R-2519A

CONTRACT: C202332

CONTENTS:

INVESTIGATION ALONG -L-

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

GEOTECHNICAL UNIT

SUBSURFACE INVESTIGATION

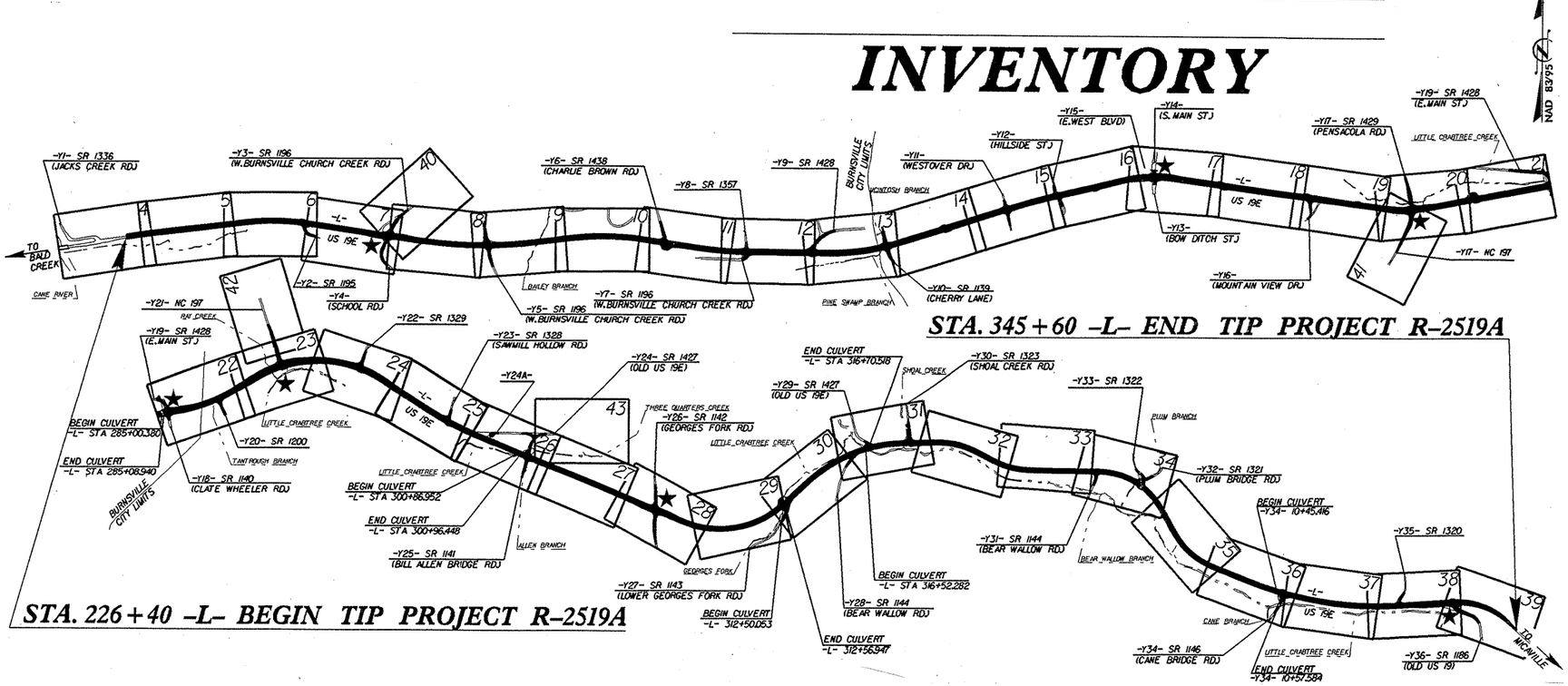
STATE PROJECT 6.909001T I.D. NO. R-2519A

F.A. PROJECT

COUNTY YANCEY

DESCRIPTION US 19 E FROM SR 1336 (JACKS CREEK ROAD) TO SR 1186 (OLD US 19)

INVENTORY



STA. 345+60 -L- END TIP PROJECT R-2519A

STA. 226+40 -L- BEGIN TIP PROJECT R-2519A

DRAWN BY: J C KUHNE D O CHEEK

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.

METRIC

ALL DIMENSIONS IN THESE PLANS ARE IN METERS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2519A	1	238

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
35609.1.1		PE
35609.2.1		RW, UTIL
35609.3.1		CONST

CAUTION NOTICE

THE SUBSURFACE INFORMATION AND THE SUBSURFACE INVESTIGATION ON WHICH IT IS BASED WAS 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 UNIT @ (919) 250-4088. NEITHER THE SUBSURFACE PLANS AND REPORTS, NOR THE FIELD BORING LOGS, ROCK CORES, OR SOIL TEST DATA IS 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.

INVESTIGATED BY J C KUHNE PERSONNEL D P MURPHY

CHECKED BY W D FRYE D O CHEEK

SUBMITTED BY J C KUHNE C COFFEY

DATE 31 Oct 2003

NORTH CAROLINA LICENSED SEAL 1878 GEOLOGIST JODY KUHNE

SEAL

SIGNATURE

ID	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
R-2519A	6.909001T	2	238

METRIC

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS
GEOTECHNICAL 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 WHICH CAN BE PENETRATED WITH A CONTINUOUS FLIGHT POWER AUGER, AND WHICH YIELDS LESS THAN 100 BLOWS PER 30 cm ACCORDING TO STANDARD PENETRATION TEST (AASHTO T206, ASTM D-1586). SOIL CLASSIFICATION IS BASED ON THE AASHTO SYSTEM AND 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 # 40 # 200	50 MX 30 MX 15 MX		50 MX 25 MX	51 MN 10 MX	35 MX	35 MX	35 MX	35 MX	36 MN	36 MN	36 MN	36 MN	GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT
LIQUID LIMIT PLASTIC INDEX	6 MX		N.P.		40 MX 10 MX	41 MN 10 MX	40 MX 11 MN	41 MN 11 MN	40 MX 10 MX	41 MN 10 MX	40 MX 11 MN	41 MN 11 MN	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS
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

P.I. OF A-7-5 ≤ L.L. - 30 : P.I. OF A-7-6 > L.L. - 30

CONSISTENCY OR DENSENESS

PRIMARY SOIL TYPE	COMPACTNESS OR CONSISTENCY	RANGE OF STANDARD PENETRATION RESISTENCE (N-VALUE)	RANGE OF UNCONFINED COMPRESSIVE STRENGTH (kN/m^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	<25
	SOFT	2 TO 4	25 TO 50
	MEDIUM STIFF	4 TO 8	50 TO 100
	STIFF	8 TO 15	100 TO 200
	VERY STIFF	15 TO 30	200 TO 400
	HARD	>30	>400

TEXTURE OR GRAIN SIZE

U.S. STD. SIEVE SIZE	4	10	40	60	200	270
OPENING (MM)	4.76	2.0	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, YEL-BRN, 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 ARE 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 30
MODERATELY COMPRESSIBLE	LIQUID LIMIT 31-50
HIGHLY COMPRESSIBLE	LIQUID LIMIT GREATER THAN 50

PERCENTAGE OF MATERIAL

ORGANIC MATERIAL	GRANULAR SOILS	SILT- CLAY SOILS
TRACE OF ORGANIC MATTER	2 - 3%	3 - 5%
LITTLE ORGANIC MATTER	3 - 5%	5 - 12%
MODERATELY ORGANIC	5 - 10%	12 - 20%
HIGHLY ORGANIC	>10%	>20%

OTHER MATERIAL	
TRACE	1 - 10%
LITTLE	10 - 20%
SOME	20 - 35%
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 SEEPAGE

MISCELLANEOUS SYMBOLS

- ROADWAY EMBANKMENT WITH SOIL DESCRIPTION
- SOIL SYMBOL
- ARTIFICIAL FILL OTHER THAN ROADWAY EMBANKMENTS
- INFERRED SOIL BOUNDARIES
- INFERRED ROCK LINE
- ALLUVIAL SOIL BOUNDARY
- 25/025 — DIP/DIP DIRECTION OF ROCK STRUCTURES
- SOUNDING ROD
- SPT CPT DPT DMT VST PMT — TEST BORING
- AUGER BORING
- CORE BORING
- MW — MONITORING WELL
- PIEZOMETER INSTALLATION
- SLOPE INDICATOR INSTALLATION
- SPT N-VALUE
- REF — SPT REFUSAL

SAMPLE DESIGNATIONS
S- BULK SAMPLE
SS- SPLIT SPOON SAMPLE
ST- SHELBY TUBE SAMPLE
RS- ROCK SAMPLE
RT- RECOMPACTED TRIAXIAL SAMPLE
CBR - CBR SAMPLE

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
FRAGS. - FRAGMENTS
MED. - MEDIUM
PMT - PRESSUREMETER TEST
SD. - SAND, SANDY
SL. - SILT, SILTY
SLI. - SLIGHTLY
TCR - TRICONE REFUSAL
γ - UNIT WEIGHT
γ_d - DRY UNIT WEIGHT
W - MOISTURE CONTENT
V. - VERY
VST - VANE SHEAR TEST

EQUIPMENT USED ON SUBJECT PROJECT

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

ADVANCING TOOLS:
- [ ] CLAY BITS
- [ ] 152 mm CONTINUOUS FLIGHT AUGER
- [X] 203 mm HOLLOW AUGERS
- [ ] HARD FACED FINGER BITS
- [ ] TUNG.-CARBIDE INSERTS
- [ ] CASING [ ] W/ ADVANCER
- [ ] TRICONE _____ mm STEEL TEETH
- [ ] TRICONE _____ mm TUNG.-CARB.
- [ ] CORE BIT
- [ ] OTHER _____

HAMMER TYPE:
- [X] AUTOMATIC [ ] MANUAL

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

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

ROCK DESCRIPTION

HARD ROCK IS NON-COASTAL PLAIN MATERIAL THAT WHEN 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 2.5 cm PER 50 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 FOLOWS:

WEATHERED ROCK (WR)	NON-COASTAL PLAIN MATERIAL THAT YIELDS SPT N VALUES > 100 BLOWS PER 30 cm.
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 2.5 cm. 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 ROCKS 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 BLOWS PER 30 cm.*
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 BLOWS PER 30 cm,*
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 GEOLOGISTS 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 6 mm DEEP CAN BE EXCAVATED BY HARD BLOW OF A GEOLOGISTS PICK. HAND SPECIMENS CAN BE DETACHED BY MODERATE BLOWS.
MEDIUM HARD	CAN BE GROOVED OR GOUGED 1 mm DEEP BY FIRM PRESSURE OF KNIFE OR PICK POINT. CAN BE EXCAVATED IN SMALL CHIPS TO PIECES 25 mm MAXIMUM SIZE BY HARD BLOWS OF THE POINT OF A GEOLOGISTS PICK.
SOFT	CAN BE GROVED OR GOUGED READILY BY KNIFE OR PICK. CAN BE EXCAVATED IN FRAGMENTS FROM CHIPS TO SEVERAL CENTIMETERS 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 25 mm OR MORE IN THICKNESS CAN BE BROKEN BY FINGER PRESSURE. CAN BE SCRATCHED READILY BY FINGERNAIL.

FRACTURE SPACING

TERM	SPACING
VERY WIDE	MORE THAN 3 m
WIDE	1 TO 3 m
MODERATELY CLOSE	30 TO 100 cm
CLOSE	5 TO 30 cm
VERY CLOSE	LESS THAN 5 cm

BEDDING

TERM	THICKNESS
VERY THICKLY BEDDED	> 1 m
THICKLY BEDDED	0.5 - 1 m
THINLY BEDDED	0.05 - 0.5 m
VERY THINLY BEDDED	10 - 50 mm
THICKLY LAMINATED	2.5 - 10 mm
THINLY LAMINATED	< 2.5 mm

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 WHICH 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 IS ENCOUNTERED, BUT WHICH DOES NOT NECESSARILY RISE TO OR ABOVE THE GROUND SURFACE.

CALCAREOUS (CALC.) - SOILS WHICH 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 (F.P.) - 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 SOIL - SOIL FORMED IN PLACE BY THE WEATHERING OF ROCK.

ROCK QUALITY DESIGNATION (R.Q.D.) - A MEASURE OF ROCK QUALITY DESCRIBED BY: TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 10 CENTIMETERS DIVIDED BY THE TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.

SAPROLITE (SAP.) - RESIDUAL SOIL WHICH 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, WHICH 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) OF A 63.5 kg HAMMER FALLING 0.76 METERS REQUIRED TO PRODUCE A PENETRATION OF 30 cm INTO SOIL WITH A 5 cm OUTSIDE DIAMETER SPLIT SPOON SAMPLER. SPT REFUSAL IS LESS THAN 2.5 cm PENETRATION WITH 50 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 (S.R.Q.D.) - A MEASURE OF ROCK QUALITY DESCRIBED BY: TOTAL LENGTH OF ROCK SEGMENTS WITHIN A STRATUM EQUAL TO OR GREATER THAN 10 CENTIMETERS DIVIDED BY THE TOTAL LENGTH OF STRATA AND EXPRESSED AS A PERCENTAGE.

TOPSOIL (T.S.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.

BENCH MARK:

ELEVATION:

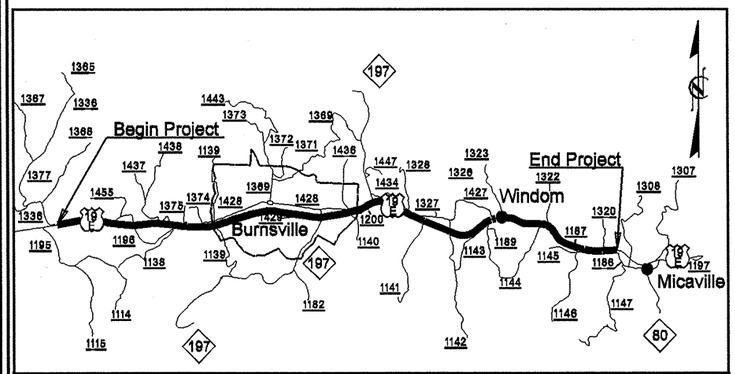
NOTES:

REVISED 09/15/00

R-2519A

PROJECT: 6.909001T

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



VICINITY MAP

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

YANCEY COUNTY

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2519A	2A	238

STATE PROJ. NO.	F. A. PROJ. NO.	DESCRIPTION
6.909001T		PE

METRIC
ALL DIMENSIONS IN THESE PLANS ARE IN METERS

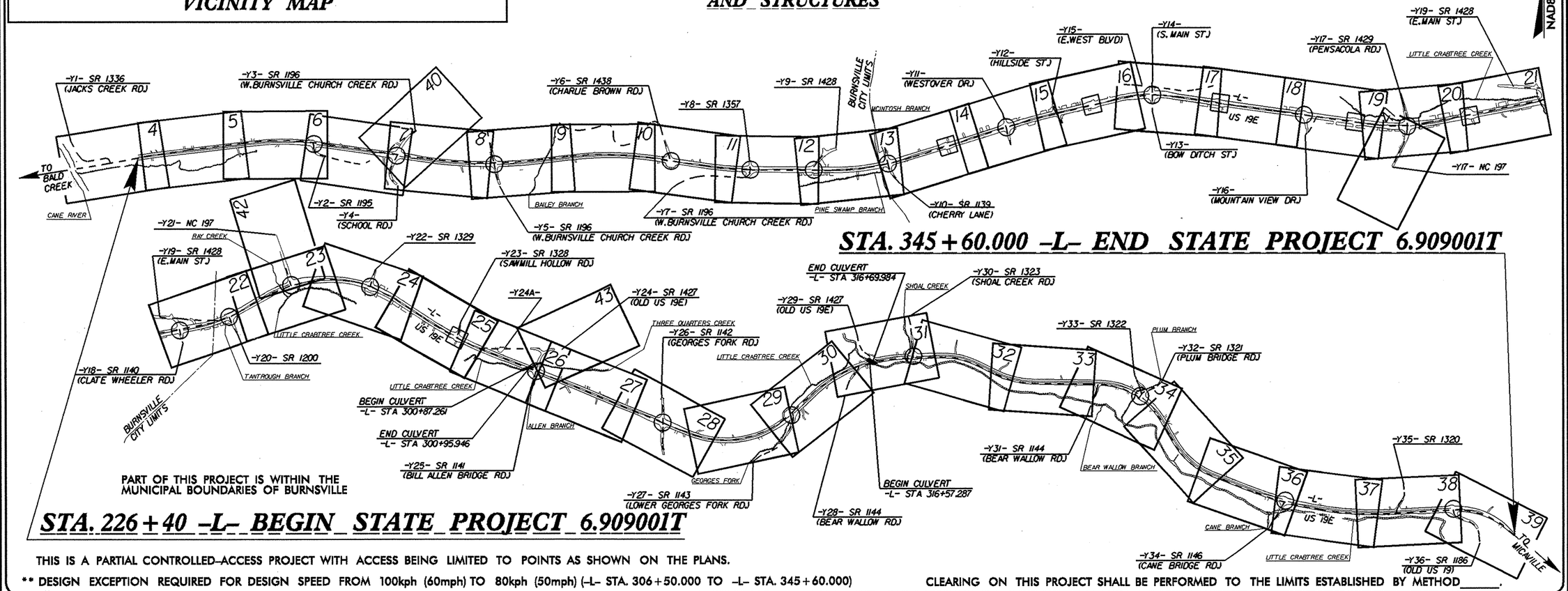
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

LOCATION: US 19 E FROM SR 1336 (JACKS CREEK ROAD) TO SR 1186 (OLD US 19)

TYPE OF WORK: GRADING, DRAINAGE, WIDENING, RESURFACING CURB & GUTTER, SIGNALS, GUARDRAIL, AND STRUCTURES

Proposed Median Crossover
Proposed Additional Median Crossover

NAD83



STA. 345 + 60.000 –L– END STATE PROJECT 6.909001T

STA. 226 + 40 –L– BEGIN STATE PROJECT 6.909001T

PART OF THIS PROJECT IS WITHIN THE MUNICIPAL BOUNDARIES OF BURNSVILLE

THIS IS A PARTIAL CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON THE PLANS.

** DESIGN EXCEPTION REQUIRED FOR DESIGN SPEED FROM 100kph (60mph) TO 80kph (50mph) (–L– STA. 306 + 50.000 TO –L– STA. 345 + 60.000)

CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD _____.

5 0 10
PLANS
5 0 10
PROFILE (HORIZONTAL)
1 0 2
PROFILE (VERTICAL)

DESIGN DATA

ADT 2006 = 25539
ADT 2026 = 37182
DHV = 8 %
D = 63 %
T = 8 % *
(C&G sect.)V = 80 km/h
(Shld. sect.) V = 100 km/h**
* TTST 4 % DUAL 4 %

PROJECT LENGTH

LENGTH OF ROADWAY PROJECT 6.909001T = 11.899 Km

LENGTH OF STRUCTURE PROJECT 6.909001T = 0.021 Km

TOTAL LENGTH OF ROADWAY PROJECT 6.909001T = 11.920 Km

Prepared in the Office of:
DIVISION OF HIGHWAYS
1000 BIRCH RIDGE DR., RALEIGH NC 27610

2002 STANDARD SPECIFICATIONS

RIGHT OF WAY DATE: MAY 21, 2004

LETTING DATE: MAY 16, 2006

BRENDA MOORE, PE
PROJECT ENGINEER

RON McCOLLUM, PE
PROJECT DESIGN ENGINEER

HYDRAULICS ENGINEER
SIGNATURE: P.E.

ROADWAY DESIGN ENGINEER
SIGNATURE: P.E.

DIVISION OF HIGHWAYS
STATE OF NORTH CAROLINA
STATE DESIGN ENGINEER P.E.

DEPARTMENT OF TRANSPORTATION
FEDERAL HIGHWAY ADMINISTRATION
APPROVED
DIVISION ADMINISTRATOR DATE

STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

Michael F. Easley
GOVERNOR

P.O. BOX 25201, RALEIGH, N.C. 27611-5201

Lyndo Tippett
SECRETARY

23 October, 2003

STATE PROJECT: 6.909001 T, R-2519A

COUNTY: Yancey

DESCRIPTION: US 19 E from SR 1336 (Jack's Creek Road) to SR 1186 (Old US 19)

SUBJECT: Geotechnical Report – Inventory

PROJECT DESCRIPTION

The project consists of 11.92 km of roadway widening from 2 and 3 lane existing to 4 and 5 lanes. Widening is exclusively along existing with no realignment. Structures to be added or lengthened are eight 2-barrel culverts, two 3-barrel culverts, ten retaining walls and no bridge work.

A geotechnical investigation was performed from April through June of 2003 utilizing a CME 550 ATV mounted drill and CME 45C Track mounted drill. Standard Penetration Tests were performed at selected locations along the alignment for embankments, cut slopes and retaining walls. Representative soil samples were obtained for visual classification in the field and for laboratory analysis by the Material and Tests Unit.

The following survey line was investigated:

Line	Stations
- L -	226+40 – 345+60

AREAS OF SPECIAL GEOTECHNICAL INTEREST

STRUCTURES

There are ten retaining walls on the project. These are covered in separate Structure reports included in this document. No bridge structures are included and it is assumed that existing culverts will be lengthened. Borings and dynamic penetrometer tests were done at these existing culvert locations:

Sta. 257+20
Sta. 279+40, on –Y 17 –
Sta. 285+00
Sta. 289+70
Sta. 300+60 and 301+30, for culverts on –L- and – Y 24 –
Sta. 312+60
Sta. 316+60

POTENTIALLY UNSUITABLE SUBSURFACE CONDITIONS

Highly plastic clays, PI>35, exist in residual soils around Stations 252-253+00. These were encountered while drilling, but no other evidence such a pavement cracking or settlement are associated.

UNSUITABLE FILL

Areas of artificial fill exist at Stas. 300-303+00 and 318+00. Drilling revealed waste materials (wood, metal, etc.) in these locations. Reinforcing fabric will be recommended in a quantity sufficient to allow undercutting under –Y 24 -, but the quality and strength of the overall material is good enough to not require undercutting. The fill at 318+00 will not be a factor once culvert and retaining wall construction have been completed.

GROUNDWATER

High groundwater exists in cuts at:

238+40 rt
308+80 lt
323+60 lt

The fill will toe in a private pond at 310+60, 30m right.

PHYSIOGRAPHY AND GEOLOGY

The project lies in moderately rolling terrain with the steepest grade from the start of the project near the Cane River at Sta. 226+40, el. 775m, to Sta. 239+00, el. 825m. It then enters a relatively broad valley and reaches a maximum elevation of 850m at Sta. 269+00. From Sta. 269+00 the grade enters the headwaters of Little Crabtree Creek and drops to 805m by Sta. 281. The project roughly follows Little Crabtree Creek valley to an elevation of 770m at Sta. 346+60.

Burnsville is the most populated town in Yancey County and many residences, business developments, schools, etc., lie along the project corridor.

The project lies entirely within Ashe Formation rocks. These are categorized as muscovite-biotite geisses, poorly to moderately foliated.

Cemeteries affected by the proposed slope and ROW boundaries exist at Sta. 232+60, 309+60 and access at 246+00.

SOIL PROPERTIES

High mica content in the parent gneisses generates mostly silty material in all residual and saprolite soils in the project corridor.

Residual soils in the wide valleys, Sta. 252+00 – 265+00, 278+00 – 290+00 and 298+00 – 305+00 tend to be silts, clayey silts and clayey sands. Alluvium in these areas are predominately non-plastic clays, silts and lenses of gravel and sandy gravel. Alluvium in the tighter stream valleys, Sta.290+00 – 293+00, 314+00 – 342+00 are predominately coarse sands, silty sands and gravel. The only highly plastic, PI>35, soils on the project were encountered in the vicinity of Stations 252+00 - 253+00.

Cut areas consist of mostly silts, silty sands and clayey sands. Weathered rock horizons generally range from 1-3m. **Manganese oxide, MnO, filled joints are visible in cut areas from Sta. 267+00 – 275+00 and were encountered in soils throughout the project.**

All areas denoted on cross sections as "saprolite and weathered rock", or "weathered rock" may contain very weathered to slightly weathered rock that requires select ripping or blasting to excavate.

Two Shelby tube samples were taken at 228+60, 21 m rt, for CU triaxial tests in plastic clays with PI 30 and 33.

ROCK PROPERTIES

Rock exposed in cuts shows moderate foliation, weathering to some degree and is highly jointed. The rock is generally moderately to slightly weathered and not found in appreciable amounts except for stations 281+00-282+50, 318+00-322+00, 327+00, 336+00, 338+00 and 343-344+00. Foliations generally dip 35-90^0 ESE with some dipslope for the left hand cuts on the project.
The volume of rock, the orientation of foliation, weathering and the degree of jointing as mapped in outcrop do not lend to efficient rock slope design so no coring was done, nor are rock slopes steeper than 1 ½:1 recommended for any cut area.

GROUNDWATER

Rainfall amounts were higher than average during the investigation of this project. Due to the highly jointed nature of the rock and the free draining soils in cut areas, groundwater was rarely encountered. It was encountered in cuts at 238+40 rt, 308+80 lt, and 323+60 lt. The stream valleys and alluvial floodplains invariably have groundwater levels between 1 and 3m. No springs or known private wells were encountered. The areas where groundwater can uniformly be expected between 1 and 3m are:

Sta. 226+40 – 233+50 rt
Sta. 251+00 – 266+00 lt
Sta. 269+40 – 271+00 lt
Sta. 277+00 – 290+40 lt and rt
Sta. 290+40 – 298+00 rt
Sta. 298+00 – 302+60 lt and rt
Sta. 302+60 – 306+00 lt
Sta. 313+00 – 318+60 lt and rt
Sta. 318+60 – 342+40 rt

GEOTECHNICAL DESCRIPTIVE ANALYSIS

Stations 226+40 – 248+00

This section involves widening existing with sliver cuts and fills. 226+40 to 231+00 has 1 ½:1 existing cuts in saprolite and some weathered rock on the left. The fills will toe in 1 – 2m of loose alluvium (AASHTO A-2-4) or loose residual soils and saprolite consisting of sandy clays (A-7-6) or silty sands (A-2-4). Auger refusal was consistent through this section on the right at 1 –2m. From 231+00 to 237+60 fills on either side will toe in 1 – 2m of residual silty clay overlying dense saprolite and weathered rock. 237+60 to 248+00 has predominately two sided cuts consisting mostly of loose to dense saprolite and 1 – 5m of weathered rock and rock in the deepest part of the cuts.

Stations 248+00 – 266+60

This section involves mostly adding 1-2m of fill to widen over loose alluvial silty clays and sands (A-7, A-7-5) and loose residual silts and sands (A-2-4, A-4). Highly plastic clays exist from 252+00 – 253+00 and there is a small retaining wall to keep the fill out of the stream from 256+60 to 257+20.

Stations 266+60 – 269+20

Moderate sized cut on right in med. dense to dense saprolite (A-4, A-2-5) with some very dense layering, 0.5 – 1m thick. MnO on existing joints is prevalent in this cut.

Stations 269+20 – 279+60

Section typified by cuts on the right and sliver fills with retaining walls on the left. The largest cut from 272+60 to 275+40 is dry and consists mostly of loose to dense saprolite (A-5) with auger refusal at 11 – 15m in holes drilled 30 – 40m rt. The three wall sections, 269+40 – 270+80, 277+60 – 278+00 and 278+70 – 279+20 will be founded through loose embankment and loose residual soil and saprolite to dense saprolite and/or weathered rock 5 – 10m deep. The fills will toe on loose alluvium (A-7-5, A-2-5) and

residual soils (A-5).

Stations 279+60 – 290+60

Proposed widening and fill 1-2m, will occur mostly on loose alluvium with small cuts predominately in slightly weathered to fresh rock on the right at 280+80 – 282+60 and in saprolite to end at 283+60.

Stations 290+60 – 304+20

The largest cut in this section, 290+60 – 292+20 lt, has mostly rock overlain by 1-2m of weathered rock and saprolite. The rest of the section consists of low cuts in loose to med. dense saprolite on the left with low fills over loose alluvium and dense saprolite on the right. A low retaining wall keeps fill out of the stream at 300+00 to 300+60 rt and is founded on loose fill, alluvium and saprolite to depths of 5+ m. A retaining wall above grade supports the parking lot from 303+00 – 303+60 rt and is founded in loose saprolite to depths of 5+ m. –Y 24- intersects at 301+25 and is a new alignment with low fill over loose alluvium and artificial fill.

Stations 304+20 – 313+20

This section has two moderate cuts from 304+20 – 306+60 rt and 308+00 – 312+40 lt typified by up to 6m of loose to dense saprolite (A-2-4, A-4) over 6 -7m of weathered rock. Rock is showing at 311+60 lt and can be expected in the bottom 1-2m of each of these cuts and the ditchline excavations. The culvert at 312+60 is founded in 1 - 1.5m of alluvium with thin weathered rock and rock below. –Y 27- intersects at 312+65 and shows mostly rock in the cut associated with the tie in.

Stations 313+20 – 318+40

This section consists of low cuts in artificial fill or saprolite and fills over loose alluvial sands and gravel. A small retaining wall supports 0.1 – 1.3m of embankment along –Y 28- at 315+50 – 315+70, 39 – 15 m rt, and is founded in loose to dense saprolite. The culvert at 316+60 is founded in 3 m of alluvium over dense saprolite and weathered rock. The culvert at 318+20 is founded in 2 m of alluvium over weathered rock and rock.

No proposal in the plans addresses fill overriding the creek from 314+20 – 315+60.

Stations 318+40 – 328+00

This section contains the largest cuts on the project with rock exposed in existing cuts at the intersection of –Y 30-, 318+60 – 318+80, 319+20 – 319+60, 320+60, 321+00, 322+00 and 326+70 lt. Rock is overlain by 1-5m of weathered rock which is capped by loose to med. dense saprolite. Loose to med. dense saprolite (A-2-5, A-2-4) makes up the majority of the remaining cut excavation with weathered rock possible at the ditchline excavations. Fills are low on the right and will toe in loose alluvial sands, gravel and cobbles. The retaining wall along –Y 30- is founded in 2-4m of embankment and .5 – 1.5m of alluvium over thin weathered rock and rock.

Stations 328+00 – 335+20

This section consists of several low cuts on the left in loose to med. dense saprolite with low fills on the left and right that rest on loose alluvium and residual soils.

Stations 335+20 – 345+60

Three moderate to large cuts are on the left side of this section with rock exposed in existing cuts at 335+90, 338+00 and 343+80. The remaining cut material consists of loose to dense saprolite overlying 1-2 m of weathered rock. Perched colluvium exists in the cut from 342+80 to 343+60, but will be undercut and removed with any slope design of 1 ½:1 or flatter. Two retaining walls at 339+35 – 339+45 and 341+20 – 341+80 will be founded in 2 – 3 m of alluvium (A-2-4 w/ gravel layers) over weathered rock.

Respectfully Submitted,

Jody C. Kuhne

EARTHWORK BALANCE SHEET

RDTOSIC

LOCATION	EXCAVATION					EMBANKMENT					WASTE			
	TOTAL UNCLASS.	ROCK	UNDERCUT	UNSUIT. UNCLASS.	SUITABLE UNCLASS.	TOTAL	ROCK	EARTH	EMBANK. (+) 15%	BORROW	ROCK	SUITABLE	UNSUIT.	TOTAL
-L- 226+40 TO 235+40 LT	15086	9780			5306	388	323		323		9457	5306		14763
SUBTOTAL	15086	9780			5306	388	323		323		9457	5306		14763
-L- 235+40 TO 244+40 LT	22102	1477			20625	1001	834		834		643	20625		21268
-Y3- 10+47.000 TO 11+70.994	1400				1400	691		691	795			605		605
-Y5- 10+17.709 TO 10+95.923	304				304	89		89	102			202		202
SUBTOTAL	23806	1477			22329	1781	834	780	1731		643	21432		22075
-L- 244+40 TO 253+40 LT	22433	1363			21070	1691	1363	55	1427			21006		21006
-Y6- 10+50.340 TO 11+30.114	196				196	260		260	299	103				
-Y8- 10+32.155 TO 10+60.264	174				174							174		174
SUBTOTAL	22803	1363			21440	1951	1363	315	1726	103		21180		21180
-L- 253+40 TO 262+40 LT	764				764	5936		5936	6826	6062				
-Y9- 11+24.000 TO 11+68.066	1				1	139		139	160	159				
-Y10- 10+06.458 TO 10+59.121	11				11	337		337	388	377				
SUBTOTAL	776				776	6412		6412	7374	6598				
-L- 262+40 TO 271+40 LT	2011				2011	8351		8351	9604	7593				
-Y11- 10+26.868 TO 10+58.037	22				22	27		27	31	9				
-Y12- 10+19.000 TO 10+55.694	1				1	35		35	40	39				
-Y14- 10+31.355 TO 10+48.791	64				64	42		42	48			16		16
SUBTOTAL	2098				2098	8455		8455	9723	7641		16		16
-L- 271+40 TO 280+40 LT	1436				1436	18681		18681	21483	20047				
-Y17- 10+25.000 TO 11+47.744	261				261	777		777	894	633				
SUBTOTAL	1697				1697	19458		19458	22377	20680				
-L- 280+40 TO 289+40 LT	3153				3153	2091		2091	2405			748		748
-Y19- 10+25.000 TO 12+19.754	787				787	247		247	284			503		503
SUBTOTAL	3940				3940	2338		2338	2689			1251		1251
-L- 289+40 TO 298+40 LT	29693	8434			21259	2004	1670		1670		6764	21259		28023
-Y21- 10+67.500 TO 12+33.932	402				402	346		346	398			4		4
-Y22- 10+03.955 TO 10+66.203	149				149	169		169	194	45				
-Y23- 10+37.000 TO 10+77.414	76				76	14		14	16			60		60
-Y24A- 11+55.566 TO 11+83.566	319				319	50		50	58			262		262
-Y24- 10+30.144 TO 11+52.962	195				195	2122		2122	2440	2245				
SUBTOTAL	30834	8434			22400	4705	1670	2701	4776	2291	6764	21585		28349
-L- 298+40 TO 307+40 LT	4625				4625	4985		4985	5733	1108				
-Y26- 10+26.848 TO 11+17.687	5				5	1390		1390	1599	1594				
SUBTOTAL	4630				4630	6375		6375	7331	2701				
-L- 307+40 TO 316+40 LT	28333	1974			26359	4901	1974	2532	4886			23447		23447
SUBTOTAL	28333	1974			26359	4901	1974	2532	4886			23447		23447
-L- 316+40 TO 324+80 LT	234619	140525			94094	1984	1653		1653		138872	94094		232966
-Y29- 11+00.000 TO 11+31.399	7				7	190		190	219	212				
-Y30- 10+28.278 TO 11+07.189	13024				13024	570		570	656			12369		12369
-D11- 10+15.00 TO 10+73.07	4895	4508			387						4508	387		4895
-D12- 10+06.30 TO 10+60.02	5913				5913							5913		5913
-D13REV- 10+21.21 TO 11+71.21	21327				21327	2		2	2			21325		21325
SUBTOTAL	279785	145033			134752	2746	1653	762	2530	212	143380	134087		277467
-L- 324+80 TO 333+80 LT	164575	57244			107331	3255	2713		2713		54532	107331		161863
-D14REV- 10+28.00 TO 12+05.83	44745	4089			40656	1	1		1		4088	40656		44744
-Y32- 10+00.000 TO 10+59.314	2318				2318	618		618	711			1607		1607
-Y33- 10+15.00 TO 10+70.08	118				118	677		677	779	661				
SUBTOTAL	211756	61333			150423	4551	2713	1295	4203	661	58620	149594		208214
-L- 333+80 TO 342+80 LT	182266	86351			95915	4504	3753		3753		82598	95915		178513
-Y35- 10+64.255 TO 11+15.981	1313				1313	63		63	73			1240		1240
SUBTOTAL	183579	86351			97228	4567	3753	63	3826		82598	97155		179753
-L- 342+80 TO 345+60 LT	95656	21160			74496	116	97		97		21063	74496		95559
-D15REV- 10+02.00 TO 10+67.24	12098				12098	50		50	58			12041		12041
SUBTOTAL	107754	21160			86594	166	97	50	154		21063	86537		107600
TOTAL LEFT	916877	336905			579972	68794	14381	51537	73649	40885	322524	561590		884114
-L- 226+40 TO 235+40 RT	4439				4439	35479		35479	40801	36362				
-D1- 10+11.165 TO 10+56.000	7				7	2116		2116	2433	2426				
-Y2- 10+09.935 TO 10+83.900	478				478	311		311	358			120		120
-D22- 10+04.420 TO 10+71.14	23				23	6		6	8			15		15
SUBTOTAL	4947				4947	37912		37912	43600	38788		135		135
-L- 235+40 TO 244+40 RT	46252	3440			42812	7139	3440	3011	6903			39349		39349
-D2- 10+10.00 TO 11+56.167	951				951	10		10	12			940		940
-Y4- 10+10.177 TO 11+34.000	952				952	1736		1736	1996	1044				
-Y5- 11+15.907 TO 11+93.760	399				399	230		230	265			135		135
SUBTOTAL	48554	3440			45114	9115	3440	4987	9175	1044		40423		40423
-L- 244+40 TO 253+40 RT	39653	4216			35437	4102	3418		3418		798	35437		36235
-D23- 10+11.025 TO 10+54.95						965		965	1110	1110				
-Y7- 10+09.883 TO 10+40.720	35				35	251		251	289	254				
SUBTOTAL	39688	4216			35472	5318	3418	1216	4817	1363	798	35437		36235
-L- 253+40 TO 262+40 RT	1349				1349	4135		4135	4755	3406				
-D3- 10+14.63 TO 10+42.00	53				53	104		104	120	67				
-D4REV- 10+13.350 TO 10+35.000	17				17	81		81	93	76				
-Y10- 10+81.191 TO 11+40.912	174				174	233		233	268	94				
SUBTOTAL	1593				1593	4553		4553	5236	3643				
-L- 262+40 TO 271+40 RT	3579	166			3413	2019	166	1820	2259			1320		1320
-Y11- 10+80.125 TO 11+38.355	155				155	12		12	14			141		141
-Y12- 10+78.902 TO 11+15.000	178				178	22		22	25			153		153
-Y13- 10+11.026 TO 10+30.377	2				2	41		41	47	45				
SUBTOTAL	3914	166			3748	2094	166	1895	2345	45		1614		1614
-L- 271+40 TO 280+40 RT	49818	3787			46031	630	525		525		3262	46031		49293
-Y16- 10+11.414 TO 10+90.198	8463				8463	29		29	33			8430		8430
-Y17- 11+69.832 TO 13+40.000	240				240	473		473	544	304				
SUBTOTAL	58521	3787			54734	1132	525	502	1102	304	3262	54461		57723
-L- 280+40 TO 289+40 RT	22671	15549			7122	3276	2730		2730		12819	7122		19941
-Y18- 10+11.034 TO 10+31.000	45				45	131		131	151	106				
-Y20- 10+11.029 TO 10+72.980	55				55	553		553	636	581				
SUBTOTAL	22771	15549			7222	3960	2730	684	3517	687	12819	7122		19941
-L- 289+40 TO 298+40 RT	1655				1655	11805		11805	13576	11921				
-D5- 10+14.63 TO 10+57.28	11				11	126		126	145	134				
SUBTOTAL	1666				1666	11931		11931	13721	12055				
-L- 298+40 TO 307+40 RT	54037				54037	3412		3412	3924			50113		50113
-Y25- 10+09.87 TO 10+69.02	136				136	22		22	25			111		111
-D6- 10+11.03 TO 10+42.00	232				232							232		232
-Y26- 11+38.531 TO 12+63.347	768				768	208		208	239			529		529
SUBTOTAL	55173				55173	3642		3642	4188			50985		50985
-L- 307+40 TO 316+40 RT	12989	628			12361	14607	628	13853	16559	3570				
-D18- 10+10.13 TO 10+24.14	9				9							9		9
-Y27- 10+09.917 TO 10+95.550	1183				1183	1230		1230	1415	232				
-D8- 10+48.83 TO 10+58.00	48				48							48		48
-D9- 10+11.03 TO 10+45.00	355				355	25		25	29			326		326
-D16- 10+09.83 TO 10+45.00						133		133	153	153				
-D10- 10+10.00 TO 10+42.52	220				220	1		1	1			219		219
SUBTOTAL	14804	628			14176	15996	628	15242	18157	3955		602		602
-L- 316+40 TO 324+80 RT	1254	56			1198	483	56	416	534			720		720
SUBTOTAL	1254	56			1198	483	56	416	534			720		720
-L- 324+80 TO 333+80 RT	1940				1940	1188		1188	1366			574		574
-Y31- 10+09.841 TO 10+58.994	5				5	173		173	199	194				
SUBTOTAL	1945				1945	1361		1361	1565	194		574		574
-L- 333+80 TO 342+80 RT	1987				1987	118		118	136			1851		1851
-Y34- 10+10.082 TO 10+89.563	118				118	484		484	557	439				
-Y36- 10+09.829 TO 11+39.000	5062				5062	1487		1487	1710			3352		3352
SUBTOTAL	7167				7167	2089		2089	2402	439		5203		5203
-L- 342+80 TO 345+60 RT	7073	1529			5544	1749	1458		1458		72	5544		5616
SUBTOTAL	7073	1529			5544	1749	1458		1458		72	5544		5616
TOTAL RIGHT	269070	29371			239699	101335	12421	86430	111817	62517	16951	202820		219770
SHEET TOTAL:	1185947	366276			819671	170129	26802	137967	185465	103402	339475	764409		1103884
TOTAL:	1185947	366276			819671	170129	26802	137967	185465	103402	339475	764409		1103884
Loss Due to Clearing & Grub	-10000				-10000							-10000		-10000
Rock to Repl. Borrow							74929			-74929	-74929			-74929
Adjustment to Rock Borrow									-28473	-28473				
GRAND TOTAL:	1175947	366276			809671	170129	101731	137967	156992		264545	754409		1018955
SAY:	1176000													

EST. SHALLOW UNDERCUT: 2000 CM
EST. CLASS IV SUBGRADE STABILIZATION: 4300 METRIC TONS
SHOULDER BORROW: 27090 CM

Earthwork quantities are calculated by the Roadway Design Unit. These earthwork quantities are based in part on subsurface data provided by the Geotechnical Engineering Unit.

RDTOSIC

PROJECT REFERENCE NO. | SHEET NO. 36 of 238

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2519A	4 of 238
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

CONST.REV. _____

R/W REV. _____

5 0 10

NAD 83

GARY ADKINS
DB 209 PG 755

CHRISTOPHER WARREN COOPER
DB 288 PG 695

DENNIS WOODY
DB 135 PG 360

ARNOLD MCINTOSH
DB 207 PG 806

GEORGE W. ROBERTS
DB 139 PG 607

MACK WHITSON
DB 220 PG 239

RIVERSIDE BAPTIST CHURCH
DB 164 PG 71

JOHN A. COOPER
DB 137 PG 463

NORMAN J. RABEK
DB 297 PG 205

ESTEL HIGGINS
DB 139 PG 553

BOYD WHEELER
DB 202 PG 672

TANKS
2SBKD
2SF&BK BUS
MTL CANOPY
EXISTING R/W
R/W MON
EIP
DK
225
226
227
POT Sta. 224+30.000
BAPT CHURCH
1SBK
1800mm CONC
900mm CONC
1200mm WD RAIL
REBAR
1SBKD
2SFAPT
WALL
1300mm WD & WW
1300mm WD RAIL
1300mm WW
1S ELEC
MTL GATE
SFD ABAND
CONC
SILO
BST
B
N 81°00'16.0" E -L-
STA. 226+40 -L- BEGIN STATE PROJ. R-2519A
TS Sta. 226+85.636
SC Sta. 227+05.636
MATCHLINE -L- STA. 227+20 SEE SHEET NO. 5

-L-

PIs Sta. 226+85.636	PI Sta. 227+14.312	PIs Sta. 227+42.988
θs = 0° 51' 34.0"	Δ = 0° 29' 49.5" (RT)	θs = 0° 51' 34.0"
Ls = 60.000	L = 17.352	Ls = 60.000
LT = 40.000	T = 8.676	LT = 40.000
ST = 20.000	R = 2,000.000	ST = 20.000
	SE = 03	

FOR -L- PROFILE SEE SHEET 44

METRIC

5 0 10

NAD 83

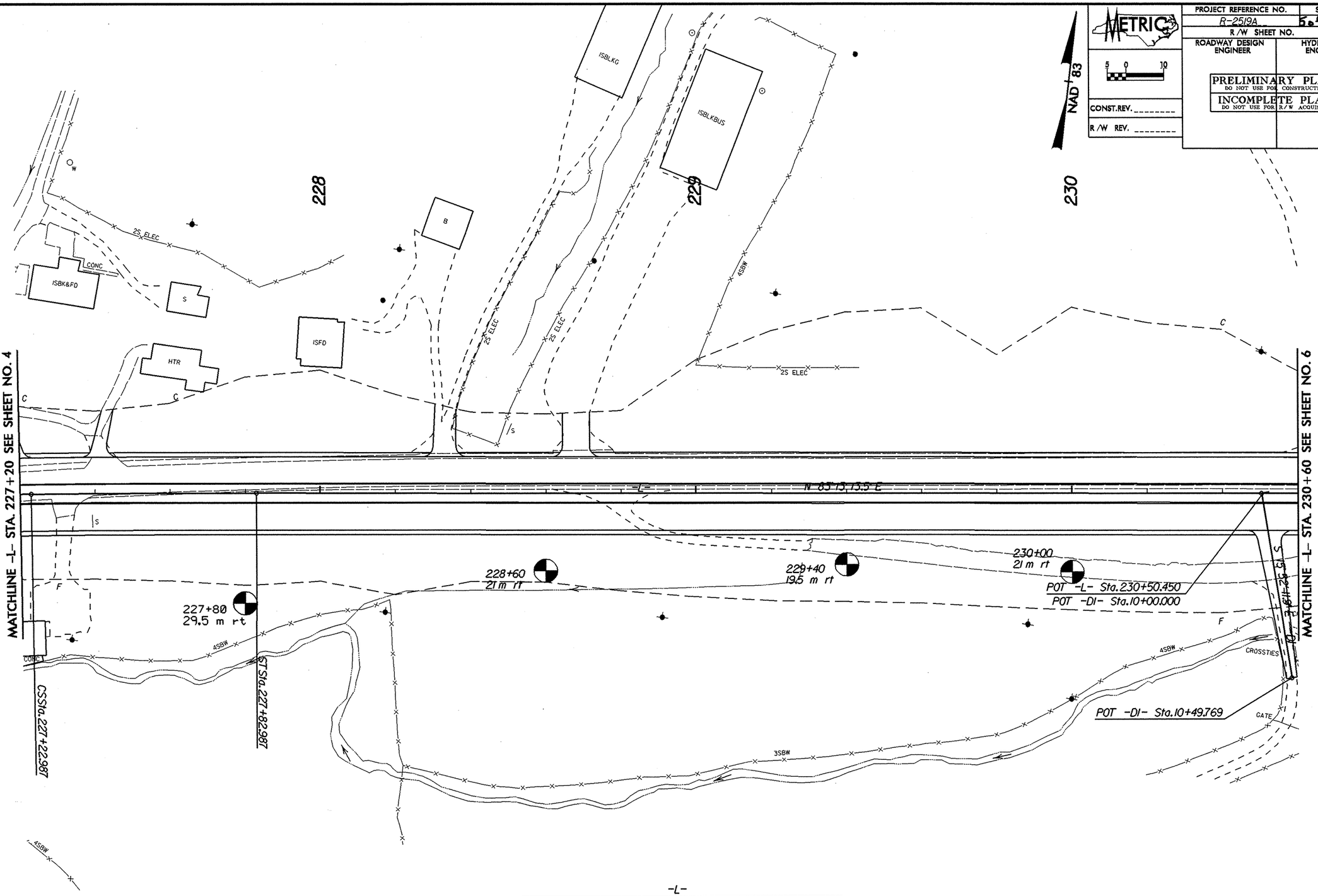
CONST.REV. _____

R/W REV. _____

PROJECT REFERENCE NO.	SHEET NO.
R-2519A	5 of 238
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION



-L-

PIs Sta 226+85.636	PI Sta 227+14.312	PIs Sta 227+42.988
θs = 0°51' 34.0"	Δ = 0°29' 49.5" (RT)	θs = 0°51' 34.0"
Ls = 60.000	L = 17.352	Ls = 60.000
LT = 40.000	T = 8.676	LT = 40.000
ST = 20.000	R = 2,000.000	ST = 20.000
	SE = 03	

FOR -L- PROFILE SEE SHEET 44

METRIC

5 0 10

PROJECT REFERENCE NO.	SHEET NO.
R-2519A	60 OF 238
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

CONST.REV. _____

R/W REV. _____

NAD 83

-L-

PIs Sta. 231+35.483
Θs = 1° 46' 19.3"
Ls = 60.000
LT = 40.002
ST = 20.002

PI Sta. 232+53.744
Δ = 11° 34' 07.8" (RT)
L = 195.857
T = 98.263
R = 970.000
SE = 04

PIs Sta. 233+71.340
Θs = 1° 46' 19.3"
Ls = 60.000
LT = 40.002
ST = 20.002

POT -L- Sta. 233+69.591
POT -Y2- Sta. 10+00.000

231 232 233 234

1½SFD
200mm WD RAIL
WALL
HTR
S
ISFD
800mm WD RAIL
800mm WD WALL
GATE
ISBKO
C
10

MATCHLINE -L- STA. 230+60 SEE SHEET NO. 5

MATCHLINE -L- STA. 234+00 SEE SHEET NO. 7

230+80
29 m rt

233+20
15 m rt

POSSTIES

TSSta. 230+95.481

SCSta. 231+55.481

1200mm CML

† CEM

CSSta. 233+51.338

PCSta. 10+15.711

BEARING BACK = S 1° 02' 00.0" E

HTR

DK

45BM

-Y2-

PI Sta. 10+41.186
Δ = 75° 20' 00.0" (LT)
L = 43.389
T = 25.475
R = 33.000
SE = SEE PLANS

FOR -L- PROFILE SEE SHEET 45
FOR -Y2- PROFILE SEE SHEET 62

METRIC

5 0 10

NAD 83

CONST.REV. _____

R/W REV. _____

PROJECT REFERENCE NO.	SHEET NO.
R-2519A	7 of 236
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

234 235 236 237

-L-

PIs Sta. 231+35.483
Θs = 1° 46' 19.3"
Ls = 60.000
LT = 40.002
ST = 20.002

PI Sta. 232+53.744
Δ = 11° 34' 07.8" (RT)
L = 195.857
T = 98.263
R = 970.000
SE = 04

PIs Sta. 233+71.340
Θs = 1° 46' 19.3"
Ls = 60.000
LT = 40.002
ST = 20.002

-Y3-

PI Sta. 11+05.865
Δ = 32° 48' 03.1" (LT)
L = 114.497
T = 58.865
R = 200.000
SE = SEE PLANS

PT Sta. 11+61.497
BEARING AH = S 23° 48' 26.9" W

MATCHLINE -Y3- STA. 11+40 SEE SHEET NO. 40

POT -L- Sta. 237+14.259
POT -Y3- Sta. 11+81.89
POT -Y4- Sta. 10+00.000

MATCHLINE -L- STA. 234+00 SEE SHEET NO. 6

MATCHLINE -L- 237+40 SEE SHEET NO. 8

-L- S 81° 40' 00.0" E

ST Sta. 234+11.338

-Y2- S 76° 22' 00.0" E

POT/-L- Sta. 236+63.500
POT -D2- Sta. 10+00.000
BEARING AH = S 8° 19' 59.9" W

PC Sta. 10+15.261

PT Sta. 10+33.03

PC Sta. 10+41.07

S 12° 06' 46.8" E -D2-

PC Sta. 10+58.167
BEARING BACK = S 23° 26' 58.4" W

PT Sta. 10+73.025
BEARING AH = S 3° 07' 37.1" W

PC Sta. 10+93.976

PT Sta. 11+21.493
BEARING AH = S 49° 07' 00.9" E

PT Sta. 11+13.352
BEARING AH = S 33° 52' 42.7" E

PC Sta. 11+16.874

PT Sta. 11+31.624
BEARING AH = S 5° 42' 26.4" E

POT -D2- Sta. 11+33.89

-Y4-

END CONST.
POT -Y4- Sta. 11+34.000

POT Sta. 11+38.561

END CONST.
POT -Y2- Sta. 10+83.900

PT Sta. 10+59.00

-Y2-
PI Sta. 10+41.86
Δ = 75° 20' 00.0" (LT)
L = 43.389
T = 25.475
R = 33.000
SE = SEE PLANS

POT Sta. 12+02.780 -Y2-

-D2-

PI Sta. 10+24.278	PI Sta. 10+57.161	PI Sta. 11+04.015	PI Sta. 11+24.401
Δ = 20° 26' 46.7" (LT)	Δ = 15° 14' 23.9" (RT)	Δ = 37° 00' 19.8" (LT)	Δ = 28° 10' 16.3" (RT)
L = 17.843	L = 31.919	L = 19.376	L = 14.750
T = 9.017	T = 16.054	T = 10.039	T = 7.527
R = 50.000	R = 120.000	R = 30.000	R = 30.000
SE = SEE PLANS	SE = SEE PLANS	SE = SEE PLANS	SE = SEE PLANS

-Y4-
PI Sta. 10+94.873
Δ = 72° 33' 59.4" (LT)
L = 63.326
T = 36.706
R = 50.000
SE = SEE PLANS

FOR -L- PROFILE SEE SHEET 45
FOR -Y3- & -Y4- PROFILE SEE SHEET 62

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2519A	8 of 238
R/W SHEET NO.	

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

5 0 10

CONST.REV. _____

R/W REV. _____

NAD 83

MATCHLINE -L- STA. 237+40 SEE SHEET NO. 7

MATCHLINE -L- STA. 240+80 SEE SHEET NO. 9

238 BST

239

240

TS Sta. 238+63.36

SC Sta. 238+63.36

CHURCH

1200mm CONC

1000mm WD RAIL

S 81° 40' 00.1" E

-L-

1600mm WW

238+40
20 m rt

239+20
28 m rt

POC -L- Sta. 239+77.400
POC -D3- Sta. 10+00.000

POT -D3- Sta. 10+46.768

S 20° 50' 34.3" E

ISBLK BUS

BST

GR

2000mm CHL

375mm CMP

EOP
EOT 12 BST
US 19E 7.3 BST
EOT 09 BST
EOP

1800mm CHL

LOADING RAMP

GATE

1200mm WD RAIL

CONC

ISF

ISF& CONC STND

MTL LT

BASEBALL FIELD

BLEACHERS

ISFD

CROSSTIES

W/LT

-L-

PIs Sta 238+43.362	PI Sta 240+68.553	PIs Sta 242+91.981
θs = 0° 57' 17.7"	Δ = 13° 00' 24.4" (LT)	θs = 0° 57' 17.7"
Ls = 60.000	L = 408.620	Ls = 60.000
LT = 40.001	T = 205.192	LT = 40.001
ST = 20.001	R = 1,800.000	ST = 20.001
	SE = 03	

FOR -L- PROFILE SEE SHEET 46

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2519A	9 of 238
R/W SHEET NO.	

5 0 10

CONST.REV. _____

R/W REV. _____

NAD 83

POT Sta.10+00.000

BEGIN CONST.
POT -Y5- Sta.10+17.709

-Y5-
S 11°17'00.0" E

POC -L- Sta.241+20.206
POT -Y5- Sta.11+05.916

ROCK

CSSta.242+71.981

ST Sta.243+31.981

N 83°25'00.0" E

241 242 243 244

SR 1186 W BURNSVILLE CHURCH CREEK RD 5.9 BST

US 19E 7.3 BST

MATCHLINE -L- STA. 240+80 SEE SHEET NO. 8

MATCHLINE -L- STA. 244+20 SEE SHEET NO. 10

PCSta.11+46.648

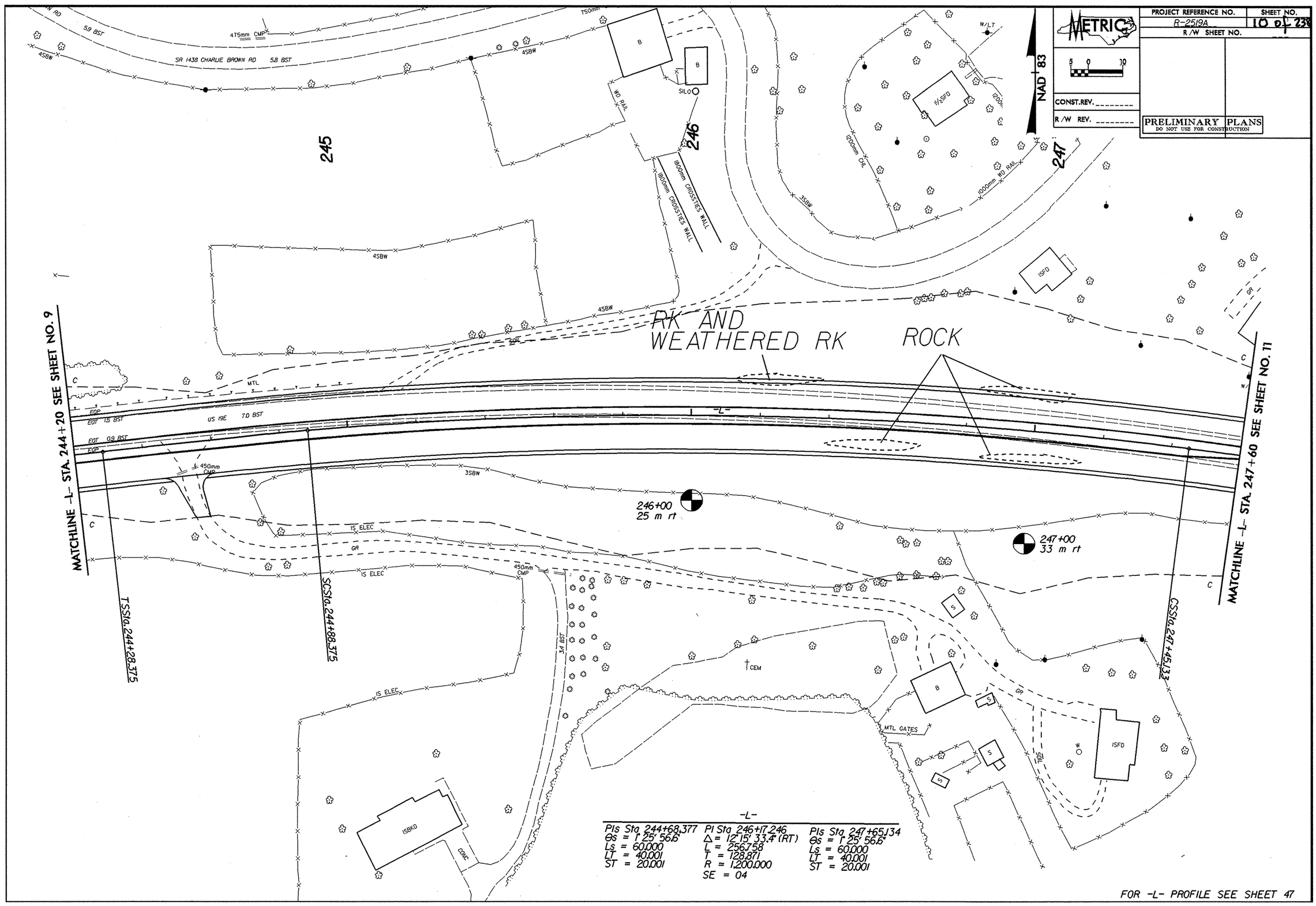
END CONST.
POC -Y5- Sta.11+93.760
PTSta.12+13.808

-Y5-
PI Sta 11+80.449
Δ = 16°02'00.0" (LT)
L = 67.160
T = 33.801
R = 240.000
SE = SEE PLANS

-L-

PIs Sta 238+43.362	PI Sta 240+68.553	PIs Sta 242+91.981
Θs = 0°57'17.7"	Δ = 13°00'24.4" (LT)	Θs = 0°57'17.7"
Ls = 60.000	L = 408.620	Ls = 60.000
LT = 40.001	T = 205.192	LT = 40.001
ST = 20.001	R = 1,800.000	ST = 20.001
	SE = 03	

FOR -L- PROFILE SEE SHEET 46
FOR -Y5- PROFILE SEE SHEET 63



METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
10 of 238
R/W SHEET NO.
CONST.REV.
R/W REV.
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
NAD 83
245
246
247
SR 1438 CHARLIE BROWN RD 5.8 BST
475mm CMP
750mm
WD RAIL
SILO
1800mm CROSSTIES WALL
1200mm CHL
1000mm WD RAIL
1½SFD
ISFD
RK AND
WEATHERED RK
ROCK
MATCHLINE -L- STA. 244+20 SEE SHEET NO. 9
MATCHLINE -L- STA. 247+60 SEE SHEET NO. 11
US 19E 7.0 BST
EOT 1.5 BST
EOT 0.9 BST
450mm CMP
3SBW
IS ELEC
GR
246+00
25 m rt
247+00
33 m rt
TSSta.244+28.375
SCSta.244+88.375
CSSta.247+45.133
3.4 BST
CEM
MTL GATES
ISBKD
CONC
-L-
PIs Sta 244+68.377
Θs = 1° 25' 56.6"
Ls = 60.000
LT = 40.001
ST = 20.001
PI Sta 246+17.246
Δ = 12° 15' 33.4" (RT)
L = 256.758
T = 128.871
R = 1,200.000
SE = 04
PIs Sta 247+65.134
Θs = 1° 25' 56.6"
Ls = 60.000
LT = 40.001
ST = 20.001
FOR -L- PROFILE SEE SHEET 47

PROJECT REFERENCE NO.	SHEET NO.
R-2519A	11 OF 238
R/W SHEET NO.	

METRIC

5 0 10

CONST.REV. _____

R/W REV. _____

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83

POT Sta.10+00.000

SR 1439 CHARLIE BROWN RD 6.2 BST

-Y6-

BEGIN CONST.
POT -Y6- Sta.10+50.340

S 16° 56' 00.0" E

248

249

250

251

TREE FARM

ISBKD

ISFD

750mm CONC

450mm CMP

POT -L- Sta.248+51.546
POT -Y6- Sta.11+40.997

TS Sta.249+68.230

SC Sta.250+28.230

MTL

US 19E

BST

S 81° 27' 33.3" E

-L-

GR

MATCHLINE -L- STA. 247+60 SEE SHEET NO. 10

MATCHLINE -L- STA. 251+00 SEE SHEET NO. 12

450mm CMP

3SBW

St Sta.248+05.33

HTR

HTRBUS

W/LT

750mm CMP

1100mm BLK WALL

FUEL TANKS

CONC

ISFD

600mm CONC

ISBLKBUS

SR 1139 PINE SWAMP RD

N 87° 12' 00.0" W

SR 1196 W BURNSVILLE CHURCH CREEK RD 7.0 BST

2.8 BST

POT Sta.11+80.420 -Y7-

PIs Sta 244+68.377	PI Sta 246+17.246	PIs Sta 247+65.134	PIs Sta 250+08.231	PI Sta 250+89.963	PIs Sta 251+71.604
θs = 1° 25' 56.6"	Δ = 12° 15' 33.4" (RT)	θs = 1° 25' 56.6"	θs = 1° 19' 20.0"	Δ = 5° 26' 15.0" (LT)	θs = 1° 19' 20.0"
Ls = 60.000	L = 256.758	Ls = 60.000	Ls = 60.000	L = 123.373	Ls = 60.000
LT = 40.001	T = 128.871	LT = 40.001	LT = 40.001	T = 61.733	LT = 40.001
ST = 20.001	R = 1,200.000	ST = 20.001	ST = 20.001	R = 1,300.000	ST = 20.001
	SE = 04			SE = 04	

FOR -L- PROFILE SEE SHEET 47
FOR -Y6- PROFILE SEE SHEET 63

PROJECT REFERENCE NO.	SHEET NO.
R-2519A	12 of 238
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

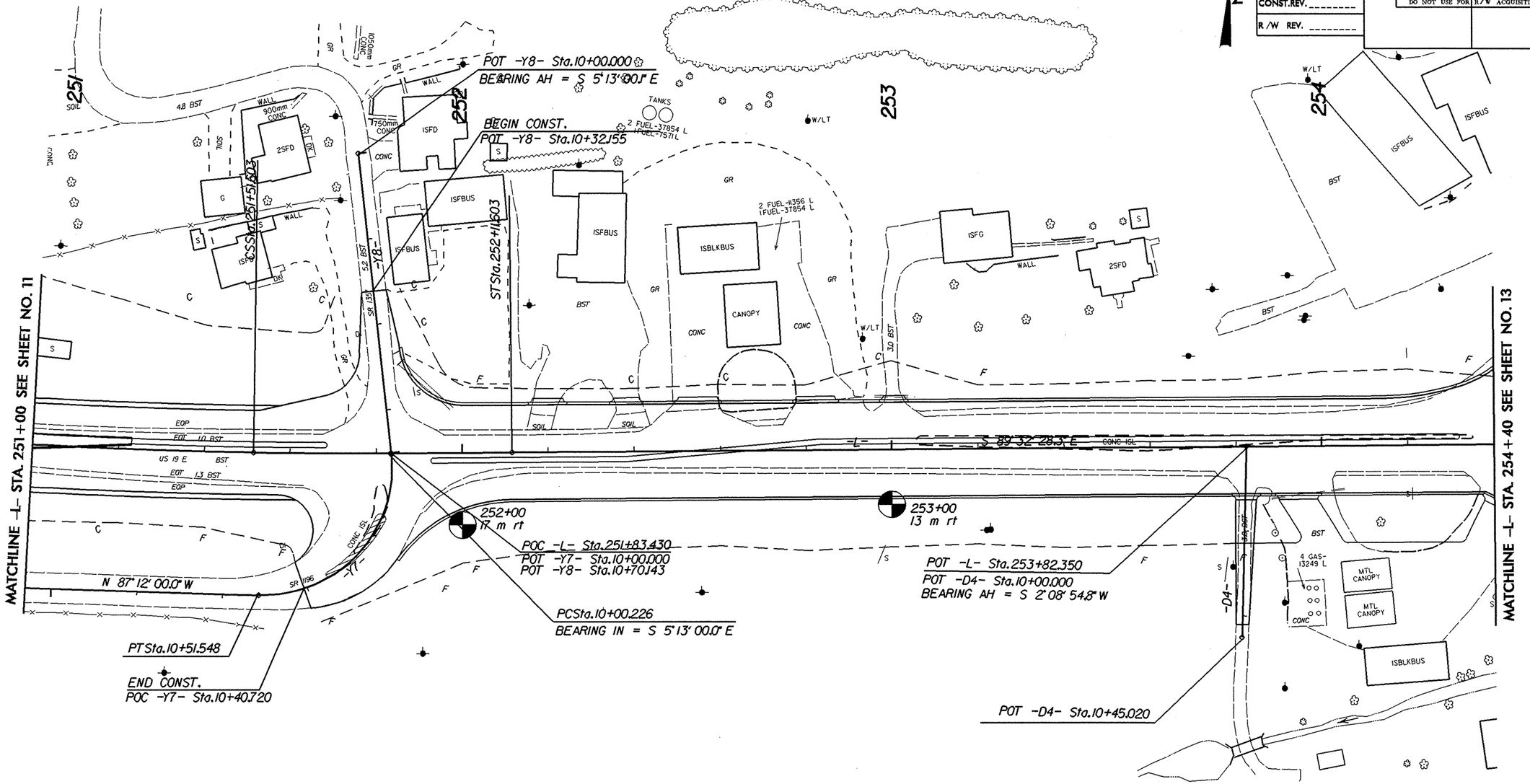
CONST.REV. _____

R/W REV. _____

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

NAD 83



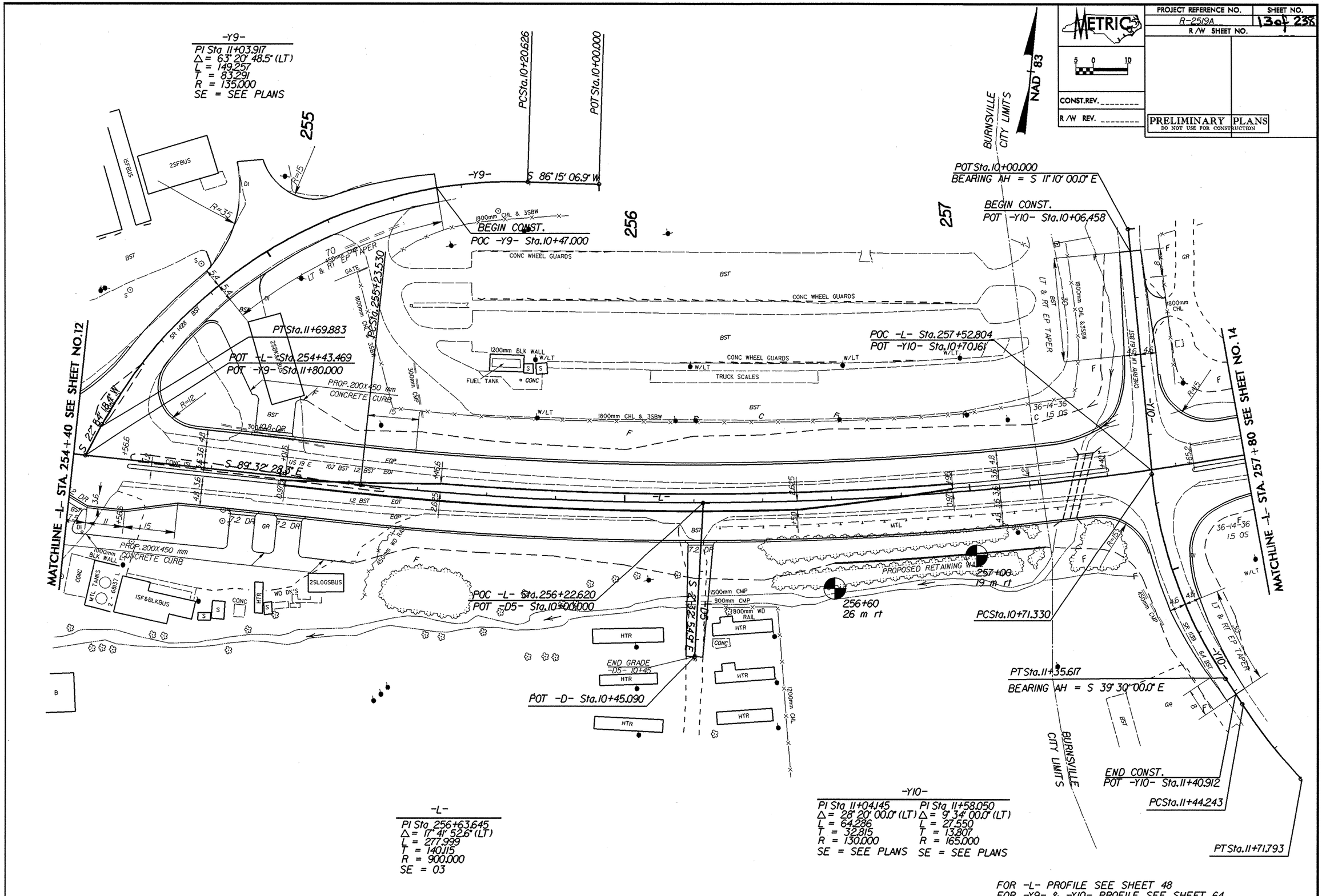
-Y7-

PI Sta 10+34.741
Δ = 98°01'00.0" (RT)
L = 51.321
T = 34.521
R = 30.000
SE = SEE PLANS

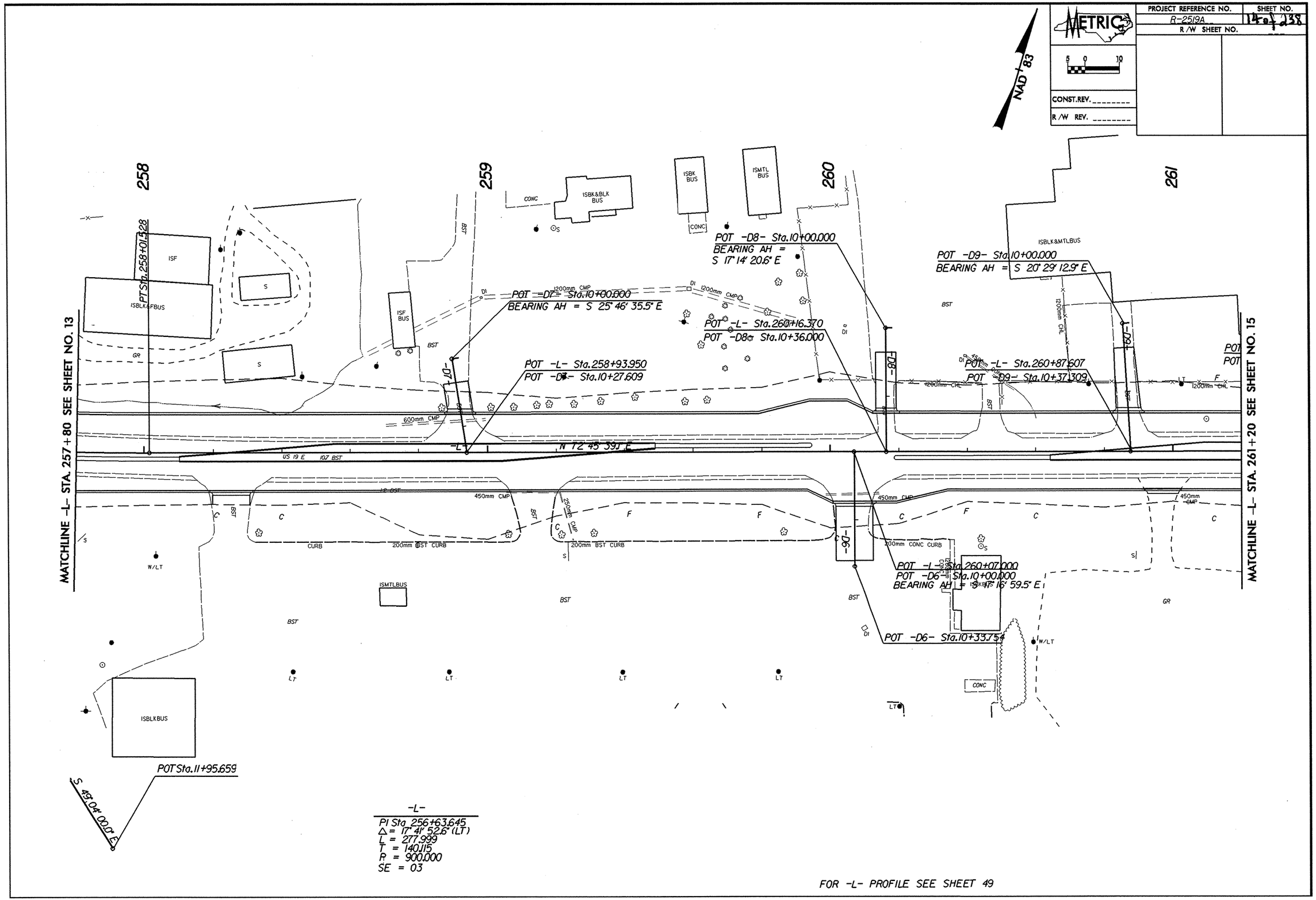
-L-

PIs Sta 250+08.231	PI Sta 250+89.963	PIs Sta 251+71.604
θs = 1°19'20.0"	Δ = 5°26'15.0" (LT)	θs = 1°19'20.0"
Ls = 60.000	L = 123.373	Ls = 60.000
LT = 40.001	T = 61.733	LT = 40.001
ST = 20.001	R = 1,300.000	ST = 20.001
	SE = 04	

FOR -L- PROFILE SEE SHEET 48
FOR -Y7- PROFILE SEE SHEET 63
FOR -Y8- PROFILE SEE SHEET 64



METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
13 of 238
R/W SHEET NO.
CONST.REV.
R/W REV.
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
NAD 83
-Y9-
PI Sta 11+03.917
Δ = 63° 20' 48.5" (LT)
L = 149.257
T = 83.291
R = 135.000
SE = SEE PLANS
PCSta.10+20.626
POT Sta.10+00.000
S 86° 15' 06.9" W
BEGIN CONST.
POC -Y9- Sta.10+47.000
POT Sta.10+00.000
BEARING AH = S 11° 10' 00.0" E
BEGIN CONST.
POT -Y10- Sta.10+06.458
PT Sta.11+69.883
POT -L- Sta.254+43.469
POT -Y9- Sta.11+80.000
PCSta.255+23.530
POC -L- Sta.257+52.804
POT -Y10- Sta.10+70.161
PROP. 200X450 mm CONCRETE CURB
S 89° 32' 28.3" E
S 22° 54' 18.4" W
MATCHLINE -L- STA. 254+40 SEE SHEET NO.12
MATCHLINE -L- STA. 257+80 SEE SHEET NO. 14
POC -L- Sta.256+22.620
POT -D5- Sta.10+00.000
S 2° 32' 54.9" E
END GRADE -D5- 10+45
POT -D- Sta.10+45.090
256+60
26 m rt
257+00
19 m rt
PROPOSED RETAINING WALL
PCSta.10+71.330
PT Sta.11+35.617
BEARING AH = S 39° 30' 00.0" E
END CONST.
POT -Y10- Sta.11+40.912
PCSta.11+44.243
PT Sta.11+71.793
BURNSVILLE CITY LIMITS
-L-
PI Sta 256+63.645
Δ = 17° 41' 52.6" (LT)
L = 277.999
T = 140.115
R = 900.000
SE = 03
-Y10-
PI Sta 11+04.145
Δ = 28° 20' 00.0" (LT)
L = 64.286
T = 32.815
R = 130.000
SE = SEE PLANS
PI Sta 11+58.050
Δ = 9° 34' 00.0" (LT)
L = 27.550
T = 13.807
R = 165.000
SE = SEE PLANS
FOR -L- PROFILE SEE SHEET 48
FOR -Y9- & -Y10- PROFILE SEE SHEET 64



METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
14 of 238
R/W SHEET NO.
CONST.REV.
R/W REV.
NAD 83
258
259
260
261
MATCHLINE -L- STA. 257+80 SEE SHEET NO. 13
MATCHLINE -L- STA. 261+20 SEE SHEET NO. 15
PT Sta. 258+01.528
POT -D7- Sta.10+00.000
BEARING AH = S 25° 46' 35.5" E
POT -D8- Sta.10+00.000
BEARING AH = S 17° 14' 20.6" E
POT -D9- Sta.10+00.000
BEARING AH = S 20° 29' 12.9" E
POT -L- Sta.260+16.370
POT -D8- Sta.10+36.000
POT -L- Sta.258+93.950
POT -D7- Sta.10+27.609
POT -L- Sta.260+87.607
POT -D9- Sta.10+37.309
POT -L- Sta.260+07.000
POT -D6- Sta.10+00.000
BEARING AH = S 17° 16' 59.5" E
POT -D6- Sta.10+33.754
POT Sta.11+95.659
S 49° 04' 00.0" E
N 72° 45' 39.1" E
US 19 E
107 BST
ISBLK&FBUS
ISF
ISF BUS
ISBK&BLK BUS
ISBK BUS
ISMTL BUS
ISBLK&MTLBUS
ISMTLBUS
ISBLKBUS
CONC
1200mm CMP
600mm CMP
450mm CMP
250mm CMP
200mm BST CURB
200mm CONC CURB
1200mm CHL
-L-
PI Sta 256+63.645
Δ = 17° 41' 52.6" (LT)
L = 277.999
T = 140.115
R = 900.000
SE = 03
FOR -L- PROFILE SEE SHEET 49

METRIC

5 0 10

CONST.REV. _____

R/W REV. _____

PROJECT REFERENCE NO.	SHEET NO.
R-2519A	15 of 238
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

NAD 83

262

263

264

BEGIN CONST.
POT -Y11- Sta.10+26.868

POT Sta.10+00.000

POT -D10- Sta.10+00.000

POT -D11- Sta.10+00.000

POT -L- Sta.261+89.441
POT -D11- Sta.10+36.000

POT -L- Sta.262+64.905
POT -Y11- Sta.10+69.081

-L- Sta.261+61.733
-D10- Sta.10+36.000

N 72° 45' 39" E -L-

S 17° 14' 21" E -D10-

S 17° 14' 19" E -D11-

S 13° 54' 00" E -Y11-

POT -L- Sta.263+00.368
POT -D12- Sta.10+00.000
BEARING AH = S 9° 58' 10.4" E

POT -D12- Sta.10+20.477

PC Sta.263+20.277

POT Sta.11+44.400

END CONST.
POT -Y11- Sta.11+38.355

MATCHLINE -L- STA. 261+20 SEE SHEET NO. 14

MATCHLINE -L- STA. 264+60 SEE SHEET NO. 16

-L-
PI Sta 263+94.812
Δ = 4° 16' 06.9" (RT)
L = 149.002
T = 74.535
R = 2,000.000
SE = 02

FOR -L- PROFILE SEE SHEET 49
FOR -Y11- PROFILE SEE SHEET 65

PROJECT REFERENCE NO. R-2519A | SHEET NO. 16 OF 238

R/W SHEET NO.

ROADWAY DESIGN ENGINEER | HYDRAULICS ENGINEER

METRIC

CONST.REV. ________

R/W REV. ________

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

-Y12-

PI Sta 10+43.410	PI Sta 11+06.115
Δ = 24° 52' 00.0" (LT)	Δ = 7° 32' 00.0" (RT)
L = 19.530	L = 32.870
T = 9.921	T = 16.459
R = 45.000	R = 250.000
SE = SEE PLANS	SE = SEE PLANS

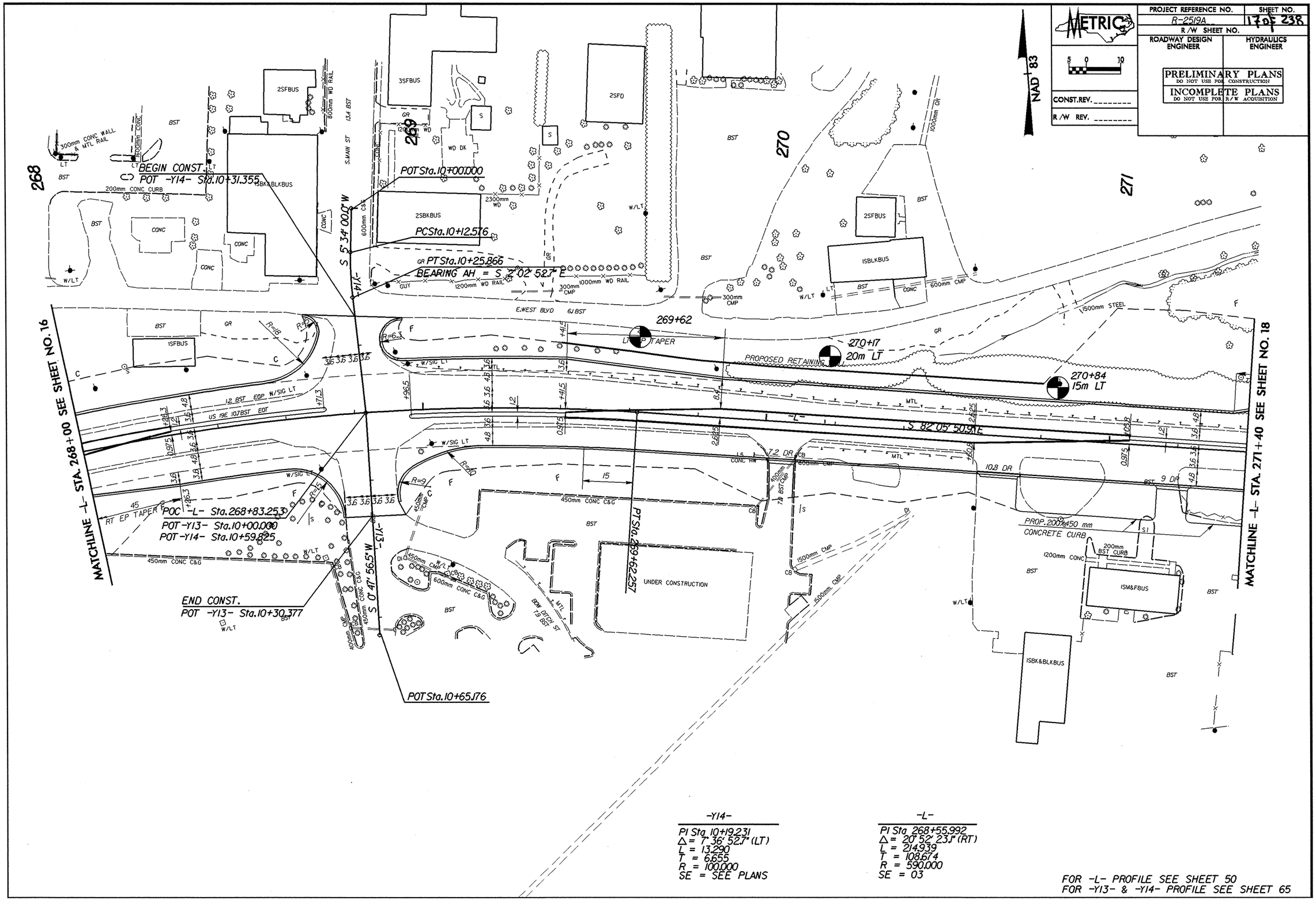
-L-

PI Sta 263+94.812	PI Sta 268+55.992
Δ = 4° 16' 06.9" (RT)	Δ = 20° 52' 23.1" (RT)
L = 149.002	L = 214.939
T = 74.535	T = 108.674
R = 2,000.000	R = 590.000
SE = 02	SE = 03

FOR -L- PROFILE SEE SHEET 50
FOR -Y12- PROFILE SEE SHEET 65

$$$$SYSTIME$$$$ $$$$DGN$$$$ $$$$USERNAME$$$$

8/17/99



METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
17 of 238
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
CONST.REV.
R/W REV.
NAD 83
268
269
270
271
BEGIN CONST.
POT -Y14- Sta.10+31.355
POT Sta.10+00.000
PC Sta.10+12.576
PT Sta.10+25.866
BEARING AH = S 2°02'52.7" E
S 5°34'00.0" W
269+62
270+17
20m LT
270+84
15m LT
PROPOSED RETAINING
S 82°05'50.9" E
MATCHLINE -L- STA. 268+00 SEE SHEET NO. 16
MATCHLINE -L- STA. 271+40 SEE SHEET NO. 18
POC -L- Sta.268+83.253
POT -Y13- Sta.10+00.000
POT -Y14- Sta.10+59.825
END CONST.
POT -Y13- Sta.10+30.377
POT Sta.10+65.176
S 0°47'56.5" W
PT Sta.269+62.257
UNDER CONSTRUCTION
PROP. 200x450 mm
CONCRETE CURB
-Y14-
PI Sta 10+19.231
Δ = 7°36'52.7" (LT)
L = 13.290
T = 6.655
R = 100.000
SE = SEE PLANS
-L-
PI Sta 268+55.992
Δ = 20°52'23.1" (RT)
L = 214.939
T = 108.674
R = 590.000
SE = 03
FOR -L- PROFILE SEE SHEET 50
FOR -Y13- & -Y14- PROFILE SEE SHEET 65

METRIC

5 0 10

CONST.REV. _____

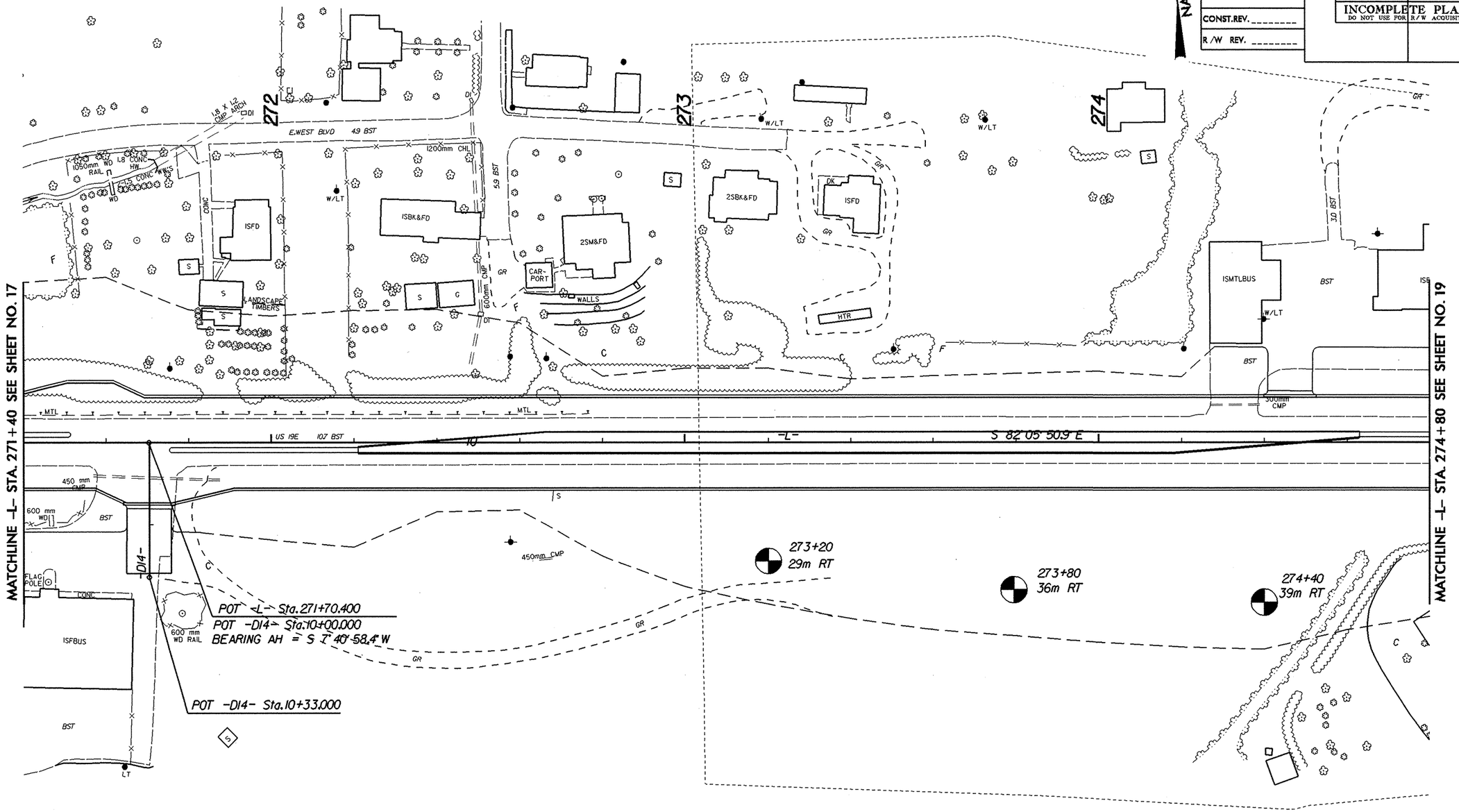
R/W REV. _____

NAD 83

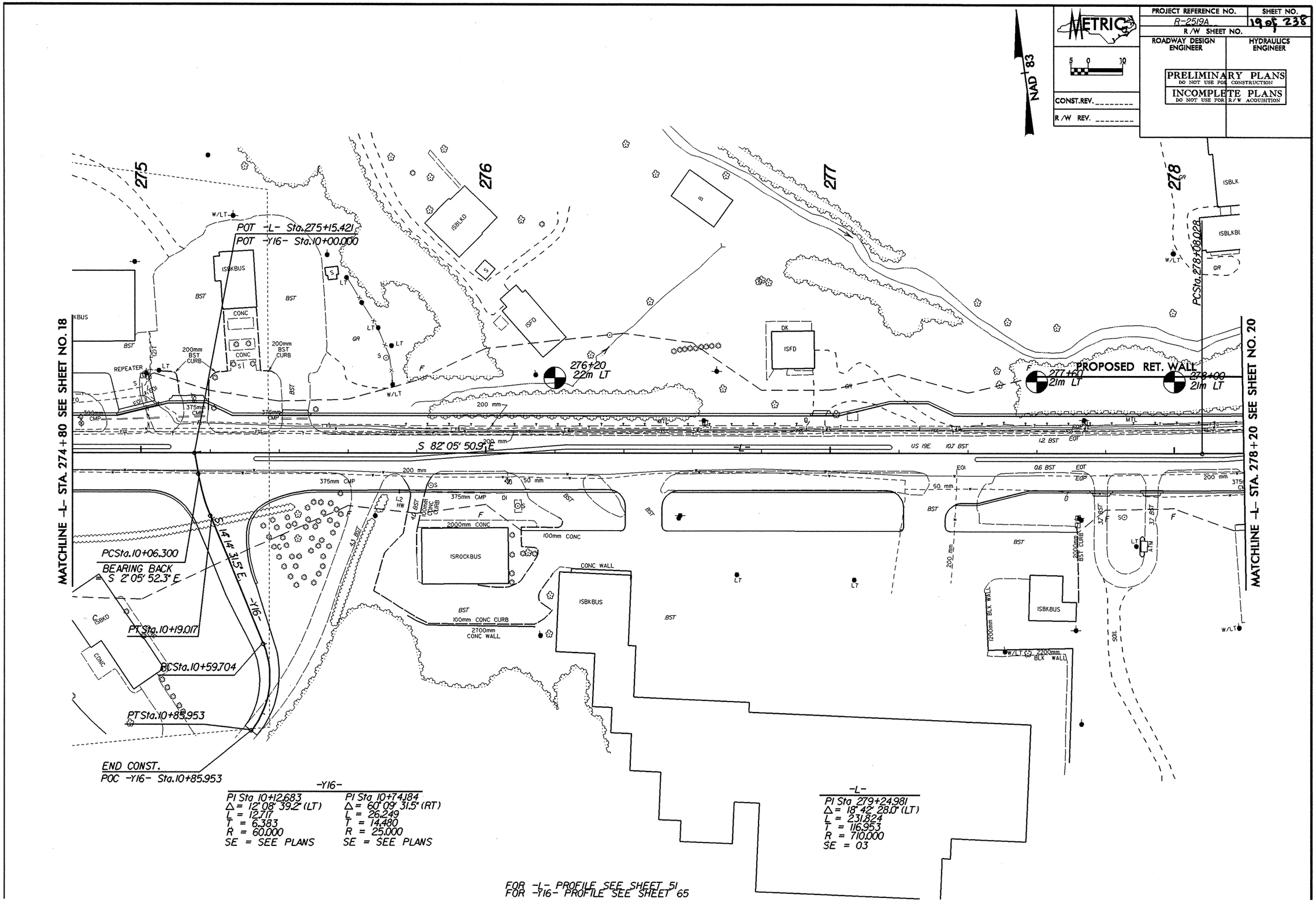
PROJECT REFERENCE NO.	SHEET NO.
R-2519A	18 of 238
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION



FOR -L- PROFILE SEE SHEET 51



METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
19 of 238
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
CONST.REV.
R/W REV.
NAD 83
275
276
277
278
POT -L- Sta.275+15.421
POT -Y16- Sta.10+00.000
276+20
22m LT
277+60
21m LT
278+00
21m LT
PROPOSED RET. WALL
PCSta.278+08.028
MATCHLINE -L- STA. 274+80 SEE SHEET NO. 18
MATCHLINE -L- STA. 278+20 SEE SHEET NO. 20
S 82° 05' 50.9" E
-L-
PCSta.10+06.300
BEARING BACK
S 2° 05' 52.3" E
PTSta.10+19.017
PCSta.10+59.704
PTSta.10+85.953
END CONST.
POC -Y16- Sta.10+85.953
S 14° 14' 31.5" E
-Y16-
ISROCKBUS
ISBKBUS
ISFD
ISBLKD
ISBLKBUS
CONC WALL
100mm CONC CURB
2700mm CONC WALL
2000mm CONC
100mm CONC
375mm CMP
200mm BST CURB
REPEATER
1200mm BLK WALL
2200mm BLK WALL
US 19E
-Y16-
PI Sta 10+12.683
Δ = 12° 08' 39.2" (LT)
L = 12.717
T = 6.383
R = 60.000
SE = SEE PLANS
PI Sta 10+74.184
Δ = 60° 09' 31.5" (RT)
L = 26.249
T = 14.480
R = 25.000
SE = SEE PLANS
-L-
PI Sta 279+24.981
Δ = 18° 42' 28.0" (LT)
L = 231.824
T = 116.953
R = 710.000
SE = 03
FOR -L- PROFILE SEE SHEET 51
FOR -Y16- PROFILE SEE SHEET 65

PROJECT REFERENCE NO.	SHEET NO.
R-2519A	20 of 23
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

CONST.REV. _____

R/W REV. _____

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

NAD 83

-Y17-

PI Sta 10+54.183
Δ = 15° 50' 00.0" (RT)
L = 45.597
T = 22.945
R = 165.000
SE = SEE PLANS

PI Sta 11+31.039
Δ = 24° 06' 00.0" (RT)
L = 60.991
T = 30.953
R = 145.000
SE = SEE PLANS

PI Sta 12+03.510
Δ = 2° 22' 00.0" (RT)
L = 41.306
T = 20.656
R = 1,000.000
SE = SEE PLANS

BEGIN CONST.
POT -Y17- Sta.*******

POT Sta.10+00.000

PC Sta.10+31.839

POC -L- Sta.279+42.984
POT -Y17- Sta.10+88.788

279+30
39m LT

PT Sta.10+76.835

PC Sta.11+00.086

279+60
23m LT

PT Sta.280+39.852

S 0° 23' 00.0" W

N 79° 11' 41.1" E

-L-

PROP. RET. WALL

PROP. RET. WALL

MATCHLINE -L- STA. 278+20 SEE SHEET NO. 19

MATCHLINE -L- STA. 281+60 SEE SHEET NO. 21

MATCHLINE -Y17- STA. 11+60 SEE SHEET NO. 41

ROCK

279

280

281

BUS

JS

BST

ISD

1950mm STONE

BENS CRK RD SR 1402

5.5 BST

W/L

US 19E

107 BST

EOT

0.9 BST

0.6 BST

7.3 BST

600mm CMP

375mm CMP

150mm CONC CURB

ISBKBUS

1400mm CONC

CONC

MTL CANOPY

GAS

1324.9

ISBL.KBUS

1200mm CMP

CONC. HW

6.1 BST

ISFBUS

1800mm CHL

HTR

HTRBUS

W/LT

W/SIGLT

2-3.8 W LB RCBC

GR

4SBW

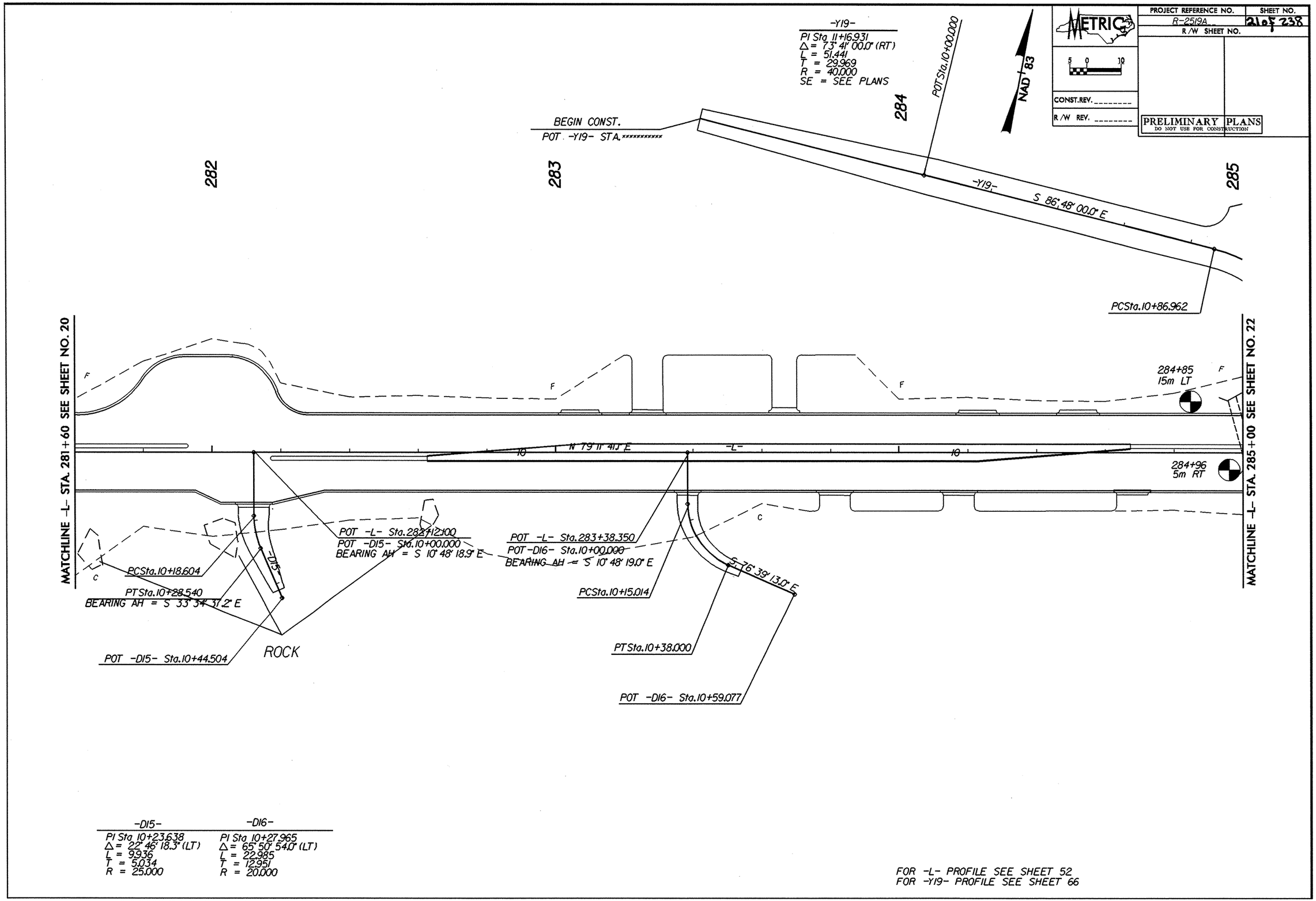
ISBL.K&FBUS

2SBL.K&FBUS

1500mm CMP

450mm CMP

-L-
PI Sta 279+24.981
Δ = 18° 42' 28.0" (LT)
L = 231.824
T = 116.953
R = 710.000
SE = 03



PROJECT REFERENCE NO.
R-2519A
SHEET NO.
21 of 238
R/W SHEET NO.
METRIC
5 0 10
CONST.REV.
R/W REV.
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
-Y19-
PI Sta 11+16.931
Δ = 73° 41' 00.0" (RT)
L = 51.441
T = 29.969
R = 40.000
SE = SEE PLANS
POT Sta.10+00.000
NAD 83
BEGIN CONST.
POT -Y19- STA.xxxxxxxxxxx
282
283
284
285
-Y19-
S 86° 48' 00.0" E
PC Sta.10+86.962
MATCHLINE -L- STA. 281+60 SEE SHEET NO. 20
MATCHLINE -L- STA. 285+00 SEE SHEET NO. 22
284+85
15m LT
284+96
5m RT
N 79° 11' 41.1" E
-L-
POT -L- Sta.282+12.100
POT -D15- Sta.10+00.000
BEARING AH = S 10° 48' 18.9" E
POT -L- Sta.283+38.350
POT -D16- Sta.10+00.000
BEARING AH = S 10° 48' 19.0" E
PC Sta.10+18.604
PT Sta.10+28.540
BEARING AH = S 33° 34' 37.2" E
-D15-
ROCK
POT -D15- Sta.10+44.504
PC Sta.10+15.014
S 76° 39' 13.0" E
PT Sta.10+38.000
POT -D16- Sta.10+59.077
-D15-
PI Sta 10+23.638
Δ = 22° 46' 18.3" (LT)
L = 9.936
T = 5.034
R = 25.000
-D16-
PI Sta 10+27.965
Δ = 65° 50' 54.0" (LT)
L = 22.985
T = 12.951
R = 20.000
FOR -L- PROFILE SEE SHEET 52
FOR -Y19- PROFILE SEE SHEET 66

METRIC

5 0 10

CONST.REV. _____

R/W REV. _____

PROJECT REFERENCE NO.	SHEET NO.
R-2519A	22 of 238
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

FOR -L- PROFILE SEE SHEET 53
FOR -Y18- & -Y19- PROFILE SEE SHEET 66
FOR -Y20- PROFILE SEE SHEET 67

-Y19-
PI Sta 11+16.931
Δ = 73° 41' 00.0" (RT)
L = 51.441
T = 29.969
R = 40.000
SE = SEE PLANS

-D16-
PI Sta 10+32.324
Δ = 74° 46' 34.7" (RT)
L = 26.102
T = 15.285
R = 20.000

PT Sta. 11+38.402

PC Sta. 10+17.040

POT -D17- Sta. 10+00.000

PC Sta. 285+86.257

PT Sta. 10+43.142

POT -D17- Sta. 10+61.585

POC -L- Sta. 285+87.180

BEARING BACK = S 10° 47' 53.7" E

S 85° 34' 28.4" E

-D17-

S 13° 07' 00.0" E

N 79° 11' 41.1" E

MATCHLINE -L- STA. 285+00 SEE SHEET NO. 21

MATCHLINE -L- STA. 288+40 SEE SHEET NO. 23

NAD 83

285

286

287

288

BURNSVILLE CITY LIMITS

2SMTLBUS

HTRBUS

ISMTL& RKBUS

MTL STOR TANK

CANOPY

GATE

ROCK BORDER

CONC STEPS

BUS

US 19E

US 19 E BUS

SR 1140

SR 1201

2100mm CHL & 3SBW

1750mm CHL & 3SBW

1350mm CONC

1200mm CMP

300mm CMP

750mm WD RAIL

600mm BLKWALL

1.2 BK HW

1.6 ROCK HW

200mm AST CURB

POT -L- Sta. 285+23.067
POT -Y18- Sta. 10+00.000
POT -Y19- Sta. *****

END CONST.
POT -Y18- Sta. 10+46.064
BEARING BACK = S 13° 07' 00.0" E

POT Sta. 10+54.069

-L-
PI Sta 286+87.870
Δ = 18° 55' 06.6" (LT)
L = 201.416
T = 101.633
R = 610.000
SE = 0.3

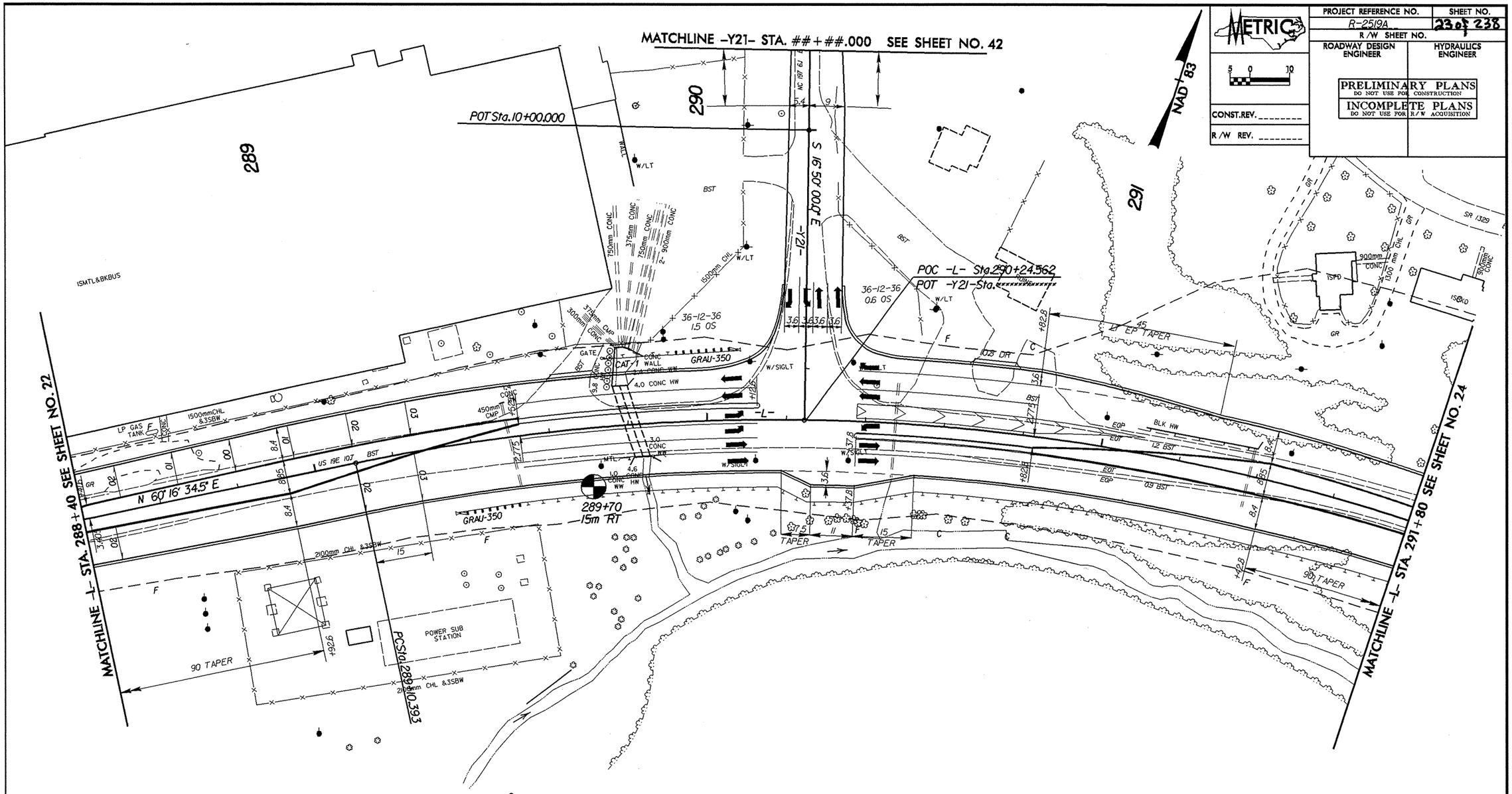
POC -L- Sta. 287+35.854
POT -Y20- Sta. 10+00.000

PT Sta. 287+87.653

S 26° 20' 00.0" E

END CONST.
POT -Y20- Sta. 10+72.980

POT Sta. 10+75.992



-L-
PI Sta 292+26.933
Δ = 63° 09' 11.2" (RT)
L = 567.648
T = 316.540
R = 515.000
SE = 0.03

FOR -L- PROFILE SEE SHEET 53
FOR -Y21- PROFILE SEE SHEET 67

METRIC

5 0 10

CONST.REV. _____

R/W REV. _____

PROJECT REFERENCE NO.	SHEET NO.
R-2519A	24 of 238
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

NAD 83

292

293

294

295

MATCHLINE -L- STA. 291+80 SEE SHEET NO. 23

MATCHLINE -L- STA. 295+20 SEE SHEET NO. 25

POT Sta.10+00.000
BEARING AH = S 7° 15' 00.0" W

BEGIN CONST.
POT -Y22- Sta.10+03.955

POC -L- Sta.293+34.800
POT -D18- Sta.10+00.000
BEARING AH = S 11° 29' 35.8" W

POC -L- Sta.294+54.665
POT -Y22- Sta.10+77.238

POC -L- Sta.294+63.040
POT -D20- Sta.10+00.000
BEARING AH = S 31° 45' 37.2" W

POC Sta.10+09.157

PT Sta.10+29.410
BEARING AH = S 11° 31' 01.1" E

PC Sta.10+33.946

PT Sta.10+43.161

POT -D18- Sta.10+59.796

POC -L- Sta 293+89.760
POT -D19- Sta.10+00.000
BEARING AH = S 23° 36' 27.5" W

POT -D19- Sta.10+30.000

POT -D20- Sta.10+30.000

PT Sta 294+78.042

S 56° 34' 14.3" E

S 01° 52' 25.1" E

-L-
PI Sta 292+26.933
Δ = 63° 09' 11.2" (RT)
L = 567.648
T = 316.540
R = 515.000
SE = 0.03

-D18-

PI Sta 10+19.505	PI Sta 10+38.567
Δ = 29° 00' 36.9" (LT)	Δ = 10° 33' 36.0" (RT)
L = 20.253	L = 9.215
T = 10.349	T = 4.621
R = 40.000	R = 50.000

FOR -L- PROFILE SEE SHEET 54
FOR -Y22- PROFILE SEE SHEET 67

METRIC

5 0 10

CONST.REV. _____

R/W REV. _____

PROJECT REFERENCE NO.	SHEET NO.
R-2519A	25 of 238
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

NAD 83

-Y23-
PI Sta. 10+21.672
Δ = 2° 26' 30.5" (LT)
L = 17.047
T = 8.525
R = 400.000
SE = SEE PLANS

MATCHLINE -L- STA. 295+20 SEE SHEET NO. 24

MATCHLINE -L- STA. 298+60 SEE SHEET NO. 26

POT Sta.10+00.000
BRG AH = S 16° 04' 30.5" W

PC Sta.10+13.147

PT Sta.10+30.194
BRG AH = S 13° 38' 00.0" W

BEGIN CONST
POC -Y23- Sta.10+37.000

POT -L- Sta.296+25.000
POT -D23- Sta.10+00.000
BEARING AH = S 33° 25' 46.1" W

POT -L- Sta.296+16.540
POT -D22- Sta.10+00.000
BEARING AH = S 33° 25' 45.7" W

POT -L- Sta.295+60.000
POT -D21- Sta.10+00.000
BEARING AH
= S 33° 25' 52.5" W

POT -L- Sta.296+43.300
POT -D24- Sta.10+00.000
BEARING AH = S 32° 45' 18.1" W

POC -L- Sta.297+71.045
POT -Y23- Sta.10+88.792

POC -L- Sta.296+72.
POT -D25- Sta.10+00.000
BEARING AH = S 31° 39' 09.3" W

POC -L- Sta.297+75.300
POT -D26- Sta.10+00.000
BEARING AH = S 27° 42' 46.9" W

POT Sta.10+35.000

PC Sta.10+13.680

PT Sta.10+30.277

POT -D21- Sta.10+52.777

POT -D22- Sta.10+28.368

PC Sta.10+19.493

PT -D23- Sta.10+30.531

PC Sta.10+21.499

PT -D24- Sta.10+29.382

POT -D25- Sta.10+26.397

S 14° 06' 52.8" E

S 56° 34' 14.3" E

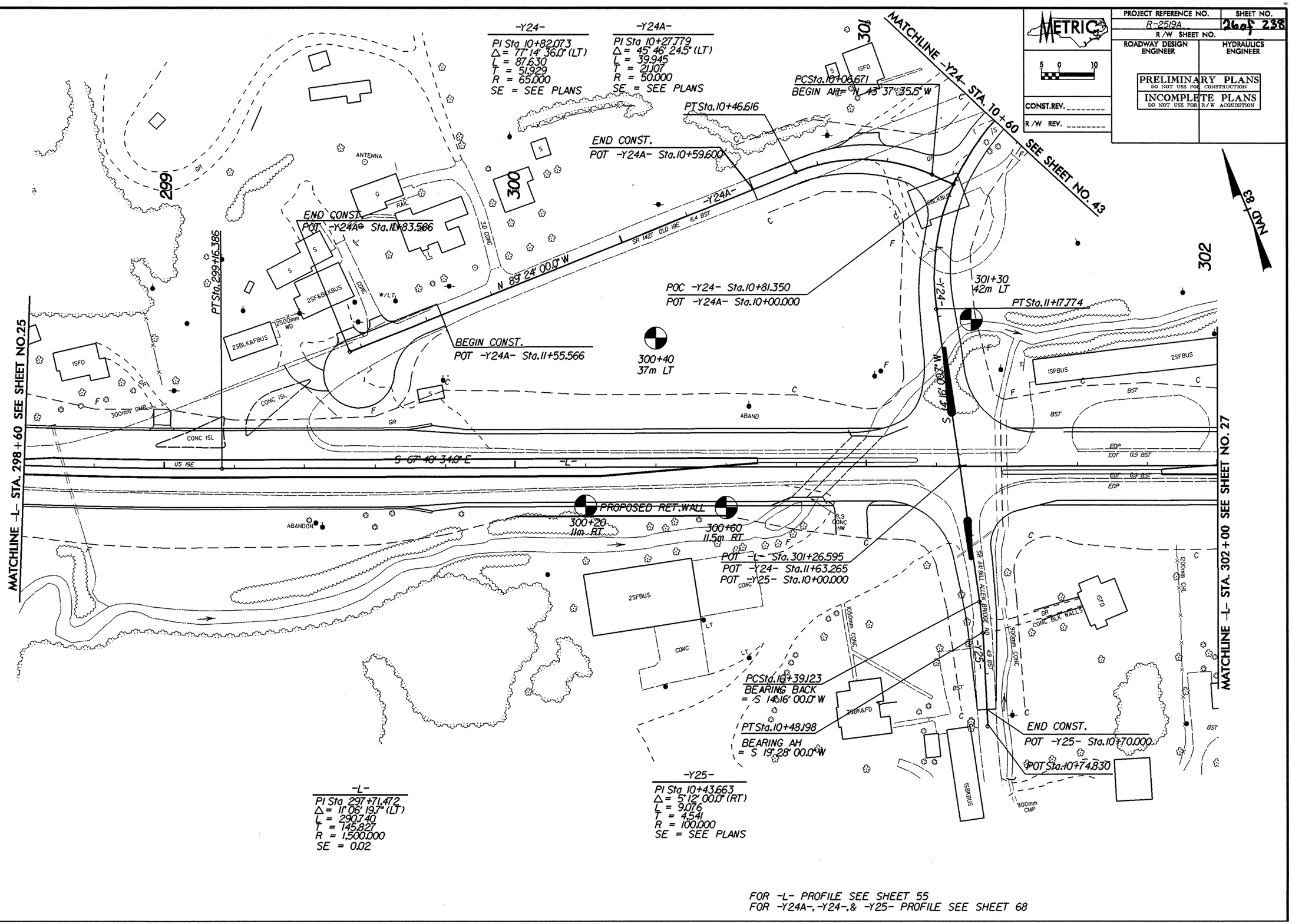
-D21-
PI Sta. 10+22.490
Δ = 47° 32' 45.3" (LT)
L = 16.597
T = 8.810
R = 20.000

-D23-
PI Sta. 10+26.536
Δ = 90° 21' 03.5" (LT)
L = 11.038
T = 7.043
R = 7.000

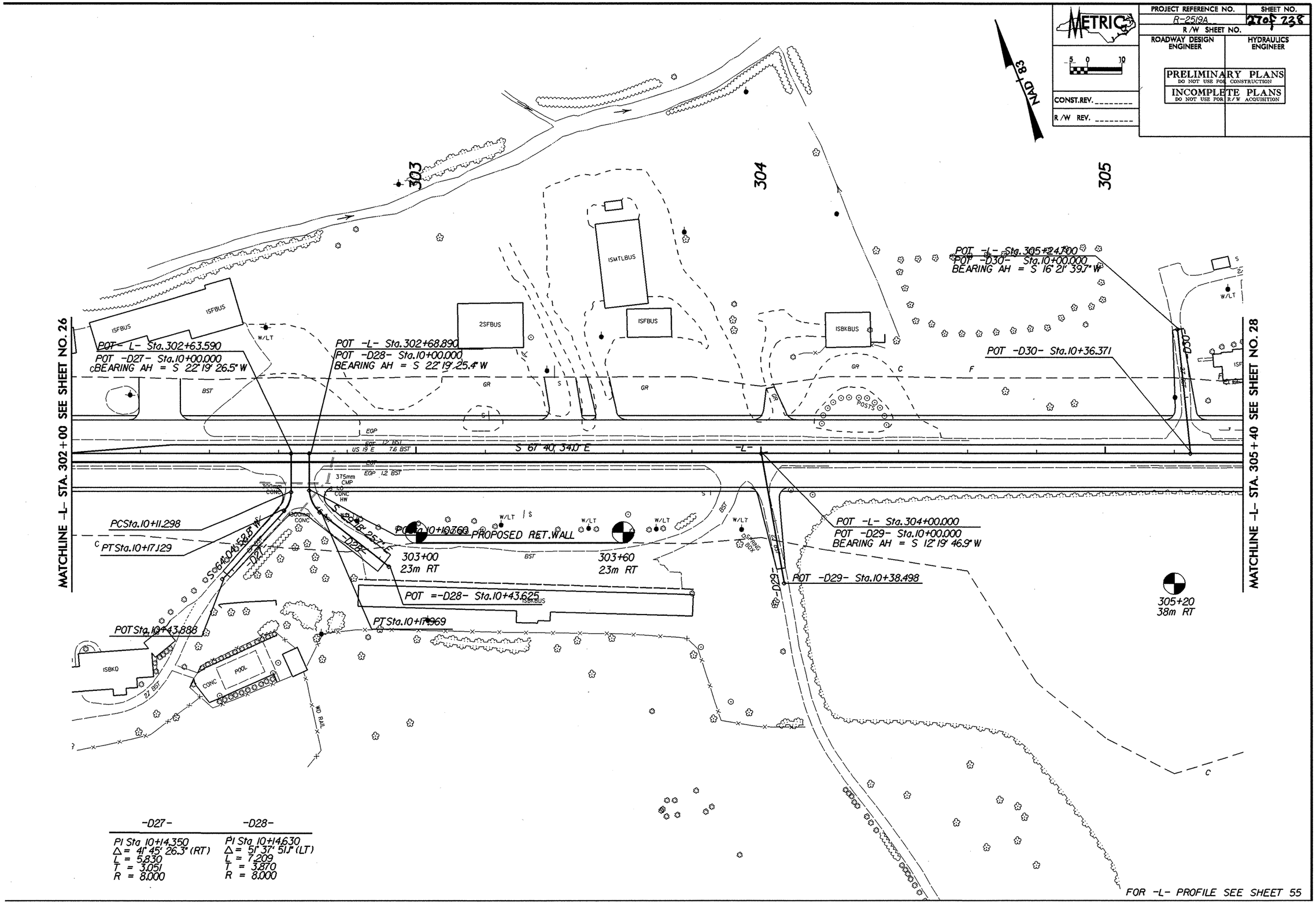
-D24-
PI Sta. 10+26.528
Δ = 90° 19' 25.8" (RT)
L = 7.882
T = 5.028
R = 5.000

-L-
PI Sta. 297+71.472
Δ = 11° 06' 19.7" (LT)
L = 290.740
T = 145.827
R = 1,500.000
SE = 0.02

FOR -L- PROFILE SEE SHEET 54
FOR -Y23- PROFILE SEE SHEET 67

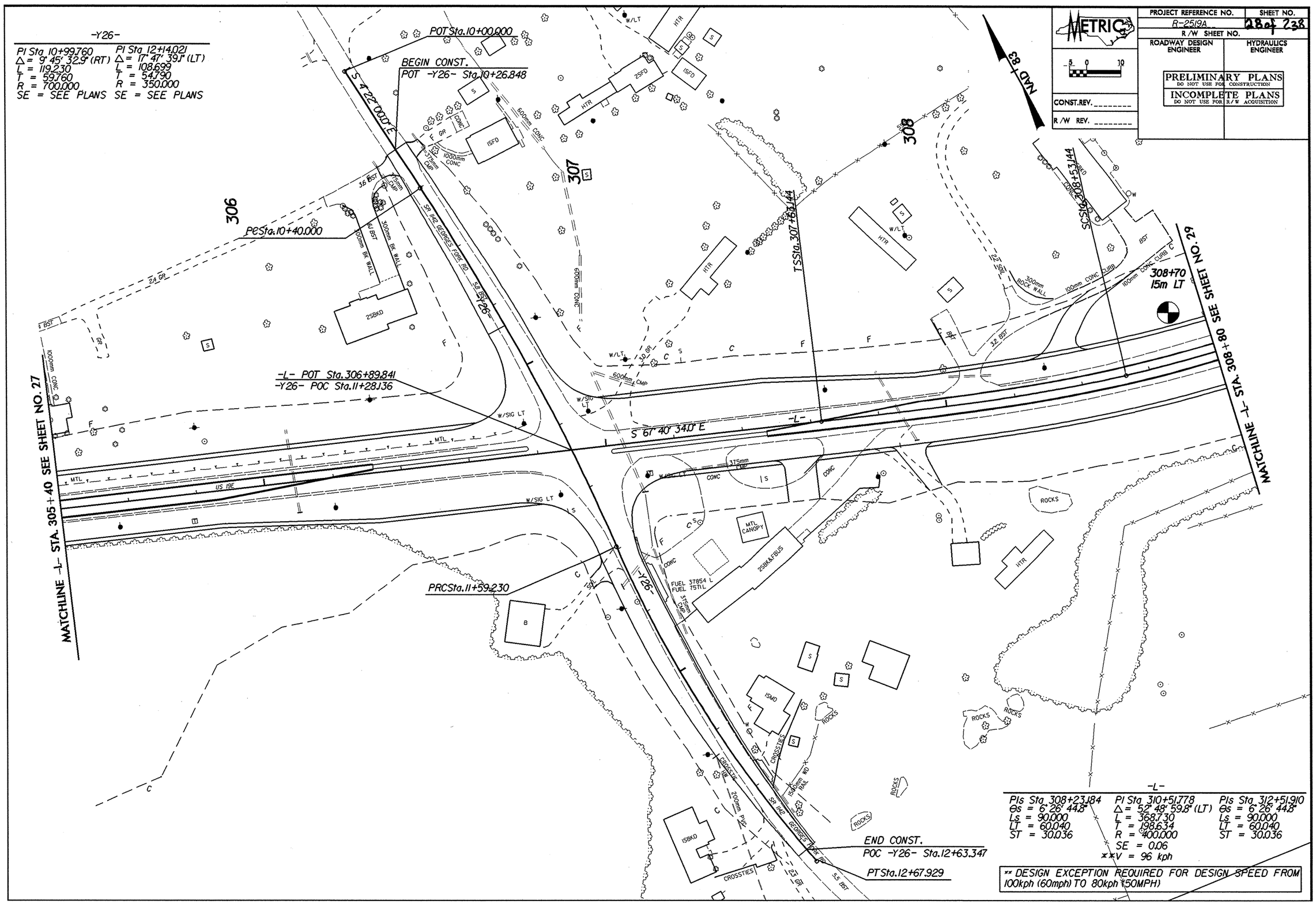


FOR -L- PROFILE SEE SHEET 55
FOR -Y24A-, -Y24-, & -Y25- PROFILE SEE SHEET 68



-D27-	-D28-
PI Sta 10+14.350	PI Sta 10+14.630
Δ = 41° 45' 26.3" (RT)	Δ = 51° 37' 51.1" (LT)
L = 5.830	L = 7.209
T = 3.051	T = 3.870
R = 8.000	R = 8.000

FOR -L- PROFILE SEE SHEET 55

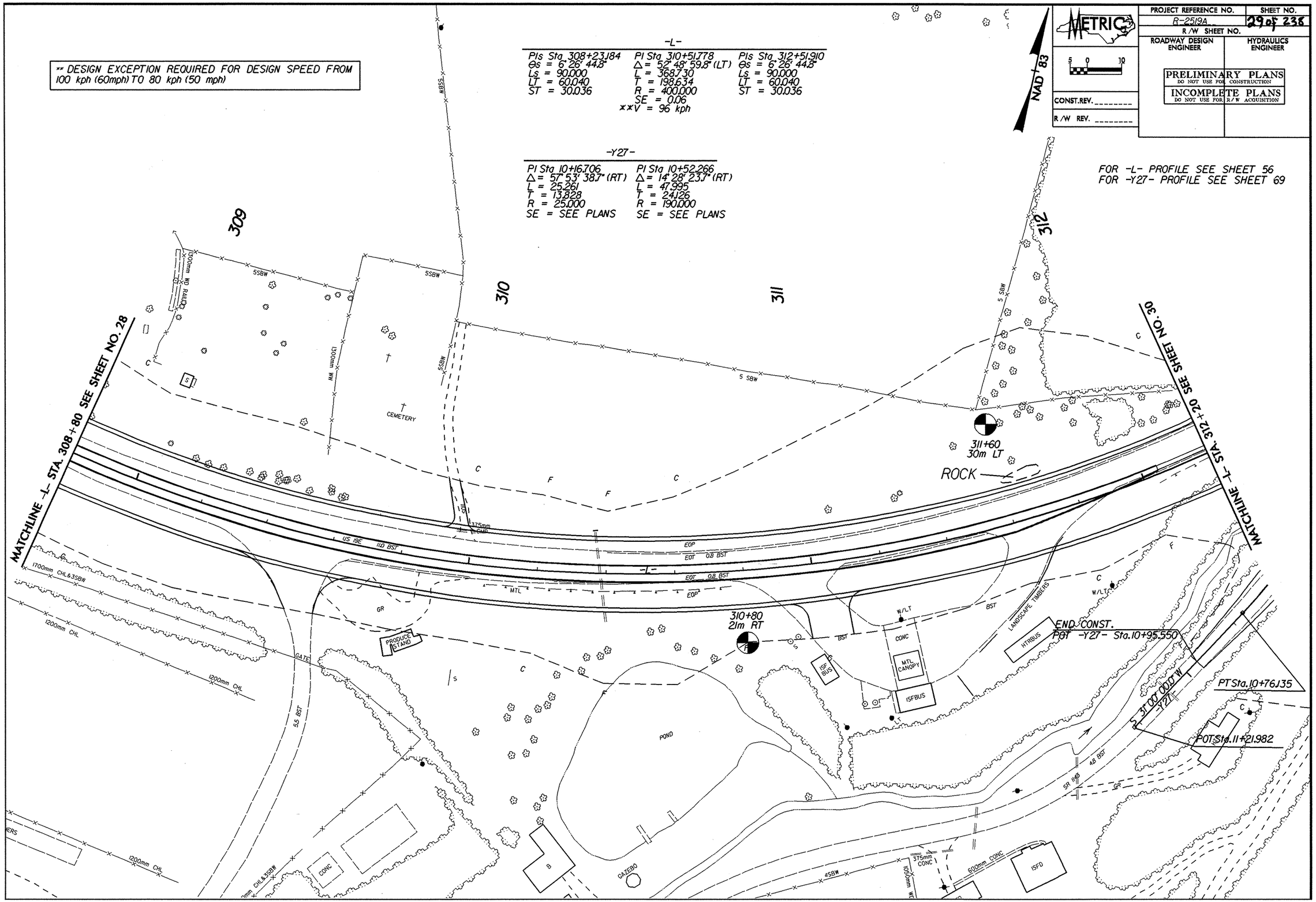


METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2519A	28 of 238
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

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

CONST.REV. _____
R/W REV. _____



METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
29 of 238
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
CONST.REV.
R/W REV.
NAD 83
** DESIGN EXCEPTION REQUIRED FOR DESIGN SPEED FROM 100 kph (60mph) TO 80 kph (50 mph)
-L-
PIs Sta 308+23.184
Θs = 6° 26' 44.8"
Ls = 90.000
LT = 60.040
ST = 30.036
PI Sta 310+51.778
Δ = 52° 48' 59.8" (LT)
L = 368.730
T = 198.634
R = 400.000
SE = 0.06
**V = 96 kph
PIs Sta 312+51.910
Θs = 6° 26' 44.8"
Ls = 90.000
LT = 60.040
ST = 30.036
-Y27-
PI Sta 10+16.706
Δ = 57° 53' 38.7" (RT)
L = 25.261
T = 13.828
R = 25.000
SE = SEE PLANS
PI Sta 10+52.266
Δ = 14° 28' 23.7" (RT)
L = 47.995
T = 24.126
R = 190.000
SE = SEE PLANS
FOR -L- PROFILE SEE SHEET 56
FOR -Y27- PROFILE SEE SHEET 69
309
310
311
312
MATCHLINE -L- STA. 308+80 SEE SHEET NO. 28
MATCHLINE -L- STA. 312+20 SEE SHEET NO. 30
311+60
30m LT
ROCK
310+80
21m RT
END CONST.
POT -Y27- Sta.10+95.550
PT Sta.10+76.135
POT Sta.11+21.982
S 31° 00' 00.0" W
-Y27-
CEMETERY
PRODUCE STAND
POND
GAZEBO
LANDSCAPE TIMBERS
HTRBUS
MTL CANOPY
ISFBUS
ISFD
CONC
US 19E
1300mm WD RAILROAD
1700mm CHL&3SBW
1200mm CHL
600mm CONC
375mm CONC

PROJECT REFERENCE NO.	SHEET NO.
R-2519A	30 of 238
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

METRIC 5 0 10

CONST.REV. _____

R/W REV. _____

NAD 83

313

314

315

-L-

PIs Sta. 308+23.184
Θs = 6° 26' 44.8"
Ls = 90.000
LT = 60.040
ST = 30.036

PI Sta 310+51.778
Δ = 52° 48' 59.8" (LT)
L = 368.730
T = 198.634
R = 400.000
SE = 0.06
xxV = 96 kph

PIs Sta. 312+51.910
Θs = 6° 26' 44.8"
Ls = 90.000
LT = 60.040
ST = 30.036

PIs Sta. 314+01.908
Θs = 4° 28' 06.5"
Ls = 90.000
LT = 60.019
ST = 30.017

PI Sta 316+01.330
Δ = 32° 43' 50.7" (LT)
L = 329.617
T = 169.442
R = 577.000
SE = 0.06

PIs Sta. 317+91.523
Θs = 4° 28' 06.5"
Ls = 90.000
LT = 60.019
ST = 30.017

-Y27-

PI Sta 10+16.706
Δ = 57° 53' 38.7" (RT)
L = 25.261
T = 13.828
R = 25.000
SE = SEE PLANS

PI Sta 10+52.266
Δ = 14° 28' 23.7" (RT)
L = 47.995
T = 24.126
R = 190.000
SE = SEE PLANS

-Y28-

PI Sta 10+12.569
Δ = 43° 00' 00.0" (RT)
L = 18.762
T = 9.848
R = 25.000
SE = SEE PLANS

PI Sta 10+69.835
Δ = 23° 26' 00.0" (LT)
L = 53.169
T = 26.961
R = 130.000
SE = SEE PLANS

-D31-

PI Sta 10+26.115
Δ = 46° 33' 12.8" (RT)
L = 12.188
T = 6.453
R = 15.000

PI Sta 10+45.515
Δ = 49° 30' 17.7" (LT)
L = 12.960
T = 6.916
R = 15.000

-D32-

PI Sta 10+36.059
Δ = 10° 35' 38.7" (LT)
L = 9.245
T = 4.636
R = 50.000

POC -L- Sta. 312+61.529
POT -Y27- Sta. 10+00.000

PCSta. 10+02.879
BEARING BACK = S 41° 22' 02.4" E

CSSta. 312+21.874

STSta. 313+11.874

TSSta. 313+41.889

312+80
27.57m LT
&
23m LT

POC -L- Sta. 312+02.930
POT -D31- Sta. 10+00.000
BEARING AH
S 43° 17' 55.4" E

N 46° 36' 56.6" E

312+60
10m RT

POT -L- Sta. 313+12.000
POT -D32- Sta. 10+00.000
BEARING AH = S 43° 23' 03.4" E

PCSta. 10+38.599

PCCSta. 10+28.140

PT Sta. 10+51.559
BEARING AH =
S 46° 15' 00.3" E

POT -D31- Sta. 10+60.107

PCSta. 10+19.662

PT Sta. 10+31.850
BEARING AH = S 3° 15' 17.4" W

PCSta. 10+31.423

PT Sta. 10+40.668
BEARING AH = S 53° 58' 42.1" E

POT -D32- Sta. 10+52.722

SCSta. 314+31.889

END CONST.
POC -Y28- Sta. 10+67.662

PROP. RET AM

S 16° 58' 00.0" W

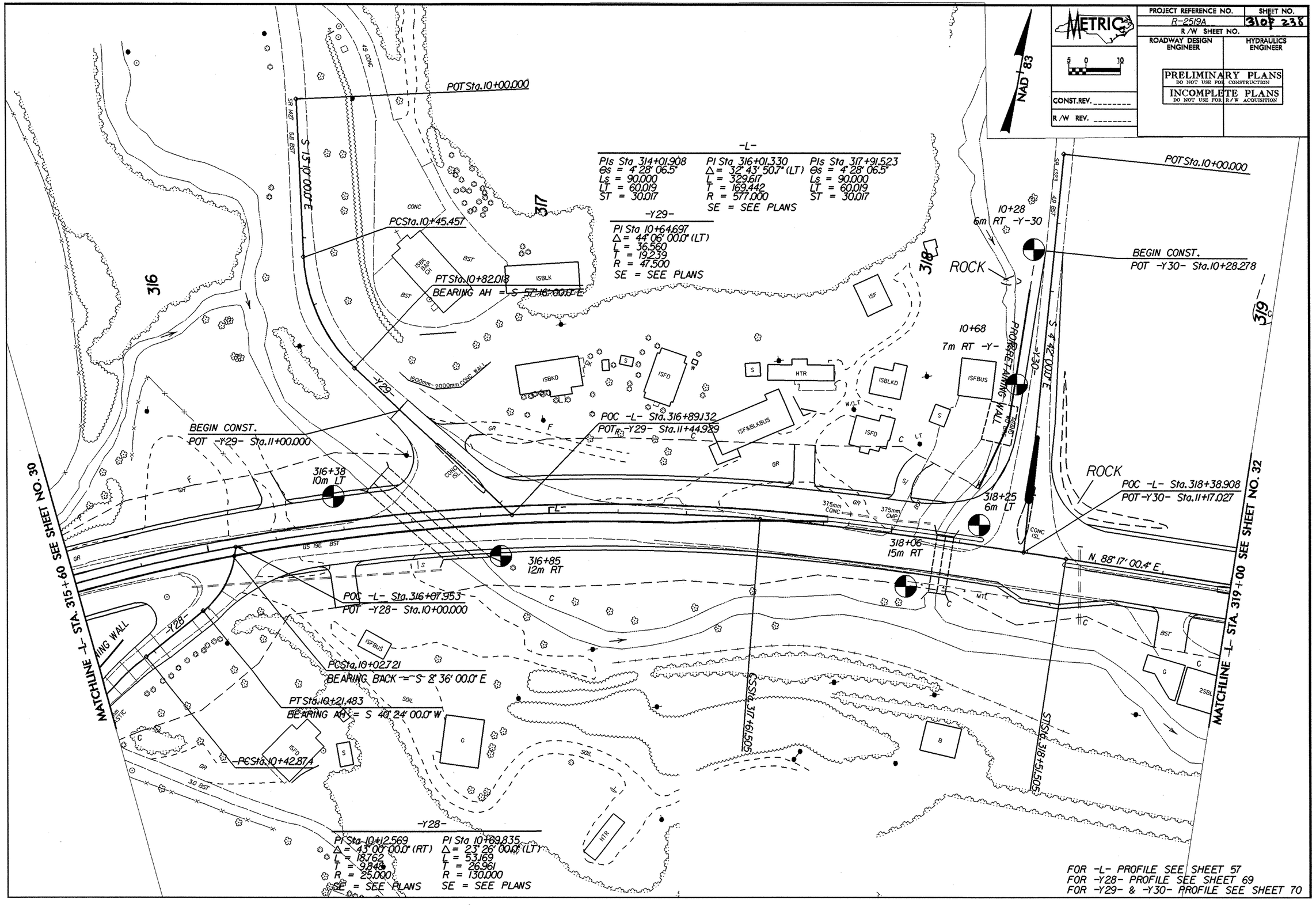
PT Sta. 10+96.043

POT Sta. 11+07.061

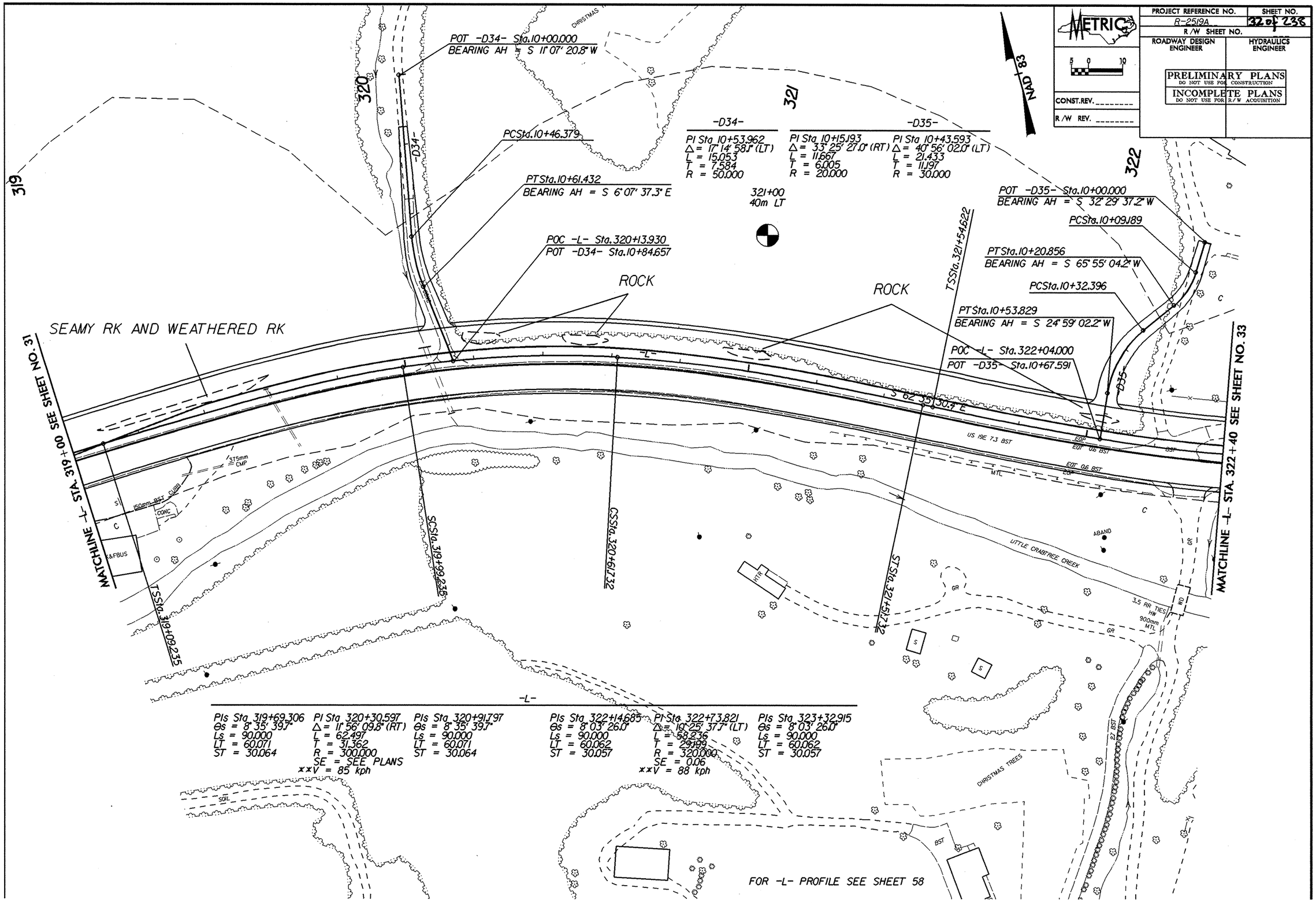
MATCHLINE -L- STA. 312+20 SEE SHEET NO. 29

MATCHLINE -L- STA. 315+60 SEE SHEET NO. 31

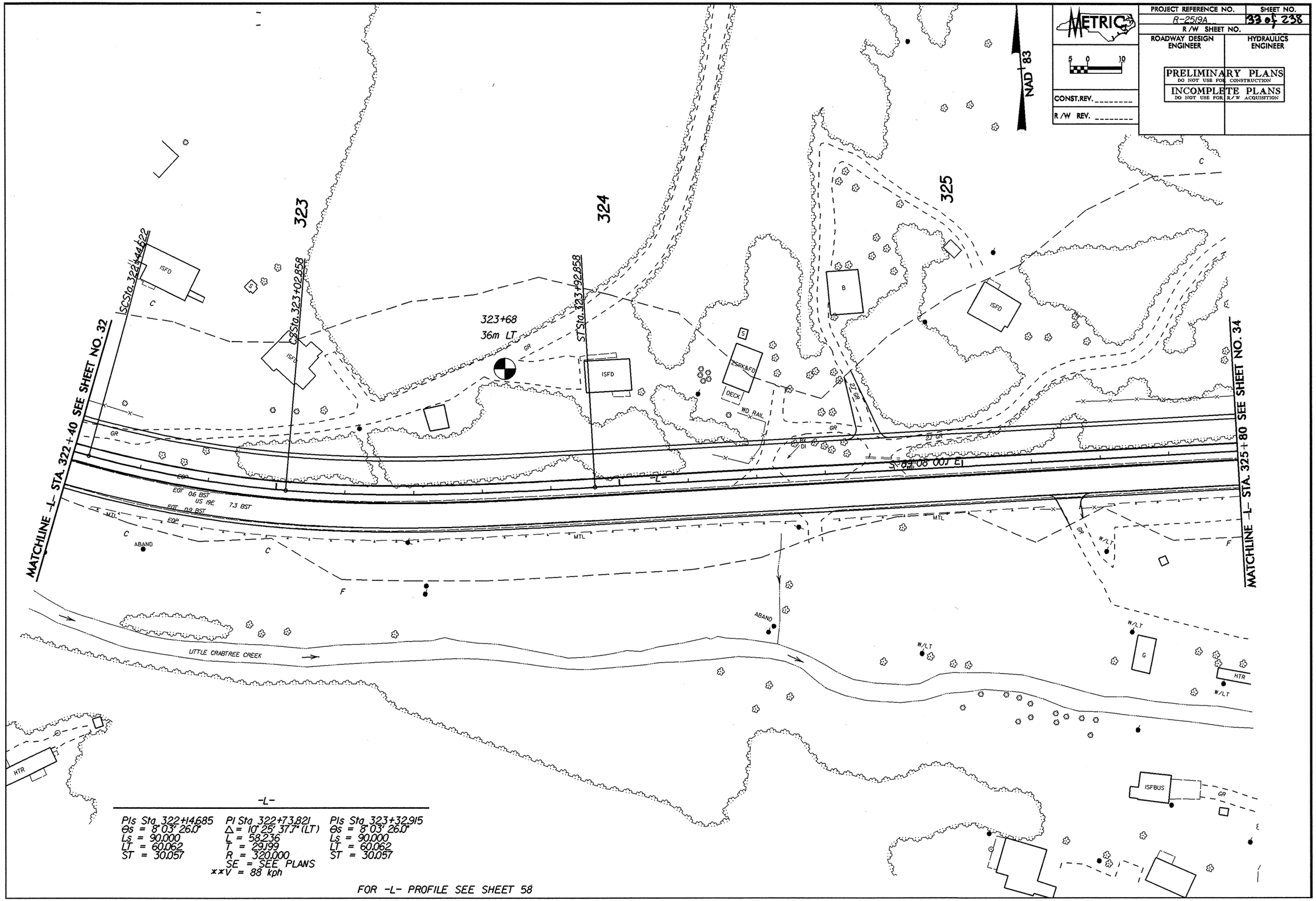
ISBKD
ISFD
HTR
2SFD
ISBK CHURCH
BST
WD. RAIL
1300mm WDRAIL&WW
600mm WDRAIL&WW
3.4 CONC
3.5GR&WW
150mm PVC
MTL
GR
CONC
EOP
EOT



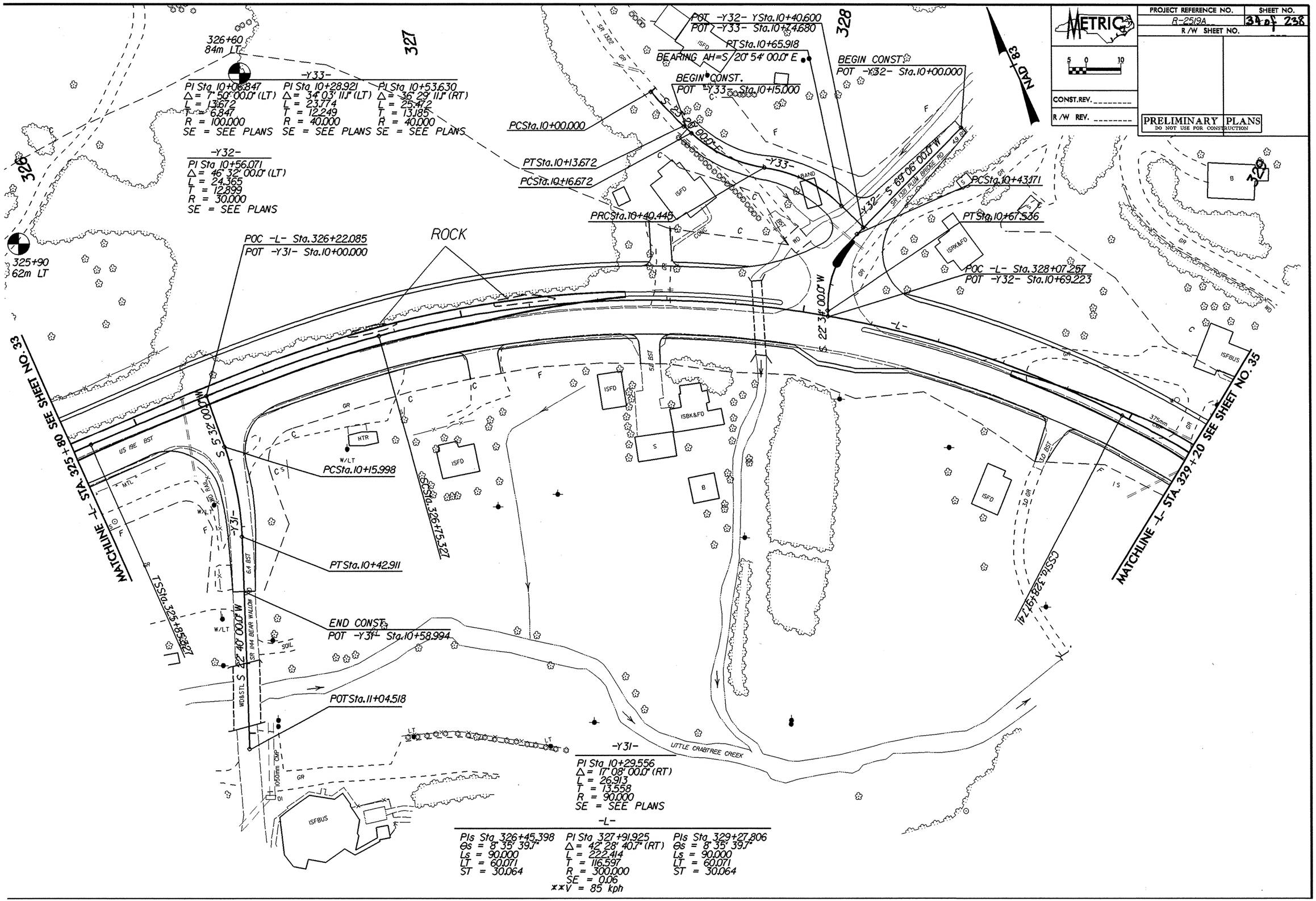
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
310 of 238
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
CONST.REV.
R/W REV.
NAD 83
POT Sta.10+00.000
S 13° 10' 00.0" E
PC Sta.10+45.457
PT Sta.10+82.018
BEARING AH = S 57° 16' 00.0" E
-L-
PIs Sta 314+01.908
Θs = 4° 28' 06.5"
Ls = 90.000
LT = 60.019
ST = 30.017
PI Sta 316+01.330
Δ = 32° 43' 50.7" (LT)
L = 329.617
T = 169.442
R = 577.000
SE = SEE PLANS
PIs Sta 317+91.523
Θs = 4° 28' 06.5"
Ls = 90.000
LT = 60.019
ST = 30.017
-Y29-
PI Sta 10+64.697
Δ = 44° 06' 00.0" (LT)
L = 36.560
T = 19.239
R = 47.500
SE = SEE PLANS
POT Sta.10+00.000
10+28
6m RT -Y-30
BEGIN CONST.
POT -Y30- Sta.10+28.278
ROCK
10+68
7m RT -Y-
PROPRIETARY WALL
S 4° 42' 00.0" E
-Y30-
316
317
318
319
BEGIN CONST.
POT -Y29- Sta.11+00.000
POC -L- Sta.316+89.132
POT -Y29- Sta.11+44.929
316+38
10m LT
318+25
6m LT
ROCK
POC -L- Sta.318+38.908
POT -Y30- Sta.11+17.027
318+06
15m RT
316+85
12m RT
N 88° 17' 00.4" E
POC -L- Sta.316+07.953
POT -Y28- Sta.10+00.000
PC Sta.10+02.721
BEARING BACK = S 2° 36' 00.0" E
PT Sta.10+21.483
BEARING AH = S 40° 24' 00.0" W
PC Sta.10+42.874
-Y28-
PI Sta 10+12.569
Δ = 43° 00' 00.0" (RT)
L = 18.762
T = 9.848
R = 25.000
SE = SEE PLANS
PI Sta 10+69.835
Δ = 23° 26' 00.0" (LT)
L = 53.169
T = 26.961
R = 130.000
SE = SEE PLANS
CS Sta.317+61.505
ST Sta.318+51.505
MATCHLINE -L- STA. 315+60 SEE SHEET NO. 30
MATCHLINE -L- STA. 319+00 SEE SHEET NO. 32
FOR -L- PROFILE SEE SHEET 57
FOR -Y28- PROFILE SEE SHEET 69
FOR -Y29- & -Y30- PROFILE SEE SHEET 70



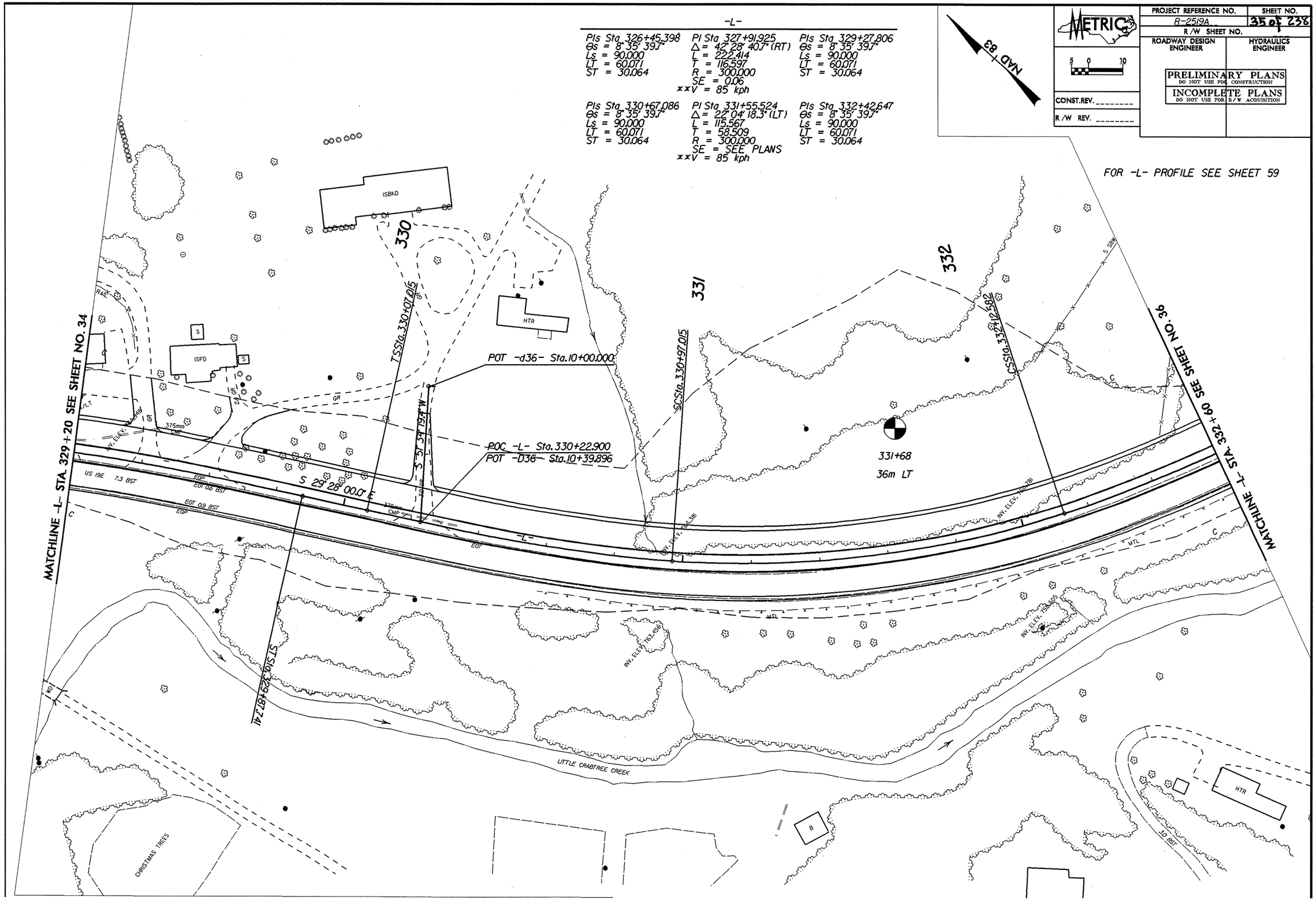
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
32 of 238
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
CONST.REV.
R/W REV.
NAD 83
POT -D34- Sta.10+00.000
BEARING AH = S 11° 07' 20.8" W
PCSta.10+46.379
PTSta.10+61.432
BEARING AH = S 6° 07' 37.3" E
POC -L- Sta.320+13.930
POT -D34- Sta.10+84.657
-D34-
PI Sta 10+53.962
Δ = 17° 14' 58.1" (LT)
L = 15.053
T = 7.584
R = 50.000
-D35-
PI Sta 10+15.193
Δ = 33° 25' 27.0" (RT)
L = 11.667
T = 6.005
R = 20.000
PI Sta 10+43.593
Δ = 40° 56' 02.0" (LT)
L = 21.433
T = 11.197
R = 30.000
321+00
40m LT
POT -D35- Sta.10+00.000
BEARING AH = S 32° 29' 37.2" W
PCSta.10+09.189
PTSta.10+20.856
BEARING AH = S 65° 55' 04.2" W
PCSta.10+32.396
PTSta.10+53.829
BEARING AH = S 24° 59' 02.2" W
POC -L- Sta.322+04.000
POT -D35- Sta.10+67.591
TSSta.321+54.622
ROCK
ROCK
SEAMY RK AND WEATHERED RK
319
320
321
322
MATCHLINE -L- STA. 319+00 SEE SHEET NO. 31
MATCHLINE -L- STA. 322+40 SEE SHEET NO. 33
S 62° 35' 30.4" E
US 19E 7.3 BST
EOT 0.6 BST
MTL
375mm CMP
150mm BST CURB
CONC
C&FBUS
SCSta.319+99.235
CSSta.320+61.732
STSta.321+51.732
TSSta.319+09.235
UTTLE CRABTREE CREEK
ABAND
3.5 RR TIES HW
900mm MTL
HTR
GR
WD
CHRISTMAS TREES
27 BST
BST
SOIL
-L-
PIs Sta 319+69.306
Θs = 8° 35' 39.7"
Ls = 90.000
LT = 60.071
ST = 30.064
PI Sta 320+30.597
Δ = 11° 56' 09.8" (RT)
L = 62.497
T = 31.362
R = 300.000
SE = SEE PLANS
**V = 85 kph
PIs Sta 320+91.797
Θs = 8° 35' 39.7"
Ls = 90.000
LT = 60.071
ST = 30.064
PIs Sta 322+14.685
Θs = 8° 03' 26.0"
Ls = 90.000
LT = 60.062
ST = 30.057
PI Sta 322+73.821
Δ = 10° 25' 37.7" (LT)
L = 58.236
T = 29.199
R = 320.000
SE = 0.06
**V = 88 kph
PIs Sta 323+32.915
Θs = 8° 03' 26.0"
Ls = 90.000
LT = 60.062
ST = 30.057
FOR -L- PROFILE SEE SHEET 58



METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
33 of 238
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
CONST.REV.
R/W REV.
NAD 83
323
324
325
323+68
36m LT
SCSta.322+44.622
CSSta.323+02.858
STSta.323+92.858
MATCHLINE -L- STA. 322+40 SEE SHEET NO. 32
MATCHLINE -L- STA. 325+80 SEE SHEET NO. 34
ISFD
ISFBUS
DECK
WD RAIL
GR
EOP
EOT 0.6 BST
US 19E
7.3 BST
EOT 0.9 BST
MTL
ABAND
W/LT
HTR
LITTLE CRABTREE CREEK
-L-
PIs Sta 322+14.685
Θs = 8°03' 26.0"
Ls = 90.000
LT = 60.062
ST = 30.057
PI Sta 322+73.821
Δ = 10°25' 37.7" (LT)
L = 58.236
T = 29.199
R = 320.000
SE = SEE PLANS
**V = 88 kph
PIs Sta 323+32.915
Θs = 8°03' 26.0"
Ls = 90.000
LT = 60.062
ST = 30.057
FOR -L- PROFILE SEE SHEET 58



METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
34 of 238
R/W SHEET NO.
CONST.REV.
R/W REV.
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
NAD 83
326+60
84m LT
325+90
62m LT
327
328
329
326
-Y33-
PI Sta 10+06.847
Δ = 7° 50' 00.0" (LT)
L = 13.672
T = 6.847
R = 100.000
SE = SEE PLANS
PI Sta 10+28.921
Δ = 34° 03' 11.1" (LT)
L = 23.774
T = 12.249
R = 40.000
SE = SEE PLANS
PI Sta 10+53.630
Δ = 36° 29' 11.1" (RT)
L = 25.472
T = 13.185
R = 40.000
SE = SEE PLANS
-Y32-
PI Sta 10+56.071
Δ = 46° 32' 00.0" (LT)
L = 24.365
T = 12.899
R = 30.000
SE = SEE PLANS
POT -Y32- Y Sta.10+40.600
POT -Y33- Sta.10+74.680
PT Sta.10+65.918
BEARING AH=S 20° 54' 00.0" E
BEGIN CONST.
POT -Y33- Sta.10+15.000
BEGIN CONST.
POT -Y32- Sta.10+00.000
PCSta.10+00.000
PT Sta.10+13.672
PCSta.10+16.672
PRCSta.10+40.445
PCSta.10+43.171
PT Sta.10+67.536
POC -L- Sta.328+07.257
POT -Y32- Sta.10+69.223
POC -L- Sta.326+22.085
POT -Y31- Sta.10+00.000
ROCK
S 22° 34' 00.0" W
S 5° 32' 00.0" W
PCSta.10+15.998
SCSta.326+75.327
PT Sta.10+42.911
END CONST.
POT -Y31- Sta.10+58.994
POT Sta.11+04.518
TSSta.325+85.327
CSSta.328+97.741
MATCHLINE -L- STA. 325+80 SEE SHEET NO. 33
MATCHLINE -L- STA. 329+20 SEE SHEET NO. 35
-Y31-
PI Sta 10+29.556
Δ = 17° 08' 00.0" (RT)
L = 26.913
T = 13.558
R = 90.000
SE = SEE PLANS
-L-
PIs Sta 326+45.398
Θs = 8° 35' 39.7"
Ls = 90.000
LT = 60.071
ST = 30.064
PI Sta 327+91.925
Δ = 42° 28' 40.7" (RT)
L = 222.414
T = 116.597
R = 300.000
SE = 0.06
**V = 85 kph
PIs Sta 329+27.806
Θs = 8° 35' 39.7"
Ls = 90.000
LT = 60.071
ST = 30.064
LITTLE CRABTREE CREEK
ISFD
ISBK&FD
ISRK&FD
ISFBUS
HTR



-L-
PIs Sta 326+45.398
Θs = 8° 35' 39.7"
Ls = 90.000
LT = 60.071
ST = 30.064
PI Sta 327+91.925
Δ = 42° 28' 40.7" (RT)
L = 222.414
T = 116.597
R = 300.000
SE = 0.06
**V = 85 kph
PIs Sta 329+27.806
Θs = 8° 35' 39.7"
Ls = 90.000
LT = 60.071
ST = 30.064
PIs Sta 330+67.086
Θs = 8° 35' 39.7"
Ls = 90.000
LT = 60.071
ST = 30.064
PI Sta 331+55.524
Δ = 22° 04' 18.3" (LT)
L = 115.567
T = 58.509
R = 300.000
SE = SEE PLANS
**V = 85 kph
PIs Sta 332+42.647
Θs = 8° 35' 39.7"
Ls = 90.000
LT = 60.071
ST = 30.064
NAD 83
METRIC
5 0 10
CONST.REV.
R/W REV.
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
35 of 238
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
FOR -L- PROFILE SEE SHEET 59
MATCHLINE -L- STA. 329+20 SEE SHEET NO. 34
MATCHLINE -L- STA. 332+60 SEE SHEET NO. 36
330
331
332
ISBKD
HTR
ISFD
TSSta.330+07.015
SCSta.330+97.015
CSSta.332+12.582
POT -d36- Sta.10+00.000
POC -L- Sta.330+22.900
POT -D36- Sta.10+39.896
S 29° 28' 00.0" E
S 51° 34' 19.4" W
331+68
36m LT
STSta.329+87.741
US 19E 7.3 BST
EOT 0.6 BST
EOT 0.9 BST
EOP
EOT
MTL
LITTLE CRABTREE CREEK
CHRISTMAS TREES
3.0 BST

PROJECT REFERENCE NO.	SHEET NO.
R-2519A	360 of 238
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

NAD 83

CONST.REV. _____

R/W REV. _____

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

-L-

PIs Sta. 330+67.086
Es = 8° 35' 39.7"
Ls = 90.000
LT = 60.071
ST = 30.064

PI Sta 331+55.524
Δ = 22° 04' 18.3" (LT)
L = 115.567
T = 58.509
R = 300.000
SE = SEE PLANS
xxV = 85 kph

PIs Sta. 332+42.647
Es = 8° 35' 39.7"
Ls = 90.000
LT = 60.071
ST = 30.064

PIs Sta. 334+41.527
Es = 1° 13' 40.0"
Ls = 60.000
LT = 40.001
ST = 20.001

PI Sta. 337+35.985
Δ = 22° 11' 00.2" (LT)
L = 542.042
T = 274.458
R = 1,400.000
SE = SEE PLANS

PIs Sta. 340+23.570
Es = 1° 13' 40.0"
Ls = 60.000
LT = 40.001
ST = 20.001

-Y34-

PI Sta. 10+75.879
Δ = 9° 54' 00.0" (RT)
L = 207.35
T = 103.93
R = 1200.000
SE = SEE PLANS

333 334 335 336

ST Sta. 333+02.982

TS Sta. 334+01.526

SC Sta. 334+61.526

POC -L- Sta. 335+77.506
POT -Y34- Sta. 10+00.000

POT Sta. 11+01.88 W/LT

PC Sta. 10+65.485

PT Sta. 10+86.220

END CONST.
POT -Y34- Sta. 10+89.563

MATCHLINE -L- STA. 332+60 SEE SHEET NO. 35

MATCHLINE -L- STA. 336+00 SEE SHEET NO. 37

S 68° 43' 37.1" E

S 28° 18' 00.0" W

S 38° 12' 00.0" W

US 19E BST

EXISTING R/W

MTL CARPORT

2SBKD

2SBKBUS

ISMTLG

GAS PUMPS
2 FUEL- 30283L
1 FUEL- 15142L

ROCK

ABAND

HTR

SFD

MTL

BST

GR

ISBK

CONC

RR (ABANDONED)

SR 1146 (OLD BRIDGE RD)

EXISTING R/W 3.288 BST

250mm CONC CURB

250mm BST CURB

200mm CONC CURB

2-1850mm CMP

1050mm CMP

750mm CMP

375mm CMP

4.0 CONC WW'S

7.0 ROCK HW

L3 CONC HW

L2 CONC

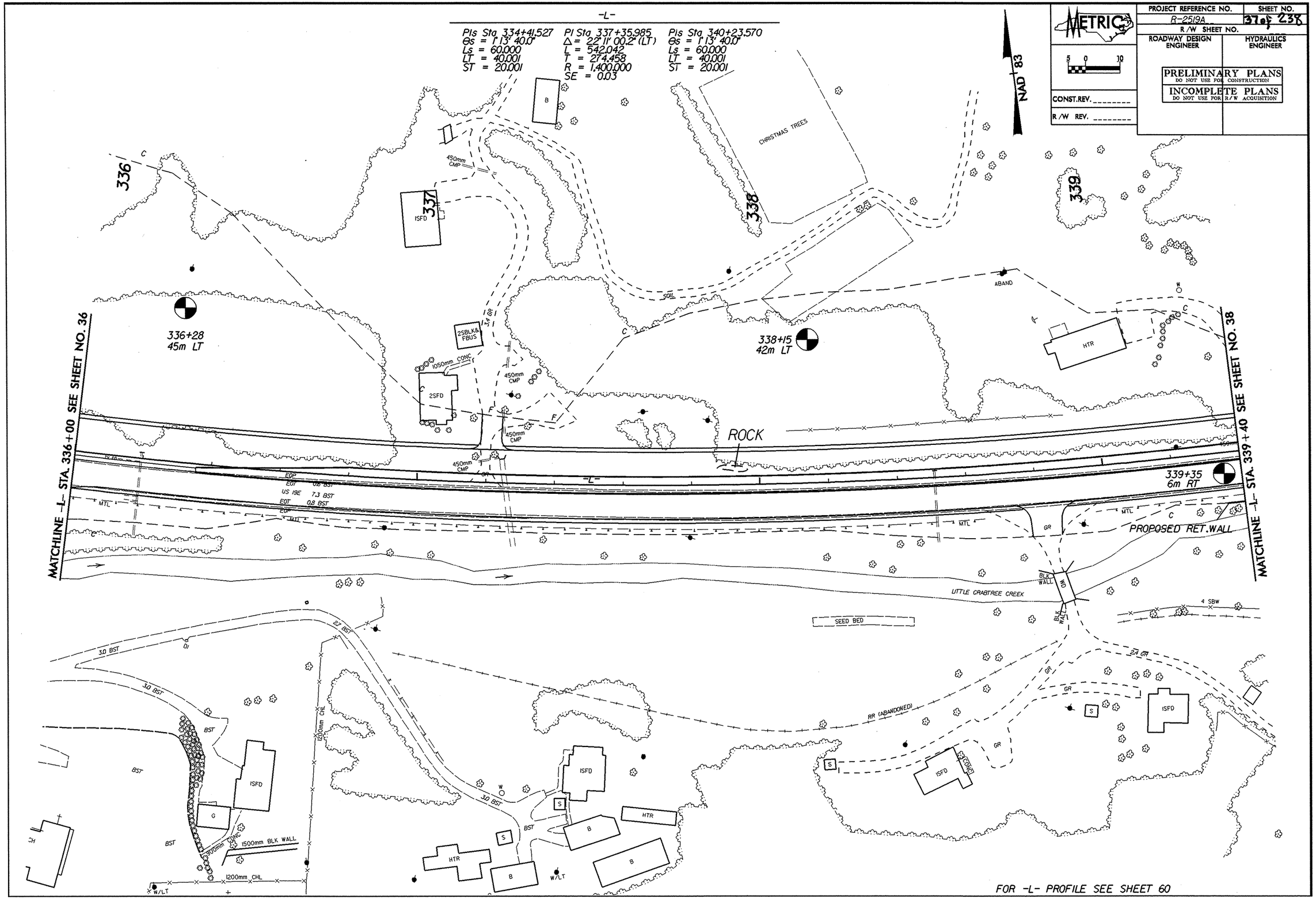
5.240 (180')

22.860 (75')

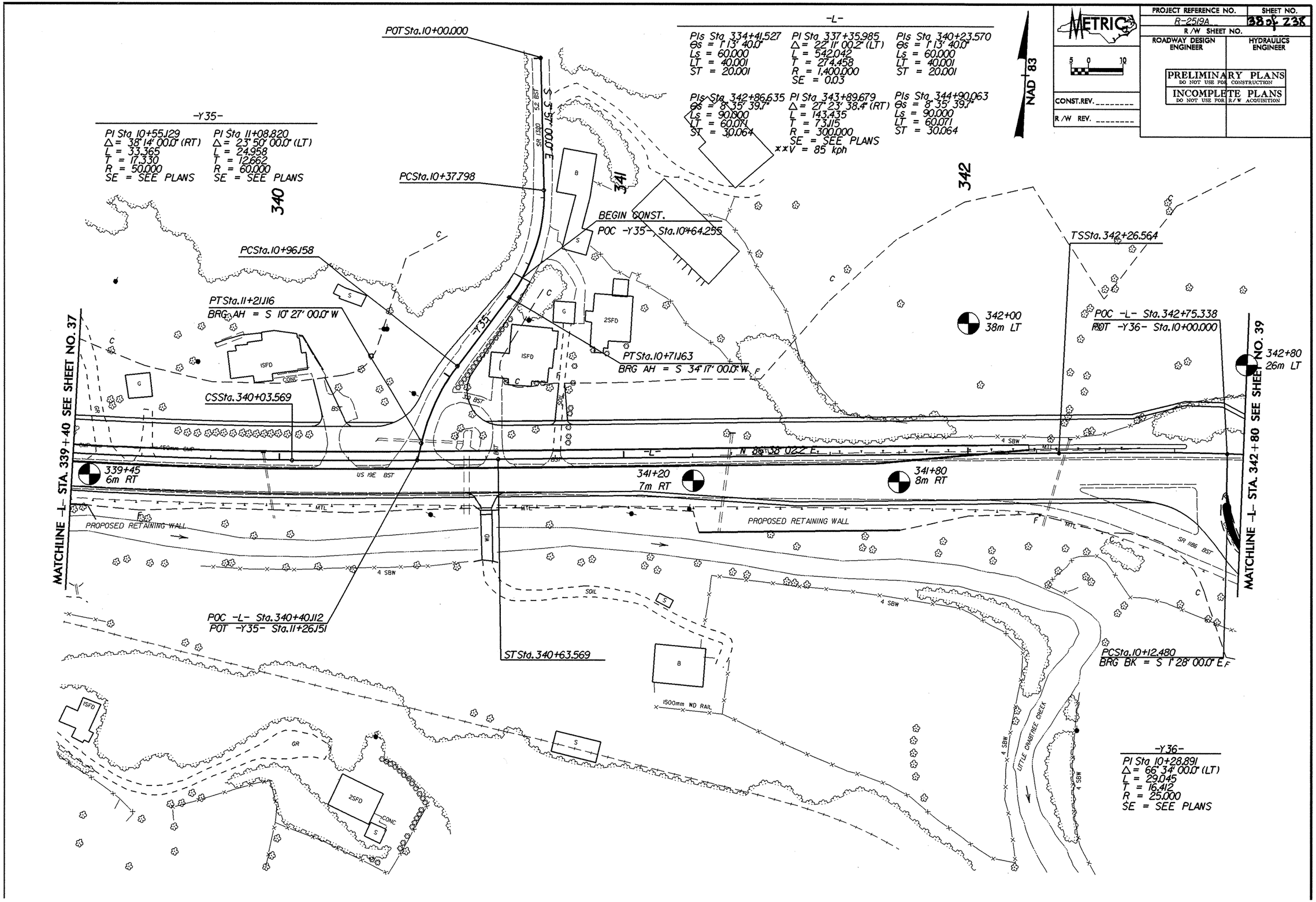
27.887

3.048

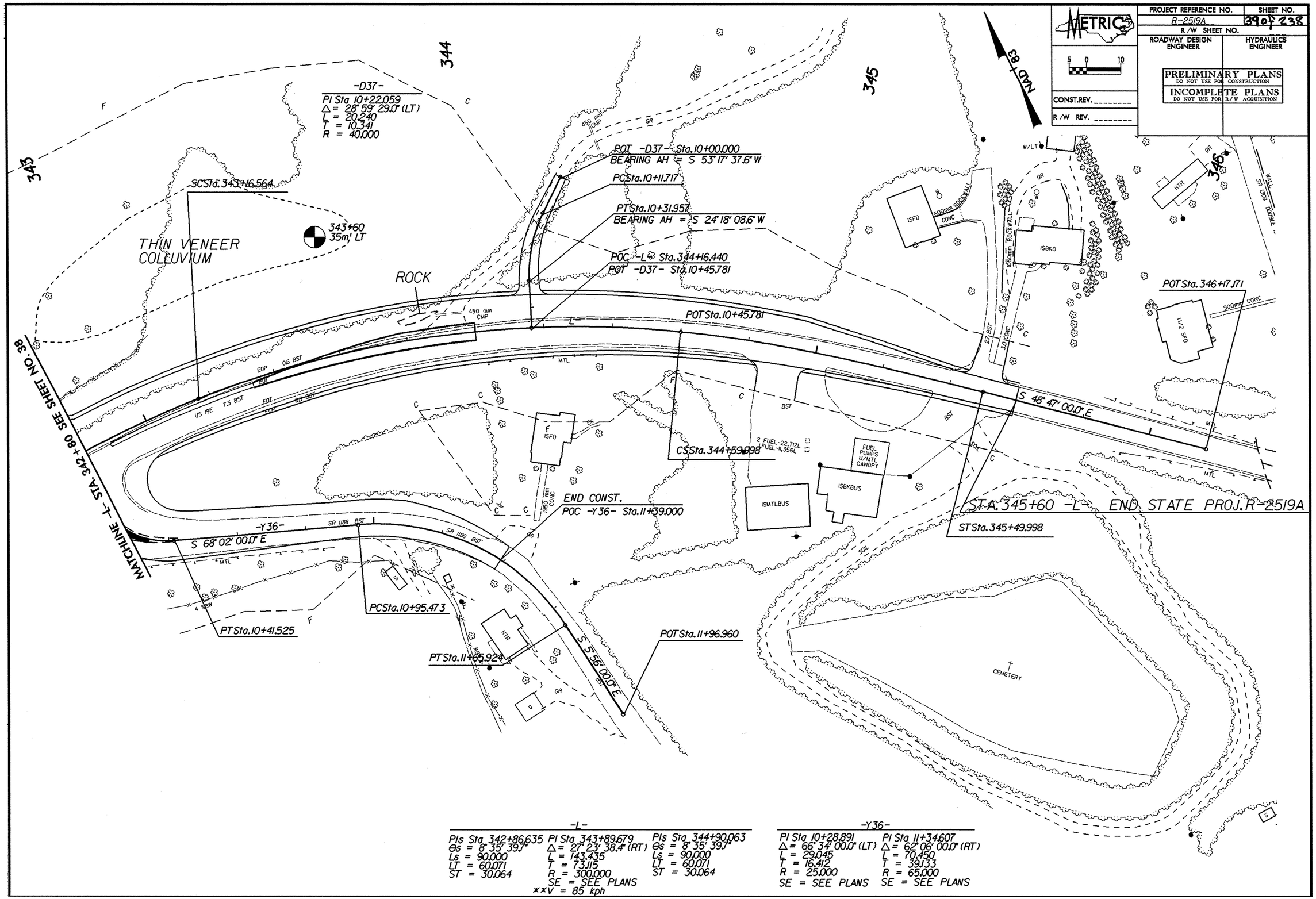
3.454



-L-
PIs Sta 334+41.527
θs = 1°13' 40.0"
Ls = 60.000
LT = 40.001
ST = 20.001
PI Sta 337+35.985
Δ = 22°11' 00.2" (LT)
L = 542.042
T = 274.458
R = 1,400.000
SE = 0.03
PIs Sta 340+23.570
θs = 1°13' 40.0"
Ls = 60.000
LT = 40.001
ST = 20.001
NAD 83
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
37 of 238
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
CONST.REV.
R/W REV.
336
337
338
339
CHRISTMAS TREES
ISFD
B
450mm CMP
336+28
45m LT
338+15
42m LT
339+35
6m RT
ROCK
HTR
ABAND
SOIL
2SBLK& FBUS
2SFD
1050mm CONC
MATCHLINE -L- STA. 336+00 SEE SHEET NO. 36
MATCHLINE -L- STA. 339+40 SEE SHEET NO. 38
US 19E 7.3 BST
EOT 0.8 BST
MTL
PROPOSED RET.WALL
LITTLE CRABTREE CREEK
BLK WALL
SEED BED
4 SBW
3.0 BST
2.7 BST
2.4 GR
RR (ABANDONED)
1200mm CHL
1500mm BLK WALL
W/LT
FOR -L- PROFILE SEE SHEET 60



METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
38 of 238
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
CONST.REV.
R/W REV.
NAD 83
-L-
PIs Sta 334+41.527
Θs = 1° 13' 40.0"
Ls = 60.000
LT = 40.001
ST = 20.001
PI Sta 337+35.985
Δ = 22° 11' 00.2" (LT)
L = 542.042
T = 274.458
R = 1,400.000
SE = 0.03
PIs Sta 340+23.570
Θs = 1° 13' 40.0"
Ls = 60.000
LT = 40.001
ST = 20.001
PIs Sta 342+86.635
Θs = 8° 35' 39.7"
Ls = 90.000
LT = 60.071
ST = 30.064
PI Sta 343+89.679
Δ = 27° 23' 38.4" (RT)
L = 143.435
T = 73.115
R = 300.000
SE = SEE PLANS
**V = 85 kph
PIs Sta 344+90.063
Θs = 8° 35' 39.7"
Ls = 90.000
LT = 60.071
ST = 30.064
-Y35-
PI Sta 10+55.129
Δ = 38° 14' 00.0" (RT)
L = 33.365
T = 17.330
R = 50.000
SE = SEE PLANS
PI Sta 11+08.820
Δ = 23° 50' 00.0" (LT)
L = 24.958
T = 12.662
R = 60.000
SE = SEE PLANS
POT Sta.10+00.000
PCSta.10+37.798
BEGIN CONST.
POC -Y35- Sta.10+64.255
PCSta.10+96.158
PTSta.11+21.16
BRG AH = S 10° 27' 00.0" W
PTSta.10+71.163
BRG AH = S 34° 17' 00.0" W
CSSta.340+03.569
TSSta.342+26.564
POC -L- Sta.342+75.338
POT -Y36- Sta.10+00.000
342+00
38m LT
342+80
26m LT
339+45
6m RT
341+20
7m RT
341+80
8m RT
N 86° 38' 02.2" E
PROPOSED RETAINING WALL
POC -L- Sta.340+40.112
POT -Y35- Sta.11+26.151
STSta.340+63.569
PCSta.10+12.480
BRG BK = S 1° 28' 00.0" E
-Y36-
PI Sta 10+28.891
Δ = 66° 34' 00.0" (LT)
L = 29.045
T = 16.412
R = 25.000
SE = SEE PLANS
MATCHLINE -L- STA. 339+40 SEE SHEET NO. 37
MATCHLINE -L- STA. 342+80 SEE SHEET NO. 39
340
341
342
S 3° 57' 00.0" E
SR 1320
US 19E BST
SR 1186 BST
1500mm WD RAIL
LITTLE CRABTREE CREEK

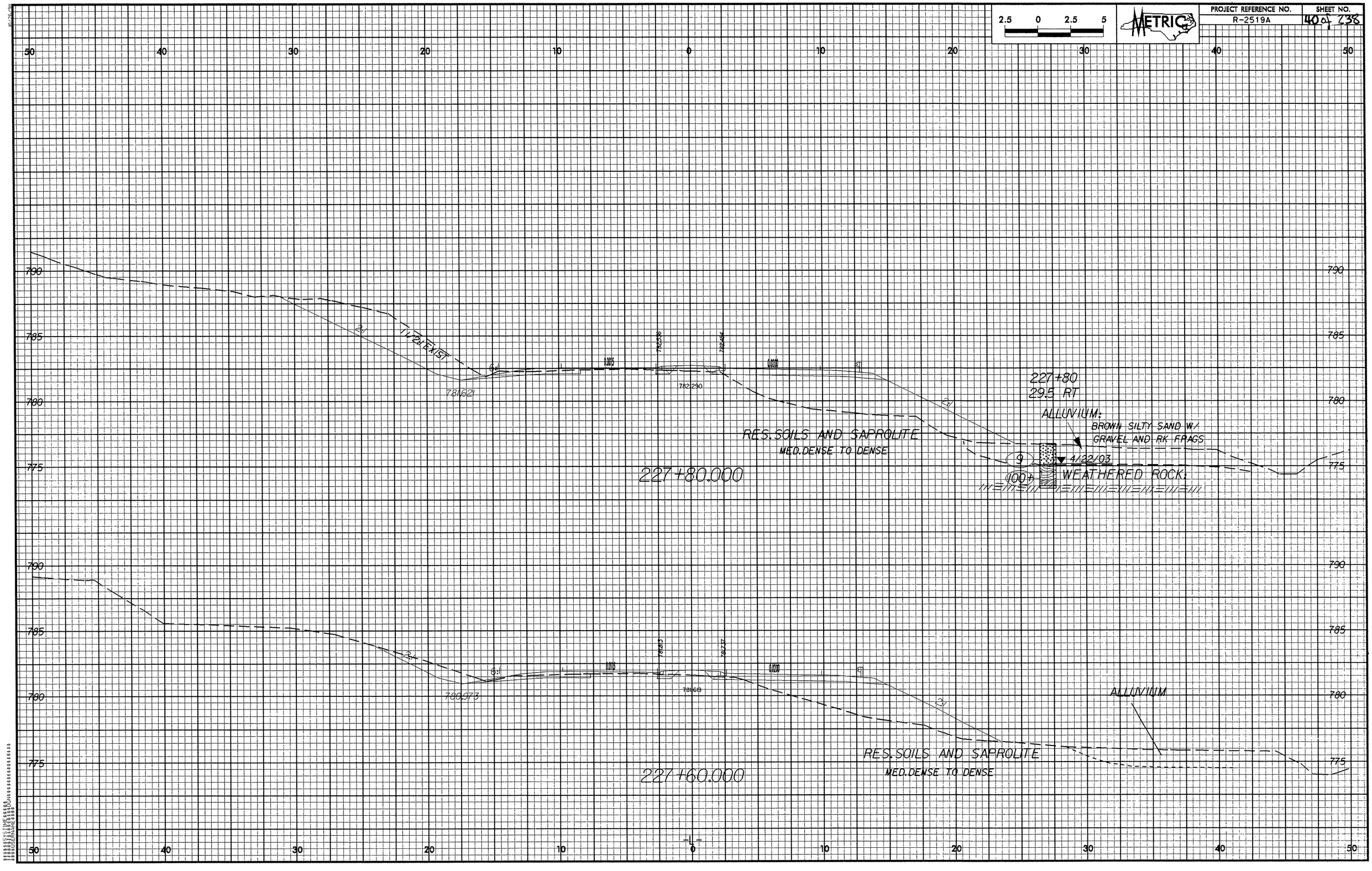


-L-

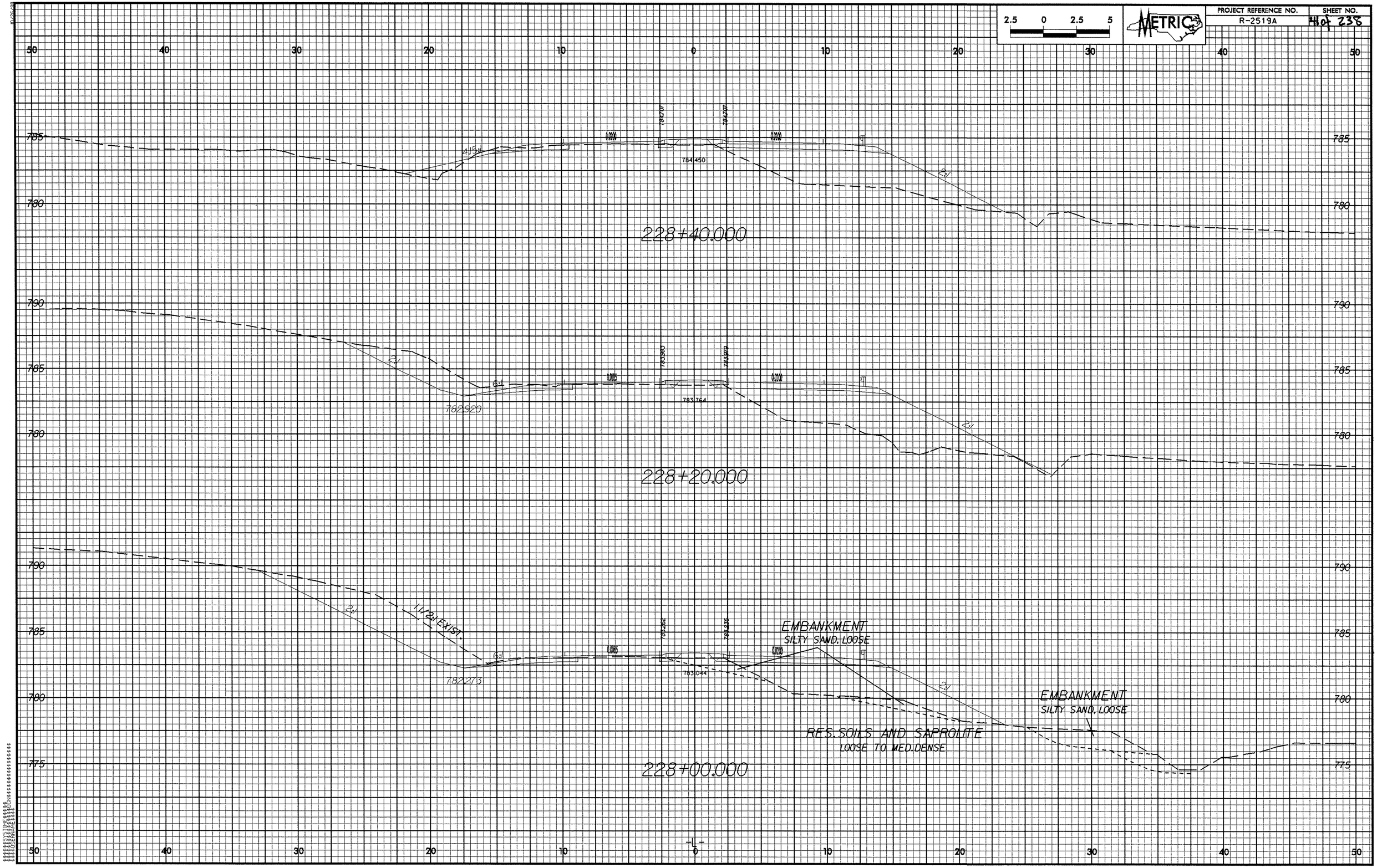
PIs Sta 342+86.635	PI Sta 343+89.679	PIs Sta 344+90.063
Θs = 8° 35' 39.7"	Δ = 27° 23' 38.4" (RT)	Θs = 8° 35' 39.7"
Ls = 90.000	L = 143.435	Ls = 90.000
LT = 60.071	T = 73.115	LT = 60.071
ST = 30.064	R = 300.000	ST = 30.064
	SE = SEE PLANS	
	**V = 85 kph	

-Y36-

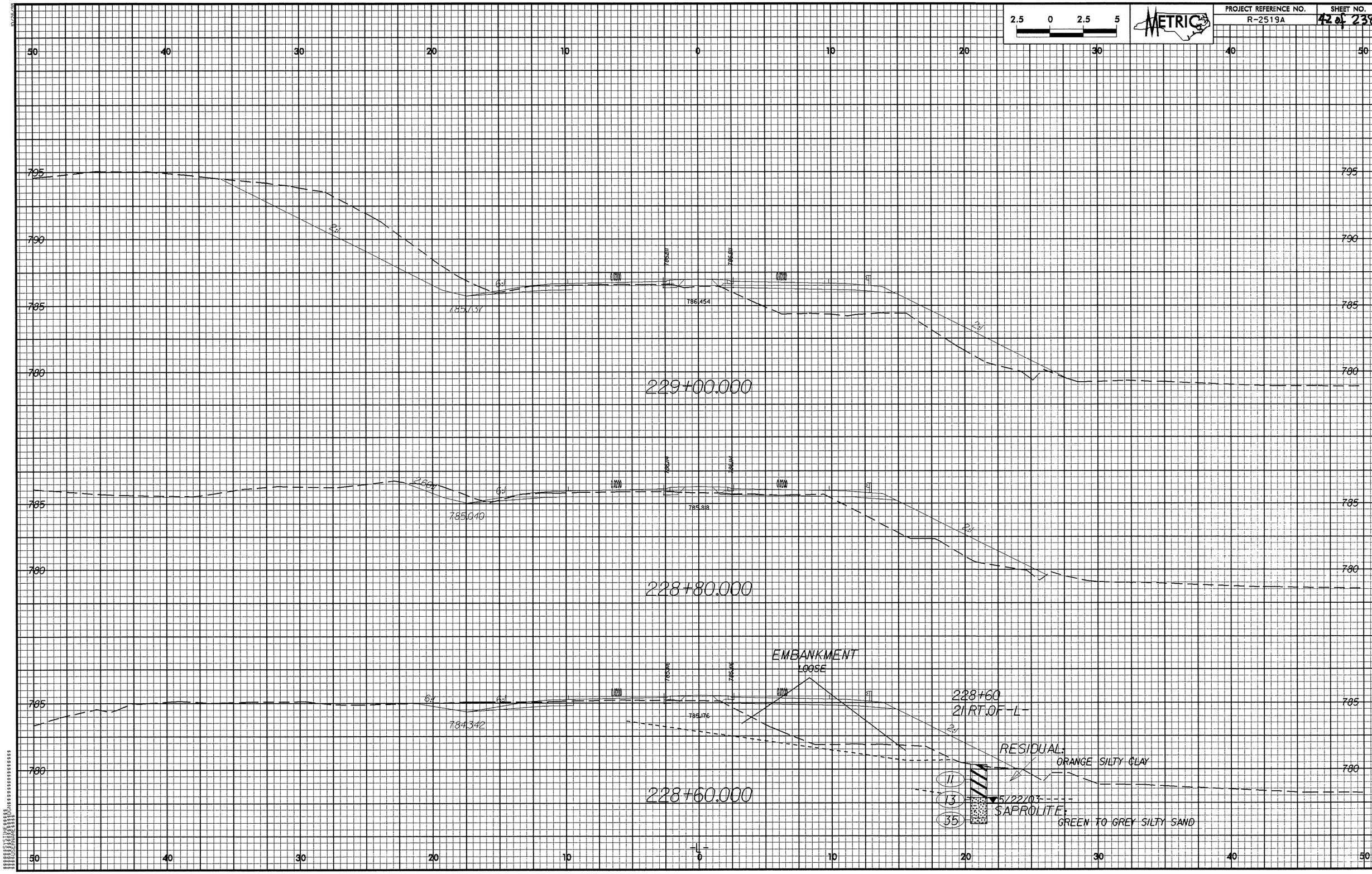
PI Sta 10+28.891	PI Sta 11+34.607
Δ = 66° 34' 00.0" (LT)	Δ = 62° 06' 00.0" (RT)
L = 29.045	L = 70.450
T = 16.412	T = 39.133
R = 25.000	R = 65.000
SE = SEE PLANS	SE = SEE PLANS



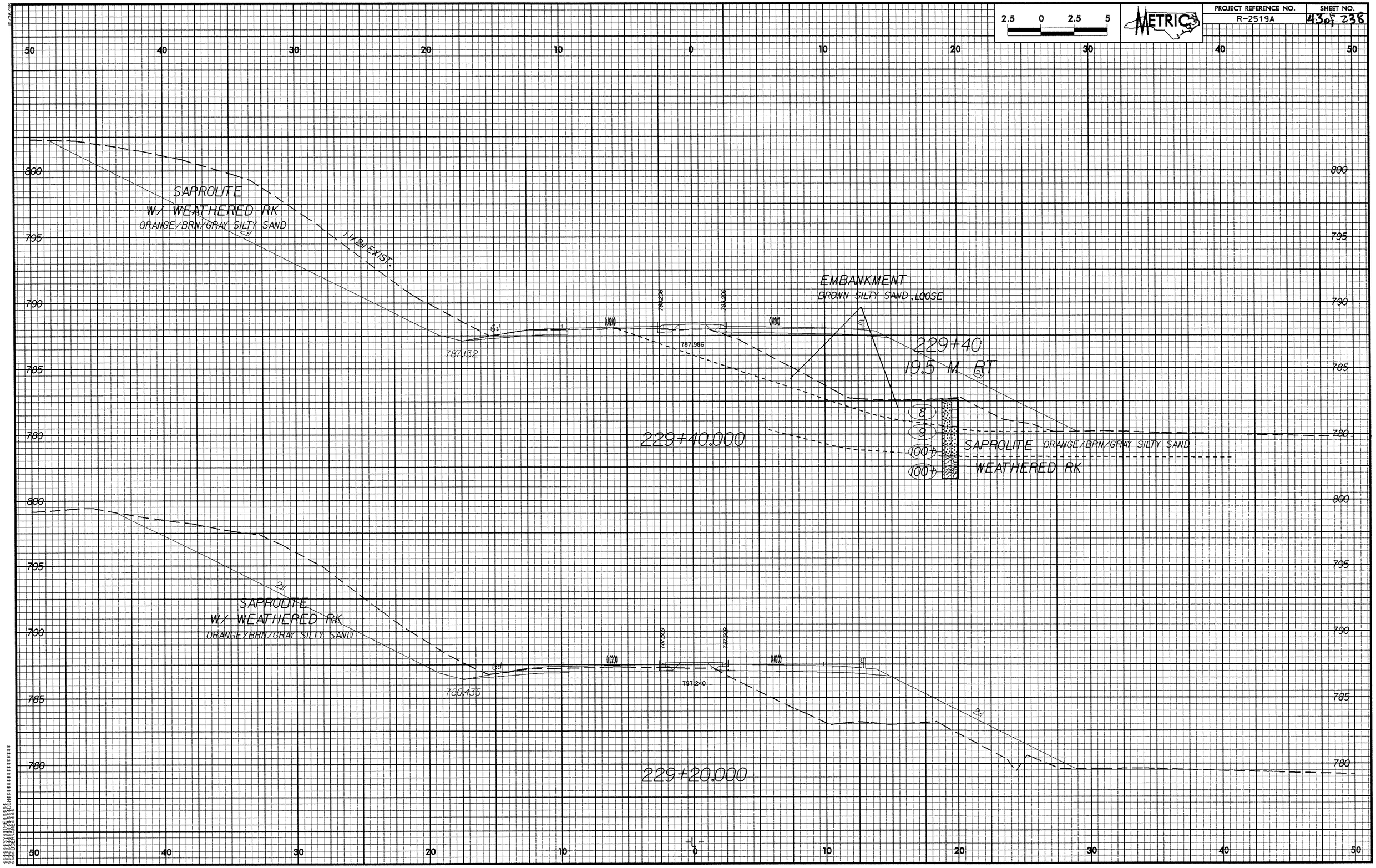
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
40 of 238
50 40 30 20 10 0 10 20 30 40 50
790
785
780
775
2:1
1 1/2:1 EXIST
6:1
0.0015
0.0200
782.290
781.621
227+80
29.5 RT
ALLUVIUM:
BROWN SILTY SAND W/
GRAVEL AND RK FRAGS
RES. SOILS AND SAPROLITE
MED. DENSE TO DENSE
9
4/22/03
100+
WEATHERED ROCK:
227+80.000
780.973
781.619
ALLUVIUM
RES. SOILS AND SAPROLITE
MED. DENSE TO DENSE
227+60.000
-L-



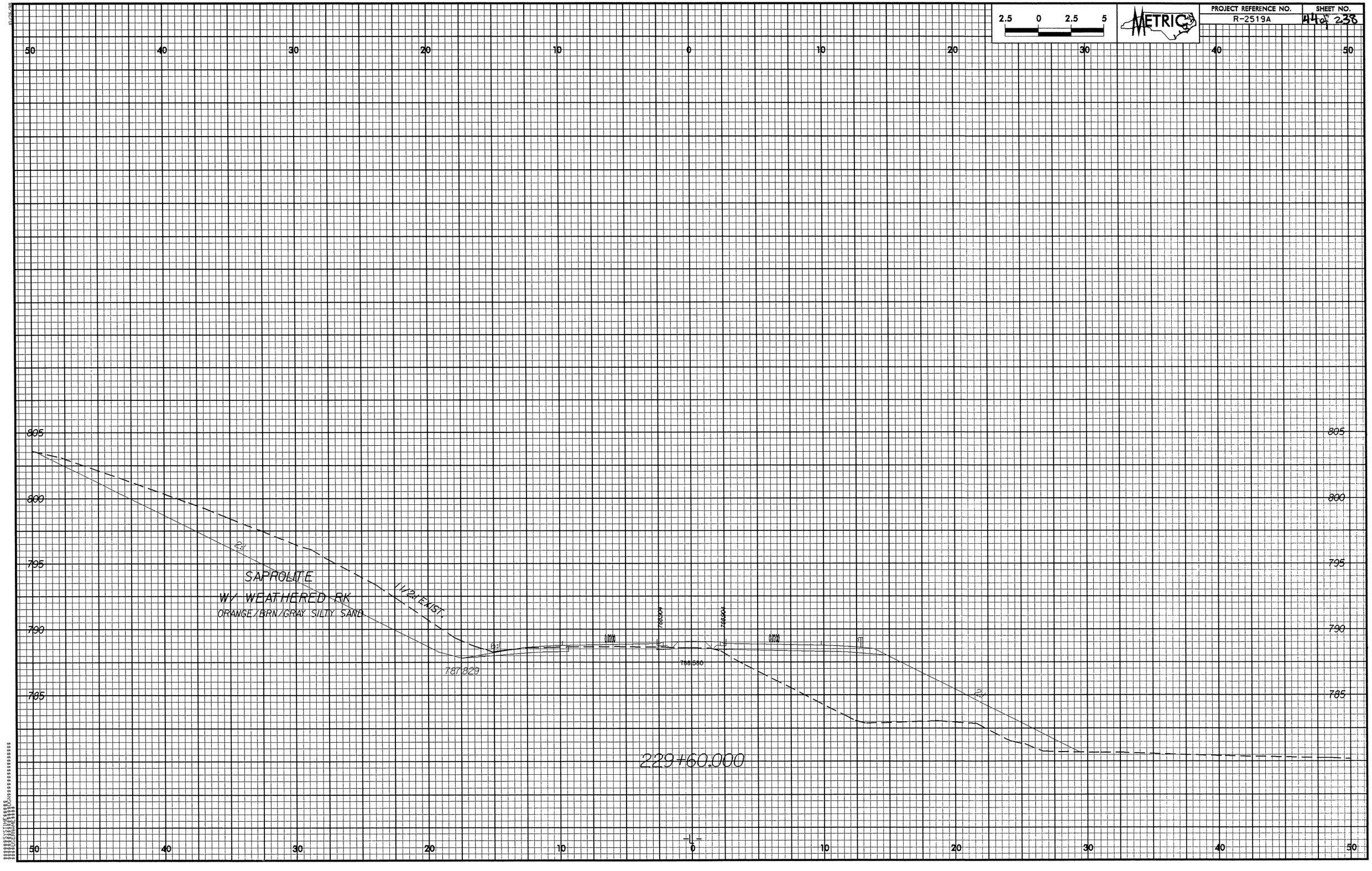
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
41 of 238
228+40.000
228+20.000
228+00.000
784.450
783.764
783.044
782.920
782.273
1 1/2:1 EXIST.
EMBANKMENT
SILTY SAND, LOOSE
RES. SOILS AND SAPROLITE
LOOSE TO MED. DENSE



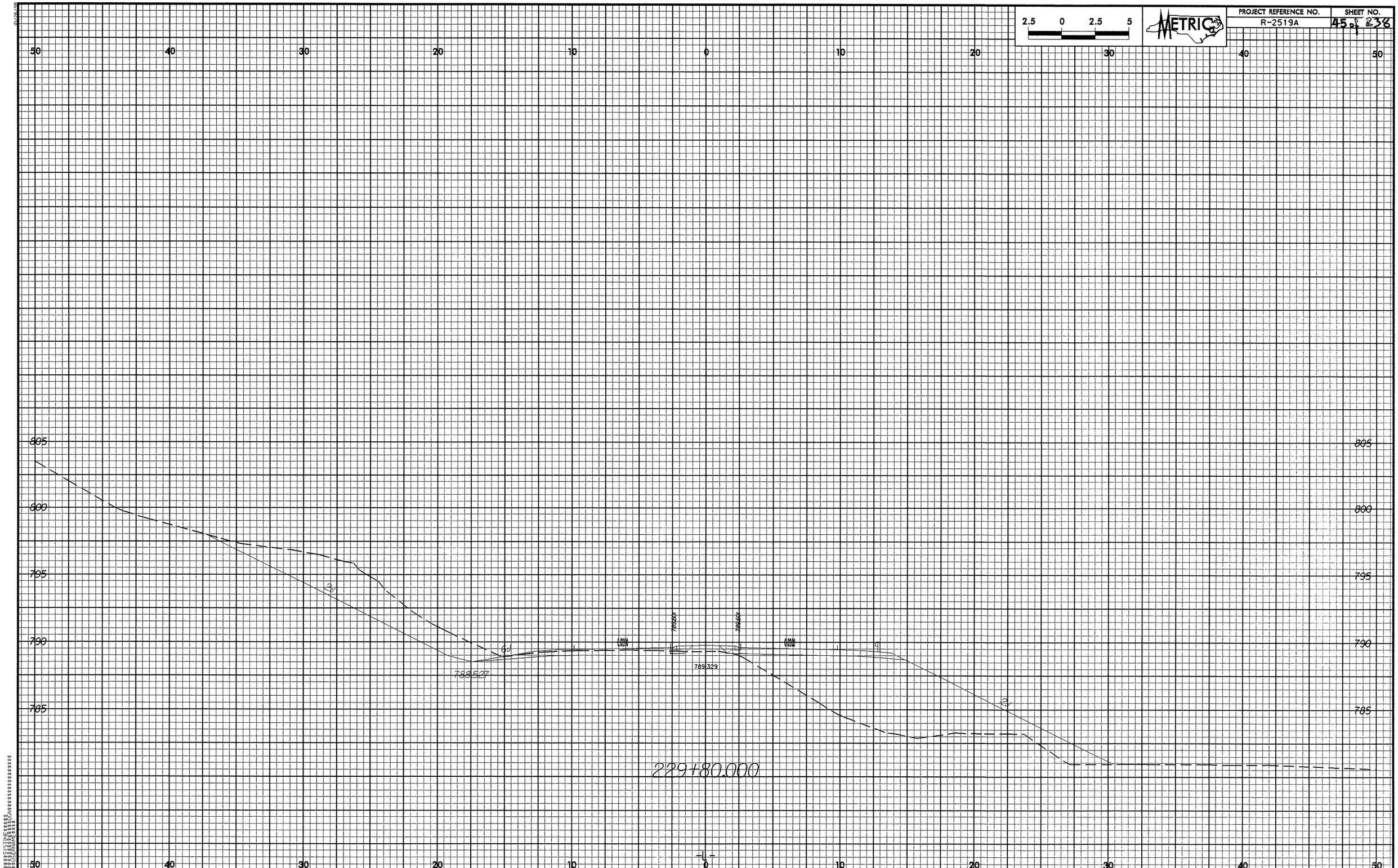
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
42 of 238
50 40 30 20 10 0 10 20 30 40 50
795
790
785
780
2:1
6:1
785.737
786.454
229+00.000
2.60:1
785.040
785.818
228+80.000
EMBANKMENT
LOOSE
784.342
785.176
228+60
21 RT. OF -L-
RESIDUAL:
ORANGE SILTY CLAY
11
13
35
5/22/03
SAPROLITE:
GREEN TO GREY SILTY SAND
228+60.000
-L-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
43 of 238
SAPROLITE
W/ WEATHERED RK
ORANGE/BRN/GRAY SILTY SAND
1 1/2:1 EXIST.
EMBANKMENT
BROWN SILTY SAND, LOOSE
229+40
19.5 M RT
787.132
787.986
229+40.000
SAPROLITE ORANGE/BRN/GRAY SILTY SAND
WEATHERED RK
SAPROLITE
W/ WEATHERED RK
ORANGE/BRN/GRAY SILTY SAND
786.435
787.240
229+20.000



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
44 of 238
50 40 30 20 10 0 10 20 30 40 50
805
800
795
790
785
2:1
SAPROLITE
W/ WEATHERED RK
ORANGE/BRN/GRAY SILTY SAND
1 1/2:1 EXIST.
6:1
787.829
0.0200
788.304
788.580
0.0200
2:1
229+60.000
-L-



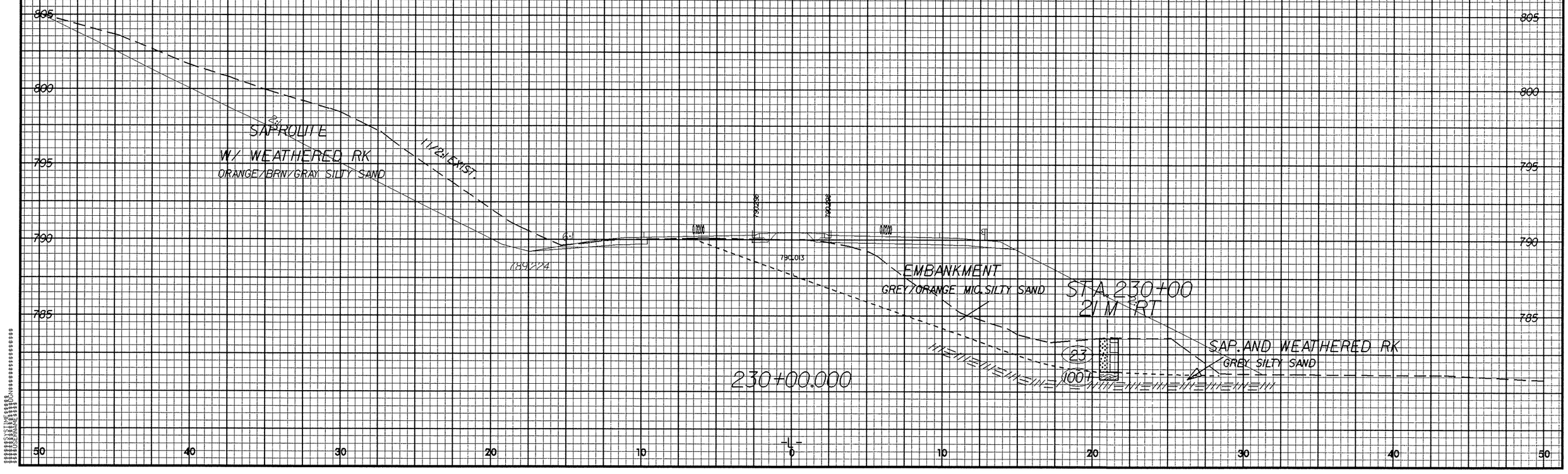
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
45 of 238
50 40 30 20 10 0 10 20 30 40 50
805
800
795
790
785
2:1
6:1
788.527
789.329
229+80.000
-L-

10/26/98

2.5 0 2.5 5

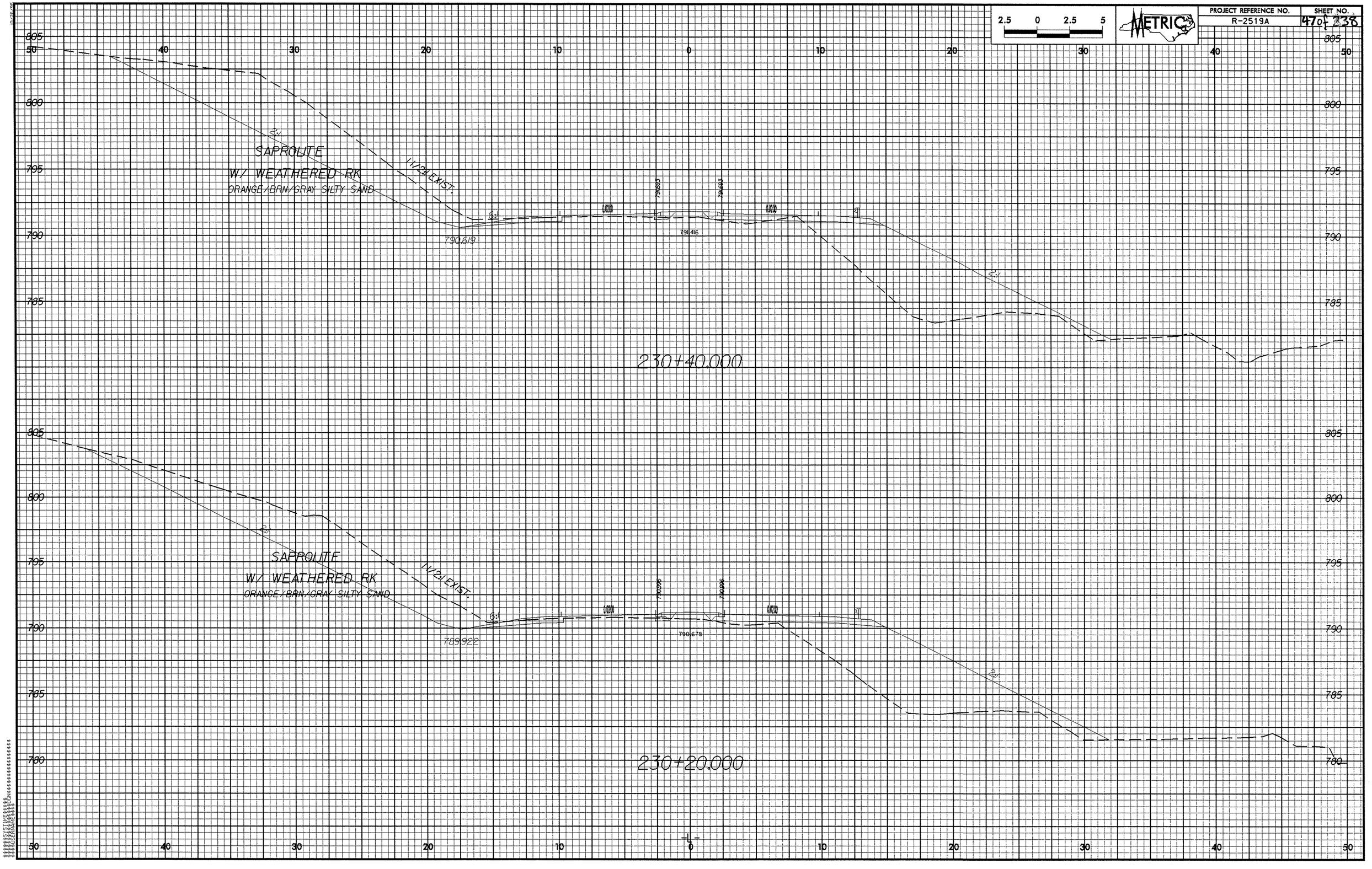
METRIC

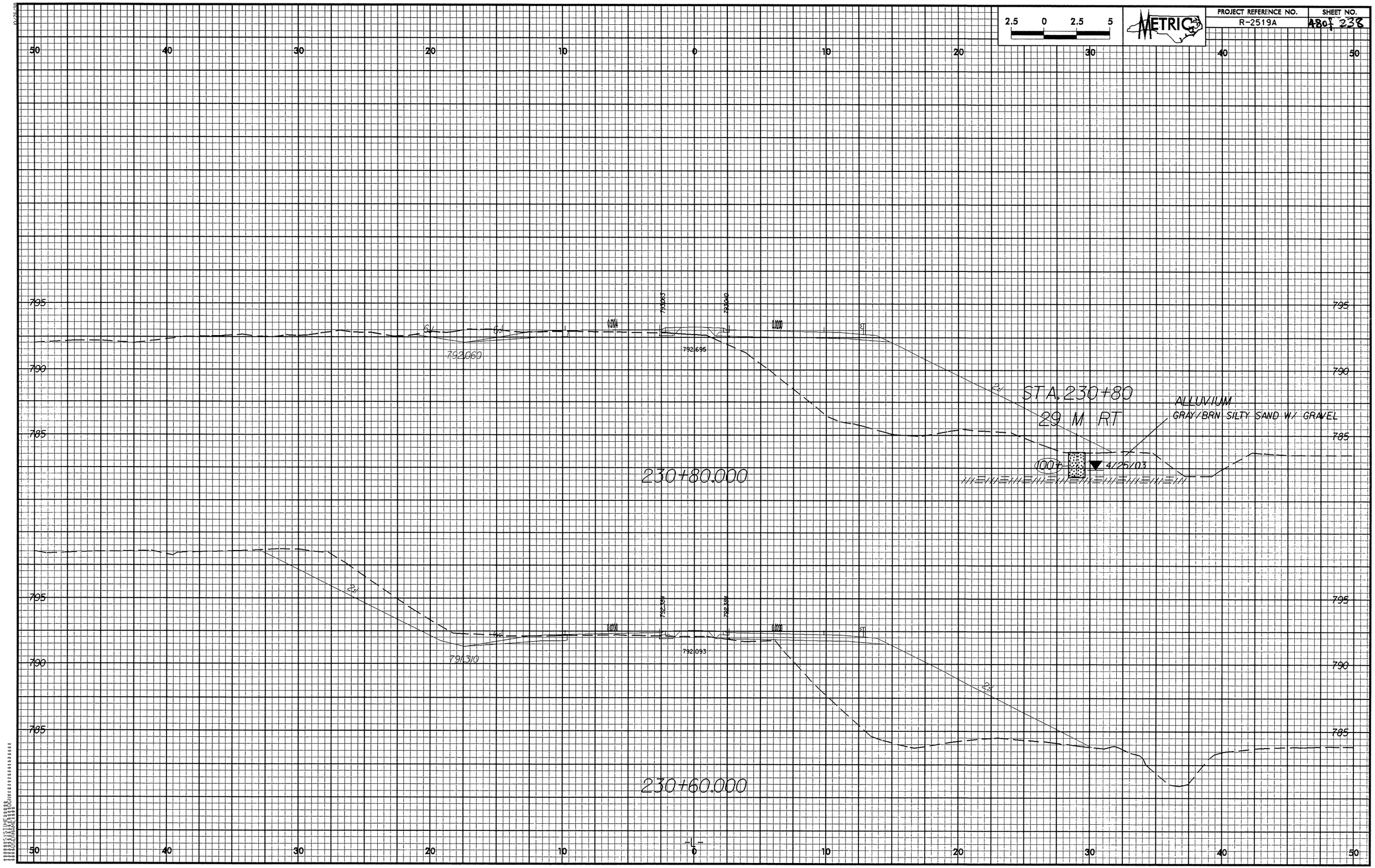
PROJECT REFERENCE NO.	SHEET NO.
R-2519A	46 OF 238



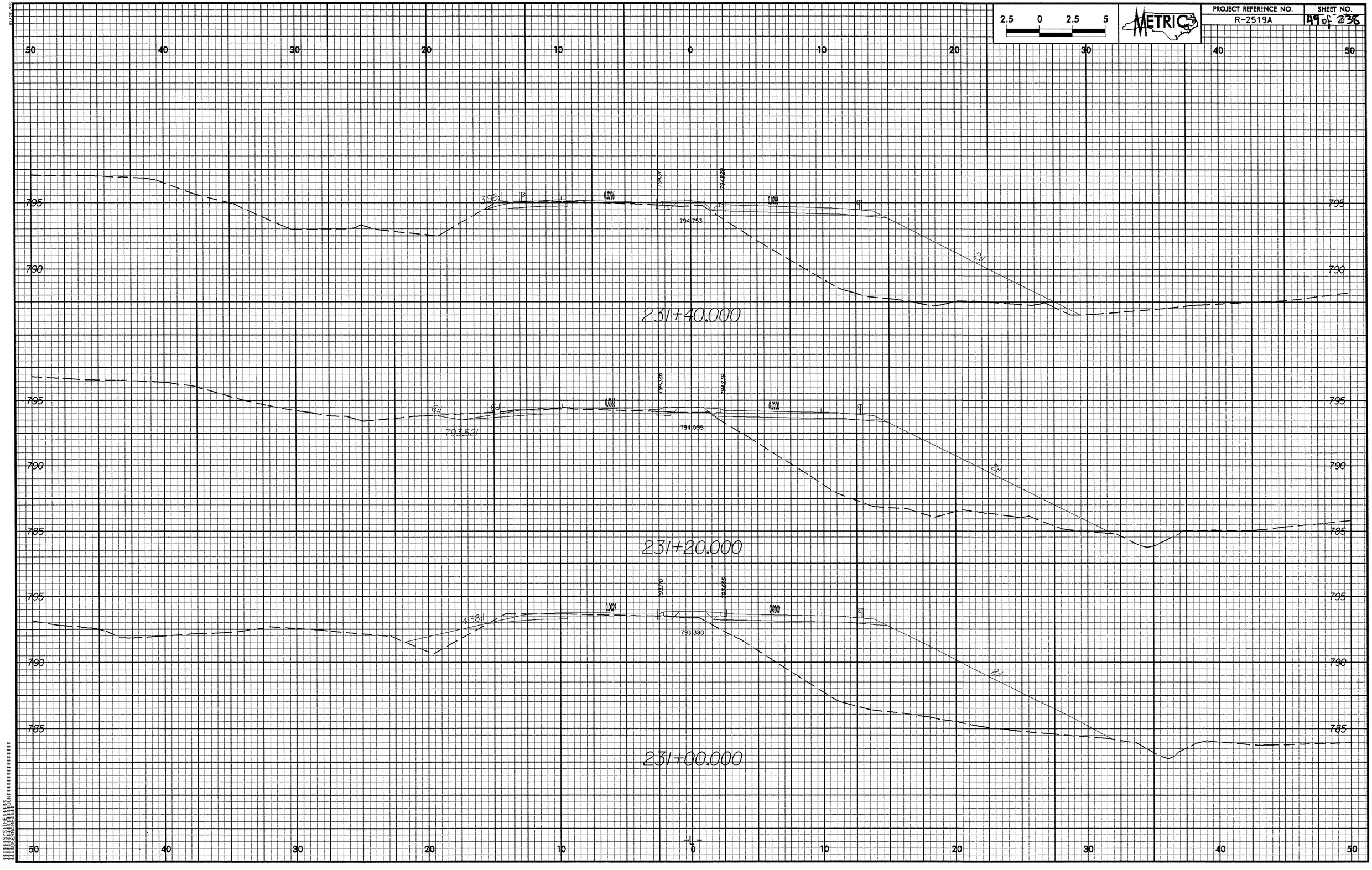
2.5 0 2.5 5

METRIC





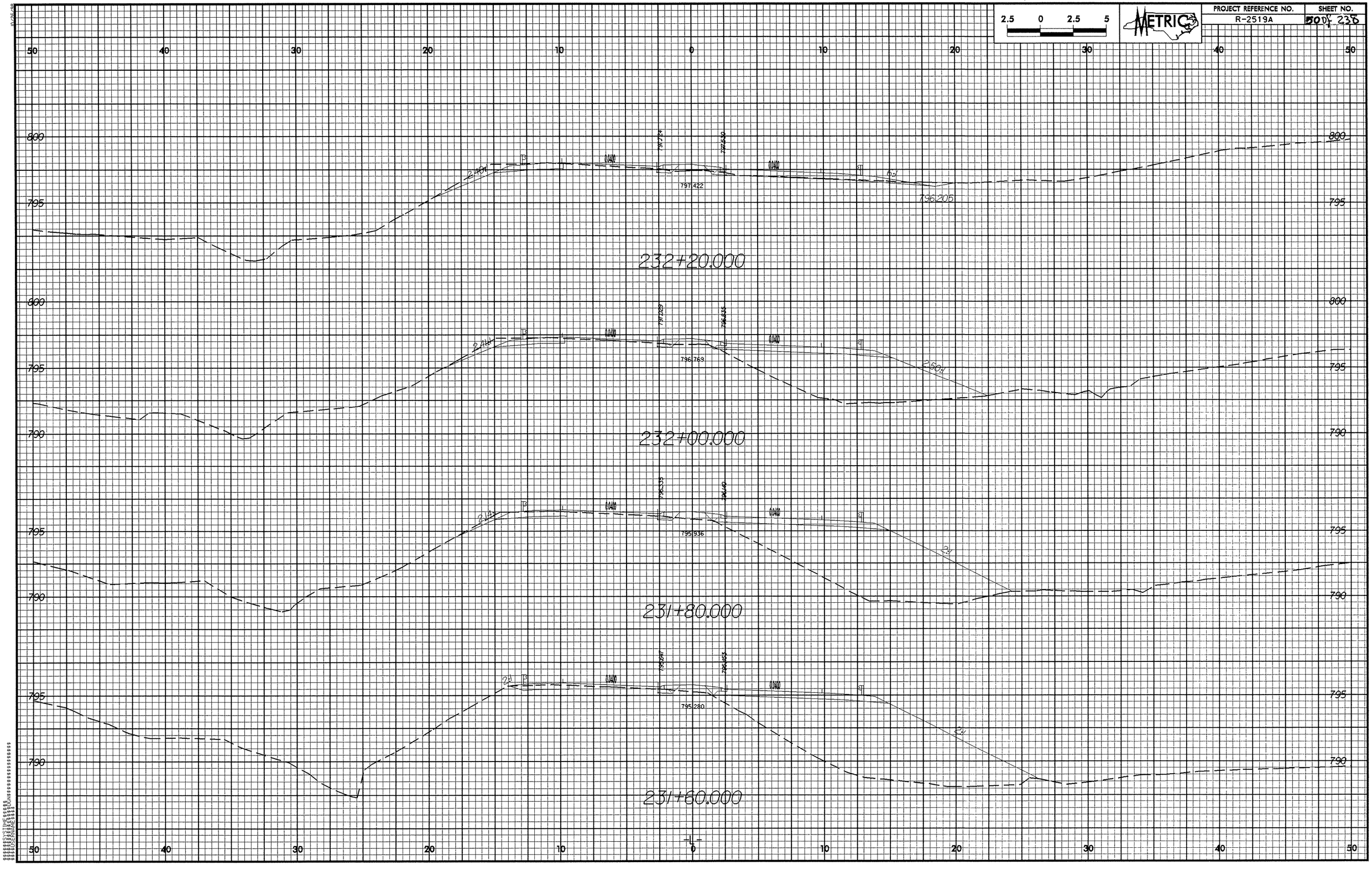
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
480 of 238
50 40 30 20 10 0 10 20 30 40 50
795
790
785
6:1
792.060
792.695
2:1
STA. 230+80
29 M RT
ALLUVIUM
GRAY/BRN SILTY SAND W/ GRAVEL
100+
4/25/03
230+80.000
791.310
792.093
230+60.000
-L-


50 40 30 20 10 0 10 20 30 40 50
795
790
785
3.96:1
794.753
794.971
794.829
2:1
231+40.000
6:1
793.521
794.095
794.326
794.238
231+20.000
4.38:1
793.380
793.570
794.656
231+00.000

2.5	0	2.5	5

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2519A	50 OF 238



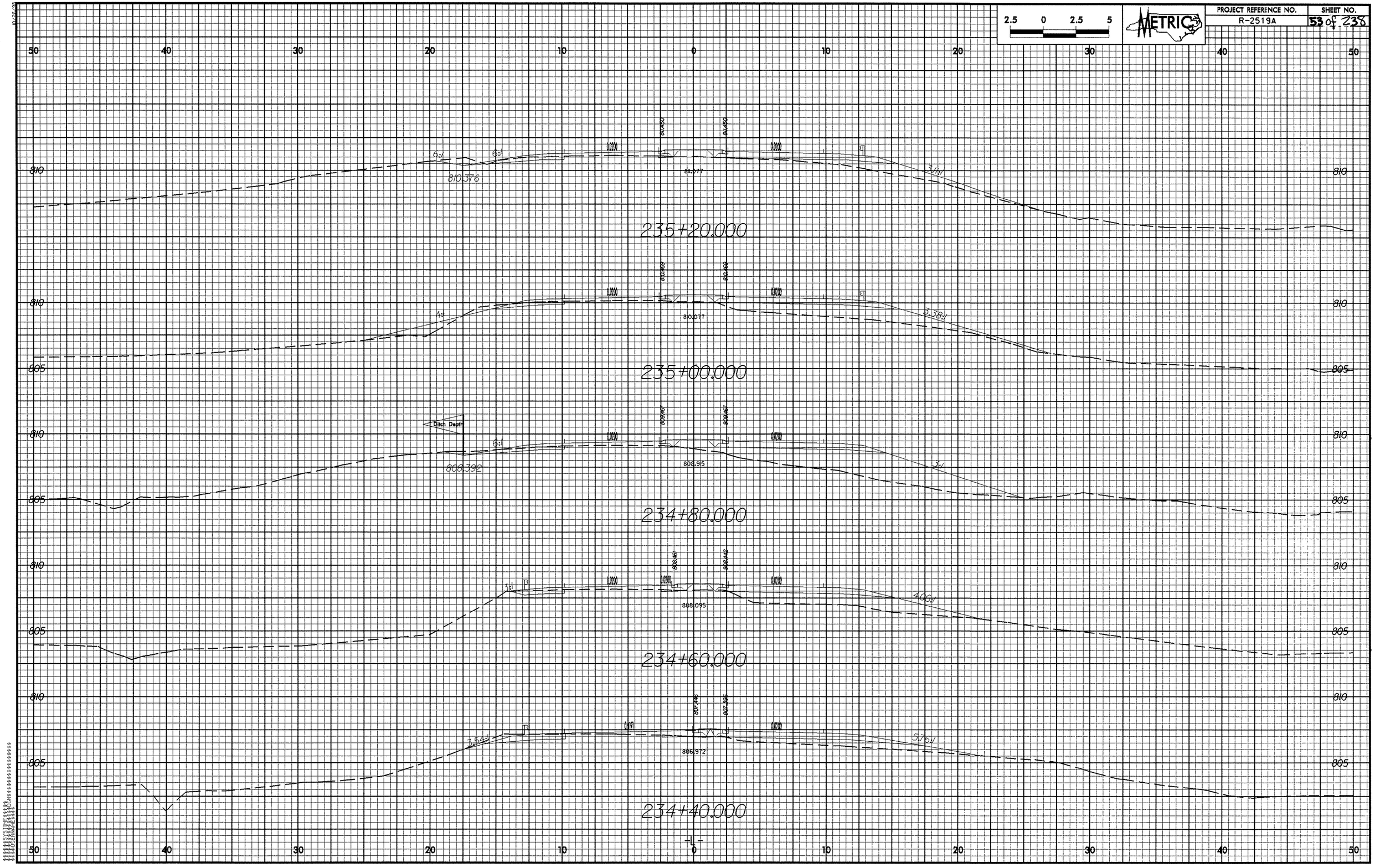
PROJECT REFERENCE NO.	SHEET NO.
R-2519A	51 of 238

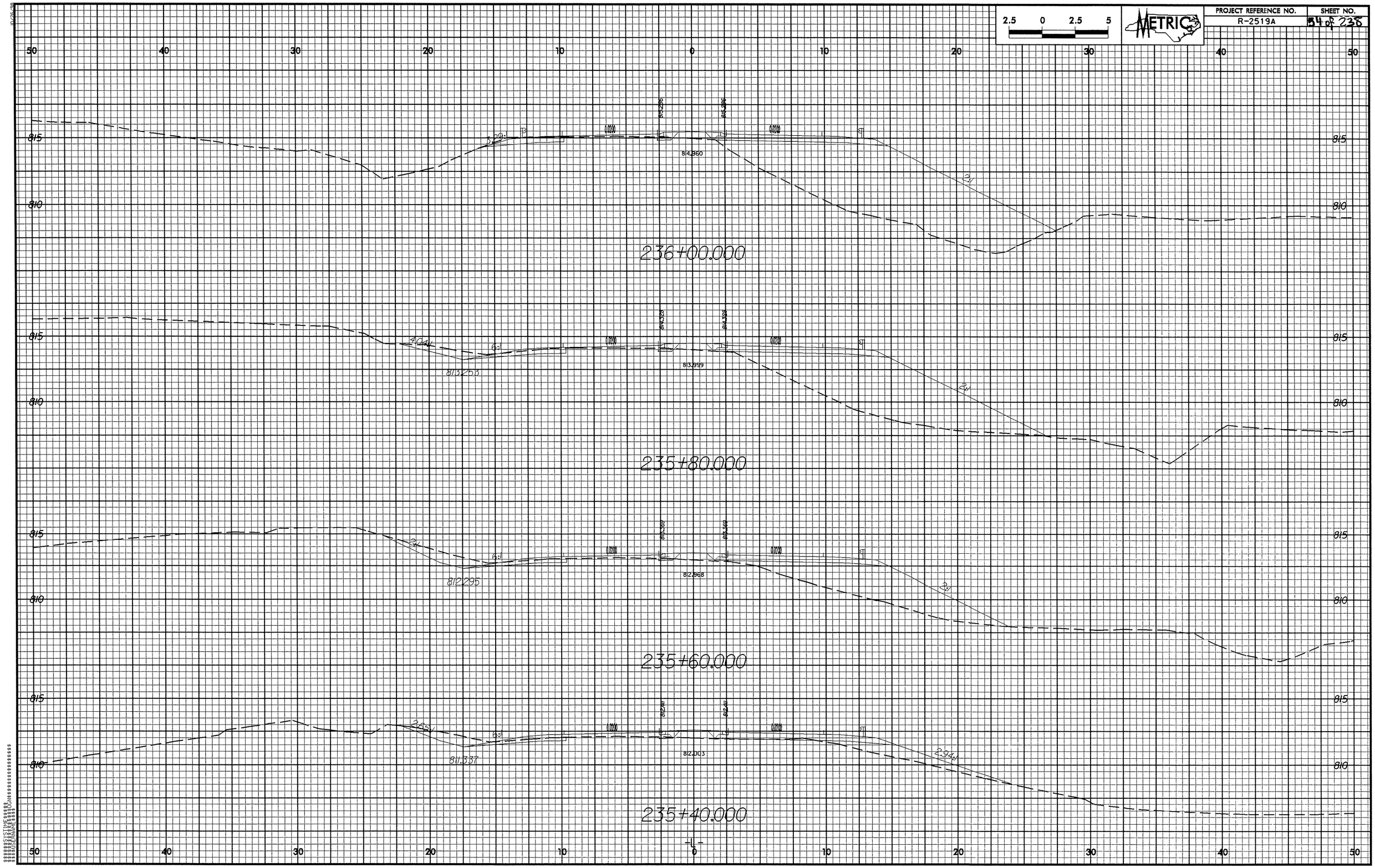
METRIC

2.5 0 2.5 5

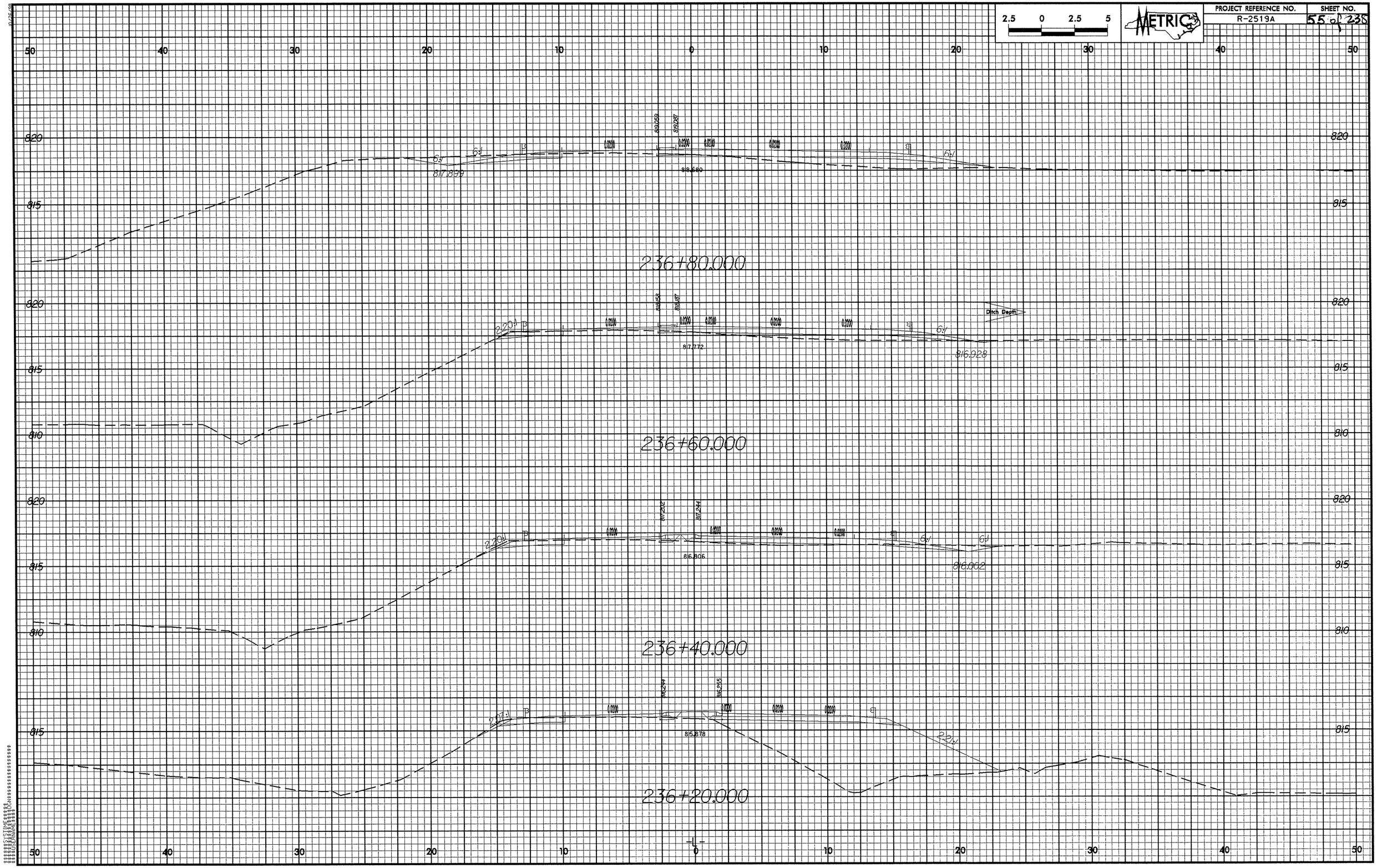
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
52 of 238
METRIC
2.5 0 2.5 5
Ditch Depth
805.311
805.988
805.252
806.359
806.335
234+20.000
804.353
804.895
804.162
805.269
805.245
234+00.000
3.76:1
803.871
233+80.000
2.01:1
3.13:1
802.966
233+60.000
2.58:1
2.74:1
802.322
802.274
802.053
233+40.000
2.81:1
2.75:1
801.427
801.379
801.125
233+20.000
233+20
15m RT OF -L-
4/24/03
6
100+
100+
-L-
ROADWAY FILL:
REDDISH BROWN SILTY SAND
WEATHERED ROCK:
BROWN & GREY FINE TO MED GRAINED SAND
SAPROLITE:
GREY TO BROWN SANDY CLAY

PROJECT REFERENCE NO. R-2519A
SHEET NO. 53 of 238

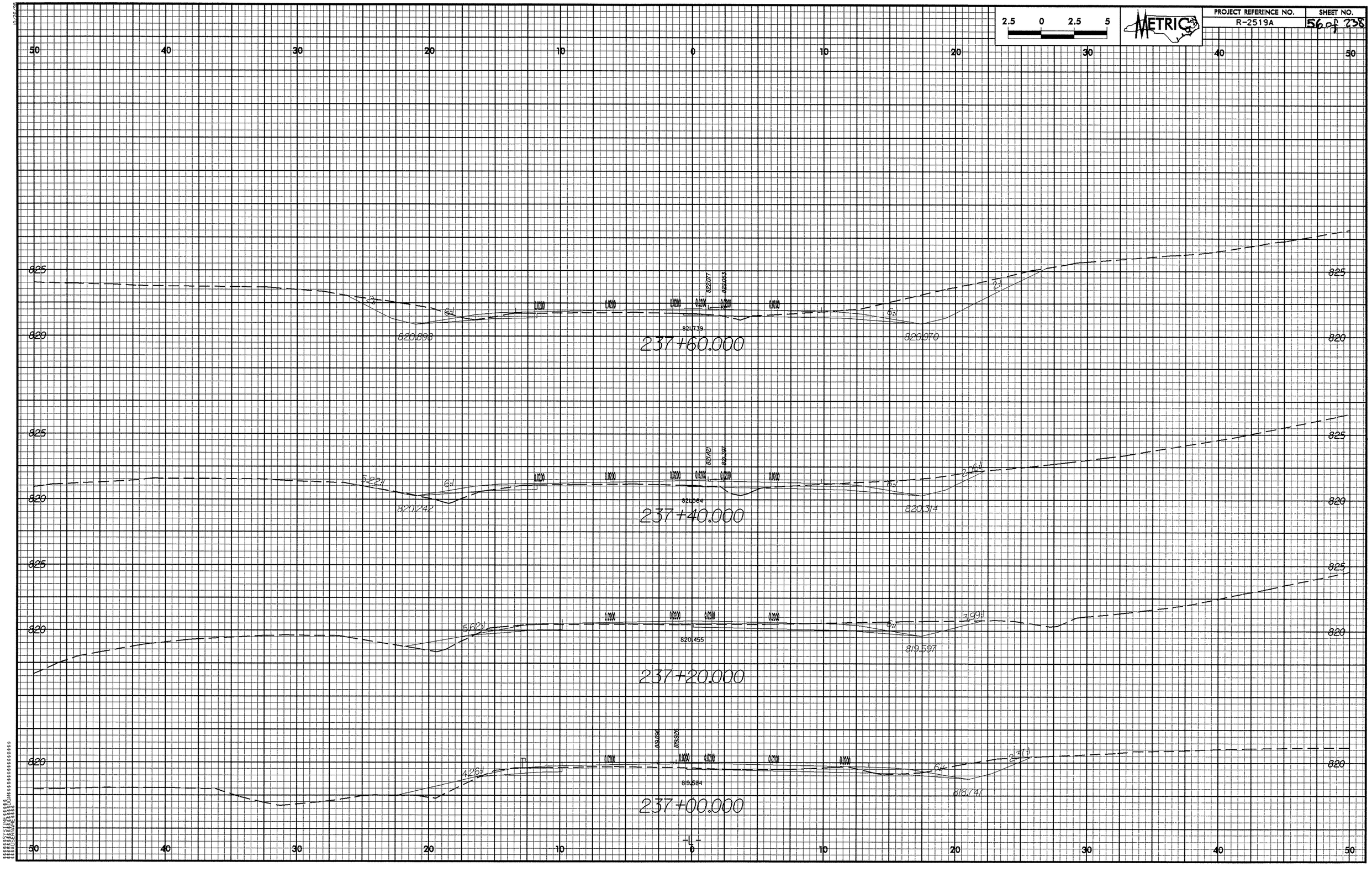




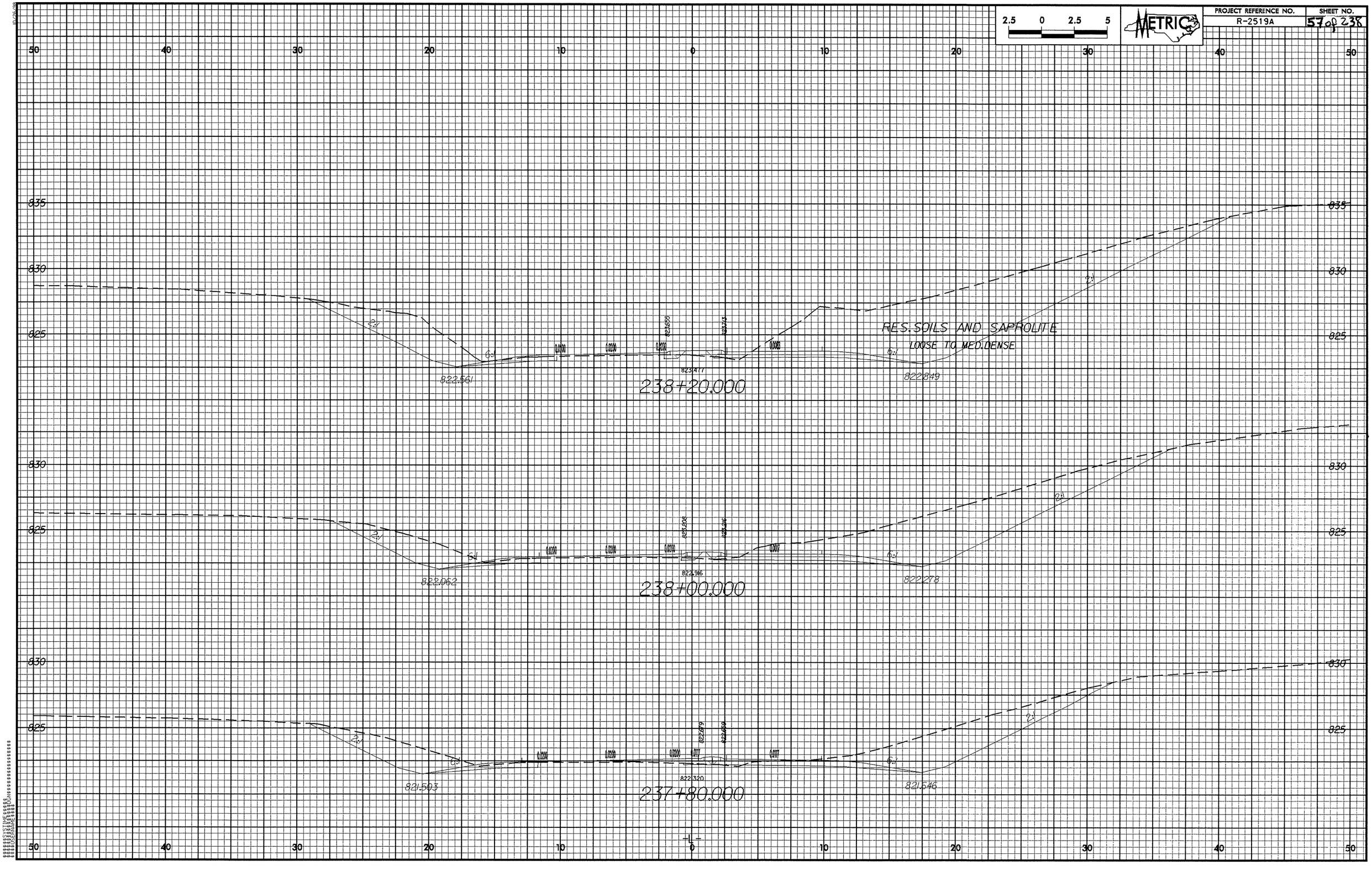
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
54 of 238
50 40 30 20 10 0 10 20 30 40 50
815
810
814.860
2:1
236+00.000
813.999
2:1
235+80.000
812.968
2:1
235+60.000
812.003
2.94:1
235+40.000
-L-



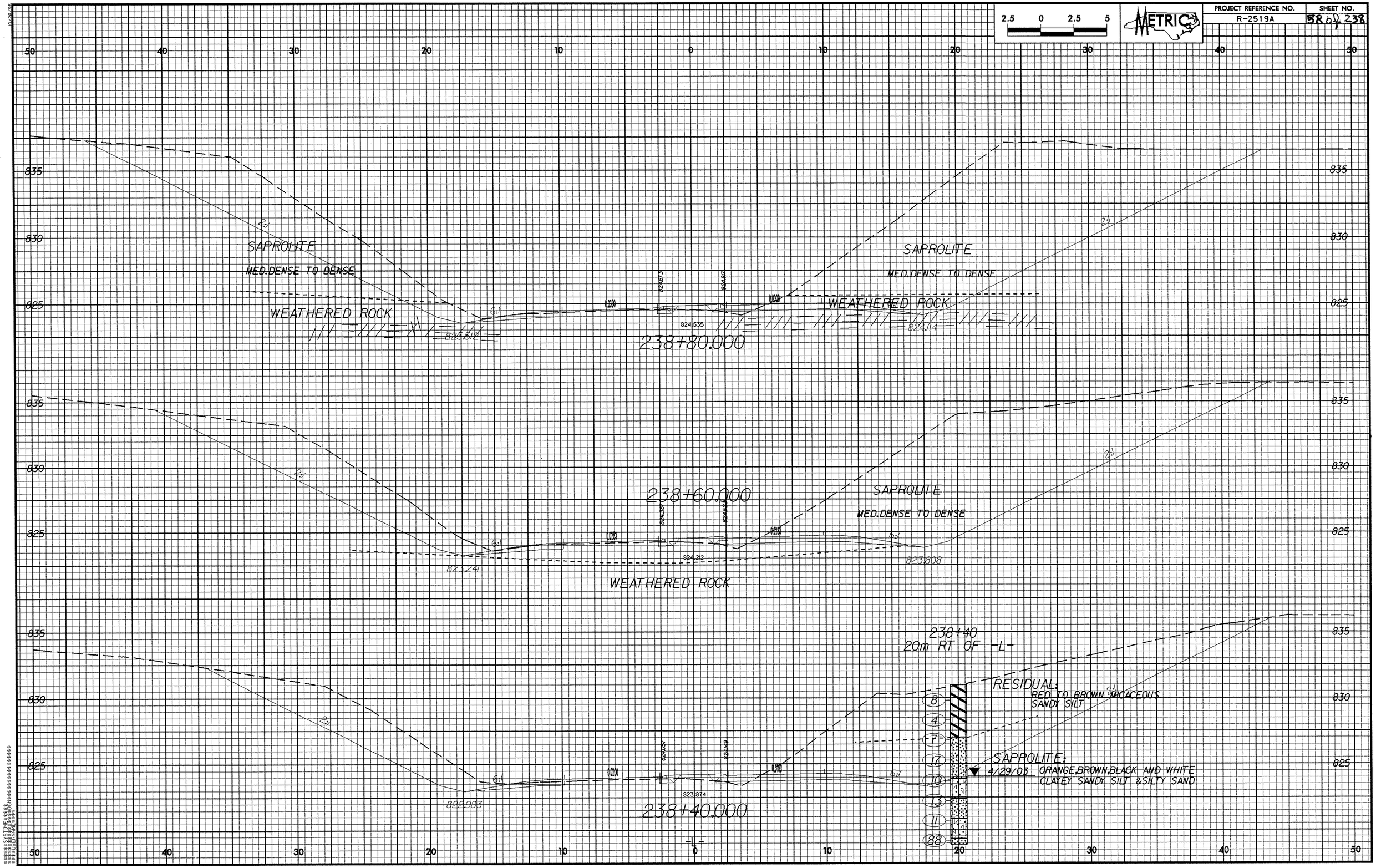
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
55 of 238
50 40 30 20 10 0 10 20 30 40 50
820
815
810
6:1
817.899
818.680
236+80.000
2.20:1
817.772
816.928
Ditch Depth
236+60.000
817.202
817.244
816.806
816.002
236+40.000
2.07:1
816.244
816.255
815.878
2.21:1
236+20.000



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
56 of 238
50 40 30 20 10 0 10 20 30 40 50
825
820
2:1
6:1
0.0200
822.077
822.053
821.739
820.898
820.070
237+60.000
5.22:1
820.242
821.421
821.397
821.064
820.314
2.06:1
237+40.000
5.62:1
820.455
819.597
3.99:1
237+20.000
4.26:1
819.894
819.928
819.584
818.747
237+00.000
-L-

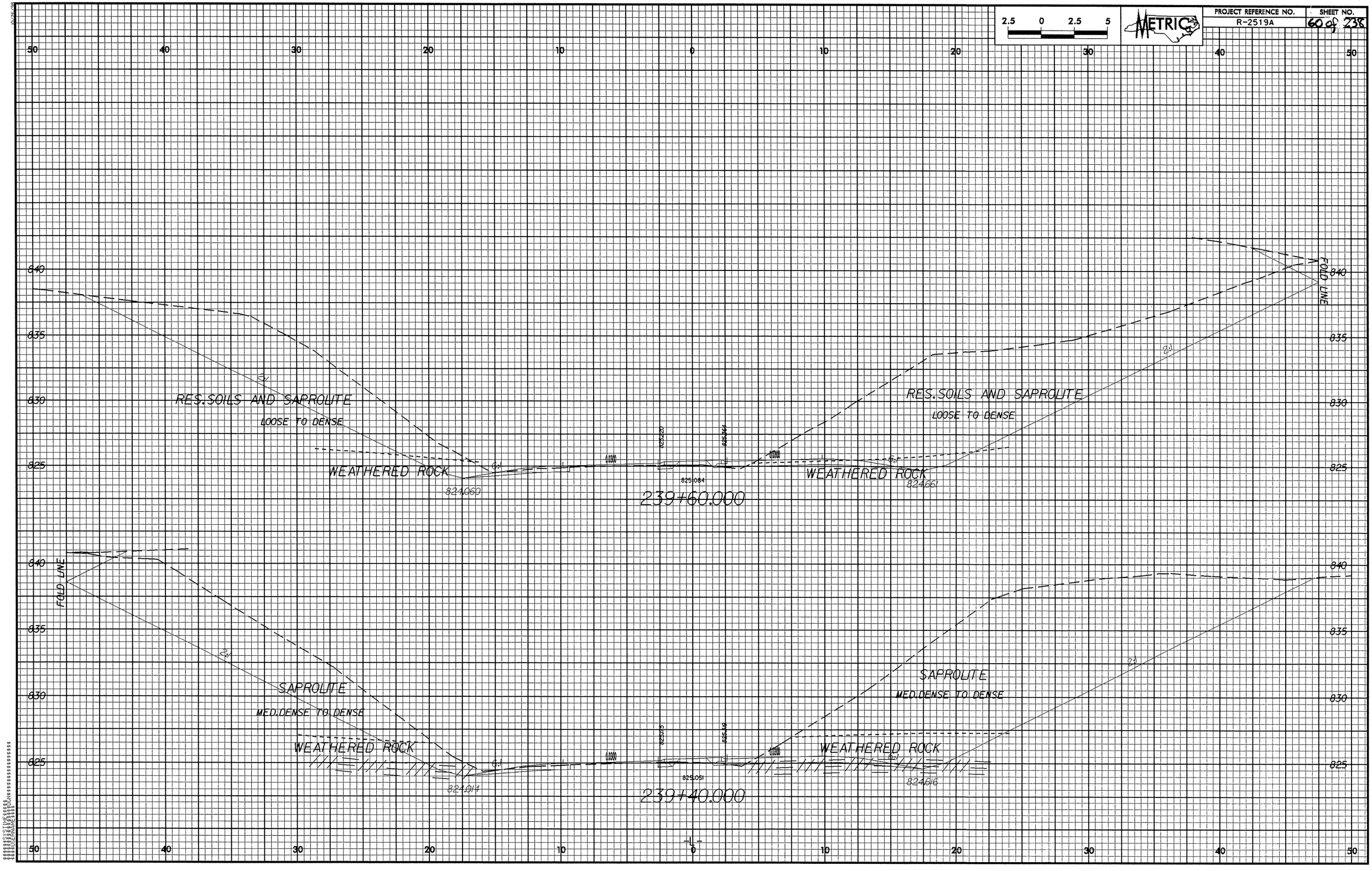


2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
57 of 238
50 40 30 20 10 0 10 20 30 40 50
835
830
825
RES. SOILS AND SAPROLITE
LOOSE TO MED. DENSE
2:1
6:1
0.0100
0.0200
0.0200
0.0083
823.655
823.713
823.477
822.561
822.849
238+20.000
823.208
823.216
822.916
822.062
822.278
238+00.000
822.679
822.659
822.320
821.503
821.646
237+80.000
-L-



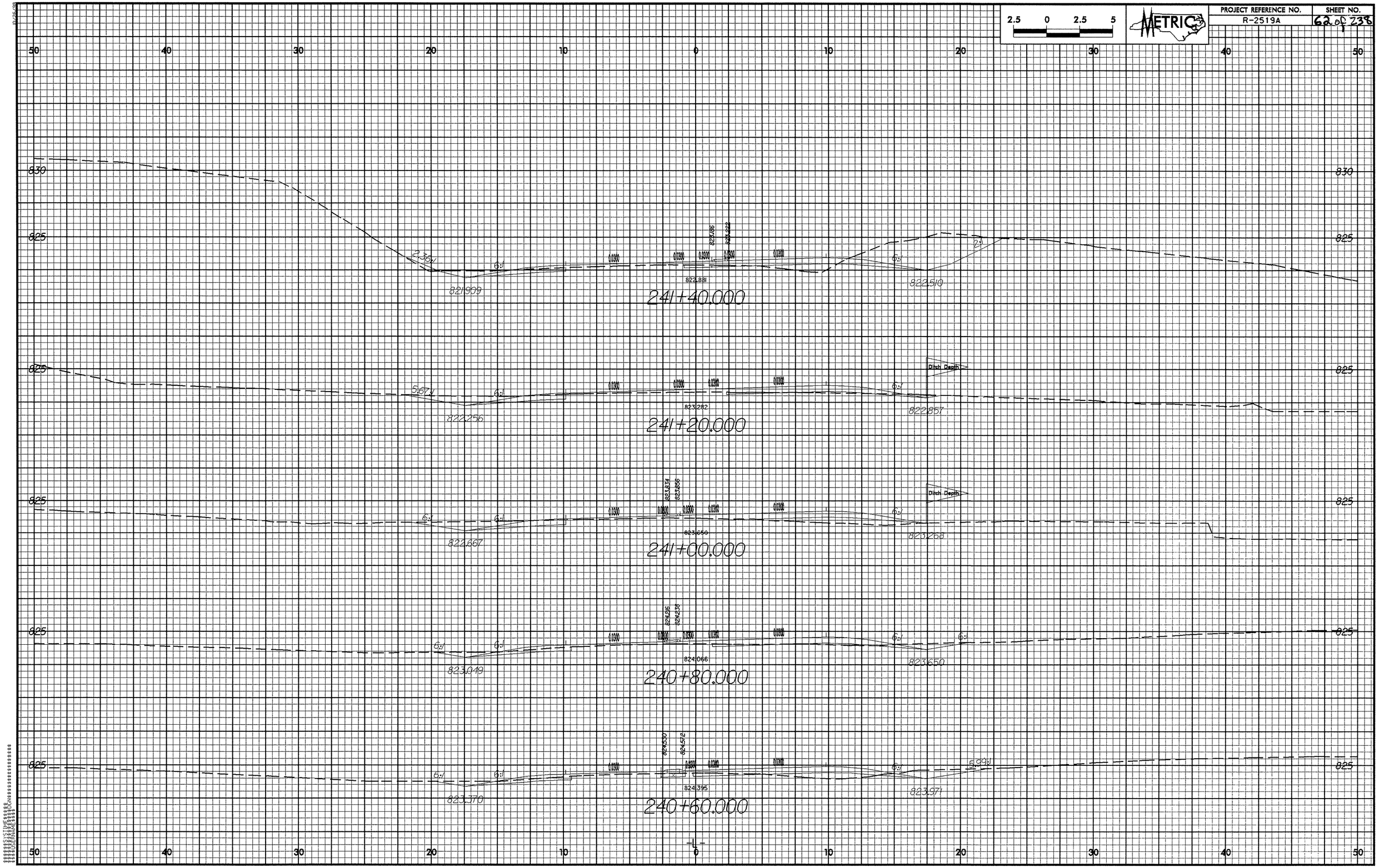
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
58 of 238
SAPROLITE
MED.DENSE TO DENSE
WEATHERED ROCK
2:1
6:1
824.635
824.14
238+80.000
238+60.000
823.241
823.808
824.212
238+40
20m RT OF -L-
RESIDUAL:
RED TO BROWN MICACEOUS SANDY SILT
SAPROLITE:
4/29/03 ORANGE,BROWN,BLACK AND WHITE CLAYEY SANDY SILT &SILTY SAND
8
4
7
17
10
13
11
88
822.983
823.874
238+40.000
-L-

2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
59 of 238
50 40 30 20 10 0 10 20 30 40 50
840
835
830
825
FOLD LINE
2:1
SAPROLITE
WEATHERED ROCK
6:1
823.908
0.0300
825.069
825.213
824.920
239+20.000
824.510
239+20
28m RT. OF -L-
10
12
13
8
13
15
89
100+
100+
SAPROLITE:
REDDISH BROWN & WHITE
MICACEOUS SILTY SAND
ORANGE & WHITE SILTY SAND
WITH QUARTS FRAG.
WEATHERED ROCK:
SAPROLITE
MED. DENSE TO DENSE
WEATHERED ROCK
823.741
824.765
825.045
239+00.000
824.342
-L-

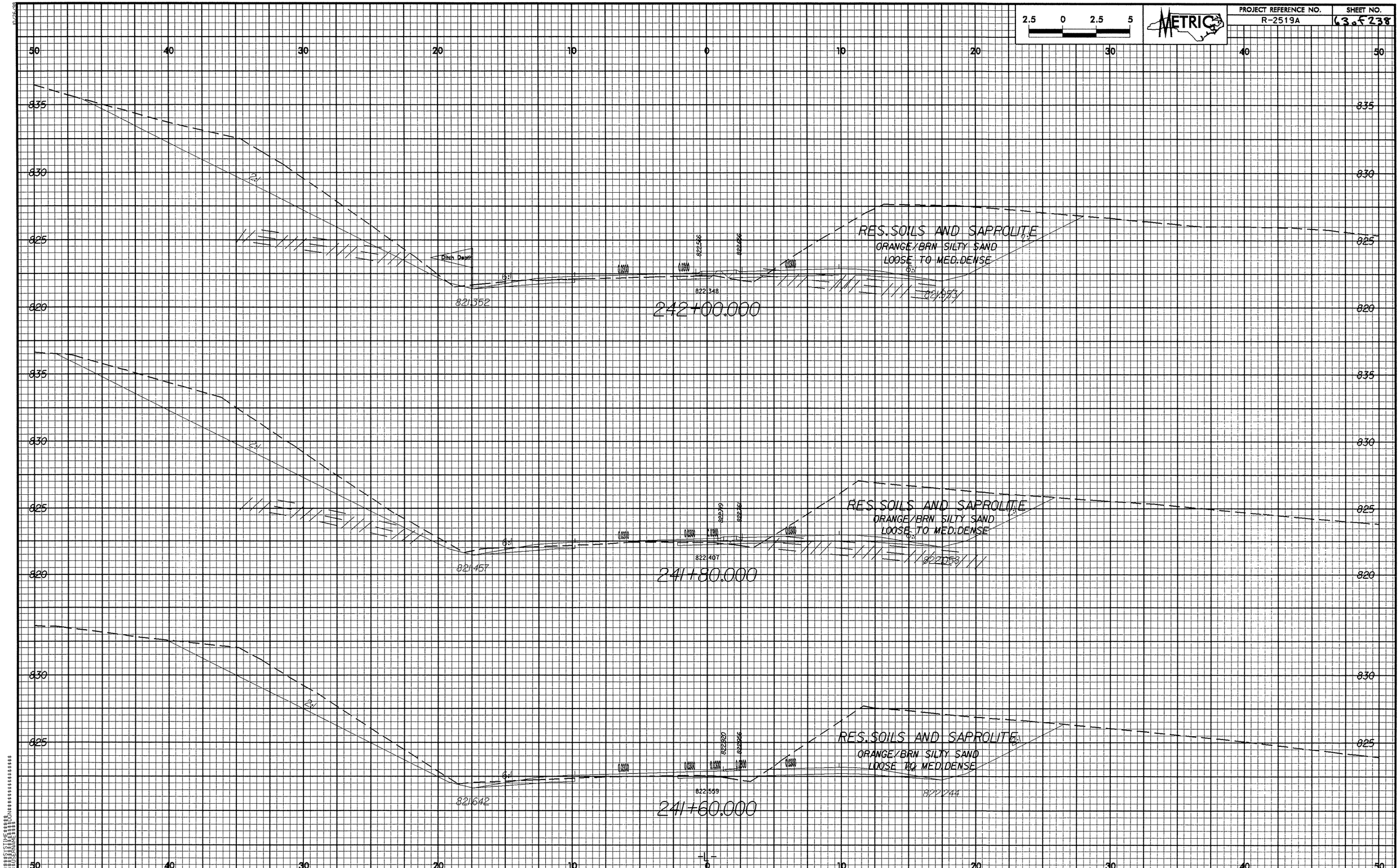

50 40 30 20 10 0 10 20 30 40 50
840
835
830
825
FOLD LINE
2:1
RES. SOILS AND SAPROLITE
LOOSE TO DENSE
WEATHERED ROCK
6:1
825.220
825.564
825.084
824.060
824.661
239+60.000
SAPROLITE
MED. DENSE TO DENSE
825.075
825.149
825.051
824.014
824.616
239+40.000

PROJECT REFERENCE NO.	SHEET NO.
R-2519A	61 of 238

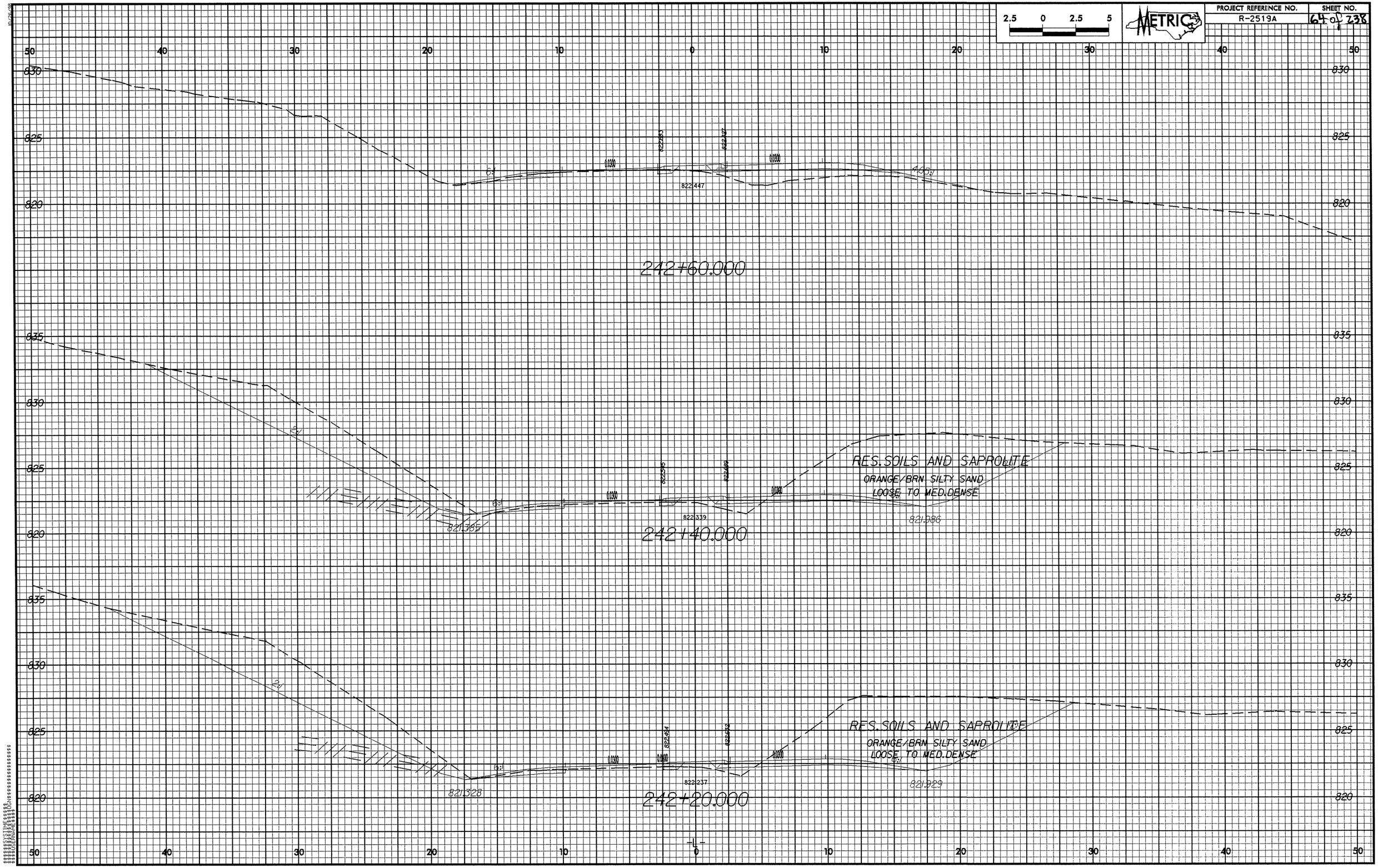
METRIC



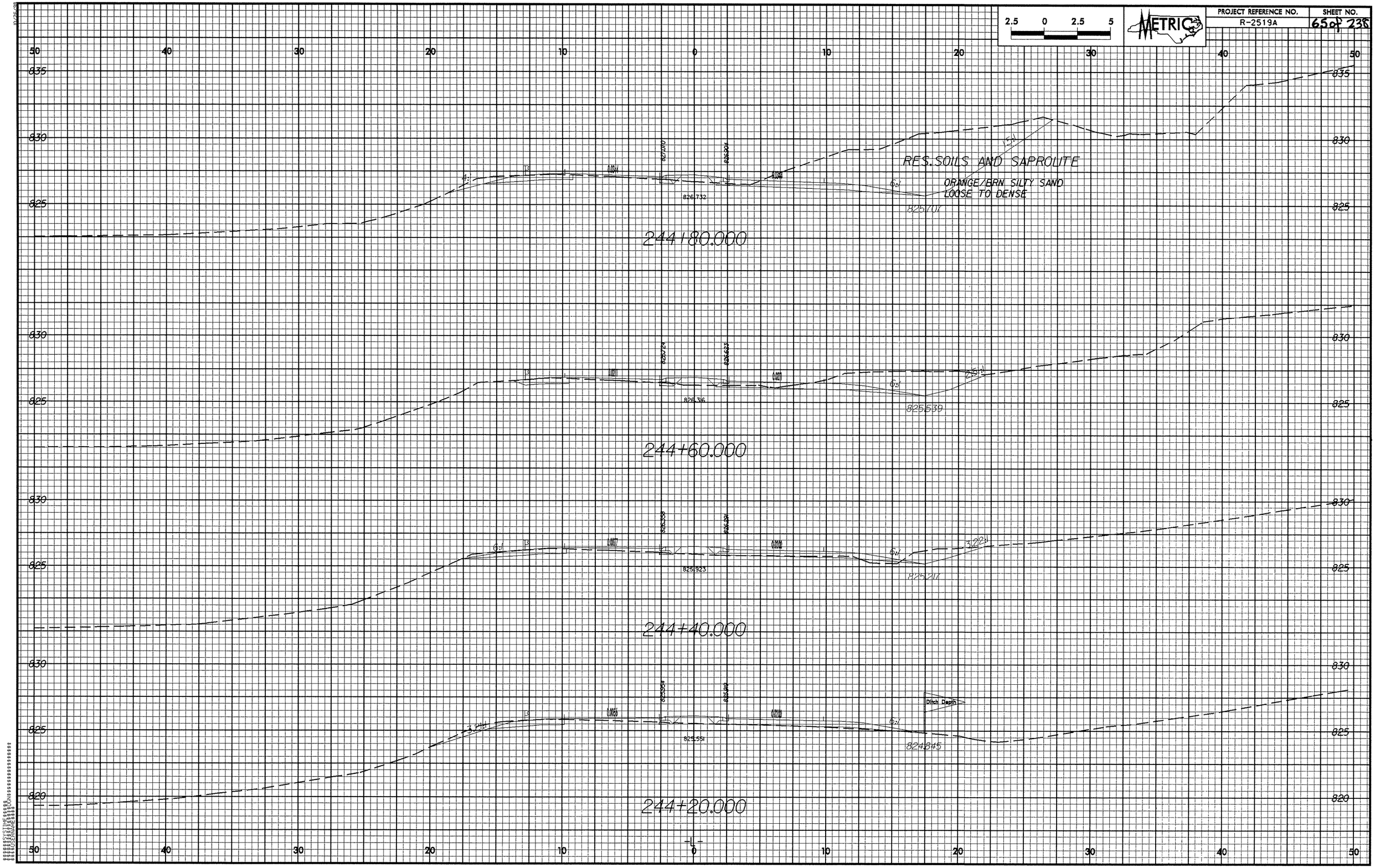
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
62 of 238
50 40 30 20 10 0 10 20 30 40 50
830
825
2.36:1
6:1
821.909
822.881
823.186
823.222
822.510
241+40.000
5.67:1
822.256
823.282
822.857
Ditch Depth
241+20.000
823.834
823.856
822.667
823.650
823.268
241+00.000
824.216
824.238
823.049
824.066
823.650
240+80.000
824.530
824.572
823.370
824.395
823.971
5.99:1
240+60.000
-L-



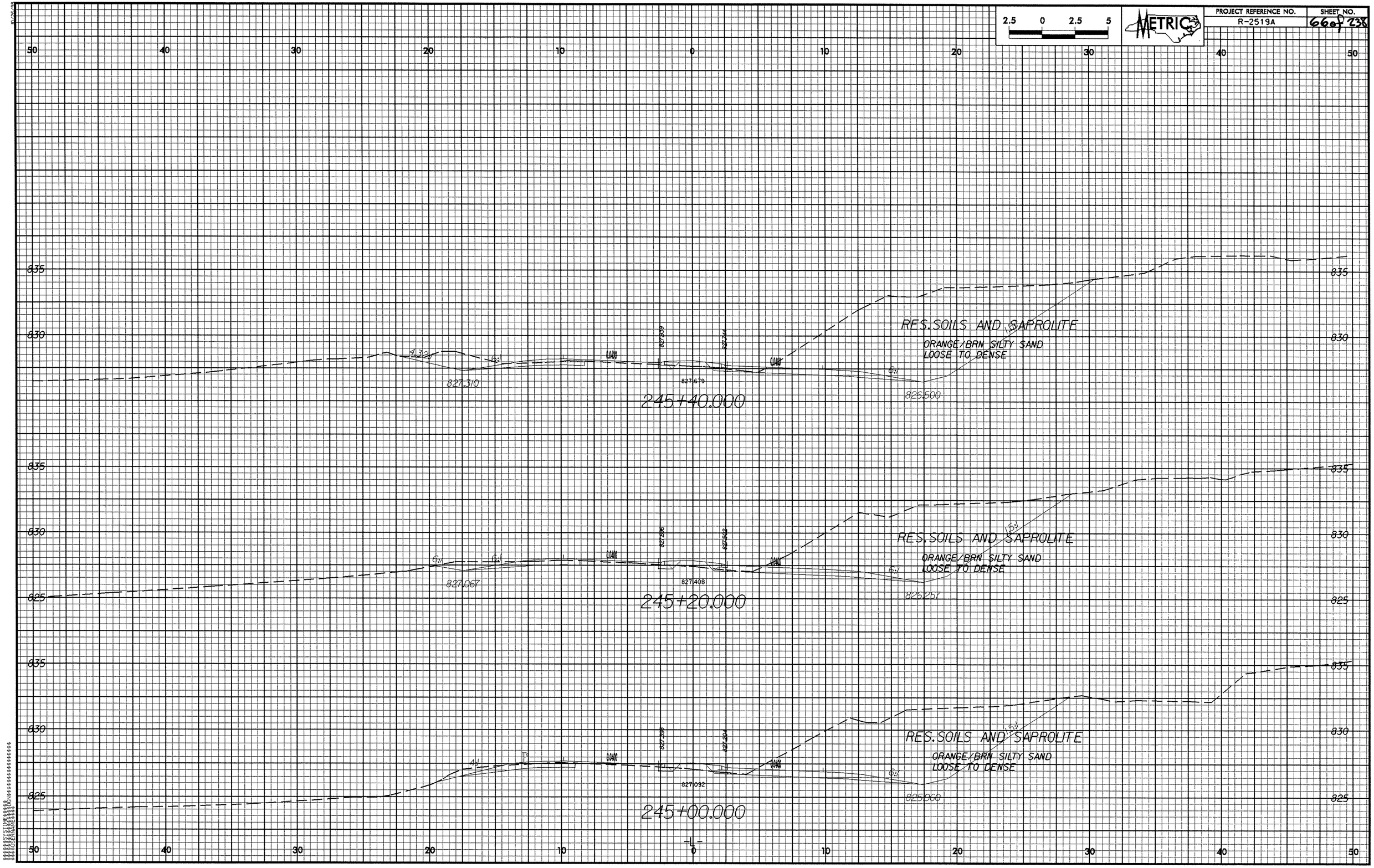
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
63 of 238
50 40 30 20 10 0 10 20 30 40 50
835
830
825
820
2:1
6:1
Ditch Depth
RES. SOILS AND SAPROLITE
ORANGE/BRN SILTY SAND
LOOSE TO MED. DENSE
822.348
821.352
821.953
242+00.000
822.407
821.457
822.058
241+80.000
822.559
821.642
822.244
241+60.000
-L-



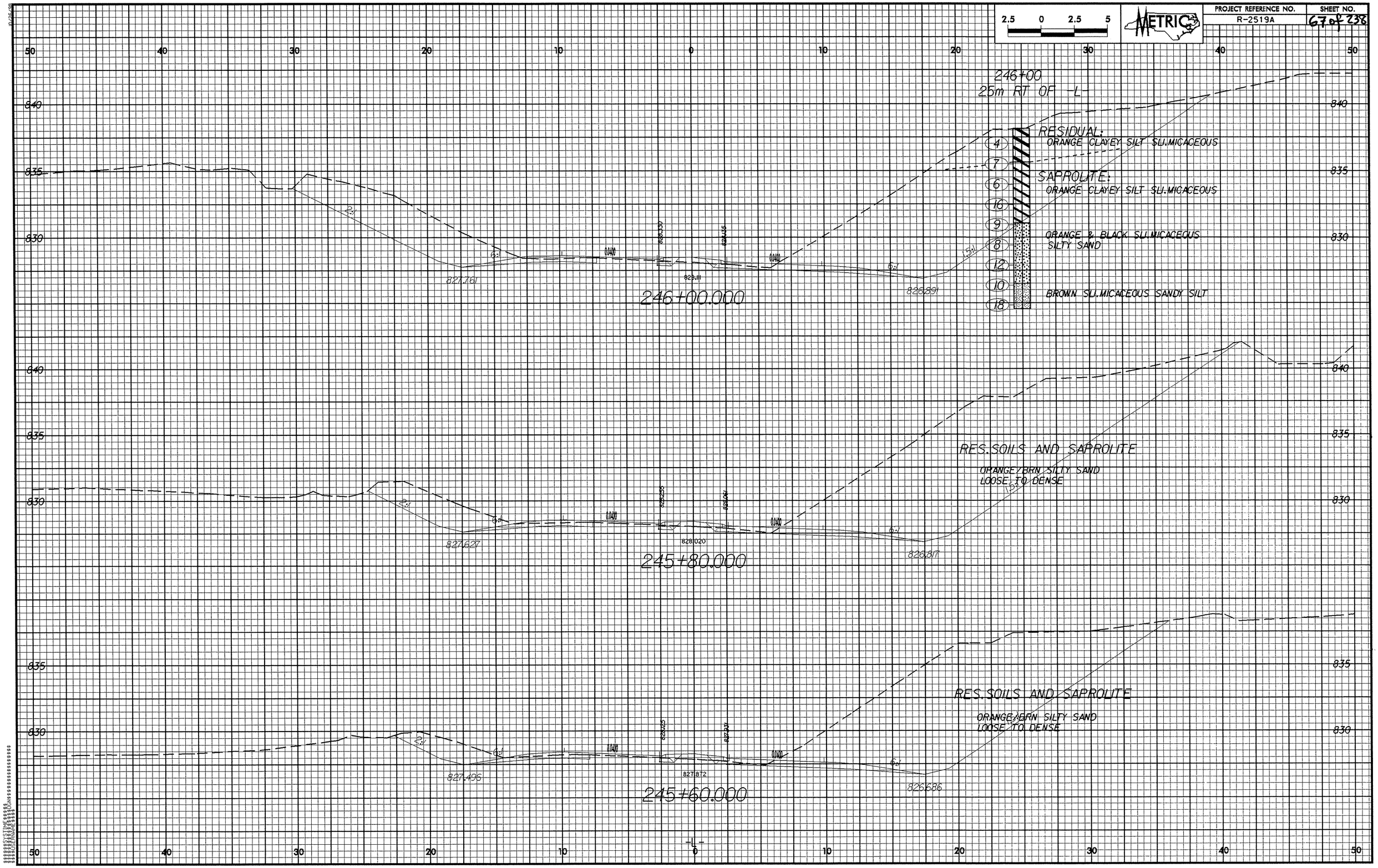
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
64 of 238
50 40 30 20 10 0 10 20 30 40 50
830
825
820
835
822.447
242+60.000
RES. SOILS AND SAPROLITE
ORANGE/BRN SILTY SAND
LOOSE TO MED. DENSE
822.339
821.385
821.986
242+40.000
822.237
821.328
821.929
242+20.000
-L-



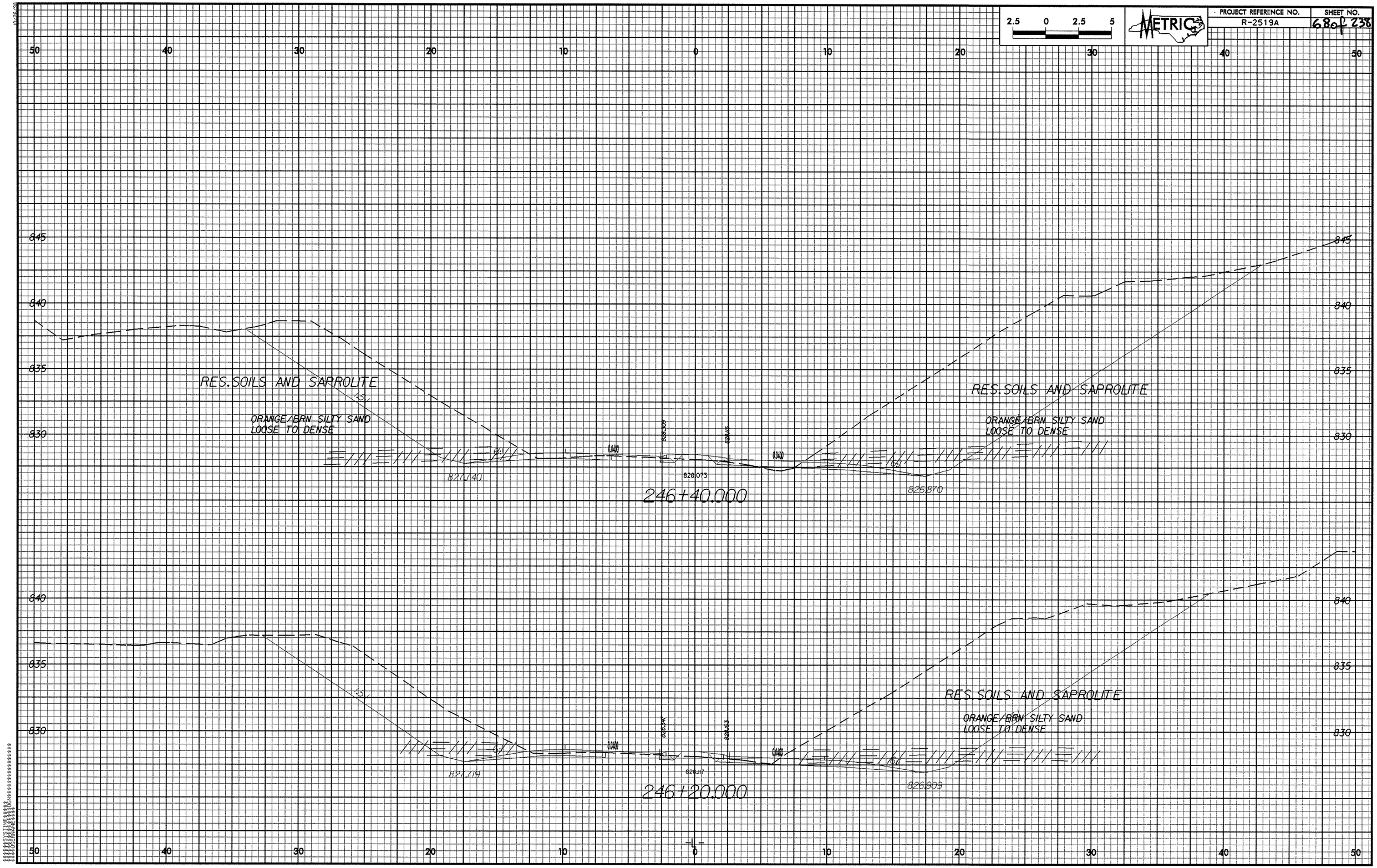
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
65 of 238
RES. SOILS AND SAPROLITE
ORANGE/BRN SILTY SAND
LOOSE TO DENSE
826.732
825.707
244+80.000
826.316
825.539
244+60.000
825.923
825.217
244+40.000
825.551
824.845
Ditch Depth
244+20.000



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
66 of 238
50 40 30 20 10 0 10 20 30 40 50
835
830
825
RES. SOILS AND SAPROLITE
ORANGE/BRN SILTY SAND
LOOSE TO DENSE
827.310
827.679
826.500
245+40.000
827.067
827.408
826.257
245+20.000
827.092
825.960
245+00.000



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
67 of 238
246+00
25m RT OF -L-
RESIDUAL:
ORANGE CLAYEY SILT SLI.MICACEOUS
SAPROLITE:
ORANGE CLAYEY SILT SLI.MICACEOUS
ORANGE & BLACK SLI.MICACEOUS
SILTY SAND
BROWN SLI.MICACEOUS SANDY SILT
4
7
6
16
9
8
12
10
18
827.761
826.891
246+00.000
RES.SOILS AND SAPROLITE
ORANGE/BRN SILTY SAND
LOOSE TO DENSE
827.627
828.020
826.817
245+80.000
RES.SOILS AND SAPROLITE
ORANGE/BRN SILTY SAND
LOOSE TO DENSE
827.496
827.872
826.686
245+60.000
-L-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
68 of 238
50 40 30 20 10 0 10 20 30 40 50
845
840
835
830
RES. SOILS AND SAPROLITE
ORANGE/BRN SILTY SAND
LOOSE TO DENSE
1:1
0.0400
828.309
828.115
827.740
828.073
826.870
246+40.000
RES. SOILS AND SAPROLITE
ORANGE/BRN SILTY SAND
LOOSE TO DENSE
1:1
0.0400
828.347
828.153
827.719
828.117
826.909
246+20.000
-L-

PROJECT REFERENCE NO. R-2519A | SHEET NO. 69 of 238

METRIC

2.5 0 2.5 5
METRIC
50 40 30 20 10 0 10 20 30 40 50
835
830
825
RES.SOILS AND SAPROLITE
ORANGE/BRN SILTY SAND
LOOSE TO DENSE
6:1
2:1
0.0400
827.274
827.080
826.706
827.059
825.836
247+40.000
RES.SOILS AND SAPROLITE
ORANGE/BRN SILTY SAND
LOOSE TO DENSE
827.594
827.400
827.025
827.364
826.155
247+20.000
247+00
33m RT OF -L-
RESIDUAL:
BROWN SILTY SAND W/ WEATHERED ROCK FRAGS
840
9
5
6
64
37
SAPROLITE:
BROWN & WHITE MICACEOUS SANDY SILT
BROWN MICACEOUS SILTY SAND
RES.SOILS AND SAPROLITE
1.5:1
827.851
827.663
827.228
827.616
826.418
247+00.000
-L-

2.5 0 2.5 5

METRIC

248+40.000

248+20.000

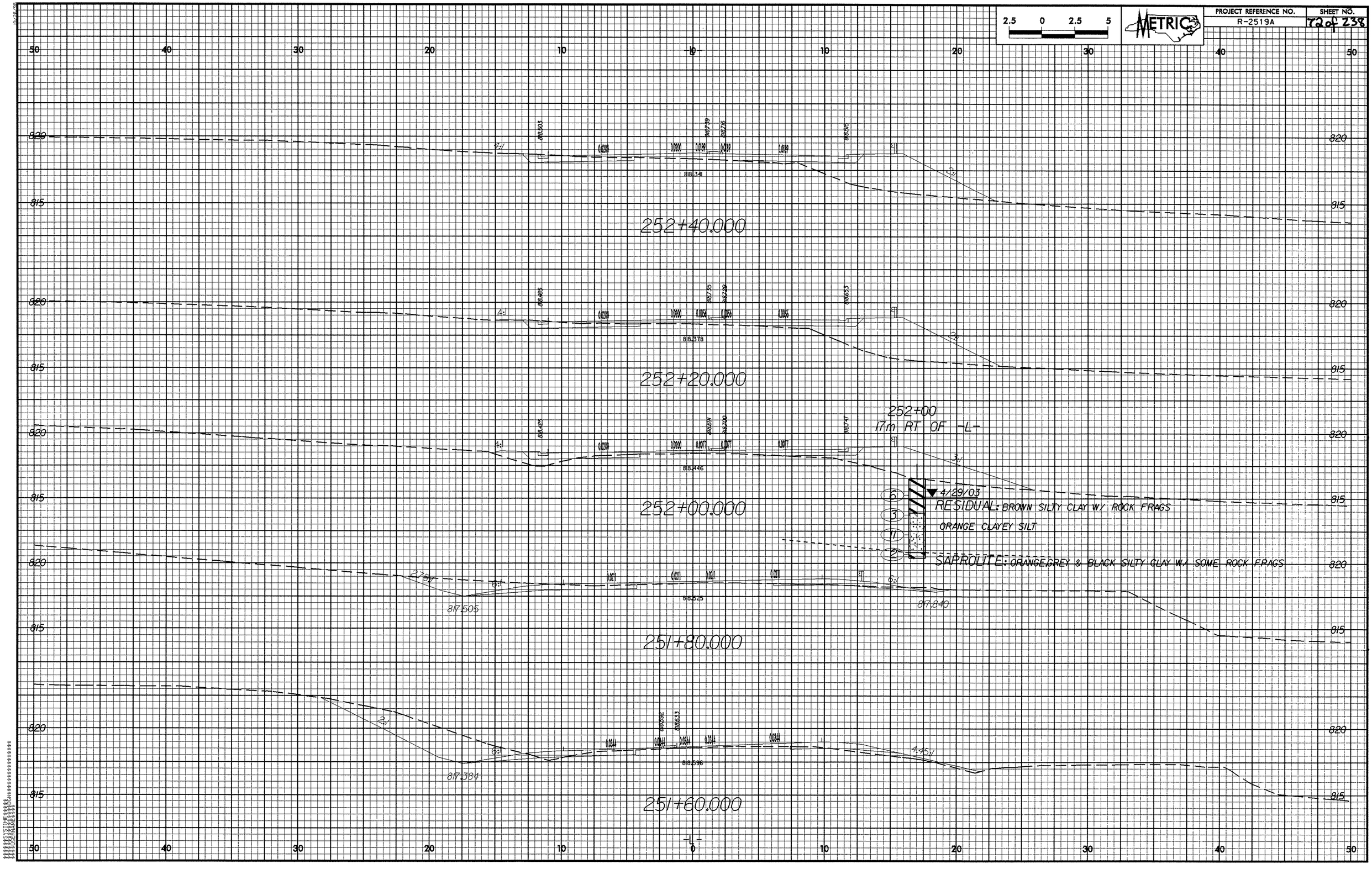
248+00.000

247+80.000

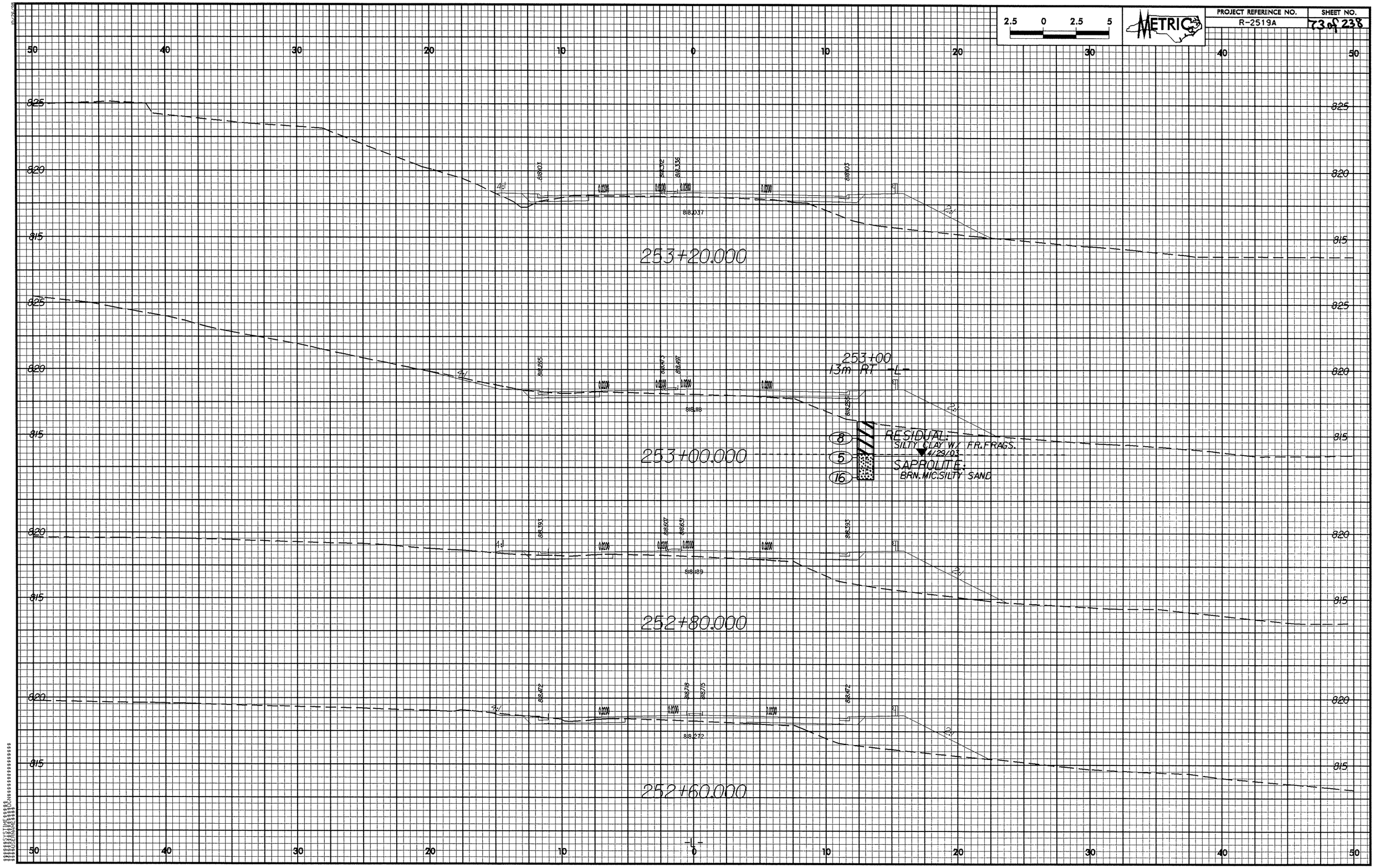
247+60.000

RES. SOILS AND SAPROLITE

ORANGE BRN SILTY SAND
LOOSE TO DENSE



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
72 of 238
252+40.000
252+20.000
252+00
17m RT OF -L-
252+00.000
4/29/03
RESIDUAL: BROWN SILTY CLAY W/ ROCK FRAGS
ORANGE CLAYEY SILT
SAPROLITE: ORANGE, GREY & BLACK SILTY CLAY W/ SOME ROCK FRAGS
817.505
817.840
251+80.000
817.384
251+60.000
-L-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
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50 40 30 20 10 0 10 20 30 40 50
825
820
815
4:1
2:1
818.037
253+20.000
253+00
13m RT -L-
818.118
253+00.000
8
5
16
RESIDUAL:
SILTY CLAY W/ FR. FRAGS.
4/29/03
SAPROLITE:
BRN. MIC. SILTY SAND
818.189
252+80.000
818.272
252+60.000
-L-

257+20.000

257+00.000

256+80.000

256+60.000

256+40.000

PROPOSED RETAINING WALL

257+00
19m RT -L-

04/31/03

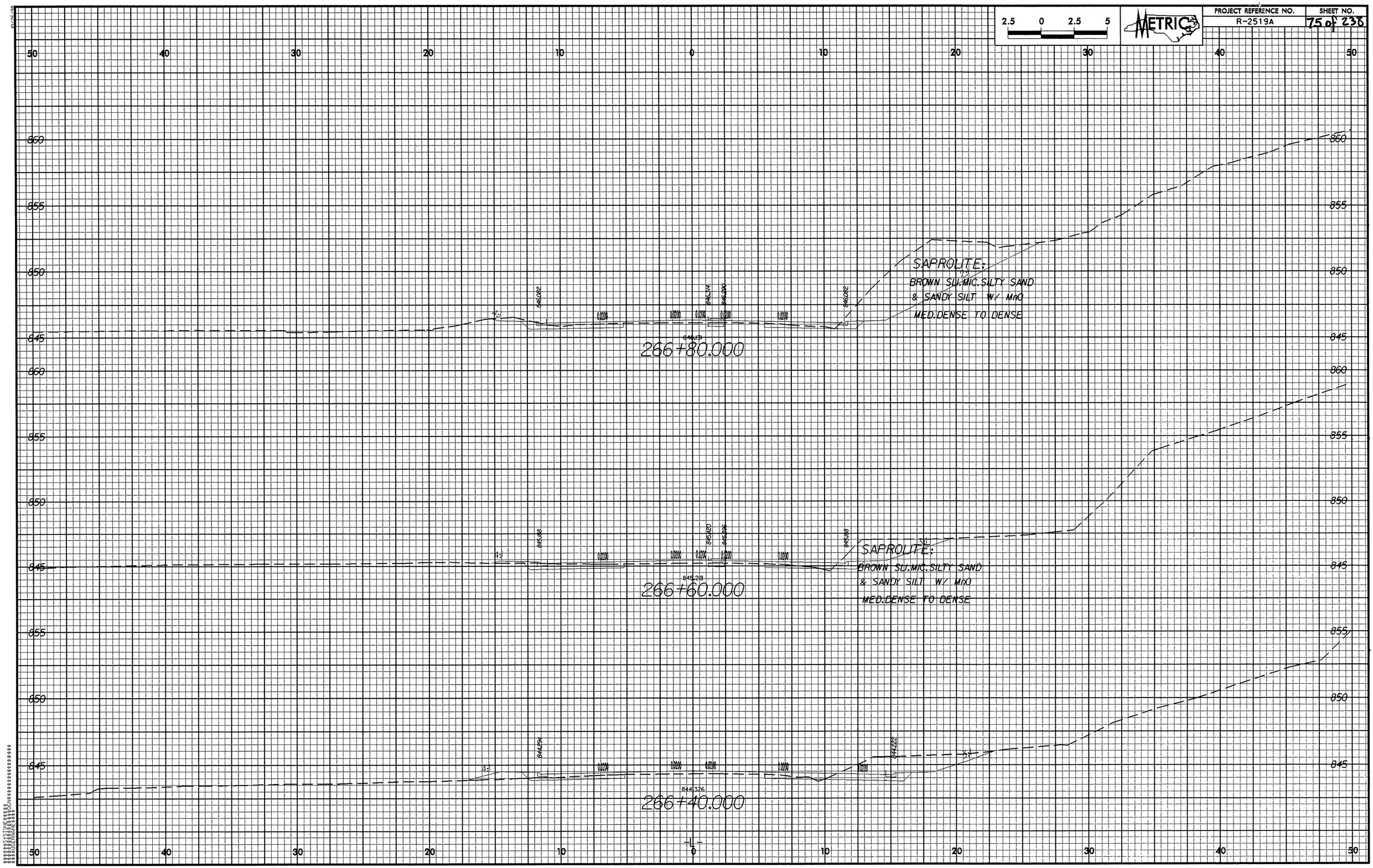
ALLUVIUM:
ORANGE COARSE SAND

SAPROLITE:
ORANGE MICASILTY FINE SAND

256+60
26m RT -L-

ALLUVIUM:
BROWN SLI.MICACEOUS ORGANIC SILTY SAND

SAPROLITE:
ORANGE, BROWN AND WHITE CLAYEY SILT & SILTY SAND



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
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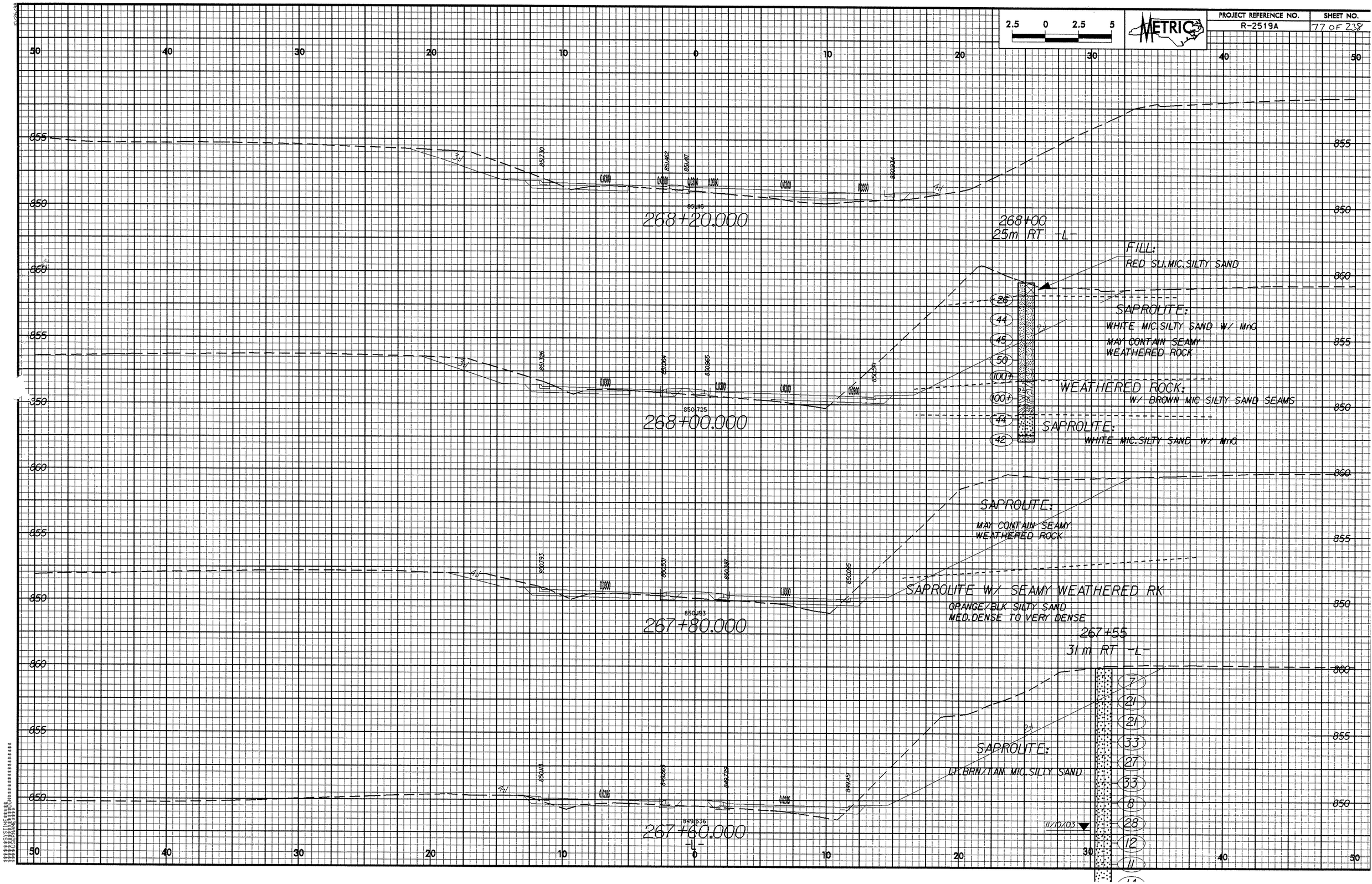
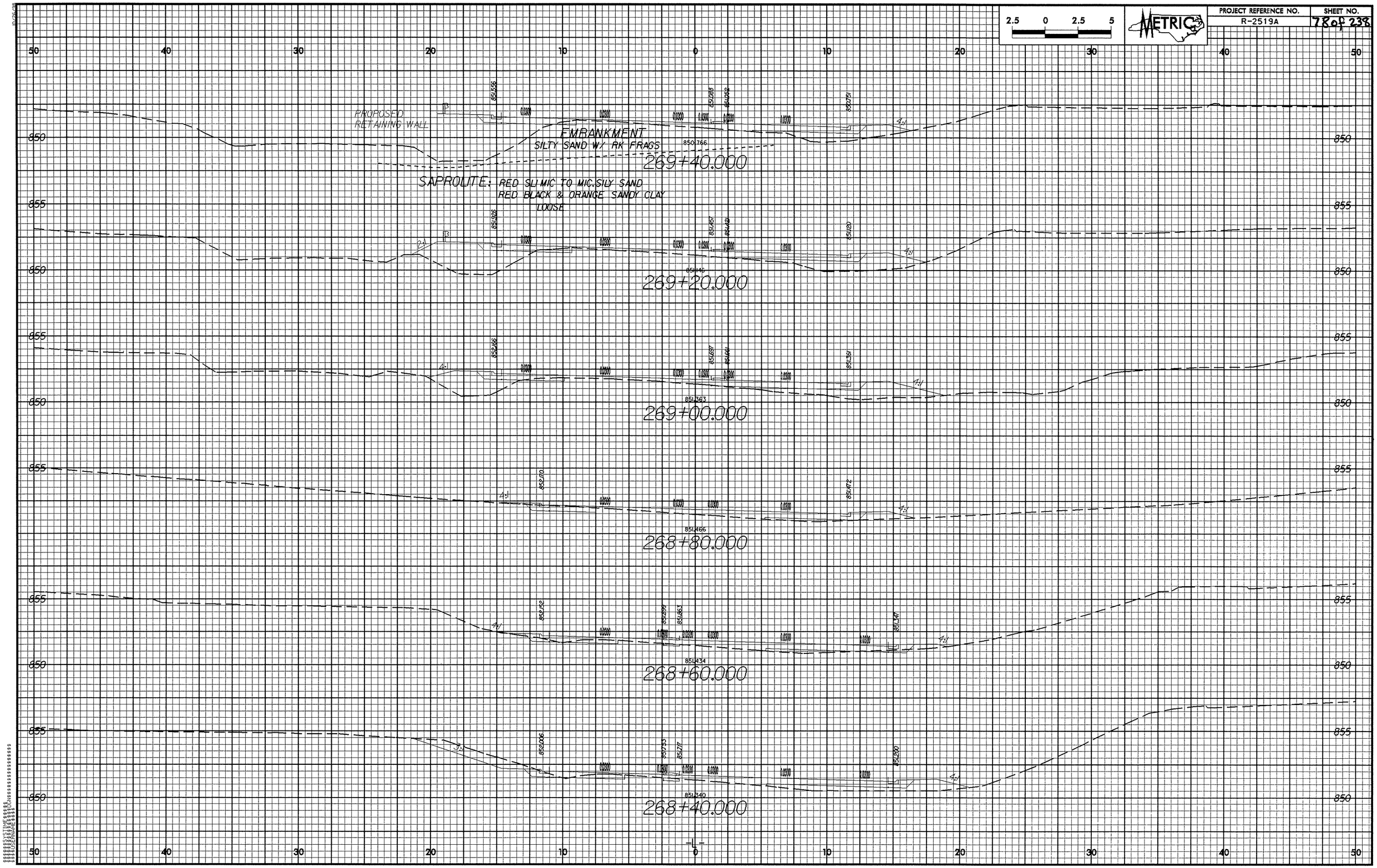
SAPROLITE:
BROWN SLI.MIC.SILTY SAND
& SANDY SILT W/ MnO
MED.DENSE TO DENSE
266+80.000
SAPROLITE:
BROWN SLI.MIC.SILTY SAND
& SANDY SILT W/ MnO
MED.DENSE TO DENSE
266+60.000
266+40.000
-L-

PROJECT REFERENCE NO.
R-2519A
SHEET NO.
76 of 238
METRIC
2.5 0 2.5 5
SAPROLITE:
BROWN SLI.MIC.SILTY SAND
& SANDY SILT W/ MnO
MED.DENSE TO DENSE
849.167
849.042
848.958
848.759
0.0151
0.0200
4:1
2:1
848.763
267+40.000
267+20
38m LT -L- FILL:
BROWN SLI.MIC.SILTY SAND
17
25
22
21
25
32
43
19
19
SAPROLITE:
BROWN SLI.MIC.SILTY SAND
& SANDY SILT
W/ MnO
848.124
848.120
848.070
847.870
0.0018
0.0018
0.0200
847.931
267+20.000
SAPROLITE:
BROWN SLI.MIC.SILTY SAND
& SANDY SILT W/ MnO
MED.DENSE TO DENSE
847.074
847.225
847.176
846.976
0.0115
0.0115
0.0200
847.047
267+00.000
-L-
860
855
850
50 40 30 20 10 0 10 20 30 40 50



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
77 OF 238
268+20.000
268+00
25m RT -L-
FILL:
RED SU.MIC.SILTY SAND
SAPROLITE:
WHITE MIC.SILTY SAND W/ MnO
MAY CONTAIN SEAMY
WEATHERED ROCK
WEATHERED ROCK:
W/ BROWN MIC SILTY SAND SEAMS
SAPROLITE:
WHITE MIC.SILTY SAND W/ MnO
268+00.000
SAPROLITE:
MAY CONTAIN SEAMY
WEATHERED ROCK
SAPROLITE W/ SEAMY WEATHERED RK
ORANGE/BLK SILTY SAND
MED.DENSE TO VERY DENSE
267+80.000
267+55
31 m RT -L-
SAPROLITE:
LT.BRN/TAN MIC.SILTY SAND
11/10/03
267+60.000
-L-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
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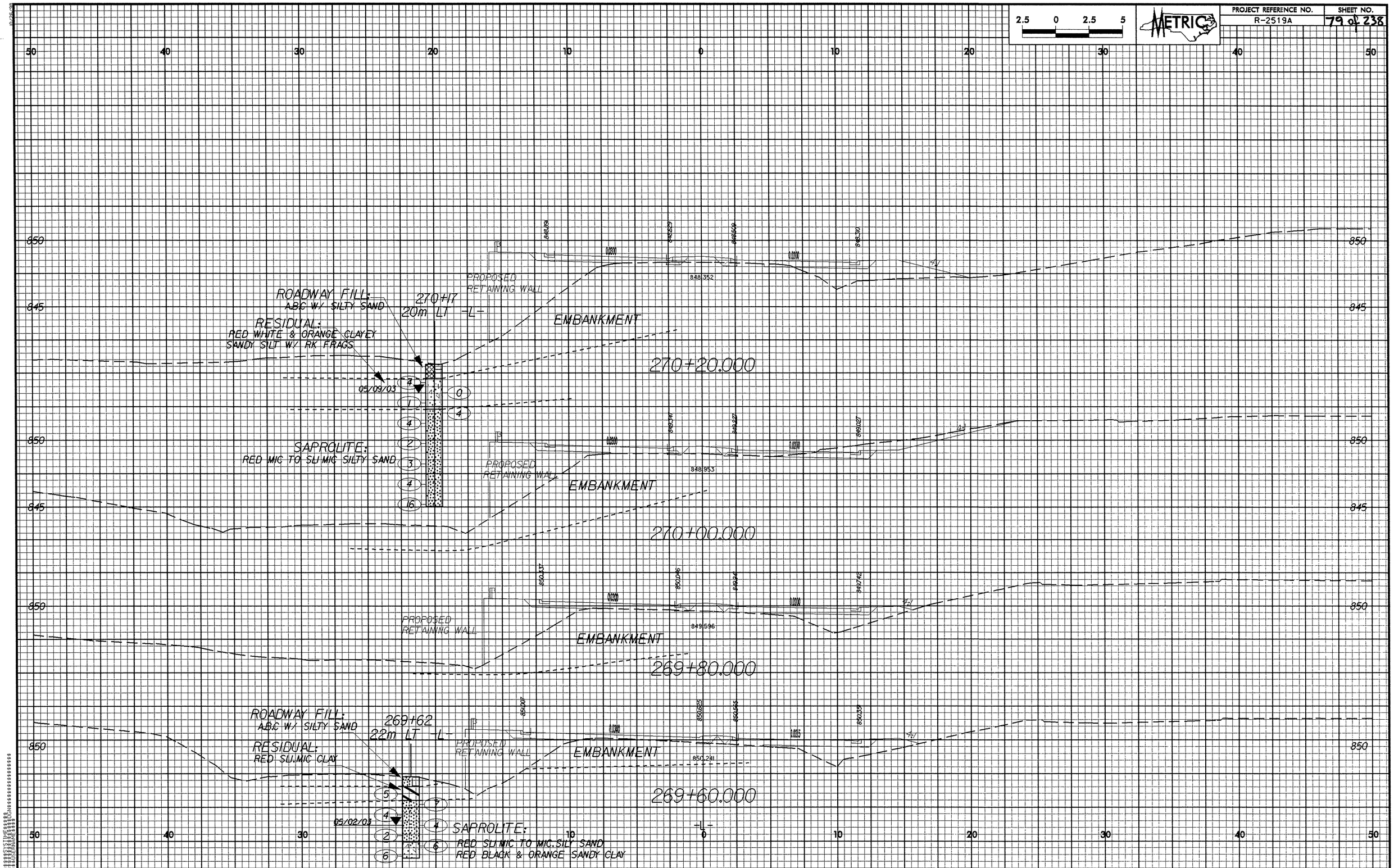
PROPOSED RETAINING WALL
EMBANKMENT
SILTY SAND W/ RK FRAGS
SAPROLITE: RED SLI MIC TO MIC. SILY SAND
RED BLACK & ORANGE SANDY CLAY
LOOSE
269+40.000
269+20.000
269+00.000
268+80.000
268+60.000
268+40.000
-L-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
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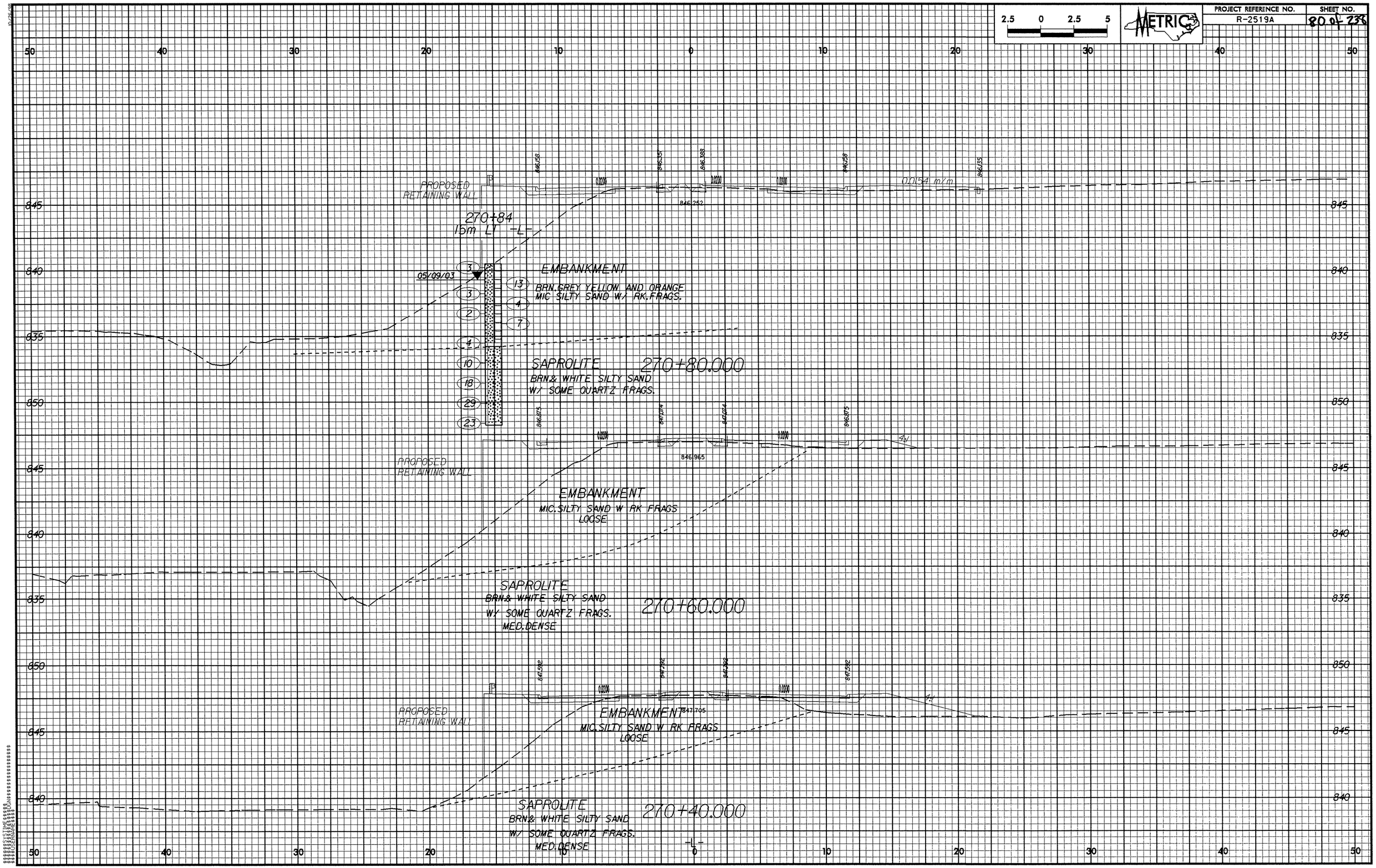
ROADWAY FILL:
A.B.C W/ SILTY SAND
270+17
20m LT -L-
RESIDUAL:
RED WHITE & ORANGE CLAYEY
SANDY SILT W/ RK FRAGS
05/09/03
PROPOSED
RETAINING WALL
EMBANKMENT
848.352
270+20.000
SAPROLITE:
RED MIC TO SLI MIC SILTY SAND
PROPOSED
RETAINING WALL
EMBANKMENT
848.953
270+00.000
PROPOSED
RETAINING WALL
EMBANKMENT
849.596
269+80.000
ROADWAY FILL:
A.B.C W/ SILTY SAND
269+62
22m LT -L-
RESIDUAL:
RED SLI.MIC CLAY
PROPOSED
RETAINING WALL
EMBANKMENT
850.241
269+60.000
05/02/03
SAPROLITE:
RED SLI.MIC TO MIC.SILY SAND
RED BLACK & ORANGE SANDY CLAY



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
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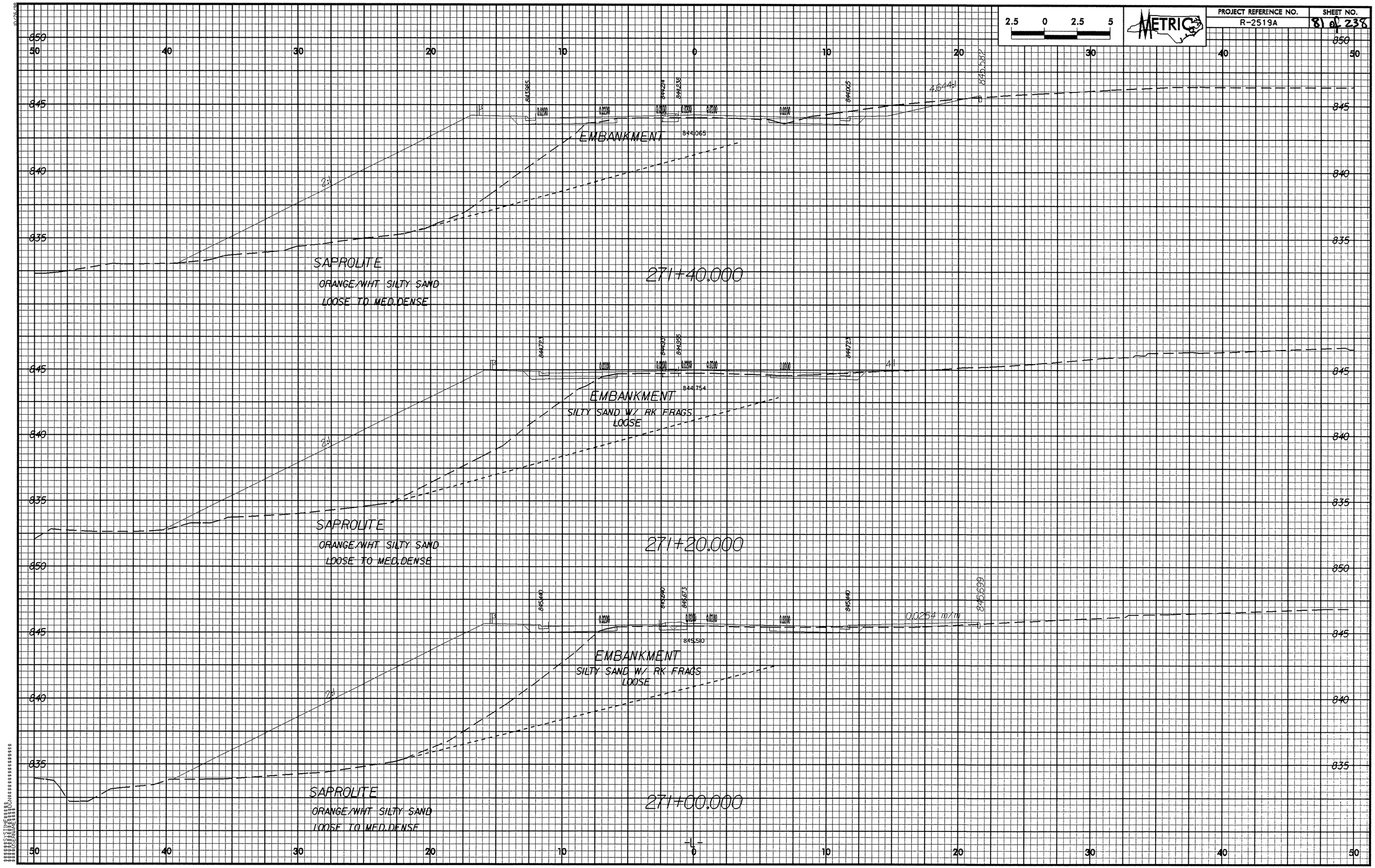
PROPOSED RETAINING WALL
270+84
15m LT -L-
0.0154 m/m
846.252
05/09/03
EMBANKMENT
BRN.GREY YELLOW AND ORANGE MIC SILTY SAND W/ RK.FRAGS.
SAPROLITE
BRN.& WHITE SILTY SAND W/ SOME QUARTZ FRAGS.
270+80.000
846.965
PROPOSED RETAINING WALL
EMBANKMENT
MIC.SILTY SAND W RK FRAGS LOOSE
SAPROLITE
BRN.& WHITE SILTY SAND W/ SOME QUARTZ FRAGS. MED.DENSE
270+60.000
PROPOSED RETAINING WALL
EMBANKMENT
MIC.SILTY SAND W RK FRAGS LOOSE
SAPROLITE
BRN.& WHITE SILTY SAND W/ SOME QUARTZ FRAGS. MED.DENSE
270+40.000
-L-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
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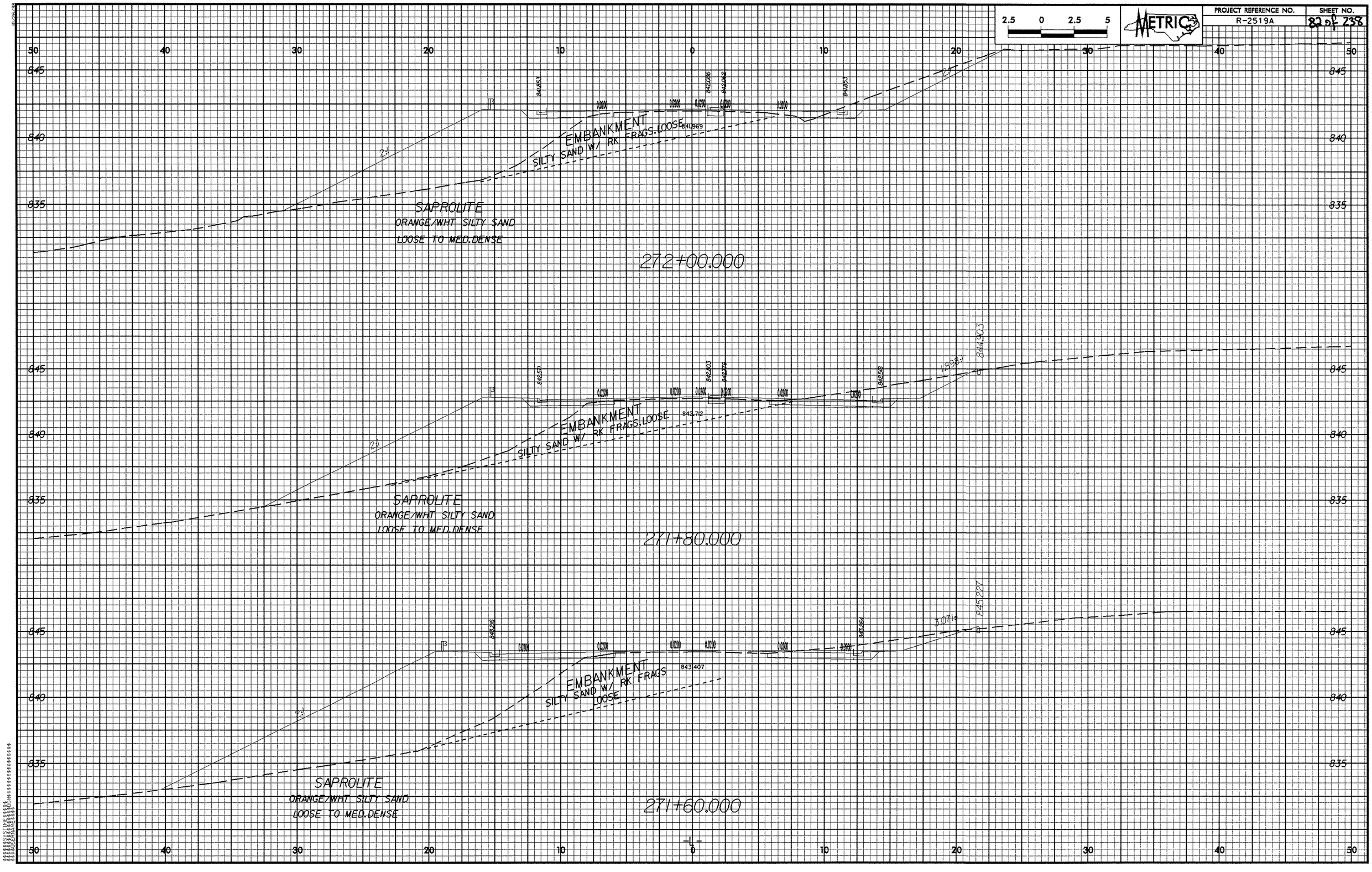
EMBANKMENT
SAPROLITE
ORANGE/WHT SILTY SAND
LOOSE TO MED.DENSE
271+40.000
EMBANKMENT
SILTY SAND W/ RK FRAGS
LOOSE
SAPROLITE
ORANGE/WHT SILTY SAND
LOOSE TO MED.DENSE
271+20.000
EMBANKMENT
SILTY SAND W/ RK FRAGS
LOOSE
SAPROLITE
ORANGE/WHT SILTY SAND
LOOSE TO MED.DENSE
271+00.000

2.5 0 2.5 5

METRIC



PROJECT REFERENCE NO. R-2519A

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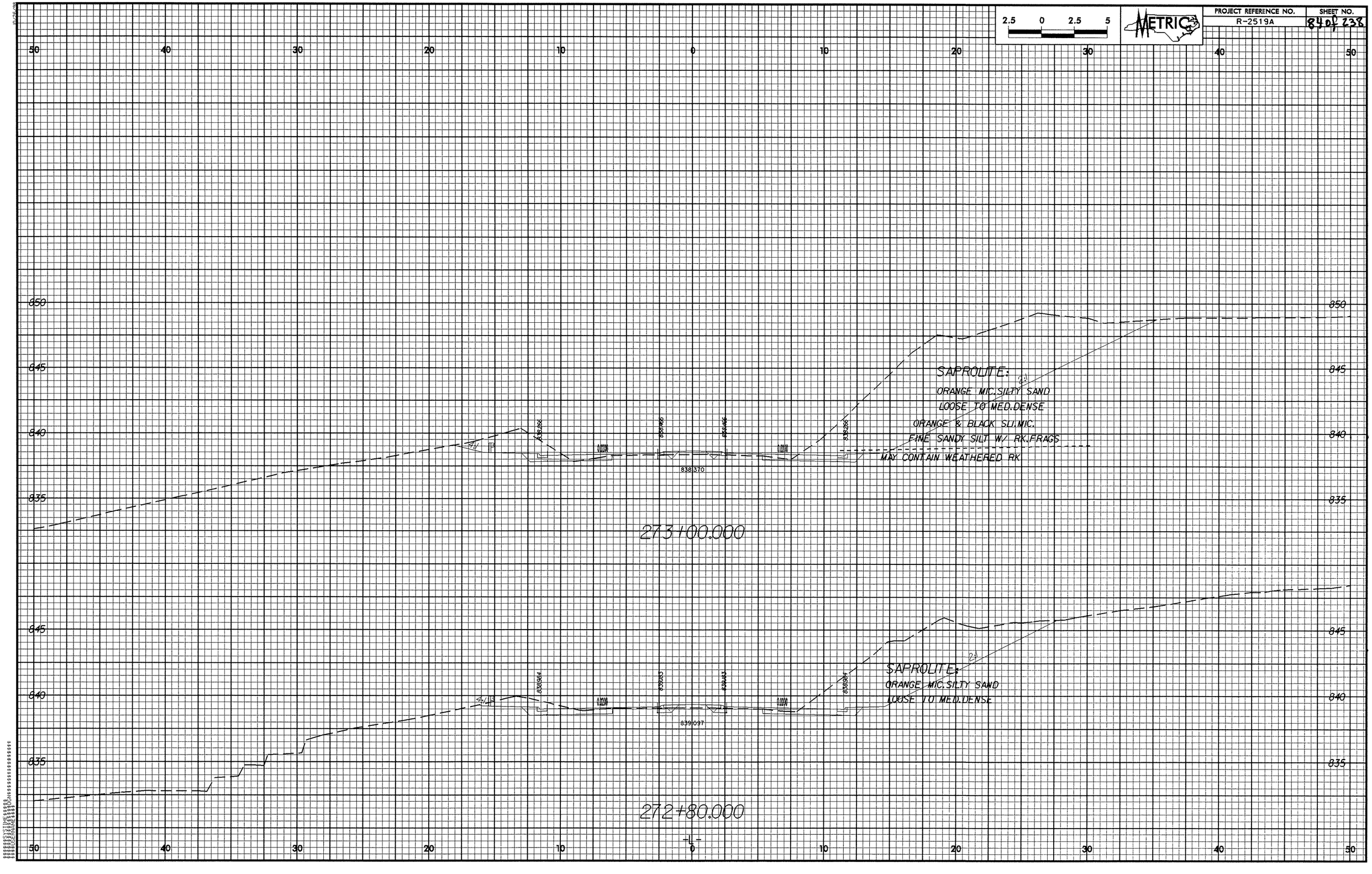
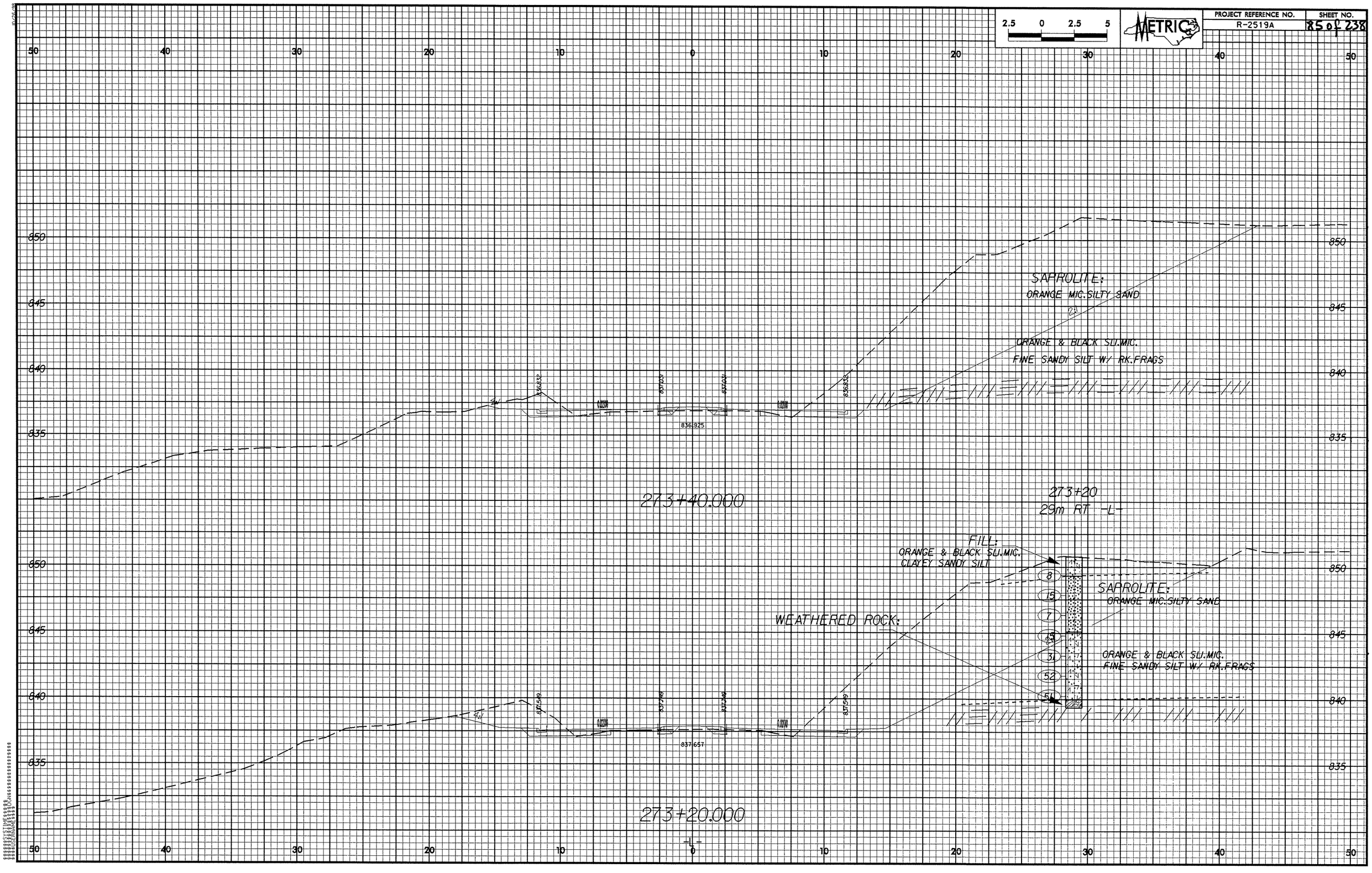
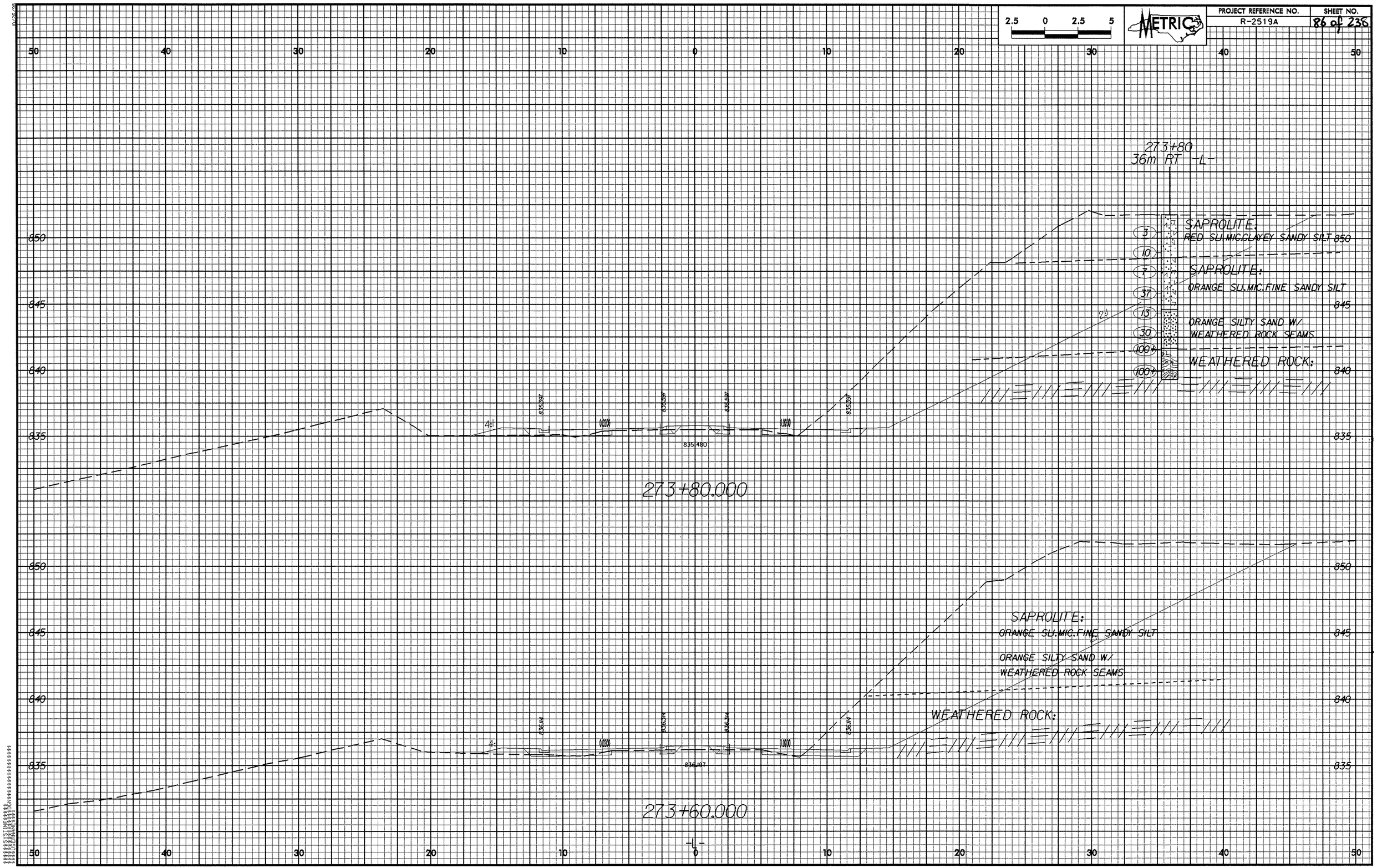


2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
84 of 238
50 40 30 20 10 0 10 20 30 40 50
850
845
840
835
SAPROLITE:
ORANGE MIC.SILTY SAND
LOOSE TO MED.DENSE
ORANGE & BLACK SLI.MIC.
FINE SANDY SILT W/ RK.FRAGS
MAY CONTAIN WEATHERED RK
838.370
273+00.000
SAPROLITE:
ORANGE MIC.SILTY SAND
LOOSE TO MED.DENSE
839.097
272+80.000
-L-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
85 of 238
50 40 30 20 10 0 10 20 30 40 50
850
845
840
835
SAPROLITE:
ORANGE MIC. SILTY SAND
ORANGE & BLACK SLI. MIC.
FINE SANDY SILT W/ RK. FRAGS
836.832
837.031
836.925
273+40.000
273+20
29m RT -L-
FILL:
ORANGE & BLACK SLI. MIC.
CLAYEY SANDY SILT
8
15
7
15
31
52
51
SAPROLITE:
ORANGE MIC. SILTY SAND
WEATHERED ROCK:
ORANGE & BLACK SLI. MIC.
FINE SANDY SILT W/ RK. FRAGS
837.549
837.749
837.749
837.549
837.657
273+20.000
-L-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
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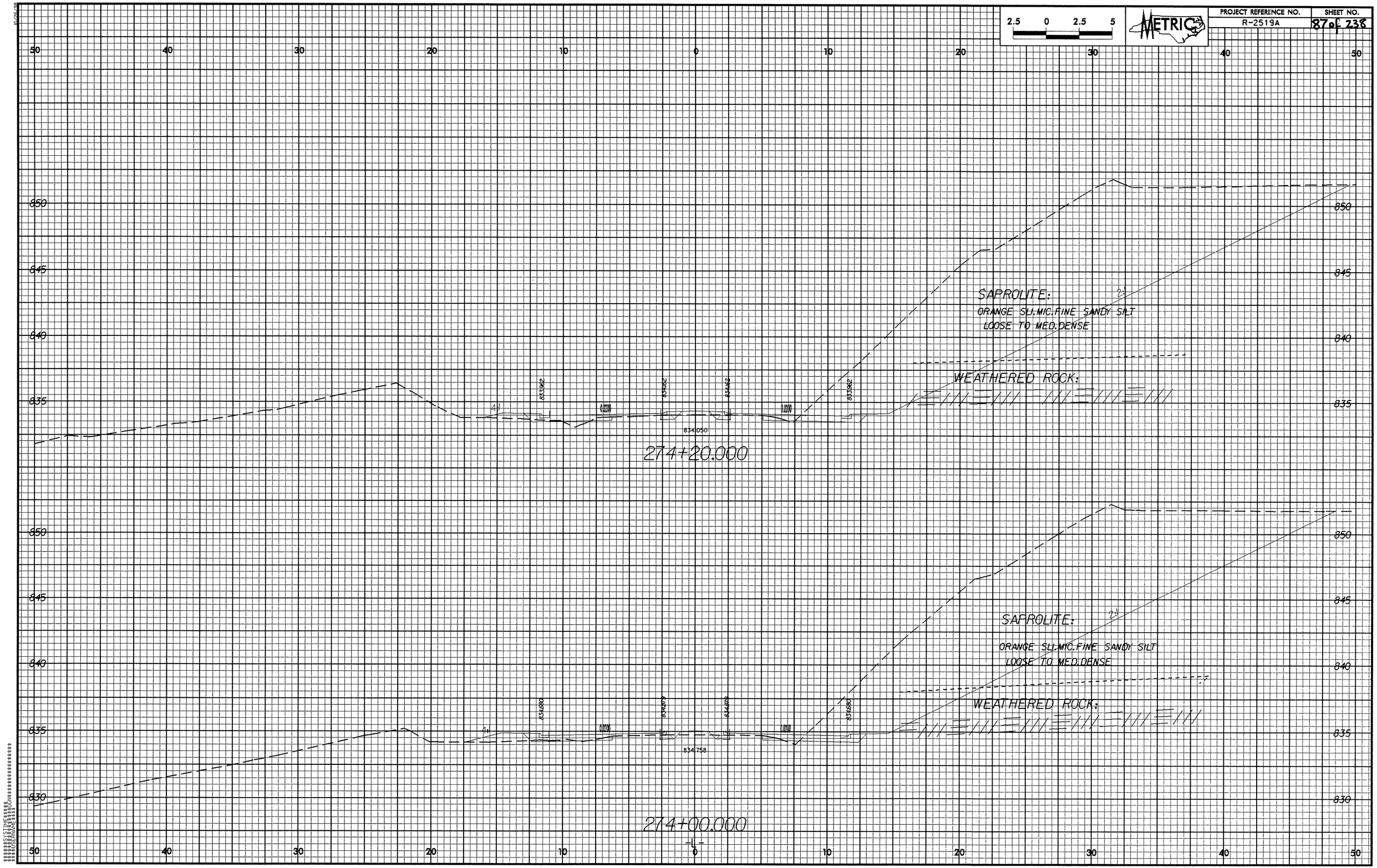
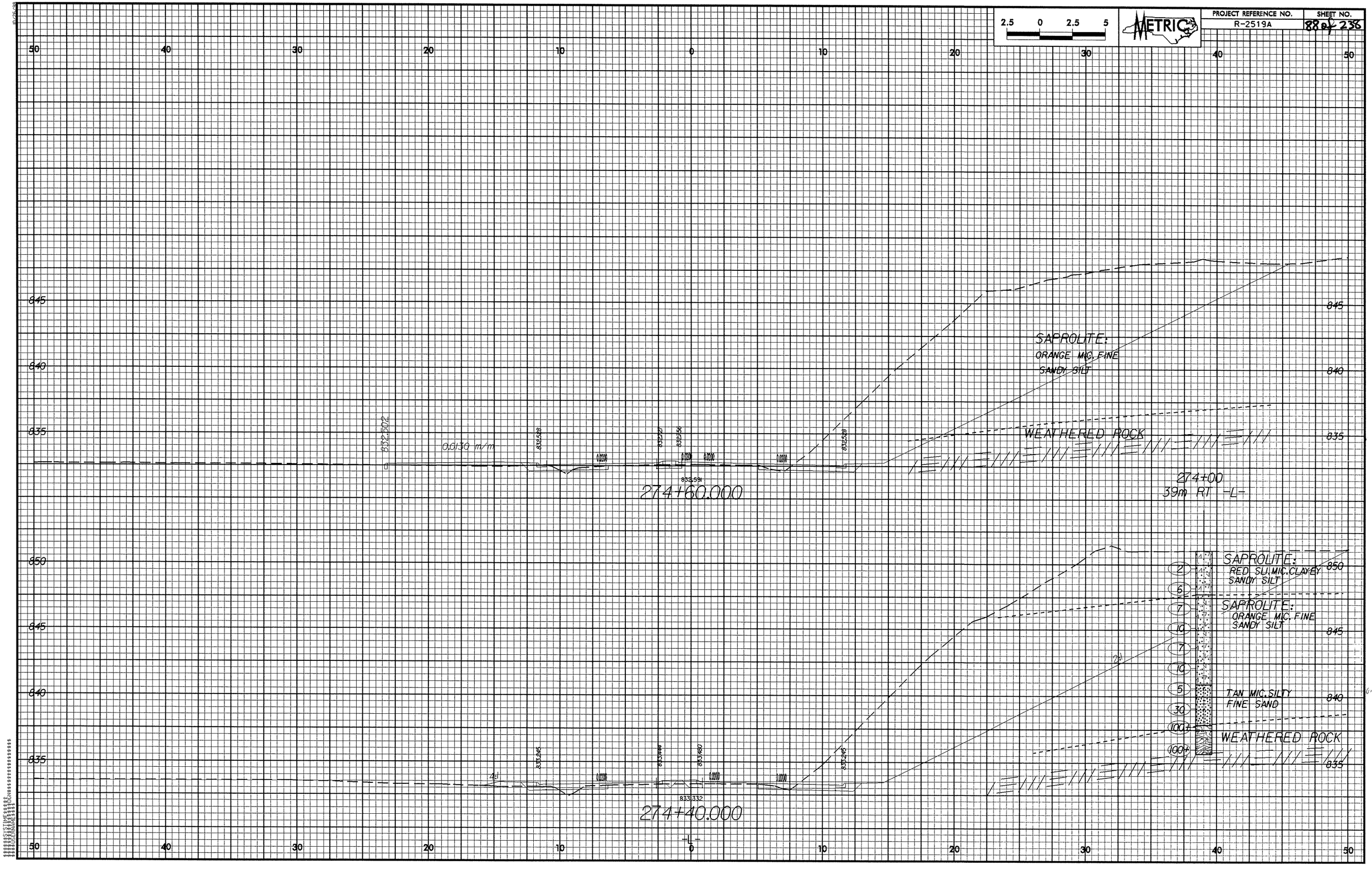
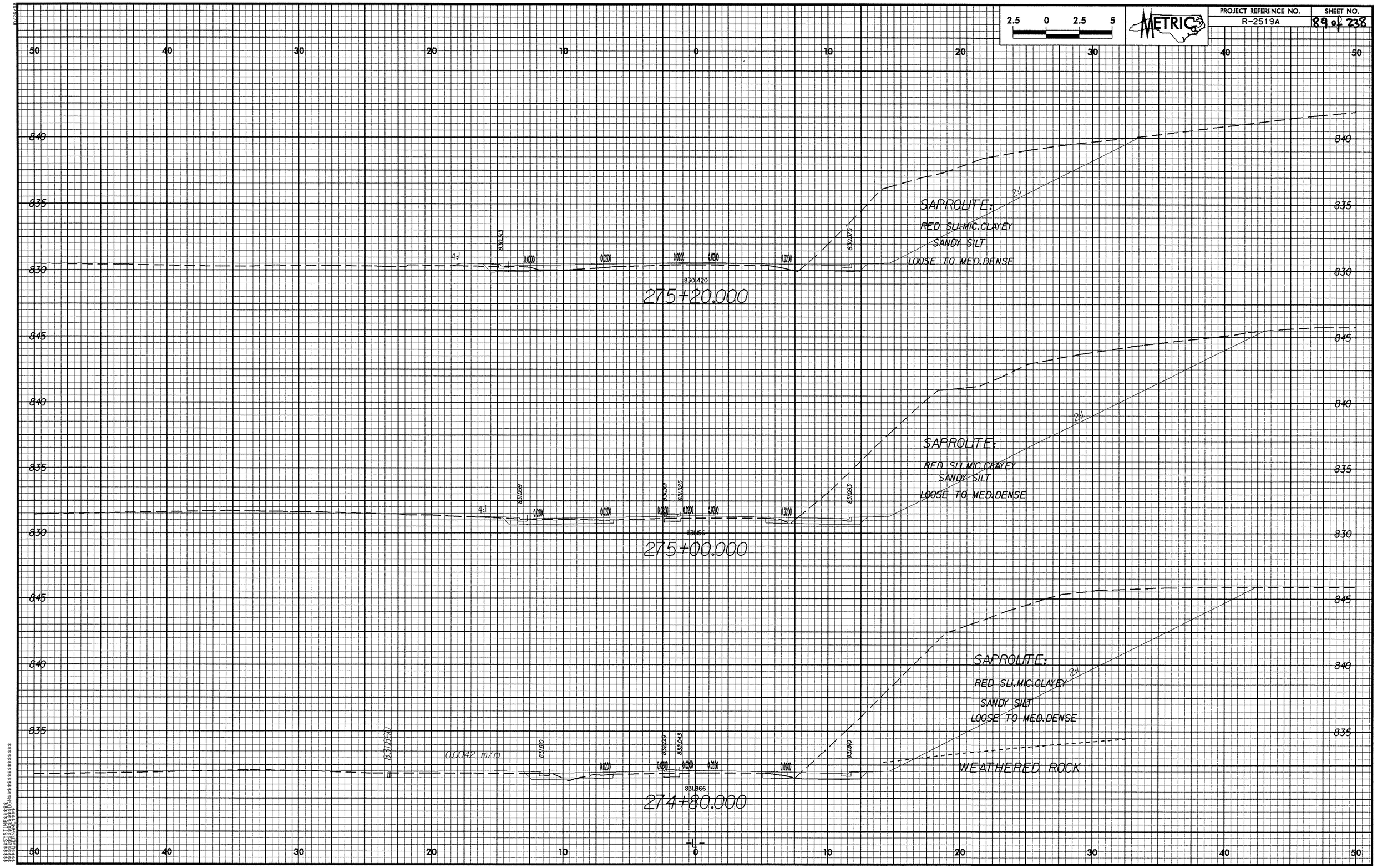
273+80
36m RT -L-
SAPROLITE:
RED SLI.MIC.CLAYEY SANDY SILT
SAPROLITE:
ORANGE SLI.MIC.FINE SANDY SILT
ORANGE SILTY SAND W/
WEATHERED ROCK SEAMS
WEATHERED ROCK:
3
10
7
37
13
30
100+
100+
850
845
840
835
4:1
2:1
835.397
835.480
273+80.000
SAPROLITE:
ORANGE SLI.MIC.FINE SANDY SILT
ORANGE SILTY SAND W/
WEATHERED ROCK SEAMS
WEATHERED ROCK:
836.114
836.187
273+60.000
-L-
50
40
30
20
10
0



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
87 of 238
50 40 30 20 10 0 10 20 30 40 50
850
845
840
835
830
SAPROLITE:
ORANGE SLI.MIC.FINE SANDY SILT
LOOSE TO MED.DENSE
WEATHERED ROCK:
2:1
4:1
833.962
834.050
274+20.000
834.680
834.758
274+00.000
-L-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
88 of 236
50 40 30 20 10 0 10 20 30 40 50
845
840
835
850
SAPROLITE:
ORANGE MIC. FINE
SANDY SILT
WEATHERED ROCK
0.0130 m/m
832.502
832.528
832.721
832.756
832.591
274+60.000
274+00
39m RT -L-
SAPROLITE:
RED SLI. MIC. CLAYEY
SANDY SILT
SAPROLITE:
ORANGE MIC. FINE
SANDY SILT
TAN MIC. SILTY
FINE SAND
WEATHERED ROCK
2
6
7
10
7
10
5
30
100+
100+
2:1
4:1
833.245
833.444
833.480
833.332
274+40.000
-L-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
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SAPROLITE:
RED SLI.MIC.CLAYEY
SANDY SILT
LOOSE TO MED.DENSE
830.420
275+20.000
SAPROLITE:
RED SLI.MIC.CLAYEY
SANDY SILT
LOOSE TO MED.DENSE
831.156
275+00.000
SAPROLITE:
RED SLI.MIC.CLAYEY
SANDY SILT
LOOSE TO MED.DENSE
WEATHERED ROCK
831.860
0.0042 m/m
831.866
274+80.000

EMBANKMENT
SILTY SAND W/ RK FRAGS
LOOSE

827.316 827.540 827.538 827.316

827.322

SAPROLITE:
WHITE CLAYEY SAND MIC.
W/ QUARTZ FRAGS
LOOSE

276+00.000

EMBANKMENT
SILTY SAND W/ RK FRAGS
LOOSE

828.122 828.558 828.534 828.122

828.134

SAPROLITE:
WHITE CLAYEY SAND MIC.
W/ QUARTZ FRAGS
LOOSE

275+80.000

828.302 829.134 829.140 828.302

828.312

275+60.000

829.652 829.288 829.660 829.652

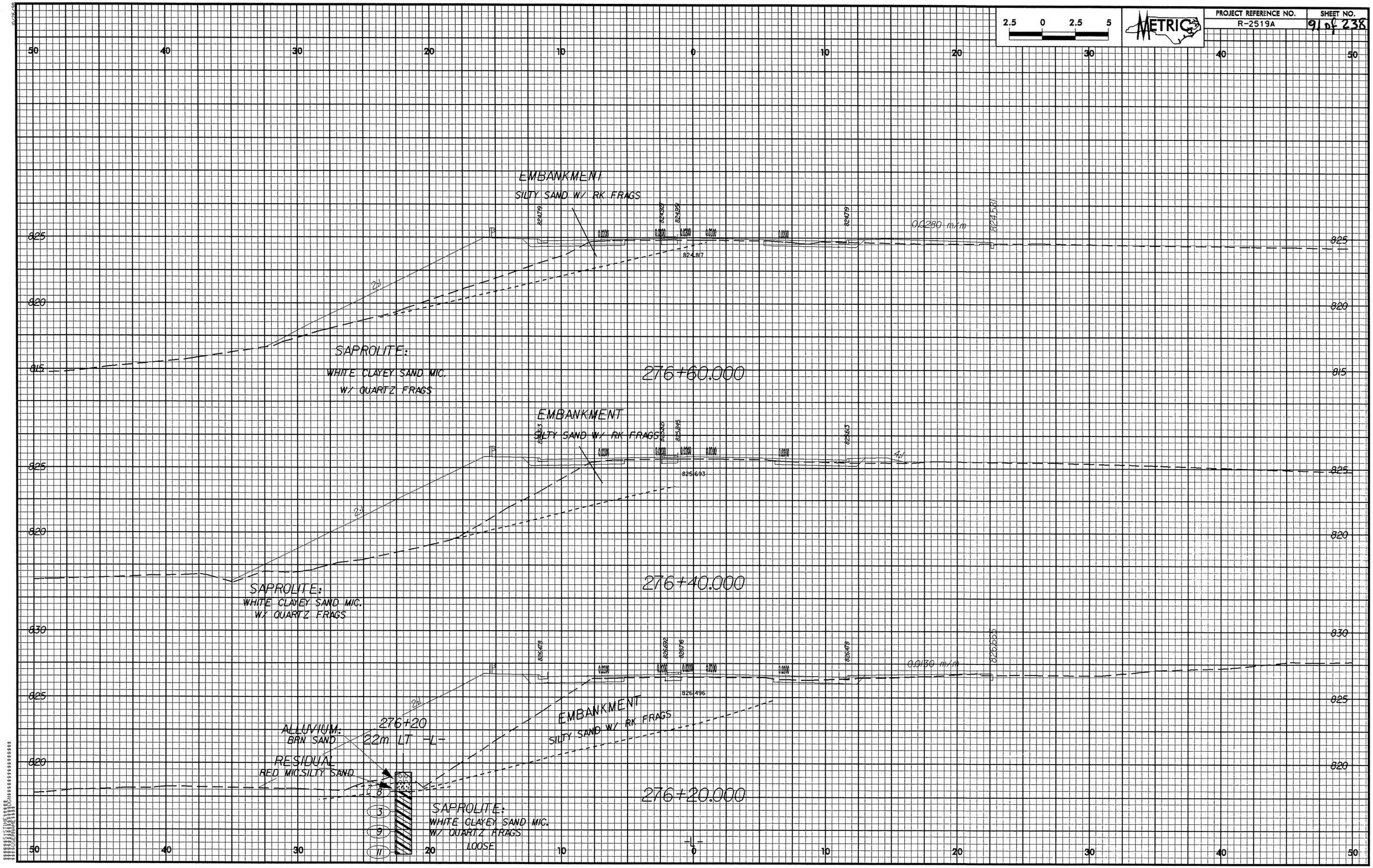
SAPROLITE:
RED SU.MIC.CLAYEY
SANDY SILT
LOOSE TO MED.DENSE

829.677

275+10.000

50 40 30 20 10 0 10 20 30 40 50

830 825 820 835



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
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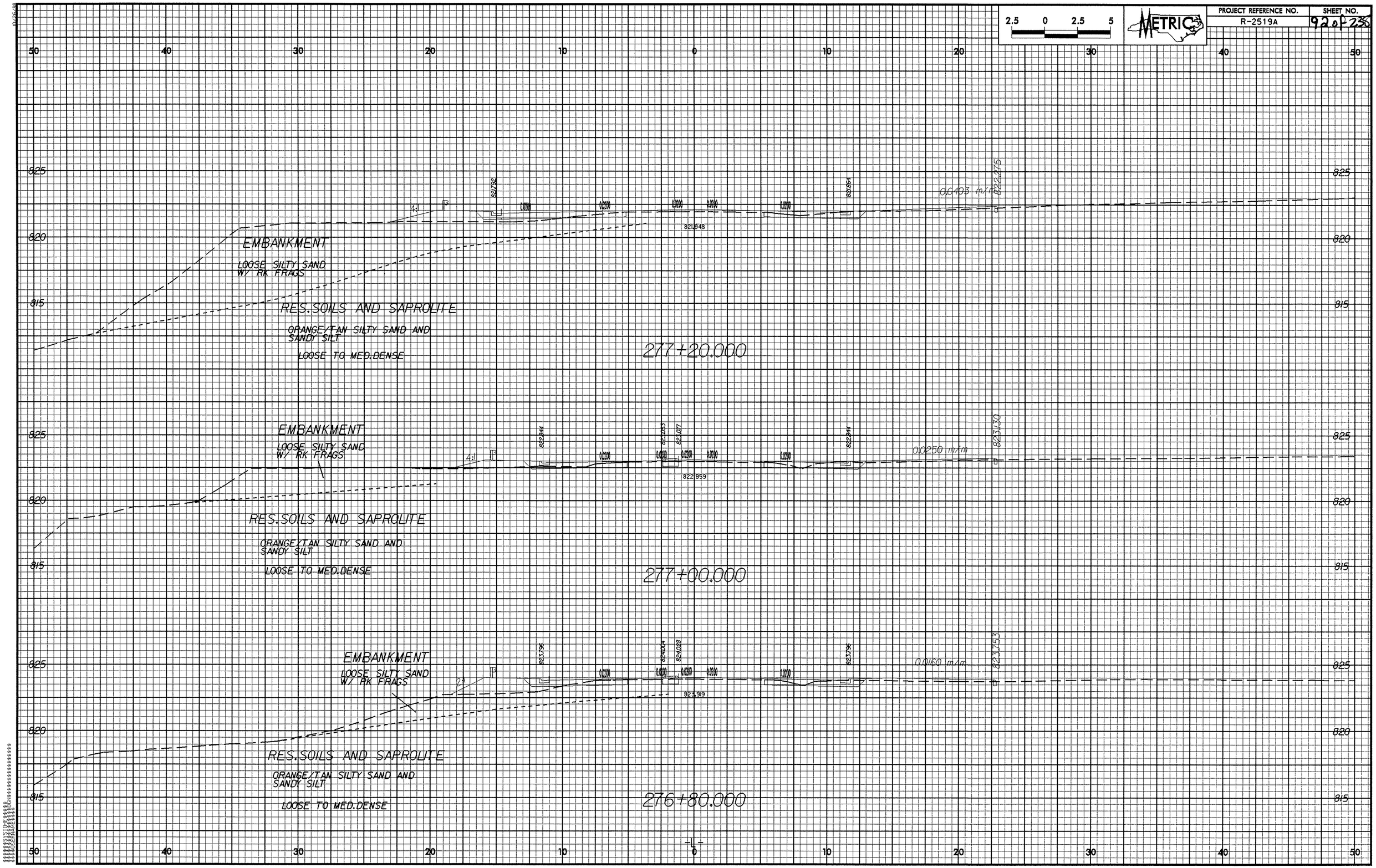
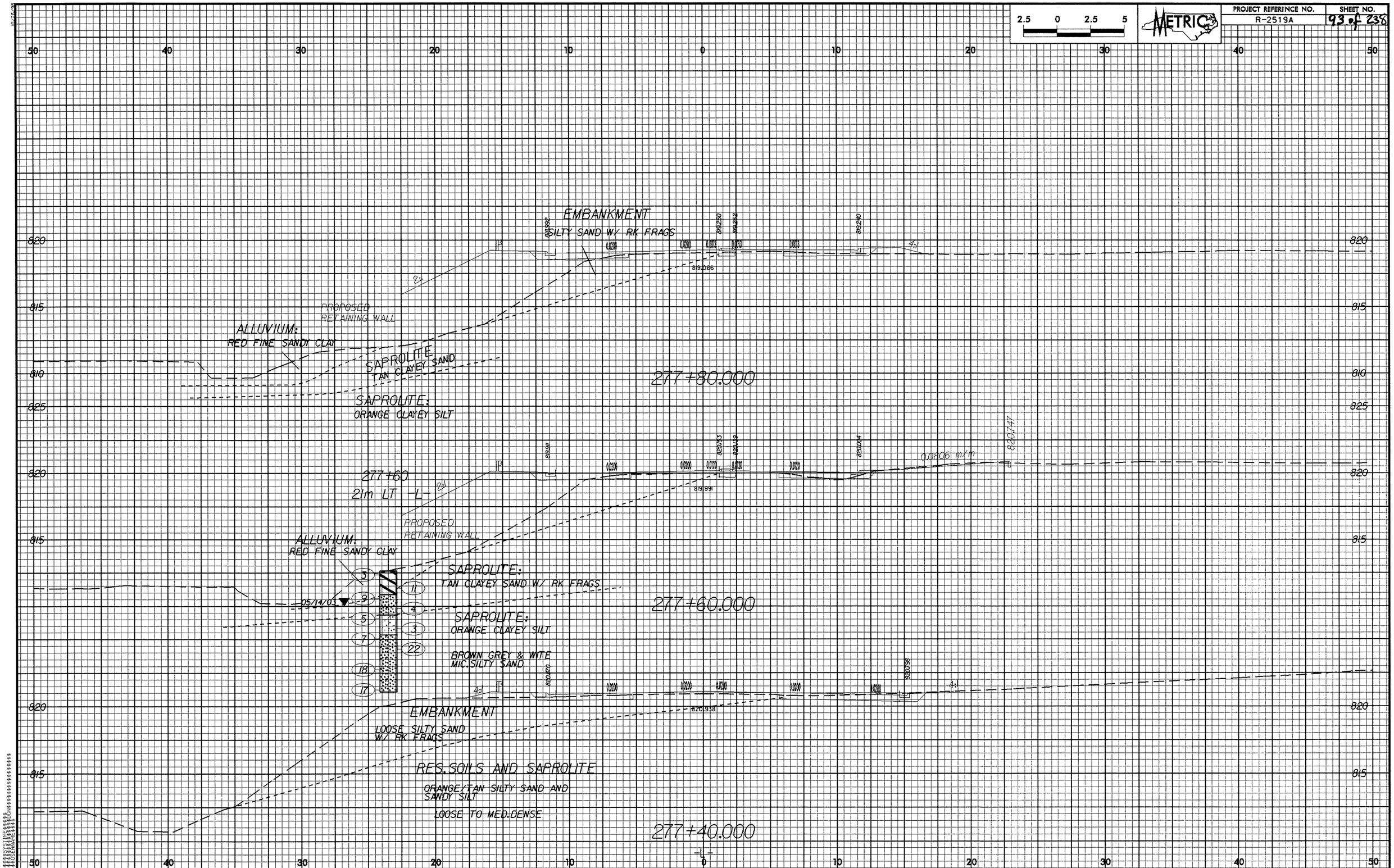
EMBANKMENT
SILTY SAND W/ RK FRAGS
0.0280 m/m
824.817
2:1
SAPROLITE:
WHITE CLAYEY SAND MIC.
W/ QUARTZ FRAGS
276+60.000
EMBANKMENT
SILTY SAND W/ RK FRAGS
4:1
826.693
2:1
SAPROLITE:
WHITE CLAYEY SAND MIC.
W/ QUARTZ FRAGS
276+40.000
0.0130 m/m
826.496
2:1
EMBANKMENT
SILTY SAND W/ RK FRAGS
ALLUVIUM:
BRN SAND
276+20
22m LT -L-
RESIDUAL
RED MIC.SILTY SAND
276+20.000
SAPROLITE:
WHITE CLAYEY SAND MIC.
W/ QUARTZ FRAGS
LOOSE
-L-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
92 of 236
50 40 30 20 10 0 10 20 30 40 50
825
820
815
821.792
821.864
0.0403 m/m
822.275
821.948
EMBANKMENT
LOOSE SILTY SAND W/ RK FRAGS
RES. SOILS AND SAPROLITE
ORANGE/TAN SILTY SAND AND SANDY SILT
LOOSE TO MED. DENSE
277+20.000
822.844
823.053
823.077
822.844
0.0250 m/m
823.130
822.959
277+00.000
823.796
824.004
824.028
823.796
0.0160 m/m
823.753
823.919
276+80.000



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
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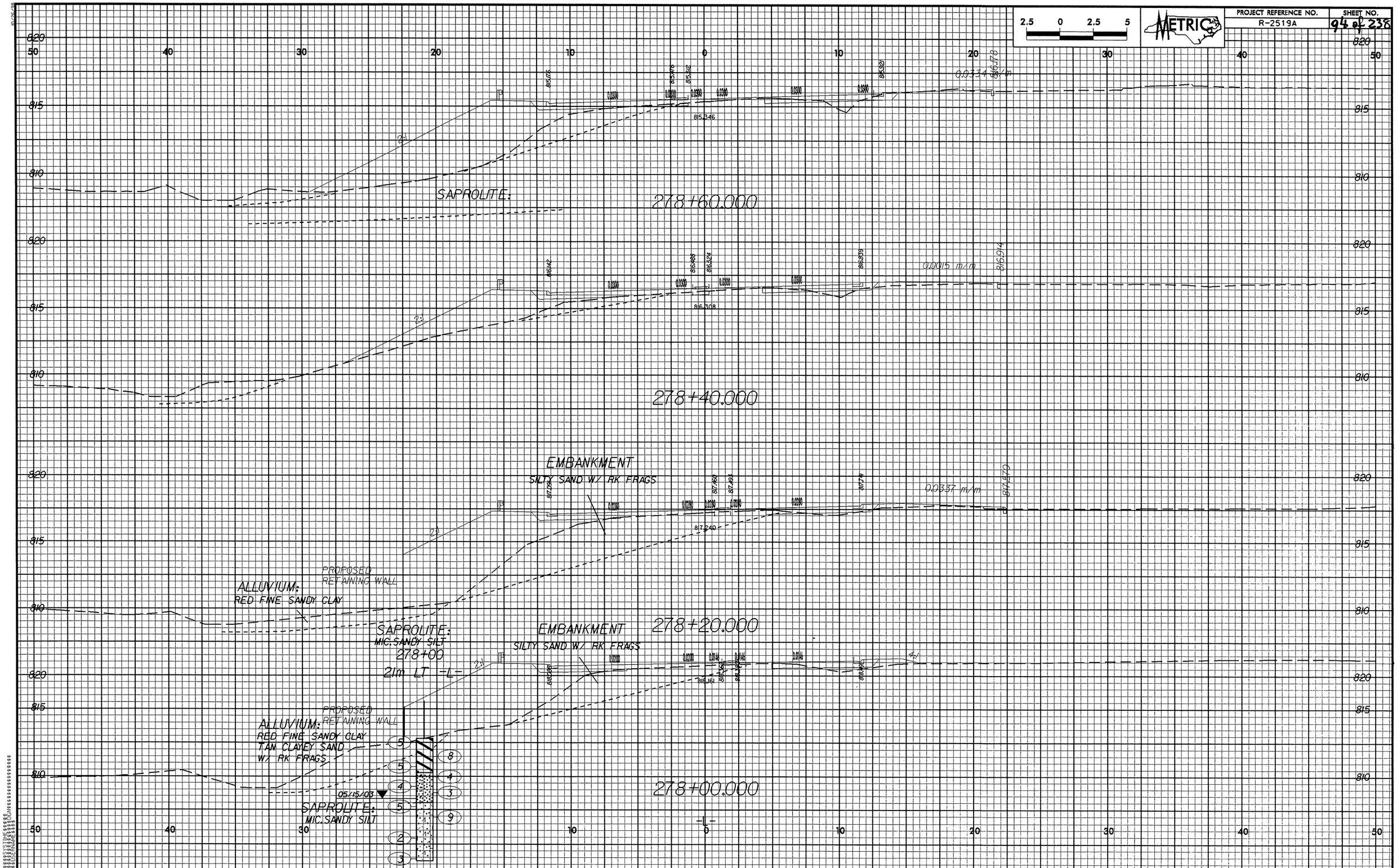
EMBANKMENT
SILTY SAND W/ RK FRAGS
PROPOSED RETAINING WALL
ALLUVIUM:
RED FINE SANDY CLAY
SAPROLITE
TAN CLAYEY SAND
SAPROLITE:
ORANGE CLAYEY SILT
277+80.000
277+60
21m LT -L-
0.0806 m/m
PROPOSED RETAINING WALL
ALLUVIUM:
RED FINE SANDY CLAY
SAPROLITE:
TAN CLAYEY SAND W/ RK FRAGS
SAPROLITE:
ORANGE CLAYEY SILT
BROWN GREY & WITE MIC. SILTY SAND
277+60.000
EMBANKMENT
LOOSE SILTY SAND W/ RK FRAGS
RES. SOILS AND SAPROLITE
ORANGE/TAN SILTY SAND AND SANDY SILT
LOOSE TO MED. DENSE
277+40.000
-L-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
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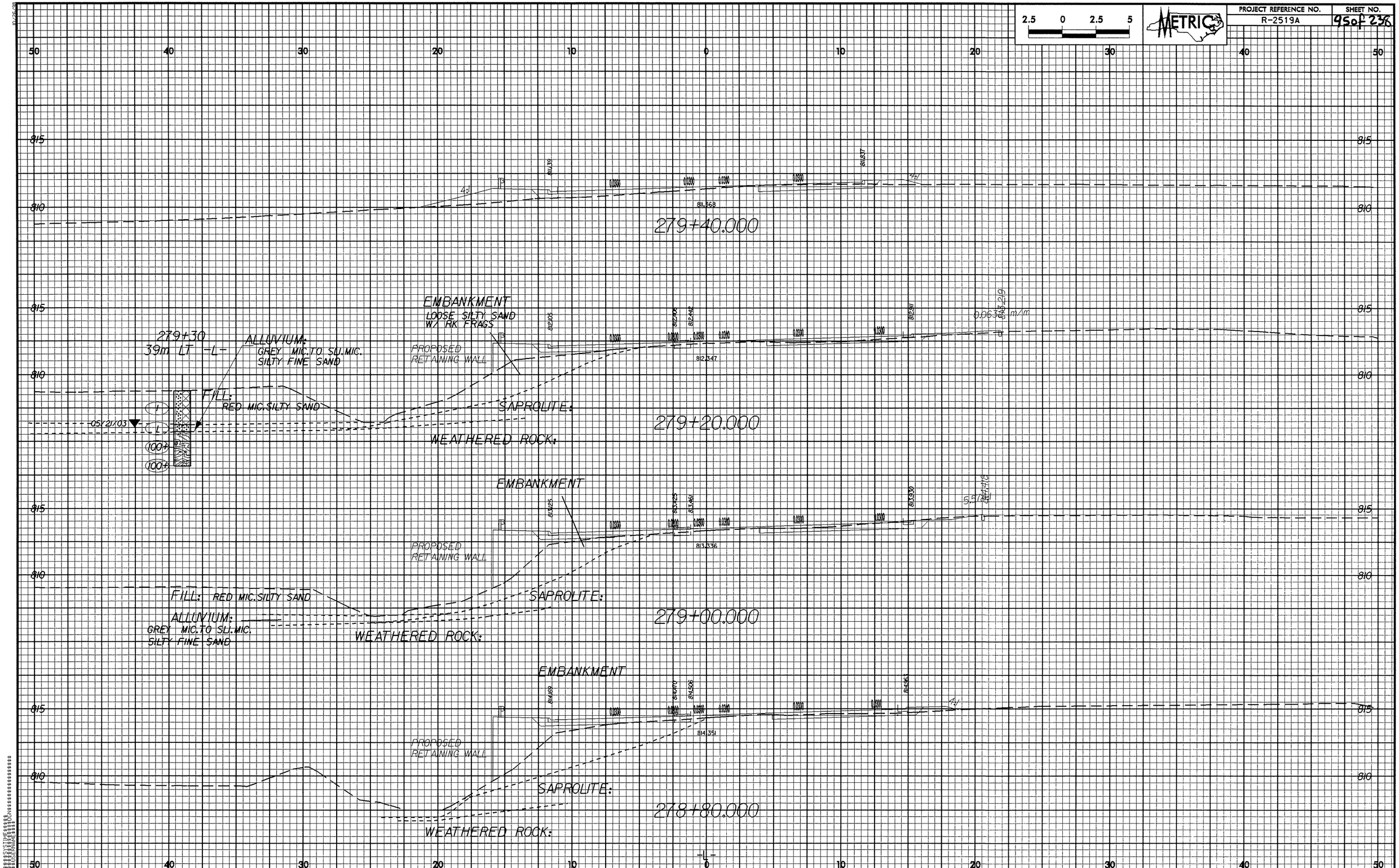
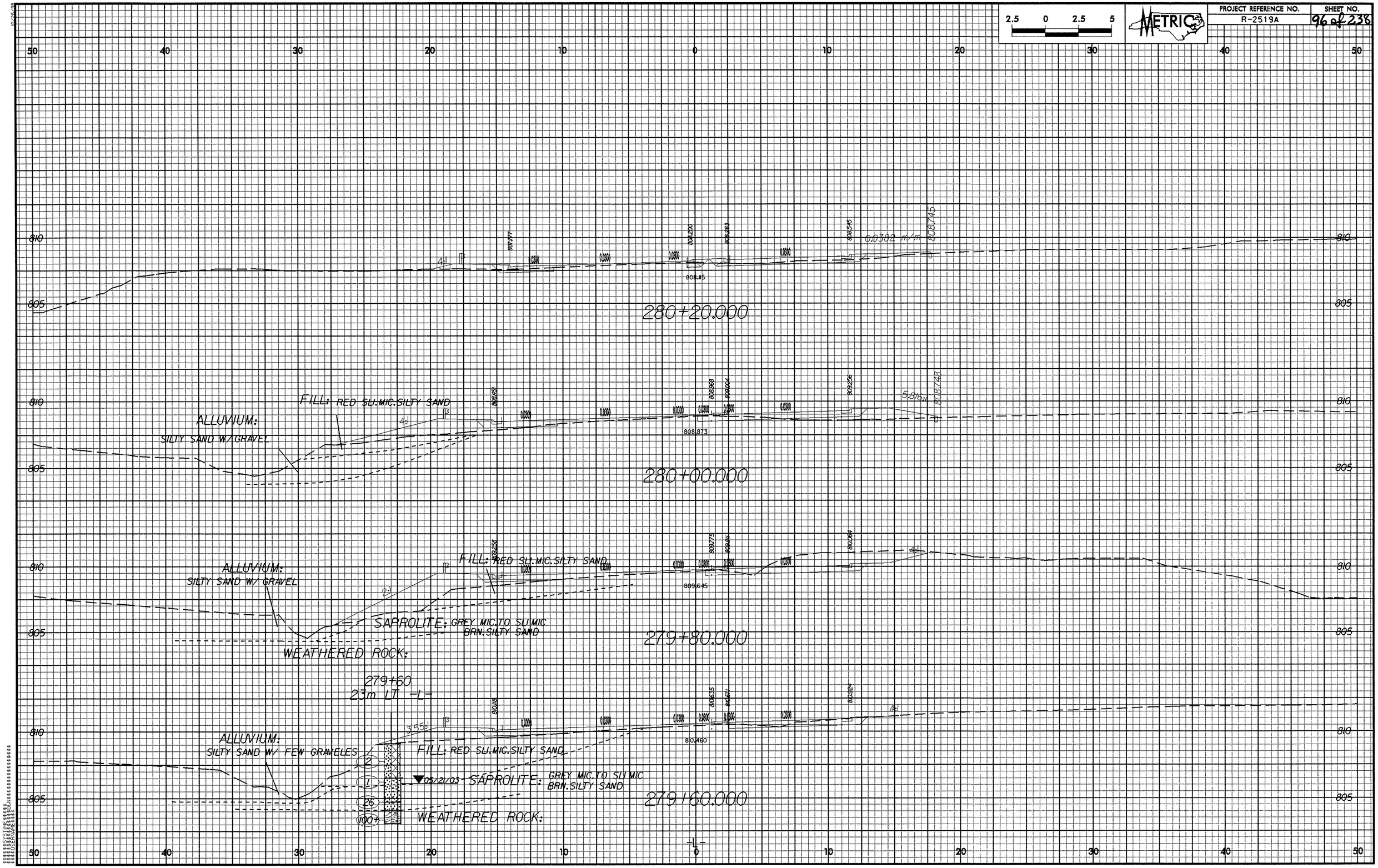
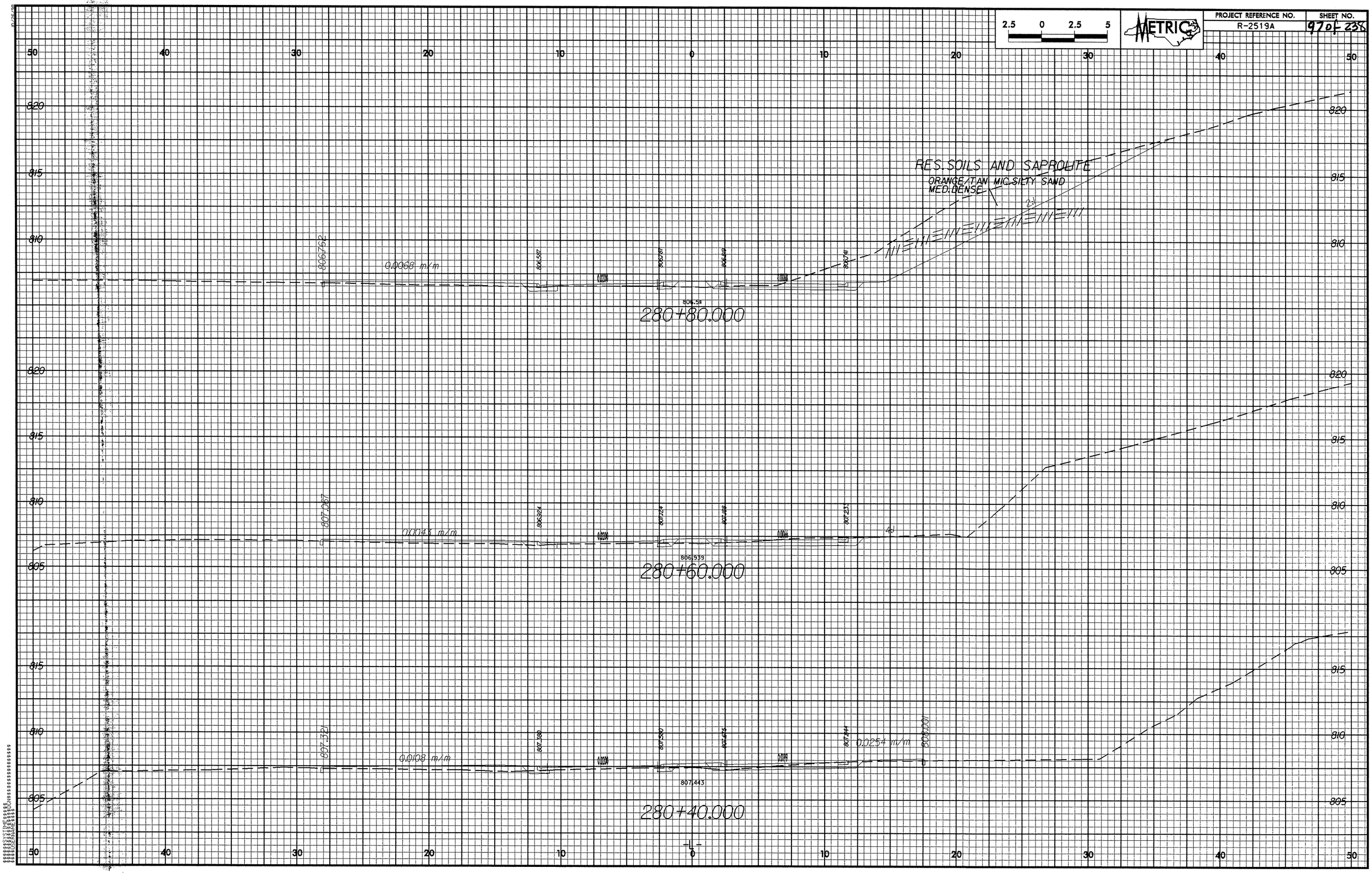
SAPROLITE:
278+60.000
0.0334 m/m
815.346
0.0015 m/m
816.308
278+40.000
EMBANKMENT
SILTY SAND W/ RK FRAGS
0.0337 m/m
817.240
PROPOSED RETAINING WALL
ALLUVIUM:
RED FINE SANDY CLAY
SAPROLITE:
MIC. SANDY SILT
278+00
21m LT -L-
EMBANKMENT
SILTY SAND W/ RK FRAGS
278+20.000
PROPOSED RETAINING WALL
ALLUVIUM:
RED FINE SANDY CLAY
TAN CLAYEY SAND
W/ RK FRAGS
05/15/03
SAPROLITE:
MIC. SANDY SILT
278+00.000
-L-



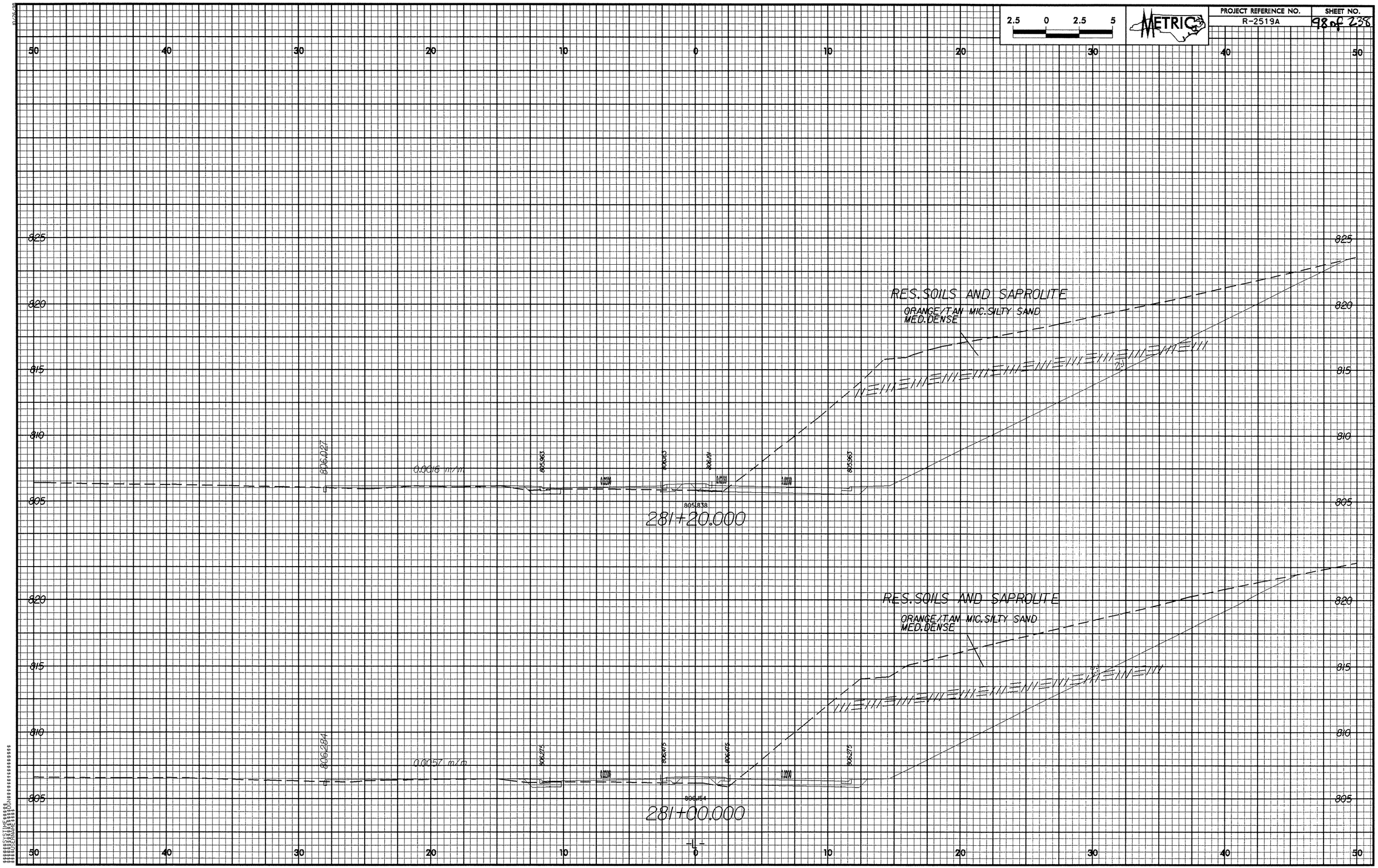
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
95 of 238
279+40.000
EMBANKMENT
LOOSE SILTY SAND
W/ RK FRAGS
PROPOSED
RETAINING WALL
279+30
39m LT -L-
ALLUVIUM:
GREY MIC. TO SLI. MIC.
SILTY FINE SAND
FILL:
RED MIC. SILTY SAND
SAPROLITE:
WEATHERED ROCK:
279+20.000
EMBANKMENT
PROPOSED
RETAINING WALL
FILL: RED MIC. SILTY SAND
ALLUVIUM:
GREY MIC. TO SLI. MIC.
SILTY FINE SAND
SAPROLITE:
WEATHERED ROCK:
279+00.000
EMBANKMENT
PROPOSED
RETAINING WALL
SAPROLITE:
WEATHERED ROCK:
278+80.000
-L-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
96 of 238
280+20.000
0.0382 m/m
808.745
808.115
280+00.000
FILL: RED SLI.MIC.SILTY SAND
ALLUVIUM:
SILTY SAND W/ GRAVEL
808.873
5.816:1
808.748
279+80.000
FILL: RED SLI.MIC.SILTY SAND
ALLUVIUM:
SILTY SAND W/ GRAVEL
SAPROLITE: GREY MIC.TO SLI.MIC BRN.SILTY SAND
WEATHERED ROCK:
809.645
279+60
23m LT -L-
279+60.000
ALLUVIUM:
SILTY SAND W/ FEW GRAVELES
FILL: RED SLI.MIC.SILTY SAND
SAPROLITE: GREY MIC.TO SLI.MIC BRN.SILTY SAND
WEATHERED ROCK:
810.460
05/21/03
-L-

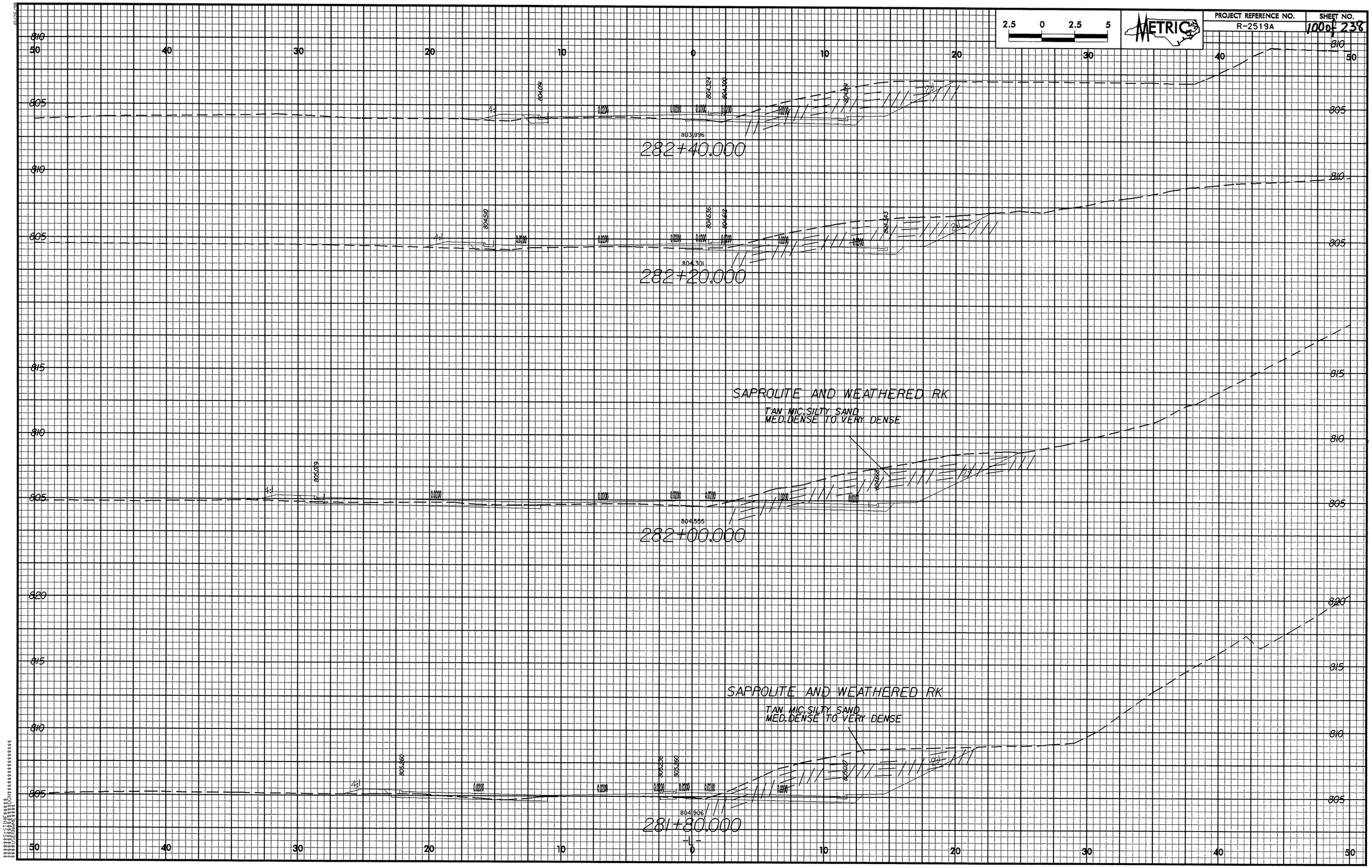


2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
97 of 238
RES. SOILS AND SAPROLITE
ORANGE/TAN MIC. SILTY SAND
MED. DENSE
2:1
806.762
0.0068 m/m
806.587
806.781
806.819
806.741
806.511
280+80.000
807.067
0.0043 m/m
806.924
807.124
807.188
807.233
4:1
806.939
280+60.000
807.321
0.0108 m/m
807.380
807.580
807.675
807.844
0.0254 m/m
808.001
807.443
280+40.000
820
815
810
805
50
40
30
20
10
0



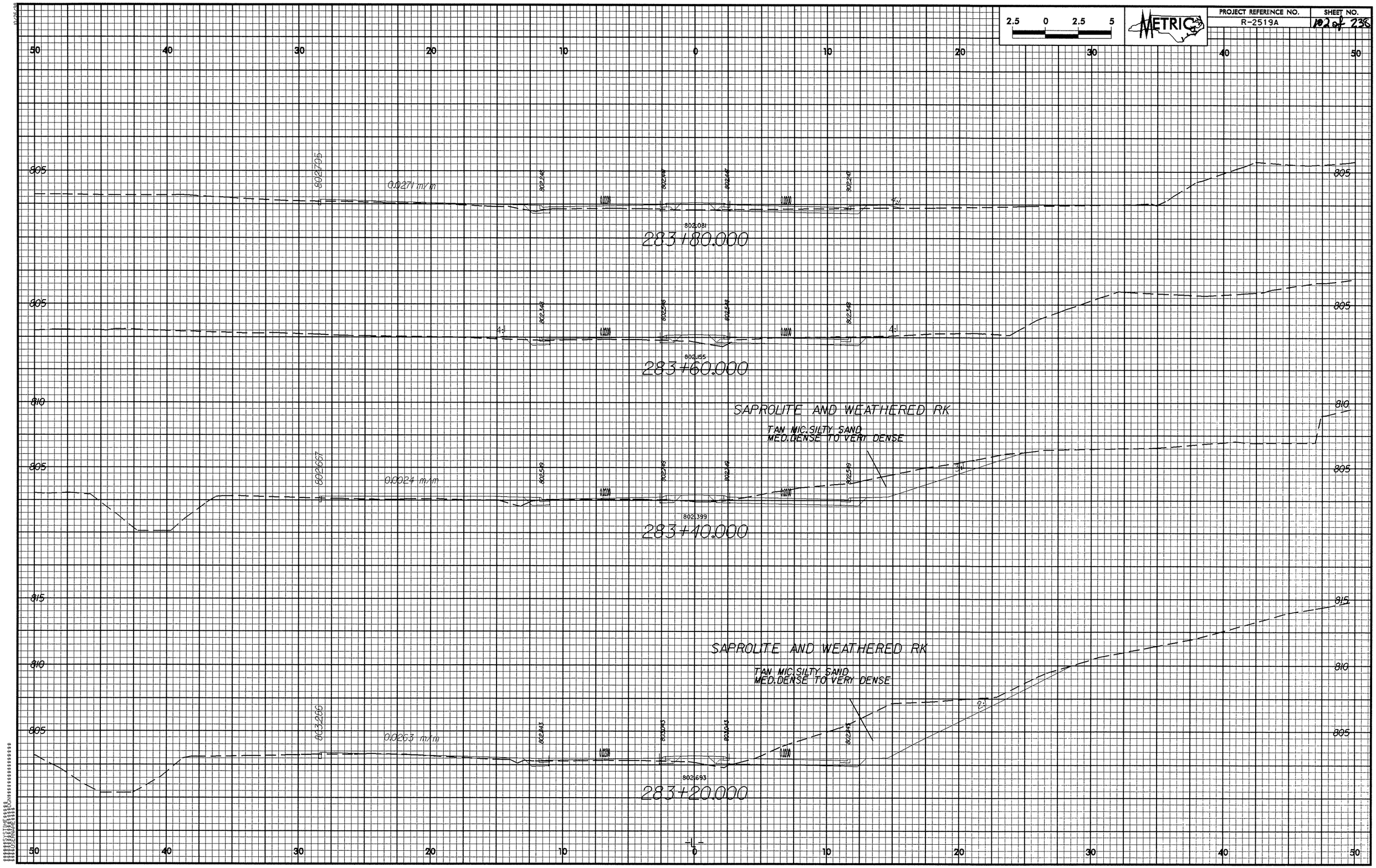
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
98 of 238
50 40 30 20 10 0 10 20 30 40 50
825
820
815
810
805
RES. SOILS AND SAPROLITE
ORANGE/TAN MIC. SILTY SAND
MED. DENSE
2:1
806.027
0.0016 m/m
805.963
806.063
806.191
805.963
805.838
281+20.000
RES. SOILS AND SAPROLITE
ORANGE/TAN MIC. SILTY SAND
MED. DENSE
806.284
0.0057 m/m
806.275
806.475
806.475
806.275
806.154
281+00.000
-L-

PROJECT REFERENCE NO.
R-2519A
SHEET NO.
99 of 238
2.5 0 2.5 5
METRIC
50 40 30 20 10 0 10 20 30 40 50
820
815
810
805
825
805.539
805.548
805.572
0.0200
4:1
2:1
805.337
281+60.000
RES.SOILS AND SAPROLITE
ORANGE/TAN MIC.SILTY SAND
MED.DENSE
805.651
805.851
805.887
805.561
281+40.000
-L-
$$$$$SYSTIME$$$$$
$$$$$$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$

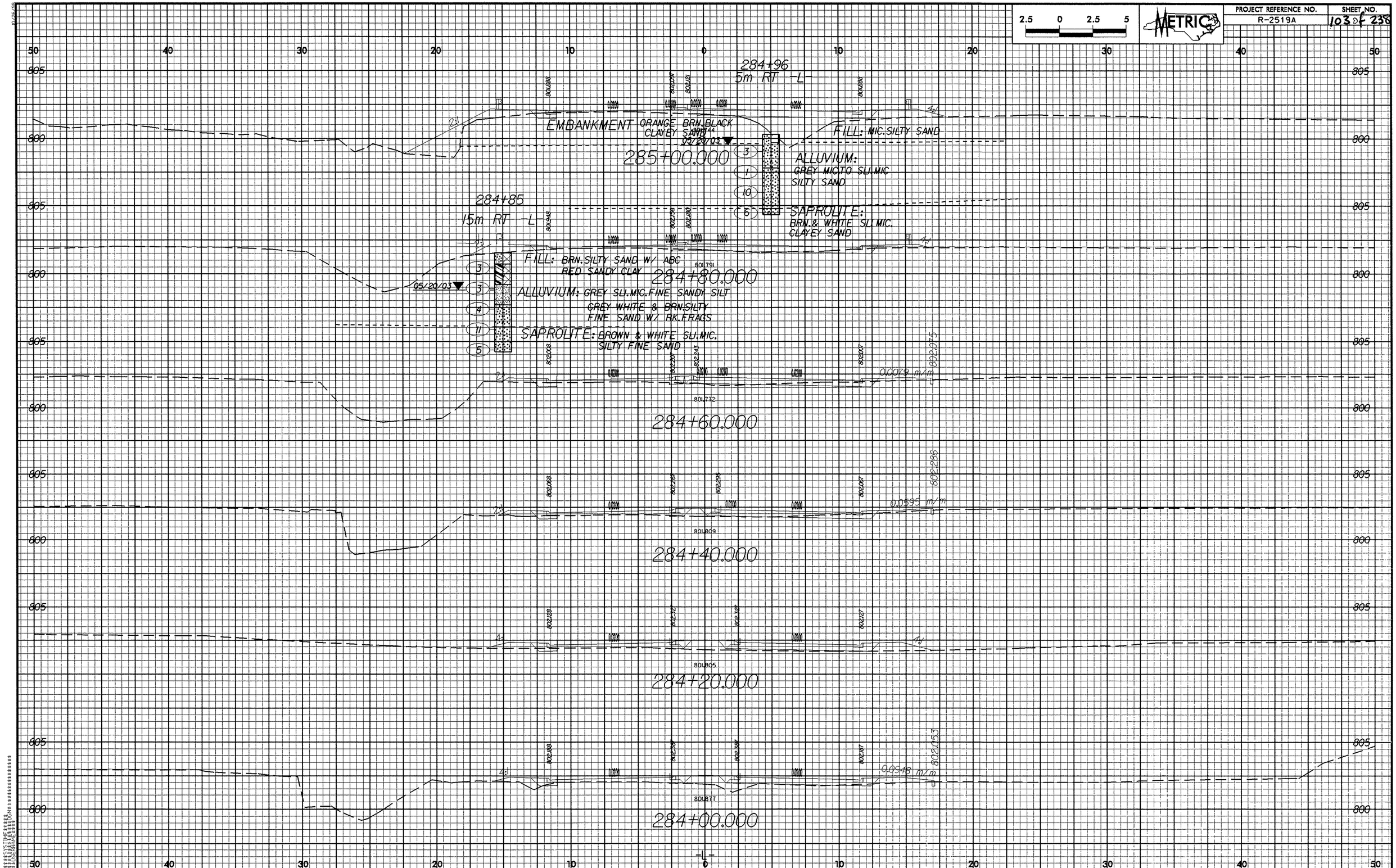


2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
100 of 238
810
805
815
820
50
40
30
20
10
0
10
20
30
40
50
804.091
804.324
804.300
803.996
282+40.000
804.510
804.636
804.612
804.301
282+20.000
SAPROLITE AND WEATHERED RK
TAN MIC.SILTY SAND
MED.DENSE TO VERY DENSE
805.079
804.555
282+00.000
SAPROLITE AND WEATHERED RK
TAN MIC.SILTY SAND
MED.DENSE TO VERY DENSE
805.260
805.236
805.260
804.906
281+80.000

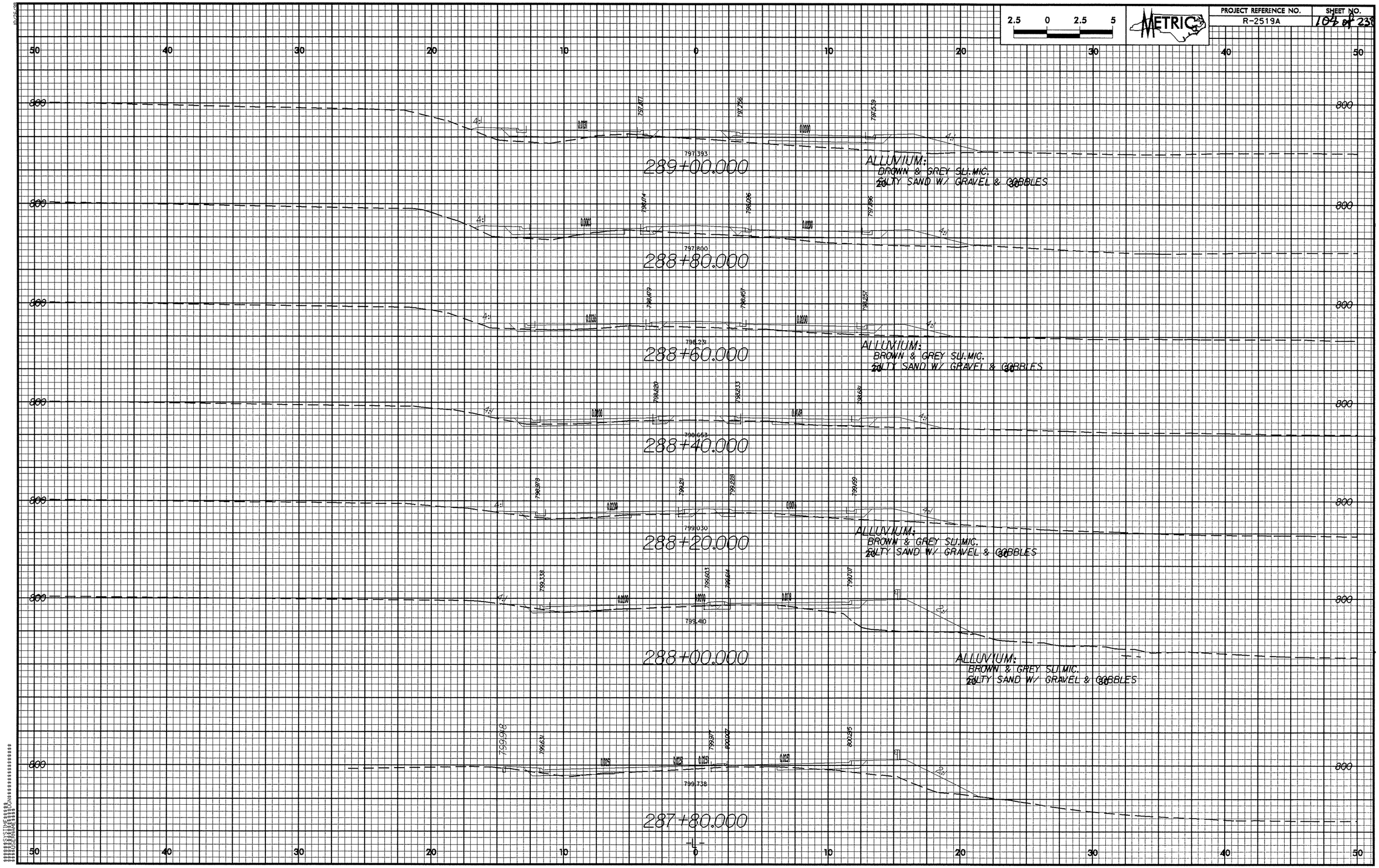
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
101 of 238
METRIC
2.5 0 2.5 5
SAPROLITE AND WEATHERED RK
TAN MIC.SILTY SAND
MED.DENSE TO VERY DENSE
283+00.000
803.028
803.155
803.367
803.355
4:1
2:1
0.0200
282+80.000
803.377
803.467
803.711
803.667
282+60.000
803.762
803.779
804.012
803.988
815
810
805
50
40
30
20
10
0



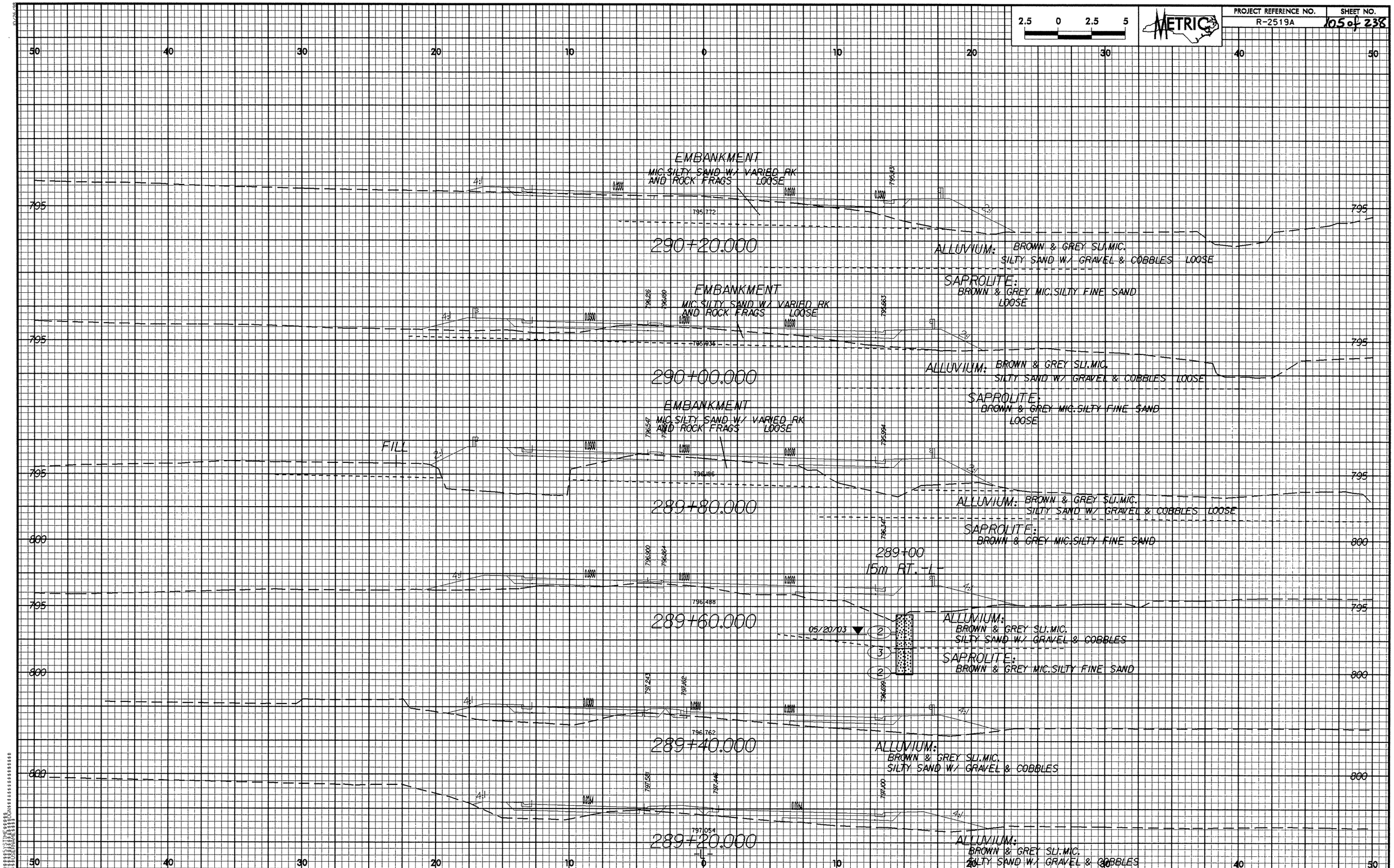
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
102 of 236
50 40 30 20 10 0 10 20 30 40 50
805
810
815
802.705
0.0271 m/m
802.248
802.447
802.447
802.247
0.0200
4:1
802.081
283+80.000
802.348
802.548
802.548
802.348
802.155
283+60.000
SAPROLITE AND WEATHERED RK
TAN MIC.SILTY SAND
MED.DENSE TO VERY DENSE
802.667
0.0024 m/m
802.549
802.749
802.749
802.549
3:1
802.399
283+40.000
SAPROLITE AND WEATHERED RK
TAN MIC.SILTY SAND
MED.DENSE TO VERY DENSE
803.286
0.0263 m/m
802.443
803.043
803.043
802.443
2:1
802.693
283+20.000
-L-



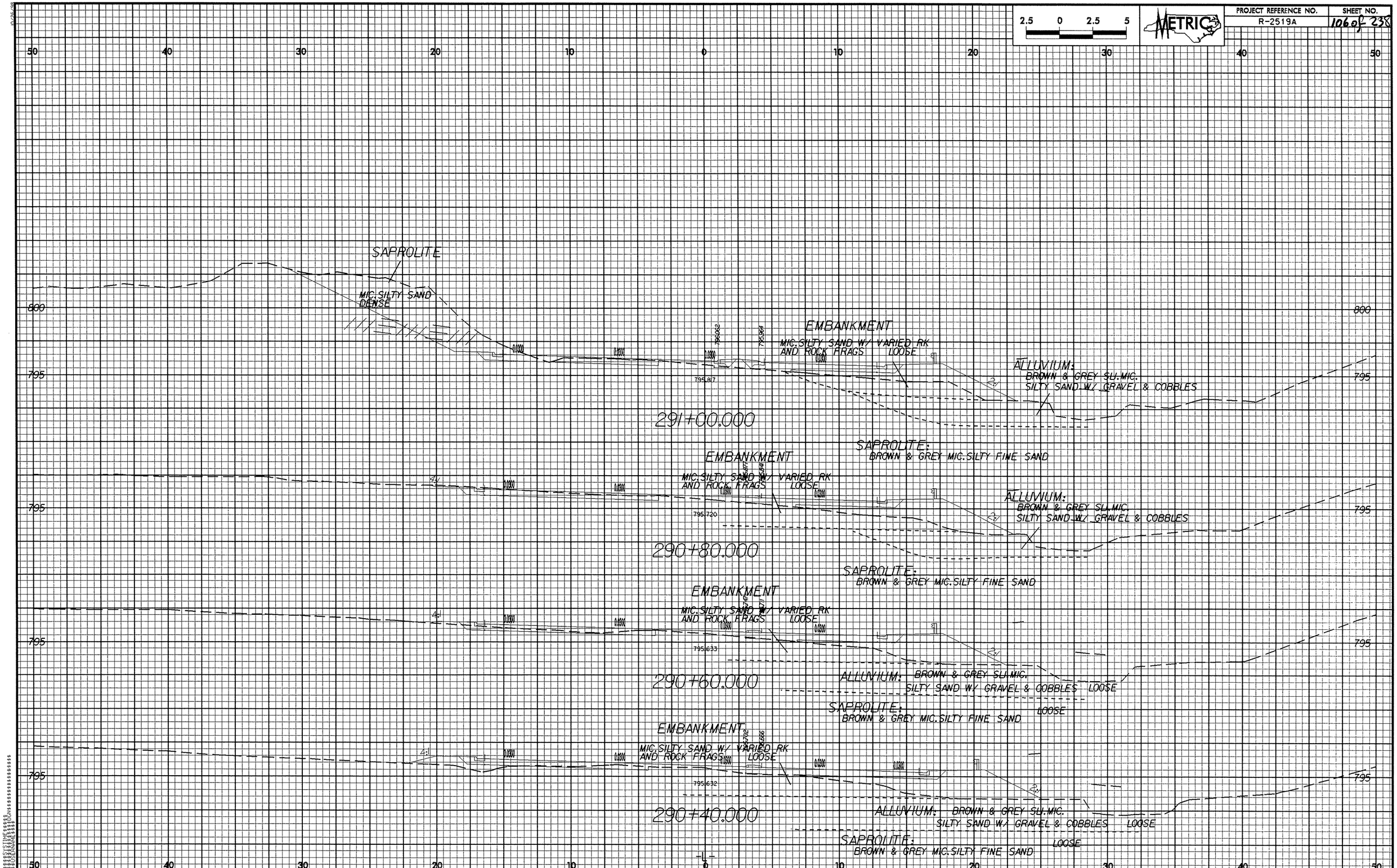
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
103 of 238
284+96
5m RT -L-
EMBANKMENT ORANGE BRN.BLACK CLAYEY SAND
FILL: MIC.SILTY SAND
05/20/03
285+00.000
ALLUVIUM: GREY MIC.TO SLI.MIC SILTY SAND
SAPROLITE: BRN.& WHITE SLI.MIC. CLAYEY SAND
284+85
15m RT -L-
FILL: BRN.SILTY SAND W/ ABC RED SANDY CLAY
05/20/03
284+80.000
ALLUVIUM: GREY SLI.MIC.FINE SANDY SILT GREY WHITE & BRN.SILTY FINE SAND W/ RK.FRAGS
SAPROLITE: BROWN & WHITE SLI.MIC. SILTY FINE SAND
0.0079 m/m
284+60.000
0.0595 m/m
284+40.000
284+20.000
0.0948 m/m
284+00.000
-L-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
104 of 238
50 40 30 20 10 0 10 20 30 40 50
800
797.393
289+00.000
ALLUVIUM:
BROWN & GREY SLI.MIC.
SILTY SAND W/ GRAVEL & COBBLES
797.800
288+80.000
798.231
288+60.000
ALLUVIUM:
BROWN & GREY SLI.MIC.
SILTY SAND W/ GRAVEL & COBBLES
798.653
288+40.000
799.030
288+20.000
ALLUVIUM:
BROWN & GREY SLI.MIC.
SILTY SAND W/ GRAVEL & COBBLES
799.410
288+00.000
ALLUVIUM:
BROWN & GREY SLI.MIC.
SILTY SAND W/ GRAVEL & COBBLES
799.738
287+80.000
-L-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
105 of 238
EMBANKMENT
MIC. SILTY SAND W/ VARIED RK AND ROCK FRAGS LOOSE
795.772
290+20.000
ALLUVIUM: BROWN & GREY SLI. MIC. SILTY SAND W/ GRAVEL & COBBLES LOOSE
SAPROLITE: BROWN & GREY MIC. SILTY FINE SAND LOOSE
EMBANKMENT
MIC. SILTY SAND W/ VARIED RK AND ROCK FRAGS LOOSE
795.936
290+00.000
ALLUVIUM: BROWN & GREY SLI. MIC. SILTY SAND W/ GRAVEL & COBBLES LOOSE
SAPROLITE: BROWN & GREY MIC. SILTY FINE SAND LOOSE
EMBANKMENT
MIC. SILTY SAND W/ VARIED RK AND ROCK FRAGS LOOSE
FILL
796.186
289+80.000
ALLUVIUM: BROWN & GREY SLI. MIC. SILTY SAND W/ GRAVEL & COBBLES LOOSE
SAPROLITE: BROWN & GREY MIC. SILTY FINE SAND
289+00
15m RT. -L-
796.488
289+60.000
05/20/03
ALLUVIUM: BROWN & GREY SLI. MIC. SILTY SAND W/ GRAVEL & COBBLES
SAPROLITE: BROWN & GREY MIC. SILTY FINE SAND
796.762
289+40.000
ALLUVIUM: BROWN & GREY SLI. MIC. SILTY SAND W/ GRAVEL & COBBLES
797.054
289+20.000
-L-
ALLUVIUM: BROWN & GREY SLI. MIC. SILTY SAND W/ GRAVEL & COBBLES



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
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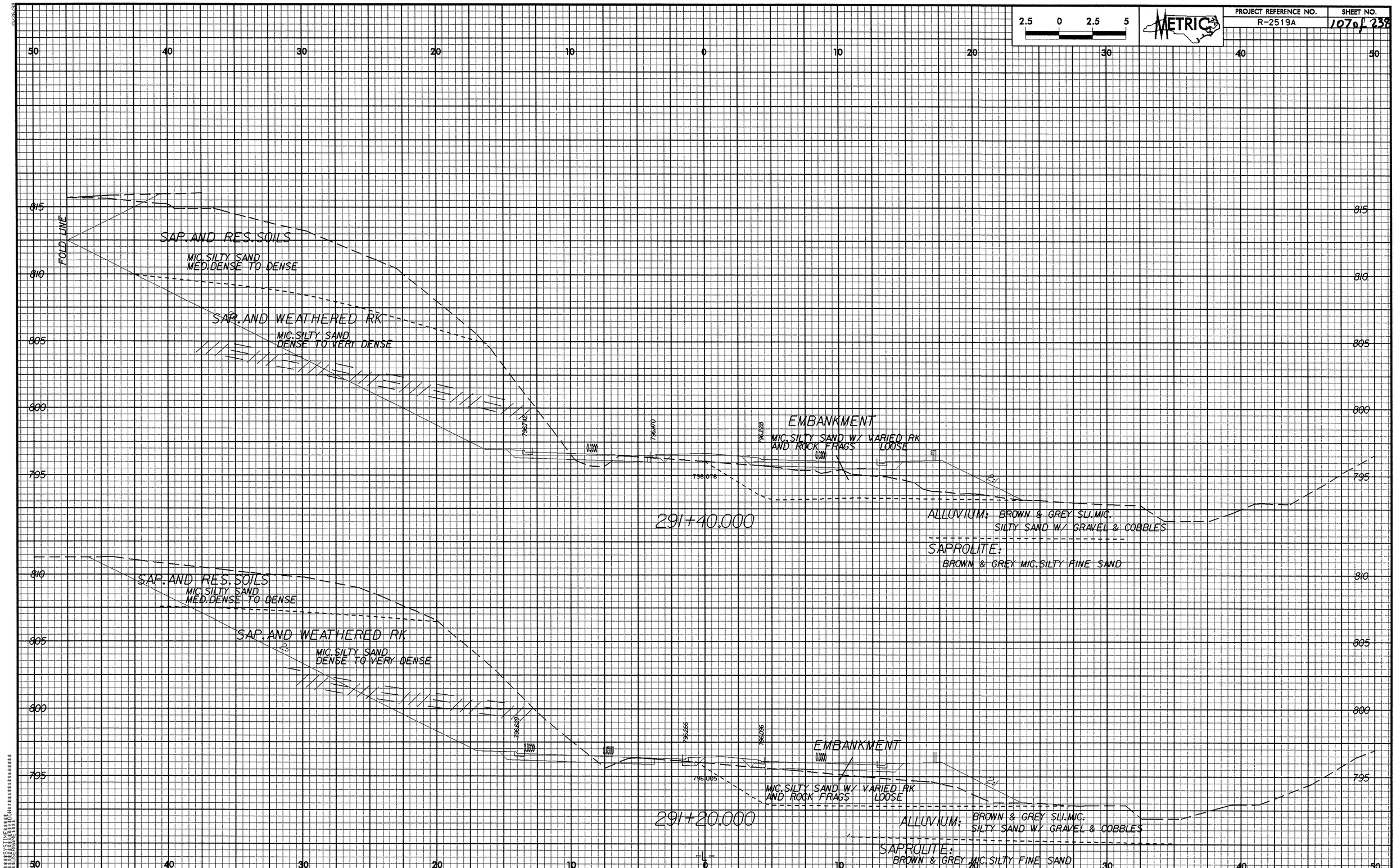
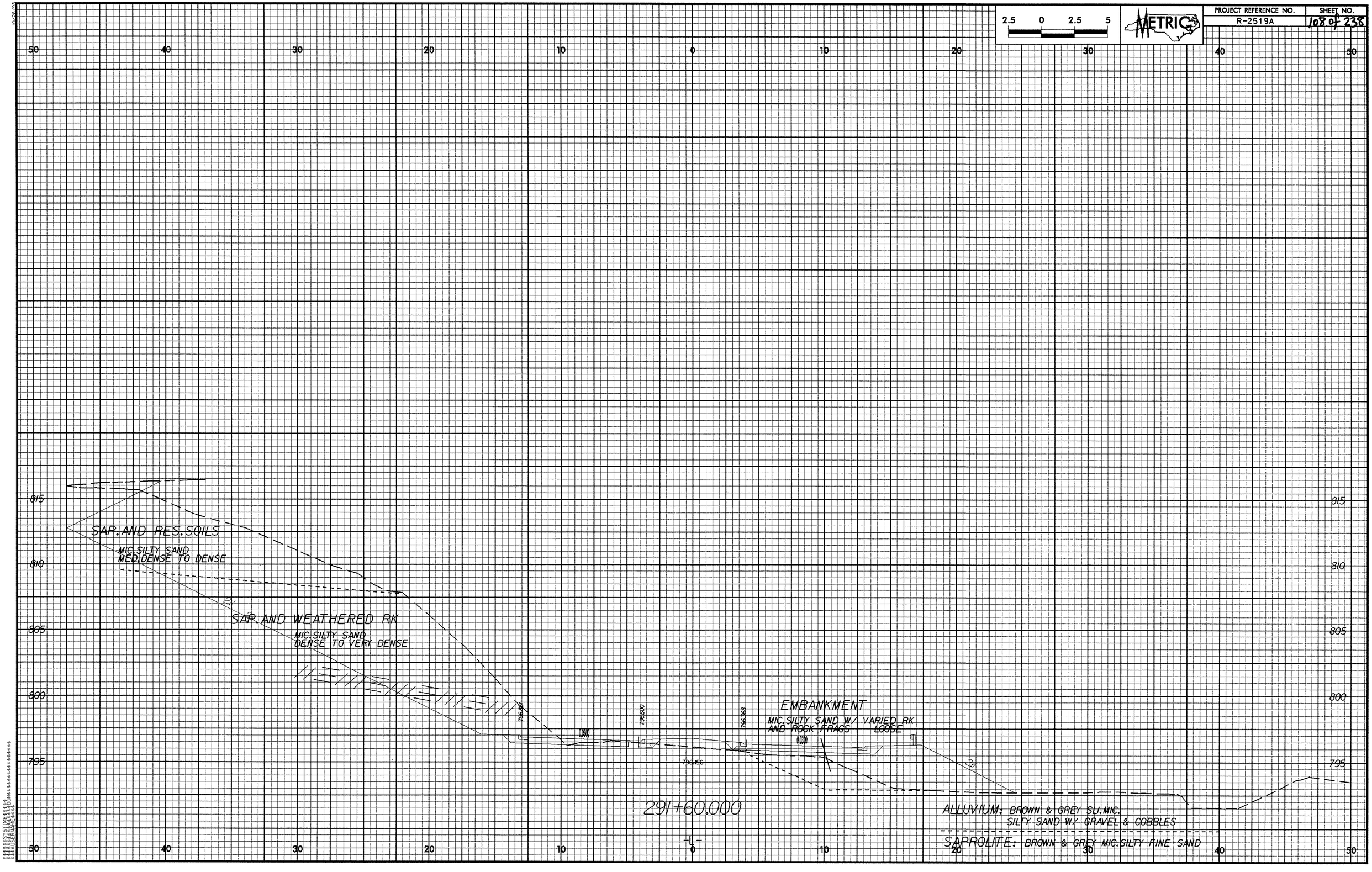
SAPROLITE
MIC. SILTY SAND DENSE
EMBANKMENT
MIC. SILTY SAND W/ VARIED RK AND ROCK FRAGS LOOSE
ALLUVIUM: BROWN & GREY SLI. MIC. SILTY SAND W/ GRAVEL & COBBLES
291+00.000
SAPROLITE: BROWN & GREY MIC. SILTY FINE SAND
EMBANKMENT
MIC. SILTY SAND W/ VARIED RK AND ROCK FRAGS LOOSE
ALLUVIUM: BROWN & GREY SLI. MIC. SILTY SAND W/ GRAVEL & COBBLES
290+80.000
SAPROLITE: BROWN & GREY MIC. SILTY FINE SAND
EMBANKMENT
MIC. SILTY SAND W/ VARIED RK AND ROCK FRAGS LOOSE
290+60.000
ALLUVIUM: BROWN & GREY SLI. MIC. SILTY SAND W/ GRAVEL & COBBLES LOOSE
SAPROLITE: BROWN & GREY MIC. SILTY FINE SAND LOOSE
EMBANKMENT
MIC. SILTY SAND W/ VARIED RK AND ROCK FRAGS LOOSE
290+40.000
ALLUVIUM: BROWN & GREY SLI. MIC. SILTY SAND W/ GRAVEL & COBBLES LOOSE
SAPROLITE: BROWN & GREY MIC. SILTY FINE SAND LOOSE
800
795
795.817
795.720
795.633
795.632



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
107 of 238
FOLD LINE
SAP. AND RES. SOILS
MIC. SILTY SAND
MED. DENSE TO DENSE
SAP. AND WEATHERED RK
MIC. SILTY SAND
DENSE TO VERY DENSE
EMBANKMENT
MIC. SILTY SAND W/ VARIED RK
AND ROCK FRAGS LOOSE
291+40.000
ALLUVIUM: BROWN & GREY SLI. MIC.
SILTY SAND W/ GRAVEL & COBBLES
SAPROLITE:
BROWN & GREY MIC. SILTY FINE SAND
SAP. AND RES. SOILS
MIC. SILTY SAND
MED. DENSE TO DENSE
SAP. AND WEATHERED RK
MIC. SILTY SAND
DENSE TO VERY DENSE
EMBANKMENT
MIC. SILTY SAND W/ VARIED RK
AND ROCK FRAGS LOOSE
291+20.000
ALLUVIUM: BROWN & GREY SLI. MIC.
SILTY SAND W/ GRAVEL & COBBLES
SAPROLITE:
BROWN & GREY MIC. SILTY FINE SAND
-L-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
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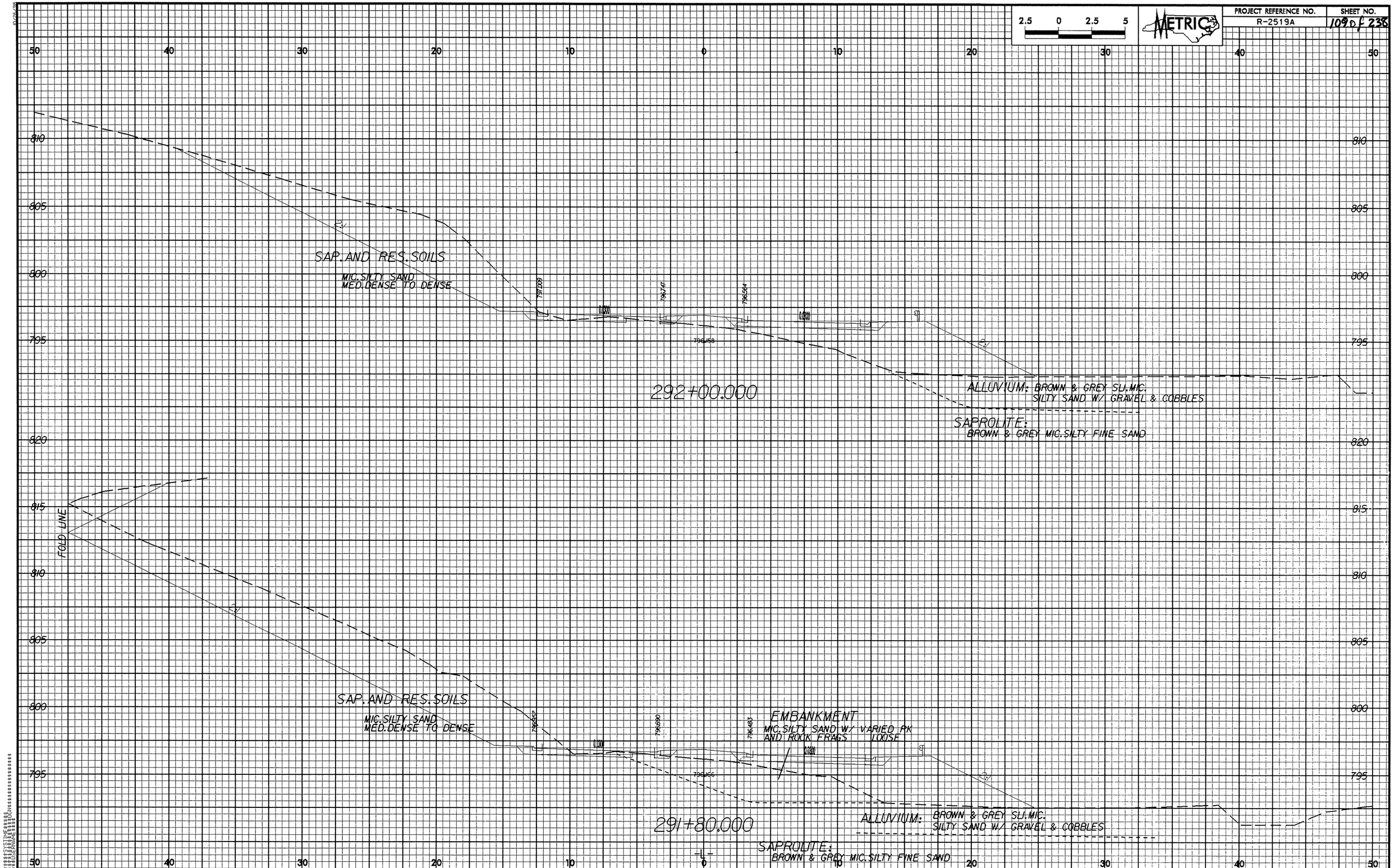
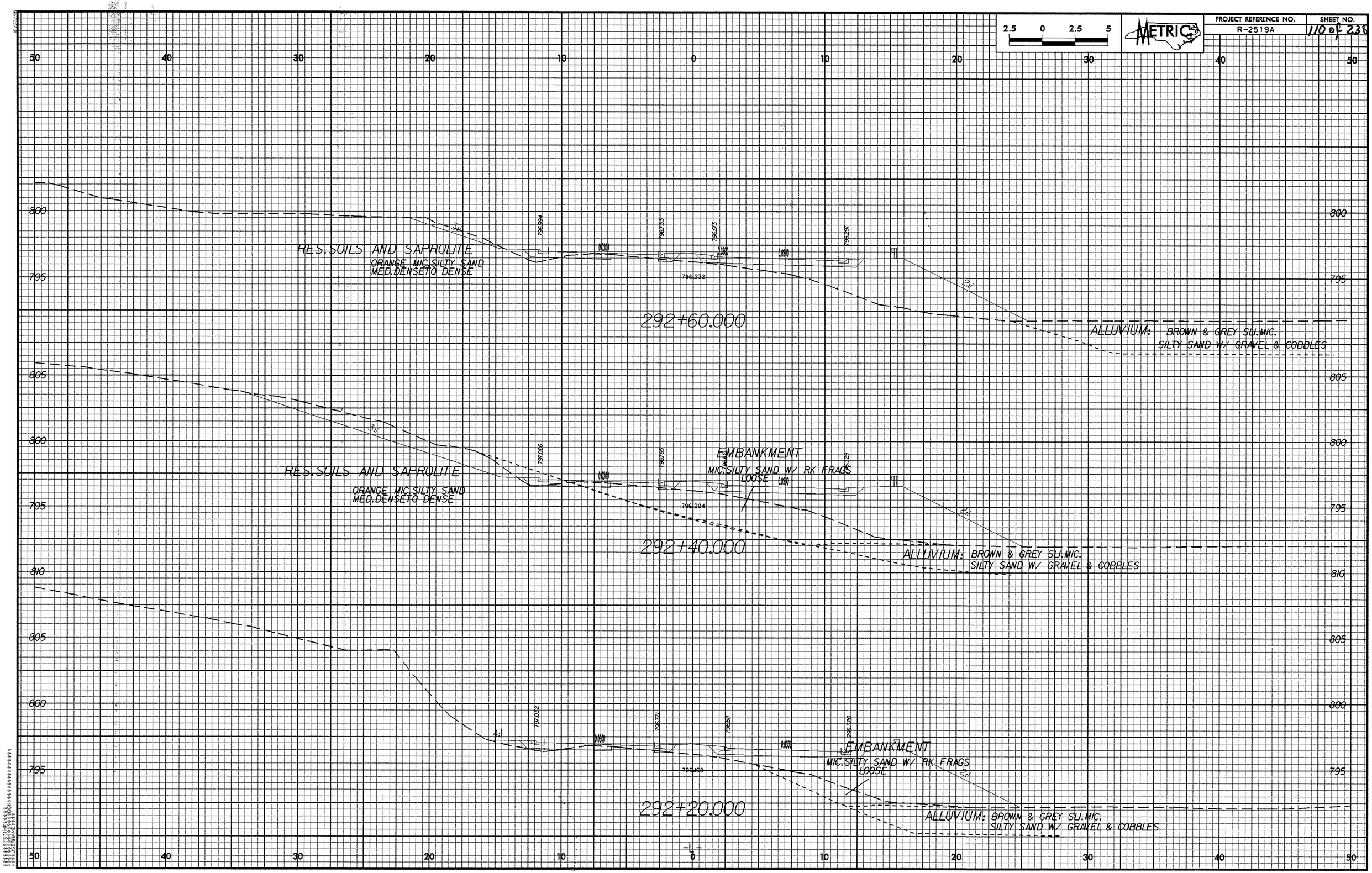
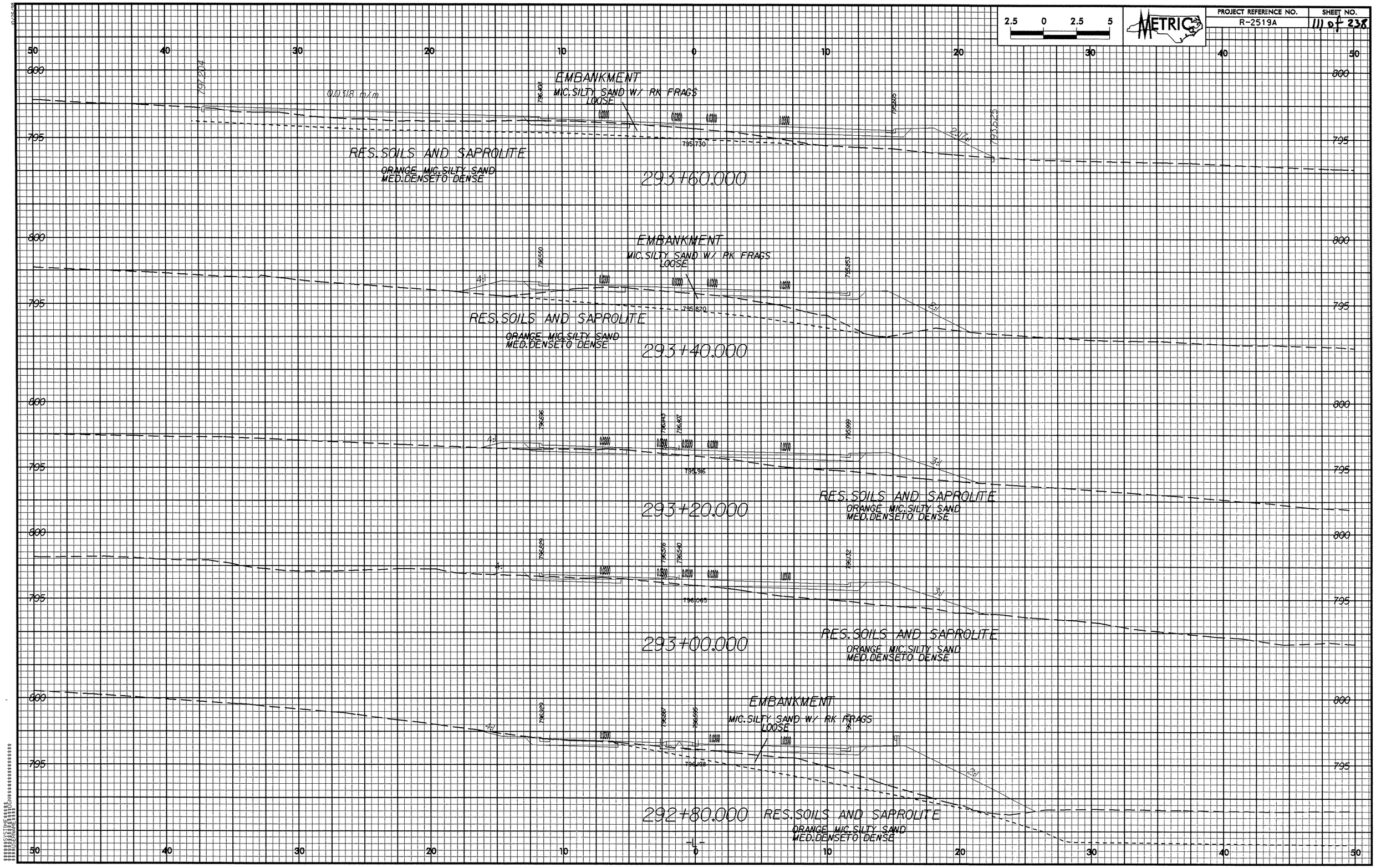
50 40 30 20 10 0 10 20 30 40 50
815
810
805
800
795
SAP. AND RES. SOILS
MIC. SILTY SAND
MED. DENSE TO DENSE
SAP. AND WEATHERED RK
MIC. SILTY SAND
DENSE TO VERY DENSE
796.867
796.600
796.368
796.156
EMBANKMENT
MIC. SILTY SAND W/ VARIED RK
AND ROCK FRAGS LOOSE
291+60.000
-L-
ALLUVIUM: BROWN & GREY SLI. MIC.
SILTY SAND W/ GRAVEL & COBBLES
SAPROLITE: BROWN & GREY MIC. SILTY FINE SAND



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
109 of 238
SAP. AND RES. SOILS
MIC. SILTY SAND
MED. DENSE TO DENSE
292+00.000
ALLUVIUM: BROWN & GREY SLI. MIC.
SILTY SAND W/ GRAVEL & COBBLES
SAPROLITE:
BROWN & GREY MIC. SILTY FINE SAND
FOLD LINE
SAP. AND RES. SOILS
MIC. SILTY SAND
MED. DENSE TO DENSE
EMBANKMENT
MIC. SILTY SAND W/ VARIED PK
AND ROCK FRAGS LOOSE
291+80.000
ALLUVIUM: BROWN & GREY SLI. MIC.
SILTY SAND W/ GRAVEL & COBBLES
SAPROLITE:
BROWN & GREY MIC. SILTY FINE SAND



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
110 of 238
RES. SOILS AND SAPROLITE
ORANGE MIC. SILTY SAND
MED. DENSE TO DENSE
292+60.000
ALLUVIUM: BROWN & GREY SLI. MIC.
SILTY SAND W/ GRAVEL & COBBLES
EMBANKMENT
MIC. SILTY SAND W/ RK FRAGS
LOOSE
RES. SOILS AND SAPROLITE
ORANGE MIC. SILTY SAND
MED. DENSE TO DENSE
292+40.000
ALLUVIUM: BROWN & GREY SLI. MIC.
SILTY SAND W/ GRAVEL & COBBLES
EMBANKMENT
MIC. SILTY SAND W/ RK FRAGS
LOOSE
292+20.000
ALLUVIUM: BROWN & GREY SLI. MIC.
SILTY SAND W/ GRAVEL & COBBLES



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
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EMBANKMENT
MIC. SILTY SAND W/ RK FRAGS
LOOSE
0.0318 m/m
797.204
796.408
795.730
793.625
RES. SOILS AND SAPROLITE
ORANGE MIC. SILTY SAND
MED. DENSE TO DENSE
293+60.000
796.550
795.820
4:1
2:1
293+40.000
796.696
796.407
795.916
3:1
293+20.000
796.829
796.540
796.065
293+00.000
796.929
796.595
796.188
292+80.000
800
795
50
40
30
20
10
0

294+60.000

FILL MIC. SILTY SAND W/ RK FRAGS LOOSE TO MED. DENSE

RES. SOILS AND SAPROLITE
ORANGE MIC. SILTY SAND
MED. DENSE TO DENSE

294+40.000

FILL
MIC. SILTY SAND W/ RK. FRAGS
LOOSE TO MED. DENSE

RES. SOILS AND SAPROLITE
ORANGE MIC. SILTY SAND
MED. DENSE TO DENSE

294+20.000

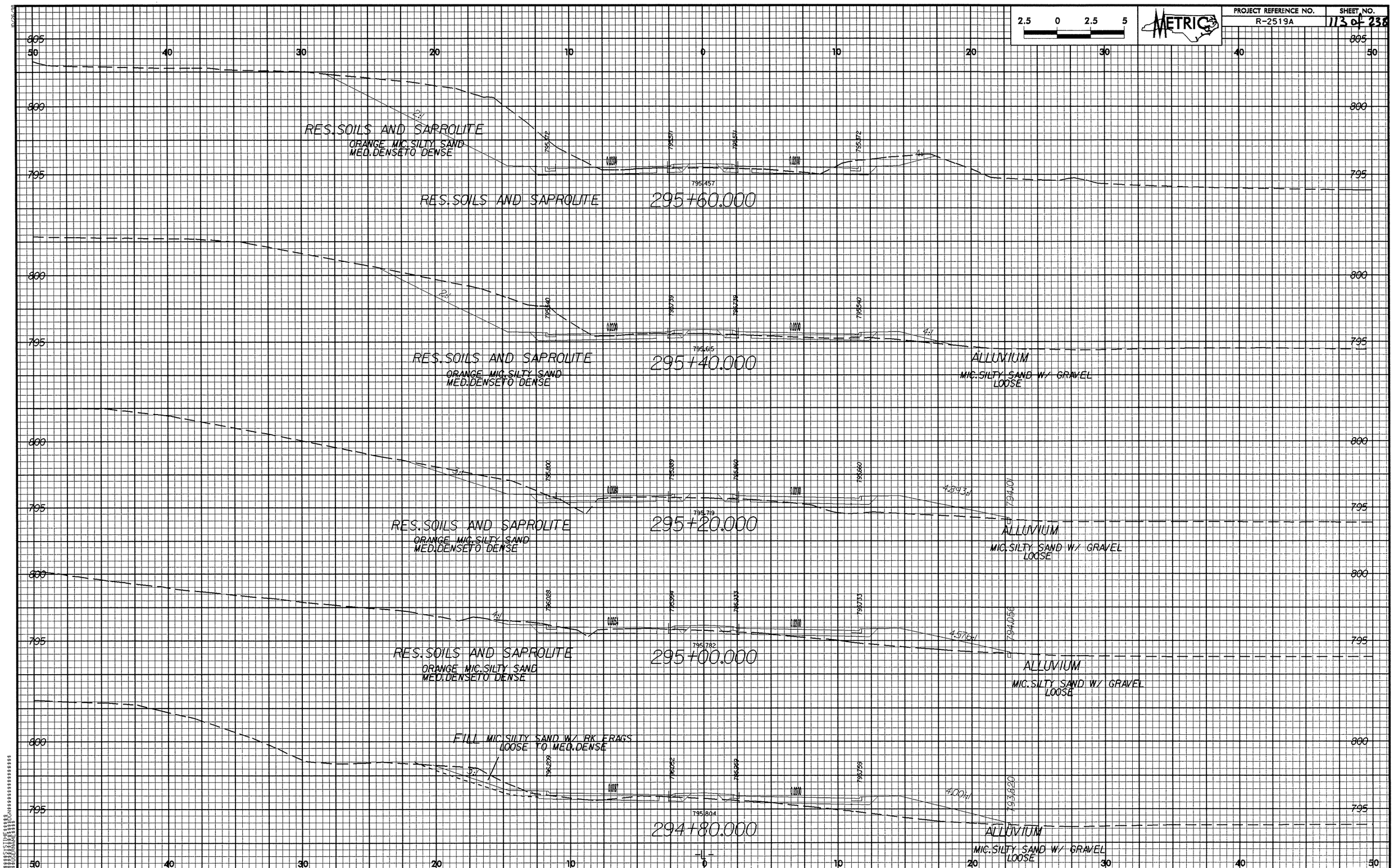
FILL
MIC. SILTY SAND W/ RK. FRAGS
LOOSE TO MED. DENSE

RES. SOILS AND SAPROLITE
ORANGE MIC. SILTY SAND
MED. DENSE TO DENSE

294+00.000

FILL
MIC. SILTY SAND W/ RK. FRAGS
LOOSE TO MED. DENSE

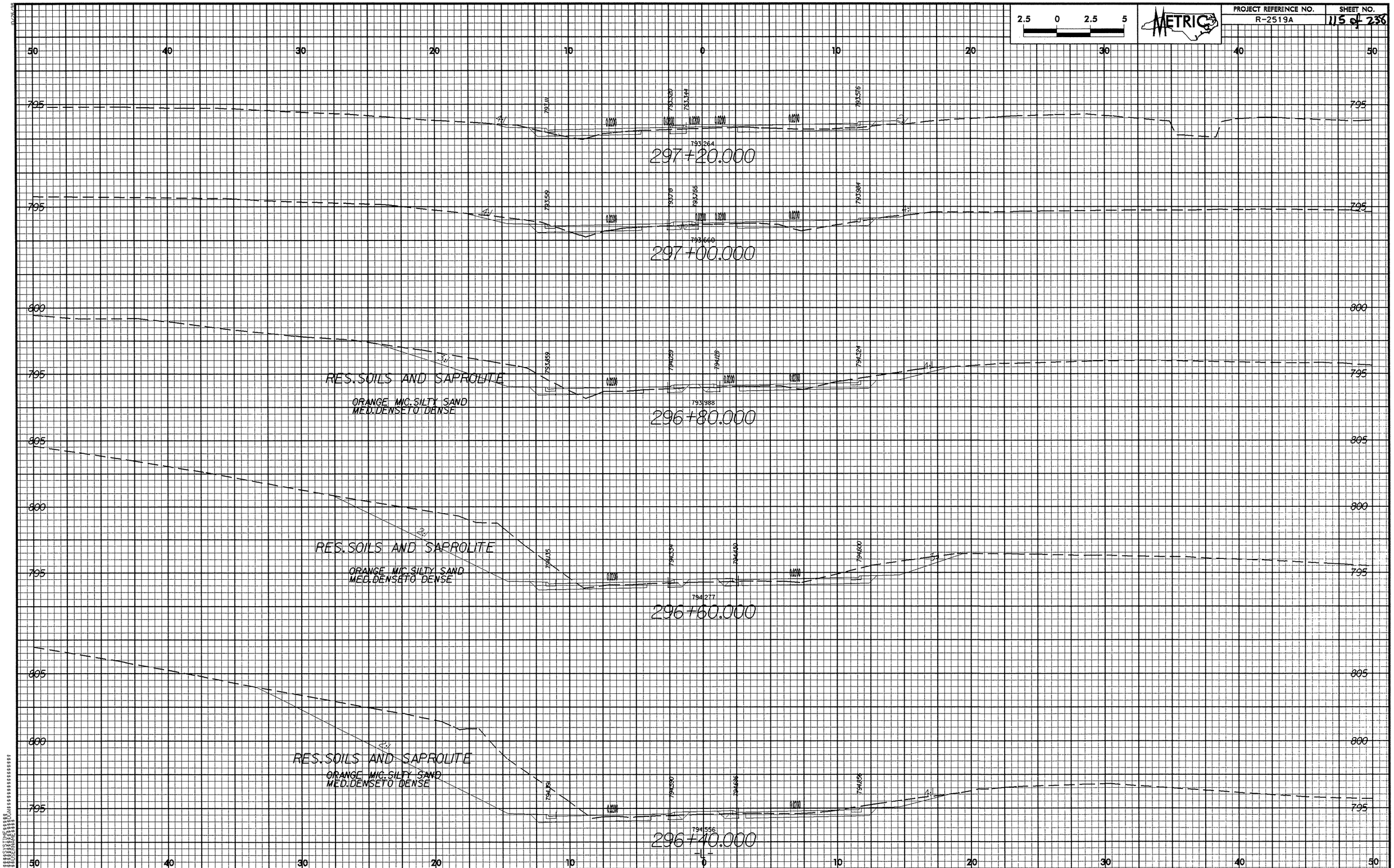
293+80.000



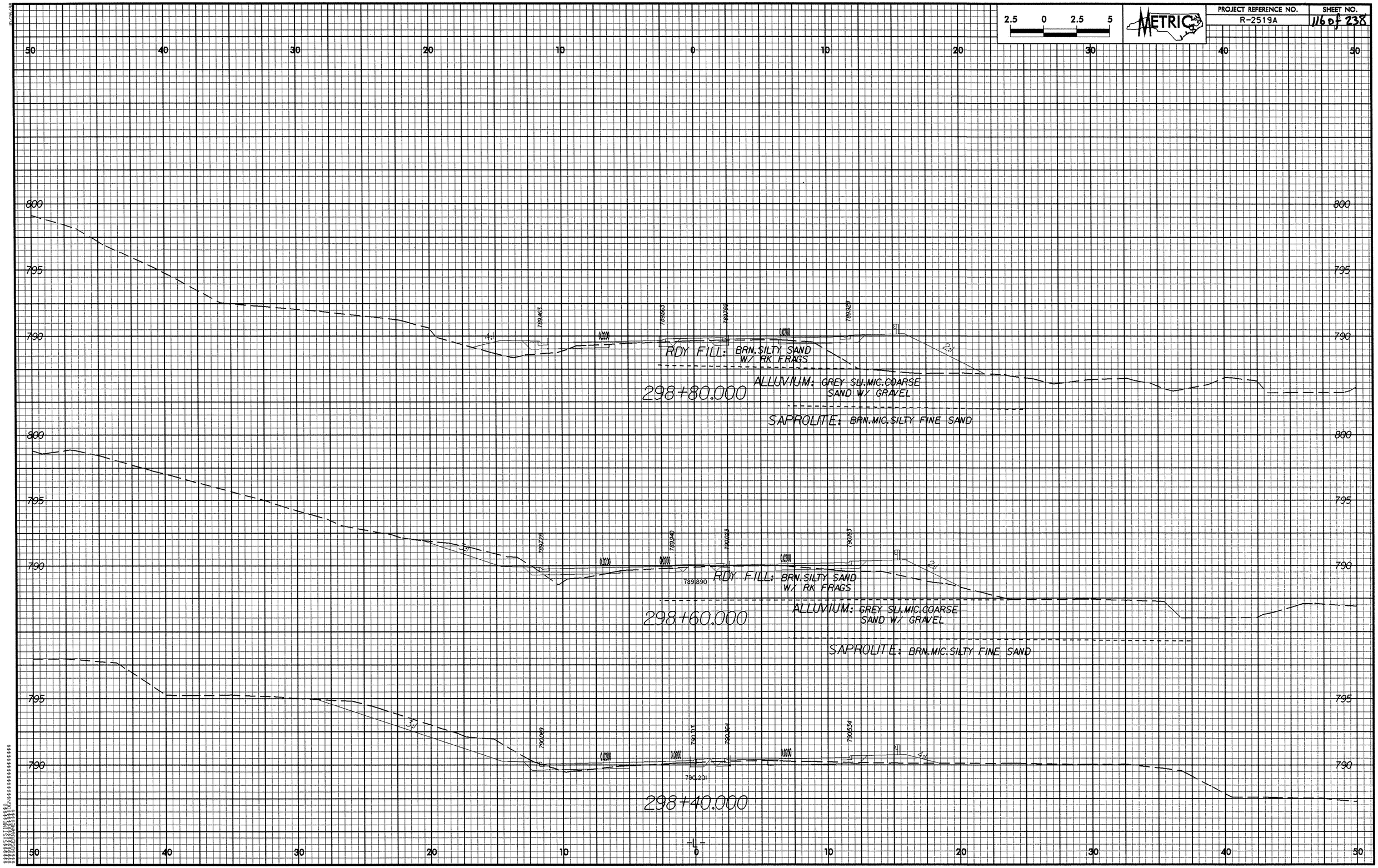
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
113 of 238
805
800
795
50 40 30 20 10 0 10 20 30 40 50
RES. SOILS AND SAPROLITE
ORANGE MIC. SILTY SAND
MED. DENSE TO DENSE
2:1
4:1
795.457
RES. SOILS AND SAPROLITE
295+60.000
795.615
RES. SOILS AND SAPROLITE
ORANGE MIC. SILTY SAND
MED. DENSE TO DENSE
295+40.000
ALLUVIUM
MIC. SILTY SAND W/ GRAVEL
LOOSE
3:1
4.893:1
794.101
795.719
RES. SOILS AND SAPROLITE
ORANGE MIC. SILTY SAND
MED. DENSE TO DENSE
295+20.000
ALLUVIUM
MIC. SILTY SAND W/ GRAVEL
LOOSE
4:1
4.576:1
794.056
795.782
RES. SOILS AND SAPROLITE
ORANGE MIC. SILTY SAND
MED. DENSE TO DENSE
295+00.000
ALLUVIUM
MIC. SILTY SAND W/ GRAVEL
LOOSE
FILL MIC. SILTY SAND W/ RK FRAGS
LOOSE TO MED. DENSE
3:1
4.001:1
793.820
795.804
294+80.000
ALLUVIUM
MIC. SILTY SAND W/ GRAVEL
LOOSE

PROJECT REFERENCE NO.	SHEET NO.
R-2519A	114 of 238

METRIC



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
115 of 236
50 40 30 20 10 0 10 20 30 40 50
795
800
805
793.111
793.320
793.344
793.576
793.264
297+20.000
793.519
793.718
793.755
793.984
793.660
297+00.000
793.859
794.059
794.128
794.324
793.988
296+80.000
RES. SOILS AND SAPROLITE
ORANGE MIC. SILTY SAND
MED. DENSE TO DENSE
794.135
794.334
794.430
794.600
794.277
296+60.000
794.391
794.590
794.686
794.856
794.556
296+40.000



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
116 of 238
50 40 30 20 10 0 10 20 30 40 50
800
795
790
RDY FILL: BRN.SILTY SAND W/ RK FRAGS
ALLUVIUM: GREY SLI.MIC.COARSE SAND W/ GRAVEL
SAPROLITE: BRN.MIC.SILTY FINE SAND
298+80.000
298+60.000
298+40.000
789.890
790.201
-L-

2.5 0 2.5 5

METRIC

50 40 30 20 10 0 10 20 30 40 50

299+80.000

790
785
787.618
5.33%
6%
4:1
2%
RDY. FILL: BRN. SILTY SAND W/ RK FRAGS
ALLUVIUM: GREY SLI.MIC. COARSE SAND W/ GRAVEL
SAPROLITE: BRN. MIC. SILTY FINE SAND

299+60.000

790
785
4:1
2%
RDY. FILL: BRN. SILTY SAND W/ RK FRAGS
ALLUVIUM: GREY SLI.MIC. COARSE SAND W/ GRAVEL
SAPROLITE: BRN. MIC. SILTY FINE SAND

299+40.000

790
785
4:1
2%
RDY. FILL: BRN. SILTY SAND W/ RK FRAGS
ALLUVIUM: GREY SLI.MIC. COARSE SAND W/ GRAVEL
SAPROLITE: BRN. MIC. SILTY FINE SAND

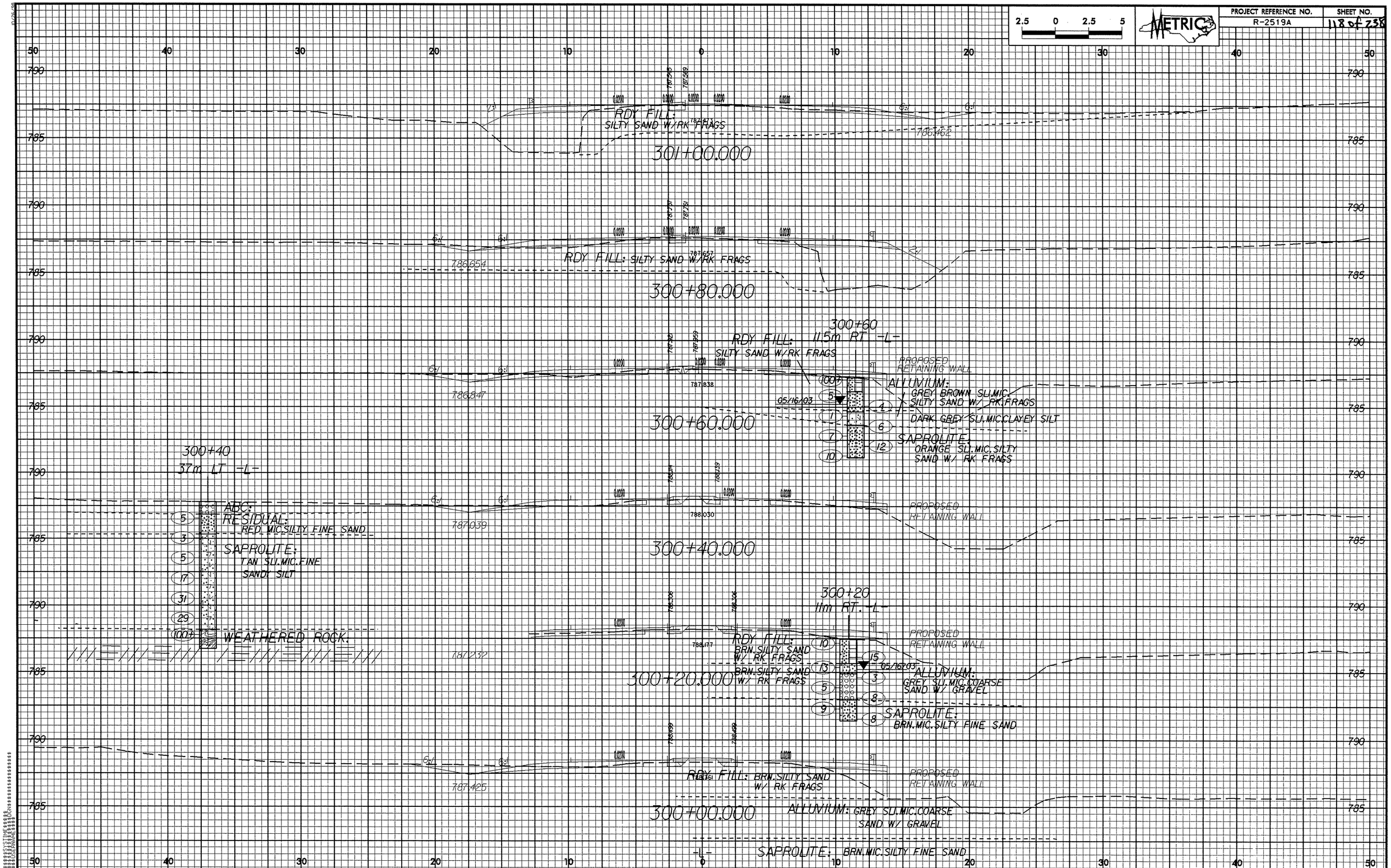
299+20.000

790
785
4:1
2%
RDY. FILL: BRN. SILTY SAND W/ RK FRAGS
ALLUVIUM: GREY SLI.MIC. COARSE SAND W/ GRAVEL
SAPROLITE: BRN. MIC. SILTY FINE SAND

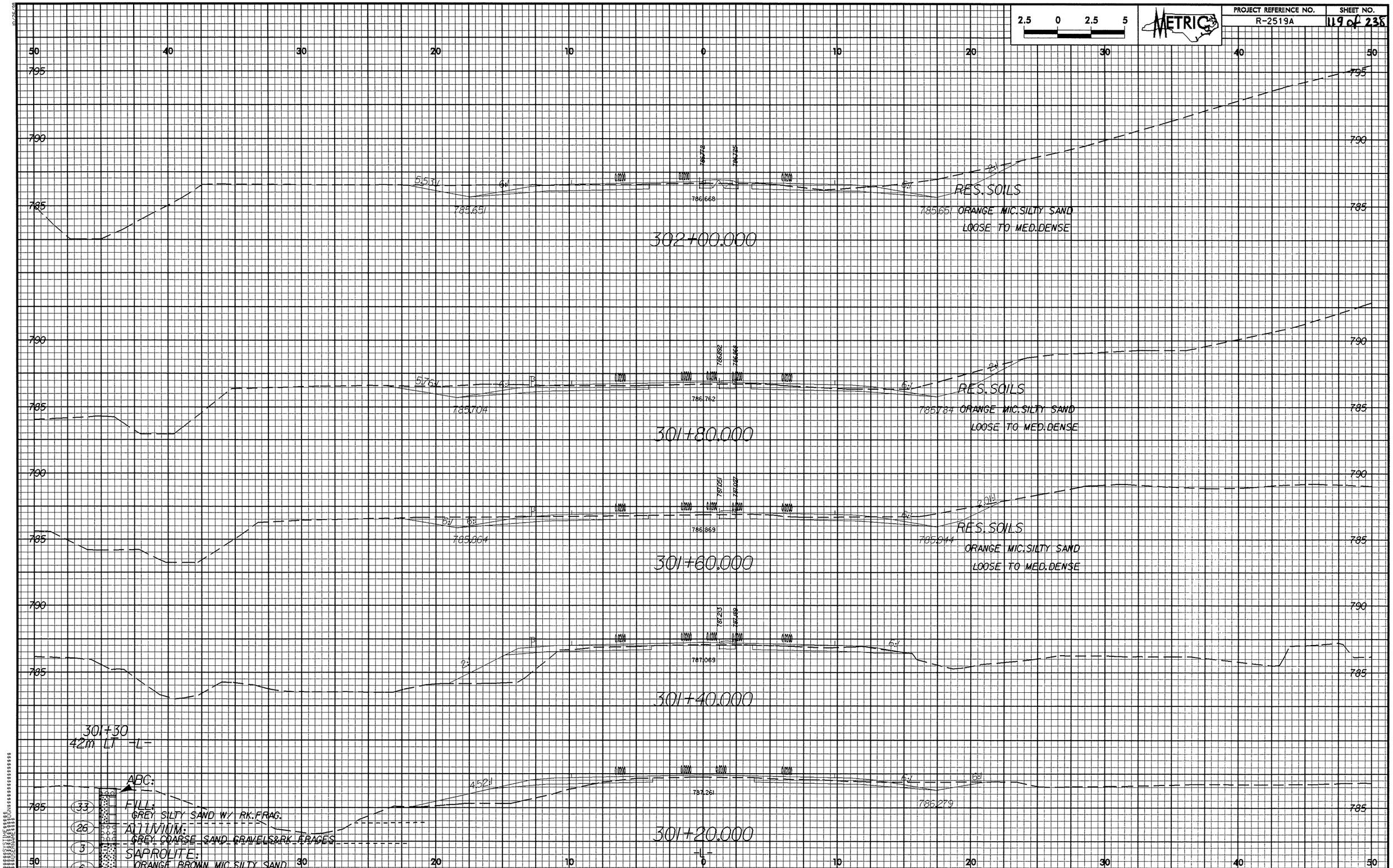
299+00.000

800
795
790
4:1
2%
RDY. FILL: BRN. SILTY SAND W/ RK FRAGS
ALLUVIUM: GREY SLI.MIC. COARSE SAND W/ GRAVEL
SAPROLITE: BRN. MIC. SILTY FINE SAND

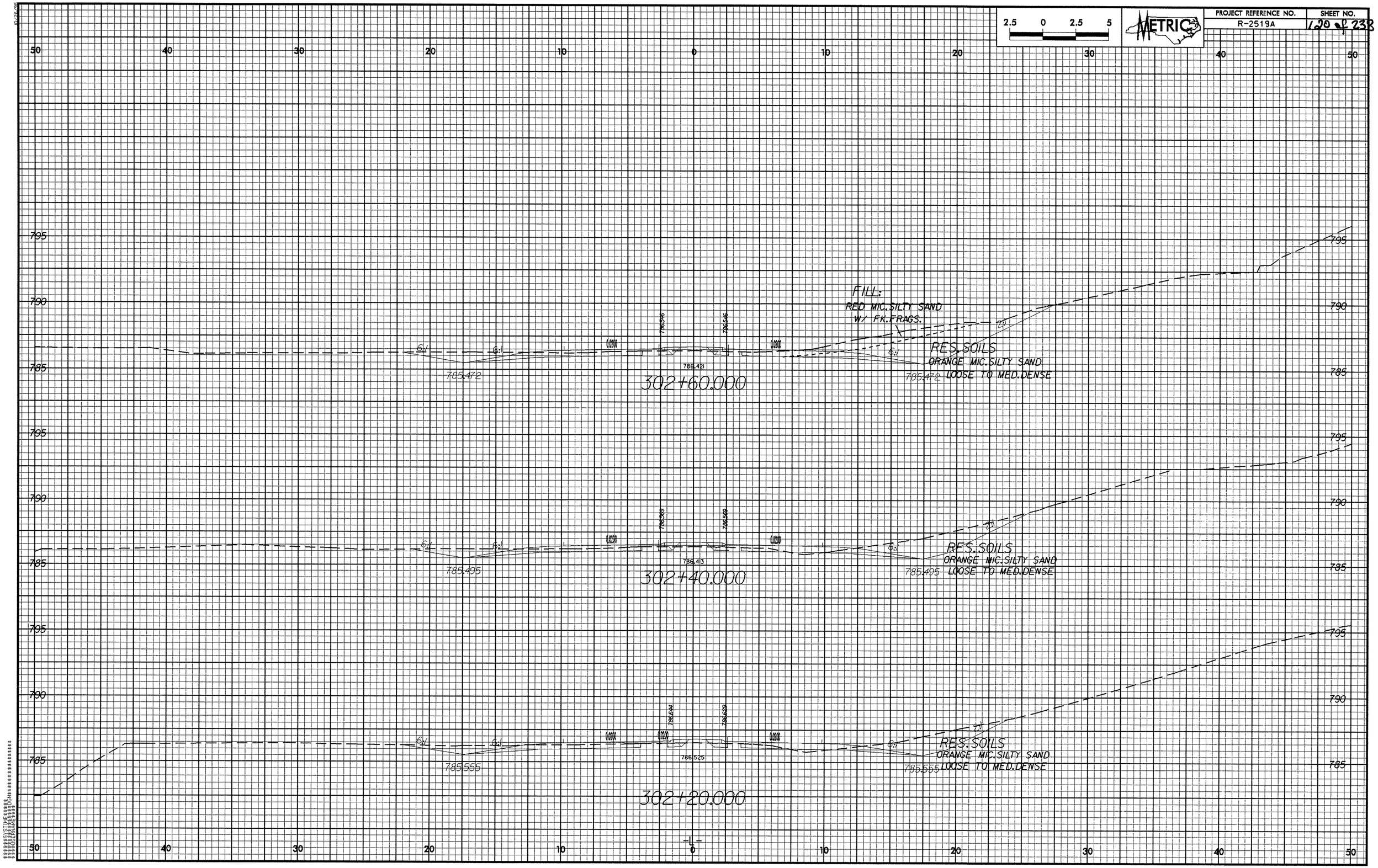
50 40 30 20 10 0 10 20 30 40 50



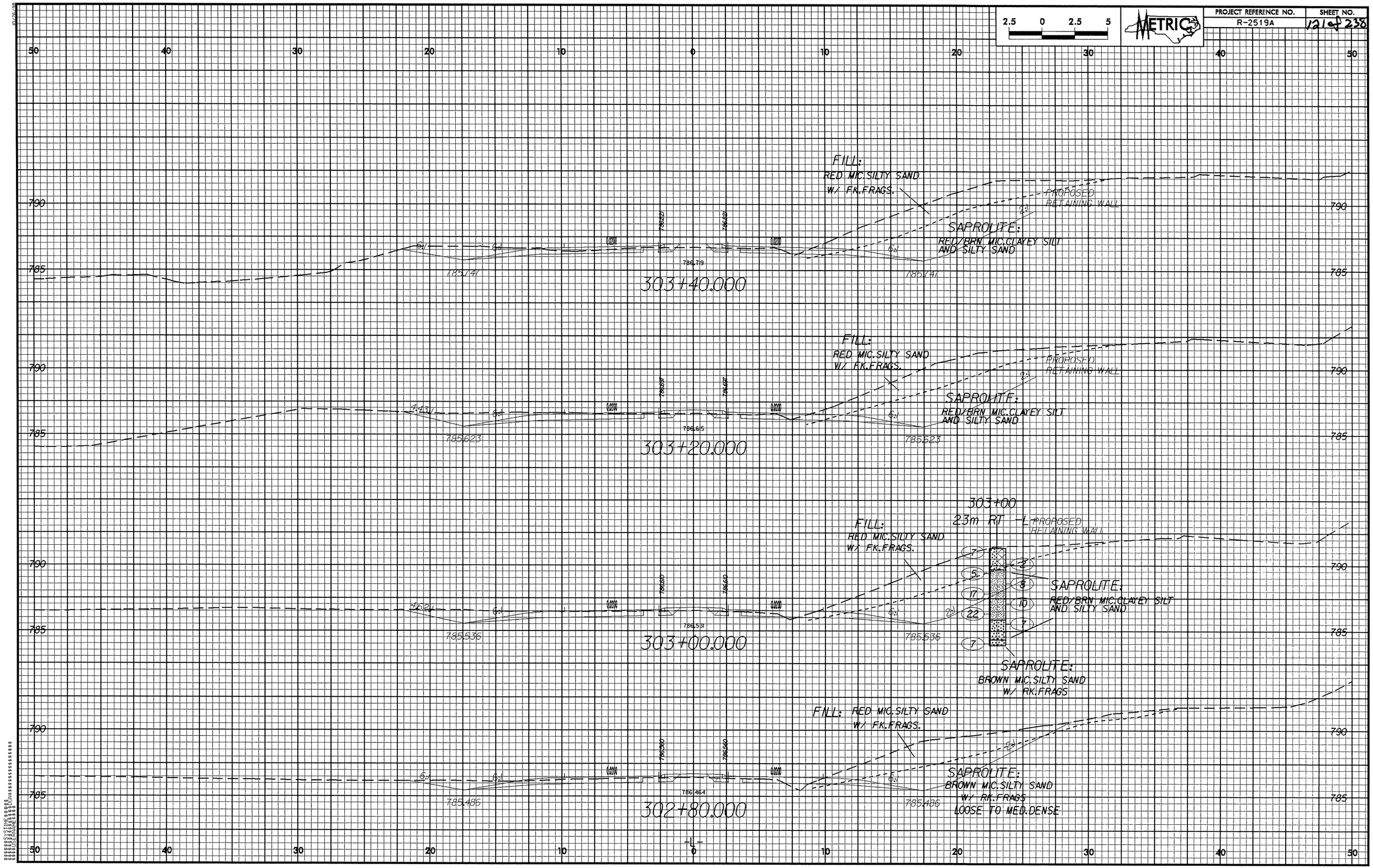
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
118 of 238
RDY FILL: SILTY SAND W/RK FRAGS
301+00.000
786.462
RDY FILL: SILTY SAND W/RK FRAGS
786.654
300+80.000
300+60
11.5m RT -L-
RDY FILL: SILTY SAND W/RK FRAGS
PROPOSED RETAINING WALL
ALLUVIUM: GREY BROWN SLI.MIC. SILTY SAND W/ RK.FRAGS
DARK GREY SLI.MIC.CLAYEY SILT
SAPROLITE: ORANGE SLI.MIC.SILTY SAND W/ RK FRAGS
05/16/03
786.847
300+60.000
300+40
37m LT -L-
ABC: RESIDUAL: RED MIC.SILTY FINE SAND
SAPROLITE: TAN SLI.MIC.FINE SANDY SILT
WEATHERED ROCK.
787.039
300+40.000
PROPOSED RETAINING WALL
300+20
11m RT. -L-
RDY FILL: BRN.SILTY SAND W/ RK FRAGS
BRN.SILTY SAND W/ RK FRAGS
ALLUVIUM: GREY SLI.MIC.COARSE SAND W/ GRAVEL
SAPROLITE: BRN.MIC.SILTY FINE SAND
05/16/03
787.232
300+20.000
PROPOSED RETAINING WALL
RDY FILL: BRN.SILTY SAND W/ RK FRAGS
ALLUVIUM: GREY SLI.MIC.COARSE SAND W/ GRAVEL
SAPROLITE: BRN.MIC.SILTY FINE SAND
787.425
300+00.000
PROPOSED RETAINING WALL
-L-



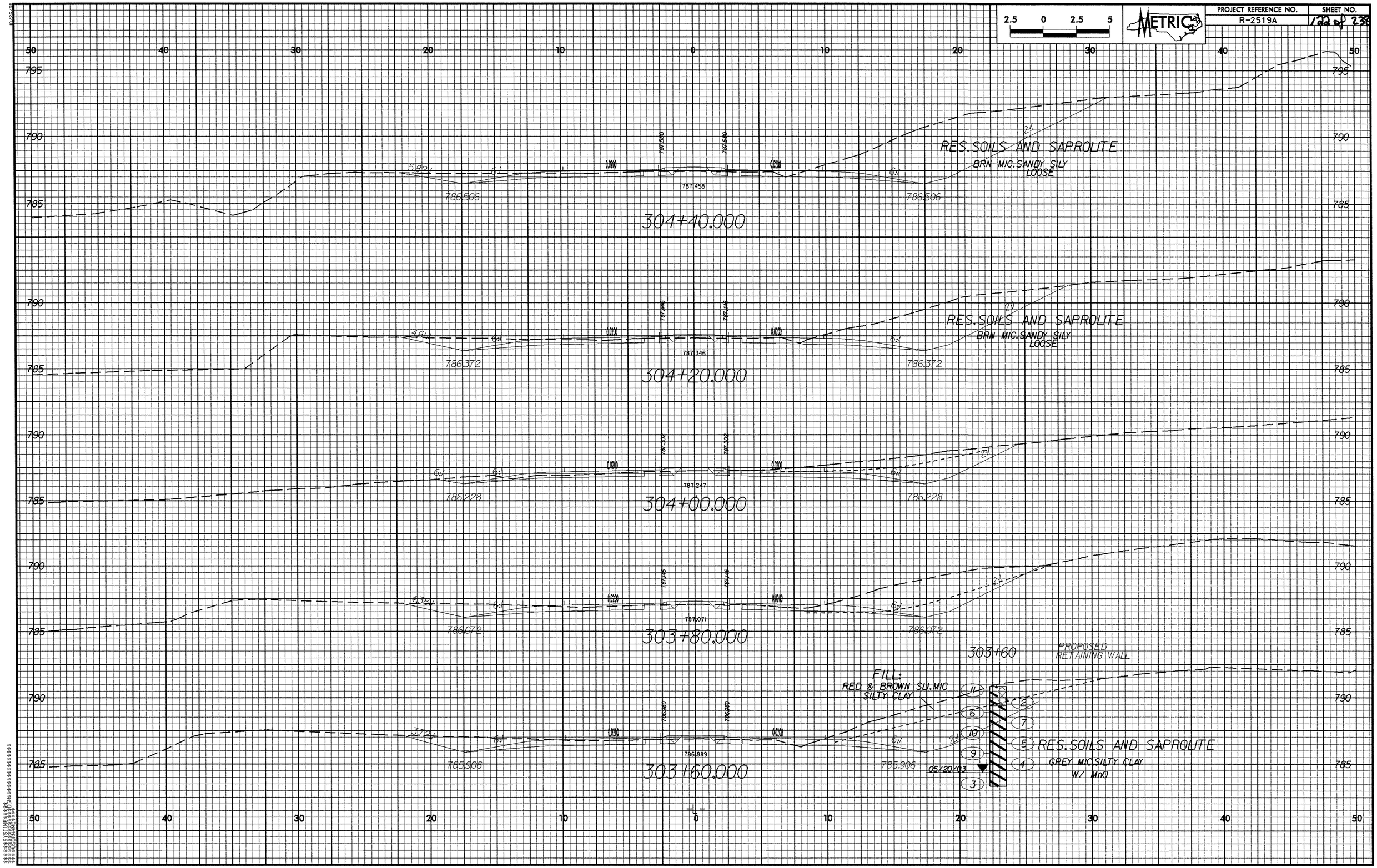
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
119 of 238
302+00.000
RES. SOILS
ORANGE MIC. SILTY SAND
LOOSE TO MED. DENSE
785.651
786.668
301+80.000
RES. SOILS
ORANGE MIC. SILTY SAND
LOOSE TO MED. DENSE
785.704
786.762
785.784
301+60.000
RES. SOILS
ORANGE MIC. SILTY SAND
LOOSE TO MED. DENSE
785.864
786.869
785.944
301+40.000
787.069
301+30
42m LT -L-
ABC:
FILL:
GREY SILTY SAND W/ RK. FRAG.
ALLUVIUM:
GREY COARSE SAND GRAVELS & RK. FRAGES
SAPROLITE:
ORANGE BROWN MIC. SILTY SAND
33
26
3
6
301+20.000
-L-
787.261
786.279



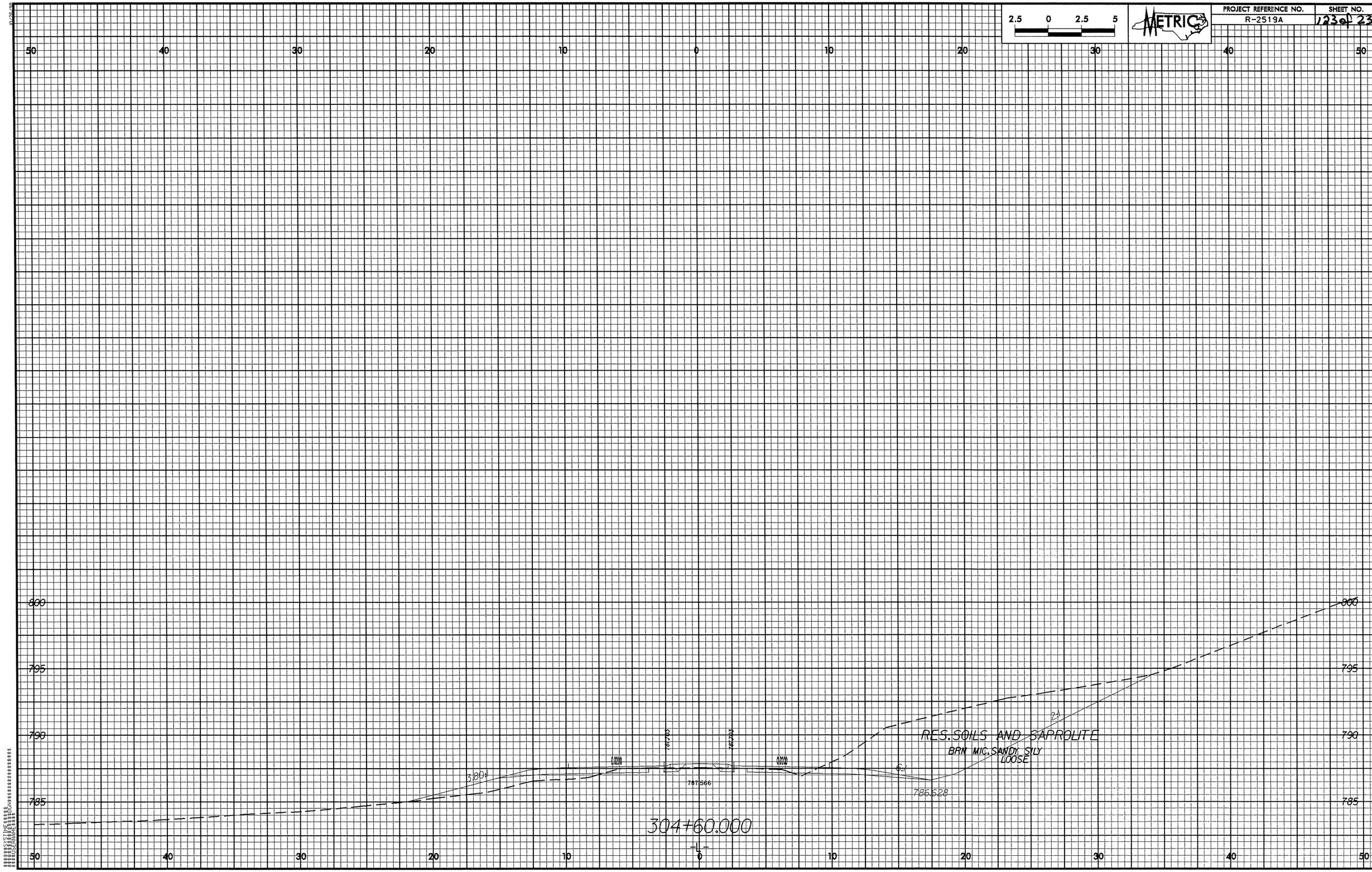
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
120 of 238
FILL:
RED MIC. SILTY SAND
W/ FK. FRAGS.
RES. SOILS
ORANGE MIC. SILTY SAND
LOOSE TO MED. DENSE
785.472
786.421
302+60.000
785.495
786.413
302+40.000
785.555
786.525
302+20.000



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
121 of 238
FILL:
RED MIC.SILTY SAND
W/ FK.FRAGS.
PROPOSED
RETAINING WALL
SAPROLITE:
RED/BRN MIC.CLAYEY SILT
AND SILTY SAND
785.741
786.719
303+40.000
785.623
786.615
303+20.000
303+00
23m RT -L
785.536
786.531
303+00.000
SAPROLITE:
BROWN MIC.SILTY SAND
W/ RK.FRAGS
785.486
786.464
302+80.000
LOOSE TO MED.DENSE
-L-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
122 of 238
RES. SOILS AND SAPROLITE
BRN MIC. SANDY SILY
LOOSE
304+40.000
304+20.000
304+00.000
303+80.000
303+60.000
303+60
PROPOSED
RETAINING WALL
FILL:
RED & BROWN SLI. MIC
SILTY CLAY
RES. SOILS AND SAPROLITE
GREY MIC. SILTY CLAY
W/ MnO
05/20/03



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
123 of 238
50 40 30 20 10 0 10 20 30 40 50
800
795
790
785
RES. SOILS AND SAPROLITE
BRN MIC. SANDY SILY
LOOSE
3.80:1
6:1
2:1
787.566
786.628
304+60.000
-L-

PROJECT REFERENCE NO. R-2519A

SHEET NO. 124 of 236

METRIC

90 80 70 60 50 40 30 20 10 0

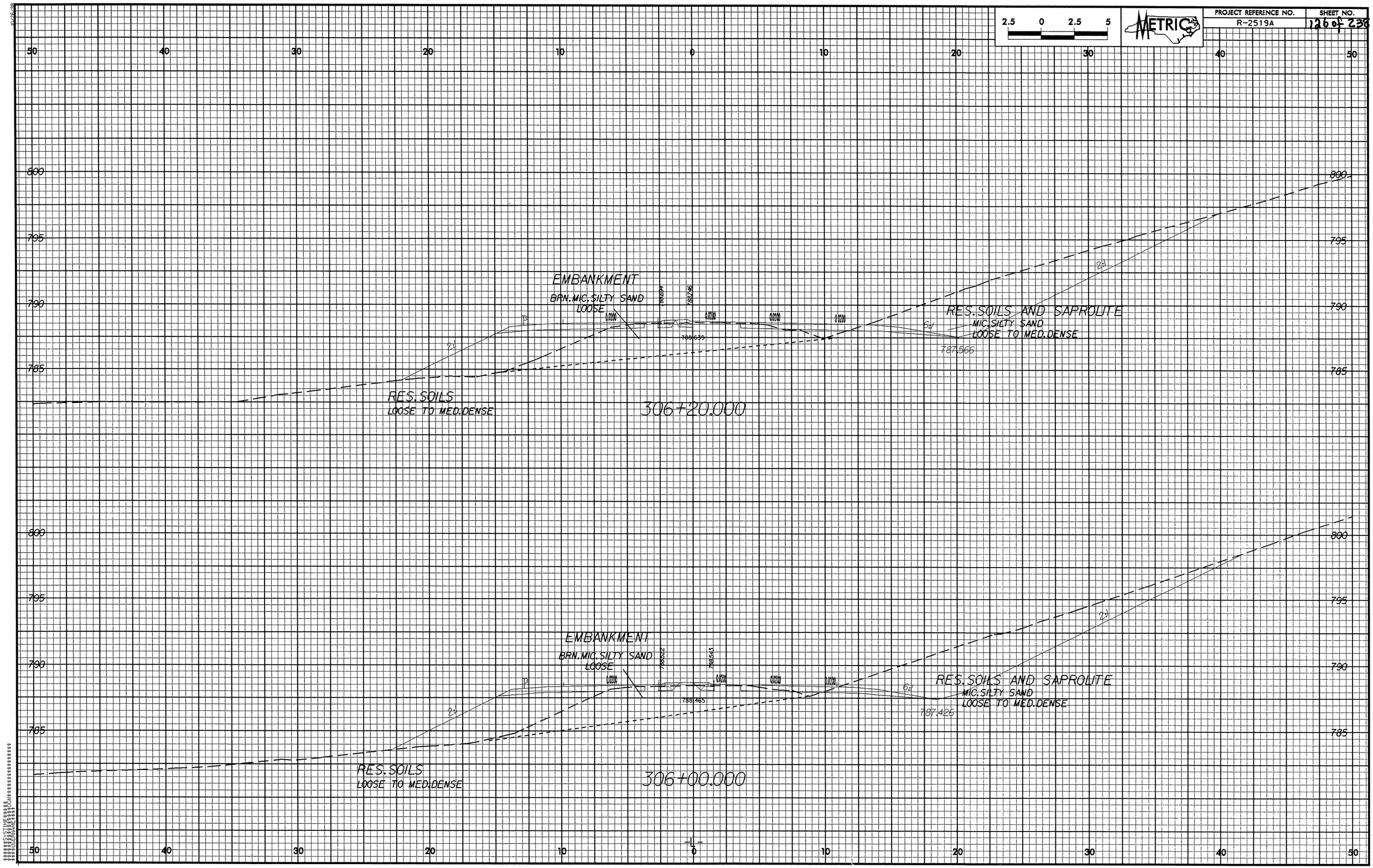
790
785

EMBANKMENT
MIC. SILTY SAND W/ RK & FRAGS
LOOSE
788.29ℓ
2:1
RES. SOILS
RED/BRN MIC. SILTS
LOOSE TO MED. DENSE
305+80.000

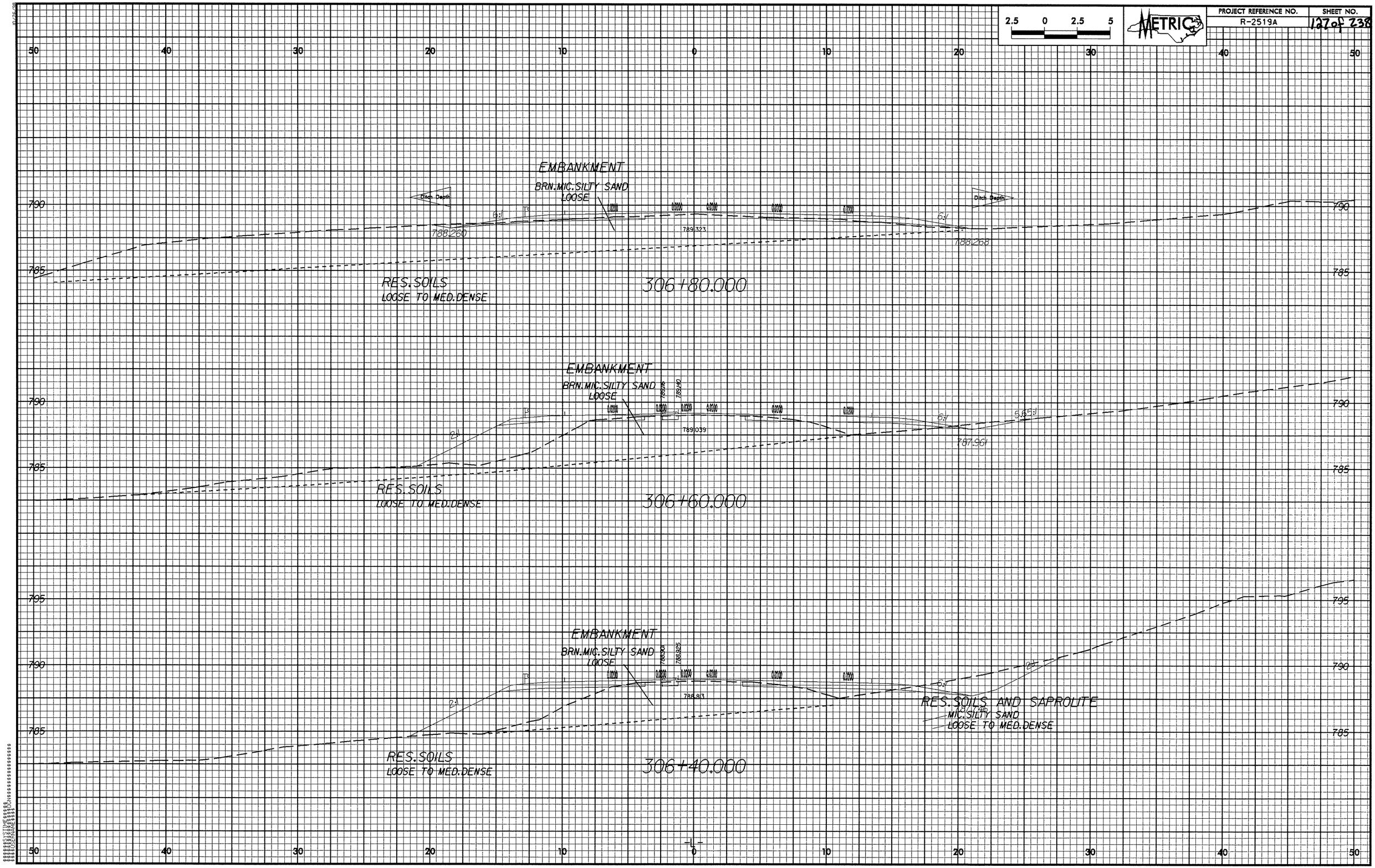
EMBANKMENT
MIC. SILTY SAND W/ RK & FRAGS
LOOSE
788.17ℓ
2:1
RES. SOILS
RED/BRN MIC. SILTS
LOOSE TO MED. DENSE
305+60.000

EMBANKMENT
MIC. SILTY SAND W/ RK FRAGS
LOOSE
788.09ℓ
2:1
RES. SOILS
RED/BRN. MIC. SILTS
LOOSE TO MED. DENSE
305+40.000

90 80 70 60 50 40 30 20 10 0
-L-



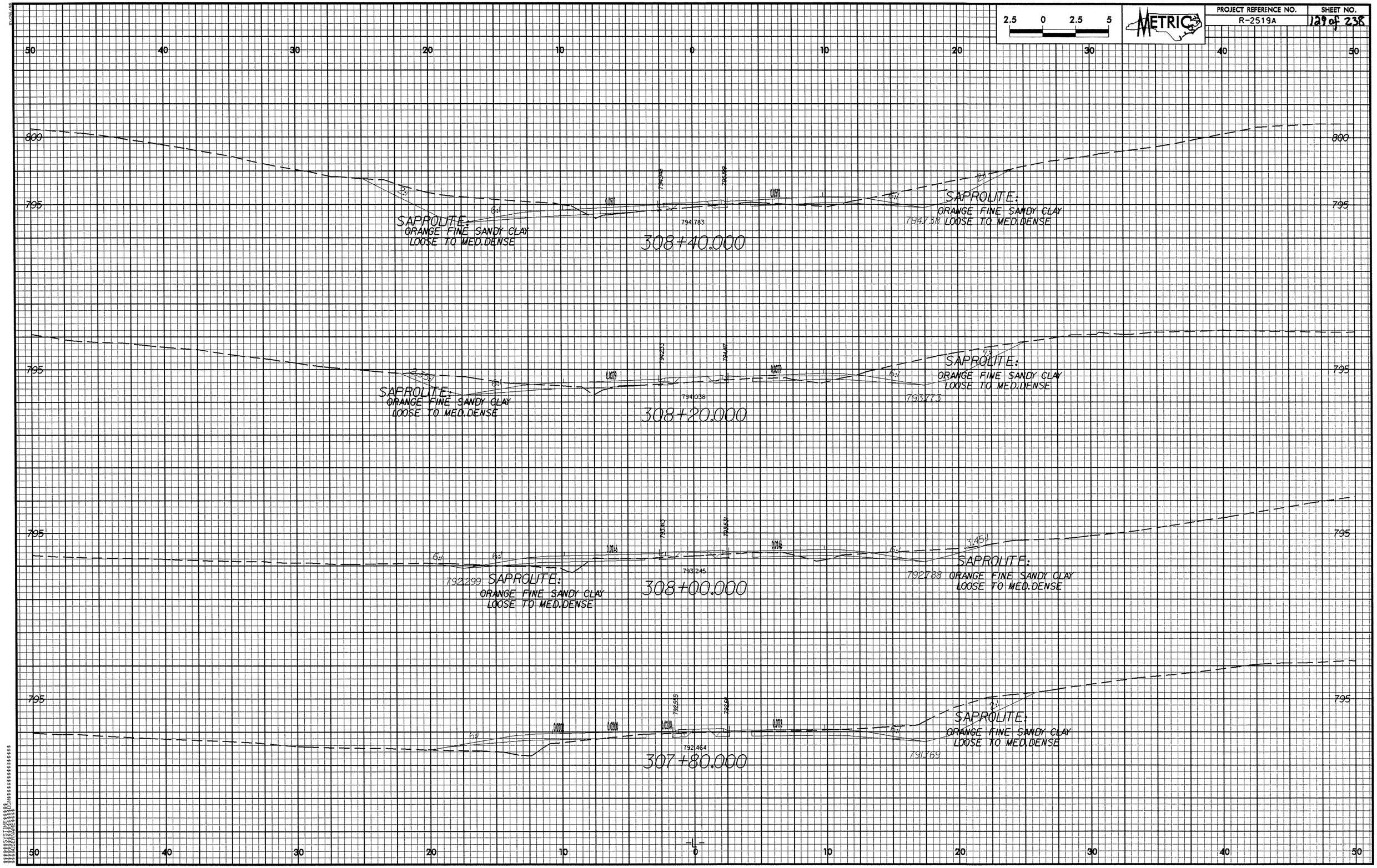
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
126 of 238
EMBANKMENT
BRN. MIC. SILTY SAND
LOOSE
RES. SOILS AND SAPROLITE
MIC. SILTY SAND
LOOSE TO MED. DENSE
787.566
RES. SOILS
LOOSE TO MED. DENSE
306+20.000
EMBANKMENT
BRN. MIC. SILTY SAND
LOOSE
RES. SOILS AND SAPROLITE
MIC. SILTY SAND
LOOSE TO MED. DENSE
787.426
RES. SOILS
LOOSE TO MED. DENSE
306+00.000



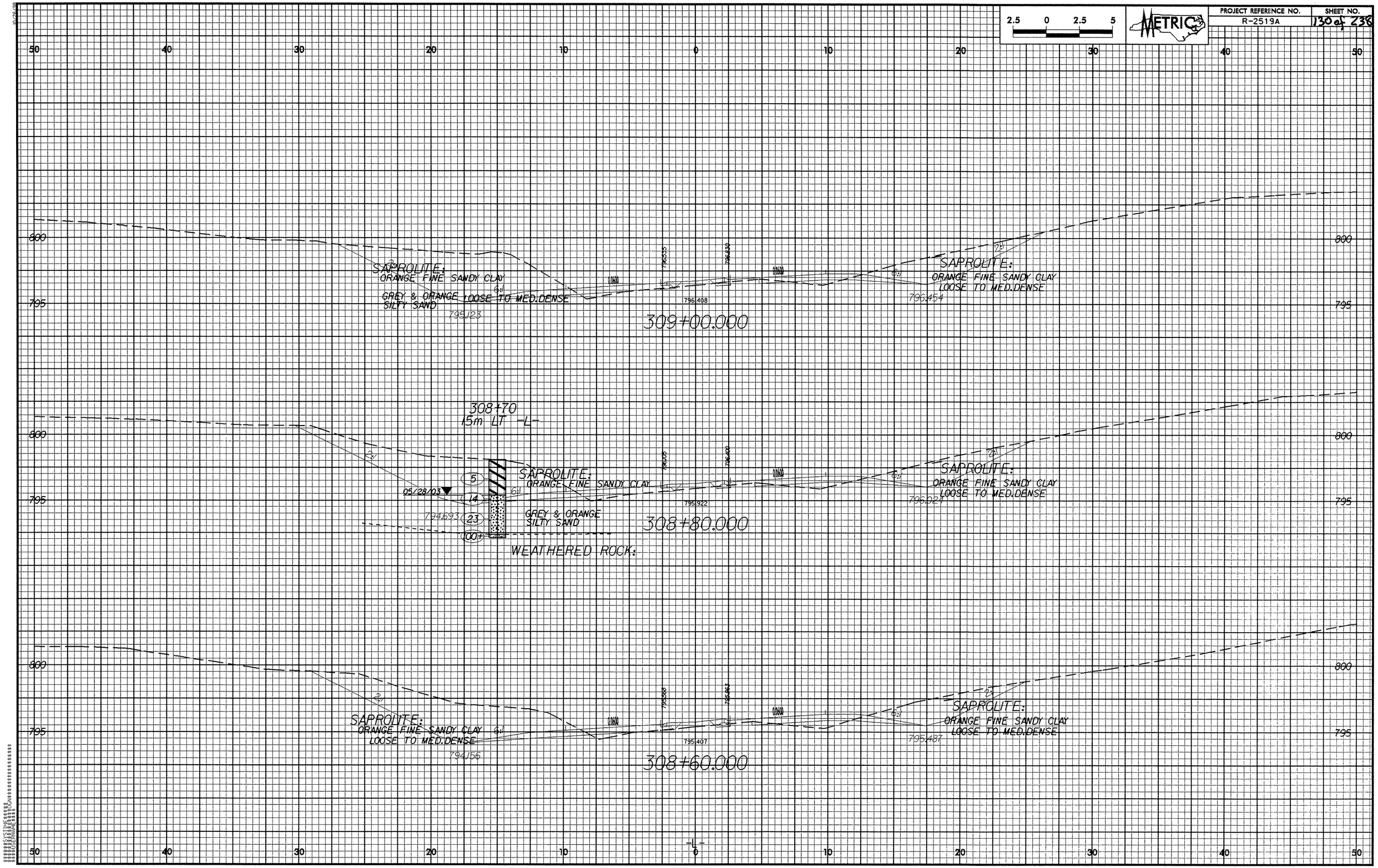
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
127 of 238
EMBANKMENT
BRN.MIC.SILTY SAND
LOOSE
Ditch Depth
Ditch Depth
6:1
6:1
788.260
789.323
788.268
RES.SOILS
LOOSE TO MED.DENSE
306+80.000
EMBANKMENT
BRN.MIC.SILTY SAND
LOOSE
789.039
787.961
5.65:1
2:1
RES.SOILS
LOOSE TO MED.DENSE
306+60.000
EMBANKMENT
BRN.MIC.SILTY SAND
LOOSE
788.813
2:1
RES.SOILS AND SAPROLITE
MIC.SILTY SAND
LOOSE TO MED.DENSE
RES.SOILS
LOOSE TO MED.DENSE
306+40.000
-L-

PROJECT REFERENCE NO.	SHEET NO.
R-2519A	128 of 238

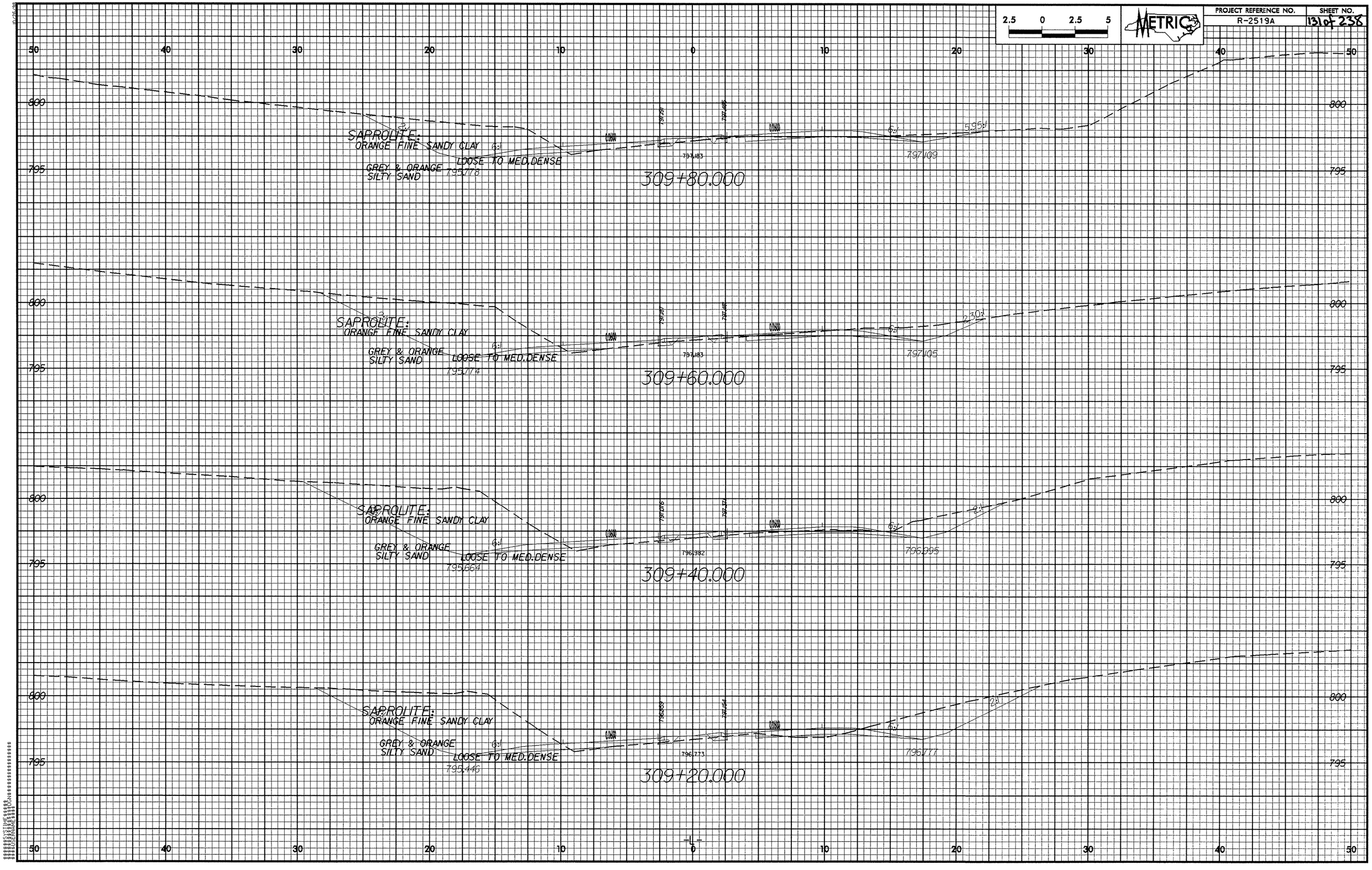
METRIC



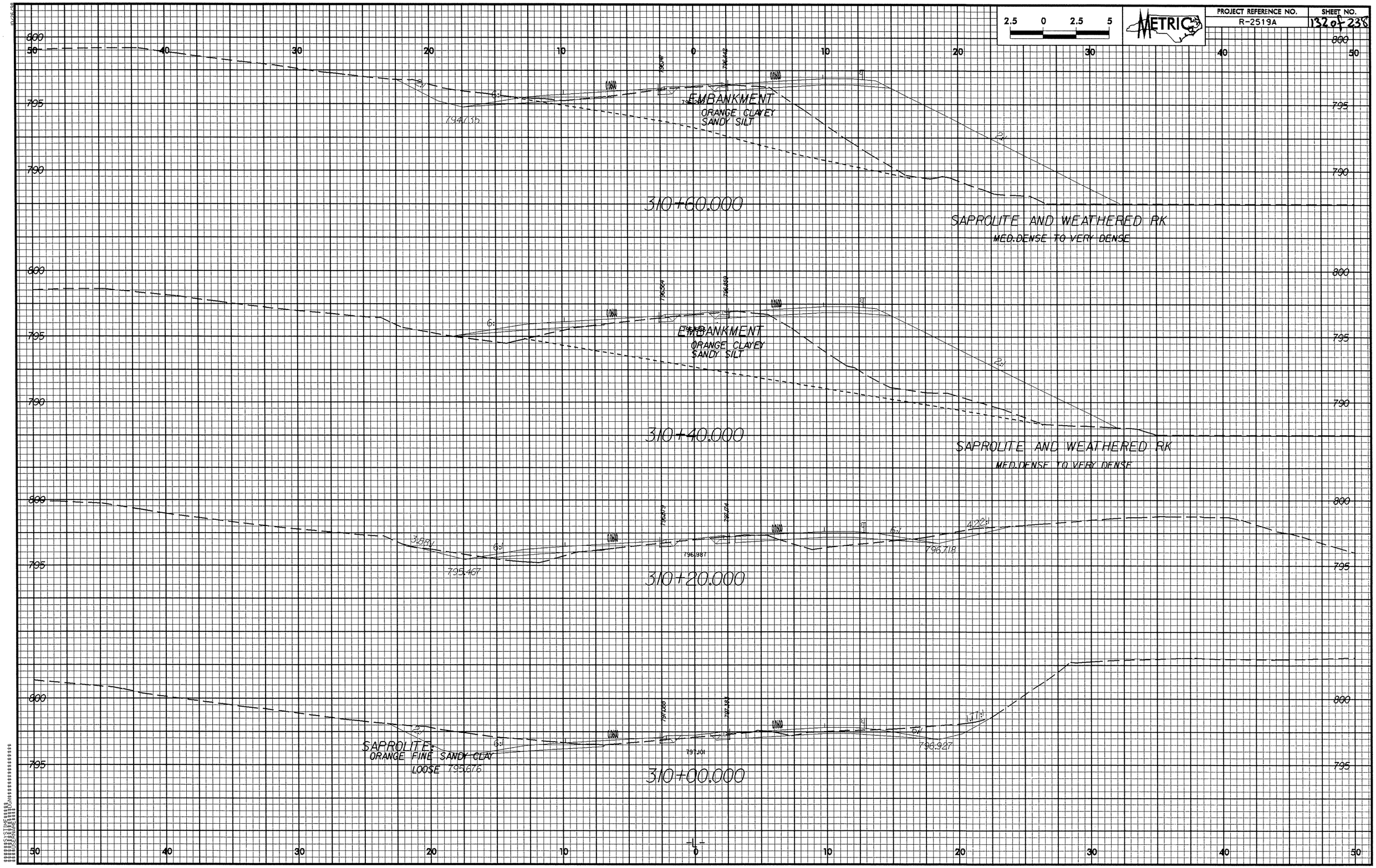
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
129 of 238
50 40 30 20 10 0 10 20 30 40 50
800
795
SAPROLITE:
ORANGE FINE SANDY CLAY
LOOSE TO MED.DENSE
794.783
308+40.000
794.738
SAPROLITE:
ORANGE FINE SANDY CLAY
LOOSE TO MED.DENSE
794.038
308+20.000
793.773
SAPROLITE:
ORANGE FINE SANDY CLAY
LOOSE TO MED.DENSE
792.299
SAPROLITE:
ORANGE FINE SANDY CLAY
LOOSE TO MED.DENSE
793.245
308+00.000
792.788
SAPROLITE:
ORANGE FINE SANDY CLAY
LOOSE TO MED.DENSE
792.464
307+80.000
791.769
SAPROLITE:
ORANGE FINE SANDY CLAY
LOOSE TO MED.DENSE
-L-



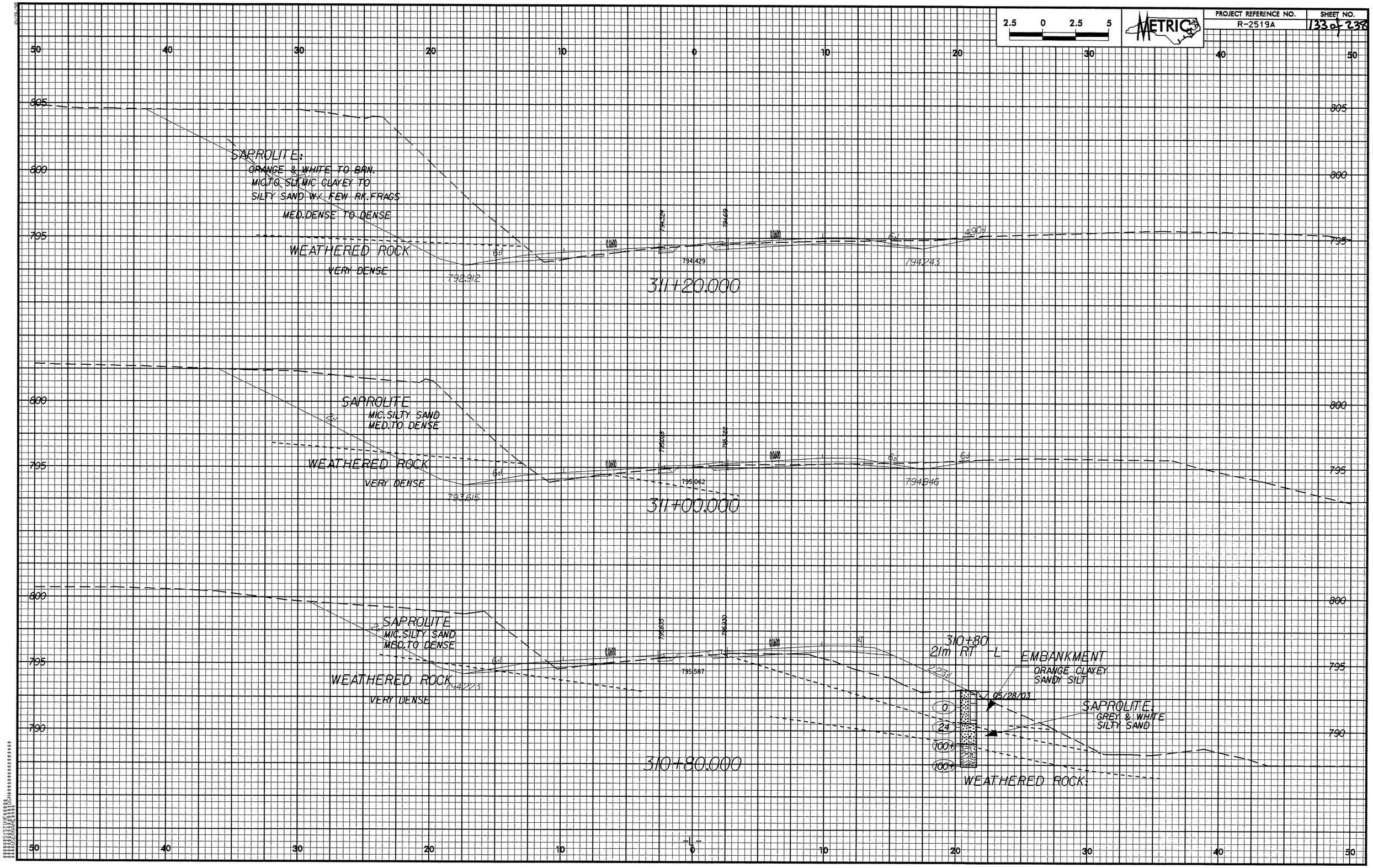
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
130 of 238
50 40 30 20 10 0 10 20 30 40 50
800
795
SAPROLITE:
ORANGE FINE SANDY CLAY
GREY & ORANGE LOOSE TO MED.DENSE
SILTY SAND
795.123
796.408
796.454
309+00.000
308+70
15m LT -L-
05/28/03
5
14
23
00+
794.693
795.922
796.924
308+80.000
WEATHERED ROCK:
794.156
795.407
795.487
308+60.000
-L-



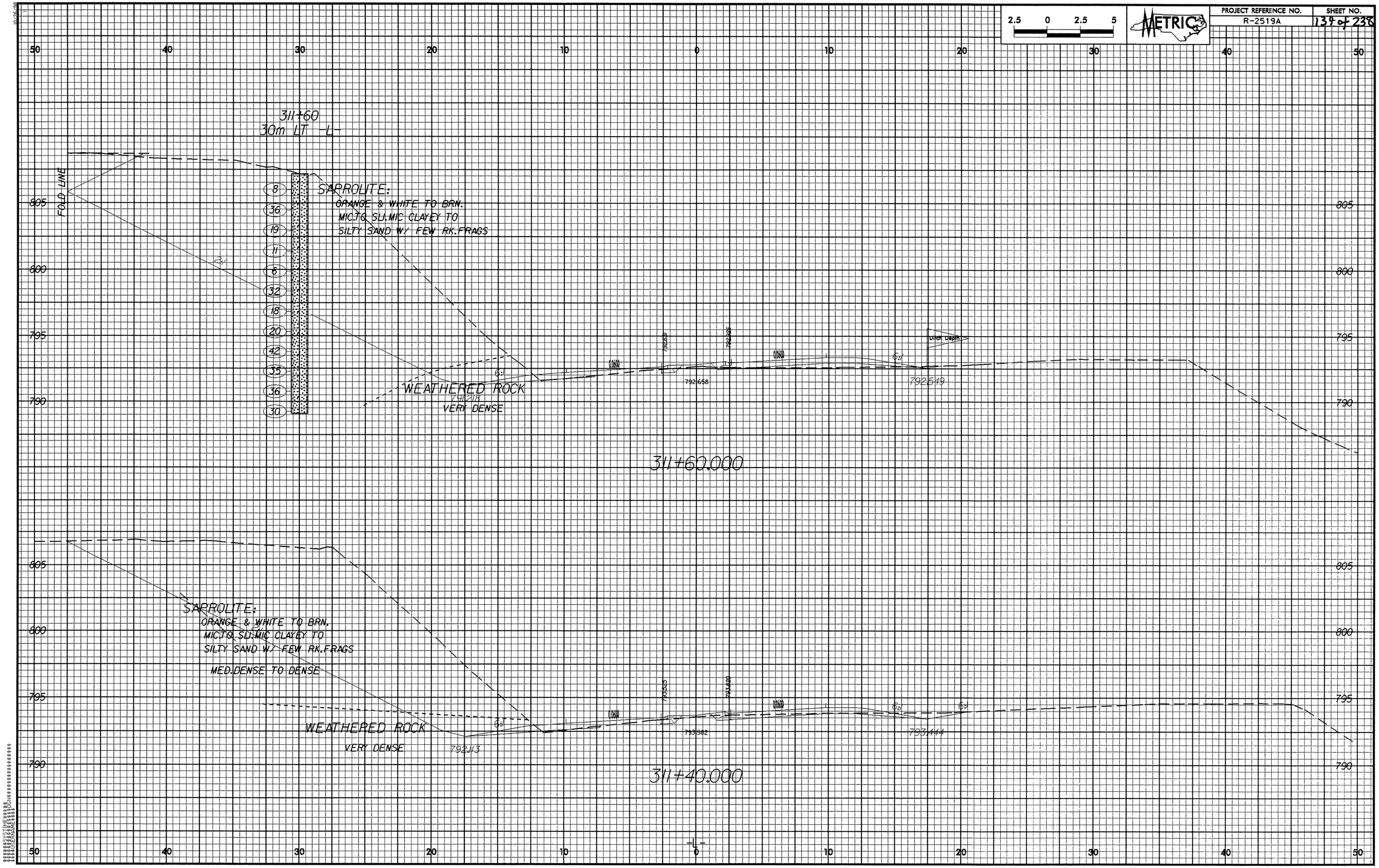
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
131 of 238
SAPROLITE:
ORANGE FINE SANDY CLAY
GREY & ORANGE SILTY SAND
LOOSE TO MED.DENSE
795.778
797.183
797.109
5.95:1
309+80.000
SAPROLITE:
ORANGE FINE SANDY CLAY
GREY & ORANGE SILTY SAND
LOOSE TO MED.DENSE
795.774
797.183
797.105
2.30:1
309+60.000
SAPROLITE:
ORANGE FINE SANDY CLAY
GREY & ORANGE SILTY SAND
LOOSE TO MED.DENSE
795.664
796.982
796.995
2:1
309+40.000
SAPROLITE:
ORANGE FINE SANDY CLAY
GREY & ORANGE SILTY SAND
LOOSE TO MED.DENSE
795.446
796.773
796.777
2:1
309+20.000



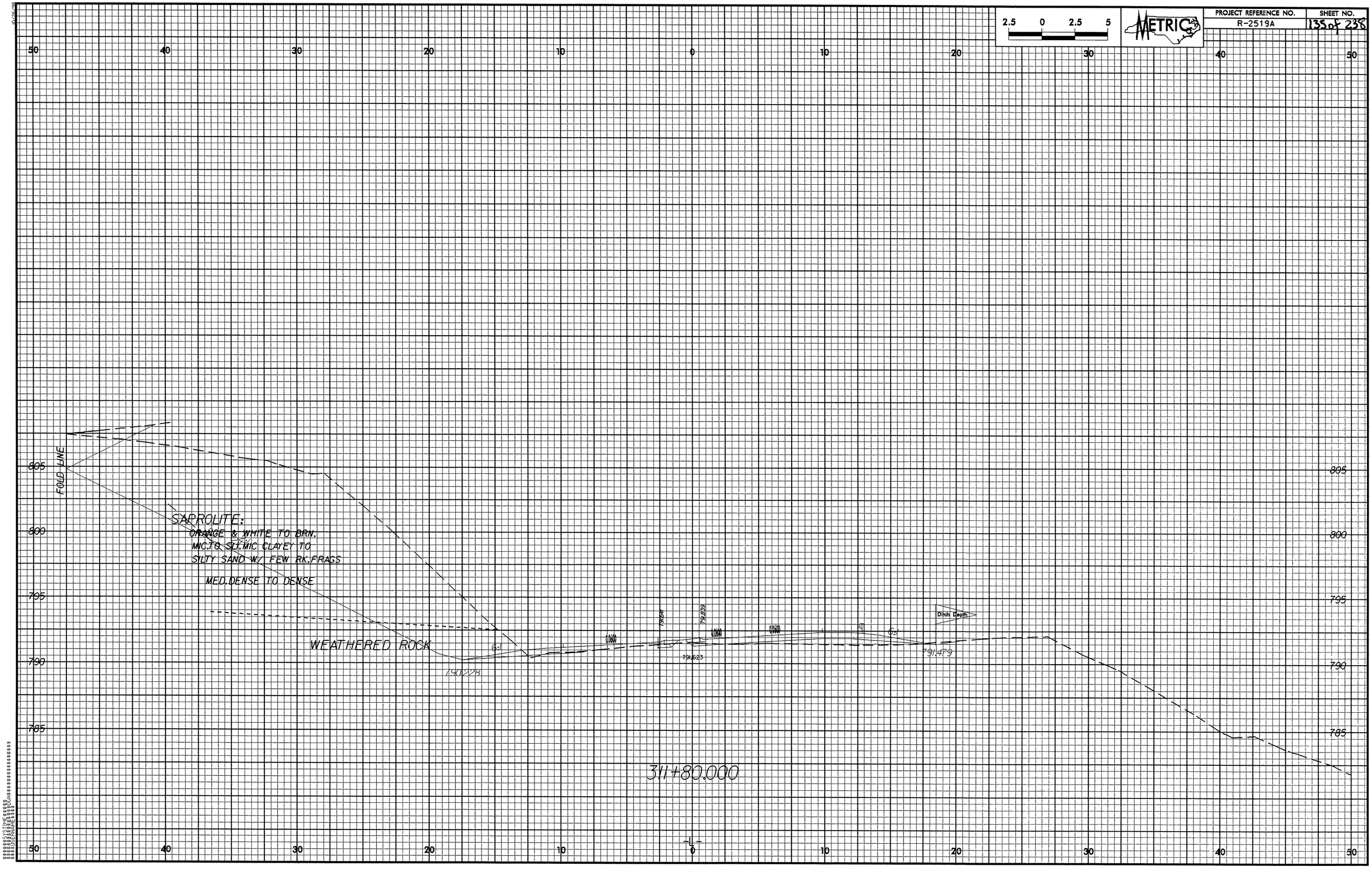
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
132 of 238
EMBANKMENT
ORANGE CLAYEY
SANDY SILT
794.735
310+60.000
SAPROLITE AND WEATHERED RK
MED.DENSE TO VERY DENSE
EMBANKMENT
ORANGE CLAYEY
SANDY SILT
310+40.000
SAPROLITE AND WEATHERED RK
MED.DENSE TO VERY DENSE
3.88:1
795.467
796.987
796.718
4.22:1
310+20.000
SAPROLITE:
ORANGE FINE SANDY CLAY
LOOSE 795.676
797.101
796.927
1.77:1
310+00.000
-L-



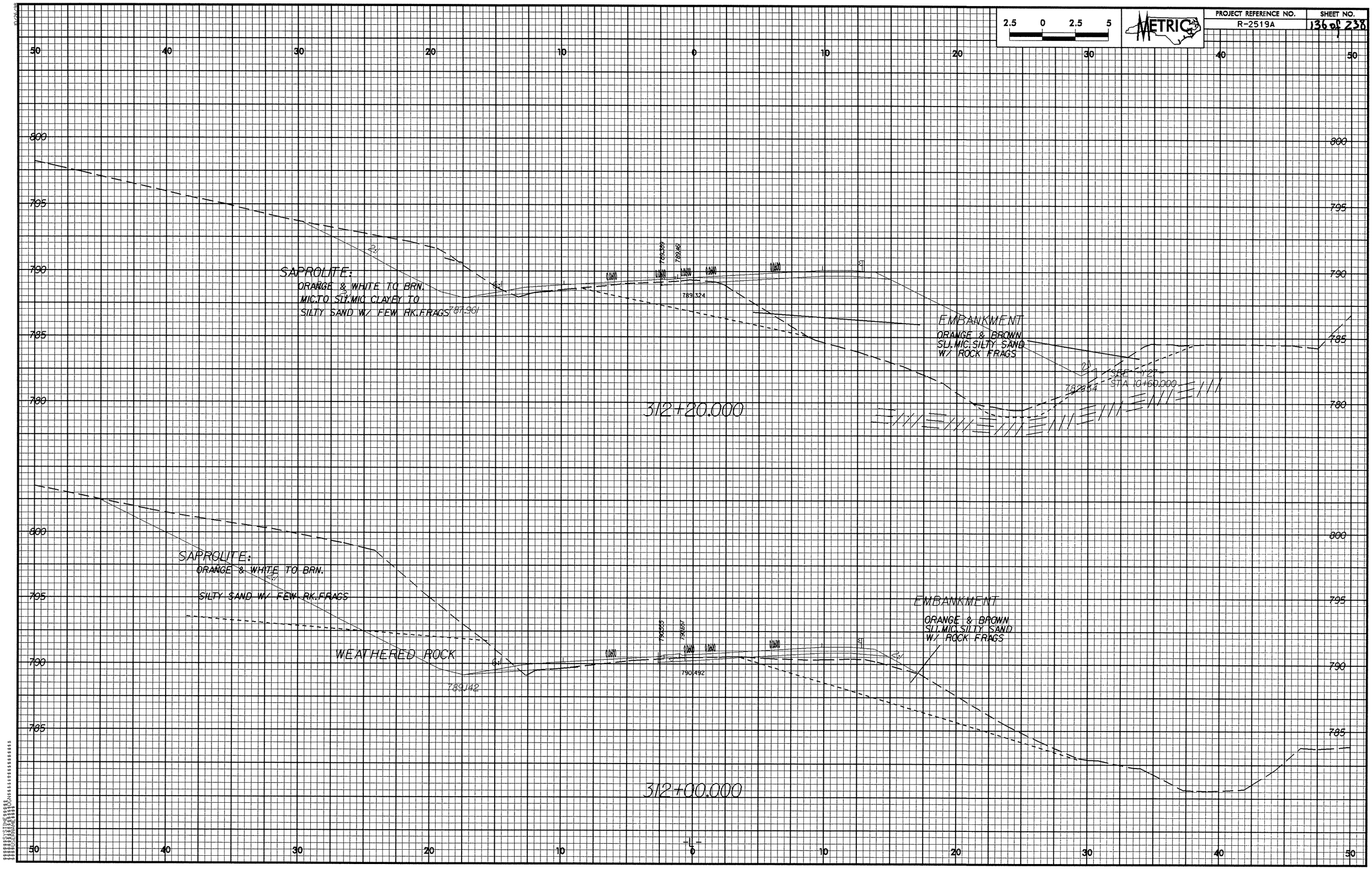
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
133 of 238
SAPROLITE:
ORANGE & WHITE TO BRN.
MIC.TO SLT.MIC CLAYEY TO
SILTY SAND W/ FEW RK.FRAGS
MED.DENSE TO DENSE
WEATHERED ROCK
VERY DENSE
792.912
794.429
794.243
311+20.000
SAPROLITE
MIC.SILTY SAND
MED.TO DENSE
WEATHERED ROCK
VERY DENSE
793.615
795.062
794.946
311+00.000
SAPROLITE
MIC.SILTY SAND
MED.TO DENSE
WEATHERED ROCK
VERY DENSE
794.223
795.587
310+80
21m RT -L-
EMBANKMENT
ORANGE CLAYEY
SANDY SILT
05/28/03
SAPROLITE:
GREY & WHITE
SILTY SAND
WEATHERED ROCK:
310+80.000
-L-



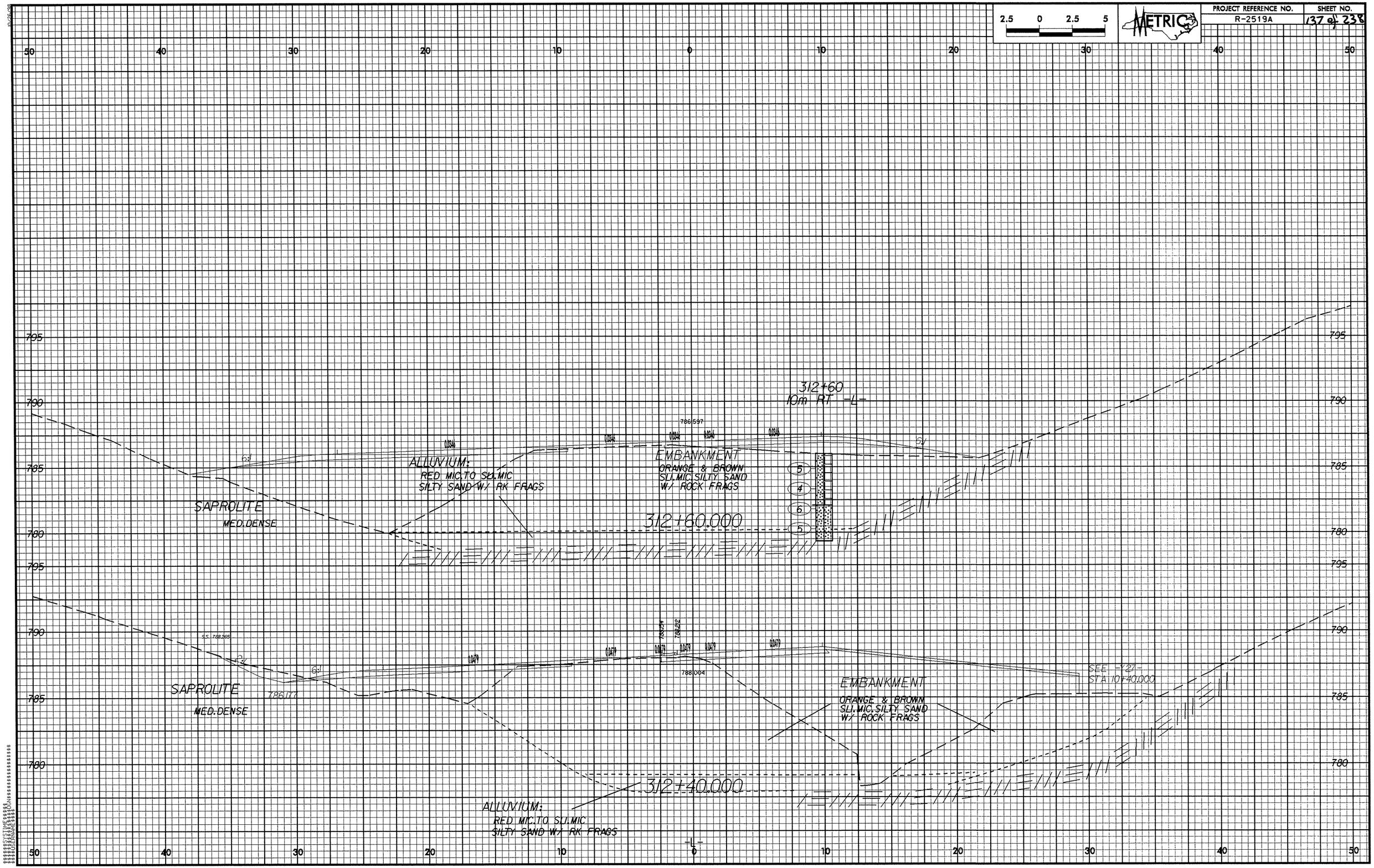
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
134 of 238
311+60
30m LT -L-
FOLD LINE
SAPROLITE:
ORANGE & WHITE TO BRN.
MIC.TO SLI.MIC CLAYEY TO
SILTY SAND W/ FEW RK.FRAGS
8
36
19
11
6
32
18
20
42
35
36
30
2:1
6:1
WEATHERED ROCK
VERY DENSE
792.658
792.549
Ditch Depth
311+60.000
SAPROLITE:
ORANGE & WHITE TO BRN.
MIC.TO SLI.MIC CLAYEY TO
SILTY SAND W/ FEW RK.FRAGS
MED.DENSE TO DENSE
WEATHERED ROCK
VERY DENSE
792.113
793.582
793.444
311+40.000
-L-



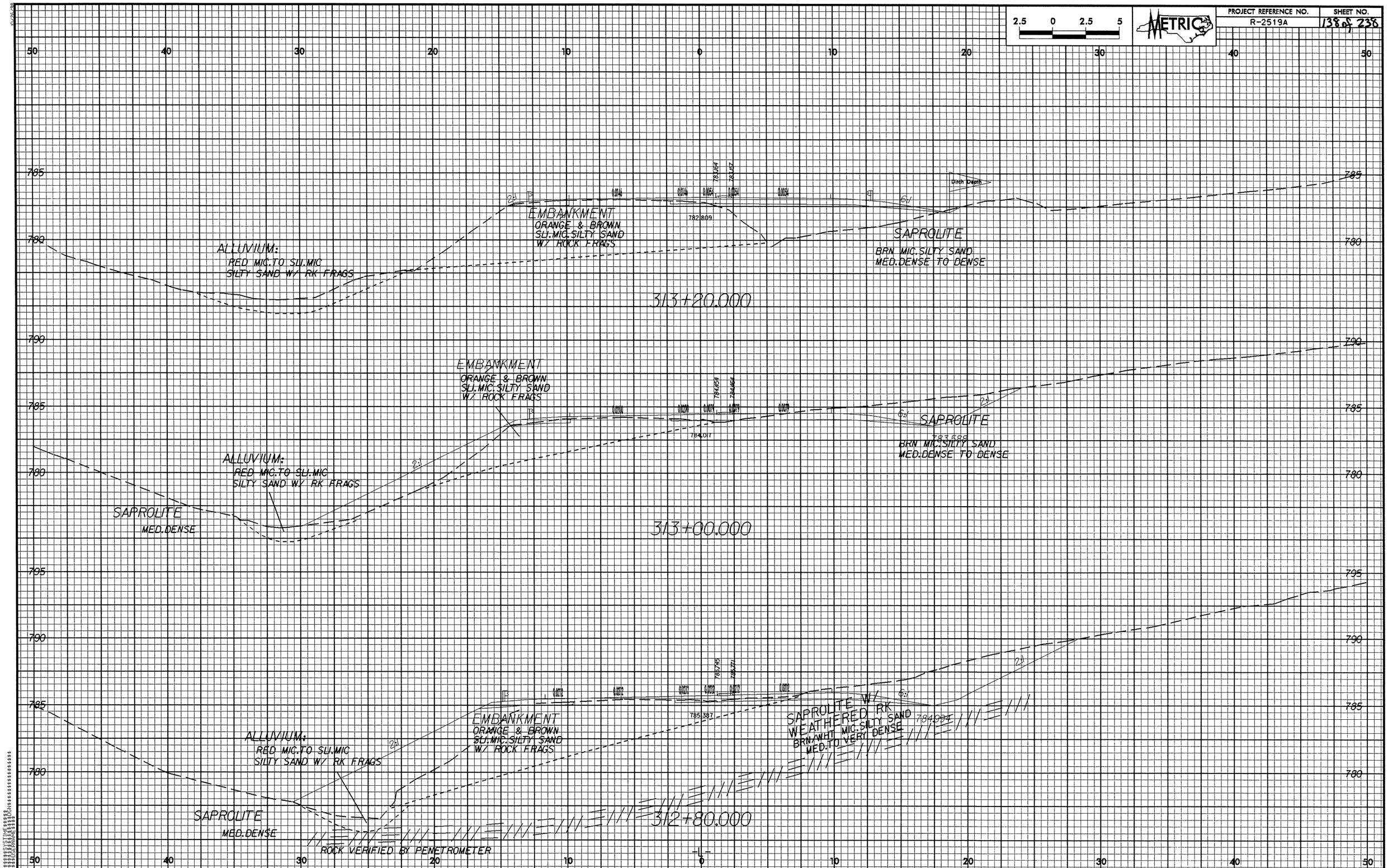
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
135 of 238
50 40 30 20 10 0 10 20 30 40 50
805
800
795
790
785
FOLD LINE
SAPROLITE:
ORANGE & WHITE TO BRN.
MIC.TO SLI.MIC CLAYEY TO
SILTY SAND W/ FEW RK.FRAGS
MED.DENSE TO DENSE
WEATHERED ROCK
6:1
790.228
791.641
791.839
791.623
Ditch Depth
791.479
311+80.000
-L-



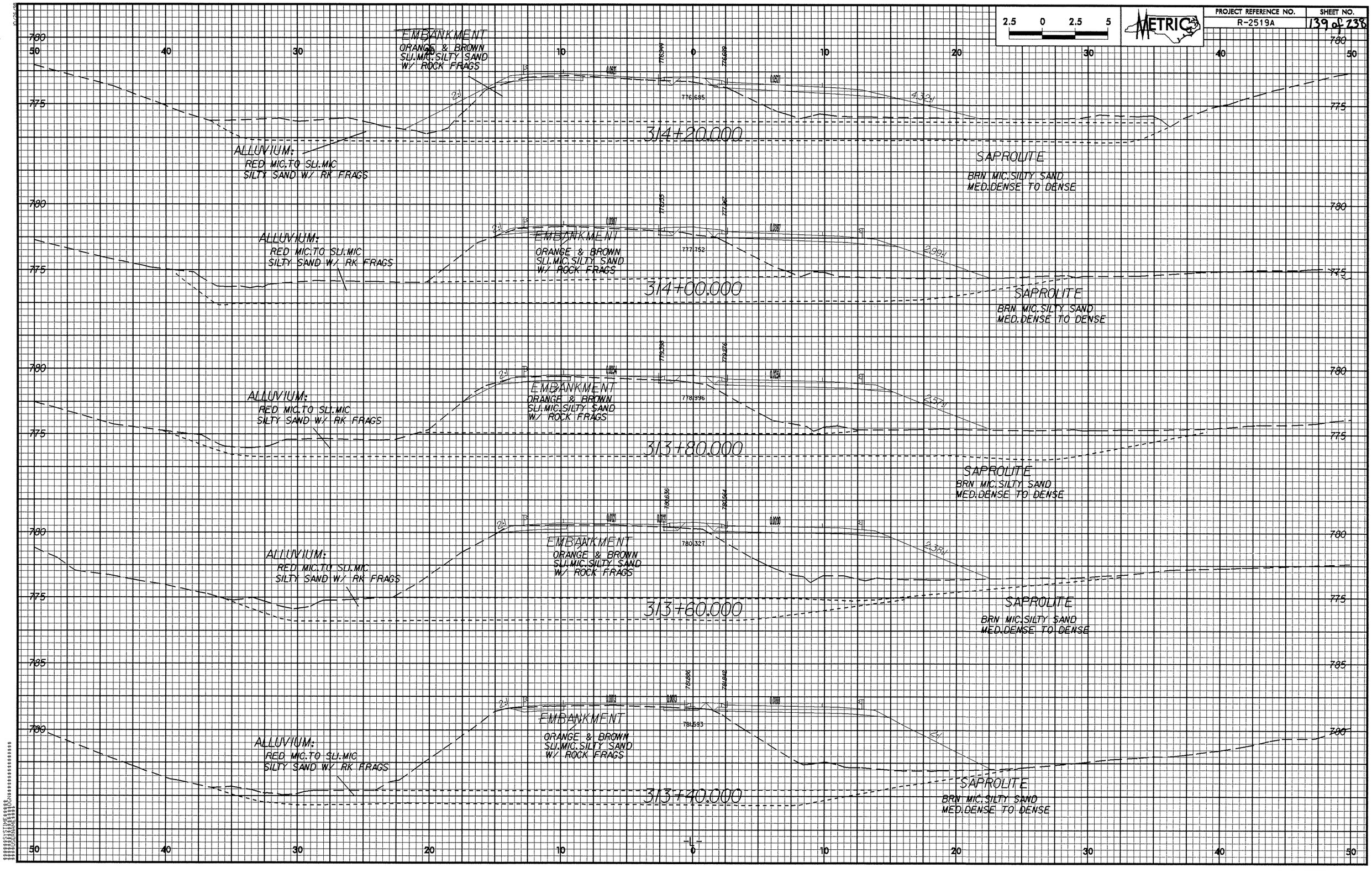
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
136 of 238
SAPROLITE:
ORANGE & WHITE TO BRN.
MIC.TO SLI.MIC CLAYEY TO
SILTY SAND W/ FEW RK.FRAGS
787.961
789.324
EMBANKMENT
ORANGE & BROWN
SLI.MIC.SILTY SAND
W/ ROCK FRAGS
SEE Y27
STA 10+60.000
312+20.000
SAPROLITE:
ORANGE & WHITE TO BRN.
SILTY SAND W/ FEW RK.FRAGS
WEATHERED ROCK
789.142
790.492
EMBANKMENT
ORANGE & BROWN
SLI.MIC.SILTY SAND
W/ ROCK FRAGS
312+00.000
-L-



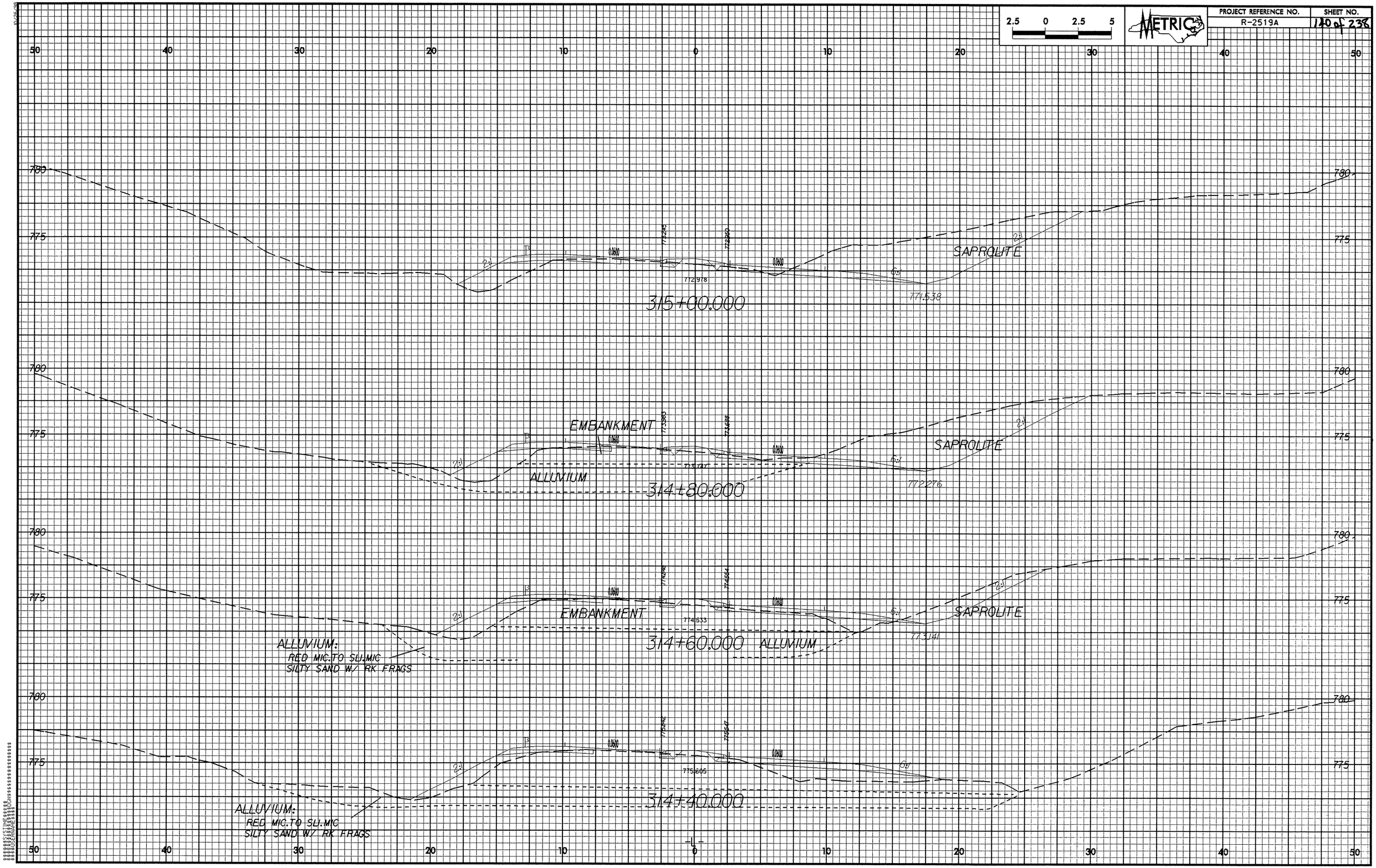
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
137 of 238
312+60
10m RT -L-
786.597
ALLUVIUM:
RED MIC.TO SLI.MIC
SILTY SAND W/ RK FRAGS
EMBANKMENT
ORANGE & BROWN
SLI.MIC.SILTY SAND
W/ ROCK FRAGS
SAPROLITE
MED.DENSE
312+60.000
S.S. 788.265
788.004
SAPROLITE
MED.DENSE
786.177
EMBANKMENT
ORANGE & BROWN
SLI.MIC.SILTY SAND
W/ ROCK FRAGS
SEE -Y27-
STA 10+40.000
312+40.000
ALLUVIUM:
RED MIC.TO SLI.MIC
SILTY SAND W/ RK FRAGS
-L-



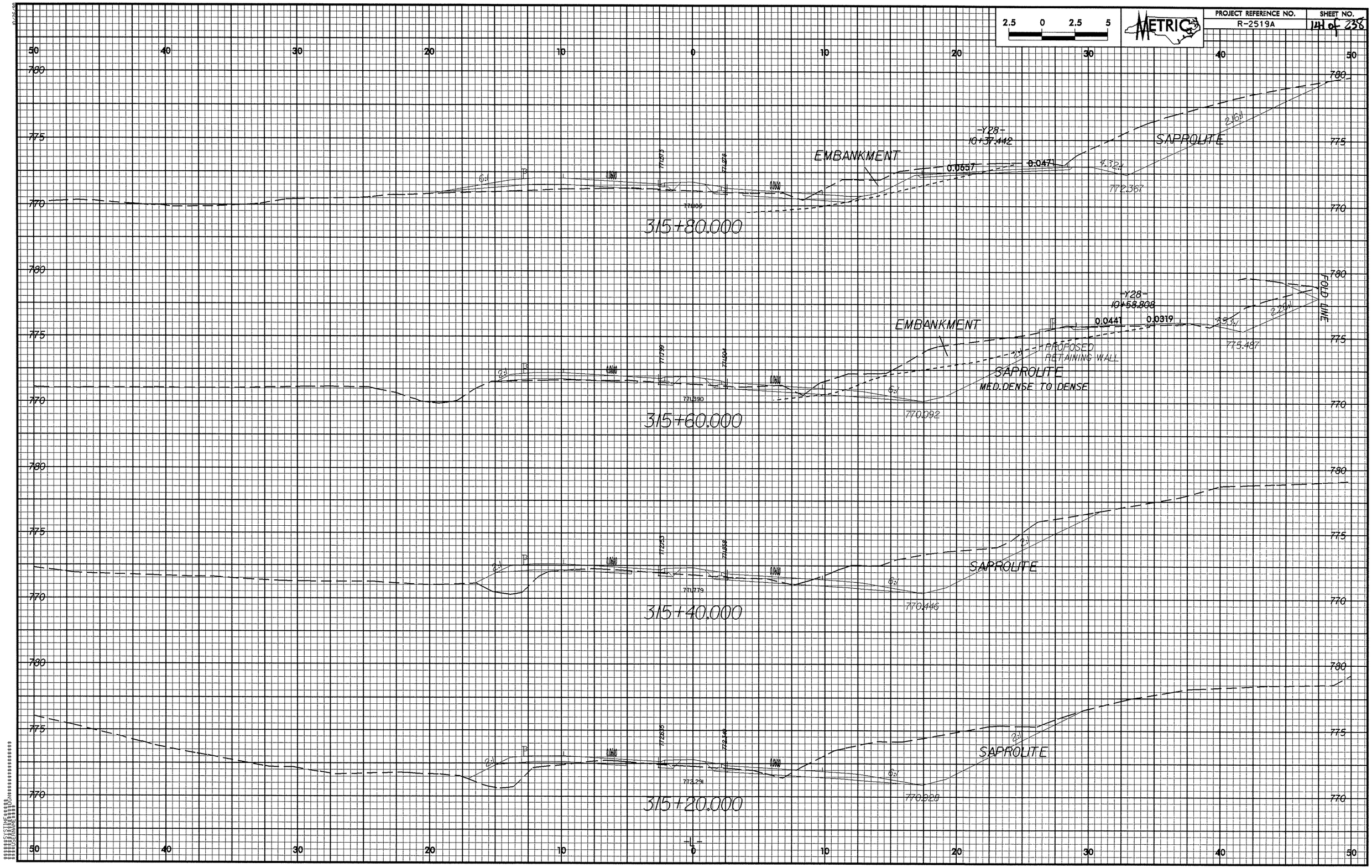
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
138 of 238
50 40 30 20 10 0 10 20 30 40 50
785
780
790
795
EMBANKMENT
ORANGE & BROWN
SLI.MIC.SILTY SAND
W/ ROCK FRAGS
ALLUVIUM:
RED MIC.TO SLI.MIC
SILTY SAND W/ RK FRAGS
SAPROLITE
BRN MIC.SILTY SAND
MED.DENSE TO DENSE
Ditch Depth
313+20.000
313+00.000
312+80.000
SAPROLITE
MED.DENSE
SAPROLITE W/
WEATHERED RK
BRN/WHT MIC.SILTY SAND
MED.TO VERY DENSE
ROCK VERIFIED BY PENETROMETER



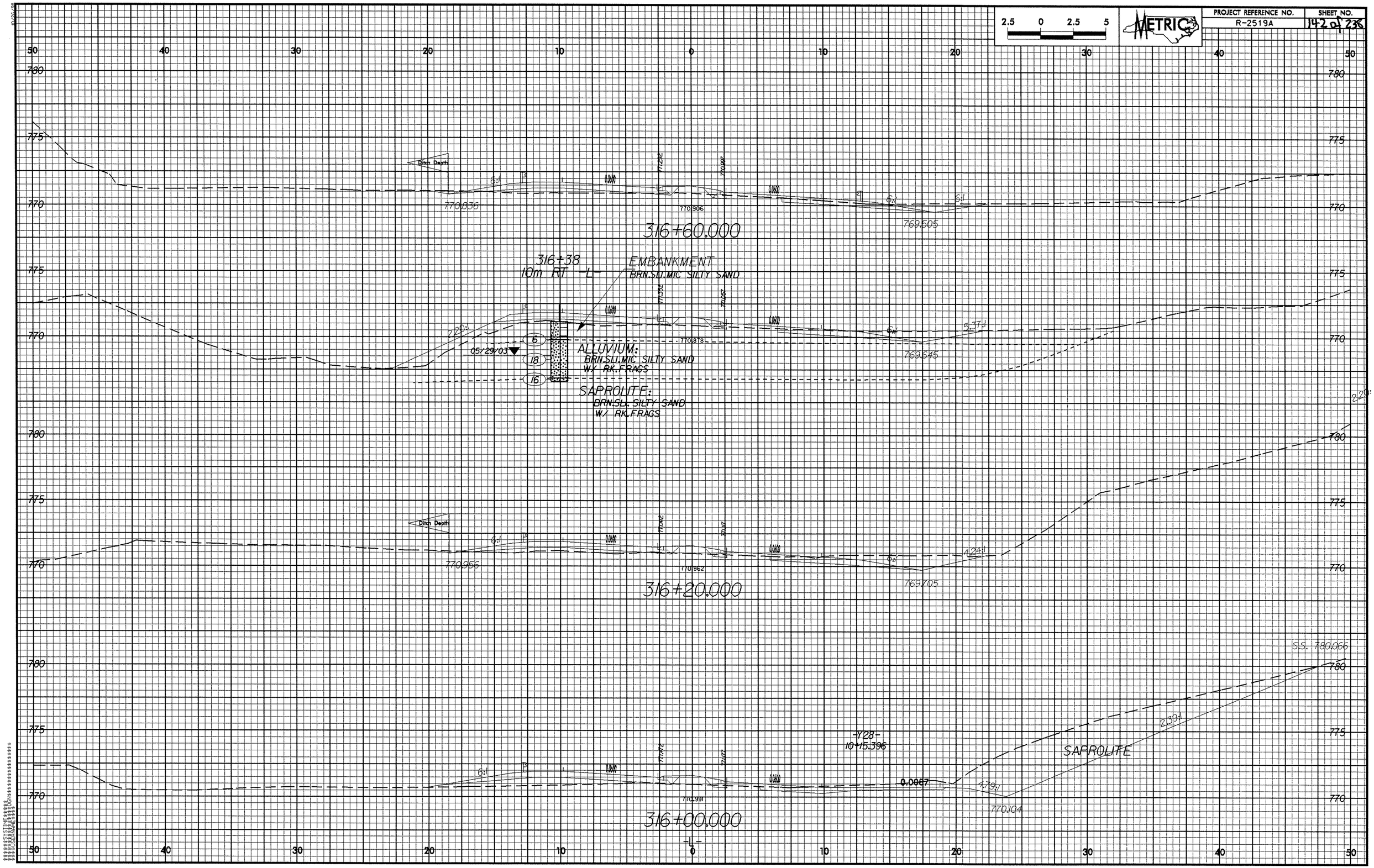
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
139 of 238
EMBANKMENT
ORANGE & BROWN
SLI.MIC.SILTY SAND
W/ ROCK FRAGS
ALLUVIUM:
RED MIC.TO SLI.MIC
SILTY SAND W/ RK FRAGS
SAPROLITE
BRN MIC.SILTY SAND
MED.DENSE TO DENSE
314+20.000
314+00.000
313+80.000
313+60.000
313+40.000
776.685
777.752
778.996
780.327
781.593
4.32:1
2.99:1
2.57:1
2.38:1
2:1
780
775
785
50
40
30
20
10
0



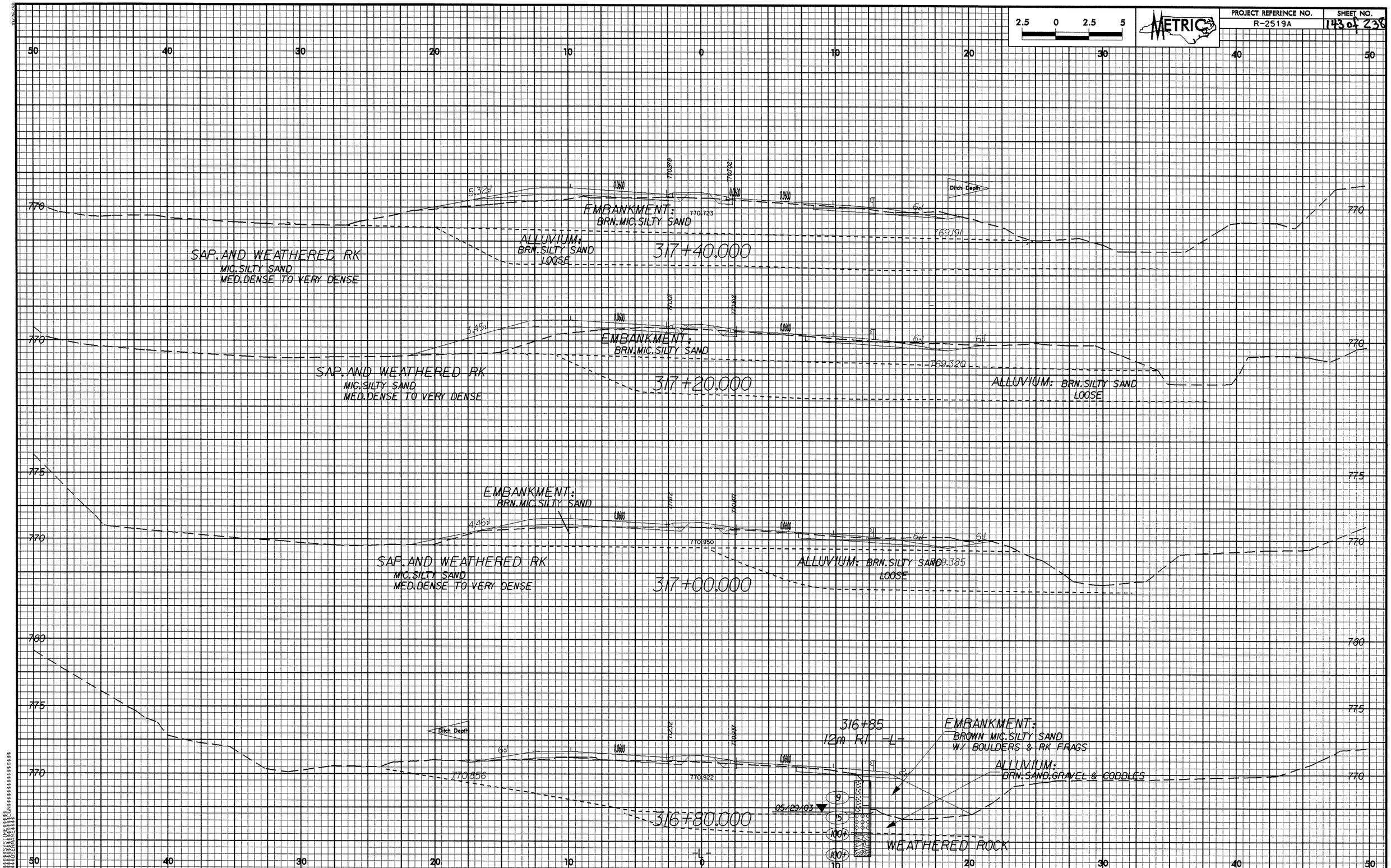
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
140 of 238
50 40 30 20 10 0 10 20 30 40 50
780
775
SAPROLITE
772.978
771.538
315+00.000
EMBANKMENT
ALLUVIUM
SAPROLITE
772.276
314+80.000
EMBANKMENT
774.533
SAPROLITE
773.141
314+60.000
ALLUVIUM
ALLUVIUM:
RED MIC.TO SLI.MIC
SILTY SAND W/ RK FRAGS
775.605
314+40.000
ALLUVIUM:
RED MIC.TO SLI.MIC
SILTY SAND W/ RK FRAGS
-L-



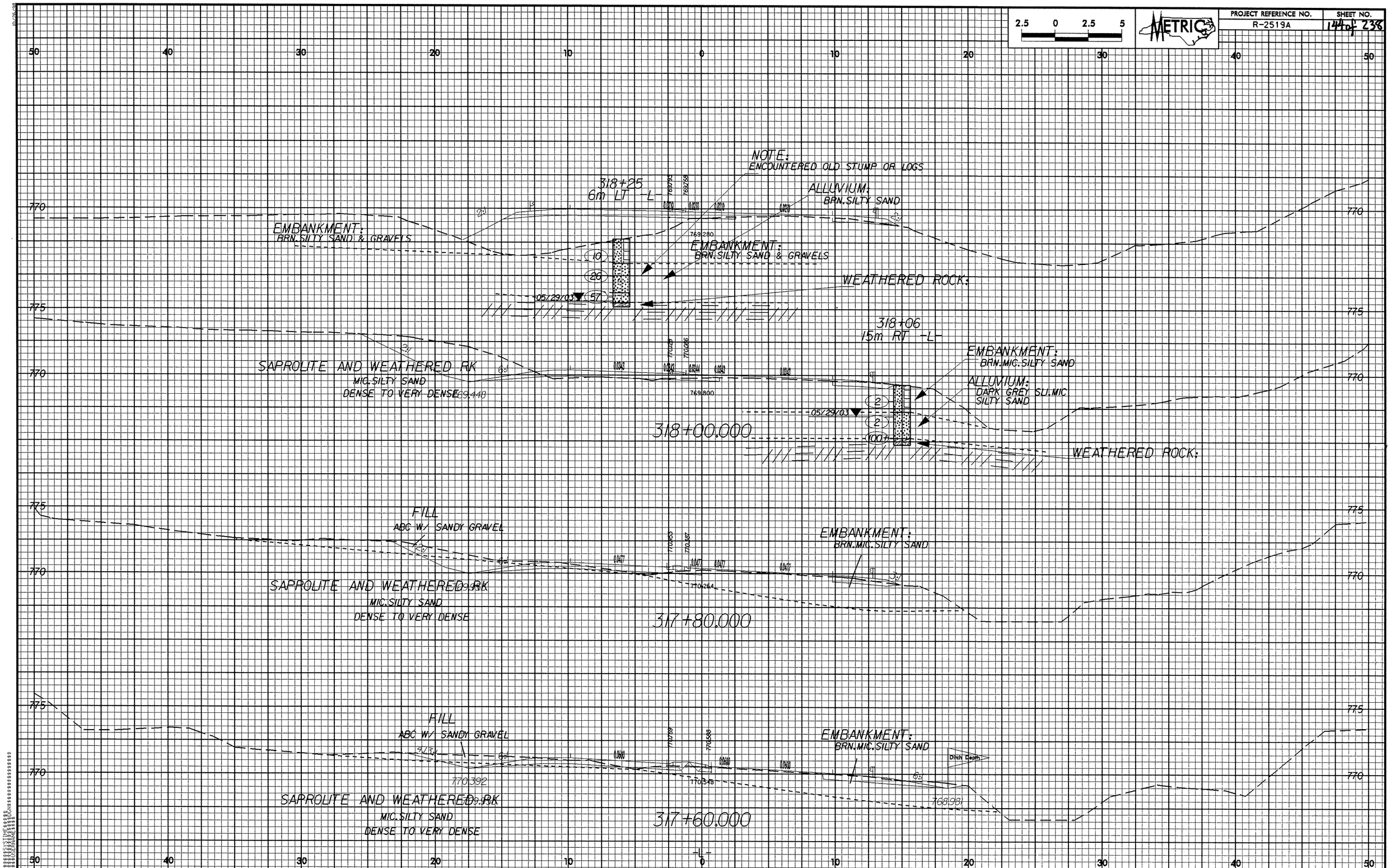
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
141 of 238
EMBANKMENT
-Y28-
10+37.442
0.0657
0.0471
SAPROLITE
772.367
315+80.000
EMBANKMENT
-Y28-
10+58.808
0.0441
0.0319
PROPOSED
RETAINING WALL
SAPROLITE
MED.DENSE TO DENSE
770.092
775.487
FOLD LINE
315+60.000
SAPROLITE
770.446
315+40.000
SAPROLITE
770.928
315+20.000
-L-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
142 of 238
Ditch Depth
770.836
770.906
769.605
316+60.000
316+38
10m RT -L-
EMBANKMENT
BRN.SLI.MIC SILTY SAND
05/29/03
ALLUVIUM:
BRN.SLI.MIC SILTY SAND
W/ RK.FRAGS
SAPROLITE:
BRN.SLI. SILTY SAND
W/ RK.FRAGS
770.878
769.645
770.956
770.962
769.705
316+20.000
S.S. 780.066
-Y28-
10+15.396
SAPROLITE
0.0087
770.991
770.104
316+00.000
-L-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
143 of 238
EMBANKMENT:
BRN.MIC.SILTY SAND
ALLUVIUM:
BRN.SILTY SAND
LOOSE
SAP.AND WEATHERED RK
MIC.SILTY SAND
MED.DENSE TO VERY DENSE
317+40.000
317+20.000
317+00.000
316+85
12m RT -L-
316+80.000
EMBANKMENT:
BROWN MIC.SILTY SAND
W/ BOULDERS & RK FRAGS
ALLUVIUM:
BRN.SAND,GRAVEL & COBBLES
WEATHERED ROCK
Ditch Depth
05/29/03



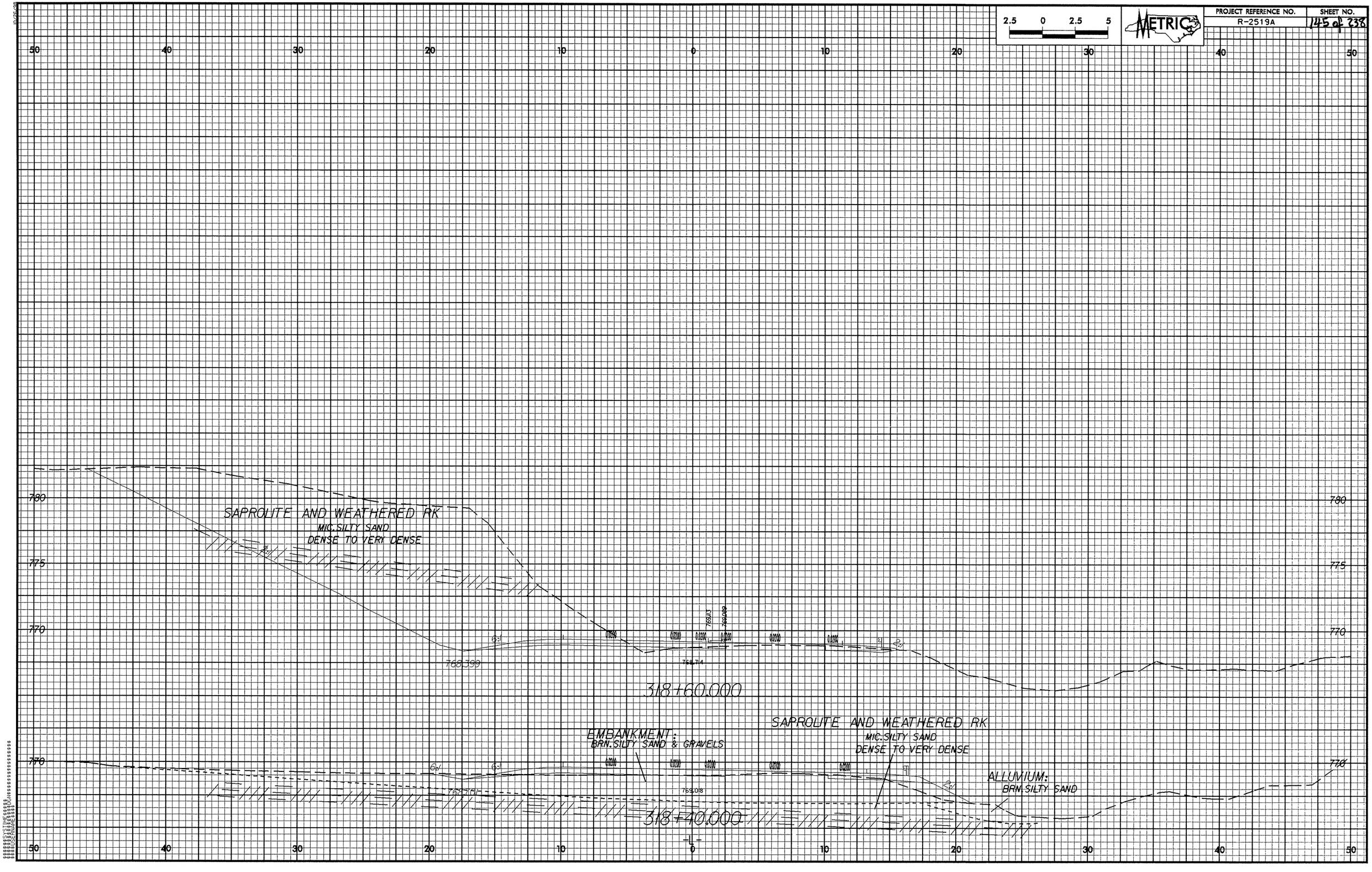
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
144 of 238
NOTE:
ENCOUNTERED OLD STUMP OR LOGS
318+25
6m LT -L-
ALLUVIUM:
BRN. SILTY SAND
EMBANKMENT:
BRN. SILTY SAND & GRAVELS
EMBANKMENT:
BRN. SILTY SAND & GRAVELS
WEATHERED ROCK:
05/29/03
318+06
15m RT -L-
EMBANKMENT:
BRN. MIC. SILTY SAND
ALLUVIUM:
DARK GREY SLI. MIC
SILTY SAND
SAPROLITE AND WEATHERED RK
MIC. SILTY SAND
DENSE TO VERY DENSE
318+00.000
WEATHERED ROCK:
FILL
ABC W/ SANDY GRAVEL
EMBANKMENT:
BRN. MIC. SILTY SAND
SAPROLITE AND WEATHERED RK
MIC. SILTY SAND
DENSE TO VERY DENSE
317+80.000
FILL
ABC W/ SANDY GRAVEL
EMBANKMENT:
BRN. MIC. SILTY SAND
Ditch Depth
SAPROLITE AND WEATHERED RK
MIC. SILTY SAND
DENSE TO VERY DENSE
317+60.000
-L-

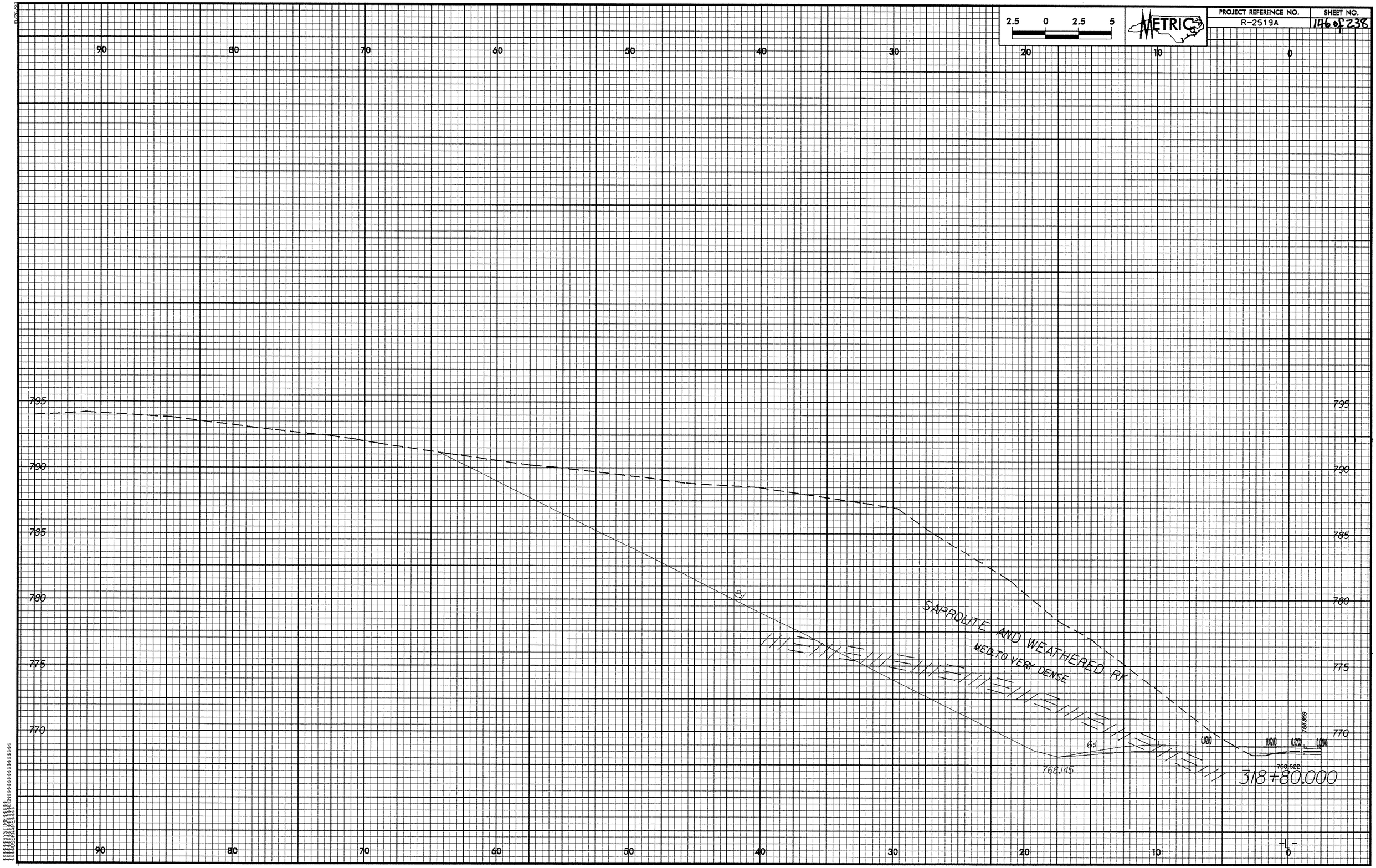
10/25/95

2.5 0 2.5 5

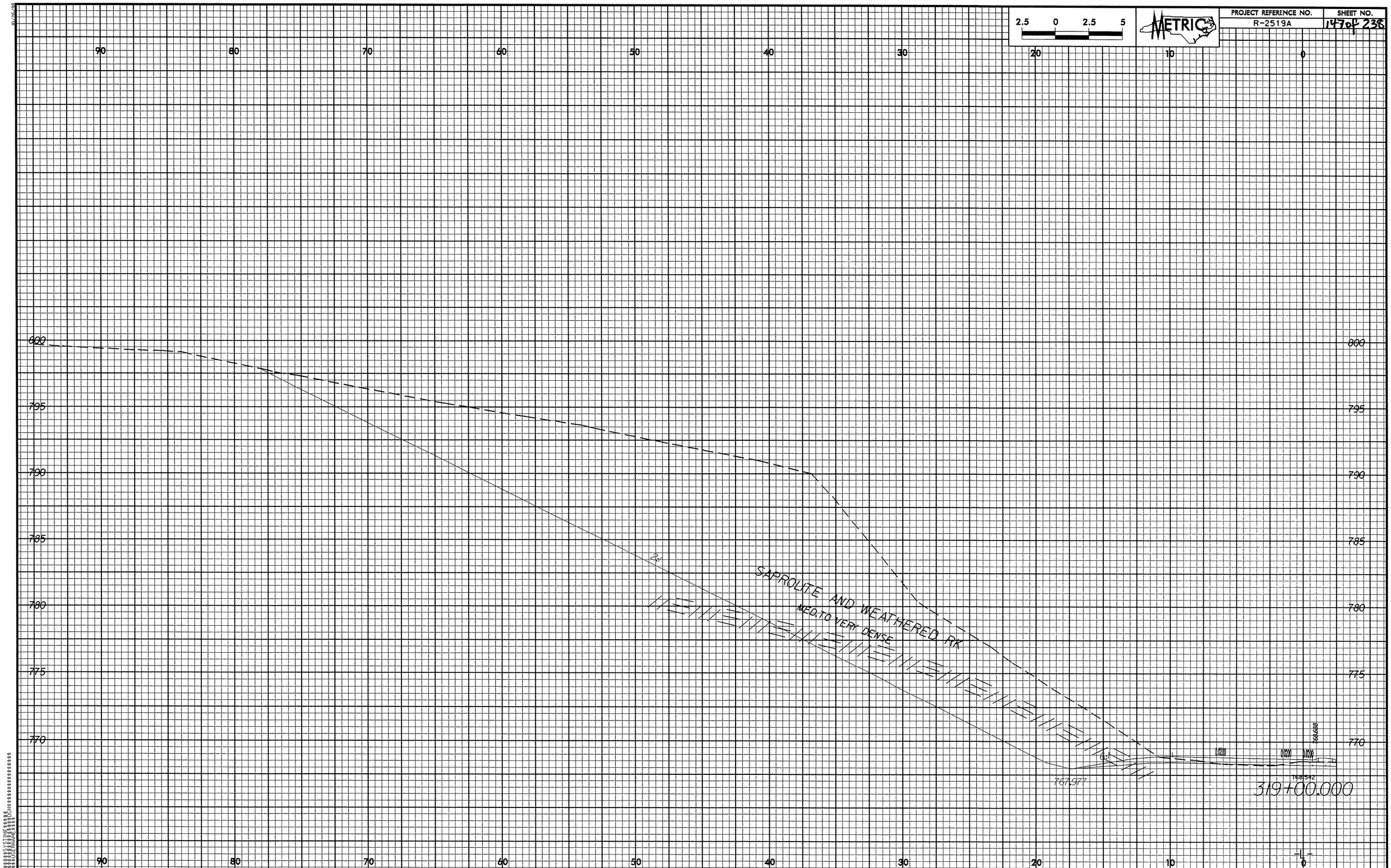
METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2519A	145 of 338





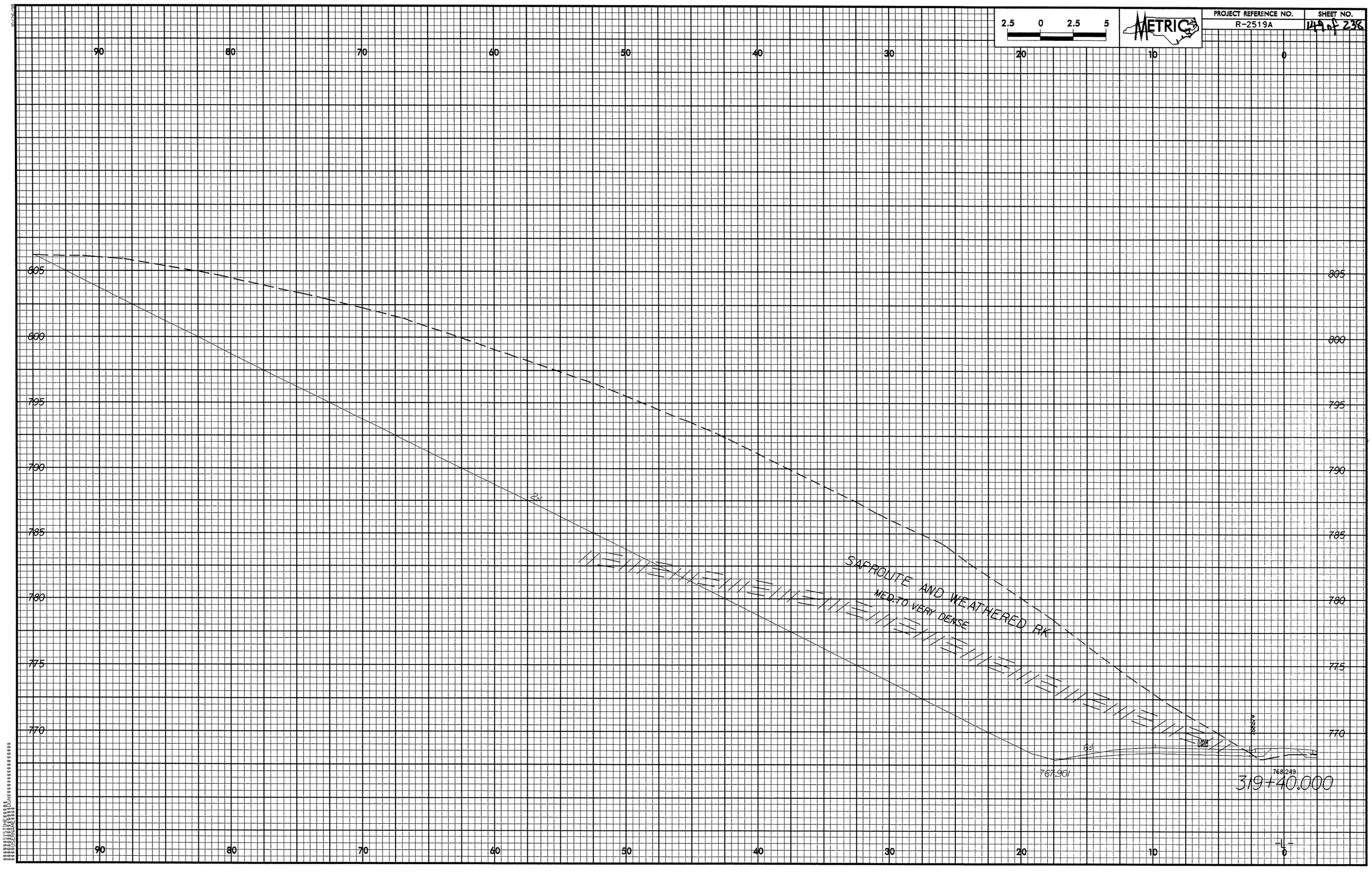
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
146 of 238
90
80
70
60
50
40
30
20
10
0
795
790
785
780
775
770
2:1
SAPROLITE AND WEATHERED RK
MED. TO VERY DENSE
6:1
768.145
768.859
768.622
318+80.000
-L-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
147 of 238
90
80
70
60
50
40
30
20
10
0
800
795
790
785
780
775
770
2:1
SAPROLITE AND WEATHERED RK
MED. TO VERY DENSE
767.977
768.688
768.542
319+00.000
-L-

METRIC

10/26/98
$$$$SYSTIME$$$$
$$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$


90
80
70
60
50
40
30
20
10
0
805
800
795
790
785
780
775
770
2:1
SAPROLITE AND WEATHERED RK
MED. TO VERY DENSE
6:1
767.901
768.249
319+40.000

90 80 70 60 50 40 30 20 10 0

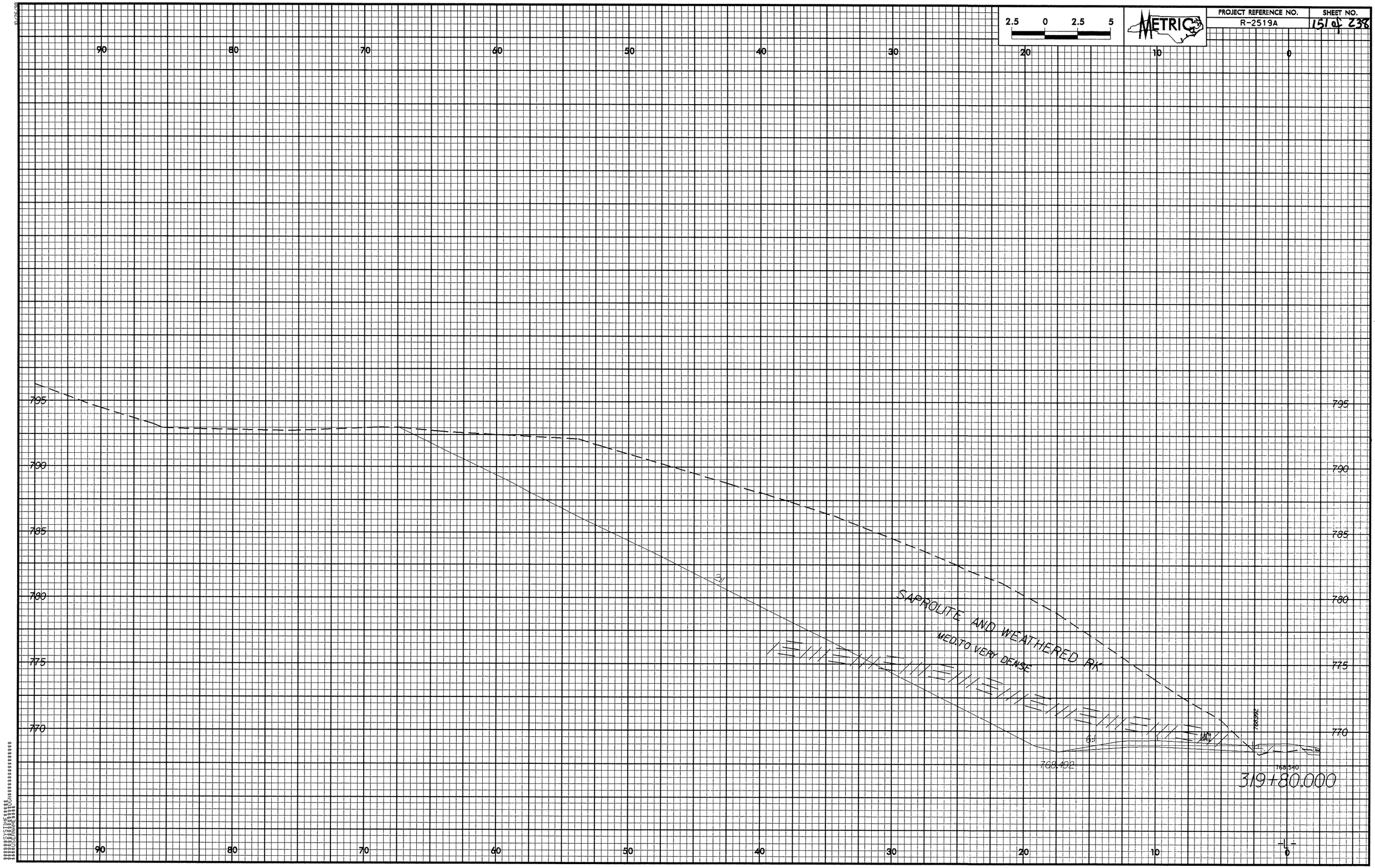
800 795 790 785 780 775 770

SAPROLITE AND WEATHERED RK
MED. TO VERY DENSE

768.119

319+60.000

90 80 70 60 50 40 30 20 10 0



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
151 of 238
90
80
70
60
50
40
30
20
10
0
795
790
785
780
775
770
2:1
SAPROLITE AND WEATHERED RK
MED. TO VERY DENSE
6:1
768.492
768.540
319+80.000

90 80 70 60 50 40 30 20 10 0

790 785 780 775 770

2:1

6:1

768.912

768.915

320+20.000

SAPROLITE
MED. DENSE TO DENSE

2:1

6:1

768.800

768.790

320+00.000

790 785 780 775 770

90 80 70 60 50 40 30 20 10 0

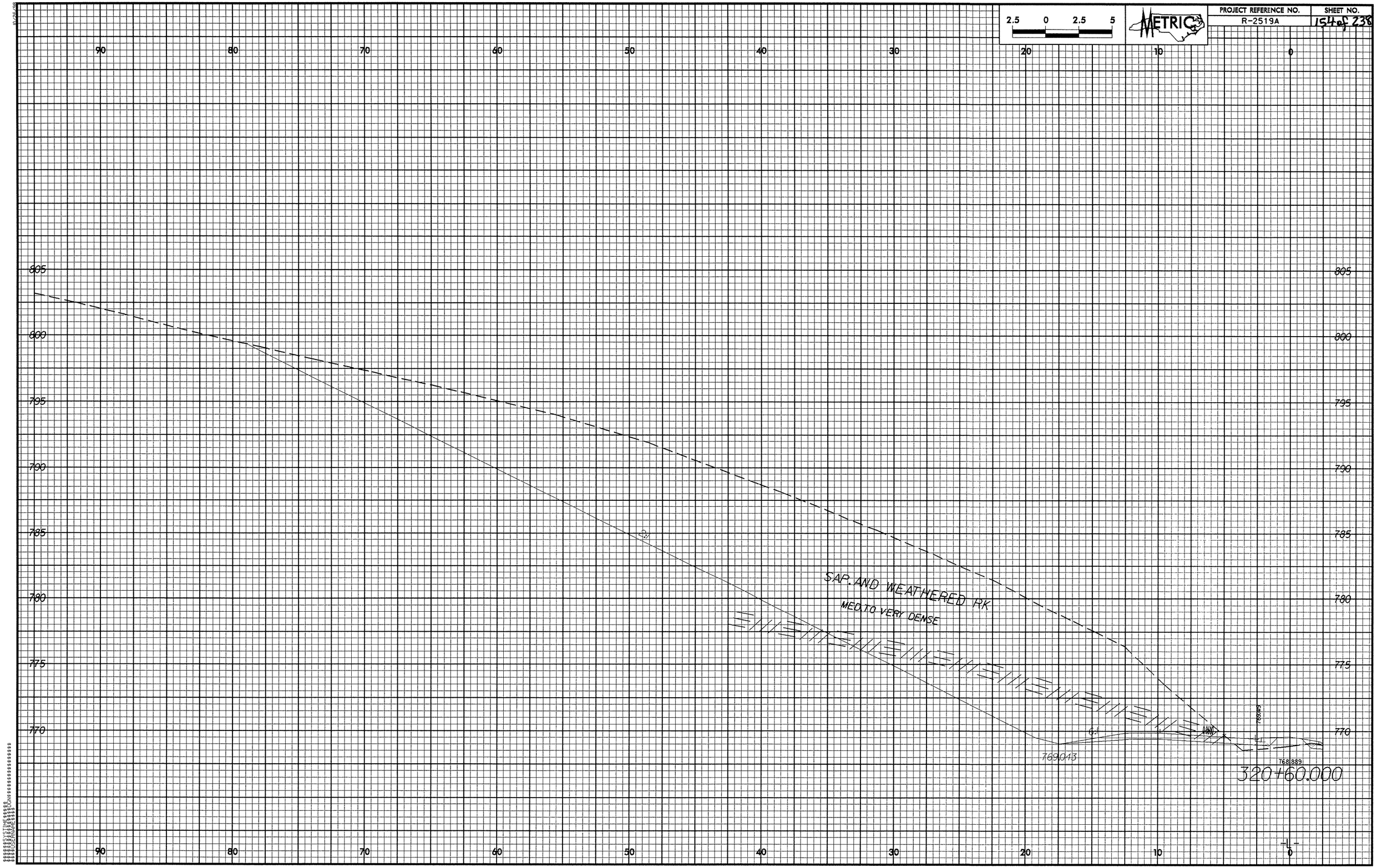
PROJECT REFERENCE NO. R-2519A

SHEET NO. 153 of 236

METRIC

$$$$$$SYSTIME$$$$$$

$$$$$$USERNAME$$$$$$DGN$$$$$$$$$$$$$$$$$$$$



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
154 of 238
90
80
70
60
50
40
30
20
10
0
805
800
795
790
785
780
775
770
SAP. AND WEATHERED RK
MED. TO VERY DENSE
2:1
6:1
769.043
768.889
320+60.000
-L-

2.5 0 2.5 5

METRIC

90 80 70 60 50 40 30 20 10 0

805
800
795
790
785
780
775
770

RES. SOILS AND SAPROLITE
MIC. SILTY SAND, MAO & FeO
LOOSE TO DENSE

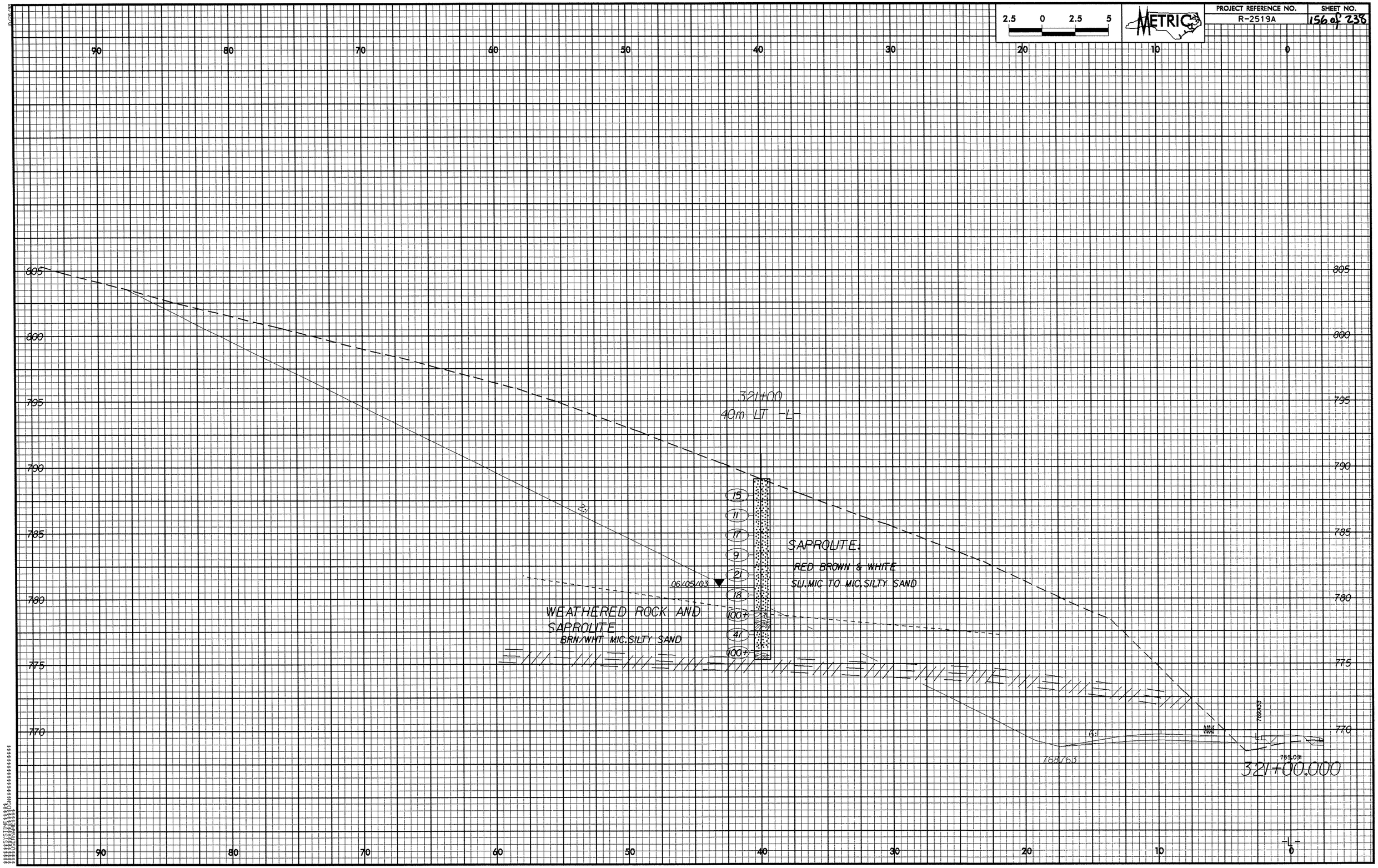
SAPROLITE AND WEATHERED ROCK
BRN-WHT MIC. SILTY SAND
DENSE TO VERY DENSE

768.954

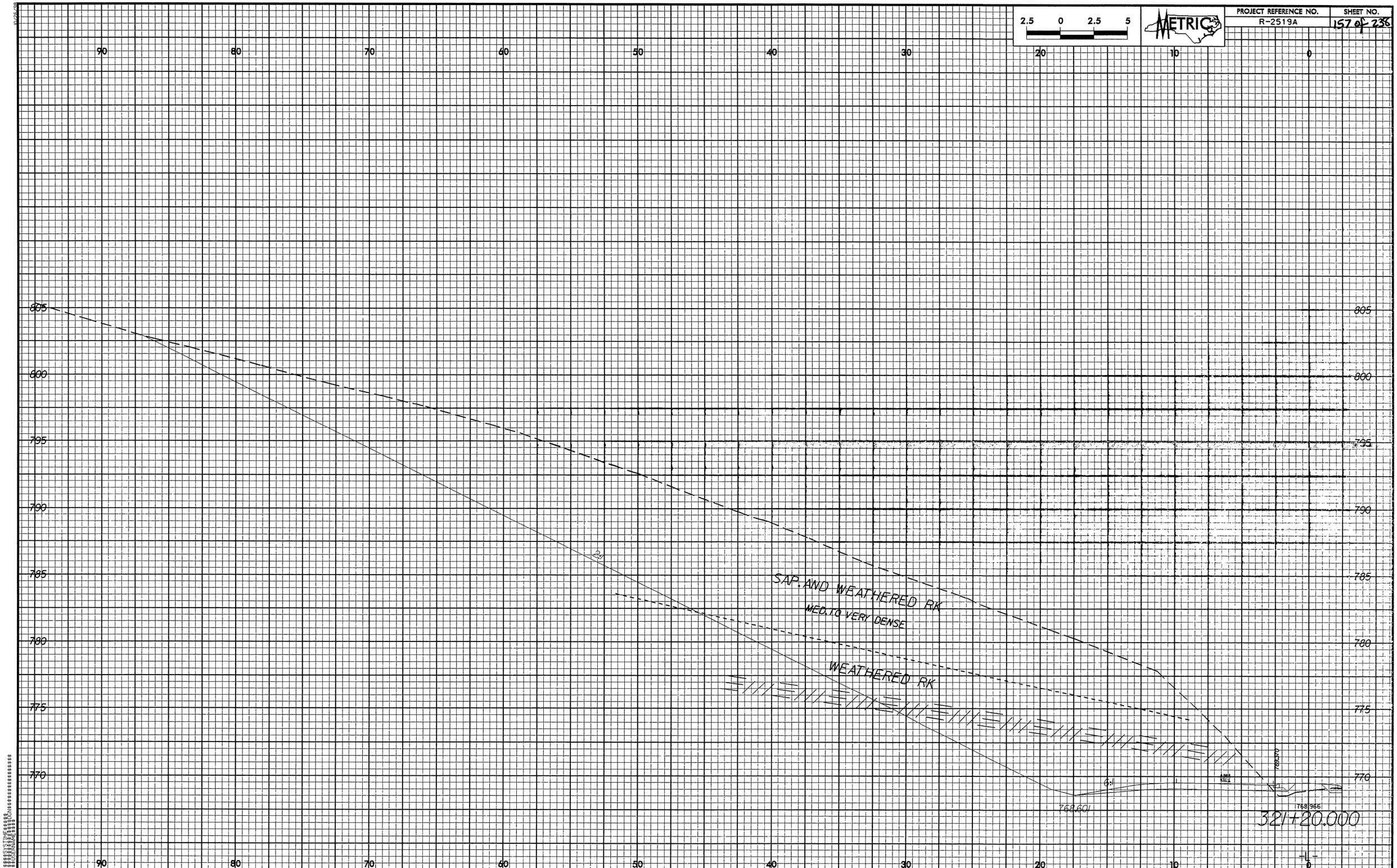
769.012

320+80.000

90 80 70 60 50 40 30 20 10 0

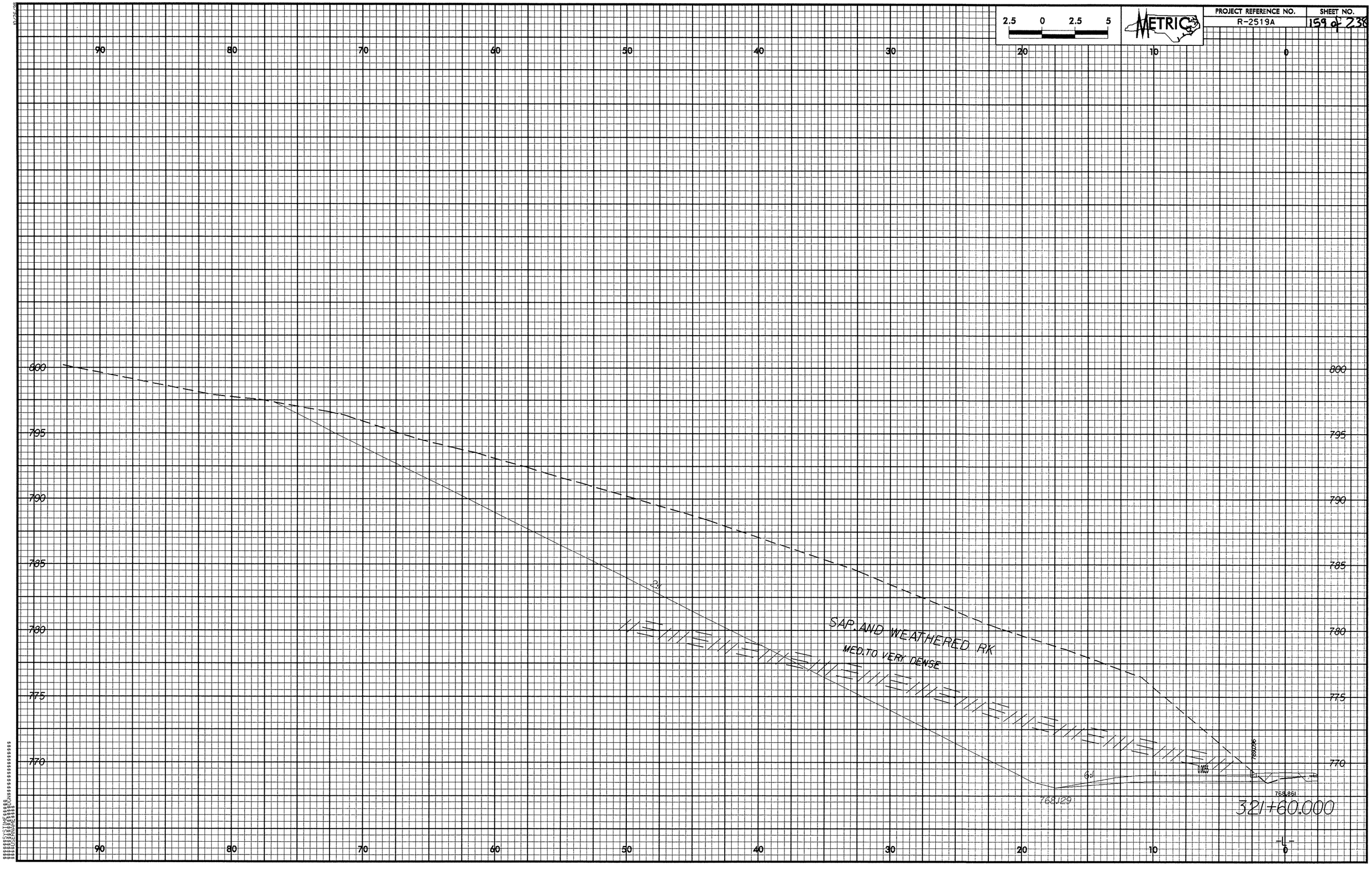


2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
156 of 238
90 80 70 60 50 40 30 20 10 0
805 800 795 790 785 780 775 770
321+00
40m LT -L-
15
11
17
9
21
18
100+
41
100+
2:1
06/05/03
SAPROLITE:
RED BROWN & WHITE
SLI.MIC TO MIC.SILTY SAND
WEATHERED ROCK AND
SAPROLITE
BRN/WHT MIC.SILTY SAND
6:1
768.763
769.091
321+00.000
-L-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
157 of 236
90
80
70
60
50
40
30
20
10
0
805
800
795
790
785
780
775
770
2:1
SAP. AND WEATHERED RK
MED. TO VERY DENSE
WEATHERED RK
6:1
768.601
768.966
321+20.000

PROJECT REFERENCE NO.	SHEET NO.
R-2519A	158 of 238



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
159 of 238
90
80
70
60
50
40
30
20
10
0
800
795
790
785
780
775
770
2:1
SAP. AND WEATHERED RK
MED. TO VERY DENSE
6:1
768.129
768.861
321+60.000
-L-

2.5 0 2.5 5

METRIC

90 80 70 60 50 40 30 20 10 0

785 780 775 770

SAP. AND WEATHERED RK
MED. TO VERY DENSE

2:1

6:1

768.435

767.468

322+00.000

795 790 785 780 775 770

2:1

SAP. AND WEATHERED RK
MED. TO VERY DENSE

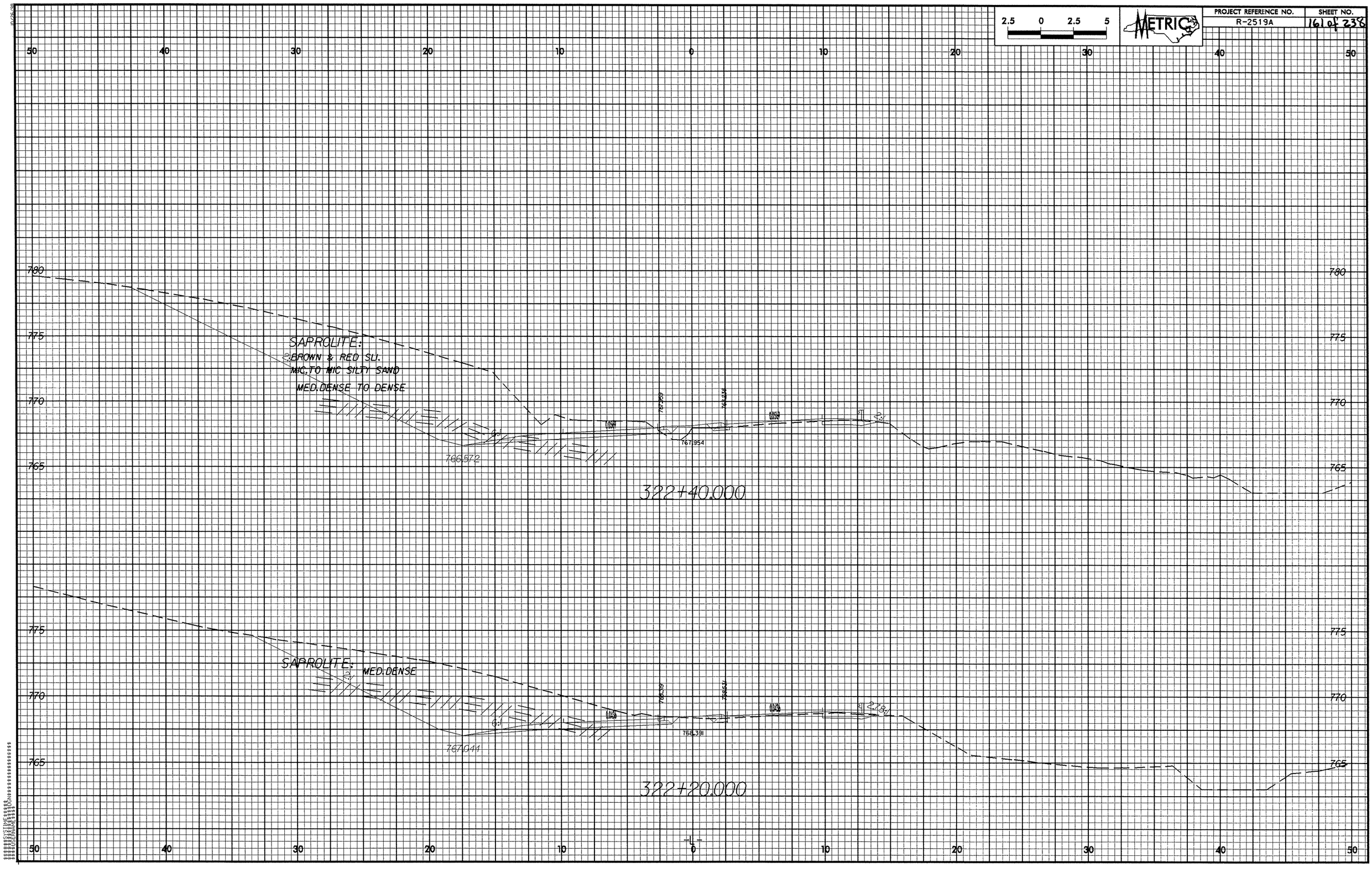
6:1

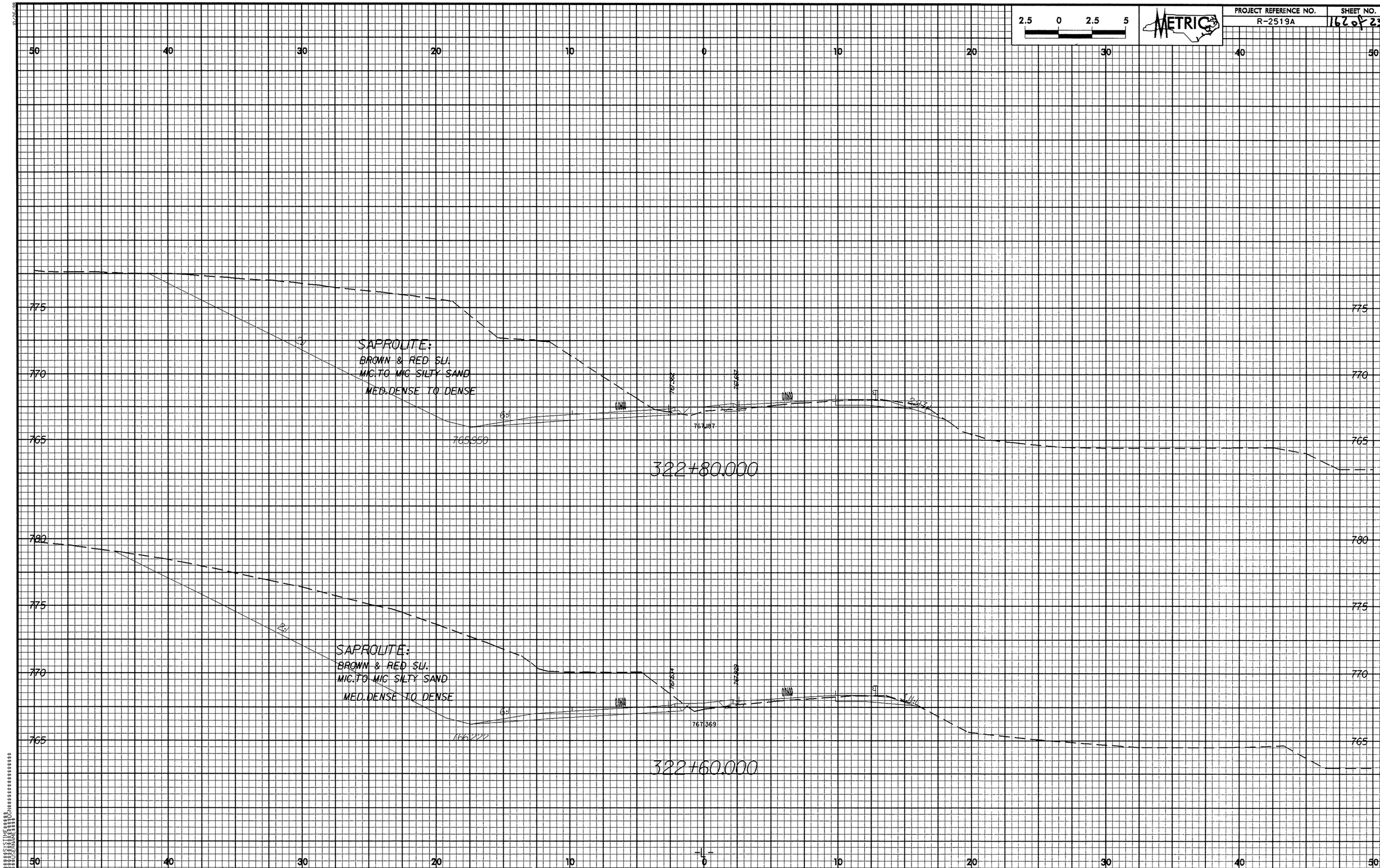
768.720

767.819

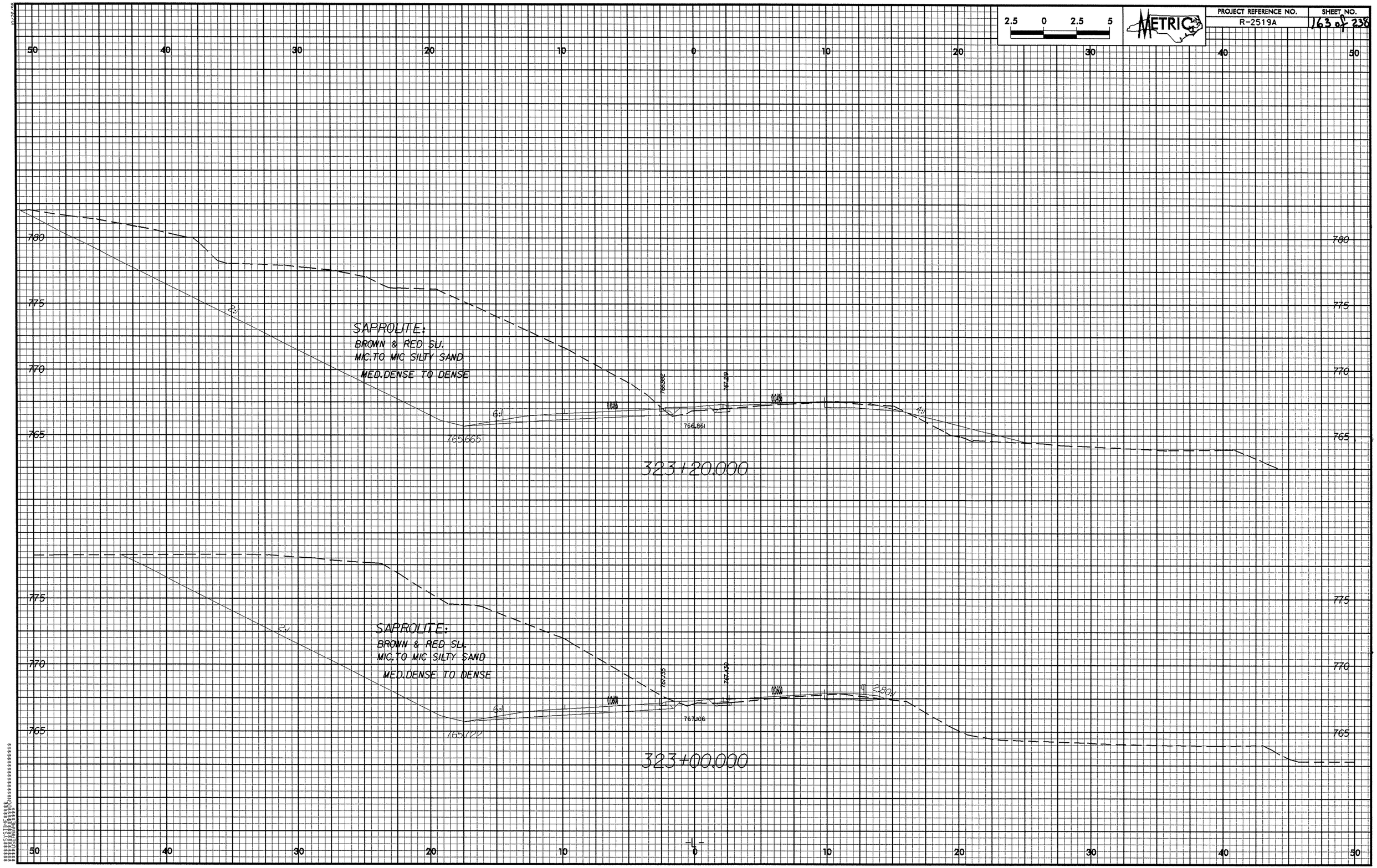
321+80.000

90 80 70 60 50 40 30 20 10 0

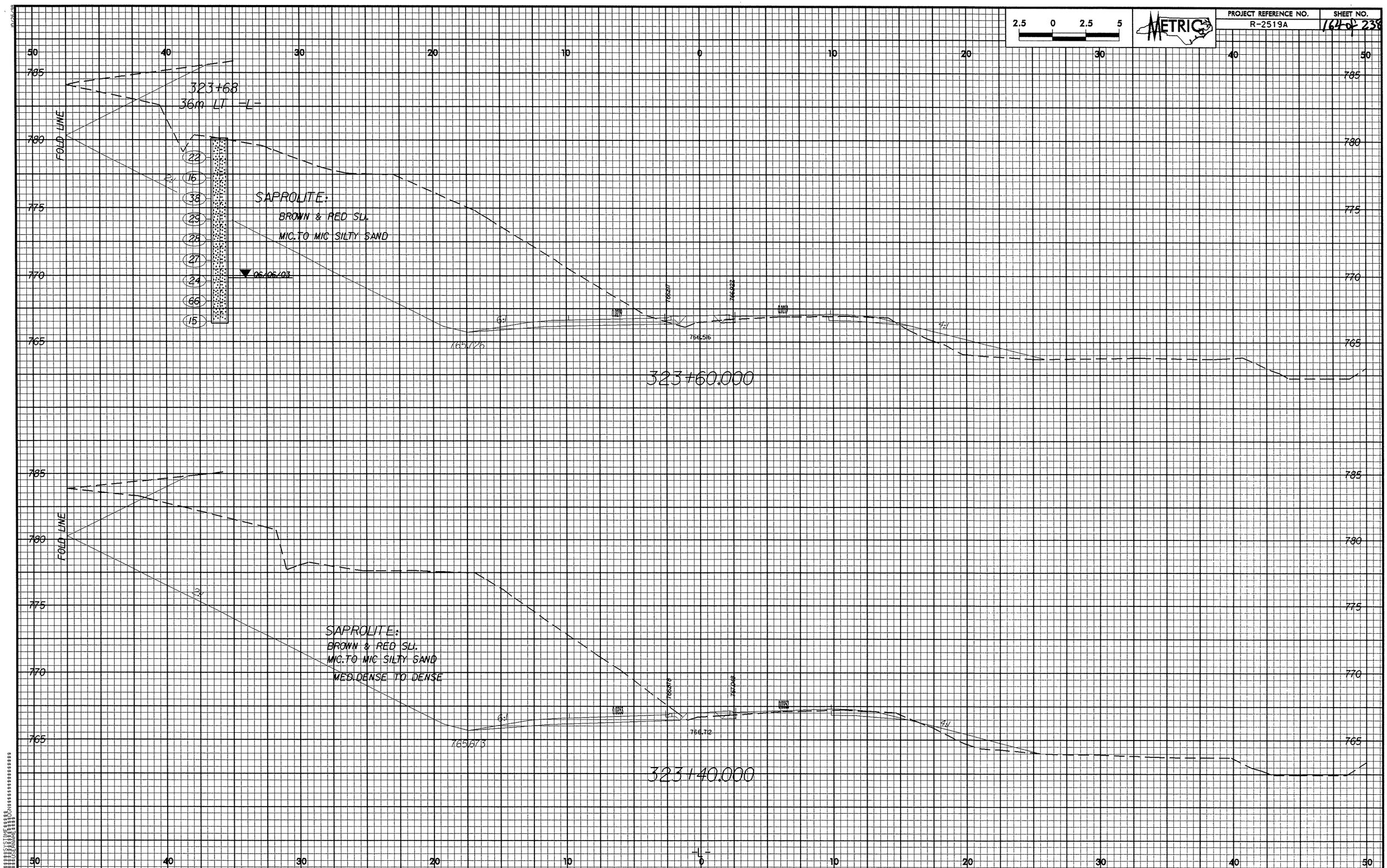

50 40 30 20 10 0 10 20 30 40 50
780
775
770
765
SAPROLITE:
BROWN & RED SLI.
MIC. TO MIC SILTY SAND
MED. DENSE TO DENSE
6:1
766.572
767.259
767.954
2:1
322+40.000
SAPROLITE: MED. DENSE
2:1
6:1
767.041
768.139
768.391
2:1
322+20.000



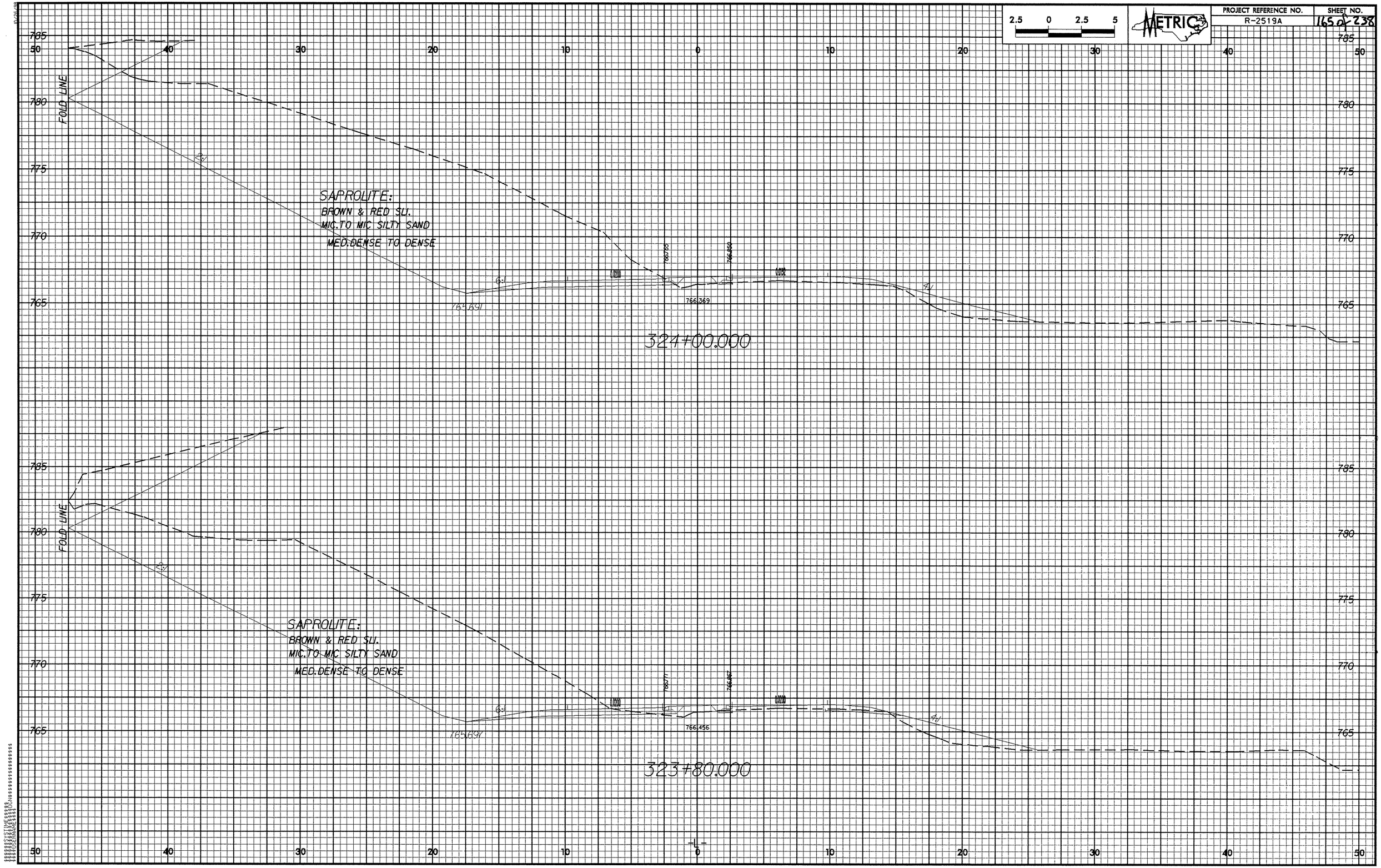
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
162 of 238
50 40 30 20 10 0 10 20 30 40 50
775
770
765
780
SAPROLITE:
BROWN & RED SLI.
MIC.TO MIC SILTY SAND
MED.DENSE TO DENSE
6:1
765.950
767.187
322+80.000
SAPROLITE:
BROWN & RED SLI.
MIC.TO MIC SILTY SAND
MED.DENSE TO DENSE
6:1
766.222
767.369
322+60.000
-L-



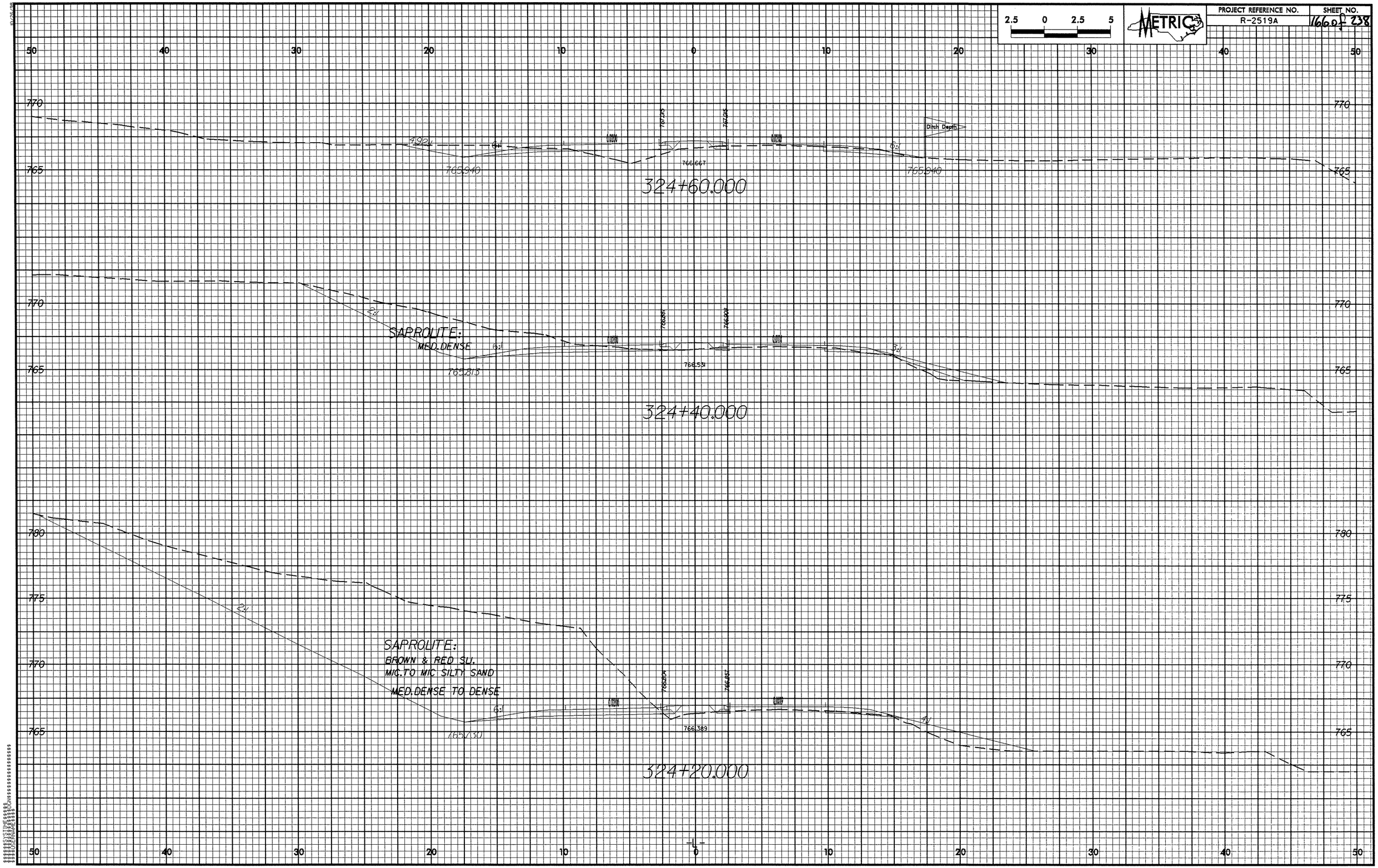
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
163 of 238
50 40 30 20 10 0 10 20 30 40 50
780
775
770
765
SAPROLITE:
BROWN & RED SLI.
MIC.TO MIC SILTY SAND
MED.DENSE TO DENSE
2:1
6:1
4:1
765.665
766.861
323+20.000
SAPROLITE:
BROWN & RED SLI.
MIC.TO MIC SILTY SAND
MED.DENSE TO DENSE
2:1
6:1
2.80:1
765.722
767.106
323+00.000
-L-



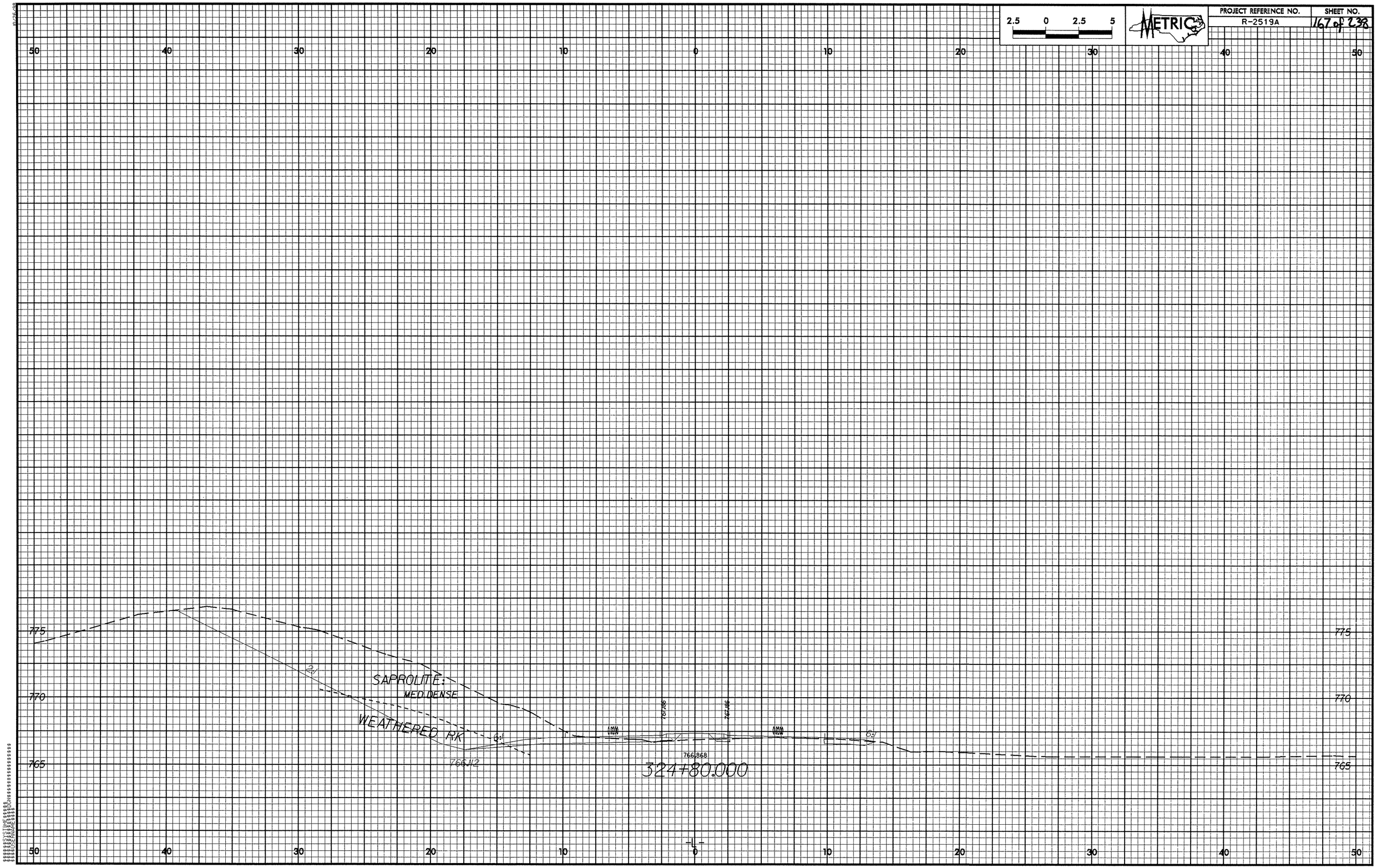
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
164 of 238
323+68
36m LT -L-
FOLD LINE
22
16
38
29
28
27
24
66
15
SAPROLITE:
BROWN & RED SLI.
MIC.TO MIC SILTY SAND
06/06/03
765.726
766.516
323+60.000
SAPROLITE:
BROWN & RED SLI.
MIC.TO MIC SILTY SAND
MED.DENSE TO DENSE
765.673
766.712
323+40.000
-L-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
165 of 238
FOLD LINE
SAPROLITE:
BROWN & RED SLI.
MIC.TO MIC SILTY SAND
MED.DENSE TO DENSE
2:1
6:1
4:1
765.691
766.369
324+00.000
765.697
766.456
323+80.000
785
780
775
770
765
50
40
30
20
10
0
-L-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
166 of 238
50 40 30 20 10 0 10 20 30 40 50
770
765
Ditch Depth
765.940
766.667
324+60.000
SAPROLITE:
MED. DENSE
765.813
766.531
324+40.000
780
775
SAPROLITE:
BROWN & RED SU.
MIC. TO MIC SILTY SAND
MED. DENSE TO DENSE
765.730
766.389
324+20.000
-L-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
167 of 238
50 40 30 20 10 0 10 20 30 40 50
775
770
765
SAPROLITE:
MED. DENSE
WEATHERED RK
2:1
6:1
766.112
766.868
324+80.000
-L-

90 80 70 60 50 40 30 20 10 0

790 785 780 775 770 765

SAPROLITE
MED. DENSE TO DENSE

SAPROLITE AND WEATHERED ROCK
DENSE TO VERY DENSE

24

766.325

766.904

325+00.000

90 80 70 60 50 40 30 20 10 0

90 80 70 60 50 40 30 20 10 0

795 790 785 780 775 770

SAPROLITE
MED. DENSE TO DENSE

SAPROLITE AND WEATHERED RK
DENSE TO VERY DENSE

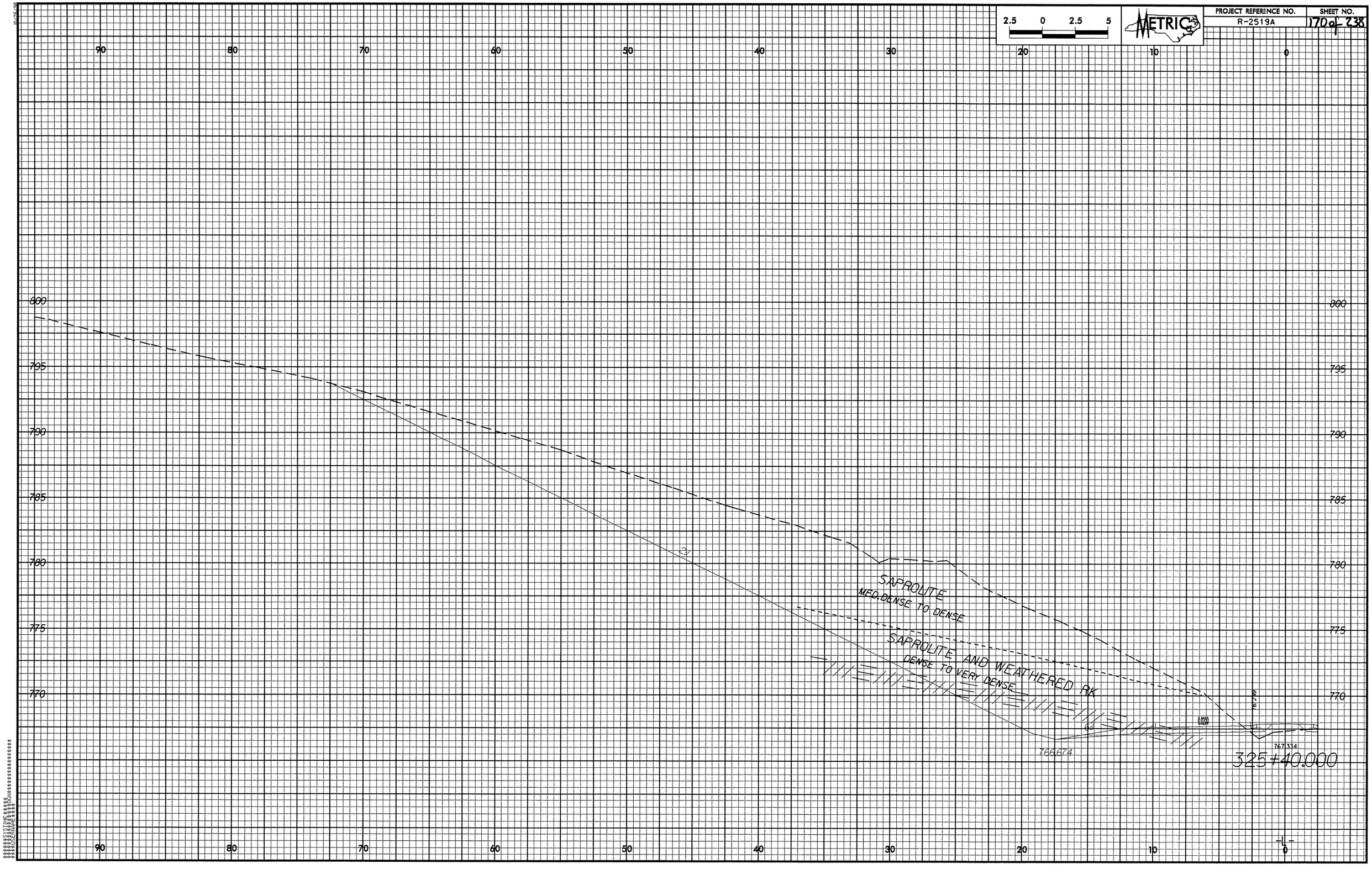
W.T.

767.210

766.522

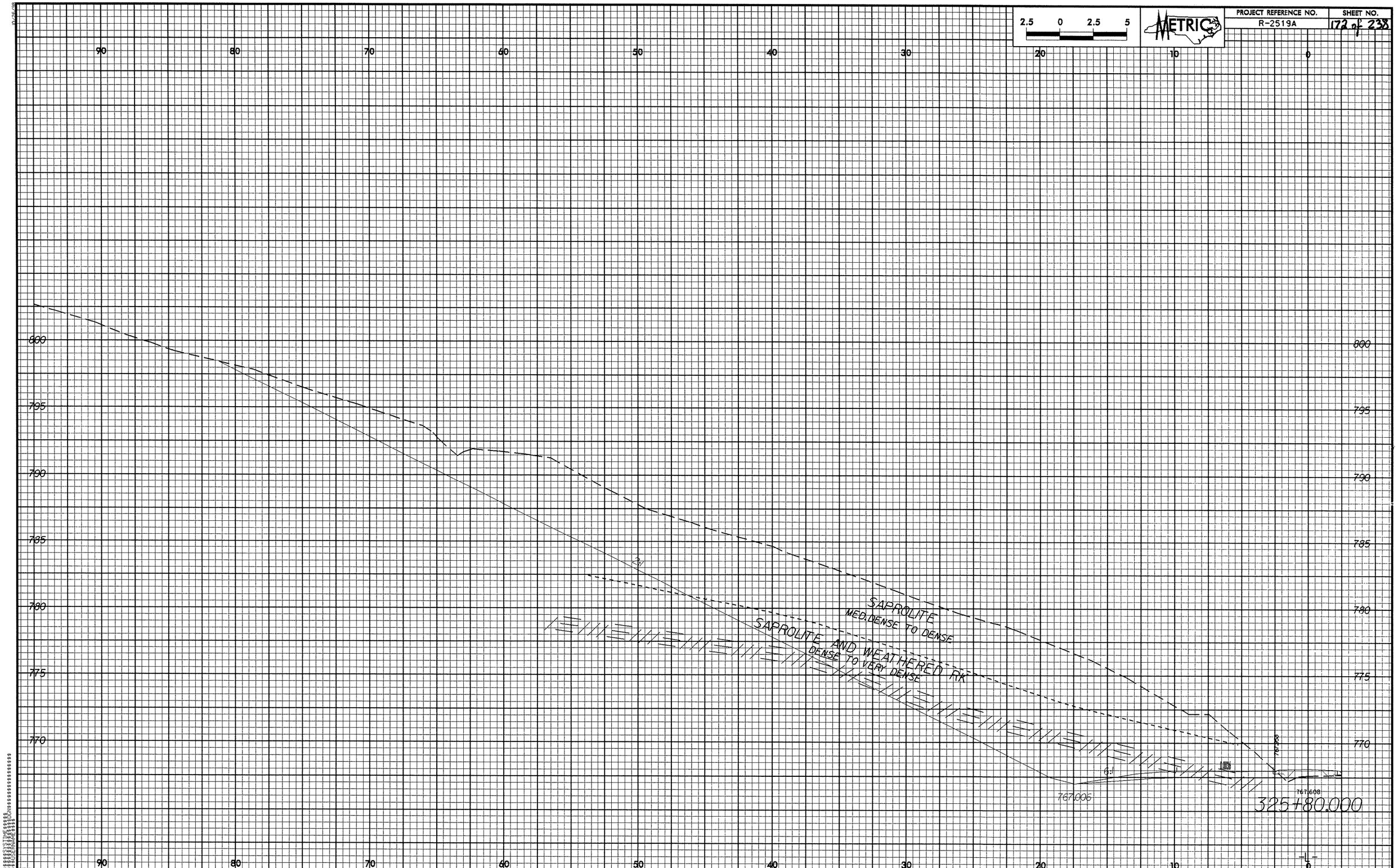
325+20.000

90 80 70 60 50 40 30 20 10 0

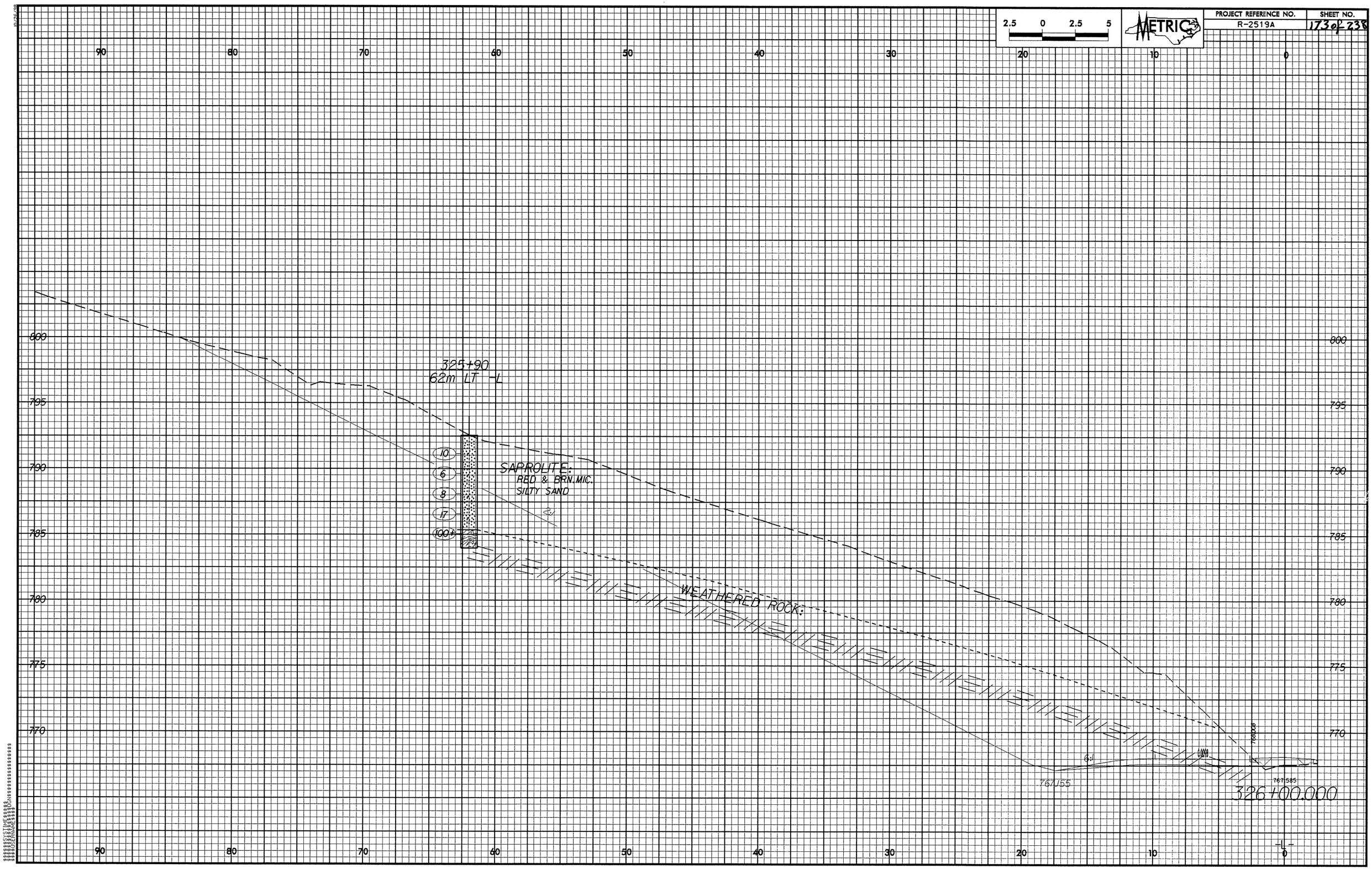


2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
170 of 238
90
80
70
60
50
40
30
20
10
0
800
795
790
785
780
775
770
2:1
SAPROLITE
MED. DENSE TO DENSE
SAPROLITE AND WEATHERED RK
DENSE TO VERY DENSE
0.0200
766.674
767.334
325+40.000

10/26/98
$$$$$$SYSTIME$$$$$ $$$$$$DGN$$$$$ $$$$$USERNAME$$$$



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
172 of 238
90
80
70
60
50
40
30
20
10
0
800
795
790
785
780
775
770
SAPROLITE
MED. DENSE TO DENSE
SAPROLITE AND WEATHERED RK
DENSE TO VERY DENSE
767.006
767.608
325+80.000



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
173 of 238
90
80
70
60
50
40
30
20
10
0
800
795
790
785
780
775
770
325+90
62m LT -L
10
6
8
17
100+
SAPROLITE:
RED & BRN. MIC.
SILTY SAND
2:1
WEATHERED ROCK:
6:1
767.155
767.585
326+00.000
-L-

2.5 0 2.5 5

METRIC

90 80 70 60 50 40 30 20 10 0

805
800
795
790
785
780
775
770

SAPROLITE (SA) MED. DENSE TO DENSE

SAPROLITE AND WEATHERED RK DENSE TO VERY DENSE

6:1

767.259

767.678

326+20.000

90 80 70 60 50 40 30 20 10 0

2.5 0 2.5 5

90 80 70 60 50 40 30 20 10 0

805 800 795 790 785 780 775 770

SAPROLITE
MED. DENSE TO DENSE

SAPROLITE AND WEATHERED RK
DENSE TO VERY DENSE

767.318

767.176

326+40.000

-L-

326+60
84m LT -L-

9
10
13
14
23
48
19
35
30
100+
100+
100+
62
100+

SAPROLITE:
BRN.TO LIGHT BRN.& GREY
SLI.MIC.TO MIC.SILTY
FINE SAND TO SILTY SAND

WEATHERED ROCK:

SAPROLITE:
BRN/GRAY MIC.SILTY SAND

2:1

6:1

767.414

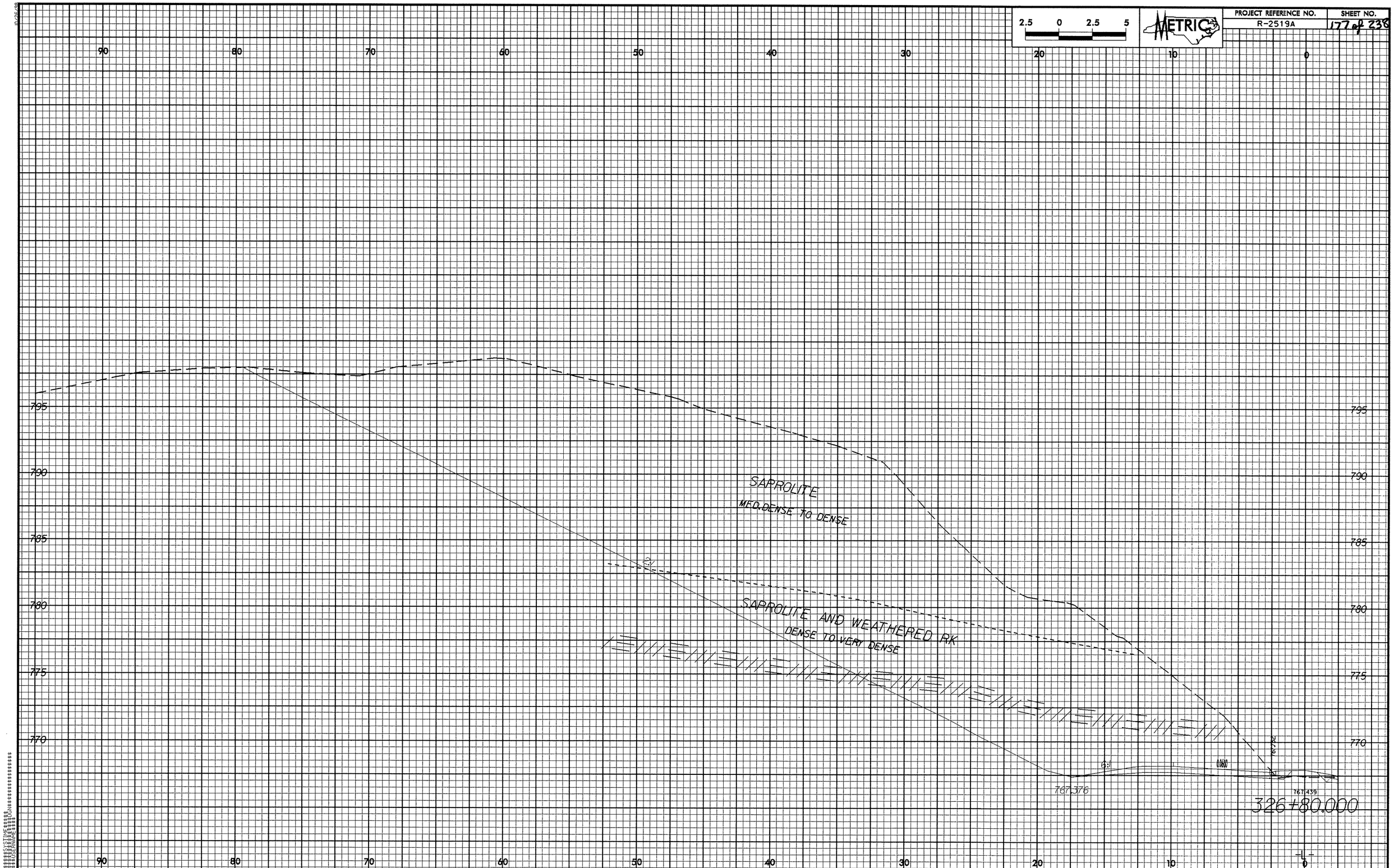
767.606

326+60.000

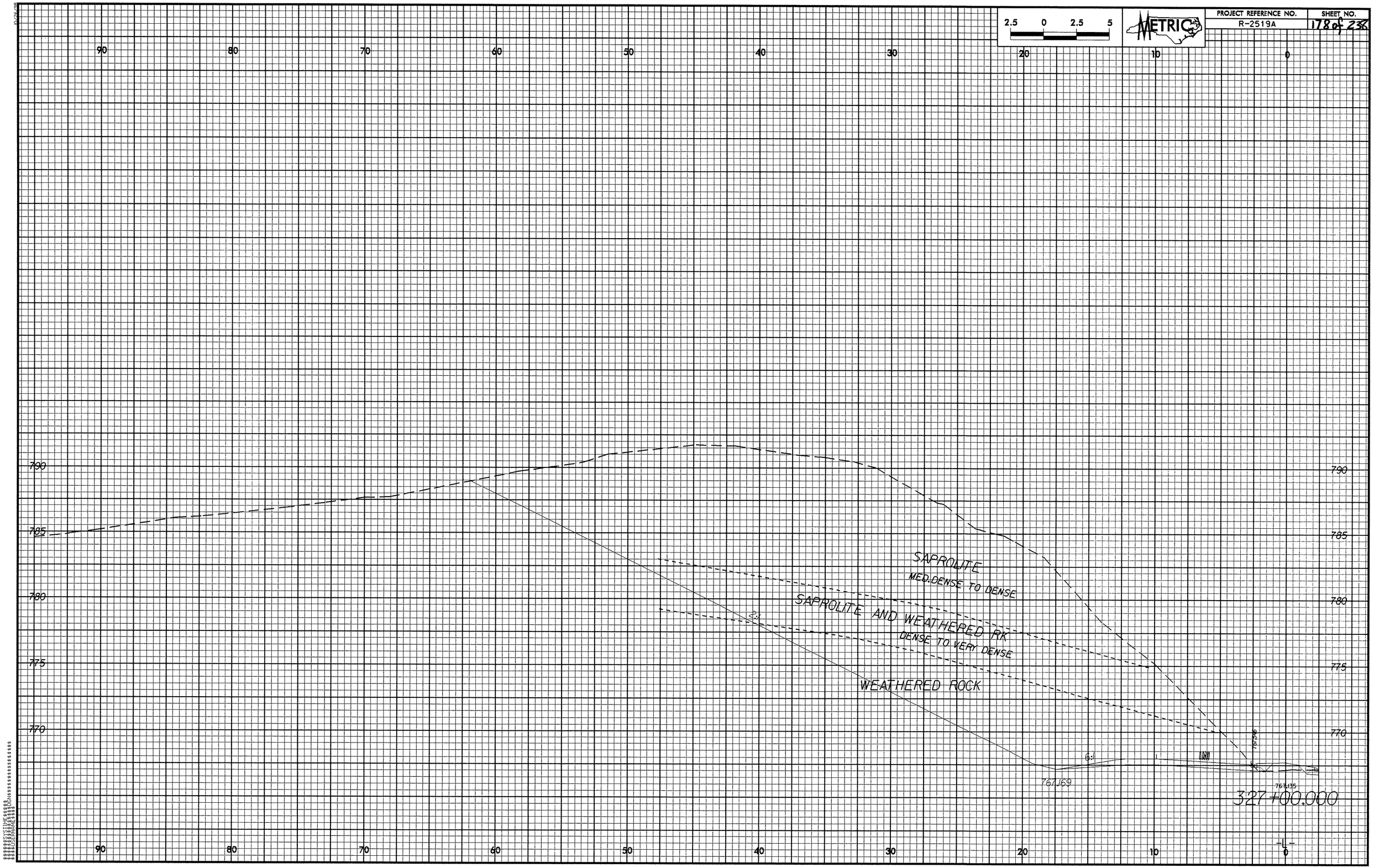
-L-

805 800 795 790 785 780 775 770

90 80 70 60 50 40 30 20 10 0



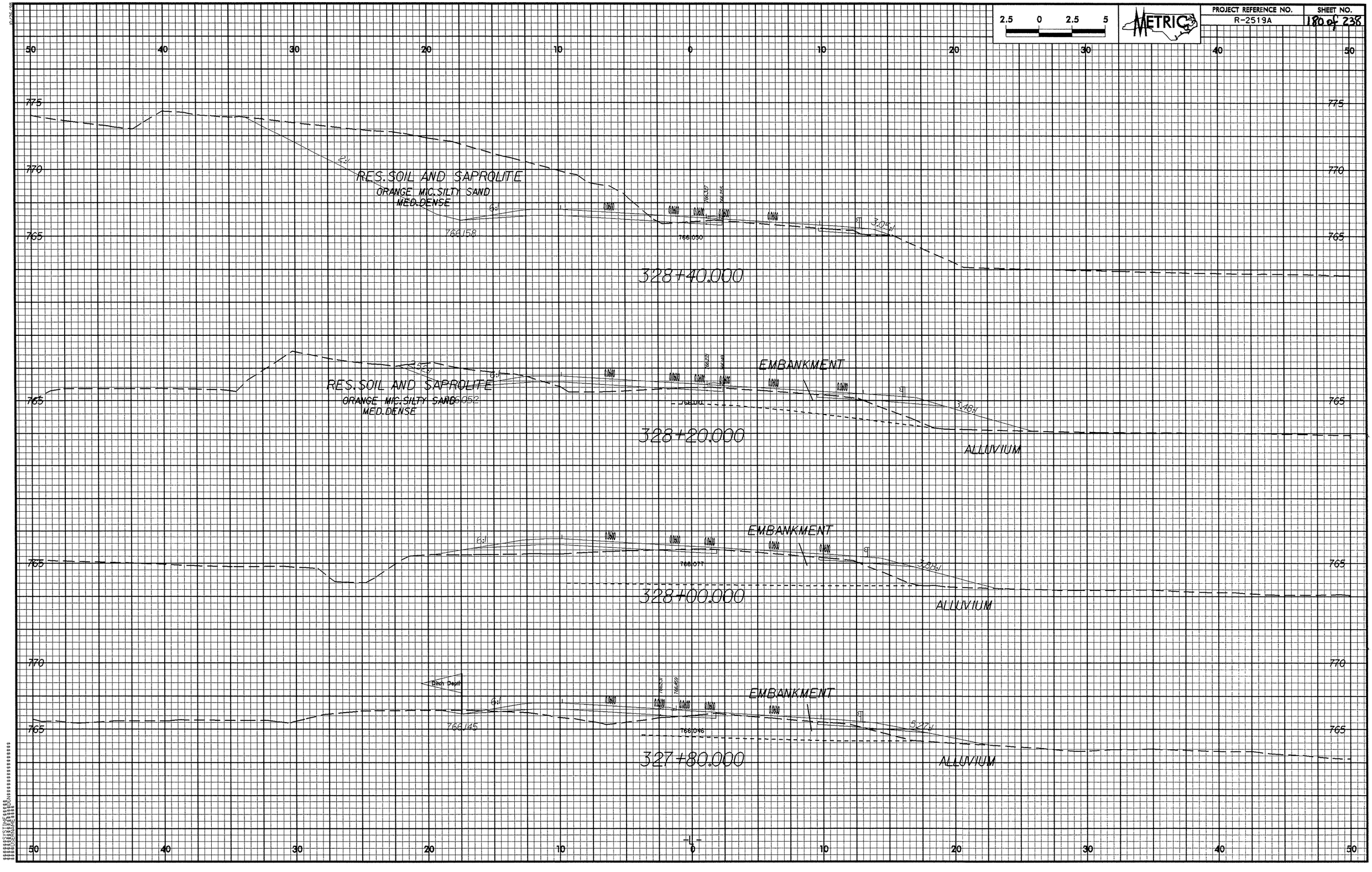
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
177 of 238
90
80
70
60
50
40
30
20
10
0
795
790
785
780
775
770
SAPROLITE
MED. DENSE TO DENSE
2:1
SAPROLITE AND WEATHERED RK
DENSE TO VERY DENSE
6:1
767.376
767.439
326+80.000
-L-



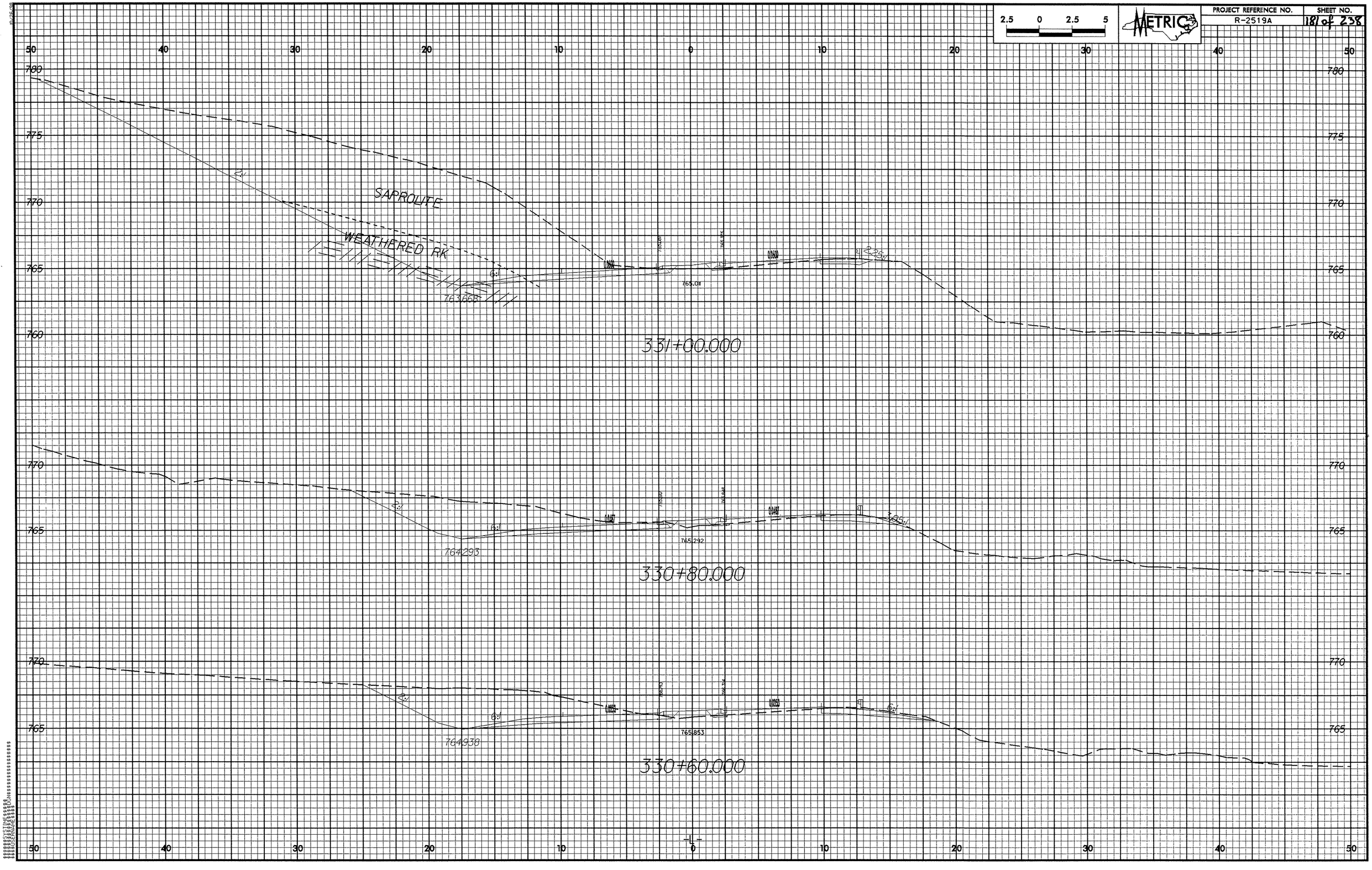
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
178 of 238
90
80
70
60
50
40
30
20
10
0
790
785
780
775
770
SAPROLITE
MED.DENSE TO DENSE
SAPROLITE AND WEATHERED RK
DENSE TO VERY DENSE
WEATHERED ROCK
2:1
6:1
767.169
767.135
327+00.000
-L-

PROJECT REFERENCE NO.	SHEET NO.
R-2519A	179 of 238

METRIC

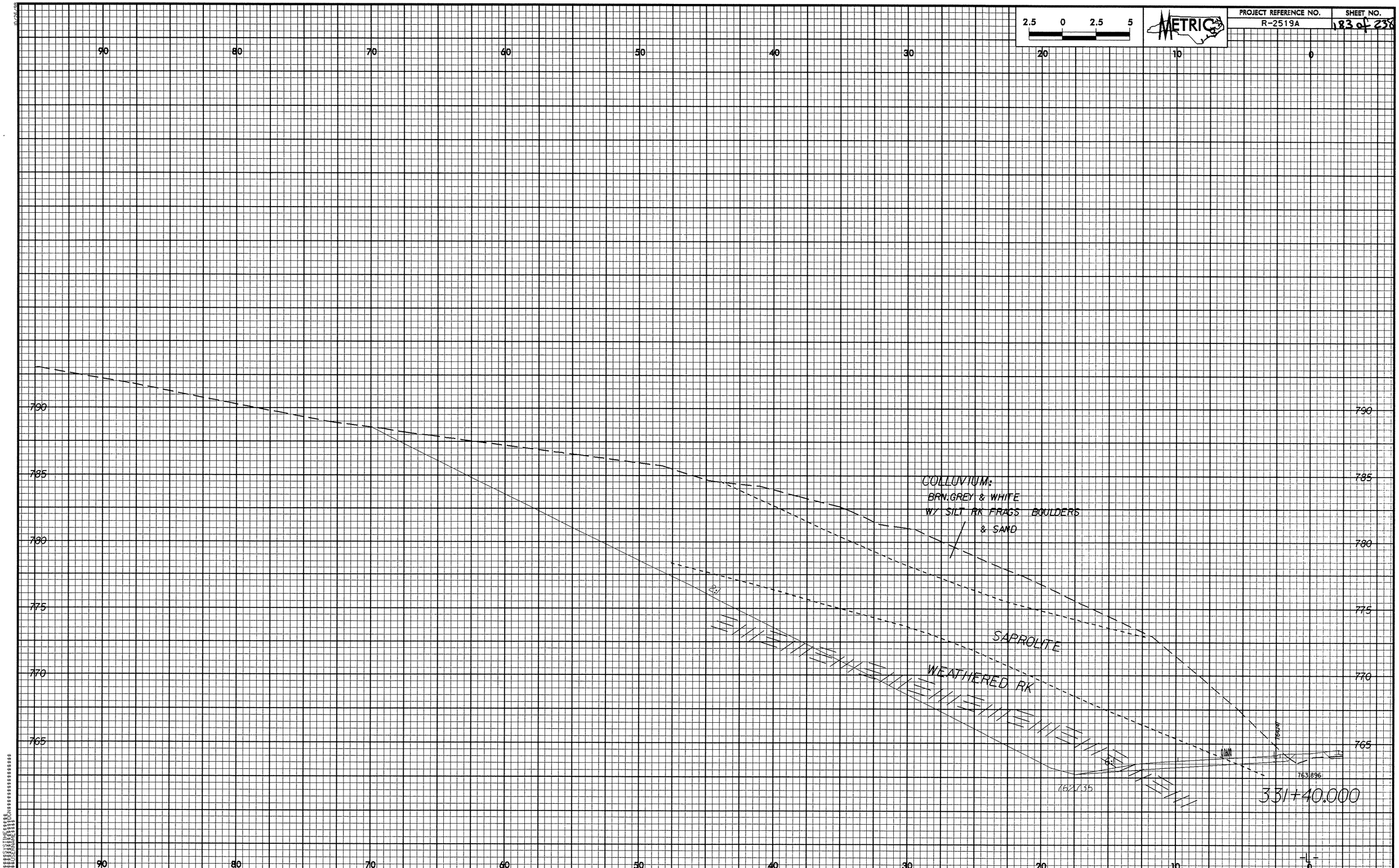


2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
180 of 238
50 40 30 20 10 0 10 20 30 40 50
775
770
765
RES. SOIL AND SAPROLITE
ORANGE MIC. SILTY SAND
MED. DENSE
2:1
6:1
3.05:1
766.158
766.050
328+40.000
EMBANKMENT
RES. SOIL AND SAPROLITE
ORANGE MIC. SILTY SAND
MED. DENSE
3.48:1
328+20.000
ALLUVIUM
EMBANKMENT
6:1
3.88:1
766.077
328+00.000
ALLUVIUM
Ditch Depth
EMBANKMENT
6:1
5.27:1
766.145
766.046
327+80.000
ALLUVIUM



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
181 of 238
SAPROLITE
WEATHERED RK
2:1
6:1
2.25:1
763.668
765.011
331+00.000
764.293
765.292
3.05:1
330+80.000
764.938
765.853
330+60.000
-L-

10/26/98
$$$$$SYSTIME$$$$$
$$$$USERNAME$$$$$DGN$$$$



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
183 of 238
90
80
70
60
50
40
30
20
10
0
790
785
780
775
770
765
COLLUVIUM:
BRN.GREY & WHITE
W/ SILT RK FRAGS BOULDERS
& SAND
SAPROLITE
WEATHERED RK
762.735
763.896
331+40.000
-L-

10/26/98

2.5 0 2.5 5

METRIC

PROJECT REFERENCE NO.	SHEET NO.
R-2519A	184 of 238

90 80 70 60 50 40 30 20 10 0

795 790 785 780 775 770 765

331+68
36m LT -L-

NOTE:
LARGE WEATHERED BOULDER
FROM 2.30-3.80m

2:1

06/11/03

9 (100+)
94
21
58
(100+)
400+

SAPROLITE

COLLUVIUM:
BRN.GREY & WHITE
W/ SILT RK FRAGS BOULDERS
& SAND

GREY & WHITE SILTY SAND
W/ SMALL RED CLAY SEAMS
& ROCK FRAGS

WEATHERED RK

6:1

763.4

763.480

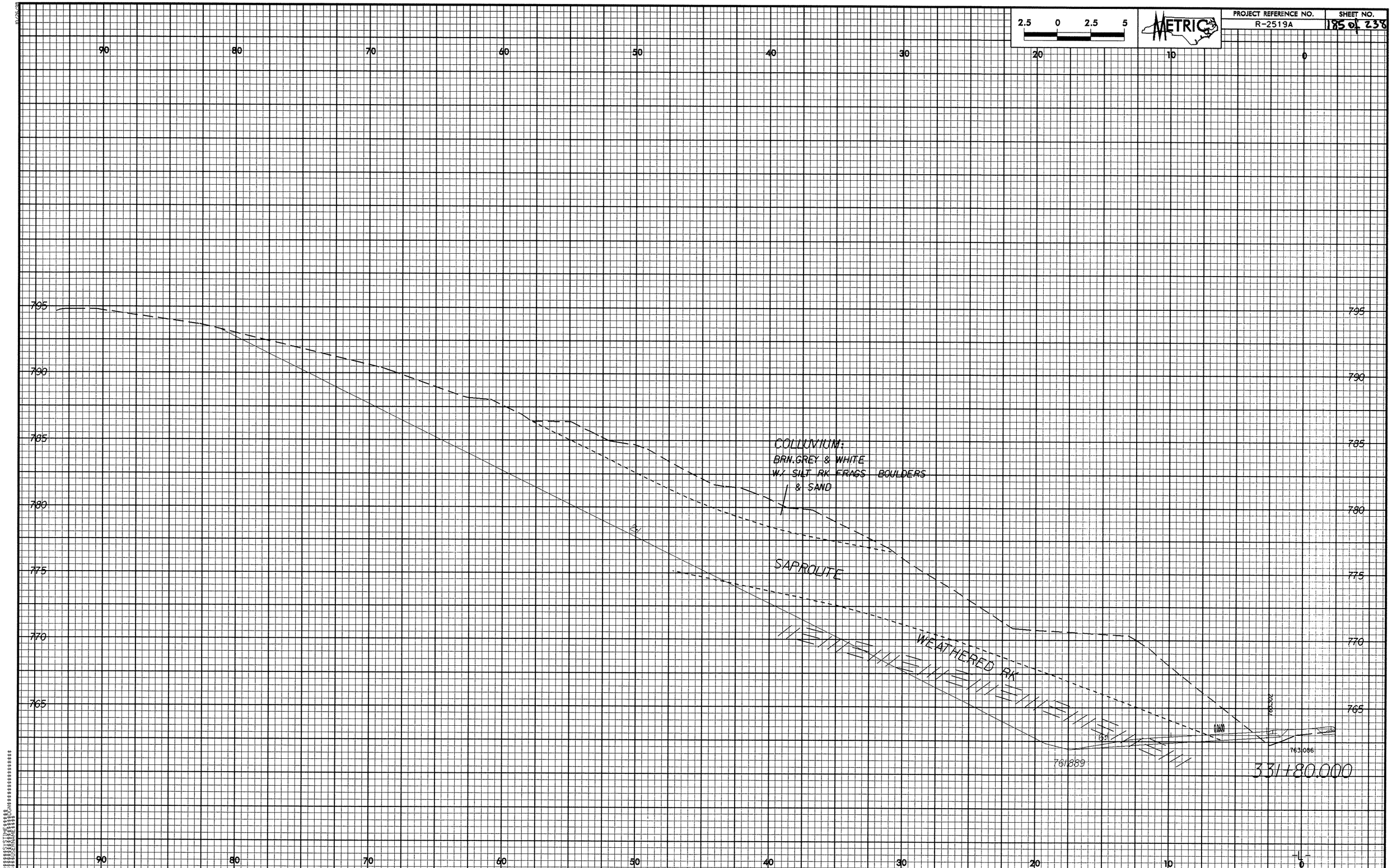
762.301

331+60.000

-L-

90 80 70 60 50 40 30 20 10 0

CROSS SECTIONS ON THIS SHEET



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
185 of 238
90
80
70
60
50
40
30
20
10
0
795
790
785
780
775
770
765
COLLUVIUM:
BRN.GREY & WHITE
W/ SILT RK FRAGS BOULDERS
& SAND
SAPROLITE
WEATHERED RK
761.889
763.086
331+80.000

2.5 0 2.5 5

METRIC

90 80 70 60 50 40 30 20 10 0

790 785 780 775 770 765

SAPROLITE

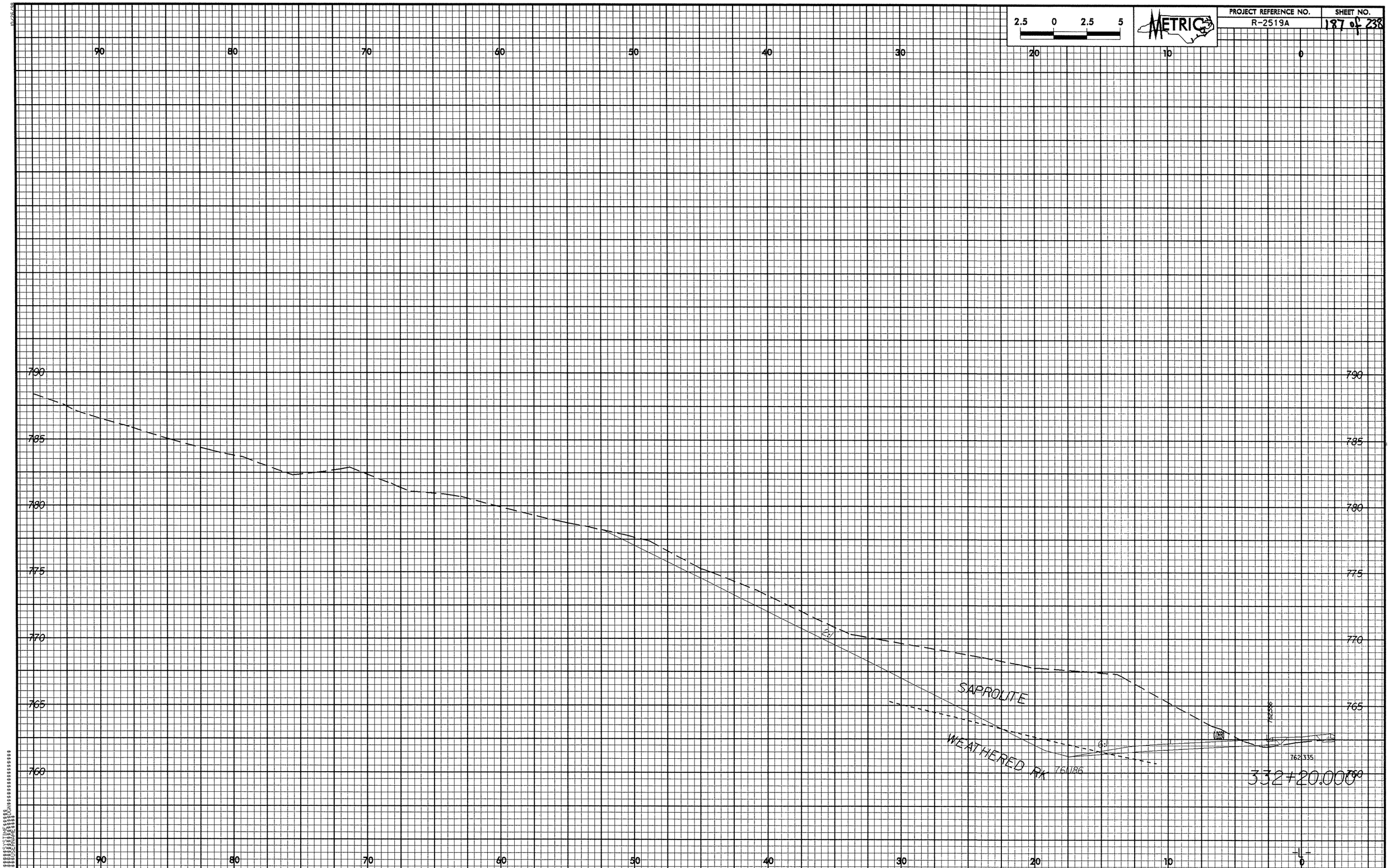
WEATHERED RK

763.205

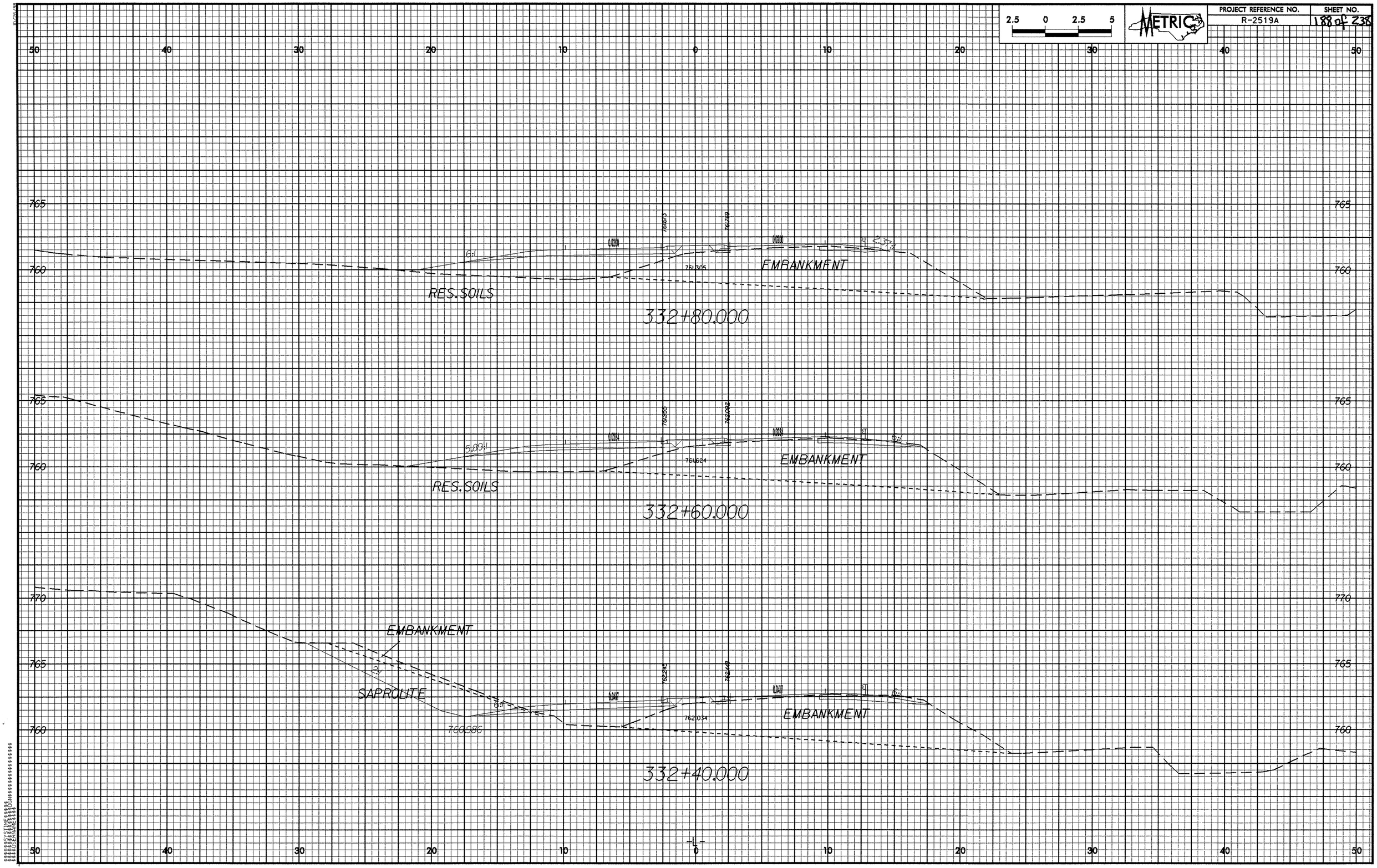
761.499

332+00.000

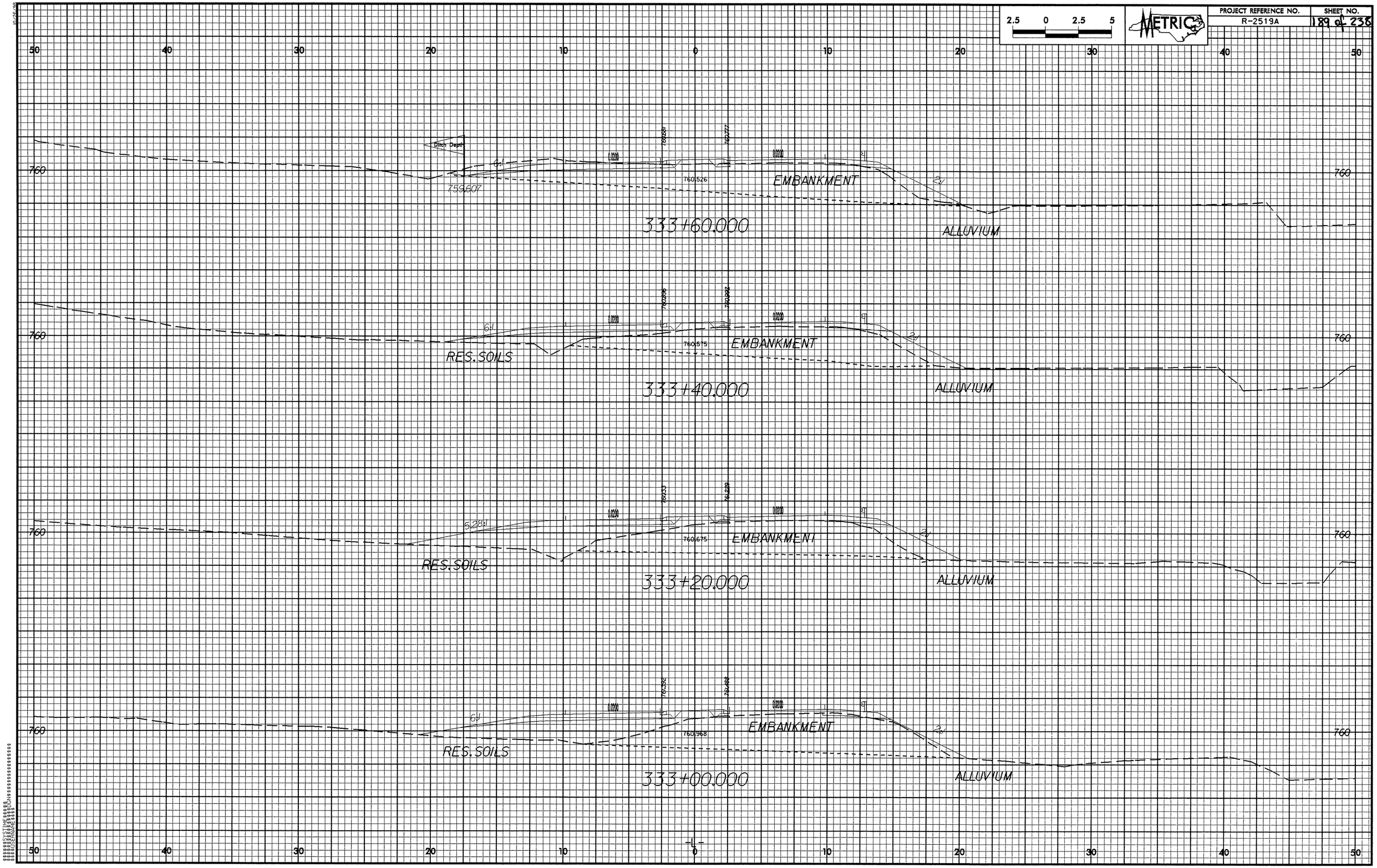
90 80 70 60 50 40 30 20 10 0



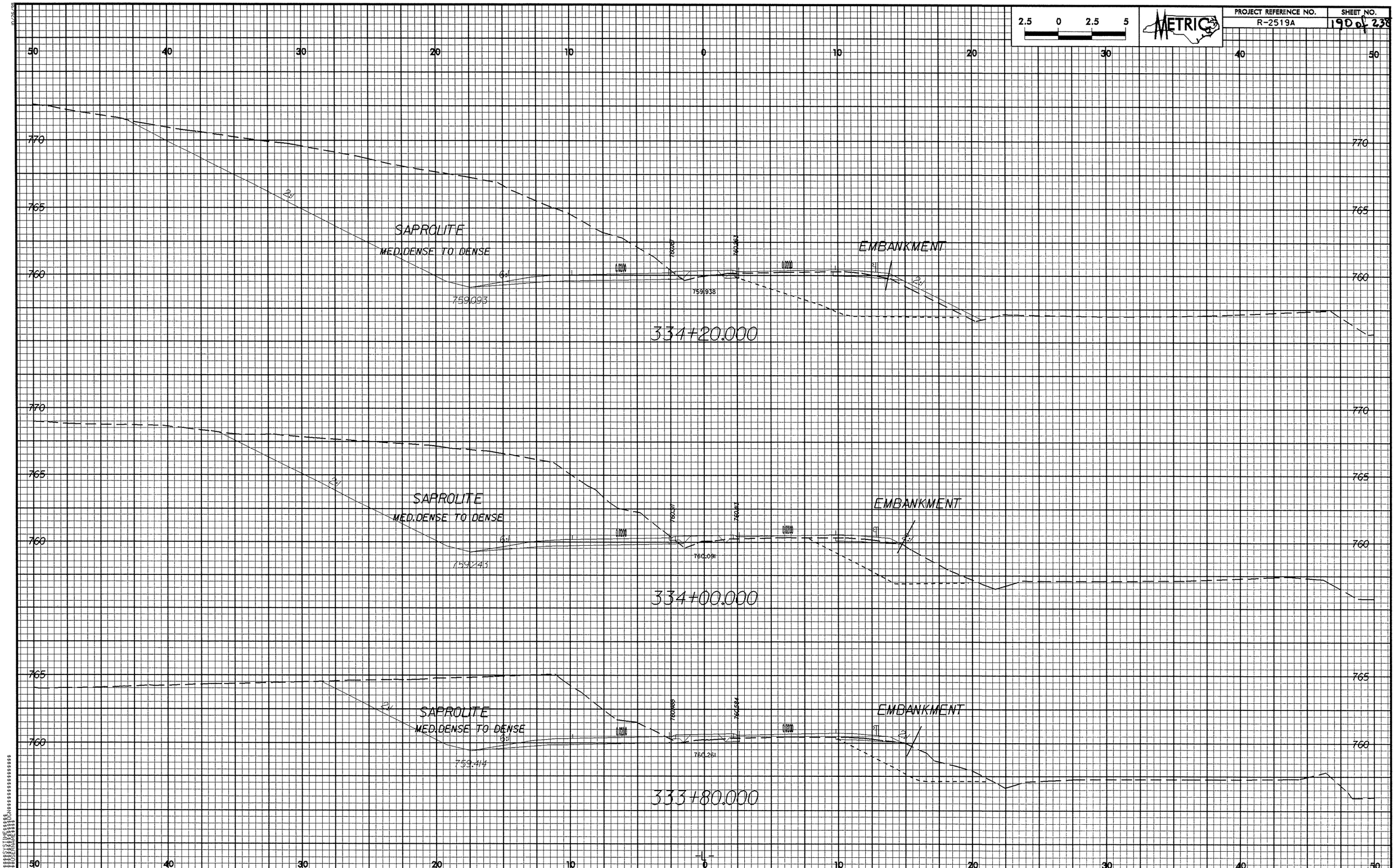
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
187 of 238
90
80
70
60
50
40
30
20
10
0
790
785
780
775
770
765
760
2:1
SAPROLITE
WEATHERED RK
761186
762335
332+20.000



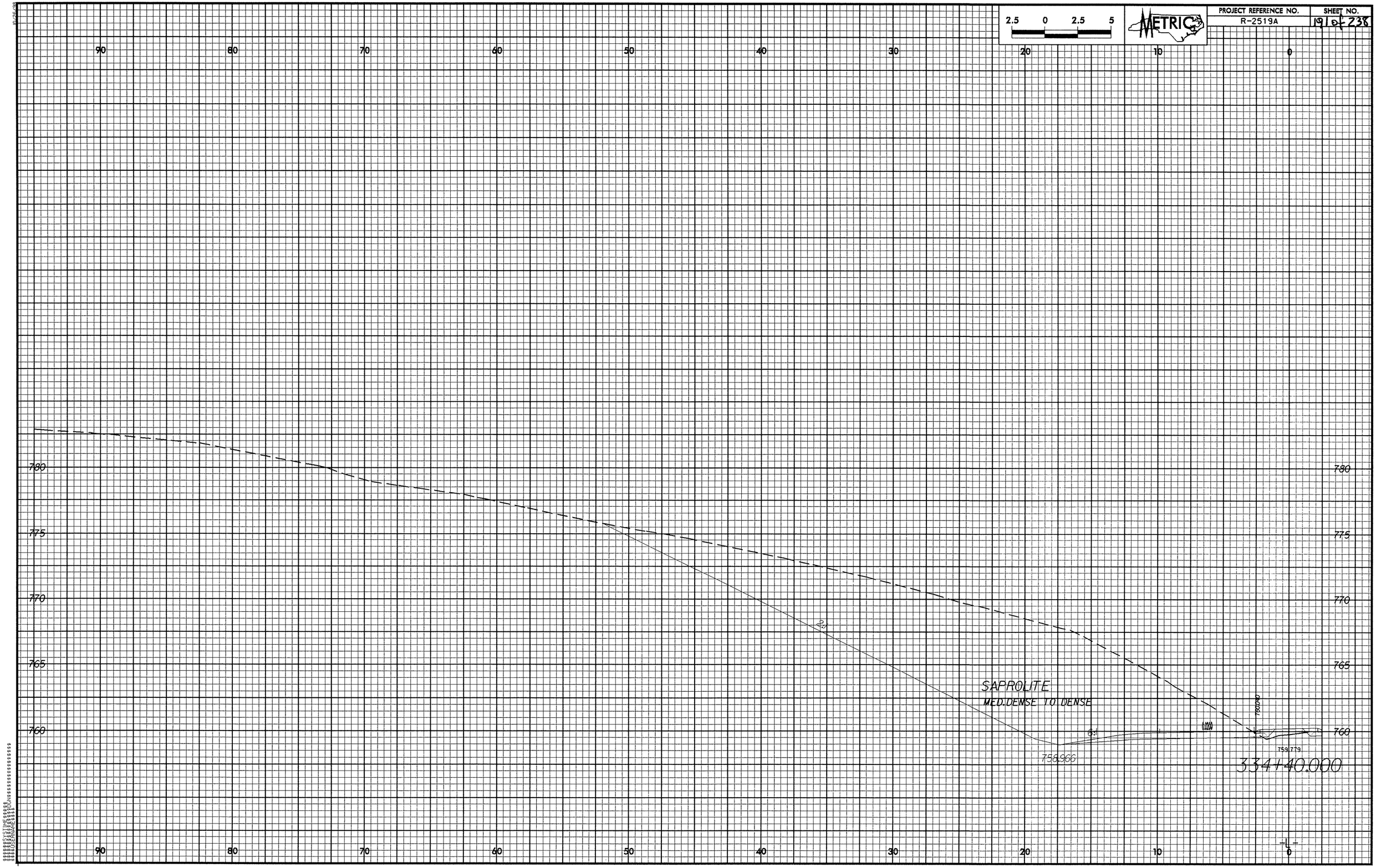
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
188 of 238
50 40 30 20 10 0 10 20 30 40 50
765
760
6:1
2.37:1
761.305
EMBANKMENT
RES. SOILS
332+80.000
5.89:1
761.624
EMBANKMENT
RES. SOILS
332+60.000
770
EMBANKMENT
2:1
SAPROLITE
760.986
762.034
EMBANKMENT
332+40.000
-L-



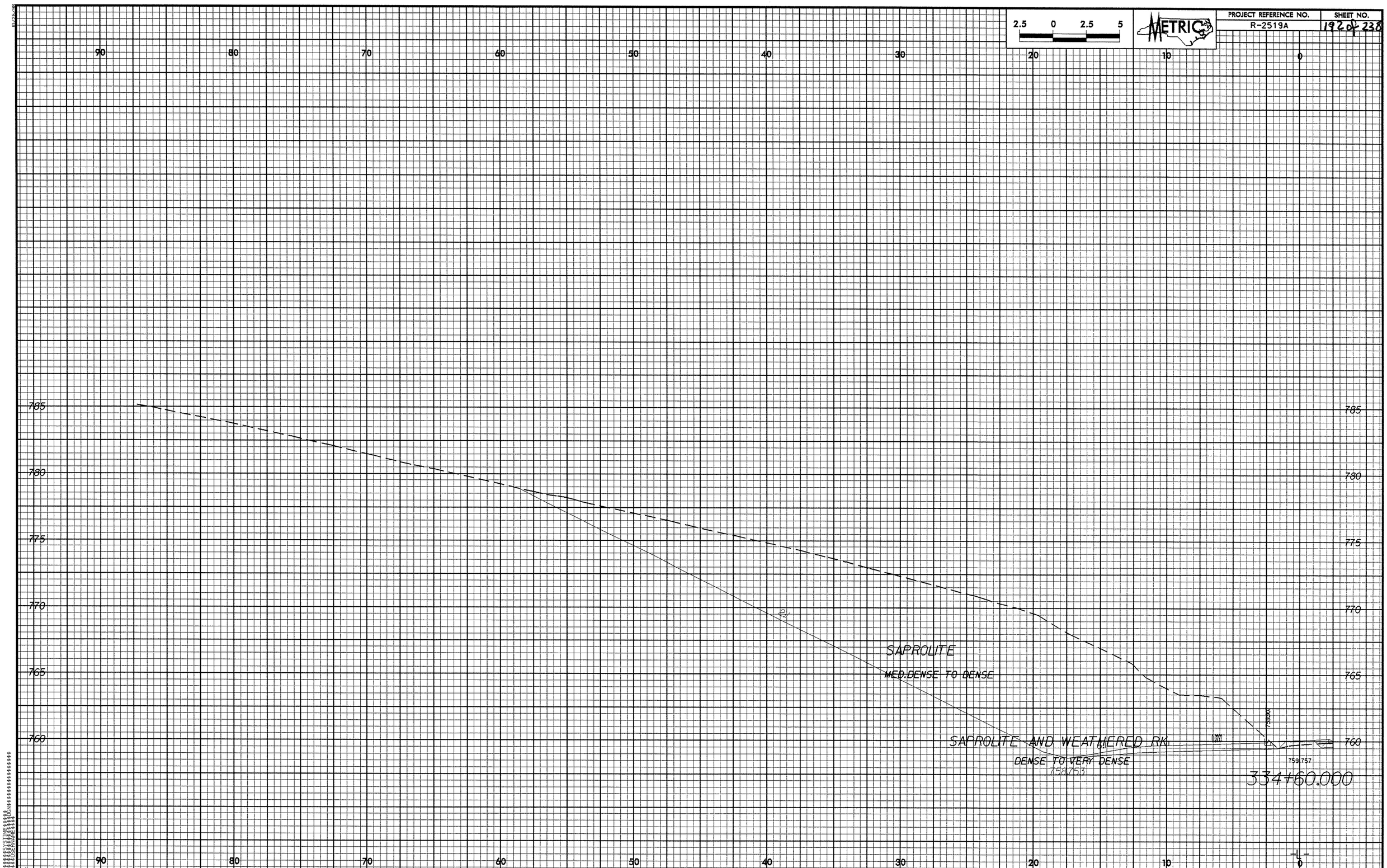
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
189 of 238
50 40 30 20 10 0 10 20 30 40 50
760
Ditch Depth
6:1
2:1
759.607
760.526
EMBANKMENT
ALLUVIUM
333+60.000
760.575
RES. SOILS
333+40.000
5.28:1
760.675
333+20.000
760.968
333+00.000
-L-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
190 of 238
SAPROLITE
MED.DENSE TO DENSE
EMBANKMENT
759.093
759.938
334+20.000
SAPROLITE
MED.DENSE TO DENSE
EMBANKMENT
759.243
760.091
334+00.000
SAPROLITE
MED.DENSE TO DENSE
EMBANKMENT
759.414
760.261
333+80.000



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
191 of 238
90
80
70
60
50
40
30
20
10
0
780
775
770
765
760
2:1
SAPROLITE
MED. DENSE TO DENSE
6:1
758.966
759.779
334+40.000
-L-



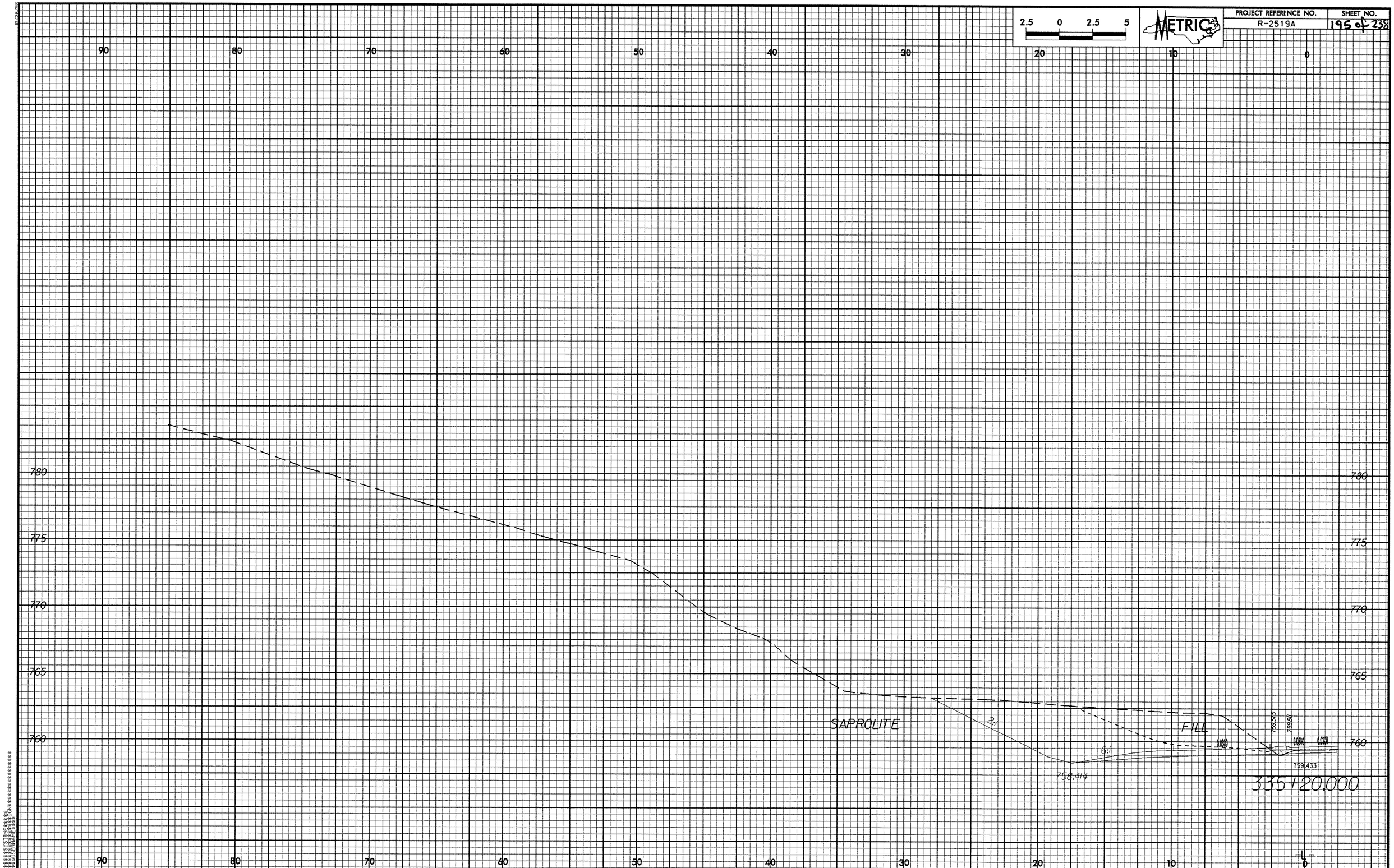
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
192 of 238
90
80
70
60
50
40
30
20
10
0
785
780
775
770
765
760
2:1
SAPROLITE
MED.DENSE TO DENSE
SAPROLITE AND WEATHERED RK
DENSE TO VERY DENSE
758.753
759.757
334+60.000
-L-

METRIC

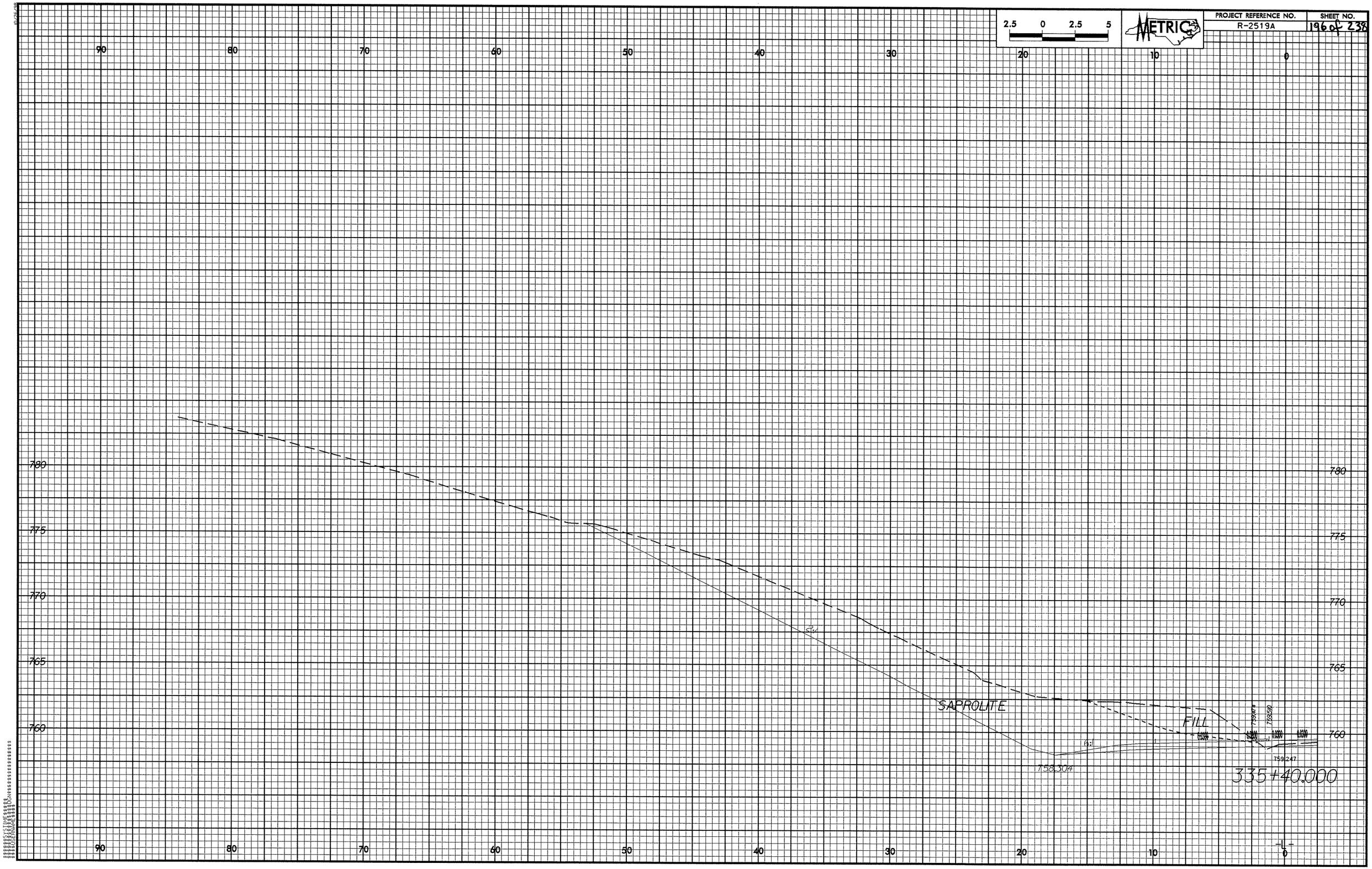
2.5 0 2.5 5
90 80 70 60 50 40 30 20 10 0
785
780
775
770
765
760
2:1
SAPROLITE
MED.DENSE TO DENSE
SAPROLITE AND WEATHERED RK
DENSE TO VERY DENSE
6:1
758.634
759.927
759.841
334+80.000
-L-

10/26/98

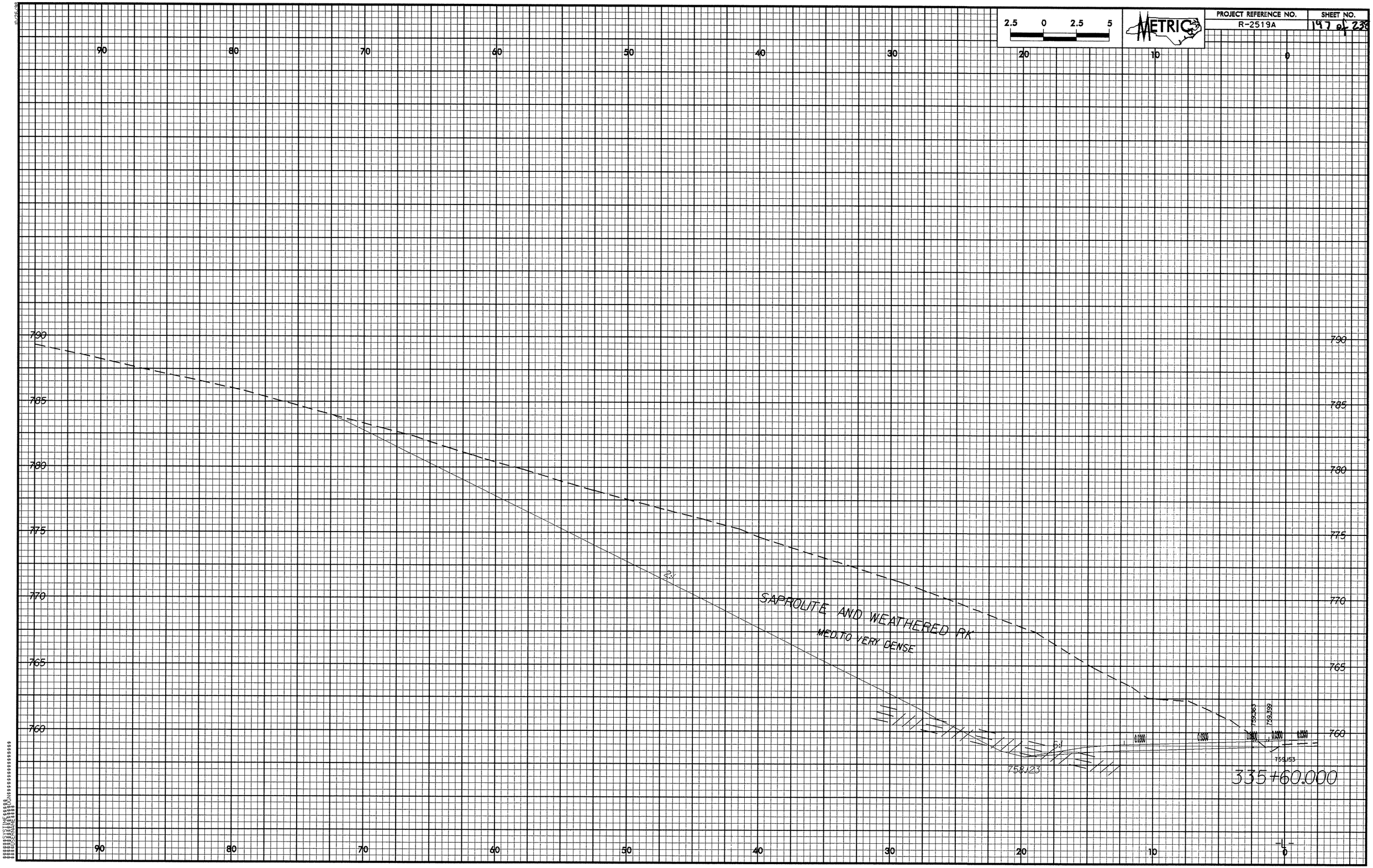
$$$$SYSTIME$$$$
$$$$$$$DGN$$$$$$$$$$$$$$$$$$$$$$$$
$$$$USERNAME$$$$



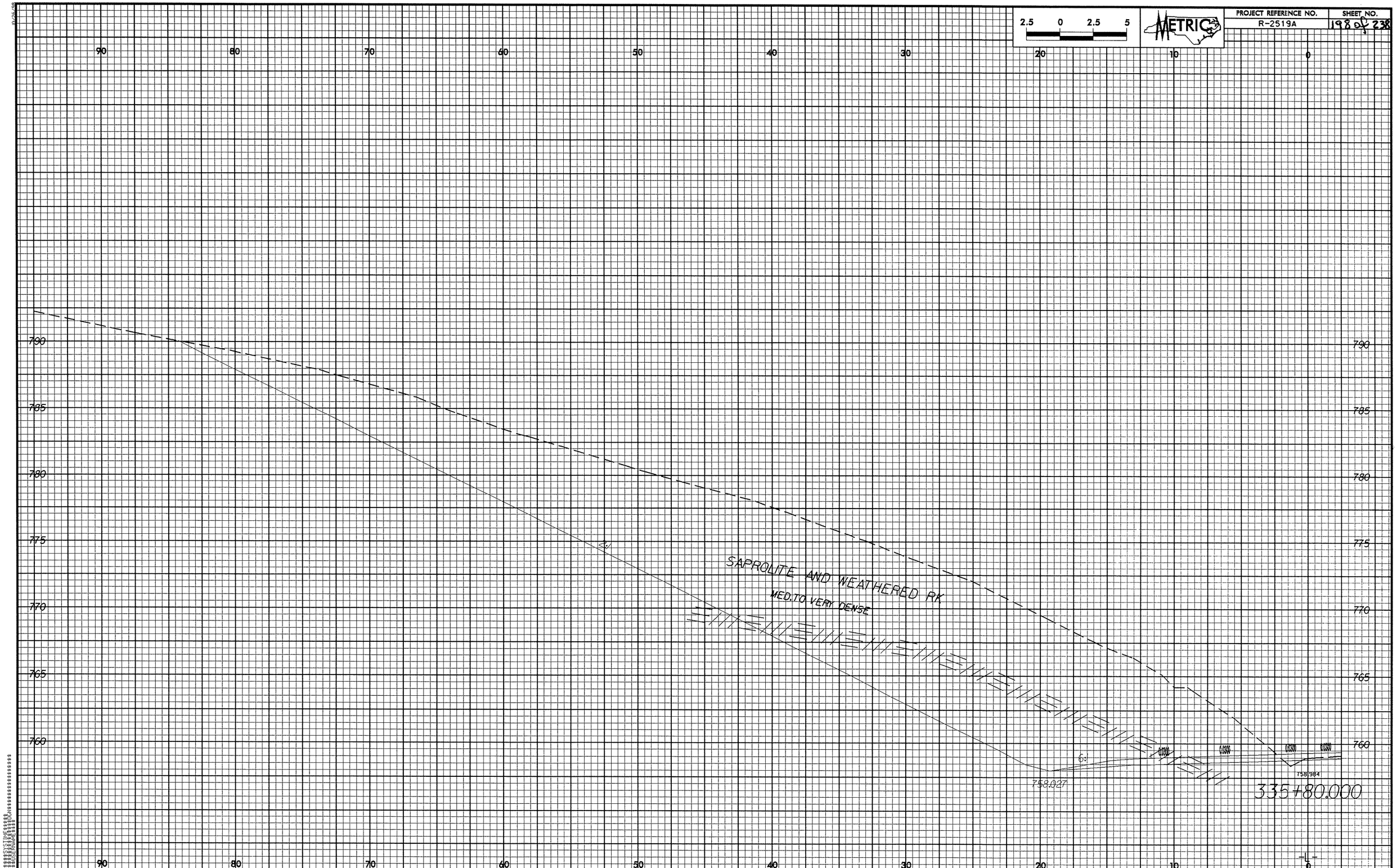
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
195 of 238
90
80
70
60
50
40
30
20
10
0
780
775
770
765
760
SAPROLITE
FILL
2:1
6:1
758.414
759.433
335+20.000
-L-



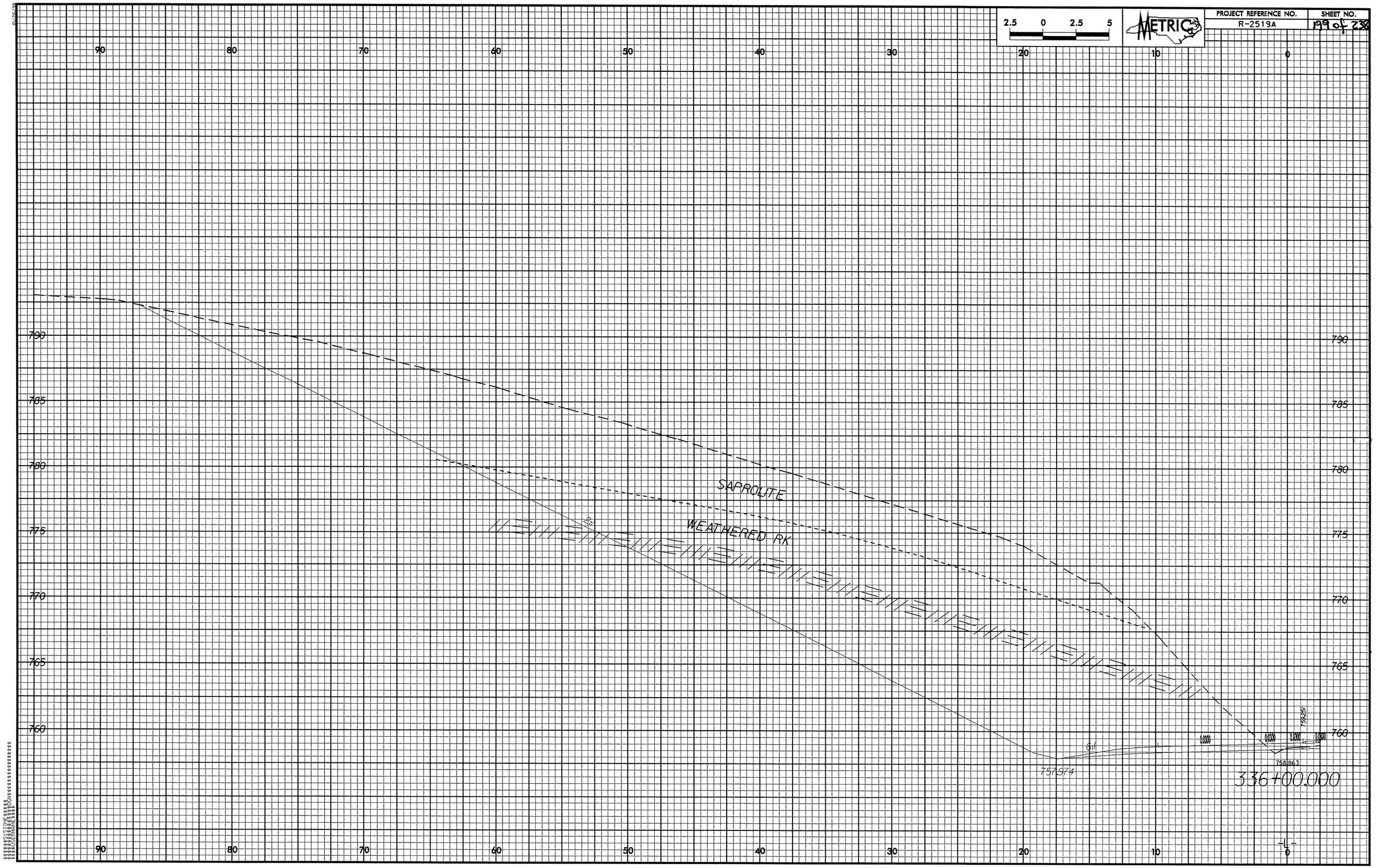
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
196 of 238
90
80
70
60
50
40
30
20
10
0
780
775
770
765
760
SAPROLITE
FILL
758.304
759.247
335+40.000



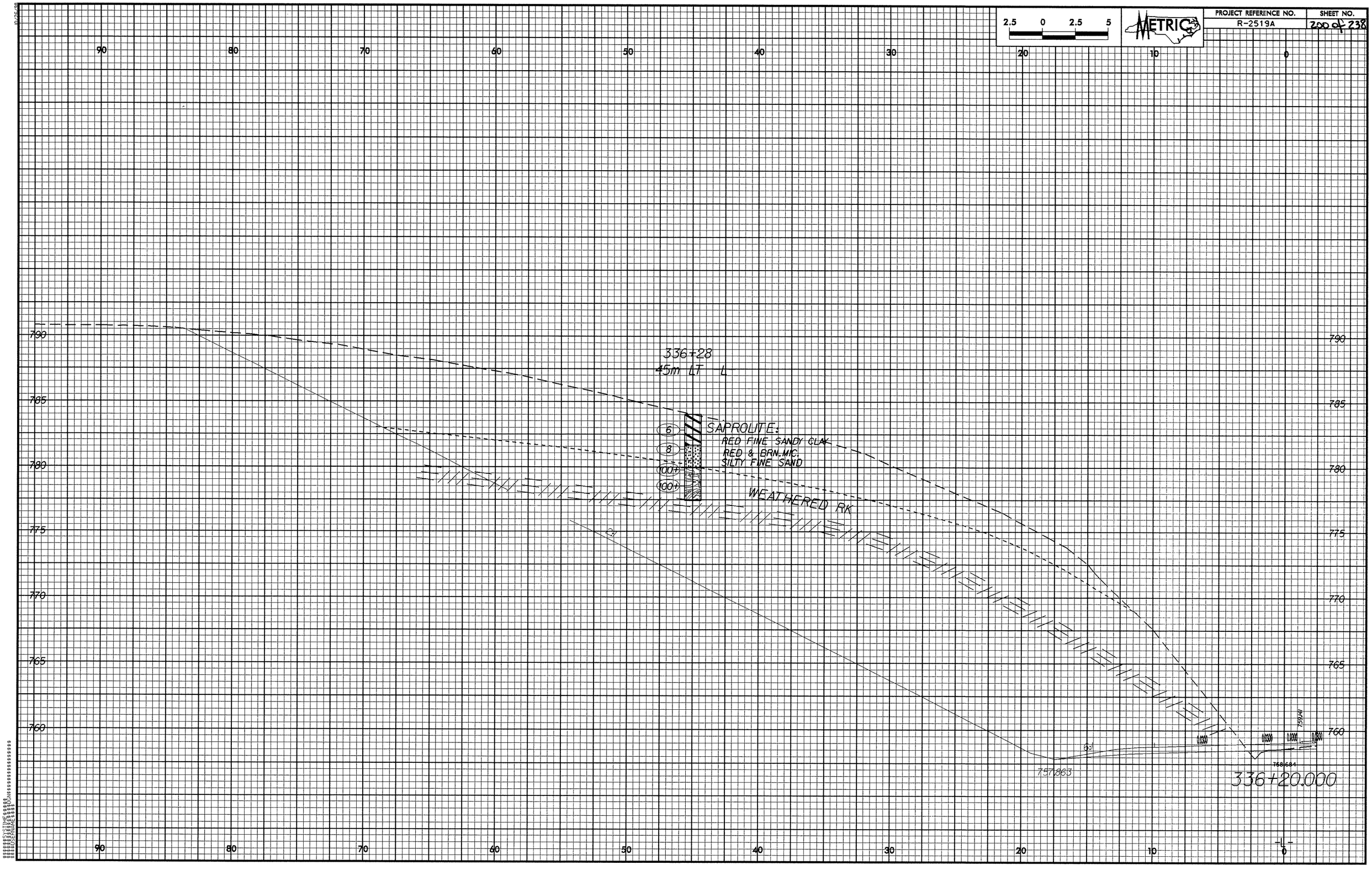
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
197 of 238
90
80
70
60
50
40
30
20
10
0
790
785
780
775
770
765
760
2:1
SAPROLITE AND WEATHERED RK
MED. TO VERY DENSE
6:1
758.123
759.153
335+60.000
-L-



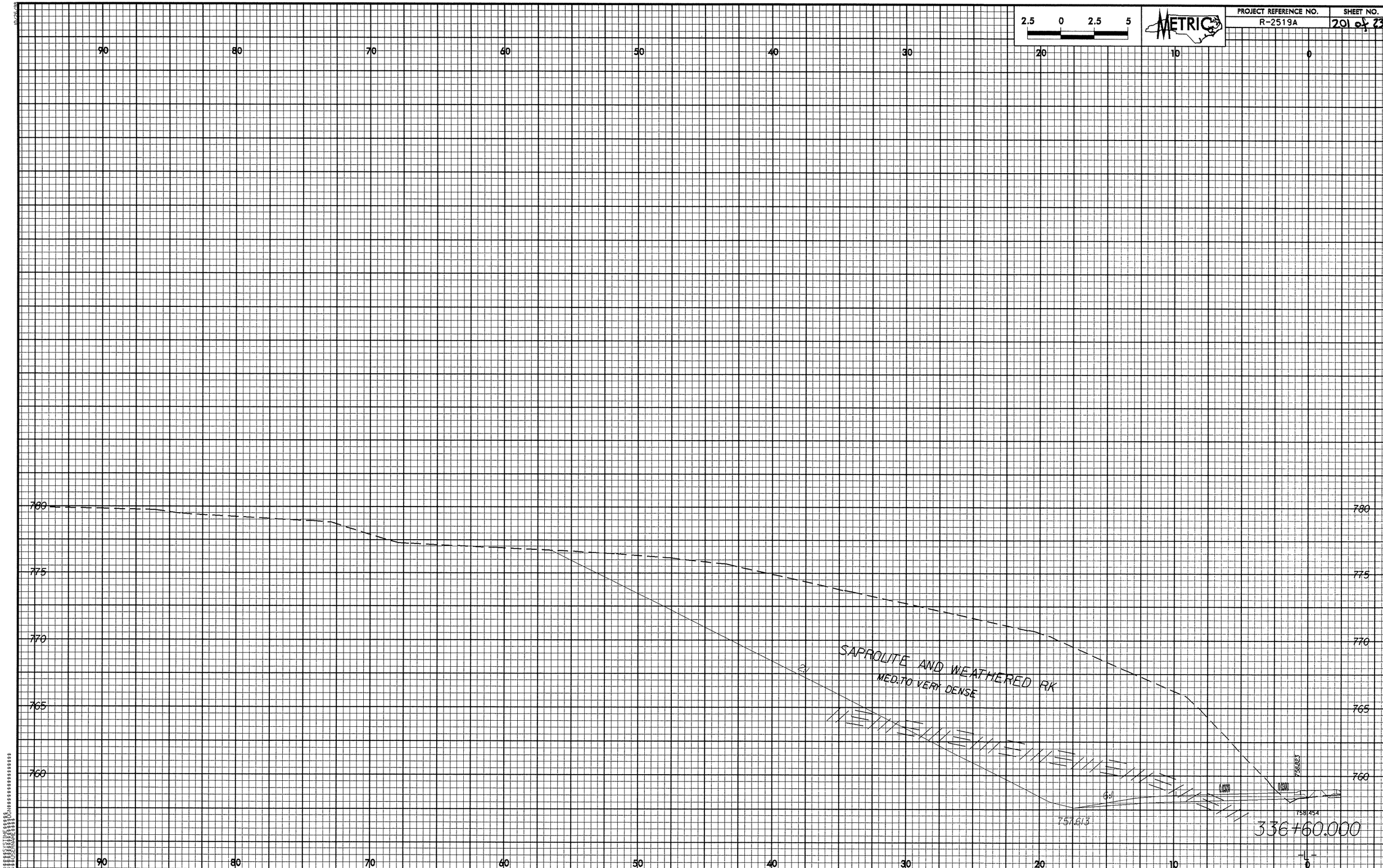
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
198 of 238
90
80
70
60
50
40
30
20
10
0
790
785
780
775
770
765
760
SAPROLITE AND WEATHERED RK
MED. TO VERY DENSE
2:1
6:1
758.027
758.984
335+80.000



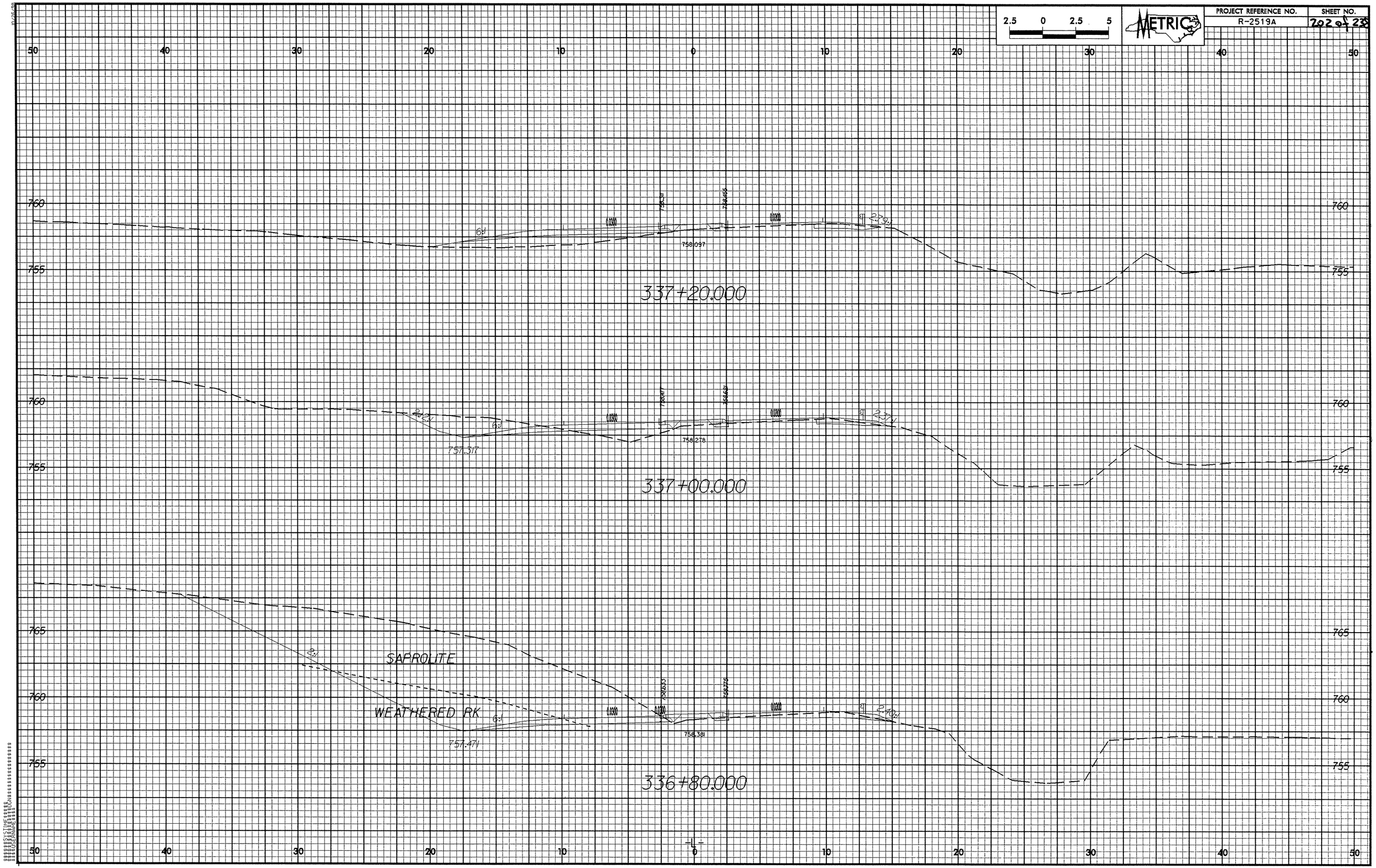
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
199 of 238
90
80
70
60
50
40
30
20
10
0
790
785
780
775
770
765
760
SAPROLITE
WEATHERED RK
2:1
6:1
757.974
758.863
759.251
336+00.000
-L-



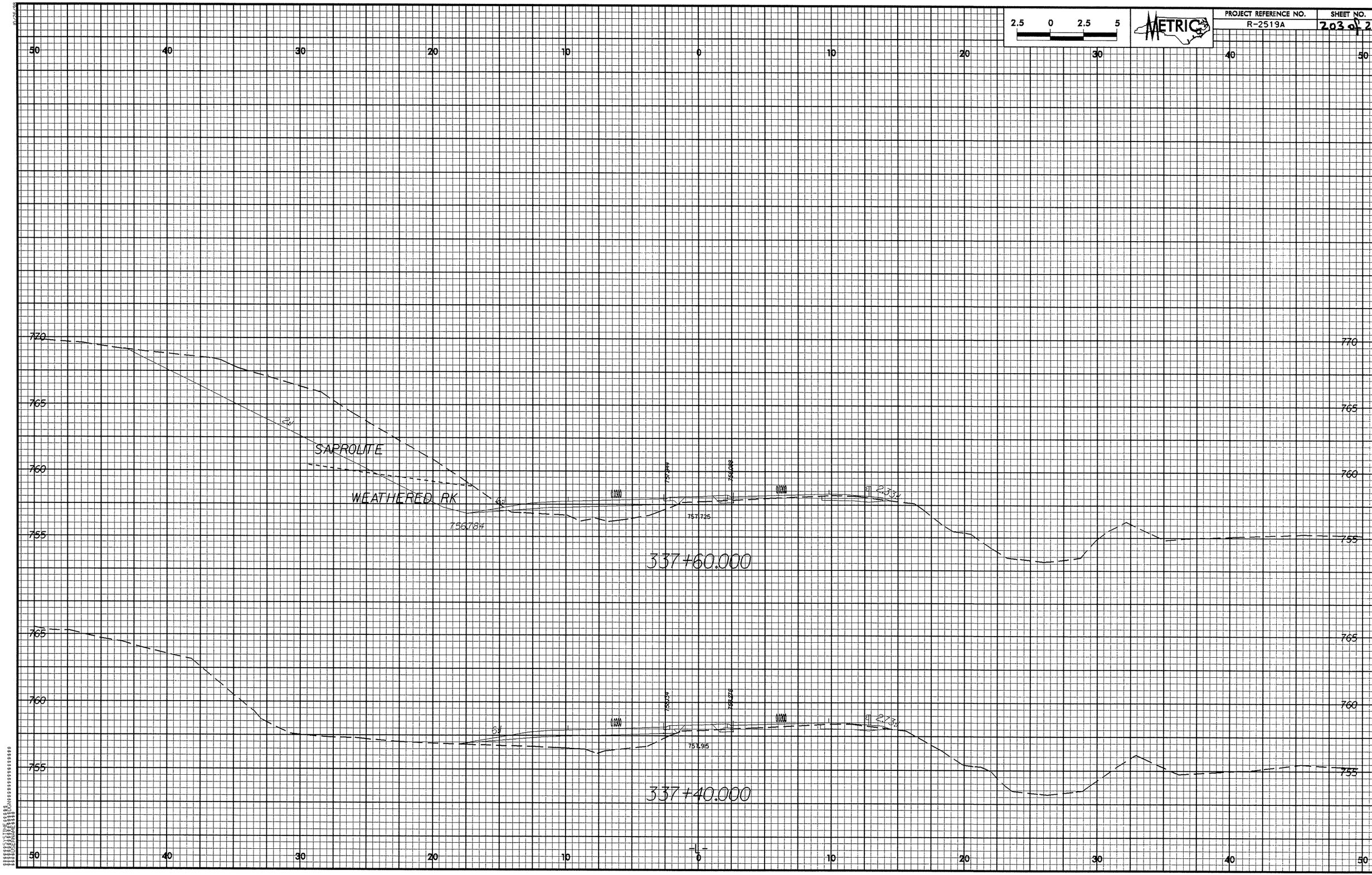
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
200 of 238
90
80
70
60
50
40
30
20
10
0
790
785
780
775
770
765
760
336+28
45m LT L
6
8
100+
100+
SAPROLITE:
RED FINE SANDY CLAY
RED & BRN. MIC.
SILTY FINE SAND
WEATHERED RK
2:1
6:1
757.863
759.41
768.684
336+20.000
-L-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
201 of 238
90
80
70
60
50
40
30
20
10
0
780
775
770
765
760
SAPROLITE AND WEATHERED RK
MED. TO VERY DENSE
2:1
6:1
757.613
758.823
758.454
336+60.000
-L-



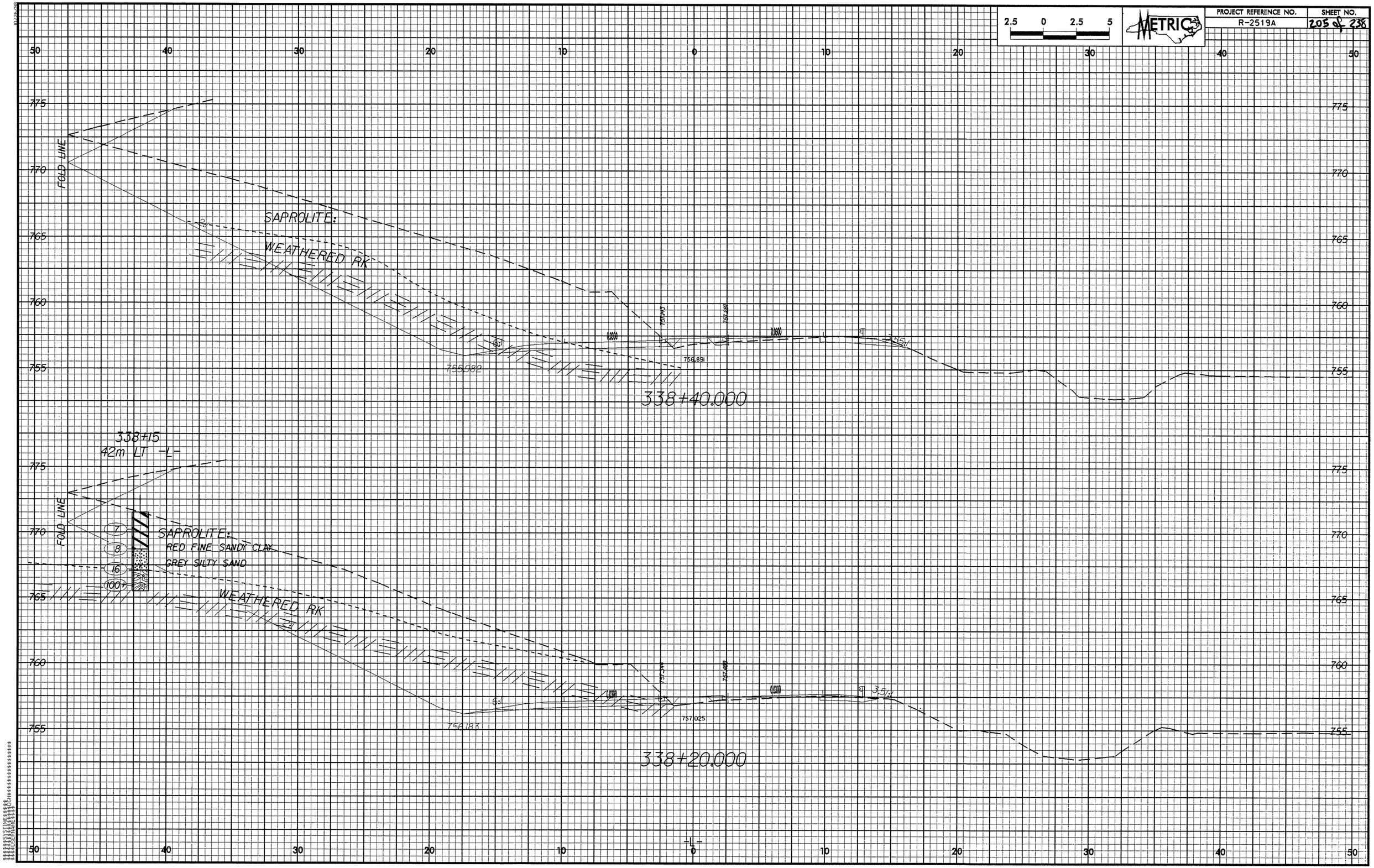
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
202 of 238
337+20.000
758.097
337+00.000
758.278
757.317
336+80.000
758.381
757.471
SAPROLITE
WEATHERED RK



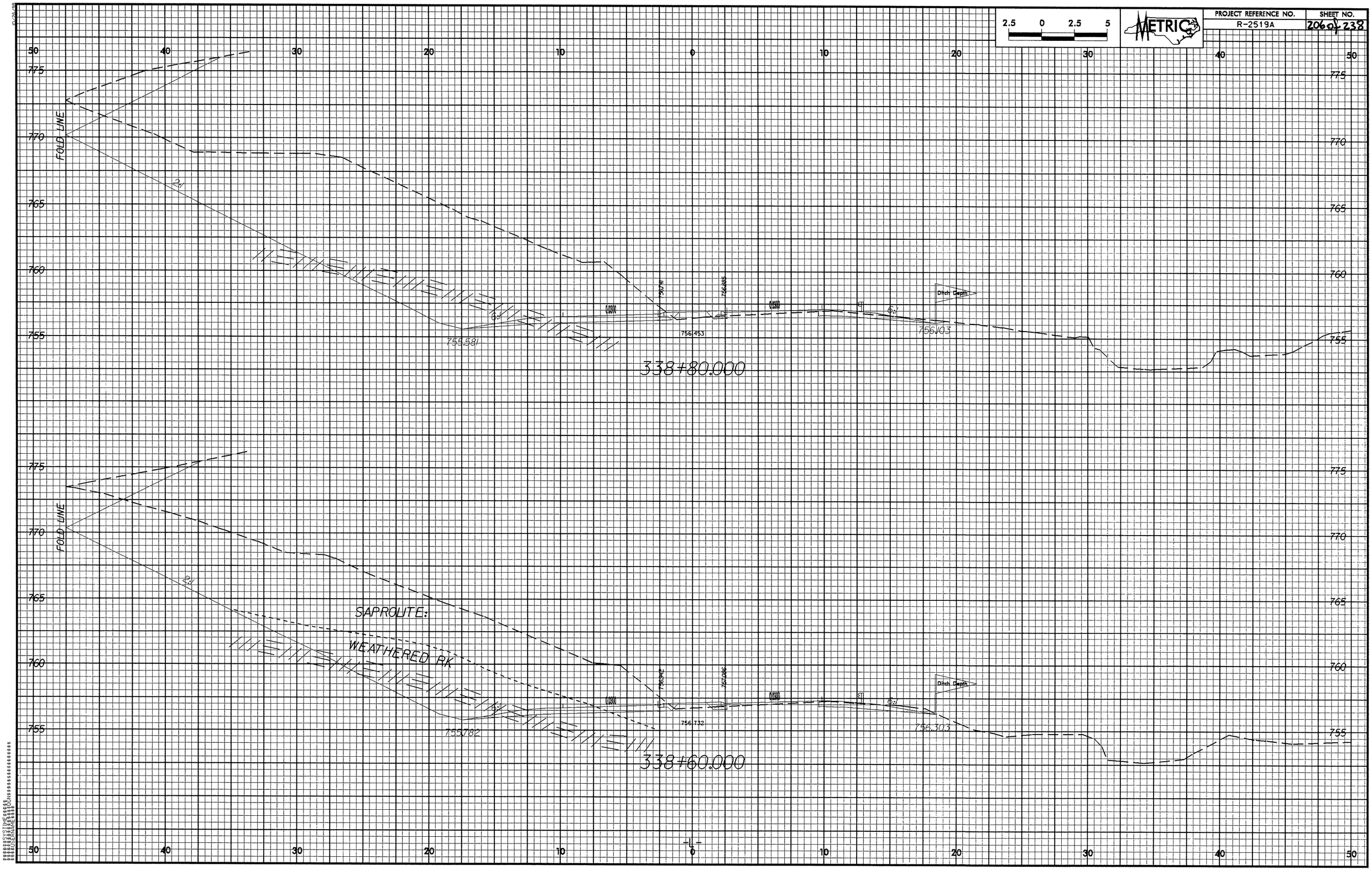
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
203 of 238
50 40 30 20 10 0 10 20 30 40 50
770
765
760
755
SAPROLITE
WEATHERED RK
756.784
757.725
2.33:1
337+60.000
757.915
2.73:1
337+40.000
-L-

PROJECT REFERENCE NO. R-2519A

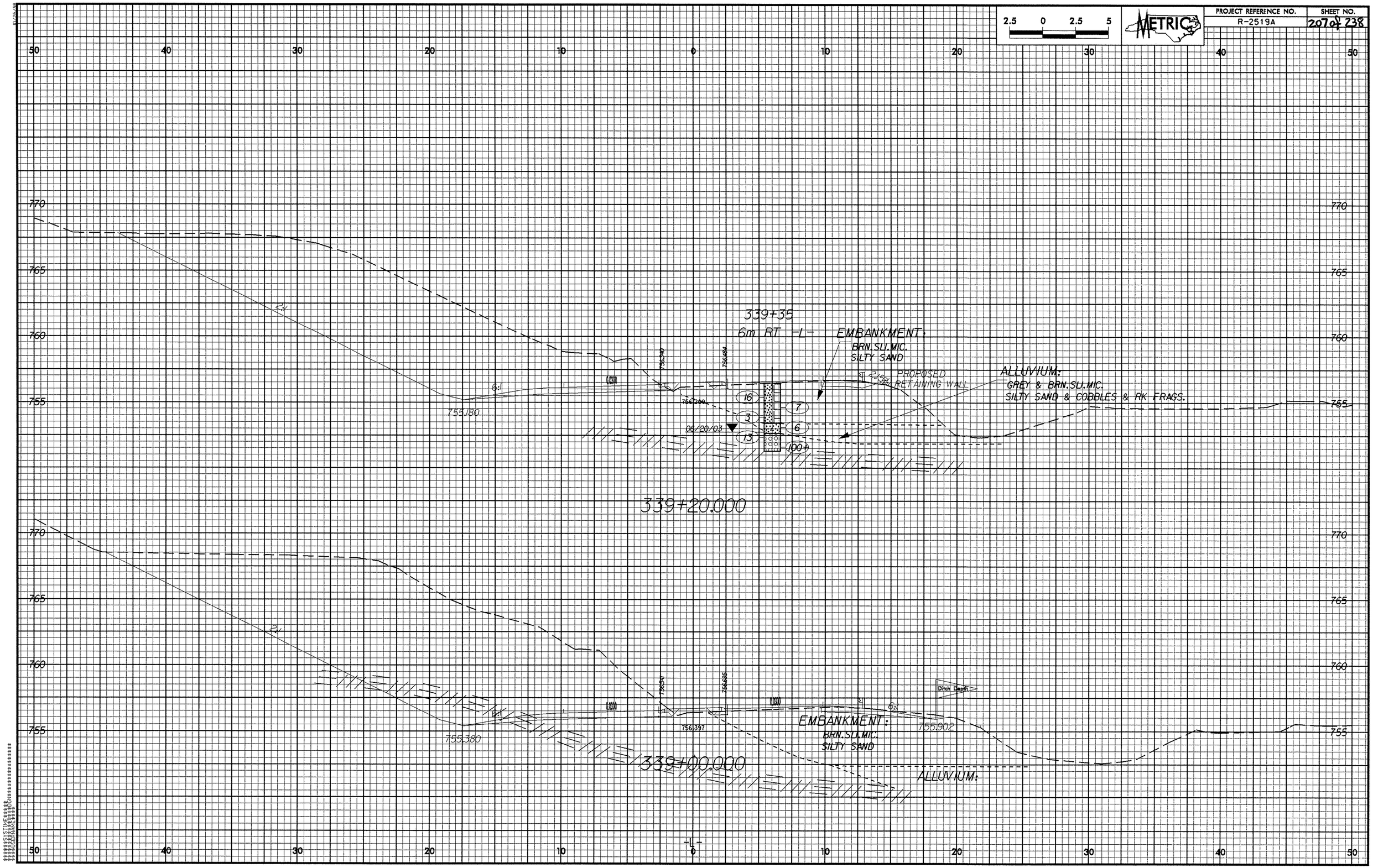
SHEET NO. 204 of 238



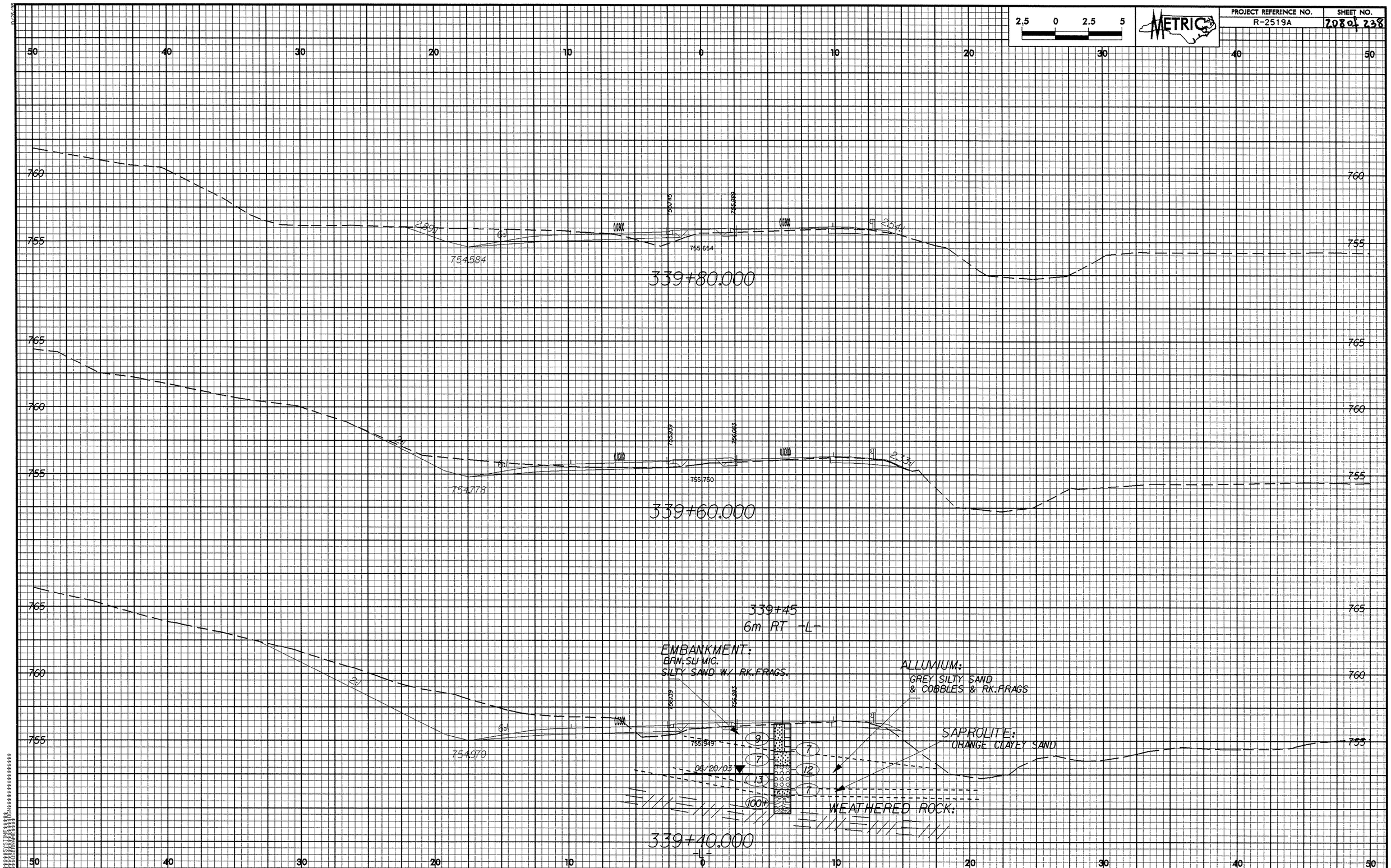
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
205 of 238
FOLD LINE
SAPROLITE:
WEATHERED RK
755.982
756.891
338+40.000
338+15
42m LT -L-
FOLD LINE
SAPROLITE:
RED FINE SANDY CLAY
GREY SILTY SAND
WEATHERED RK
756.183
757.025
338+20.000
-L-



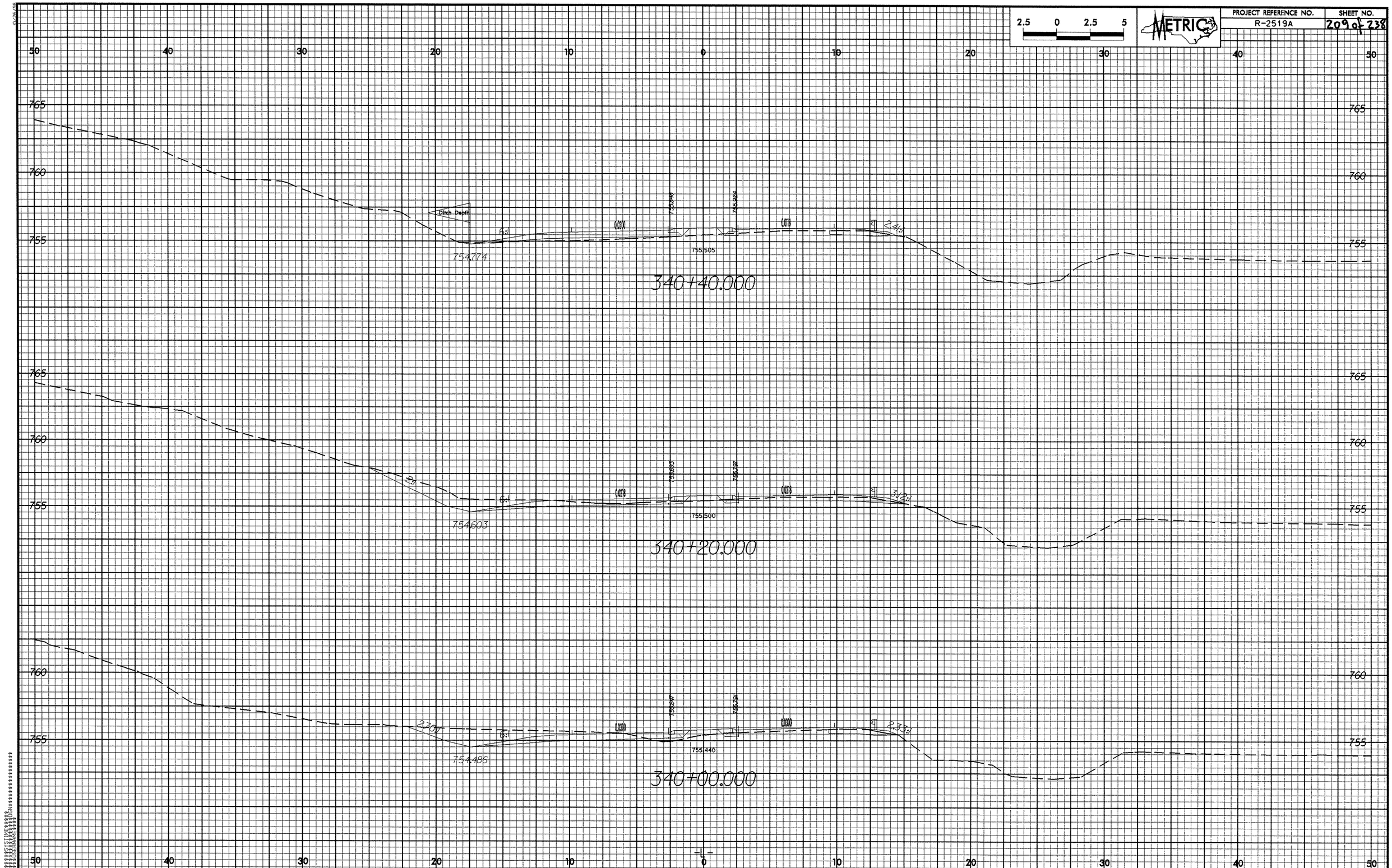
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
206 of 238
FOLD LINE
2:1
6:1
755.581
756.453
756.103
Ditch Depth
338+80.000
SAPROLITE:
WEATHERED RK
755.782
756.732
756.303
338+60.000



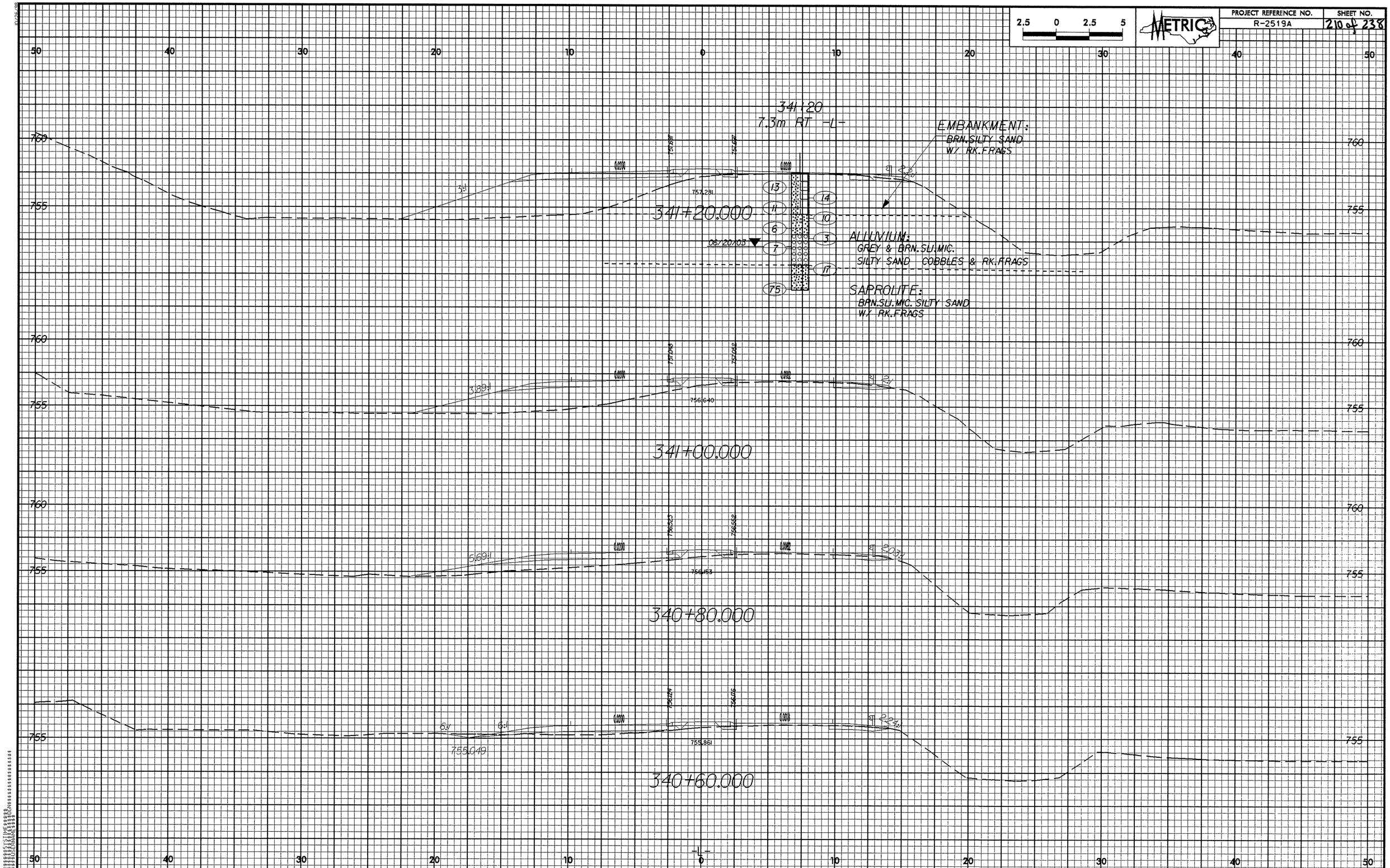
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
207 of 238
339+35
6m RT -L-
EMBANKMENT:
BRN.SLI.MIC.
SILTY SAND
PROPOSED
RETAINING WALL
ALLUVIUM:
GREY & BRN.SLI.MIC.
SILTY SAND & COBBLES & RK FRAGS.
755.180
06/20/03
339+20.000
Ditch Depth
EMBANKMENT:
BRN.SLI.MIC.
SILTY SAND
755.380
756.397
755.902
339+00.000
ALLUVIUM:
-L-



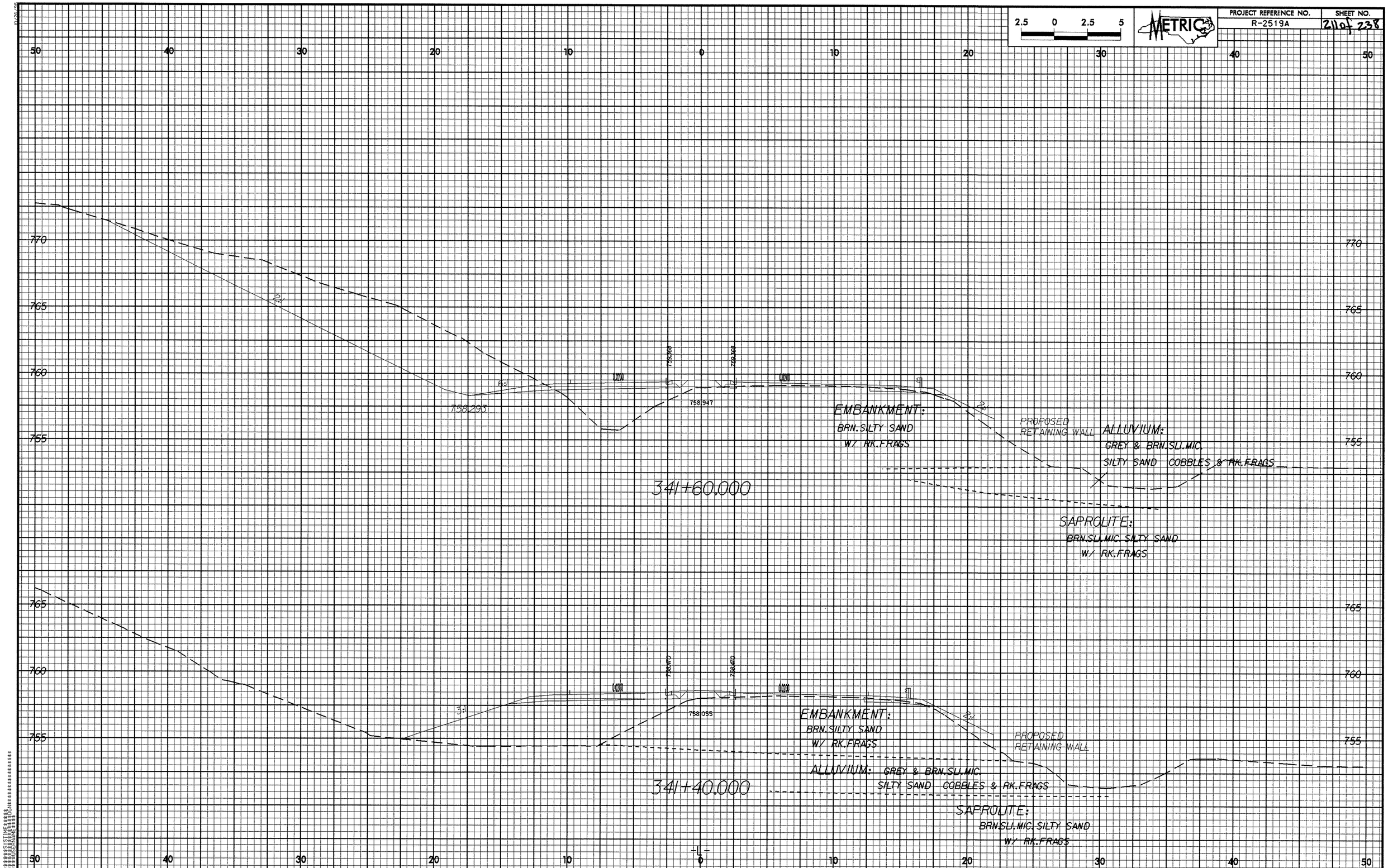
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
208 of 238
339+80.000
754.584
755.654
339+60.000
754.778
755.750
339+45
6m RT -L-
EMBANKMENT:
BRN. SLI MIC.
SILTY SAND W/ RK. FRAGS.
ALLUVIUM:
GREY SILTY SAND
& COBBLES & RK. FRAGS
SAPROLITE:
ORANGE CLAYEY SAND
WEATHERED ROCK:
754.979
755.949
06/20/03
339+40.000
-L-



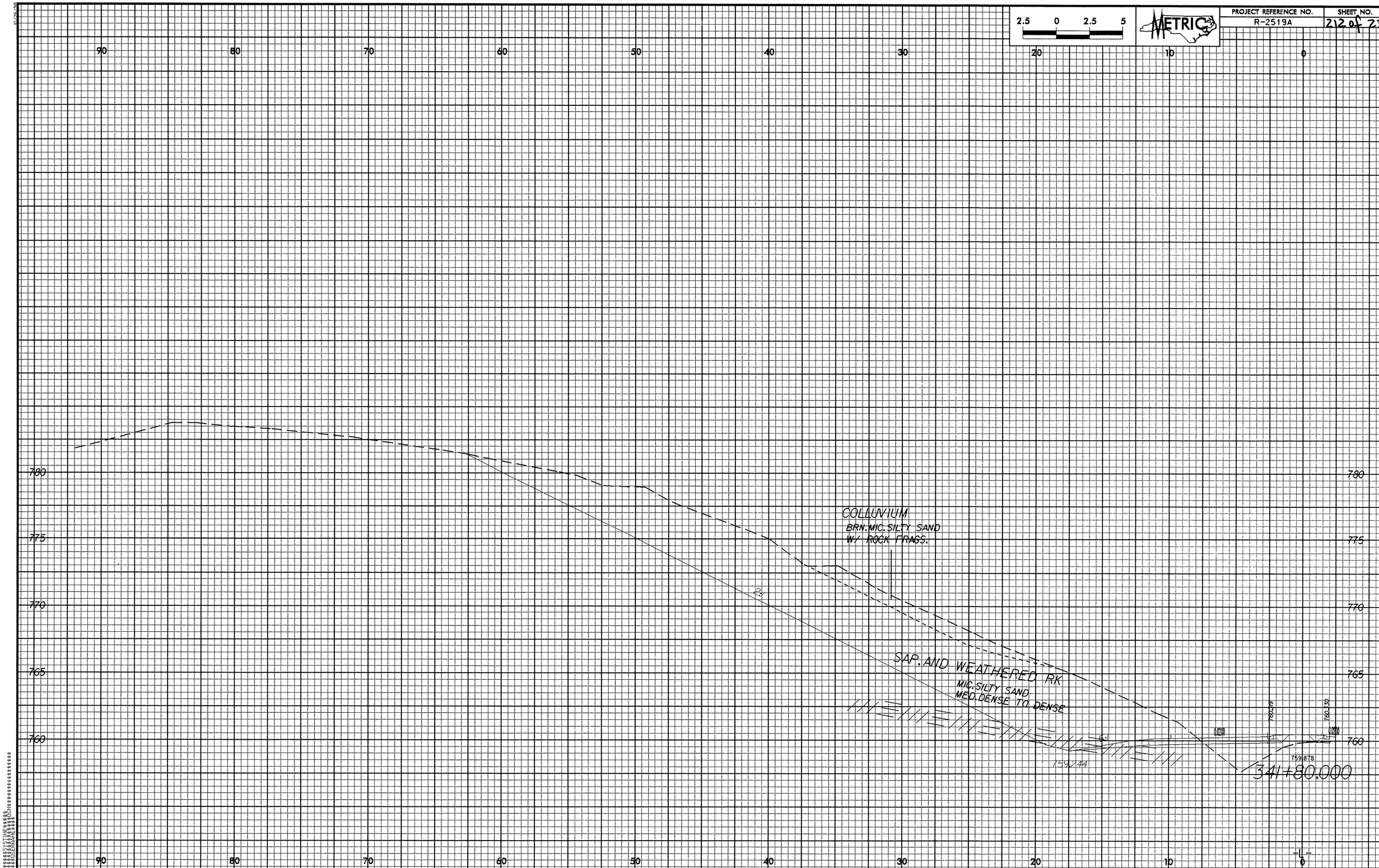
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
209 of 238
50 40 30 20 10 0 10 20 30 40 50
765
760
755
Ditch Depth
6:1
2:1
3:1
2.70:1
2.33:1
754.774
755.505
340+40.000
754.603
755.500
340+20.000
754.486
755.440
340+00.000
-L-



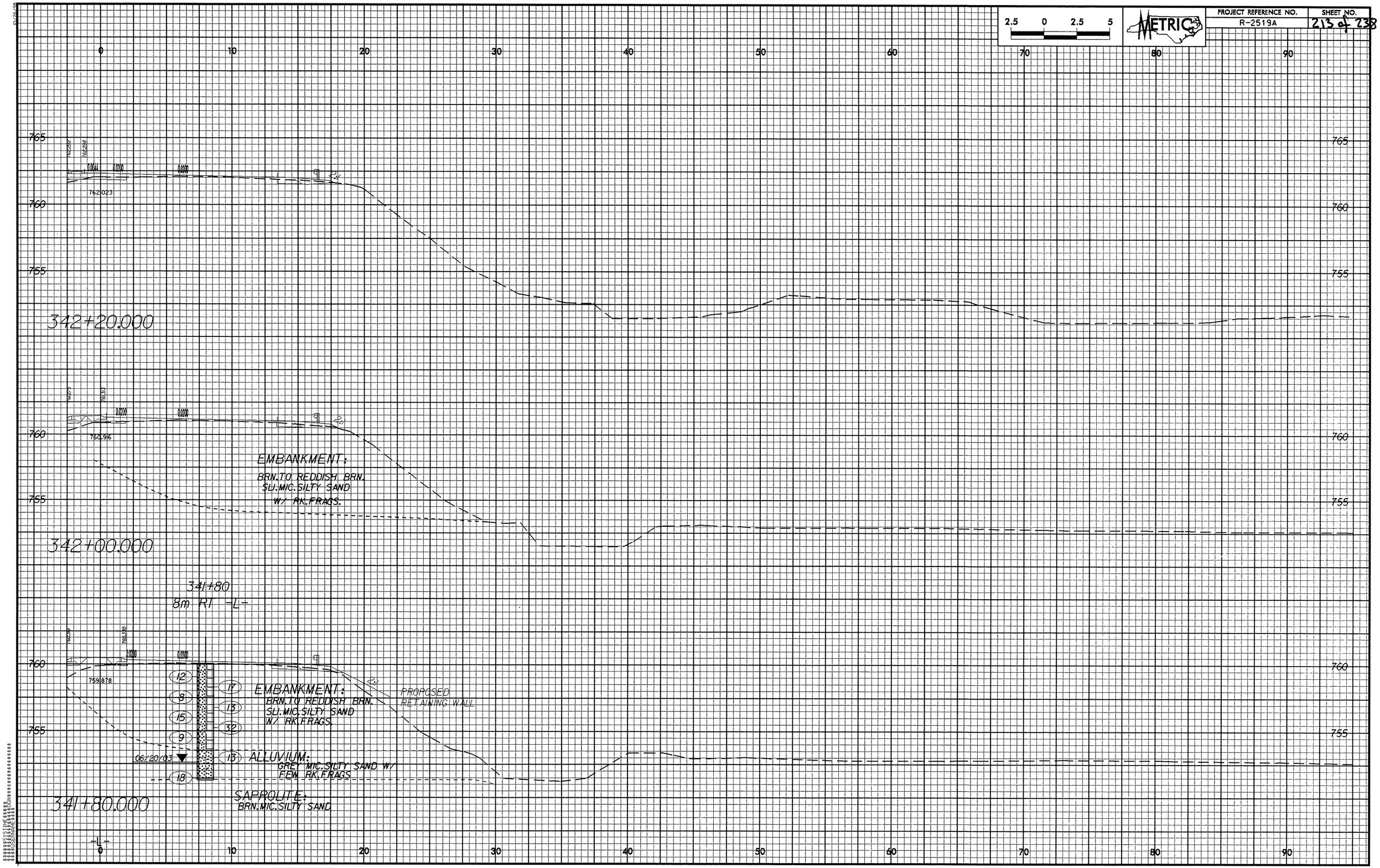
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
210 of 238
341+20
7.3m RT -L-
EMBANKMENT:
BRN.SILTY SAND
W/ RK.FRAGS
341+20.000
ALLUVIUM:
GREY & BRN.SLI.MIC.
SILTY SAND COBBLES & RK.FRAGS
SAPROLITE:
BRN.SLI.MIC. SILTY SAND
W/ RK.FRAGS
06/20/03
757.281
756.640
756.153
755.861
755.049
341+00.000
340+80.000
340+60.000
-L-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
211 of 238
50 40 30 20 10 0 10 20 30 40 50
770
765
760
755
2:1
6:1
758.293
758.947
759.368
759.368
EMBANKMENT:
BRN. SILTY SAND
W/ RK. FRAGS
PROPOSED
RETAINING WALL
ALLUVIUM:
GREY & BRN. SLI. MIC.
SILTY SAND COBBLES & RK. FRAGS
341+60.000
SAPROLITE:
BRN. SLI. MIC. SILTY SAND
W/ RK. FRAGS
3:1
758.055
758.470
758.470
EMBANKMENT:
BRN. SILTY SAND
W/ RK. FRAGS
PROPOSED
RETAINING WALL
ALLUVIUM: GREY & BRN. SLI. MIC.
SILTY SAND COBBLES & RK. FRAGS
341+40.000
SAPROLITE:
BRN. SLI. MIC. SILTY SAND
W/ RK. FRAGS
-L-



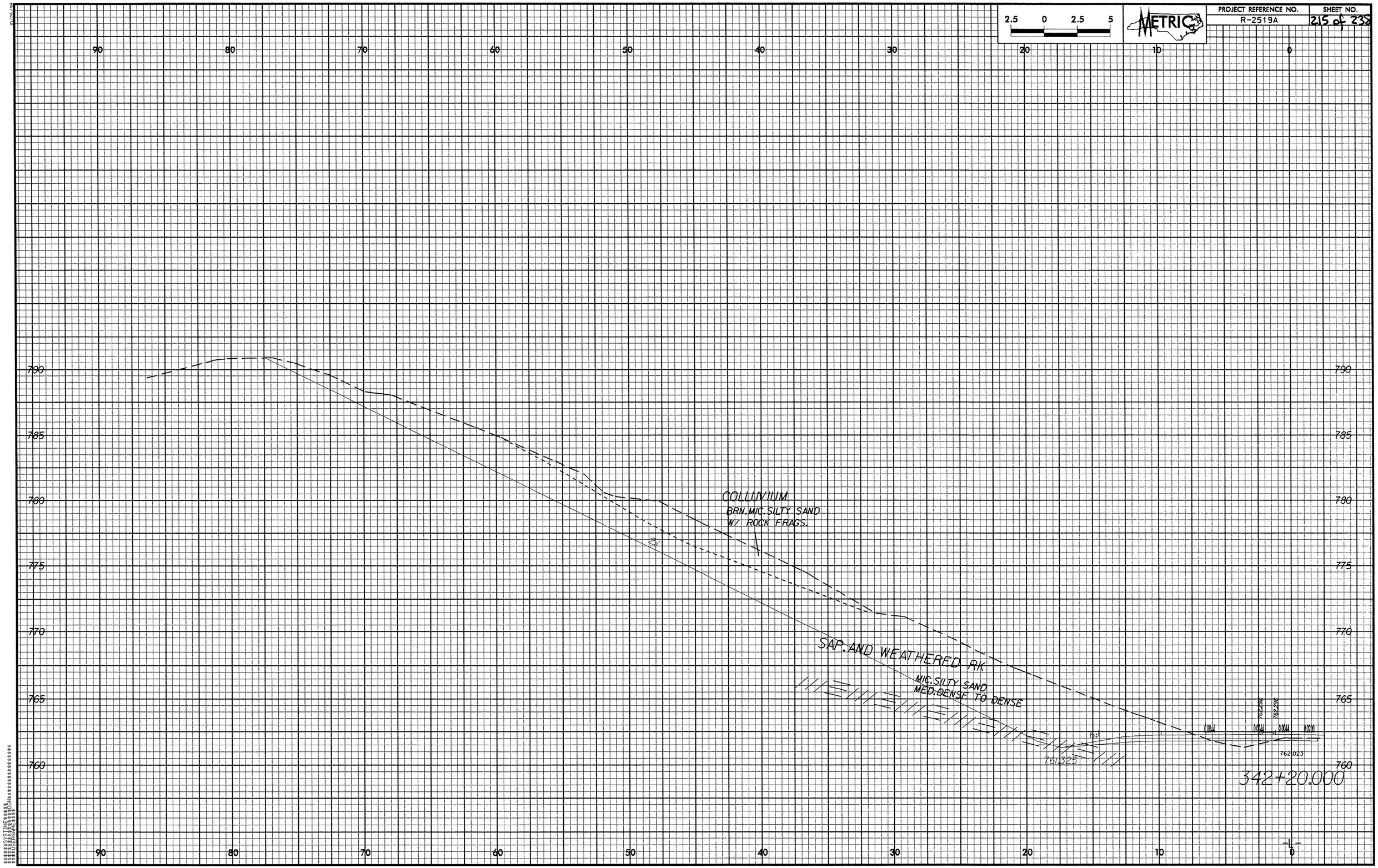
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
212 of 238
90
80
70
60
50
40
30
20
10
0
780
775
770
765
760
COLLUVIUM
BRN. MIC. SILTY SAND
W/ ROCK FRAGS.
2:1
SAP. AND WEATHERED RK
MIC. SILTY SAND
MED. DENSE TO DENSE
759.244
759.878
341+80.000



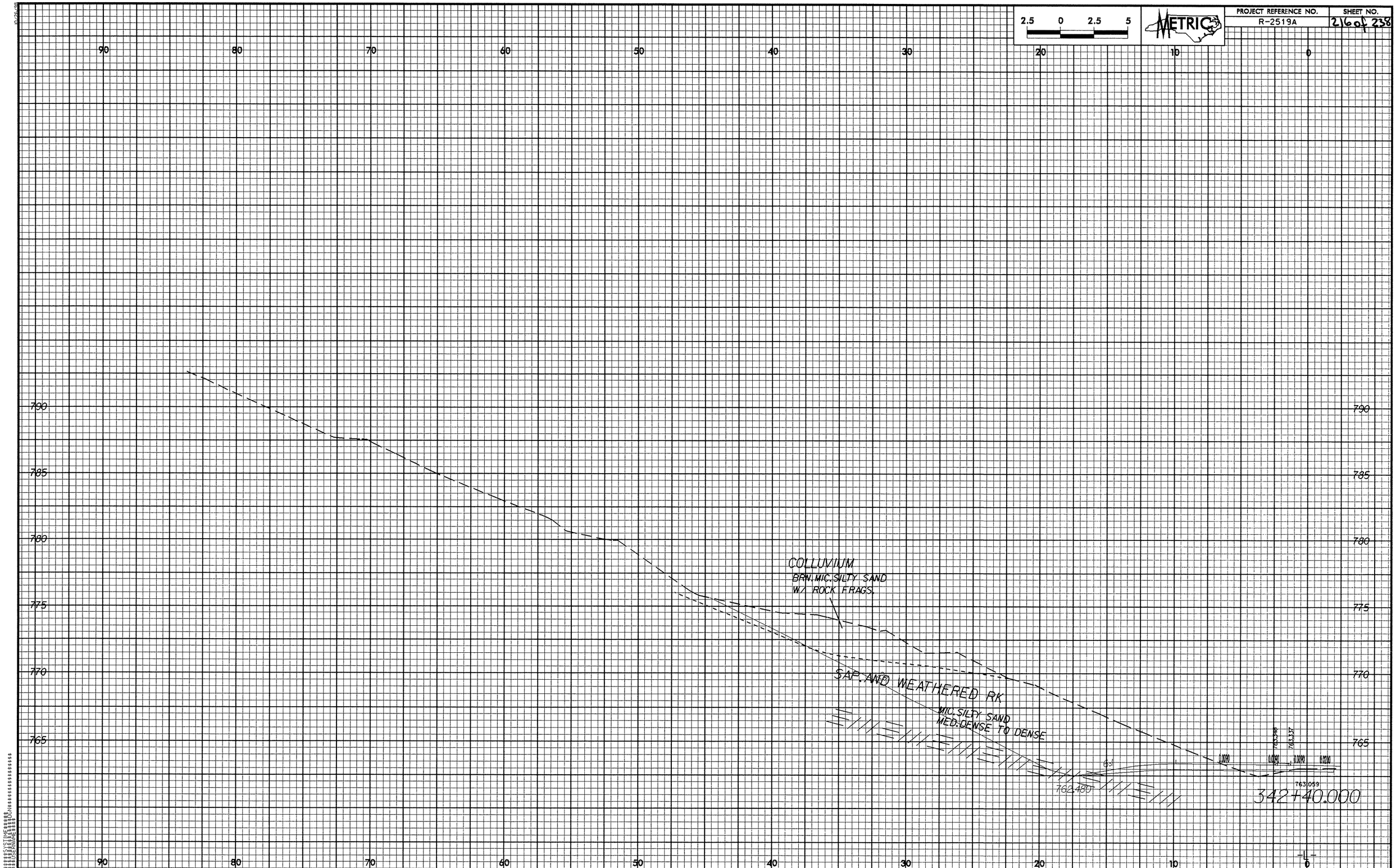
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
213 of 238
0 10 20 30 40 50 60 70 80 90
765
760
755
762.023
342+20.000
760.916
EMBANKMENT:
BRN.TO REDDISH BRN.
SLI.MIC.SILTY SAND
W/ RK.FRAGS.
342+00.000
341+80
8m RT -L-
759.878
12
8
15
9
17
13
32
13
18
06/20/03
EMBANKMENT:
BRN.TO REDDISH BRN.
SLI.MIC.SILTY SAND
W/ RK.FRAGS.
PROPOSED
RETAINING WALL
ALLUVIUM:
GREY MIC.SILTY SAND W/
FEW RK.FRAGS
SAPPOLITE:
BRN.MIC.SILTY SAND
341+80.000
-L-

METRIC

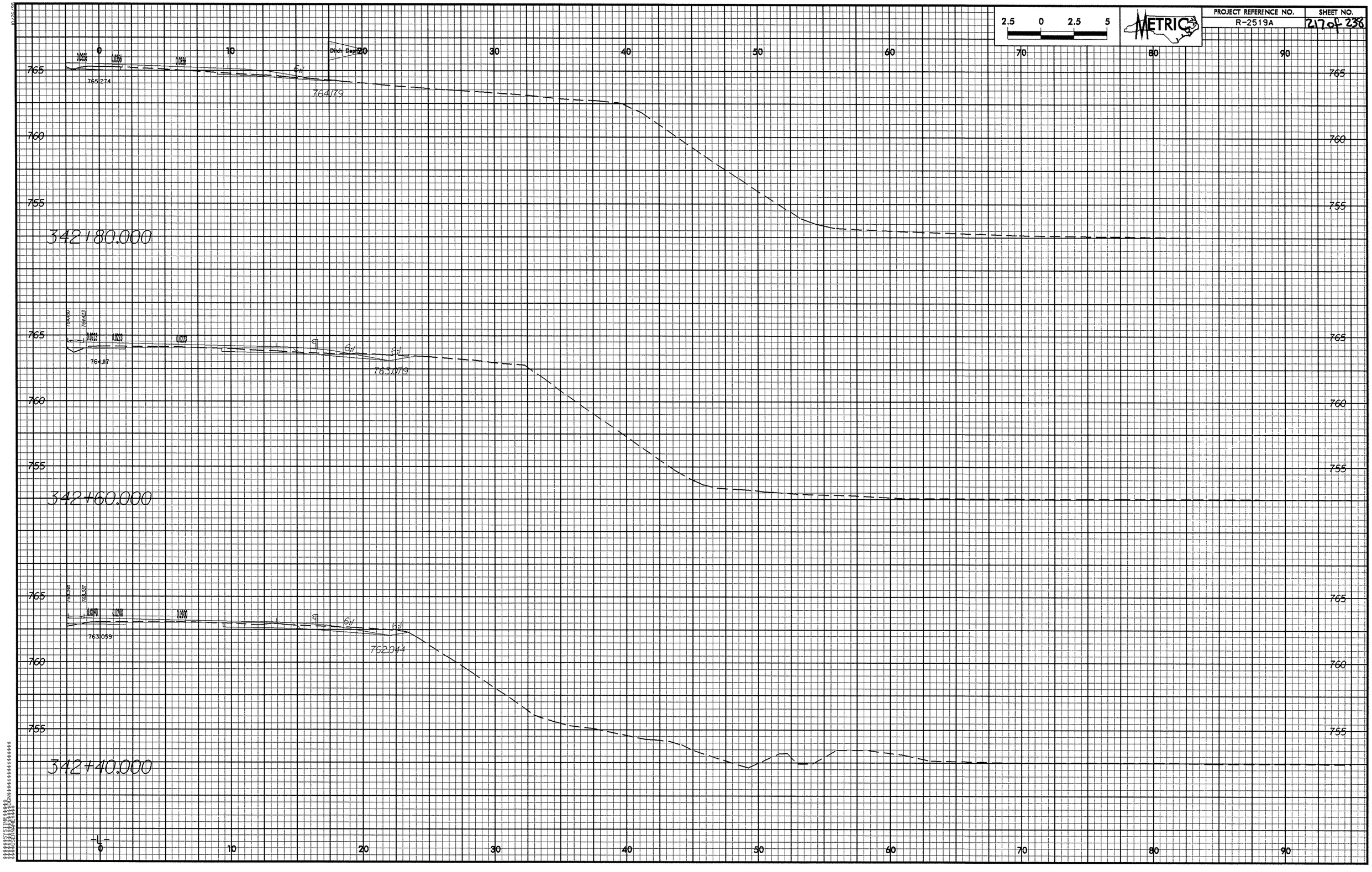
2.5 0 2.5 5
90 80 70 60 50 40 30 20 10 0
785 780 775 770 765 760
COLLUVIUM
BRN.MIC.SILTY SAND
W/ ROCK FRAGS.
342+00
32.5m LT -L-
SAPROLITE:
BRN.MIC.SILTY SAND
WEATHERED ROCK:
26
24
36
31
100
20
6:1
760.218
760.916
342+00.000
-L-



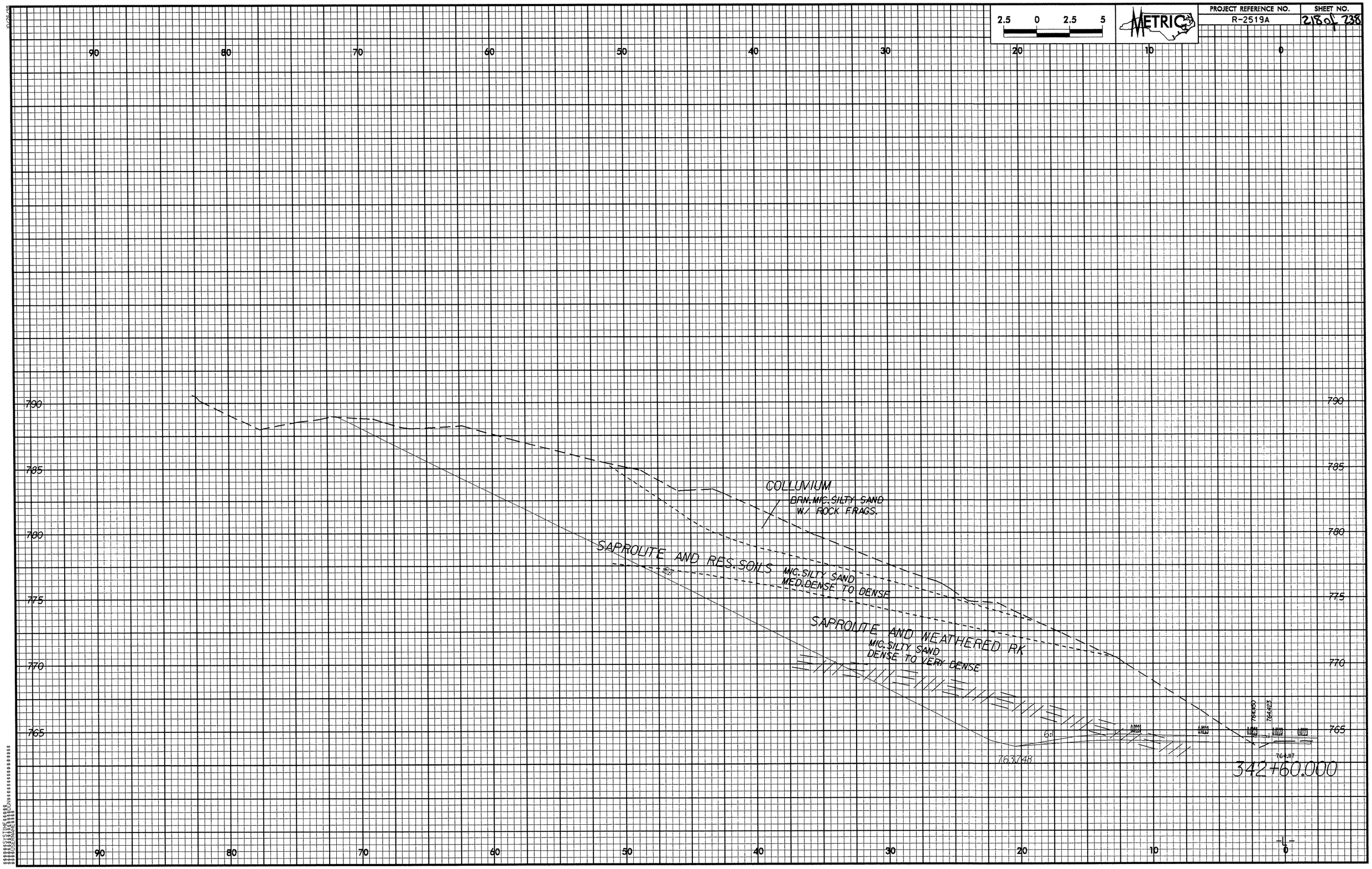
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
215 of 238
90
80
70
60
50
40
30
20
10
0
790
785
780
775
770
765
760
COLLUVIUM
BRN. MIC. SILTY SAND
W/ ROCK FRAGS.
2:1
SAP. AND WEATHERED RK
MIC. SILTY SAND
MED. DENSE TO DENSE
6:1
761.325
762.023
342+20.000



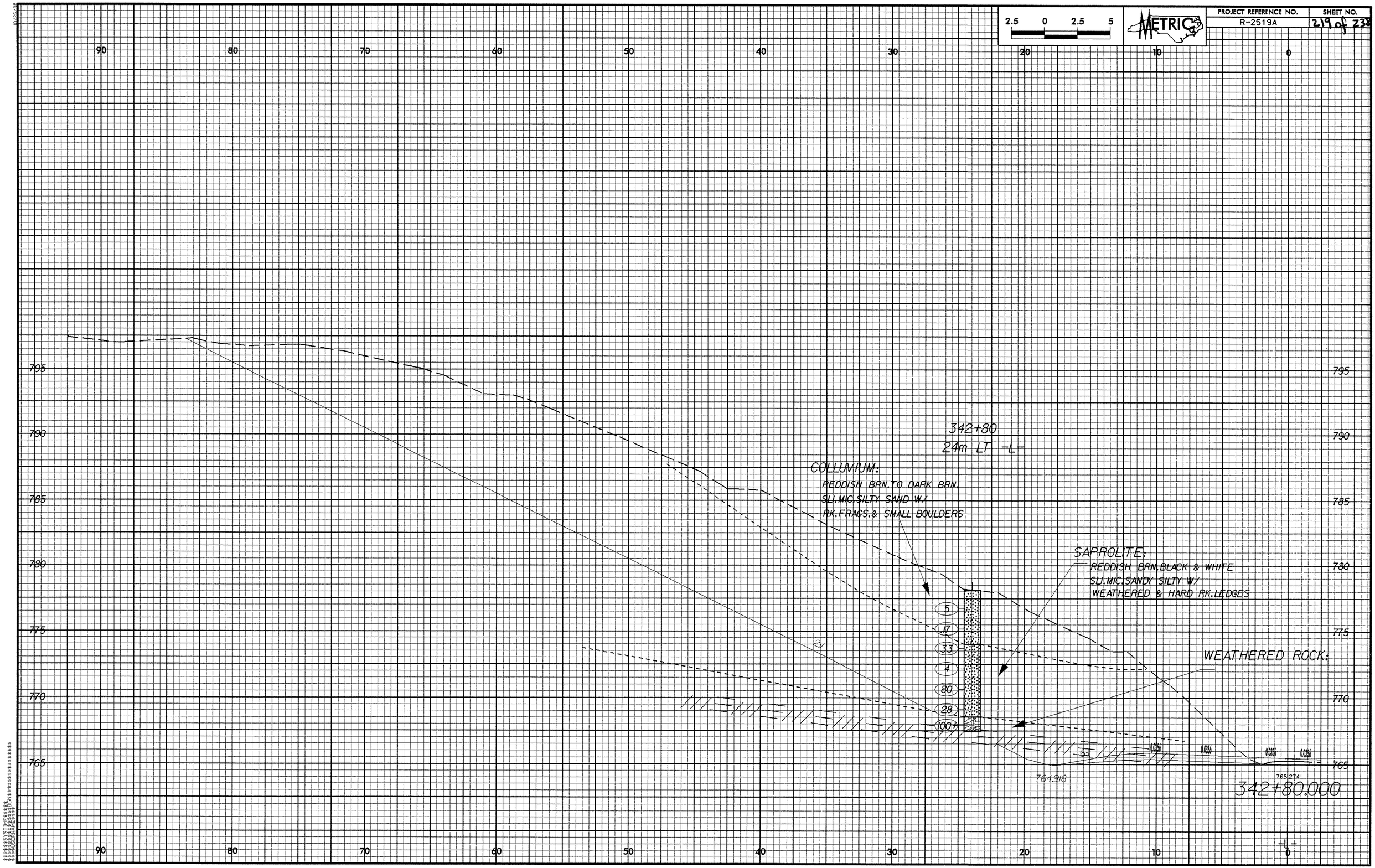
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
216 of 238
90
80
70
60
50
40
30
20
10
0
790
785
780
775
770
765
COLLUVIUM
BRN. MIC. SILTY SAND
W/ ROCK FRAGS.
SAP. AND WEATHERED RK
MIC. SILTY SAND
MED. DENSE TO DENSE
6:1
762.480
763.059
342+40.000
-L-



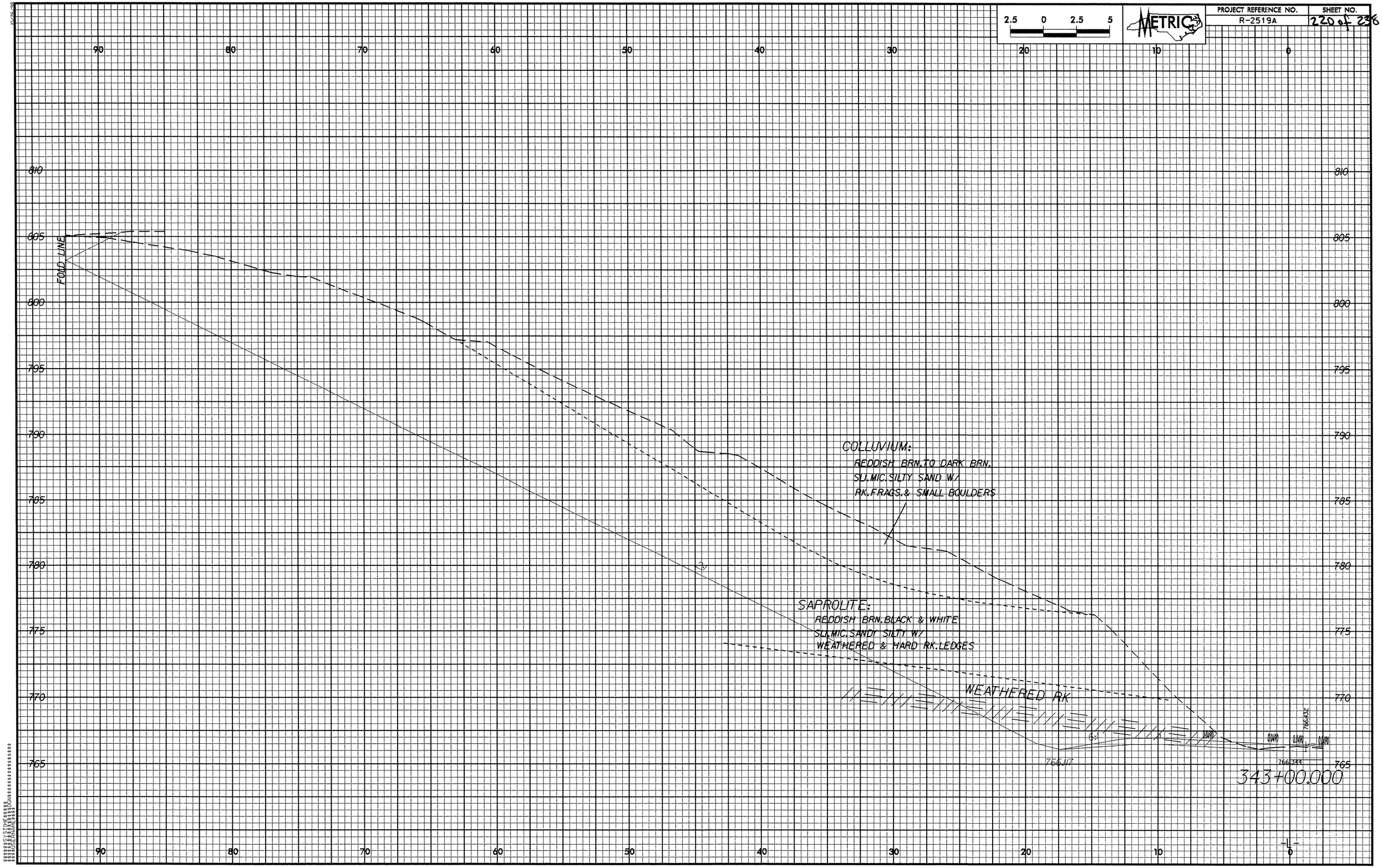
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
217 of 238
Ditch Depth
765.274
764.179
342+80.000
764.117
763.079
342+60.000
763.059
762.044
342+40.000
765
760
755
0
10
20
30
40
50
60
70
80
90



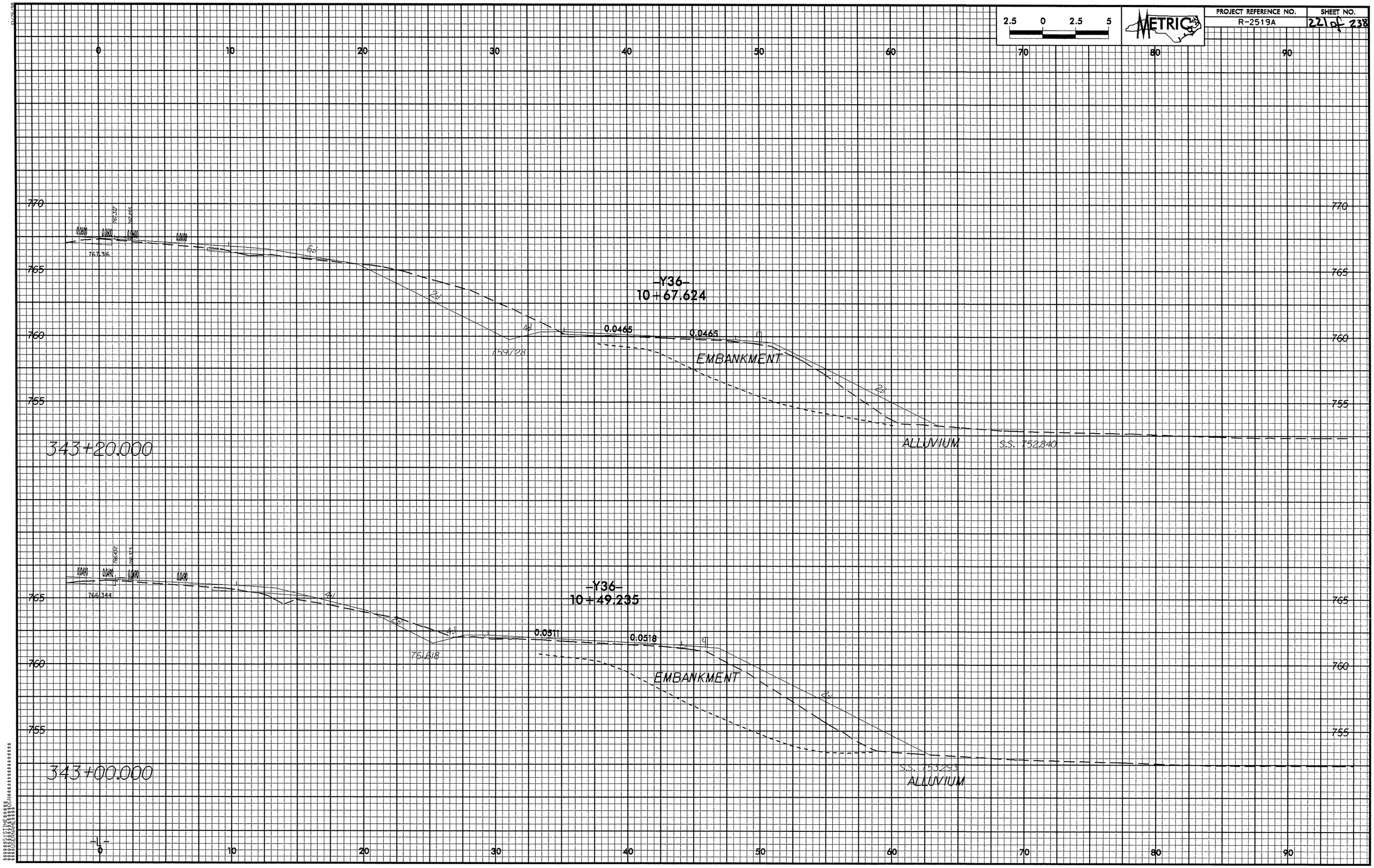
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
218 of 238
90
80
70
60
50
40
30
20
10
0
790
785
780
775
770
765
COLLUVIUM
BRN. MIC. SILTY SAND
W/ ROCK FRAGS.
SAPROLITE AND RES. SOILS
MIC. SILTY SAND
MED. DENSE TO DENSE
SAPROLITE AND WEATHERED RK
MIC. SILTY SAND
DENSE TO VERY DENSE
2:1
6:1
763.748
764.117
342+60.000



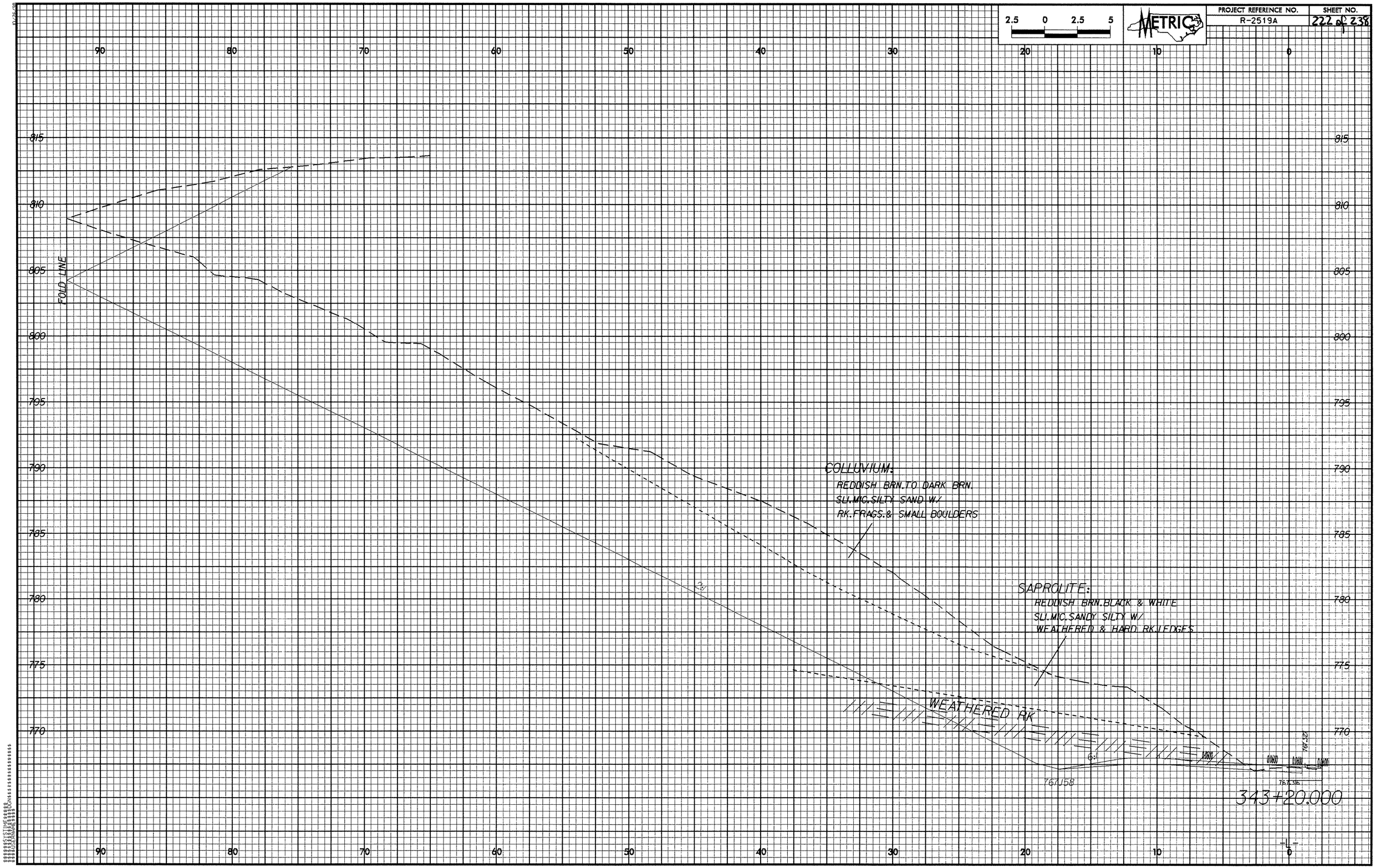
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
219 of 238
342+80
24m LT -L-
COLLUVIUM:
REDDISH BRN. TO DARK BRN.
SLI. MIC. SILTY SAND W/
RK. FRAGS. & SMALL BOULDERS
SAPROLITE:
REDDISH BRN. BLACK & WHITE
SLI. MIC. SANDY SILTY W/
WEATHERED & HARD RK. LEDGES
WEATHERED ROCK:
5
17
33
4
80
28
100+
2:1
764.916
765.274
342+80.000
-L-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
220 of 238
90
80
70
60
50
40
30
20
10
0
810
805
800
795
790
785
780
775
770
765
FOLD LINE
COLLUVIUM:
REDDISH BRN.TO DARK BRN.
SLI.MIC.SILTY SAND W/
RK.FRAGS.& SMALL BOULDERS
SAPROLITE:
REDDISH BRN.BLACK & WHITE
SLI.MIC.SANDY SILTY W/
WEATHERED & HARD RK.LEDGES
WEATHERED RK
766.117
766.432
766.344
343+00.000



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
221 of 238
0 10 20 30 40 50 60 70 80 90
770
765
760
755
-Y36-
10+67.624
0.0465
0.0465
EMBANKMENT
ALLUVIUM
S.S. 752.840
343+20.000
-Y36-
10+49.235
0.0511
0.0518
EMBANKMENT
ALLUVIUM
S.S. 753.293
343+00.000



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
222 of 238
90 80 70 60 50 40 30 20 10 0
815 810 805 800 795 790 785 780 775 770
FOLD LINE
COLLUVIUM:
REDDISH BRN. TO DARK BRN.
SLI. MIC. SILTY SAND W/
RK. FRAGS. & SMALL BOULDERS
SAPROLITE:
REDDISH BRN. BLACK & WHITE
SLI. MIC. SANDY SILTY W/
WEATHERED & HARD RK. LEDGES
WEATHERED RK
767.158
343+20.000
-L-

2.5 0 2.5 5

METRIC

90 80 70 60 50 40 30 20 10 0

815 810 805 800 795 790 785 780 775 770

FOLD LINE

COLLUVIUM:
RED & GREY SILTY SAND

SAPROLITE:
ORANGE GREY & BRN. SLI. MIC. TO MIC. SILTY SAND W/ WEATHERED RK. & HARD ROCK LEDGES

WEATHERED ROCK

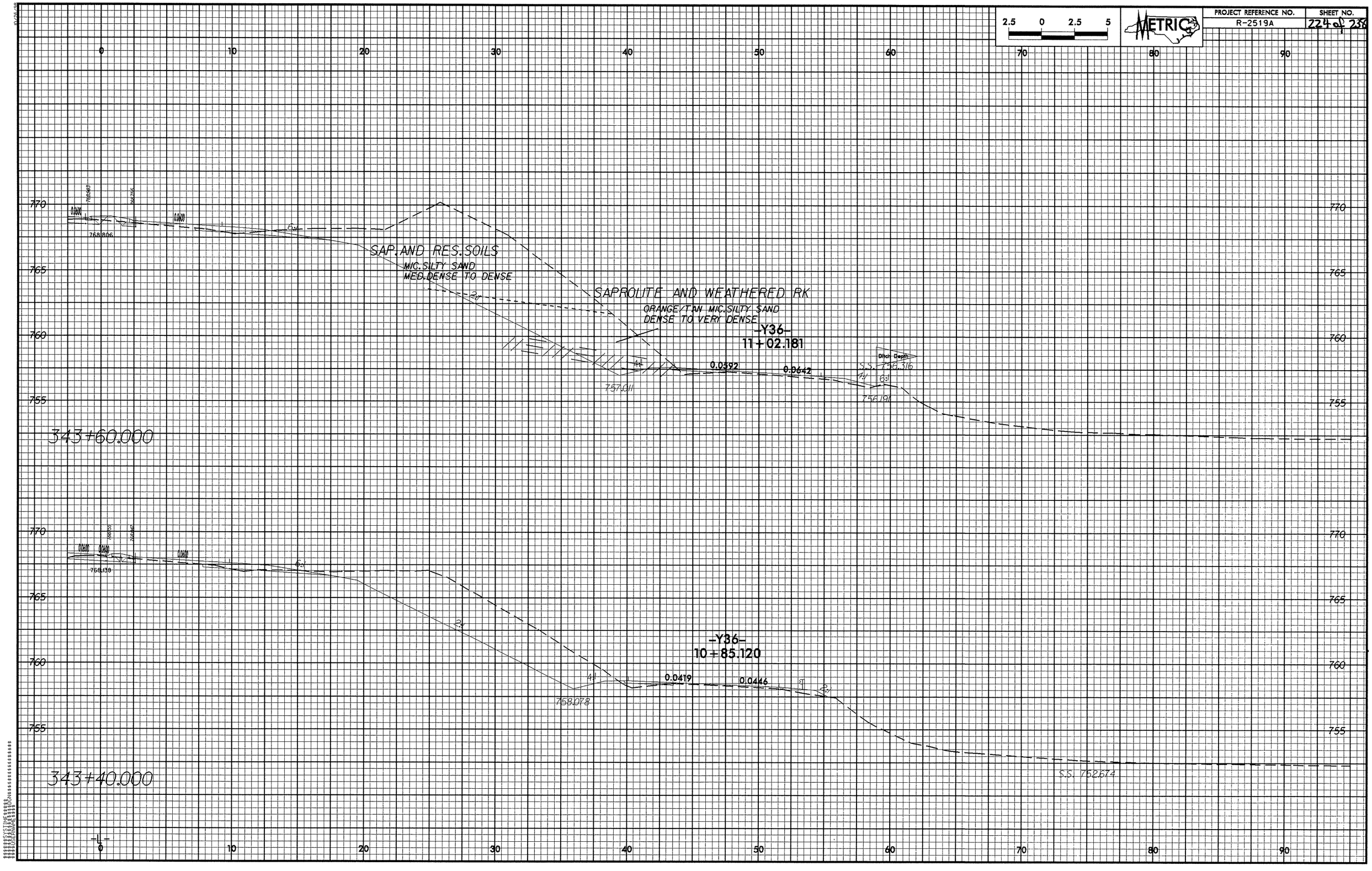
767.966

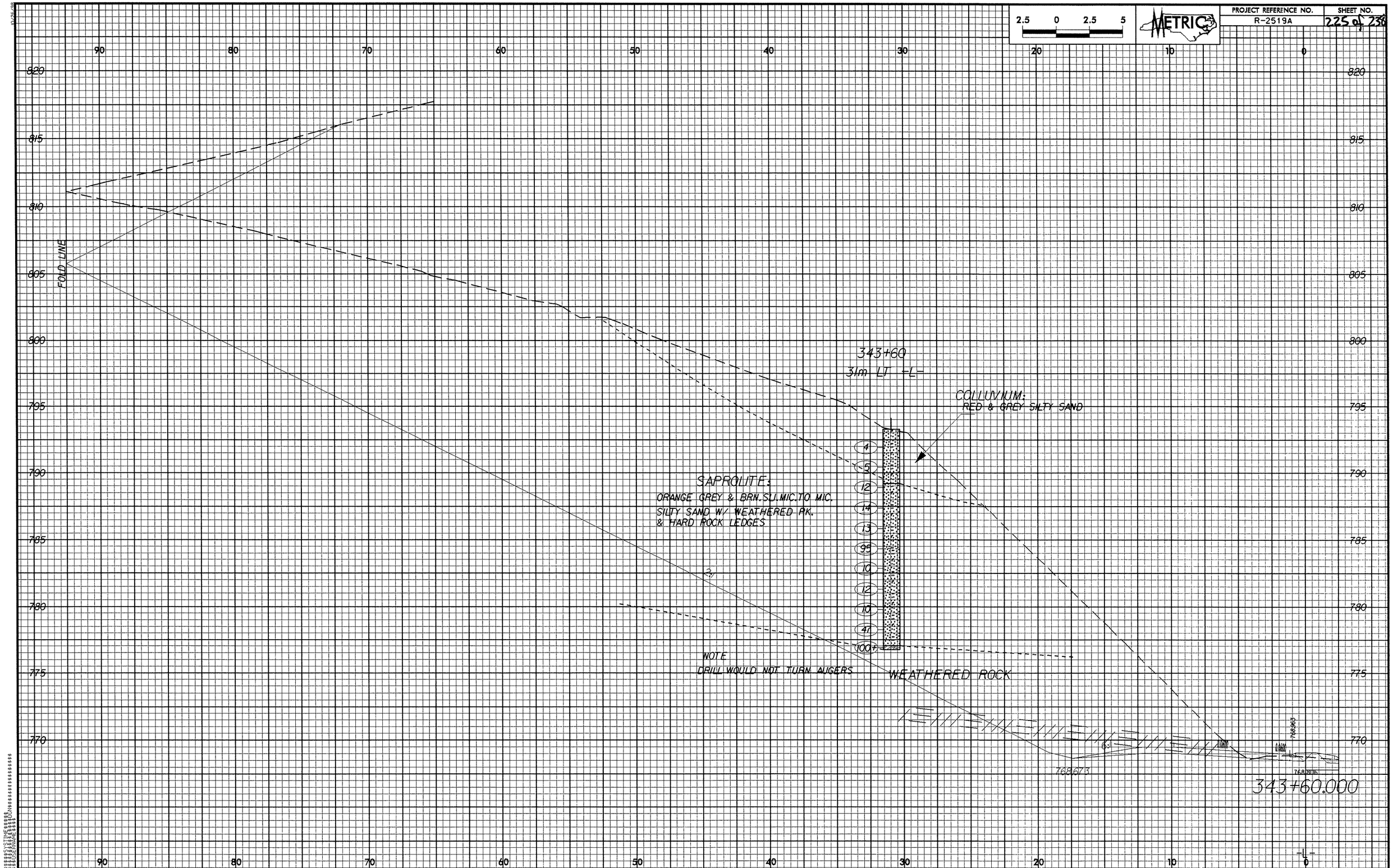
343+40.000

-L-

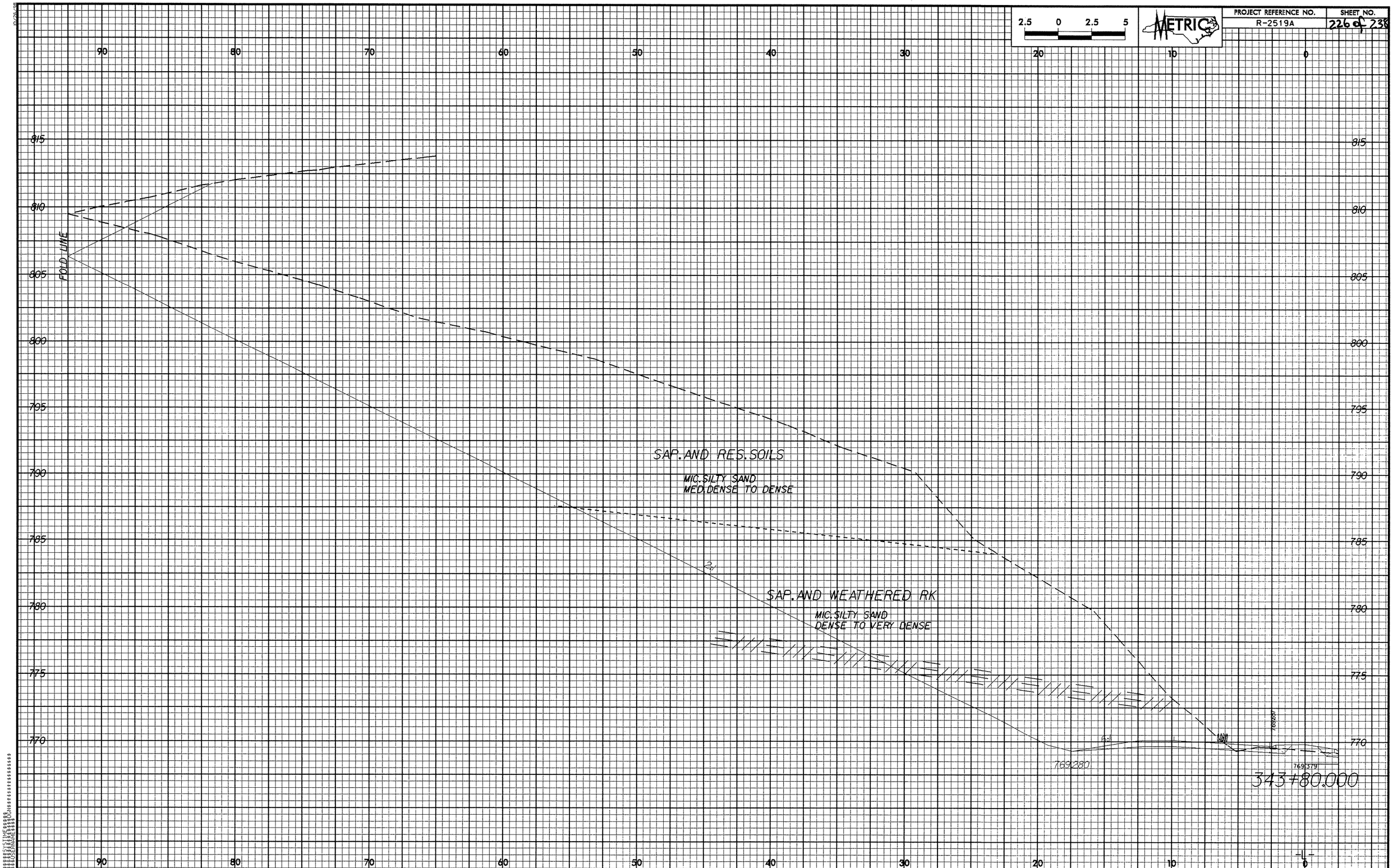
2.5 0 2.5 5

METRIC

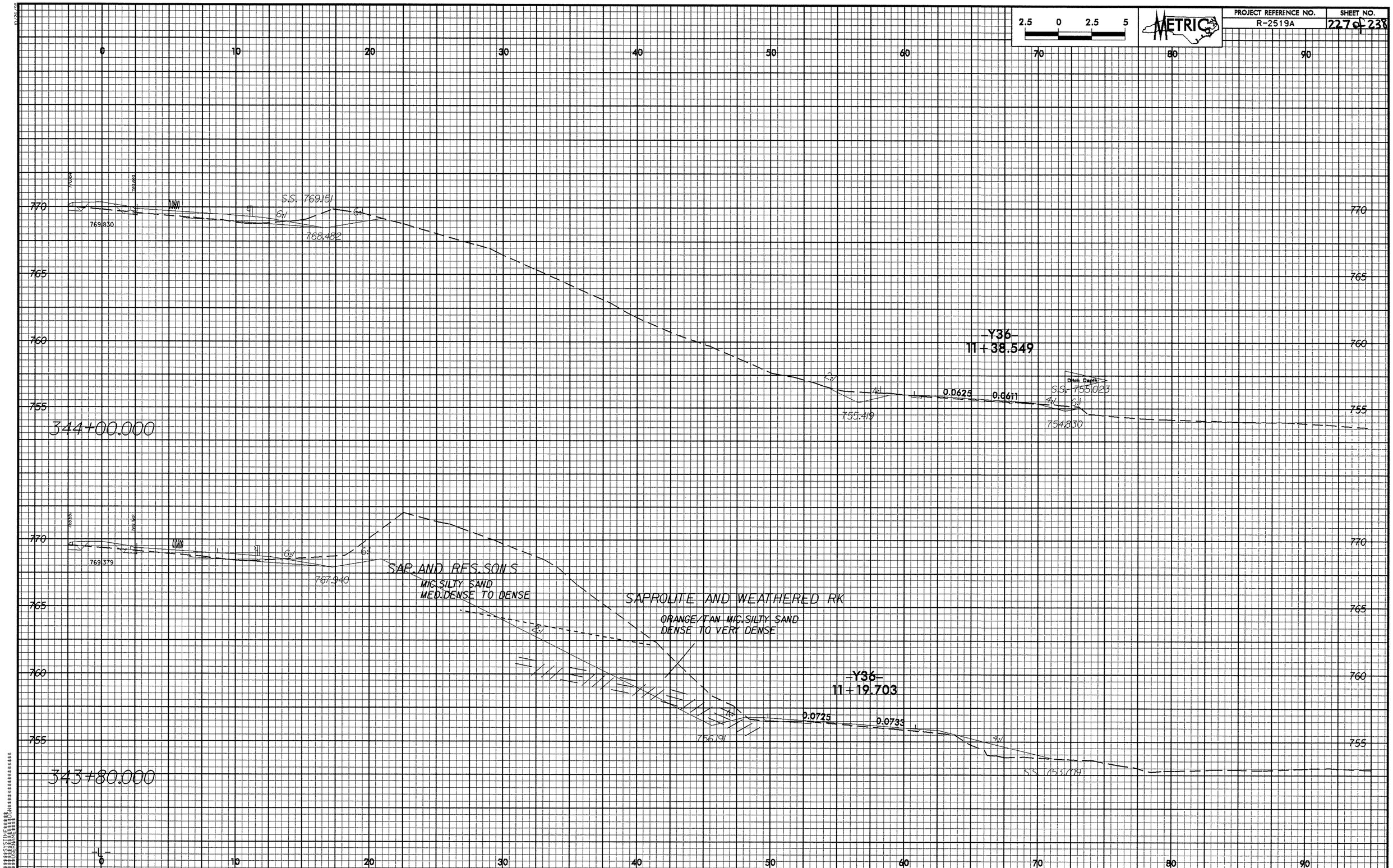




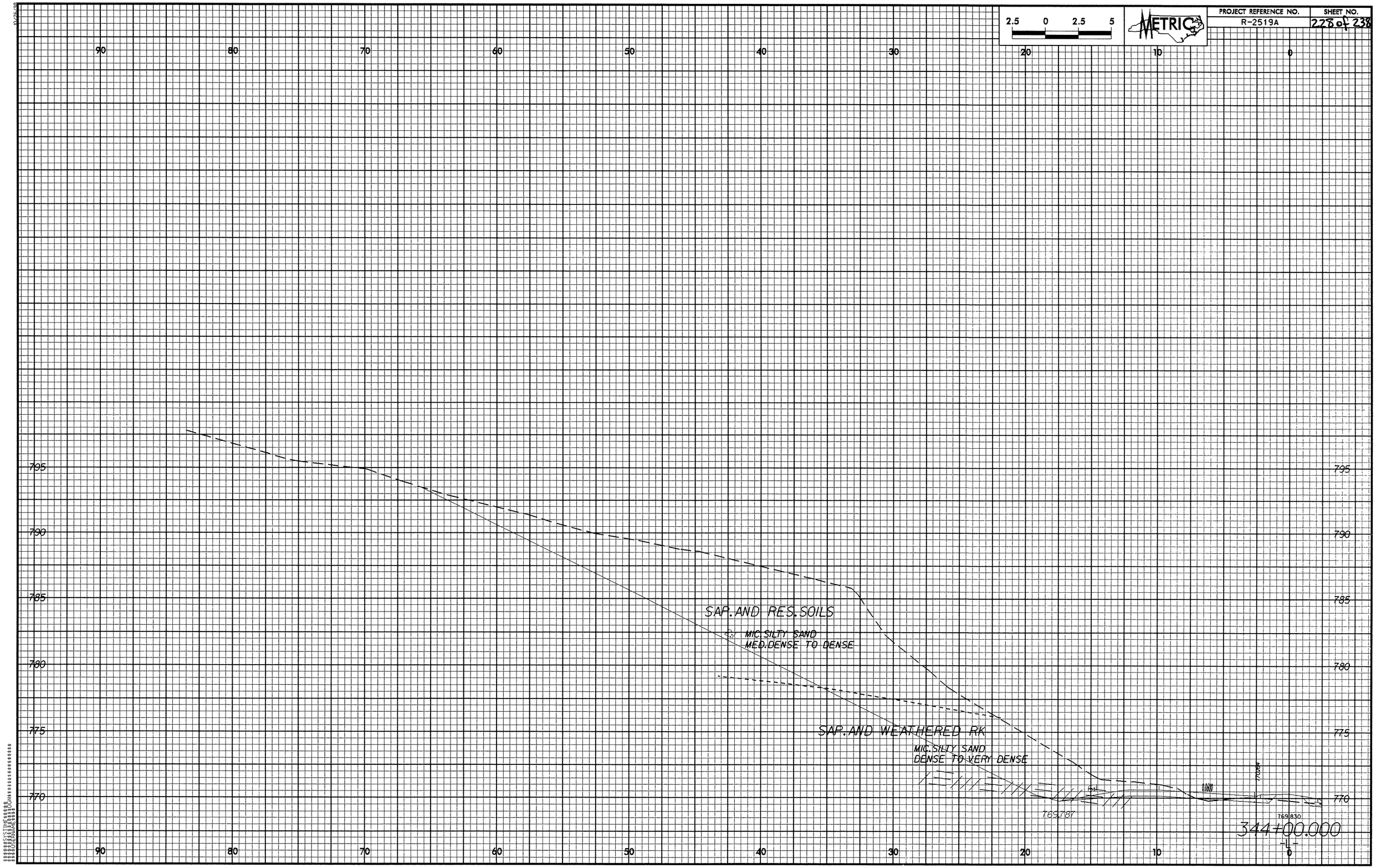
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
225 of 238
FOLD LINE
343+60
31m LT -L-
COLLUVIUM:
RED & GREY SILTY SAND
SAPROLITE:
ORANGE GREY & BRN. SLI. MIC. TO MIC.
SILTY SAND W/ WEATHERED PK.
& HARD ROCK LEDGES
4
5
12
14
13
95
10
12
10
41
100+
NOTE
DRILL WOULD NOT TURN AUGERS
WEATHERED ROCK
768.673
768.806
343+60.000
-L-



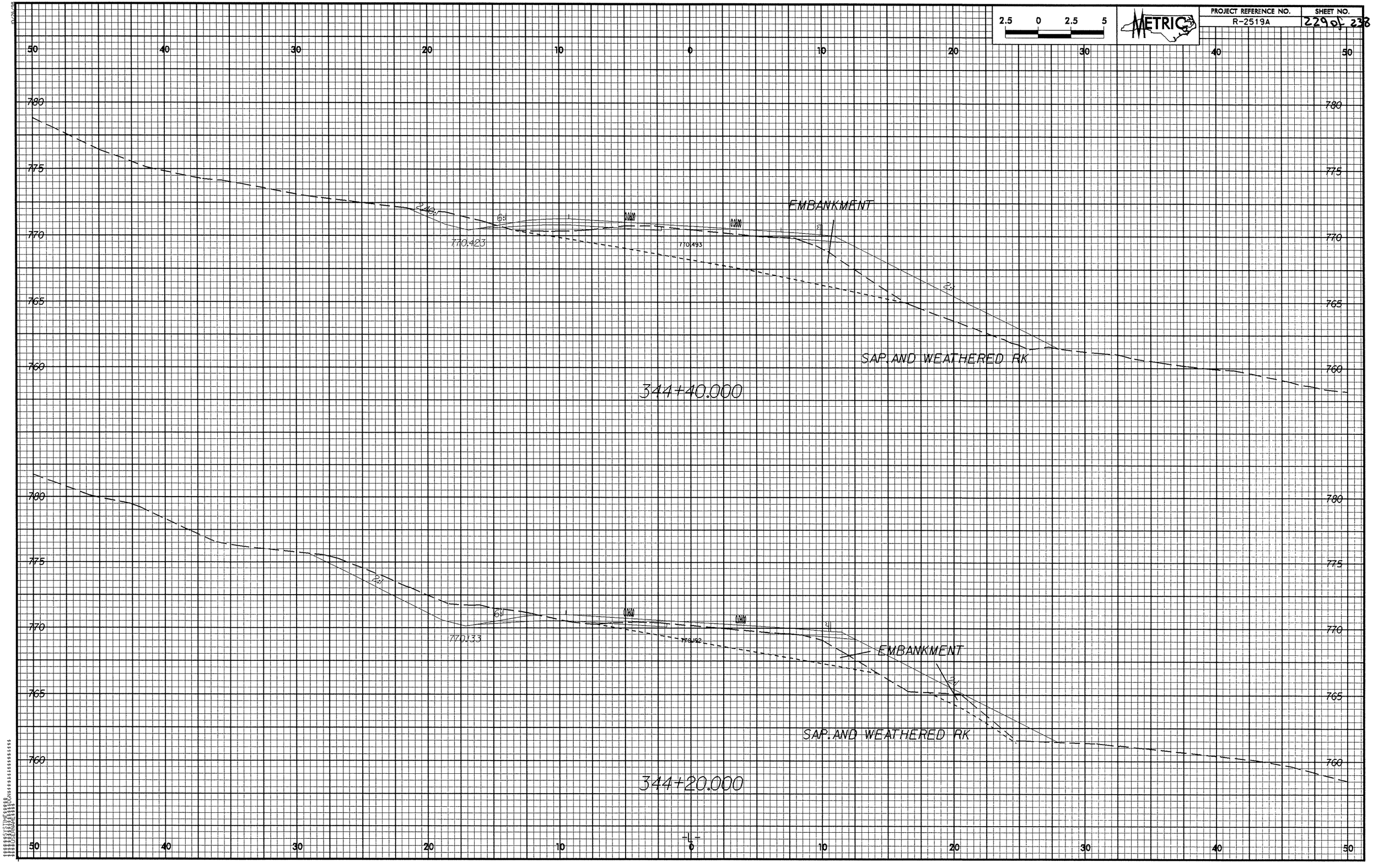
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
226 of 238
90
80
70
60
50
40
30
20
10
0
815
810
805
800
795
790
785
780
775
770
FOLD LINE
SAP. AND RES. SOILS
MIC. SILTY SAND
MED. DENSE TO DENSE
2:1
SAP. AND WEATHERED RK
MIC. SILTY SAND
DENSE TO VERY DENSE
6:1
769.280
769.379
343+80.000

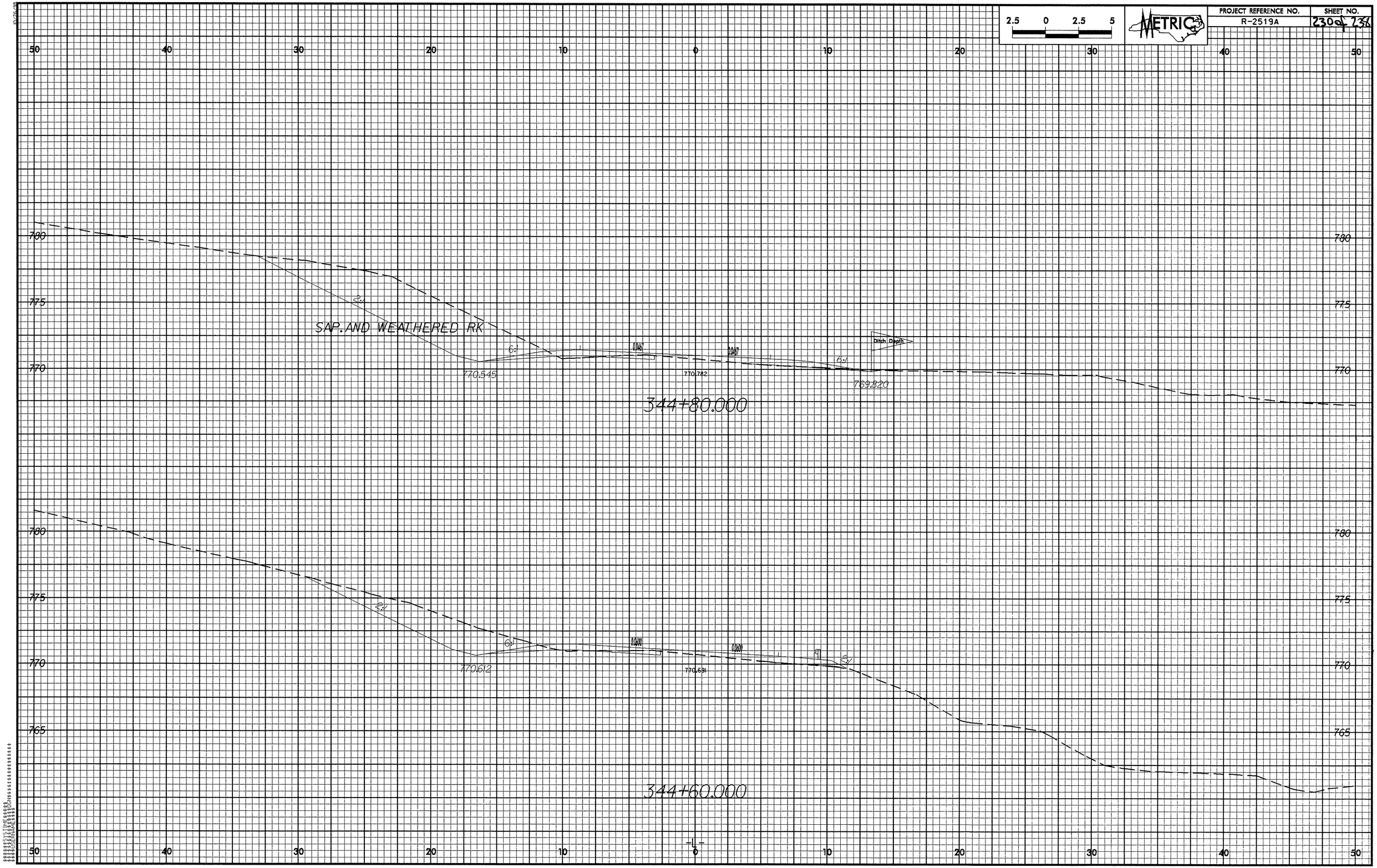


2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
227 of 238
0 10 20 30 40 50 60 70 80 90
770
765
760
755
S.S. 769.151
769.830
768.482
-Y36-
11+38.549
0.0625
0.0611
Ditch Depth
S.S. 755.023
755.419
754.830
344+00.000
769.379
767.940
SAP. AND RES. SOILS
MIC. SILTY SAND
MED. DENSE TO DENSE
SAPROLITE AND WEATHERED RK
ORANGE/TAN MIC. SILTY SAND
DENSE TO VERY DENSE
-Y36-
11+19.703
0.0725
0.0733
756.191
S.S. 753.709
343+80.000

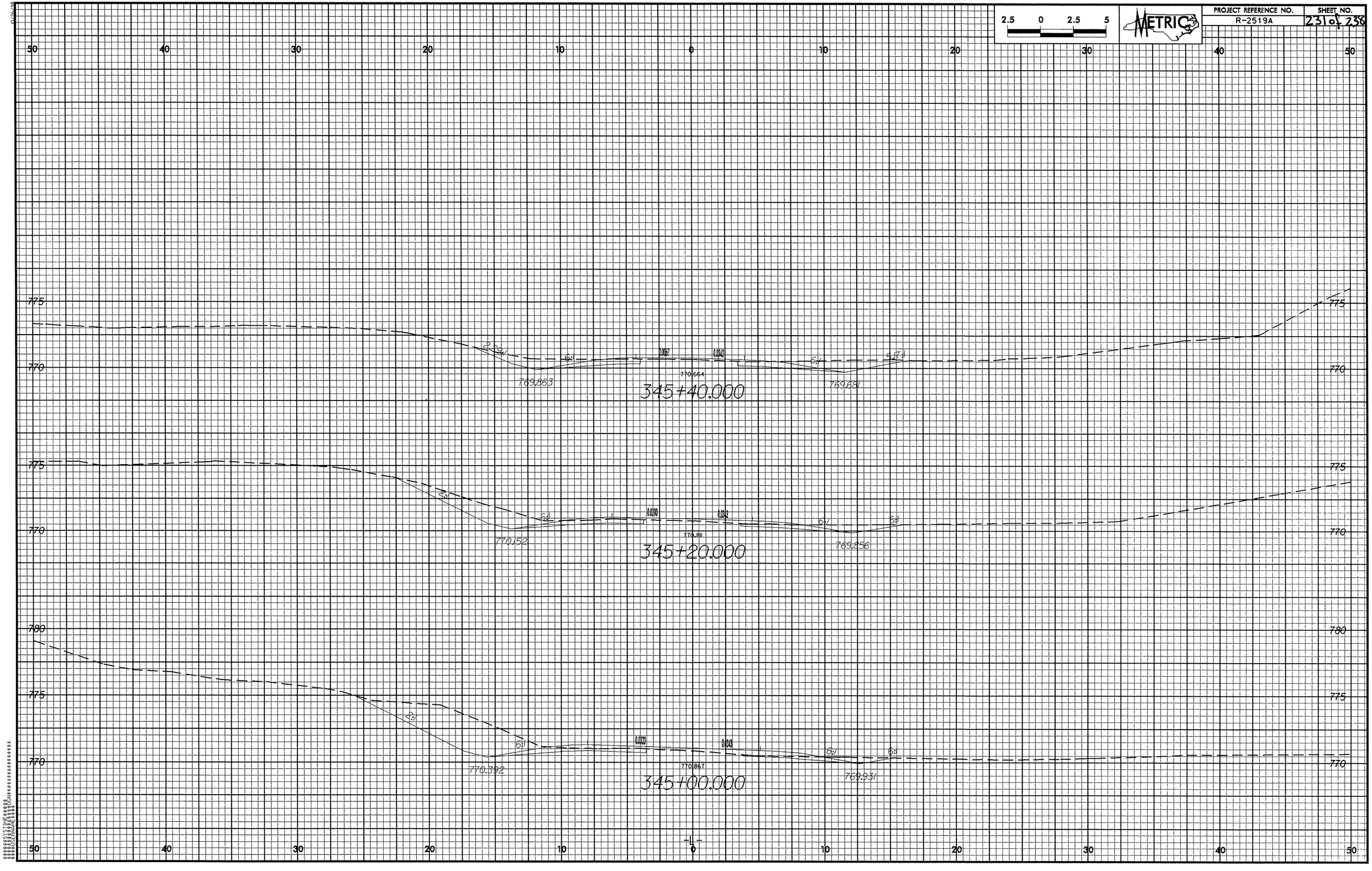


2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
228 of 238
90
80
70
60
50
40
30
20
10
0
795
790
785
780
775
770
SAP. AND RES. SOILS
MIC. SILTY SAND
MED. DENSE TO DENSE
SAP. AND WEATHERED RK
MIC. SILTY SAND
DENSE TO VERY DENSE
769.787
769.830
344+00.000
-L-

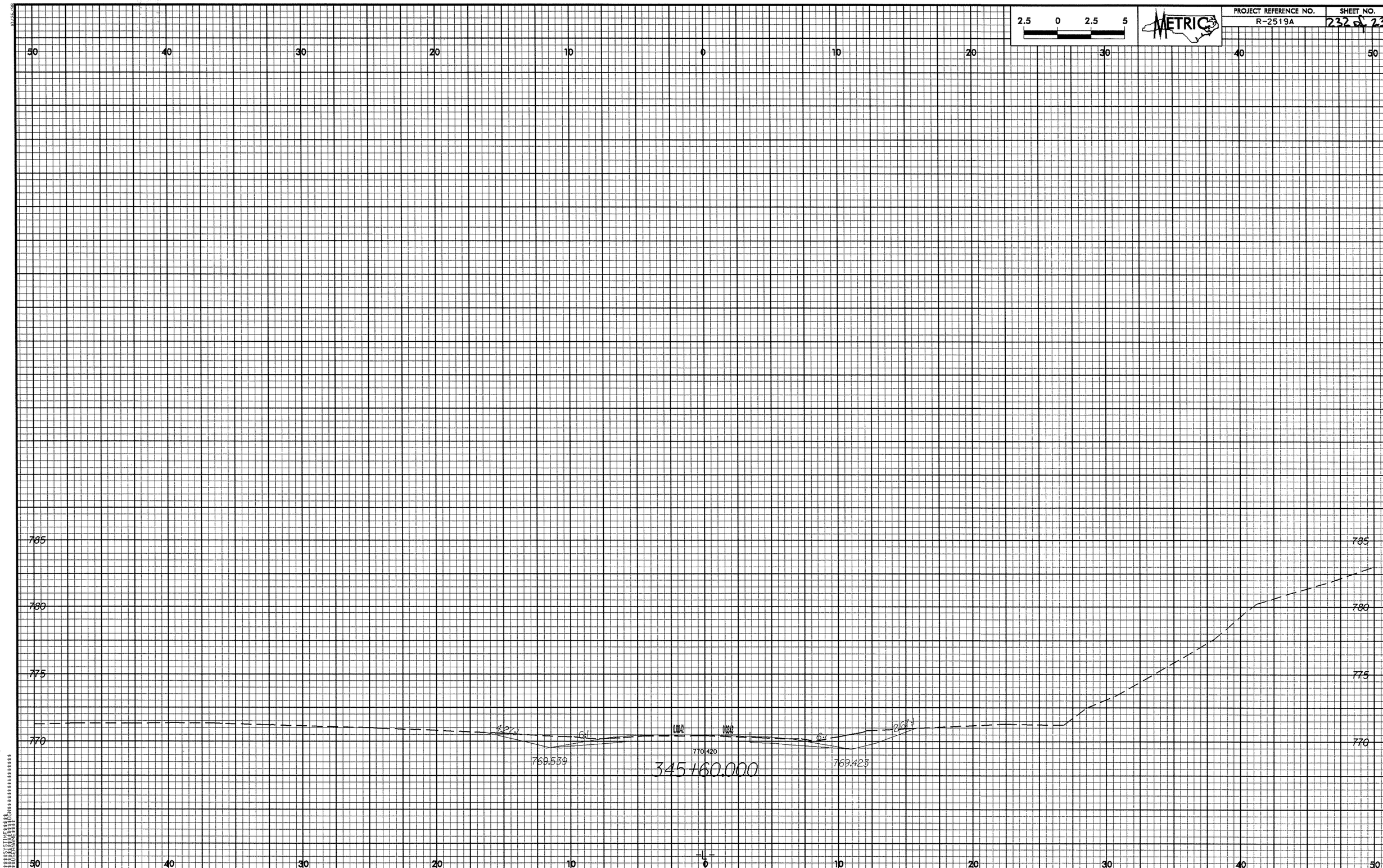

50
40
30
20
10
0
10
20
30
40
50
780
775
770
765
760
2:1
6:1
770.423
770.493
EMBANKMENT
SAP AND WEATHERED RK
344+40.000
770.133
770.162
EMBANKMENT
SAP. AND WEATHERED RK
344+20.000
-L-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
230 of 236
50 40 30 20 10 0 10 20 30 40 50
780
775
770
765
SAP. AND WEATHERED RK
2:1
6:1
770.545
770.782
769.820
Ditch Depth
344+80.000
770.612
770.691
344+60.000
-L-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
231 of 238
50 40 30 20 10 0 10 20 30 40 50
775
770
769.863
770.664
769.681
345+40.000
770.152
770.811
769.856
345+20.000
780
770.392
770.867
769.931
345+00.000
-L-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2519A
SHEET NO.
232 of 238
50 40 30 20 10 0 10 20 30 40 50
785
780
775
770
4.27:1
6:1
0.0042
0.0343
6:1
2.67:1
769.539
770.420
769.423
345+60.000
-L-

JJL

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS-MATERIALS AND TESTS UNIT
SOILS TEST REPORT-SOILS LABORATORY

T.I.P. ID #:	--

REPORT ON SAMPLES OF:	Soils for Classification

PROJECT:	6.909001	COUNTY:	Yancey	Owner:	--
DATE SAMPLED:	4-22-03	DATE RECEIVED:	5-2-03	DATE REPORTED:	5-14-03
SAMPLED FROM:	Roadway	SAMPLED BY:	D. Murphy		
SUBMITTED BY:	W. D. Frye	2002	STANDARD SPECIFICATION		
LABORATORY:	Asheville				

TEST RESULTS

Project Sample No.	SS-9	SS-10	SS-11	SS-12	SS-13	SS-14	SS-15	SS-16
Lab Sample No. A	141296	141297	141298	141299	141300	141301	141302	141303
HiCAMS Sample #	--	--	--	--	--	--	--	--
Retained #4 Sieve %	--	--	--	--	--	--	--	--
Passing #10 Sieve %	95	79	97	96	97	99	78	87
Passing #40 Sieve %	70	60	84	71	86	91	60	69
Passing #200 Sieve %	27	34	24	28	63	28	30	40

MINUS #10 FRACTION

Soil Mortar - 100%								
Coarse Sand -Ret. #60	42	34	31	39	20	28	35	32
Fine Sand - Ret. #270	36	29	52	41	25	51	33	28
Silt 0.05-0.005 mm %	12	23	9	12	19	11	24	26
Clay < 0.005 mm %	10	14	8	8	36	10	8	14
Passing # 40 Sieve %	--	--	--	--	--	--	--	--
Passing # 200 Sieve %	--	--	--	--	--	--	--	--

Liquid Limit	50	48	41	34	58	62	45	48
Plastic Index	NP	NP	NP	NP	23	NP	NP	NP
AASHTO Classification	A-2-5 (0)	A-2-5 (0)	A-2-5 (0)	A-2-4 (0)	A-7-5 (14)	A-2-5 (0)	A-2-5 (0)	A-5 (1)
Quantity								
Texture								
Station	239+20 RT	239+20 RT	239+20 RT	239+20 RT	238+40 RT	238+40 RT	238+40 RT	238+40 RT
Hole No.								
Depth (ft) From:	1.12	5.68	7.20	10.24	1.00	4.04	5.56	--
To:	1.57	6.13	7.65	10.69	1.45	4.49	4.49	--

Remarks:

A-141288 – A-141314

CC:

W. D. Frye	
J. J. Lail	
File	

SOILS ENGINEER:	

M&T 503E

JJL

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS-MATERIALS AND TESTS UNIT
SOILS TEST REPORT-SOILS LABORATORY

T.I.P. ID #:	--

REPORT ON SAMPLES OF:	Soils for Classification

PROJECT:	6.909001	COUNTY:	Yancey	Owner:	--
DATE SAMPLED:	4-22-03	DATE RECEIVED:	5-2-03	DATE REPORTED:	5-14-03
SAMPLED FROM:	Roadway	SAMPLED BY:	D. Murphy		
SUBMITTED BY:	W. D. Frye	2002	STANDARD SPECIFICATION		
LABORATORY:	Asheville				

TEST RESULTS

Project Sample No.	SS-1	SS-2	SS-3	SS-4	SS-5	SS-6	SS-7	SS-8
Lab Sample No. A	141288	141289	141290	141291	141292	141293	141294	141295
HiCAMS Sample #	--	--	--	--	--	--	--	--
Retained #4 Sieve %	--	--	--	--	--	--	--	--
Passing #10 Sieve %	82	68	70	81	89	80	100	89
Passing #40 Sieve %	69	66	64	58	79	73	70	72
Passing #200 Sieve %	23	51	32	17	44	45	17	49

MINUS #10 FRACTION

Soil Mortar - 100%								
Coarse Sand -Ret. #60	36	7	18	43	23	19	45	28
Fine Sand - Ret. #270	41	23	48	38	38	33	39	18
Silt 0.05-0.005 mm %	13	32	18	15	23	26	10	26
Clay < 0.005 mm %	10	38	16	4	16	22	6	28
Passing # 40 Sieve %	--	--	--	--	--	--	--	--
Passing # 200 Sieve %	--	--	--	--	--	--	--	--

Liquid Limit	23	51	33	28	26	38	26	29
Plastic Index	NP	25	NP	NP	6	16	NP	10
AASHTO Classification	A-2-4 (0)	A-7-6 (10)	A-2-4 (0)	A-2-4 (0)	A-4 (2)	A-6 (4)	A-2-4 (0)	A-4 (3)
Quantity								
Texture								
Station	227+80 RT	228+60 RT	228+60 RT	228+60 RT	229+40 RT	229+40 RT	229+40 RT	233+20 RT
Hole No.								
Depth (ft) From:	1.09	.96	2.48	4.00	1.00	2.52	4.04	1.10
To:	1.54	1.41	2.93	4.45	1.45	2.97	4.49	1.55

Remarks:

A-141288 – A-141314

CC:

W. D. Frye	
J. J. Lail	
File	

SOILS ENGINEER:	

JJL

NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS-MATERIALS AND TESTS UNIT
SOILS TEST REPORT-SOILS LABORATORY

T.I.P. ID #:	--

REPORT ON SAMPLES OF:	Soils for Classification

PROJECT:	6.909001	COUNTY:	Yancey	Owner:	--		
DATE SAMPLED:	4-22-03	DATE RECEIVED:	5-2-03	DATE REPORTED:	5-14-03		
SAMPLED FROM:	Roadway	SAMPLED BY:	D. Murphy				
SUBMITTED BY:	W. D. Frye	2002	STANDARD SPECIFICATION				
LABORATORY:	Asheville						

TEST RESULTS

Project Sample No.	SS-27	SS-28	SS-29					
Lab Sample No. A	141312	141313	141314					
HiCAMS Sample #	--	--	--					
Retained #4 Sieve %	--	--	--					
Passing #10 Sieve %	99	91	88					
Passing #40 Sieve %	86	61	62					
Passing #200 Sieve %	22	22	16					

MINUS #10 FRACTION

Soil Mortar - 100%								
Coarse Sand -Ret. #60	33	49	51					
Fine Sand - Ret. #270	52	33	37					
Silt 0.05-0.005 mm %	11	14	8					
Clay < 0.005 mm %	4	4	4					
Passing # 40 Sieve %	--	--	--					
Passing # 200 Sieve %	--	--	--					

Liquid Limit	37	36	46					
Plastic Index	NP	NP	NP					
AASHTO Classification	A-2-4 (0)	A-4 (0)	A-2-5 (0)					
Quantity								
Texture								
Station	267+20 RT	267+20 RT	268+00 RT					
Hole No.								
Depth (ft) From:	2.53	10.13	10.12					
To:	2.98	10.58	10.57					

Remarks:

A-141288 – A-141314

CC:

W. D. Frye	
J. J. Lail	
File	

SOILS ENGINEER:	

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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS-MATERIALS AND TESTS UNIT
SOILS TEST REPORT-SOILS LABORATORY

T.I.P. ID #:	--

REPORT ON SAMPLES OF:	Soils for Classification

PROJECT:	6.909001	COUNTY:	Yancey	Owner:	--		
DATE SAMPLED:	4-22-03	DATE RECEIVED:	5-2-03	DATE REPORTED:	5-14-03		
SAMPLED FROM:	Roadway	SAMPLED BY:	D. Murphy				
SUBMITTED BY:	W. D. Frye	2002	STANDARD SPECIFICATION				
LABORATORY:	Asheville						

TEST RESULTS

Project Sample No.	SS-17	SS-18	SS-19	SS-20	SS-21	SS-22	SS-23	SS-24
Lab Sample No. A	141304	141305	141306	141307	141308	141309	141310	141311
HiCAMS Sample #	--	--	--	--	--	--	--	--
Retained #4 Sieve %	--	--	--	--	--	--	--	--
Passing #10 Sieve %	99	62	90	97	74	99	100	98
Passing #40 Sieve %	91	53	80	76	67	87	82	84
Passing #200 Sieve %	40	38	44	43	50	53	44	22

MINUS #10 FRACTION

Soil Mortar - 100%								
Coarse Sand -Ret. #60	21	22	22	33	18	23	30	34
Fine Sand - Ret. #270	49	20	39	32	17	51	33	52
Silt 0.05-0.005 mm %	22	26	31	27	12	14	21	12
Clay < 0.005 mm %	8	32	8	8	53	12	16	2
Passing # 40 Sieve %	--	--	--	--	--	--	--	--
Passing # 200 Sieve %	--	--	--	--	--	--	--	--

Liquid Limit	46	77	53	56	70	51	45	41
Plastic Index	NP	43	NP	16	38	16	14	NP
AASHTO Classification	A-5 (1)	A-7-5 (6)	A-5 (3)	A-7-5 (4)	A-7-5 (12)	A-7-5 (8)	A-7-5 (3)	A-2-5 (0)
Quantity								
Texture								
Station	238+40 RT	252+00 RT	252+00 RT	252+00 RT	253+00 RT	246+00 RT	246+00 RT	247+00 RT
Hole No.								
Depth (ft) From:	10.12	1.09	2.61	5.65	.95	1.00	4.04	5.55
To:	10.57	1.54	3.06	6.10	1.40	1.45	4.49	6.00

Remarks:

A-141288 – A-141314

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DIVISION OF HIGHWAYS-MATERIALS AND TESTS UNIT
SOILS TEST REPORT-SOILS LABORATORY

T.I.P. ID #:	--

REPORT ON SAMPLES OF:	Soils for Classification

PROJECT:	6.909001	COUNTY:	Yancey	Owner:	--
DATE SAMPLED:	5-8-03	DATE RECEIVED:	5-16-03	DATE REPORTED:	6-17-03
SAMPLED FROM:	Roadway	SAMPLED BY:	D. P. Murphy		
SUBMITTED BY:	W. D. Frye	2002	STANDARD SPECIFICATION		
LABORATORY:	Asheville				

TEST RESULTS

Project Sample No.	SS-33	SS-34	SS-35	SS-36	SS-37	SS-38	SS-45	SS-46
Lab Sample No. A	141483	141484	141485	141486	141487	141488	141489	141490
HiCAMS Sample #	--	--	--	--	--	--	--	--
Retained #4 Sieve %	--	--	--	--	--	--	--	--
Passing #10 Sieve %	81	100	99	88	98	99	84	94
Passing #40 Sieve %	61	84	89	64	83	81	76	83
Passing #200 Sieve %	41	27	33	27	52	39	45	42

MINUS #10 FRACTION

Soil Mortar - 100%								
Coarse Sand -Ret. #60	32	38	25	42	26	31	20	19
Fine Sand - Ret. #270	24	42	46	33	26	37	32	44
Silt 0.05-0.005 mm %	20	12	21	17	22	24	30	25
Clay < 0.005 mm %	24	8	8	8	26	8	18	12
Passing # 40 Sieve %	--	--	--	--	--	--	--	--
Passing # 200 Sieve %	--	--	--	--	--	--	--	--

Liquid Limit	45	62	59	54	43	51	35	42
Plastic Index	7	NP	NP	NP	5	NP	3	NP
AASHTO Classification	A-5 (4)	A-2-5 (0)	A-2-5 (0)	A-2-5 (0)	A-5 (3)	A-5 (1)	A-4 (2)	A-5 (1)
Quantity								
Texture								
Station	270+17 LT	270+17 LT	270+17 LT	270+84 LT	274+40 RT	274+40 RT	300+60 RT	300+60 RT
Hole No.								
Depth (ft) From:	1.21	3.49	8.81	3.63	1.14	4.18	1.76	2.72
To:	1.51	3.79	9.11	3.93	1.44	4.48	2.06	3.02

Remarks:

A-141483 – A-141491

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DIVISION OF HIGHWAYS-MATERIALS AND TESTS UNIT
SOILS TEST REPORT-SOILS LABORATORY

T.I.P. ID #:	--

REPORT ON SAMPLES OF:	Soils for Classification

PROJECT:	6.909001	COUNTY:	Yancey	Owner:	--
DATE SAMPLED:	4-30-03	DATE RECEIVED:	5-7-03	DATE REPORTED:	5-15-03
SAMPLED FROM:	Roadway	SAMPLED BY:	D. Murphy		
SUBMITTED BY:	W. D. Frye	2002	STANDARD SPECIFICATION		
LABORATORY:	Asheville				

TEST RESULTS

Project Sample No.	SS-25	SS-26	SS-30	SS-31	SS-32			
Lab Sample No. A	141401	141402	141403	141404	141405			
HiCAMS Sample #	--	--	--	--	--			
Retained #4 Sieve %	--	--	--	--	--			
Passing #10 Sieve %	100	96	100	69	98			
Passing #40 Sieve %	96	74	96	60	88			
Passing #200 Sieve %	68	34	75	30	38			

MINUS #10 FRACTION

Soil Mortar - 100%								
Coarse Sand -Ret. #60	10	36	8	25	24			
Fine Sand - Ret. #270	35	35	23	40	48			
Silt 0.05-0.005 mm %	39	23	22	16	18			
Clay < 0.005 mm %	16	6	47	19	10			
Passing # 40 Sieve %	--	--	--	--	--			
Passing # 200 Sieve %	--	--	--	--	--			

Liquid Limit	68	55	64	53	62			
Plastic Index	20	NP	27	11	NP			
AASHTO Classification	A-7-5 (14)	A-2-5 (0)	A-7-5 (19)	A-2-7 (0)	A-5 (1)			
Quantity								
Texture								
Station	256+60 RT	256+60 RT	269+62 LT	269+62 LT	269+62 LT			
Hole No.								
Depth (ft) From:	1.60	2.36	CL	CL	CL			
To:	2.05	2.81	--	--	--			

Remarks:

A-141401 – A-141405

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DIVISION OF HIGHWAYS-MATERIALS AND TESTS UNIT
SOILS TEST REPORT-SOILS LABORATORY

T.I.P. ID #:	--

REPORT ON SAMPLES OF:	Soils for Classification

PROJECT:	6.909001	COUNTY:	Yancey	Owner:	--
DATE SAMPLED:	5-8-03	DATE RECEIVED:	5-16-03	DATE REPORTED:	6-17-03
SAMPLED FROM:	Roadway	SAMPLED BY:	D. P. Murphy		
SUBMITTED BY:	W. D. Frye	2002	STANDARD SPECIFICATION		
LABORATORY:	Asheville				

TEST RESULTS

Project Sample No.	SS-47							
Lab Sample No. A	141491							
HiCAMS Sample #	--							
Retained #4 Sieve %	--							
Passing #10 Sieve %	96							
Passing #40 Sieve %	65							
Passing #200 Sieve %	23							

MINUS #10 FRACTION

Soil Mortar - 100%								
Coarse Sand -Ret. #60	50							
Fine Sand - Ret. #270	31							
Silt 0.05-0.005 mm %	11							
Clay < 0.005 mm %	8							
Passing # 40 Sieve %	--							
Passing # 200 Sieve %	--							

Liquid Limit	45							
Plastic Index	NP							
AASHTO Classification	A-2-5 (0)							
Quantity								
Texture								
Station	300+60 RT							
Hole No.								
Depth (ft) From:	5.00							
To:	5.30							

Remarks:

A-141483 – A-141491

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J. J. Lail	
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SOILS ENGINEER:	

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DIVISION OF HIGHWAYS-MATERIALS AND TESTS UNIT
SOILS TEST REPORT-SOILS LABORATORY

T.I.P. ID #:	--

REPORT ON SAMPLES OF:	Soils for Classification

PROJECT:	6.909001	COUNTY:	Yancey	Owner:	--
DATE SAMPLED:	5-13-03	DATE RECEIVED:	5-16-03	DATE REPORTED:	6-17-03
SAMPLED FROM:	Roadway	SAMPLED BY:	D. P. Murphy		
SUBMITTED BY:	W. D. Frye	2002	STANDARD SPECIFICATION		
LABORATORY:	Asheville				

TEST RESULTS

Project Sample No.	SS-39	SS-40	SS-41	SS-42	SS-43	SS-44	SS-48	SS-49
Lab Sample No. A	141586	141587	141588	141589	141590	141591	141592	141593
HiCAMS Sample #	--	--	--	--	--	--	--	--
Retained #4 Sieve %	--	--	--	--	--	--	--	--
Passing #10 Sieve %	100	70	76	59	97	98	85	90
Passing #40 Sieve %	82	55	67	48	89	90	74	78
Passing #200 Sieve %	29	29	50	31	62	44	55	61

MINUS #10 FRACTION

Soil Mortar - 100%								
Coarse Sand -Ret. #60	35	33	19	29	15	20	19	20
Fine Sand - Ret. #270	44	33	19	23	33	48	22	15
Silt 0.05-0.005 mm %	15	24	23	18	40	20	19	16
Clay < 0.005 mm %	6	10	39	30	12	12	40	49
Passing # 40 Sieve %	--	--	--	--	--	--	--	--
Passing # 200 Sieve %	--	--	--	--	--	--	--	--

Liquid Limit	24	48	47	46	54	47	53	62
Plastic Index	NP	NP	11	21	NP	NP	18	33
AASHTO Classification	A-2-4 (0)	A-2-5 (0)	A-7-5 (4)	A-2-7 (2)	A-5 (7)	A-5 (2)	A-7-5 (9)	A-7-6 (16)
Quantity								
Texture								
Station	274+40 RT	276+20 LT	277+60 LT	277+60 LT	277+60 LT	300+40 LT	303+60 RT	303+60 RT
Hole No.								
Depth (ft) From:	11.63	2.82	1.0	1.76	3.28	2.62	1.72	2.48
To:	12.08	3.12	1.3	2.06	3.58	2.92	2.02	2.78

Remarks:

A-141586 – A-141599

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J. J. Lail	
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SOILS ENGINEER:	

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DIVISION OF HIGHWAYS-MATERIALS AND TESTS UNIT
SOILS TEST REPORT-SOILS LABORATORY

T.I.P. ID #:	--

REPORT ON SAMPLES OF:	Soils for Classification

PROJECT:	6.909001	COUNTY:	Yancey	Owner:	--
DATE SAMPLED:	5-19-03	DATE RECEIVED:	6-9-03	DATE REPORTED:	6-17-03
SAMPLED FROM:	Roadway	SAMPLED BY:	D. P. Murphy		
SUBMITTED BY:	W. D. Frye	2002	STANDARD SPECIFICATION		
LABORATORY:	Asheville				

TEST RESULTS

Project Sample No.	SS-55	SS-56	SS-57	SS-58	SS-59	SS-60	SS-61	SS-62
Lab Sample No. A	141764	141765	141766	141767	141768	141769	141770	141771
HiCAMS Sample #	--	--	--	--	--	--	--	--
Retained #4 Sieve %	--	--	--	--	--	--	--	--
Passing #10 Sieve %	87	100	88	72	94	95	89	88
Passing #40 Sieve %	62	98	74	54	63	75	66	65
Passing #200 Sieve %	23	61	43	32	18	33	20	21

MINUS #10 FRACTION

Soil Mortar - 100%								
Coarse Sand -Ret. #60	43	12	28	36	52	36	46	44
Fine Sand - Ret. #270	37	37	29	27	36	40	41	41
Silt 0.05-0.005 mm %	12	25	21	21	8	14	7	9
Clay < 0.005 mm %	8	26	22	16	4	10	6	6
Passing # 40 Sieve %	--	--	--	--	--	--	--	--
Passing # 200 Sieve %	--	--	--	--	--	--	--	--

Liquid Limit	31	42	29	42	37	39	41	42
Plastic Index	NP	12	10	NP	NP	NP	NP	NP
AASHTO Classification	A-2-4 (0)	A-7-5 (6)	A-4 (2)	A-2-5 (0)	A-2-4 (0)	A-2-4 (0)	A-2-5 (0)	A-2-5 (0)
Quantity								
Texture								
Station	284+85 LT	308+70 LT	310+80 RT	311+60 LT	318+25 LT	321+00 LT	325+90 LT	323+68 LT
Hole No.								
Depth (ft) From:	6.93	1.15	.97	6.98	4.01	.95	2.63	7.19
To:	7.38	1.60	1.42	7.43	4.46	1.40	3.08	7.64

Remarks:

A-141764 – A-141773

CC:

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J. J. Lail	
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SOILS ENGINEER:	

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NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
DIVISION OF HIGHWAYS-MATERIALS AND TESTS UNIT
SOILS TEST REPORT-SOILS LABORATORY

T.I.P. ID #:	--

REPORT ON SAMPLES OF:	Soils for Classification

PROJECT:	6.909001	COUNTY:	Yancey	Owner:	--
DATE SAMPLED:	5-13-03	DATE RECEIVED:	5-16-03	DATE REPORTED:	6-17-03
SAMPLED FROM:	Roadway	SAMPLED BY:	D. P. Murphy		
SUBMITTED BY:	W. D. Frye	2002	STANDARD SPECIFICATION		
LABORATORY:	Asheville				

TEST RESULTS

Project Sample No.	SS-50	SS-51	SS-52	SS-53	SS-54	SS-55		
Lab Sample No. A	141594	141595	141596	141597	141598	141599		
HiCAMS Sample #	--	--	--	--	--	--		
Retained #4 Sieve %	--	--	--	--	--	--		
Passing #10 Sieve %	93	97	88	93	90	96		
Passing #40 Sieve %	80	85	71	59	82	77		
Passing #200 Sieve %	51	53	41	18	39	34		

MINUS #10 FRACTION

Soil Mortar - 100%								
Coarse Sand -Ret. #60	24	22	30	57	22	33		
Fine Sand - Ret. #270	28	32	30	29	41	41		
Silt 0.05-0.005 mm %	14	14	20	8	19	18		
Clay < 0.005 mm %	34	32	20	6	18	8		
Passing # 40 Sieve %	--	--	--	--	--	--		
Passing # 200 Sieve %	--	--	--	--	--	--		

Liquid Limit	54	45	49	38	29	47		
Plastic Index	15	19	17	NP	NP	NP		
AASHTO Classification	A-7-5 (6)	A-7-6 (7)	A-7-5 (3)	A-2-4 (0)	A-4 (1)	A-2-5 (0)		
Quantity								
Texture								
Station	303+60 RT	303+60 RT	303+60 RT	303+00 RT	284+85 LT	284+85 LT		
Hole No.								
Depth (ft) From:	3.24	5.52	7.04	7.00	2.37	6.93		
To:	3.54	5.82	7.49	7.45	2.82	7.38		

Remarks:

A-141586 – A-141599

CC:

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J. J. Lail	
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DIVISION OF HIGHWAYS-MATERIALS AND TESTS UNIT
SOILS TEST REPORT-SOILS LABORATORY

T.I.P. ID #:	--

REPORT ON SAMPLES OF:	Soils for Classification

PROJECT:	6.909001	COUNTY:	Yancey	Owner:	--
DATE SAMPLED:	6-10-03	DATE RECEIVED:	6-18-03	DATE REPORTED:	6-23-03
SAMPLED FROM:	Roadway	SAMPLED BY:	D. P. Murphy		
SUBMITTED BY:	W. D. Frye	2002	STANDARD SPECIFICATION		
LABORATORY:	Asheville				

TEST RESULTS

Project Sample No.	SS-65	SS-66	SS-67	SS-68	SS-69	SS-70		
Lab Sample No. A	141921	141922	141923	141924	141925	141926		
HiCAMS Sample #	--	--	--	--	--	--		
Retained #4 Sieve %	--	--	--	--	--	--		
Passing #10 Sieve %	28	28	100	88	96	95		
Passing #40 Sieve %	21	22	98	80	82	78		
Passing #200 Sieve %	9	12	75	28	52	38		

MINUS #10 FRACTION

Soil Mortar - 100%								
Coarse Sand -Ret. #60	41	35	6	25	23	30		
Fine Sand - Ret. #270	33	28	28	56	30	38		
Silt 0.05-0.005 mm %	14	14	31	13	20	22		
Clay < 0.005 mm %	12	23	35	6	27	10		
Passing # 40 Sieve %	--	--	--	--	--	--		
Passing # 200 Sieve %	--	--	--	--	--	--		

Liquid Limit	19	32	56	51	60	47		
Plastic Index	NP	9	28	NP	22	NP		
AASHTO Classification	A-1-a (0)	A-2-4 (0)	A-7-6 (19)	A-2-5 (0)	A-7-5 (9)	A-4 (1)		
Quantity								
Texture								
Station	331+68 LT	331+68 LT	336+28 LT	336+28 LT	338+15 LT	343+60 LT		
Hole No.								
Depth (ft) From:	5.44	6.96	.90	2.42	1.00	5.60		
To:	5.89	7.41	1.35	2.87	1.45	6.05		

Remarks:

A-141921 – A-141926

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SOILS TEST REPORT-SOILS LABORATORY

T.I.P. ID #:	--

REPORT ON SAMPLES OF:	Soils for Classification

PROJECT:	6.909001	COUNTY:	Yancey	Owner:	--
DATE SAMPLED:	5-19-03	DATE RECEIVED:	6-9-03	DATE REPORTED:	6-17-03
SAMPLED FROM:	Roadway	SAMPLED BY:	D. P. Murphy		
SUBMITTED BY:	W. D. Frye	2002	STANDARD SPECIFICATION		
LABORATORY:	Asheville				

TEST RESULTS

Project Sample No.	SS-63	SS-64						
Lab Sample No. A	141772	141773						
HiCAMS Sample #	--	--						
Retained #4 Sieve %	--	--						
Passing #10 Sieve %	98	99						
Passing #40 Sieve %	77	86						
Passing #200 Sieve %	34	35						

MINUS #10 FRACTION

Soil Mortar - 100%								
Coarse Sand -Ret. #60	37	28						
Fine Sand - Ret. #270	37	50						
Silt 0.05-0.005 mm %	16	14						
Clay < 0.005 mm %	10	8						
Passing # 40 Sieve %	--	--						
Passing # 200 Sieve %	--	--						

Liquid Limit	30	41						
Plastic Index	NP	NP						
AASHTO Classification	A-2-4 (0)	A-2-5 (0)						
Quantity								
Texture								
Station	323+68 LT	326+60 LT						
Hole No.								
Depth (ft) From:	13.27	5.66						
To:	13.72	6.11						

Remarks:

A-141764 – A-141773

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