



STATE OF NORTH CAROLINA
DEPARTMENT OF TRANSPORTATION

MICHAEL F. EASLEY
GOVERNOR

LYNDO TIPPETT
SECRETARY

May 6, 2005

NC Department of Environment and Natural Resources
Division of Water Quality-Stormwater Management
943 Washington Square Mall
Washington, NC 27889

Attention: Mr. Bill Moore

Subject: **Stormwater Permit Request for Improvements to US 17.** Improvements to US 17 From South of SR 1127 (Possum Track Road) to North of SR 1418 (Roberson Road). Beaufort County. State Project No. 8.T150601. Federal Aid Project MAF-75-3 (26). TIP No. R-2510. USACE Action ID 199301143; \$420.00 Debit WBS 34440.1.1.

The North Carolina Department of Transportation (NCDOT) proposes to improve US 17 in Beaufort County, North Carolina. Beaufort County falls under the jurisdiction of the Coastal Area Management Act (CAMA). The NCDOT is applying for a CAMA Major Development Permit, a Clean Water Act (CWA) §404 Department of the Army Permit, and a North Carolina CWA §401 Water Quality Certification.

A stormwater application form and one copy of the project permit drawings are provided with this request. Please review this project for authorization by your division.

Thank you for your assistance with this important matter. Any assistance you can provide in expediting the review of this project is greatly appreciated. If you have any questions concerning this project, please feel free to contact Mr. Chris Underwood at (919) 715-1451.

Sincerely,

Gregory J. Thorpe, Ph.D., Environmental Management Director
Project Development and Environmental Analysis Branch

CC:

Mr. John Hennessy, DWQ Raleigh
Mr. Travis Wilson, NCWRC
Mr. Gary Jordan, USFWS
Mr. Jay Bennett, P.E., Roadway Design
Mr. Omar Sultan, Programming and TIP
Mr. Art McMillan, P.E., Highway Design
Mr. David Chang, P.E., Hydraulics
Mr. Greg Perfetti, P.E., Structure Design

Mr. Mark Staley, Roadside Environmental
Mr. John Sullivan, FHWA
Mr. C.E. Lassiter, P.E., Division Engineer
Mr. Jay Johnson, DEO
Mr. David Franklin, USACE, Wilmington
Mr. Brian Yamamoto, P.E., Planning Engineer
Mr. Steve Sollod, DCM
Mr. Bill Arrington, DCM

OFFICE USE ONLY		
Date Received	Fee Paid	Permit Number

**State of North Carolina
Department of Environment and Natural Resources
Division of Water Quality**

STORMWATER MANAGEMENT PERMIT APPLICATION FORM

**NORTH CAROLINA DEPARTMENT OF TRANSPORTATION
LINEAR ROADWAY PROJECT**

This form may be photocopied for use as an original.

DWQ Stormwater Management Plan Review:

A complete stormwater management plan submittal includes this application form, a supplement form for each BMP proposed (see Section V), design calculations, and plans and specifications showing all road and BMP details.

I. PROJECT INFORMATION

NCDOT Project Number: 8.T150601 / 34440.1.1 County: Beaufort

Project Name: R-2510A: Widening of US 17

Project Location: US 17 from South of SR 1127 (Possum Track Rd) to North of SR 1149 (Price Rd)

Contact Person: Mr. Marshall Clawson, PE Phone: 919-250-4100 Fax: 919-250-4108

Receiving Stream Name: Horse Br & White Br River Basin: Tar-Pamlico Class: C, NSW

Receiving Stream Name: Maple Branch River Basin: Tar-Pamlico Class: C, Sw, NSW

Proposed linear feet of project: 4.198 mi (22,165 LF)

Proposed Structural BMP and Road Station (*attach a list of station and BMP type if more room is needed*):

Grass Swales, Preformed Scour Holes, and Level Spreaders - Refer to Stormwater Management Plan & Roadway Plans

Type of proposed project: (*check all that apply*):

☐ New ☒ Widening ☐ 2 lane* ☒ 4 lane* ☐ Curb and Gutter ☐ Bridge Replacement
☐ Other (*Describe*) _____

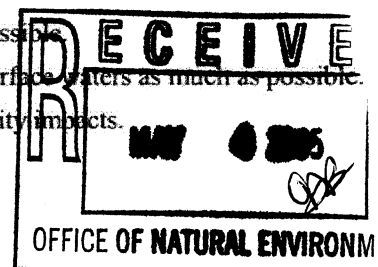
**2 lane and 4 lane imply that roadside ditches are used unless Curb and Gutter is also checked.*

II. REQUIRED ITEMS CHECKLIST

Initial in the space provided below to indicate the following design requirements have been met and supporting documentation is attached. Supporting documentation shall, at a minimum, consist of a brief narrative description including (1) the scope of the project, (2) how the items below are met, (3) how the proposed best management practices minimize water quality impacts, and (4) any significant constraints and/or justification for not meeting a, b, c and d to the maximum extent practicable.

Designer's Initials

WHT 4/13/05 a. The amount of impervious surface has been minimized as much as possible.
WHT 4/13/05 b. The runoff from the impervious areas has been diverted away from surface waters as much as possible.
WHT 4/13/05 c. Best Management Practices are employed which minimize water quality impacts.
WHT 4/13/05 d. Vegetated roadside ditches are 3:1 slope or flatter.



III. OPERATION AND MAINTENANCE AGREEMENT

I acknowledge and agree by my initials below that the North Carolina Department of Transportation is responsible for the implementation of the four maintenance items listed. I agree to notify DWQ of any operational problems with the BMP's that would impact water quality or prior to making any changes to the system or responsible party.

Maintenance Engineer's Initials

DHA ^{5/2/05} a. BMP's shall be inspected and maintained in good working order.

DHA b. Eroded areas shall be repaired and reseeded as needed.

DHA c. Stormwater collection systems, including piping, inlets, and outlets, shall be maintained to insure proper functioning.

Maintenance Engineer's Name: Dwayne H. Alligood
Title: Division Maintenance Engineer

IV. APPLICATION CERTIFICATION

I, (print or type name) _____ of _____ Branch, certify that the information included on this permit application form is, to the best of my knowledge, correct and that the project will be constructed in conformance with the approved plans and that the proposed project complies with the requirements of 15A NCAC 2H .1000.

Title: _____

Address: _____

Signature: _____ Date: _____

V. SUPPLEMENT FORMS

The applicable state stormwater management permit supplement form(s) listed below must be submitted for each BMP specified for this project. Contact the Stormwater and General Permits Unit at (919) 733-5083 for the status and availability of these forms.

Form SWU-102	Wet Detention Basin Supplement
Form SWU-103	Infiltration Basin Supplement
Form SWU-104	Low Density Supplement
Form SWU-105	Curb Outlet System Supplement
Form SWU-106	Off-Site System Supplement
Form SWU-107	Underground Infiltration Trench Supplement
Form SWU-108	Neuse River Basin Supplement
Form SWU-109	Innovative Best Management Practice Supplement
Form SWU-110	Extended Dry Detention Basin Supplement

STORMWATER MANAGEMENT PLAN

TIP No. R-2510A
Project: 34440.1.1,
Beaufort County

Hydraulics Project Manager: R. Kevin Williams, PE (Ko & Associates, PC)
Dan Duffield (NCDOT Hydraulics Unit)

ROADWAY DESCRIPTION

The project involves the widening of US 17 in Beaufort County from South of SR 1127 (Possum Track Road) to SR 1149 (Prince Road). The overall length of the project is approximately 4.20 miles. The existing roadway is a 22-foot wide roadway with two 11-foot wide lanes. It is proposed, with Project R-2510A, to widen US 17 to a four-lane divided shoulder section roadway with a grass swale median. The project crosses six streams and Table 1 below is a listing of the streams and the proposed crossing structure. The project drainage system consists of cross pipes, grated inlets with associated pipe systems, tail ditches, lateral stormwater ditches and swales.

Table 1. Stream Crossings

Location	Stream Name	Drainage Area	Proposed Structure	Bury Depth
Site 1 Sta 57+50	Horse Branch	58 Acres	66" RCP	1.0 ft
Site 2 Sta 155+50	UT to White Branch	55 Acres	36" RCP	1.0 ft
Site 3 Sta 162+35	UT to White Branch	11.8 Acres	36" RCP	1.0 ft
Site 4 Sta 185+82	UT to White Branch	29.6 Acres	36" RCP	1.0 ft
Site 5 Sta 224+00	UT to Maple Branch	704 Acres	2 @ 8'x7' RCBC	1.0 ft
Site 6 Sta 241+50	UT to Maple Branch	N/A	Existing 36" RCP	Existing

ENVIROMENTAL DESCRIPTION

The project is located in the Tar-Pamlico River Basin. The streams listed in Table 1 have been classified as jurisdictional stream and therefore riparian buffer rules apply. The purpose of the rule is to protect and preserve riparian buffers in the Tar-Pamlico River Basin to maintain their nutrient removal functions.

There are seventeen wetland sites that will be impacted by the proposed project. Wetland impacts have been kept to a minimum by symmetrical widening of the roadway.

BEST MANAGEMENT PRACTICES (BMP's)

The primary goal of Best Management Practices (BMP) is to prevent degradation of the states surface waters by the location, construction and operation of the highway system. BMP's are activities, practices and procedures taken to prevent or reduce stormwater pollution. The BMP's and measures that have been used on this project to reduce stormwater impacts are grassed swales, preformed scour holes and level spreaders.

In addition, the proposed 2-barrel box culvert at UT to Maple Branch will be buried 1-foot below the stream bed with a sill installed in one barrel to maintain the normal stream flow and channel characteristics.

GRASS SWALES

Grassed swales have been utilized along the entire project in the left, right and median drainage swales. Grass swale summary tables are included within Appendix A. The grass swale summary tables indicate whether the grass swale provides treatment for the discharge.

PREFORMED SCOUR HOLES

Preformed Scour Holes have been provided in two locations, Station 223+39 Rt and Station 234+05 Rt. A Preformed Scour Hole was utilized at these locations in an effort to diffuse the concentrated flow from the grass swale into sheet flow.

LEVEL SPREADERS

Level spreaders have been provided at five locations, Stations 154+70 Rt, 156+20 Rt, 184+00 Rt, 225+35 Lt and 225+30 Lt. The level spreader was utilized at these locations where the concentrated grass swale could be released outside of Buffer Zone 2. The level spreader will allow the storm water to sheet flow through both Buffer Zones 1 and 2.

Site 1 – Horse Branch (Sta 57+50)

The proposed work at this location involves the placement of a 66" RCP for the jurisdictional stream crossing and grass swales draining each of the four quadrants of the roadway crossing. The roadway is being widened at the same elevation as the existing roadway and the existing terrain is very flat. The proposed roadway grass swales are located 2-4 feet below the existing ground. Level spreaders are not utilized at this location because the grass swales are in 2-4 feet of cut and the swales cannot be daylighted until they are well within Buffer Zone 1.

Site 2 – UT to White Branch (Sta 155+50)

The jurisdictional stream begins at the outlet of the existing cross pipe on the Right or East side of the roadway. The proposed work at this location involves the placement of a 36" RCP for the stream crossing and grass swales drain each of the four quadrants of the roadway crossing. The roadway is being widened at the same elevation as the existing roadway and the existing terrain is very flat.

The proposed roadway grass swales on the Left side (West side) of the roadway are located outside of the buffer zone and the Right or East side grass swales can be daylighted outside of the Buffer Zone. Level spreaders have been incorporated along the Right or East side of the roadway at stations 154+70 and 156+20

Site 3 – UT to White Branch (Sta 162+35)

The jurisdictional stream begins at the outlet of the existing cross pipe on the Right or East side of the roadway. The proposed work at this location involves the placement of a 36" RCP for the stream crossing and grass swales drain each of the four quadrants of the roadway crossing. The roadway is being widened at the same elevation as the existing roadway and the existing terrain is very flat. The proposed roadway grass swales on the Left side (West side) of the roadway are located outside of the buffer zone and the Right or East side grass swales can be daylighted outside of the Buffer Zone. Level spreaders are not utilized at this location because the grass swales are in 2 feet of cut and the swales cannot be daylighted until they are well within Buffer Zone 1.

Site 4 – UT to White Branch (Sta 185+82)

The jurisdictional stream begins at the outlet of the existing cross pipe on the Right or East side of the roadway. The proposed work at this location involves the placement of a 36" RCP for the stream crossing and grass swales drain each of the four quadrants of the roadway crossing. The roadway is being widened at the same elevation as the existing roadway and the existing terrain is very flat. The proposed roadway grass swales on the Left side (West side) of the roadway are located outside of the buffer zone. The Right or SouthEast side grass swale can be daylighted outside of the Buffer Zone and a level spreader has been incorporated at Station 184+00 Right. The grass swale at Station 185+75 cannot be daylighted outside of the Buffer Zone because the grass swale is in 2.5 feet of cut and a level spreader cannot be utilized at this location.

Site 5 – UT to Maple Branch (Sta 224+00)

The proposed work at this location involves the placement of a two barrel RCBC for the jurisdictional stream crossing and grass swales draining each of the four quadrants of the roadway crossing. A Preformed Scour Hole has been incorporated at Station 223+39 Rt, this will diffuse the concentrated swale flow into sheet flow upon entering the wetland. Level spreaders have been incorporated in the North East and North West quadrants at Stations 225+30 Rt and 225+35 Lt. The level spreaders will sheet flow the concentrated grass swale discharge through Buffer Zones 1 and 2. A level Spreader was investigated to be used in the South West quadrant, but one was not recommended because due to its proposed length and the existing ground topography a residence would need to be taken and this was determined to not be feasible.

Site 6 – UT to Maple Branch (Sta 241+50)

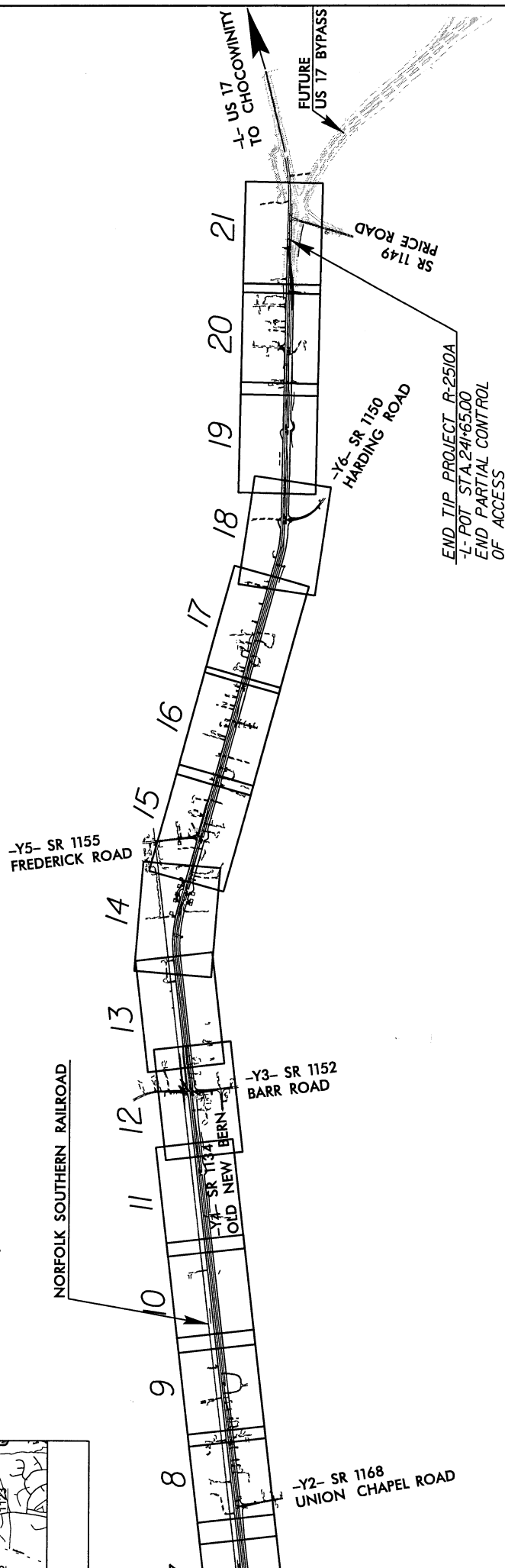
The jurisdictional stream begins at the outlet of the existing cross pipe on the Right or East side of the roadway. The proposed work at this location involves the tapering the four lane divided section back into the existing two lane roadway section. The project virtually ends at this location and the only impact to the buffer zone is a cut swale conveying the roadway swale into UT to Maple Branch. The existing ground slope is 10% at this location which is considered too steep for level spreader use

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

BEAUFORT COUNTY

**LOCATION: US 17 FROM SOUTH OF SR 1127 (POSSUM TRACK ROAD)
TO SR 1149 (PRICE ROAD)**

TYPE OF WORK: GRADING, PAVING, DRAINAGE, AND CULVERT



END TIP PROJECT R-2510A
-L- POT STA. 241+65.00
END PARTIAL CONTROL
OF ACCESS

STATE OF NORTH CAROLINA
DIVISION OF HIGHWAYS

VENTIONAL PLAN SHEET SYMBOLS

ROADS:

Guard	
nal Milepost	
andoned	
mantled	

HT OF WAY:

Control Point	
g Right of Way Marker	
g Right of Way Line	
ed Right of Way Line	
ed Right of Way Line with n Pin and Cap Marker	
ed Right of Way Line with concrete or Granite Marker	

g Control of Access	
ed Control of Access	
g Easement Line	
ed Temporary Construction Easement	
ed Temporary Drainage Easement	
ed Permanent Drainage Easement	
ed Permanent Utility Easement	

DS AND RELATED FEATURES:

g Edge of Pavement	
g Curb	
ed Slope Stakes Cut	
ed Slope Stakes Fill	
ed Wheel Chair Ramp	
g Cut for Future Wheel Chair Ramp	
g Metal Guardrail	
ed Guardrail	
g Cable Guiderail	
ed Cable Guiderail	

EXISTING STRUCTURES:

MAJOR:

Bridge, Tunnel or Box Culvert	
Bridge Wing Wall, Head Wall and End Wall	

MINOR:

Head and End Wall	
Pipe Culvert	
Footbridge	
Drainage Box: Catch Basin, DI or JB	
Paved Ditch Gutter	
Storm Sewer Manhole	
Storm Sewer	

UTILITIES:

POWER:

Existing Power Pole	
Proposed Power Pole	
Existing Joint Use Pole	
Proposed Joint Use Pole	
Power Manhole	
Power Line Tower	
Power Transformer	
UG Power Cable Hand Hole	
H-Frame Pole	
Recorded UG Power Line	
Designated UG Power Line (S.U.E.*)	

TELEPHONE:

Existing Telephone Pole	
Proposed Telephone Pole	
Telephone Manhole	

WATER:

Water Manhole	
Water Meter	
Water Valve	
Water Hydrant	
Recorded UG Water Line	
Designated UG Water Line (S.U.E.*)	
Above Ground Water Line	

TV:

TV Satellite Dish	
TV Pedestal	
TV Tower	
UG TV Cable Hand Hole	
Recorded UG TV Cable	
Designated UG TV Cable (S.U.E.*)	
Recorded UG Fiber Optic Cable	
Designated UG Fiber Optic Cable (S.U.E.*)	

GAS:

Gas Valve	
Gas Meter	
Recorded UG Gas Line	
Designated UG Gas Line (S.U.E.*)	
Above Ground Gas Line	

SANITARY SEWER:

Sanitary Sewer Manhole	
Sanitary Sewer Cleanout	
UG Sanitary Sewer Line	
Above Ground Sanitary Sewer	
Recorded SS Forced Main Line	
Designated SS Forced Main Line (S.U.E.*)	

MISCELLANEOUS:

SURVEY CONTROL SHEET R-2510A

PROJECT REFERENCE NO.	SHEET NO.
R2510A	ID
Location and Surveys	

POINT CAYTON - WGS84 LATITUDE 35°15'40.10785"N LONGITUDE 76°59'25.02715"W HEIGHT -91.1715FT	NORTHING 556829.4275FT EASTING 2399829.3215FT ELEVATION 30.2865FT HORZ ERROR 0.0035FT VERT ERROR 0.0355FT 3D ERROR 0.0365FT	POINT CAYTON - LOCAL NORTHING 556829.4275FT EASTING 2399829.3215FT ELEVATION 30.2865FT UTILIZED HORZ AND VERT QUALITY SURVEY QUALITY
POINT R2510AW-2 - WGS84 LATITUDE 35°33'45.20023"N LONGITUDE 77°05'05.91015"W HEIGHT -110.9365FT	NORTHING 665164.1895FT EASTING 2569499.8355FT ELEVATION 30.2865FT HORZ ERROR 0.0035FT VERT ERROR 0.0355FT 3D ERROR 0.0365FT	POINT R2510AW-2 - LOCAL NORTHING 665164.1895FT EASTING 2569499.8355FT ELEVATION 30.2865FT UTILIZED HORZ AND VERT QUALITY SURVEY QUALITY
POINT R2510A-7 - WGS84 LATITUDE 35°38'20.00932"N LONGITUDE 77°06'10.14123"W HEIGHT -81.2995FT	NORTHING 644318.6135FT EASTING 2564590.4645FT ELEVATION 38.8725FT HORZ ERROR 0.0025FT VERT ERROR 0.0215FT 3D ERROR 0.0225FT	POINT R2510A-7 - LOCAL NORTHING 644318.6135FT EASTING 2564590.4645FT ELEVATION 38.8725FT UTILIZED HORZ AND VERT QUALITY SURVEY QUALITY
POINT PITTMAN - WGS84 LATITUDE 35°36'06.21209"N LONGITUDE 77°06'19.73537"W HEIGHT -79.9735FT	NORTHING 642922.5185FT EASTING 2564549.9815FT ELEVATION 38.8725FT HORZ ERROR 0.0025FT VERT ERROR 0.0215FT 3D ERROR 0.0225FT	POINT PITTMAN - LOCAL NORTHING 642922.5185FT EASTING 2564549.9815FT ELEVATION 38.8725FT UTILIZED HORZ AND VERT QUALITY SURVEY QUALITY
POINT MCAREED - WGS84 LATITUDE 35°29'02.51477"N LONGITUDE 77°02'57.96732"W HEIGHT -87.0345FT	NORTHING 536792.4045FT EASTING 2580630.1855FT ELEVATION 33.4165FT HORZ ERROR 0.0105FT VERT ERROR 0.0325FT 3D ERROR 0.0335FT	POINT MCAREED - LOCAL NORTHING 536792.4045FT EASTING 2580630.1855FT ELEVATION 33.4165FT UTILIZED HORZ AND VERT QUALITY SURVEY QUALITY
POINT R2510A-6 - WGS84 LATITUDE 35°28'39.88014"N LONGITUDE 77°06'19.73537"W HEIGHT -73.9245FT	NORTHING 636165.2815FT EASTING 2561976.5855FT ELEVATION 30.2865FT HORZ ERROR 0.0035FT VERT ERROR 0.0335FT 3D ERROR 0.0345FT	POINT R2510A-6 - LOCAL NORTHING 636165.2815FT EASTING 2561976.5855FT ELEVATION 30.2865FT UTILIZED HORZ AND VERT QUALITY SURVEY QUALITY
POINT R2510A-5 - WGS84 LATITUDE 35°28'49.76373"N LONGITUDE 77°06'51.33671"W HEIGHT -72.0605FT	NORTHING 635130.4575FT EASTING 2561358.4105FT ELEVATION 48.1735FT HORZ ERROR 0.0055FT VERT ERROR 0.0355FT 3D ERROR 0.0365FT	POINT R2510A-5 - LOCAL NORTHING 635130.4575FT EASTING 2561358.4105FT ELEVATION 48.1735FT UTILIZED HORZ AND VERT QUALITY SURVEY QUALITY
POINT R2510AW-1 - WGS84 LATITUDE 35°27'16.72522"N LONGITUDE 77°05'18.92453"W HEIGHT -85.8405FT	NORTHING 629921.2995FT EASTING 2569177.3945FT ELEVATION 30.2865FT HORZ ERROR 0.0035FT VERT ERROR 0.0335FT 3D ERROR 0.0345FT	POINT R2510AW-1 - LOCAL NORTHING 629921.2995FT EASTING 2569177.3945FT ELEVATION 30.2865FT UTILIZED HORZ AND VERT QUALITY SURVEY QUALITY
POINT R2510A-4 - WGS84 LATITUDE 35°27'27.20684"N LONGITUDE 77°07'19.74574"W HEIGHT -64.6625FT	NORTHING 626739.9705FT EASTING 2559167.1745FT ELEVATION 55.6405FT HORZ ERROR 0.0025FT VERT ERROR 0.0355FT 3D ERROR 0.0365FT	POINT R2510A-4 - LOCAL NORTHING 626739.9705FT EASTING 2559167.1745FT ELEVATION 55.6405FT UTILIZED HORZ AND VERT QUALITY SURVEY QUALITY
POINT R2510A-3 - WGS84 LATITUDE 35°27'20.83952"N LONGITUDE 77°07'20.83952"W HEIGHT -63.2655FT	NORTHING 625463.1395FT EASTING 2559019.4065FT ELEVATION 30.2865FT HORZ ERROR 0.0035FT VERT ERROR 0.0335FT 3D ERROR 0.0345FT	POINT R2510A-3 - LOCAL NORTHING 625463.1395FT EASTING 2559019.4065FT ELEVATION 30.2865FT UTILIZED HORZ AND VERT QUALITY SURVEY QUALITY
POINT R2510A-2 - WGS84 LATITUDE 35°26'35.67313"N LONGITUDE 77°07'30.86874"W HEIGHT -62.4615FT	NORTHING 621502.7755FT EASTING 2558345.7435FT ELEVATION 57.8465FT HORZ ERROR 0.0015FT VERT ERROR 0.0355FT 3D ERROR 0.0365FT	POINT R2510A-2 - LOCAL NORTHING 621502.7755FT EASTING 2558345.7435FT ELEVATION 57.8465FT UTILIZED HORZ AND VERT QUALITY SURVEY QUALITY
POINT R2510A-1 - WGS84 LATITUDE 35°26'35.67313"N LONGITUDE 77°07'30.86874"W HEIGHT -59.9445FT	NORTHING 620029.2205FT EASTING 2558110.3715FT ELEVATION 60.3715FT HORZ ERROR 0.0025FT VERT ERROR 0.0335FT 3D ERROR 0.0345FT	POINT R2510A-1 - LOCAL NORTHING 620029.2205FT EASTING 2558110.3715FT ELEVATION 60.3715FT UTILIZED HORZ AND VERT QUALITY SURVEY QUALITY

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDDOT FOR MONUMENT "R2510AW-2" WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF NORTHING: 665164.189(1) EASTING: 2569499.835(1) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99989282 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R2510AW-2" TO "L" STATION 10+00.00 IS S 13°57'32.7" W 46.577.903 (1) ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 86

NOTES:

THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:

SURVEY CONTROL SHEET R-2510A

PROJECT REFERENCE NO.	SHEET NO.
R-2510A	1E
Location and Surveys	

BY7	POINT	DESC.	NORTH	EAST	ELEVATION	Y7 STATION	OFFSET
58	BL-41		642344.1551	2564329.6567	38.49	OUTSIDE PROJECT LIMITS	
59	B77-59		642680.3375	2564965.0815	23.99	OUTSIDE PROJECT LIMITS	

BENCHMARK DATA

BM1	ELEVATION • 62.48
N 622484	E 2558526
L STATION 35+33 123 LEFT	
RR SPIKE IN BST • RR CROSSING	
BM2	ELEVATION • 58.68
N 625542	E 2558994
L STATION 66+26 122 LEFT	
RR SPIKE IN BST • RR CROSSING	
BM3	ELEVATION • 54.67
N 628837	E 2559496
L STATION 99+59 125 LEFT	
RR SPIKE IN BST • RR CROSSING	
BM4	ELEVATION • 61.27
N 631257	E 2559834
L STATION 124+03 157 LEFT	
RR SPIKE IN CP&L POLE-RR/C44	
BM5	ELEVATION • 55.88
N 633011	E 2560132
L STATION 141+00 128 LEFT	
RR SPIKE IN BST • RR CROSSING	
BM6	ELEVATION • 55.14
N 634607	E 2560351
L STATION 156+34 609 LEFT	
USCGS MON "D 26"	
BM7	ELEVATION • 49.20
N 637378	E 2563054
L STATION 193+99 288 RIGHT	
RR SPIKE IN 24' CEDAR TREE	
BM8	ELEVATION • 33.81
N 639755	E 2563866
L STATION 218+56 218 RIGHT	
RR SPIKE IN 15' GUM TREE	
BM9	ELEVATION • 40.94
N 642557	E 2564323
L STATION 246+44	
RR SPIKE IN 42' OAK TREE	

DATUM DESCRIPTION

THE LOCALIZED COORDINATE SYSTEM DEVELOPED FOR THIS PROJECT IS BASED ON THE STATE PLANE COORDINATES ESTABLISHED BY NCDOT FOR MONUMENT "R2510AW-2" WITH NAD 1983/95 STATE PLANE GRID COORDINATES OF NORTHING: 665164.189(ft) EASTING: 2569498.835(ft) THE AVERAGE COMBINED GRID FACTOR USED ON THIS PROJECT (GROUND TO GRID) IS: 0.99989282 THE N.C. LAMBERT GRID BEARING AND LOCALIZED HORIZONTAL GROUND DISTANCE FROM "R2510AW-2" TO -L- STATION 10+00.00 IS S 13°57'32.7" W 46.577.903 (ft) ALL LINEAR DIMENSIONS ARE LOCALIZED HORIZONTAL DISTANCES VERTICAL DATUM USED IS NAVD 88

ELEVATION	L STATION	OFFSET
60.39	10+43.59	160.76 LT
58.48	16+22.83	94.30 LT
58.13	22+25.13	90.97 LT
59.74	28+09.84	61.89 LT
61.25	33+87.57	56.36 LT
60.26	39+04.15	57.94 LT
58.03	44+05.83	61.16 LT
59.45	48+93.26	8.15 LT
55.00	54+79.50	10.02 LT
55.87	61+23.08	11.18 LT
57.09	67+38.29	3.54 LT
56.41	73+14.90	11.16 LT
55.64	78+36.79	132.59 LT
54.50	84+20.37	76.08 LT
53.69	90+09.85	53.75 LT
53.99	96+03.60	55.29 LT
51.94	101+95.67	66.66 LT
53.61	107+76.47	57.25 LT
56.33	112+92.52	54.21 LT
58.19	118+12.16	54.06 LT
59.16	123+97.75	74.62 LT
57.23	129+79.41	53.74 LT
52.65	135+57.86	66.13 LT
53.66	141+23.60	78.59 LT
53.41	146+60.76	76.18 LT
49.91	152+78.68	9.97 LT
49.10	159+05.30	11.54 LT
48.21	166+00.17	13.70 LT
46.36	172+05.70	1.08 RT
43.40	184+11.62	6.60 LT
45.32	190+13.37	14.06 LT
45.89	196+98.00	9.65 LT
43.58	203+06.20	10.42 RT
41.35	209+02.25	2.80 LT
37.81	214+90.69	3.17 LT
34.21	220+94.83	13.96 LT
31.92	227+09.58	15.50 LT
33.90	233+31.30	77.07 LT
33.95	239+04.62	3.56 LT
38.49	244+69.67	74.41 LT
41.21	OUTSIDE PROJECT LIMITS	

ELEVATION	Y1 STATION	OFFSET
59.44	OUTSIDE PROJECT LIMITS	
57.83	OUTSIDE PROJECT LIMITS	

ELEVATION	Y2 STATION	OFFSET
57.09	OUTSIDE PROJECT LIMITS	
57.83	OUTSIDE PROJECT LIMITS	

ELEVATION	Y3 STATION	OFFSET
57.35	OUTSIDE PROJECT LIMITS	
59.16	15+60.87	24.11 RT
56.02	19+53.59	31.02 RT
51.08	OUTSIDE PROJECT LIMITS	

ELEVATION	Y4 STATION	OFFSET
56.02	10+32.69	39.47 RT
56.83	12+81.76	15.66 RT

ELEVATION	Y5 STATION	OFFSET
52.01	OUTSIDE PROJECT LIMITS	

NOTES:

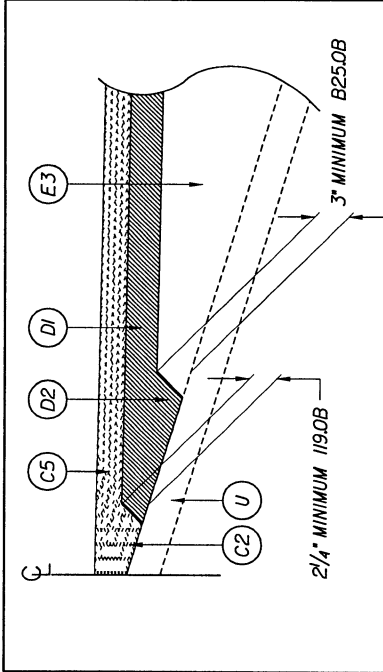
THE CONTROL DATA FOR THIS PROJECT CAN BE FOUND ELECTRONICALLY BY SELECTING PROJECT CONTROL DATA AT:

PROJECT REFERENCE NO.		SHEET NO.
R-2510A		I-F
RW		SHEET NO.
ROADWAY DESIGN ENGINEER		

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

L	78 + 00.00	626683.5411	2559292.6759	137	L	146 + 00.00	633395.1499	2560365.6835	205	L	214 + 00.00	639380.4737	2563526.5491
L	79 + 00.00	626782.3901	2559307.8050	138	L	147 + 00.00	633487.1554	2560404.8295	206	L	215 + 00.00	639476.3305	2563555.0355
L	80 + 00.00	626881.2390	2559322.9342	139	L	148 + 00.00	633576.8453	2560449.0239	207	L	216 + 00.00	639572.1873	2563583.5220
L	81 + 00.00	626980.0879	2559338.0633	140	L	149 + 00.00	633664.1752	2560497.7277	208	L	217 + 00.00	639668.0441	2563612.0084
L	82 + 00.00	627078.9368	2559353.1925	141	L	150 + 00.00	633750.1806	2560548.7465	209	L	218 + 00.00	639763.9009	2563640.4949
L	83 + 00.00	627177.7857	2559368.3217	142	L	151 + 00.00	633835.9994	2560600.0801	210	L	219 + 00.00	639859.7576	2563668.9813
L	84 + 00.00	627276.6347	2559383.4508	143	L	152 + 00.00	633921.8182	2560651.4136	211	L	220 + 00.00	639955.6144	2563697.4678
L	85 + 00.00	627375.4836	2559398.5800	144	L	153 + 00.00	634007.6370	2560702.7472	212	L	221 + 00.00	640051.4712	2563725.9542
L	86 + 00.00	627474.3325	2559413.7091	145	L	154 + 00.00	634093.4558	2560754.0807	213	L	222 + 00.00	640147.3280	2563754.4407
L	87 + 00.00	627573.1814	2559428.8383	146	L	155 + 00.00	634179.2746	2560805.4143	214	L	223 + 00.00	640243.1848	2563782.9271
L	88 + 00.00	627672.0303	2559443.9674	147	L	156 + 00.00	634265.0934	2560856.7478	215	L	224 + 00.00	640339.0415	2563811.4136
L	89 + 00.00	627770.8792	2559459.0966	148	L	157 + 00.00	634350.9122	2560908.0814	216	L	225 + 00.00	640434.8983	2563839.9001
L	90 + 00.00	627869.7282	2559474.2257	149	L	158 + 00.00	634436.7310	2560959.4149	217	L	226 + 00.00	640530.7551	2563868.3865
L	91 + 00.00	627968.5771	2559489.3549	150	L	159 + 00.00	634522.5498	2561010.7485	218	L	227 + 00.00	640626.6119	2563896.8730
L	92 + 00.00	628067.4260	2559504.4841	151	L	160 + 00.00	634608.3686	2561062.0820	219	L	228 + 00.00	640722.4686	2563925.3594
L	93 + 00.00	628166.2749	2559519.6132	152	L	161 + 00.00	634694.1874	2561113.4156	220	L	229 + 00.00	640818.3254	2563953.8459
L	94 + 00.00	628265.1238	2559534.7424	153	L	162 + 00.00	634780.0062	2561164.7491	221	L	230 + 00.00	640914.1822	2563982.3323
L	95 + 00.00	628363.9728	2559549.8715	154	L	163 + 00.00	634865.8250	2561216.0827	222	L	231 + 00.00	641010.0390	2564010.8188
L	96 + 00.00	628462.8217	2559565.0007	155	L	164 + 00.00	634951.6438	2561267.4162	223	L	232 + 00.00	641105.8958	2564039.3052
L	97 + 00.00	628561.6706	2559580.1298	156	L	165 + 00.00	635037.4626	2561318.7498	224	L	233 + 00.00	641201.7525	2564067.7917
L	98 + 00.00	628660.5195	2559595.2590	157	L	166 + 00.00	635123.2814	2561370.0833	225	L	234 + 00.00	641297.6093	2564096.2781
L	99 + 00.00	628759.3684	2559610.3881	158	L	167 + 00.00	635209.1002	2561421.4169	226	L	235 + 00.00	641393.4661	2564124.7646
L	100 + 00.00	628858.2174	2559625.5173	159	L	168 + 00.00	635294.9190	2561472.7504	227	L	236 + 00.00	641489.3229	2564153.2510
L	101 + 00.00	628957.0663	2559640.6465	160	L	169 + 00.00	635380.7378	2561524.0840	228	L	237 + 00.00	641585.1796	2564181.7375
L	102 + 00.00	629055.9152	2559655.7756	161	L	170 + 00.00	635466.5566	2561575.4175	229	L	238 + 00.00	641681.0364	2564210.2239
L	103 + 00.00	629154.7641	2559670.9048	162	L	171 + 00.00	635552.3754	2561626.7511	230	L	239 + 00.00	641776.8932	2564238.7104
L	104 + 00.00	629253.6130	2559686.0339	163	L	172 + 00.00	635638.1942	2561678.0846	231	L	240 + 00.00	641872.7500	2564267.1969
L	105 + 00.00	629352.4619	2559701.1631	164	L	173 + 00.00	635724.0130	2561729.4182	232	L	241 + 00.00	641968.6068	2564295.6833
L	106 + 00.00	629451.3109	2559716.2922	165	L	174 + 00.00	635809.8318	2561780.7517	233	L	242 + 00.00	642064.4635	2564324.1698
L	107 + 00.00	629550.1598	2559731.4214	166	L	175 + 00.00	635895.6506	2561832.0853	234	L	243 + 00.00	642160.3203	2564352.6562
L	108 + 00.00	629649.0087	2559746.5505	167	L	176 + 00.00	635981.4694	2561883.4188	235	L	244 + 00.00	642256.1771	2564381.1427
L	109 + 00.00	629747.8576	2559761.6797	168	L	177 + 00.00	636067.2882	2561934.7524	236	L	245 + 00.00	642352.0339	2564409.6291
L	110 + 00.00	629846.7065	2559776.8088	169	L	178 + 00.00	636153.1070	2561986.0859	237	L	246 + 00.00	642447.8907	2564438.1156
L	111 + 00.00	629945.5555	2559791.9380	170	L	179 + 00.00	636238.9258	2562037.4195	238	L	246 + 44.18	642490.2384	2564450.7004
L	112 + 00.00	630044.4044	2559807.0672	171	L	180 + 00.00	636324.7446	2562088.7530					
L	113 + 00.00	630143.2533	2559822.1963	172	L	181 + 00.00	636410.5634	2562140.0866					
L	114 + 00.00	630242.1022	2559837.3255	173	L	182 + 00.00	636496.3822	2562191.4201					
L	115 + 00.00	630340.9511	2559852.4546	174	L	183 + 00.00	636582.2010	2562242.7537					
L	116 + 00.00	630439.8000	2559867.5838	175	L	184 + 00.00	636668.0198	2562294.0872					
L	117 + 00.00	630538.6490	2559882.7129	176	L	185 + 00.00	636753.8386	2562345.4208					
L	118 + 00.00	630637.4979	2559897.8421	177	L	186 + 00.00	636839.6574	2562396.7543					
L	119 + 00.00	630736.3468	2559912.9712	178	L	187 + 00.00	636925.4762	2562448.0879					
L	120 + 00.00	630835.1957	2559928.1004	179	L	188 + 00.00	637011.2950	2562499.4214					
L	121 + 00.00	630934.0446	2559943.2296	180	L	189 + 00.00	637097.1138	2562550.7550					
L	122 + 00.00	631032.8936	2559958.3587	181	L	190 + 00.00	637182.9326	2562602.0885					
L	123 + 00.00	631131.7425	2559973.4879	182	L	191 + 00.00	637268.7514	2562653.4221					
L	124 + 00.00	631230.5914	2559988.6170	183	L	192 + 00.00	637354.5702	2562704.7556					
L	125 + 00.00	631329.4403	2560003.7462	184	L	193 + 00.00	637440.3890	2562756.0892					
L	126 + 00.00	631428.2892	2560018.8753	185	L	194 + 00.00	637526.2078	2562807.4227					
L	127 + 00.00	631527.1381	2560034.0045	186	L	195 + 00.00	637612.0266	2562858.7563					
L	128 + 00.00	631625.9871	2560049.1336	187	L	196 + 00.00	637697.8454	2562910.0899					
L	129 + 00.00	631724.8360	2560064.2628	188	L	197 + 00.00	637783.6642	2562961.4234					
L	130 + 00.00	631823.6849	2560079.3920	189	L	198 + 00.00	637869.5699	2563012.6110					
L	131 + 00.00	631922.5338	2560094.5211	190	L	199 + 00.00	637956.5161	2563062.0004					

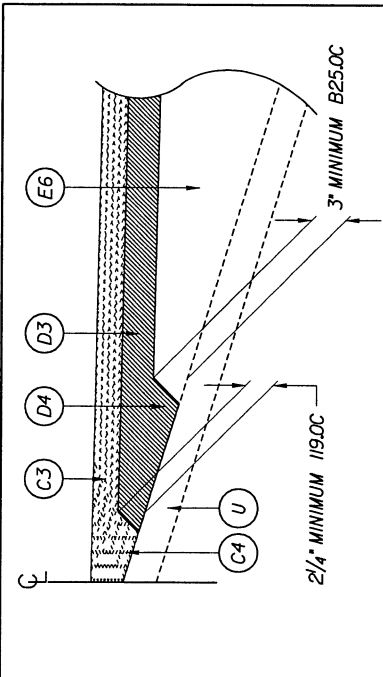
PROJECT REFERENCE NO.	R-2510A	SHEET NO.	2
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER		
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			
Carter-Burgess Consultants in Planning, Engineering, Architecture, Construction Management and Related Services 3511 Glenwood Avenue, Suite 300 Raleigh, North Carolina 27612			
KO & ASSOCIATES, P.C. Consulting Engineers 1011 SCHAUER DR., SUITE #202 RALEIGH, N.C. 27606			



DETAIL SHOWING METHOD OF WEDGING

W2

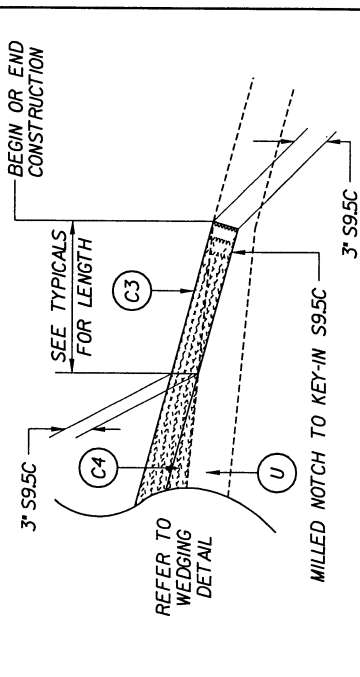
-Y2-, -Y3-, -Y5-, -Y6-



DETAIL SHOWING METHOD OF WEDGING

W1

-L-, -DET1-, -DET2-



DETAIL SHOWING TIE-INS AT PROJECT TERMINI

NOTE: SEE SHEET NO.2 FOR WEDGING DETAILS

PROJECT REFERENCE NO. R-2510A

SHEET NO. 2A

ROADWAY DESIGN ENGINEER
PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

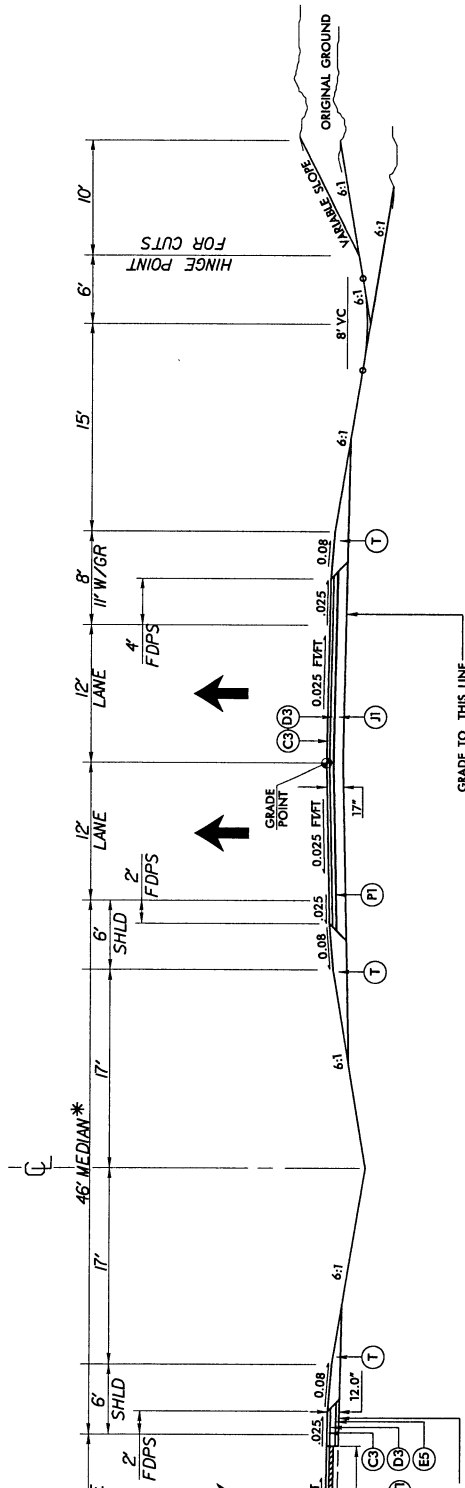
CarterBurgess

Consultants in Planning, Engineering, Architecture,
Construction Management and Related Services
5411 Oakwood Road, Suite 100
Raleigh, North Carolina 27612

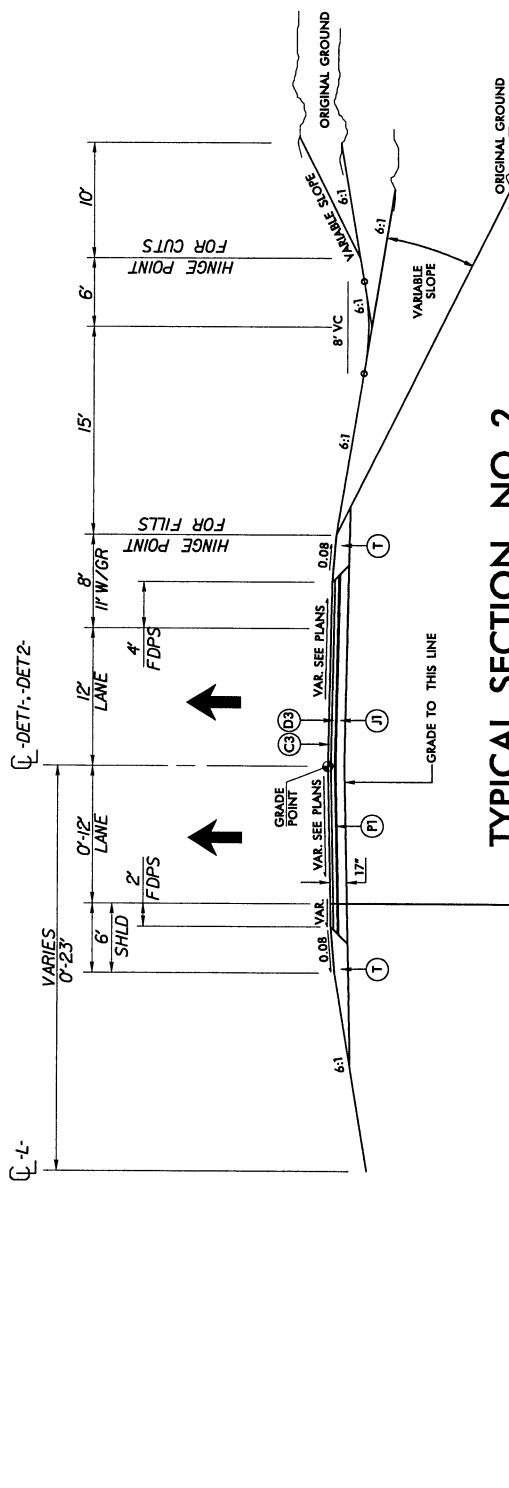


KO & ASSOCIATES, P.C.
Consulting Engineers
1011 SCHAUER DR, SUITE #202
RALEIGH, N.C. 27606

TYPICAL SECTION NO. 1



GRADE TO THIS LINE



TYPICAL SECTION NO. 2

PAVEMENT SCHEDULE	
C1	2 1/2" SF9.5A
C2	VAR. DEP. SF9.5A
C3	3" S9.5C
C4	VAR. DEP. S9.5C
C5	1 1/4" SF9.5A
D1	2 1/2" I19.0B
D2	VAR. DEP. I19.0B
D3	4" I19.0C
D4	VAR. DEP. I19.0C
E1	4" B25.0B
E2	5" B25.0B
E3	VAR. DEP. B25.0B
E4	4.5" B25.0C
E5	5" B25.0C
E6	VAR. DEP. B25.0C
J1	10" ABC

NOTE: SEE SHEET NO.2 FOR WEDGING DETAILS

PROJECT REFERENCE NO.
R-2510A

SHEET NO.
2B

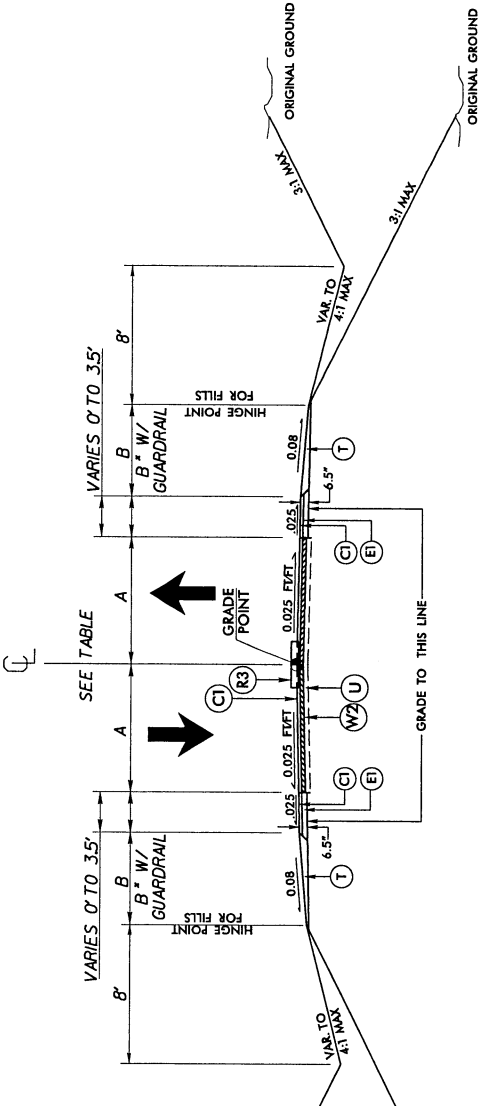
ROADWAY DESIGN ENGINEER
B.W. SHEET NO.

HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Carter Burgess
Consultants in Planning, Engineering, Architecture,
Construction Management and Related Services
1011 Schaub Drive, Suite 300
Raleigh, North Carolina 27612

KO & ASSOCIATES, P.C.
Consulting Engineers
1011 Schaub Dr., Suite #202
Raleigh, N.C. 27606



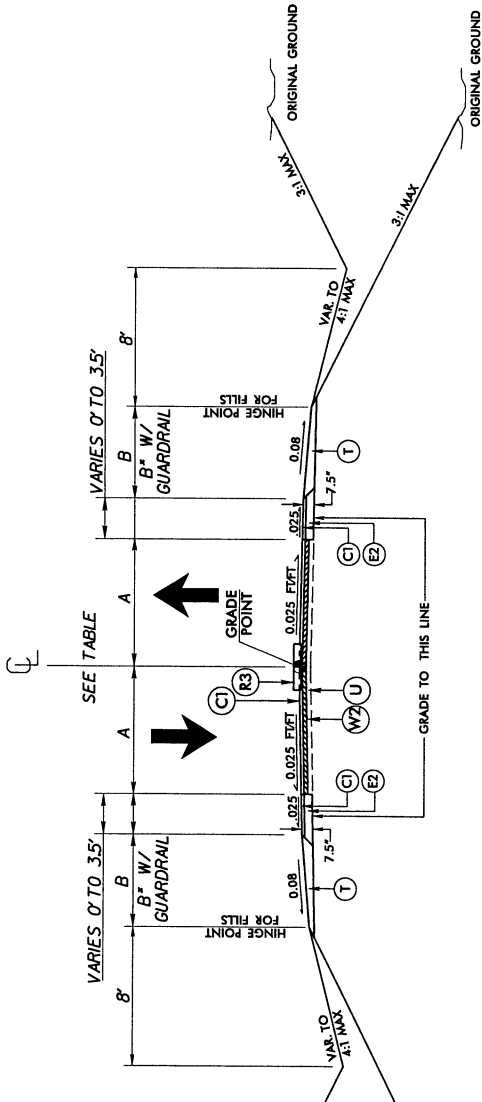
TYPICAL SECTION NO. 3

USE TYPICAL SECTION NO. 3 AS FOLLOWS:

LINE	ROAD NAME	STATION TO STATION	A	B	B"
-Y1-	POSSUM TRACK ROAD	STA. 11+14.04 TO STA. 13+00.00	10'	6'	9'
-Y2-	UNION CHAPEL ROAD	STA. 11+11.62 TO STA. 13+00.00	7.5'	5'	8'
-Y6-	HARDING ROAD	STA. 11+12.98 TO STA. 13+50.00	10'	5'	8'

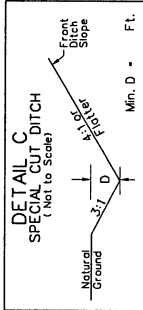
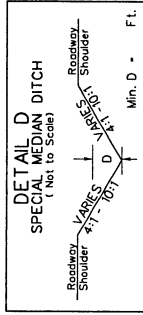
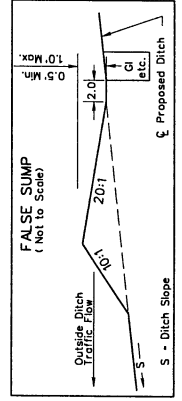
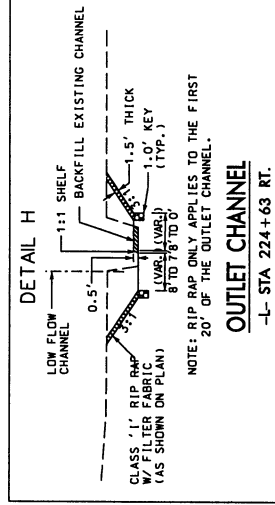
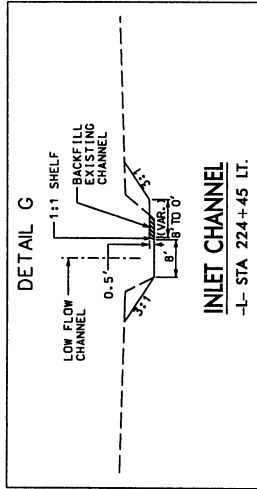
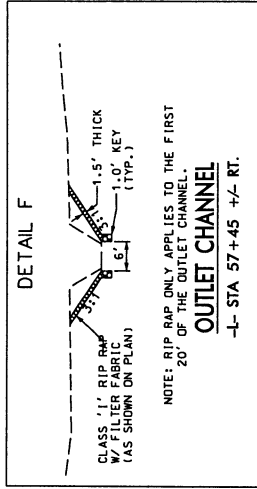
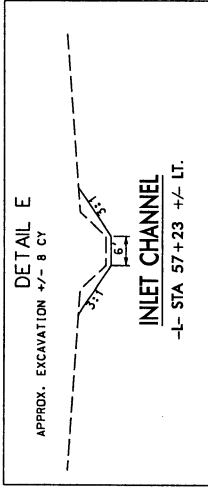
NOTE 1: EXISTING PAVEMENT LOCATION VARIES
NOTE 2: SEE PLANS FOR LOCATION OF TURN LANES,
TAPERS AND ISLANDS

PAVEMENT SCHEDULE	
C1	2 1/2" SF9.5A
C2	VAR. DEP. SF9.5A
C3	3" S9.5C
C4	VAR. DEP. S9.5C
C5	1 1/4" SF9.5A
D1	2 1/2" I19.0B
D2	VAR. DEP. I19.0B
D3	4" I19.0C
D4	VAR. DEP. I19.0C
E1	4" B25.0B
E2	5" B25.0B
E3	VAR. DEP. B25.0B
E4	4.5" B25.0C
E5	5" B25.0C
E6	VAR. DEP. B25.0C
J1	10" ABC



TYPICAL SECTION NO. 4

PROJECT REFERENCE NO.	SHEET NO.
R-2510A	2C
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
Carter Burgess Consultants in Planning, Engineering, Architecture, Construction Management and Related Services 1011 Schaub Dr., Suite 202 Raleigh, North Carolina 27606	
KO & ASSOCIATES, P.C. Consulting Engineers 1011 Schaub Dr., Suite #202 Raleigh, N.C. 27606	

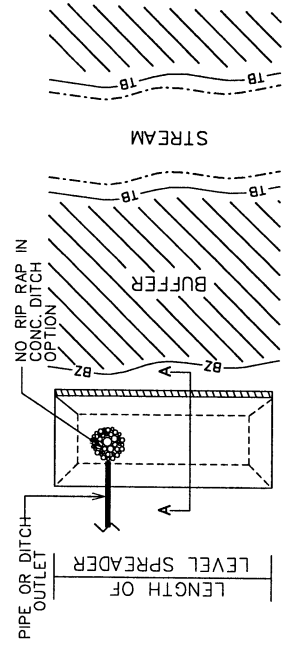


SHEET	ROADWAY	STATION	STATION	SIDE
4 & 5	-L-	29-50	31-00	MED
5	-L-	31-00	34-75	MED
5 & 6	-L-	34-75	44-00	MED
6	-L-	44-00	48-00	MED
6 & 7	-L-	48-00	58-00	MED
7 & 8	-L-	57-10	66-50	MED
8	-L-	66-50	73-50	MED
8 & 9	-L-	73-50	77-50	MED
9	-L-	77-50	83-50	MED
9 & 10	-L-	83-50	88-65	MED
10	-L-	88-65	92-55	MED
10 & 11	-L-	92-55	95-75	MED
11	-L-	95-75	98-87	MED
11 & 12	-L-	98-87	99-50	MED
12	-L-	99-50	102-40	MED
12 & 13	-L-	102-40	103-80	MED
13	-L-	103-80	105-20	MED
13 & 14	-L-	105-20	107-50	MED
14	-L-	107-50	109-61	MED
14 & 15	-L-	109-61	116-80	MED
15	-L-	116-80	118-27	MED
15 & 16	-L-	118-27	120-00	MED
16	-L-	120-00	122-00	MED
16 & 17	-L-	122-00	123-30	MED
17	-L-	123-30	127-00	MED
17 & 18	-L-	127-00	129-00	MED
18	-L-	129-00	136-00	MED
18 & 19	-L-	136-00	142-80	MED
19	-L-	142-80	145-00	MED
19 & 20	-L-	145-00	158-50	MED
20	-L-	158-50	162-35	MED
20 & 21	-L-	162-35	168-00	MED
21	-L-	168-00	213-40	MED
21 & 22	-L-	213-40	225-50	MED
22	-L-	225-50	229-50	MED
22 & 23	-L-	229-50	231-50	MED
23	-L-	231-50	232-50	MED

LEVEL SPREADER DETAIL

(NOT TO SCALE)

PLAN VIEW



INTERSECTION DETAILS

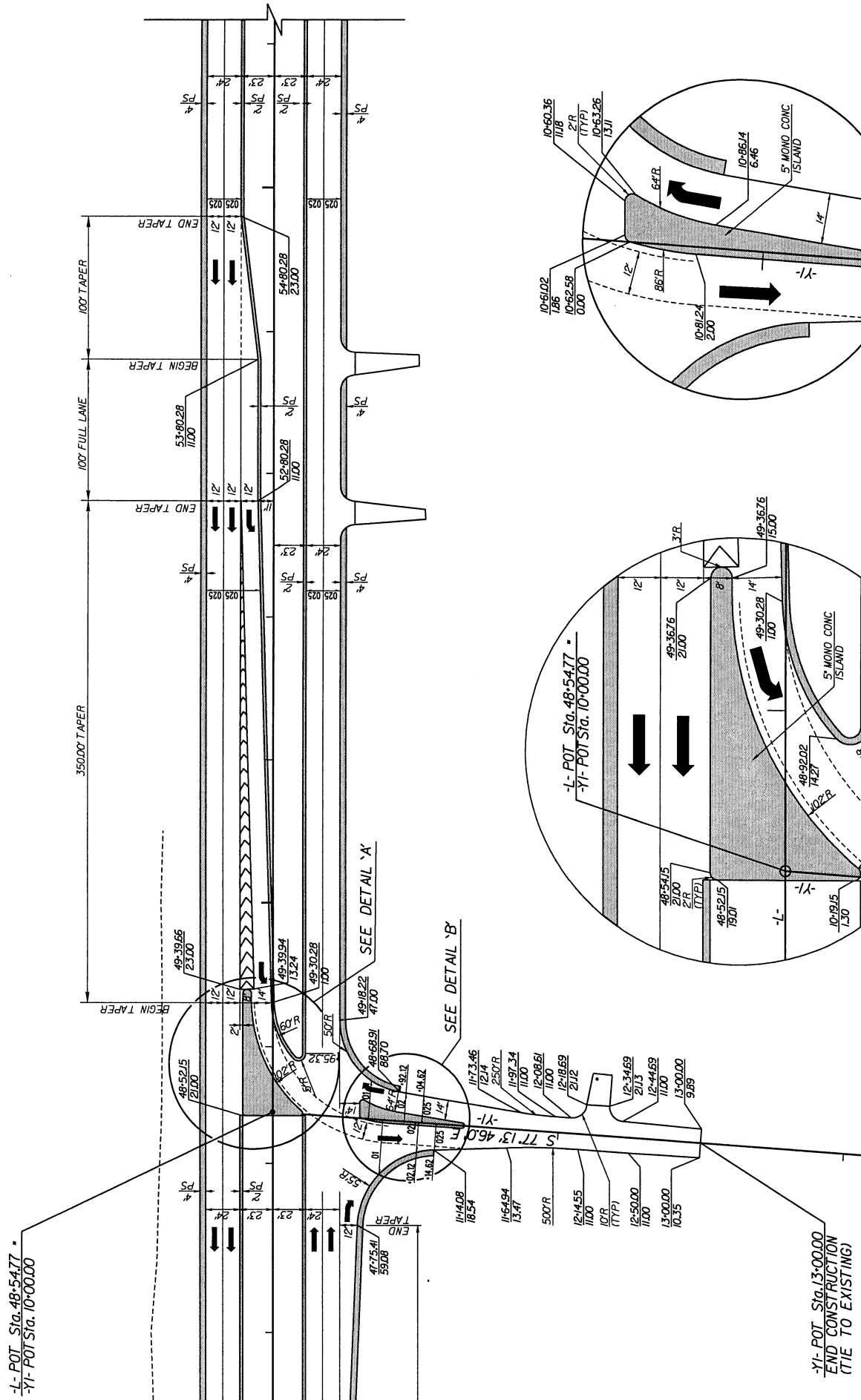
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SEE SHEET 6 FOR PLAN

NAD 8395

PROJECT REFERENCE NO.	SHEET NO.
R-2510A	2D
RAW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
Carter Burgess Consultants in Planning, Engineering, Architecture, Construction Management and Related Services 2811 Glenwood Avenue, Suite 300 Raleigh, North Carolina 27612	

NOTE: ALL RADII ARE MEASURED FROM THE EDGE OF TRAVEL LANE



INTERSECTION DETAILS

65

SEE SHEET 8 FOR PLAN

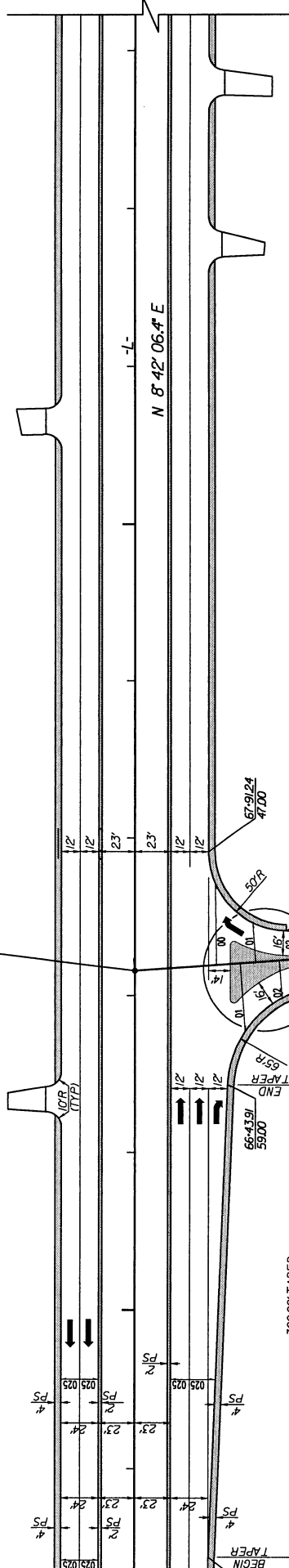
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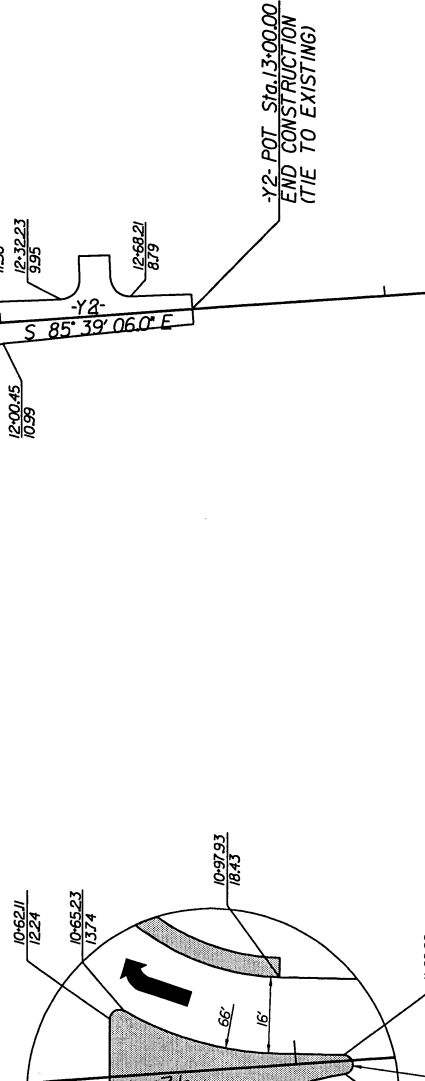
PROJECT REFERENCE NO.	SHEET NO.
R-2510A	2E
ROADWAY DESIGN ENGINEER	
HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

Carter Burgess
Consultants in Planning, Engineering, Architecture,
Construction Management and Related Services
1000 West 10th Street, Suite 300
Raleigh, North Carolina 27612

-L- POT Sta. 67+5.43 -
-Y2- POT Sta. 10+00.00



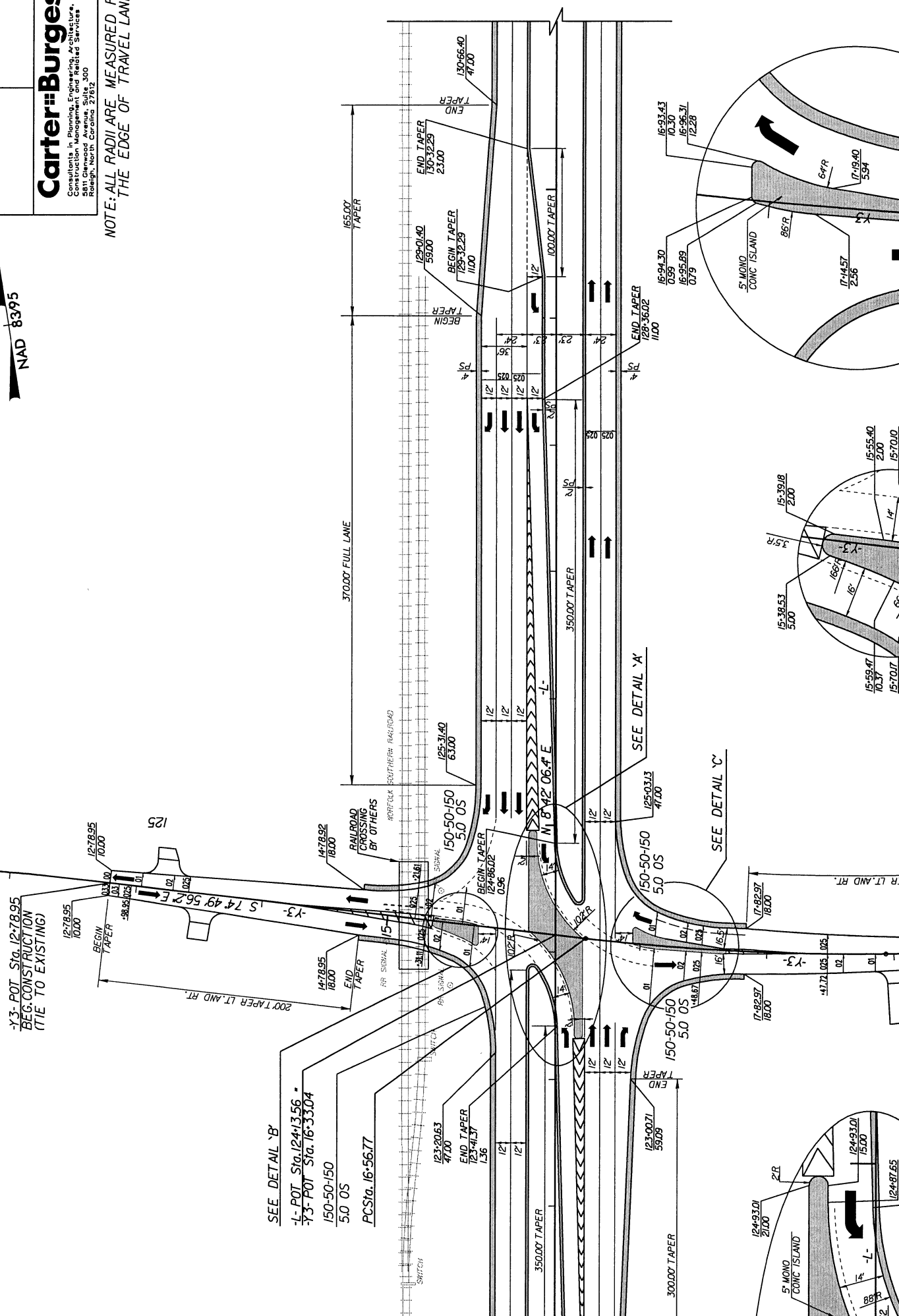
NOTE: ALL RADII ARE MEASURED FROM THE EDGE OF TRAVEL LANE



SEE SHEET 12 FOR PLAN

PROJECT REFERENCE NO. <i>R-250A</i>	SHEET NO. <i>2F</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

NOTE: ALL RADII ARE MEASURED FROM THE EDGE OF TRAVEL LANE



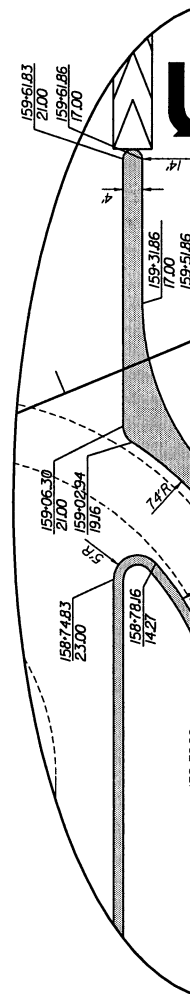
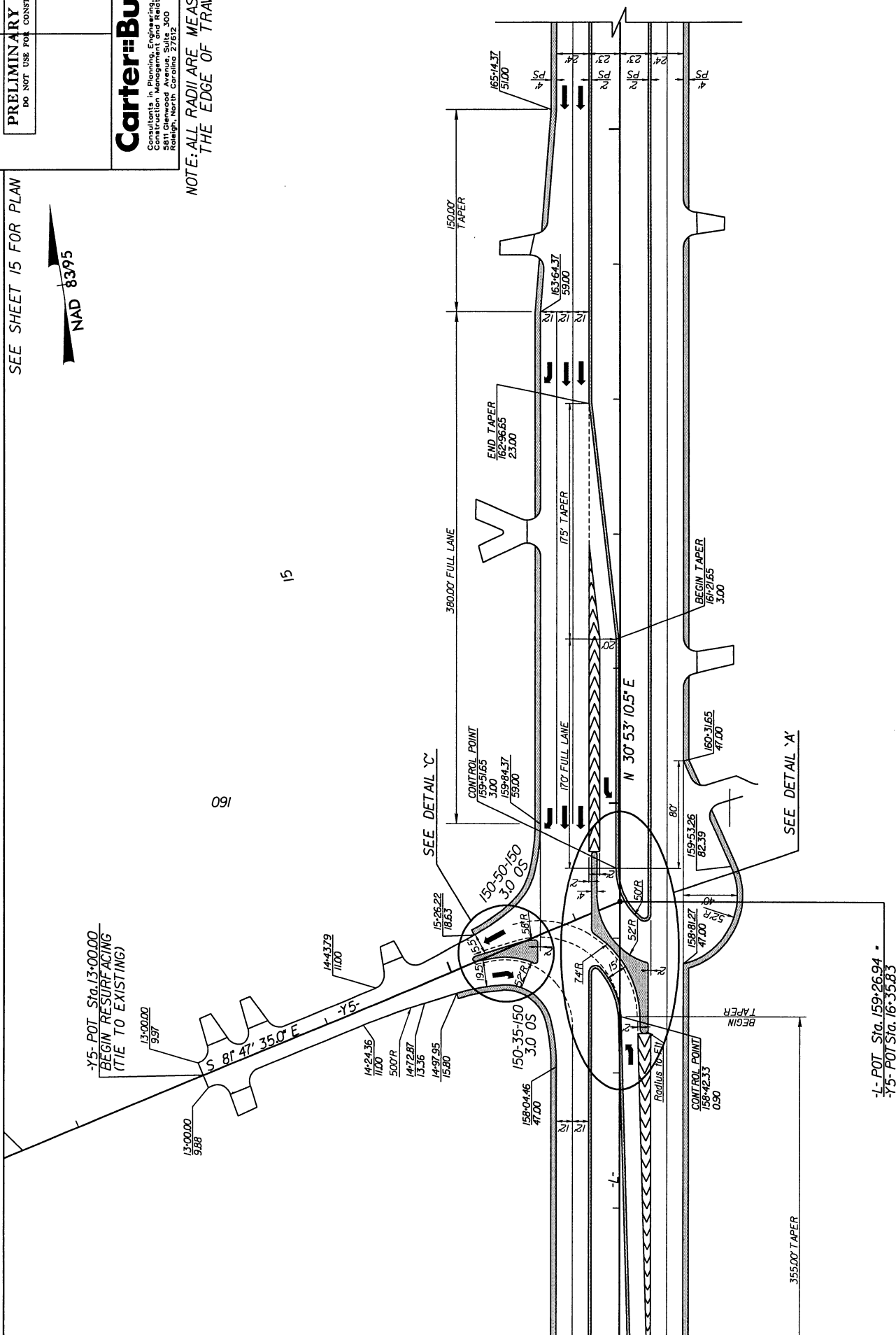
SEE SHEET 15 FOR PLAN

PROJECT REFERENCE NO. <i>R-2510A</i>	SHEET NO. <i>2G</i>
RW SHEET NO. ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

Carter::Burgess

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5811 Glenwood Avenue, Suite 300
Raleigh, North Carolina 27612

NOTE: ALL RADII ARE MEASURED FROM THE EDGE OF TRAVEL LANE



205

SEE SHEET 18 FOR PLAN

NAD 83/95

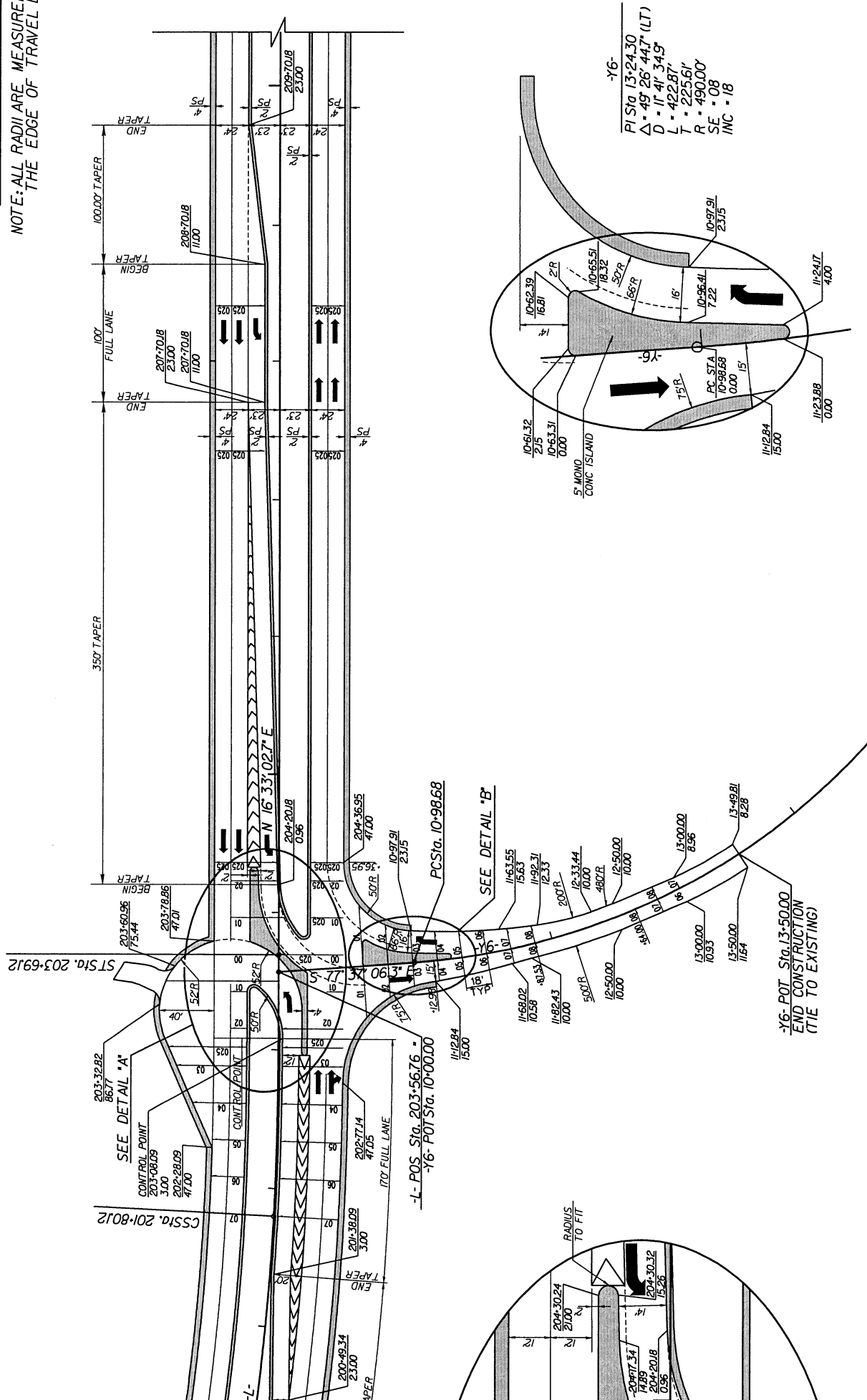
PROJECT REFERENCE NO. <i>R-250A</i>	SHEET NO. <i>2H</i>
RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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NOTE: ALL RADII ARE MEASURED FROM THE EDGE OF TRAVEL LANE



SEE SHEET 22 FOR -L- PROFILE
SEE SHEET 33 FOR -DET- PROFILE
SEE SHEET 2C FOR DITCH DETAILS
ALL DRIVEWAYS ARE 16' WIDE WITH
10' RADII UNLESS OTHERWISE NOTED

PROJECT REFERENCE NO.	SHEET NO.
R-2510A	4

ROADWAY DESIGN ENGINEER	R/W SHEET NO.

PRELIMINARY PLANS
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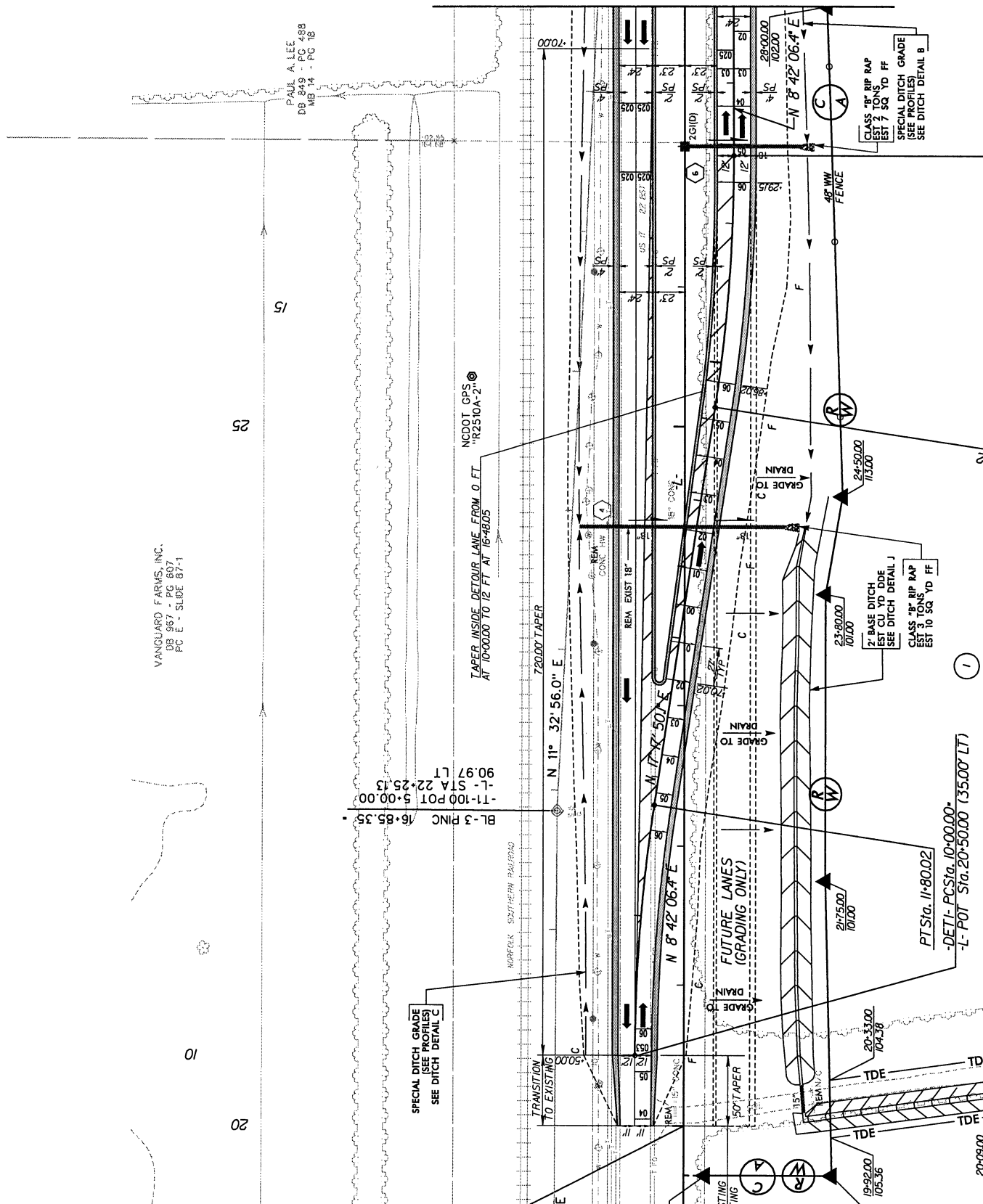
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NAD 83/95



NOTE: ALL DRIVEWAY CONNECTIONS ARE 6" ABC UNLESS OTHERWISE NOTED

SEE SHEET 23 FOR -L- PROFILE
SEE SHEET 2C FOR DITCH DETAILS
ALL DRIVEWAYS ARE 16' WIDE WITH
10' RADIUS UNLESS OTHERWISE NOTED

NAD 8395

PROJECT REFERENCE NO.	R-2510A	SHEET NO.	5
ROADWAY DESIGN ENGINEER		HYDRAULICS ENGINEER	

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

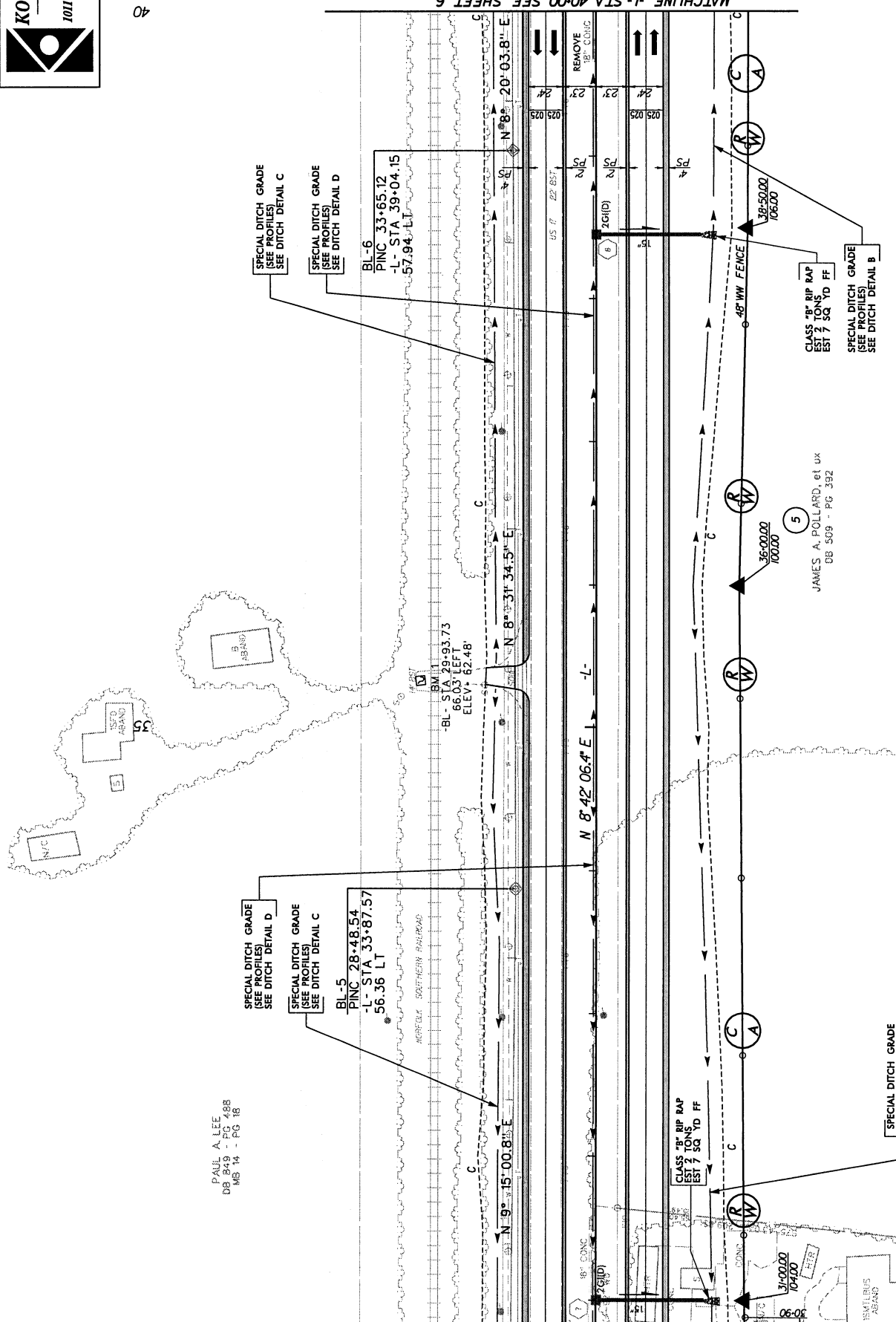
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PROJECT REFERENCE NO.
 R-2510A

SHEET NO.
 6

ROADWAY DESIGN
 ENGINEER

HYDRAULICS
 ENGINEER

PRELIMINARY PLANS
 DO NOT USE FOR CONSTRUCTION

NOTE: ALL DRIVEWAY
 CONNECTIONS ARE 6" ABC
 UNLESS OTHERWISE NOTED
 SEE SHEET 23 FOR L-PROFILE
 SEE SHEET 32 FOR YI-PROFILE
 SEE SHEET 2C FOR DITCH DETAILS
 SEE SHEET 2D FOR INTERSECTION DETAILS
 ALL DRIVEWAYS ARE 16' WIDE WITH
 10' RADII UNLESS OTHERWISE NOTED

Weyerhaeuser Company
 DB 1082 - PG 35
 TB 11 - PG 375
 MB 14 - PG 18

BL-7
 PNC 38+66.81
 L STA 44+05.83
 61.16 L.T.

BL-8 PNC 43+57.12 -
 BY1-43 POT 5+00.00
 -L- STA 48+93.26
 8.15 L.T.
 -L- POT Sta. 48+54.77 -
 -YI- POT Sta. 10+00.00

MATCHLINE - L- STA 53+00 SEE SHEET 7

100' FULL LANE
 350.00' TAPER

NAD 8395

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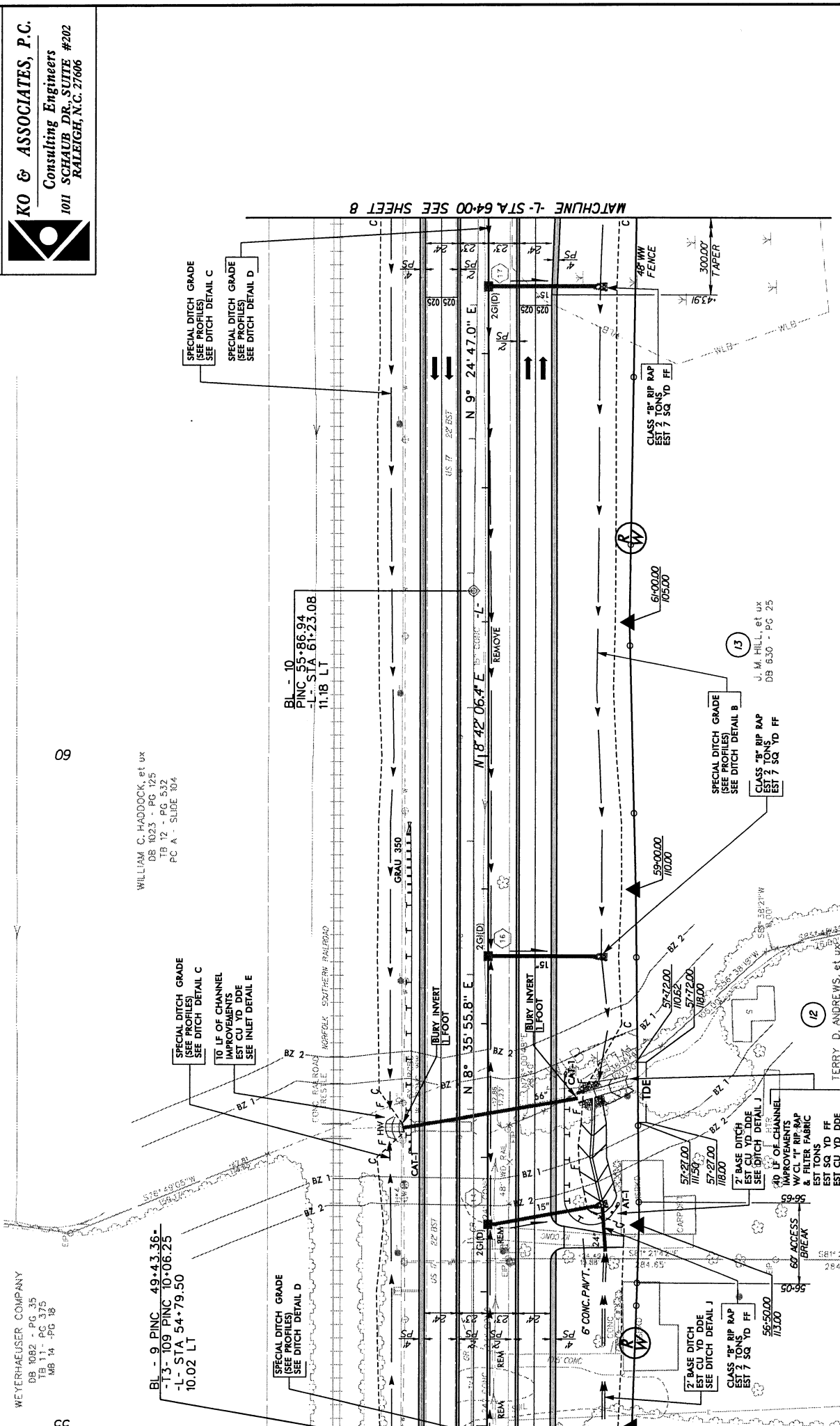
45

50

NOTE: ALL DRIVEWAY CONNECTIONS ARE 6" ABC UNLESS OTHERWISE NOTED
 SEE SHEET 24 FOR -L- PROFILE
 SEE SHEET 2C FOR DITCH DETAILS
 ALL DRIVEWAYS ARE 16' WIDE WITH 10' RADIUS UNLESS OTHERWISE NOTED



PROJECT REFERENCE NO.	SHEET NO.
R-2510A	7
ROADWAY DESIGN ENGINEER	
HYDRAULICS ENGINEER	
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
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KO & ASSOCIATES, P.C. Consulting Engineers 1011 SCHAUER DR., SUITE #202 RALEIGH, N.C. 27606	



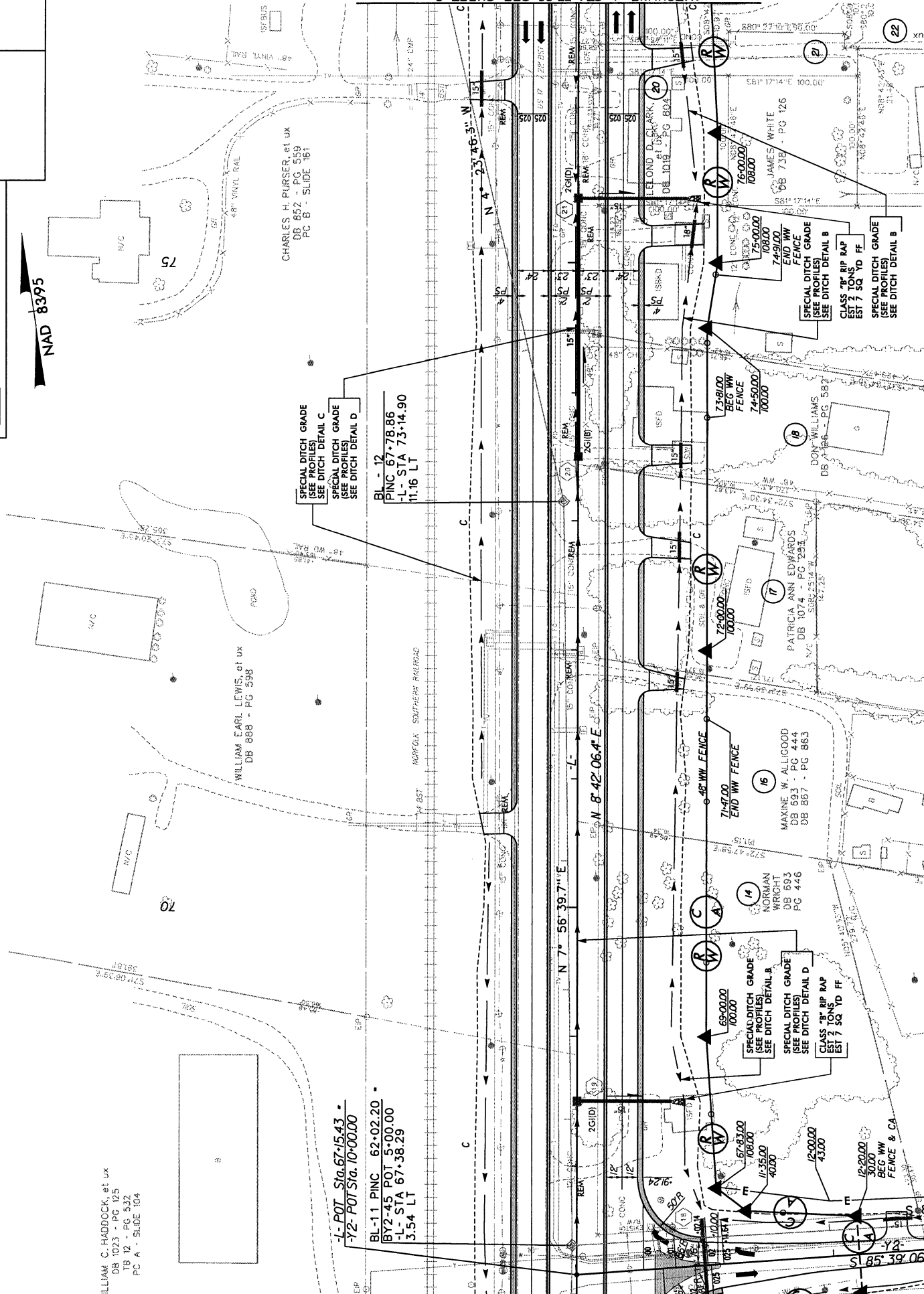
NOTE: ALL DRIVEWAY
CONNECTIONS ARE 6" ABC
UNLESS OTHERWISE NOTED

SEE SHEET 24 FOR -L- PROFILE
SEE SHEET 32 FOR -Y2- PROFILE
SEE SHEET 2C FOR DITCH DETAILS
SEE SHEET 2D FOR INTERSECTION DETAILS
ALL DRIVEWAYS ARE 16' WIDE WITH
10' RADII UNLESS OTHERWISE NOTED

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PROJECT REFERENCE NO.	R-2510A	SHEET NO.	8
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER		
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			



PROJECT REFERENCE NO.

R-2510A

SHEET NO.

10

ROADWAY DESIGN ENGINEER

BW SHEET NO.

HYDRAULICS ENGINEER

PRELIMINARY PLANS

DO NOT USE FOR CONSTRUCTION

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NOTE: ALL DRIVEWAY CONNECTIONS ARE 6" ABC UNLESS OTHERWISE NOTED

SEE SHEET 25 FOR L-PROFILE

SEE SHEET 2C FOR DITCH DETAILS

ALL DRIVEWAYS ARE 16' WIDE WITH 10' RADII UNLESS OTHERWISE NOTED

NAD 8395

95

GEORGE F. WIGGINS, et ux
DB 1055 - PG 412

BL -16
PINC 90+84.85
L- STA 96+03.60
55.29 LT

SPECIAL DITCH GRADE
(SEE PROFILES)
SEE DITCH DETAIL C

BM 3
L- STA 94+41.67
62.50 FT
ELEV. 51.67'

SPECIAL GRADE TO DRAIN
(SEE PROFILES)
SEE DITCH DETAIL D

BL -17 PINC 96+76.84
L- STA 101+95.67
66.66 LT

29

MATCHLINE L- STA 103+00 SEE SHEET 11

28

D. H. BRIGHT
DB 229 - PG 140
MB 17 - PG 68

CLASS "B" RIP RAP
EST 3 TONS
EST 10 SQ YD FF

SPECIAL DITCH GRADE
(SEE PROFILES)
SEE DITCH DETAIL B

CLASS "B" RIP RAP
EST 11 TONS
EST 28 SQ YD FF

CLASS "B" RIP RAP
EST 7 TONS
EST 7 SQ YD FF

SPECIAL DITCH GRADE
(SEE PROFILES)
SEE DITCH DETAIL B

CLASS "B" RIP RAP
EST 2 TONS
EST 7 SQ YD FF

4" BASE TAIL DITCH
EST 1000 CY DDE
SEE DITCH DETAIL A

CLASS "B" RIP RAP
EST 7 TONS
EST 7 SQ YD FF

30

ARLEY E. MEERS, et ux
DB 914 - PG 251
D8 711 - PG 734
ADDIE ELIZABETH F. GALLOWAY
D8 711 - PG 734

NAD 8395

INW OUT - 47.08

SEE SHEET 44000

PROJECT REFERENCE NO.	R-2510A	SHEET NO.	11
R/W SHEET NO.			
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER		

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511

NAD 83/95

NOTE: ALL DRIVEWAY CONNECTIONS ARE 6" ABC UNLESS OTHERWISE NOTED

SEE SHEET 26 FOR -L-PROFILE
SEE SHEET 2C FOR DITCH DETAILS
ALL DRIVEWAYS ARE 16' WIDE WITH
10' RADII UNLESS OTHERWISE NOTED

29

JOHNNIE M. SMITH, et al
DB 976 - PG 343
PG 5 - SLIDE 98-7

BL-18

PINC 102+57.71
-L- STA 107+76.47
57.25 LT

**SPECIAL DITCH GRADE
(SEE PROFILES)
SEE DITCH DETAIL C**

BL-19
PINC 107+73.77
-L- STA 112+92.52
54 21 T

SPECIAL DITCH GRADE
(SEE PROFILES)

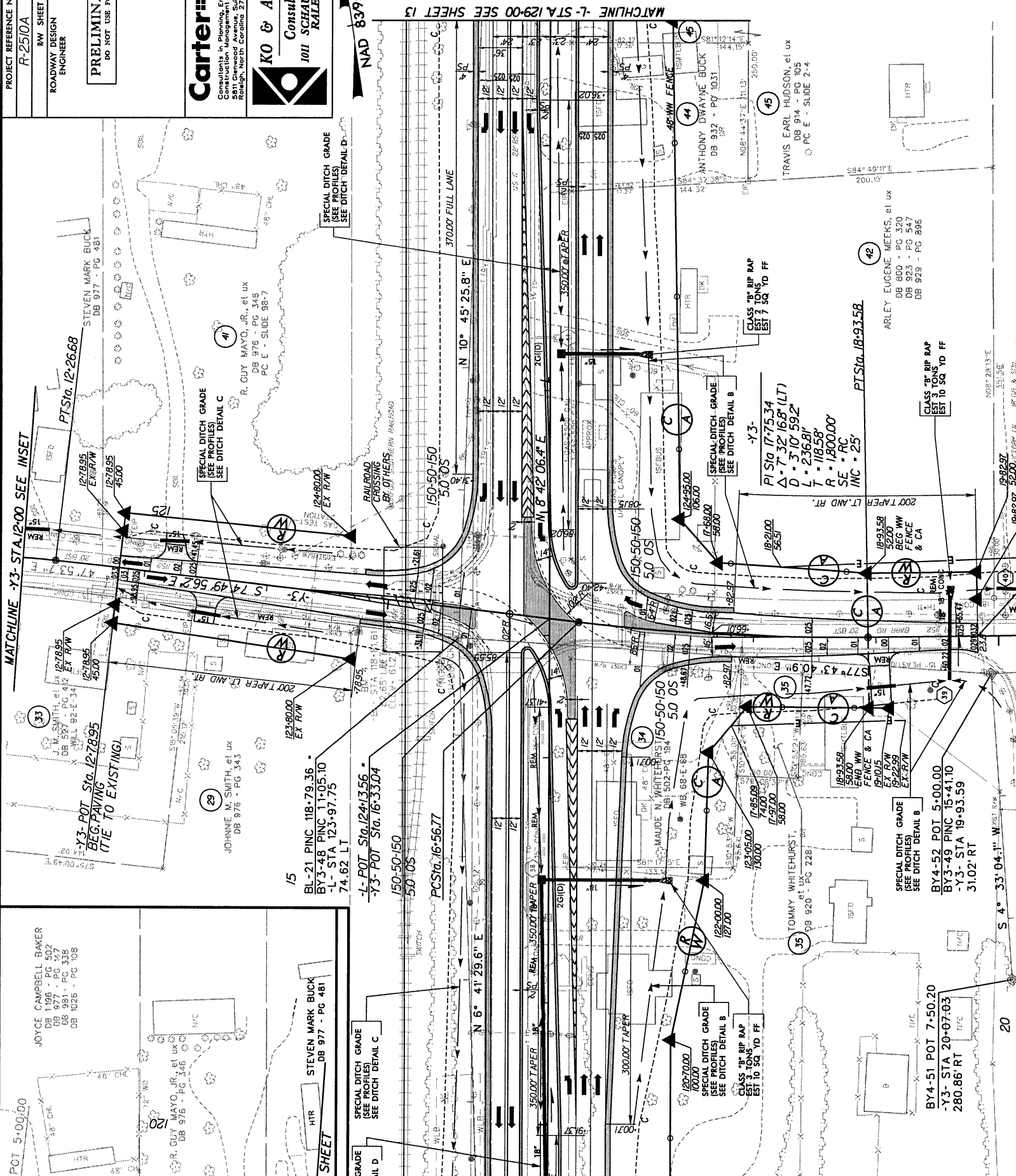
SEE DITCH DETAIL B

**SPECIAL DITCH GRADE
(SEE PROFILES)
SEE DITCH DETAIL D**

32

MAUDE ELIZABETH WHITEHURST
OB 502 - PG 537

MAINTENANCE - L-51A 116-00 SEE SHEET 12

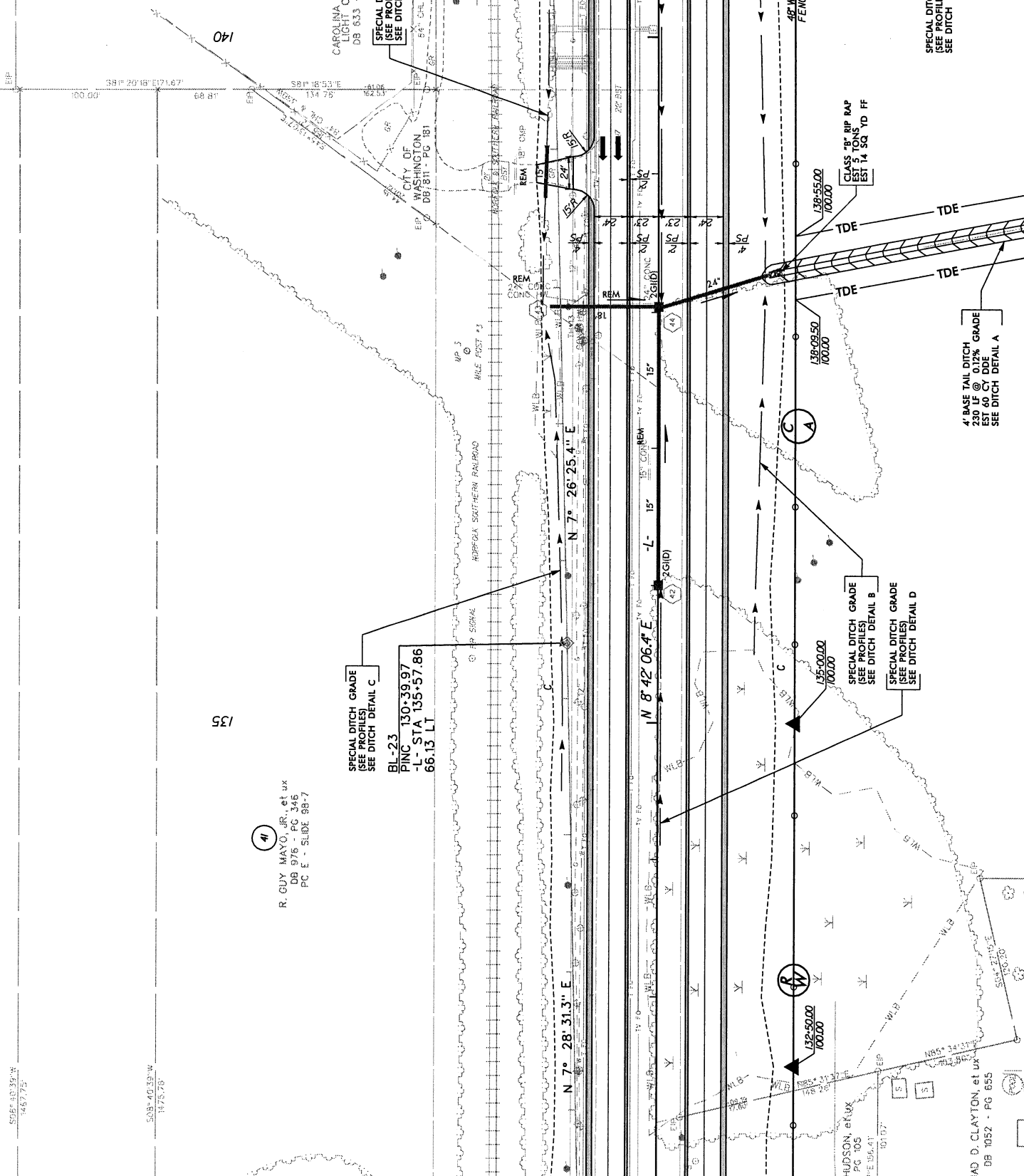


NOTE: ALL DRIVEWAY
CONNECTIONS ARE 6" ABC
UNLESS OTHERWISE NOTED

SEE SHEET 27 FOR -L- PROFILE
SEE SHEET 2C FOR DITCH DETAILS
ALL DRIVEWAYS ARE 16' WIDE WITH
10' RADI UNLESS OTHERWISE NOTED

NAD 8395

PROJECT REFERENCE NO.	SHEET NO.
R-2510A	13
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	
Carter Burgess Consultants in Planning, Engineering, Architecture, Construction Management and Related Services 300 North Carolina Street, Suite 300 Raleigh, North Carolina 27602	
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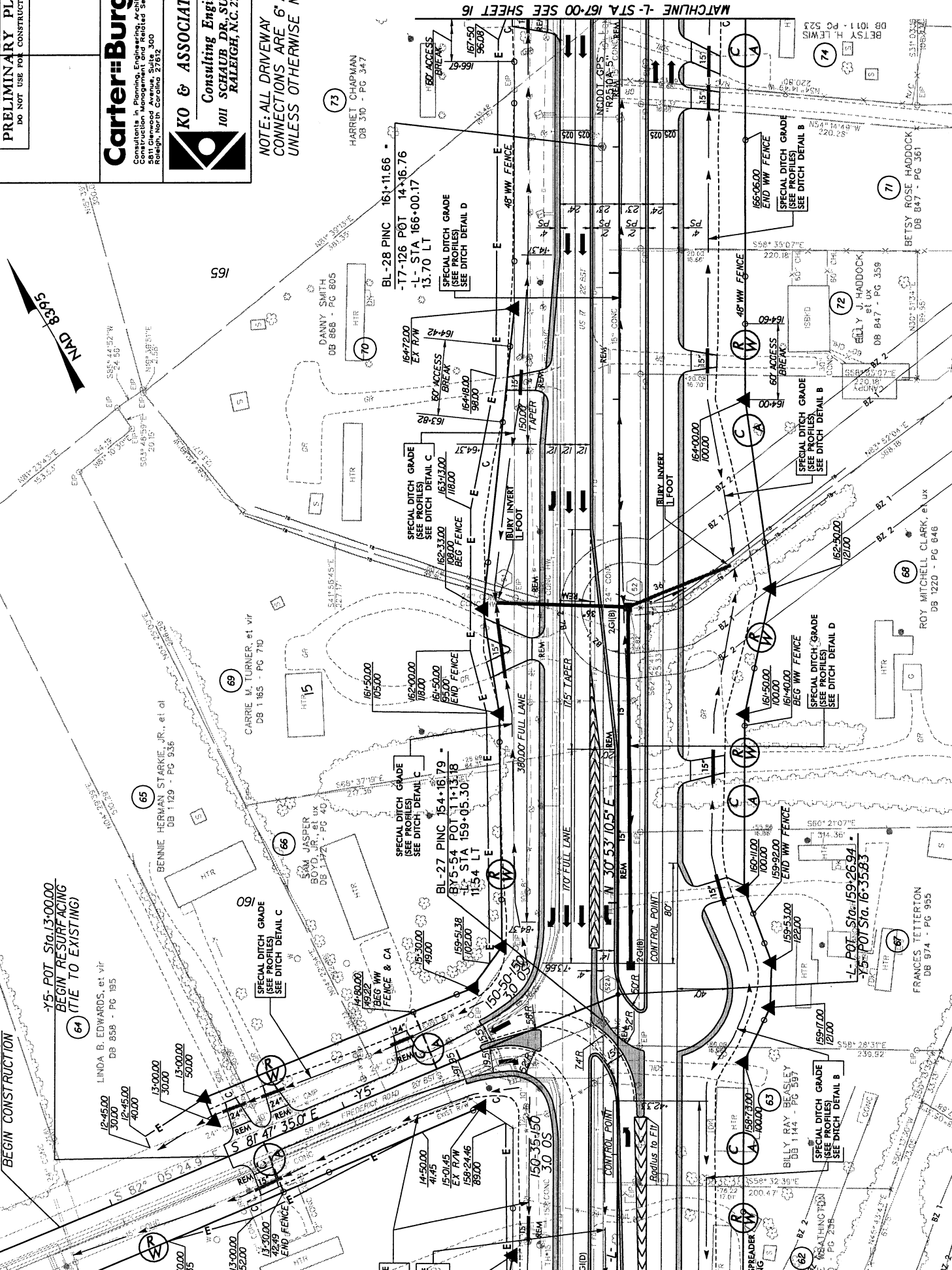


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Consulting Engineers
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NOTE: ALL DRIVEWAY CONNECTIONS ARE 6" ABC UNLESS OTHERWISE NOTED

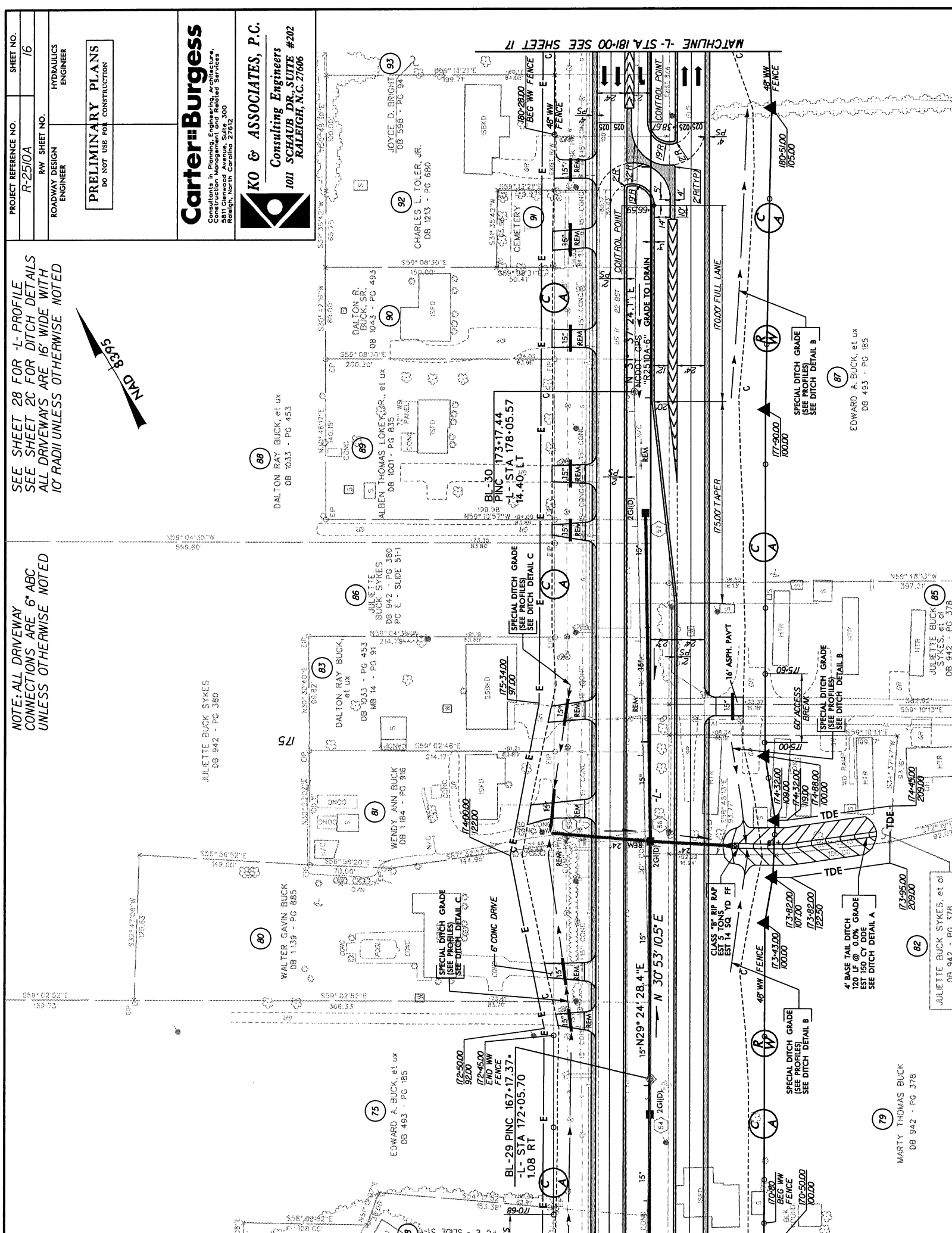
SEE SHEET 28 FOR -L- PROFILE
SEE SHEET 33 FOR -Y5- PROFILE
SEE SHEET 2C FOR DITCH DETAILS
SEE SHEET 2F FOR INTERSECTION DETAILS
ALL DRIVEWAYS ARE 16' WIDE WITH
90° RADI UNLESS OTHERWISE NOTED



PROJECT REFERENCE NO.	R-2510A	R/W SHEET NO.	HYDRAULICS ENGINEER
SHEET NO.	16		

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

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 Raleigh, North Carolina 27602



NOTE: ALL DRIVEWAY CONNECTIONS ARE 6" ABC UNLESS OTHERWISE NOTED

SEE SHEET 29 FOR 'L'-PROFILE
SEE SHEET 2C FOR DITCH DETAILS
ALL DRIVEWAYS ARE 16' WIDE WITH
10' RADI UNLESS OTHERWISE NOTED

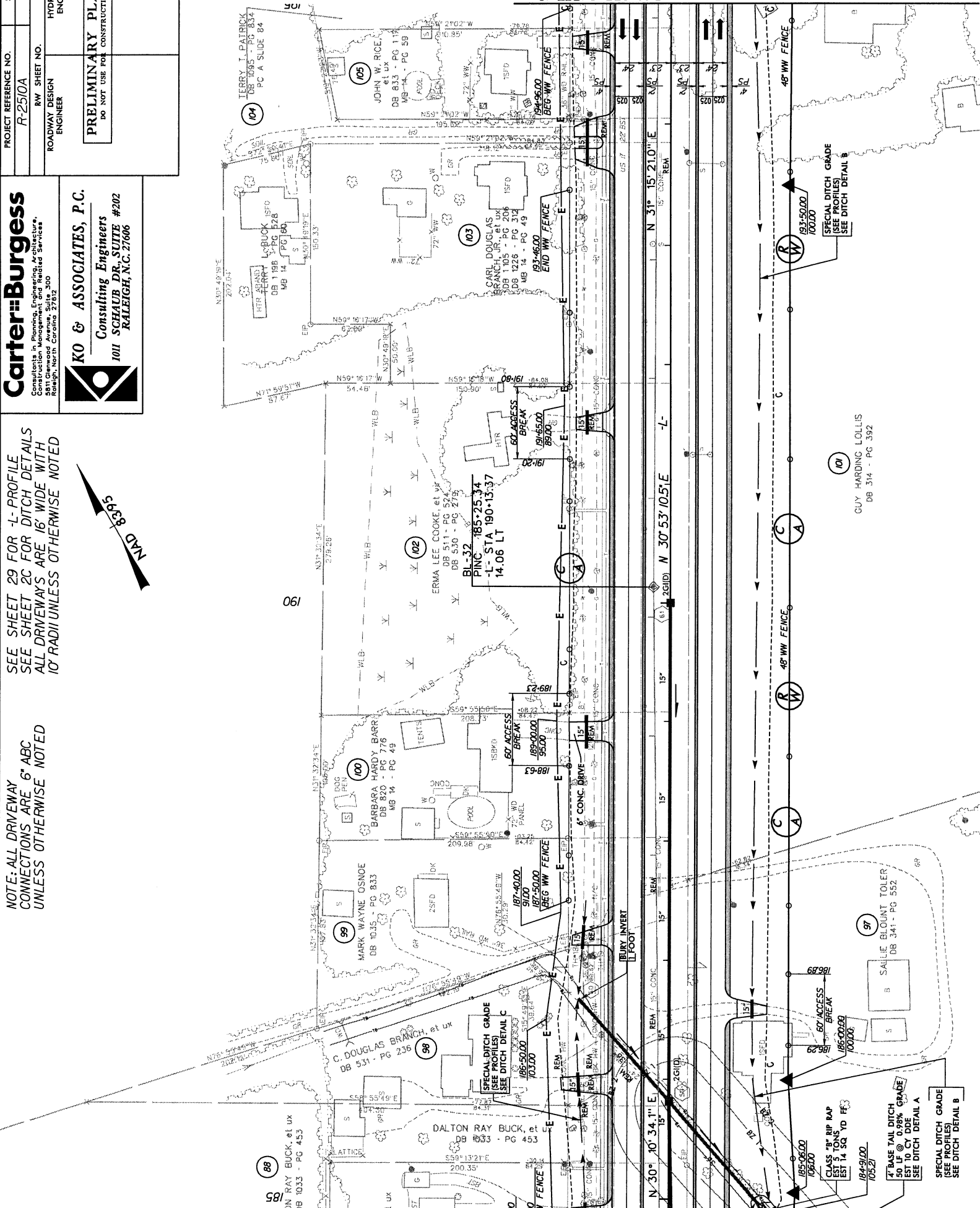


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Raleigh, North Carolina 27602



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RALEIGH, N.C. 27602

PROJECT REFERENCE NO.	R-2510A	SHEET NO.	17
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER		
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION			



MATCHLINE -L- STA 195+00 SEE SHEET 18

PROJECT REFERENCE NO.	SHEET NO.
R-2510A	18

ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	


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 Consulting Engineers
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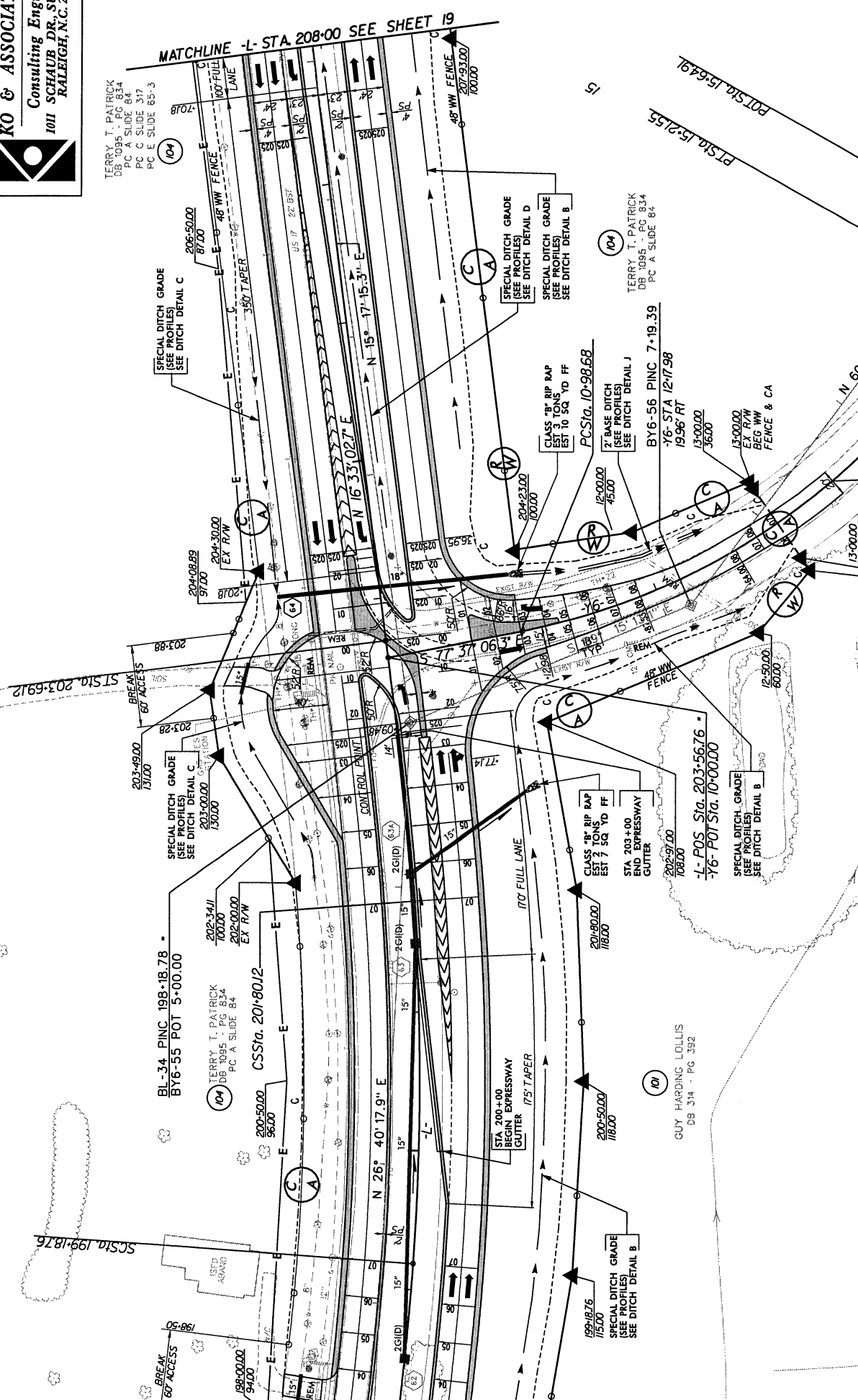
NOTE: ALL DRIVEWAY CONNECTIONS ARE 6" ABC UNLESS OTHERWISE NOTED

SEE SHEET 29 FOR -L- PROFILE
 SEE SHEET 33 FOR -Y6- PROFILE
 SEE SHEET 2C FOR DITCH DETAILS
 SEE SHEET 2F FOR INTERSECTION DETAILS
 ALL DRIVEWAYS ARE 16' WIDE WITH 10' RADII UNLESS OTHERWISE NOTED



205

200



SEE SHEET 30 FOR -L- PROFILE
SEE SHEET 2C FOR DITCH DETAILS
ALL DRIVEWAYS ARE 16' WIDE WITH
10' RADIUS UNLESS OTHERWISE NOTED

PROJECT REFERENCE NO.	SHEET NO.
R-2510A	19

RW SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

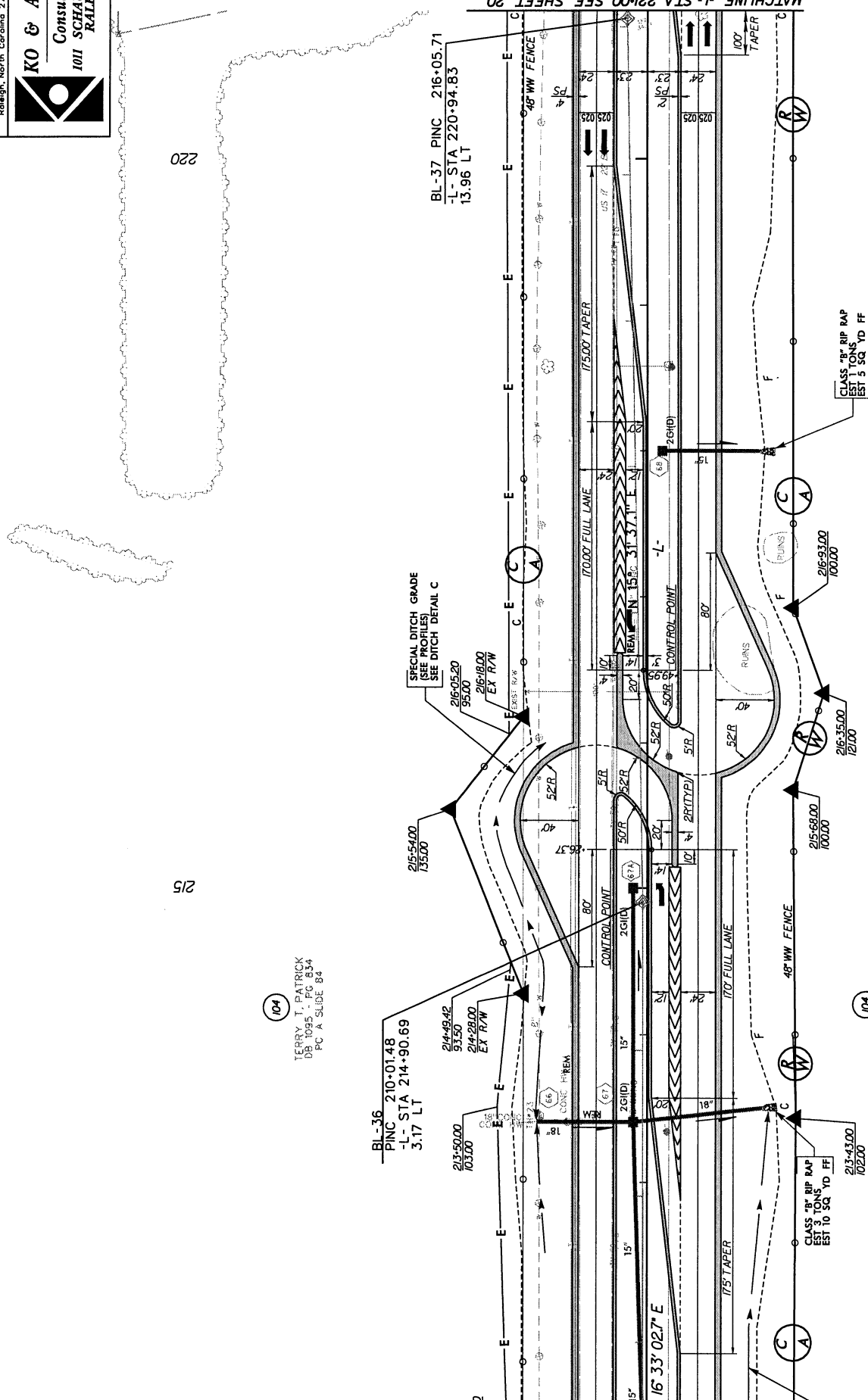
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104
TERRY T. PATRICK
DB 1095 - PC 834
PC A SLIDE 84

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Consulting Engineers
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RALEIGH, N.C. 27606

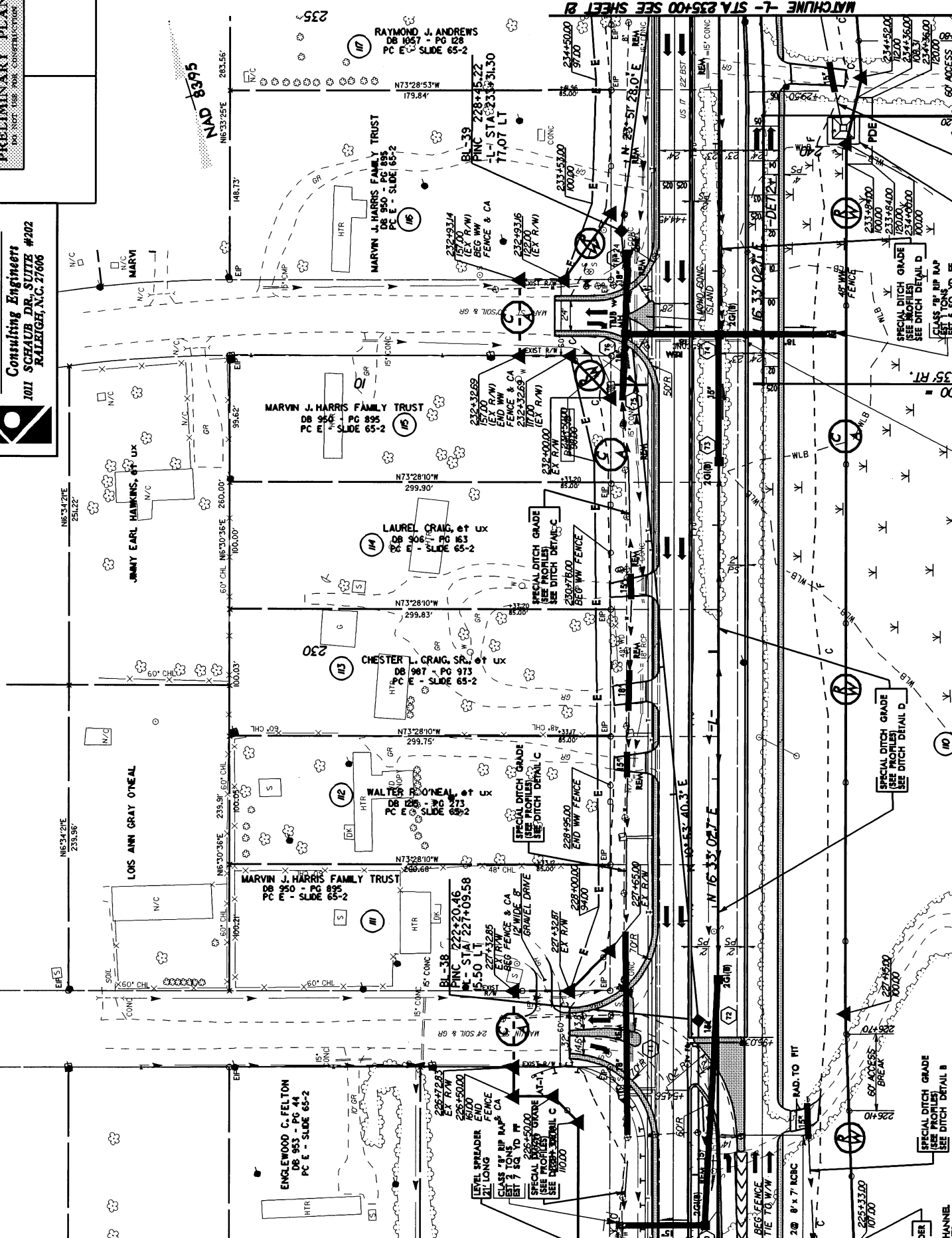
PROJECT REFERENCE NO.
R-2510A

HYDRAULICS
ENGINEER

PRELIMINARY PLANS
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SEE SHEET 30 FOR -L- PROFILE
SEE SHEET 34 FOR -DET2- PROFILE
SEE SHEET 2C FOR DITCH DETAILS
ALL DRIVEWAYS ARE 16' WIDE WITH
10' RADII UNLESS OTHERWISE NOTED

NOTE: ALL DRIVEWAY
CONNECTIONS ARE 6' ABC
UNLESS OTHERWISE NOTED



SHEET NO.
20

PROJECT REFERENCE NO.
R-2510A

HYDRAULICS
ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

PROJECT REFERENCE NO.
R-2510A

HYDRAULICS
ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

SEE SHEET 31 FOR -L- PROFILE
SEE SHEET 34 FOR -DET2- PROFILE
SEE SHEET 2C FOR DITCH DETAILS
ALL DRIVEWAYS ARE 16' WIDE WITH
10' RADI UNLESS OTHERWISE NOTED

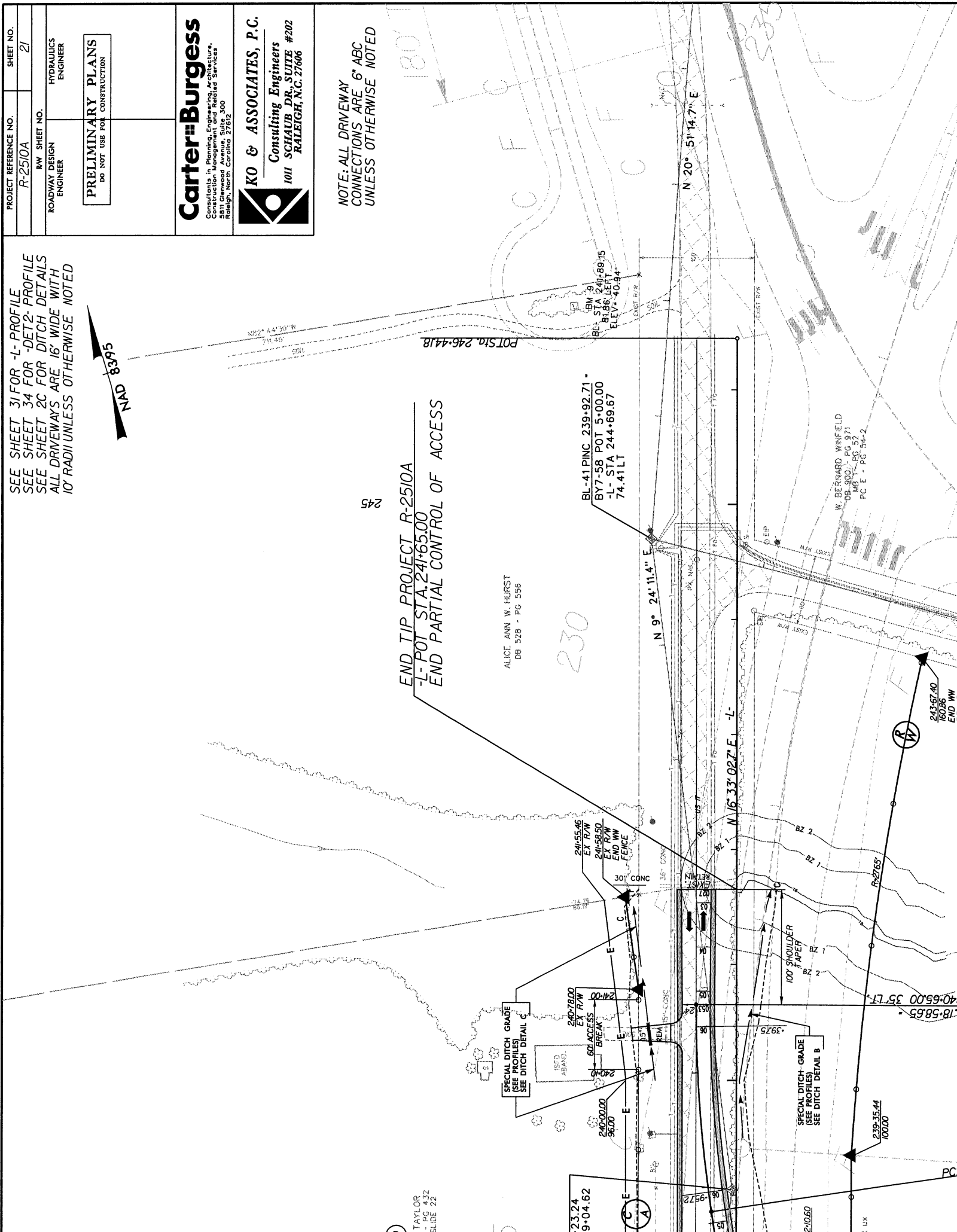


PROJECT REFERENCE NO.	SHEET NO.
R-2510A	21
R/W SHEET NO.	
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER
PRELIMINARY PLANS DO NOT USE FOR CONSTRUCTION	

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Raleigh, NC 27601-2502

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Consulting Engineers
1011 SCHAUER DR., SUITE #202
RALEIGH, N.C. 27606

NOTE: ALL DRIVEWAY
CONNECTIONS ARE 6" ABC
UNLESS OTHERWISE NOTED



END TIP PROJECT R-2510A
-L- POT STA. 241+65.00
END PARTIAL CONTROL OF ACCESS

TAYLOR
- PG 432
SLIDE 22

PROJECT REFERENCE NO.

R-2510A

SHEET NO.

22

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS

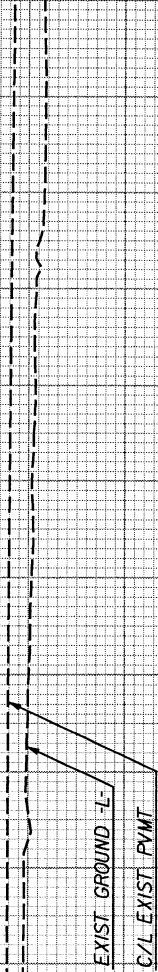
DO NOT USE FOR CONSTRUCTION

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SEE SHEET 4 FOR -L- PLAN

BEGIN CONSTRUCTION

PI = 20+00.00

EL = 6.50'

VC = 200'

K = 351

BEGIN GRADE

PI = 20+50.00

ELEV = 617.3'

(INCLUDES 3' OF RESURFACING)

FEATHER TO MATCH EXISTING

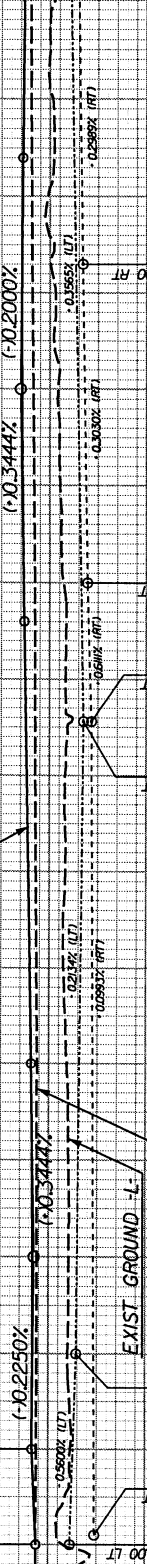
PROP. GRADE -L-

PI = 26+00.00

EL = 6.105'

VC = 240'

K = 441



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PRELIMINARY PLANS
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DO NOT USE FOR CONSTRUCTION

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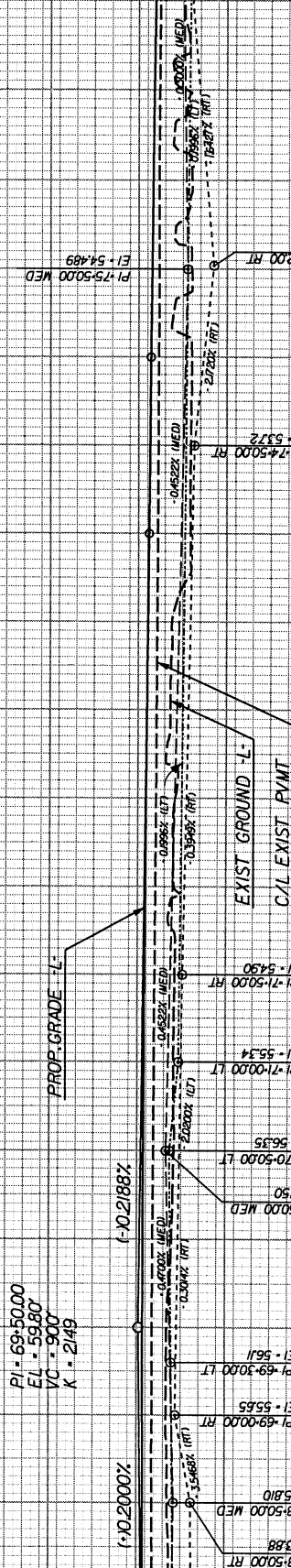
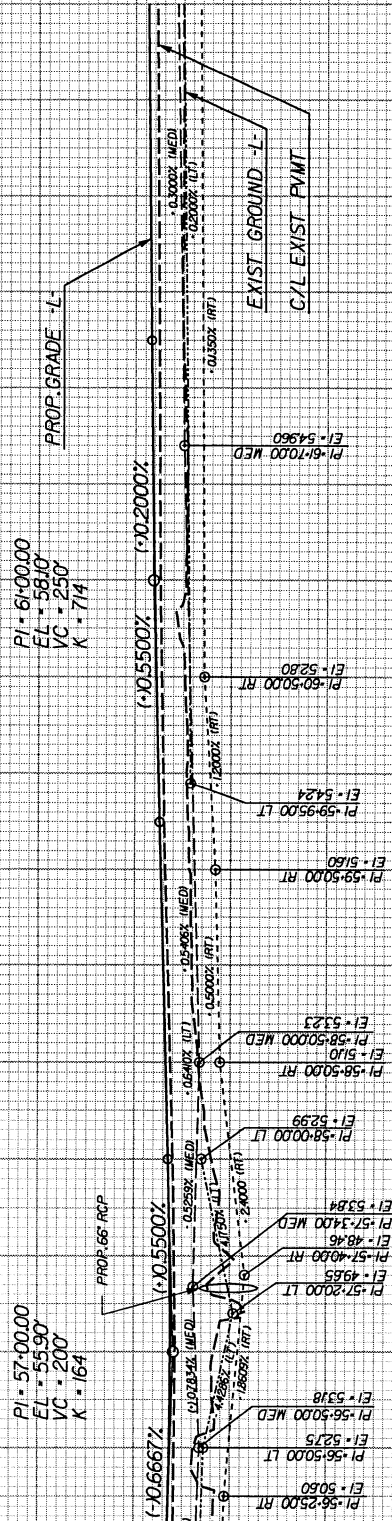
KO & ASSOCIATES, P.C.

Consulting Engineers

**SCHAUB DR., SUITE #202
RALEIGH, N.C. 27606**

STRUCTURE HYDRAULIC DATA

1e 72° RCP STA 57+33.2 -L-					
DESIGN DISCHARGE	•	70	CFS		
DESIGN FREQUENCY	•	50	YRS		
DESIGN HW ELEVATION	•	52.81	FT		
BASE DISCHARGE	•	80	CFS		
BASE FREQUENCY	•	100	YRS		
BASE HW ELEVATION	•	53.02	FT		
OVERTOPPING DISCHARGE	•	170	CFS		
OVERTOPPING FREQUENCY	•	500-	YRS		
OVERTOPPING ELEVATION	•	56.20	FT		



SEE SHEET 9 FOR -L- PLAN

PROJECT REFERENCE NO.
R-2510A

ROADWAY DESIGN
ENGINEER

SHEET NO.
25

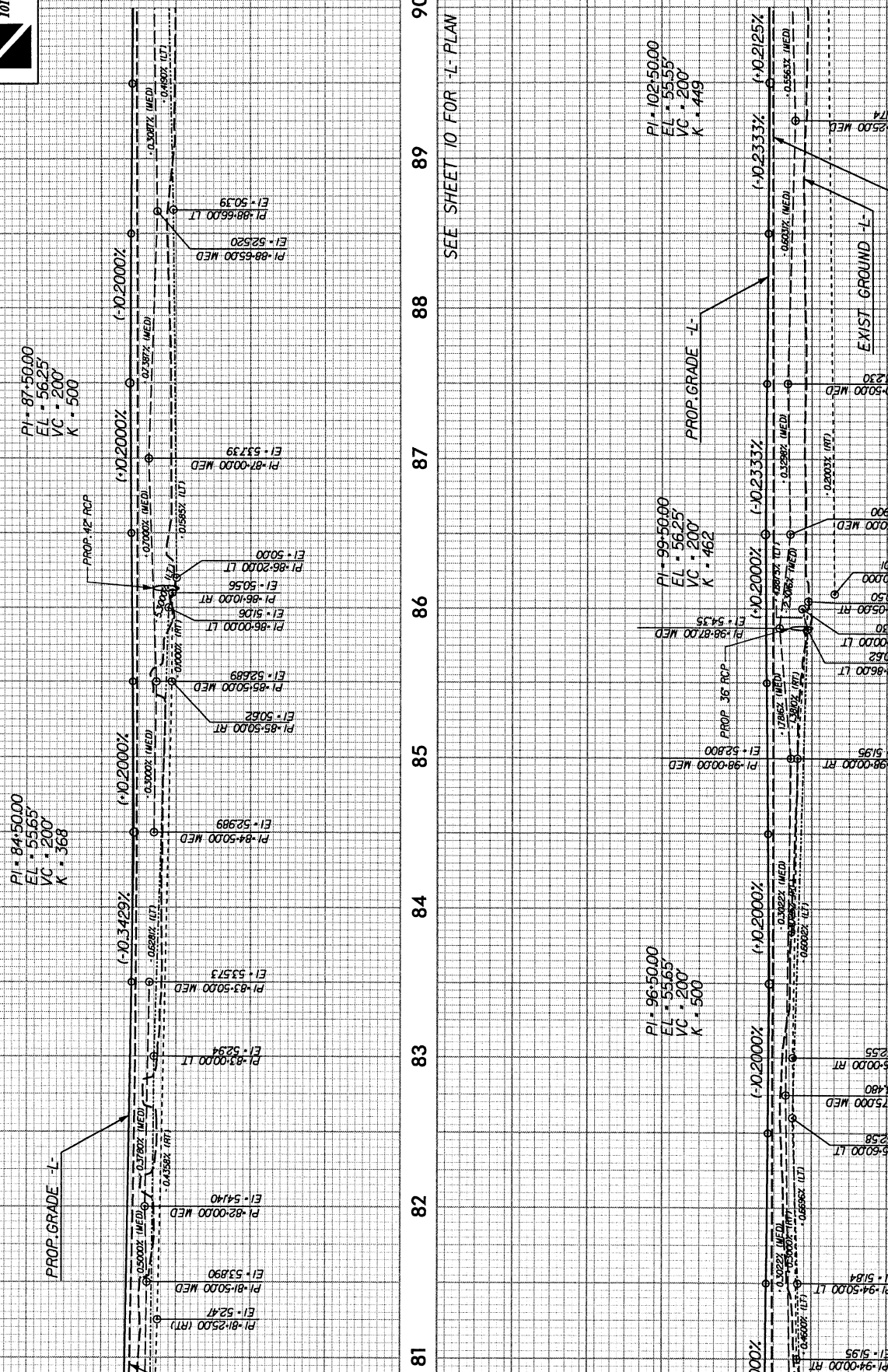
HYDRAULICS
ENGINEER

PRELIMINARY PLANS
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PIPE HYDRAULIC DATA	
42" RCP @ STA 86+13	
DRAINAGE AREA	64.00 AC
DESIGN FREQUENCY	50 YRS
DESIGN DISCHARGE	30.00 CFS
DESIGN HW ELEVATION	52.53 FT
100 YEAR DISCHARGE	36.00 CFS
100 YEAR HW ELEVATION	52.88 FT
OVERTOPPING FREQUENCY	500+ YRS
OVERTOPPING DISCHARGE	79 CFS
OVERTOPPING ELEVATION	55.77 FT

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SEE SHEET 11 FOR -L- PLAN

PROJECT REFERENCE NO.

SHEET NO.

R-2510A

26

ROADWAY DESIGN
ENGINEER

HYDRAULICS
ENGINEER

PRELIMINARY PLANS
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1011 SCHAUER DR., SUITE #202
RALEIGH, N.C. 27606

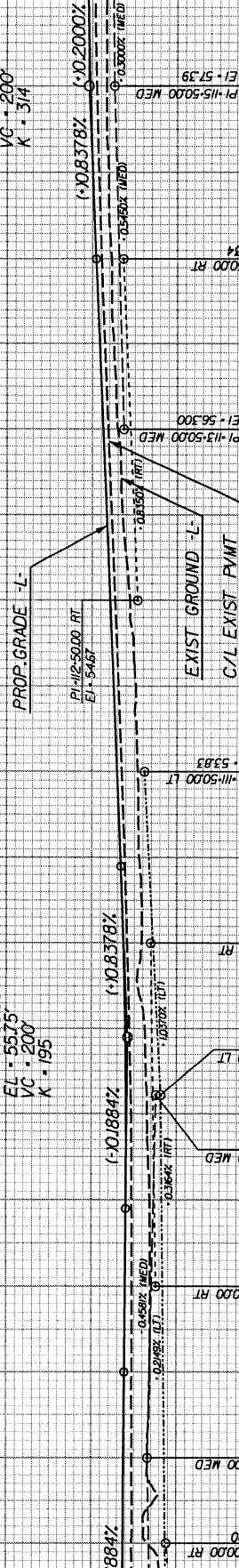
PI = 115+50.00
EL = 60.40'
VC = 200'
K = 314

PI = 109+95.00
EL = 55.75'
VC = 200'
K = 195

PI = 129+10.00
EL = 60.05'
VC = 200'
K = 298

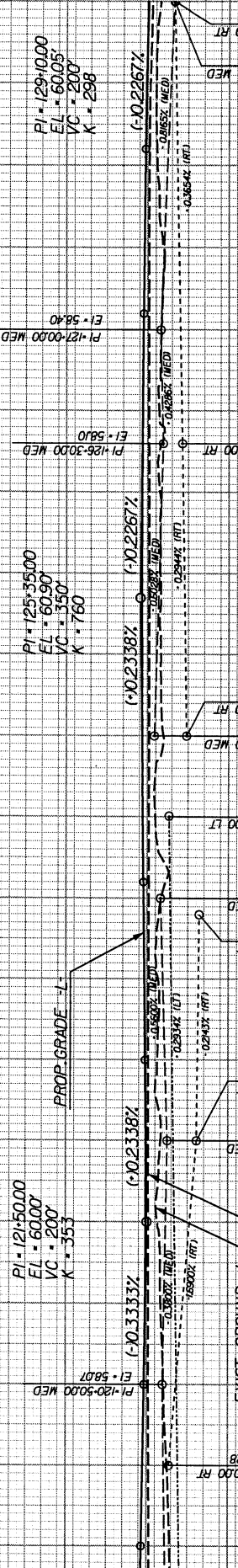
PI = 125+35.00
EL = 60.90'
VC = 350'
K = 760

PI = 121+50.00
EL = 60.00'
VC = 200'
K = 353



107 108 109 110 111 112 113 114 115 116

SEE SHEET 12 FOR -L- PLAN



SEE SHEET 13 FOR 'L' PLAN

PROJECT REFERENCE NO.
R-2510A

SHEET NO.
27

ROADWAY DESIGN
ENGINEER

HYDRAULICS
ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Carter Burgess

Consulting Engineers, Inc.
5511 Glenwood Avenue, Suite 300
Raleigh, North Carolina 27612



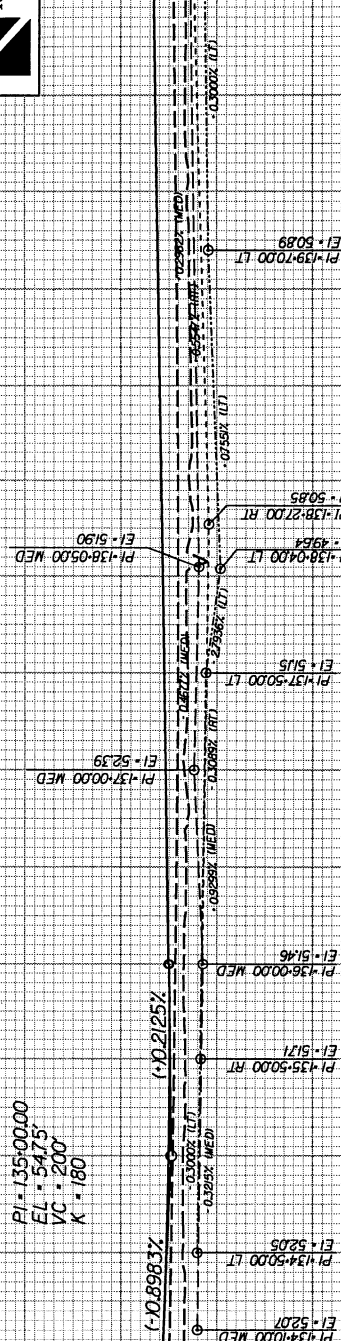
KO & ASSOCIATES, P.C.

Consulting Engineers
1011 SCHAUUB DR., SUITE #202
RALEIGH, N.C. 27606

PI = 135+00.00
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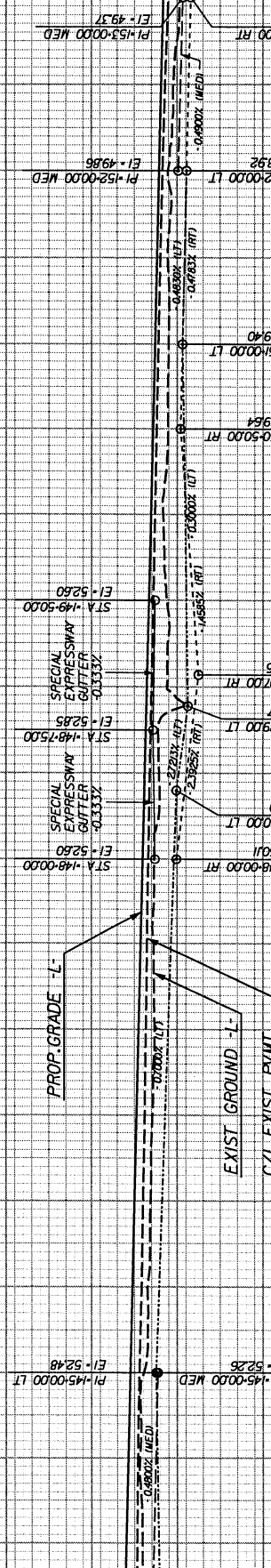
PROP. GRADE -L-

EXIST. GROUND -L-
C/L EXIST. P.V.M.T.



132 133 134 135 136 137 138 139 140 141

SEE SHEET 14 FOR 'L' PLAN



70 60 50 40

PROJECT REFERENCE NO.

R-2510A

SHEET NO.

28

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS

DO NOT USE FOR CONSTRUCTION

Carter Burgess

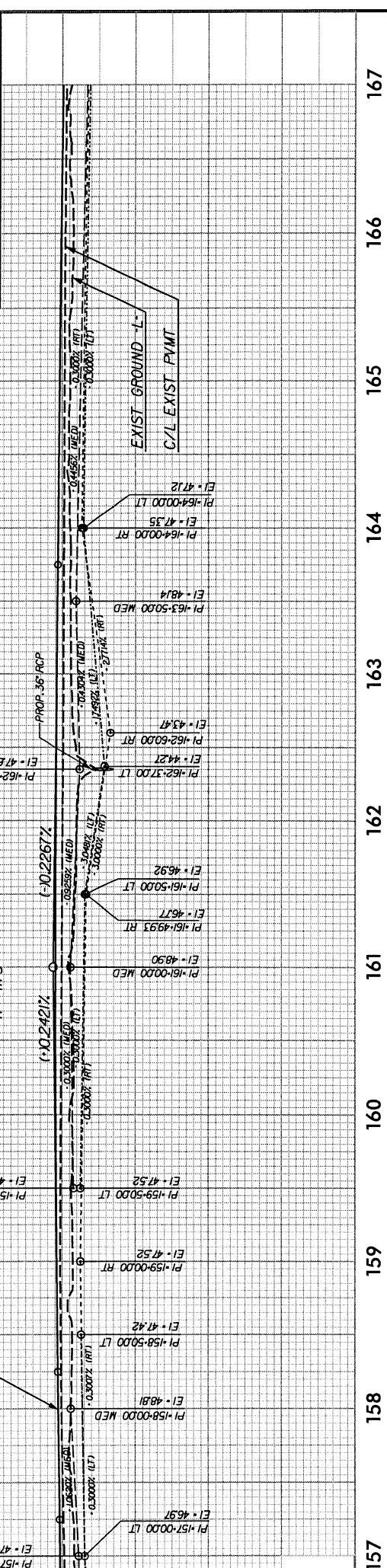
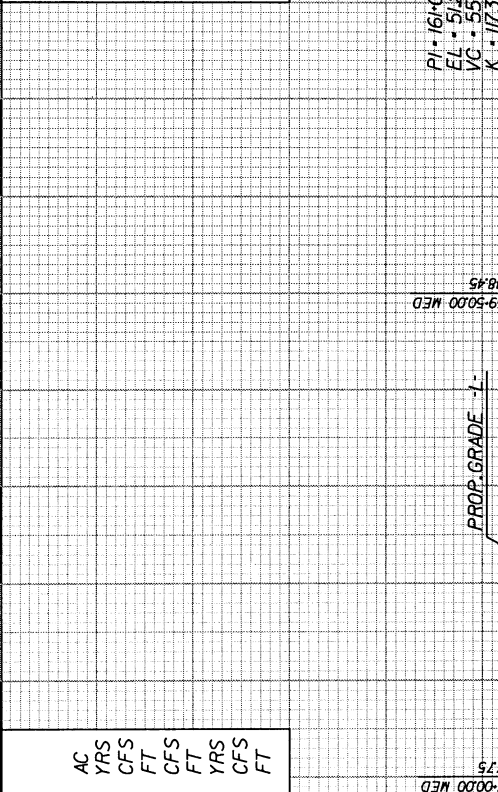
Consultants in Planning, Engineering, Architecture,
 Construction Management and Related Services
 5811 Glenwood Avenue, Suite 300
 Raleigh, North Carolina 27612

KO & ASSOCIATES, P.C.

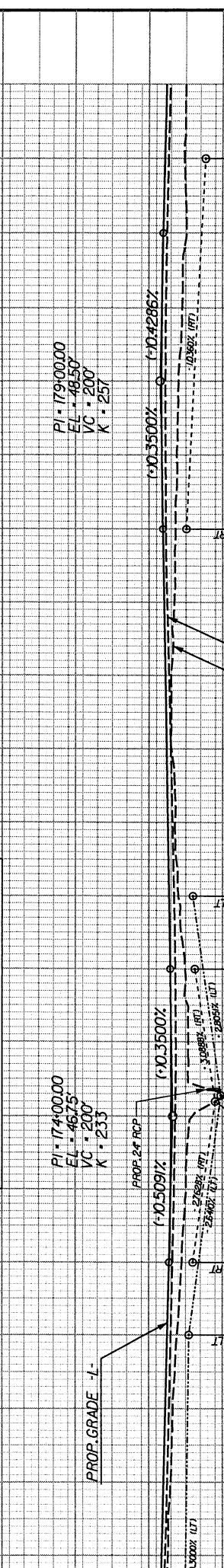
Consulting Engineers
 1011 SCHAUER DR., SUITE #202
 RALEIGH, N.C. 27606

SEE SHEET 15 FOR L-PLAN

PIPE HYDRAULIC DATA	
36" RCP @ STA 162+35	
DRAINAGE AREA	1180 AC
DESIGN FREQUENCY	50 YRS
DESIGN DISCHARGE	810 CFS
DESIGN HW ELEVATION	45.90 FT
100 YEAR DISCHARGE	980 CFS
100 YEAR HW ELEVATION	46.19 FT
OVERTOPPING FREQUENCY	500+ YRS
OVERTOPPING DISCHARGE	30 CFS
OVERTOPPING ELEVATION	50.86 FT



PIPE HYDRAULIC DATA	
24" RCP @ STA 174+18	
DRAINAGE AREA	2270 AC
DESIGN FREQUENCY	50 YRS
DESIGN DISCHARGE	1100 CFS
DESIGN HW ELEVATION	42.22 FT
100 YEAR DISCHARGE	1300 CFS
100 YEAR HW ELEVATION	42.45 FT
OVERTOPPING FREQUENCY	500+ YRS
OVERTOPPING DISCHARGE	35 CFS
OVERTOPPING ELEVATION	46.96 FT



PROJECT REFERENCE NO.

R-2510A

SHEET NO.

30

ROADWAY DESIGN ENGINEER

HYDRAULICS ENGINEER

PRELIMINARY PLANS

DO NOT USE FOR CONSTRUCTION

Carter Burgess

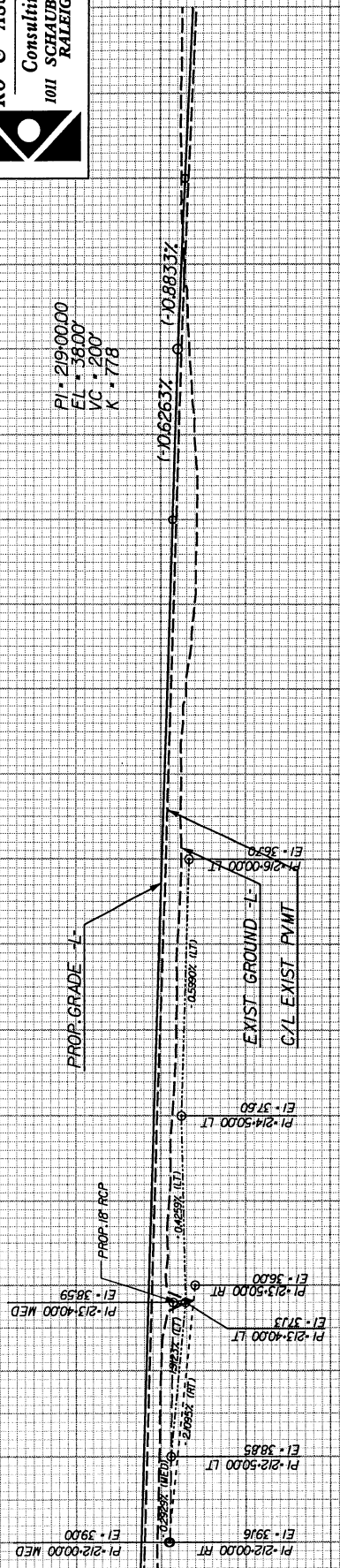
Consultants in Planning, Engineering, Architecture,
 Surveying, and Construction Management Services
 5511 Glenwood Avenue, Suite 300
 Raleigh, North Carolina 27612

KO & ASSOCIATES, P.C.

Consulting Engineers
 1011 SCHAUER DR., SUITE #202
 RALEIGH, N.C. 27606

SEE SHEET 19 FOR -L- PLAN

PIPE HYDRAULIC DATA	
18" RCP @ STA 213+40	
DRAINAGE AREA	1.11 AC
DESIGN FREQUENCY	50 YRS
DESIGN DISCHARGE	2.40 CFS
DESIGN HW ELEVATION	38.03 FT
100 YEAR DISCHARGE	2.90 CFS
100 YEAR HW ELEVATION	38.14 FT
OVERTOPPING FREQUENCY	500 YRS
OVERTOPPING DISCHARGE	14 CFS
OVERTOPPING ELEVATION	41.51 FT

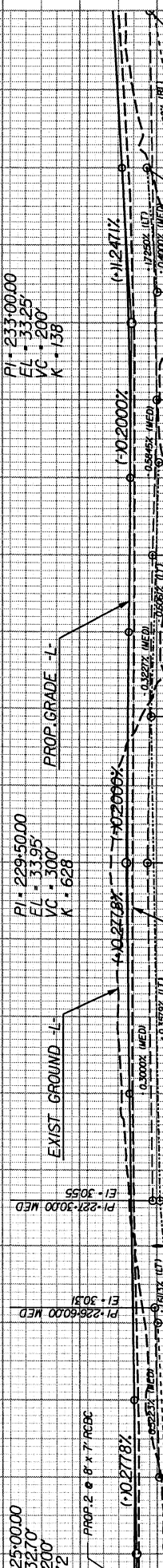


BENCHMARK • 8 EL = 33.81'
RR SPIKE 15' GUM
227.96' RT OF -BL- STA 213+62.32
218.31' RT OF -L- STA 218+55.55

212 213 214 215 216 217 218 219 220 221

SEE SHEET 20 FOR -L- PLAN

PIPE HYDRAULIC DATA	
18" RCP @ STA 227+00	
DRAINAGE AREA	4.32 AC
DESIGN FREQUENCY	50 YRS
DESIGN DISCHARGE	4.10 CFS
DESIGN HW ELEVATION	31.06 FT
100 YEAR DISCHARGE	5.00 CFS
100 YEAR HW ELEVATION	31.25 FT
OVERTOPPING FREQUENCY	500 YRS
OVERTOPPING DISCHARGE	14 CFS
OVERTOPPING ELEVATION	32.95 FT



PROPOSED 2' x 7' RCP

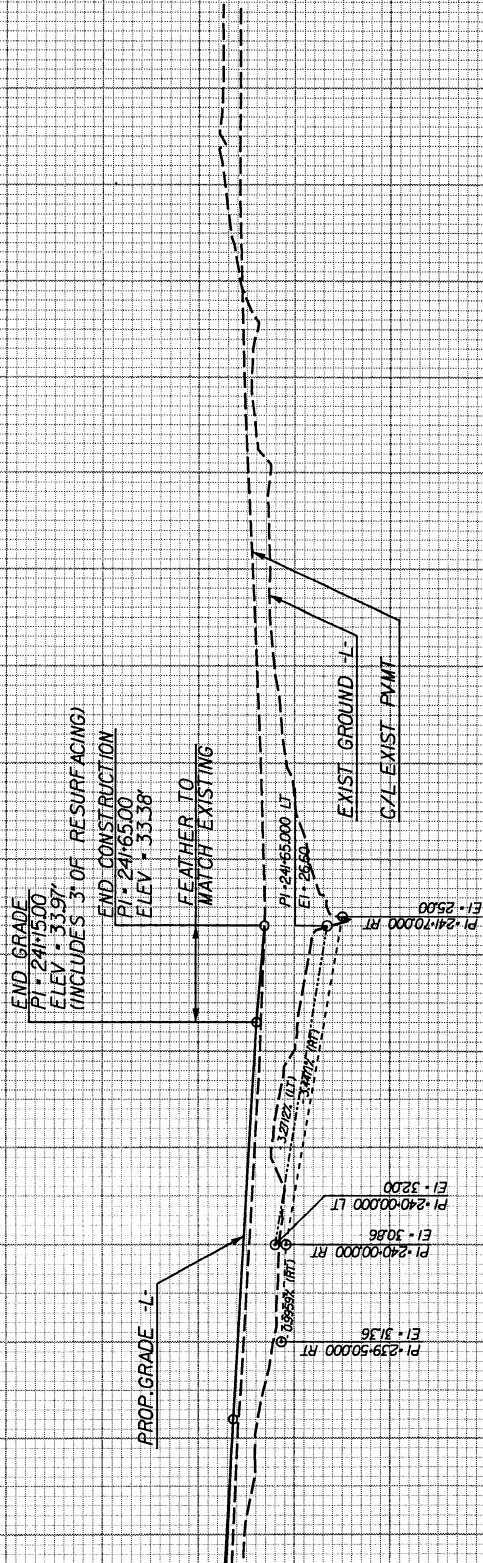
PROJECT REFERENCE NO.	SHEET NO.
R-2510A	31
ROADWAY DESIGN ENGINEER	HYDRAULICS ENGINEER

PRELIMINARY PLANS

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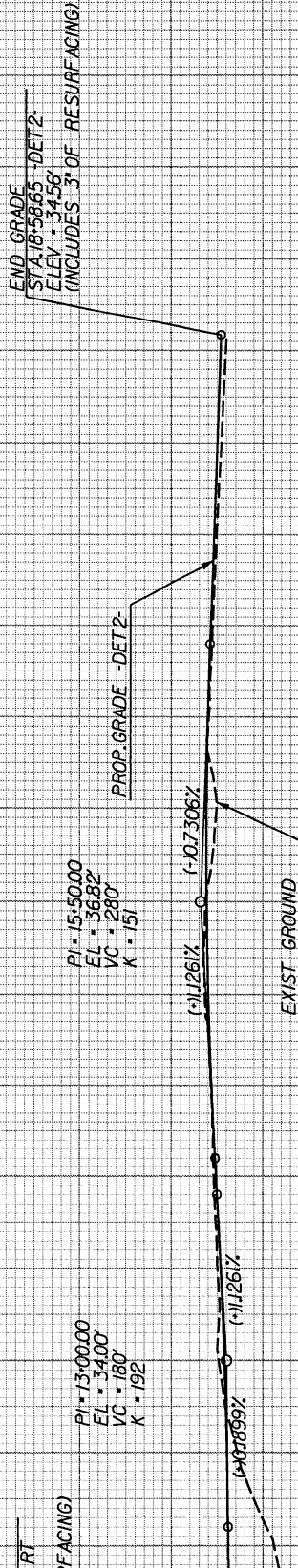
**Consultants in Planning, Engineering, Architecture,
Construction Management and Related Services**
5811 Glenwood Avenue, Suite 300
Raleigh, North Carolina 27612

KO & ASSOCIATES, P.C.
Consulting Engineers
1011 SCHAUH DR., SUITE #202
RALEIGH, N.C. 27606



SEE SHEET 20 & 21 FOR -L- PLAN

-DET2-



PROJECT REFERENCE NO.
R-2510A

SHEET NO.
34

ROADWAY DESIGN
ENGINEER

HYDRAULICS
ENGINEER

PRELIMINARY PLANS
DO NOT USE FOR CONSTRUCTION

Carter Burgess
Consultants in Planning, Engineering, Architecture,
Construction Management and Related Services
5811 Glenwood Avenue, Suite 300
Raleigh, North Carolina 27612

KO & ASSOCIATES, P.C.
Consulting Engineers
1011 SCHAUER DR., SUITE #202
RALEIGH, N.C. 27606

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	PROJ. REFERENCE NO.	SHEET NO.
	R-2510A	X-0

INDEX OF SHEETS

Handwritten characters 'R' and 'Y' on a grid background. The 'R' is formed by a vertical line, a curved top, and a diagonal leg. The 'Y' is formed by two diagonal lines meeting at a point, with a vertical line extending downwards from the junction.

Y3-1

44

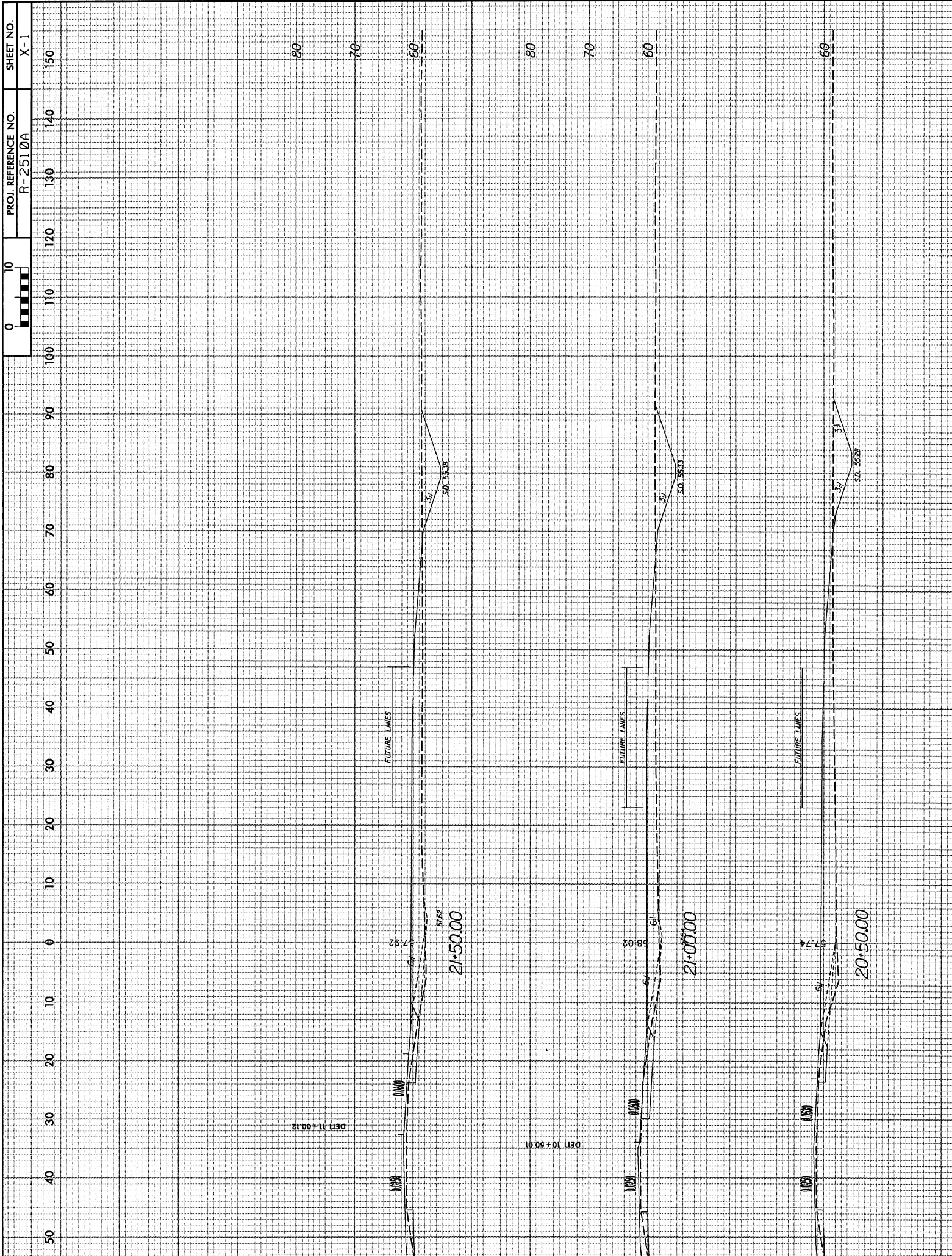
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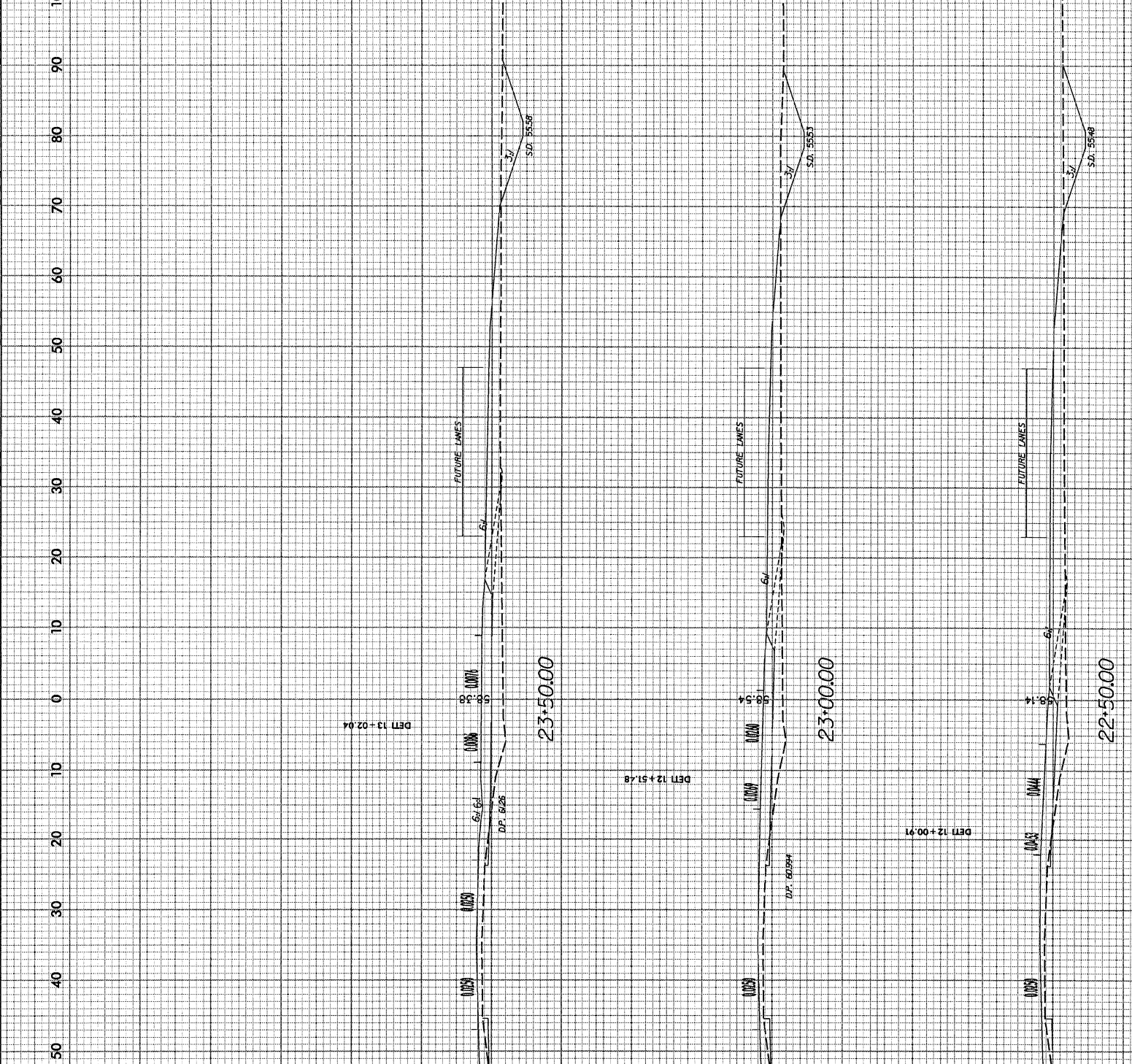
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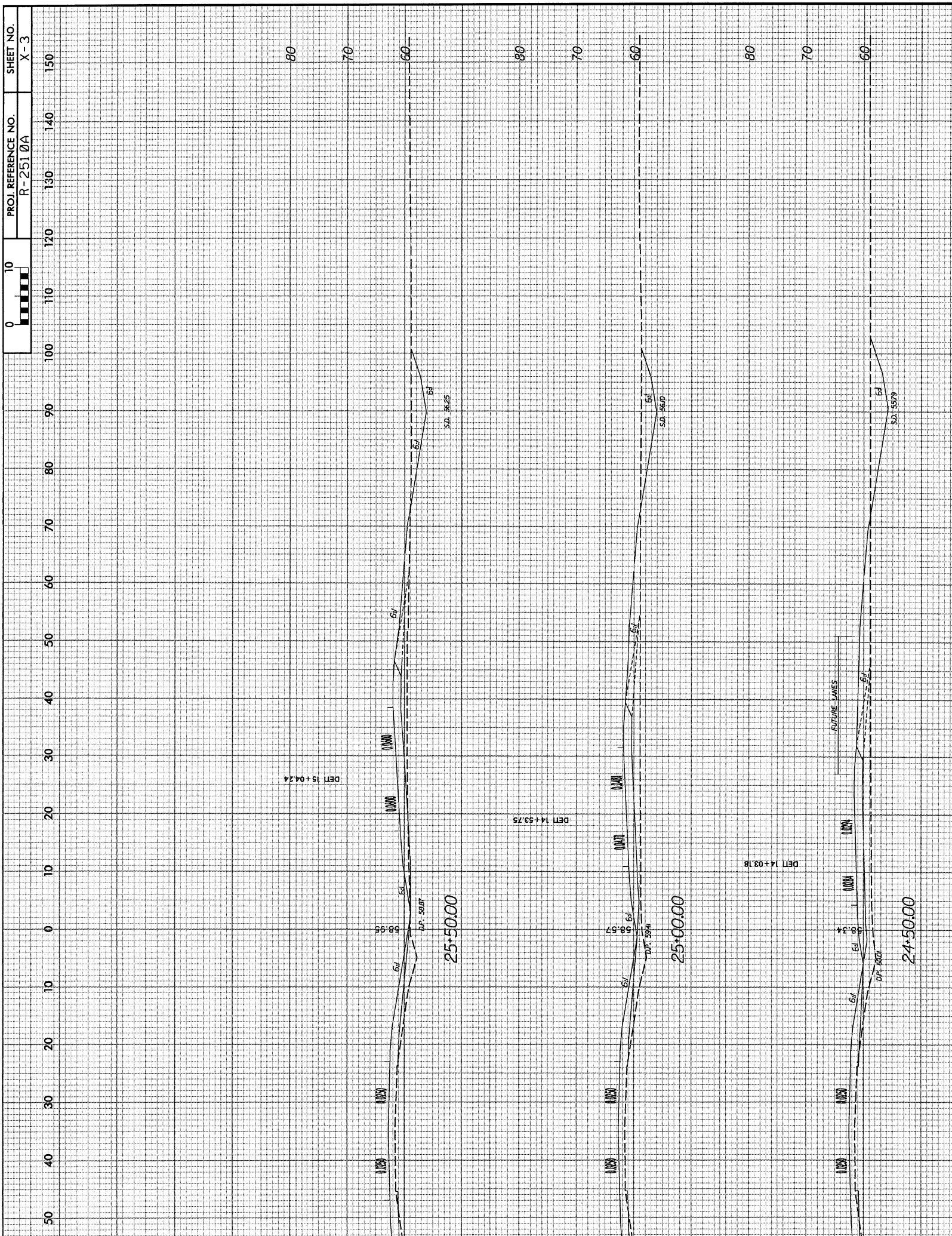
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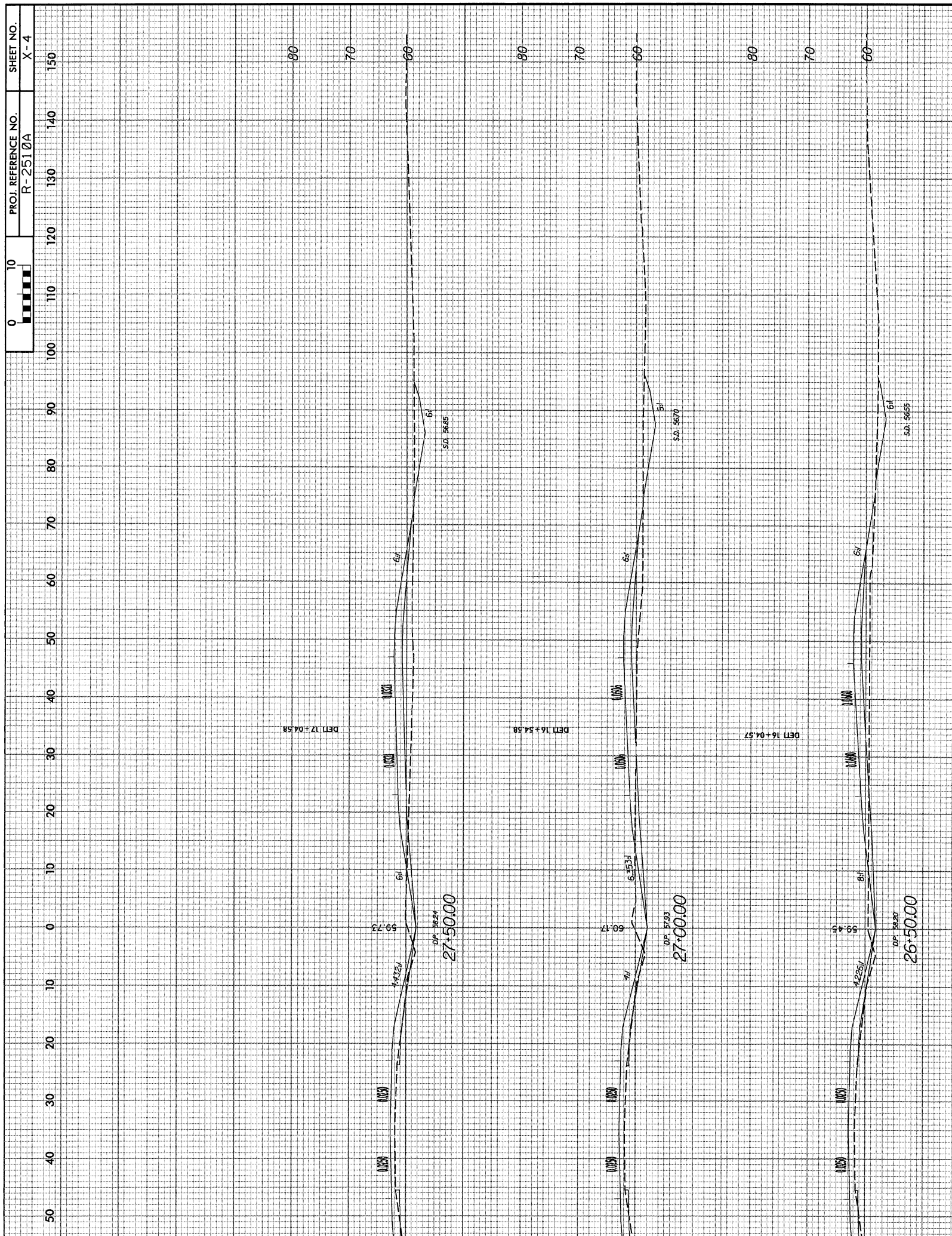
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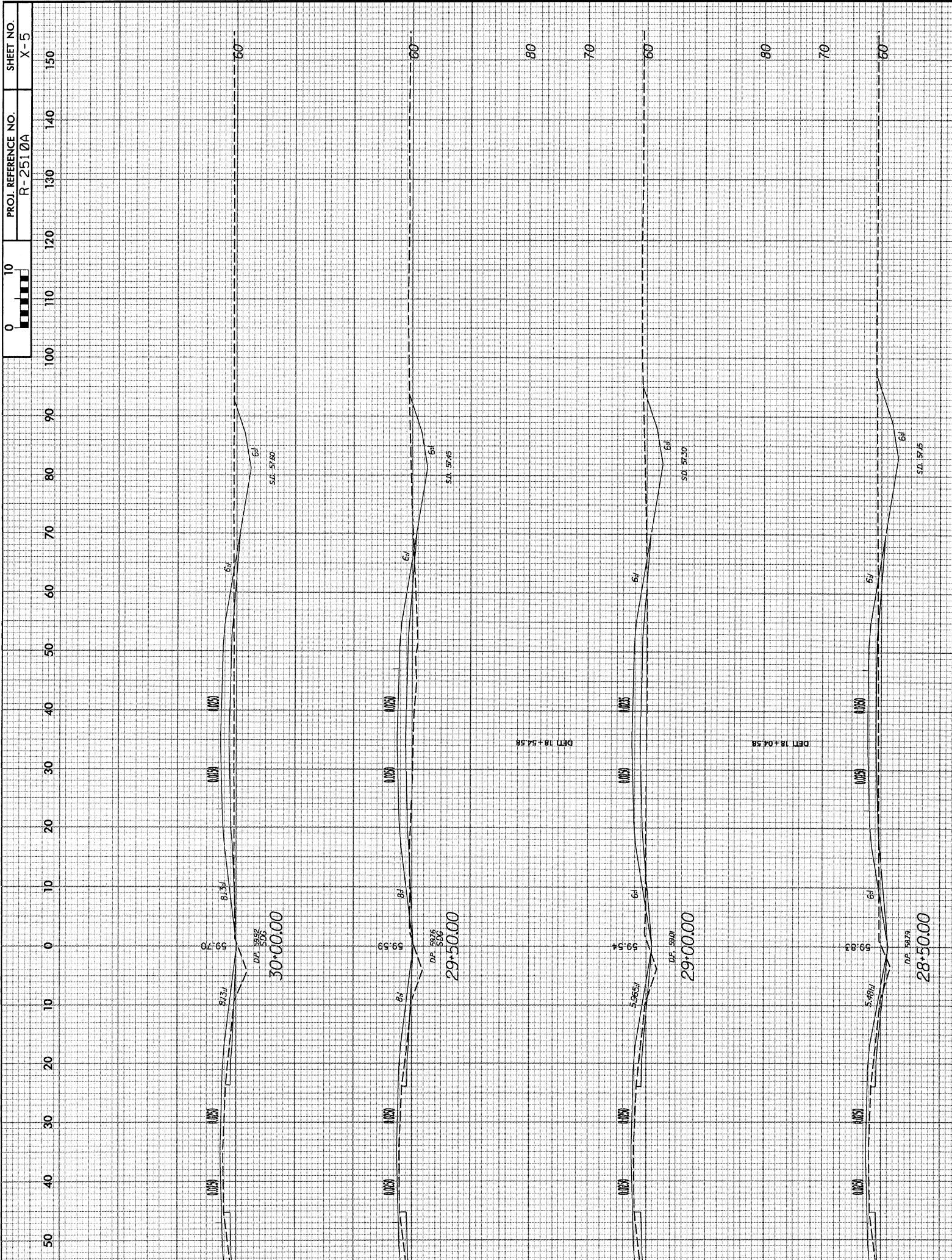
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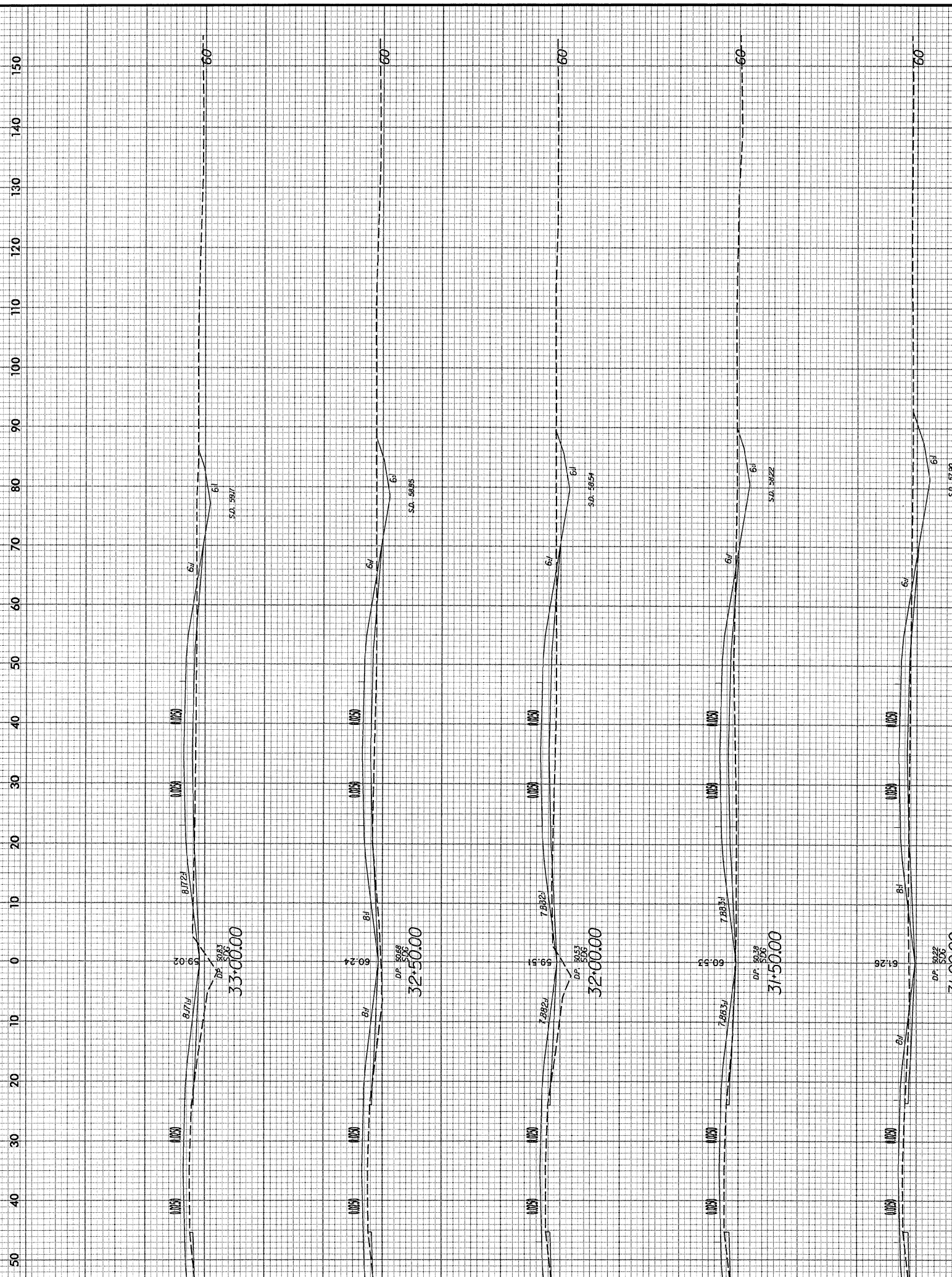


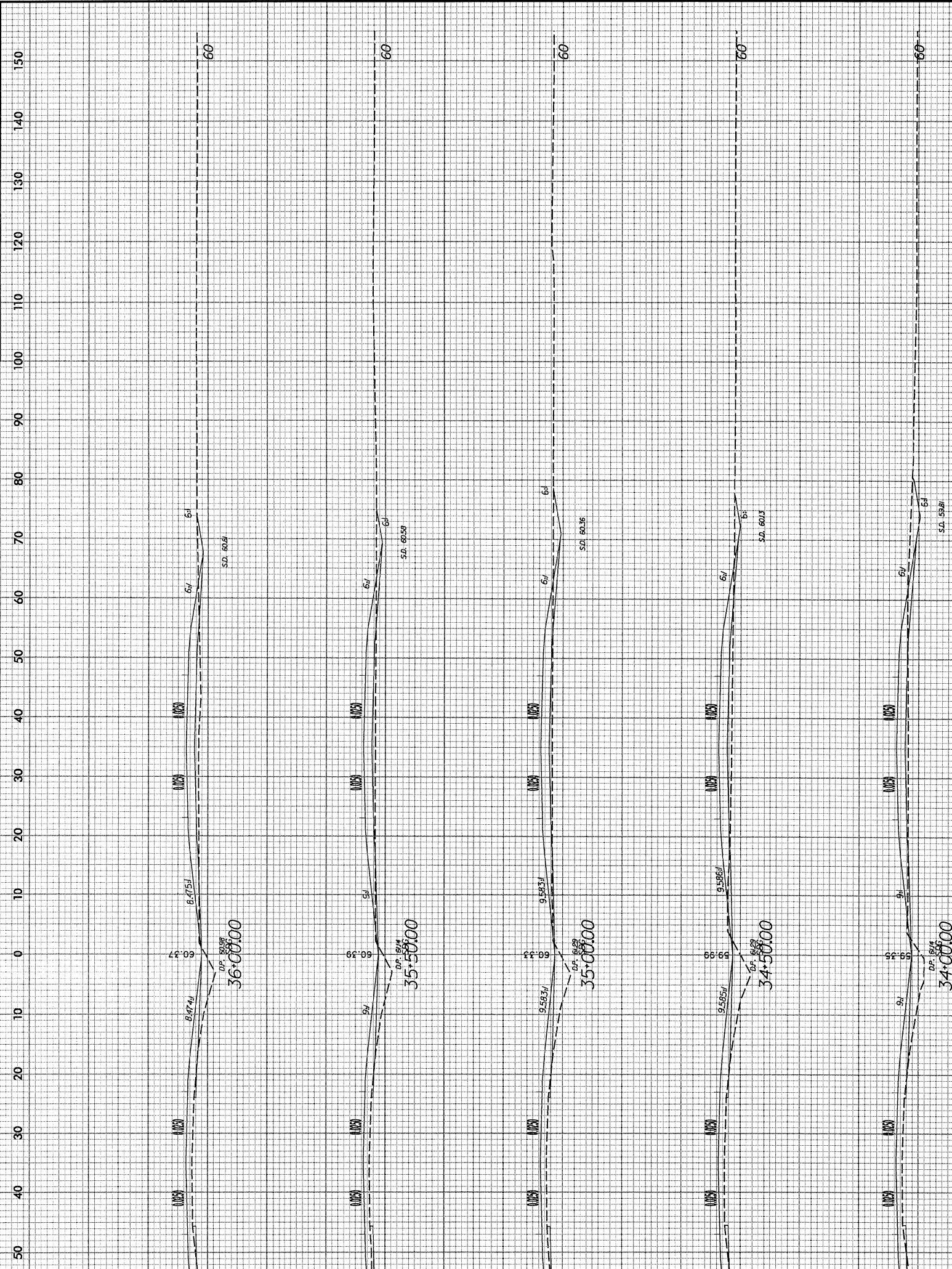


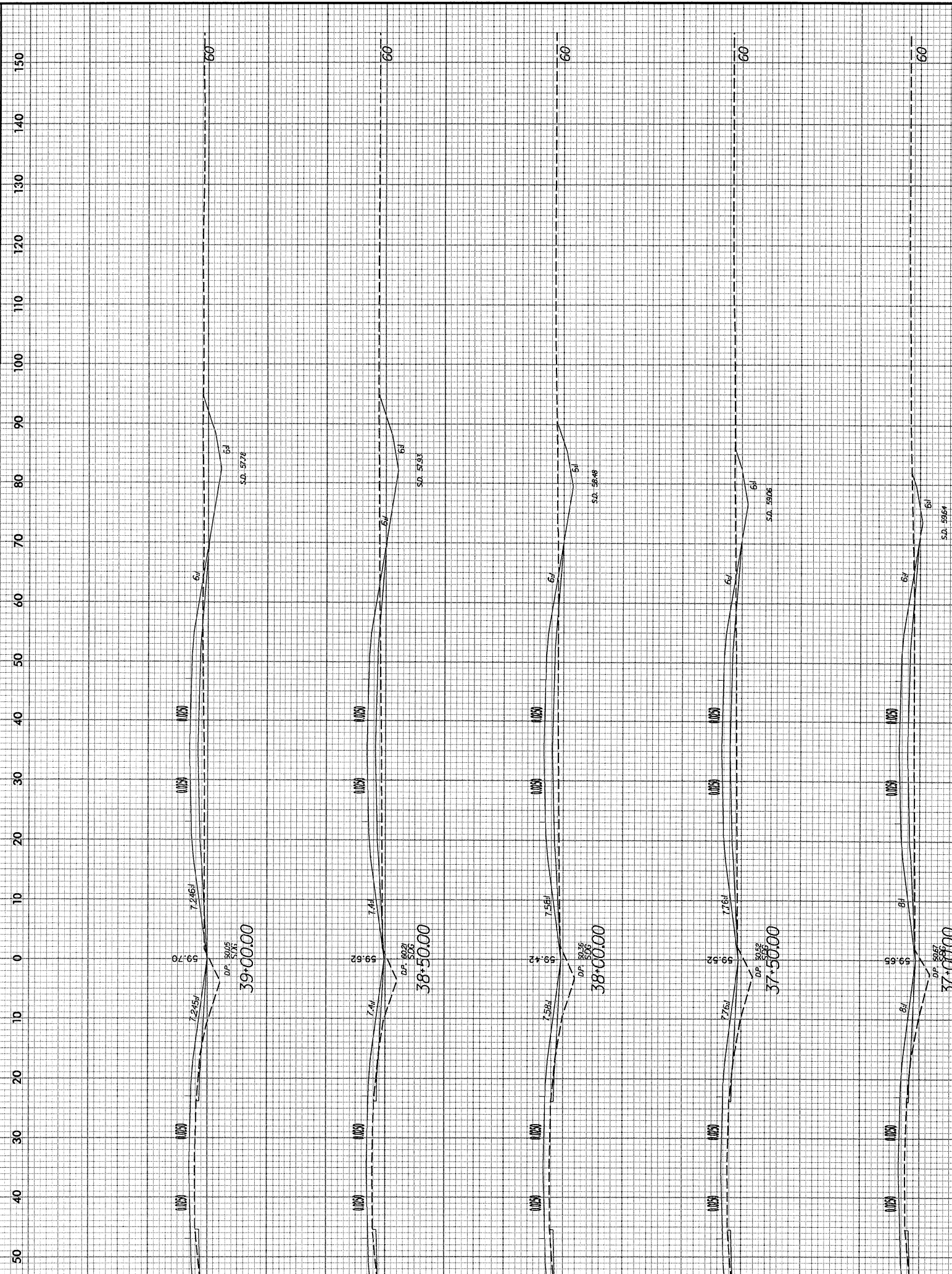


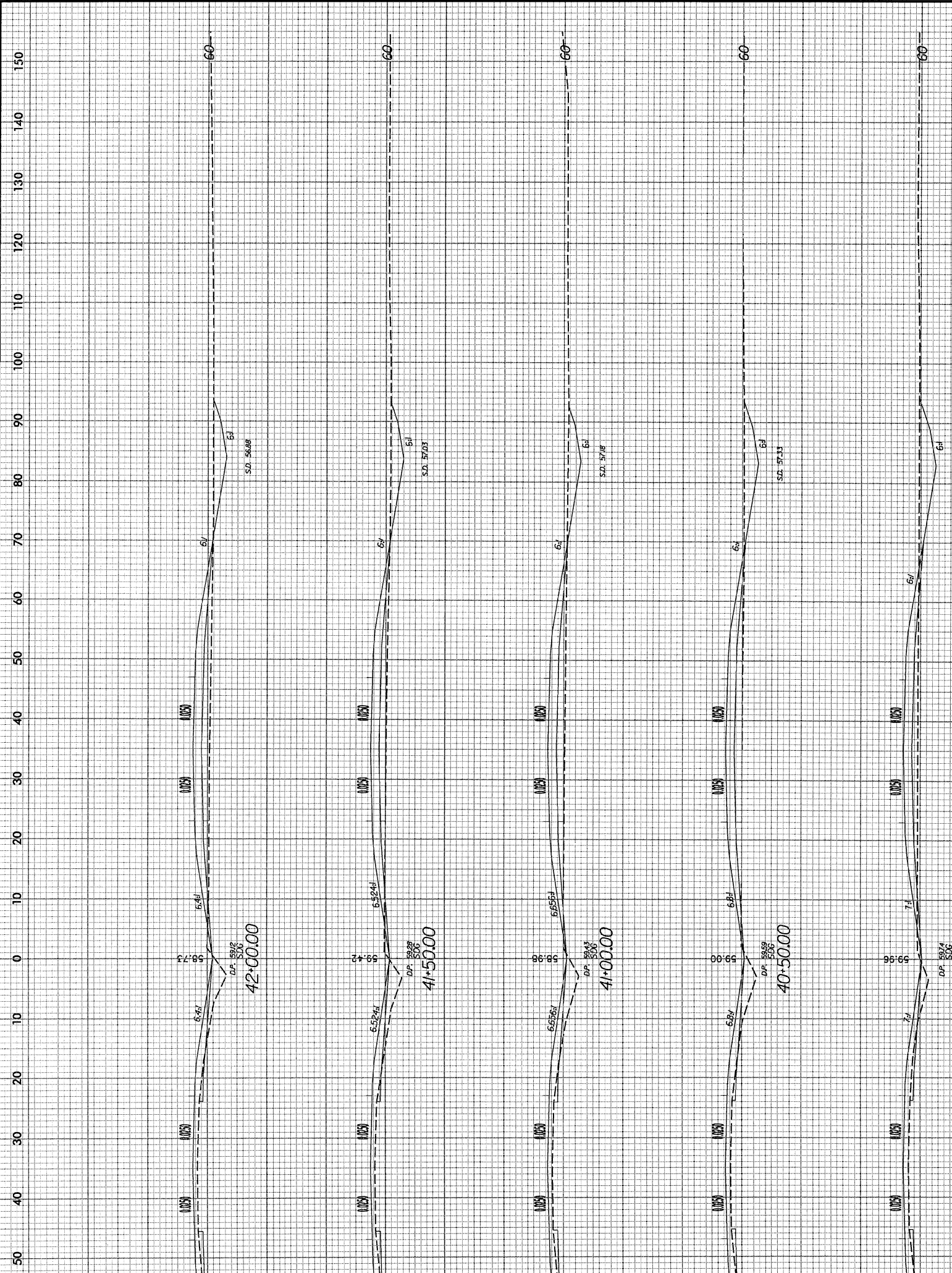


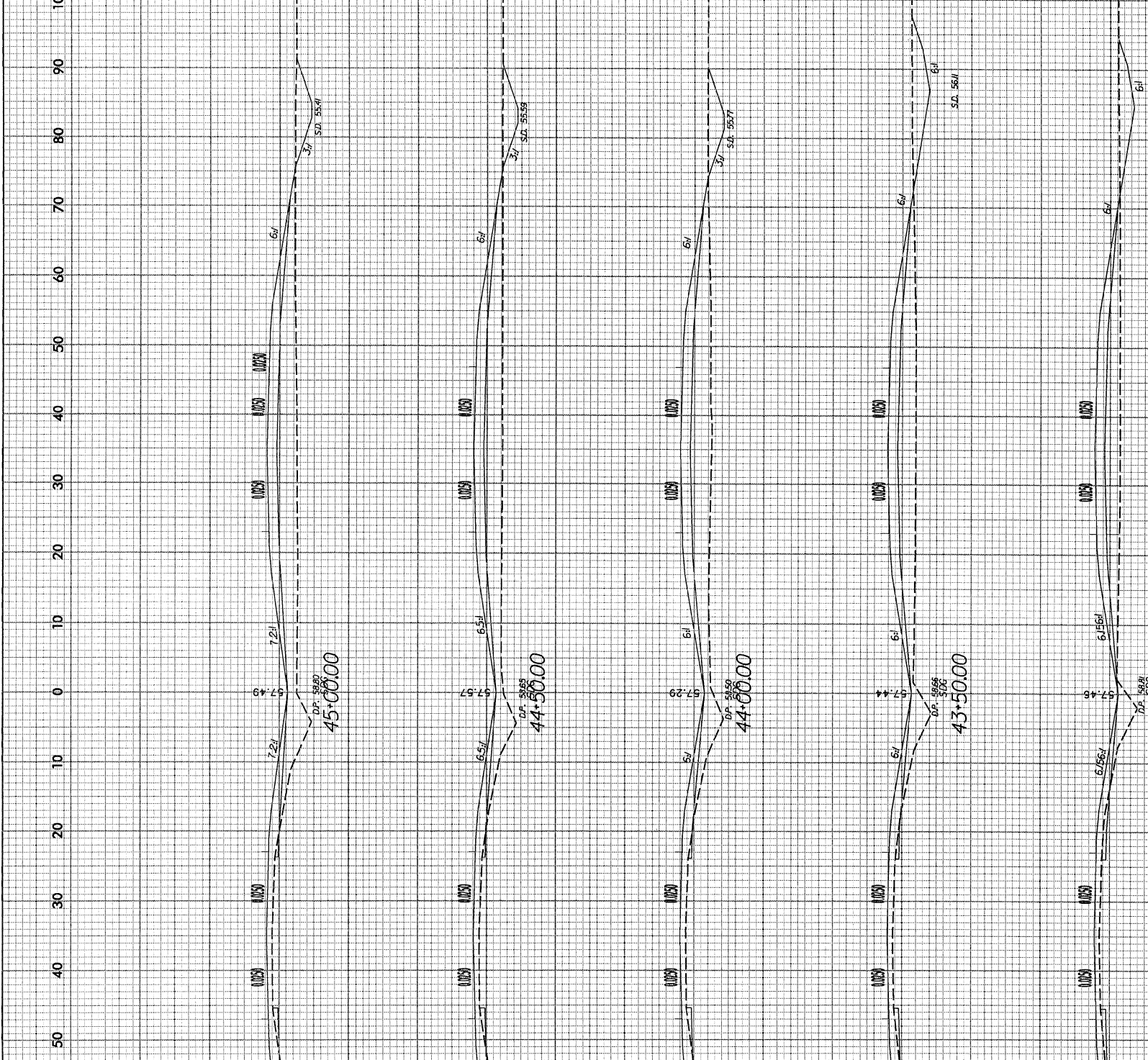


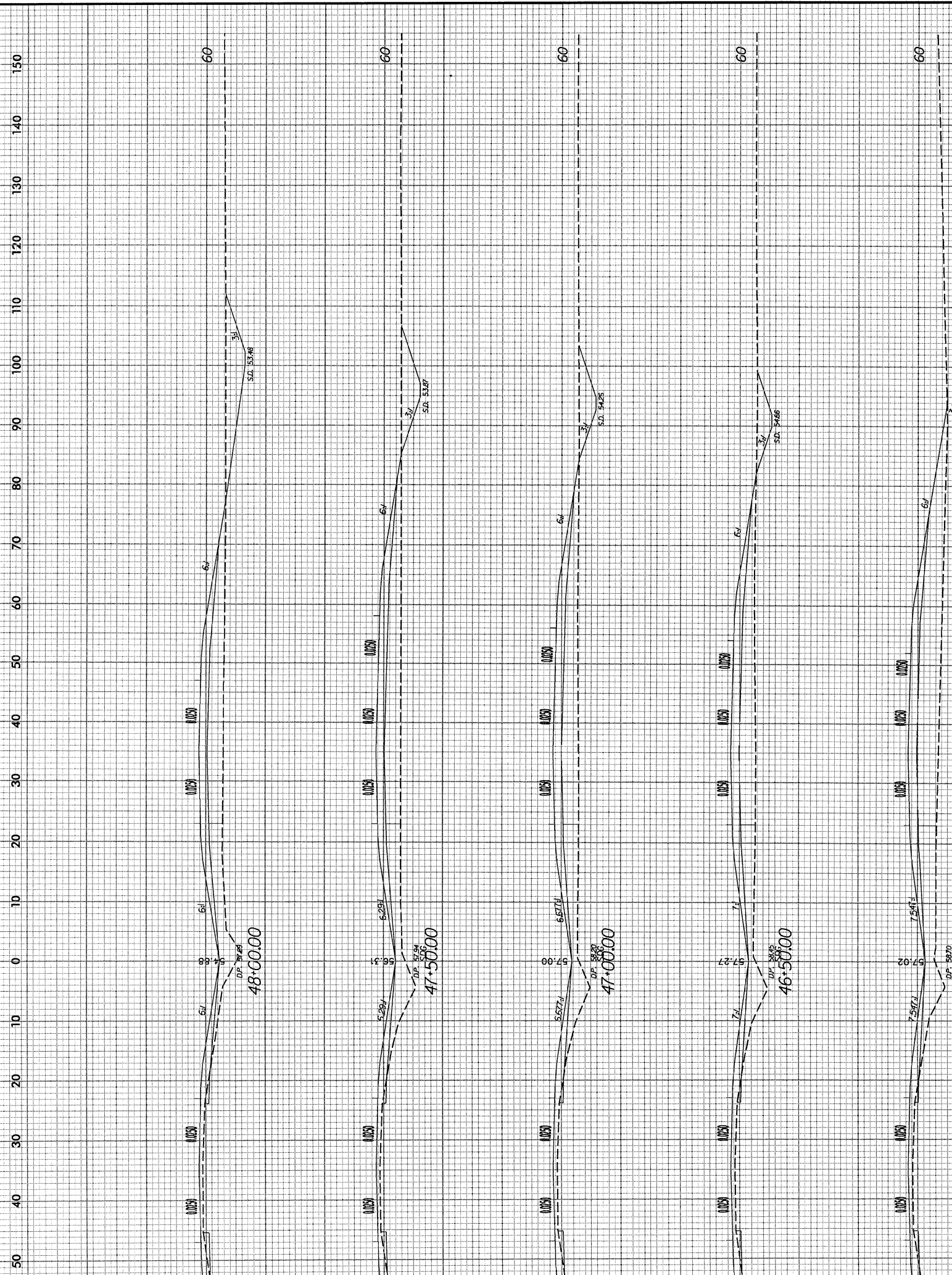


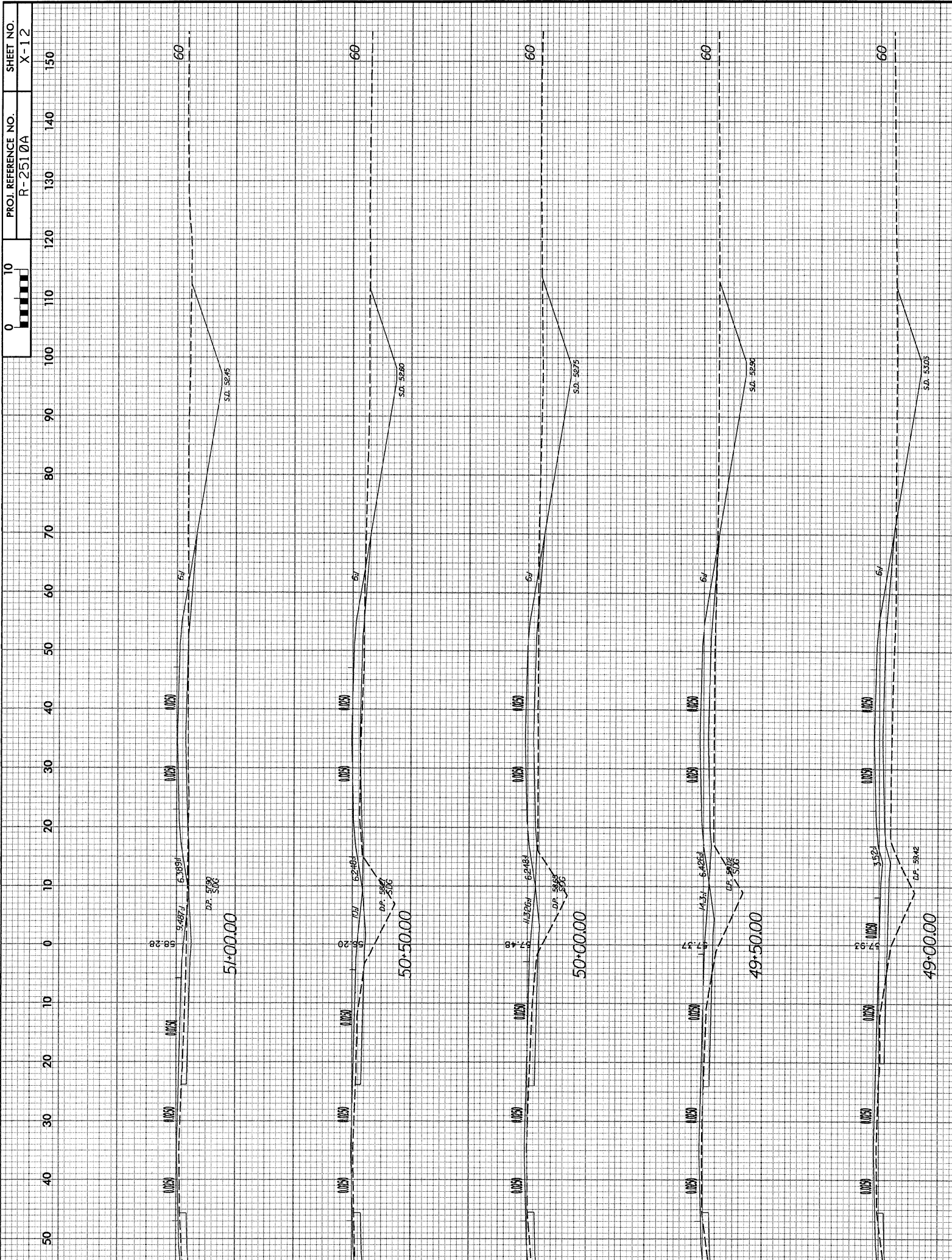


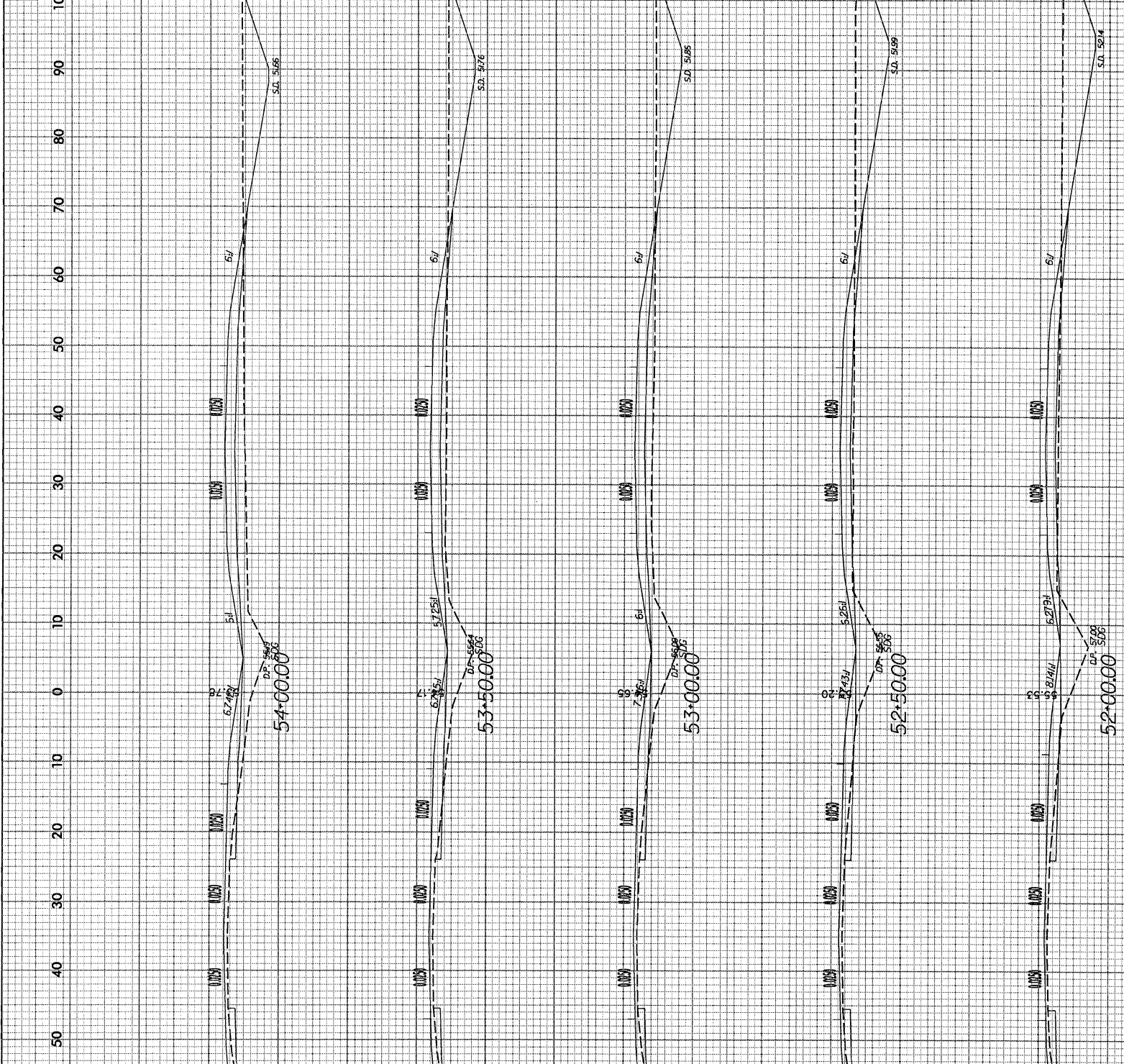


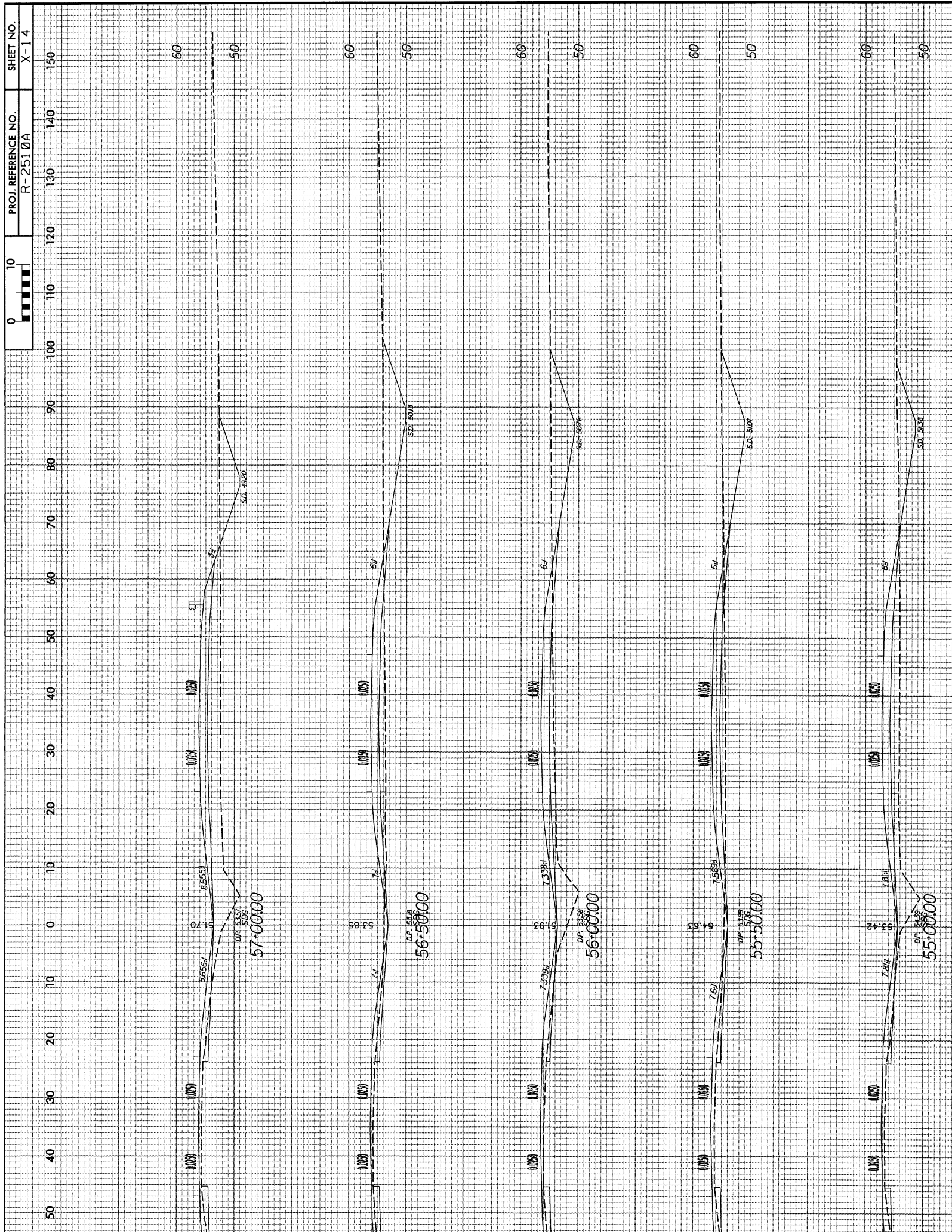


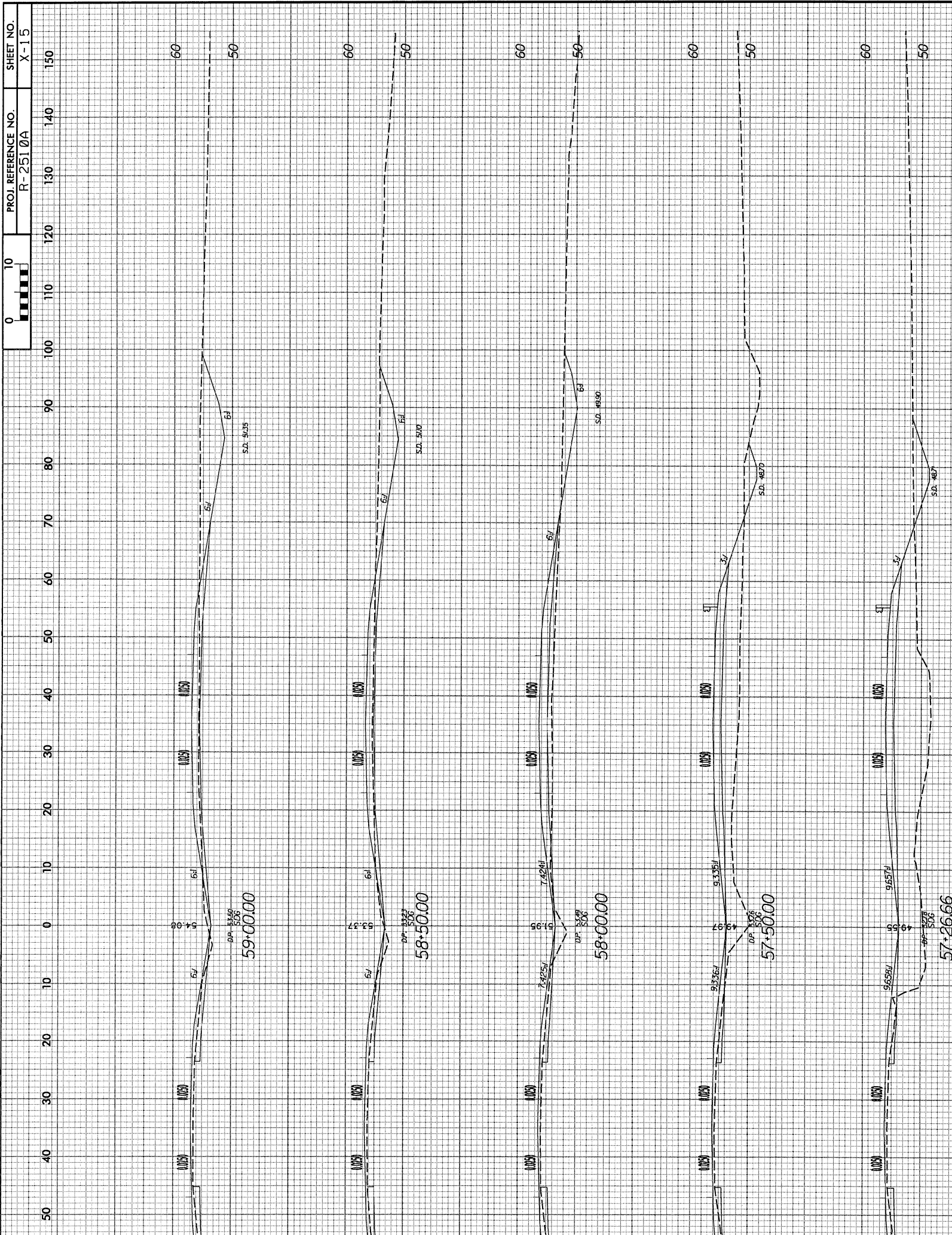


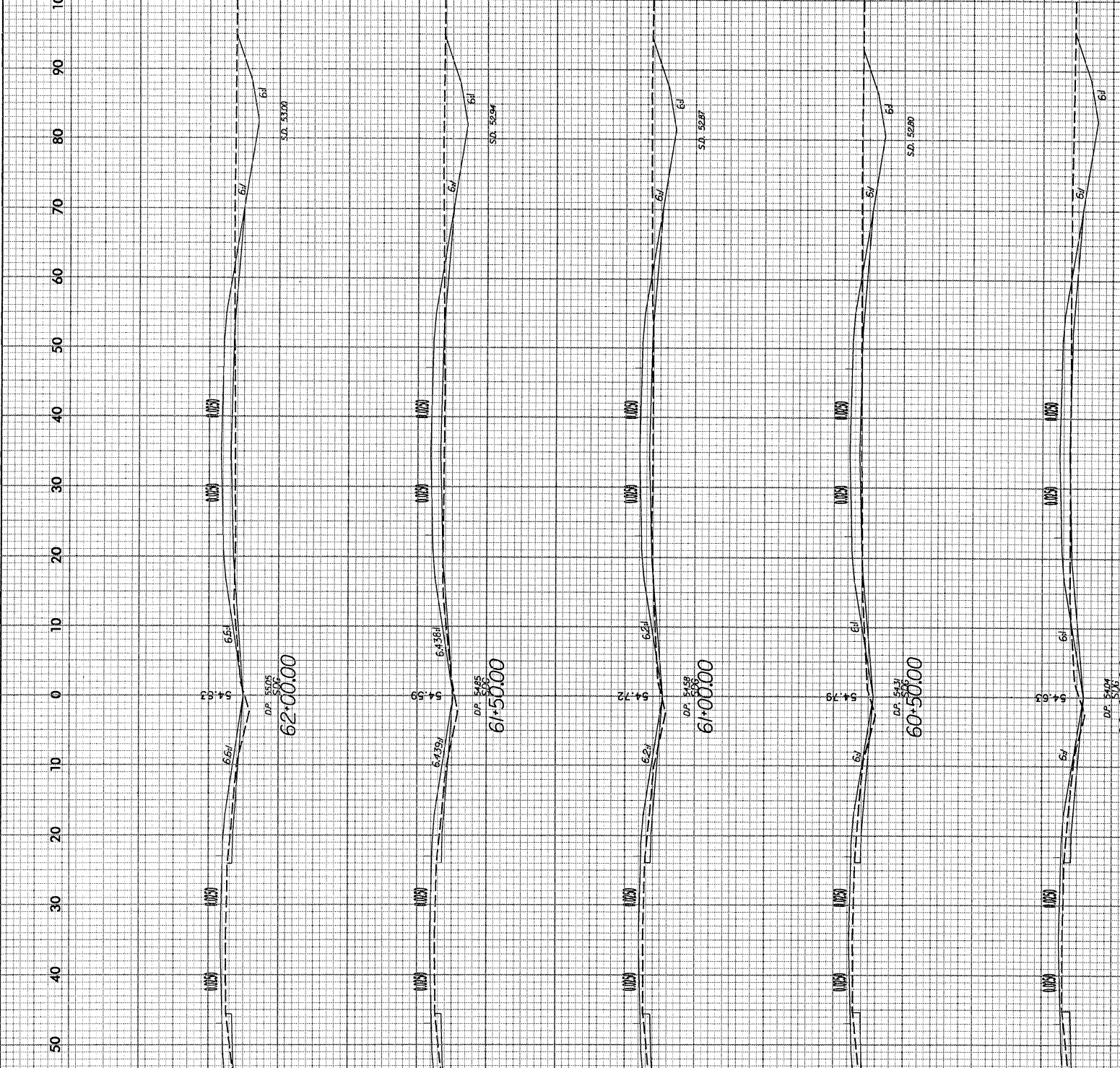


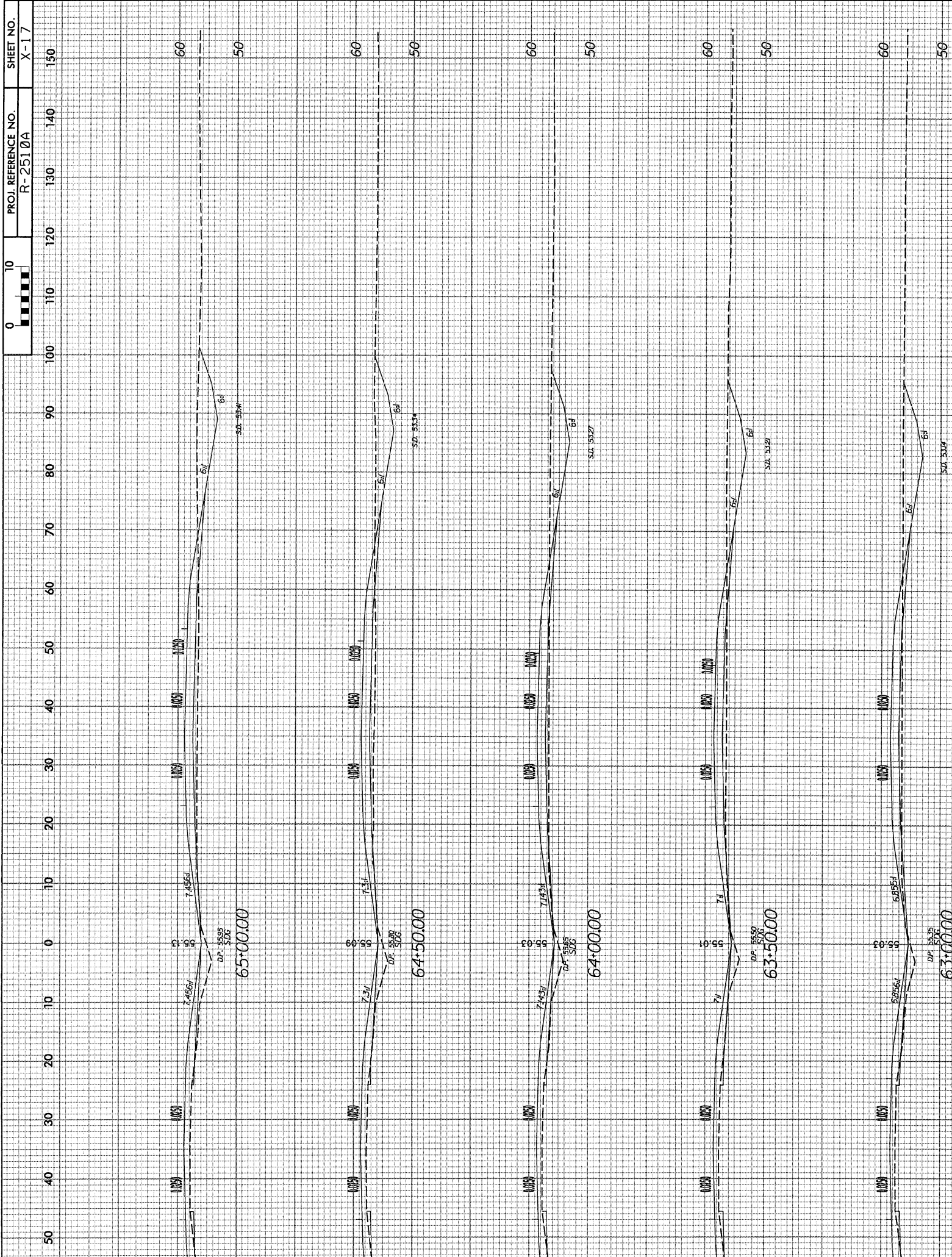


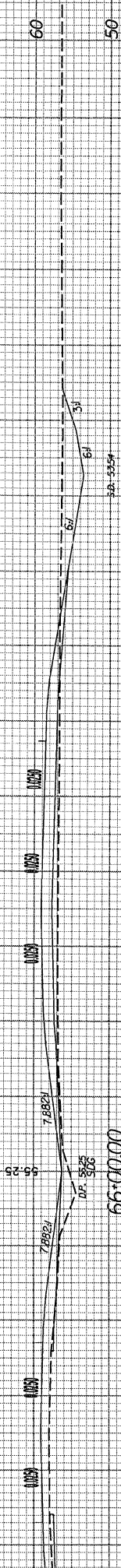
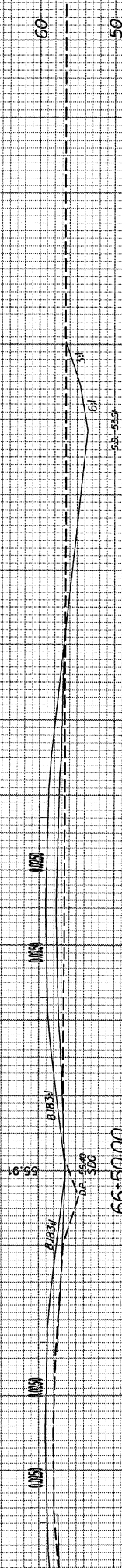
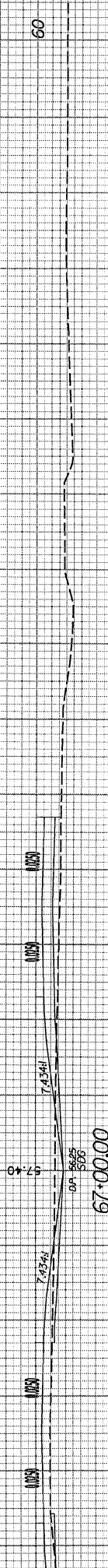
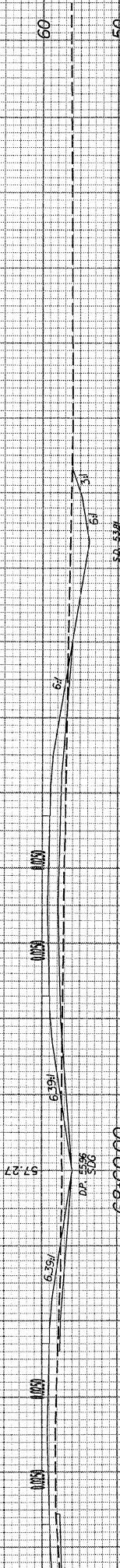


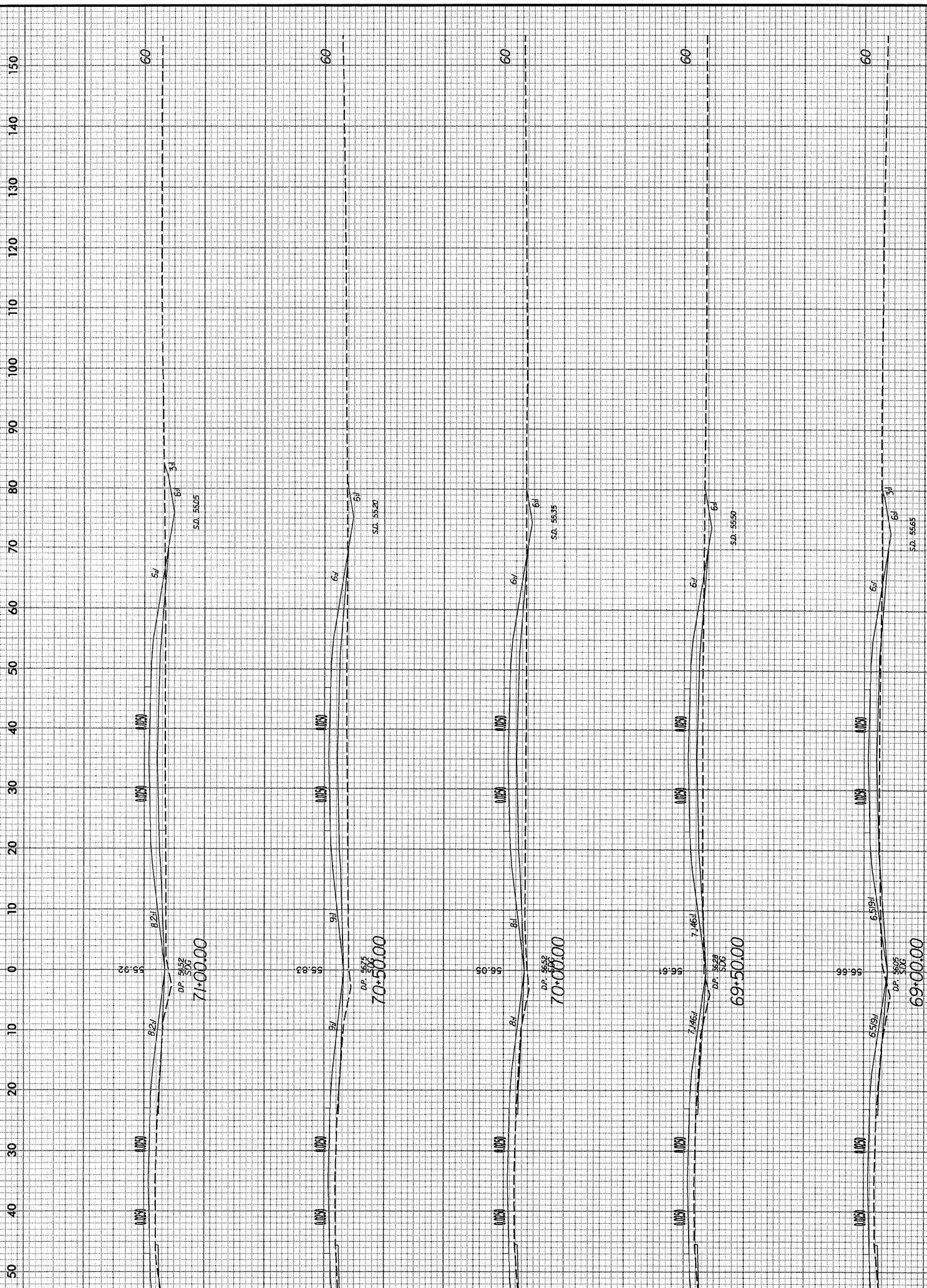


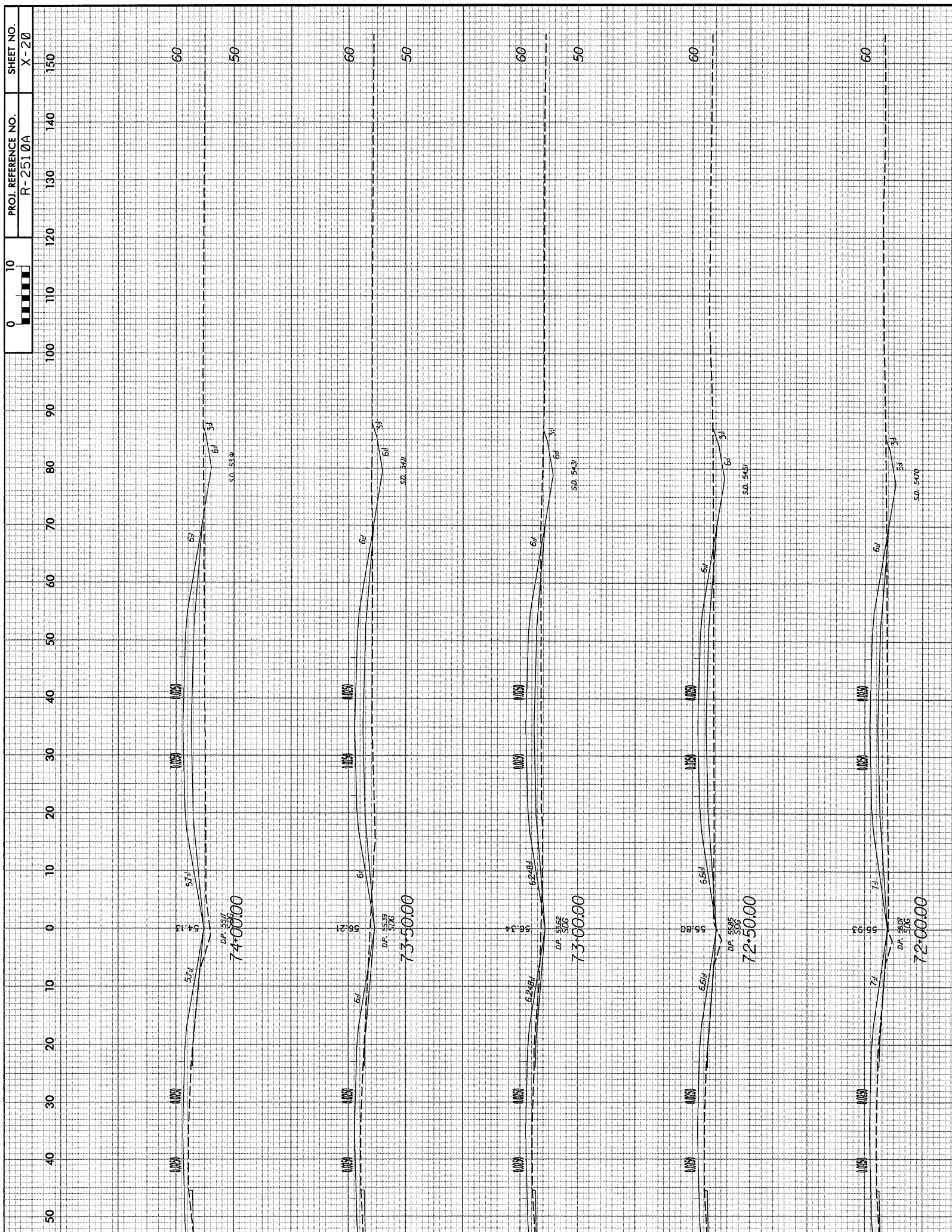


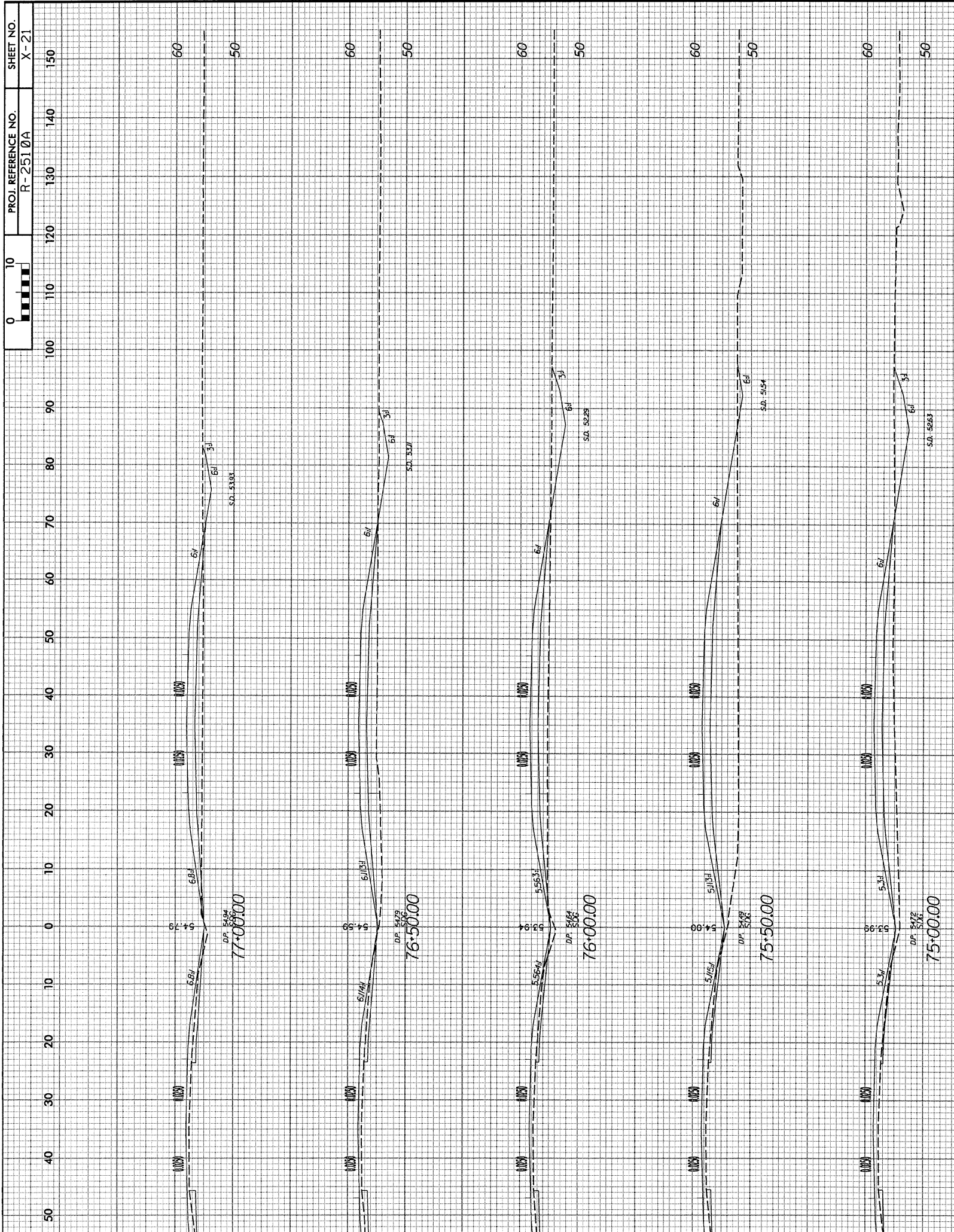


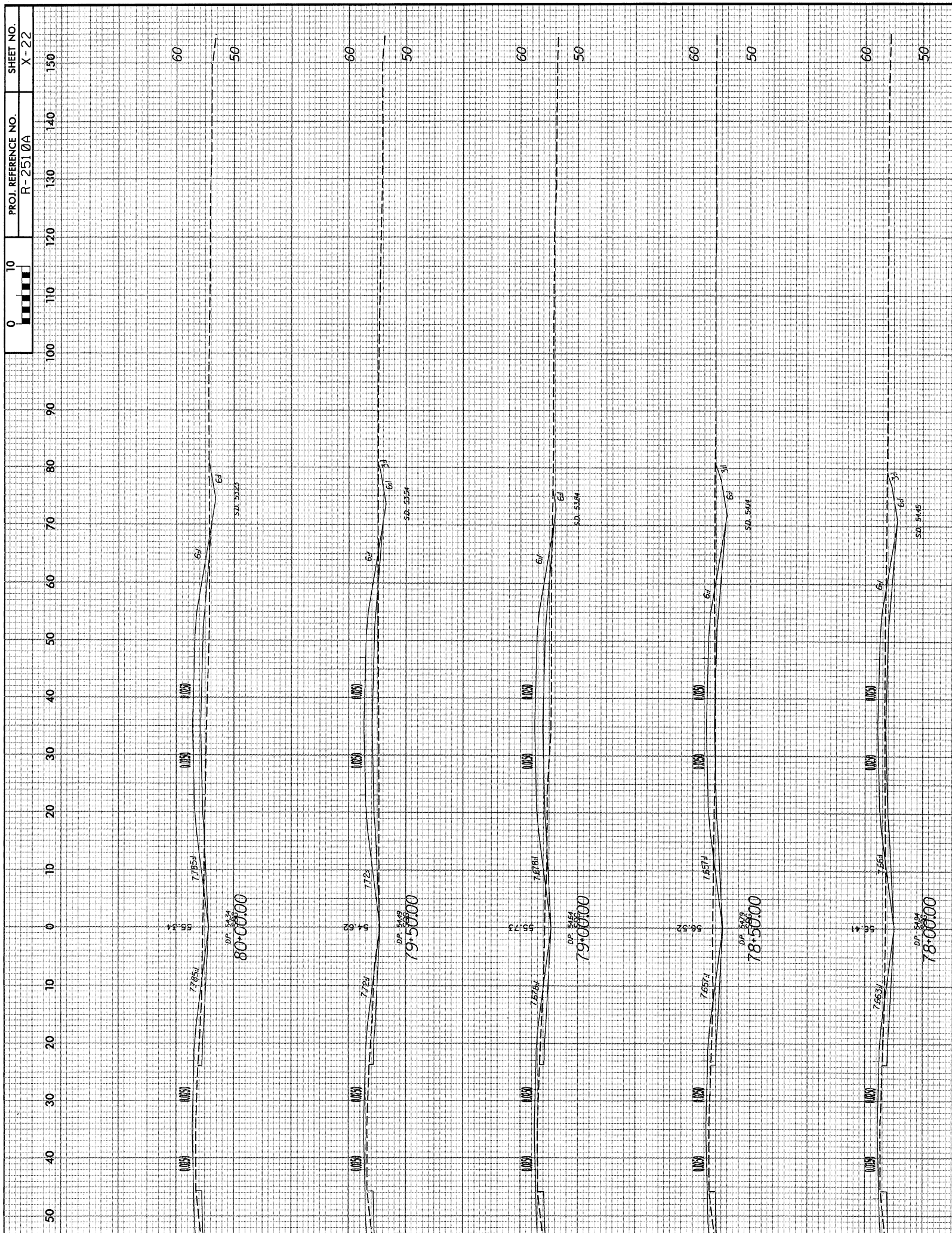


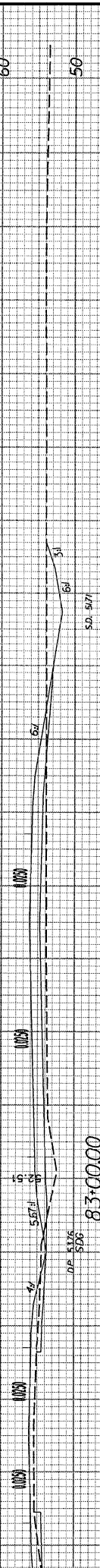












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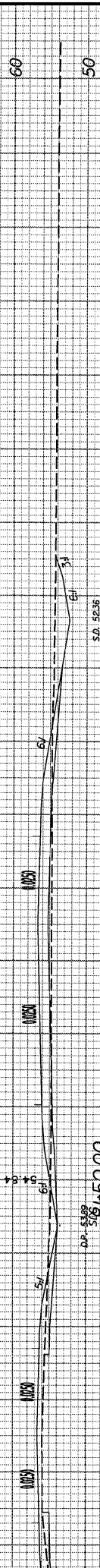
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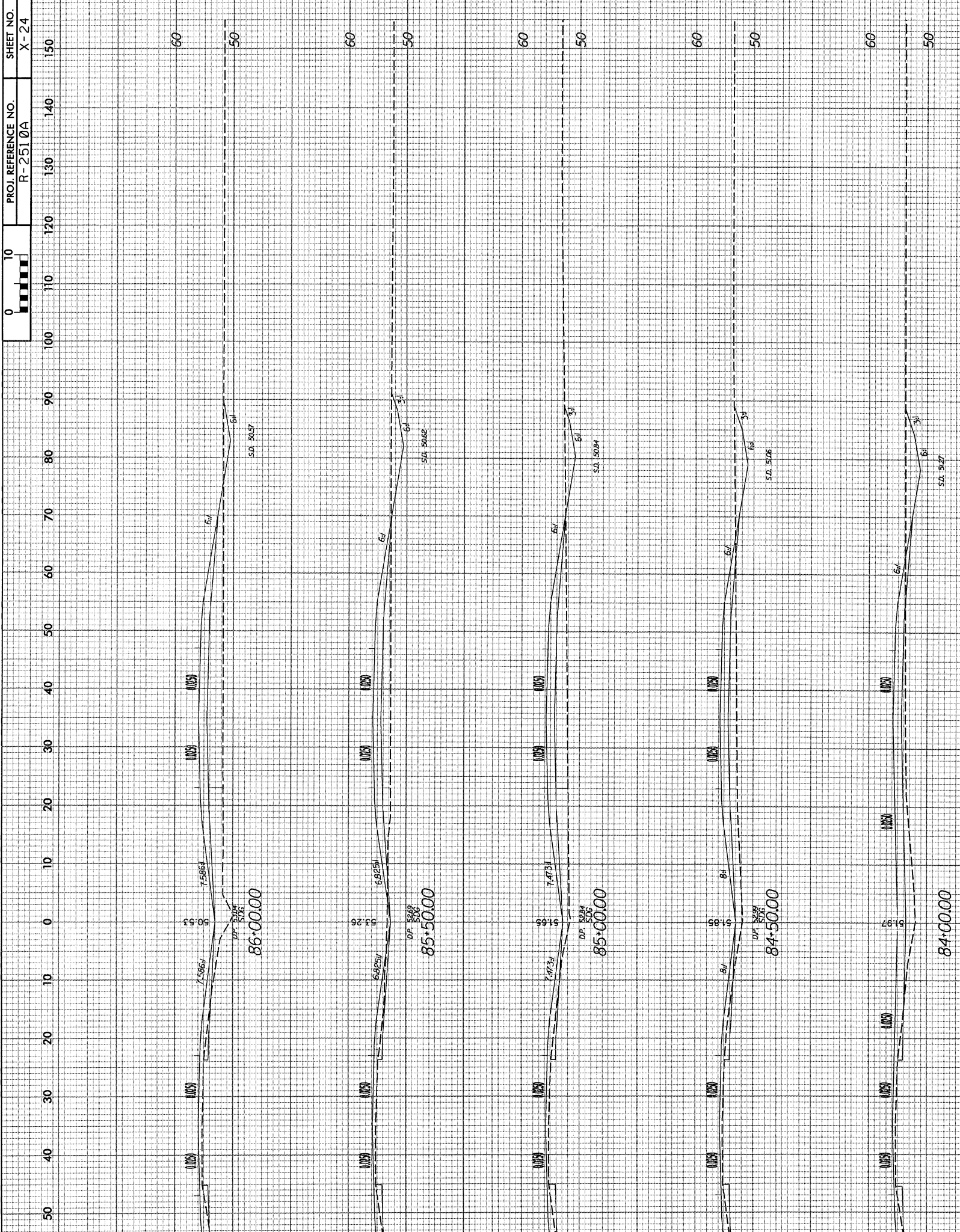
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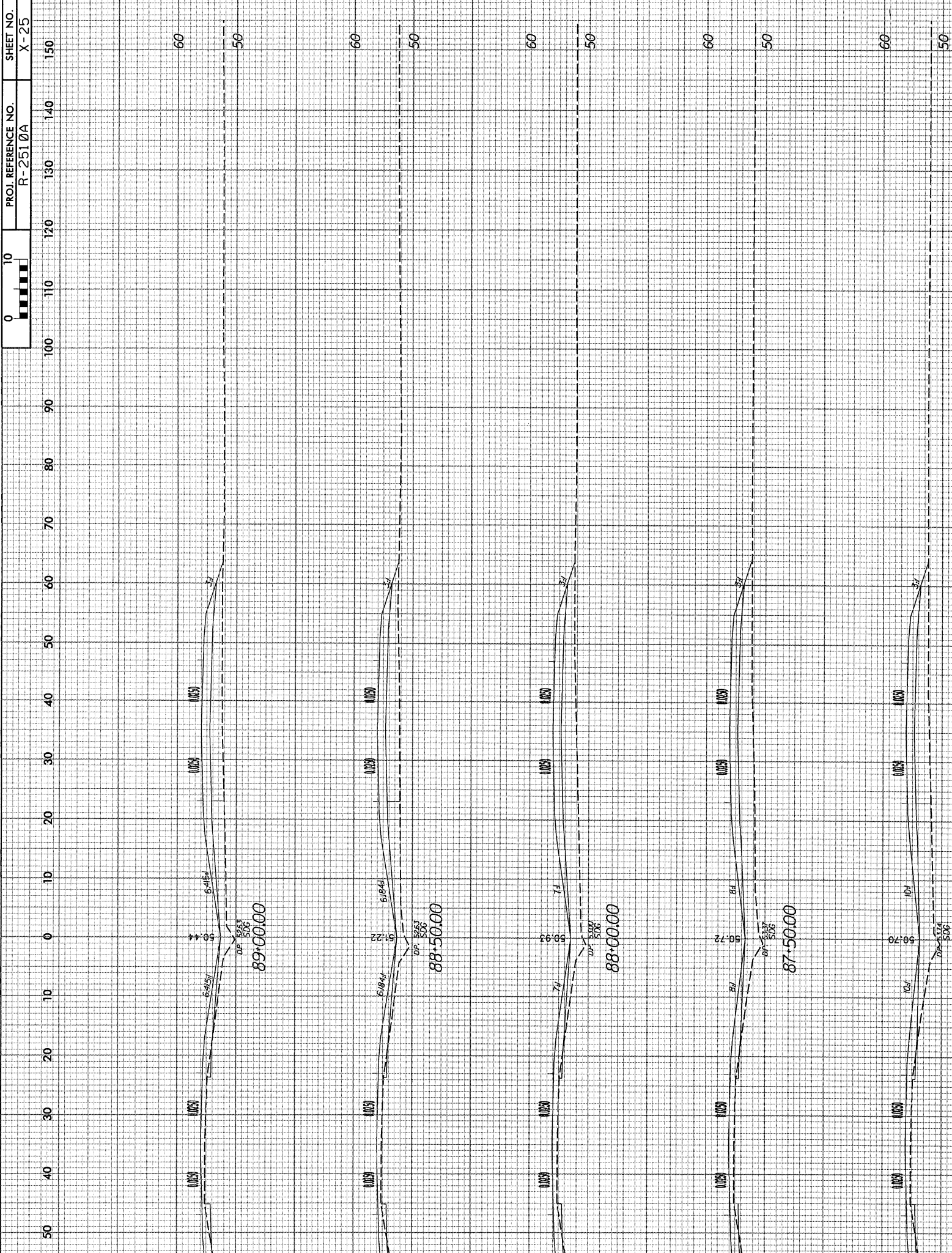
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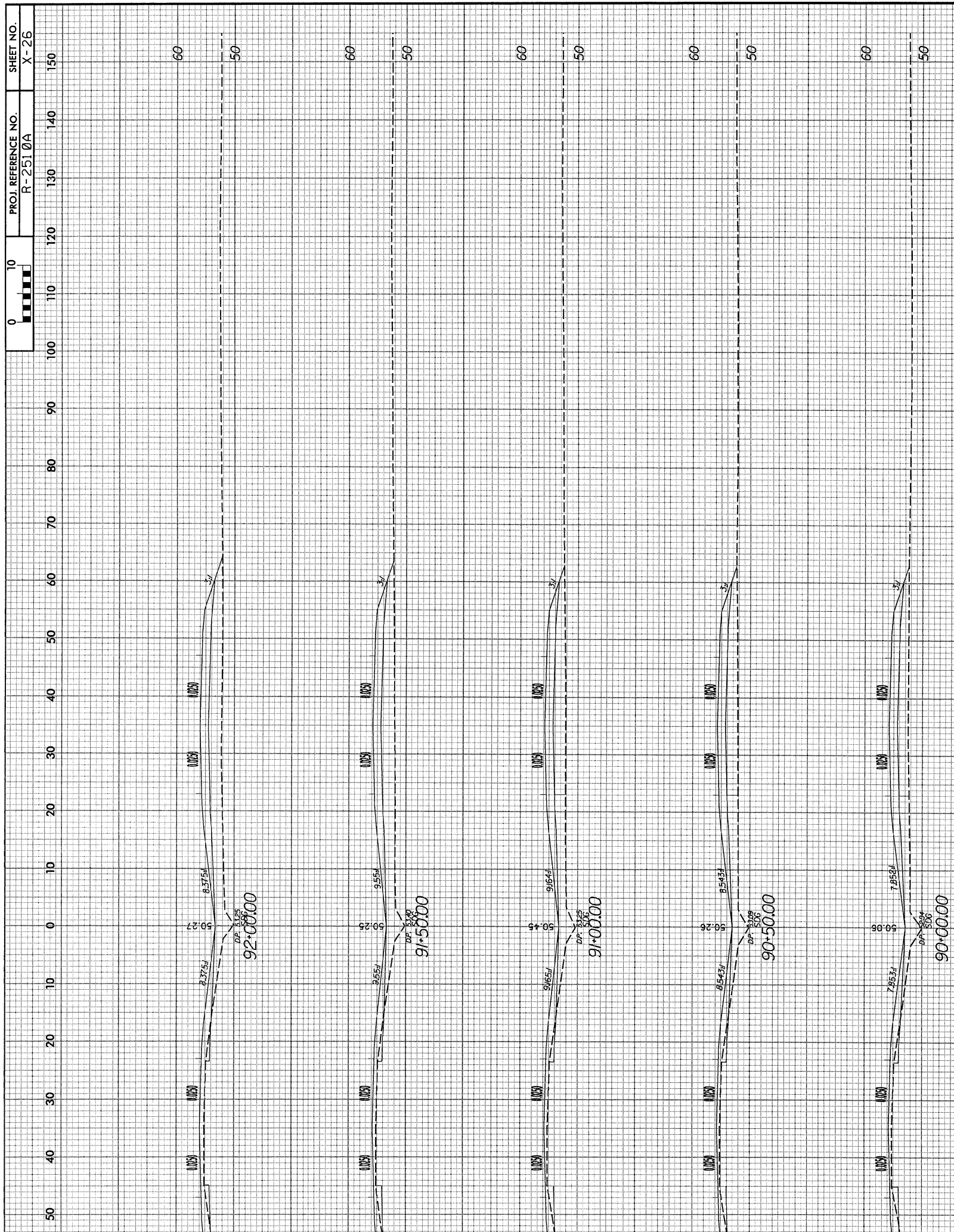
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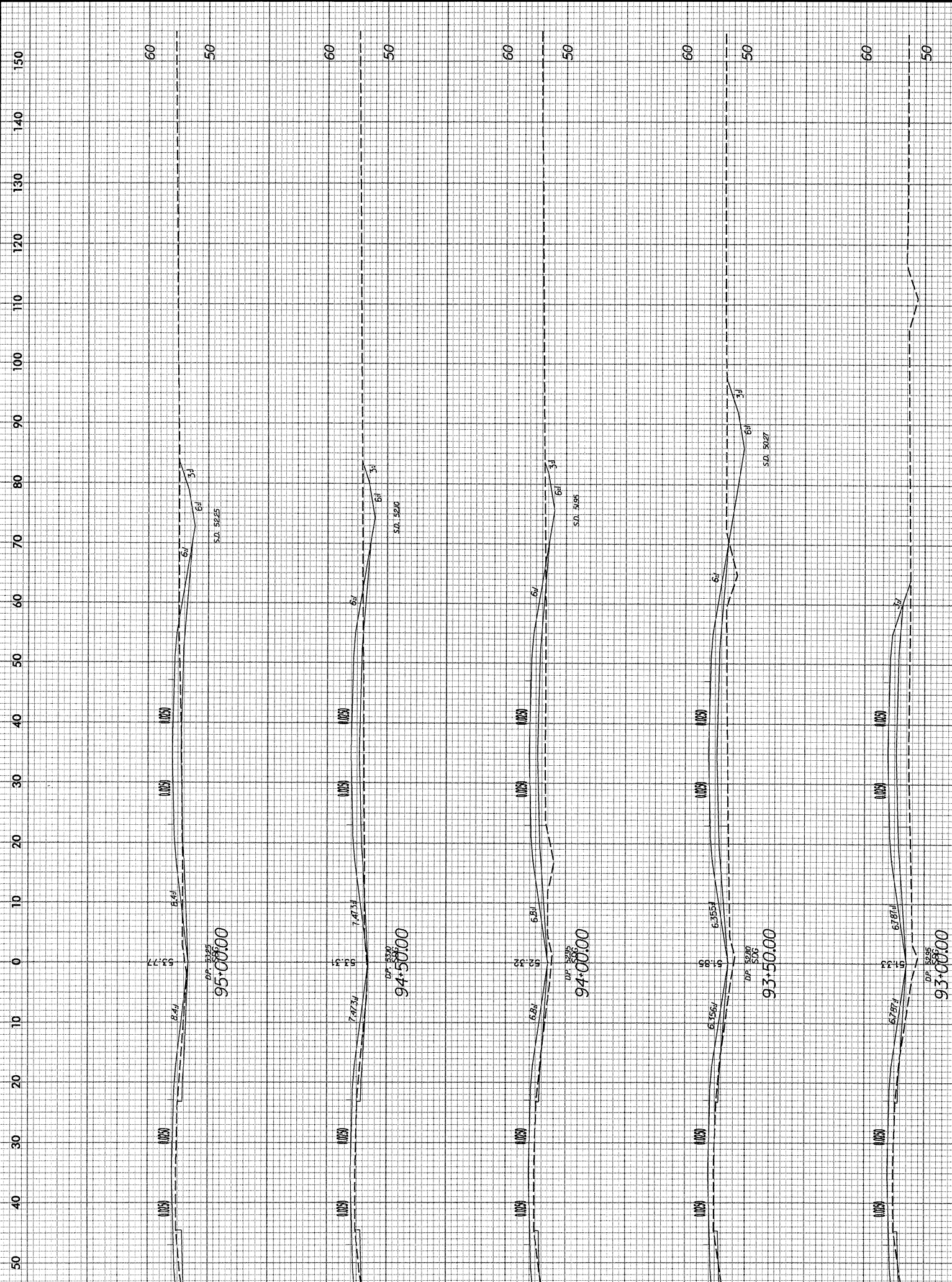
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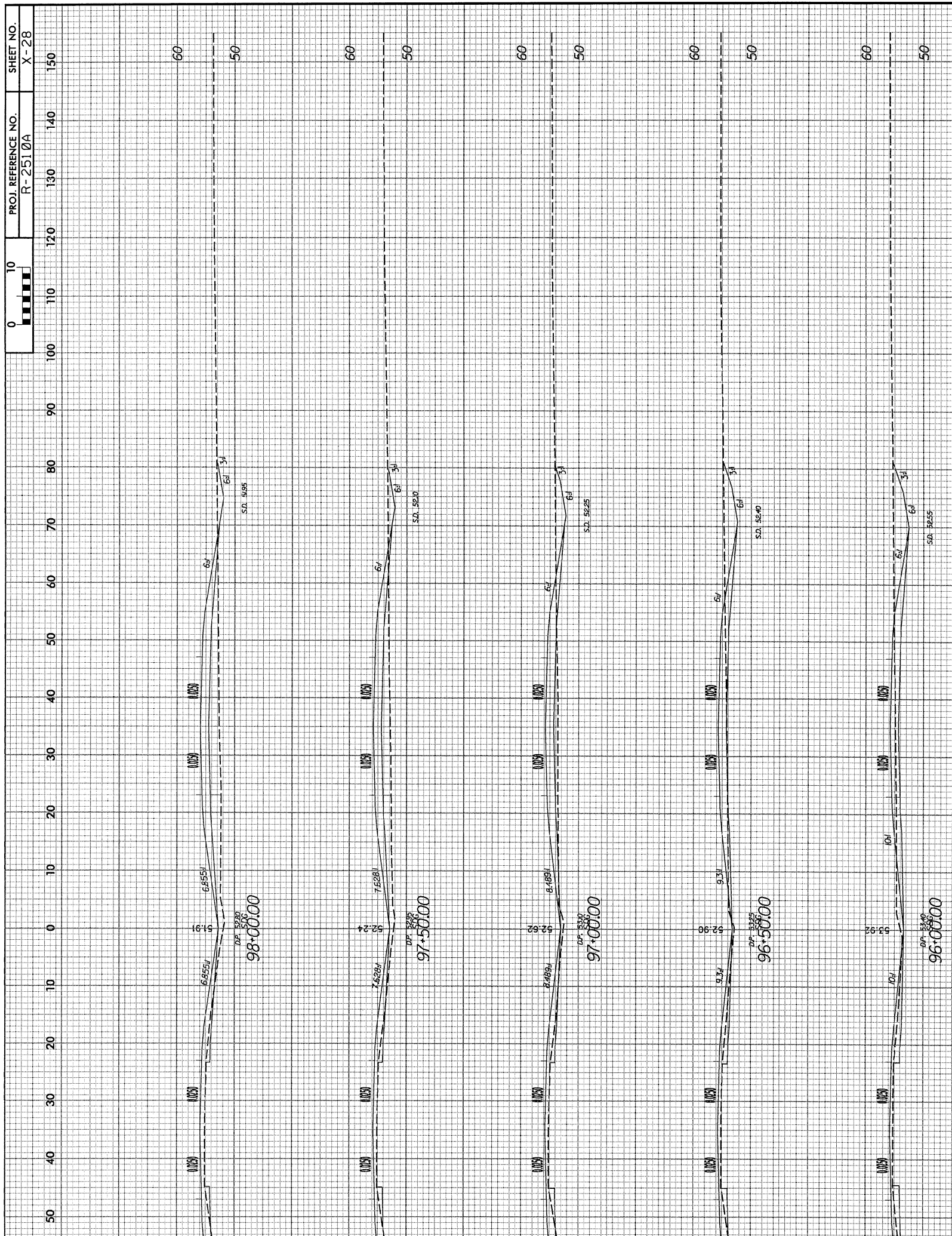
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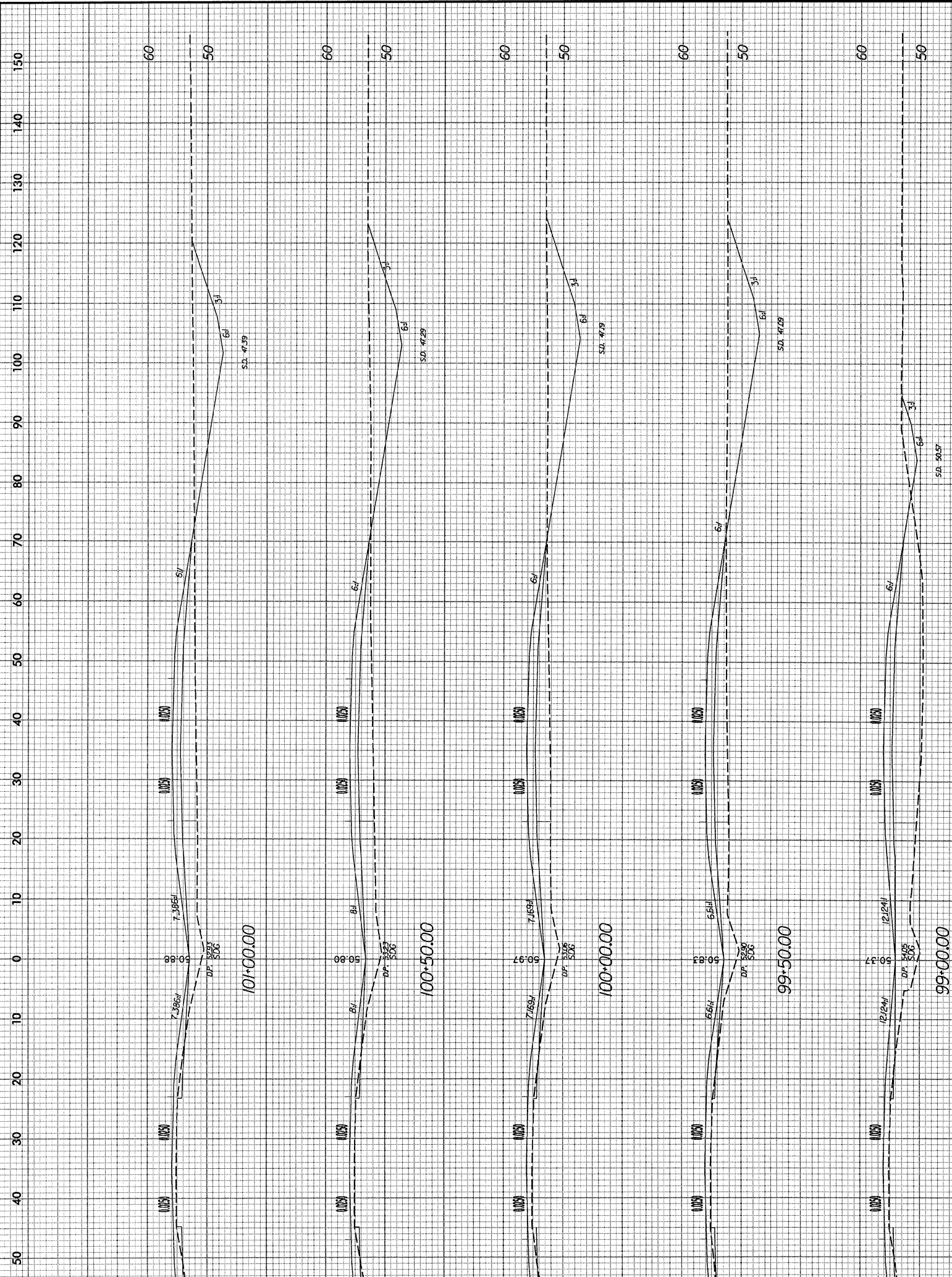


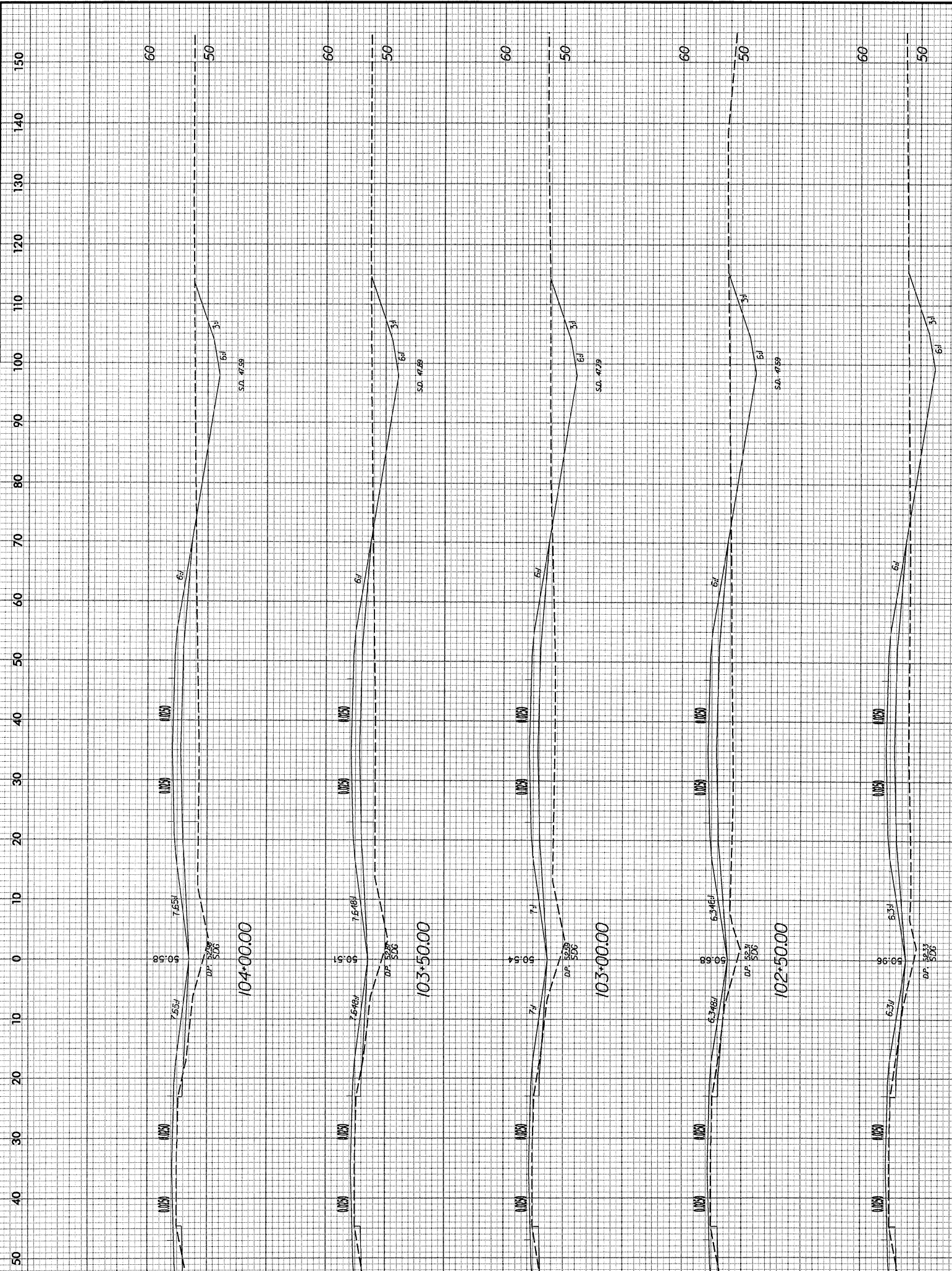


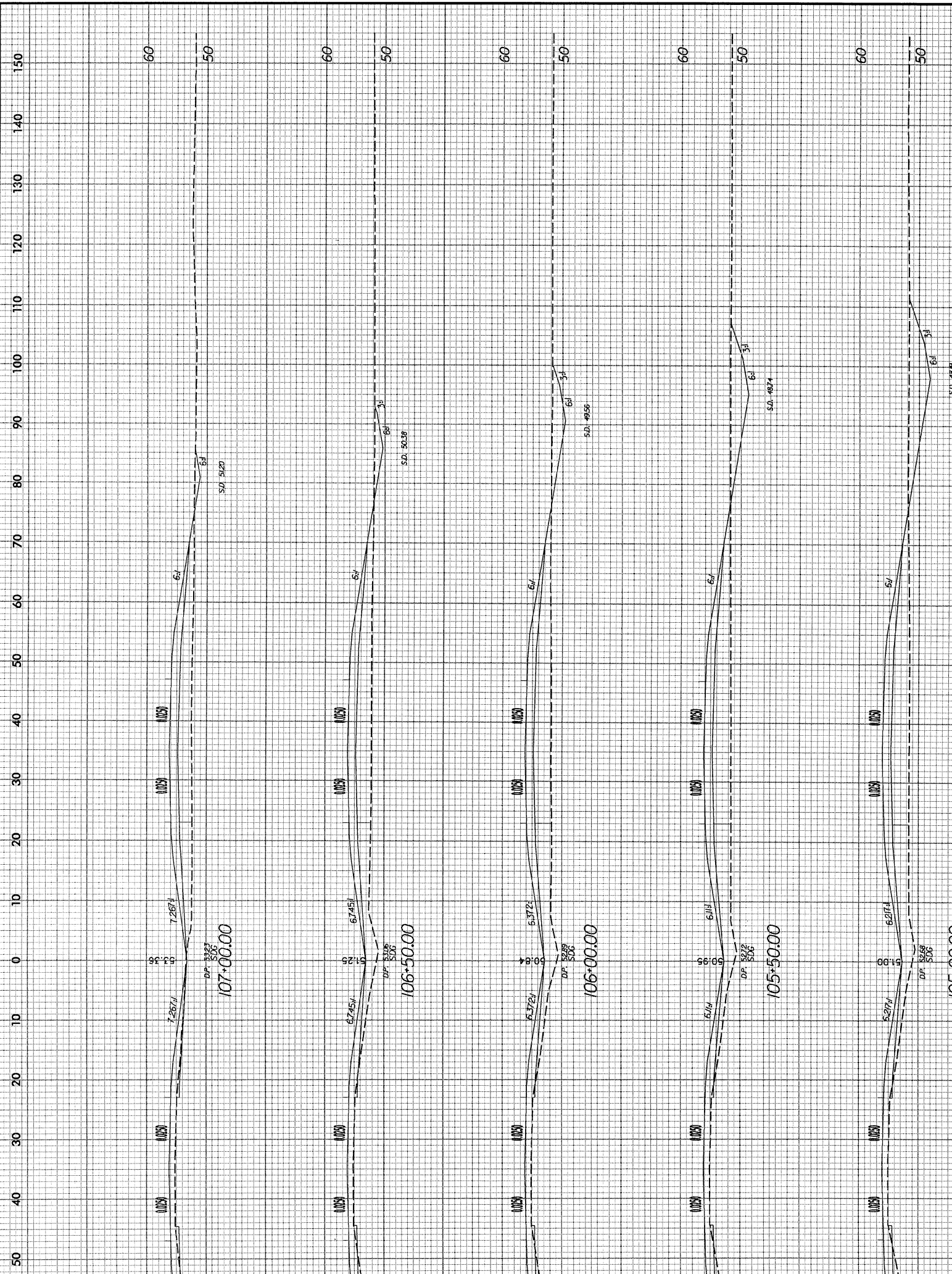


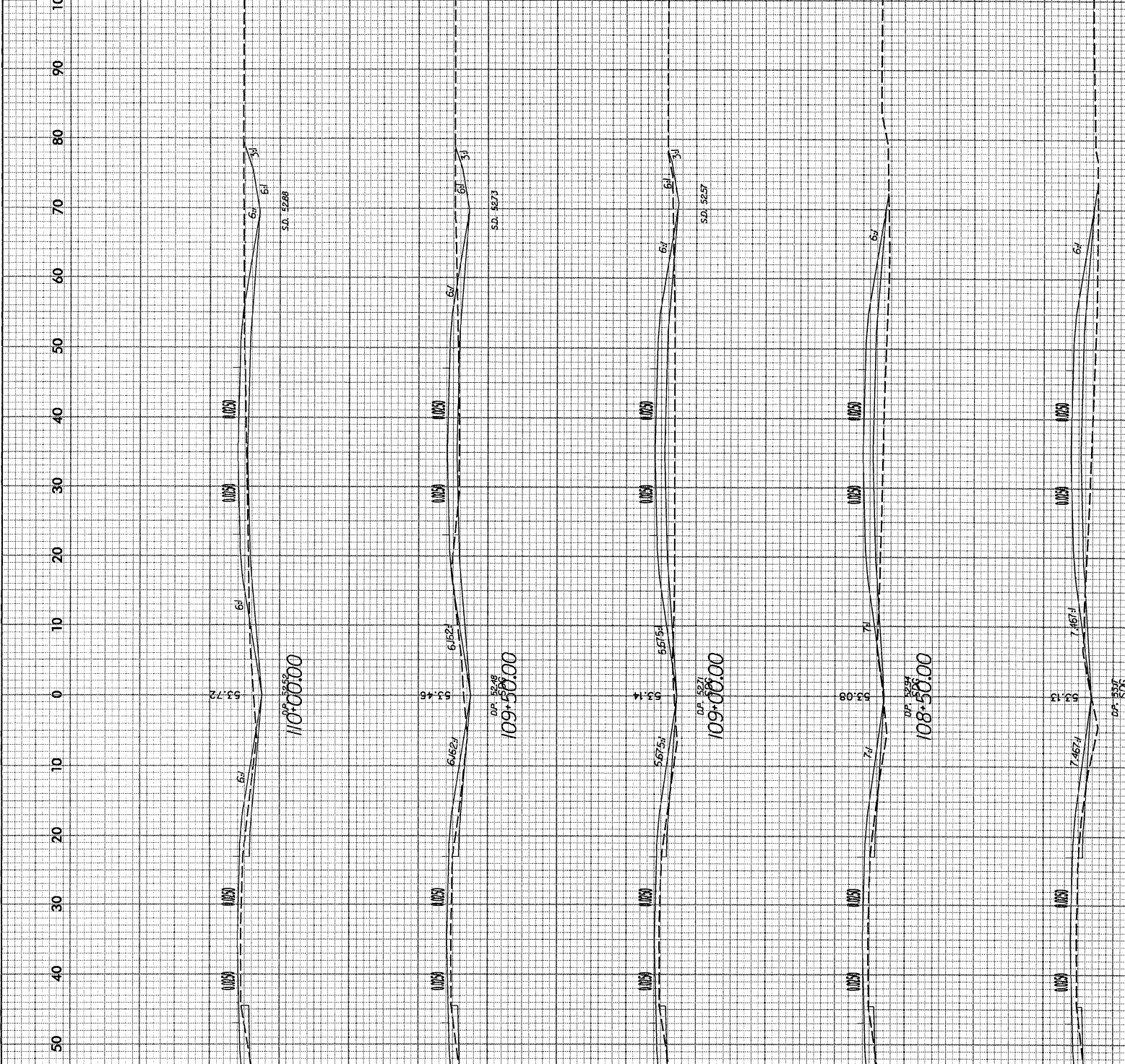


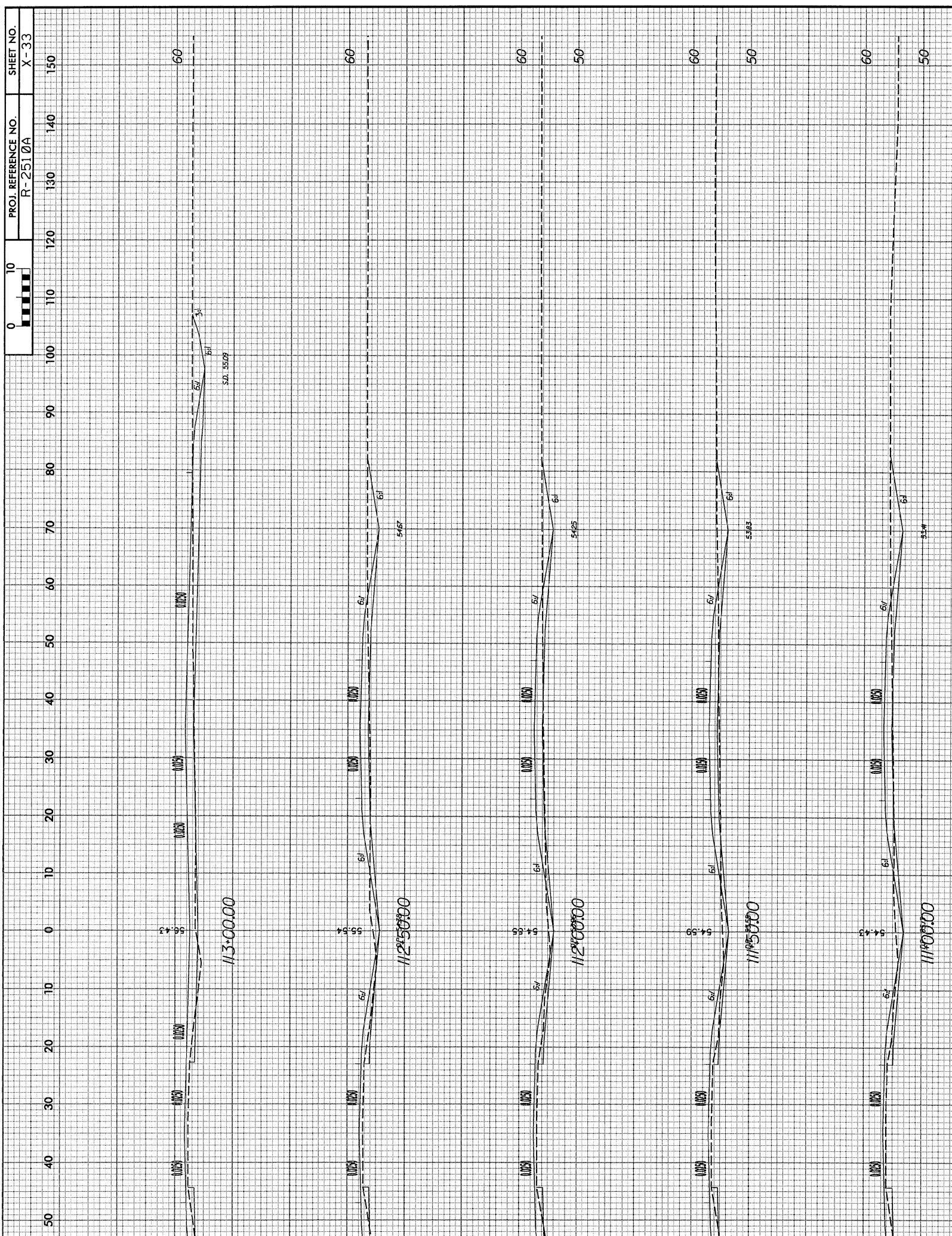


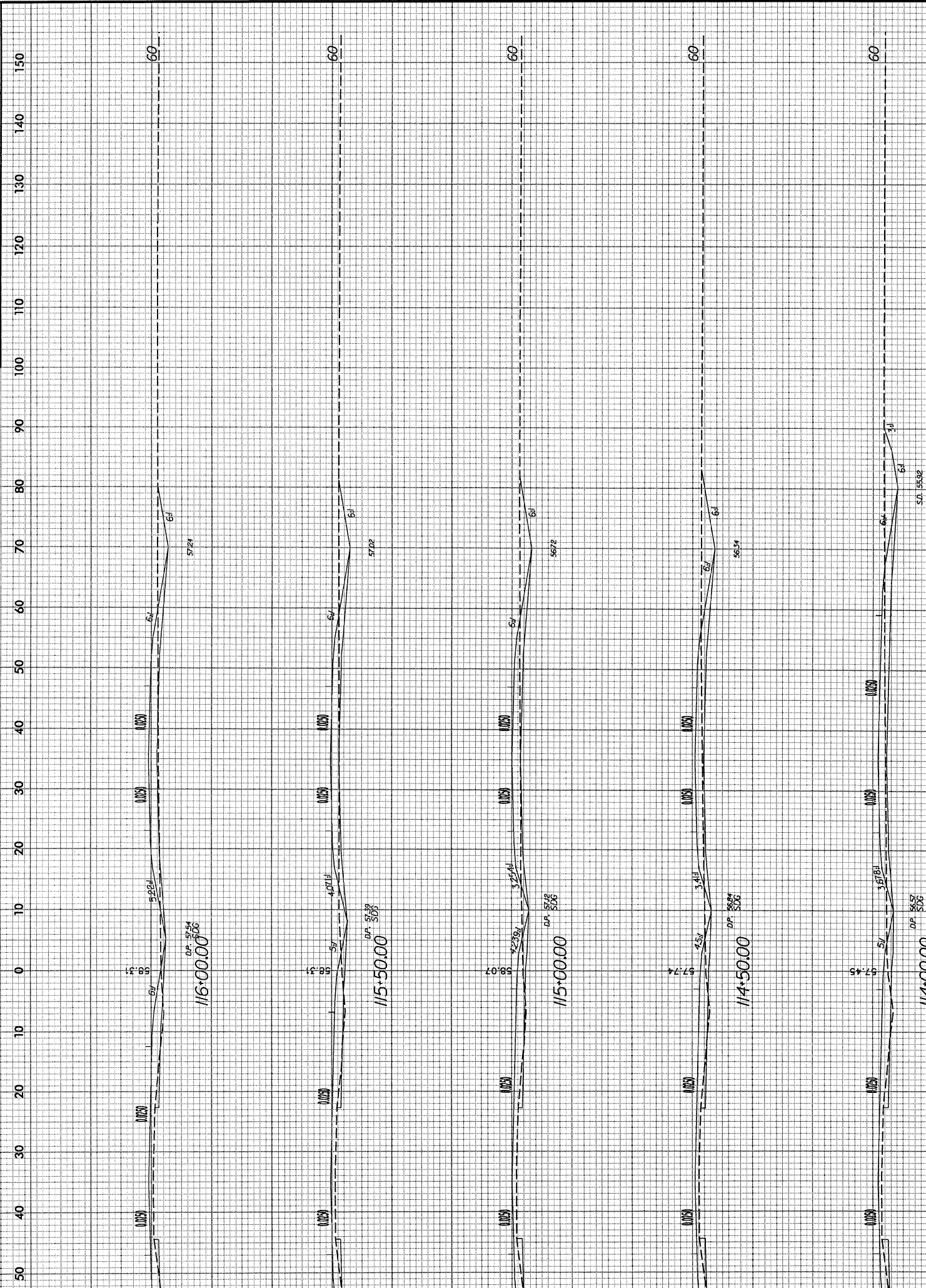


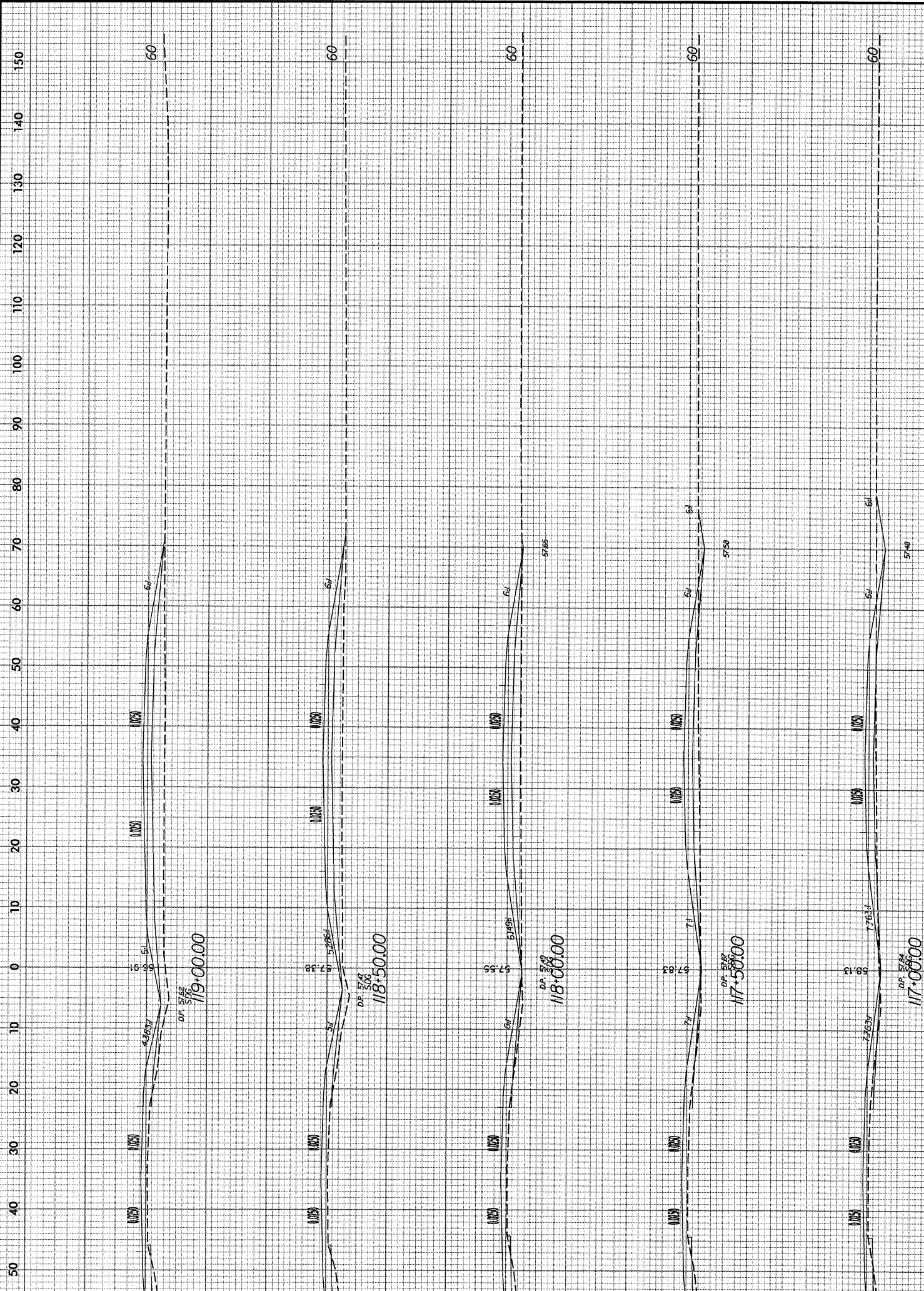


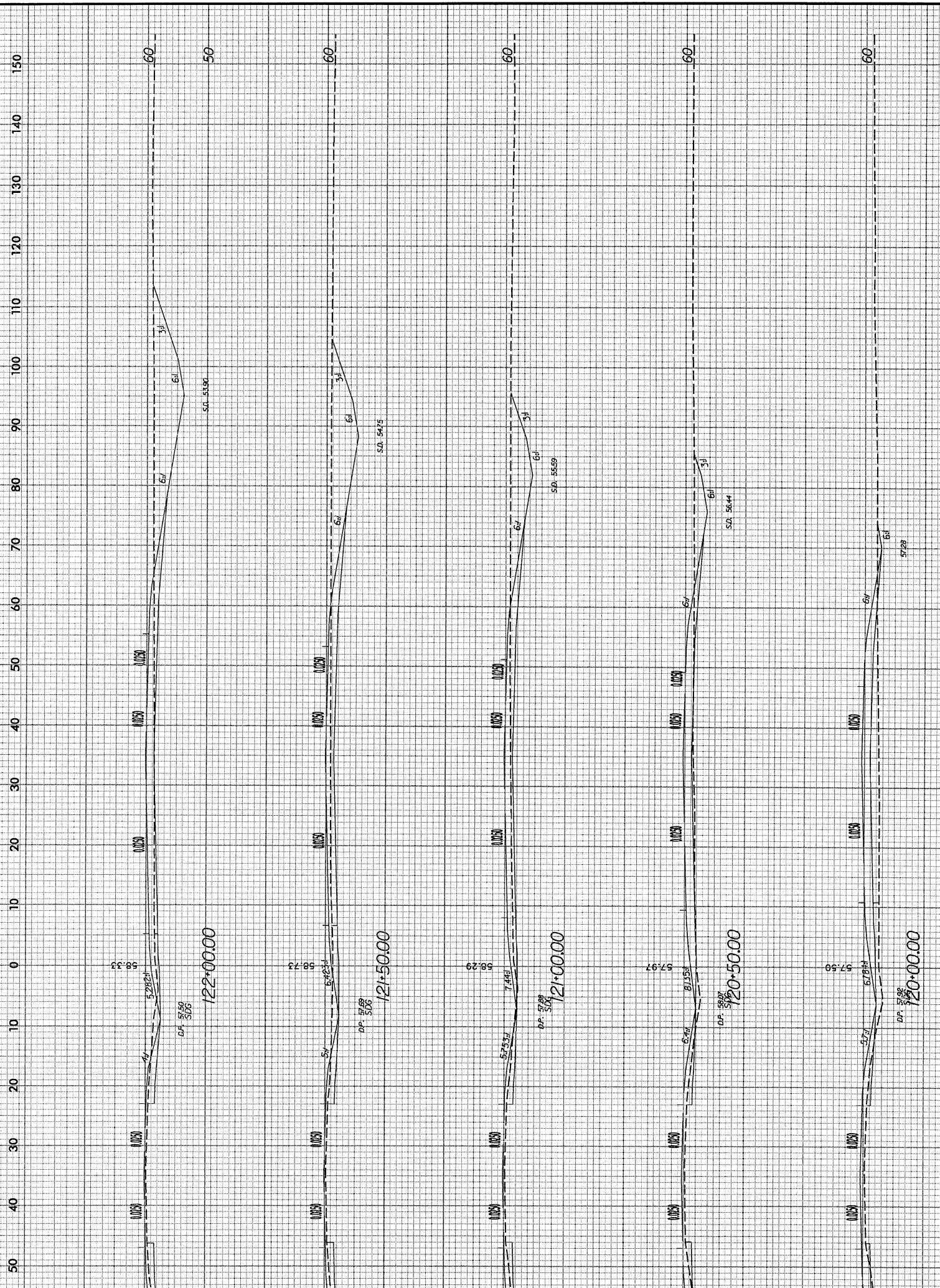


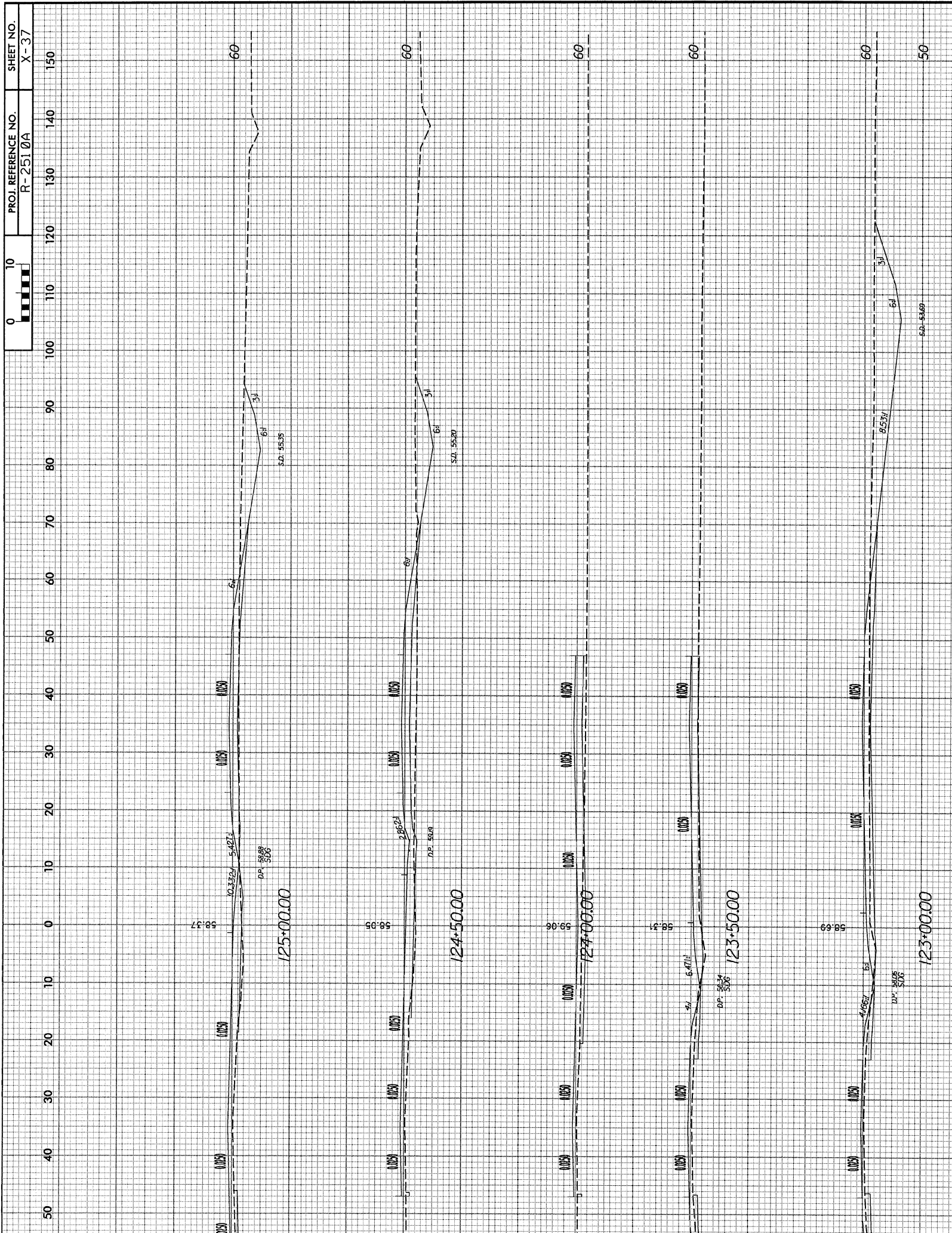


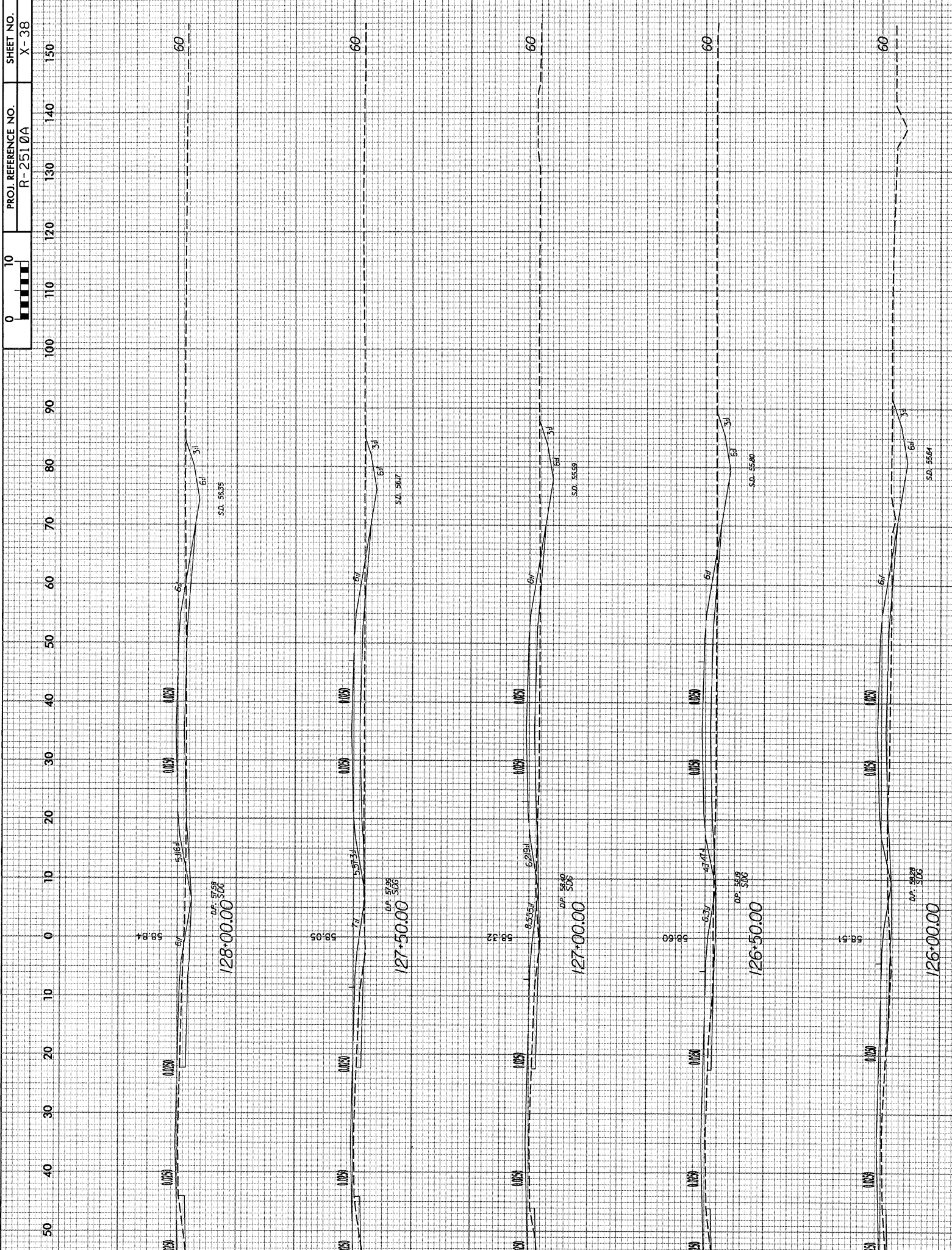


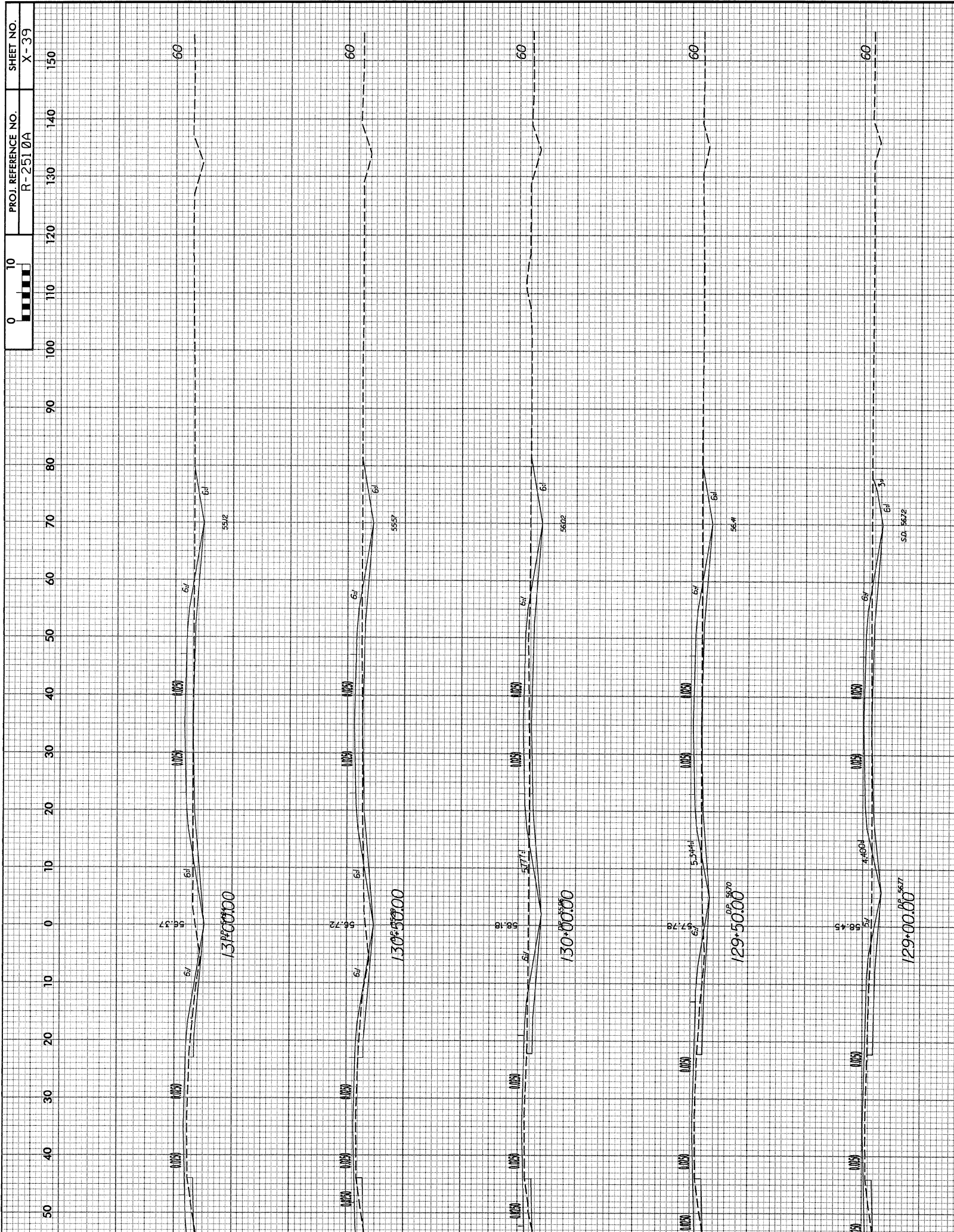


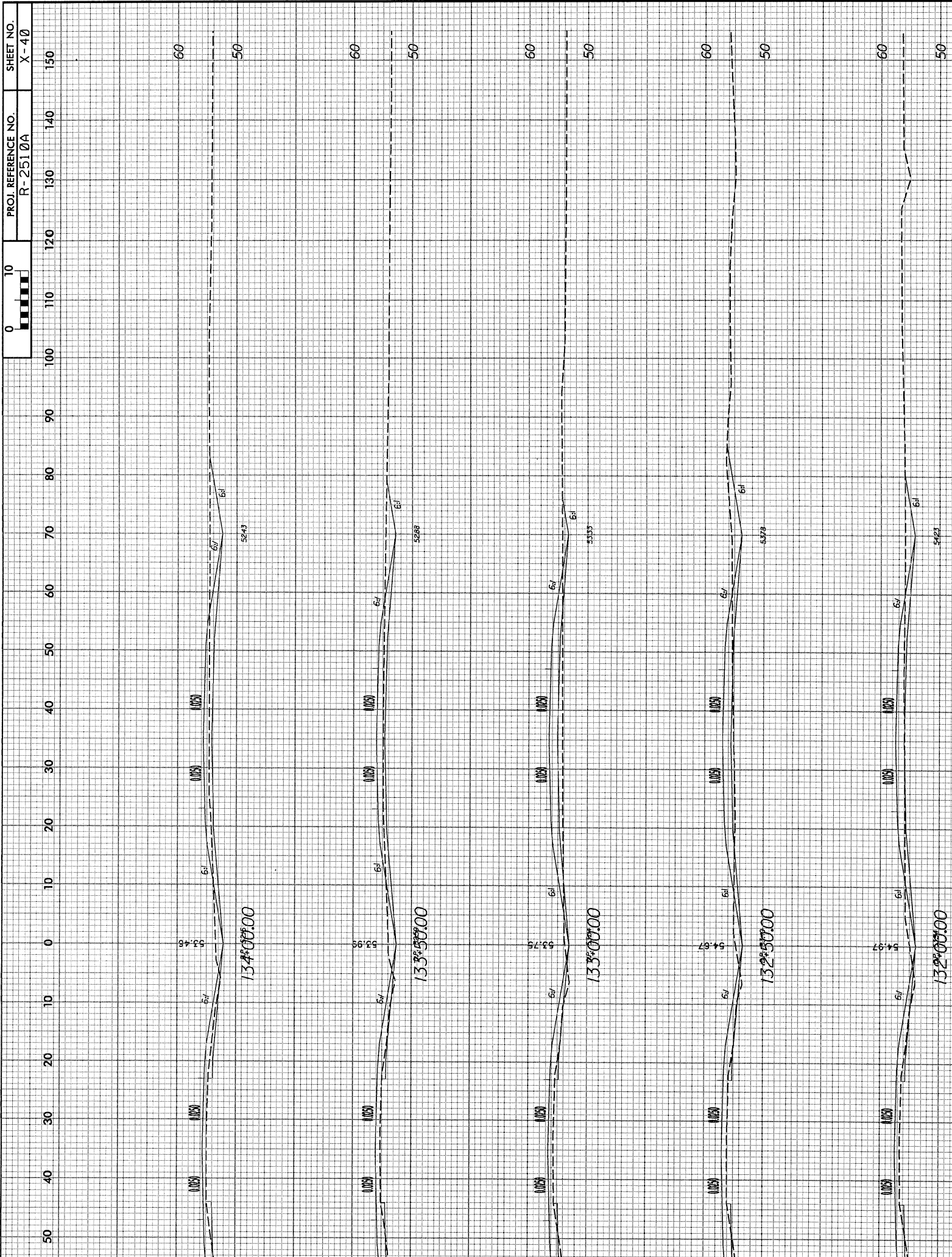


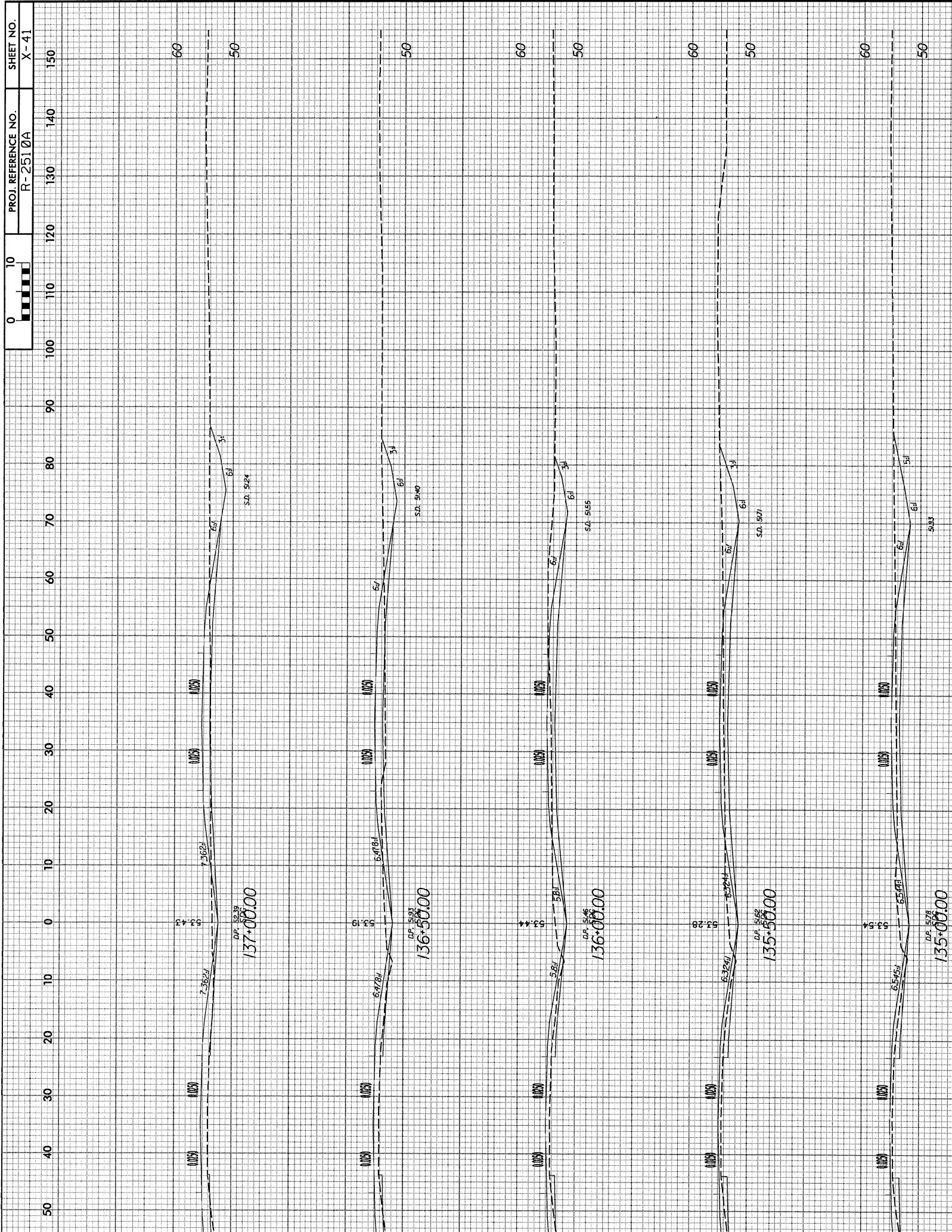


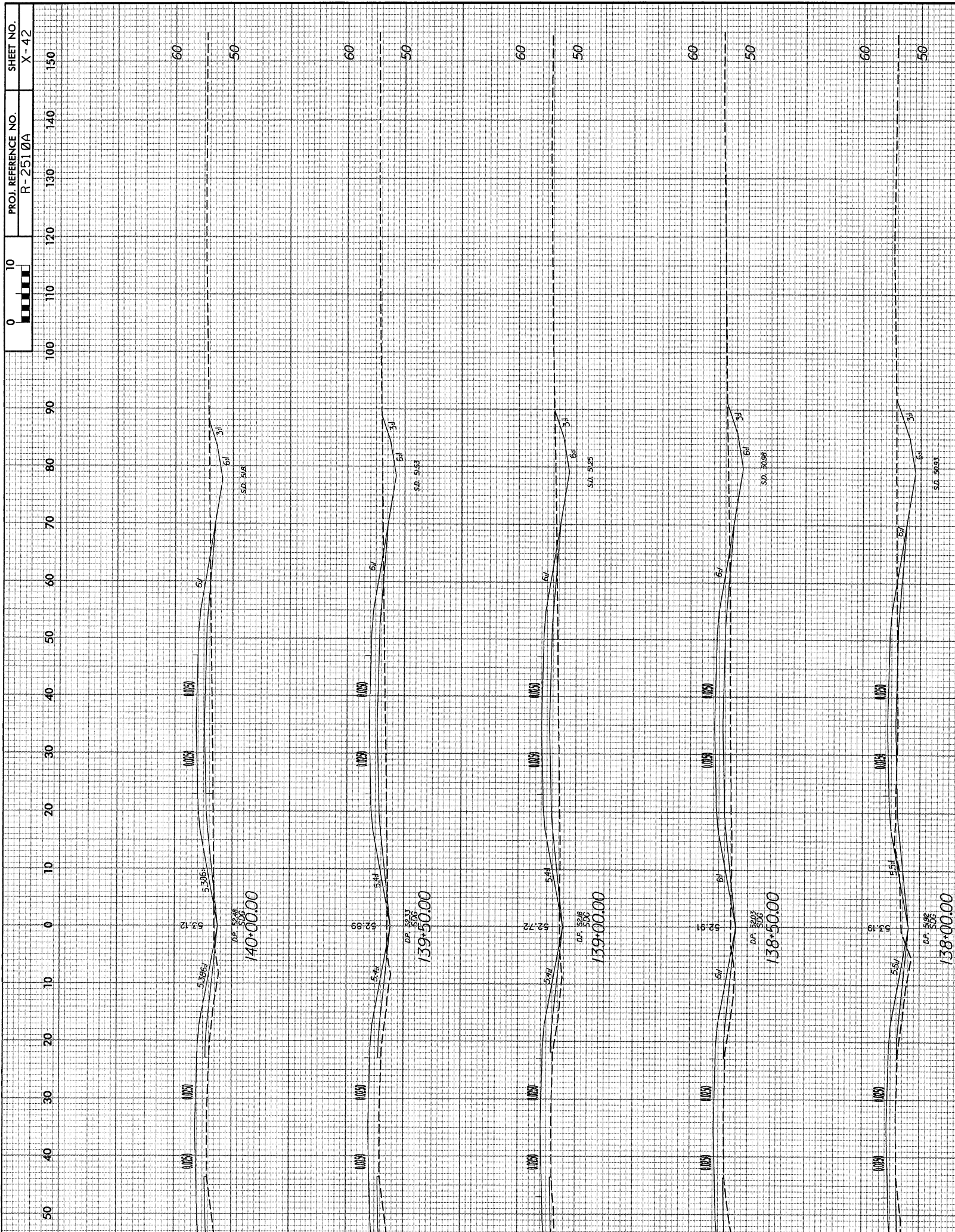


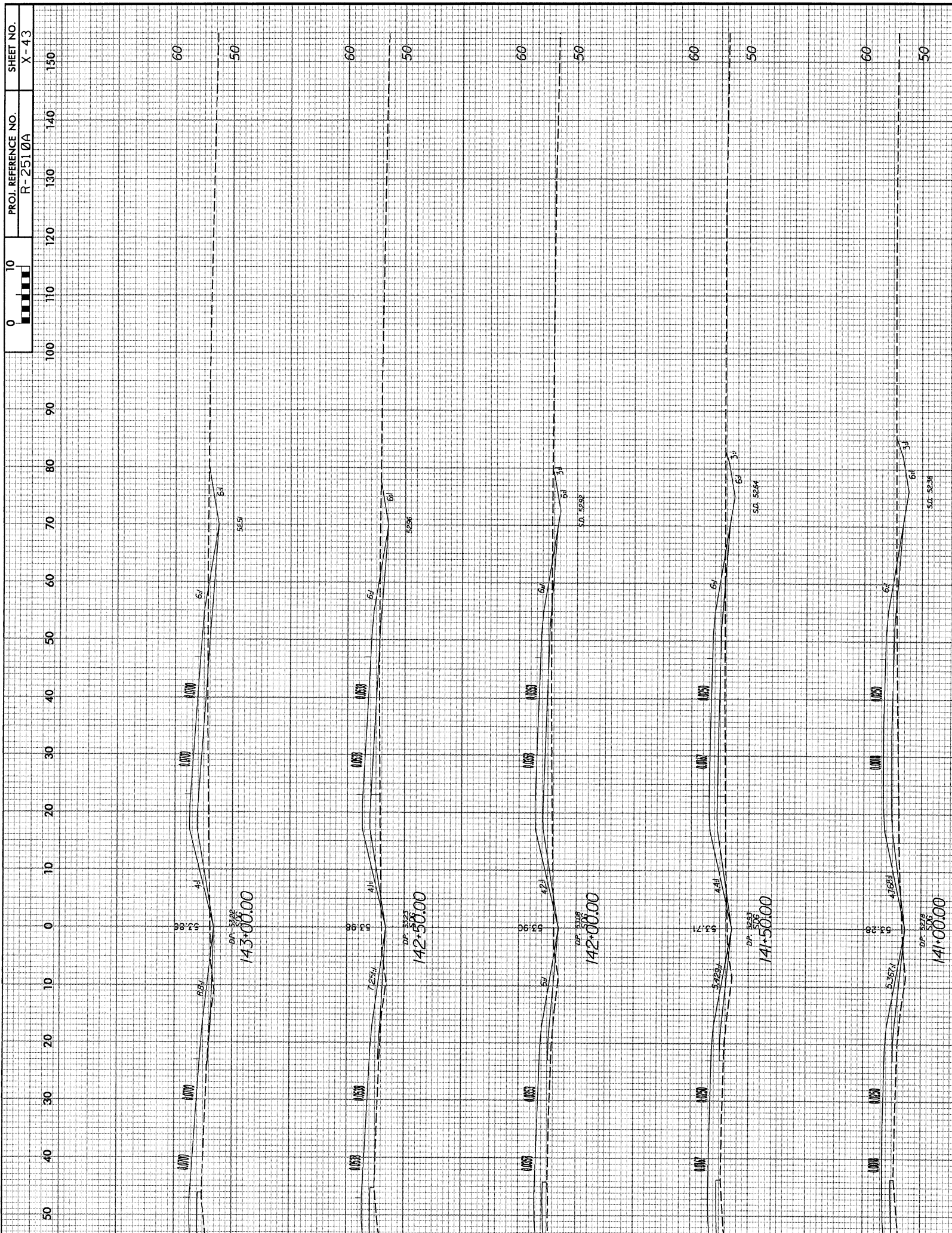


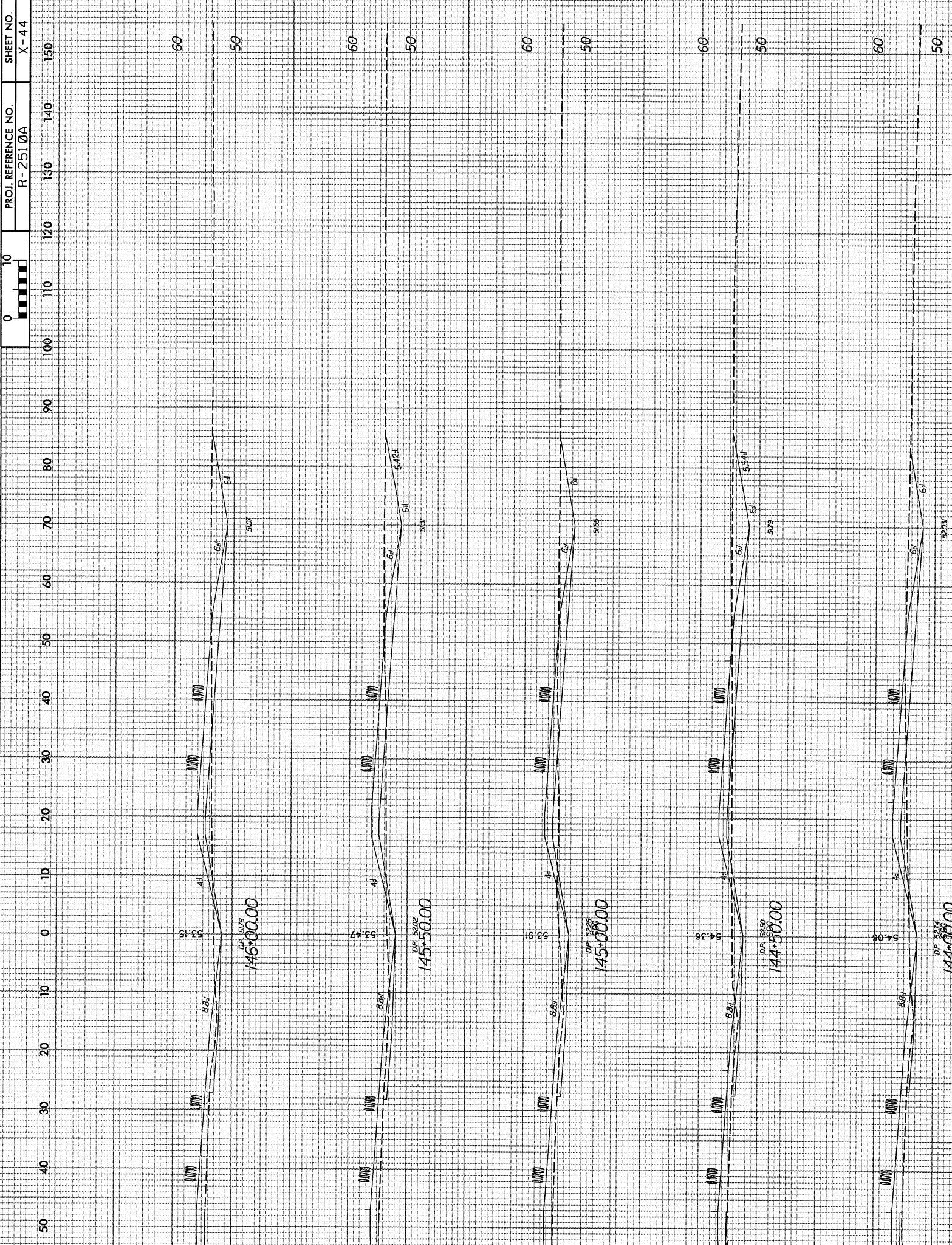


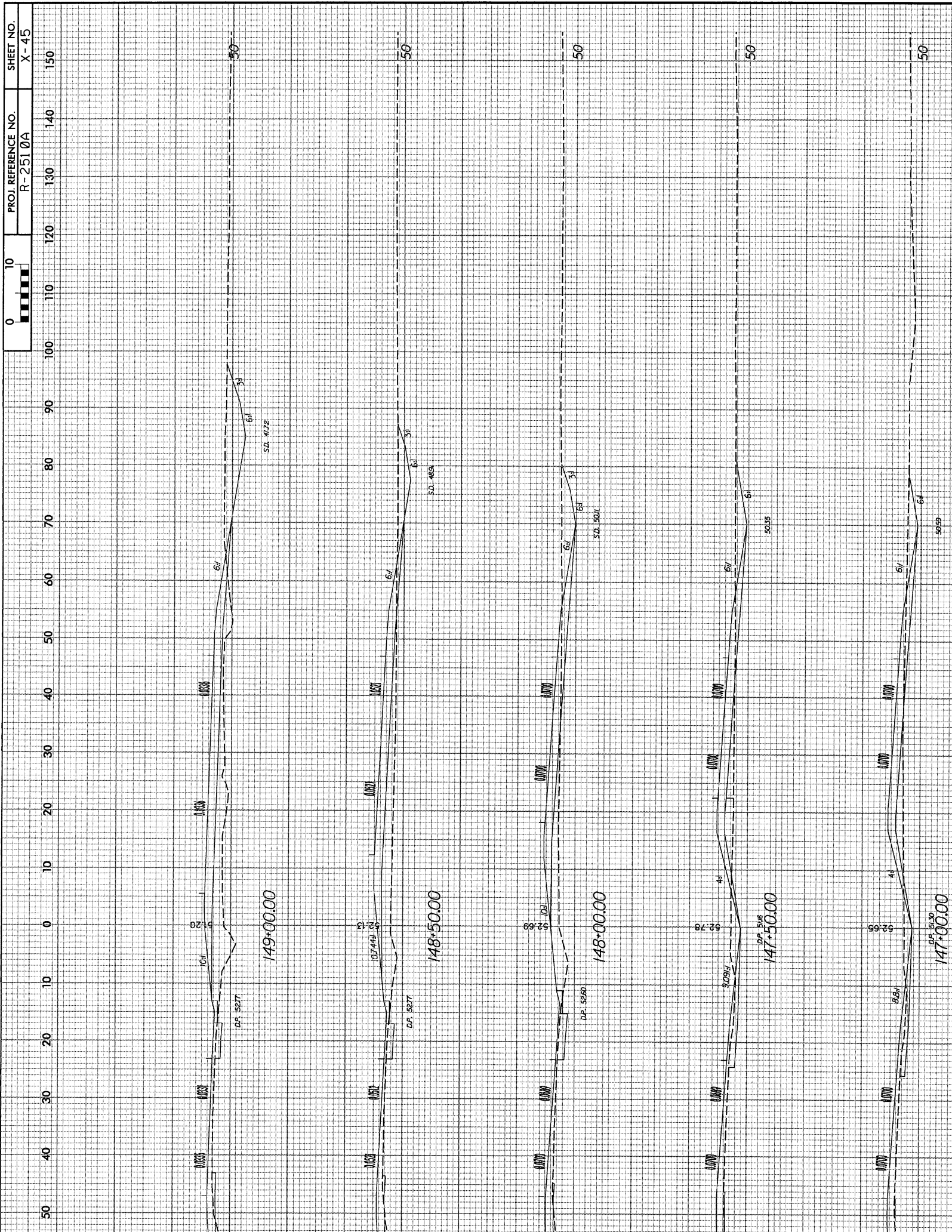


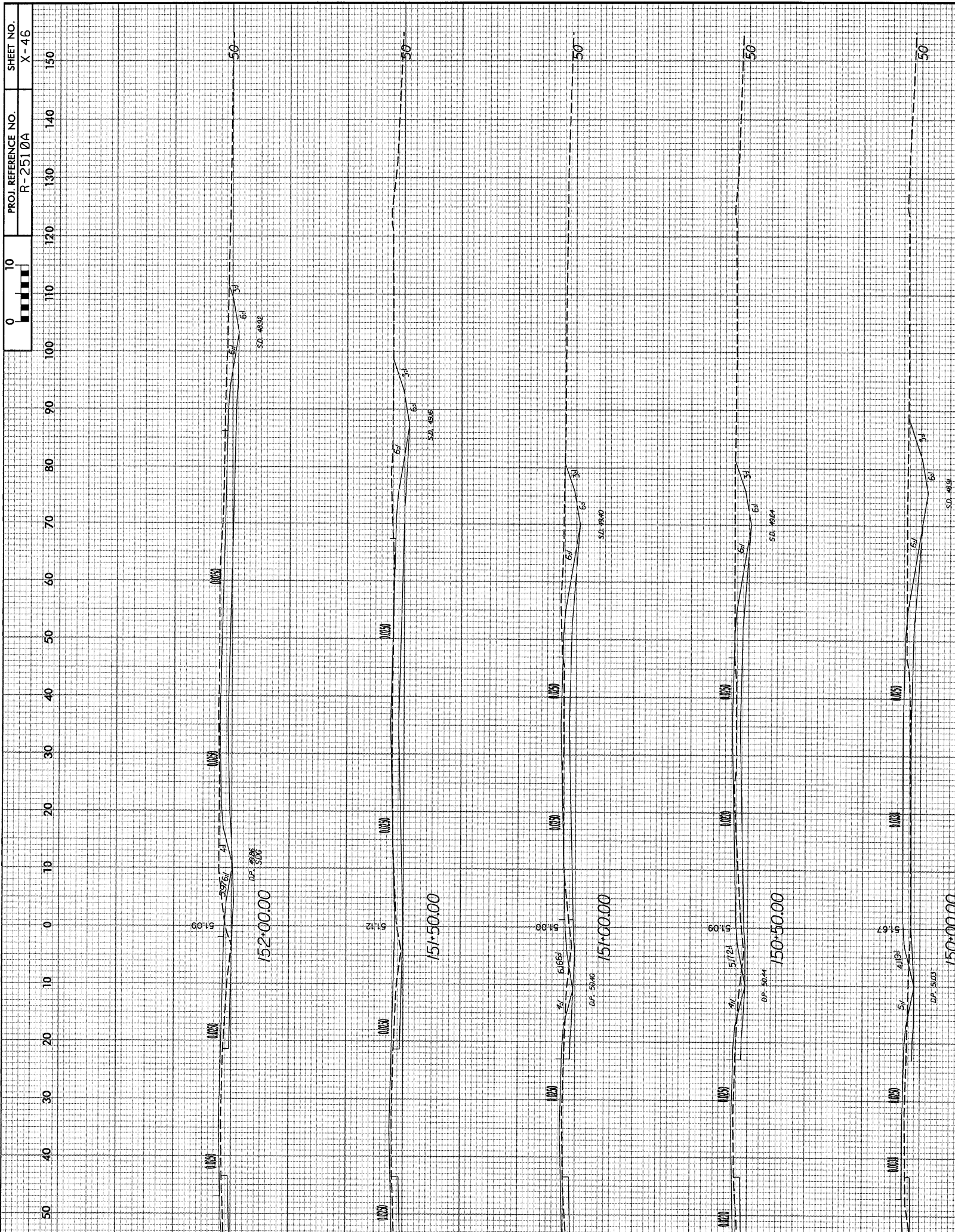


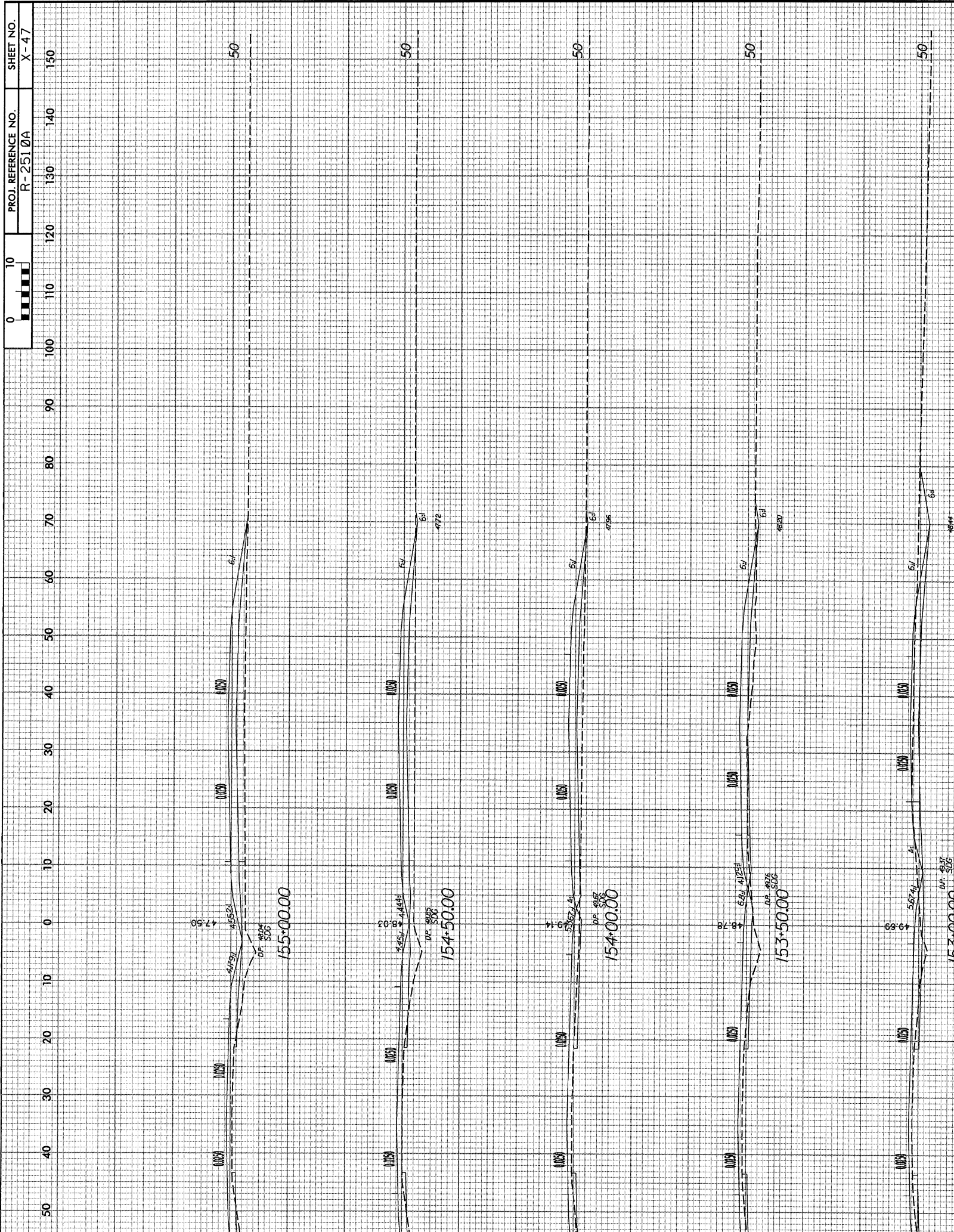


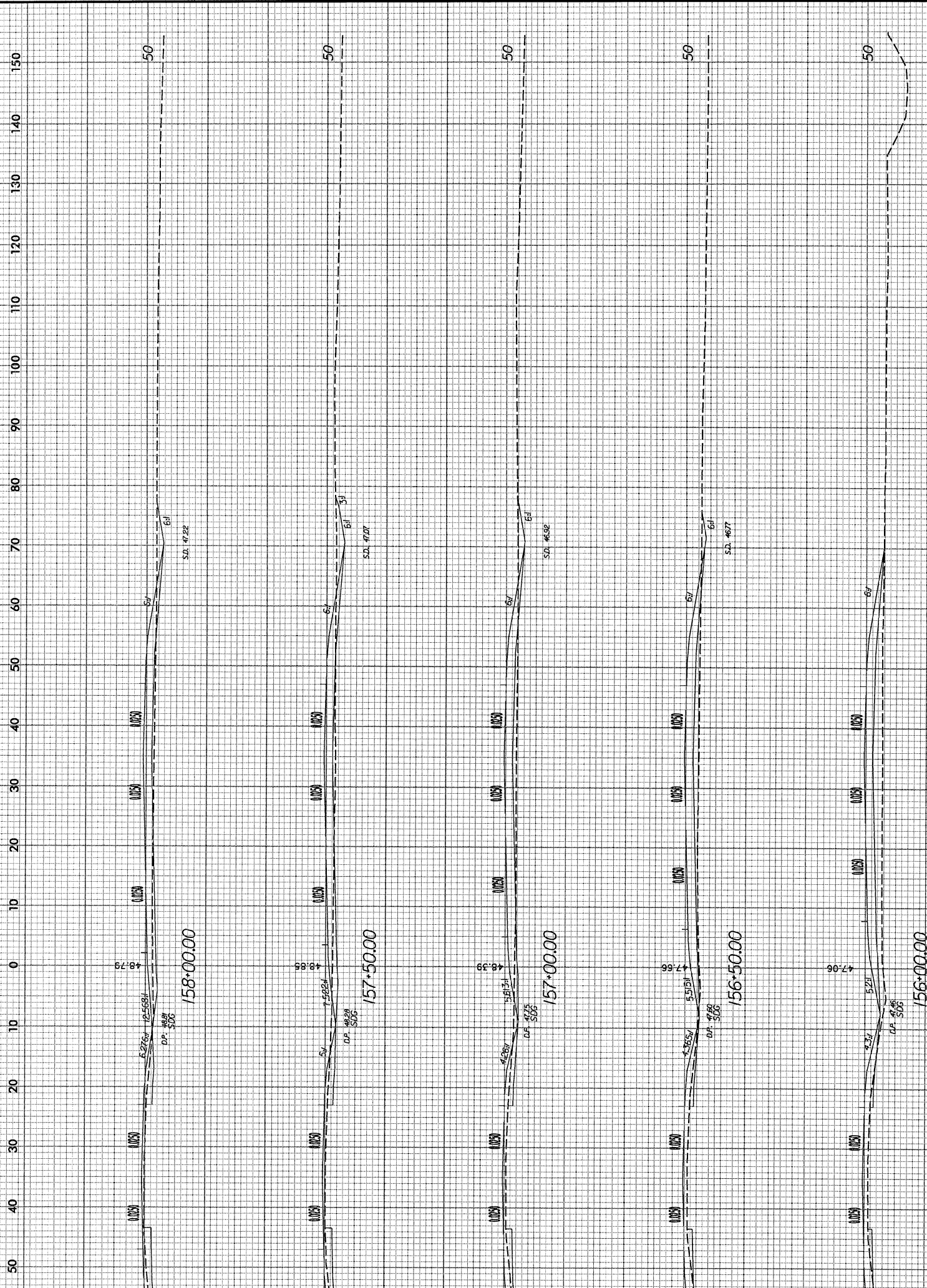


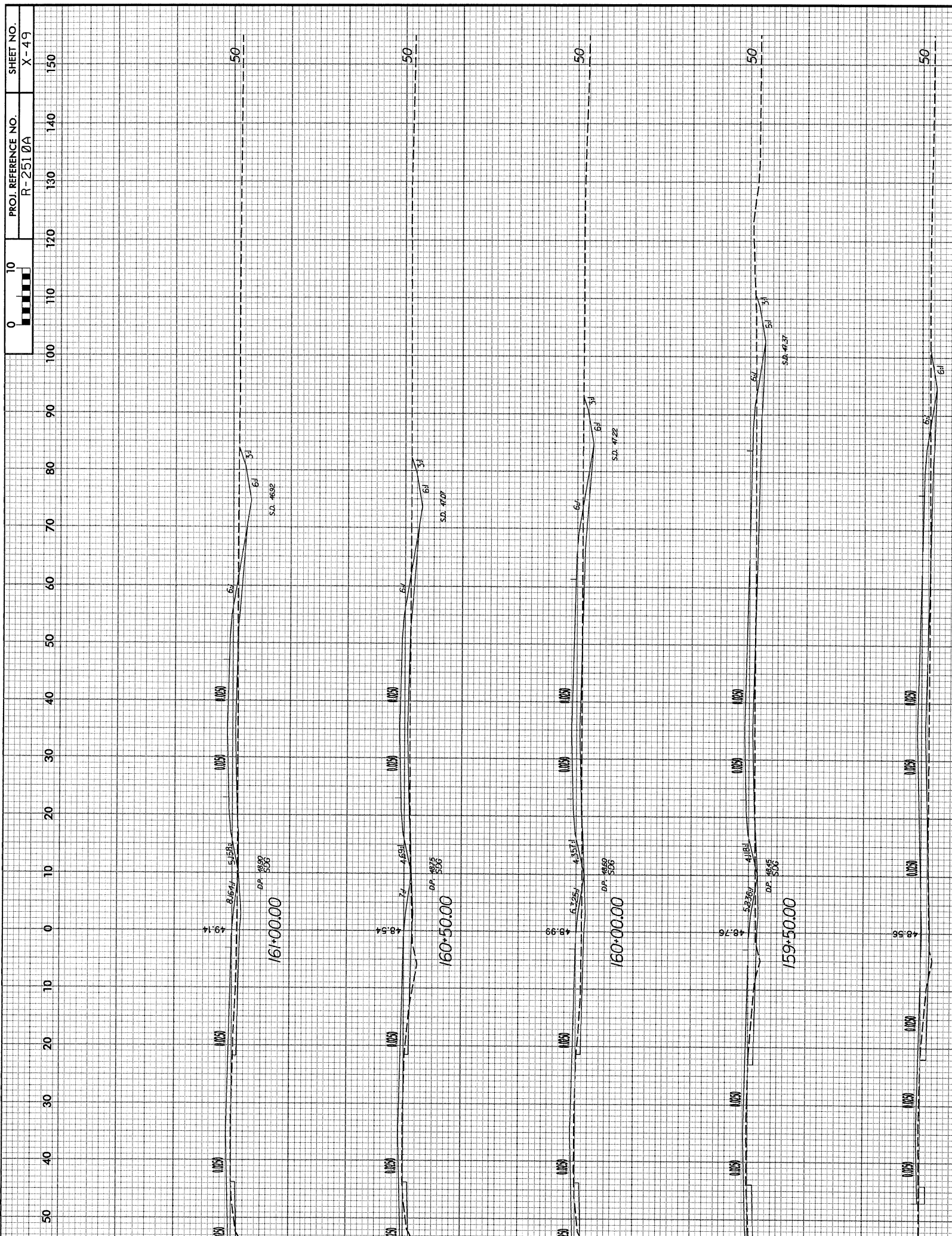


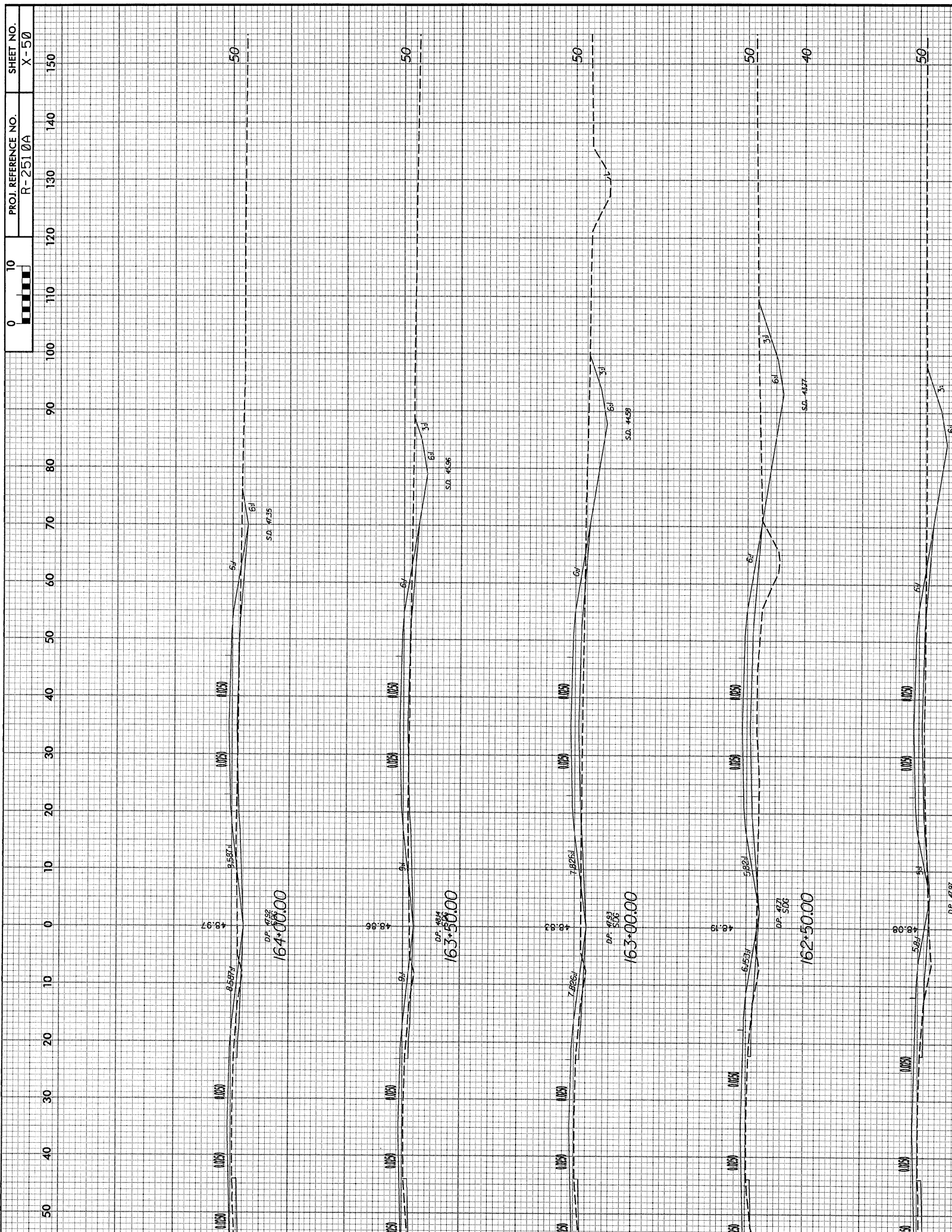


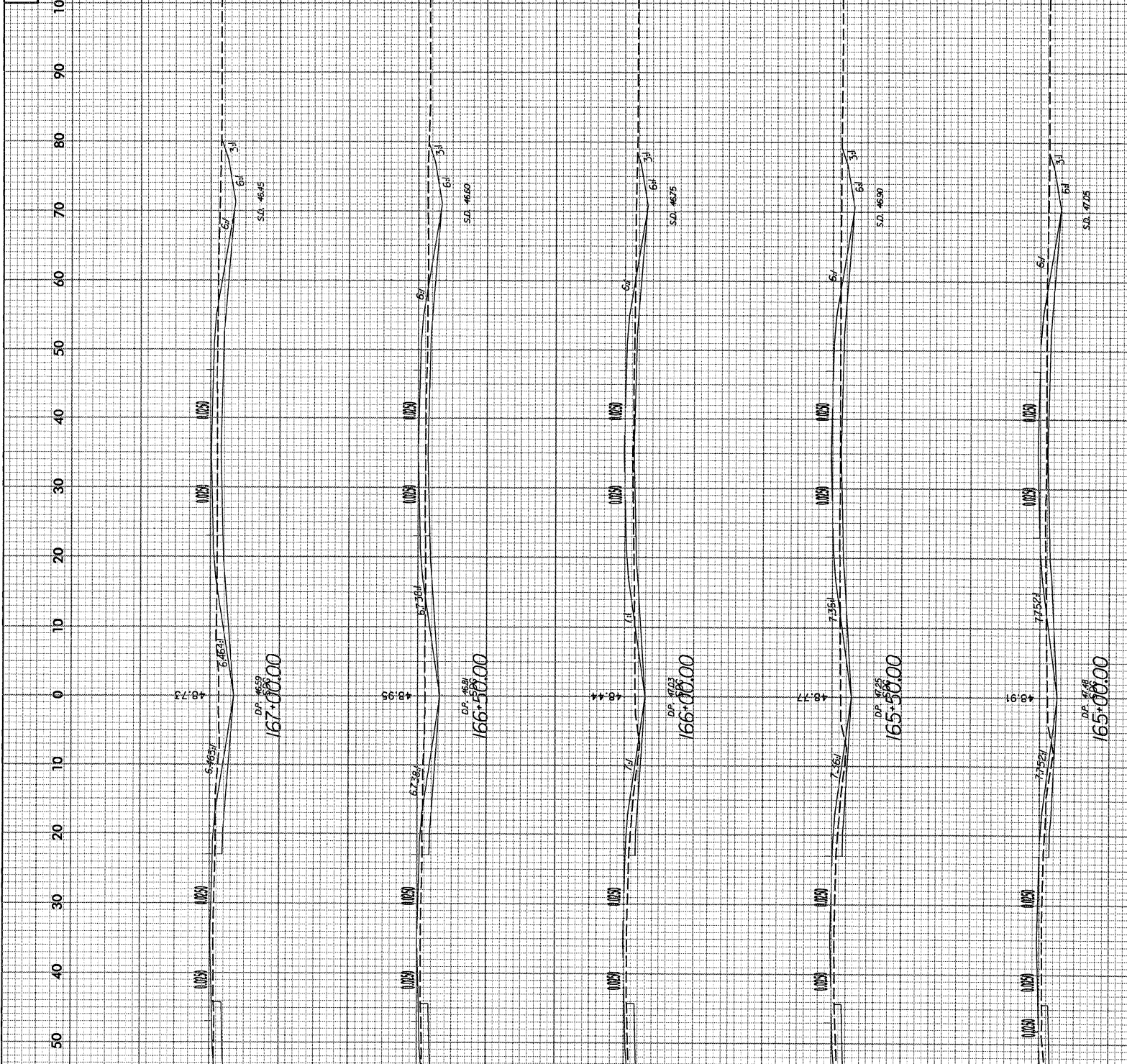


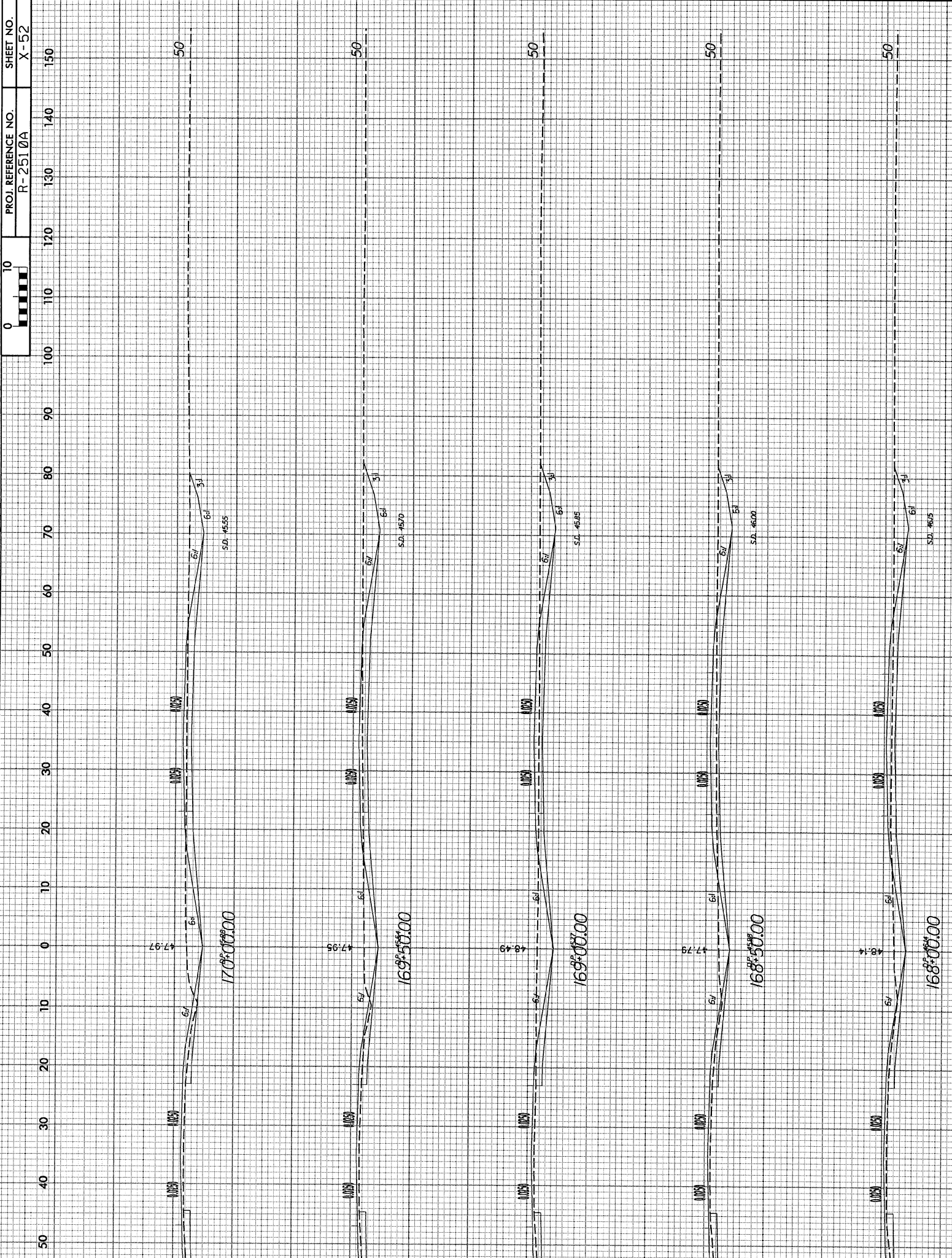


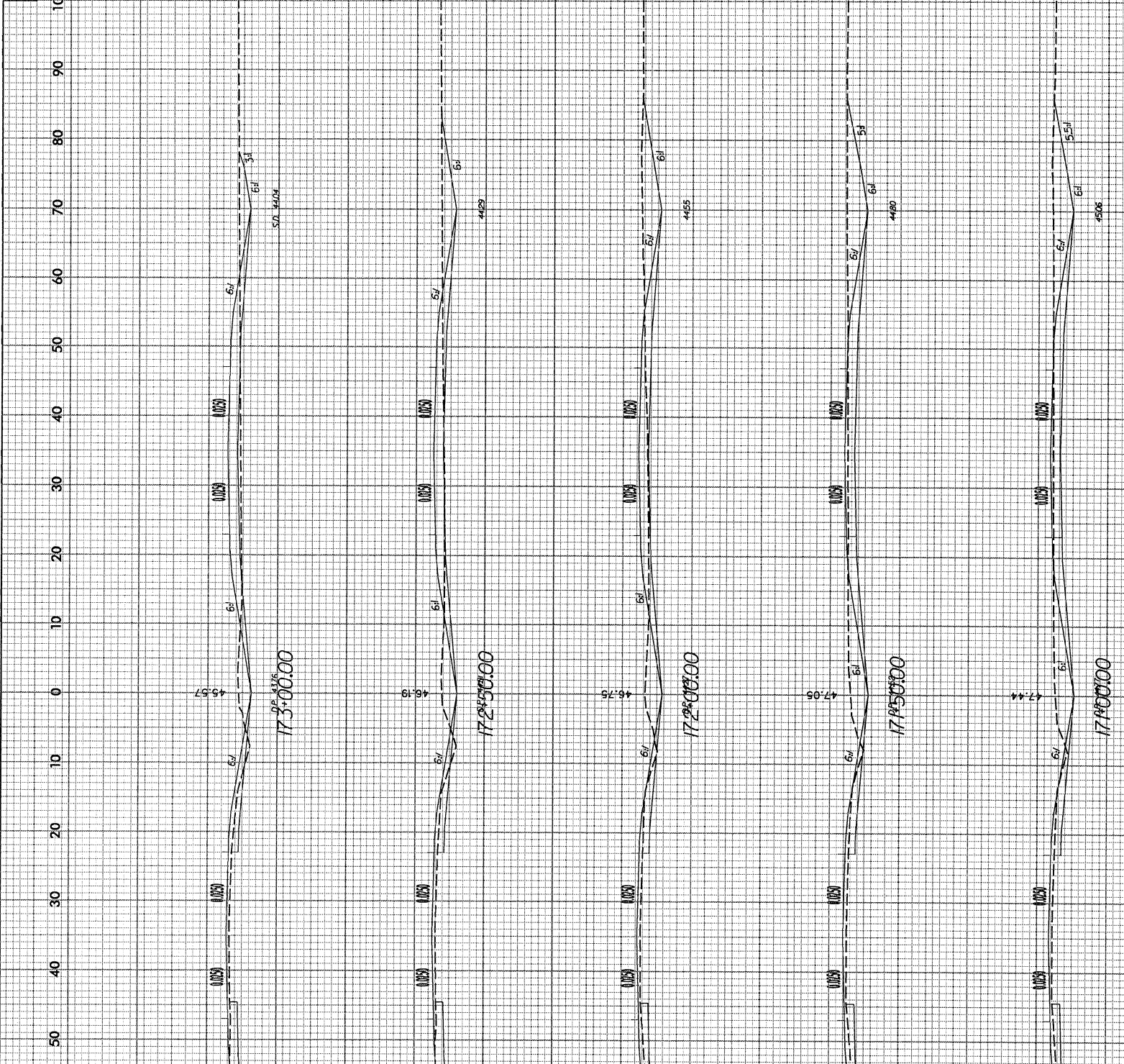


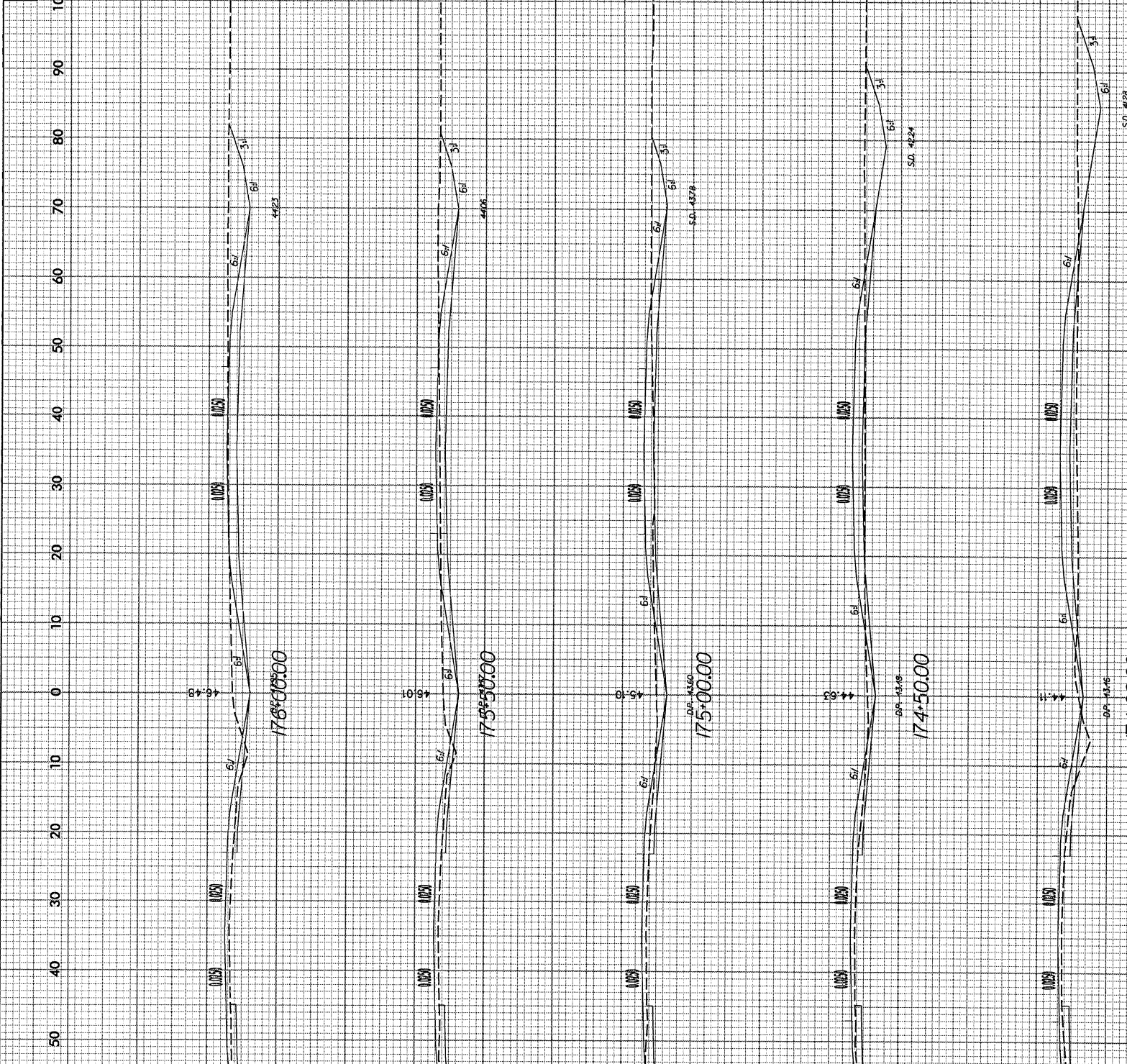


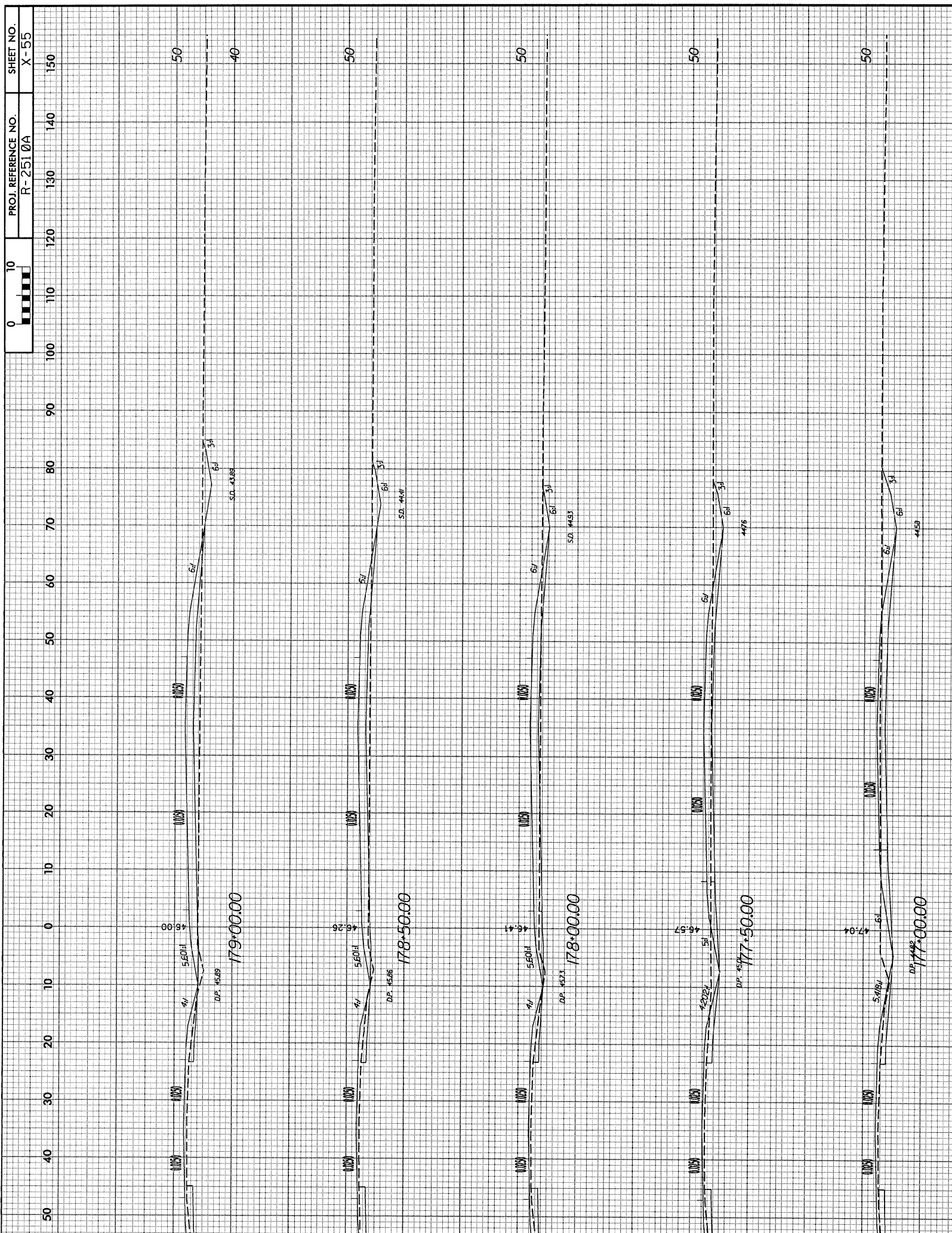


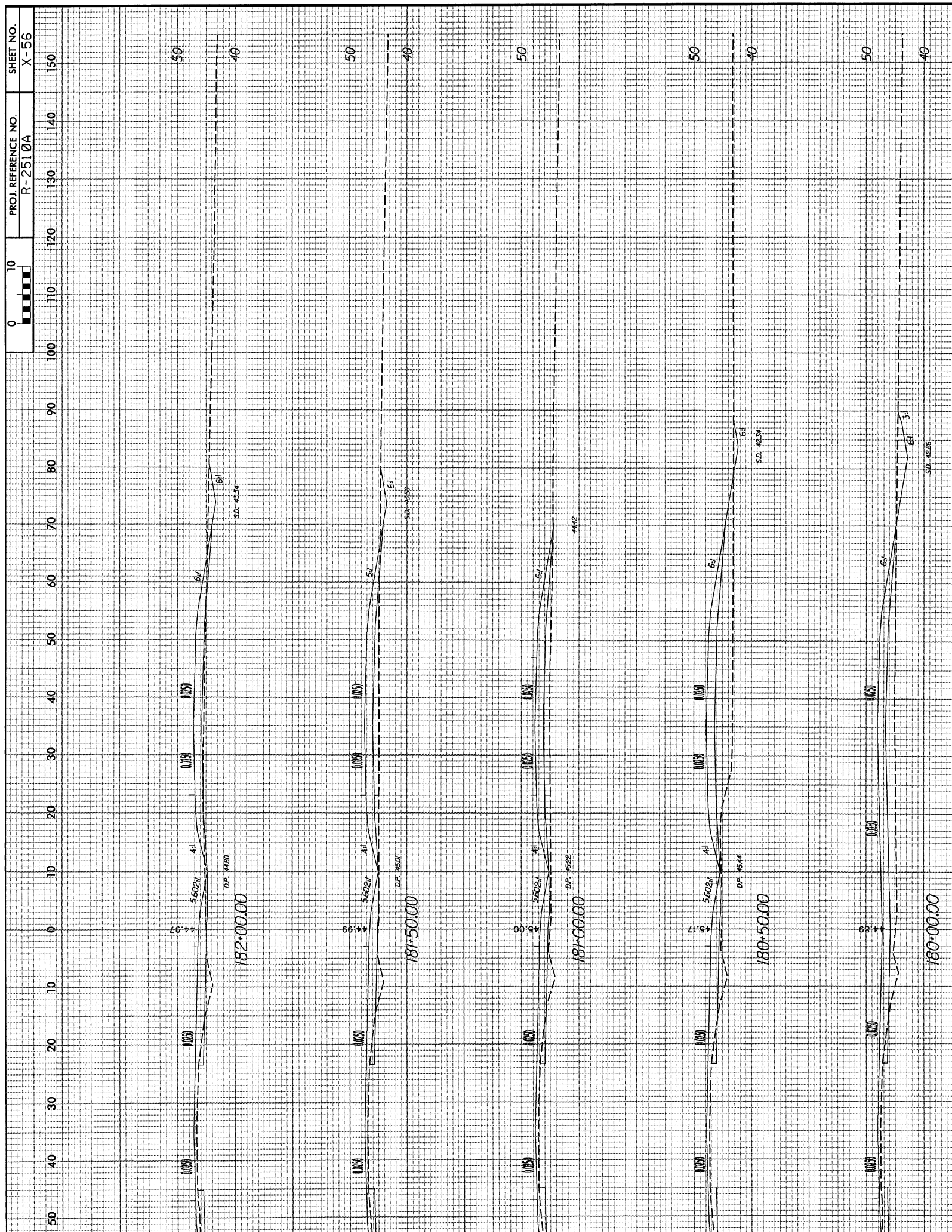


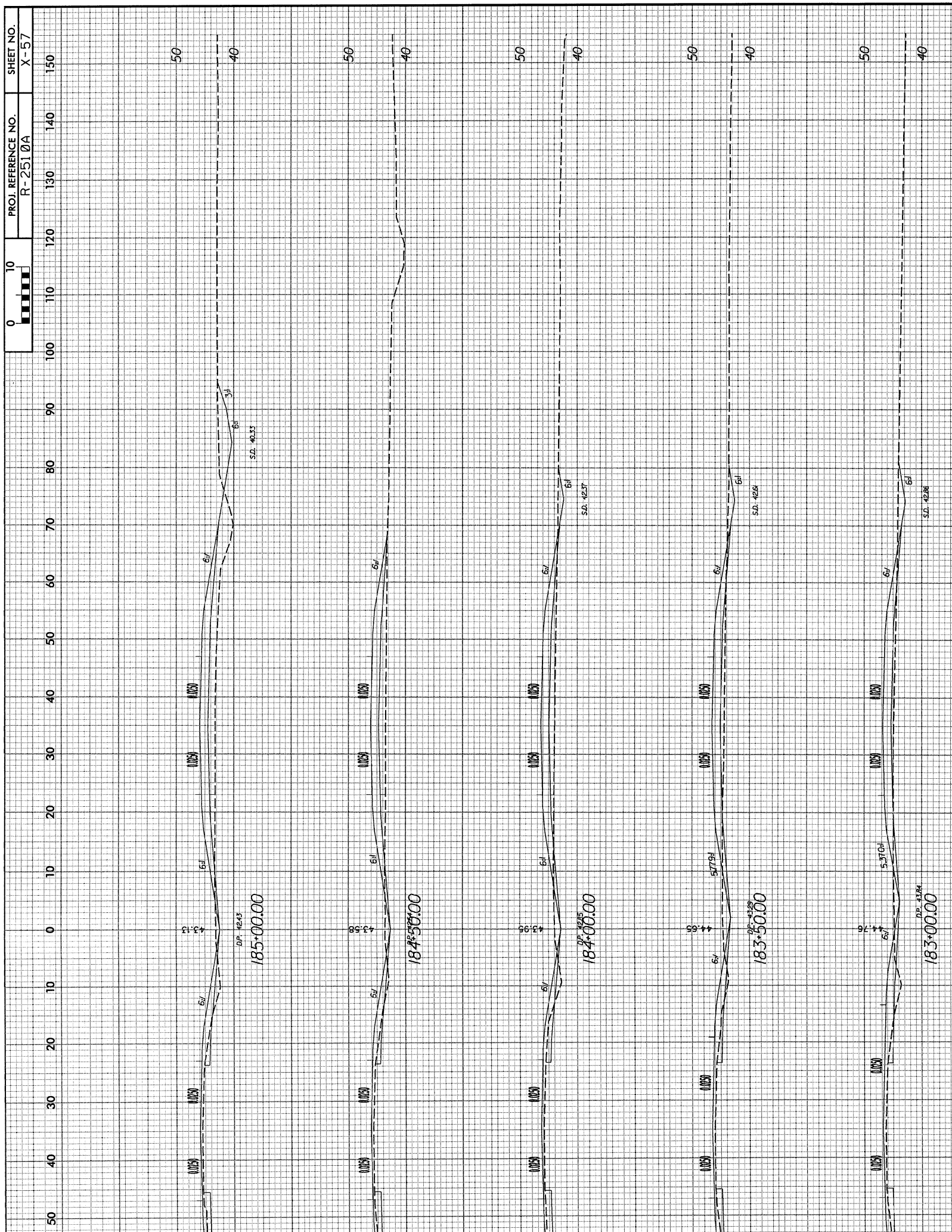


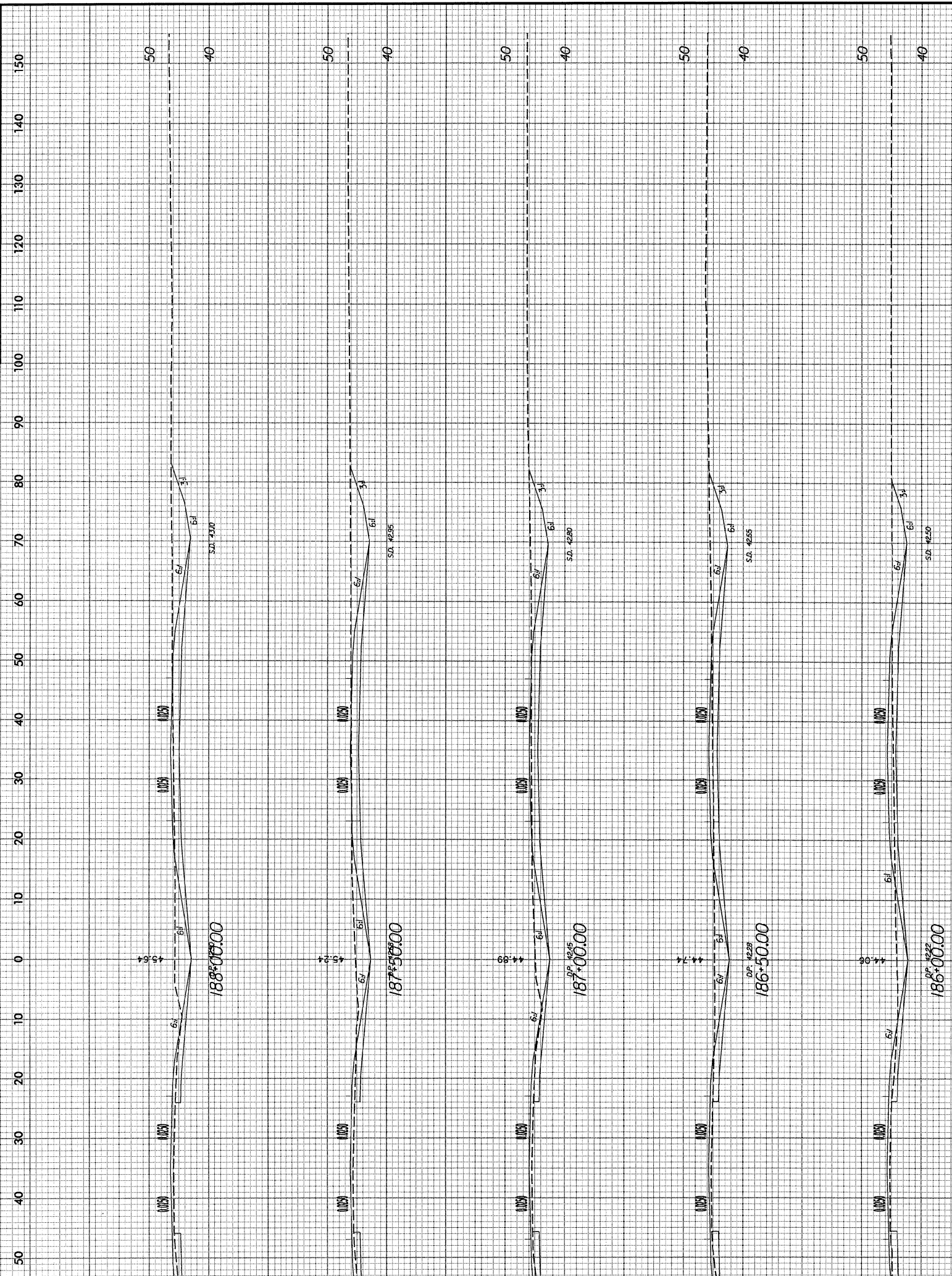


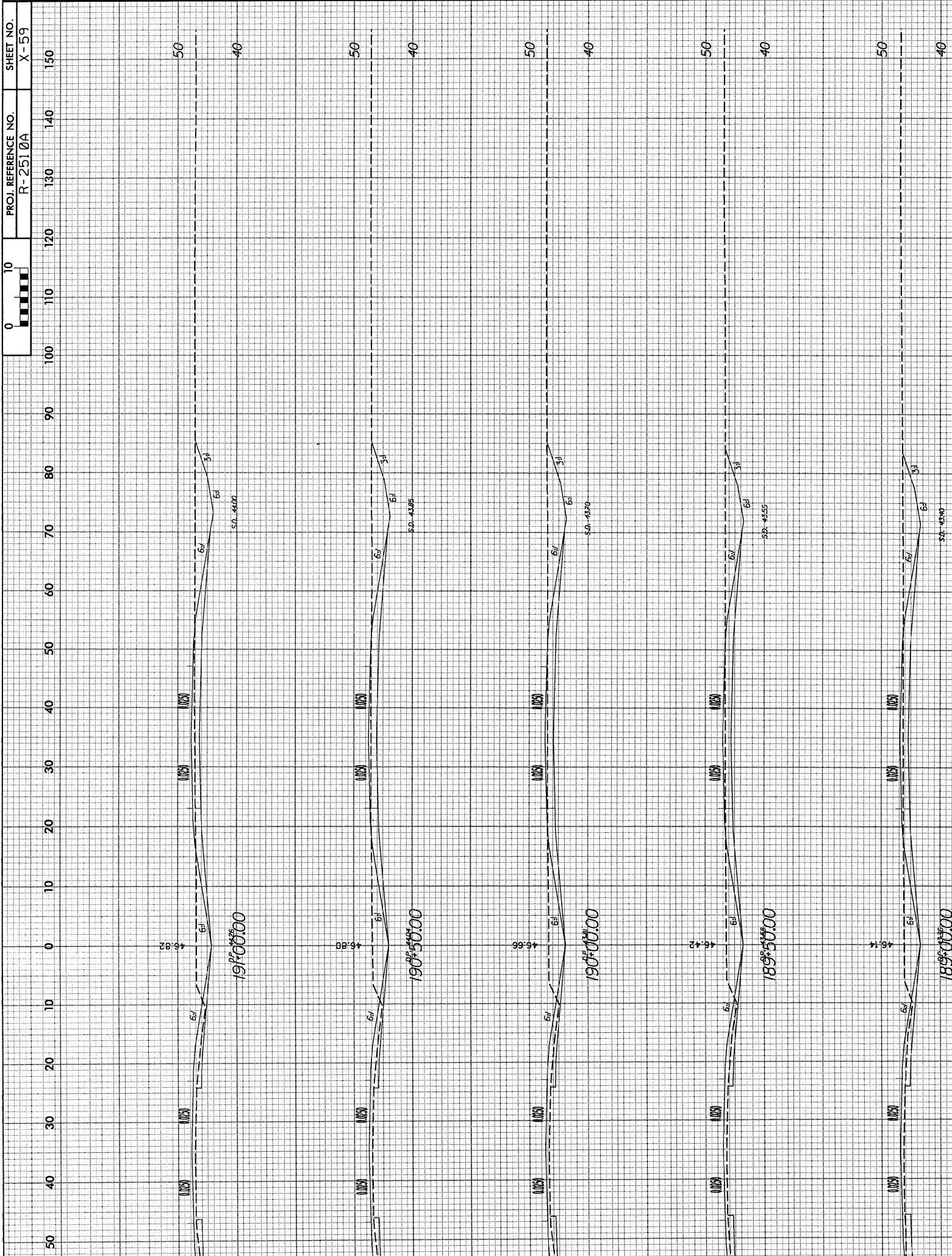


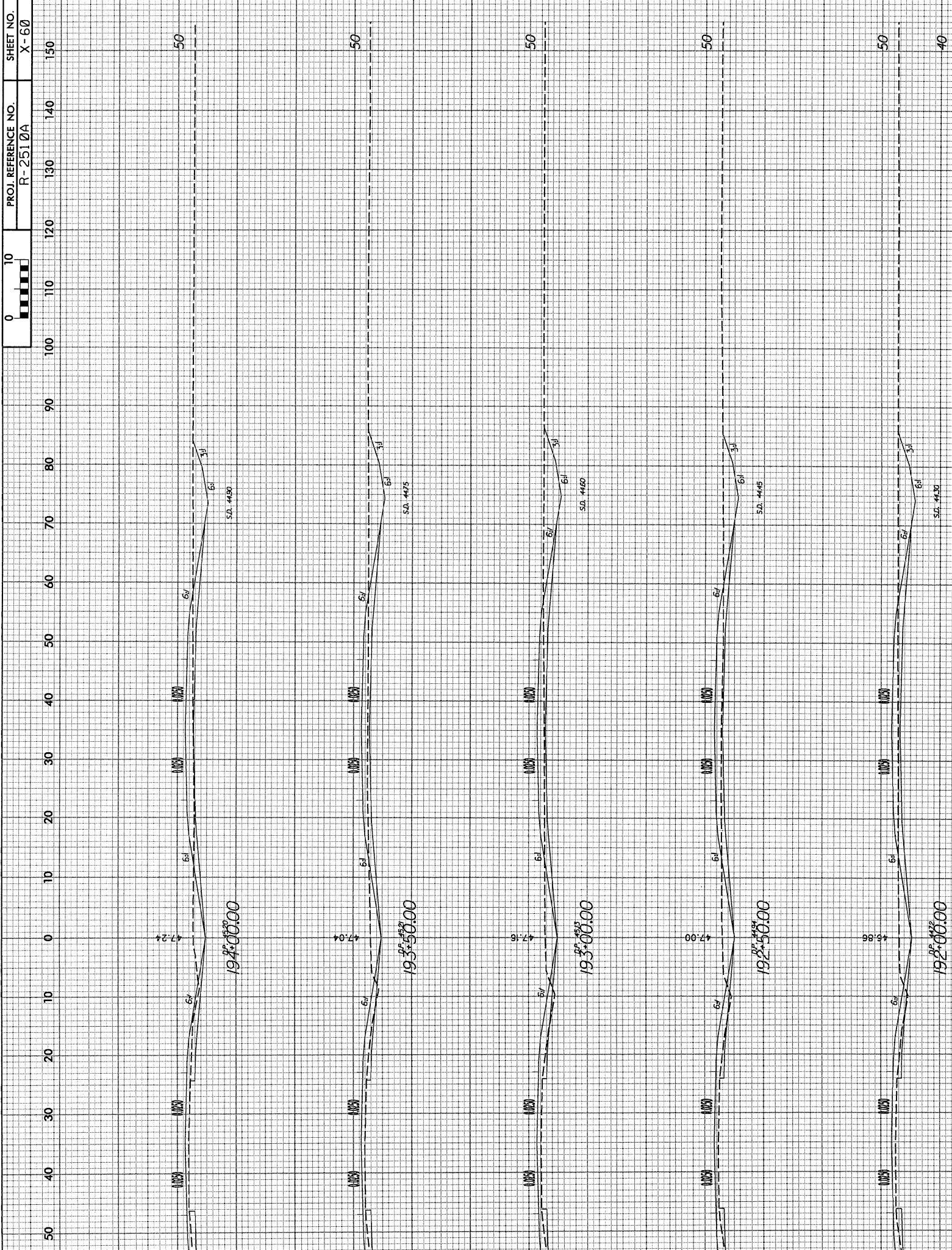


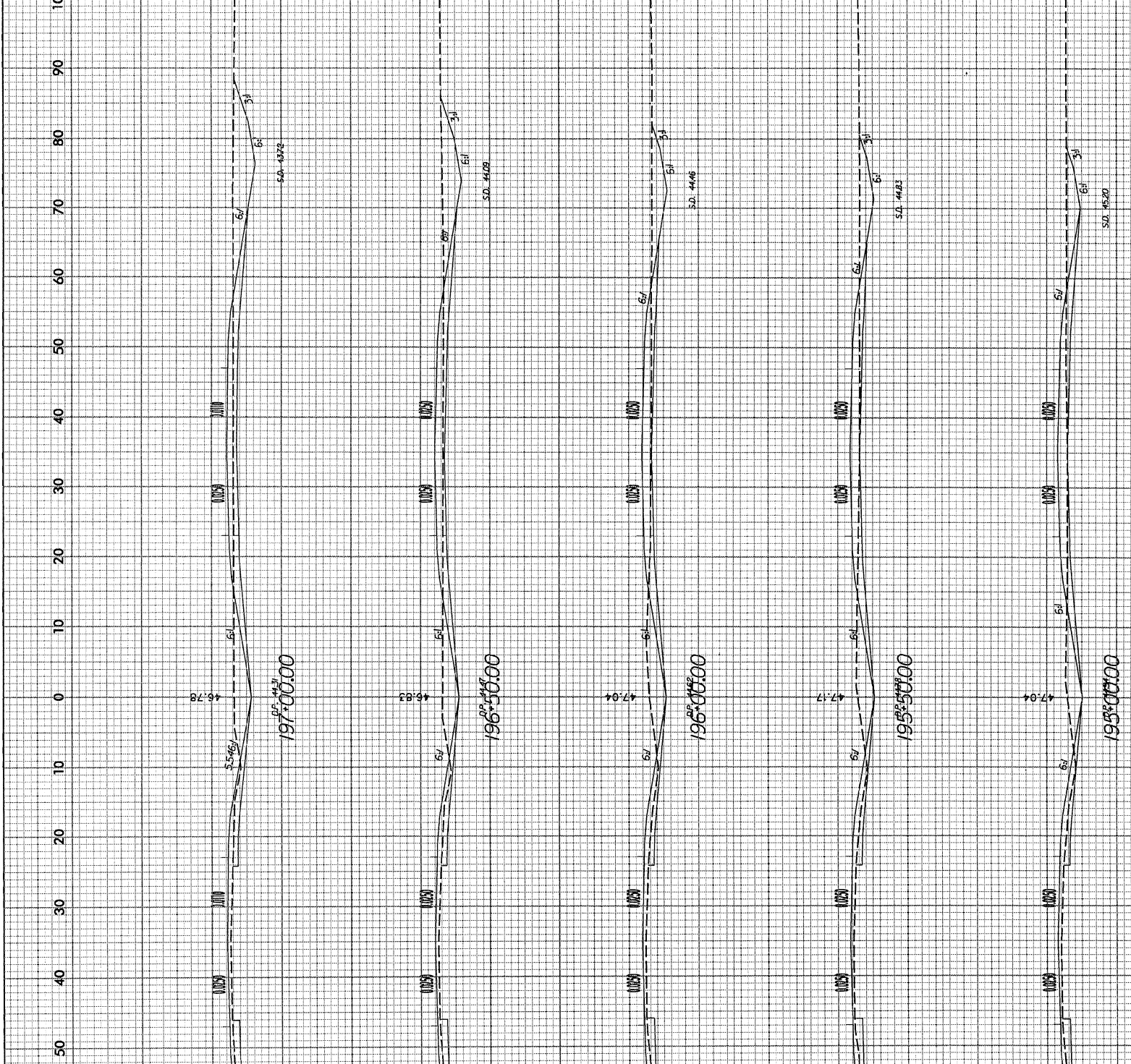


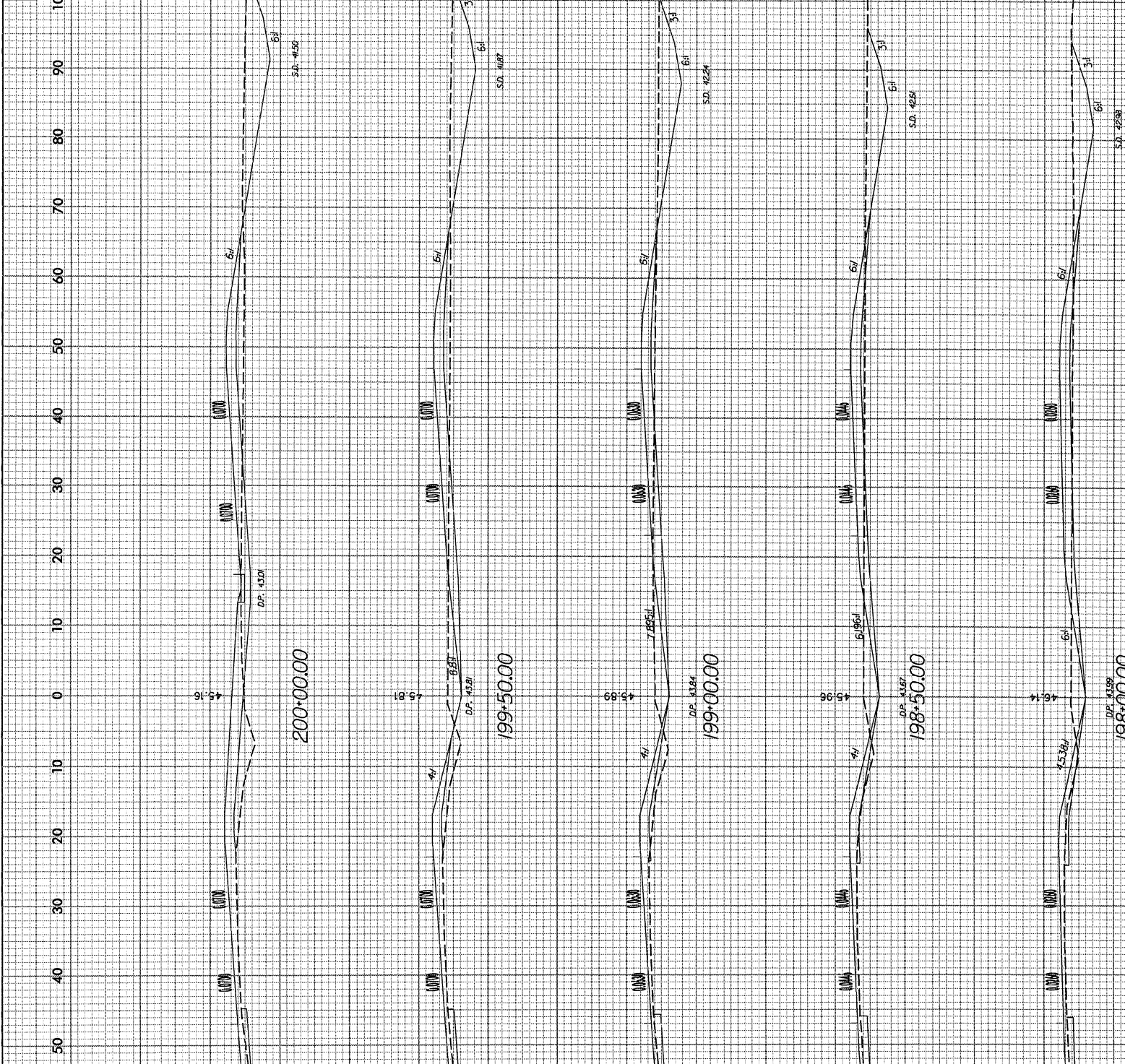


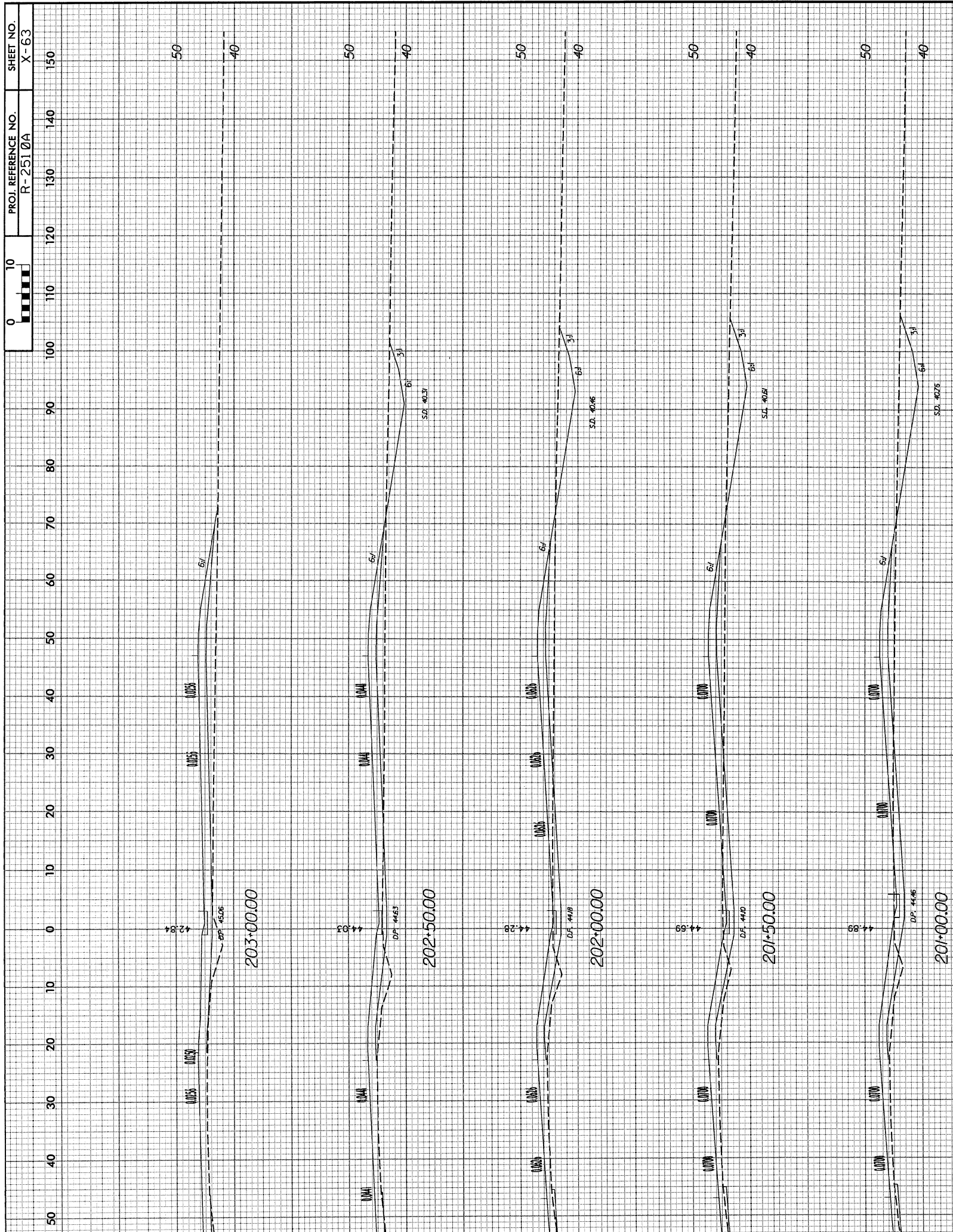


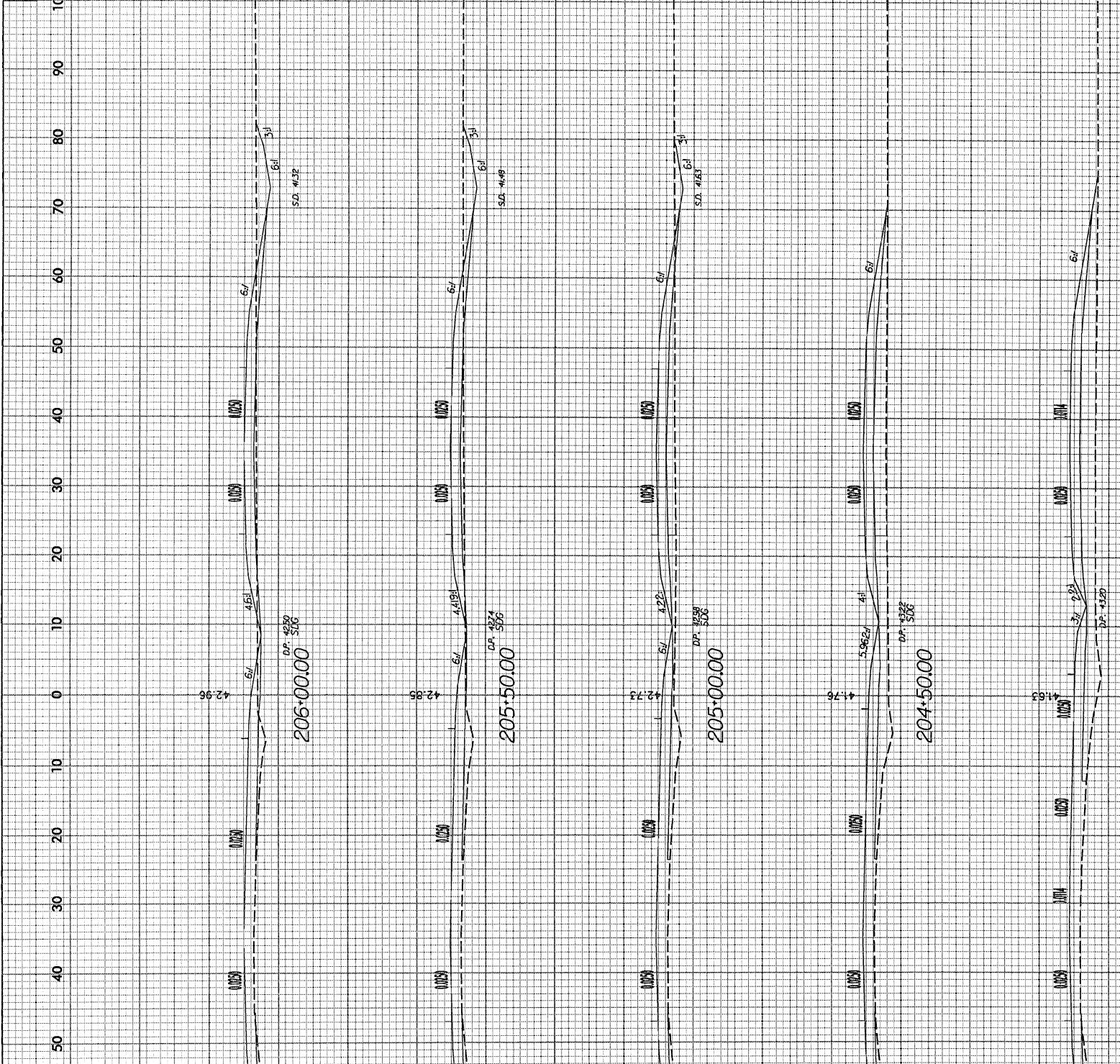


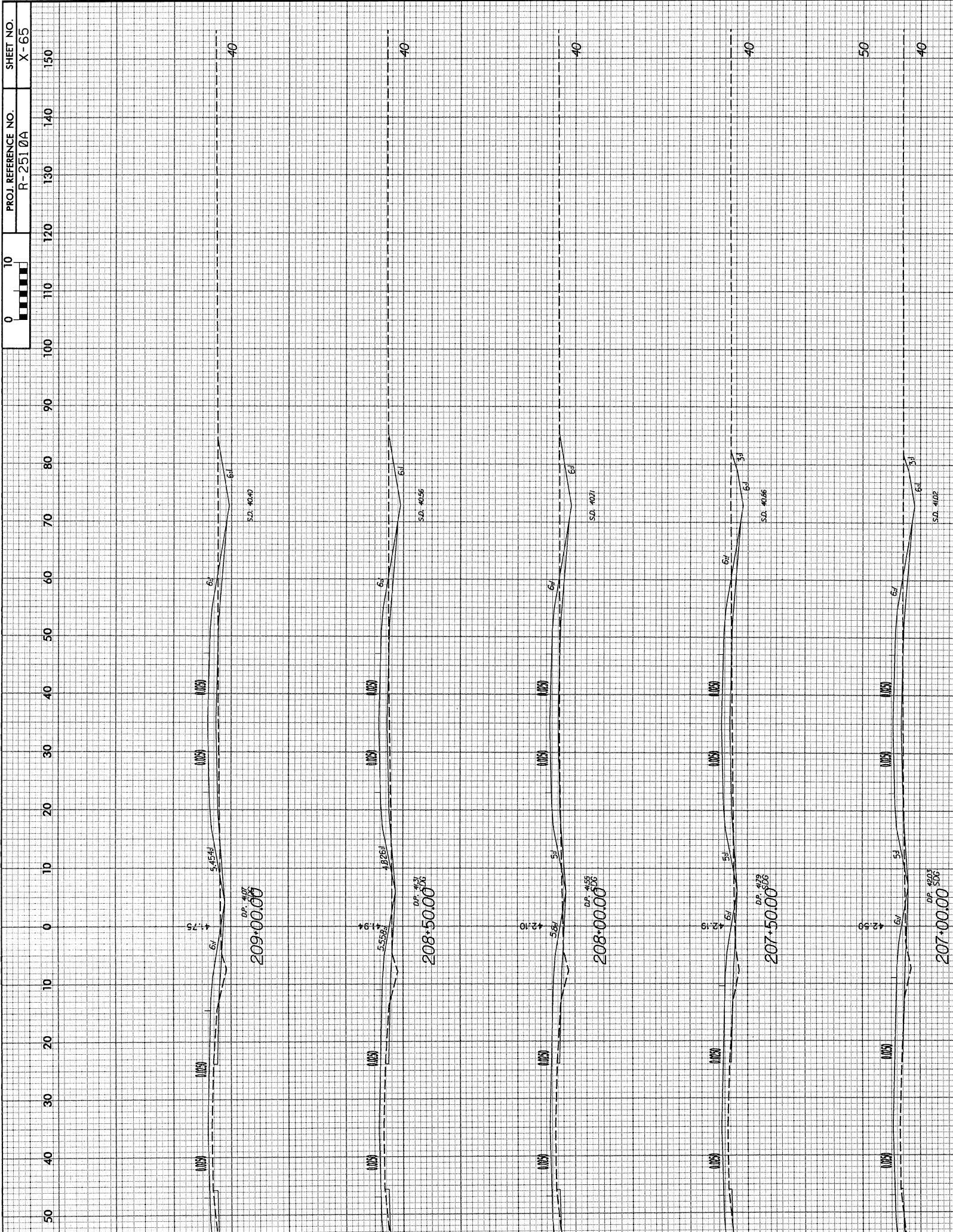


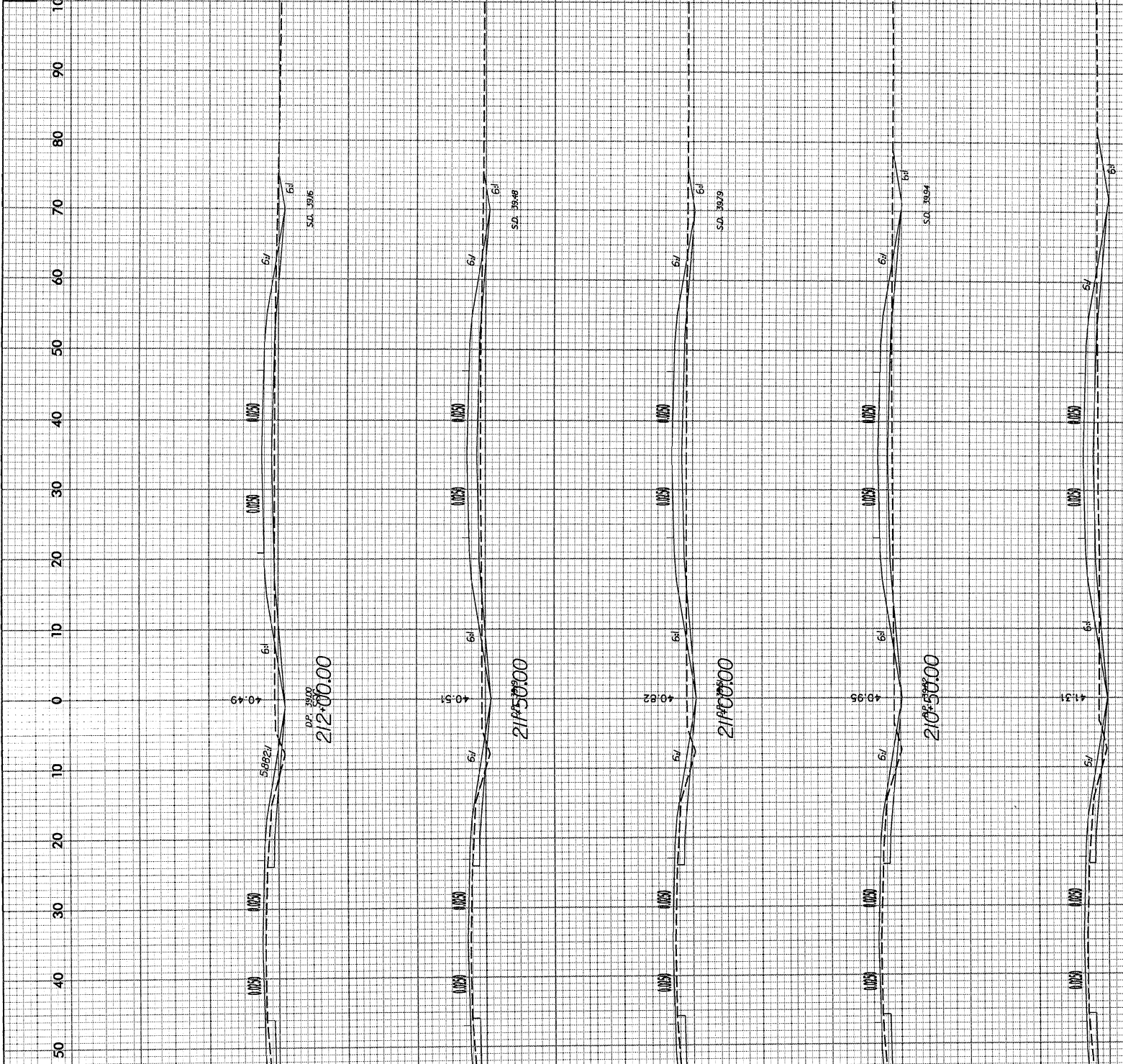


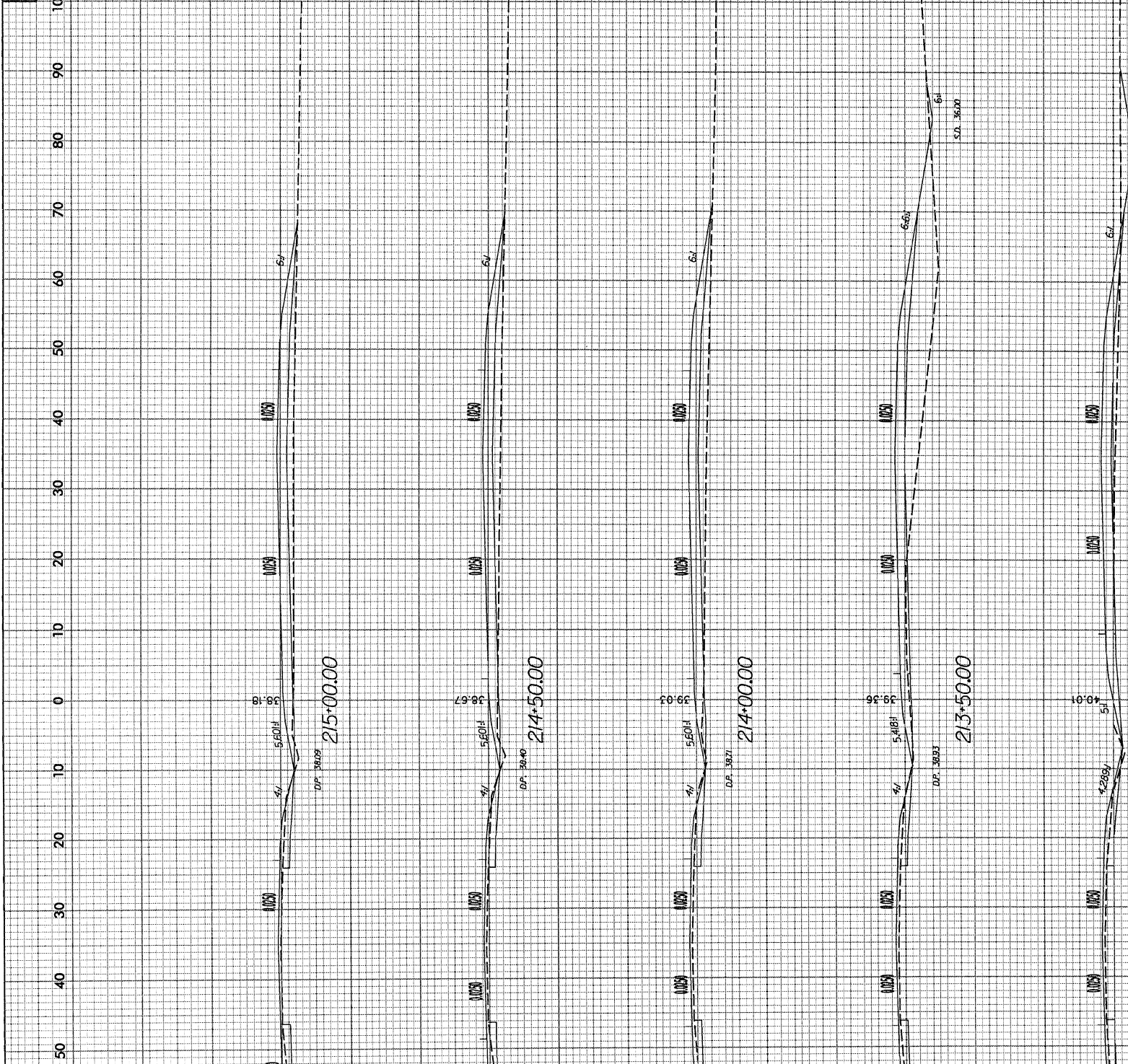


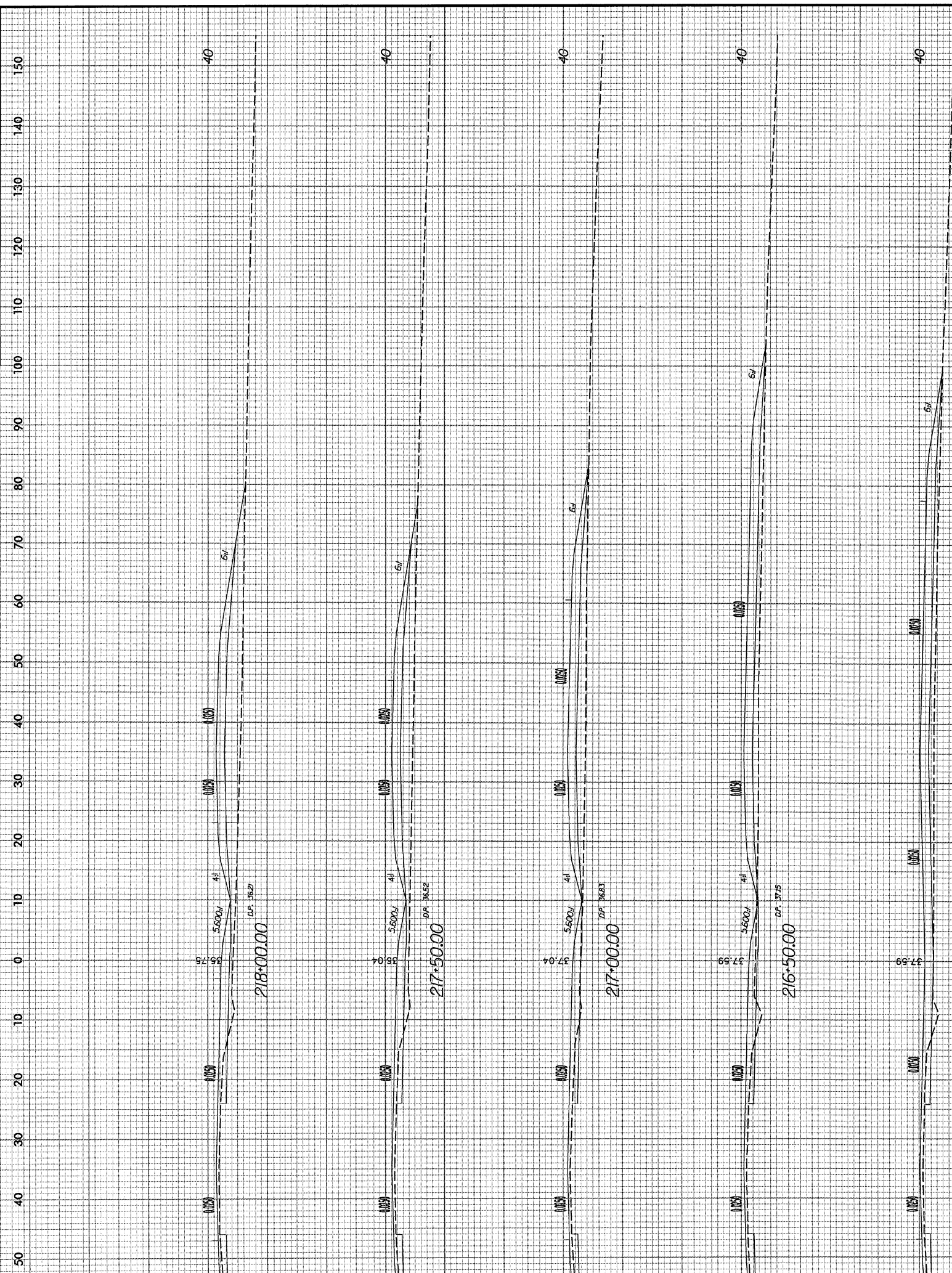


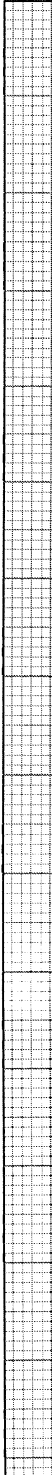


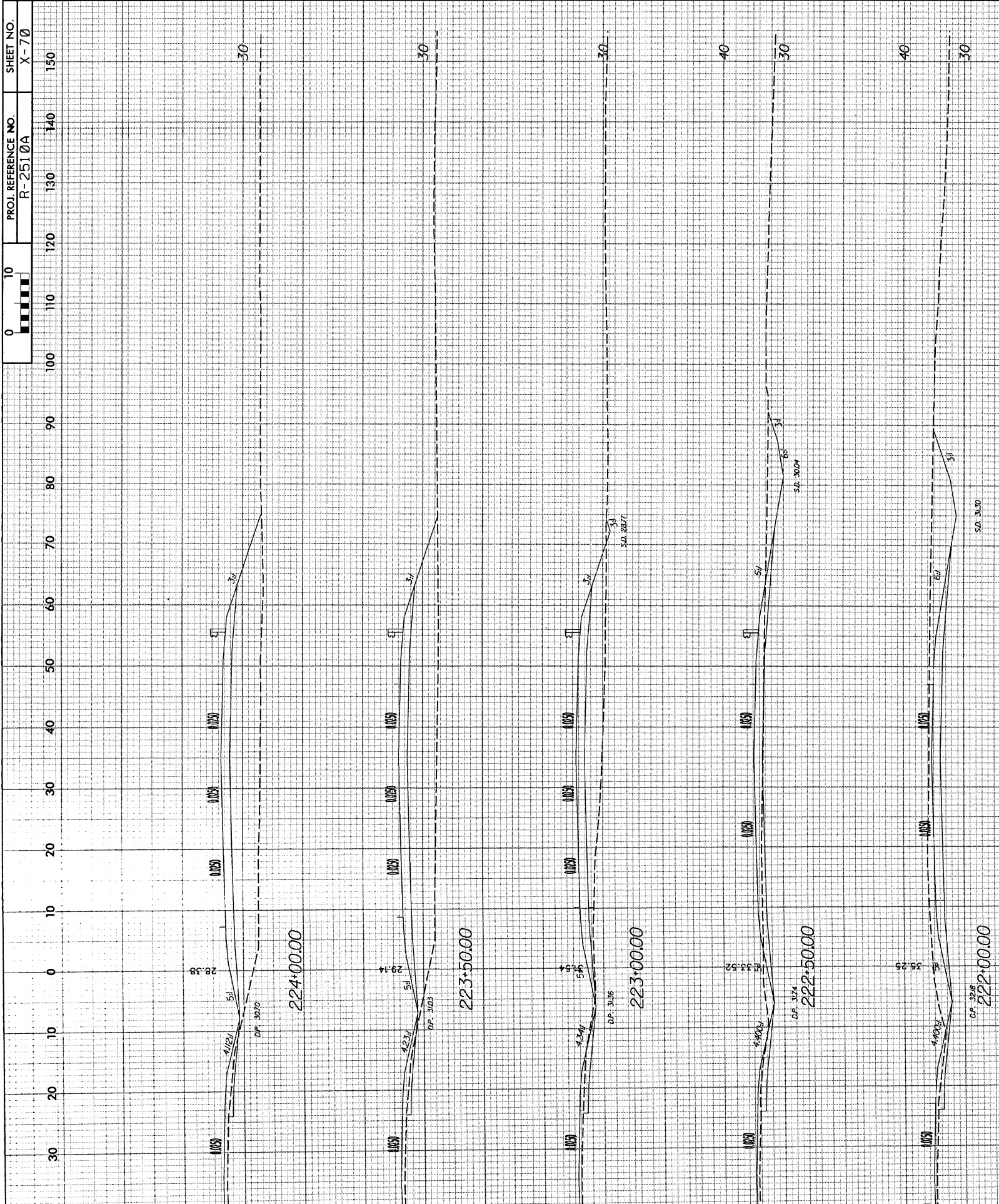


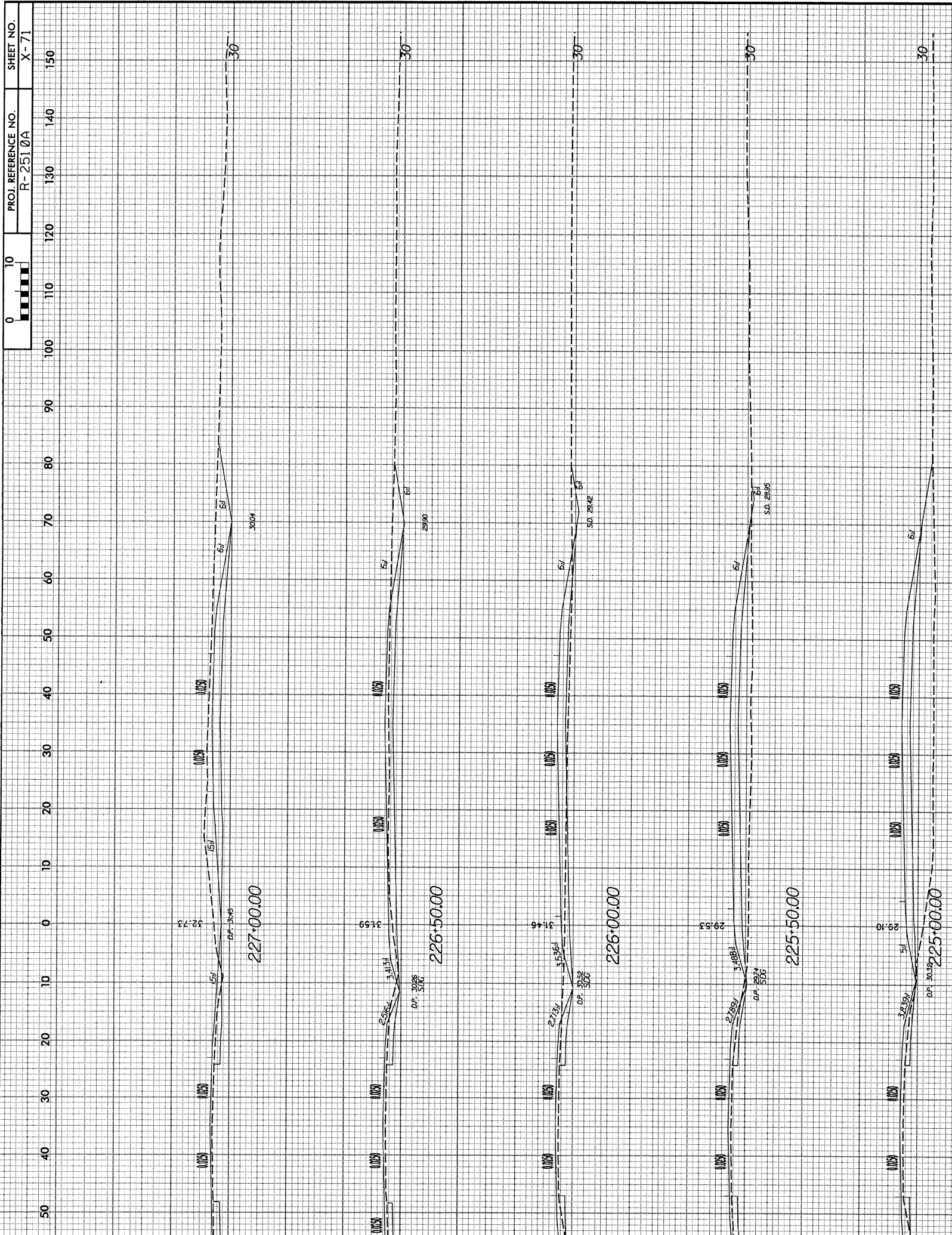


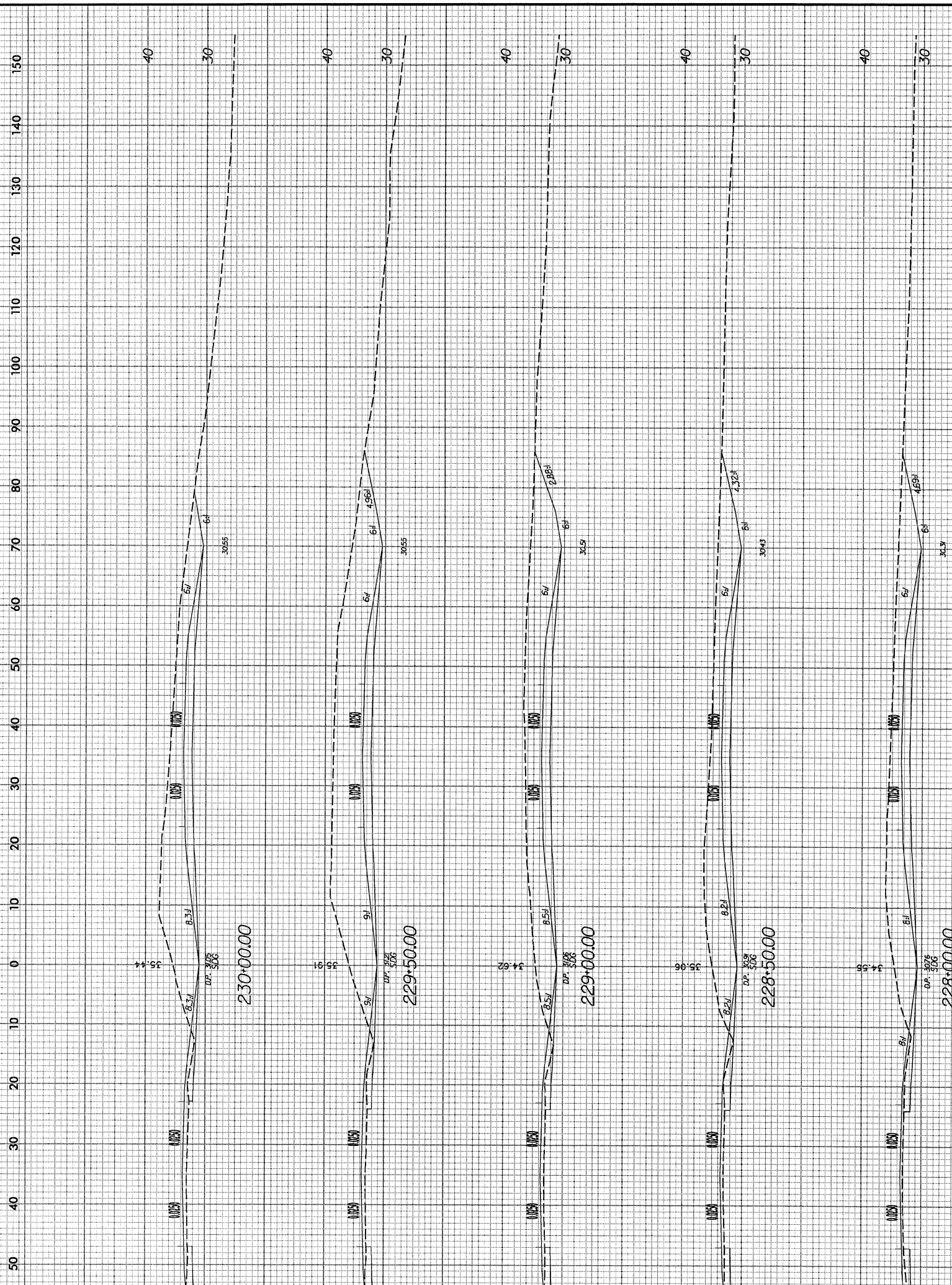


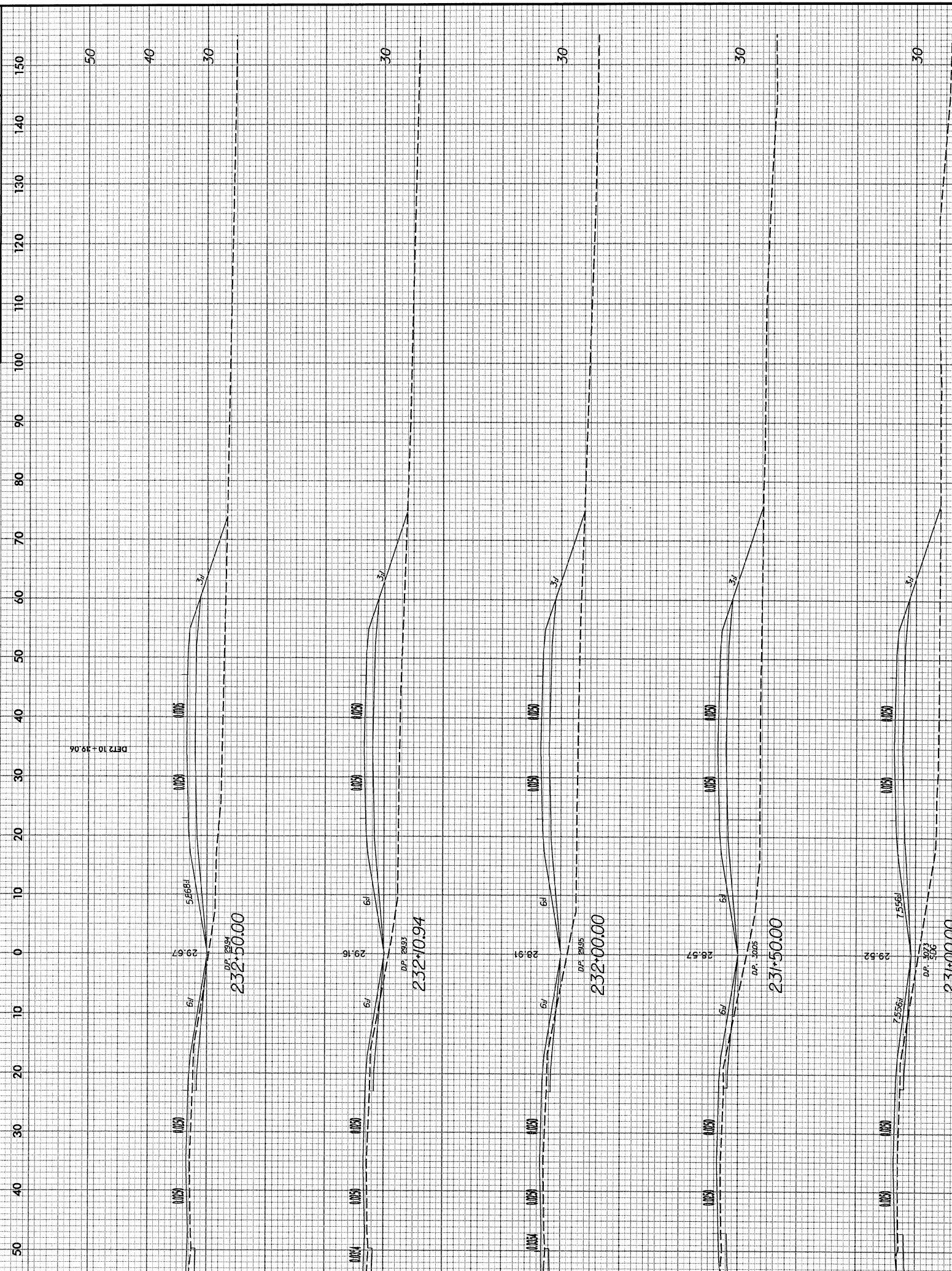


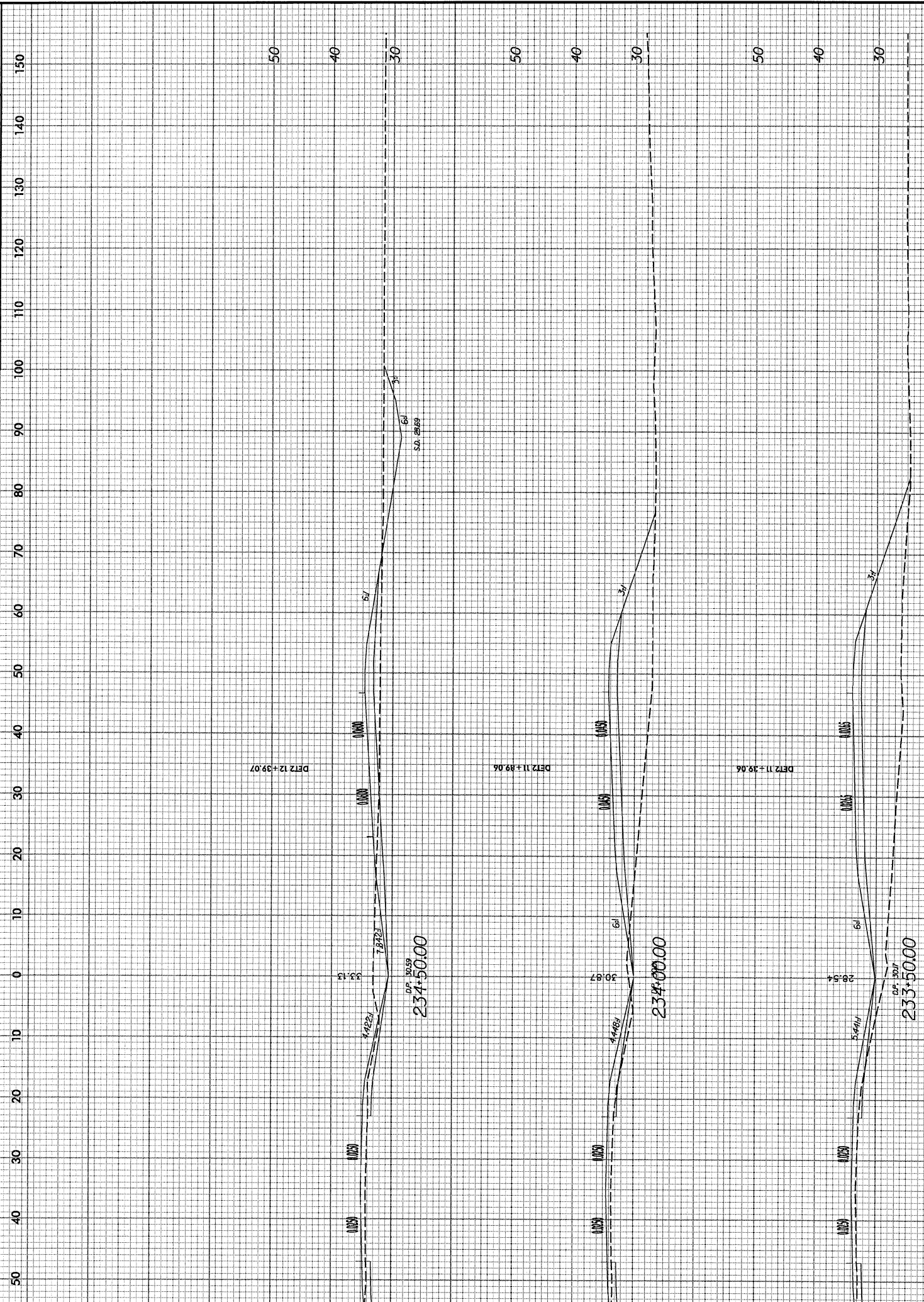


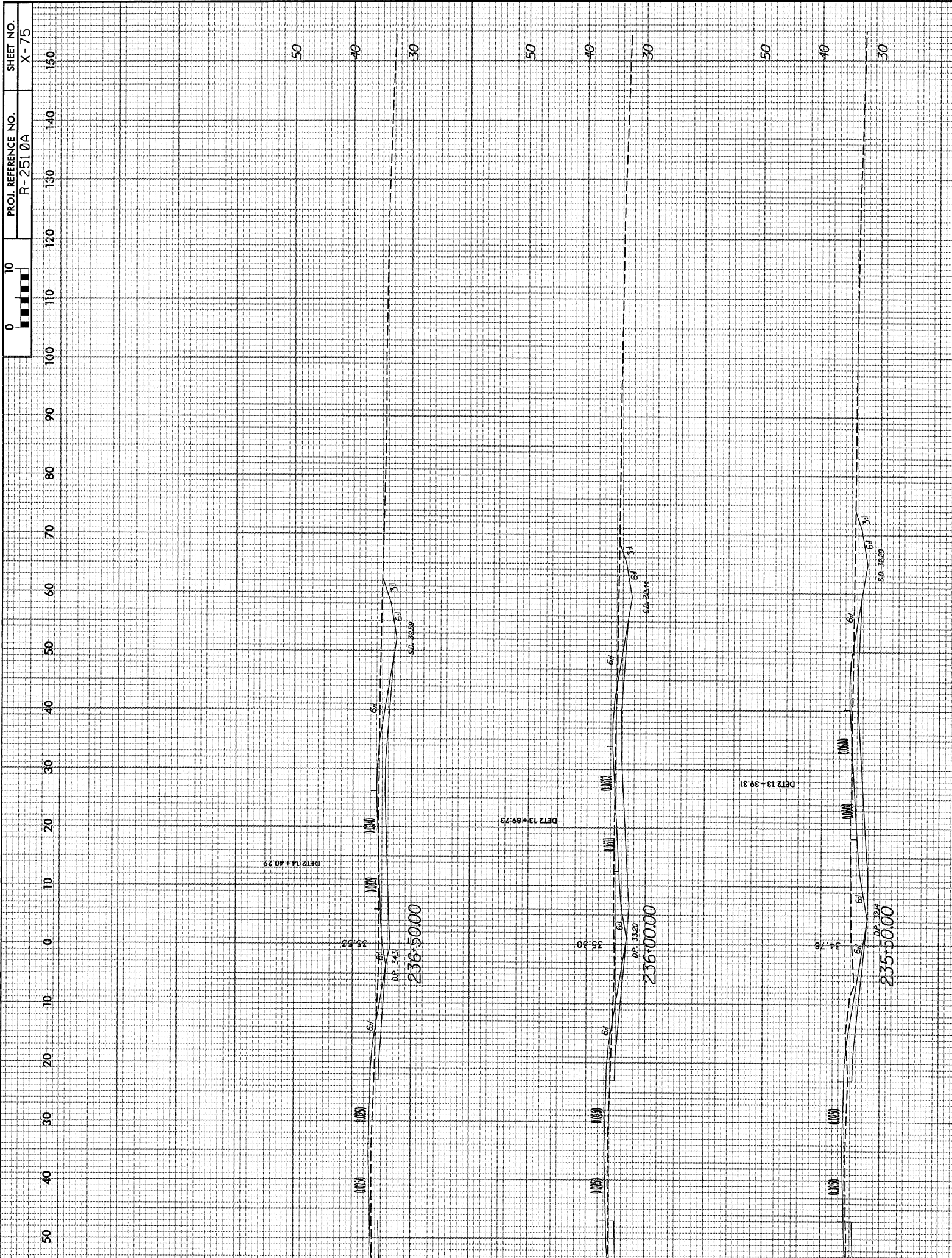


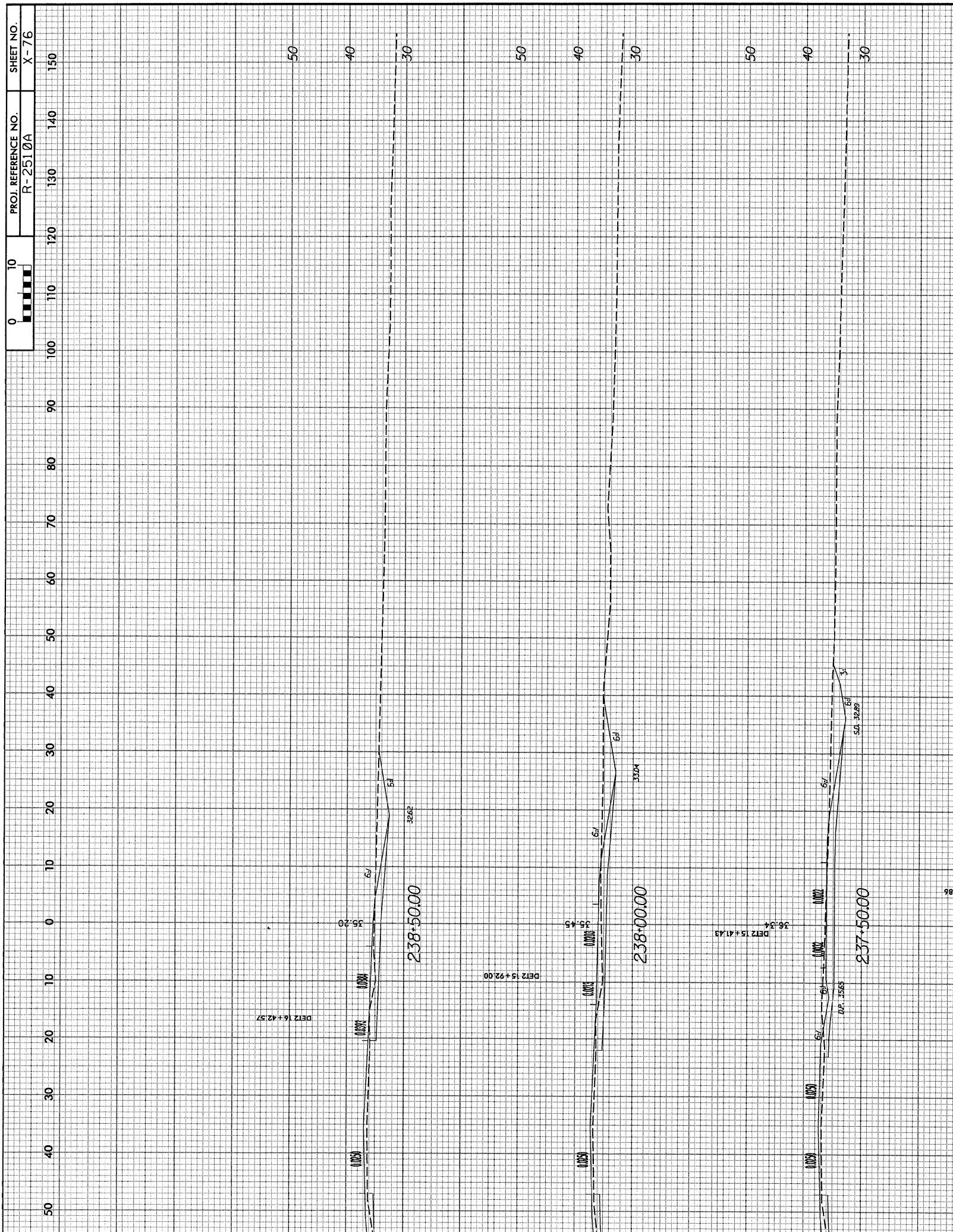


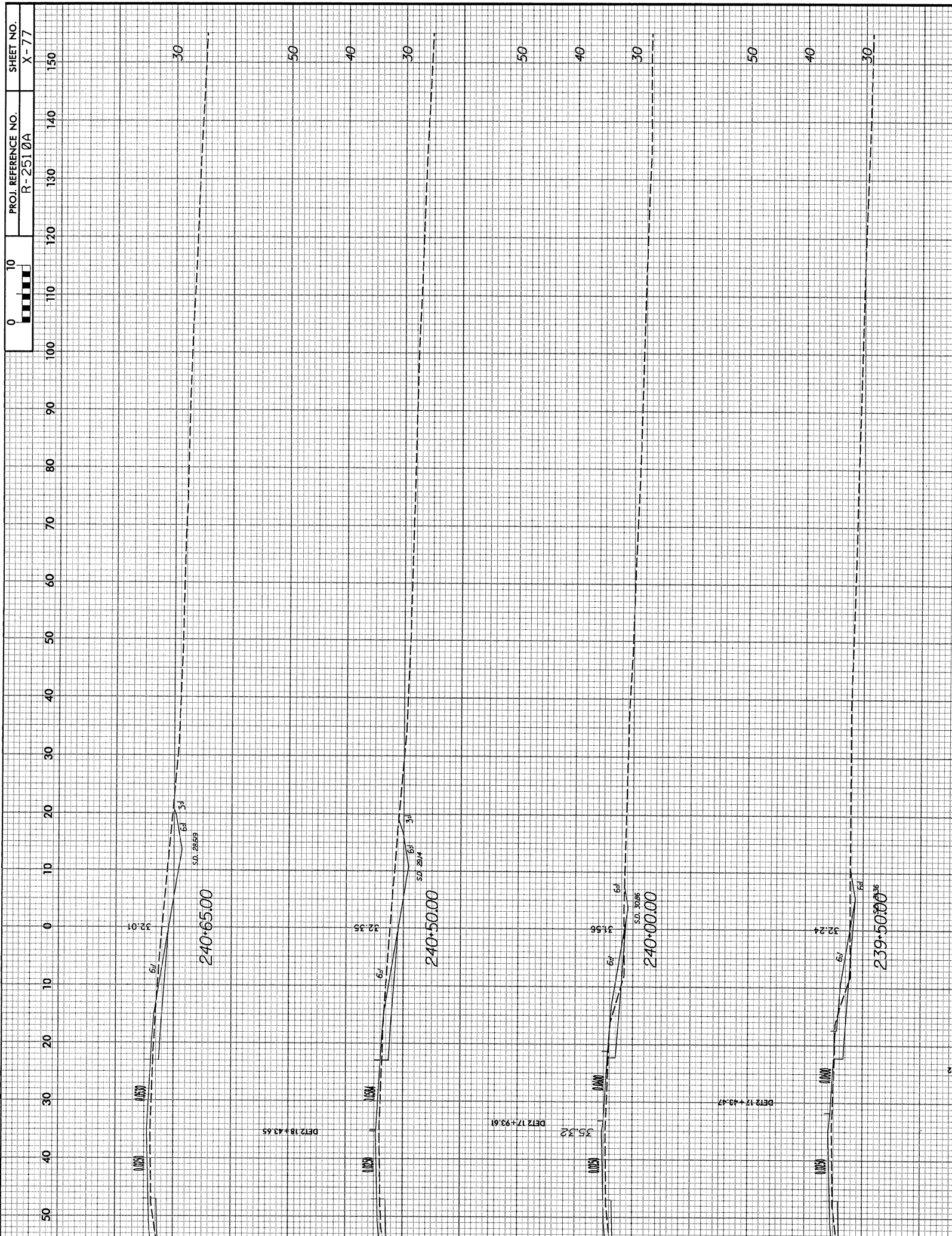






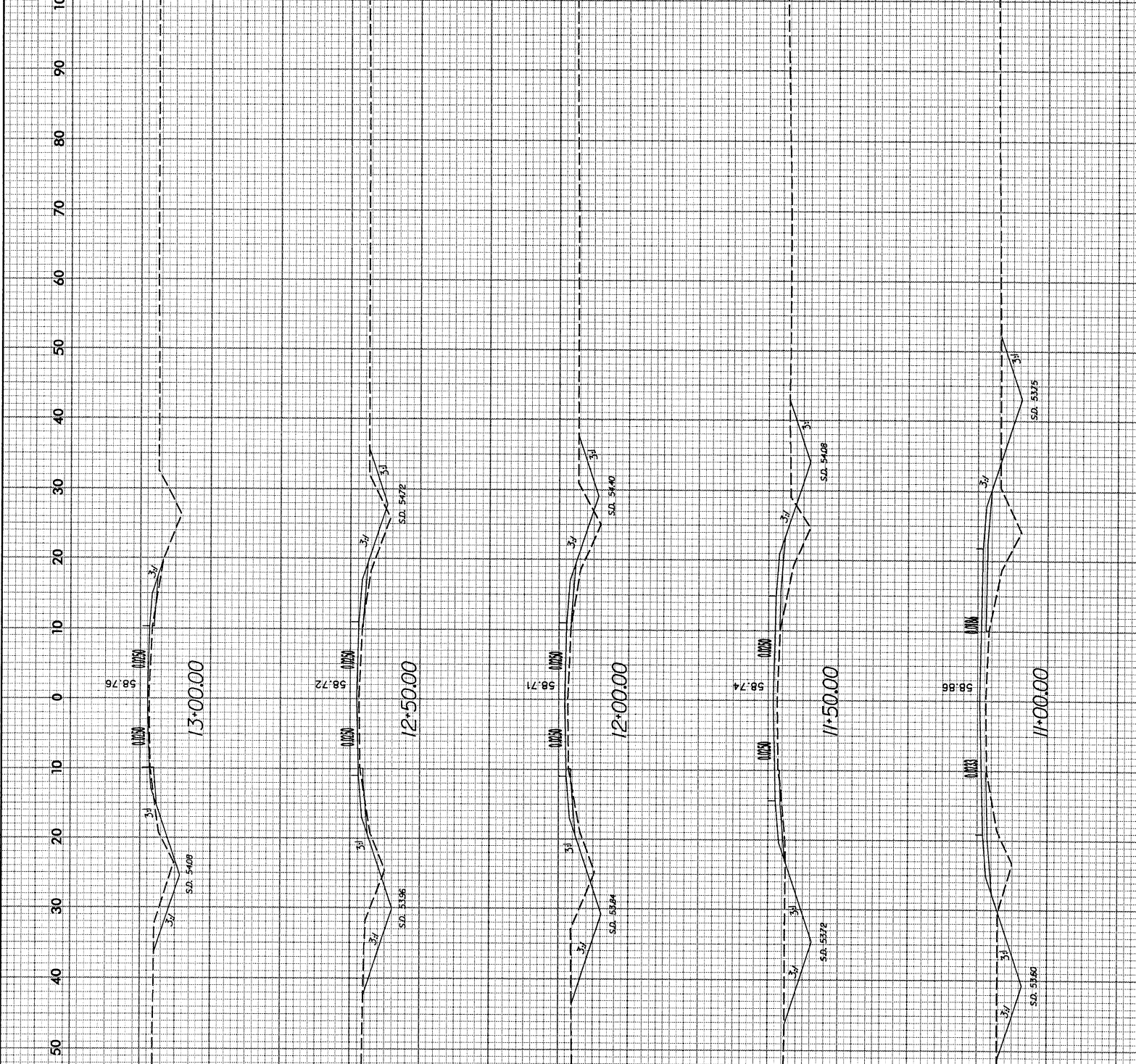


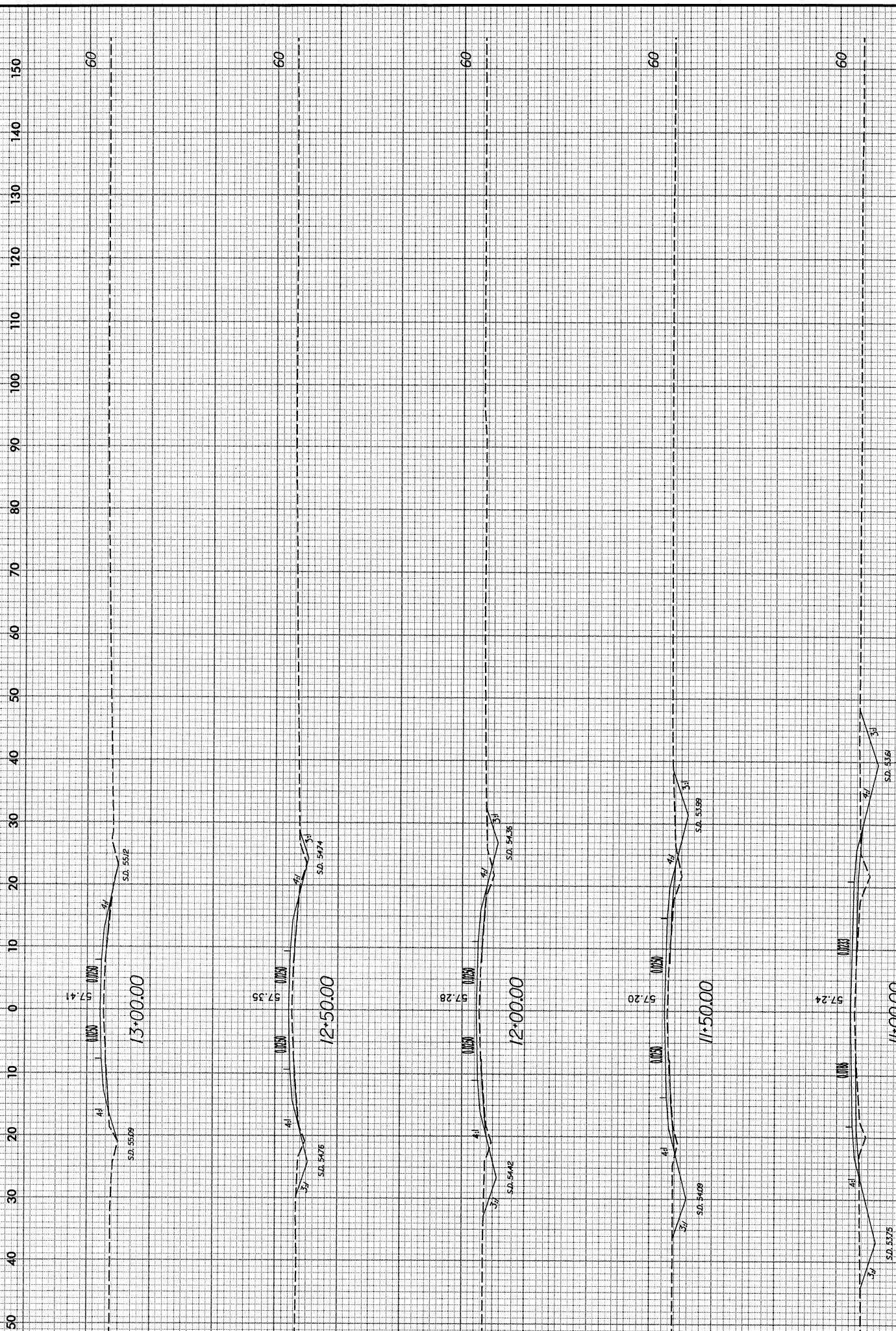


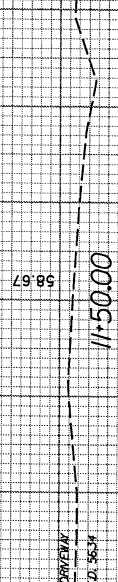
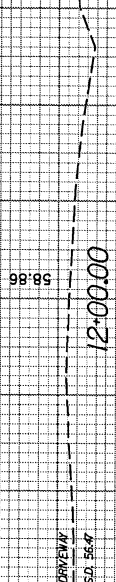
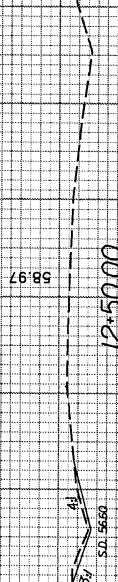
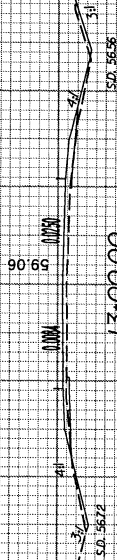
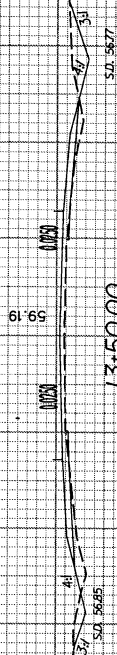


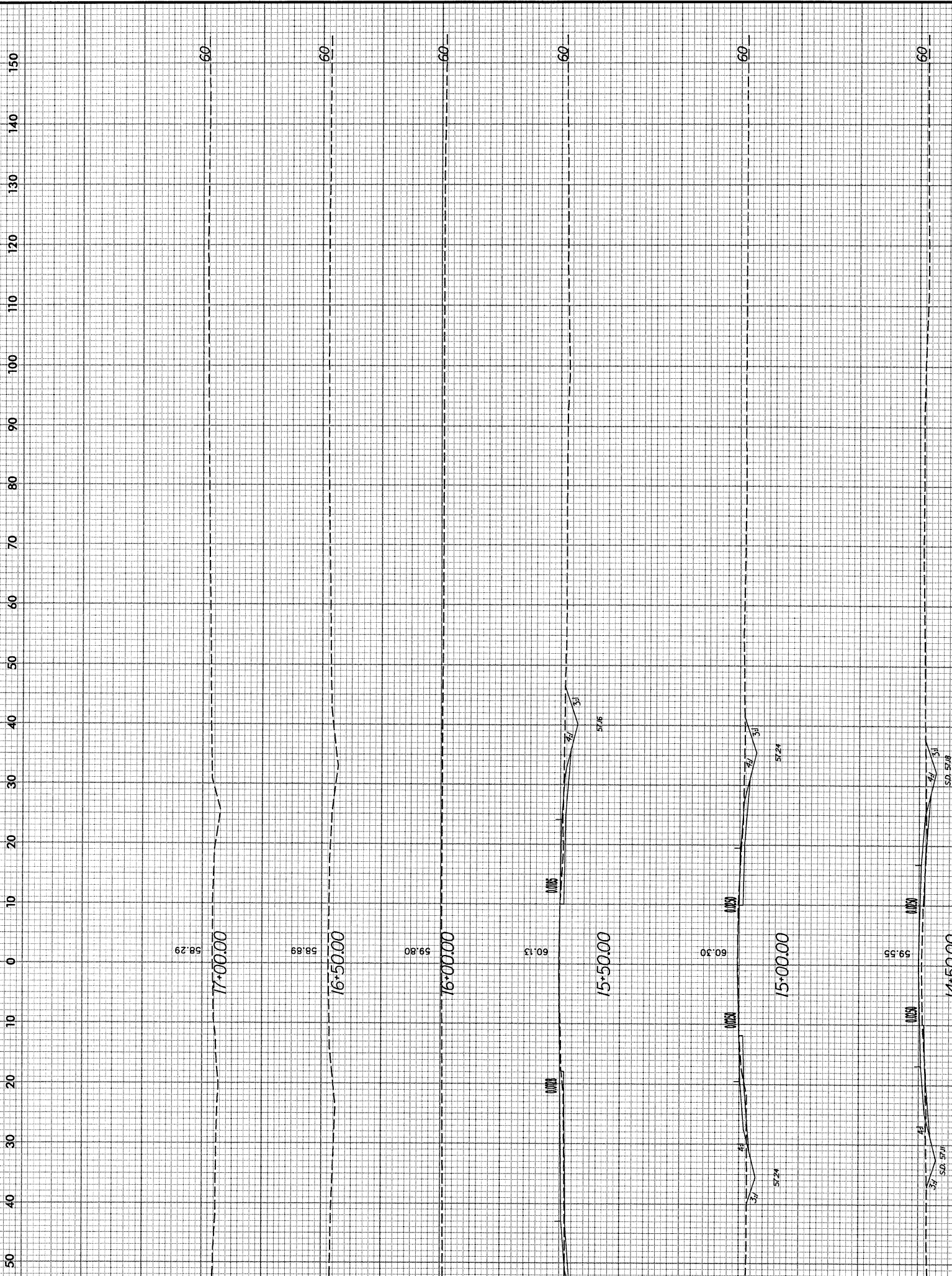
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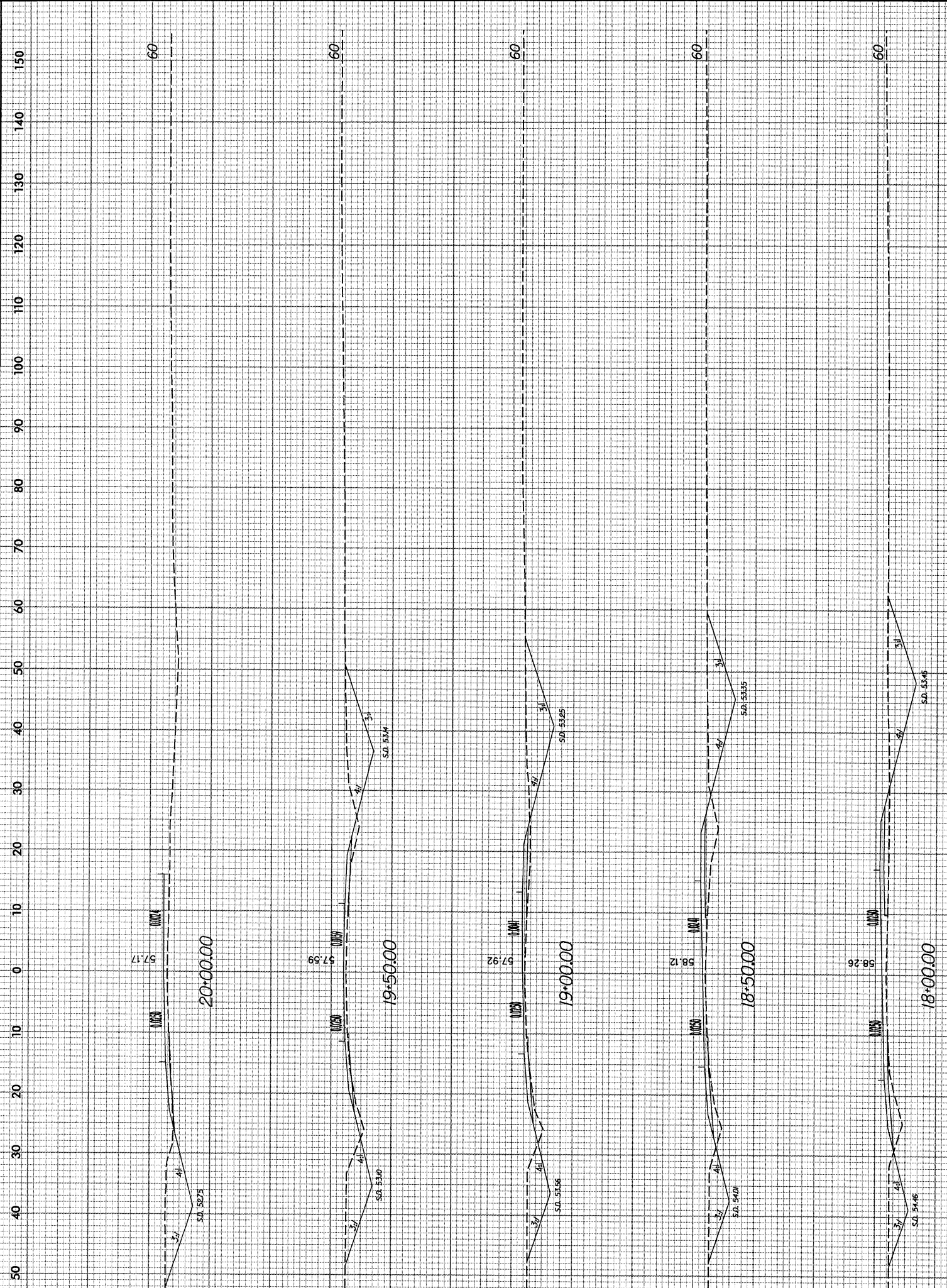


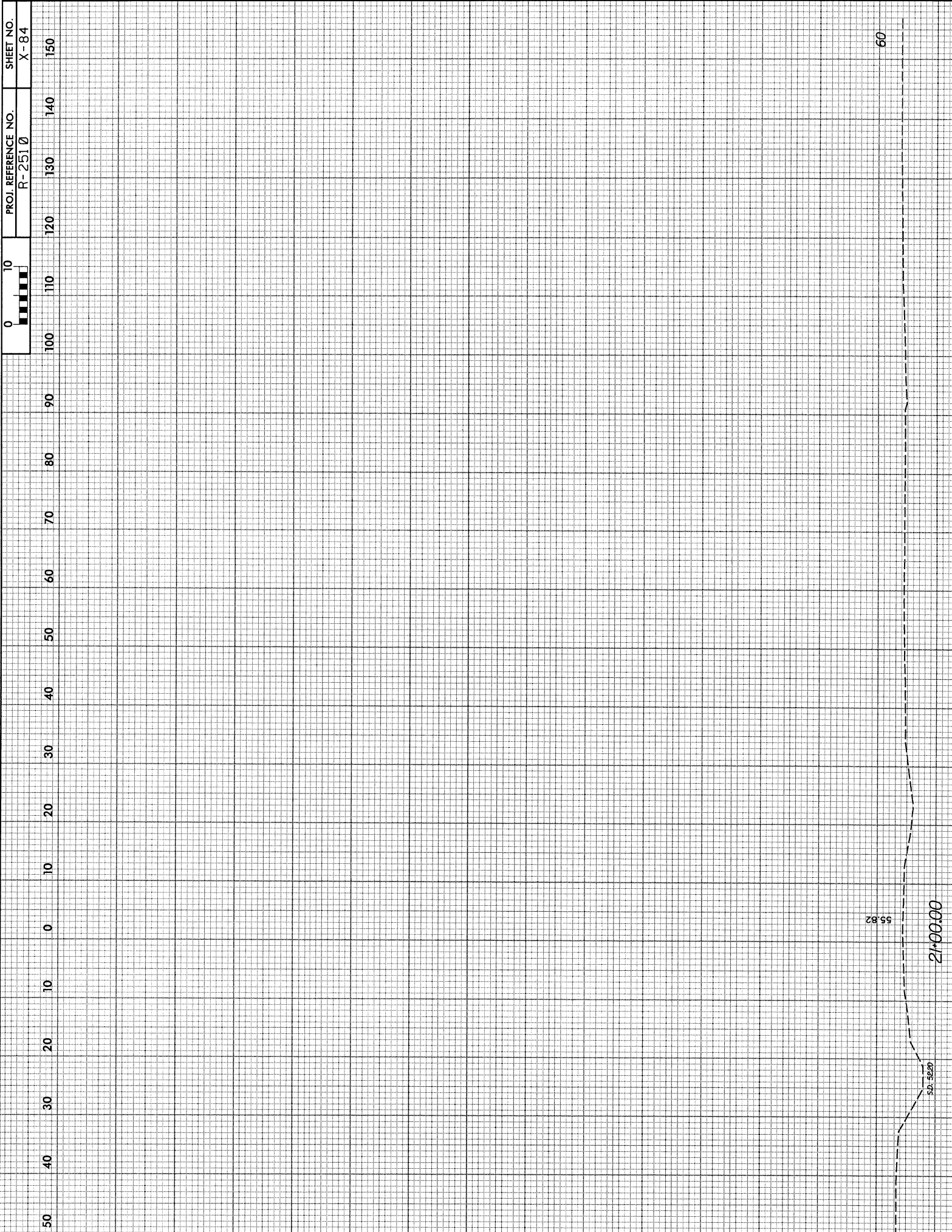












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