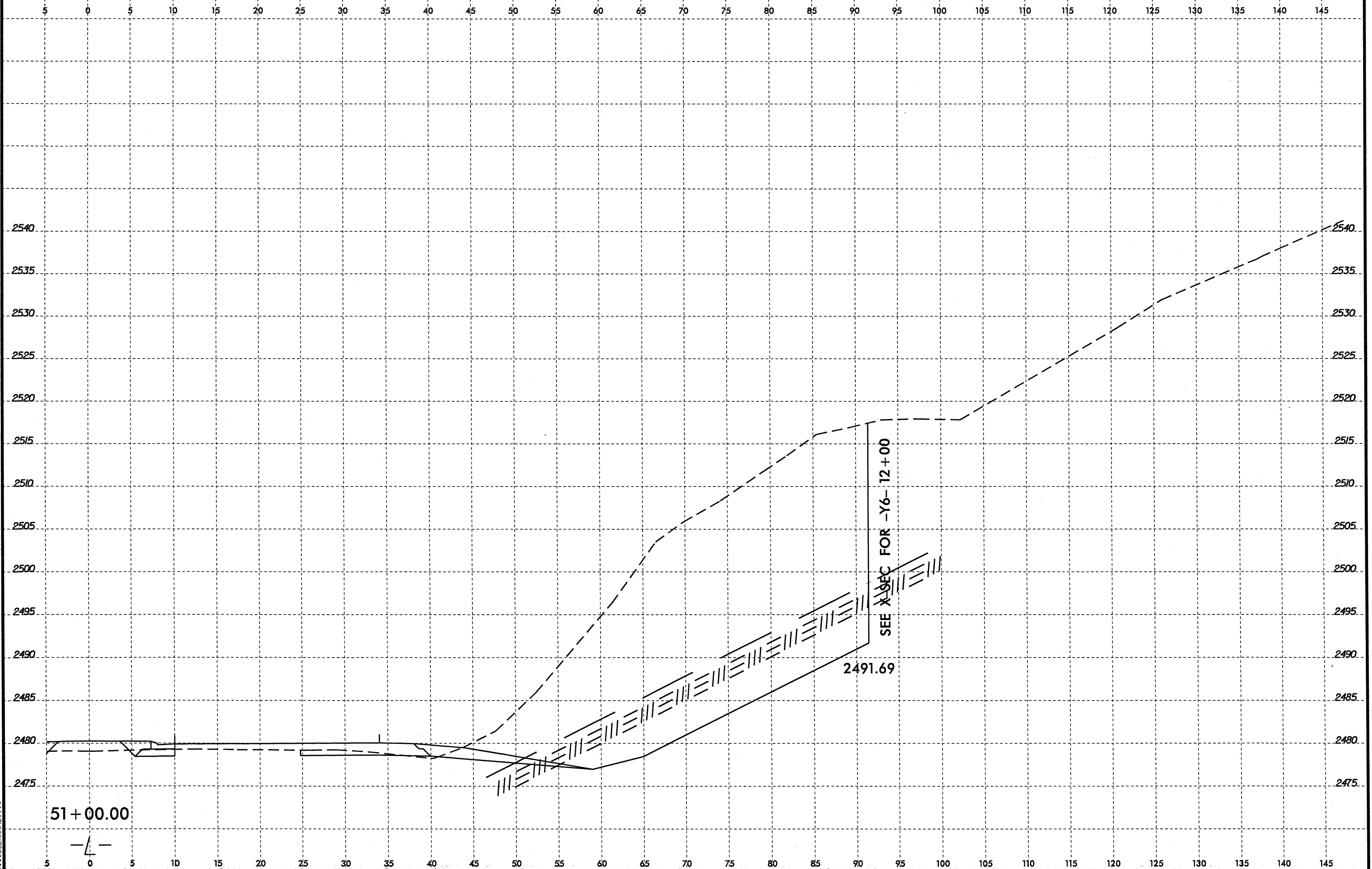
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8/23/99
AUG-2008 08:02
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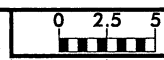
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	R-2519B	57/473



8/23/99
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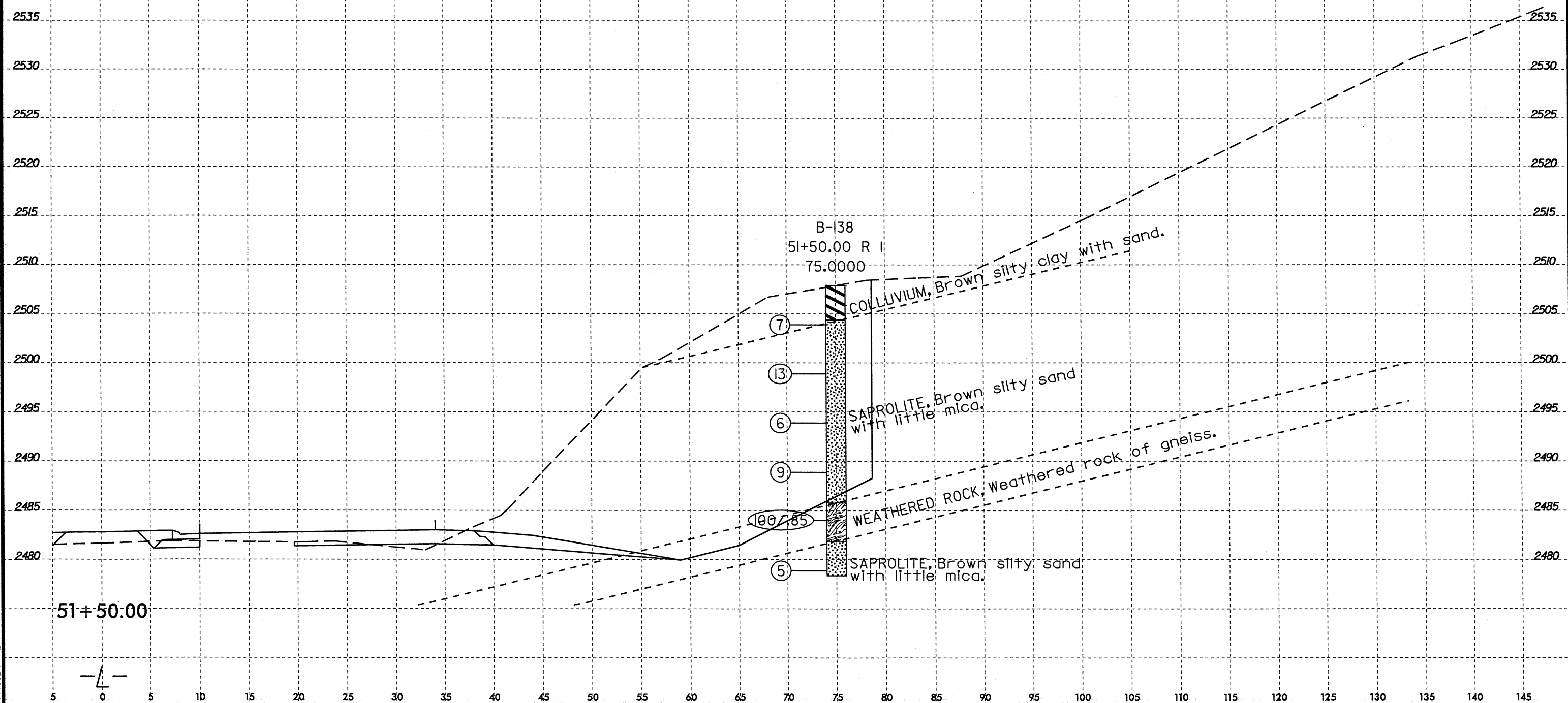


8/23/99



PROJ. REFERENCE NO.	SHEET NO.
R-2519B	59/475

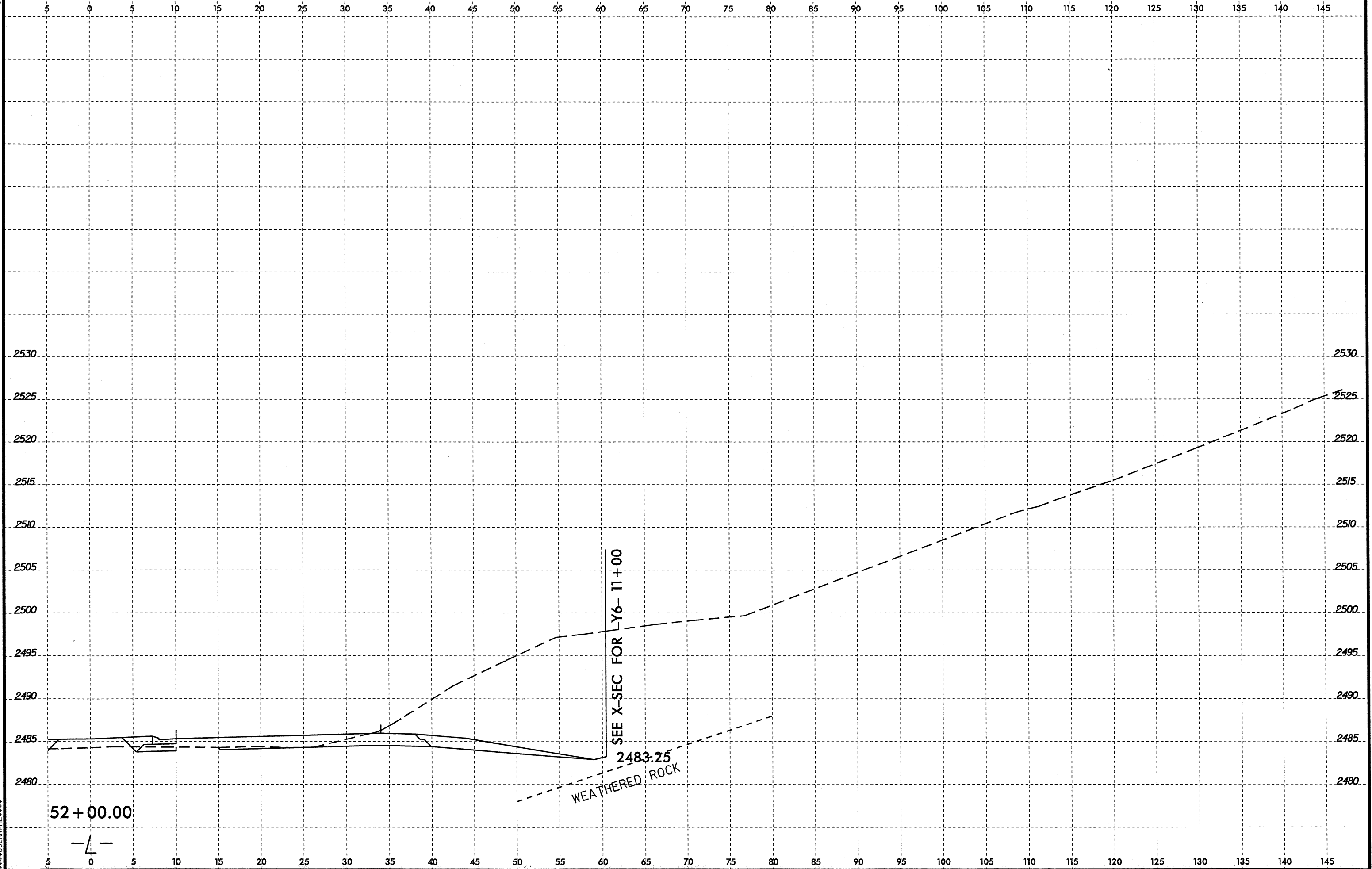
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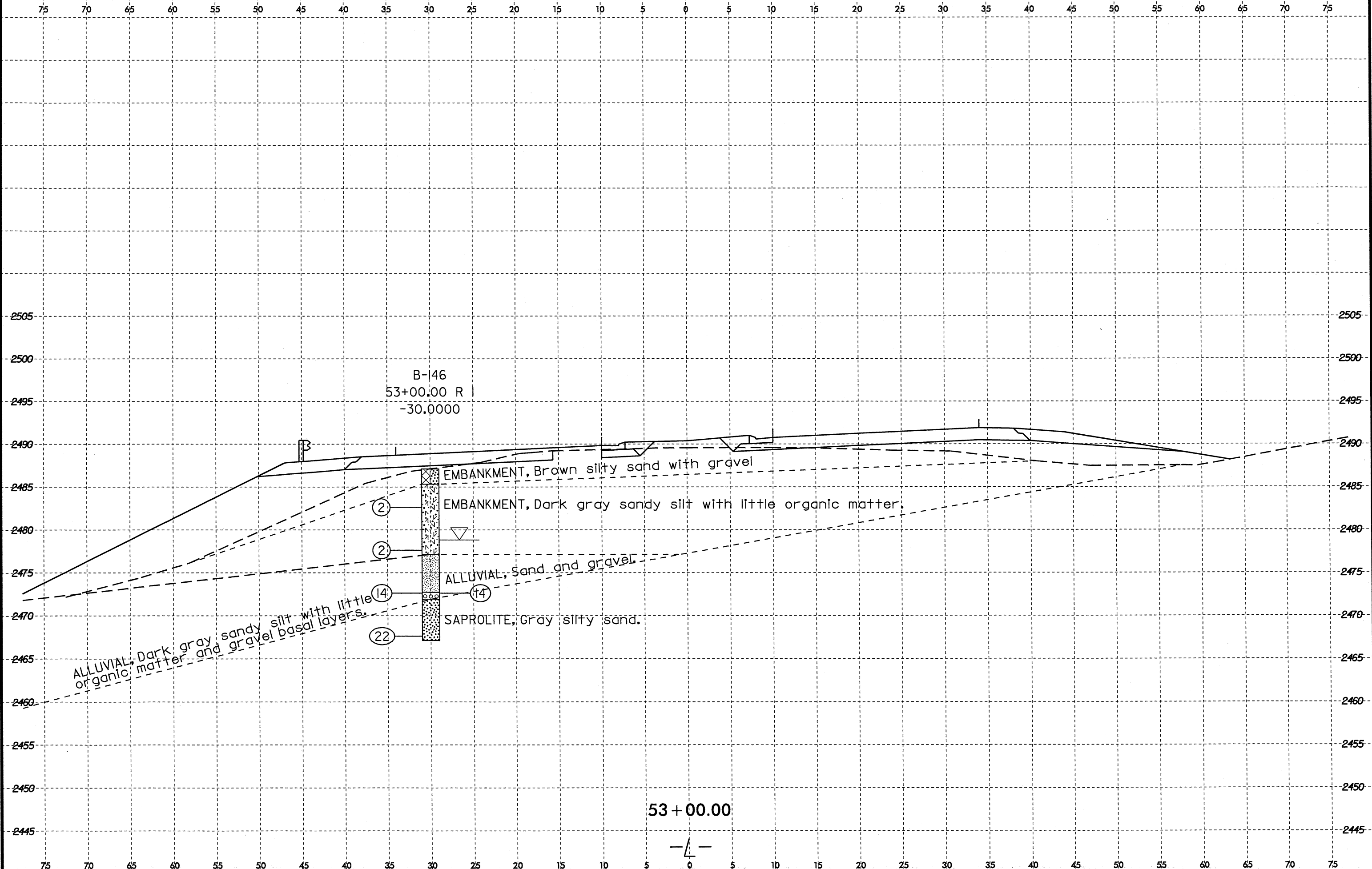
51+50.00

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8/23/99
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8/23/99
06-AUG-2008 08:20
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B-146
53+00.00 R
-30.0000

EMBANKMENT, Brown silty sand with gravel

EMBANKMENT, Dark gray sandy silt with little organic matter.

ALLUVIAL, Sand and gravel.

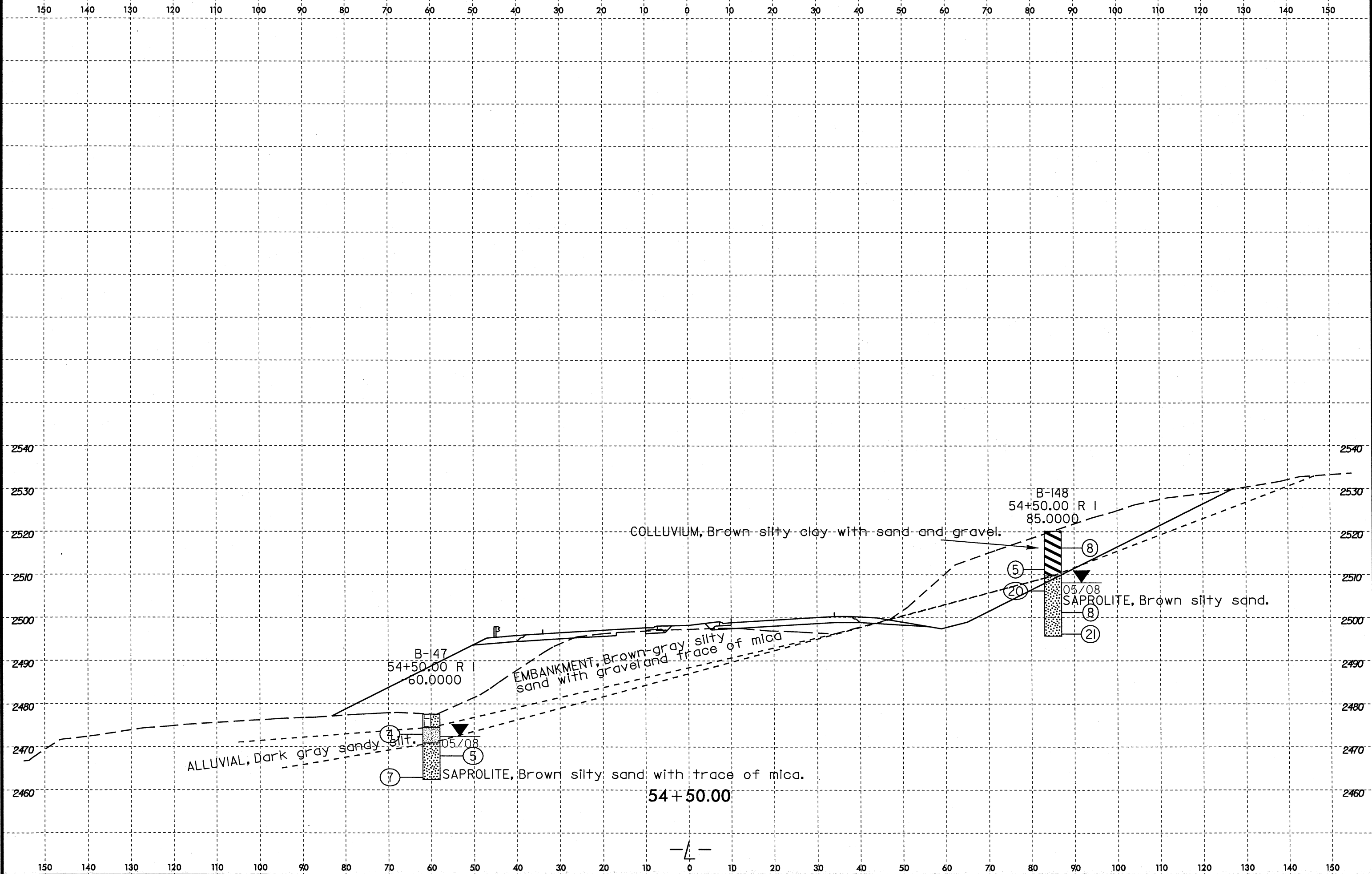
SAPROLITE, Gray silty sand.

ALLUVIAL, Dark gray sandy silt with little organic matter and gravel basal layers.

53 + 00.00

— 1 —

8/23/99
08-JUL-2008 09:07
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150 140 130 120 110 100 90 80 70 60 50 40 30 20 10 0 10 20 30 40 50 60 70 80 90 100 110 120 130 140 150

2540

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2500

2490

2480

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2500

2490

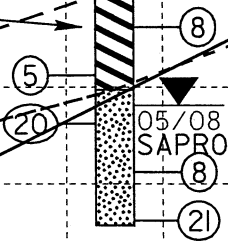
2480

2470

2460

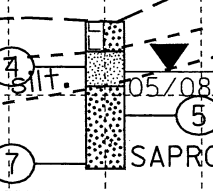
COLLUVIUM, Brown silty clay with sand and gravel.

B-148
54+50.00 R 1
85.0000



SAPROLITE, Brown silty sand.

B-147
54+50.00 R 1
60.0000

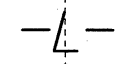


ALLUVIAL, Dark gray sandy silt.

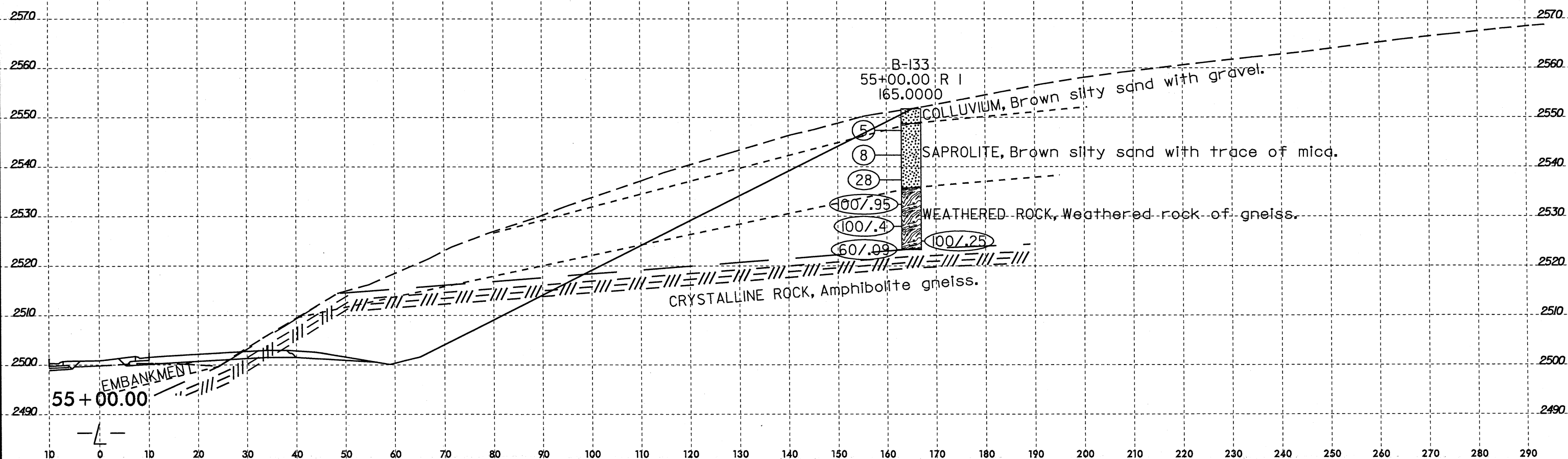
SAPROLITE, Brown silty sand with trace of mica.

EMBANKMENT, Brown-gray silty sand with gravel and trace of mica

54+50.00

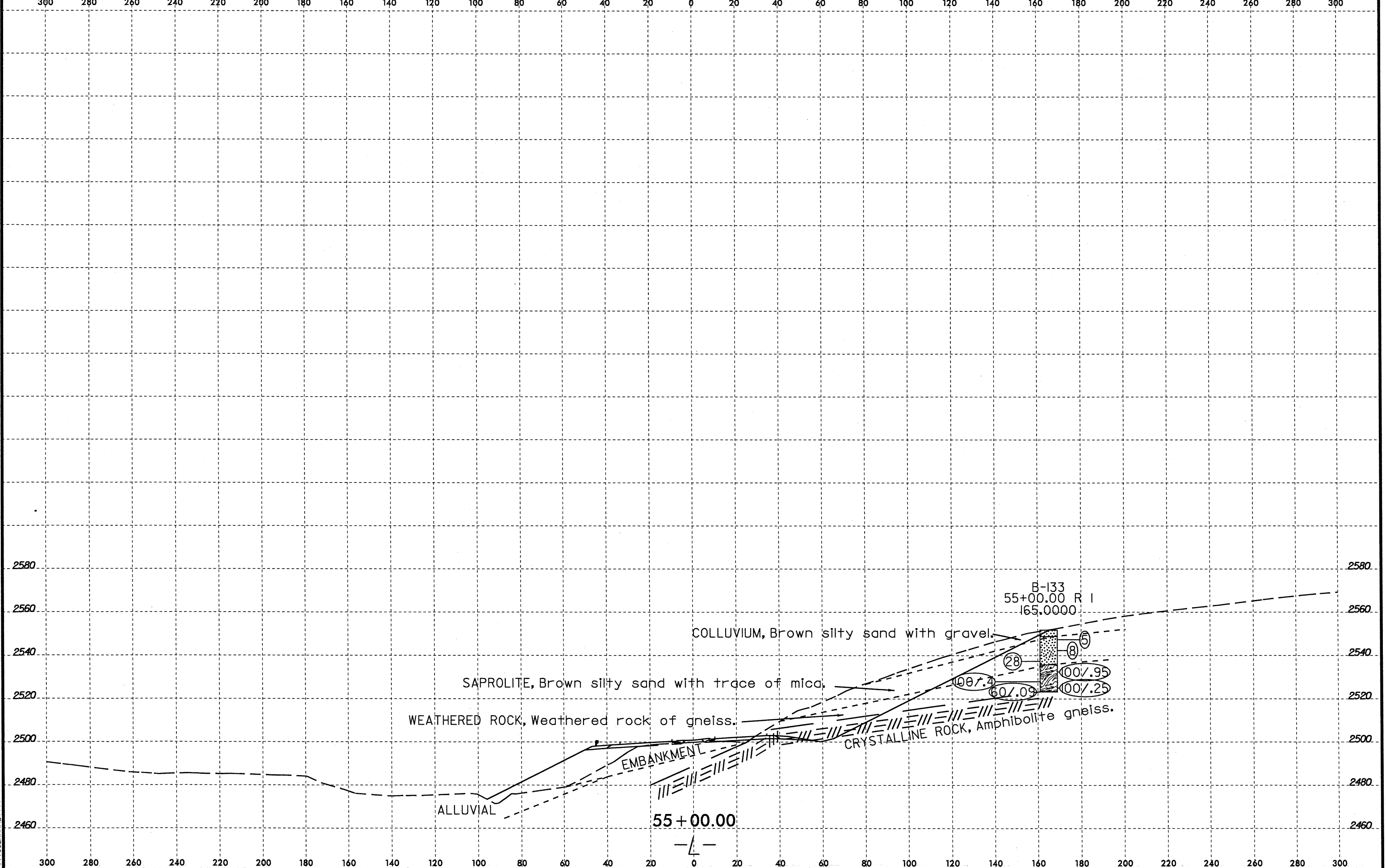


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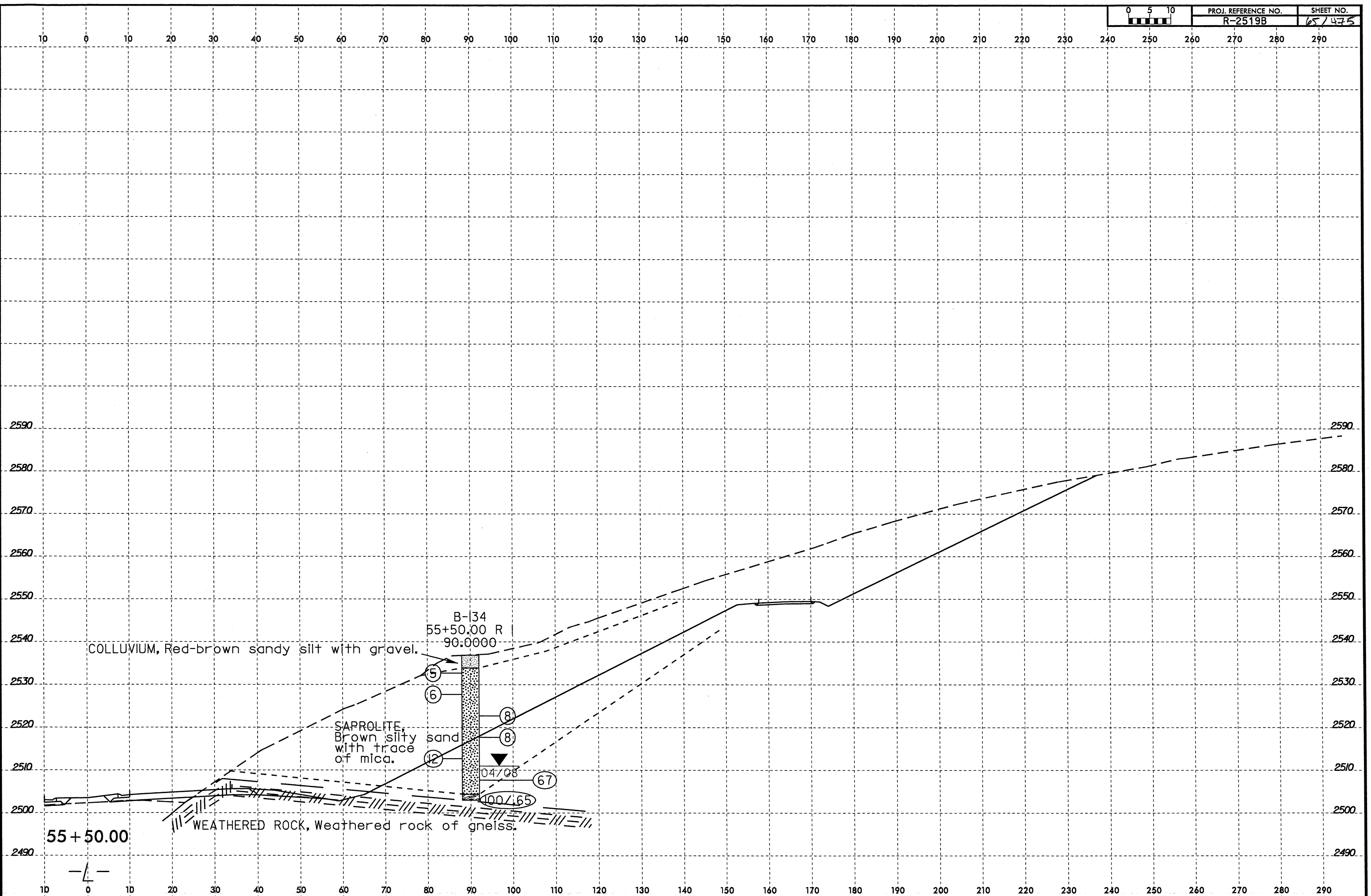


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2590
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2500
2490

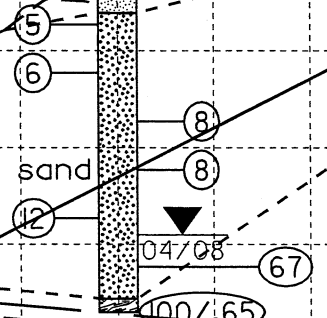
COLLUVIUM, Red-brown sandy silt with gravel.

B-34
55+50.00 R
90:0000

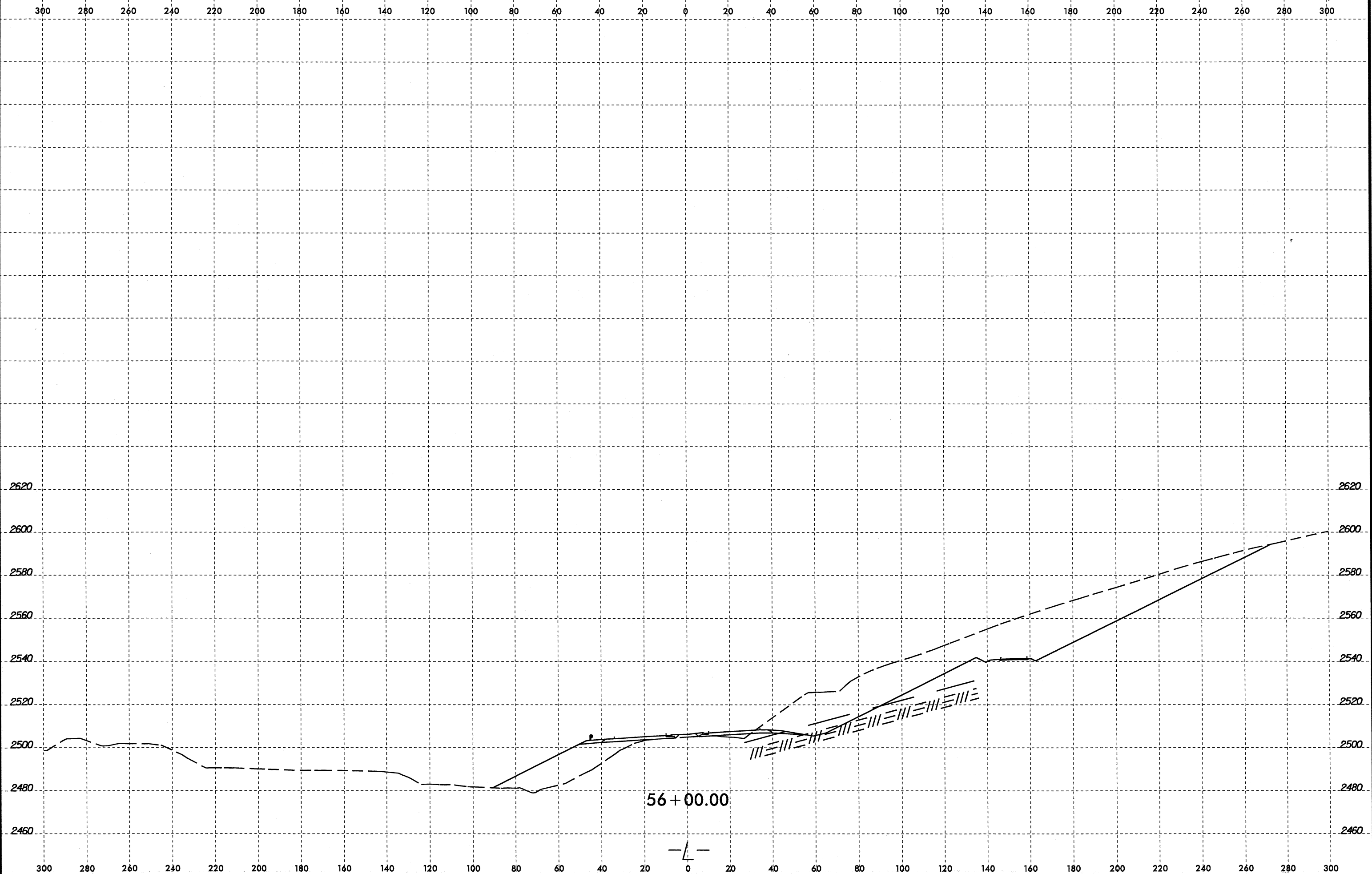
SAPROLITE,
Brown silty sand
with trace
of mica.

WEATHERED ROCK, Weathered rock of gneiss.

55+50.00

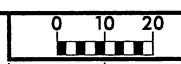


8/23/99

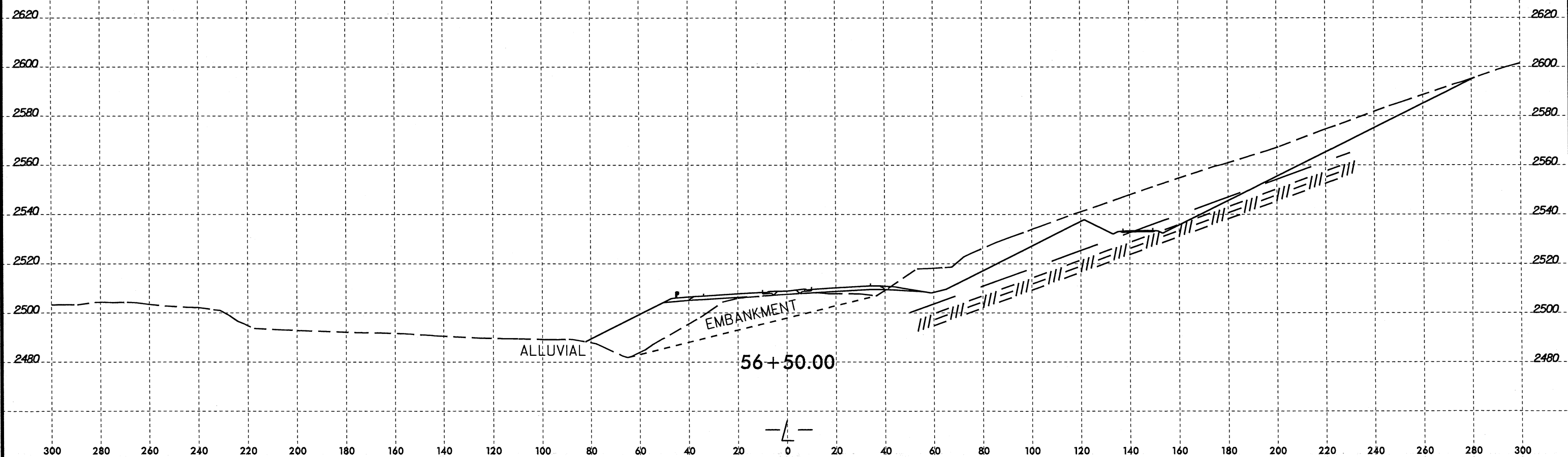
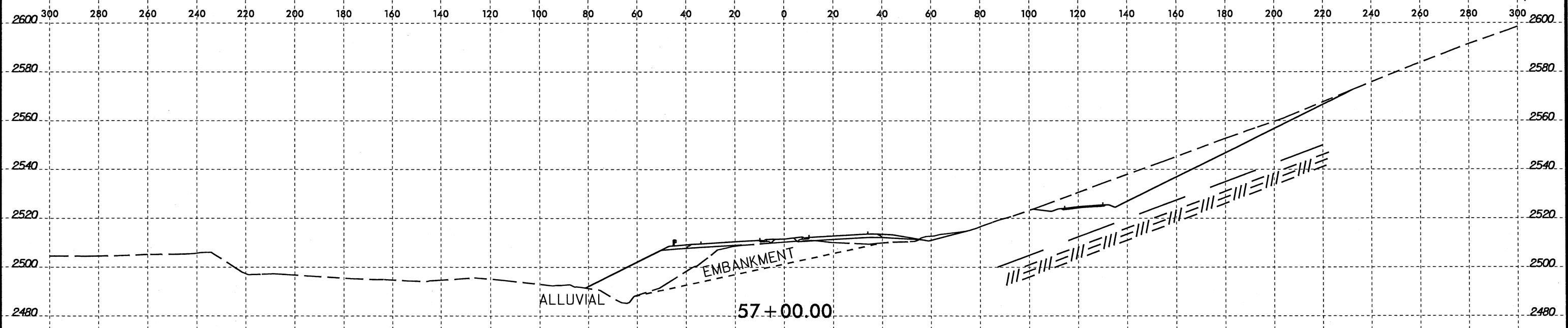


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USER NAME

8/23/99



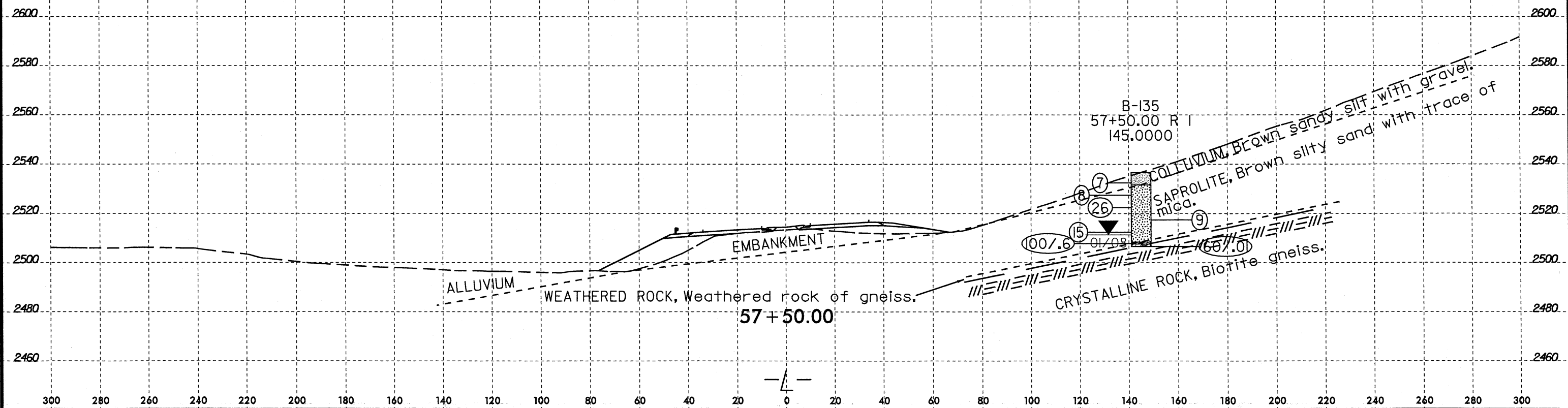
PROJ. REFERENCE NO.	SHEET NO.
R-2519B	67/475



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8/23/99

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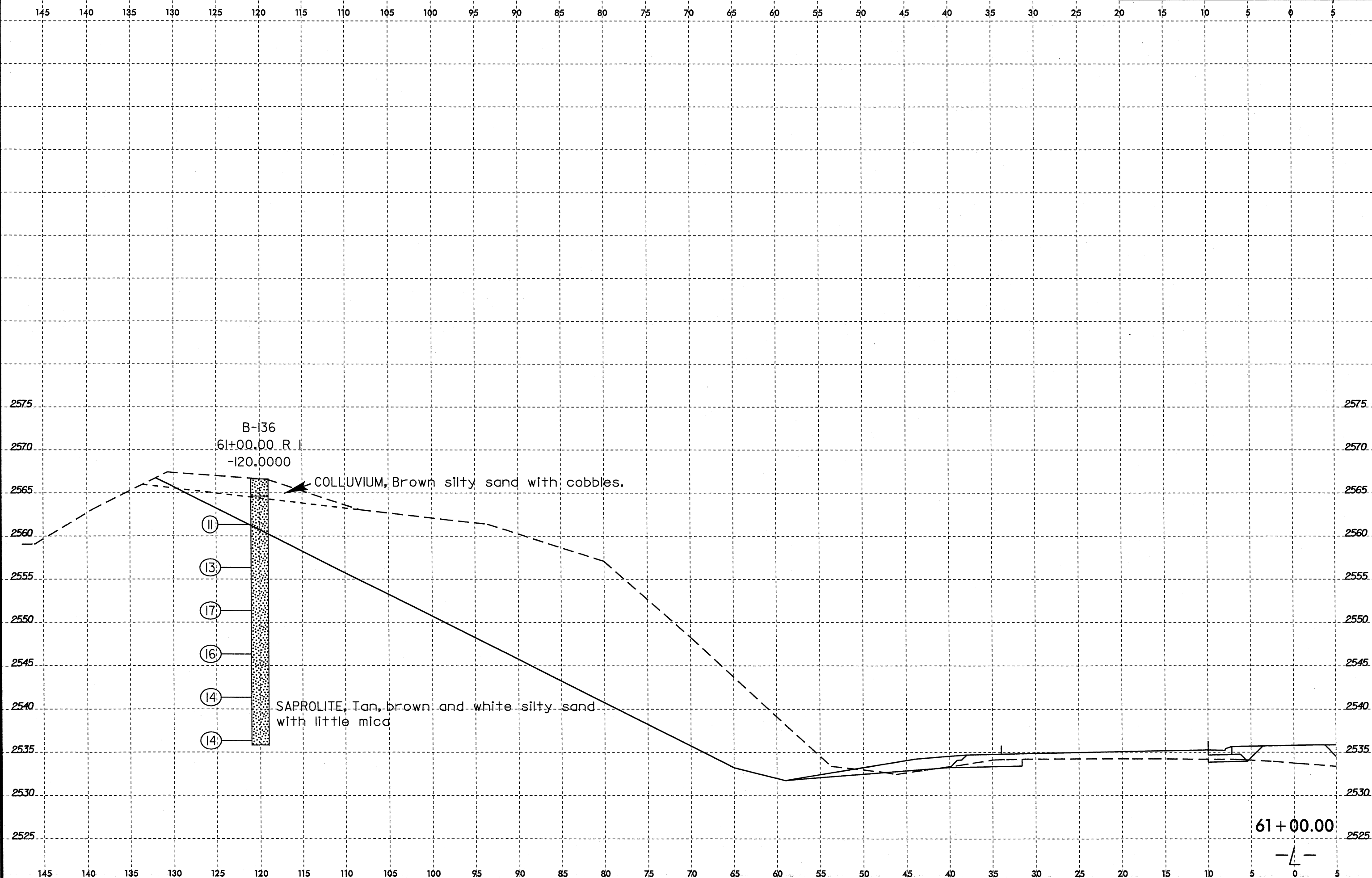
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\$\$\$\$\$USERNAME\$\$\$\$\$

8/23/99
B-JUL-2008 14:19
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USERNAME



PROJ. REFERENCE NO.
R-2519B

SHEET NO.
69/475



B-136
61+00.00 R.I.
-120.0000

COLLUVIUM, Brown silty sand with cobbles.

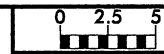
- 11
- 13
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- 16
- 14
- 14

SAPROLITE, Tan, brown and white silty sand
with little mica

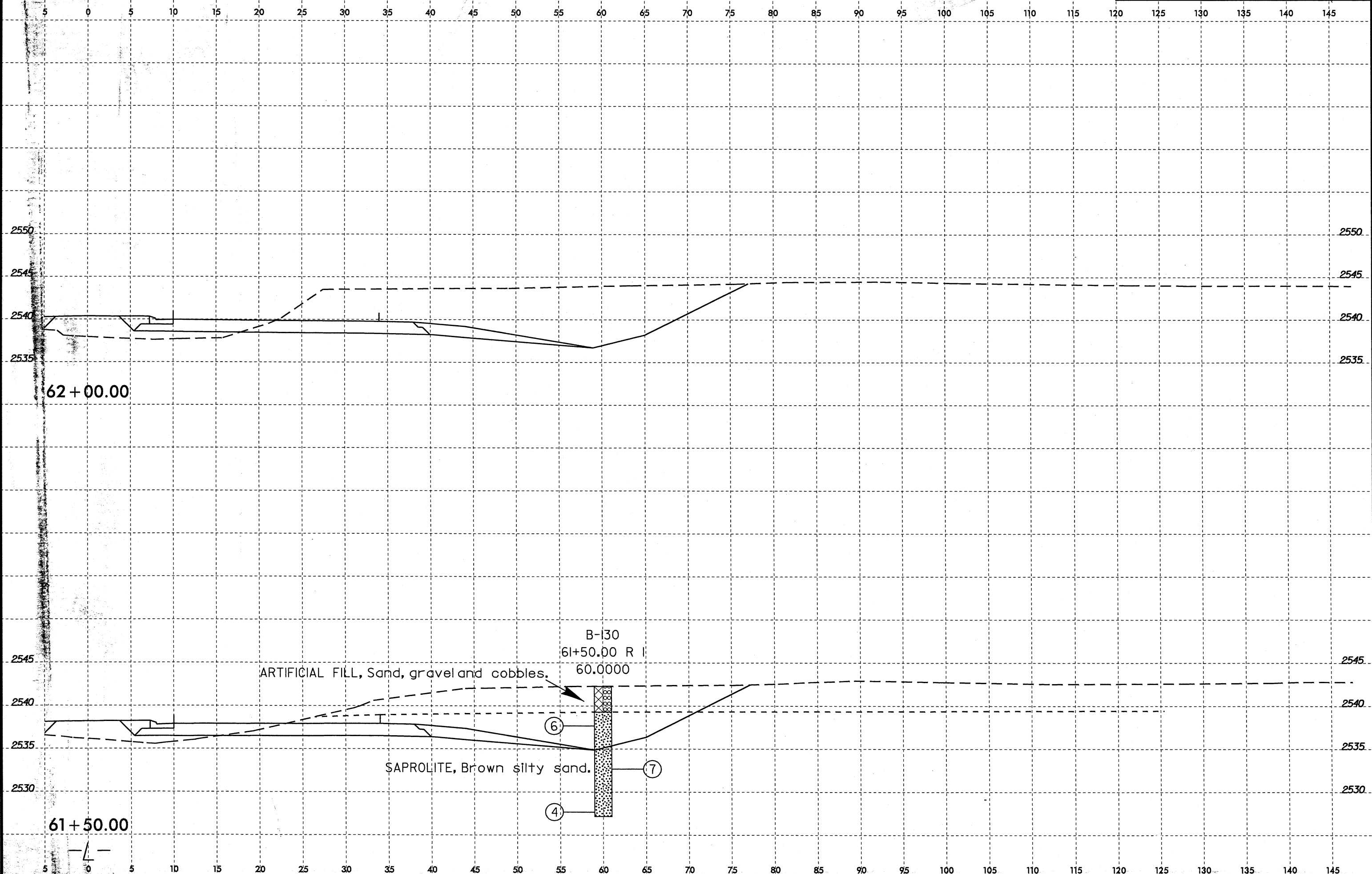
61+00.00

-4-

8/23/99



PROJ. REFERENCE NO.	SHEET NO.
R-2519B	70/1475



62 + 00.00

61 + 50.00

ARTIFICIAL FILL, Sand, gravel and cobbles.

SAPROLITE, Brown silty sand.

B-30
61+50.00 R I
60.0000

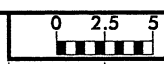
6

7

4

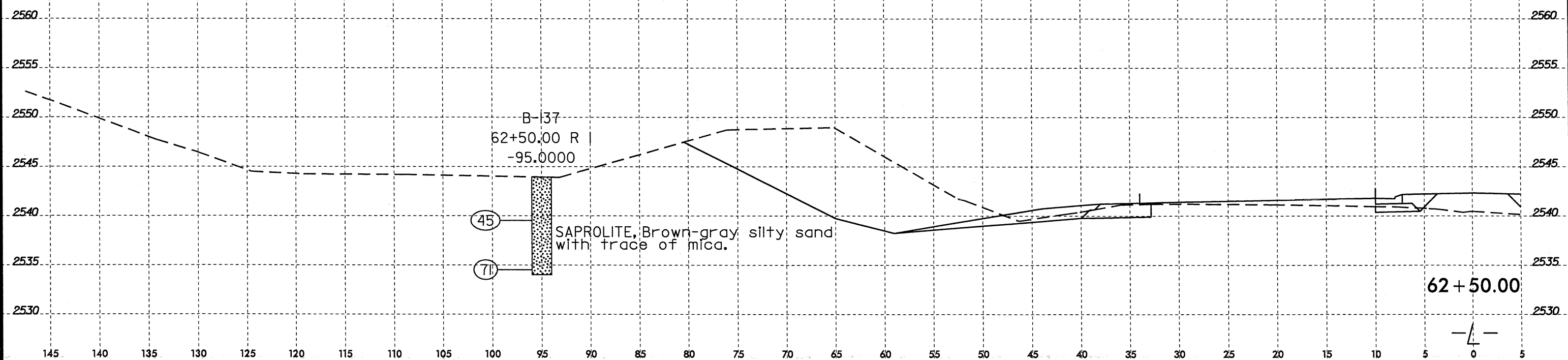
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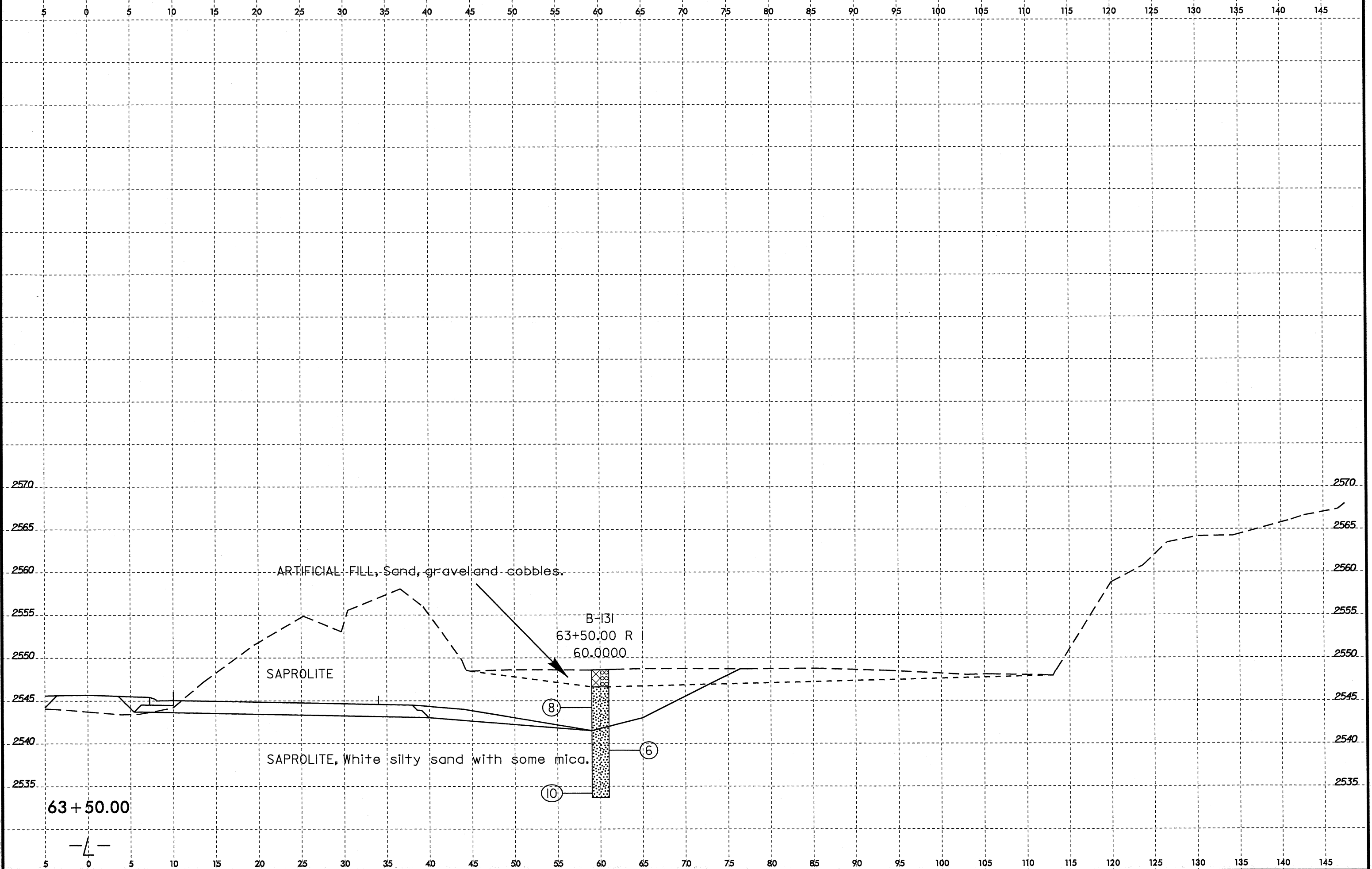
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R-2519B	71/443

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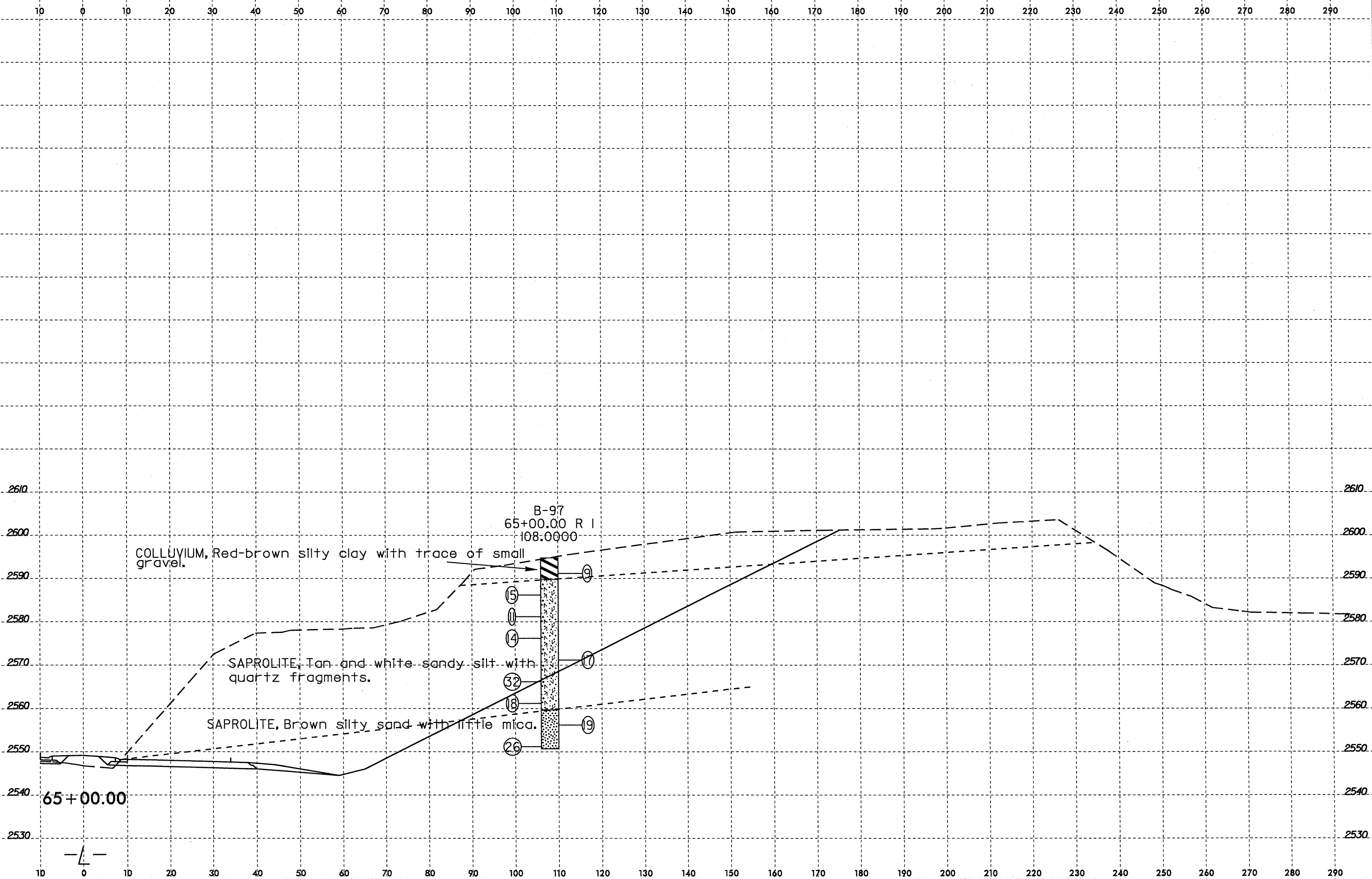


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COLLUVIUM, Red-brown silty clay with trace of small gravel.

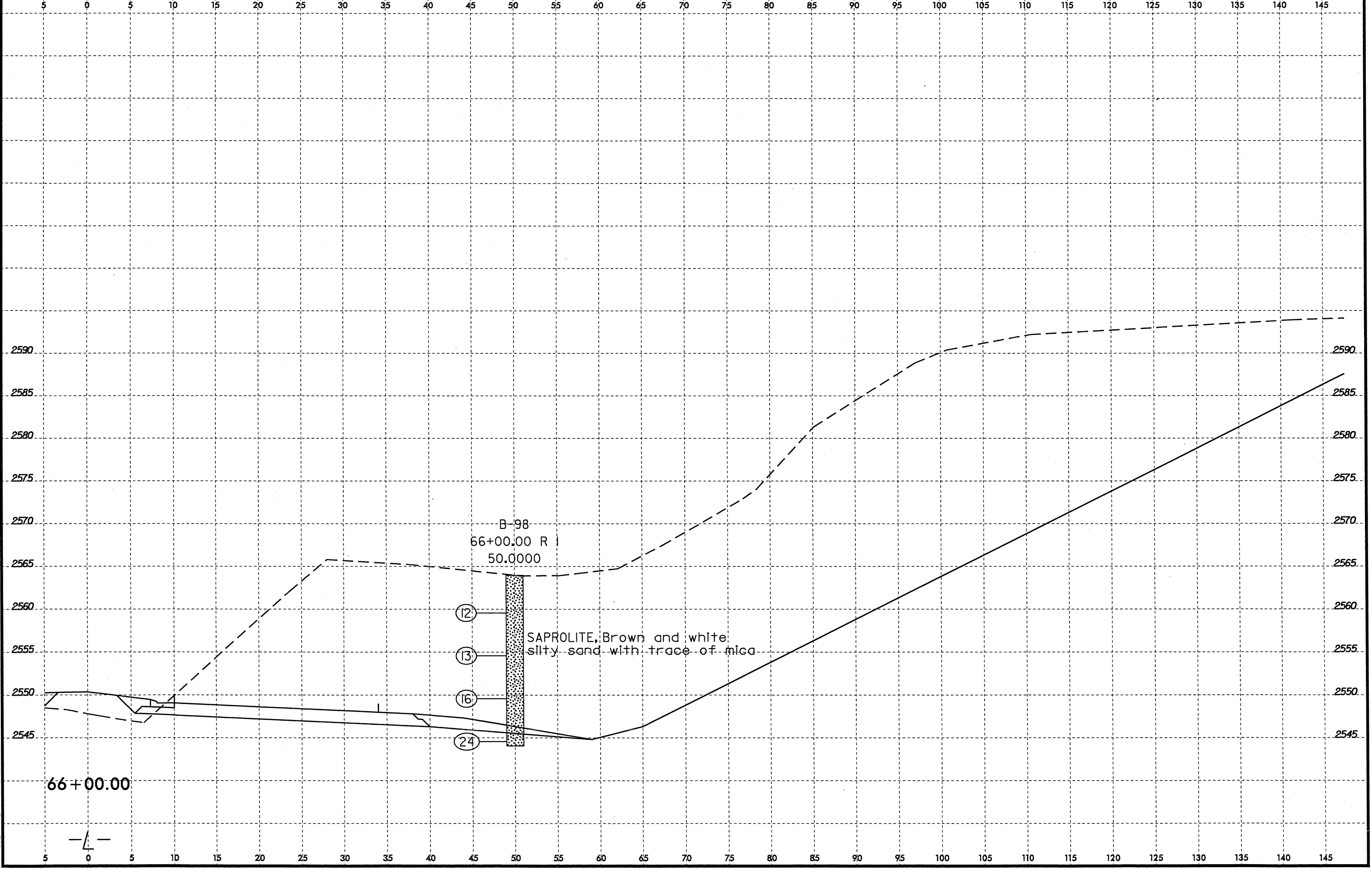
B-97
65+00.00 R I
108.0000

SAPROLITE, Tan and white sandy silt with quartz fragments.

SAPROLITE, Brown silty sand with little mica.

65+00.00

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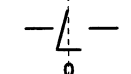


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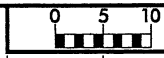
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- (13)
- (16)
- (24)

SAPROLITE, Brown and white
silty sand with trace of mica

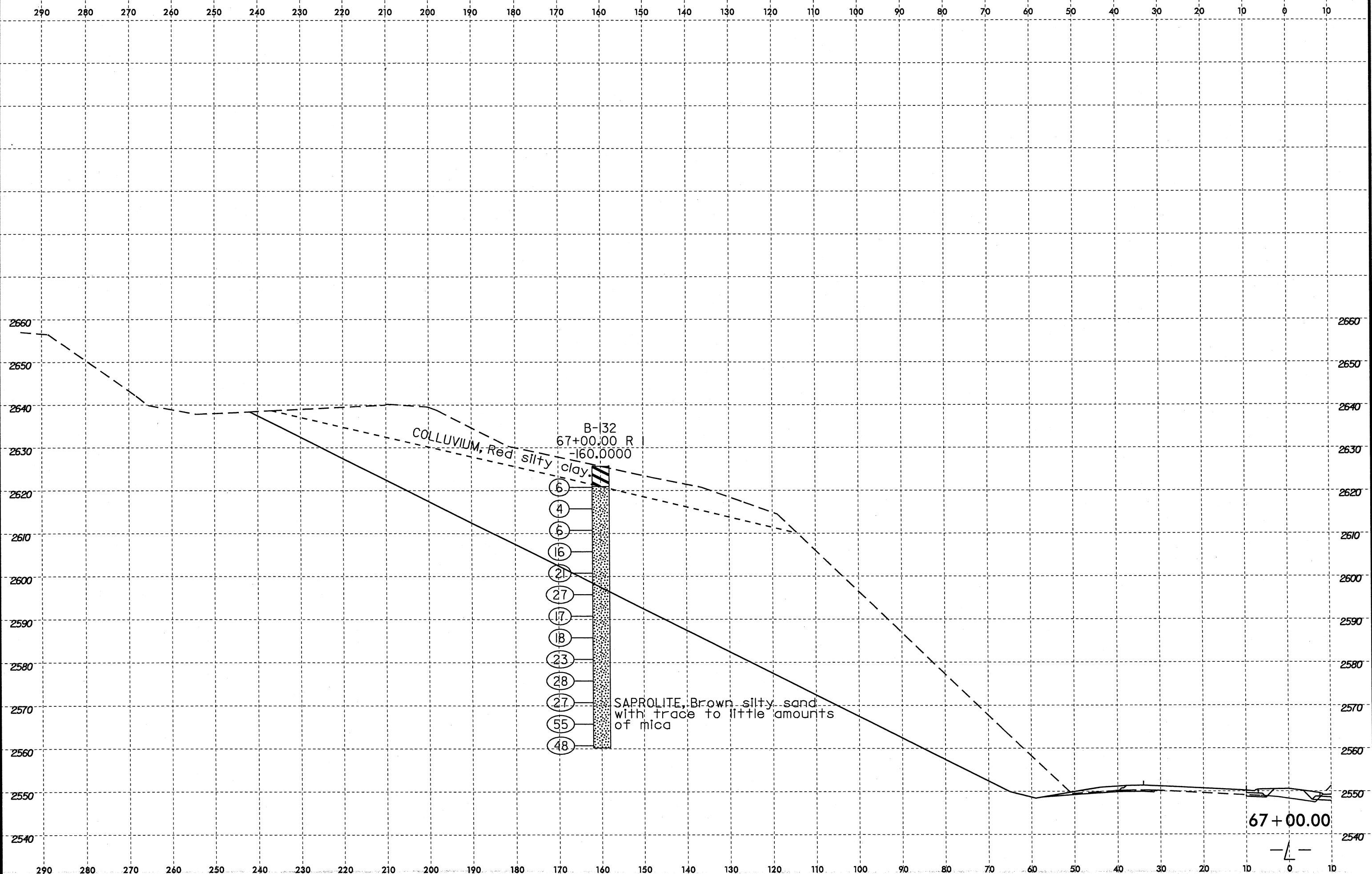
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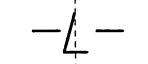
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COLLUVIUM, Red silty clay

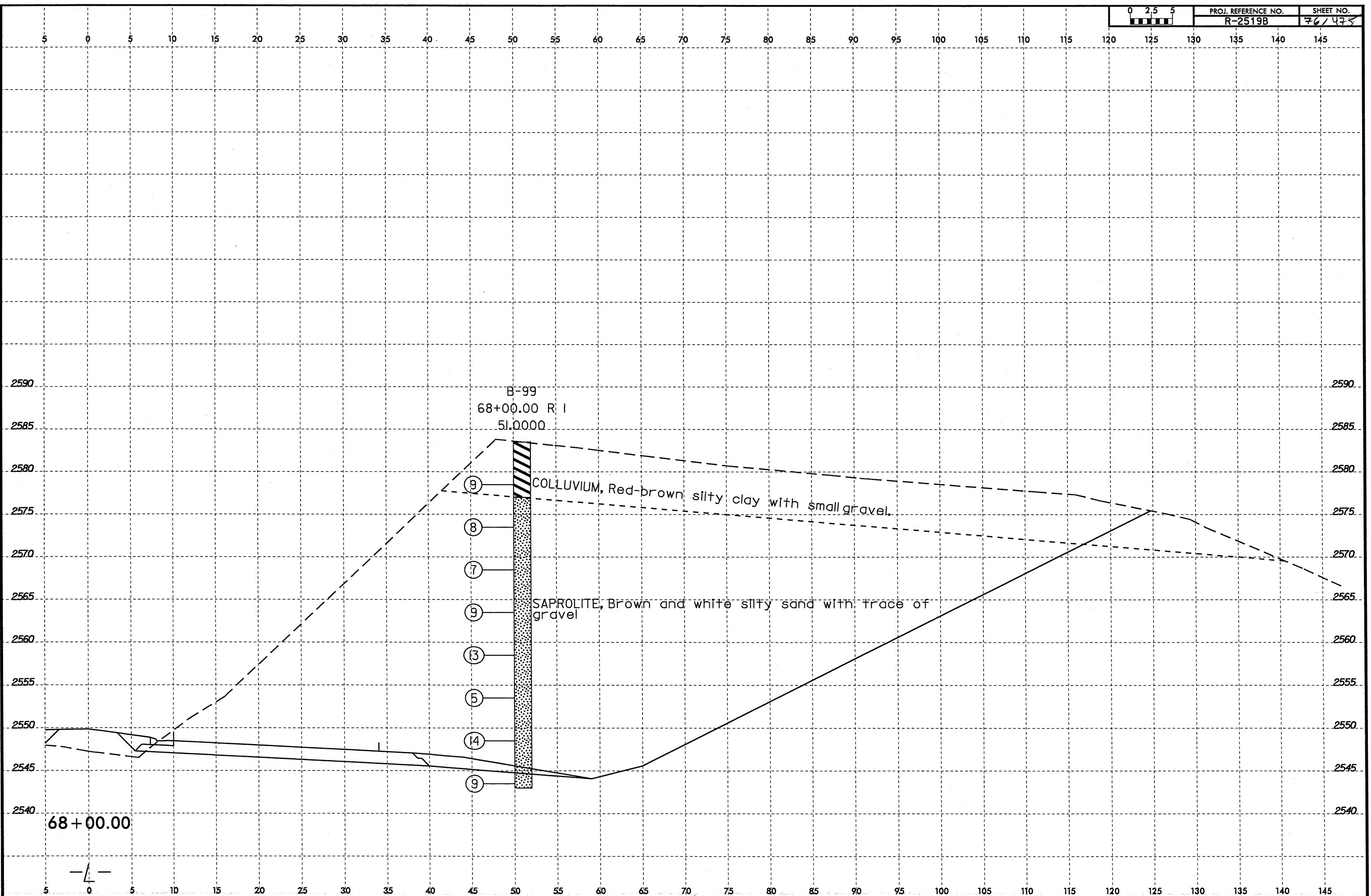
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- (27)
- (17)
- (18)
- (23)
- (28)
- (27)
- (55)
- (48)

SAPROLITE, Brown silty sand with trace to little amounts of mica

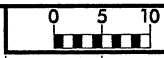
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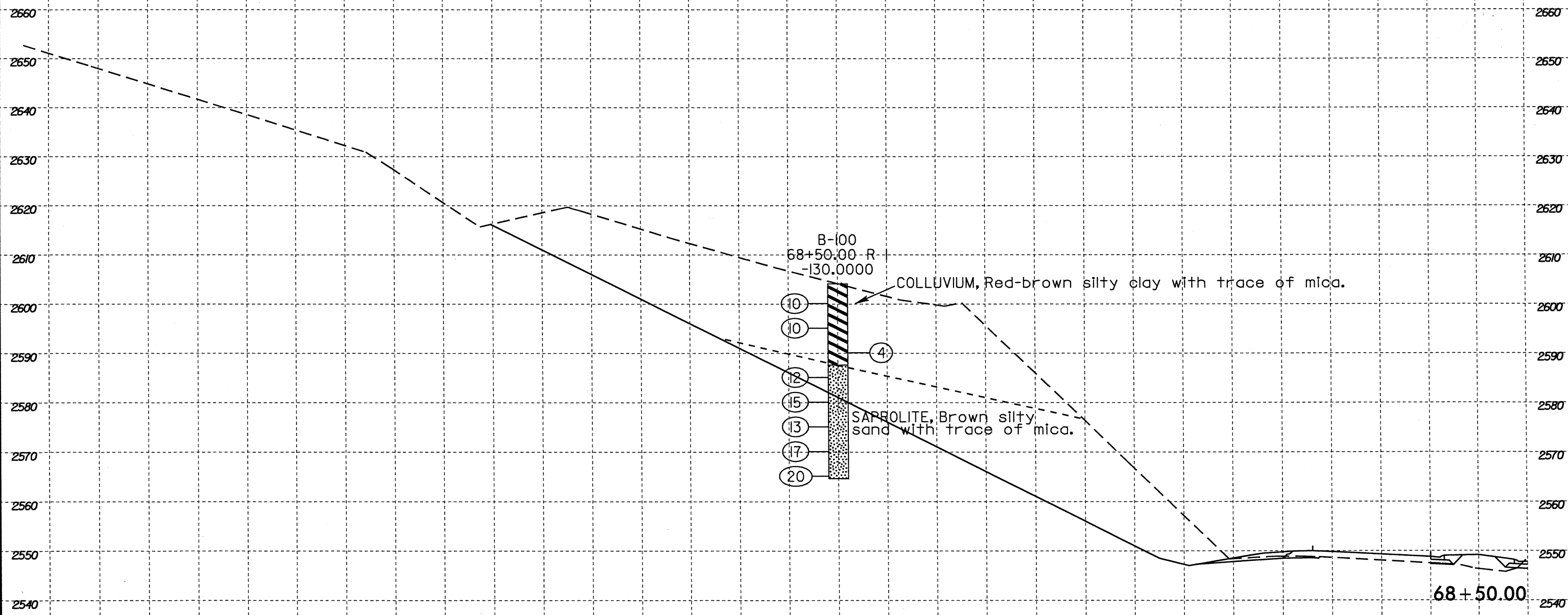


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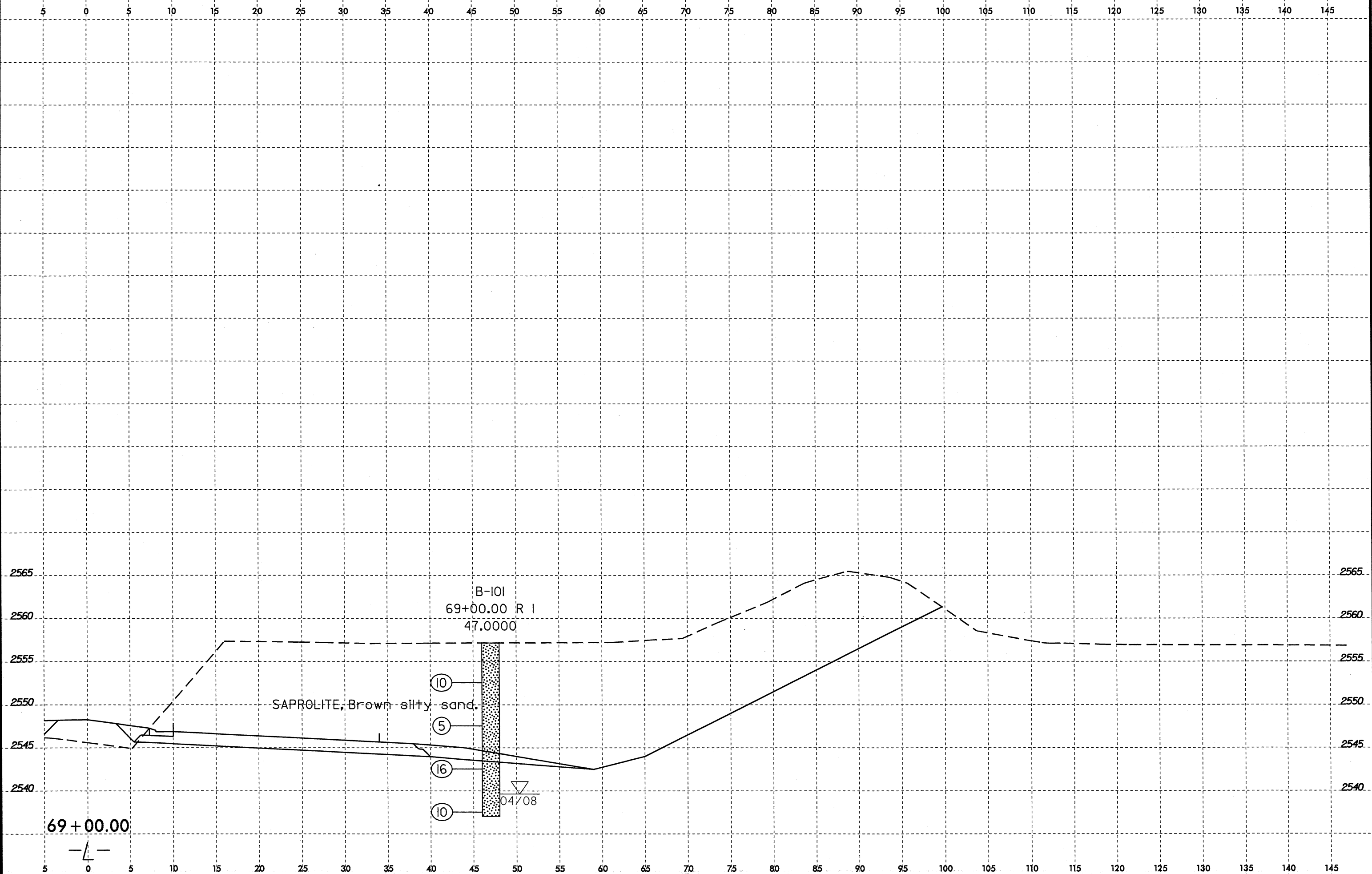
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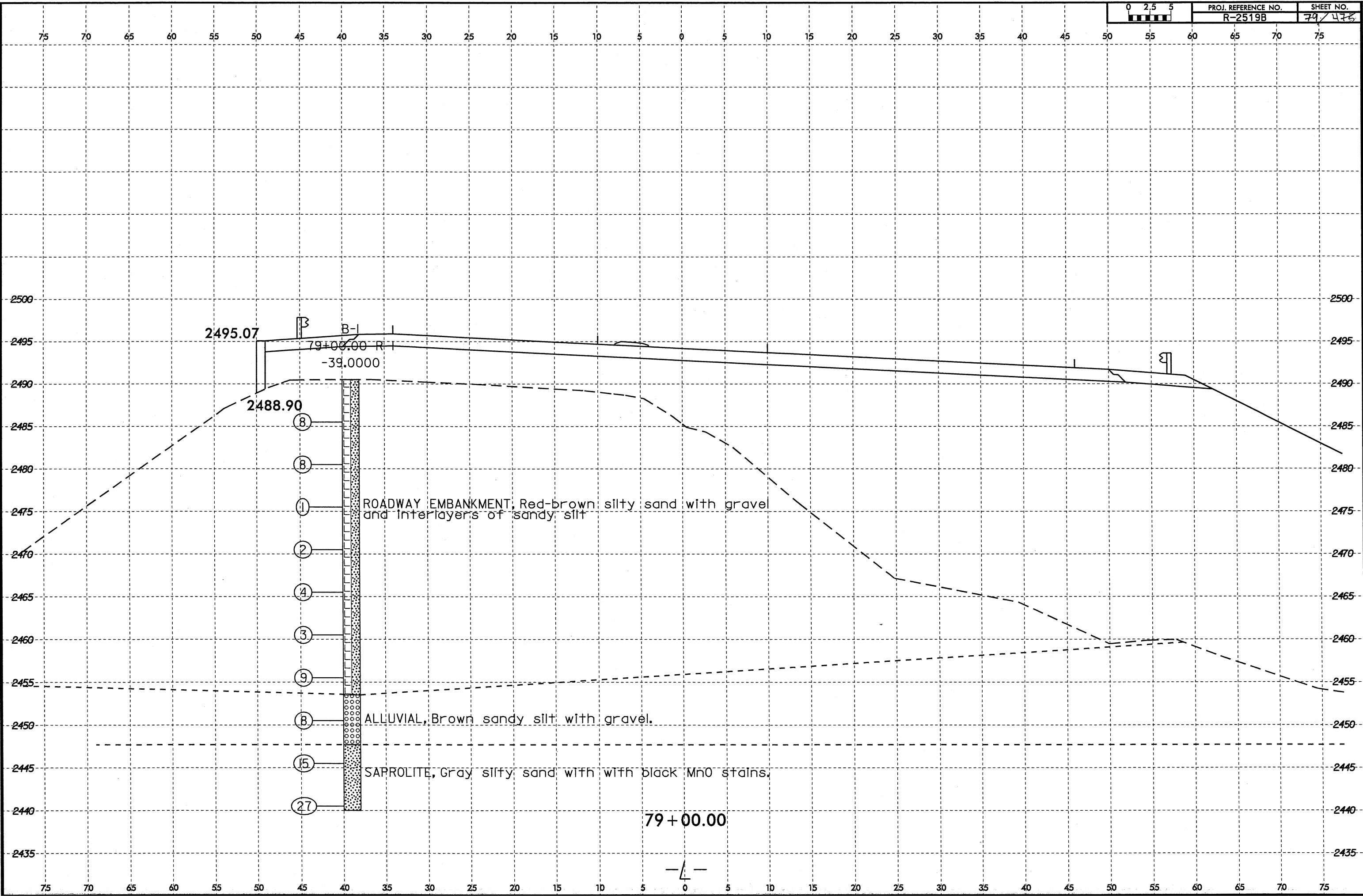
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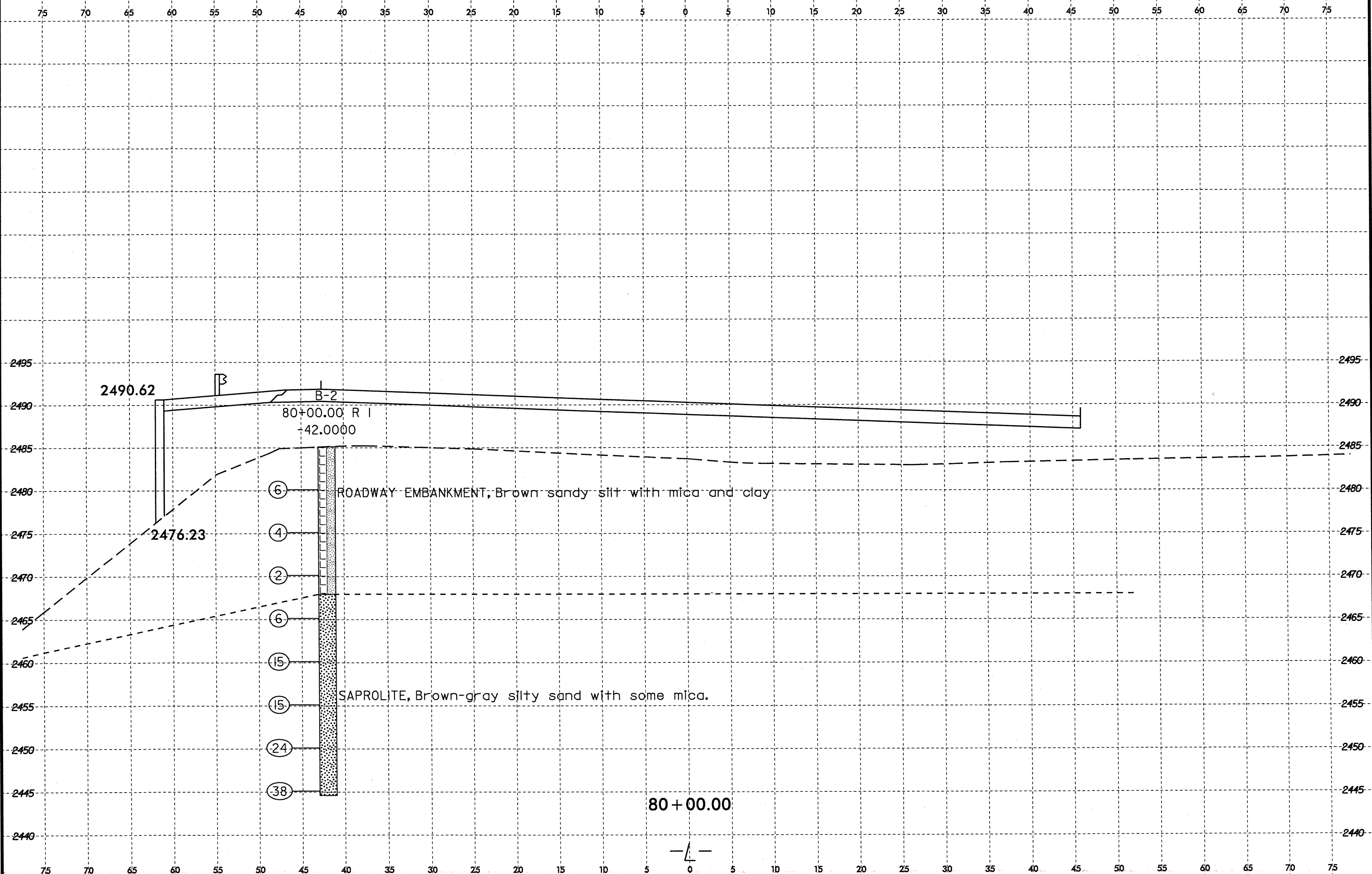


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2490.62

2476.23

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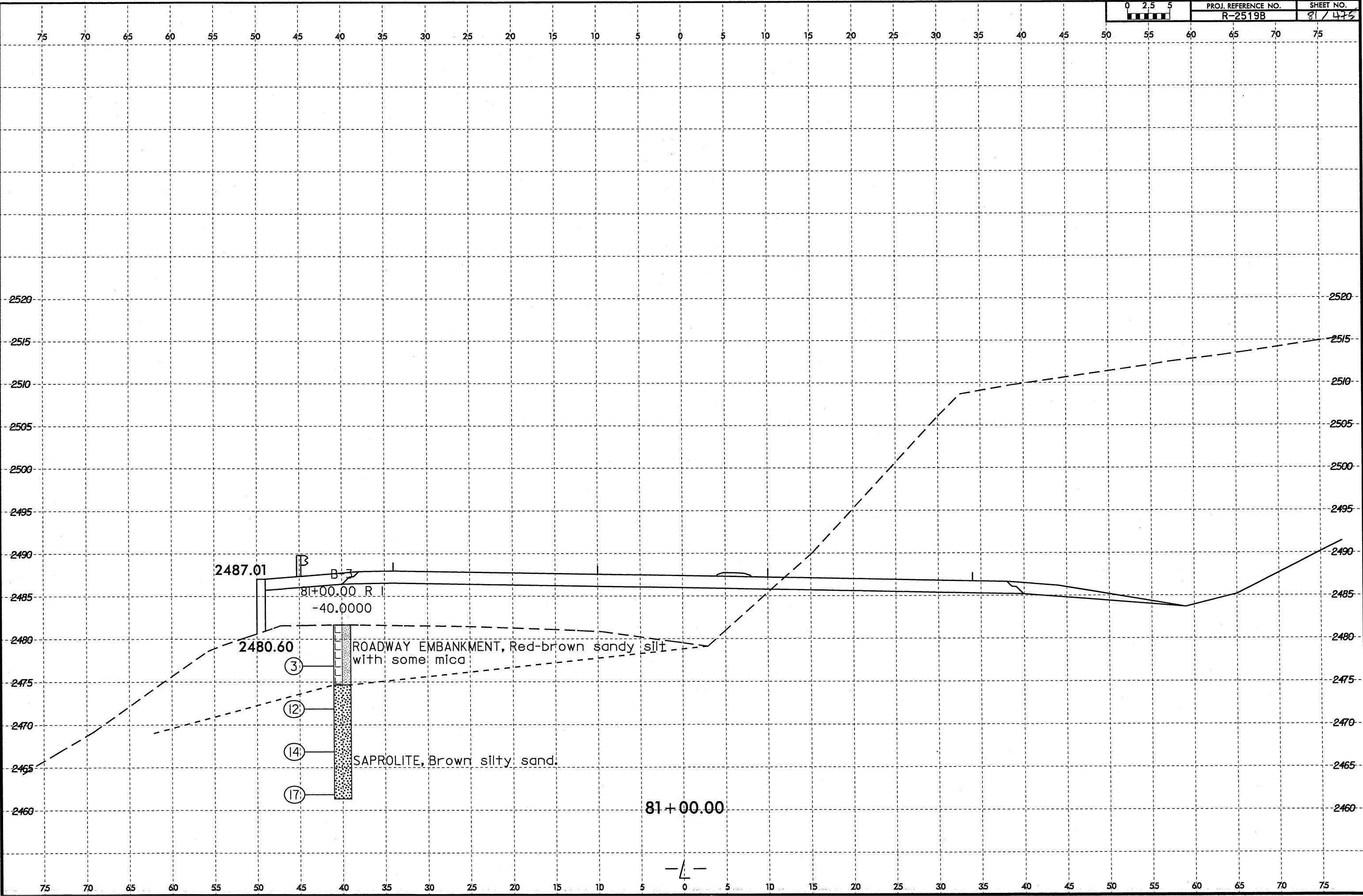
ROADWAY EMBANKMENT, Brown sandy silt with mica and clay

SAPROLITE, Brown-gray silty sand with some mica.

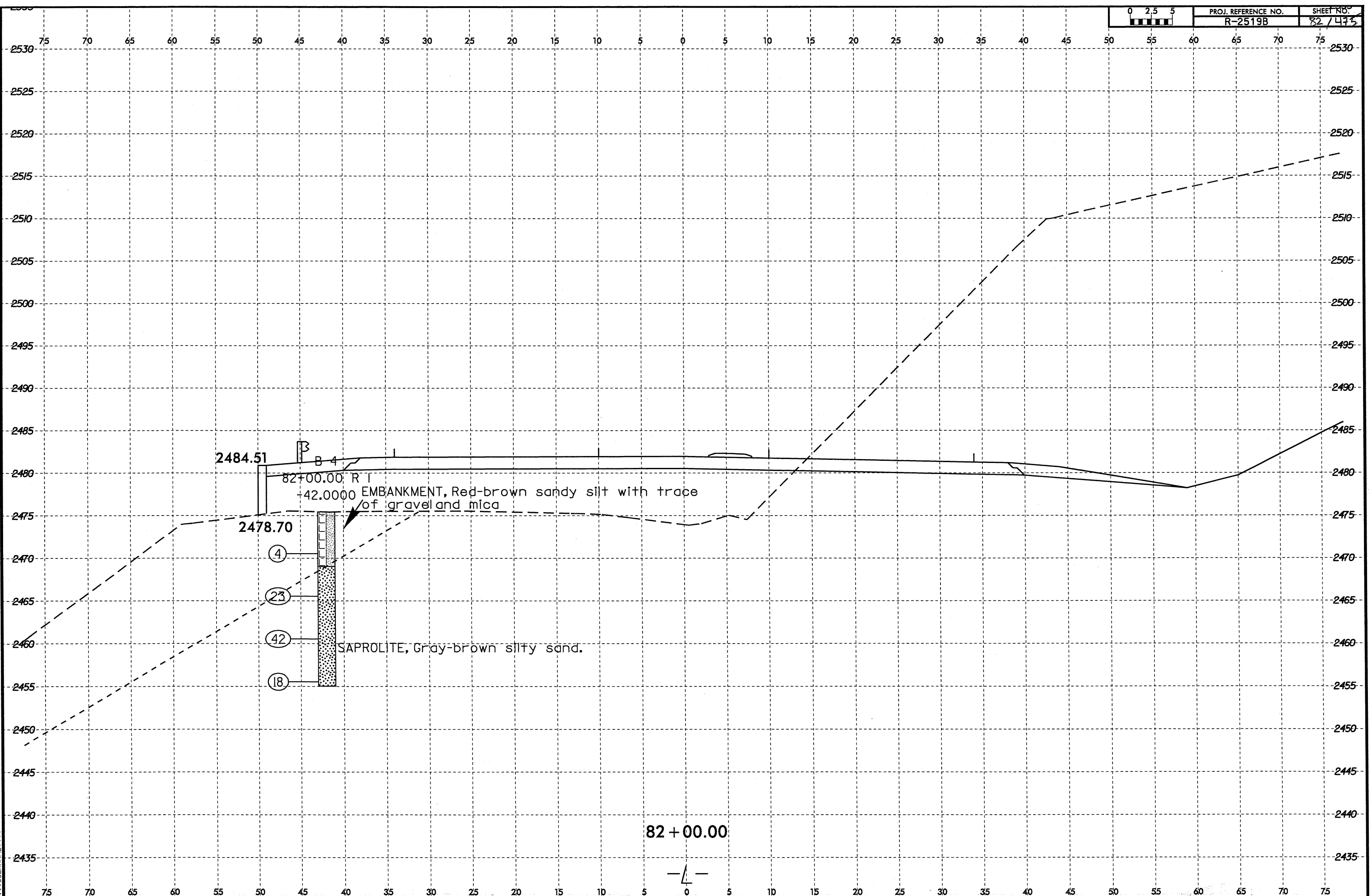
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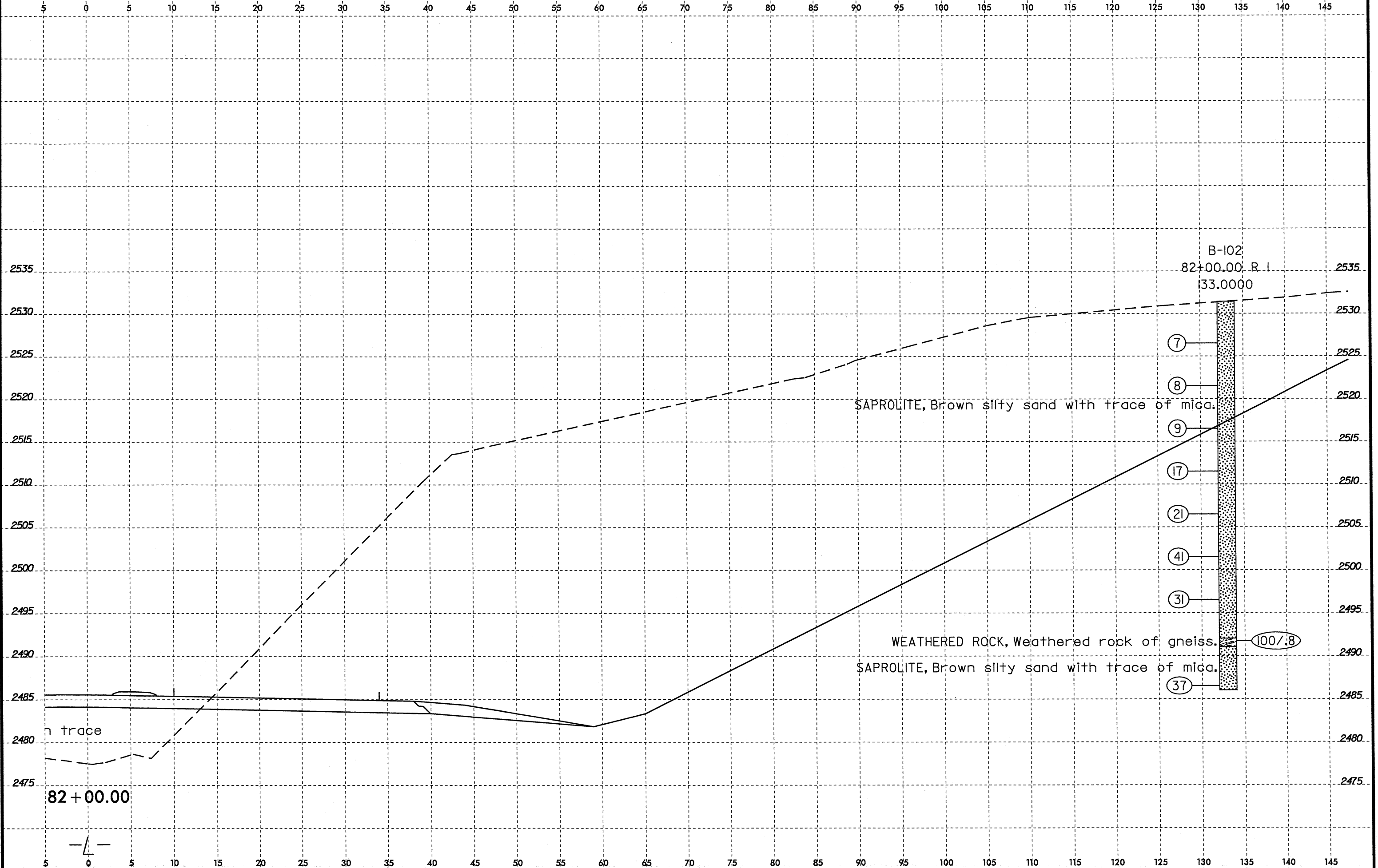


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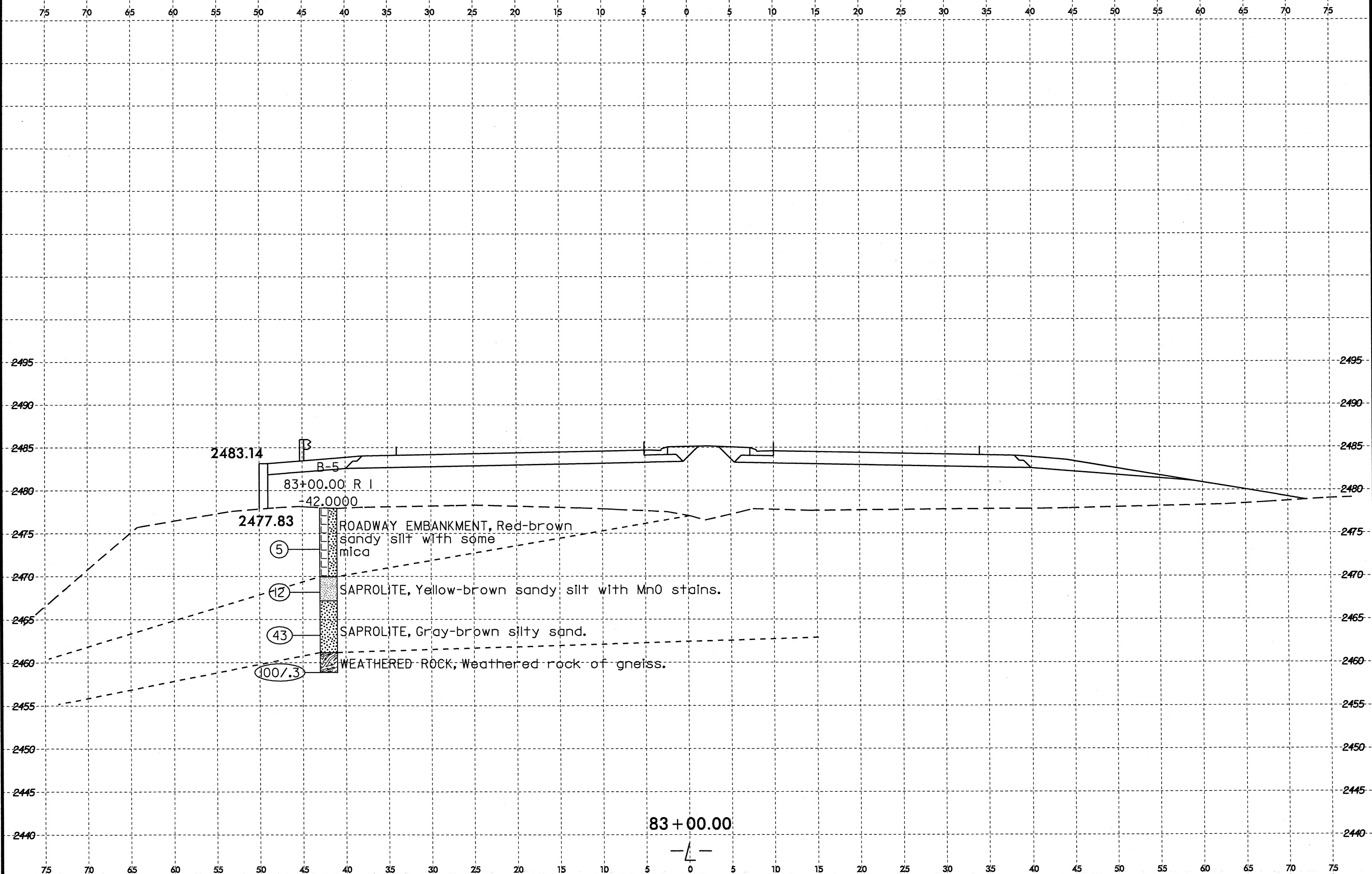


8/23/99

8/23/99
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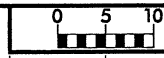
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ROADWAY EMBANKMENT, Red-brown sandy silt with some mica
SAPROLITE, Yellow-brown sandy silt with MnO stains.
SAPROLITE, Gray-brown silty sand.
WEATHERED ROCK, Weathered rock of gneiss.

83 + 00.00

— 1 —

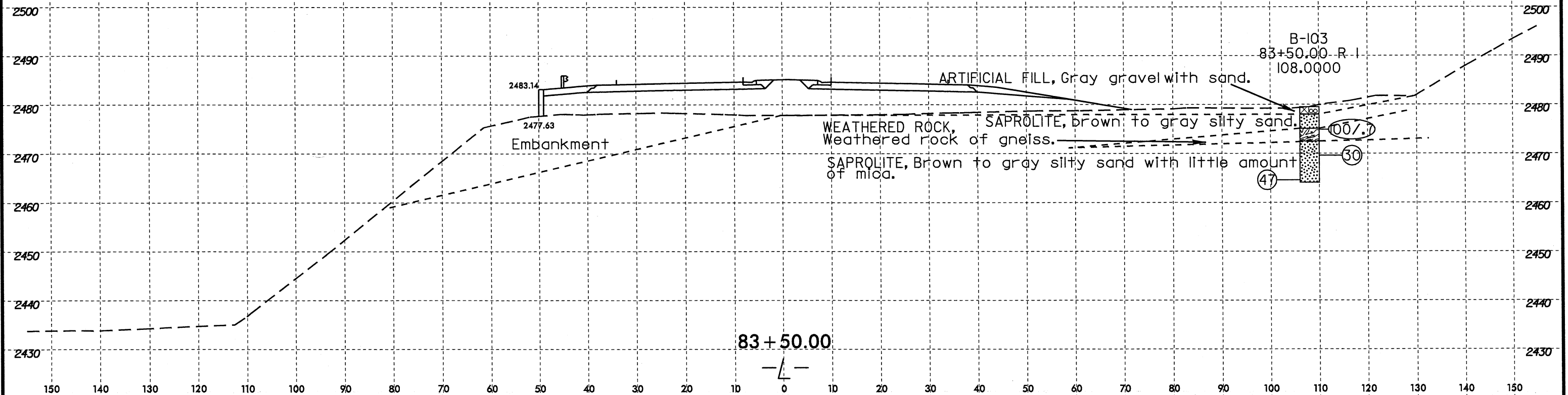
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R-2519B

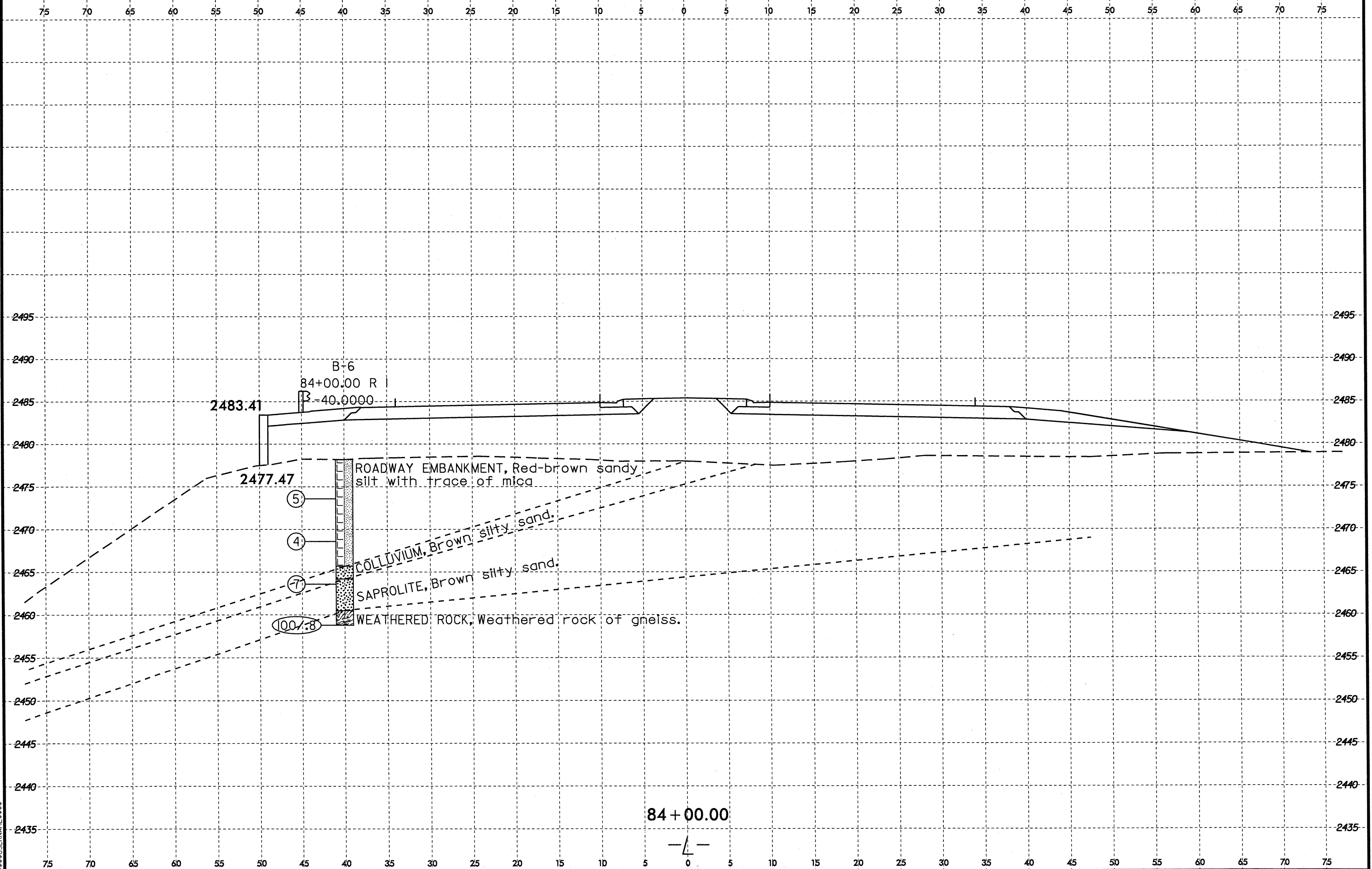
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85 / 475

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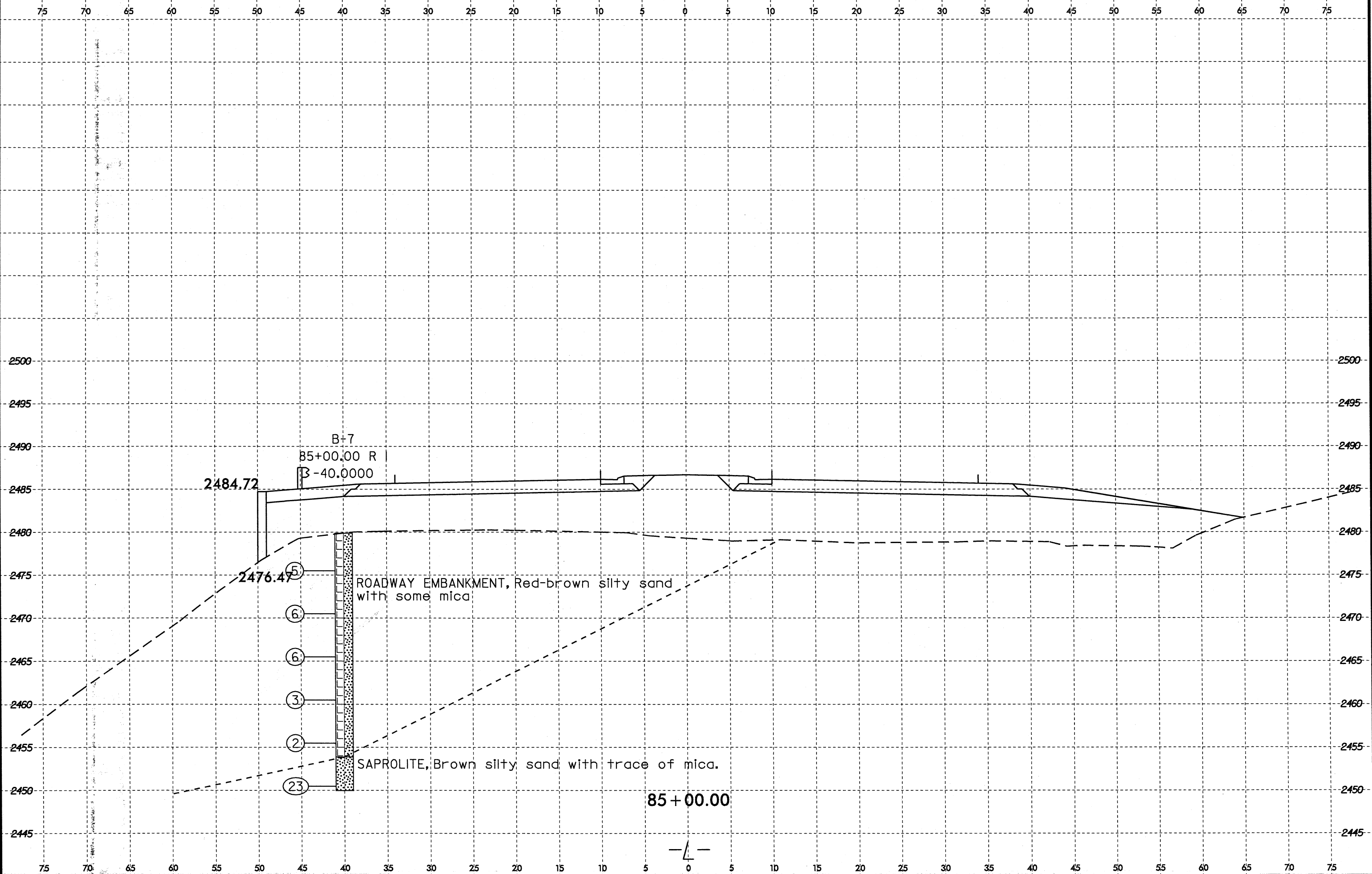


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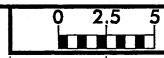
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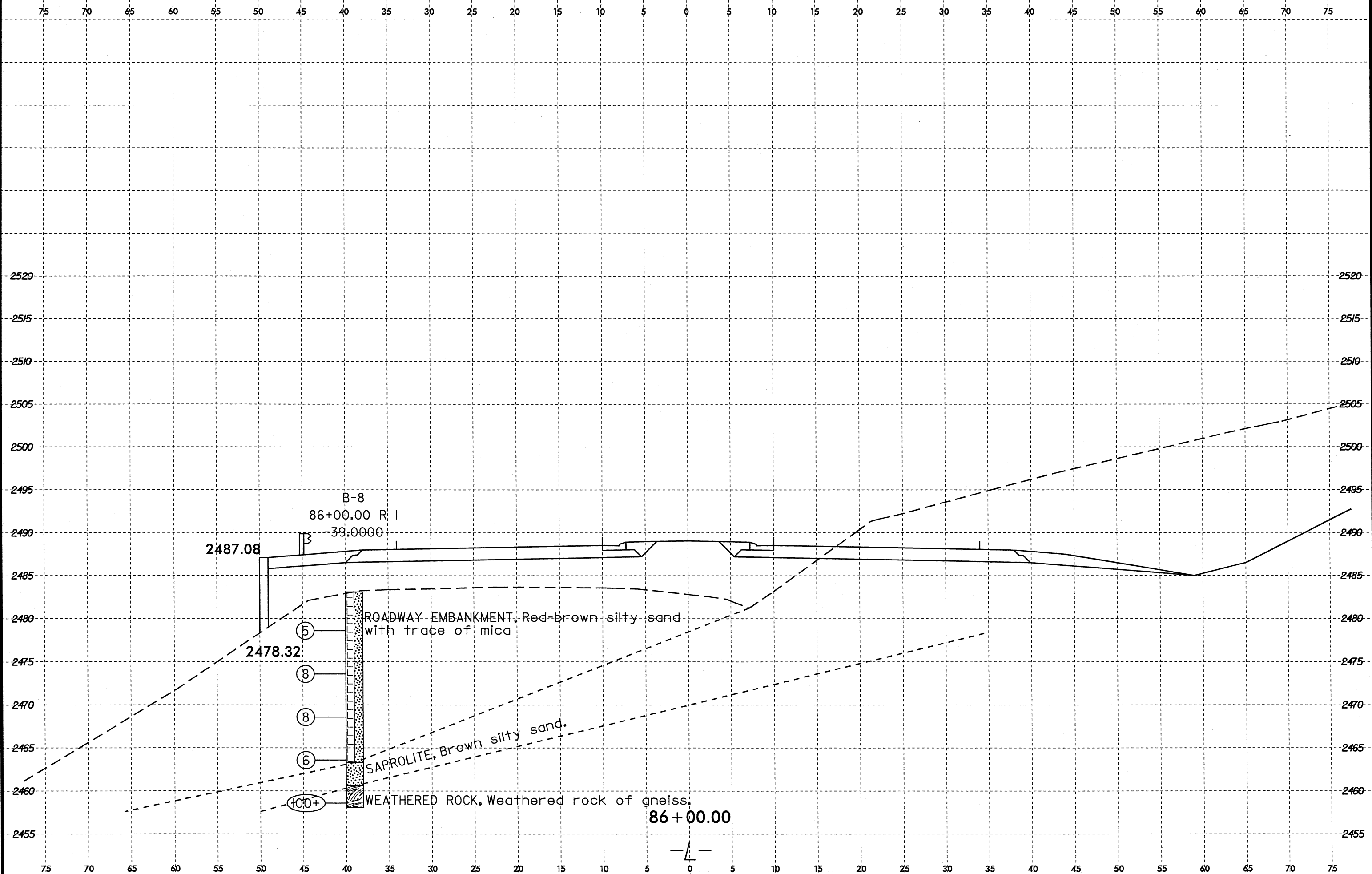
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PROJ. REFERENCE NO. R-2519B SHEET NO. 88/475



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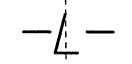
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ROADWAY EMBANKMENT, Red-brown silty sand
with trace of mica

SAPROLITE, Brown silty sand.

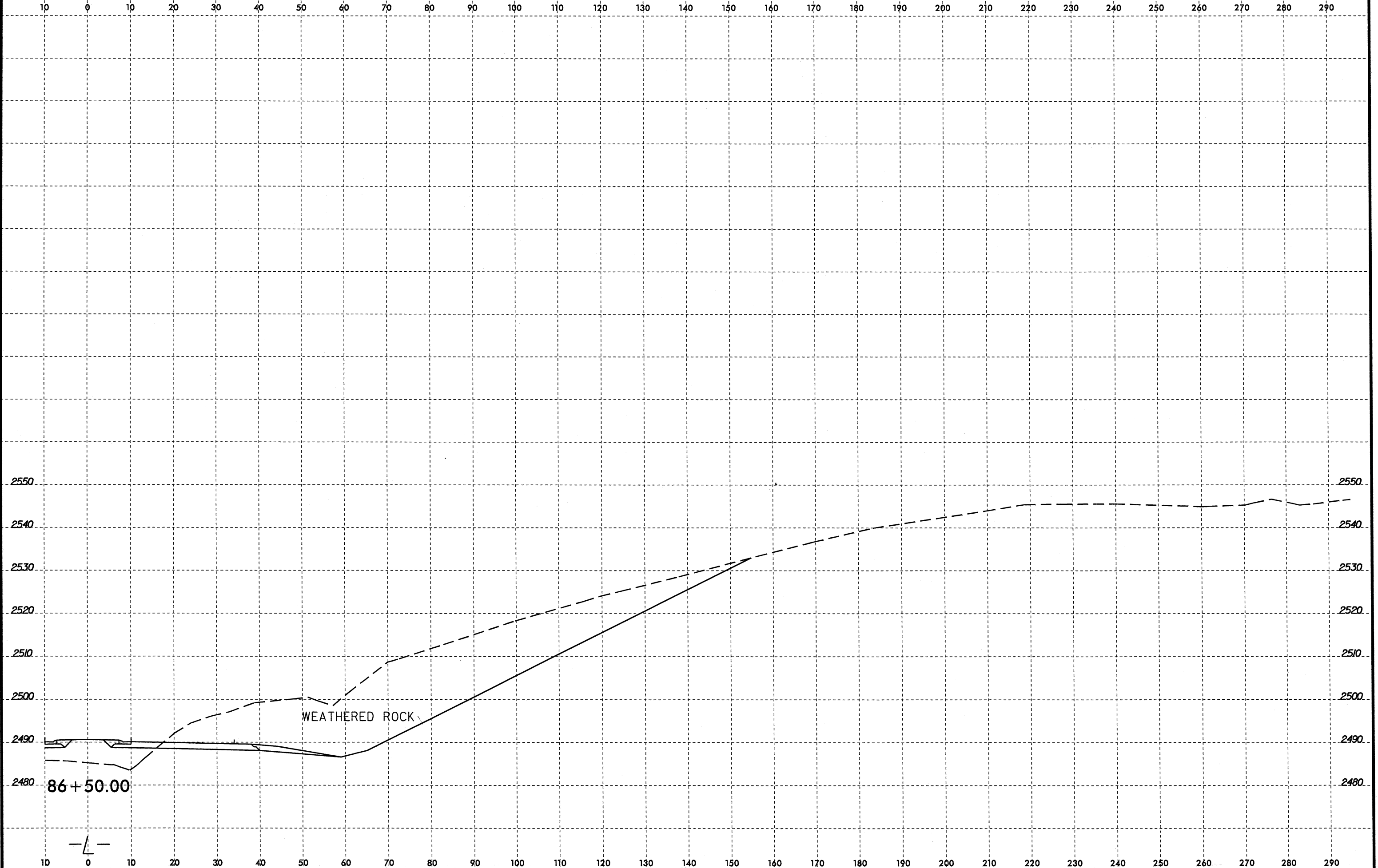
WEATHERED ROCK, Weathered rock of gneiss.

86+00.00

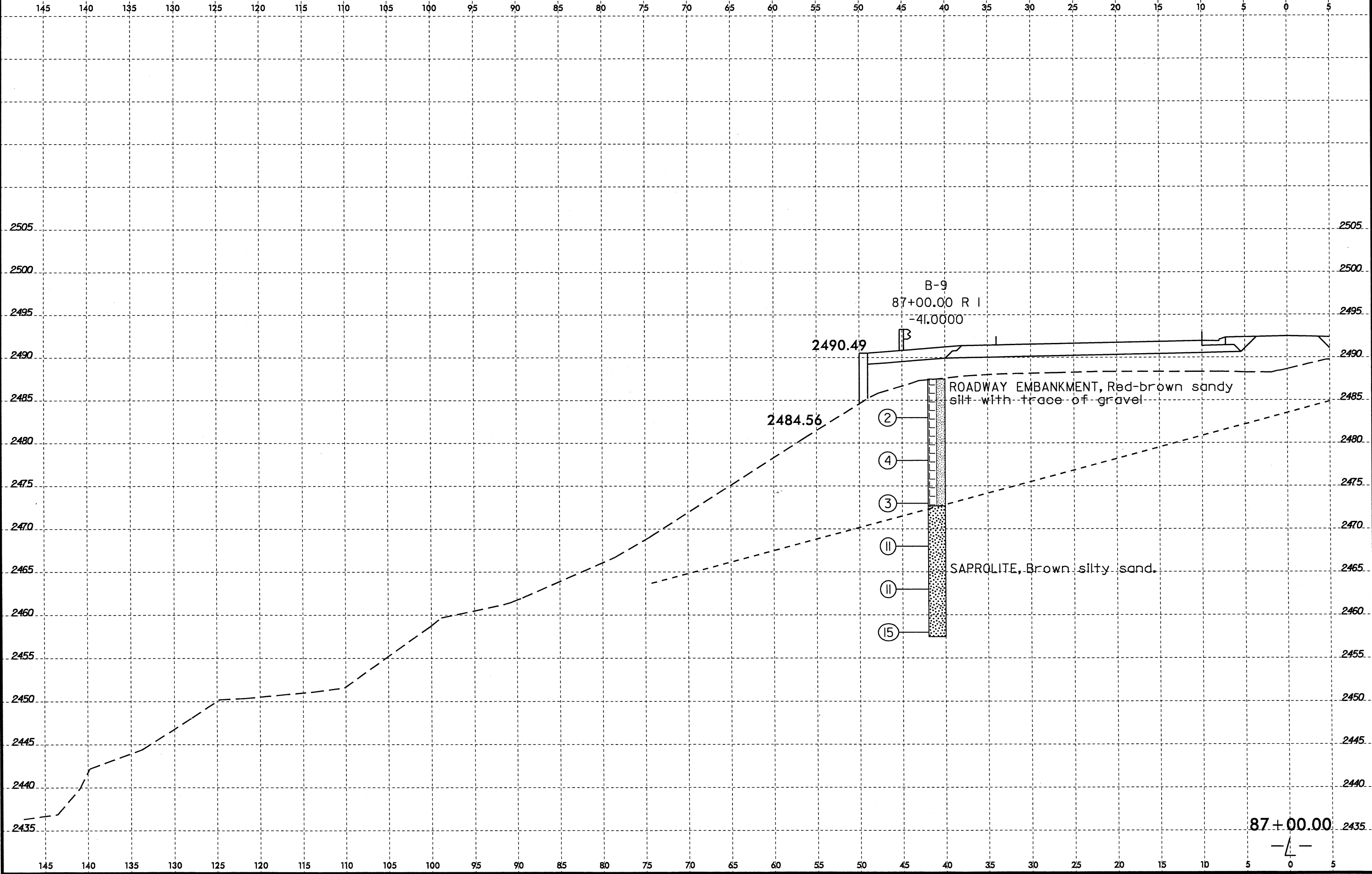


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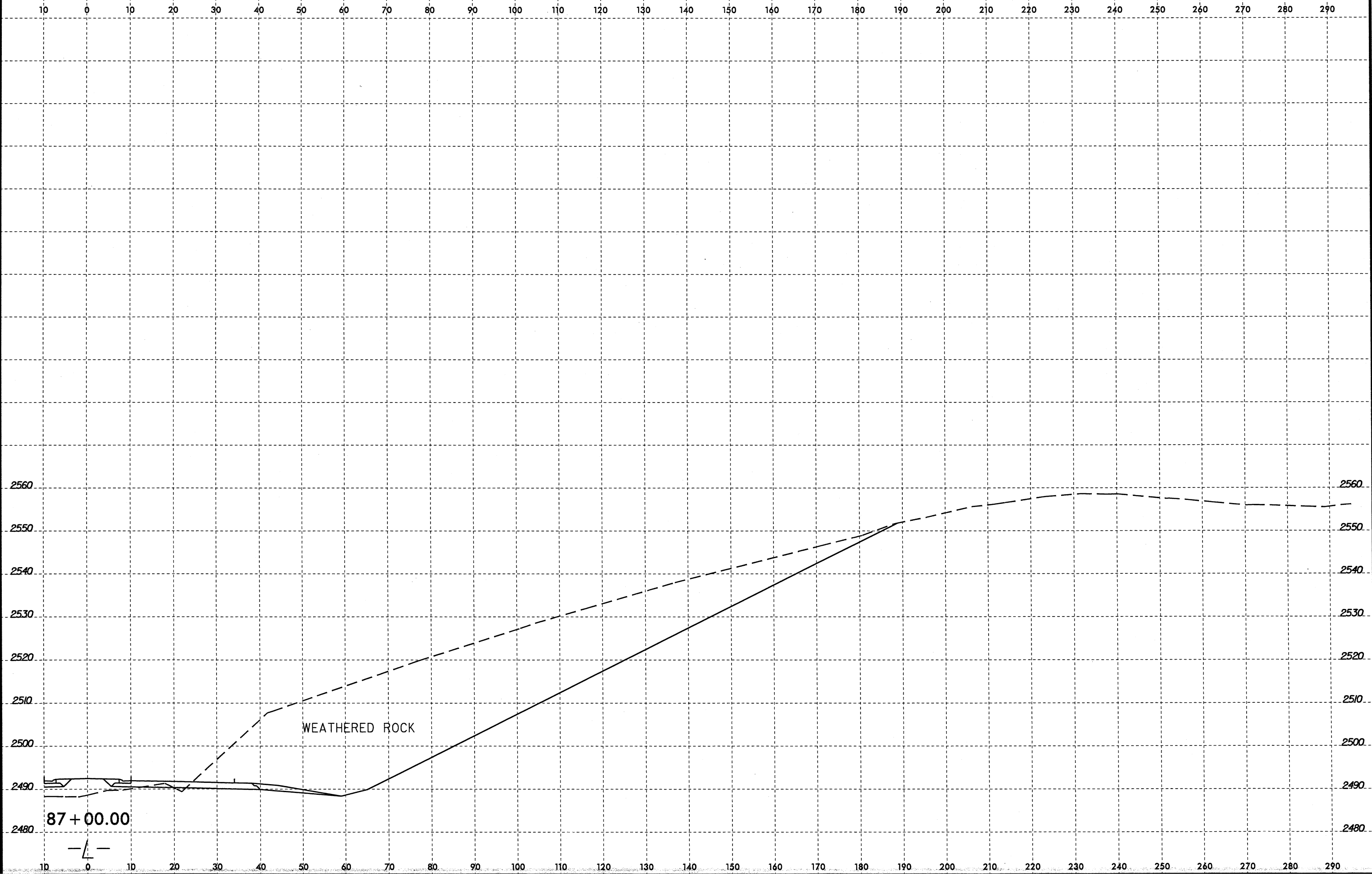
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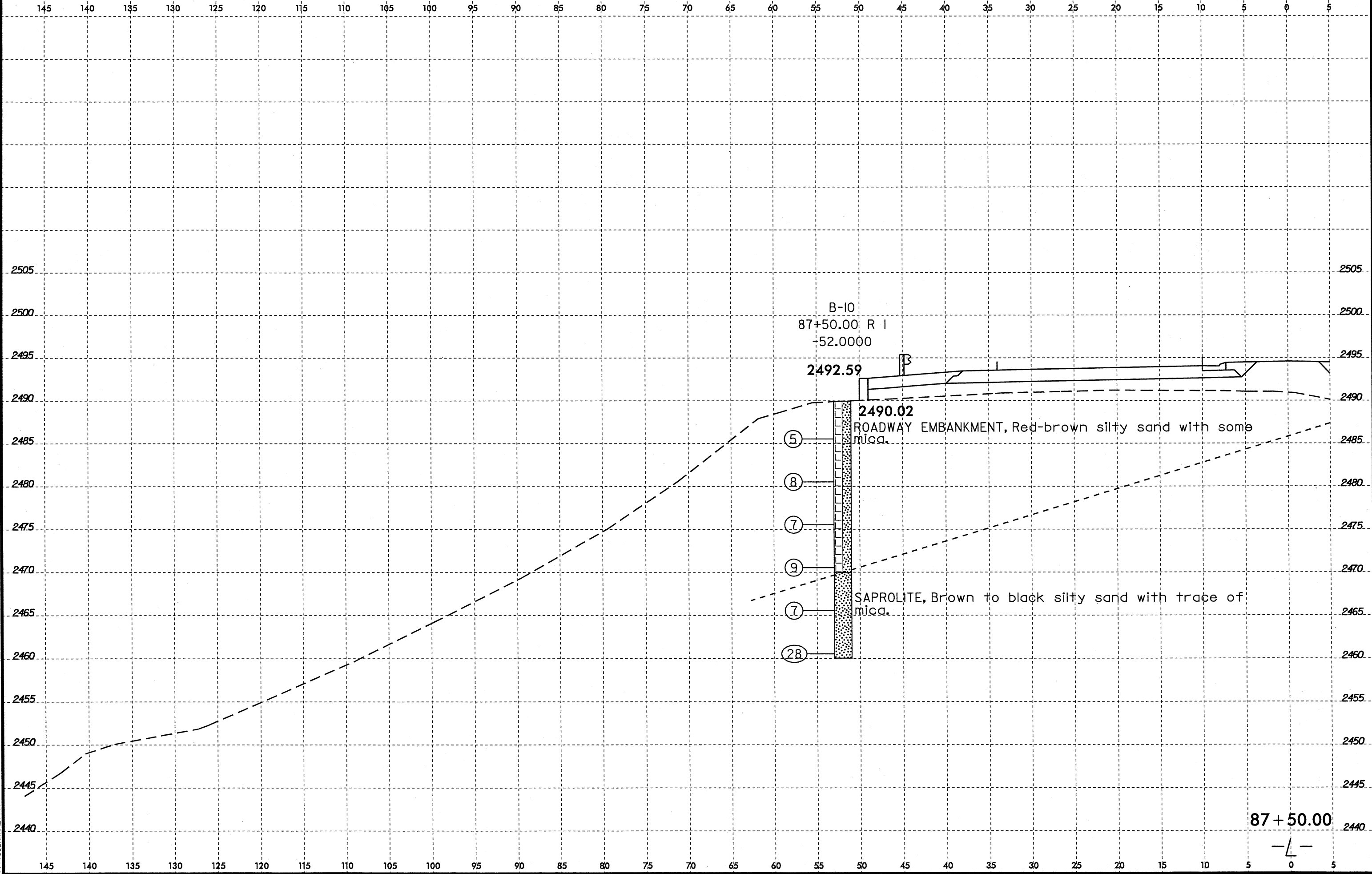
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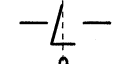


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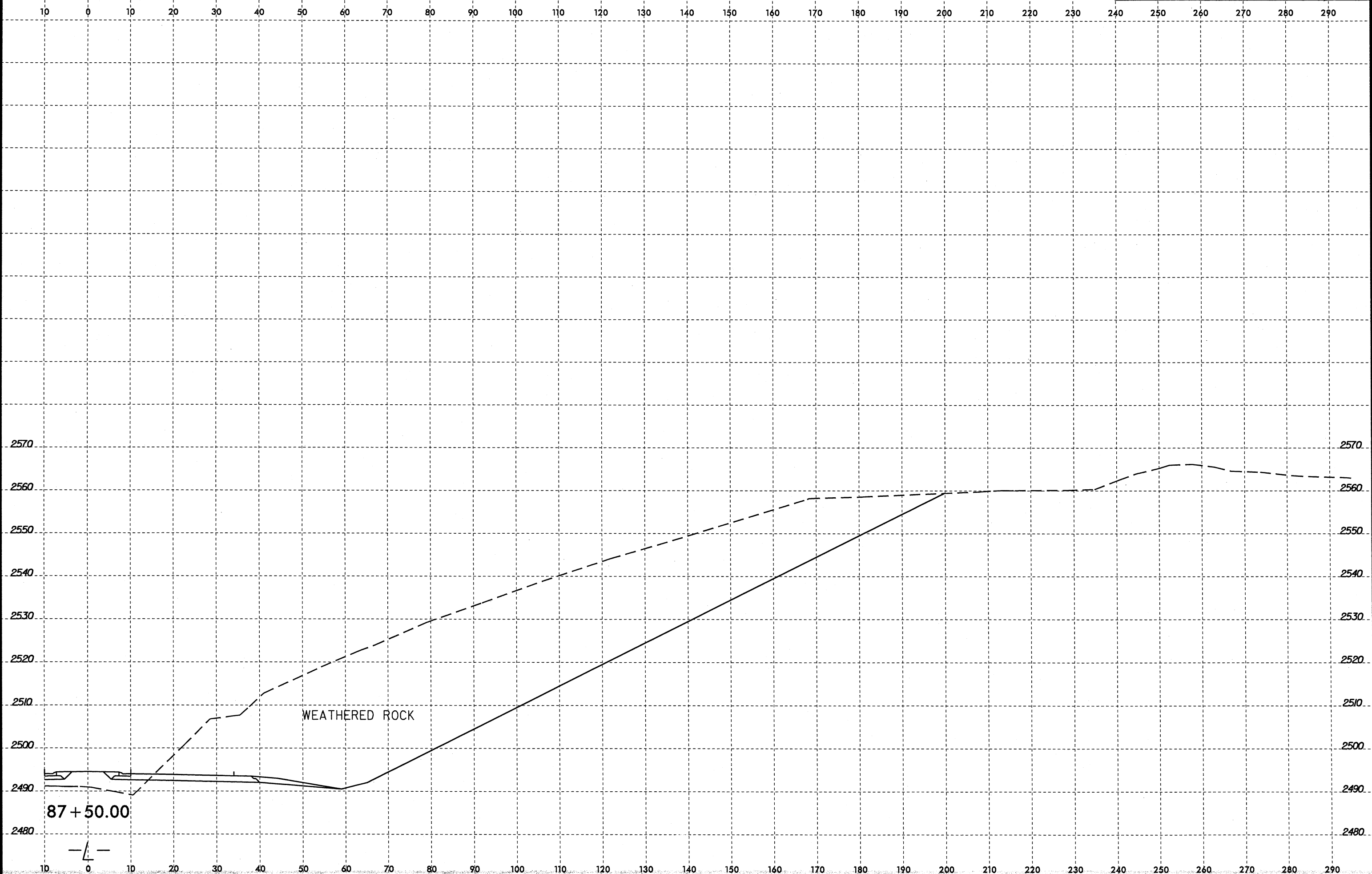


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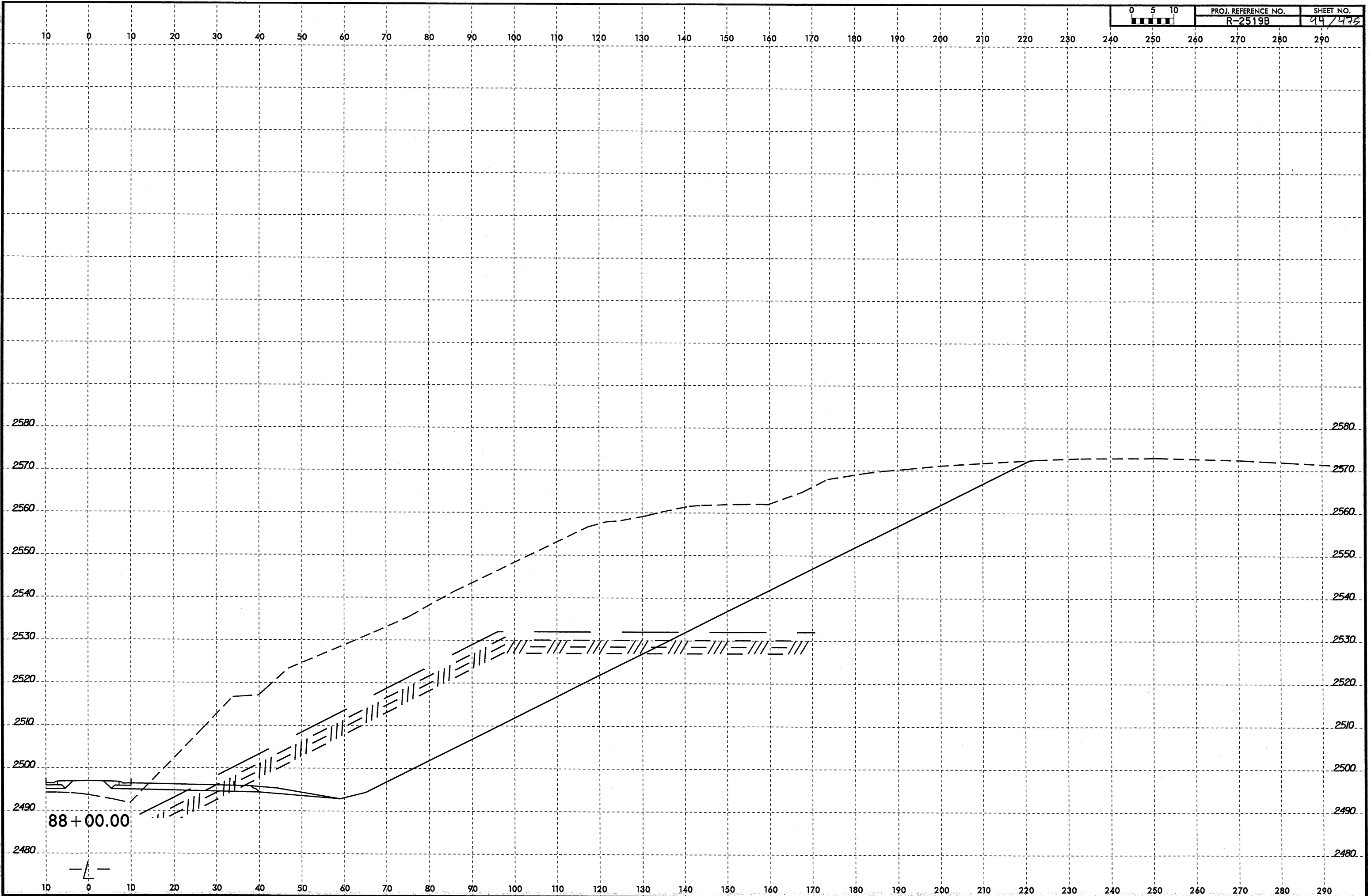
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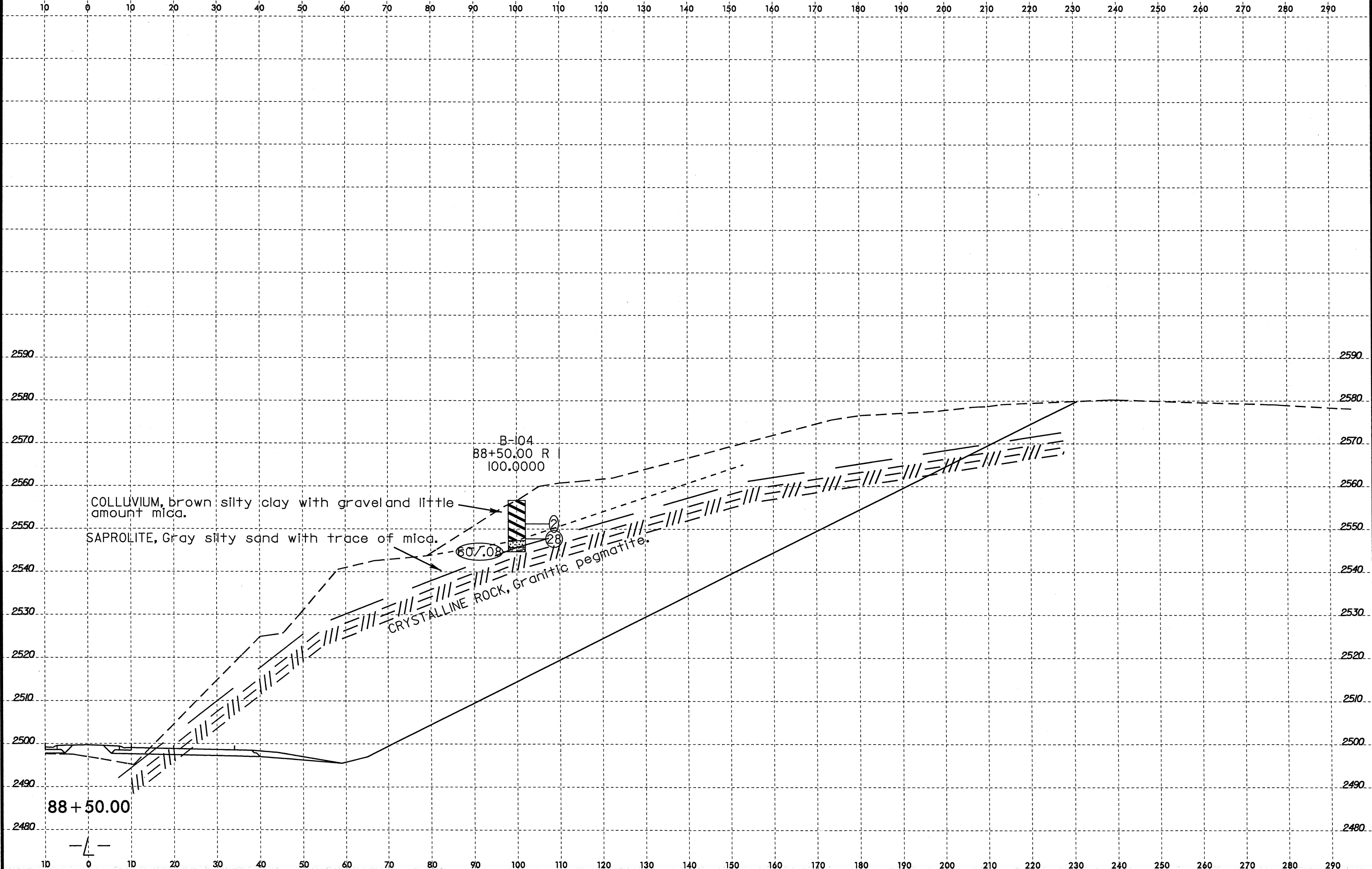
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COLLUVIUM, brown silty clay with gravel and little amount mica.

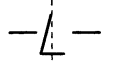
SAPROLITE, Gray silty sand with trace of mica.

CRYSTALLINE ROCK, Granitic pegmatite.

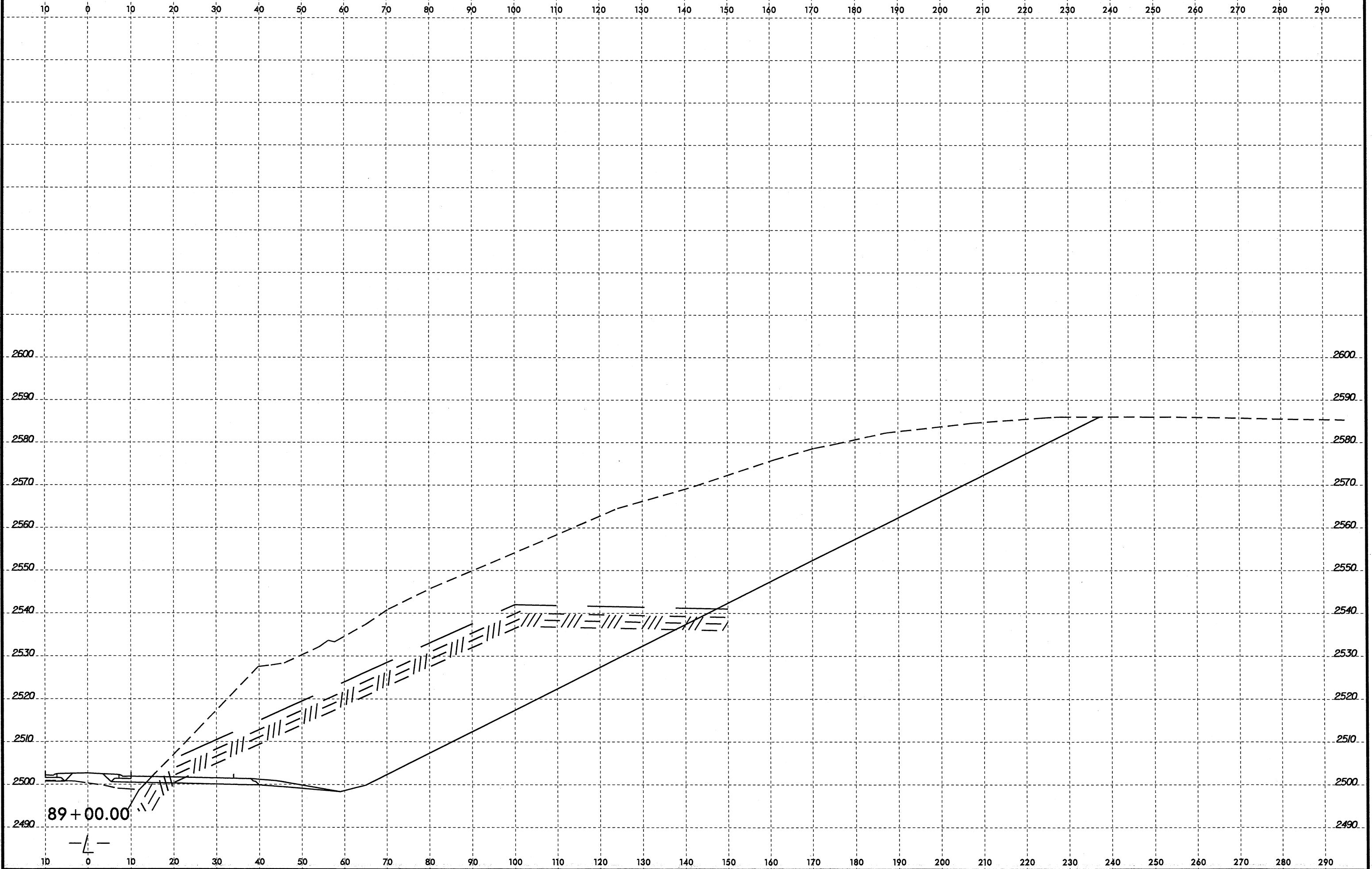
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88 + 50.00

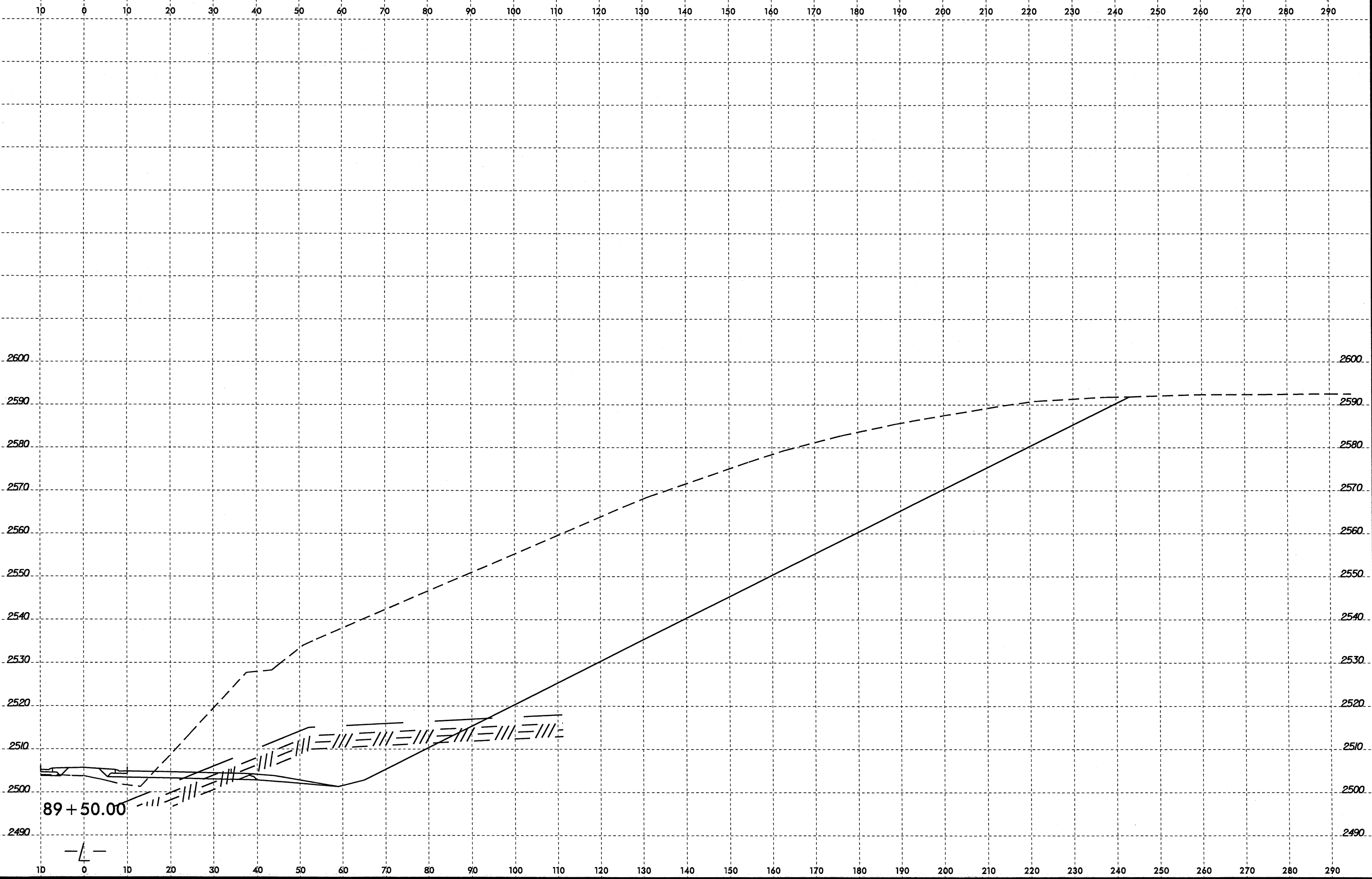


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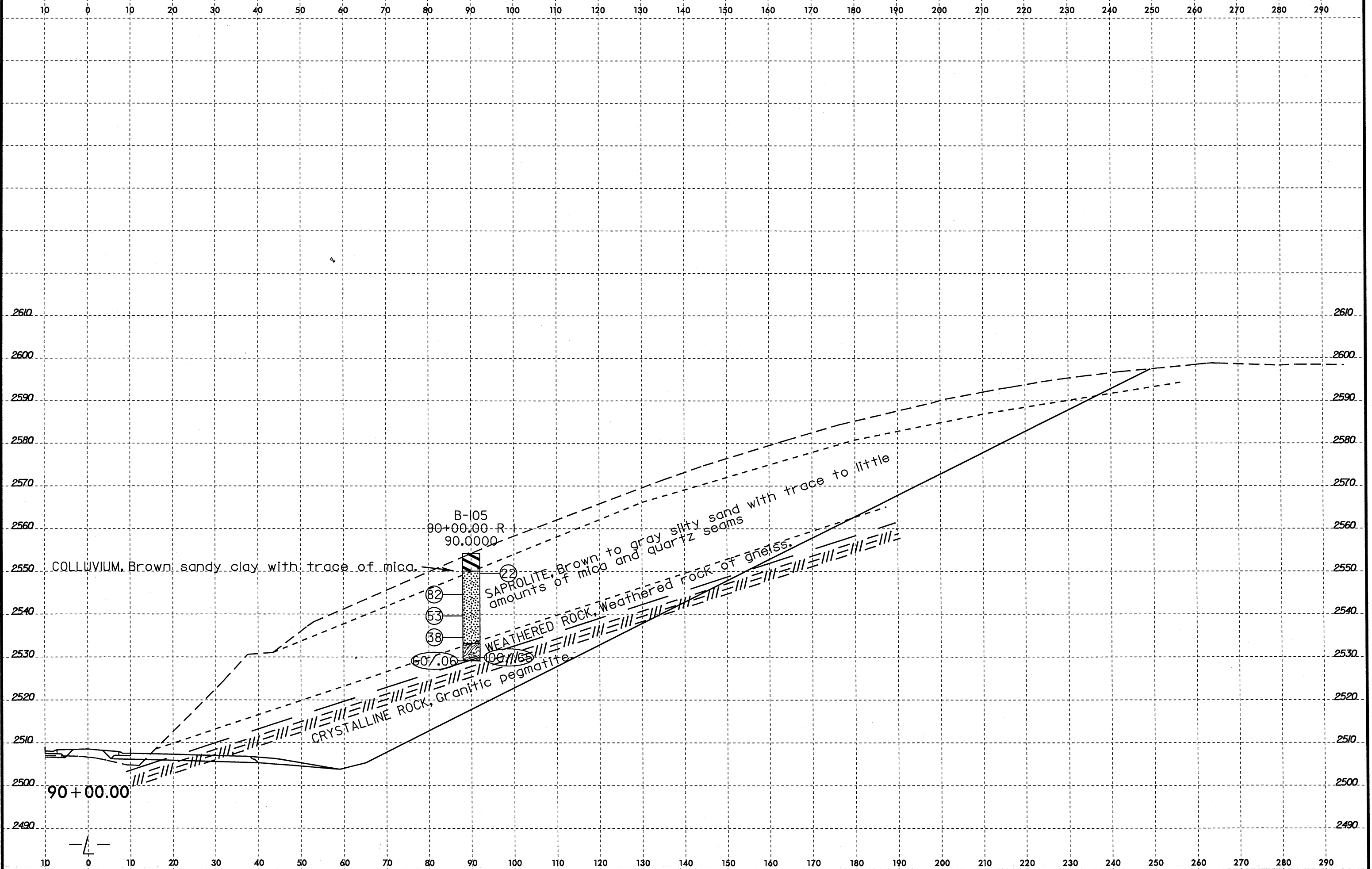


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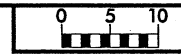
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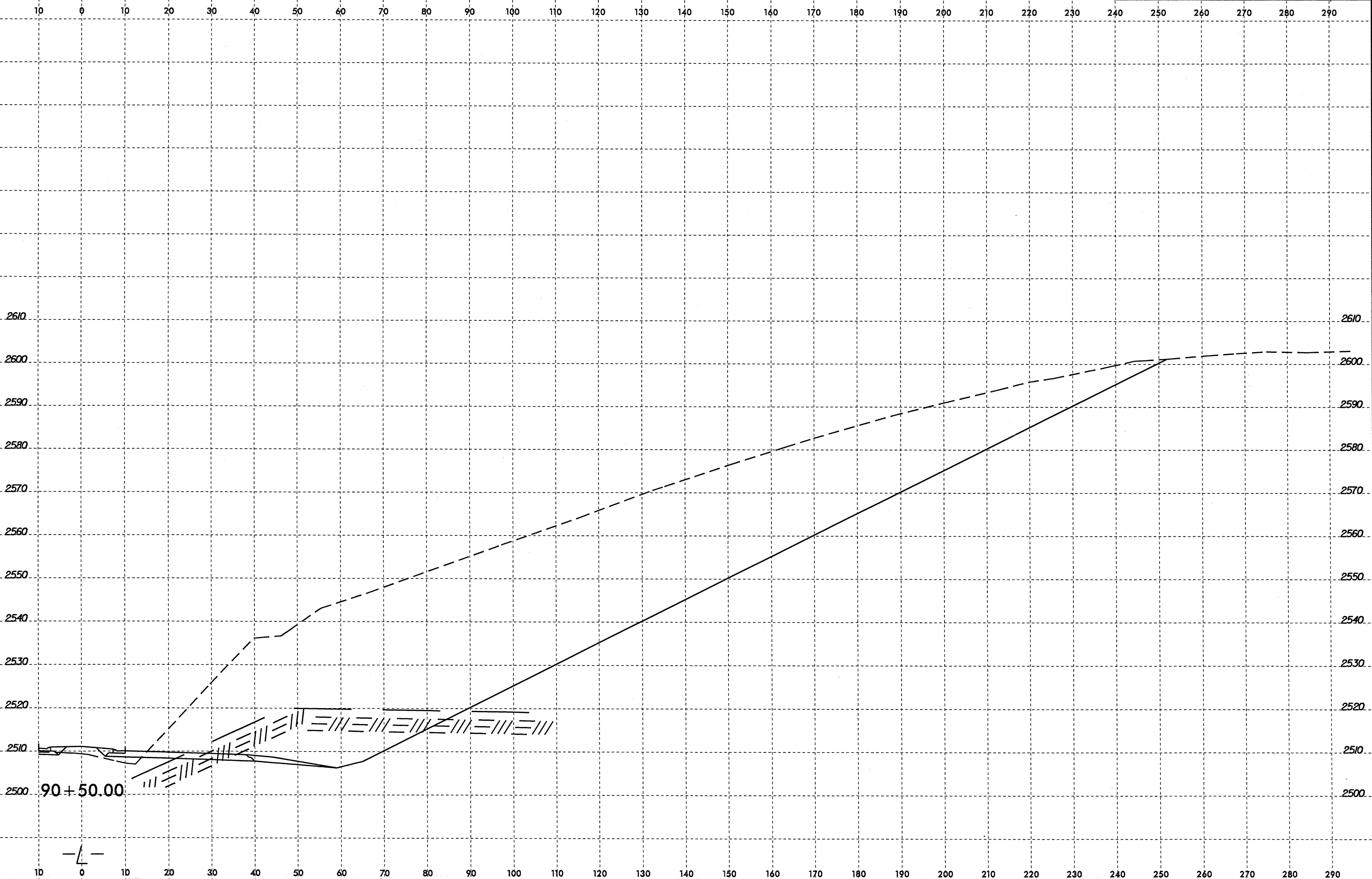


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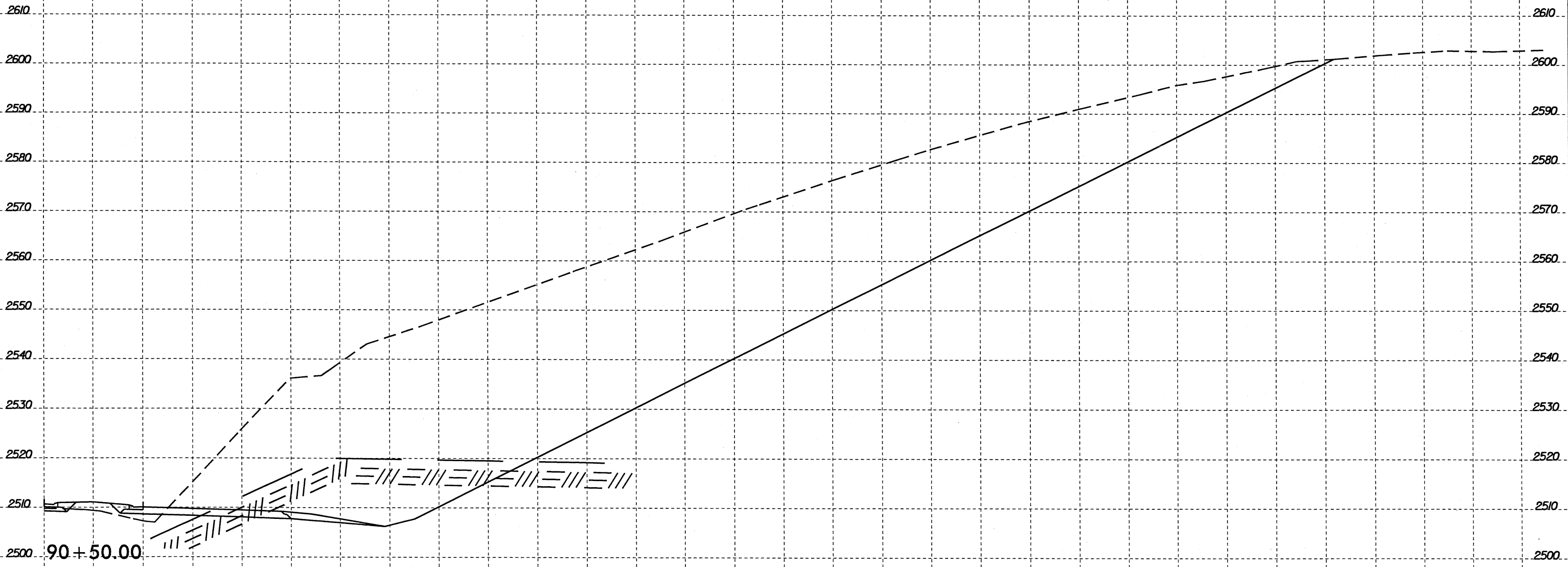
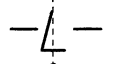
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SHEET NO.
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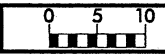


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90+50.00



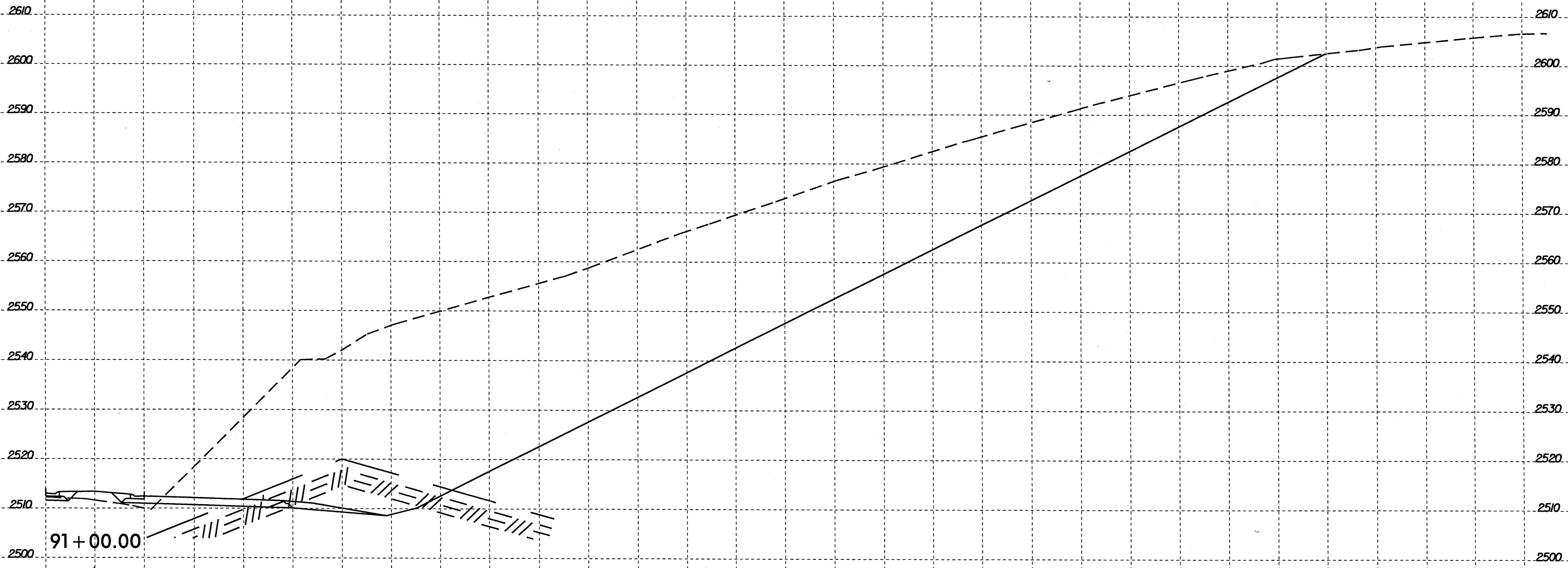
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R-2519B

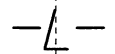
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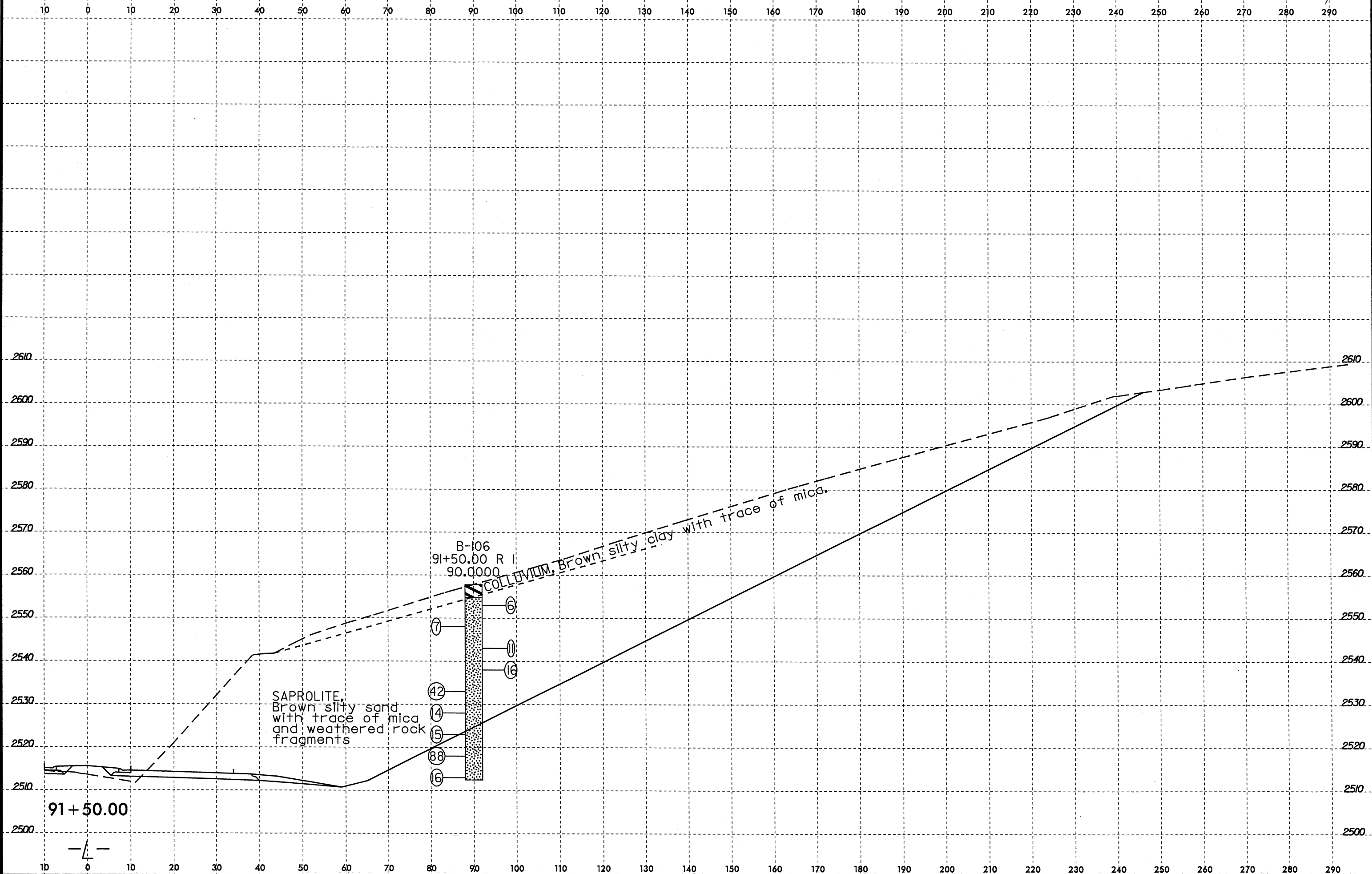
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91+00.00



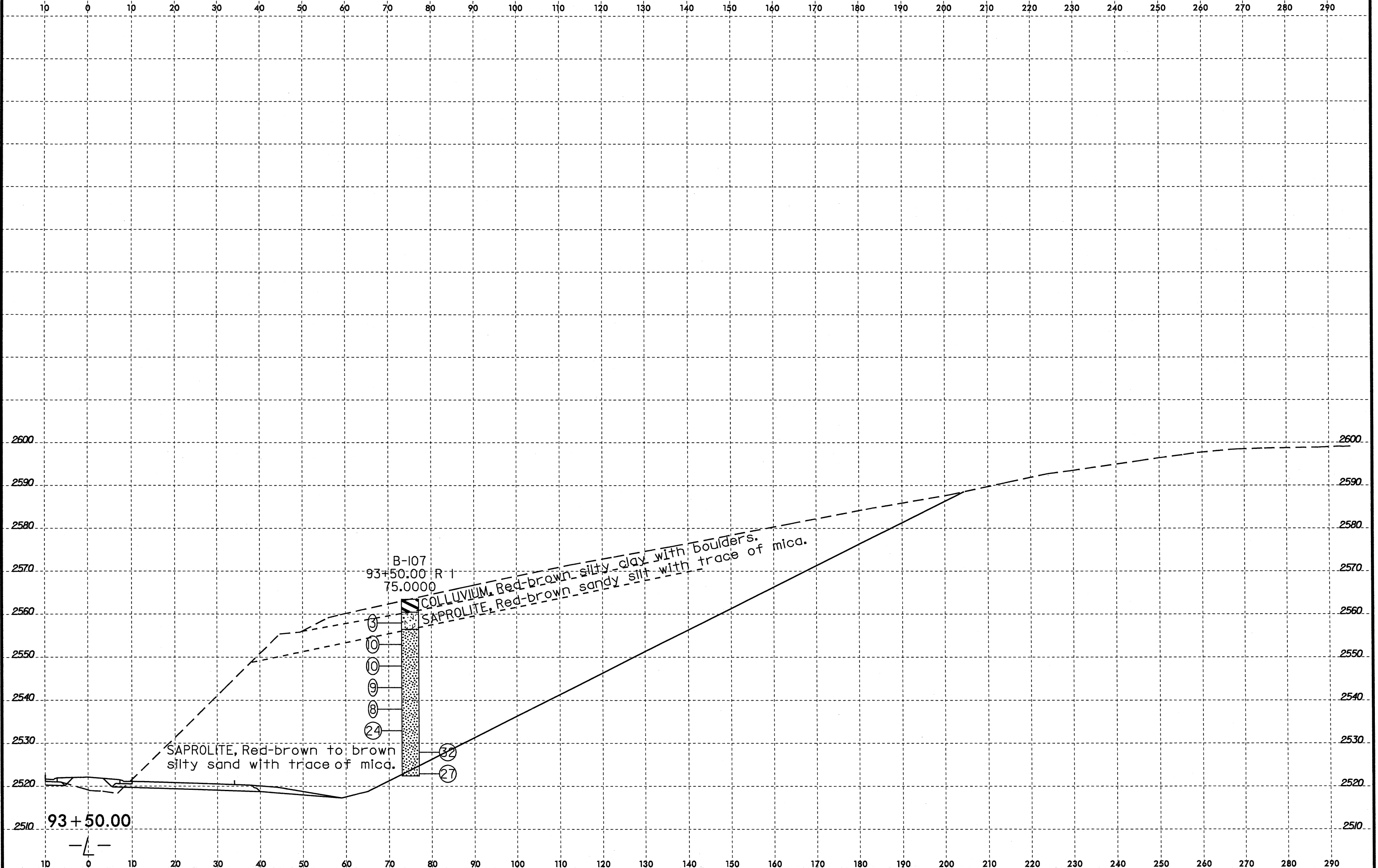
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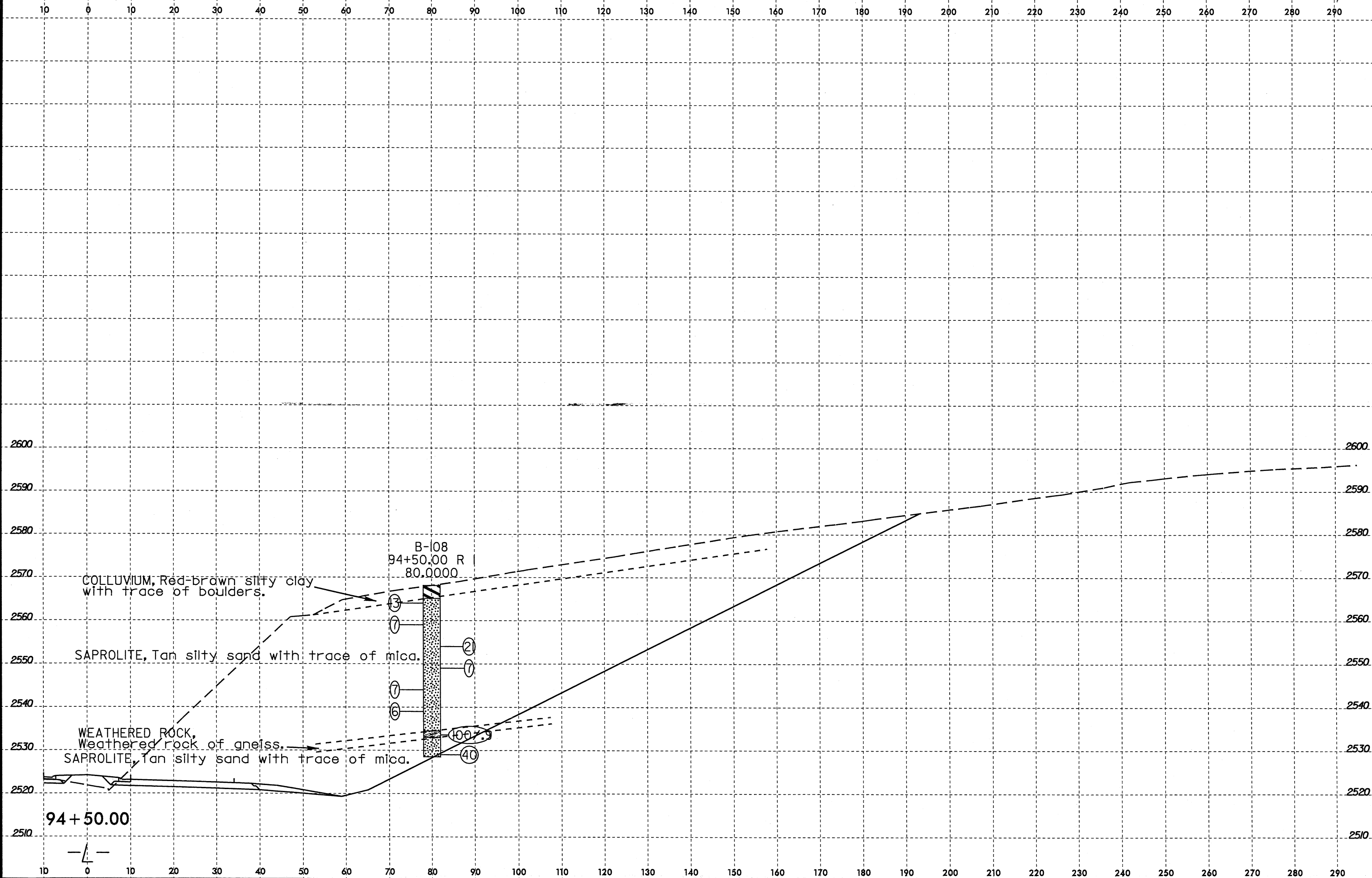


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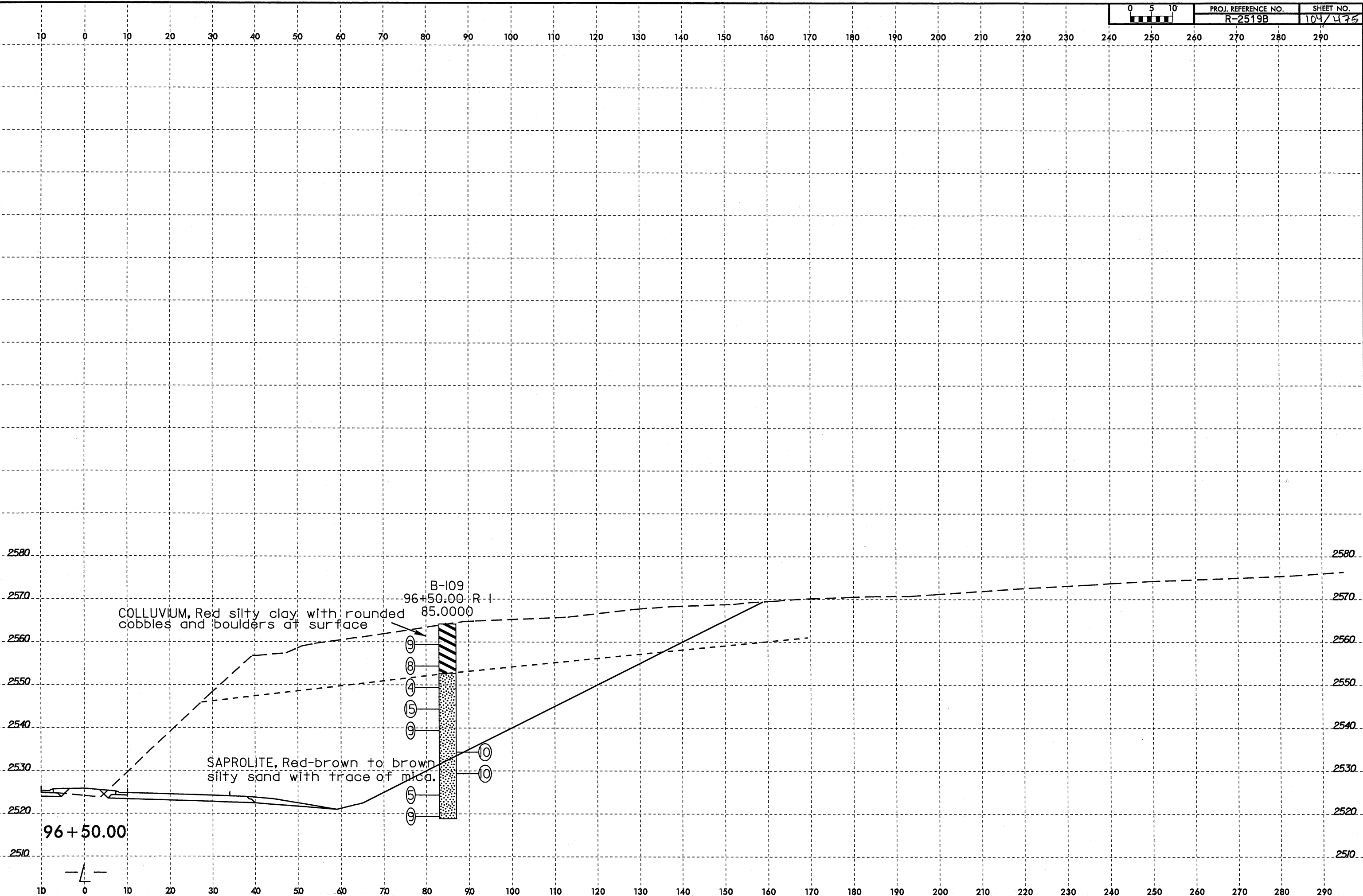
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8/23/99

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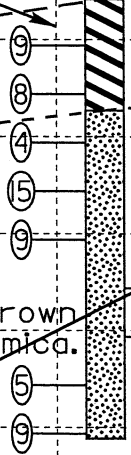


96+50.00

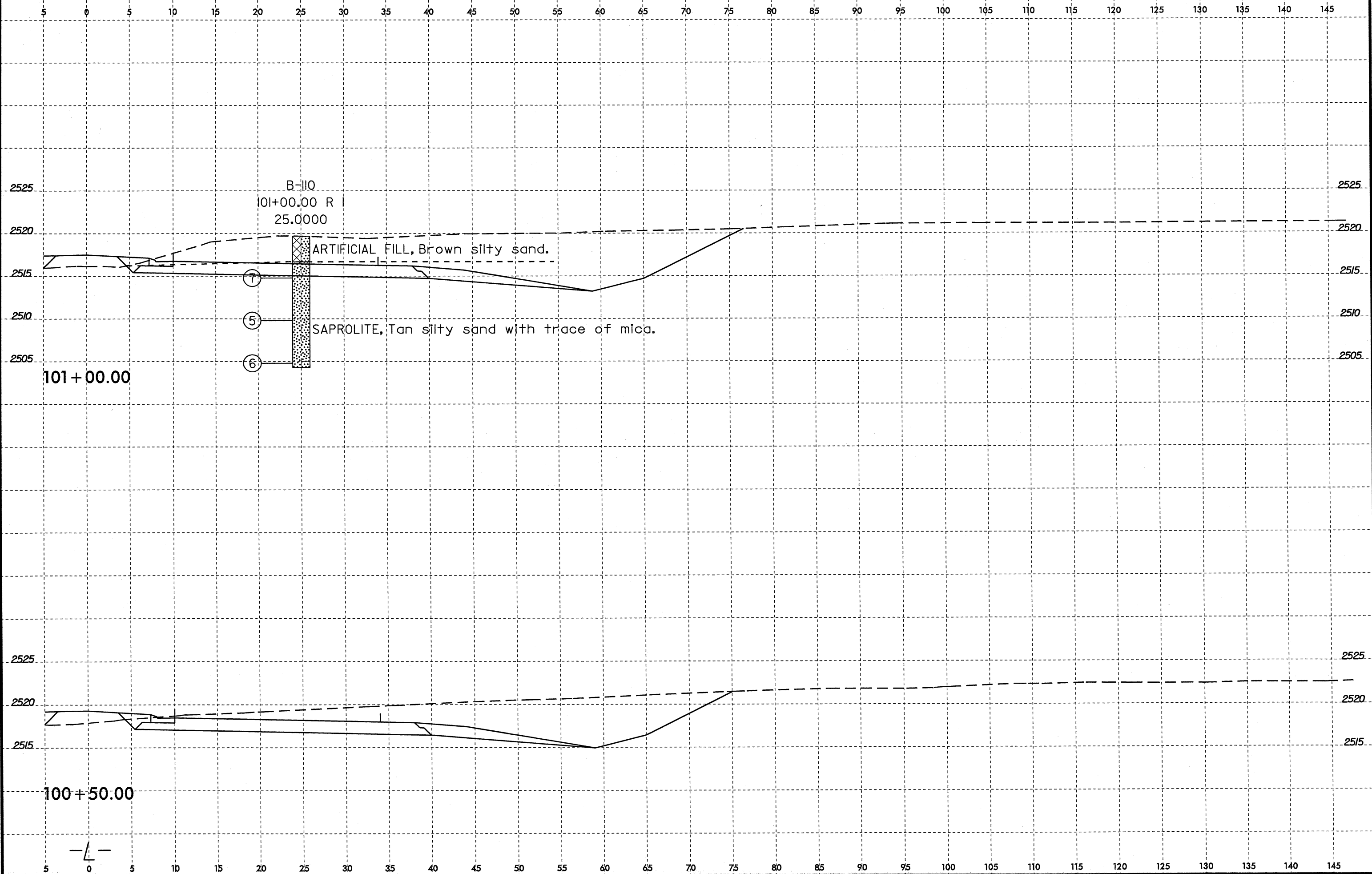
COLLUVIUM, Red silty clay with rounded cobbles and boulders at surface

SAPROLITE, Red-brown to brown silty sand with trace of mica.

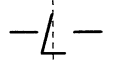
B-109
96+50.00 R-1
85.0000



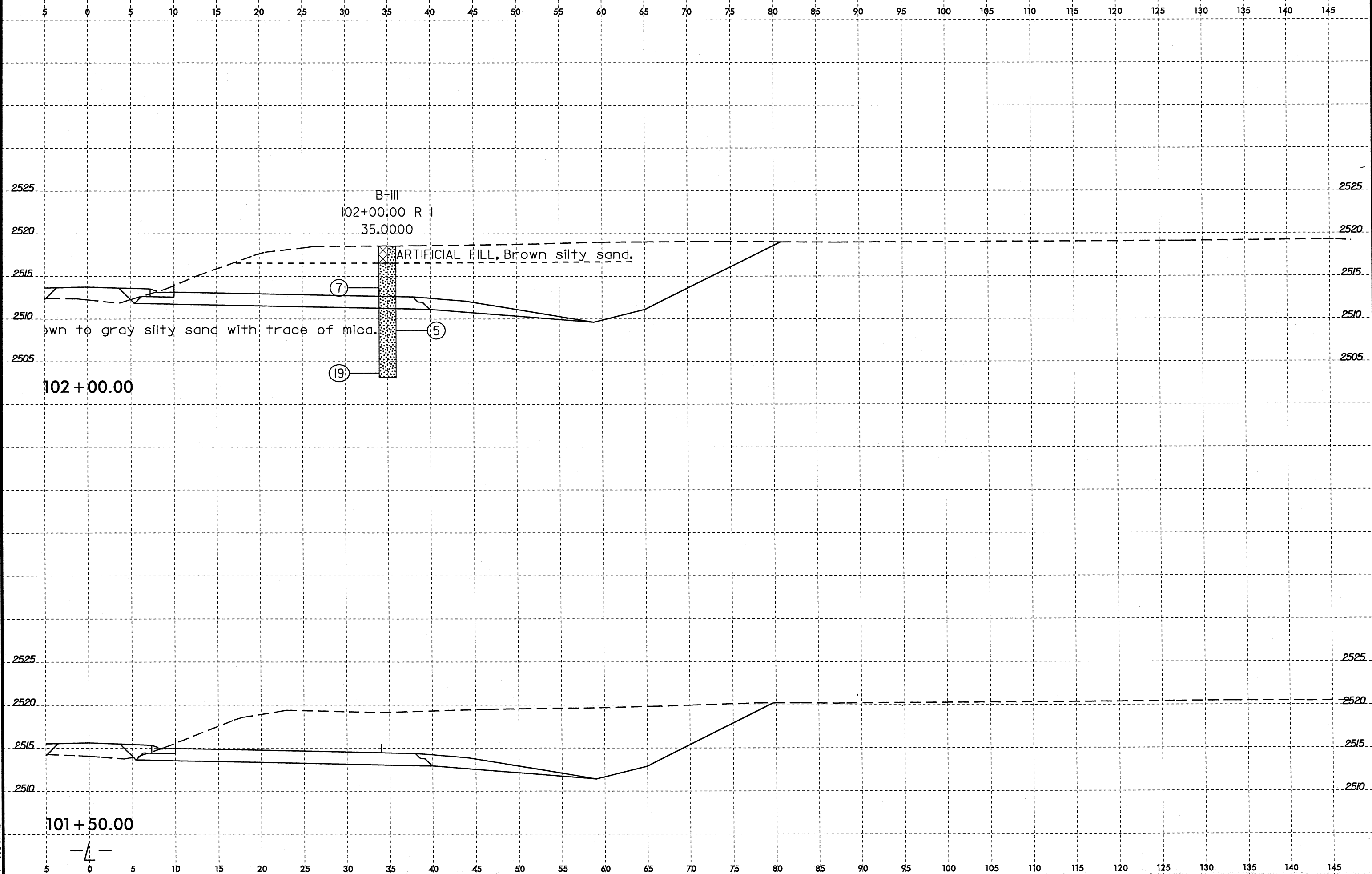
8/23/99



02-jul-2008 10:03
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8/23/99



02-JUL-2008 10:03
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102+00.00

101+50.00

B-III
 102+00.00 R 1
 35.0000

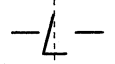
ARTIFICIAL FILL, Brown silty sand.

own to gray silty sand with trace of mica.

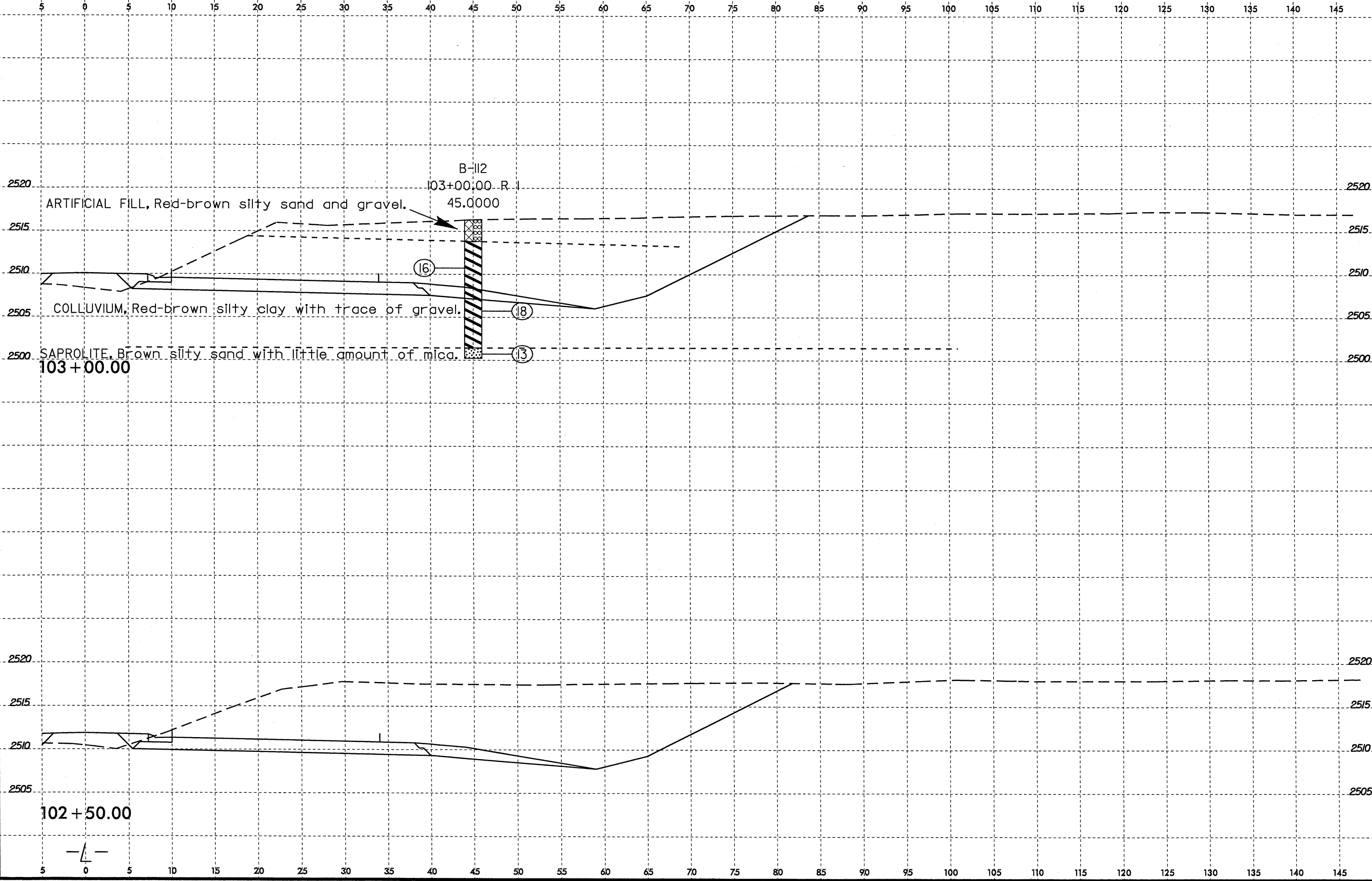
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5

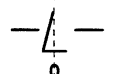
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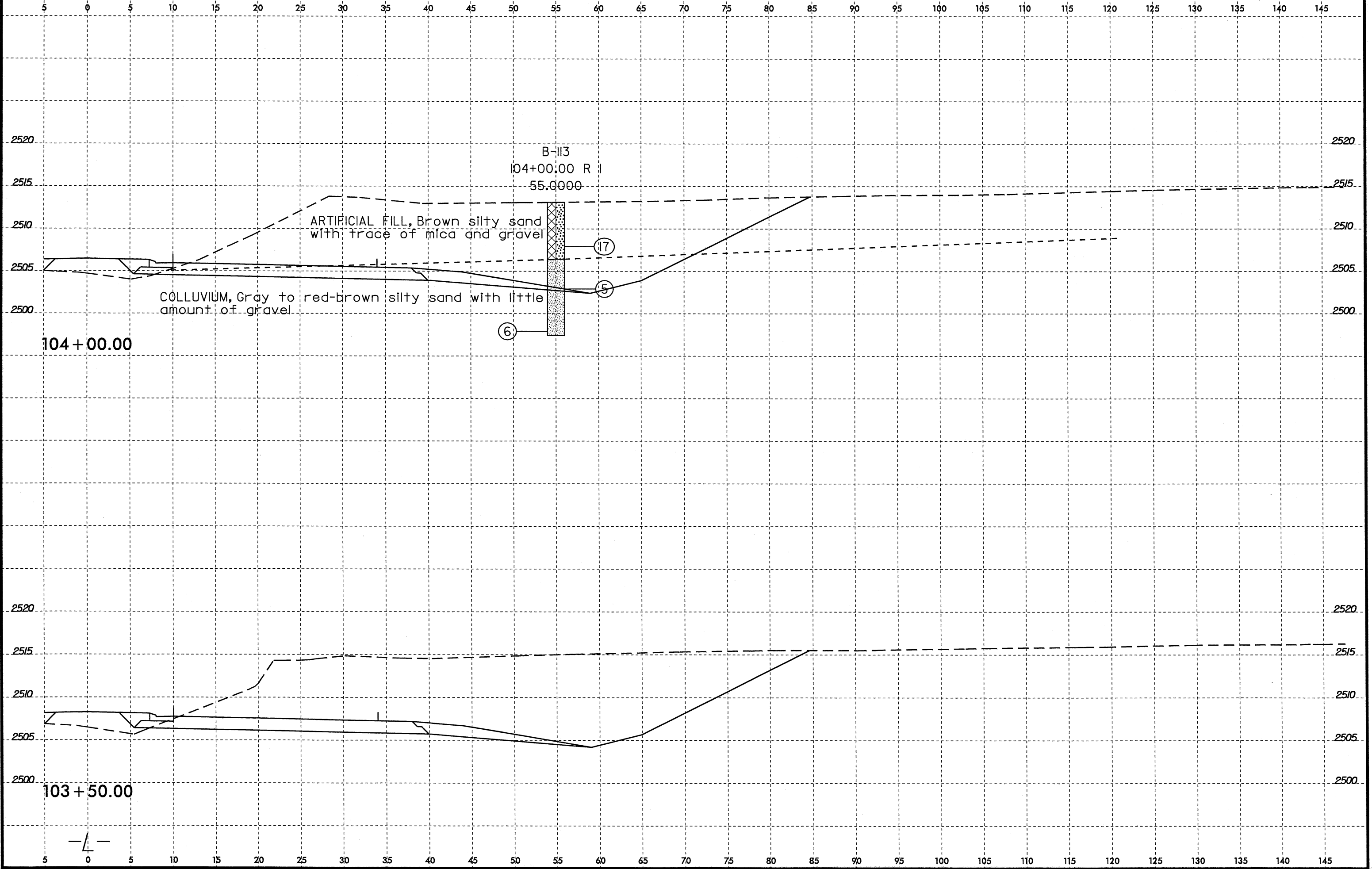


B/25/99

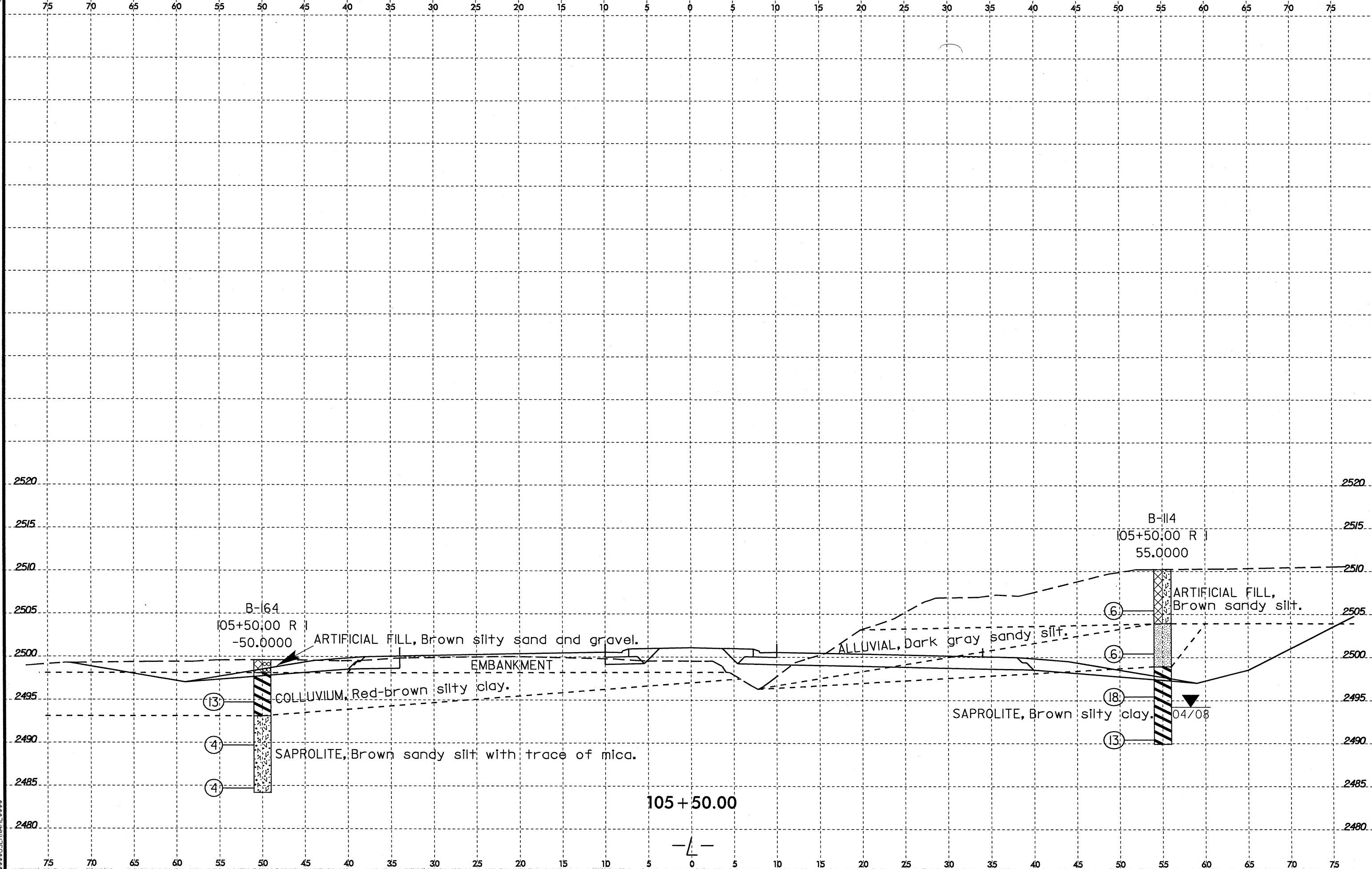


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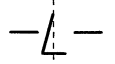




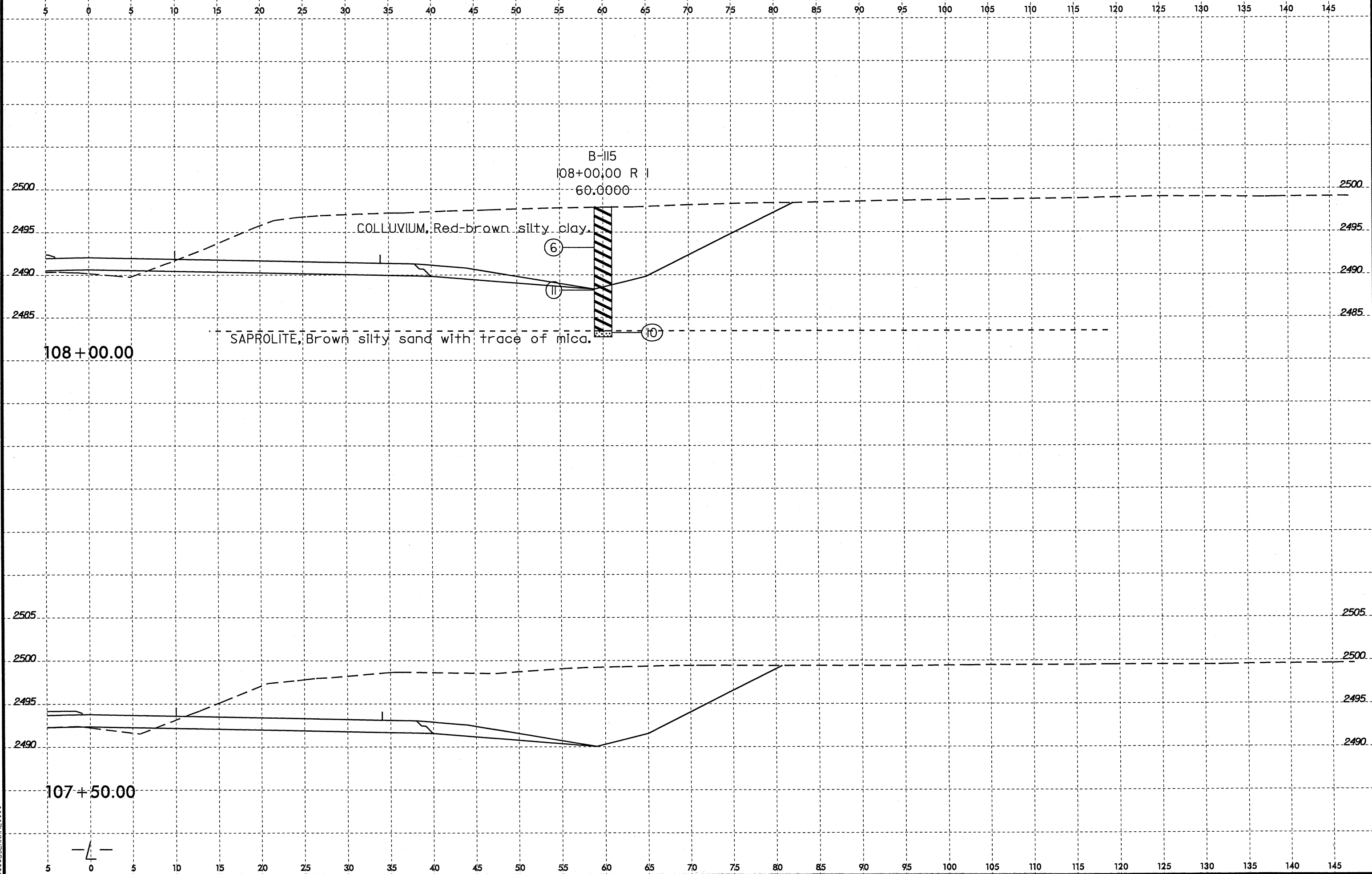
8/23/99
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105 + 50.00

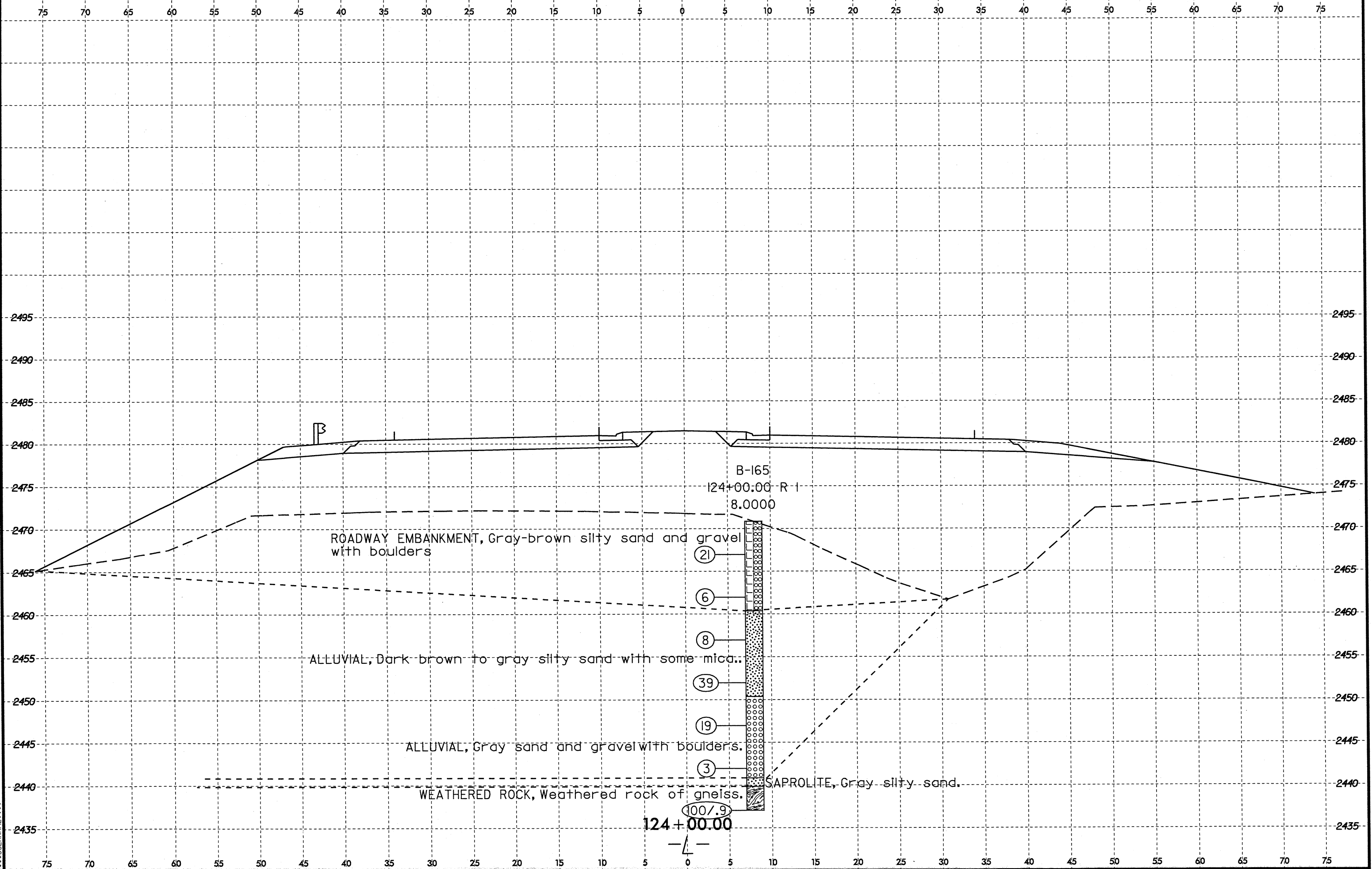


B/23/99

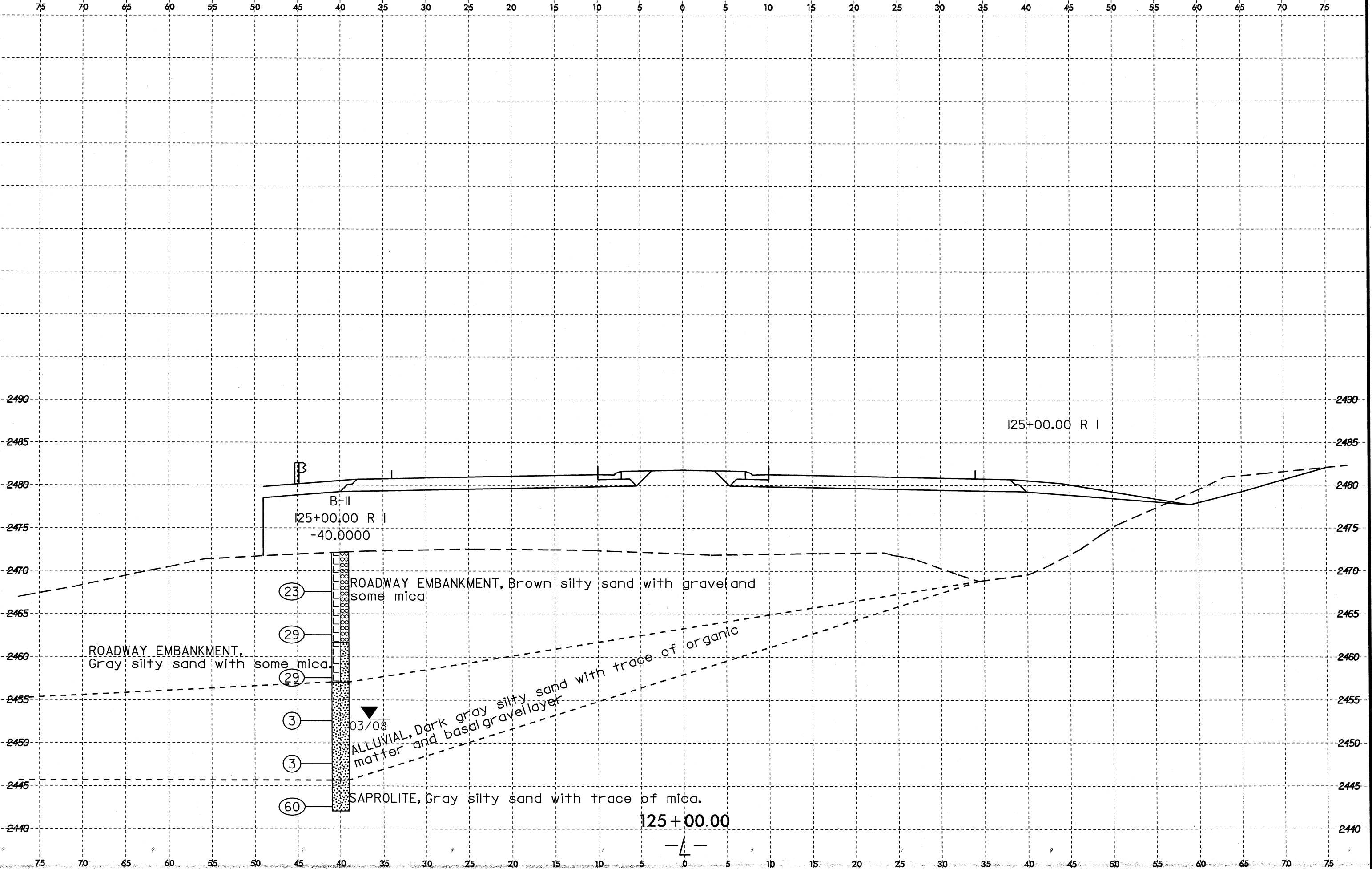


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8/23/99
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125+00.00 R I

B-II
125+00.00 R I
-40.0000

23 ROADWAY EMBANKMENT, Brown silty sand with gravel and some mica

ROADWAY EMBANKMENT, Gray silty sand with some mica.

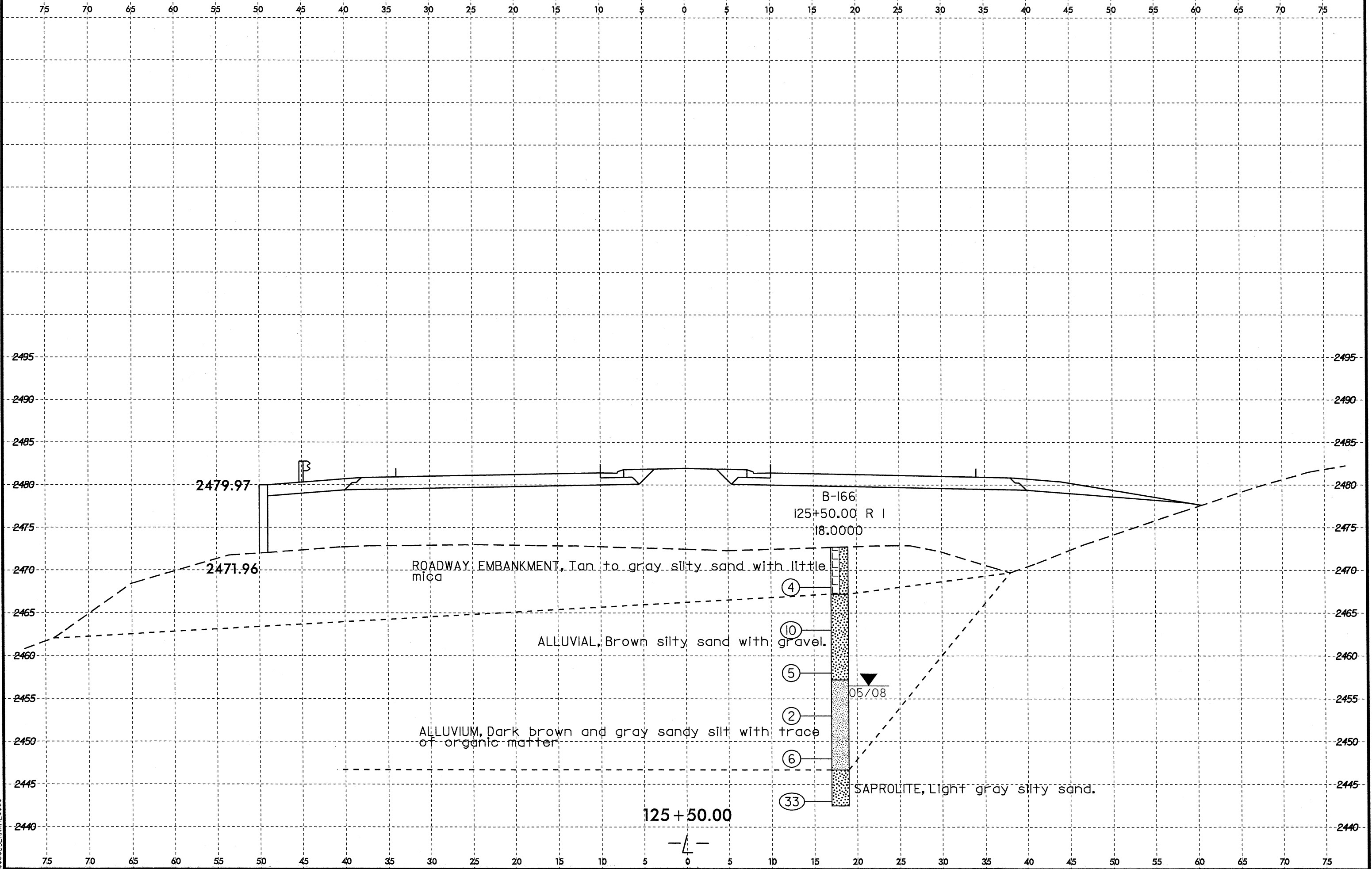
3 ALLUVIAL, Dark gray silty sand with trace of organic matter and basal gravel layer

60 SAPROLITE, Gray silty sand with trace of mica.

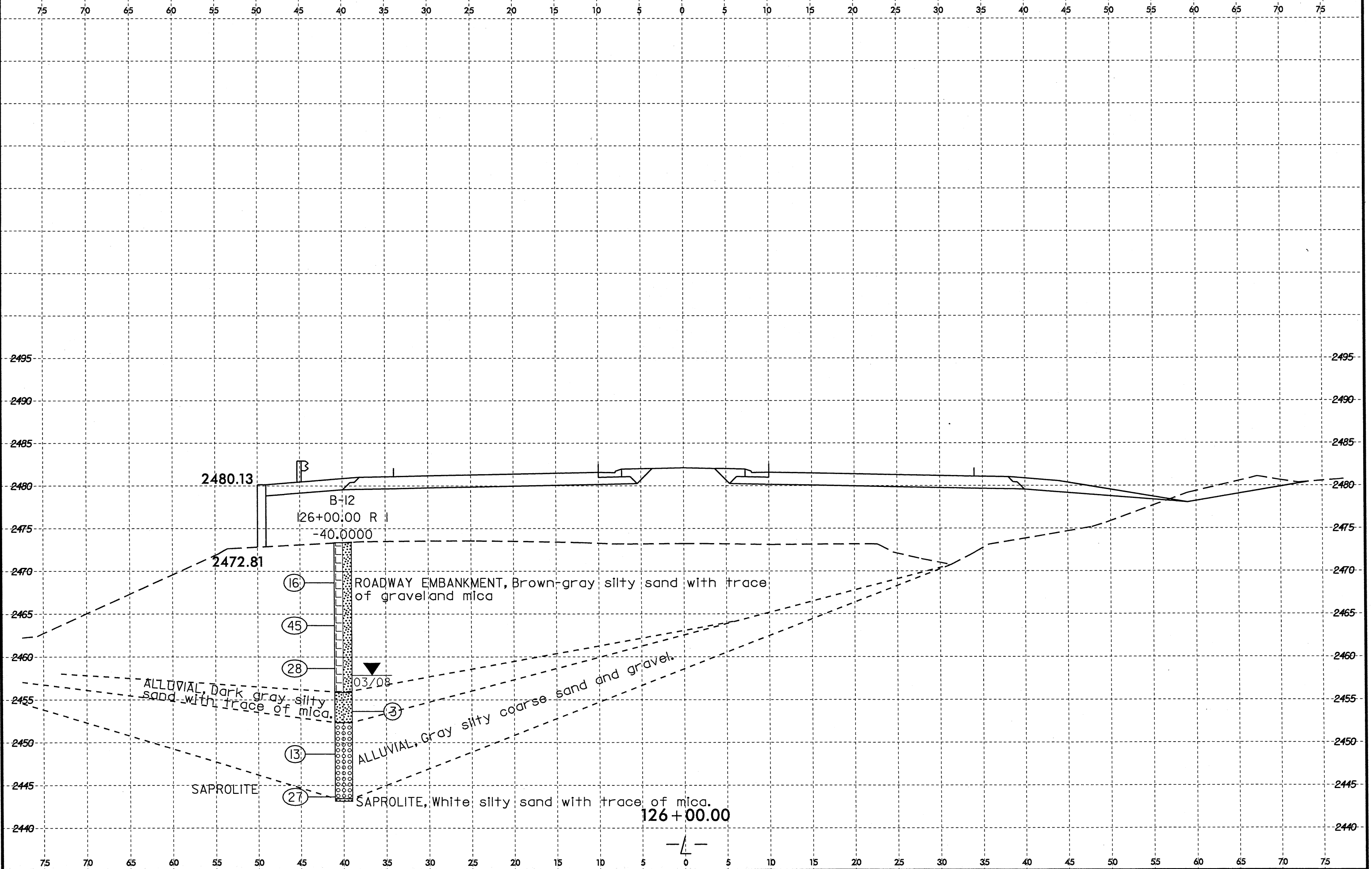
125+00.00



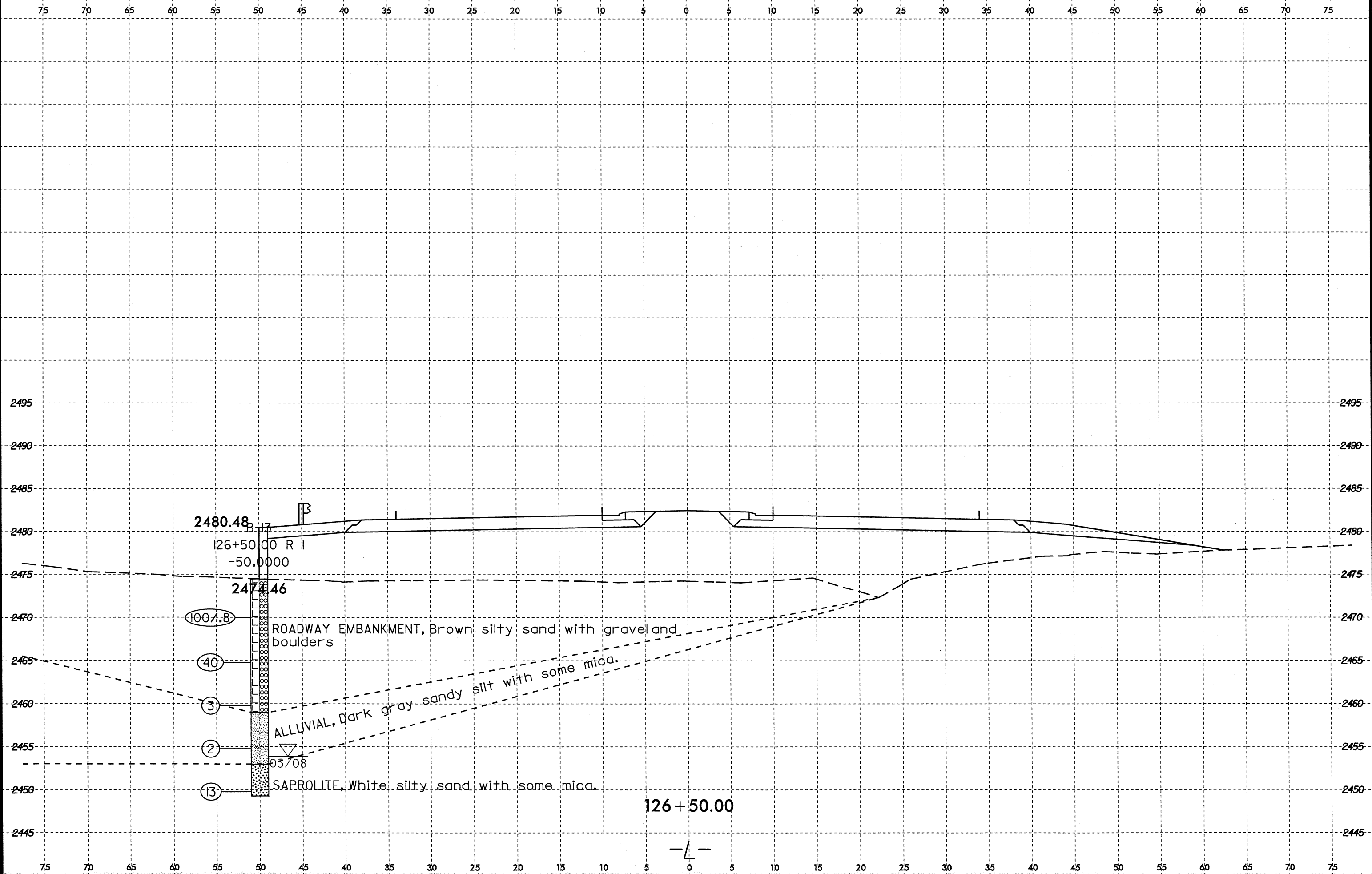
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8/23/99
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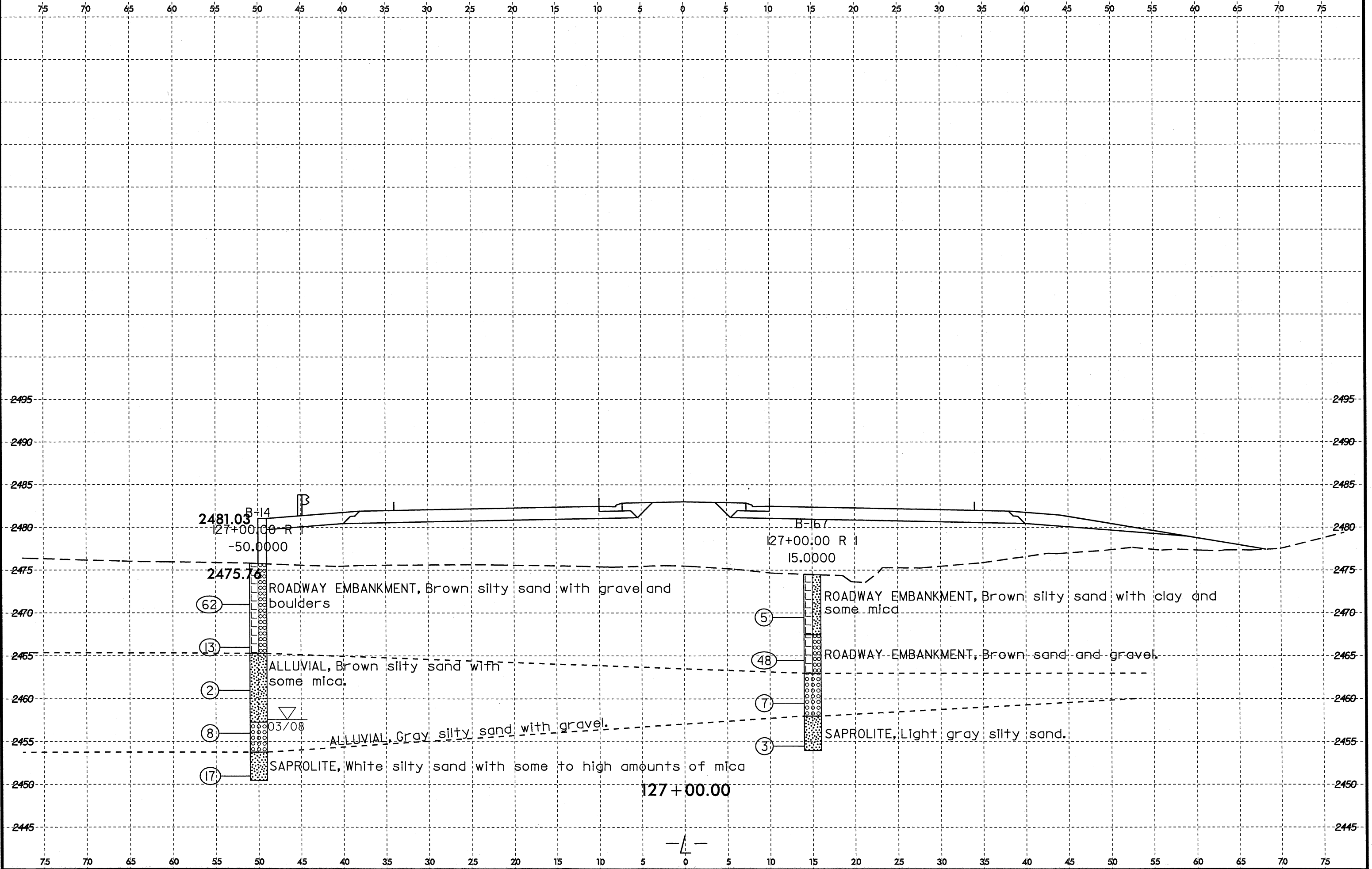


8/23/99



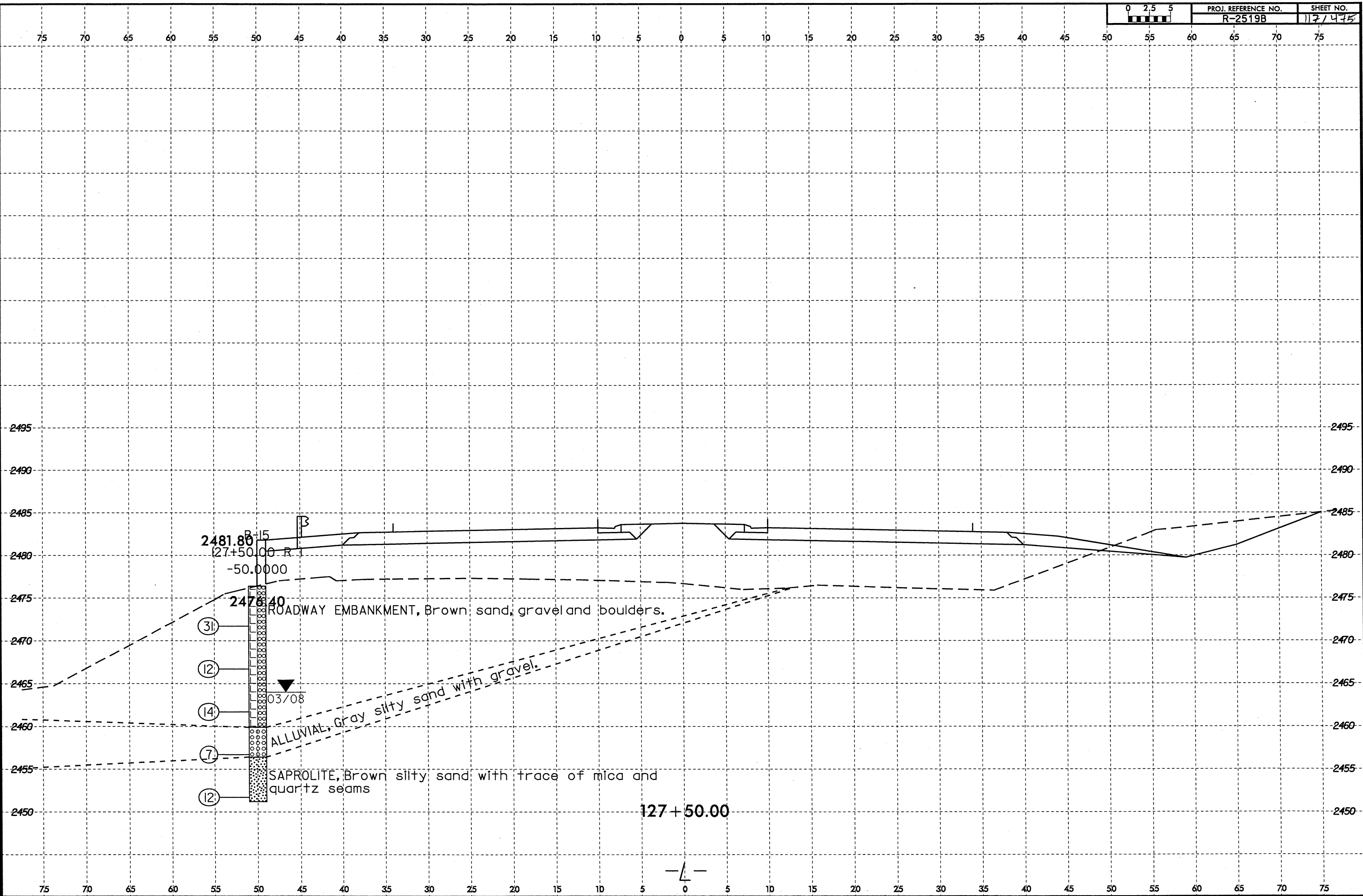
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17-JUL-2008 14:52
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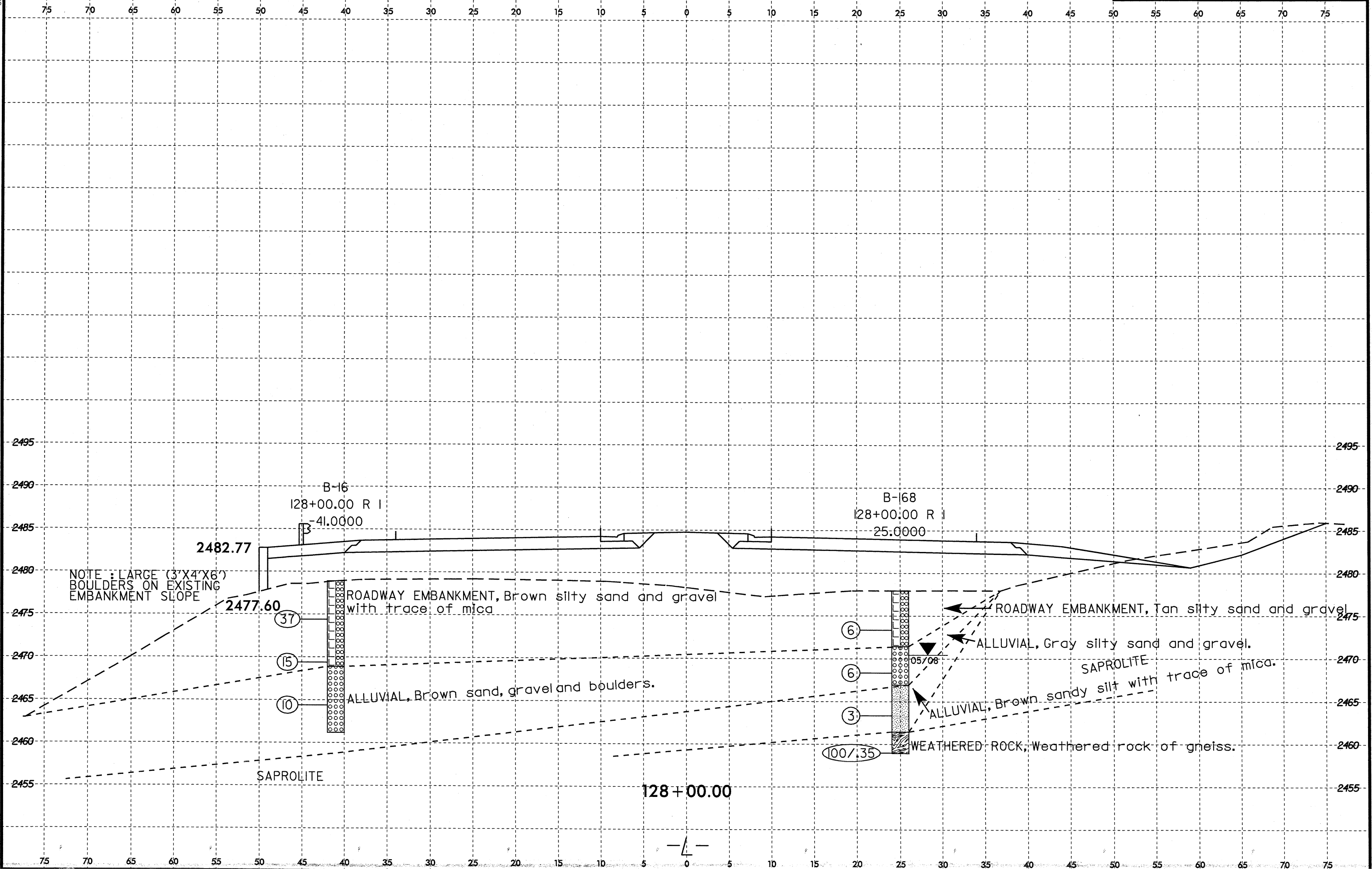


8/23/99

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8/23/99
25-AUG-2008 08:23
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NOTE: LARGE (3'X4'X6')
BOULDERS ON EXISTING
EMBANKMENT SLOPE

B-16
128+00.00 R I
41.0000

B-168
128+00.00 R I
25.0000

ROADWAY EMBANKMENT, Brown silty sand and gravel
with trace of mica

ROADWAY EMBANKMENT, Tan silty sand and gravel

37

15

10

ALLUVIAL, Brown sand, gravel and boulders.

6

6

3

ALLUVIAL, Gray silty sand and gravel.

SAPROLITE
ALLUVIAL, Brown sandy silt with trace of mica.

100/35

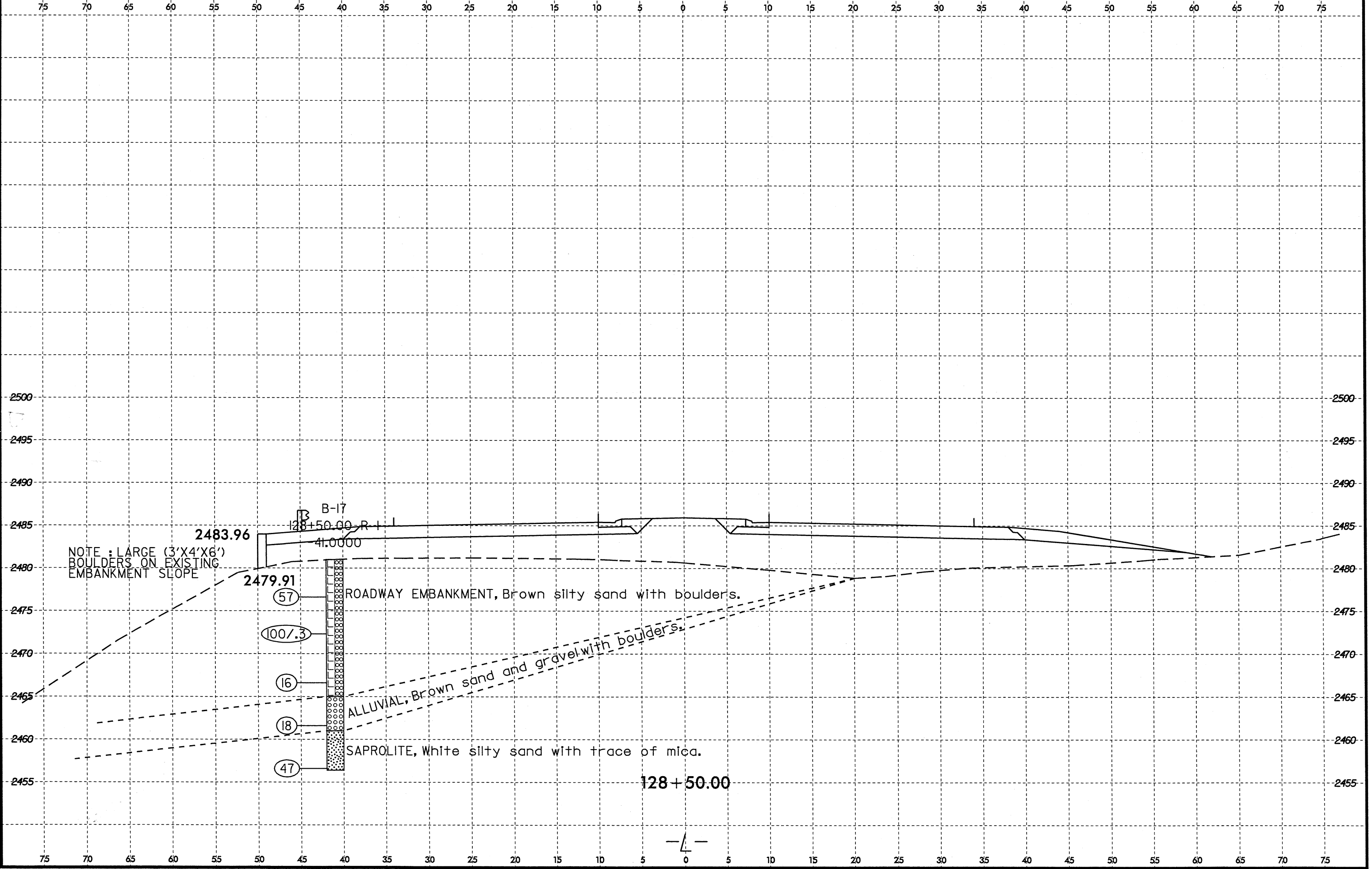
WEATHERED ROCK, Weathered rock of gneiss.

SAPROLITE

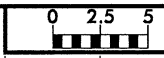
128 + 00.00



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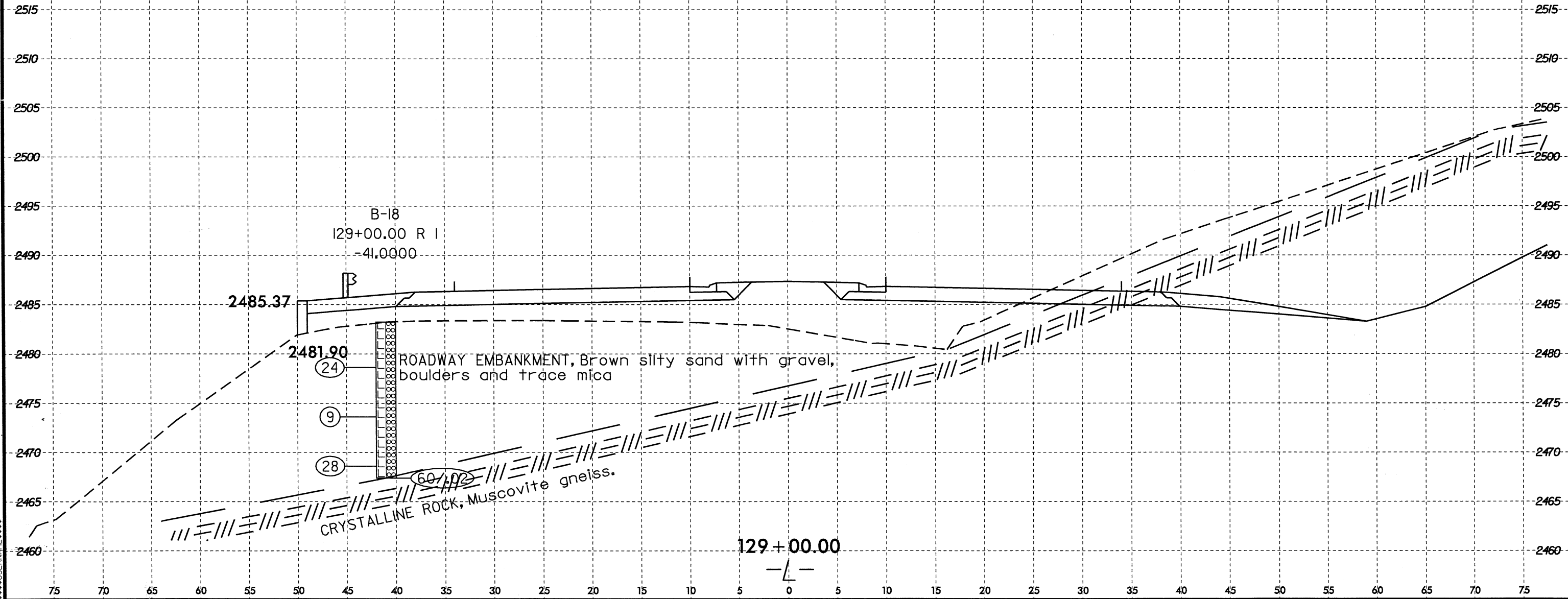


8/23/99



PROJ. REFERENCE NO. R-2519B SHEET NO. 120/475

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B-18
129+00.00 R I
-41.0000

2485.37

2481.90
(24)

ROADWAY EMBANKMENT, Brown silty sand with gravel,
boulders and trace mica

(9)

(28)

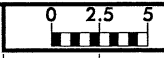
CRYSTALLINE ROCK, Muscovite gneiss.

129 + 00.00

-4-

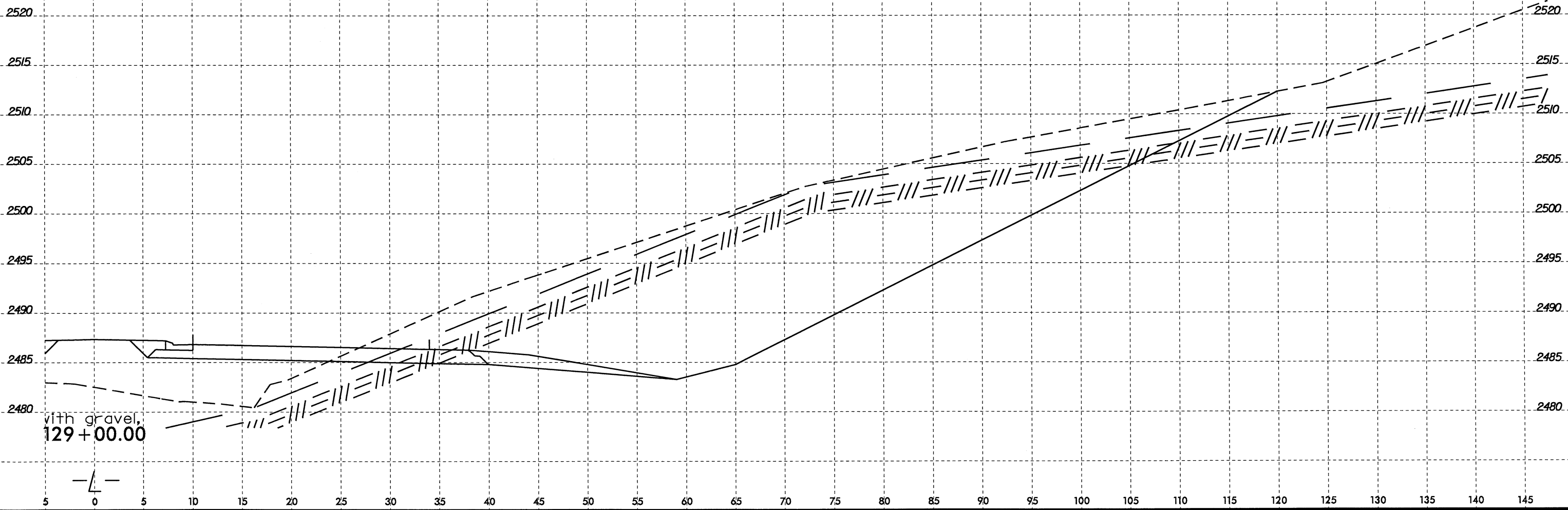
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8/23/99



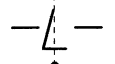
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R-2519B	121/475

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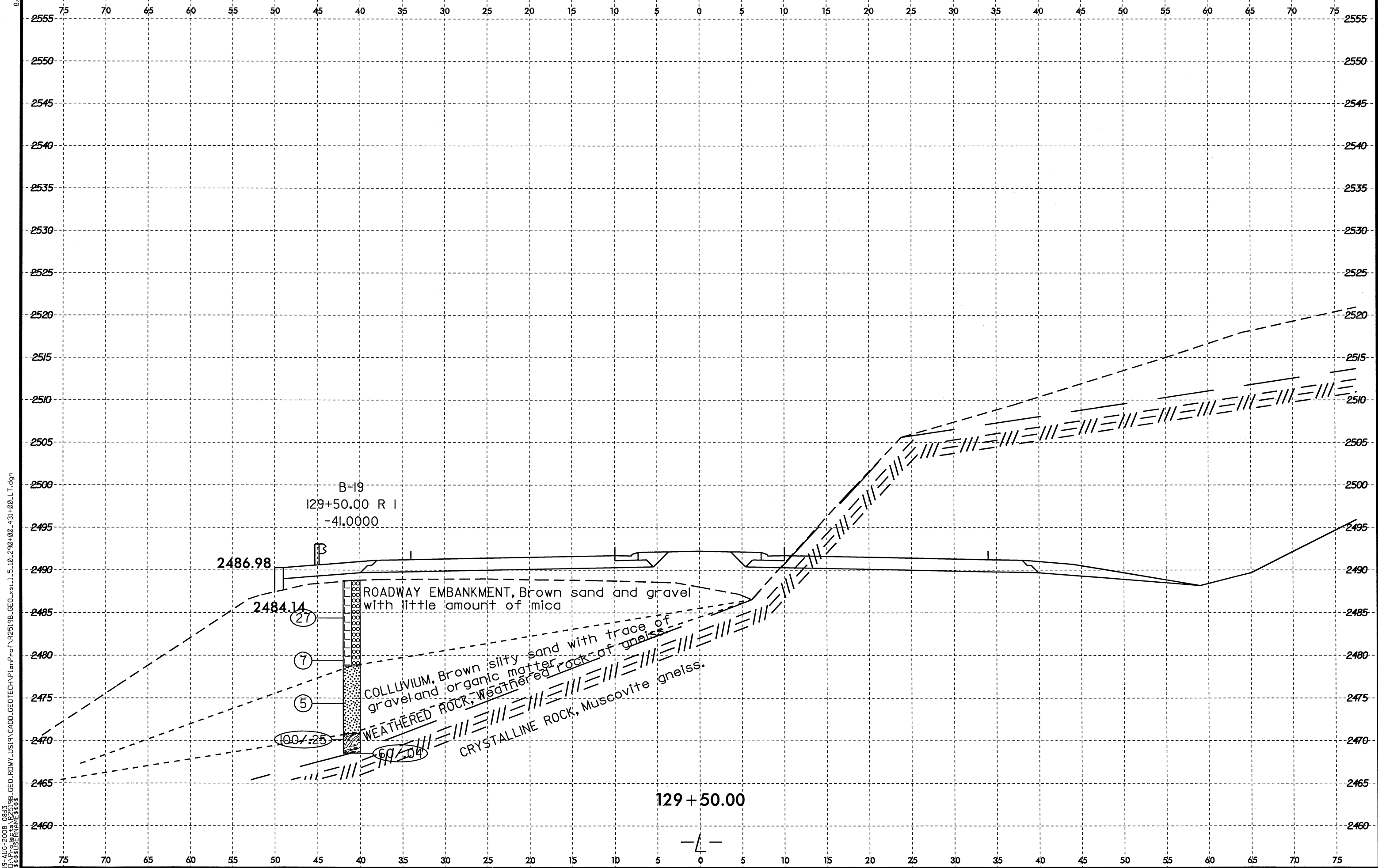


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 \$\$\$SERNAME\$\$\$

with gravel,
129 + 00.00

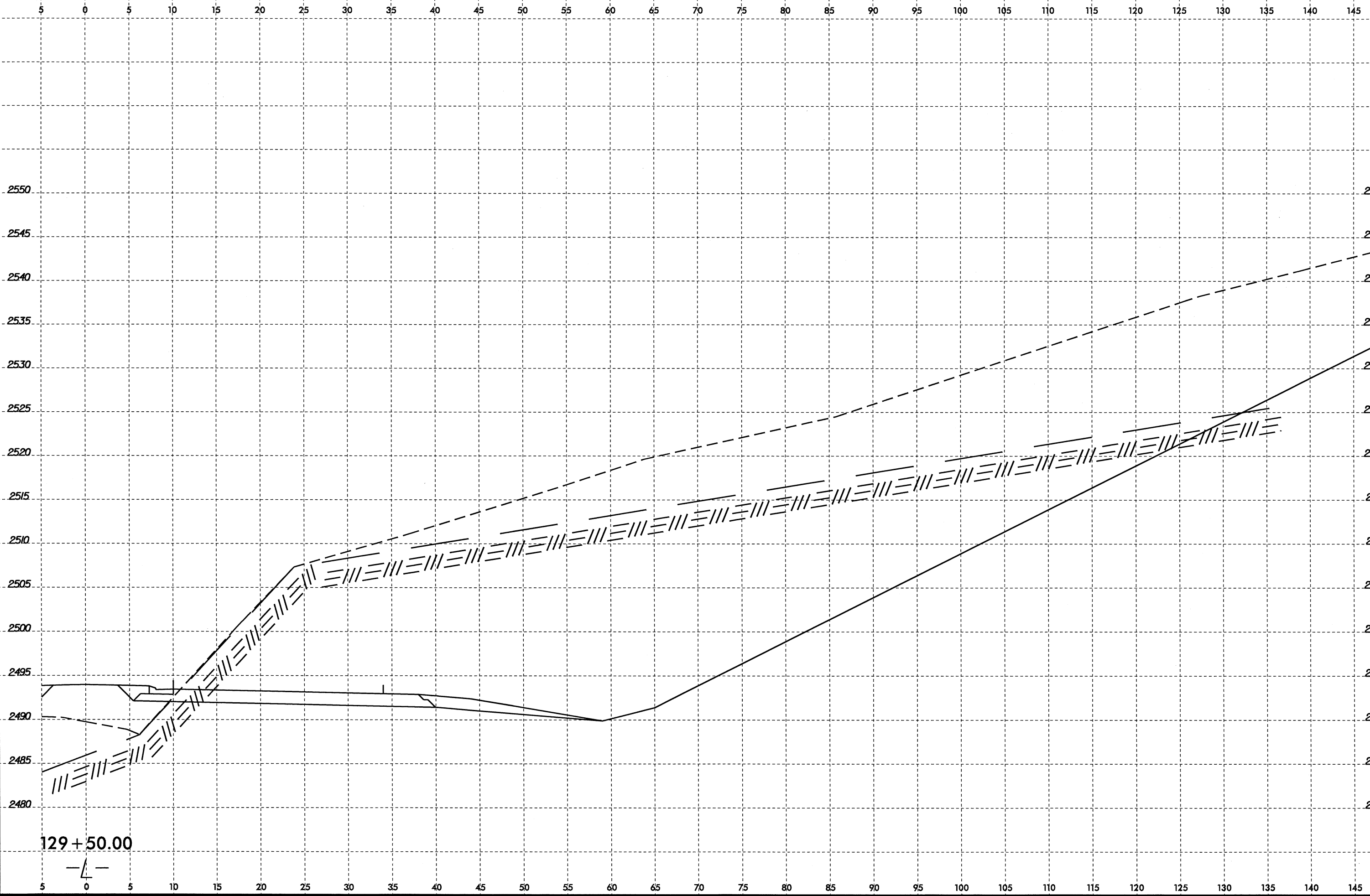


8/23/99

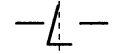


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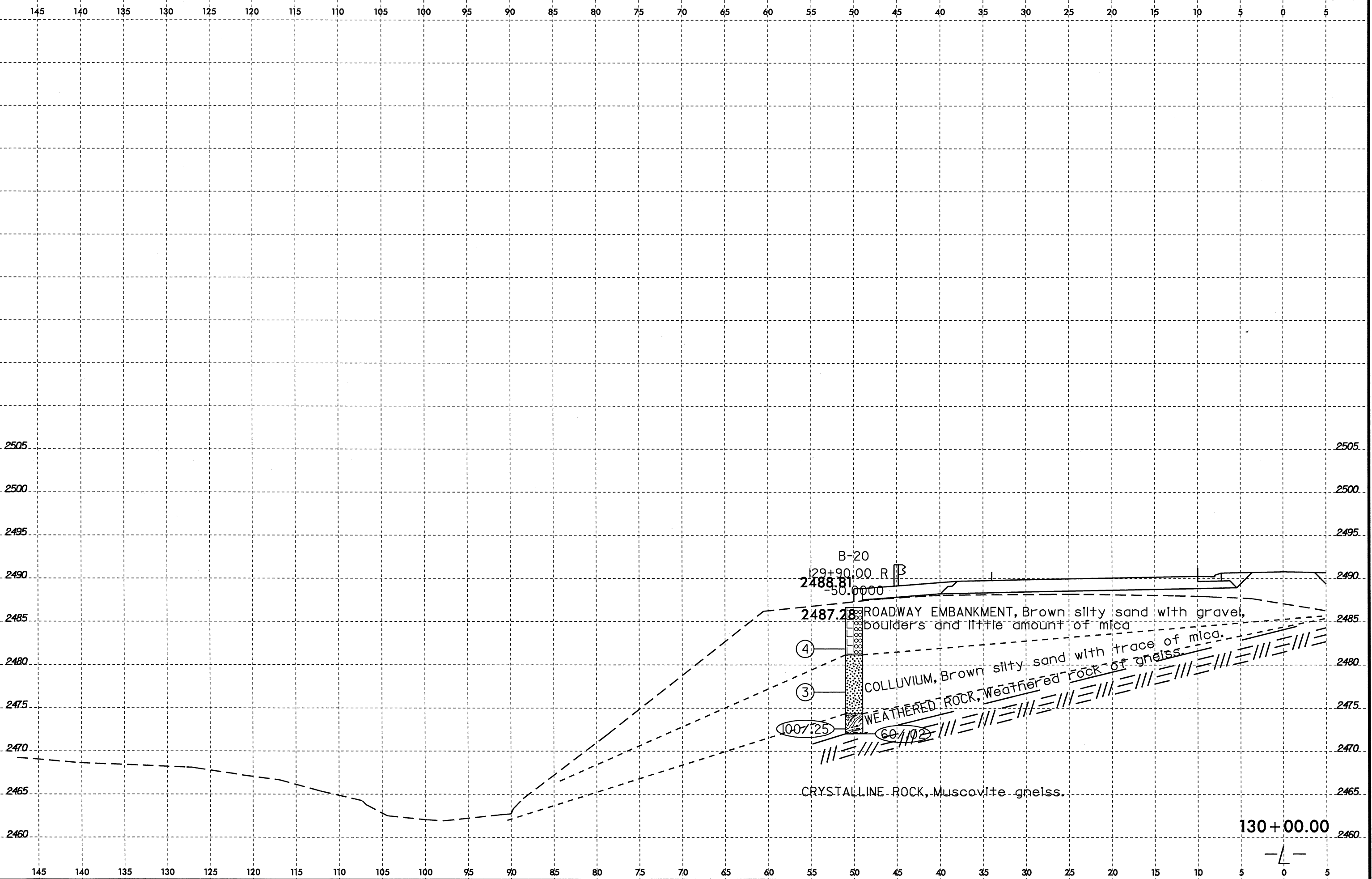
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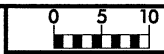
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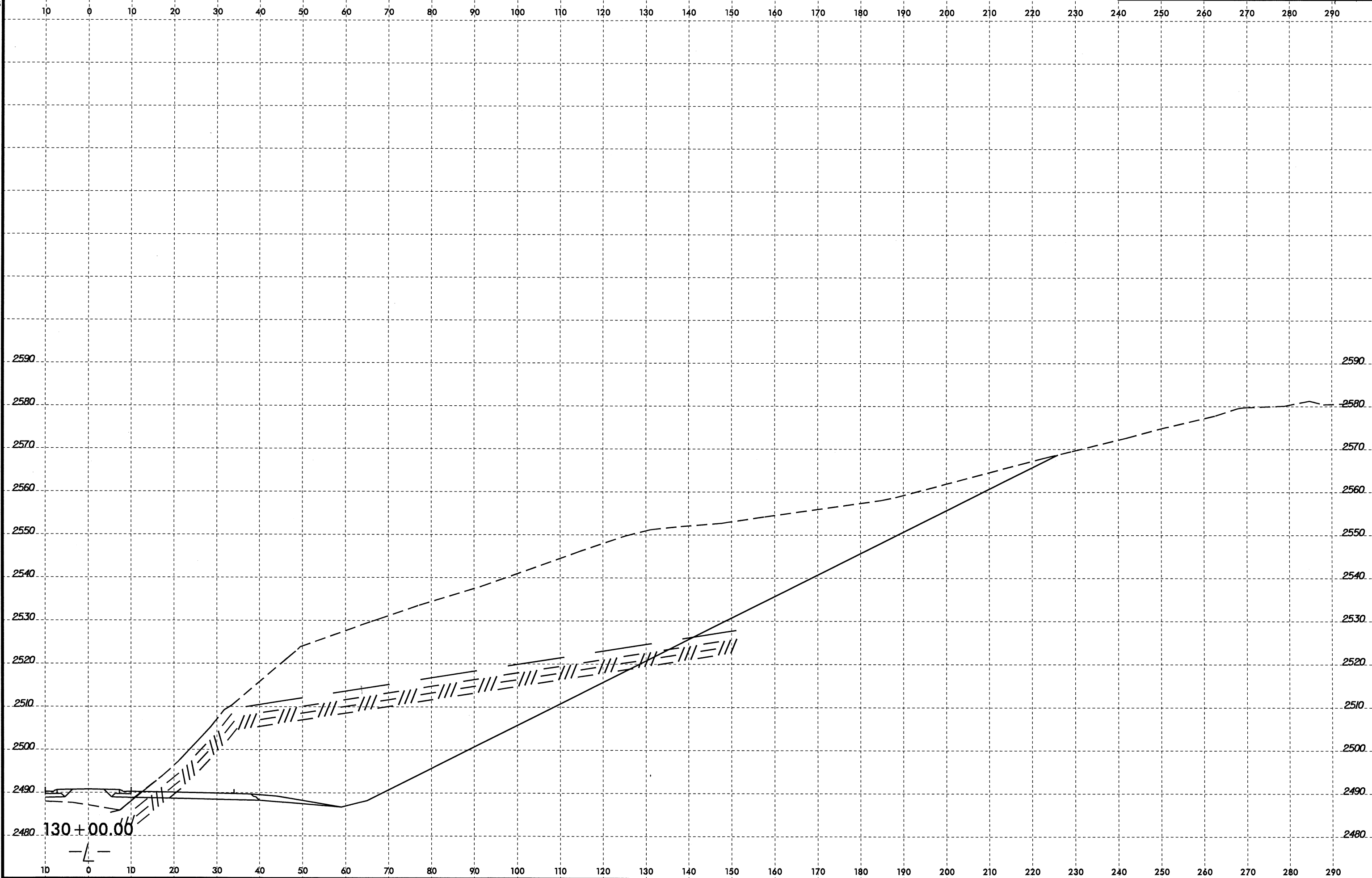
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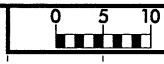
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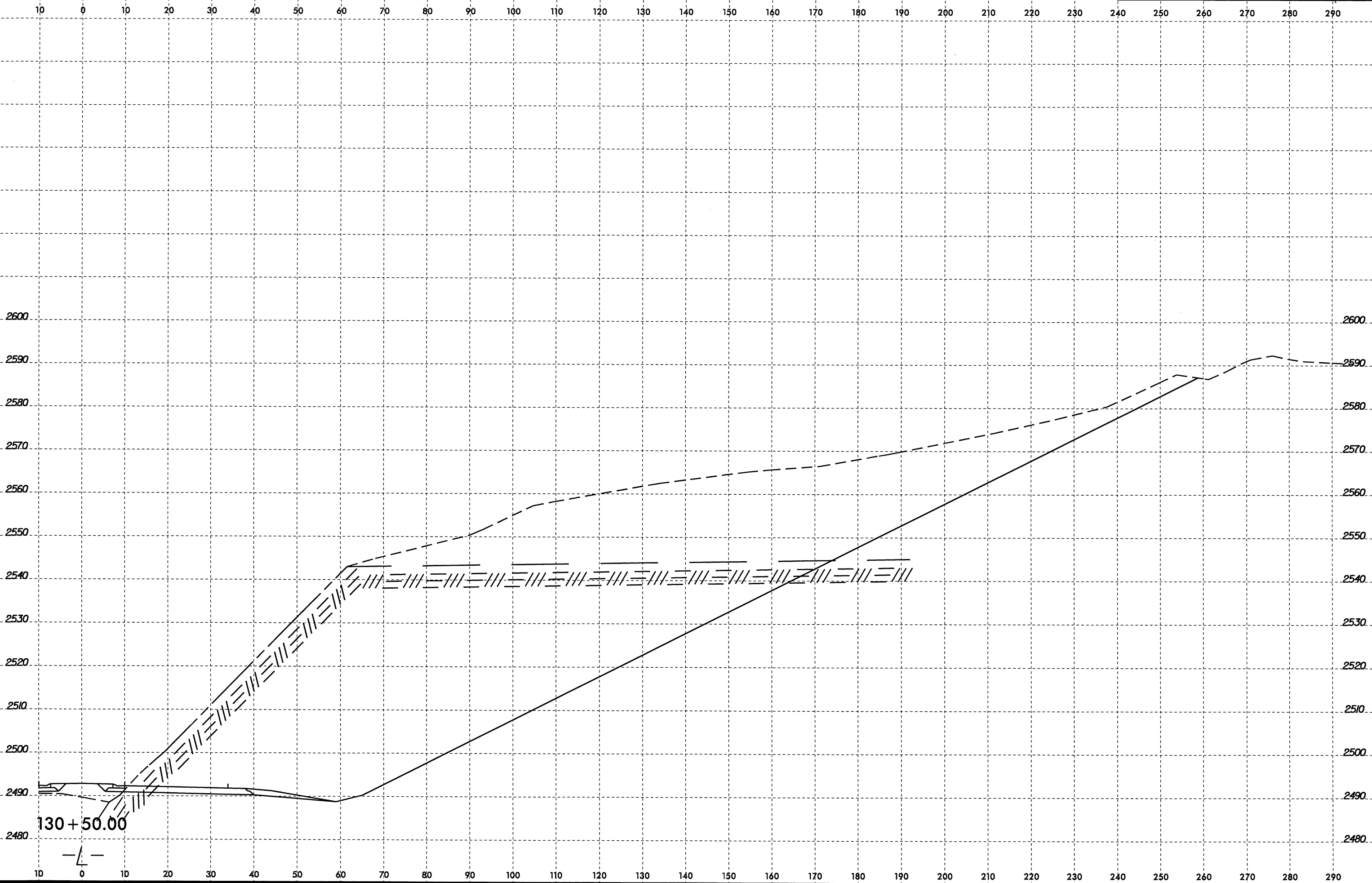
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R-2519B	125/125



8/23/99

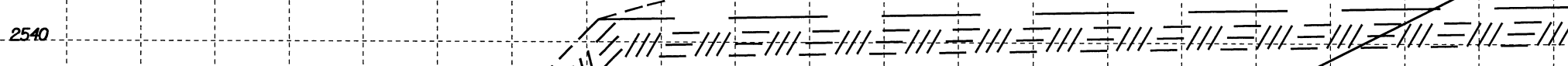
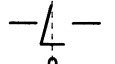


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R-2519B	126/475

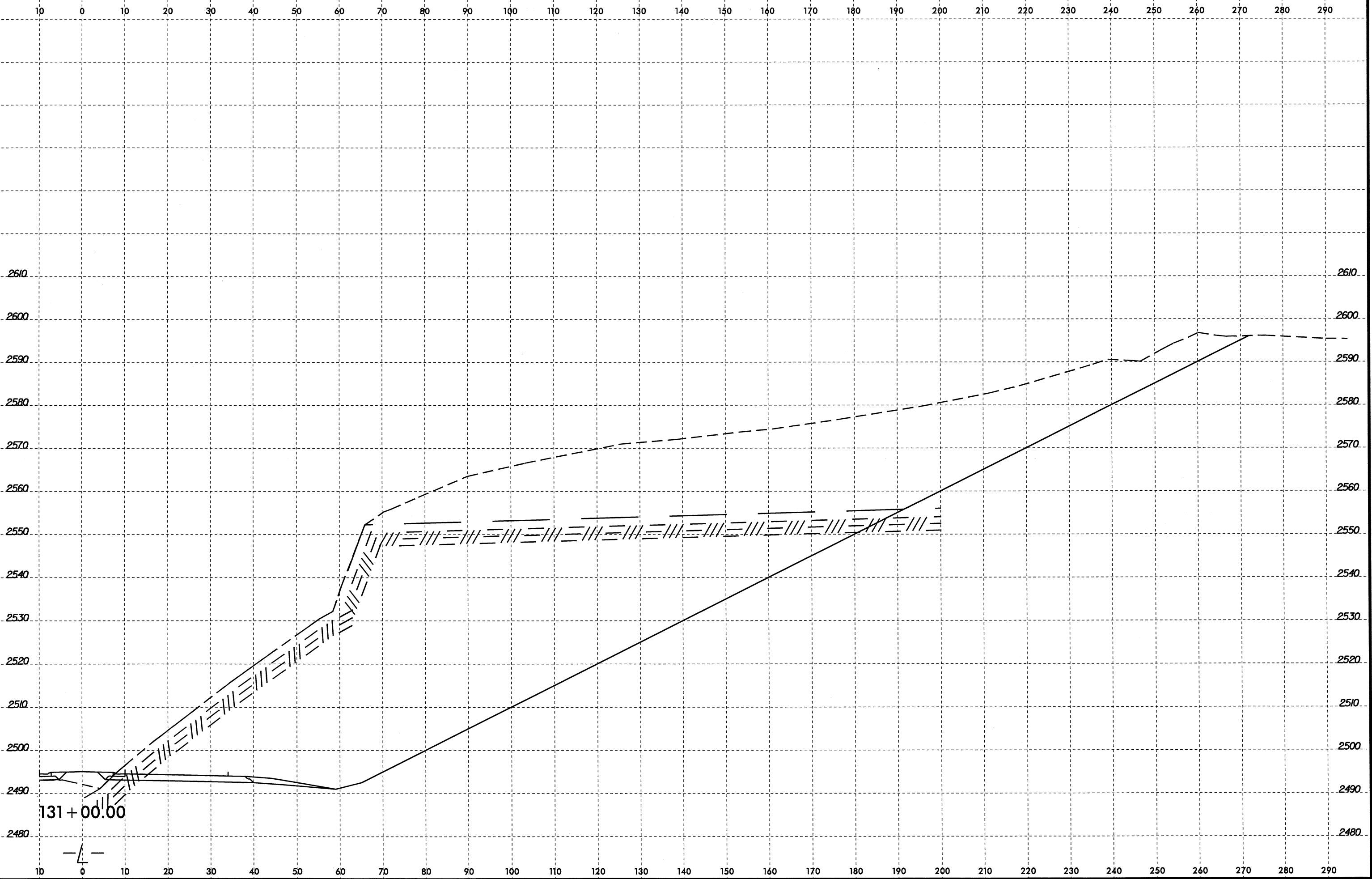


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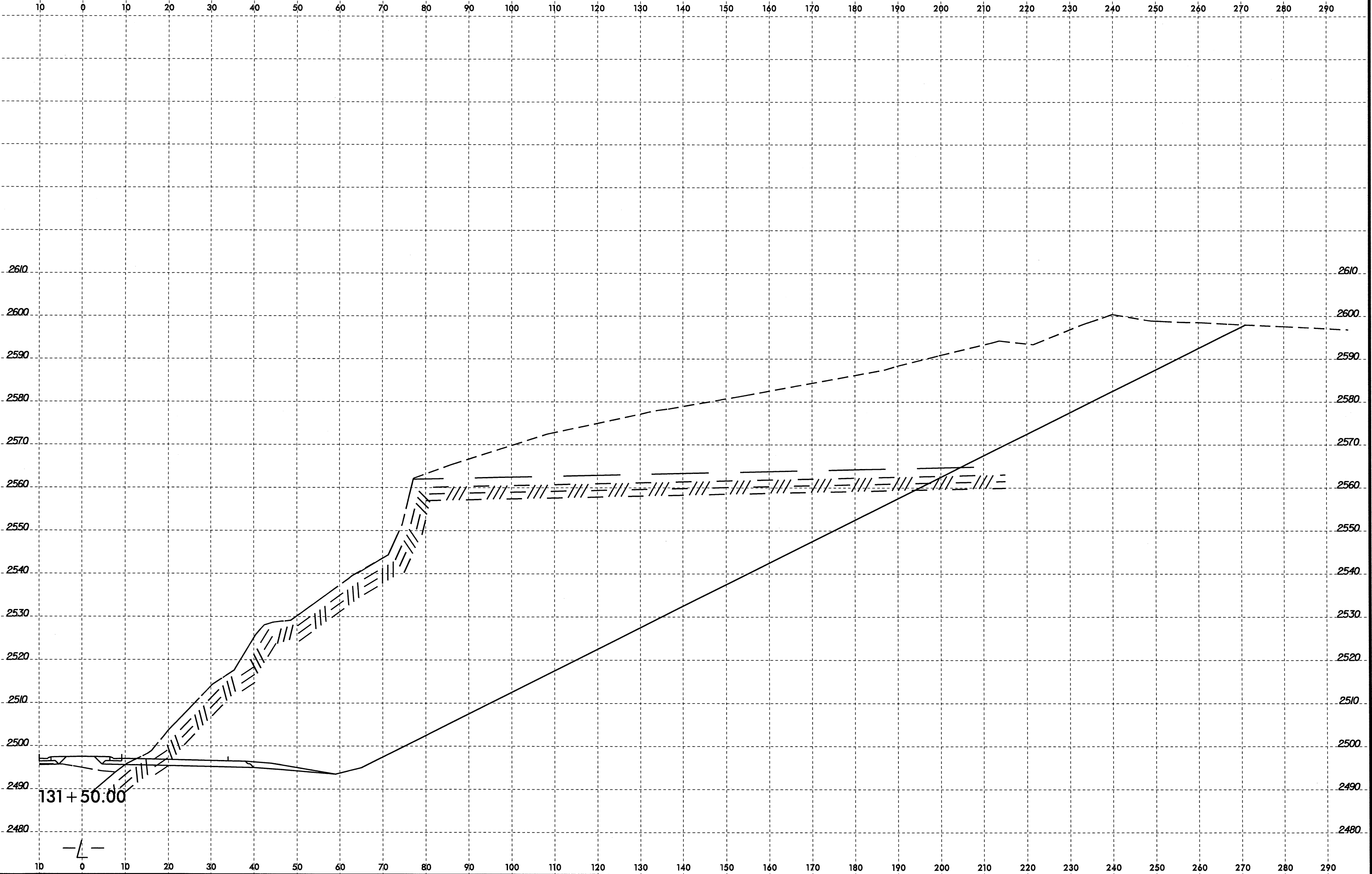
130 + 50.00



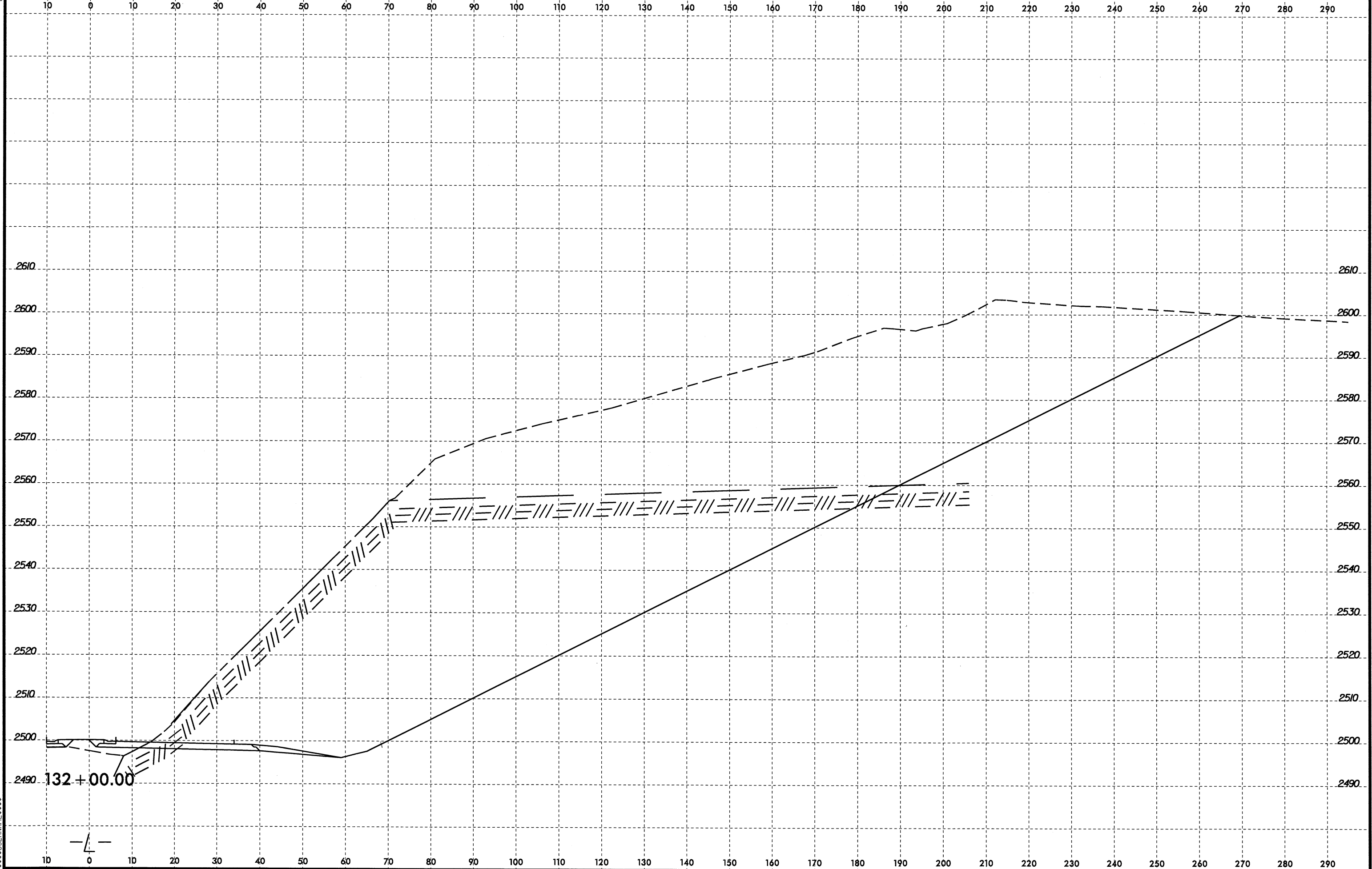
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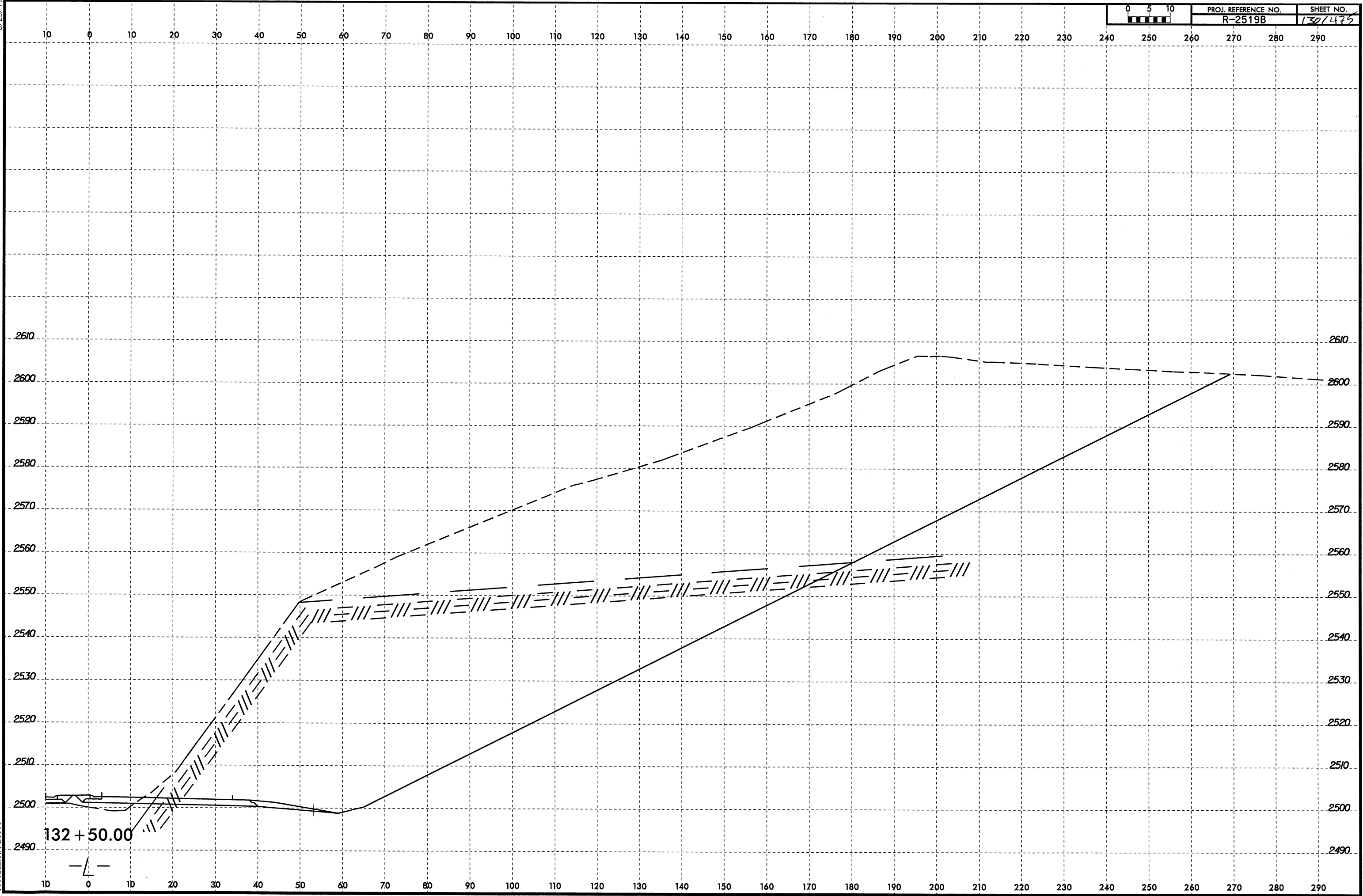
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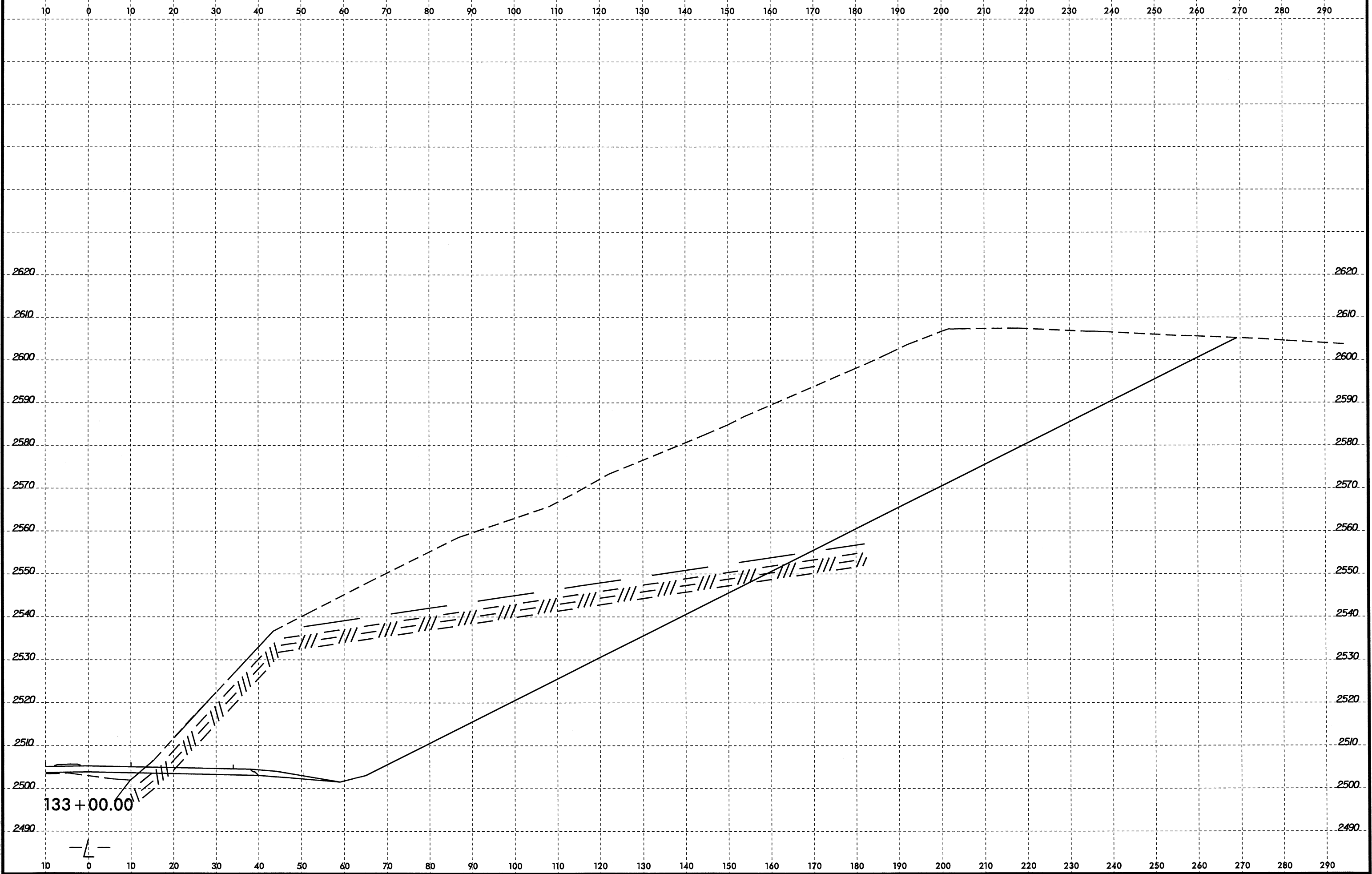
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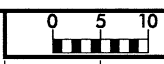
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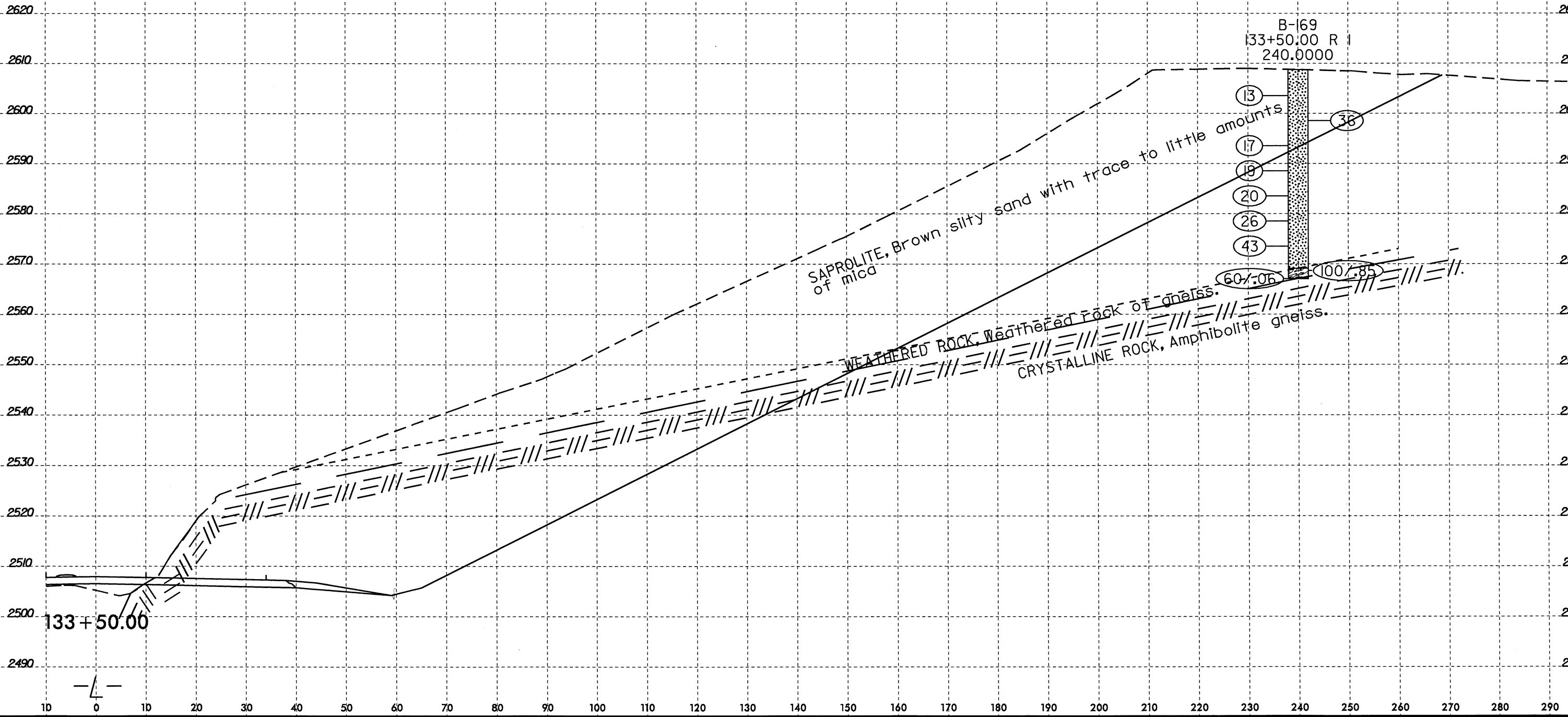


8/23/99



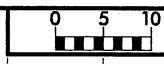
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R-2519B	132 / 475

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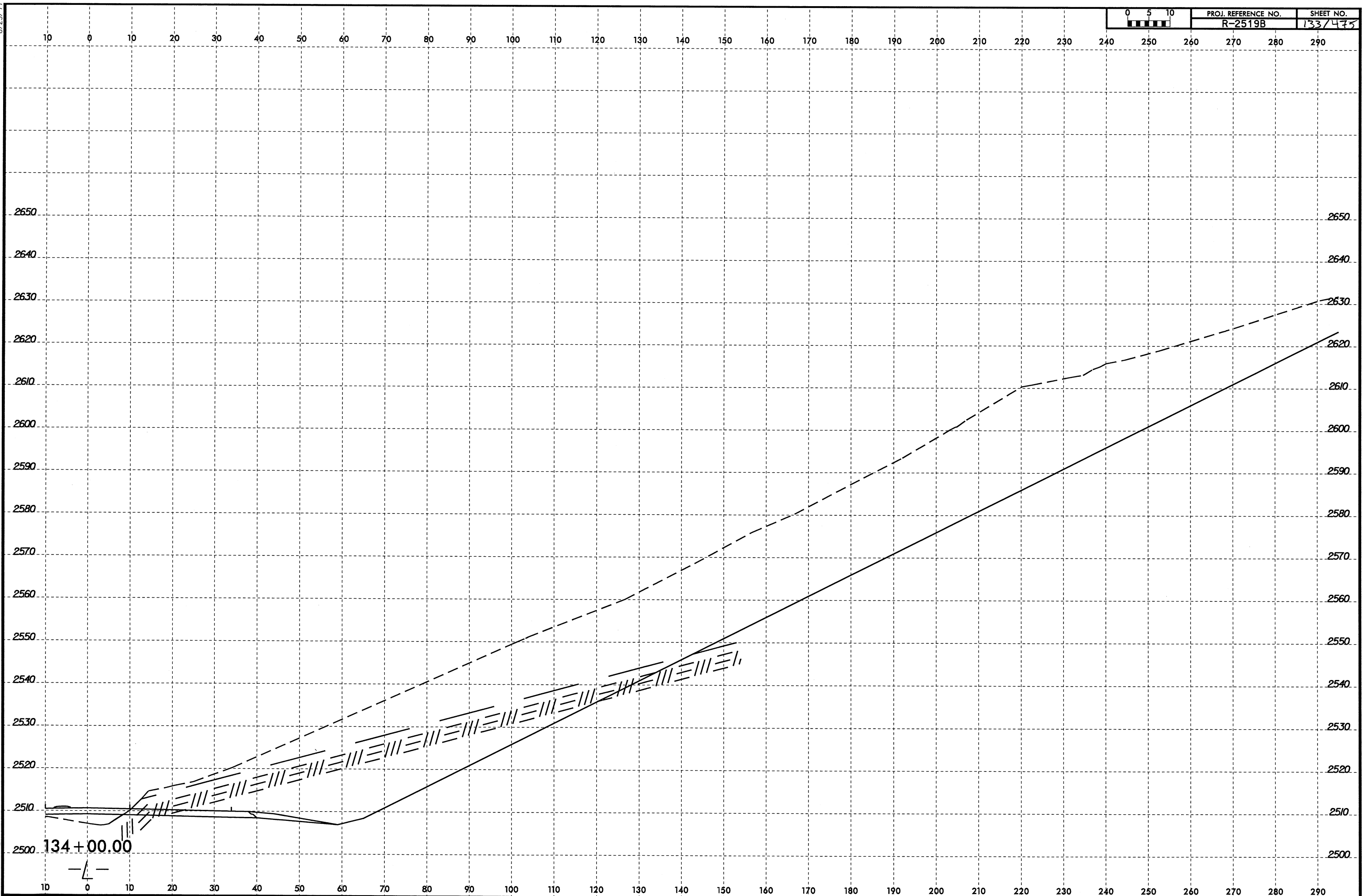


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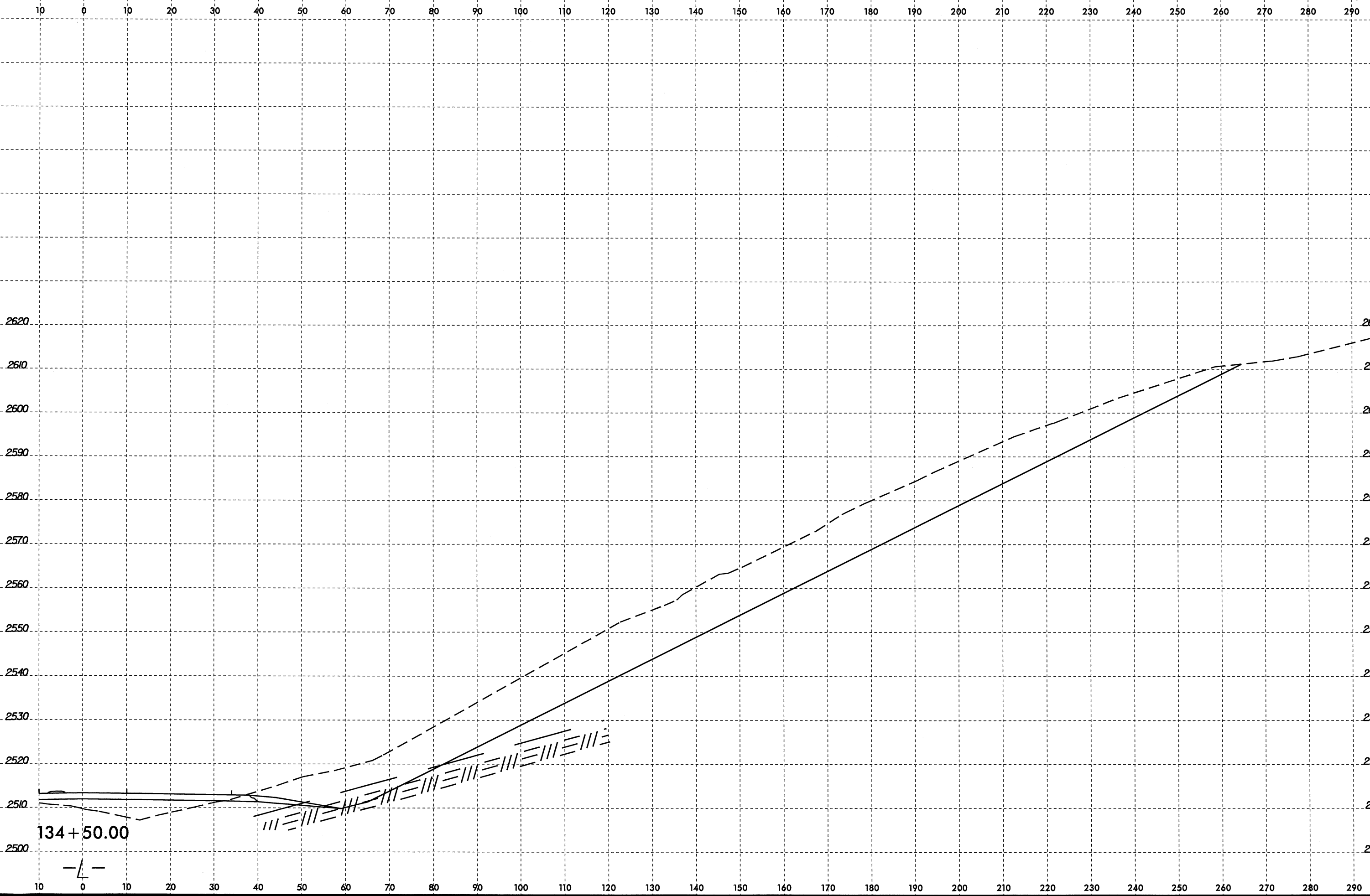


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R-2519B	133/475

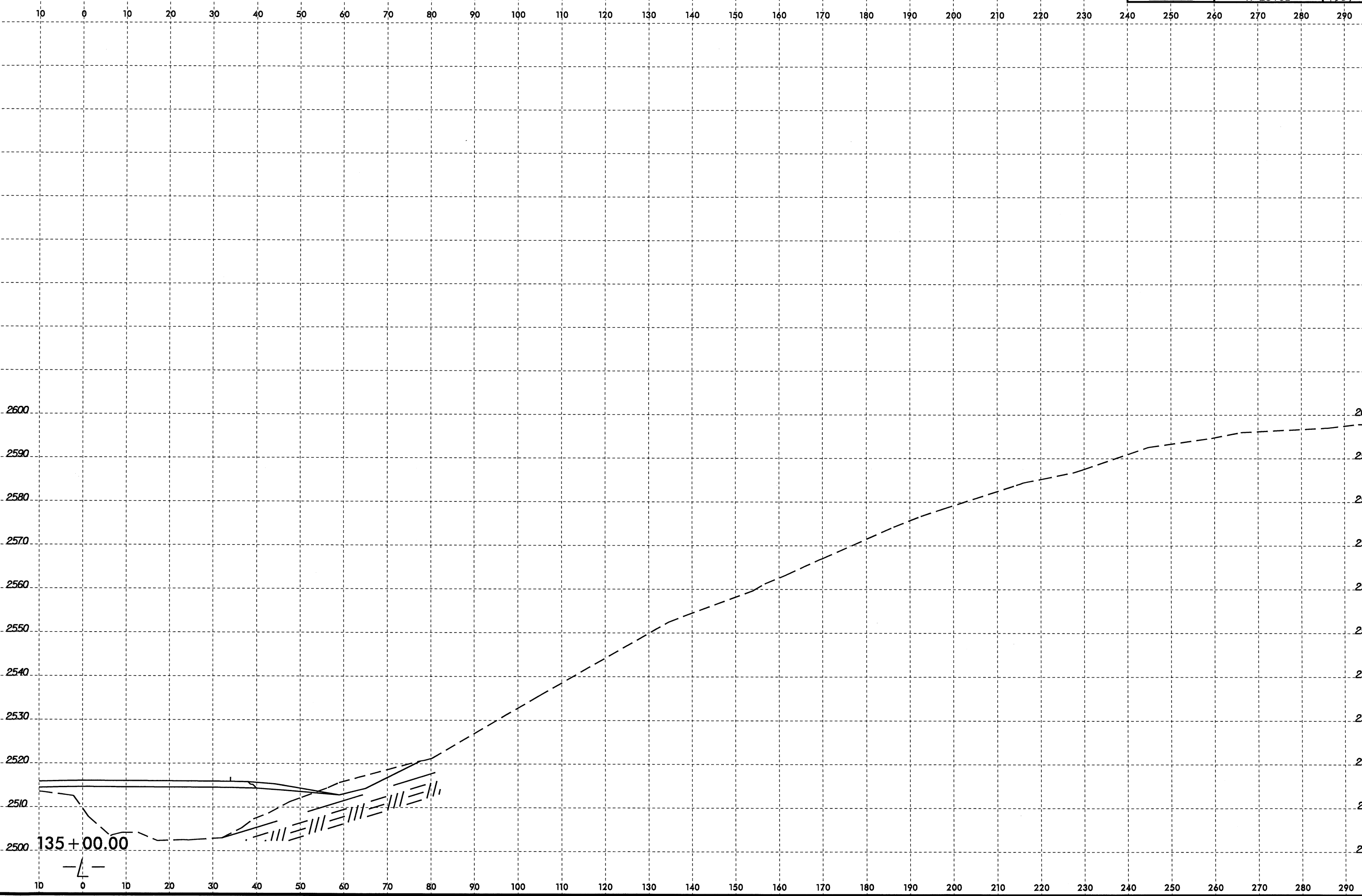


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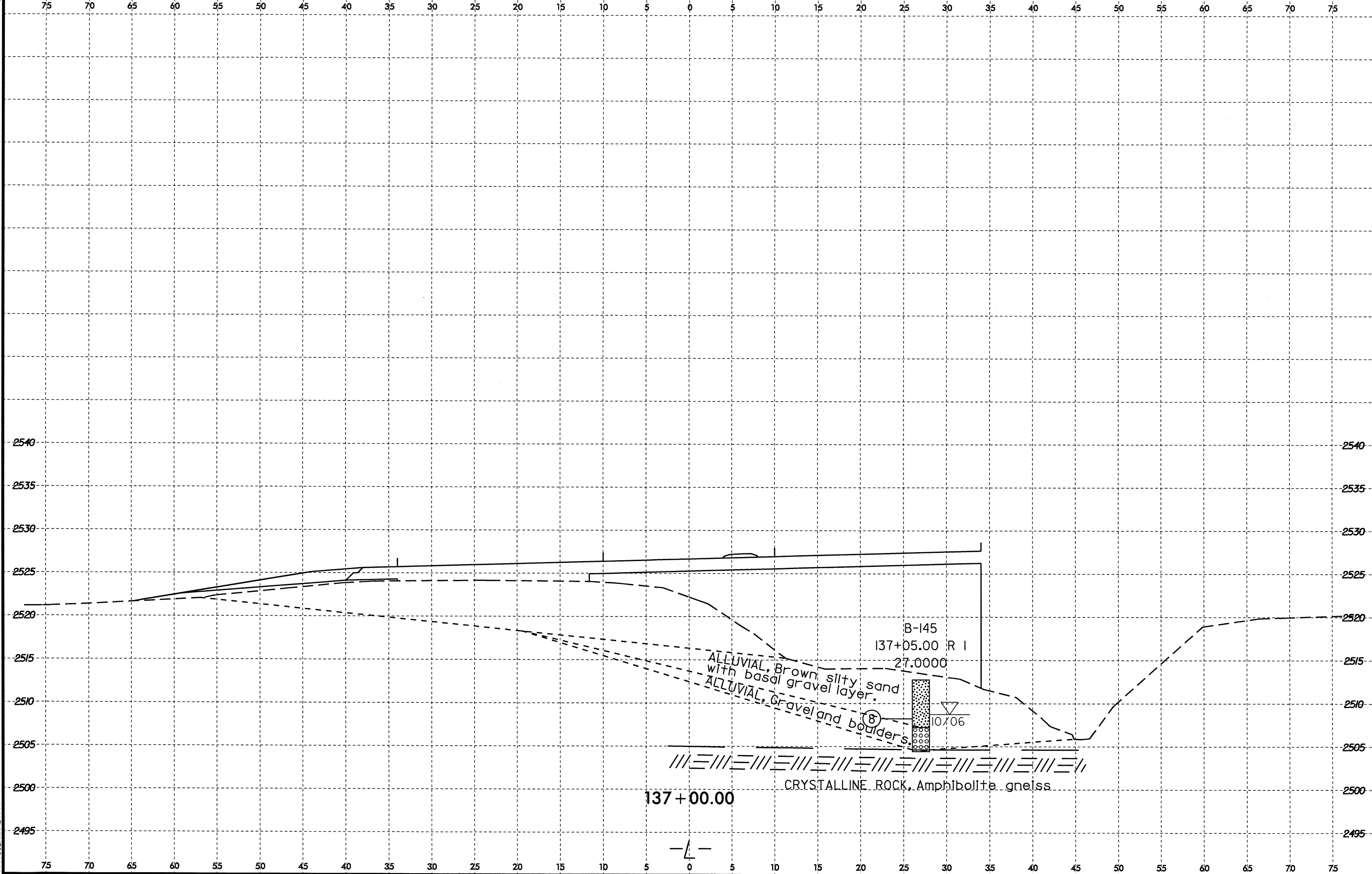
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	R-2519B	134/475



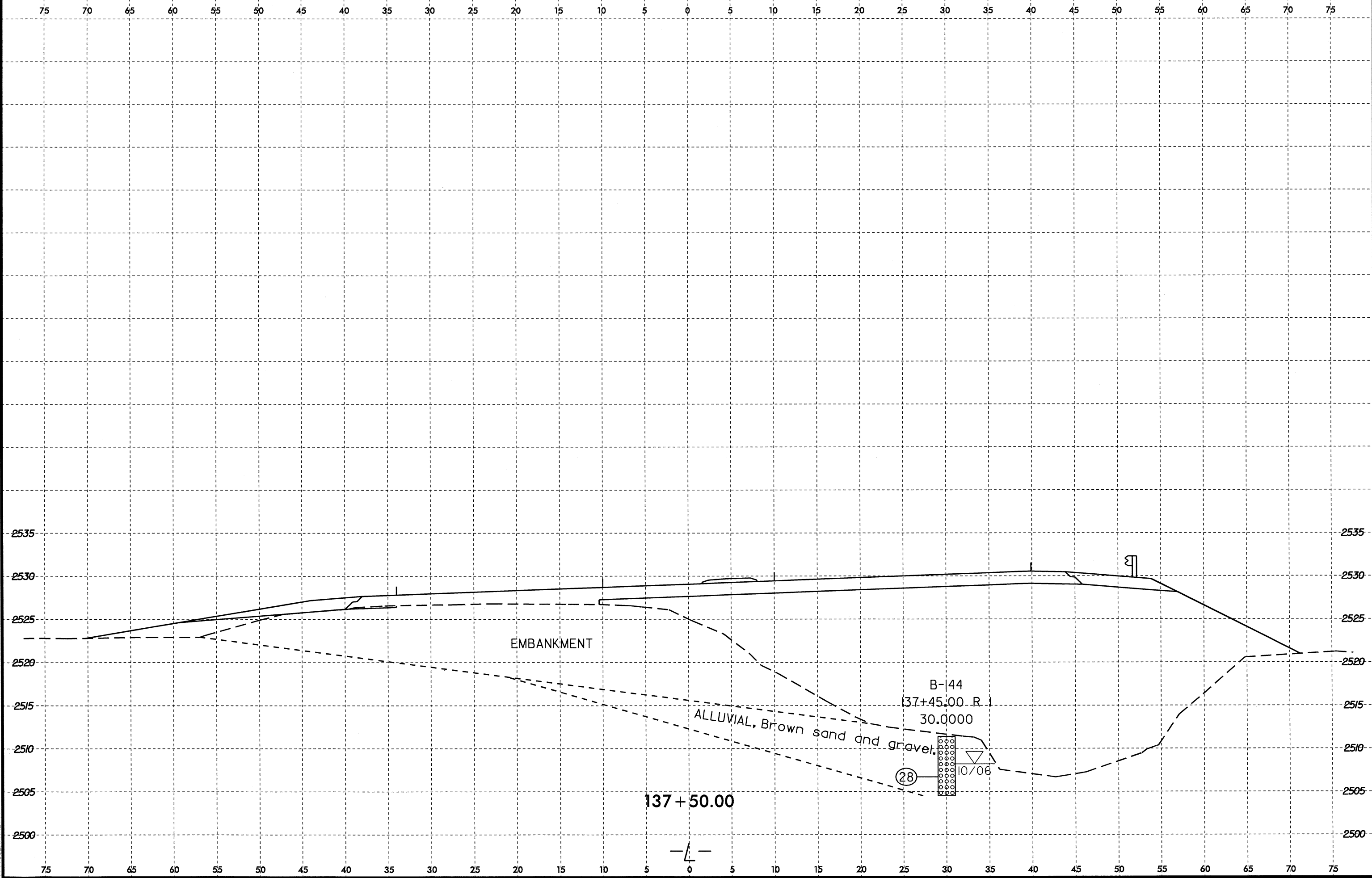
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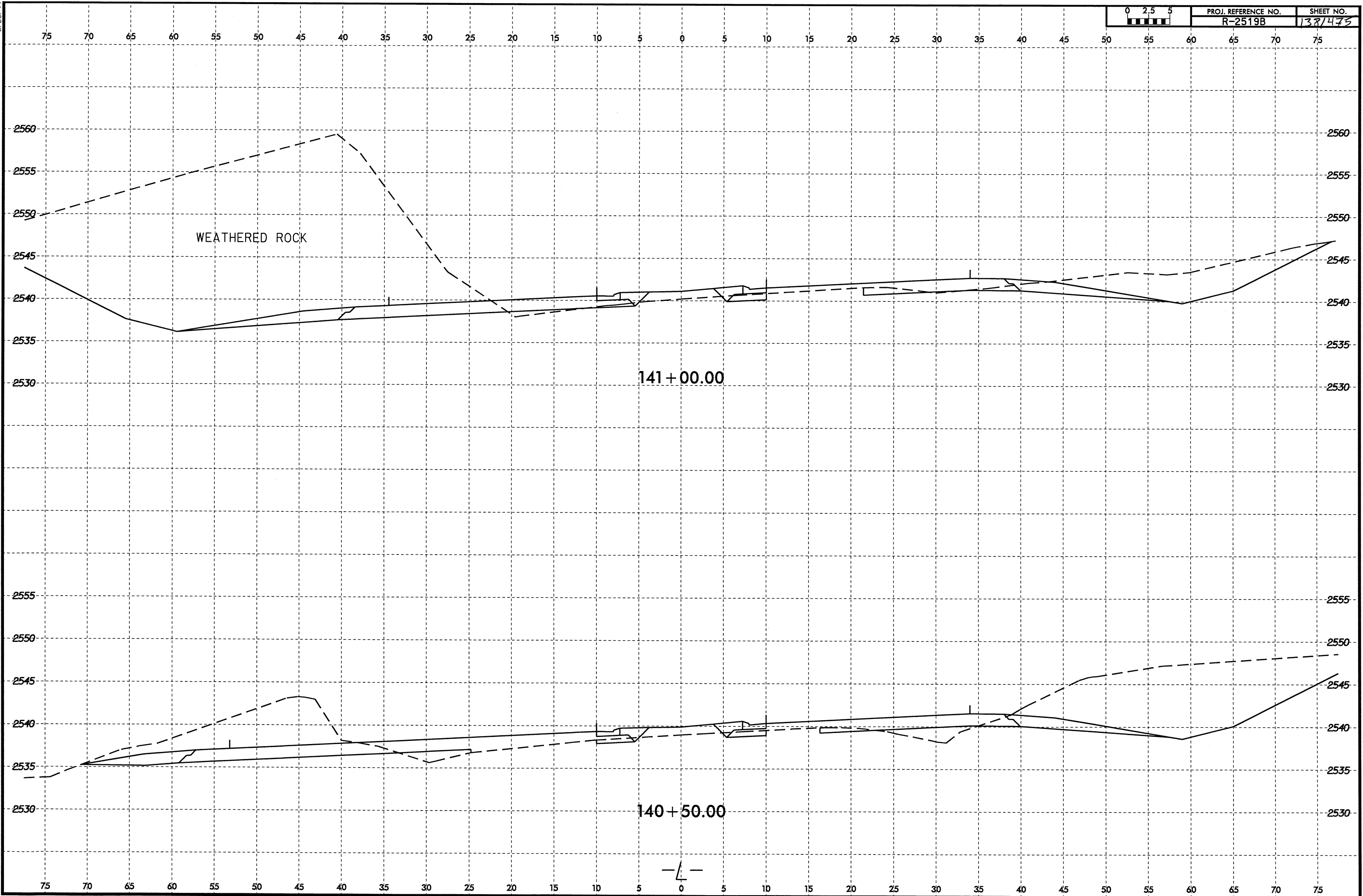
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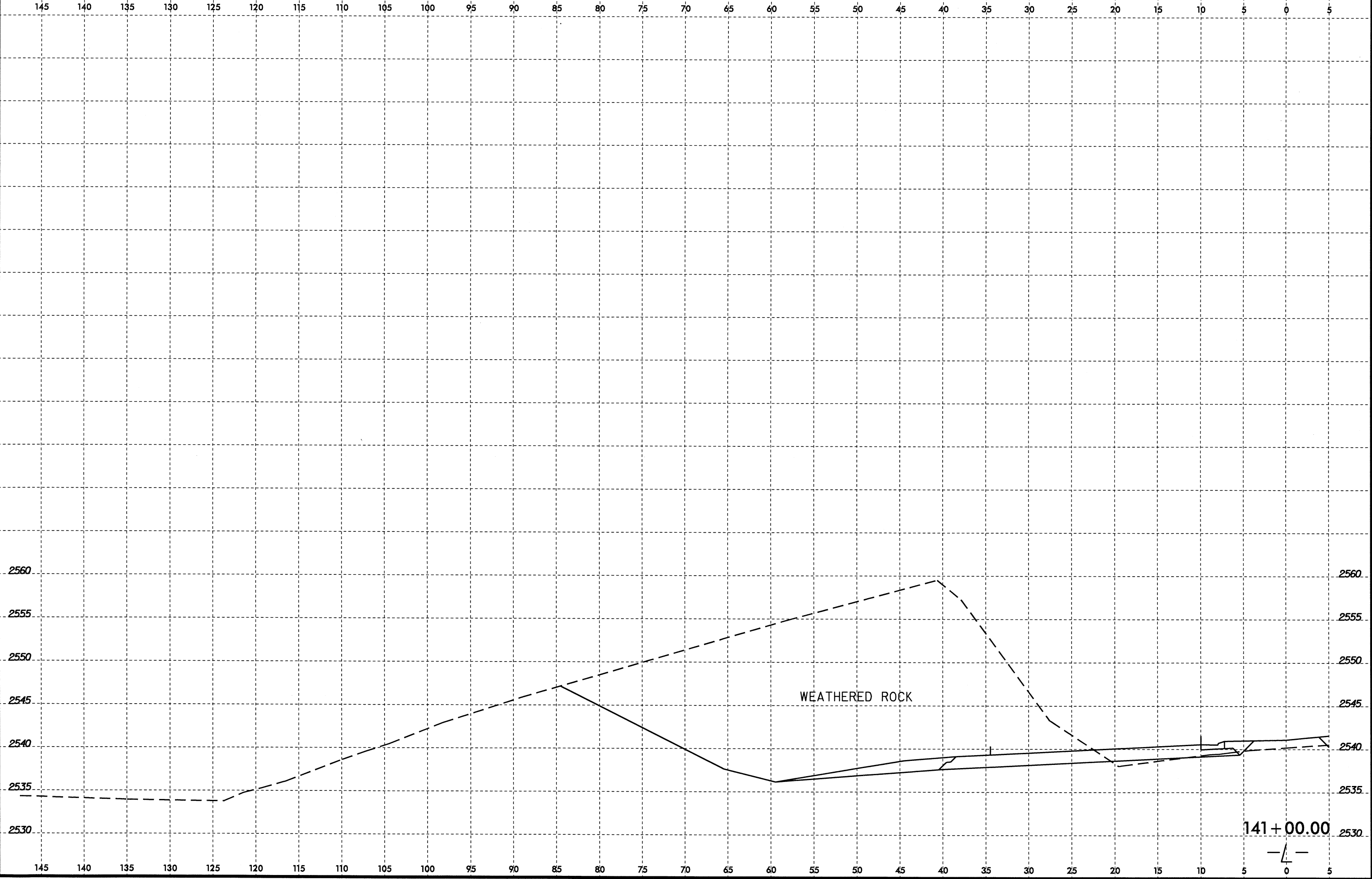
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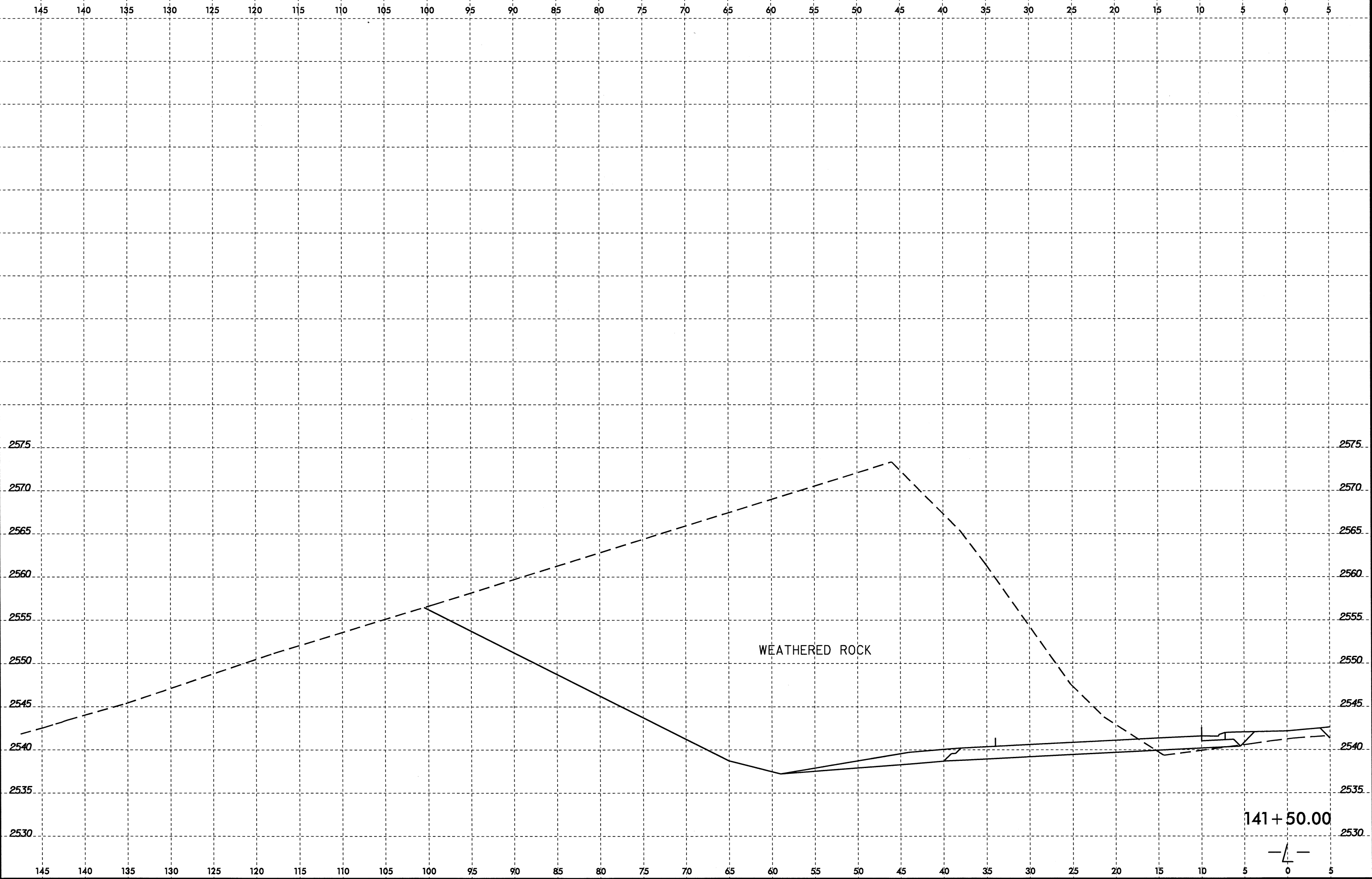


8/23/99

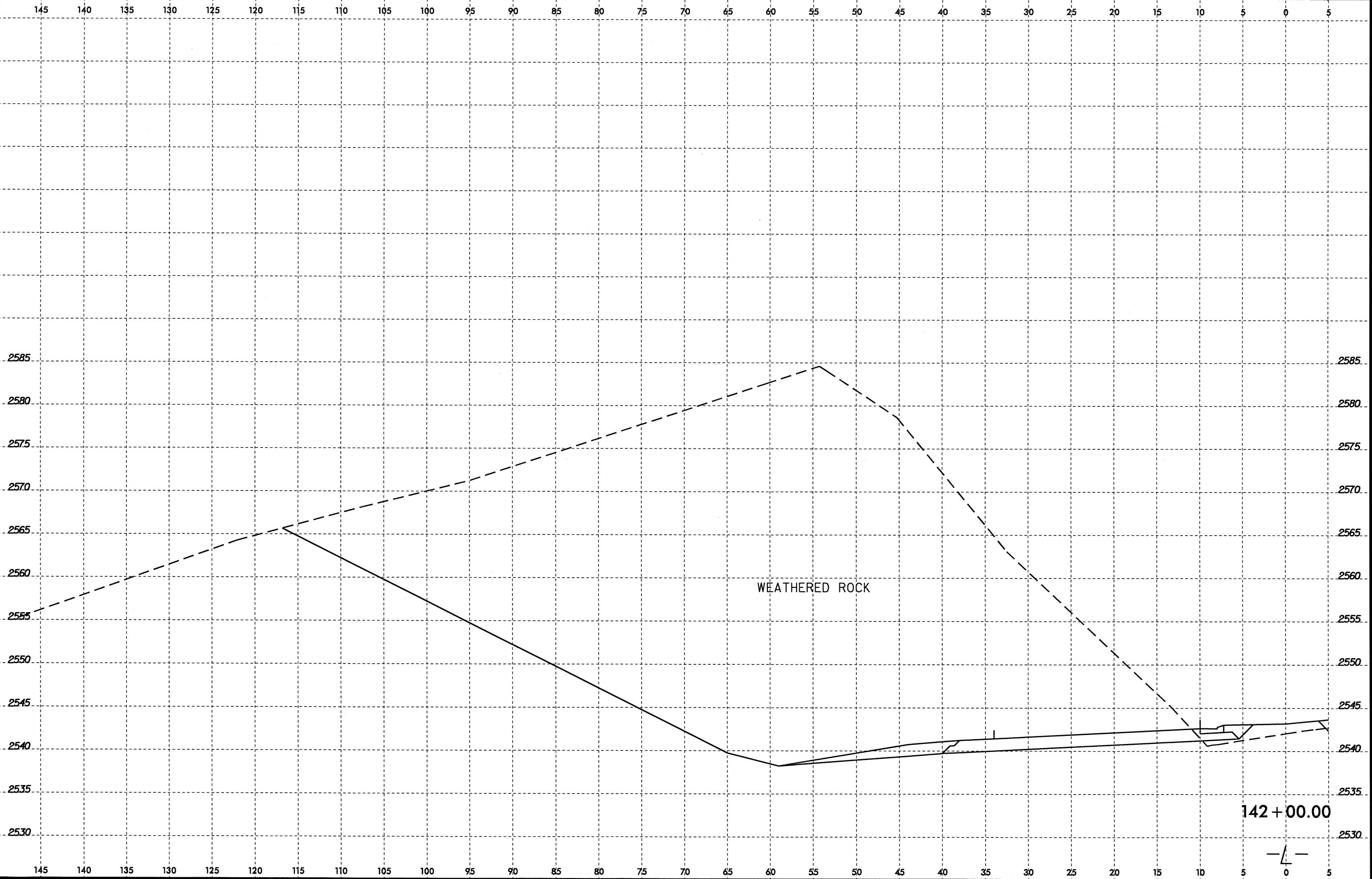


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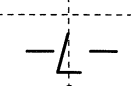


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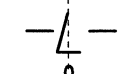
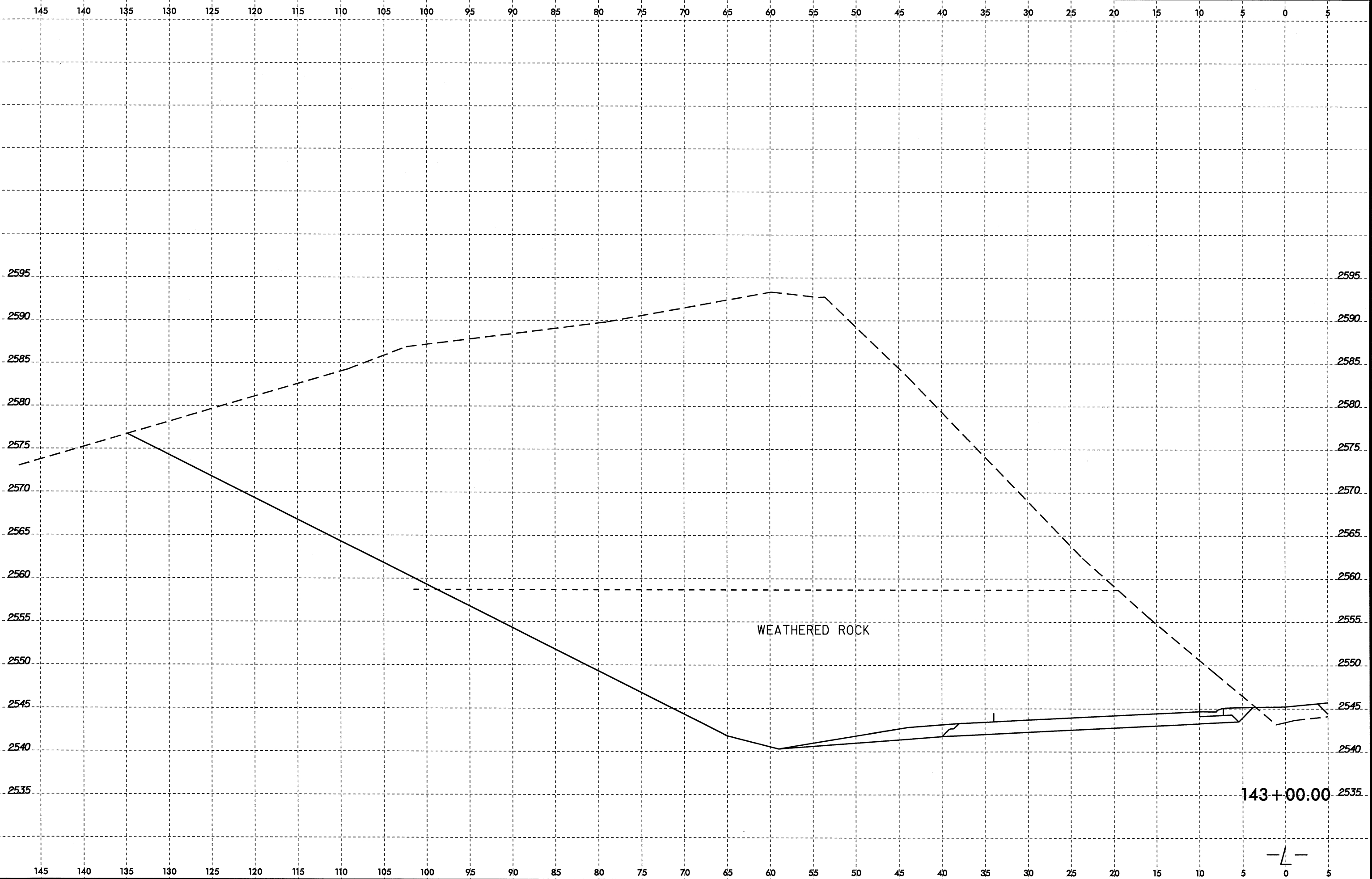


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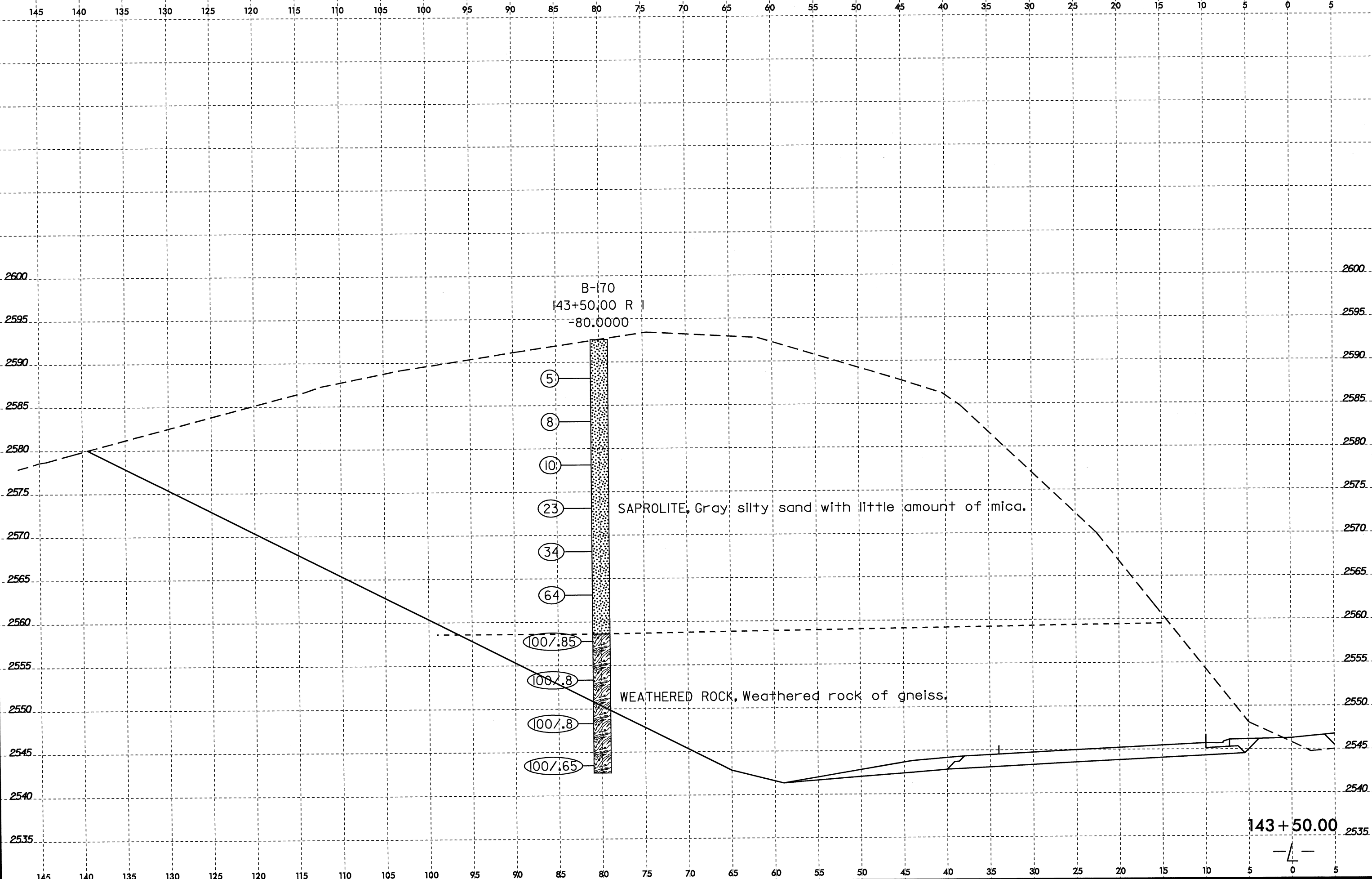
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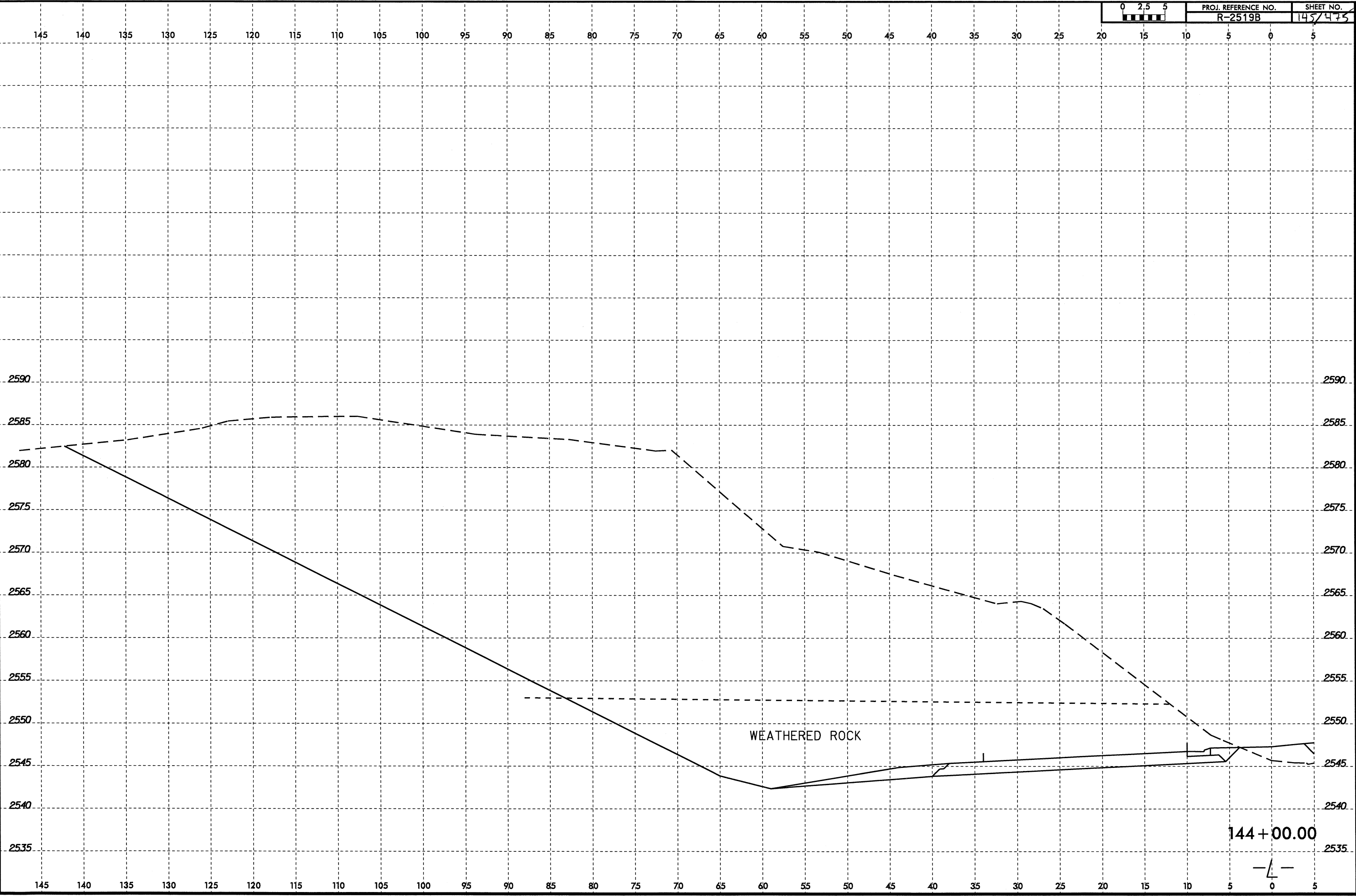
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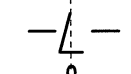
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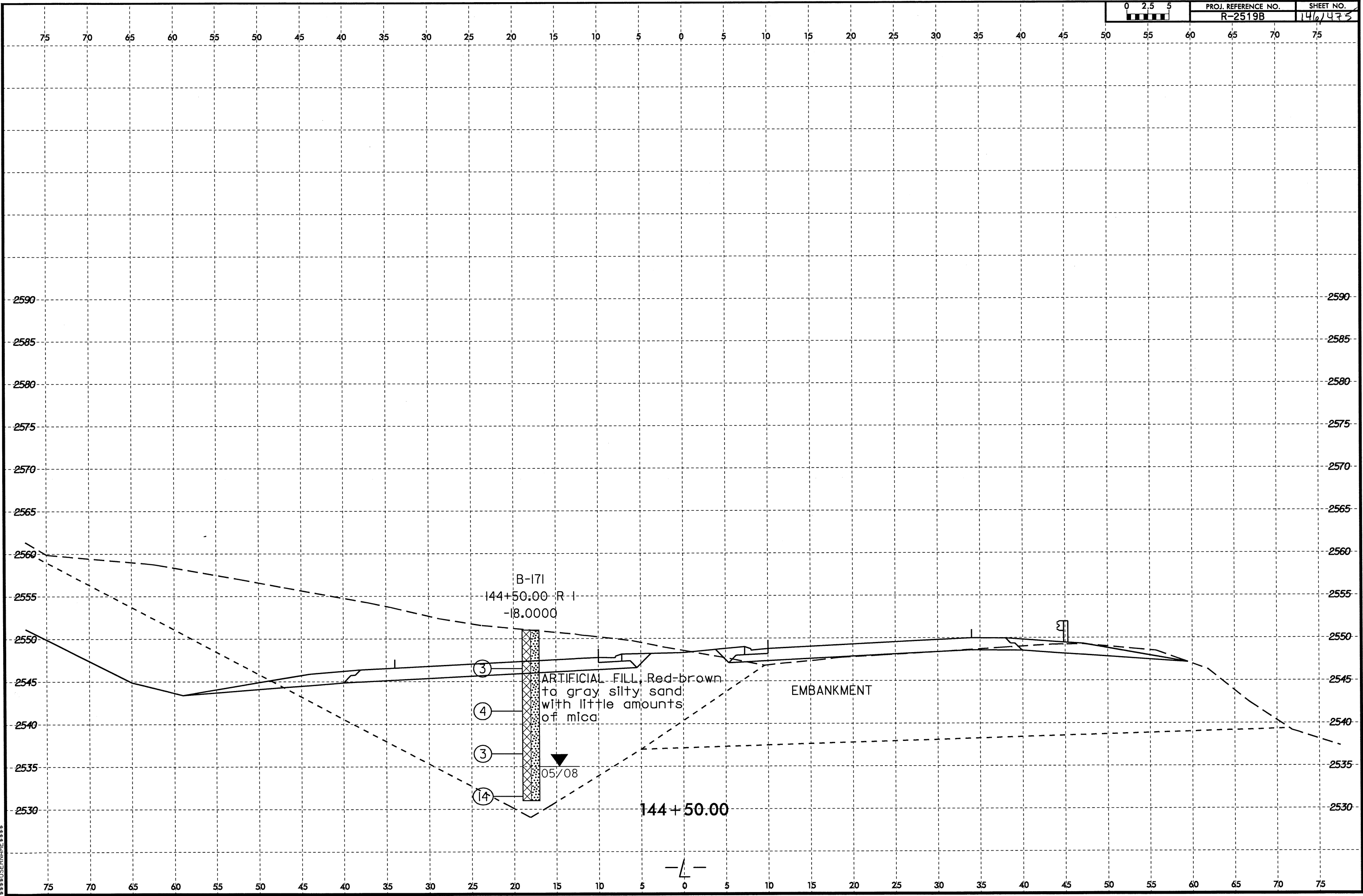
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144 + 00.00



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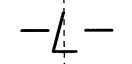
B-171
144+50.00 R-1
-18.0000

③
④
ARTIFICIAL FILL, Red-brown
to gray silty sand
with little amounts
of mica

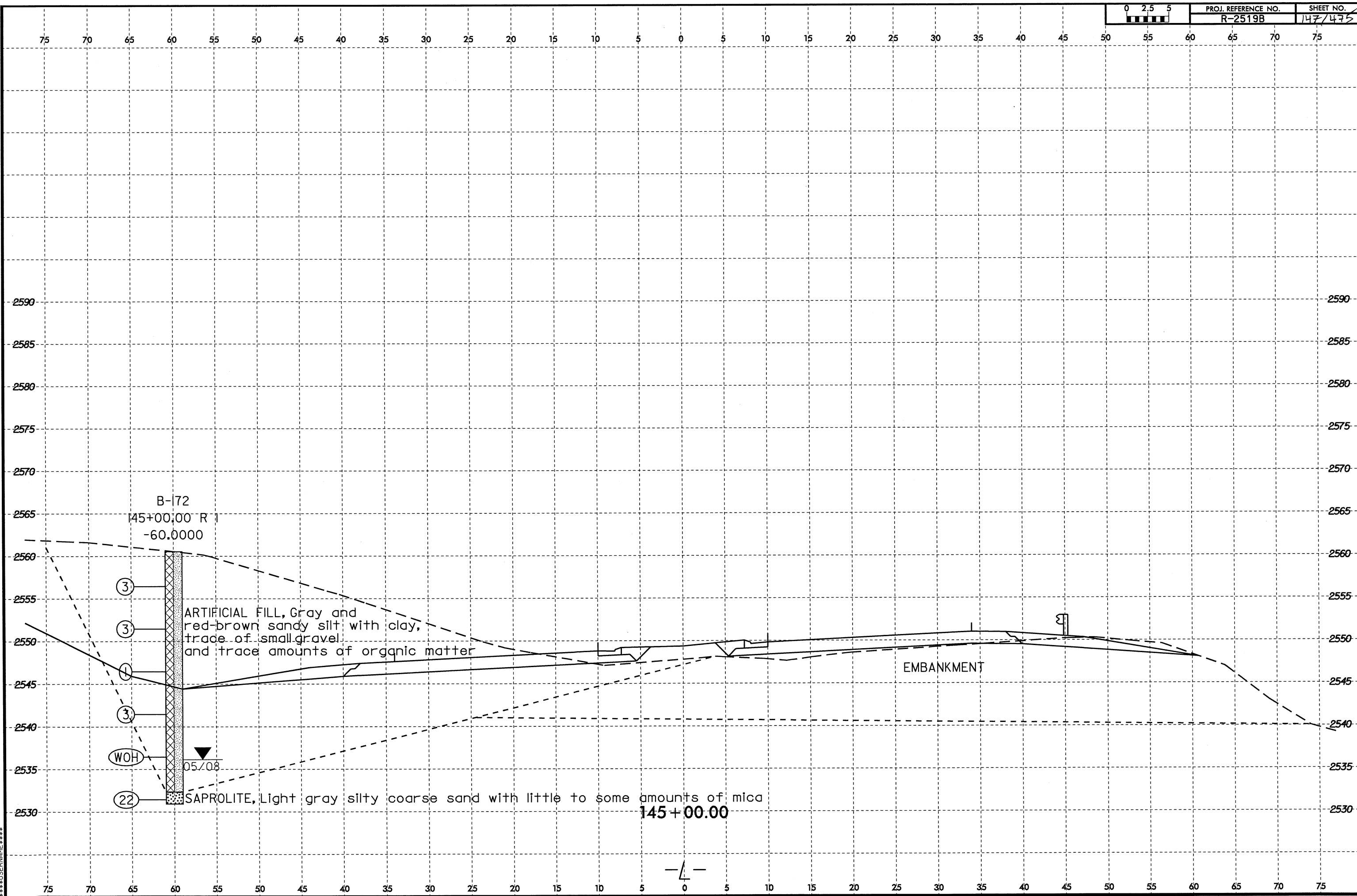
③
④
05/08

EMBANKMENT

144 + 50.00



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B-172
145+00.00 R
-60.0000

- ③
- ③
- ①
- ③
- WOH
- ②②

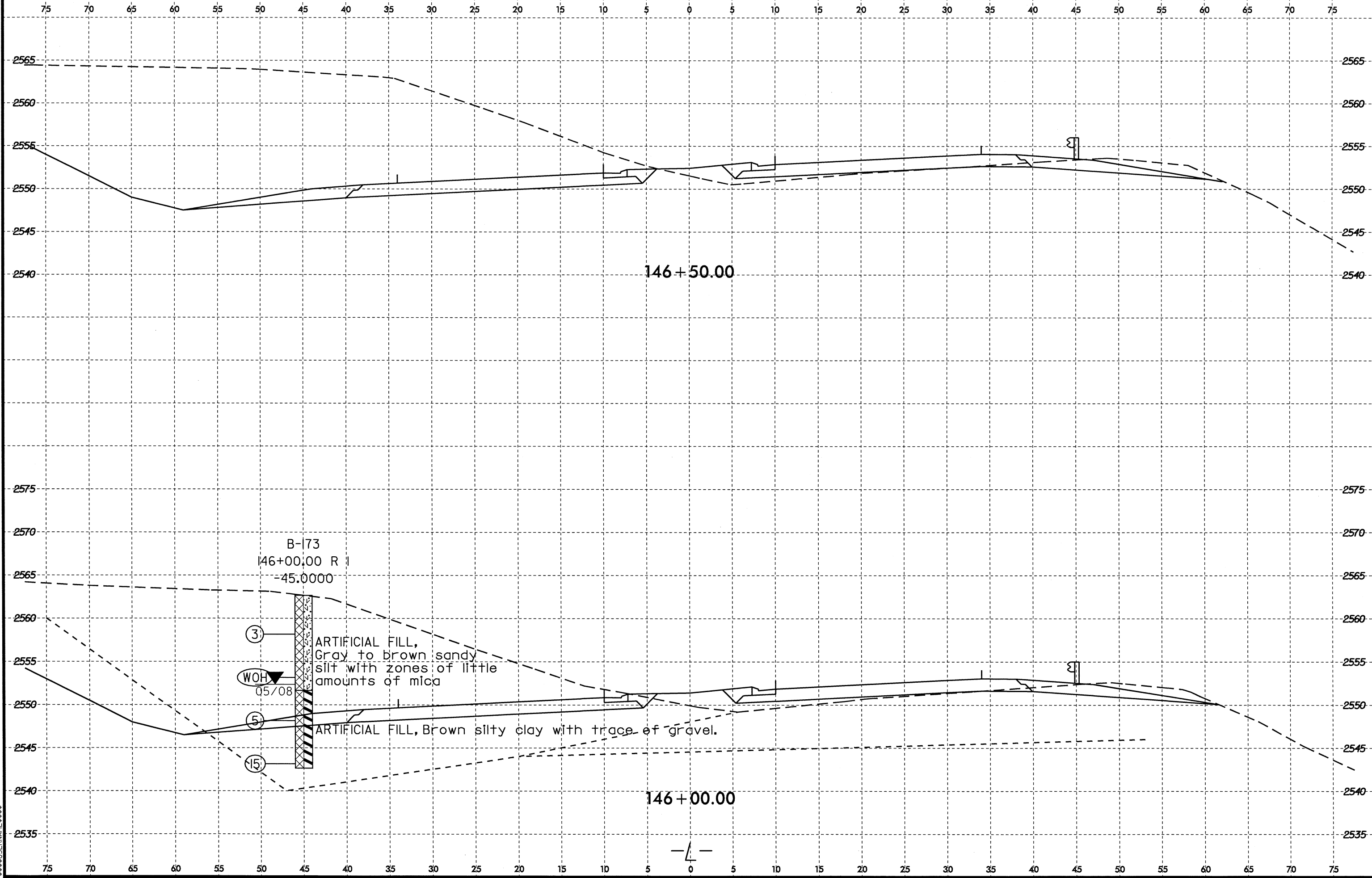
ARTIFICIAL FILL, Gray and red-brown sandy silt with clay, trace of small gravel and trace amounts of organic matter

SAPROLITE, Light gray silty coarse sand with little to some amounts of mica

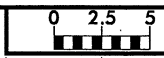
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8/23/99



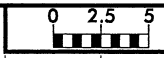
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R-2519B	149/475

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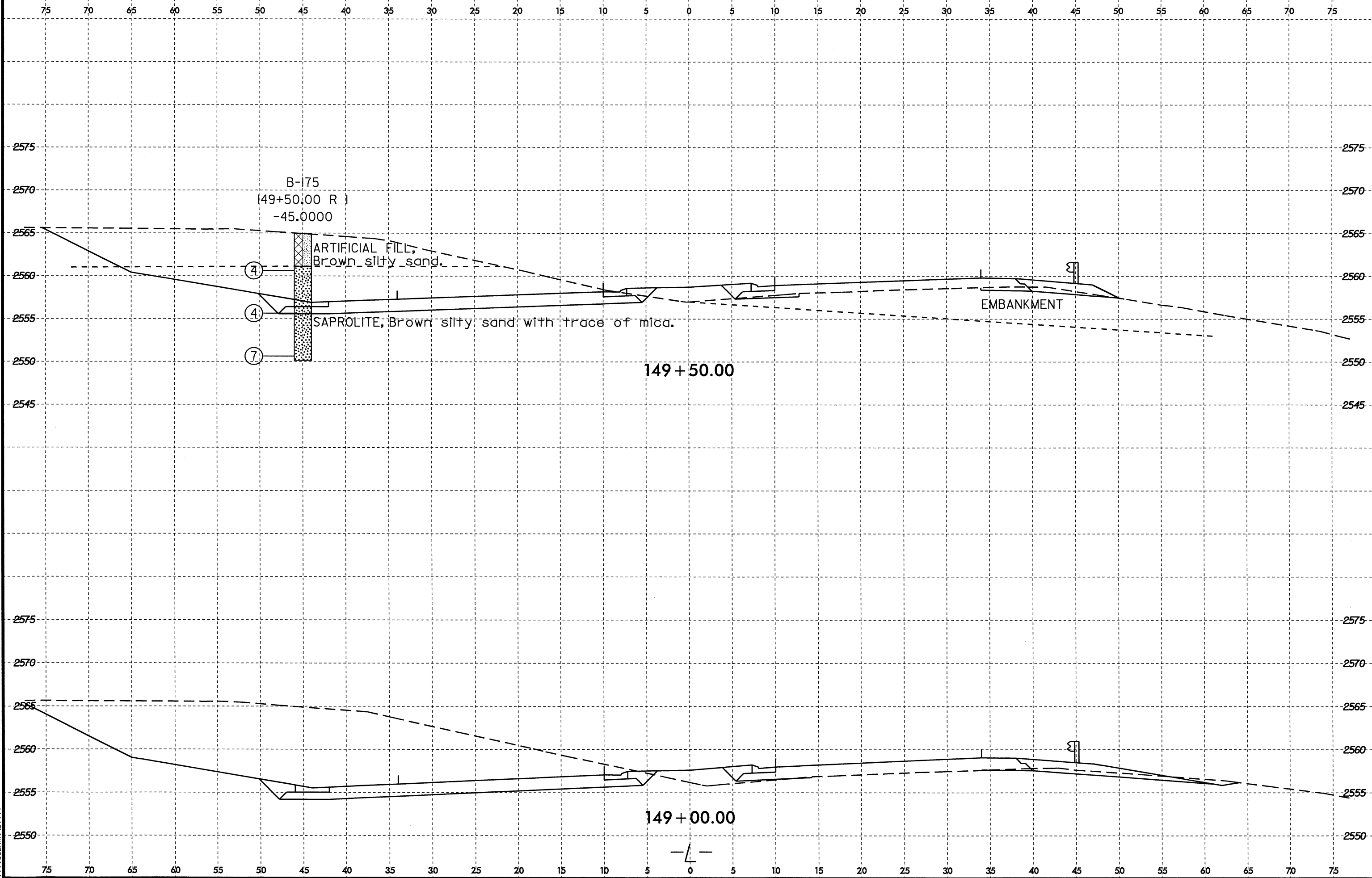


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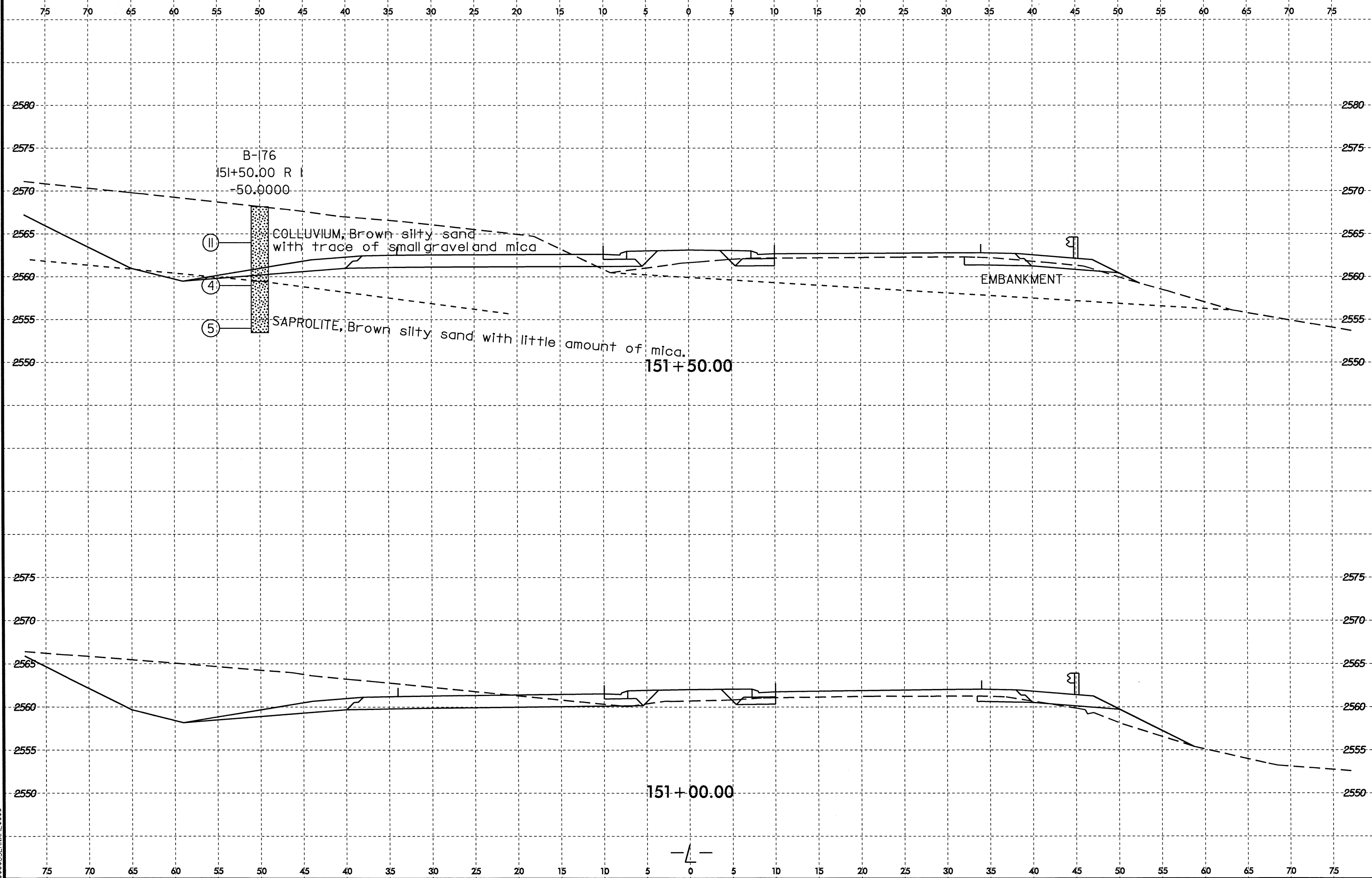
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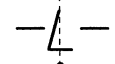
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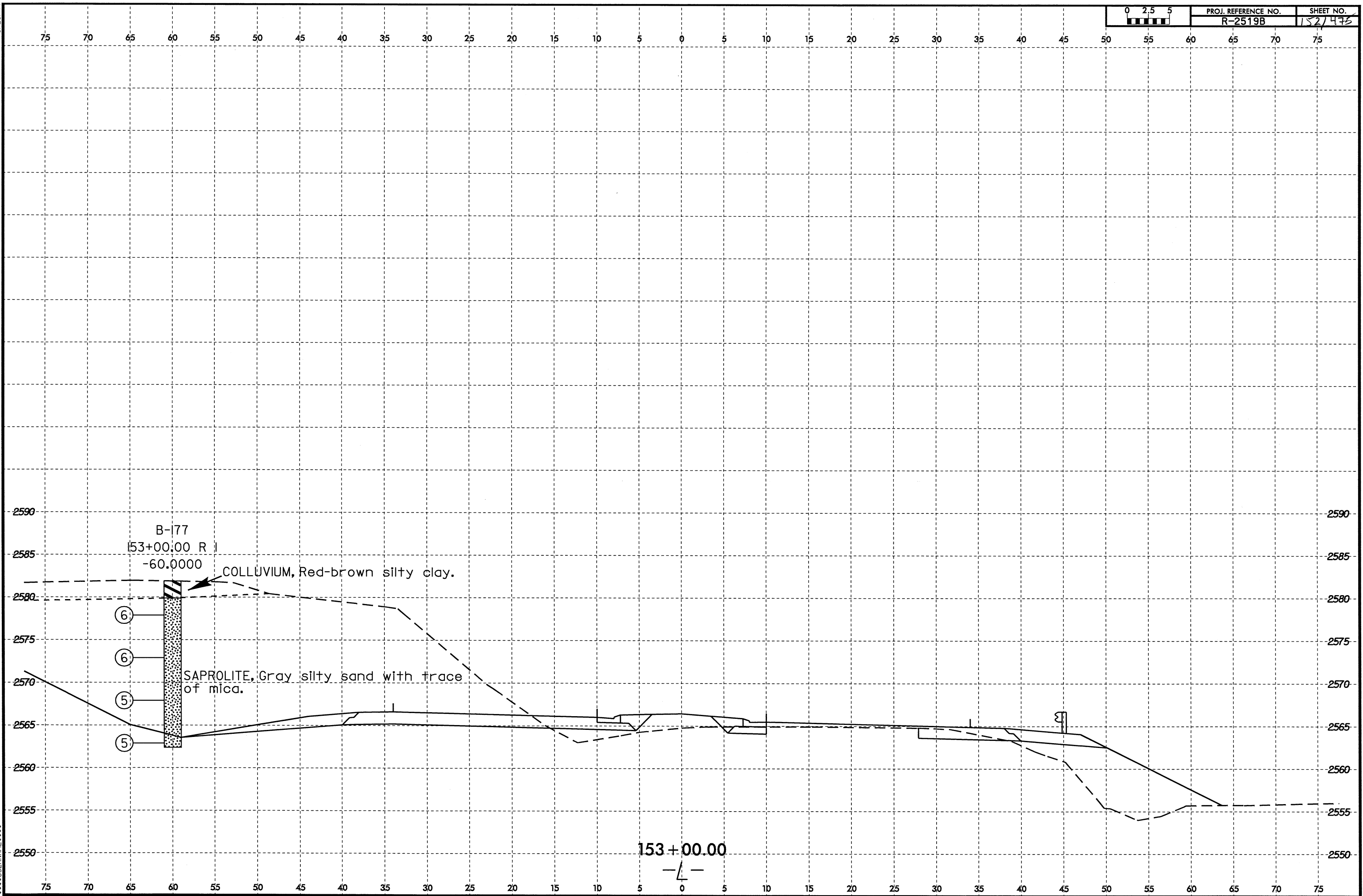
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151+00.00



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B-77

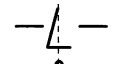
53+00.00 R
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COLLUVIUM, Red-brown silty clay.

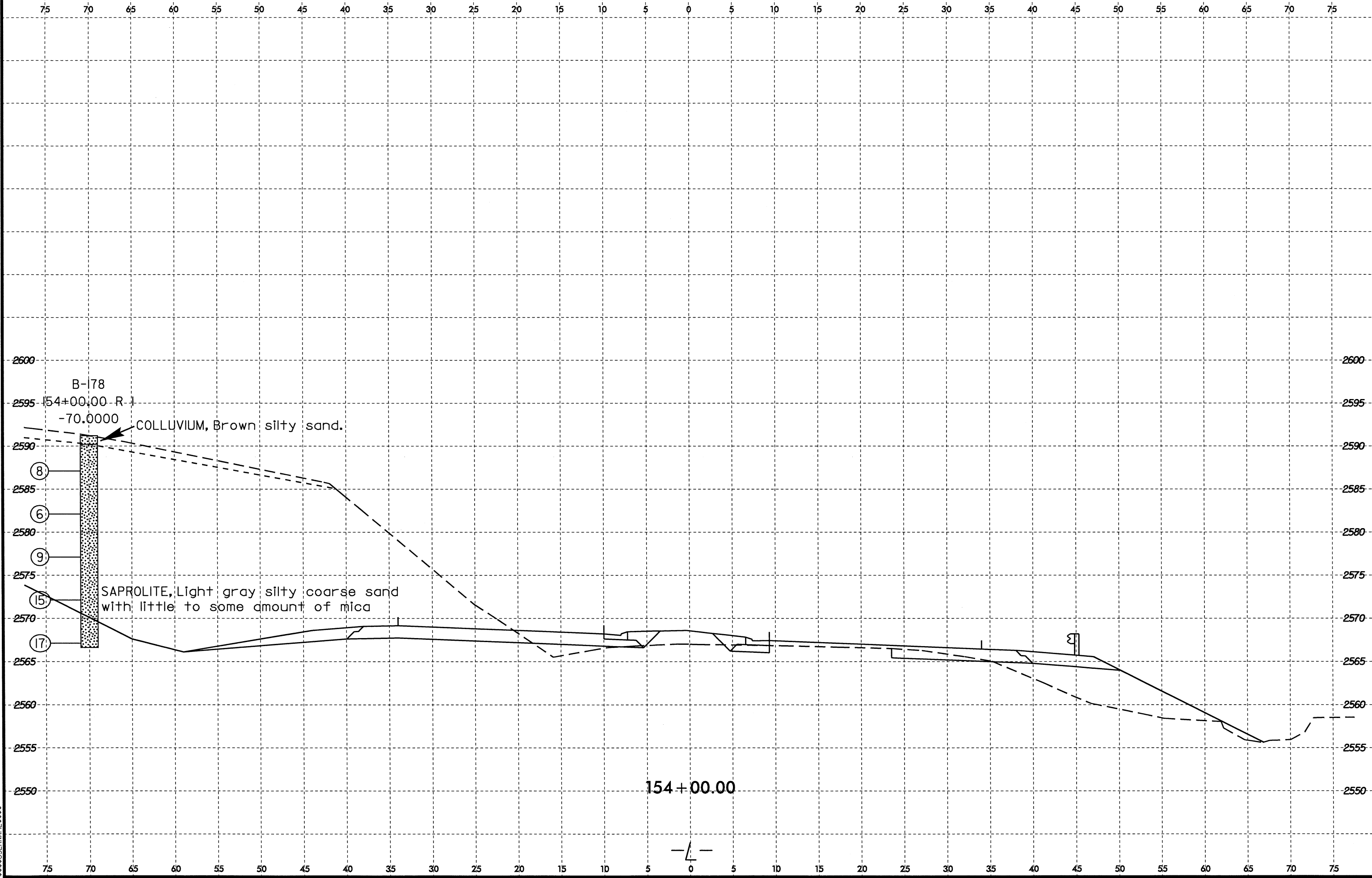
- ⑥
- ⑥
- ⑤
- ⑤

SAPROLITE, Gray silty sand with trace of mica.

153+00.00

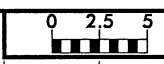


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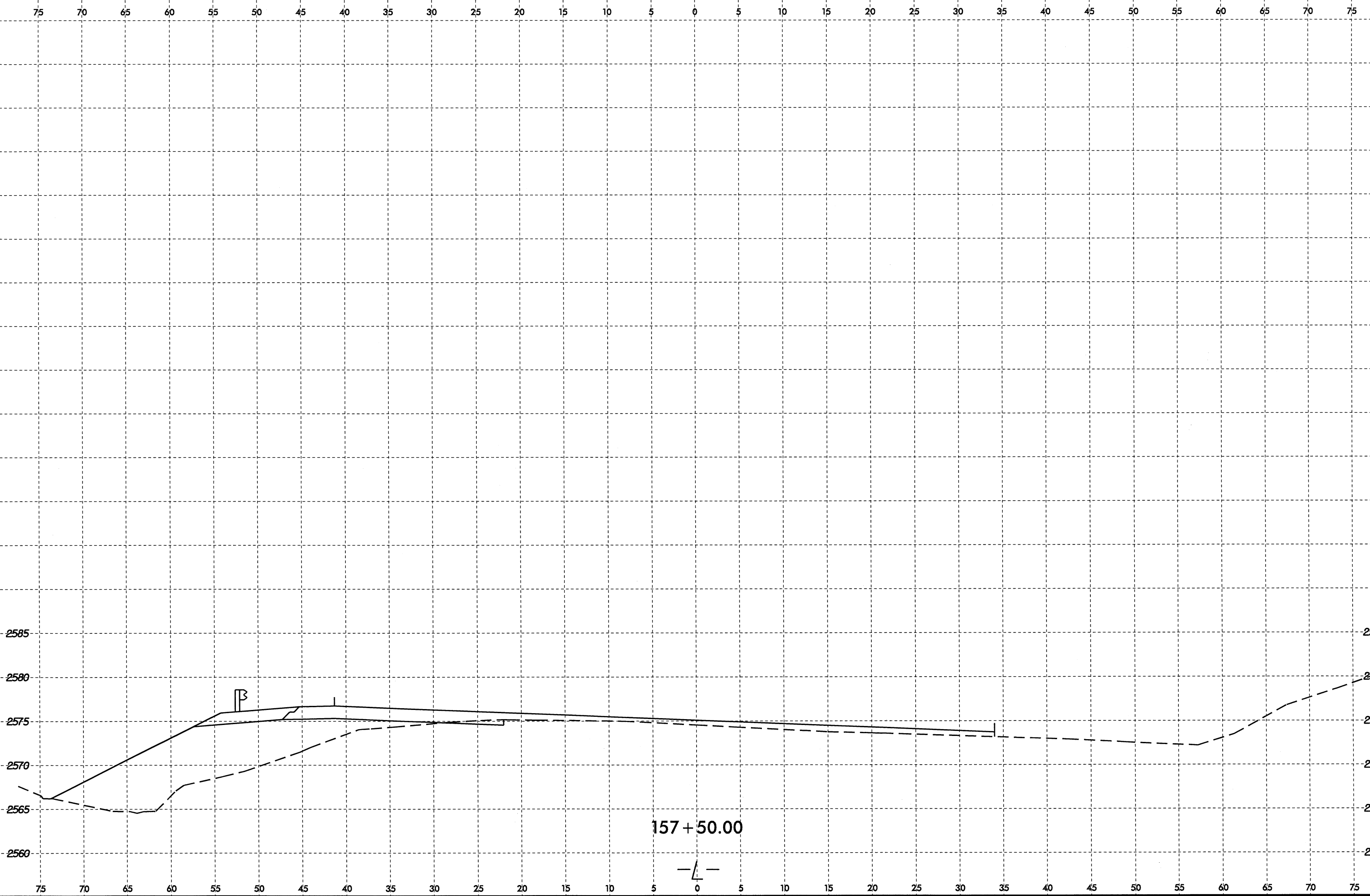
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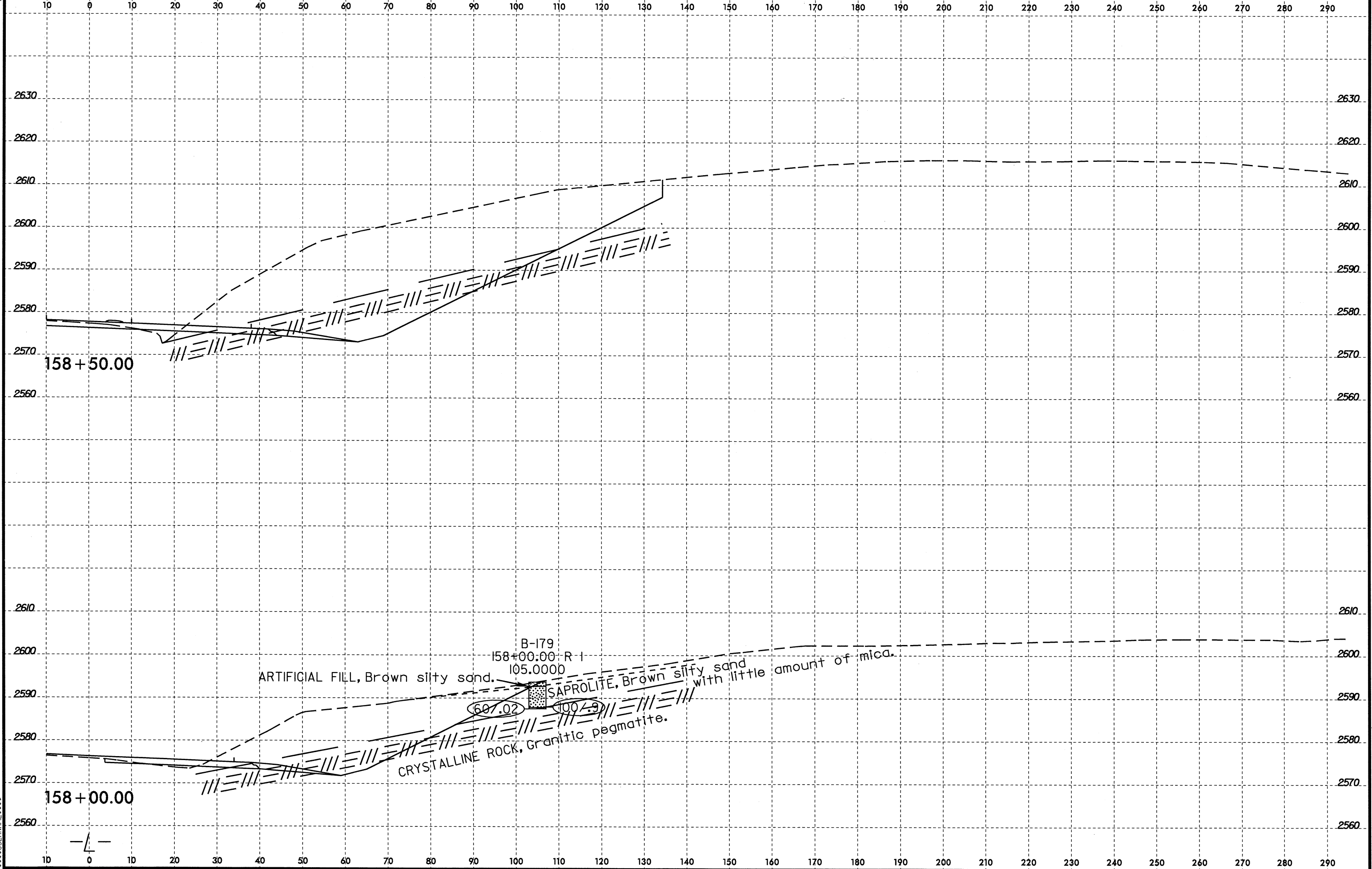
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R-2519B

SHEET NO.
154/475

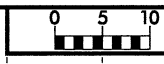


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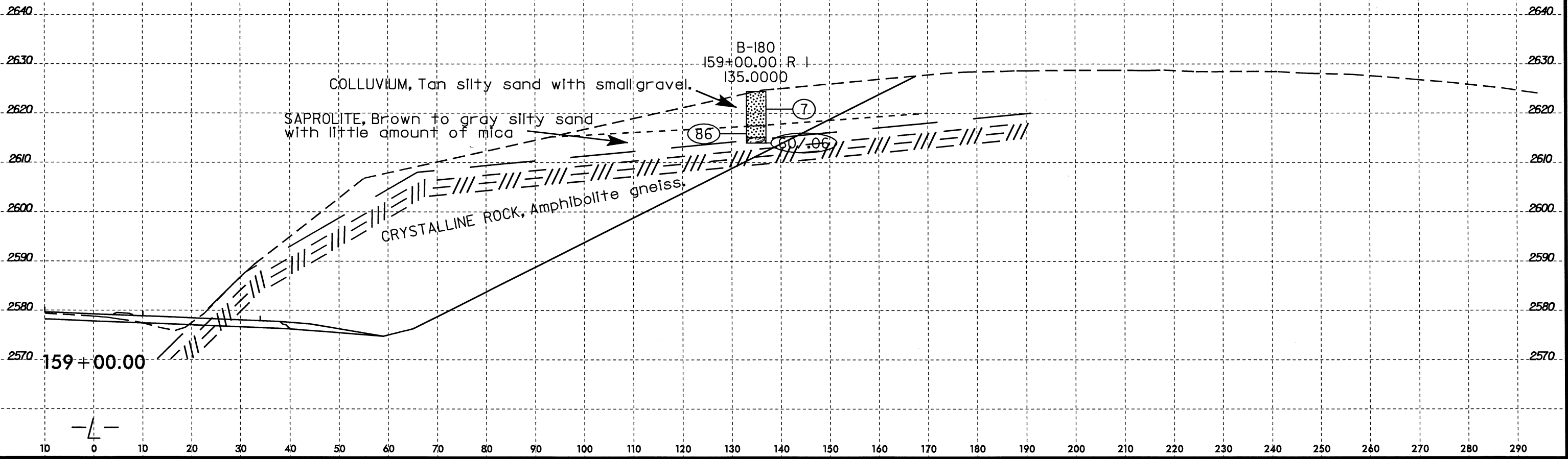


8/23/99



PROJ. REFERENCE NO. R-2519B SHEET NO. 156/475

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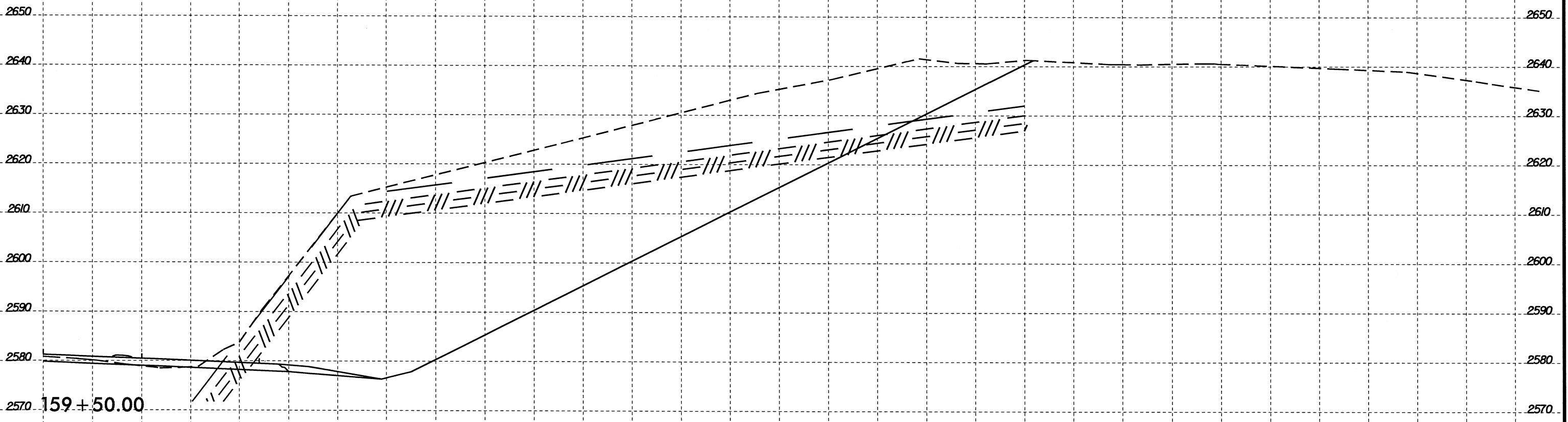
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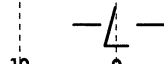


PROJ. REFERENCE NO.	SHEET NO.
R-2519B	157/475

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2570 159+50.00

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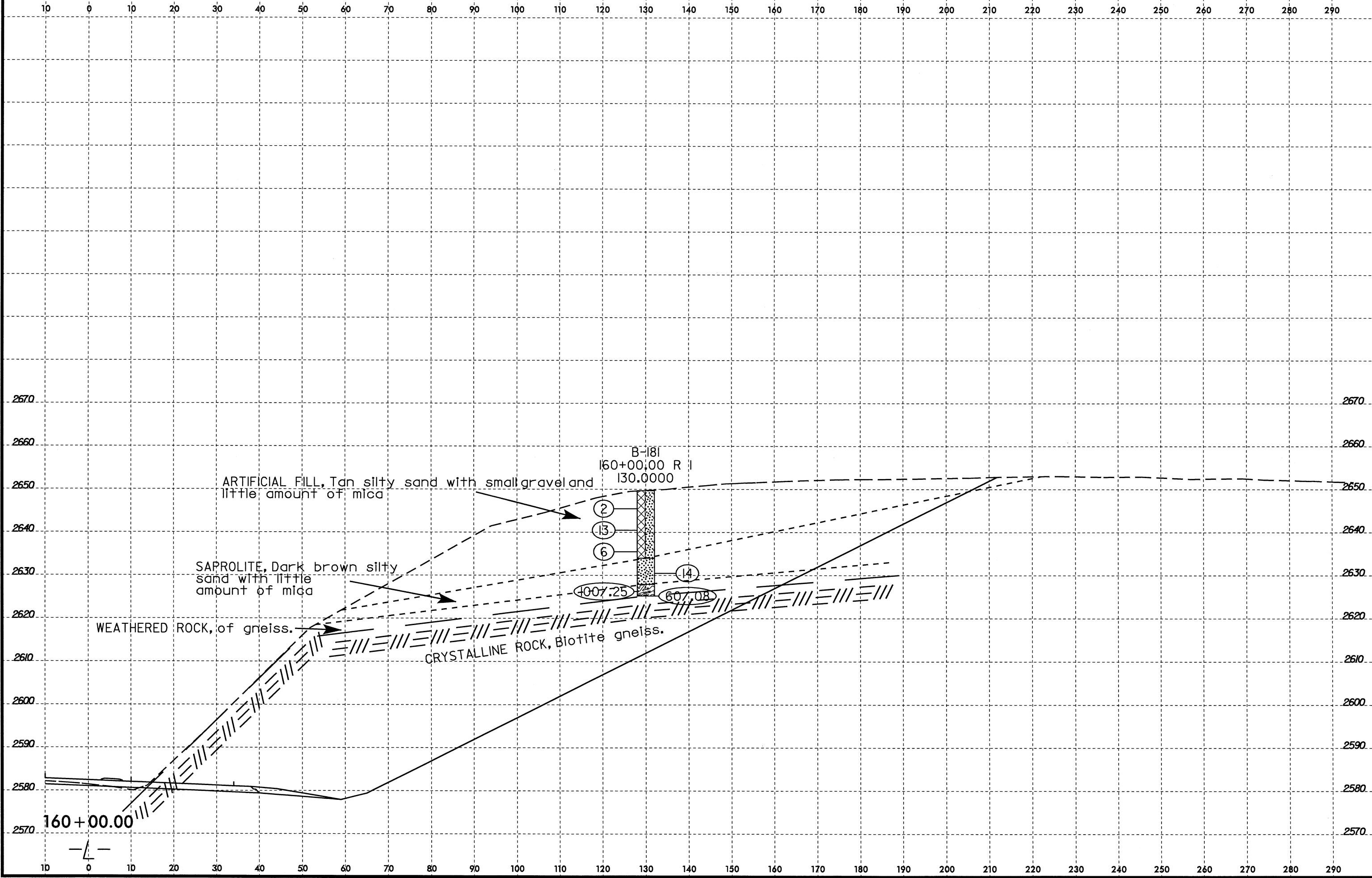
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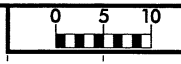
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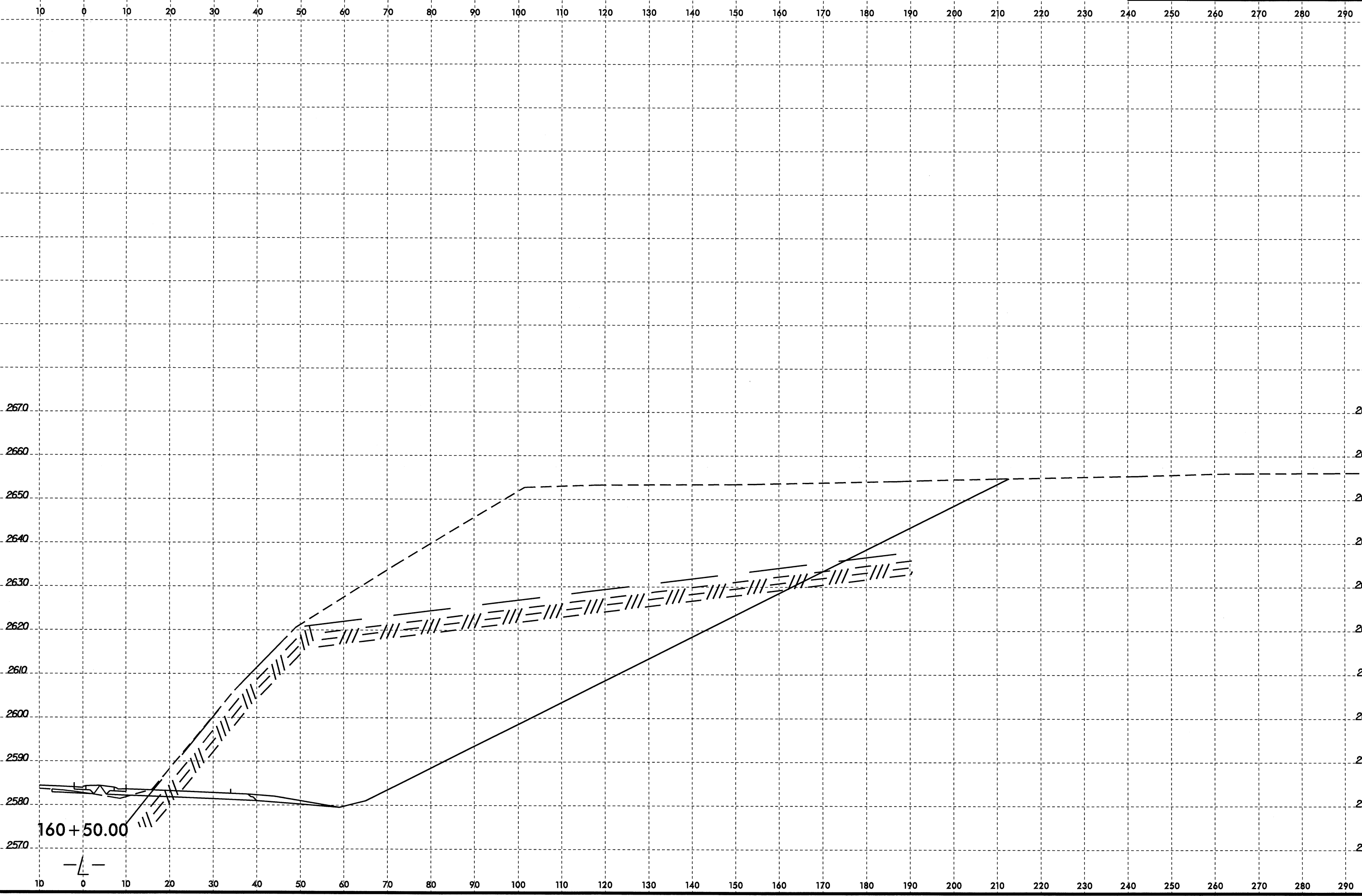
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R-2519B

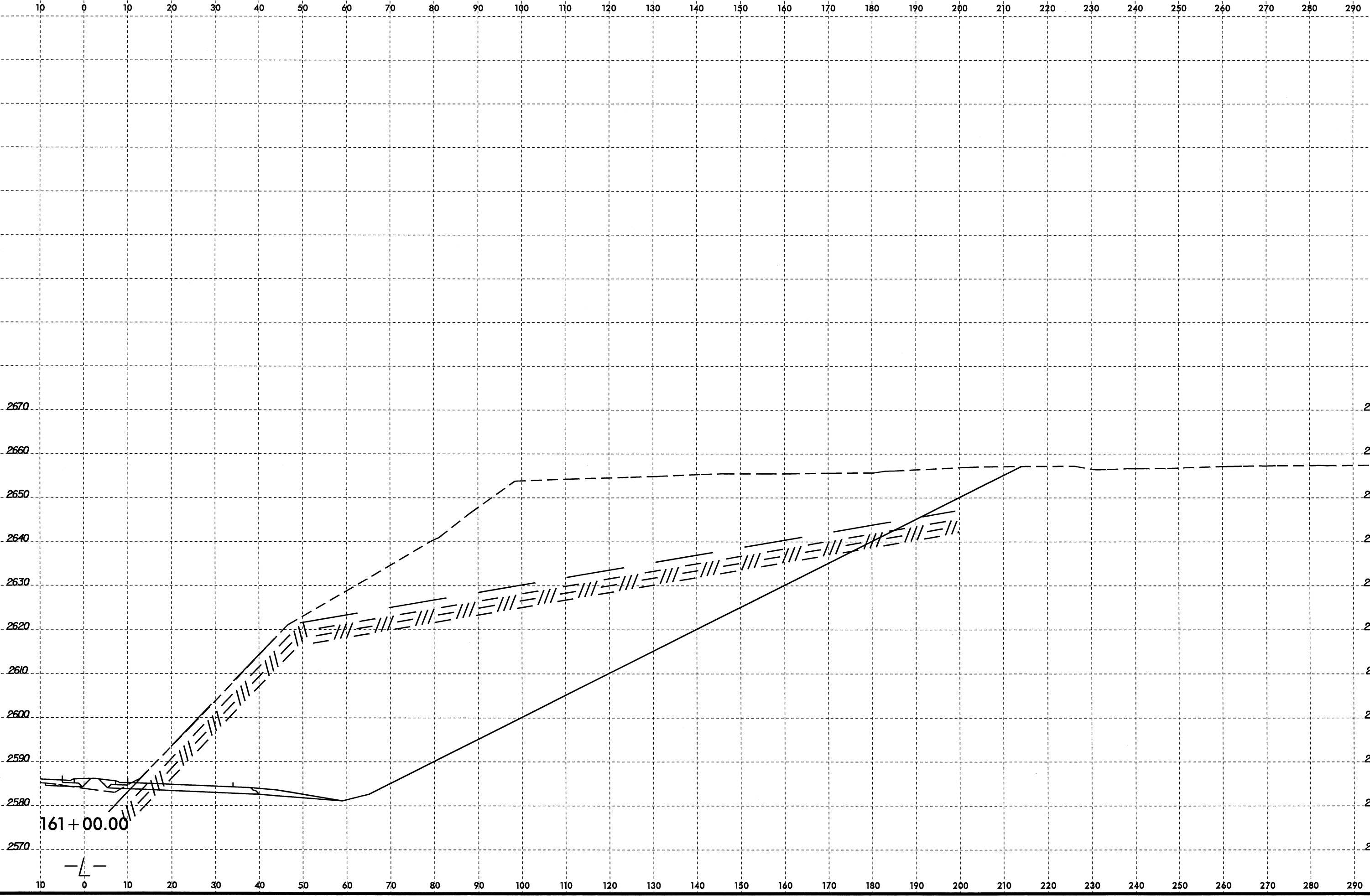
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159/475



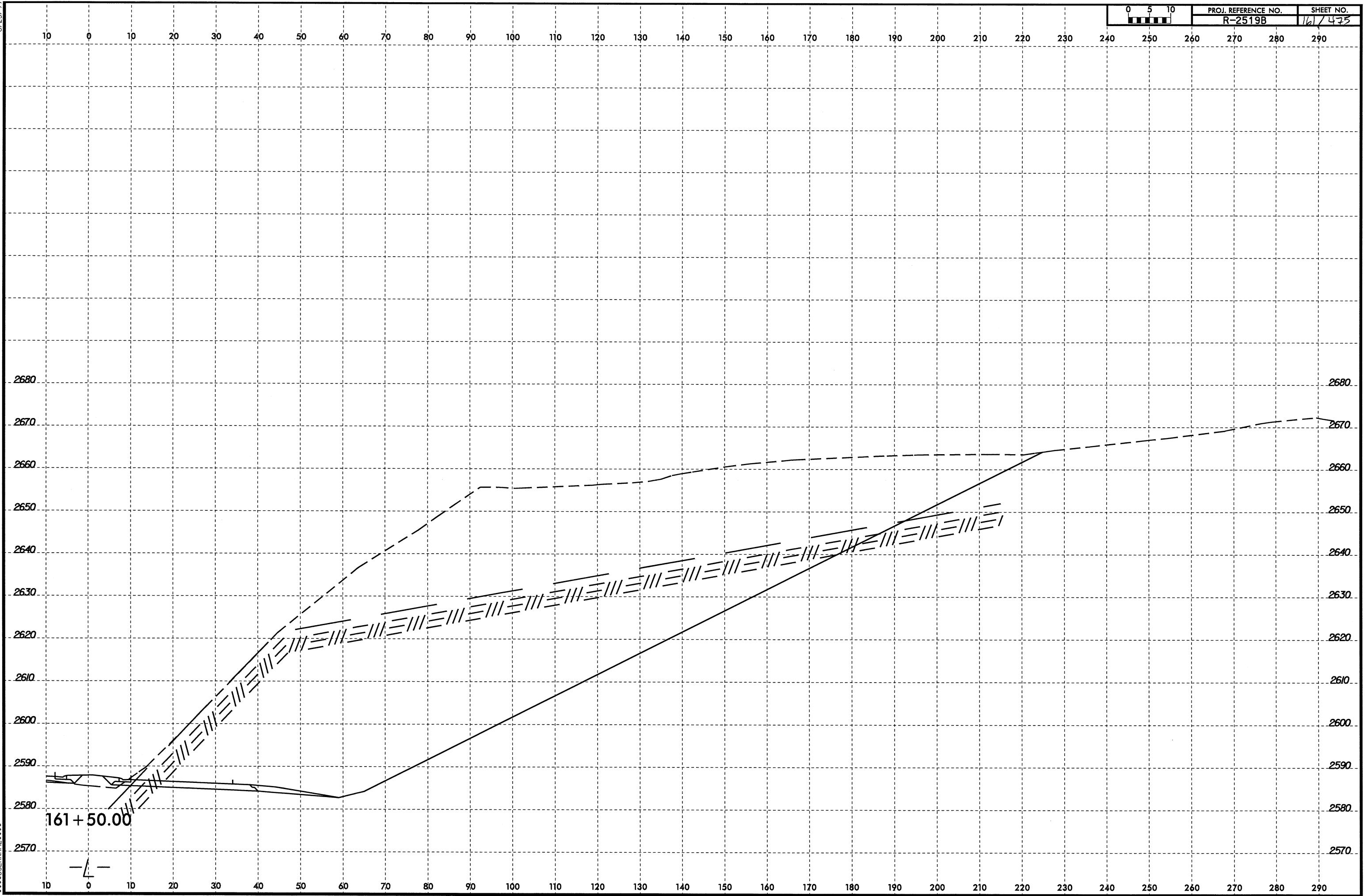
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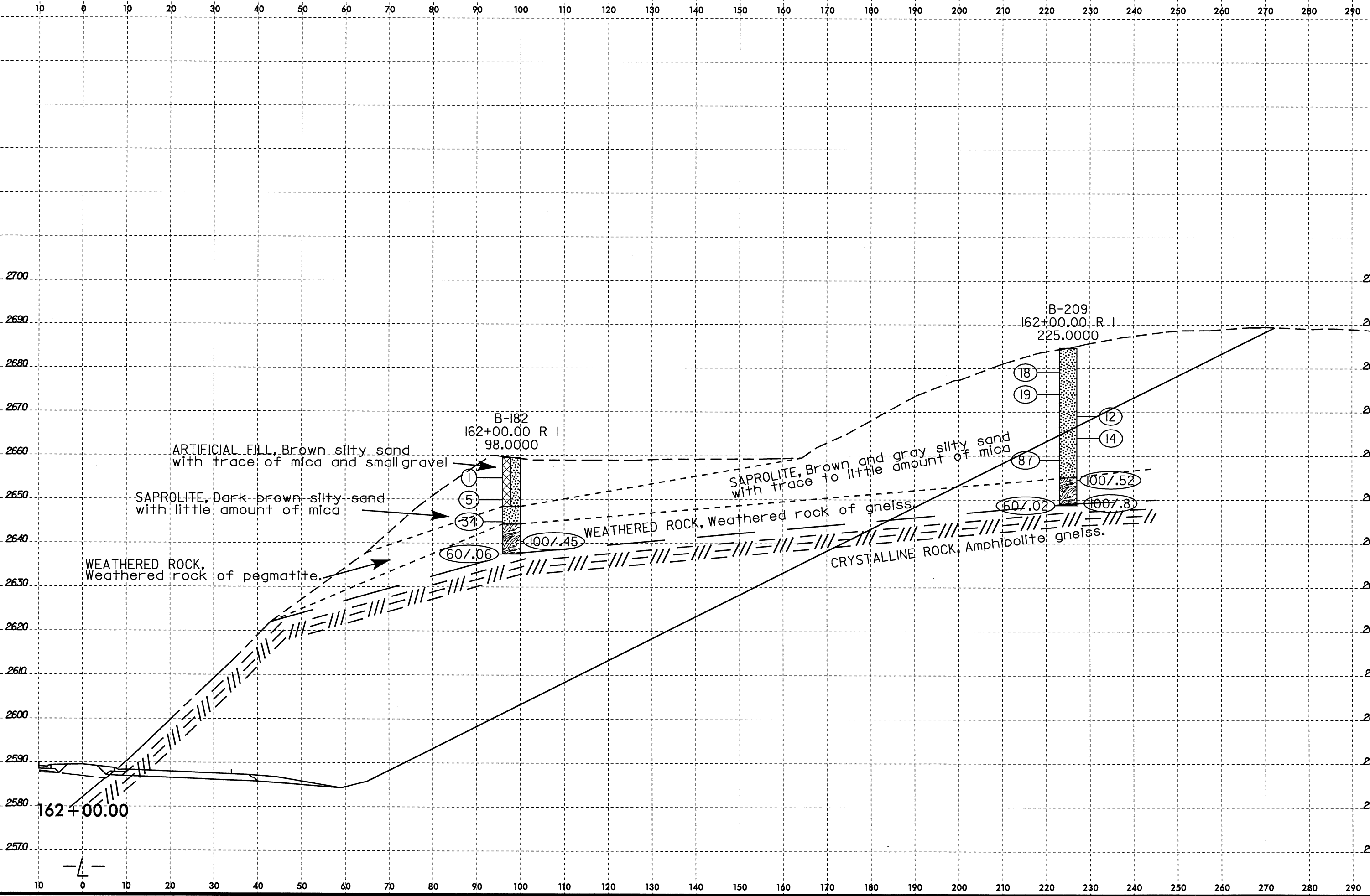
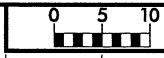


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