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CONTRACT: 34518.1.2 ID: R-2915A

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

CONTENTS

INVESTIGATION ALONG -L- AND -RPC-

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STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

GEOTECHNICAL ENGINEERING UNIT

ROADWAY SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 34518.1.2 R-2915A F.A. PROJ. STP-0221(139)
 COUNTY WATAUGA/ASHE
 PROJECT DESCRIPTION US 221 FROM US 221/441 INTERCHANGE
 TO SR 1003 (IDLEWILD ROAD)

INVENTORY

STATE	PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	34518.1.2 R-2915A	1	61
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
	STP-0221(139)	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) 707-6850. NEITHER THE SUBSURFACE PLANS AND REPORTS, NOR THE FIELD BORING LOGS, ROCK CORES, OR SOIL TEST DATA ARE PART OF THE CONTRACT.

GENERAL SOIL AND ROCK STRATA DESCRIPTIONS AND INDICATED BOUNDARIES ARE BASED ON A GEOTECHNICAL INTERPRETATION OF ALL AVAILABLE SUBSURFACE DATA AND MAY NOT NECESSARILY REFLECT THE ACTUAL SUBSURFACE CONDITIONS BETWEEN BORINGS OR BETWEEN SAMPLED STRATA WITHIN THE BOREHOLE. THE LABORATORY SAMPLE DATA AND THE IN SITU UN-PLACED 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
DC ELLIOTT

DO CHEEK

C COFFEY

INVESTIGATED BY JW MANN

CHECKED BY JC KUHNE

SUBMITTED BY JW MANN

DATE 7/8/13



DRAWN BY: JW MANN

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

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

08/08/15

TIP PROJECT: R-2915A

CONTRACT:

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Jmann AT 6E4266093

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

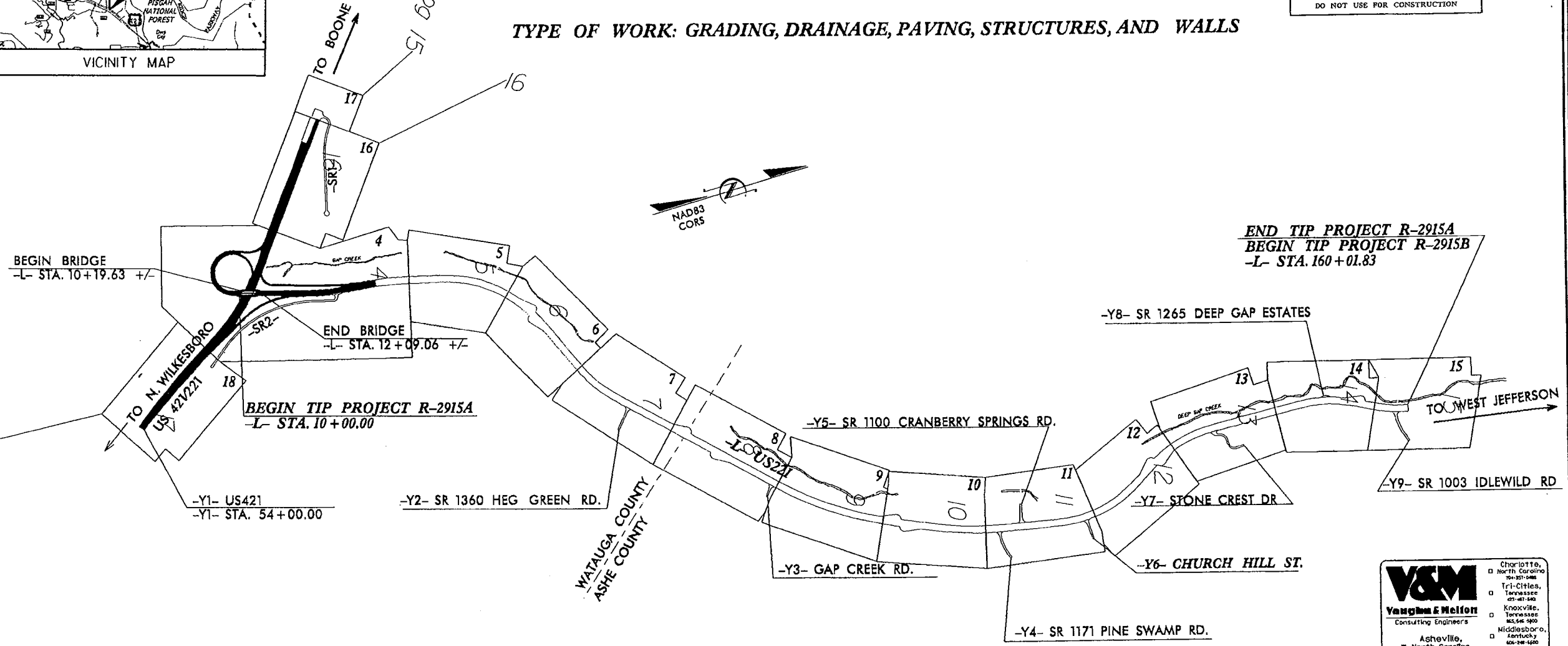
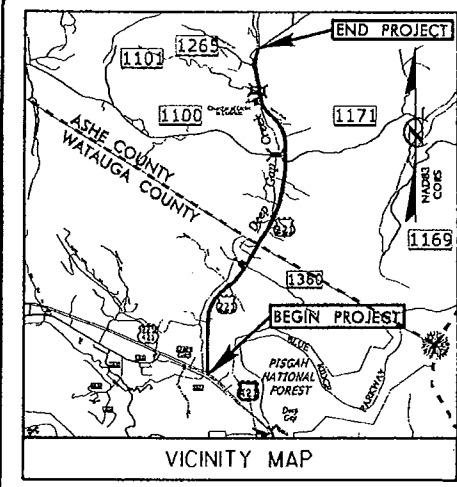
WATAUGA & ASHE COUNTIES

LOCATION: US 221 FROM US 421 IN WATAUGA COUNTY TO SR 1003
(IDLEWILD RD) IN ASHE COUNTY

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

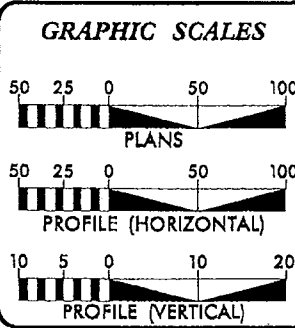
STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2915A	1A	61
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION	
34518.1.2	STP-0221 (139)	P.E.	

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



END TIP PROJECT R-2915A
BEGIN TIP PROJECT R-2915B
-L- STA. 160 + 01.83

THIS IS A PARTIAL CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON THE PLANS.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD ???



DESIGN DATA

ADT 2015 = 11970
ADT 2035 = 20400
DHV = 10 %
D = 65 %
T = 9 %
V = 60 MPH
*(TTST 2%+ DUALS 7%)
FUNC CLASS =
RURAL ARTERIAL
STATEWIDE TIER

PROJECT LENGTH

LENGTH ROADWAY TIP PROJECT R-2915A = 2.805 MI.
LENGTH STRUCTURES TIP PROJECT R-2915A = 0.036 MI.
TOTAL LENGTH OF TIP PROJECT R-2915A = 2.841 MI.

Prepared in the Office of:
VAUGHN & MELTON
1318-F PATTON AVE.
ASHEVILLE, NC, 28806
FOR NCDOT DIVISION OF HIGHWAYS

2012 STANDARD SPECIFICATIONS	REECE SCHULER, PE PROJECT ENGINEER
RIGHT OF WAY DATE:	AARON CARVER, PE PROJECT DESIGN ENGINEER
LETTING DATE: DECEMBER 15, 2015	NCDOT CONTACT: BRENDA MOORE, PE

HYDRAULICS ENGINEER

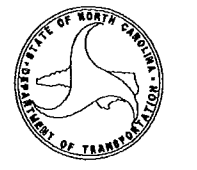
SIGNATURE: _____ P.E.

ROADWAY DESIGN ENGINEER

SIGNATURE: _____ P.E.

V&M
Vaughn & Melton
Consulting Engineers

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Asheville, North Carolina 828-253-2796
Spartanburg, South Carolina 803-534-1779



NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION				GRADATION			ROCK DESCRIPTION			TERMS AND DEFINITIONS		
<p>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 (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, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE:</p> <p>VERY STIFF, SAND-SILT CLAY, MOST WITH INTERBEDDED FINE SAND LAYERS, MUCKY PLASTIC, A-7-6</p>				<p>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). POORLY GRADED - INDICATES A MIXTURE OF UNIFORM PARTICLES OF TWO OR MORE SIZES.</p> <p>ANGULARITY OF GRAINS</p> <p>THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.</p>			<p>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:</p> <p>NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.</p>			<p>ALLOVIUM (ALLOVJ) - SOILS THAT HAVE BEEN TRANSPORTED BY WATER. AQUIFER - A WATER BEARING FORMATION OR STRATA. ARENACEOUS - APPLIED TO ROCKS THAT HAVE BEEN DERIVED FROM SAND OR THAT CONTAIN SAND. 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. 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. CALCAREOUS (CALC.) - SOILS THAT CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE. COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE. 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. DIKE - A TABULAR BODY OF IGNEOUS ROCK THAT CUTS ACROSS THE STRUCTURE OF ADJACENT ROCKS OR CUTS MASSIVE ROCK. DIP - THE ANGLE AT WHICH A STRATUM OR ANY PLANAR FEATURE IS INCLINED FROM THE HORIZONTAL. DIP DIRECTION (DIP AZIMUTH) - THE DIRECTION OR BEARING OF THE HORIZONTAL TRACE OF THE LINE OF DIP, MEASURED CLOCKWISE FROM NORTH. FAULT - A FRACTURE OR FRACTURE ZONE ALONG WHICH THERE HAS BEEN DISPLACEMENT OF THE SIDES RELATIVE TO ONE ANOTHER PARALLEL TO THE FRACTURE. FISSILE - A PROPERTY OF SPLITTING ALONG CLOSELY SPACED PARALLEL PLANES. FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLOOED FROM PARENT MATERIAL. FLOOD PLAIN (FP) - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM. FORMATION (FM) - A MAPPABLE GEOLOGIC UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD. JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED. 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) - IRRREGULARLY 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 INTRODUCED 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 IN OR BPFI 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.</p>		
SOIL LEGEND AND AASHTO CLASSIFICATION				MINERALOGICAL COMPOSITION			WEATHERING					
GENERAL CLASS.	GRANULAR MATERIALS (<= 35% PASSING #200)			SILT-CLAY MATERIALS (> 35% PASSING #200)			ORGANIC MATERIALS			NON-CRYSTALLINE ROCK (ICR)		
GROUP CLASS.	A-1, A-1.5, A-2, A-2.5, A-3, A-4, A-4.5, A-5, A-5.5, A-6, A-6.5, A-7, A-7.5, A-8			A-1, A-2, A-3, A-4, A-5, A-6, A-7			A-1, A-2, A-3, A-4, A-5, A-6, A-7			FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.		
SYMBOL	[Symbol patterns for granular and silt-clay materials]			[Symbol patterns for organic materials]			[Symbol patterns for non-crystalline rock]			FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.		
% PASSING	[Table with sieve sizes 10, 40, 200 and percentages]			[Table with sieve sizes 10, 40, 200 and percentages]			[Table with sieve sizes 10, 40, 200 and percentages]			COASTAL PLAIN SEDIMENTARY ROCK (CPI) SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.		
LIQUID LIMIT PLASTIC INDEX	[Table with values for LL and PI]			[Table with values for LL and PI]			[Table with values for LL and PI]			SLIGHTLY WEATHERED: ROCK GENERALLY FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.		
GROUP INDEX	[Table with values for GI]			[Table with values for GI]			[Table with values for GI]			MODERATELY WEATHERED: ROCK GENERALLY FRESH, JOINTS STAINED, SOME JOINTS MAY SHOW THIN CLAY COATINGS IF OPEN. CRYSTALS ON A BROKEN SPECIMEN FACE SHINE BRIGHTLY. ROCK RINGS UNDER HAMMER BLOWS IF OF A CRYSTALLINE NATURE.		
USUAL TYPES OF MAJOR MATERIALS	[Table with material types]			[Table with material types]			[Table with material types]			SLIGHT (SLJ): ROCK GENERALLY FRESH, JOINTS STAINED AND DISCOLORATION EXTENDS INTO ROCK UP TO 1 INCH. OPEN JOINTS MAY CONTAIN CLAY. IN GRANITOID ROCKS SOME OCCASIONAL FELDSPAR CRYSTALS ARE DULL AND DISCOLORED. CRYSTALLINE ROCKS RING UNDER HAMMER BLOWS.		
GENERALITY AS A SUBGRADE	[Table with subgrade ratings]			[Table with subgrade ratings]			[Table with subgrade ratings]			MODERATE (MOD.): SIGNIFICANT PORTIONS OF ROCK SHOW DISCOLORATION AND WEATHERING EFFECTS. IN GRANITOID ROCKS, MOST FELDSPARS ARE DULL AND DISCOLORED, SOME SHOW CLAY. ROCK HAS DULL SOUND UNDER HAMMER BLOWS AND SHOWS SIGNIFICANT LOSS OF STRENGTH AS COMPARED WITH FRESH ROCK.		
CONSISTENCY OR DENSENESS				MISCELLANEOUS SYMBOLS			GROUND WATER			ROCK HARDNESS		
[Table with soil consistency/denseness data]				[Symbol legend for miscellaneous symbols]			[Table with groundwater symbols and descriptions]			[Table with rock hardness data]		
TEXTURE OR GRAIN SIZE				ABBREVIATIONS			EQUIPMENT USED ON SUBJECT PROJECT			FRACTURE SPACING		
[Table with soil texture/grain size data]				[Table with abbreviations]			[Table with equipment used]			[Table with fracture spacing data]		
SOIL MOISTURE - CORRELATION OF TERMS				DRILL UNITS			HAND TOOLS			BEDDING		
[Table with soil moisture correlation data]				[Table with drill units]			[Table with hand tools]			[Table with bedding data]		
PLASTICITY				ADVANCING TOOLS			HAMMER TYPE			INDURATION		
[Table with plasticity data]				[Table with advancing tools]			[Table with hammer types]			[Table with induration data]		
COLOR				EQUIPMENT USED ON SUBJECT PROJECT			FRACTURE SPACING			INDURATION		
[Table with color data]				[Table with equipment used]			[Table with fracture spacing data]			[Table with induration data]		



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAT MCCRORY
GOVERNOR

ANTHONY J. TATA
SECRETARY

July 8, 2013

STATE PROJECT: 34518.1.2 (R-2915A)
COUNTY: Watauga/Ashe
DESCRIPTION: US 221 from US 421 to SR 1003 (Idlewild Road)
SUBJECT: Geotechnical Report – Inventory

PROJECT DESCRIPTION

The project starts at the southern tip of Ashe County and just below the border of Watauga County. The "A" project section begins at the US 421 intersection, continues 2.8 miles due north and consists of widening two-lane to four-lane with minor vertical and horizontal alignment changes along existing. It is anticipated that existing culverts and pipes will be extended. At the time of the investigation, a controlled access interchange with built up abutments and bridge at the US 421/221 is proposed and was investigated with the roadway. No other structures are proposed. The terrain is mountainous but does not include unusually large cuts and fills. The following alignment was investigated:

- L- Station 10+00 – 160+01
- RPC- Ramp for interchange at US 441/221

The total length of lines investigated is 2.8 miles. The field investigation was conducted in June 2013. All borings were conducted with a CME-550 drill machine with an automatic hammer. Standard Penetration Tests were performed utilizing Hollow Stem Augers with carbide insert teeth in the head stem.

AREAS OF SPECIAL GEOTECHNICAL INTEREST

Crystalline Rock: Weathered to crystalline rock should be expected within 10' of grade in the following Station intervals:

24+50

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

TELEPHONE: 919-707-6850
FAX: 919-250-4237
WEBSITE:
www.ncdot.gov/doh/preconstruct/highway/geotech

LOCATION:
CENTURY CENTER COMPLEX
ENTRANCE B-2
1020 BIRCH RIDGE DRIVE
RALEIGH NC

32+00 – 34+00
58+00 – 60+00
96+00 – 98+50
113 – 114+50
135+00 – 151+50

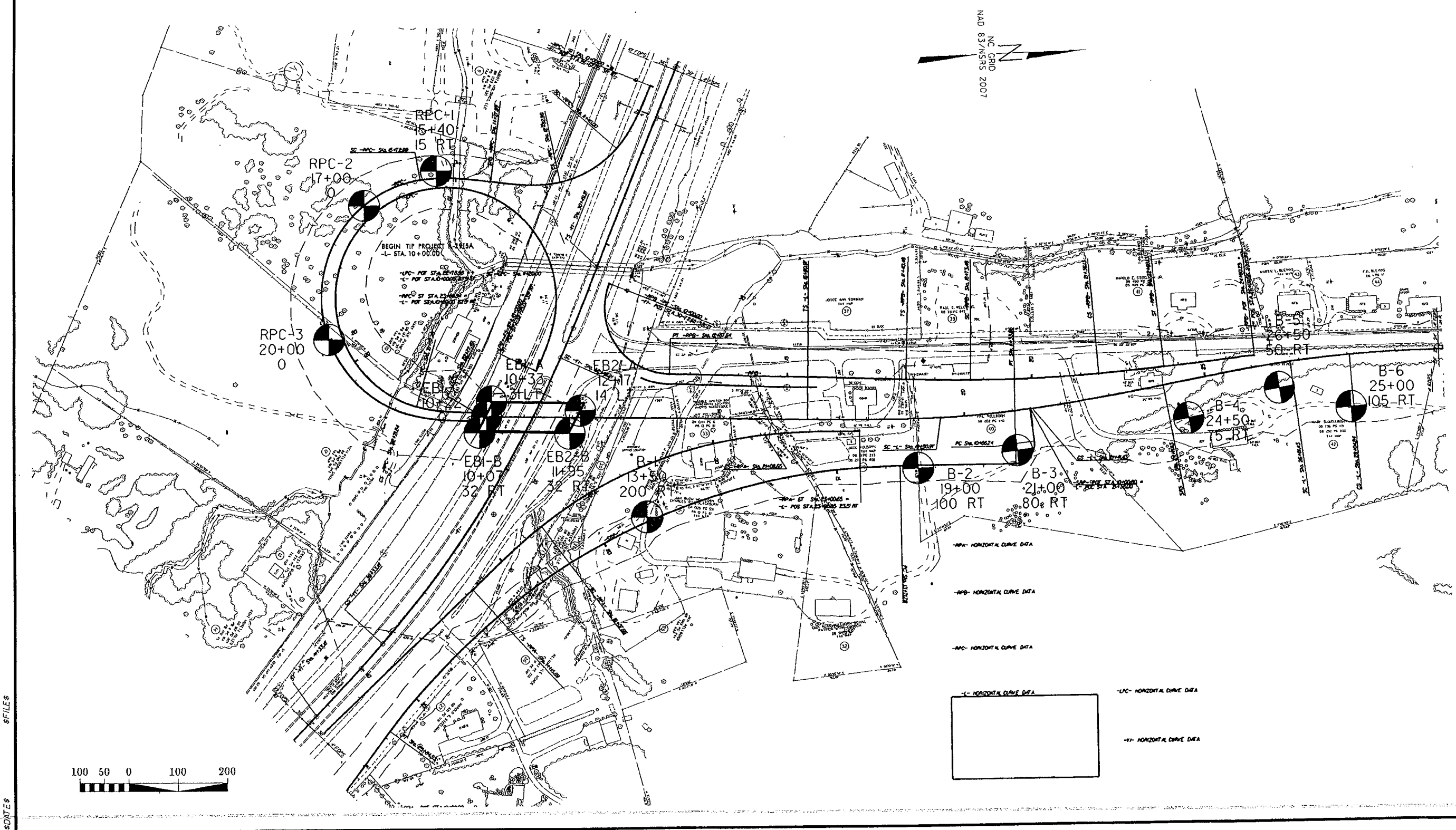
SOIL PROPERTIES

Soils on the project are derived from Granitic gneiss rock (Zabg) encountered within the project corridor. The dominant residual and saprolitic soil types encountered are micaceous silty sand, silty sand and sand (AASHTO A-4, A-2-4&5). Weathered and crystalline rock may require blasting and is unlikely to produce durable stone for use on the project.

Respectfully submitted,

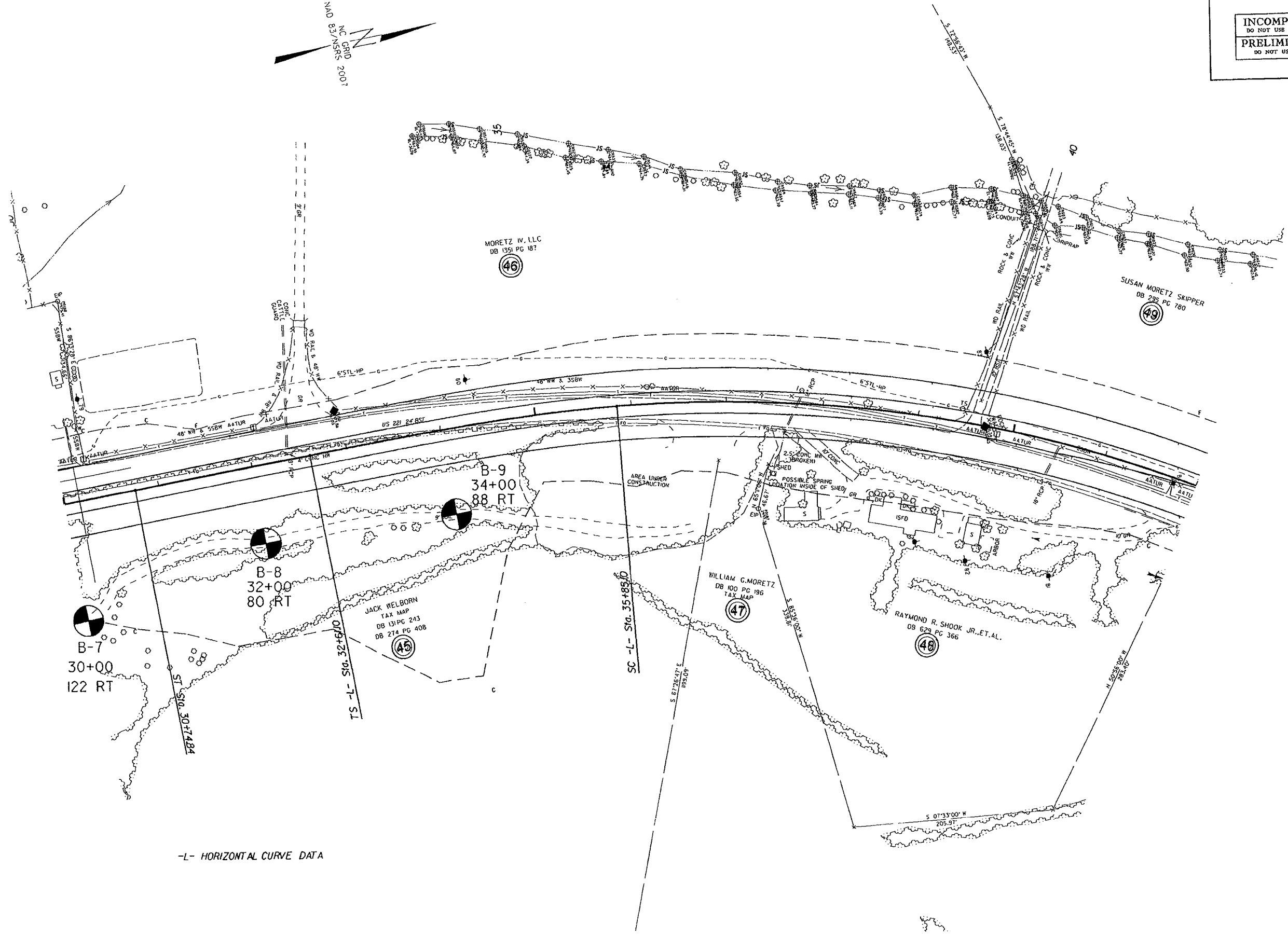
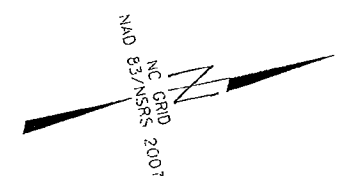
John Mann, PG
Project Geological Engineer

PROJECT REFERENCE NO. R-2951A	SHEET NO. 4/61
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR ACQUISITION	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



\$FILES\$
\$DATES\$

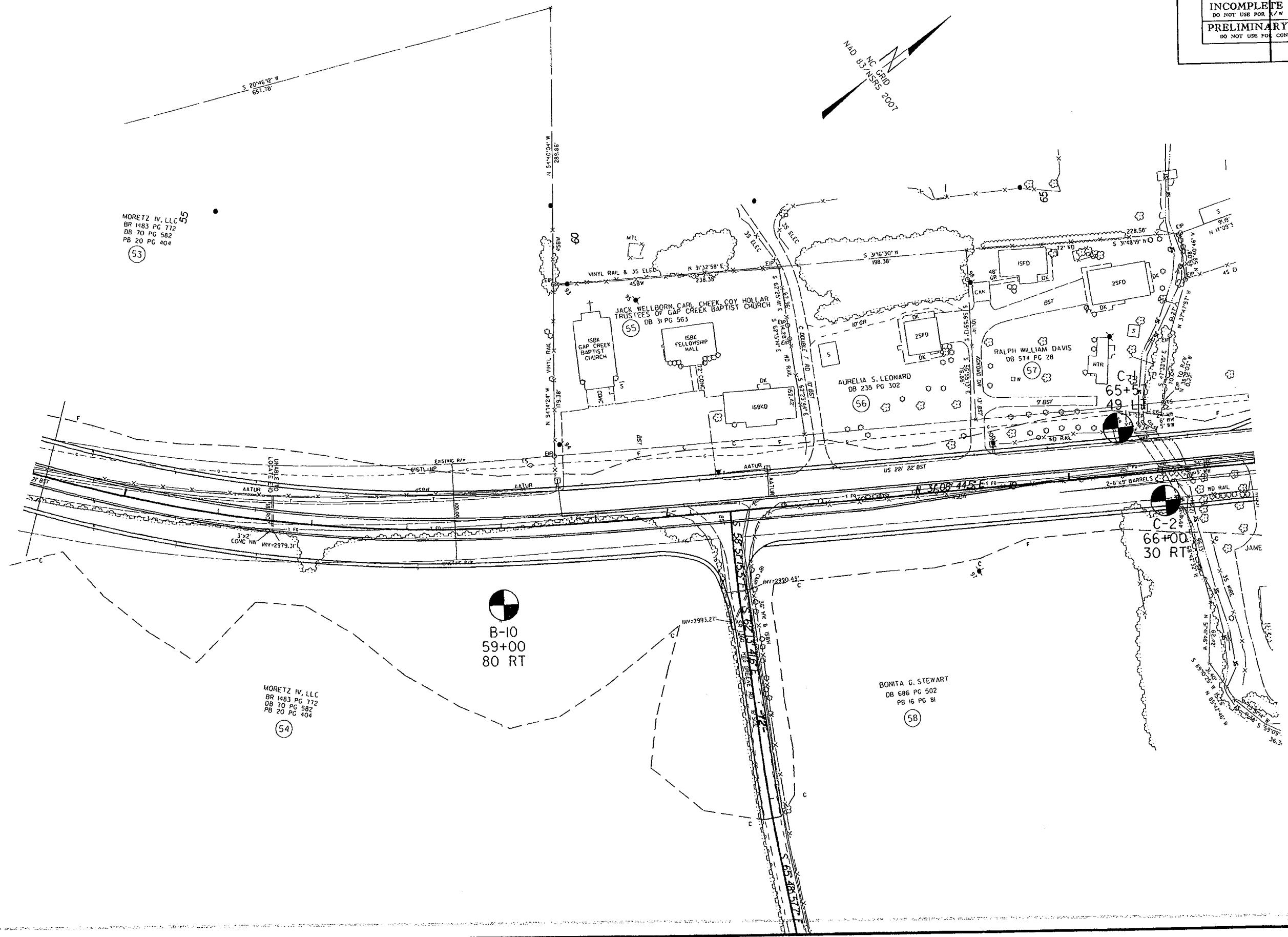
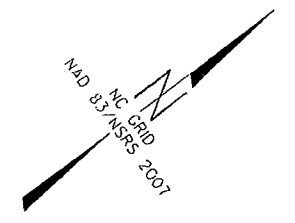
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RAW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR A/CQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	



\$FILES
 \$DATES

-L- HORIZONTAL CURVE DATA

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



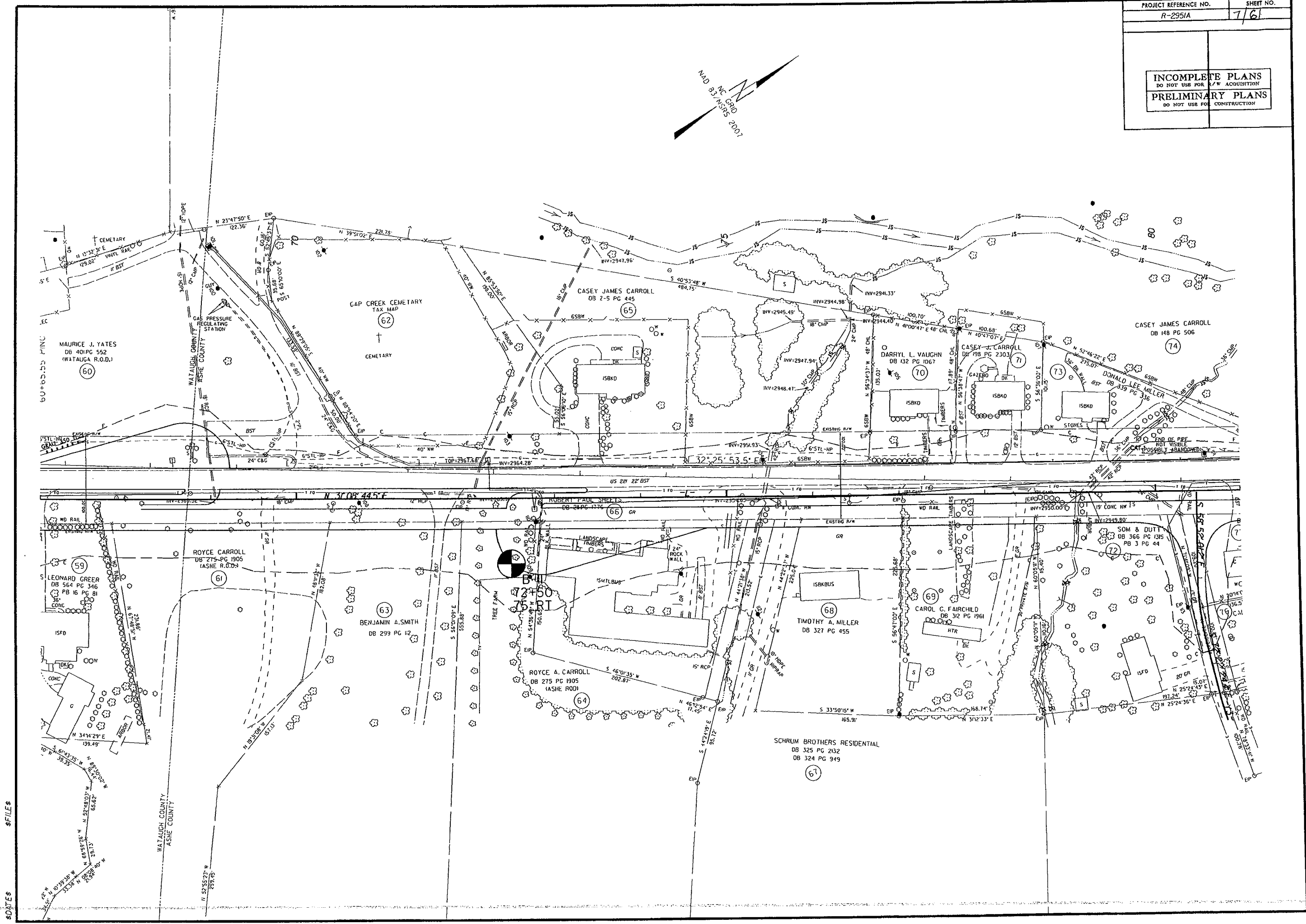
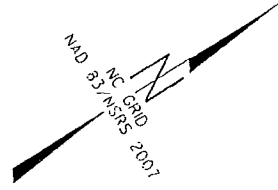
MORETZ IV, LLC
BR 1483 PG 772
DB 70 PG 582
PB 20 PG 404
(53)

MORETZ IV, LLC
BR 1483 PG 772
DB 70 PG 582
PB 20 PG 404
(54)

B-10
59+00
80 RT

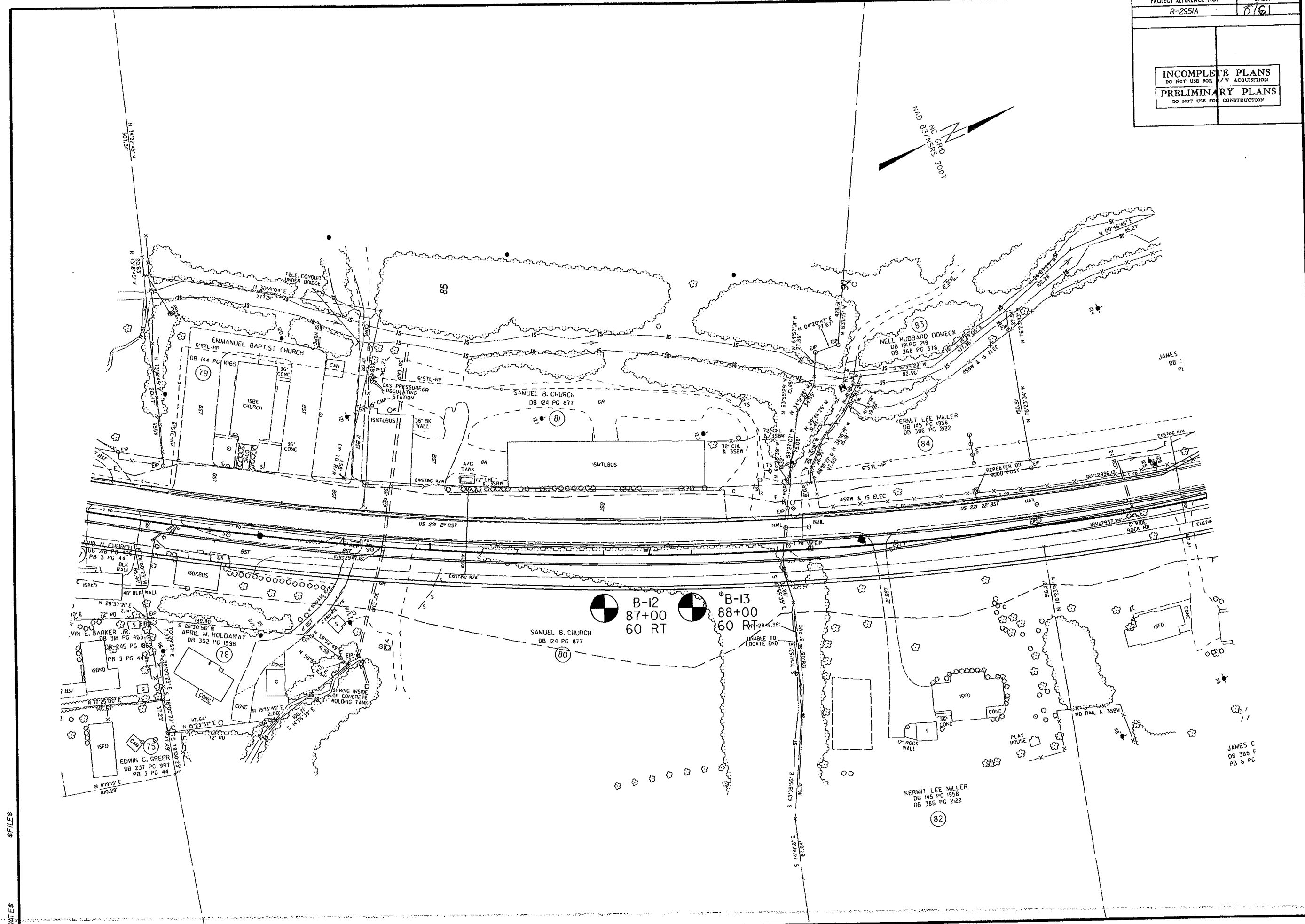
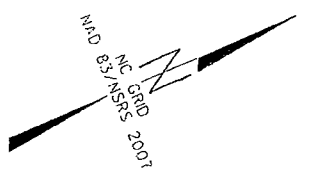
BONITA G. STEWART
DB 686 PG 502
PB 16 PG 81
(58)

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\$DATES



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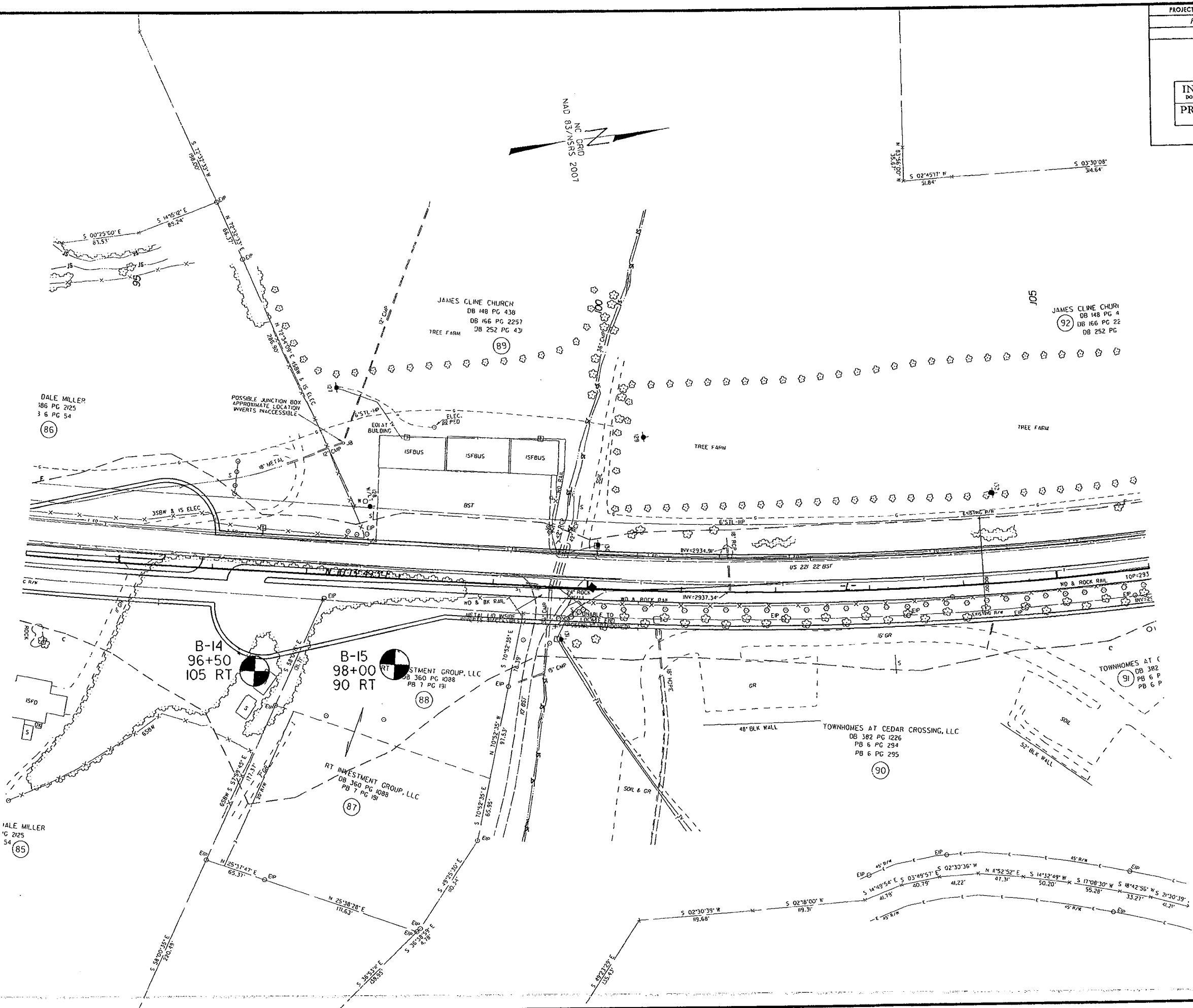
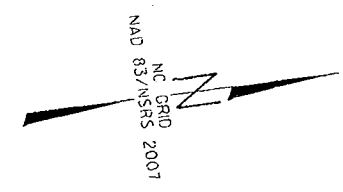
INCOMPLETE PLANS
DO NOT USE FOR A/W ACQUISITION
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\$FILES \$DATES

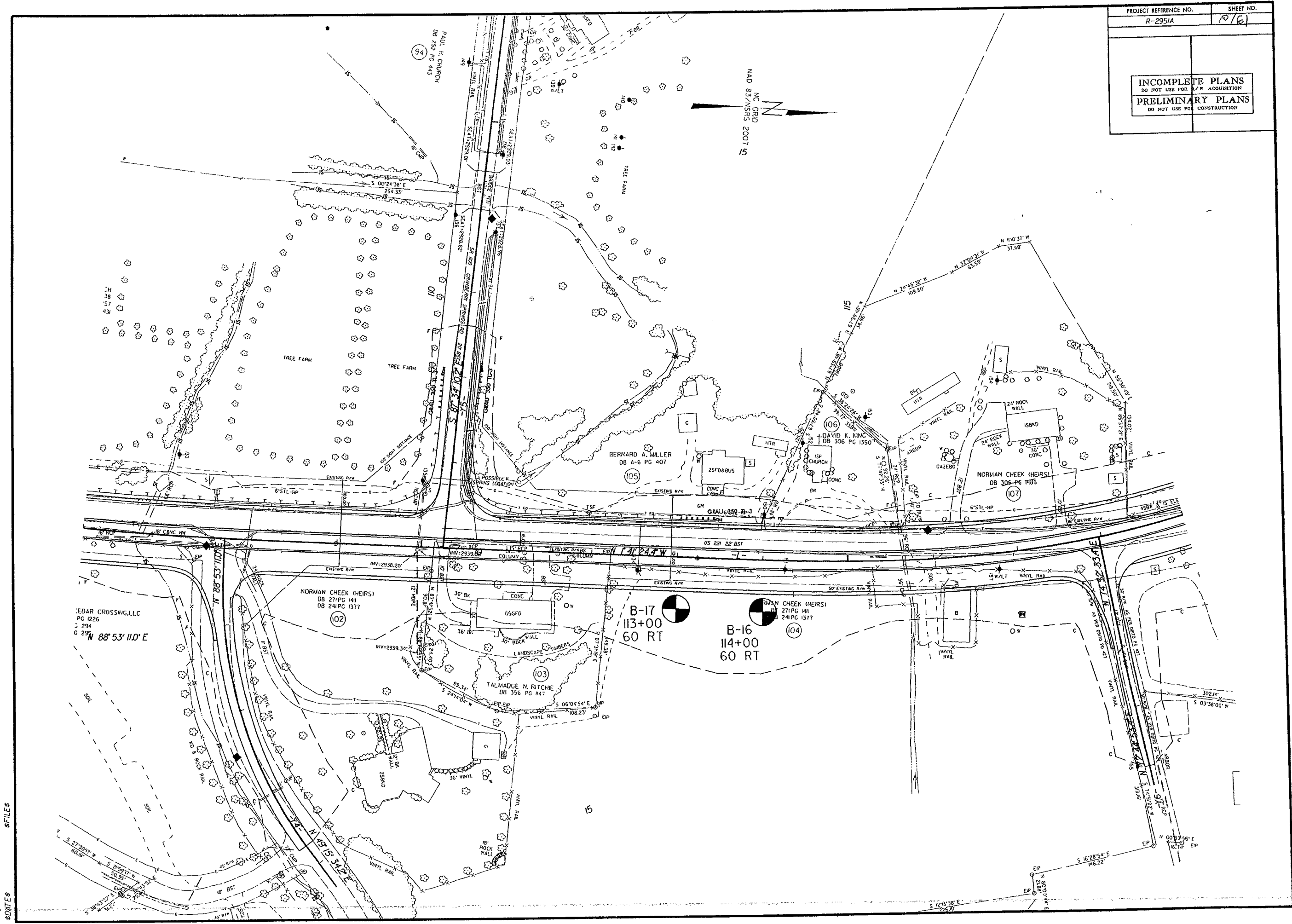
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DO NOT USE FOR A/CQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

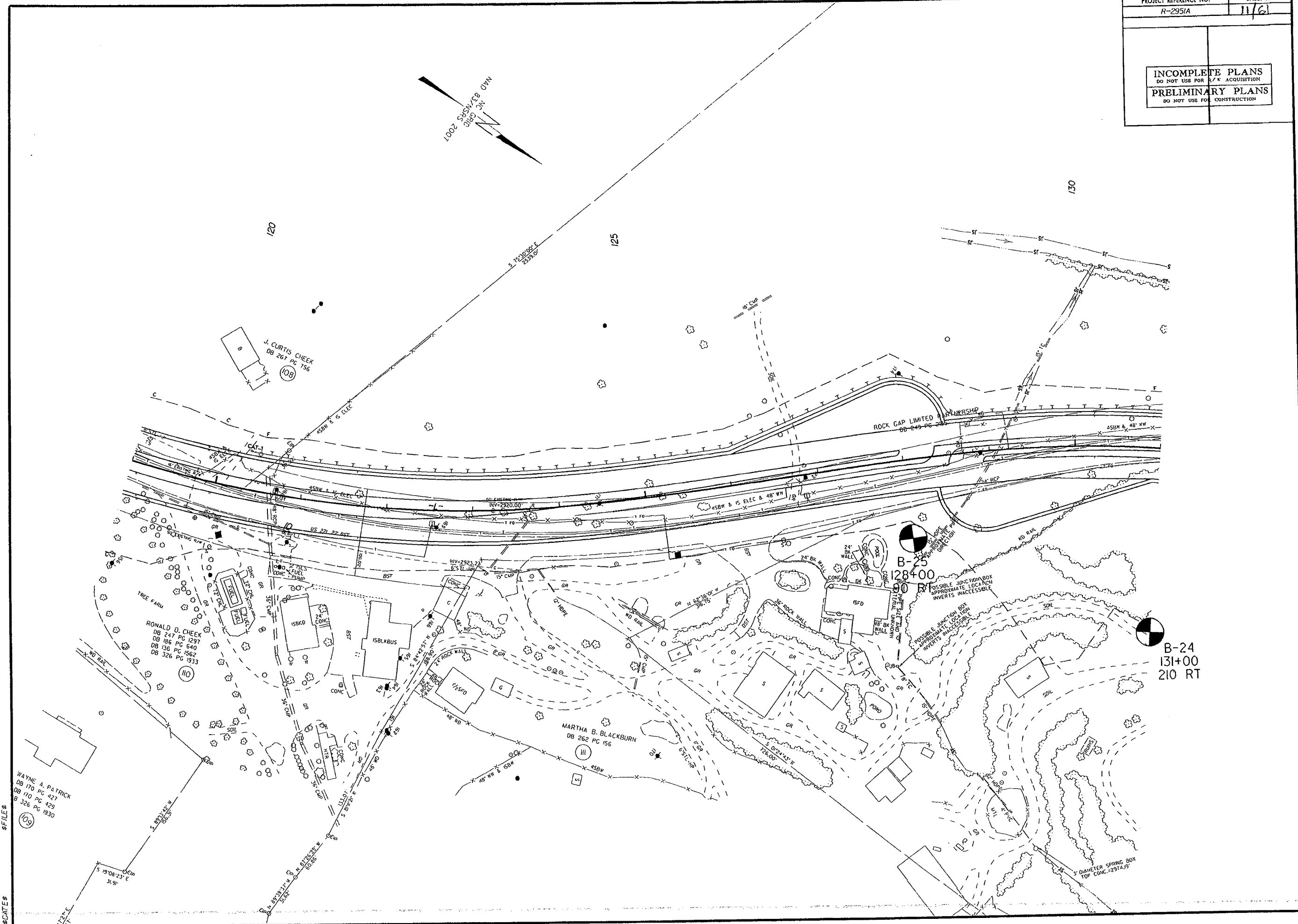


SCALE \$

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



SFILES \$
SDATES \$

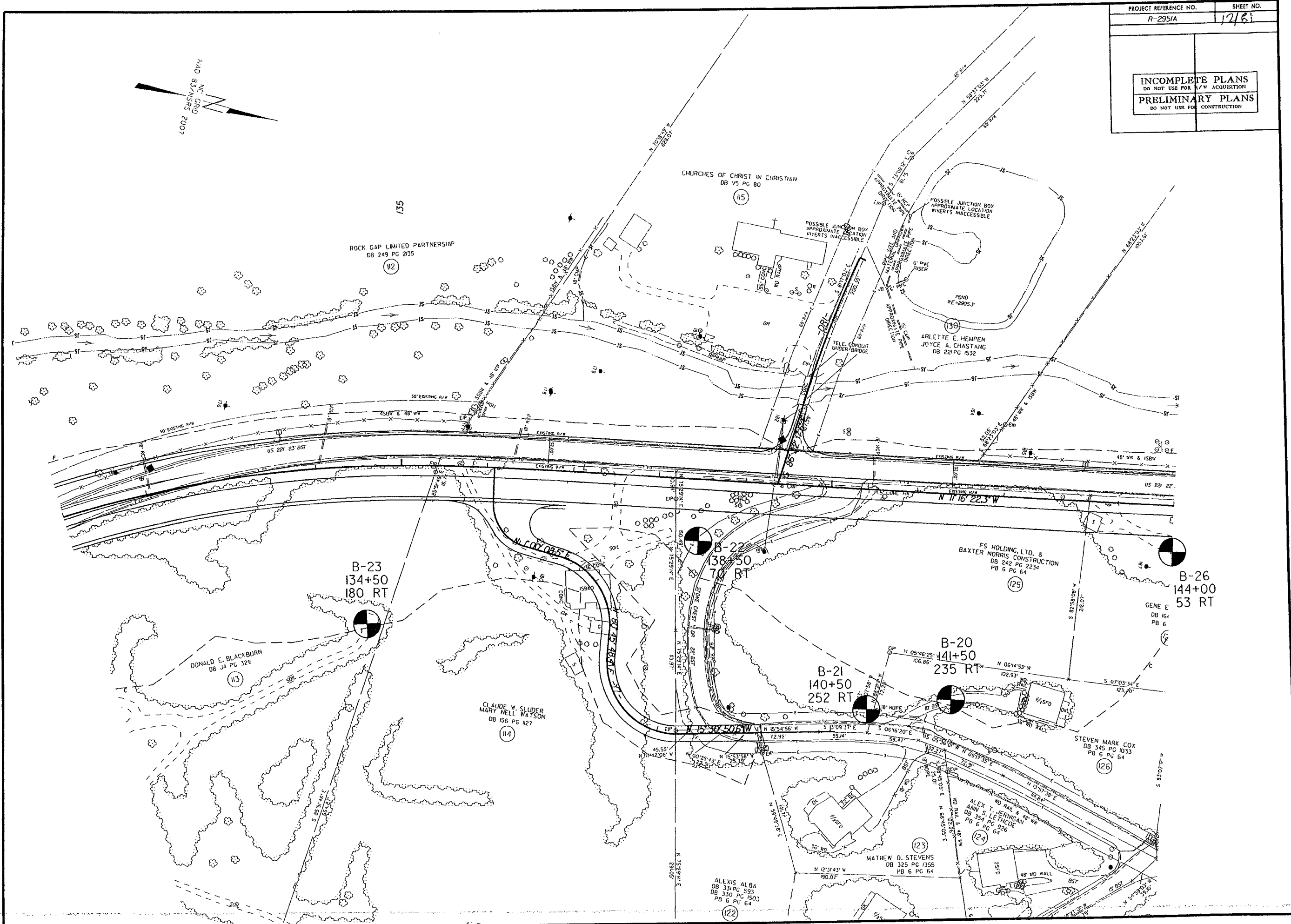
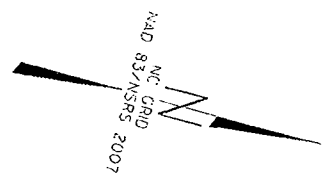


WAYNE A. PATRICK
 DB 170 PG 423
 DB 110 PG 425
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 (109)

SCALE\$

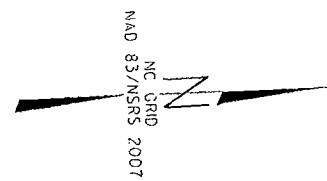
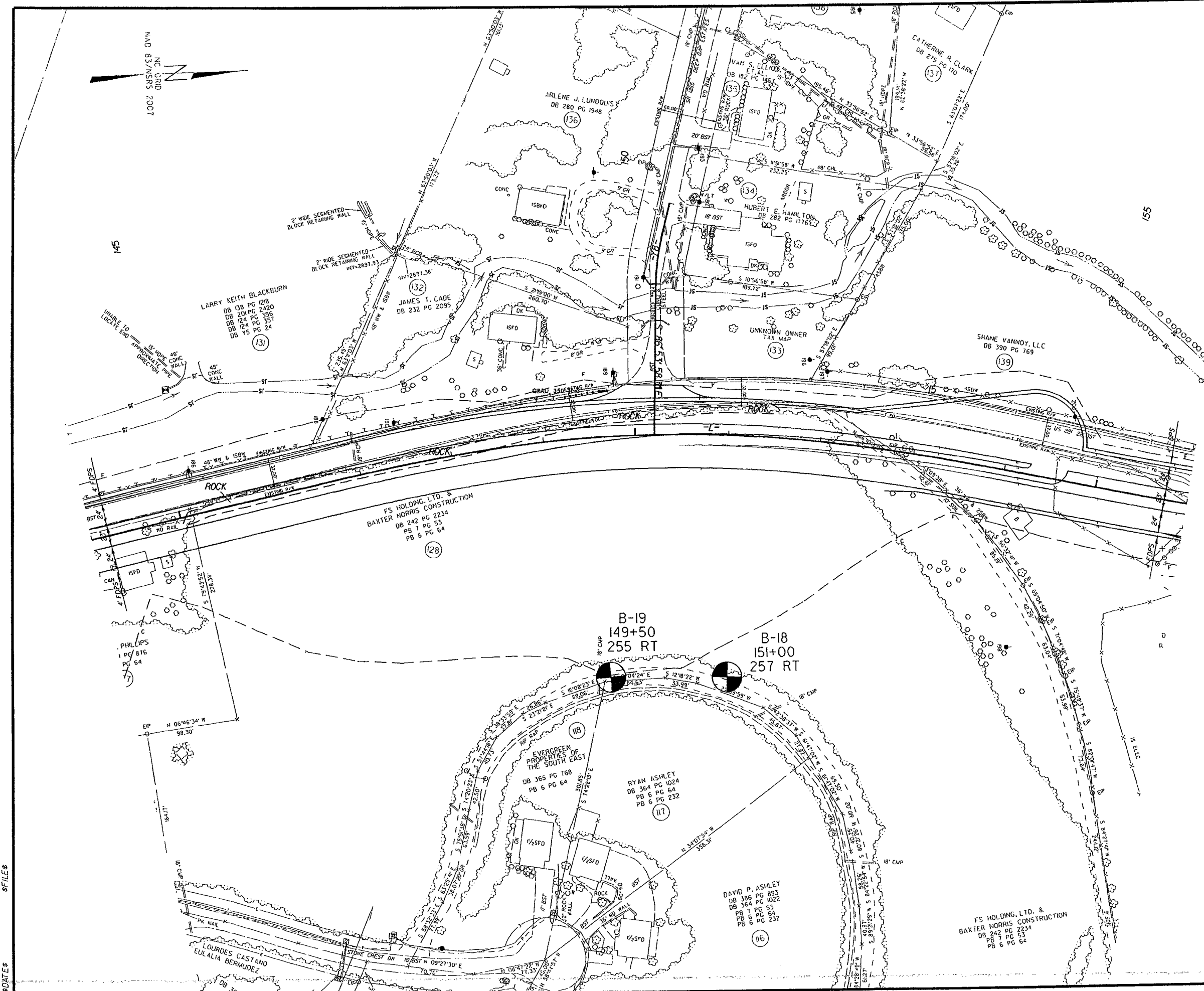
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PRELIMINARY PLANS
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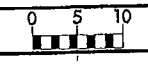


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\$DATES\$

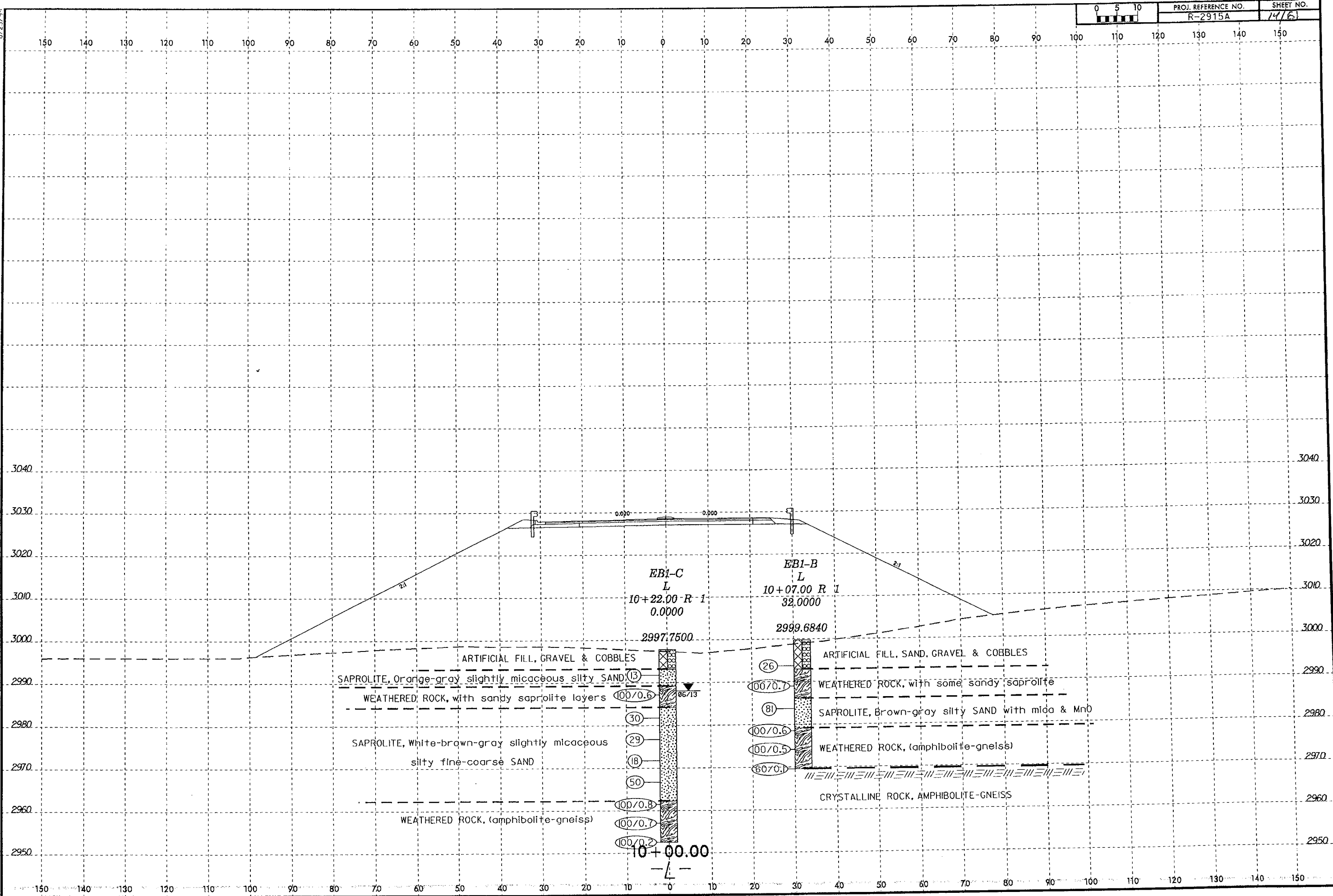
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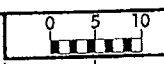
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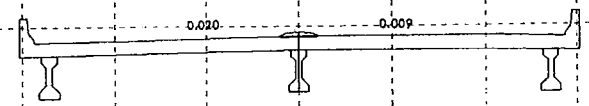
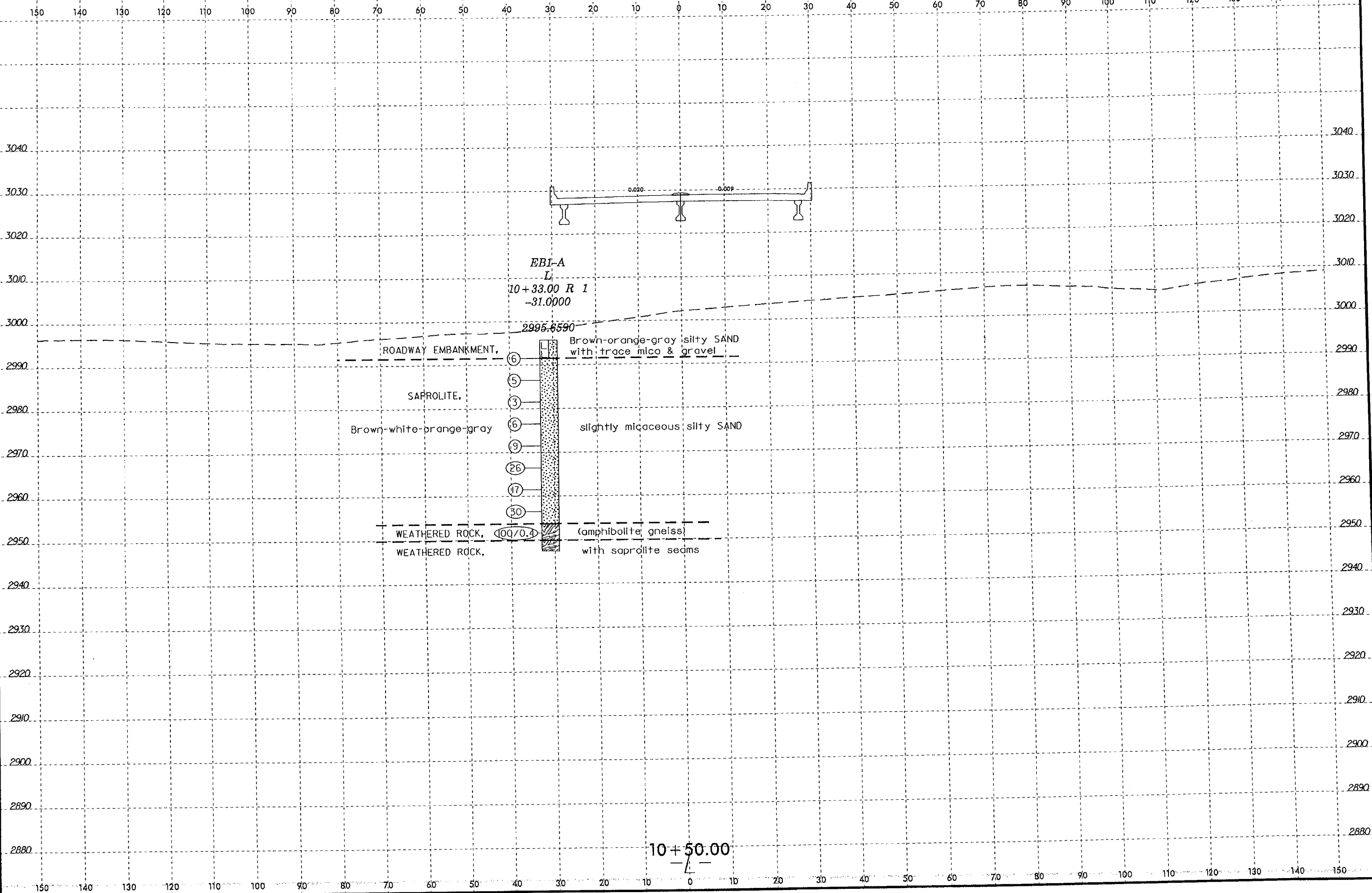
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8/23/99

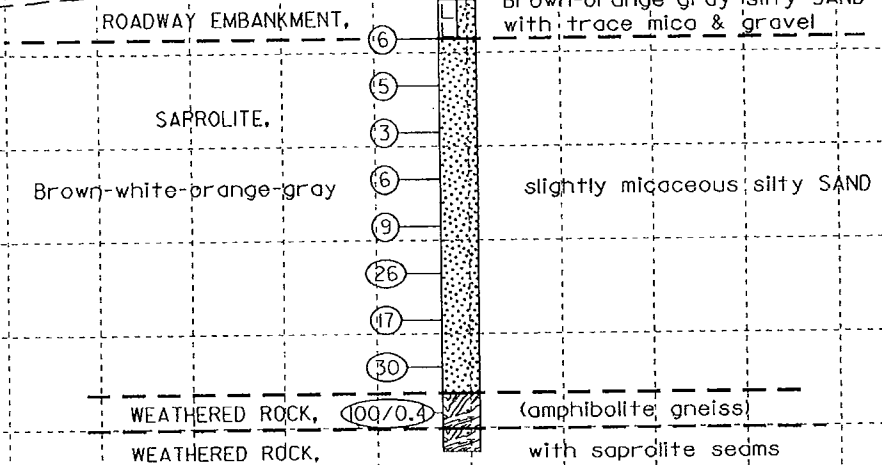


PROJ. REFERENCE NO. R-2915A SHEET NO. 15/61



EBI-A
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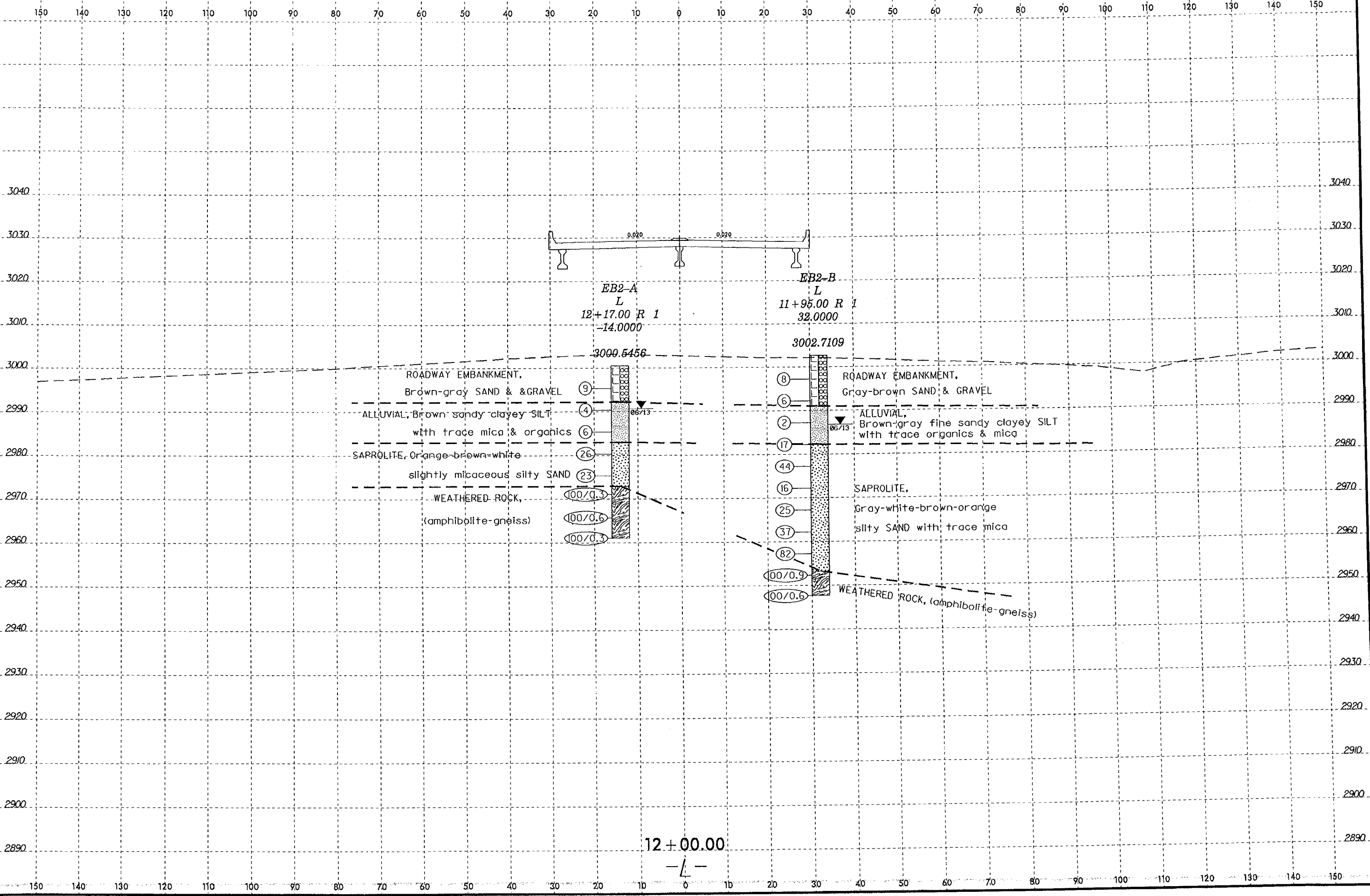
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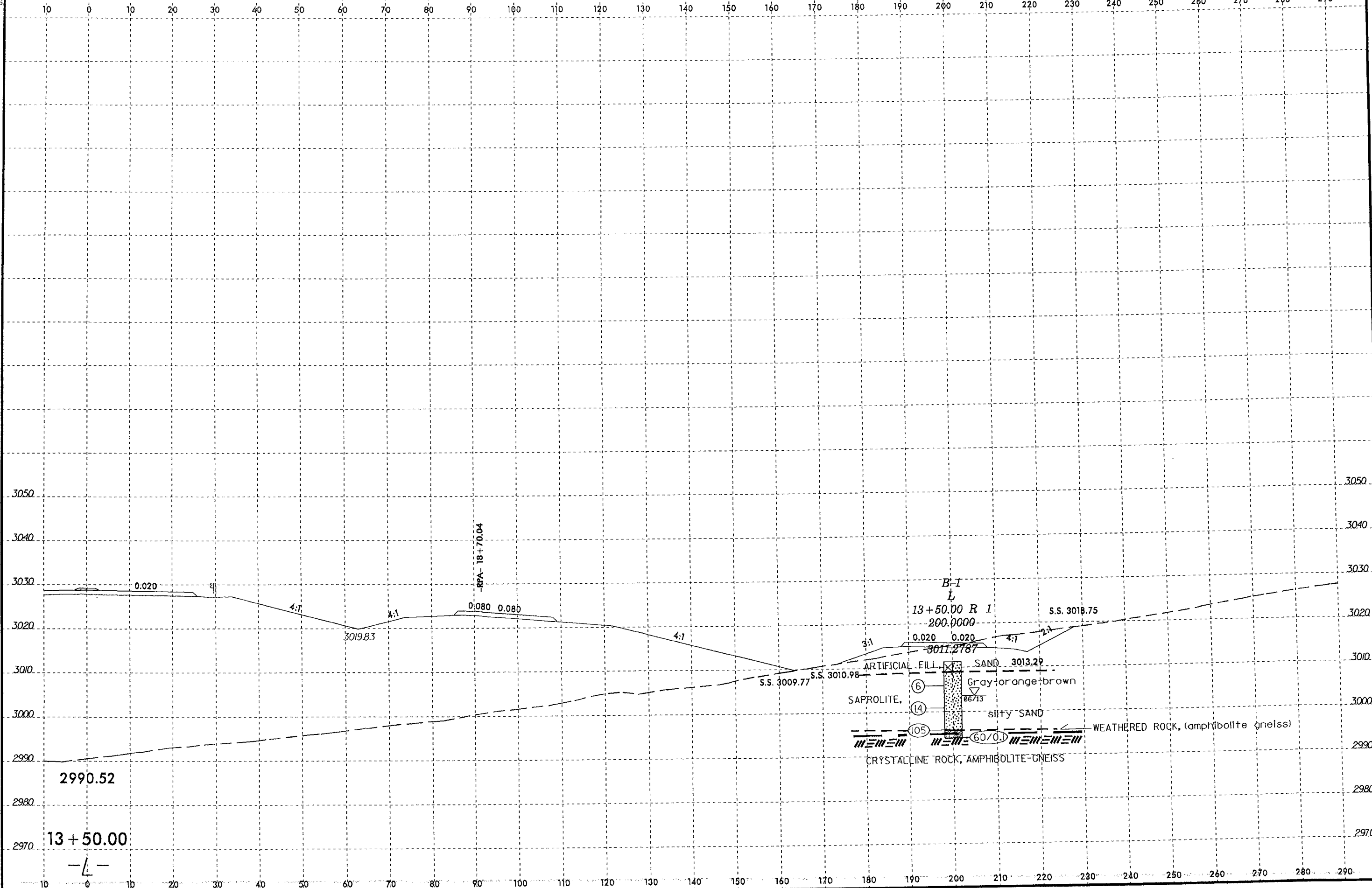
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8/23/99
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R-2915A
GEO
13+50.00



2990.52

13+50.00

—L—

B-1
L

13+50.00 R 1

200.0000

0.020 0.020

3011.2787

ARTIFICIAL FILL

SAND 3013.29

SAPROLITE

Gray-orange-brown silty SAND

WEATHERED ROCK, (amphibolite gneiss)

CRYSTALLINE ROCK, AMPHIBOLITE-GNEISS

S.S. 3018.75

S.S. 3009.77

S.S. 3010.98

3019.83

RPA-18+70.04

0.080 0.080

6

14

105

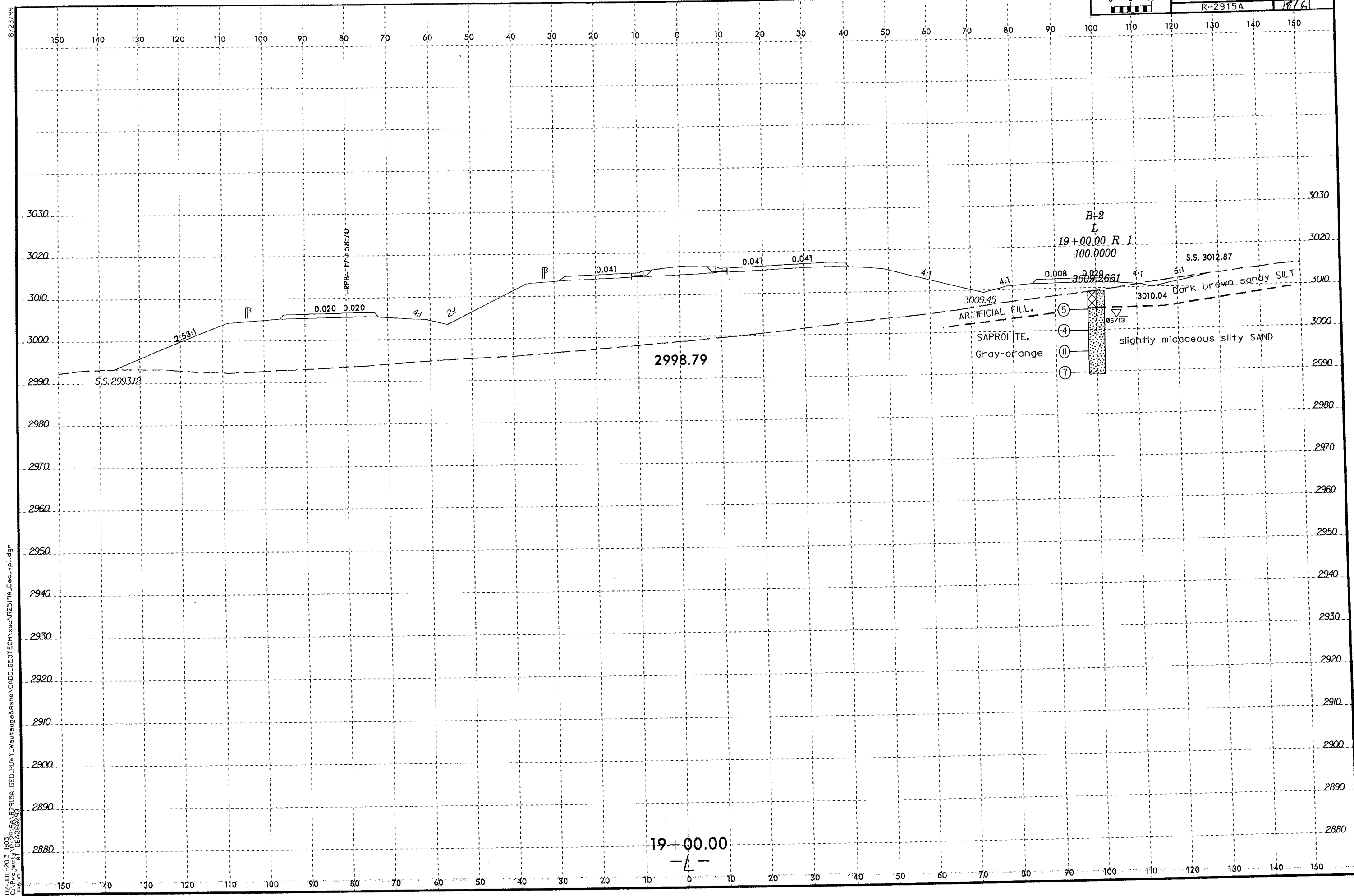
60/0

06/13

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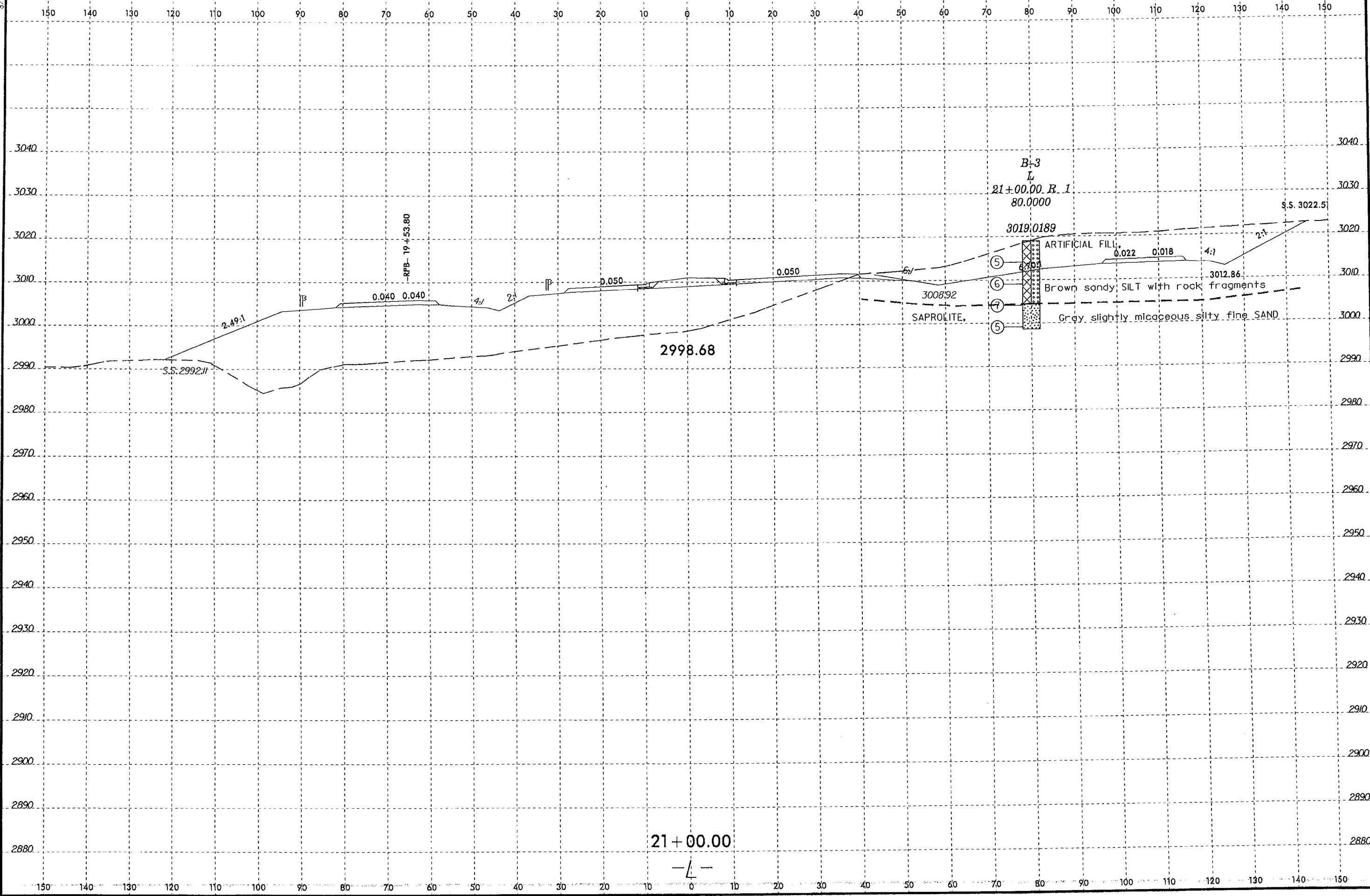
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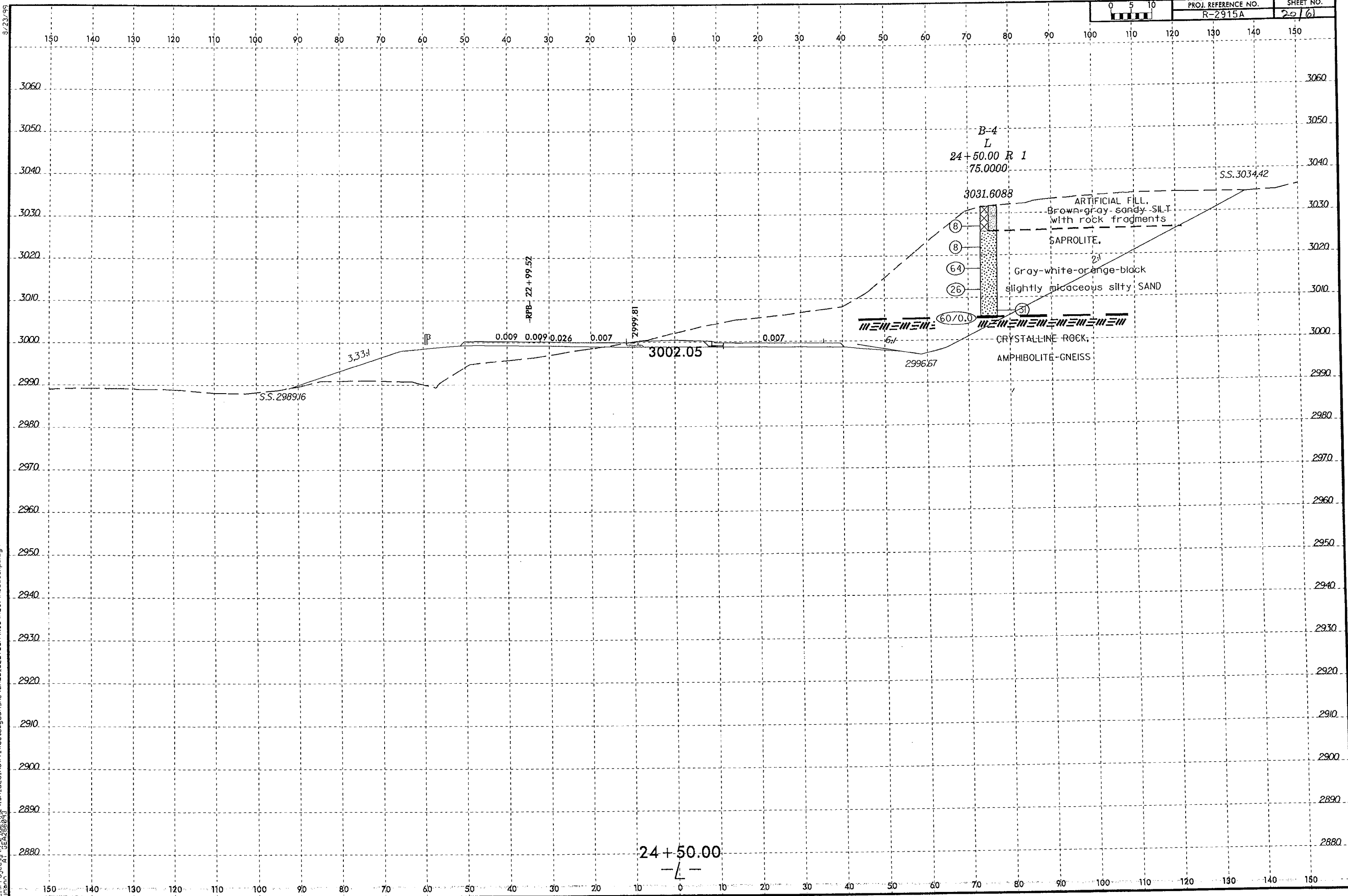
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-L-

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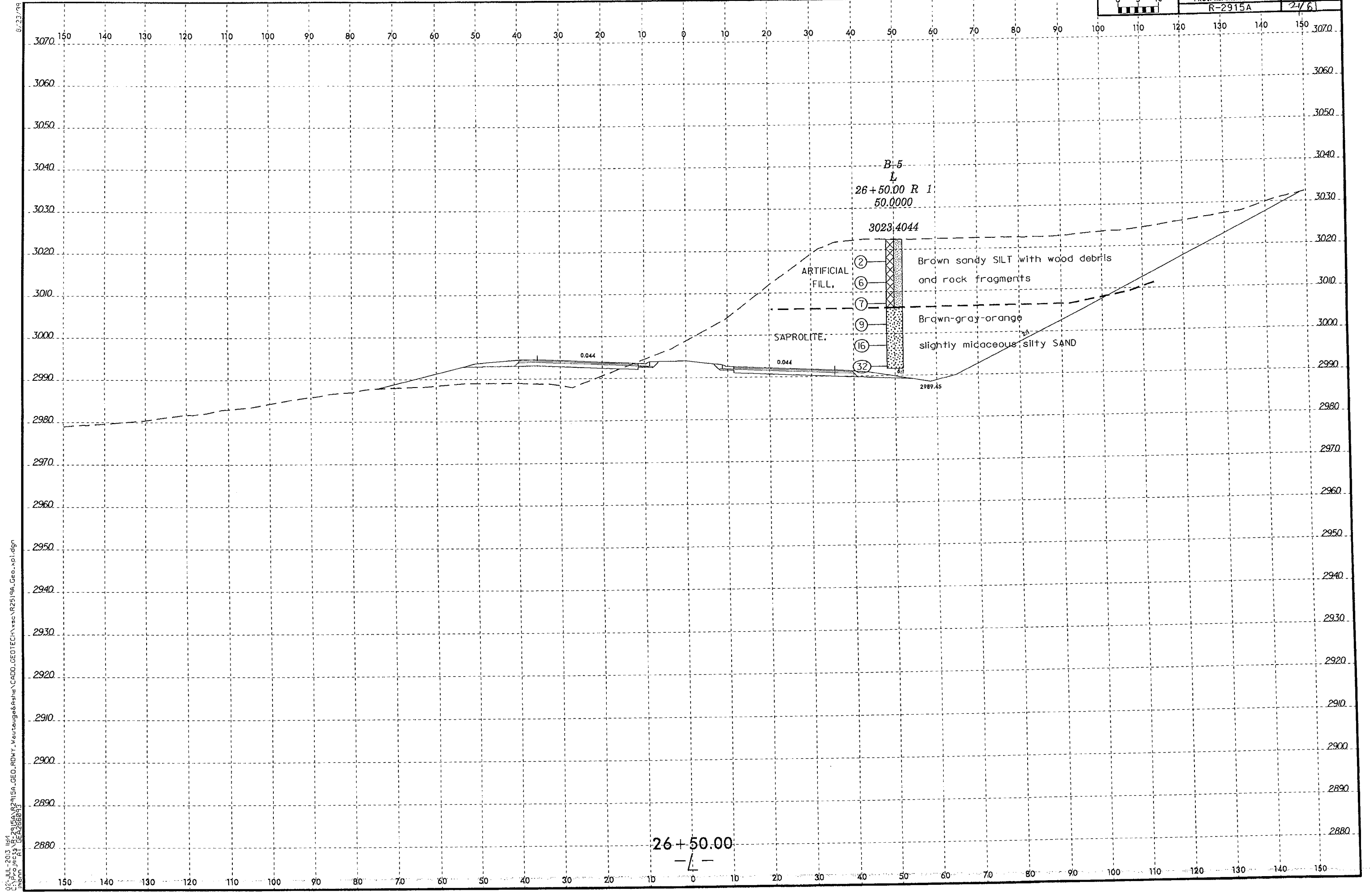
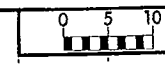


21 + 00.00
-L-

B+3
L
21+00.00 B. 1
80.0000
3019.0189
ARTIFICIAL FILL
0.022 0.018 4:1
3012.86
Brown sandy SILT with rock fragments
3008.92
SAPROLITE
Gray slightly micaceous silty fine SAND
S.S. 3022.5

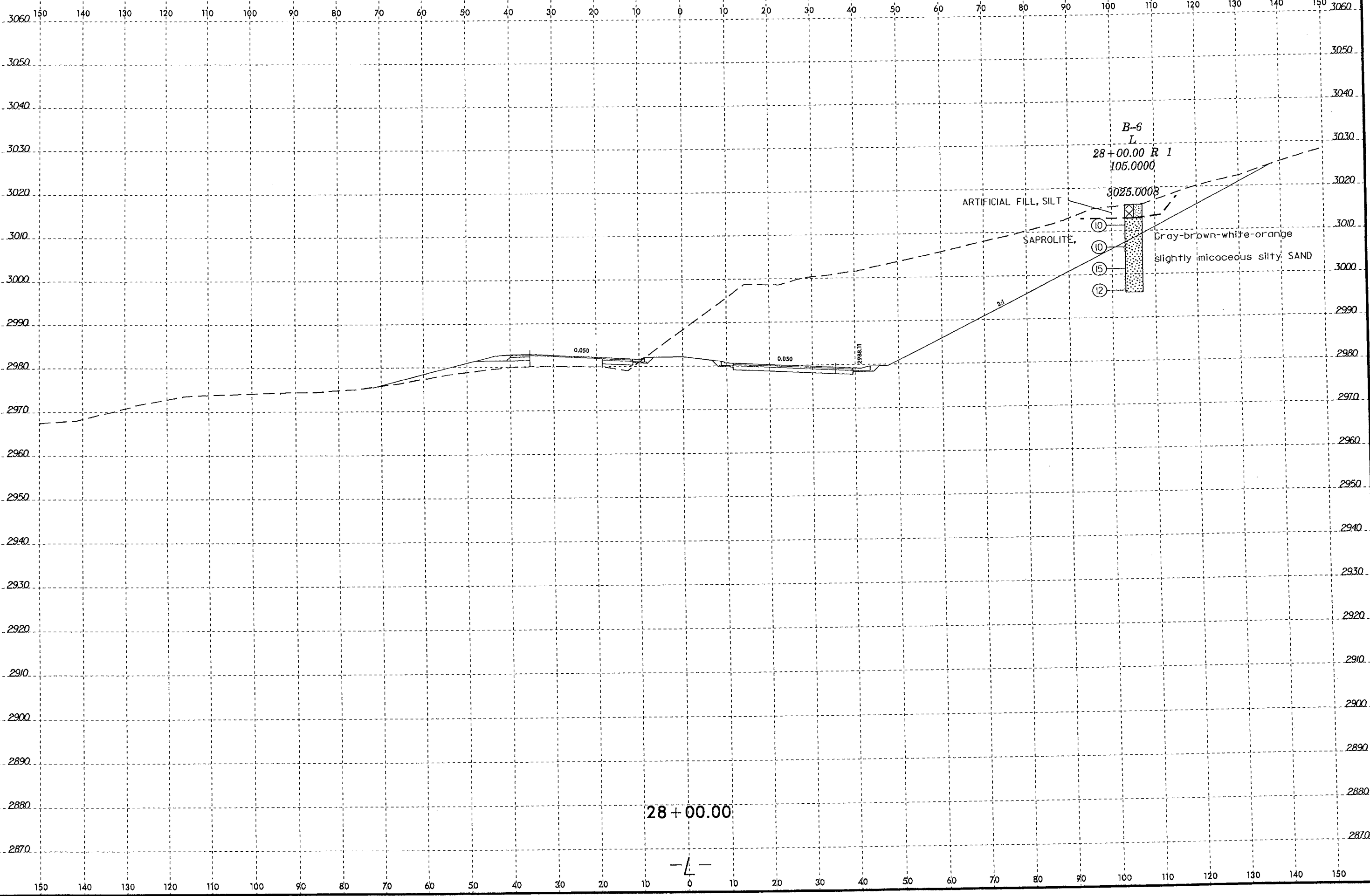


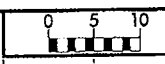
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26+50.00
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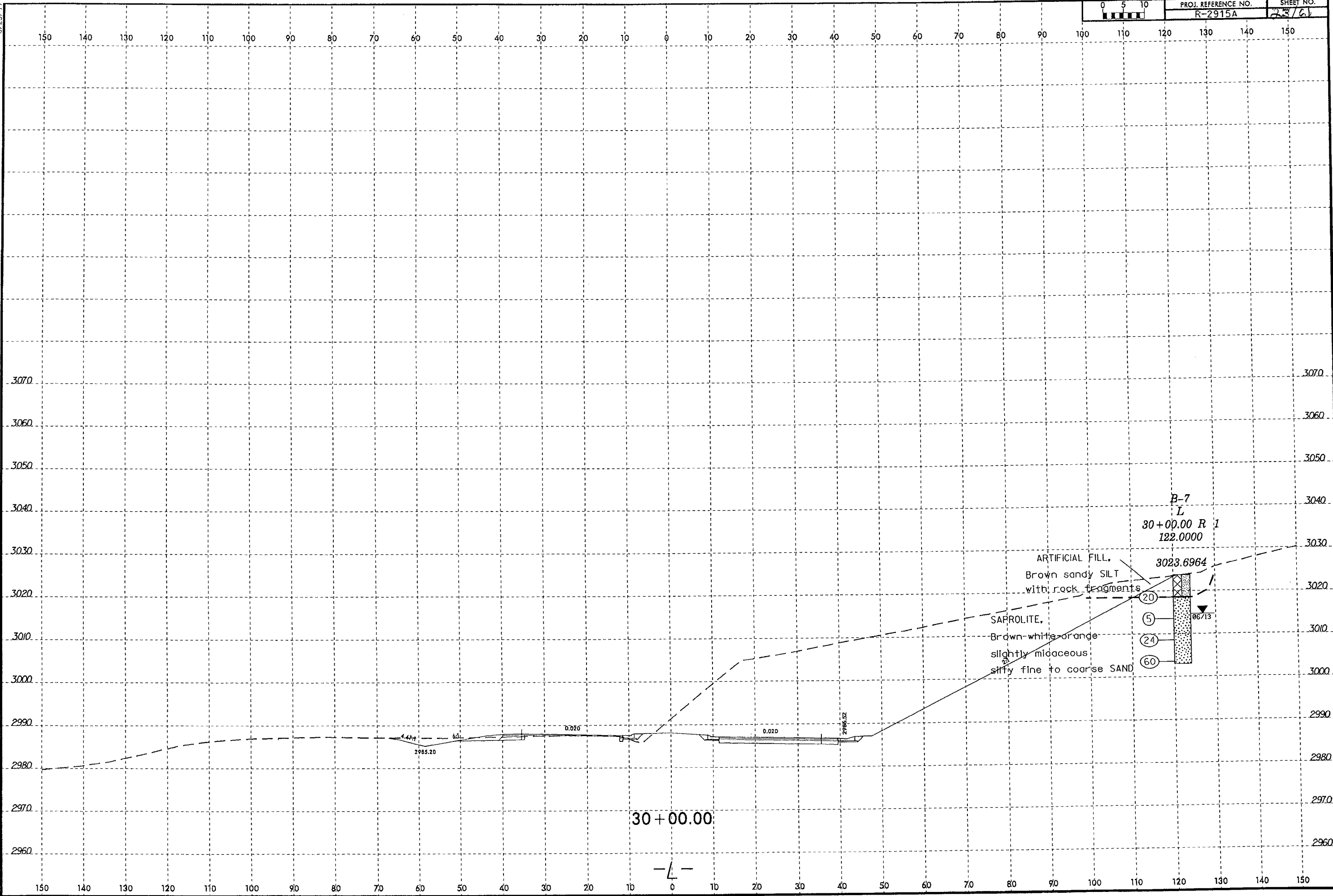
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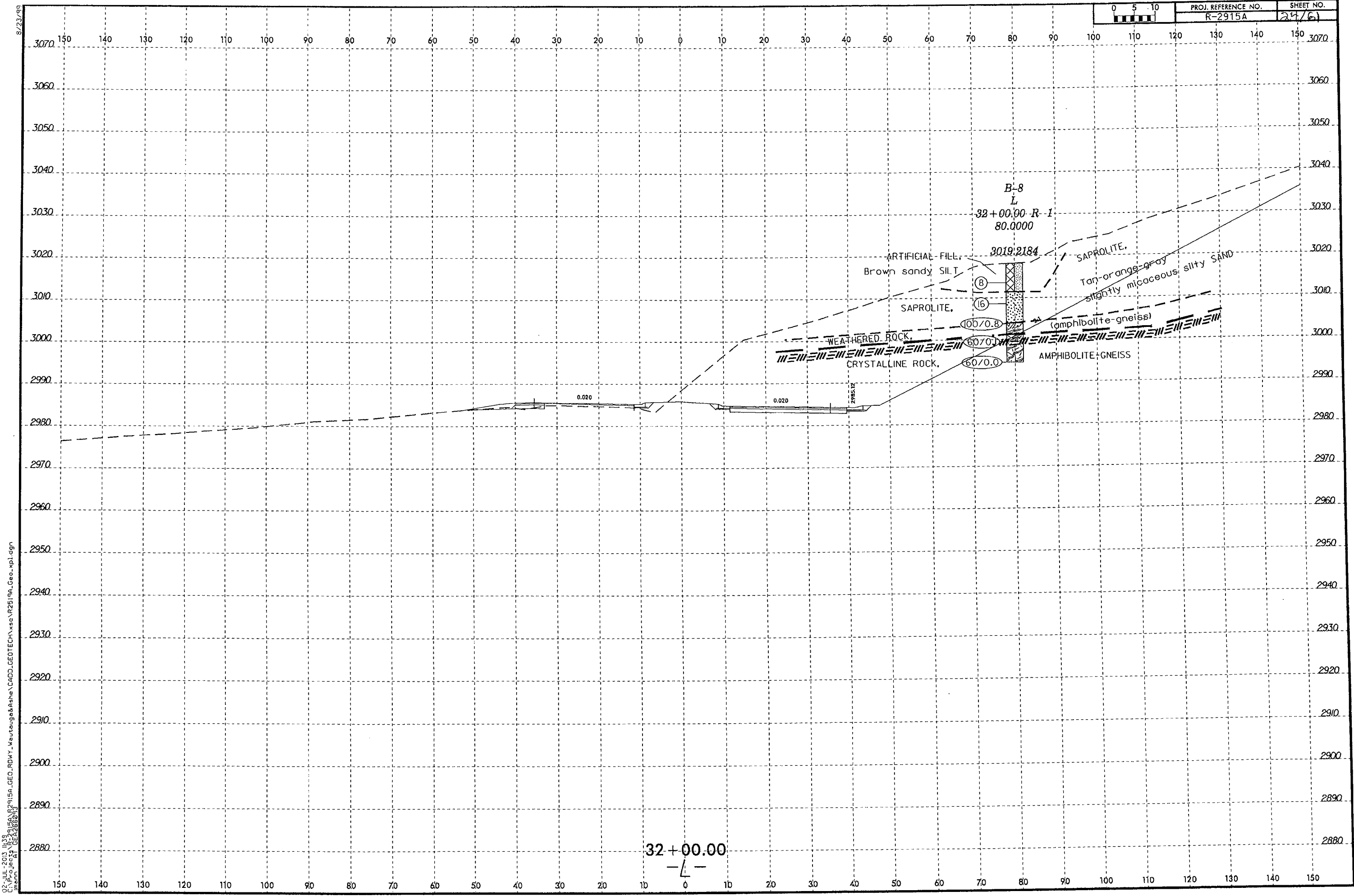




PROJ. REFERENCE NO. R-2915A SHEET NO. 23/61

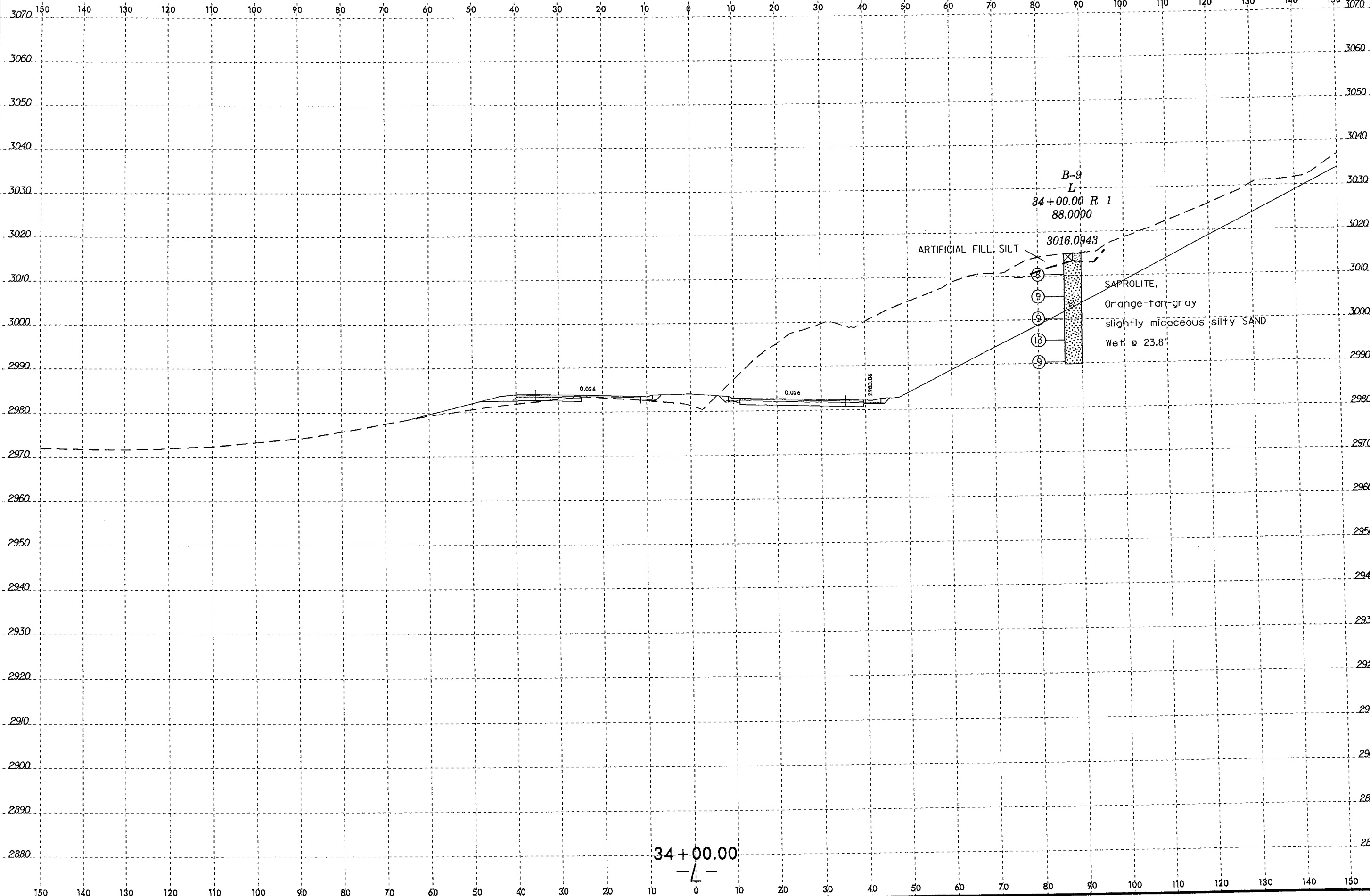
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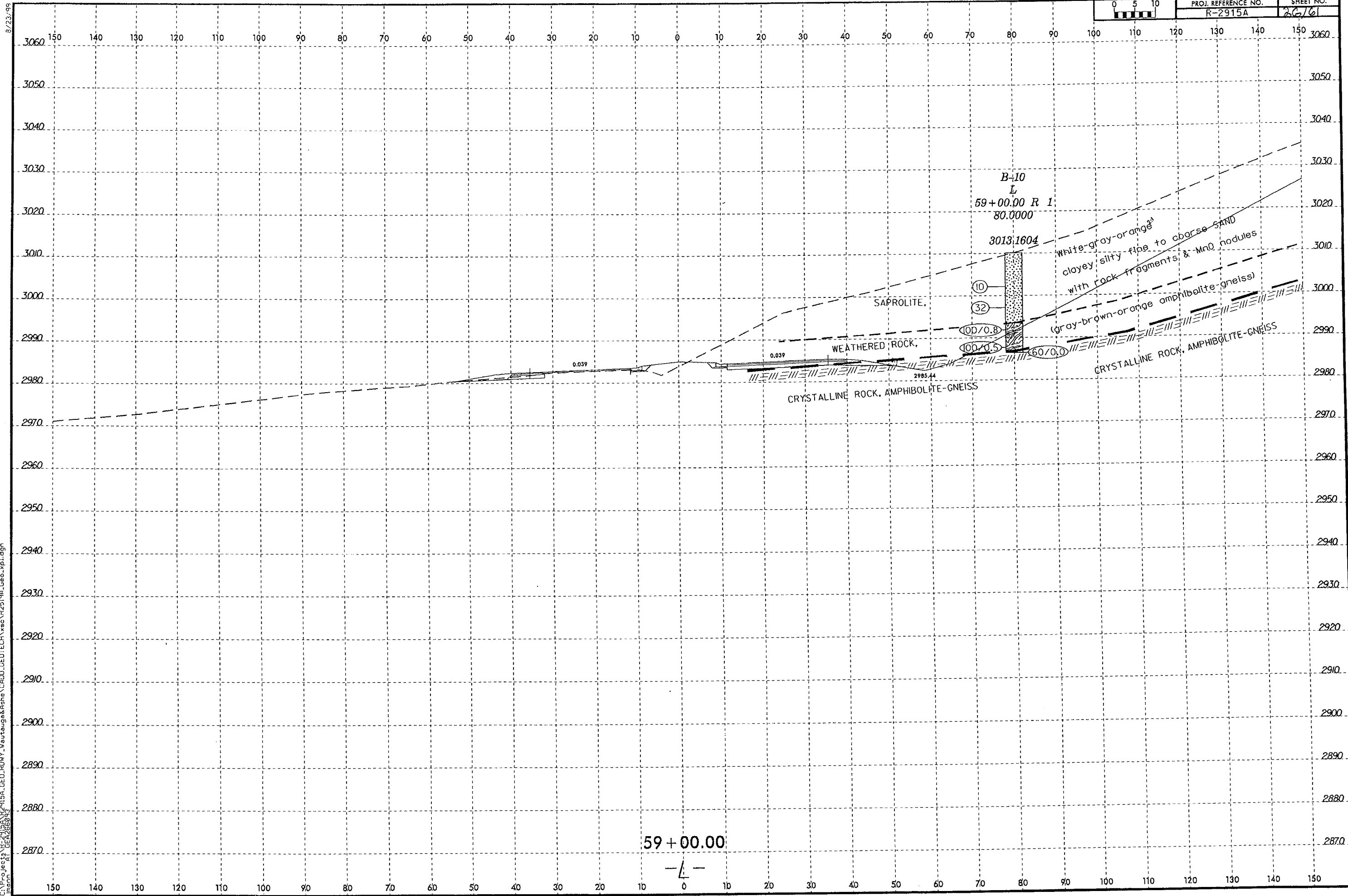
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8/23/99



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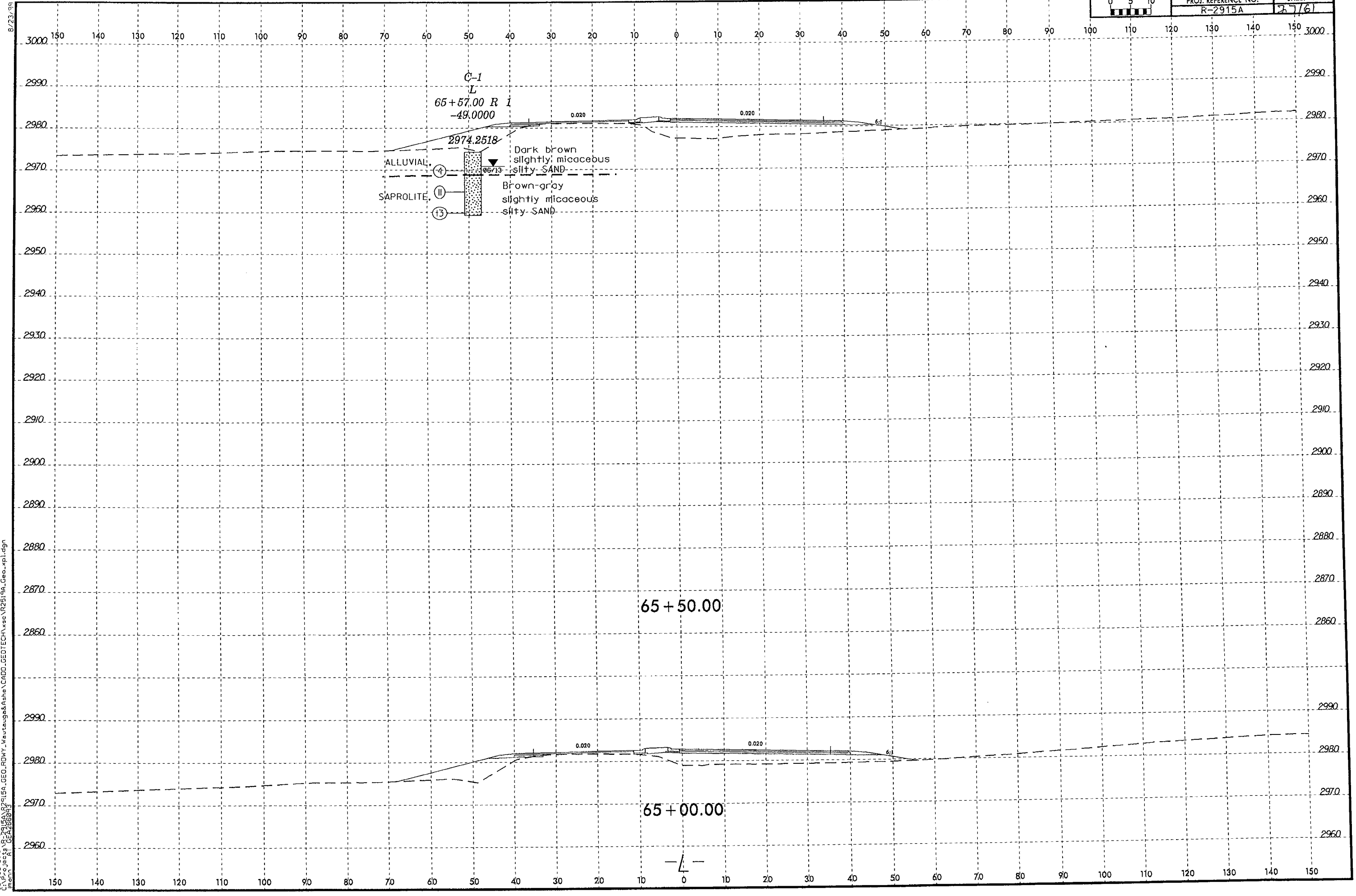
34 + 00.00
-L-



59 + 00.00

-L-

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 15A\RDWY_Vaitebaug&Ashe\CADD_GEO\TECH\15A\Geo.vpl.dgn



C-1
L
65+57.00 R 1
-49.0000

2974.2518
ALLUVIAL (4)
SAPROLITE (II)
(I3)

Dark brown slightly micaceous silty SAND
Brown-gray slightly micaceous silty SAND

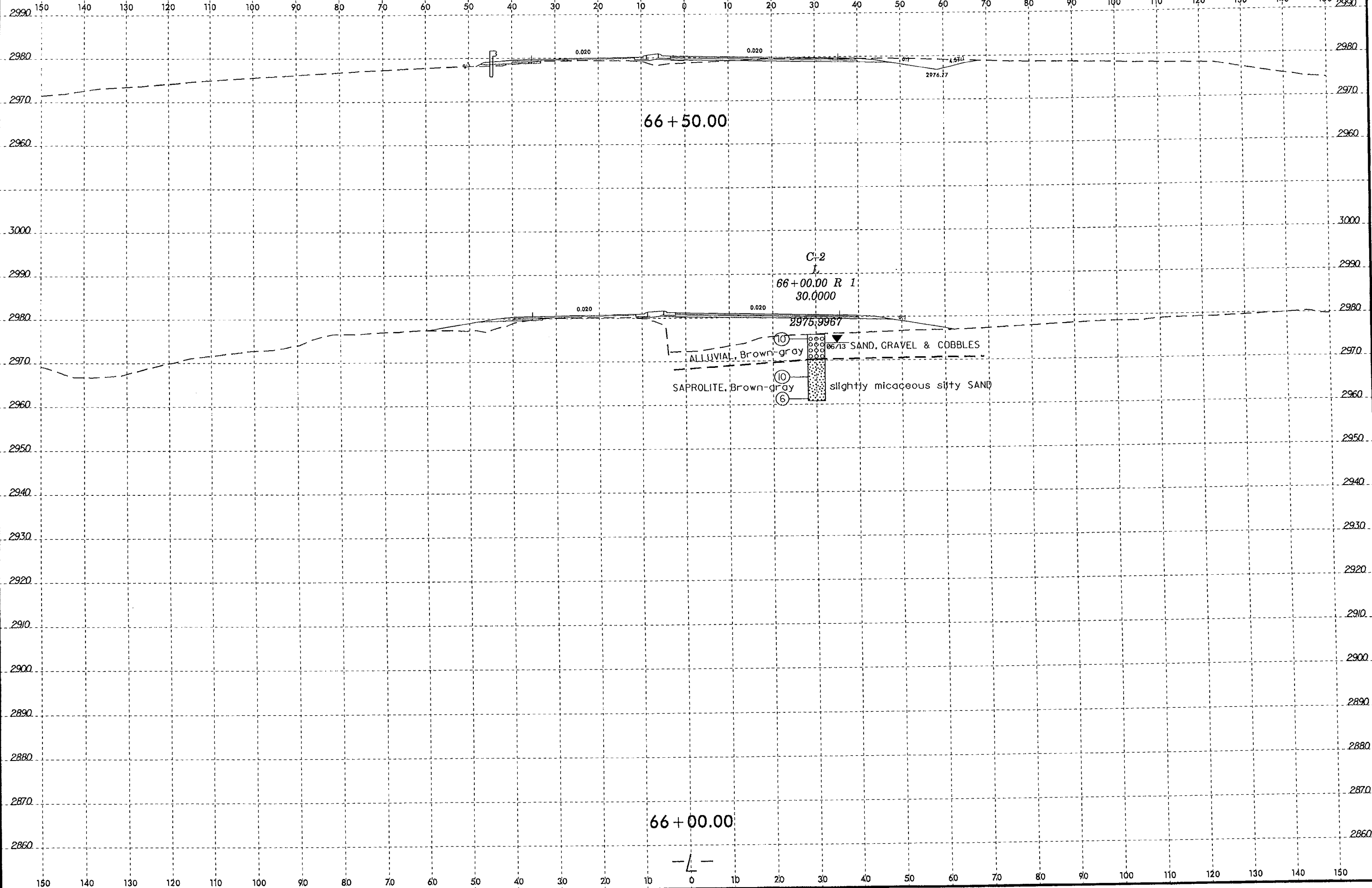
65 + 50.00

65 + 00.00

-L-

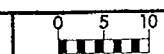
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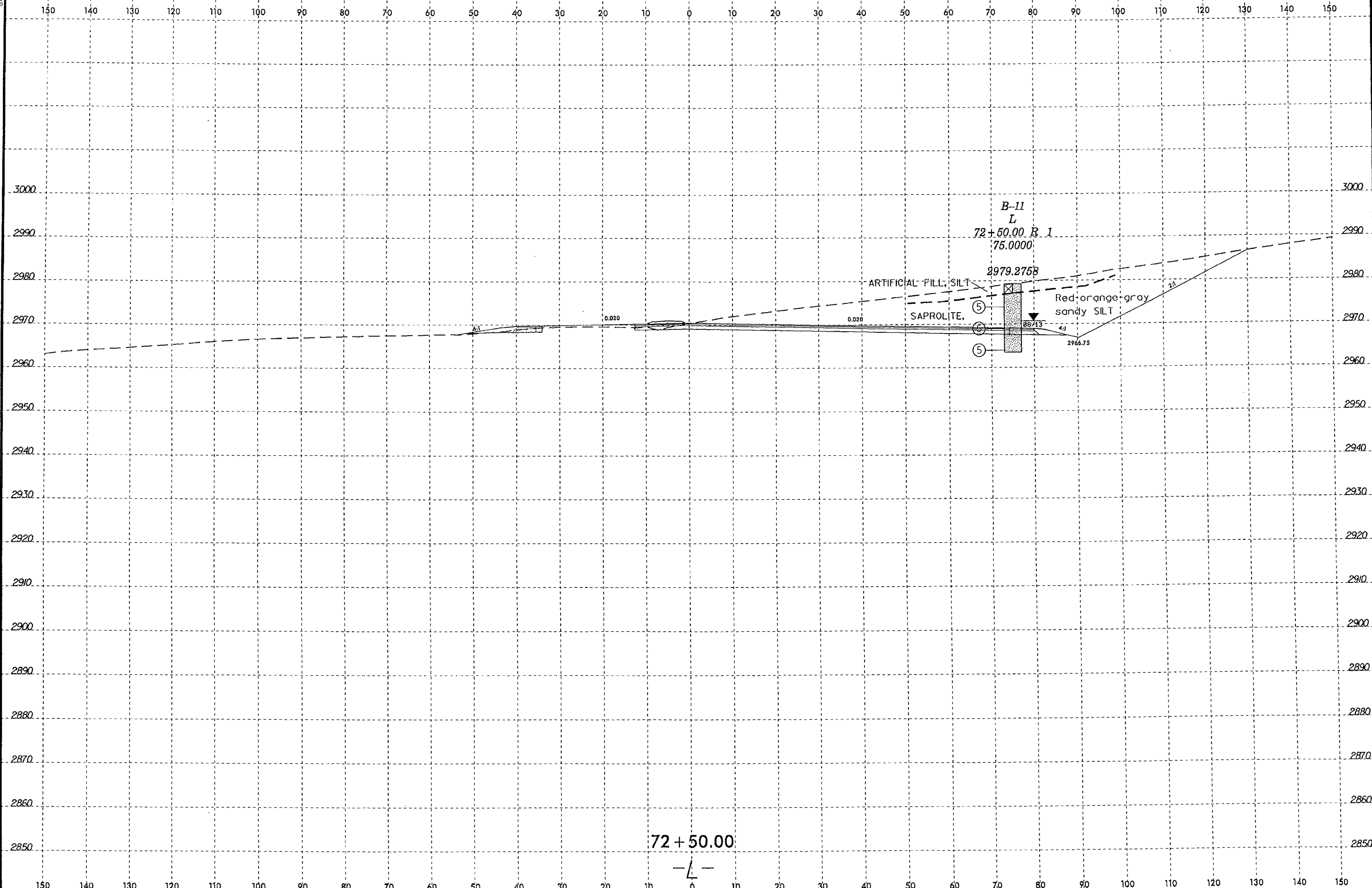


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8/23/99



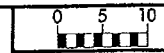
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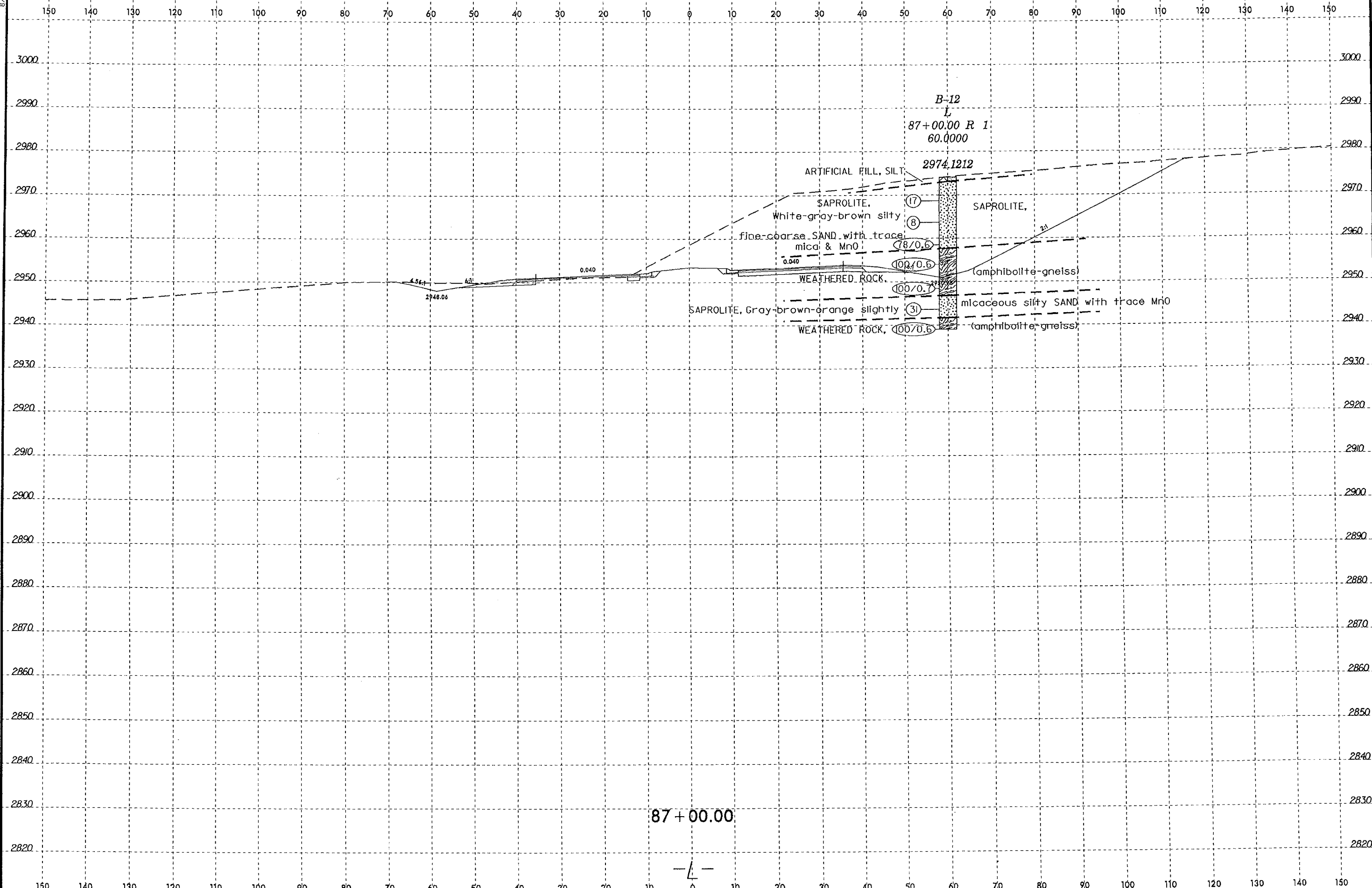
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mgm HI 08/23/99

72 + 50.00
-L-

6/23/98



PROJ. REFERENCE NO. R-2915A SHEET NO. 30/61



B-12
L
87+00.00 R 1
60.0000

2974.1212

ARTIFICIAL FILL, SILT

SAPROLITE, (17)

White-gray-brown silty (8)

fine-coarse SAND with trace mica & MnO (78/0.6)

WEATHERED ROCK (100/0.6)

WEATHERED ROCK (100/0.6)

SAPROLITE, Gray-brown-orange slightly (3)

WEATHERED ROCK, (100/0.6)

SAPROLITE,

(amphibolite-gneiss)

micaceous silty SAND with trace MnO

(amphibolite-gneiss)

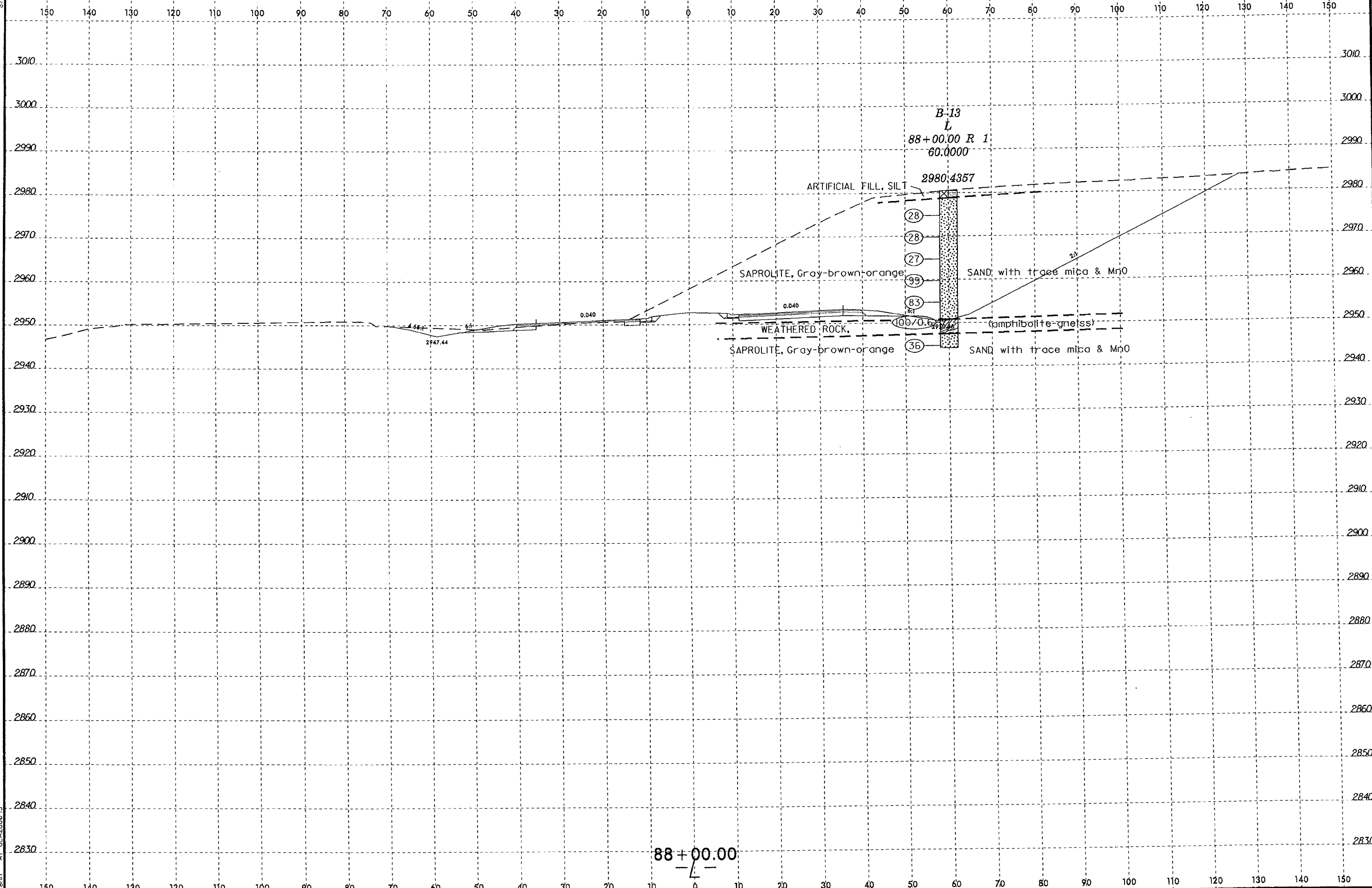
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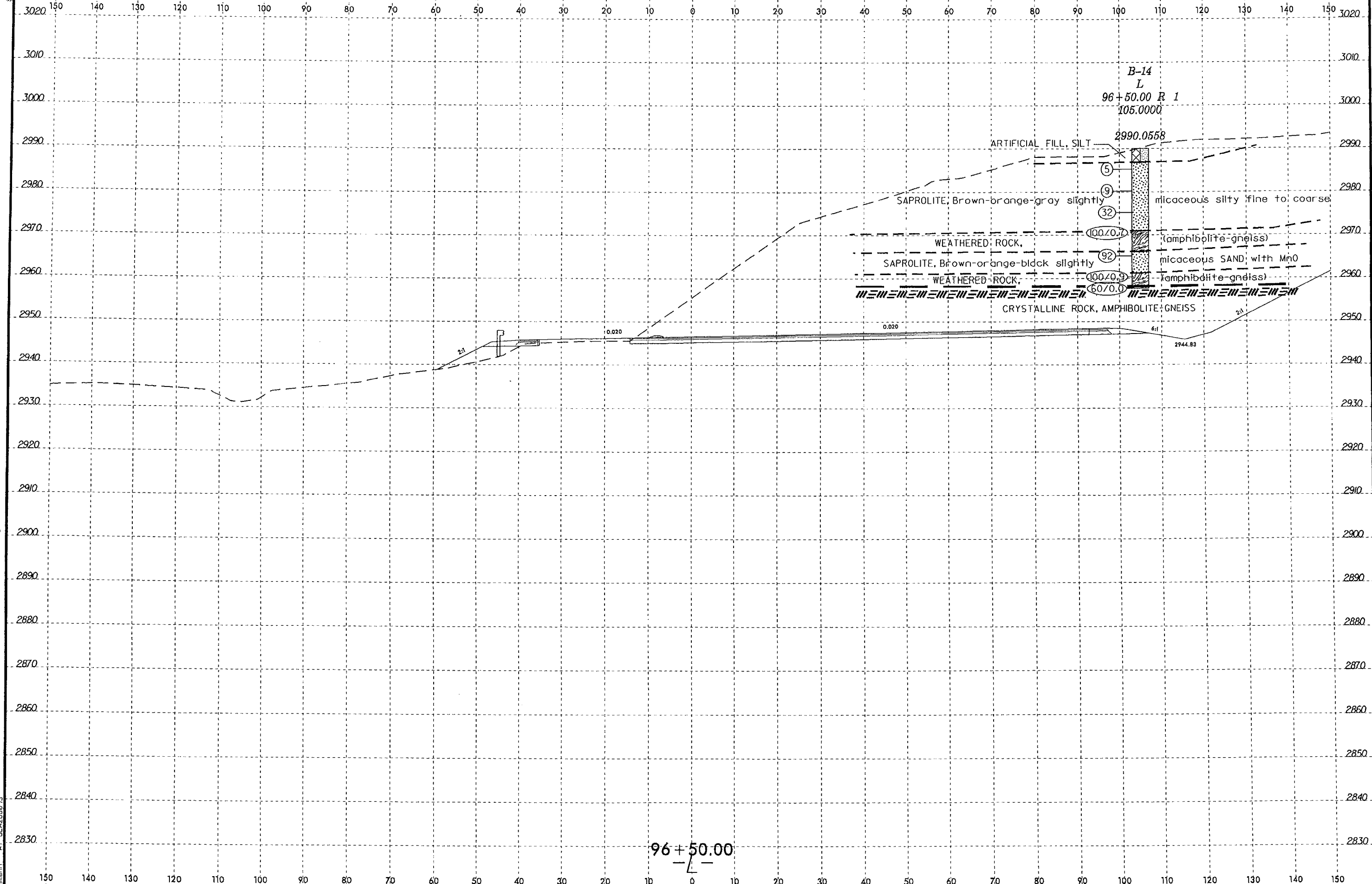
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8/23/99

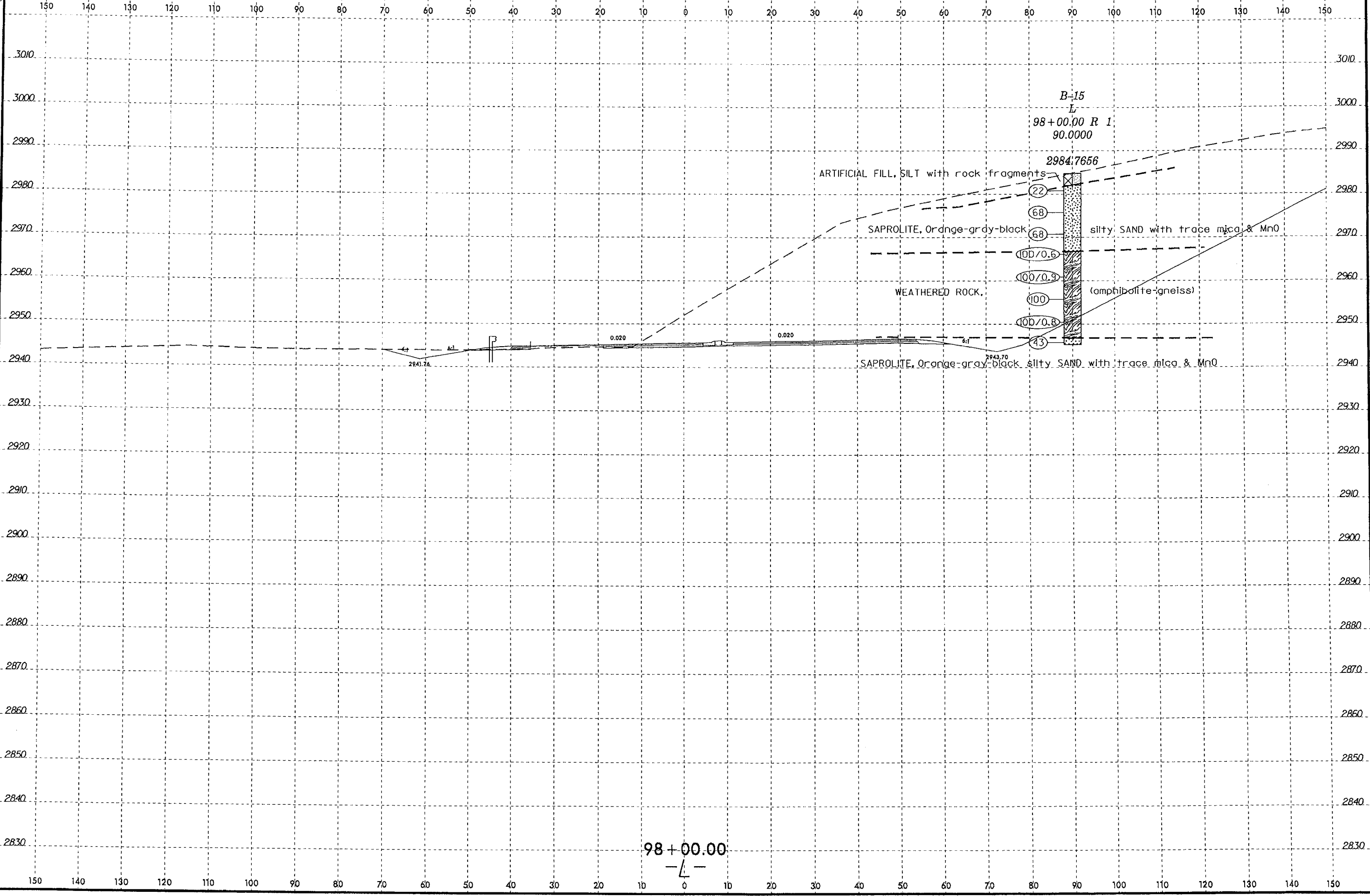


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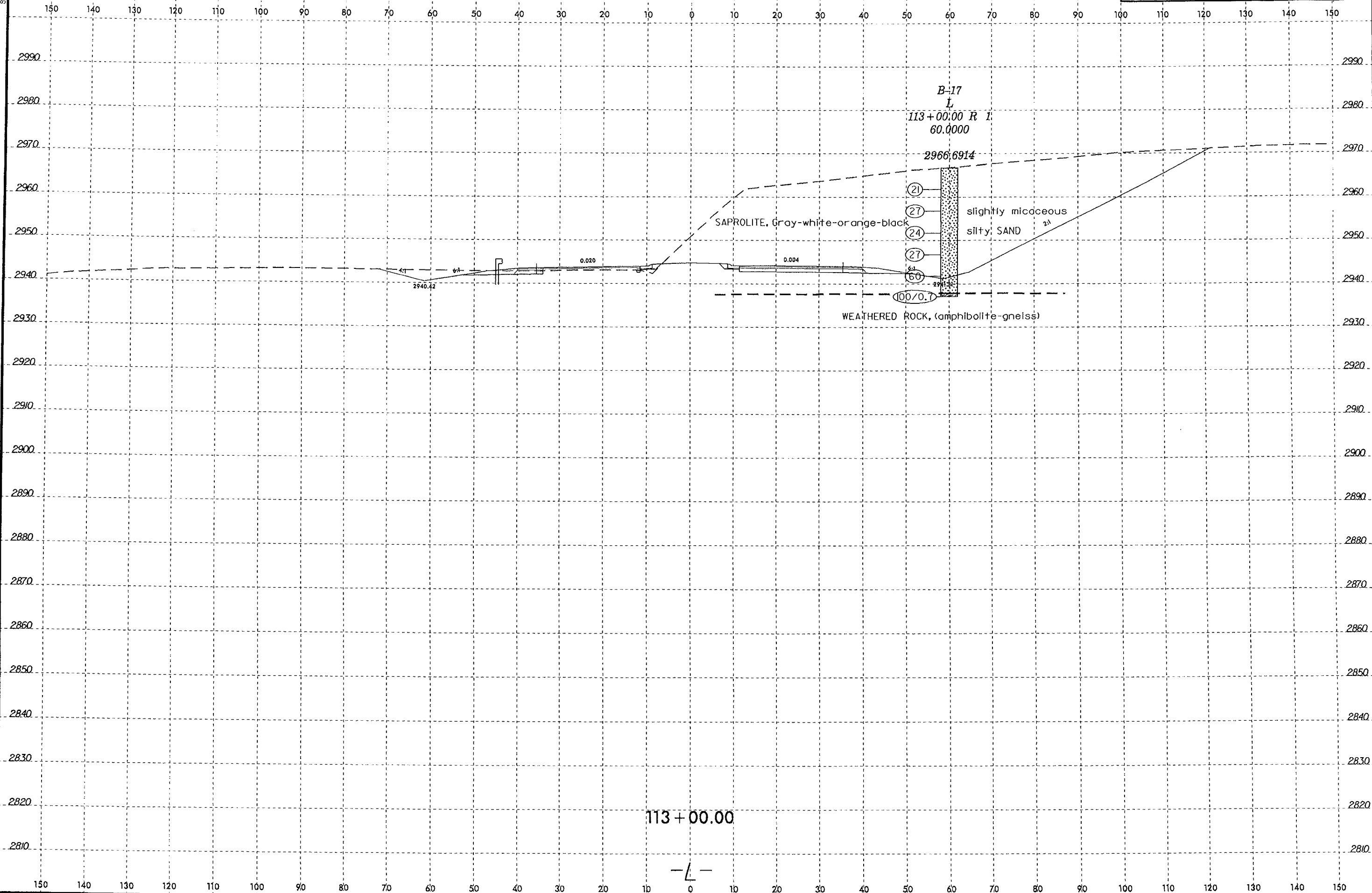
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8/22/99

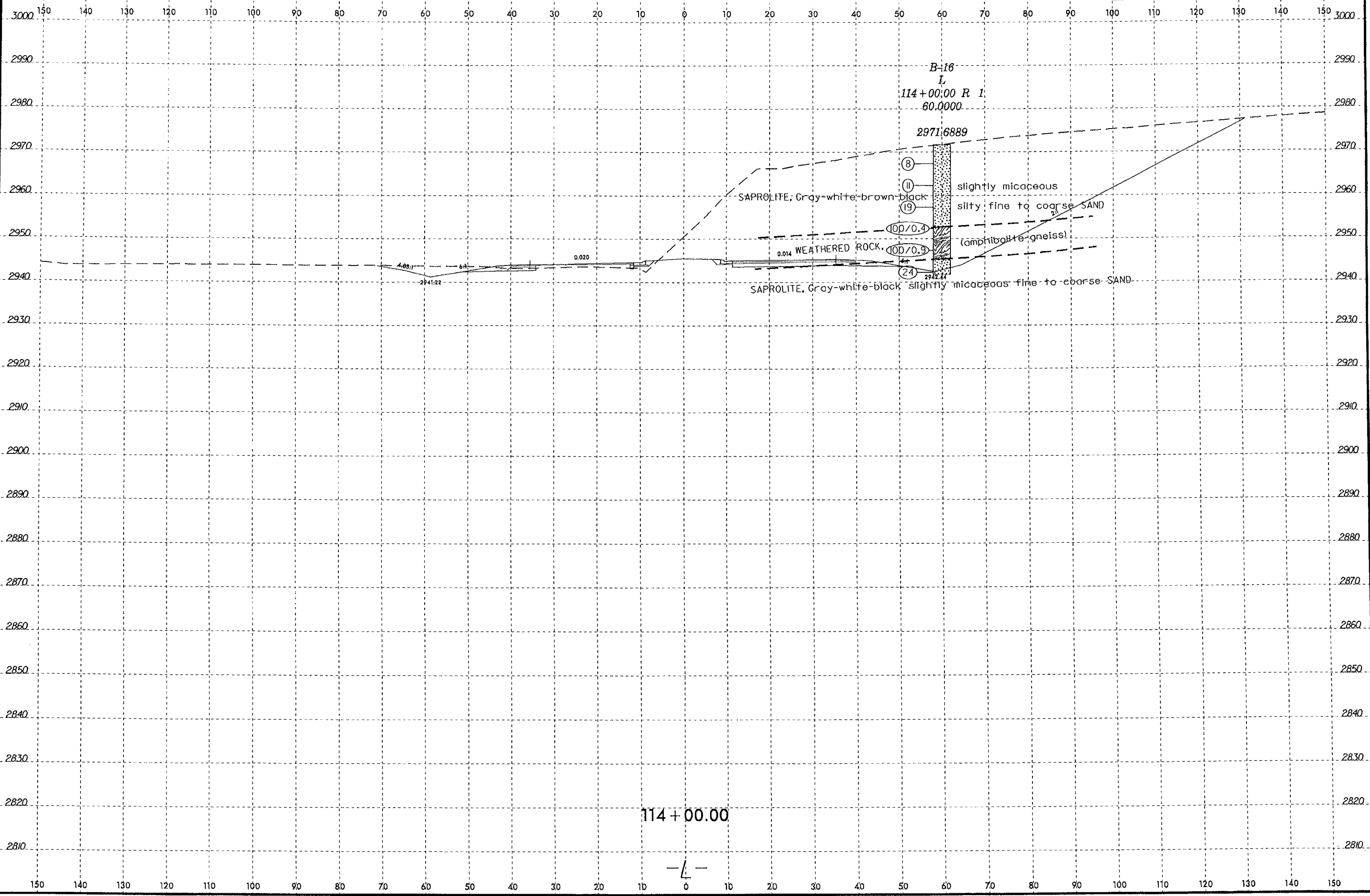


113 + 00.00

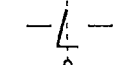
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8/23/95



114 + 00.00



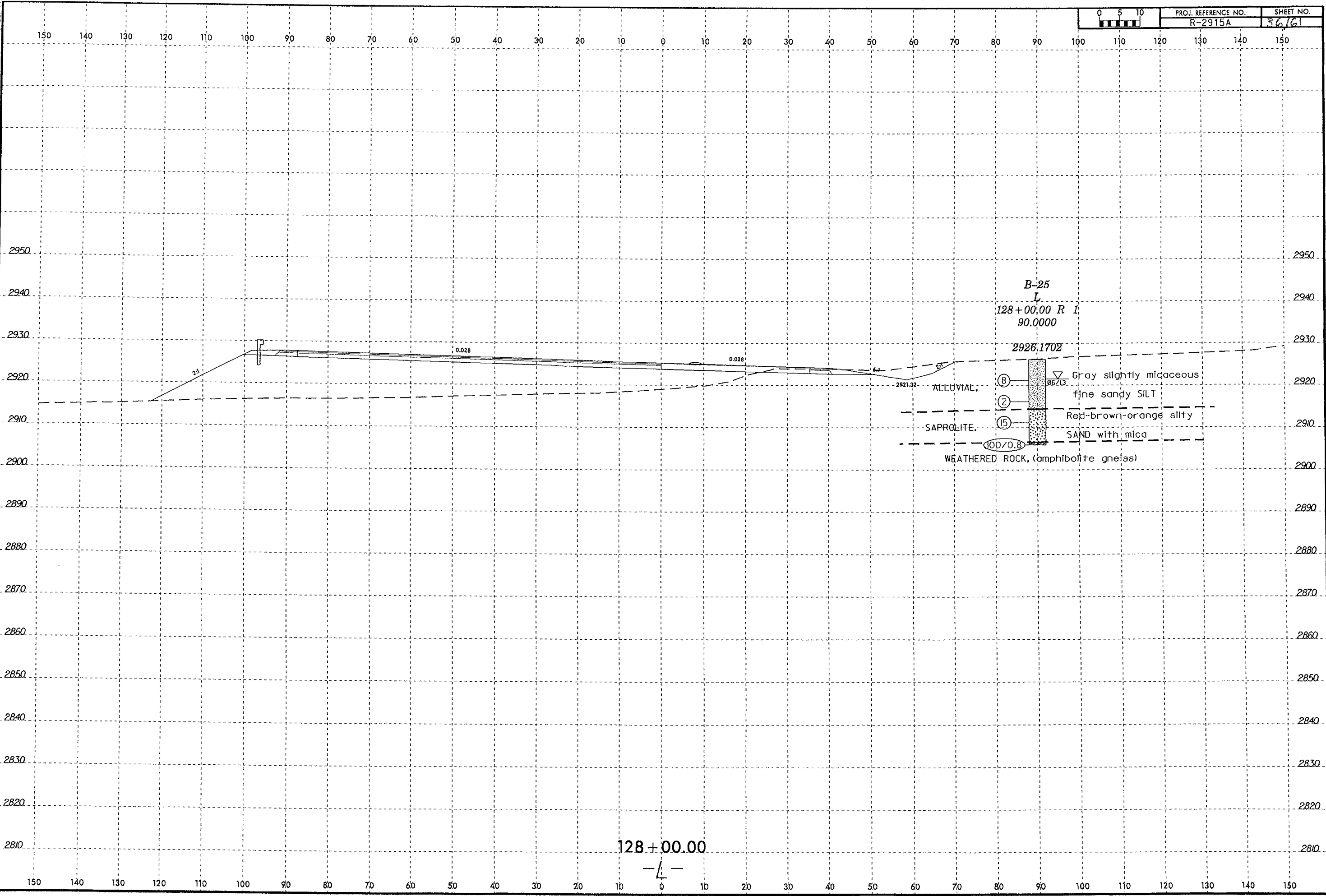
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R-2915A

SHEET NO.
36/61

8/22/99
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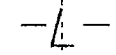


B-25
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128+00.00 R I
90.0000

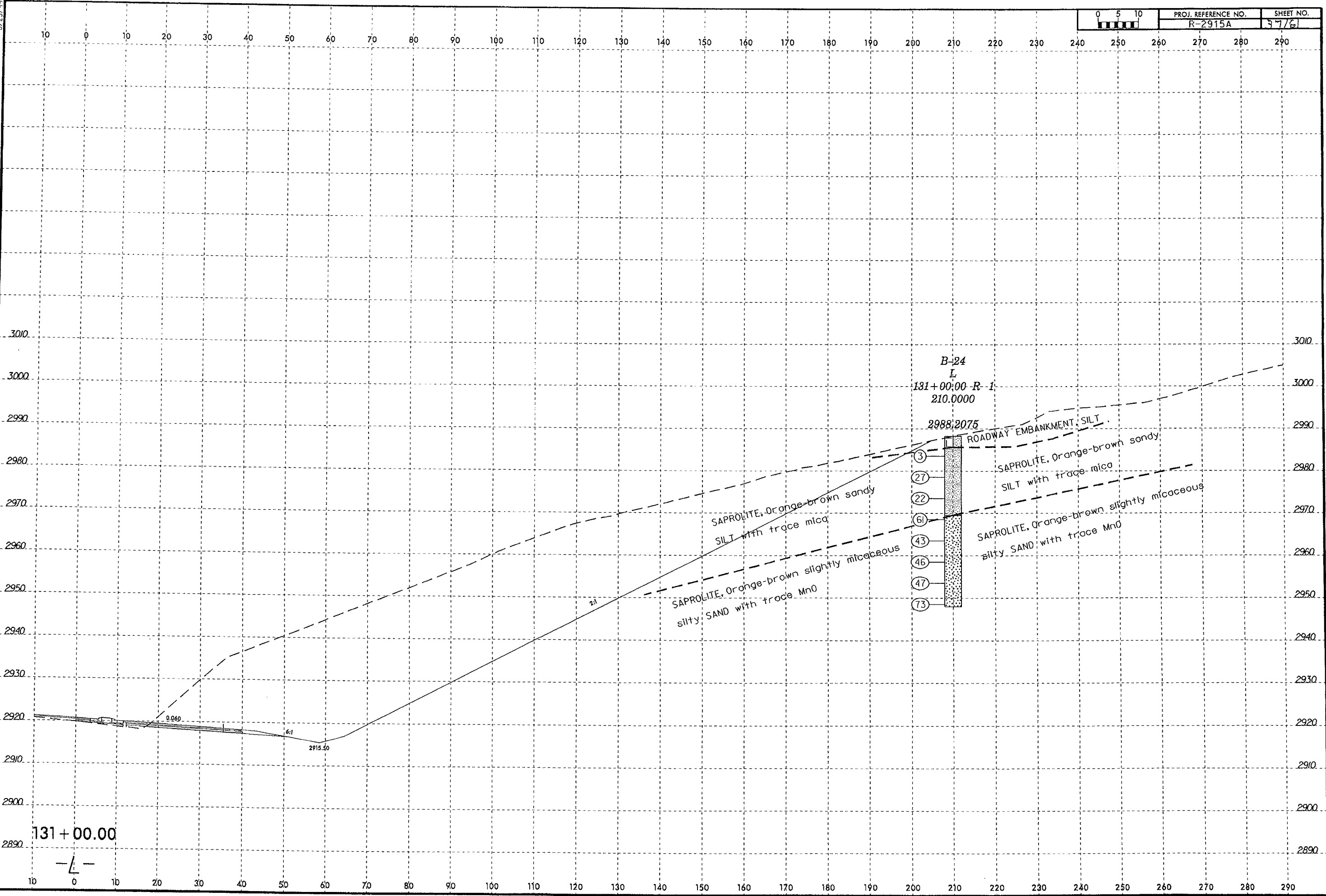
2926.1702

- ⑧ Gray slightly micaceous fine sandy SILT
- ② Red-brown-orange silty SAND with mica
- ⑮ WEATHERED ROCK, (amphibolite gneiss)

128+00.00

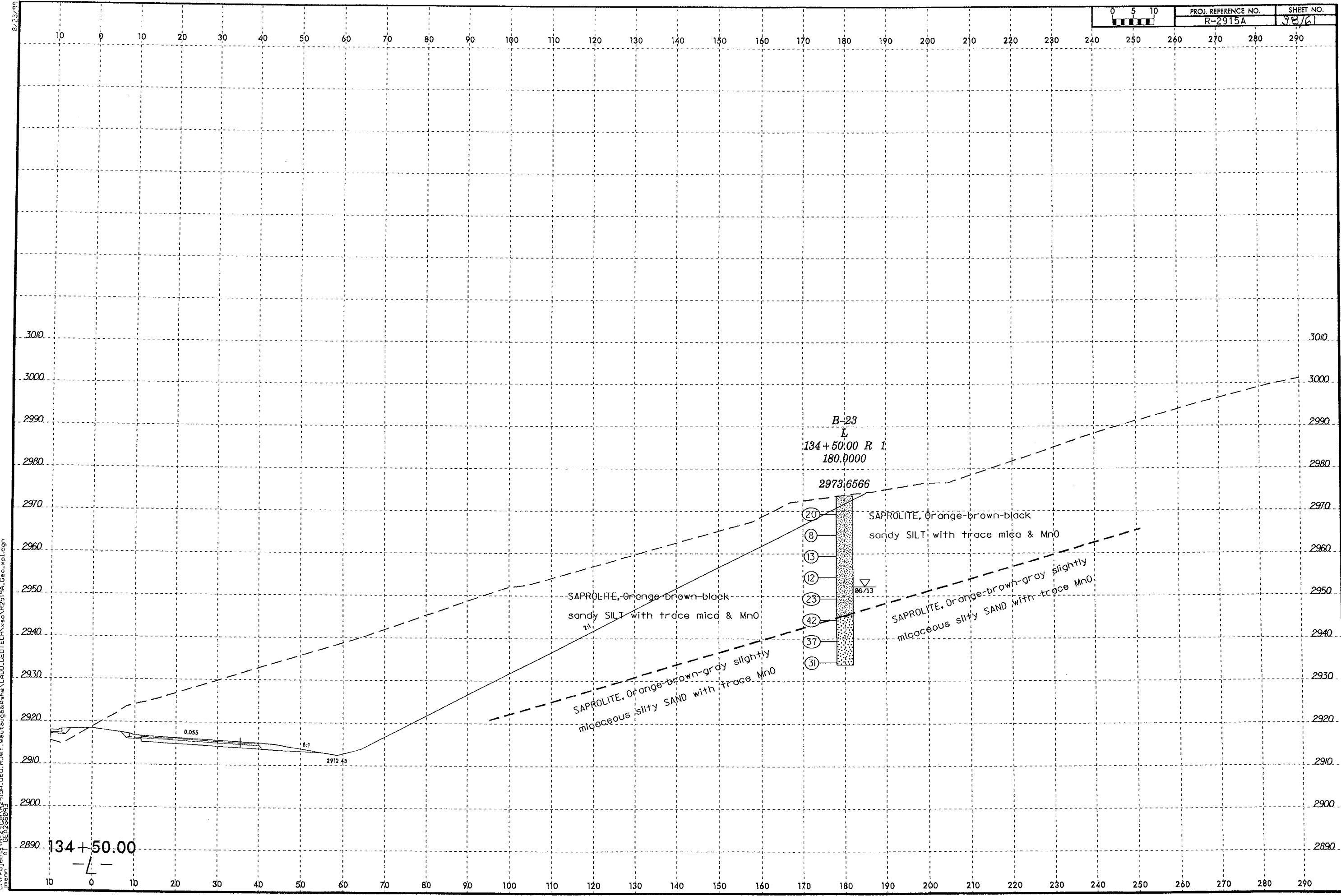
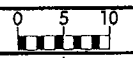


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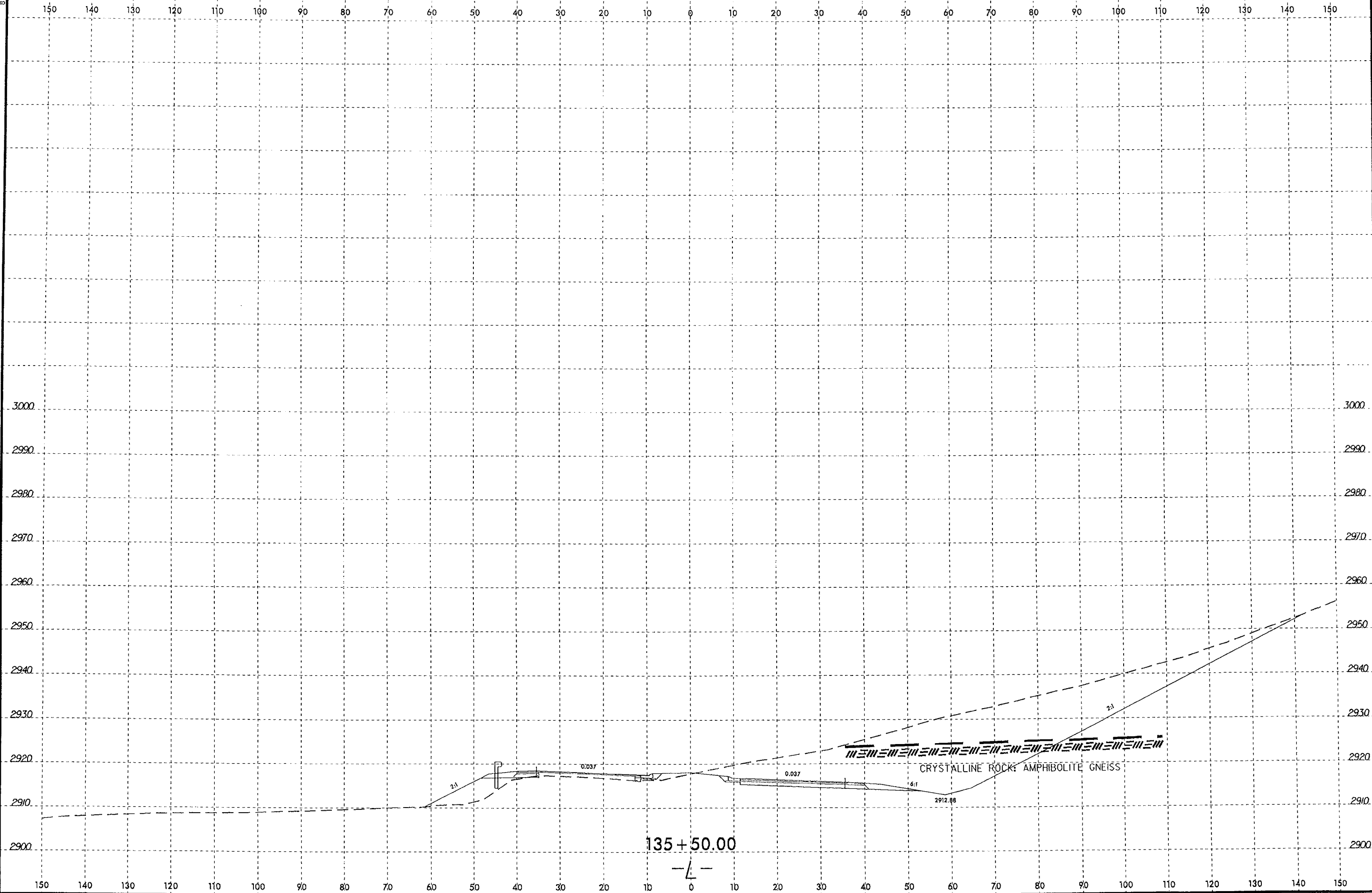


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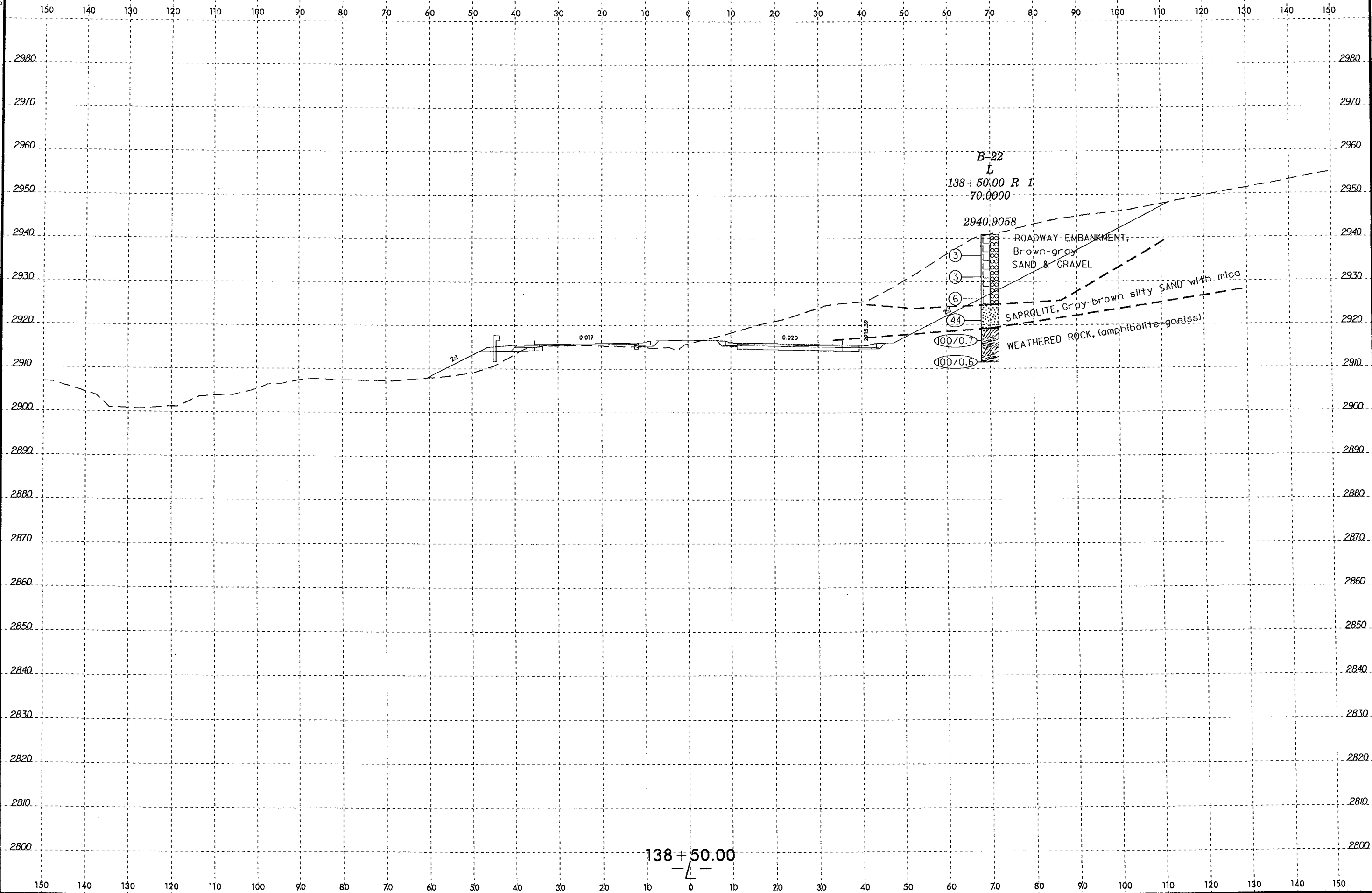
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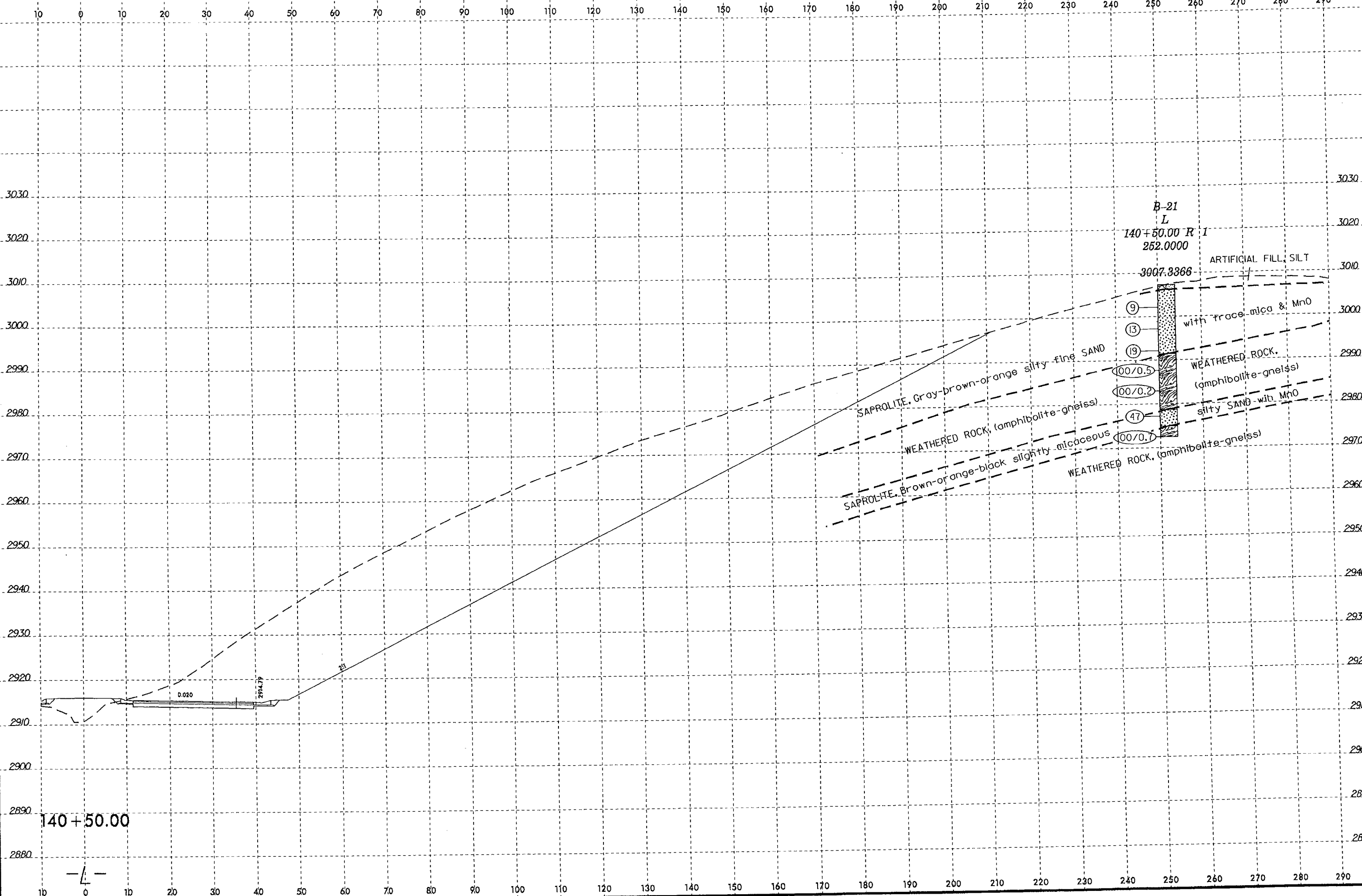
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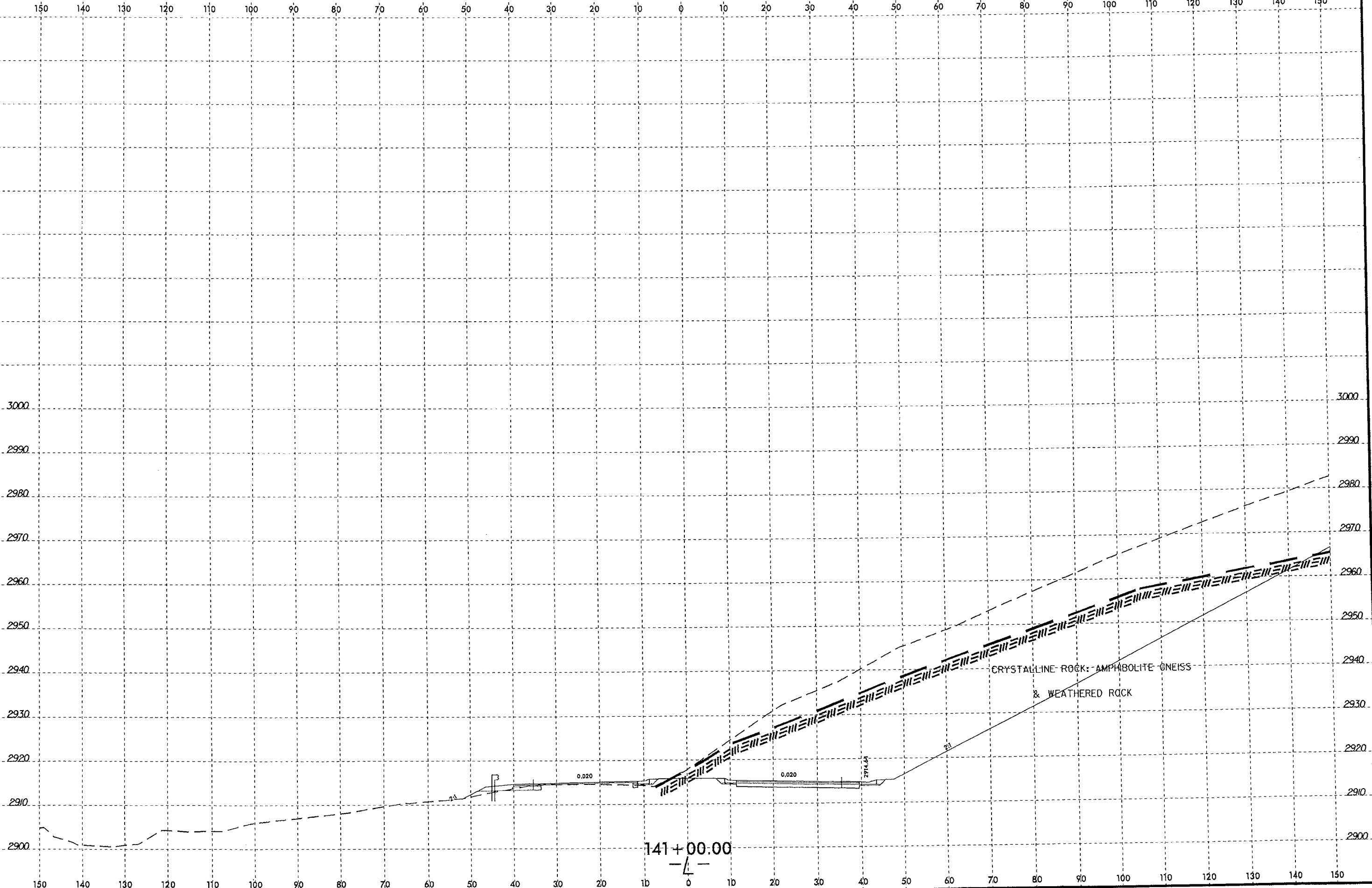
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8/23/99

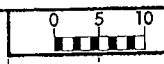


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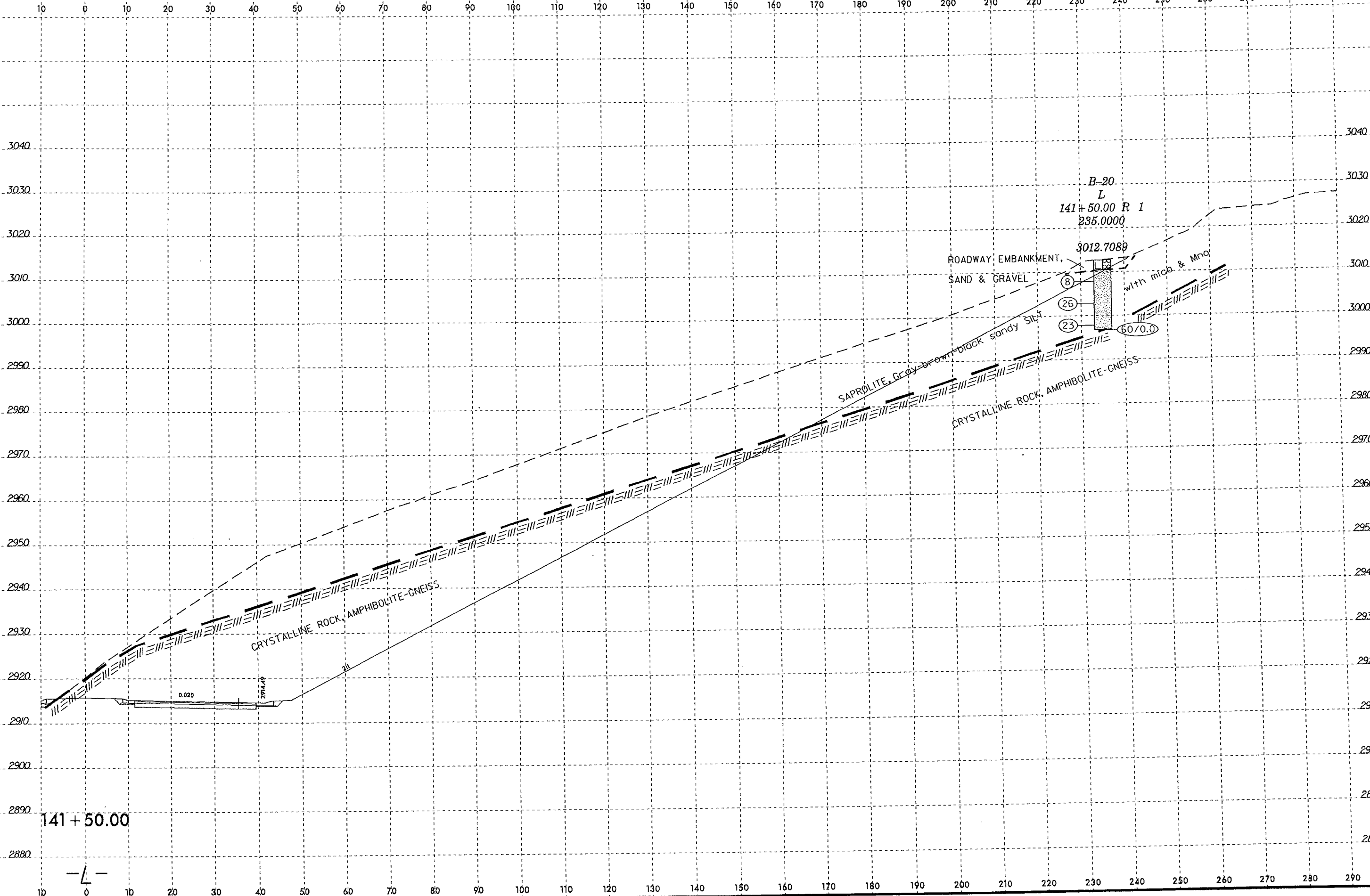
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8/23/99



PROJ. REFERENCE NO.	SHEET NO.
R-2915A	43/61



141 + 50.00

B-20
L
141 + 50.00 R 1
235.0000

ROADWAY: EMBANKMENT.
SAND & GRAVEL

SAPROLITE, Gray-brown-black sandy silt

CRYSTALLINE ROCK, AMPHIBOLITE-GNEISS

with mica & MnO₂

(26)
(23)

60/0.0

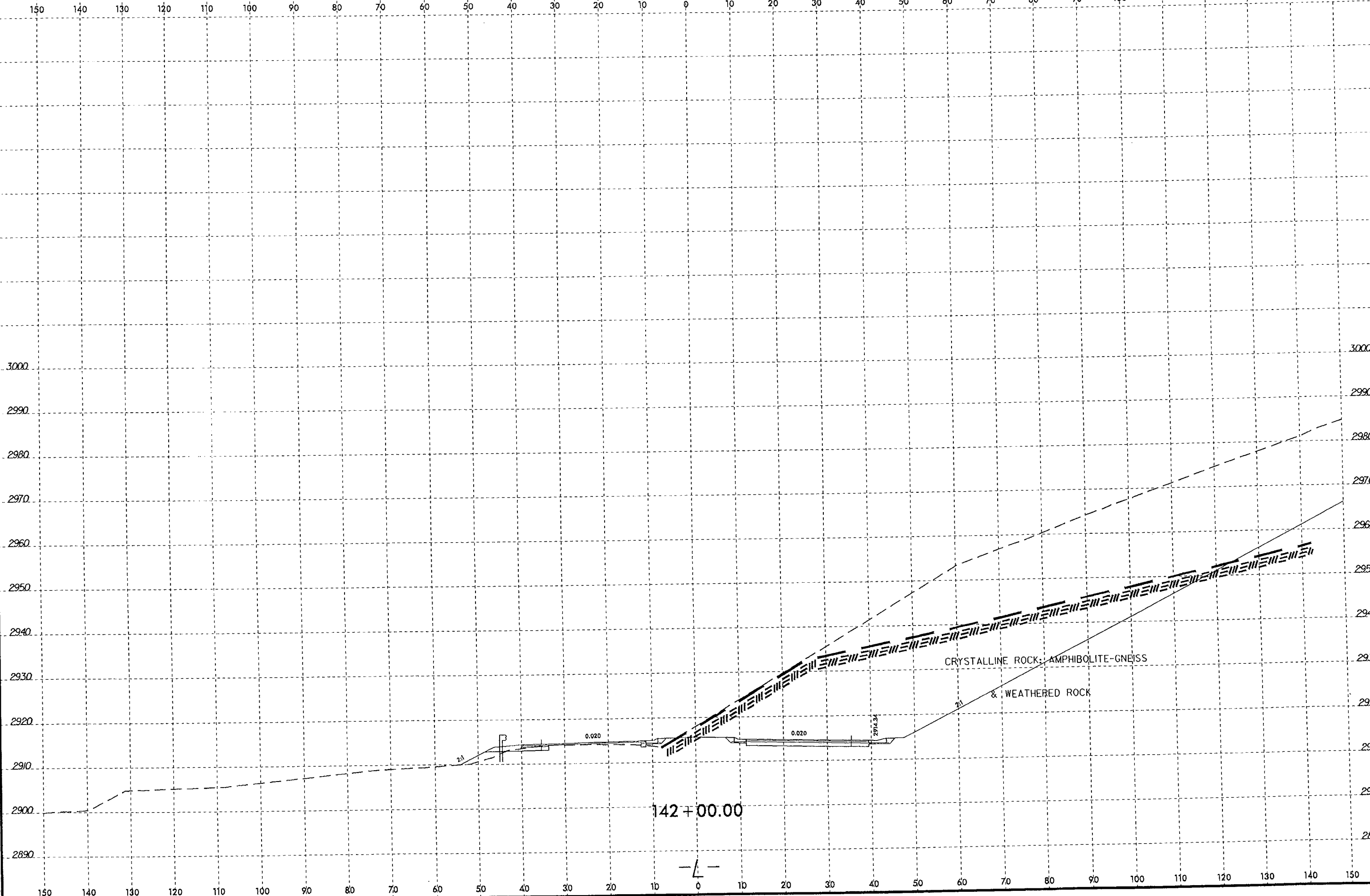
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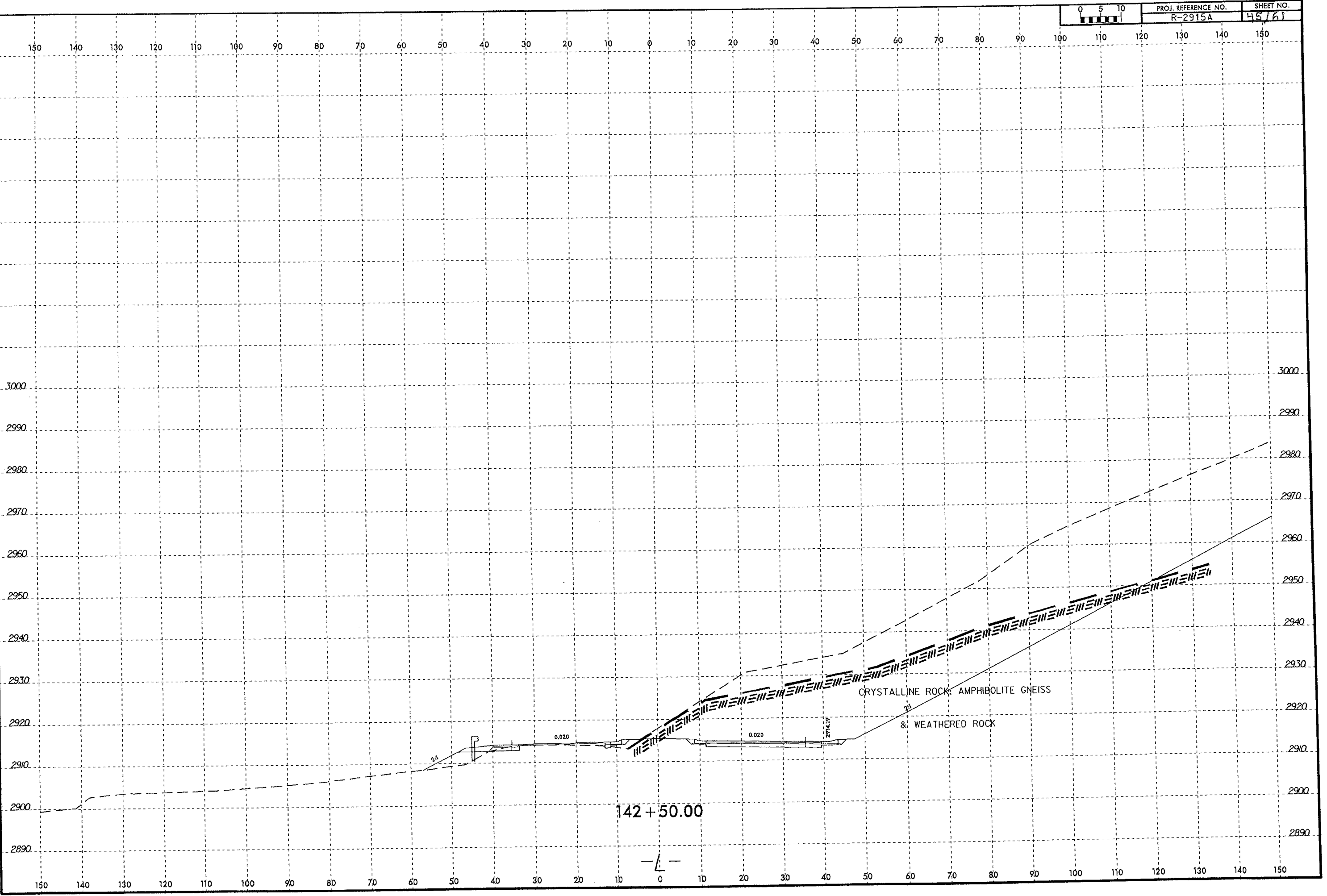
CRYSTALLINE ROCK, AMPHIBOLITE-GNEISS

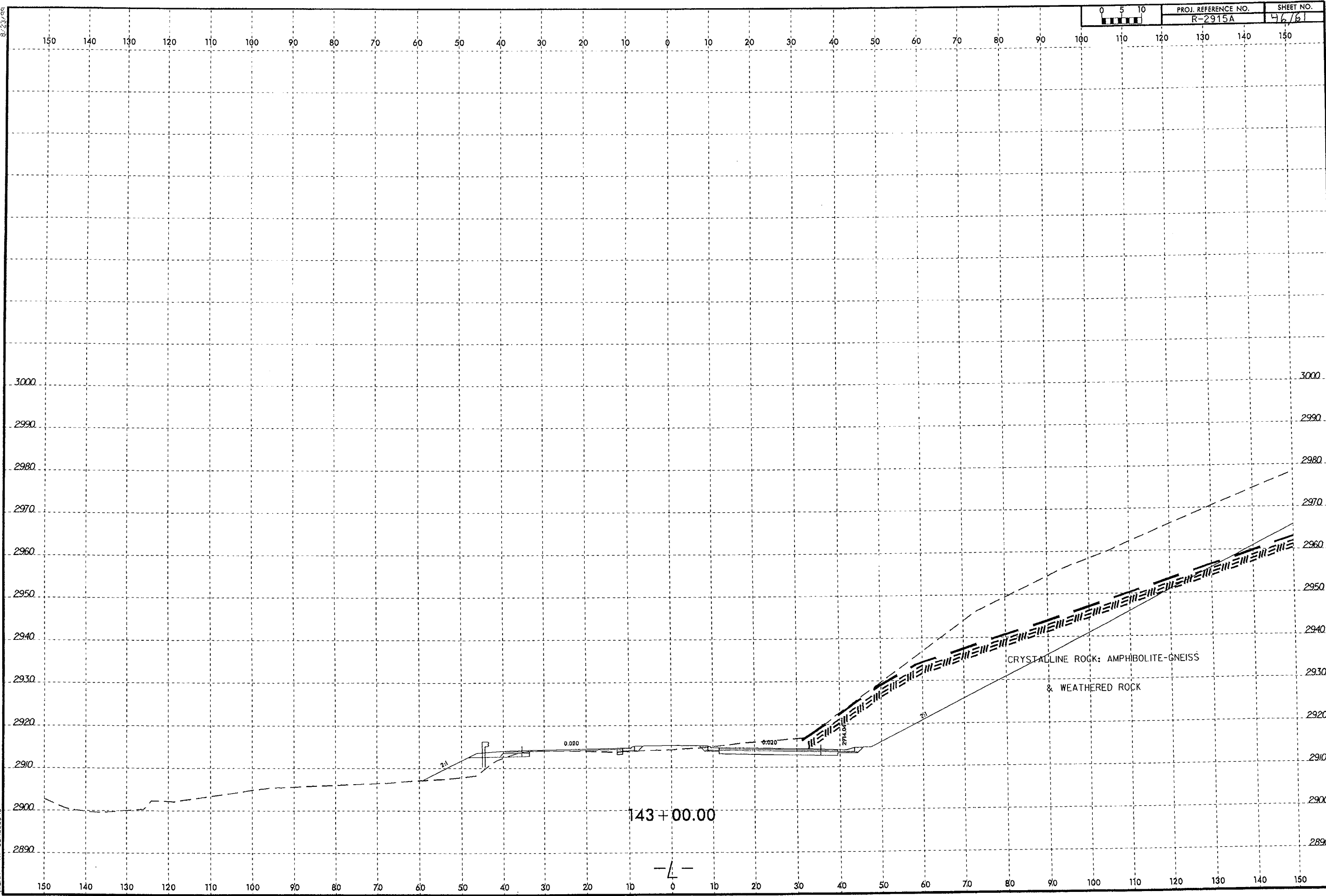
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imann AT GEA255013



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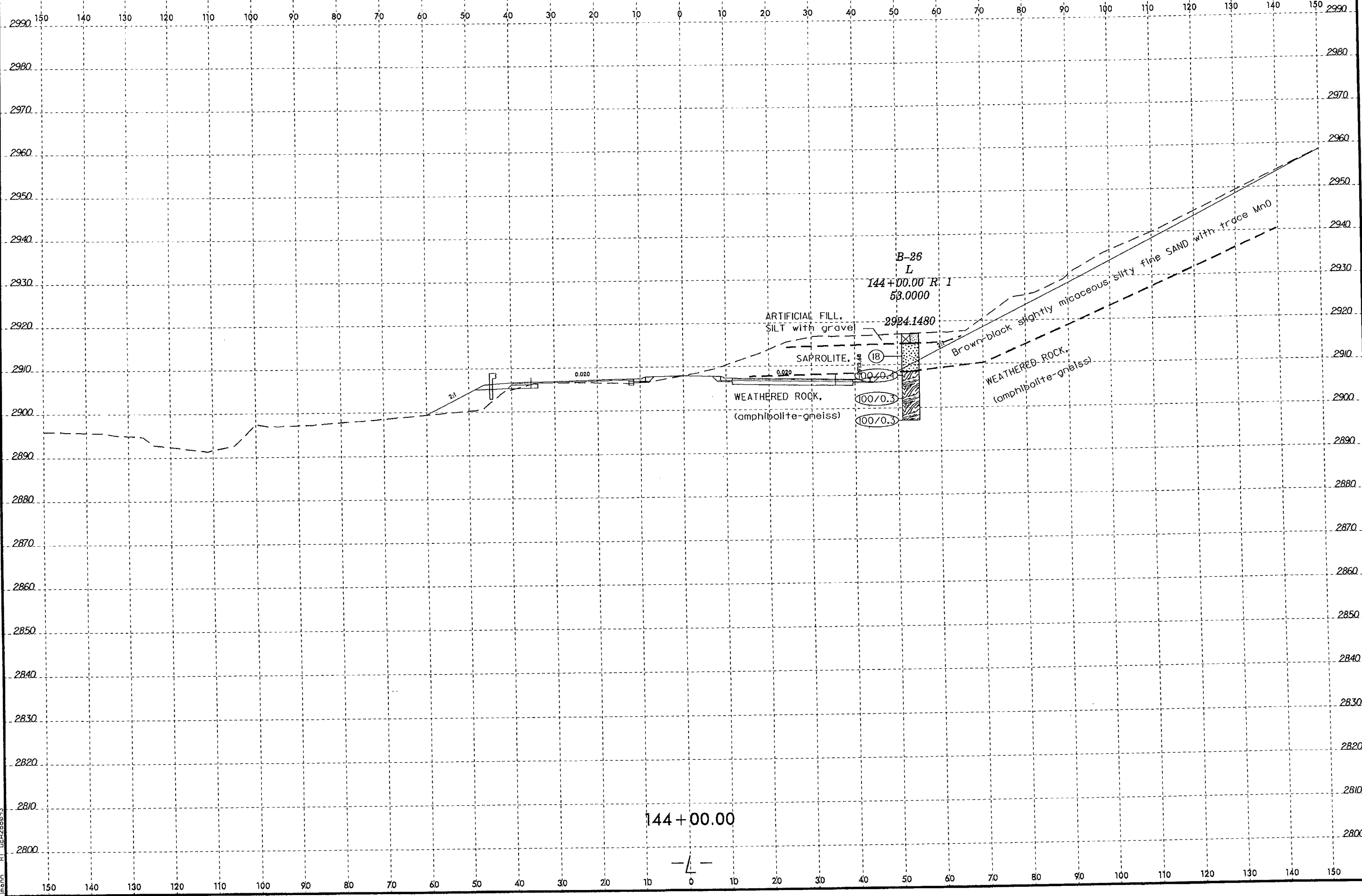




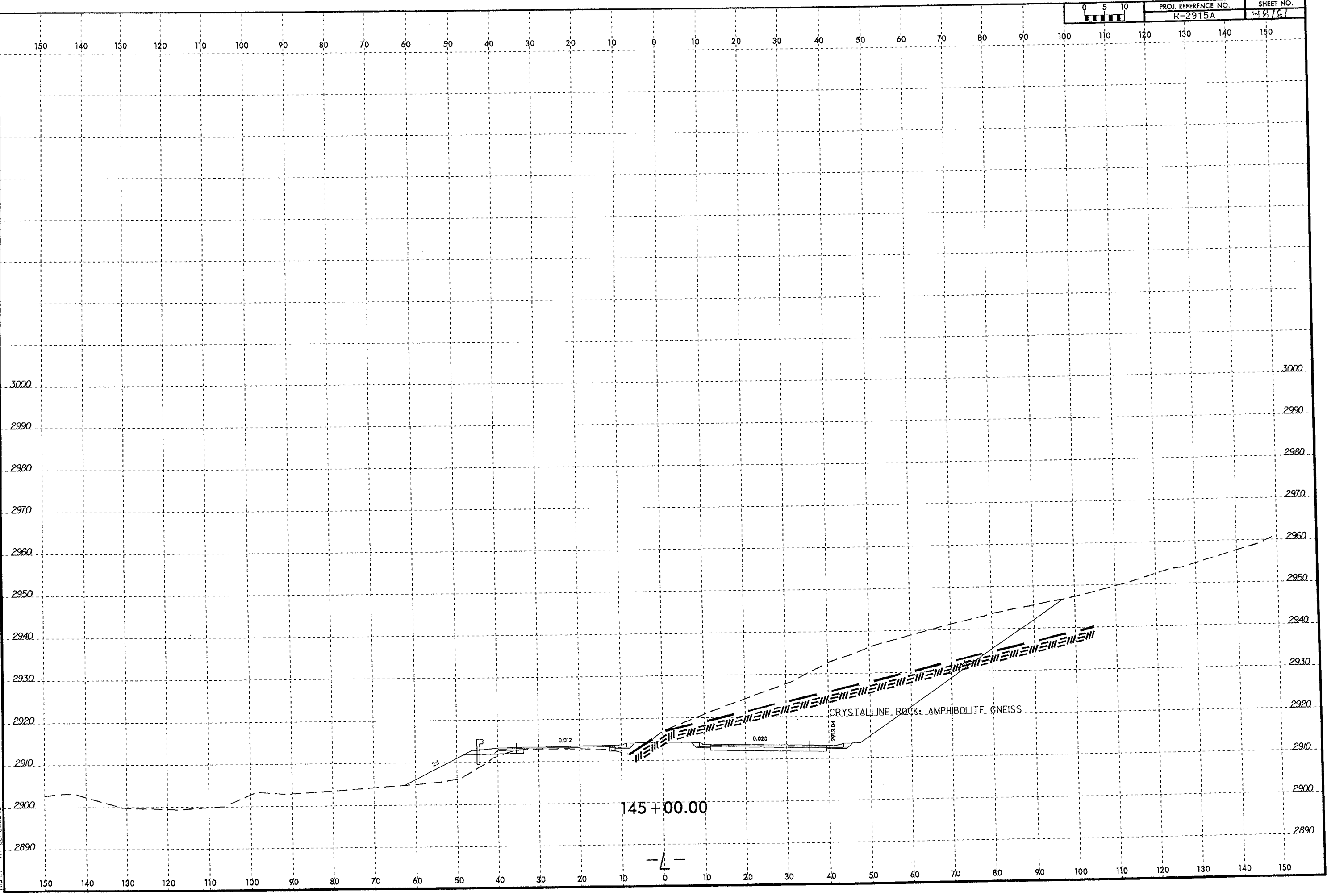
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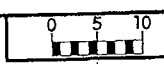
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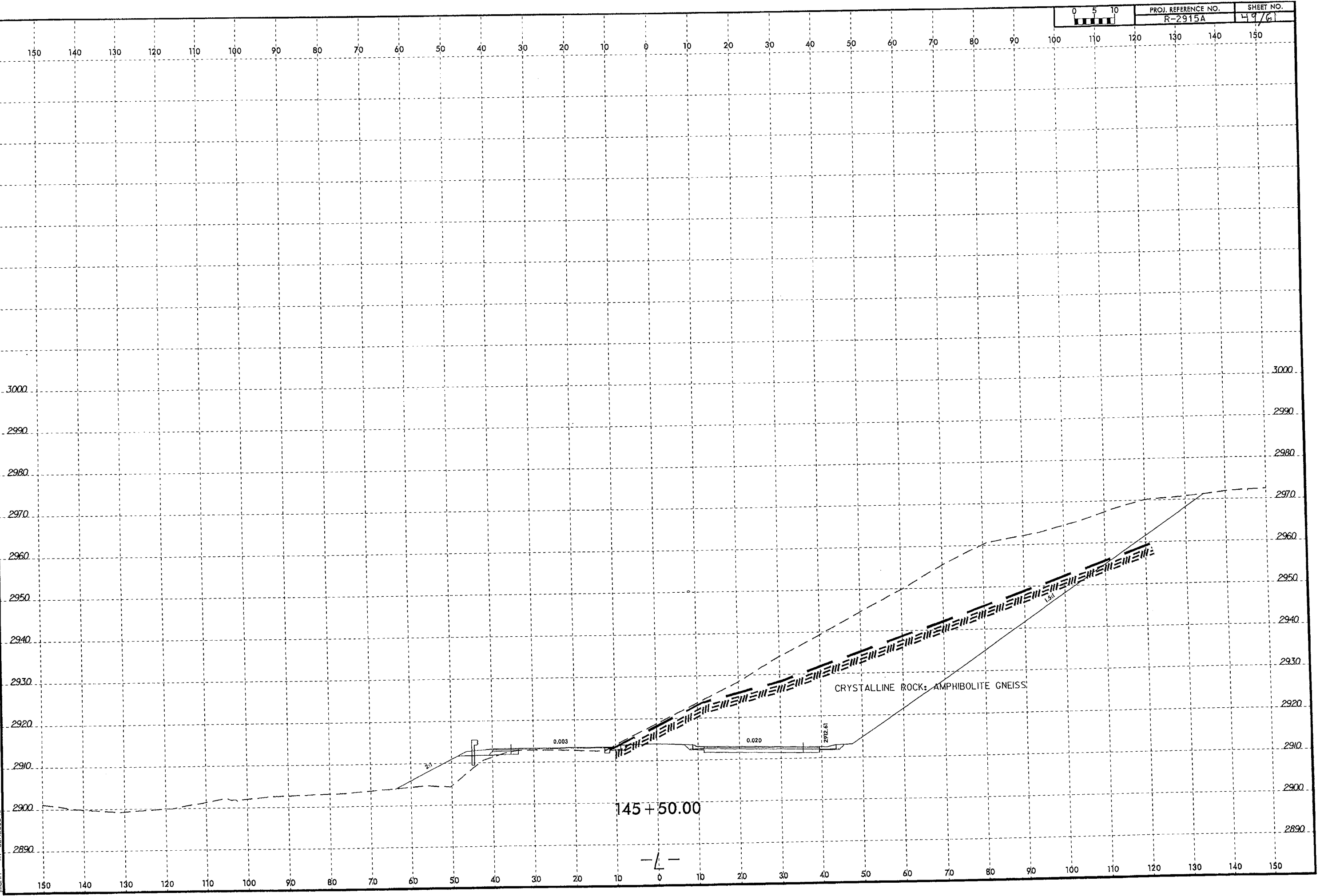


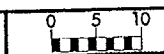
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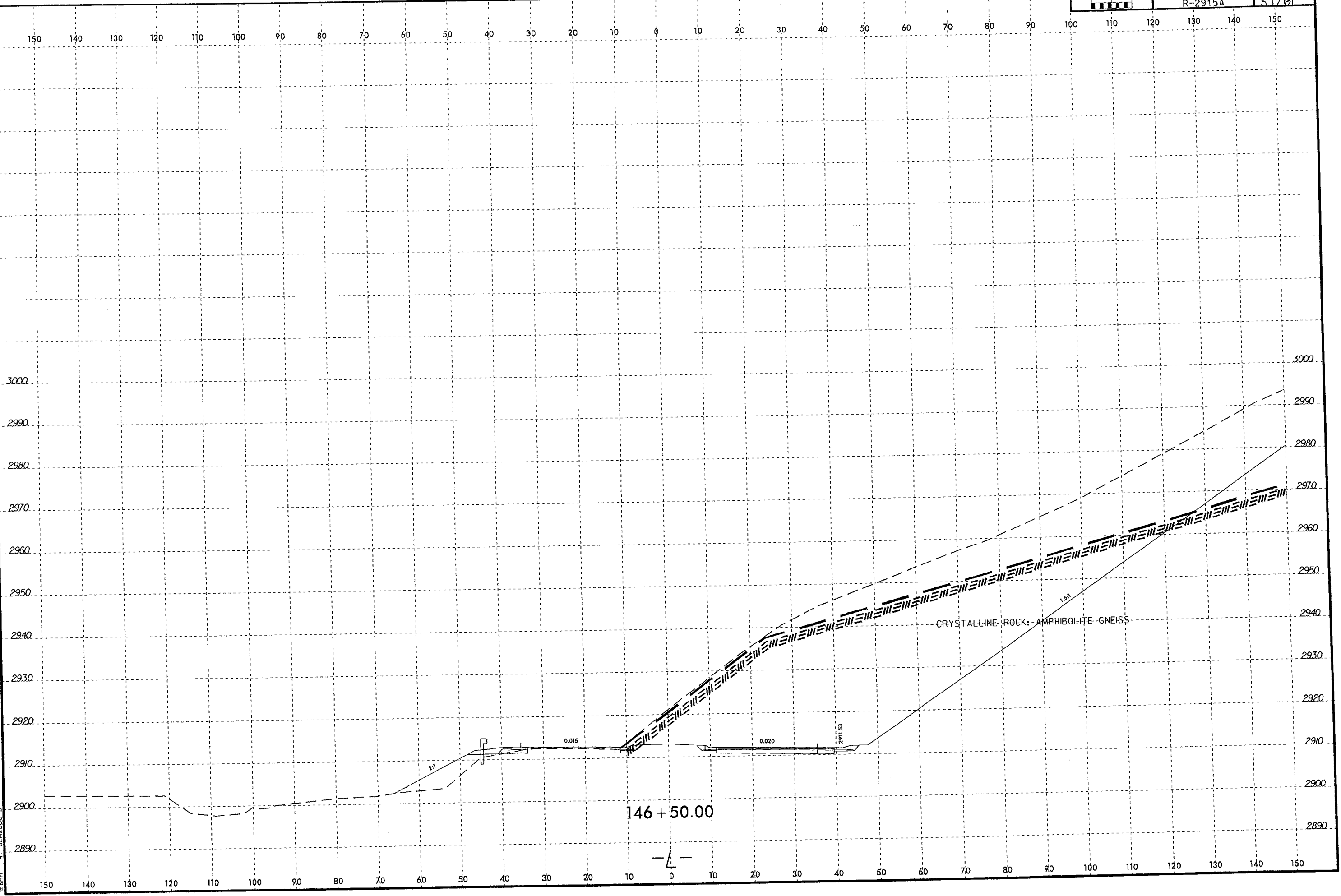
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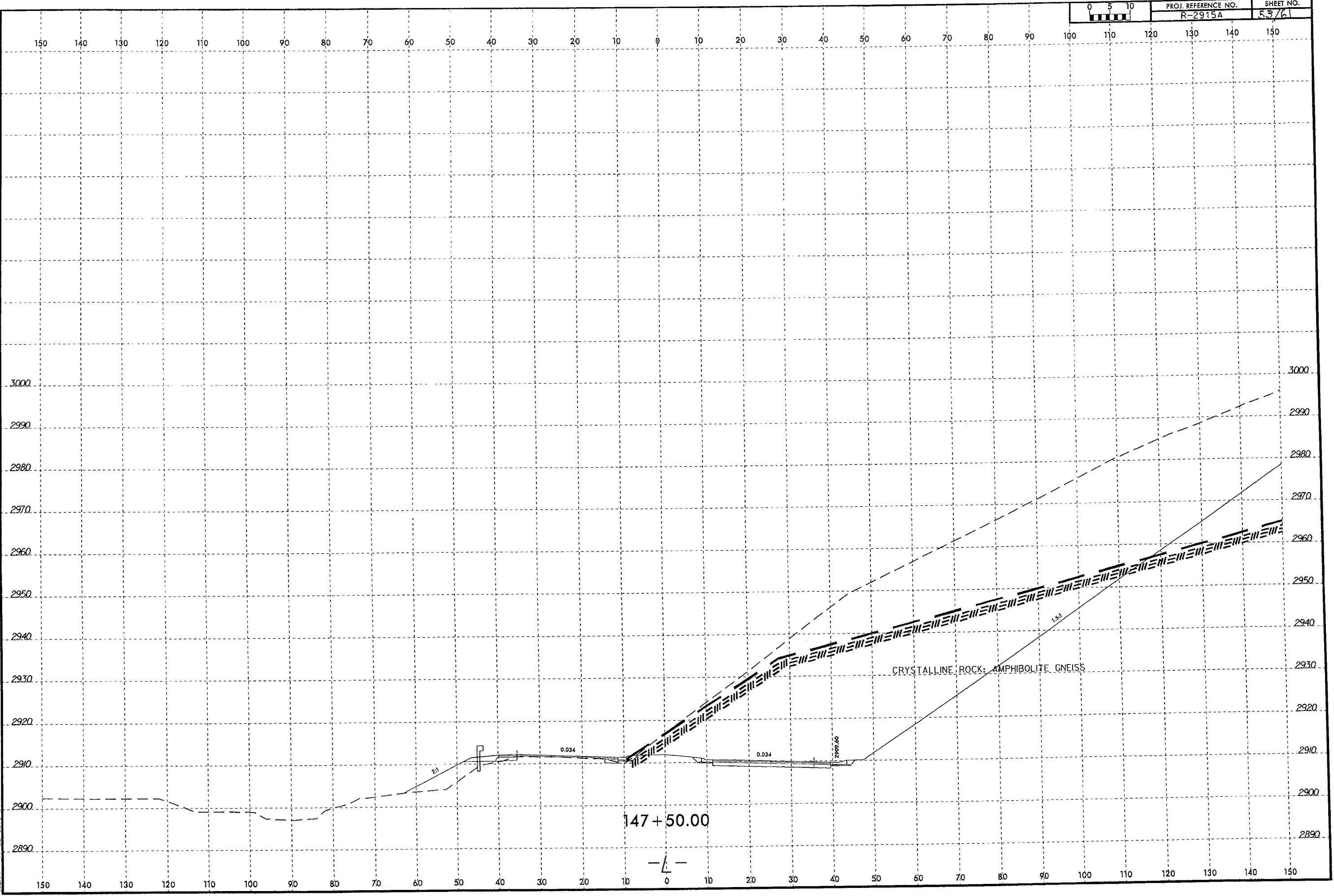
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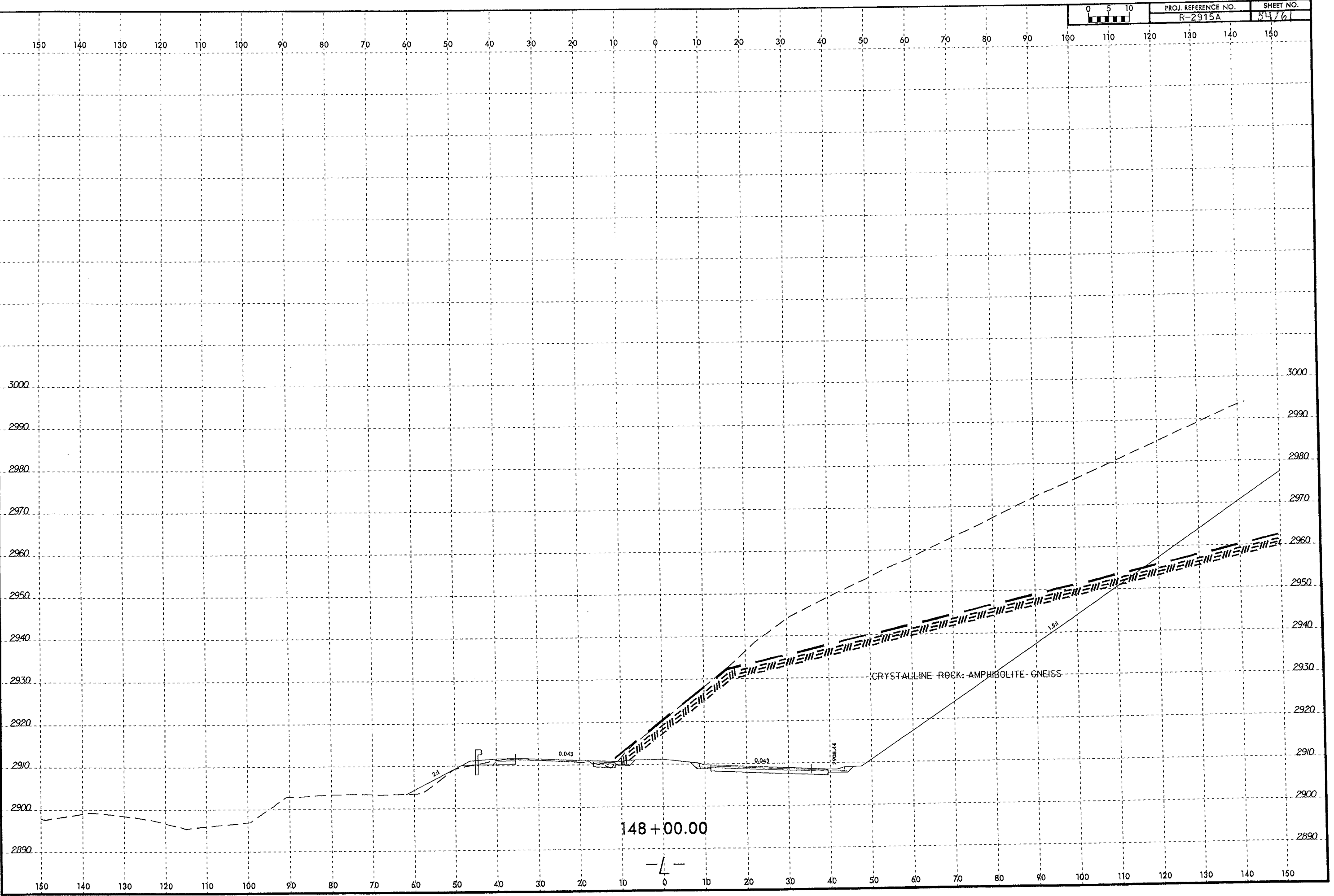


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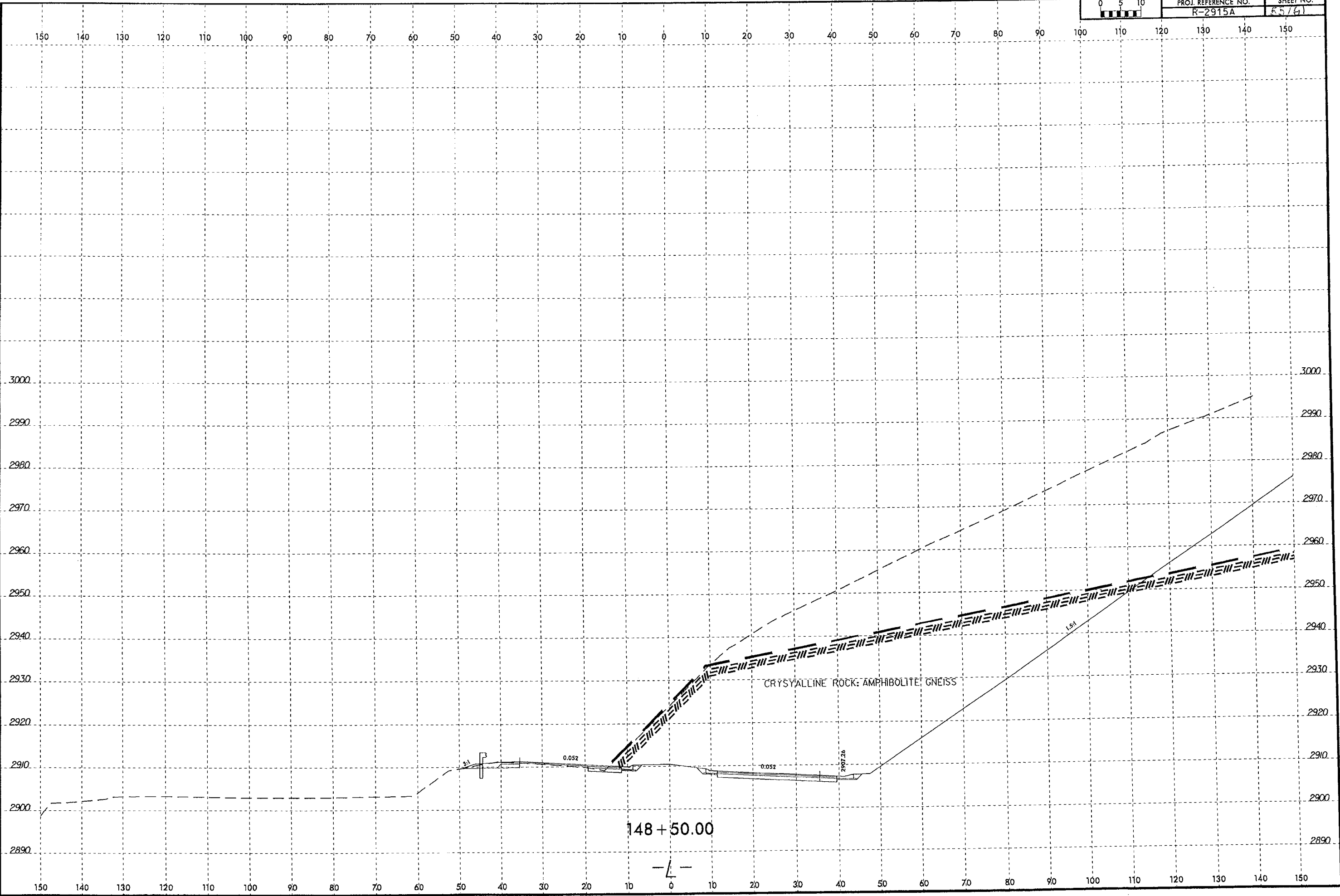


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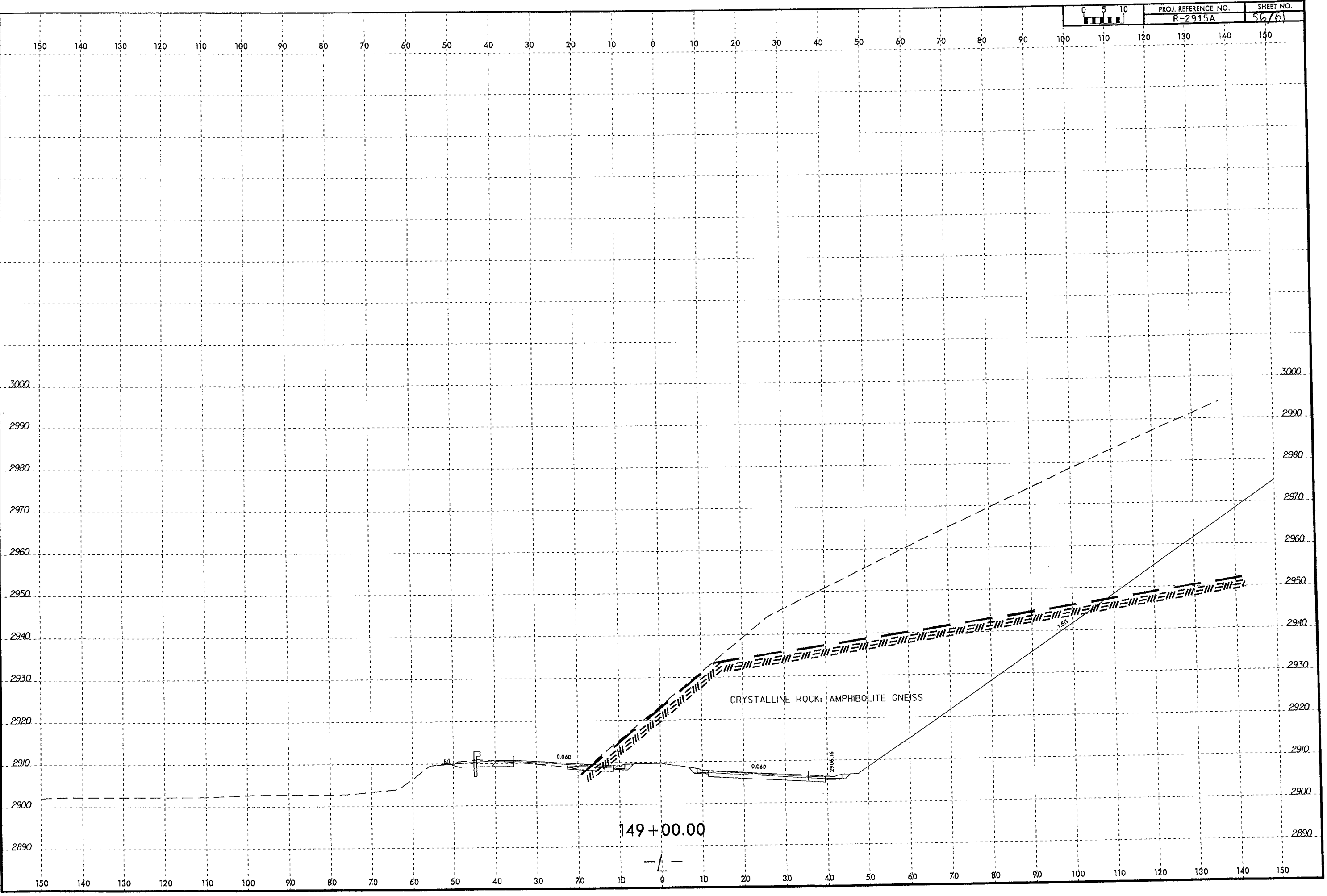
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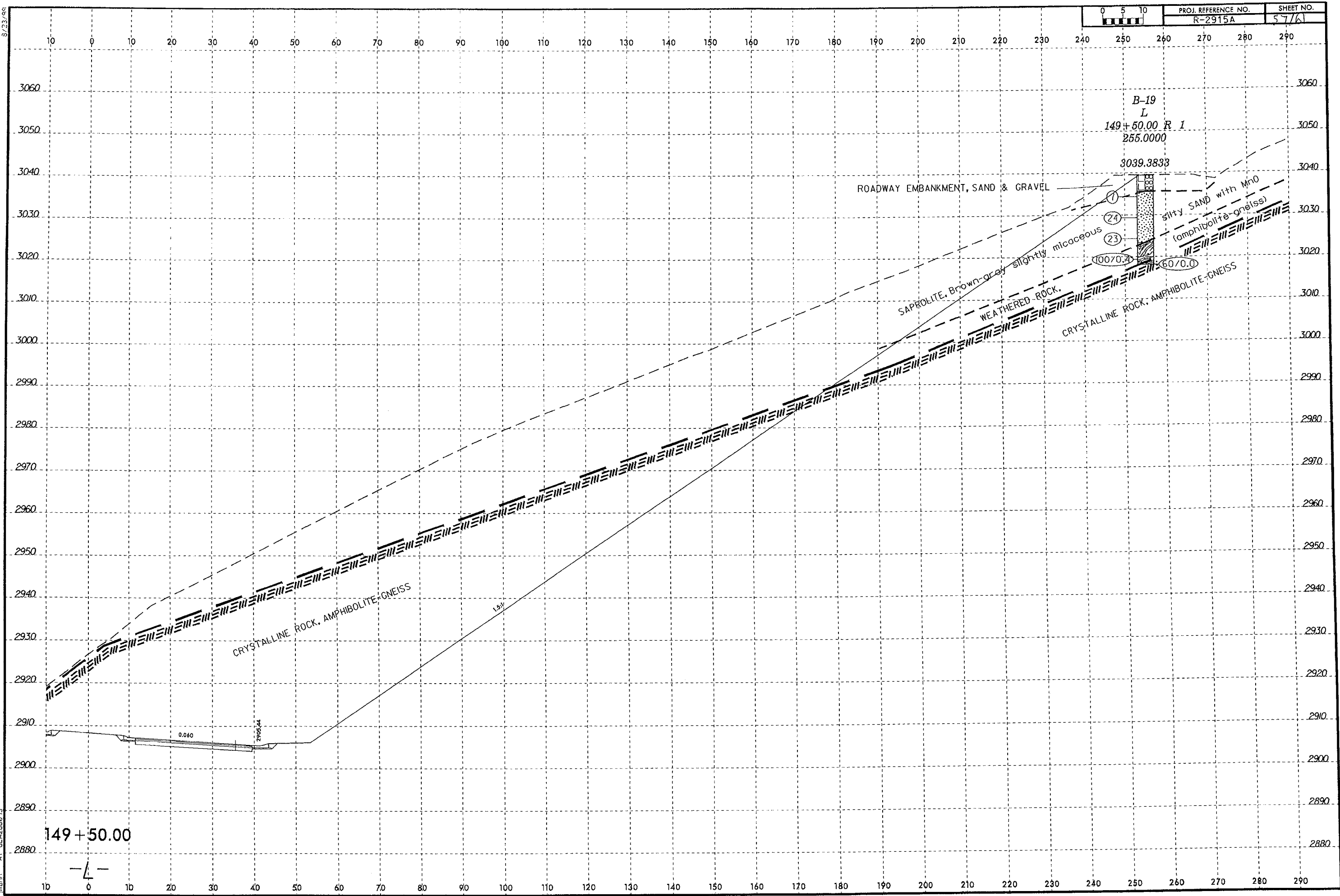
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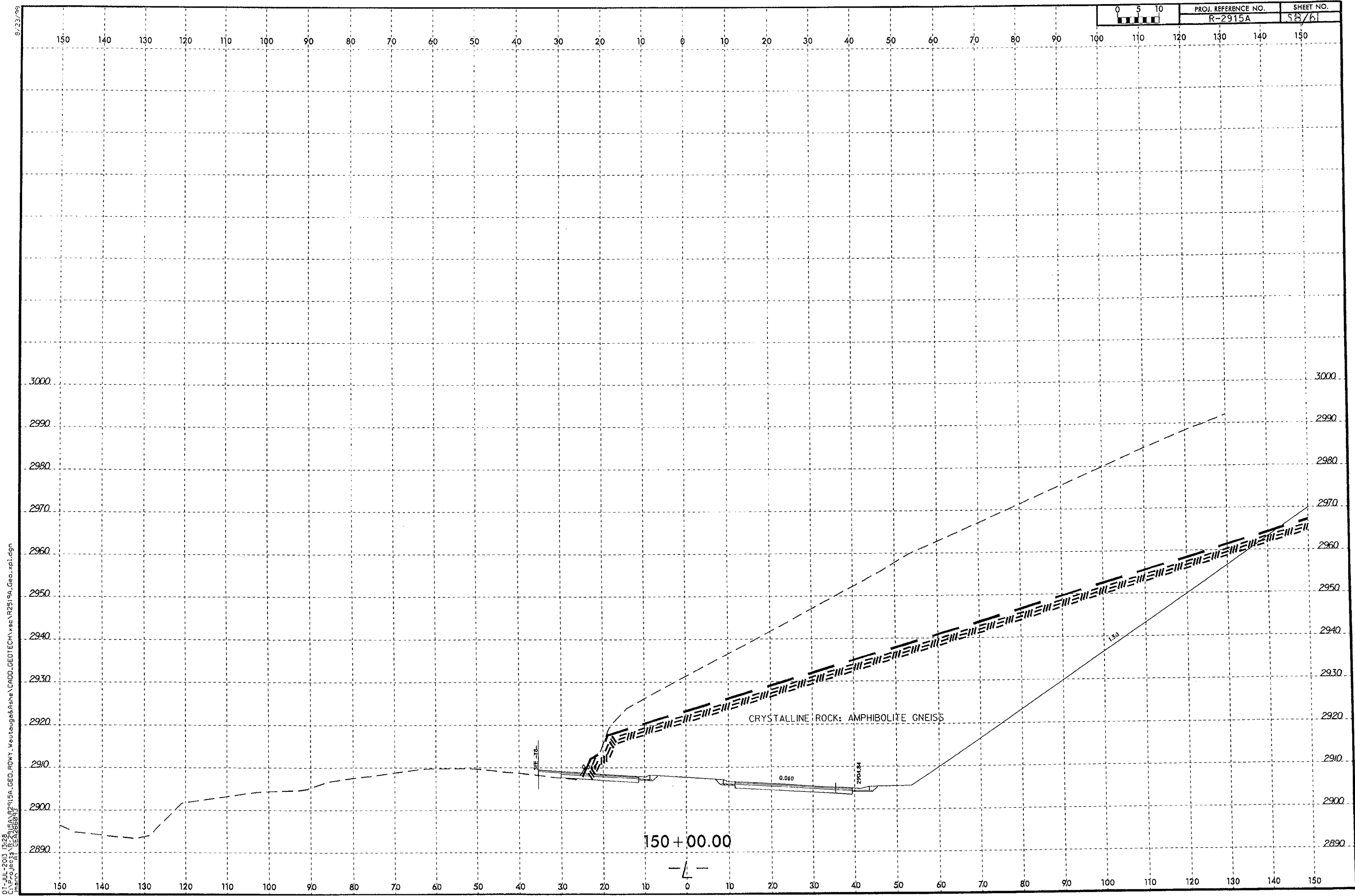


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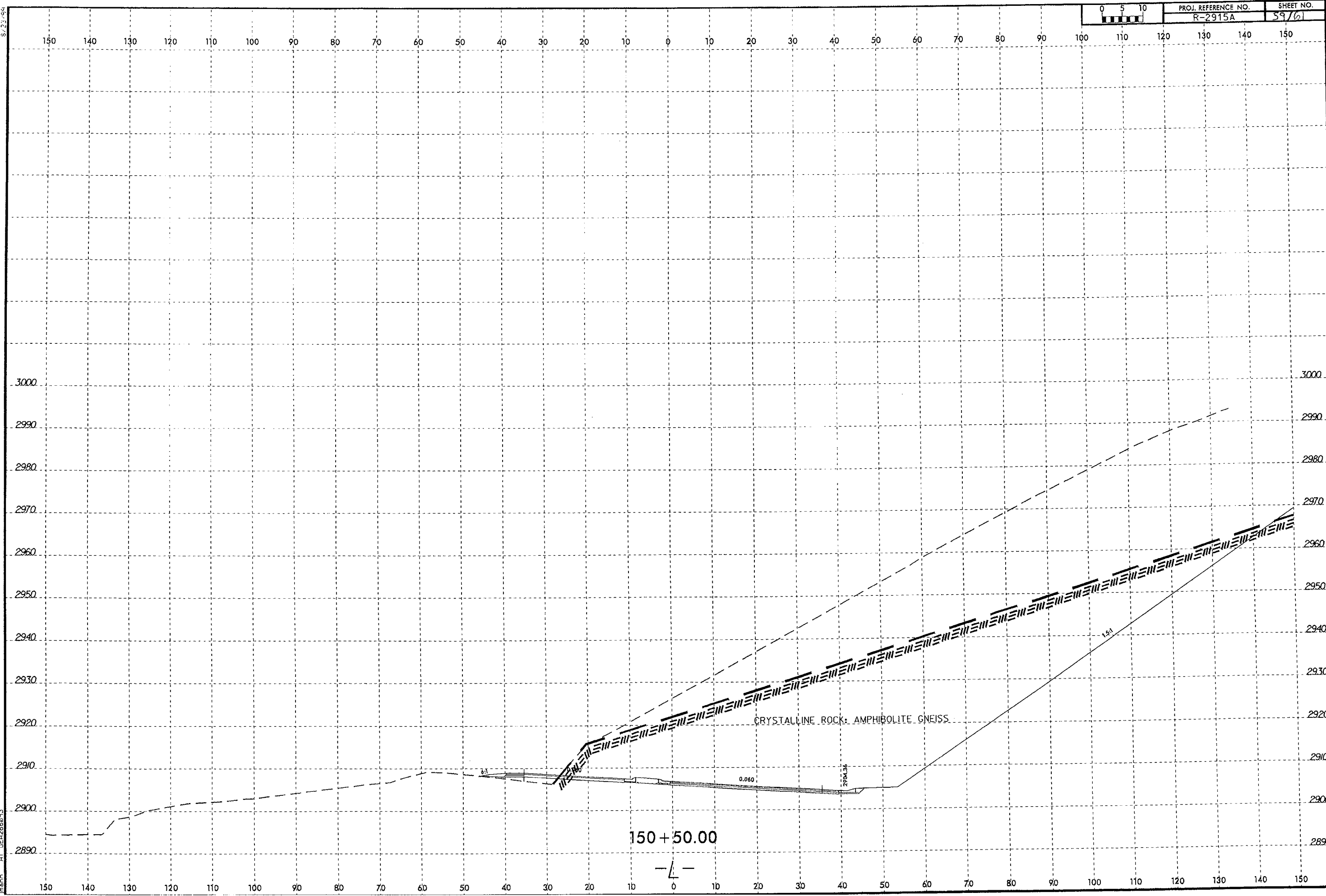
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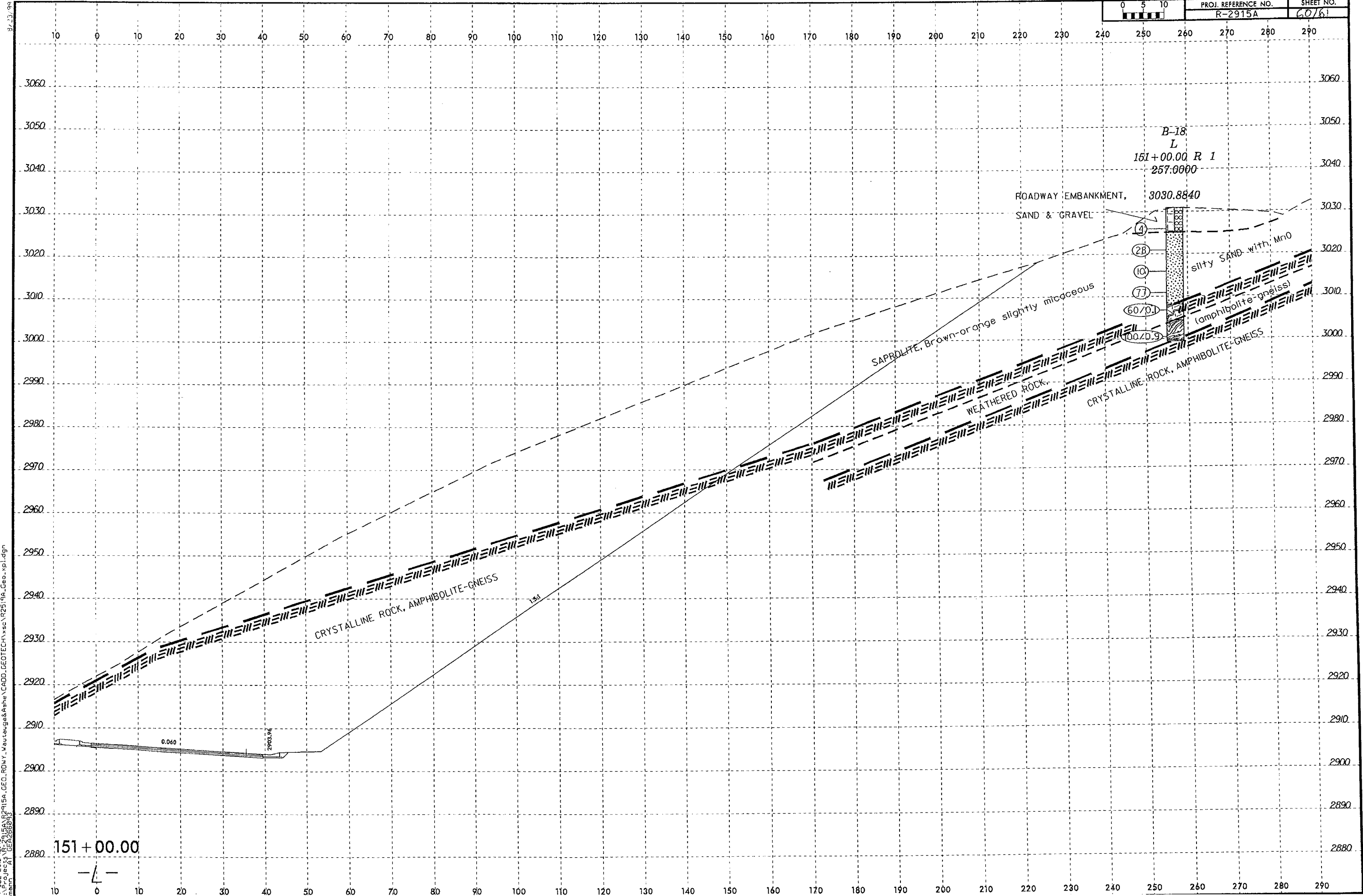
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