ID: R-2518A

PROJECT: C201372

CONTENTS:

INVESTIGATION ALONG -L-

STATE OF NORTH CAROLINA

DEPARTMENT OF TRANSPORTATION

DIVISION OF HIGHWAYS

GEOTECHNICAL UNIT

SUBSURFACE INVESTIGATION

STATE PROJECT 6.869005T I.D. NO. R-2518A

F.A. PROJECT

COUNTY MADISON/YANCEY

DESCRIPTION US 19 FROM I-26 TO 0.8 KM EAST OF THE YANCEY CO. LINE

INVENTORY

METRIC

ALL DIMENSIONS IN THESE PLANS ARE IN METERS

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2518A	1	368

STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
34445.1.1		PE
34445.2.2		ROW, UTIL.
34445.4.1		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.

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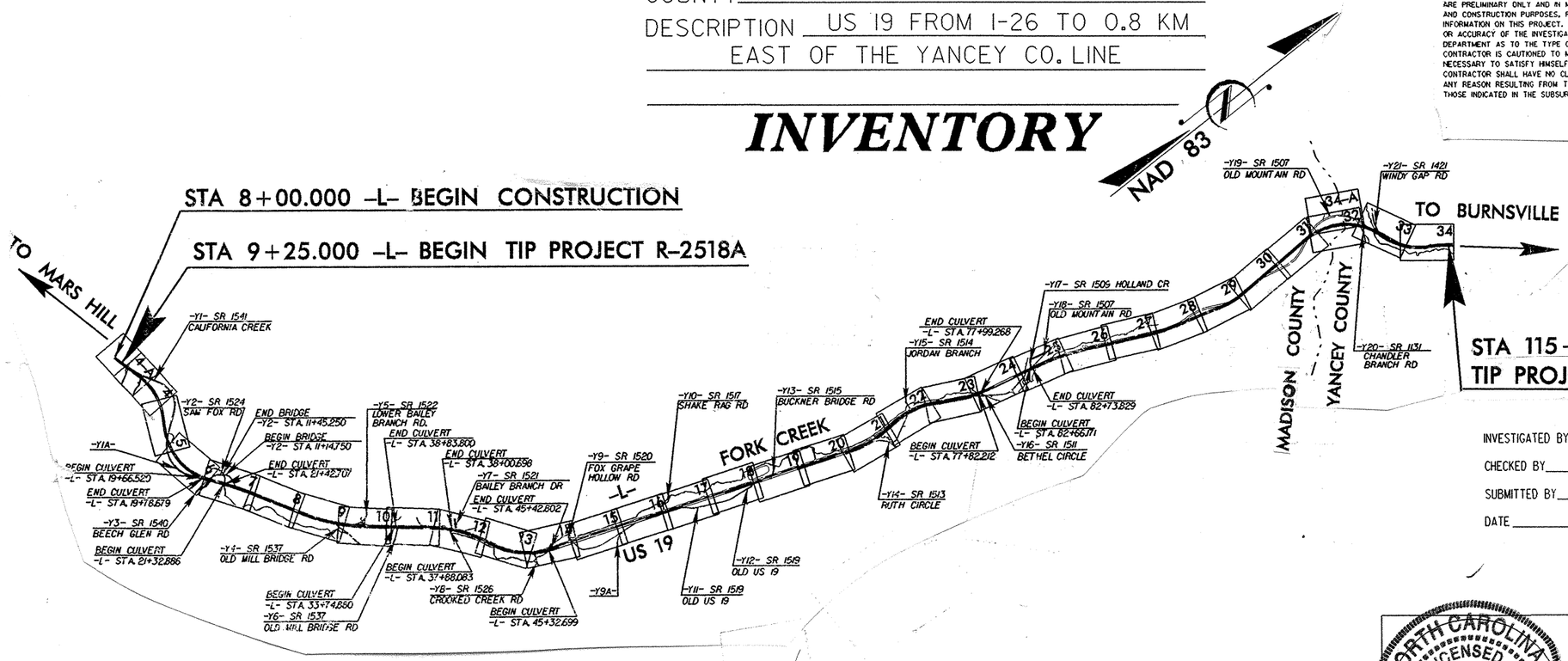

INVESTIGATED BY J C KUHNE PERSONNEL D P MURPHY

CHECKED BY W D FRYE D O CHEEK

SUBMITTED BY J C KUHNE C COFFEY

DATE

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NORTH CAROLINA LICENSED SEAL 1878 GEOLOGIST JODY KUHNE

2/27/04

SEAL

SIGNATURE

DRAWN BY: J C KUHNE D O CHEEK D P MURPHY

ID	STATE PROJECT NO.	SHEET NO.	TOTAL SHEETS
R-2518A	6.869005T	2	368

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 ACCORDING TO STANDARD PENETRATION TEST (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	50 MX											GRANULAR SOILS	SILT-CLAY SOILS	MUCK, PEAT
#40	30 MX	50 MX	51 MN											
#200	15 MX	25 MX	10 MX	35 MX	35 MX	35 MX	35 MX	36 MN	36 MN	36 MN	36 MN			
LIQUID LIMIT	6 MX		N.P.	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	40 MX	41 MN	SOILS WITH LITTLE OR MODERATE AMOUNTS OF ORGANIC MATTER		HIGHLY ORGANIC SOILS
PLASTIC INDEX				10 MX	10 MX	11 MN	11 MN	10 MX	10 MX	11 MN	11 MN			
GROUP INDEX	0		0	0		4 MX		8 MX	12 MX	16 MX	NO MX			
USUAL TYPES OF MAJOR MATERIALS	STONE FRAGS. GRAVEL AND SAND		FINE SAND	SILTY OR CLAYEY GRAVEL AND SAND				SILTY SOILS		CLAYEY SOILS				
GEN. RATING AS A SUBGRADE	EXCELLENT TO GOOD							FAIR TO POOR				FAIR TO POOR	POOR	UNSUITABLE

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 (BLOWS)	RANGE OF UNCONFINED COMPRESSIVE STRENGTH (kN/m^2)
GENERALLY GRANULAR MATERIAL	VERY LOOSE LOOSE MEDIUM DENSE DENSE VERY DENSE	<4 4 TO 10 10 TO 30 30 TO 50 >50	N/A
GENERALLY SILT-CLAY MATERIAL	VERY SOFT SOFT MEDIUM STIFF STIFF VERY STIFF HARD	<2 2 TO 4 4 TO 8 8 TO 15 15 TO 30 >30	<25 25 TO 50 50 TO 100 100 TO 200 200 TO 400 >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	COBBLE	GRAVEL	COARSE SAND	FINE SAND	SILT	CLAY

GRAIN SIZE MM: 305 | 75 | 2.0 | 0.25 | 0.05 | 0.005
GRAIN SIZE 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) PL — PLASTIC LIMIT	- WET - (W)	SEMISOLID; REQUIRES DRYING TO ATTAIN OPTIMUM MOISTURE
OM — OPTIMUM MOISTURE SL — SHRINKAGE LIMIT	- MOIST - (M)	SOLID; AT OR NEAR OPTIMUM MOISTURE
	- DRY - (D)	REQUIRES ADDITIONAL WATER TO ATTAIN OPTIMUM MOISTURE

PLASTICITY

	PLASTICITY INDEX	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, MOTTLED, 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

ROCK DESCRIPTION

IN THE BROADEST MEANING, HARD ROCK IS CONSIDERED THAT MATERIAL WHICH CANNOT BE SAMPLED BY CONVENTIONAL SOIL SAMPLING TOOLS OR TECHNIQUES. THE BOUNDARY BETWEEN SOIL AND ROCK IS ARBITRARY. TRANSITION BETWEEN SOIL AND ROCK IS OFTEN REPRESENTED BY A ZONE OF *WEATHERED ROCK*. FOR THE PURPOSE OF THIS INVESTIGATION, THESE MATERIALS ARE DIVIDED AS FOLLOWS:

WEATHERED ROCK (SWR) (HWR)		SOFT WEATHERED ROCK	MATERIAL THAT CAN BE PENETRATED WITH SOME DIFFICULTY USING POWER AUGERS AND YIELDS SPT VALUES > 100 BLOWS BUT < SPT REFUSAL
		HARD WEATHERED ROCK	MATERIAL THAT CAN BE PENETRATED WITH GREAT DIFFICULTY USING POWER AUGERS AND YIELDS SPT REFUSAL.**
HARD ROCK (HR)	CORED ROCK	INFERRED ROCK LINE**	MATERIAL THAT CANNOT BE PENETRATED BY POWER AUGERS, EXCEPT IN THIN LEDGES, AND REQUIRES ROCK CORING TOOLS FOR OBTAINING A SAMPLE.

*SPT REFUSAL ≤2.5cm OF PENETRATION PER 50 BLOWS.

**AN INFERRED ROCK LINE INDICATES THE LEVEL AT WHICH AUGERS COULD NO LONGER PENETRATE. THE HARD ROCK SYMBOL IS SHOWN WHEN ROCK IS CORED AND ONLY TO THAT DEPTH CORED. A DESCRIPTION OF ROCK IS GIVEN INCLUDING:

CORE RECOVERY (REC.)- TOTAL LENGTH OF ROCK RECOVERED IN THE CORE BARREL DIVIDED BY THE TOTAL LENGTH OF THE CORE RUN TIMES 100%.

ROCK QUALITY DESIGNATION (RQD)- TOTAL LENGTH OF SOUND ROCK SEGMENTS RECOVERED THAT ARE LONGER THAN OR EQUAL TO 0.1m DIVIDED BY THE TOTAL LENGTH OF THE CORE RUN TIMES 100%.

GROUND WATER

- WATER LEVEL IN BORE HOLE IMMEDIATELY AFTER DRILLING.
- STATIC WATER LEVEL AFTER_____HOURS.
- PERCHED WATER, SATURATED ZONE OR WATER BEARING STRATA
- SPRING OR SEEPAGE

MISCELLANEOUS SYMBOLS AND ABBREVIATIONS

- ROADWAY EMBANKMENT WITH SOIL DESCRIPTION
- SOIL SYMBOL
- ARTIFICIAL FILL OTHER THAN ROADWAY EMBANKMENTS
- INFERRED SOIL BOUNDARIES
- ALLUVIAL/RESIDUAL BOUNDARIES
- 25° DIP DIRECTION AND DIP OF STRUCTURES
- APPARENT DIP (NORMAL TO_____)
- SPT DPT VST TEST BORING
- AUGER BORING
- CORE BORING
- MW MONITORING WELL
- PIEZOMETER INSTALLATION
- SLOPE INDICATOR INSTALLATION
- SPT N-COUNT

SAMPLE DESIGNATIONS
S- BULK SAMPLE
SS- SPLIT SPOON SAMPLE
ST- SHELBY TUBE SAMPLE
RS- ROCK SAMPLE
● - SOUNDING ROD

EQUIPMENT USED ON SUBJECT PROJECT

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

AUGER TOOLS:
- [ ] 6" (152 mm) CONTINUOUS FLIGHT
- [x] 8" (203 mm) HOLLOW AUGERS
- [ ] HARD FACED FINGER BITS
- [ ] TUNG. - CARBIDE INSERTS
- [ ] CLAY BITS

OTHER:

HAMMER TYPE:
- [x] AUTOMATIC
- [ ] MANUAL

CORE BORING TOOLS:
- [ ] -AX
- [ ] -BX
- [ ] -NX

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

TERMS AND DEFINITIONS

ALLUVIUM (ALLUV.) - SOILS WHICH HAVE BEEN TRANSPORTED BY WATER.
APPARENT DIP - THE DIP OF ROCK STRATA NOT PERPENDICULAR TO STRIKE.
AQUIFER - A WATER BEARING FORMATION OR STRATA.
AUGER REFUSAL (A.R.) - POINT AT WHICH POWER AUGERS WILL NOT PENETRATE.
BEDDED - SOIL OR ROCK LYING IN A POSITION ESSENTIALLY PARALLEL.
BEDROCK - ROCK OF RELATIVELY GREAT THICKNESS AND EXTENT IN ITS ORIGINAL LOCATION.
CALCAREOUS (CALC.) - SOILS WHICH CONTAIN APPRECIABLE AMOUNTS OF CALCIUM CARBONATE.
COHESIVE SOIL - A SOIL THAT WHEN UNCONFINED HAS CONSIDERABLE DRY STRENGTH AND SIGNIFICANT COHESION WHEN SUBMERGED.
COLLUVIUM - ROCK FRAGMENTS MIXED WITH SOIL DEPOSITED BY GRAVITY ON SLOPE OR AT BOTTOM OF SLOPE.
CORE RECOVERY (% REC.) - TOTAL LENGTH OF ALL ROCK DIVIDED BY TOTAL LENGTH OF CORE RUN AND EXPRESSED AS A PERCENTAGE.
COQUINA - A ROCK TYPE COMPOSED ESSENTIALLY OF MARINE SHELLS CEMENTED BY CALCIUM CARBONATE.
DIKE - IGNEOUS ROCK INTRUSION WHICH IS NARROW COMPARED WITH ITS OTHER DIMENSIONS.
DIP - THE ANGLE BETWEEN A BEDDING PLANE, JOINT PLANE OR FAULT PLANE AND THE HORIZONTAL. MEASURED PERPENDICULAR TO THE STRIKE.
DUMPS - UNCOVERED DEPOSITS OF WASTE MATERIAL SUCH AS WOOD, MASONRY DEBRIS OR GARBAGE.
FAULT - A BREAK IN THE CONTINUITY OF A BODY OF ROCK, ATTENDED BY A MOVEMENT ON EITHER OR BOTH SIDES OF THE BREAK.
FINES - PORTIONS OF A SOIL FINER THAN NO. 200 U.S. STANDARD SIEVE.
FISSILITY OR FISSILE - A PROPERTY OF SPLITTING EASILY ALONG CLOSELY SPACED PARALLEL PLANES.
FLOAT - ROCK FRAGMENTS ON SURFACE NEAR THEIR ORIGINAL POSITION AND DISLODGED FROM PARENT MATERIAL.
FLOODPLAIN - LAND BORDERING A STREAM, BUILT OF SEDIMENTS DEPOSITED BY THE STREAM.
FORMATION - A MAPPABLE UNIT THAT CAN BE RECOGNIZED AND TRACED IN THE FIELD.
FRACTURE - A CRACK LARGE ENOUGH TO BE VISIBLE TO THE UNAIDED EYE.
FRIABLE - EASY TO BREAK OR CRUMBLE.
GRANULAR MATERIAL - SOIL THAT WHEN UNCONFINED HAS LITTLE OR NO DRY STRENGTH AND HAS LITTLE OR NO COHESION WHEN SUBMERGED.
GROUNDWATER (G.W.) - WATER THAT IS FREE TO MOVE THROUGH SOIL MASS UNDER THE INFLUENCE OF GRAVITY.
GROUNDWATER LEVEL - LEVEL OF WATER WITH RESPECT TO EXISTING GROUND SURFACE.
HARDPAN - A GENERAL TERM USED TO DESCRIBE A HARD CEMENTED SOIL LAYER WHICH DOES NOT SOFTEN WHEN WET.
INDURATED - EARTH MATERIAL HARDENED BY HEAT, PRESSURE OR CEMENTATION.
INTERBEDDED - ALTERNATING LENSES OR LAYERS OF SOIL AND/OR ROCK MATERIALS.
JOINT - FRACTURE IN ROCK ALONG WHICH NO APPRECIABLE MOVEMENT HAS OCCURRED.
LAMINATED - VERY THIN ALTERNATING LAYERS LESS THAN 1cm.
LAYER - SUBJECT MATERIAL GREATER THAN 1cm IN THICKNESS.
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.
MARL - A NON-INDURATED, CALCAREOUS DEPOSIT OF CLAYS, SILTS AND SANDS, OFTEN CONTAINING SHELLS.
MICACEOUS SOIL (MIC.) - A SOIL OR ROCK TYPE CONTAINING AN APPRECIABLE AMOUNT OF MICA.
MUCK (MK.) - A HIGHLY ORGANIC SOIL OF VERY SOFT CONSISTENCY, GENERALLY FOUND ON TIDAL FLATS, LAKE OR STREAM FLOODPLAINS.
PEAT (PT) - A FIBROUS MASS OF ORGANIC MATTER IN VARIOUS STAGES OF DECOMPOSITION.
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 - SEE LEGEND
ROCK QUALITY DESIGNATION (R.Q.D.) - A MEASURE OF ROCK QUALITY DESCRIBED BY: TOTAL LENGTH OF ROCK SEGMENTS EQUAL TO OR GREATER THAN 0.1 METER DIVIDED BY THE TOTAL LENGTH OF CORE RUN EXPRESSED AS A PERCENTAGE.
SANITARY LANDFILLS - COMPACTED AND/OR COVERED LAYERS OF SOIL AND WASTE PRODUCTS.
SAPROLITE (SAP.) - RESIDUAL SOIL WHICH RETAINS THE RELIC STRUCTURE OR FABRIC OF THE PARENT ROCK.
SLICKENSIDE - POLISHED AND STRIATED SURFACE THAT RESULTS FROM FRICTION ALONG A FAULT OR SLIP PLAIN.
SILL - AN IGNEOUS SHEET OF INTRUSIVE ROCK WHOSE THICKNESS IS SLIGHT COMPARED TO ITS LATERAL EXTENT.
SOME - PRESENCE OF 5% TO 30% OF SUBJECT MATERIAL.
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 PENETRATION RESISTANCE OF LESS THAN 2.5 cm WITH 50 BLOWS.
STRIKE - THE DIRECTION OR BEARING OF A HORIZONTAL LINE IN THE PLANE OF AN INCLINED STRATUM, JOINT, FAULT OR OTHER STRUCTURAL PLANE.
SUBGRADE - THE SOIL PREPARED TO SUPPORT A STRUCTURE OR A PAVEMENT SYSTEM.
TOPSOIL (T.S.) - SURFACE SOILS USUALLY CONTAINING ORGANIC MATTER.
TRACE - PRESENCE OF LESS THAN 5% OF SUBJECT MATERIAL.

ABBREVIATIONS

BLDR. - BOULDER	PL - PLASTIC LIMIT
CL. - CLAY	PI - PLASTICITY INDEX
COB. - COBBLE	n - POROSITY
CSE. - COARSE	SD. - SAND
EST. - ESTIMATED	SAT. - SATURATED
F. - FINE	SL. - SILT, SILTY
FOSS. - FOSSILIFEROUS	SLI. - SLIGHTLY
FRAC. - FRACTURED	G_s - SPECIFIC GRAVITY
GR. - GRAVEL	qu - UNCONFINED COMPRESSIVE STRENGTH
LL - LIQUID LIMIT	γ - UNIT WEIGHT (WET UNIT WEIGHT)
MED. - MEDIUM	γ_d - DRY UNIT WEIGHT
W - MOISTURE CONTENT	γ_{SAT} - SATURATED UNIT WEIGHT
MOT. - MOTTLED	e - VOID RATIO
OM - OPTIMUM MOISTURE	V. - VERY
ORG. - ORGANIC	

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ADDITIONAL INFORMATION MAY BE AVAILABLE, INCLUDING, BUT NOT LIMITED TO THE FOLLOWING:

FIELD BORING LOGS
ROCK CORES
SOIL & ROCK TEST DATA
SUBSURFACE REPORT

THIS INFORMATION MAY BE VIEWED BY APPOINTMENT 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.

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NOTES:

REVISED NOVEMBER 11, 1998

09/09/99

R-2518A

PROJECT: 6.869005T

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

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

MADISON / YANCEY COUNTIES

METRIC

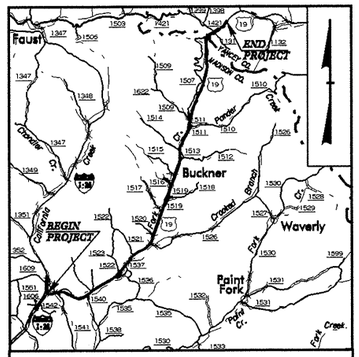
ALL DIMENSIONS IN THESE PLANS ARE IN METERS UNLESS OTHERWISE SHOWN

STATE	STATE PROJECT REFERENCE NO.	SHEET NO.	TOTAL SHEETS
N.C.	R-2518A	2A	368

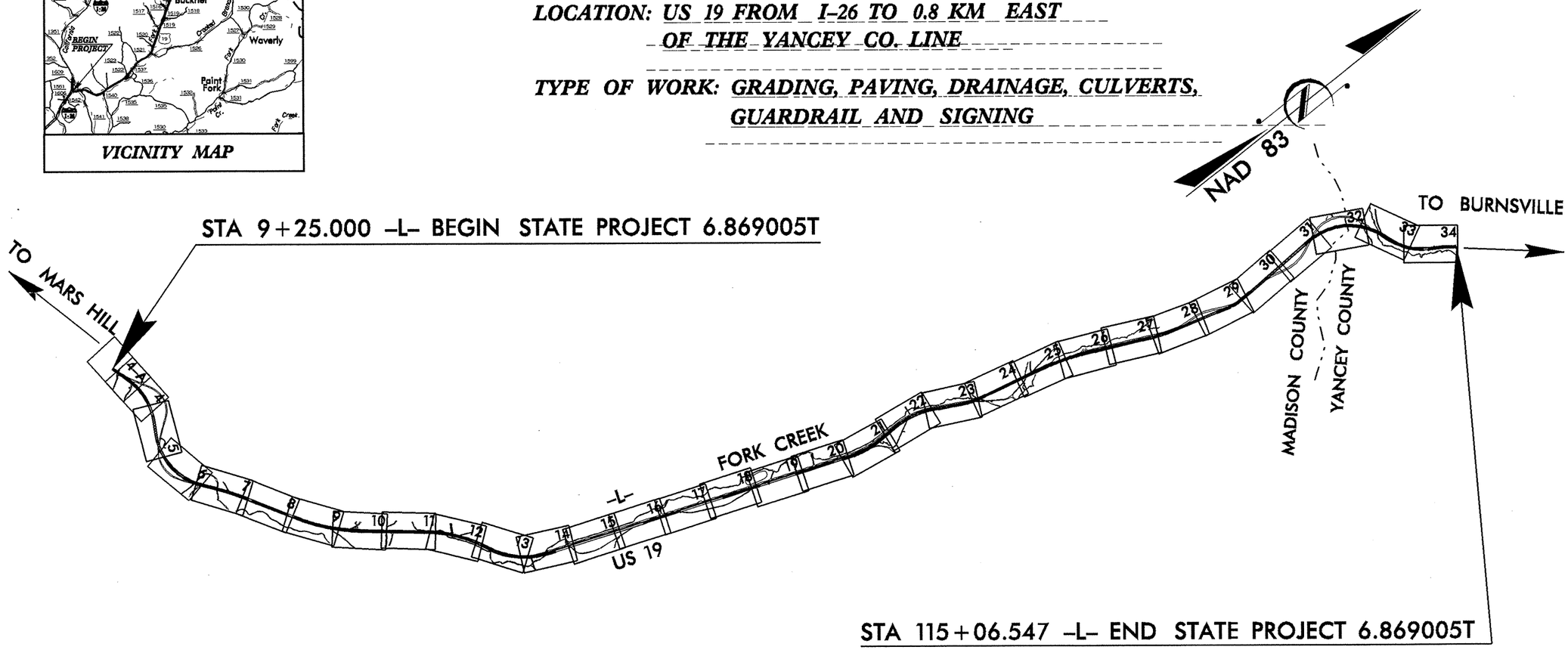
STATE PROJ. NO.	F.A. PROJ. NO.	DESCRIPTION
6.869005T		PE

LOCATION: US 19 FROM I-26 TO 0.8 KM EAST OF THE YANCEY CO. LINE

TYPE OF WORK: GRADING, PAVING, DRAINAGE, CULVERTS, GUARDRAIL AND SIGNING



VICINITY MAP



THIS PROJECT IS NOT WITHIN ANY MUNICIPAL BOUNDARIES.
CLEARING ON THIS PROJECT SHALL BE PERFORMED TO THE LIMITS ESTABLISHED BY METHOD ____.
THIS IS A PARTIAL CONTROLLED-ACCESS PROJECT WITH ACCESS BEING LIMITED TO POINTS AS SHOWN ON THE PLANS.

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

GRAPHIC SCALES

5 0 10
PLANS

5 0 10
PROFILE (HORIZONTAL)

1 0 2
PROFILE (VERTICAL)

DESIGN DATA

ADT 2008 = 10,860 - 12,080
ADT 2028 = 16,440 - 18,220
DHV = 10 %
D = 65 %
T = 10 % *
V = 100 km/h

* TTST 6 % + DUAL 4 %

PROJECT LENGTH

LENGTH ROADWAY PROJECT 6.869005T = ____ KM
LENGTH STRUCTURE PROJECT 6.869005T = ____ KM
TOTAL LENGTH STATE PROJECT 6.869005T = 10.582 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

B. L. MOORE, PE
PROJECT ENGINEER

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

27 February, 2004

STATE PROJECT: 34445.1.1, R-2518A

COUNTY: Madison/Yancey

DESCRIPTION: US 19 E from I-26 to 0.8 km East of the Yancey Co. line

SUBJECT: Geotechnical Report – Inventory

PROJECT DESCRIPTION

The project consists of 10.58 km of roadway widening from 2 and 3 lane existing to 4 lane with exit turnouts. Widening is along existing except for Stations 93+00 – 115+00 which involve straightening of these sections. Structures to be added or lengthened are one 1-barrel culvert, three 2-barrel culverts, five 3-barrel culverts, three retaining walls and no bridge work.

A geotechnical investigation was performed from July through August 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 -	9+25 – 115+06

AREAS OF SPECIAL GEOTECHNICAL INTEREST

STRUCTURES

There are three 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 with SPT's were done at these existing culvert locations:

19+60 rt – 19+80 lt	45+20 rt – 45+40 lt	83+00
21+25 rt – 21+25 lt	70+40 rt	
33+70 lt – 33+90 rt	77+60 lt – 78+00 rt	
37+80 lt – 38+00 rt	81+50 rt – 81+60 lt	

At the time of this investigation, no proposal exists for stream alignment at Stations 82+60 – 84+20. Discussion with the Hydraulics Unit prompted additional borings for a culvert at Station 83+00.

GROUNDWATER

Groundwater is expected within 2m of grade within all alluvial areas with low fills. Water will be within the expected foundations of the three retaining walls. Cuts from Stations 9+20 – 84+00 were dry at the time of the investigation. Cuts from 84+00 – 115+00 have groundwater levels above grade, usually near the soil/weathered rock boundary.

POTENTIALLY UNSUITABLE SUBSURFACE CONDITIONS

Colluvium is present in the wall excavations from Stations 101+20 – 103+20. Colluvium in cut areas is expected to be removed by proposed slope designs.

PHYSIOGRAPHY AND GEOLOGY

The project beginning ties into existing I-26 at Station 9+20, grades into a 31m cut from Station 11+60 – 14+20 and then drops into the floodplain of Middle Fork Creek for the next 6.8 km. This section contains several one-sided cuts in rock and soil typically 10-20m in height. At station 83+00 the alignment begins climbing from elevation 738m to 887m at the highest point in Ivy Gap and then ties into existing at Station 115+00.

There is little recent development along the existing alignment with land use limited to older farmhouses with small family farms, several old or abandoned service stations and some commercial ventures such as used cars, antiques, flea markets and of course, the Carp Lake.

The project is contained within one geologic unit which is an internally complex high grade, migmatized biotite gneiss unit. Amphibolite, particularly hornblende is common and foliation is poorly to moderately developed striking predominately N-S and dipping steeply to the east.

SOIL PROPERTIES

Soils in cut areas are predominately micaceous silty sands and clayey sands. Manganese

oxide and iron oxide should be expected throughout all cuts and will generate nearly frictionless surfaces of indeterminate orientation throughout the overburden profile.

The first cut section through Station 14+20 is predominately medium to very dense saprolite with weathered rock seams and some rock at the proposed ditchline elevation.

The next 6.8 km will involve low to medium cuts in mostly saprolite, some with weathered rock throughout the cut. The fills will rest on mostly very loose to loose alluvial deposits of sandy gravel, clayey gravel and other combinations of sands and clays. No organic material was encountered in natural or artificial fill materials.

The final grade from 84+00 – 115+00 will have the largest cuts on the project with 2 – 10 m of medium dense to very dense saprolite and 2 – 4 m of weathered rock before grading into weathered and fresh rock material.

Areas denoted on cross sections as "saprolite with weathered rock seams" may contain very weathered to slightly weathered rock that requires select ripping or blasting to excavate.

ROCK PROPERTIES

As described under Geology, the complex gneisses on this project are widely variable with most hard rock encountered from Stations 85+00 – 115+00. There are no typical overburden profiles and rock appears intermittently from one cut section to the next. The project is located entirely within the mapped unit Ymg and typically has no concerns for trigger amounts of sulfate producing minerals. No contingencies for acid producing rock are recommended. Foliation strikes roughly N-S steeply dipping to the east between 45 and 90^0. For those of you who may endeavor to drill and blast this rock, quartz veining is common in 3-30cm thickness with quartz rich layers up to 1m. RQD is generally poor but consistently reaches 50% from Stations 90-106+00. A stereonet of major discontinuities in the vicinity of 106+00 is included in this report.

GROUNDWATER

Soils on the project are generally well drained with very little water likely above grade in all cut areas from 9+20 to 84+00. The extensive alluvial areas on which most of the low fills will be built are likely to have water at the base flow elevation of the streams to within 1 m of the surface. Rainfall amounts were above average at the time of the investigation, however, no swampy areas or standing water was noted along the alignment. Water should be expected within 2 – 10m of the surface in all areas from Stations 84+00 to 115+00. A quantity of fabric for soil stabilization and granular backfill is in the recommendations for fill areas over alluvium to deal with saturated areas although no saturated clays of note were found.

GEOTECHNICAL DESCRIPTIVE ANALYSIS

Stations 9+20 – 18+20

This section grades from the intersection of I-26 and begins a short section of realignment through the first large cut area from 12+00 – 14+20. The cut depth reaches 35 m, mostly in soil and saprolite. Weathered rock can be expected through the center of the cut starting at elevation 700 and grading into rock at elevation 690. All borings were dry through this section with the exception of 13+60 showing water levels 3 m above grade. MnO is present throughout this section and will negatively affect the med. dense to dense soils.

The left hand cut from 15+80 – 18+20 is dry with mostly saprolite and weathered rock at grade.

Petroleum product was found in the boring at 15+40.

Stations 18+20 – 42+00

This section is characterized by low cuts with several large culvert extensions and associated floodplain alluvium. Culverts cross at 19+80, 21+40, 33+80 and 38+00. Stream channel realignment is not addressed in the plans for 35+80 to 37+80 but it is assumed that this will not be culvert.Cuts will involve rock at 20+80, 25+80 – 26+20, 27+00, 30+00 and 34+80 – 35+40. The intersection at –Y3-, Station 20+20, was not drilled, but is likely to have rock up to 3 m above grade.

Stations 42+00 – 62+00

42+00 begins with a 20 m cut on the left with 5 – 10 m of rock and weathered rock above the ditchline elevation dropping to 5 m of weathered rock by 43+80. Alluvium is present from 44+60 – 46+00 with a culvert extension at 45+60. The cut from 46+20 – 47+20 has 5 – 7 m of hard rock above the ditchline elevation. Alluvial floodplain is present until 52+00 which starts a large cut on the right to 55+60. Rock is present in this section from 5 – 15 m above ditchline elevation. Alluvial floodplain continues to finish the section from 55+60 to 62+00.

Stations 62+00 – 76+00

This section is characterized by medium and large cuts on the right, with rock 2 – 12 m above ditchline elevation from 62+20 – 64+00 and 68+80 – 69+20. Rock is more prevalent from 72+80 – 75+80 and increases to 15 – 17 m above ditchline elevation. Weathered rock horizons in this section may be 2 – 5 m thick. The smaller cuts in this section will primarily be saprolite and weathered rock.

Stations 76+00 – 83+40

This section consists of mostly alluvial floodplain with several low cuts in saprolite on the left.

Stations 83+40 – 100+60

This area contains several medium to large cuts consisting of 5-20 m of rock above ditchline elevation with up to 5 m of weathered rock horizon above that. Rock does not reach consistent RQD's above 50% through the section and is not a good candidate for presplit blasting. Rock structure is heterogeneous and rock strength is high.

Stations 100+60 – 103+80

Large retaining walls support the embankment on the left with no cut on the right. Colluvium/alluvium exists in this section in depths up to 7 m but is usually underlain by shallow weathered rock. Preliminary fill slopes near the walls are proposed at 1 ½:1; slopes this step should be constructed of ClassIV rock fill and unsuitable colluvium beneath the fill area should be undercut to stable material.

103+80 – 109+00

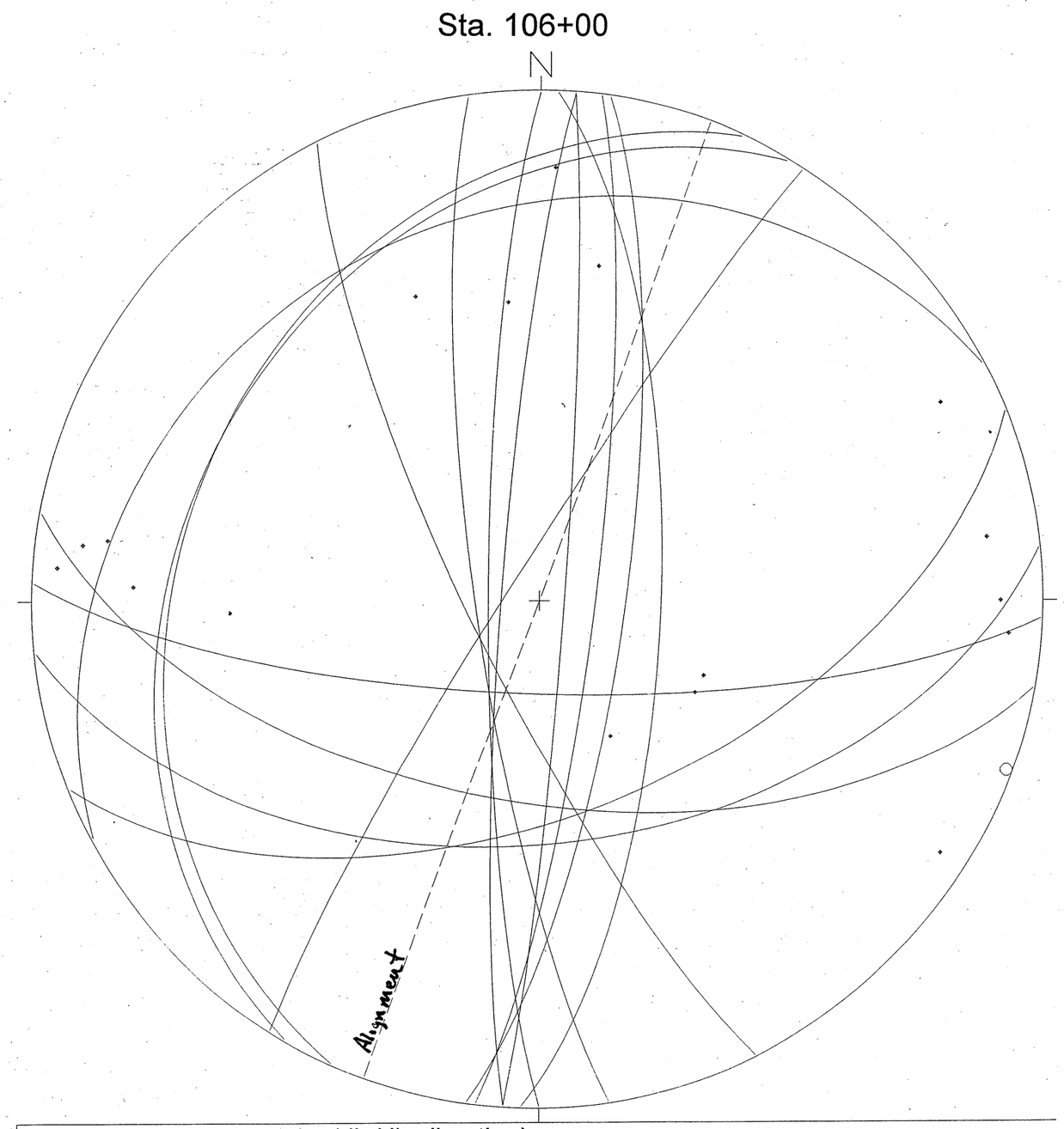
This section involves the largest cuts on the alignment with rock up to 20 m above centerline grade and up to 45 m above 2:1 proposed cutslopes. RQD's are high up to Station 104+60 and presplit blasting should be considered in this section after reviewing stereonet data included in this report. Thin colluvium veneers are expected to be excavated in conceivable slope designs and should not represent a problem in the backslopes.

109+00 – 115+00

This section shifts to cuts on the left with a medium sized cut for the realigned tie in of -Y 21- . The cut for –Y 21- has very good RQD. The culvert crossing at 109+60 was not drilled and has rock outcropping at the stream level. Rock in the cuts from 110+00 – 112+00 is 5-8 m above ditchline elevation and has very poor RQD.

Respectfully submitted,

Jody C. Kuhne



R-2518A
6.869001T

× joint (dip/dip direction)
△ foliation (dip/dip direction)

PROJECT: R-2518A COUNTY: Madison /Yancey SHEET 3C OF 368

	STATION	STATION	EXCAVATION					EMBANKMENT				BORROW	WASTE			
			TOTAL EXCAV. (UNCL)	ROCK	UNDERCUT	UNSUIT. UNCLASS.	SUITABLE UNCLASS.	TOTAL	ROCK	EARTH	EMB. + 15 %		ROCK	SUITABLE	UNSUIT.	TOTAL
	L RIGHT															
L	09+25.000	18+40.000	290,349	4,430			285,919	12,710	4,430	7,394	12,933			277,416		277,416
Y1	10+94.767	11+75.000	845				845	2,134		2,134	2,454	1,609				
D1	10+09.400	10+24.699						142		142	163	163				
D1A	10+03.011	10+85.000	4,616				4,616	19		19	22			4,594		4,594
D1B	10+02.062	10+29.000	674				674							674		674
D2B	10+11.025	10+26.240						243		243	279	279				
D3	10+00.000	10+18.200	14				14	1		1	1			13		13
	SUBTOTAL		296,498	4,430			292,068	15,249	4,430	9,933	15,852	2,051		282,697		282,697
L	18+40.000	27+60.000	16,344	901			15,443	16,166	901	15,085	18,249	1,905				
Y1A	10+09.570	11+30.000	1,894				1,894	3,210		3,210	3,692	1,798				
Y3	10+10.165	11+40.000	15,452				15,452	745		745	857			14,595		14,595
D3A	10+11.155	10+54.000	6,759				6,759							6,759		6,759
D3B	5+03.600	5+13.798						273		273	314	314				
D3C	10+03.600	10+40.000	615				615	81		81	93			522		522
	SUBTOTAL		41,064	901			40,163	20,475	901	19,394	23,205	4,017		21,876		21,876
L	27+60.000	36+80.000	14,241	871			13,370	2,126	871	1,081	2,114			12,127		12,127
Y4	10+09.830	11+40.000	86				86	3,654		3,654	4,202	4,116				
Y6	10+11.171	10+80.000	2,269				2,269	17		17	20			2,249		2,249
D6B	10+11.074	10+42.000	318				318							318		318
	SUBTOTAL		16,914	871			16,043	5,797	871	4,752	6,336	4,116		14,694		14,694
L	36+80.000	46+00.000	5,287	184			5,103	10,148	184	9,927	11,600	6,313				
Y8	10+10.040	10+43.000						336		336	386	386				
D6C	10+11.026	10+35.000	48				48							48		48
	SUBTOTAL		5,335	184			5,151	10,484	184	10,263	11,986	6,699		48		48
L	46+00.000	55+20.000	212,916	27,651			185,265	17,211	14,342		14,342		13,309	185,265		198,574
Y9A	10+09.825	10+60.000	6				6	430		430	495	489				
D7A	10+11.035	10+42.034	9				9	36		36	41	32				
	SUBTOTAL		212,931	27,651			185,280	17,677	14,342	466	14,878	521	13,309	185,265		198,574
	SHEET TOTALS		572,742	34,037			538,705	69,682	20,728	44,808	72,257	17,404	13,309	504,580		517,889

PROJECT: R-2518A COUNTY: Madison /Yancey

	STATION	STATION	EXCAVATION					EMBANKMENT				BORROW	WASTE			
			TOTAL EXCAV. (UNCL)	ROCK	UNDERCUT	UNSUIT. UNCLASS.	SUITABLE UNCLASS.	TOTAL	ROCK	EARTH	EMB. + 15 %		ROCK	SUITABLE	UNSUIT.	TOTAL
	L RIGHT															
L	55+20.000	64+40.000	160,229	63,605			96,624	15,318	12,765		12,765		50,840	96,624		147,464
Y11	10+09.825	10+80.000	219				219	332		332	382	163				
Y12	10+09.825	10+75.339	74				74	393		393	452	378				
D7	10+02.763	10+40.000	200				200							200		200
D8	10+02.709	10+20.000	29				29							29		29
D8A	10+11.025	10+50.000	18				18	28		28	32	14				
	SUBTOTAL		160,769	63,605			97,164	16,071	12,765	753	13,631	555	50,840	96,853		147,693
L	64+40.000	73+60.000	200,483	14,806			185,677	7,286	6,072		6,072		8,734	185,677		194,411
Y14	10+09.830	10+60.000	5,483				5,483							5,483		5,483
D9	10+11.025	10+38.000	397				397							397		397
D10	10+11.195	10+40.000	450				450							450		450
	SUBTOTAL		206,813	14,806			192,007	7,286	6,072		6,072		8,734	192,007		200,741
L	73+60.000	82+80.000	182,457	63,752			118,705	6,663	5,553		5,553		58,199	118,705		176,904
Y16	10+09.825	11+20.000						2,985		2,985	3,433	3,433				
Y17	10+90.900	12+20.000	384				384	1,451		1,451	1,669	1,285				
D11	10+11.178	10+28.000						10		10	12	12				
D12	10+02.700	10+20.000	6				6	1		1	1			5		5
D12A	10+00.000	10+39.061						119		119	137	137				
	SUBTOTAL		182,847	63,752			119,095	11,229	5,553	4,566	10,805	4,867	58,199	118,710		176,909
L	82+80.000	92+00.000	377,052	94,900			282,152	9,537	7,948		7,948		86,952	282,152		369,104
D14A	10+11.025	11+53.600	73,655				73,655							73,655		73,655
D15A	10+11.079	10+79.000	8,611	5,434			3,177						5,434	3,177		8,611
D15B	10+11.025	10+40.000	1,962				1,962	33		33	38			1,924		1,924
	SUBTOTAL		461,280	100,334			360,946	9,570	7,948	33	7,986		92,386	360,908		453,294
L	92+00.000	101+20.000	322,195	114,491			207,704	17,707	14,756		14,756		99,735	207,704		307,439
D16	10+11.220	10+37.000	1,430				1,430							1,430		1,430
	SUBTOTAL		323,625	114,491			209,134	17,707	14,756		14,756		99,735	209,134		308,869
L	101+20.000	110+40.000	864,980	587,398			277,582	79,062	65,885		65,885		521,513	277,582		799,095
Y20	10+09.825	10+60.000	634				634	2,080		2,080	2,392	1,758				
D16A	10+11.030	10+64.000	36				36	5,912		5,912	6,799	6,763				
D17	10+02.906	12+03.328	9,951				9,951	645		645	742			9,209		9,209
	SUBTOTAL		875,601	587,398			288,203	87,699	65,885	8,637	75,818	8,521	521,513	286,791		808,304
L	110+40.000	115+06.547	592				592	4,735		4,735	5,445	4,853				
	SUBTOTAL:		592				592	4,735		4,735	5,445	4,853				
	SHEET TOTALS		2,211,527	944,386			1,267,141	154,297	112,979	18,724	134,513	18,796	831,407	1,264,403		2,095,810

PROJECT: R-2518A COUNTY: Madison /Yancey SHEET 3E OF 368

	STATION	STATION	EXCAVATION					EMBANKMENT				BORROW	WASTE			
			TOTAL EXCAV. (UNCL)	ROCK	UNDERCUT	UNSUIT. UNCLASS.	SUITABLE UNCLASS.	TOTAL	ROCK	EARTH	EMB. + 15 %		ROCK	SUITABLE	UNSUIT.	TOTAL
	L LEFT															
L	09+25.000	18+40.000	241,923	2,186			239,737	2,783	2,186	160	2,370			239,553		239,553
Y1	10+20.000	10+71.455	104				104							104		104
D2	10+00.000	10+60.000	570				570							570		570
D2A	10+00.500	11+40.500	749				749	281		281	323			426		426
DET2	10+63.111	13+74.112	2,096				2,096	1,470		1,470	1,691			405		405
	SUBTOTAL		245,442	2,186			243,256	4,534	2,186	1,911	4,384			241,058		241,058
L	18+40.000	27+60.000	55,371	2,938			52,433	21,165	2,938	17,639	23,223			32,148		32,148
Y2	10+00.000	11+20.000	550				550	184		184	212			338		338
Y2	11+60.000	12+20.000	1,879				1,879	300		300	345			1,534		1,534
D4A	10+00.000	10+52.356	2,763				2,763	2		2	2			2,761		2,761
	SUBTOTAL		60,563	2,938			57,625	21,651	2,938	18,125	23,782			36,781		36,781
L	27+60.000	36+80.000	75,101	3,760			71,341	39,252	3,760	34,740	43,711			31,390		31,390
Y5	10+00.000	10+76.476	3,716				3,716	727		727	836			2,880		2,880
D5	10+00.000	10+58.577	2,945				2,945							2,945		2,945
D6	10+18.600	10+31.668	181				181	29		29	33			148		148
	SUBTOTAL		81,943	3,760			78,183	40,008	3,760	35,496	44,580			37,363		37,363
L	36+80.000	46+00.000	148,836	6,488			142,348	19,974	6,488	12,188	20,504			128,332		128,332
Y7	10+00.000	10+65.606	286				286	856		856	984	698				
	SUBTOTAL		149,122	6,488			142,634	20,830	6,488	13,044	21,488	698		128,332		128,332
L	46+00.000	55+20.000	2,591	185			2,406	1,275	185	1,053	1,396			1,195		1,195
Y9	10+20.000	10+49.976	18				18	17		17	20	2				
Y10	10+06.000	10+44.548						46		46	53	53				
	SUBTOTAL		2,609	185			2,424	1,338	185	1,116	1,469	55		1,195		1,195
L	55+20.000	64+40.000	2,283	120			2,163	985	120	841	1,087			1,196		1,196
	SUBTOTAL		2,283	120			2,163	985	120	841	1,087			1,196		1,196
L	64+40.000	73+60.000	4,998	209			4,789	3,815	209	3,564	4,308			690		690
Y13	10+15.000	10+62.216	21				21	116		116	133	112				
Y15	10+00.000	10+37.851						24		24	28	28				
	SUBTOTAL		5,019	209			4,810	3,955	209	3,704	4,469	140		690		690
L	73+60.000	82+80.000	25,458	61			25,397	7,761	61	7,688	8,902			16,556		16,556
Y17	09+95.000	10+70.000	646				646	198		198	228			418		418
D13	10+00.000	10+20.680						182		182	209	209				
D14	10+04.500	10+43.710	1,101				1,101							1,101		1,101
D15	10+02.000	10+45.247	624				624							624		624
	SUBTOTAL		27,829	61			27,768	8,141	61	8,068	9,339	209		18,699		18,699
	SHEET TOTALS		574,810	15,947			558,863	101,442	15,947	82,305	110,598	1,102		465,314		465,314

PROJECT: R-2518A COUNTY: Madison /Yancey

	STATION	STATION	EXCAVATION					EMBANKMENT				BORROW	WASTE			
			TOTAL EXCAV. (UNCL)	ROCK	UNDERCUT	UNSUIT. UNCLASS.	SUITABLE UNCLASS.	TOTAL	ROCK	EARTH	EMB. + 15 %		ROCK	SUITABLE	UNSUIT.	TOTAL
	L LEFT															
L	82+80.000	92+00.000	5,918	838			5,080	8,712	838	7,706	9,700	3,782				
Y18	10+03.203	11+75.000	17,543				17,543	170		170	196			17,347		17,347
	SUBTOTAL		23,461	838			22,623	8,882	838	7,876	9,896	3,782		17,347		17,347
L	92+00.000	101+20.000	45,335	11,461			33,874	61,003	11,461	47,250	65,799	20,464				
	SUBTOTAL		45,335	11,461			33,874	61,003	11,461	47,250	65,799	20,464				
L	101+20.000	110+40.000	172,614	107,336			65,278	117,332	97,777		97,777		9,559	65,278		74,837
Y19	10+00.000	11+01.416	19,546				19,546	5		5	6			19,540		19,540
Y21	10+00.000	10+60.100	1,872				1,872	1,162		1,162	1,336			536		536
DET	10+28.000	11+90.000	13				13	6,251		6,251	7,189	7,176				
D16B	10+01.000	10+25.000	5				5							5		5
	SUBTOTAL		194,050	107,336			86,714	124,750	97,777	7,418	106,308	7,176	9,559	85,359		94,918
L	110+40.000	115+06.547	97,799	14,551			83,248	563	469		469		14,082	83,248		97,330
D17A	10+01.000	10+30.900	222				222							222		222
D20	5+00.000	05+28.520	1,453				1,453							1,453		1,453
		SUBTOTAL	99,474	14,551			84,923	563	469		469		14,082	84,923		99,005
	SHEET TOTALS		362,320	134,186			228,134	195,198	110,545	62,544	182,472	31,422	23,641	187,629		211,270
	SHEET 1 TOTALS		572,742	34,037			538,705	69,682	20,728	44,808	72,257	17,404	13,309	504,580		517,889
	SHEET 2 TOTALS		2,211,527	944,386			1,267,141	154,297	112,979	18,724	134,513	18,796	831,407	1,264,403		2,095,810
	SHEET 3 TOTALS		574,810	15,947			558,863	101,442	15,947	82,305	110,598	1,102		465,314		465,314
		TOTALS	3,721,399	1,128,556			2,592,843	520,619	260,199	208,381	499,840	68,724	868,357	2,421,926		3,290,283
LOSS DUE TO CLEARING & GRUB.			-5,000				-5,000							-5,000		-5,000
WASTE IN LIEU OF BORROW												-68,724		-68,724		-68,724
DETOUR REMOVAL			7,189				7,189							7,189		7,189
	PROJECT TOTALS		3,723,588	1,128,556			2,595,032	520,619	260,199	208,381	499,840		868,357	2,355,391		3,223,748
	ADJUSTMENT FOR ROCK WASTE SWELL												173,671			173,671
	ADJUSTMENT FOR UNCOMPACTED ROCK WASTE												156,304			156,304
	GRAND TOTALS		3,723,588	1,128,556			2,595,032	520,619	260,199	208,381	499,840		1,198,332	2,355,391		3,553,723
	SAY		3,723,800													
	ADDITIONAL UNDERCUT		25,000 CM AS A CONTINGENCY ITEM													
	SHOULDER BORROW		37,000 CM													
	DRAINAGE DITCH EXCAV.		9,360 CM													
	PAVEMENT STR. VOLUME		72,157 CM													

Computed By: rwb 3/8/07 Checked By: gsb 6/14/07

PROJECT: R-2518A COUNTY: Madison /Yancey

	STATION	STATION	EXCAVATION					EMBANKMENT				BORROW	WASTE			
			TOTAL EXCAV. (UNCL)	ROCK	UNDERCUT	UNSUIT. UNCLASS.	SUITABLE UNCLASS.	TOTAL	ROCK	EARTH	EMB. + 15 %		ROCK	SUITABLE	UNSUIT.	TOTAL
	EARTHWORK TOTALS FOR ALTERNATE PAV'T DESIGN ASPHALT BASE															
	TOTALS		3,721,399	1,128,556			2,592,843	520,619	260,199	208,381	499,840	68,724	868,357	2,421,926		3,290,283
	ADJ. FOR ALT. PAV'T DESIGN		-12,500								9,600	9,600		-12,500		-12,500
	LOSS DUE TO CLEARING & GRUB.		-5,000				-5,000							-5,000		-5,000
	WASTE IN LIEU OF BORROW											-78,324		-78,324		-78,324
	DETOUR REMOVAL		7,189				7,189							7,189		7,189
	PROJECT TOTALS		3,711,088	1,128,556			2,595,032	520,619	260,199	208,381	509,440		868,357	2,333,291		3,201,648
ADJUSTMENT FOR ROCK WASTE SWELL													173,671			173,671
ADJUSTEMENT FOR UNCOMPACTED ROCK WASTE													156,304			156,304
	GRAND TOTALS		3,711,088	1,128,556			2,595,032	520,619	260,199	208,381	509,440		1,198,332	2,333,291		3,531,623
	SAY (ASPHALT BASE)		3,711,300													
	ADDITIONAL UNDERCUT		25,000 CM AS A CONTINGENCY ITEM													
	SHOULDER BORROW		30,200 CM													
	DRAINAGE DITCH EXCAV.		9,360 CM													
	PAVEMENT STR. VOLUME		62,873 CM													

Computed By: GSB 2/22/08 Checked By: TFD 2/22/08

PROJECT REFERENCE NO.	SHEET NO.
R-2518A	4 of 368
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

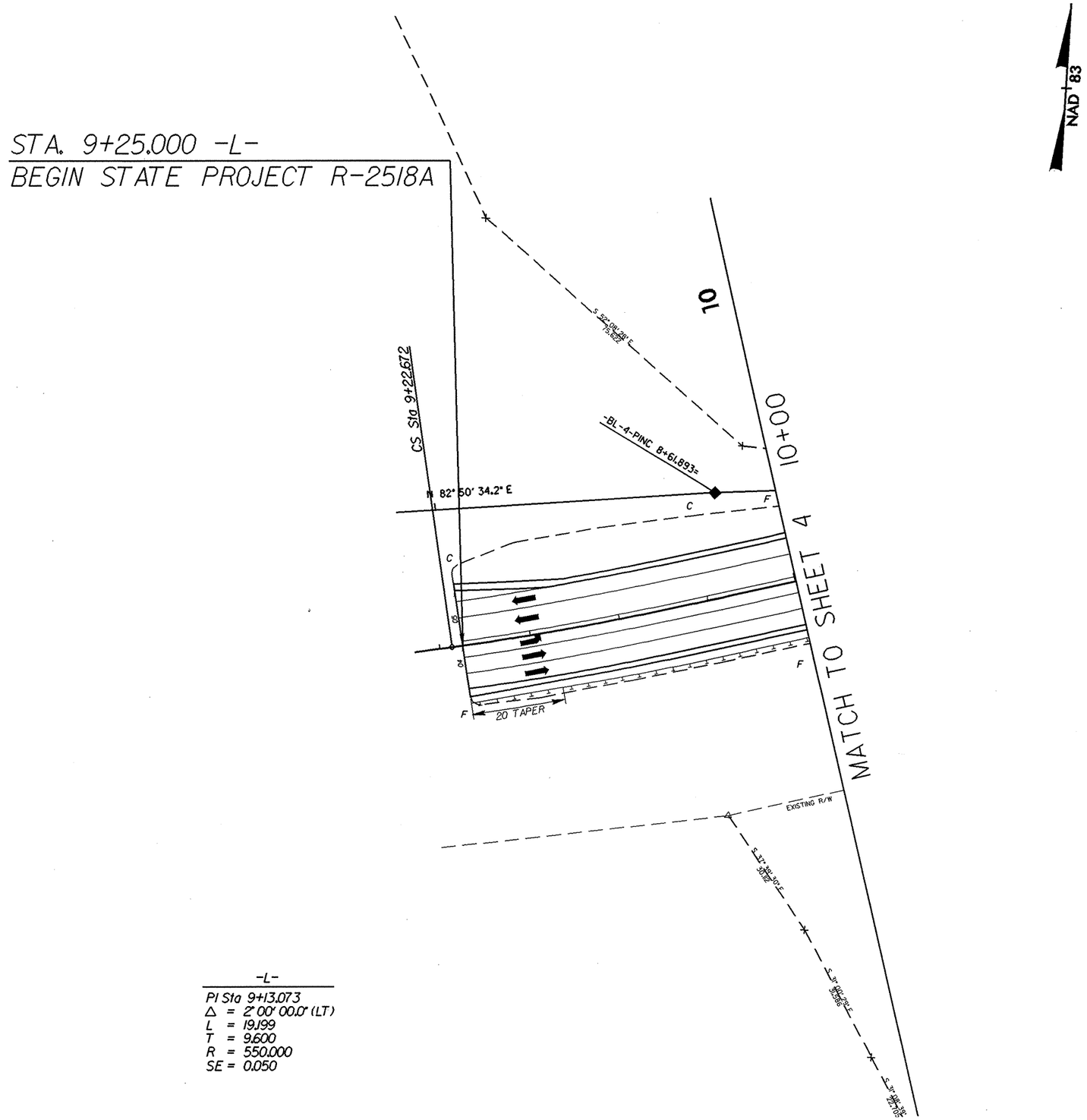
5 0 10

CONST. REV.

R/W REV.

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



-L-

PI Sta 9+13.073
Δ = 2° 00' 00.0" (LT)
L = 19.199
T = 9.600
R = 550.000
SE = 0.050

PROJECT REFERENCE NO.	SHEET NO.
R-2518A	5 of 369
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

CONST.REV.

R/W REV.

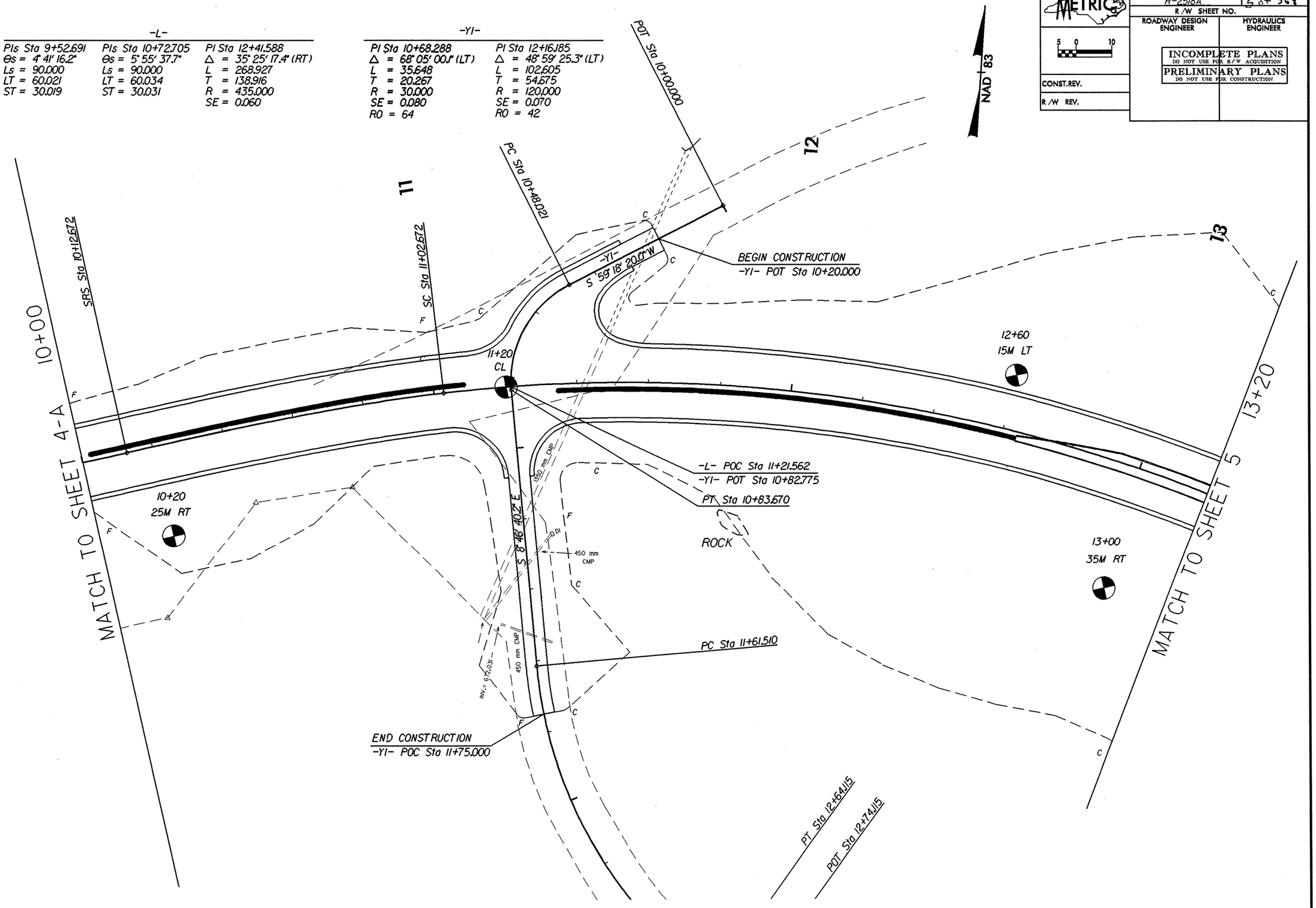
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-

PIs Sta 9+52.691	PIs Sta 10+72.705	PI Sta 12+41.588
Θs = 4° 41' 16.2"	Θs = 5° 55' 37.7"	Δ = 35° 25' 17.4" (RT)
Ls = 90.000	Ls = 90.000	L = 268.927
LT = 60.021	LT = 60.034	T = 138.916
ST = 30.019	ST = 30.031	R = 435.000
		SE = 0.060

-Y1-

PI Sta 10+68.288	PI Sta 12+16.185
Δ = 68° 05' 00.1" (LT)	Δ = 48° 59' 25.3" (LT)
L = 35.648	L = 102.605
T = 20.267	T = 54.675
R = 30.000	R = 120.000
SE = 0.080	SE = 0.070
RO = 64	RO = 42



PROJECT REFERENCE NO.	SHEET NO.
R-2518A	6 of 348
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

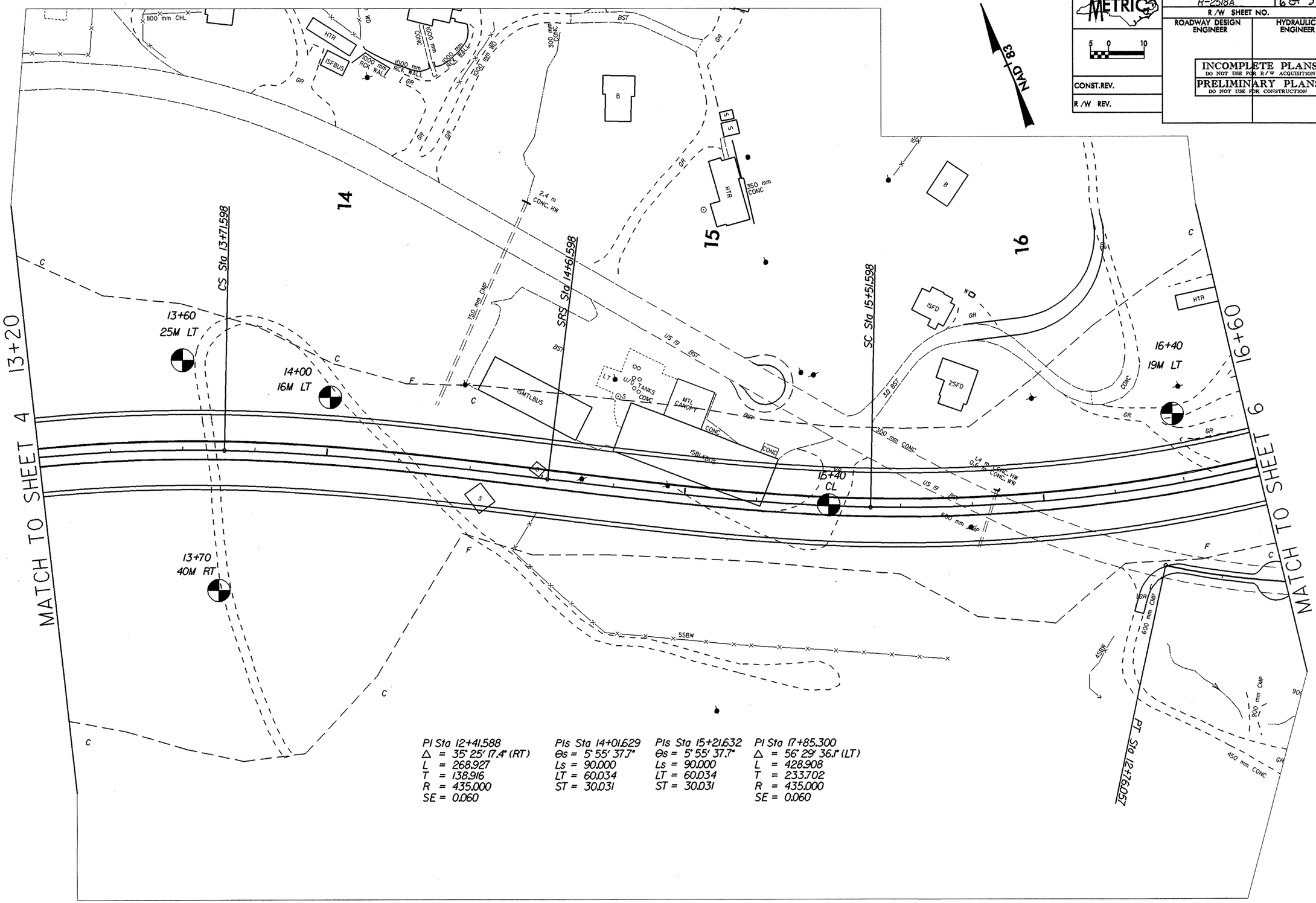
METRIC

5 0 10

CONST.REV.

R/W REV.

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



PI Sta 12+41.588
Δ = 35° 25' 17.4" (RT)
L = 268.927
T = 138.916
R = 435.000
SE = 0.060

PIs Sta 14+01.629
θs = 5° 55' 37.7"
Ls = 90.000
LT = 60.034
ST = 30.031

PIs Sta 15+21.632
θs = 5° 55' 37.7"
Ls = 90.000
LT = 60.034
ST = 30.031

PI Sta 17+85.300
Δ = 56° 29' 36.1" (LT)
L = 428.908
T = 233.702
R = 435.000
SE = 0.060

PROJECT REFERENCE NO.	SHEET NO.
R-2518A	7 OF 36
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

CONST.REV.

R/W REV.

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

NAD 83

-L-

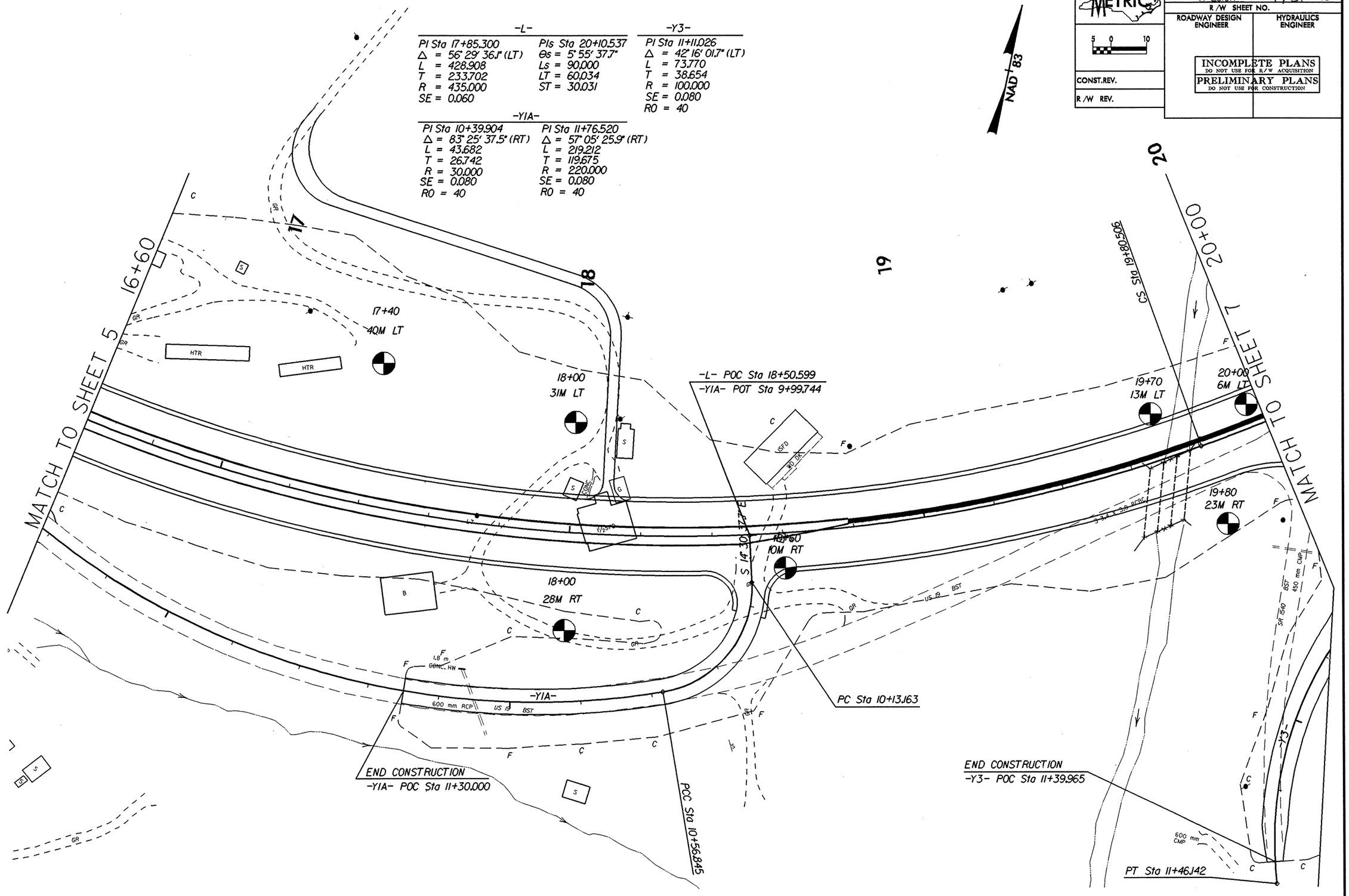
PI Sta 17+85.300	PIs Sta 20+10.537
Δ = 56° 29' 36.1" (LT)	Θs = 5° 55' 37.7"
L = 428.908	Ls = 90.000
T = 233.702	LT = 60.034
R = 435.000	ST = 30.031
SE = 0.060	

-Y3-

PI Sta 11+11.026
Δ = 42° 16' 01.7" (LT)
L = 73.770
T = 38.654
R = 100.000
SE = 0.080
RO = 40

-Y1A-

PI Sta 10+39.904	PI Sta 11+76.520
Δ = 83° 25' 37.5" (RT)	Δ = 57° 05' 25.9" (RT)
L = 43.682	L = 219.212
T = 26.742	T = 119.675
R = 30.000	R = 220.000
SE = 0.080	SE = 0.080
RO = 40	RO = 40



8/17/99

PROJECT REFERENCE NO.	SHEET NO.
R-2518A	8 of 36
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

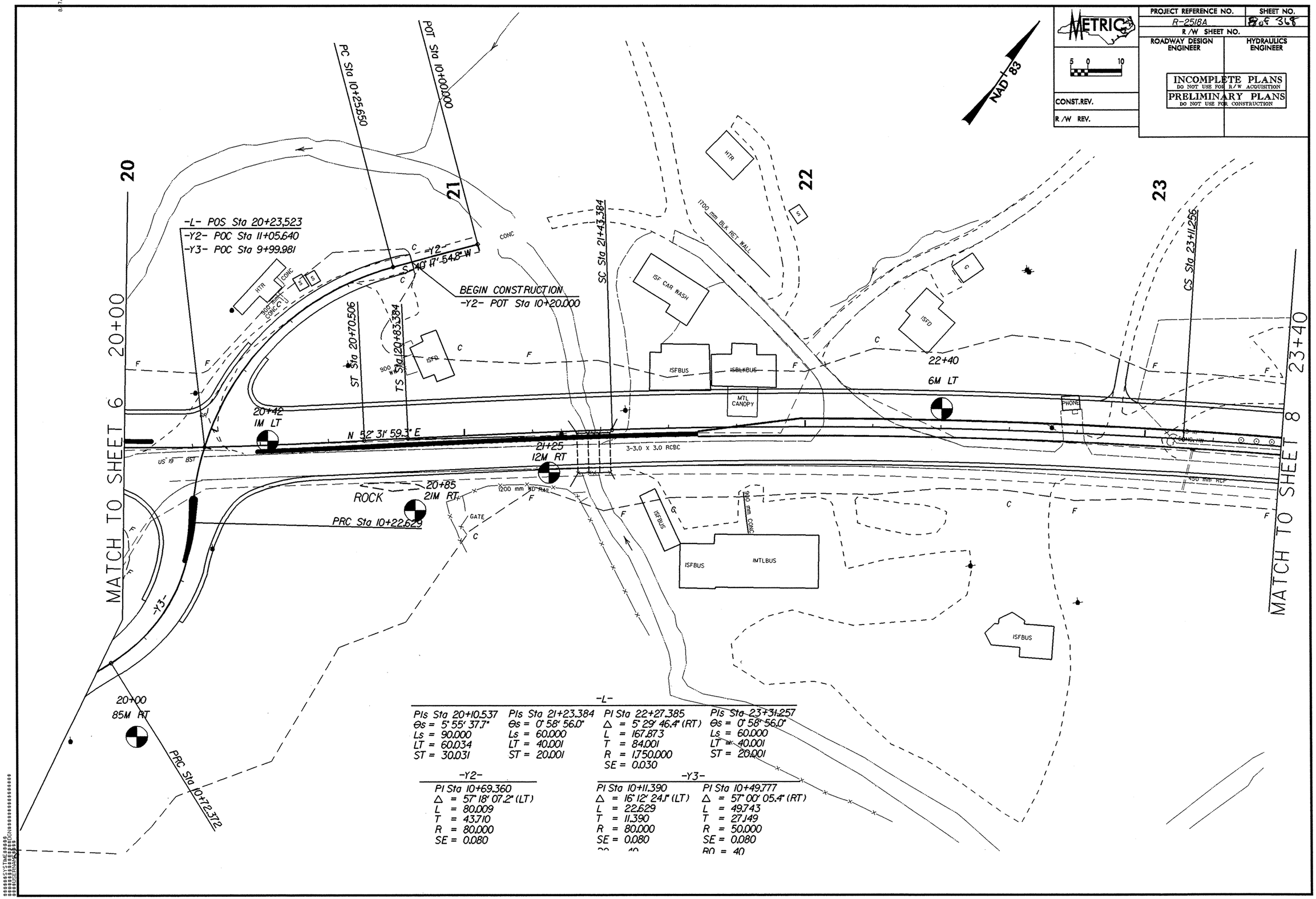
METRIC

5 0 10

CONST.REV.

R/W REV.

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



-L-

PIs Sta 20+10.537	PIs Sta 21+23.384	PI Sta 22+27.385	PIs Sta 23+31.257
θs = 5° 55' 37.7"	θs = 0° 58' 56.0"	Δ = 5° 29' 46.4" (RT)	θs = 0° 58' 56.0"
Ls = 90.000	Ls = 60.000	L = 167.873	Ls = 60.000
LT = 60.034	LT = 40.001	T = 84.001	LT = 40.001
ST = 30.031	ST = 20.001	R = 1,750.000	ST = 20.001
		SE = 0.030	

-Y2-

PI Sta 10+69.360
Δ = 57° 18' 07.2" (LT)
L = 80.009
T = 43.710
R = 80.000
SE = 0.080

-Y3-

PI Sta 10+11.390	PI Sta 10+49.777
Δ = 16° 12' 24.1" (LT)	Δ = 57° 00' 05.4" (RT)
L = 22.629	L = 49.743
T = 11.390	T = 27.149
R = 80.000	R = 50.000
SE = 0.080	SE = 0.080
	RO = 40

SYSTIME
SYSDATE
DGNFILE
USERNAME

PROJECT REFERENCE NO.	SHEET NO.
R-2518A	9 of 368
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

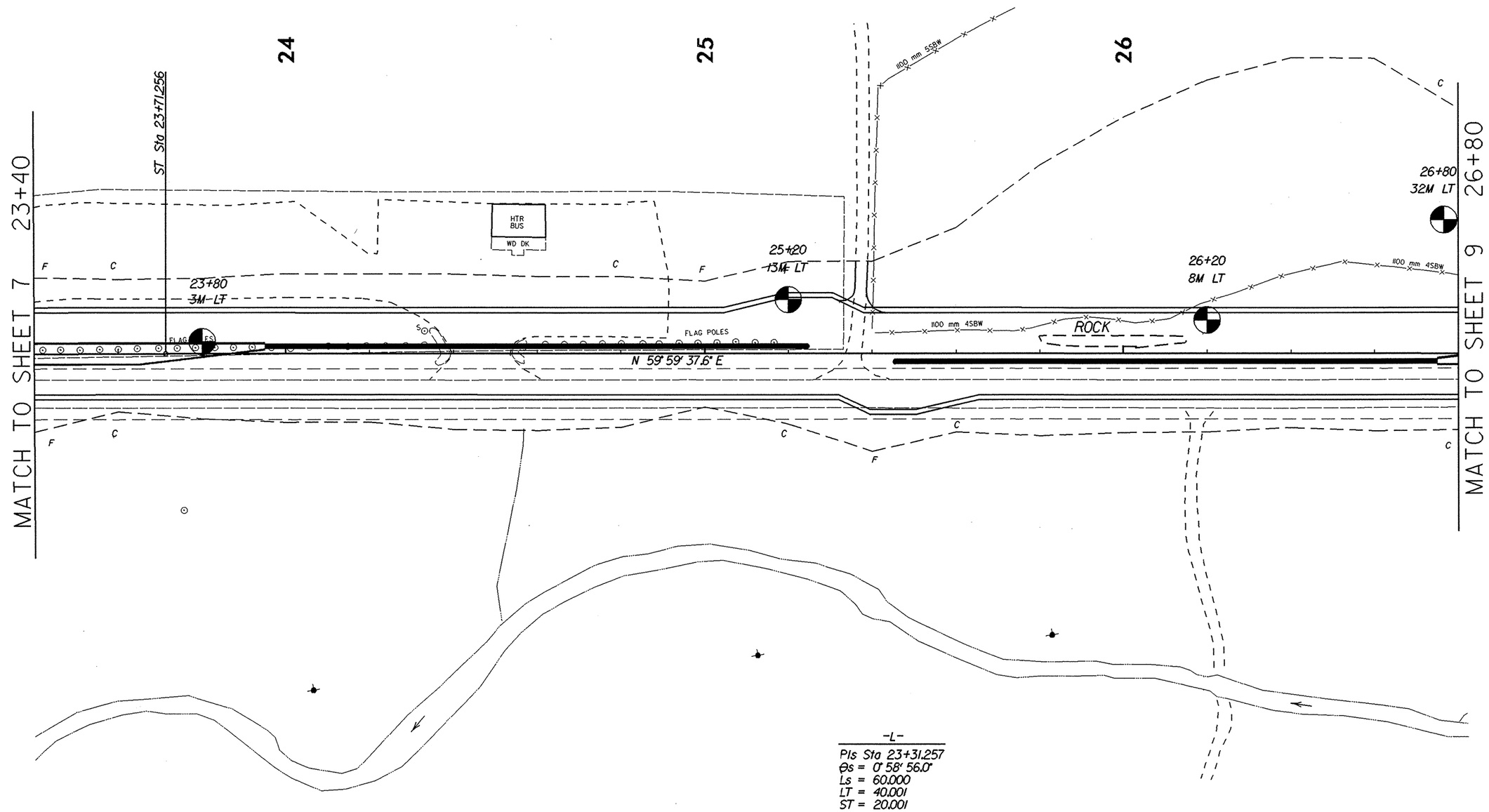
METRIC

5 0 10

CONST.REV.

R/W REV.

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



PROJECT REFERENCE NO.	SHEET NO.
R-2518A	10 of 368
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

CONST.REV.

R/W REV.

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

NAD 83

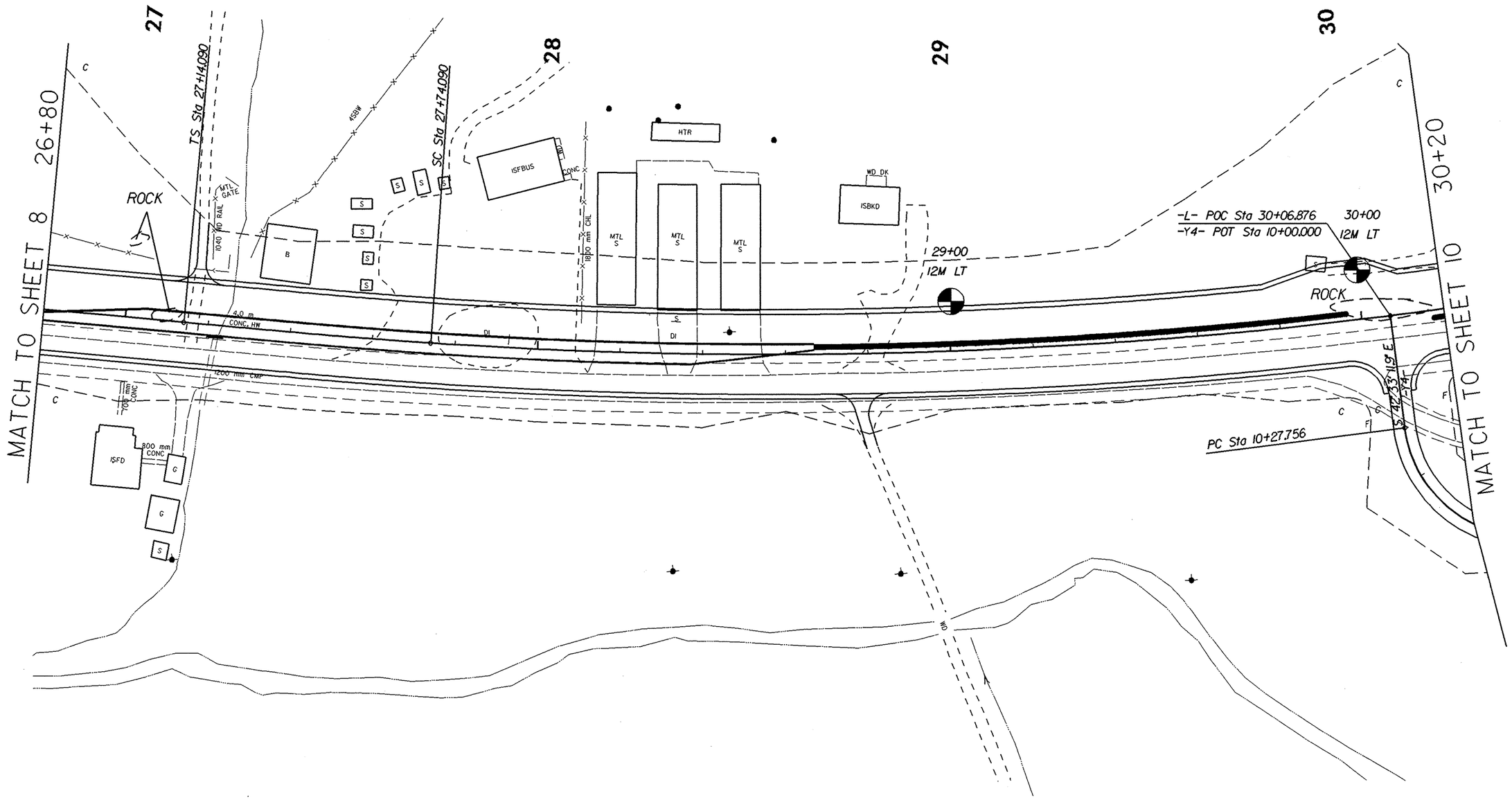
-L-

PIs Sta 27+54.091
Θs = 1° 25' 56.6"
Ls = 60.000
LT = 40.001
ST = 20.001

PI Sta 29+56.270
Δ = 17° 15' 54.2" (LT)
L = 361.599
T = 182.180
R = 1,200.000
SE = 0.040

-Y4-

PI Sta 10+62.692
Δ = 98° 41' 39.0" (LT)
L = 51.676
T = 34.936
R = 30.000
SE = 0.080
RO = 40



PROJECT REFERENCE NO.	SHEET NO.
R-2518A	11 of 369
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

CONST.REV.

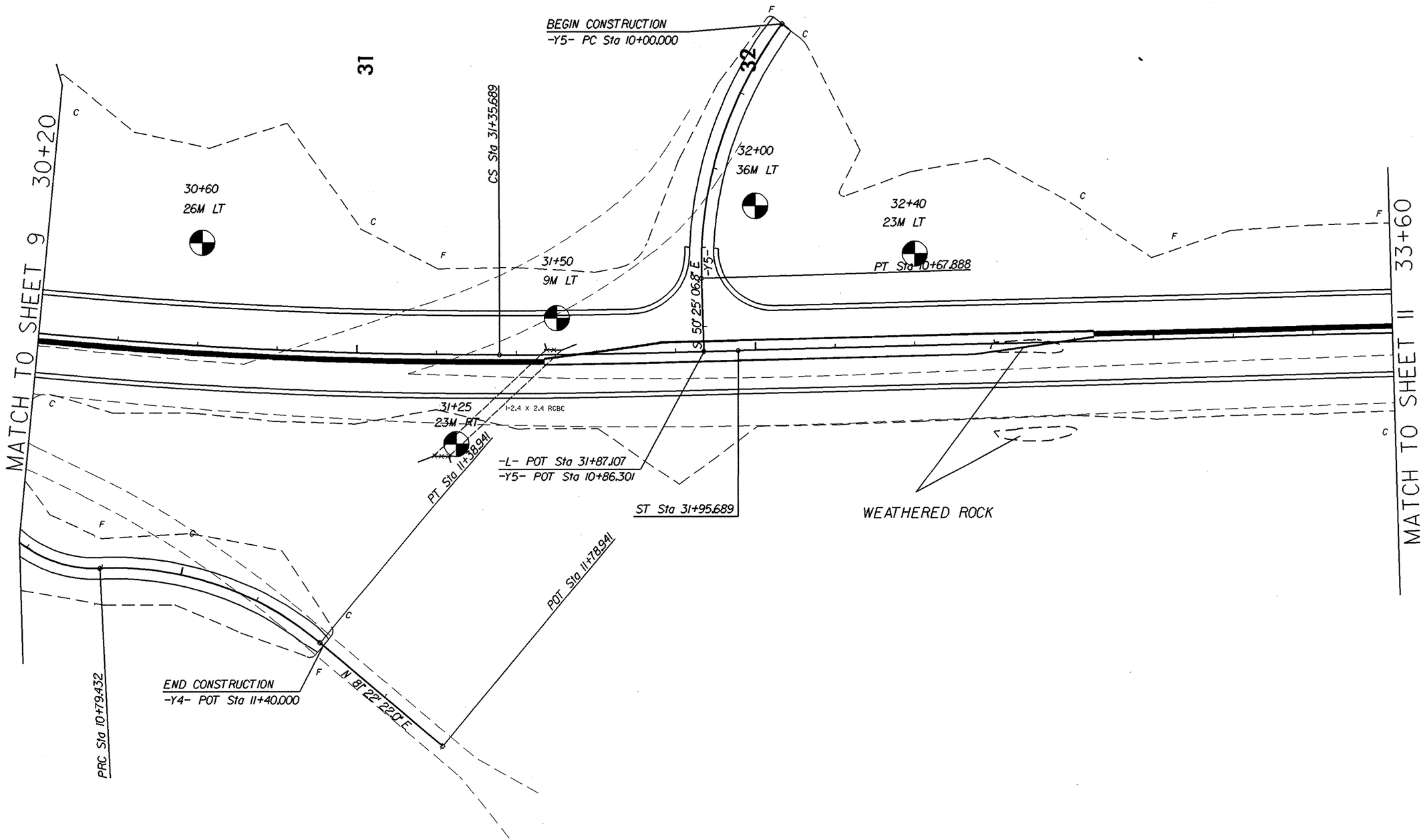
R/W REV.

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

-L-	
PI Sta 29+56.270	PIs Sta 31+55.690
Δ = 17° 15' 54.2" (LT)	θs = 1° 25' 56.6"
L = 361.599	Ls = 60.000
T = 182.180	LT = 40.001
R = 1,200.000	ST = 20.001
SE = 0.040	

-Y4-	
PI Sta 10+62.692	PI Sta 11+10.639
Δ = 98° 41' 39.0" (LT)	Δ = 42° 37' 12.9" (RT)
L = 51.676	L = 59.509
T = 34.936	T = 31.207
R = 30.000	R = 80.000
SE = 0.080	SE = 0.080
RO = 40	RO = 40

-Y5-
PI Sta 10+35.311
Δ = 38° 53' 49.3" (LT)
L = 67.888
T = 35.311
R = 100.000
SE = 0.030
RO = 18



PROJECT REFERENCE NO.	SHEET NO.
R-2518A	12 OF 38
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

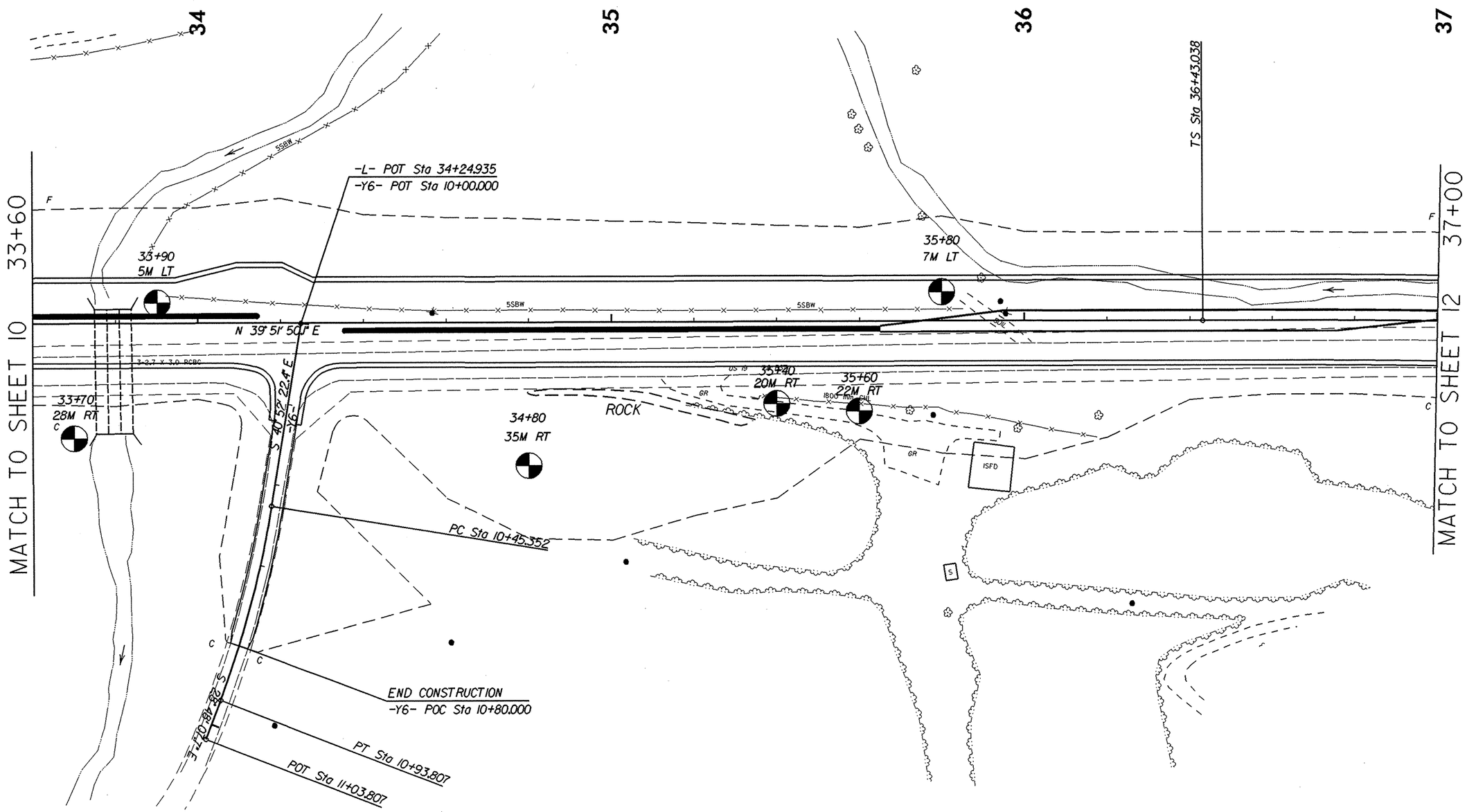
CONST.REV.

R/W REV.

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

NAD 83

-L-	-Y6-
PIs Sta 36+93.043	PI Sta 10+69.669
Θs = 2° 23' 14.4"	Δ = 12° 04' 14.6" (RT)
Ls = 75.000	L = 48.455
LT = 50.005	T = 24.318
ST = 25.004	R = 230.000
	SE = 0.080
	R0 = 40



PROJECT REFERENCE NO.	SHEET NO.
R-2518A	13 of 368
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

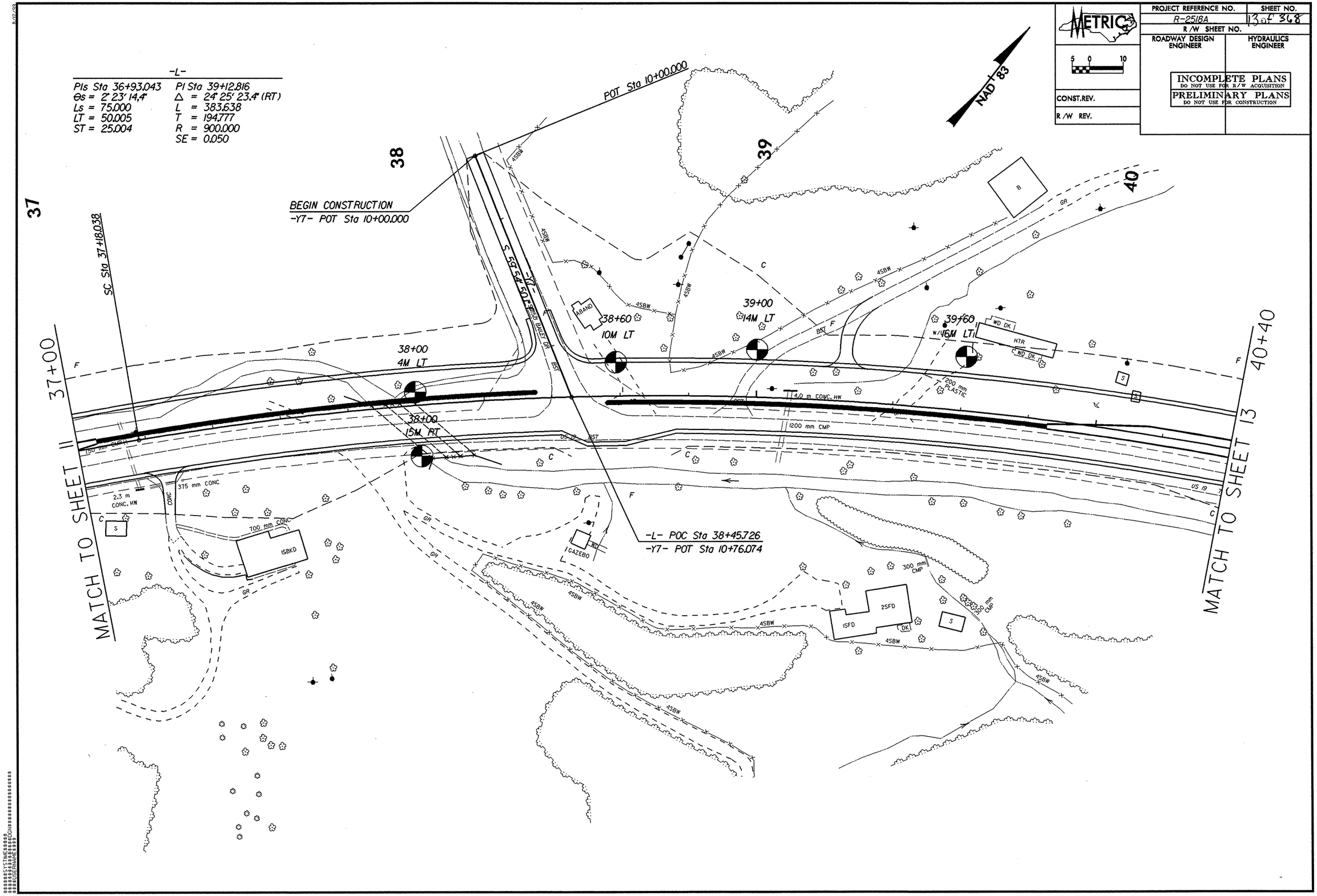
METRIC

5 0 10

CONST.REV.

R/W REV.

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



PROJECT REFERENCE NO.	SHEET NO.
R-2518A	14 of 36
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC 5 0 10

CONST. REV.

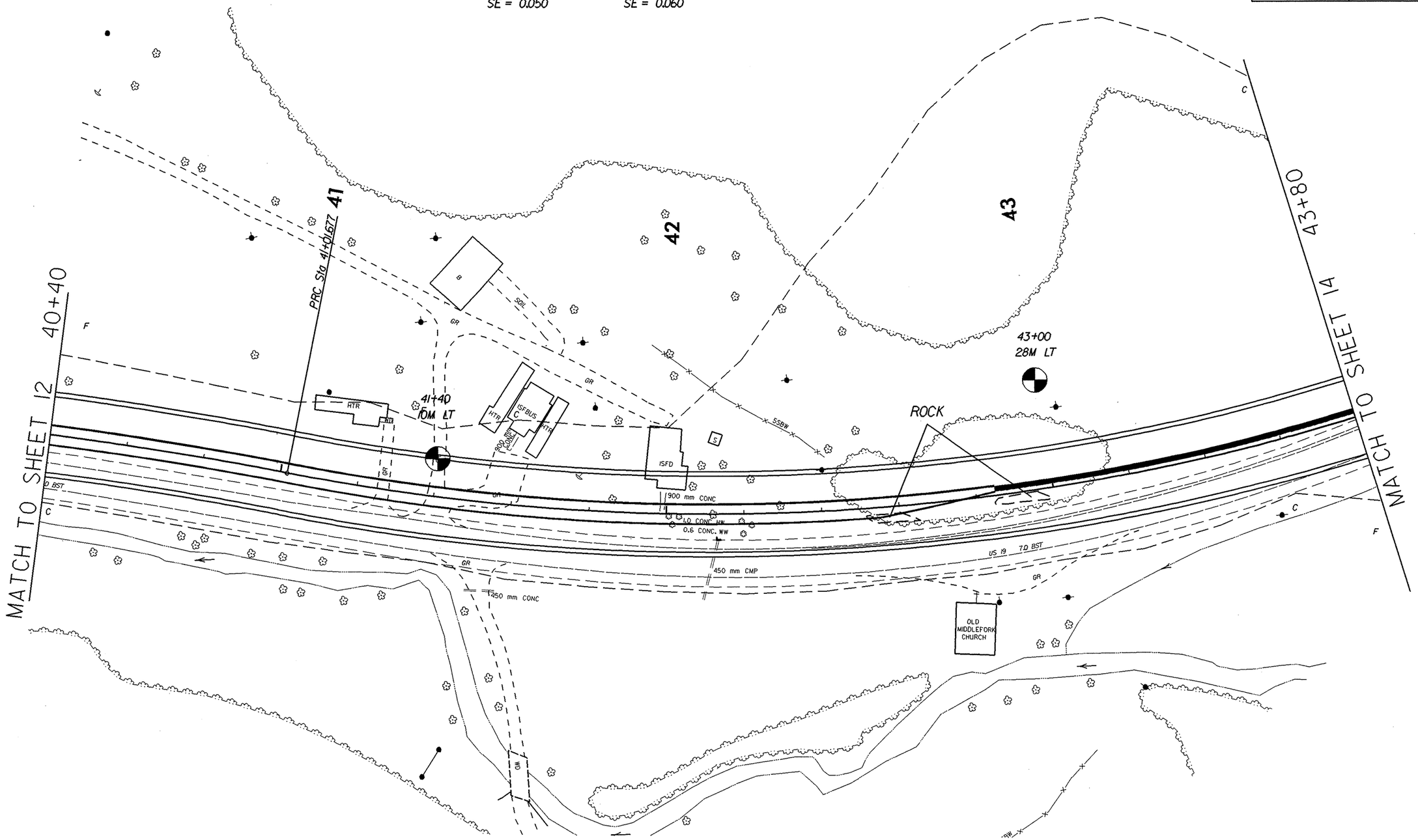
R/W REV.

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

NAD 83

-L-

PI Sta 39+12.816	PI Sta 43+14.962
Δ = 24° 25' 23.4" (RT)	Δ = 41° 42' 01.3" (LT)
L = 383.638	L = 407.573
T = 194.777	T = 213.285
R = 900.000	R = 560.000
SE = 0.050	SE = 0.060



PROJECT REFERENCE NO.	SHEET NO.
R-2518A	15 of 368
R /W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

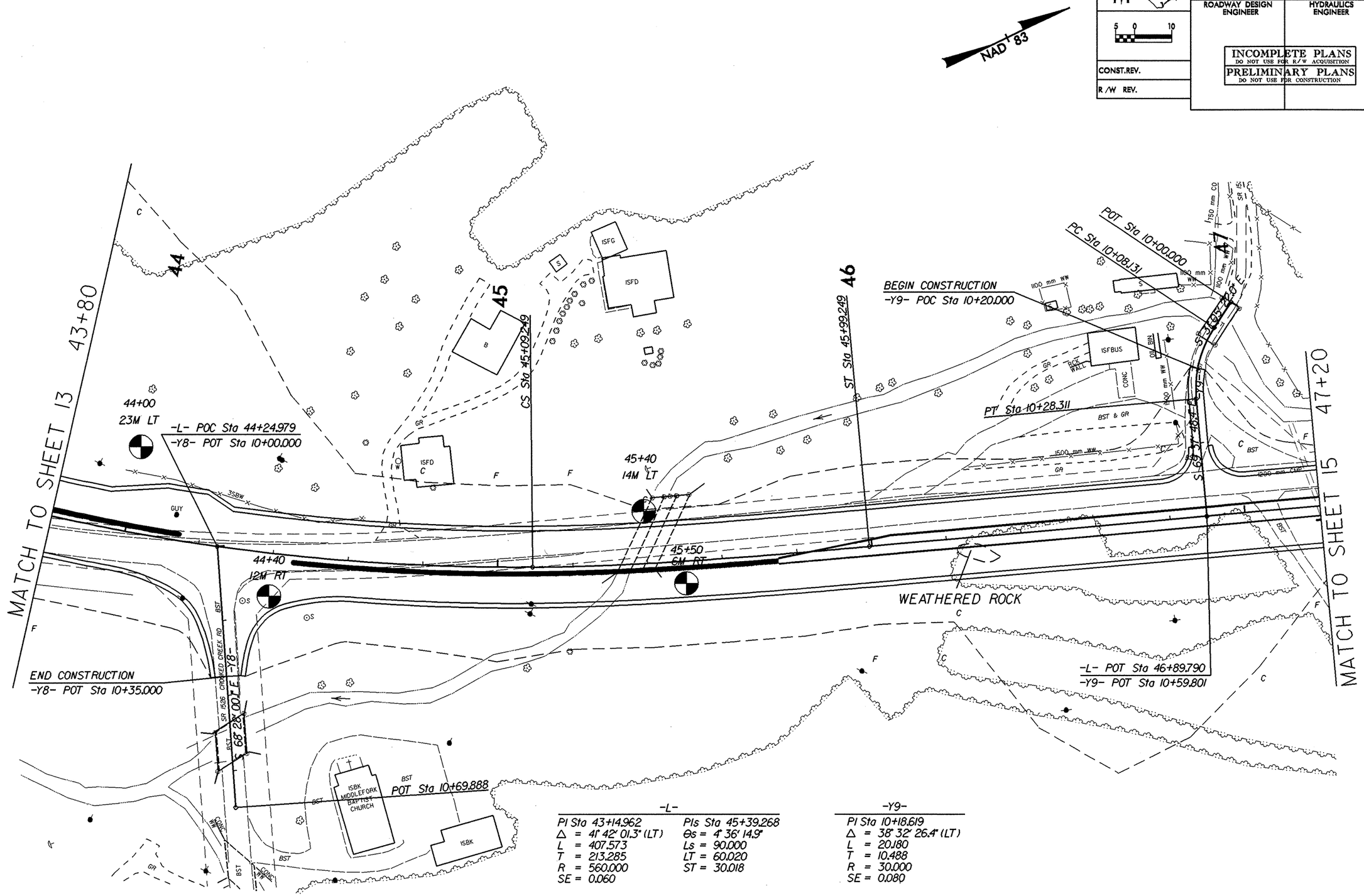
METRIC

5 0 10

CONST.REV.

R /W REV.

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



-L-	
PI Sta 43+14.962	PIs Sta 45+39.268
Δ = 41° 42' 01.3" (LT)	Θs = 4° 36' 14.9"
L = 407.573	Ls = 90.000
T = 213.285	LT = 60.020
R = 560.000	ST = 30.018
SE = 0.060	

-Y9-
PI Sta 10+18.619
Δ = 38° 32' 26.4" (LT)
L = 20.180
T = 10.488
R = 30.000
SE = 0.080

PROJECT REFERENCE NO.	SHEET NO.
R-2518A	16 of 36
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

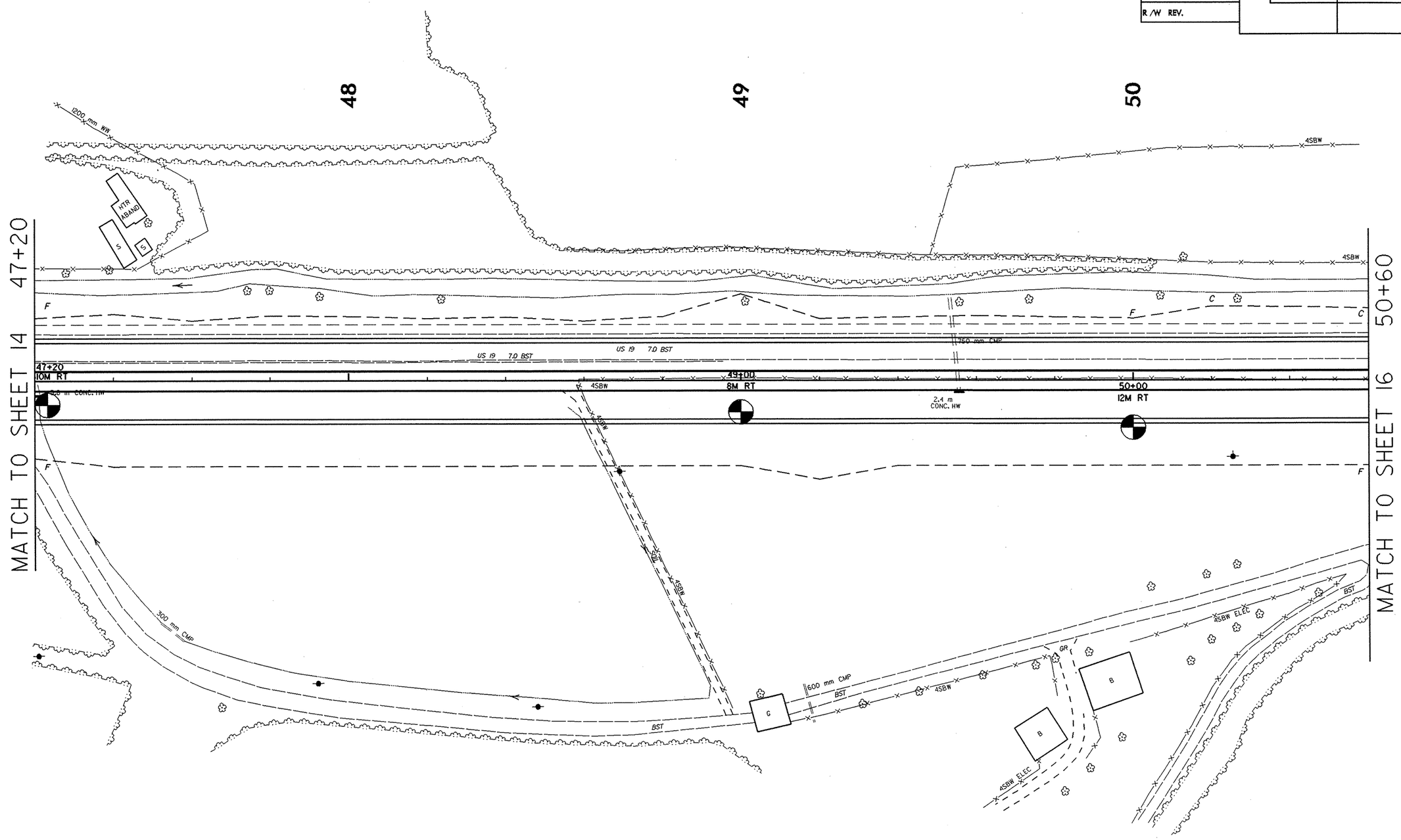
METRIC

5 0 10

CONST.REV.

R/W REV.

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



PROJECT REFERENCE NO.	SHEET NO.
R-2518A	17 OF 368
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

CONST. REV.

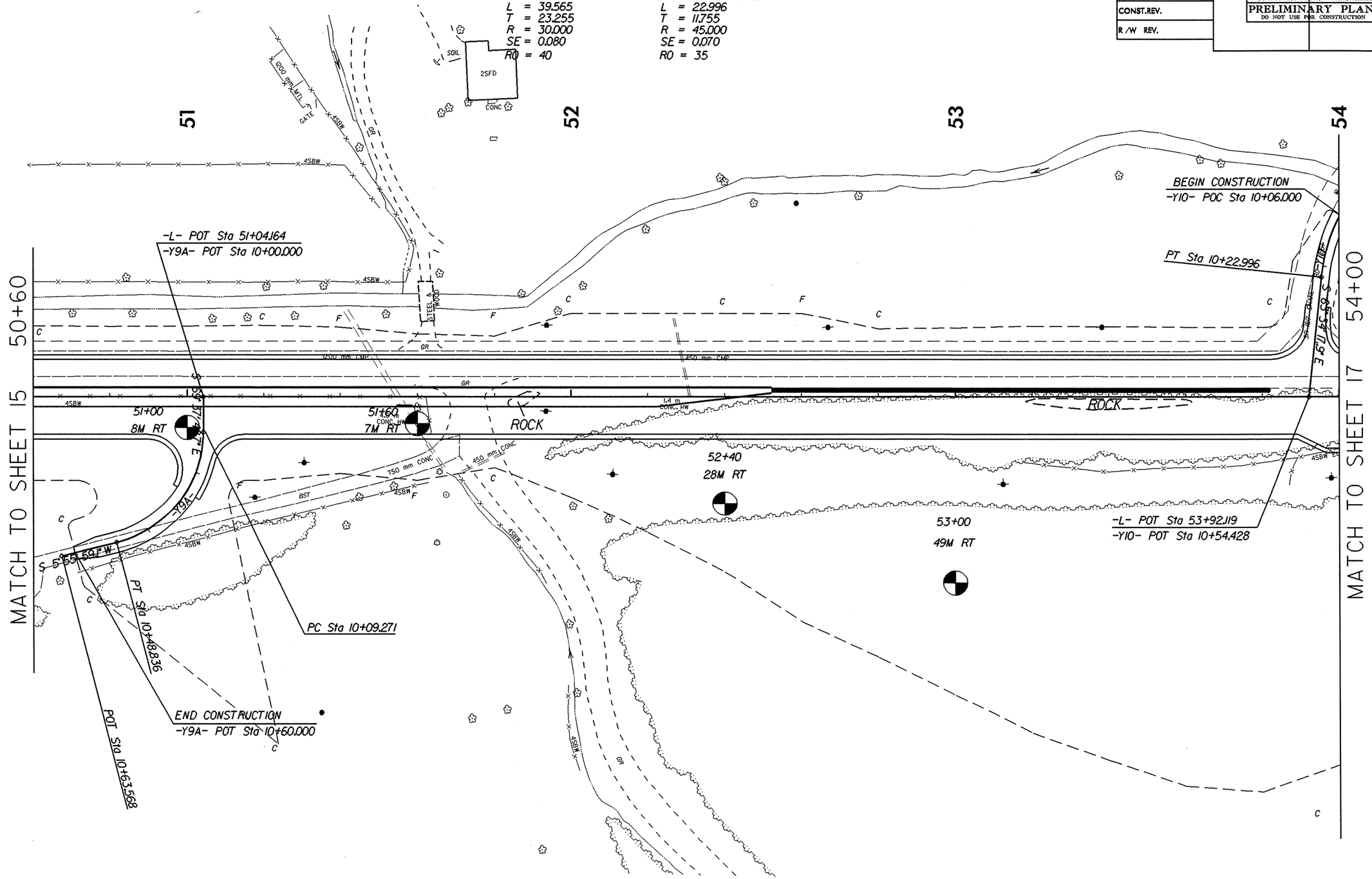
R/W REV.

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

NAD 83

-Y9A-
PI Sta 10+32.526
Δ = 75° 33' 47.8" (RT)
L = 39.565
T = 23.255
R = 30.000
SE = 0.080
RO = 40

-Y10-
PI Sta 10+11.755
Δ = 29° 16' 47.6" (LT)
L = 22.996
T = 11.755
R = 45.000
SE = 0.070
RO = 35



PROJECT REFERENCE NO.	SHEET NO.
R-2518A	18 of 368
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

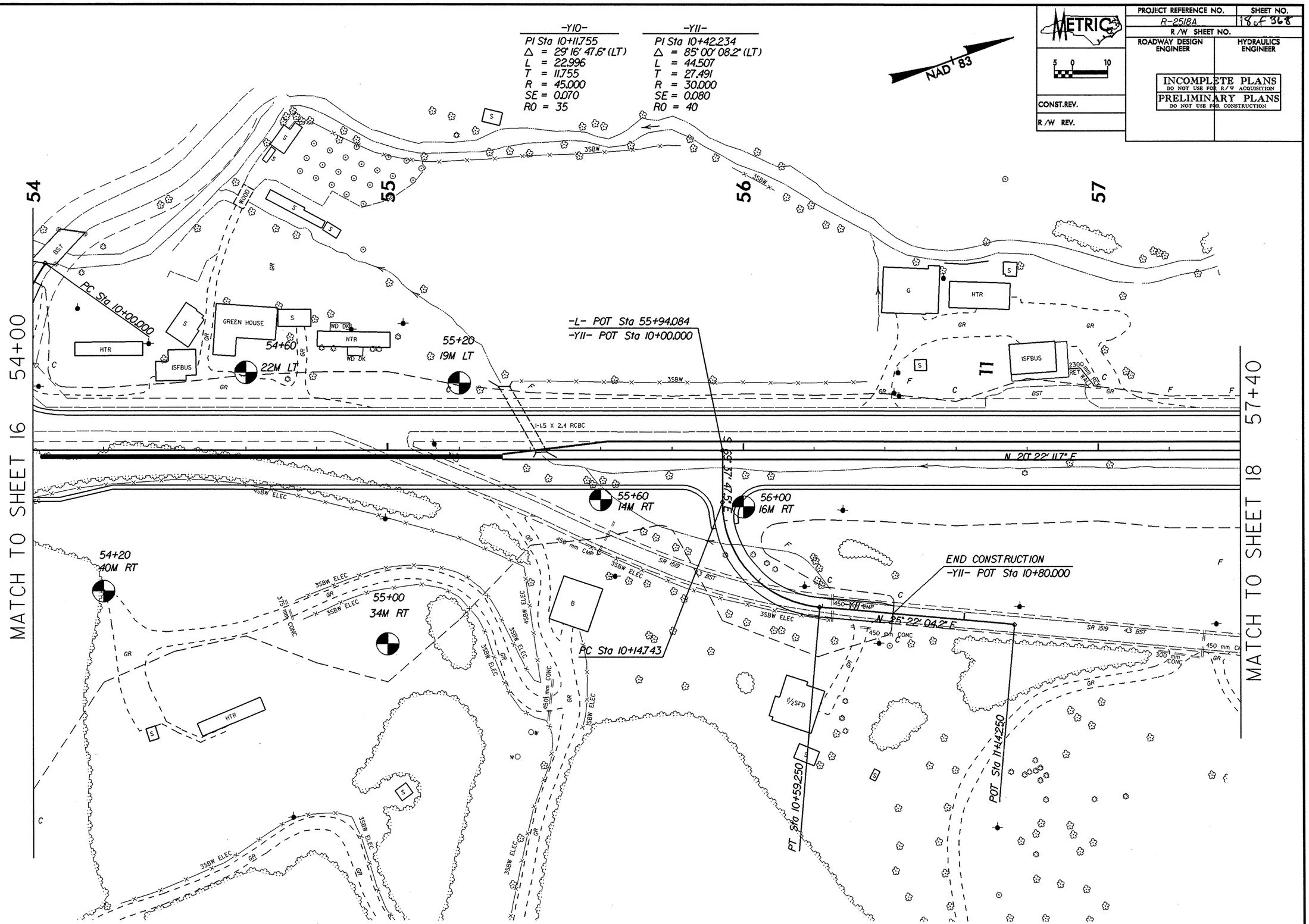
METRIC

5 0 10

CONST.REV.

R/W REV.

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



PROJECT REFERENCE NO.	SHEET NO.
R-2518A	19 OF 36B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

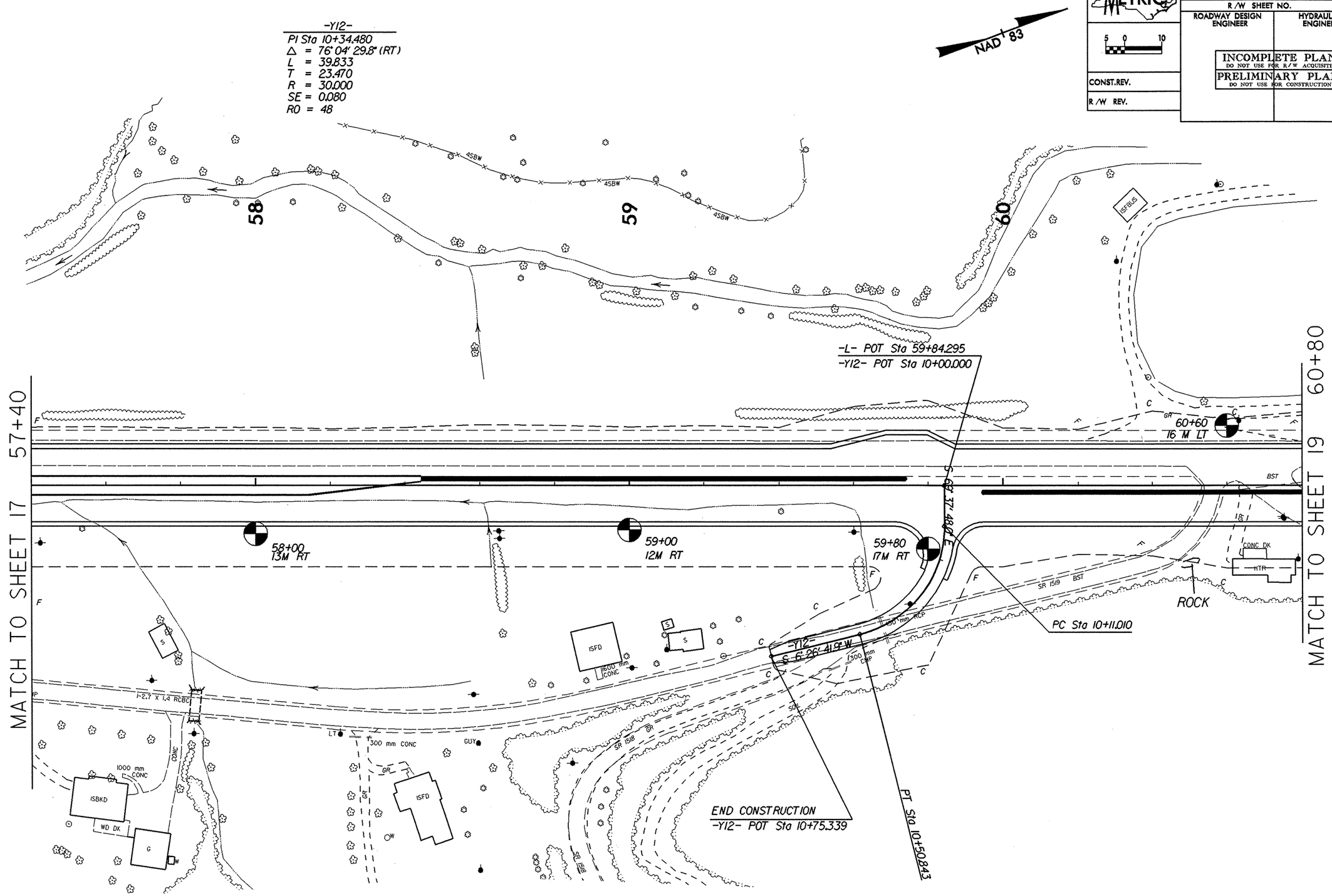
METRIC

5 0 10

CONST.REV.

R/W REV.

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



PROJECT REFERENCE NO.	SHEET NO.
R-2518A	20 OF 368
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

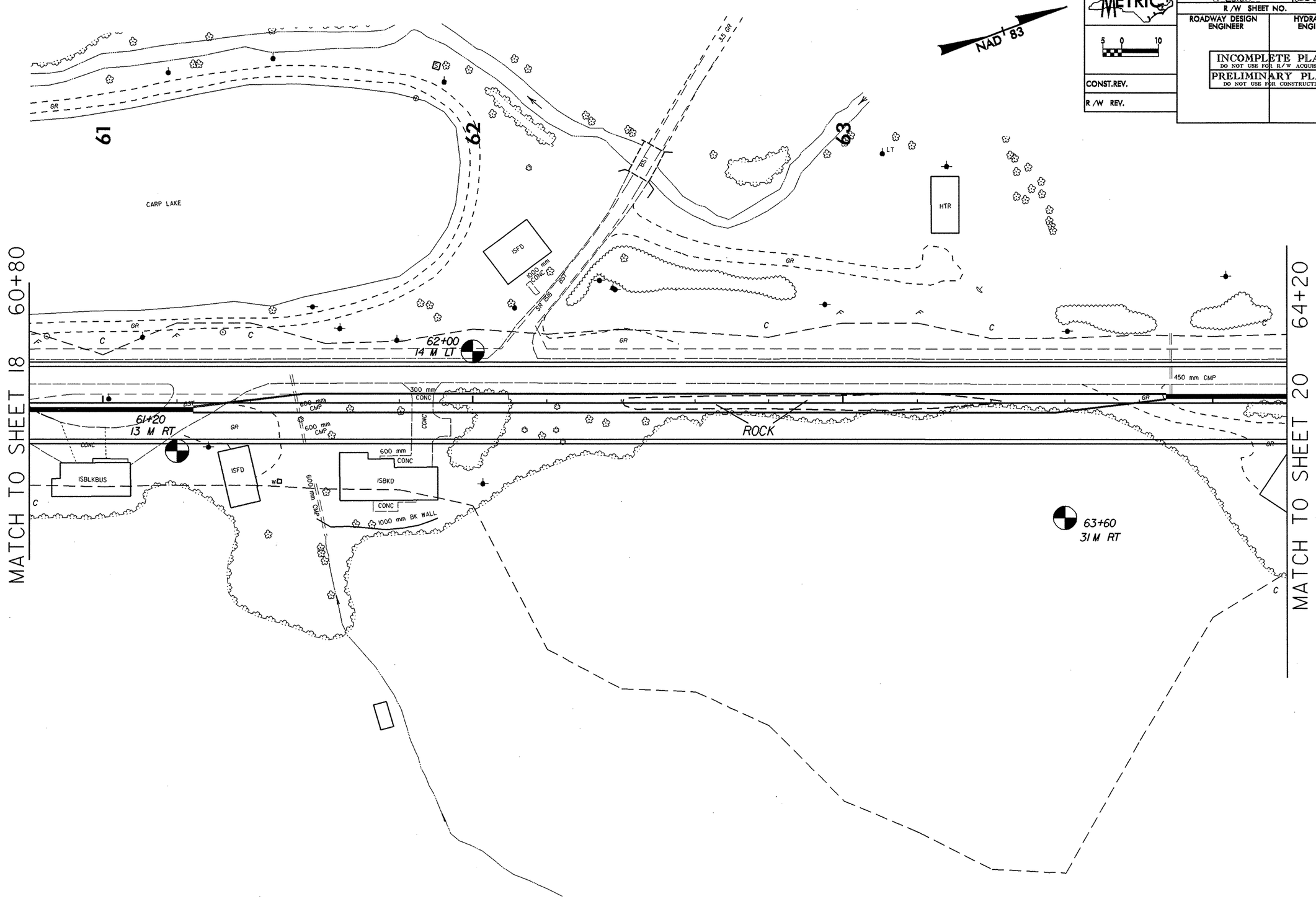
METRIC

5 0 10

CONST.REV.

R/W REV.

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



PROJECT REFERENCE NO.	SHEET NO.
R-2518A	21 of 368
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

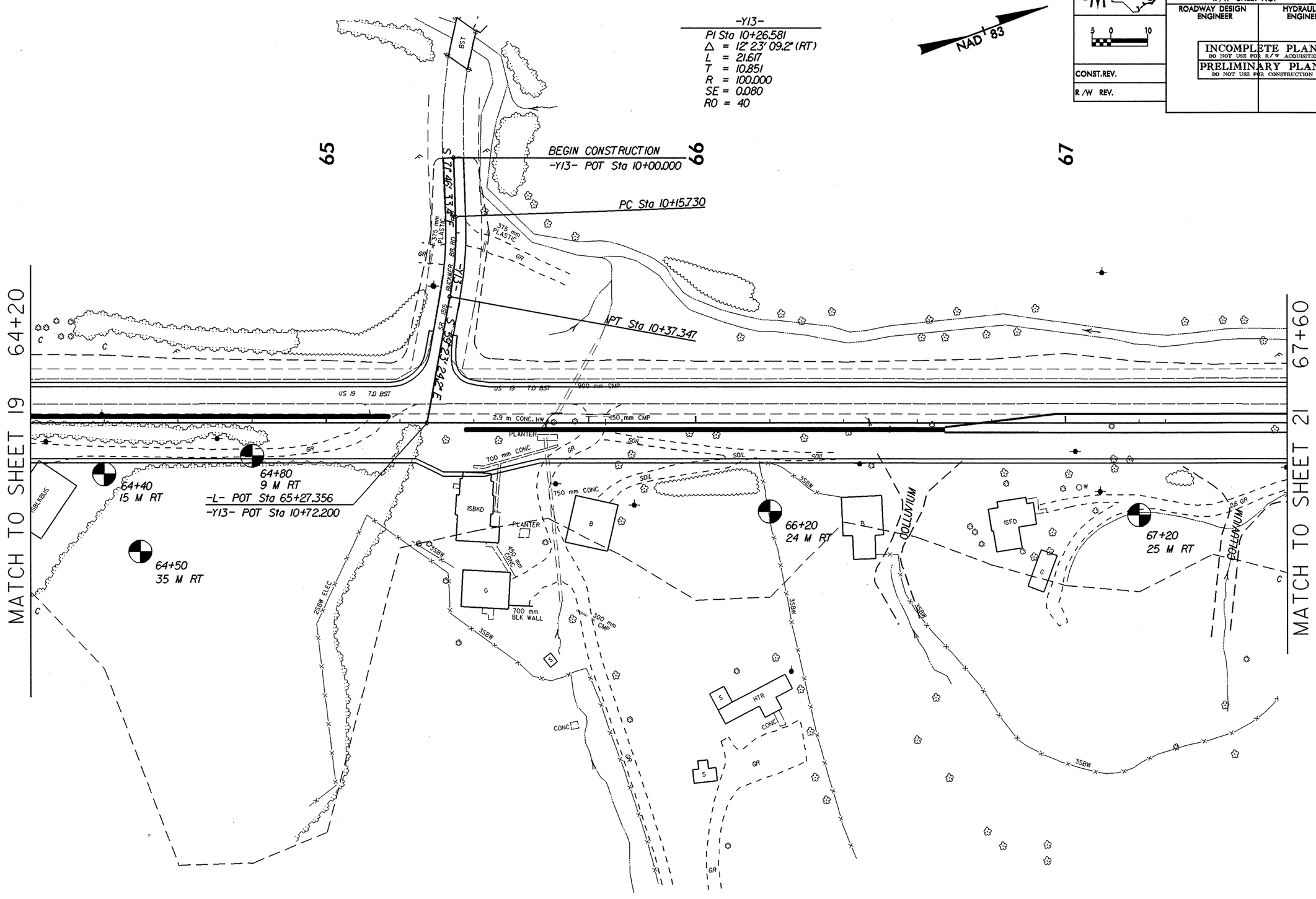
METRIC

5 0 10

CONST.REV.

R/W REV.

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



PROJECT REFERENCE NO.	SHEET NO.
R-2518A	22 of 368
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

CONST.REV.

R/W REV.

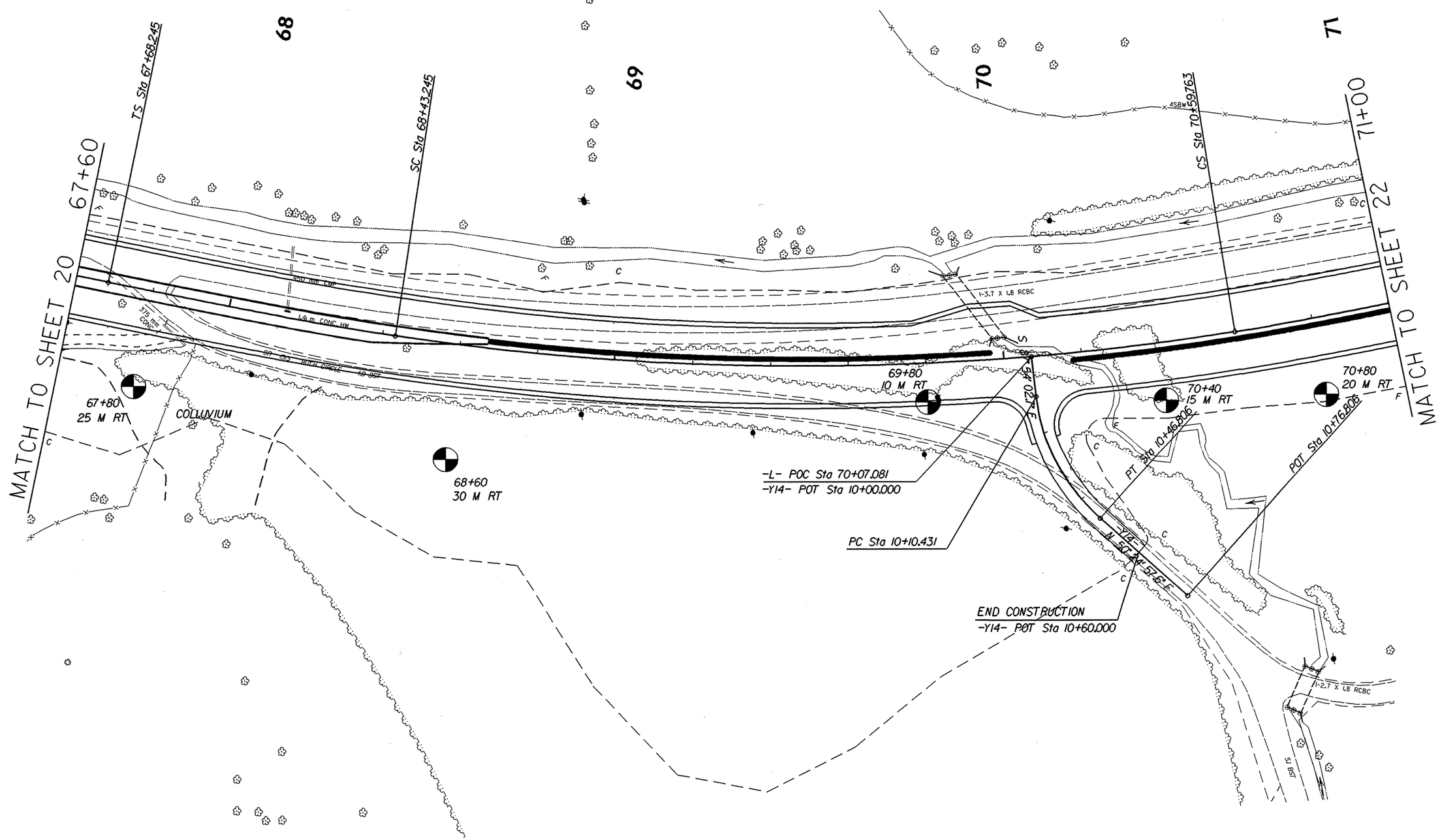
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

-L-

PIs Sta 68+18.253	PI Sta 69+52.375	PIs Sta 70+84.769
θs = 3° 04' 09.9"	Δ = 17° 43' 19.8" (LT)	θs = 3° 04' 09.9"
Ls = 75.000	L = 216.517	Ls = 75.000
LT = 50.008	T = 109.130	LT = 50.008
ST = 25.007	R = 700.000	ST = 25.007
	SE = 0.050	

-Y14-

PI Sta 10+29.466
Δ = 41° 40' 59.7" (LT)
L = 36.376
T = 19.035
R = 50.000
SE = 0.080
RO = 40



PROJECT REFERENCE NO.	SHEET NO.
R-2518A	23 of 36
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

CONST.REV.

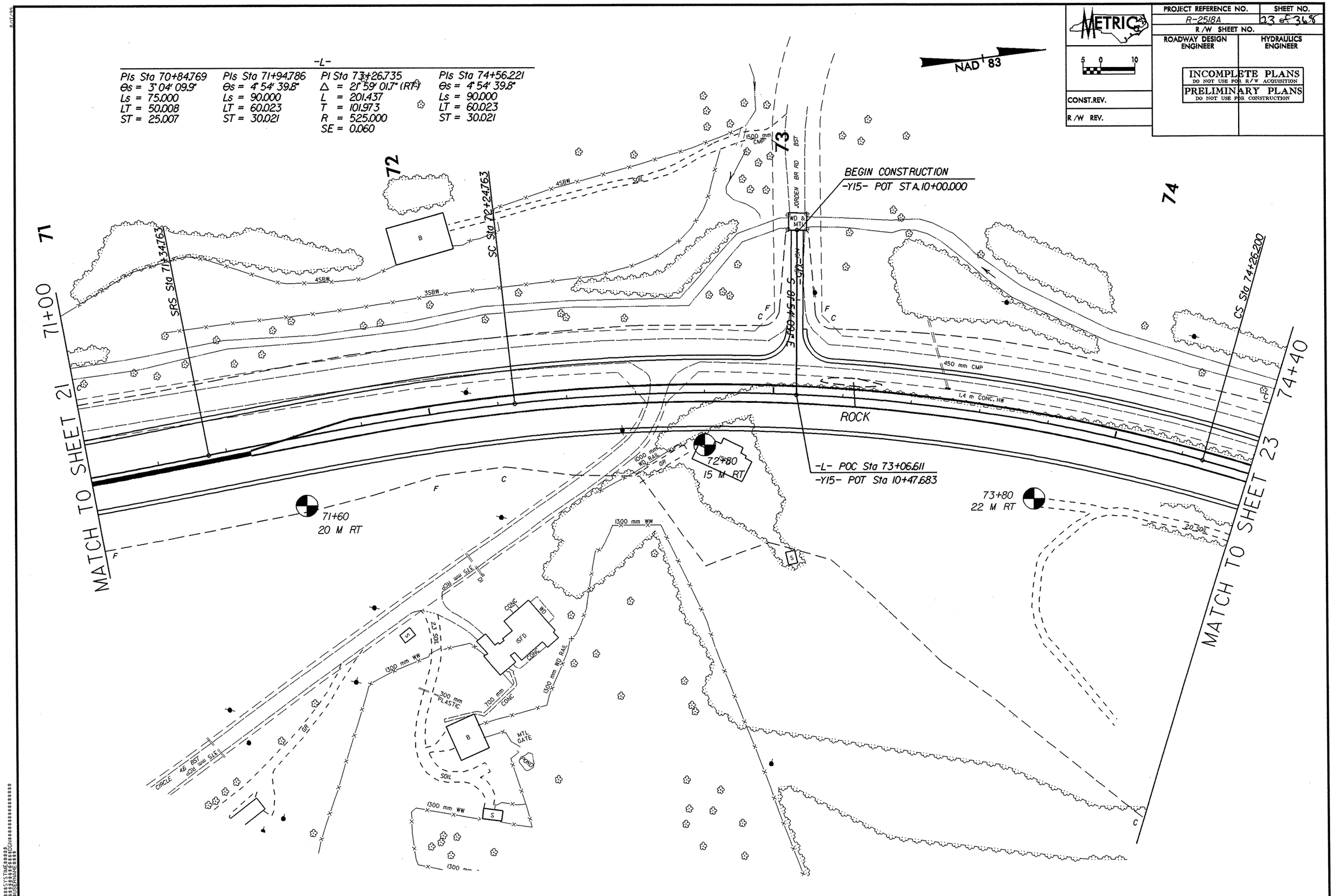
R/W REV.

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

NAD 83

-L-

PIs Sta 70+84.769	PIs Sta 71+94.786	PI Sta 73+26.735	PIs Sta 74+56.221
θs = 3° 04' 09.9"	θs = 4° 54' 39.8"	Δ = 21° 59' 01.7" (RT)	θs = 4° 54' 39.8"
Ls = 75.000	Ls = 90.000	L = 201.437	Ls = 90.000
LT = 50.008	LT = 60.023	T = 101.973	LT = 60.023
ST = 25.007	ST = 30.021	R = 525.000	ST = 30.021
		SE = 0.060	



PROJECT REFERENCE NO.	SHEET NO.
R-2518A	24 of 368
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

CONST.REV.

R/W REV.

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

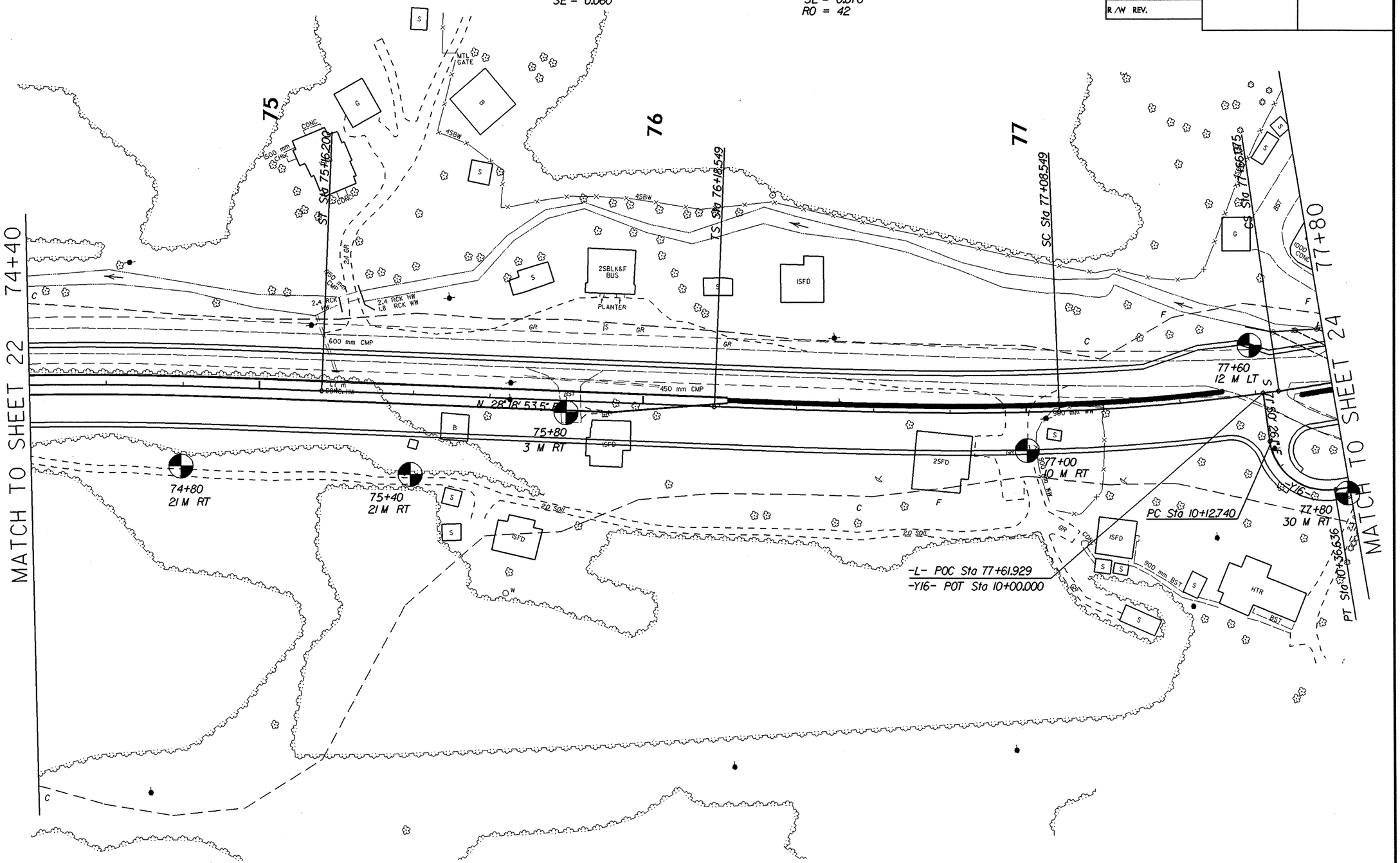
NAD 83

-L-

PIs Sta 74+56.221	PIs Sta 76+78.569	PI Sta 77+37.337	PIs Sta 77+96.093
Θs = 4° 54' 39.8"	Θs = 4° 38' 44.2"	Δ = 5° 56' 19.5" (LT)	Θs = 4° 38' 44.2"
Ls = 90.000	Ls = 90.000	L = 57.526	Ls = 90.000
LT = 60.023	LT = 60.021	T = 28.789	LT = 60.021
ST = 30.021	ST = 30.019	R = 555.000	ST = 30.019
		SE = 0.060	

-Y16-

PI Sta 10+28.078
Δ = 91° 16' 32.7" (LT)
L = 23.896
T = 15.338
R = 15.000
SE = 0.070
RO = 42



PROJECT REFERENCE NO.	SHEET NO.
R-2518A	25 of 368
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

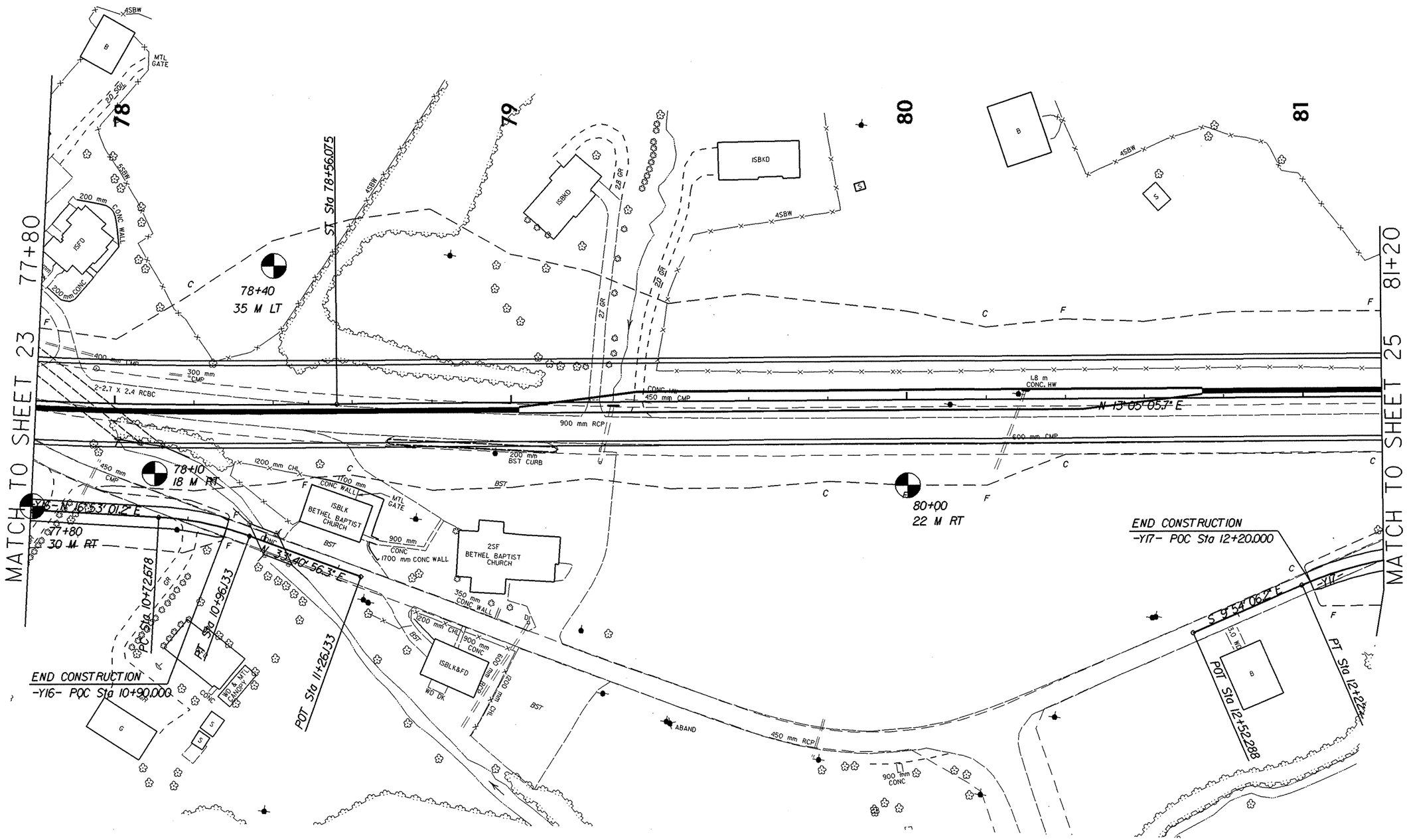
CONST.REV.

R/W REV.

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

NAD 83

-L-	-Y16-	-Y17-
PIs Sta 77+96.093	PI Sta 10+84.490	PI Sta 12+00.604
θs = 4° 38' 44.2"	Δ = 16° 47' 55.2" (RT)	Δ = 25° 15' 52.4" (LT)
Ls = 90.000	L = 23.455	L = 44.095
LT = 60.021	T = 11.812	T = 22.412
ST = 30.019	R = 80.000	R = 100.000
	SE = 0.080	SE = 0.080
	RO = 42	RO = 48



PROJECT REFERENCE NO.	SHEET NO.
R-2518A	26 of 368
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

CONST.REV.

R/W REV.

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83

-L-

PIs Sta 83+02.146
Θs = 1° 00' 40.0"
Ls = 60.000
LT = 40.001
ST = 20.001

PI Sta 84+78.868
Δ = 10° 32' 03.9" (RT)
L = 312.563
T = 156.723
R = 1,700.000
SE = 0.030

-Y18-

PI Sta 10+63.521
Δ = 46° 46' 33.2" (LT)
L = 81.639
T = 43.249
R = 100.000
SE = 0.080
RO = 40

-Y17-

PI Sta 12+00.604
Δ = 25° 15' 52.4" (LT)
L = 44.095
T = 22.412
R = 100.000
SE = 0.080
RO = 48

PI Sta 11+24.695
Δ = 77° 16' 02.0" (RT)
L = 40.457
T = 23.978
R = 30.000
SE = 0.080
RO = 48

PI Sta 10+21.286
Δ = 17° 17' 25.7" (LT)
L = 42.249
T = 21.286
R = 140.000
SE = 0.080
RO = 48

BEGIN CONSTRUCTION
-Y17- PC Sta 10+00.000

END CONSTRUCTION
-Y18- POT Sta 11+40.000

-Y17- POC Sta 10+14.223
-Y18- POT Sta 10+00.000

-L- POT Sta 82+14.589
-Y17- POT Sta 10+80.728

PC Sta 10+20.212

PT Sta 11+01.912

PT Sta 10+42.249

TS Sta 82+62.45

SC Sta 83+32.45

10+36 (SEE 82+63.48 M LT -L-)
-L- Y-18

N 7° 30' 21.0" W

S 39° 15' 12.2" E

S 67° 54' 56.6" W

S 15° 21' 46.2" W

81+35
10 M LT

82+50
3 M LT

81+45
18m RT -L-

82+07
11m RT -L-

81+58
40m RT -L-

84+60
30m RT -L-

PC Sta 11+00.718

PC Sta 11+78.193

PT Sta 11+41.75

MATCH TO SHEET 24

MATCH TO SHEET 26

81+20

84+60

82

83

84

2-1.8 X 2.1RCBC

1-2.7 X 2.1RCBC

300 mm CMP

1200 mm MD RAIL

MD DK

HTR

CONC WALL

ISFD ABAND

45BW

35BW

W/LT

$$$$$SYSTIME$$$$$
$$$$$SYSDATE$$$$$
$$$$$MACHNAME$$$$$
$$$$$USERNAME$$$$$

PROJECT REFERENCE NO.	SHEET NO.
R-2518A	27 of 368
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

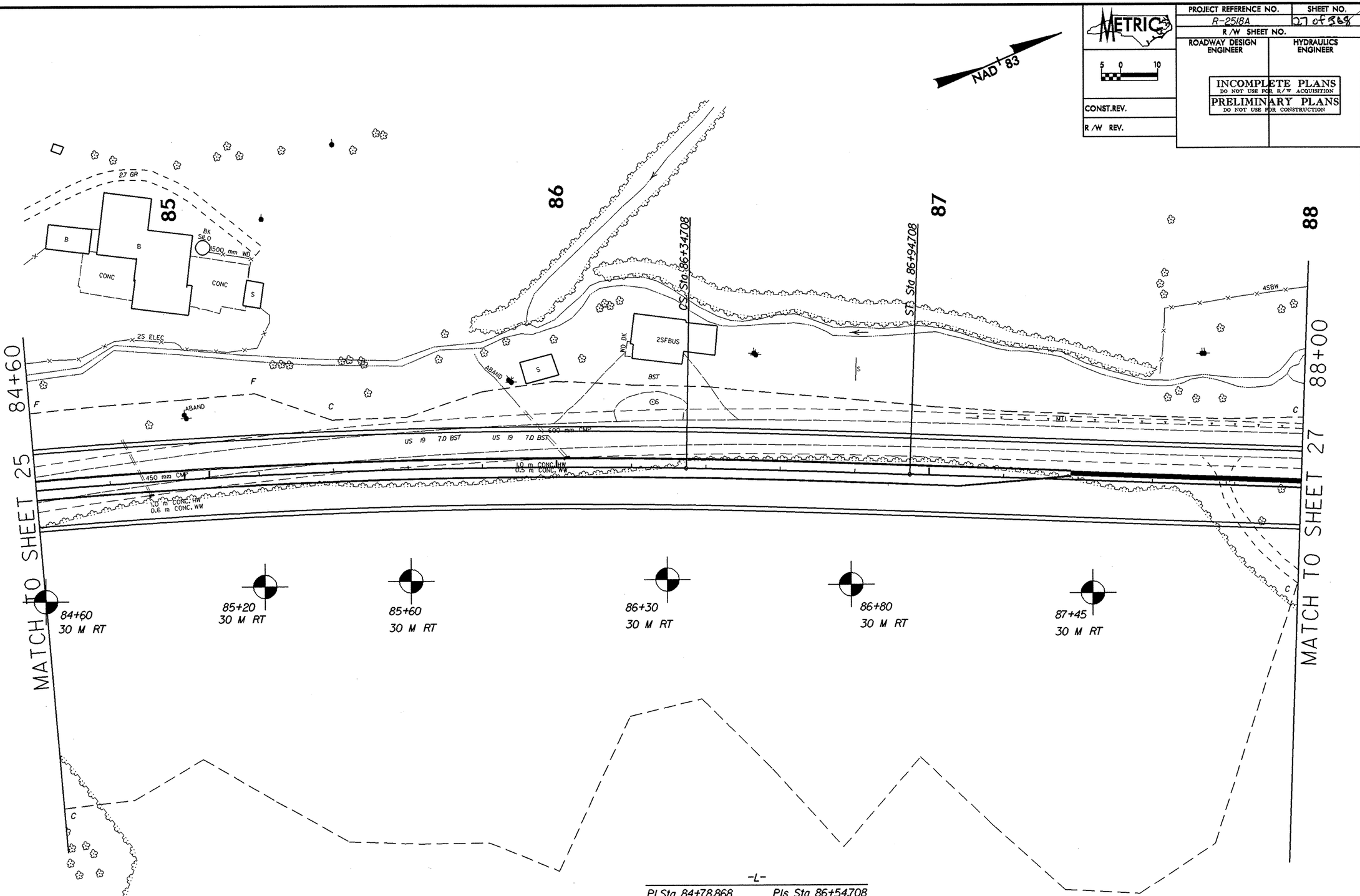
METRIC

5 0 10

CONST.REV.

R/W REV.

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



-L-

PI Sta 84+78.868	PIs Sta 86+54.708
Δ = 10° 32' 03.9" (RT)	θs = 1° 00' 40.0"
L = 312.563	Ls = 60.000
T = 156.723	LT = 40.001
R = 1,700.000	ST = 20.001
SE = 0.030	

PROJECT REFERENCE NO.	SHEET NO.
R-2518A	28 of 368
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

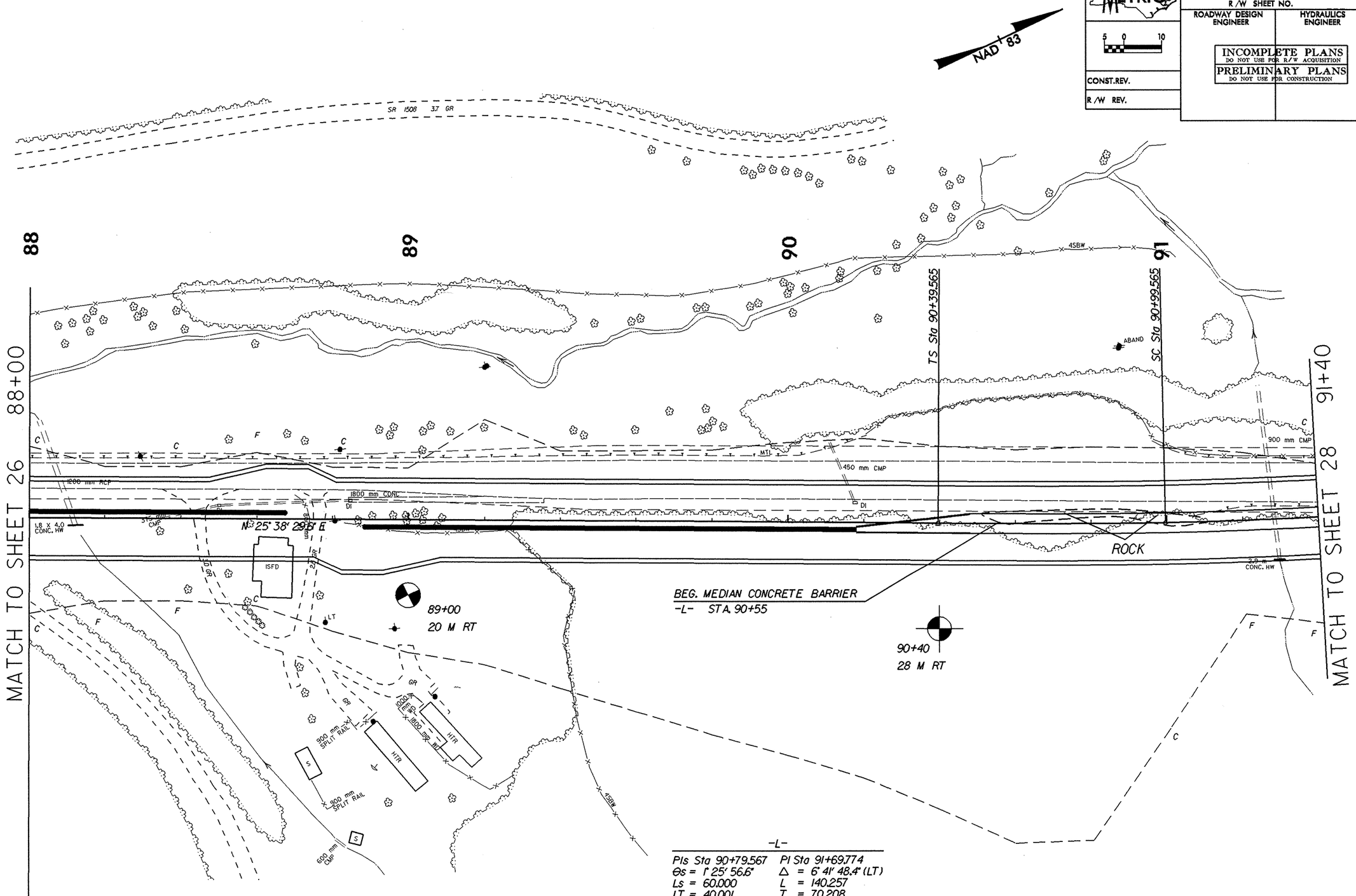
METRIC

5 0 10

CONST. REV.

R/W REV.

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



-L-

PIs Sta 90+79.567	PI Sta 91+69.774
Θs = 1° 25' 56.6"	Δ = 6° 41' 48.4" (LT)
Ls = 60.000	L = 140.257
LT = 40.001	T = 70.208
ST = 20.001	R = 1,200.000
	SE = 0.040

PROJECT REFERENCE NO.	SHEET NO.
R-2518A	29 of 368
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

CONST.REV.

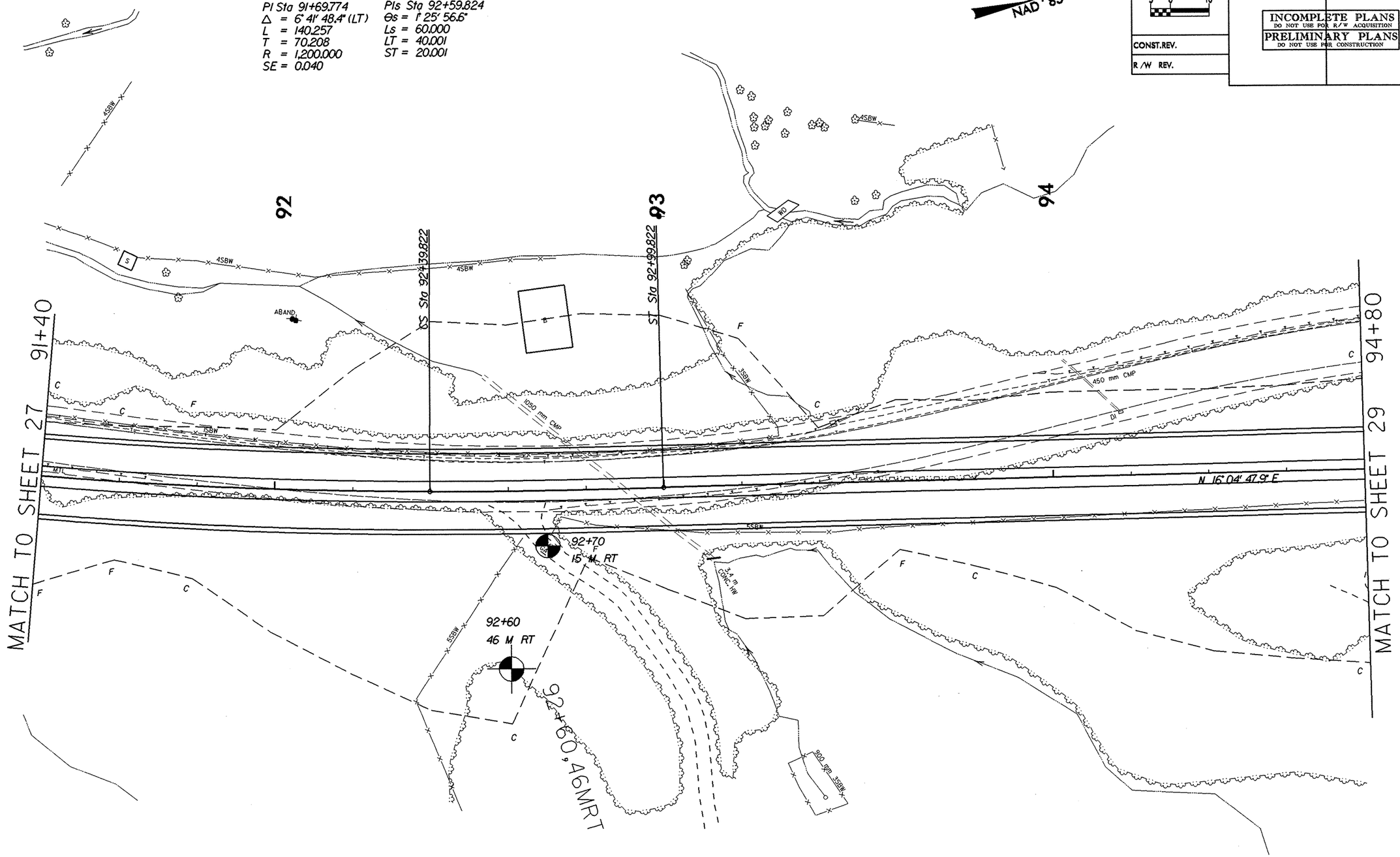
R/W REV.

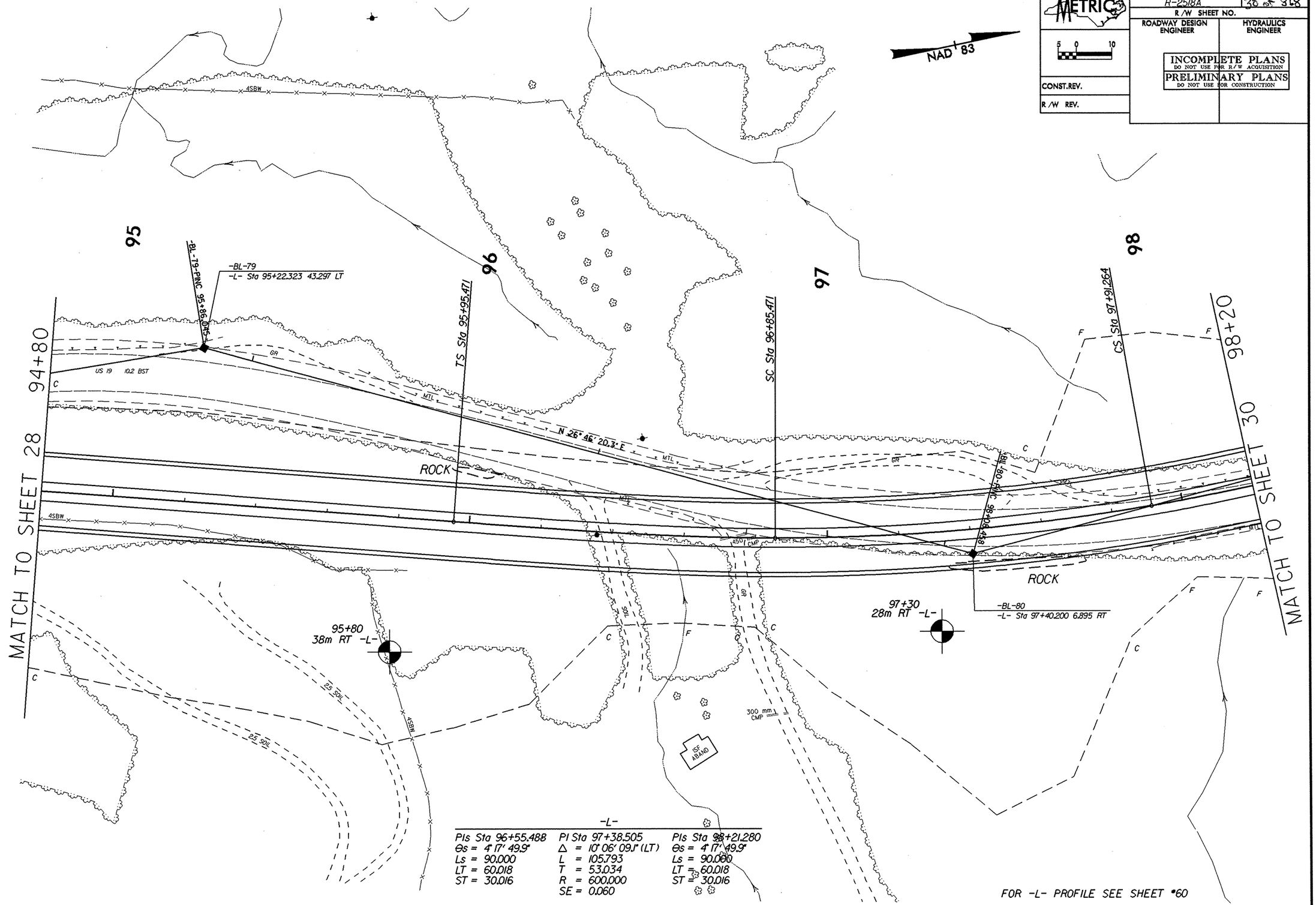
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

NAD 83

-L-

PI Sta 91+69.774	PIs Sta 92+59.824
Δ = 6° 41' 48.4" (LT)	Θs = 1° 25' 56.6"
L = 140.257	Ls = 60.000
T = 70.208	LT = 40.001
R = 1,200.000	ST = 20.001
SE = 0.040	





METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
30 of 368
R/W SHEET NO.
ROADWAY DESIGN ENGINEER
HYDRAULICS ENGINEER
INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION
CONST.REV.
R/W REV.
NAD 83
95
96
97
98
MATCH TO SHEET 28
MATCH TO SHEET 30
94+80
98+20
-BL-79
-L- Sta 95+22.323 43.297 LT
-BL-79-PINC 95+86.045
TS Sta 95+95.471
SC Sta 96+85.471
CS Sta 97+91.264
-BL-80
-L- Sta 97+40.200 6.895 RT
-BL-80-PINC 98+08.458
N 26° 46' 20.3" E
ROCK
ROCK
US 19 10.2 BST
4SBW
25 SOIL
300 mm CMP
ISF ABAND
95+80
38m RT -L-
97+30
28m RT -L-
-L-
PIs Sta 96+55.488
Θs = 4° 17' 49.9"
Ls = 90.000
LT = 60.018
ST = 30.016
PI Sta 97+38.505
Δ = 10° 06' 09.1" (LT)
L = 105.793
T = 53.034
R = 600.000
SE = 0.060
PIs Sta 98+21.280
Θs = 4° 17' 49.9"
Ls = 90.000
LT = 60.018
ST = 30.016
FOR -L- PROFILE SEE SHEET #60

PROJECT REFERENCE NO.	SHEET NO.
R-2518A	31 of 368
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

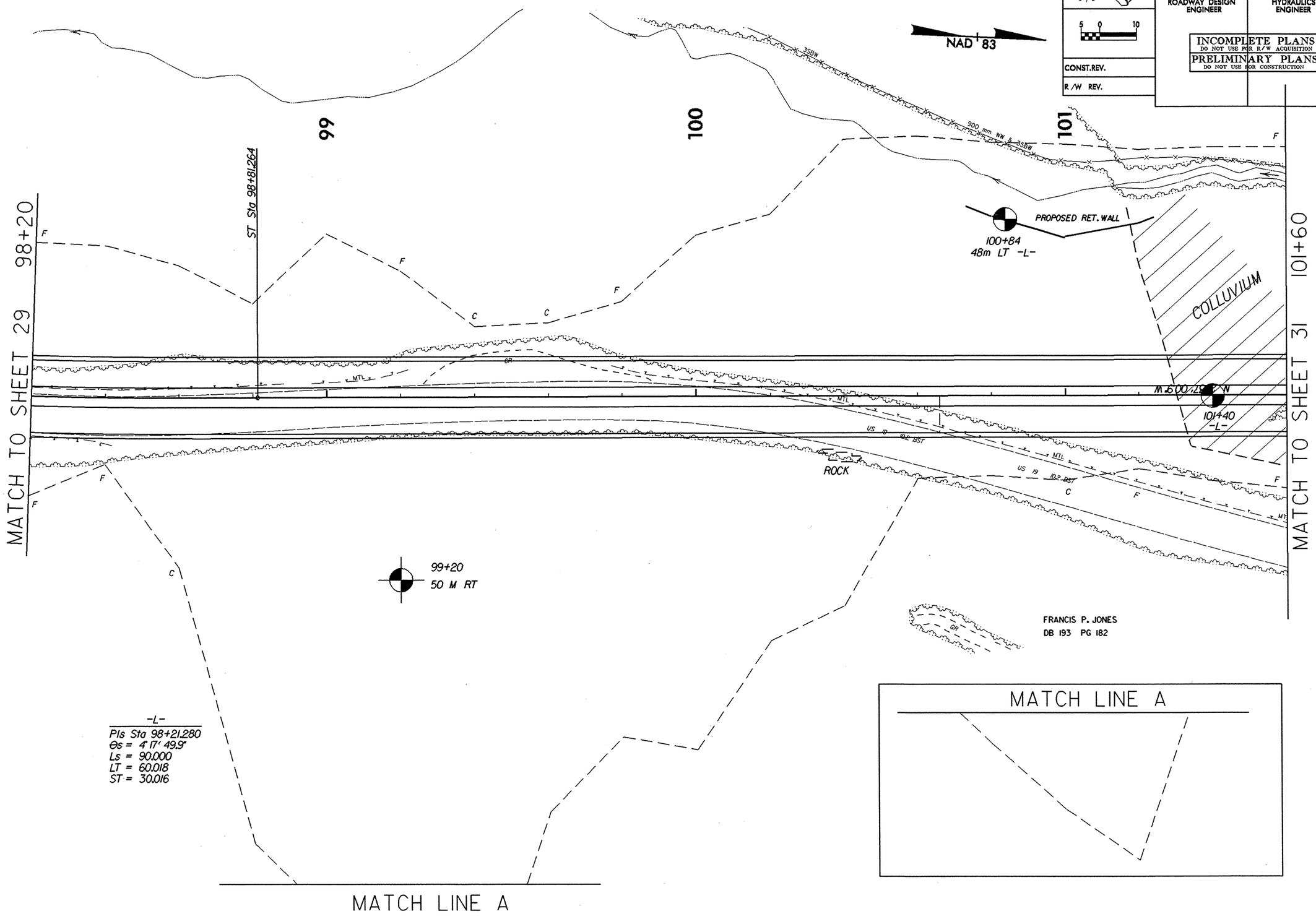
METRIC

5 0 10

CONST. REV.

R/W REV.

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



PROJECT REFERENCE NO.	SHEET NO.
R-2518A	32 of 368
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

5 0 10

CONST. REV.

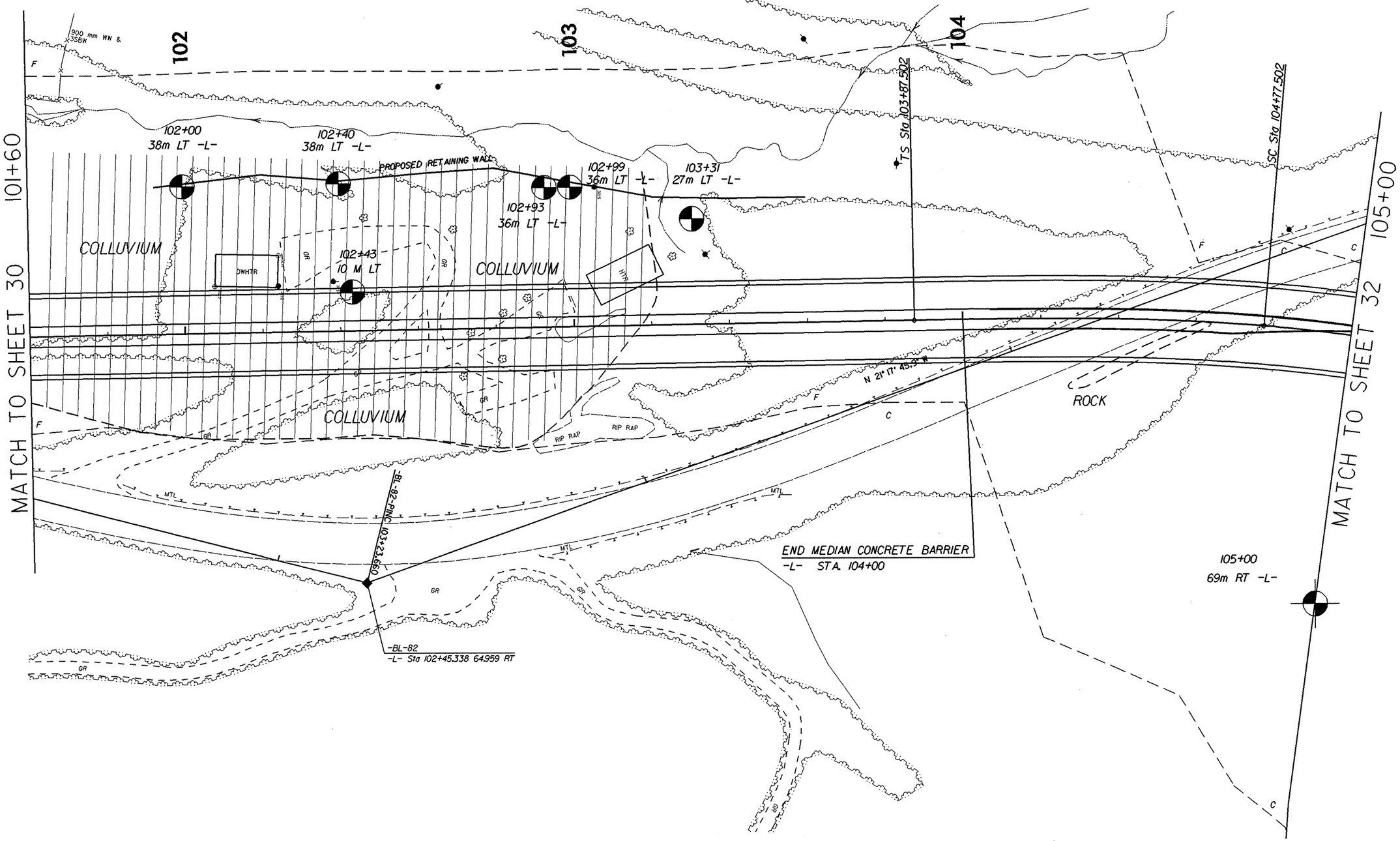
R/W REV.

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

NAD 83

PIs Sta 104+47.536
Θs = 5° 55' 37.7"
Ls = 90.000
LT = 60.034
ST = 30.031

PI Sta 107+31.772
Δ = 60° 36' 53.6" (RT)
L = 460.199
T = 254.269
R = 435.000
SE = 0.060



PROJECT REFERENCE NO.	SHEET NO.
R-2518A	32 & 32B
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

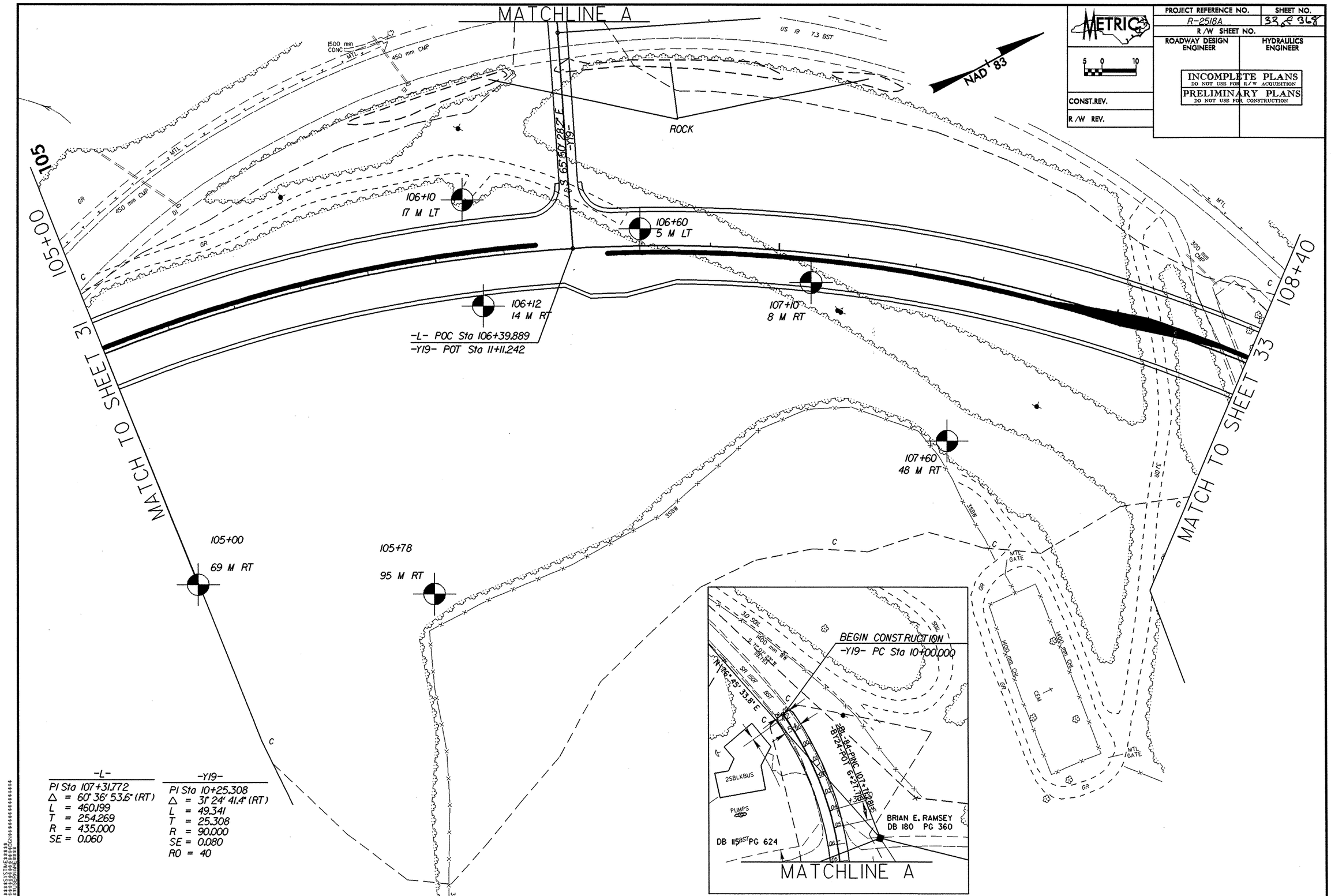
METRIC

5 0 10

CONST.REV.

R/W REV.

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



-L-	-Y19-
PI Sta 107+31.772	PI Sta 10+25.308
Δ = 60° 36' 53.6" (RT)	Δ = 31° 24' 41.4" (RT)
L = 460.199	L = 49.341
T = 254.269	T = 25.308
R = 435.000	R = 90.000
SE = 0.060	SE = 0.080
	RO = 40

PROJECT REFERENCE NO.	SHEET NO.
R-2518A	34 OF 368
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

METRIC

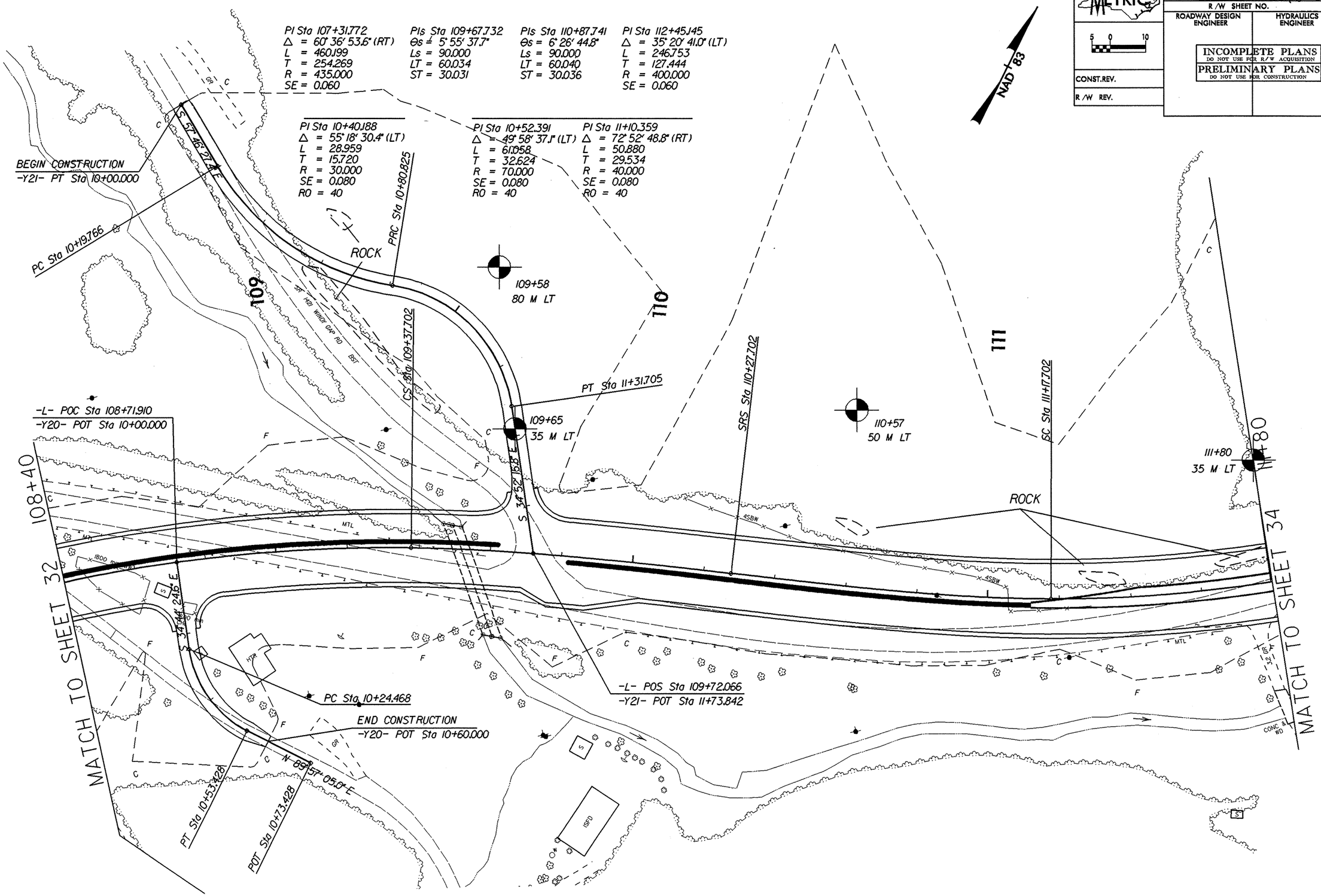
5 0 10

CONST.REV.

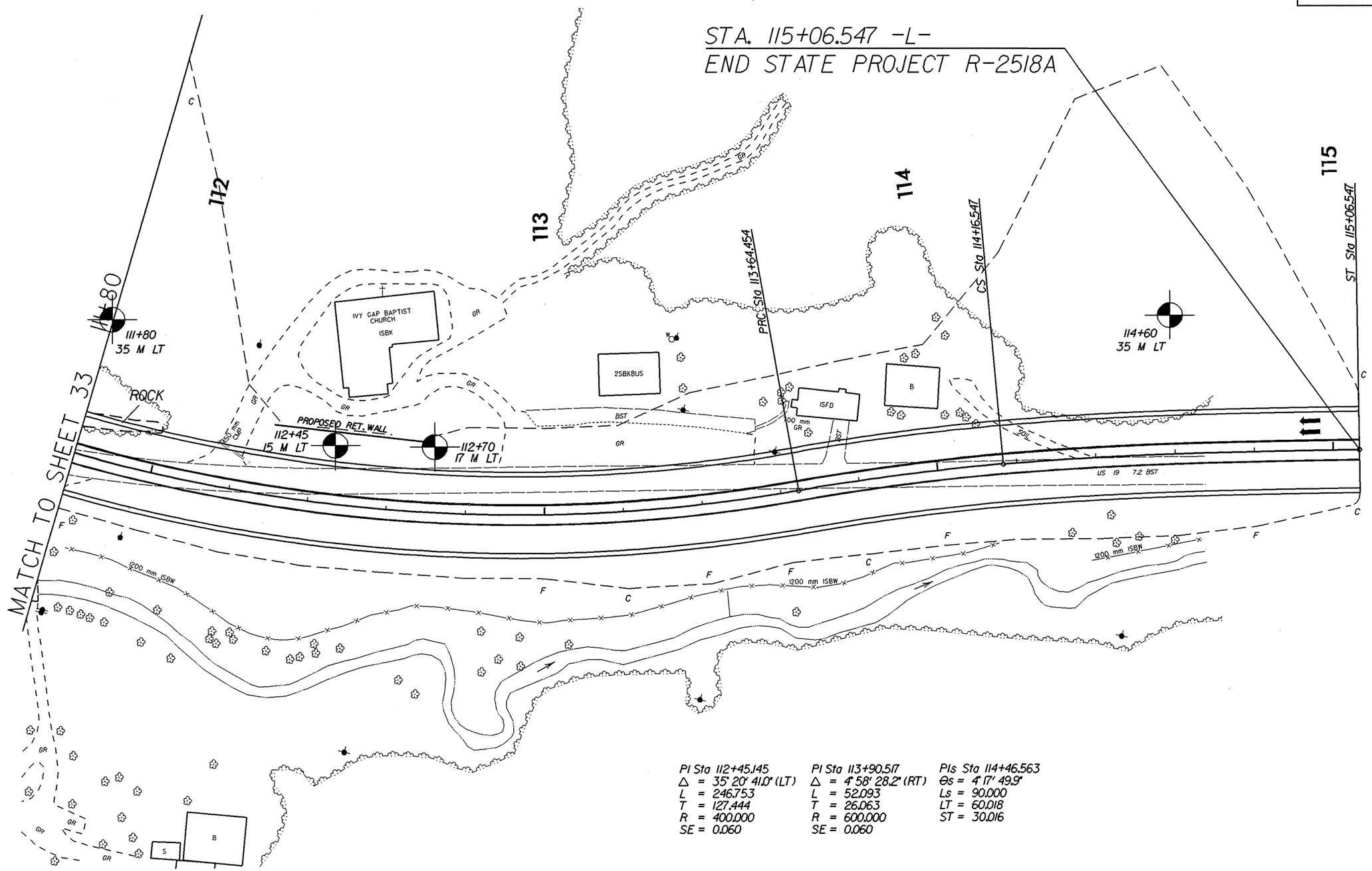
R/W REV.

INCOMPLETE PLANS
DO NOT USE FOR R/W ACQUISITION

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION



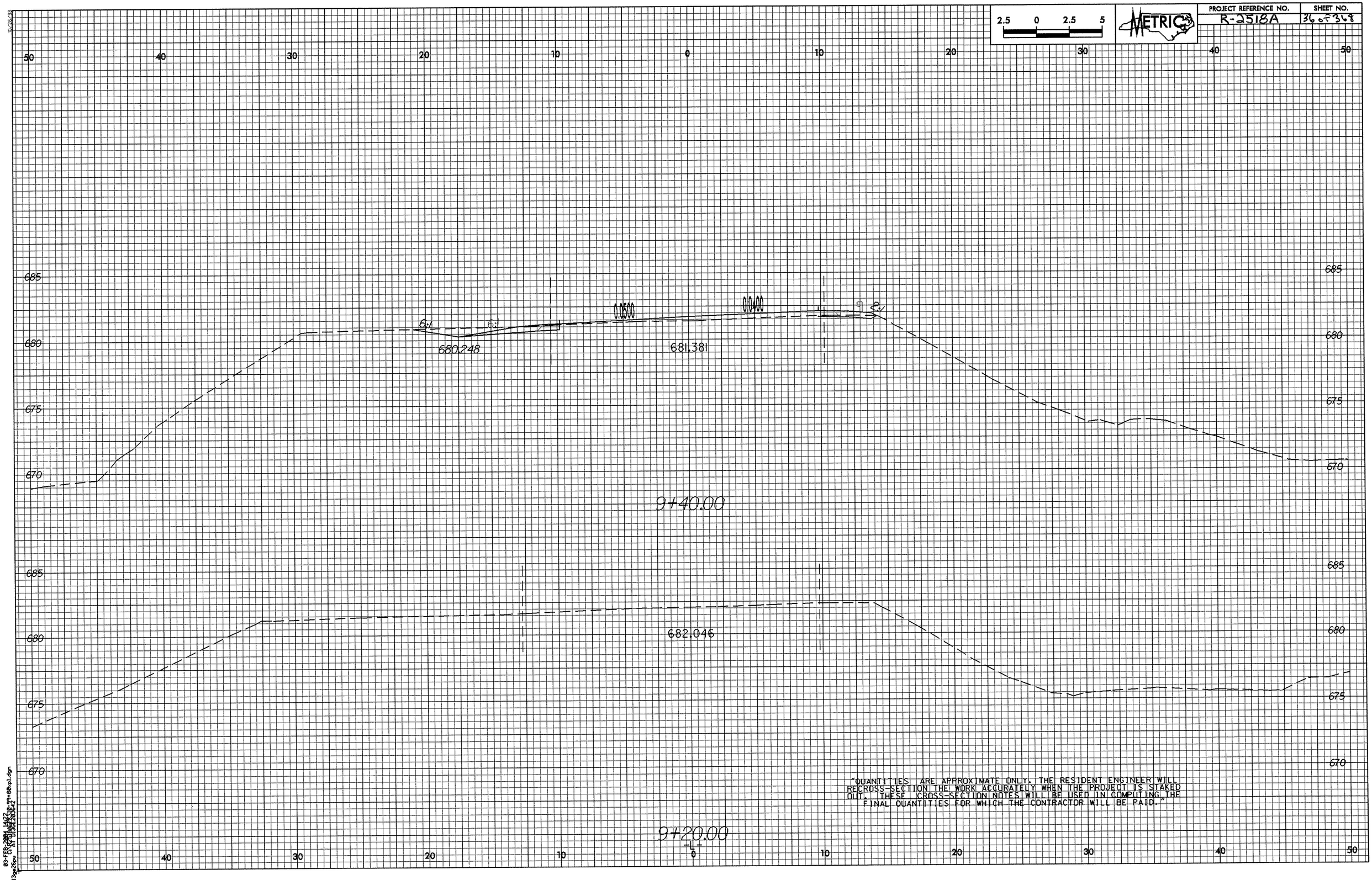
METRIC	PROJECT REFERENCE NO.	SHEET NO.
5 0 10	R-2518A	35 of 36
	R/W SHEET NO.	
CONST.REV.	ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
R/W REV.	INCOMPLETE PLANS DO NOT USE FOR R/W ACQUISITION PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

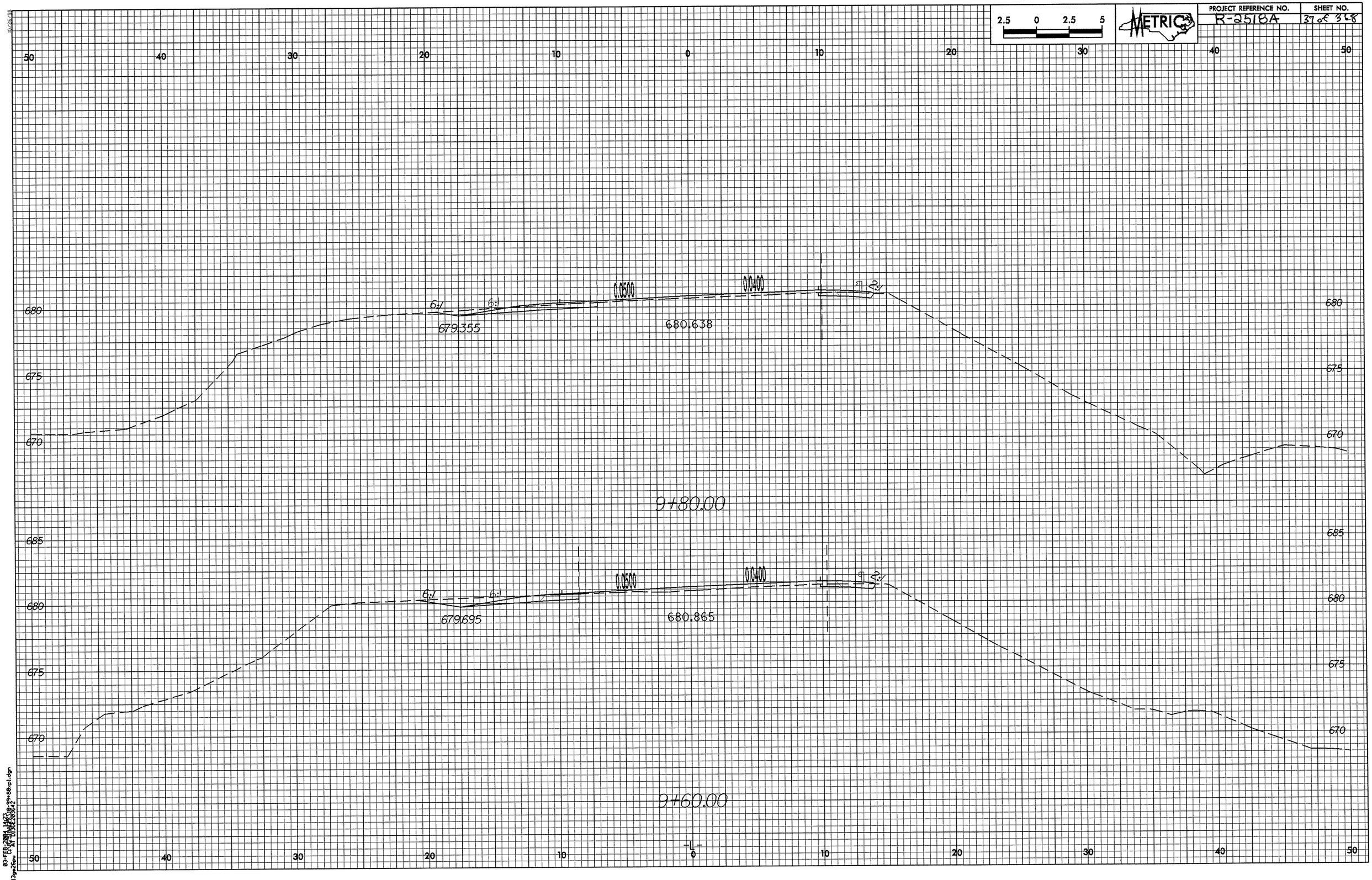


PI Sta 112+45.145
Δ = 35° 20' 41.0" (LT)
L = 246.753
T = 127.444
R = 400.000
SE = 0.060

PI Sta 113+90.517
Δ = 4° 58' 28.2" (RT)
L = 52.093
T = 26.063
R = 600.000
SE = 0.060

PIs Sta 114+46.563
Θs = 4° 17' 49.9"
Ls = 90.000
LT = 60.018
ST = 30.016

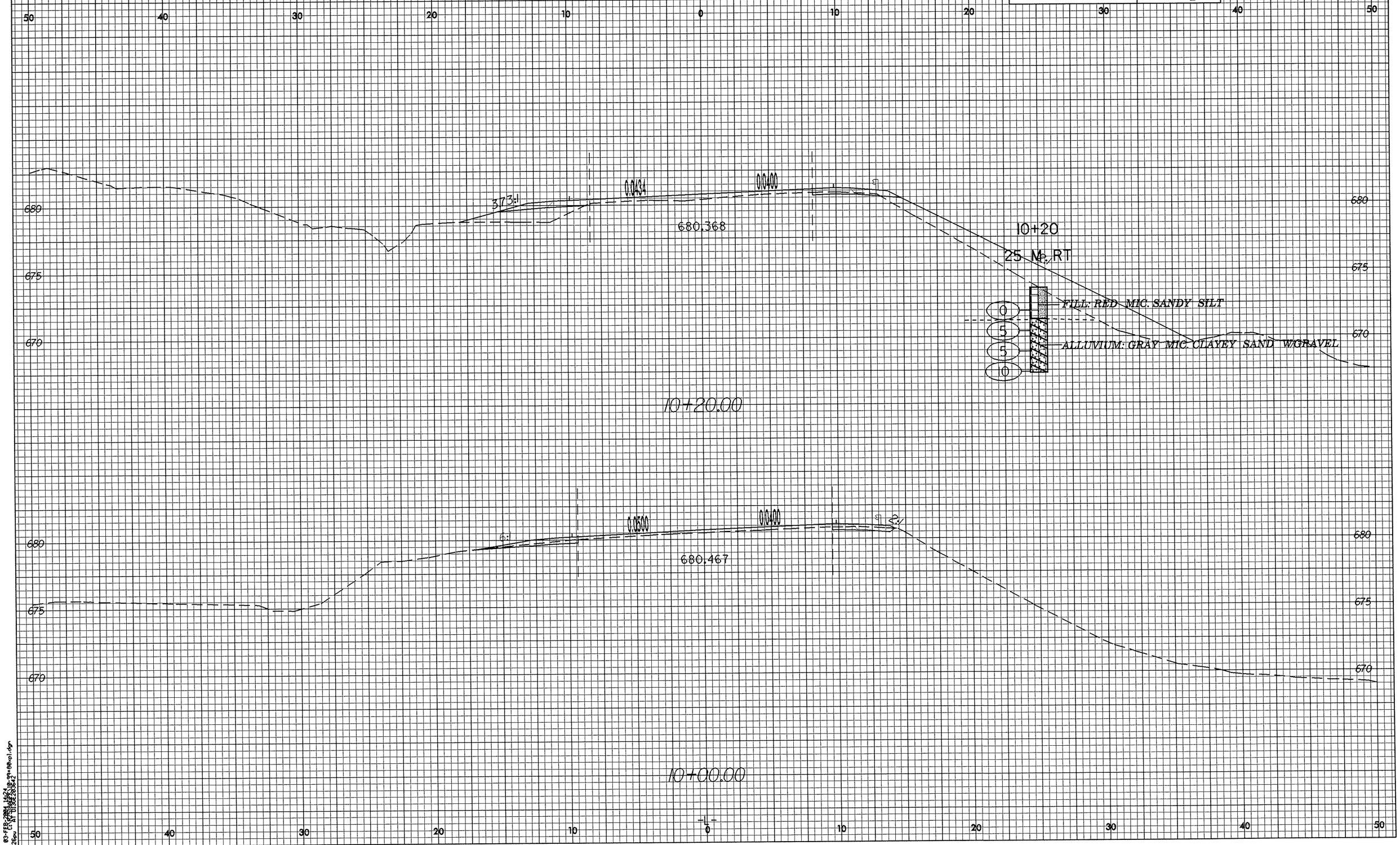

2.5 0 2.5 5
METRIC
50 40 30 20 10 0 10 20 30 40 50
685
680
675
670
0.0500
0.0400
680.248
681.381
9+40.00
682.046
9+20.00
"QUANTITIES ARE APPROXIMATE ONLY. THE RESIDENT ENGINEER WILL RECROSS-SECTION THE WORK ACCURATELY WHEN THE PROJECT IS STAKED OUT. THESE CROSS-SECTION NOTES WILL BE USED IN COMPUTING THE FINAL QUANTITIES FOR WHICH THE CONTRACTOR WILL BE PAID."

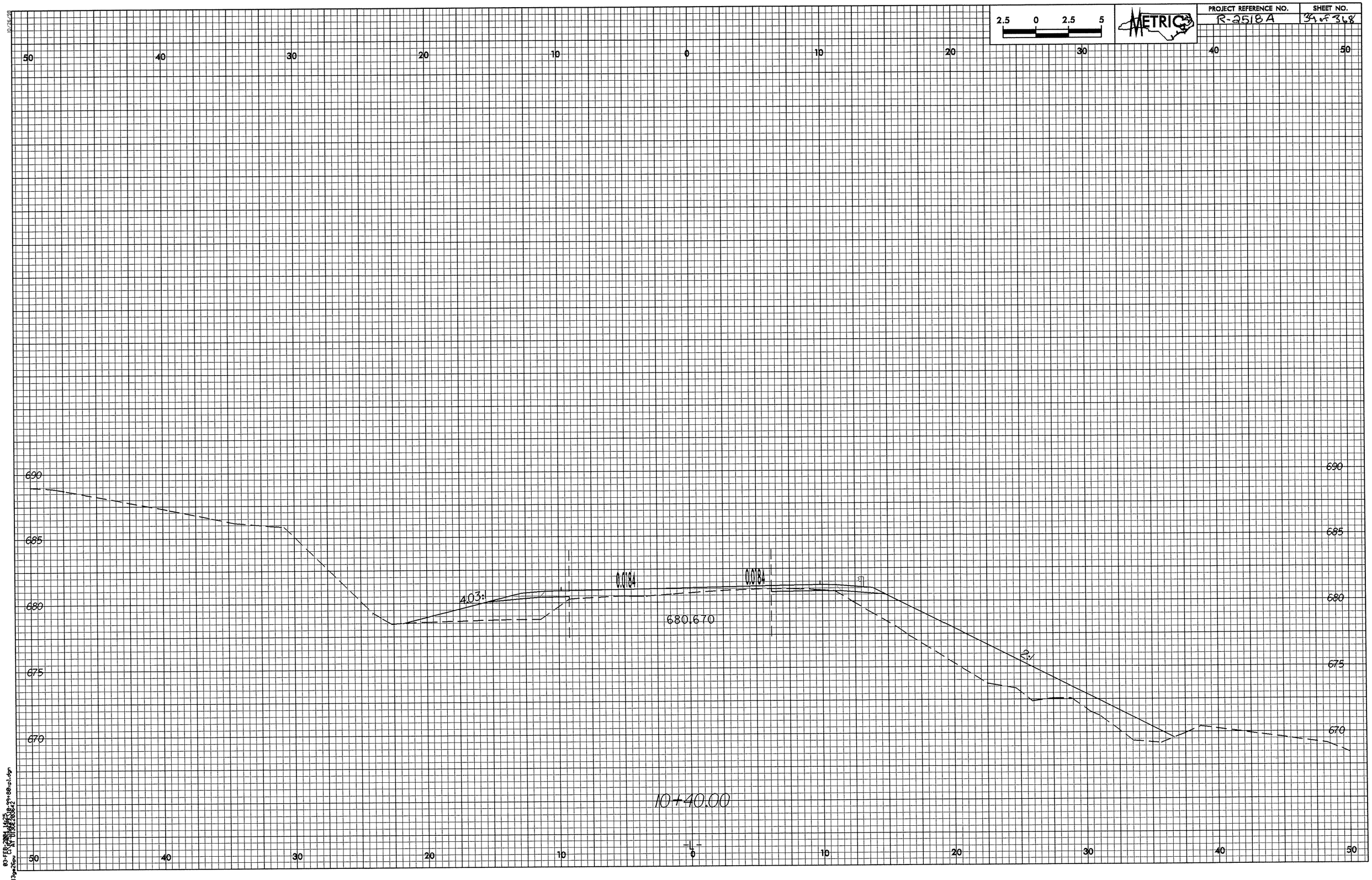

2.5 0 2.5 5
METRIC
50 40 30 20 10 0 10 20 30 40 50
680
675
670
685
6:1
6:1
0.0500
0.0400
2:1
679.355
680.638
9+80.00
679.695
680.865
9+60.00

PROJECT REFERENCE NO.	SHEET NO.
R-2518	38.E3b8

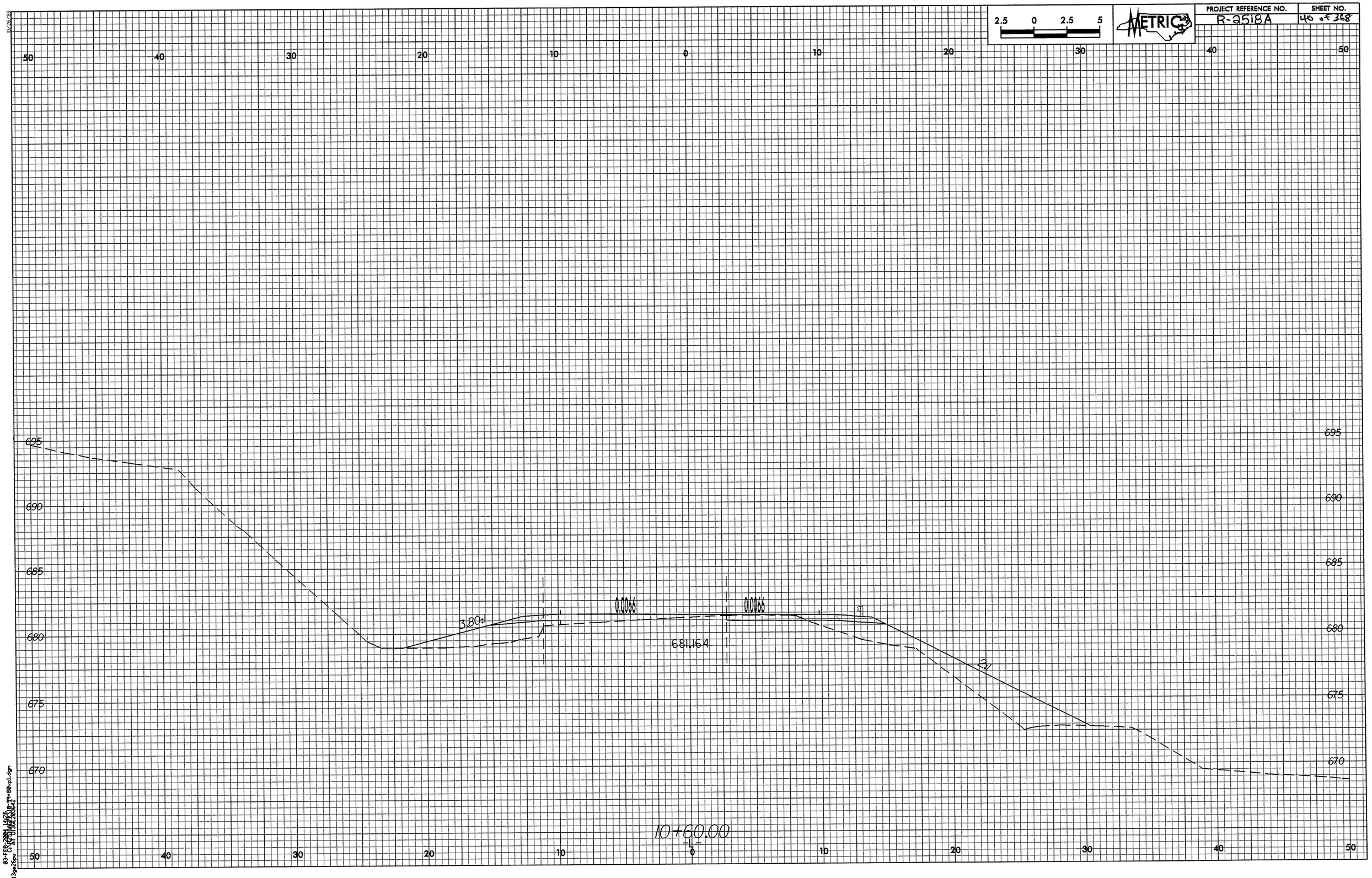
2.5 0 2.5 5

METRIC



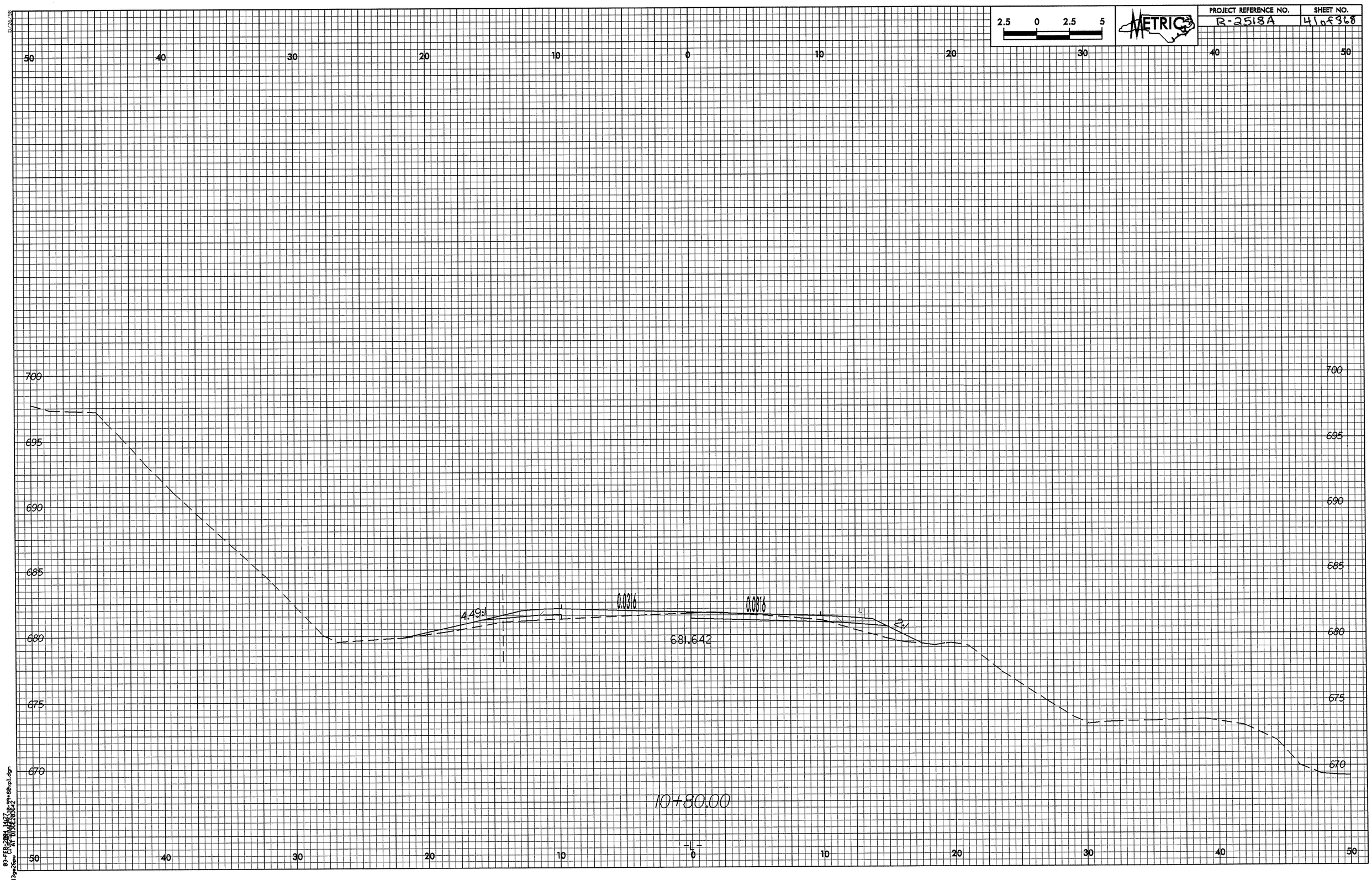


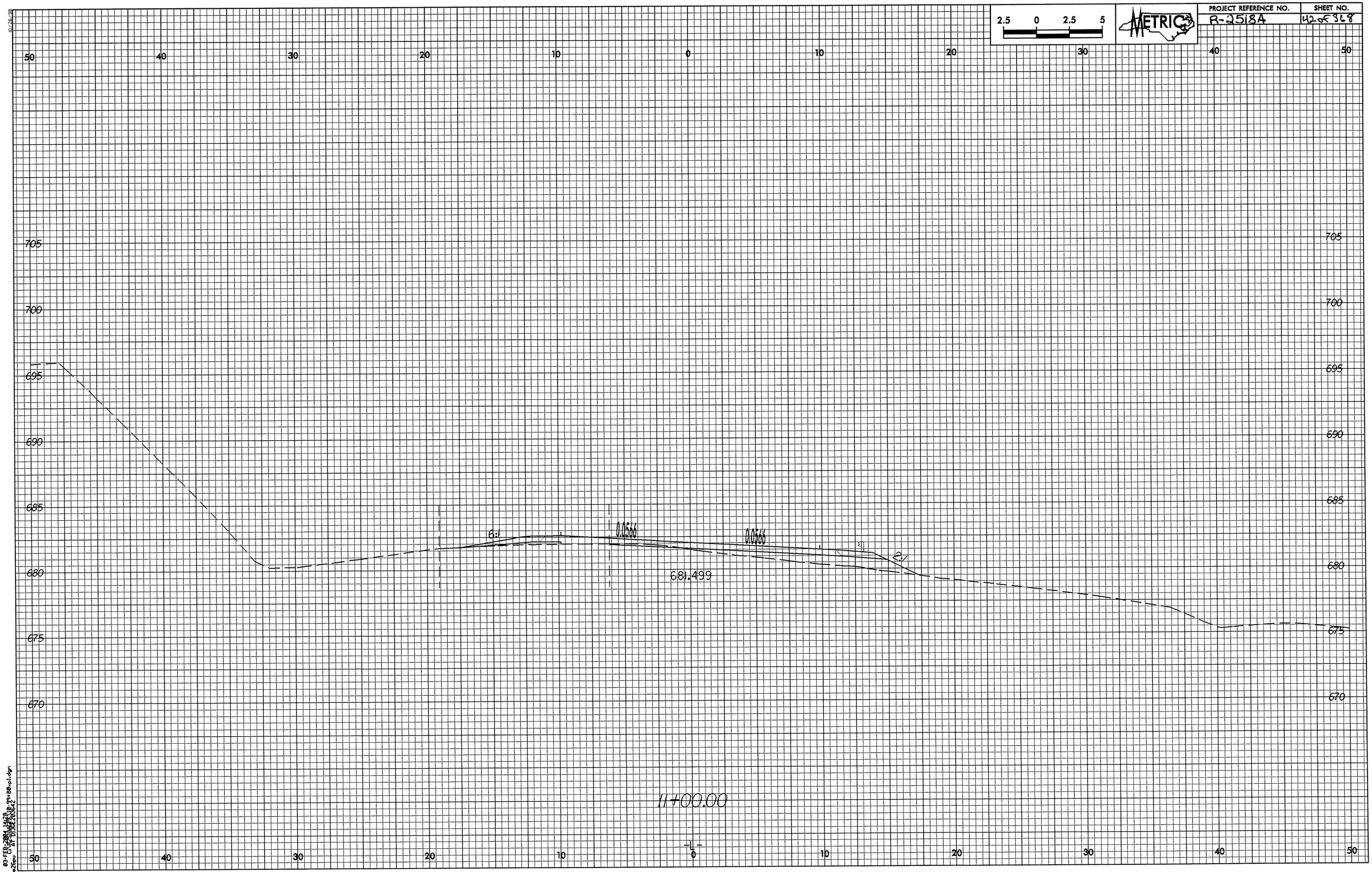
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
39 of 368
50 40 30 20 10 0 10 20 30 40 50
690
685
680
675
670
4.03:1
0.0184
0.0184
680.670
2:1
10+40.00
-L-



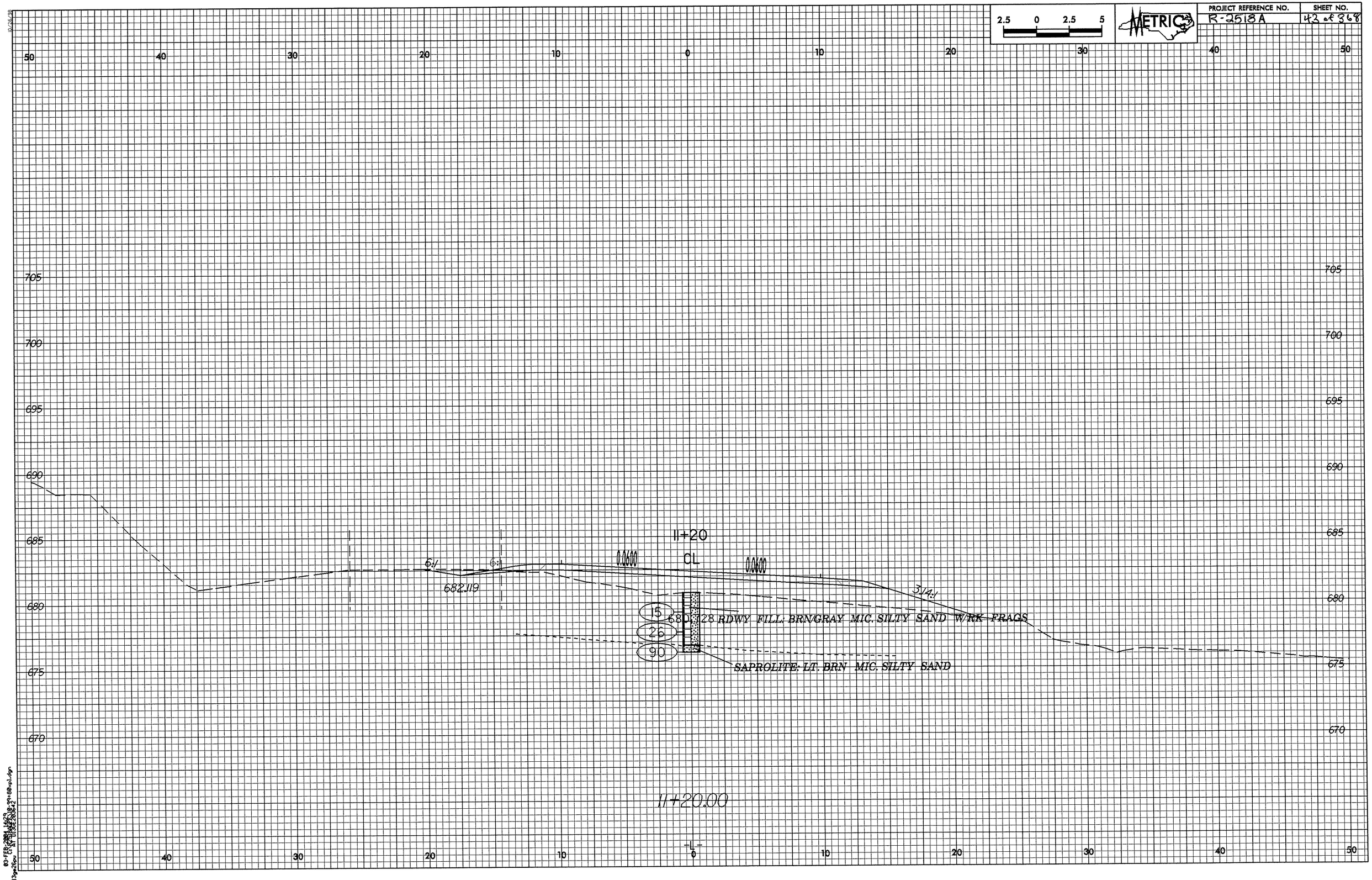
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
40 of 368
50 40 30 20 10 0 10 20 30 40 50
695
690
685
680
675
670
3.80:1
0.0066
0.0066
681.164
2:1
10+60.00

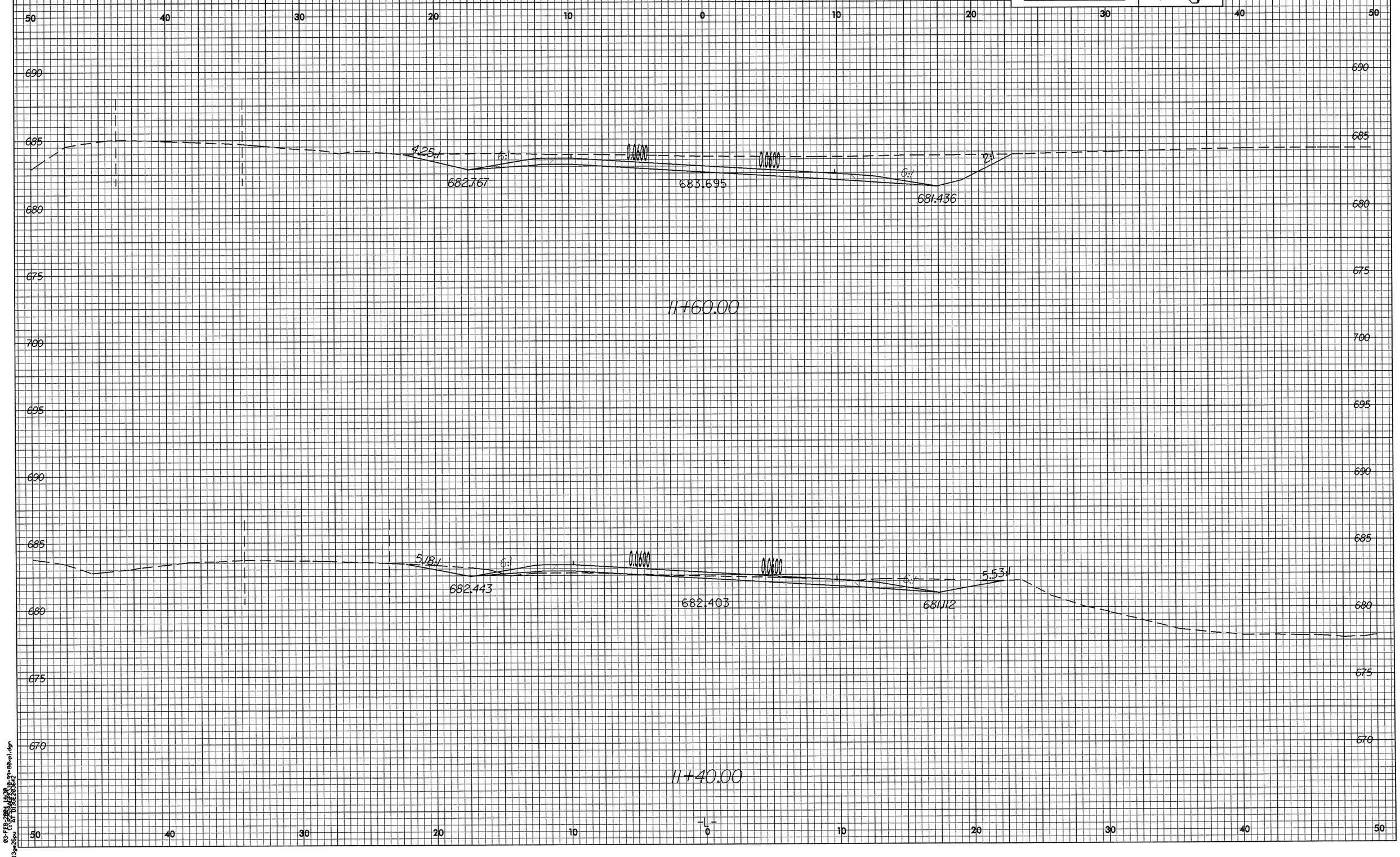
PROJECT REFERENCE NO.	SHEET NO.
R-2518A	41 of 368



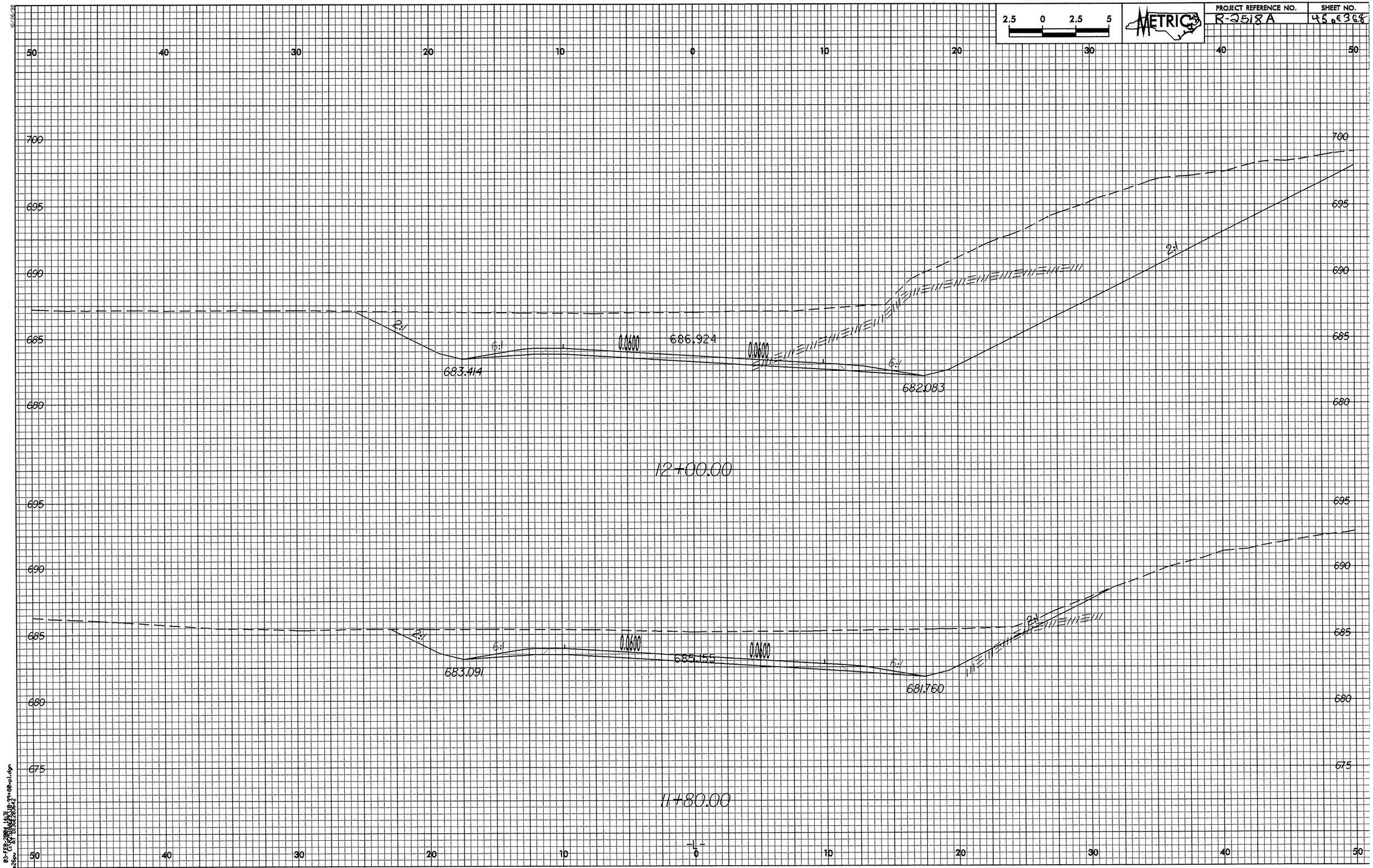


2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
42 of 368
50 40 30 20 10 0 10 20 30 40 50
705
700
695
690
685
680
675
670
6:1
0.0566
0.0566
2:1
681.499
11+00.00
-L-

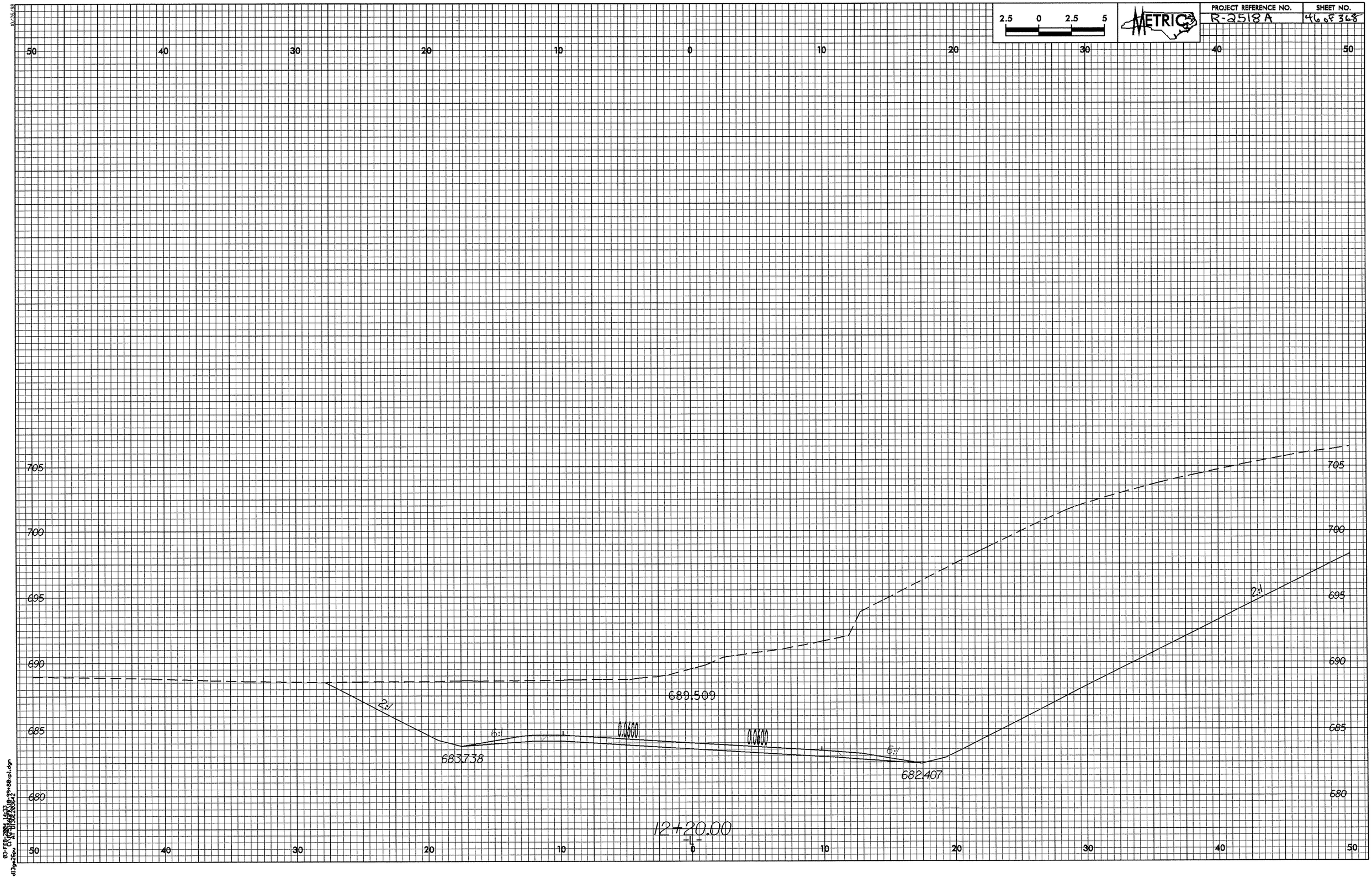

2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
43 of 368
50
40
30
20
10
0
10
20
30
40
50
705
700
695
690
685
680
675
670
11+20
CL
0.0600
0.0600
6:1
6:1
682.119
314.1
15
26
90
680
28 RDWY FILL: BRN/GRAY MIC. SILTY SAND W/RK FRAGS
SAPROLITE: LT. BRN MIC. SILTY SAND
11+20.00
-L-



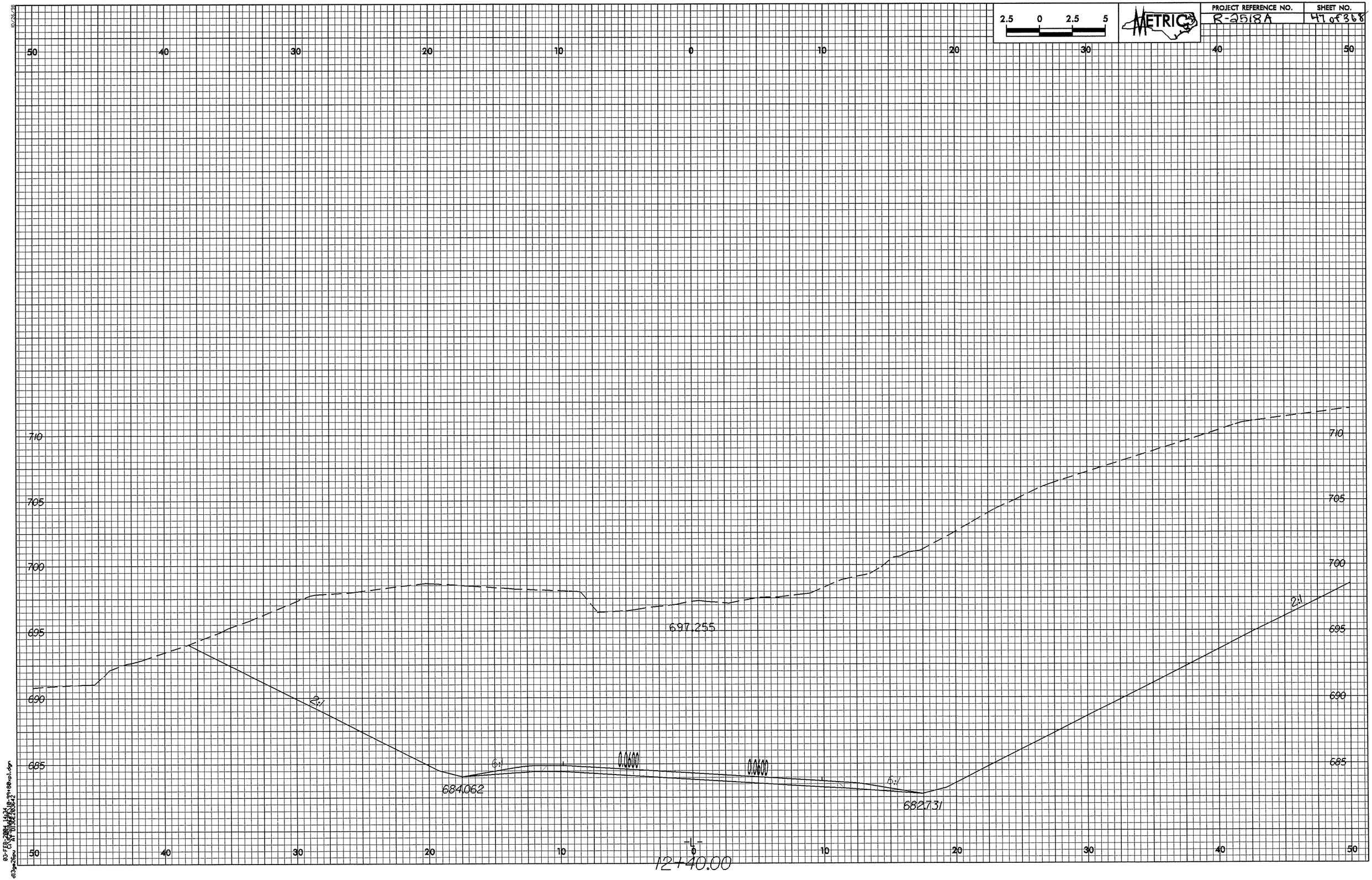
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
44 of 368
50 40 30 20 10 0 10 20 30 40 50
690
685
680
675
700
695
690
685
680
675
670
4.25:1
6:1
0.0600
0.0600
6:1
2:1
682.767
683.695
681.436
11+60.00
5.18:1
6:1
0.0600
0.0600
6:1
5.53:1
682.443
682.403
681.112
11+40.00
-L-

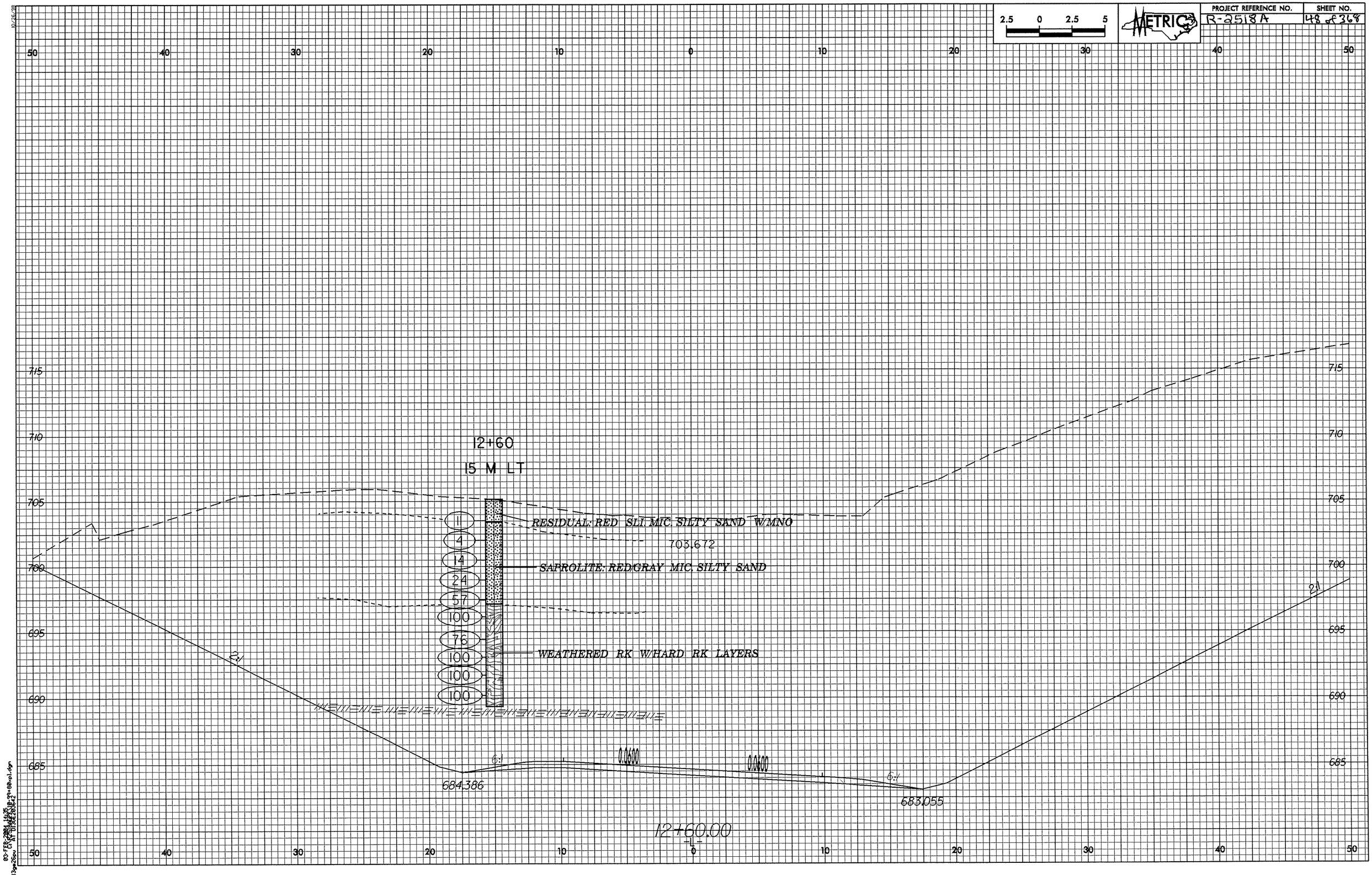


2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
45 of 368
50 40 30 20 10 0 10 20 30 40 50
700
695
690
685
680
675
2:1
6:1
0.0600
686.924
683.414
682.083
12+00.00
683.091
685.155
681.760
11+80.00



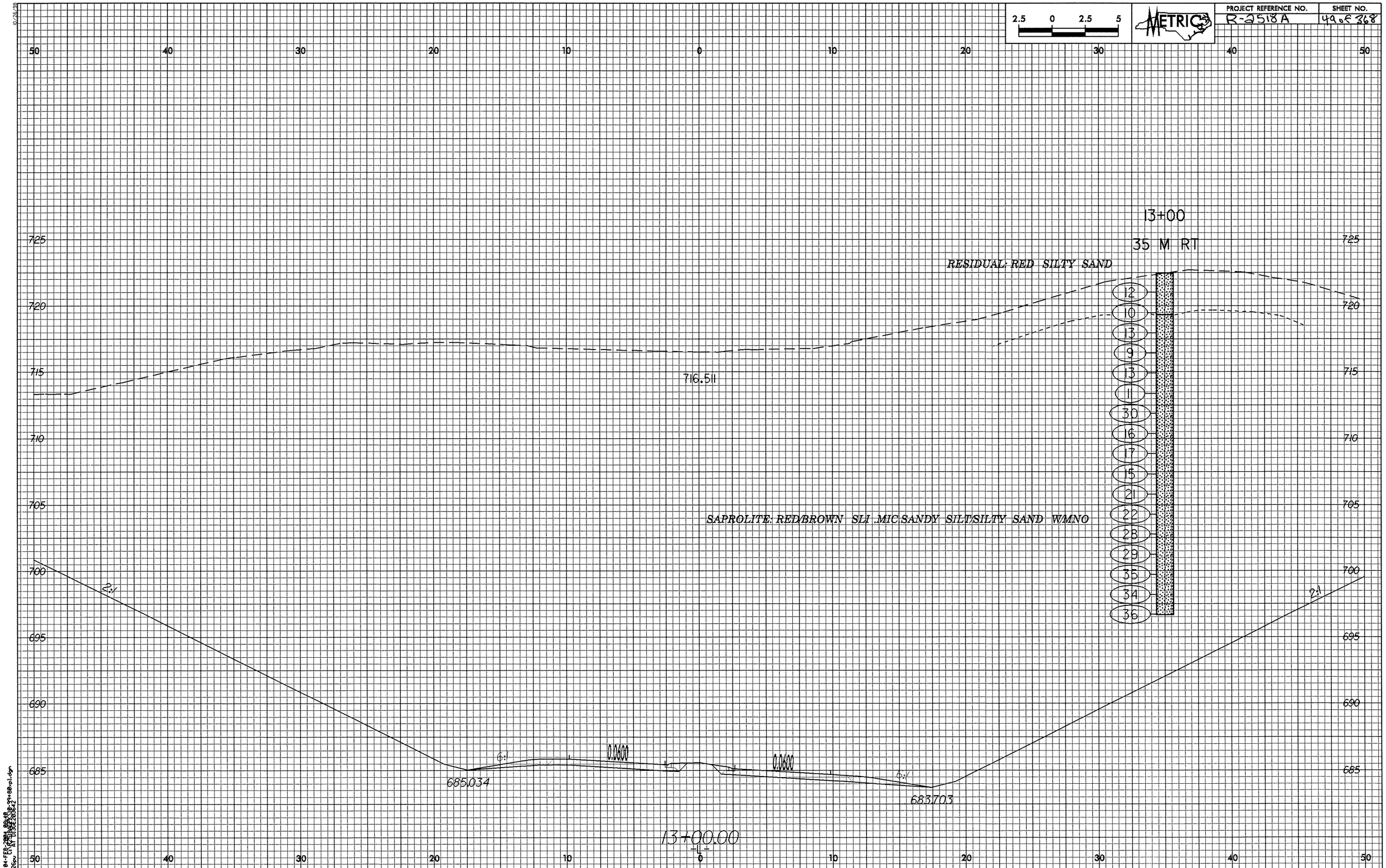
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
46 of 368
50 40 30 20 10 0 10 20 30 40 50
705
700
695
690
685
680
689.509
2:1
6:1
0.0600
0.0600
6:1
2:1
683.738
682.407
12+20.00
-L-

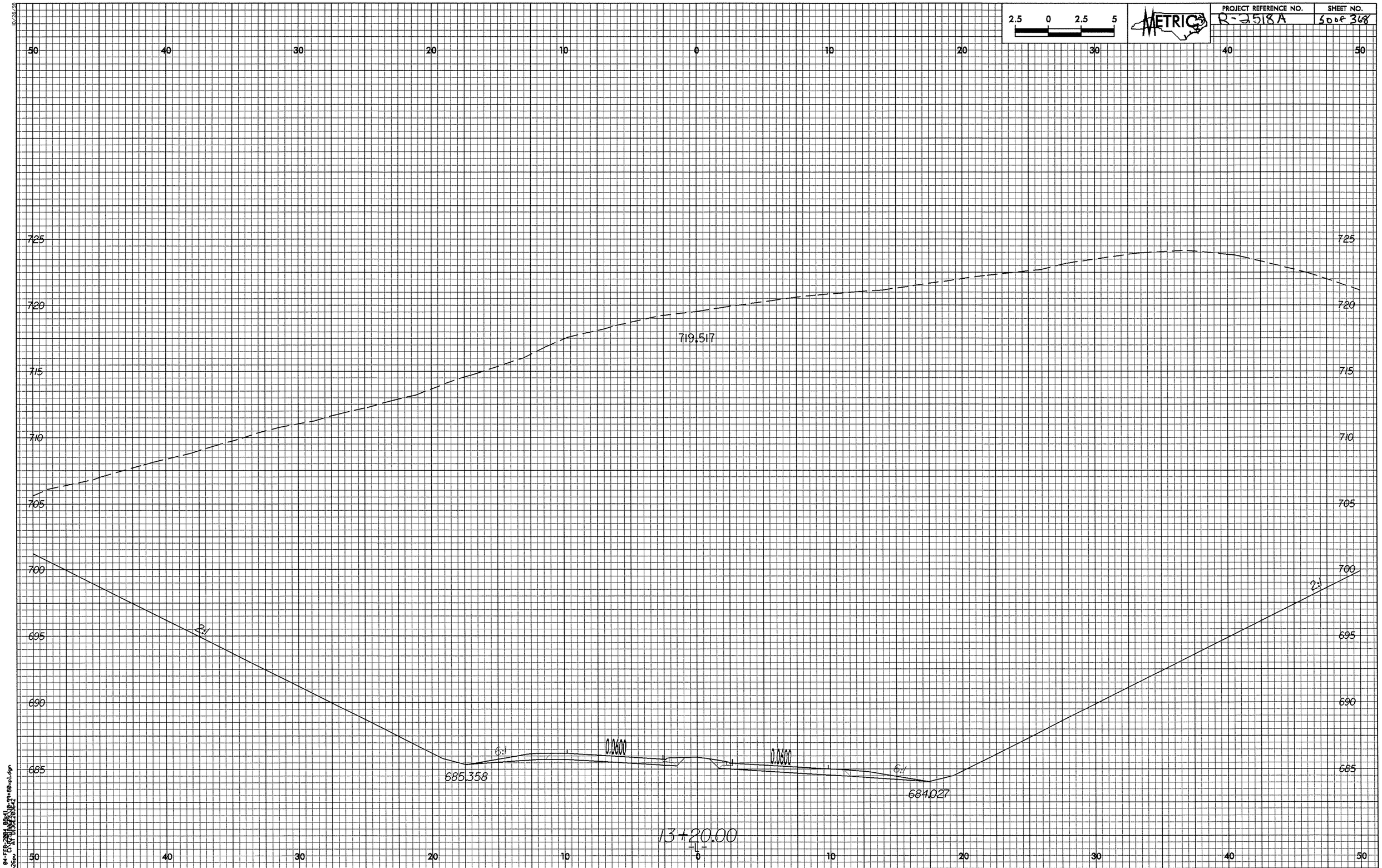

2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
47 of 368
50 40 30 20 10 0 10 20 30 40 50
710
705
700
695
690
685
697.255
684.062
682.731
2:1
6:1
6:1
6:1
2:1
0.0600
0.0600
-L-
12+40.00

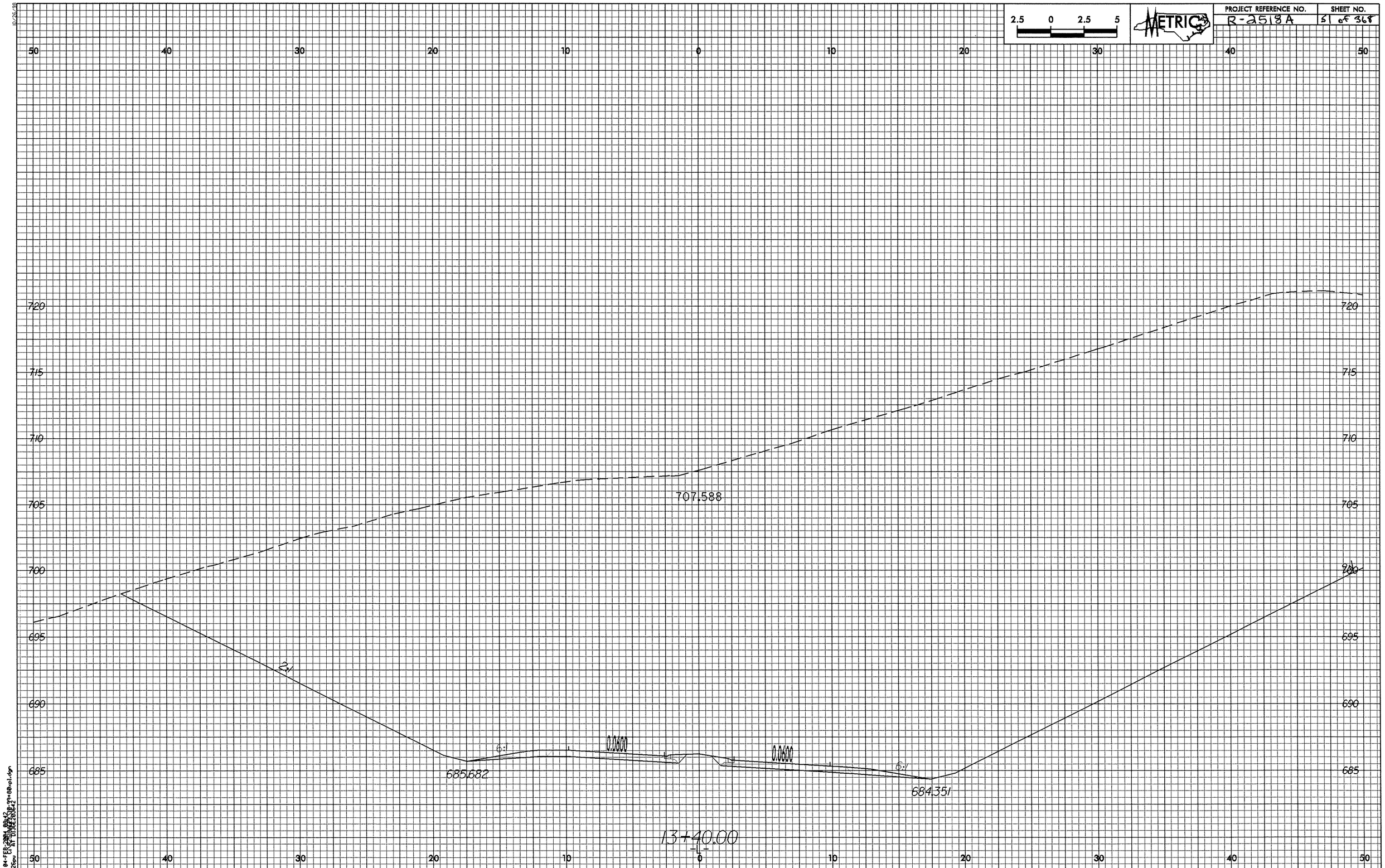


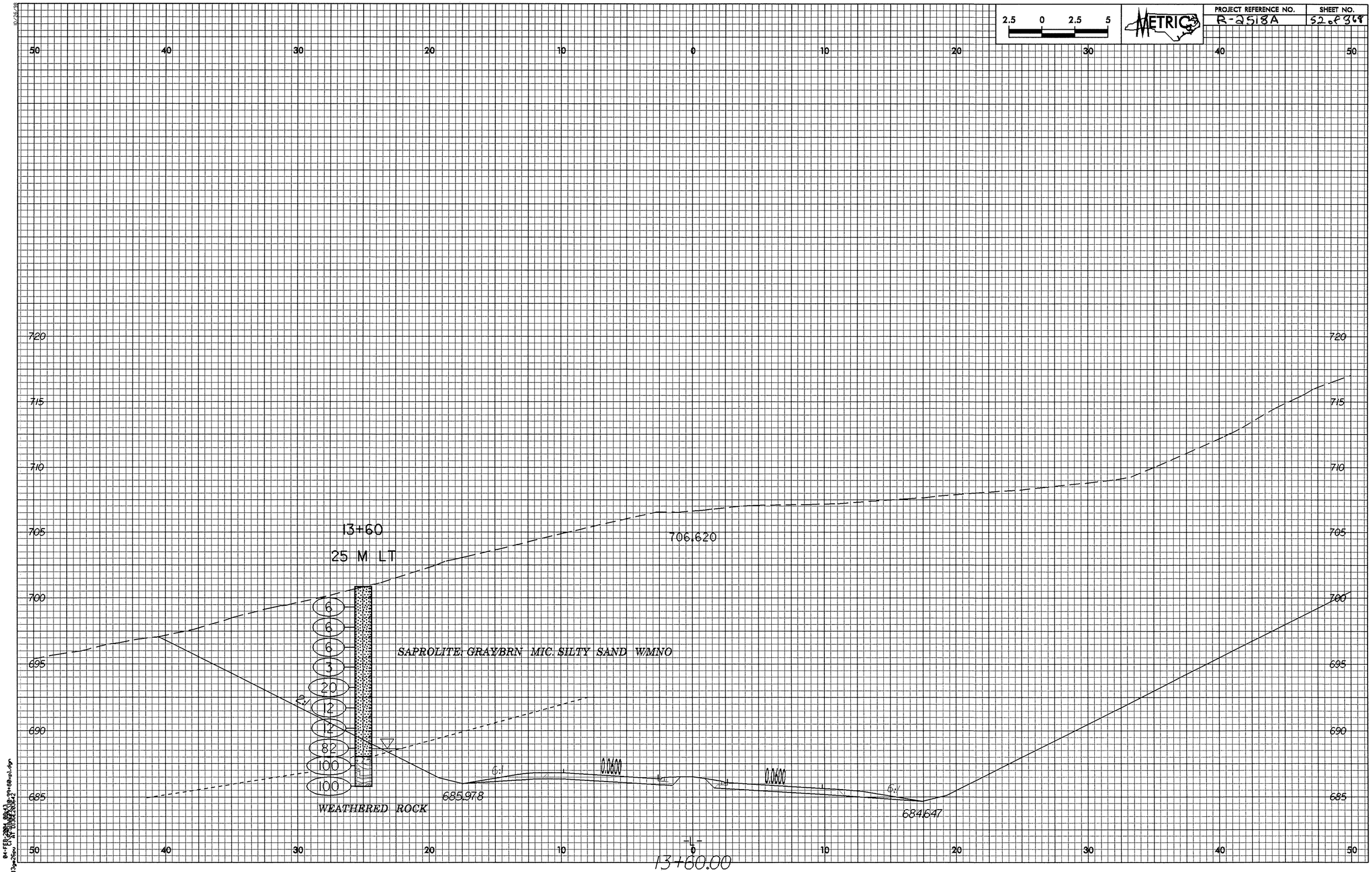
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
48 of 368
12+60
15 M LT
RESIDUAL: RED SLI. MIC. SILTY SAND W/MNO
703.672
SAPROLITE: RED/GRAY MIC. SILTY SAND
WEATHERED RK W/HARD RK LAYERS
11
4
14
24
57
100
76
100
100
100
2:1
6:1
0.0600
0.0600
6:1
2:1
684.386
683.055
12+60.00
-L-
715
710
705
700
695
690
685
50
40
30
20
10
0
10
20
30
40
50

PROJECT REFERENCE NO.	SHEET NO.
R-2518A	49 of 368

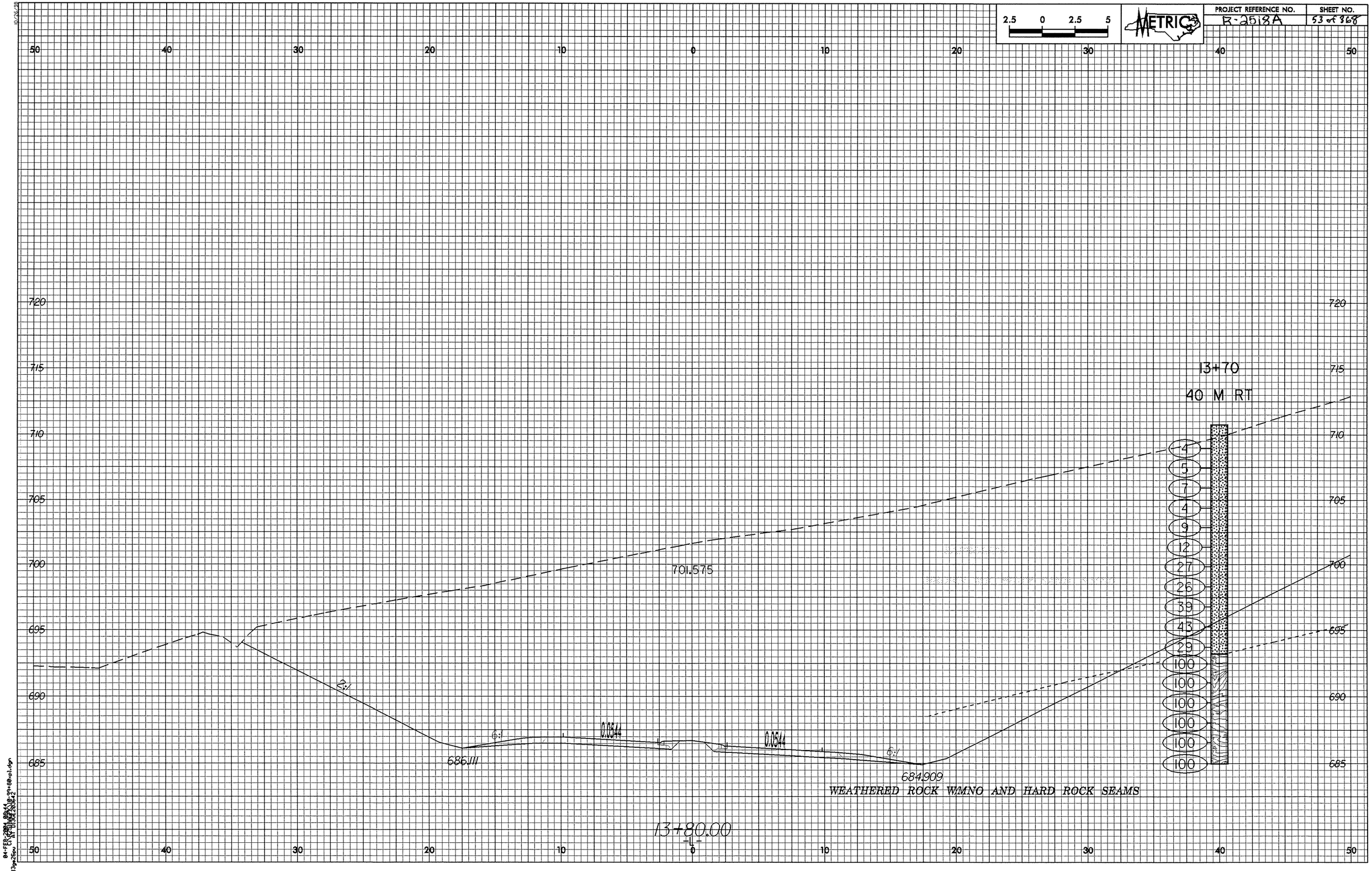


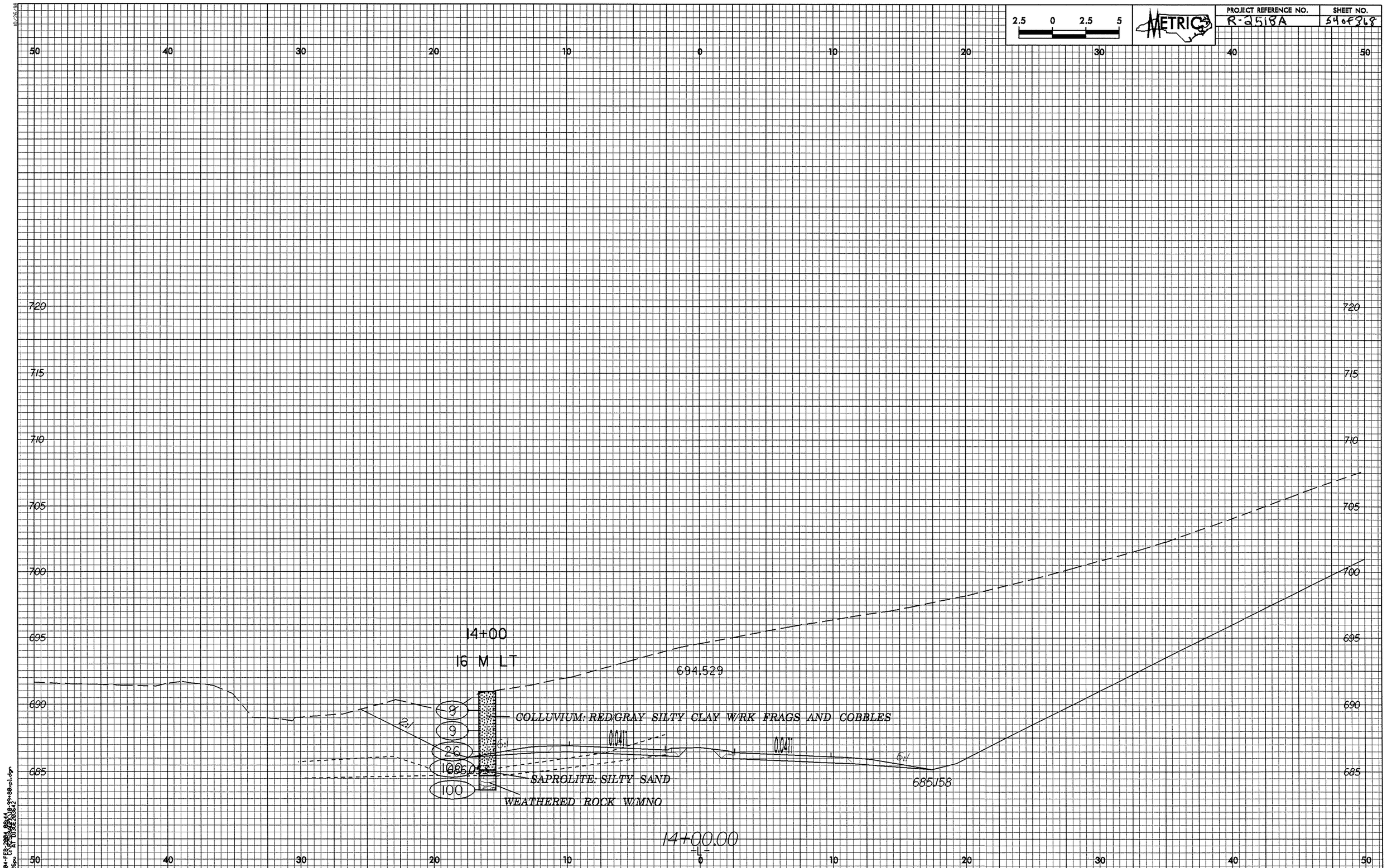

2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
5 OF 368
50 40 30 20 10 0 10 20 30 40 50
725
720
715
710
705
700
695
690
685
719.517
2:1
6:1
0.0600
0.0600
6:1
2:1
685.358
684.027
13+20.00
-L-


2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
51 of 368
50 40 30 20 10 0 10 20 30 40 50
720
715
710
705
700
695
690
685
707.588
2:1
6:1
0.0600
0.0600
6:1
685.682
684.351
13+40.00
-L-

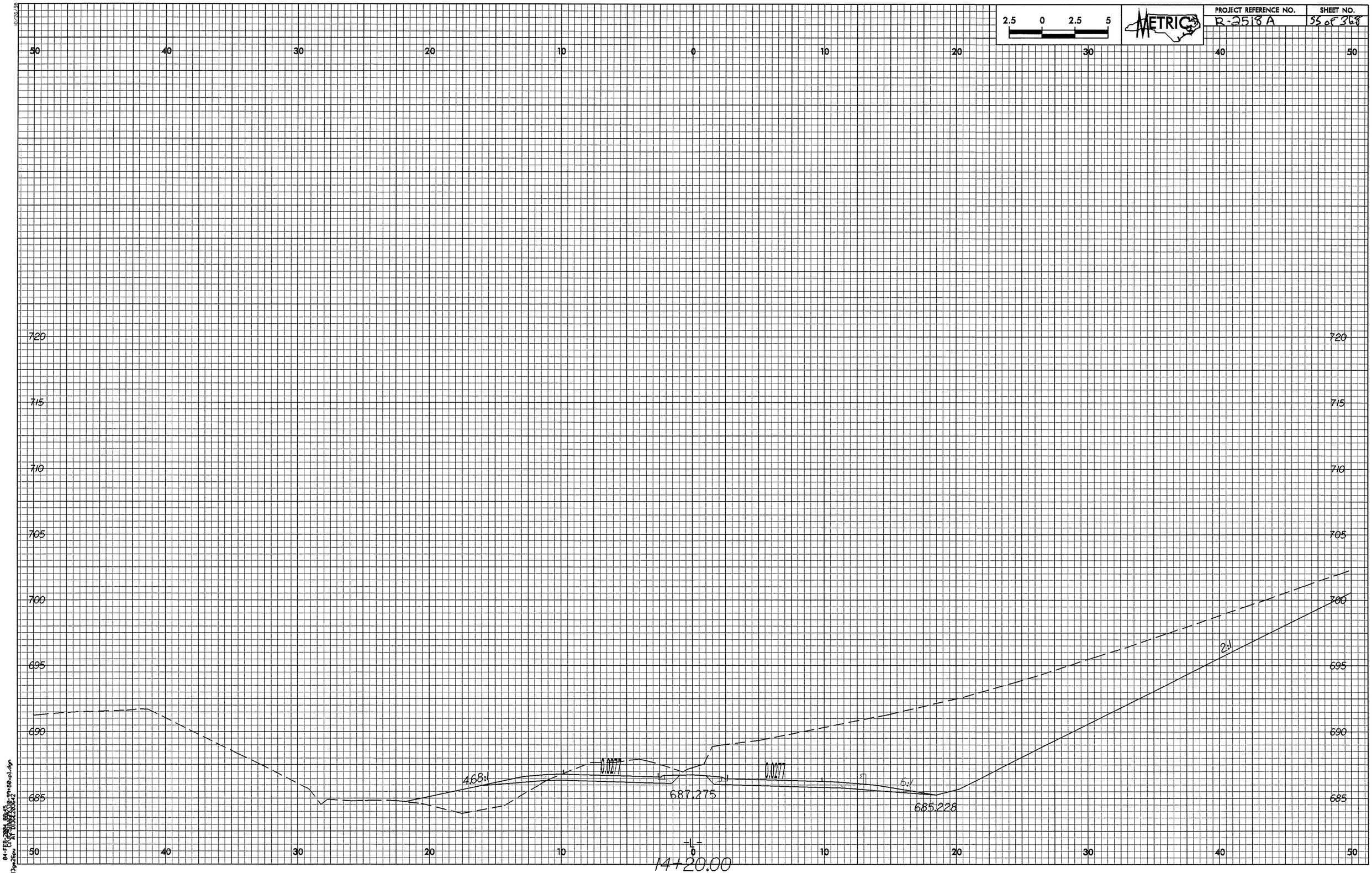


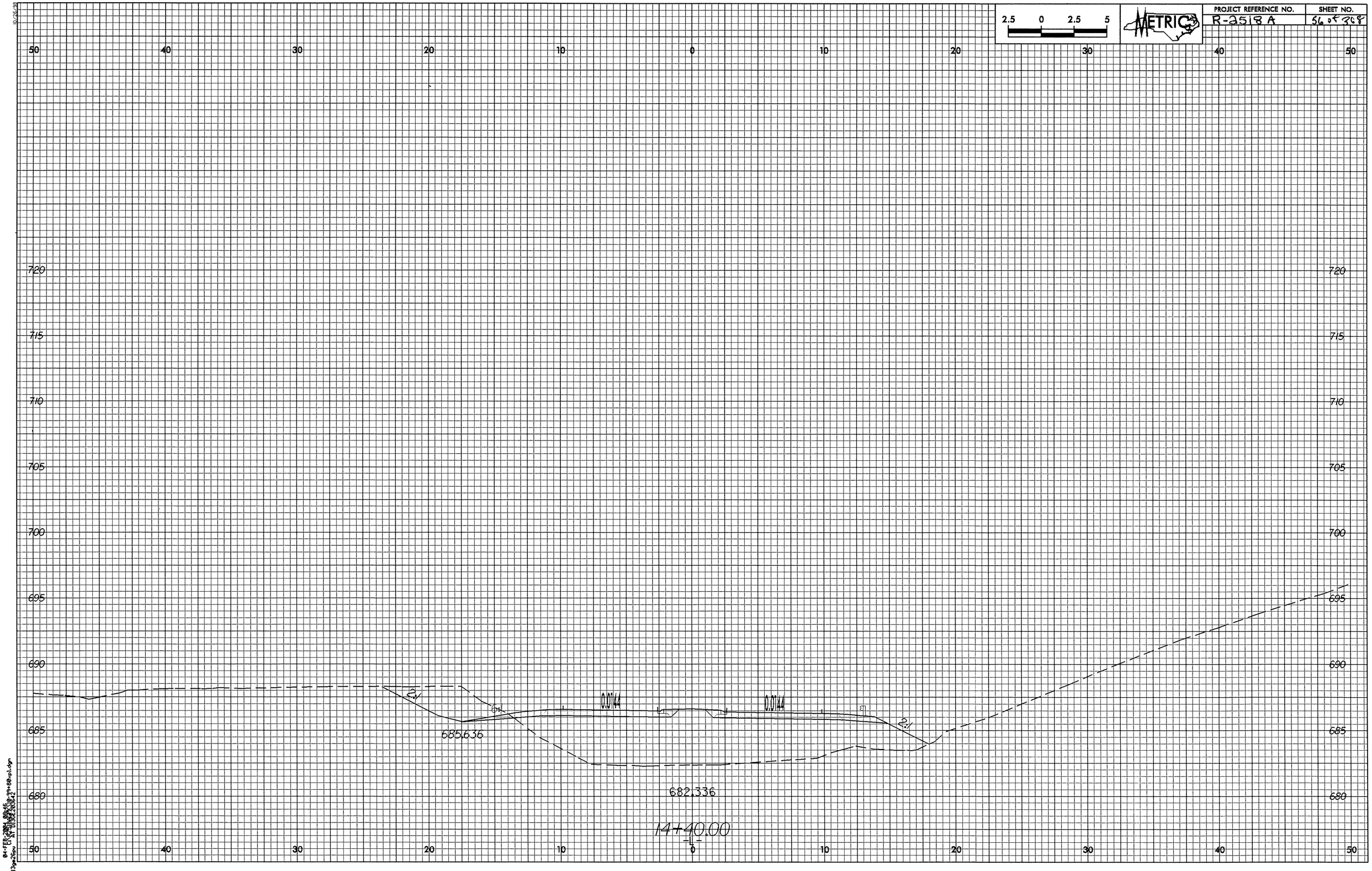
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
52 of 368
13+60
25 M LT
706.620
6
6
6
3
20
12
12
82
100
100
2:1
SAPROLITE: GRAY/BRN MIC. SILTY SAND W/MNO
WEATHERED ROCK
6:1
0.0600
0.0600
6:1
685.978
684.647
-L-
13+60.00


2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
53 of 368
50 40 30 20 10 0 10 20 30 40 50
720
715
710
705
700
695
690
685
13+70
40 M RT
4
5
7
4
9
12
27
26
39
43
29
100
100
100
100
100
100
701.575
2:1
6:1
0.0544
0.0544
6:1
686.111
684.909
WEATHERED ROCK WMNO AND HARD ROCK SEAMS
13+80.00
-L-

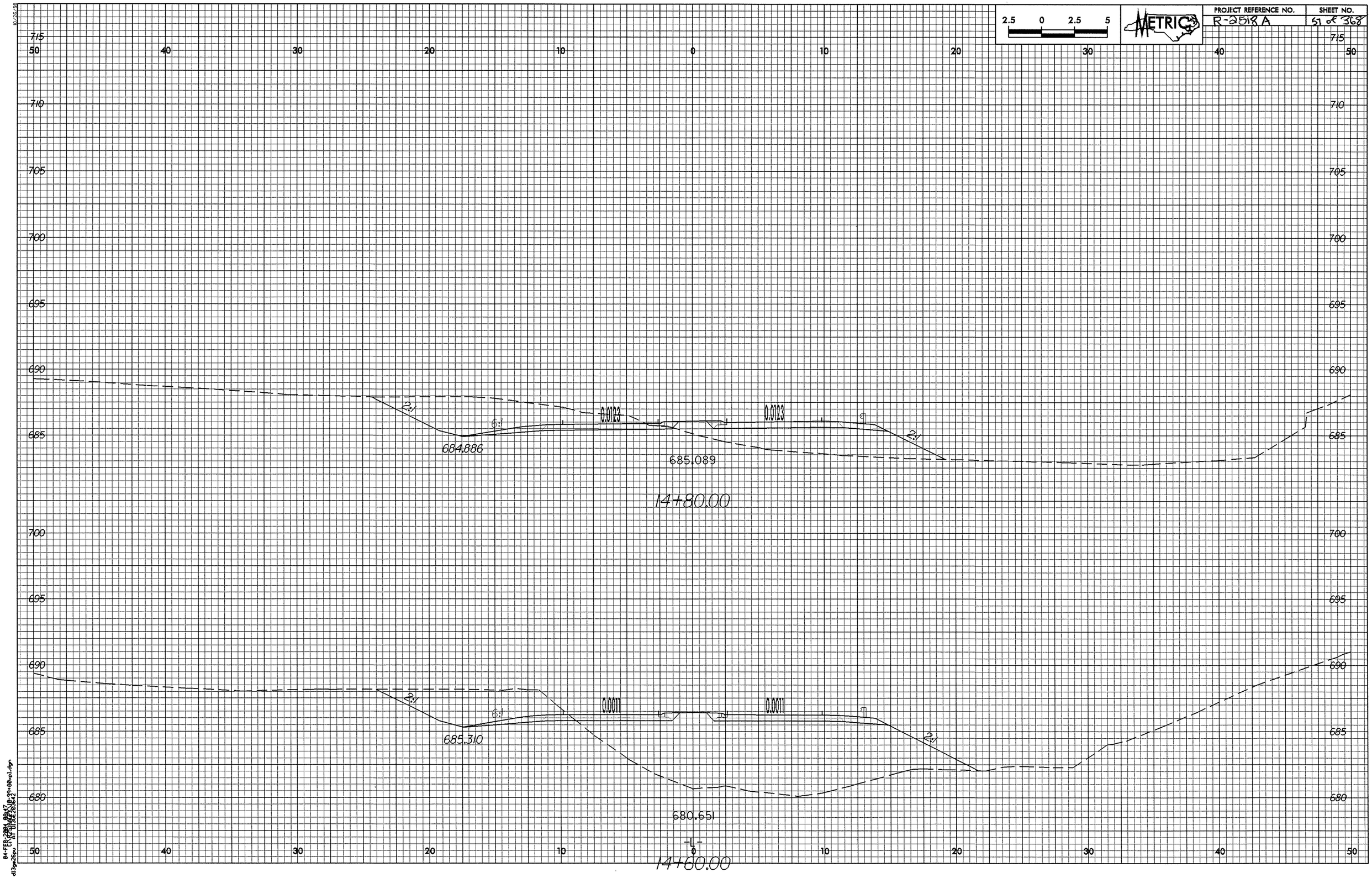


2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
54 of 368
14+00
16 M LT
694.529
COLLUVIUM: RED/GRAY SILTY CLAY W/RK FRAGS AND COBBLES
SAPROLITE: SILTY SAND
WEATHERED ROCK W/MNO
685.158
14+00.00
-L-

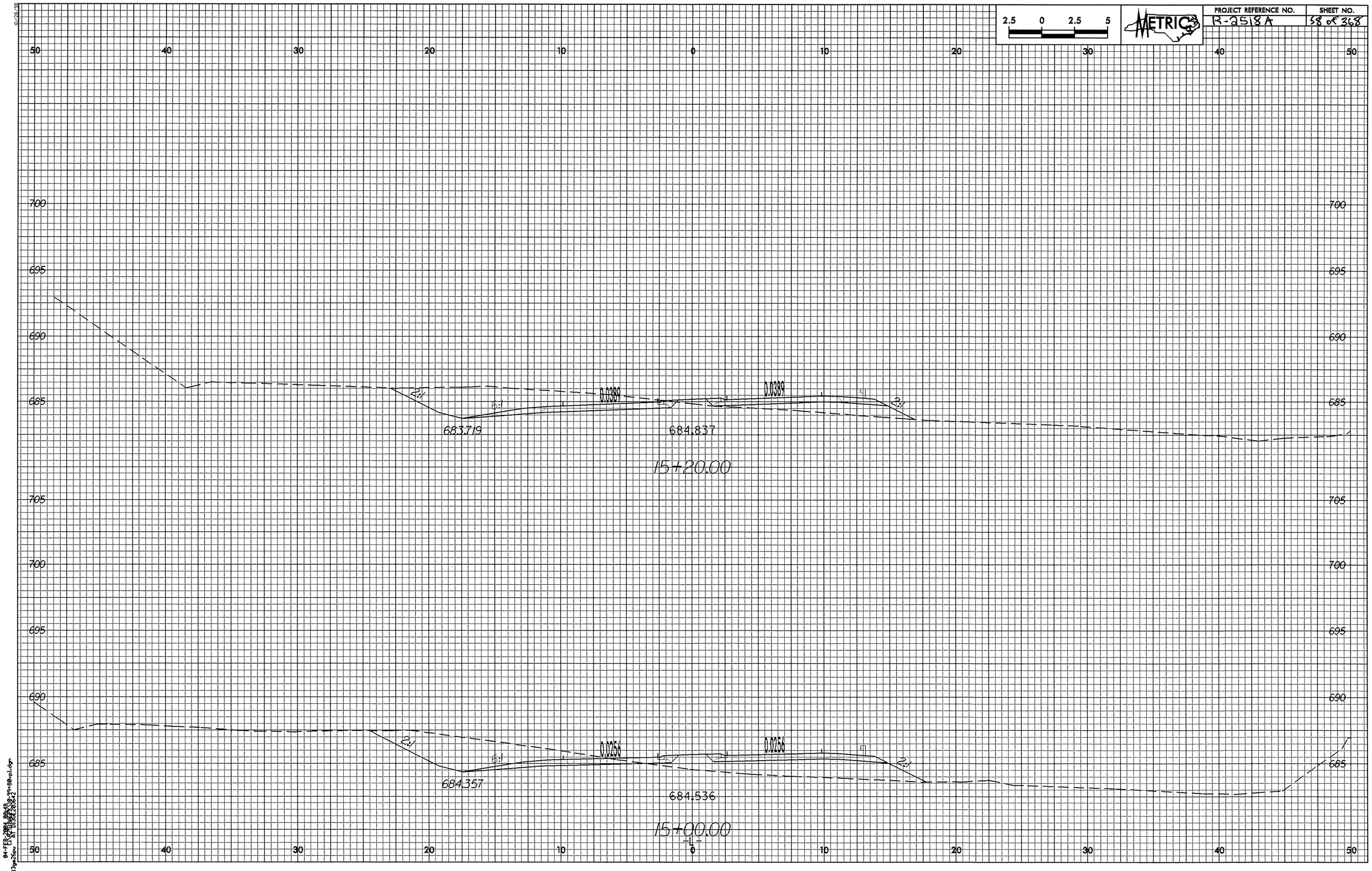

2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518 A
SHEET NO.
55 of 368
50 40 30 20 10 0 10 20 30 40 50
720
715
710
705
700
695
690
685
4.68:1
0.0077
687.275
0.0077
5:1
685.228
2:1
-L-
14+20.00

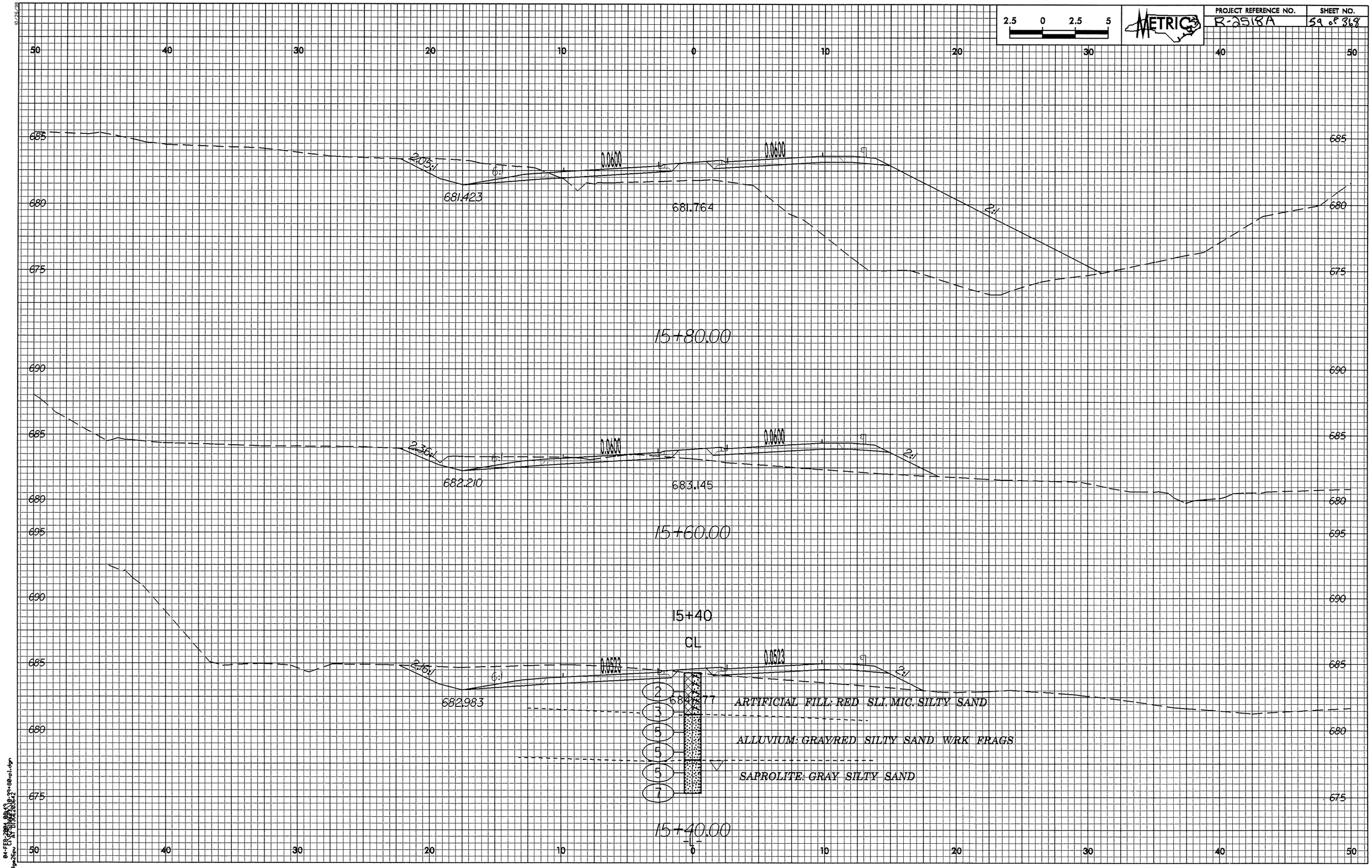


2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518 A
SHEET NO.
56 of 368
50 40 30 20 10 0 10 20 30 40 50
720
715
710
705
700
695
690
685
680
2:1
6:1
0.0144
0.0144
2:1
685.636
682.336
14+40.00
-L-

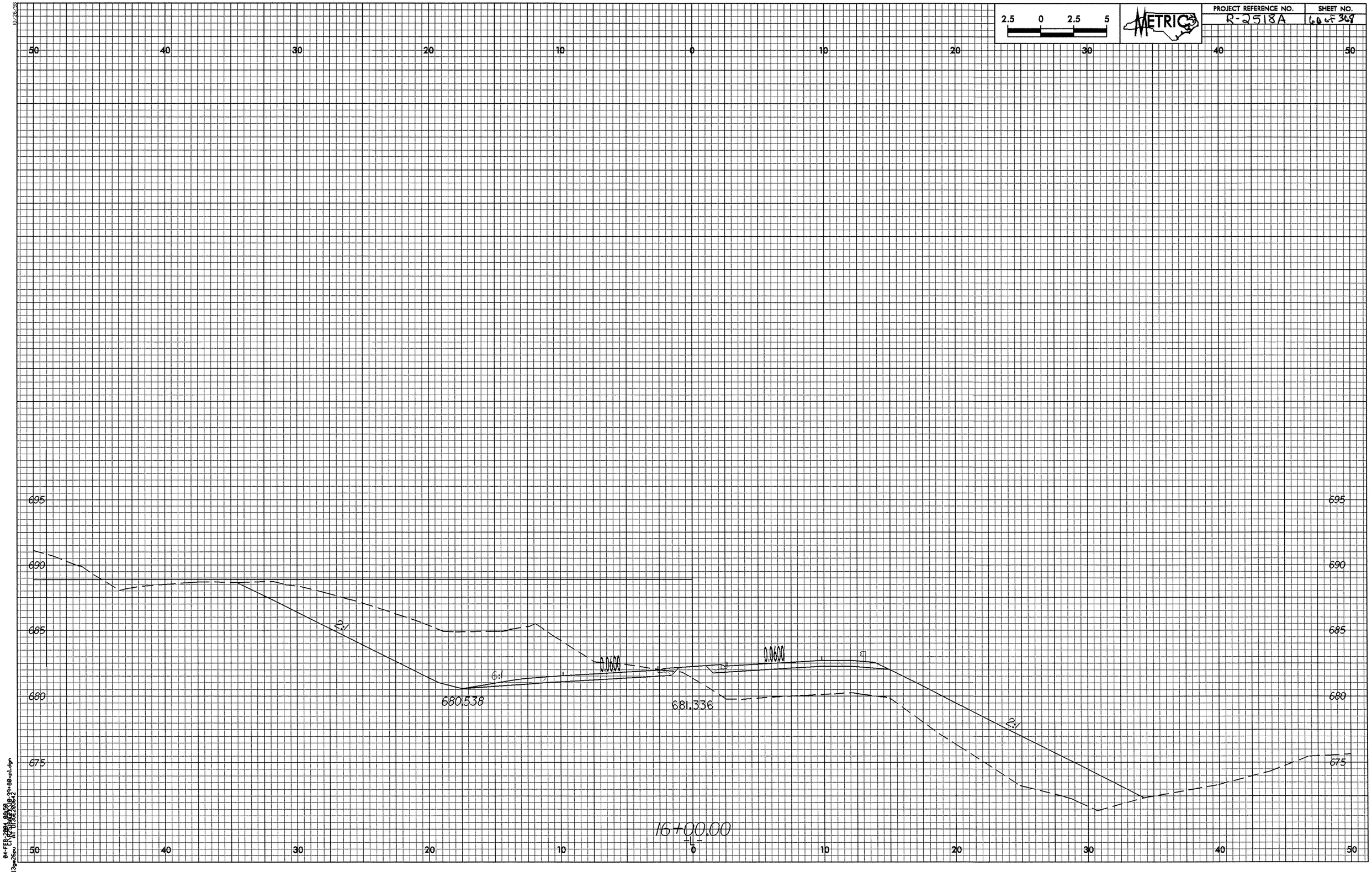


2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518 A
SHEET NO.
57 of 368
715
710
705
700
695
690
685
680
50 40 30 20 10 0 10 20 30 40 50
2:1
6:1
0.0123
0.0123
2:1
684.886
685.089
14+80.00
2:1
6:1
0.0011
0.0011
2:1
685.310
680.651
-L-
14+60.00

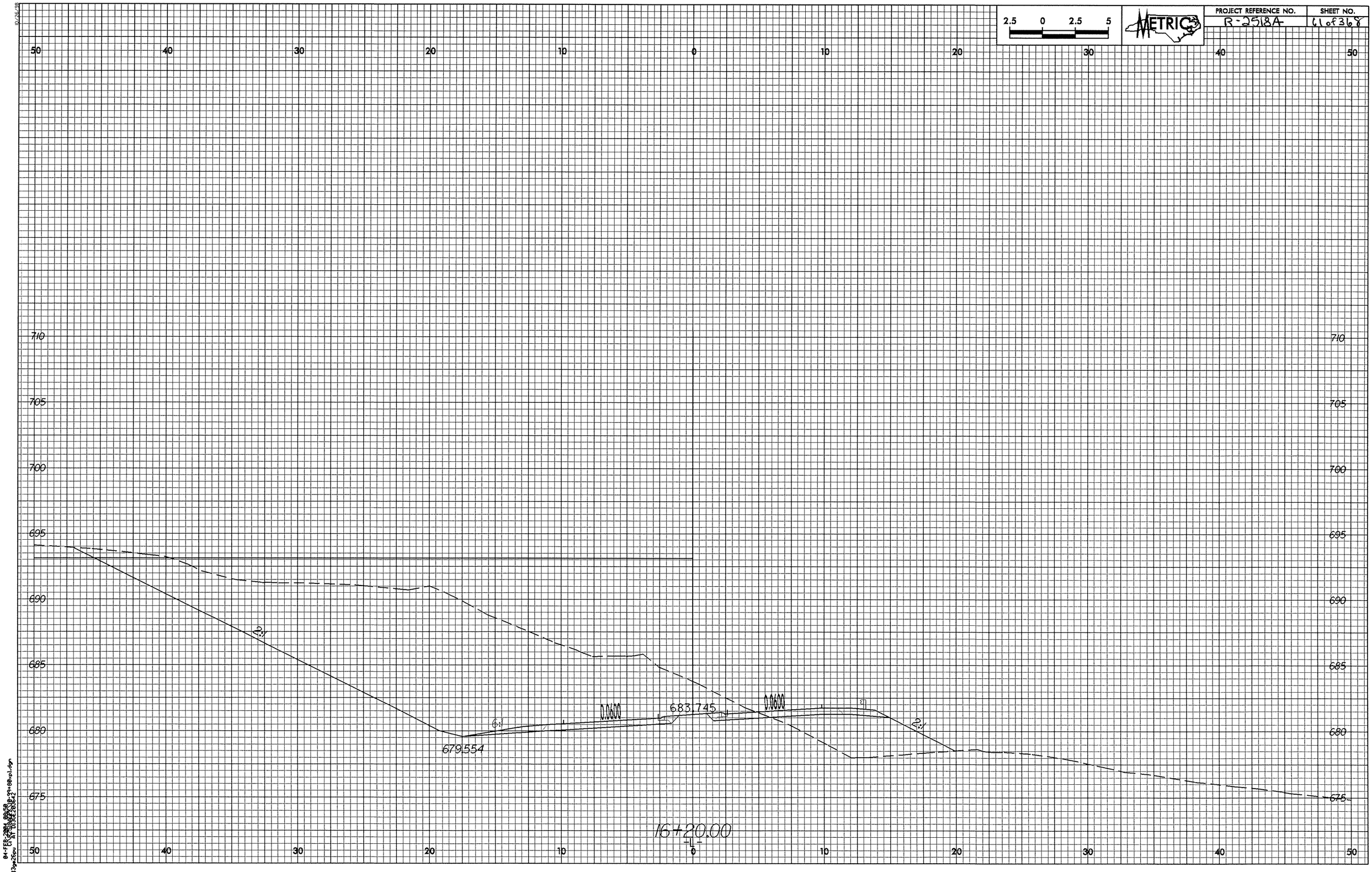

2.5 0 2.5 5
METRIC
50 40 30 20 10 0 10 20 30 40 50
700
695
690
685
2:1
6:1
0.0389
0.0389
683.719
684.837
15+20.00
705
700
695
690
685
2:1
6:1
0.0256
0.0256
2:1
684.357
684.536
15+00.00
50 40 30 20 10 0 10 20 30 40 50



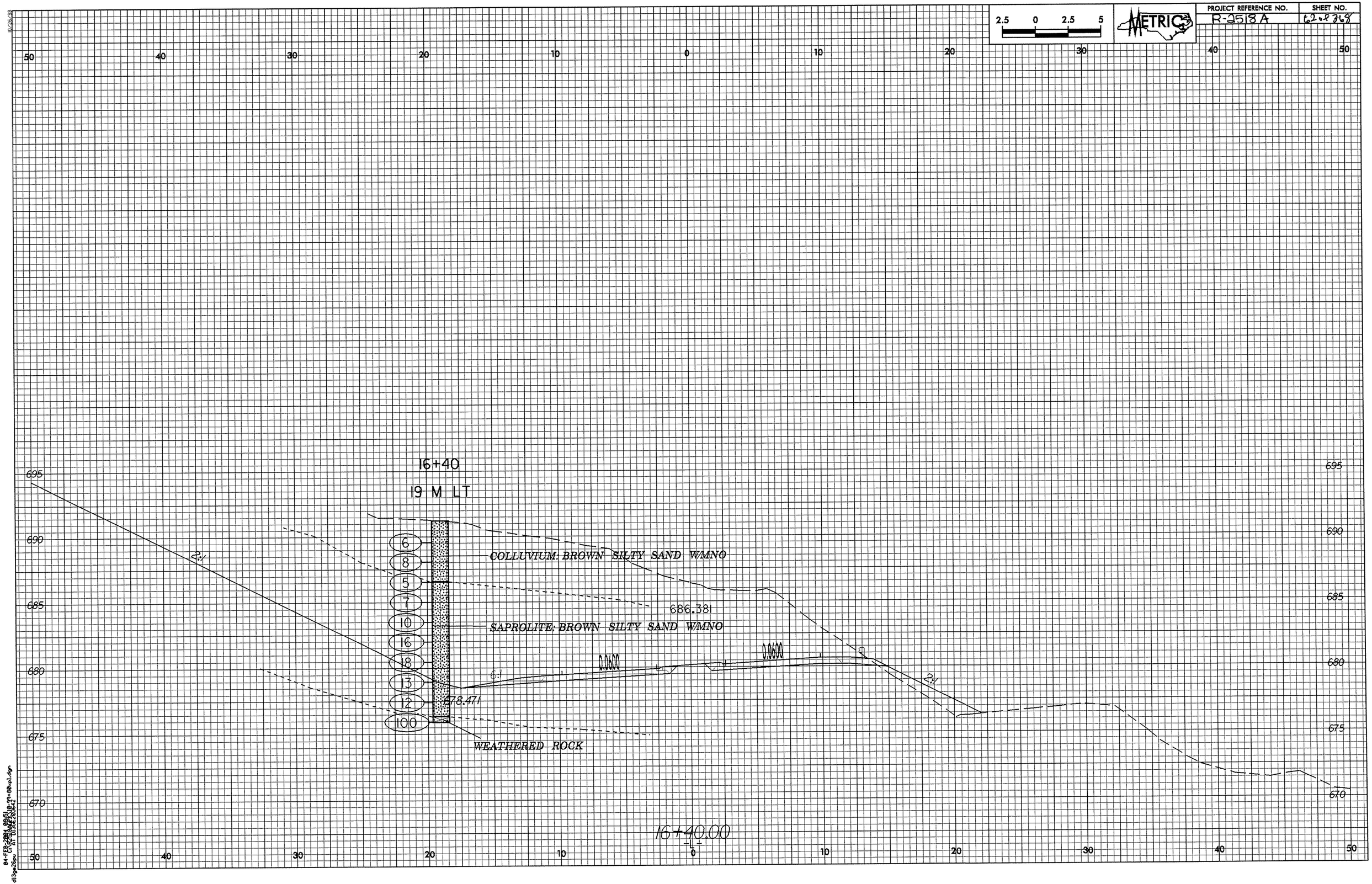
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
59 of 368
50 40 30 20 10 0 10 20 30 40 50
685
680
675
690
695
2.05:1
6:1
0.0600
0.0600
681.423
681.764
2:1
15+80.00
2.36:1
6:1
0.0600
0.0600
2:1
682.210
683.145
15+60.00
15+40
CL
2.16:1
6:1
0.0523
0.0523
2:1
682.983
684.477
ARTIFICIAL FILL: RED SLI. MIC. SILTY SAND
ALLUVIUM: GRAY/RED SILTY SAND W/RK FRAGS
SAPROLITE: GRAY SILTY SAND
2
3
5
5
5
7
15+40.00
-L-



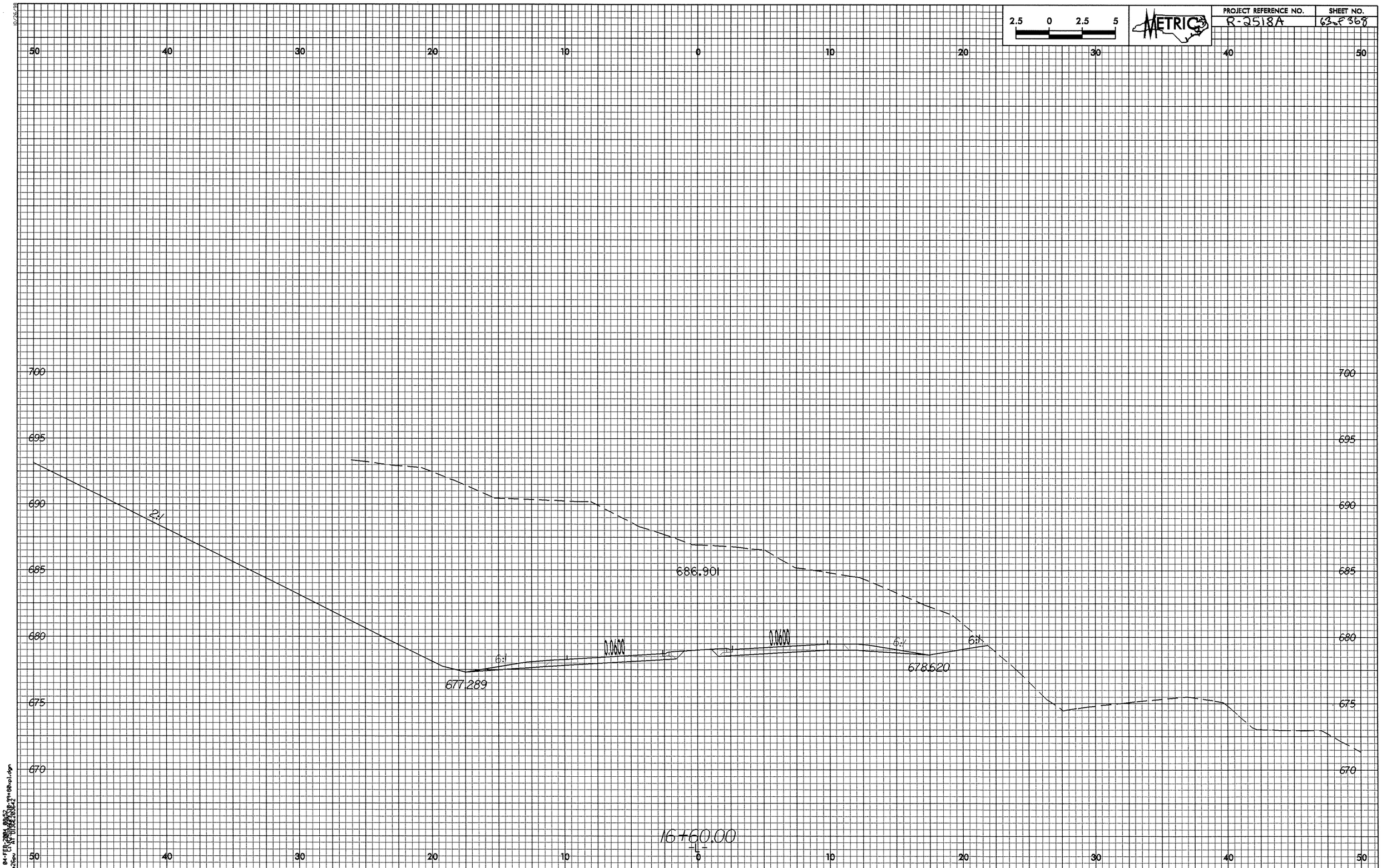
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
60 of 368
50 40 30 20 10 0 10 20 30 40 50
695
690
685
680
675
2:1
6:1
0.0600
0.0600
680.538
681.336
2:1
16+00.00
-L-



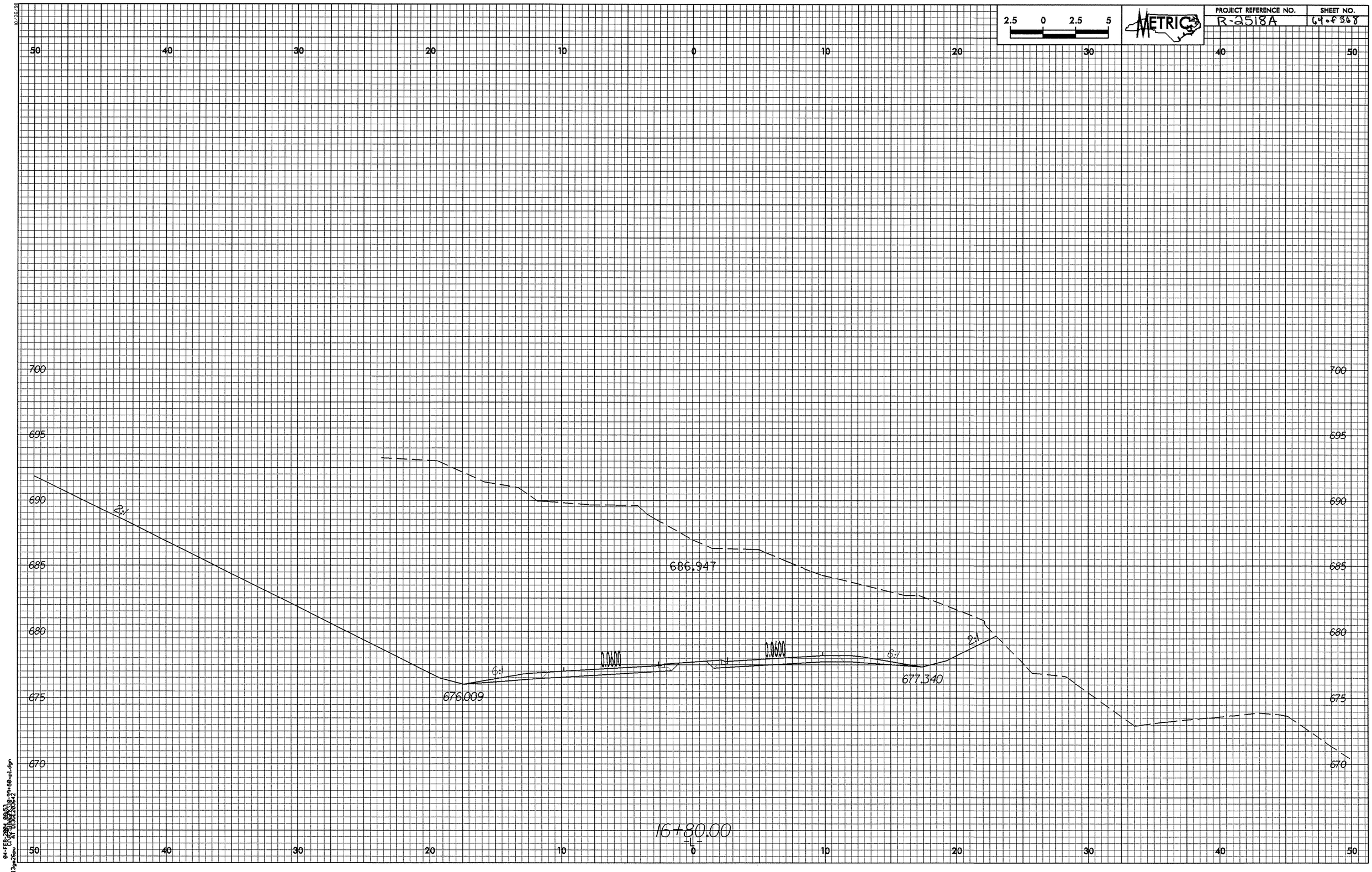
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
61 of 368
50 40 30 20 10 0 10 20 30 40 50
710
705
700
695
690
685
680
675
2:1
6:1
0.0600
683.745
0.0600
2:1
679.554
16+20.00
-L-



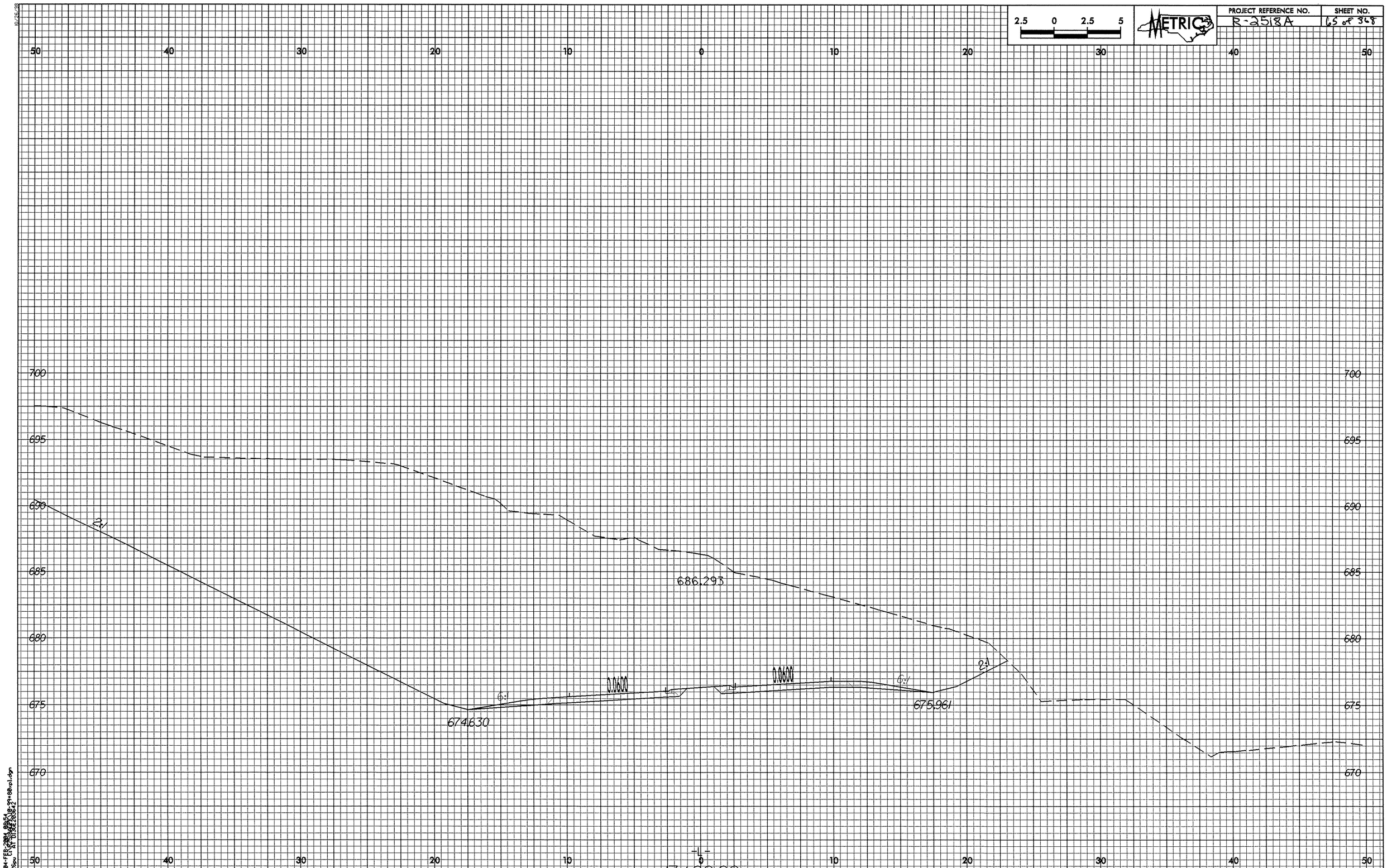
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
62 of 368
50 40 30 20 10 0 10 20 30 40 50
16+40
19 M LT
695
690
685
680
675
670
6
8
5
7
10
16
18
13
12
100
COLLUVIUM: BROWN SILTY SAND W/MNO
686.381
SAPROLITE: BROWN SILTY SAND W/MNO
0.0600
0.0600
6:1
2:1
2:1
678.471
WEATHERED ROCK
16+40.00
-L-



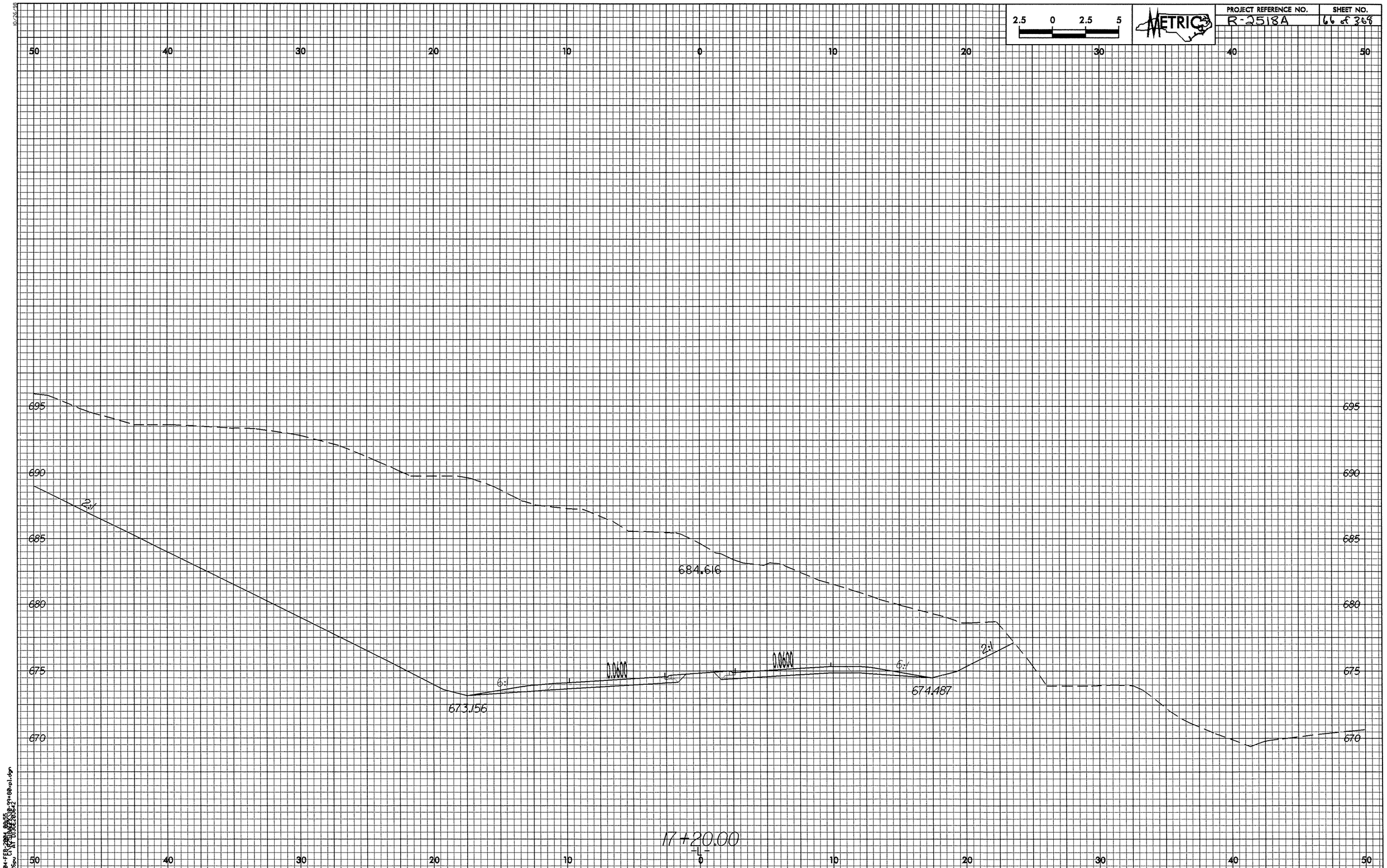
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
63 of 368
50 40 30 20 10 0 10 20 30 40 50
700
695
690
685
680
675
670
2:1
686.901
6:1
0.0600
0.0600
6:1
6:1
677.289
678.620
16+60.00
-L-



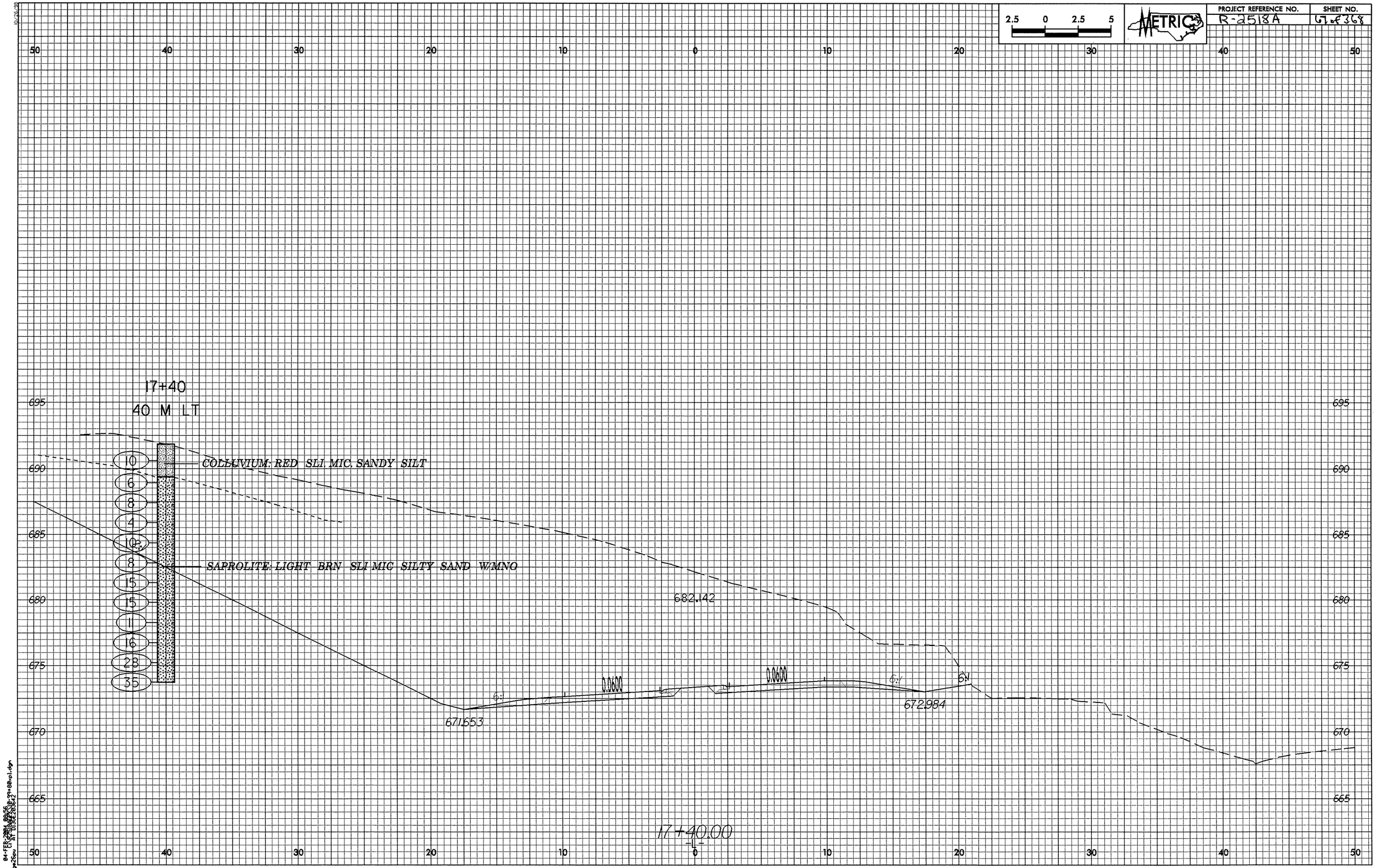
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
64 of 368
50 40 30 20 10 0 10 20 30 40 50
700
695
690
685
680
675
670
2:1
686.947
0.0600
0.0600
6:1
6:1
2:1
676.009
677.340
16+80.00
-L-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
65 of 368
50 40 30 20 10 0 10 20 30 40 50
700
695
690
685
680
675
670
2:1
686.293
0.0600
0.0600
6:1
6:1
2:1
674.630
675.961
-L-
17+00.00

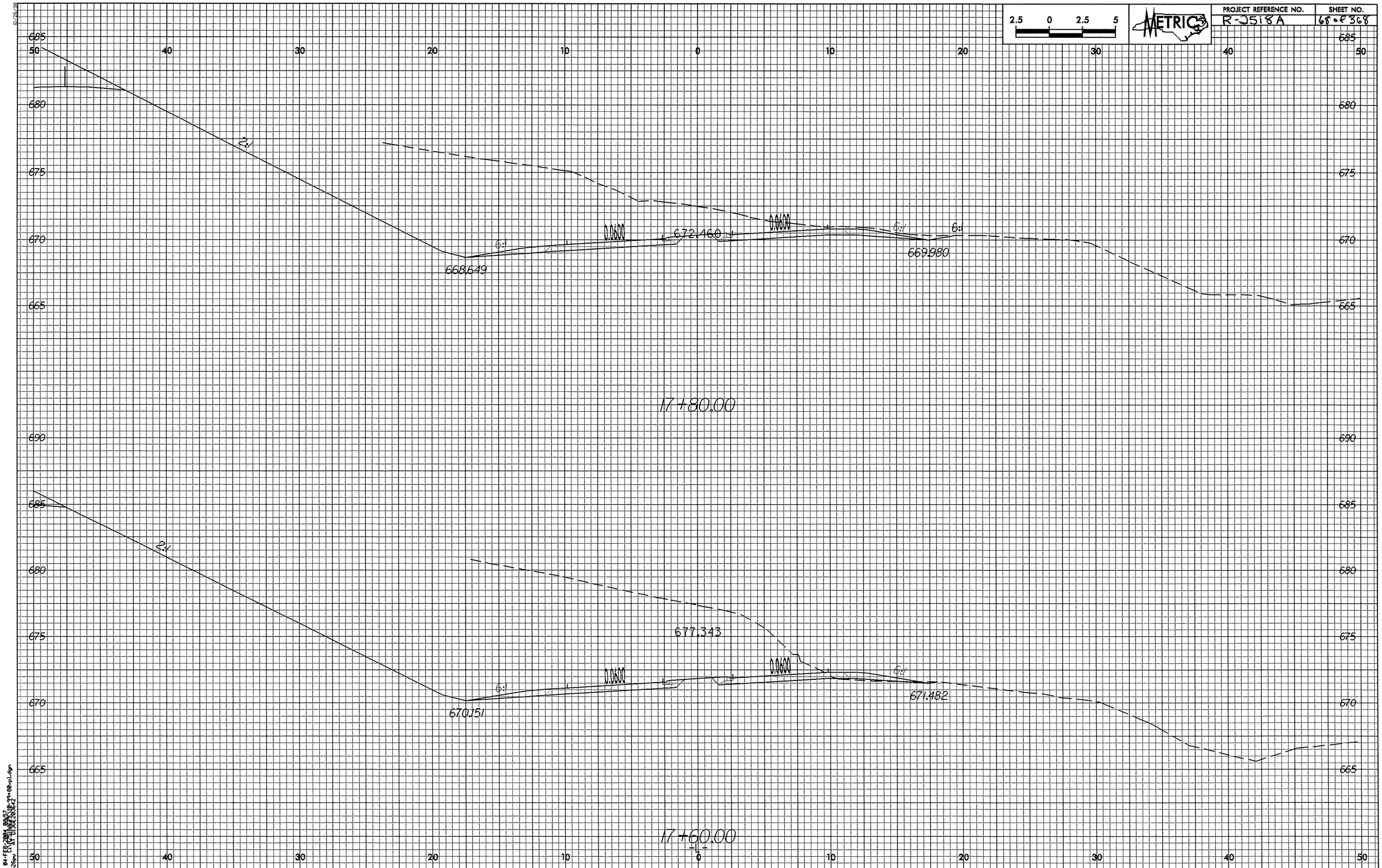


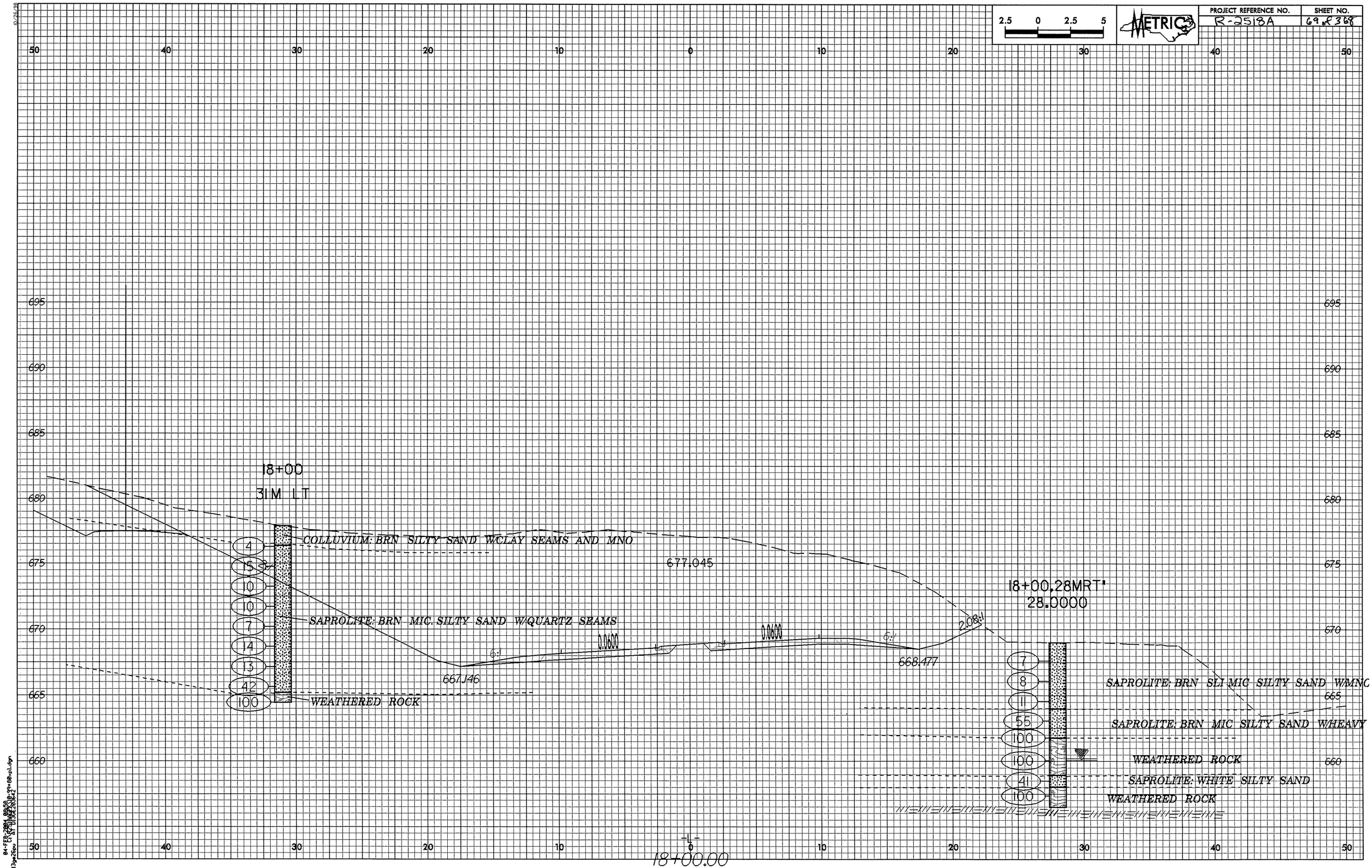
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
66 of 368
50 40 30 20 10 0 10 20 30 40 50
695
690
685
680
675
670
2:1
684.616
0.0600
0.0600
6:1
6:1
2:1
673.156
674.487
17+20.00
-L-

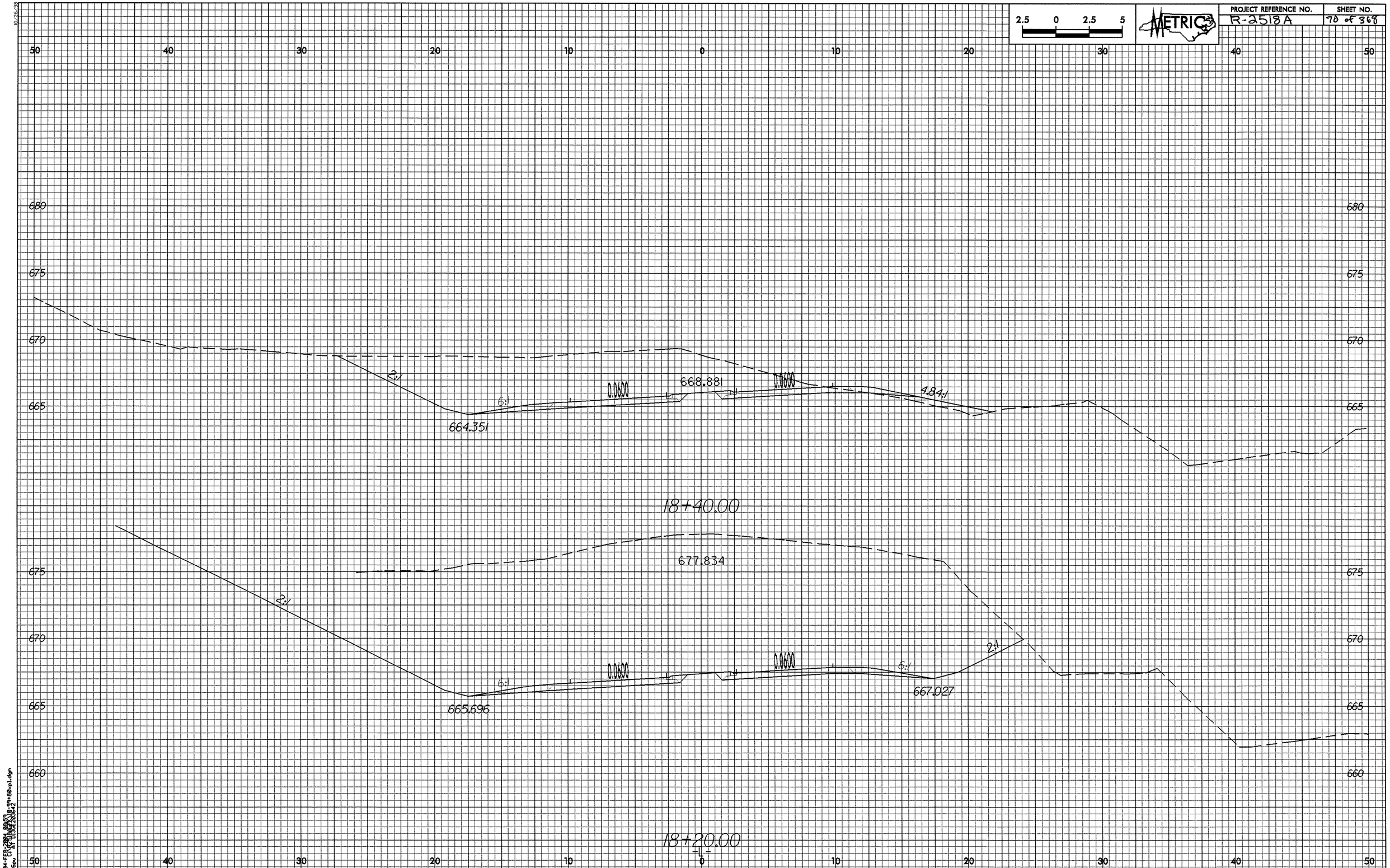


2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
67 of 368
17+40
40 M LT
COLLUVIUM: RED SLI. MIC. SANDY SILT
SAPROLITE: LIGHT BRN SLI MIC SILTY SAND W/MNO
10
6
8
4
10
8
15
15
11
16
28
35
682.142
671.653
672.984
0.0600
0.0600
6:1
6:1
6:1
17+40.00
-L-
695
690
685
680
675
670
665
50
40
30
20
10
0
10
20
30
40
50

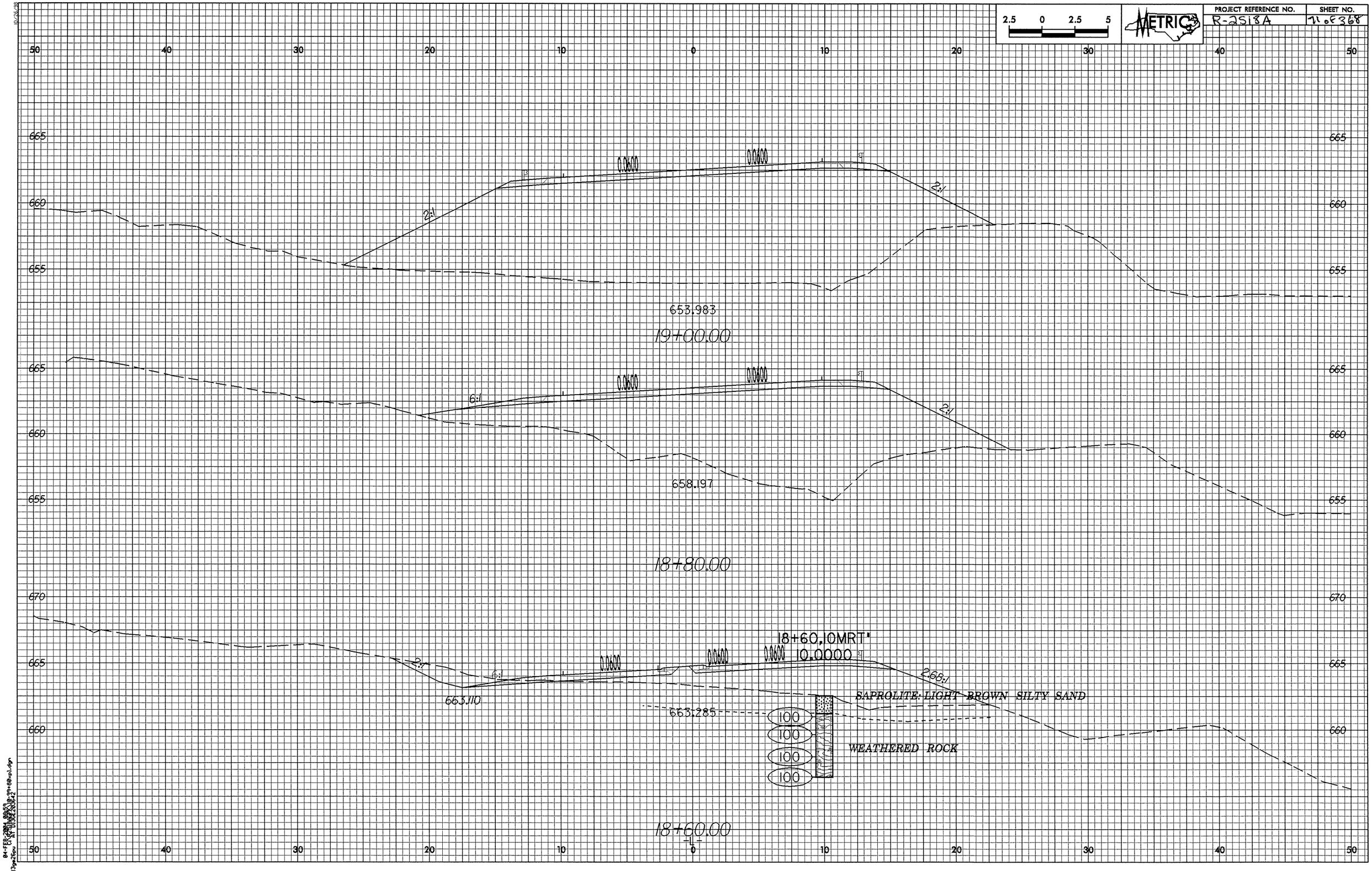
PROJECT REFERENCE NO.	SHEET NO.
R-5518A	68-P368

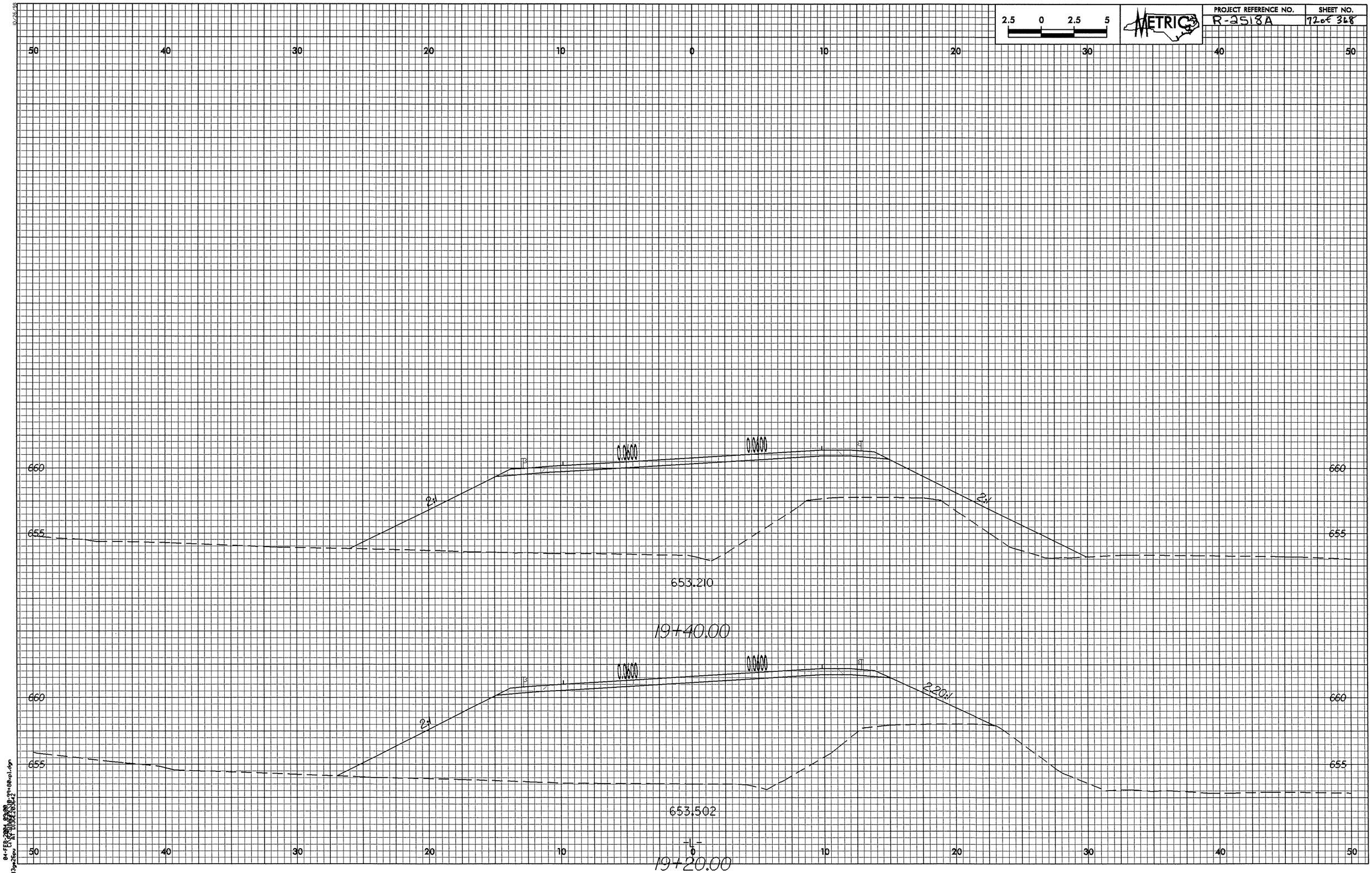


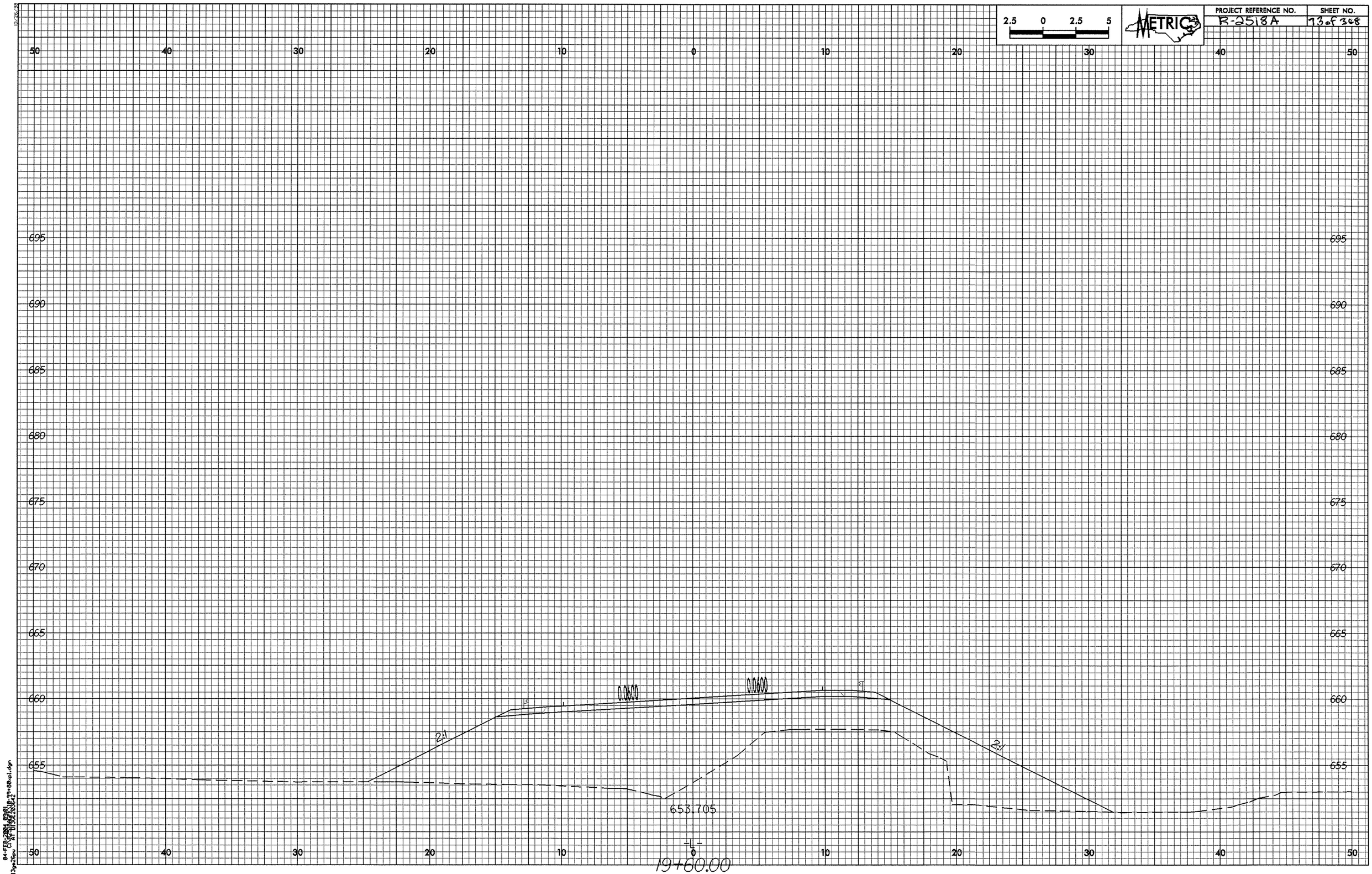

2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
69 of 368
18+00
31M LT
COLLUVIUM: BRN SILTY SAND W/CLAY SEAMS AND MNO
SAPROLITE: BRN MIC. SILTY SAND W/QUARTZ SEAMS
WEATHERED ROCK
4
5
10
10
7
14
13
42
100
677.045
667.146
668.477
0.0600
0.0600
6:1
6:1
2.08:1
18+00.28MRT'
28.0000
7
8
11
55
100
100
41
100
SAPROLITE: BRN SLI MIC SILTY SAND W/MNC
SAPROLITE: BRN MIC SILTY SAND W/HEAVY
WEATHERED ROCK
SAPROLITE: WHITE SILTY SAND
WEATHERED ROCK
-L-
18+00.00
695
690
685
680
675
670
665
660
50
40
30
20
10
0



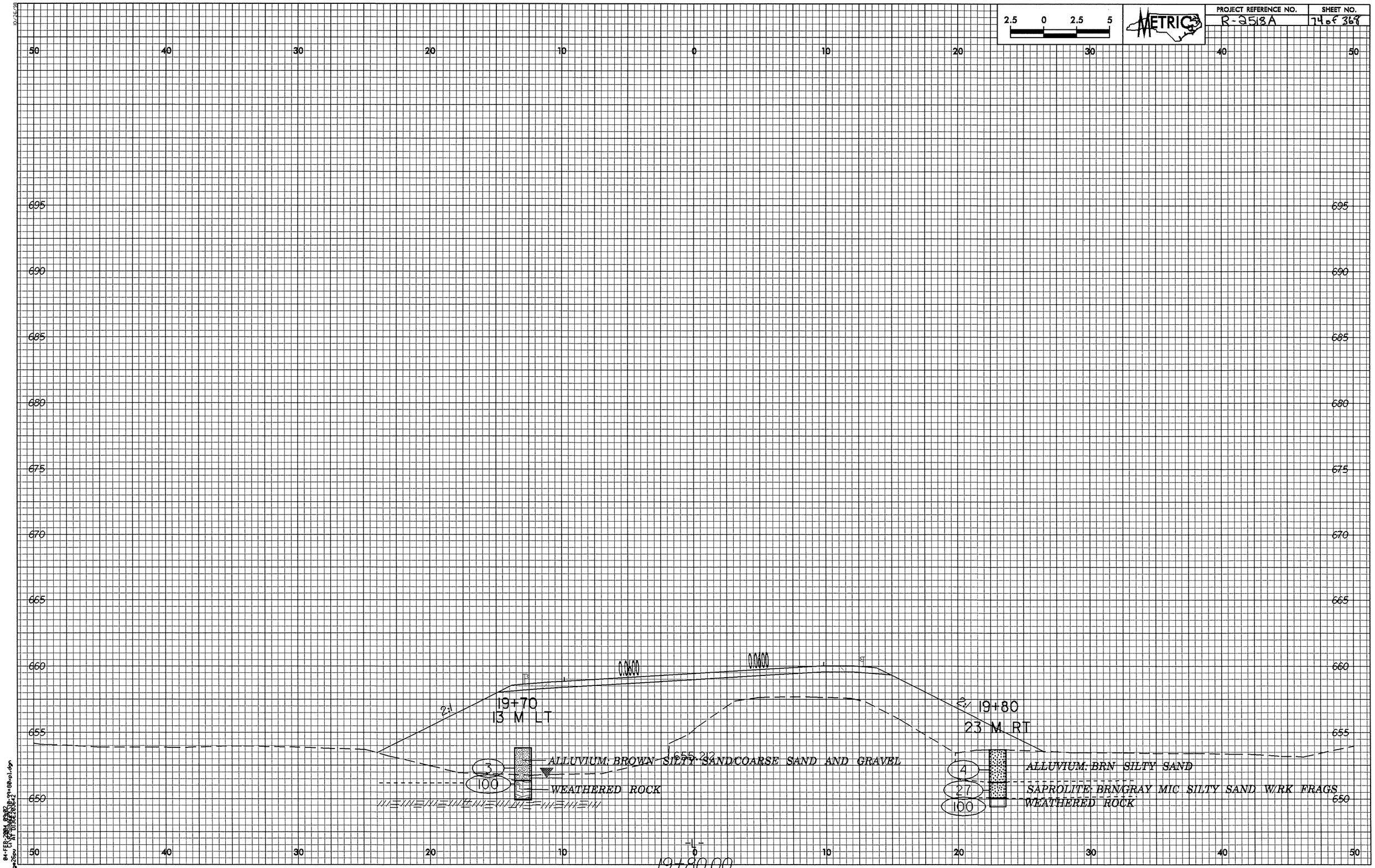
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
70 of 368
50 40 30 20 10 0 10 20 30 40 50
680
675
670
665
660
2:1
6:1
0.0600
668.881
0.0600
4.84:1
664.351
18+40.00
677.834
2:1
6:1
0.0600
0.0600
6:1
2:1
665.696
667.027
18+20.00
-L-

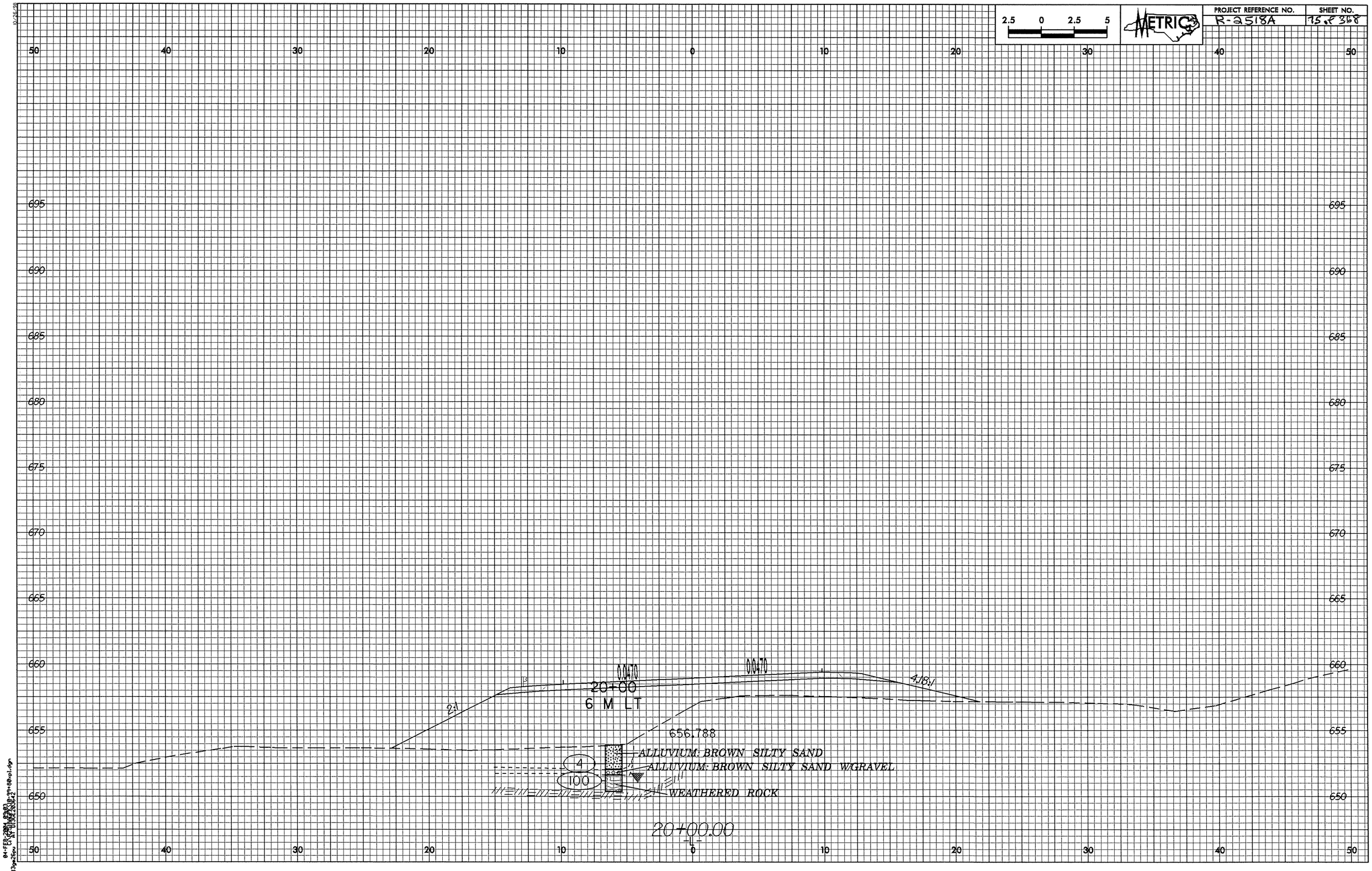

2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
71 of 368
50 40 30 20 10 0 10 20 30 40 50
665
660
655
670
0.0000
2:1
653.983
19+00.00
6:1
658.197
18+80.00
18+60.10MRT'
10.0000
2.68:1
663.110
663.285
SAPROLITE: LIGHT BROWN SILTY SAND
WEATHERED ROCK
100
18+60.00


2.5 0 2.5 5
METRIC
50 40 30 20 10 0 10 20 30 40 50
660
655
0.0000
0.0000
2:1
2:1
653.210
19+40.00
0.0000
0.0000
2:1
2.20:1
653.502
-L-
19+20.00

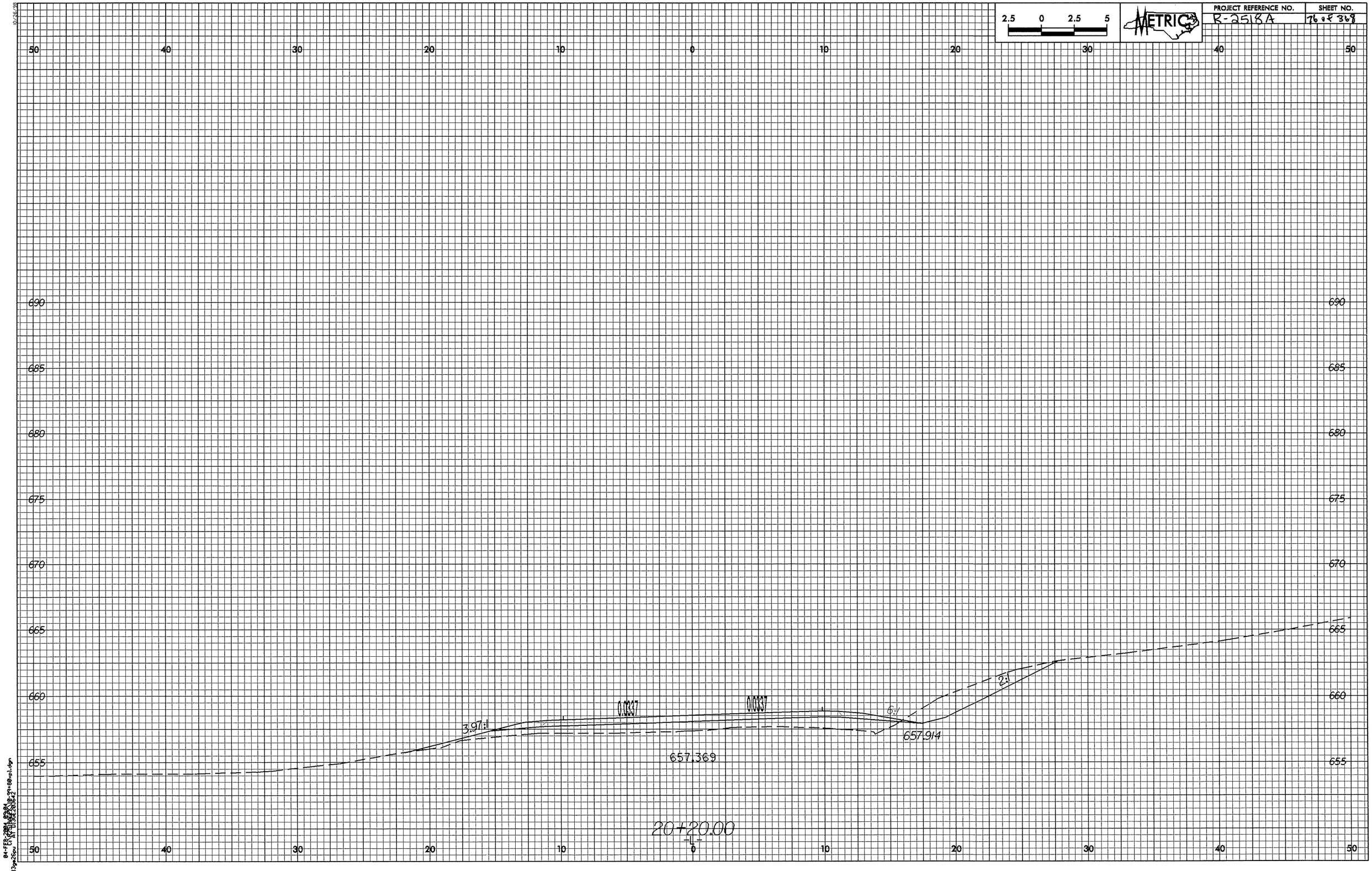

2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
73 of 348
50 40 30 20 10 0 10 20 30 40 50
695
690
685
680
675
670
665
660
655
0.0600
0.0600
2:1
2:1
653.705
-L-
19+60.00

PROJECT REFERENCE NO.	SHEET NO.
R-2518A	74 of 368

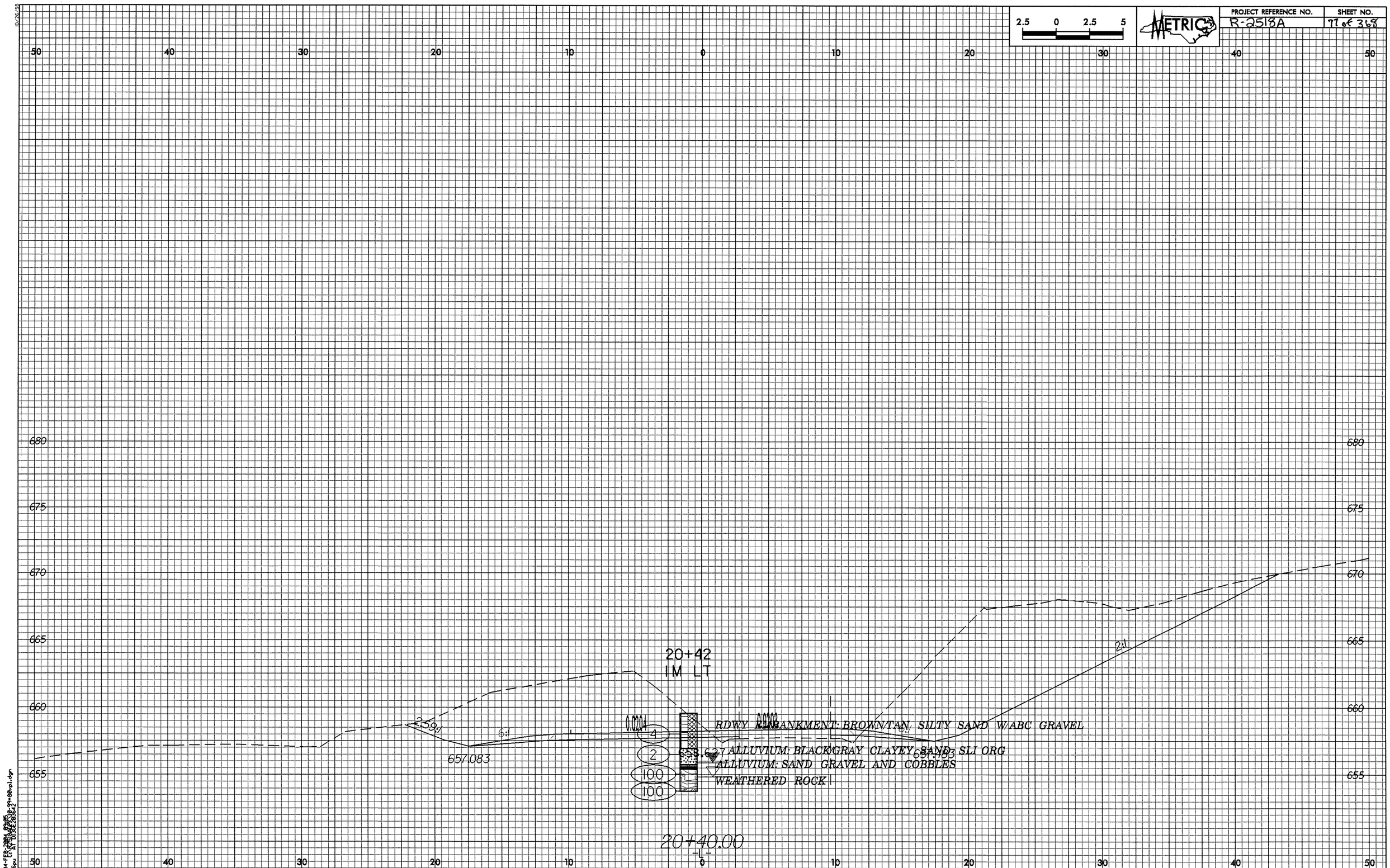




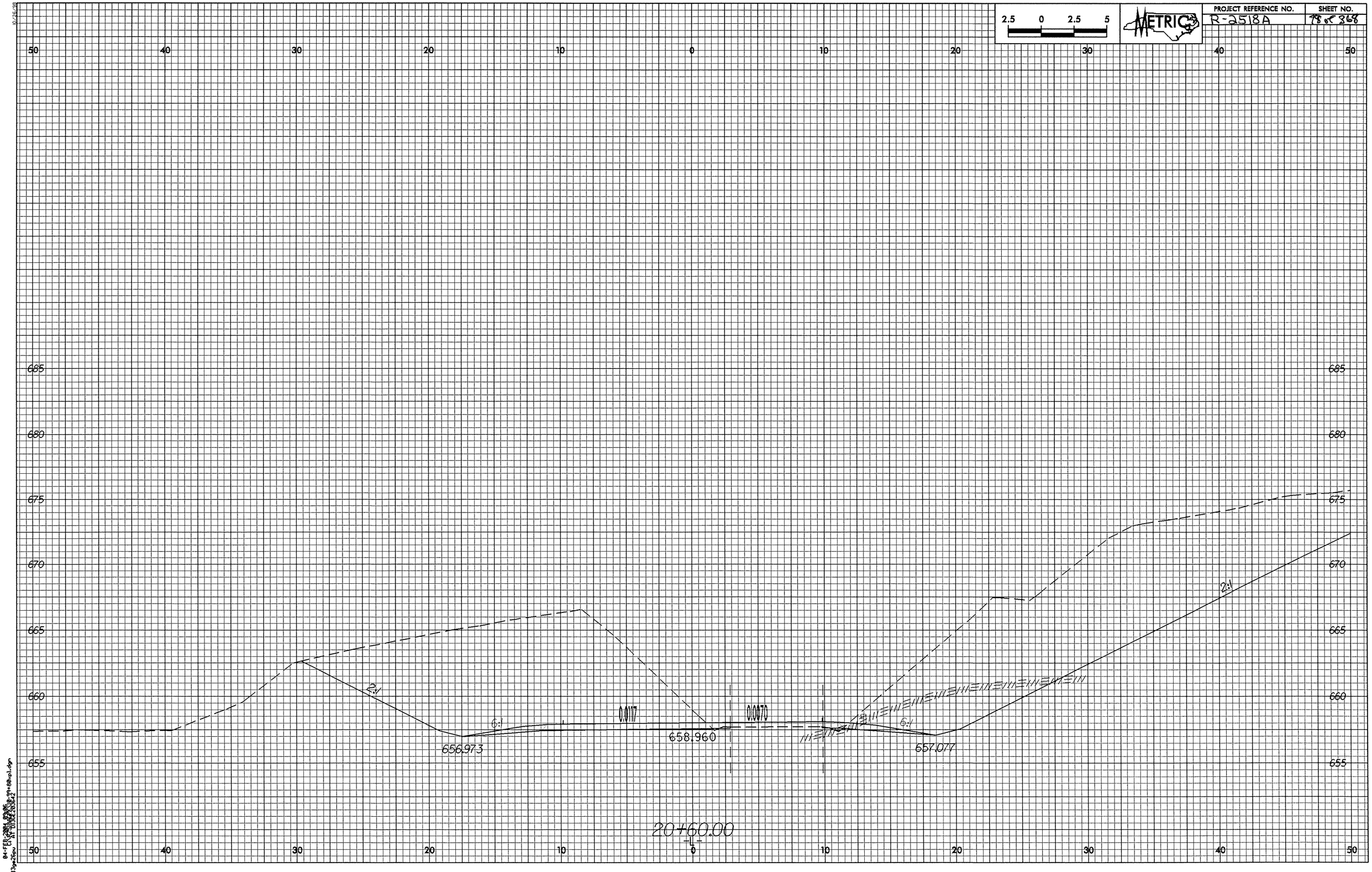
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
75 of 368
50 40 30 20 10 0 10 20 30 40 50
695 690 685 680 675 670 665 660 655 650
0.0470
0.0470
20+00
6 M LT
2:1
4.18:1
656.788
ALLUVIUM: BROWN SILTY SAND
ALLUVIUM: BROWN SILTY SAND W/GRAVEL
WEATHERED ROCK
4
100
20+00.00
-L-

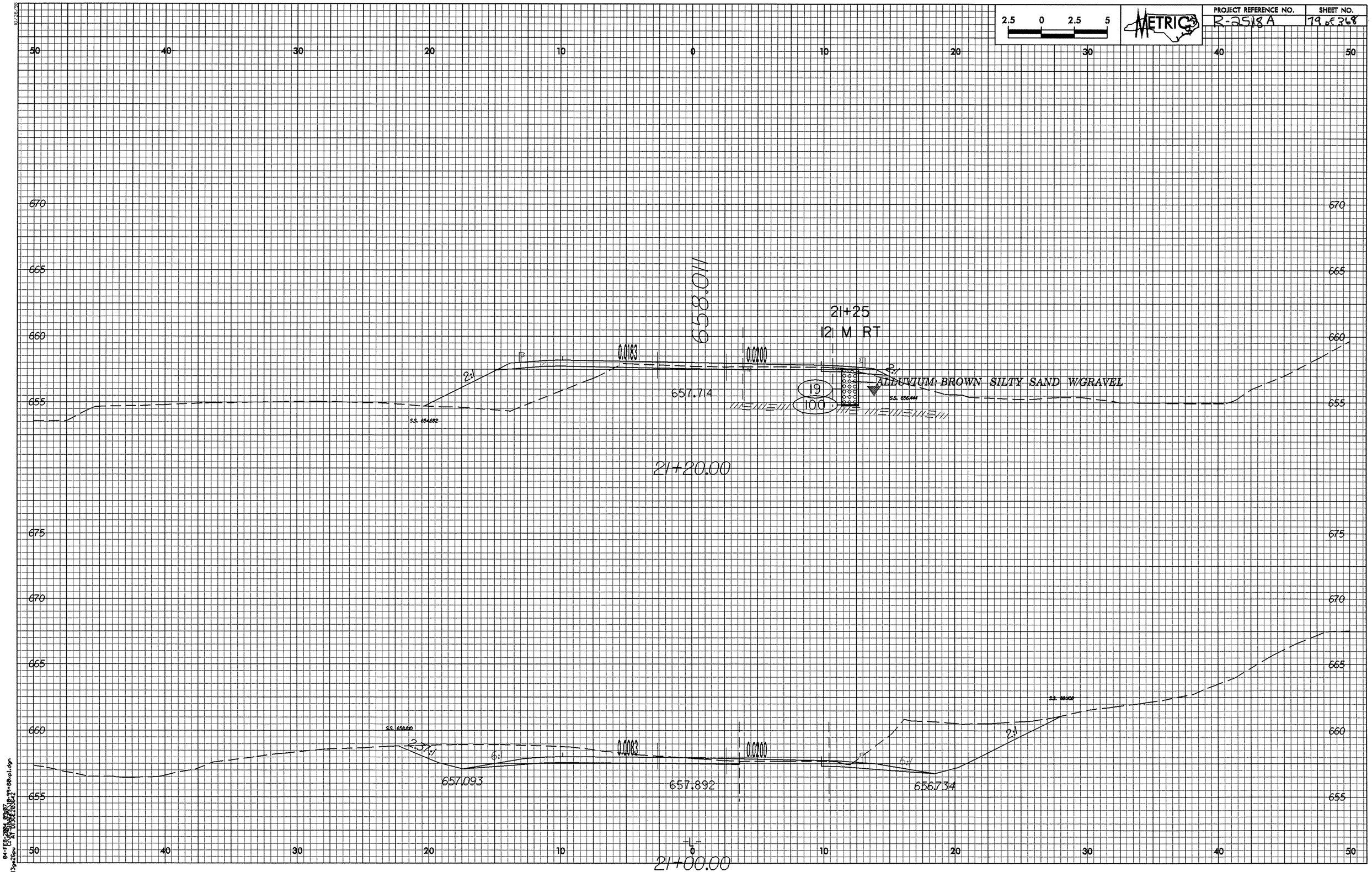


2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
76 of 368
50 40 30 20 10 0 10 20 30 40 50
690
685
680
675
670
665
660
655
3.97:1
0.0337
0.0337
6:1
2:1
657.369
657.914
20+20.00
-L-

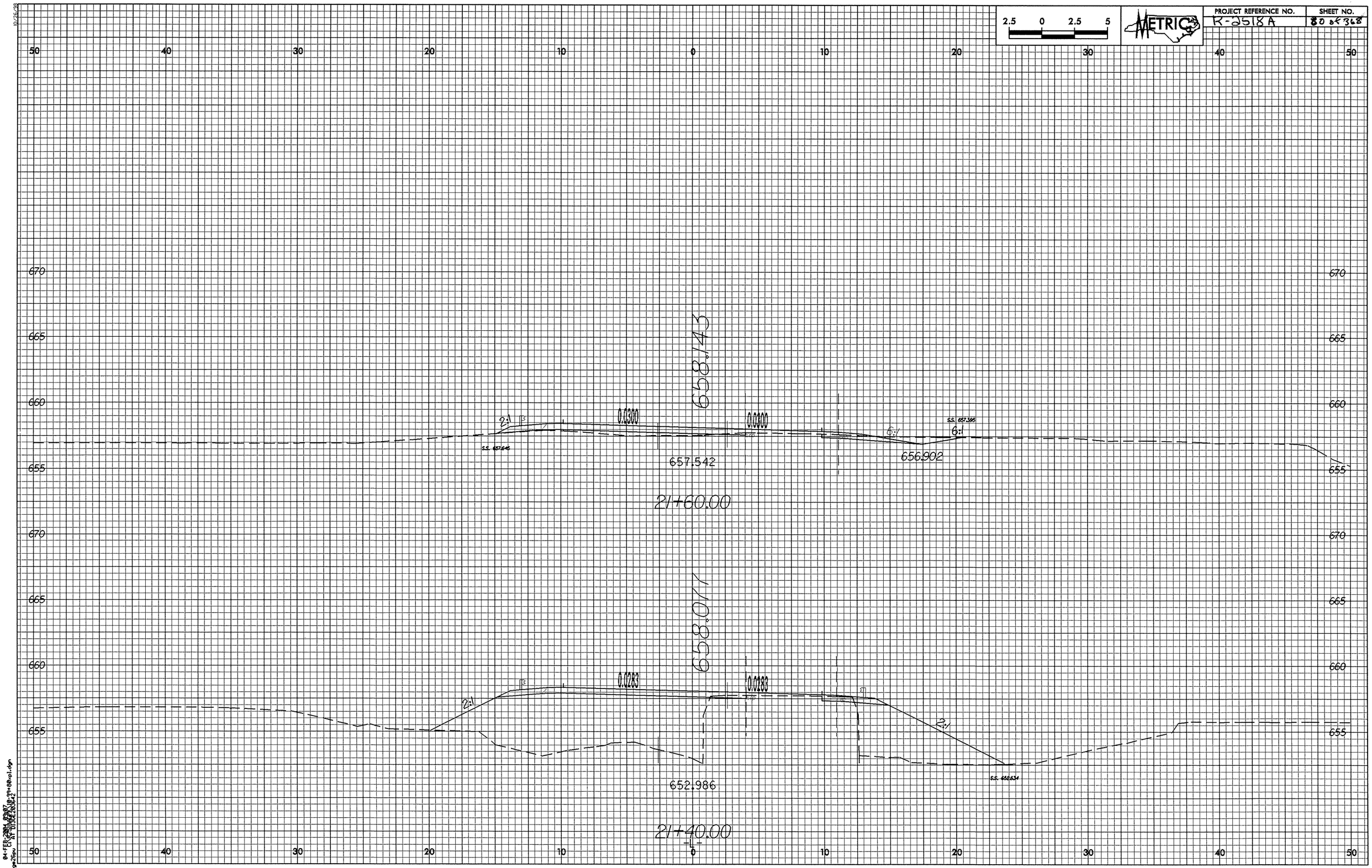

2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
77 of 368
50 40 30 20 10 0 10 20 30 40 50
680
675
670
665
660
655
20+42
IM LT
2:1
6:1
657.083
RDWY EMBANKMENT: BROWN/TAN SILTY SAND W/ABC GRAVEL
ALLUVIUM: BLACK/GRAY CLAYEY SAND SLI ORG
ALLUVIUM: SAND GRAVEL AND COBBLES
WEATHERED ROCK
4
2
100
100
20+40.00

PROJECT REFERENCE NO.	SHEET NO.
R-2518A	78 of 368

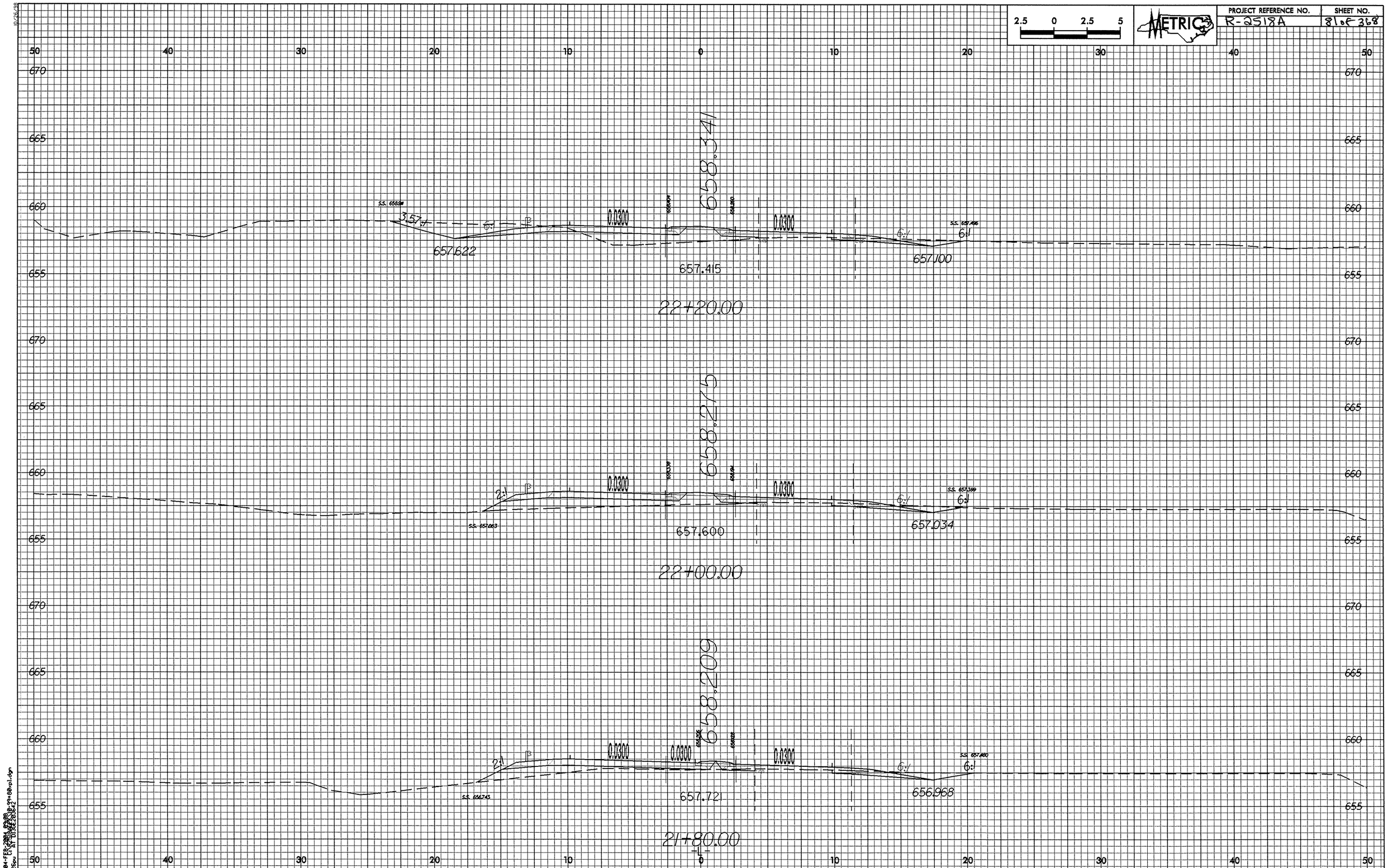




2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
79 of 368
50 40 30 20 10 0 10 20 30 40 50
670
665
660
655
675
658.011
21+25
12 M RT
0.0183
0.0200
2:1
2:1
ALLUVIUM: BROWN SILTY SAND W/GRAVEL
657.714
19
100
S.S. 654.682
S.S. 656.444
21+20.00
S.S. 658.610
2.37:1
6:1
0.0083
0.0200
6:1
2:1
657.093
657.892
656.734
-L-
21+00.00

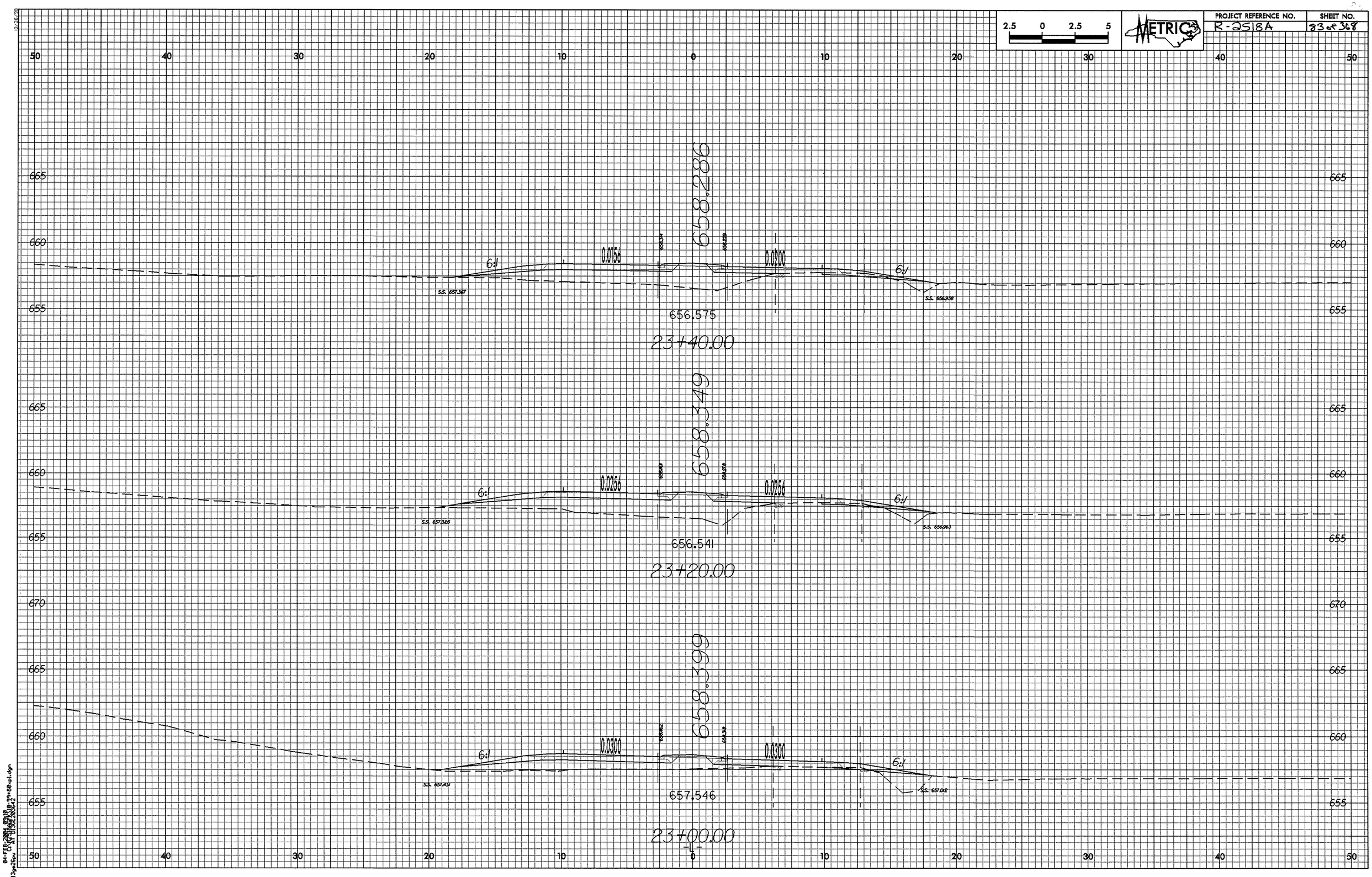


2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
80 of 368
50 40 30 20 10 0 10 20 30 40 50
670
665
660
655
658.143
2:1
0.0300
0.0300
6:1
6:1
S.S. 657.645
S.S. 657.395
657.542
656.902
21+60.00
658.077
0.0283
0.0283
2:1
2:1
S.S. 652.634
652.986
21+40.00



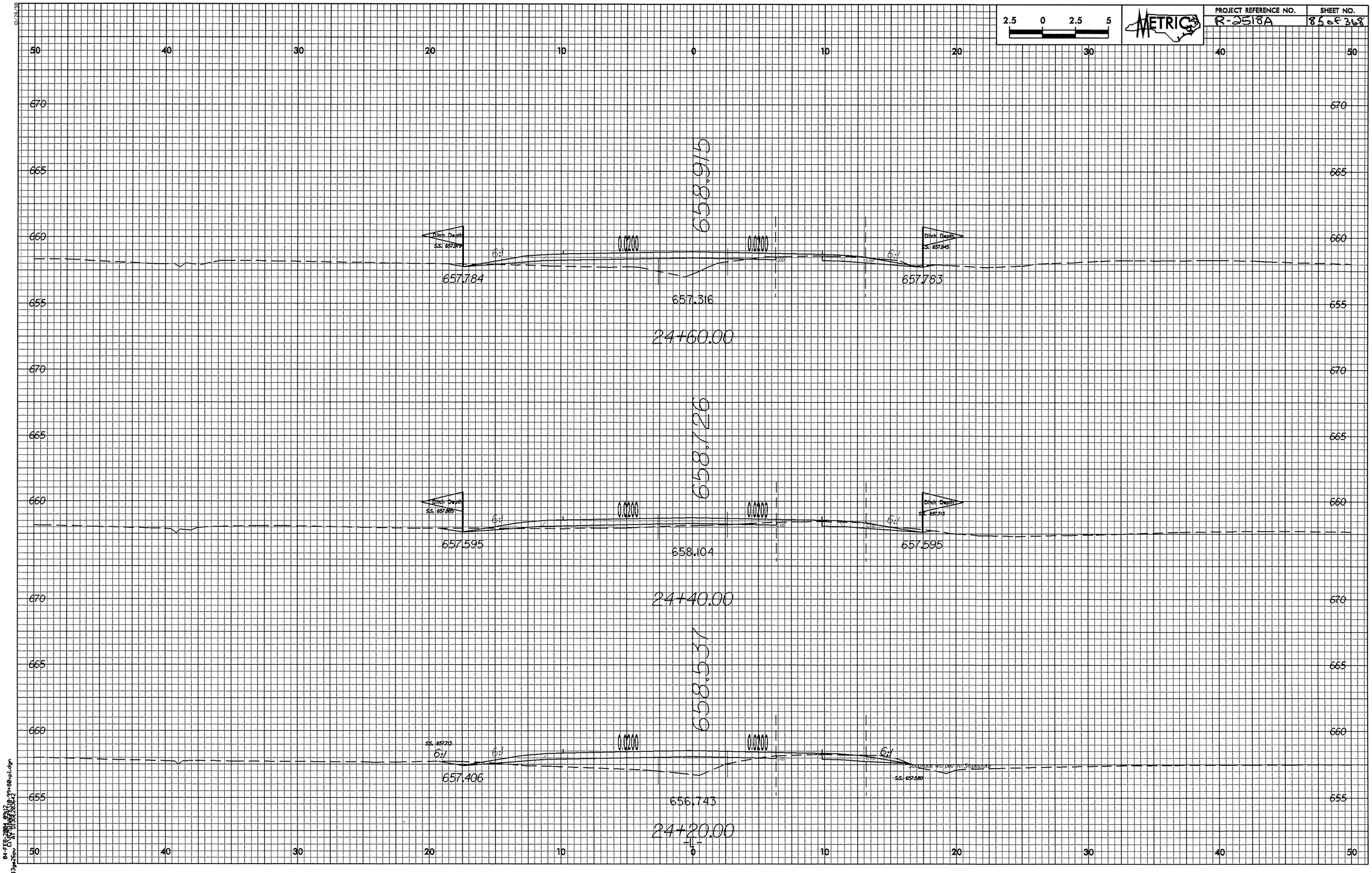
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
81 of 368
50 40 30 20 10 0 10 20 30 40 50
670
665
660
655
658.341
3.57:1
6:1
0.0300
657.622
657.415
657.100
22+20.00
658.275
2:1
657.600
657.034
22+00.00
658.209
657.721
656.968
21+80.00
-L-

2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2513A
SHEET NO.
82 OF 368
50 40 30 20 10 0 10 20 30 40 50
670
665
660
655
S.S. 661575
2:1
6:1
0.0300
657.783
658.423
657.892
22+80.00
S.S. 662494
657.782
658.421
657.294
22+60.00
Ditch Depth
S.S. 657.205
657.180
22+40
6 M LT
S.S. 659554
657.754
658.394
S.S. 658796
657.153
FILL: RED/BRN SILTY SAND
ALLUVIUM: BLK/GRAY CLAYEY SAND W/RK FRAGS
SAPROLITE: RED/BRN SILTY SAND
WEATHERED ROCK
7
17
100
22+40.00

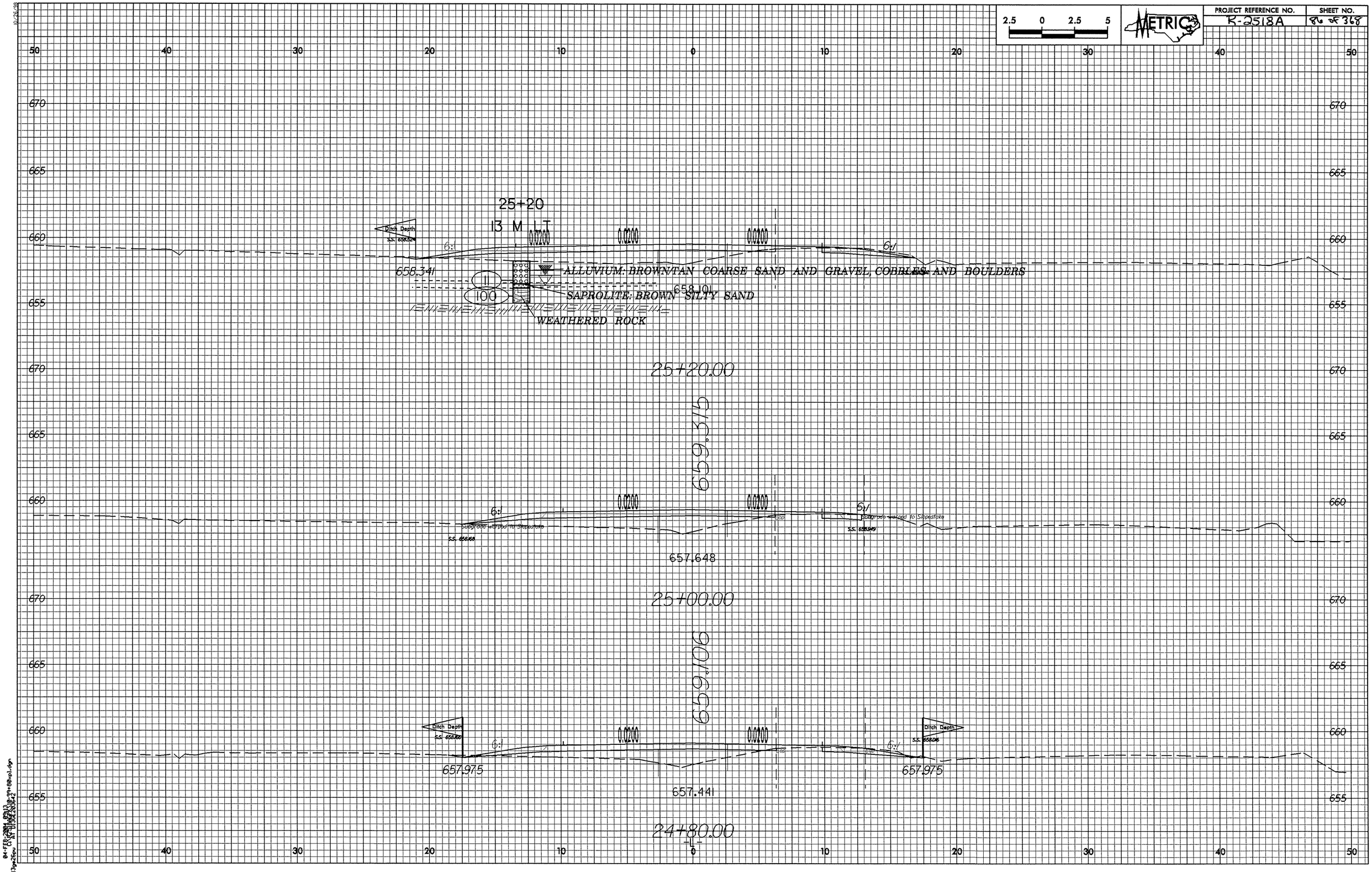


2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
83 of 368
50 40 30 20 10 0 10 20 30 40 50
665
660
655
670
658.286
6:1
0.0156
0.0200
6:1
S.S. 657.347
S.S. 656.938
656.575
23+40.00
658.349
6:1
0.0256
0.0256
6:1
S.S. 657.328
S.S. 656.963
656.541
23+20.00
658.399
6:1
0.0300
0.0300
6:1
S.S. 657.431
S.S. 657.012
657.546
23+00.00
-L-

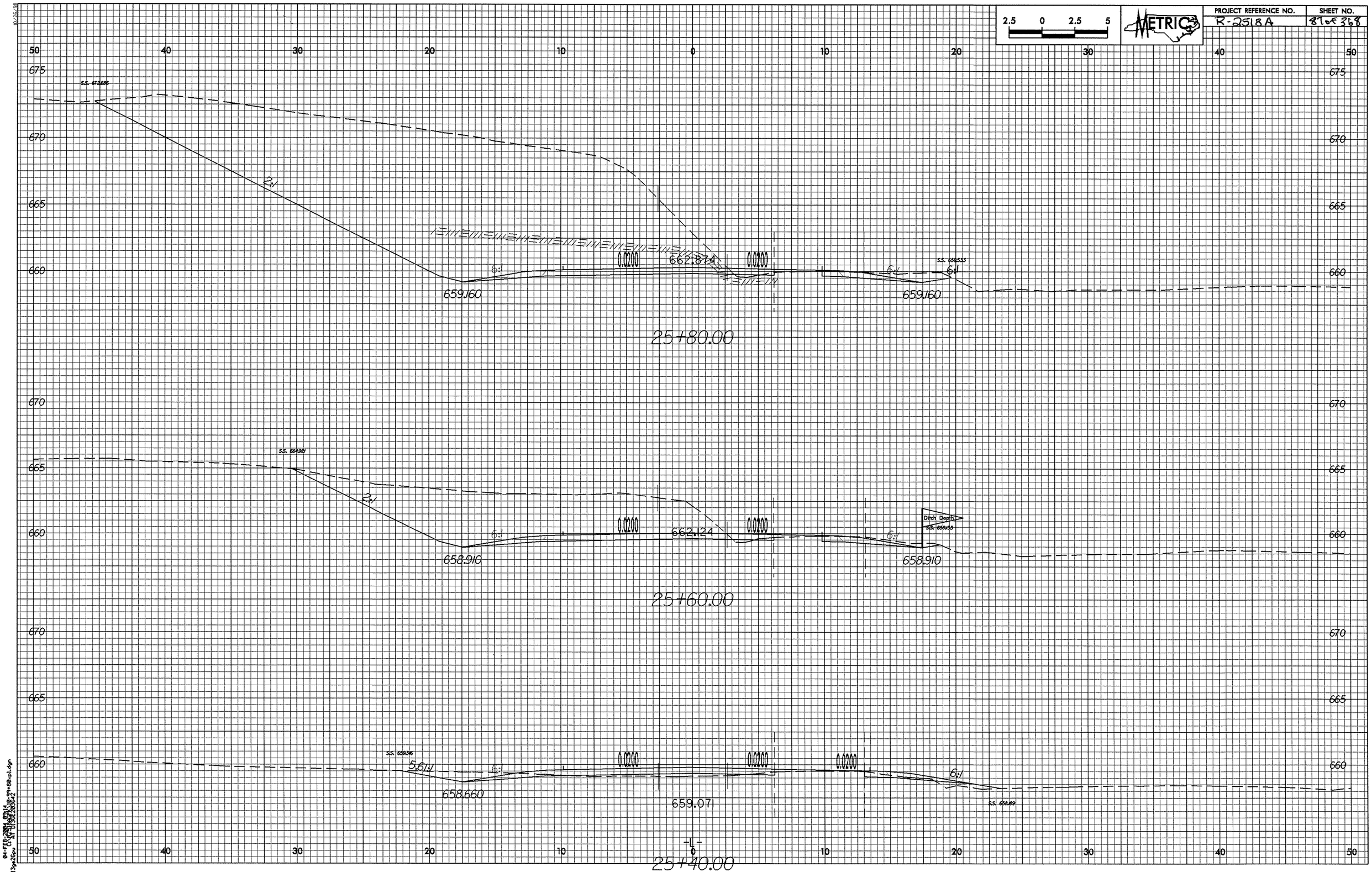
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
84.F368
658.359
Ditch Depth
S.S. 657.580
6:1
0.0144
0.0200
657.283
Subgrade warped to Slopestake
S.S. 657.580
656.729
24+00.00
658.254
23+80
3 M LT
0.0044
0.0200
657.277
ALLUVIUM: BROWN TO BLACK CLAY, SAND & W/RK FRAGS
SAPROLITE: WHITE/GRAY/BLACK SILTY SAND W/RK FRAGS
WEATHERED ROCK
27
86
100
656.57
23+80.00
658.233
0.0056
657.354
S.S. 657.688
656.686
23+60.00
-L-



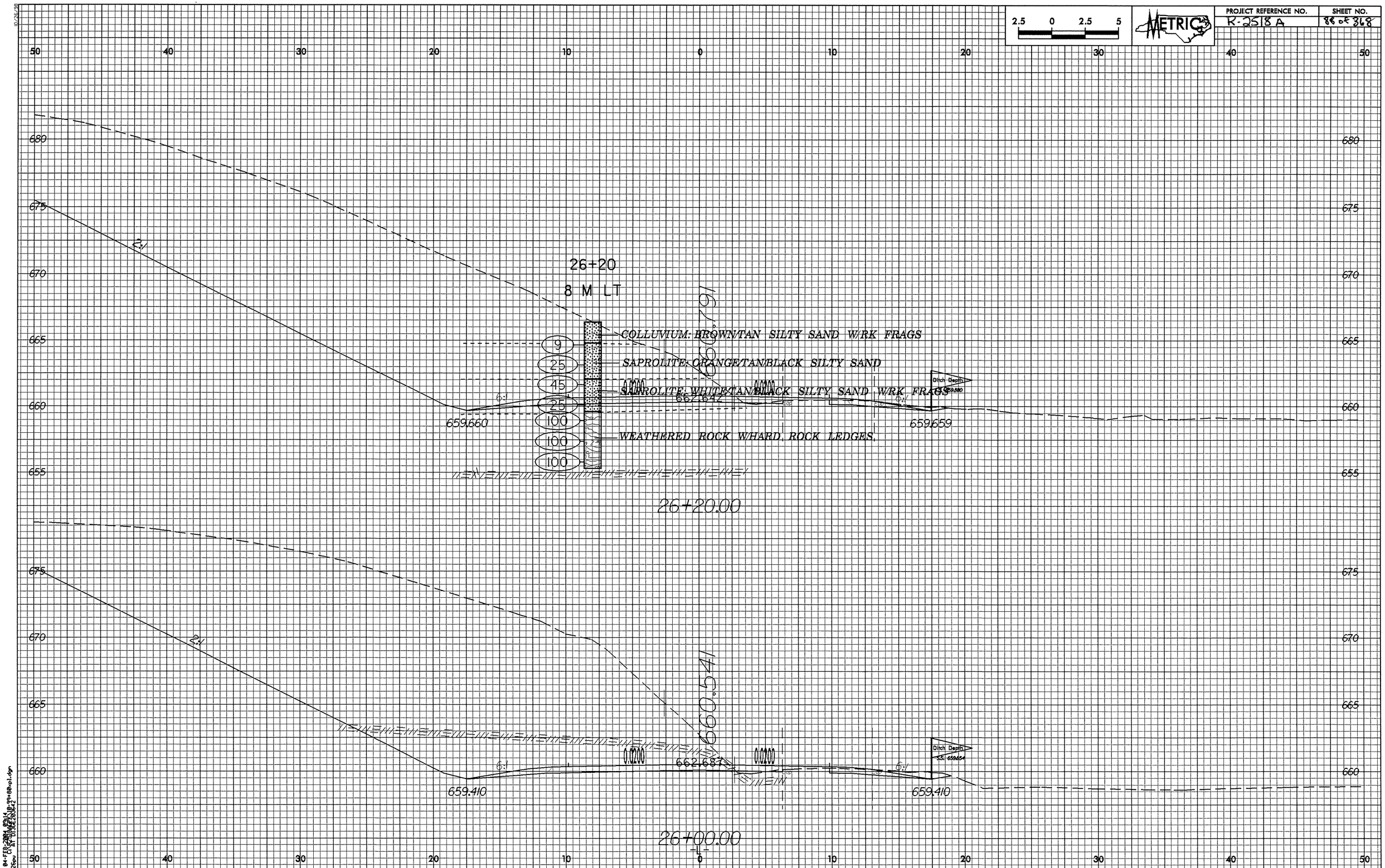
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
85 of 368
658.915
Ditch Depth
S.S. 657.919
6:1
0.0200
0.0200
6:1
Ditch Depth
S.S. 657.945
657.784
657.783
657.316
24+60.00
658.726
Ditch Depth
S.S. 657.865
6:1
0.0200
0.0200
6:1
Ditch Depth
S.S. 657.713
657.595
657.595
658.104
24+40.00
658.537
S.S. 657.713
6:1
6:1
0.0200
0.0200
6:1
Subgrade wo ped to Slopestake
S.S. 657.580
657.406
656.743
24+20.00
-L-



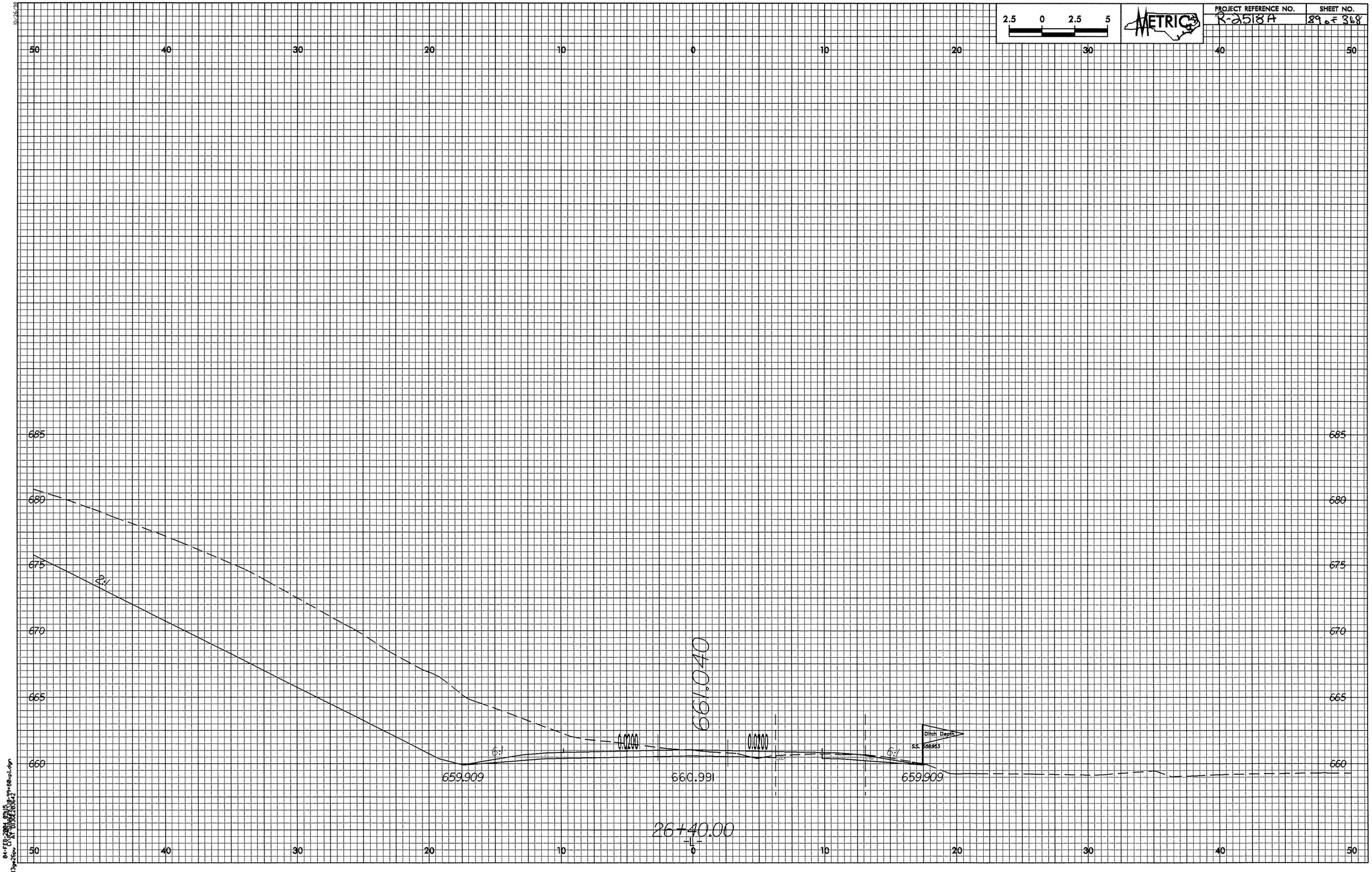
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
86 of 368
25+20
13 M LT
Ditch Depth
0.0200
0.0200
0.0200
6:1
6:1
658.341
ALLUVIUM: BROWN/TAN COARSE SAND AND GRAVEL, COBBLES AND BOULDERS
11
100
SAPROLITE: BROWN SILTY SAND
658.101
WEATHERED ROCK
25+20.00
659.315
0.0200
0.0200
6:1
6:1
Subgrade warped to Slopestake
Subgrade warped to Slopestake
657.648
25+00.00
659.106
Ditch Depth
Ditch Depth
0.0200
0.0200
6:1
6:1
657.975
657.975
657.441
24+80.00
-L-

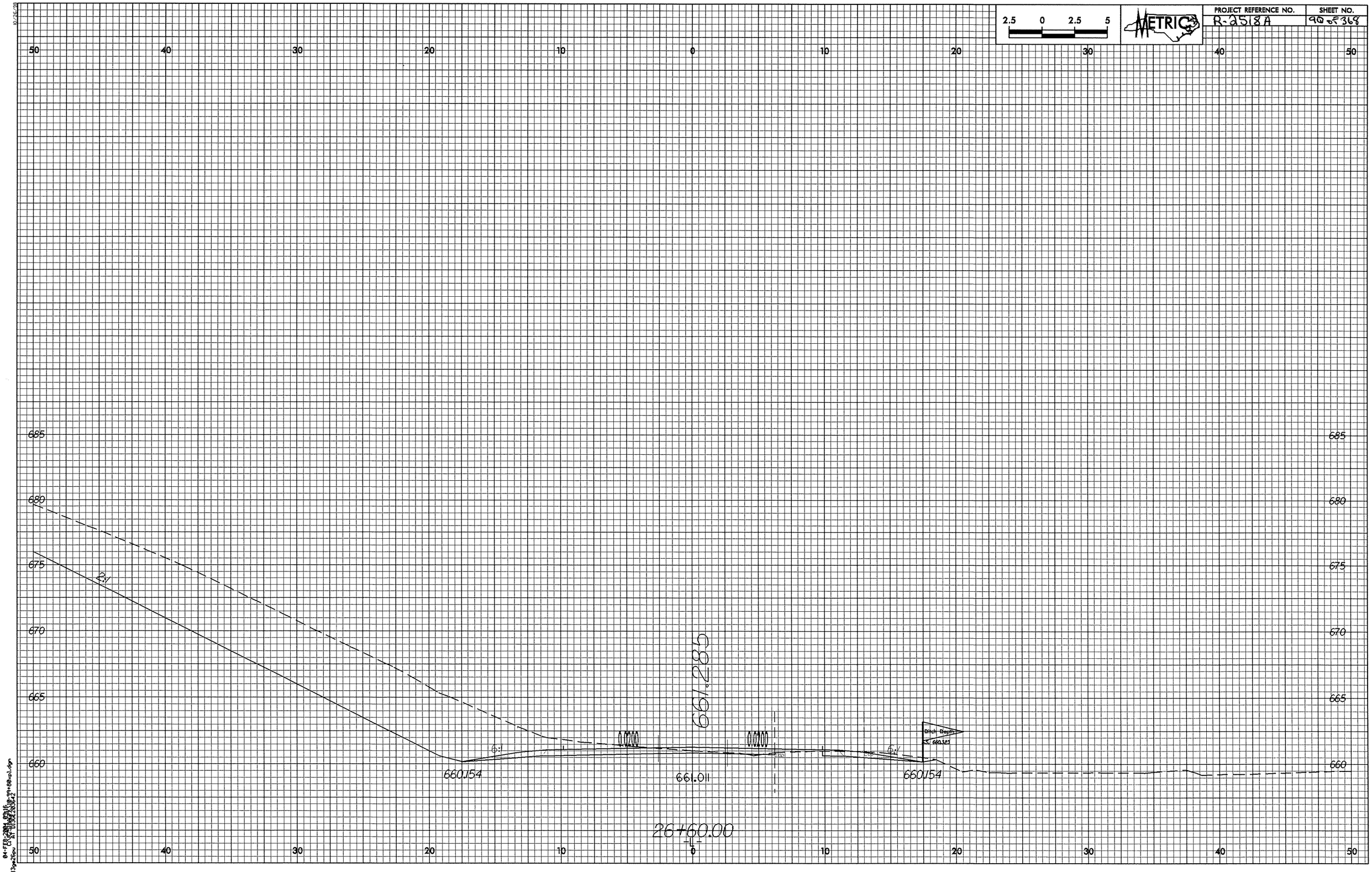


2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
87 of 368
50 40 30 20 10 0 10 20 30 40 50
675
670
665
660
S.S. 672.686
2:1
6:1
0.0200
662.874
659.160
S.S. 658.533
25+80.00
S.S. 664.921
662.124
658.910
Ditch Depth
S.S. 659.133
25+60.00
S.S. 659.516
5.61:1
658.660
659.071
S.S. 658.169
25+40.00

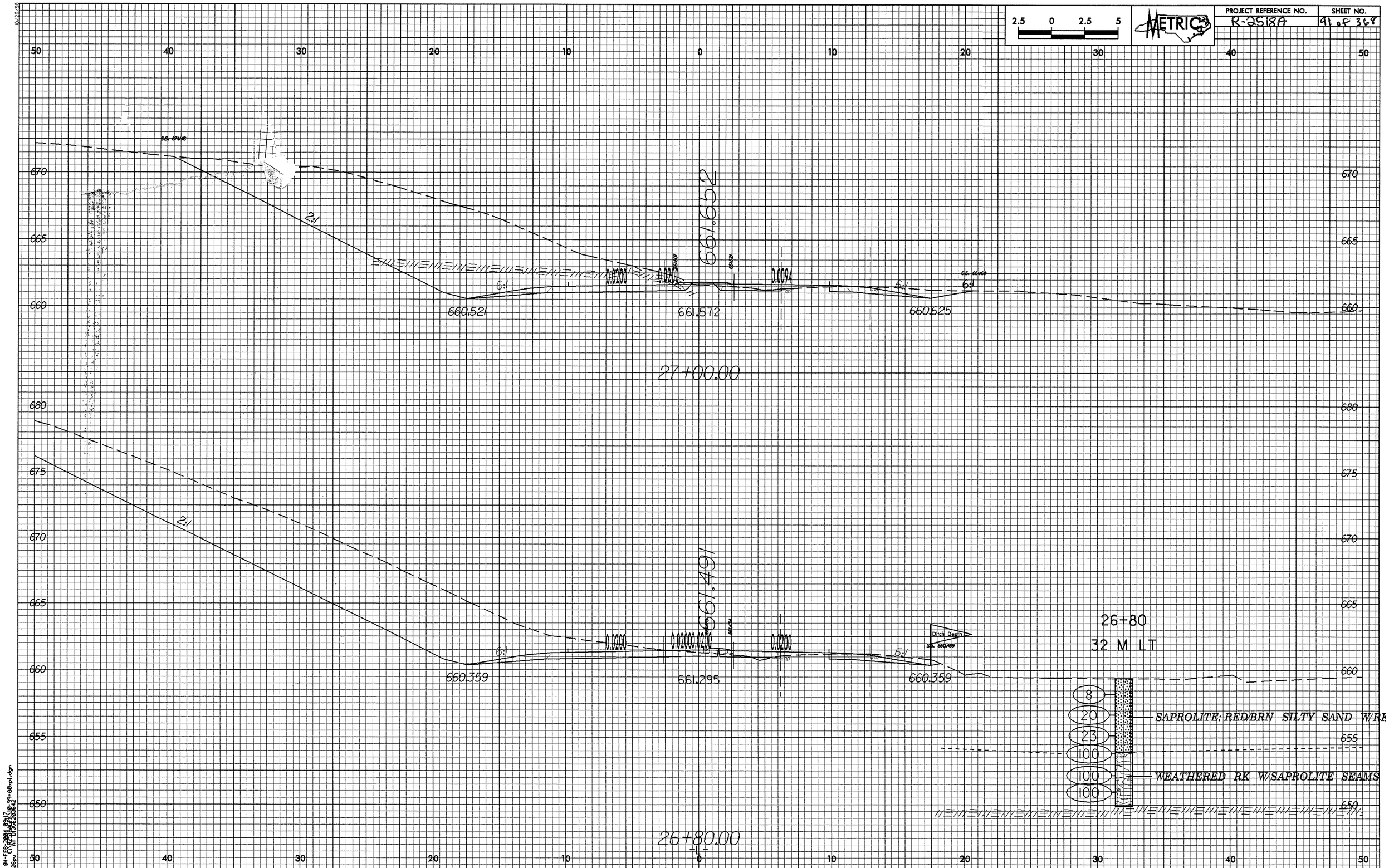


PROJECT REFERENCE NO.
R-2518 A
SHEET NO.
88 of 368
METRIC
2.5 0 2.5 5
26+20
8 M LT
COLLUVIUM: BROWN/TAN SILTY SAND W/RK FRAGS
SAPROLITE: ORANGE/TAN/BLACK SILTY SAND
SAPROLITE: WHITE/TAN/BLACK SILTY SAND W/RK FRAGS
WEATHERED ROCK W/HARD ROCK LEDGES.
9
25
45
25
100
100
100
660.791
662.642
659.660
659.659
Ditch Depth
26+20.00
660.541
662.687
0.0200
0.0200
659.410
659.410
Ditch Depth
26+00.00
2:1
6:1

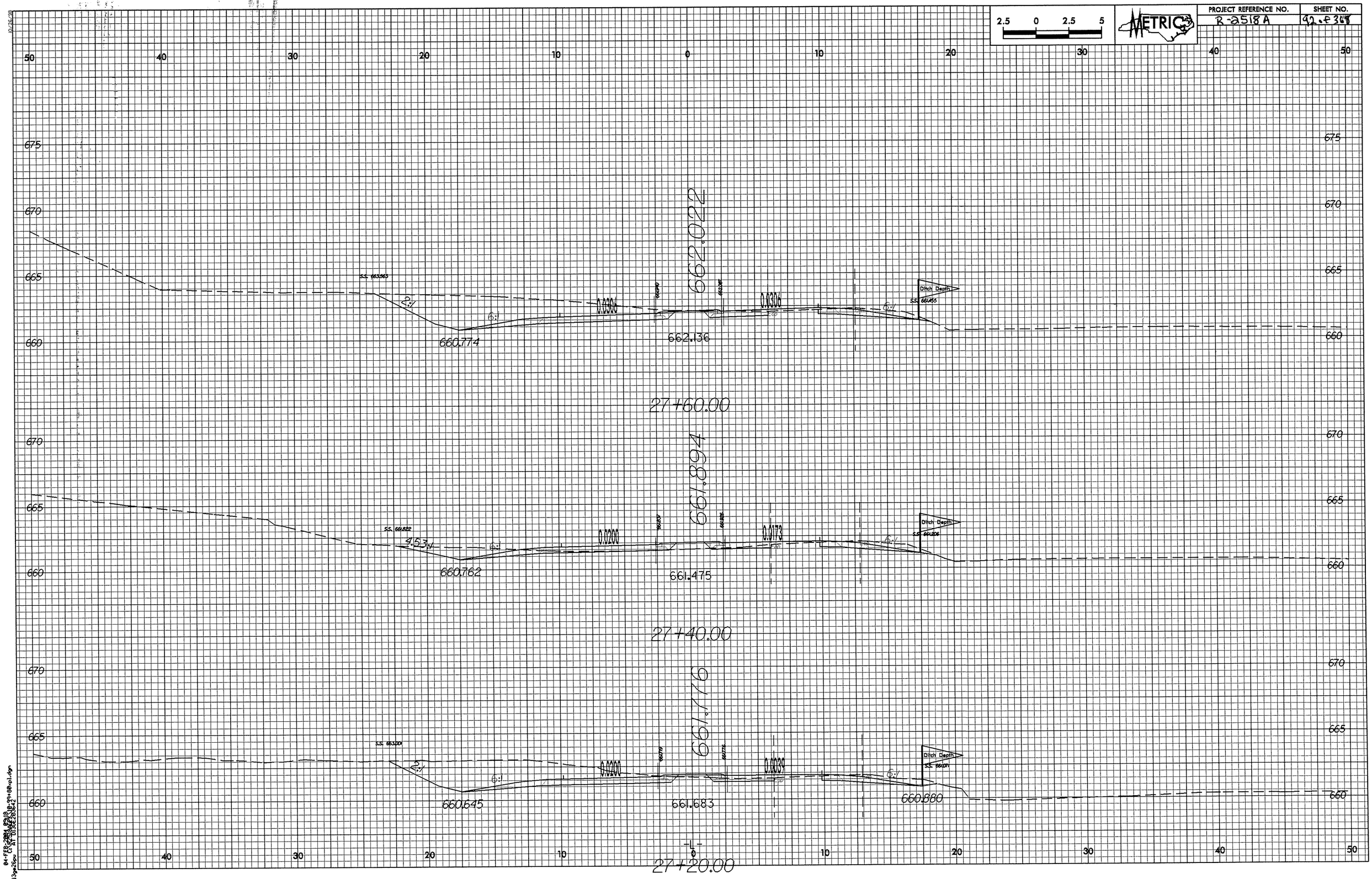

2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
89 of 368
50 40 30 20 10 0 10 20 30 40 50
685
680
675
670
665
660
2:1
6:1
661.040
659.909
660.991
659.909
Ditch Depth
S.R. 568953
26+40.00
-L-



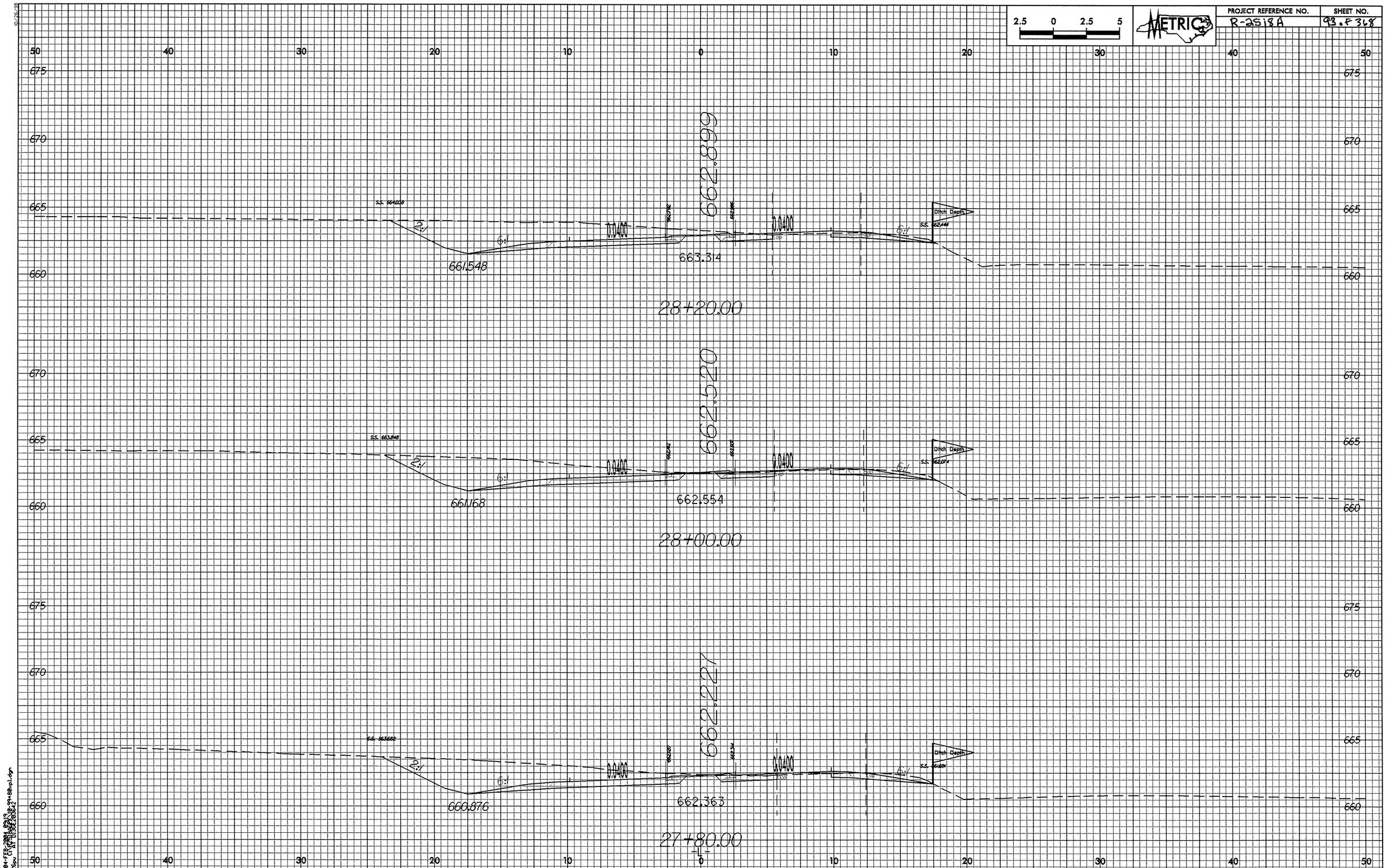
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
90 of 368
50 40 30 20 10 0 10 20 30 40 50
685
680
675
670
665
660
2:1
6:1
0.0200
0.0200
661.285
Ditch Depth
660.154
661.011
660.154
26+60.00
-L-



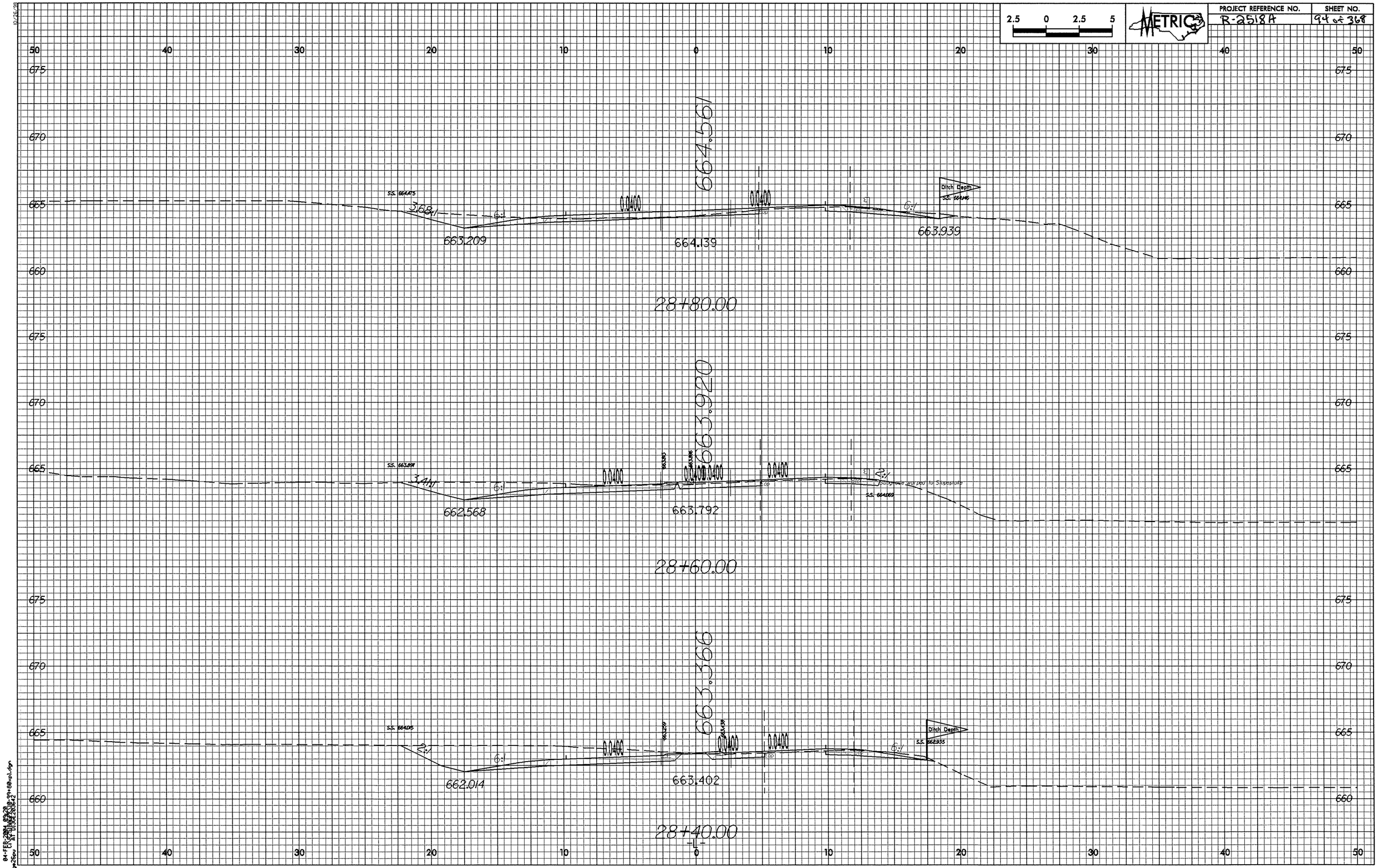
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
91 of 368
50 40 30 20 10 0 10 20 30 40 50
670 665 660 680 675 670 665 660 655 650
2:1
6:1
0.0200
0.0094
661.652
660.521
661.572
660.625
27+00.00
661.491
660.359
661.295
660.359
Ditch Depth
26+80
32 M LT
8
20
23
100
100
100
SAPROLITE: RED/BRN SILTY SAND W/RK
WEATHERED RK W/SAPROLITE SEAMS
26+80.00
-L-



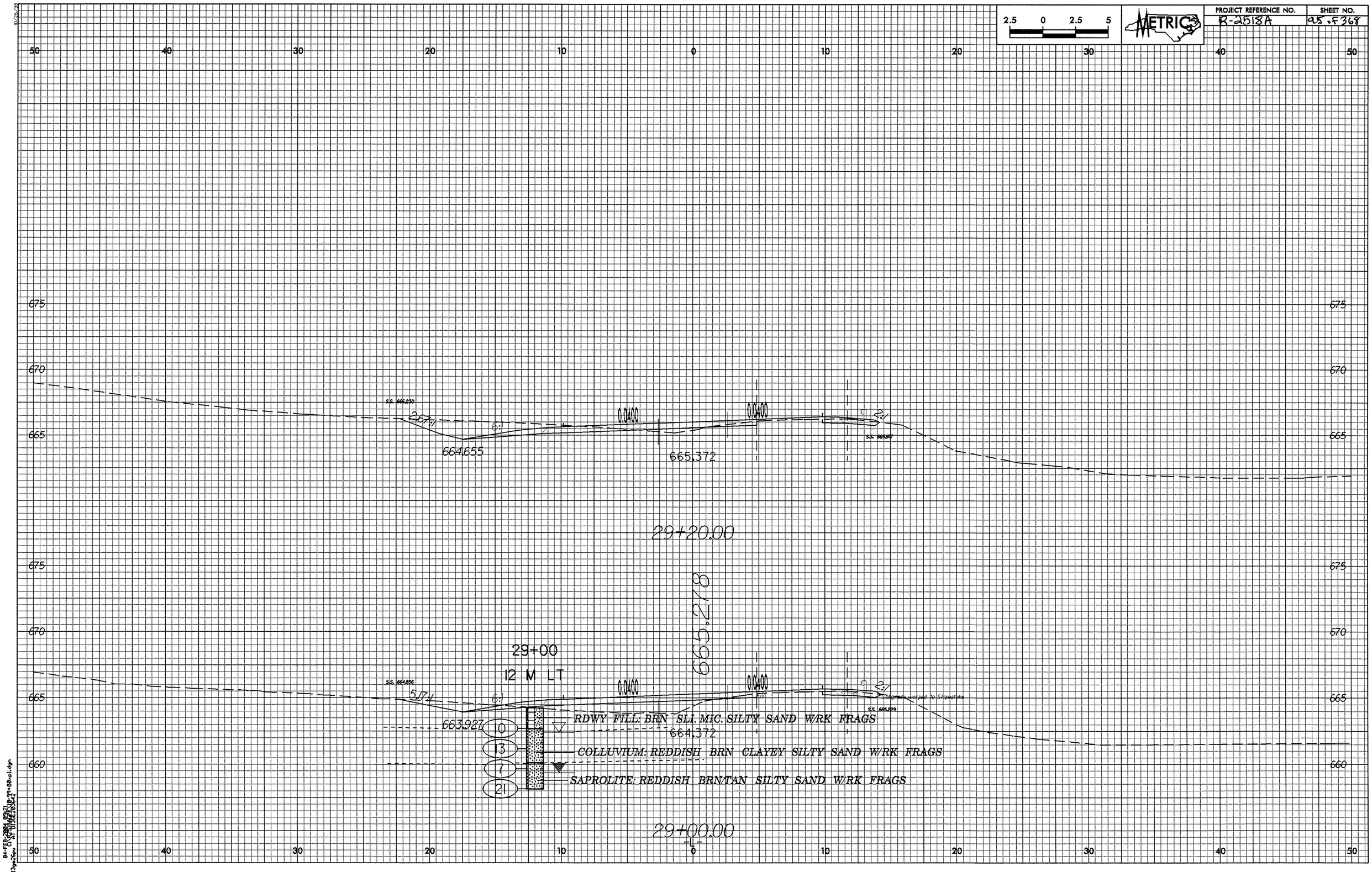
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
92 of 368
50 40 30 20 10 0 10 20 30 40 50
675
670
665
660
662.022
S.S. 663.963
2:1
6:1
0.0306
0.0306
6:1
Ditch Depth
S.S. 661.455
660.774
662.136
27+60.00
661.894
S.S. 661.822
4.53:1
6:1
0.0200
0.0173
6:1
Ditch Depth
S.S. 661.206
660.762
661.475
27+40.00
661.776
S.S. 663.001
2:1
6:1
0.0200
0.0039
6:1
Ditch Depth
S.S. 661.071
660.645
661.683
660.880
-L-
27+20.00



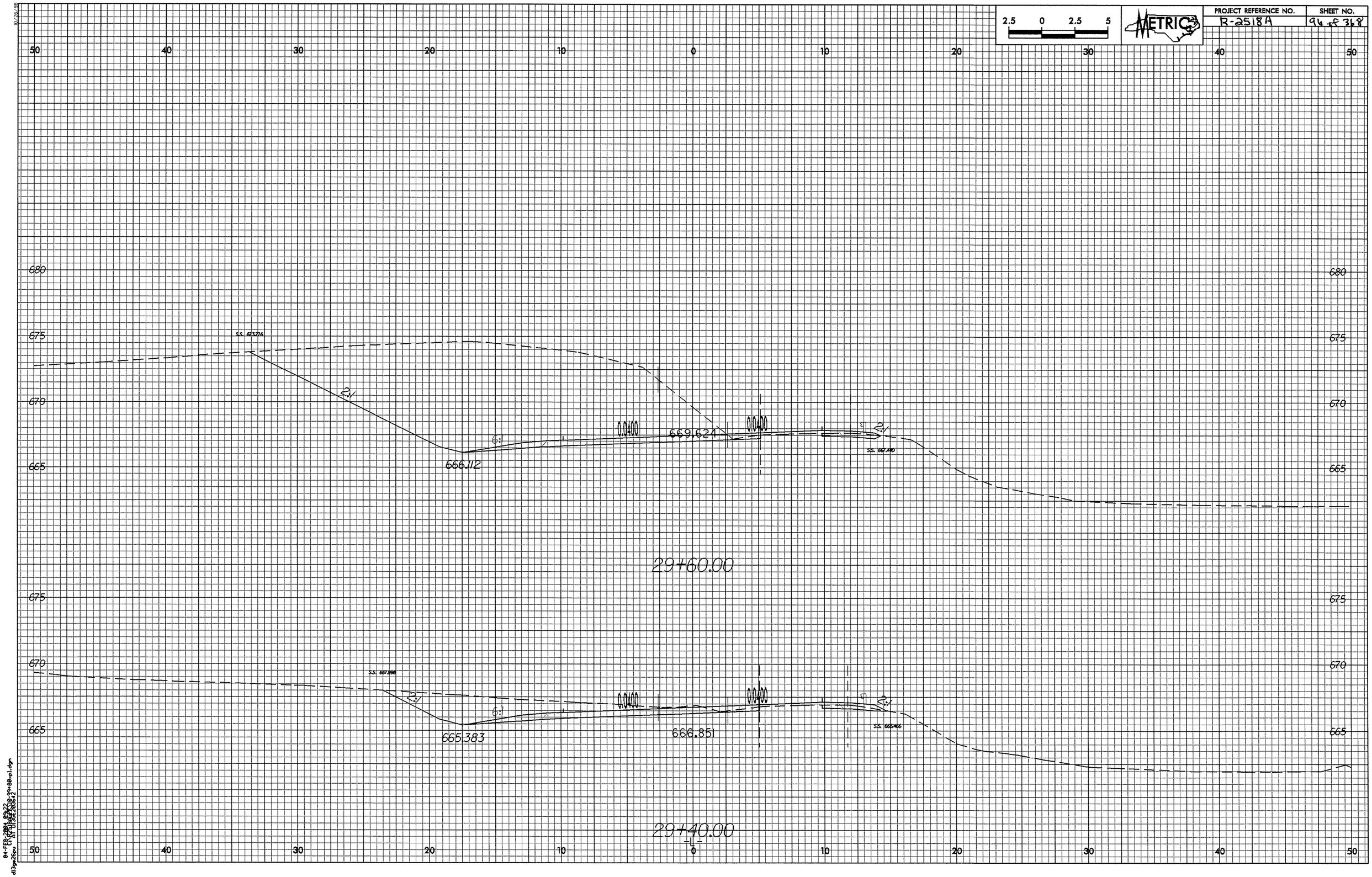
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
93.F368
50 40 30 20 10 0 10 20 30 40 50
675
670
665
660
662.899
S.S. 664.038
2:1
6:1
0.0400
663.314
661.548
Ditch Depth
S.S. 662.444
28+20.00
662.520
S.S. 663.848
661.168
662.554
28+00.00
662.227
S.S. 663.682
660.876
662.363
27+80.00



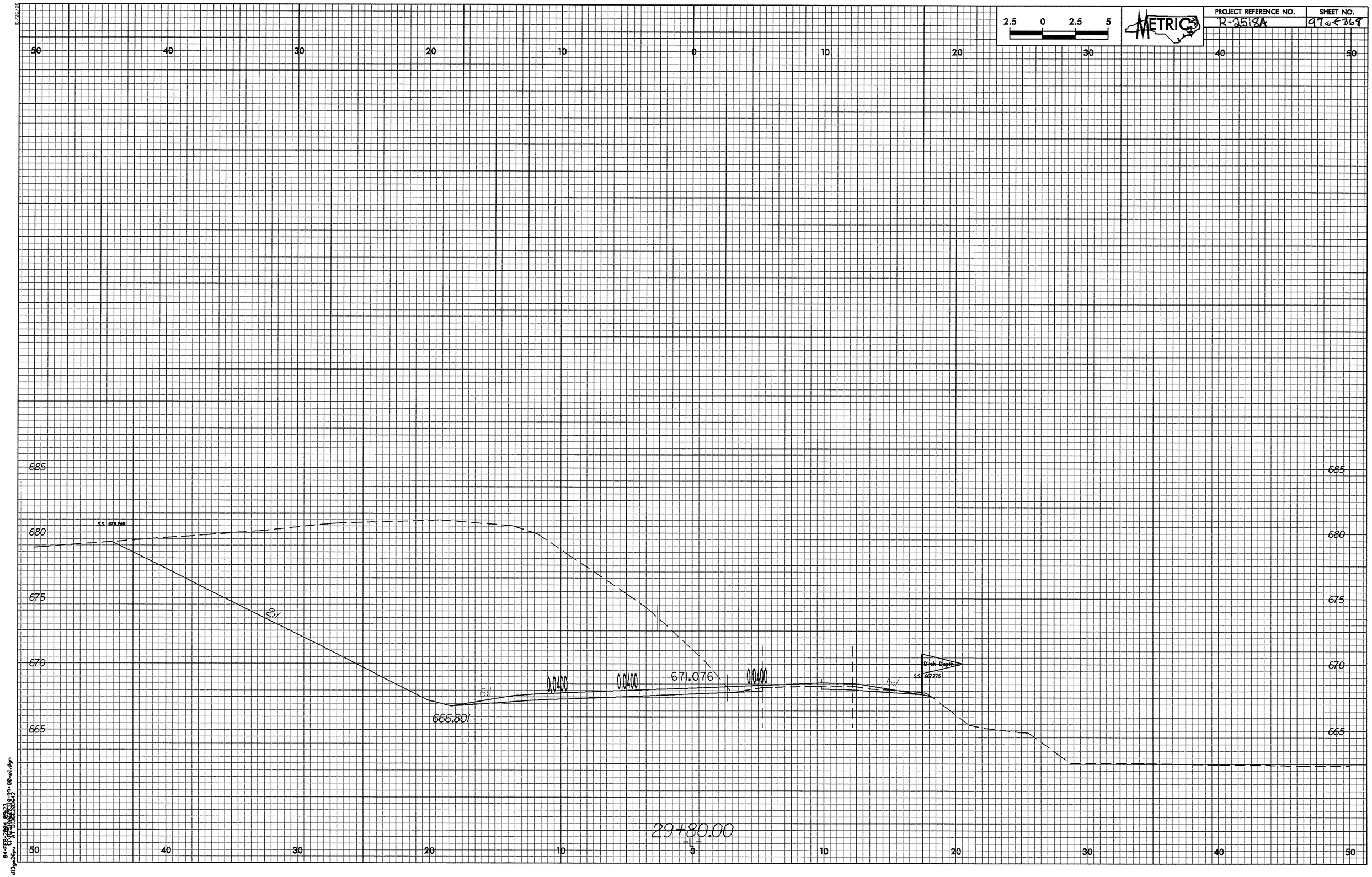
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
94 of 368
50 40 30 20 10 0 10 20 30 40 50
675
670
665
660
664.561
663.920
663.366
S.S. 664.475
3.68:1
6:1
0.0400
663.209
664.139
663.939
Ditch Depth
28+80.00
S.S. 663.897
3.41:1
662.568
663.792
2:1
Subgrade warped to Slopestake
S.S. 664.069
28+60.00
S.S. 664.015
662.014
663.402
S.S. 662.935
28+40.00



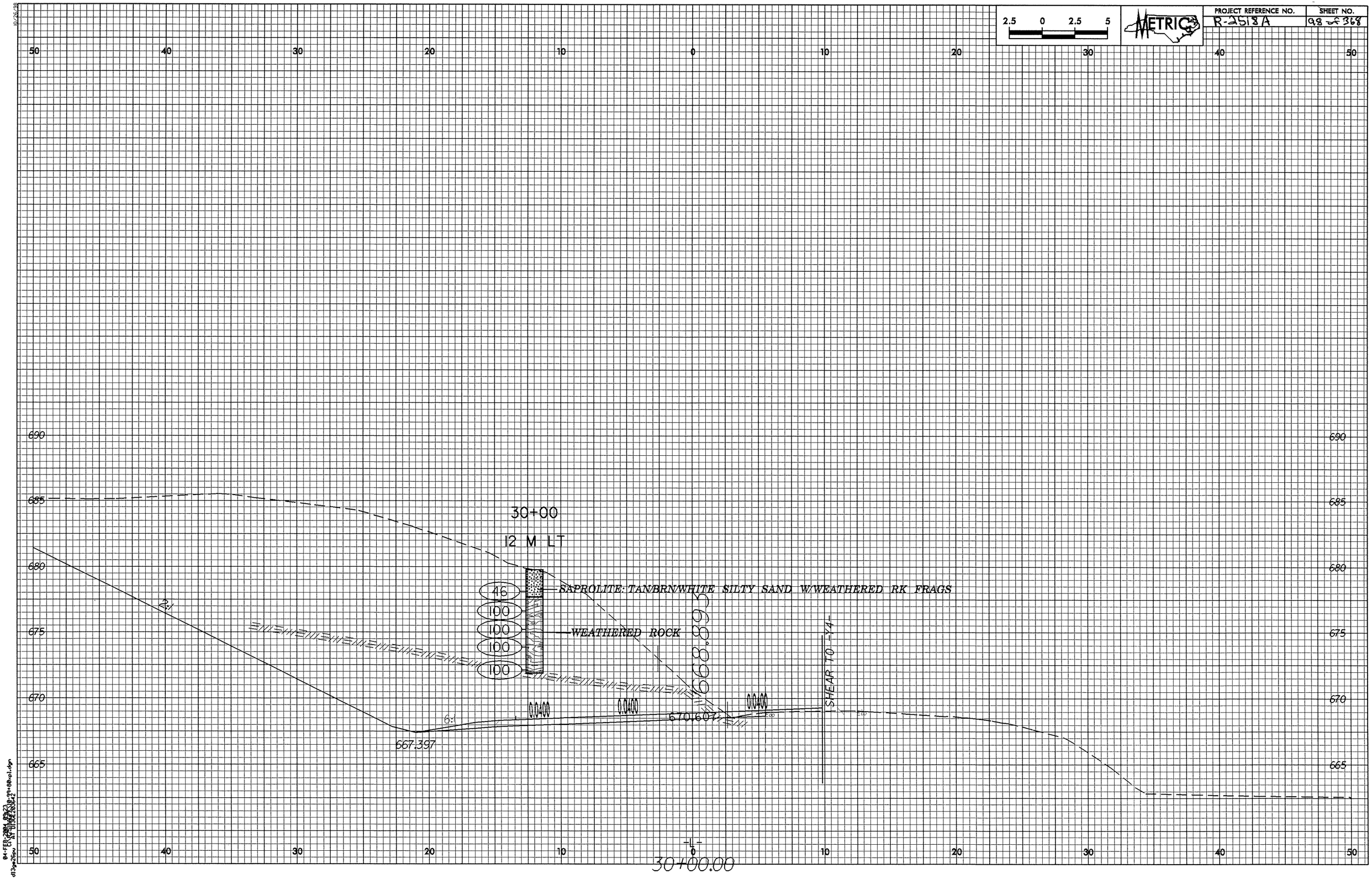
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
95 of 368
50 40 30 20 10 0 10 20 30 40 50
675
670
665
660
S.S. 666.230
2.67:1
6:1
0.0400
0.0400
2:1
664.655
665.372
29+20.00
665.278
29+00
12 M LT
S.S. 664.856
5.17:1
6:1
0.0400
0.0400
2:1
Subgrade warped to Slopestake
S.S. 665.229
663.927
10
13
7
21
RDWY FILL: BRN SLI. MIC. SILTY SAND W/RK FRAGS
664.372
COLLUVIUM: REDDISH BRN CLAYEY SILTY SAND W/RK FRAGS
SAPROLITE: REDDISH BRN/TAN SILTY SAND W/RK FRAGS
29+00.00
-L-

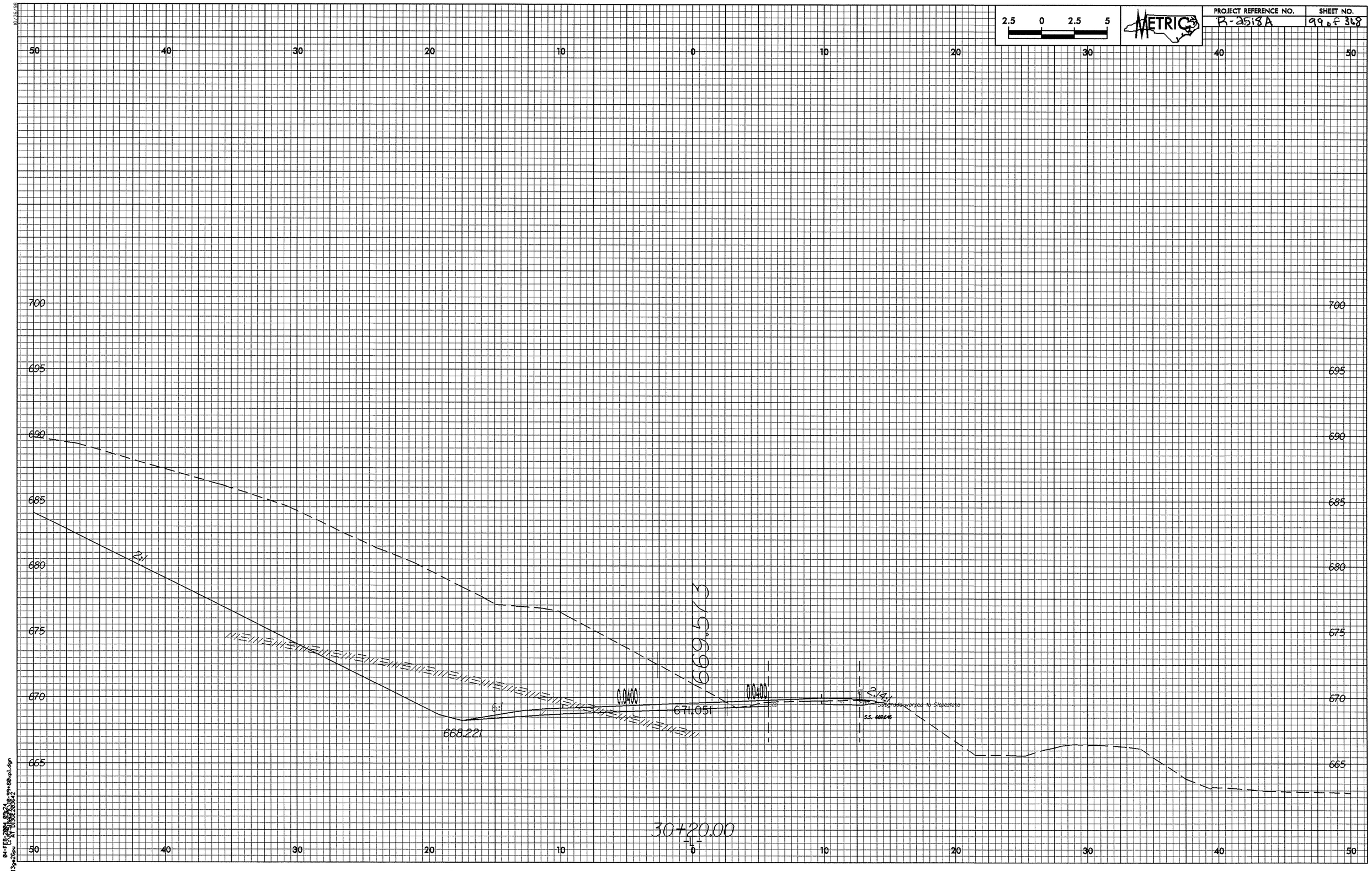


2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
96 of 368
50 40 30 20 10 0 10 20 30 40 50
680
675
670
665
S.S. 673.776
2:1
6:1
0.0400
669.624
0.0400
2:1
S.S. 667.440
666.112
29+60.00
S.S. 667.998
2:1
6:1
0.0400
0.0400
2:1
S.S. 665.466
665.383
666.851
29+40.00
-L-

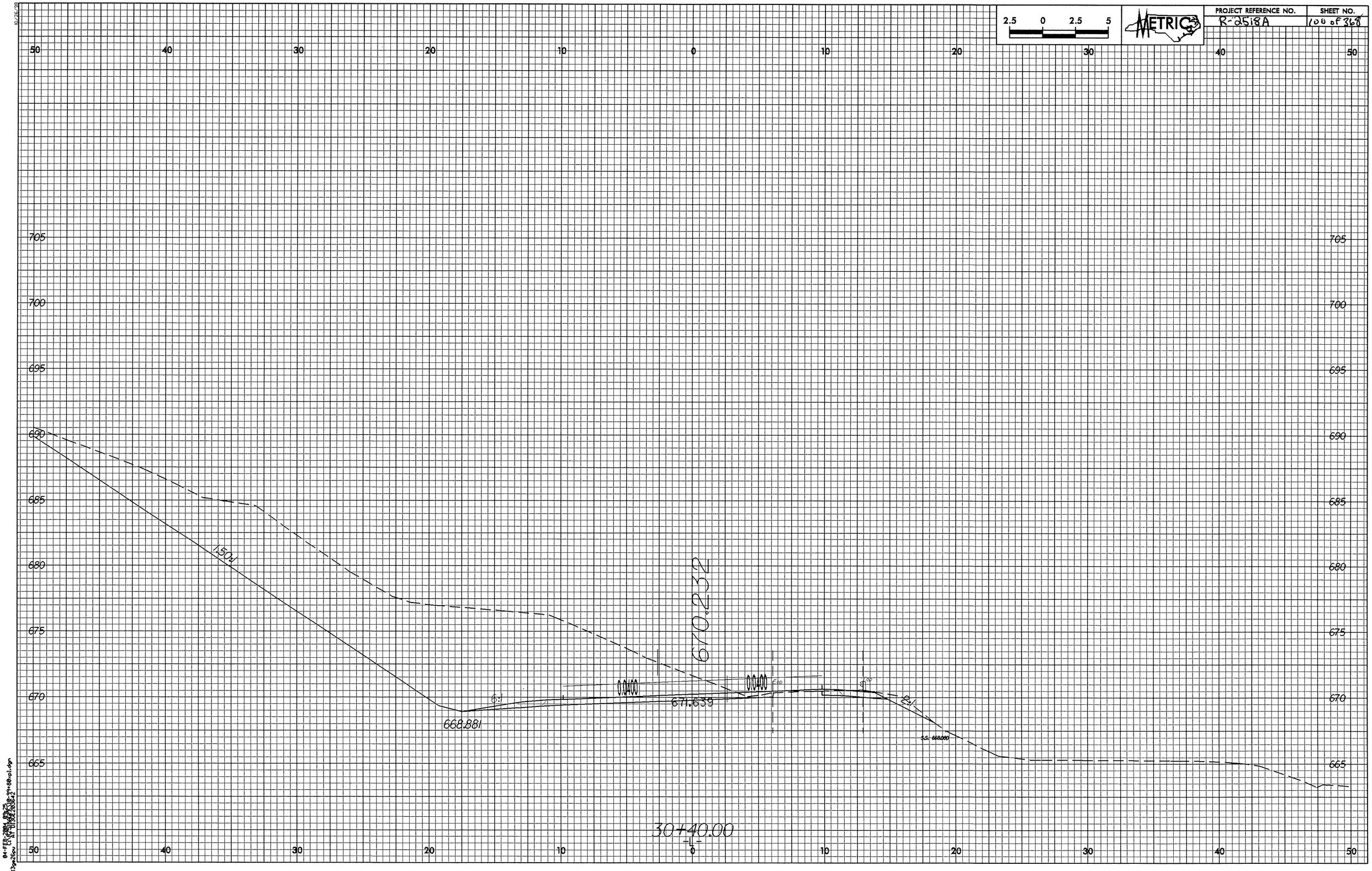


2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
97 of 368
50 40 30 20 10 0 10 20 30 40 50
685
680
675
670
665
S.S. 679.269
2:1
6:1
0.0400
0.0400
671.076
0.0400
6:1
Ditch Depth
S.S. 667.775
666.801
29+80.00
-L-

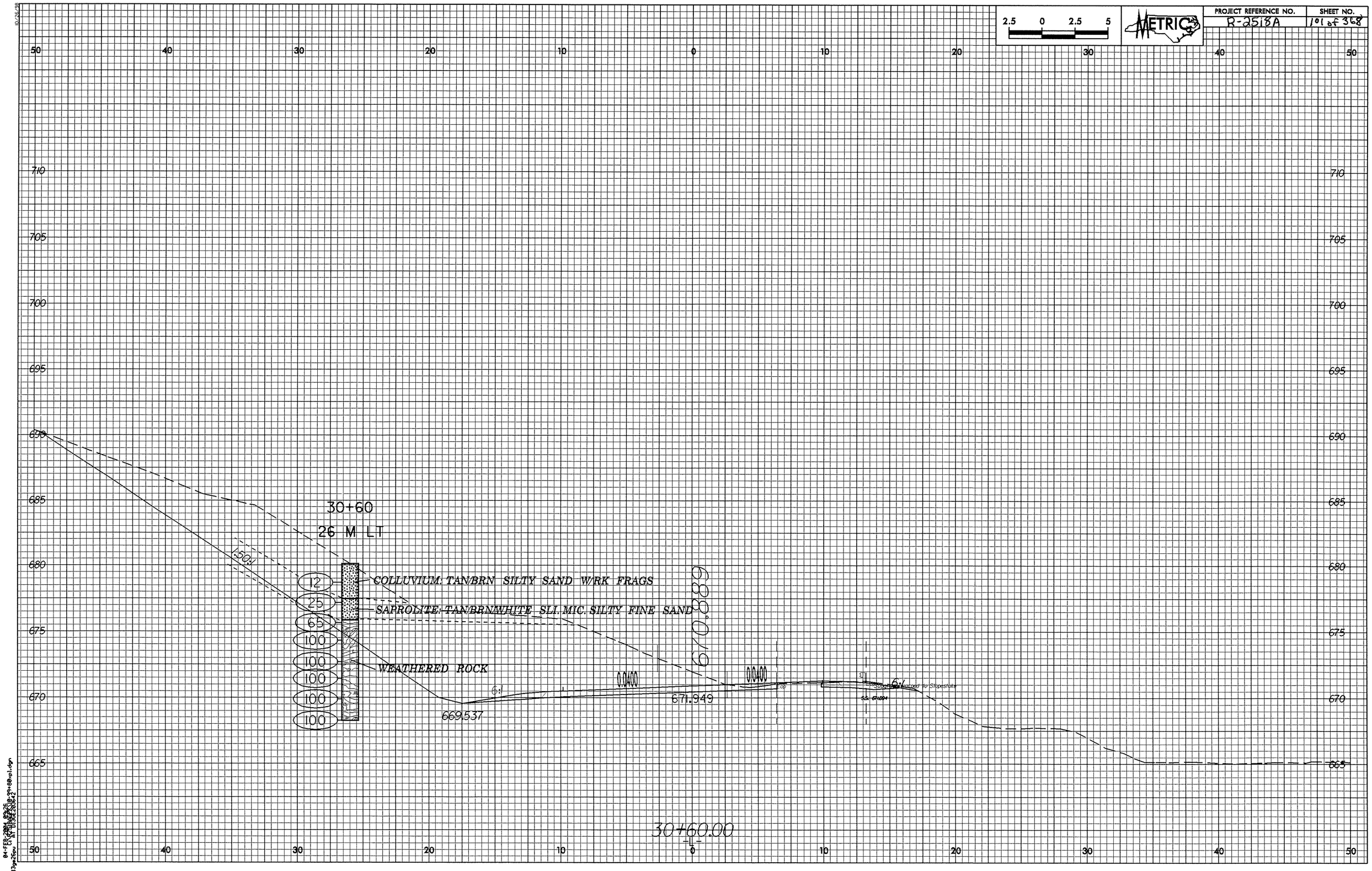

2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
98 of 368
50 40 30 20 10 0 10 20 30 40 50
690
685
680
675
670
665
30+00
12 M LT
46
100
100
100
100
SAPROLITE: TAN/BRN/WHITE SILTY SAND W/WEATHERED RK FRAGS
WEATHERED ROCK
2:1
6:1
0.0400
0.0400
0.0400
670.607
667.397
SHEAR TO -YA-
-L-
30+00.00



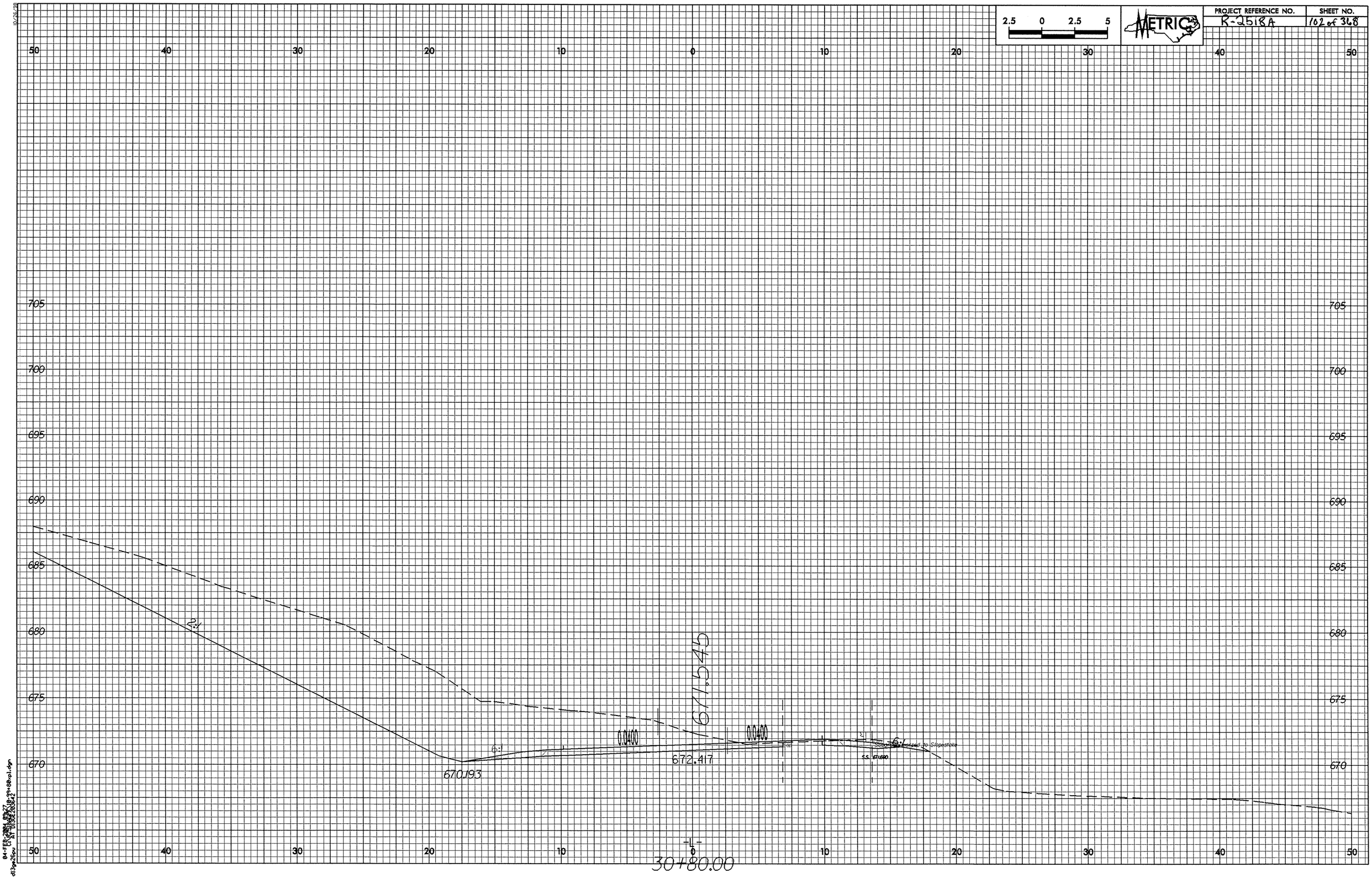
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
99 of 368
50 40 30 20 10 0 10 20 30 40 50
700
695
690
685
680
675
670
665
2:1
6:1
0.0400
0.0400
669.573
671.051
668.221
2.14:1
Subgrade warped to Slopestake
S.S. 669.646
30+20.00
-L-



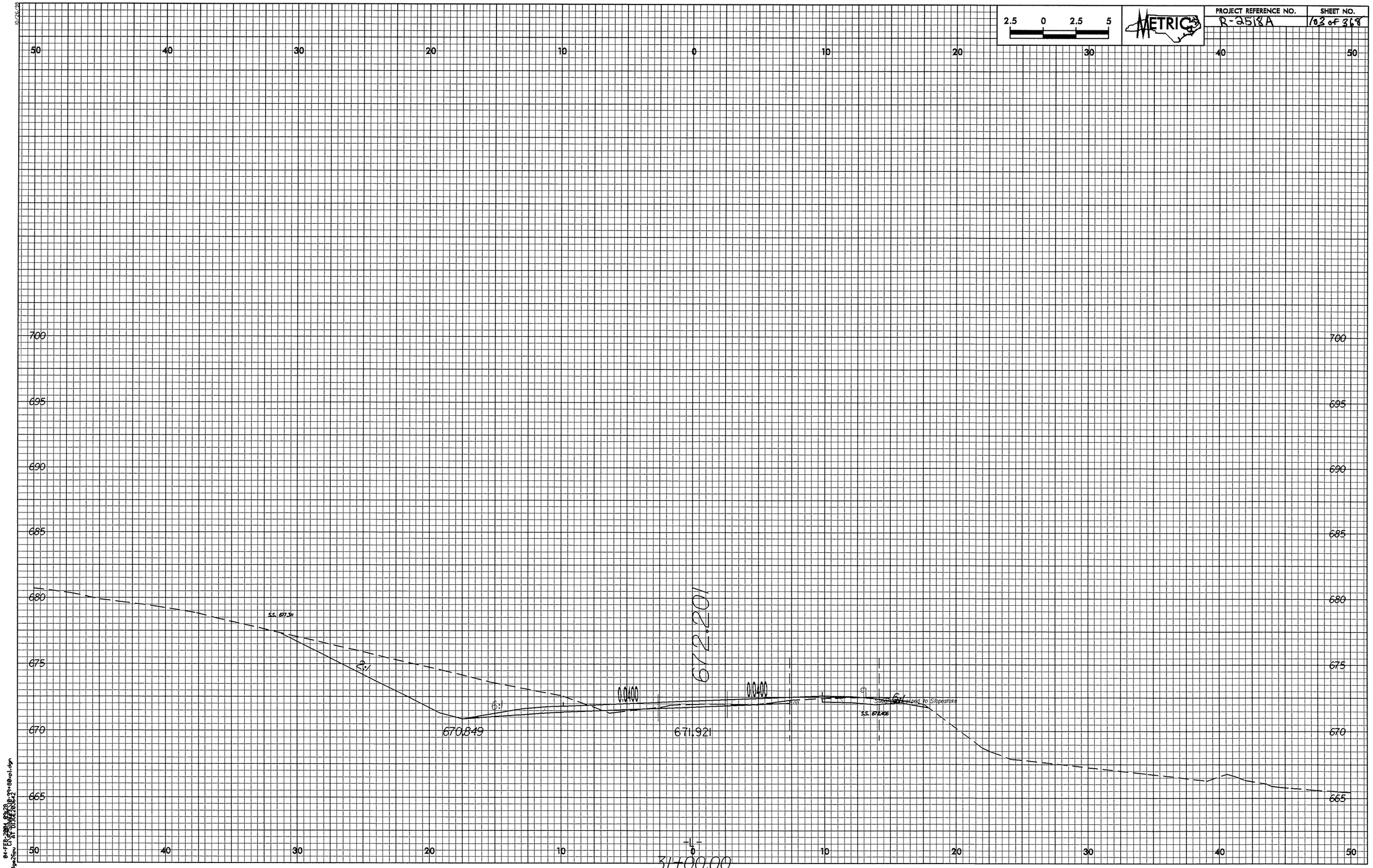
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
100 of 368
50 40 30 20 10 0 10 20 30 40 50
705
700
695
690
685
680
675
670
665
1.50:1
670.232
0.0400
0.0400
6:1
671.639
668.881
2:1
S.S. 668.080
30+40.00
-L-



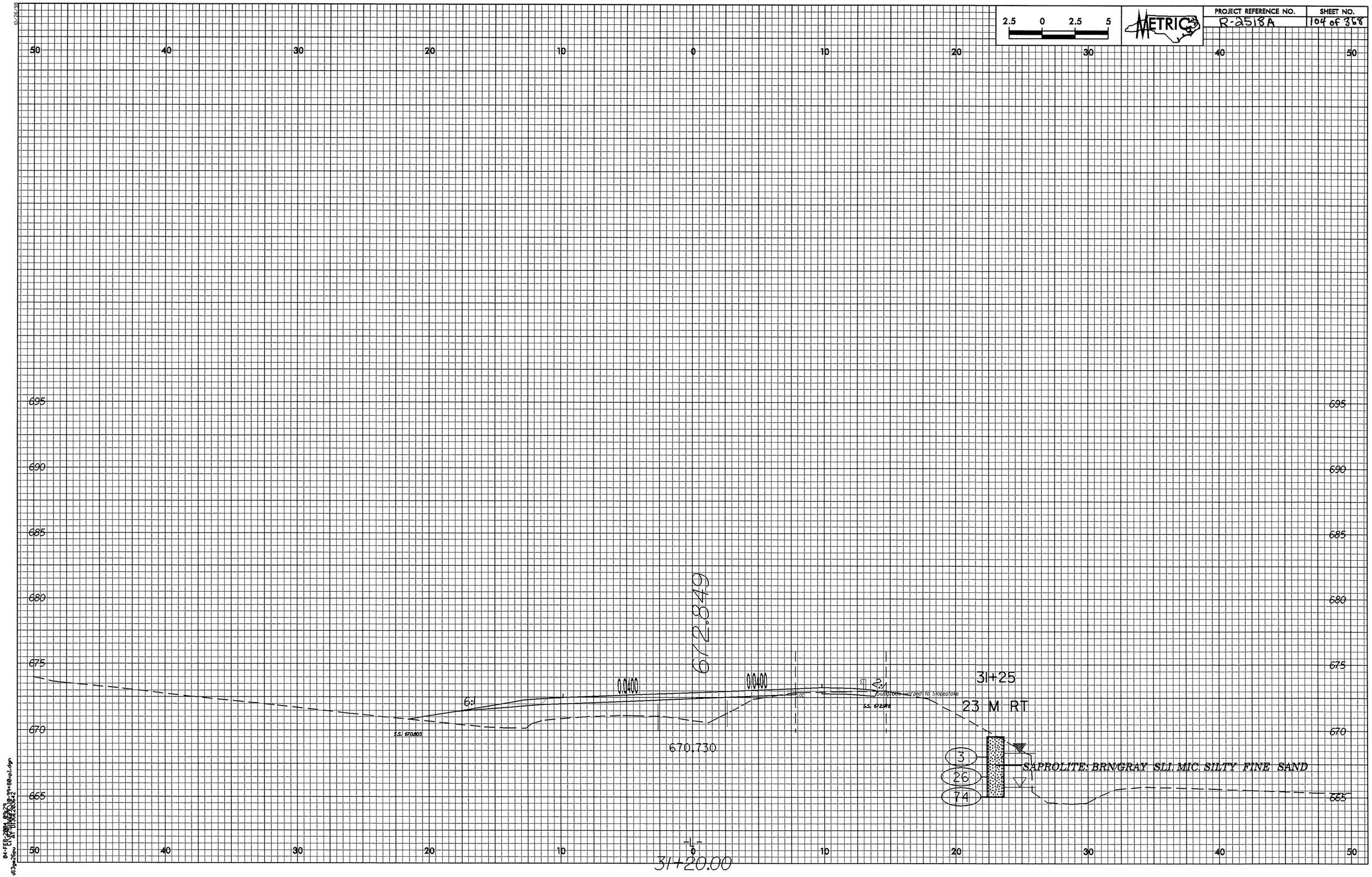
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
101 of 368
30+60
26 M LT
1.50:1
12
25
65
100
100
100
100
100
COLLUVIUM: TAN/BRN SILTY SAND W/RK FRAGS
SAPROLITE: TAN/BRN/WHITE SLI. MIC. SILTY FINE SAND
WEATHERED ROCK
670.889
0.0400
0.0400
6:1
6:1
669.537
671.949
30+60.00
-L-



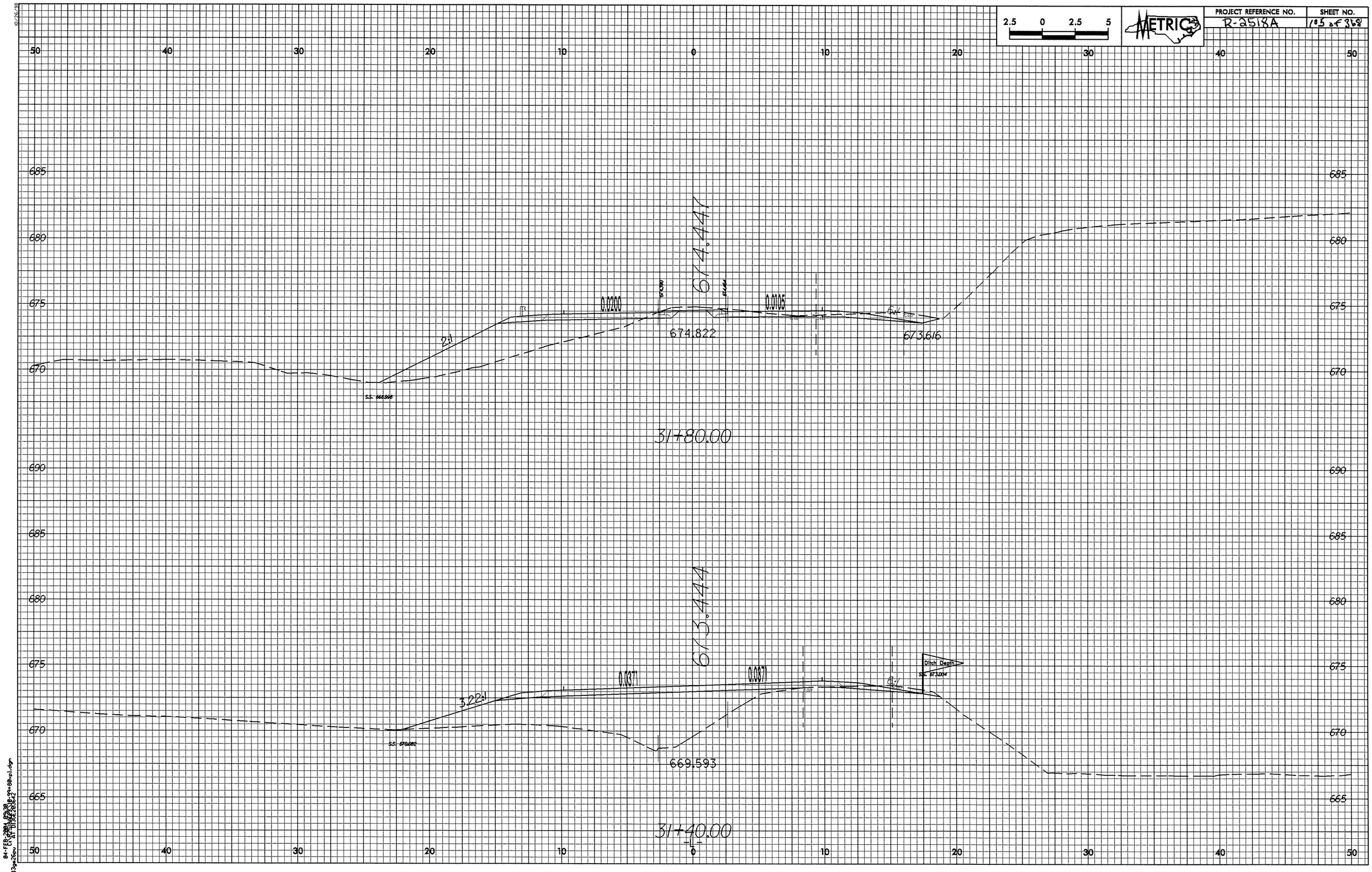
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
102 of 368
50 40 30 20 10 0 10 20 30 40 50
705
700
695
690
685
680
675
670
2:1
6:1
0.0400
0.0400
671.545
672.417
670.193
-L-
30+80.00



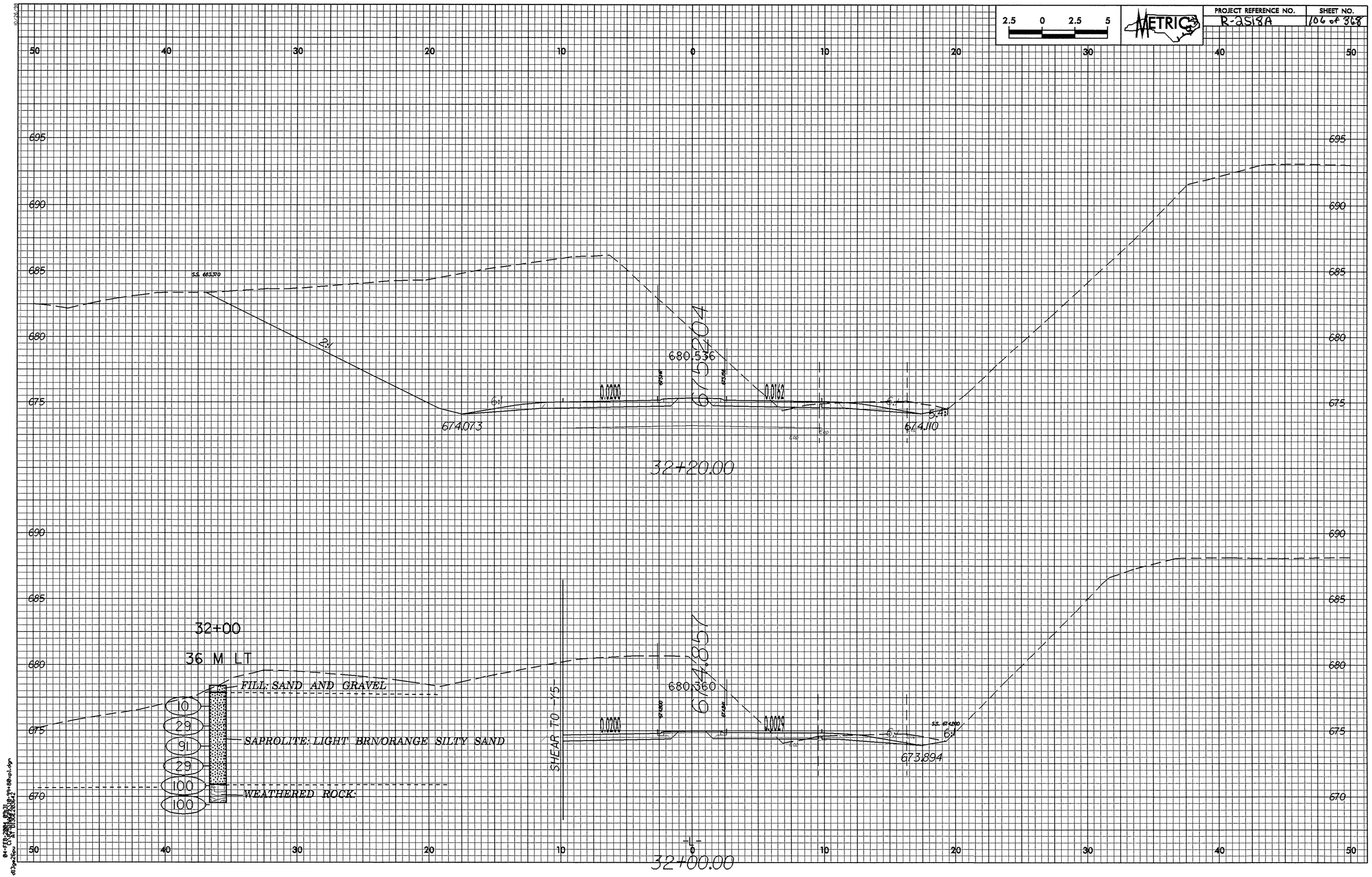
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
103 of 368
50 40 30 20 10 0 10 20 30 40 50
700
695
690
685
680
675
670
665
S.S. 677.311
2:1
6:1
0.0400
0.0400
672.201
670.849
671.921
6:1
S.S. 672.406
-L-
31+00.00



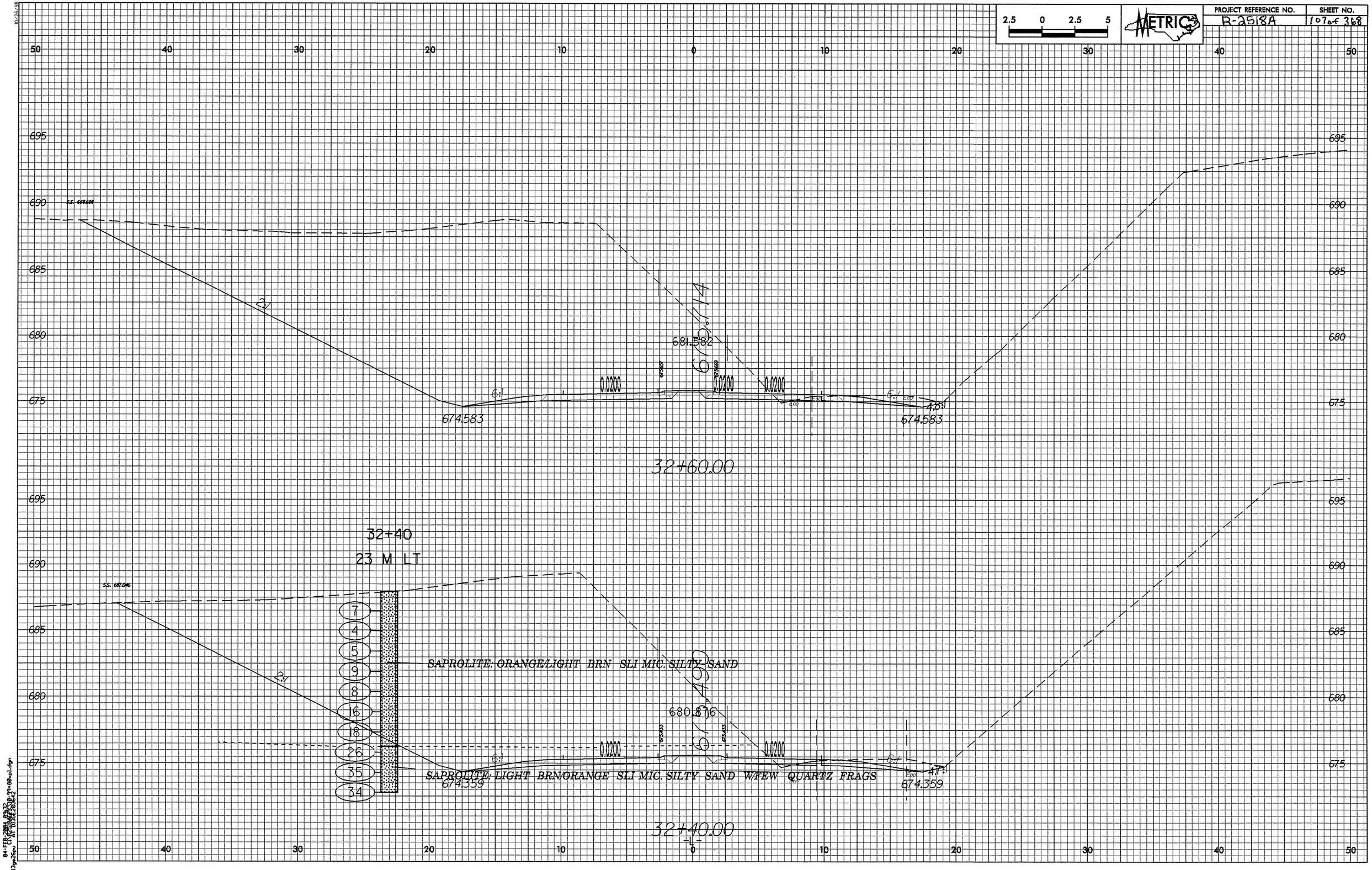
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
104 of 368
50 40 30 20 10 0 10 20 30 40 50
695
690
685
680
675
670
665
672.849
0.0400
0.0400
6:1
2:1
Subgrade warped to Slopestake
S.S. 670.803
S.S. 672.978
670.730
31+25
23 M RT
3
26
74
SAPROLITE: BRN/GRAY SLI. MIC. SILTY FINE SAND
-L-
31+20.00



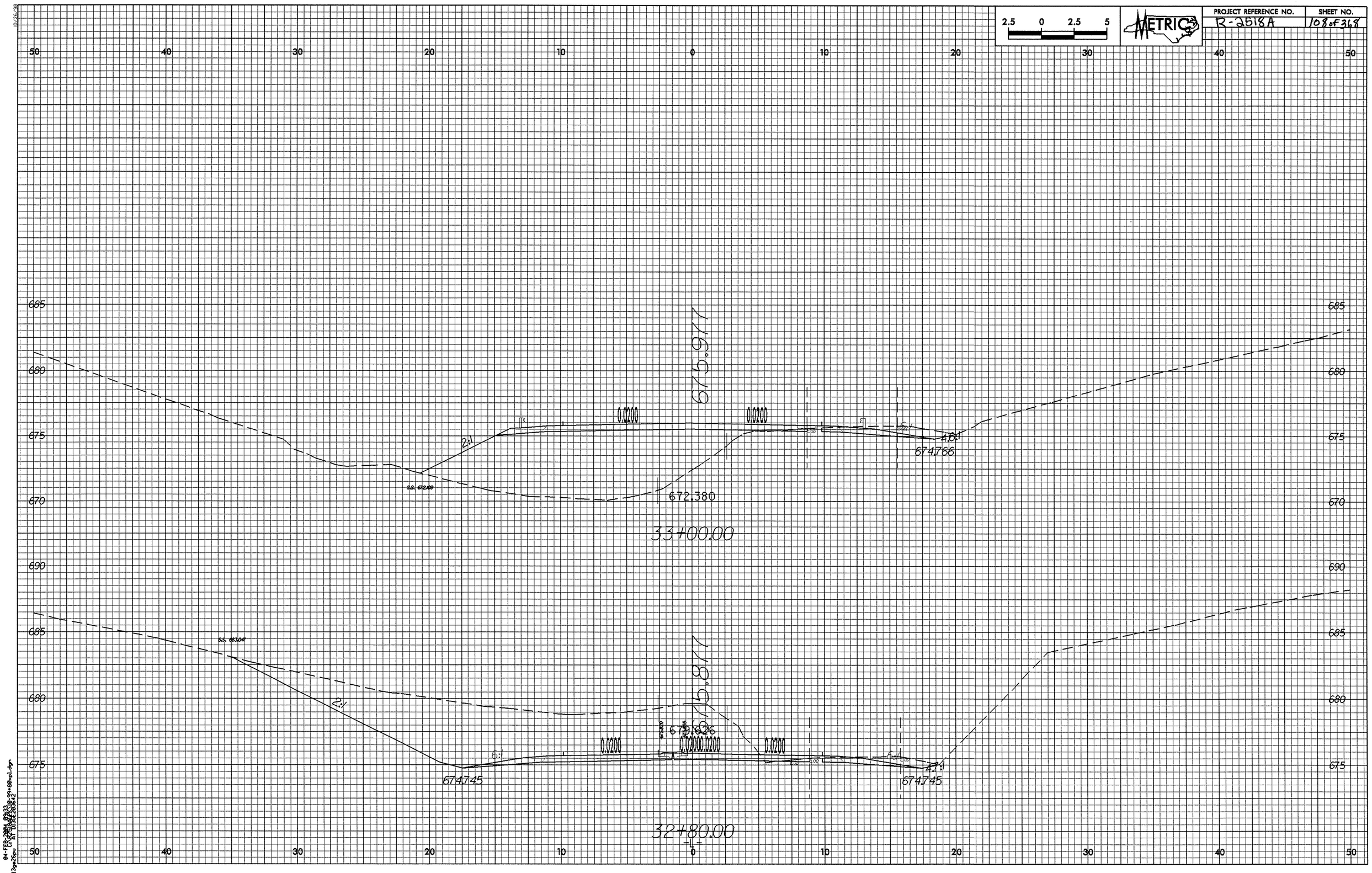
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
105 of 368
50 40 30 20 10 0 10 20 30 40 50
685
680
675
670
690
665
674.447
0.0200
0.0105
674.822
673.616
2:1
6:1
31+80.00
673.444
0.0371
0.0371
3.22:1
6:1
Ditch Depth
669.593
31+40.00
-L-



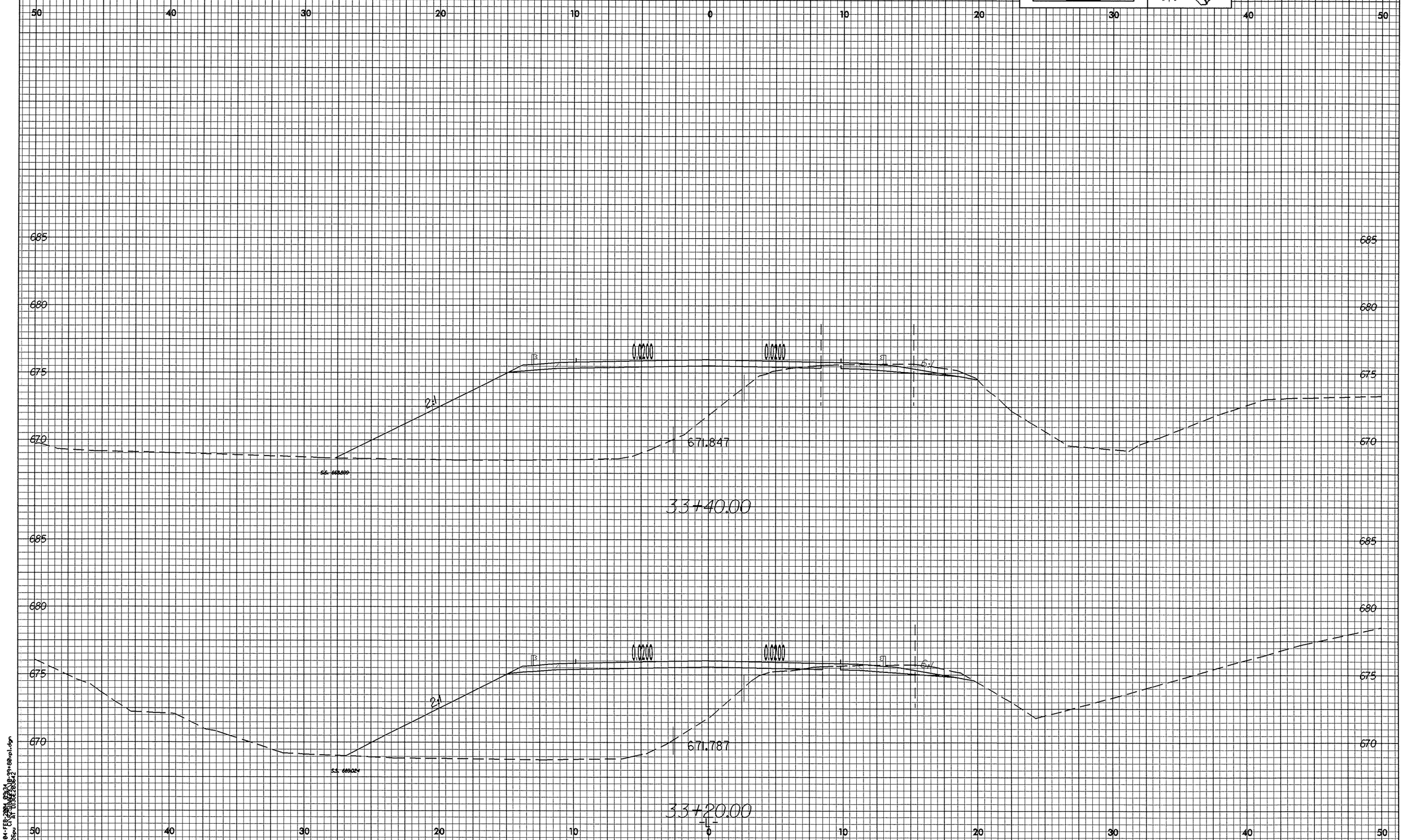
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
106 of 368
50 40 30 20 10 0 10 20 30 40 50
695
690
685
680
675
670
S.S. 683.370
2:1
6:1
0.0200
680.536
675.204
0.0162
674.073
674.110
5.4:1
32+20.00
32+00
36 M LT
FILL: SAND AND GRAVEL
SAPROLITE: LIGHT BRN/ORANGE SILTY SAND
WEATHERED ROCK:
10
29
91
29
100
100
SHEAR TO -Y5-
680.360
674.857
0.0200
0.0029
673.894
S.S. 674.200
-L-
32+00.00



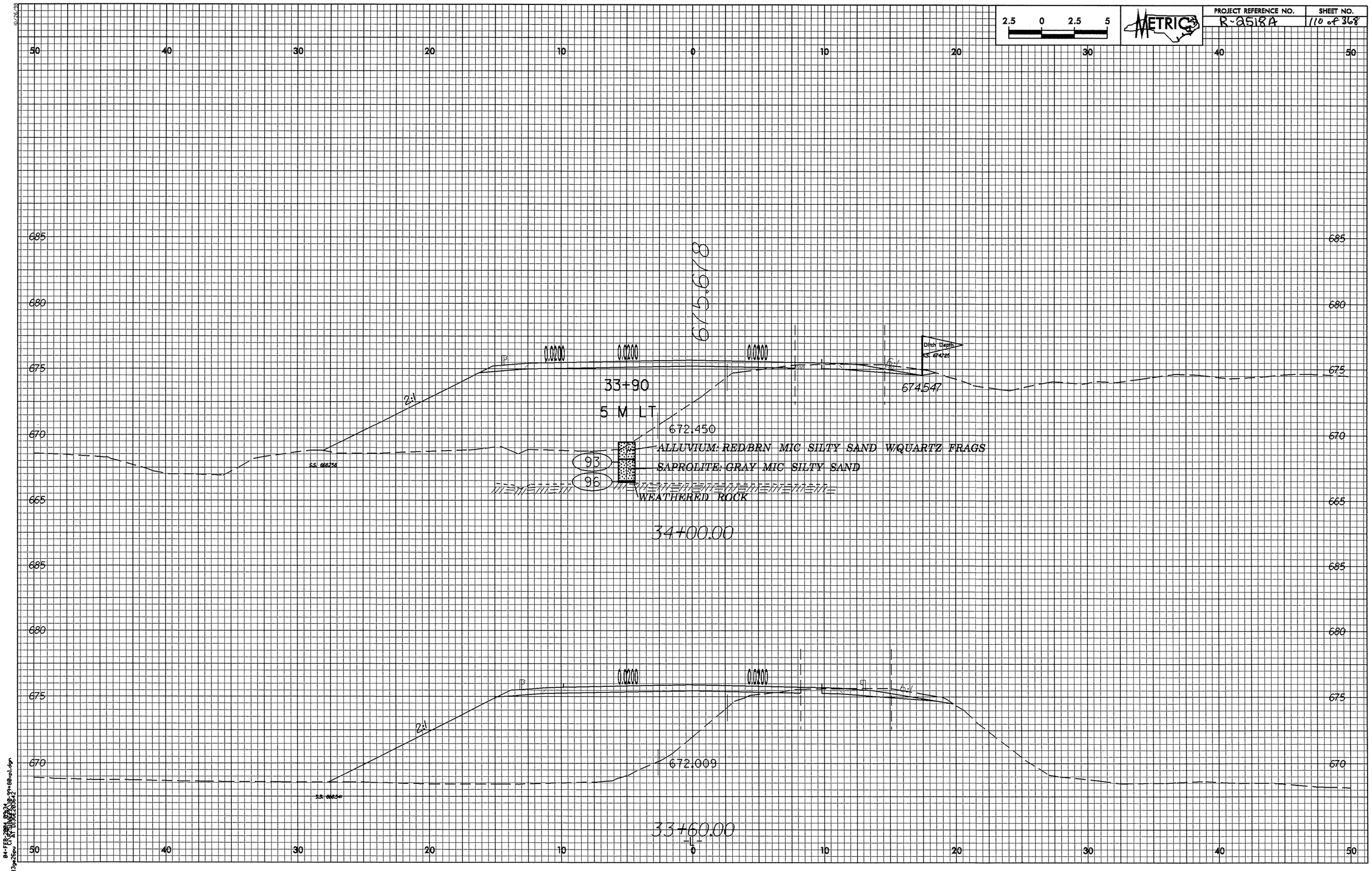
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
107 of 368
50 40 30 20 10 0 10 20 30 40 50
695
690
685
680
675
2:1
6:1
4.8:1
0.0200
681.582
674.583
32+60.00
32+40
23 M LT
7
4
5
9
8
16
18
26
35
34
SAPROLITE: ORANGE/LIGHT BRN SLI MIC. SILTY SAND
680.876
SAPROLITE: LIGHT BRN/ORANGE SLI MIC. SILTY SAND W/FEW QUARTZ FRAGS
674.359
32+40.00
-L-



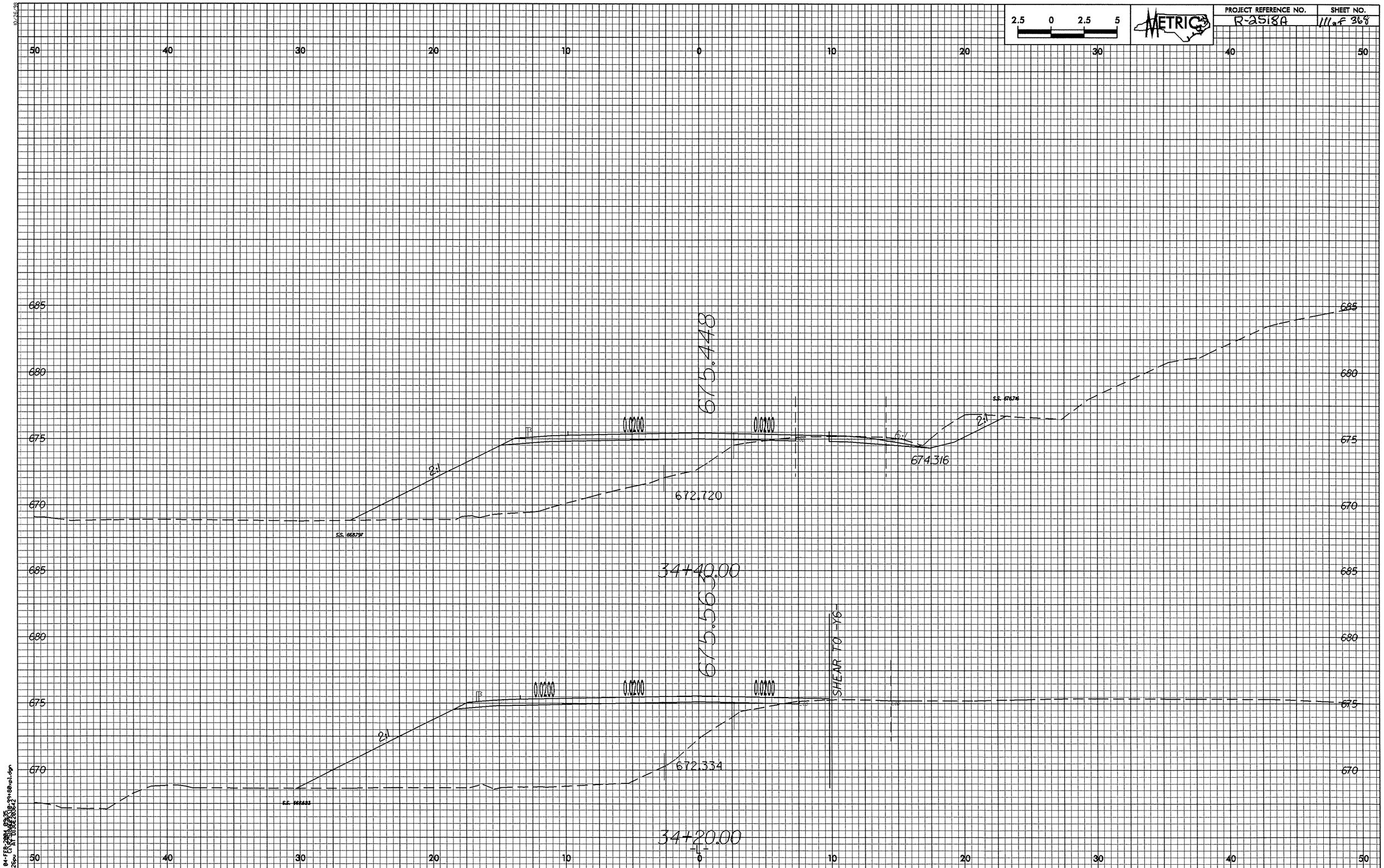
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
108 of 368
50 40 30 20 10 0 10 20 30 40 50
685
680
675
670
690
675.977
0.0200
0.0200
2:1
4.6:1
674.766
672.380
33+00.00
675.877
0.0200
0.0200
0.0200
6:1
4.7:1
674.745
674.745
32+80.00
-L-



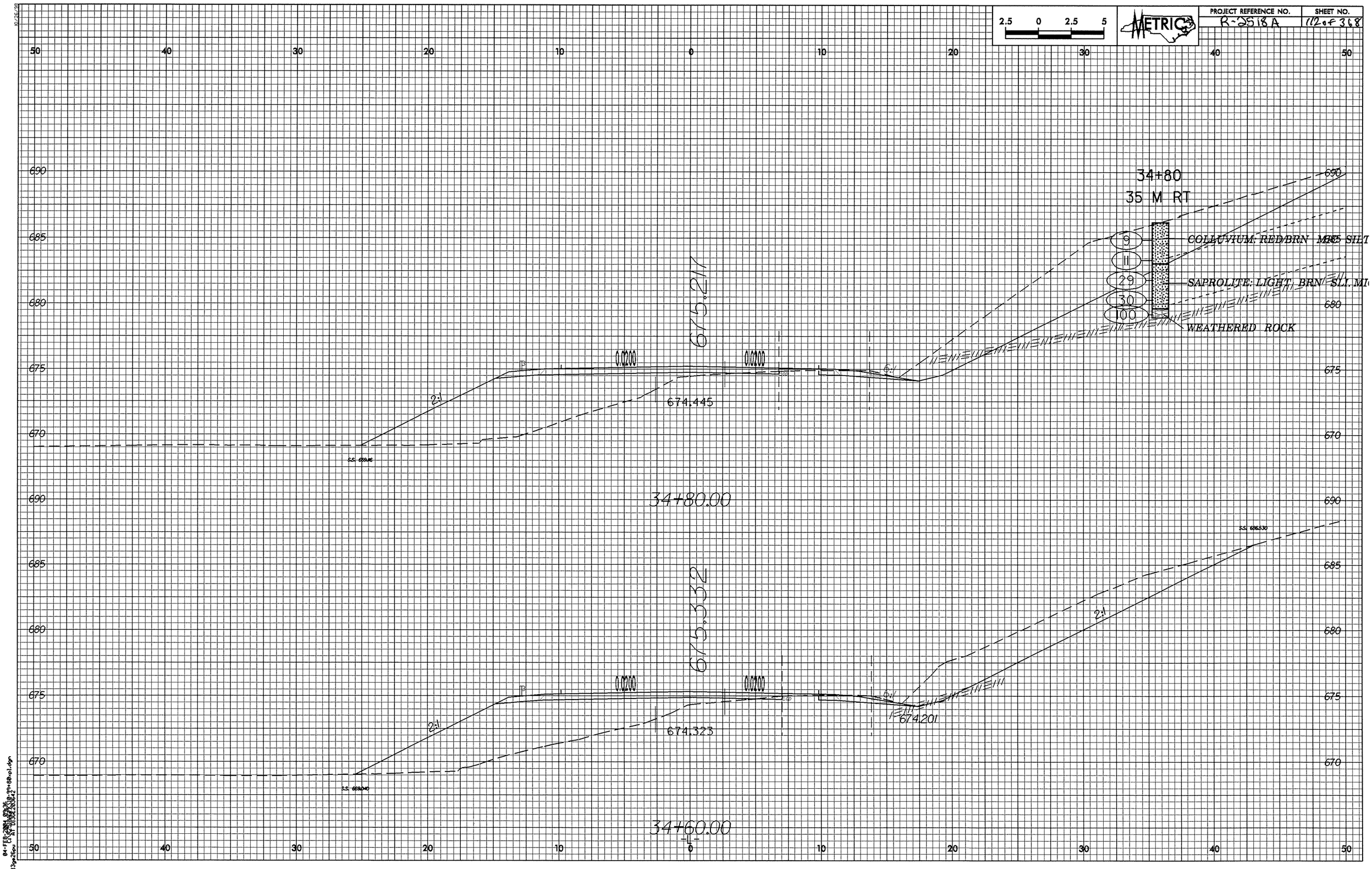
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518 A
SHEET NO.
109 of 368
50 40 30 20 10 0 10 20 30 40 50
685
680
675
670
0.0200
0.0200
2:1
6:1
671.847
33+40.00
0.0200
0.0200
2:1
6:1
671.787
33+20.00
-L-



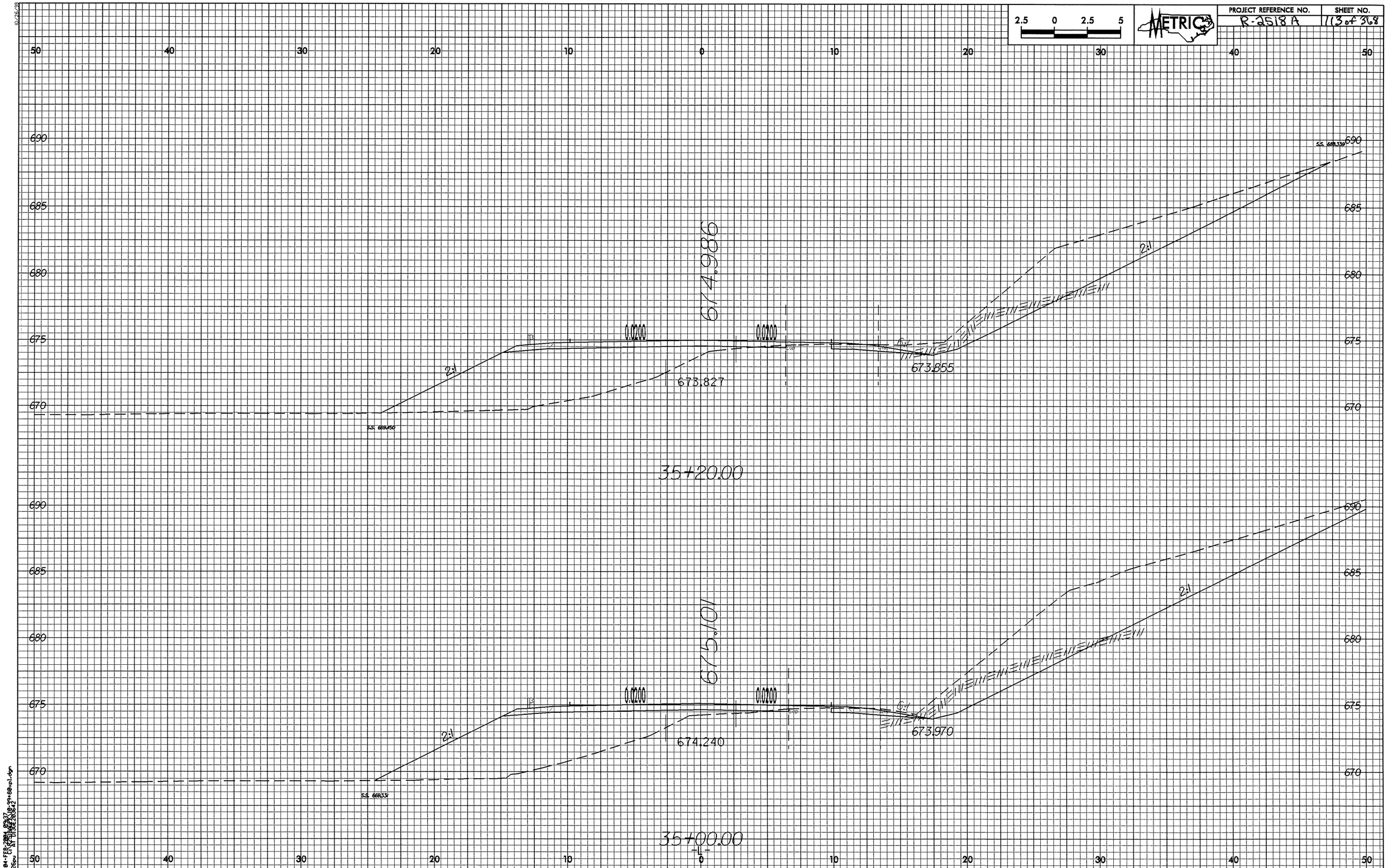
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
110 of 368
675.678
0.0200
0.0200
0.0200
Ditch Depth
674.547
33+90
5 M LT
2:1
672.450
ALLUVIUM: RED/BRN MIC SILTY SAND W/QUARTZ FRAGS
SAPROLITE: GRAY MIC SILTY SAND
93
96
WEATHERED ROCK
34+00.00
0.0200
0.0200
2:1
672.009
33+60.00
-L-



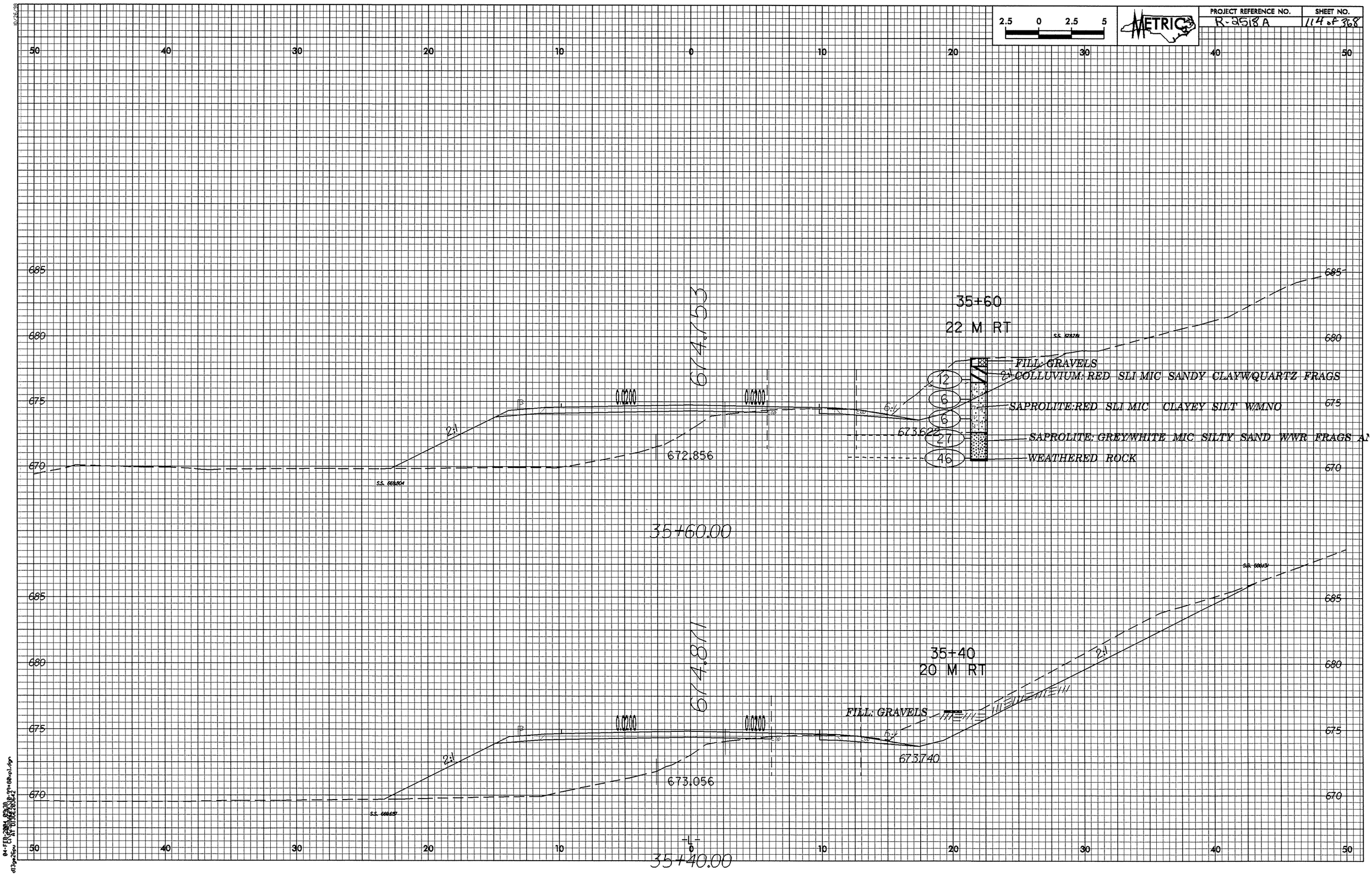
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
111 of 368
50 40 30 20 10 0 10 20 30 40 50
685
680
675
670
675.448
0.0200
0.0200
2:1
6:1
2:1
674.316
672.720
34+40.00
675.563
SHEAR TO -Y6-
0.0200
0.0200
0.0200
2:1
672.334
34+20.00
-L-

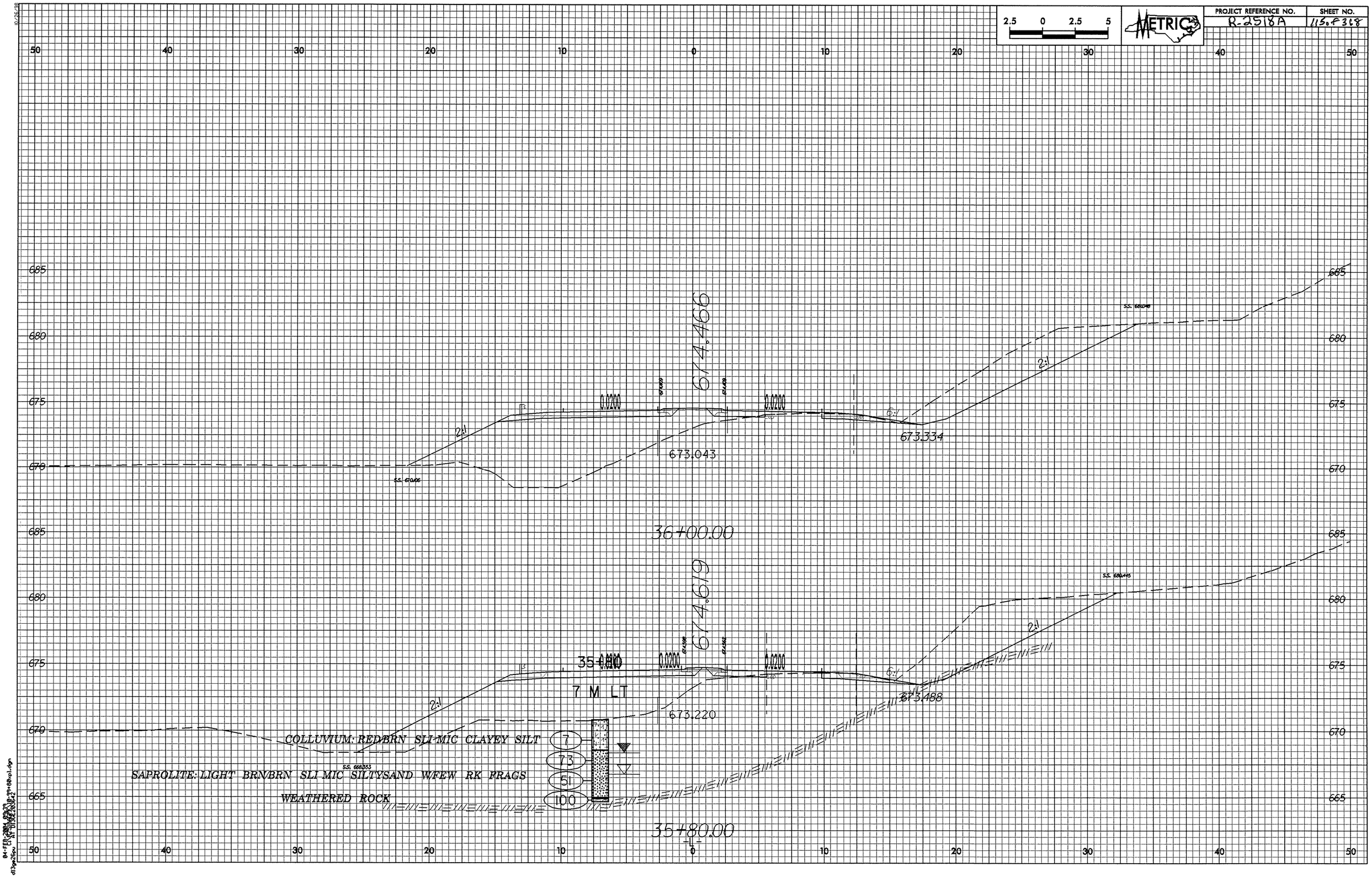


2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
112 of 368
34+80
35 M RT
9
11
29
30
100
COLLUVIUM: RED/BRN MIC SILT
SAPROLITE: LIGHT BRN SLI. MI
WEATHERED ROCK
675.211
0.0200
0.0200
674.445
2:1
6:1
34+80.00
675.332
0.0200
0.0200
674.323
674.201
2:1
6:1
34+60.00
-L-

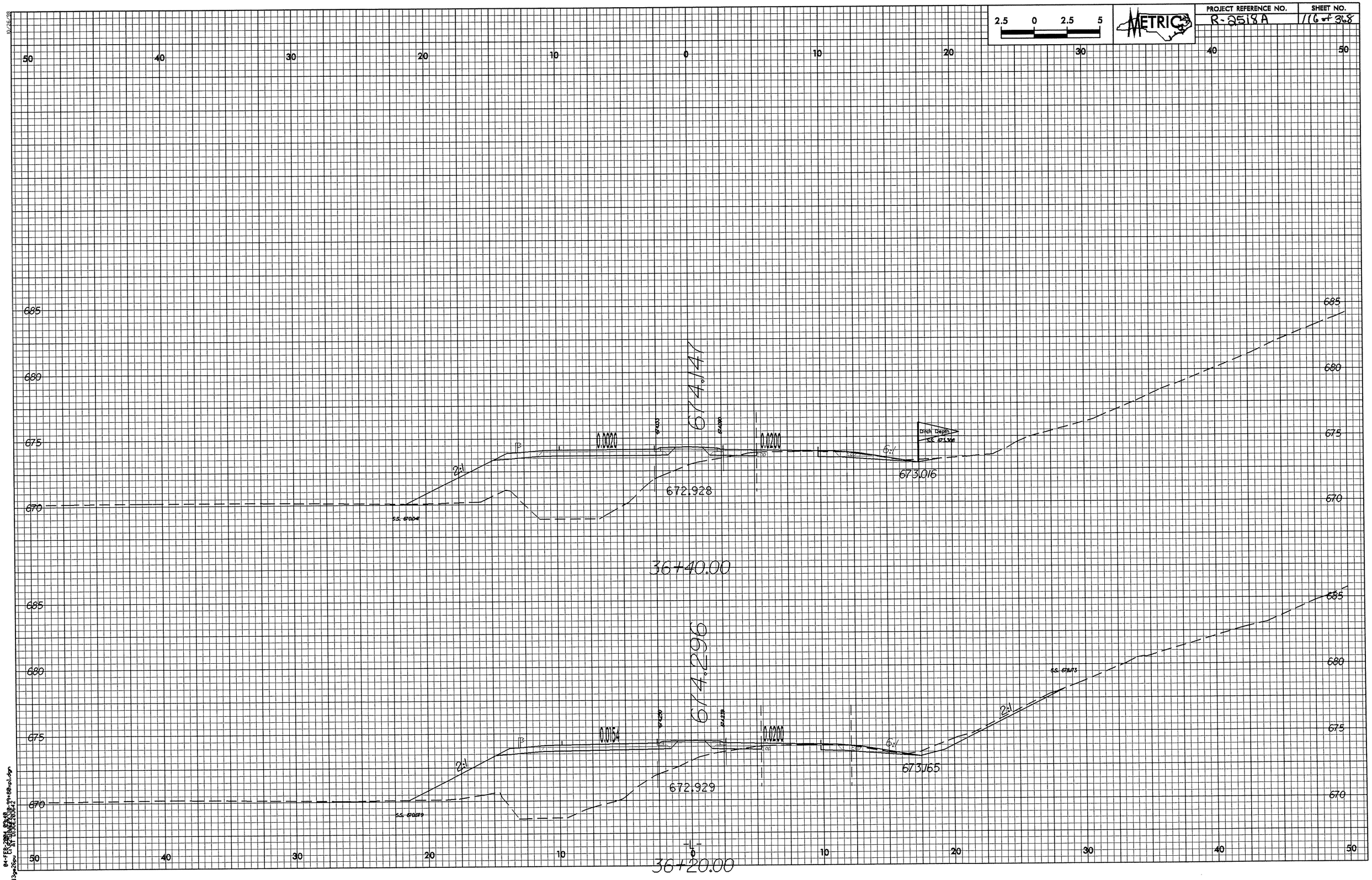


2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518 A
SHEET NO.
113 of 368
50 40 30 20 10 0 10 20 30 40 50
690
685
680
675
670
674.986
0.0200
0.0200
2:1
2:1
673.827
673.855
S.S. 669.450
35+20.00
675.101
0.0200
0.0200
2:1
2:1
674.240
673.970
S.S. 669.331
35+00.00
-L-

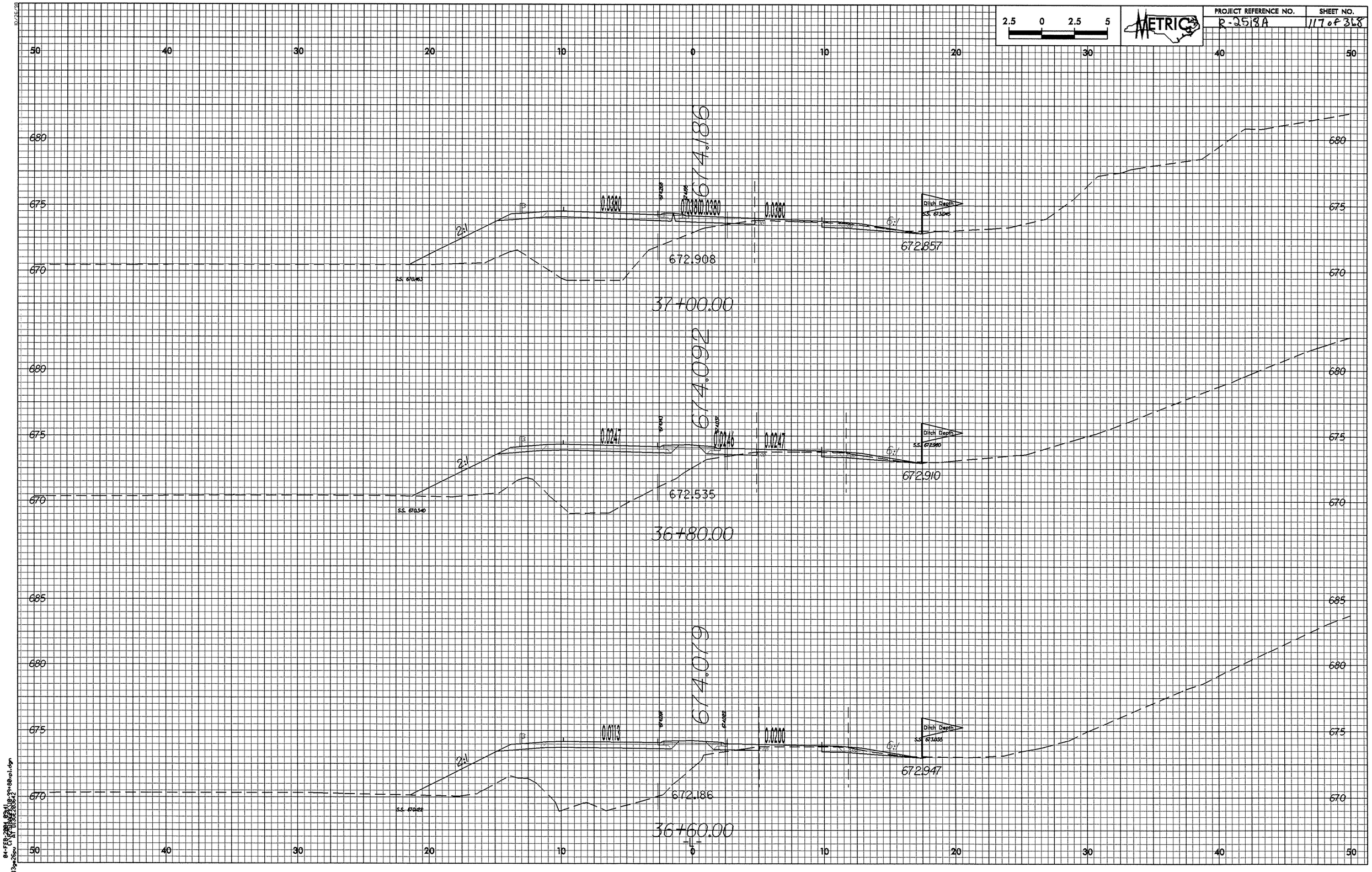

PROJECT REFERENCE NO.
R-2518A
SHEET NO.
114 of 368
METRIC
2.5 0 2.5 5
35+60
22 M RT
674.753
FILL: GRAVELS
COLLUVIUM: RED SLI MIC SANDY CLAYW/QUARTZ FRAGS
SAPROLITE:RED SLI MIC CLAYEY SILT W/MNO
SAPROLITE: GREY/WHITE MIC SILTY SAND W/WR FRAGS
WEATHERED ROCK
12
6
6
27
46
673.622
672.856
35+60.00
35+40
20 M RT
674.871
FILL: GRAVELS
673.740
673.056
35+40.00



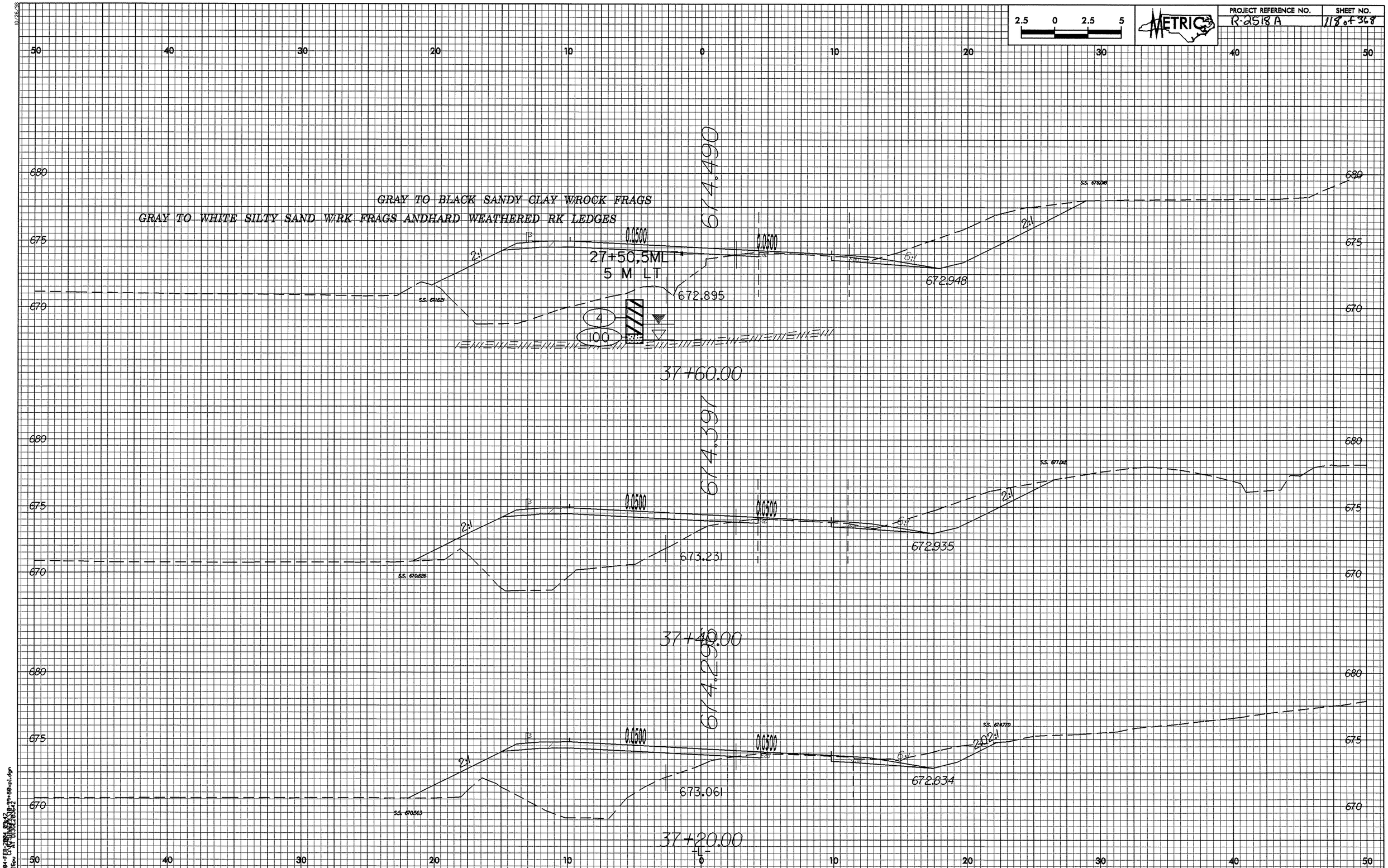
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
115 of 368
50 40 30 20 10 0 10 20 30 40 50
685
680
675
670
665
674.466
0.0200
0.0200
2:1
6:1
673.043
673.334
36+00.00
674.619
0.0200
0.0200
2:1
6:1
7 M LT
673.220
673.488
COLLUVIUM: RED/BRN SLI MIC CLAYEY SILT
SAPROLITE: LIGHT BRN/BRN SLI MIC SILTYSAND W/FEW RK FRAGS
WEATHERED ROCK
7
73
51
100
35+80.00
-L-



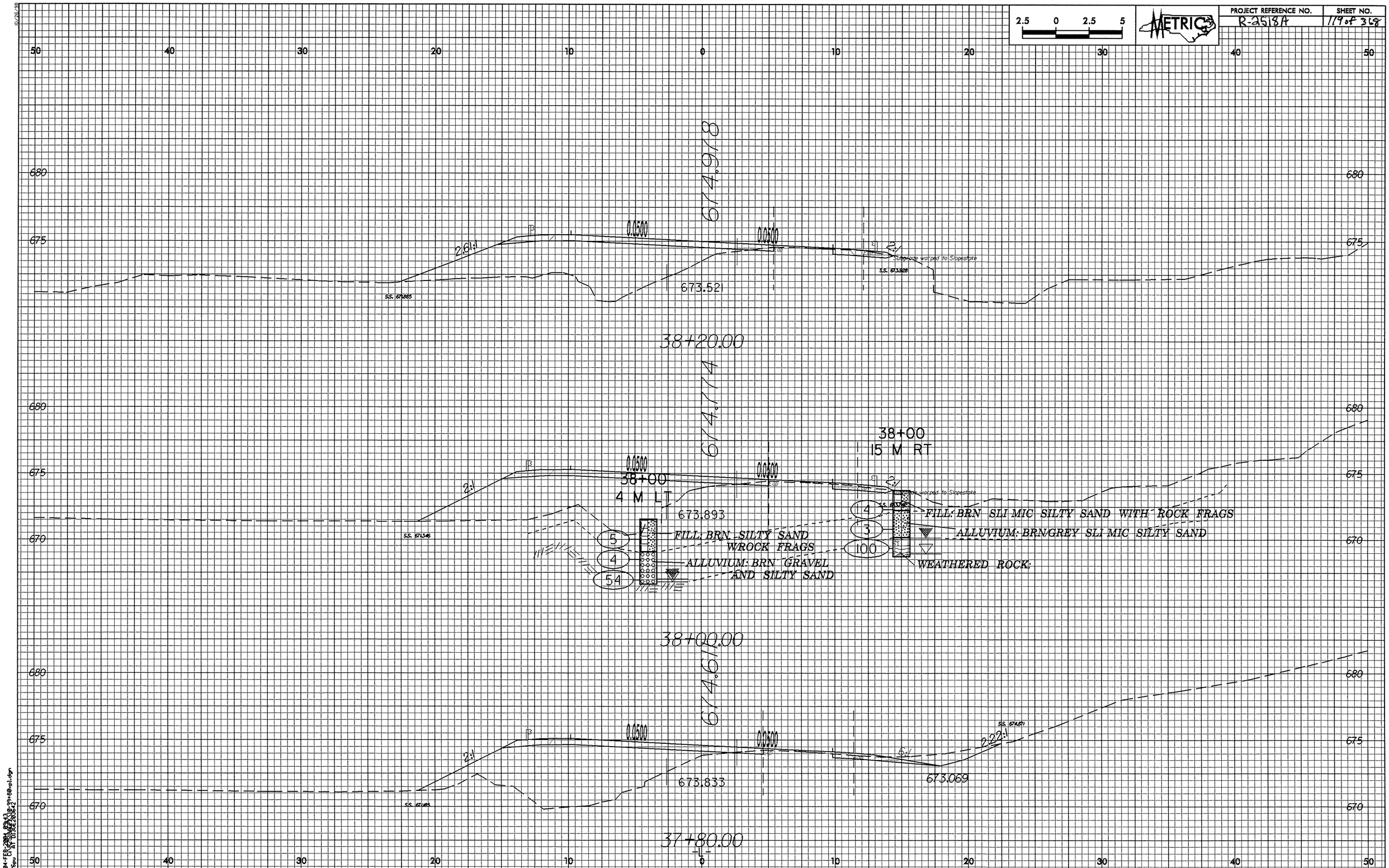
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
116 of 368
50 40 30 20 10 0 10 20 30 40 50
685
680
675
670
674.147
0.0020
0.0200
2:1
6:1
Ditch Depth
S.S. 673.306
673.016
672.928
S.S. 670.041
36+40.00
674.296
0.0154
0.0200
2:1
6:1
2:1
673.165
672.929
S.S. 670.079
S.S. 678.173
36+20.00



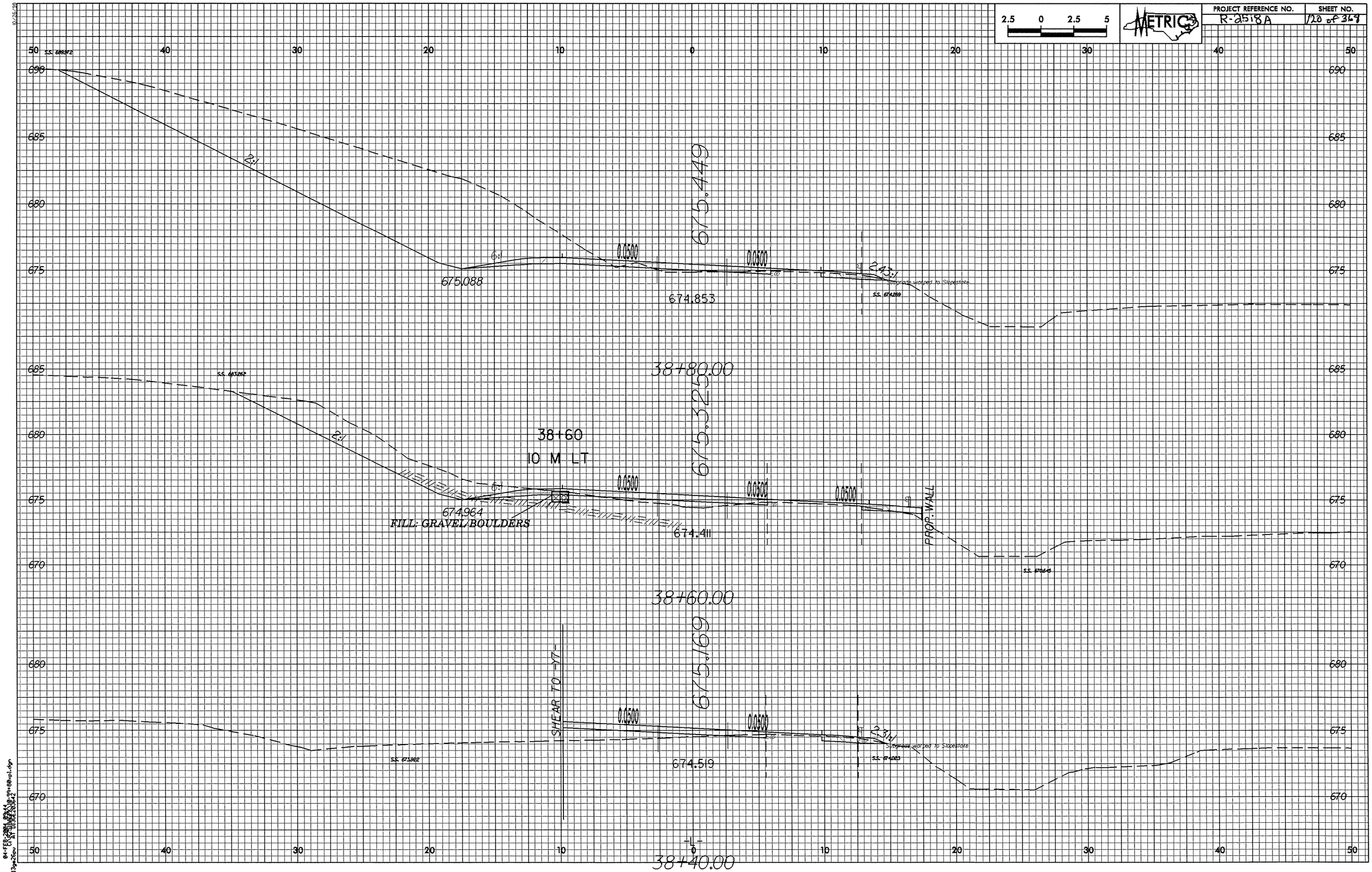
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
117 of 368
674.186
0.0380
0.0380
0.0380
0.0380
2:1
6:1
Ditch Depth
S.S. 673.045
672.908
672.857
S.S. 670.463
37+00.00
674.092
0.0247
0.0246
0.0247
2:1
6:1
Ditch Depth
S.S. 672.980
672.535
672.910
S.S. 670.340
36+80.00
674.079
0.0113
0.0200
2:1
6:1
Ditch Depth
S.S. 673.035
672.186
672.947
S.S. 670.122
36+60.00
-L-



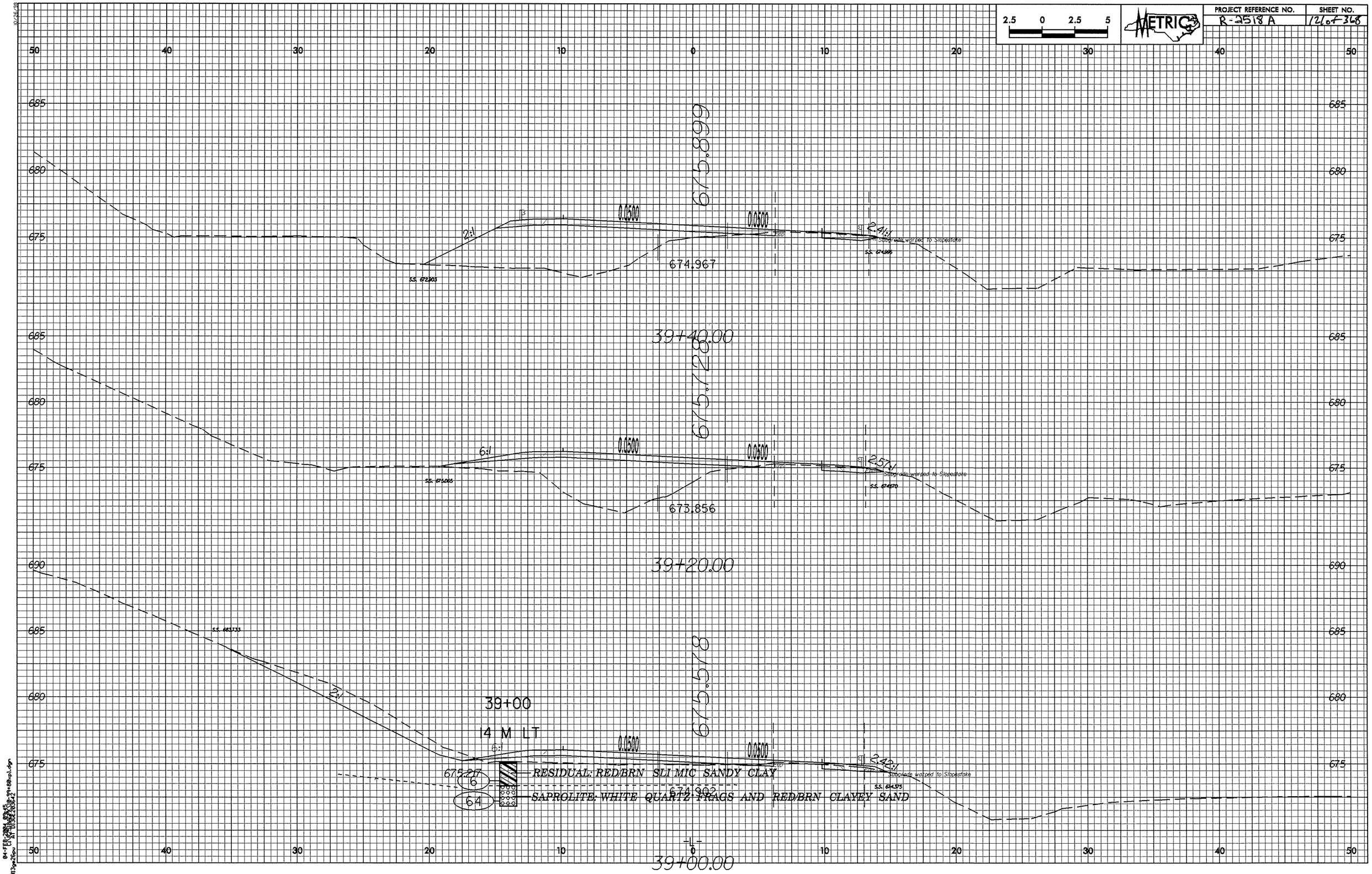
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518 A
SHEET NO.
118 of 368
GRAY TO BLACK SANDY CLAY W/ROCK FRAGS
GRAY TO WHITE SILTY SAND W/RK FRAGS ANDHARD WEATHERED RK LEDGES
674.490
0.0500
0.0500
2:1
2:1
6:1
27+50,5MLT
5 M LT
672.895
672.948
4
100
37+60.00
674.397
0.0500
0.0500
2:1
2:1
6:1
673.231
672.935
37+40.00
674.290
0.0500
0.0500
2:1
2:1
6:1
673.061
672.834
37+20.00
680
675
670
50
40
30
20
10
0
10
20
30
40
50



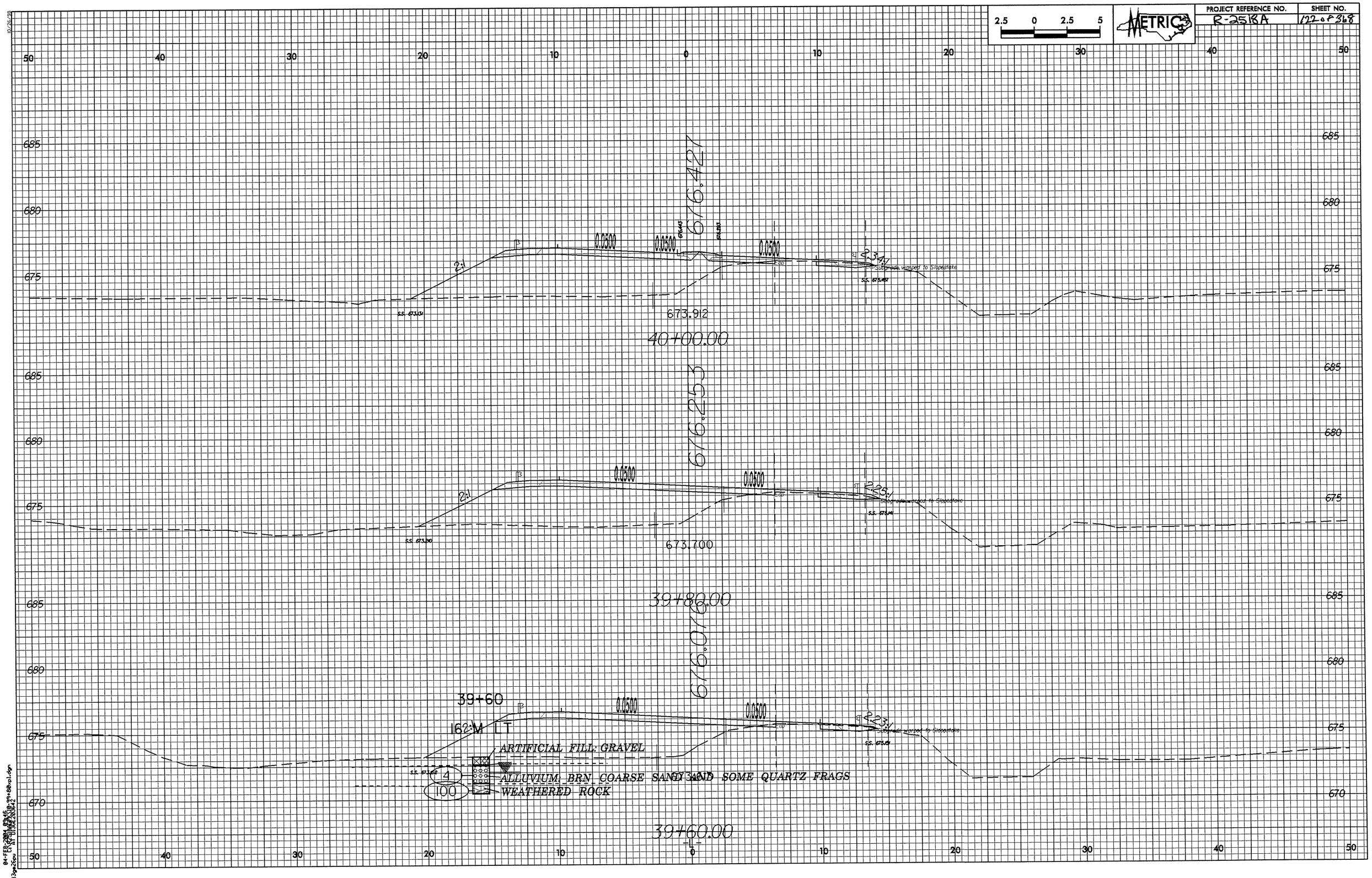
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
119 of 368
50 40 30 20 10 0 10 20 30 40 50
680
675
670
674.918
0.0500
0.0500
2.61:1
2:1
Subgrade warped to Slopestake
673.521
38+20.00
674.114
38+00
15 M RT
38+00
4 M LT
673.893
FILL: BRN SILTY SAND W/ROCK FRAGS
ALLUVIUM: BRN GRAVEL AND SILTY SAND
FILL: BRN SLI MIC SILTY SAND WITH ROCK FRAGS
ALLUVIUM: BRN/GREY SLI MIC SILTY SAND
WEATHERED ROCK:
5
4
54
4
3
100
38+00.00
674.611
673.833
673.069
2.22:1
37+80.00



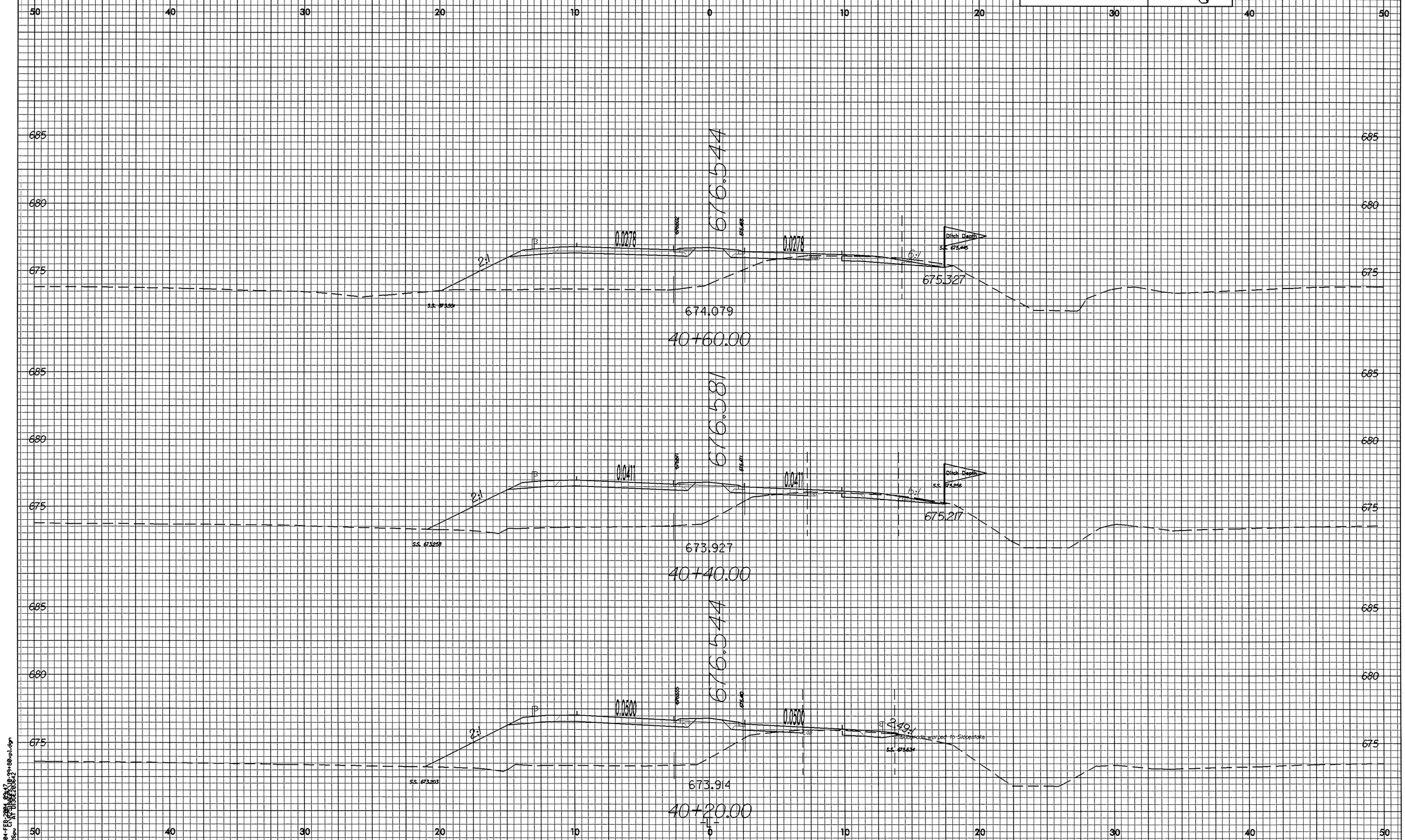
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
120 of 368
50 40 30 20 10 0 10 20 30 40 50
690
685
680
675
670
2:1
6:1
0.0500
675.449
675.088
674.853
2.43:1
Subgrade warped to Slopestake
38+80.00
675.325
38+60
10 M LT
674.964
FILL: GRAVEL/BOULDERS
674.411
PROP. WALL
38+60.00
675.169
SHEAR TO -Y7-
674.519
2.31:1
38+40.00
-L-



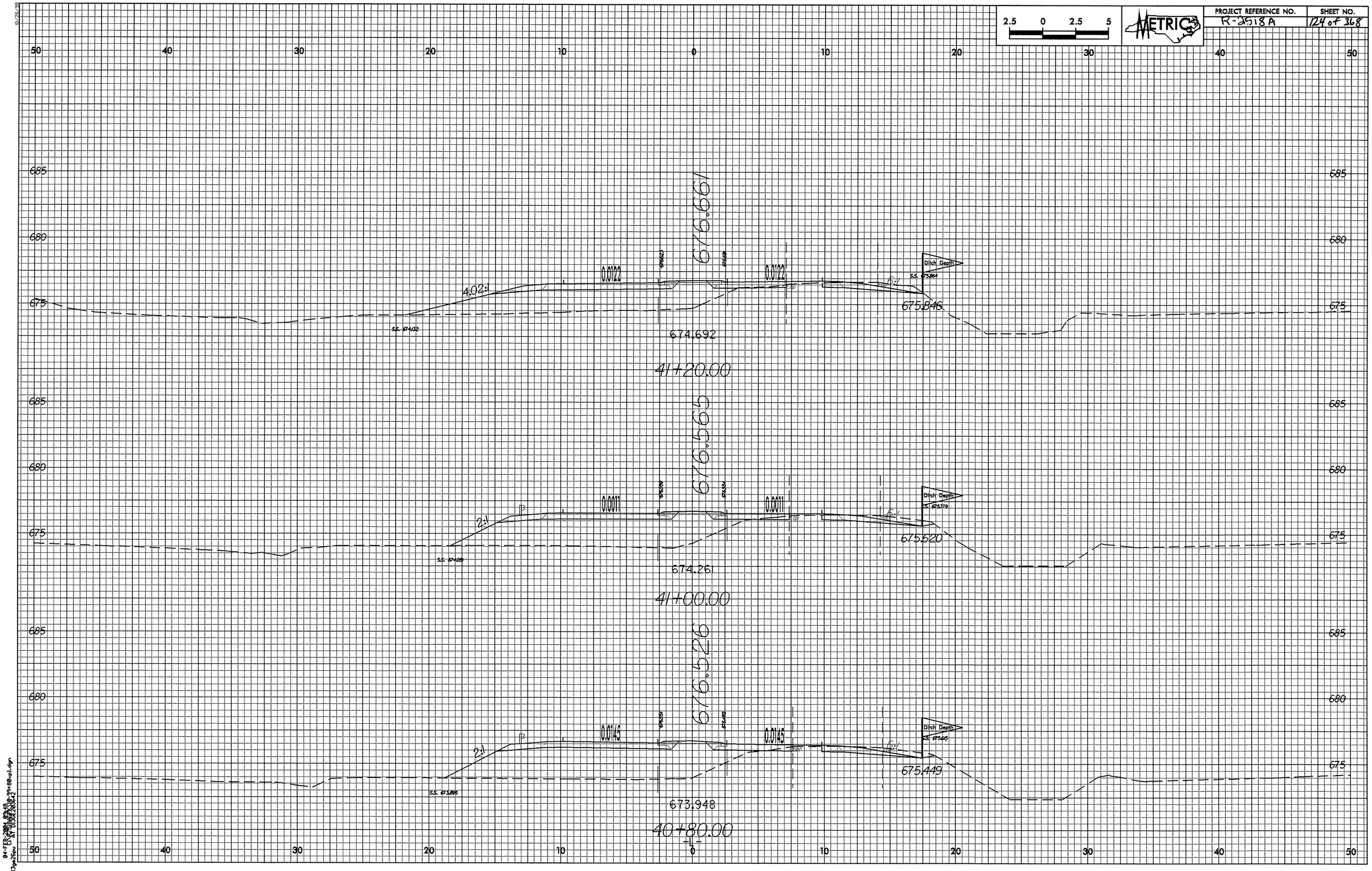
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518 A
SHEET NO.
12 of 368
50 40 30 20 10 0 10 20 30 40 50
685
680
675
690
675.899
0.0500
0.0500
2:1
2.41:1
Subgrade warped to Slopestake
674.967
39+40.00
675.728
6:1
2.57:1
673.856
39+20.00
675.578
2:1
39+00
14 M LT
6:1
2.42:1
675.217
6
64
RESIDUAL: RED/BRN SLI MIC SANDY CLAY
SAPROLITE: WHITE QUARTZ FRAGS AND RED/BRN CLAYEY SAND
674.902
-L-
39+00.00



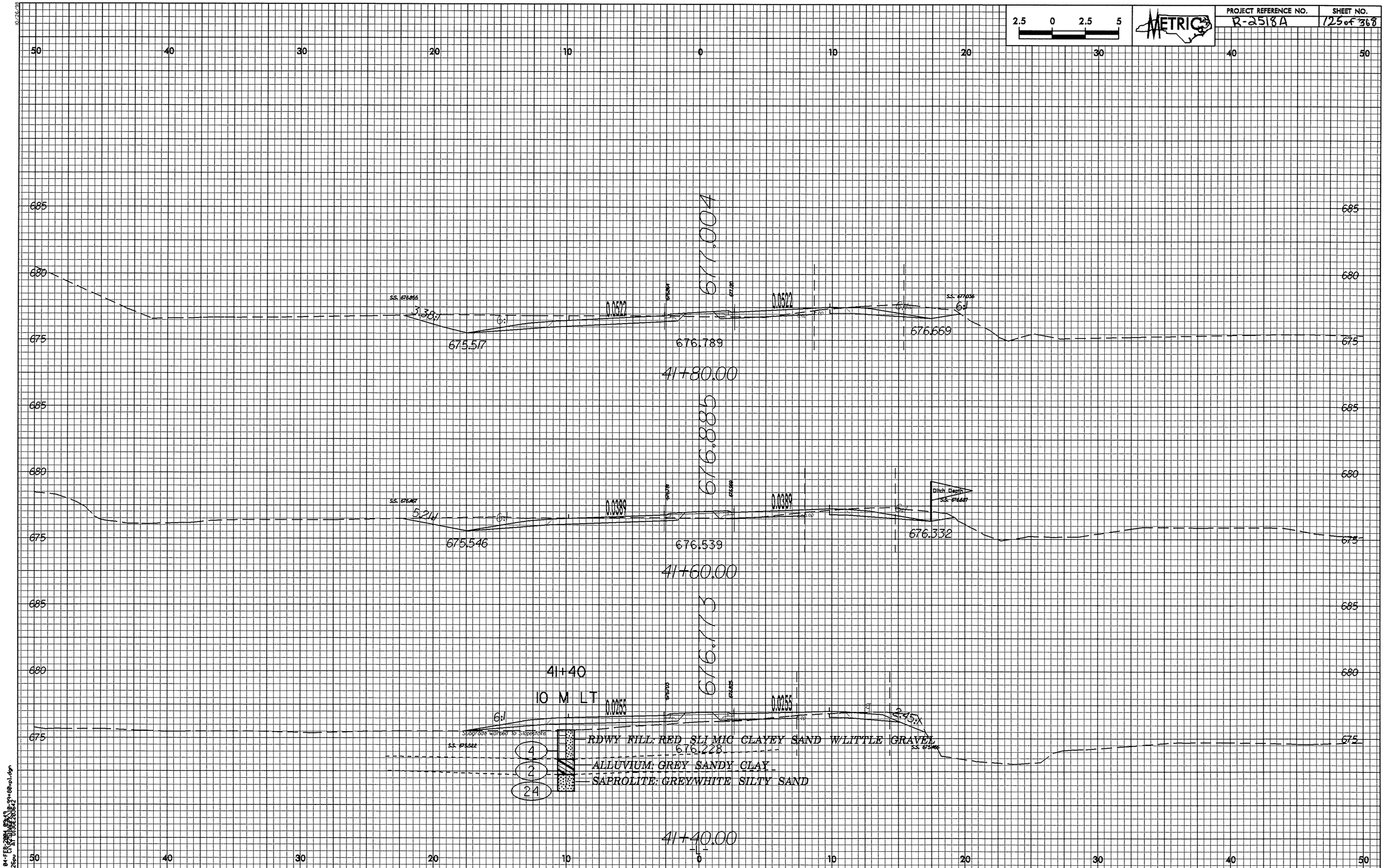
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
122 of 368
50 40 30 20 10 0 10 20 30 40 50
685
680
675
670
676.421
0.0500
0.0500
0.0500
2:1
2.34:1
Subgrade warped to Slopestake
673.912
40+00.00
676.253
0.0500
0.0500
2:1
2.25:1
Subgrade warped to Slopestake
673.700
39+80.00
676.076
39+60
162:M LT
0.0500
0.0500
2.23:1
Subgrade warped to Slopestake
ARTIFICIAL FILL: GRAVEL
4
100
ALLUVIUM: BRN COARSE SAND AND SOME QUARTZ FRAGS
WEATHERED ROCK
39+60.00



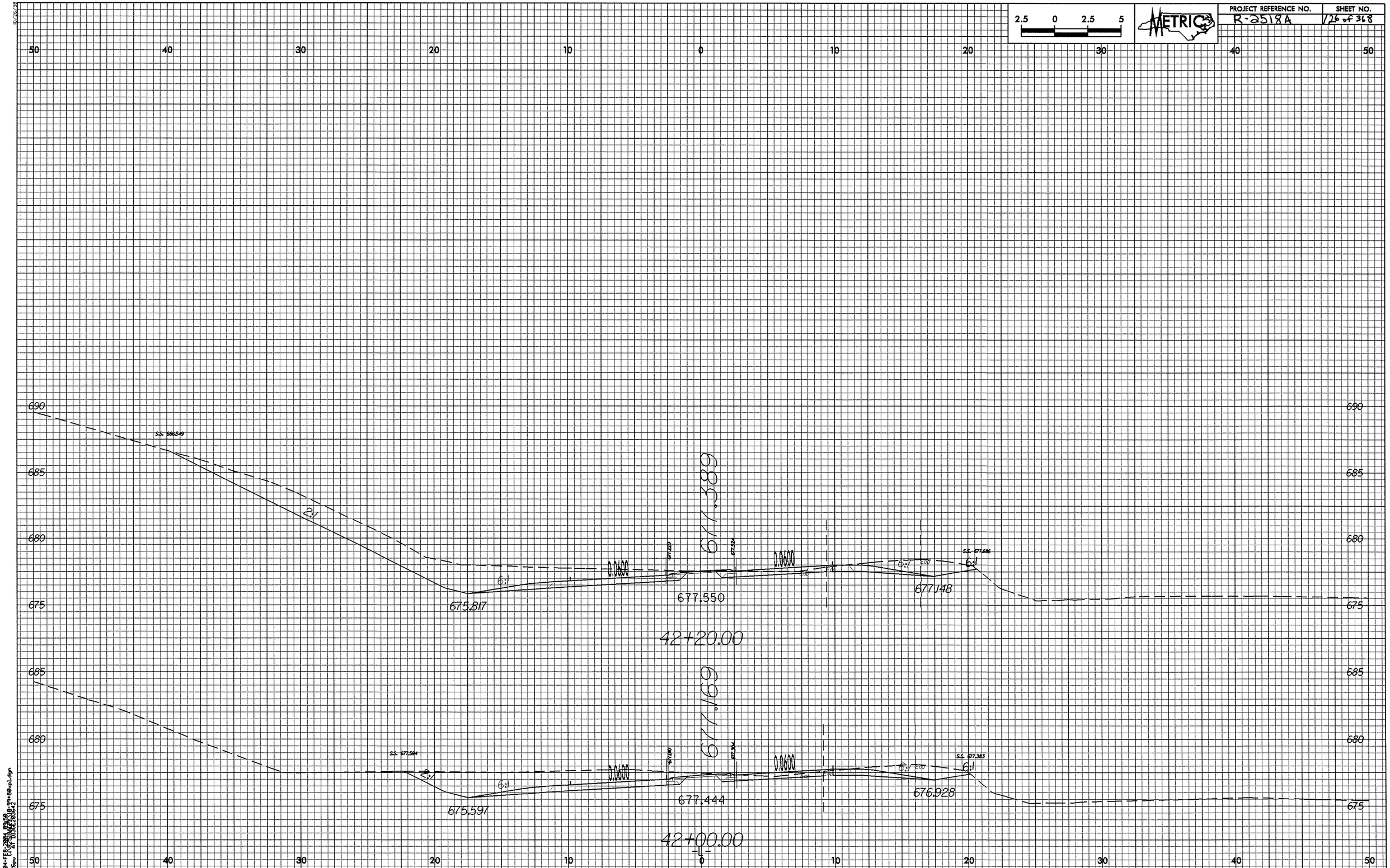
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
123 of 368
50 40 30 20 10 0 10 20 30 40 50
685
680
675
676.544
0.0278
0.0278
2:1
6:1
Ditch Depth
675.327
674.079
40+60.00
676.581
0.0411
0.0411
2:1
6:1
Ditch Depth
675.217
673.927
40+40.00
676.544
0.0500
0.0500
2:1
2.49:1
Subgrade warped to Slopestake
673.914
40+20.00



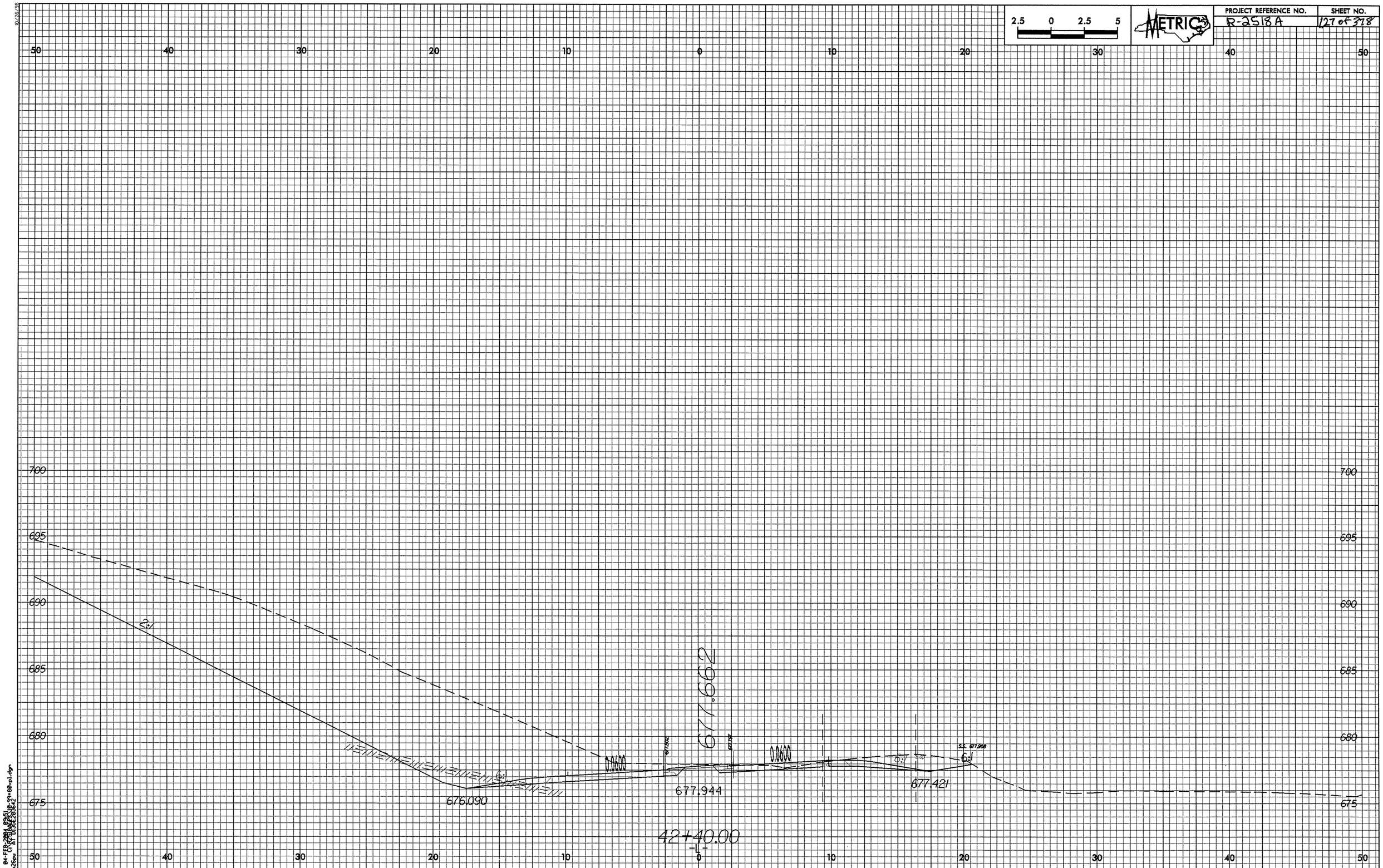
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
124 of 368
50 40 30 20 10 0 10 20 30 40 50
685
680
675
676.661
0.0122
0.0122
4.02:1
6:1
Ditch Depth
S.S. 675.864
675.846
S.S. 674.132
674.692
41+20.00
676.565
0.0011
0.0011
2:1
6:1
Ditch Depth
S.S. 675.779
675.620
S.S. 674.051
674.261
41+00.00
676.526
0.0145
0.0145
2:1
6:1
Ditch Depth
S.S. 675.615
675.449
S.S. 673.895
673.948
40+80.00
-L-



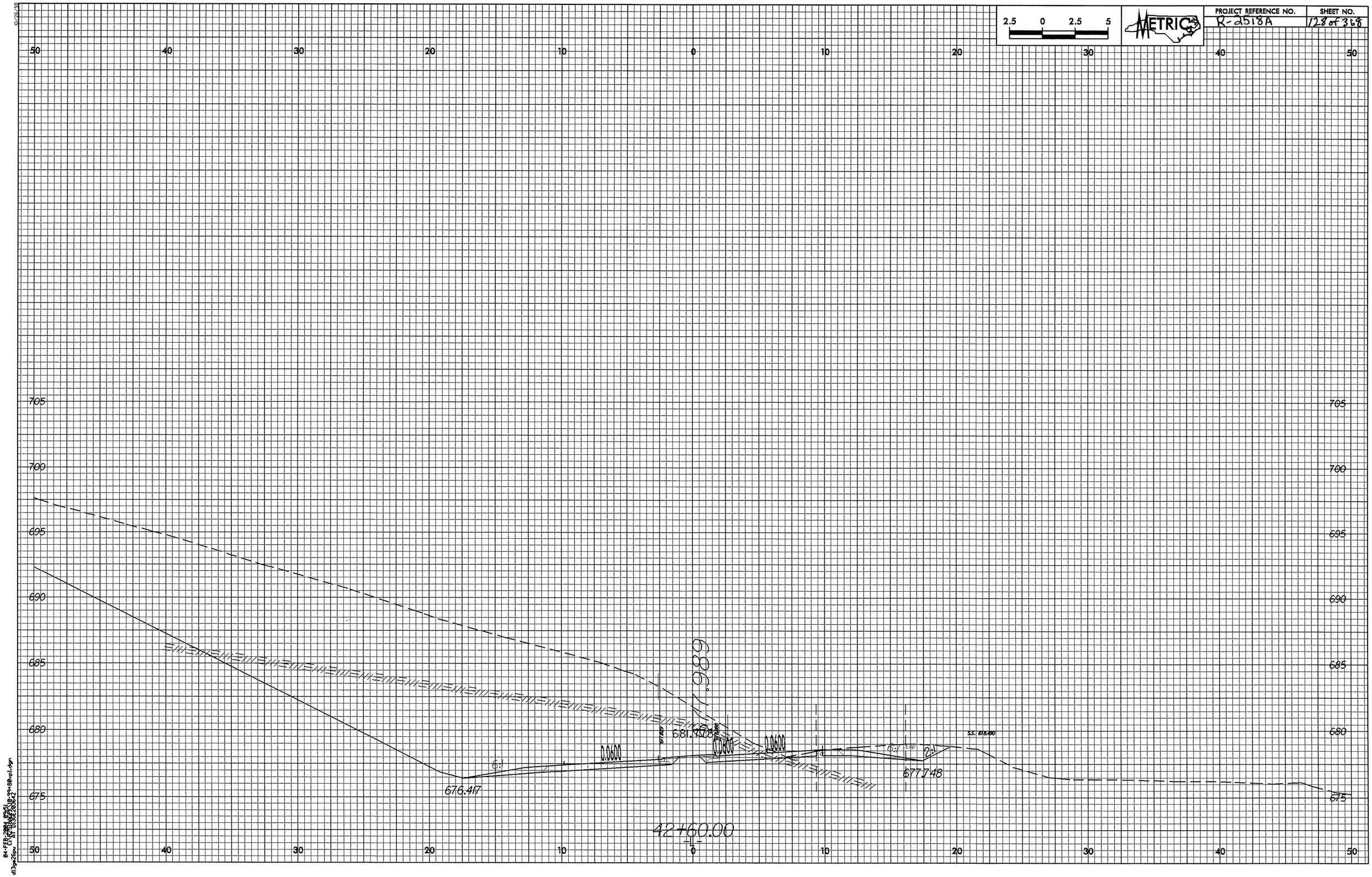
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
125 of 368
50 40 30 20 10 0 10 20 30 40 50
685
680
675
677.004
676.885
676.773
3.38:1
6:1
0.0522
675.517
676.789
676.669
41+80.00
5.21:1
0.0389
675.546
676.539
676.332
Ditch Depth
41+60.00
41+40
10 M LT
0.0255
2.45:1
Subgrade warped to slopestake
RDWY FILL: RED SLI MIC CLAYEY SAND W/LITTLE GRAVEL
676.228
ALLUVIUM: GREY SANDY CLAY
SAPROLITE: GREY/WHITE SILTY SAND
4
2
24
41+40.00
-L-



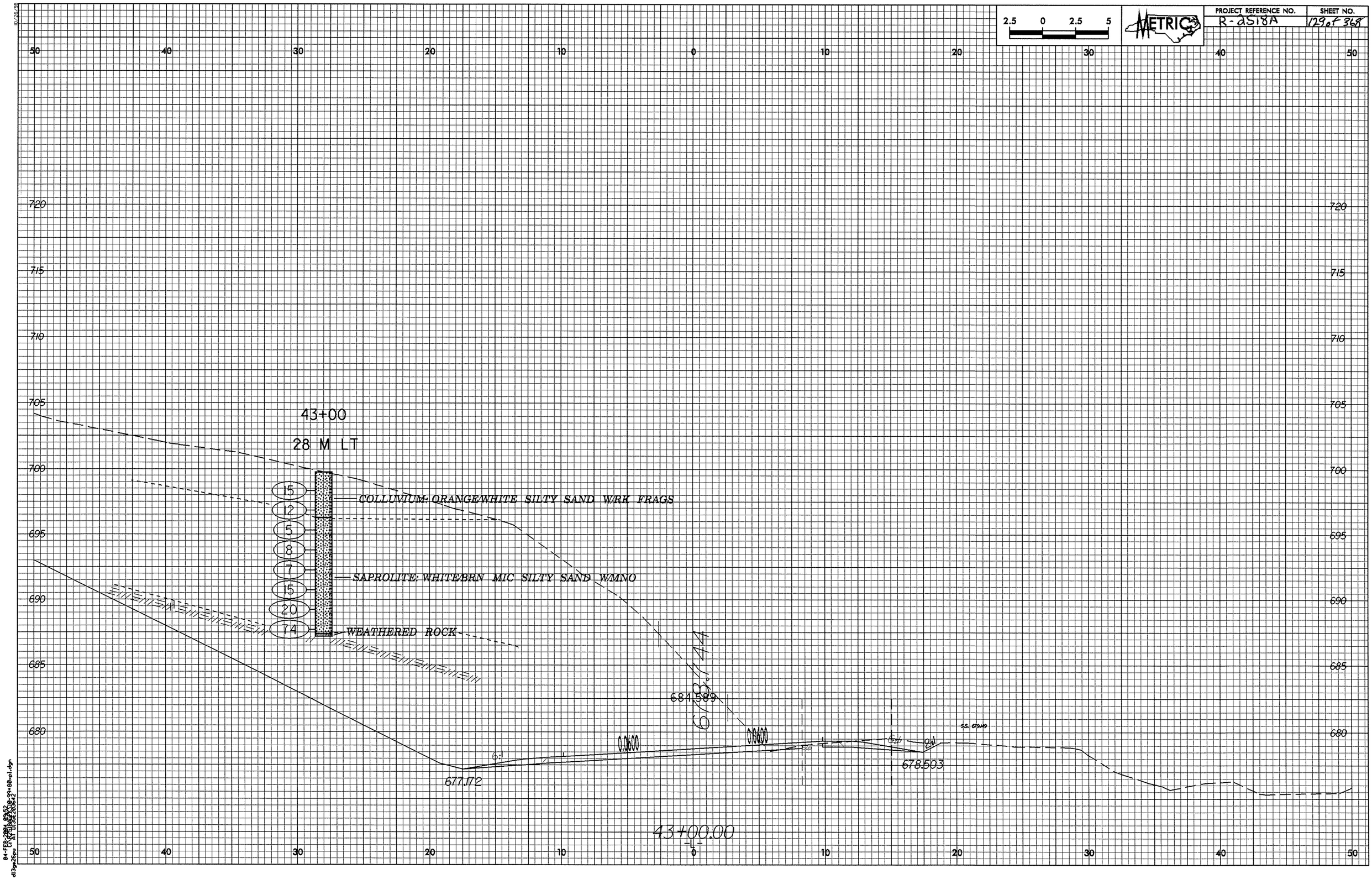
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
126 of 368
50 40 30 20 10 0 10 20 30 40 50
690
685
680
675
S.S. 686.549
2:1
6:1
0.0600
677.389
677.550
675.817
677.148
S.S. 677.686
42+20.00
S.S. 677.594
677.169
677.444
675.597
676.928
S.S. 677.383
42+00.00
-L-



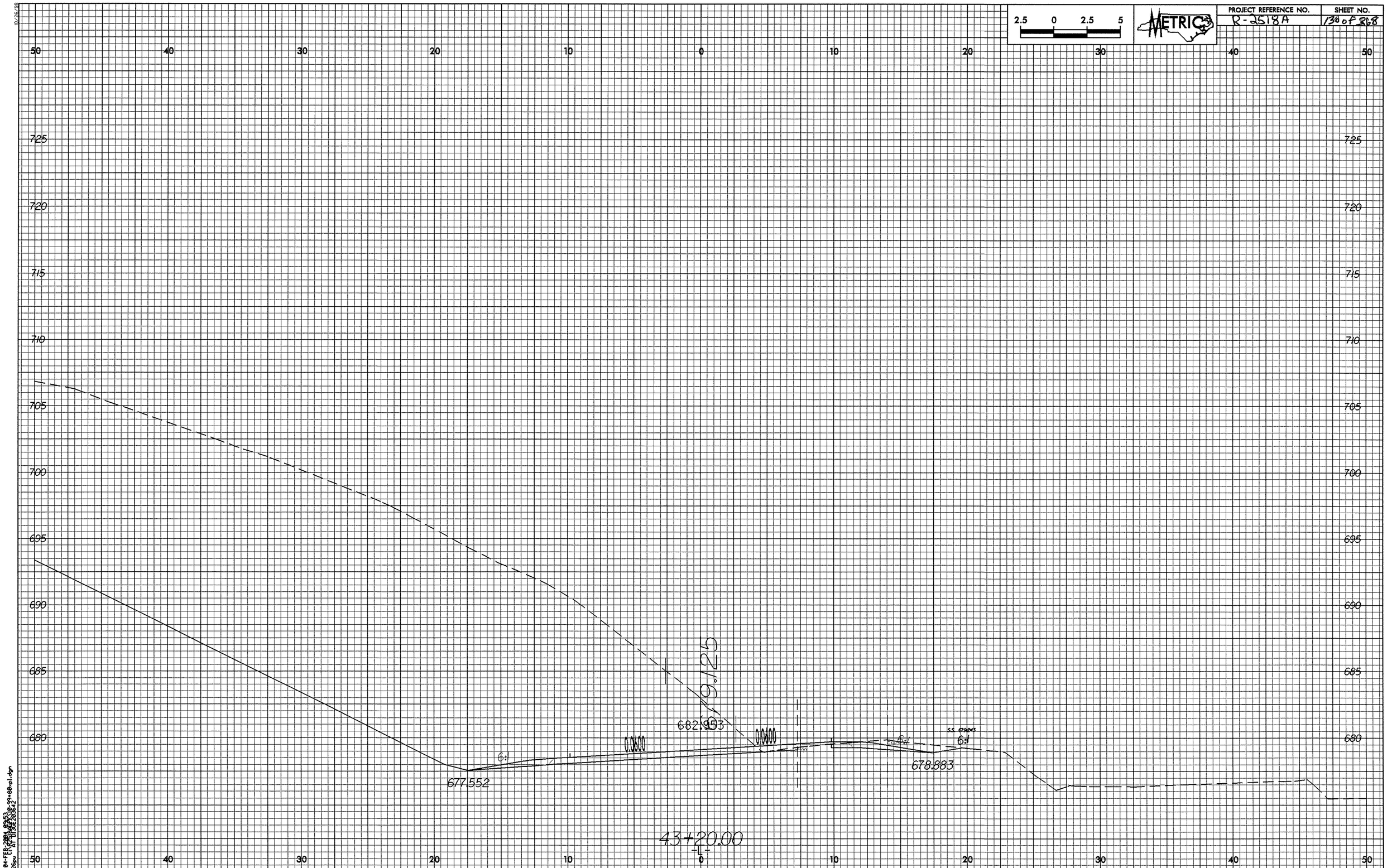
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
127 of 378
50 40 30 20 10 0 10 20 30 40 50
700
695
690
685
680
675
2:1
677.662
0.0600
0.0600
6:1
6:1
6:1
676.090
677.944
677.421
42+40.00
-L-



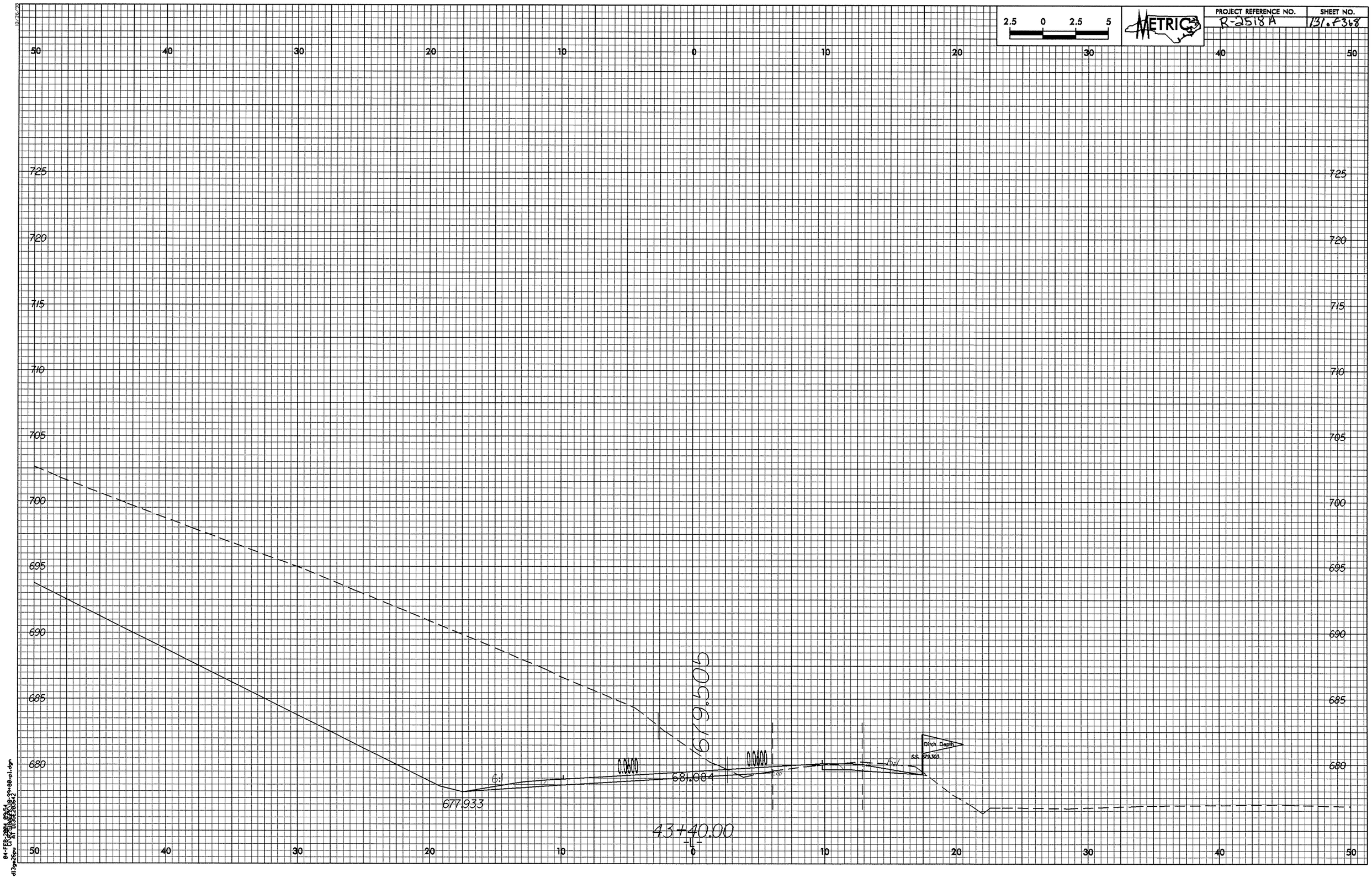
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
128 of 368
50 40 30 20 10 0 10 20 30 40 50
705
700
695
690
685
680
675
686.17
681.773
0.0600
0.0600
0.0600
6:1
6:1
2:1
676.417
677.748
42+60.00



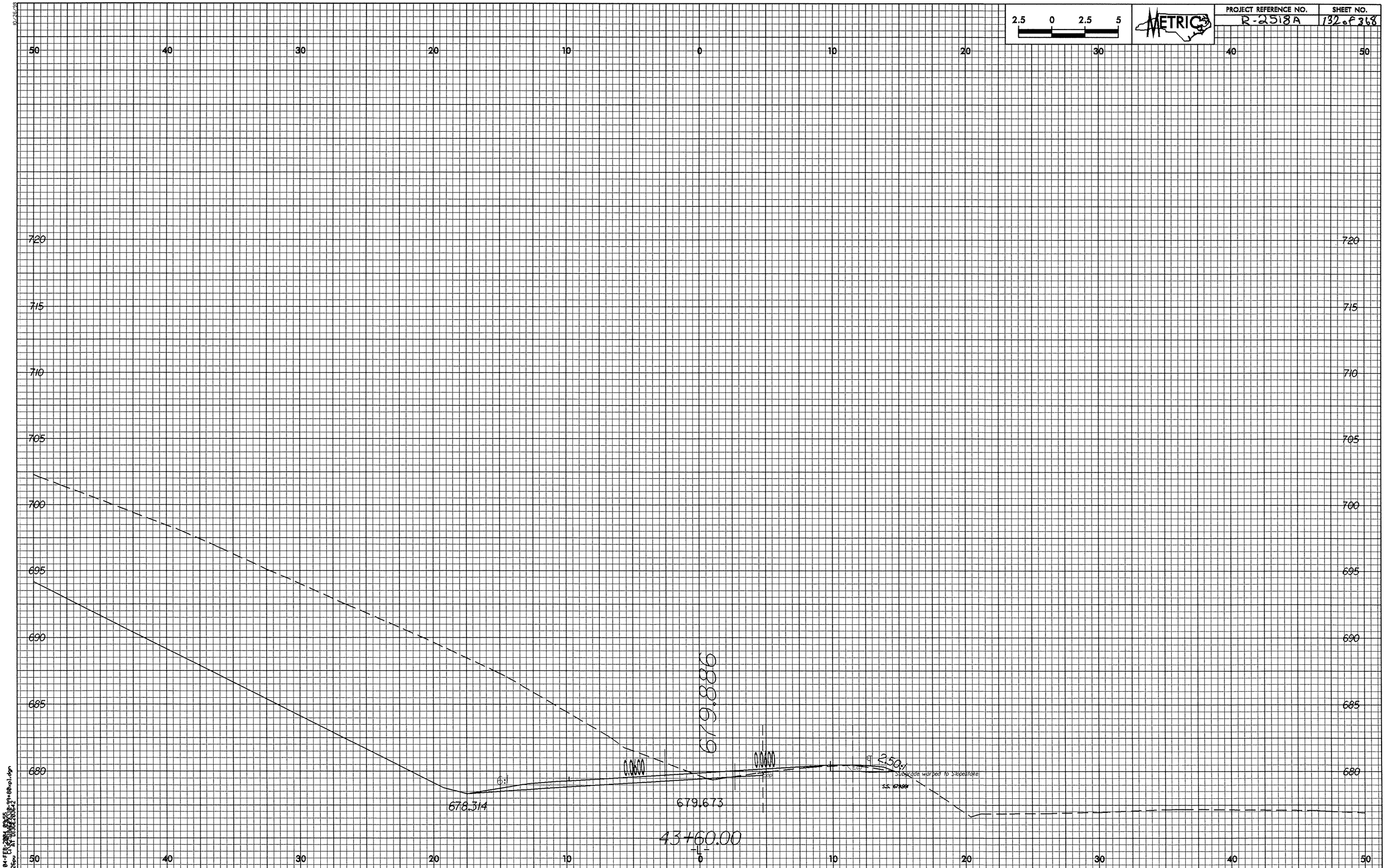
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
129 of 368
50 40 30 20 10 0 10 20 30 40 50
720
715
710
705
700
695
690
685
680
43+00
28 M LT
15
12
5
8
7
15
20
74
COLLUVIUM: ORANGE/WHITE SILTY SAND W/RK FRAGS
SAPROLITE: WHITE/BRN MIC SILTY SAND W/MNO
WEATHERED ROCK
678.744
684.589
0.0600
0.0600
6:1
677.172
678.503
43+00.00
-L-



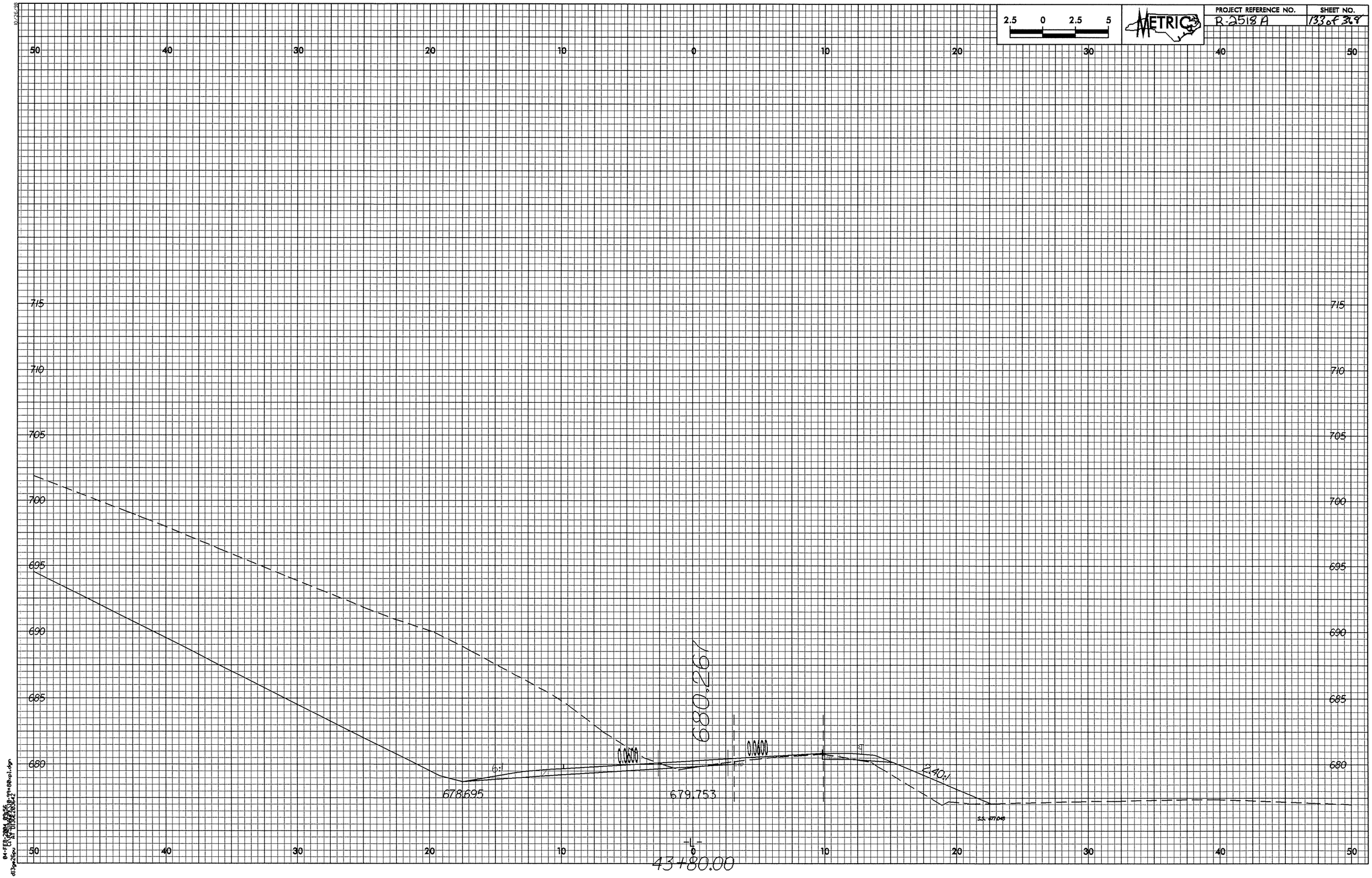
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
130 of 368
50 40 30 20 10 0 10 20 30 40 50
725
720
715
710
705
700
695
690
685
680
679.125
682.953
0.0600
0.0600
6:1
6:1
6:1
677.552
678.883
43+20.00
-L-



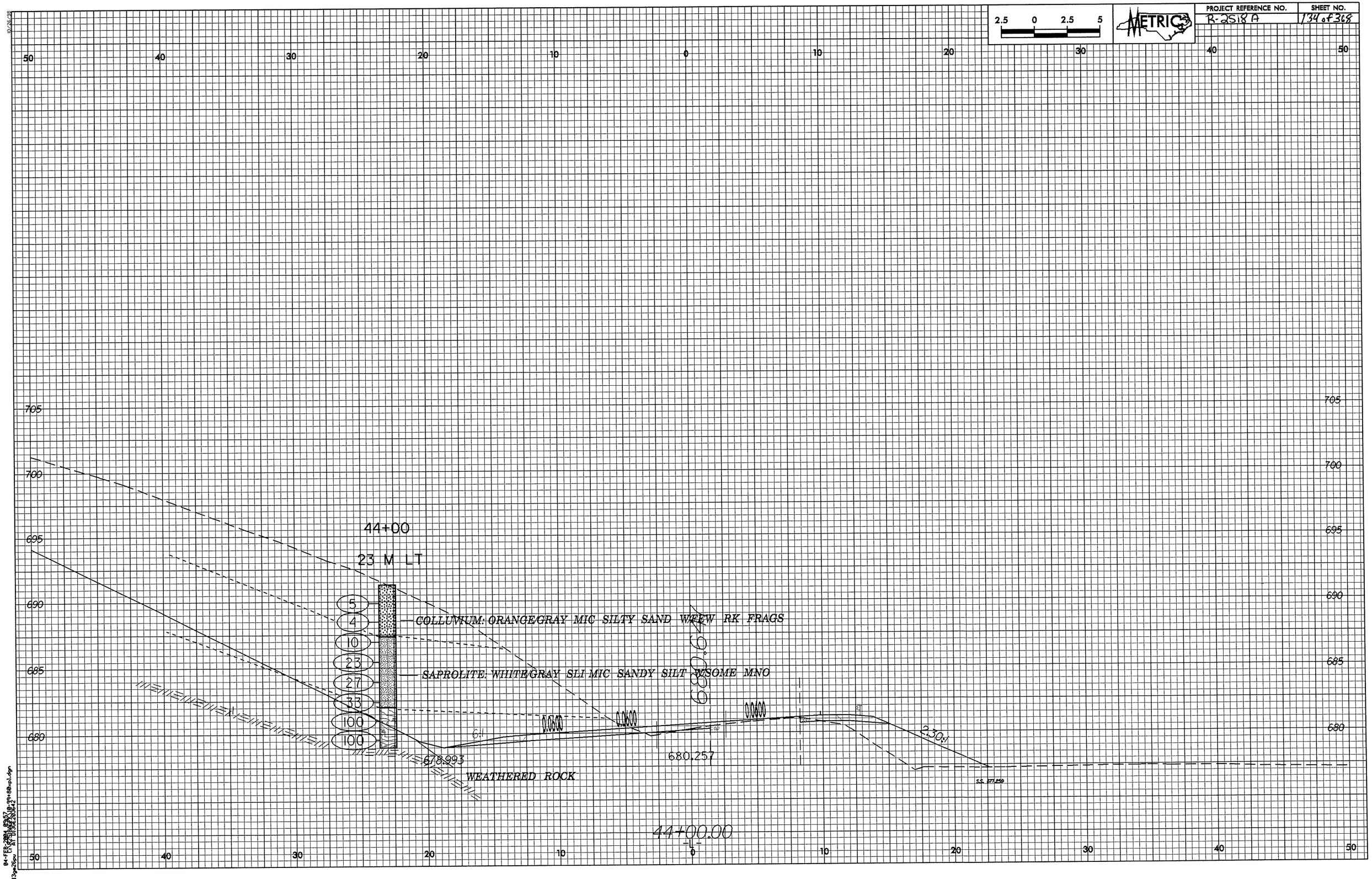
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
131 of 368
50 40 30 20 10 0 10 20 30 40 50
725
720
715
710
705
700
695
690
685
680
679.505
0.0600
0.0600
681.084
677.933
6:1
6:1
Ditch Depth
S.S. 679.303
43+40.00
-L-



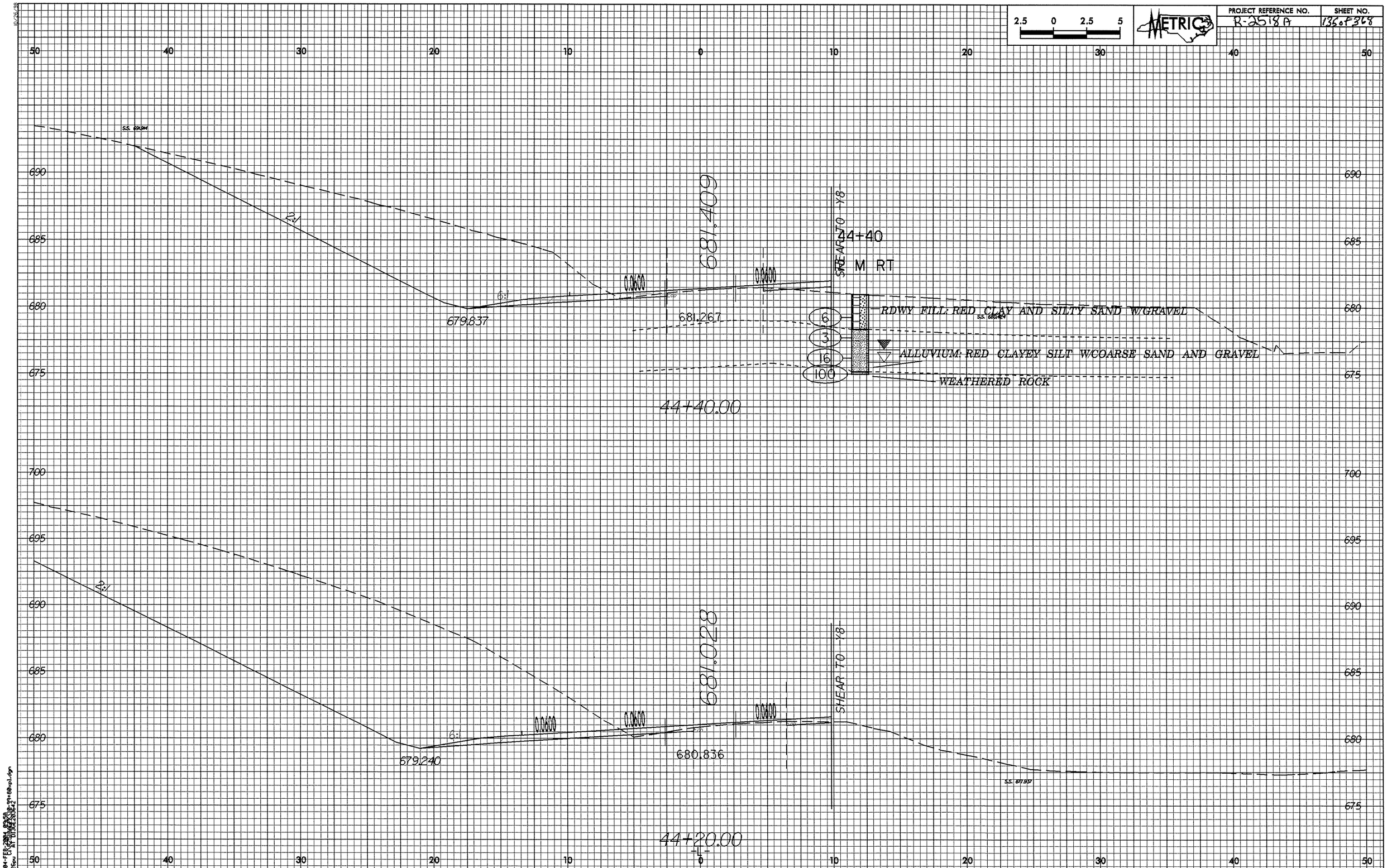
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
132 of 368
50 40 30 20 10 0 10 20 30 40 50
720
715
710
705
700
695
690
685
680
679.886
0.0600
0.0600
6:1
2.50:1
Subgrade warped to Slopestake
678.314
679.673
43+60.00
-L-



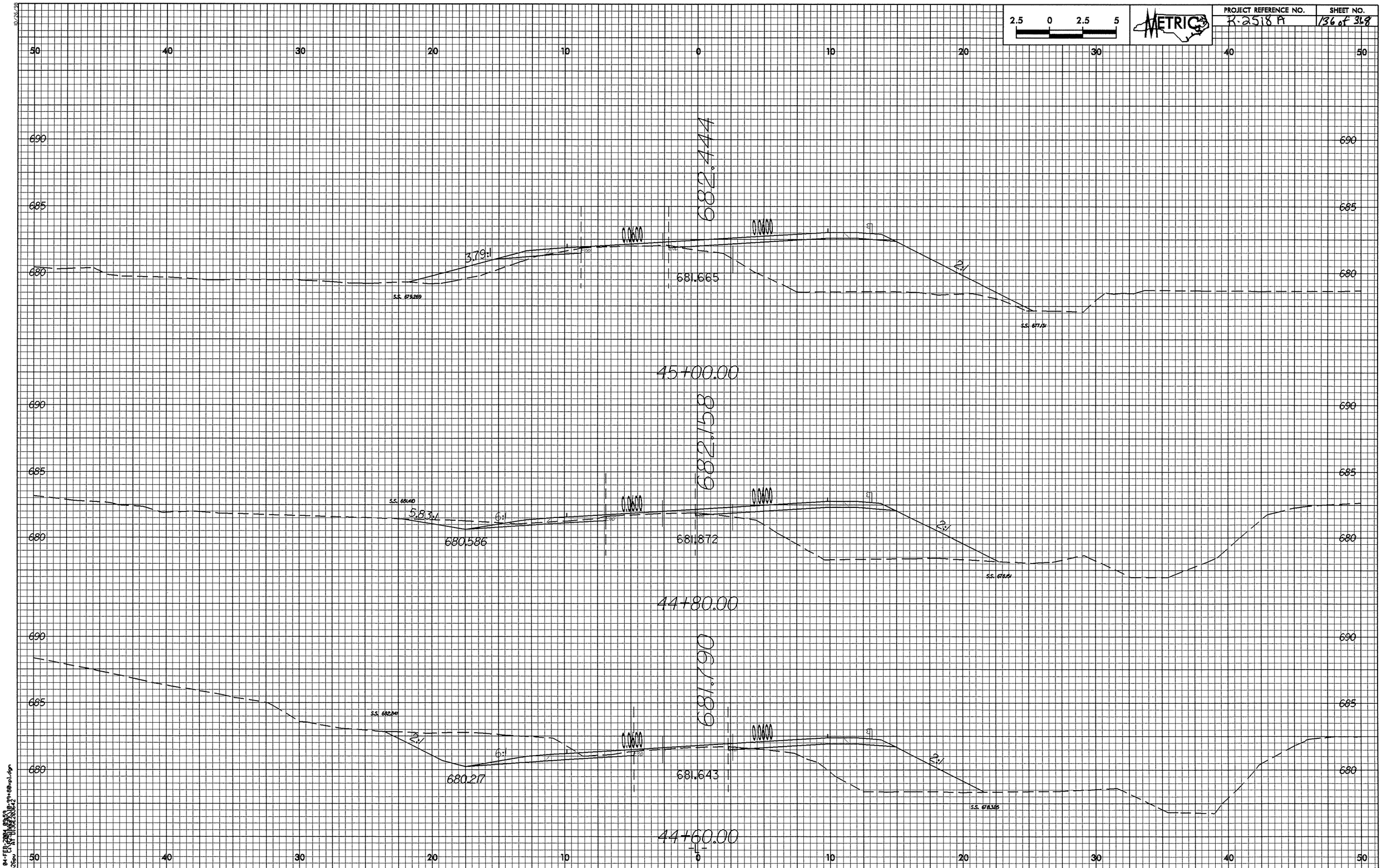
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
133 of 368
50 40 30 20 10 0 10 20 30 40 50
715
710
705
700
695
690
685
680
680.267
0.0600
0.0600
6:1
2.40:1
678.695
679.753
-L-
43+80.00



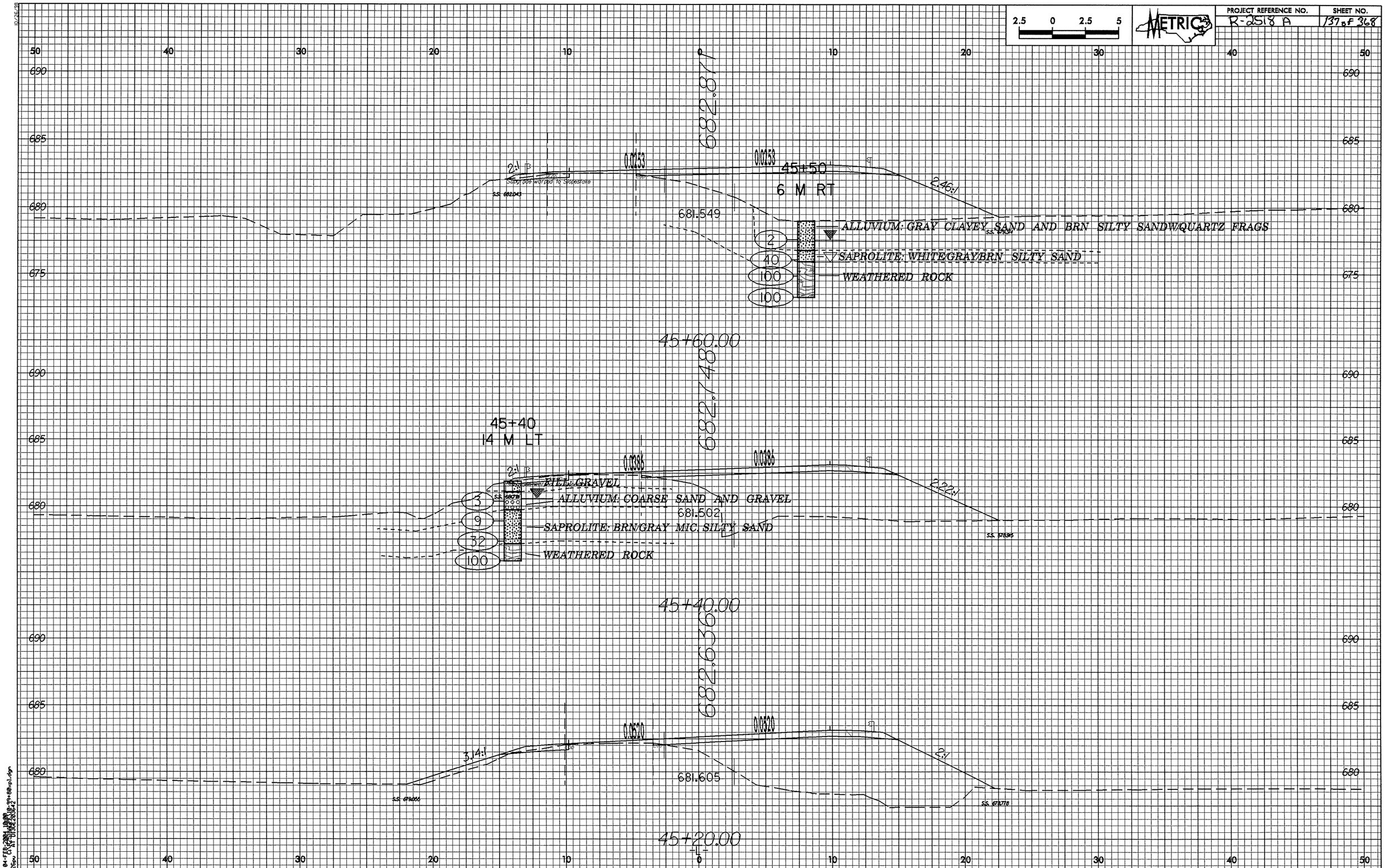
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518 A
SHEET NO.
134 of 368
50 40 30 20 10 0 10 20 30 40 50
705
700
695
690
685
680
44+00
23 M LT
5
4
10
23
27
33
100
100
COLLUVIUM: ORANGE/GRAY MIC SILTY SAND W/FEW RK FRAGS
SAPROLITE: WHITE/GRAY SLI MIC SANDY SILT W/SOME MNO
680.64
0.0600
0.0600
0.0600
6:1
2.30:1
678.993
680.257
WEATHERED ROCK
44+00.00
-L-



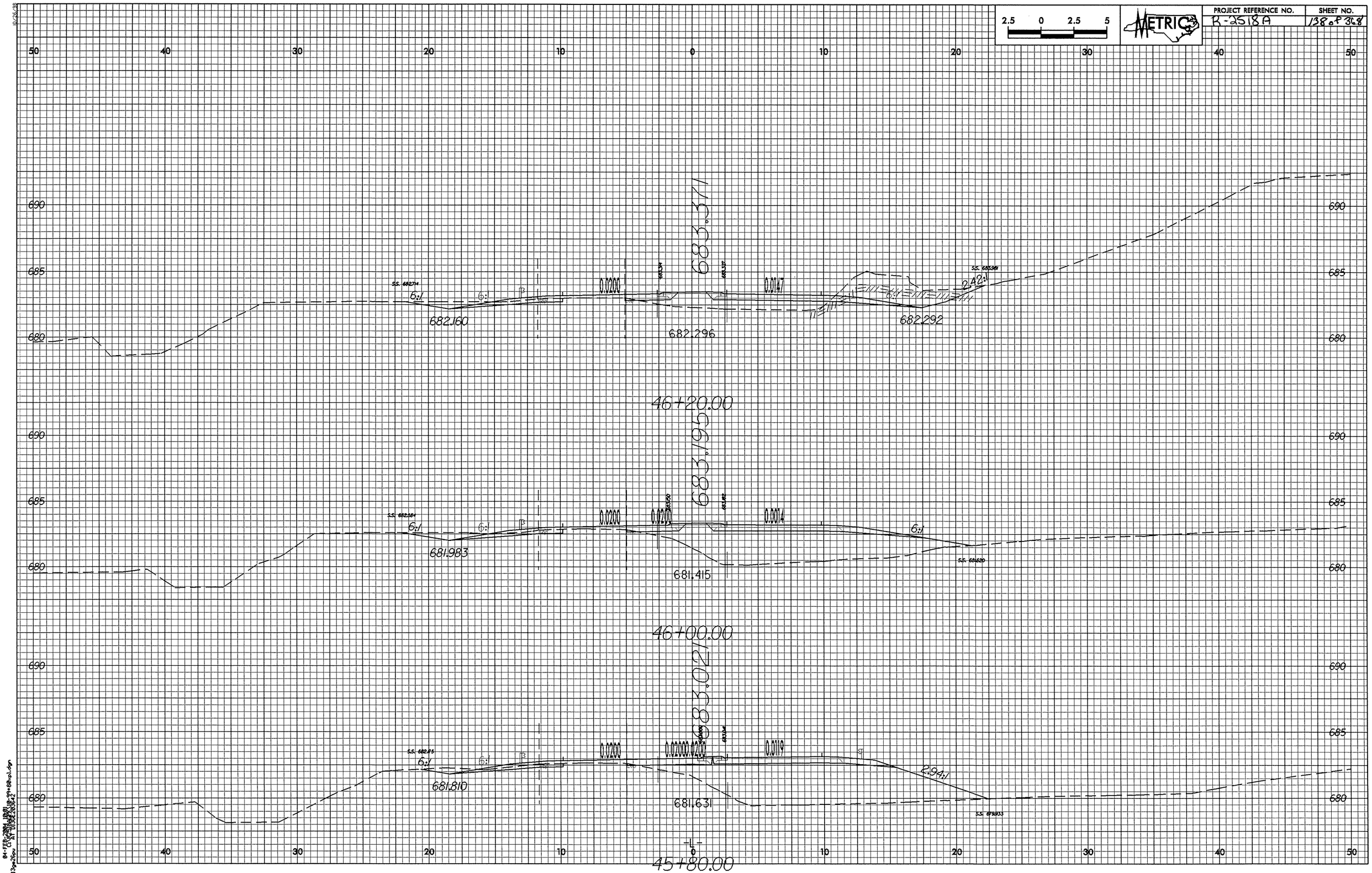
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
135 of 368
50 40 30 20 10 0 10 20 30 40 50
690 685 680 675
S.S. 691.914
2:1
6:1
0.0600
679.837
681.409
681.267
SHEAR TO Y8
44+40
M RT
RDWY FILL: RED CLAY AND SILTY SAND W/GRAVEL
S.S. 680.424
6
3
16
100
ALLUVIUM: RED CLAYEY SILT W/COARSE SAND AND GRAVEL
WEATHERED ROCK
44+40.00
700 695 690 685 680 675
2:1
6:1
0.0600
679.240
681.028
680.836
SHEAR TO Y8
S.S. 677.957
44+20.00
-L-



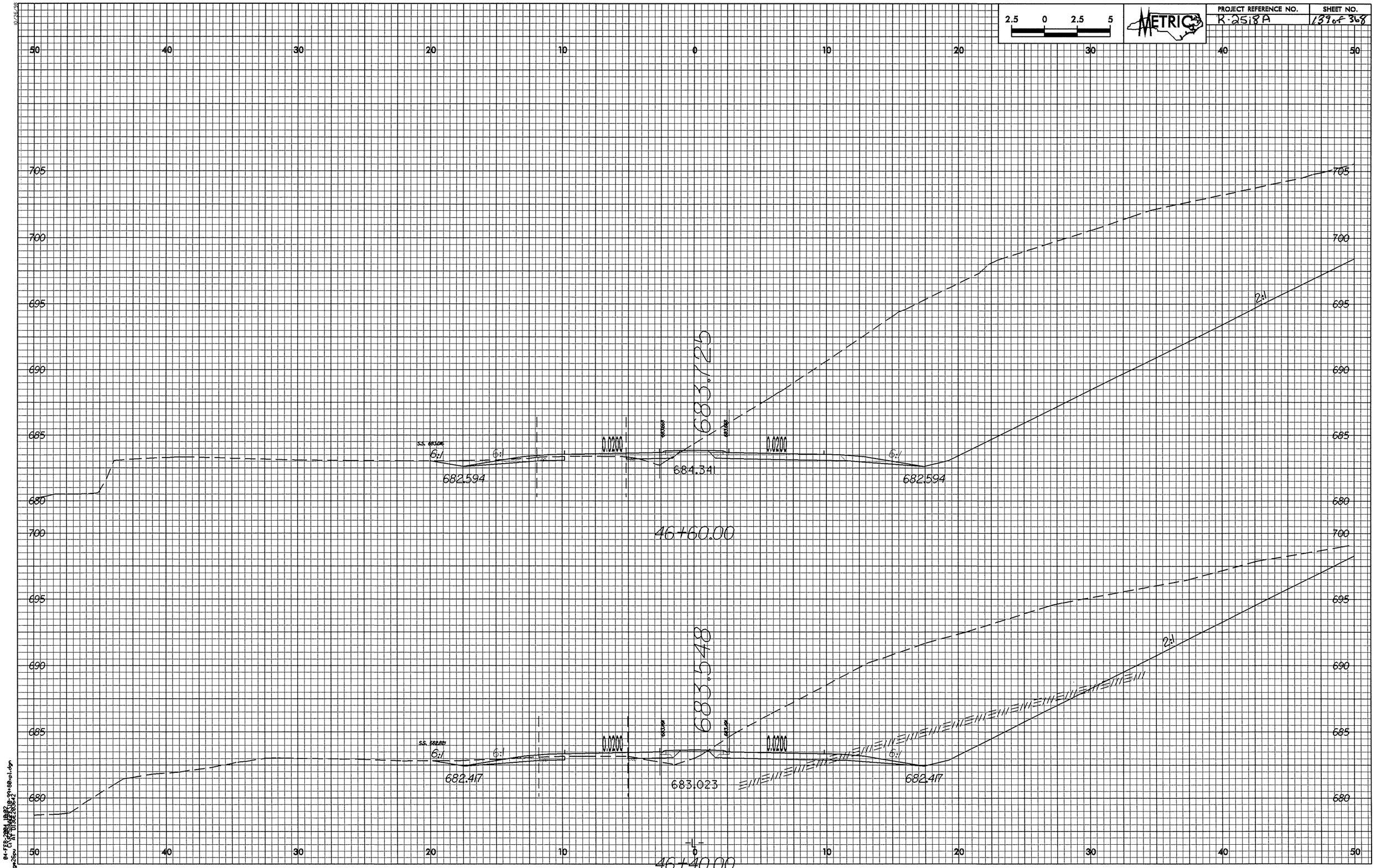
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518 A
SHEET NO.
136 of 368
682.444
3.79:1
0.0600
0.0600
681.665
2:1
45+00.00
682.158
5.83:1
6:1
0.0600
0.0600
680.586
681.872
2:1
44+80.00
681.790
2:1
6:1
0.0600
0.0600
680.217
681.643
2:1
44+60.00



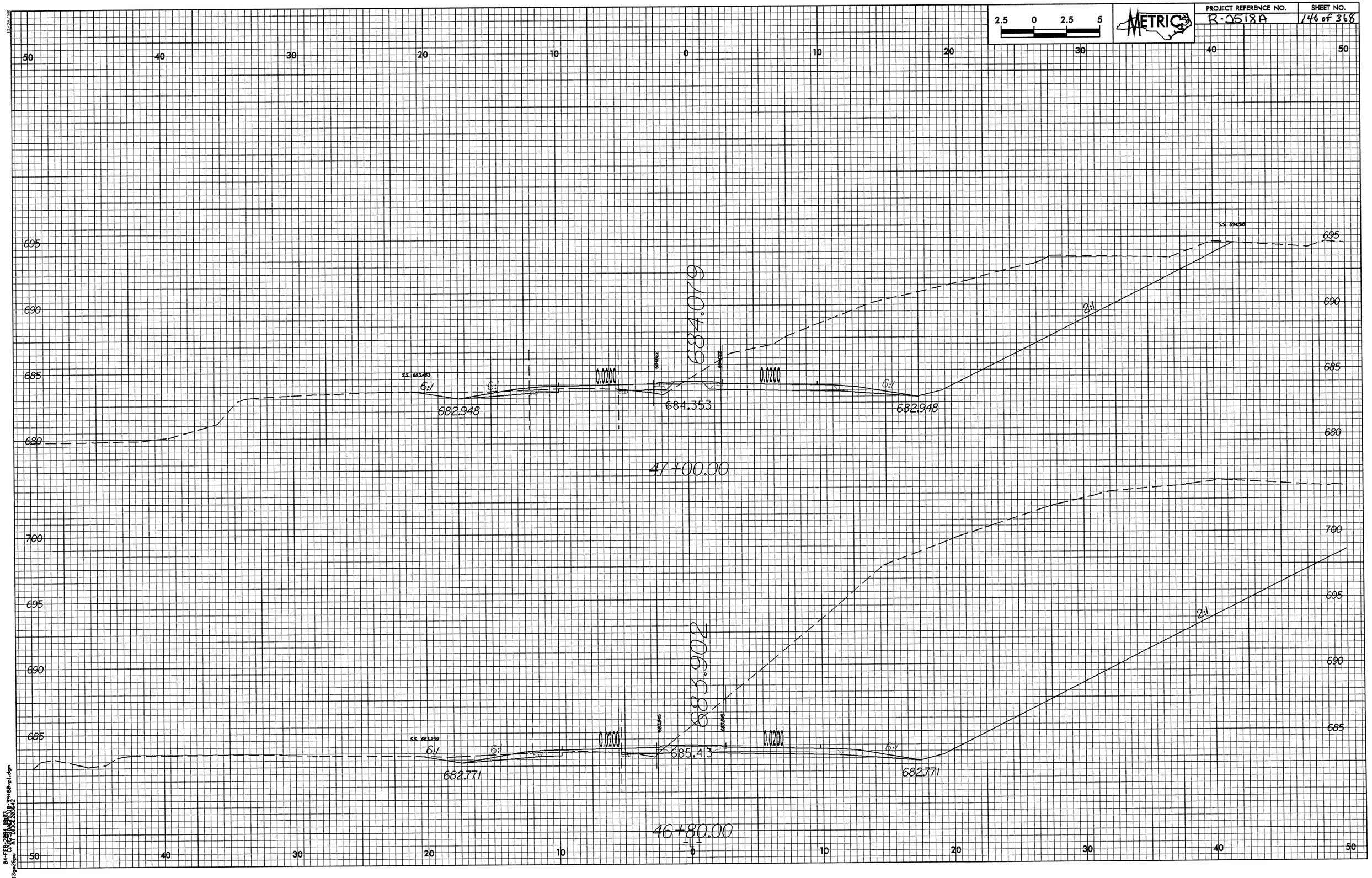
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518 A
SHEET NO.
137 of 368
682.877
0.0253
0.0253
45+50
6 M RT
2:1
2.46:1
681.549
ALLUVIUM: GRAY CLAYEY SAND AND BRN SILTY SANDW/QUARTZ FRAGS
SAPROLITE: WHITE/GRAY/BRN SILTY SAND
WEATHERED ROCK
2
40
100
100
45+60.00
682.748
45+40
14 M LT
0.0386
0.0386
2:1
2.22:1
FILL: GRAVEL
ALLUVIUM: COARSE SAND AND GRAVEL
681.502
SAPROLITE: BRN/GRAY MIC. SILTY SAND
WEATHERED ROCK
3
9
32
100
45+40.00
682.636
0.0520
0.0520
3.14:1
2:1
681.605
45+20.00
690
685
680
675
50
40
30
20
10
0

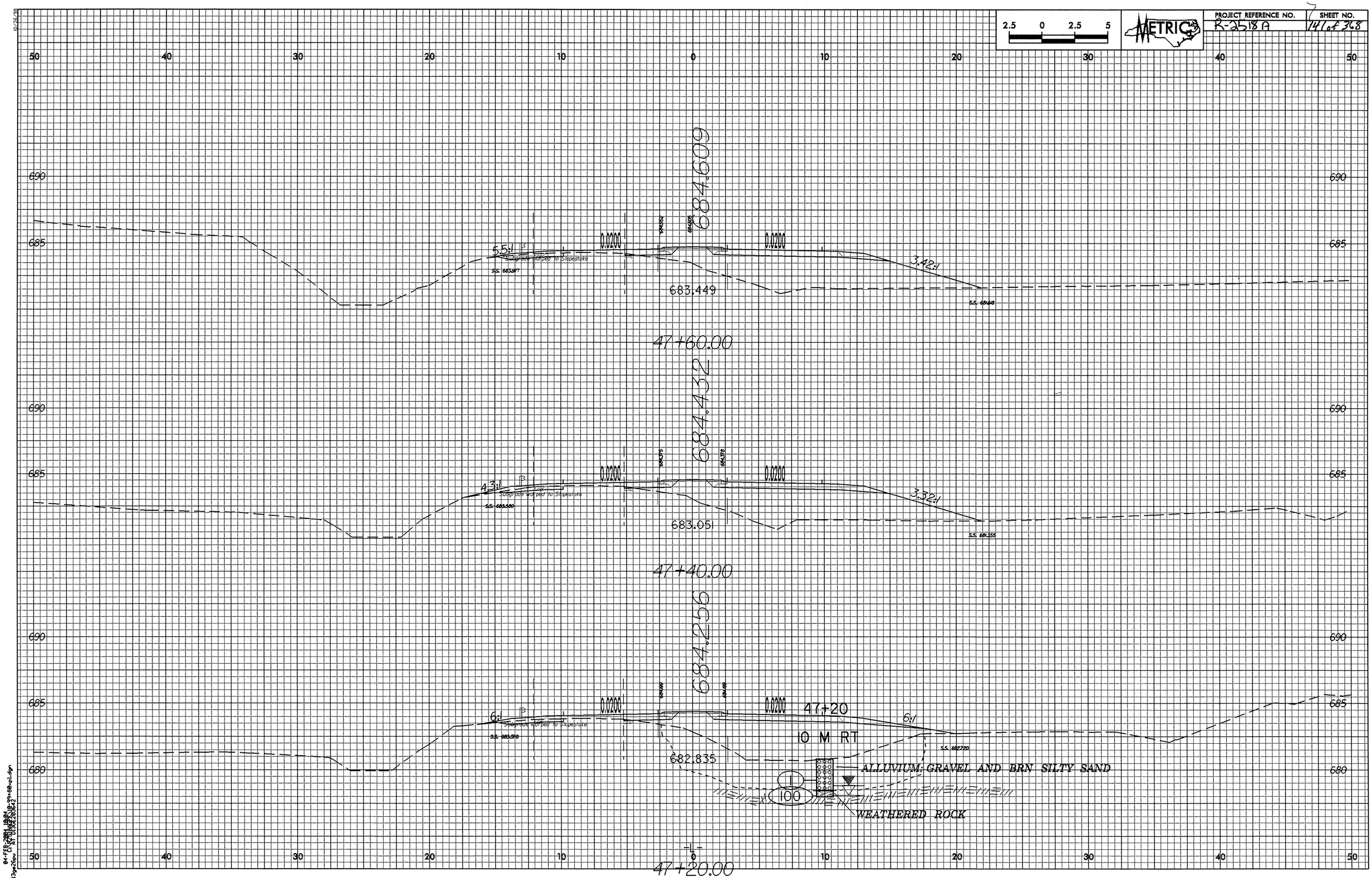


2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
138 of 368
50 40 30 20 10 0 10 20 30 40 50
690
685
680
683.371
0.0200
0.0147
682.160
682.296
682.292
2.42:1
46+20.00
683.195
0.0200
0.0200
0.0014
681.983
681.415
46+00.00
683.021
0.0200
0.0200
0.0119
681.810
681.631
2.94:1
45+80.00

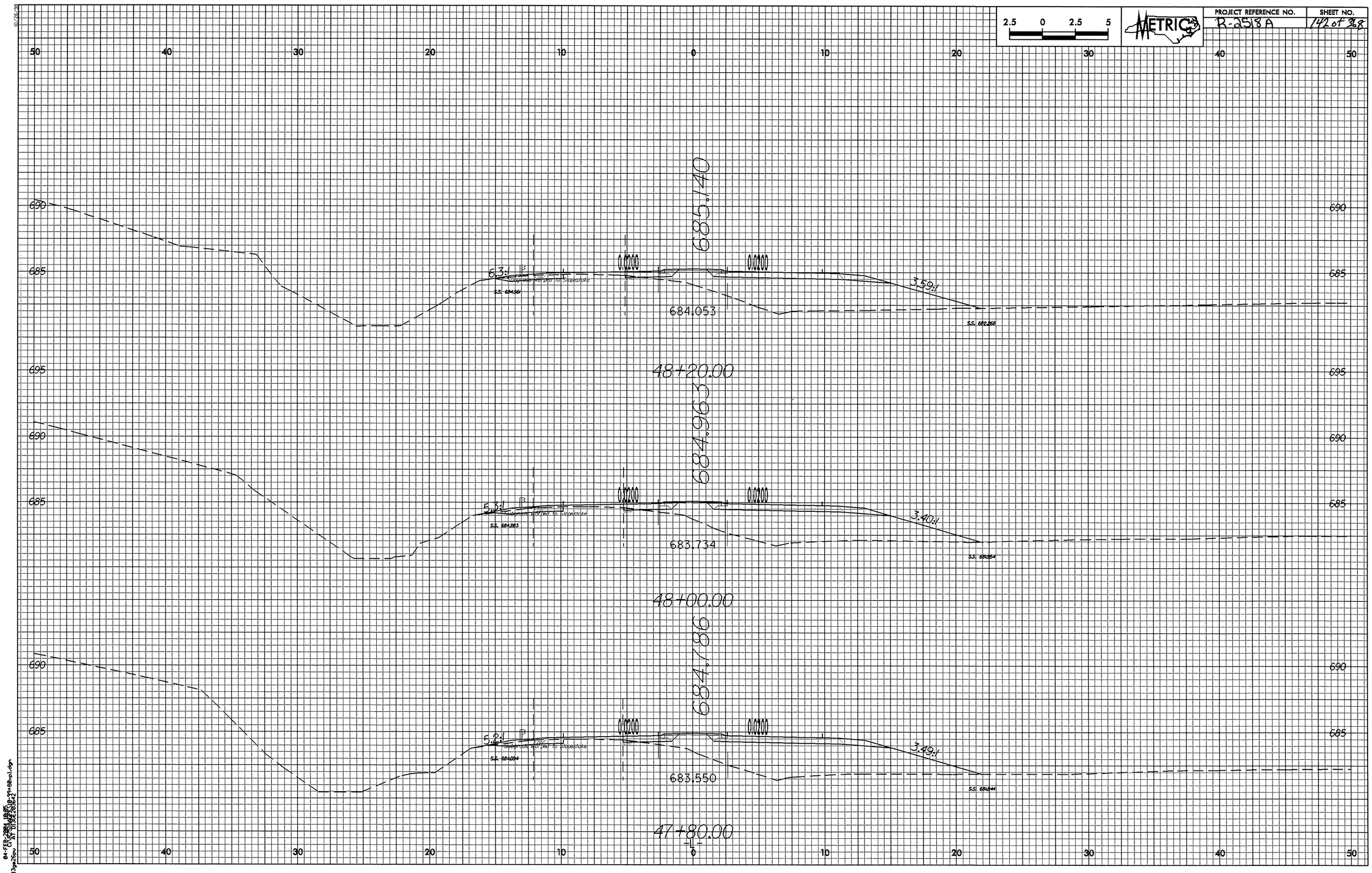


2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
139 of 368
50 40 30 20 10 0 10 20 30 40 50
705
700
695
690
685
680
683.725
683.548
S.S. 683.016
S.S. 682.821
6:1
0.0200
682.594
684.341
682.417
683.023
2:1
46+60.00
46+40.00
-L-

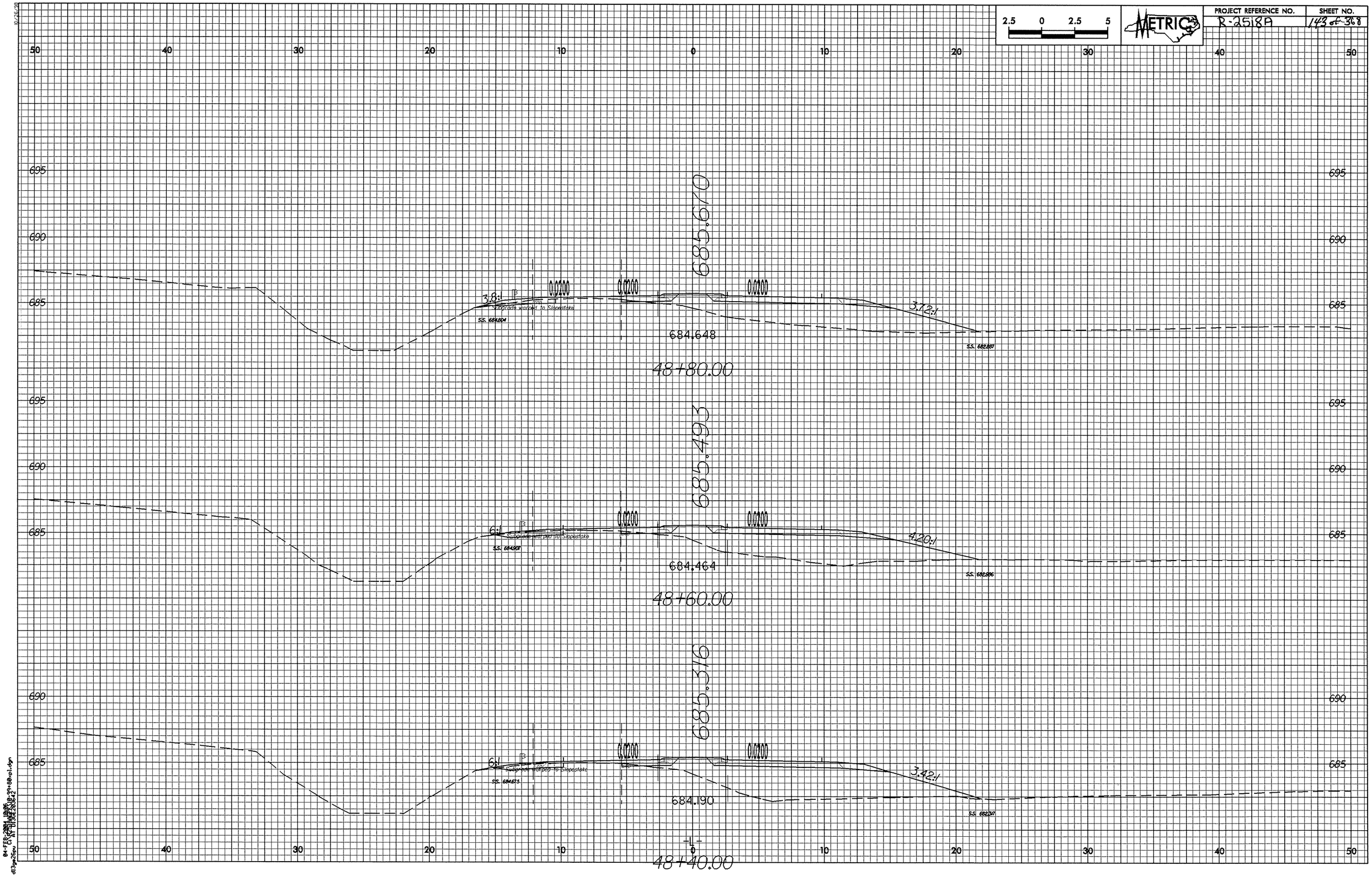

2.5 0 2.5 5
METRIC
50 40 30 20 10 0 10 20 30 40 50
695
690
685
680
700
684.079
683.902
0.0200
6:1
2:1
682.948
684.353
682.771
685.413
47+00.00
46+80.00



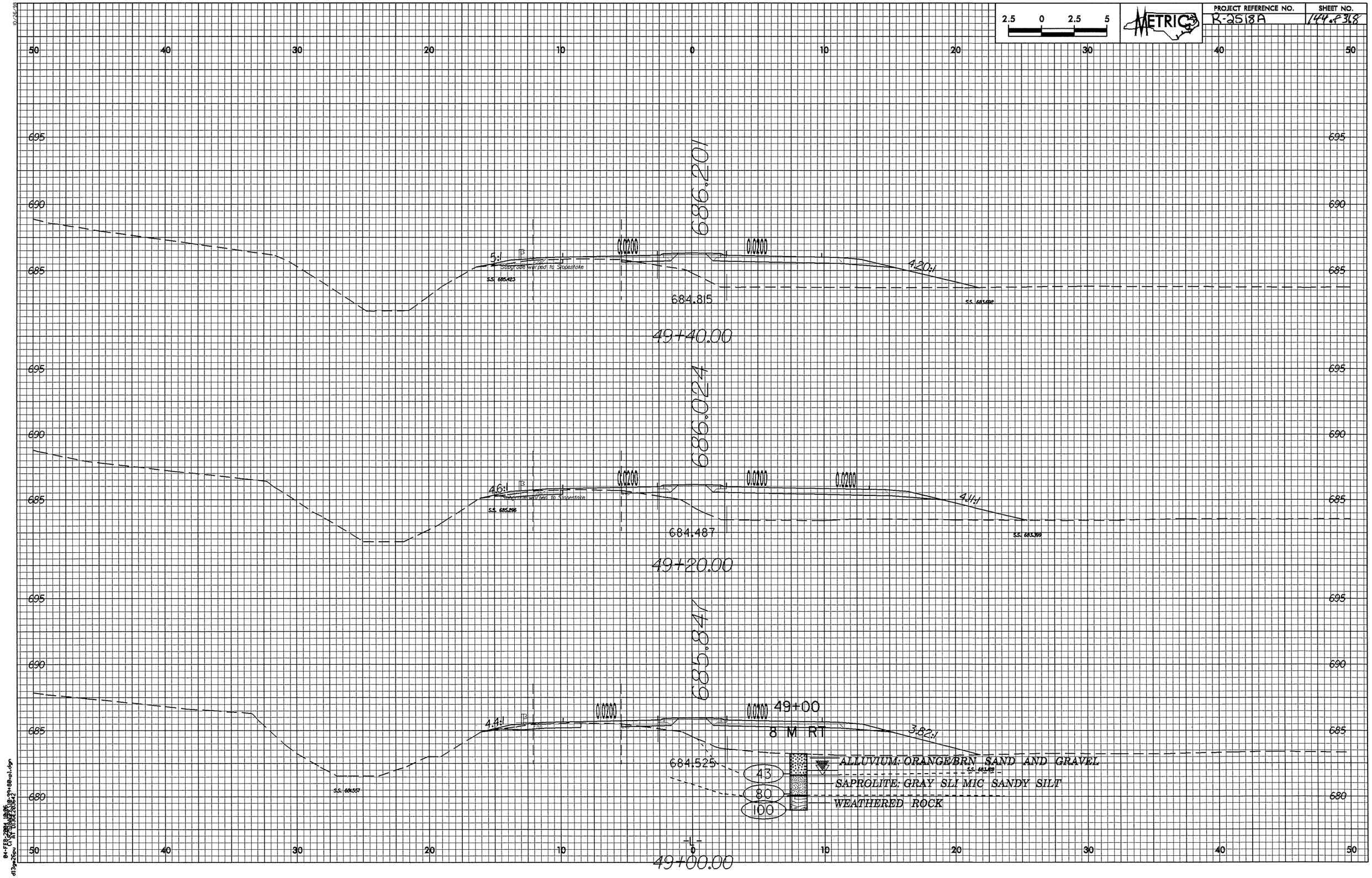
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
141 of 368
50 40 30 20 10 0 10 20 30 40 50
690
685
680
684.609
5.5:1
Subgrade Warped to Slopestake
0.0200
0.0200
3.42:1
683.449
47+60.00
684.432
4.3:1
Subgrade Warped to Slopestake
0.0200
0.0200
3.32:1
683.051
47+40.00
684.256
6:1
Subgrade Warped to Slopestake
0.0200
0.0200
47+20
6:1
10 M RT
682.835
ALLUVIUM: GRAVEL AND BRN SILTY SAND
1
100
WEATHERED ROCK
-L-
47+20.00



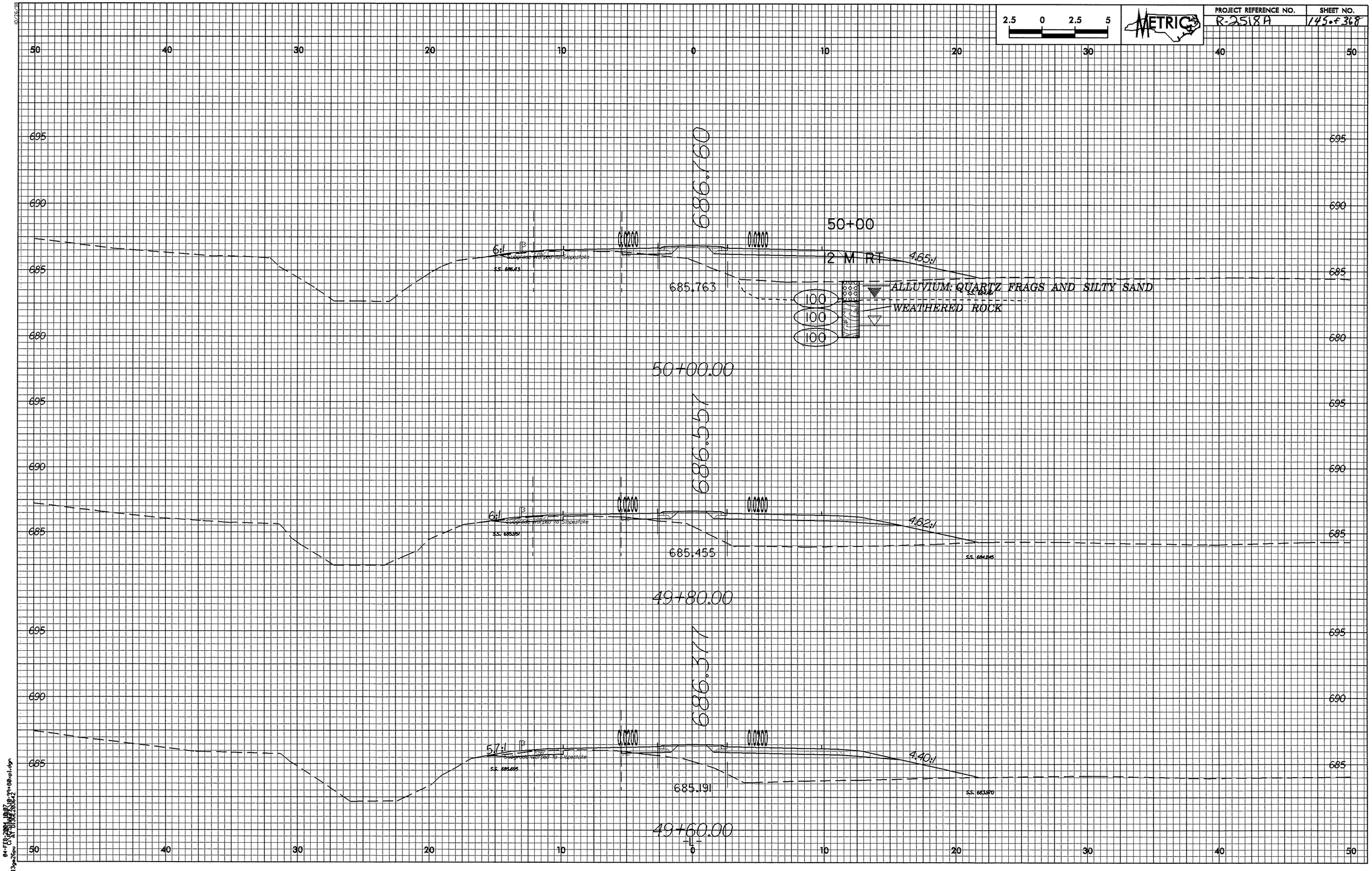
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
142 of 368
50 40 30 20 10 0 10 20 30 40 50
690
685
695
685.140
0.0200
0.0200
6.3:1
3.59:1
684.053
48+20.00
684.963
5.3:1
3.40:1
683.734
48+00.00
684.786
5.2:1
3.49:1
683.550
47+80.00
-L-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
143 of 368
50 40 30 20 10 0 10 20 30 40 50
695
690
685
685.670
3.8:1
0.0200
0.0200
0.0200
3.72:1
Subgrade warped to Slopestake
S.S. 684.804
684.648
S.S. 682.887
48+80.00
685.493
6:1
0.0200
0.0200
4.20:1
Subgrade warped to Slopestake
S.S. 684.907
684.464
S.S. 682.986
48+60.00
685.316
6:1
0.0200
0.0200
3.42:1
Subgrade warped to Slopestake
S.S. 684.675
684.190
S.S. 682.317
-L-
48+40.00



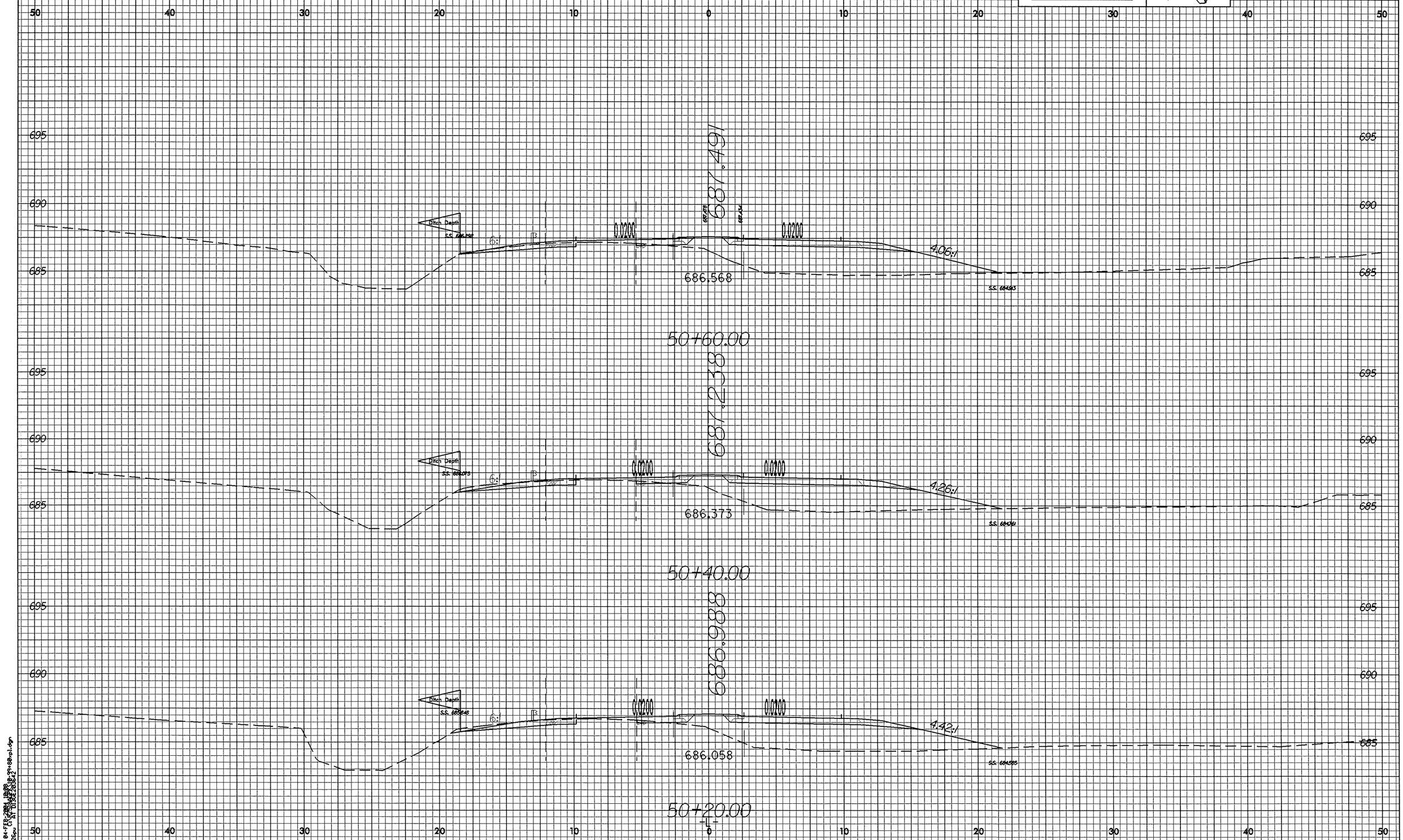
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
144 of 368
686.201
5:1
0.0200
0.0200
4.20:1
Subgrade warped to Slopestake
S.S. 685.423
684.815
S.S. 683.692
49+40.00
686.024
4.6:1
0.0200
0.0200
0.0200
4.11:1
Subgrade warped to Slopestake
S.S. 685.296
684.487
S.S. 683.399
49+20.00
685.847
4.4:1
0.0200
0.0200
49+00
8 M RT
3.82:1
684.525
S.S. 684.557
S.S. 683.488
43
80
100
ALLUVIUM: ORANGE/BRN SAND AND GRAVEL
SAPROLITE: GRAY SLI MIC SANDY SILT
WEATHERED ROCK
49+00.00



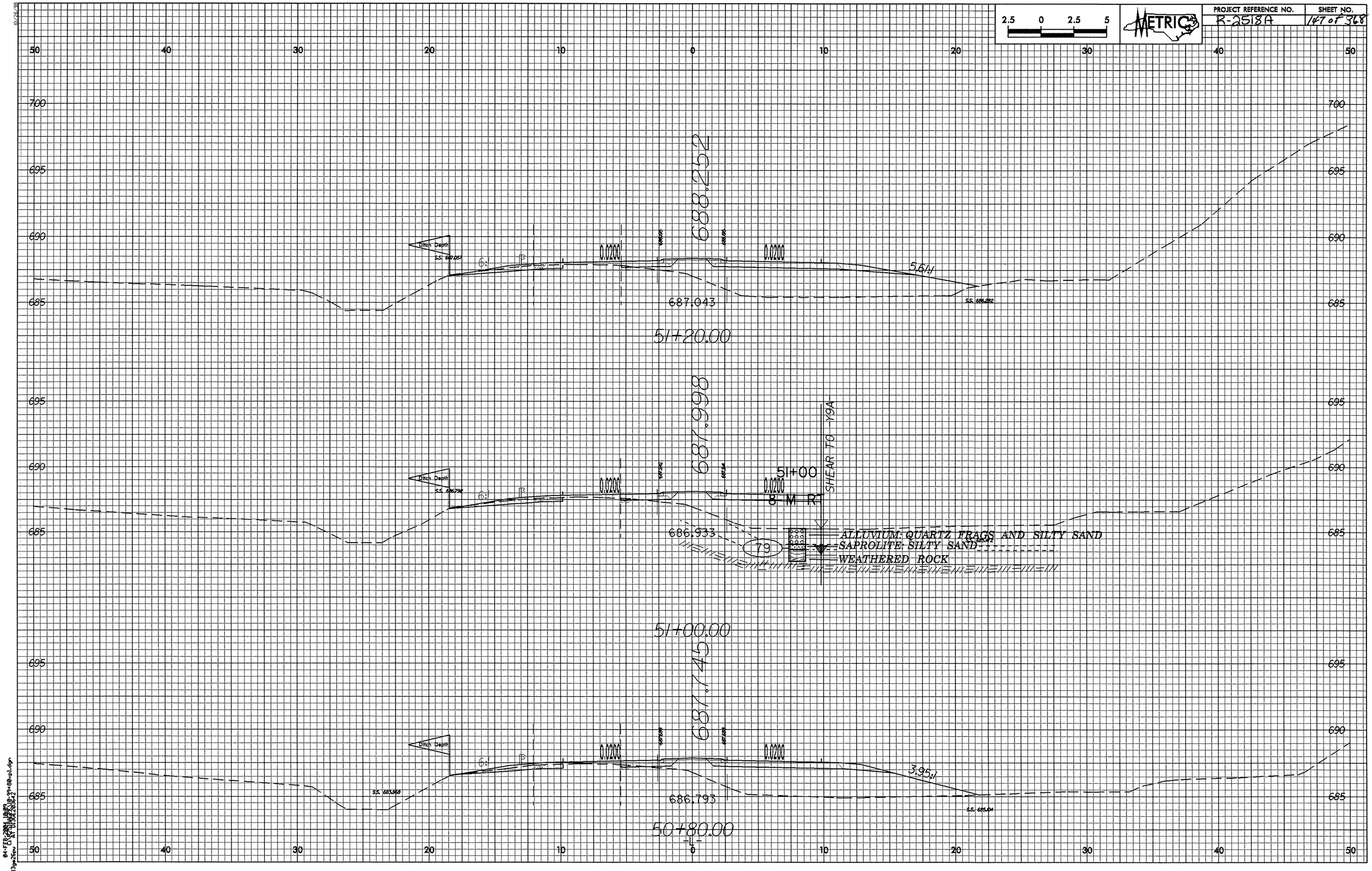
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
145 of 368
50+00
2 M RT
686.760
685.763
ALLUVIUM: QUARTZ FRAGS AND SILTY SAND
WEATHERED ROCK
100
100
100
50+00.00
686.557
685.455
49+80.00
686.377
685.191
49+60.00
6:1
4.65:1
4.62:1
5.7:1
4.40:1
0.0200
0.0200
695
690
685
680
50
40
30
20
10
0

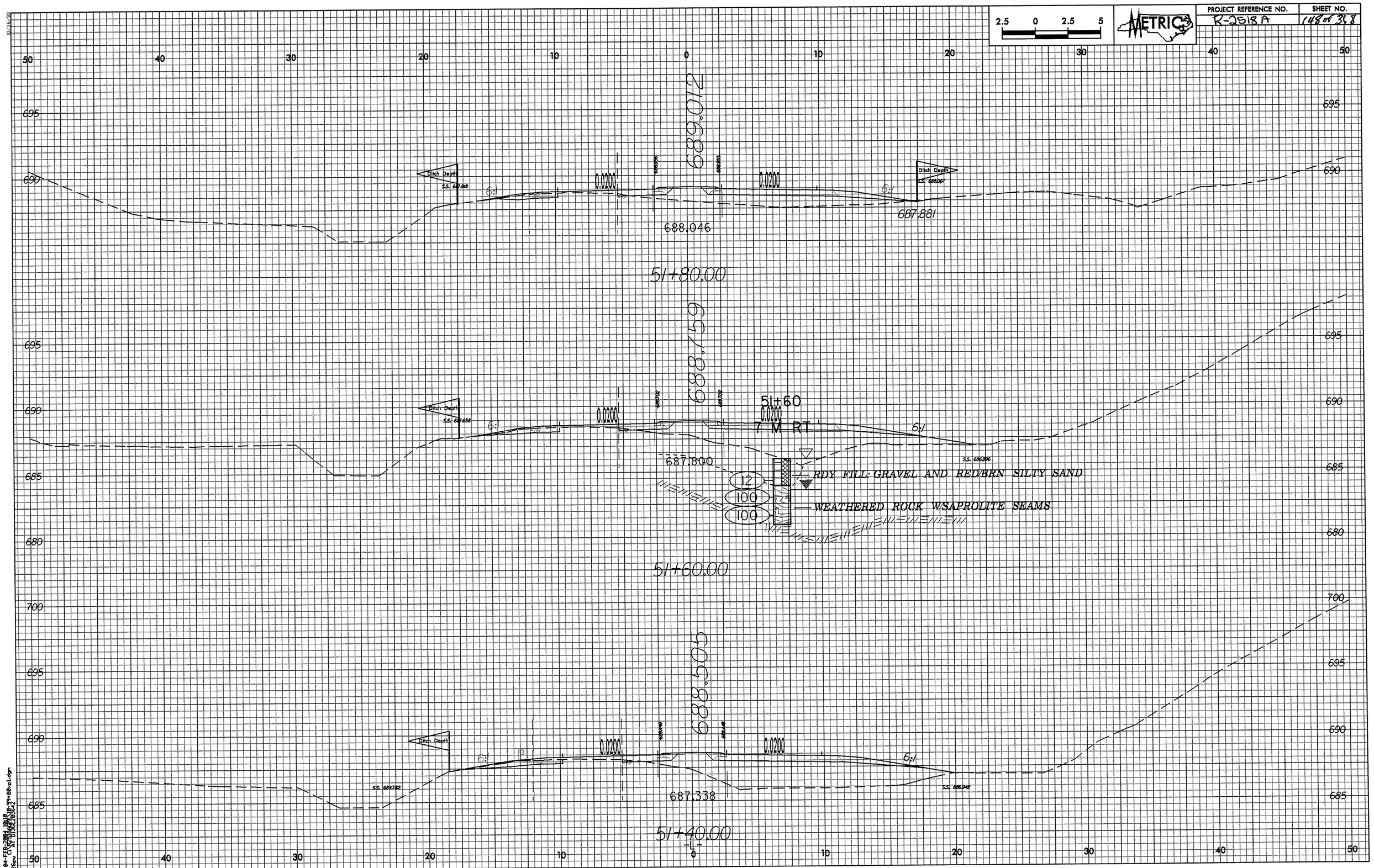
2.5 0 2.5 5

METRIC

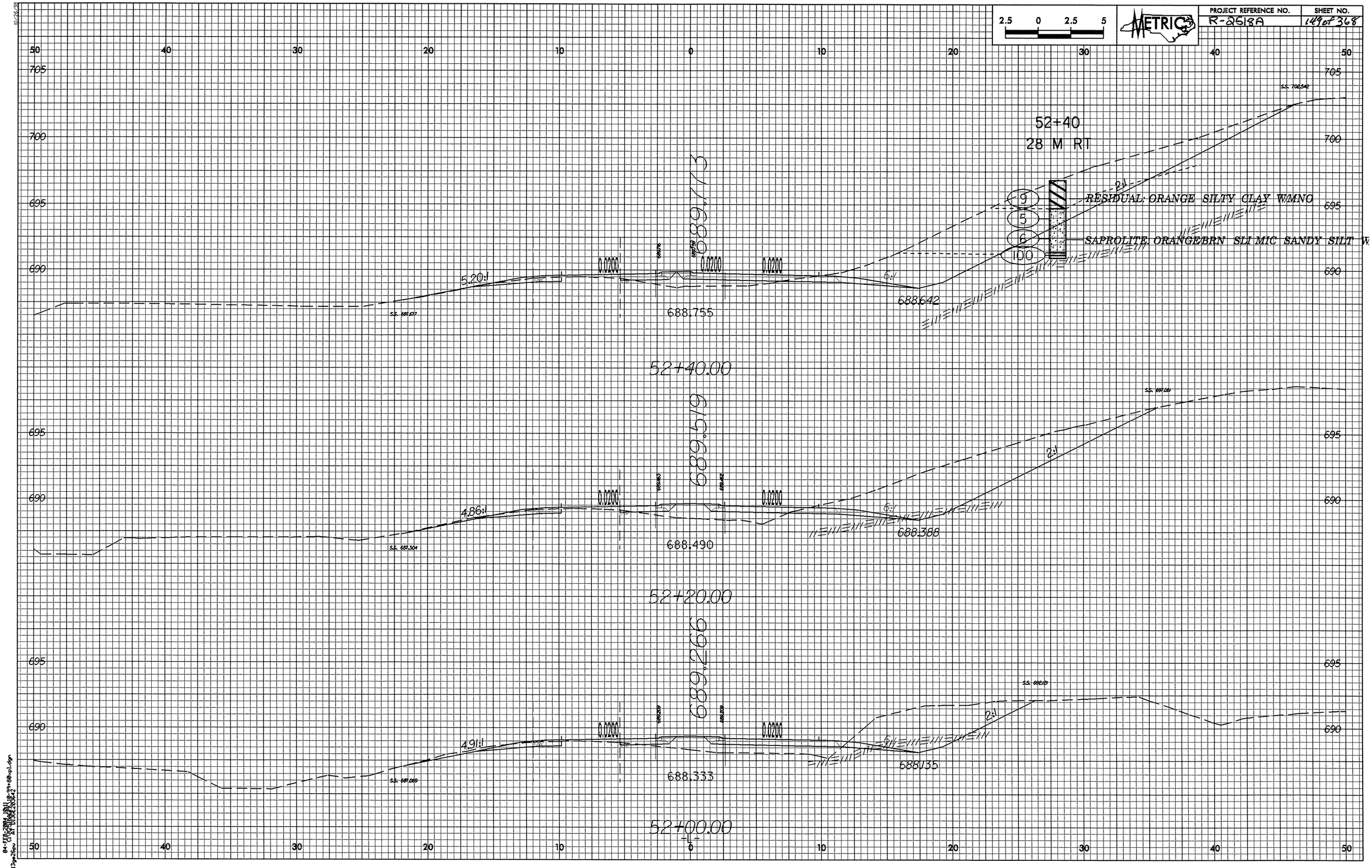


10/26/98
04-FER-0001A (PB98)
d13pe26pw AT DISCE2D3B-12
R-2518A_PB98_93+88-01.dgn

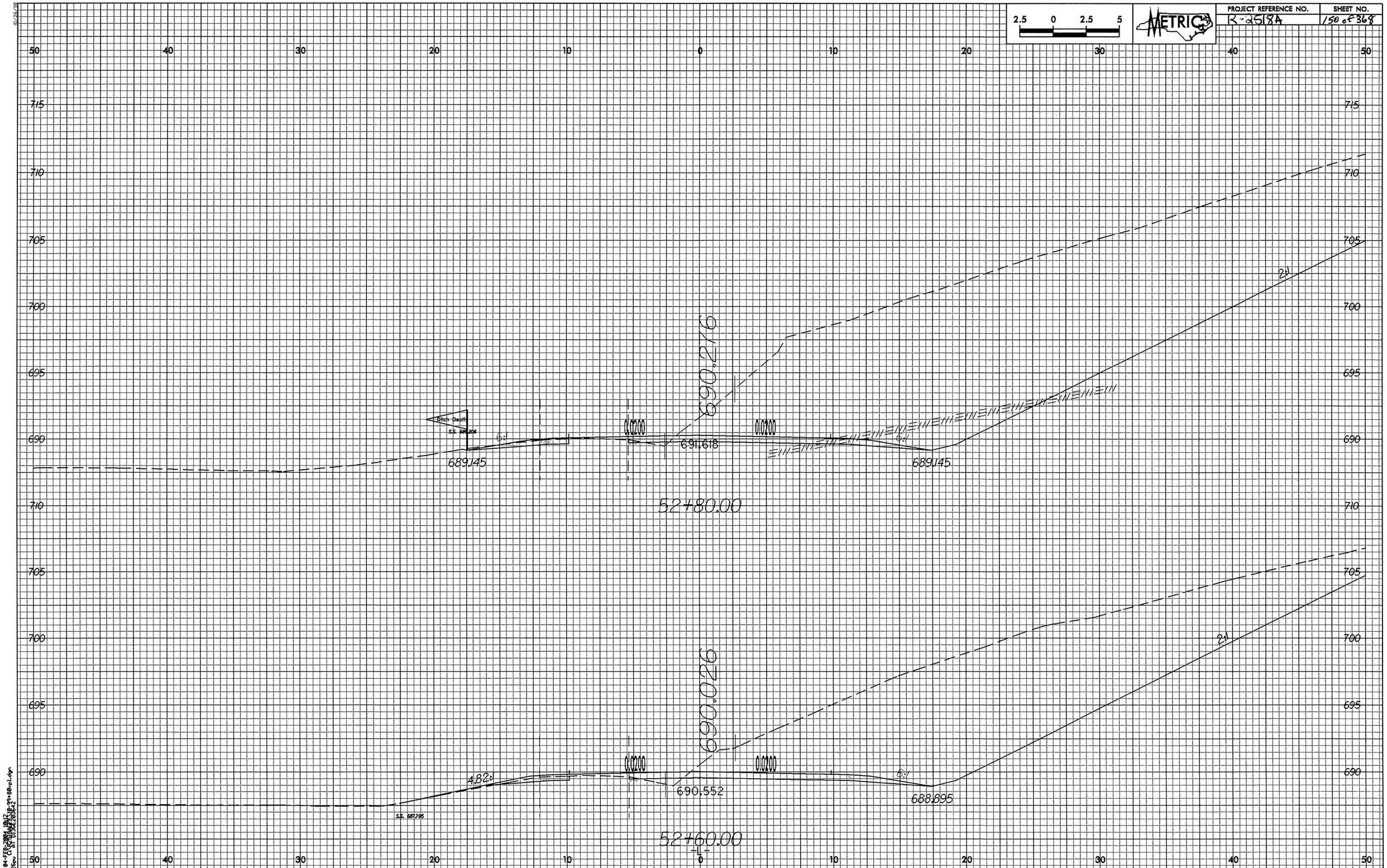

2.5 0 2.5 5
METRIC
50 40 30 20 10 0 10 20 30 40 50
700
695
690
685
Ditch Depth
6:1
0.0200
688.252
5.61'
687.043
51+20.00
687.998
SHEAR TO Y9A
51+00
8 M R
686.933
ALLUVIUM: QUARTZ FRAGS AND SILTY SAND
SAPROLITE: SILTY SAND
WEATHERED ROCK
79
51+00.00
687.145
3.95'
686.793
50+80.00



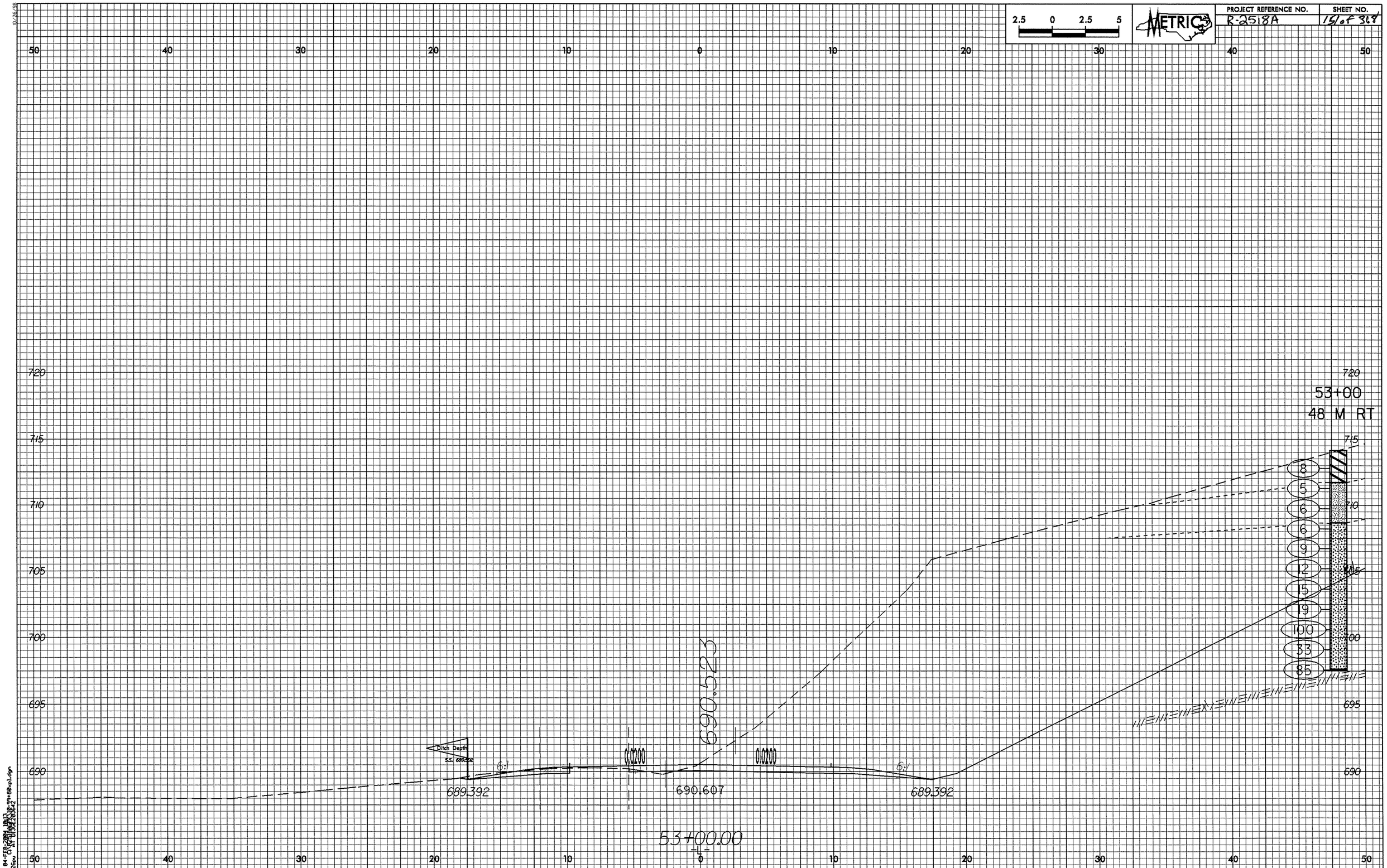
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
148 of 368
689.012
Ditch Depth
S.S. 687.918
6:1
0.0200
688.046
687.881
51+80.00
688.759
51+60
7 M RT
687.800
12
100
100
RDY FILL: GRAVEL AND RED/BRN SILTY SAND
WEATHERED ROCK W/SAPROLITE SEAMS
51+60.00
688.505
687.338
51+40.00



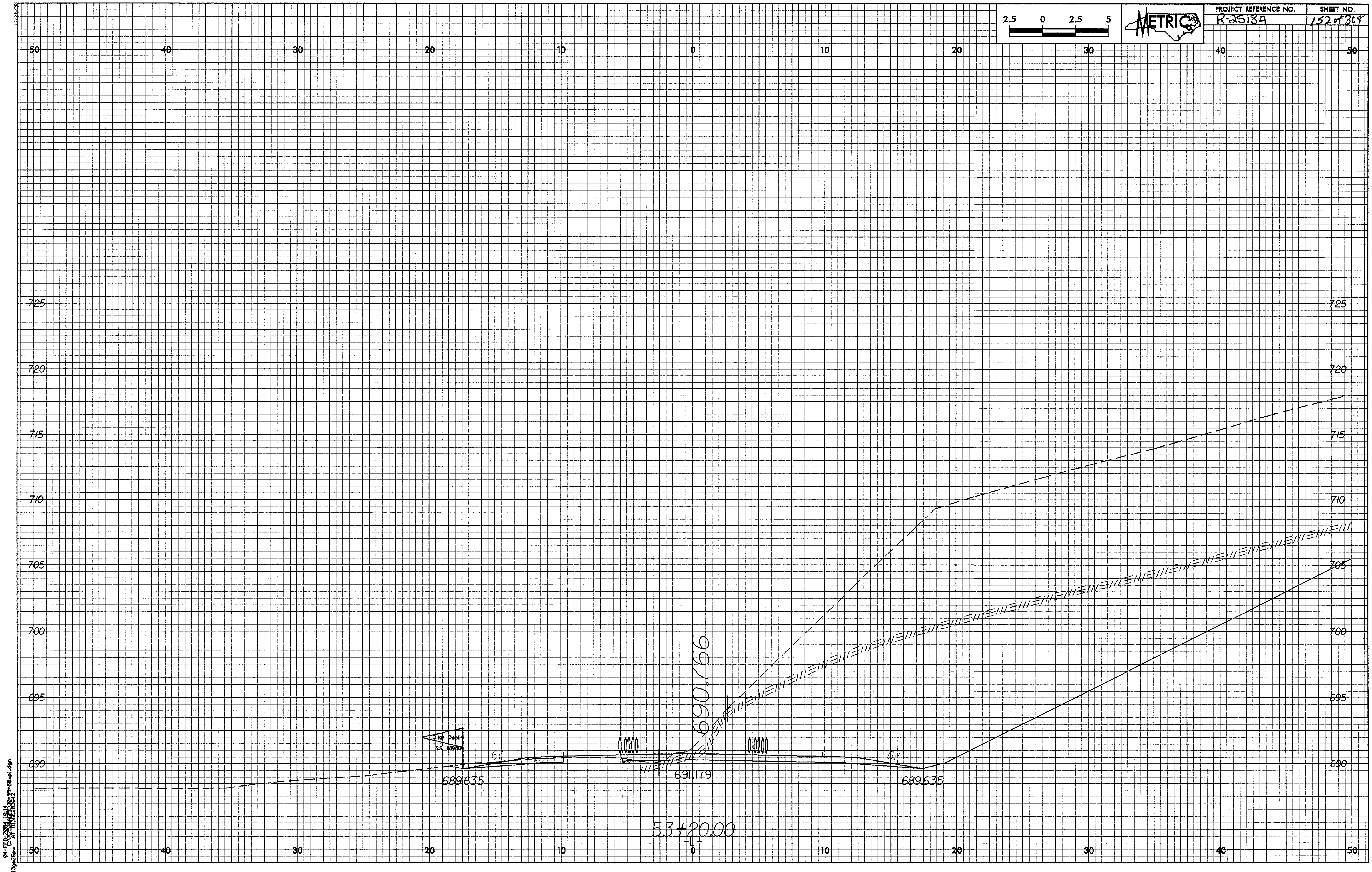
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
149 of 368
52+40
28 M RT
RESIDUAL: ORANGE SILTY CLAY W/MNO
SAPROLITE: ORANGE/BRN SLI MIC SANDY SILT W
9
5
6
100
2:1
6:1
5.20:1
0.0200
0.0200
0.0200
689.773
688.755
688.642
52+40.00
689.519
4.86:1
0.0200
0.0200
688.490
688.388
52+20.00
689.266
4.91:1
0.0200
0.0200
688.333
688.135
52+00.00
705
700
695
690
50
40
30
20
10
0
10
20
30
40
50

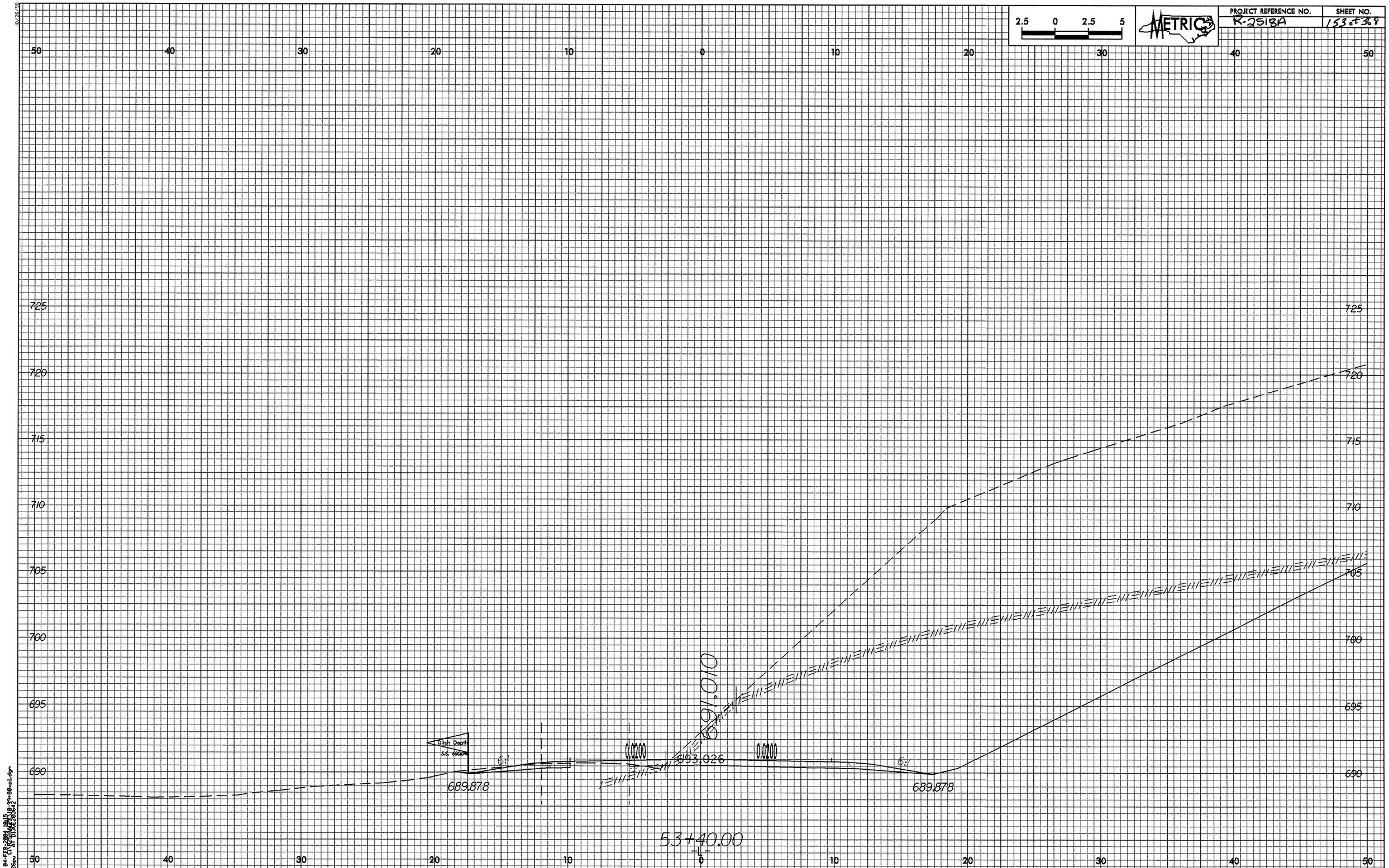


2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
150 of 368
50 40 30 20 10 0 10 20 30 40 50
715
710
705
700
695
690
Ditch Depth
S.S. 689.206
6:1
0.0200
0.0200
690.216
691.618
689.145
689.145
2:1
52+80.00
690.026
4.82:1
0.0200
0.0200
690.552
688.895
6:1
2:1
S.S. 687.795
52+60.00
-L-

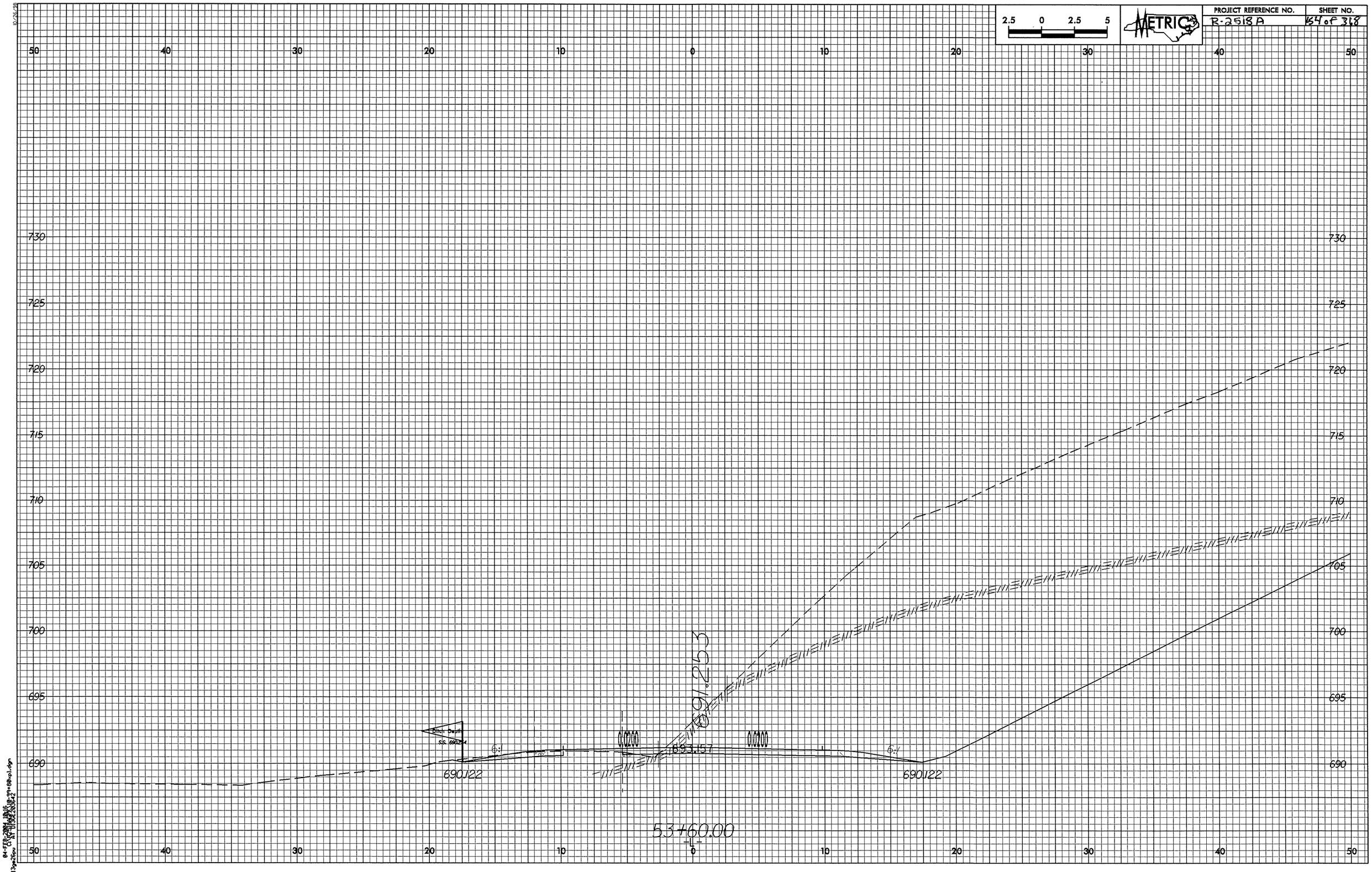


2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
15 of 368
50 40 30 20 10 0 10 20 30 40 50
720
715
710
705
700
695
690
53+00
48 M RT
8
5
6
6
9
12
15
19
100
33
85
690.523
Ditch Depth
S.S. 689.392
6:1
0.0200
0.0200
6:1
689.392
690.607
689.392
53+00.00
-L-

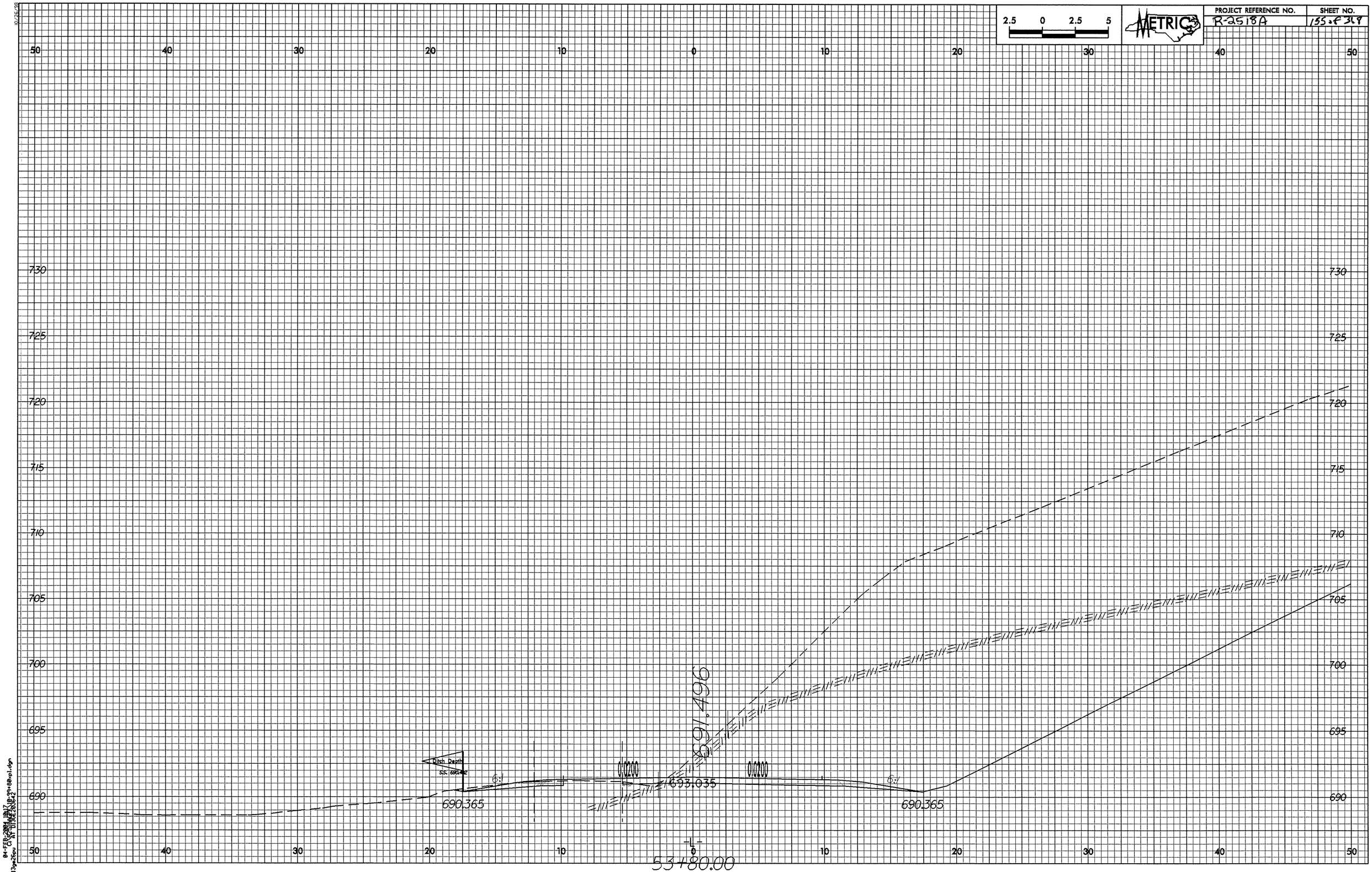

10/26/98
2.5 0 2.5 5
METRIC
50 40 30 20 10 0 10 20 30 40 50
725
720
715
710
705
700
695
690
Ditch Depth
S.S. 689.808
6:1
0.0200
0.0200
6:1
690.766
689.635
691.179
689.635
53+20.00
-L-
04-FEB-2004 10:14
d13ge26pu



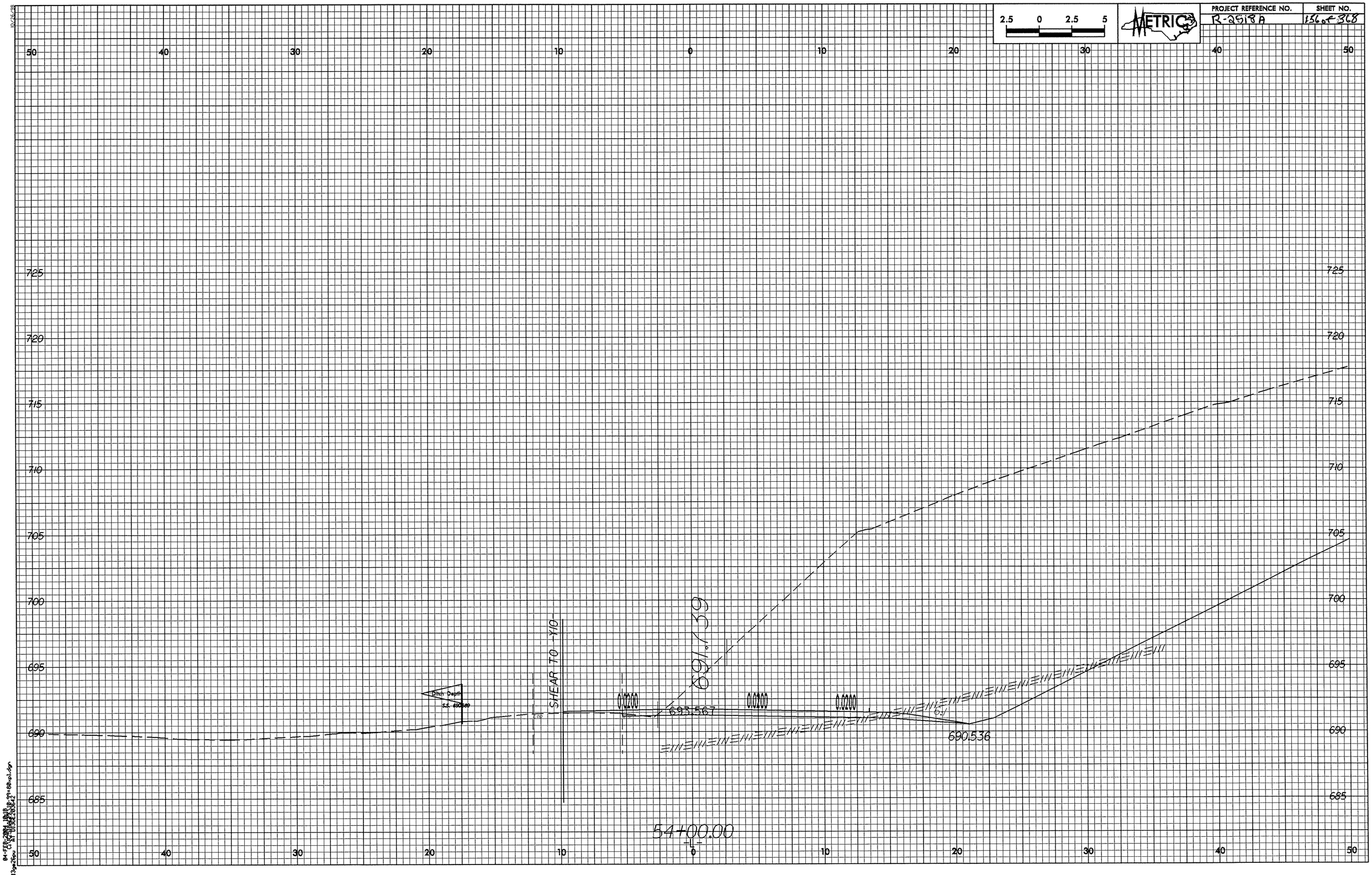
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
153 of 368
50 40 30 20 10 0 10 20 30 40 50
725
720
715
710
705
700
695
690
Ditch Depth
6:1
0.0200
693.026
0.0200
6:1
689.878
689.878
53+40.00
-L-



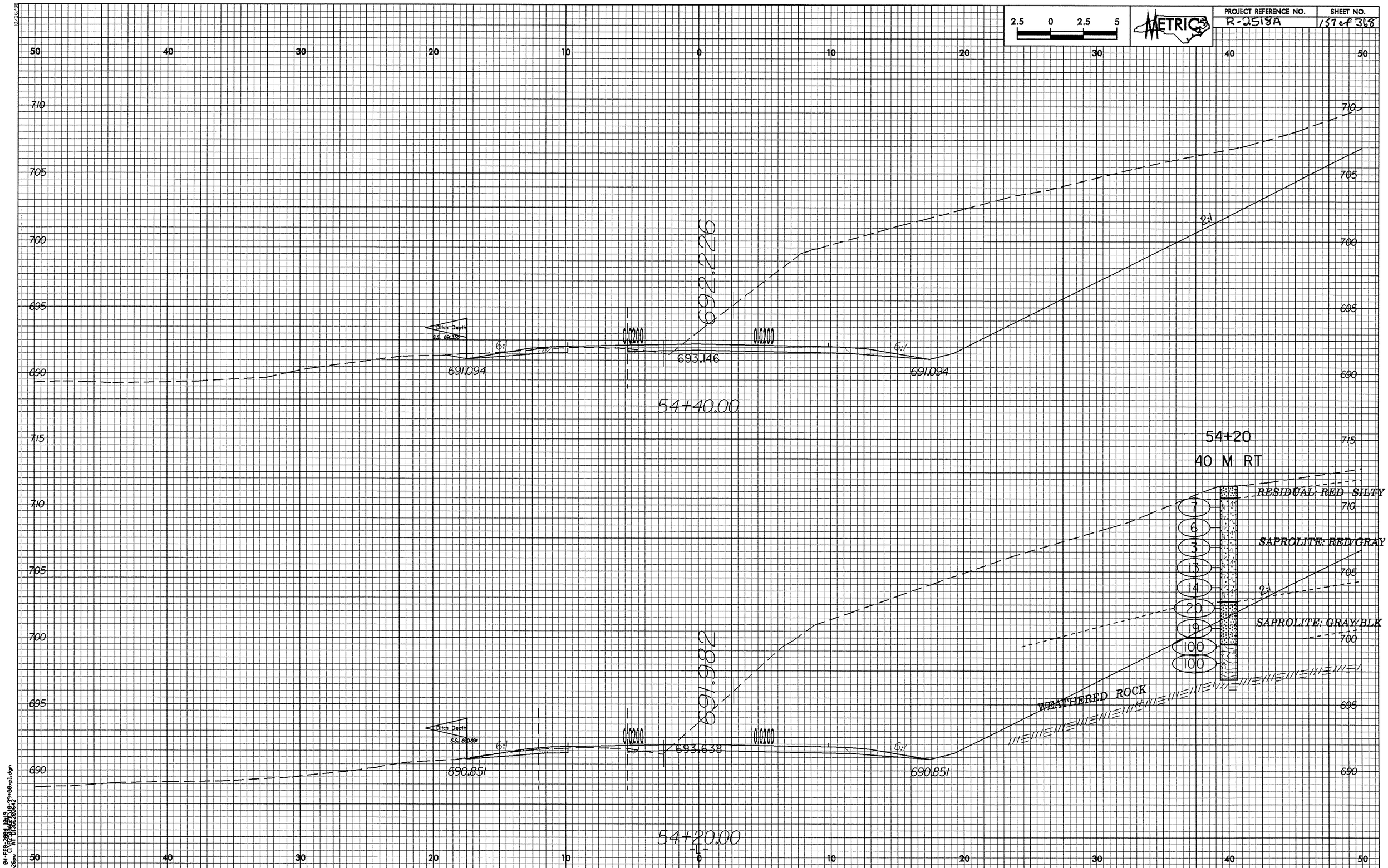
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
154 of 368
50 40 30 20 10 0 10 20 30 40 50
730 725 720 715 710 705 700 695 690
Ditch Depth
S.S. 690.254
6:1
0.0200
693.157
691.253
690.122
690.122
53+60.00
-L-



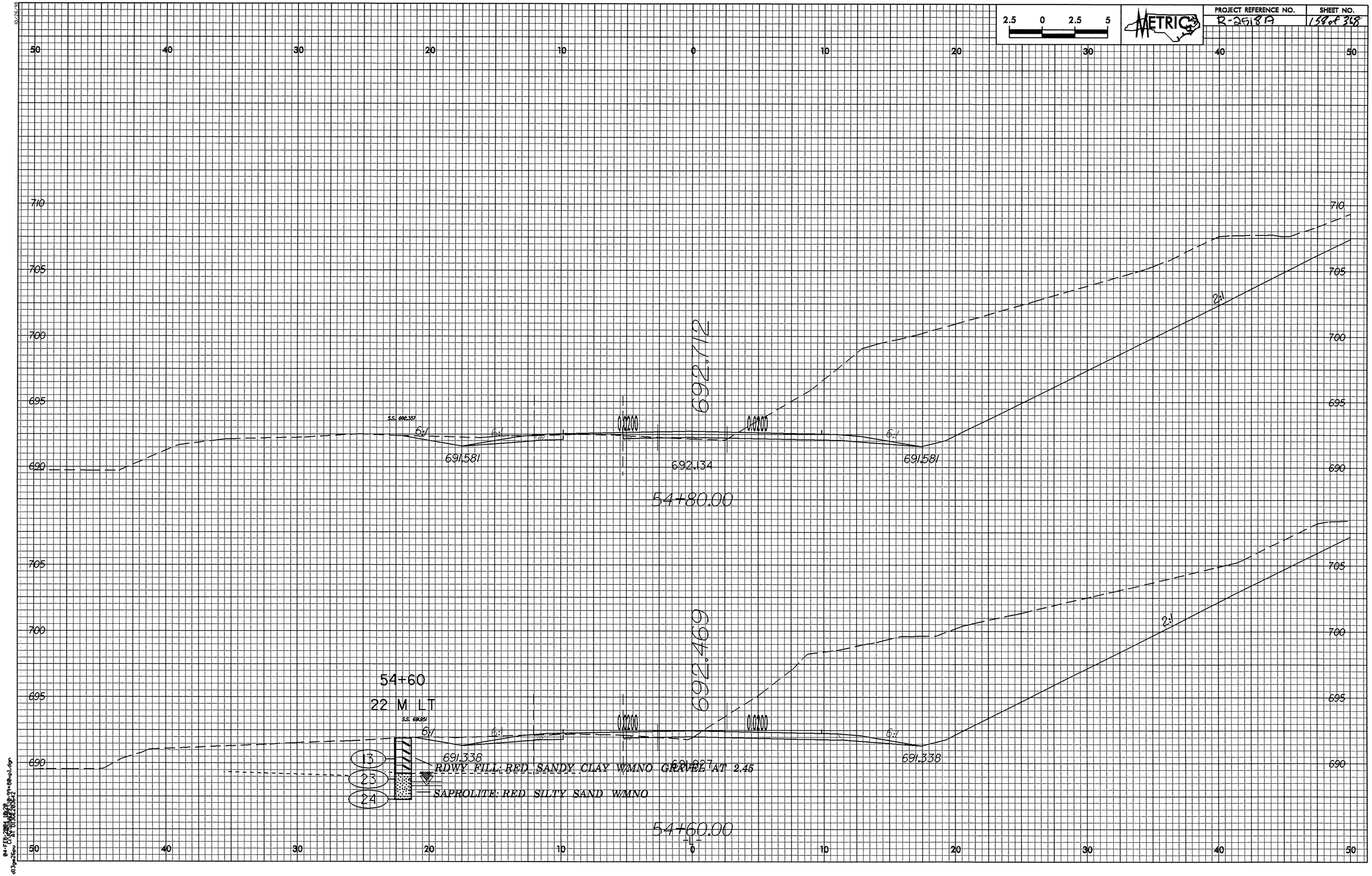
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
155 of 318
50 40 30 20 10 0 10 20 30 40 50
730 725 720 715 710 705 700 695 690
Ditch Depth
S.S. 690.492
6:1
0.0200
0.0200
691.496
693.035
690.365
690.365
-L-
53+80.00



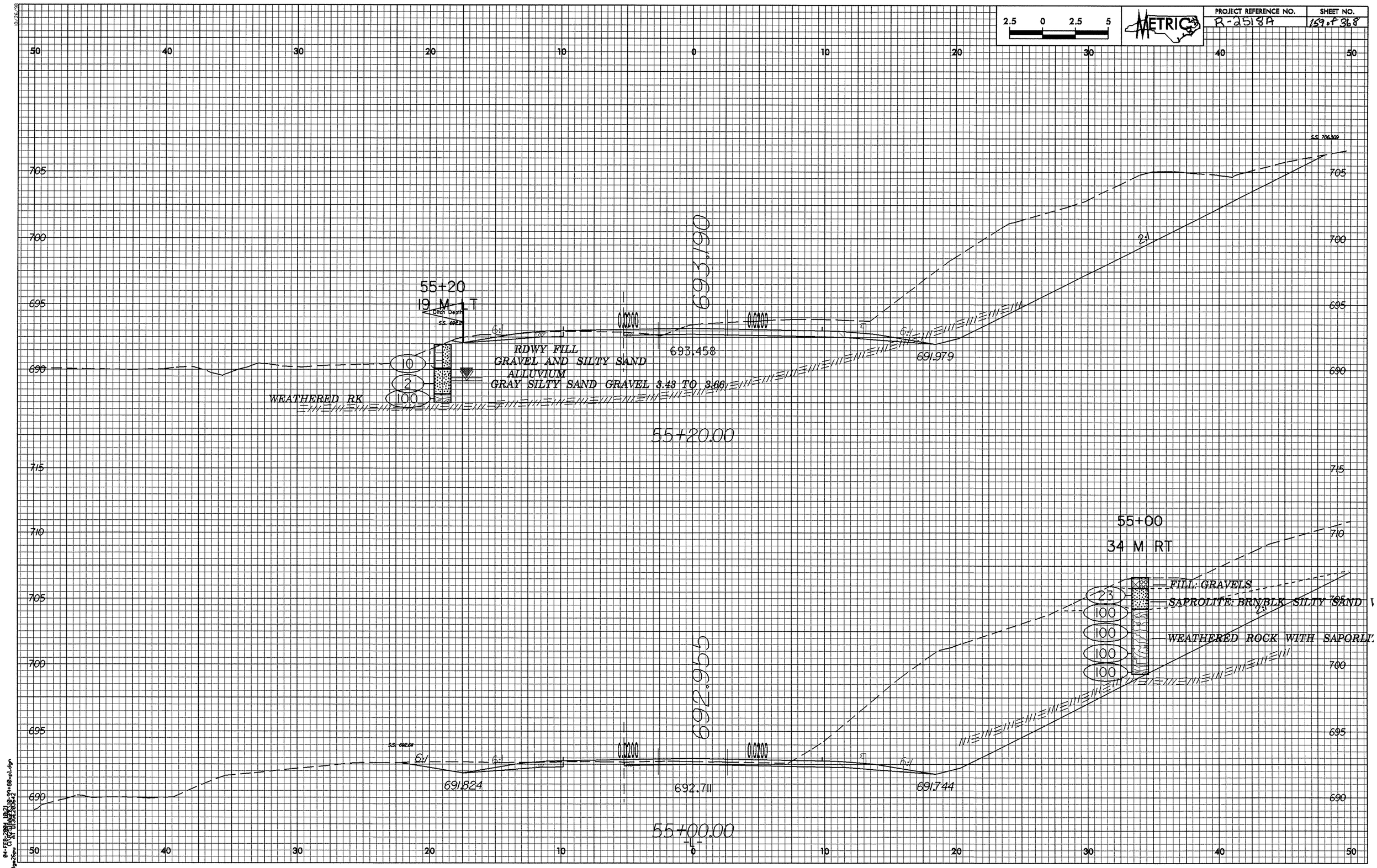
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
156 of 368
50 40 30 20 10 0 10 20 30 40 50
725 720 715 710 705 700 695 690 685
Ditch Depth
SHEAR TO -Y10-
0.0200
0.0200
0.0200
693.567
691.139
690.536
54+00.00
-L-



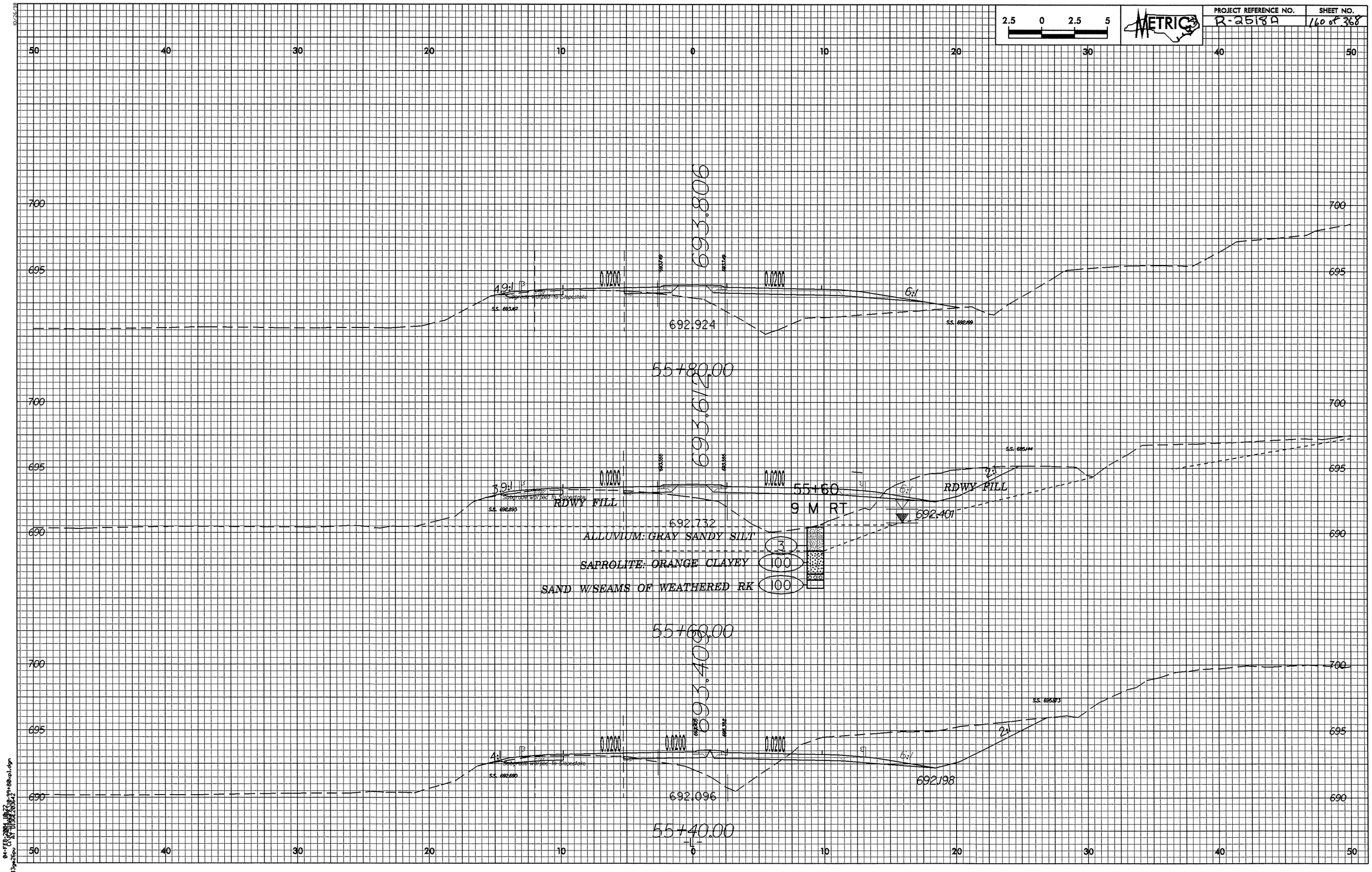
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
157 of 368
692.226
Ditch Depth
S.S. 691.355
6:1
0.0200
0.0200
6:1
2:1
691.094
693.146
691.094
54+40.00
54+20
40 M RT
RESIDUAL: RED SILTY
SAPROLITE: RED/GRAY
SAPROLITE: GRAY/BLK
7
6
3
13
14
20
19
100
100
2:1
691.982
WEATHERED ROCK
Ditch Depth
S.S. 690.891
6:1
0.0200
0.0200
6:1
690.851
693.638
690.851
54+20.00



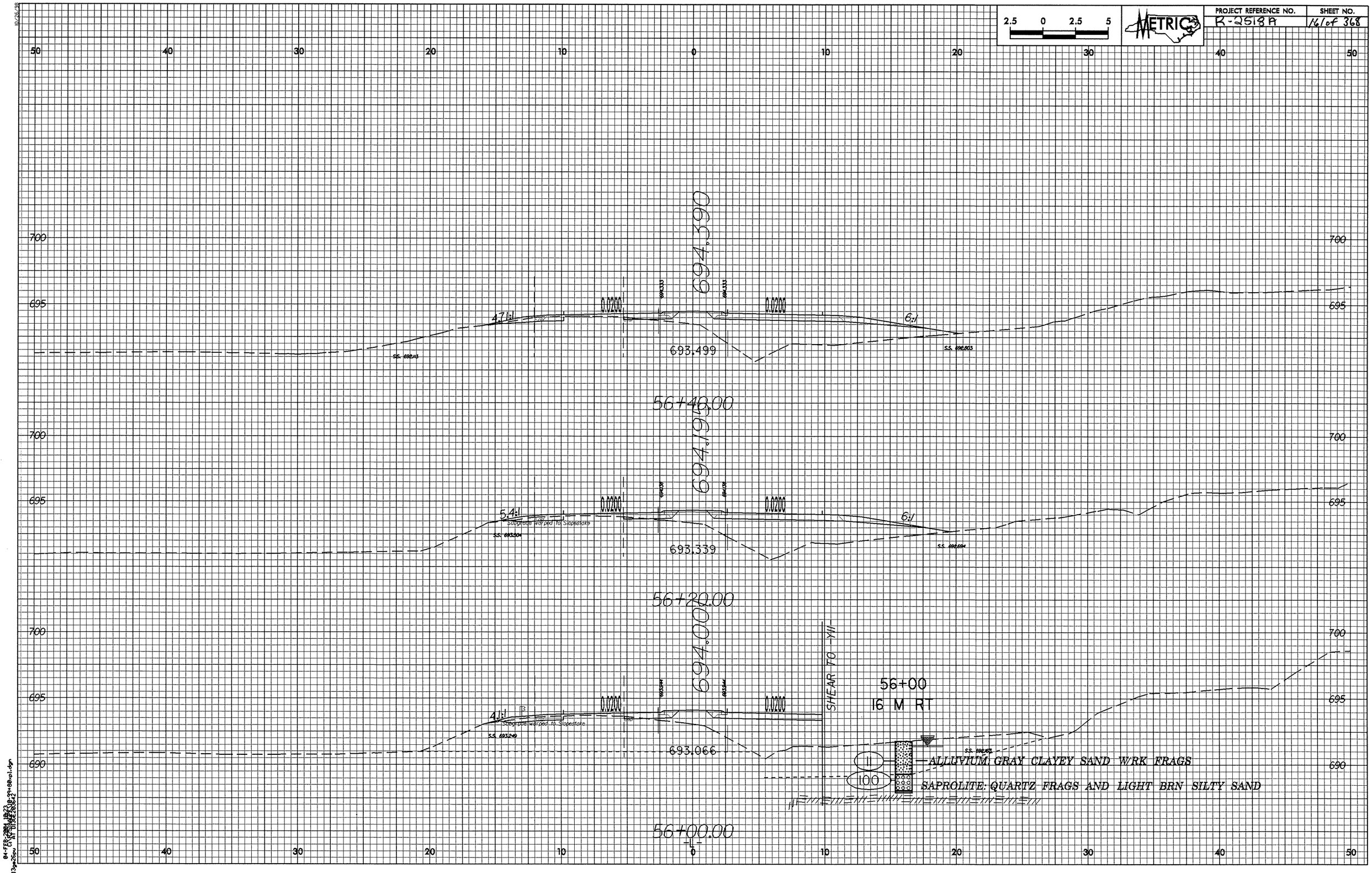
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
158 of 368
50 40 30 20 10 0 10 20 30 40 50
710
705
700
695
690
692.712
692.134
691.581
691.581
0.0200
0.0200
6:1
6:1
6:1
2:1
54+80.00
692.469
54+60
22 M LT
691.338
691.338
691.927
13
23
24
RDWY FILL: RED SANDY CLAY W/MNO GRAVEL AT 2.45
SAPROLITE: RED SILTY SAND W/MNO
54+60.00
-L-



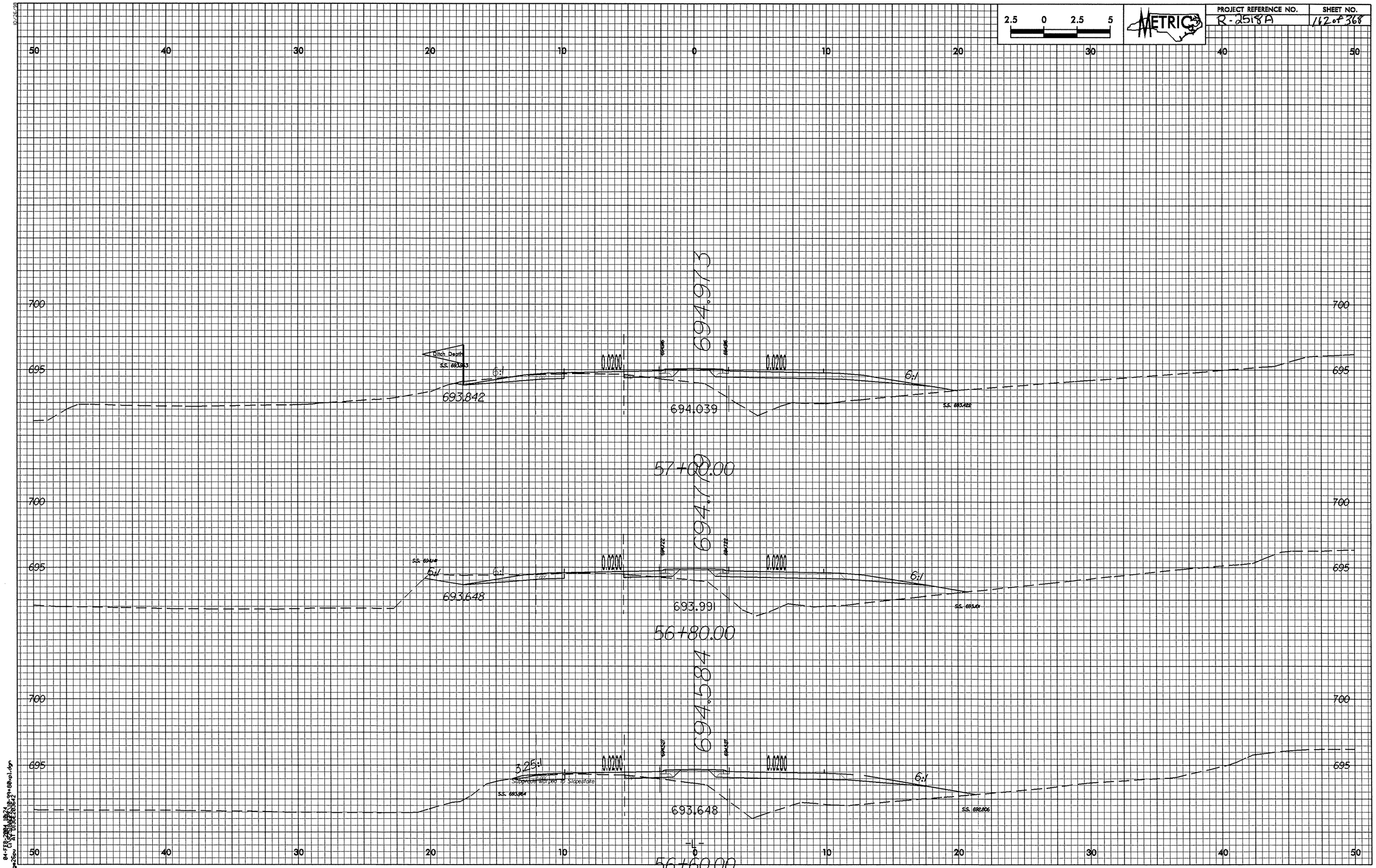
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
159 of 368
55+20
19 M LT
Ditch Depth
RDWY FILL
GRAVEL AND SILTY SAND
ALLUVIUM
GRAY SILTY SAND GRAVEL 3.43 TO 3.66
WEATHERED RK
10
2
100
693.190
693.458
691.979
0.0200
6:1
2:1
55+20.00
55+00
34 M RT
FILL: GRAVELS
SAPROLITE: BRN/BLK SILTY SAND
WEATHERED ROCK WITH SAPORLI
23
100
692.955
691.824
692.711
691.744
55+00.00



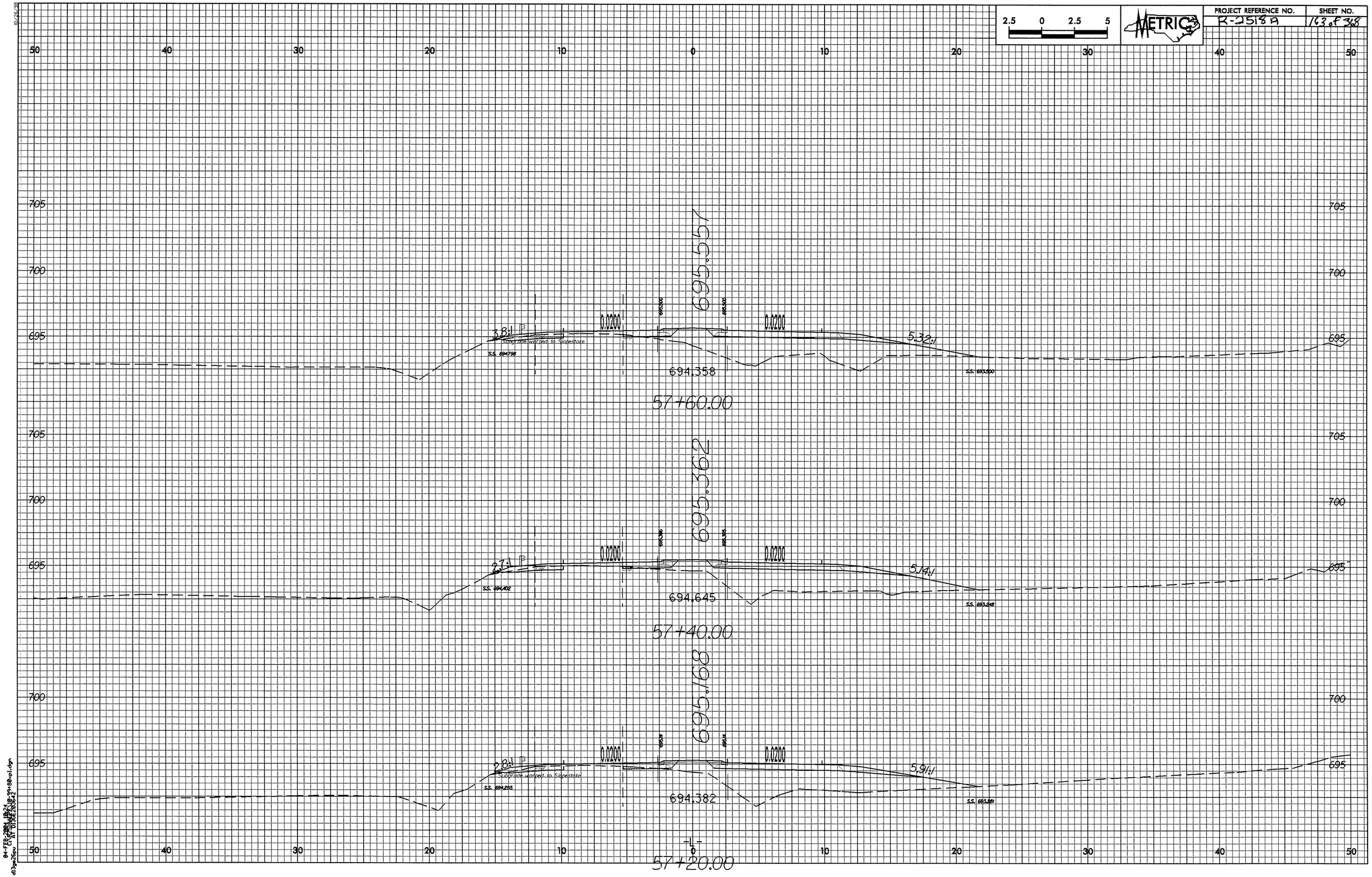
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
160 of 368
50 40 30 20 10 0 10 20 30 40 50
700
695
690
693.806
4.9:1
0.0200
0.0200
6:1
692.924
55+80.00
693.612
3.9:1
0.0200
0.0200
55+60
9 M RT
RDWY FILL
RDWY FILL
2:1
692.401
692.732
ALLUVIUM: GRAY SANDY SILT
3
SAPROLITE: ORANGE CLAYEY
100
SAND W/SEAMS OF WEATHERED RK
100
55+60.00
693.409
4:1
0.0200
0.0200
0.0200
6:1
2:1
692.198
692.096
55+40.00
-L-



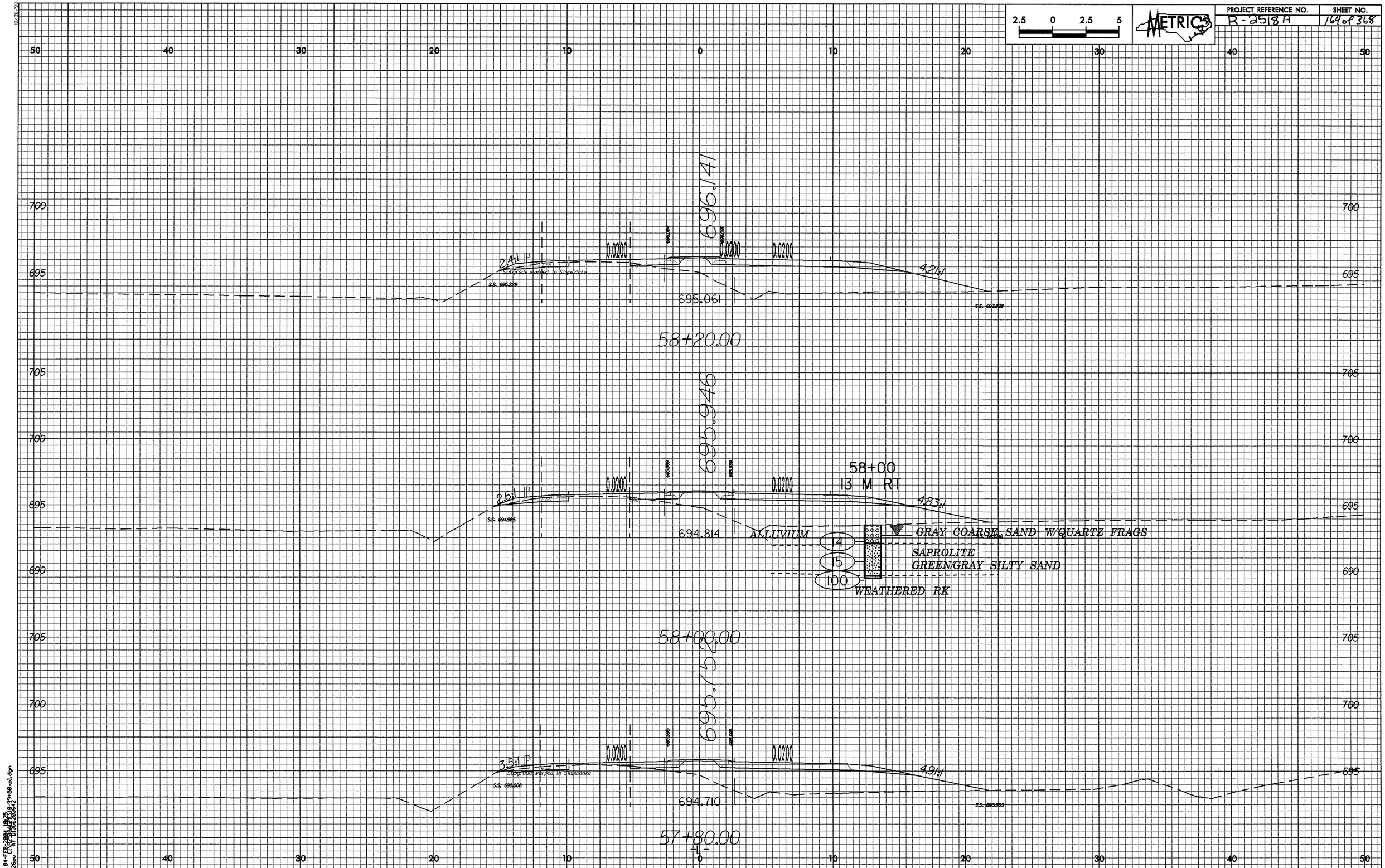
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
16 of 368
50 40 30 20 10 0 10 20 30 40 50
700
695
694.390
0.0200
4.71:1
6:1
693.499
56+40.00
694.194
5.4:1
Subgrade warped to Slopestake
693.339
56+20.00
694.000
4.1:1
693.066
SHEAR TO -Y11-
56+00
16 M RT
690
11
100
ALLUVIUM: GRAY CLAYEY SAND W/RK FRAGS
SAPROLITE: QUARTZ FRAGS AND LIGHT BRN SILTY SAND
56+00.00
-L-



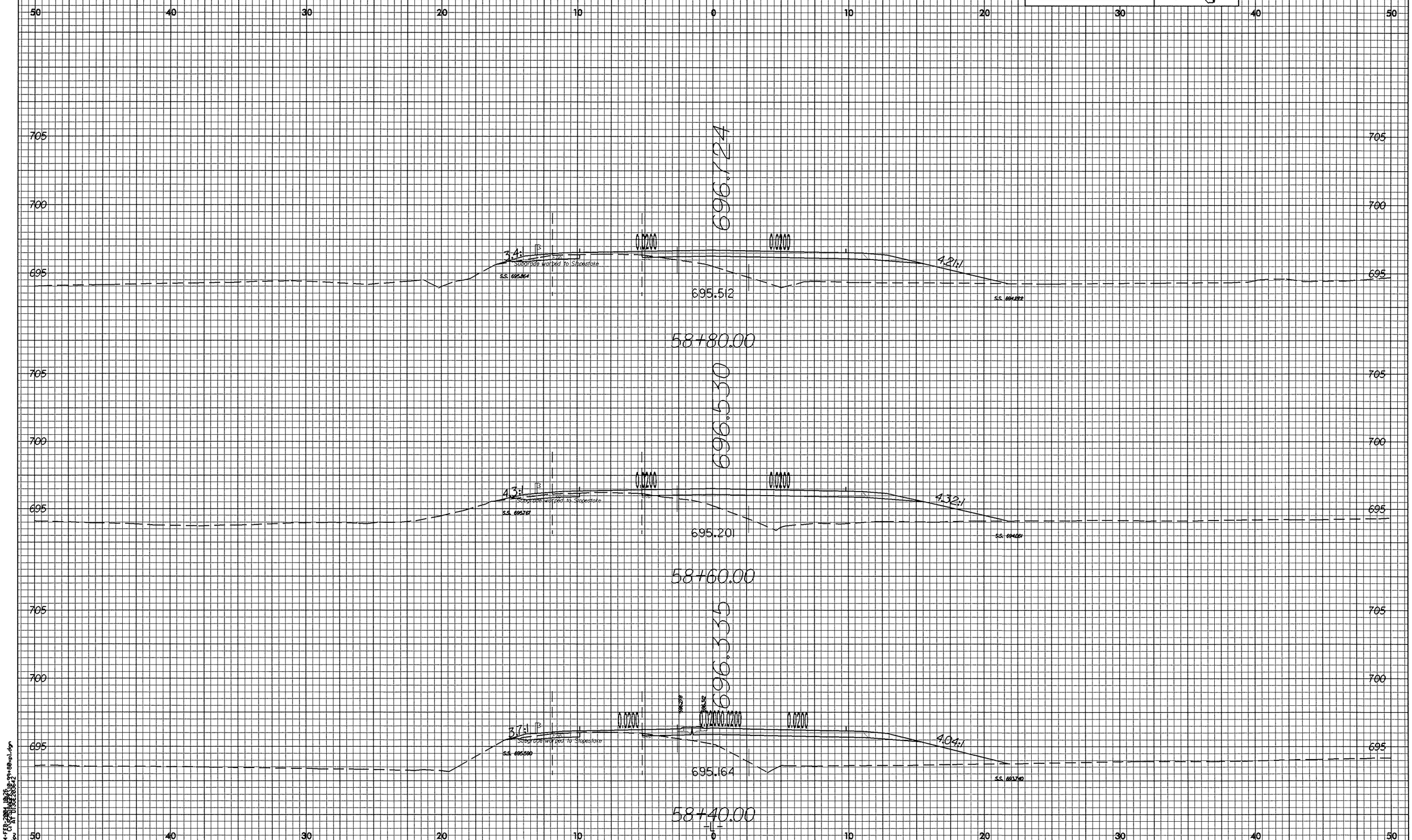
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
162 of 368
50 40 30 20 10 0 10 20 30 40 50
700
695
694.973
Ditch Depth
6:1
0.0200
693.842
694.039
57+00.00
694.779
693.648
693.991
56+80.00
694.584
3.25:1
Subgrade Warped to Slopestake
693.648
56+60.00



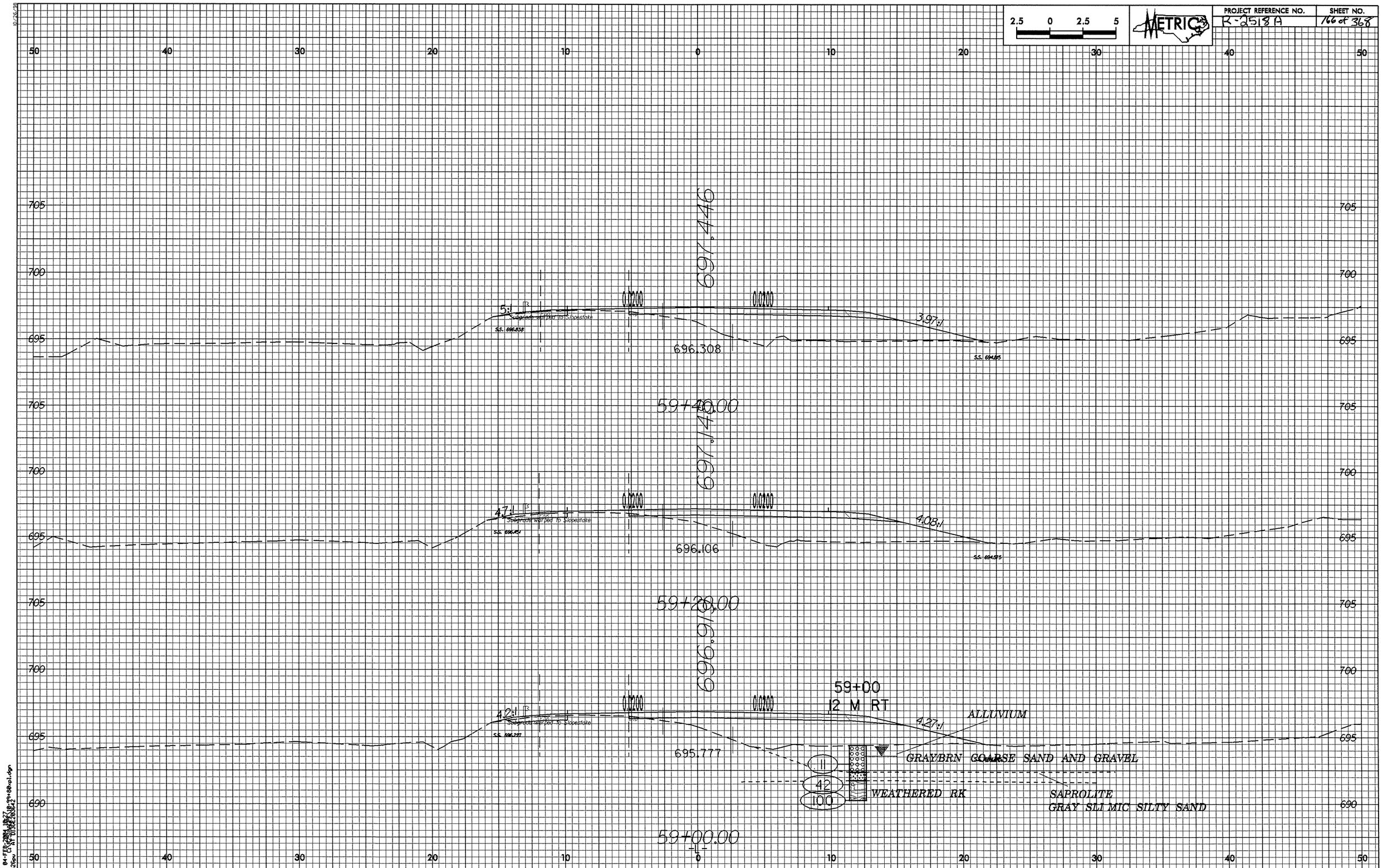
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
163 of 368
50 40 30 20 10 0 10 20 30 40 50
705
700
695
695.557
3.8:1
0.0200
0.0200
5.32:1
Subgrade warped to Slopestake
S.S. 694.798
S.S. 693.500
694.358
57+60.00
695.362
2.7:1
0.0200
0.0200
5.14:1
S.S. 694.402
S.S. 693.248
694.645
57+40.00
695.168
2.8:1
0.0200
0.0200
5.91:1
Subgrade warped to Slopestake
S.S. 694.255
S.S. 693.281
694.382
-L-
57+20.00



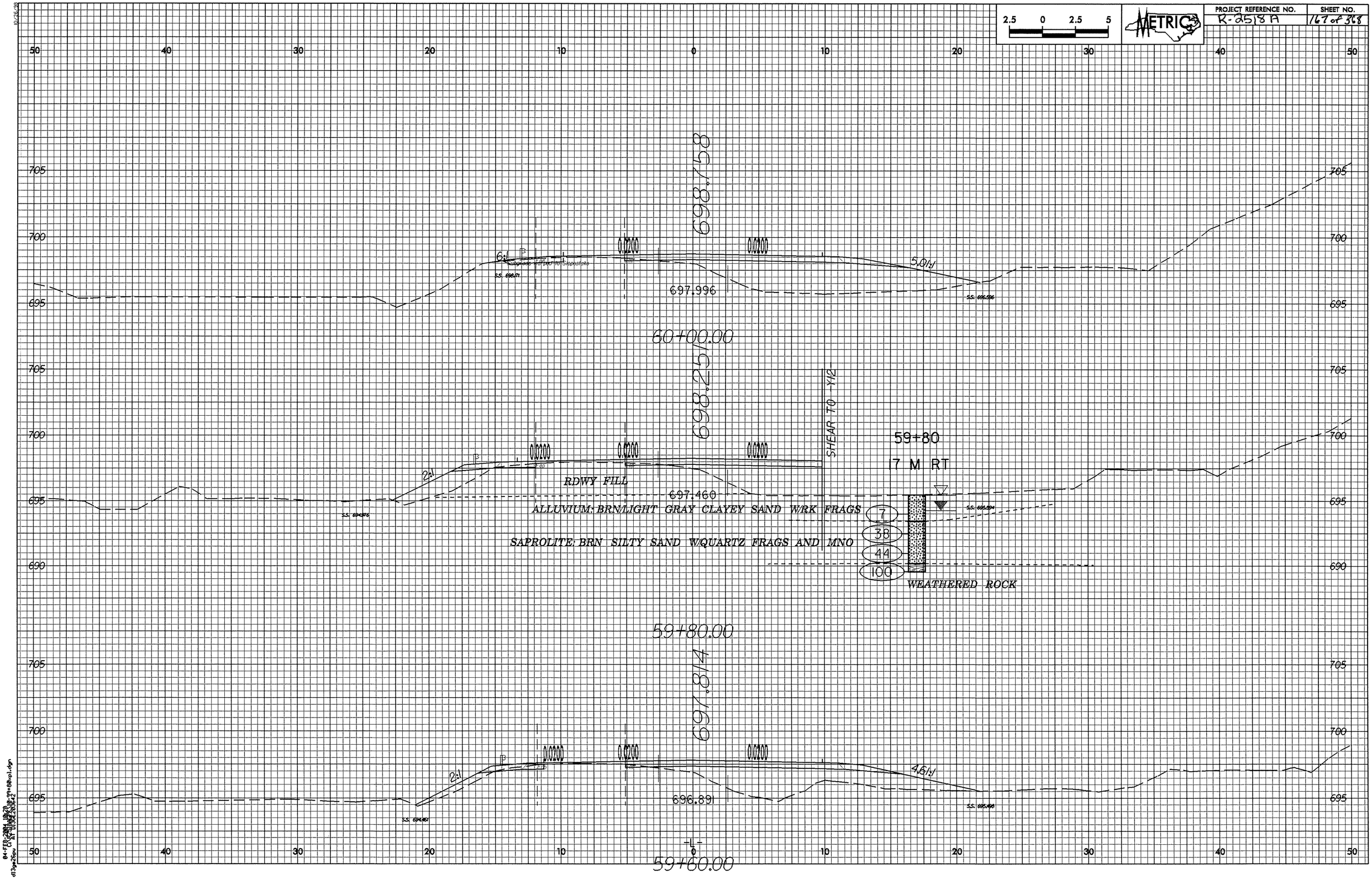
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
164 of 368
696.141
0.0200
0.0200
0.0200
2.4:1
Subgrade warped to Slopestake
4.21:1
695.061
58+20.00
695.946
58+00
13 M RT
2.6:1
4.83:1
694.814
ALLUVIUM
GRAY COARSE SAND W/QUARTZ FRAGS
14
SAPROLITE
15
GREEN/GRAY SILTY SAND
100
WEATHERED RK
58+00.00
695.752
3.5:1
4.91:1
694.710
57+80.00



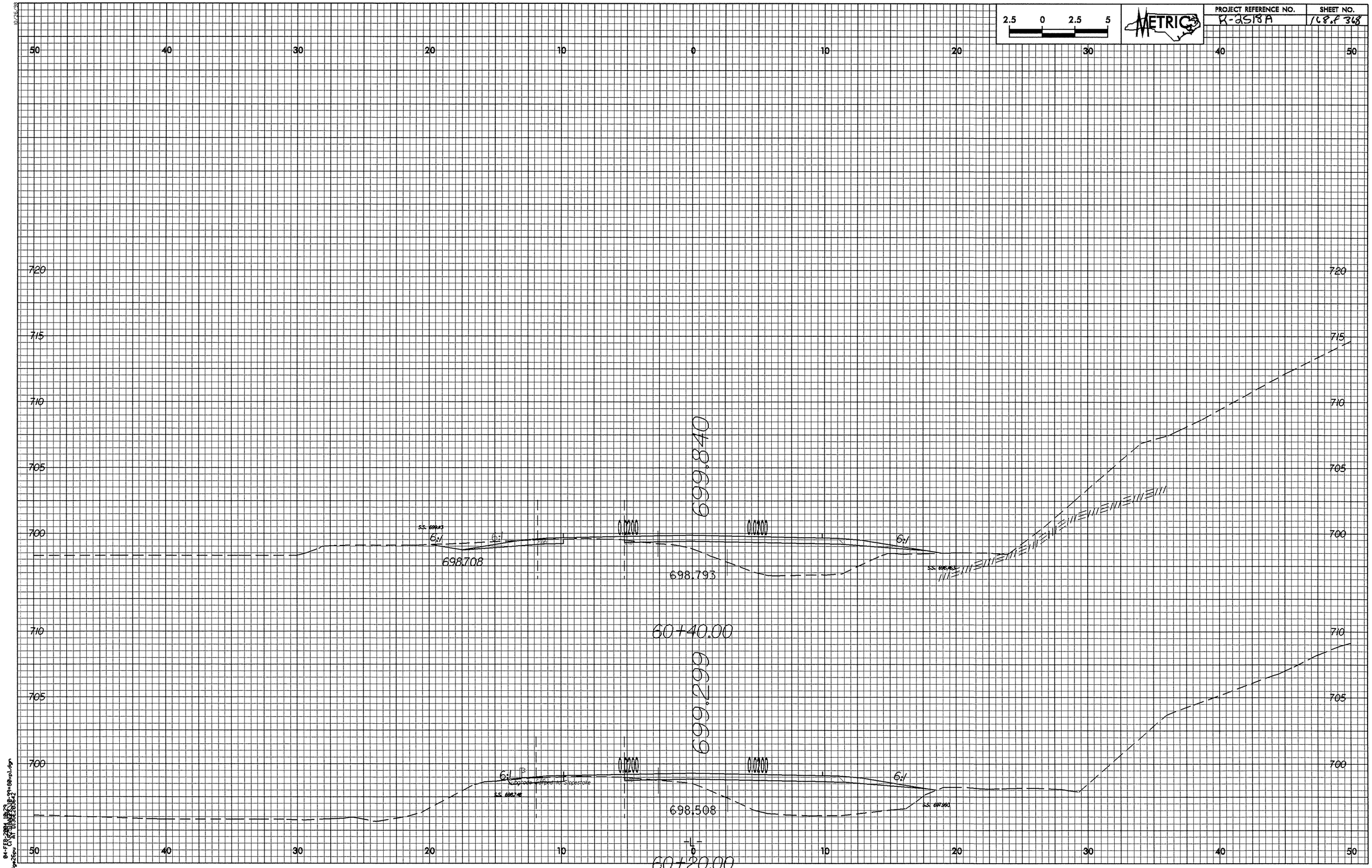
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
165 of 368
50 40 30 20 10 0 10 20 30 40 50
705
700
695
696.124
0.0200
0.0200
3.4:1
Subgrade warped to Slopestake
S.S. 695.864
4.21:1
695.512
S.S. 694.222
58+80.00
696.530
0.0200
0.0200
4.3:1
Subgrade warped to Slopestake
S.S. 695.767
4.32:1
695.201
S.S. 694.081
58+60.00
696.335
0.0200
0.0200
0.0200
3.7:1
Subgrade warped to Slopestake
S.S. 695.590
4.04:1
695.164
S.S. 693.740
58+40.00
-L-



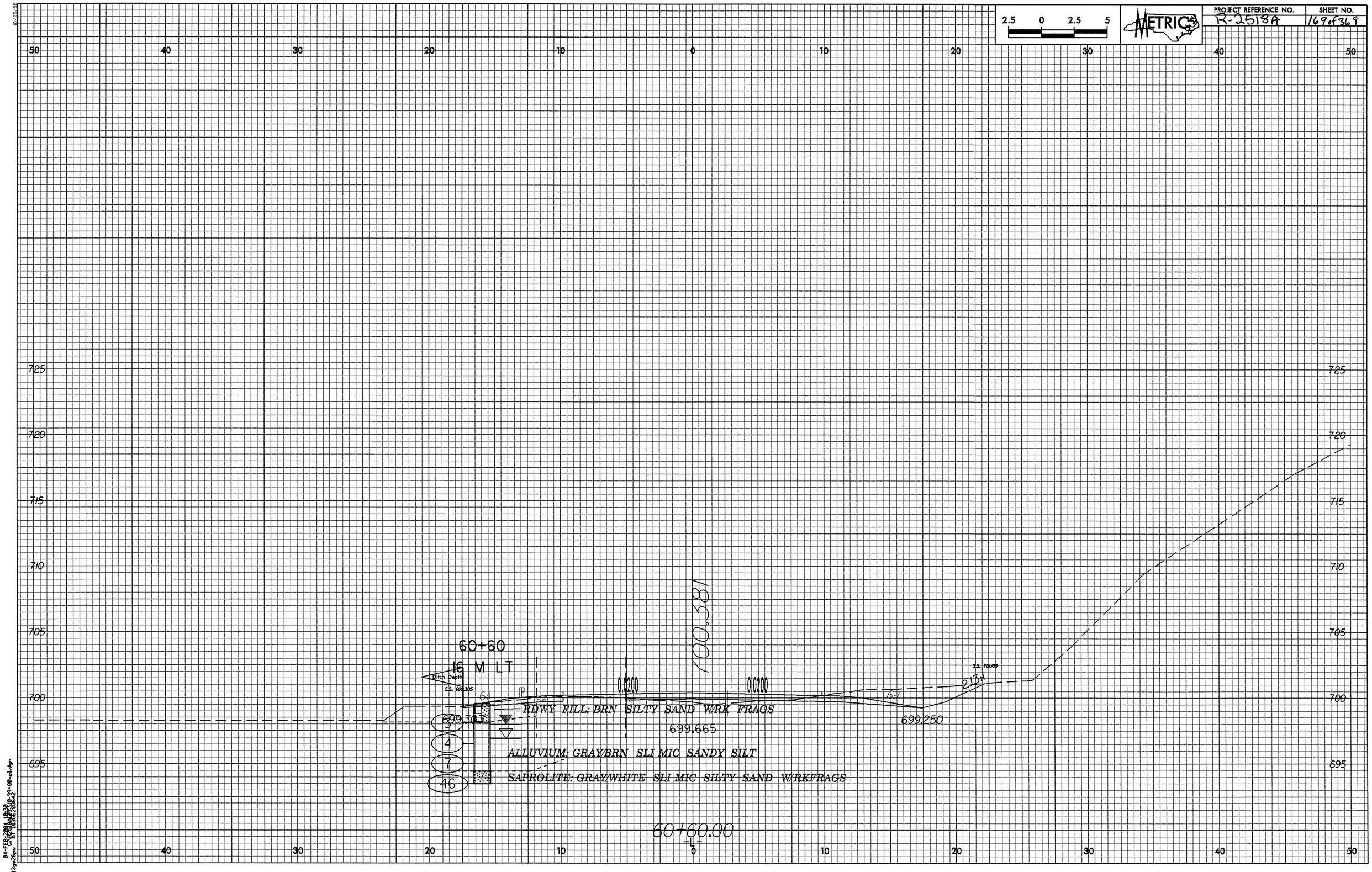
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
166 of 368
50 40 30 20 10 0 10 20 30 40 50
705
700
695
690
697.446
5:1
0.0200
0.0200
3.97:1
696.308
59+40.00
697.140
4.7:1
4.08:1
696.106
59+20.00
696.910
59+00
12 M RT
4.2:1
4.27:1
ALLUVIUM
695.777
GRAY/BRN COARSE SAND AND GRAVEL
11
42
100
WEATHERED RK
SAPROLITE
GRAY SLI MIC SILTY SAND
59+00.00
-L-



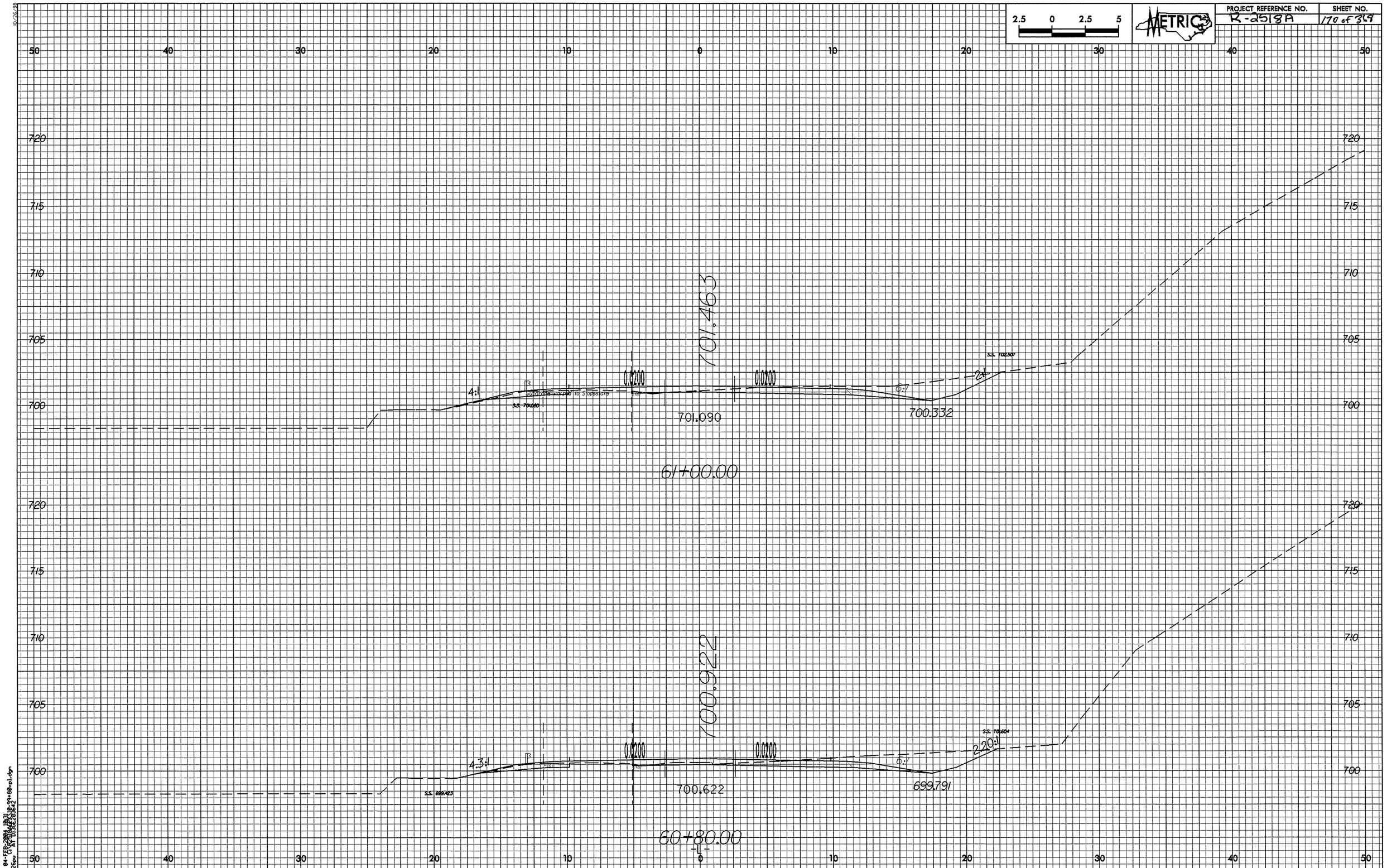
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
167 of 368
698.758
697.996
60+00.00
698.251
SHEAR TO Y12
59+80
17 M RT
RDWY FILL
697.460
ALLUVIUM: BRN/LIGHT GRAY CLAYEY SAND W/RK FRAGS
SAPROLITE: BRN SILTY SAND W/QUARTZ FRAGS AND MNO
7
38
44
100
WEATHERED ROCK
59+80.00
697.814
696.891
59+60.00



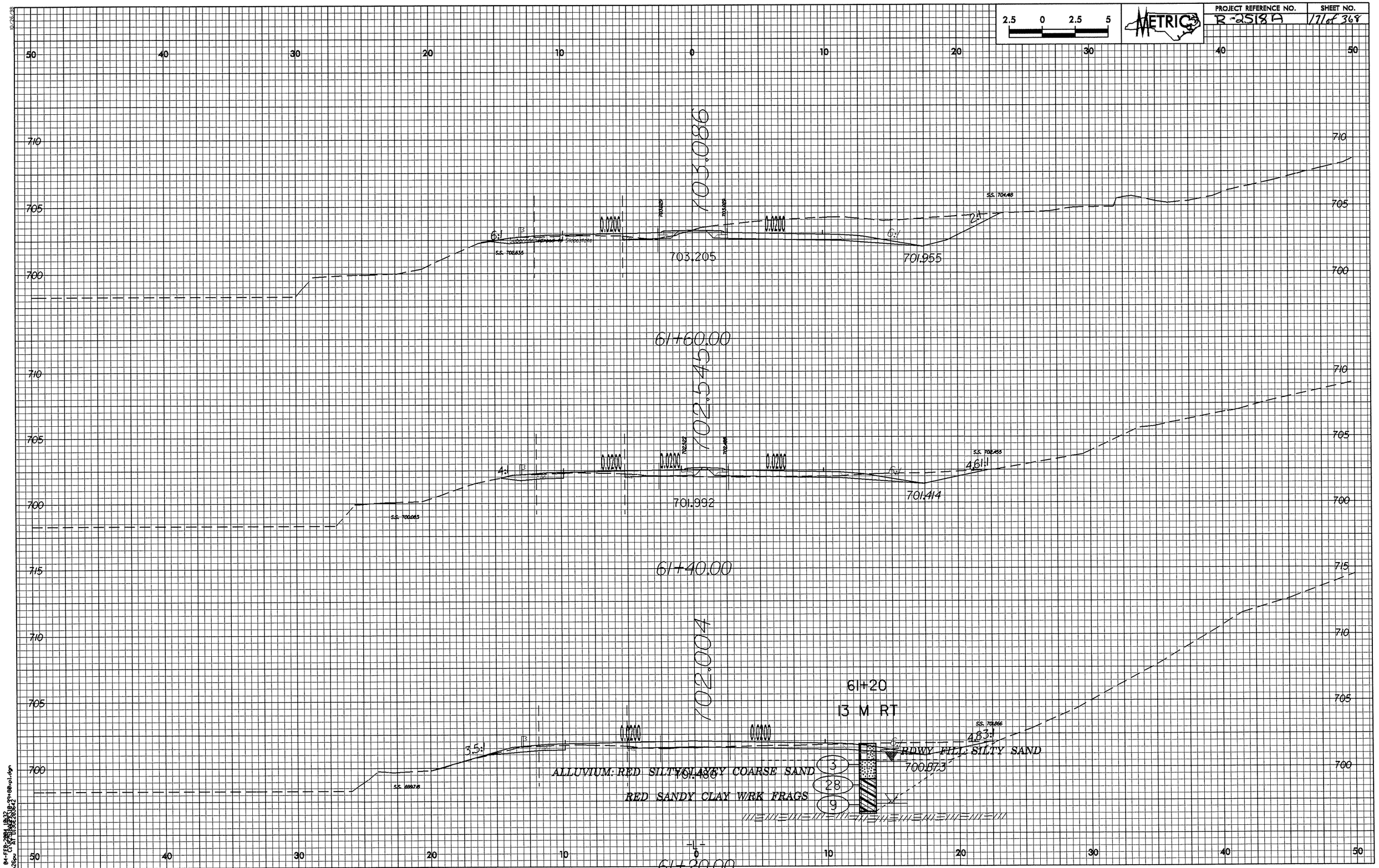
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
168 of 368
50 40 30 20 10 0 10 20 30 40 50
720
715
710
705
700
699.840
0.0200
0.0200
6:1
6:1
6:1
698.708
698.793
60+40.00
699.299
0.0200
0.0200
6:1
6:1
Subgrade Trapped to Slopestake
698.508
-L-
60+20.00



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
169 of 369
50 40 30 20 10 0 10 20 30 40 50
725
720
715
710
705
700
695
60+60
16 M LT
Ditch Depth
S.S. 699.305
0.0200
0.0200
100.381
S.S. 70.00
213:1
6:1
RDWY FILL: BRN SILTY SAND W/RK FRAGS
699.305
699.665
699.250
3
4
7
46
ALLUVIUM: GRAY/BRN SLI MIC SANDY SILT
SAPROLITE: GRAY/WHITE SLI MIC SILTY SAND W/RKFRAGS
60+60.00
-L-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
170 of 369
50 40 30 20 10 0 10 20 30 40 50
720
715
710
705
700
701.463
0.0200
0.0200
4:1
6:1
2:1
S.S. 702.307
S.S. 701.080
701.090
700.332
61+00.00
700.922
4.3:1
6:1
2.20:1
S.S. 701.604
S.S. 699.423
700.622
699.791
60+80.00
-L-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
171 of 368
50 40 30 20 10 0 10 20 30 40 50
710
705
700
703.086
6:1
0.0200
703.205
701.955
S.S. 704.48
61+60.00
702.545
4:1
701.992
701.414
4.61:1
S.S. 700.083
61+40.00
702.004
61+20
13 M RT
3.5:1
4.83:1
S.S. 701.866
RDWY FILL: SILTY SAND
700.873
ALLUVIUM: RED SILTY/CLAYEY COARSE SAND
RED SANDY CLAY W/RK FRAGS
3
28
9
-L-
61+20.00

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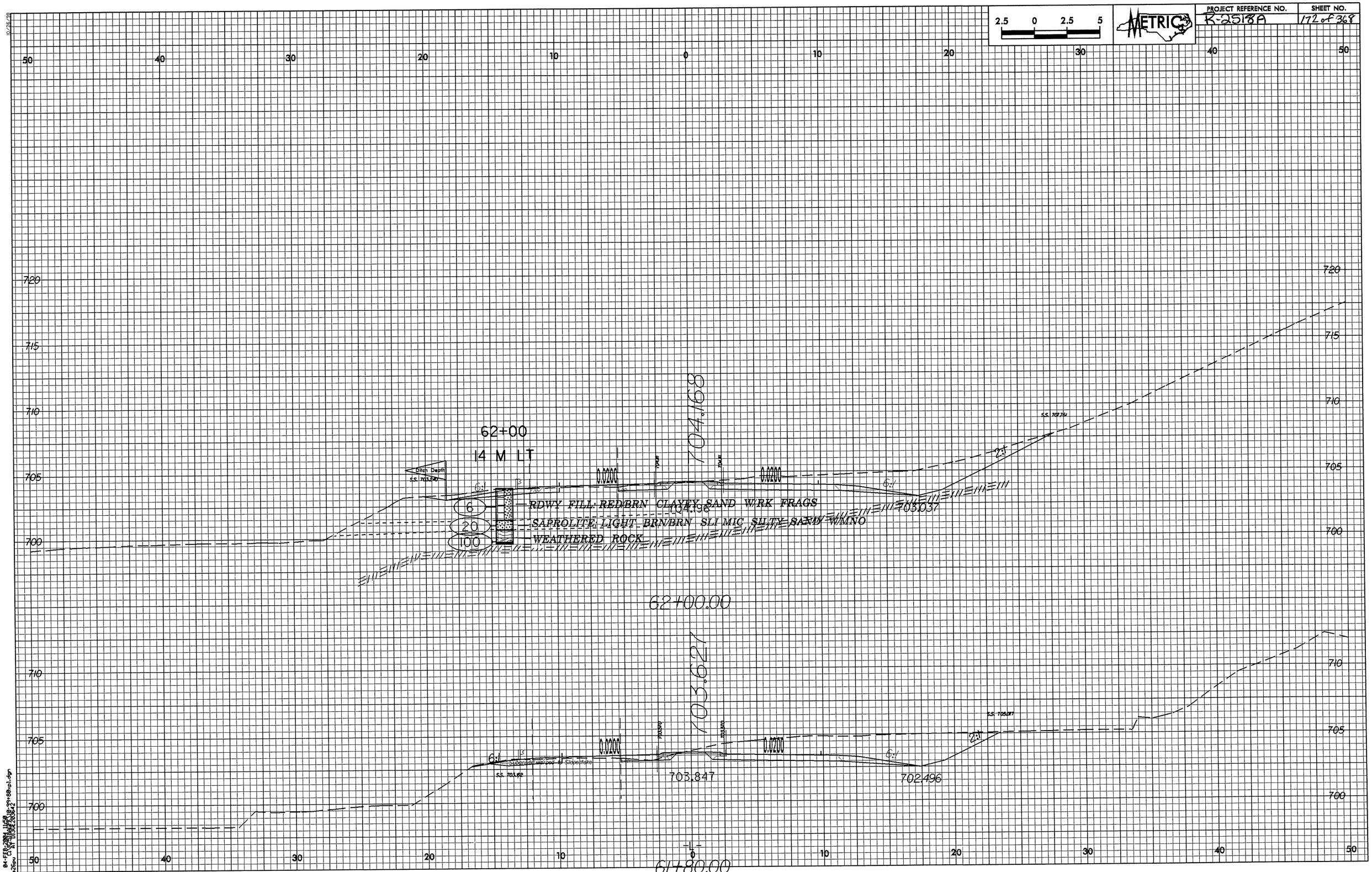
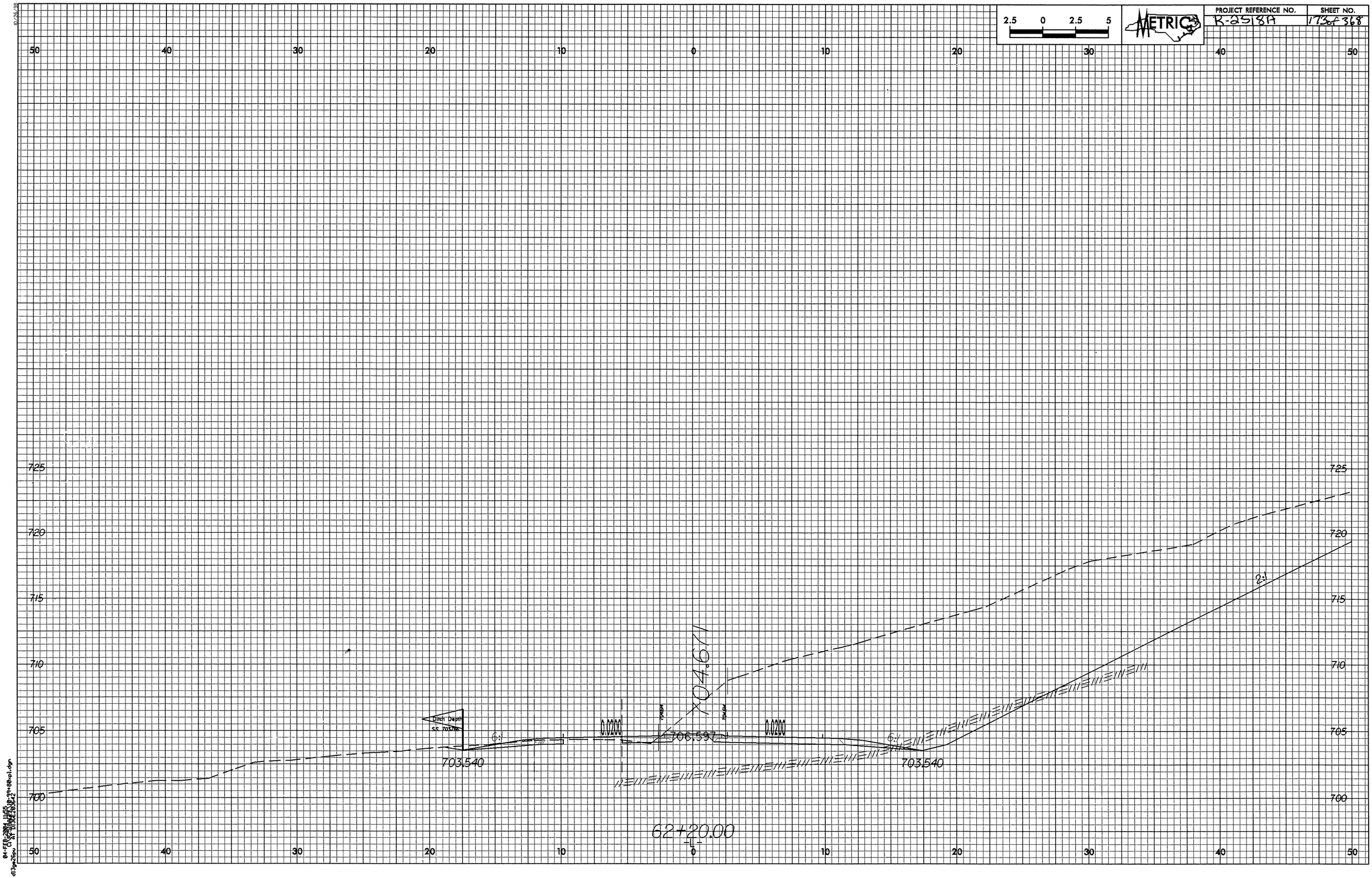
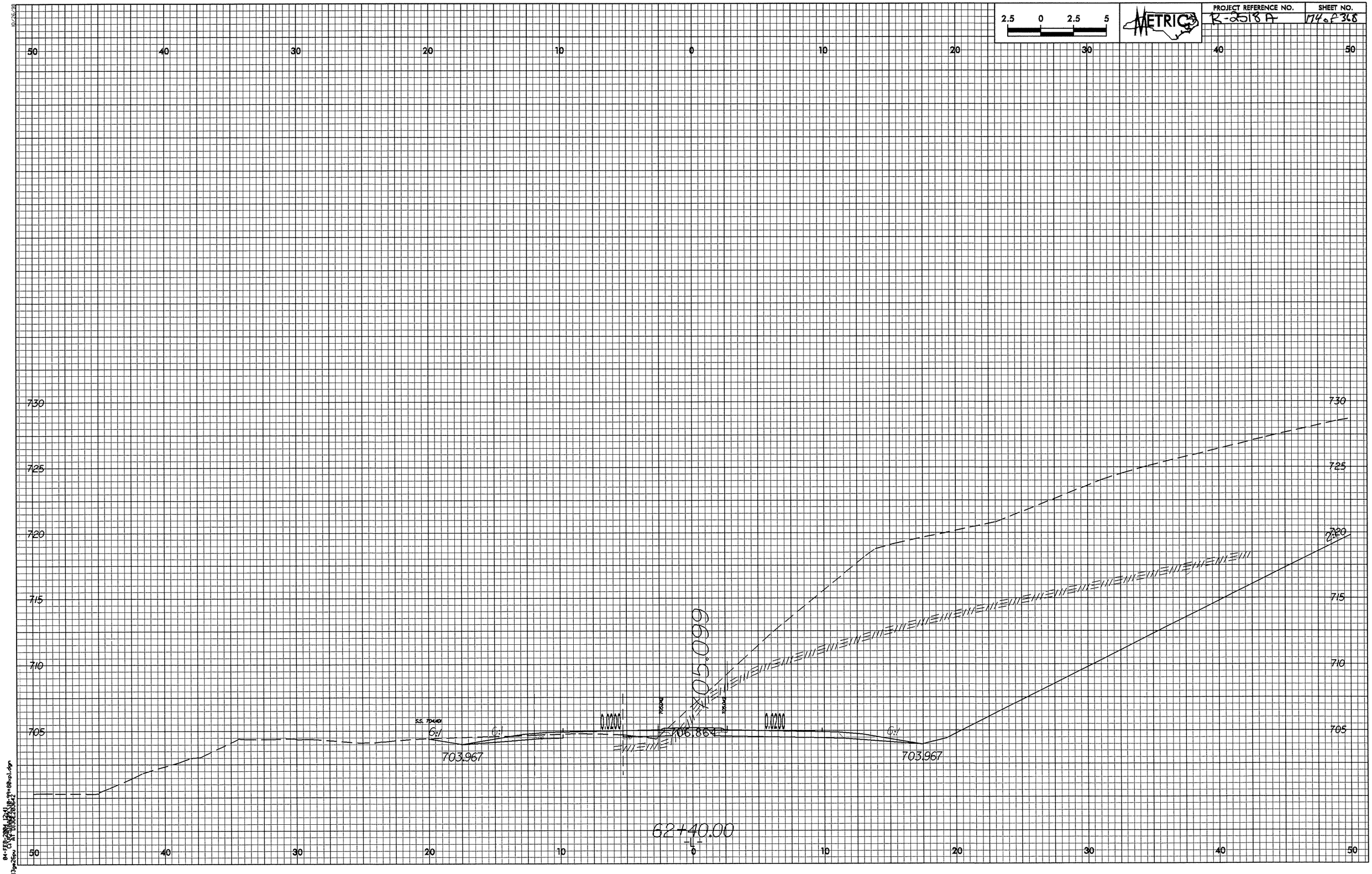
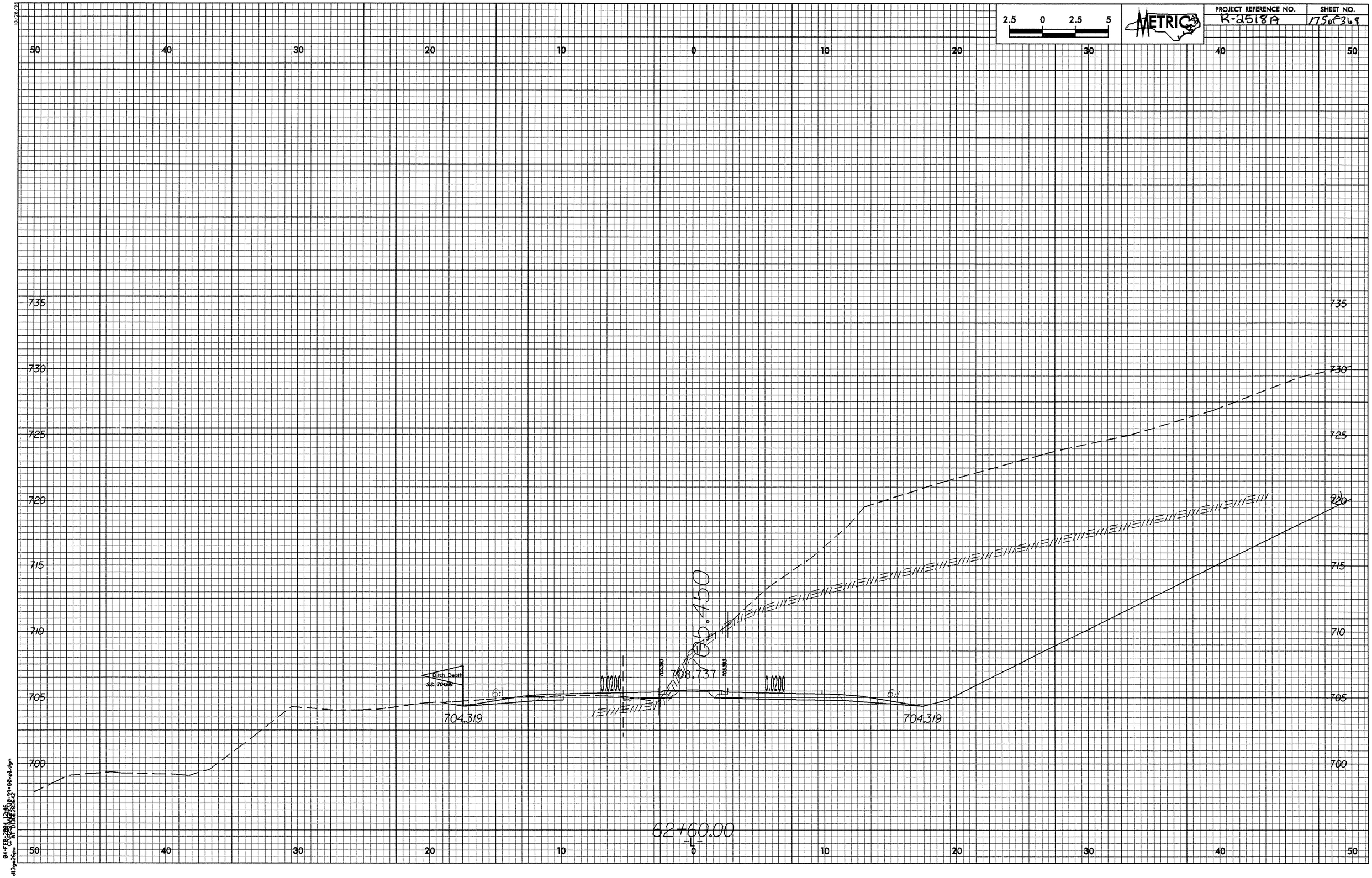




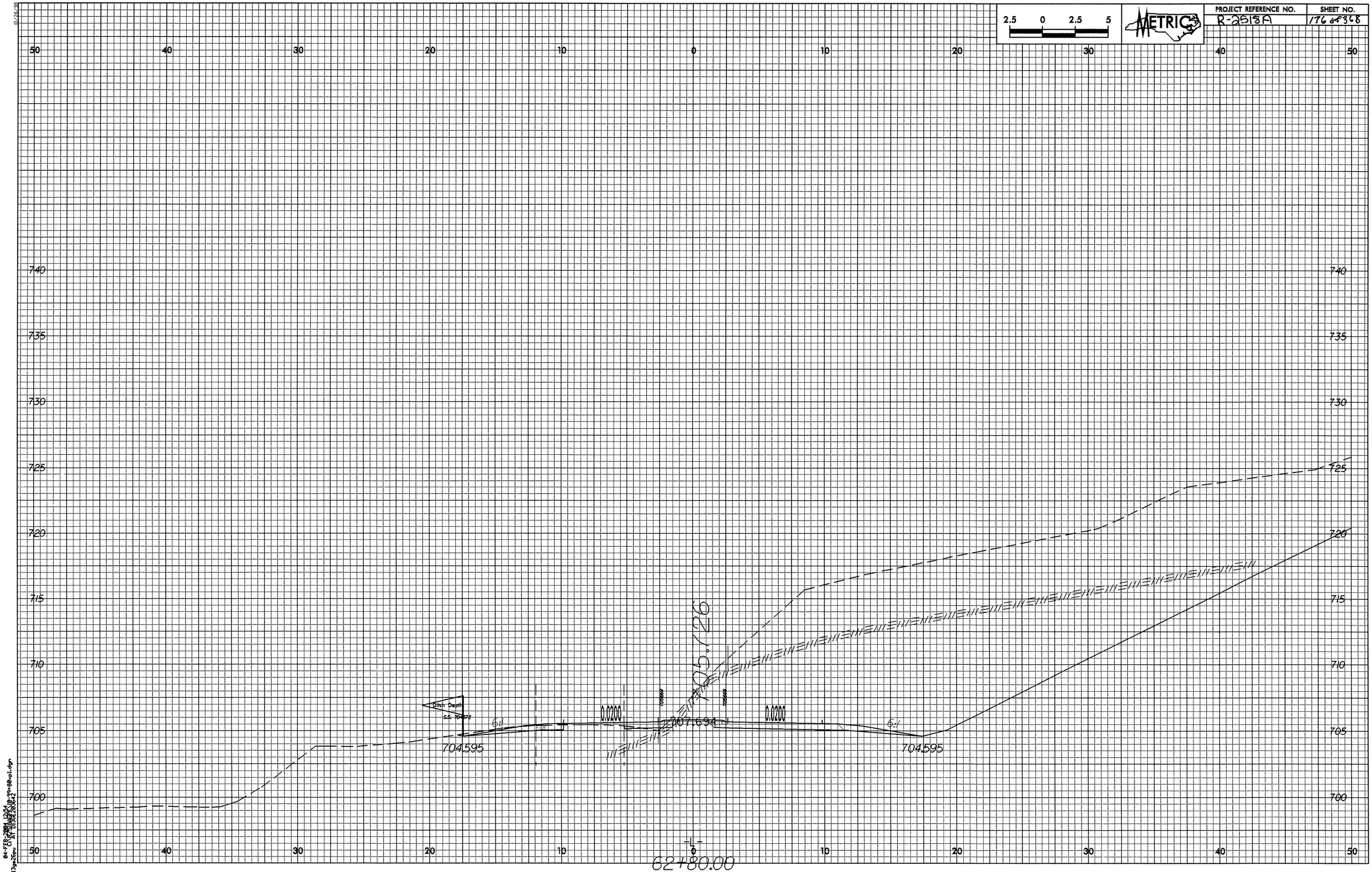
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
173 of 368
50 40 30 20 10 0 10 20 30 40 50
725
720
715
710
705
700
Ditch Depth
S.S. 703.766
6:1
0.0200
706.597
704.671
0.0200
6:1
2:1
703.540
703.540
62+20.00
-L-



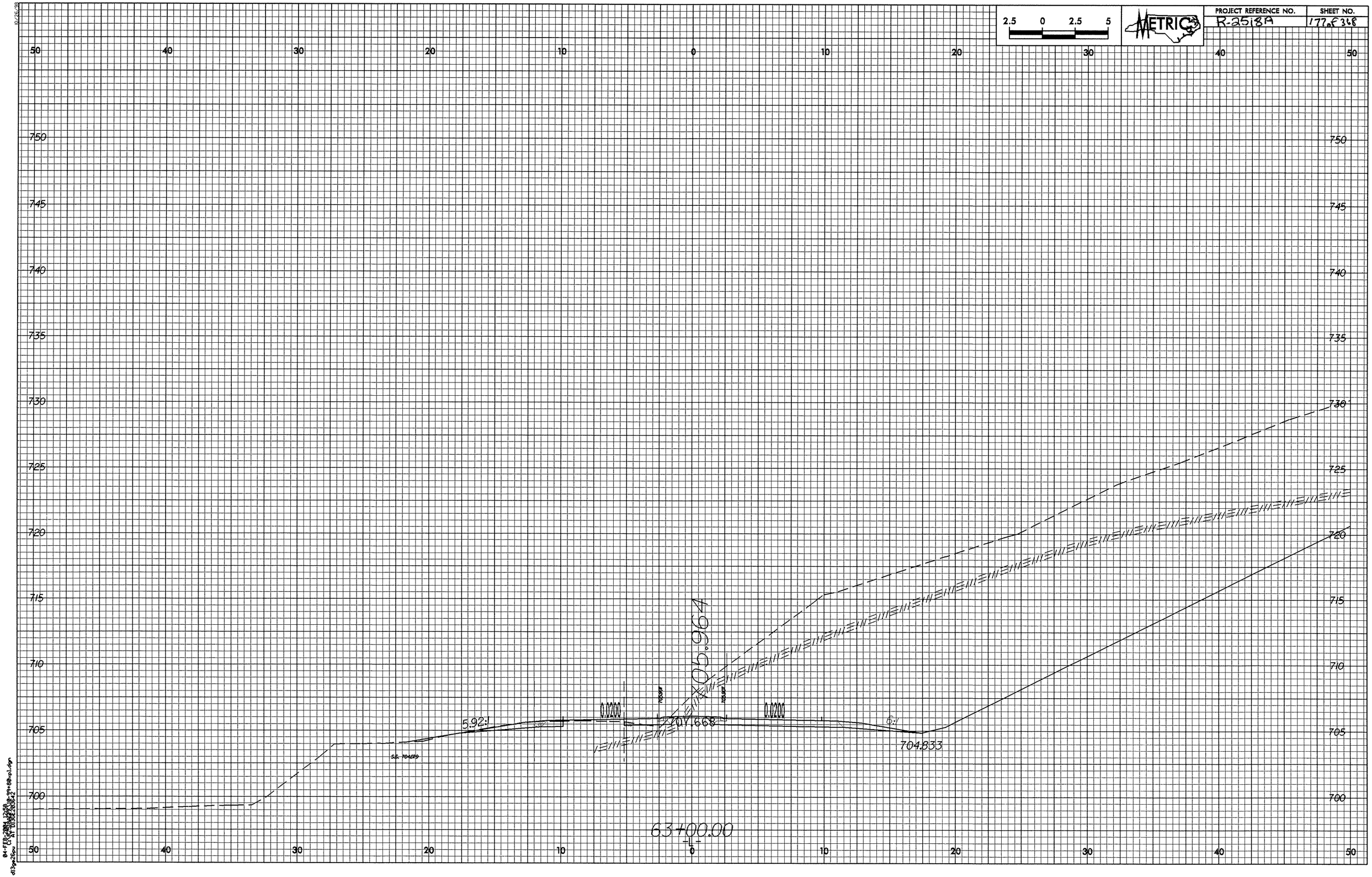
2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
174 of 368
50 40 30 20 10 0 10 20 30 40 50
730
725
720
715
710
705
S.S. 704.401
6:1
6:1
0.0200
705.099
706.864
0.0200
6:1
703.967
703.967
62+40.00
-L-

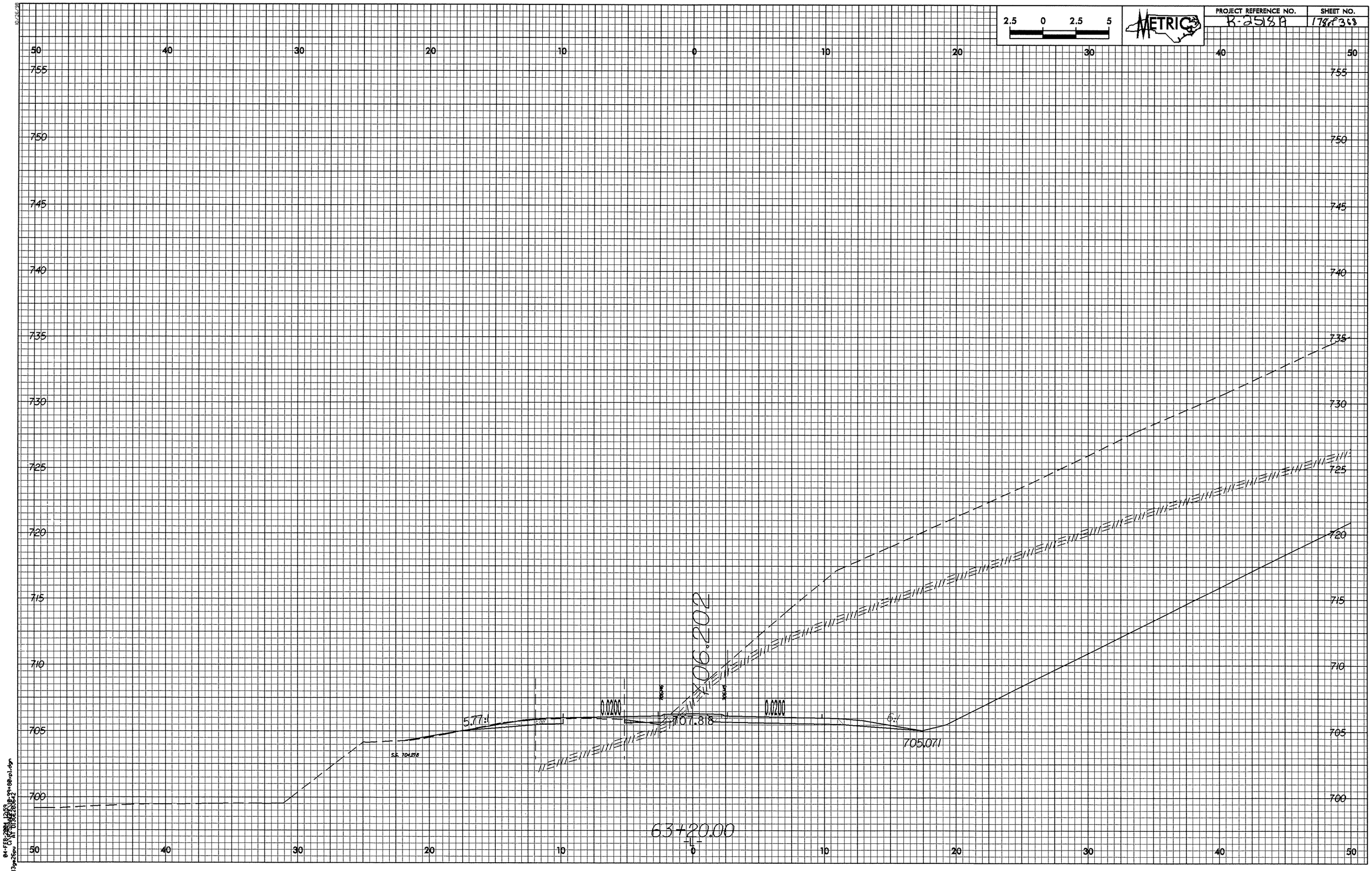


2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
175 of 368
50 40 30 20 10 0 10 20 30 40 50
735
730
725
720
715
710
705
700
Ditch Depth
S.S. 704.6
6:1
0.0200
708.737
705.450
704.319
704.319
62+60.00
-L-

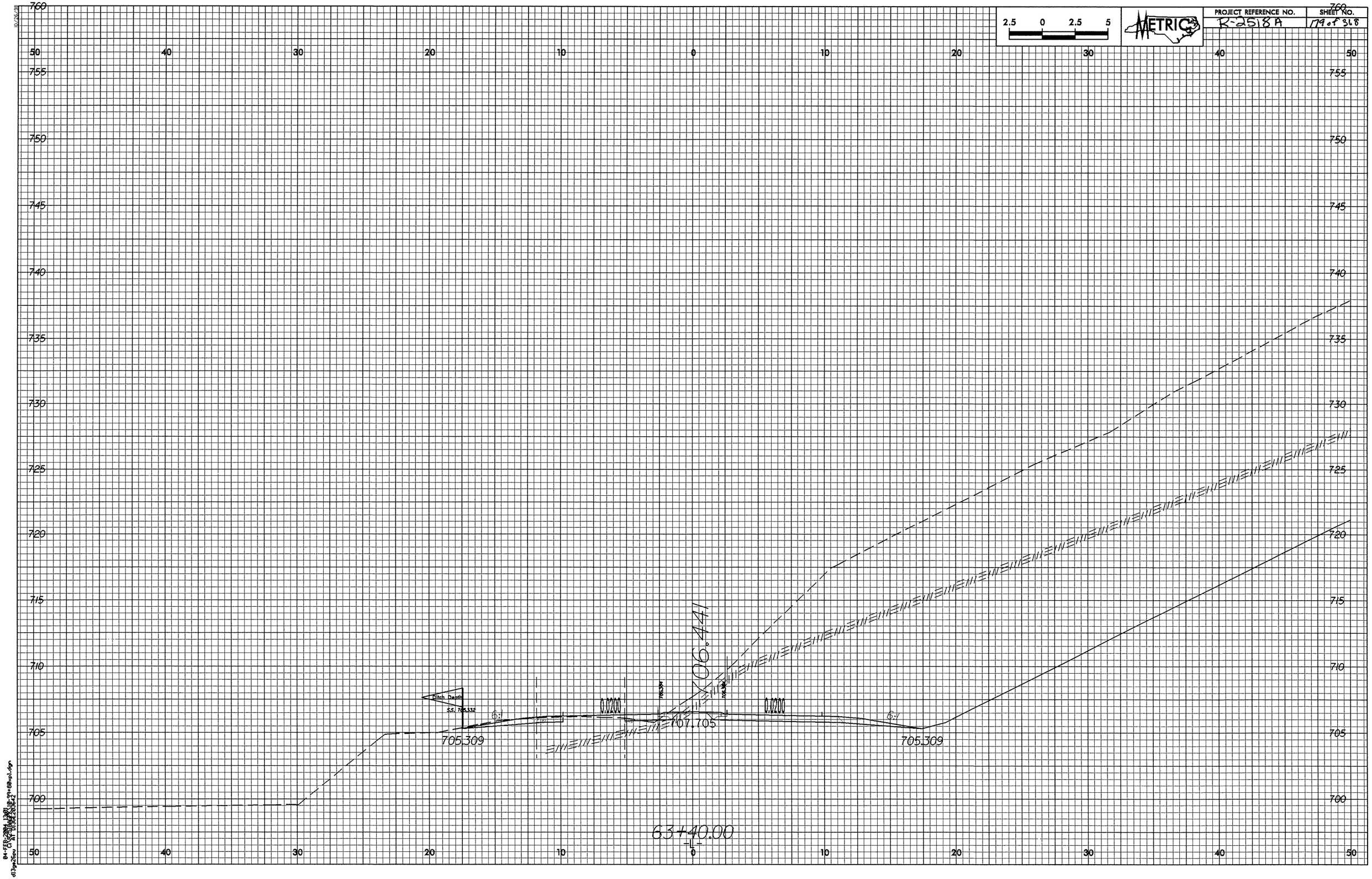


2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
176 of 368
50 40 30 20 10 0 10 20 30 40 50
740 735 730 725 720 715 710 705 700
Ditch Depth
S.S. 704.572
6:1
0.0200
707.694
705.126
704.595
704.595
-L-
62+80.00


2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
177 of 368
50 40 30 20 10 0 10 20 30 40 50
750
745
740
735
730
725
720
715
710
705
700
5.92:1
0.0200
0.0200
6:1
704.833
63+00.00
10/26/98



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
178 of 368
50 40 30 20 10 0 10 20 30 40 50
755 750 745 740 735 730 725 720 715 710 705 700
706.202
5.77:1
0.0200
707.818
0.0200
6:1
705.071
S.S. 704.278
63+20.00
-L-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
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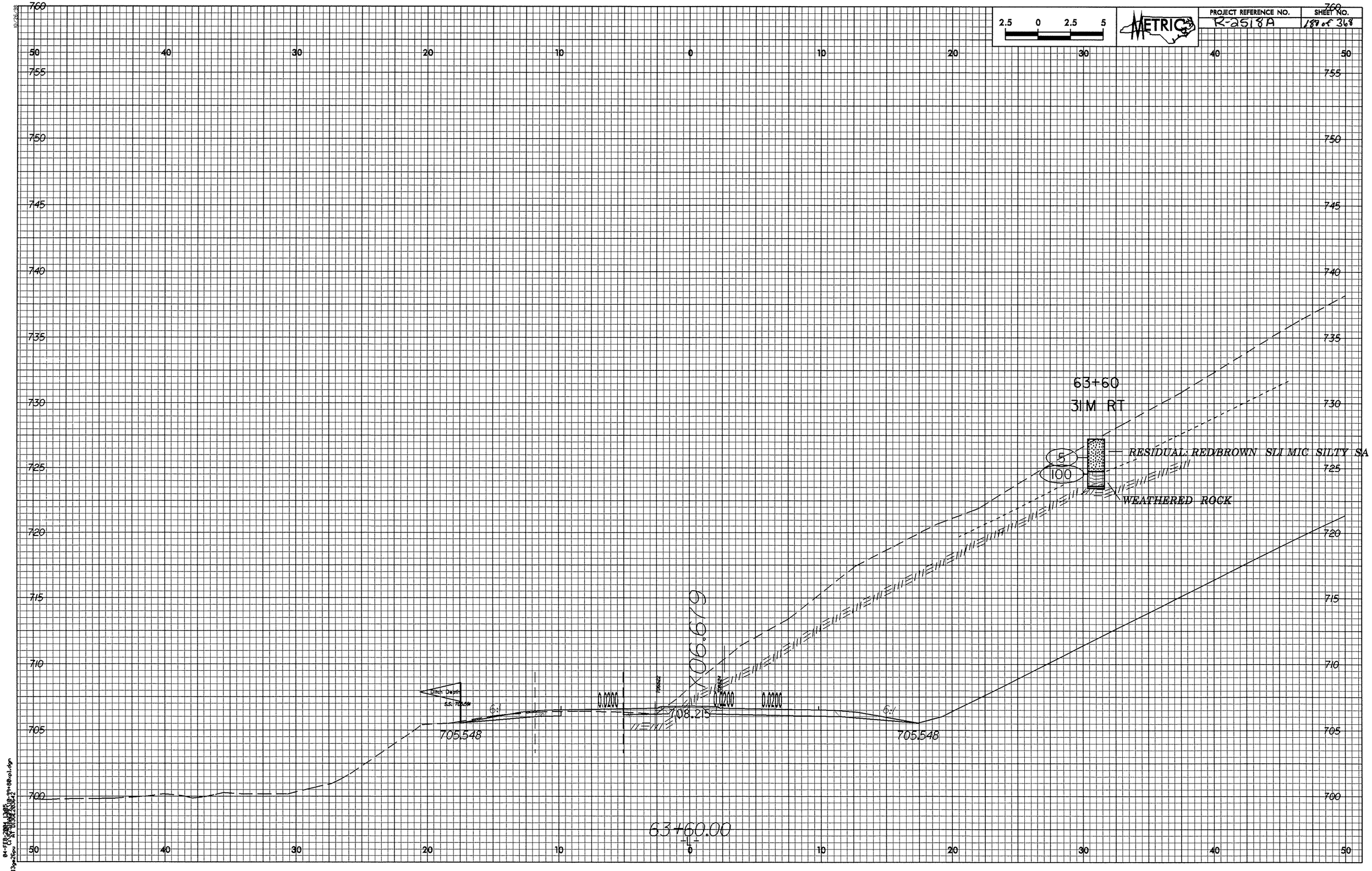
760
755
750
745
740
735
730
725
720
715
710
705
700
50 40 30 20 10 0 10 20 30 40 50
Ditch Depth
S.S. 705.332
6:1
0.0200
706.441
707.705
705.309
705.309
63+40.00
-L-



PROJECT REFERENCE NO.
R-2518A
SHEET NO.
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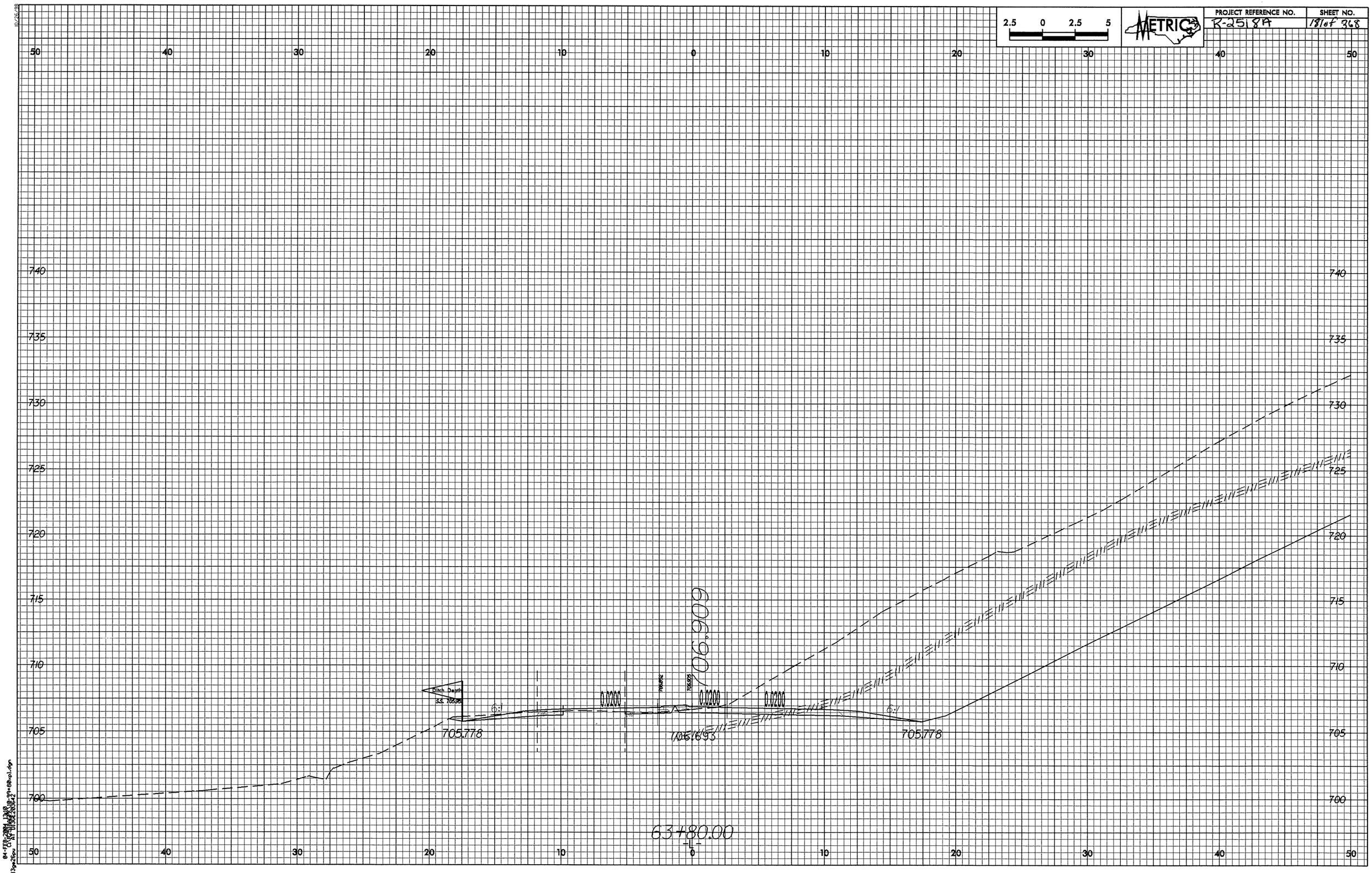
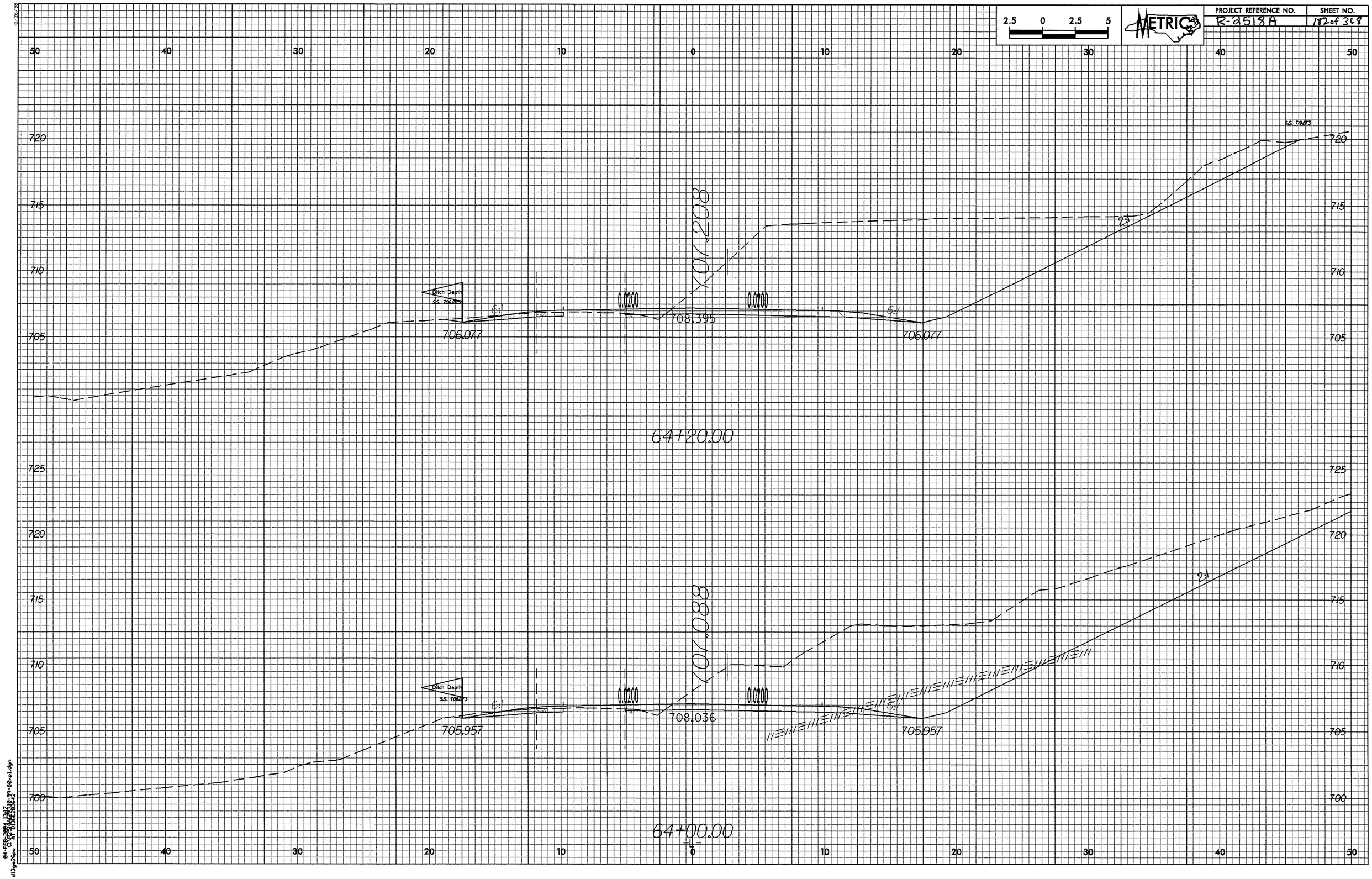
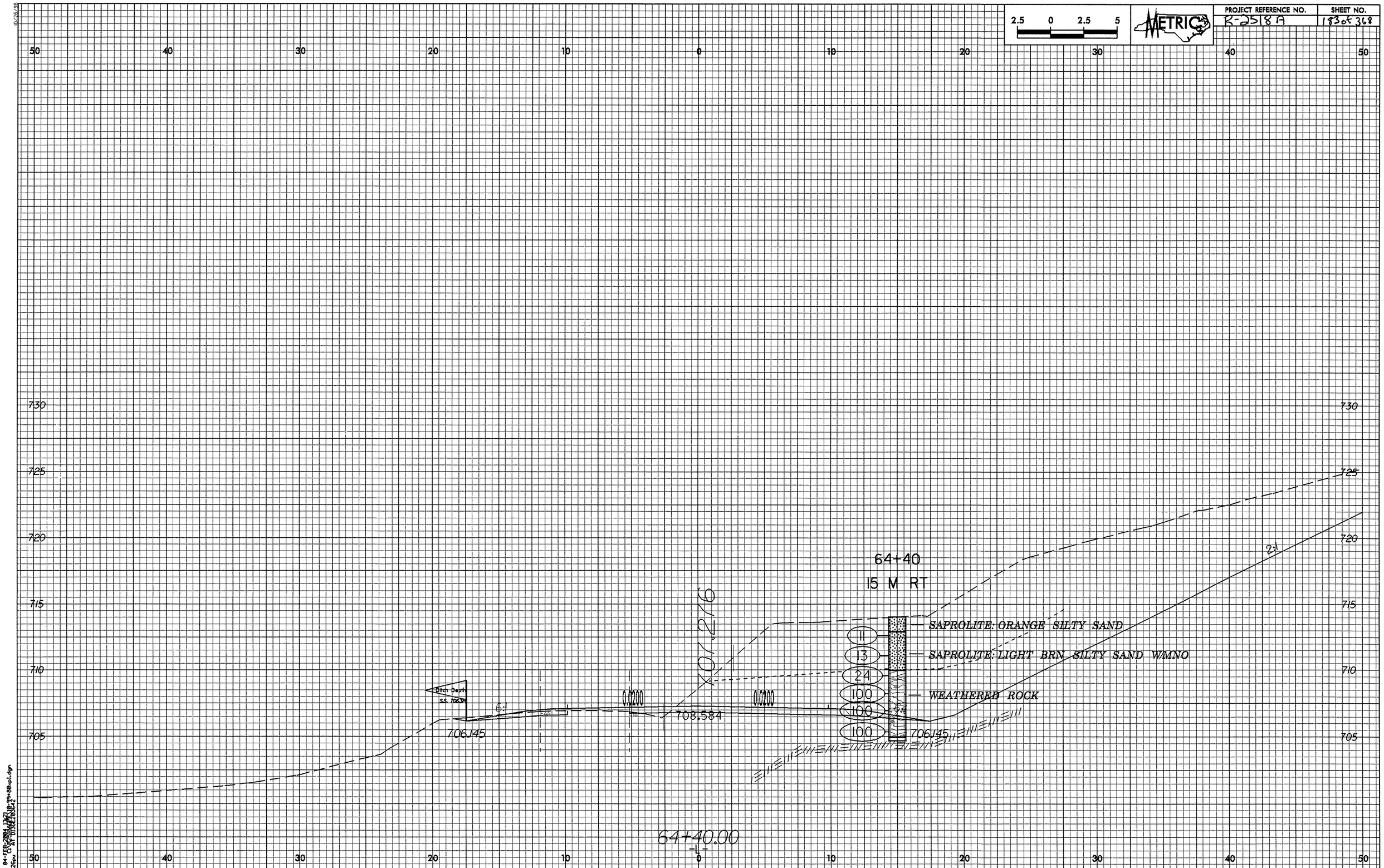
METRIC
2.5 0 2.5 5
63+60
31M RT
RESIDUAL: RED/BROWN SLI MIC SILTY SA
5
100
WEATHERED ROCK
X06.679
Ditch Depth
S.S. 705.591
6:1
0.0200
708.215
705.548
705.548
63+60.00



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
181 of 368
50 40 30 20 10 0 10 20 30 40 50
740 735 730 725 720 715 710 705 700
Ditch Depth
S.S. 705.96
6:1
0.0200
706.909
705.778
706.693
705.778
63+80.00
-L-



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
182 of 368
50 40 30 20 10 0 10 20 30 40 50
720
715
710
705
725
700
S.S. 719.873
707.208
Ditch Depth
6:1
0.0200
708.395
706.077
2:1
64+20.00
707.088
708.036
705.957
64+00.00



2.5 0 2.5 5
METRIC
PROJECT REFERENCE NO.
R-2518A
SHEET NO.
183 of 368
64+40
15 M RT
SAPROLITE: ORANGE SILTY SAND
SAPROLITE: LIGHT BRN SILTY SAND W/MNO
WEATHERED ROCK
1
13
24
100
100
100
Ditch Depth
S.S. 706.39
6:1
0.0200
0.0200
708.584
706.145
706.145
2:1
64+40.00
-L-
730
725
720
715
710
705
50
40
30
20
10
0
10
20
30
40
50