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CONTRACT: ID: R-4753

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

CONTENTS

LINE	STATION	PLAN	XSECT
-L-	16+50 - 214+30	4-14	15-115

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

ROADWAY SUBSURFACE INVESTIGATION

PROJ. REFERENCE NO. 39999.1.1 F.A. PROJ. SPT-107(10)

COUNTY Jackson

PROJECT DESCRIPTION NC 107 FROM EAST OF SR 1002 TO NC 281

INVENTORY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-4753	1	115

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
39999.1.1	STP 107(10)	P.E.
		R/W & 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 (IN-PLACE) TEST DATA CAN BE RELIED ON ONLY TO THE DEGREE OF RELIABILITY INHERENT IN THE STANDARD TEST METHOD. THE OBSERVED WATER LEVELS OR SOIL MOISTURE CONDITIONS INDICATED IN THE SUBSURFACE INVESTIGATIONS ARE AS RECORDED AT THE TIME OF THE INVESTIGATION. THESE WATER LEVELS OR SOIL MOISTURE CONDITIONS MAY VARY CONSIDERABLY WITH TIME ACCORDING TO CLIMATIC CONDITIONS INCLUDING TEMPERATURES, PRECIPITATION, AND WIND, AS WELL AS OTHER NON-CLIMATIC FACTORS.

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

PERSONNEL
F&H drill crew
R. DeLost
M. Morgan

INVESTIGATED BY PQ Lockamy
CHECKED BY JC Kuhne
SUBMITTED BY JC Kuhne
DATE 7-17-2013

NORTH CAROLINA LICENSED SEAL 1907 GEOLOGIST Patrick Q. Lockamy
PQ Lockamy 7-17-13

DRAWN BY: PQ Lockamy

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.

09/08/95

See Sheet 1-A For Index of Sheets

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

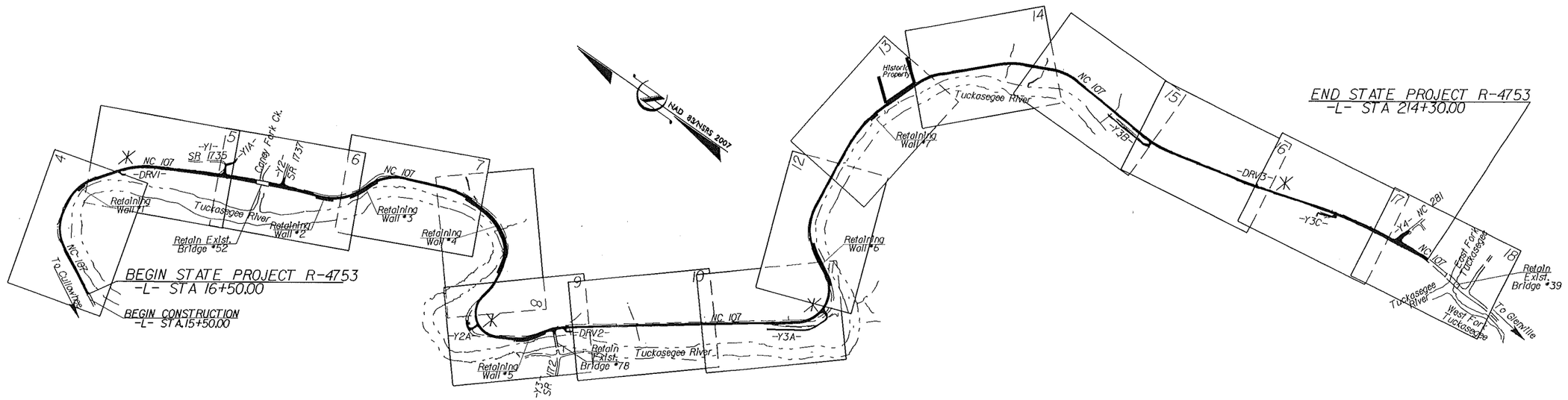
JACKSON COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-4753	1A	115

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
39999.1.1	STP-107(10)	P.E.

LOCATION: NC 107 FROM NORTH OF SR 1002 TO NC 281

TYPE OF WORK: GRADING, DRAINAGE, PAVING, RESURFACING, & RETAINING WALLS



✳ DESIGN EXCEPTION REQUIRED FOR: Horizontal Curve Radius and Vertical Curve Crest K Factors
THIS PROJECT IS NOT WITHIN THE LIMITS OF ANY MUNICIPALITY.
CLEARING ON THIS PROJECT SHALL BE PREFORMED TO THE LIMITS ESTABLISHED BY METHOD ___.

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

GRAPHIC SCALES

PLANS: 50 25 0 50 100

PROFILE (HORIZONTAL): 50 25 0 50 100

PROFILE (VERTICAL): 10 5 0 10 20

DESIGN DATA

ADT 2015 = 9440 vpd
ADT 2035 = 17000 vpd
DHV = 13 %
D = 55 %
T = 10 % *
V = 40 MPH
* TTST = 2% DUAL 8%
FUNC CLASS = RURAL COLLECTOR
REGIONAL TIER

PROJECT LENGTH

Length Roadway TIP Project R-4753 = 3.746 Miles

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

2012 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE:
January 17, 2014

LETTING DATE:
October 20, 2015

James Speer, PE
PROJECT ENGINEER

John Lansford, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER

P.E.
SIGNATURE:

ROADWAY DESIGN ENGINEER

P.E.
SIGNATURE:

STATE OF NORTH CAROLINA · DEPARTMENT OF TRANSPORTATION ·

TIP PROJECT: R-4753

CONTRACT:

08-JUL-2013 12:57
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Plackamy
AT GEA257463

PROJECT REFERENCE NO.	SHEET NO.
3.9999.1.1	2/115

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL ENGINEERING UNIT

SUBSURFACE INVESTIGATION

SOIL AND ROCK LEGEND, TERMS, SYMBOLS, AND ABBREVIATIONS

SOIL DESCRIPTION

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, ANGULARITY, STRUCTURE, PLASTICITY, ETC. EXAMPLE:

VERY STIFF, GRAY, SILTY CLAY, MOIST WITH INTERBEDDED FINE SAND LAYERS, HIGHLY PLASTIC, A-7-6

SOIL LEGEND AND AASHTO CLASSIFICATION

GENERAL CLASS.	GRANULAR MATERIALS (≤ 35% PASSING #200)							SILT-CLAY MATERIALS (> 35% PASSING #200)				ORGANIC MATERIALS		
GROUP CLASS.	A-1		A-3	A-2				A-4	A-5	A-6	A-7	A-1, A-2 A-3	A-4, A-5 A-6, A-7	
	A-1-a	A-1-b		A-2-4	A-2-5	A-2-6	A-2-7				A-7-5 A-7-6			
SYMBOL														
% PASSING #10	50 MX											GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT
#40	30 MX	50 MX	51 MN											
#200	15 MX	25 MX	10 MX	35 MX	35 MX	35 MX	35 MX	36 MN	36 MN	36 MN	36 MN			
LIQUID LIMIT	6 MX		NP	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS
PLASTIC INDEX				10 MX	10 MX	11 MN	11 MN	10 MX	10 MX	11 MN	11 MN			
GROUP INDEX	0		0	0		4 MX		8 MX	12 MX	16 MX	No MX			
USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS. GRAVEL AND SAND		FINE SAND	SILTY OR CLAYEY GRAVEL AND SAND				SILTY SOILS		CLAYEY SOILS				
GEN. RATING AS A SUBGRADE	EXCELLENT TO GOOD							FAIR TO POOR				FAIR TO POOR	POOR	UNSUITABLE

PI OF A-7-5 SUBGROUP IS ≤ LL - 30 ; PI OF A-7-6 SUBGROUP IS > LL - 30

CONSISTENCY OR DENSENESS

PRIMARY SOIL TYPE	COMPACTNESS OR CONSISTENCY	RANGE OF STANDARD PENETRATION RESISTENCE (N-VALUE)	RANGE OF UNCONFINED COMPRESSIVE STRENGTH ($TONS/FT^2$)
GENERALLY GRANULAR MATERIAL (NON-COHESIVE)	VERY LOOSE	<4	N/A
	LOOSE	4 TO 10	
	MEDIUM DENSE	10 TO 30	
	DENSE	30 TO 50	
	VERY DENSE	>50	
GENERALLY SILT-CLAY MATERIAL (COHESIVE)	VERY SOFT	<2	<0.25
	SOFT	2 TO 4	0.25 TO 0.50
	MEDIUM STIFF	4 TO 8	0.5 TO 1.0
	STIFF	8 TO 15	1 TO 2
	VERY STIFF	15 TO 30	2 TO 4
	HARD	>30	>4

TEXTURE OR GRAIN SIZE

U.S. STD. SIEVE SIZE	4	10	40	60	200	270
OPENING (MM)	4.76	2.00	0.42	0.25	0.075	0.053

BOULDER (BLDR.)	COBBLE (COB.)	GRAVEL (GR.)	COARSE SAND (CSE. SD.)	FINE SAND (F SD.)	SILT (SL.)	CLAY (CL.)

GRAIN SIZE	MM	305	75	2.0	0.25	0.05	0.005
	IN.	12	3				

SOIL MOISTURE - CORRELATION OF TERMS

SOIL MOISTURE SCALE (ATTERBERG LIMITS)	FIELD MOISTURE DESCRIPTION	GUIDE FOR FIELD MOISTURE DESCRIPTION
	- SATURATED - (SAT.)	USUALLY LIQUID; VERY WET, USUALLY FROM BELOW THE GROUND WATER TABLE
LL — LIQUID LIMIT		
PLASTIC RANGE (PI)	- WET - (W)	SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE
PL — PLASTIC LIMIT		
OM — OPTIMUM MOISTURE	- MOIST - (M)	SOLID; AT OR NEAR OPTIMUM MOISTURE
SL — SHRINKAGE LIMIT		
	- DRY - (D)	REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE

PLASTICITY

	PLASTICITY INDEX (PI)	DRY STRENGTH
NONPLASTIC	0-5	VERY LOW
LOW PLASTICITY	6-15	SLIGHT
MED. PLASTICITY	16-25	MEDIUM
HIGH PLASTICITY	26 OR MORE	HIGH

COLOR

DESCRIPTIONS MAY INCLUDE COLOR OR COLOR COMBINATIONS (TAN, RED, YELLOW-BROWN, BLUE-GRAY), MODIFIERS SUCH AS LIGHT, DARK, STREAKED, ETC. ARE USED TO DESCRIBE APPEARANCE.

GRADATION

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.

ANGULARITY OF GRAINS

THE ANGULARITY OR ROUNDNESS OF SOIL GRAINS IS DESIGNATED BY THE TERMS: ANGULAR, SUBANGULAR, SUBROUNDED, OR ROUNDED.

MINERALOGICAL COMPOSITION

MINERAL NAMES SUCH AS QUARTZ, FELDSPAR, MICA, TALC, KAOLIN, ETC. ARE USED IN DESCRIPTIONS WHENEVER THEY ARE CONSIDERED OF SIGNIFICANCE.

COMPRESSIBILITY

SLIGHTLY COMPRESSIBLE	LIQUID LIMIT LESS THAN 31
MODERATELY COMPRESSIBLE	LIQUID LIMIT EQUAL TO 31-50
HIGHLY COMPRESSIBLE	LIQUID LIMIT GREATER THAN 50

PERCENTAGE OF MATERIAL

ORGANIC MATERIAL	GRANULAR SOILS	SILT - CLAY SOILS	OTHER MATERIAL	
TRACE OF ORGANIC MATTER	2 - 3%	3 - 5%	TRACE	1 - 10%
LITTLE ORGANIC MATTER	3 - 5%	5 - 12%	LITTLE	10 - 20%
MODERATELY ORGANIC	5 - 10%	12 - 20%	SOME	20 - 35%
HIGHLY ORGANIC	>10%	>20%	HIGHLY	35% AND ABOVE

GROUND WATER

- WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING
- STATIC WATER LEVEL AFTER 24 HOURS
- PW — PERCHED WATER, SATURATED ZONE, OR WATER BEARING STRATA
- SPRING OR SEEP

MISCELLANEOUS SYMBOLS

- ROADWAY EMBANKMENT (RE) WITH SOIL DESCRIPTION
- SOIL SYMBOL
- ARTIFICIAL FILL (AF) OTHER THAN ROADWAY EMBANKMENT
- INFERRED SOIL BOUNDARY
- INFERRED ROCK LINE
- ALLUVIAL SOIL BOUNDARY
- 25/025 — DIP & DIP DIRECTION OF ROCK STRUCTURES
- SPT / CPT / VST — TEST BORING
- AUGER BORING
- CORE BORING
- MW — MONITORING WELL
- PIEZOMETER INSTALLATION
- SLOPE INDICATOR INSTALLATION
- CONE PENETROMETER TEST
- SOUNDING ROD
- TEST BORING W/ CORE
- SPT N-VALUE
- REF — SPT REFUSAL

ABBREVIATIONS

AR - AUGER REFUSAL
BT - BORING TERMINATED
CL. - CLAY
CPT - CONE PENETRATION TEST
CSE. - COARSE
DMT - DILATOMETER TEST
DPT - DYNAMIC PENETRATION TEST
e - VOID RATIO
F - FINE
FOSS. - FOSSILIFEROUS
FRAC. - FRACTURED, FRACTURES
FRAGS. - FRAGMENTS
HI. - HIGHLY
MED. - MEDIUM
MICA. - MICACEOUS
MOD. - MODERATELY
NP - NON PLASTIC
ORG. - ORGANIC
PMT - PRESSUREMETER TEST
SAP. - SAPROLITIC
SD. - SAND, SANDY
SL. - SILT, SILTY
SLI. - SLIGHTLY
TCR - TRICONE REFUSAL
w - MOISTURE CONTENT
V - VERY
VST - VANE SHEAR TEST
WEA. - WEATHERED
γ - UNIT WEIGHT
γ_d - DRY UNIT WEIGHT

SAMPLE ABBREVIATIONS

S - BULK
SS - SPLIT SPOON
ST - SHELBY TUBE
RS - ROCK
RT - RECOMPACTED TRIAXIAL
CBR - CALIFORNIA BEARING RATIO

EQUIPMENT USED ON SUBJECT PROJECT

DRILL UNITS:
- [ ] MOBILE B-___
- [ ] BK-51
- [X] CME-45C
- [ ] CME-550
- [ ] PORTABLE HOIST
- [ ] _____
- [ ] _____

ADVANCING TOOLS:
- [ ] CLAY BITS
- [ ] 6" CONTINUOUS FLIGHT AUGER
- [X] 8" HOLLOW AUGERS
- [ ] HARD FACED FINGER BITS
- [ ] TUNG.-CARBIDE INSERTS
- [ ] CASING [ ] W/ ADVANCER
- [ ] TRICONE _____" STEEL TEETH
- [ ] TRICONE _____" TUNG.-CARB.
- [ ] CORE BIT
- [ ] _____

HAMMER TYPE:
- [ ] AUTOMATIC
- [ ] MANUAL

CORE SIZE:
- [ ] -B_____
- [ ] -N_____
- [ ] -H_____

HAND TOOLS:
- [ ] POST HOLE DIGGER
- [ ] HAND AUGER
- [ ] SOUNDING ROD
- [ ] VANE SHEAR TEST
- [ ] _____

ROCK DESCRIPTION

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:

WEATHERED ROCK (WR)	NON-COASTAL PLAIN MATERIAL THAT WOULD YIELD SPT N VALUES > 100 BLOWS PER FOOT IF TESTED.
CRYSTALLINE ROCK (CR)	FINE TO COARSE GRAIN IGNEOUS AND METAMORPHIC ROCK THAT WOULD YIELD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES GRANITE, GNEISS, GABBRO, SCHIST, ETC.
NON-CRYSTALLINE ROCK (NCR)	FINE TO COARSE GRAIN METAMORPHIC AND NON-COASTAL PLAIN SEDIMENTARY ROCK THAT WOULD YEILD SPT REFUSAL IF TESTED. ROCK TYPE INCLUDES PHYLLITE, SLATE, SANDSTONE, ETC.
COASTAL PLAIN SEDIMENTARY ROCK (CP)	COASTAL PLAIN SEDIMENTS CEMENTED INTO ROCK, BUT MAY NOT YIELD SPT REFUSAL. ROCK TYPE INCLUDES LIMESTONE, SANDSTONE, CEMENTED SHELL BEDS, ETC.

WEATHERING

FRESH	ROCK FRESH, CRYSTALS BRIGHT, FEW JOINTS MAY SHOW SLIGHT STAINING. ROCK RINGS UNDER HAMMER IF CRYSTALLINE.
VERY SLIGHT (V SLI.)	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.
SLIGHT (SLI.)	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.
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.
MODERATELY SEVERE (MOD. SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. IN GRANITOID ROCKS, ALL FELDSPARS DULL AND DISCOLORED AND A MAJORITY SHOW KAOLINIZATION. ROCK SHOWS SEVERE LOSS OF STRENGTH AND CAN BE EXCAVATED WITH A GEOLOGIST'S PICK. ROCK GIVES "CLUNK" SOUND WHEN STRUCK. *IF TESTED, WOULD YIELD SPT REFUSAL*
SEVERE (SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC CLEAR AND EVIDENT BUT REDUCED IN STRENGTH TO STRONG SOIL. IN GRANITOID ROCKS ALL FELDSPARS ARE KAOLINIZED TO SOME EXTENT. SOME FRAGMENTS OF STRONG ROCK USUALLY REMAIN. *IF TESTED, YIELDS SPT N VALUES > 100 BPF*
VERY SEVERE (V SEV.)	ALL ROCK EXCEPT QUARTZ DISCOLORED OR STAINED. ROCK FABRIC ELEMENTS ARE DISCERNIBLE BUT THE MASS IS EFFECTIVELY REDUCED TO SOIL STATUS, WITH ONLY FRAGMENTS OF STRONG ROCK REMAINING. SAPROLITE IS AN EXAMPLE OF ROCK WEATHERED TO A DEGREE SUCH THAT ONLY MINOR VESTIGES OF THE ORIGINAL ROCK FABRIC REMAIN. *IF TESTED, YIELDS SPT N VALUES < 100 BPF*
COMPLETE	ROCK REDUCED TO SOIL. ROCK FABRIC NOT DISCERNIBLE, OR DISCERNIBLE ONLY IN SMALL AND SCATTERED CONCENTRATIONS. QUARTZ MAY BE PRESENT AS DIKES OR STRINGERS. SAPROLITE IS ALSO AN EXAMPLE.

ROCK HARDNESS

VERY HARD	CANNOT BE SCRATCHED BY KNIFE OR SHARP PICK. BREAKING OF HAND SPECIMENS REQUIRES SEVERAL HARD BLOWS OF THE GEOLOGIST'S PICK.
HARD	CAN BE SCRATCHED BY KNIFE OR PICK ONLY WITH DIFFICULTY. HARD HAMMER BLOWS REQUIRED TO DETACH HAND SPECIMEN.
MODERATELY HARD	CAN BE SCRATCHED BY KNIFE OR PICK. GOUGES OR GROOVES TO 0.25 INCHES DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGIST'S PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.
MEDIUM HARD	CAN BE GROOVED OR GOUGED 0.05 INCHES DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PEICES 1 INCH MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGIST'S PICK.
SOFT	CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL INCHES IN SIZE BY MODERATE BLOWS OF A PICK POINT. SMALL, THIN PIECES CAN BE BROKEN BY FINGER PRESSURE.
VERY SOFT	CAN BE CARVED WITH KNIFE. CAN BE EXCAVATED READILY WITH POINT OF PICK. PIECES 1 INCH OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGERNAIL.

FRACTURE SPACING

TERM	SPACING
VERY WIDE	MORE THAN 10 FEET
WIDE	3 TO 10 FEET
MODERATELY CLOSE	1 TO 3 FEET
CLOSE	0.16 TO 1 FEET
VERY CLOSE	LESS THAN 0.16 FEET

BEDDING

TERM	THICKNESS
VERY THICKLY BEDDED	> 4 FEET
THICKLY BEDDED	1.5 - 4 FEET
THINLY BEDDED	0.16 - 1.5 FEET
VERY THINLY BEDDED	0.03 - 0.16 FEET
THICKLY LAMINATED	0.008 - 0.03 FEET
THINLY LAMINATED	< 0.008 FEET

INDURATION

FOR SEDIMENTARY ROCKS, INDURATION IS THE HARDENING OF THE MATERIAL BY CEMENTING, HEAT, PRESSURE, ETC.

FRIABLE	RUBBING WITH FINGER FREES NUMEROUS GRAINS; GENTLE BLOW BY HAMMER DISINTEGRATES SAMPLE.
MODERATELY INDURATED	GRAINS CAN BE SEPARATED FROM SAMPLE WITH STEEL PROBE; BREAKS EASILY WHEN HIT WITH HAMMER.
INDURATED	GRAINS ARE DIFFICULT TO SEPARATE WITH STEEL PROBE; DIFFICULT TO BREAK WITH HAMMER.
EXTREMELY INDURATED	SHARP HAMMER BLOWS REQUIRED TO BREAK SAMPLE; SAMPLE BREAKS ACROSS GRAINS.

TERMS AND DEFINITIONS

ALLUVIUM (ALLUV.) - 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 DISLODGED 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.) - IRREGULARLY 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 (SREC.) - 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.

BENCH MARK:

ELEVATION: FT.

NOTES:

REVISED 09/23/09

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

PAT MCCRORY
GOVERNOR

ANTHONY J. TATA
SECRETARY

July 16, 2013

STATE PROJECT: 39999.1.1 (R-4753)
FEDERAL PROJECT: STP-107(10)
COUNTY: Jackson
DESCRIPTION: NC 107from East of SR-1002 to NC-281

SUBJECT: Geotechnical Report – Inventory

PROJECT DESCRIPTION

This project is located in central-south Jackson County from East Laport to Tuckasegee. The proposed project is an improvement to the existing 2 lane highway. The highway traverses floodplain and river bluff slopes along the east bank of the Tuckasegee River. The following alignment was investigated:

–L- Station 16+50 to 214+30 (3.75 miles)

The total length of lines investigated is 3.75 miles. The field investigation was conducted in May and June of 2013. All borings were made by contractors Florence and Hutcheson (F&H) utilizing a CME 45C drill machine with an automatic hammer. Standard Penetration Tests were performed utilizing Hollow Stem Augers.

AREAS OF SPECIAL GEOTECHNICAL INTEREST

Crystalline Rock: Weathered to crystalline rock should be expected to be within 6 feet of grade in the following -L-Station intervals:

17+70 to 23+00
53+80 to 62+00
63+50 to 65+40
71+80 to 79+75
80+75 to 82+80
86+50 to 89+50
91+00 to 98+00
107+40 to 118+50
126+50 to 135+00
172+00 to 174+50

Soil Properties

Soils on the project are derived from the in situ weathering, fluvial processing or mass wasting of predominantly gneissic rock. Resultant residual soils include sandy silt with mica and silty sand with mica (AASHTO A-4, and A-2-4). Alluvial soils have downward coarsening profile grading from sandy clay to sandy silt to silty sand (A-6, A-4, A-2-4). Aged and weathered alluvial terraces and colluvium tend to be clayey A-7 or A-6 soils. Fills and embankments along the project may be any of the afore mentioned soils with variable amounts of stone included. Weathered and crystalline rocks are common along river bluffs and existing road cuts and may produce limited amounts of durable stone for use on the project.

Respectfully submitted,

P. Q. Lockamy

P. Q. Lockamy
Project Geological Engineer

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

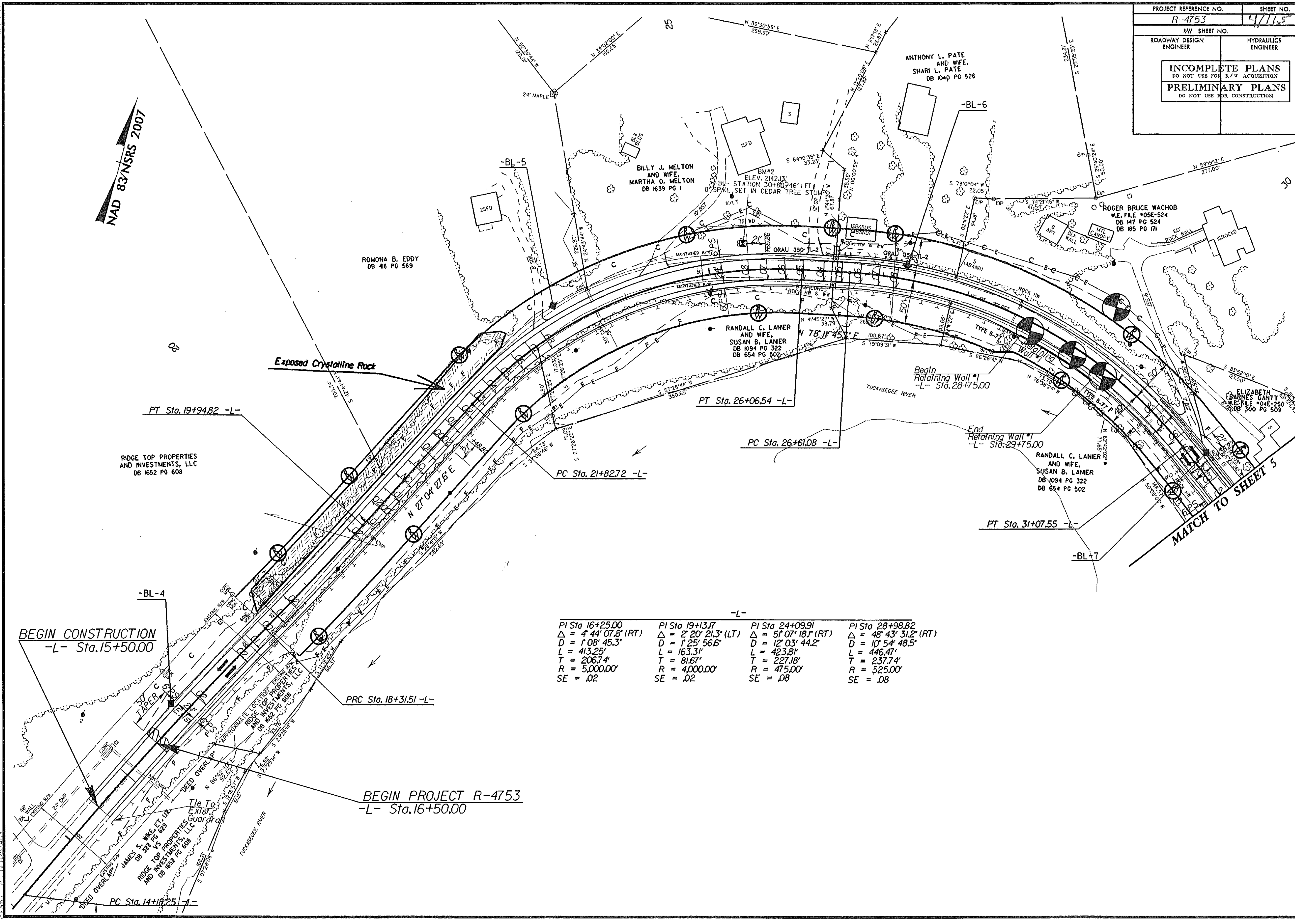
www.ncdot.gov/doh/preconstruct/highway/geotech

LOCATION:
CENTURY CENTER COMPLEX
ENTRANCE B-2
1020 BIRCH RIDGE DRIVE
RALEIGH NC 27610

PROJECT REFERENCE NO.	SHEET NO.
R-4753	4/11.5
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



NAD 83/NSRS 2007
BEGIN CONSTRUCTION
-L- Sta.15+50.00
BEGIN PROJECT R-4753
-L- Sta.16+50.00
PC Sta. 14+18.25 -L-
PRC Sta. 18+31.51 -L-
PT Sta. 19+94.82 -L-
PC Sta. 21+82.72 -L-
PT Sta. 26+06.54 -L-
PC Sta. 26+61.08 -L-
PT Sta. 31+07.55 -L-
Begin Retaining Wall #1
-L- Sta.28+75.00
End Retaining Wall #1
-L- Sta.29+75.00
Exposed Crystalline Rock
MATCH TO SHEET 5
-BL-4
-BL-5
-BL-6
-BL-7
RIDGE TOP PROPERTIES AND INVESTMENTS, LLC DB 1652 PG 608
ROMONA B. EDDY DB 416 PG 569
BILLY J. MELTON AND WIFE, MARTHA O. MELTON DB 1639 PG 1
ANTHONY L. PATE AND WIFE, SHARI L. PATE DB 1040 PG 526
RANDALL C. LANIER AND WIFE, SUSAN B. LANIER DB 1094 PG 322 DB 654 PG 502
ROGER BRUCE WACHOB W.E. F.N.E. #05E-524 DB 147 PG 524 DB 185 PG 171
ELIZABETH BARNES GANTT W.B. F.N.E. #04E-250 DB 300 PG 509
JAMES S. WIKE, ET. UX DB 312 PG 629
BM#2 ELEV. 2142.13' -BL- STATION 30+80.46' LEFT 8" SPIKE SET IN CEDAR TREE STUMP
TUCKASEGEE RIVER
Tie To Exist. Guardrail
DEED OVERLAP
N 27° 04' 27.6" E
N 78° 11' 45.3" E

-L-

PI Sta 16+25.00	PI Sta 19+13.17	PI Sta 24+09.91	PI Sta 28+98.82
Δ = 4° 44' 07.8" (RT)	Δ = 2° 20' 21.3" (LT)	Δ = 51° 07' 18.1" (RT)	Δ = 48° 43' 31.2" (RT)
D = 1° 08' 45.3"	D = 1° 25' 56.6"	D = 12° 03' 44.2"	D = 10° 54' 48.5"
L = 413.25'	L = 163.31'	L = 423.81'	L = 446.47'
T = 206.74'	T = 81.67'	T = 227.18'	T = 237.74'
R = 5,000.00'	R = 4,000.00'	R = 475.00'	R = 525.00'
SE = .02	SE = .02	SE = .08	SE = .08

5/14/99

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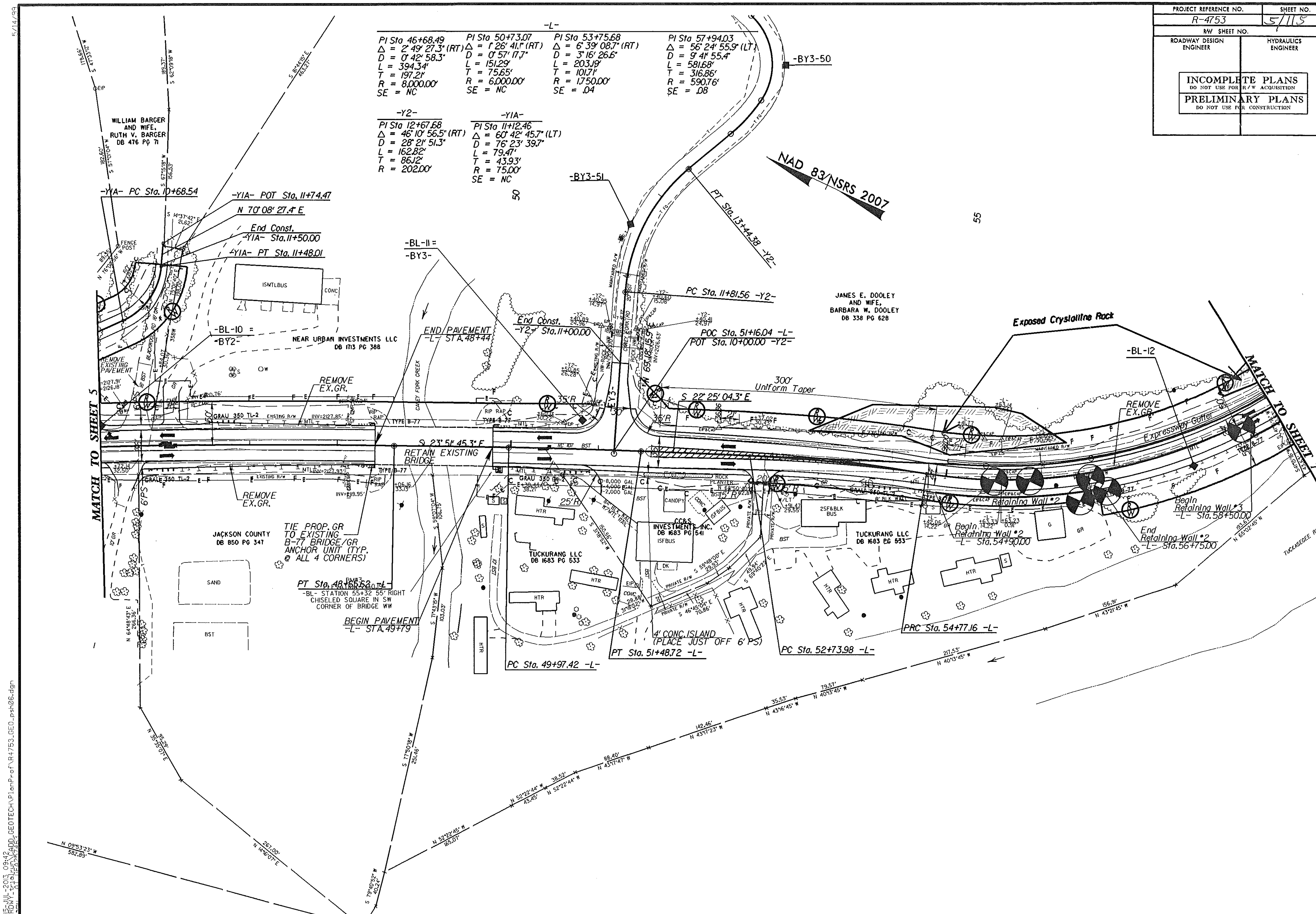
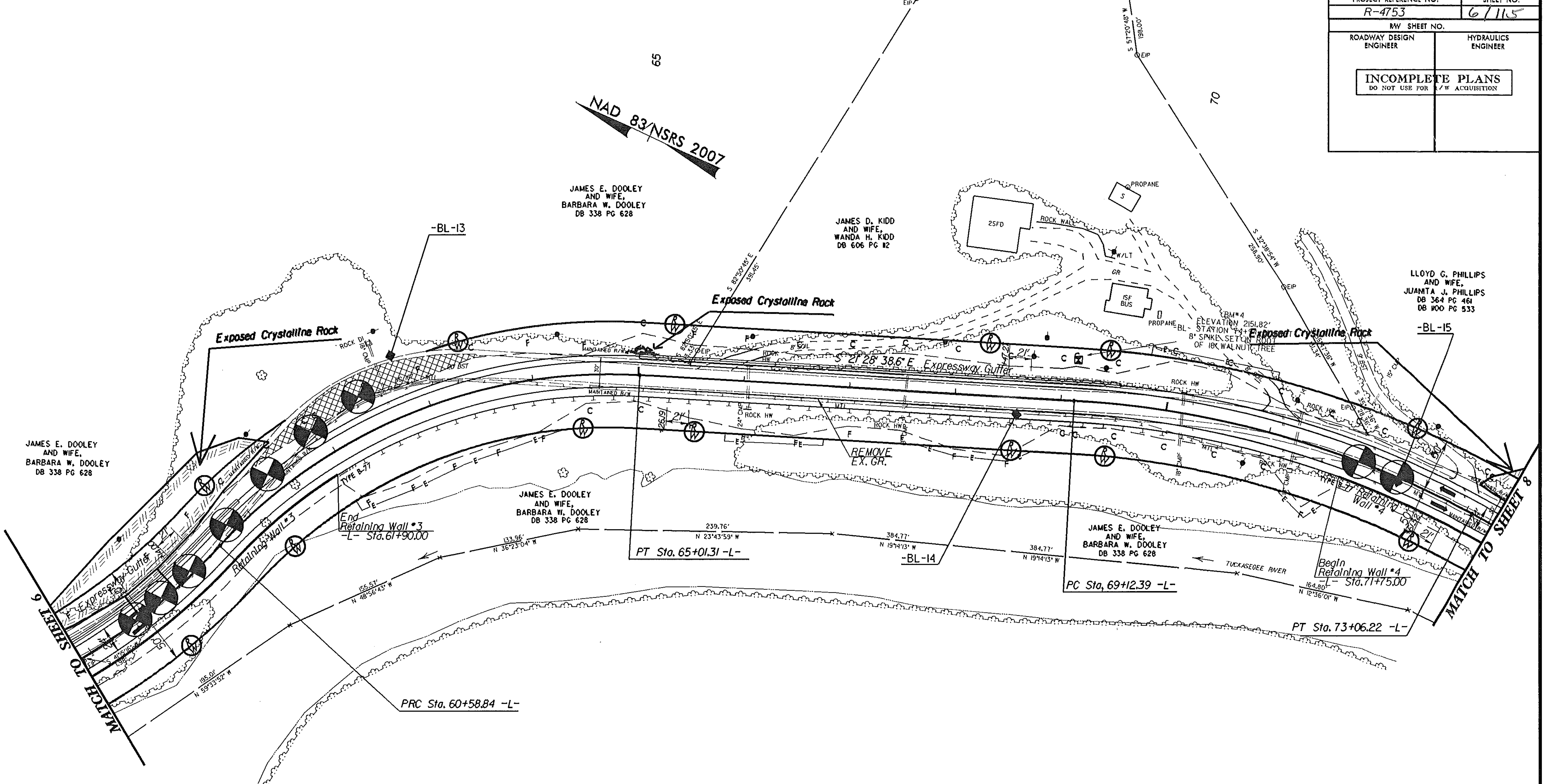

PROJECT REFERENCE NO. R-4753
SHEET NO. 5/115
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION
-L-
PI Sta 46+68.49 Δ = 2° 49' 27.3" (RT) D = 0° 42' 58.3" L = 394.34' T = 197.21' R = 8,000.00' SE = NC
PI Sta 50+73.07 Δ = 1° 26' 41.1" (RT) D = 0° 57' 17.7" L = 151.29' T = 75.65' R = 6,000.00' SE = NC
PI Sta 53+75.68 Δ = 6° 39' 08.7" (RT) D = 3° 16' 26.6" L = 203.19' T = 101.71' R = 1,750.00' SE = .04
PI Sta 57+94.03 Δ = 56° 24' 55.9" (LT) D = 9° 41' 55.4" L = 581.68' T = 316.86' R = 590.76' SE = .08
-Y2-
PI Sta 12+67.68 Δ = 46° 10' 56.5" (RT) D = 28° 21' 51.3" L = 162.82' T = 86.12' R = 202.00'
-Y1A-
PI Sta 11+12.46 Δ = 60° 42' 45.7" (LT) D = 76° 23' 39.7" L = 79.47' T = 43.93' R = 75.00' SE = NC
NAD 83/NSRS 2007
-BY3-50
-BY3-51
PT Sta. 13+44.38 -Y2-
PC Sta. 11+81.56 -Y2-
JAMES E. DOOLEY AND WIFE, BARBARA W. DOOLEY DB 338 PG 628
WILLIAM BARGER AND WIFE, RUTH V. BARGER DB 476 PG 71
-Y1A- PC Sta. 10+68.54
-Y1A- POT Sta. 11+74.47
N 70° 08' 27.4" E
End Const. -Y1A- Sta. 11+50.00
-Y1A- PT Sta. 11+48.01
-BL-10 = -BY2-
-BL-11 = -BY3-
NEAR URBAN INVESTMENTS LLC DB 1713 PG 388
END PAVEMENT -L- STA. 48+44
End Const. -Y2- Sta. 11+00.00
POC Sta. 51+16.04 -L-
POT Sta. 10+00.00 -Y2-
300' Uniform Taper
S 22° 25' 04.3" E
Exposed Crystalline Rock
-BL-12
MATCH TO SHEET 7
MATCH TO SHEET 5
REMOVE EX.GR.
Expressway Gutter
S 23° 51' 45.3" E
RETAIN EXISTING BRIDGE
REMOVE EXISTING PAVEMENT
TIE PROP. GR TO EXISTING B-77 BRIDGE/GR ANCHOR UNIT (TYP. @ ALL 4 CORNERS)
JACKSON COUNTY DB 850 PG 347
PT Sta. 48+56.52 -L-
-BL- STATION 55+32 55' RIGHT CHISELED SQUARE IN SW CORNER OF BRIDGE WW
BEGIN PAVEMENT -L- STA. 49+79
PC Sta. 49+97.42 -L-
TUCKURANG LLC DB 1683 PG 633
CC&S INVESTMENTS INC. DB 1683 PG 541
4' CONC. ISLAND (PLACE JUST OFF 6' PS)
PT Sta. 51+48.72 -L-
PC Sta. 52+73.98 -L-
TUCKURANG LLC DB 1683 PG 533
PRC Sta. 54+77.16 -L-
Begin Retaining Wall #2 -L- Sta. 54+90.00
End Retaining Wall #2 -L- Sta. 56+75.00
Begin Retaining Wall #3 -L- Sta. 58+50.00
Retaining Wall #2
TUCKASEGEE RIVER
CANEY FORK CREEK
SAND
BST
HTR
CANOPY
GRAU 350 TL-2
TYPE B-77
50
55

PROJECT REFERENCE NO.	SHEET NO.
R-4753	6/115
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION



NAD 83/NSRS 2007
JAMES E. DOOLEY AND WIFE, BARBARA W. DOOLEY DB 338 PG 628
JAMES D. KIDD AND WIFE, WANDA H. KIDD DB 606 PG 12
LLOYD G. PHILLIPS AND WIFE, JUANITA J. PHILLIPS DB 364 PG 461 DB 100 PG 533
-BL-13
-BL-14
-BL-15
Exposed Crystalline Rock
Expressway Gutter
S 21° 28' 38.6" E Expressway Gutter
REMOVE EX. GR.
End Retaining Wall #3 -L- Sta. 61+90.00
Retaining Wall #3
Begin Retaining Wall #4 -L- Sta. 71+75.00
Retaining Wall #4
PT Sta. 65+01.31 -L-
PC Sta. 69+12.39 -L-
PT Sta. 73+06.22 -L-
PRC Sta. 60+58.84 -L-
BM#4 ELEVATION 2151.82' STATION 74+ 8" SPIKE SET IN ROOT OF 18" WALNUT TREE
TUCKASEGEE RIVER
MATCH TO SHEET 6
MATCH TO SHEET 8
2SFD
PROPANE
ROCK WALL
ROCK HW

-L-

PI Sta 57+94.03	PI Sta 62+95.74	PI Sta 71+12.51
Δ = 56° 24' 55.9" (LT)	Δ = 50° 42' 11.3" (RT)	Δ = 25° 04' 21.2" (RT)
D = 9° 41' 55.4"	D = 11° 27' 33.0"	D = 6° 21' 58.3"
L = 581.68'	L = 442.47'	L = 393.84'
T = 316.86'	T = 236.90'	T = 200.12'
R = 590.76'	R = 500.00'	R = 900.00'
SE = .08	SE = .08	SE = .06

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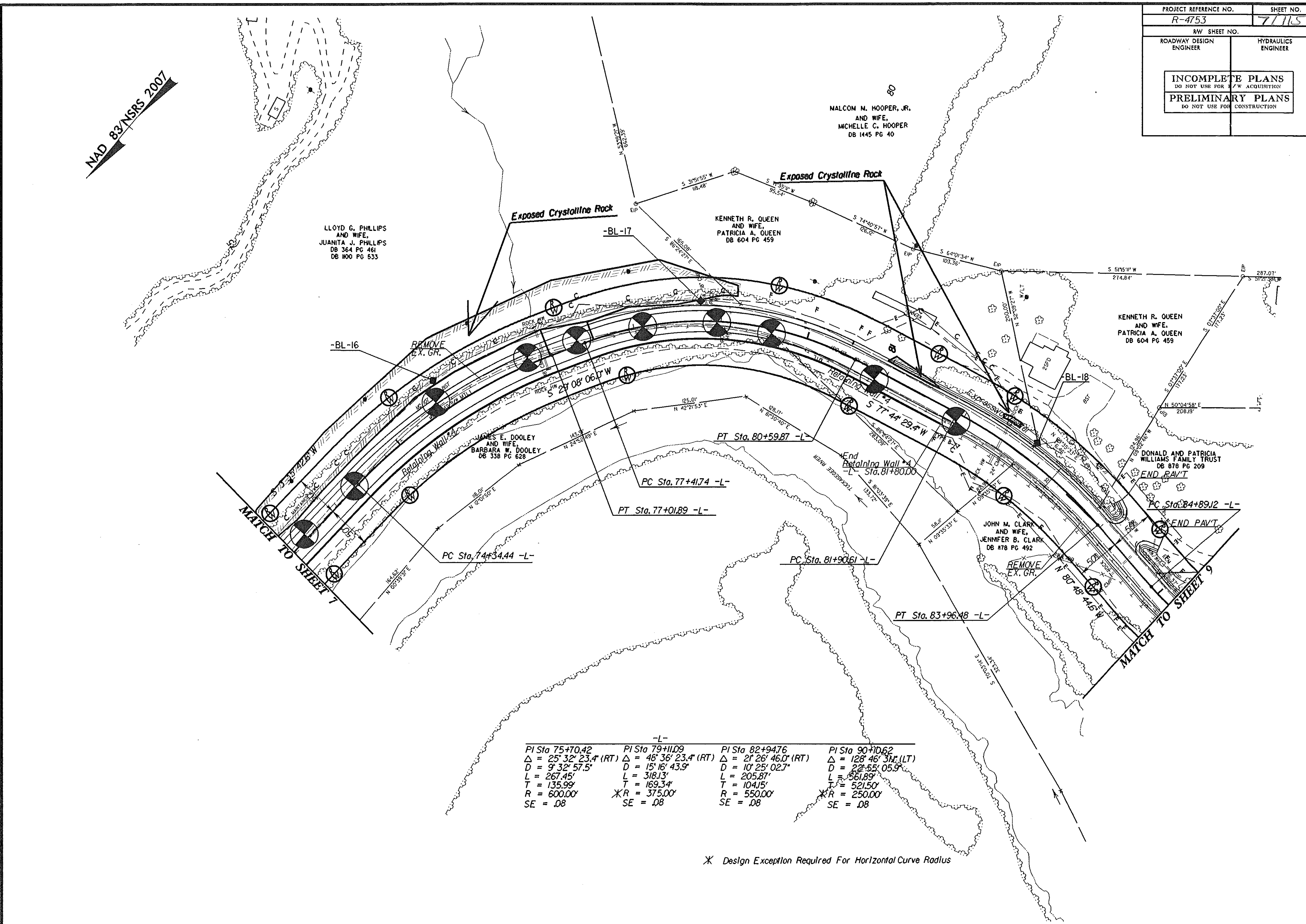
PROJECT REFERENCE NO.	SHEET NO.
R-4753	7/115

R/W SHEET NO.

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

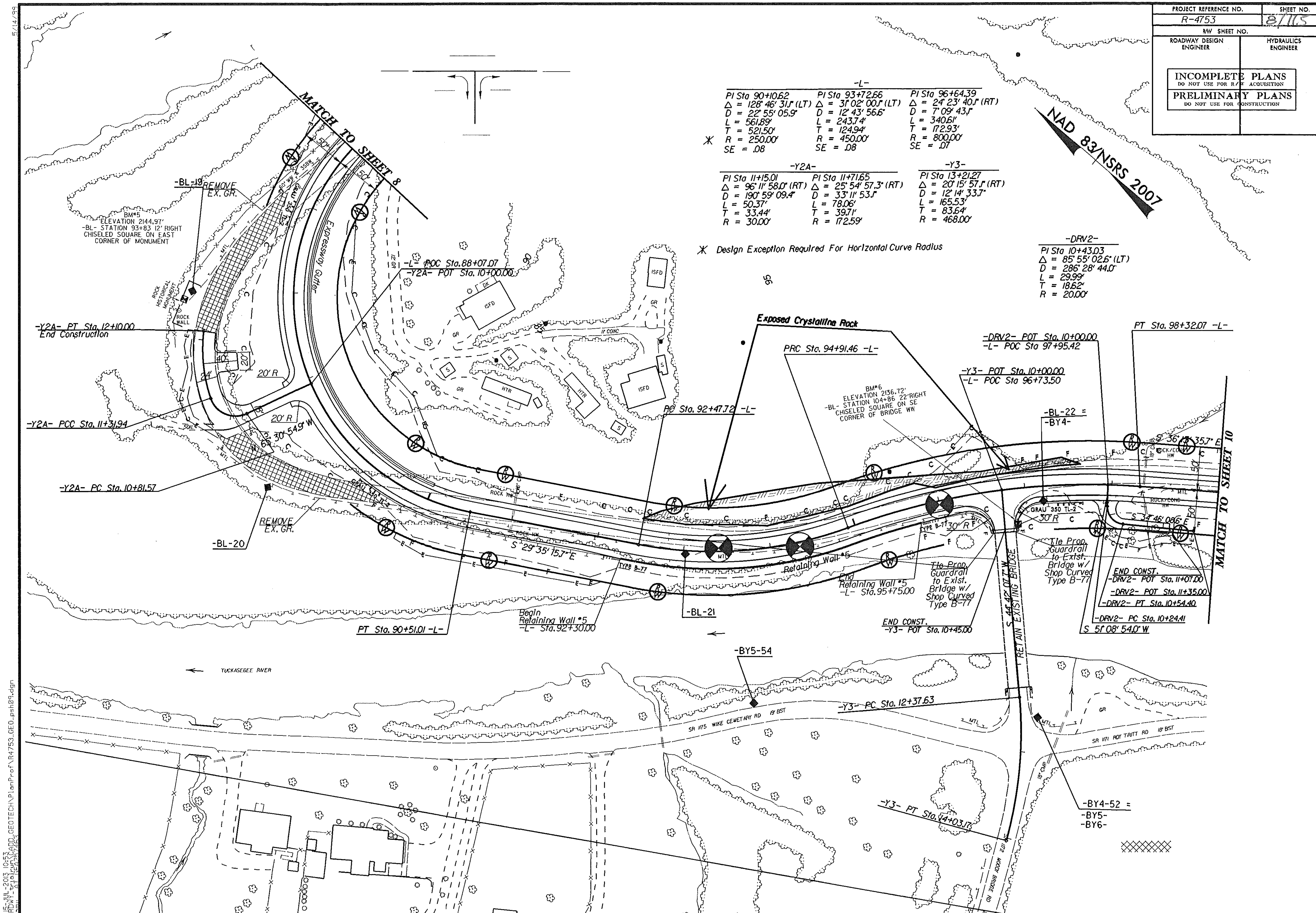


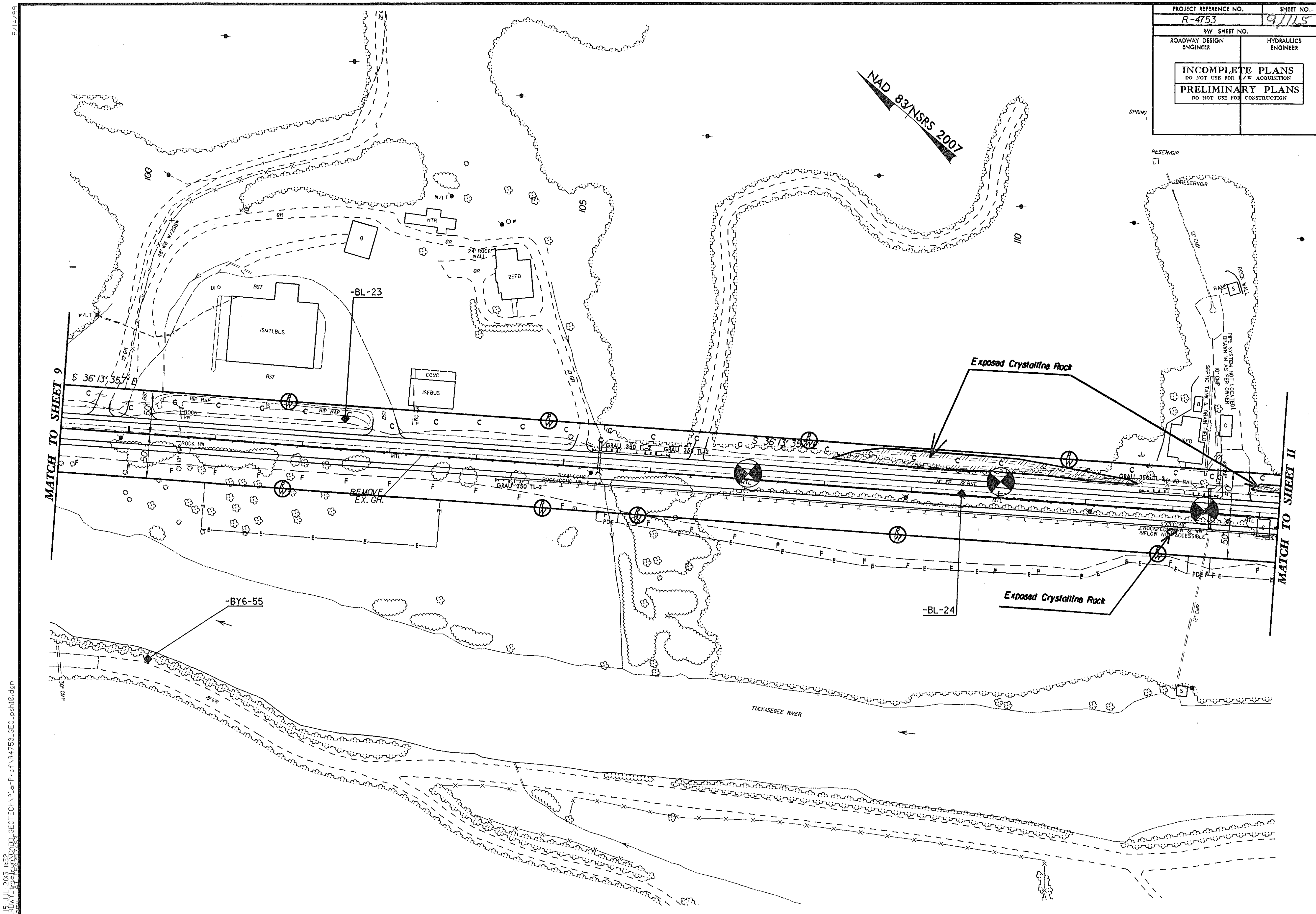
NAD 83/NSRS 2007
LLOYD G. PHILLIPS
AND WIFE,
JUANITA J. PHILLIPS
DB 364 PG 461
DB 1100 PG 533
Exposed Crystalline Rock
-BL-17
KENNETH R. QUEEN
AND WIFE,
PATRICIA A. QUEEN
DB 604 PG 459
MALCOM N. HOOPER, JR.
AND WIFE,
MICHELLE C. HOOPER
DB 1445 PG 40
Exposed Crystalline Rock
-BL-16
REMOVE
EX. GR.
S 29° 08' 06.0" W
Retaining Wall #4
JAMES E. DOOLEY
AND WIFE,
BARBARA W. DOOLEY
DB 338 PG 628
S 77° 44' 29.4" W
-BL-18
KENNETH R. QUEEN
AND WIFE,
PATRICIA A. QUEEN
DB 604 PG 459
DONALD AND PATRICIA
WILLIAMS FAMILY TRUST
DB 876 PG 209
END PAV'T
PC Sta. 84+89.12 -L-
END PAV'T
PT Sta. 80+59.87 -L-
End
Retaining Wall #4
-L- Sta. 81+80.00
PC Sta. 77+41.74 -L-
PT Sta. 77+01.89 -L-
PC Sta. 74+34.44 -L-
PC Sta. 81+90.61 -L-
JOHN M. CLARK
AND WIFE,
JENNIFER B. CLARK
DB 878 PG 492
REMOVE
EX. GR.
N 80° 48' 44.6" W
PT Sta. 83+96.48 -L-
MATCH TO SHEET 7
MATCH TO SHEET 9

-L-

PI Sta 75+70.42	PI Sta 79+11.09	PI Sta 82+94.76	PI Sta 90+10.62
Δ = 25° 32' 23.4" (RT)	Δ = 48° 36' 23.4" (RT)	Δ = 21° 26' 46.0" (RT)	Δ = 128° 46' 31.1" (LT)
D = 9° 32' 57.5"	D = 15° 16' 43.9"	D = 10° 25' 02.7"	D = 22° 55' 05.9"
L = 267.45'	L = 318.13'	L = 205.87'	L = 561.89'
T = 135.99'	T = 169.34'	T = 104.15'	T = 521.50'
R = 600.00'	✱R = 375.00'	R = 550.00'	✱R = 250.00'
SE = .08	SE = .08	SE = .08	SE = .08

✱ Design Exception Required For Horizontal Curve Radius


PROJECT REFERENCE NO.
R-4753
SHEET NO.
8/11.5
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
NAD 83/NSRS 2007
MATCH TO SHEET 8
MATCH TO SHEET 10
-L-
PI Sta 90+10.62
Δ = 128° 46' 31.1" (LT)
D = 22° 55' 05.9"
L = 561.89'
T = 521.50'
R = 250.00'
SE = .08
PI Sta 93+72.66
Δ = 31° 02' 00.1" (LT)
D = 12° 43' 56.6"
L = 243.74'
T = 124.94'
R = 450.00'
SE = .08
PI Sta 96+64.39
Δ = 24° 23' 40.1" (RT)
D = 7° 09' 43.1"
L = 340.61'
T = 172.93'
R = 800.00'
SE = .07
-Y2A-
PI Sta 11+15.01
Δ = 96° 11' 58.0" (RT)
D = 190° 59' 09.4"
L = 50.37'
T = 33.44'
R = 30.00'
PI Sta 11+71.65
Δ = 25° 54' 57.3" (RT)
D = 33° 11' 53.1"
L = 78.06'
T = 39.71'
R = 172.59'
-Y3-
PI Sta 13+21.27
Δ = 20° 15' 57.1" (RT)
D = 12° 14' 33.7"
L = 165.53'
T = 83.64'
R = 468.00'
-DRV2-
PI Sta 10+43.03
Δ = 85° 55' 02.6" (LT)
D = 286° 28' 44.0"
L = 29.99'
T = 18.62'
R = 20.00'
✱ Design Exception Required For Horizontal Curve Radius
BM#5
ELEVATION 2144.97'
-BL- STATION 93+83 12' RIGHT
CHISELED SQUARE ON EAST CORNER OF MONUMENT
BM#6
ELEVATION 2136.72'
-BL- STATION 104+86 22' RIGHT
CHISELED SQUARE ON SE CORNER OF BRIDGE WW
-BL-19
REMOVE EX. GR.
-BL-20
-BL-21
-BL-22 = -BY4-
-Y2A- PT Sta. 12+10.00
End Construction
-Y2A- PCC Sta. 11+31.94
-Y2A- PC Sta. 10+81.57
-L- POC Sta. 88+07.07
-Y2A- POT Sta. 10+00.00
Expressway Gutter
Exposed Crystalline Rock
PRC Sta. 94+91.46 -L-
PC Sta. 92+47.72 -L-
PT Sta. 90+51.01 -L-
S 29° 35' 15.7" E
Begin Retaining Wall #5
-L- Sta. 92+30.00
Retaining Wall #5
End Retaining Wall #5
-L- Sta. 95+75.00
Tie Prop. Guardrail to Exist. Bridge w/ Shop Curved Type B-77
END CONST.
-Y3- POT Sta. 10+45.00
-Y3- POT Sta. 10+00.00
-L- POC Sta 96+73.50
-DRV2- POT Sta. 10+00.00
-L- POC Sta 97+95.42
PT Sta. 98+32.07 -L-
S 36° 12' 35.7" E
S 34° 46' 08.6" E
END CONST.
-DRV2- POT Sta. 11+07.00
-DRV2- POT Sta. 11+35.00
-DRV2- PT Sta. 10+54.40
-DRV2- PC Sta. 10+24.41
S 51° 08' 54.0" W
S 44° 42' 07.7" W
RETAIN EXISTING BRIDGE
-BY5-54
-Y3- PC Sta. 12+37.63
-Y3- PT Sta. 14+03.17
-BY4-52 = -BY5- -BY6-
TUCKASEGEE RIVER
SR 1175 WIKE CEMETARY RD
SR 1171 ROY TRITT RD


PROJECT REFERENCE NO.
SHEET NO.
R-4753
9/115
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
NAD 83/NSRS 2007
MATCH TO SHEET 9
MATCH TO SHEET 11
S 36°13'35.7" E
-BL-23
-BL-24
-BY6-55
Exposed Crystalline Rock
Exposed Crystalline Rock
REMOVE EX. GR.
GRAU 350 TL-2
RIP RAP
ROCK HW
1SMTLBUS
1SFBUS
2SFD
HTR
CONC
BST
TUCKASEGEE RIVER
RESERVOIR
SPRING
ROCK WALL
SEPTIC TANK & DRAIN FIELD
PIPE SYSTEM NOT LOCATED DRAWN IN AS PER OWNER
100
105
110
5/14/99
15-JUL-2013 11:32

PROJECT REFERENCE NO.	SHEET NO.
R-4753	10/115
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-
PI Sta 128+00.46
Δ = 114° 22' 34.4" (LT)
D = 16° 22' 12.8"
L = 698.68'
T = 542.85'
✻ R = 350.00'
SE = .08

-Y3A-

PI Sta 13+32.47	PI Sta 11+15.66
Δ = 33° 46' 55.2" (RT)	Δ = 108° 52' 23.8" (RT)
D = 28° 38' 52.4"	D = 114° 35' 29.6"
L = 117.92'	L = 95.01'
T = 60.73'	T = 69.93'
R = 200.00'	R = 50.00'
SE = NC	SE = NC

✻ Design Exception Required For Horizontal Curve Radius

5/14/99

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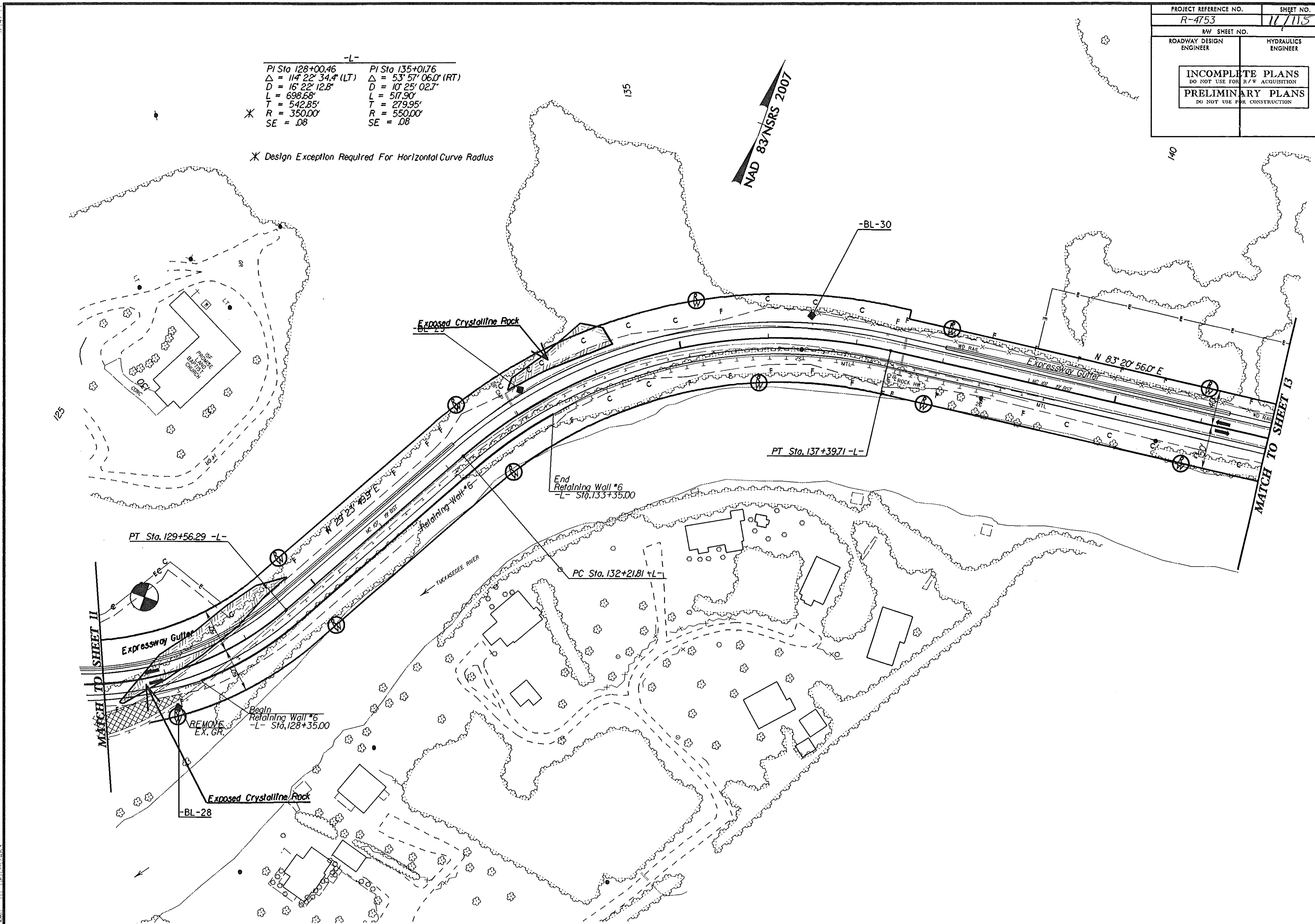
PROJECT REFERENCE NO.	SHEET NO.
R-4753	11/115
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



-L-
PI Sta 128+00.46
Δ = 114° 22' 34.4" (LT)
D = 16° 22' 12.8"
L = 698.68'
T = 542.85'
R = 350.00'
SE = .08
PI Sta 135+01.76
Δ = 53° 57' 06.0" (RT)
D = 10° 25' 02.7"
L = 517.90'
T = 279.95'
R = 550.00'
SE = .08
✱ Design Exception Required For Horizontal Curve Radius
NAD 83/NSRS 2007
135
140
125
-BL-30
Exposed Crystalline Rock
-BL-29
N 83° 20' 56.0" E
Expressway Gutter
PT Sta. 137+39.71 -L-
End Retaining Wall #6 -L- Sta.133+35.00
Retaining Wall #6
PC Sta. 132+21.81 -L-
PT Sta. 129+56.29 -L-
TUCKASEGEE RIVER
Expressway Gutter
Begin Retaining Wall #6 -L- Sta.128+35.00
REMOVE EX. GR.
Exposed Crystalline Rock
-BL-28
MATCH TO SHEET 11
MATCH TO SHEET 13

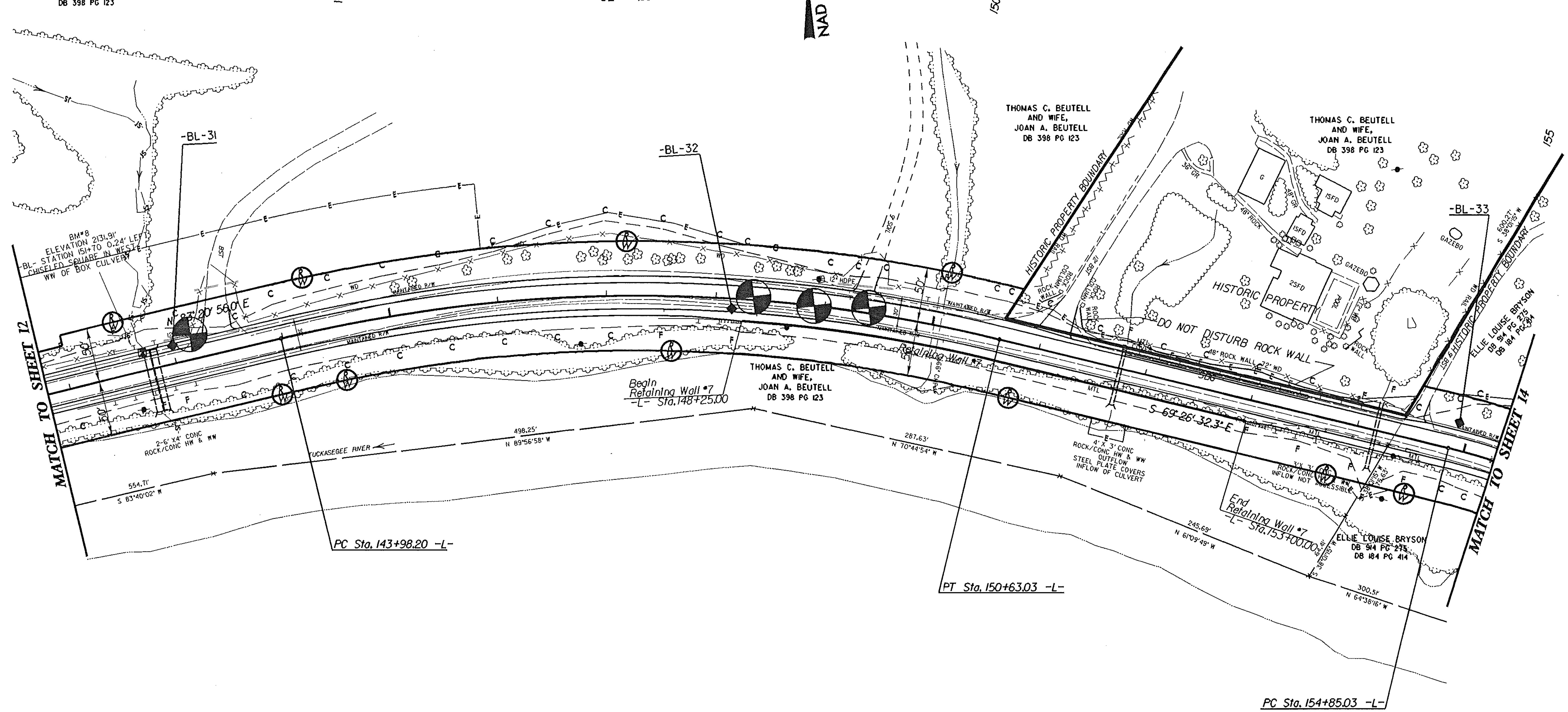
PROJECT REFERENCE NO.	SHEET NO.
R-4753	12/115
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

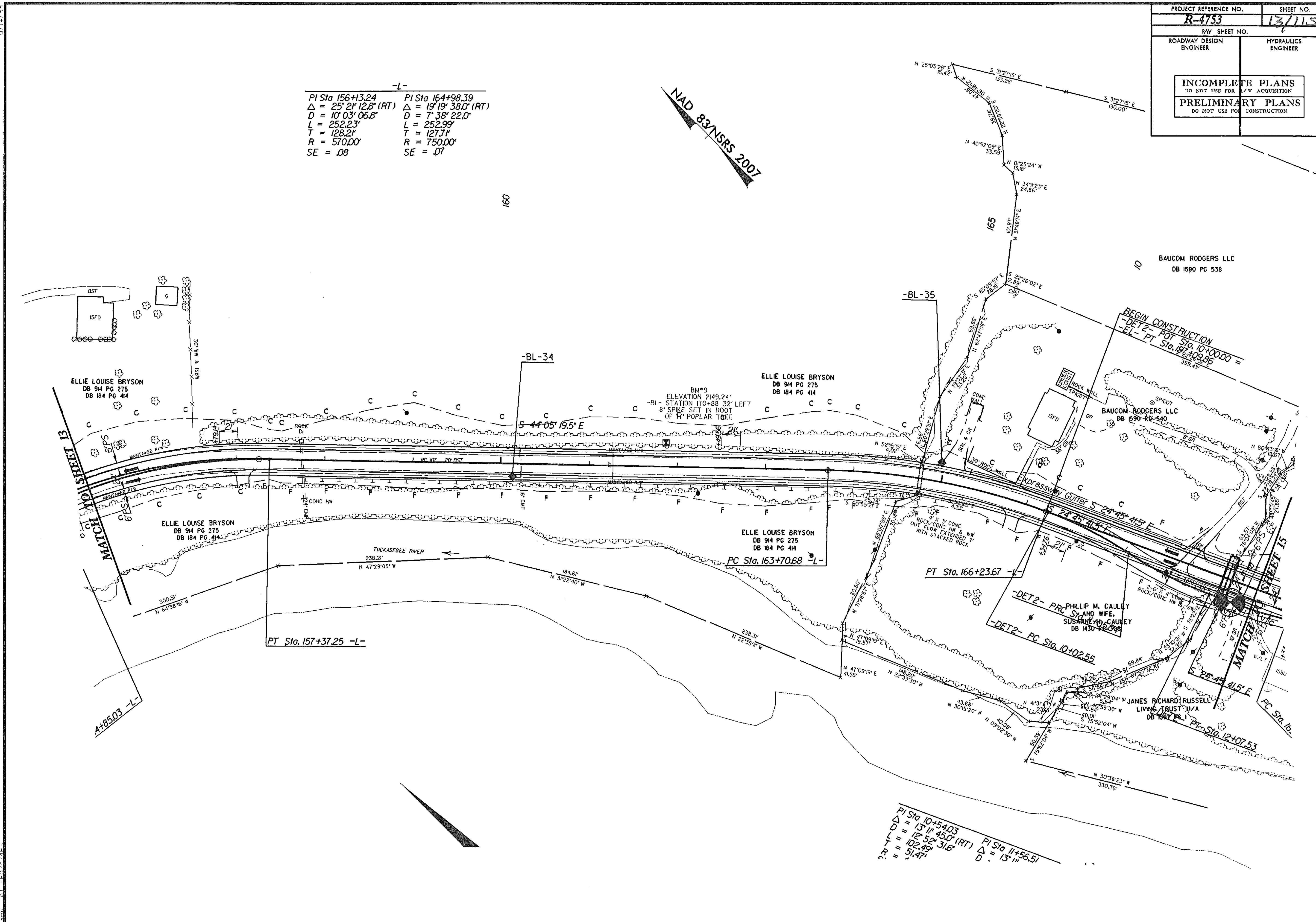
-L-

PI Sta 147+37.01	PI Sta 156+13.24
Δ = 27° 12' 31.7" (RT)	Δ = 25° 21' 12.8" (RT)
D = 4° 05' 33.2"	D = 10° 03' 06.8"
L = 664.84'	L = 252.23'
T = 338.81'	T = 128.21'
R = 1,400.00'	R = 570.00'
SE = .05	SE = .08



NAD 83/NSRS 2007
THOMAS C. BEUTELL AND WIFE, JOAN A. BEUTELL DB 398 PG 123
145
150
155
-BL-31
-BL-32
-BL-33
BM#8 ELEVATION 2131.91' -BL- STATION 151+70 0.24' LEFT CHISELED SQUARE IN WEST WW OF BOX CULVERT
N 83°20' 56.0" E
MATCH TO SHEET 12
MATCH TO SHEET 14
2-6' X4' CONC ROCK/CONC HW & WW
TUCKASEGEE RIVER
498.25' N 89°56'58" W
554.71' S 83°40'02" W
287.63' N 70°44'54" W
245.69' N 61°09'49" W
300.5' N 64°38'16" W
Begin Retaining Wall #7 -L- Sta.148+25.00
End Retaining Wall #7 -L- Sta.153+00.00
Retaining Wall #7
PC Sta. 143+98.20 -L-
PT Sta. 150+63.03 -L-
PC Sta. 154+85.03 -L-
HISTORIC PROPERTY BOUNDARY
HISTORIC PROPERTY
DO NOT DISTURB ROCK WALL
S 69° 26' 32.3" E
4' X 3' CONC ROCK/CONC HW & WW OUTFLOW STEEL PLATE COVERS INFLOW OF CULVERT
GAZEBO
ELLIE LOUISE BRYSON DB 914 PG 275 DB 184 PG 414

05-JUL-2013 11:25
R:\GEOTECH\PlanProf\R4753_Rdy_psh13.dgn
5/14/99


PROJECT REFERENCE NO.
R-4753
SHEET NO.
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
-L-
PI Sta 156+13.24
Δ = 25° 21' 12.8" (RT)
D = 10° 03' 06.8"
L = 252.23'
T = 128.21'
R = 570.00'
SE = .08
PI Sta 164+98.39
Δ = 19° 19' 38.0" (RT)
D = 7° 38' 22.0"
L = 252.99'
T = 127.71'
R = 750.00'
SE = .07
NAD 83/NSRS 2007
BAUCOM RODGERS LLC
DB 1590 PG 538
-BL-35
-BL-34
BEGIN CONSTRUCTION
-DET2- POT Sta. 10+00.00 =
-EL- PT Sta. 197+09.86
ELLIE LOUISE BRYSON
DB 914 PG 275
DB 184 PG 414
BM*9
ELEVATION 2149.24'
-BL- STATION 170+88 32' LEFT
8" SPIKE SET IN ROOT
OF 18" POPLAR TREE
S 44°05' 19.5" E
BAUCOM RODGERS LLC
DB 1590 PG 540
Expressway Gutter S 24°45' 41.5" E
MATCH TO SHEET 13
MATCH TO SHEET 15
TUCKASEGEE RIVER
PC Sta. 163+70.68 -L-
PT Sta. 157+37.25 -L-
PT Sta. 166+23.67 -L-
-DET2- PRC Sta.
-DET2- PC Sta. 10+02.55
PHILLIP M. CAULEY
AND WIFE,
SUSANNE H. CAULEY
DB 1430 PG 098
JAMES RICHARD RUSSELL
LIVING TRUST U/A
PT Sta. 12+07.53
4+85.03 -L-
PI Sta 10+54.03
Δ = 13° 11' 45.0" (RT)
D = 17° 52' 31.6"
L = 102.49'
T = 51.47'
PI Sta 11+56.51
Δ = 13° 1'

PROJECT REFERENCE NO.	SHEET NO.
R-4753	14/115
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

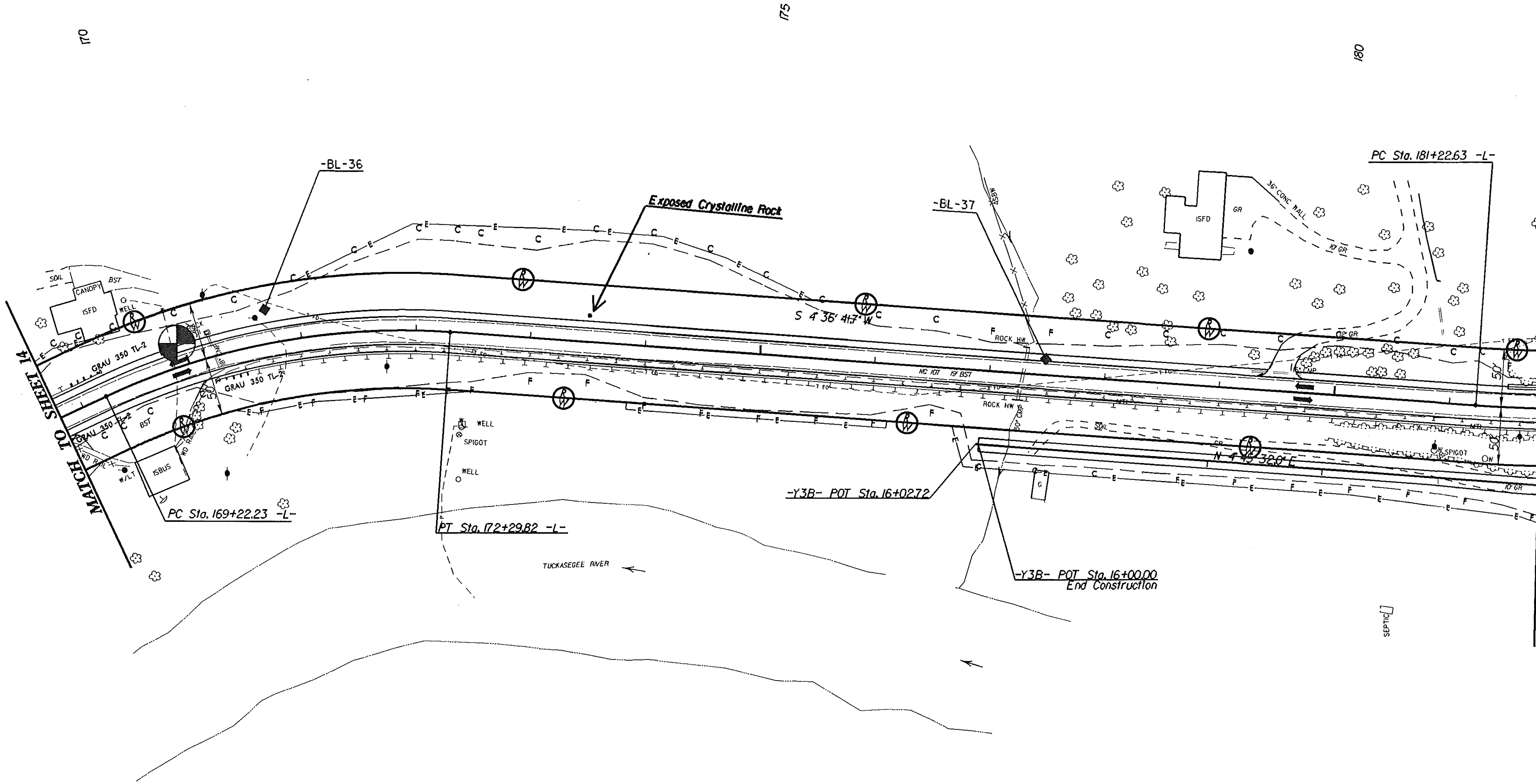
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83/NSRS 2007

-L-

PI Sta 170+79.48	PI Sta 183+05.62
Δ = 29° 22' 23.3" (RT)	Δ = 17° 20' 27.8" (LT)
D = 9° 32' 57.5"	D = 4° 46' 28.7"
L = 307.59'	L = 363.19'
T = 157.26'	T = 182.99'
R = 600.00'	R = 1,200.00'
SE = .08	SE = .05



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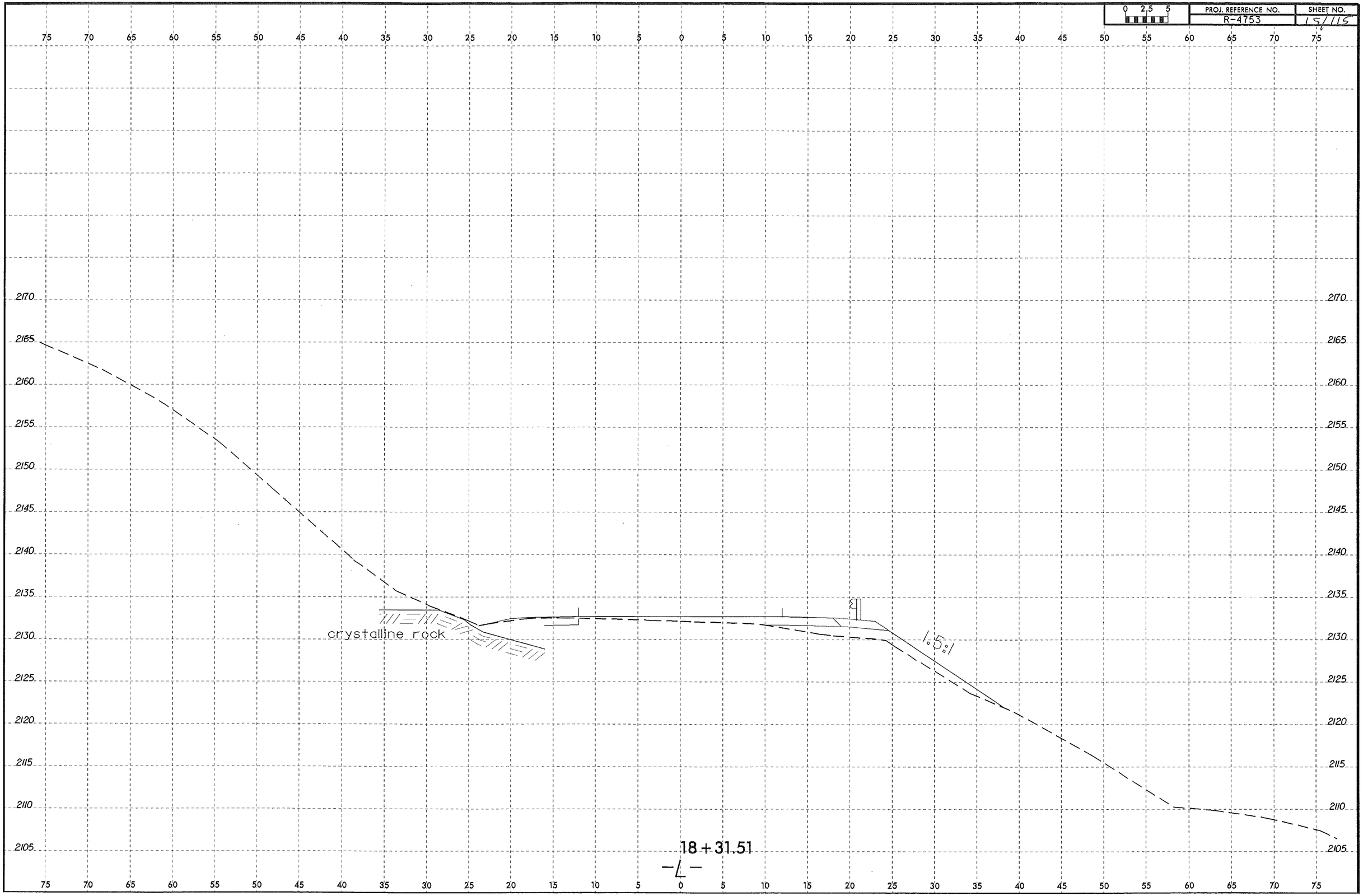
	R-4753	15/115



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	R-4753	16/11.5

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

2170
2165
2160
2155
2150
2145
2140
2135
2130
2125
2120
2115
2110
2105

1.5:1

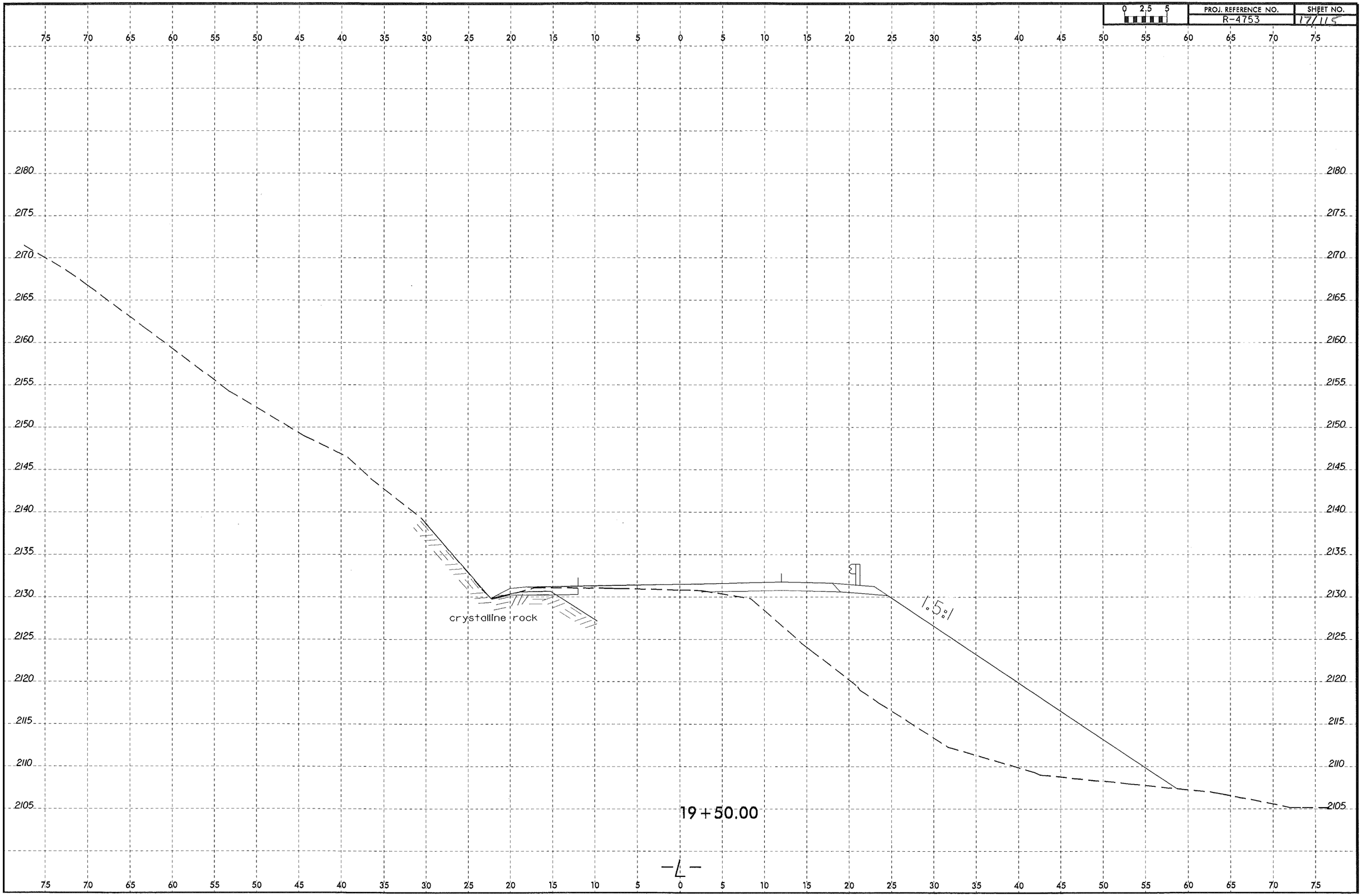
crystalline rock

1.5:1

18+50.00

-L-

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	R-4753	17/115



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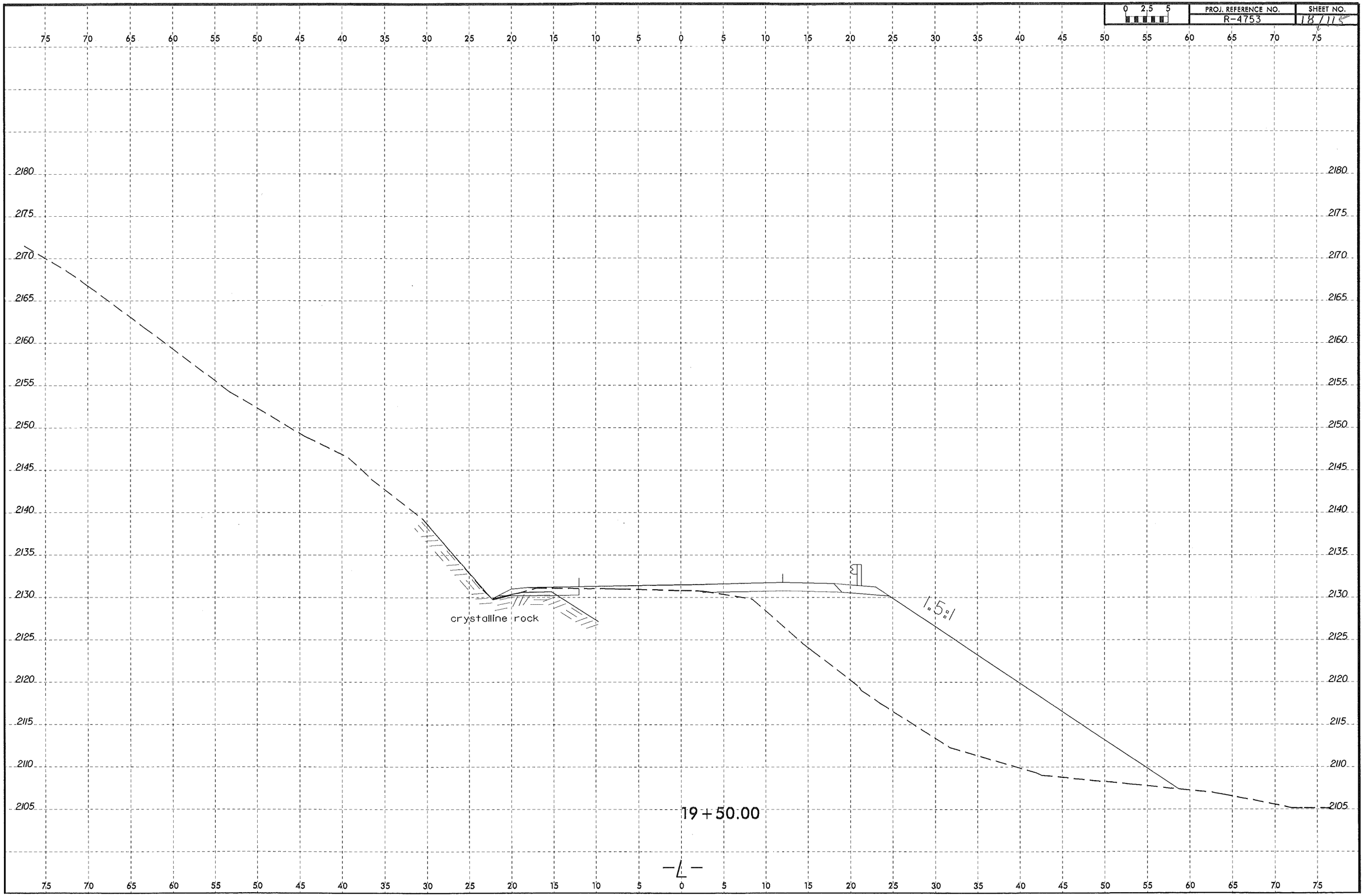
	R-4753	18/115



0 2.5 5

PROJ. REFERENCE NO. R-4753

SHEET NO. 19/115

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

2180 2175 2170 2165 2160 2155 2150 2145 2140 2135 2130 2125 2120 2115 2110 2105

1.5:1

19+94.82

—L—

0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
R-4753	20/115

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

2180
2175
2170
2165
2160
2155
2150
2145
2140
2135
2130
2125
2120
2115
2110
2105

crystalline rock

1.5:1

20+50.00

—℄—

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
R-4753	21 of 115

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

2175
2170
2165
2160
2155
2150
2145
2140
2135
2130
2125
2120
2115
2110
2105

crystalline rock

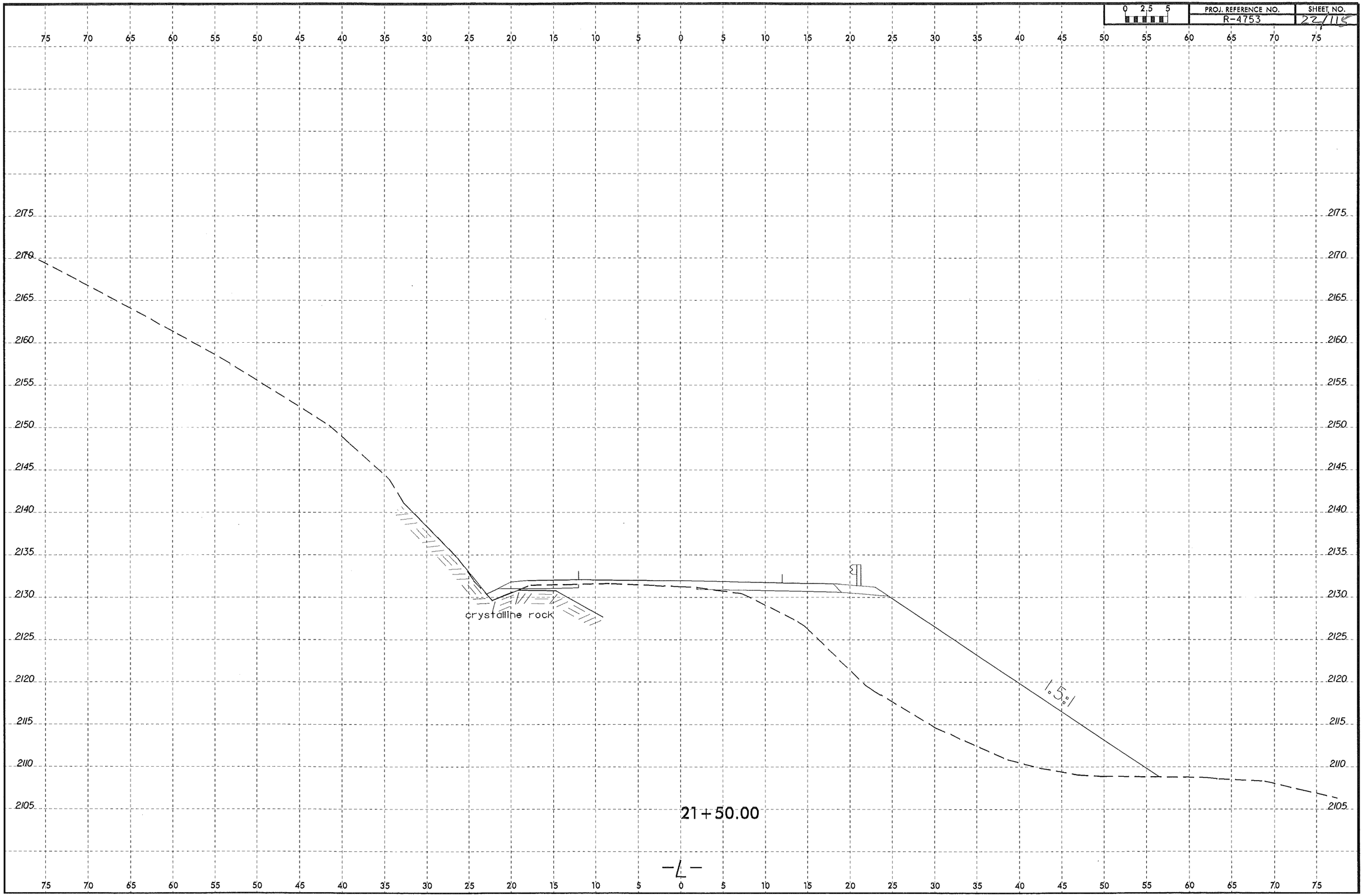
1.5:1

21+00.00

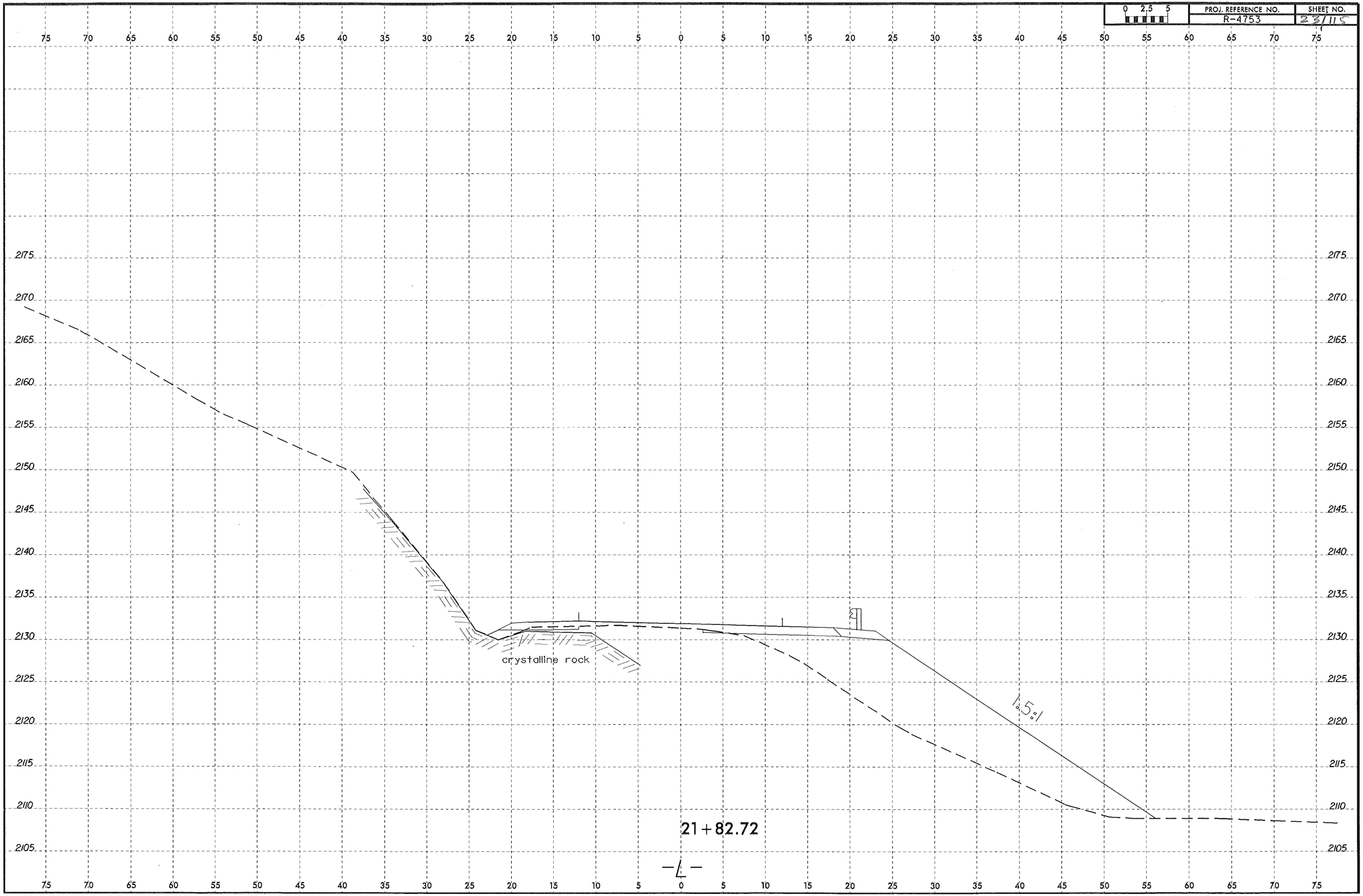
—℄—

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

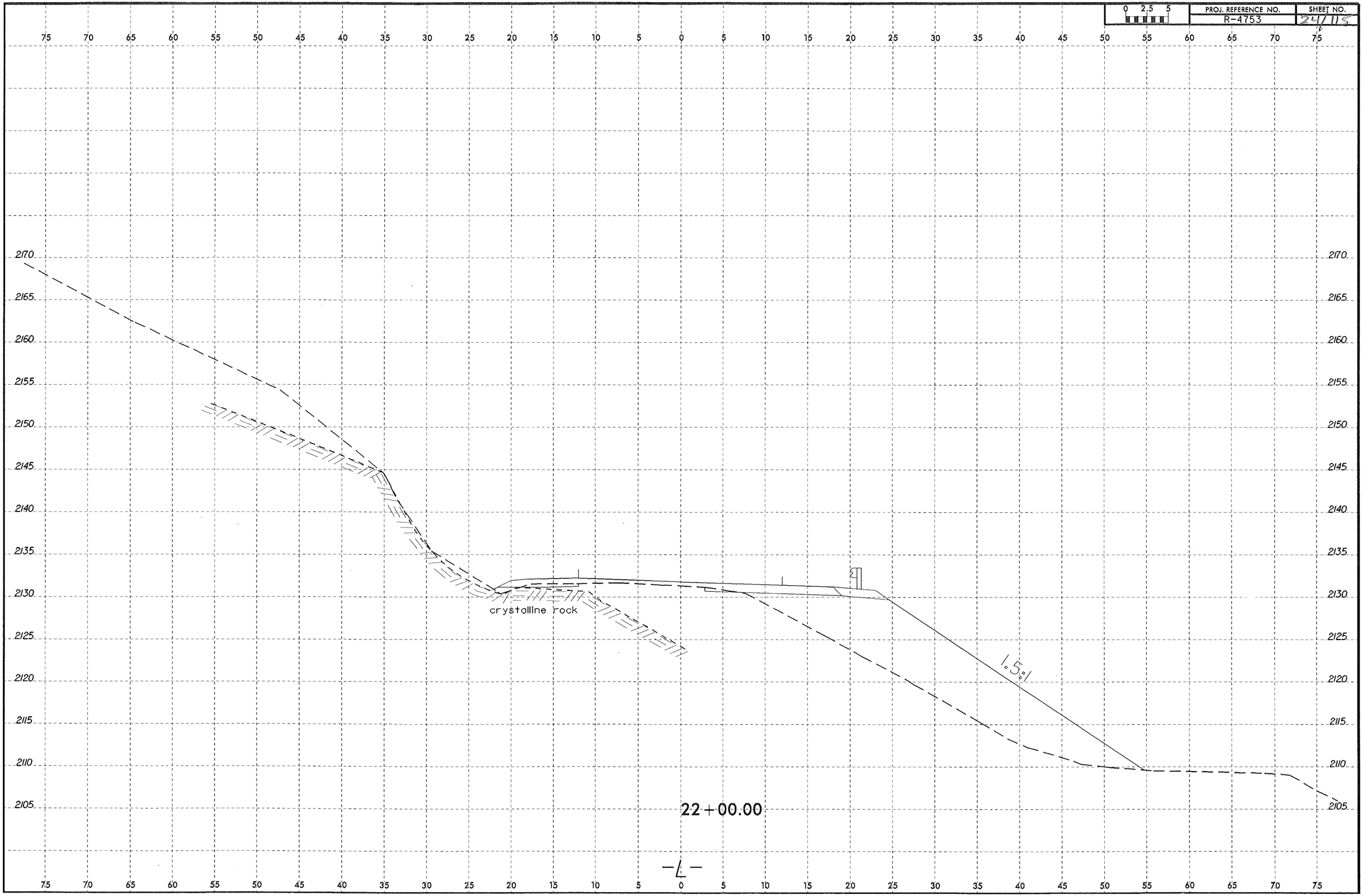
0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	R-4753	22/115



0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	R-4753	23/115



0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	R-4753	24/115



0 2.5 5

PROJ. REFERENCE NO. R-4753

SHEET NO. 25/115

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

2160
2155
2150
2145
2140
2135
2130
2125
2120
2115
2110
2105

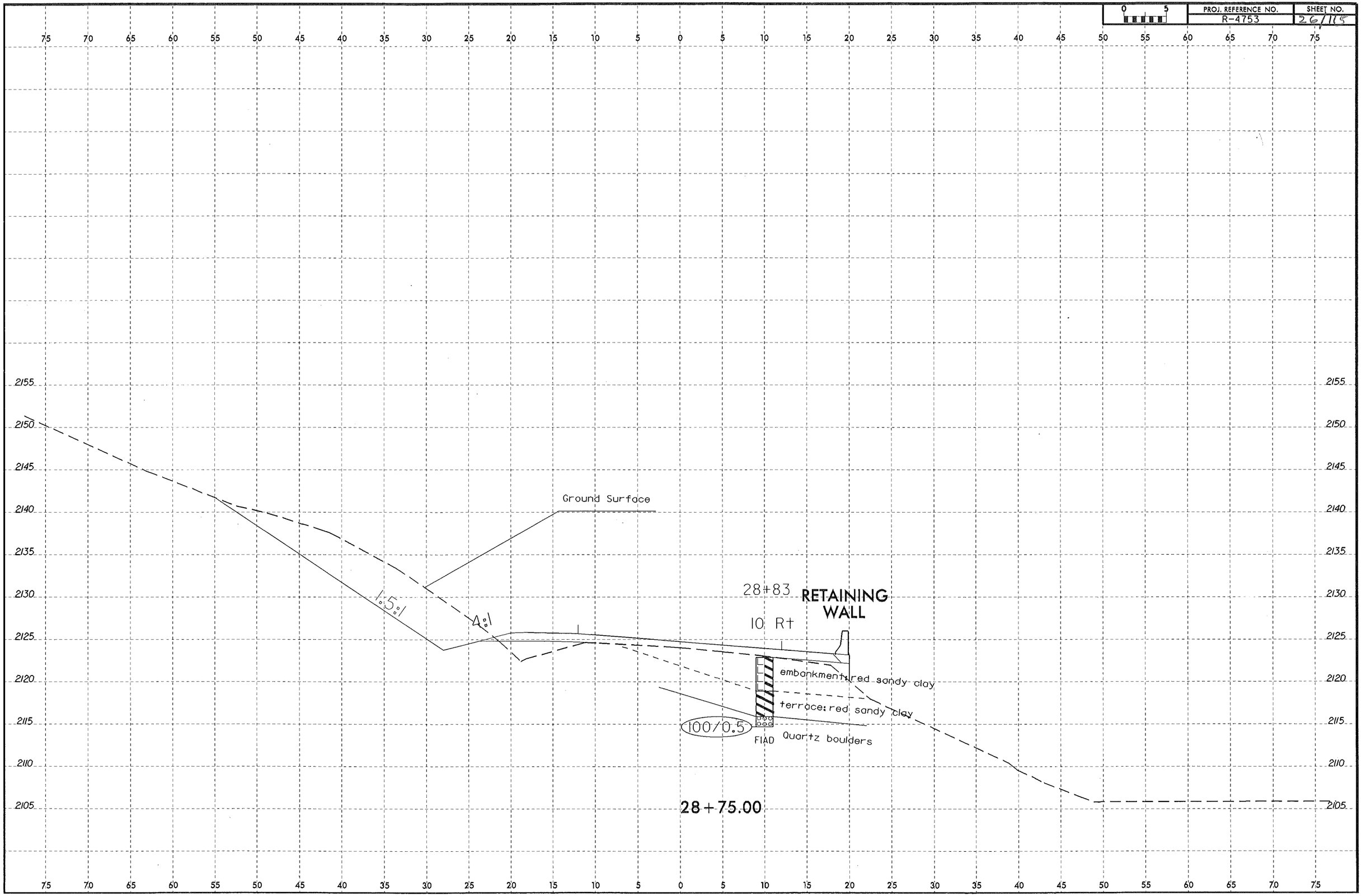
crystalline rock

2:1

22+50.00

—L—

0 5	PROJ. REFERENCE NO.	SHEET NO.
	R-4753	26/115



PROJ. REFERENCE NO. R-4753

SHEET NO. 2-7 11.5

29+50

65 Lt

40

75

60/0.1

FIAD

terrace: red to tan sandy clay

saprolite: green-black, tan & white, silty sand

crystalline rock (gnelss)

1.5:1

4%

Ground Surface

29+40

9 Rt

RETAINING WALL

embankment: red sandy clay

4

WOH

FIAD

alluvium: tan sandy clay grading to brown silty fine sand

29+50.00

PROJ. REFERENCE NO. R-4753

SHEET NO. 28/115

0 5

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

2150
2145
2140
2135
2130
2125
2120
2115
2110
2105

Ground Surface

1:5:1

4:1

29+83

8 Rt

RETAINING WALL

embankment:
red sandy clay

6

1

alluvium: tan sandy clay w/gray mottles

FHD

29+75.00

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	R-4753	29 OF 45

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

2165 2160 2155 2150 2145 2140 2135 2130 2125 2120

crystalline rock

2%

54+00.00

53+50.00

—℄—

PROJ. REFERENCE NO.	SHEET NO.
R-4753	30 OF 115

0 2.5 5

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

2170
2165
2160
2155
2150
2145
2140
2135
2130
2125
2120

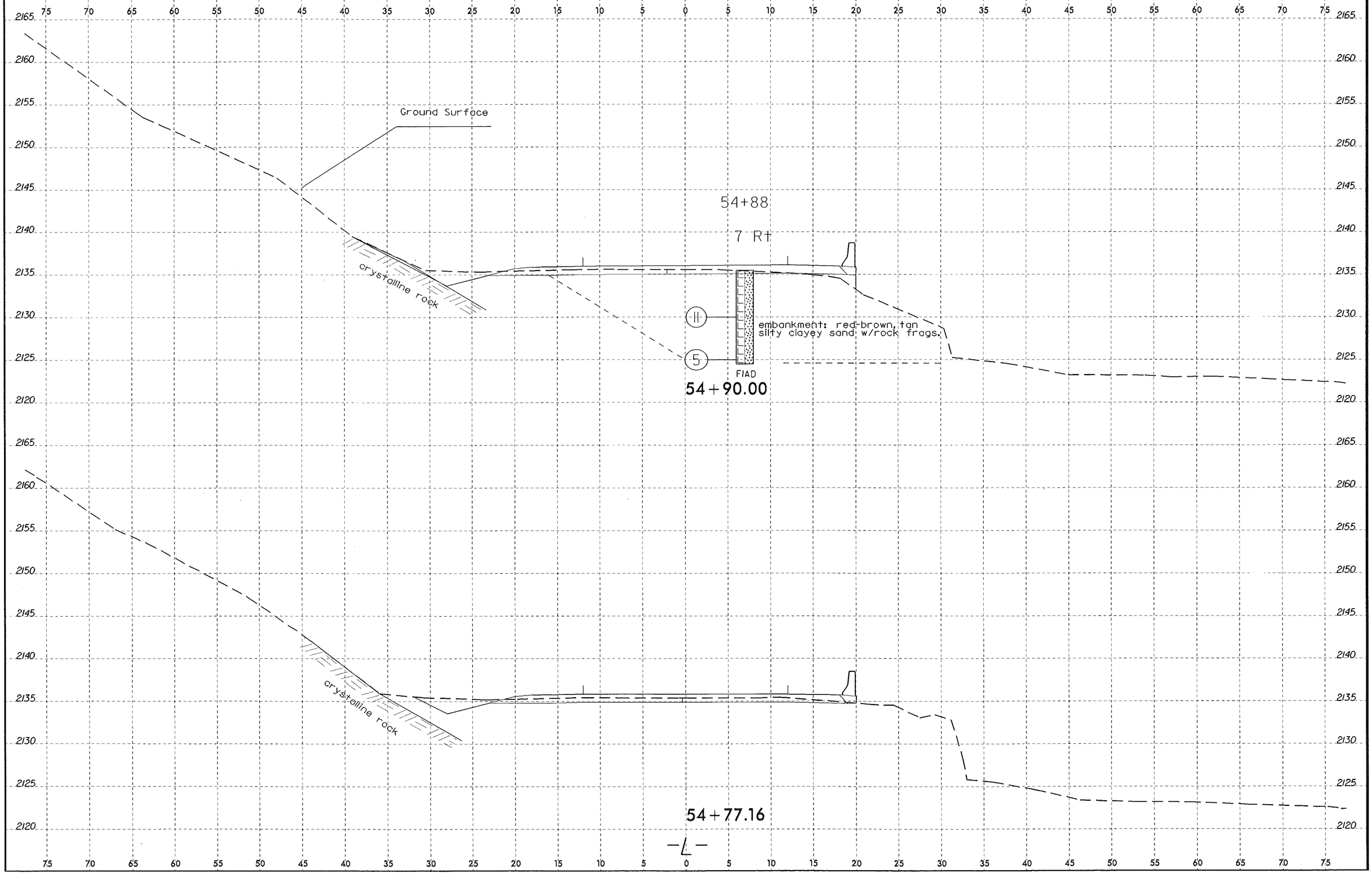
crystalline rock

54+50.00

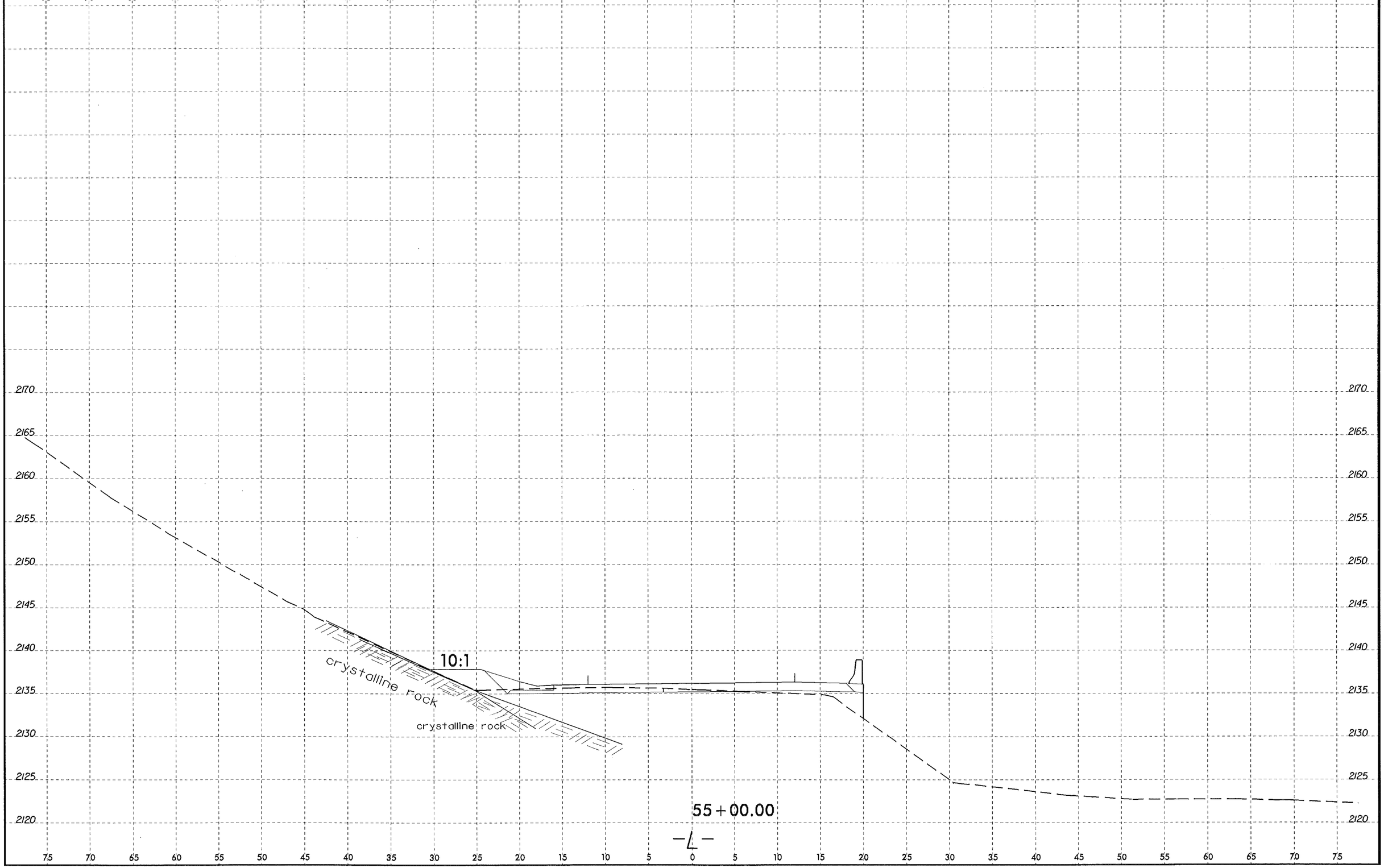
—℄—

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	R-4753	31



0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	R-4753	32/115



0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
R-4753	33715

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

2185 2180 2175 2170 2165 2160 2155 2150 2145 2140 2135 2130 2125 2120 2115

Ground Surface

10:1

crystalline rock

55+55

2-R+

38

26

100/0.3

EIAD

55+50.00

embankment: tan, red & black-green, silty sand w/mica and rock frags.

Weathered rock (Gneiss)

-L-

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	R-4753	34 OF 115

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

2180
2175
2170
2165
2160
2155
2150
2145
2140
2135
2130
2125
2120
2115
2110

Ground Surface

10:1

crystalline rock

55+96

2 Rt

6
15
8
3

embankment: red, brown-red, black & tan, fine sandy clay

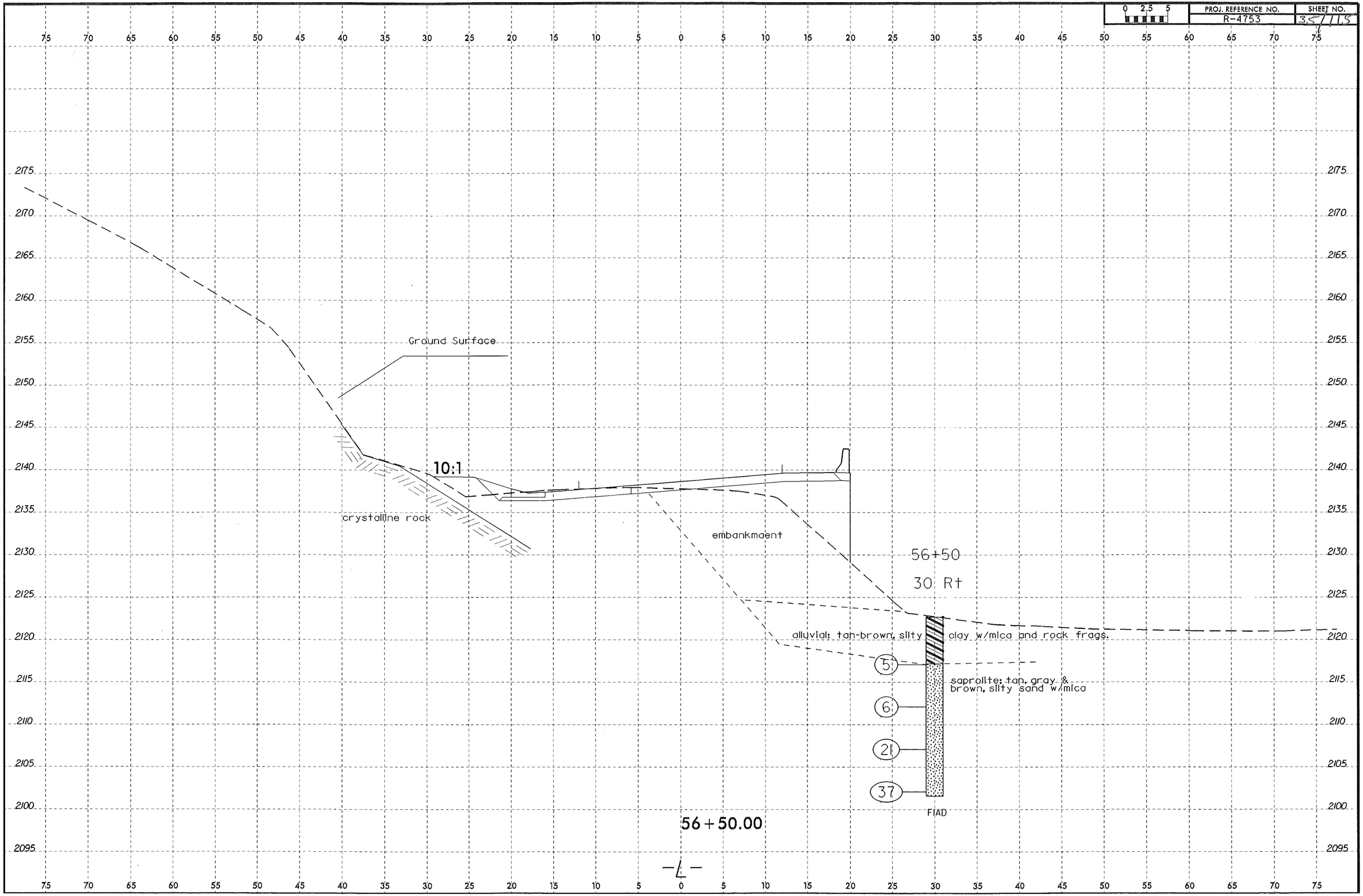
saprolite: tan, green-black & gray, silty fine sand w/rock frags.

FIAD
56+00.00

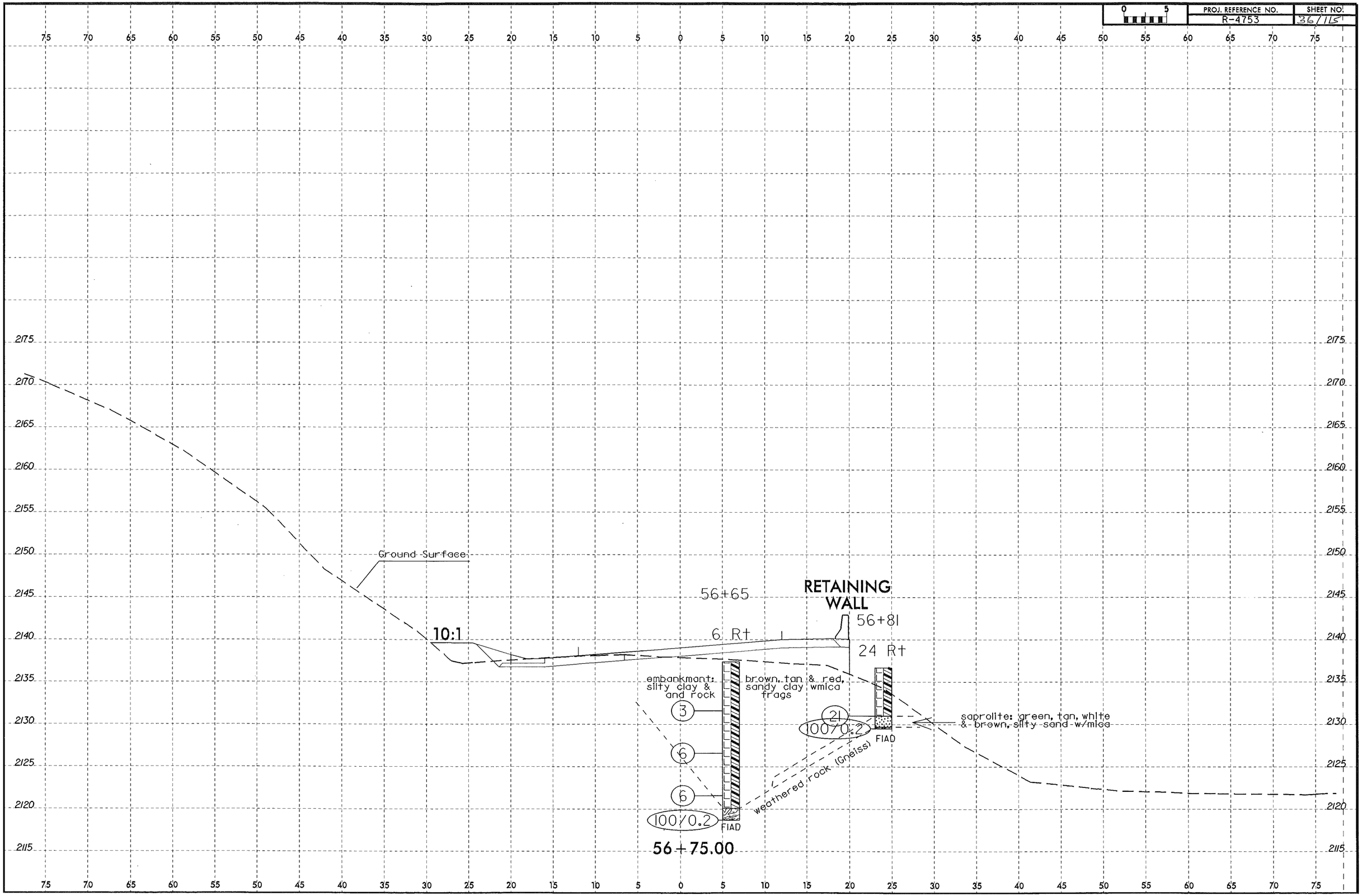
$-\mathit{L}-$

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	R-4753	35 / 115



PROJ. REFERENCE NO.	SHEET NO.
R-4753	36/115



0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	R-4753	37 115

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

2180 2175 2170 2165 2160 2155 2150 2145 2140 2135 2130 2125 2120 2115 2110

Ground Surface

10:1

crystalline rock

58+46

5 Rt

(3) embankment: brown, red, sandy clay

(17) saprolite: gray, brown, red, white, silty, clayey sand

(12) FIAD

58+50.00

-L-

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
R-4753	28 / 115

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

2180
2175
2170
2165
2160
2155
2150
2145
2140
2135
2130
2125
2120
2115
2110

10:1

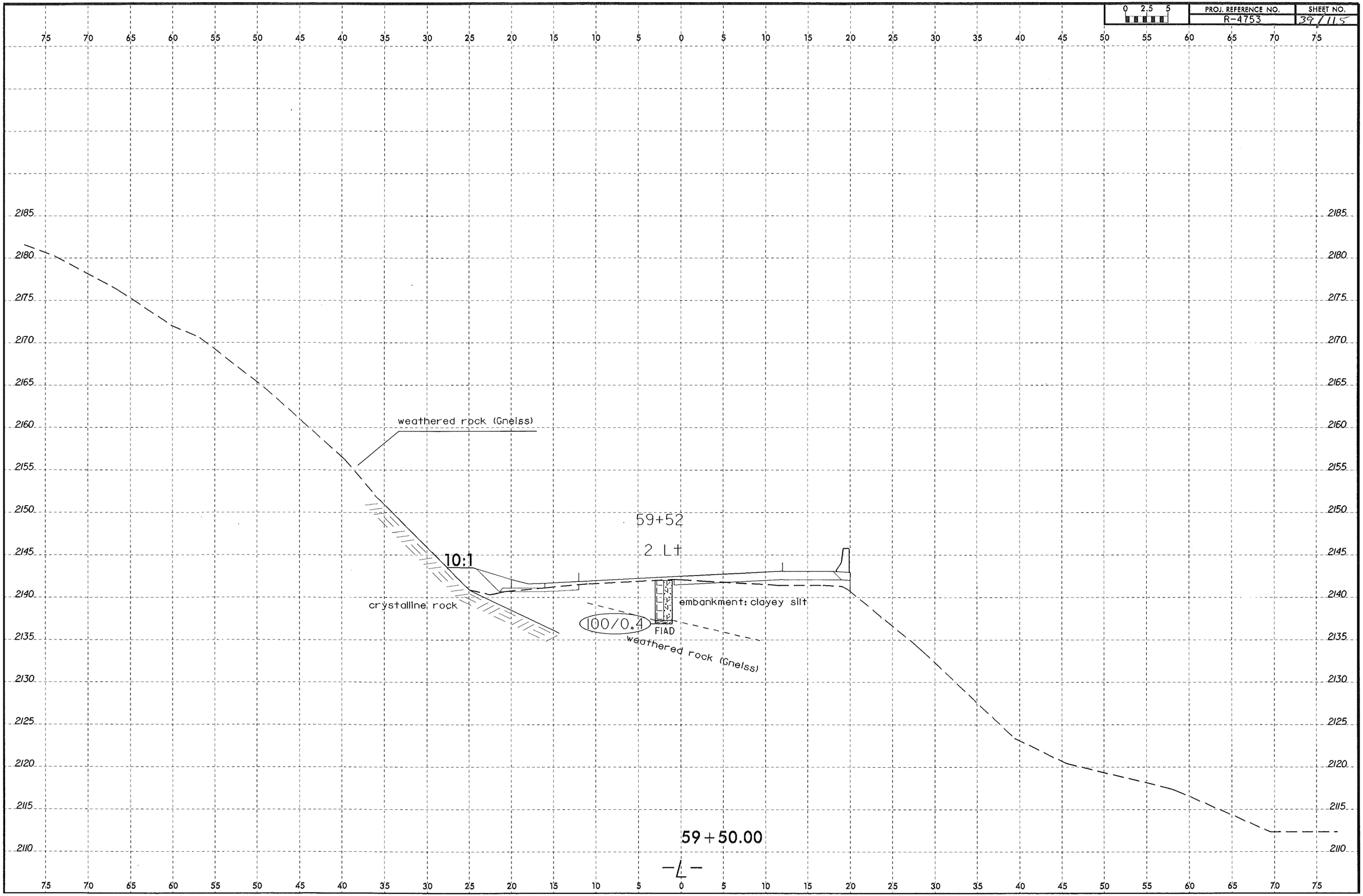
crystalline rock

59+00.00

—℄—

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	R-4753	39/115



0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
R-4753	40/115

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

2185
2180
2175
2170
2165
2160
2155
2150
2145
2140
2135
2130
2125
2120
2115
2110
2105

60+21

4L+

10:1

embankment: Brown or red clayey silt w/mica

4

100/0.3

60/0.1

weathered rock (Gnelss)

crystalline rock (Gnelss)

60+00.00

-L-

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
R-4753	41

60+77

9 Lt

10:1

embankment: brown, red & white, clayey silt w/ mica

saprolite: red brown silty sand with mica

crystalline rock (Gneiss)

3

6

15

60/0.1

60+58.84

-L-

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	R-4753	42 / 115

Ground Surface

crystalline rock

61+00.00

—L—

0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
R-4753	43/115

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

2165
2160
2155
2150
2145
2140
2135
2130
2125
2120
2115
2110
2105

Ground Surface

61+36

19 Lt

crystalline rock

3 embankment: brown-red & tan, clayey silt w/ mica

15

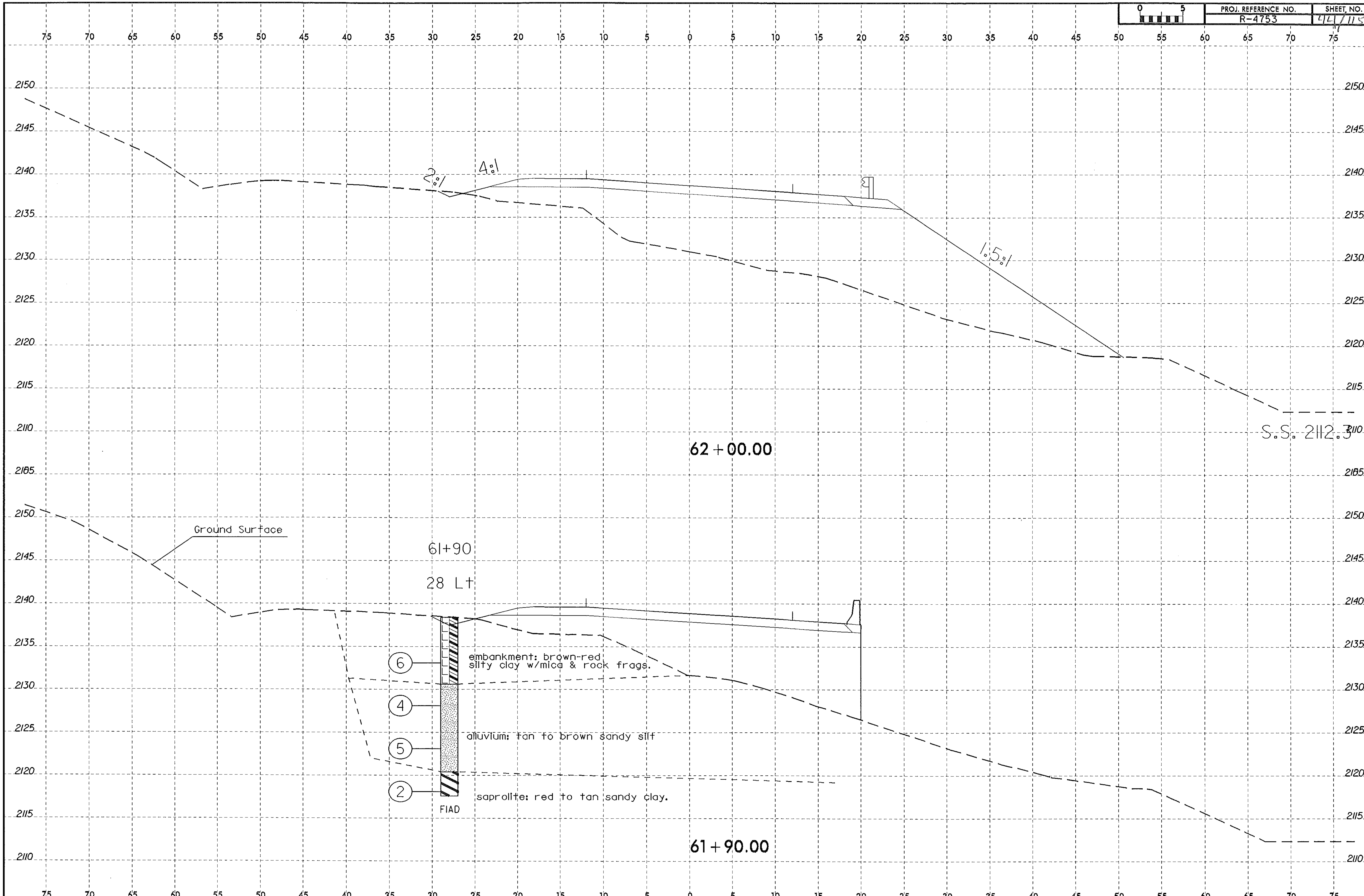
13 saprolite: brown, black & white, silty sand w/mica

22 FIAD

61+50.00

-L-

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75



PROJ. REFERENCE NO.
R-4753
SHEET NO.
46/115
2:1
4:1
1.5:1
S.S. 2112.3
62 + 00.00
Ground Surface
61+90
28 Lt
embankment: brown-red silty clay w/mica & rock frags.
alluvium: tan to brown sandy silt
saprolite: red to tan sandy clay.
FIAD
61 + 90.00

PROJ. REFERENCE NO.	SHEET NO.
R-4753	45/115

0 5

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

2145 2140 2135 2130 2125 2120 2115

4%

0.080 0.080

2%

63+00.00

2150 2145 2140 2135 2130 2125 2120 2115 2110

Ground Surface

62+42

35 Lt

4%

2%

WOH — embankment: brown clayey silt w/mica

7 — alluvium: tan to brown clay filled sandy silt

WOH — alluvium: gray, tan & black, sandy clay

3 — saprolite: white, black & tan, clayey, silty sand w/mica

FIAD

62+50.00

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
R-4753	46 / 115

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

2165
2160
2155
2150
2145
2140
2135
2130
2125
2120
2115

crystalline rock

2:1

64+00.00

-L-

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

0 2.5 5

PROJ. REFERENCE NO. R-4753

SHEET NO. 47 / 115

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

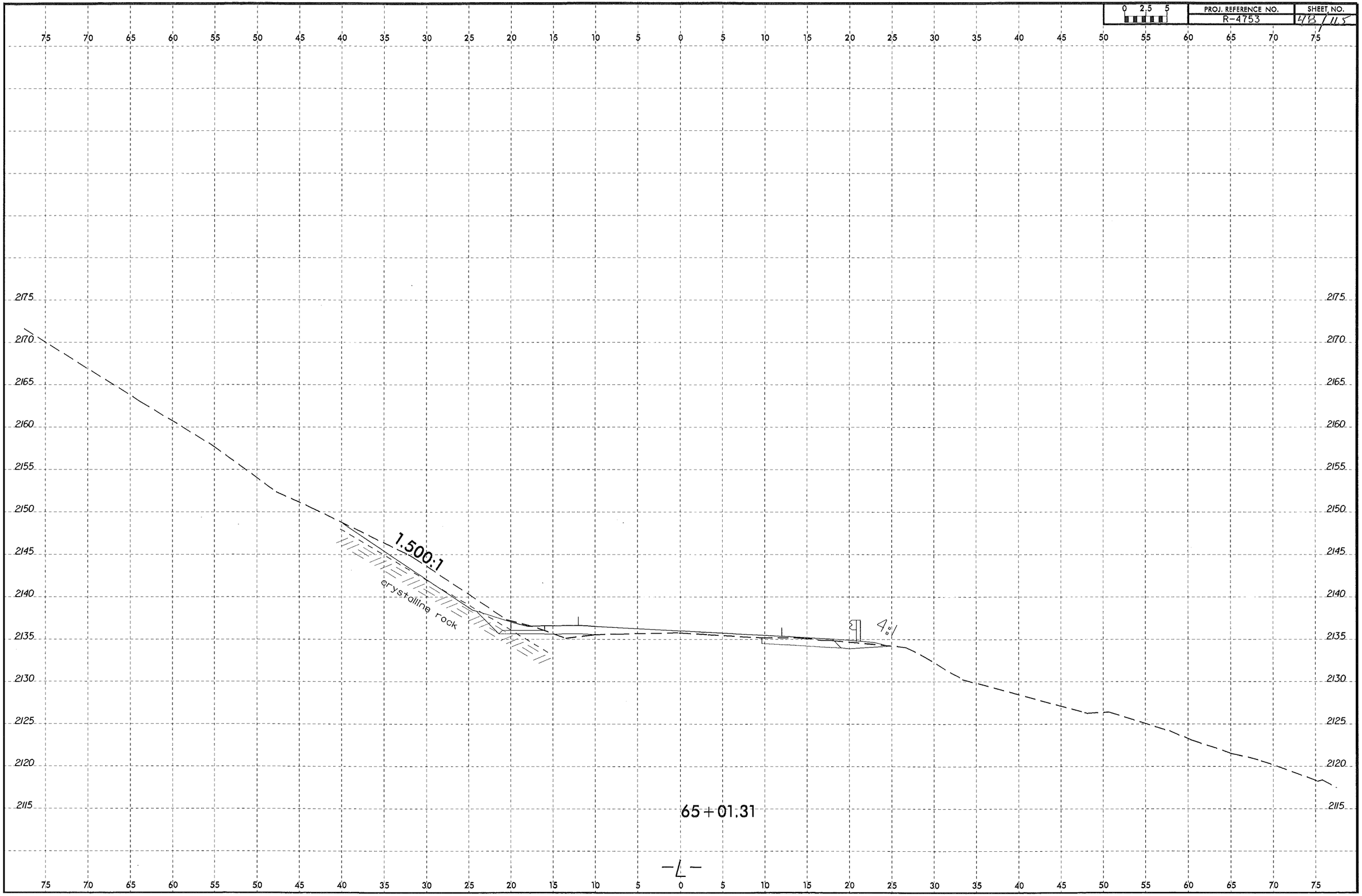
2175
2170
2165
2160
2155
2150
2145
2140
2135
2130
2125
2120
2115

crystalline rock

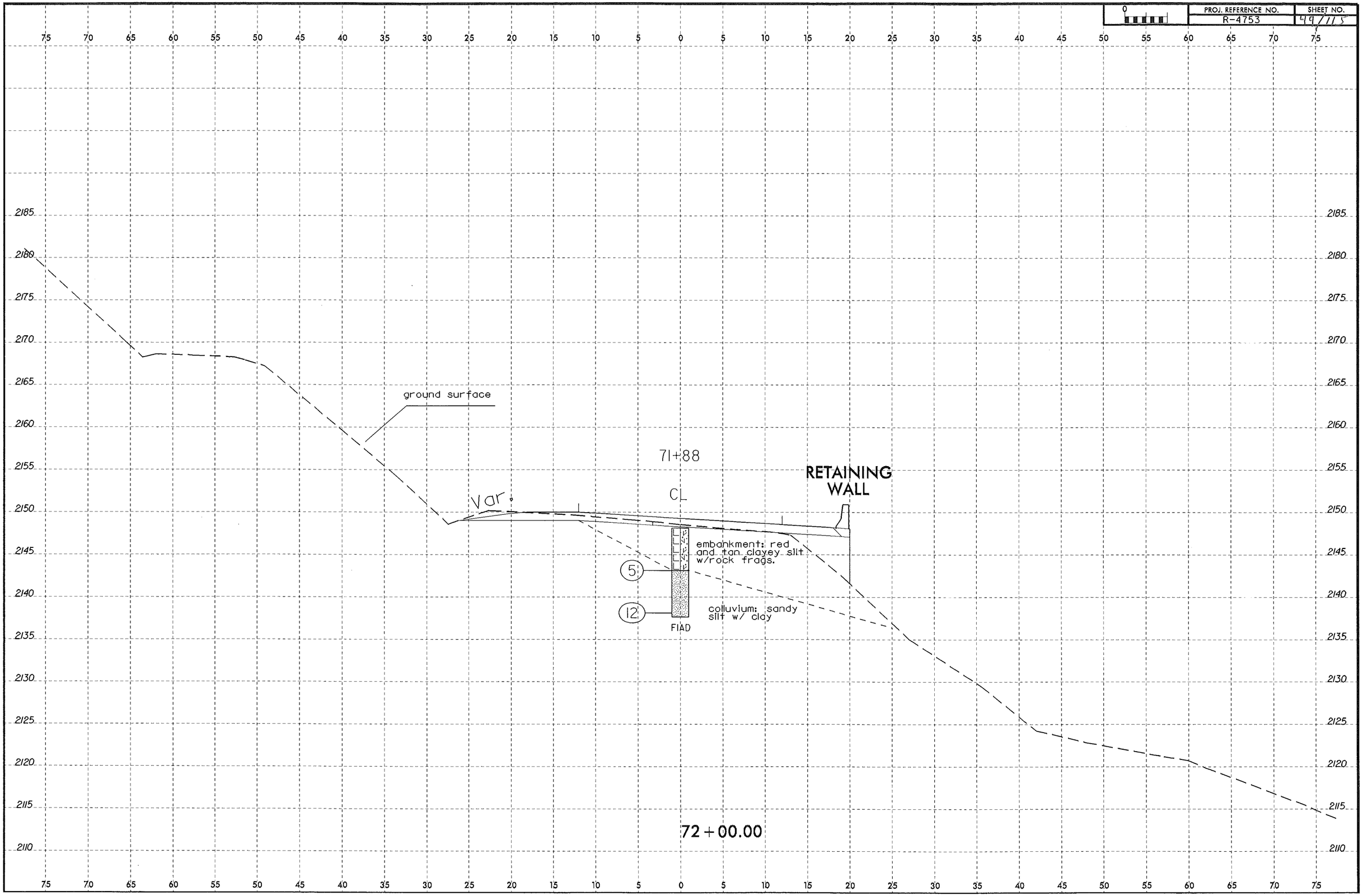
64+50.00

-L-

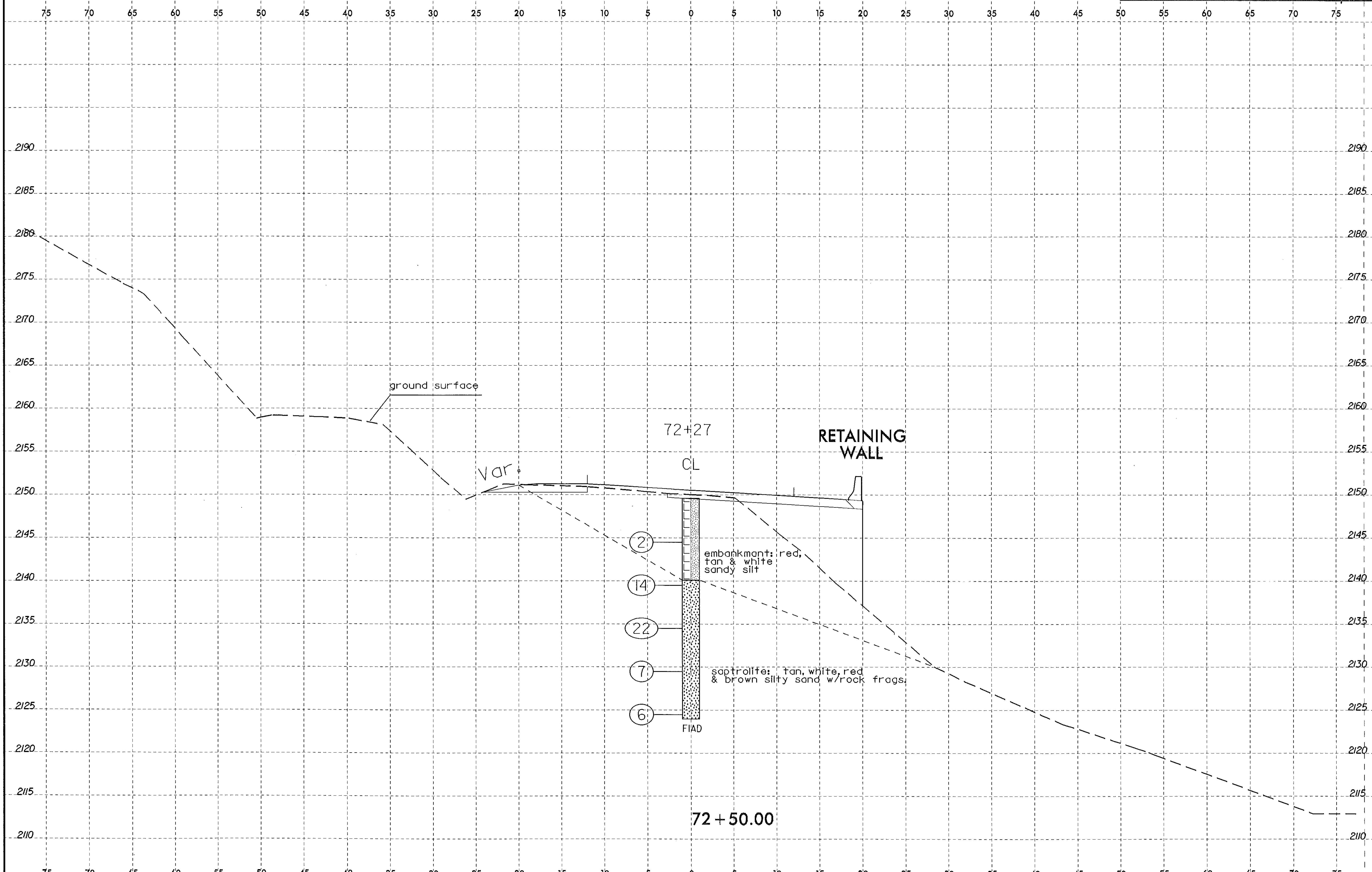
0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	R-4753	48 of 115



PROJ. REFERENCE NO.	SHEET NO.
R-4753	49/115



PROJ. REFERENCE NO.	SHEET NO.
R-4753	50/115



0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
R-4753	5 / 115

crystalline rock

73+00.00

—℄—

0 5	PROJ. REFERENCE NO.	SHEET NO.
	R-4753	52/115

73+51

6 Lt

RETAINING WALL

1.5:1

2:1

WOH

86

14

9

30

FIAD

ground surface

crystalline rock

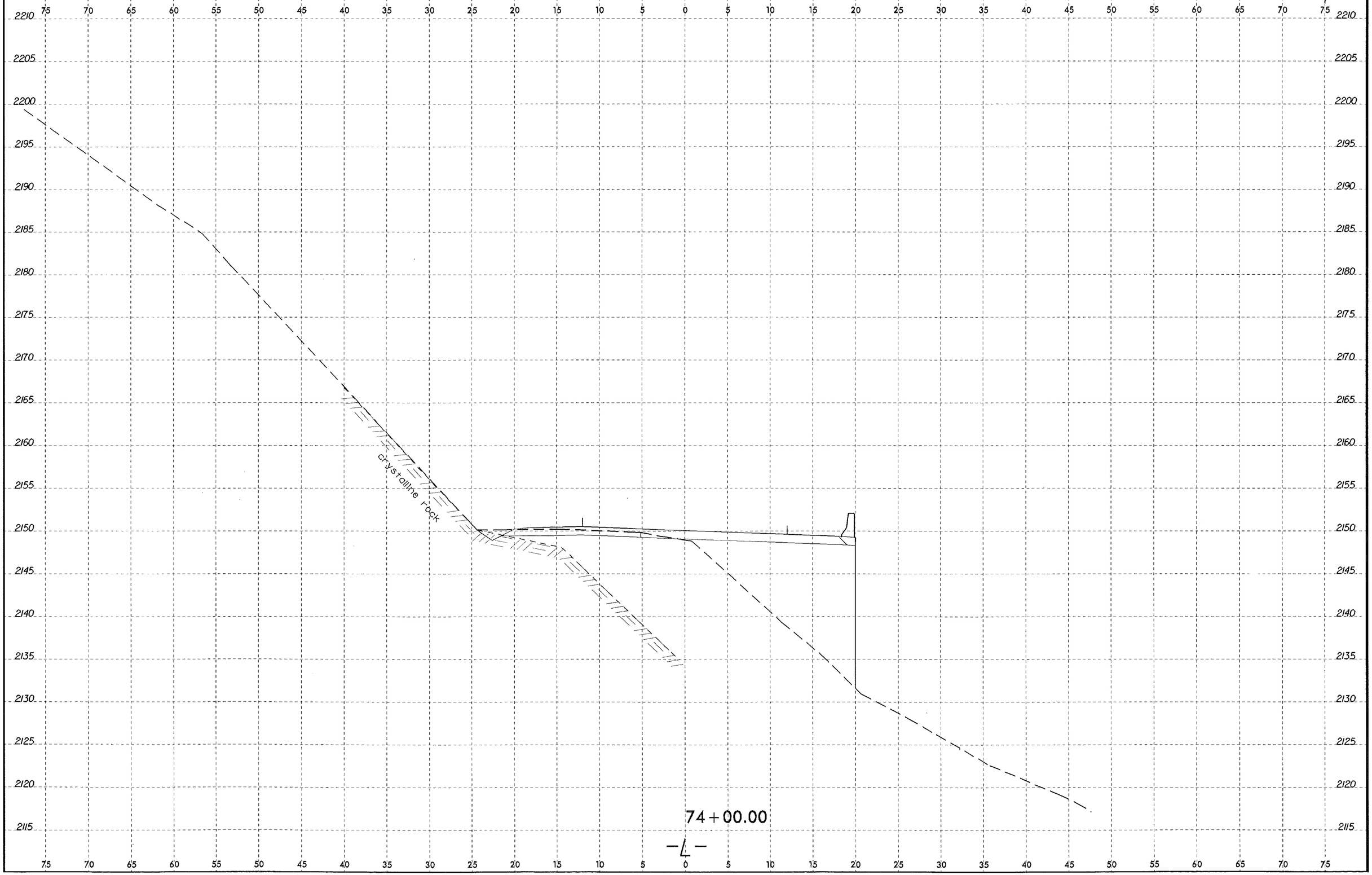
embankment: brown sandy silt

saprolite: brown silty sandy w/mica

73+50.00

0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
R-4753	58/115



0 2.5 5

PROJ. REFERENCE NO.	SHEET, NO.
R-4753	54 / 115

crystalline rock

ground surface

74+30

2 Lt

21

19

60/0.1

FIAD

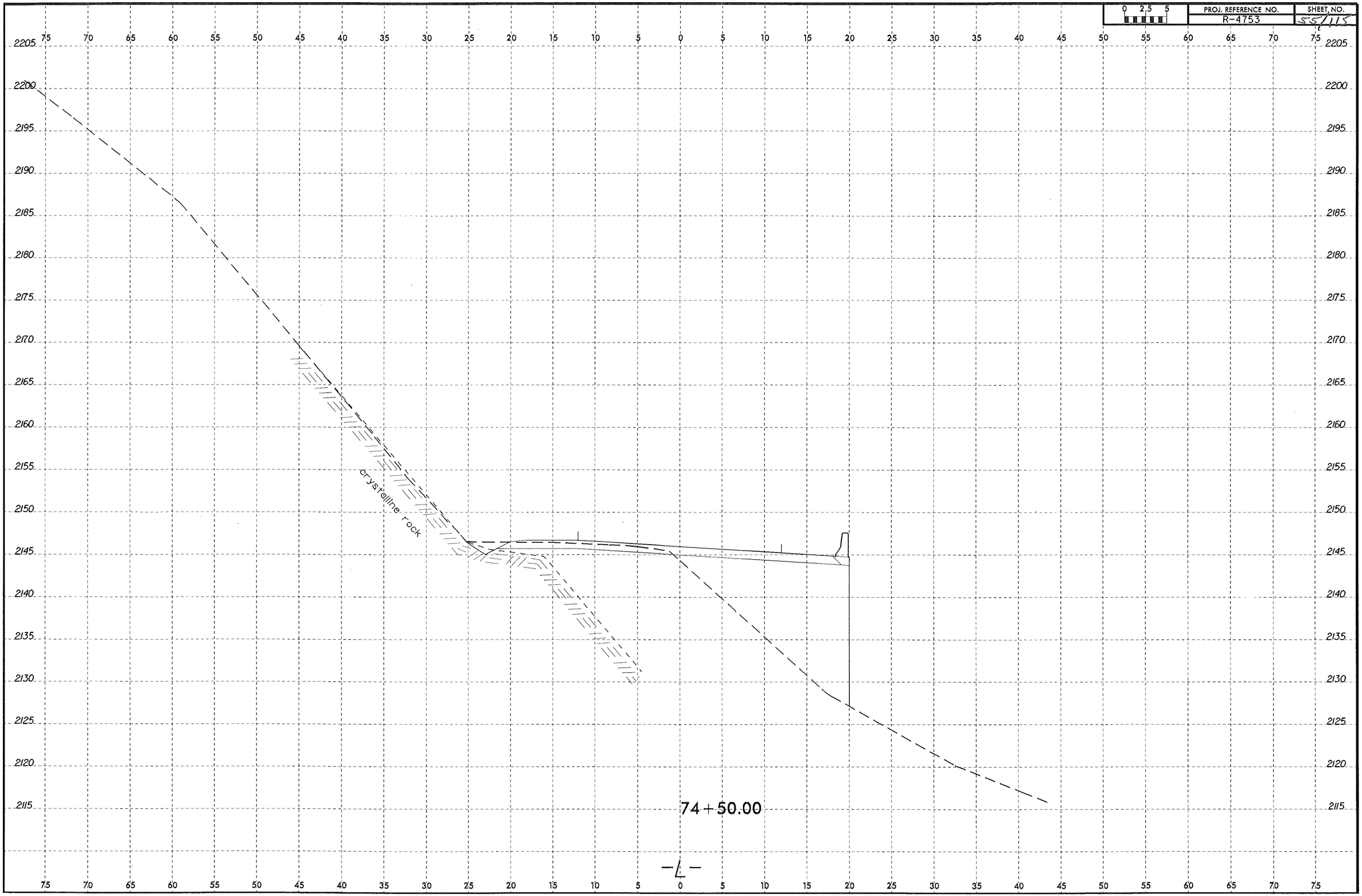
embankment: White to brown silty fine sand w/mica and rock frags.

74+34.44

-L-

0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
R-4753	55 OF 115



0 2.5 5

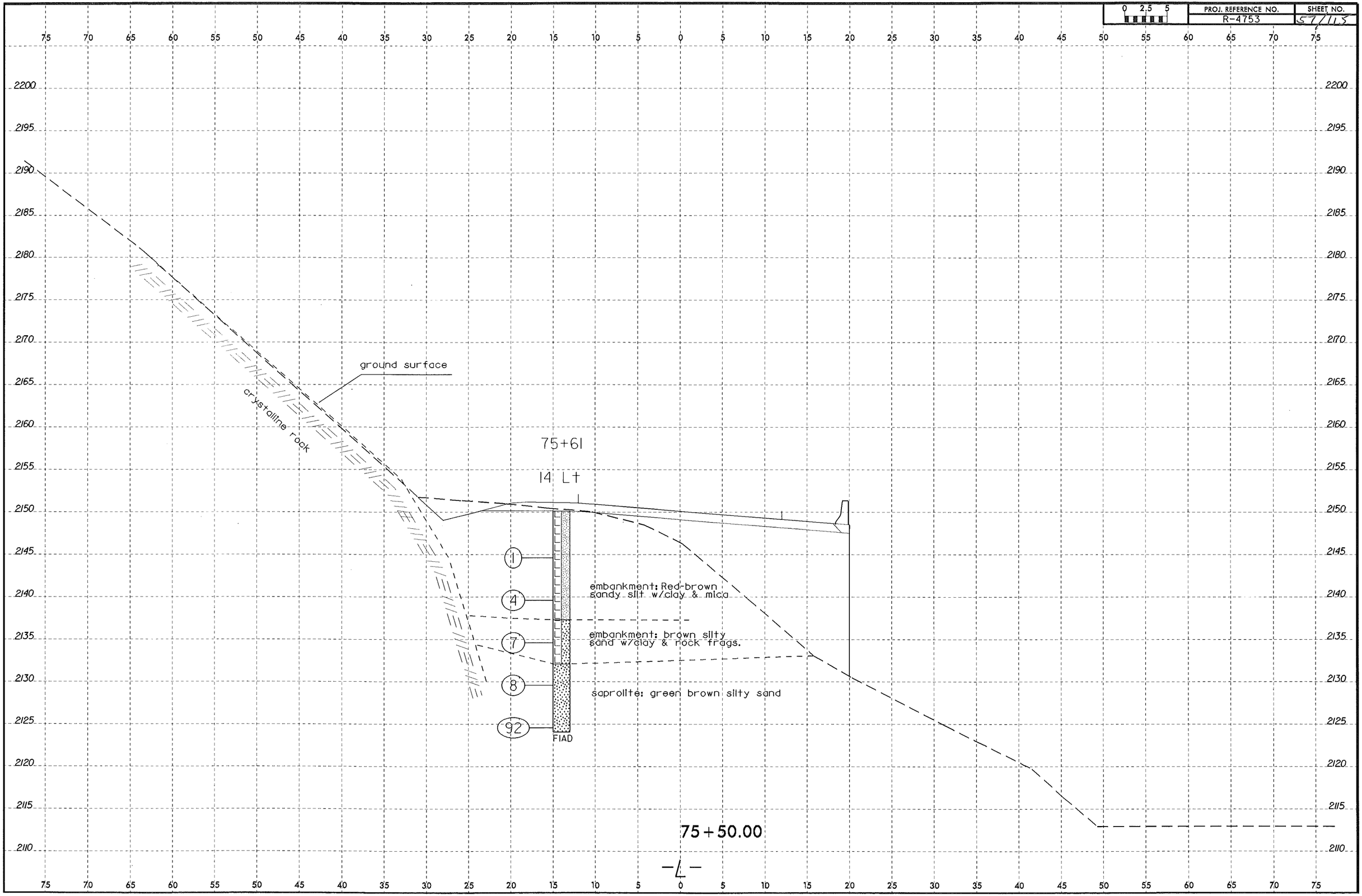
PROJ. REFERENCE NO.	SHEET NO.
R-4753	56

crystalline rock

75+00.00

—℄—

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	R-4753	57/115



0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
R-4753	58/115

crystalline rock

76+00.00

—L—

0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
R-4753	59

crystalline rock

ground surface

76+75

8 Lt

4

embankment: brown to red silty clay w/rock frags.

100/0.3 FIAD

weathered rock (Gneiss)

76+50.00

—L—

0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
R-4753	60/115

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

2175
2170
2165
2160
2155
2150
2145
2140
2135
2130
2125
2120
2115
2110

crystalline rock

77+01.89

$-\mathit{L}-$

PROJ. REFERENCE NO.	SHEET NO.
R-4753	61/115

0 5

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

2175
2170
2165
2160
2155
2150
2145
2140
2135
2130
2125
2120
2115
2110

ground surface

77+34

6 L†

embankment: brown to red silty clay w/rock frags.

RETAINING WALL

1.5:1

2:1

crystalline rock (Gneiss)

60/0.1

PIAD

77+41.74

0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
R-4753	62 OF 115

crystalline rock

77 + 50.00

—L—

0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
R-4753	63/115

ground surface

crystalline rock

78+10

CL

21

22

79

18

5/13

100/0.8

FIAD

weathered rock (Gneiss)

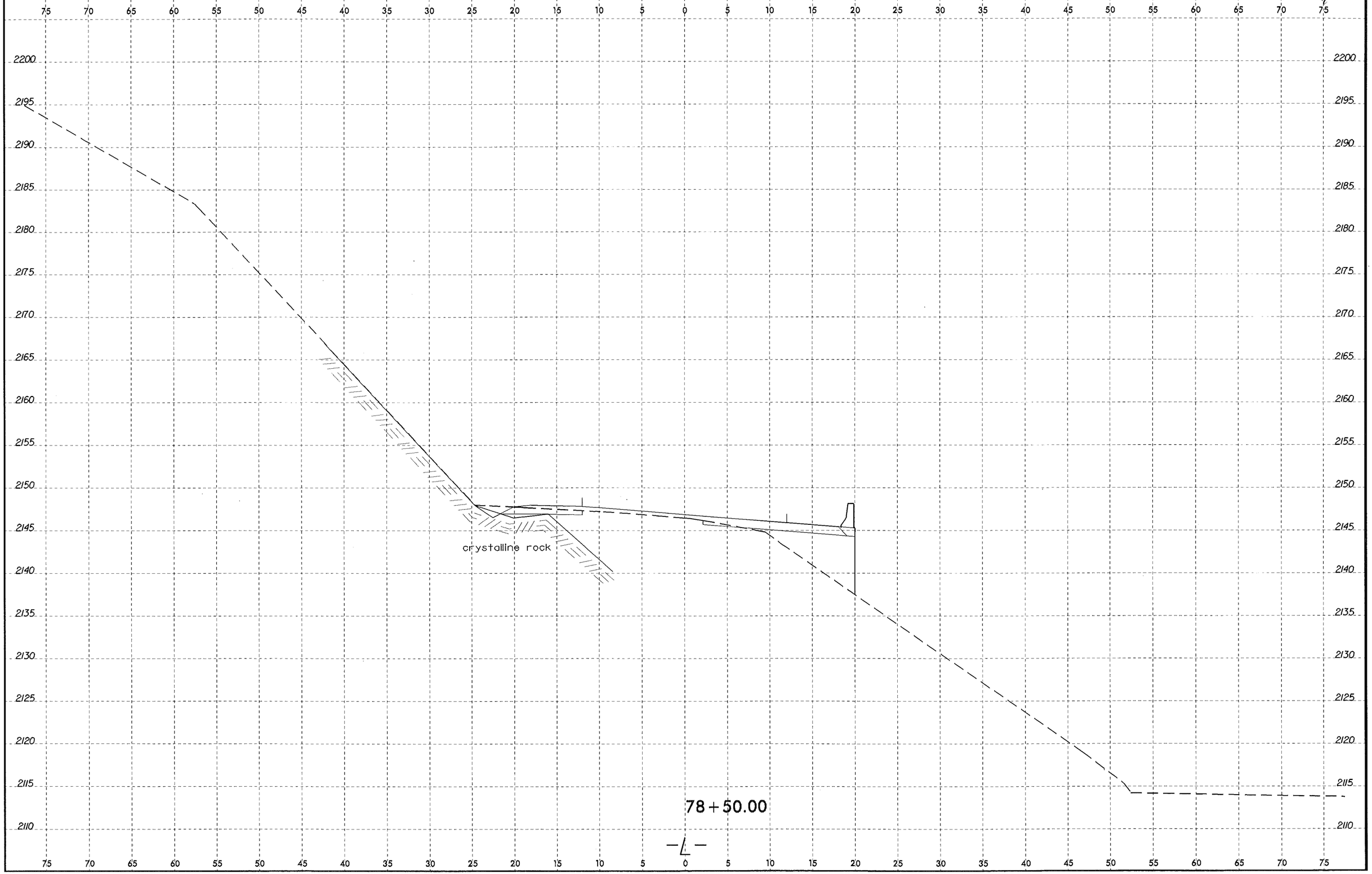
embankment: green-brown, tan silty clay

saprolite: green, white to black silty fine sand w/mica

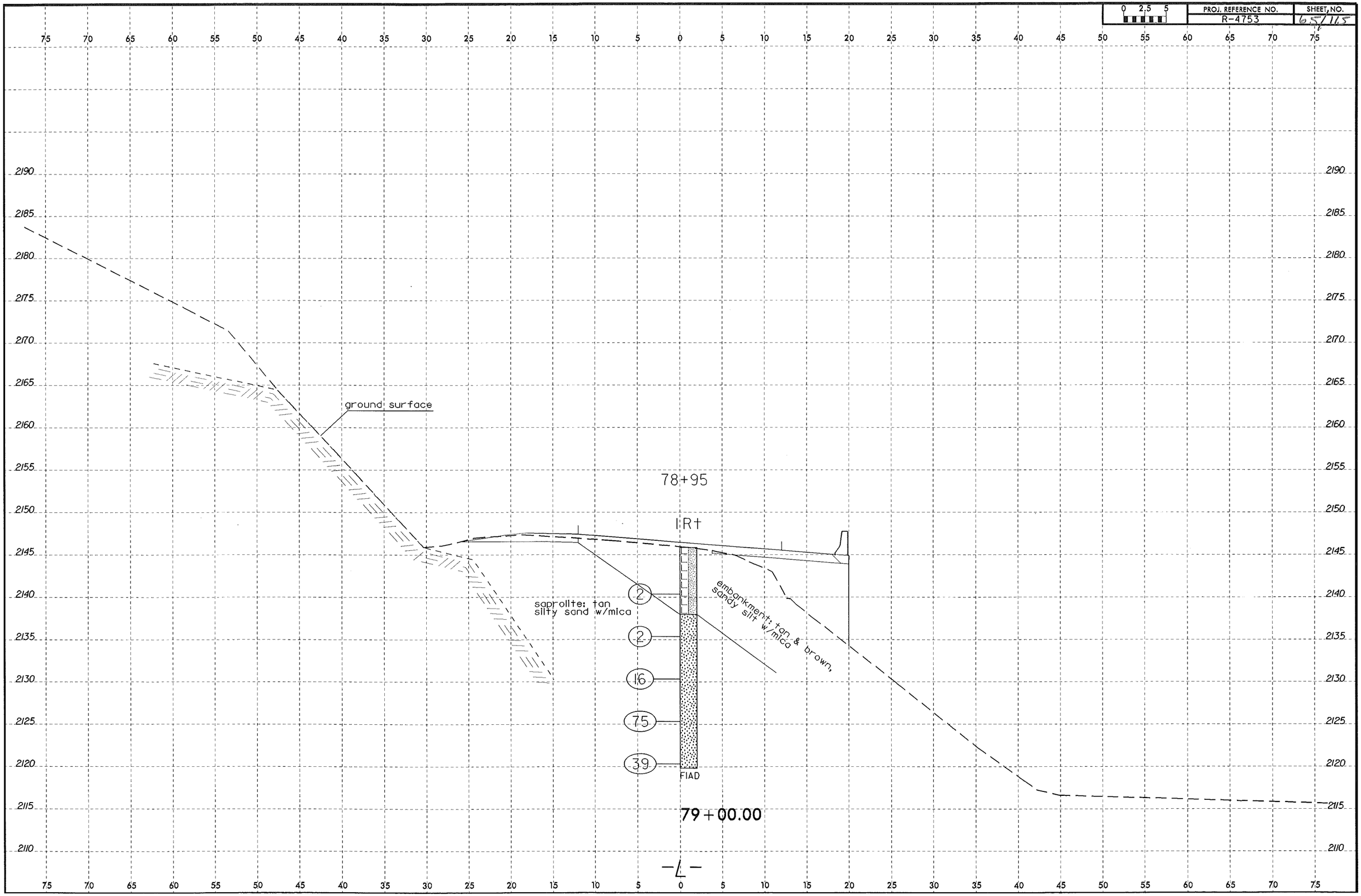
78+00.00

—L—

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	R-4753	64 / 115



0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	R-4753	65 of 115



0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	R-4753	66/115

ground surface

crystalline rock

79+59

5 Rt

embankment: mixed sandy clayey silt, brown silty sand and rock fragments

5

16

8

saprolite: gray to tan silty sand w/mica

100/0.7

5-2013

60/0.1

FIAD

weathered rock (Gneiss)

crystalline rock (Gneiss)

79+50.00

-L-

0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
R-4753	67/115

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

2185 2180 2175 2170 2165 2160 2155 2150 2145 2140 2135 2130 2125 2120 2115 2110

1.500:1

ground surface

crystalline rock

80+89

10 Rt

17 embankment: red-brown & tan, silty sand w/rock frags.

6

11

16 saprolite: green-black & tan, silty sand w/mica

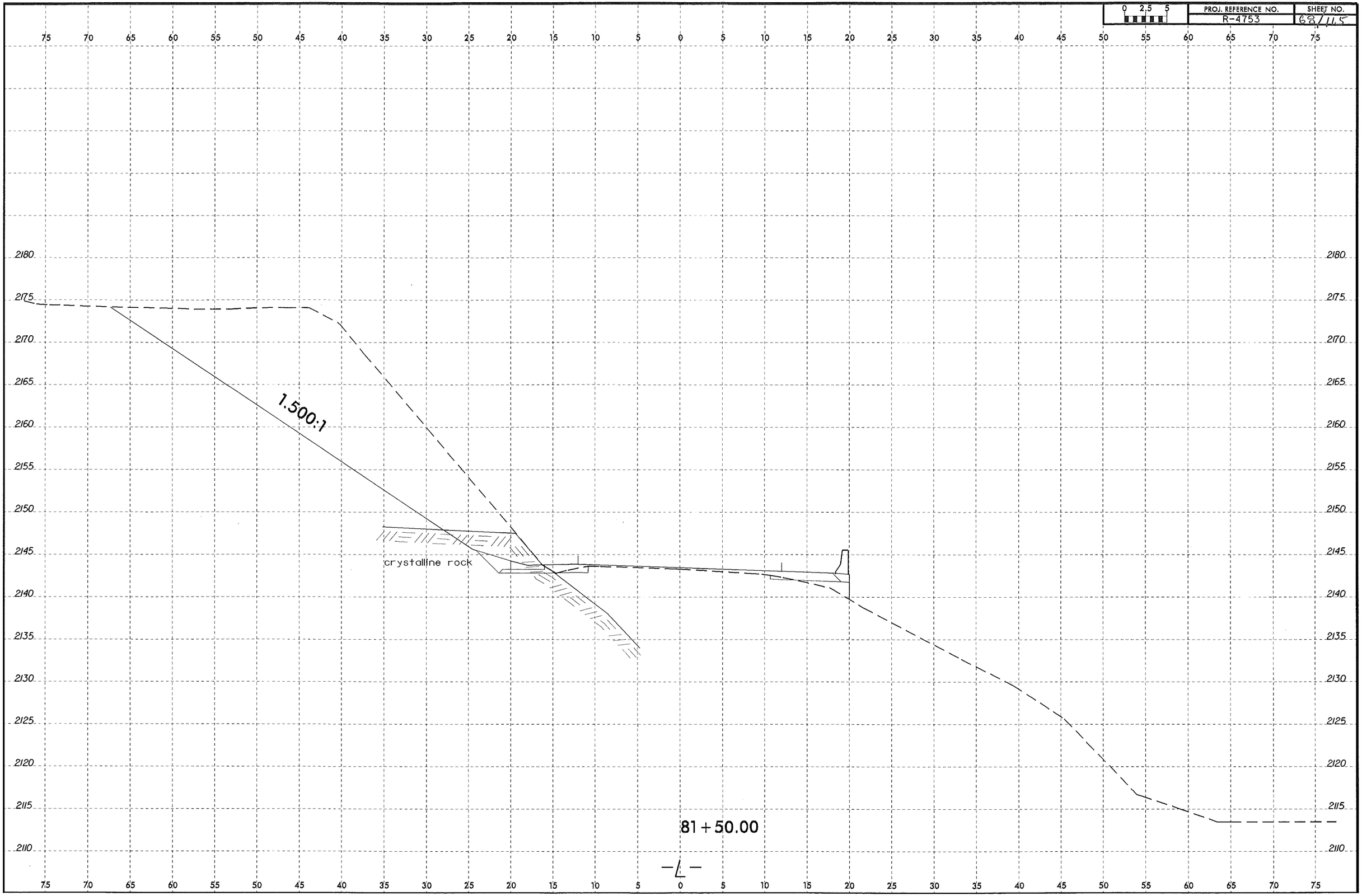
7

FIAD

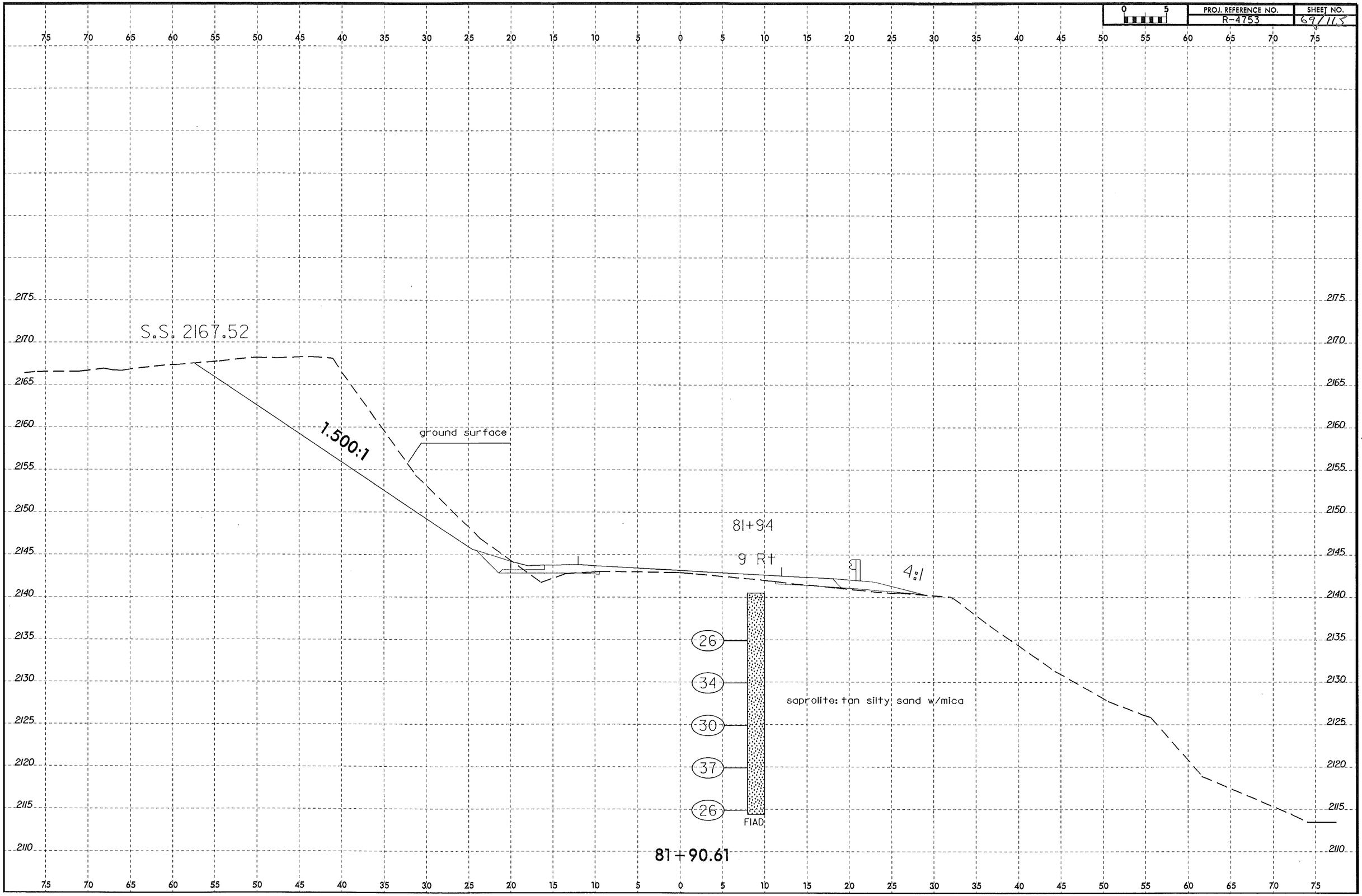
81+00.00

$-\mathit{L}-$

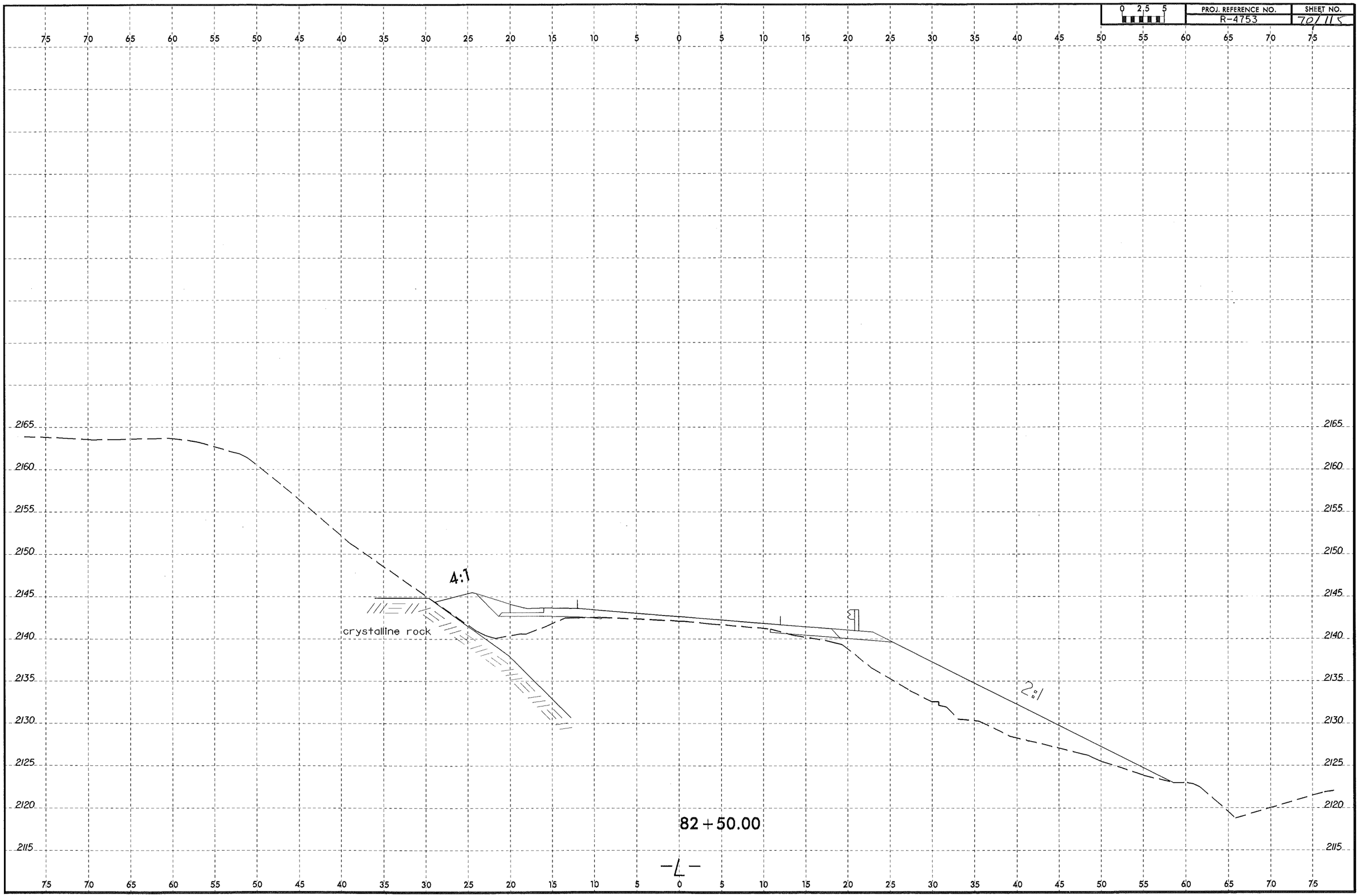
0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	R-4753	68/115



PROJ. REFERENCE NO.	SHEET NO.
R-4753	69/115



0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	R-4753	70/115



0 2.5 5

PROJ. REFERENCE NO. R-4753

SHEET NO. 11

crystalline rock

92+47.72

-L-

0 2,5 5	PROJ. REFERENCE NO.	SHEET NO.
	R-4753	72/115

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

2195 2190 2185 2180 2175 2170 2165 2160 2155 2150 2145 2140 2135 2130 2125 2120 2115

crystalline rock

93+00.00

—L—

0 2.5 5

PROJ. REFERENCE NO.	SHEET, NO.
R-4753	23/115

93+40

4 Lt

ground surface

saprolite: silty sand.

100/0.7

weathered rock (Gneiss)

crystalline rock (Gneiss)

17

saprolite: tan, brown, green-black & white silty sand w/mica

60/0.1

FIAD

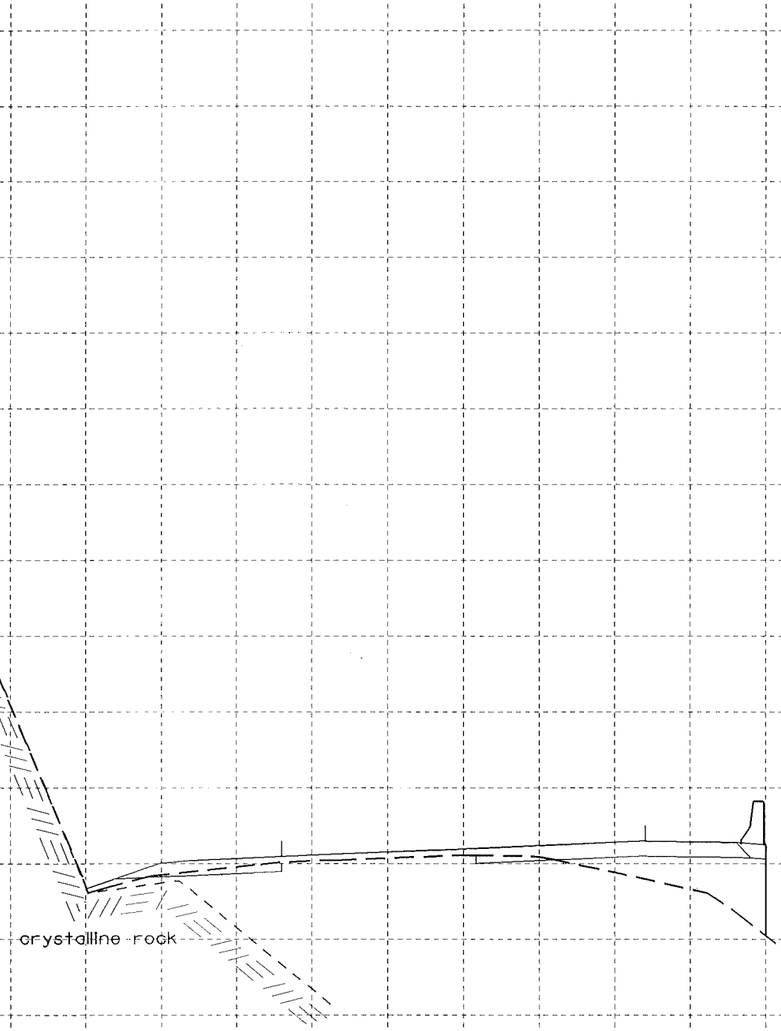
93+50.00

-L-

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	R-4753	74 OF 115

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

2195
2190
2185
2180
2175
2170
2165
2160
2155
2150
2145
2140
2135
2130
2125
2120
2115



94+00.00
—L—

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

0 2.5 5

PROJ. REFERENCE NO. R-4753

SHEET NO. 75 11.5

94+33

5' Rt

ground surface

weathered rock (Gneiss)

crystalline rock (Gneiss)

5

10

embankment: tan, brown & red silty sand w/mica & rock frags.

embankment: tan, brown & red, sandy clayey silt w/rock frags. (A-6).

100/0.7

60/0.1

FIAD

94+50.00

-L-

0 2.5 5

PROJ. REFERENCE NO. R-4753

SHEET NO. 76 OF 105

crystalline rock

94+91.46

-L-

0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
R-4753	77/115

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

2200
2195
2190
2185
2180
2175
2170
2165
2160
2155
2150
2145
2140
2135
2130
2125
2120
2115

crystalline rock

95+00.00

-L-

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	R-4753	76/115

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

2175
2170
2165
2160
2155
2150
2145
2140
2135
2130
2125
2120
2115

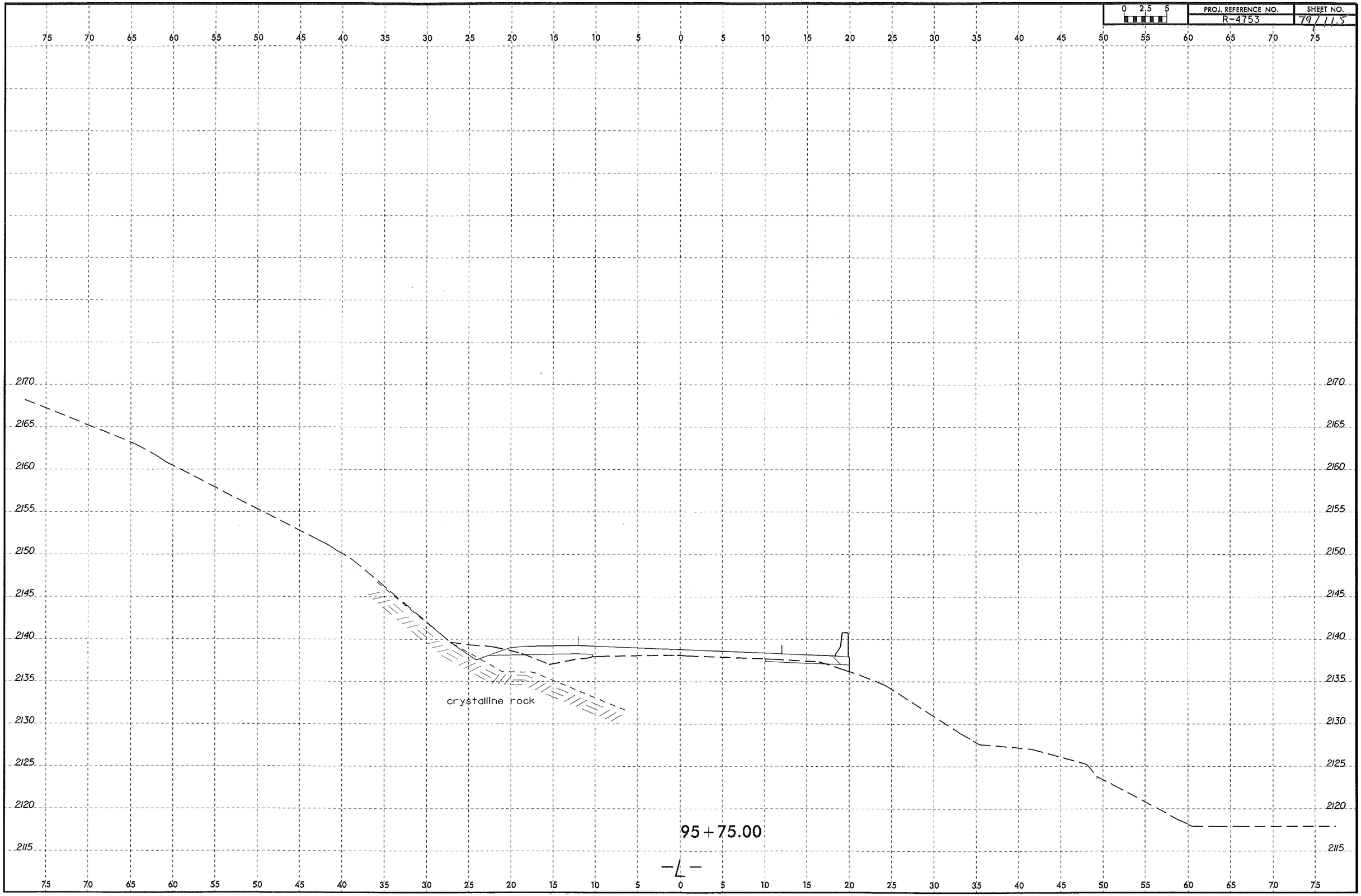
crystalline rock

95+50.00

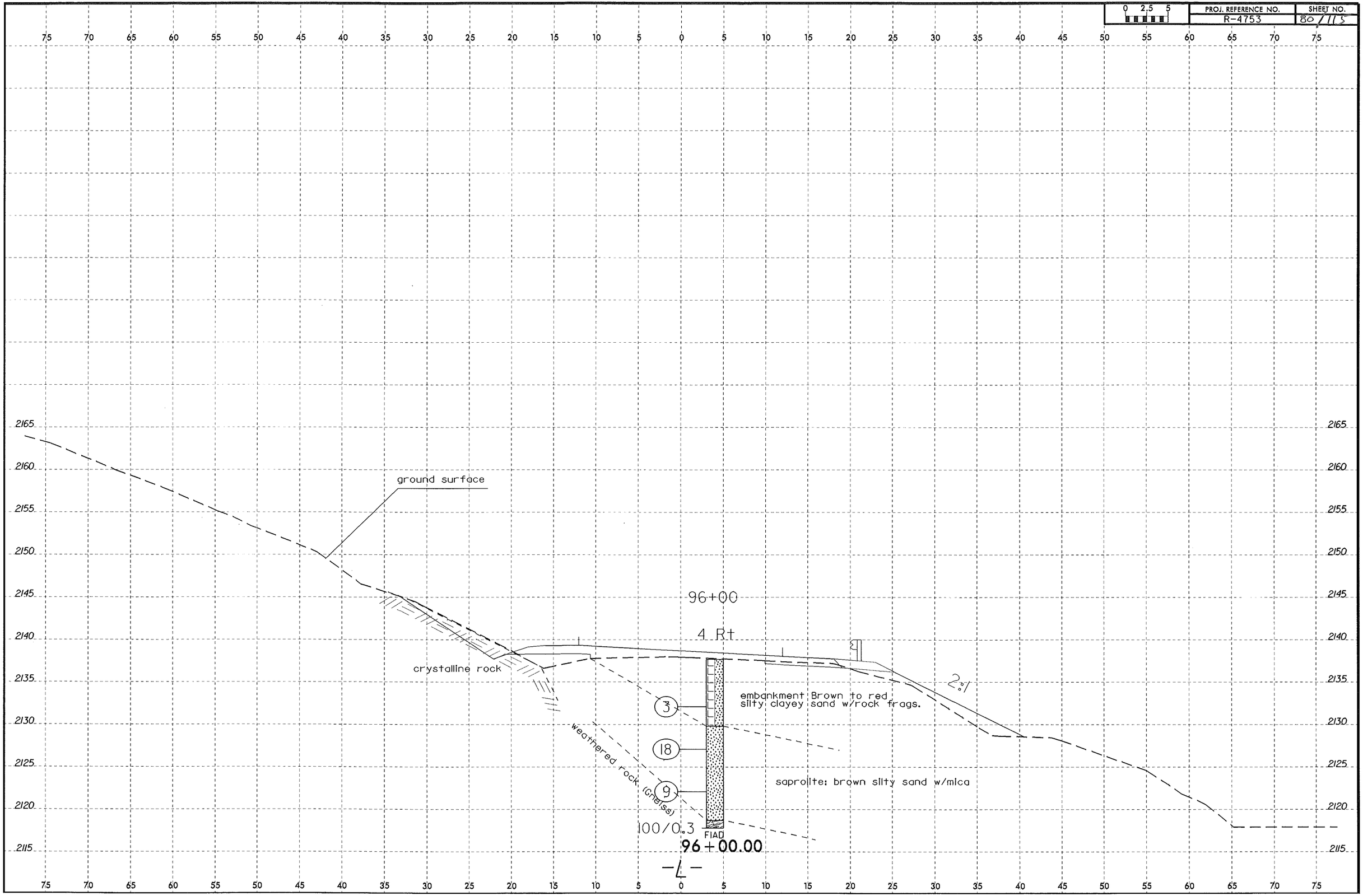
—L—

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

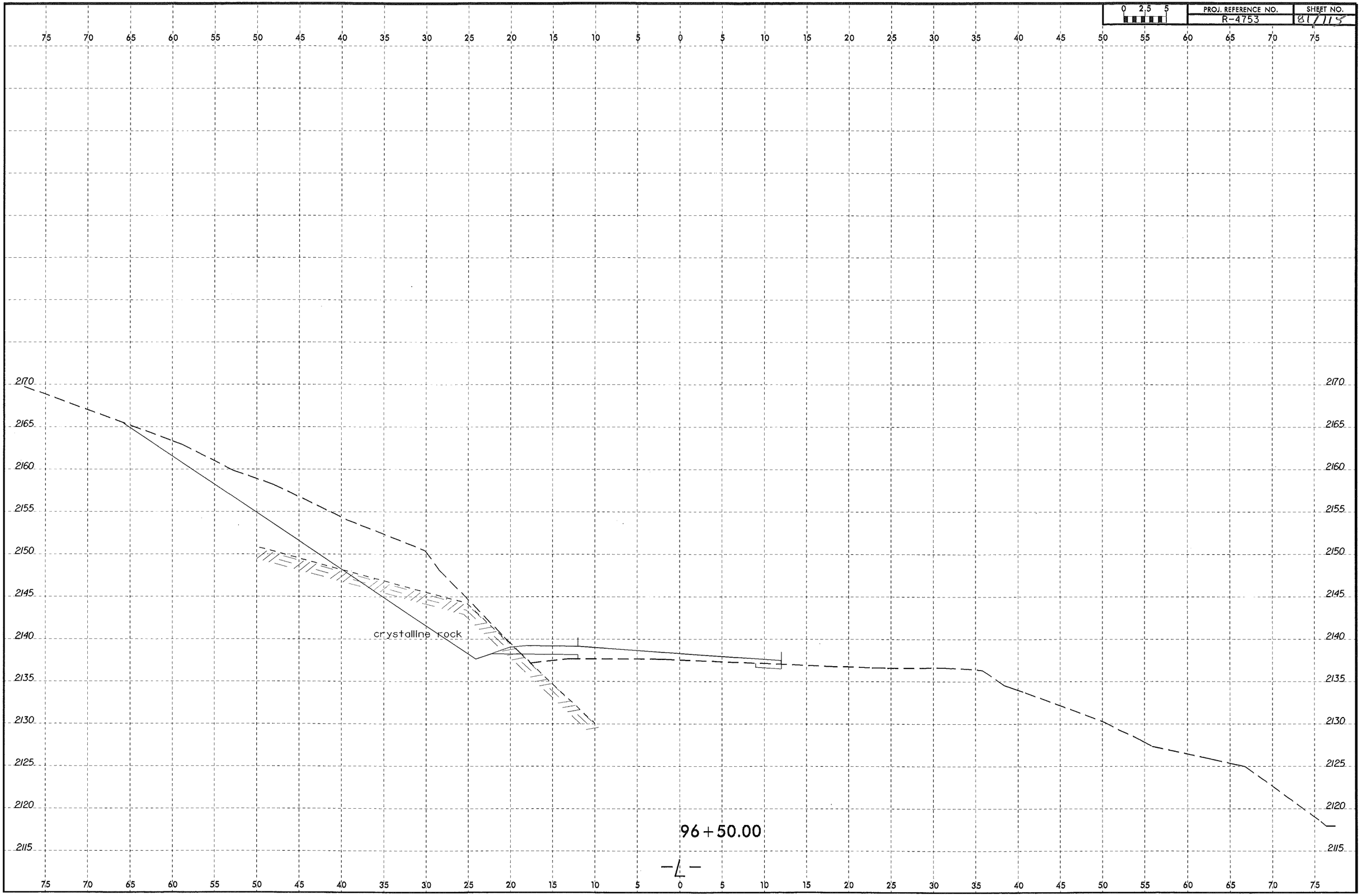
0 2,5 5	PROJ. REFERENCE NO.	SHEET NO.
	R-4753	79 / 115



0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	R-4753	80 of 115



0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	R-4753	81/115



0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	R-4753	82-115

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

2180
2175
2170
2165
2160
2155
2150
2145
2140
2135
2130
2125
2120

crystalline rock

2%

97+00.00

-L-

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	R-4753	83/115

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

2175
2170
2165
2160
2155
2150
2145
2140
2135
2130
2125
2120
2115

crystalline rock

97 + 50.00

$-\mathit{L}-$

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

0 2.5 5

PROJ. REFERENCE NO. R-4753

SHEET NO. 84 of 115

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

2175
2170
2165
2160
2155
2150
2145
2140
2135
2130
2125

ground surface

107+12

7 L+

2%

2%

10 embankment: red & brown silty clay w/rock frags.

13 saprolite: brown & tan silty sand w/mica

27

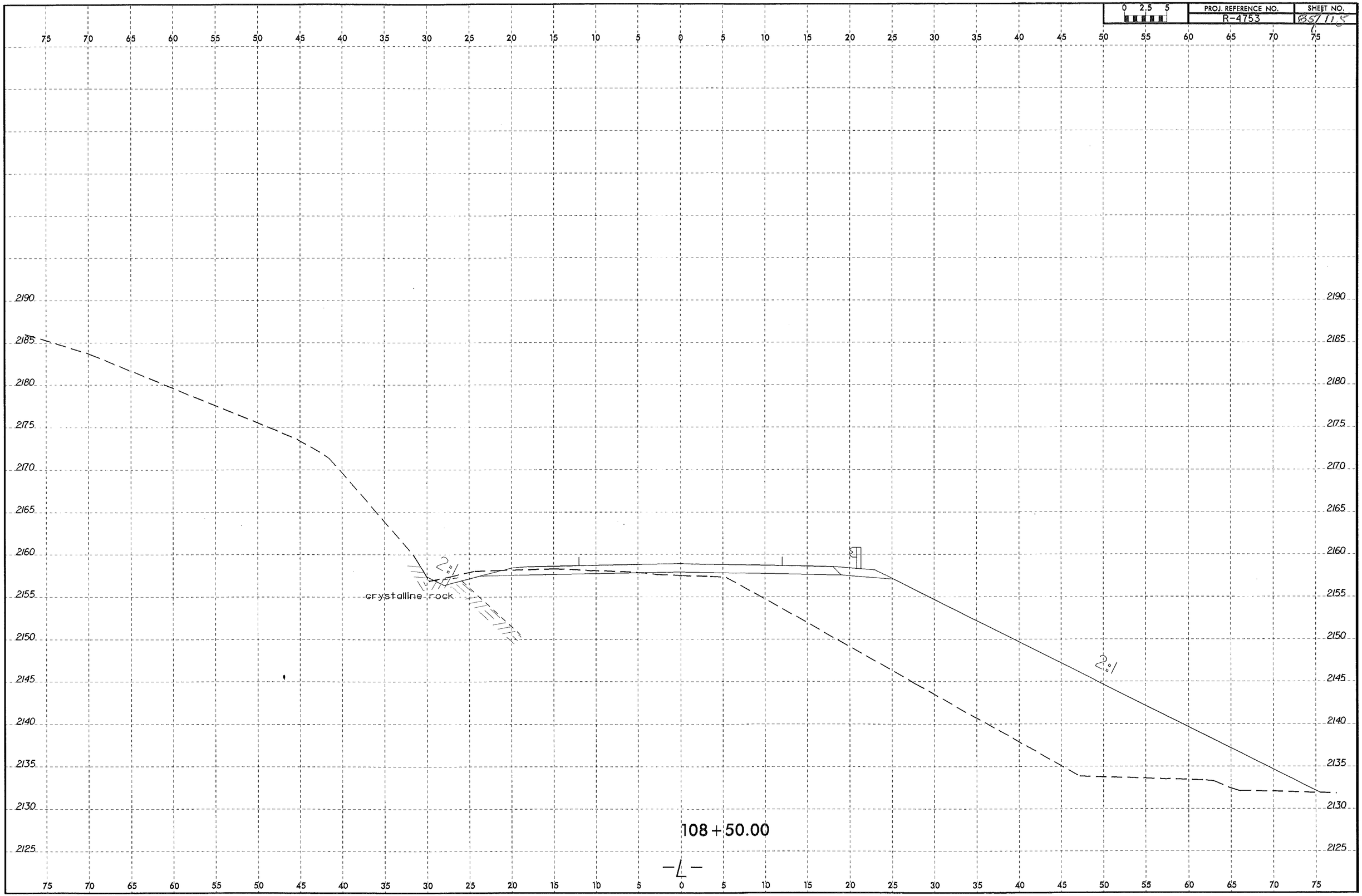
FIAD

107+00.00

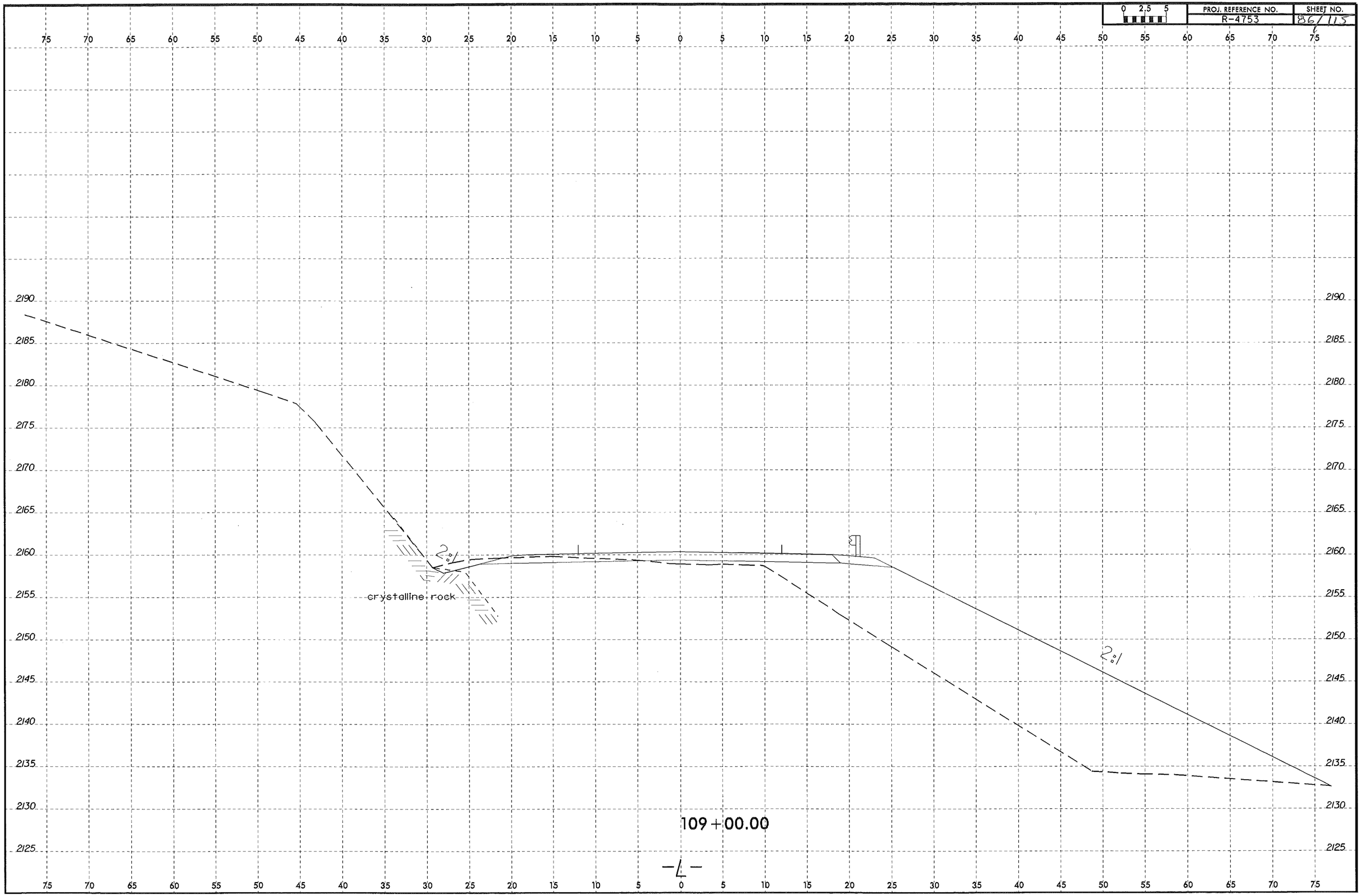
—L—

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	R-4753	85/115



0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	R-4753	86/115



0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	R-4753	87/115

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

2195
2190
2185
2180
2175
2170
2165
2160
2155
2150
2145
2140
2135
2130
2125

2:1

crystalline rock

2:1

2:1

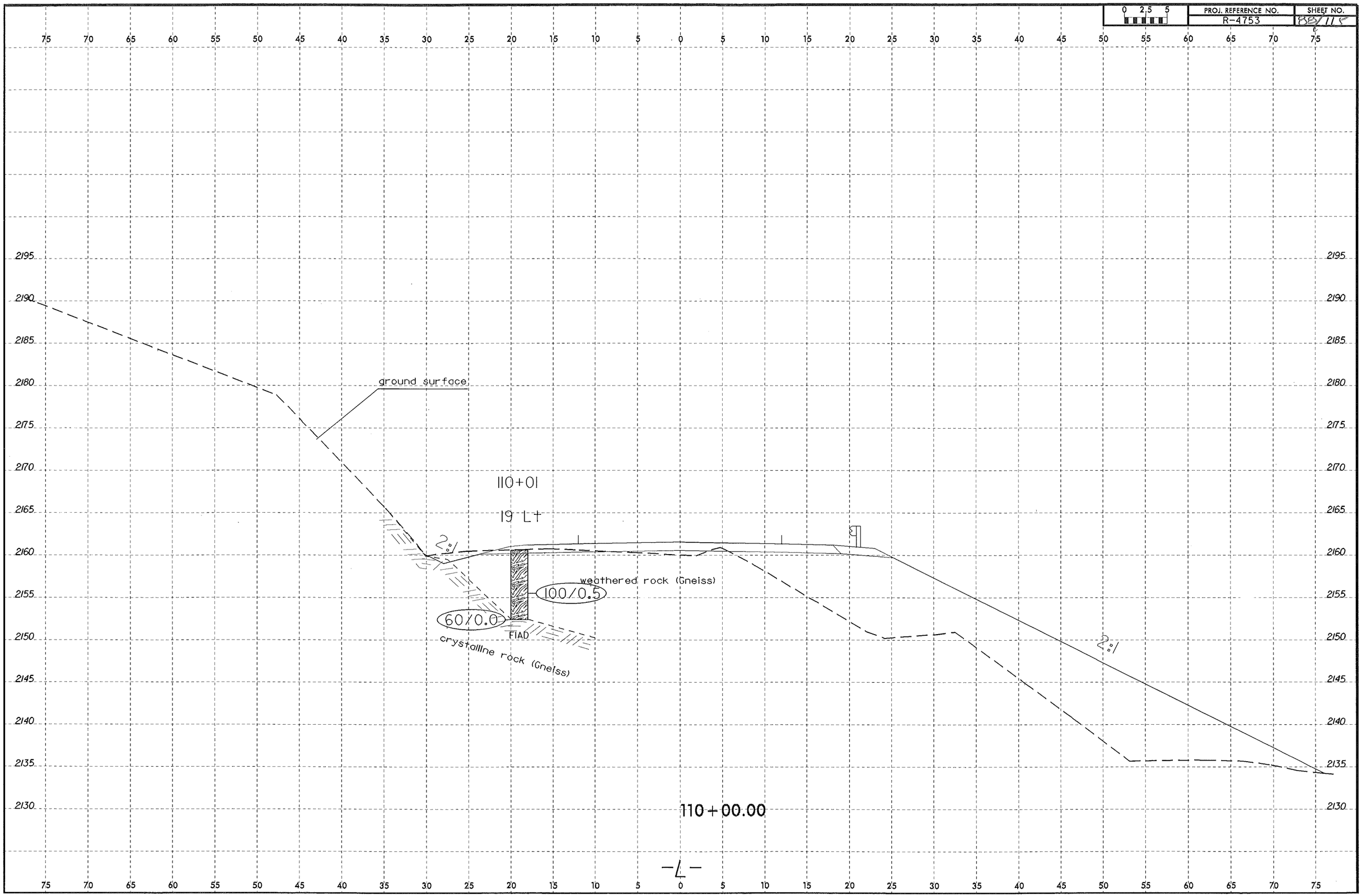
109+50.00

—L—

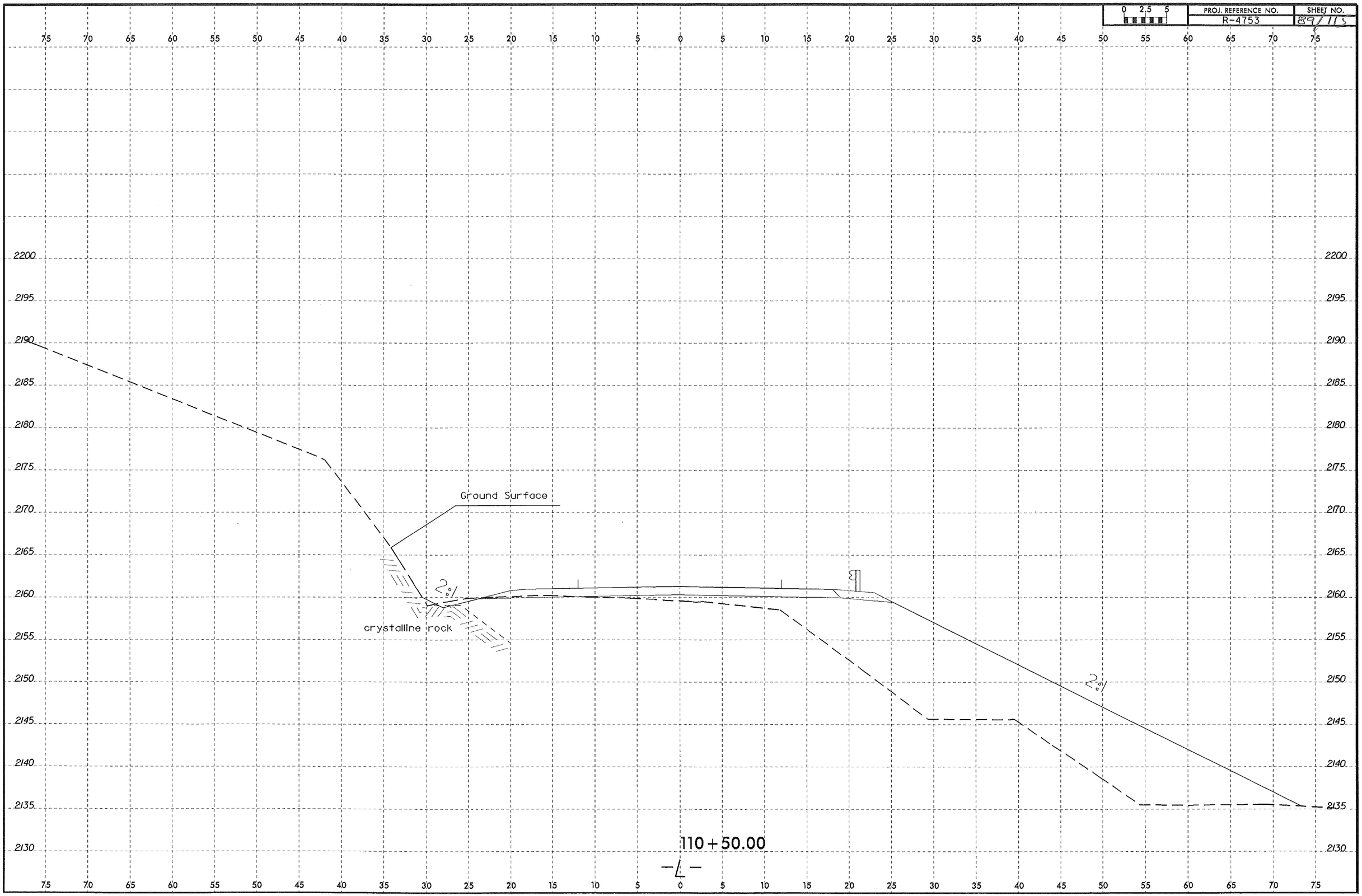
75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

0 2.5 5

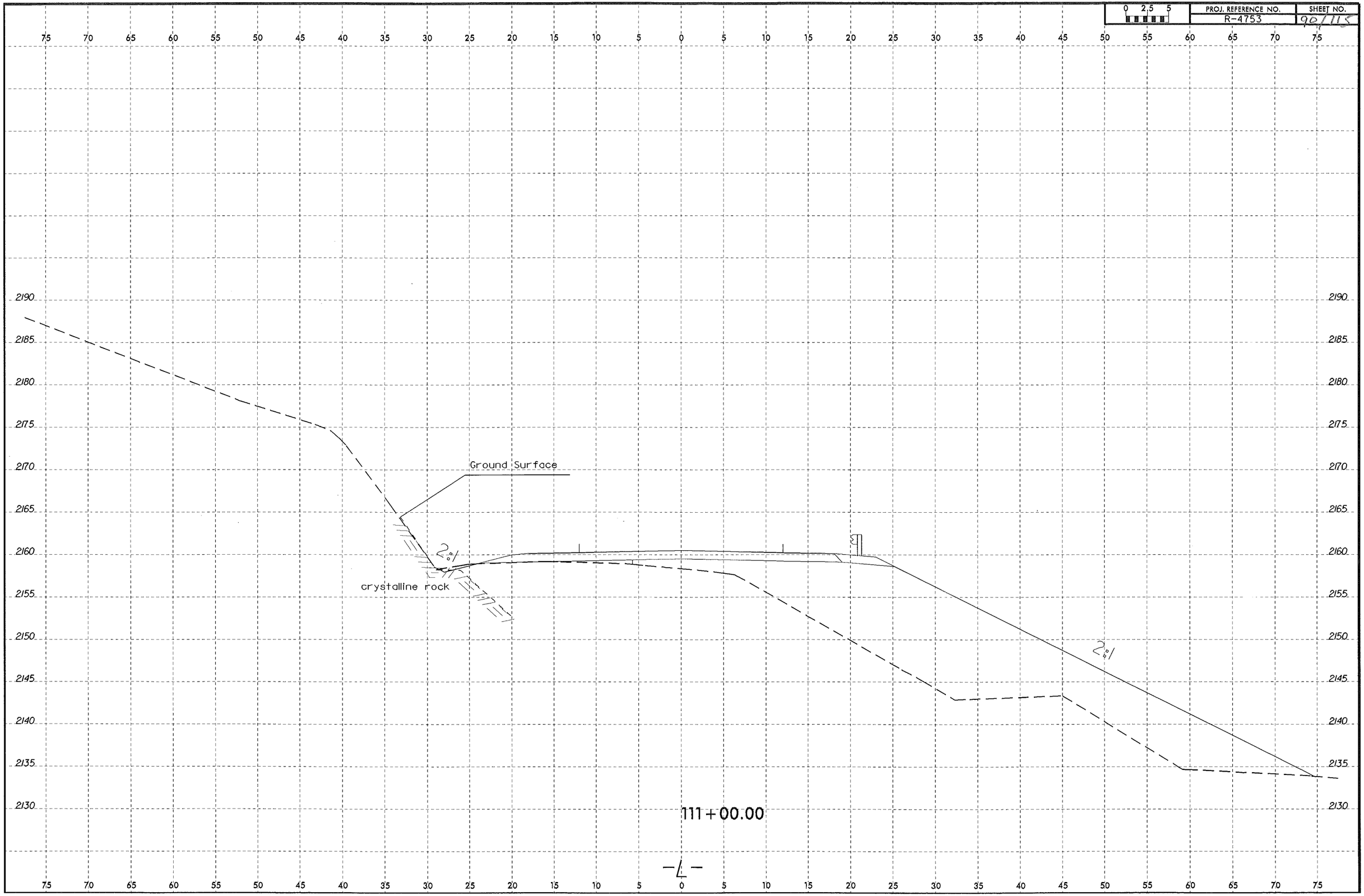
PROJ. REFERENCE NO.	SHEET NO.
R-4753	88/115



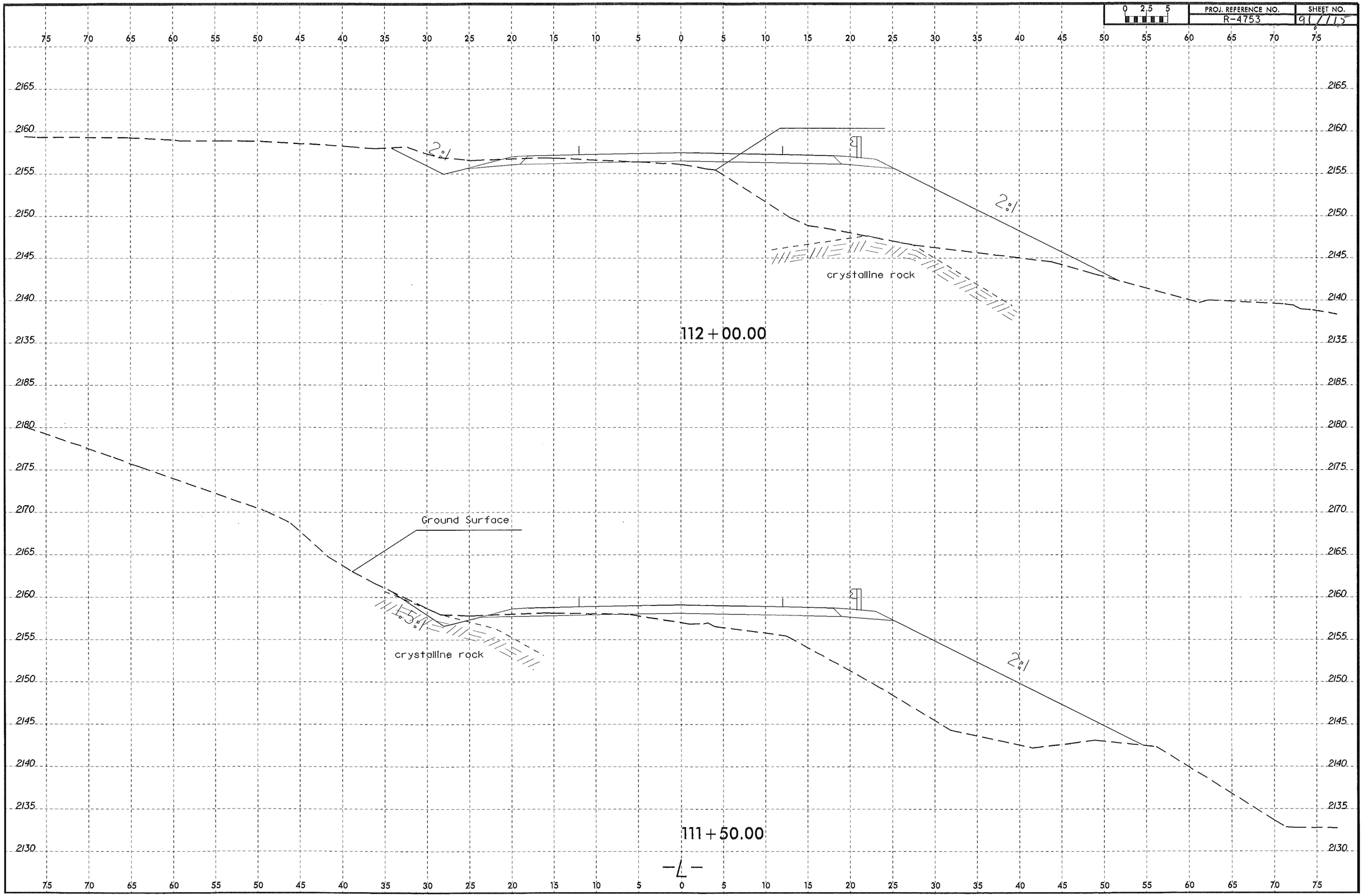
0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	R-4753	89/115



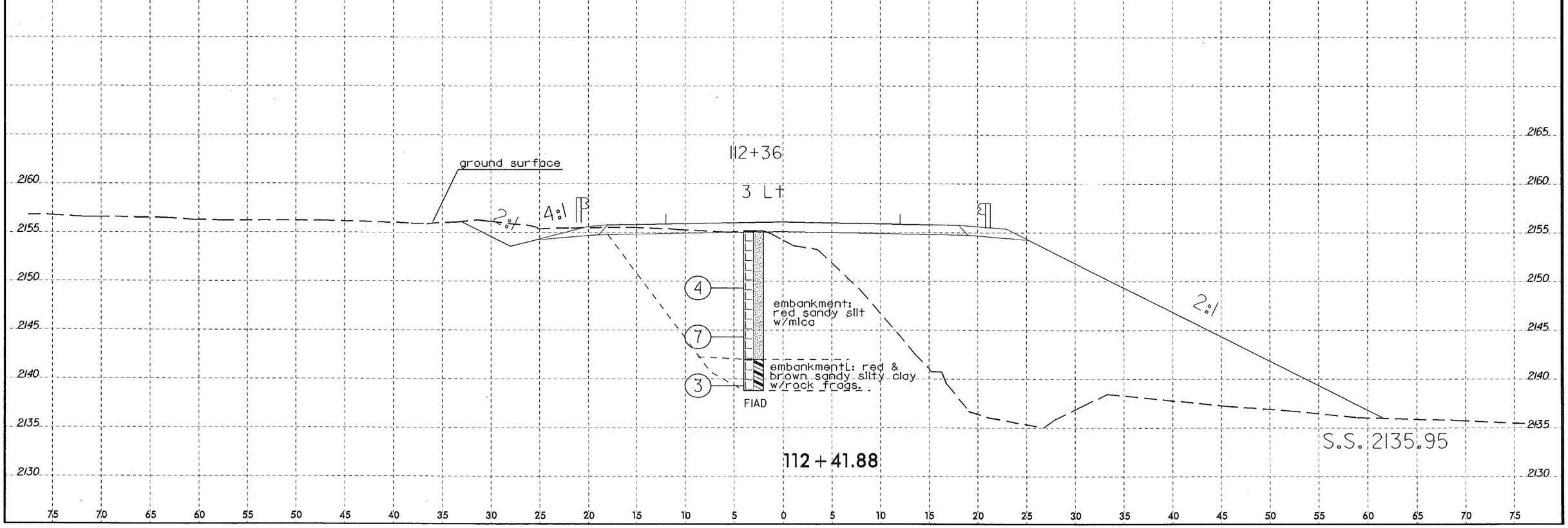
0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	R-4753	90/115



0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	R-4753	9



0 5	PROJ. REFERENCE NO.	SHEET, NO.
	R-4753	92 / 115



0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	R-4753	23 / 115

Ground Surface

crystalline rock

2:1

2:1

2:1

113+00.00

—℄—

0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
R-4753	94 of 115

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

2185
2180
2175
2170
2165
2160
2155
2150
2145
2140
2135
2130
2125

Ground Surface

2:1

crystalline rock

2:1

113 + 50.00

—L—

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	R-4753	9.5/11.5

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

2190
2185
2180
2175
2170
2165
2160
2155
2150
2145
2140
2135
2130

Ground Surface

2:1

2:1

114+00.00

-L-

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
R-4753	96 / 115

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

2200
2195
2190
2185
2180
2175
2170
2165
2160
2155
2150
2145
2140
2135
2130
2125

Ground Surface

2:1

crystalline rock

2:1

114 + 50.00

-L-

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
R-4753	97 /115

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

2190
2185
2180
2175
2170
2165
2160
2155
2150
2145
2140
2135
2130
2125

ground surface

114+90

10 Lt

crystalline rock

2

2

2

embankment: red & brown silty clay w/mica

FIAD

2%

115+00.00

—L—

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	R-4753	98/115

Ground Surface

crystalline rock

2:1

115+50.00

—L—

PROJ. REFERENCE NO. R-4753

SHEET NO. 99 / 115

ground surface

116+04

7 Lt

Var.

2:1

WOH

8

15

FIAD

embankment: red & brown silty clay w/mica

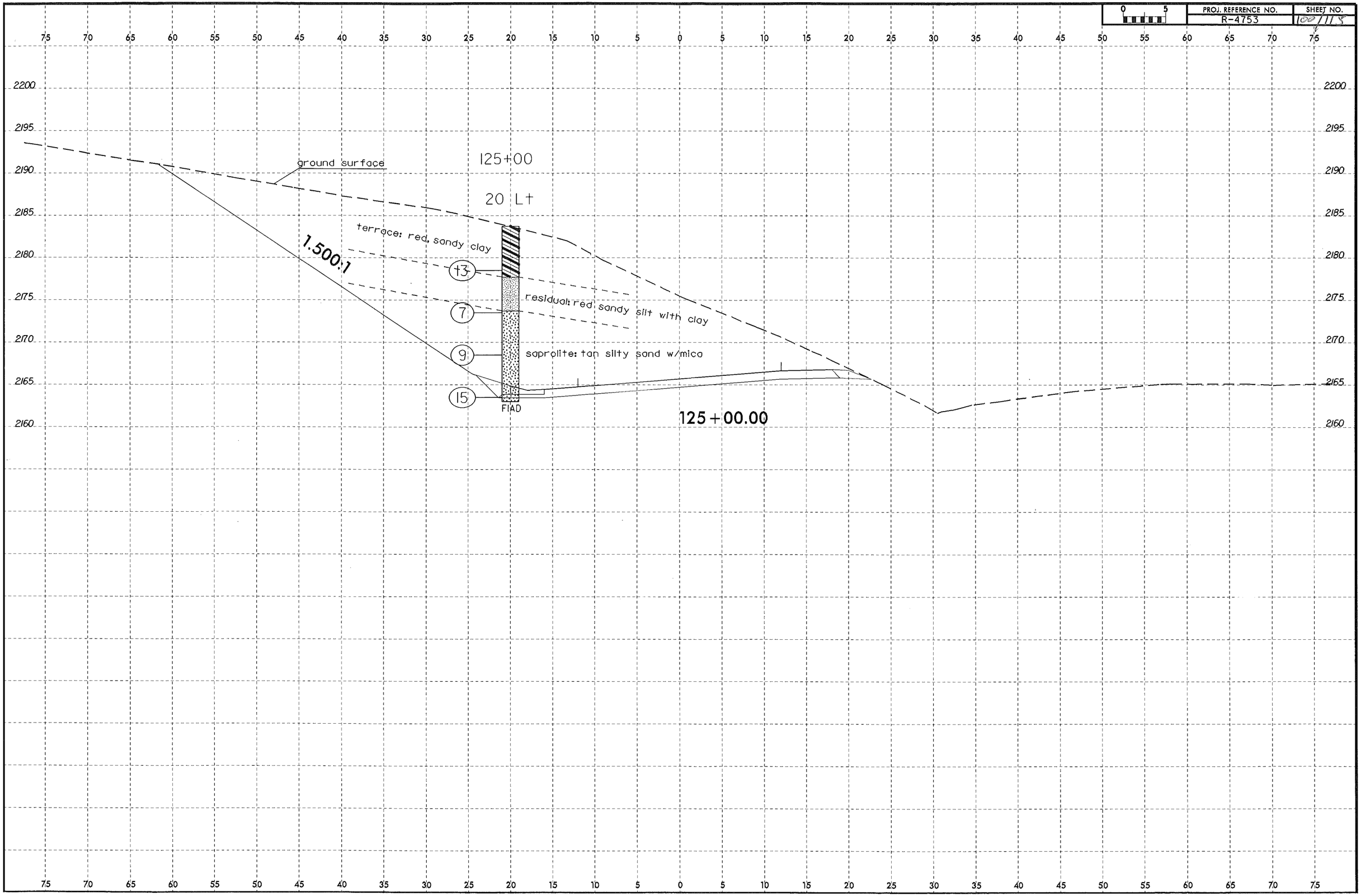
saprollte: brown to tan silty sand w/mica

116+00.00

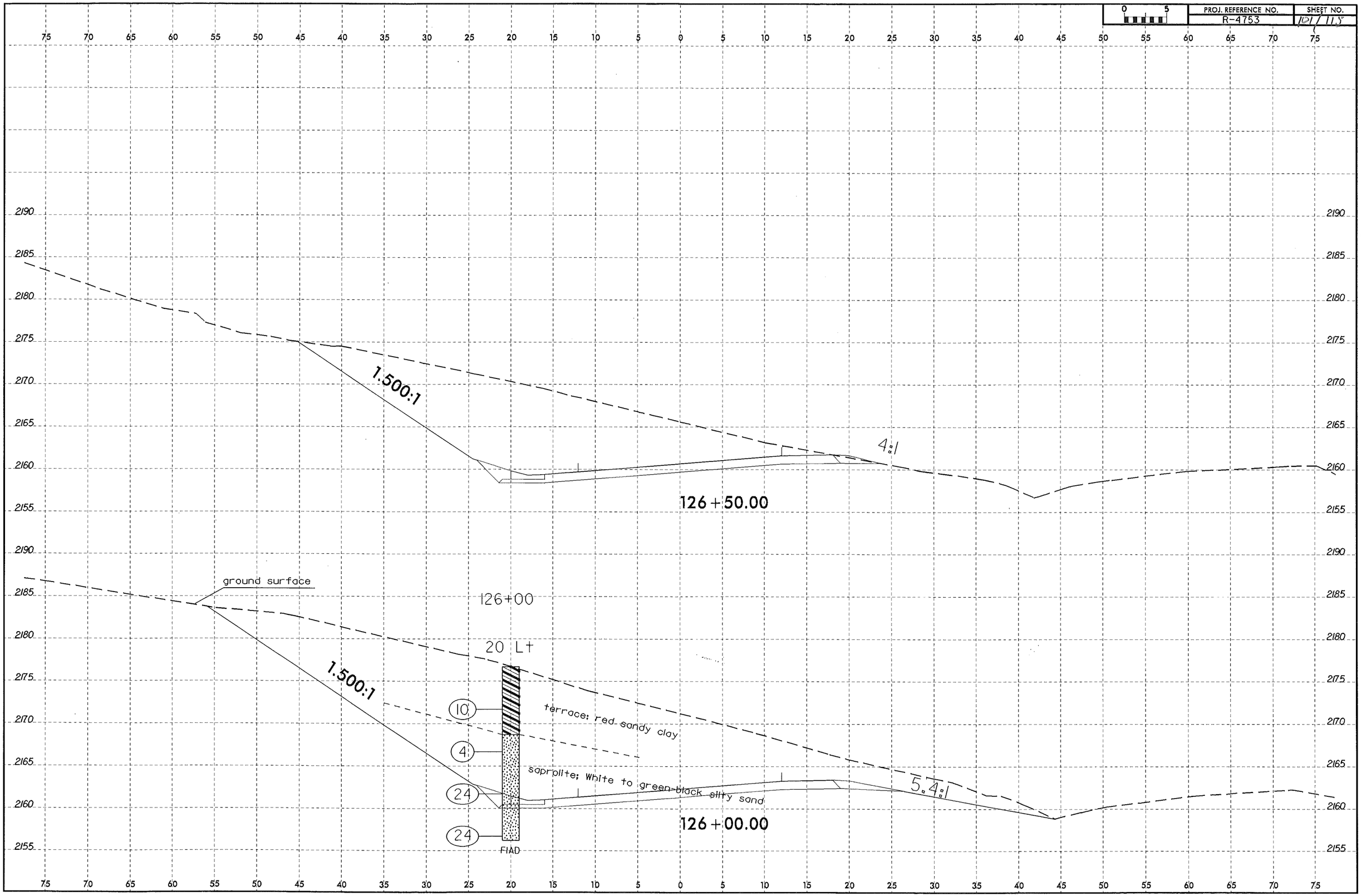
S.S. 2135.00

2175
2170
2165
2160
2155
2150
2145
2140
2135
2130

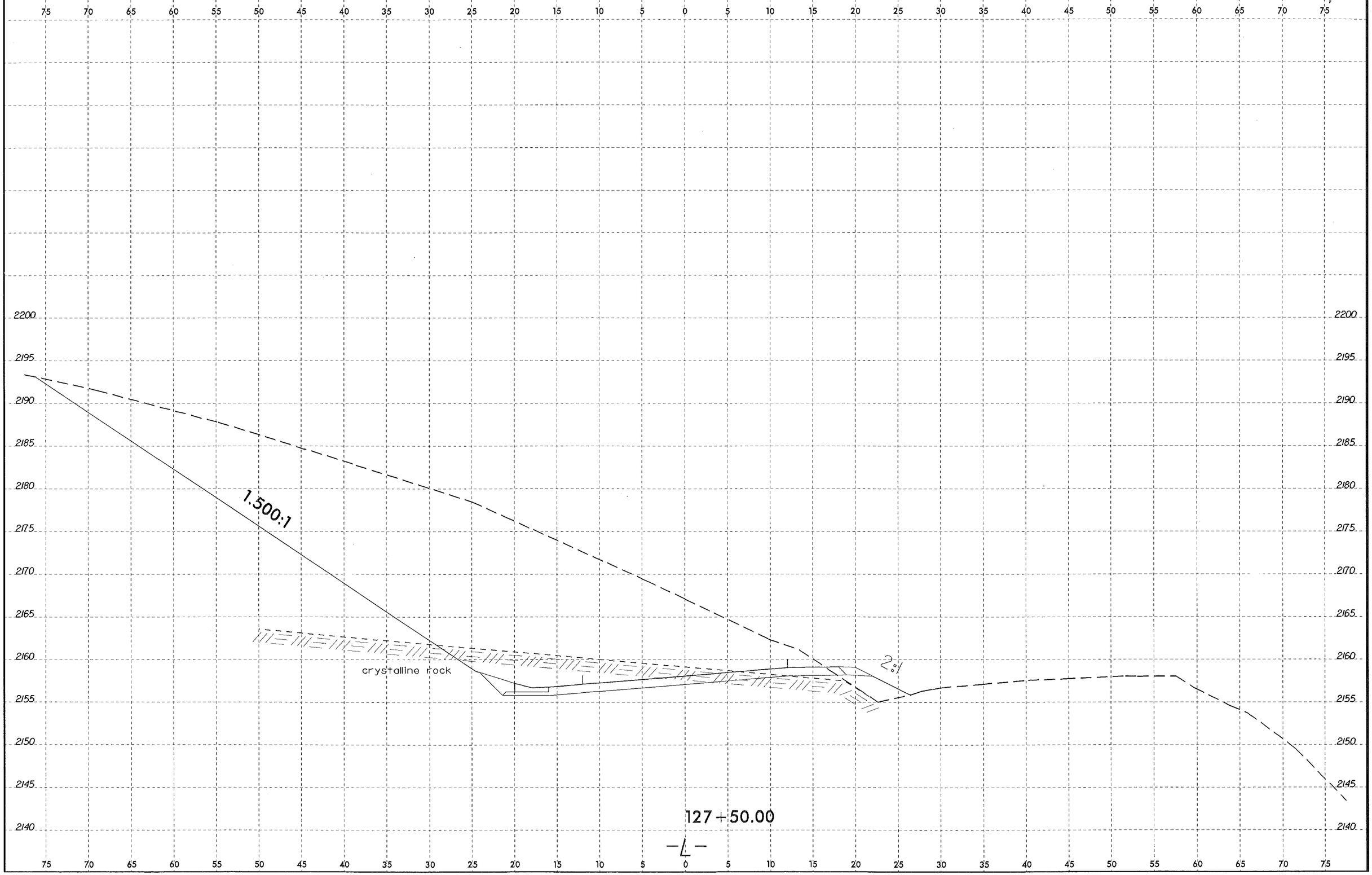
0 5	PROJ. REFERENCE NO.	SHEET NO.
	R-4753	102 / 115



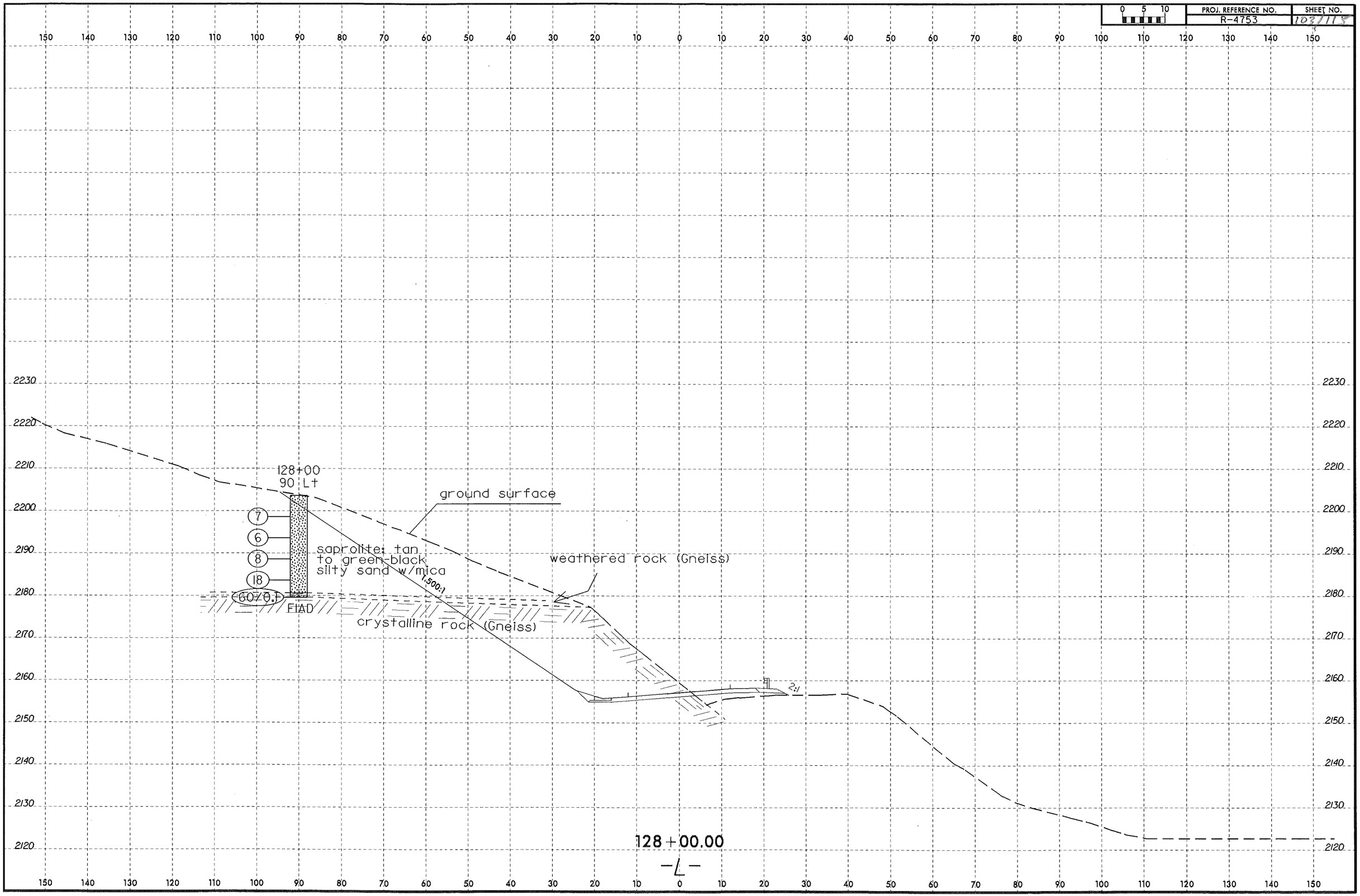
PROJ. REFERENCE NO.	SHEET NO.
R-4753	101 / 115



0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	R-4753	102 /115



0 5 10	PROJ. REFERENCE NO.	SHEET NO.
	R-4753	103/115



0 2.5 5

PROJ. REFERENCE NO.	SHEET NO.
R-4753	104/115

1:500.1

crystalline rock

128+50.00

—L—

0 2.5 5

PROJ. REFERENCE NO. R-4753

SHEET NO. 105 / 115

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

2205 2200 2195 2190 2185 2180 2175 2170 2165 2160 2155 2150 2145 2140 2135 2130 2125 2120

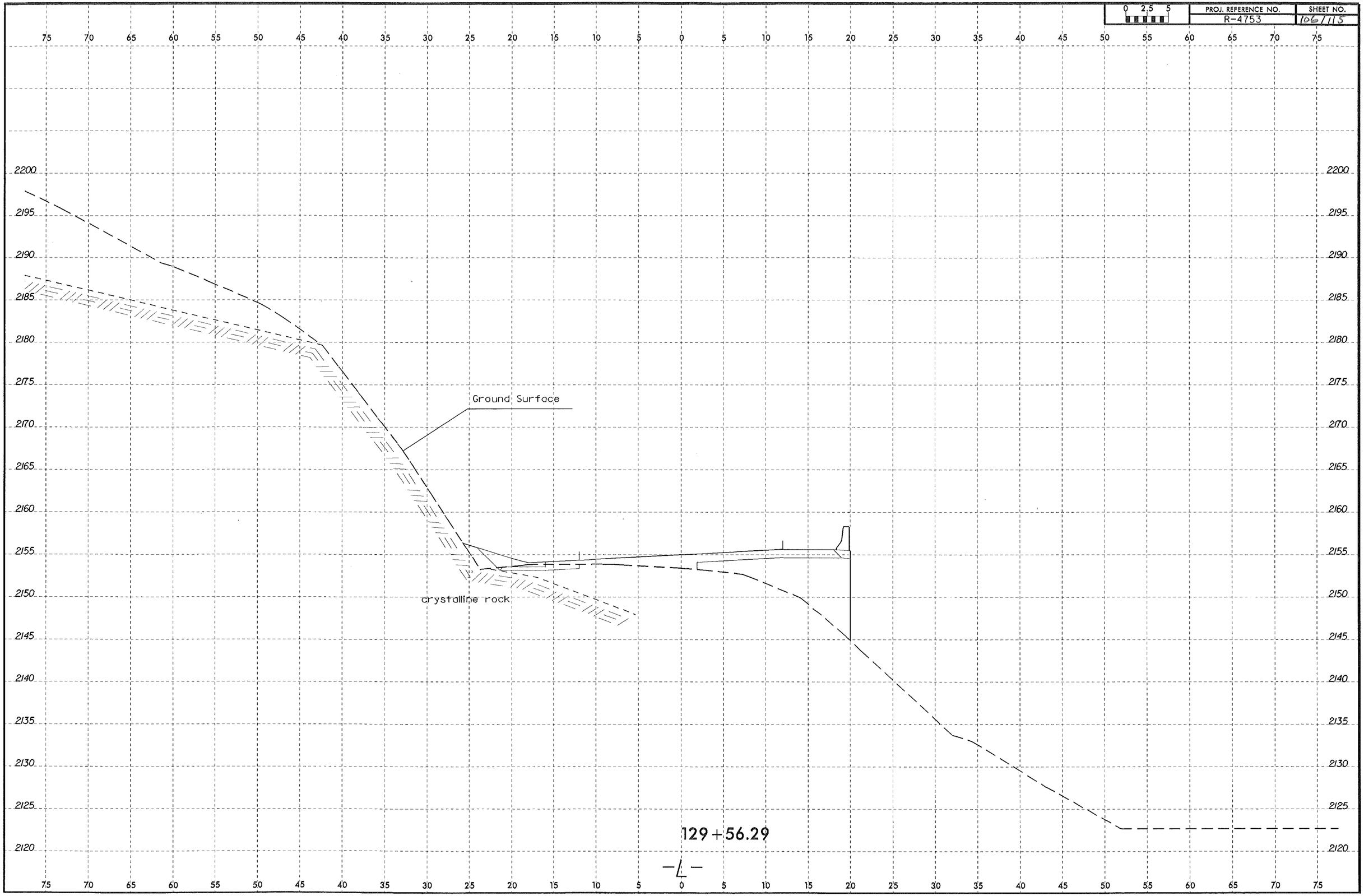
crystalline rock

Ground Surface

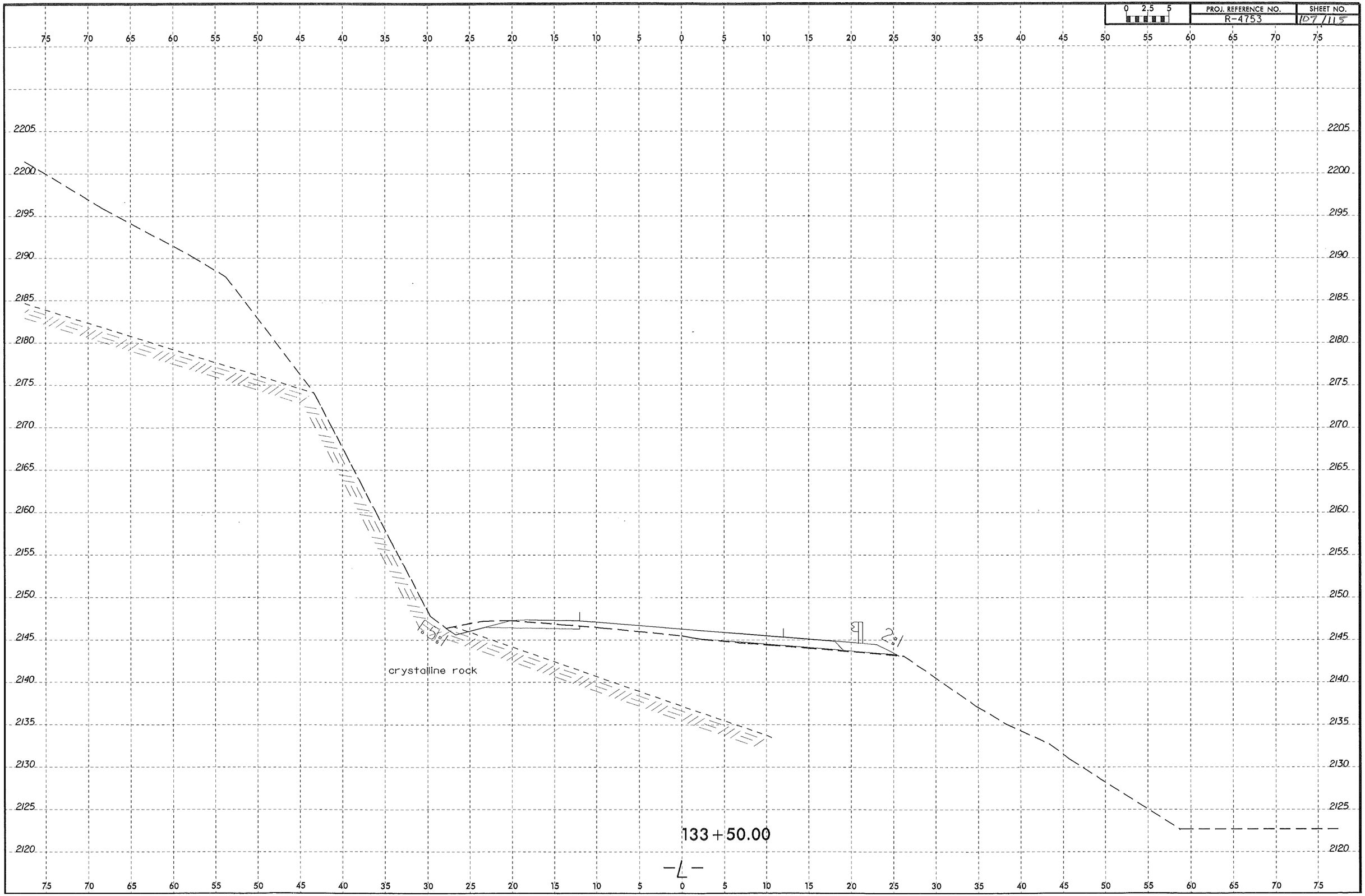
129+00.00

$-\not{L}-$

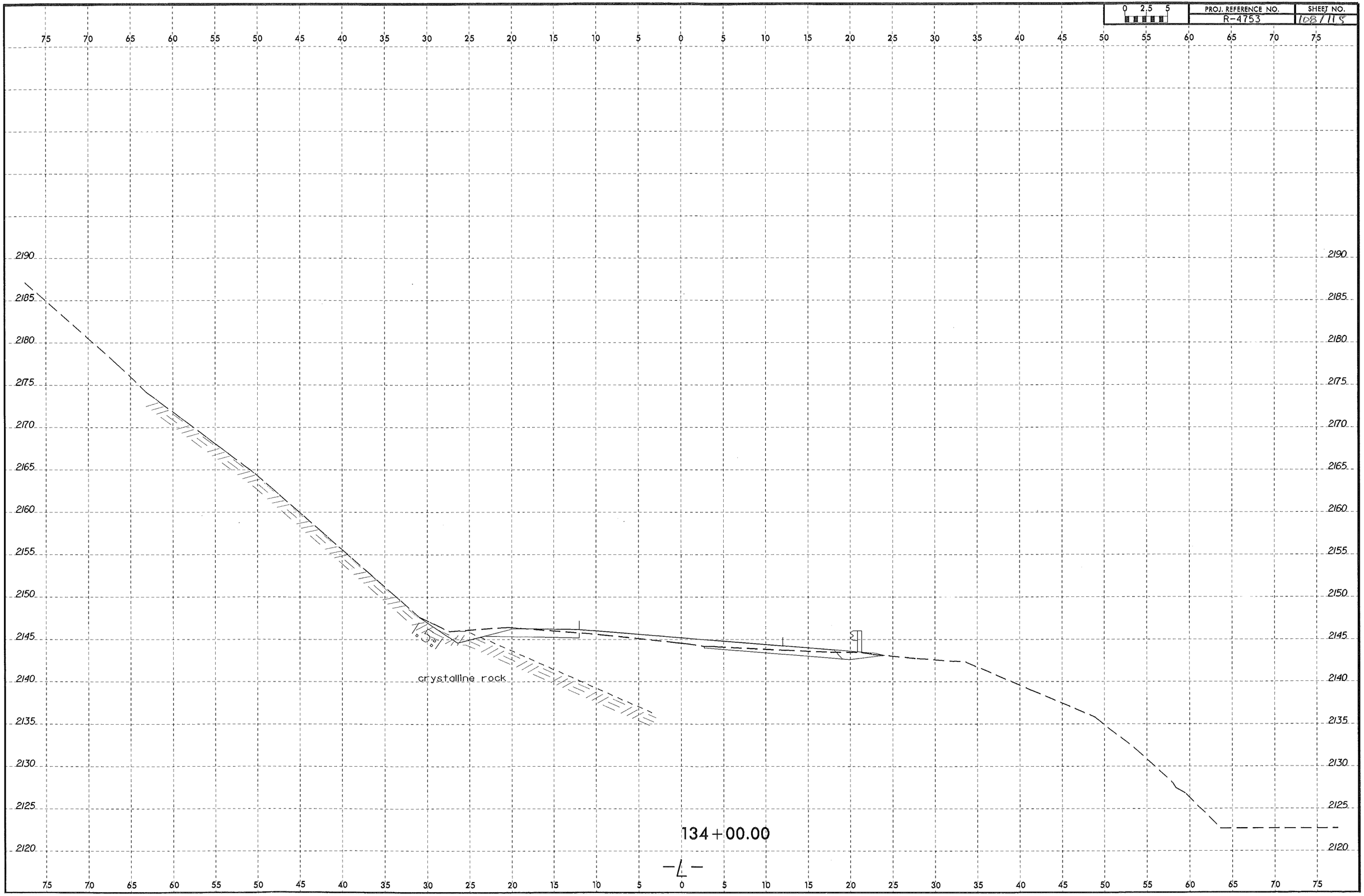
0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	R-4753	106/115



0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	R-4753	107 /115



0 2,5 5	PROJ. REFERENCE NO.	SHEET NO.
	R-4753	108/115



PROJ. REFERENCE NO.	SHEET, NO.
R-4753	109 115

0 5

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

2145 2140 2135 2130 2125 2120 2115 2140

143+18

23 Lt

ground surface

2%

4:1

2%

alluvial: brown silty clay

(3)

(4)

6/2013

saprolite: tan to brown silty sand w/mica

(3)

(7)

FIAD

143+00.00

2:1

2%

142+78.54

2:1

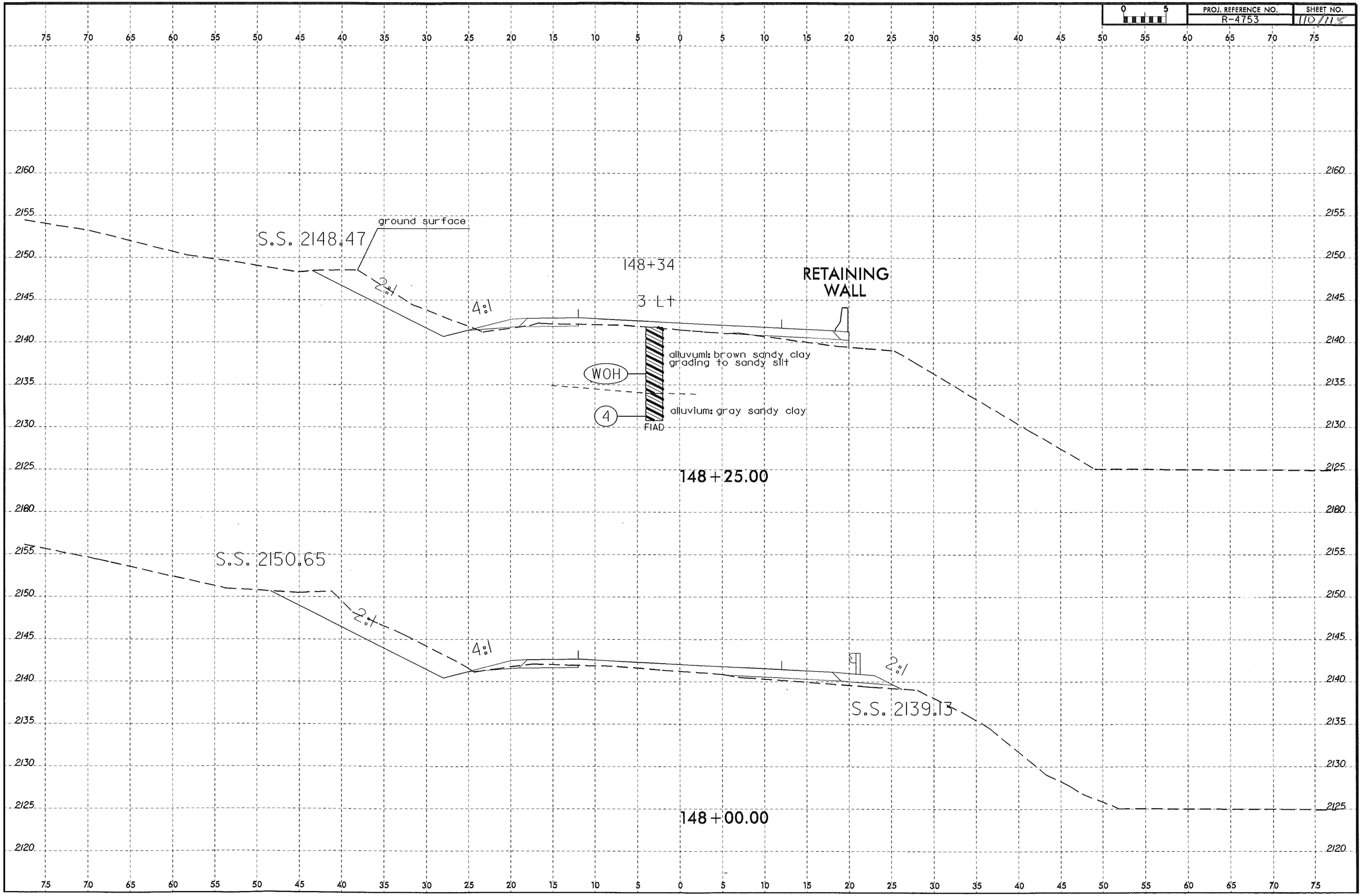
2%

142+50.00

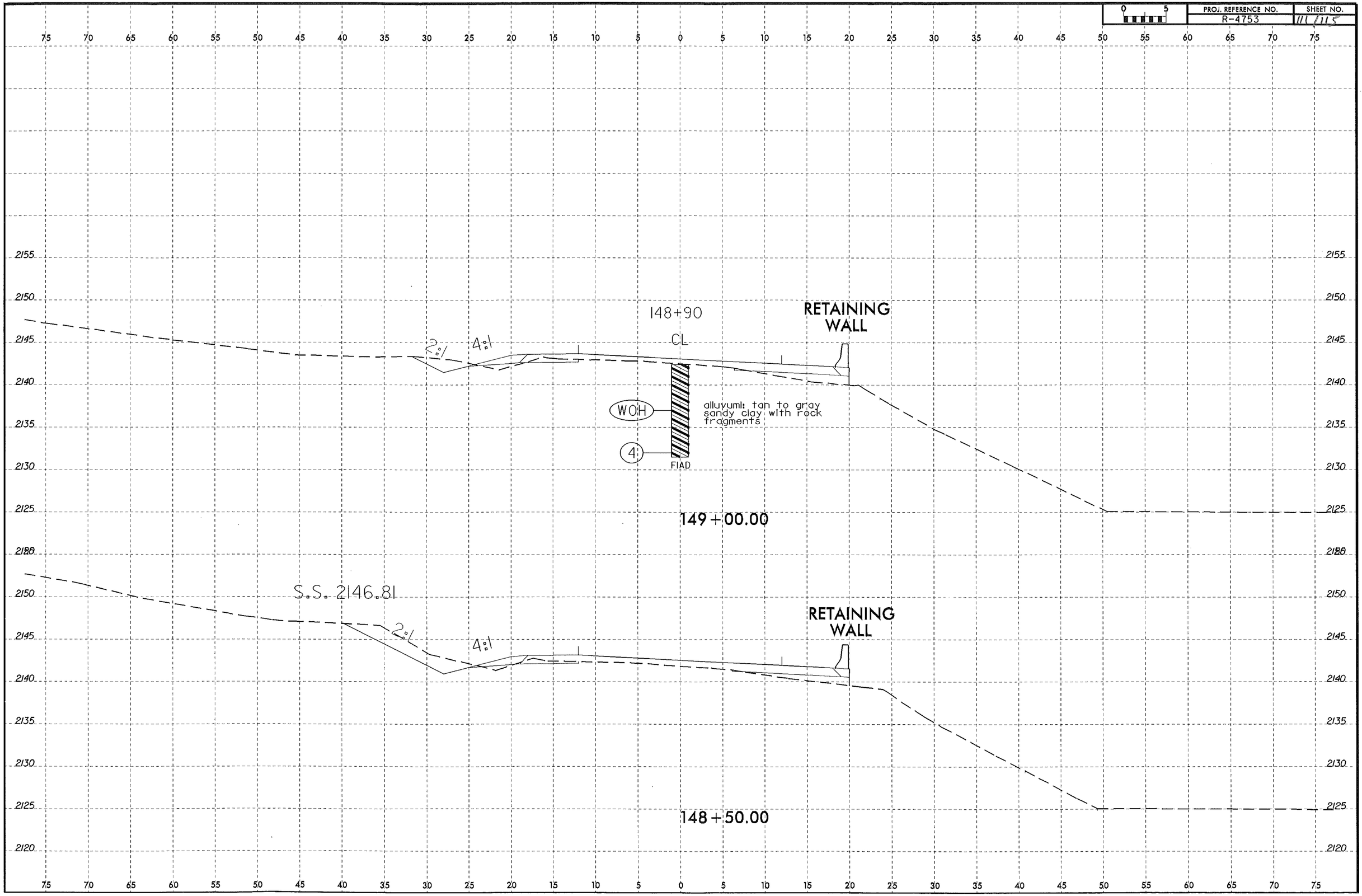
2145 2140 2135 2130 2125 2120 2140

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

PROJ. REFERENCE NO.	SHEET NO.
R-4753	110/115



0 5	PROJ. REFERENCE NO.	SHEET NO.
	R-4753	111 (11.5



PROJ. REFERENCE NO.	SHEET NO.
R-4753	112/115

149+40

5 Lt

RETAINING WALL

2% 4:1

ground surface

embankment: brown to tan sandy clay

alluvium: tan to gray sandy clay

4

4

FIAD

149+50.00

RETAINING WALL

2% 4:1

149+25.00

PROJ. REFERENCE NO. R-4753

SHEET NO. 113/115

0 5

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

2170 2165 2160 2155 2150 2175 2170

1.5:1

4:1

6:1 DRIVE WAY TIE

169+22.23

2170 2165 2160 2155 2150 2145

2:1

4:1

6:1 DRIVE WAY TIE

169+00.00

2165 2160 2155 2150 2145

2:1

168+55

24 Rt 2:1

ground surface

24

saprolite: brown silty sand w/mica

FIAD

168+50.00

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

PROJ. REFERENCE NO.	SHEET NO.
R-4753	114 / 115

0 5

75 70 65 60 55 50 45 40 35 30 25 20 15 10 5 0 5 10 15 20 25 30 35 40 45 50 55 60 65 70 75

2170
2165
2160
2155
2150
2145

ground surface

169+95

20 Lt

2:1

4:1

6:1 DRIVE WAY TIE

alluvium: red silty clay w/roots

alluvium: tan with brown and gray mottles sandy silt w/clay grading to silty sand

4

4

FIAD

170+00.00

1.5:1

4:1

DRIVE WAY TIE

169+50.00

0 2.5 5	PROJ. REFERENCE NO.	SHEET NO.
	R-4753	115/115