



**GOVERNO DO ESTADO DO RIO GRANDE DO SUL
SECRETARIA DE LOGÍSTICA E TRANSPORTES
DEPARTAMENTO AUTÔNOMO DE ESTRADAS DE RODAGEM**

READEQUAÇÃO DE PROJETO FINAL DE ENGENHARIA

**RODOVIA : ERS-715
TRECHO : SENTINELA DO SUL (FIM TRV) – CERRO GRANDE DO SUL
SEGMENTO : km 10,10 ao km 24,28
EXTENSÃO : 14,18 km
LOTE : 2
CÓDIGO SRE: 715 ERS 0030**

VOLUME ANEXO 1C – SEÇÕES TRANSVERSAIS

PROJETO FINAL DE ENGENHARIA

 **Magna**
MAIO/2023



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1. APRESENTAÇÃO

ERS-715 - PROJETO FINAL DE ENGENHARIA



1. APRESENTAÇÃO

A empresa Magna Engenharia Ltda, apresenta o **VOLUME ANEXO 1C – SEÇÕES TRANSVERSAIS – LOTE 2**, referente a “Elaboração de Readequação de Projeto Final de Engenharia”, para implantação e pavimentação asfáltica da rodovia ERS-715, trecho Sentinela do Sul (fim Trv.) – Cerro Grande do Sul, código SRE 715ERS0030, segmento do km 0,00 (4,00 – SRE) ao km 24,44 (28,44 – SRE), com uma extensão total de 24,44 km, conforme contrato celebrado com o Departamento Autônomo de Estradas de Rodagem - DAER/RS no Estado do Rio Grande do Sul.

Embora o SRE, indique uma extensão de 24,44km, os estudos realizados indicaram uma extensão total de 24,28 km, sendo previsto a divisão do segmento em dois lotes de construção, sendo o Lote 1 do km 0+000 ao km 10+100, com uma extensão total de 10,10 km e o Lote 2 do km 10+100 ao km 24+275 com uma extensão de 14,18 km.

Os materiais apresentados neste relatório tratam da readequação dos projetos existentes da ERS-715, os quais foram apresentados originalmente pela empresa ECOPLAN Engenharia Ltda em julho de 1998.

1.1 DADOS BÁSICOS DO CONTRATO

Os dados básicos relativos ao contrato são os seguintes:

- Rodovia: ERS-715
- Trecho : Sentinela do Sul (fim Trv.) – Cerro Grande do Sul
- Extensão Total: 24,44 km
- Número do Contrato: AJ/CD/012/19
- Data da Solicitação: 07/07/2021
- Objeto do Contrato: Elaboração de Readequação de Projeto Final de Engenharia
- Processo Nº: PROA 21043500236869
- Ordem Início Serviços: 07/07/2021
- Prazo de Execução: 120 dias para 10 Km e 180 dias para 14,28 Km

1.2 VOLUMES INTEGRANTES

A presente etapa do projeto do Lote 1 é composta pelos seguintes volumes:

Volume 1 – Relatório do Projeto: apresenta a memória descritiva e justificativa do projeto elaborado, com a descrição dos estudos realizados. São detalhados os critérios adotados na



elaboração do projeto, a metodologia empregada, os cálculos efetuados e as soluções propostas para a execução das obras.

Volume 1A – Notas de Serviço e Cálculo de Volumes: contém todas as notas de serviços de terraplenagem, bem como o cálculo dos volumes de terraplenagem e os quantitativos da seção transversal.

Volume 1B – Estudos Geotécnicos: apresenta os resultados das sondagens, ensaios e análises realizados e demais elementos dos estudos geotécnicos.

Volume 1C – Seções Transversais: contém as seções transversais desenhadas e gabaritadas na escala 1:200.

Volume 1D – Elementos de Topografia: documento em meio digital contendo todos os dados do levantamento topográfico.

Volume 2 – Projeto de Execução: apresenta a documentação gráfica ilustrativa do projeto elaborado para toda a obra.

Volume 4 – Orçamento - apresenta o custo de todos os serviços e obras necessárias à execução do projeto executivo.

1.3 IDENTIFICAÇÃO DO TRECHO NO SISTEMA RODOVIÁRIO ESTADUAL

A rodovia ERS-715 tem início junto ao Entroncamento BR-116, e finaliza junto ao município de Cerro Grande do Sul. Ao longo dos seus 24, km esta rodovia interliga a BR-116/ERS-717 (p/Camaquã) com o Município de Cerro Grande do Sul. A sua diretriz se desenvolve aproximadamente no sentido leste - oeste.

O trecho rodoviário objeto do presente projeto corresponde ao segmento final da ERS-715, desde o fim do trevo do município de Sentinela do Sul (km 4,00 - SRE), até o município de Cerro Grande do Sul (km 28,44-SRE), com uma extensão total de 24,44 km.

O quadro a seguir identifica o trecho em estudo de acordo com o Sistema Rodoviário Estadual (SRE), atualizado até o mês junho/2021.

Código SRE	Início do Segmento	Final do Segmento	Extensão (km)	Situação Física
715 ERS 0030	Sentinela do Sul	Cerro Grande do Sul	24,44	Em Obras de Pavimentação - EOP



O segmento objeto do presente projeto faz parte da malha rodoviária sob jurisdição da 3ª Superintendência Regional do DAER/RS, sediada em Santa Cruz do Sul/RS.

1.4 EQUIPE TÉCNICA

Responsáveis Técnicos

- Eng. Rodrigo da Silva Gazen CREA 97364/D-RS
- Eng. Carlos Moacir Dri Consiglio CREA 71360/D-RS

Coordenador de Projeto

- Eng. Carlos Eduardo Flores Urbano CREA 145929/D-RS

Estudos Geológicos

- Geólogo Eduardo Favaretto Antunes - CREA 243717/D-RS
- Eng. André Luiz Hebmuller CREA 087145/D-RS

Estudos Topográficos

- Eng. Luiz Carlos Marques Becker CREA 227520/D-RS

Estudos Geotécnicos

- Eng. André Luiz Hebmuller CREA 087145/D-RS

Estudos Hidrológicos

- Eng. Renan May Chaves CREA 236588/D-RS

Estudos de Tráfego:

- Eng. Pedro Picada Gomes CREA 228845/D-RS

Projeto Geométrico

- Eng. Vinícius Isoppo Rodrigues CREA 206507/D-RS

Projeto Terraplenagem

- Eng. Vinícius Isoppo Rodrigues CREA 206507/D-RS
- Eng. Marcos Roberto Maciel Pereira CREA 212573/D-RS

Projeto de Pavimentação

- Eng. Pedro Picada Gomes CREA 228845/D-RS
- Eng. André Luiz Hebmuller CREA 087145/D-RS

Projeto de Drenagem e Obras de Arte Correntes

- Eng. Renan May Chaves CREA 236588/D-RS

**Projeto de Interseções, Retornos e Acessos**

- Eng. Vinícius Isoppo Rodrigues CREA 206507/D-RS

Projeto de Sinalização

- Eng. Gilberto José da Silveira Migliavacca CREA 65323/D-RS

Projeto de Obras Complementares

- Eng. Gilberto José da Silveira Migliavacca CREA 65323/D-RS

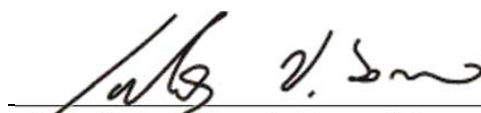
Projeto de Desapropriação

- Eng. Luiz Carlos Marques Becker CREA 227520/D-RS

Orçamento

- Eng. Ana Marília Julião Terbai Gularte CREA 076485/D-RS

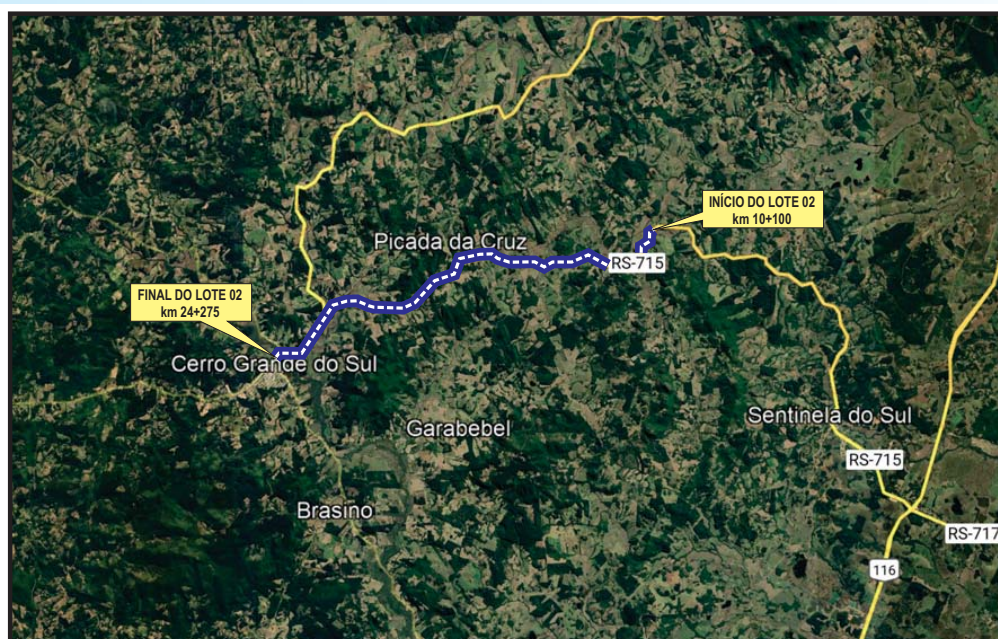
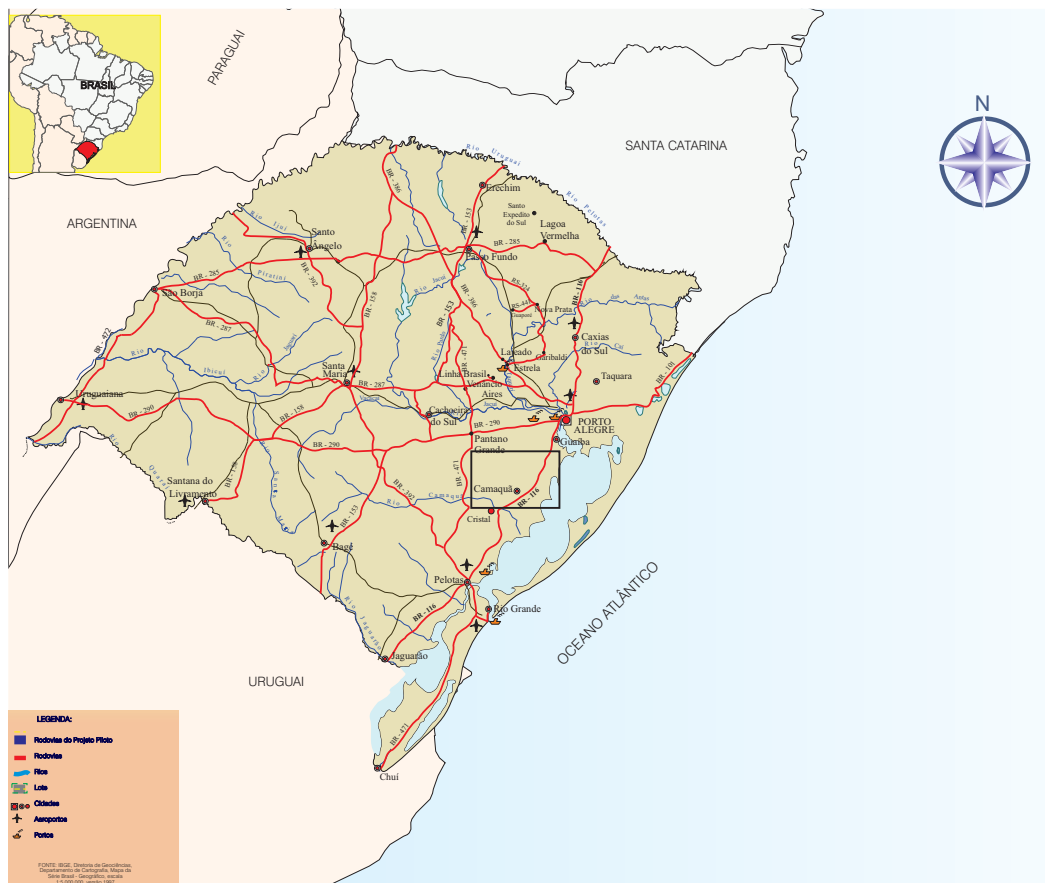
Porto Alegre, 29 de maio de 2023.


Engº. Carlos Eduardo Flores Urbano
Coordenador Geral



2. MAPA DE SITUAÇÃO

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TRECHO EM ESTUDO

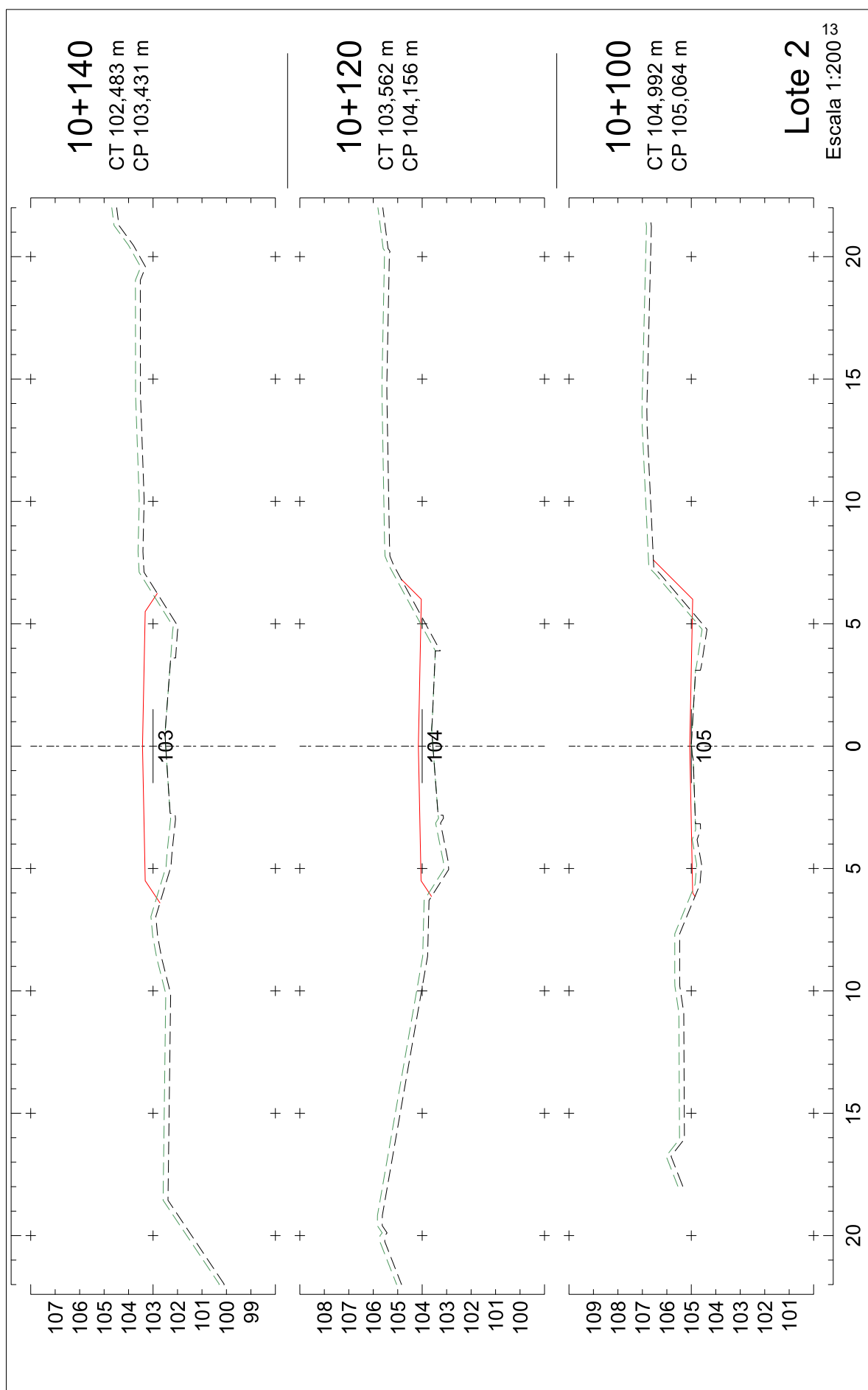
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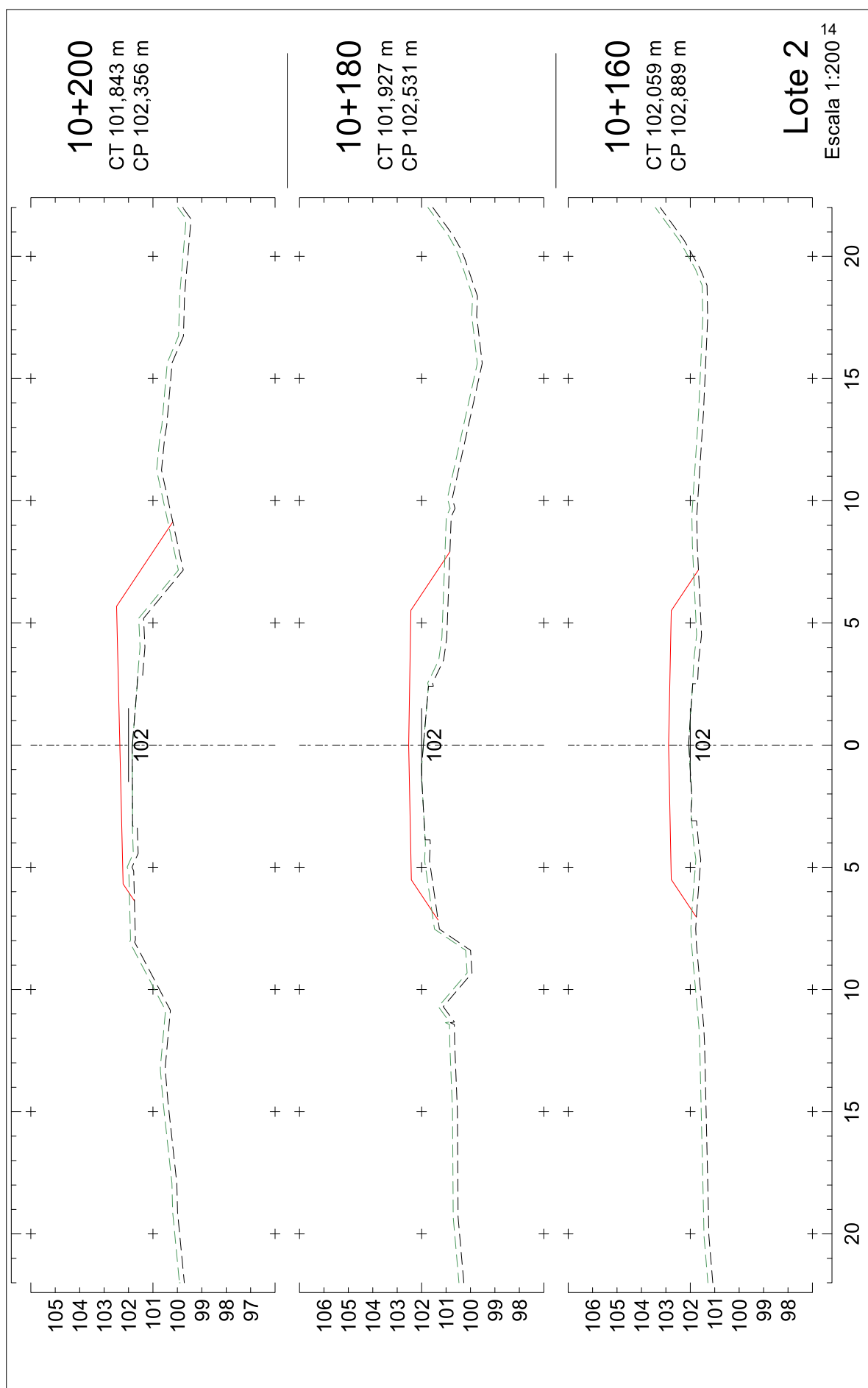


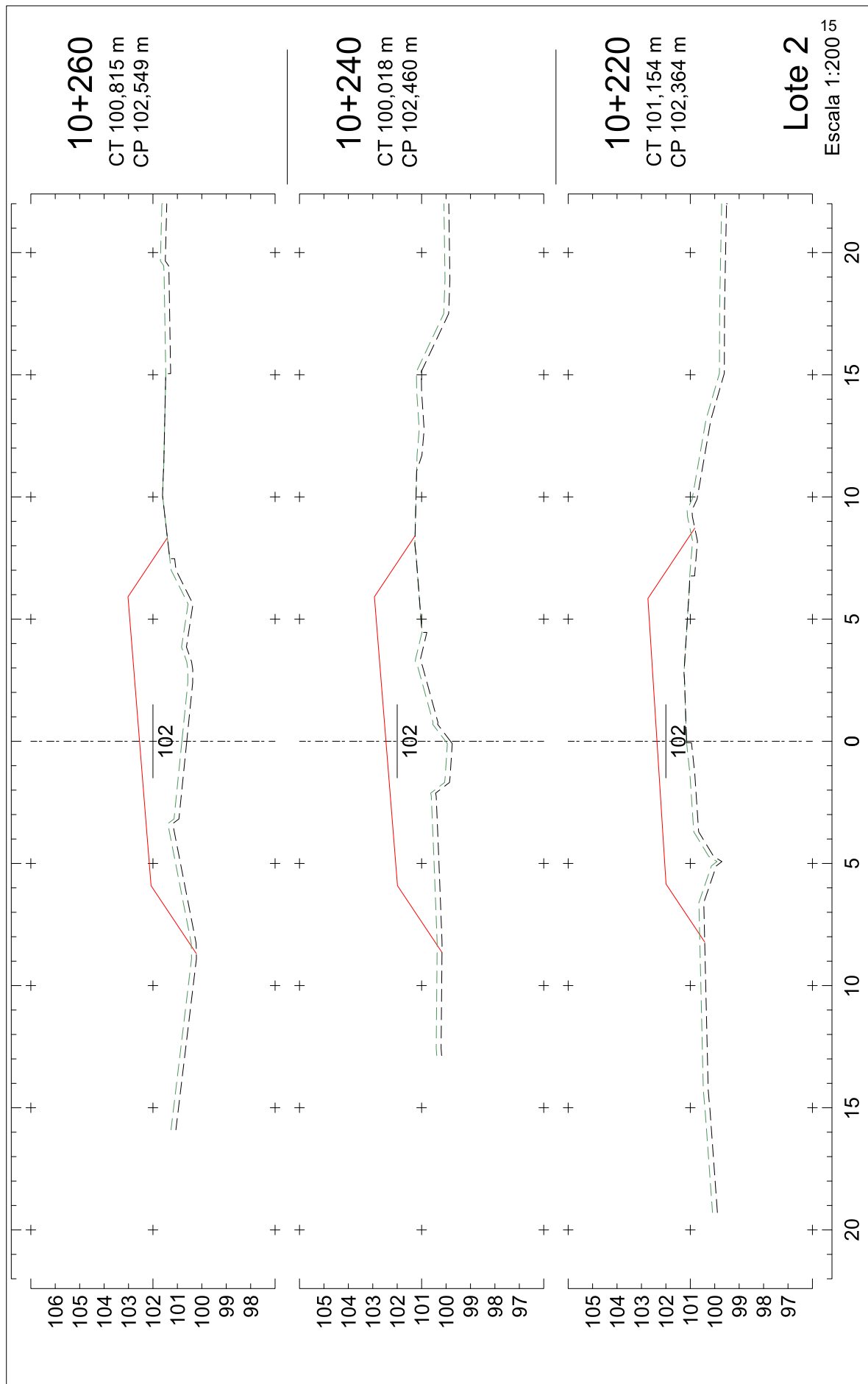
3. SEÇÕES TRANSVERSAIS

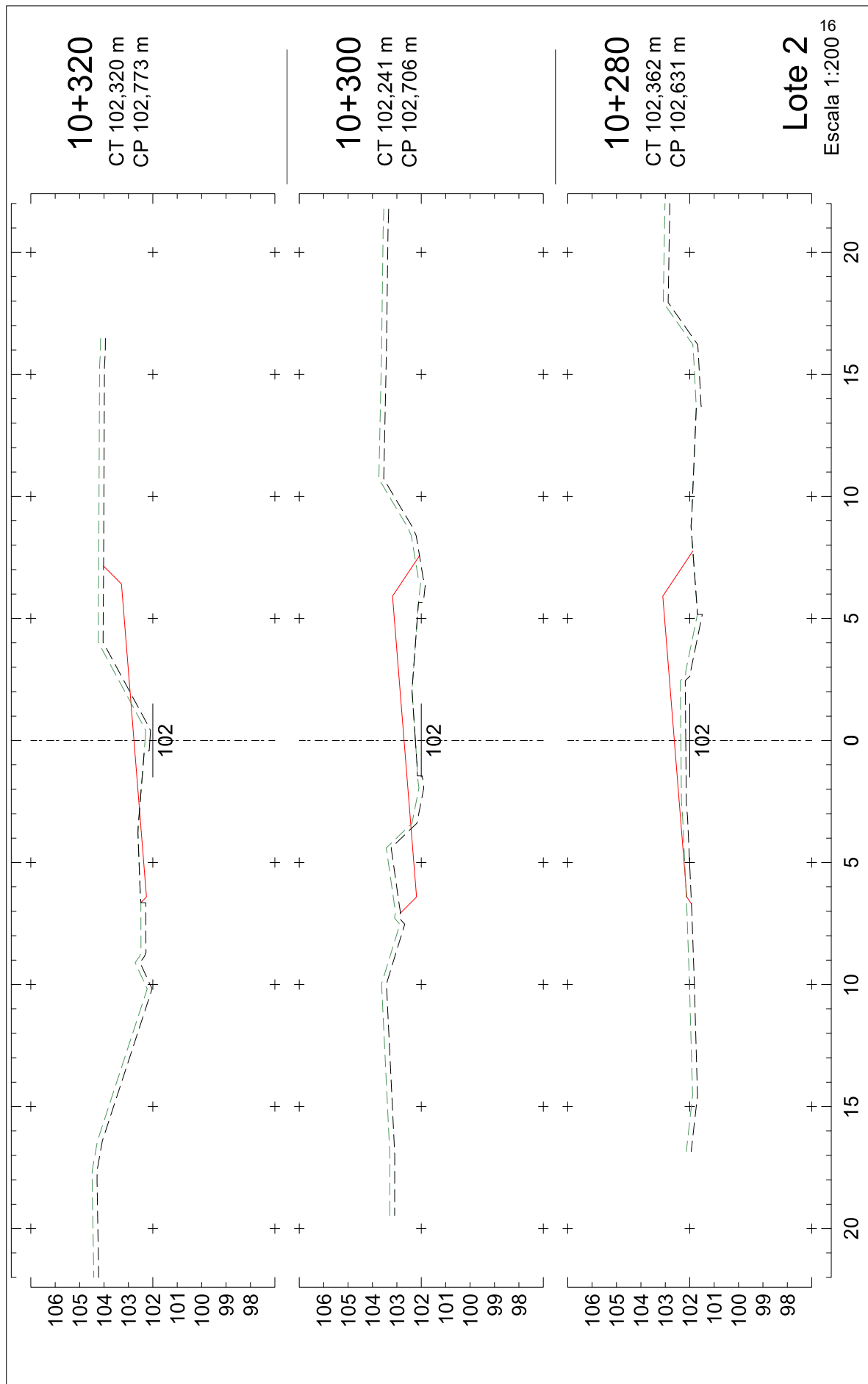


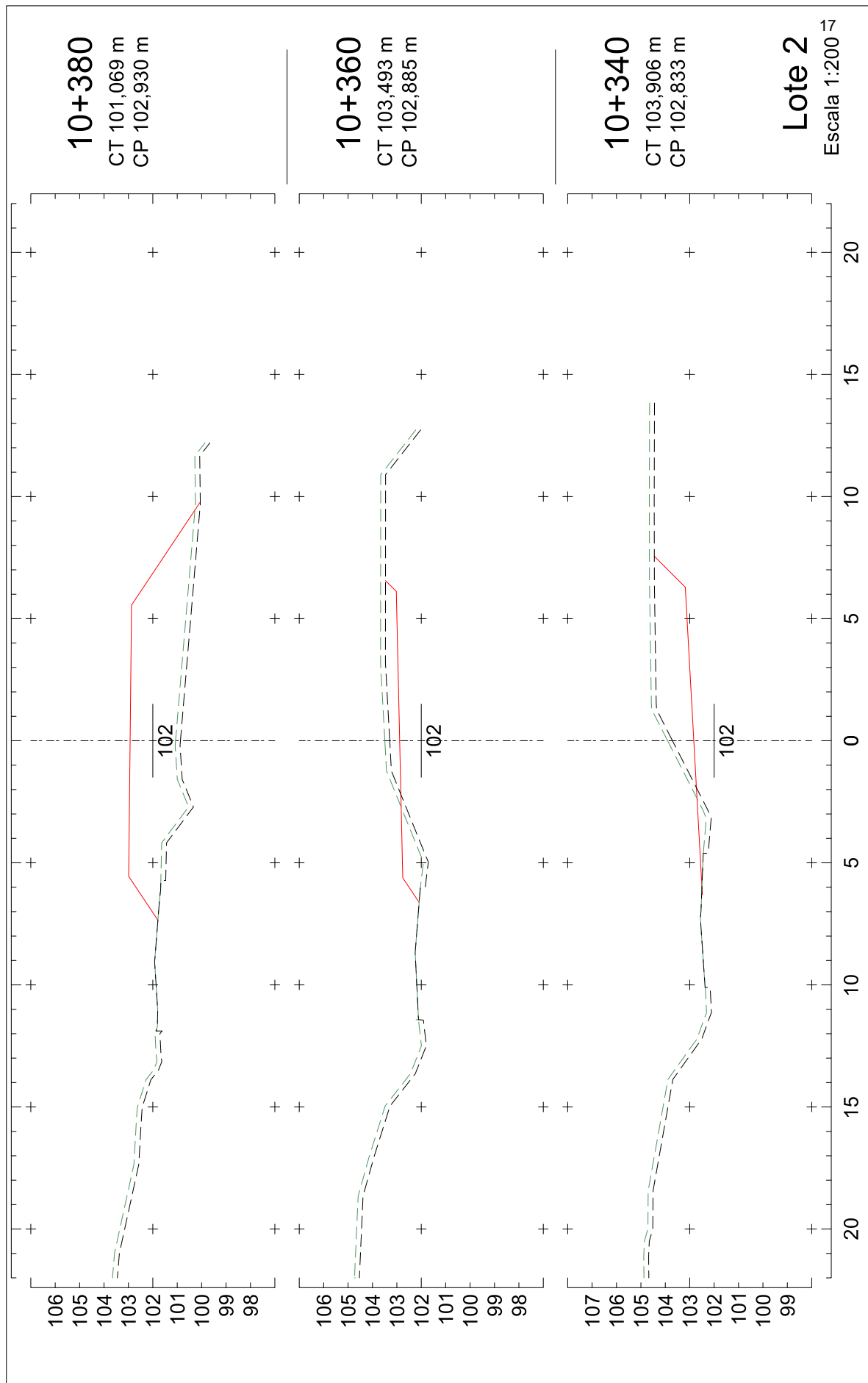
3. 1 LINHA GERAL

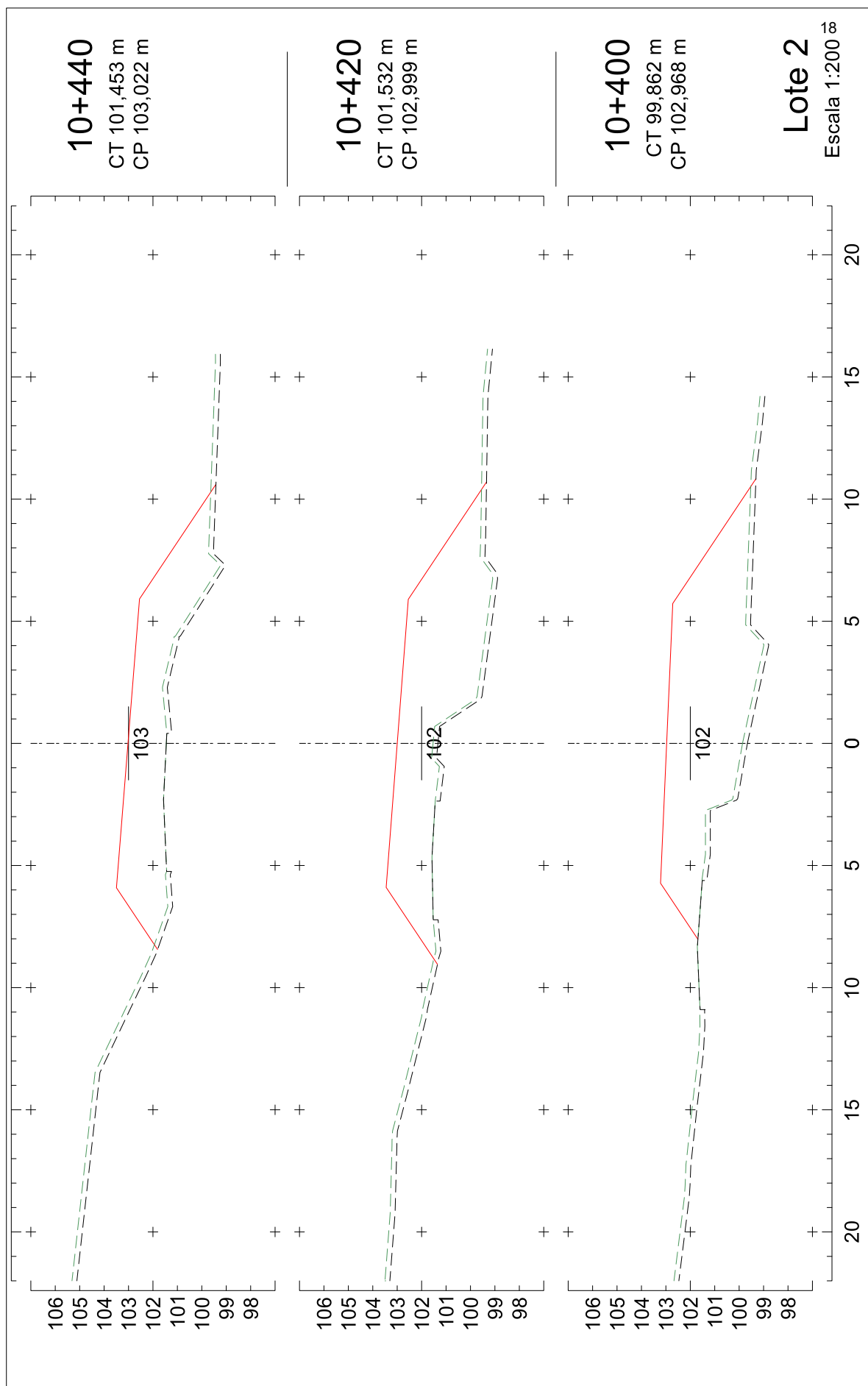


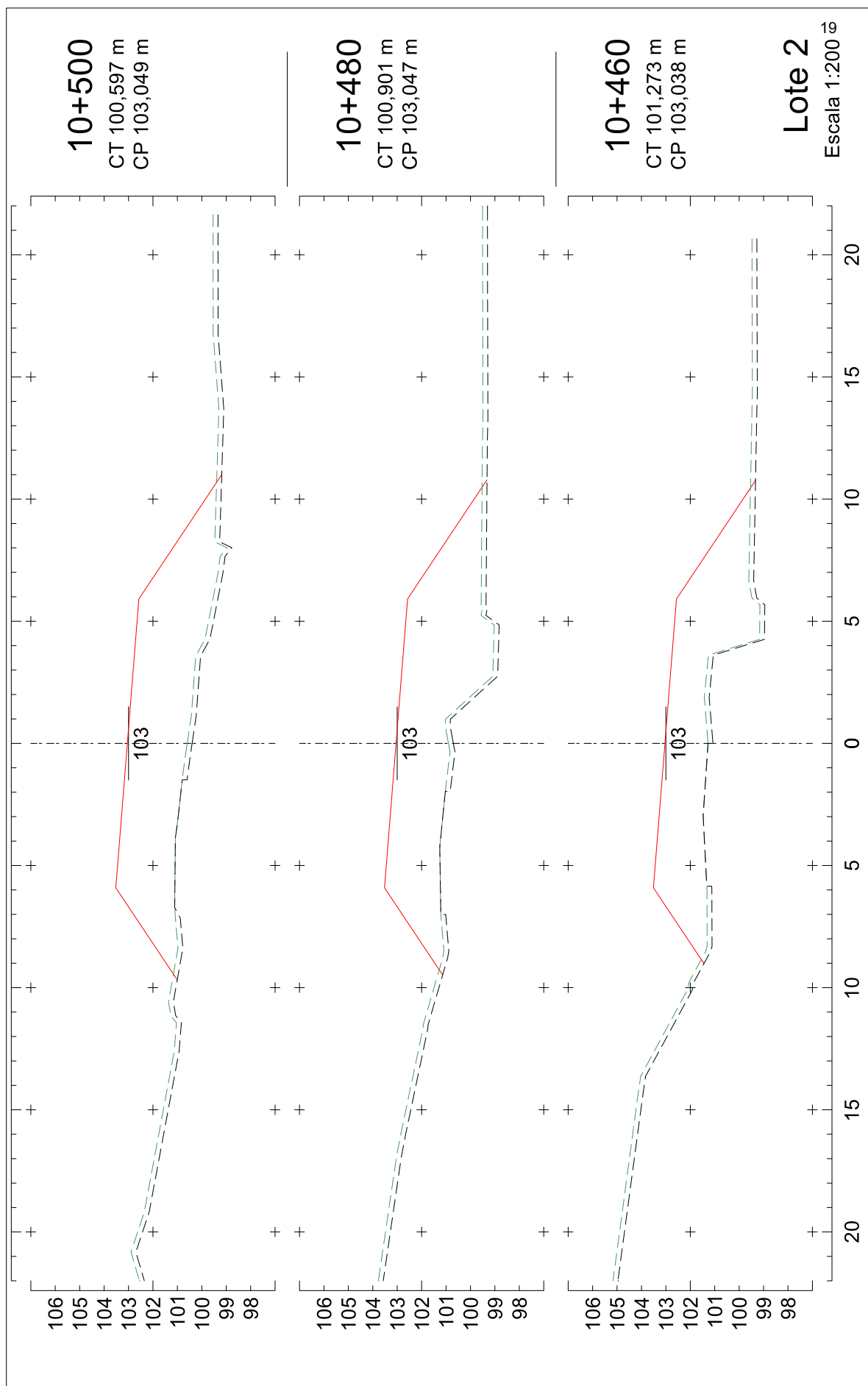


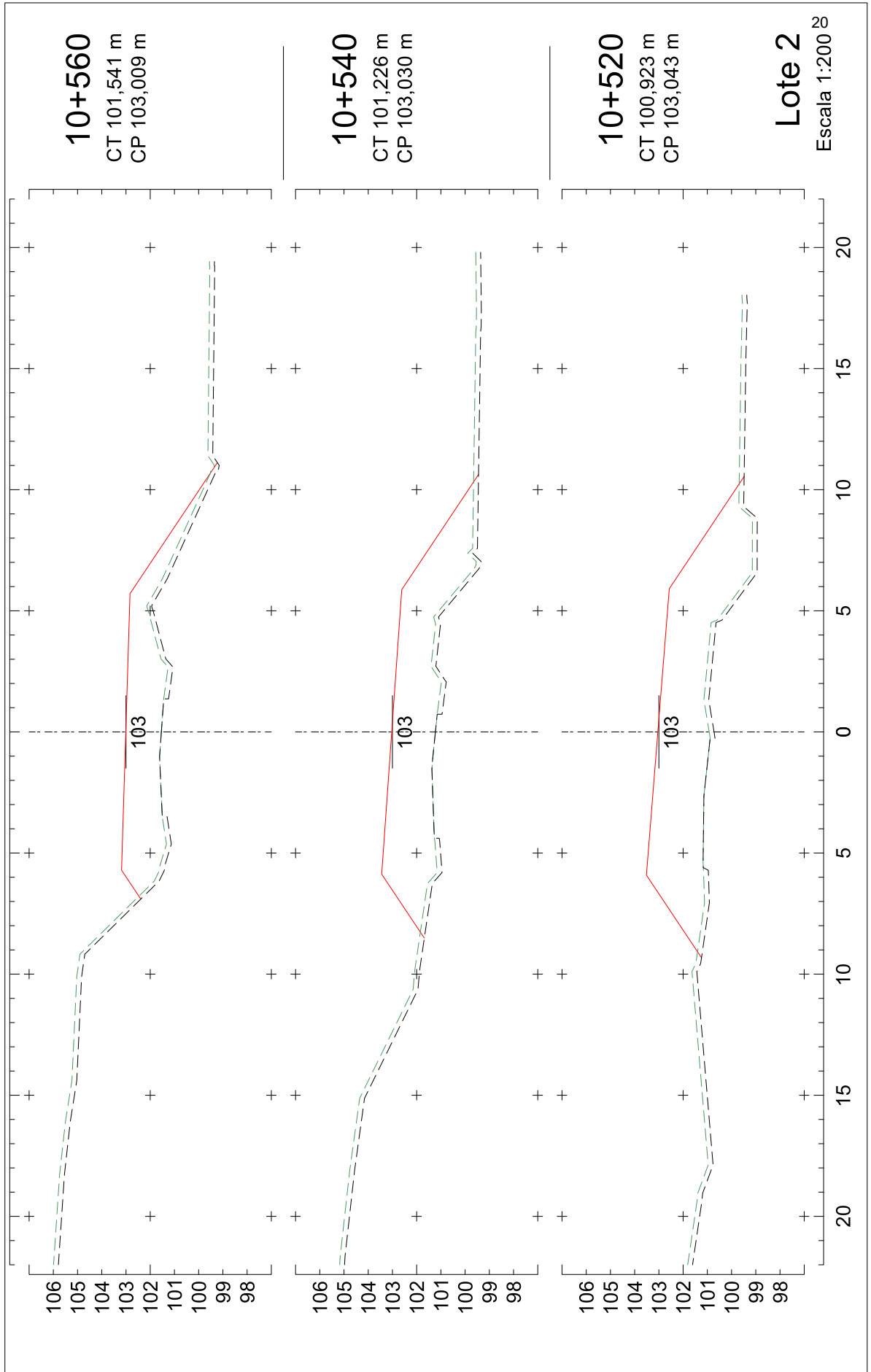


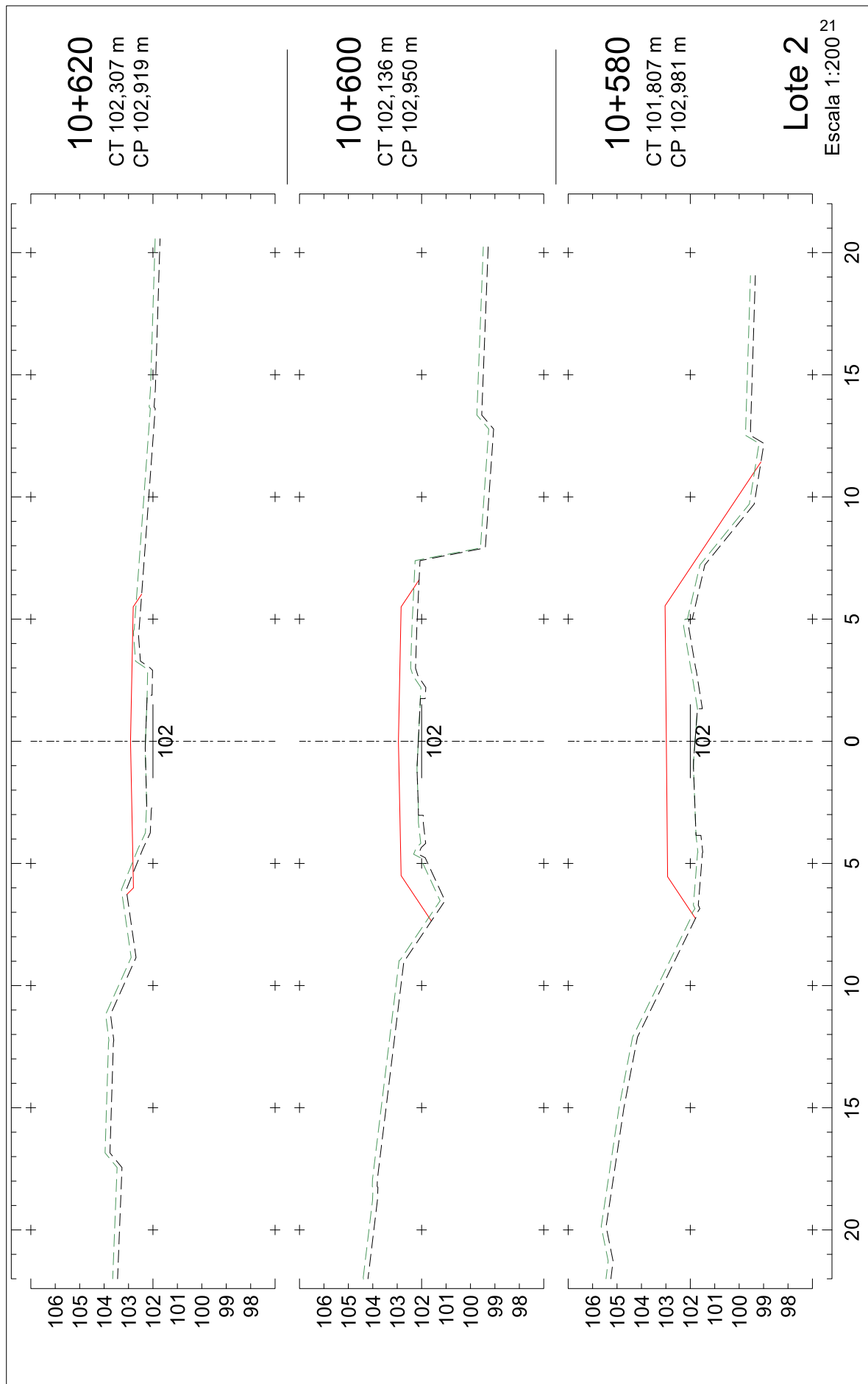


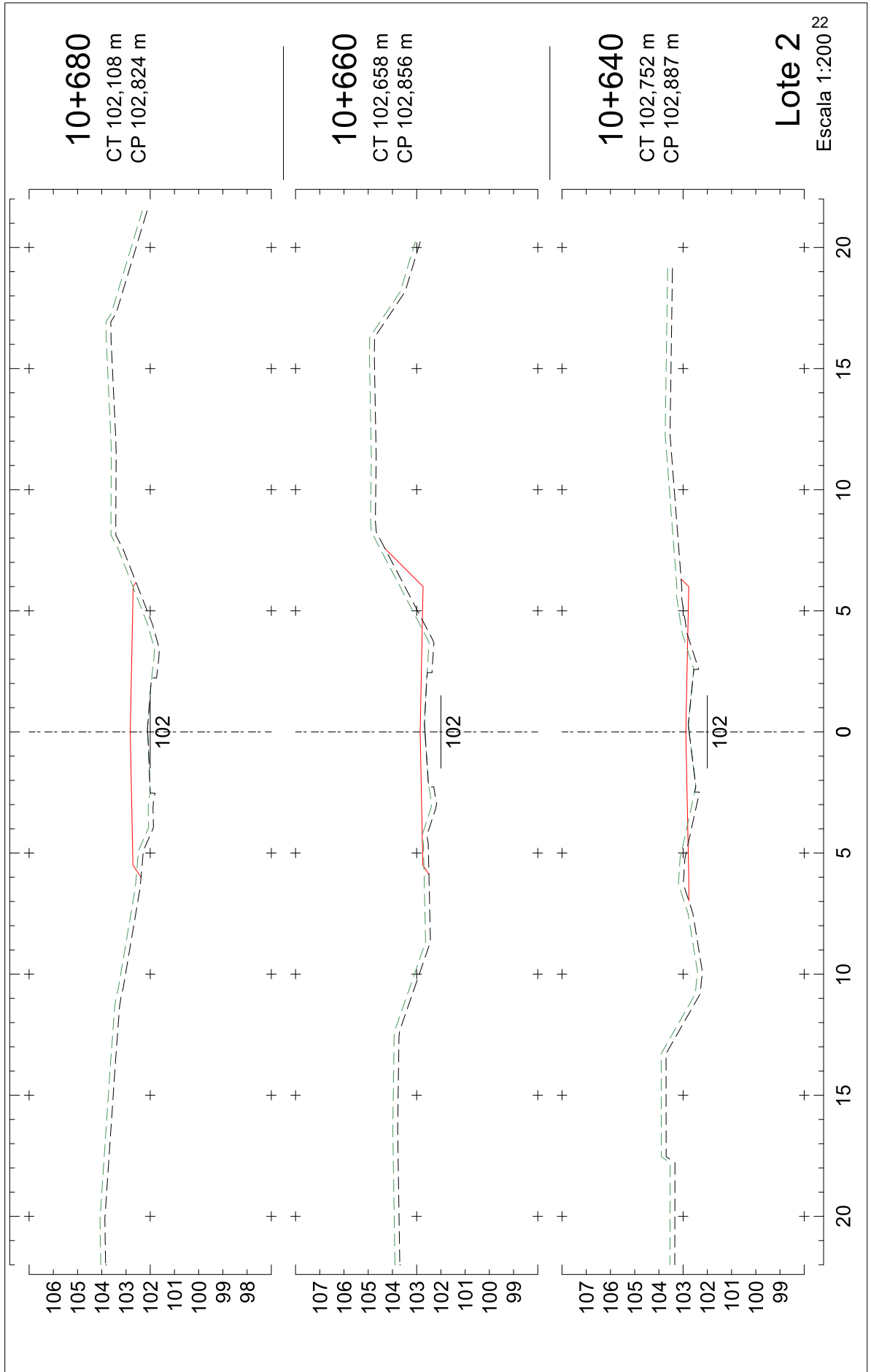


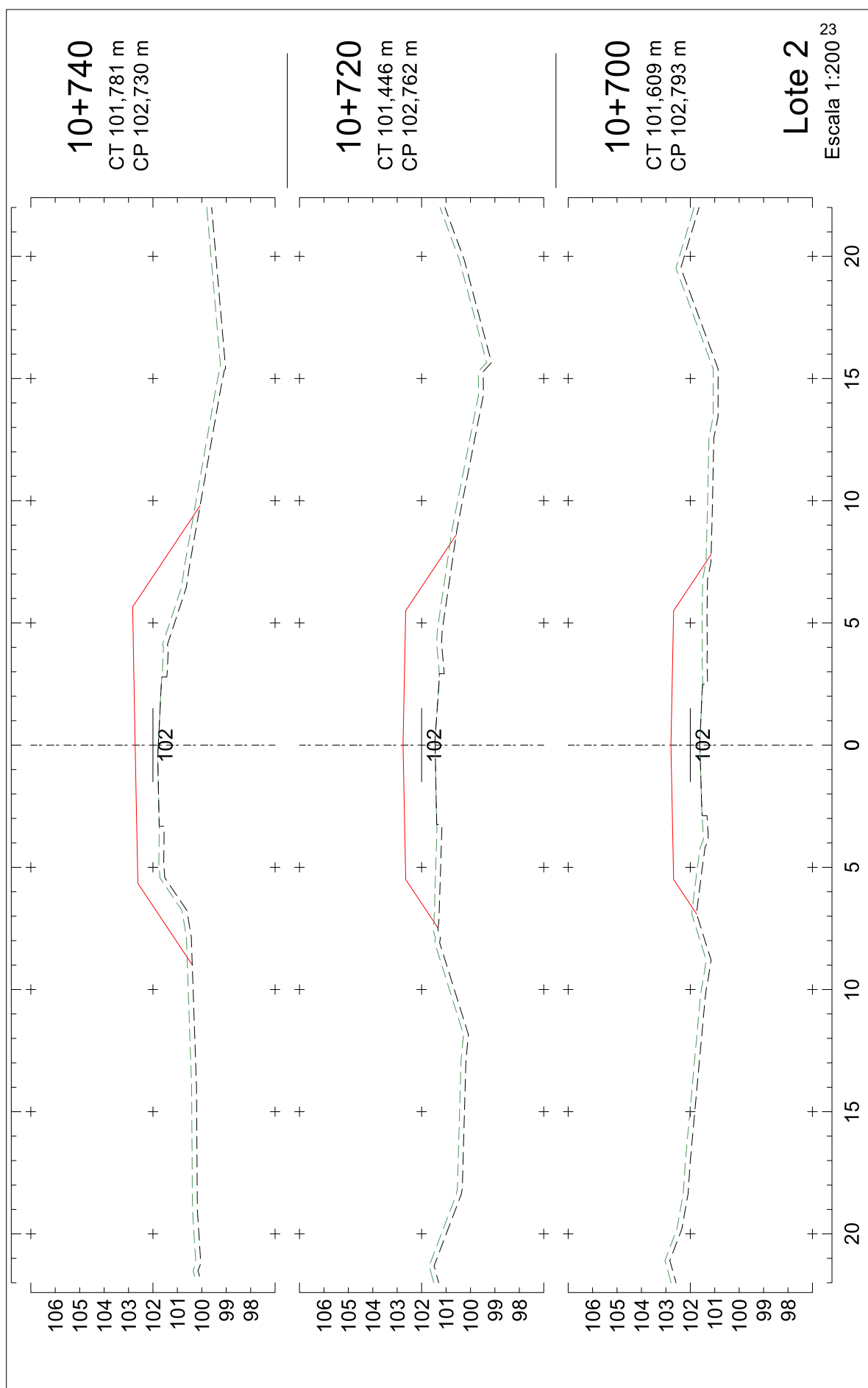


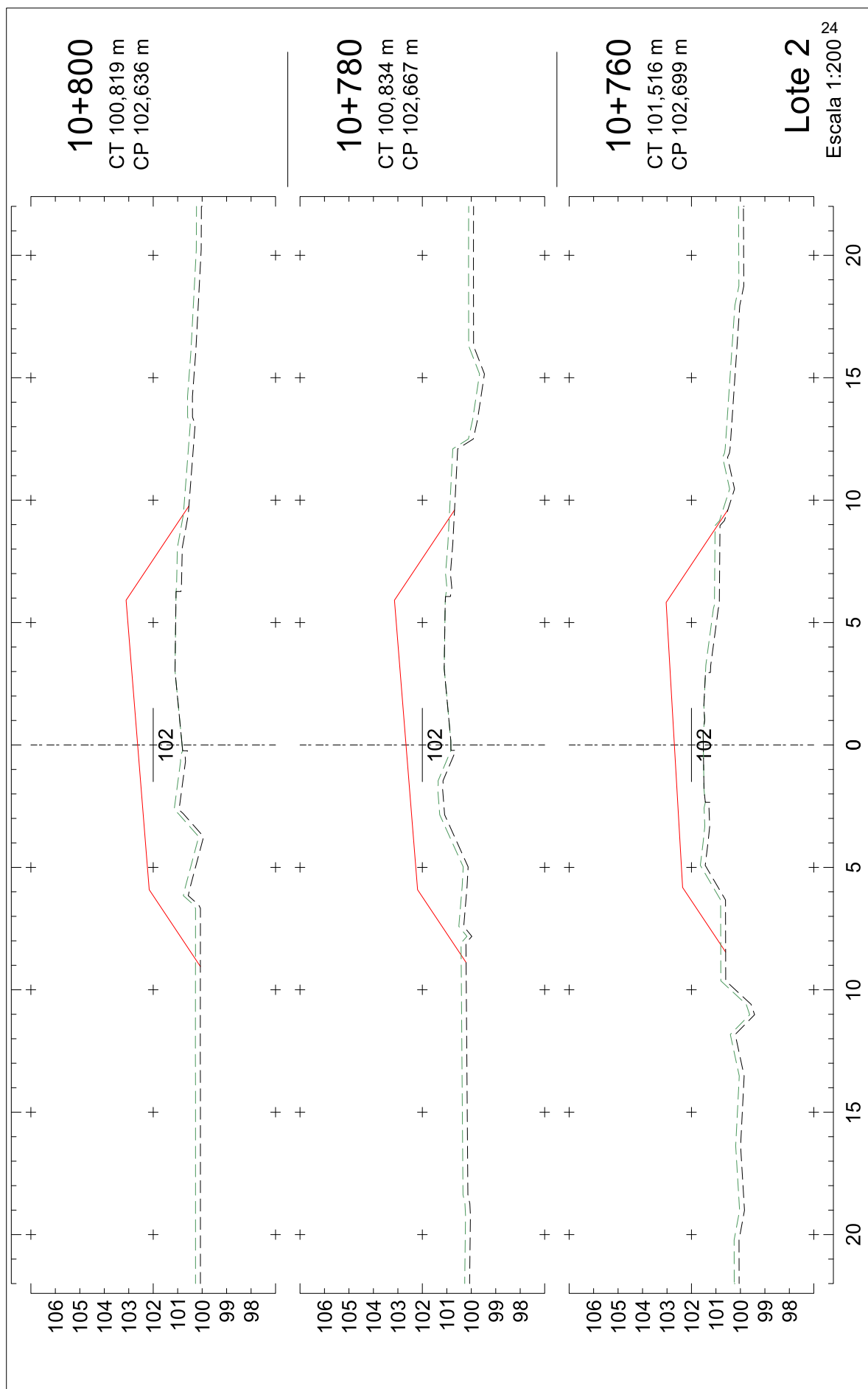


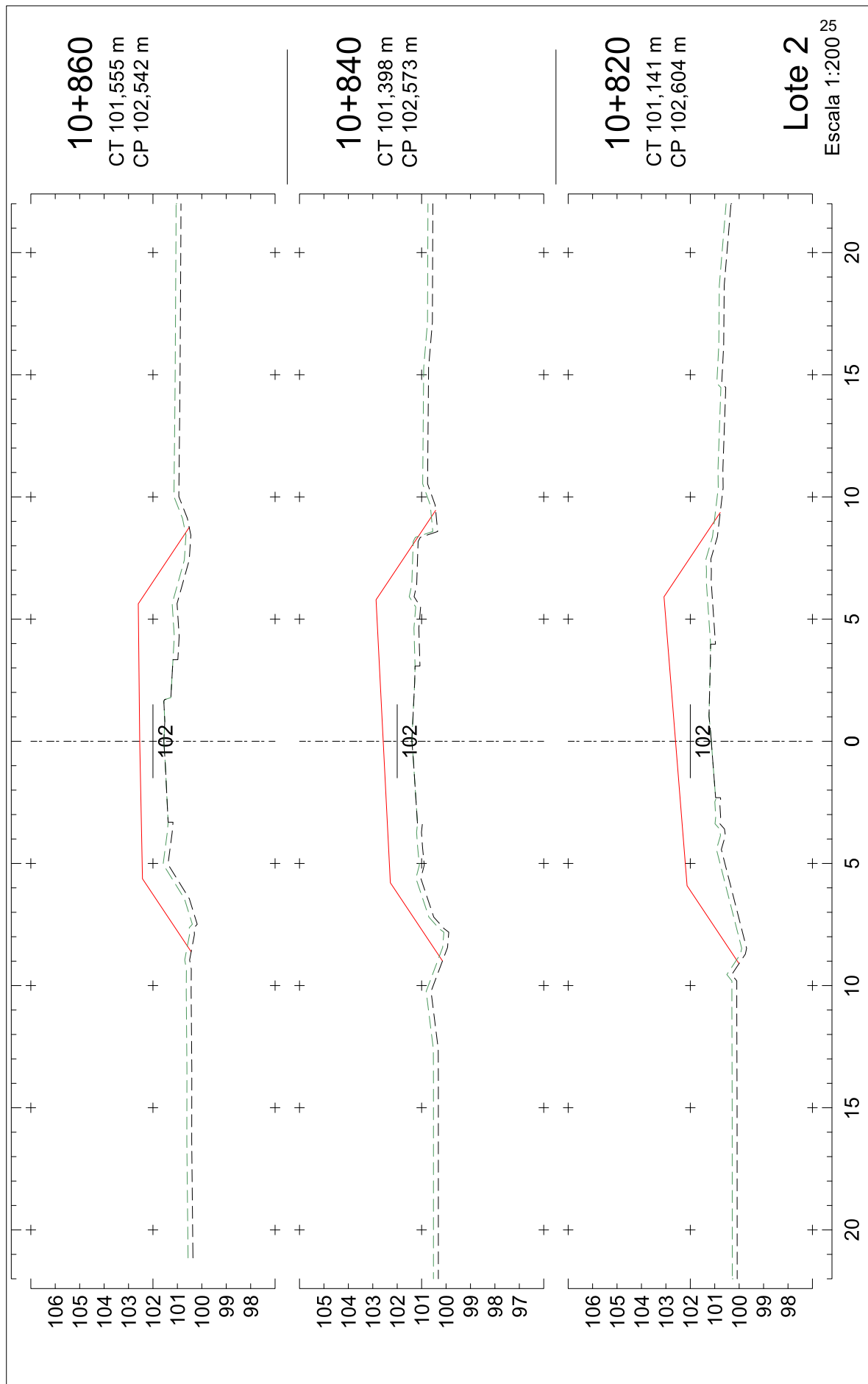


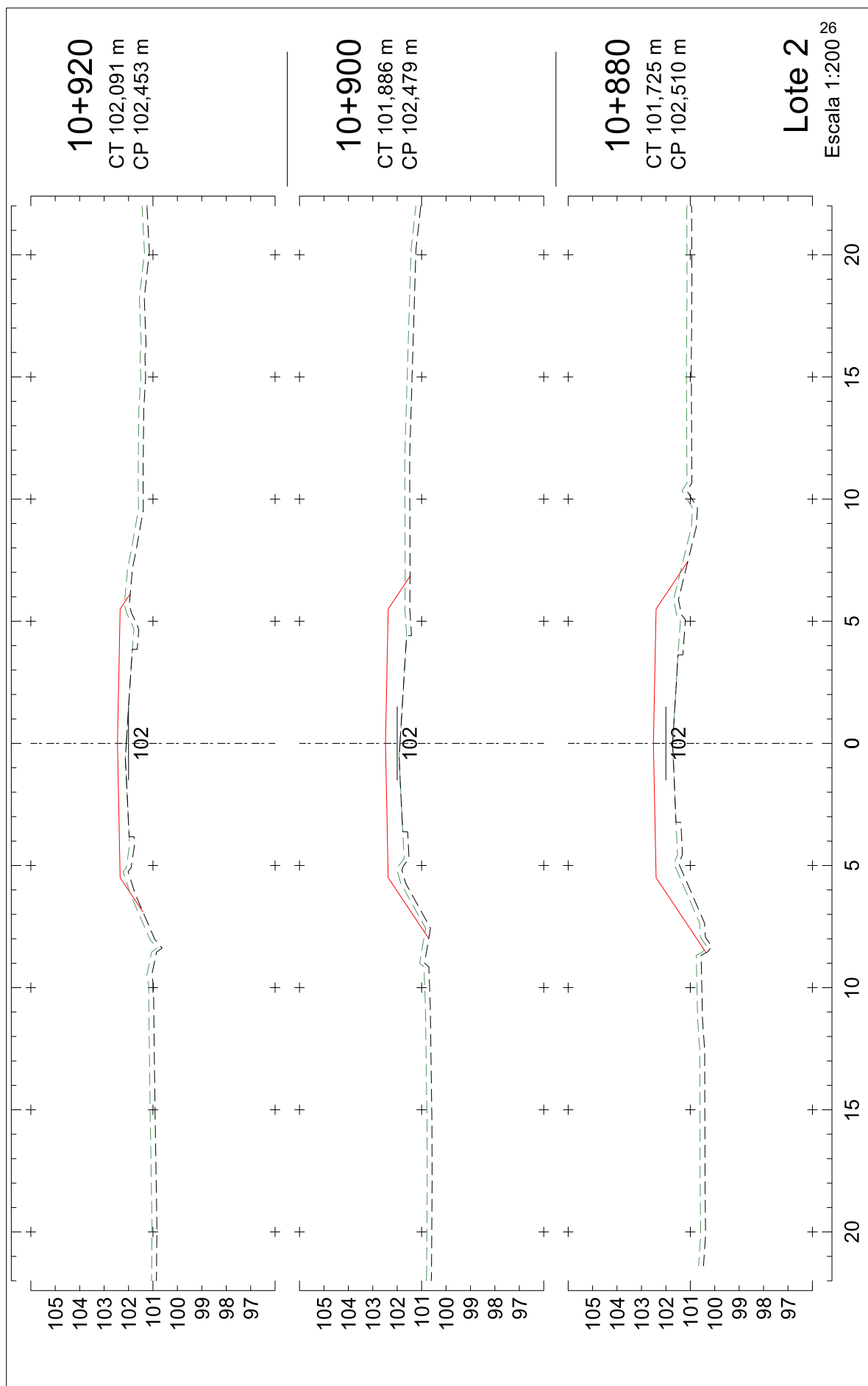


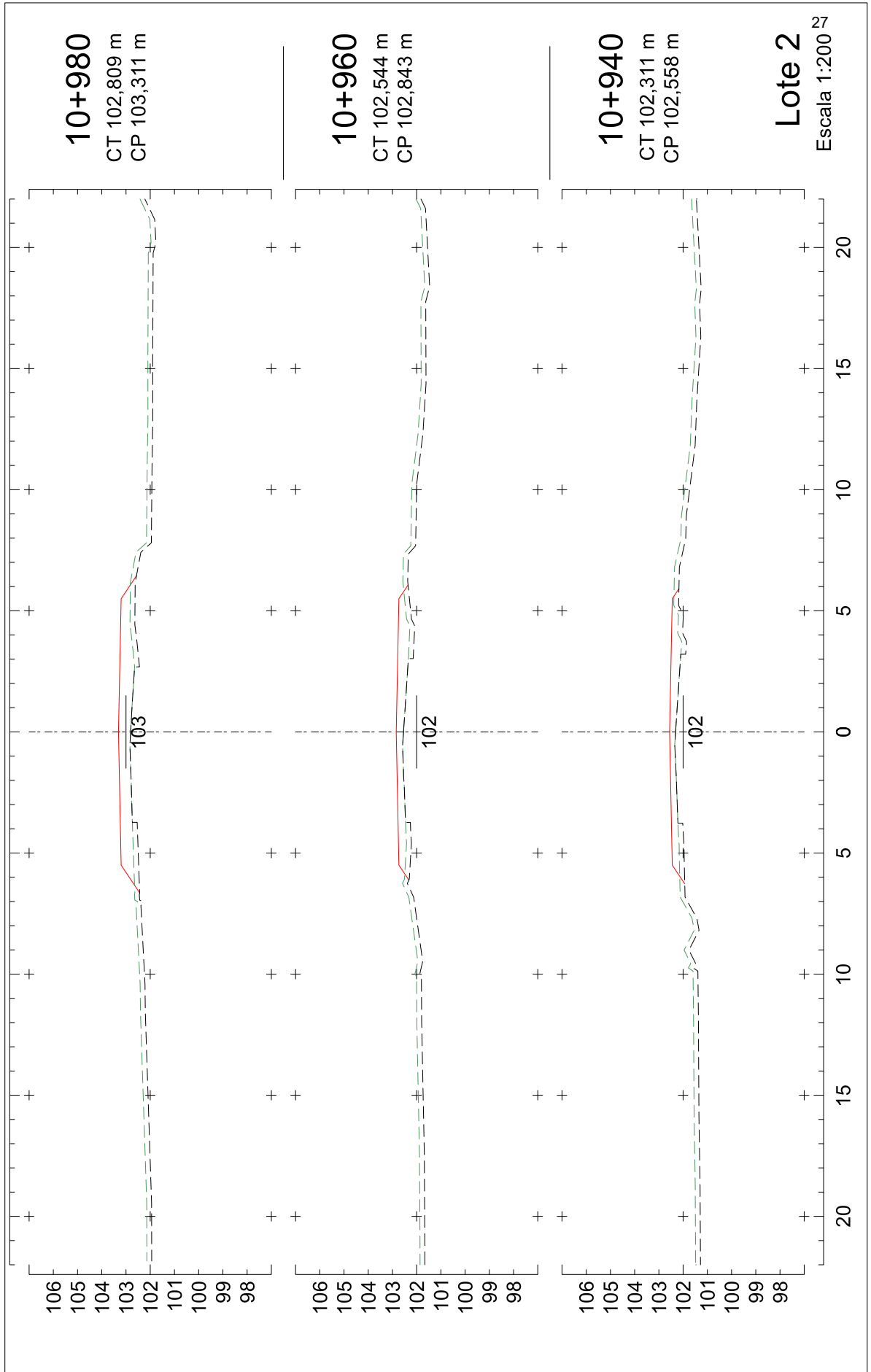


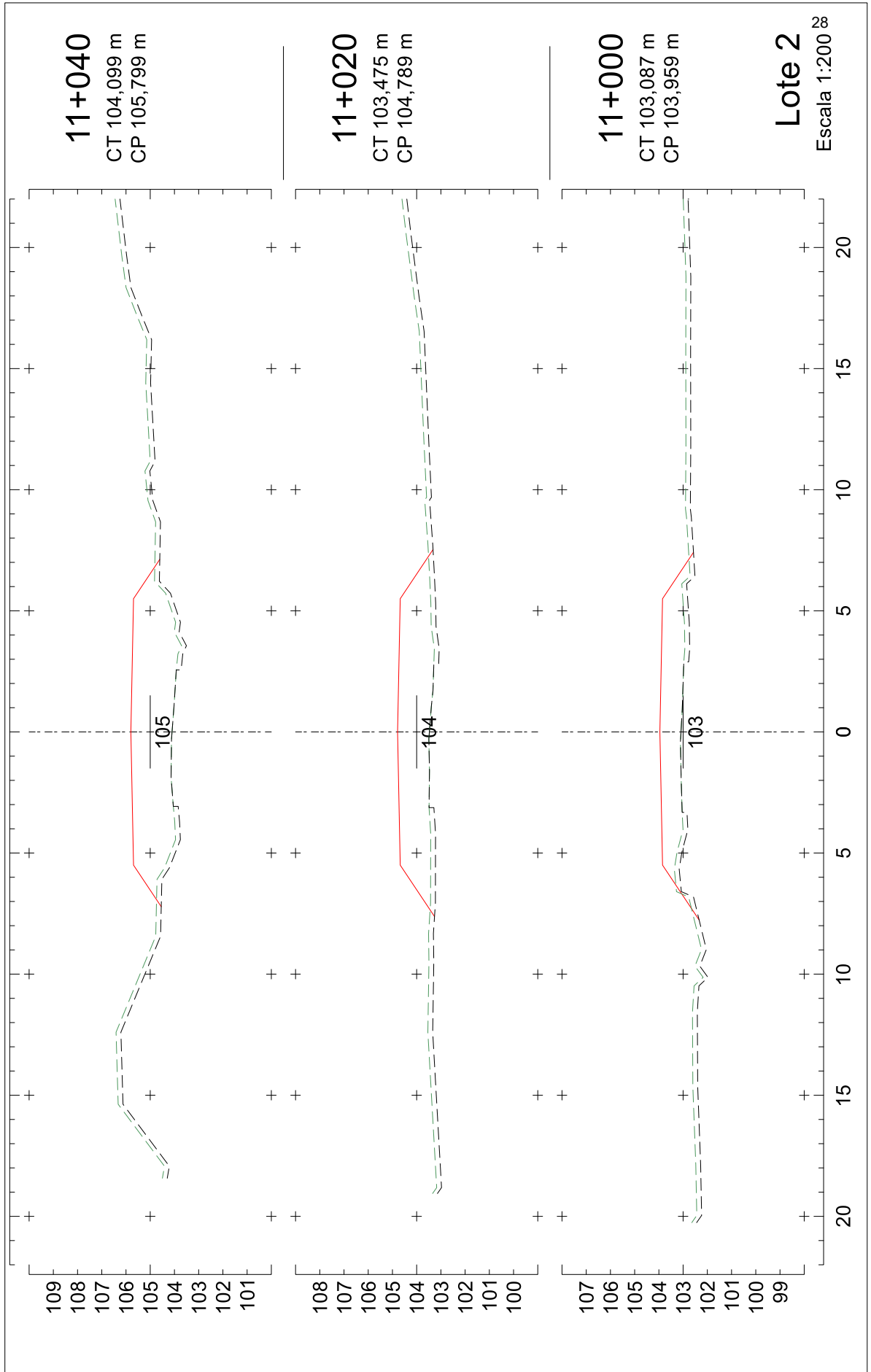


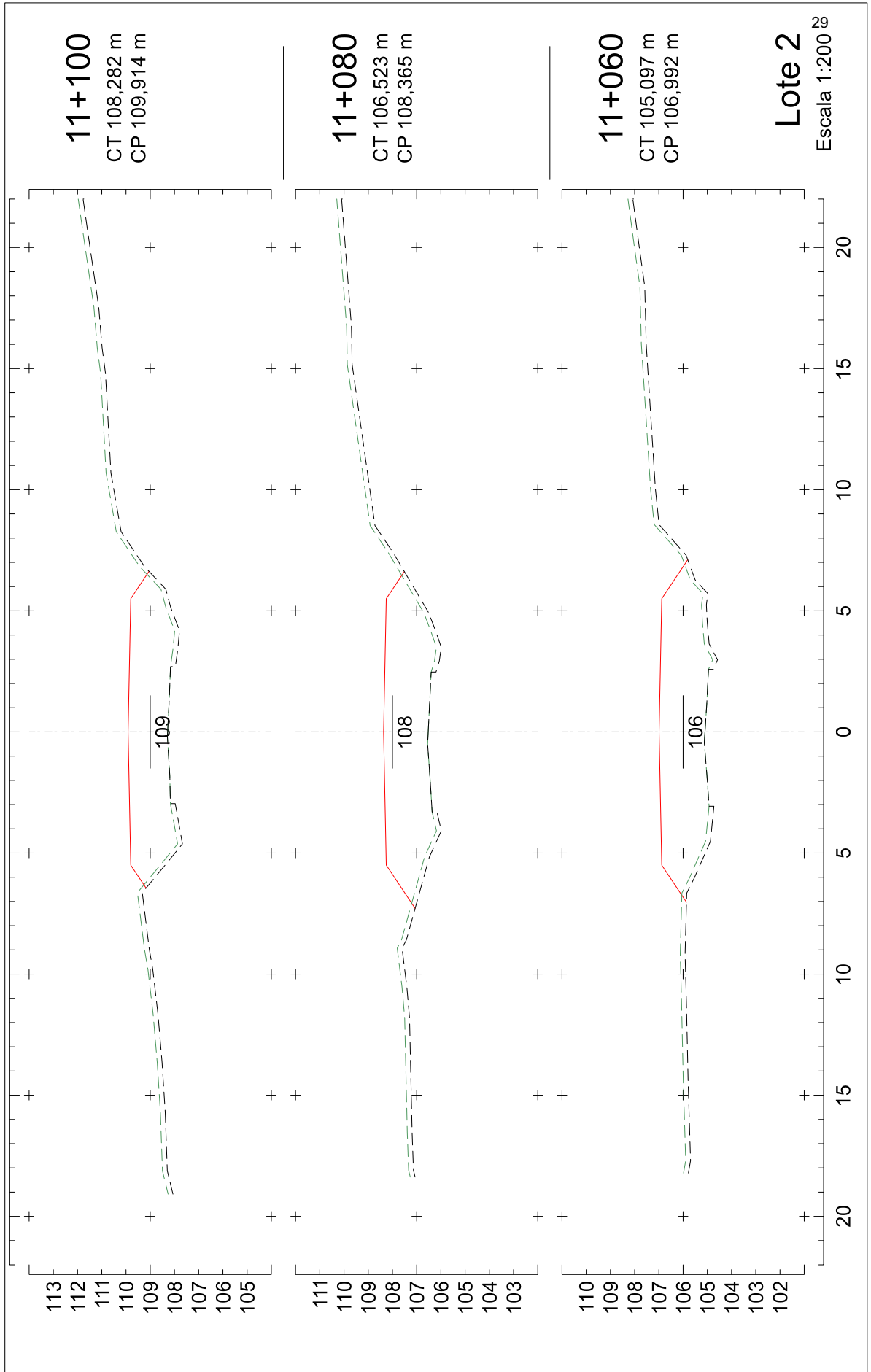


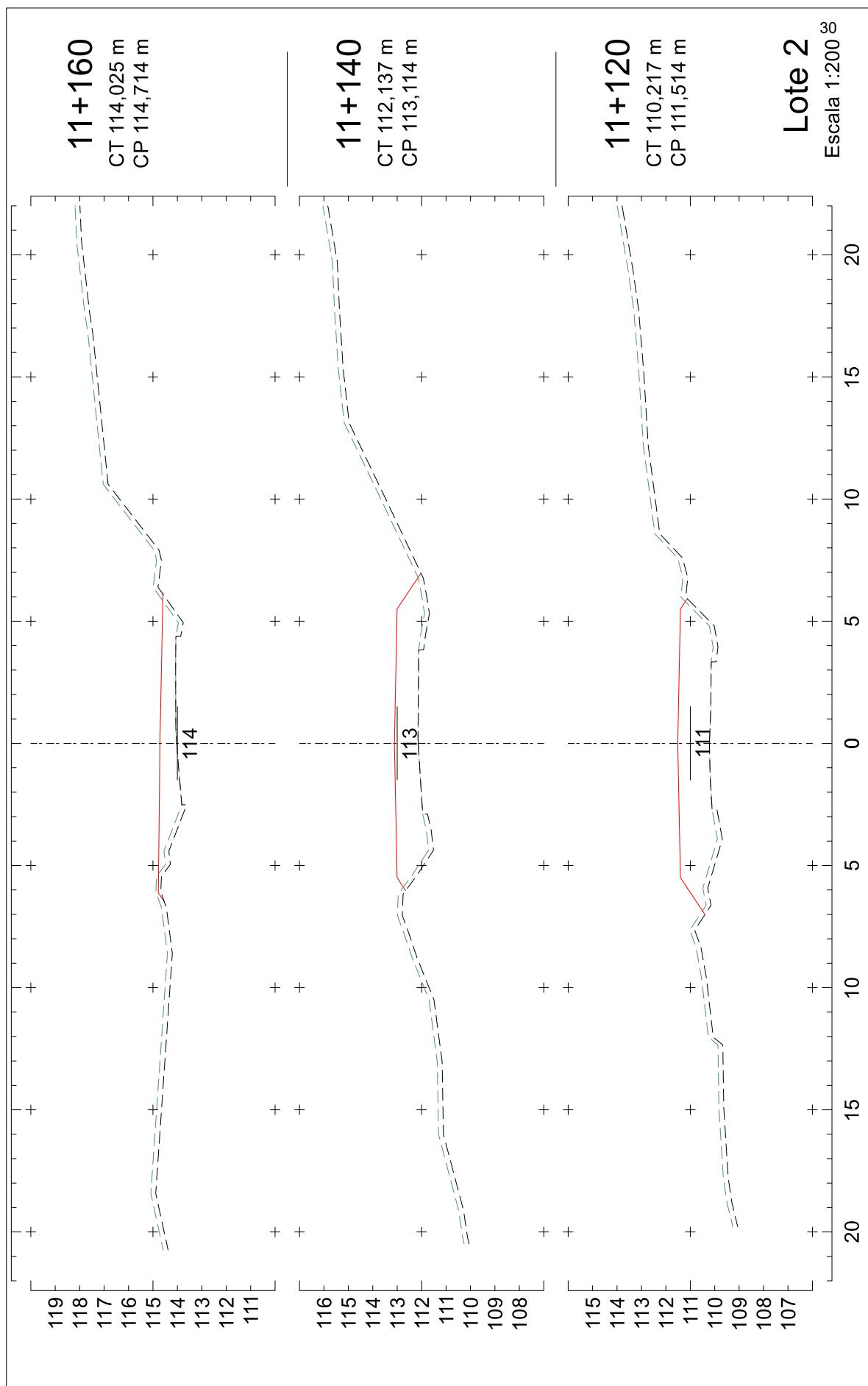


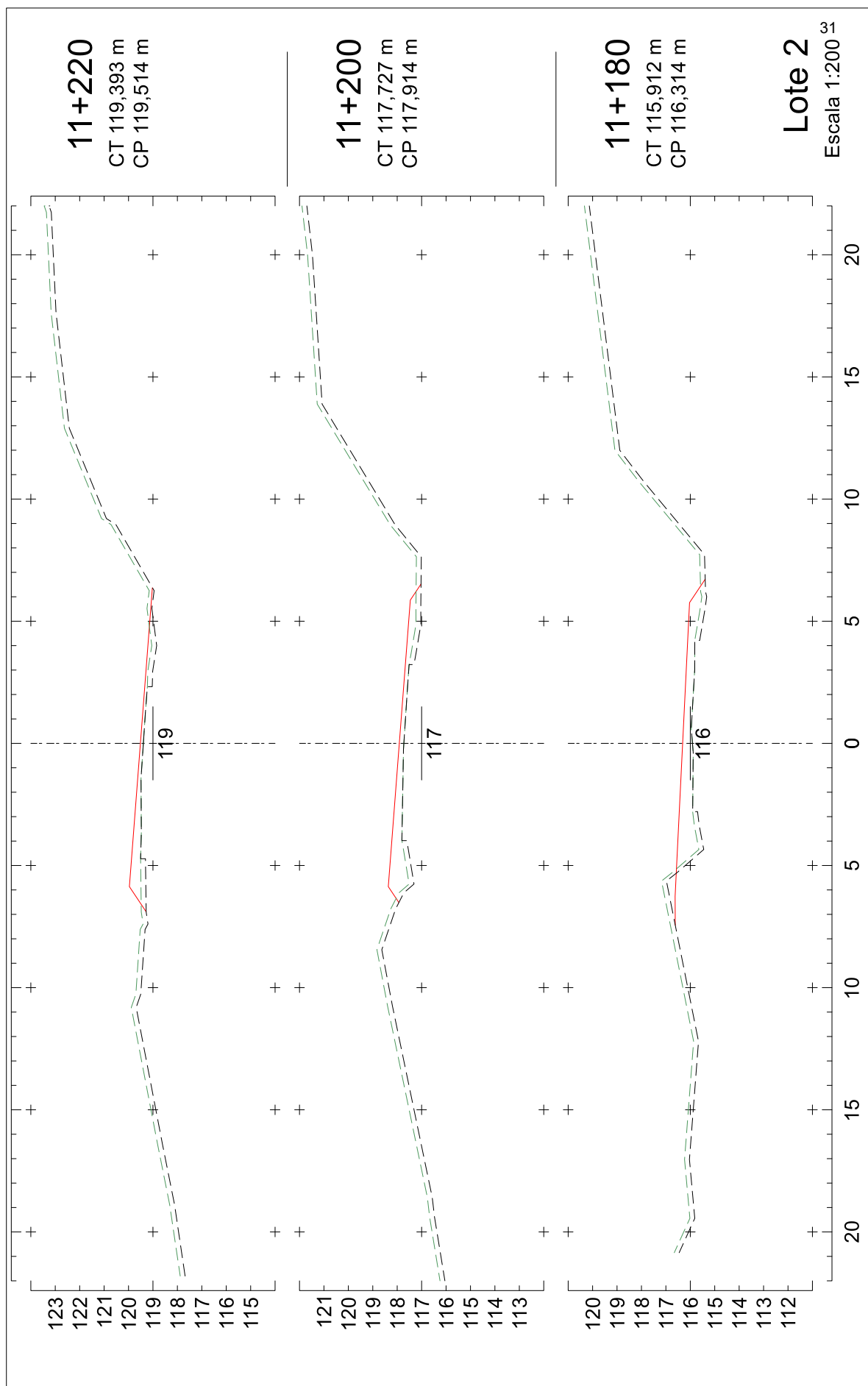


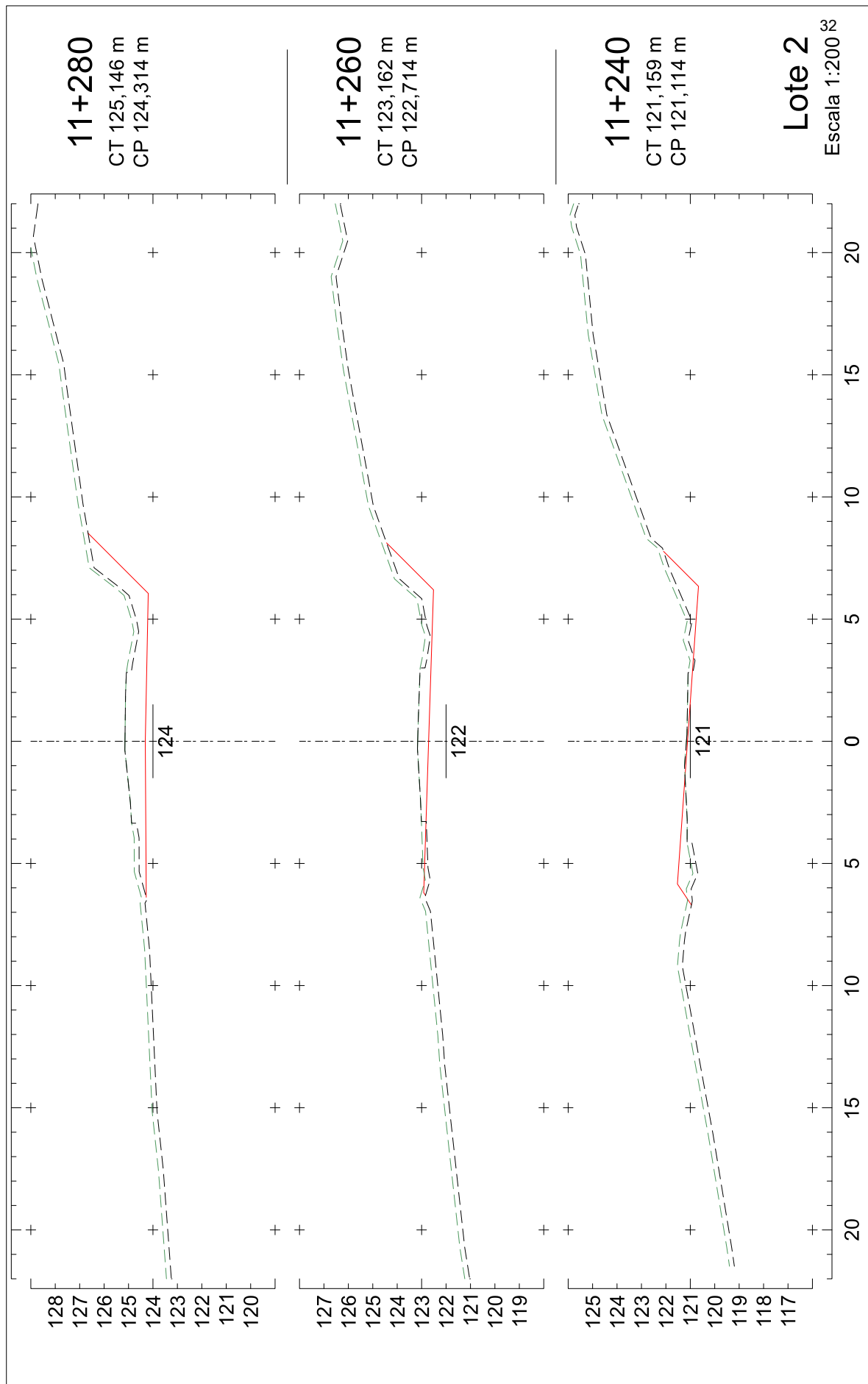


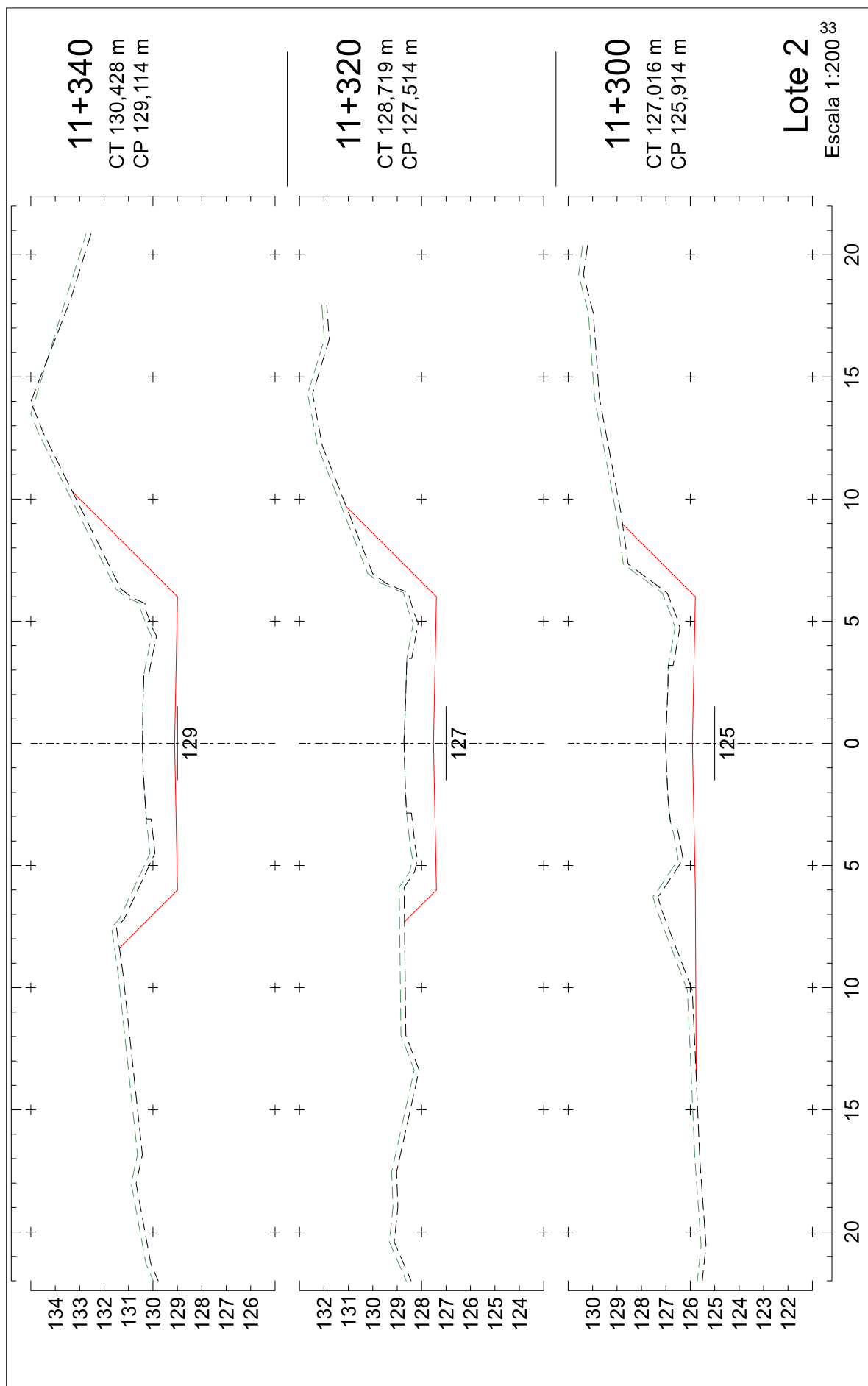


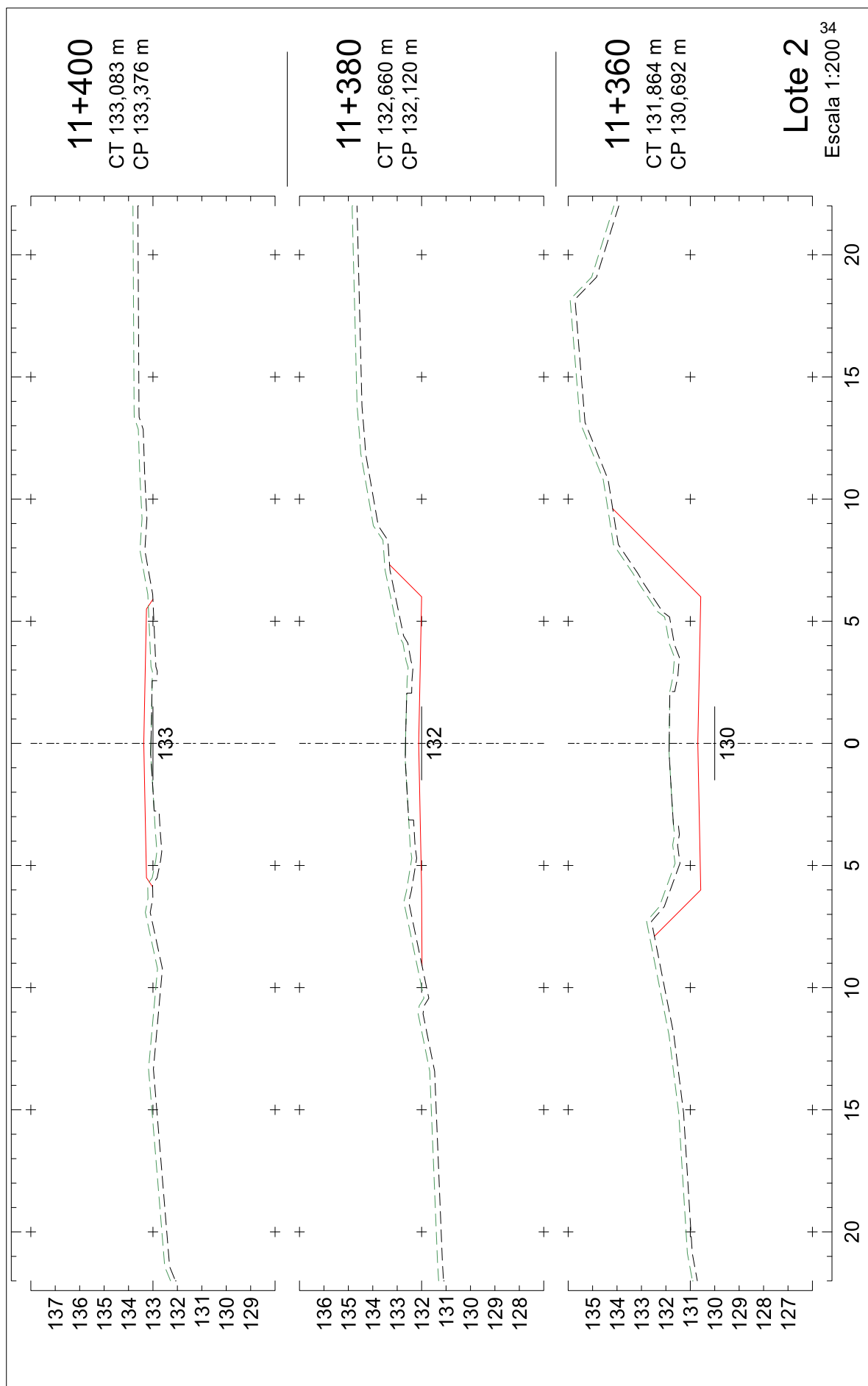


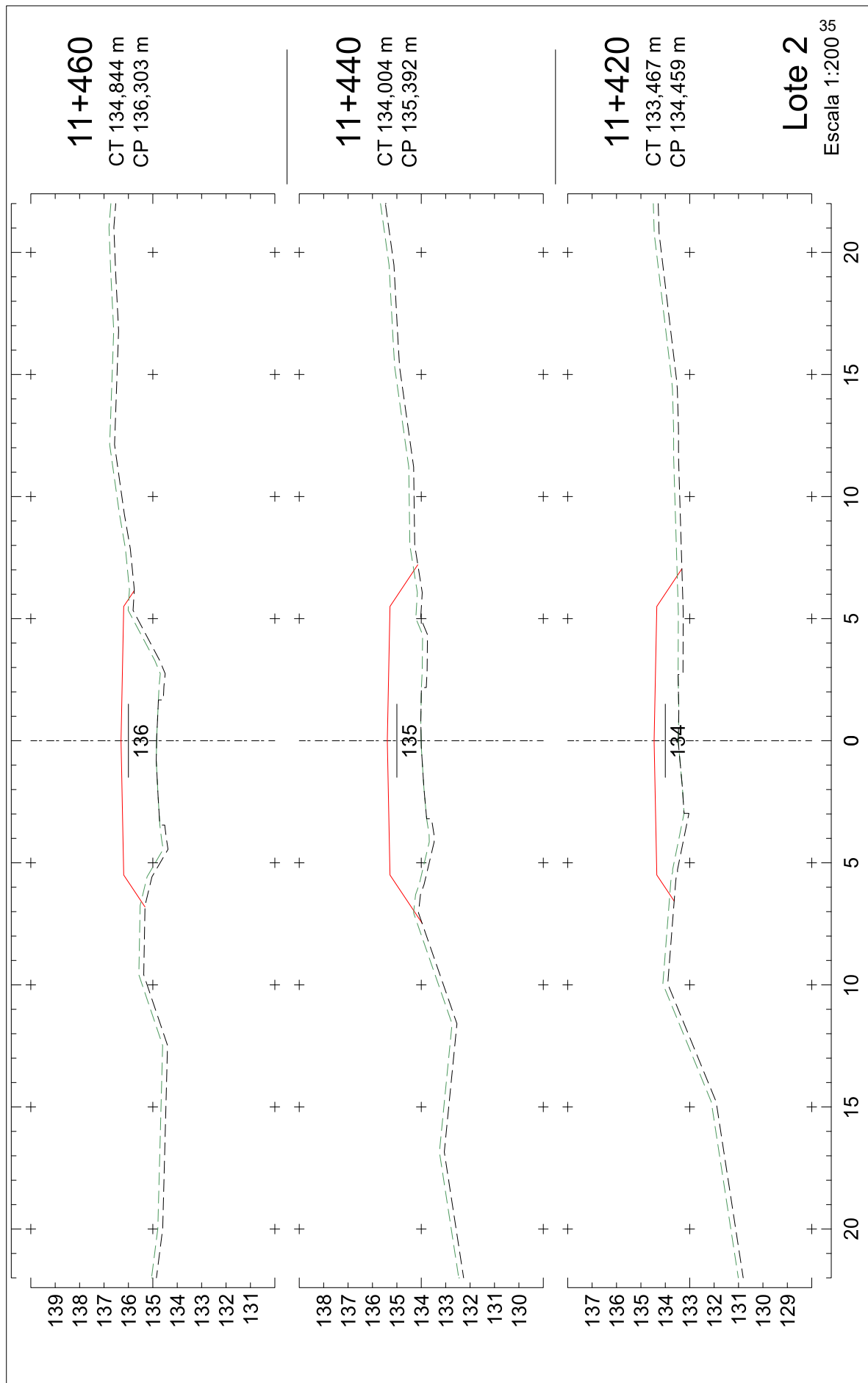


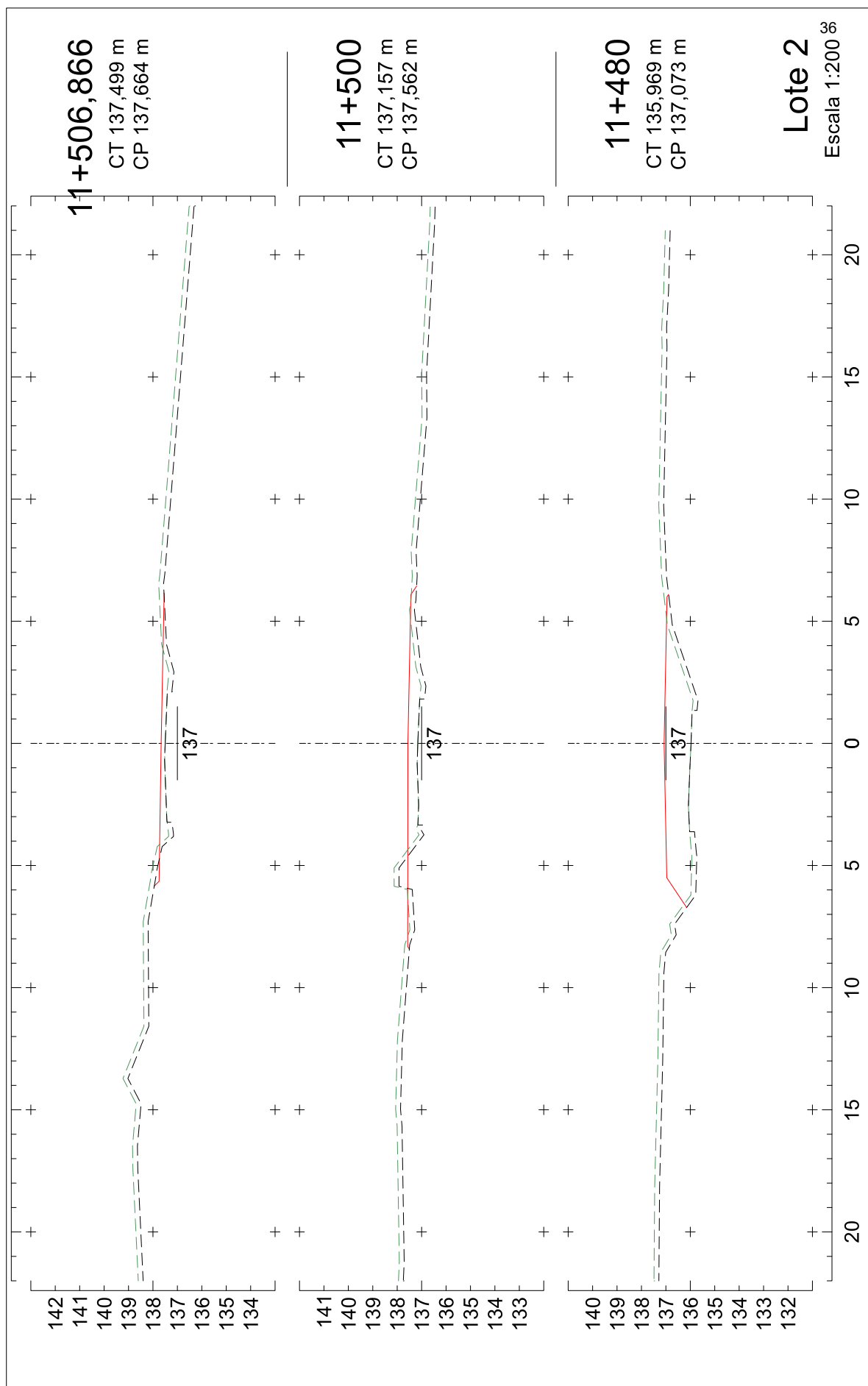


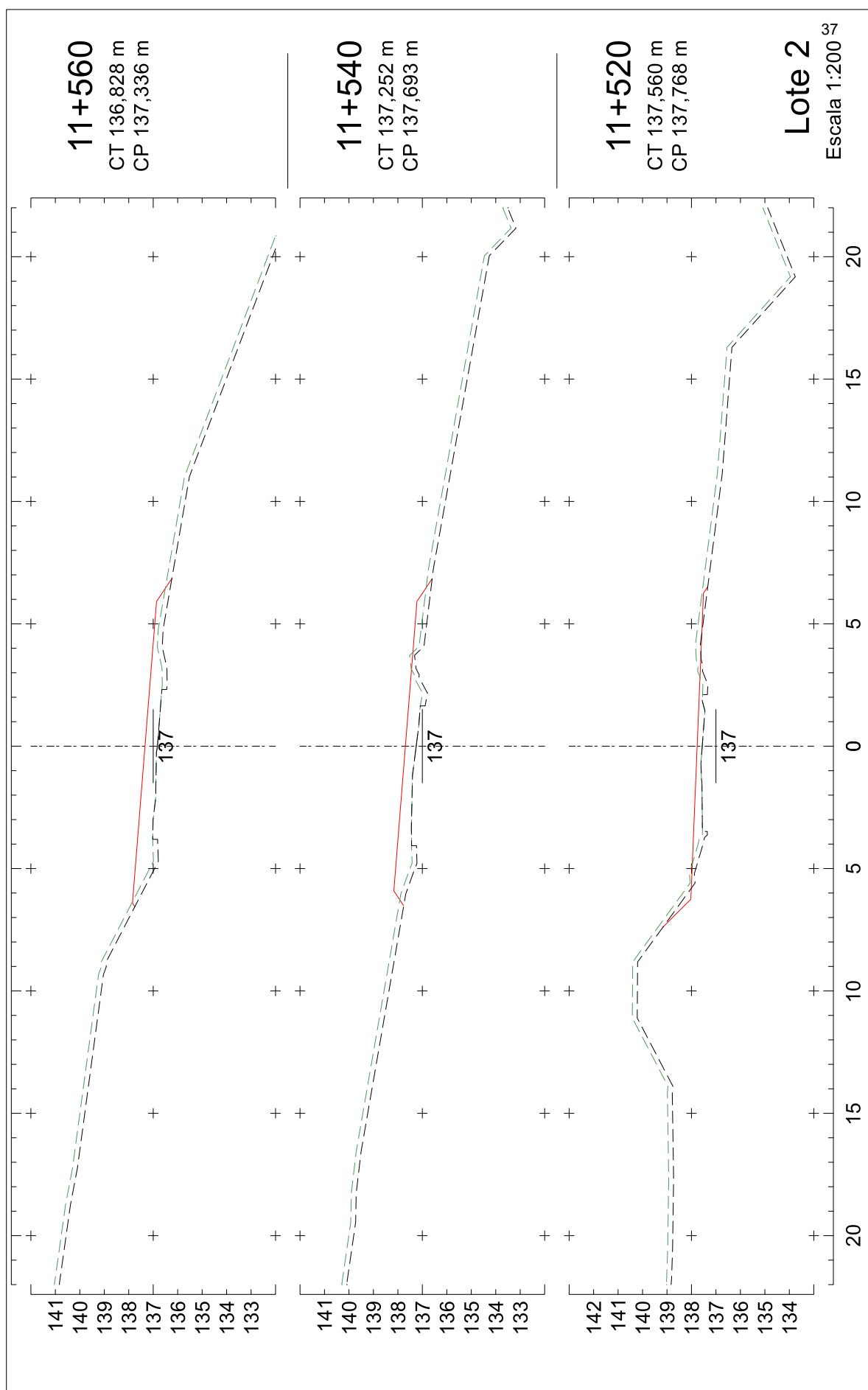


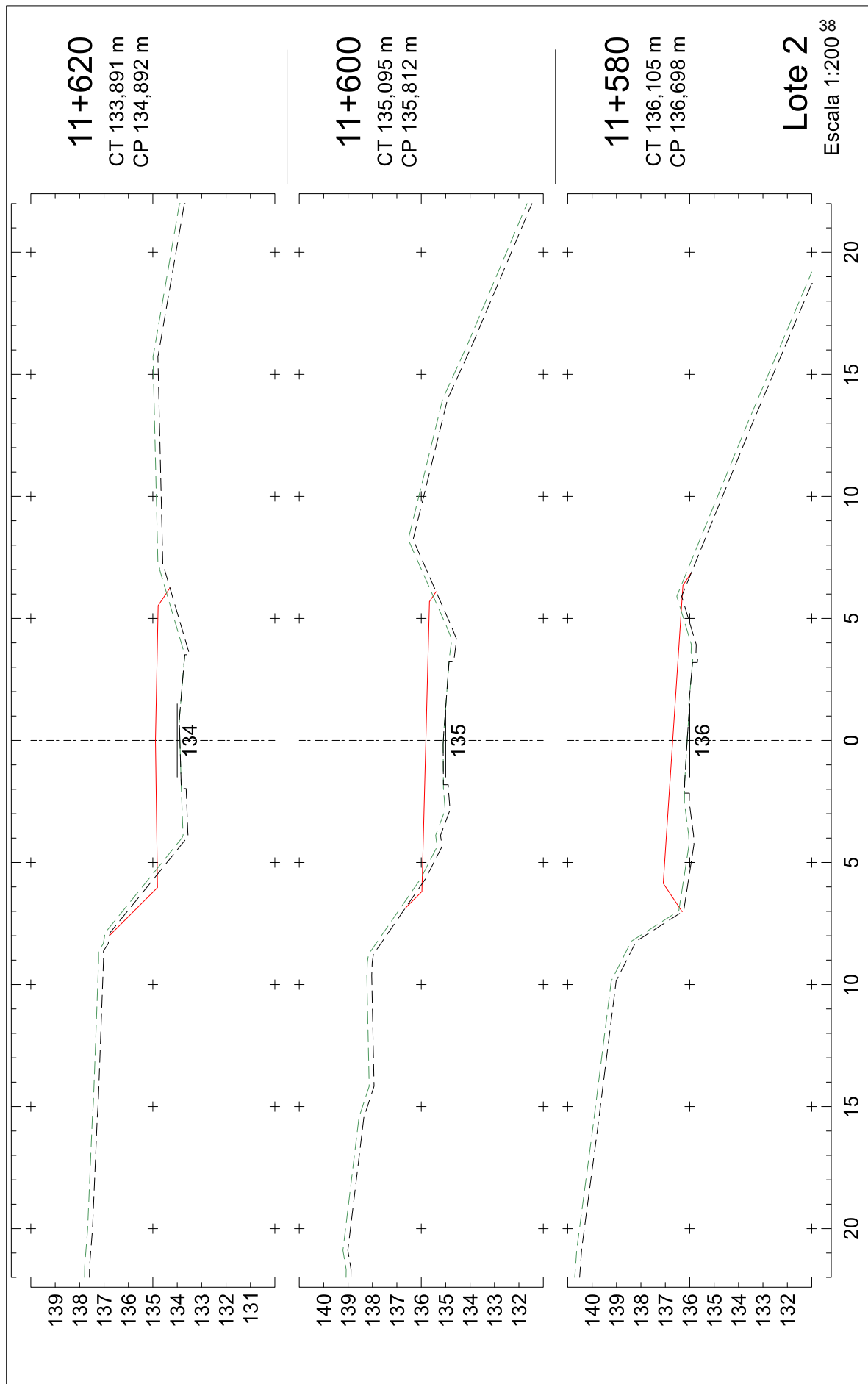


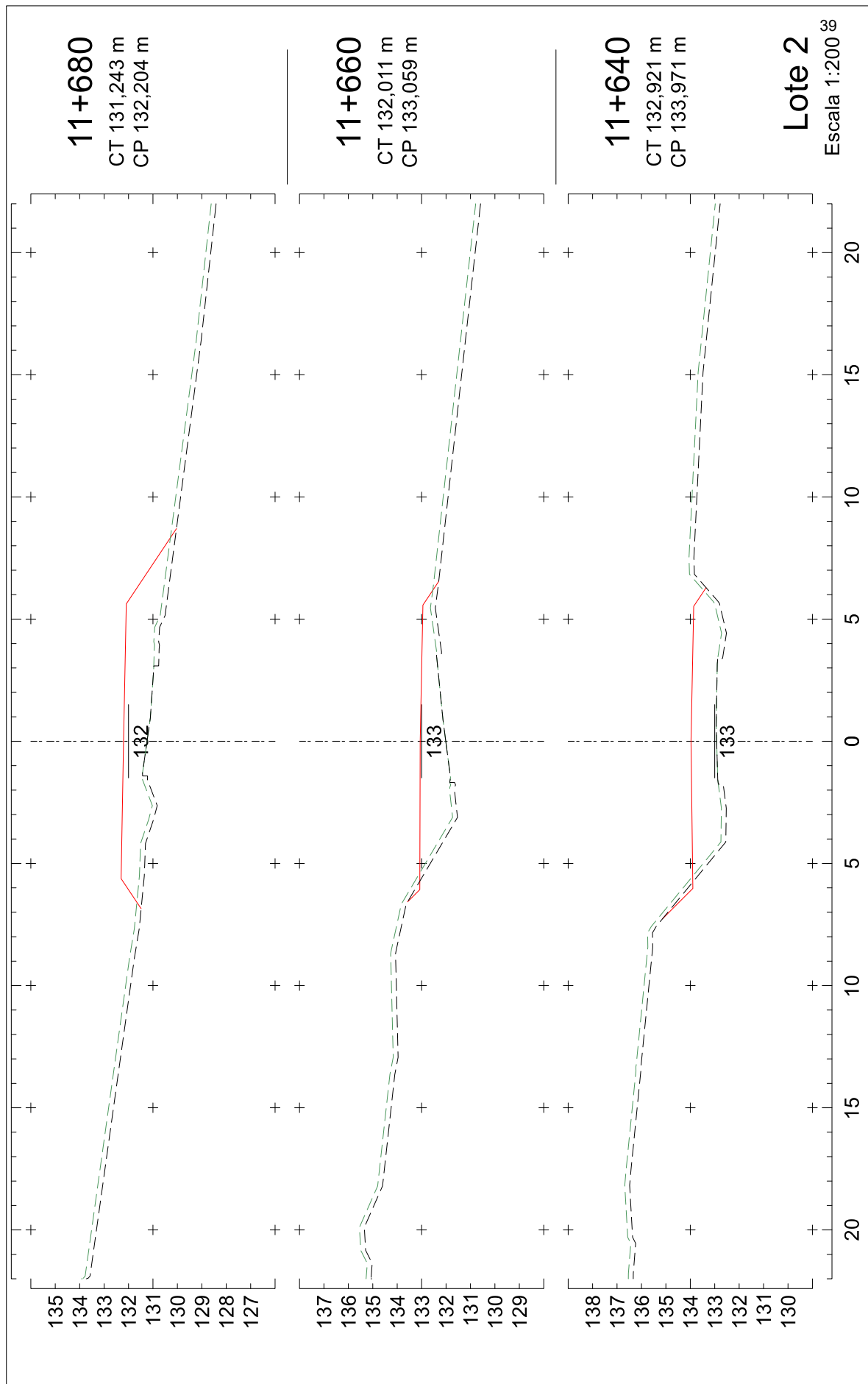


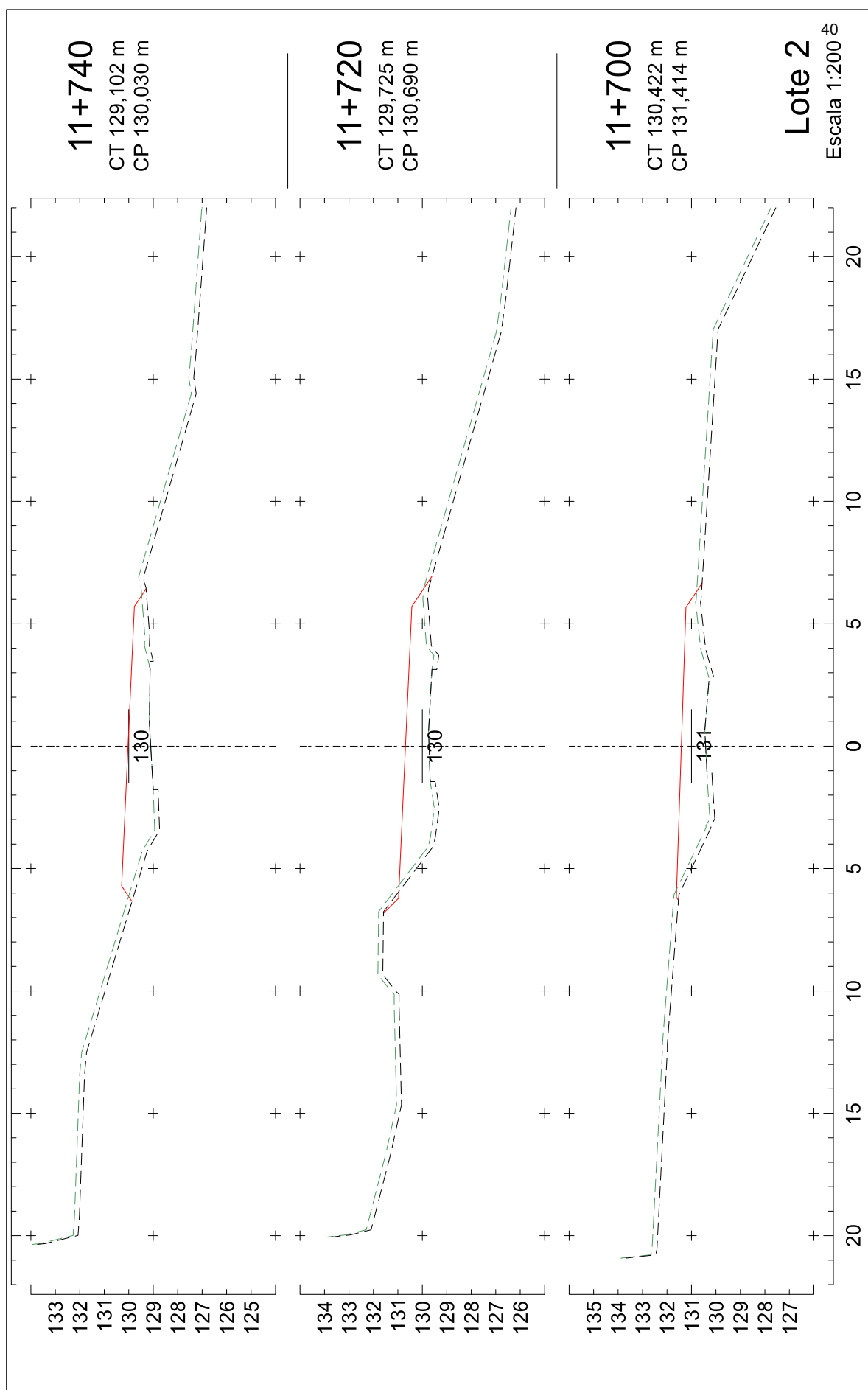


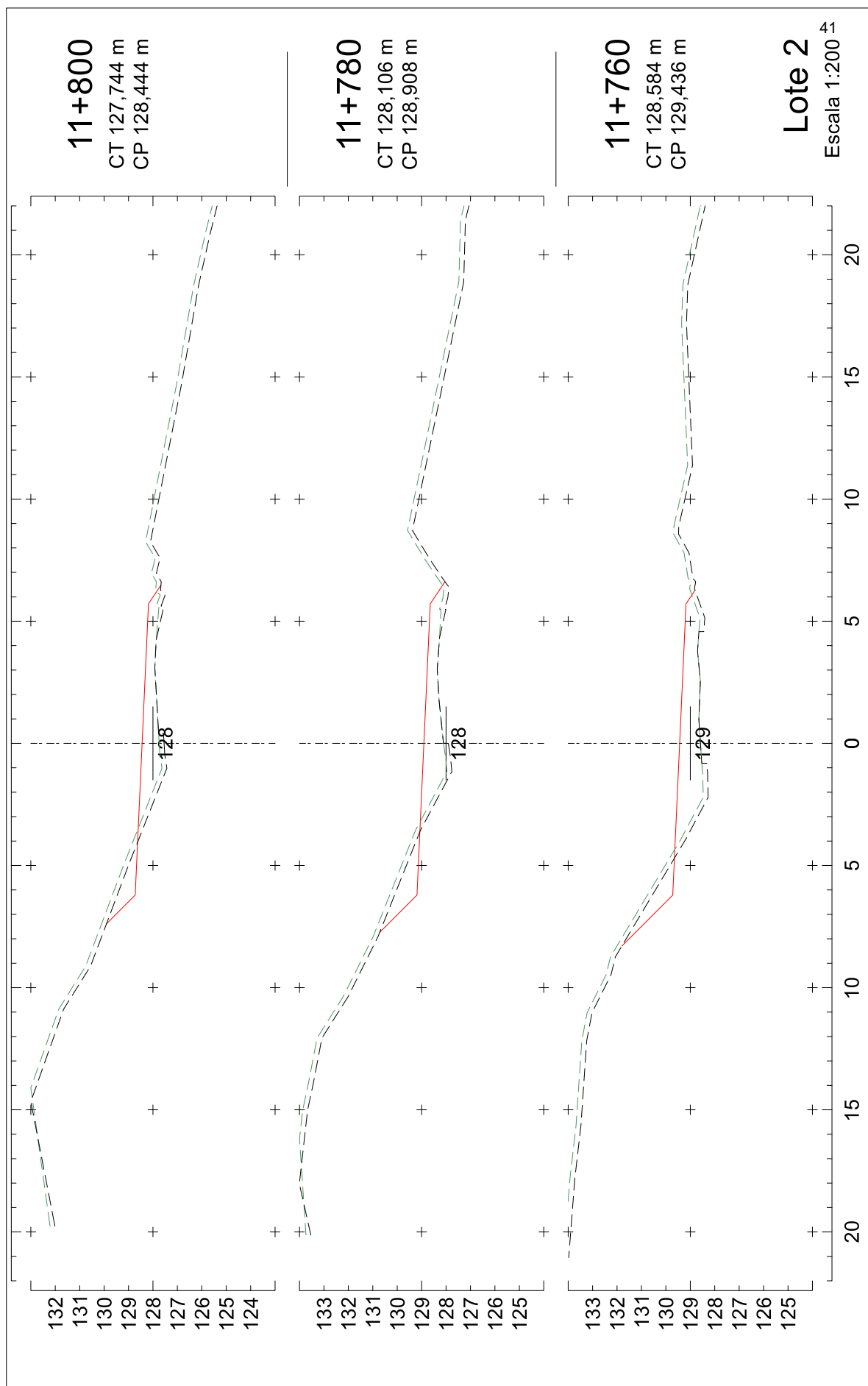


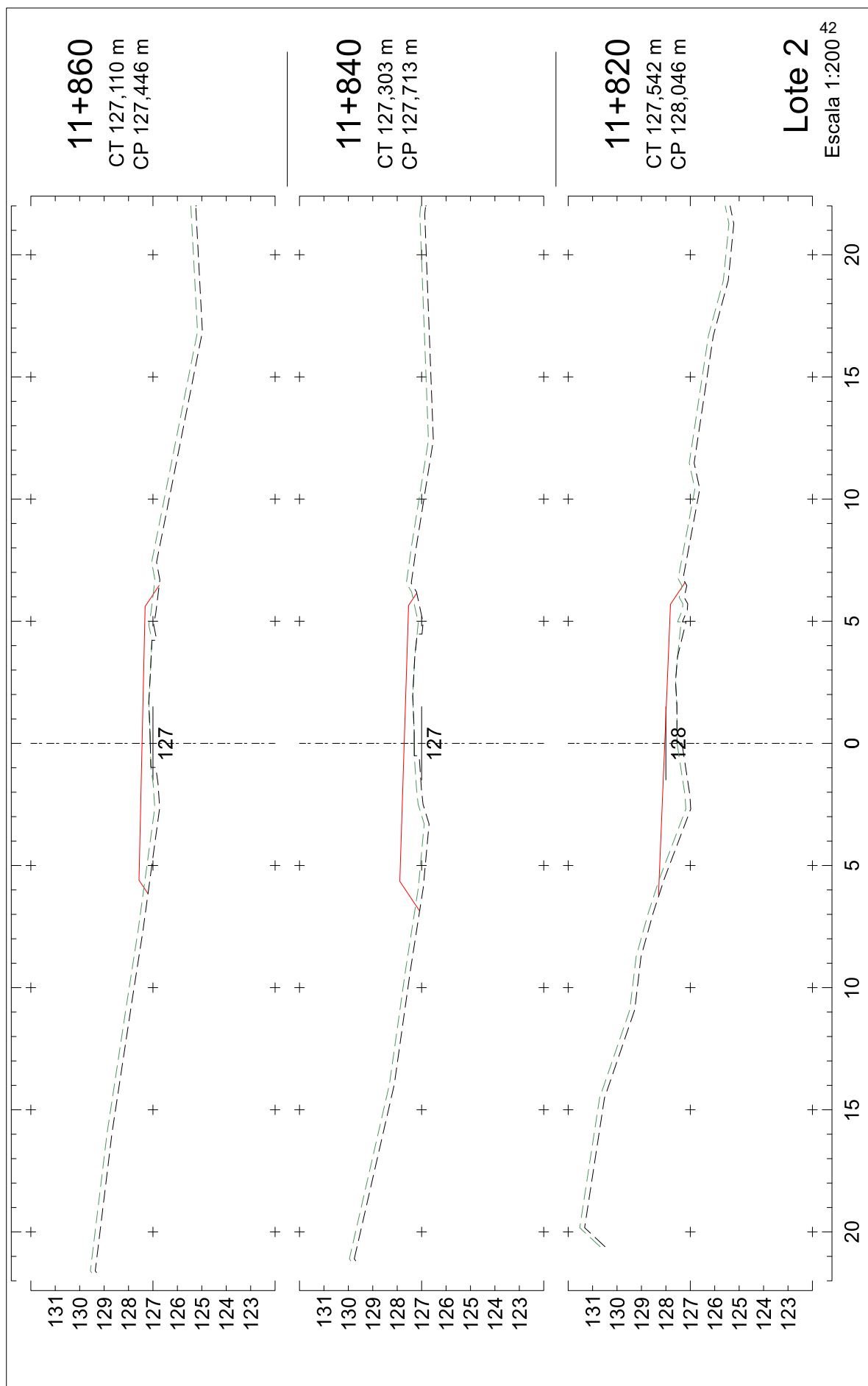


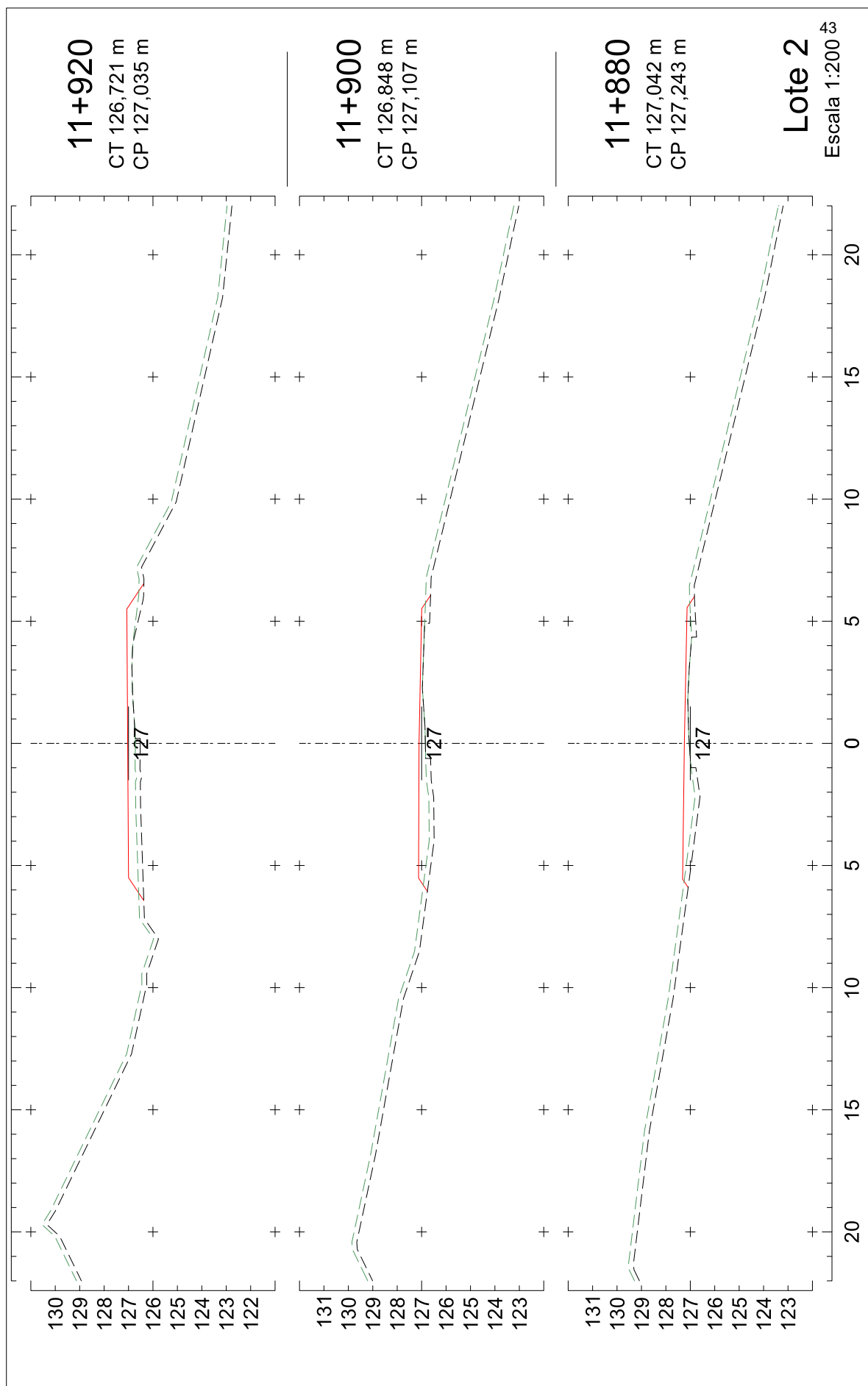


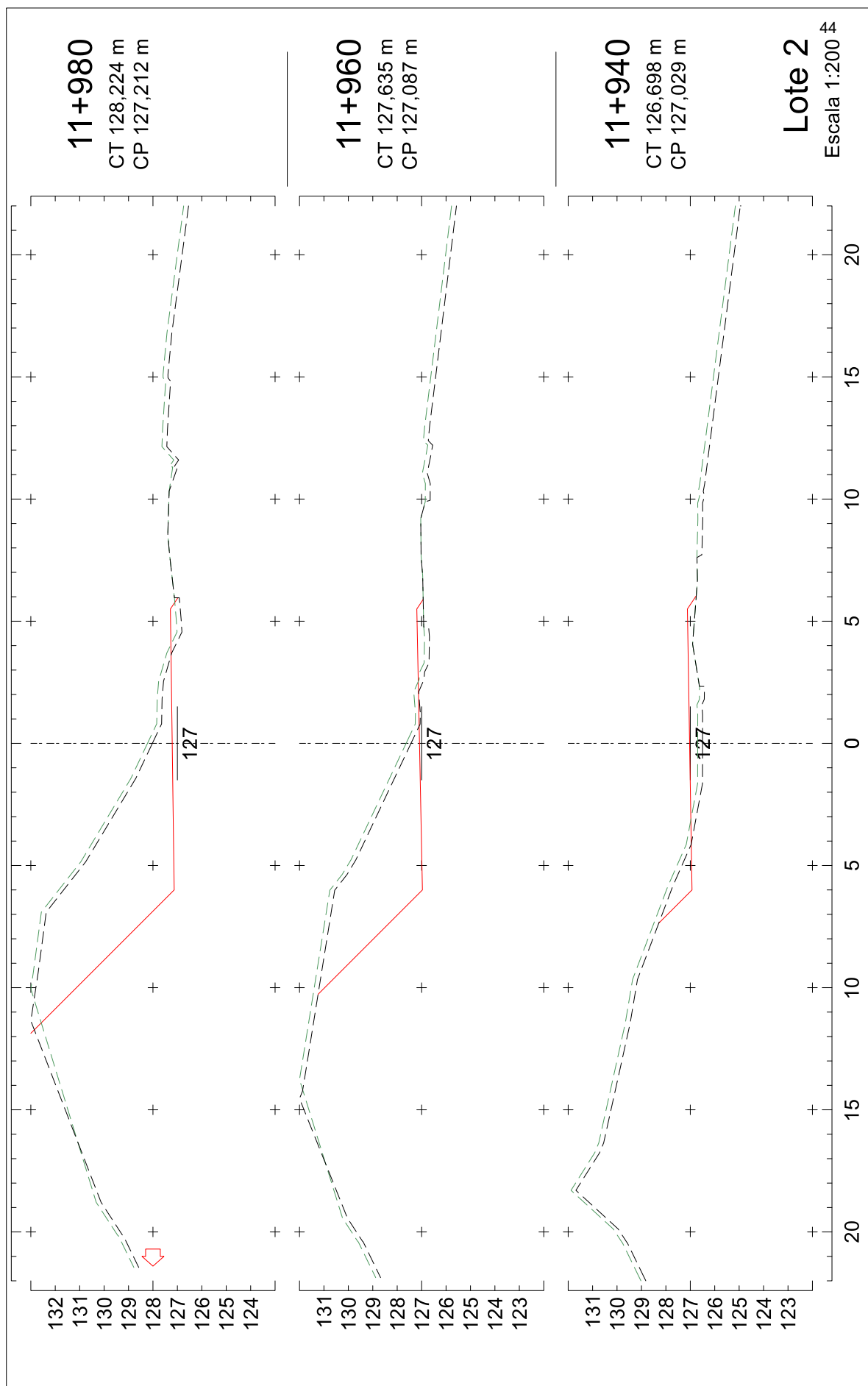


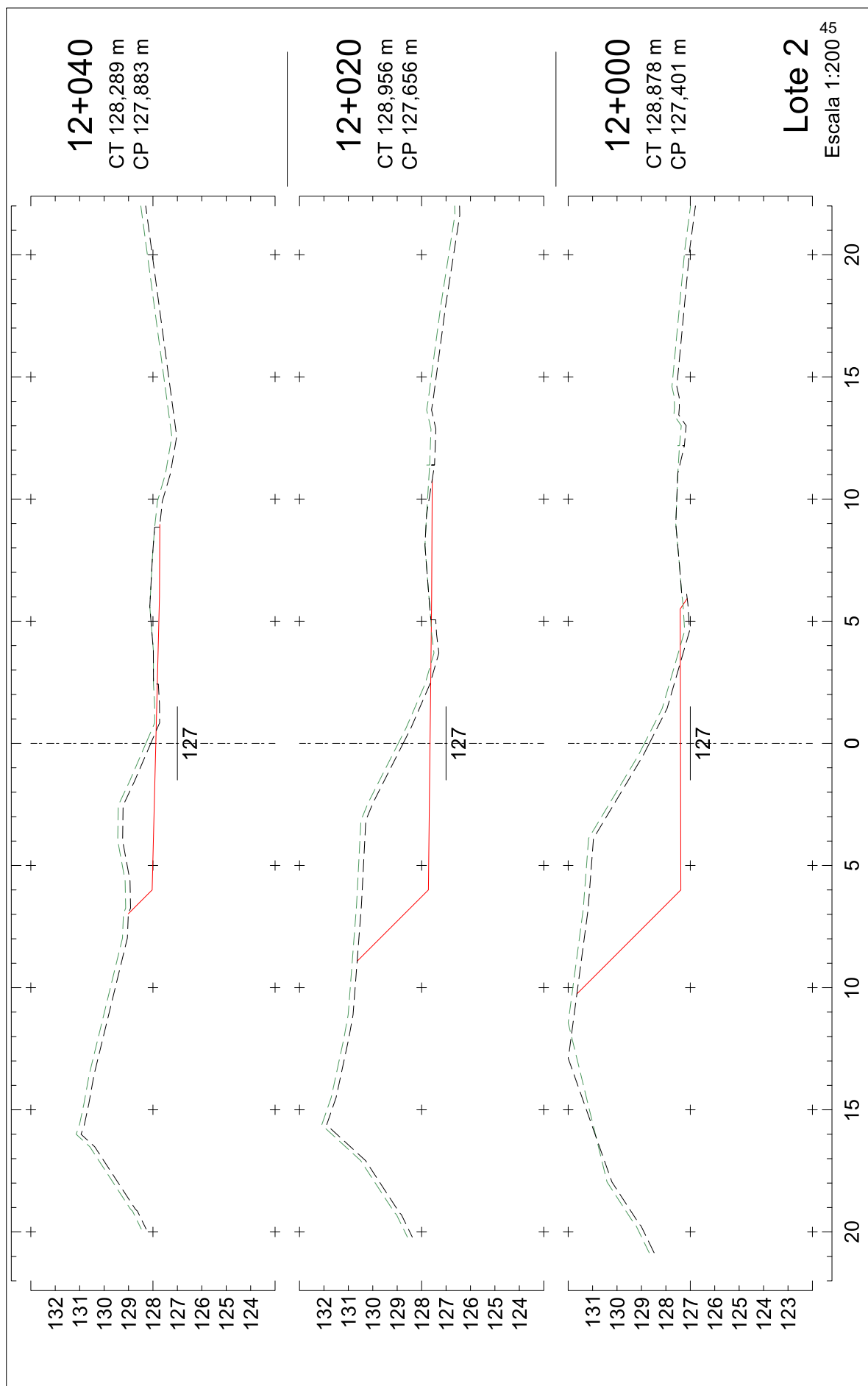


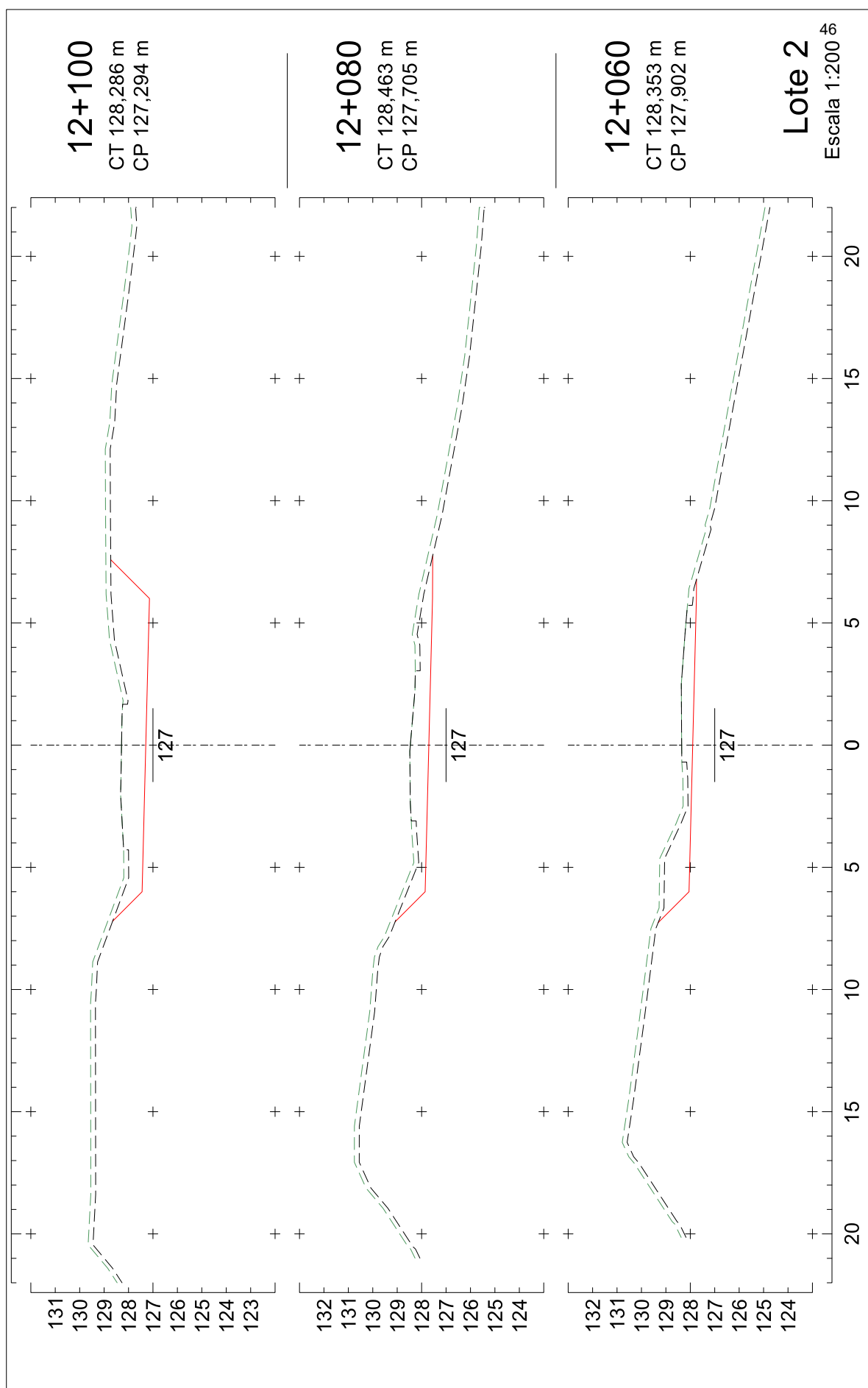


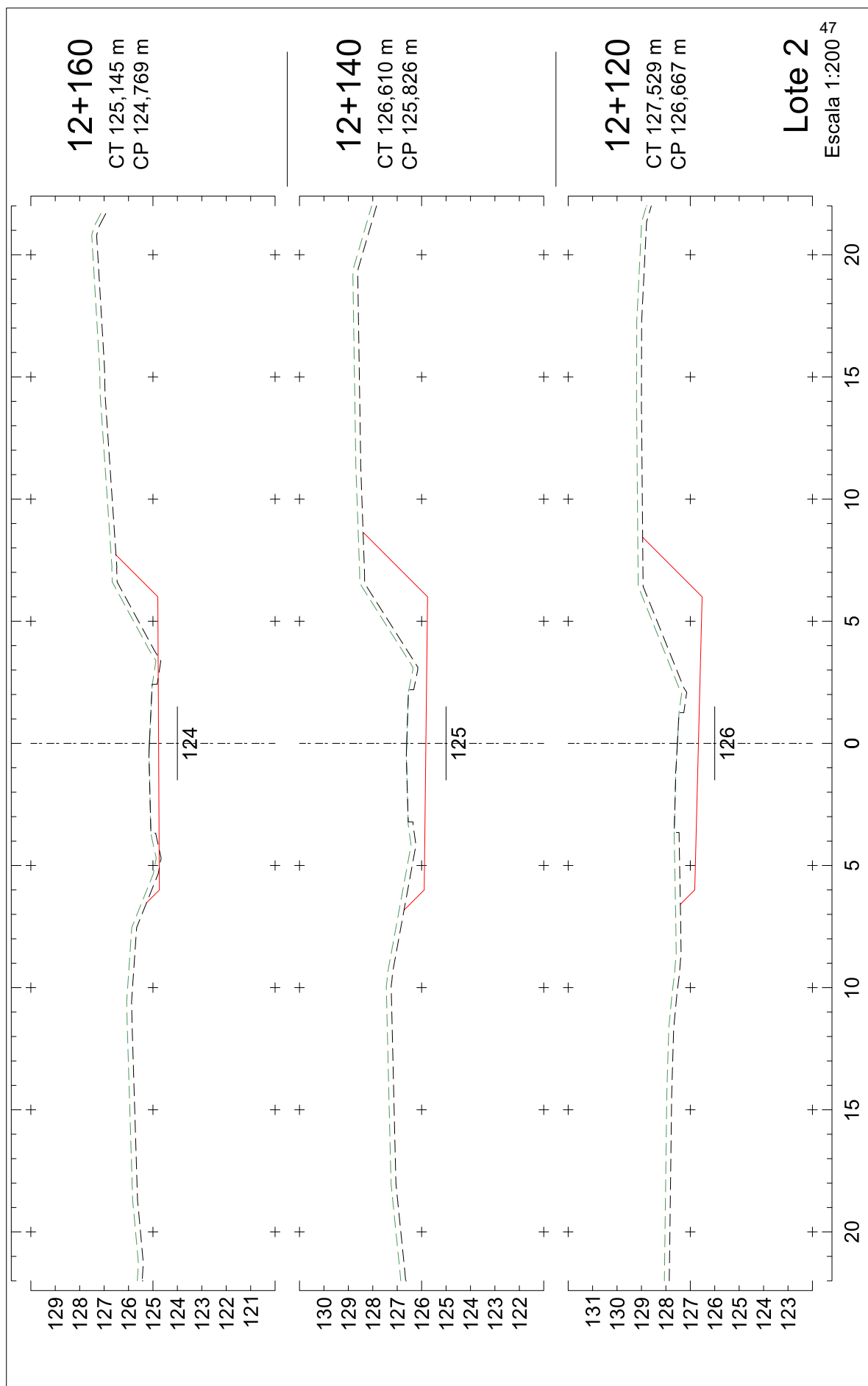


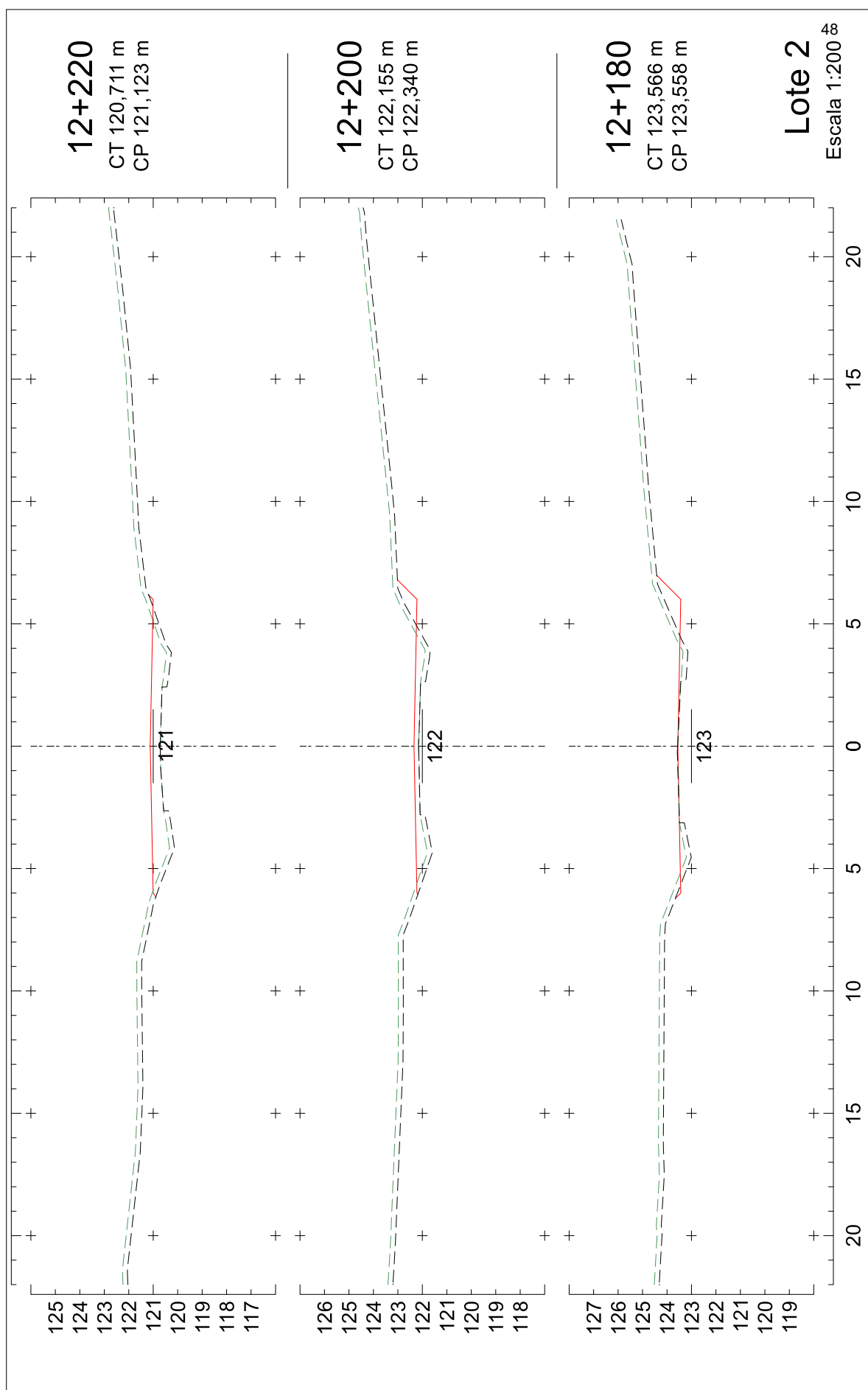


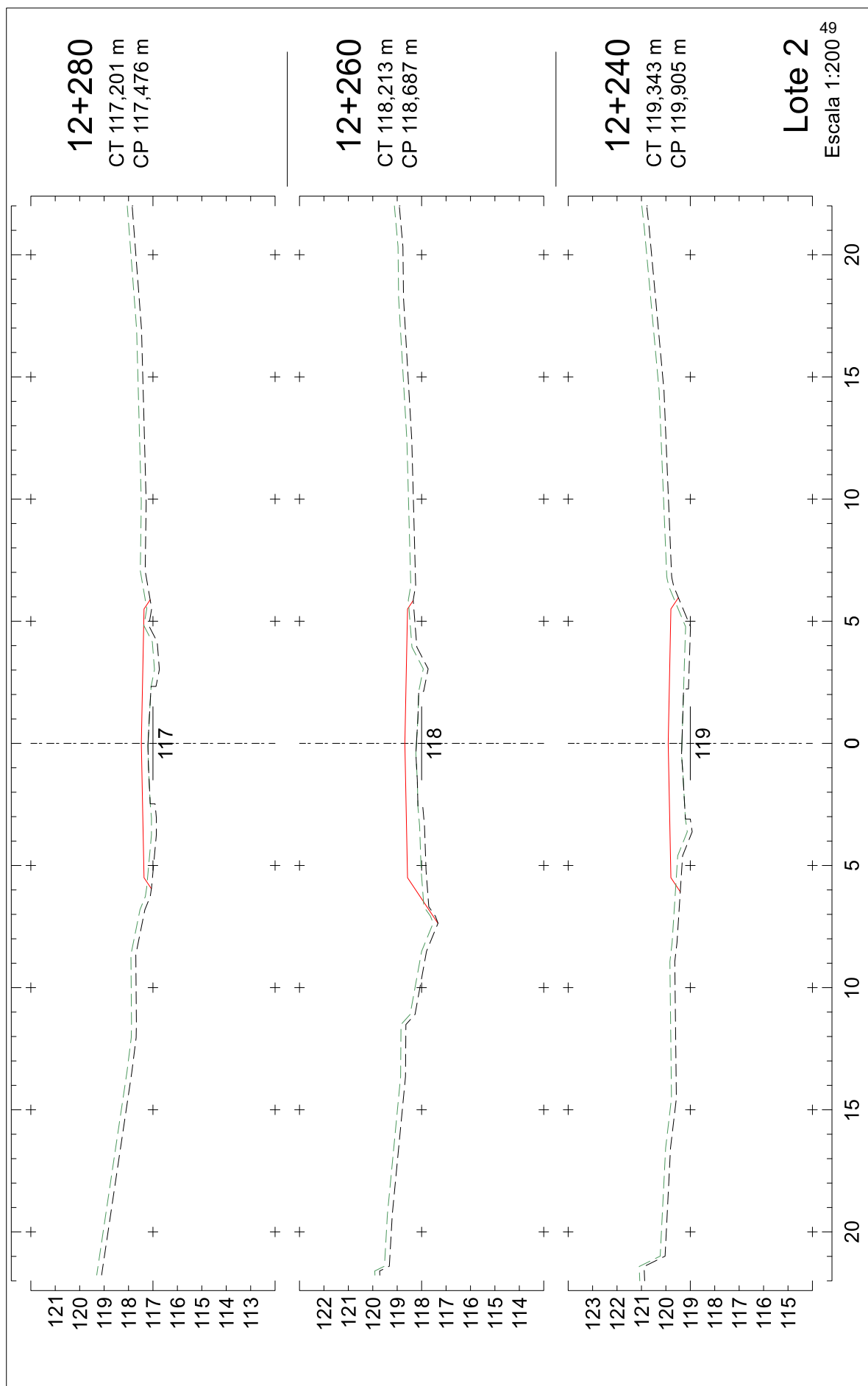


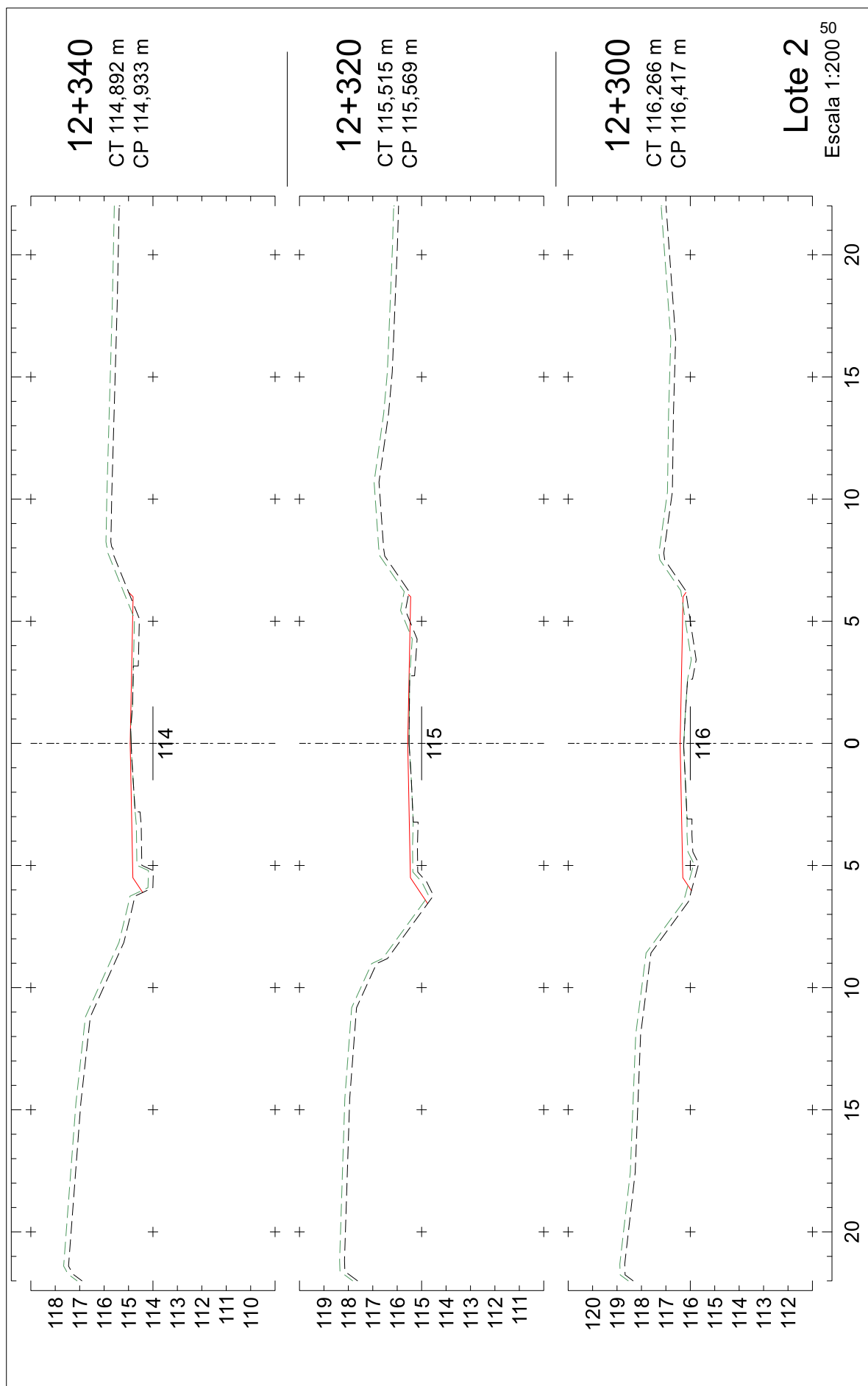


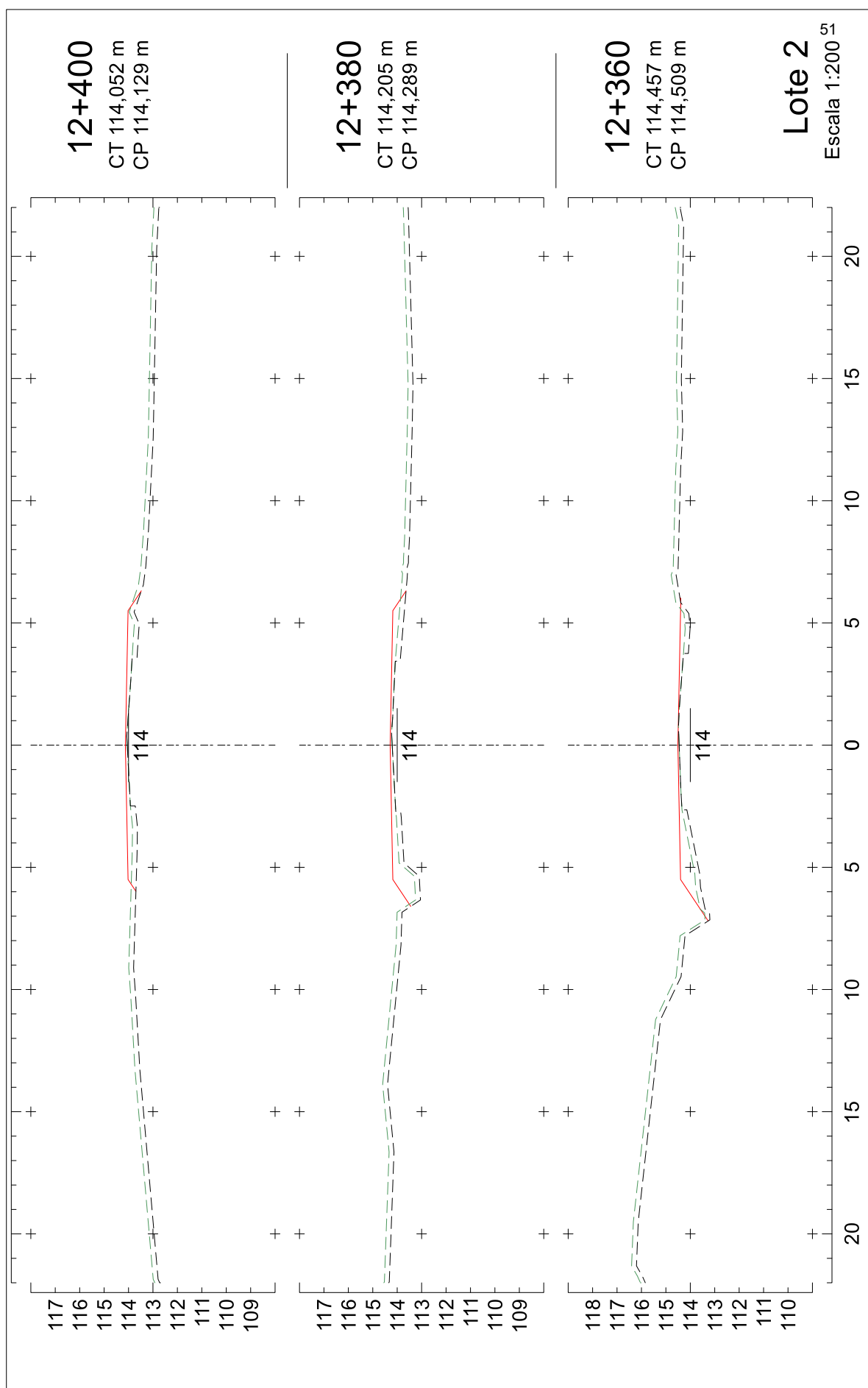


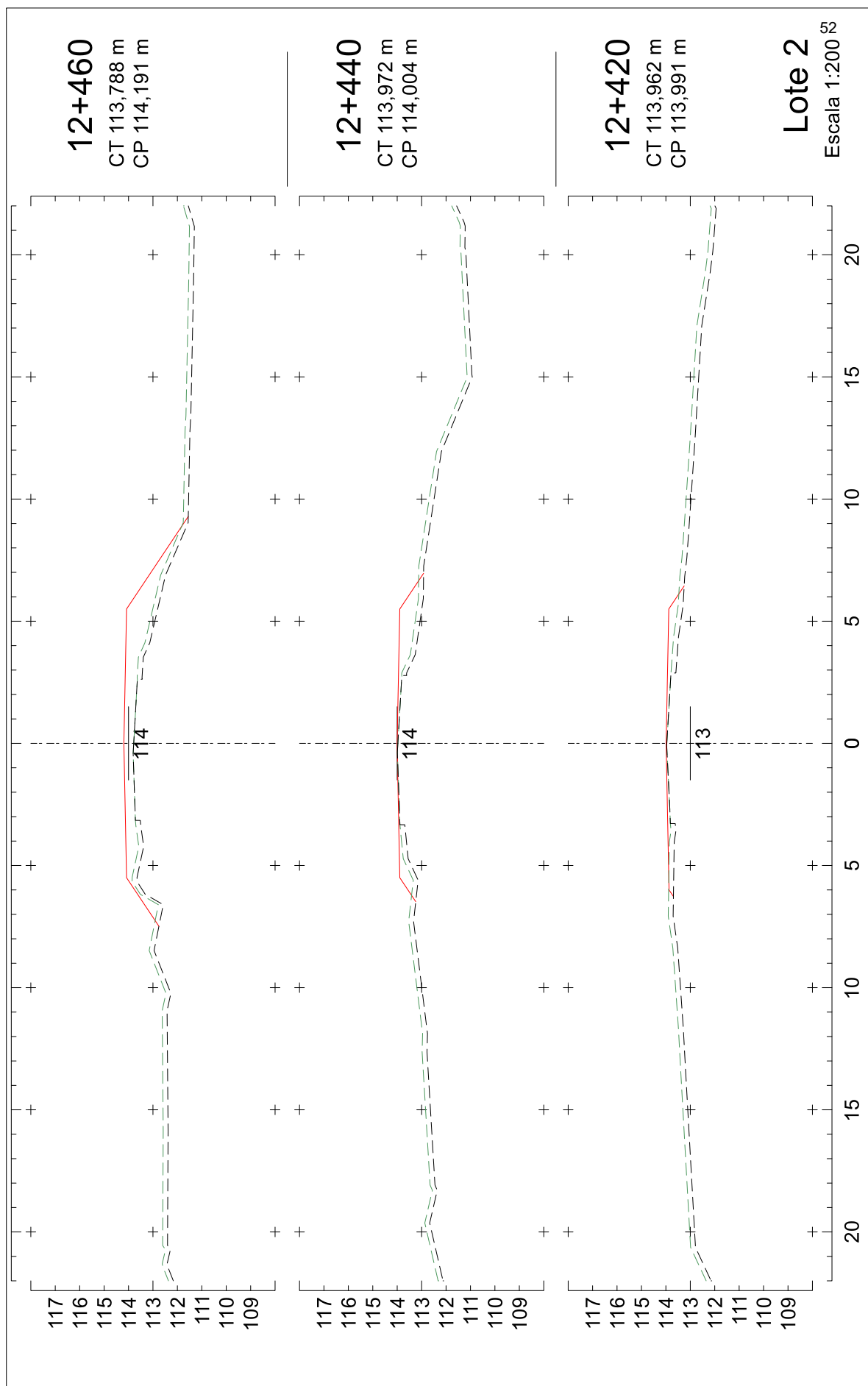


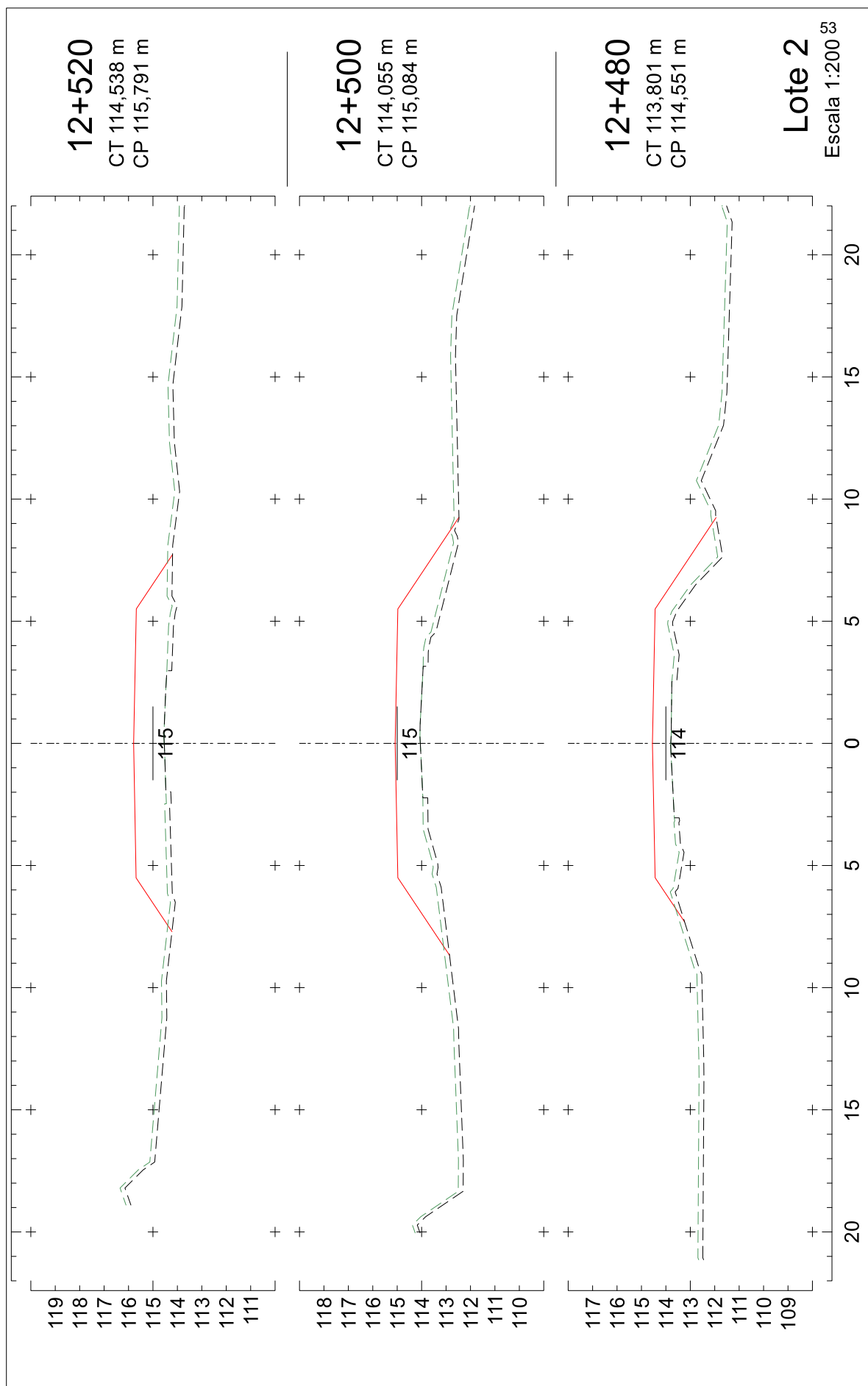


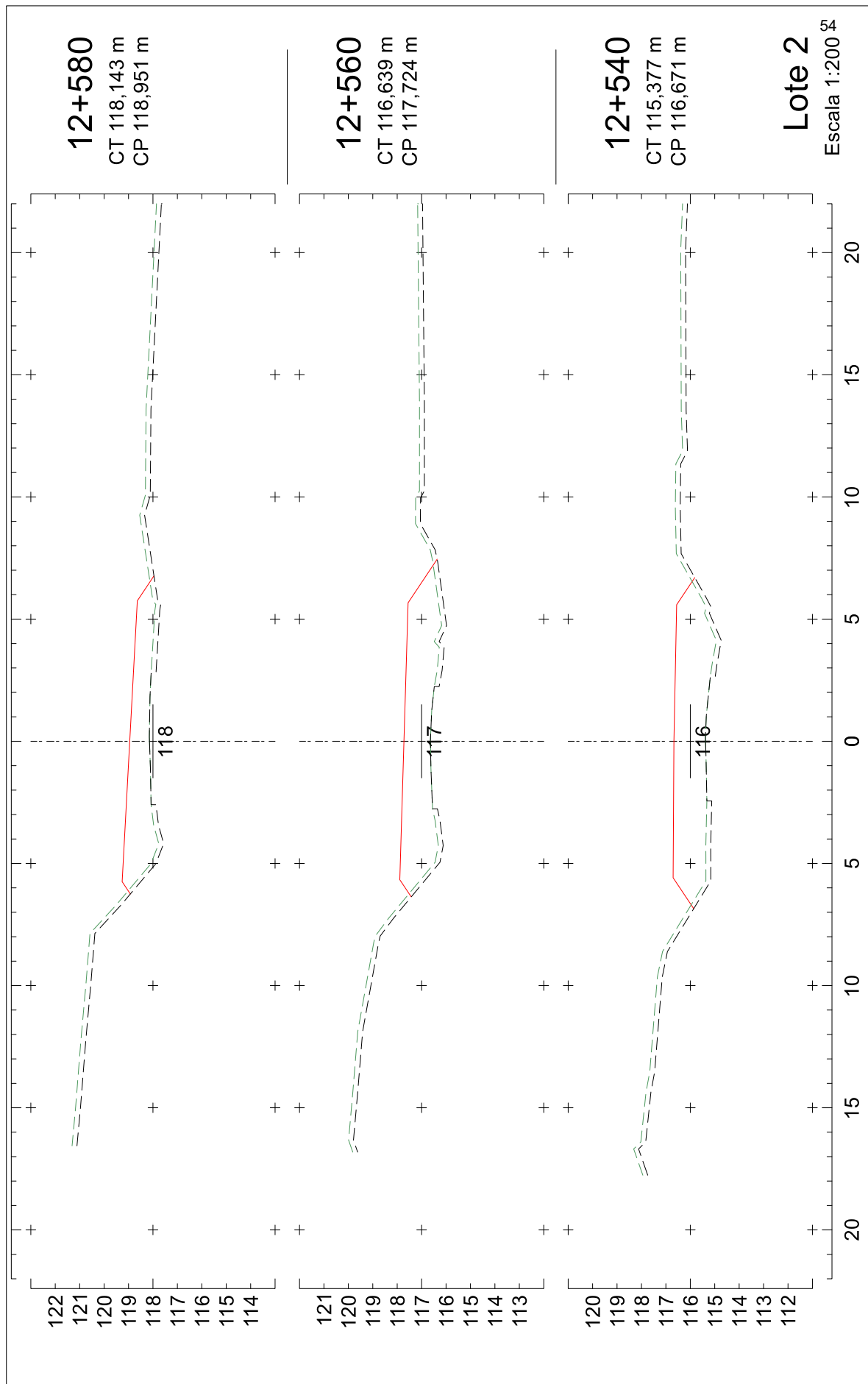


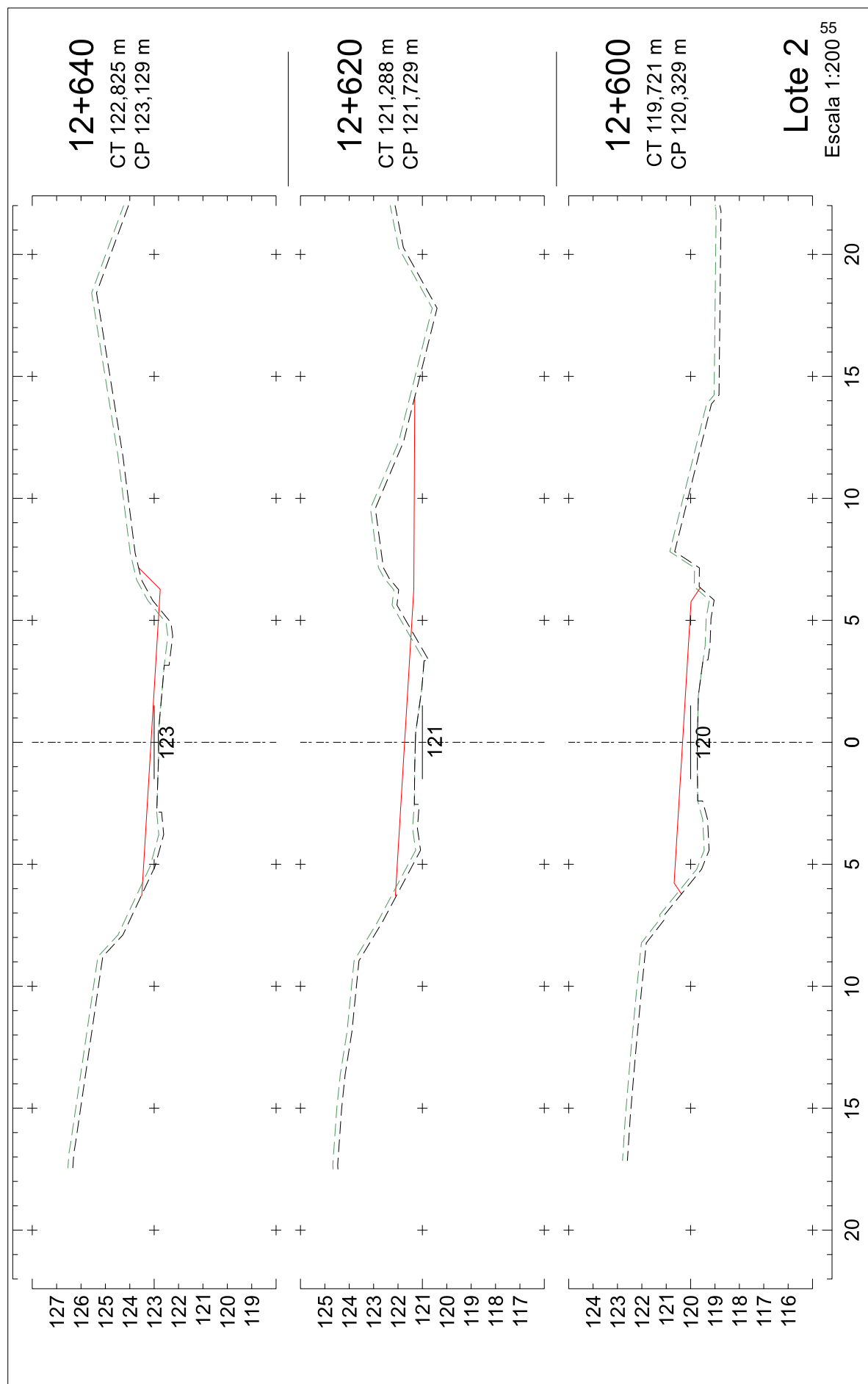


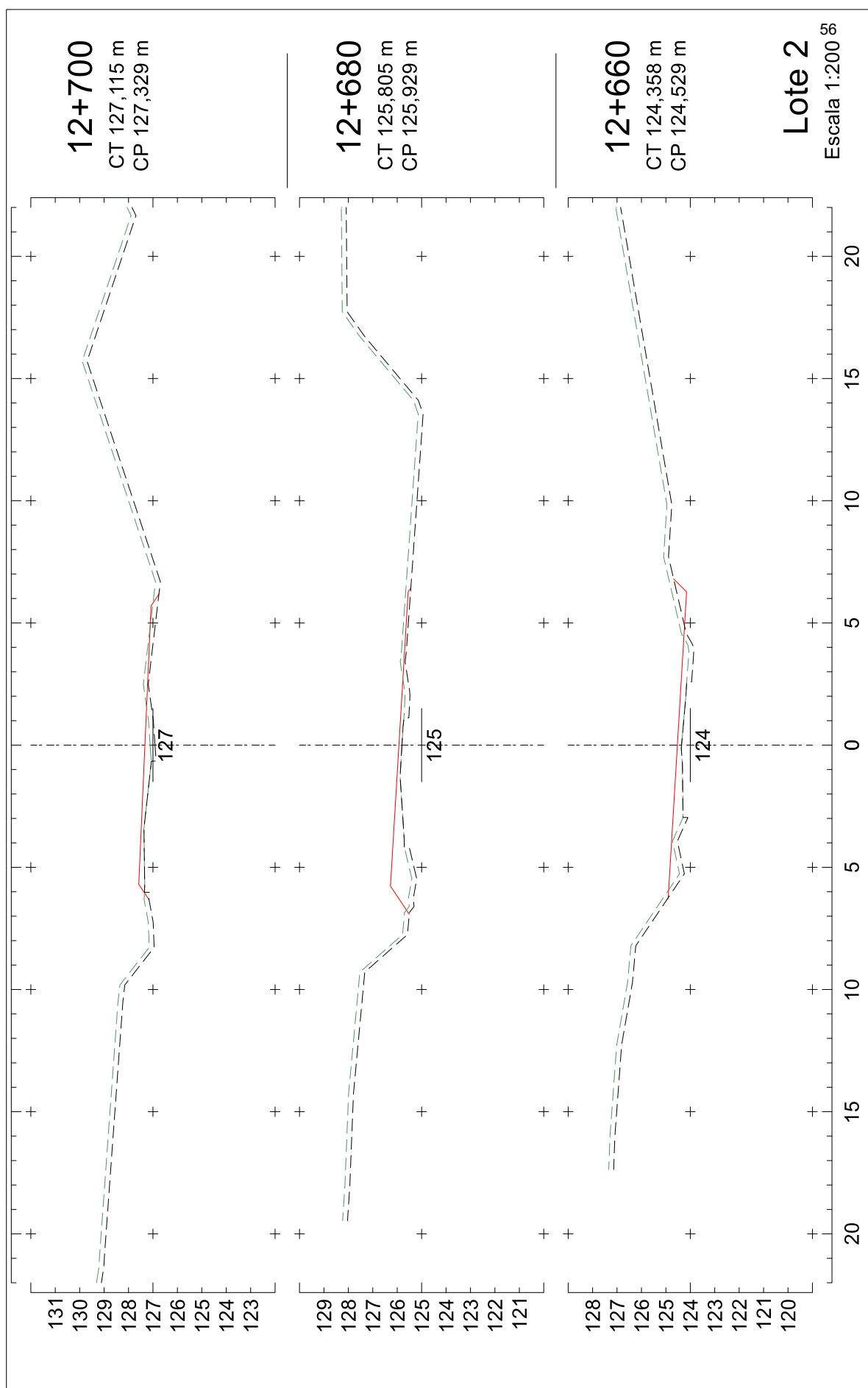


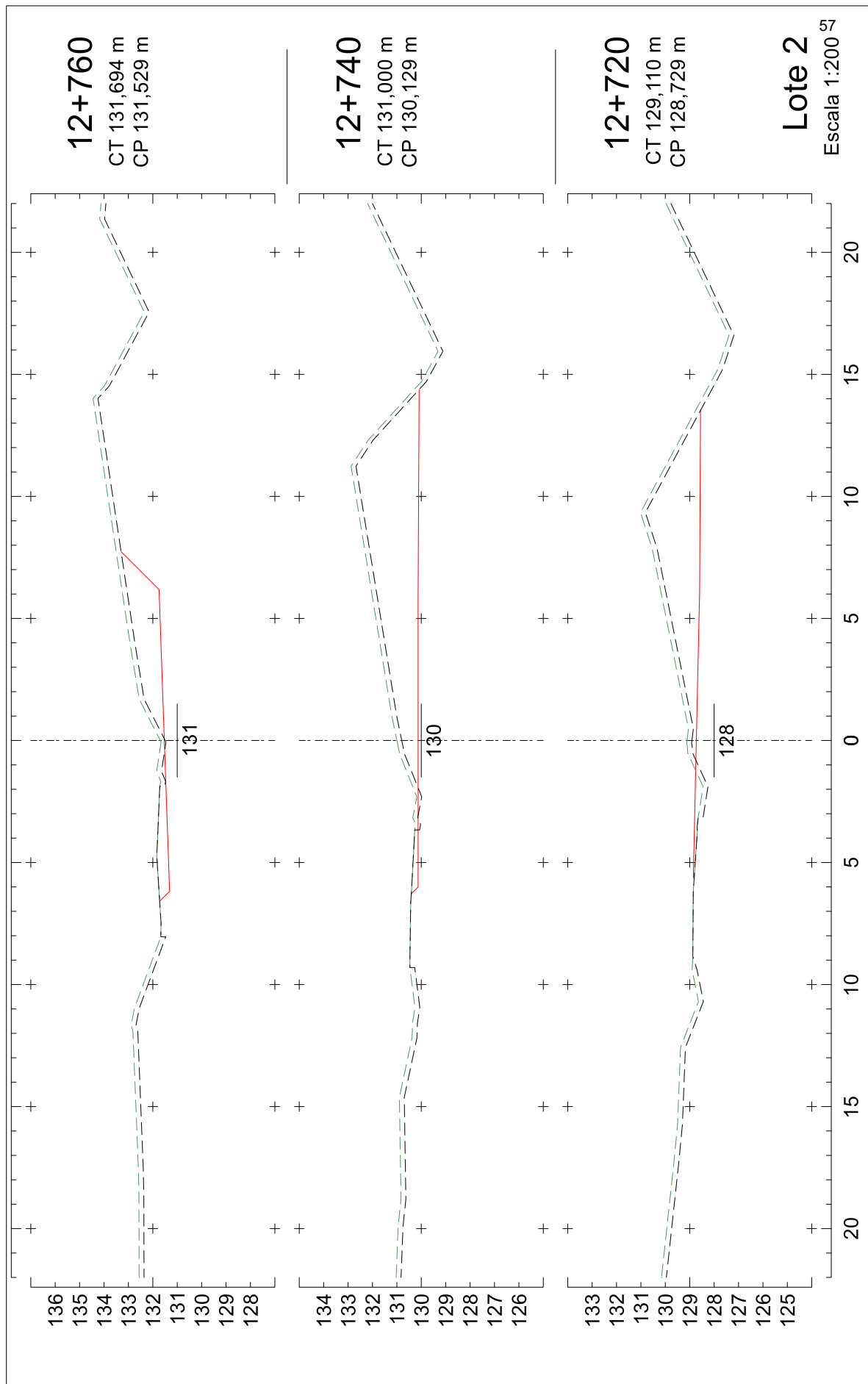


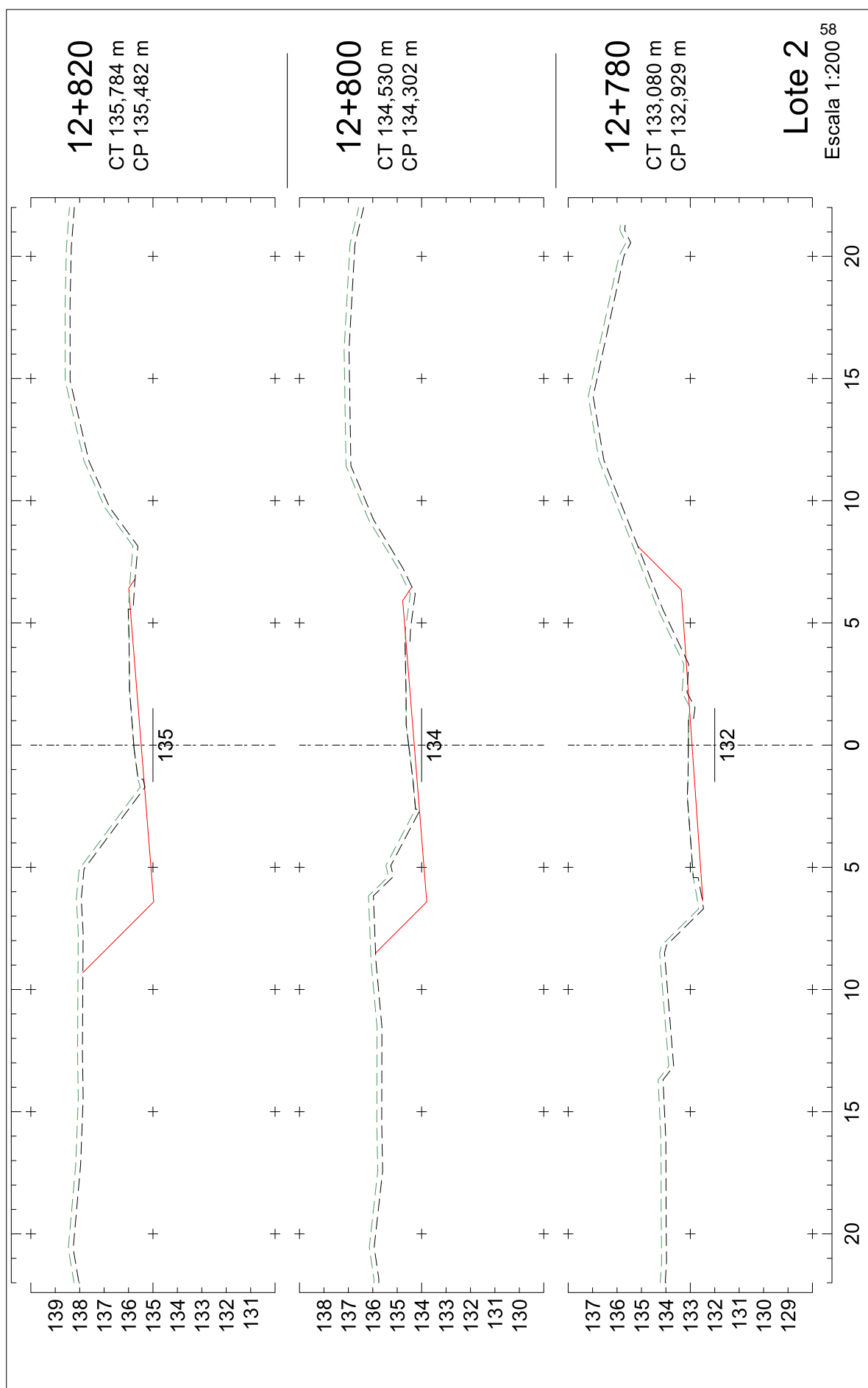


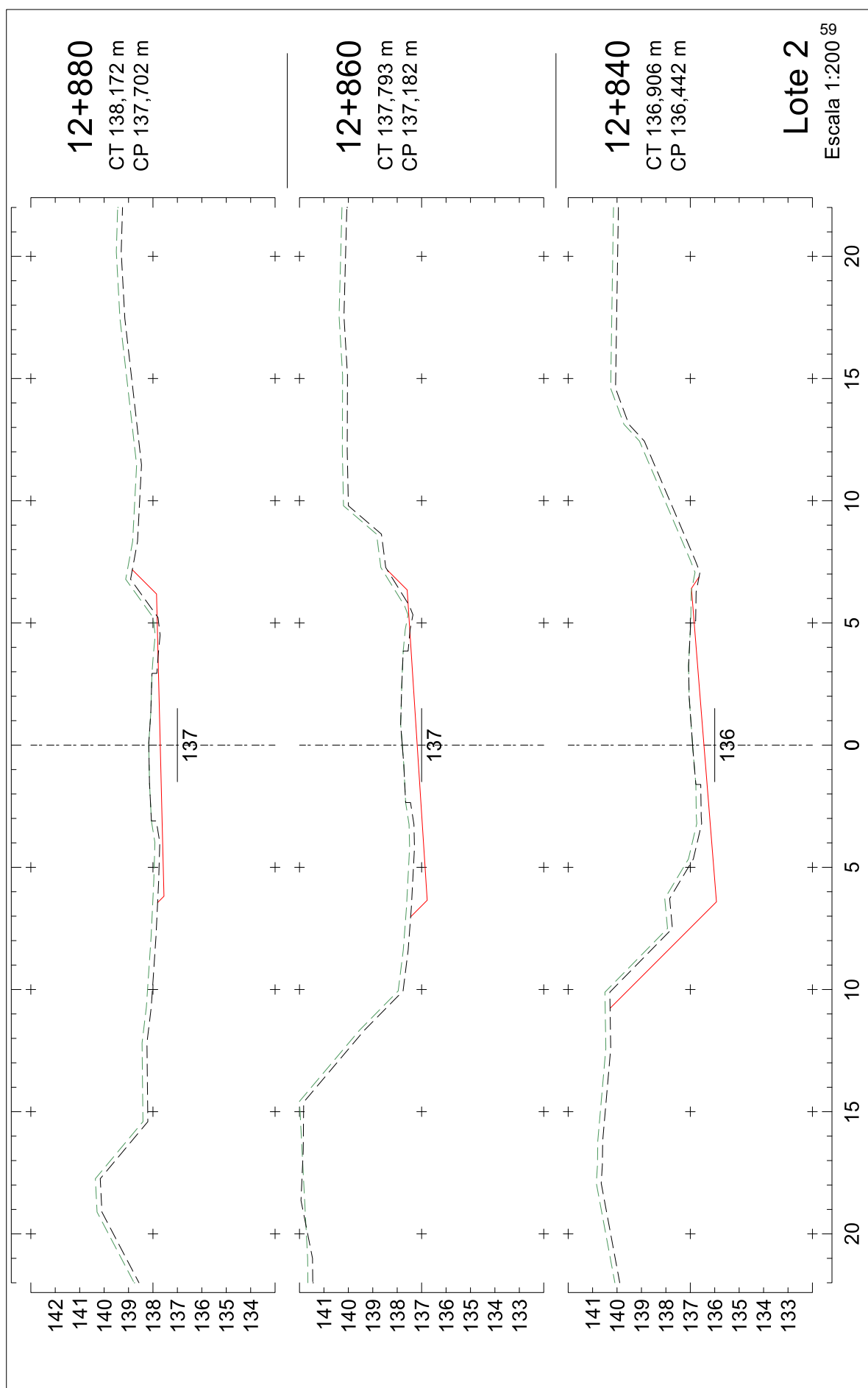


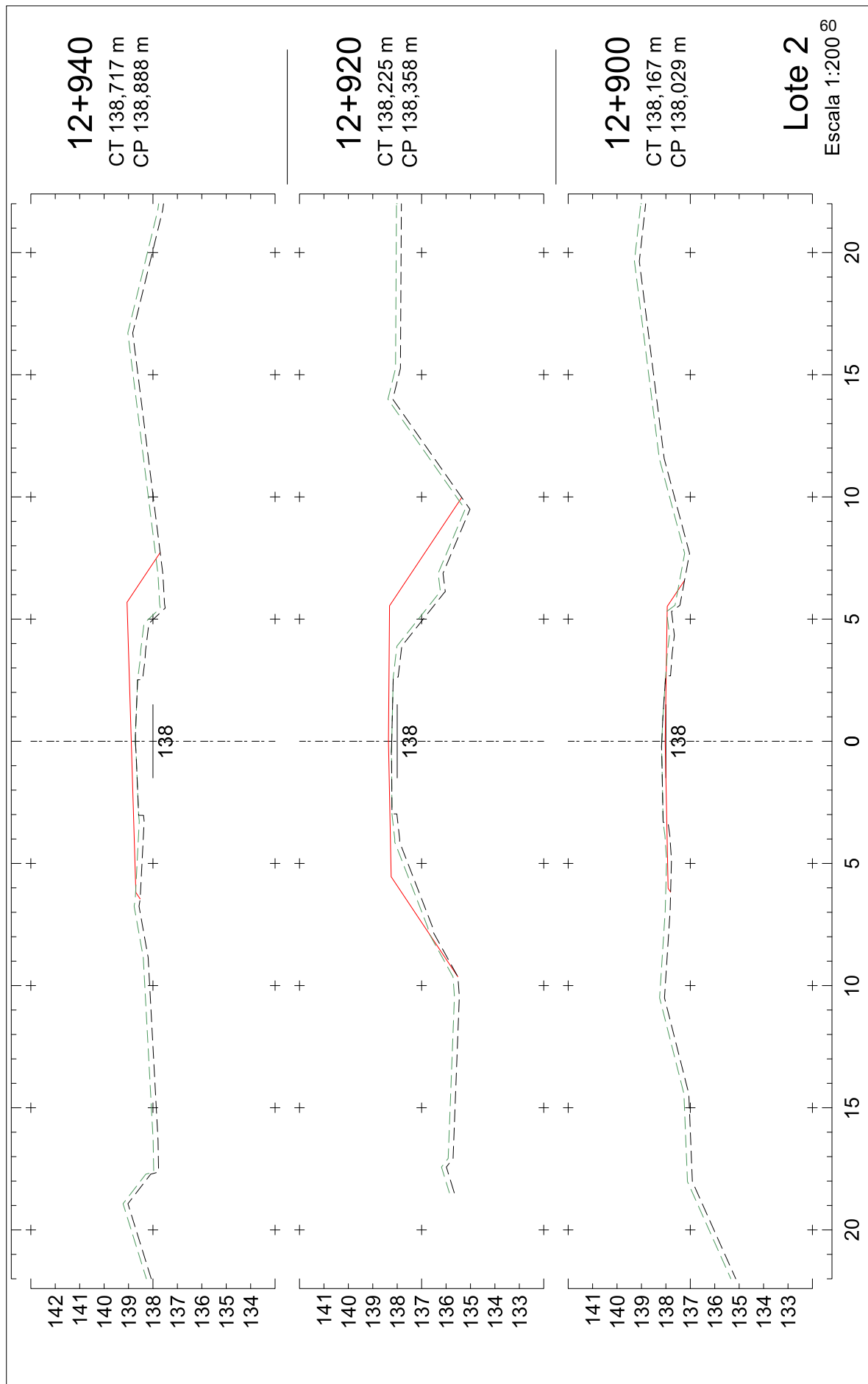


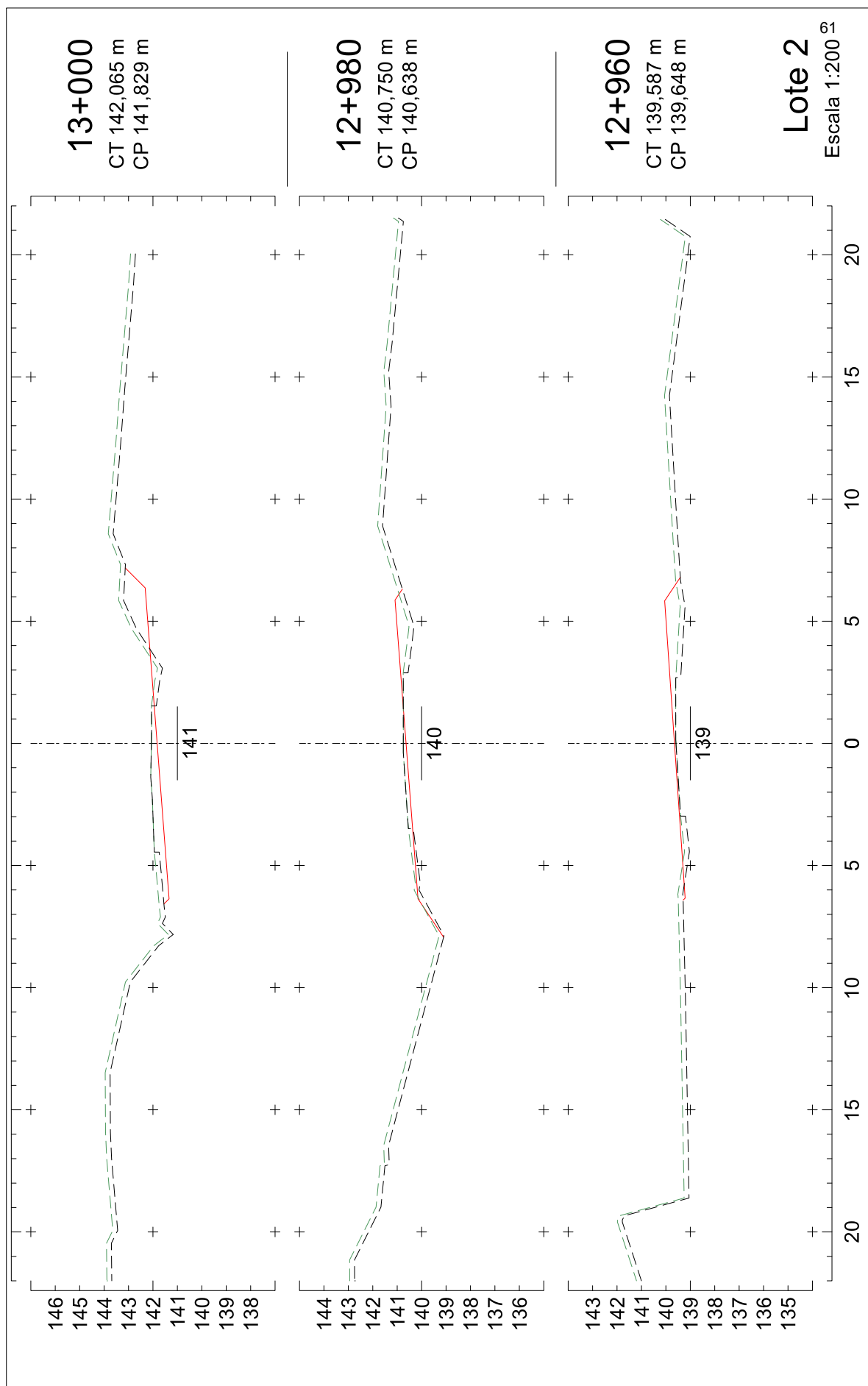


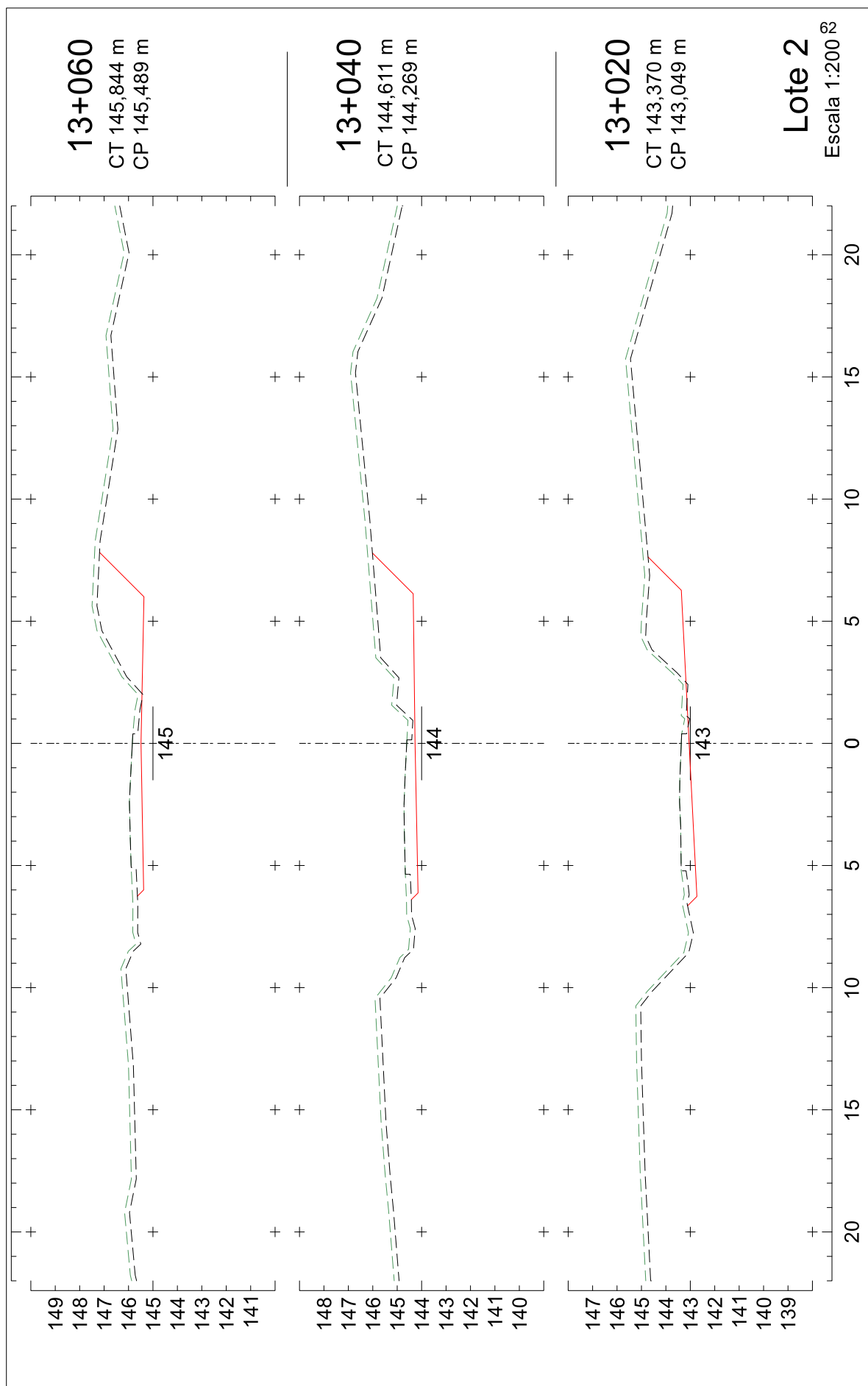


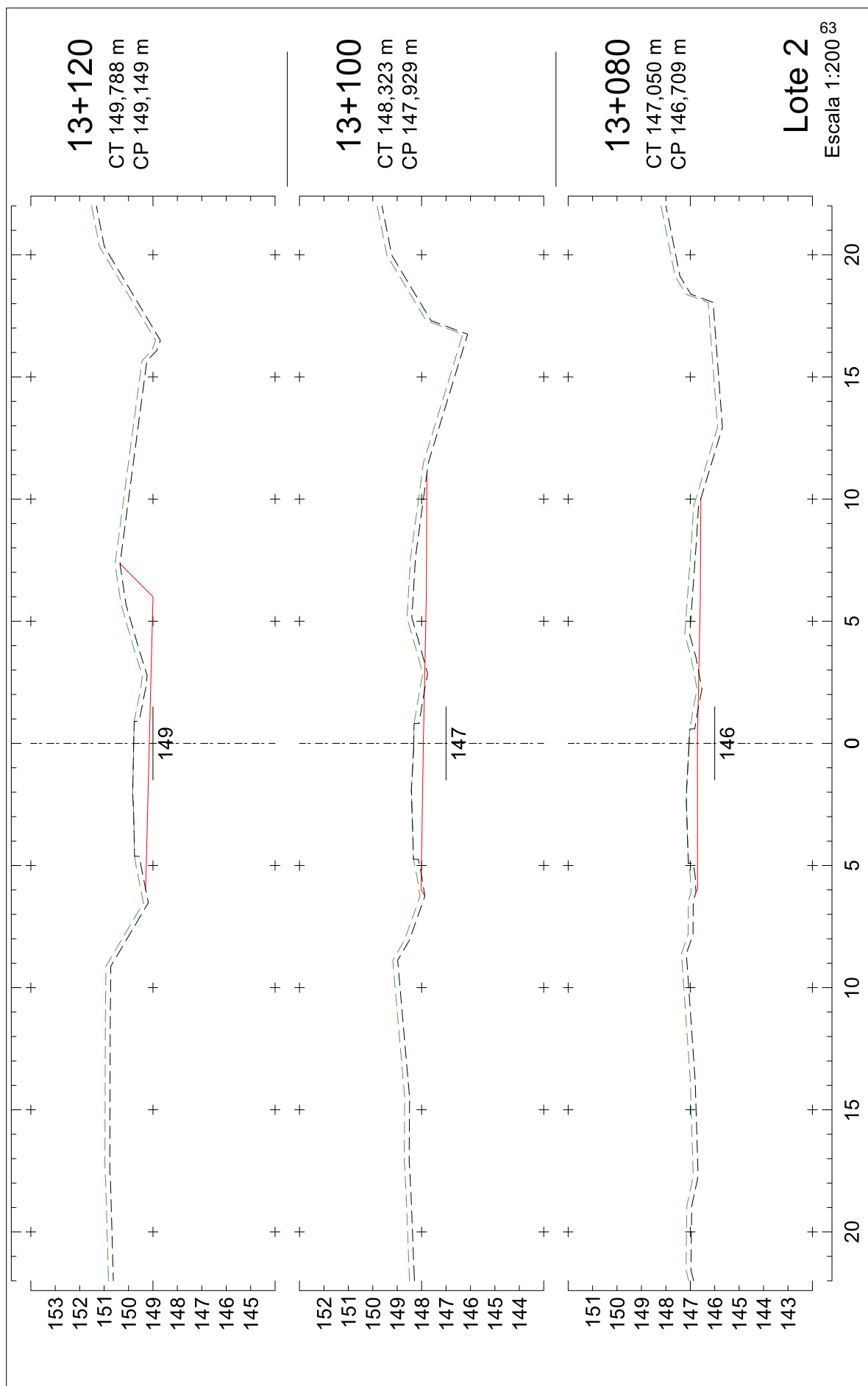


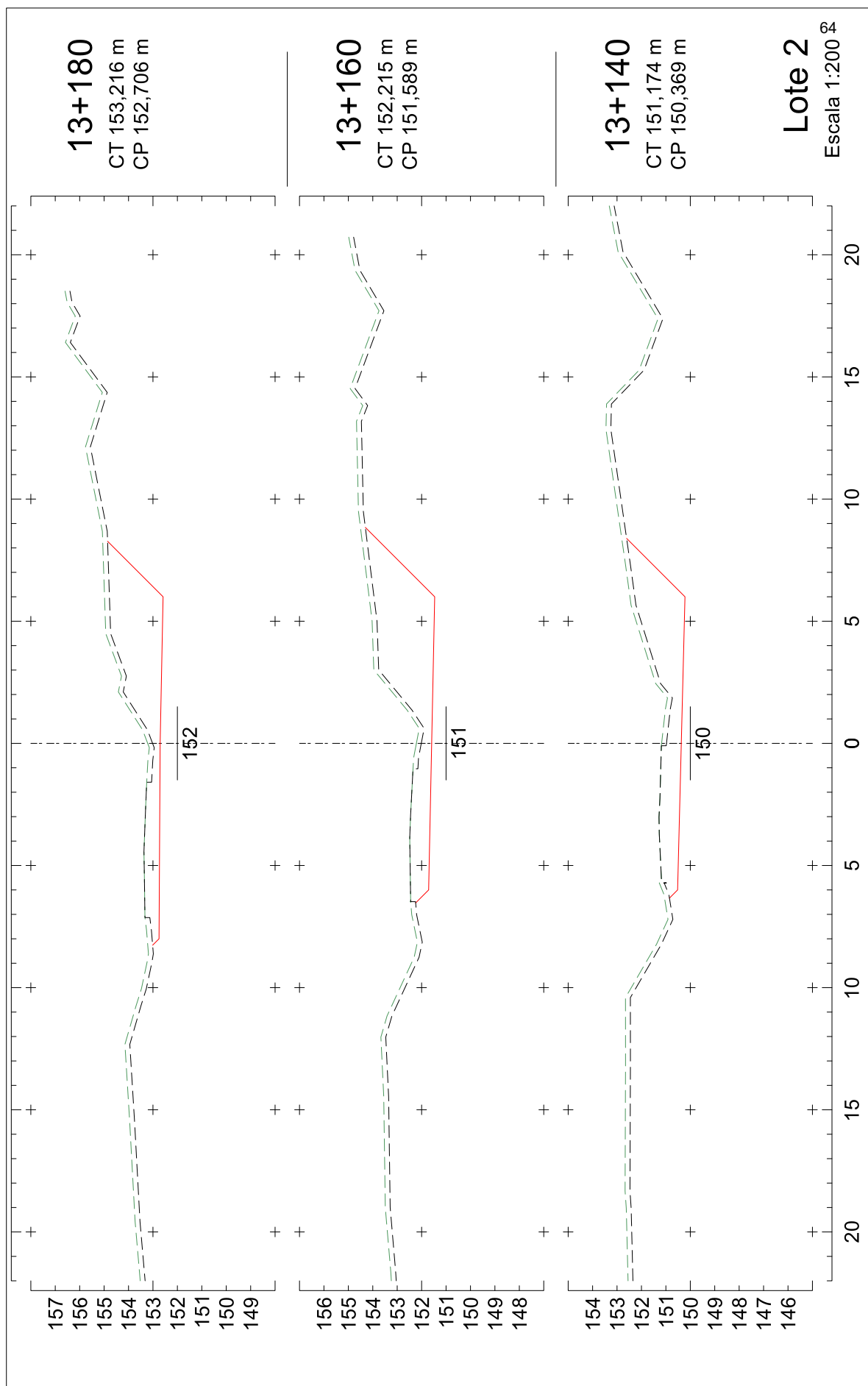


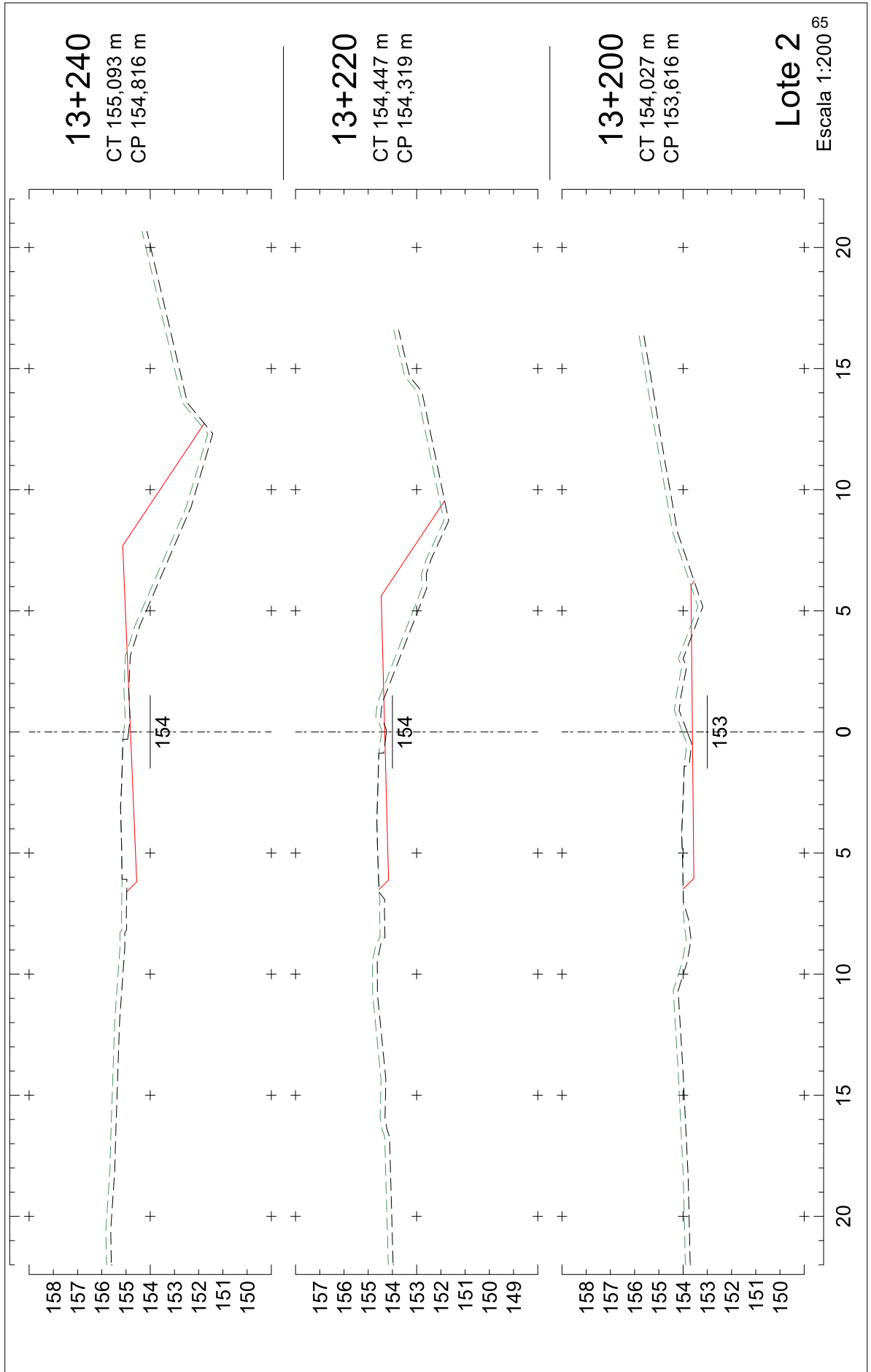


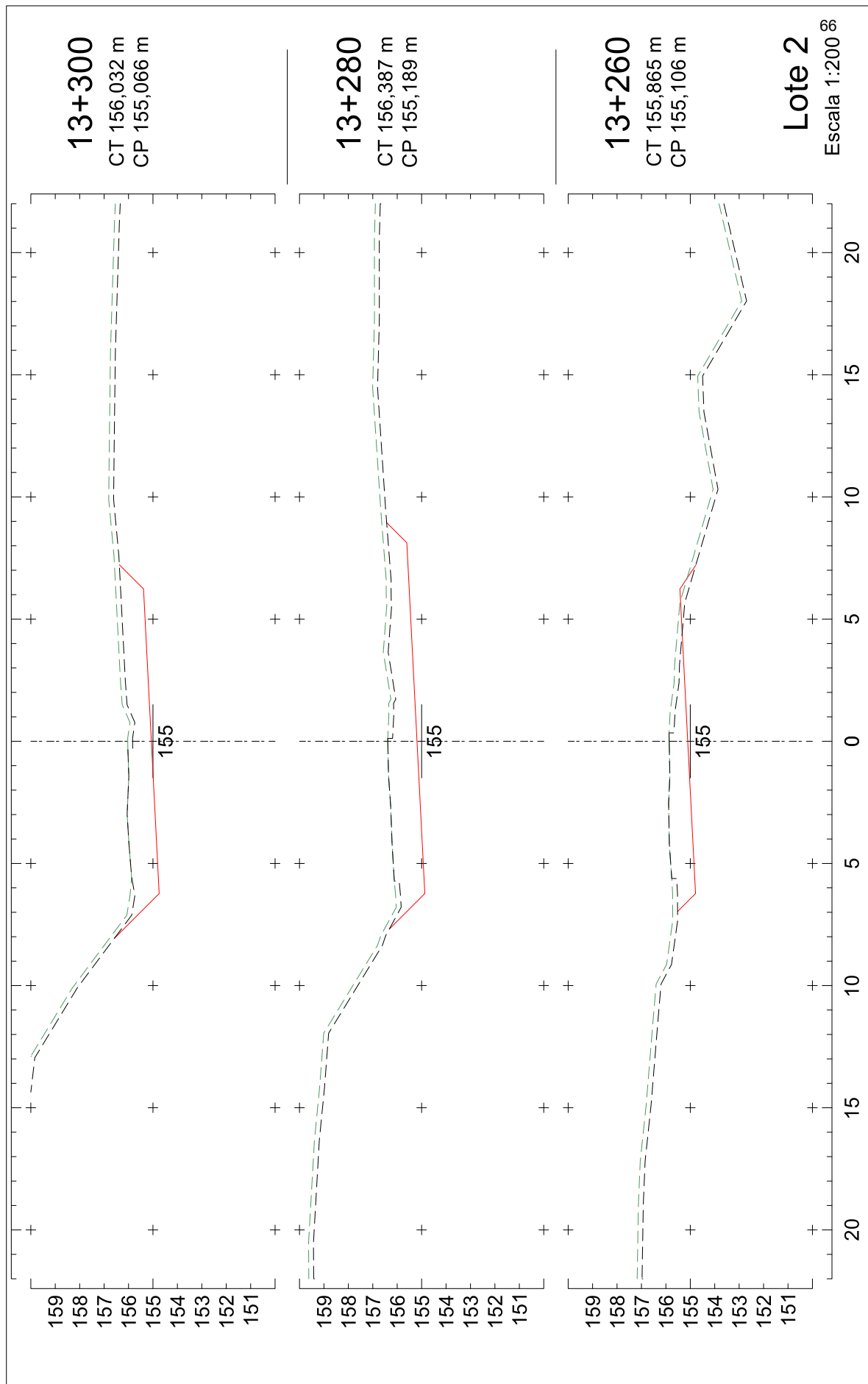


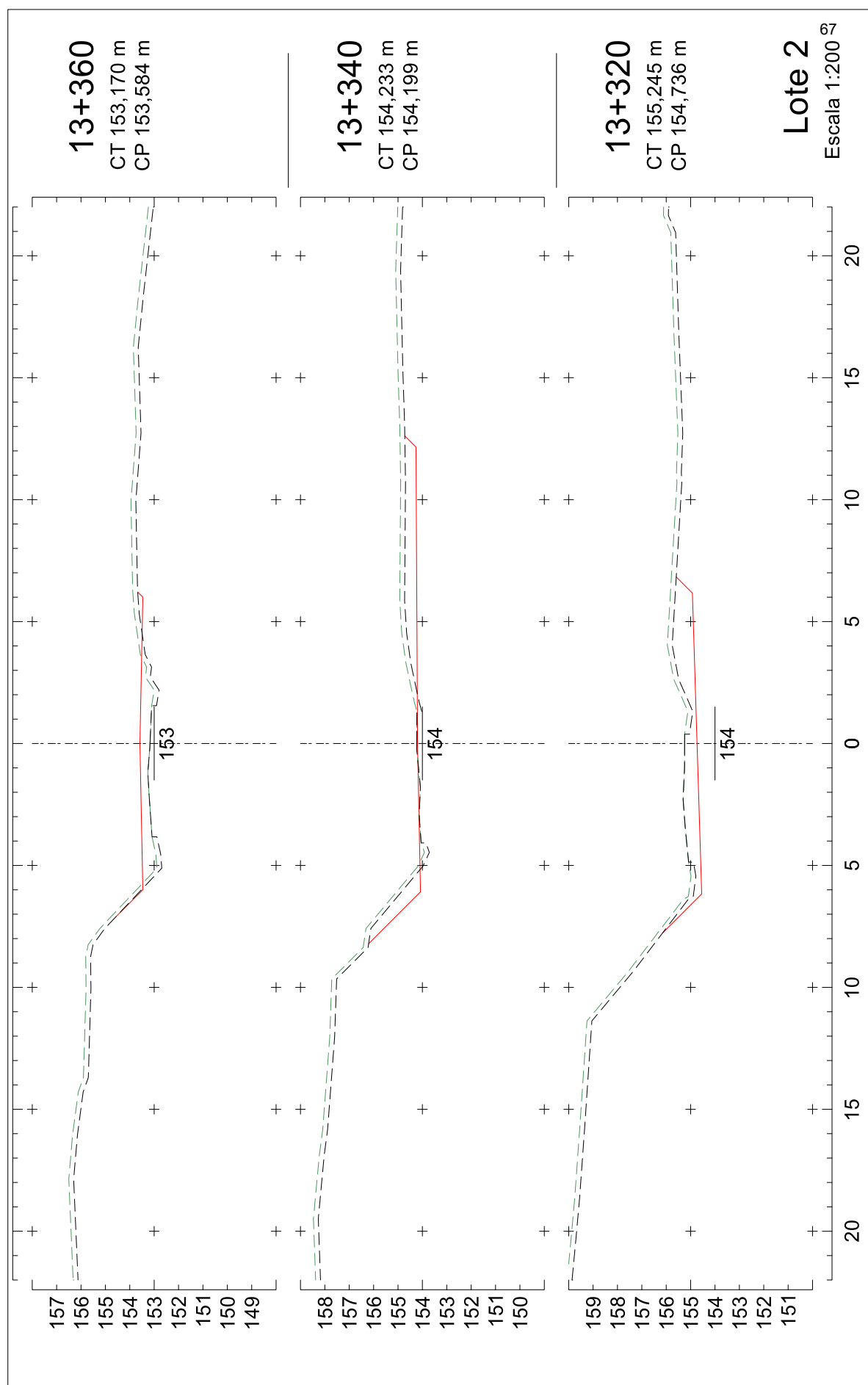


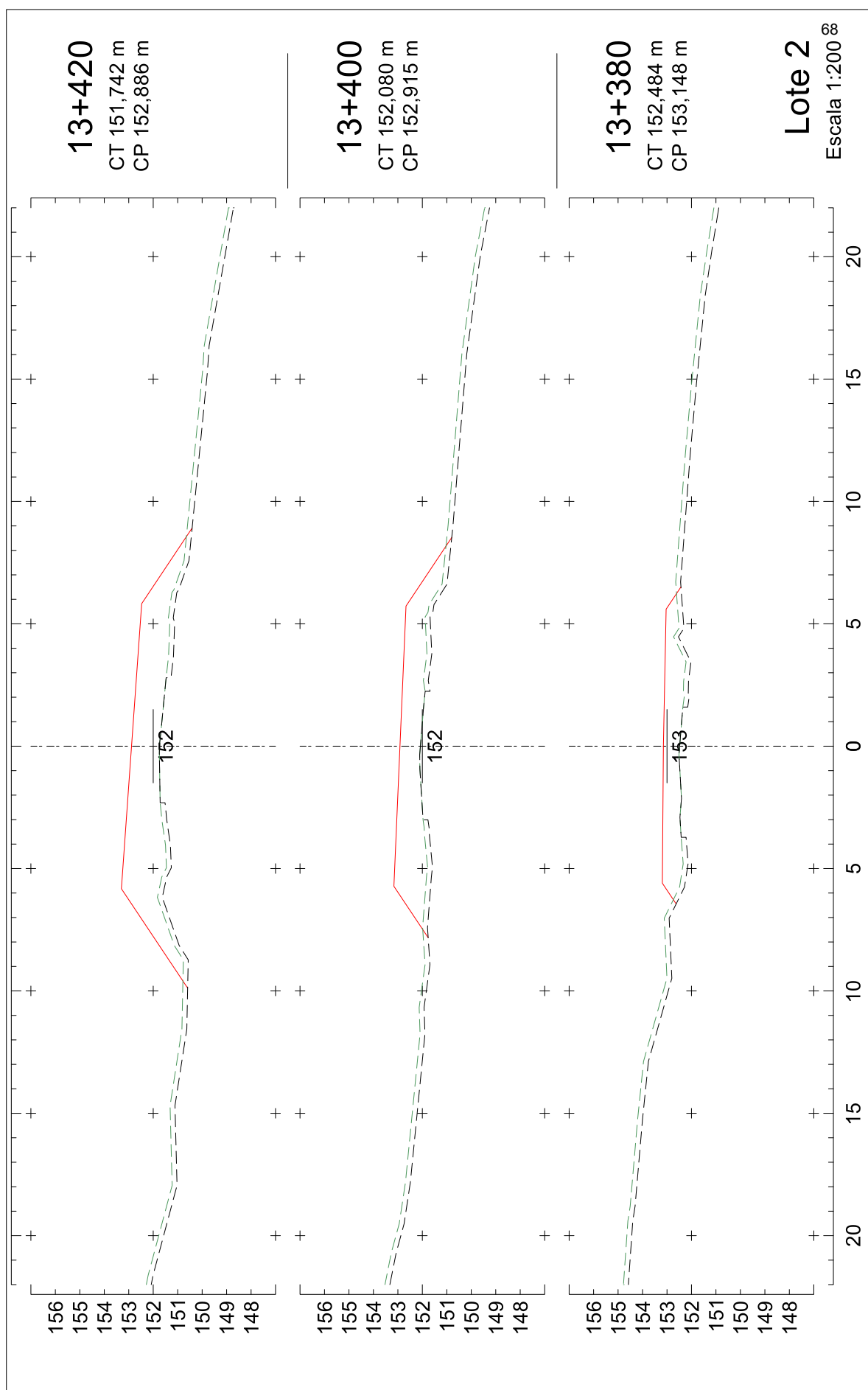


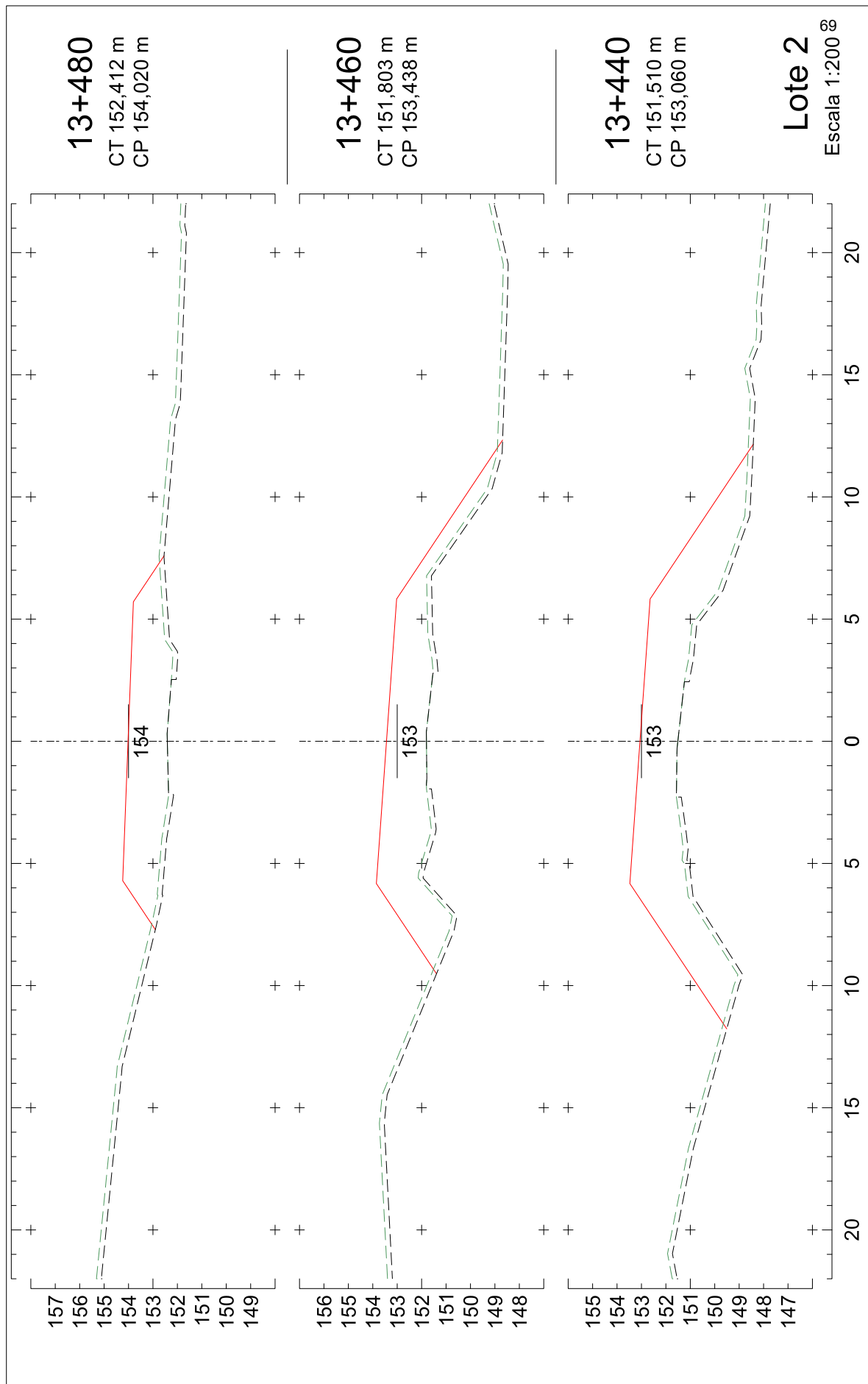


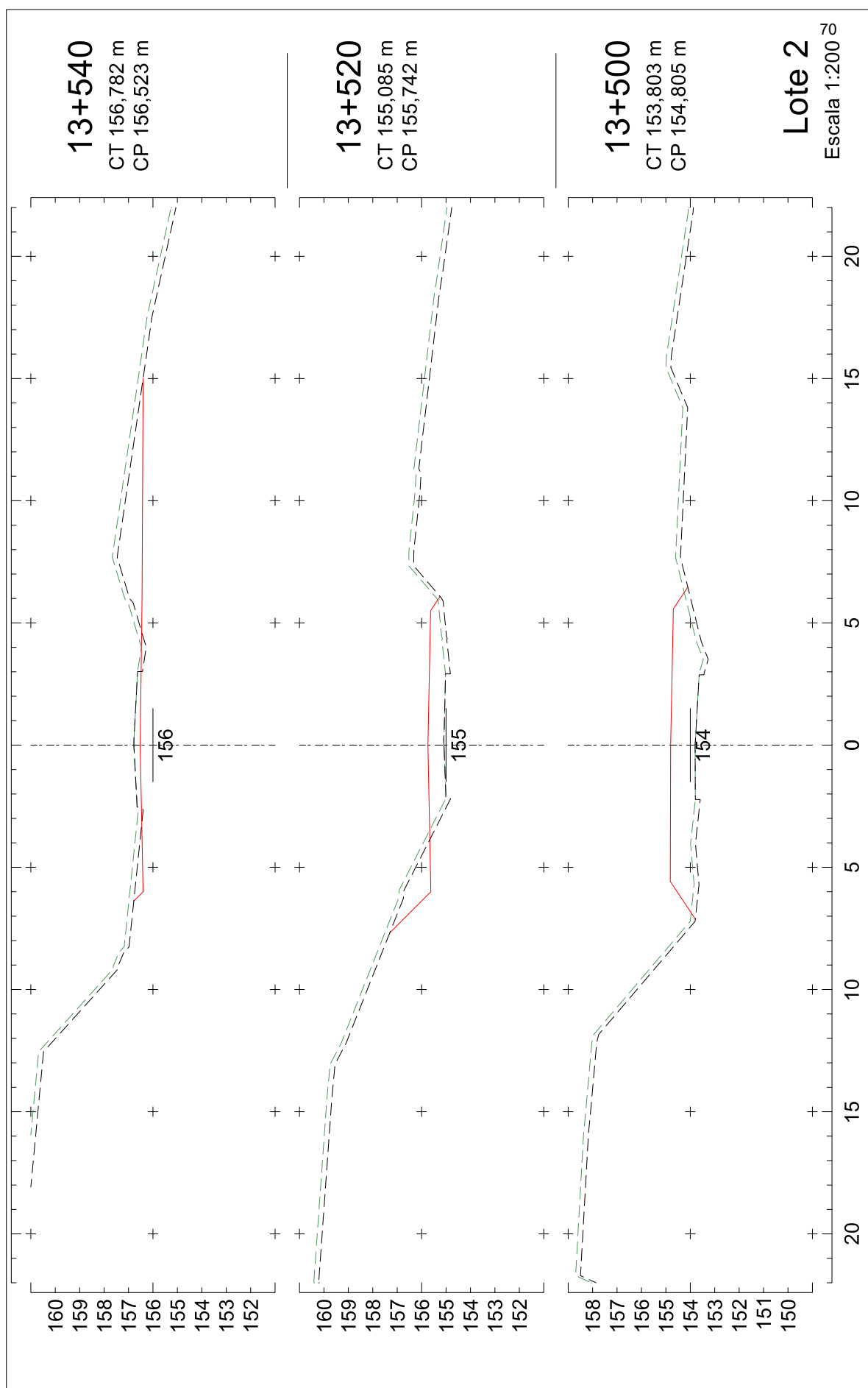


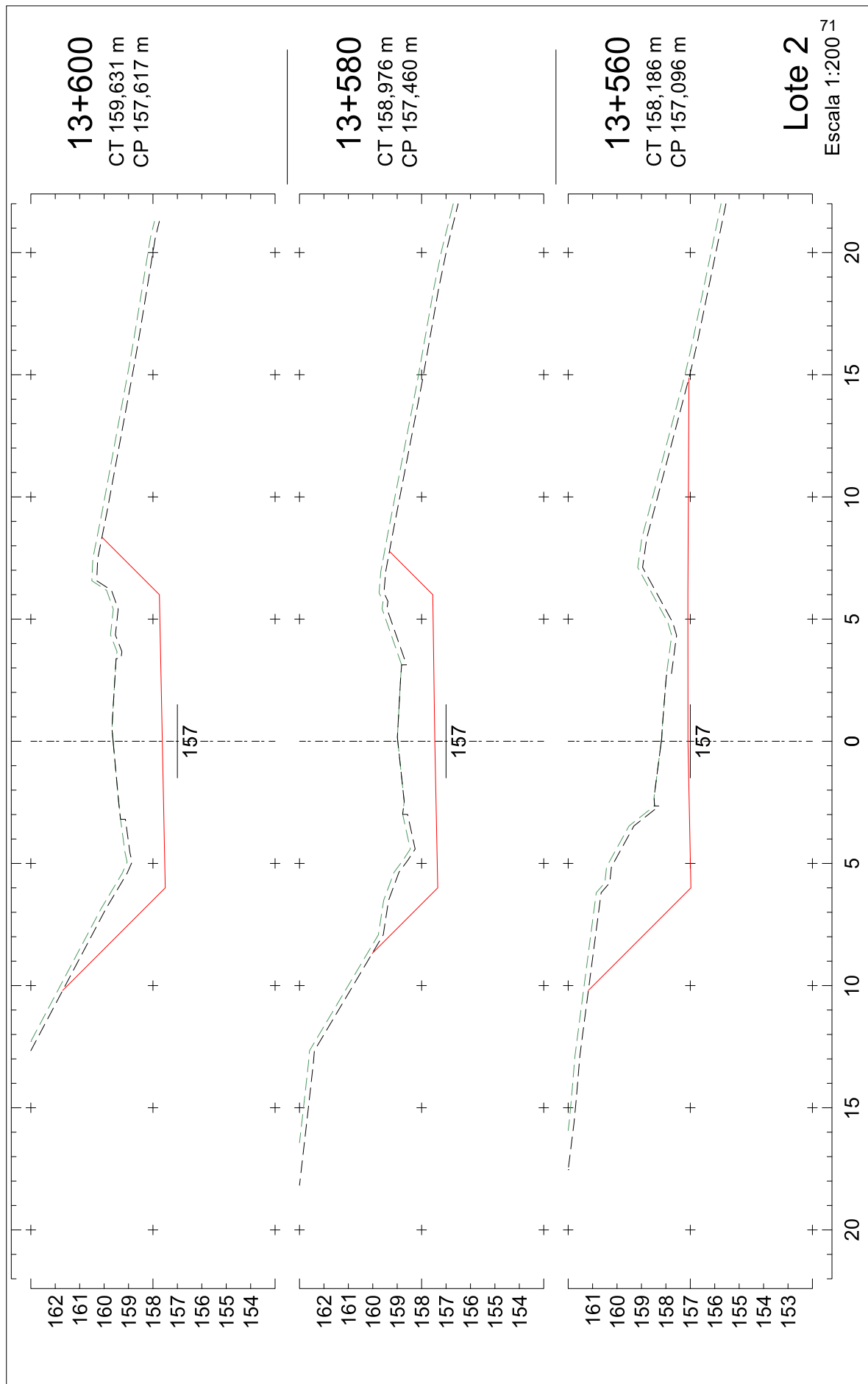


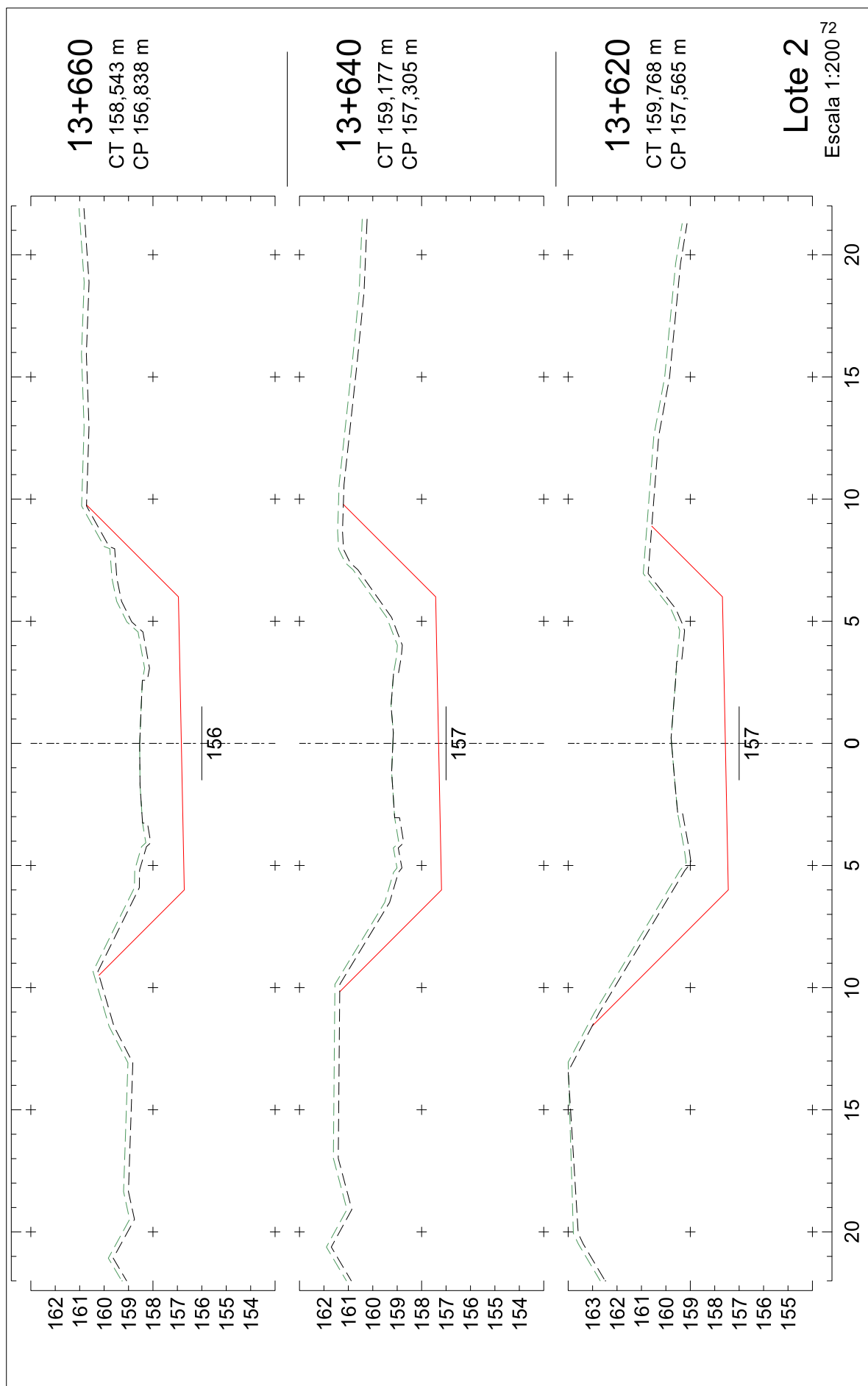


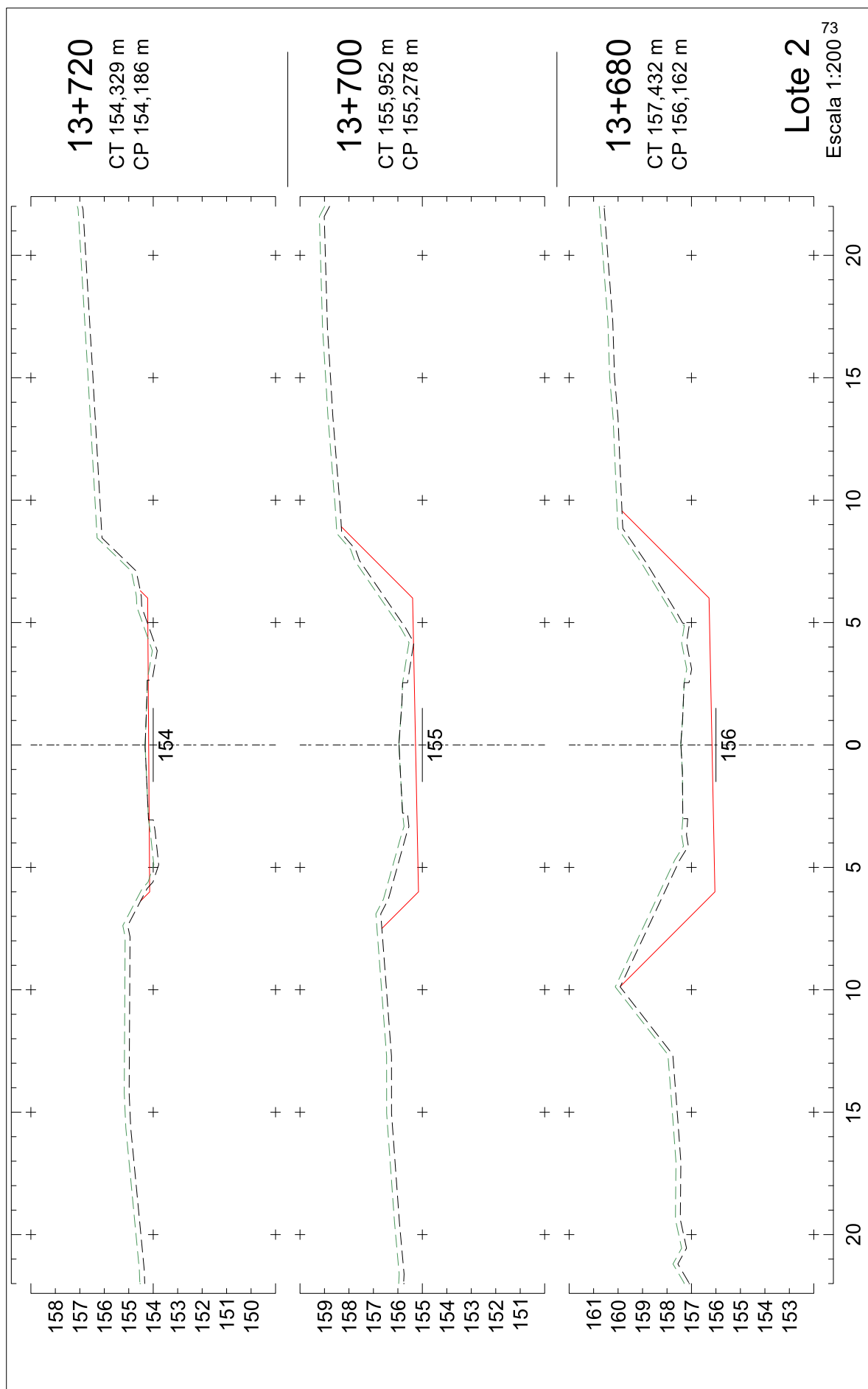


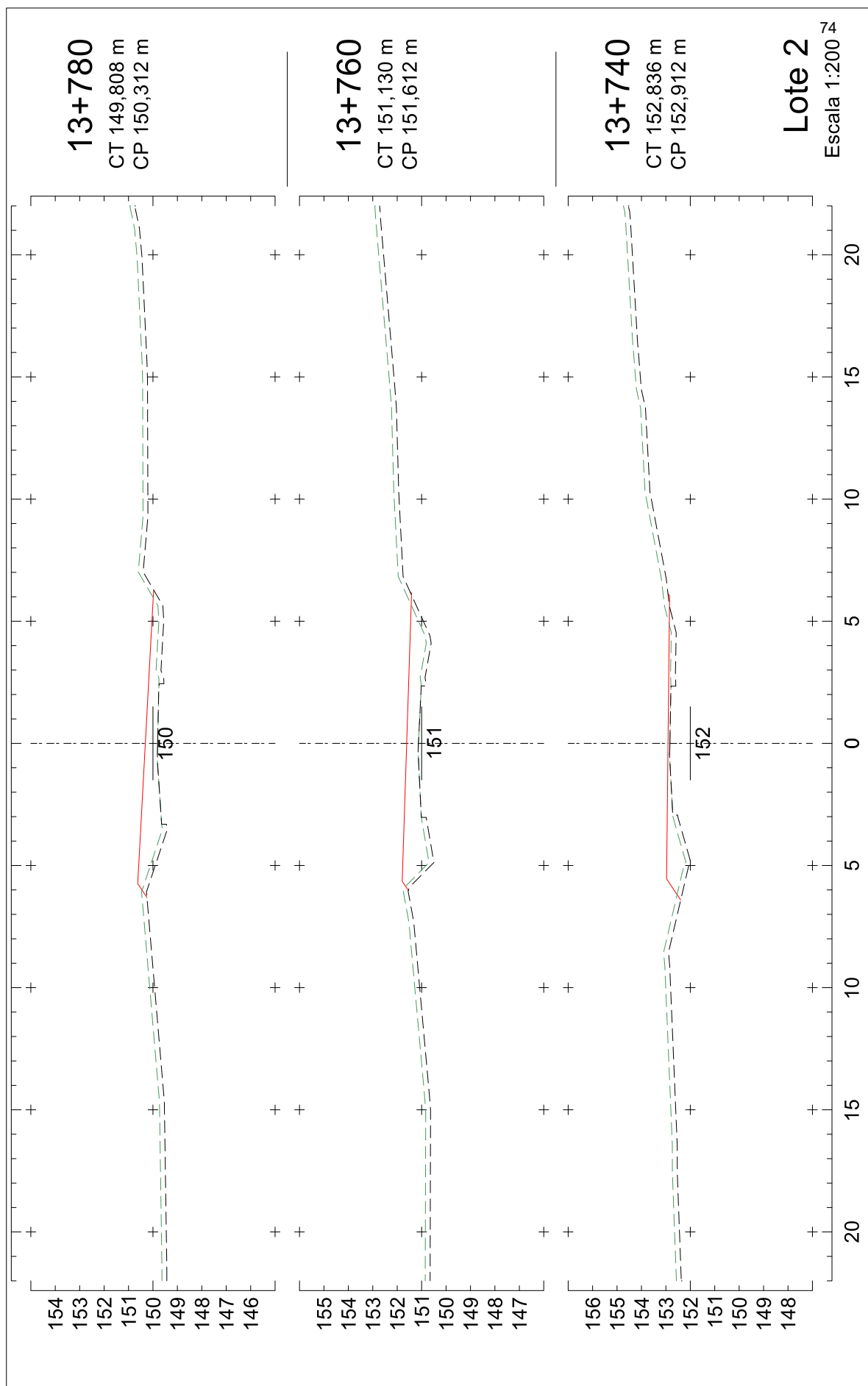


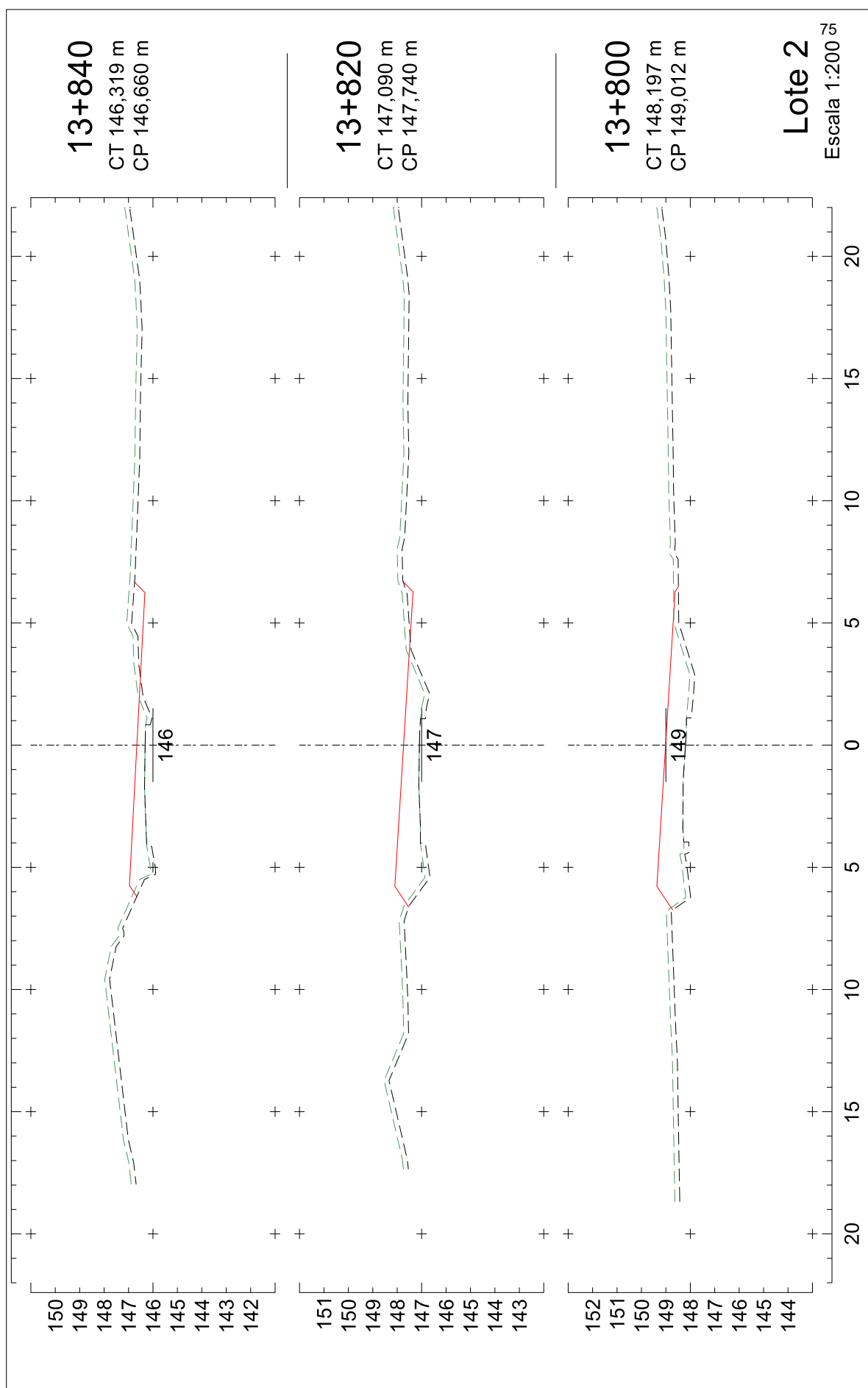


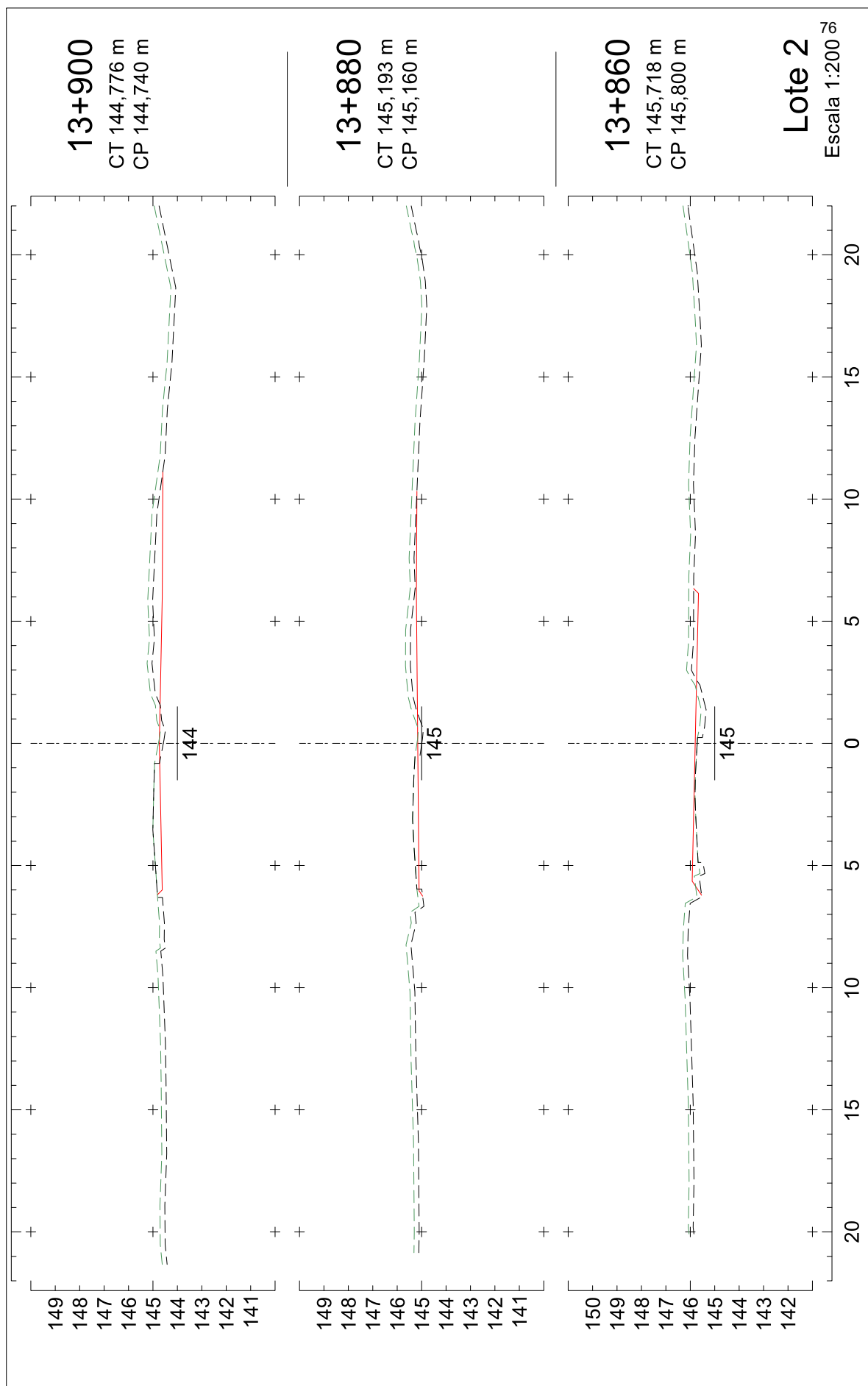


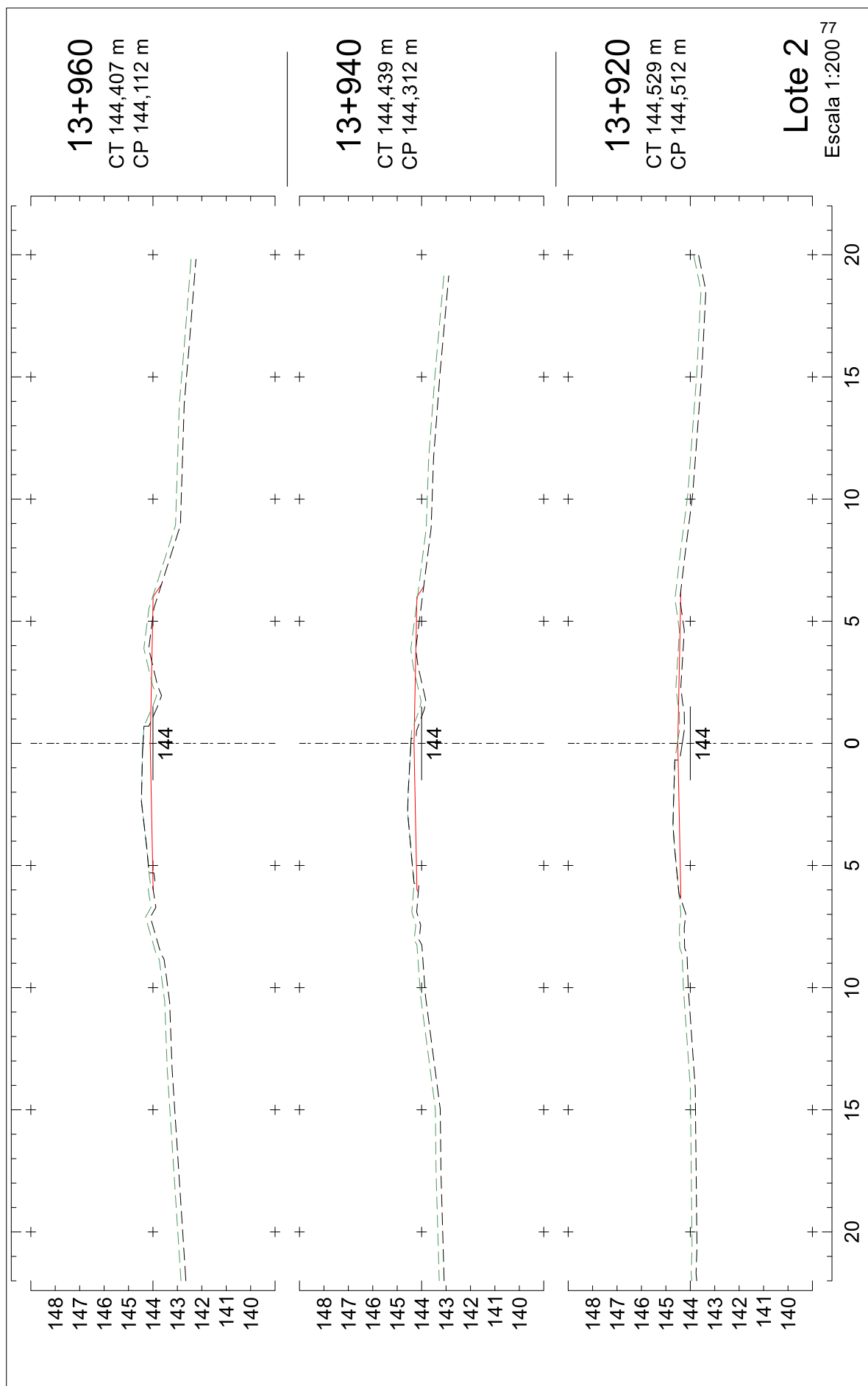


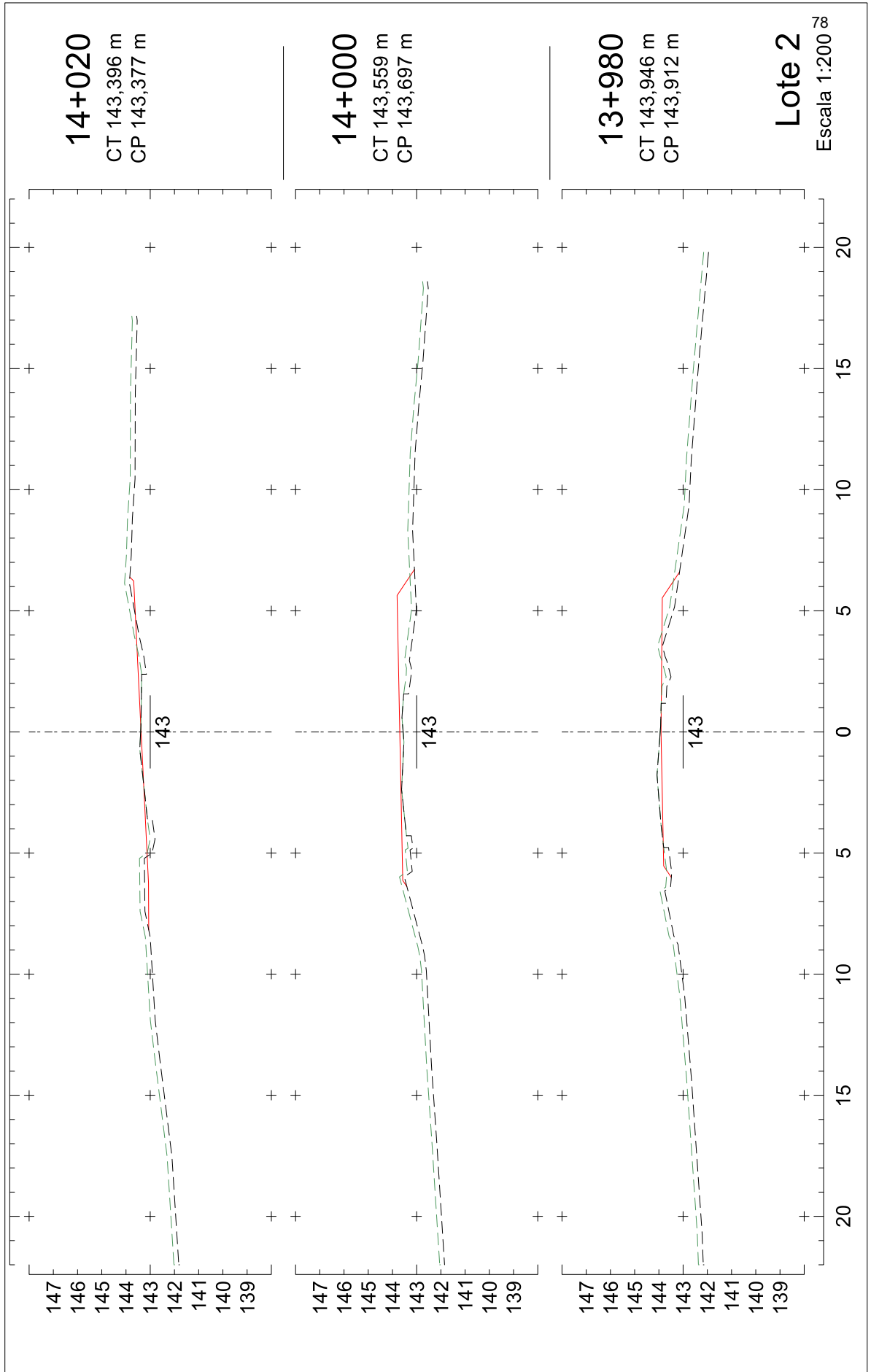


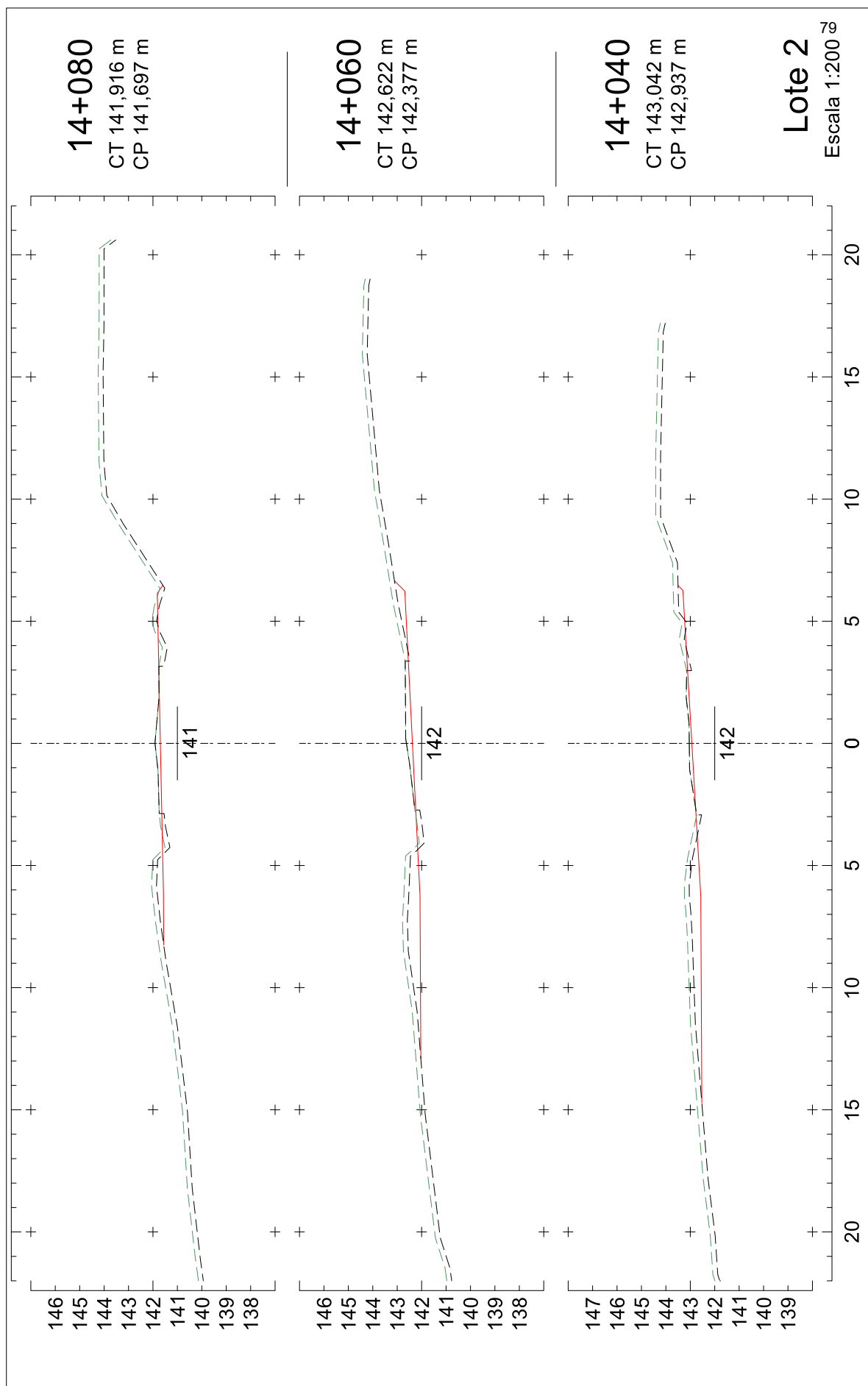


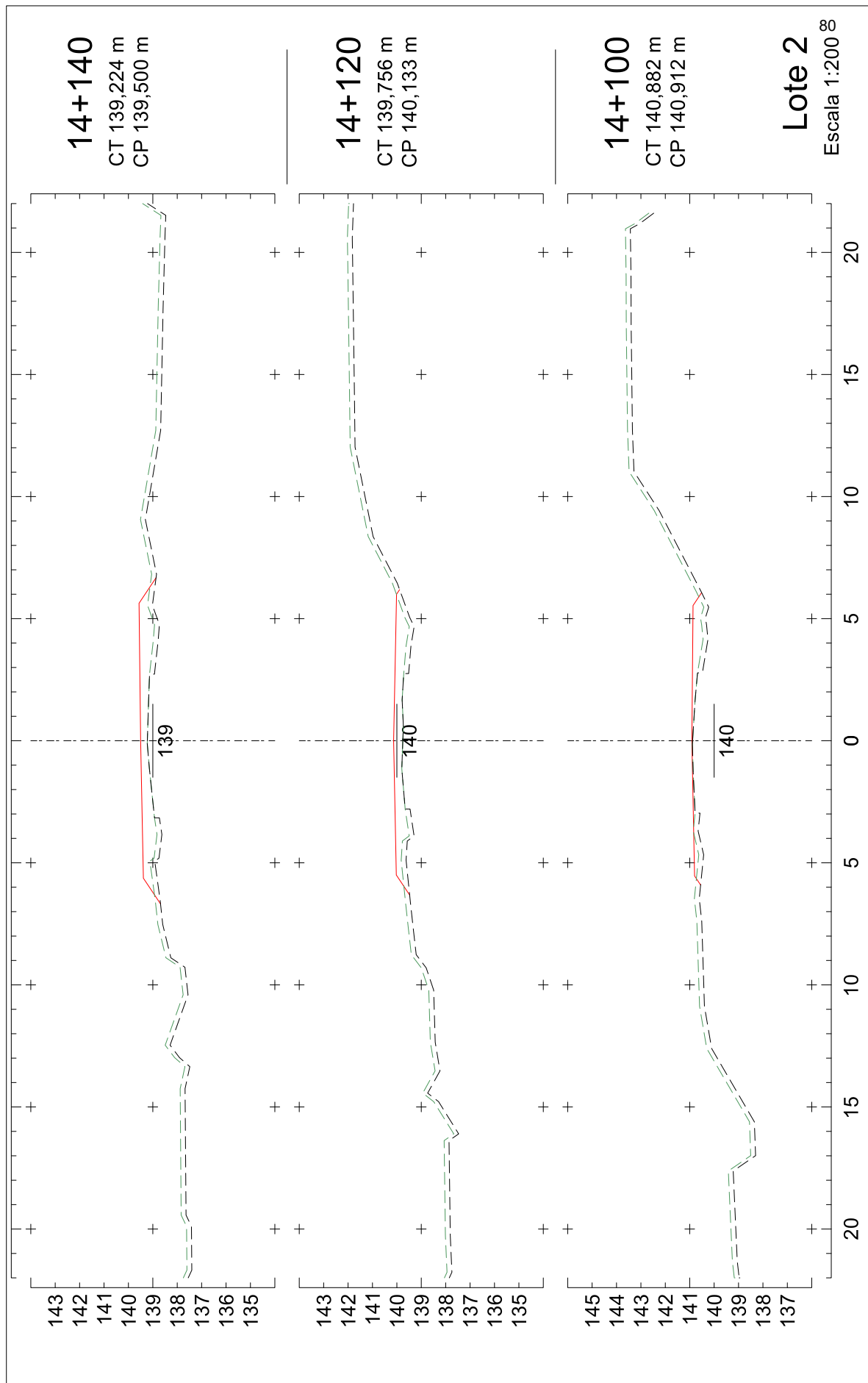


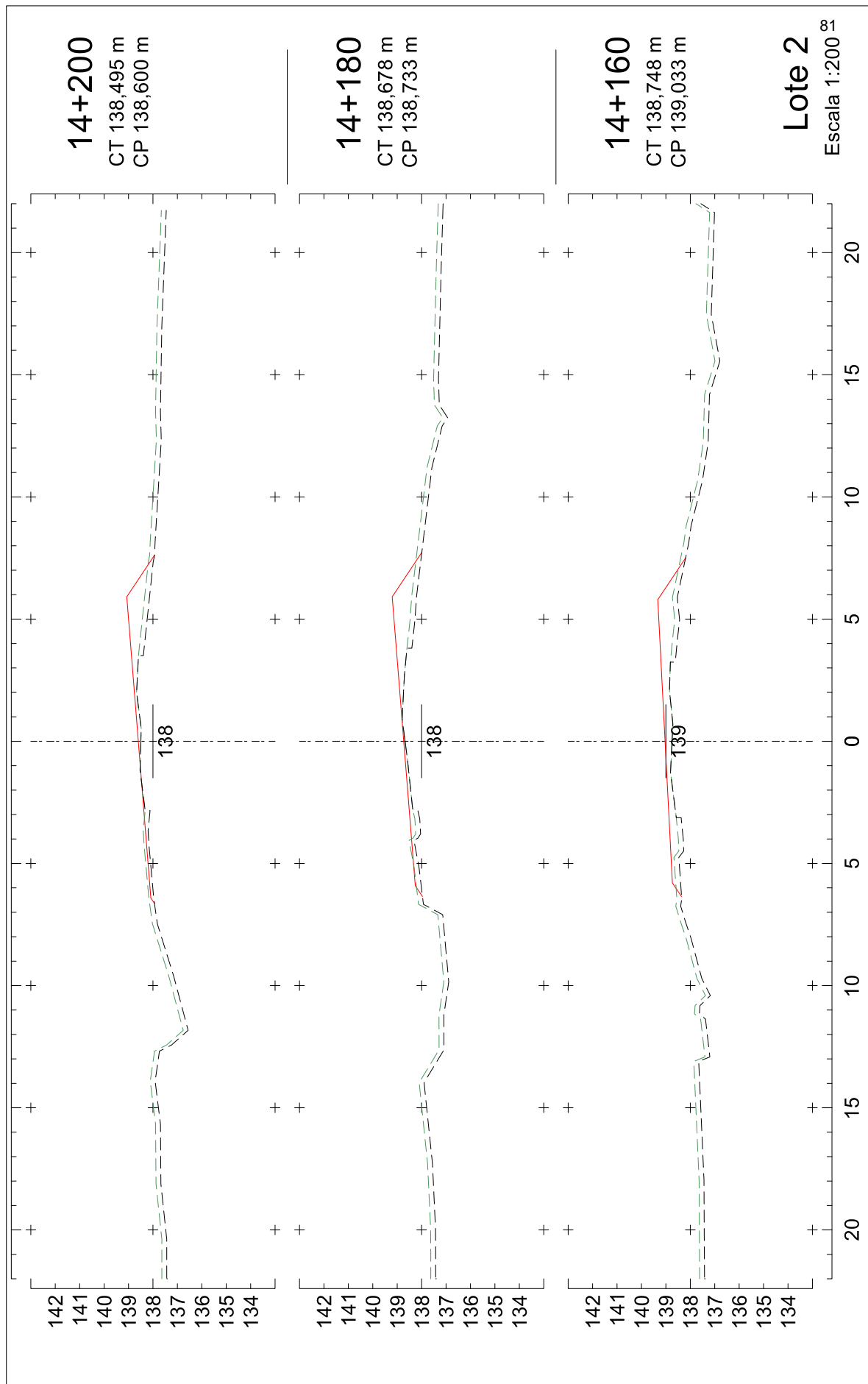


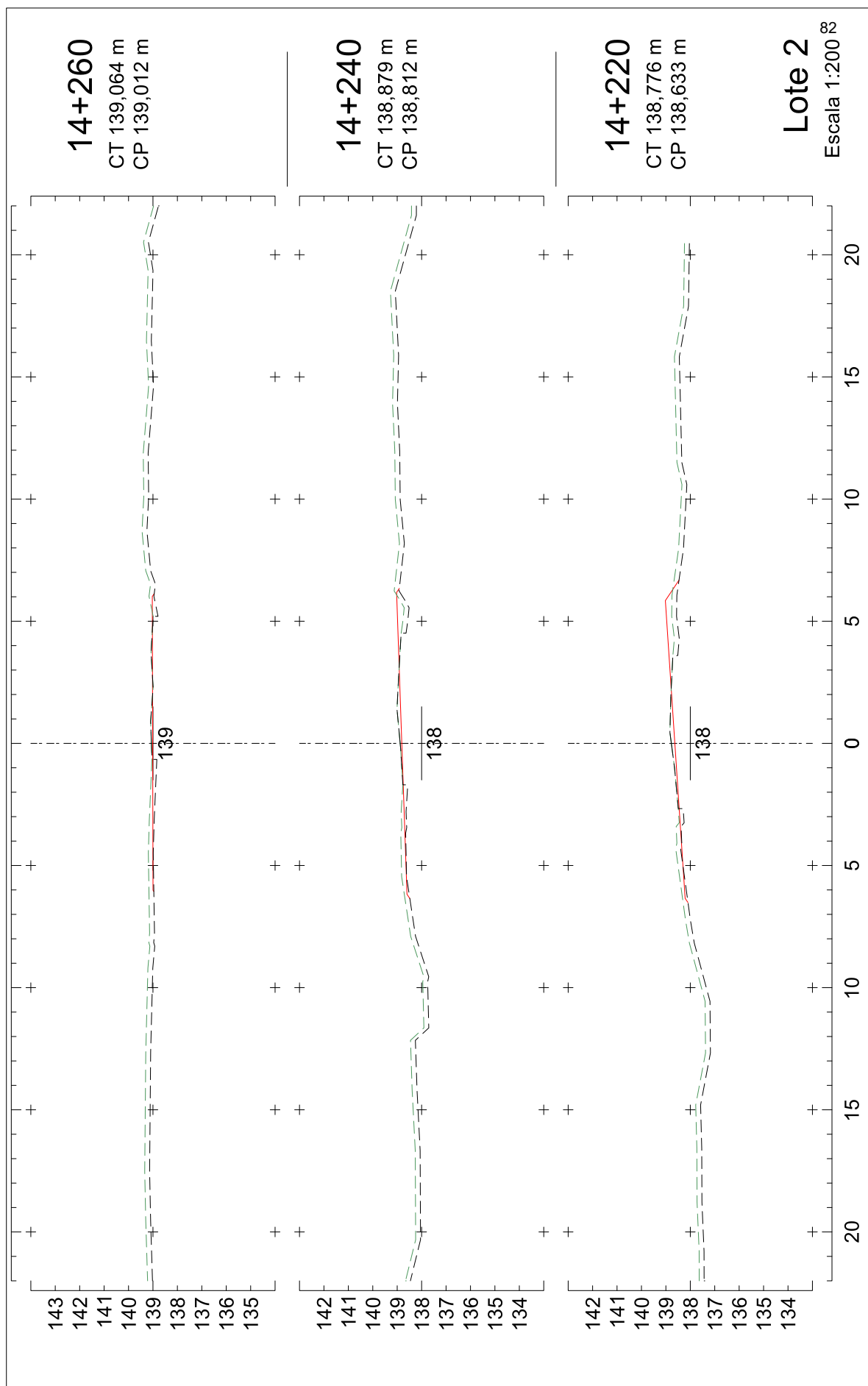


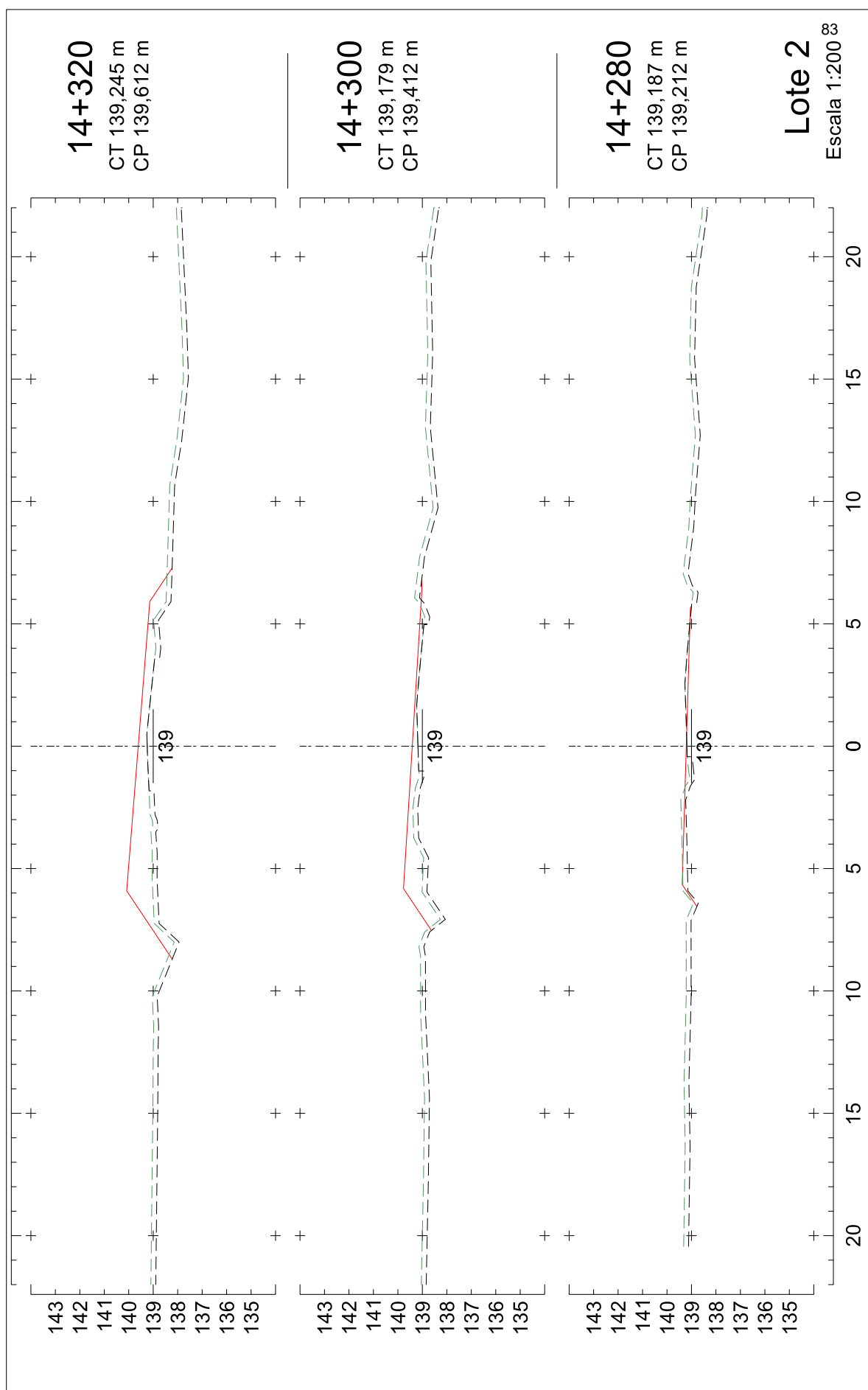


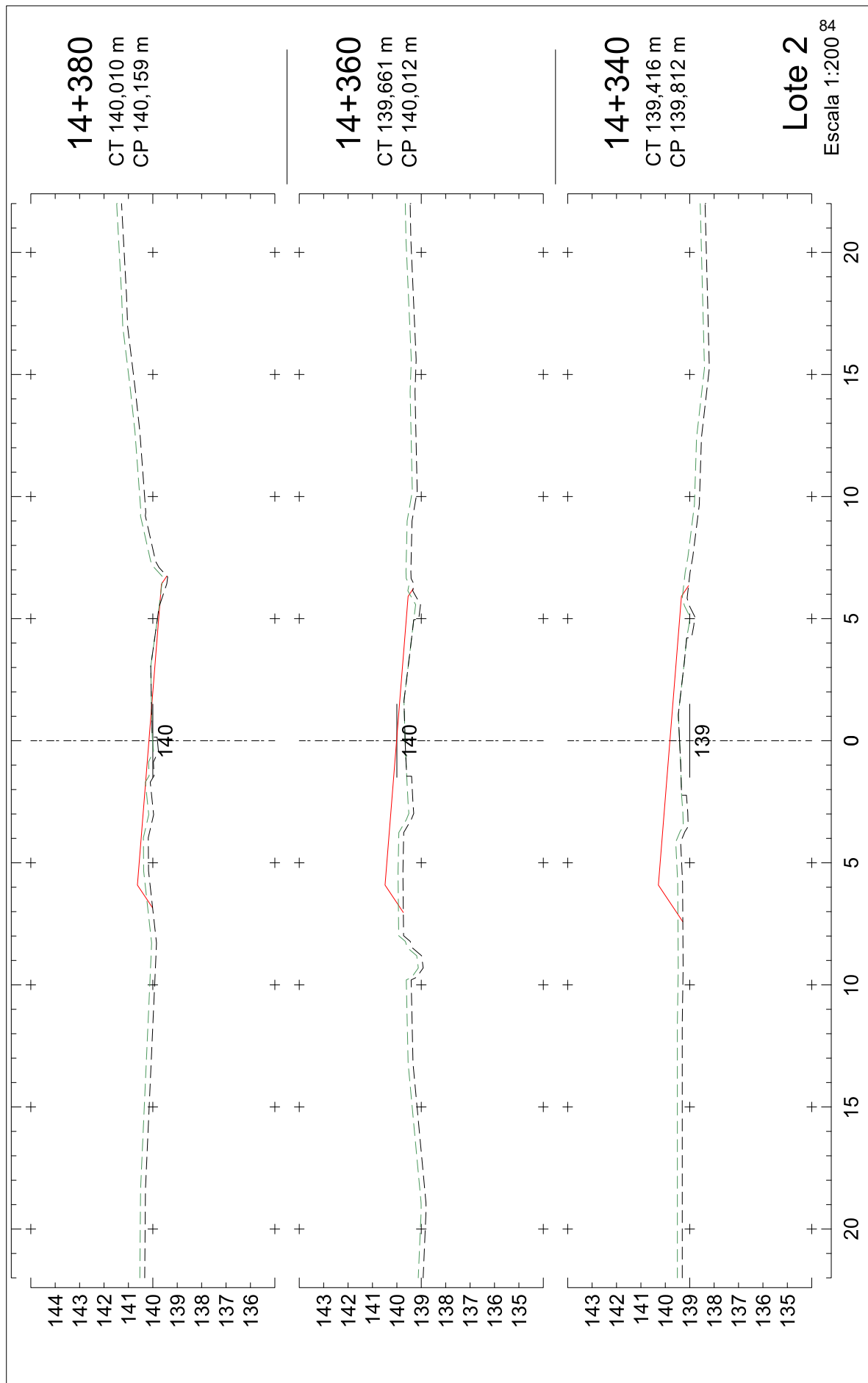


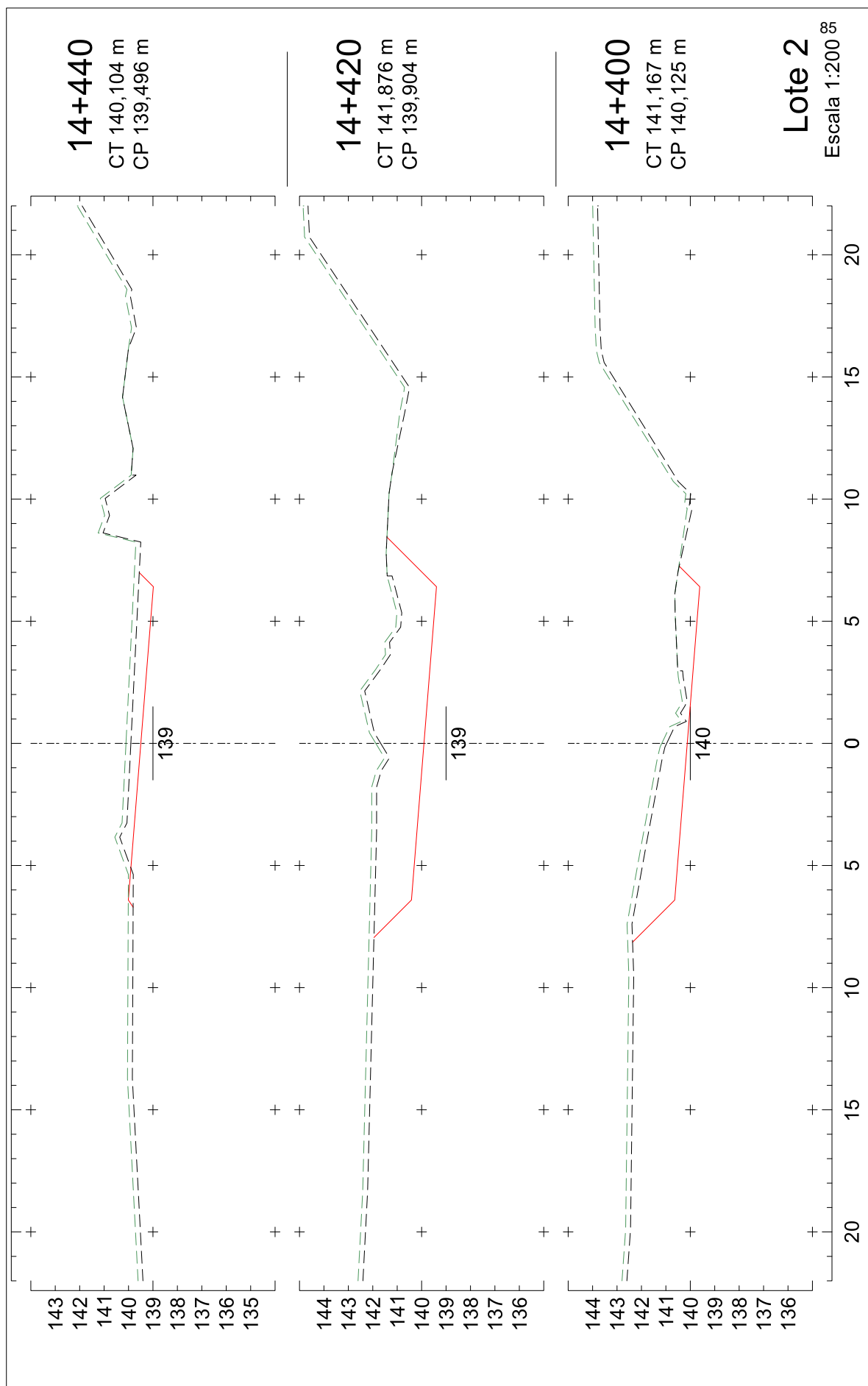


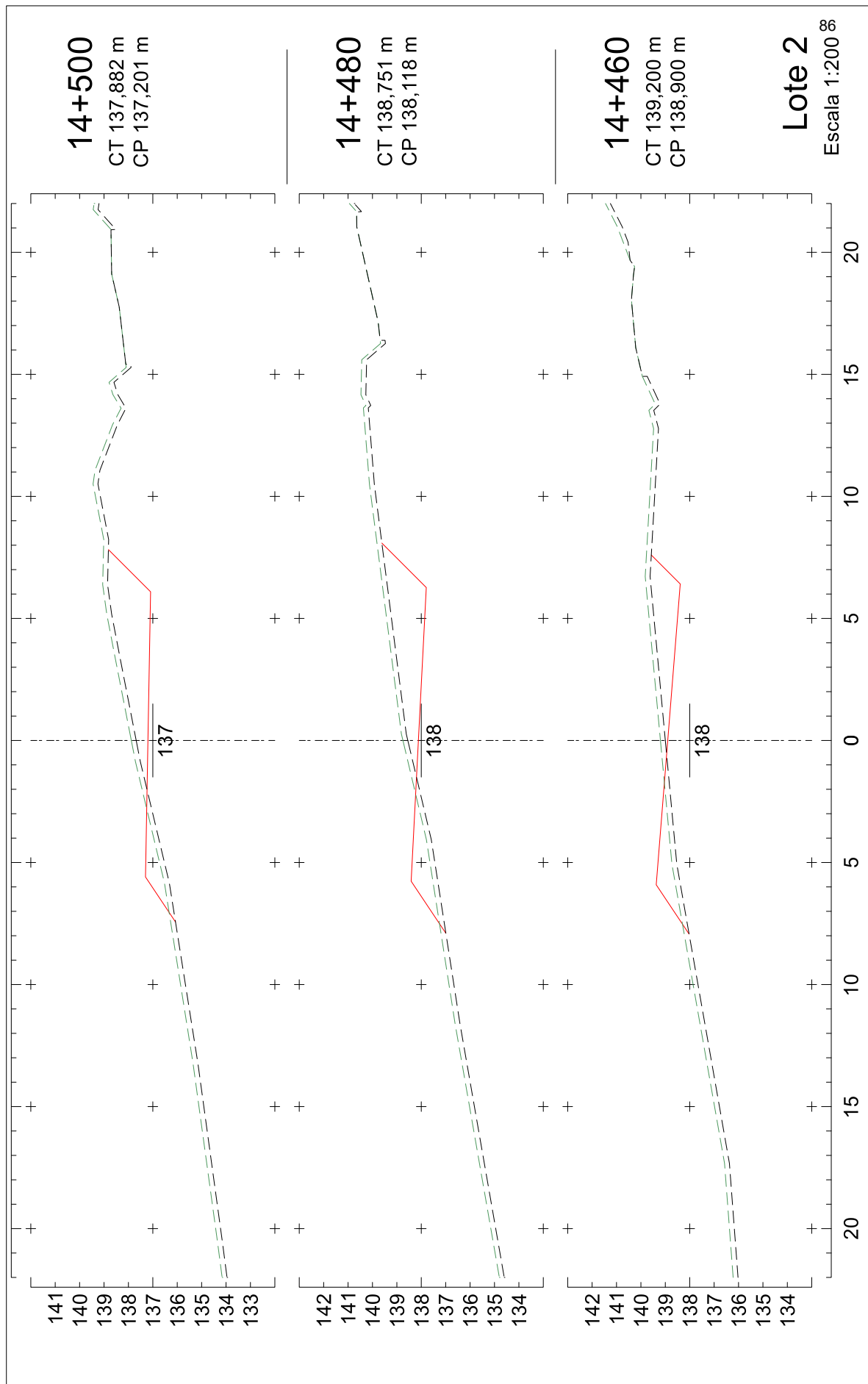


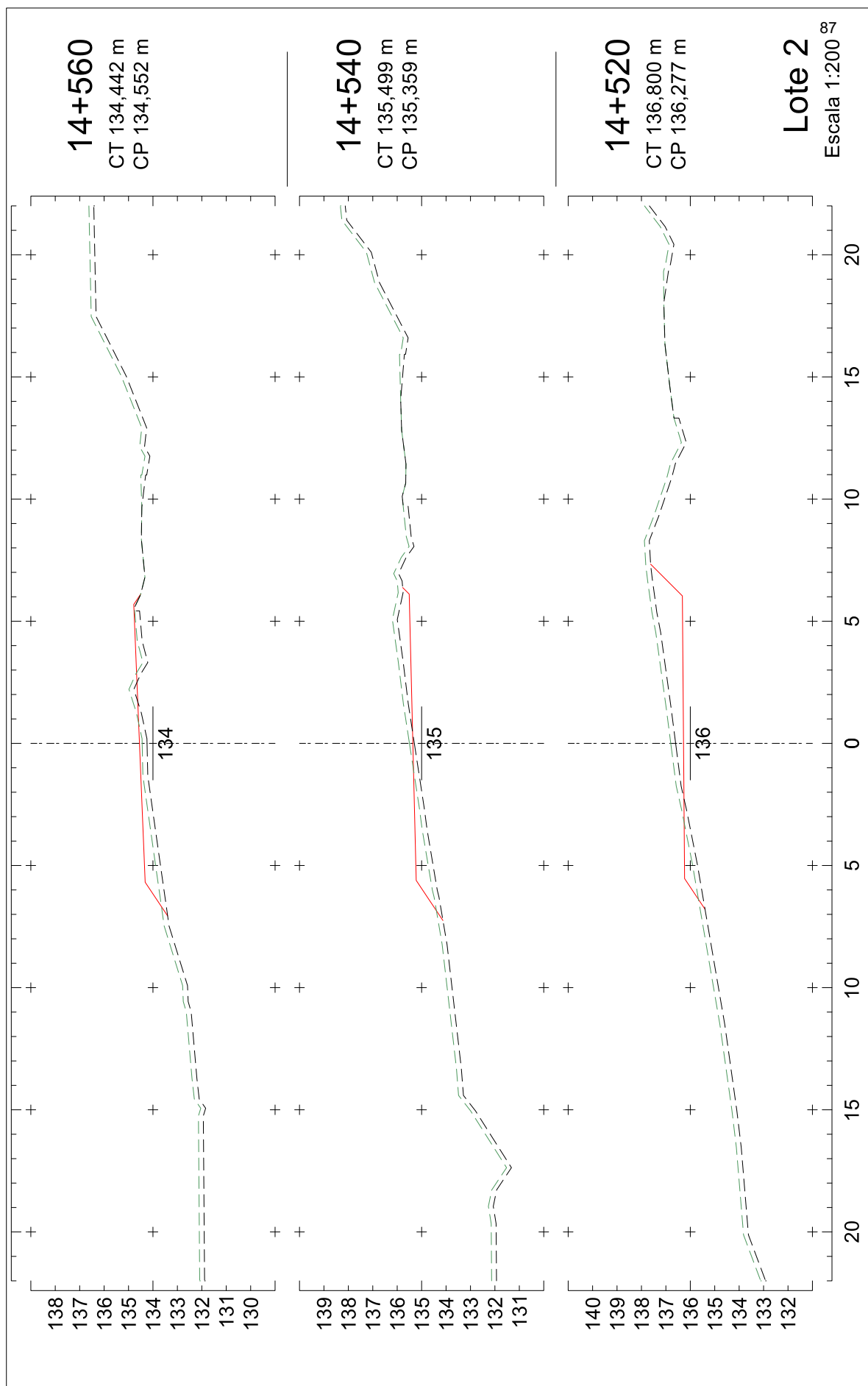


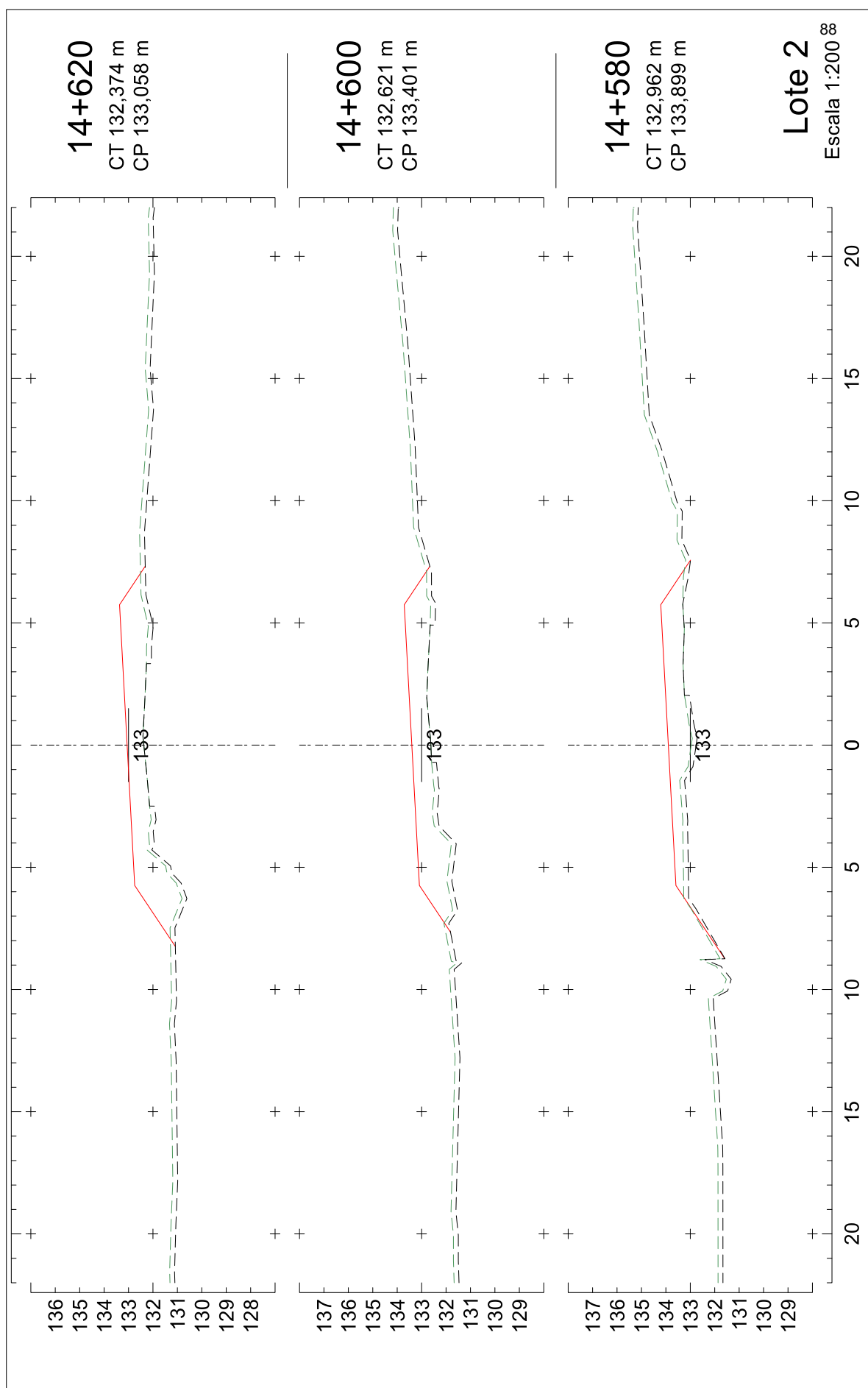




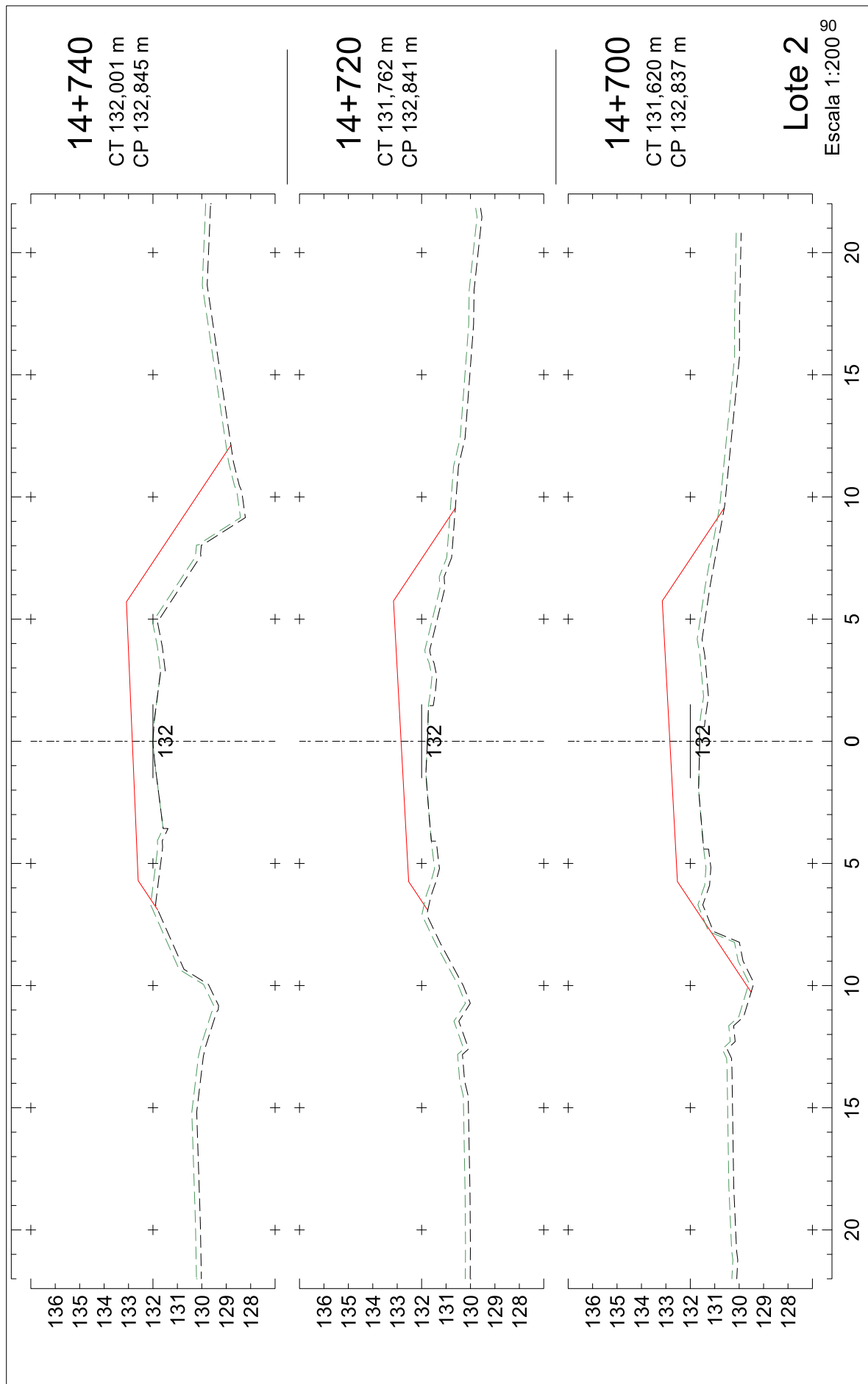


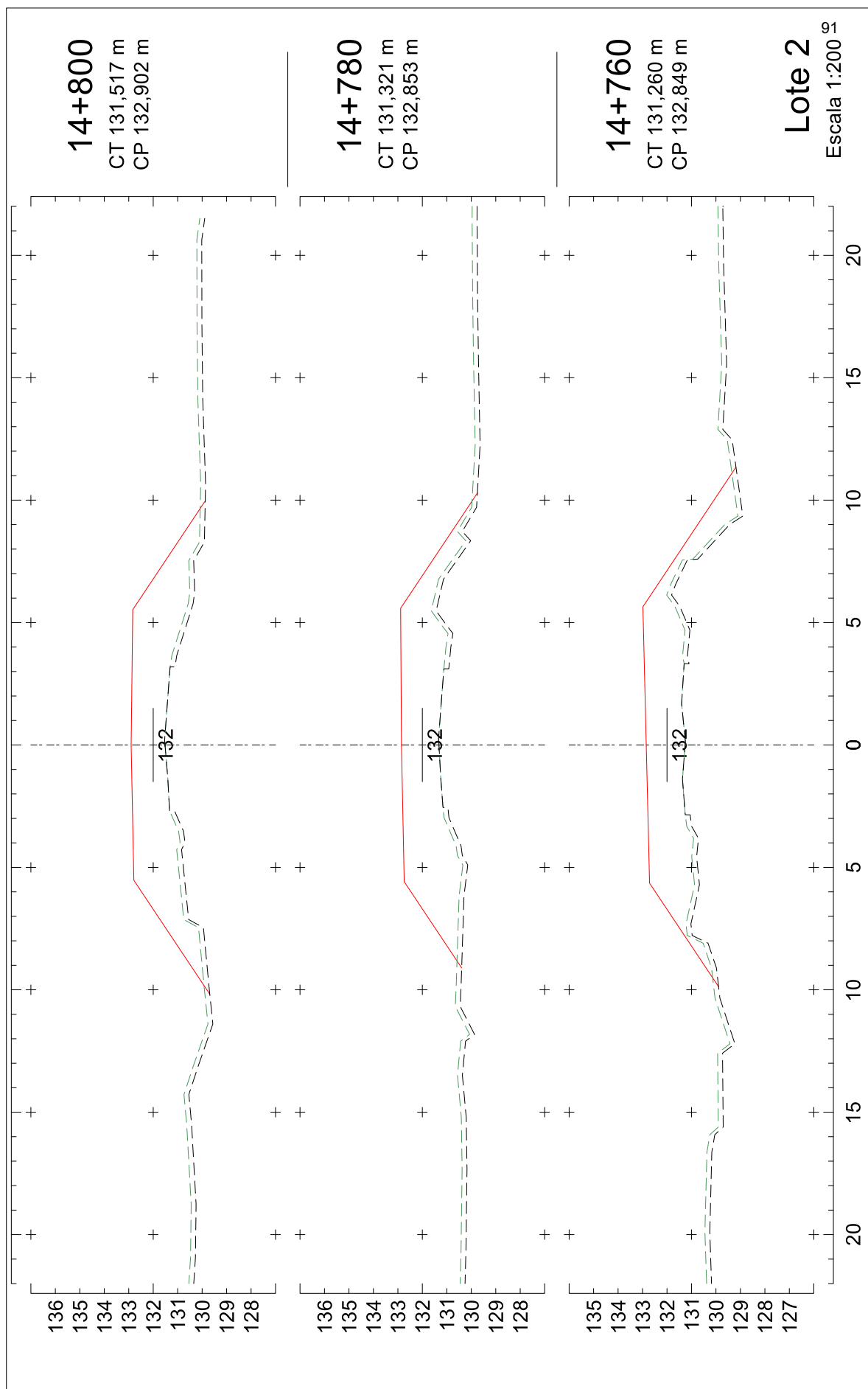


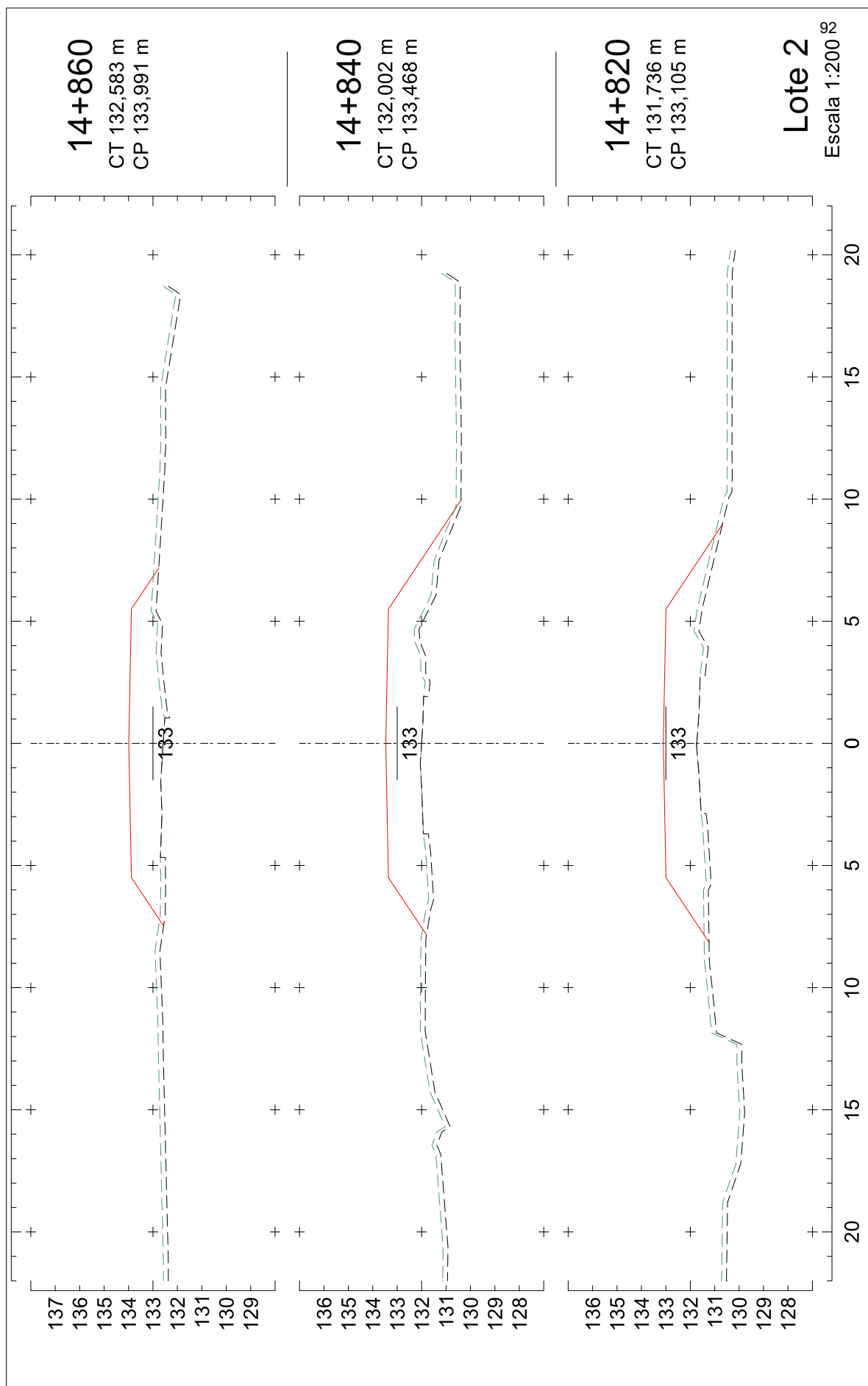


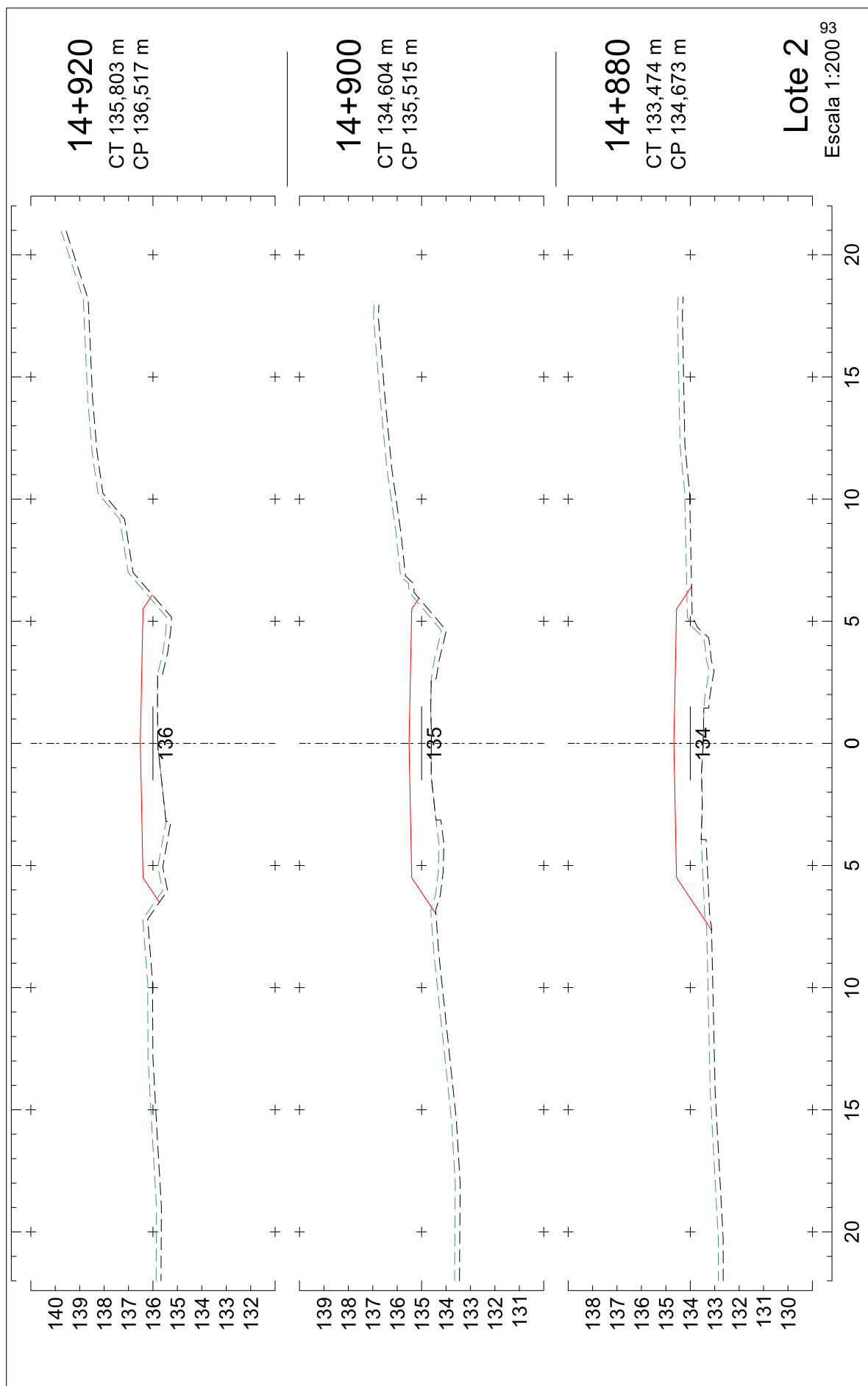


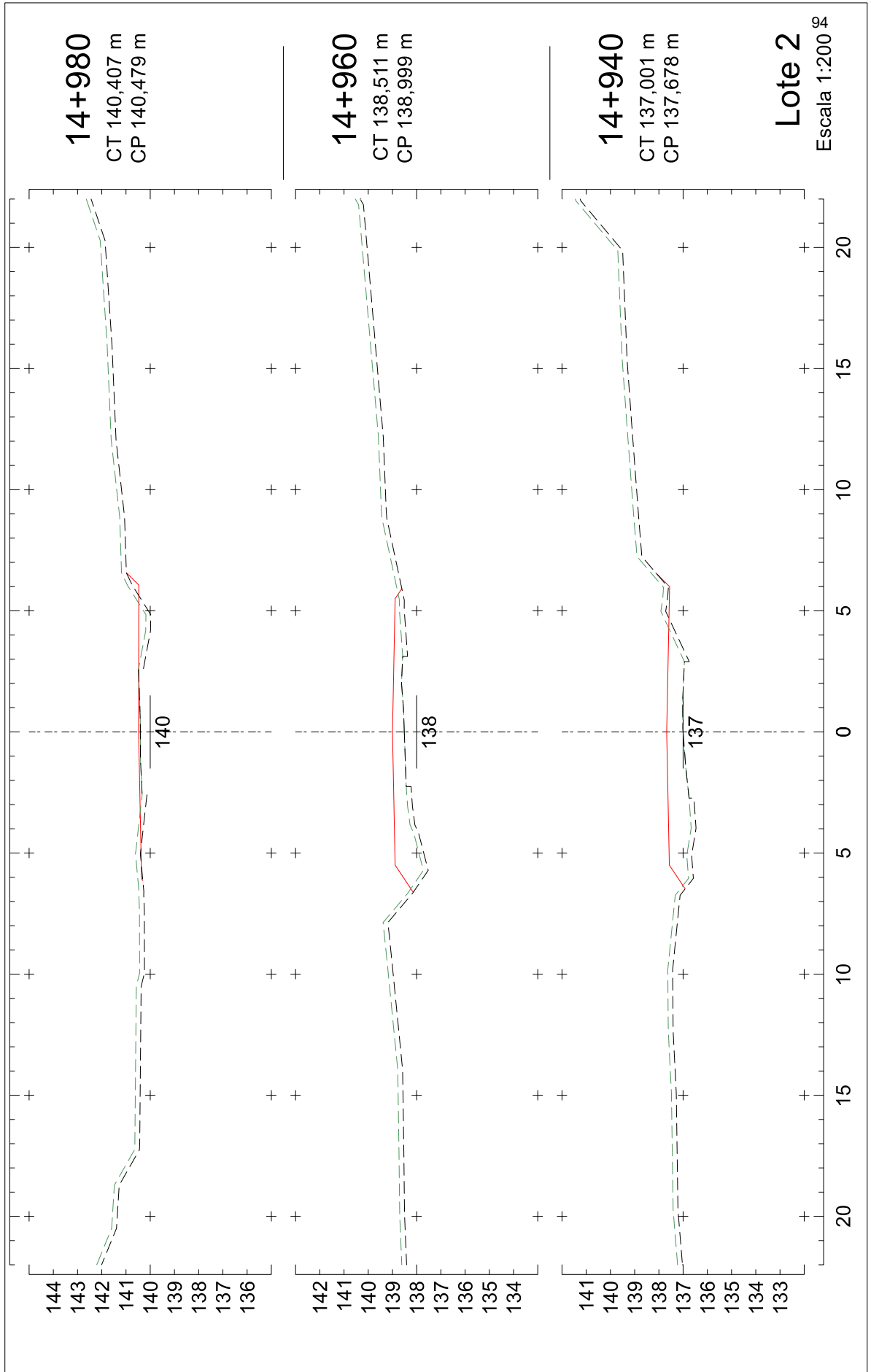


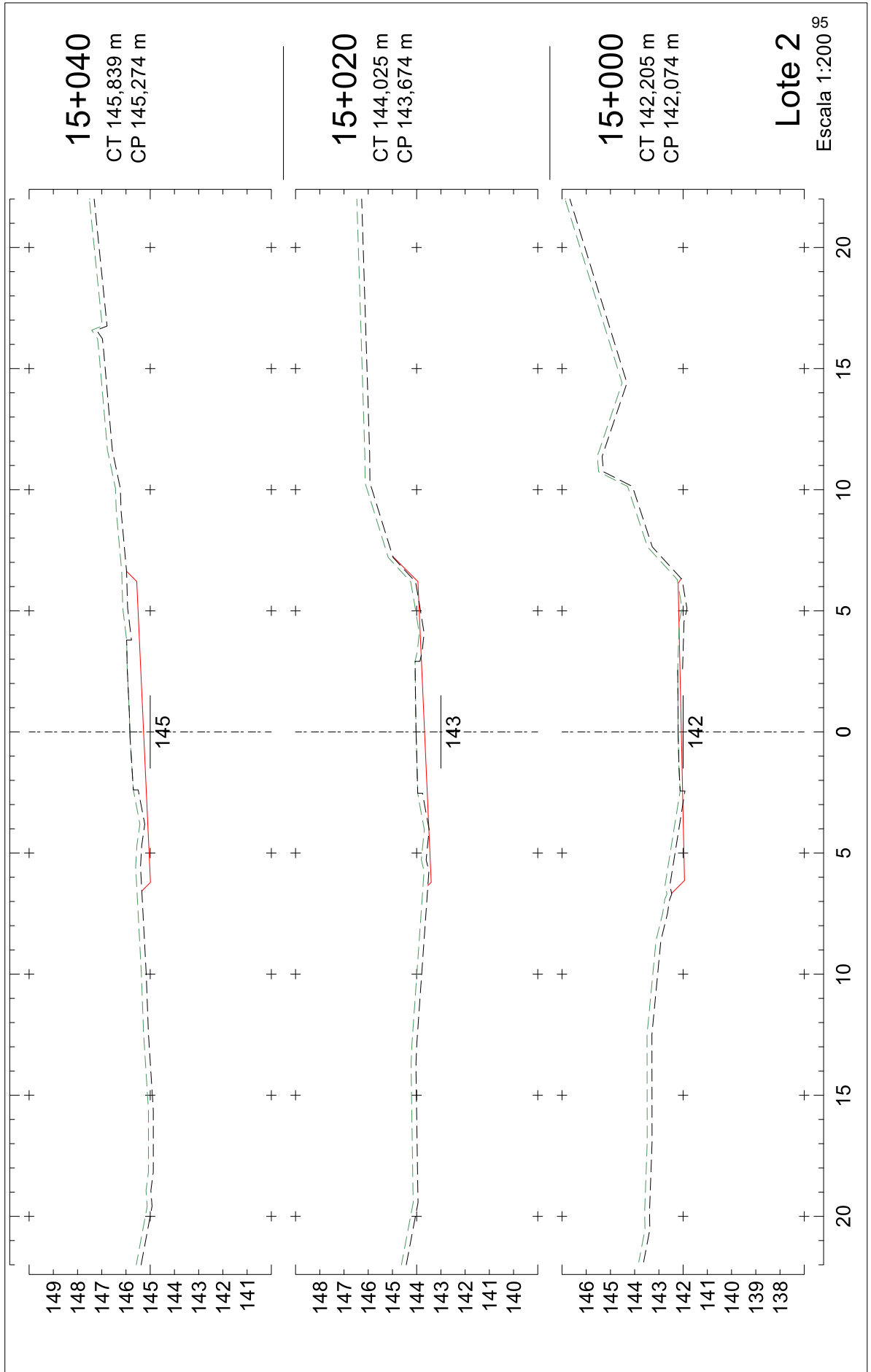


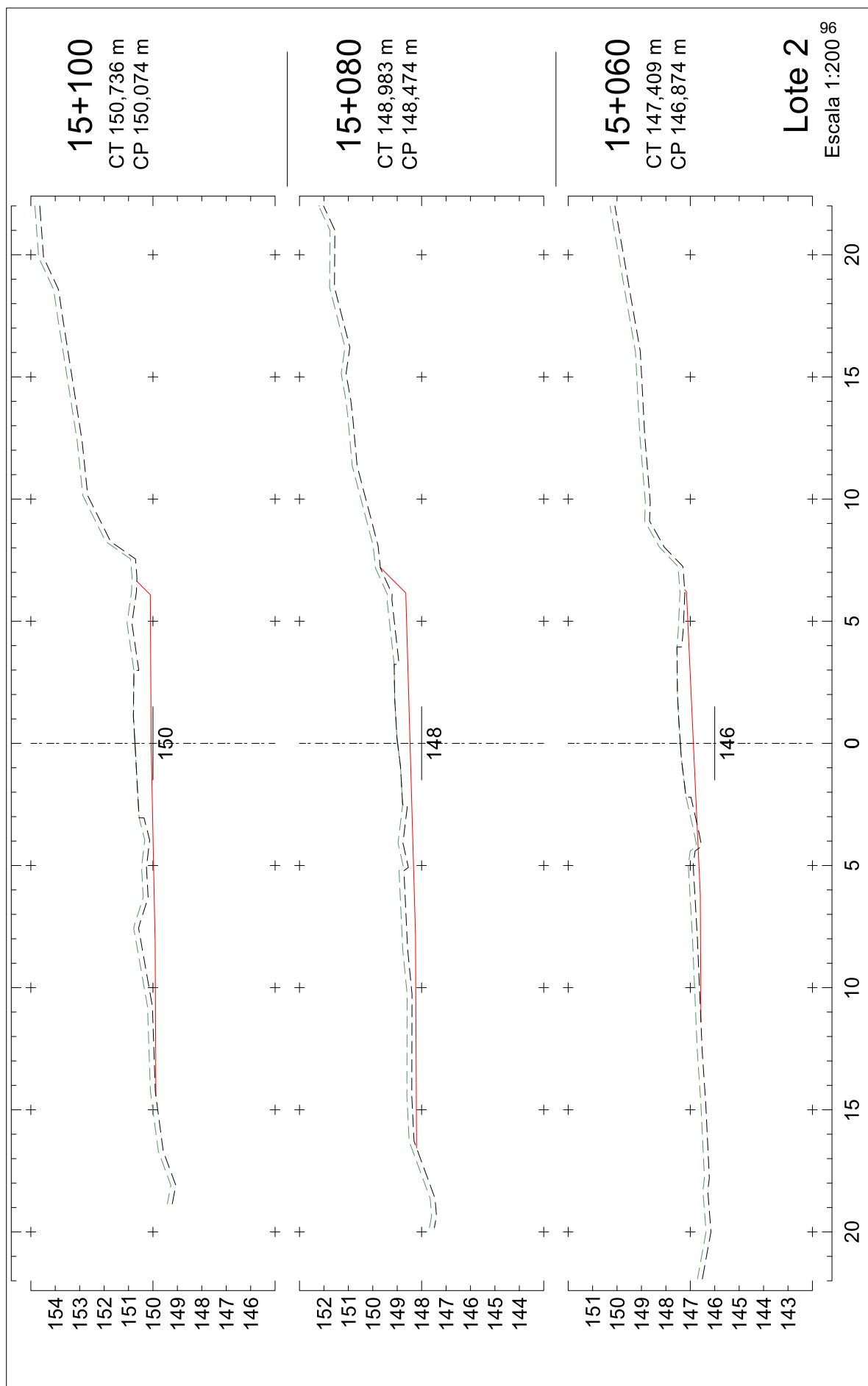


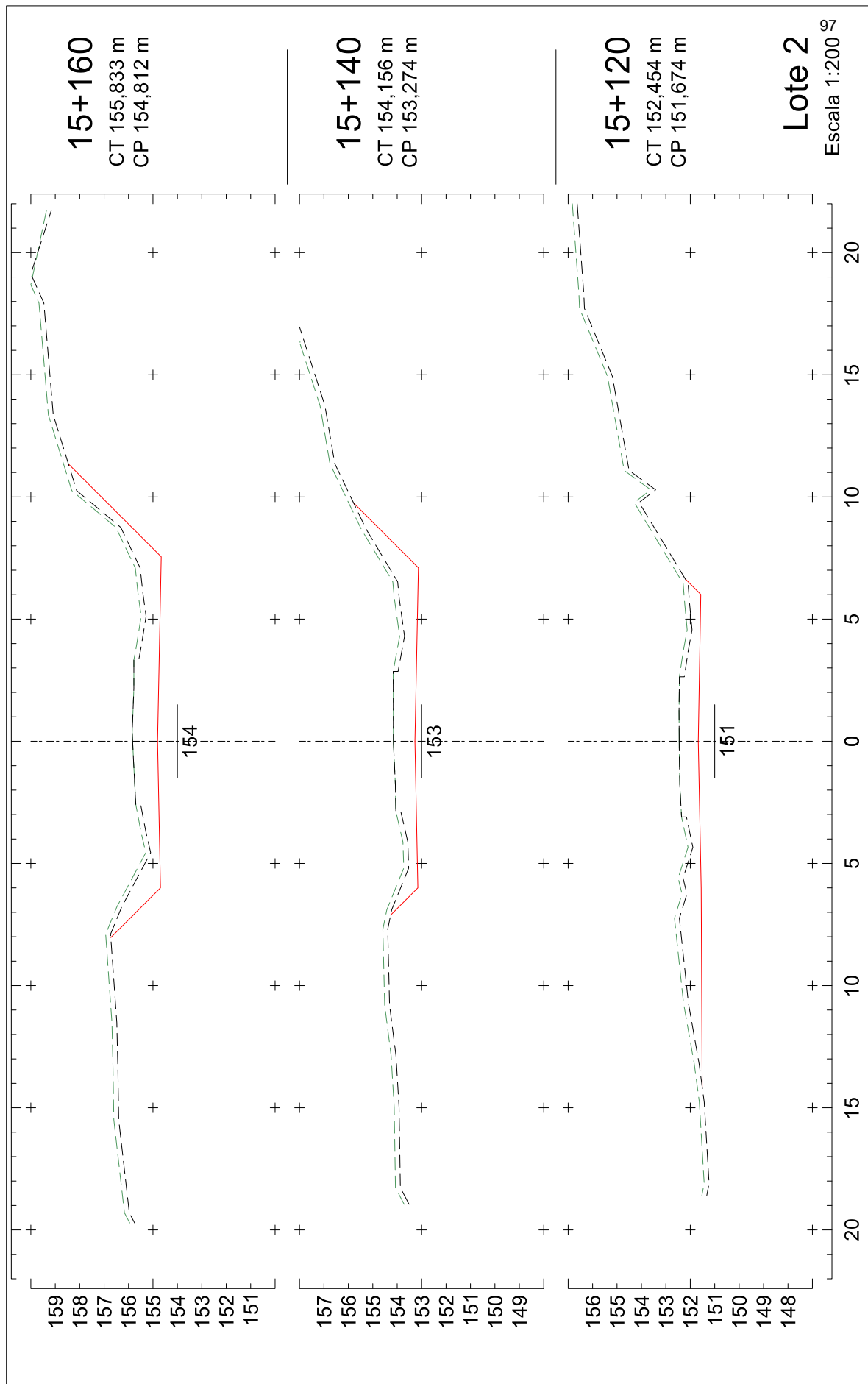


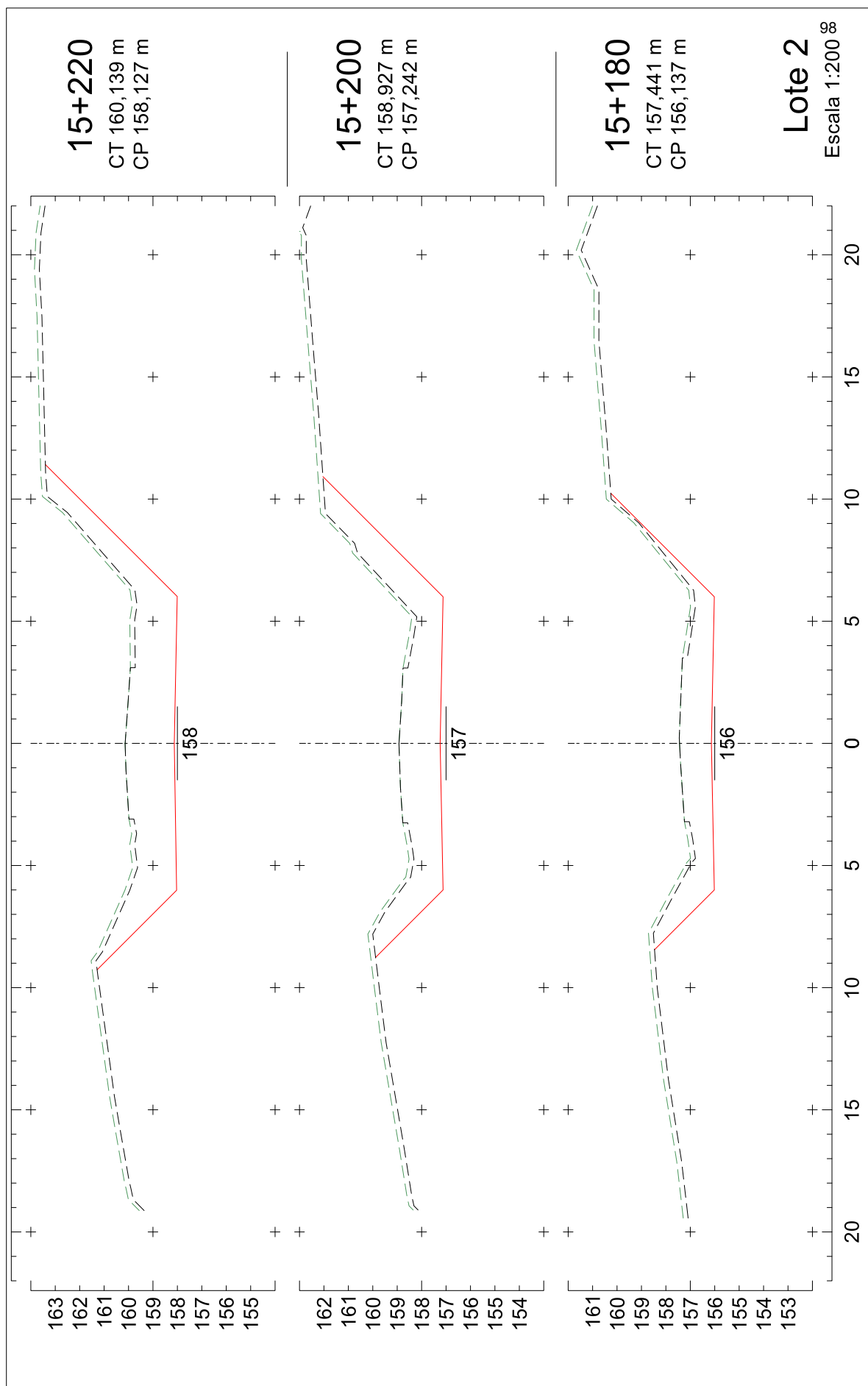


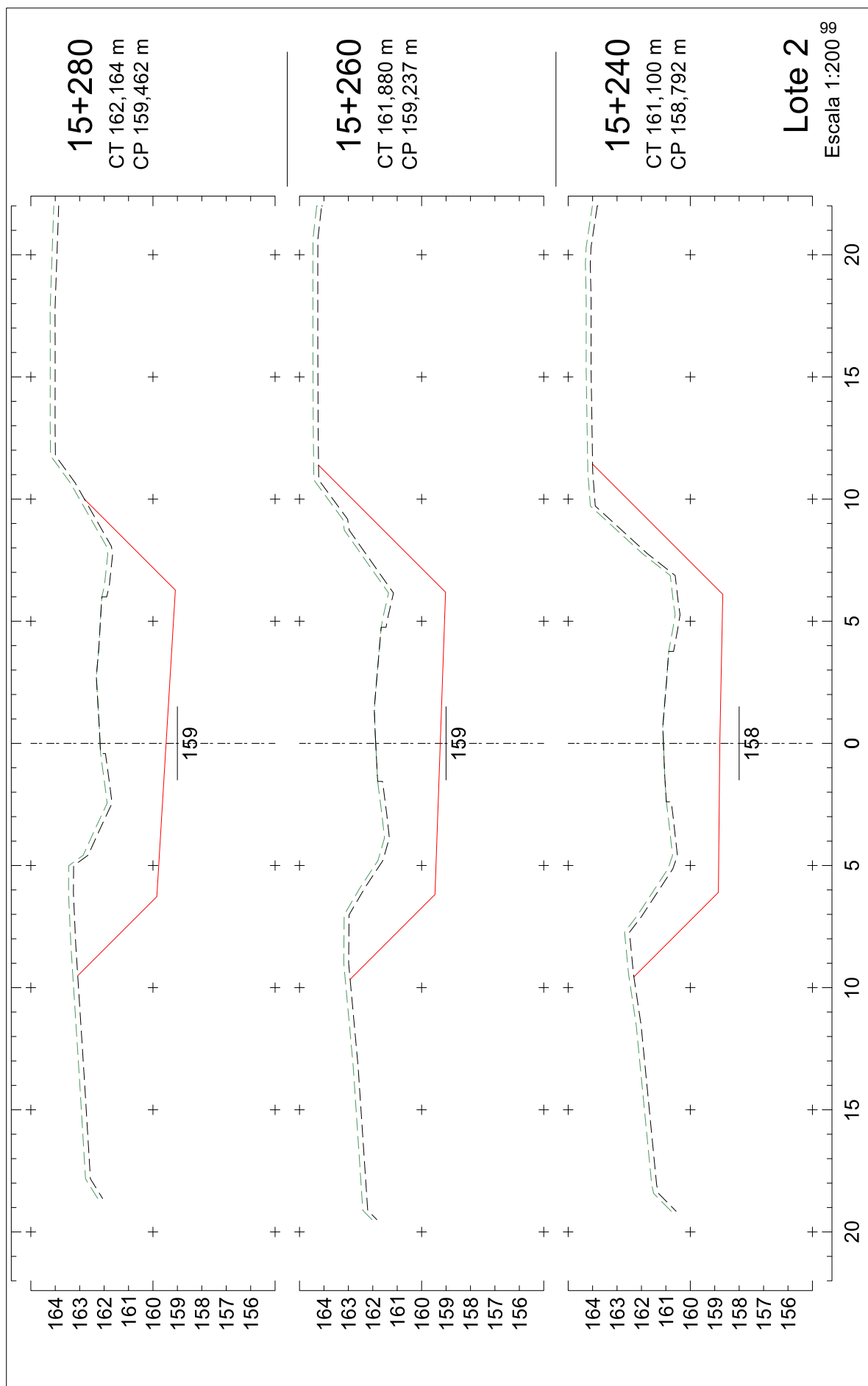


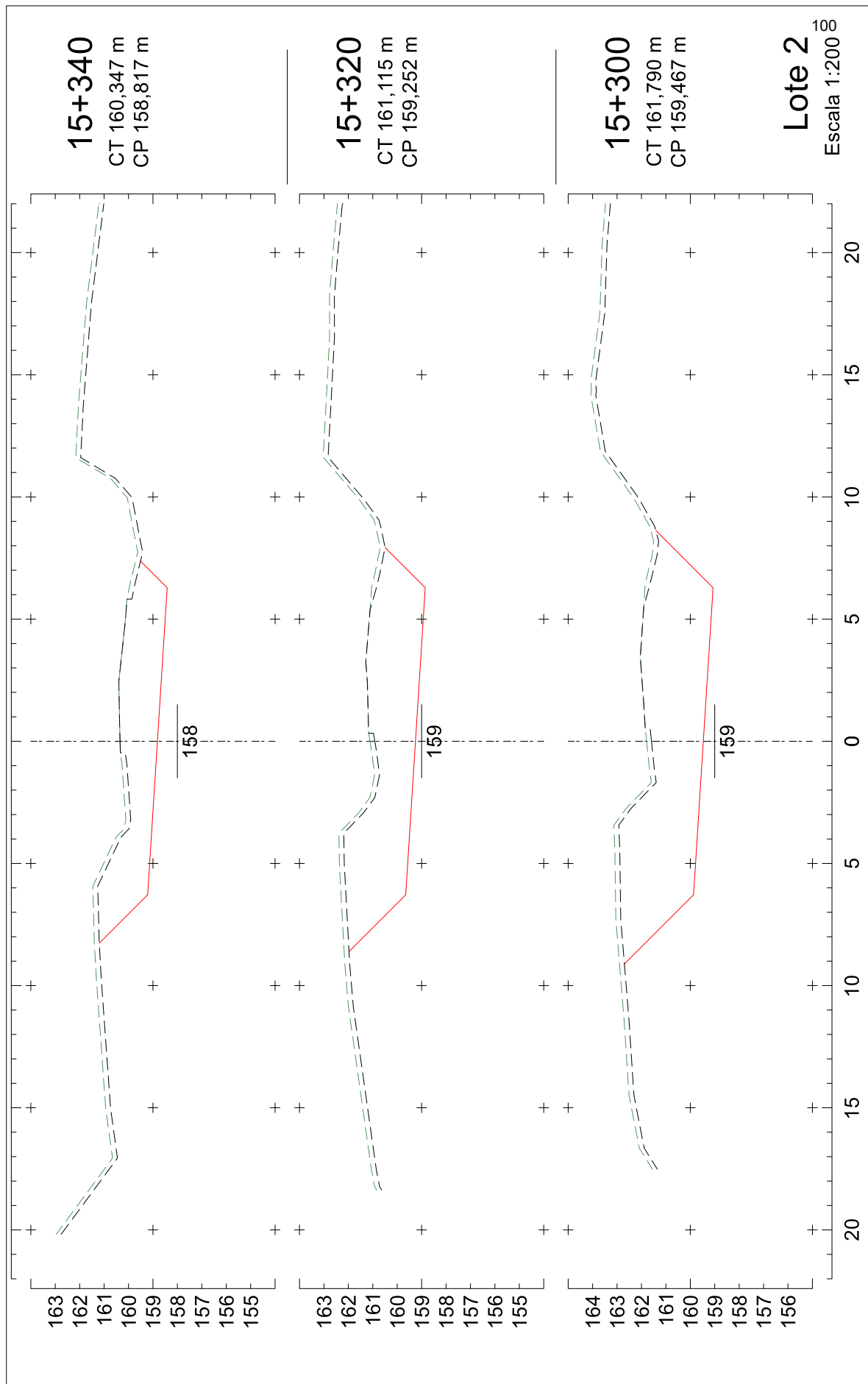


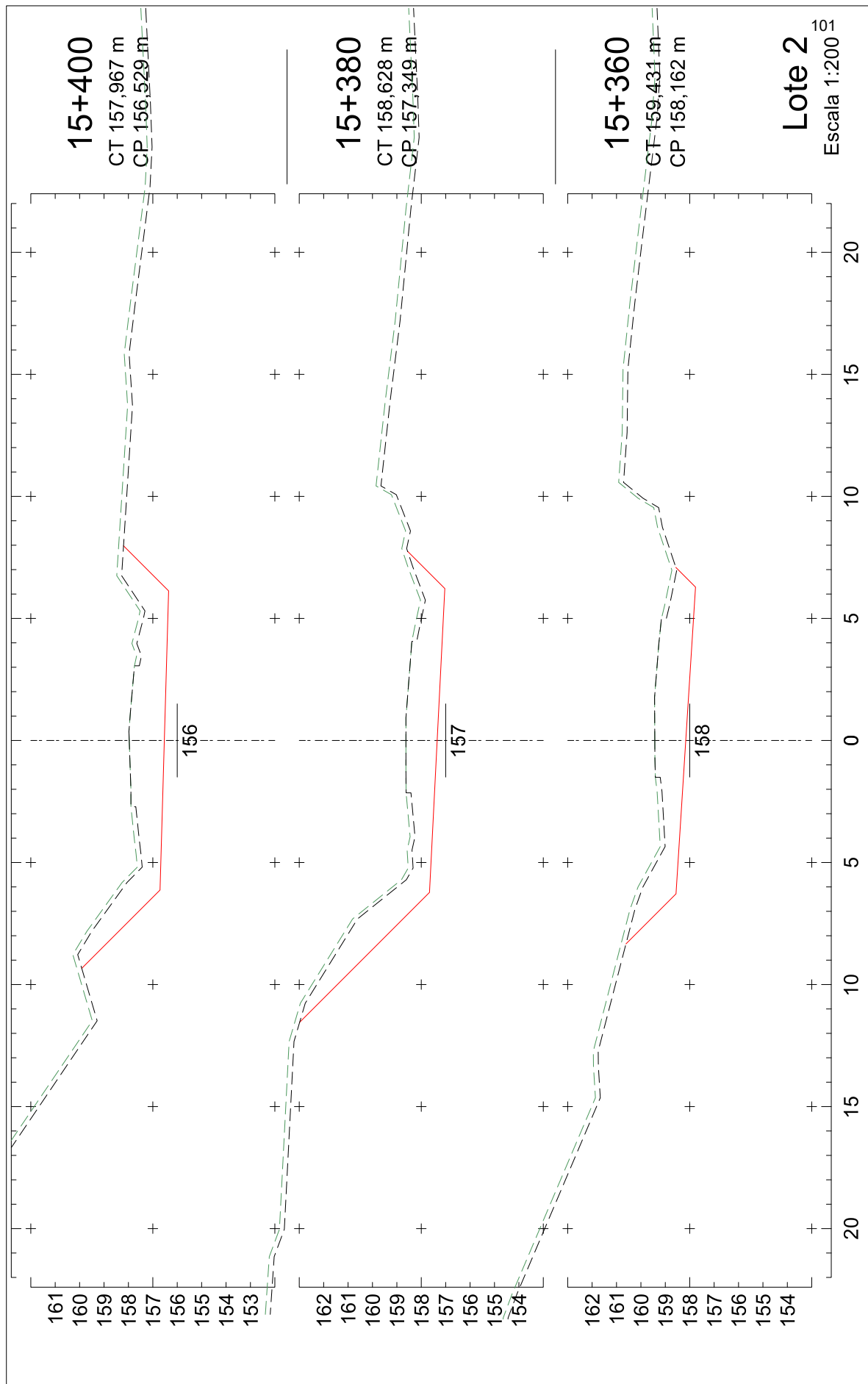


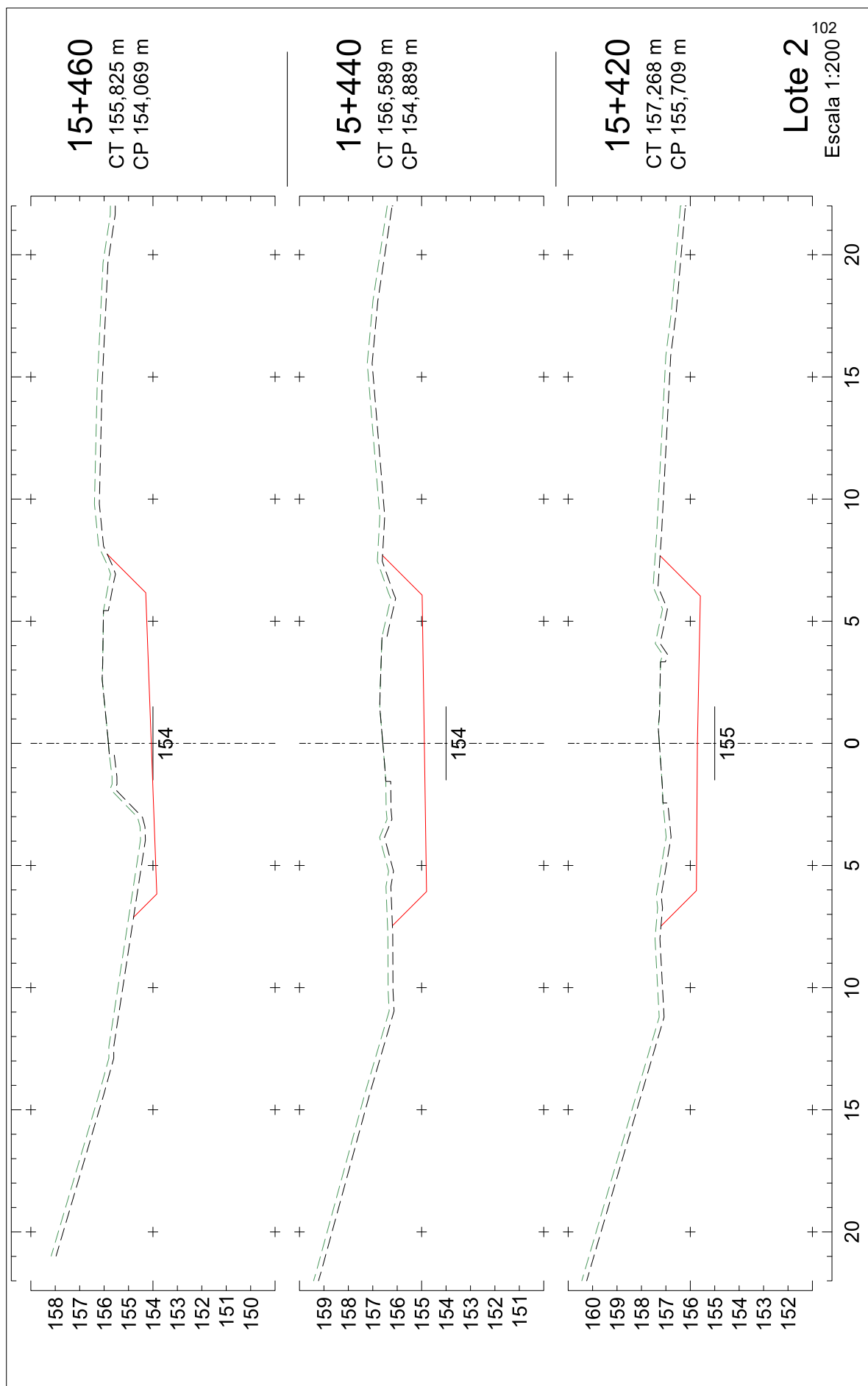


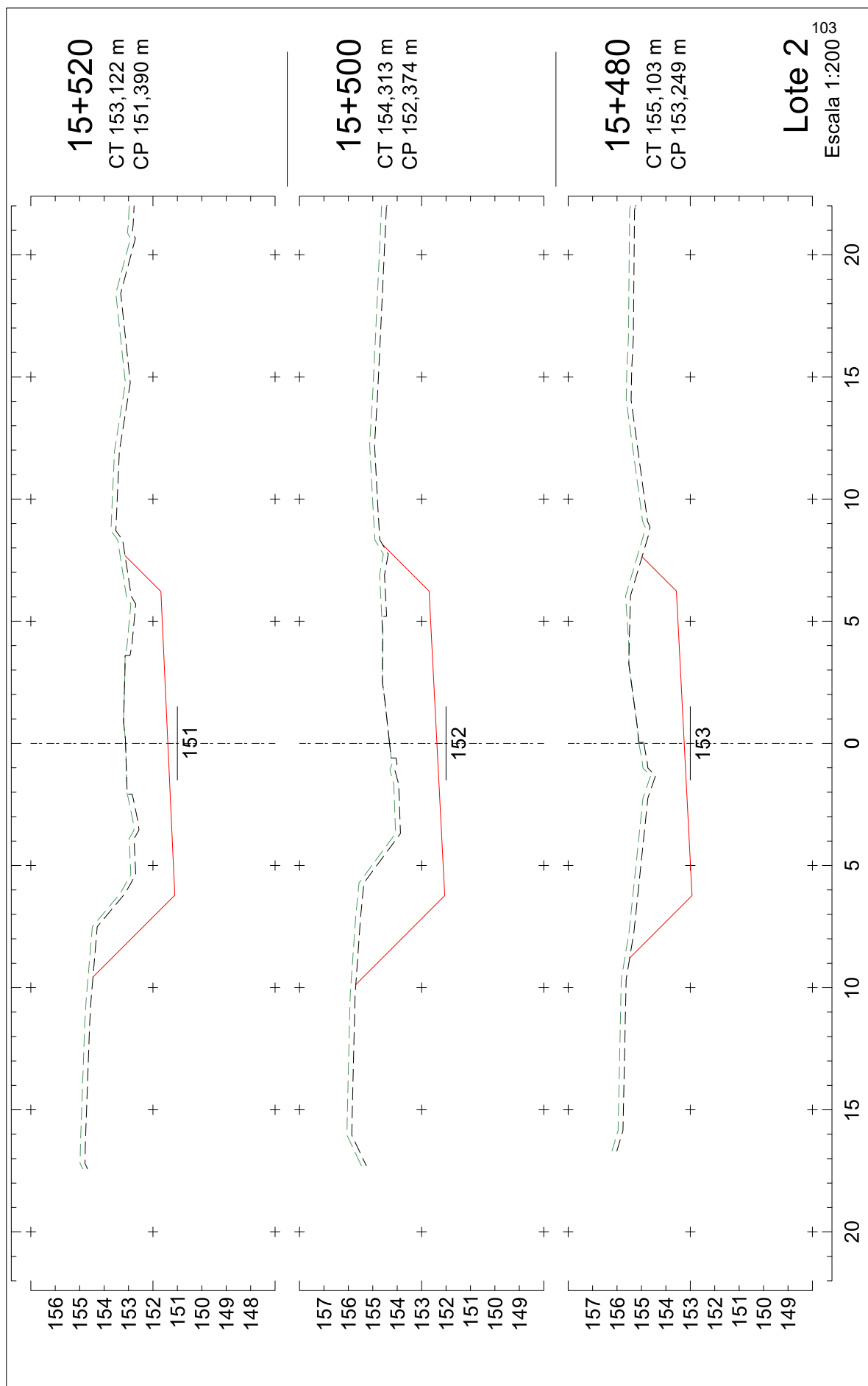


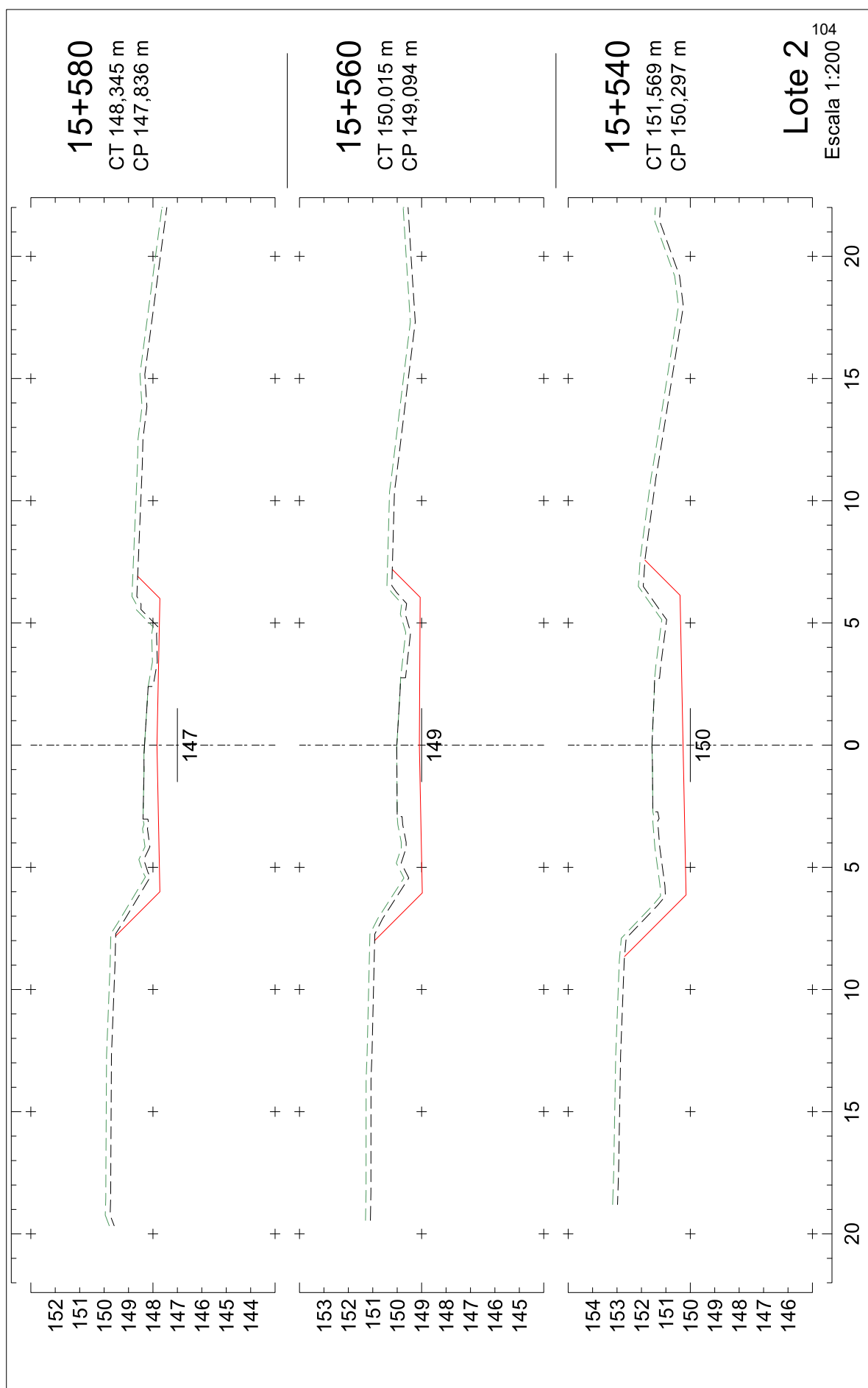


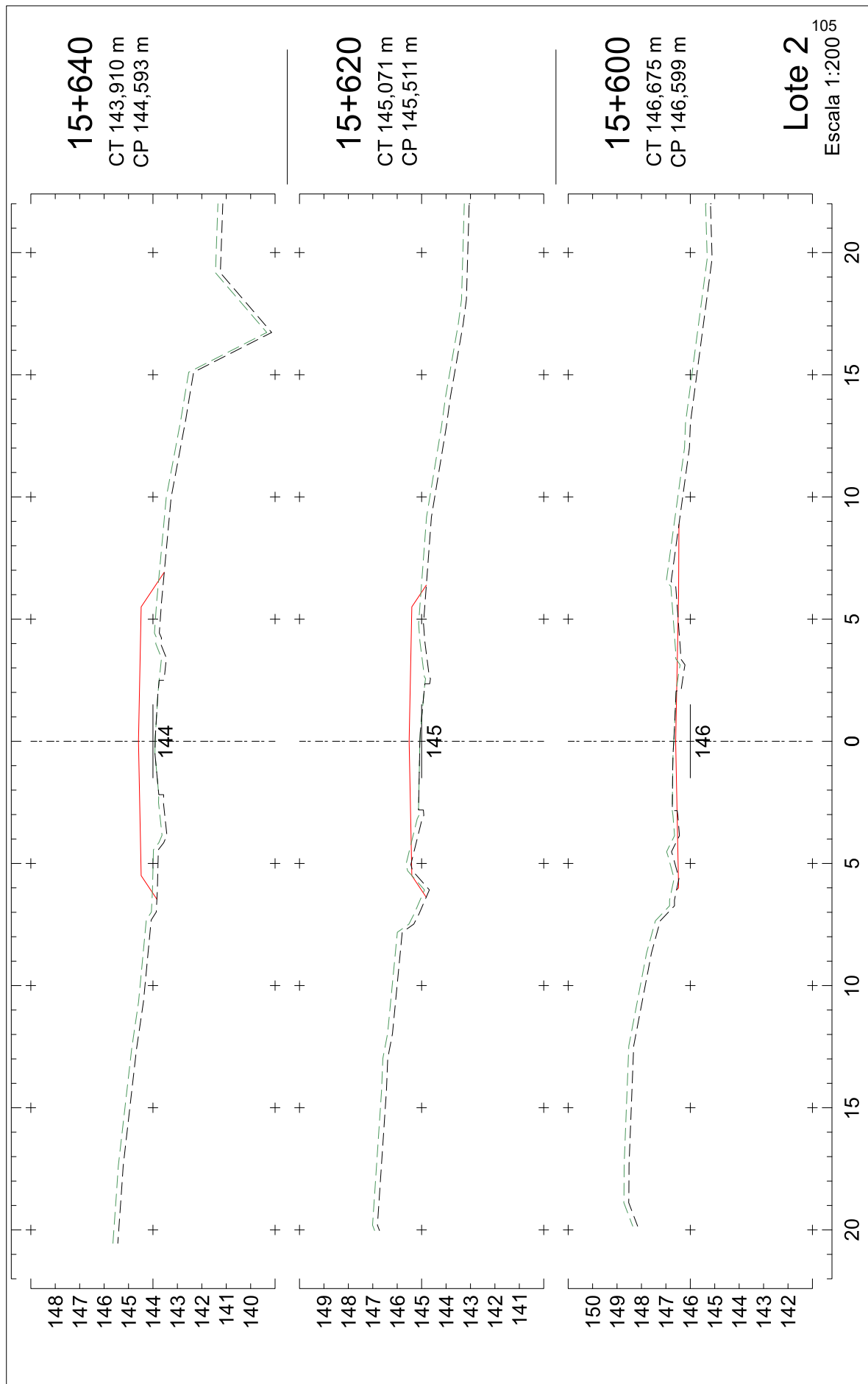


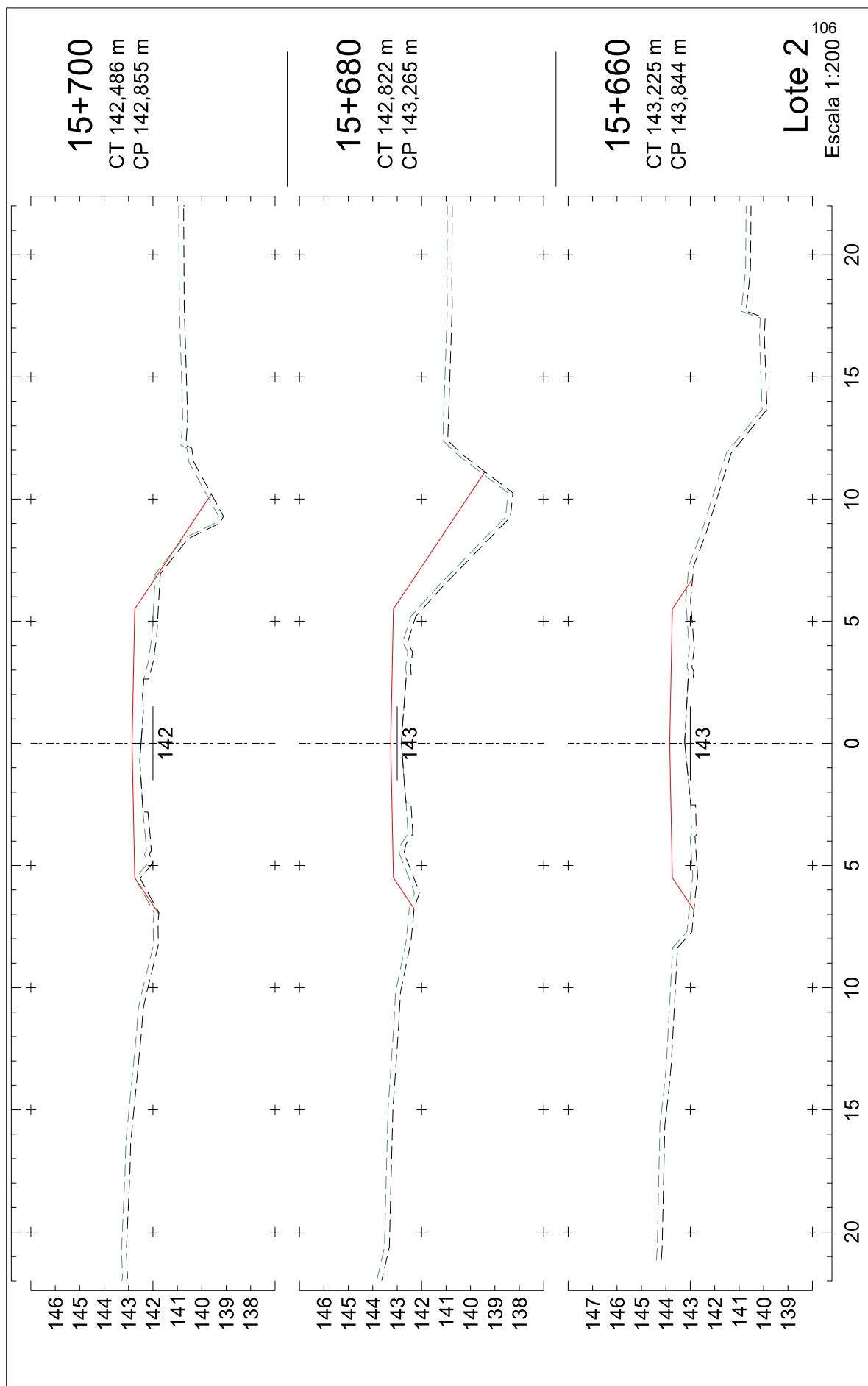


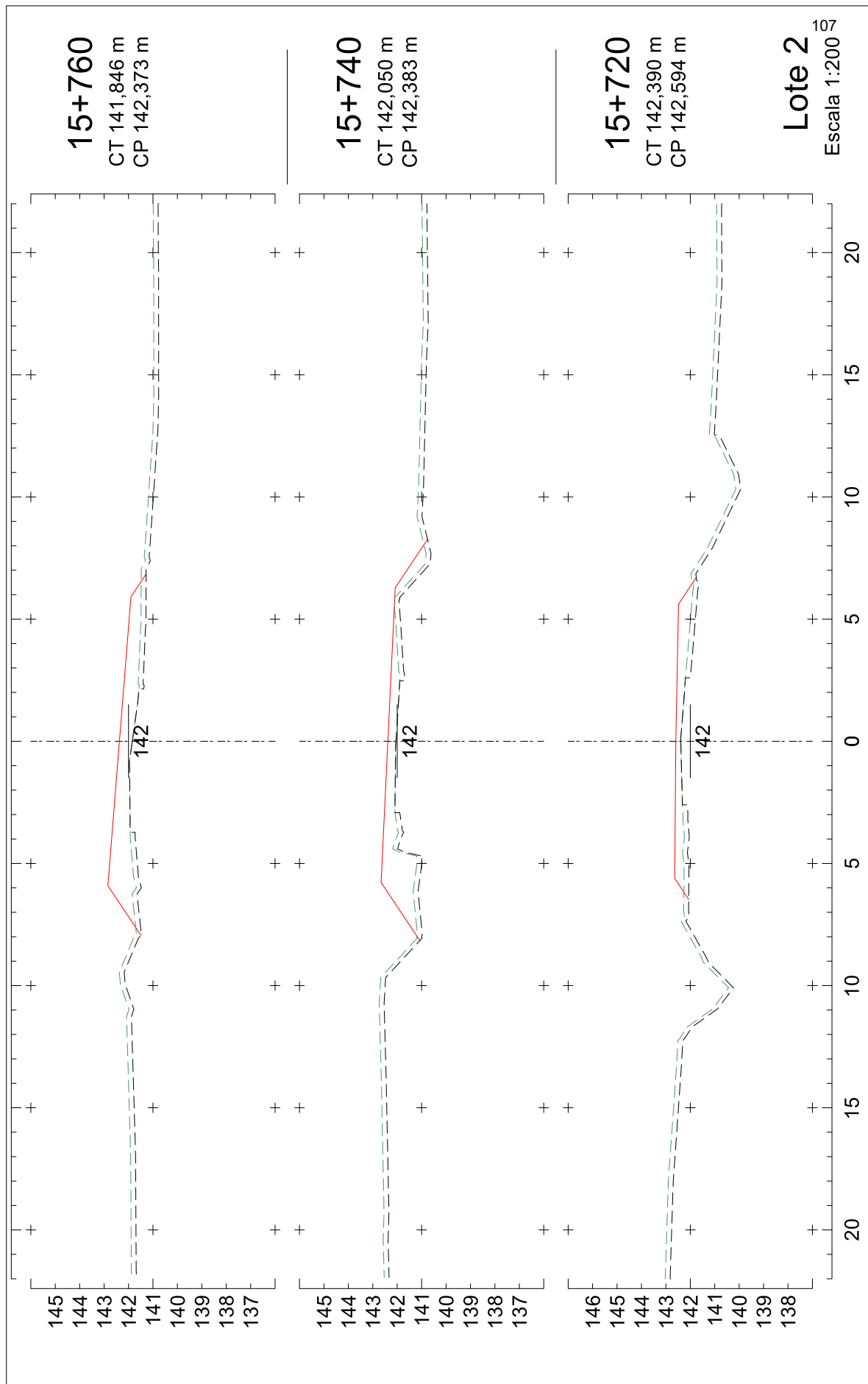


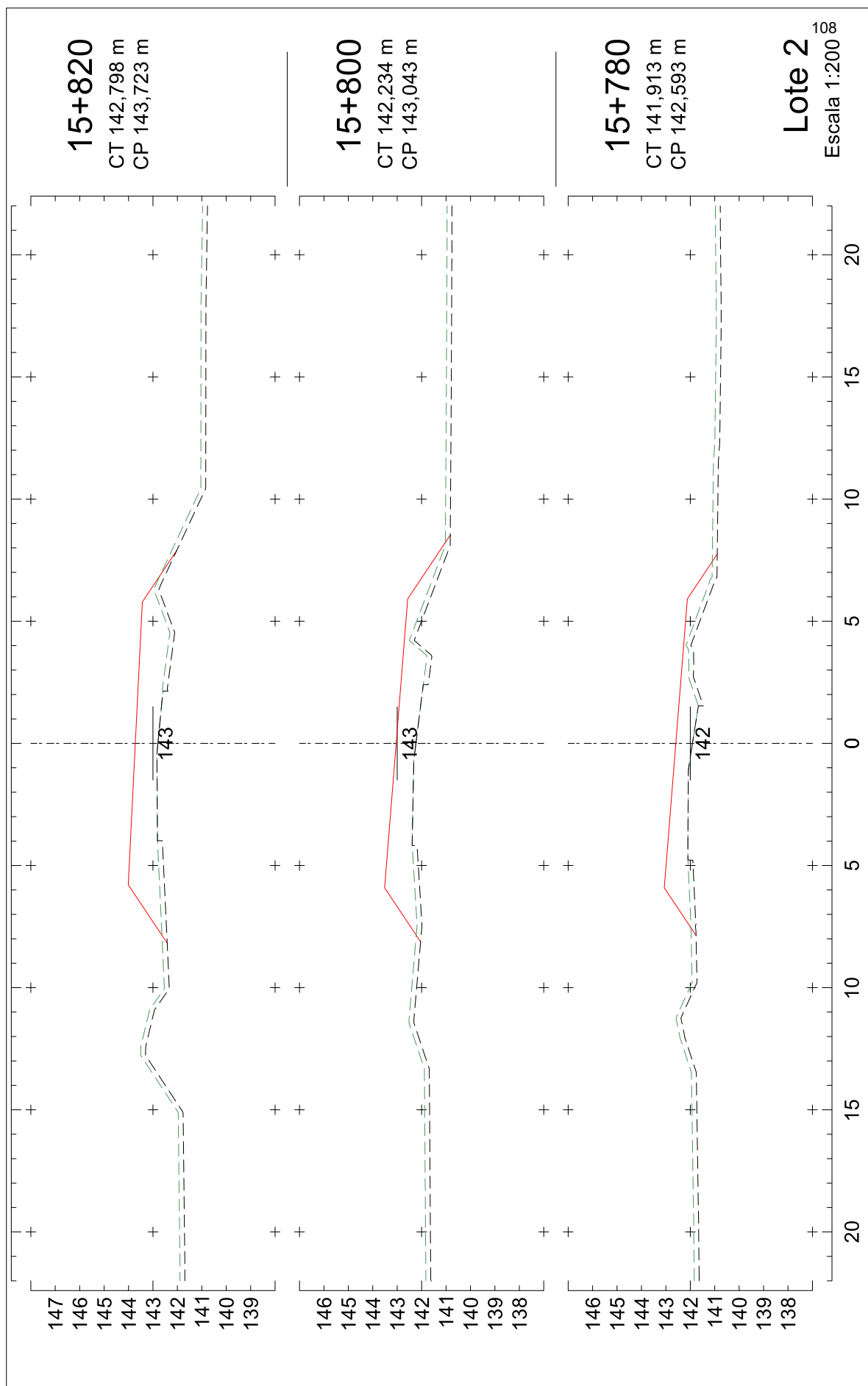


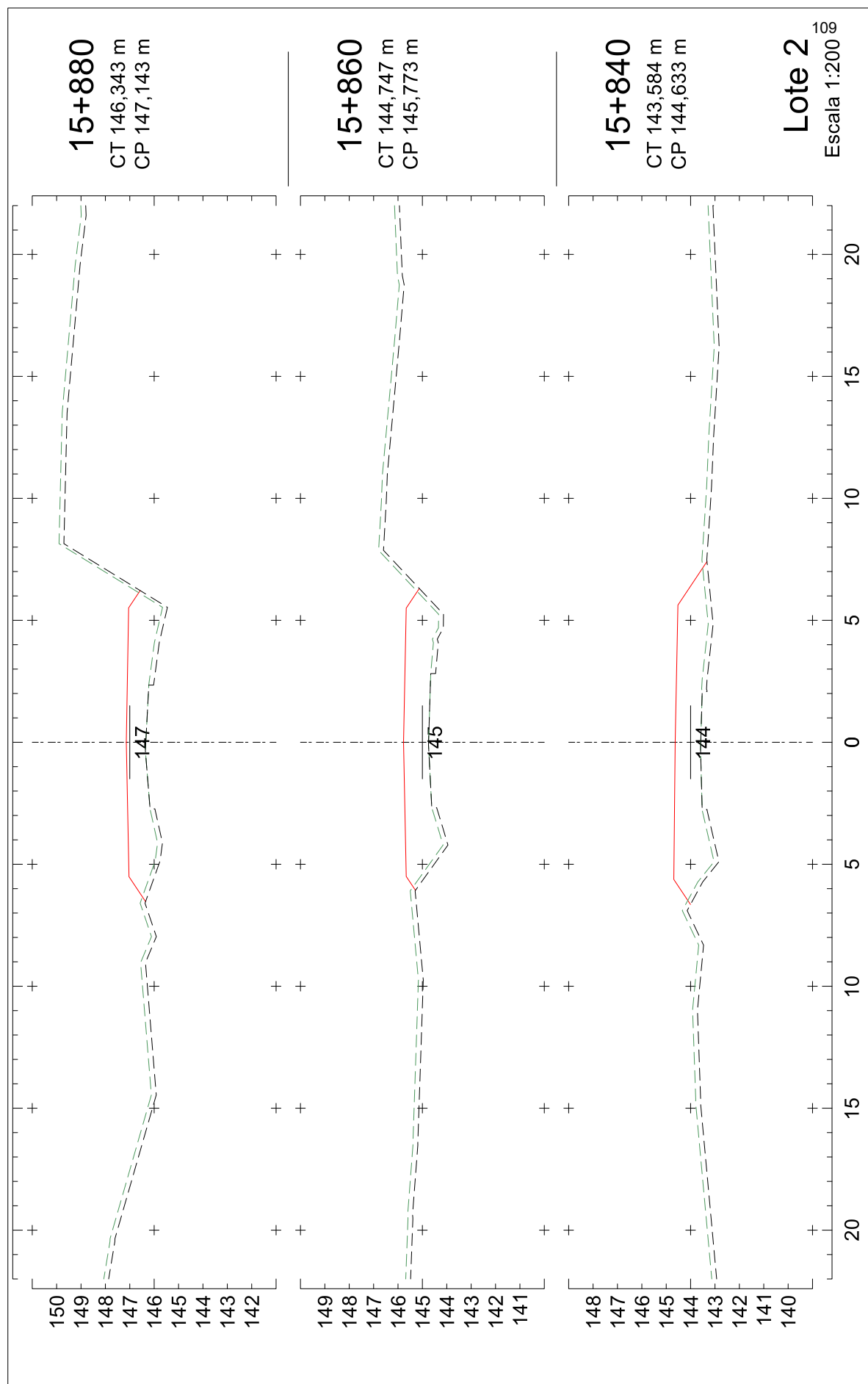


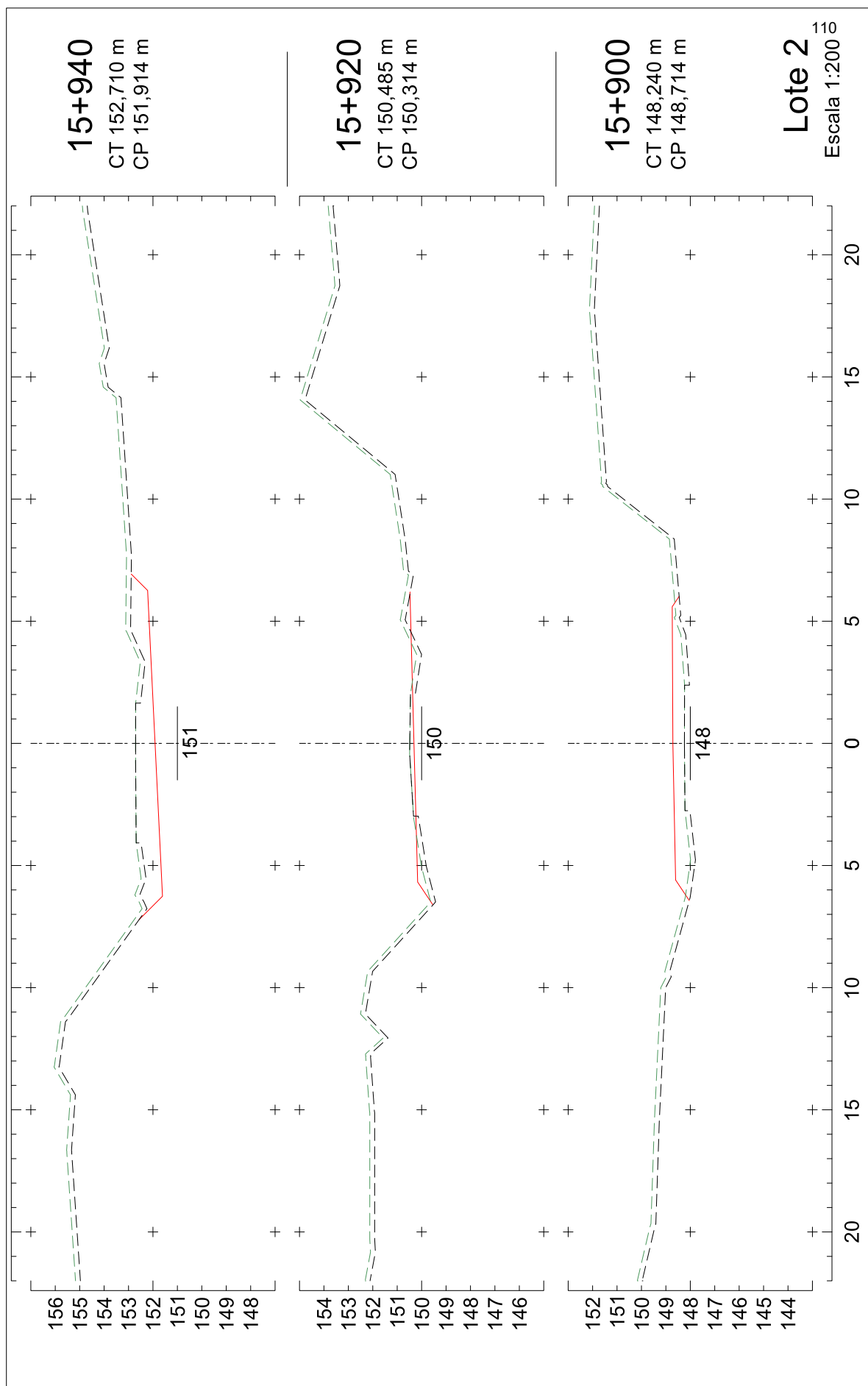


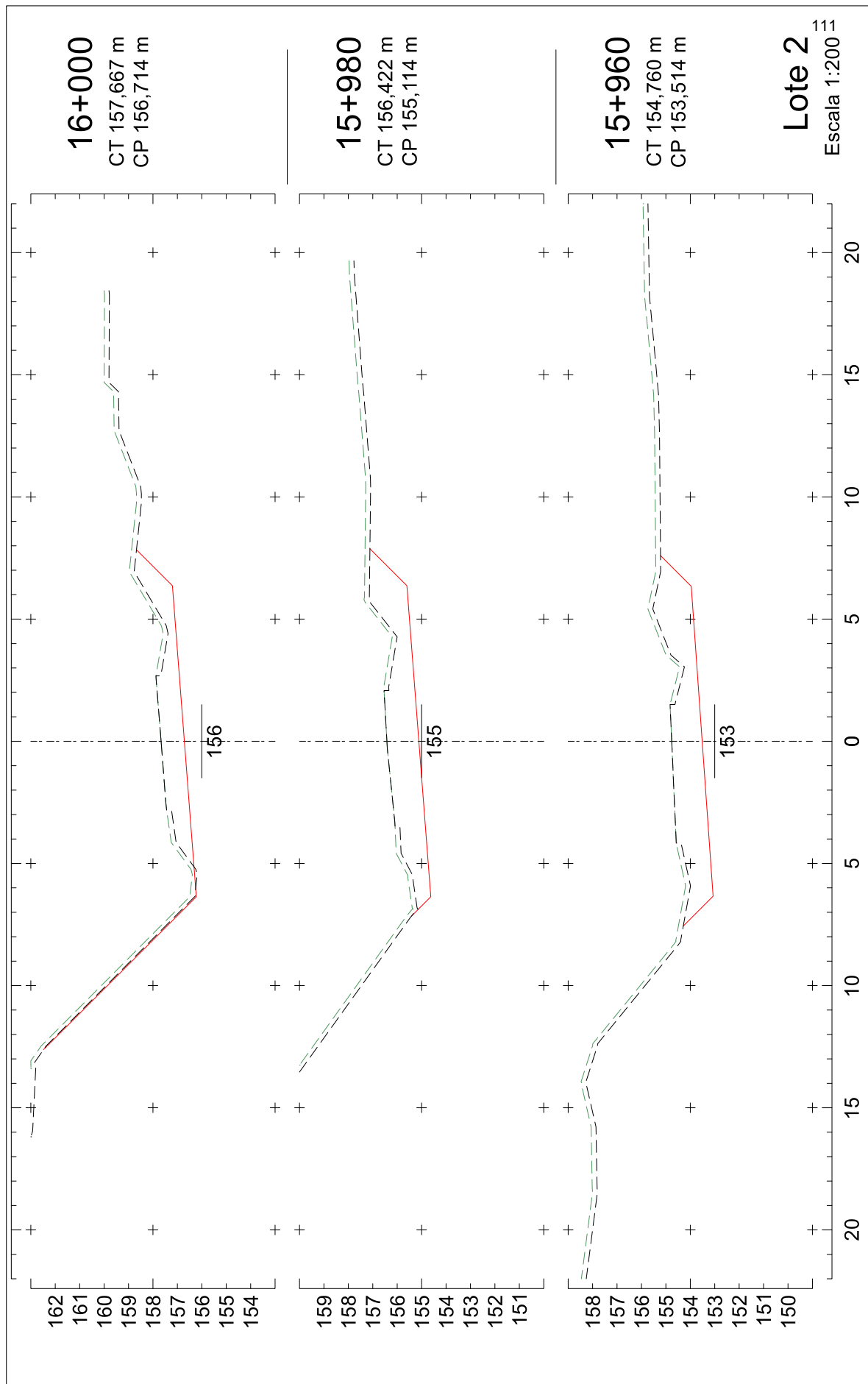


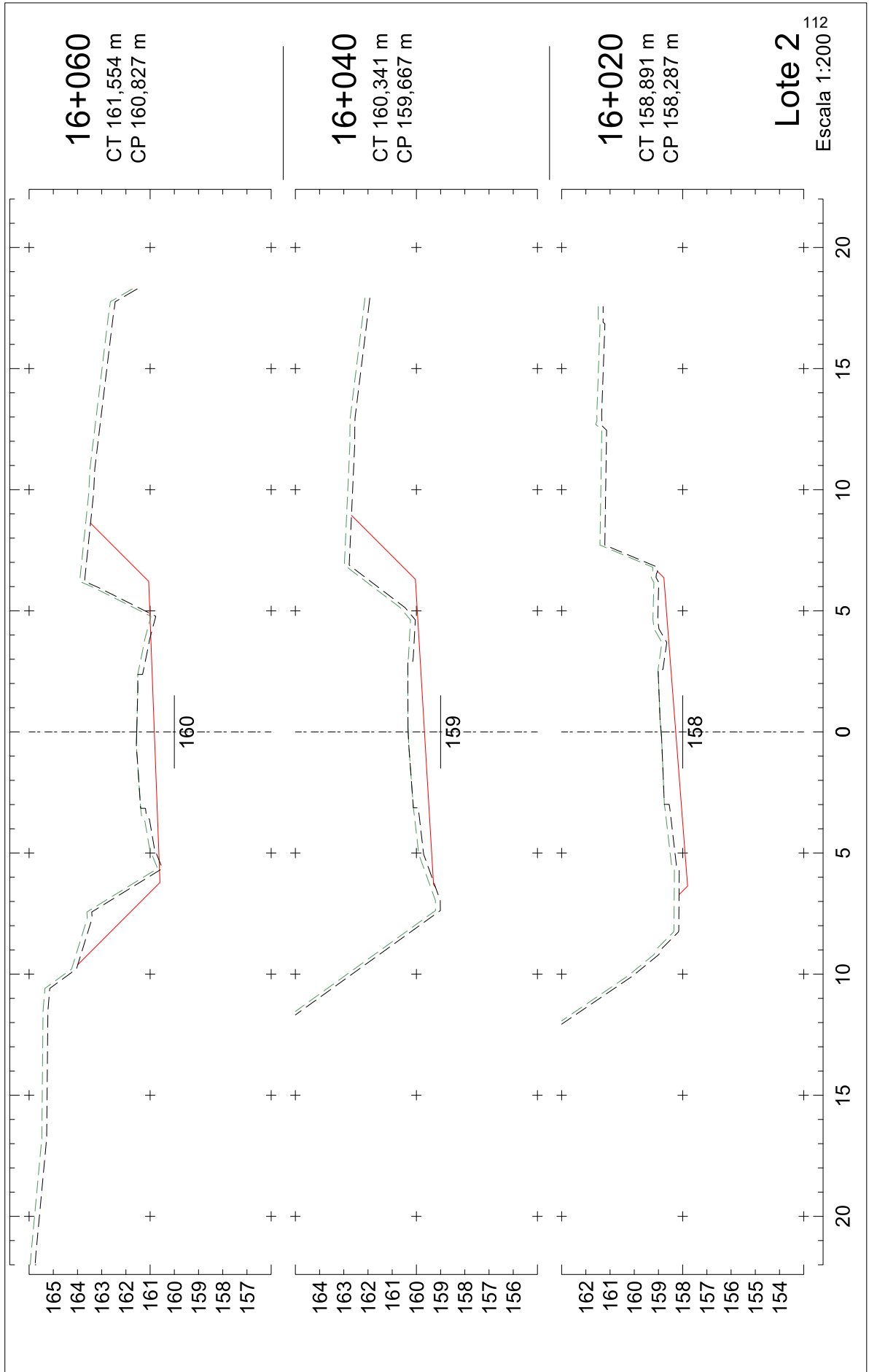


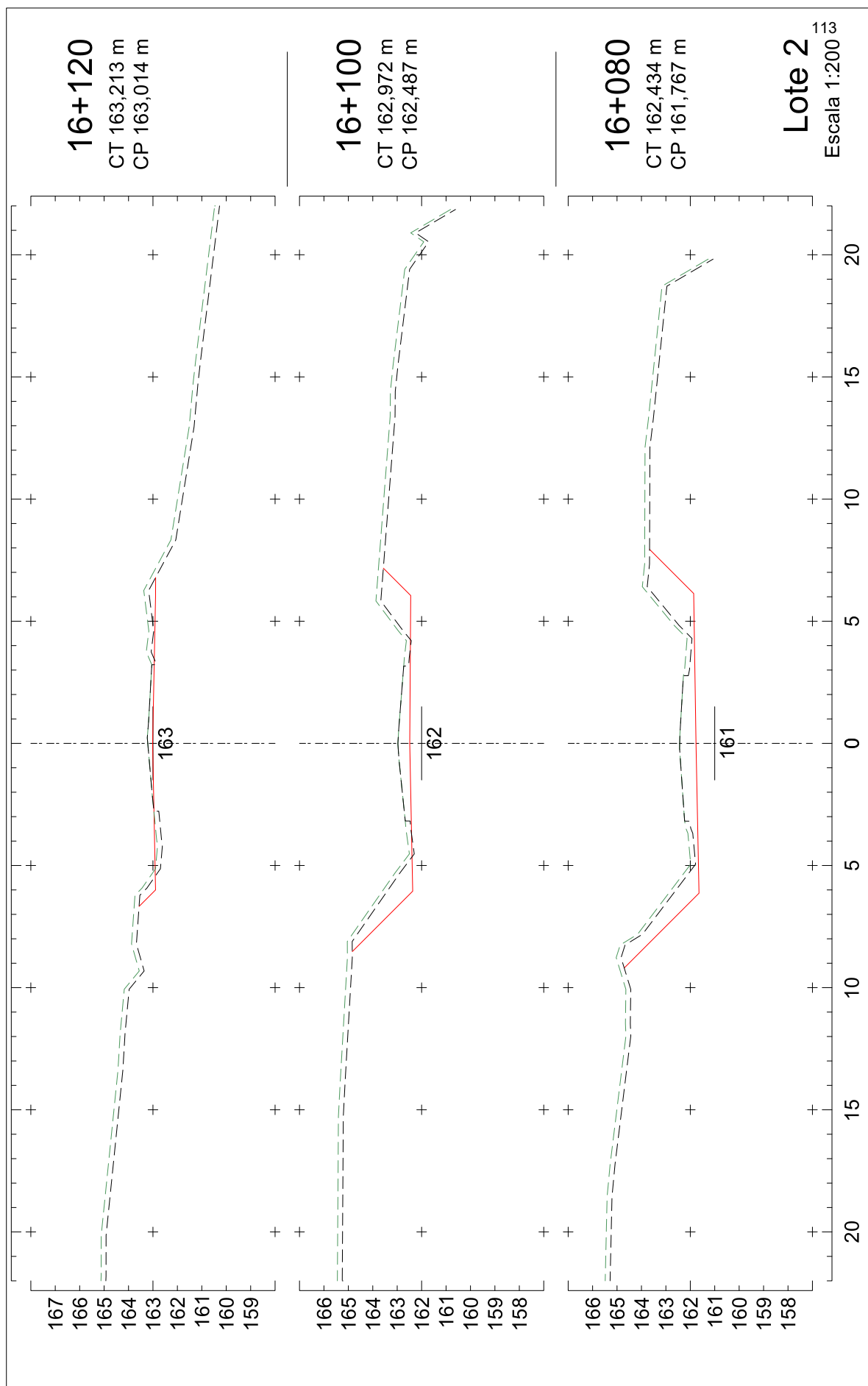


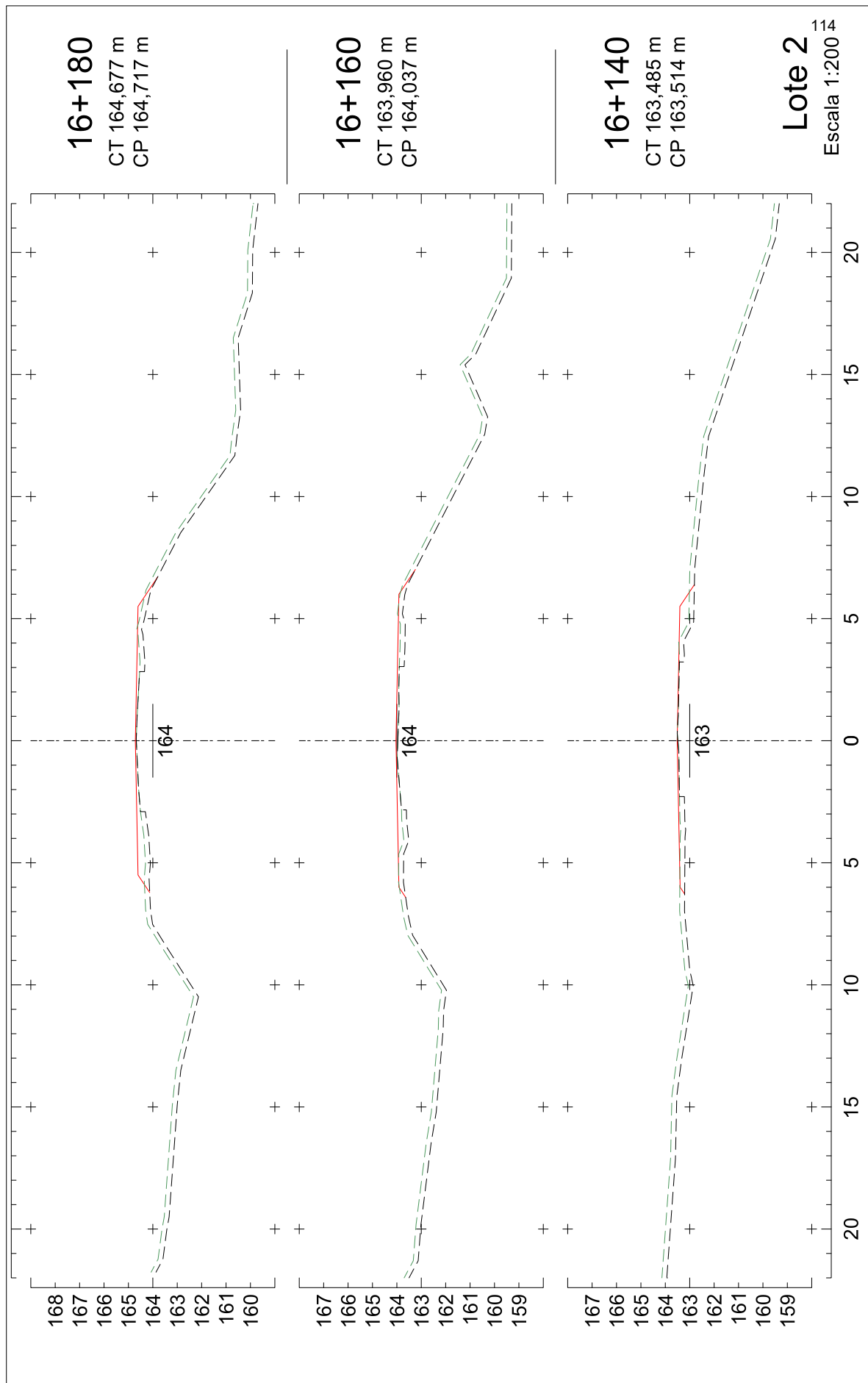


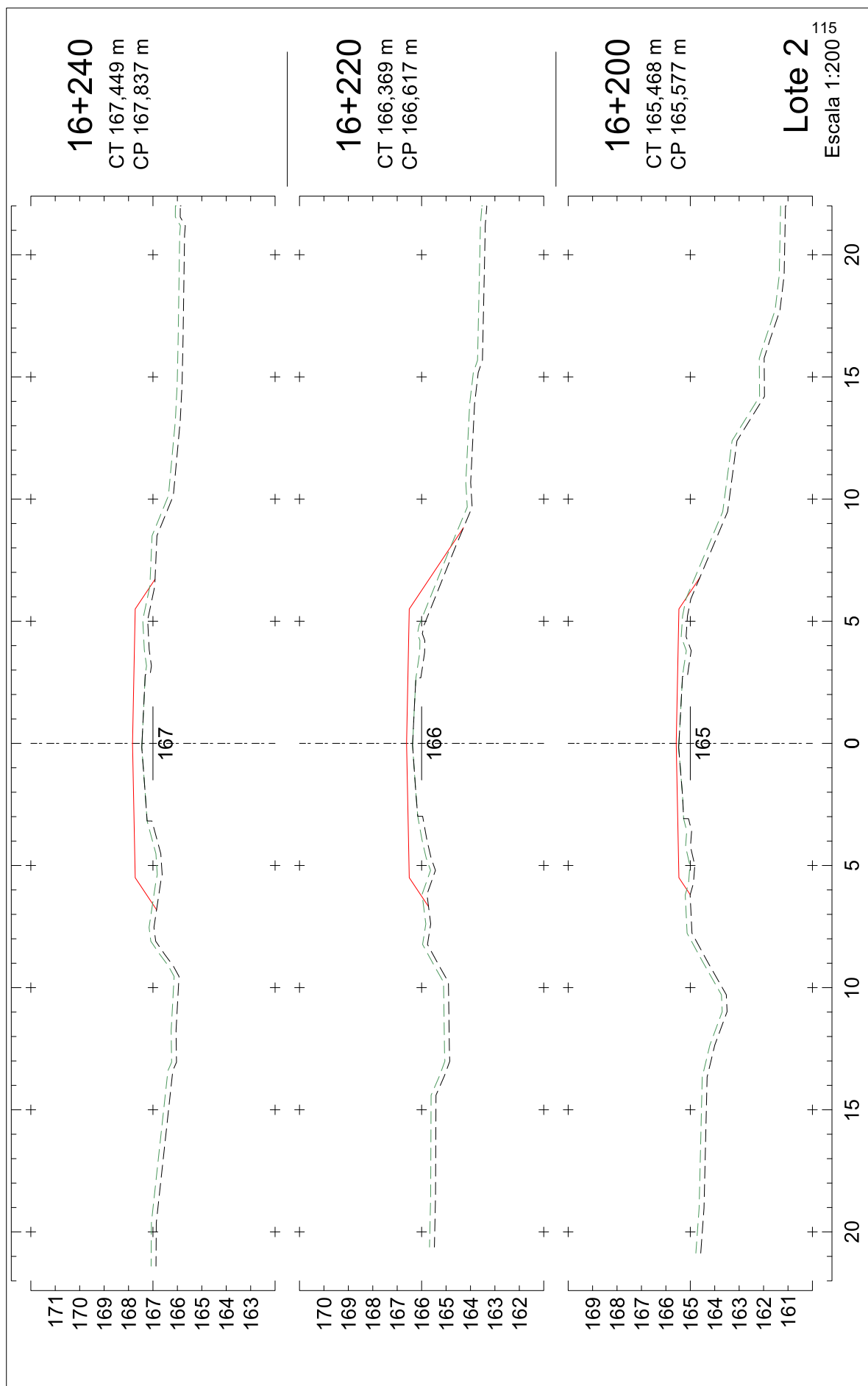


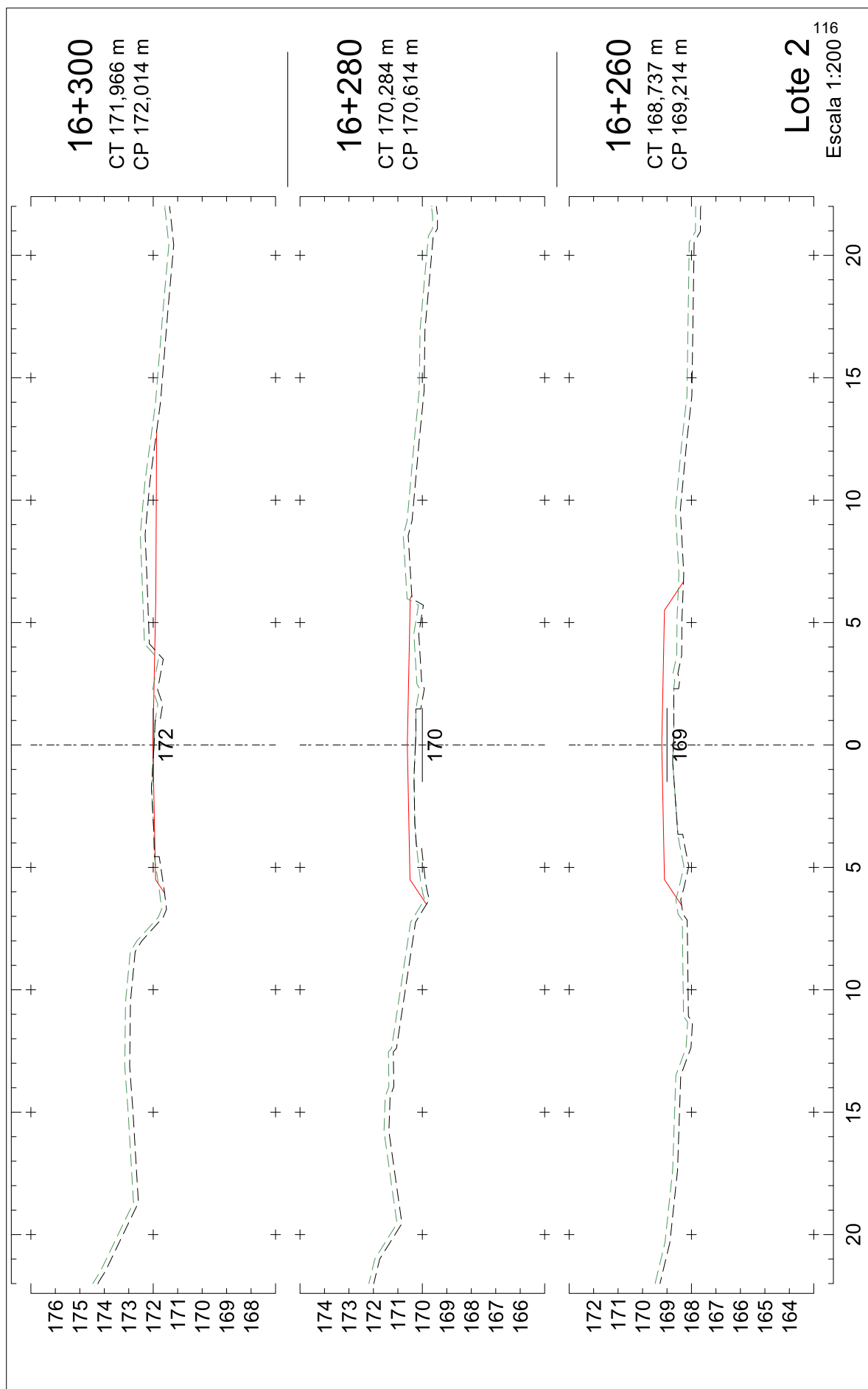


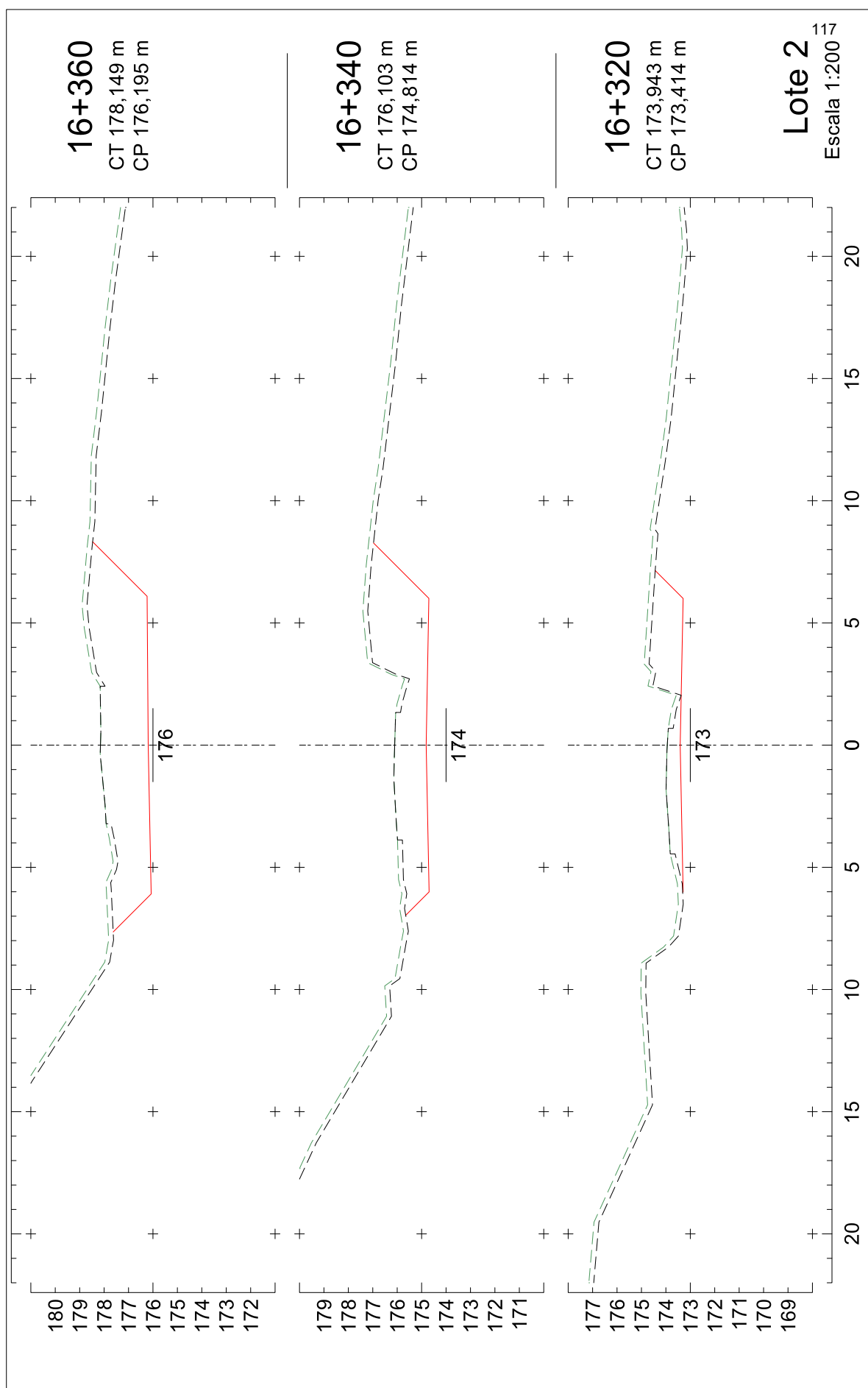


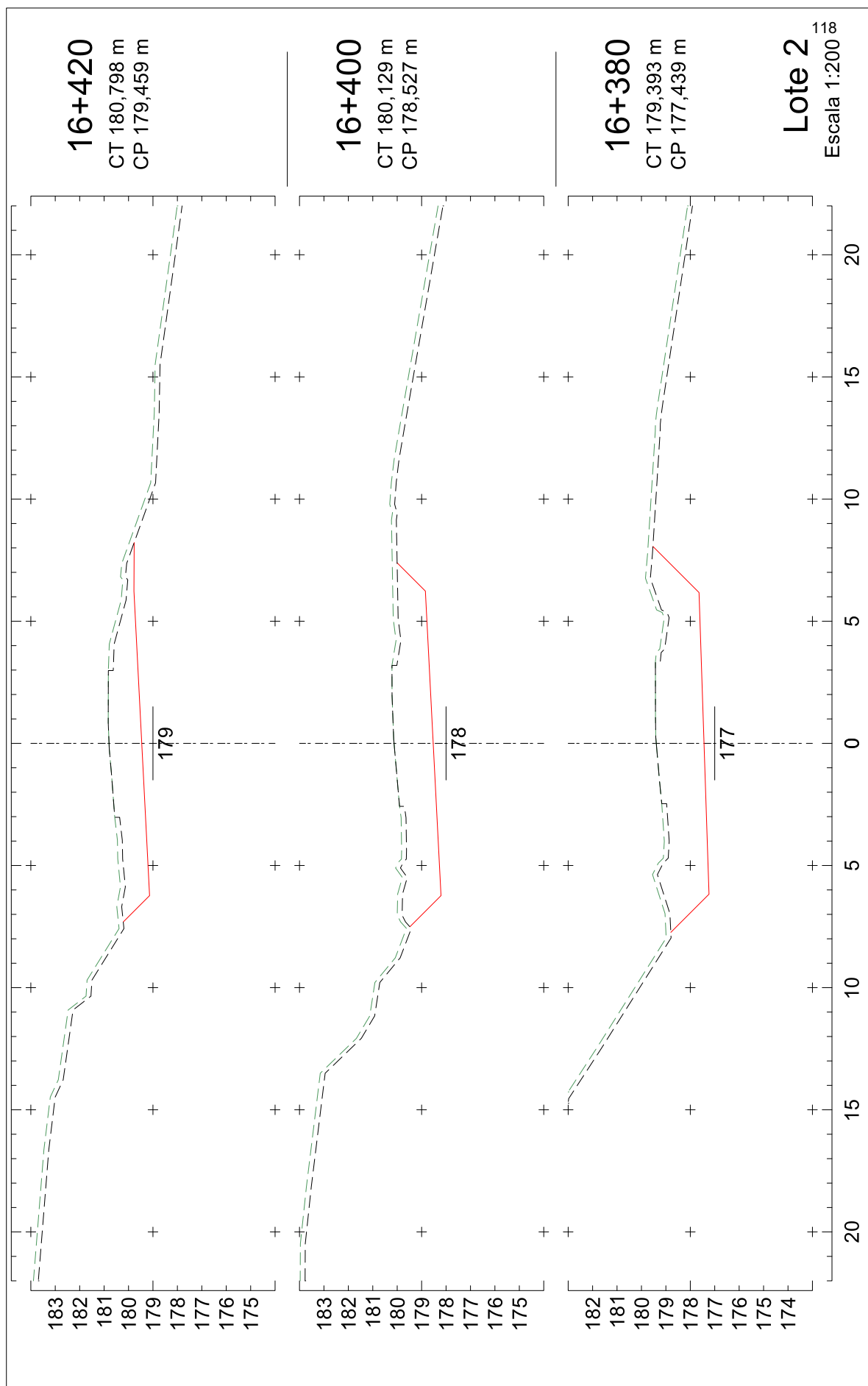


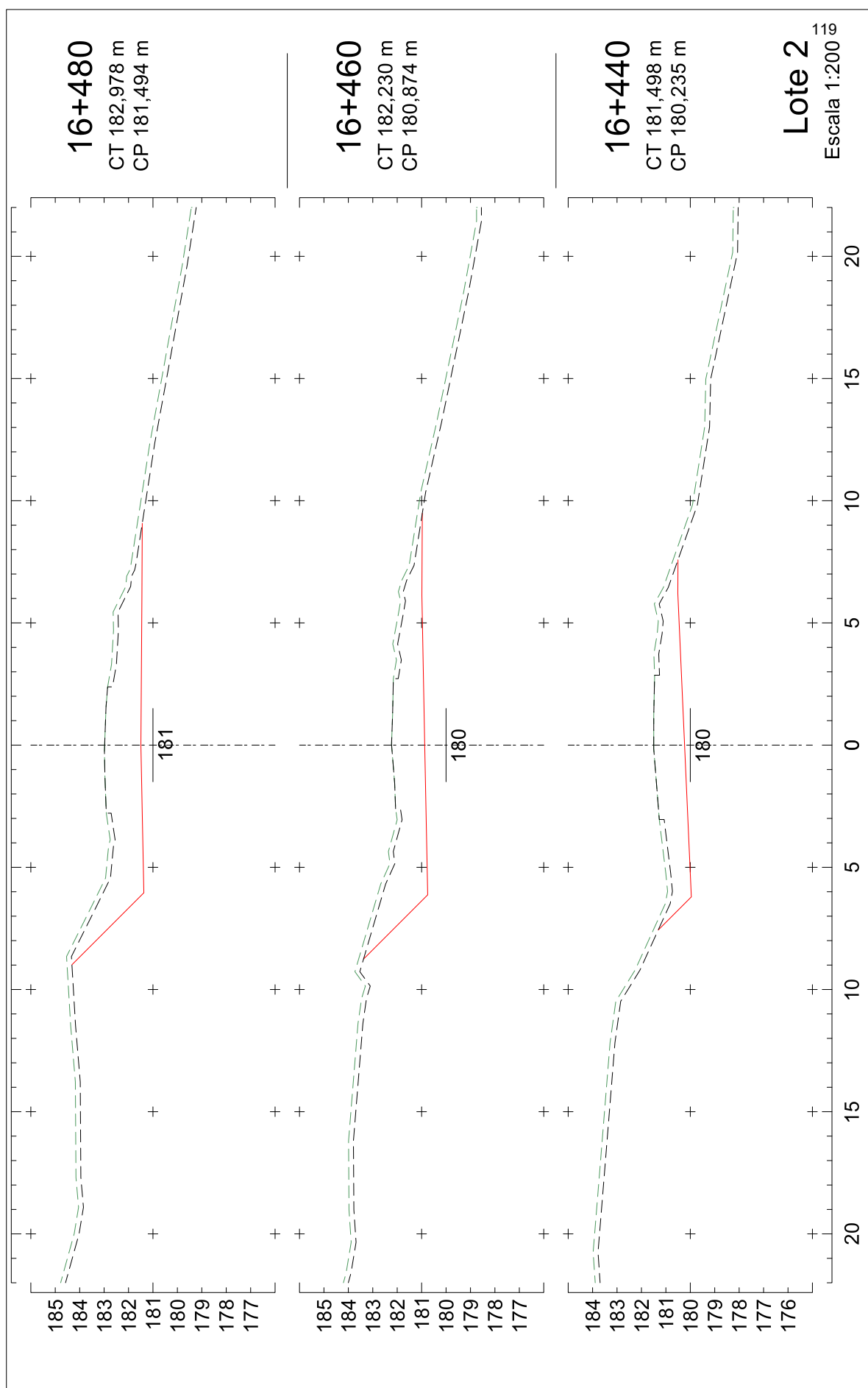


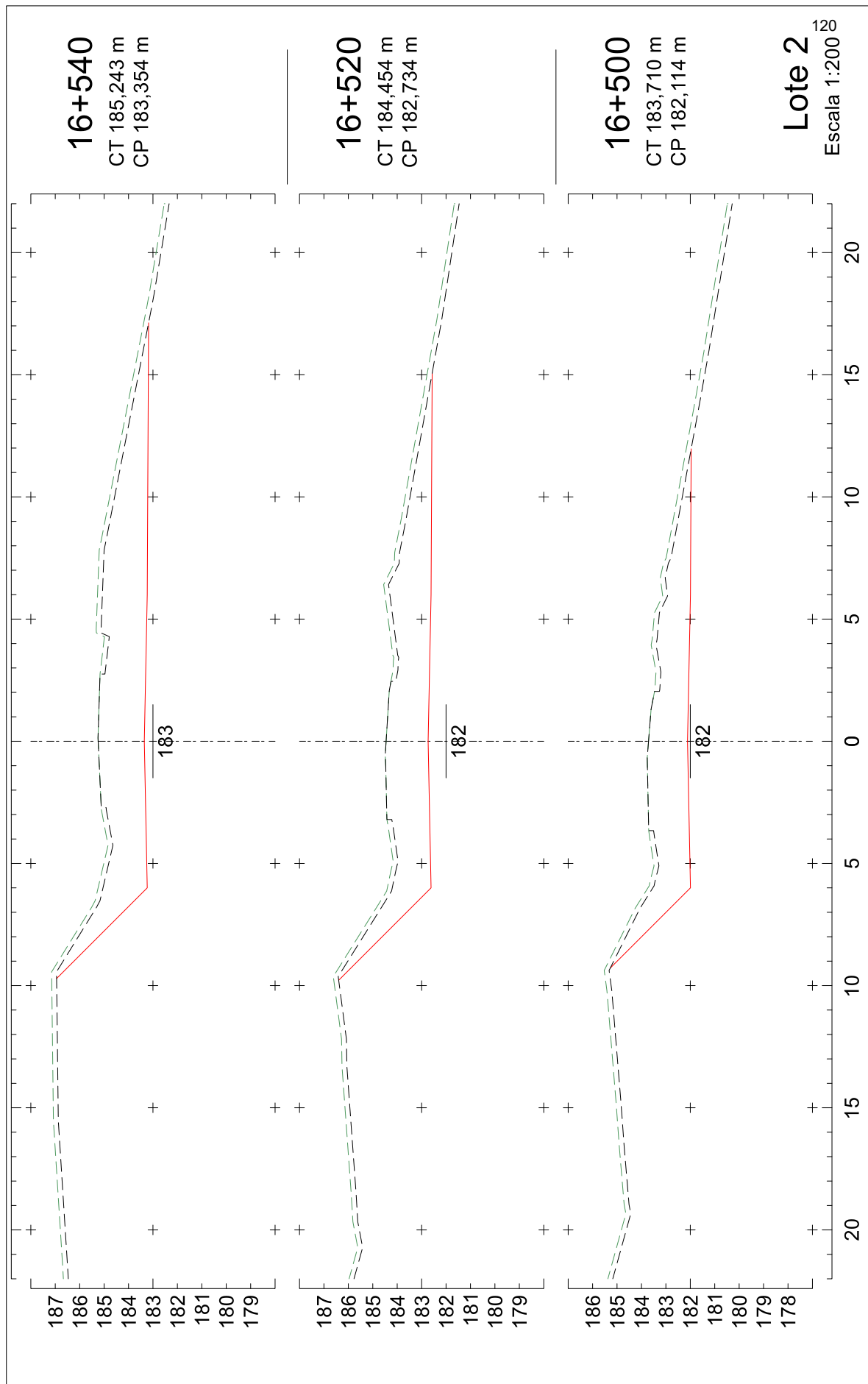


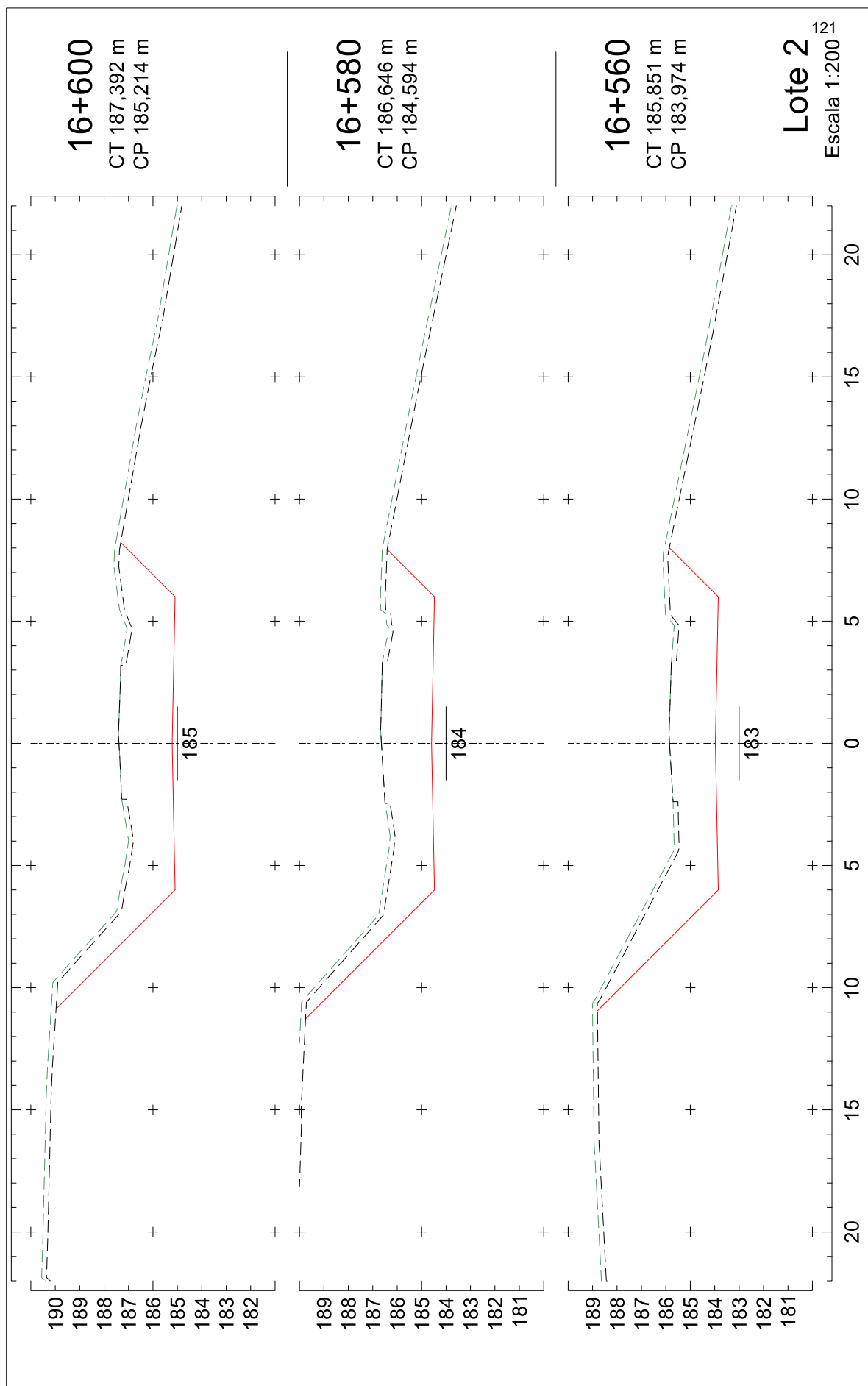


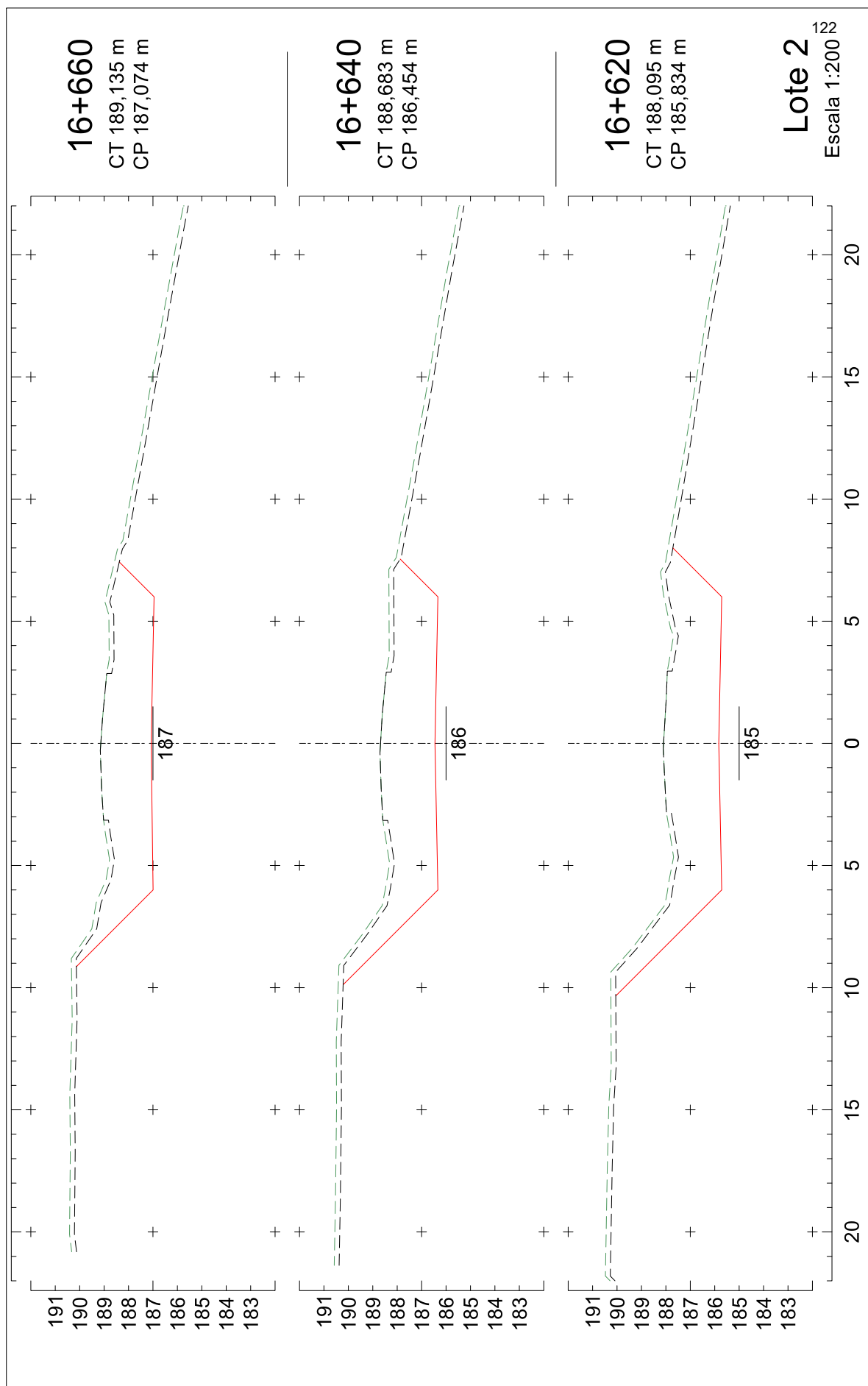


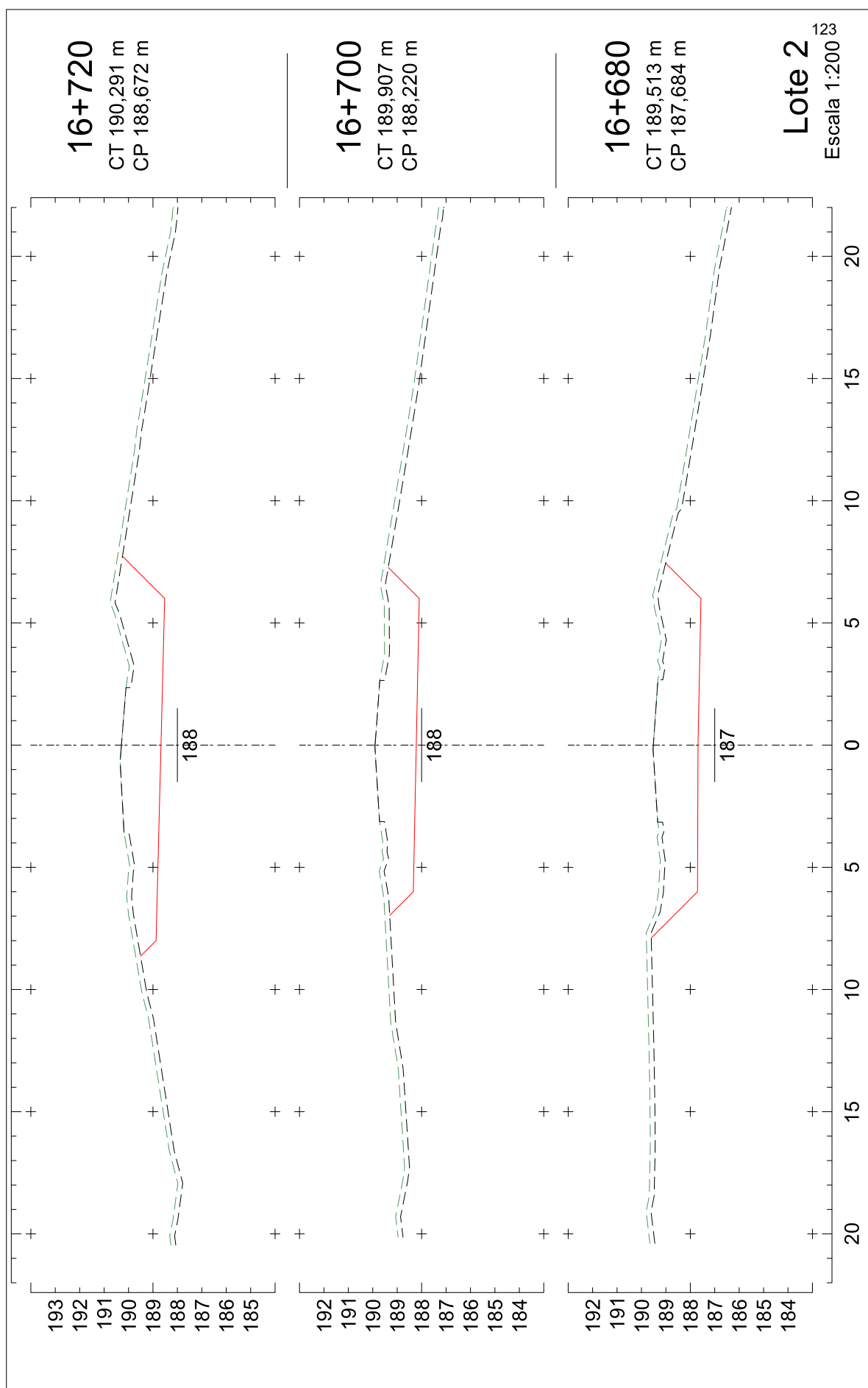


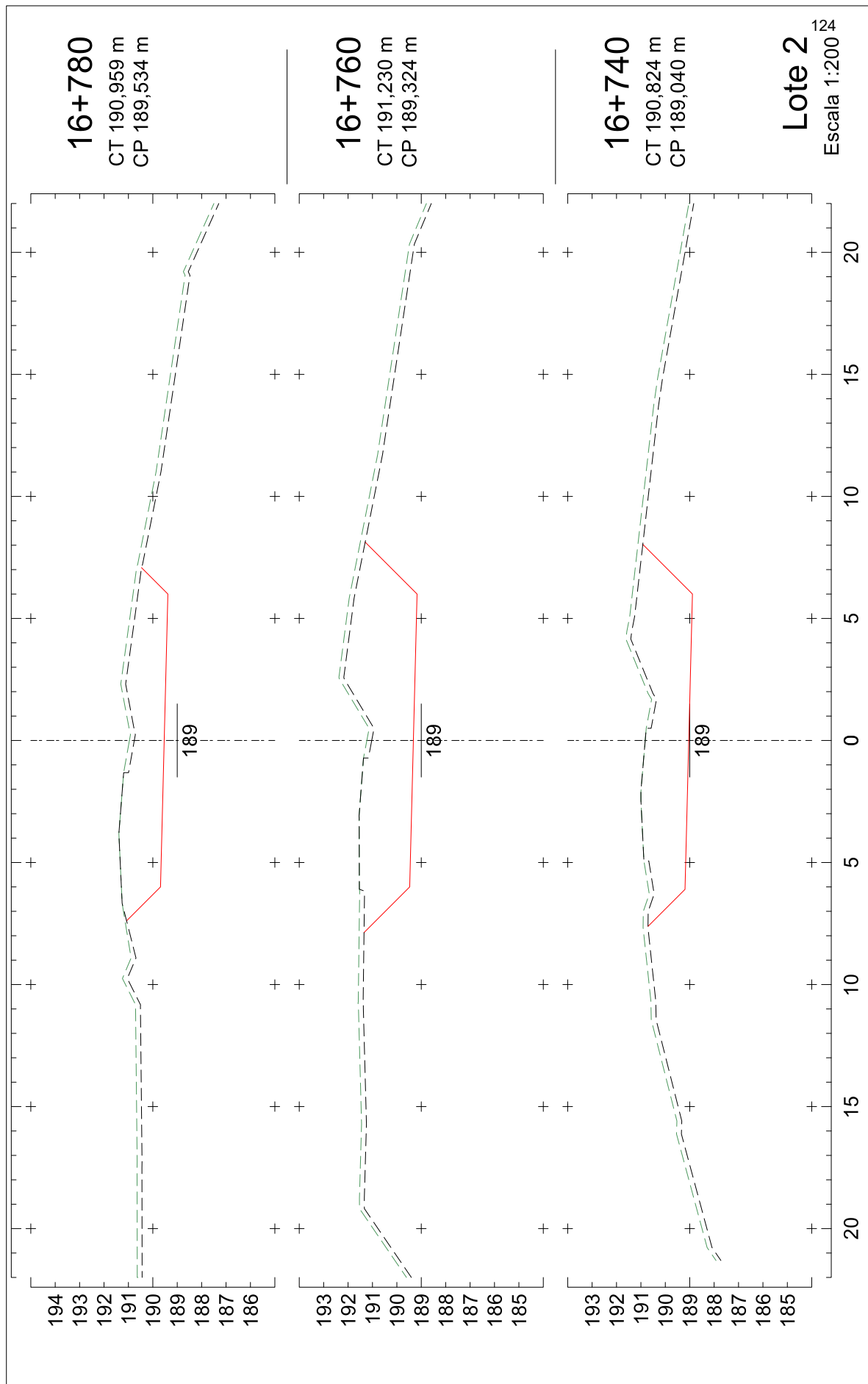


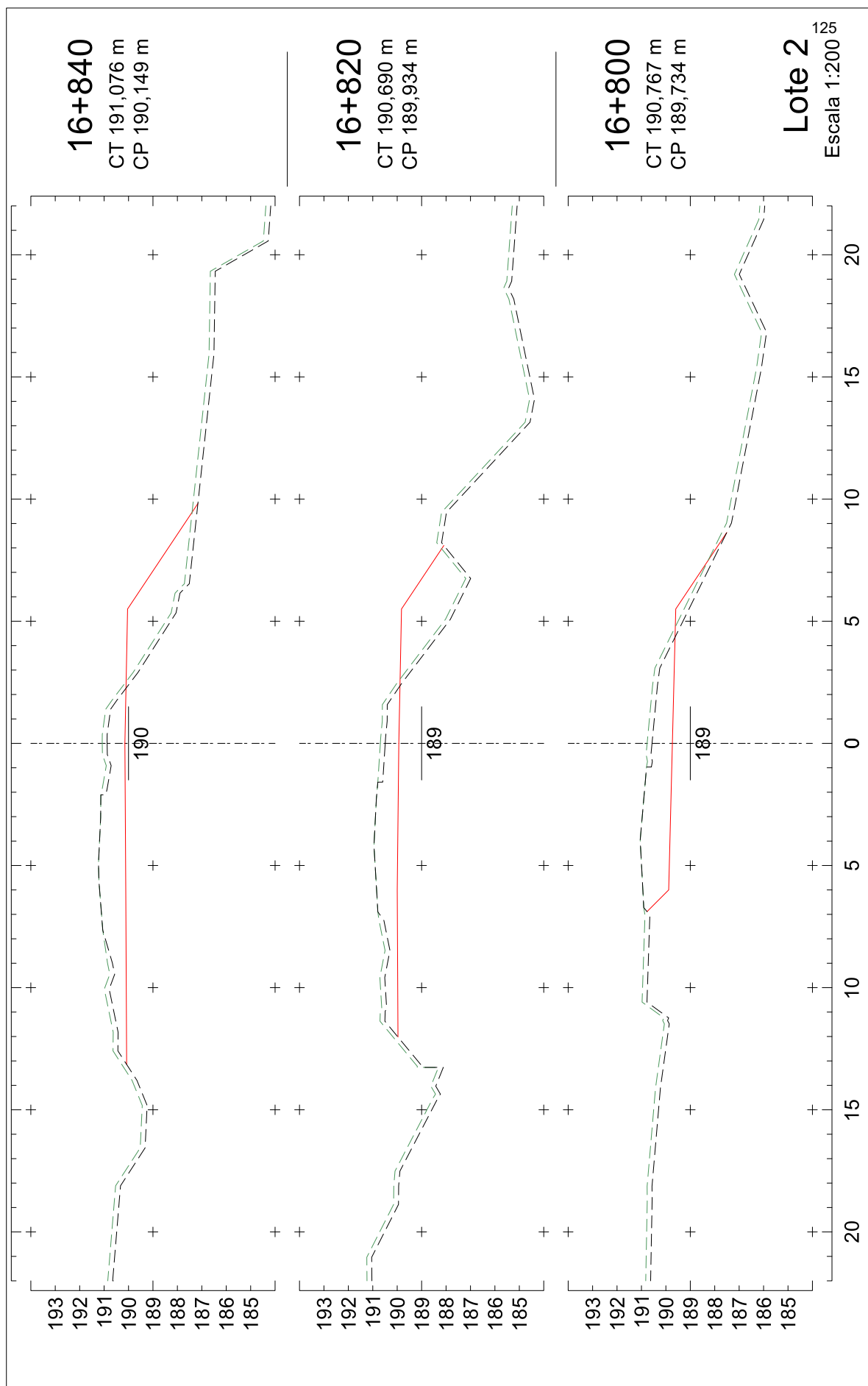


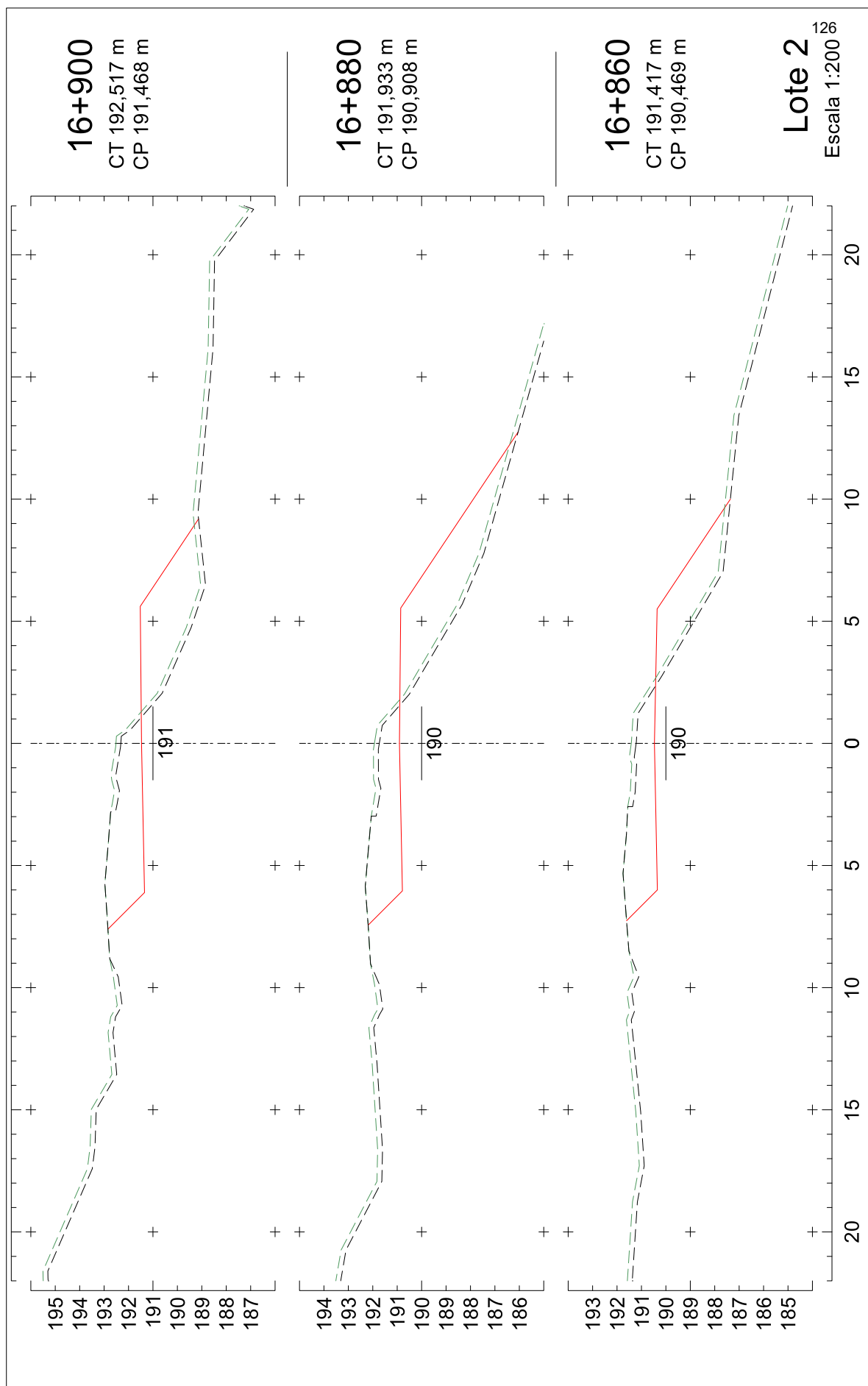


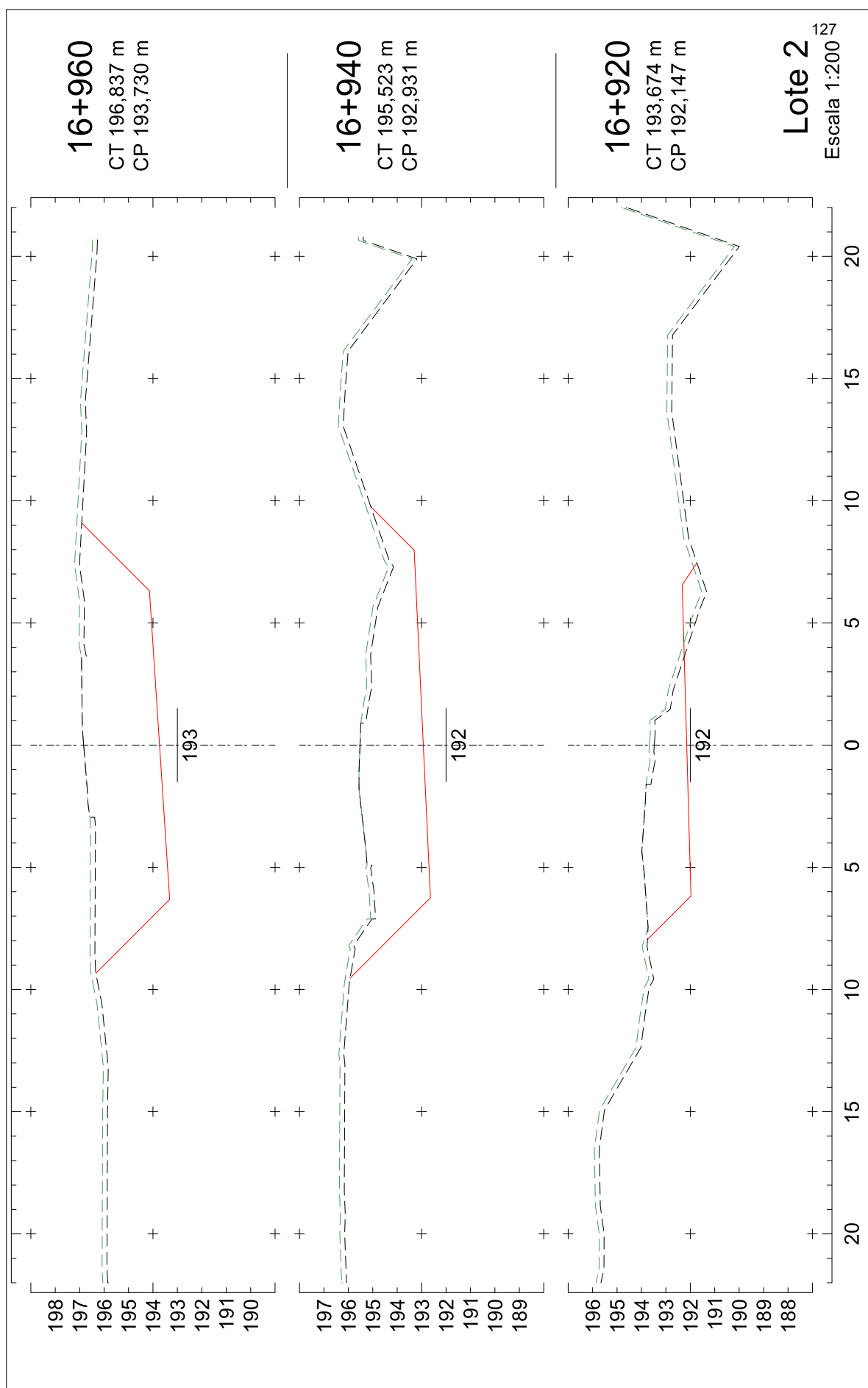


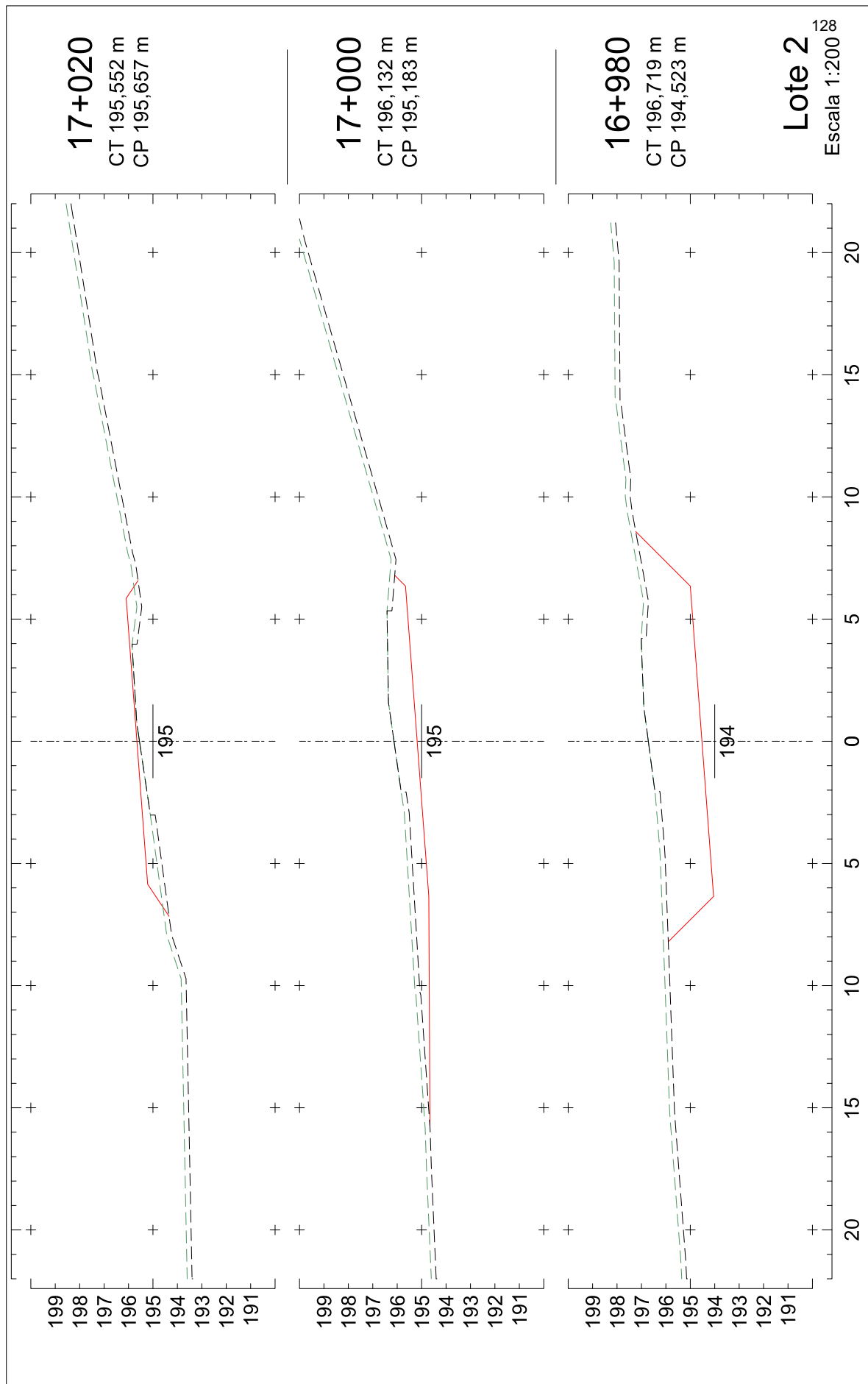


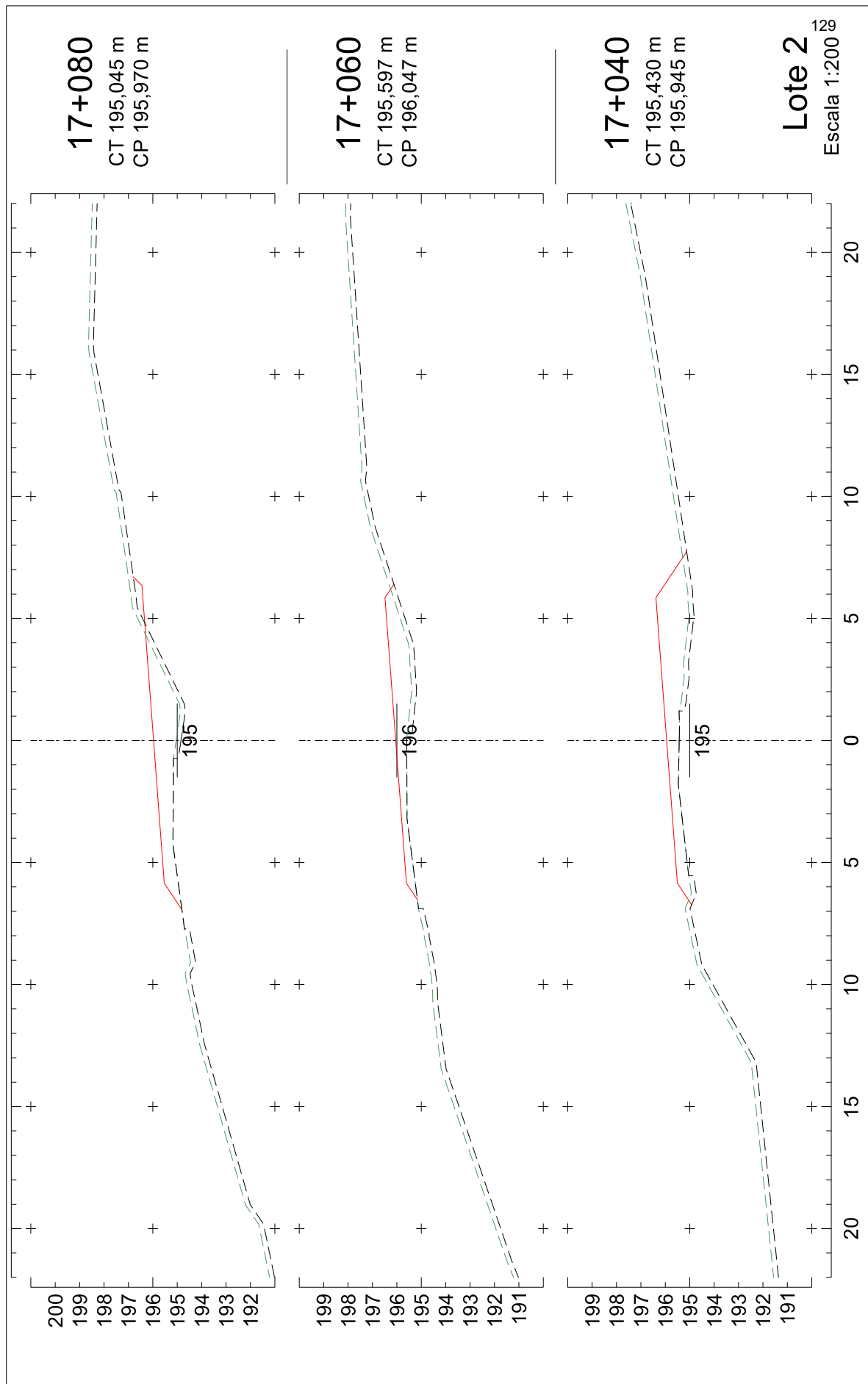


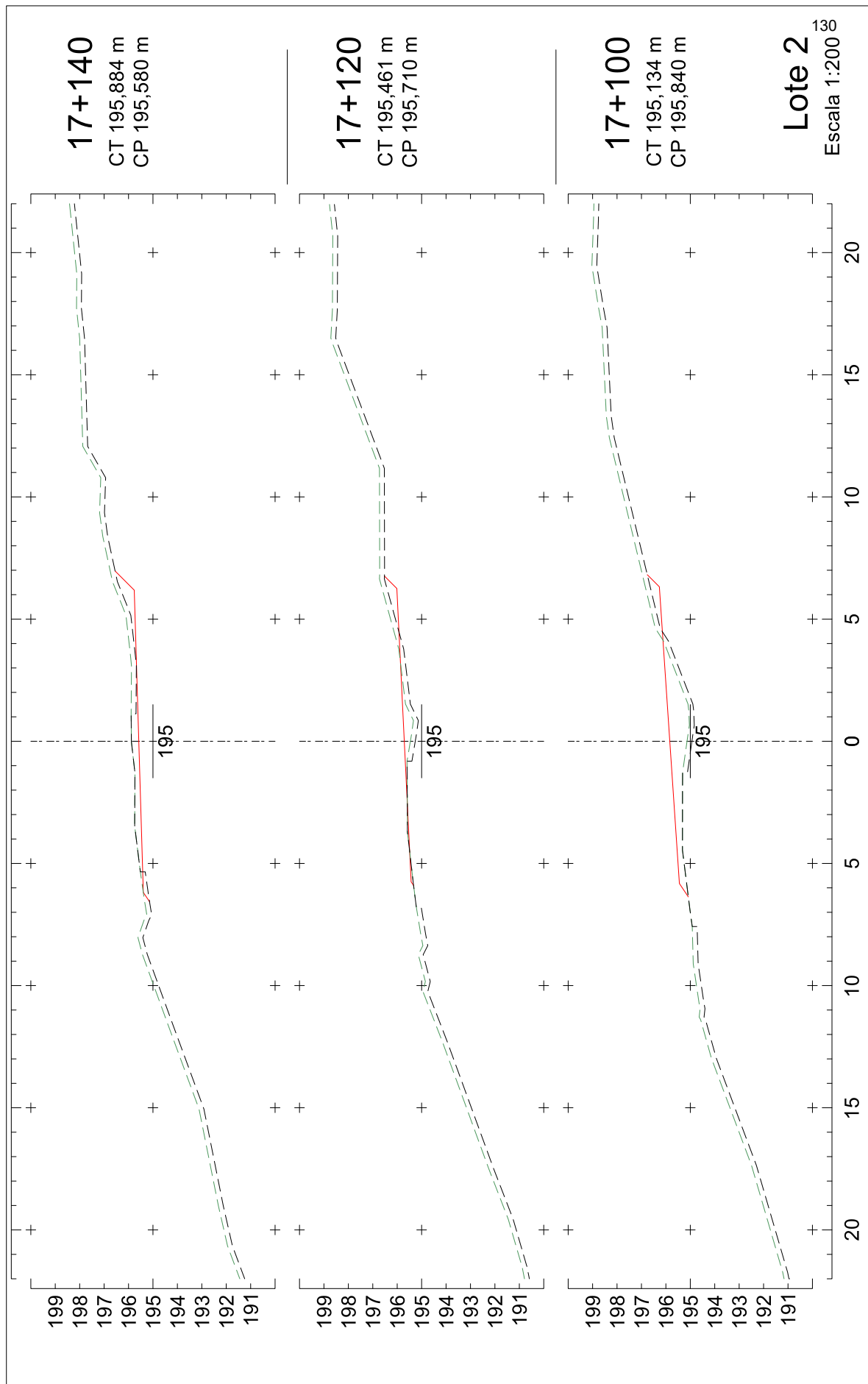


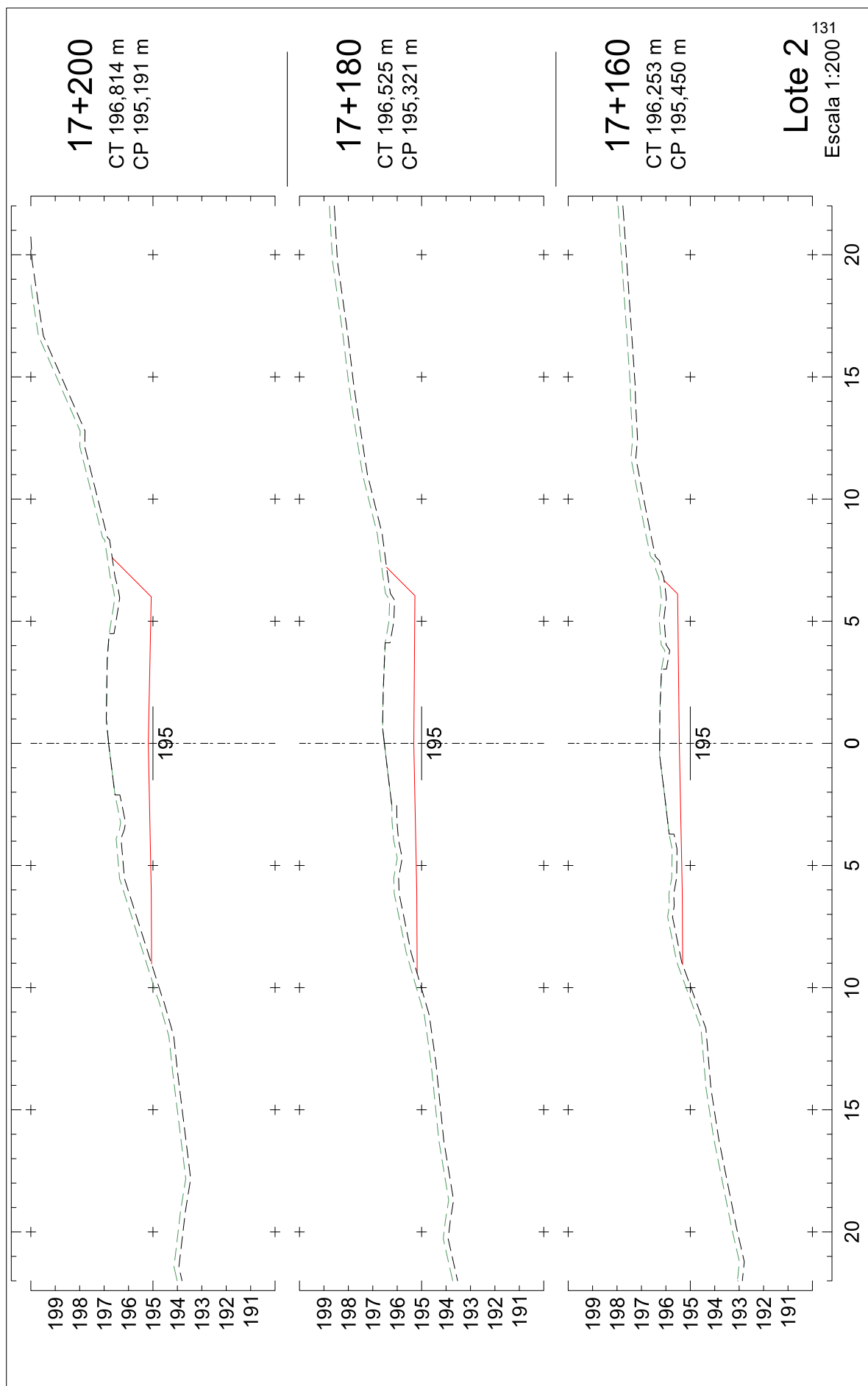


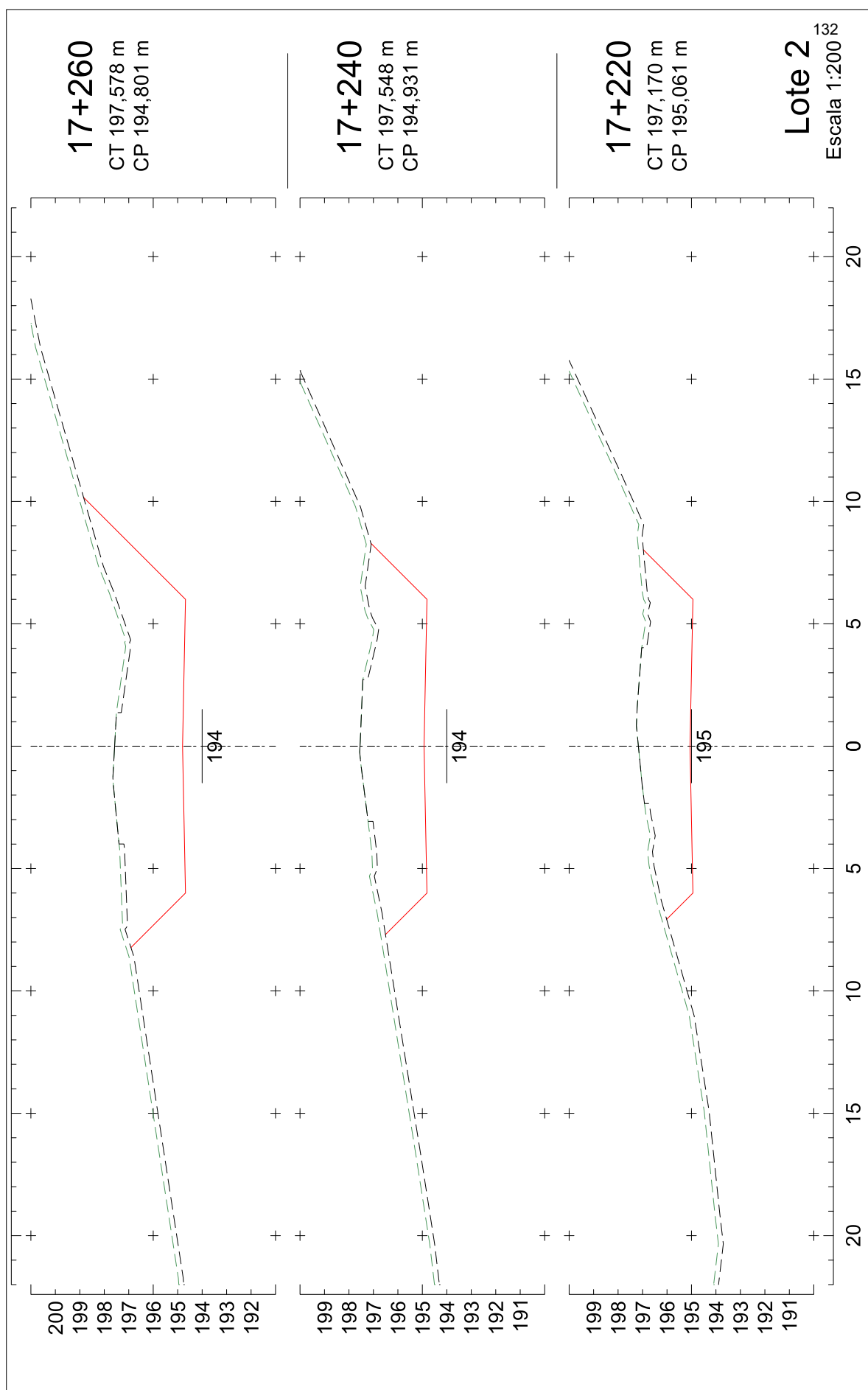


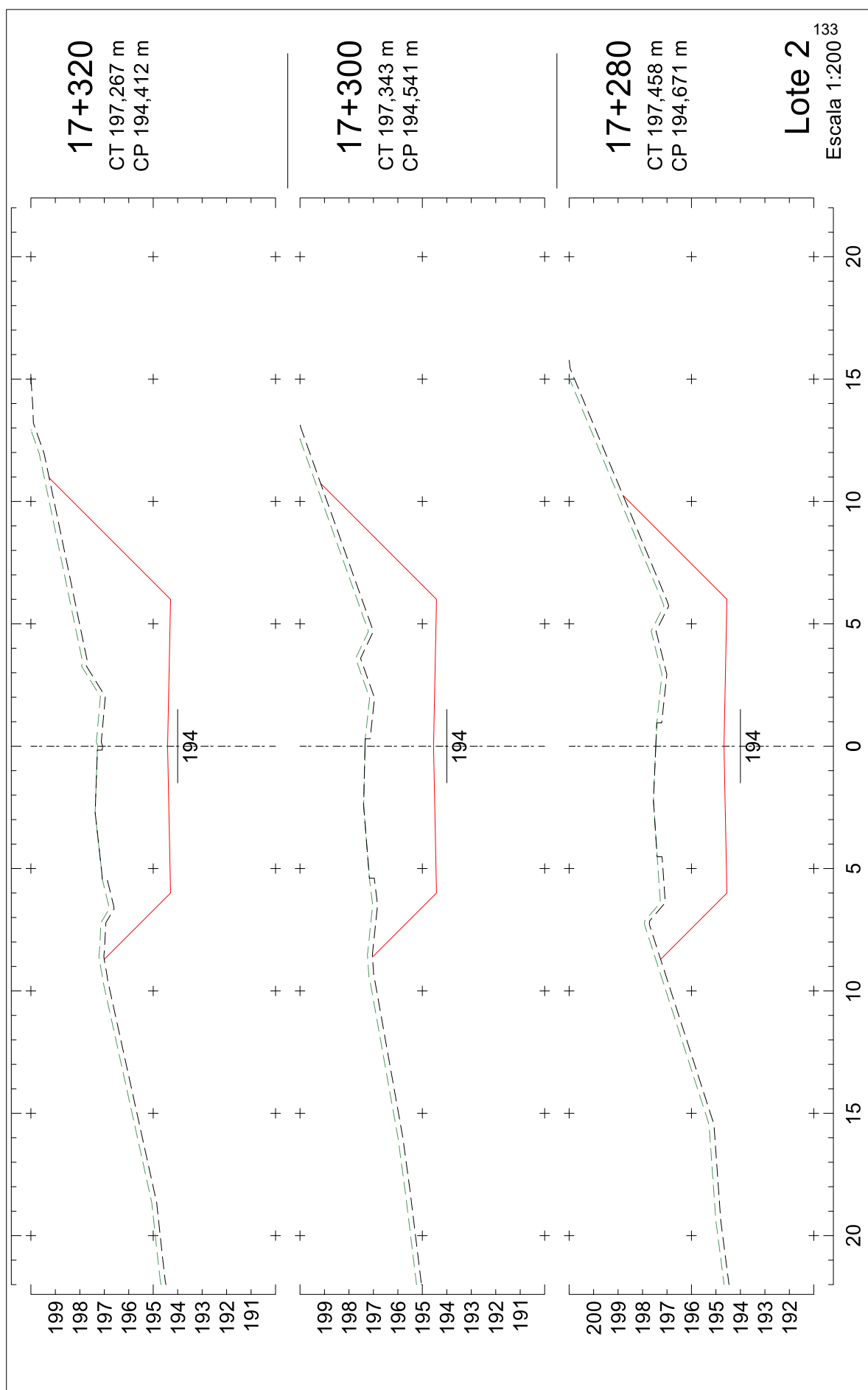


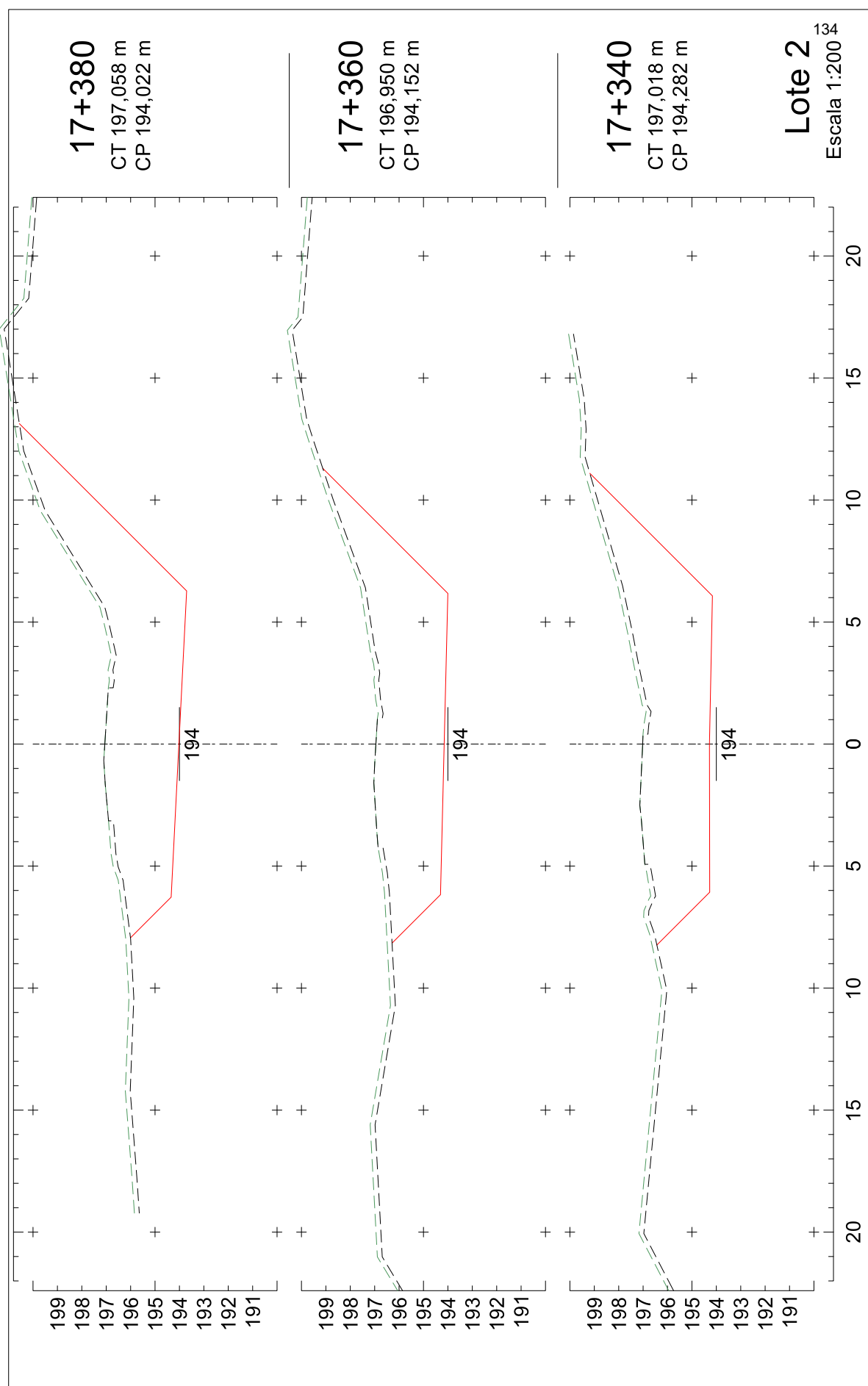


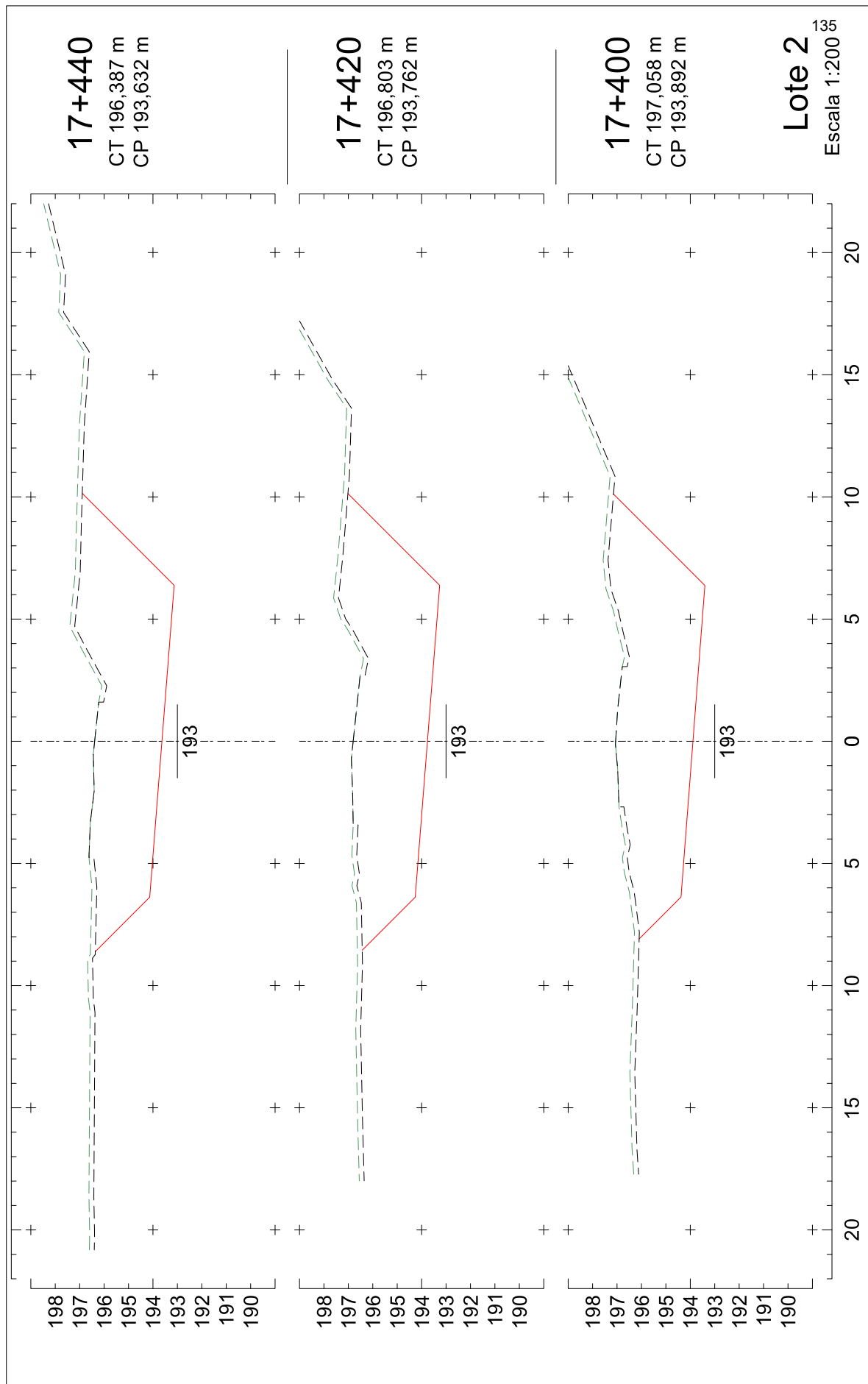


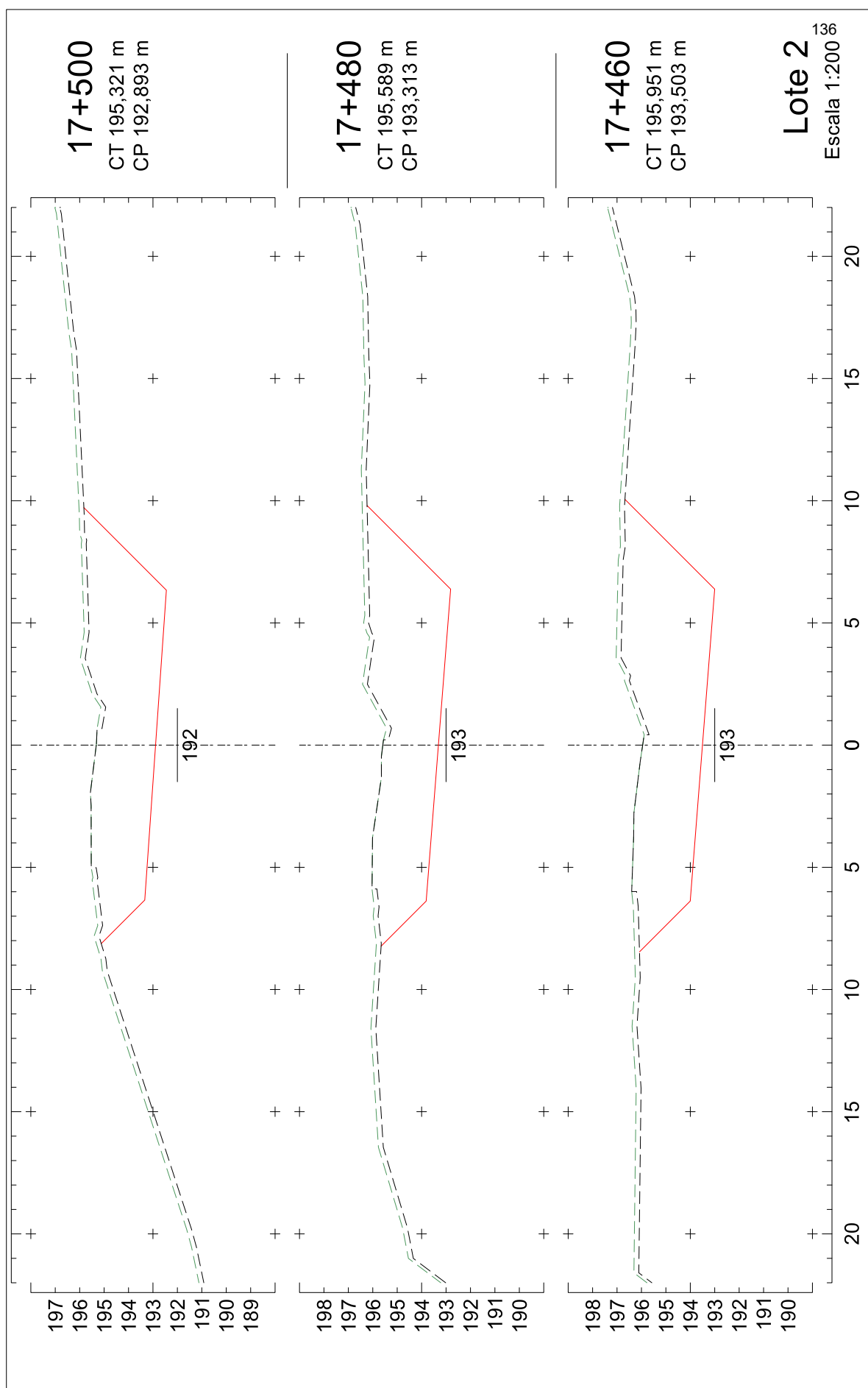


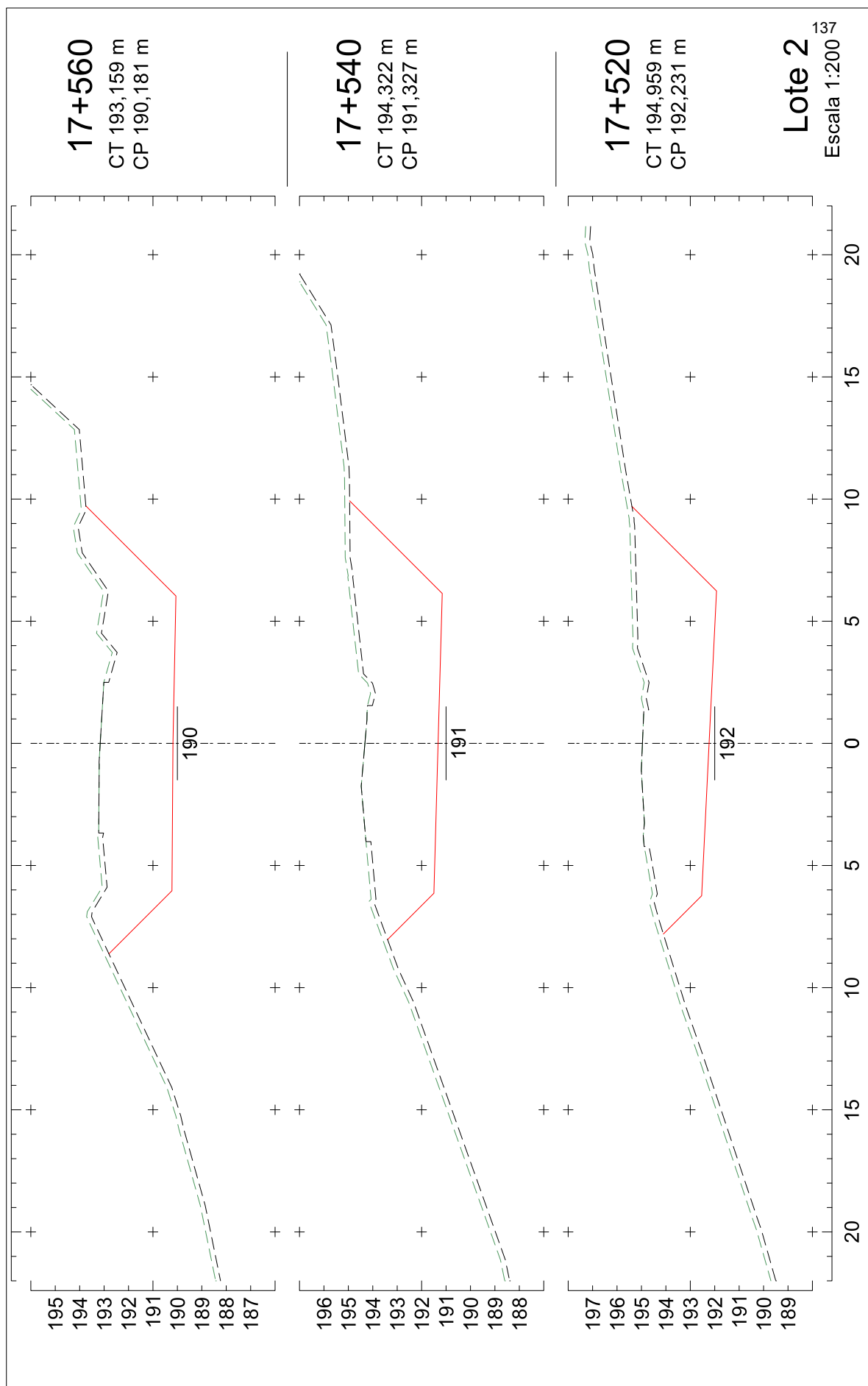


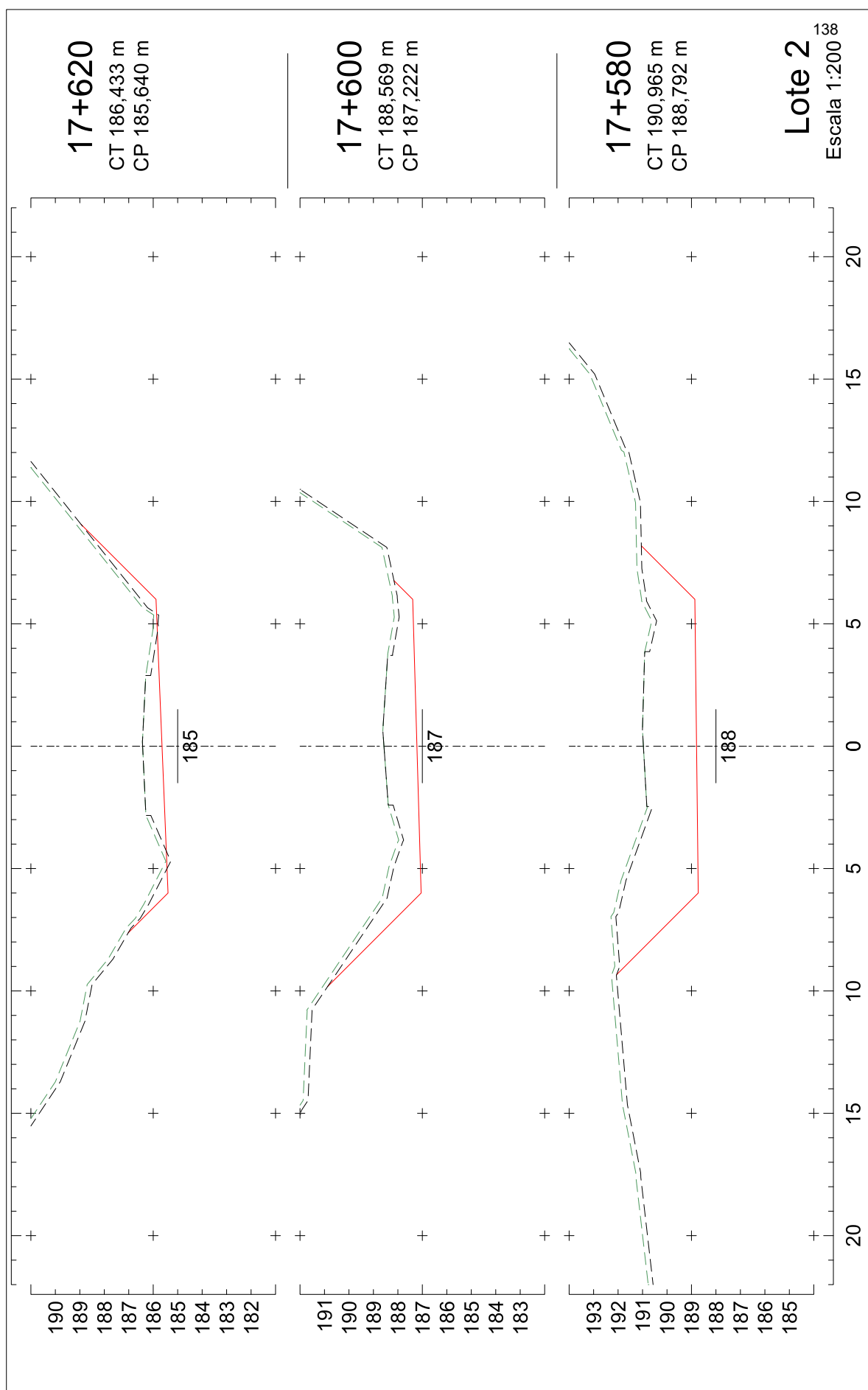


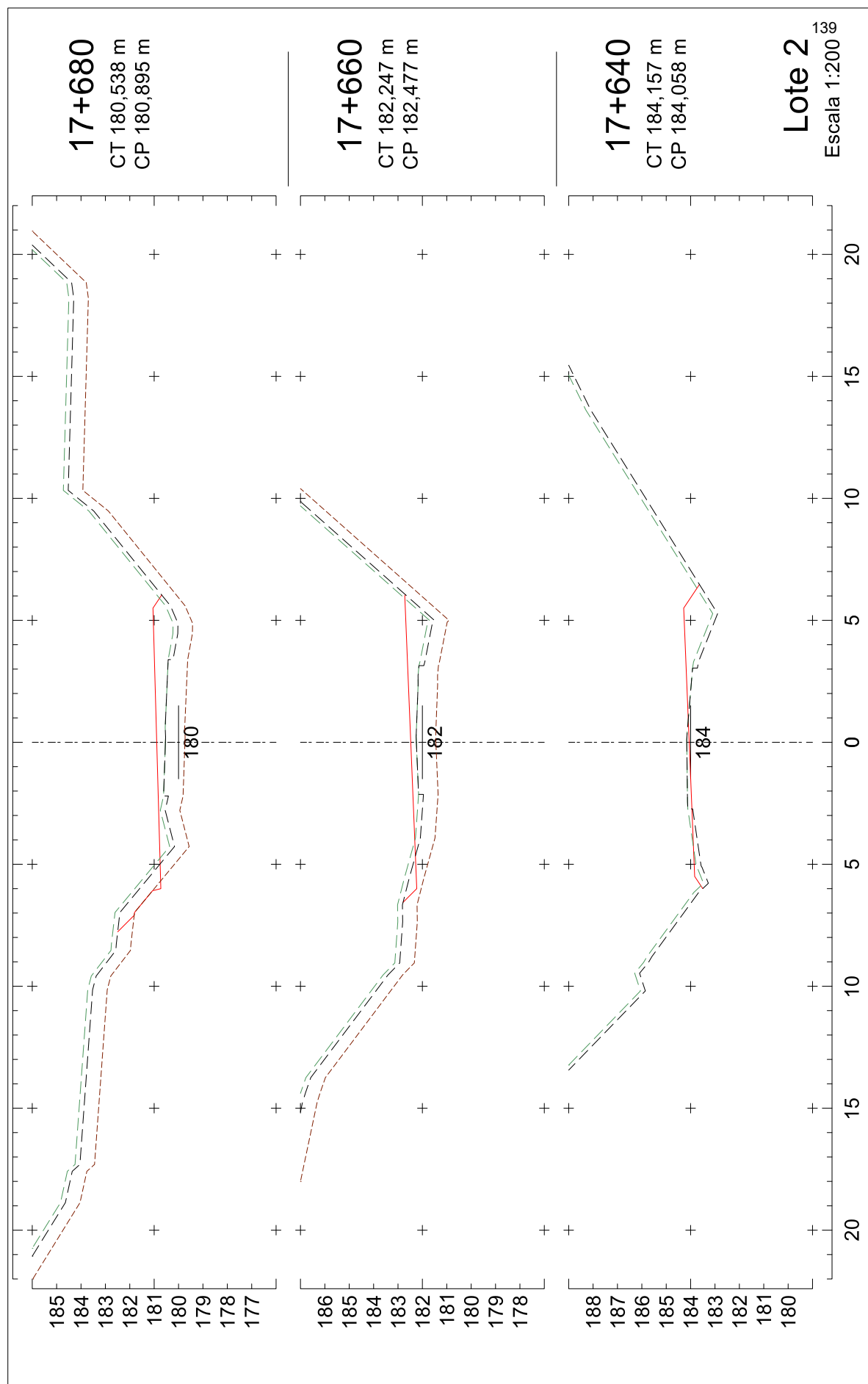


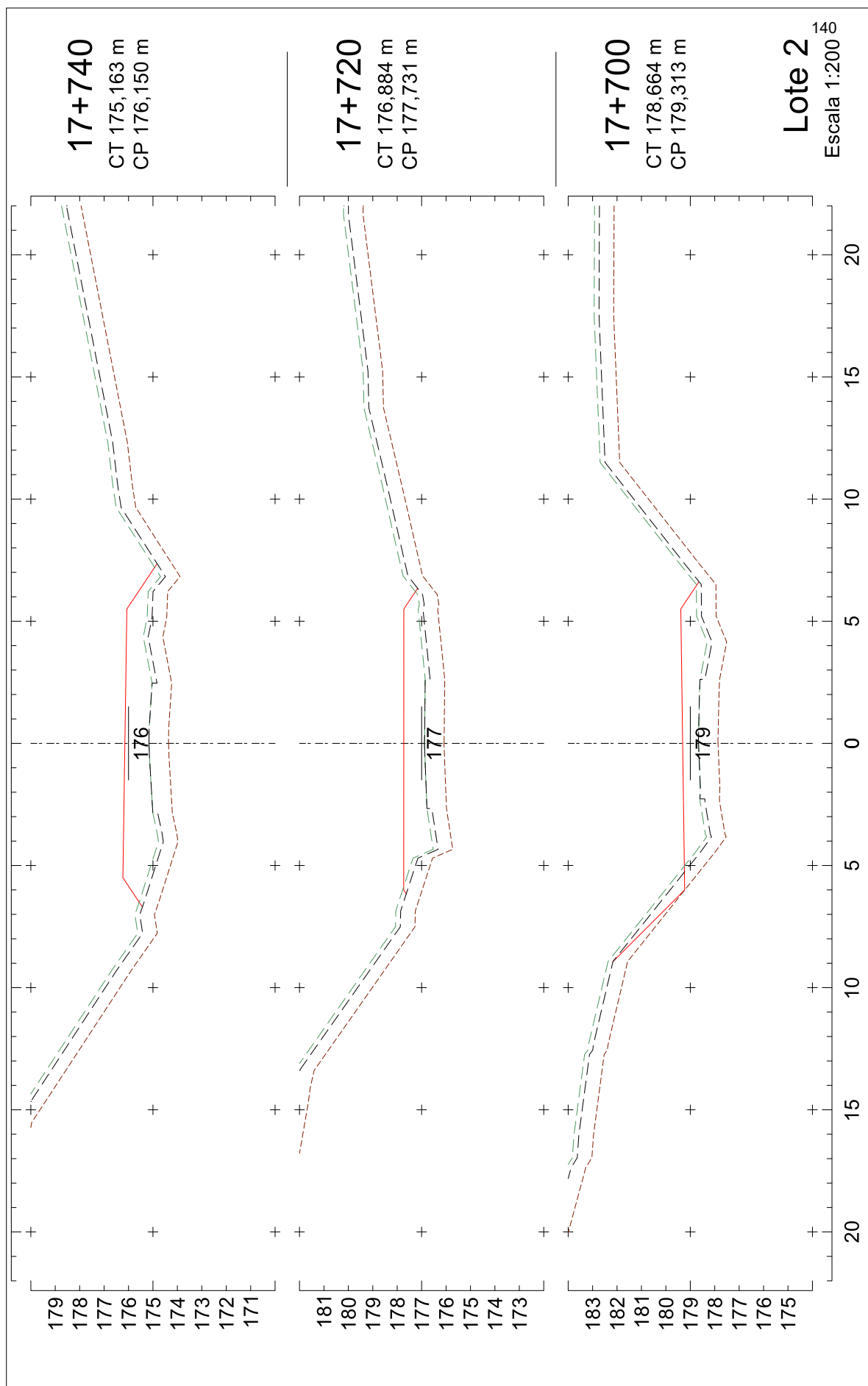


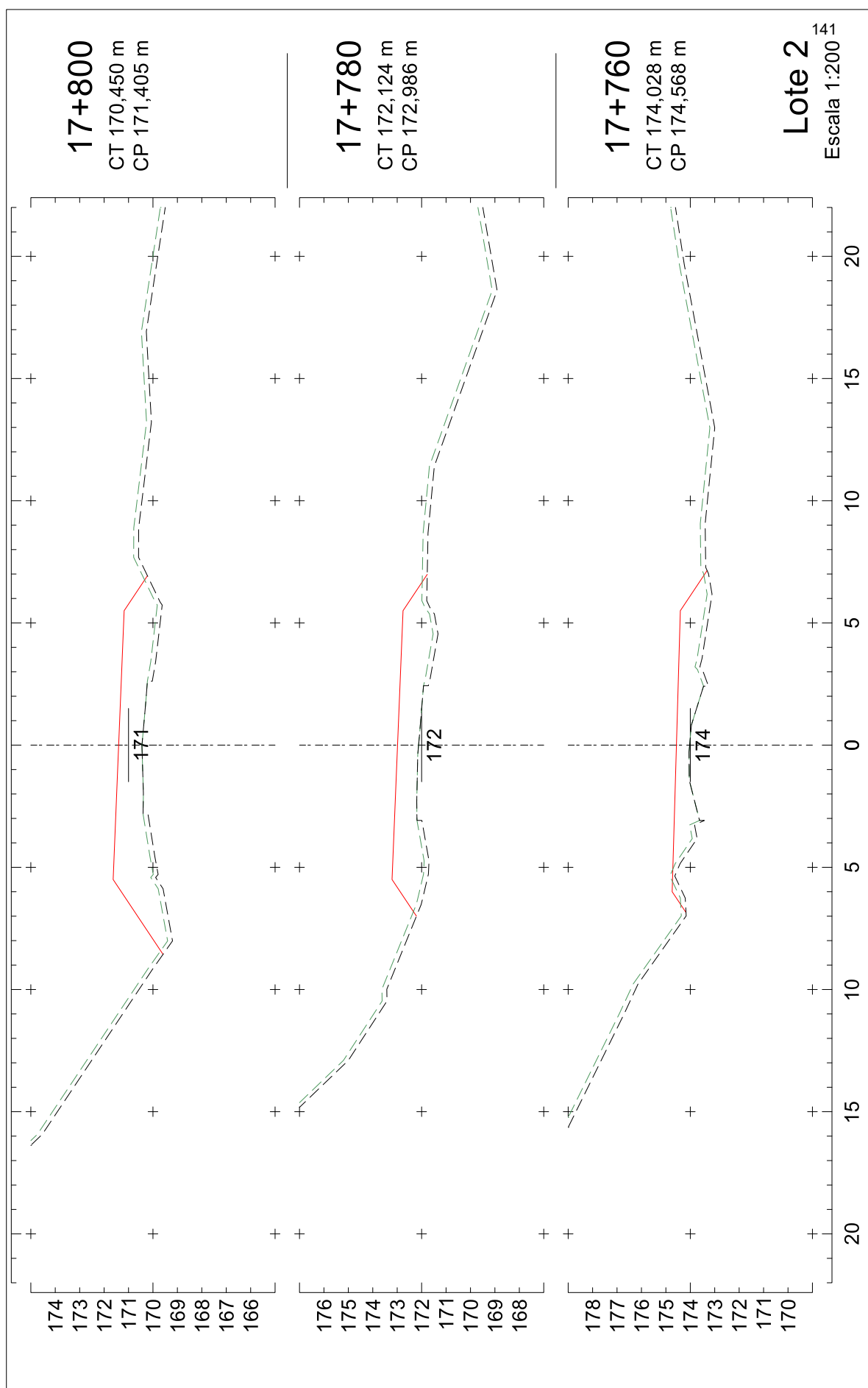


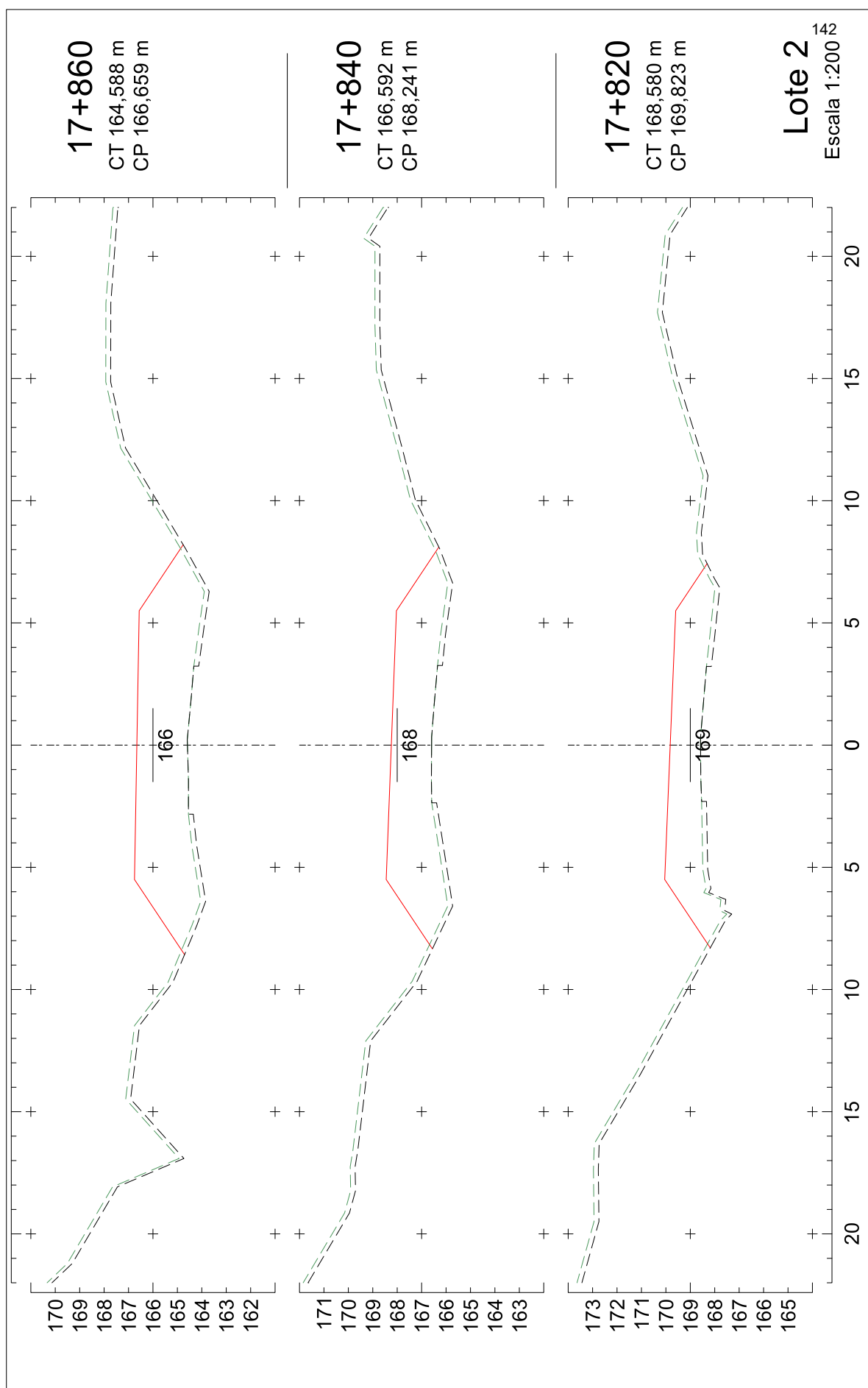


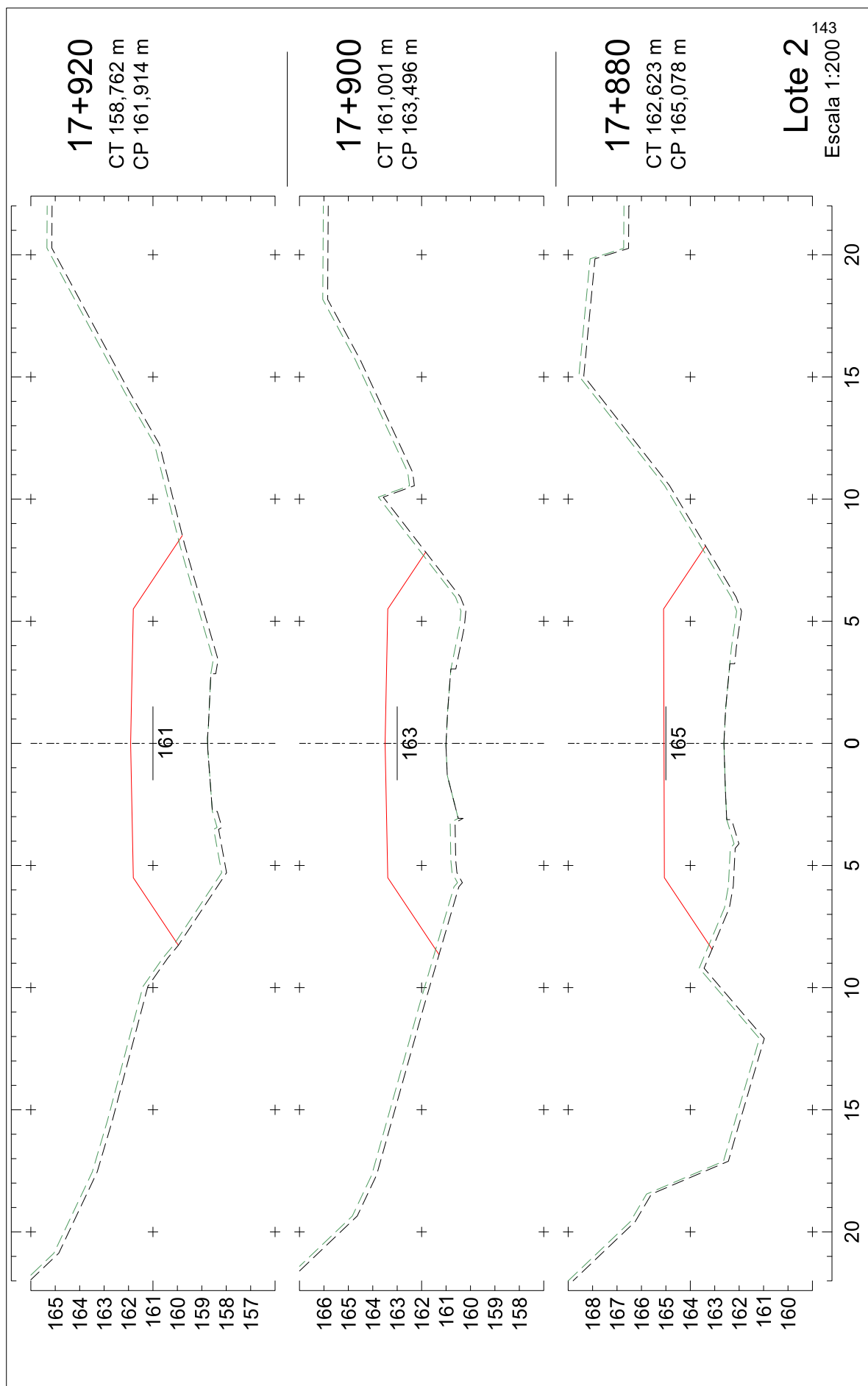


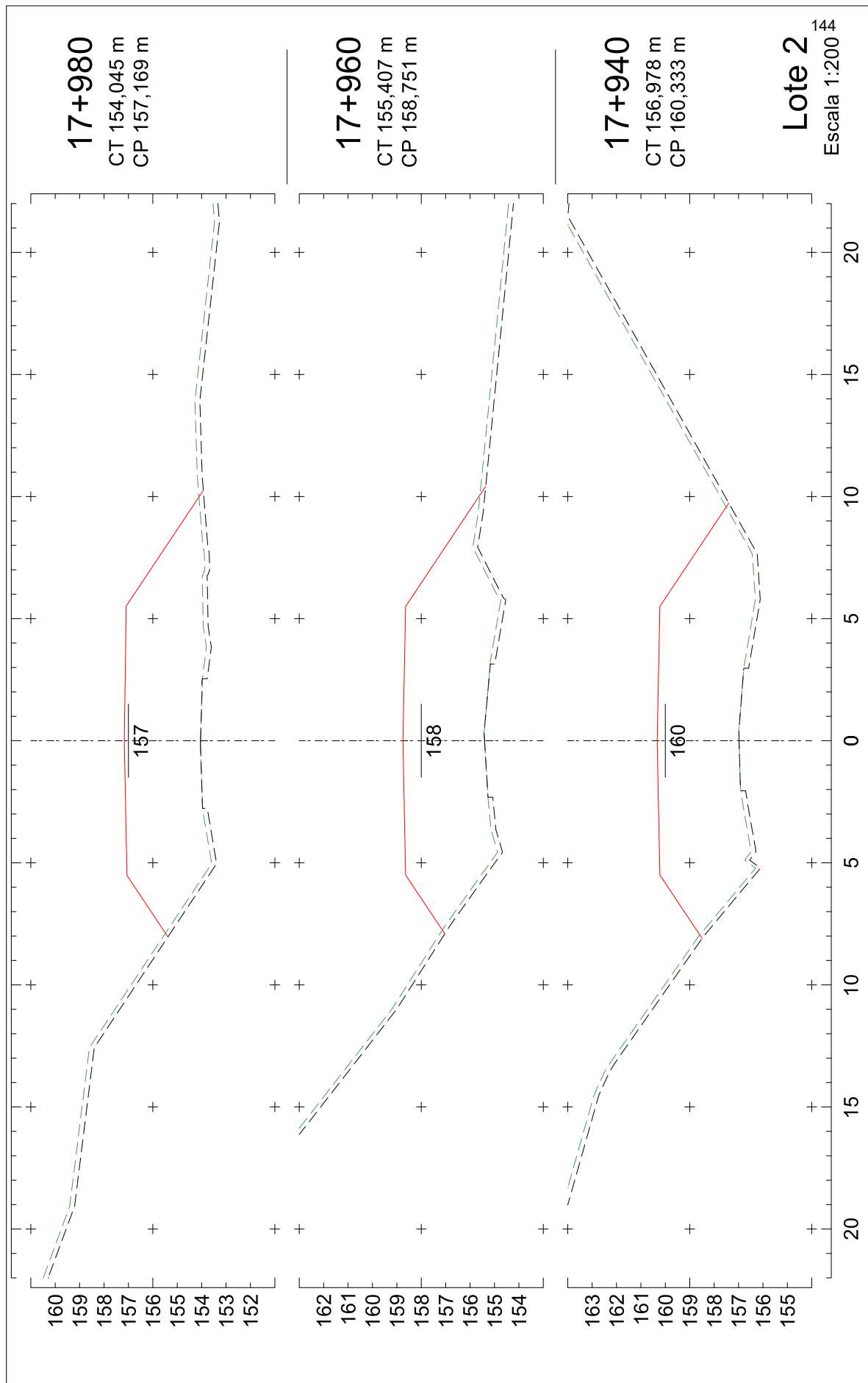


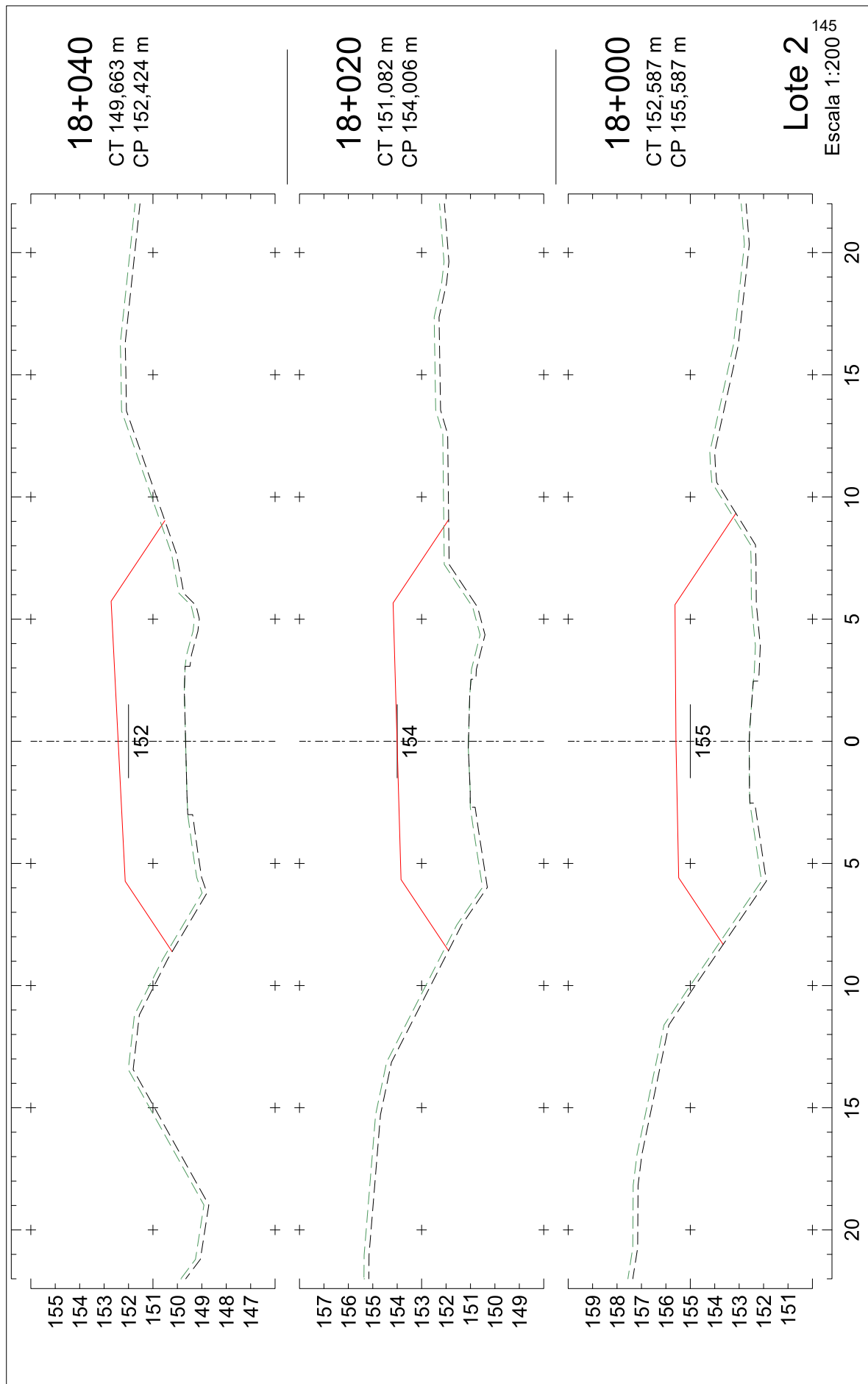


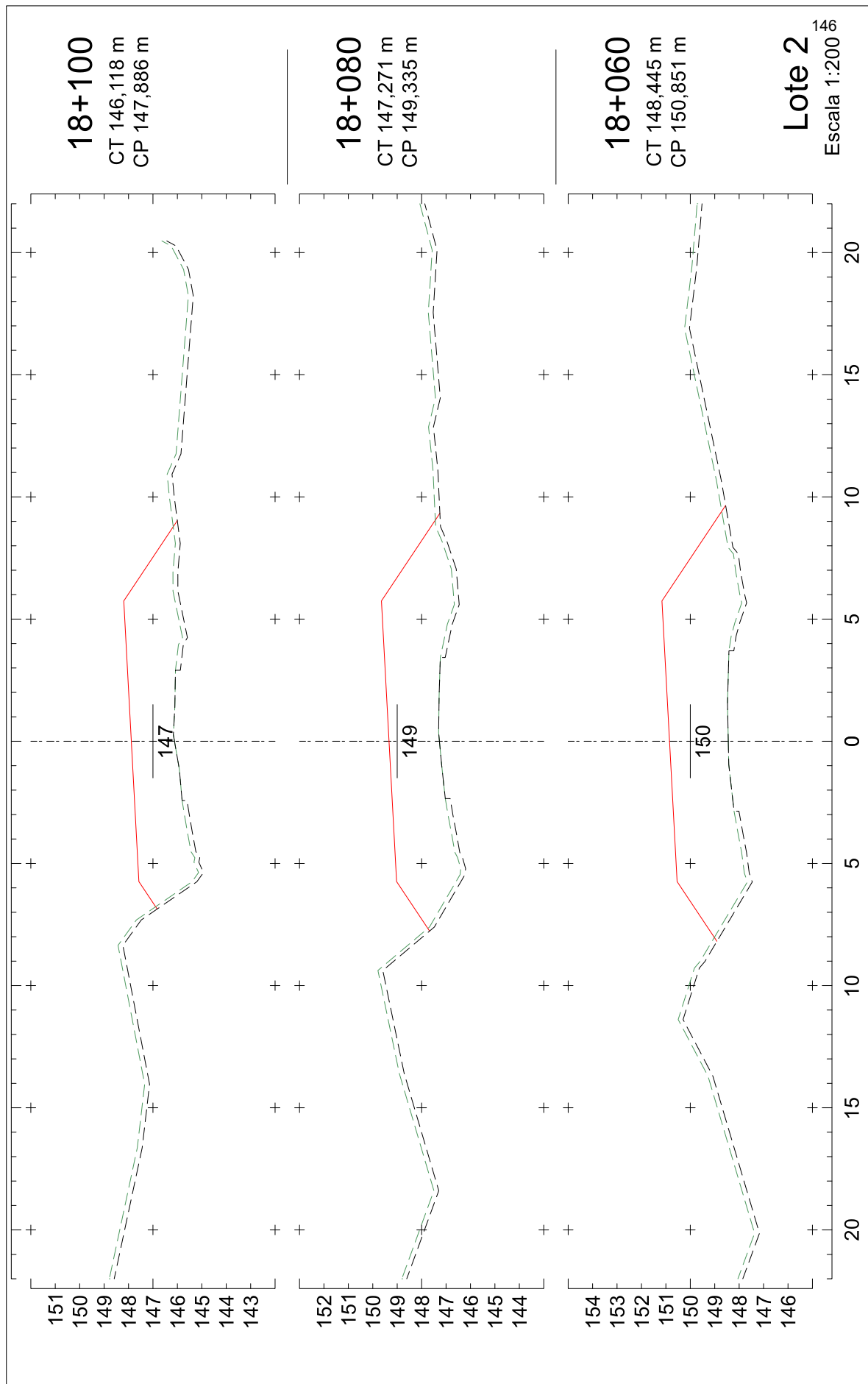


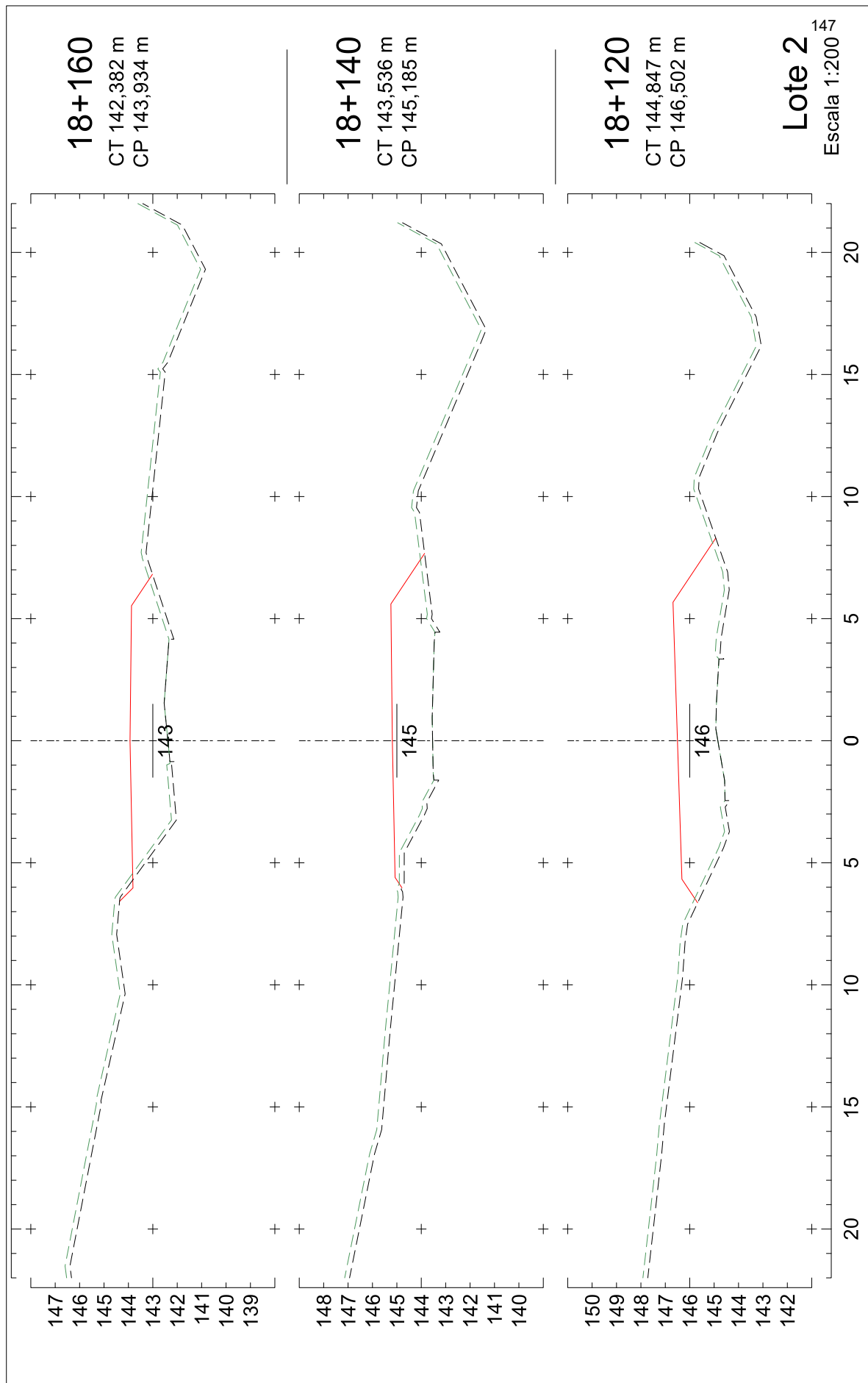


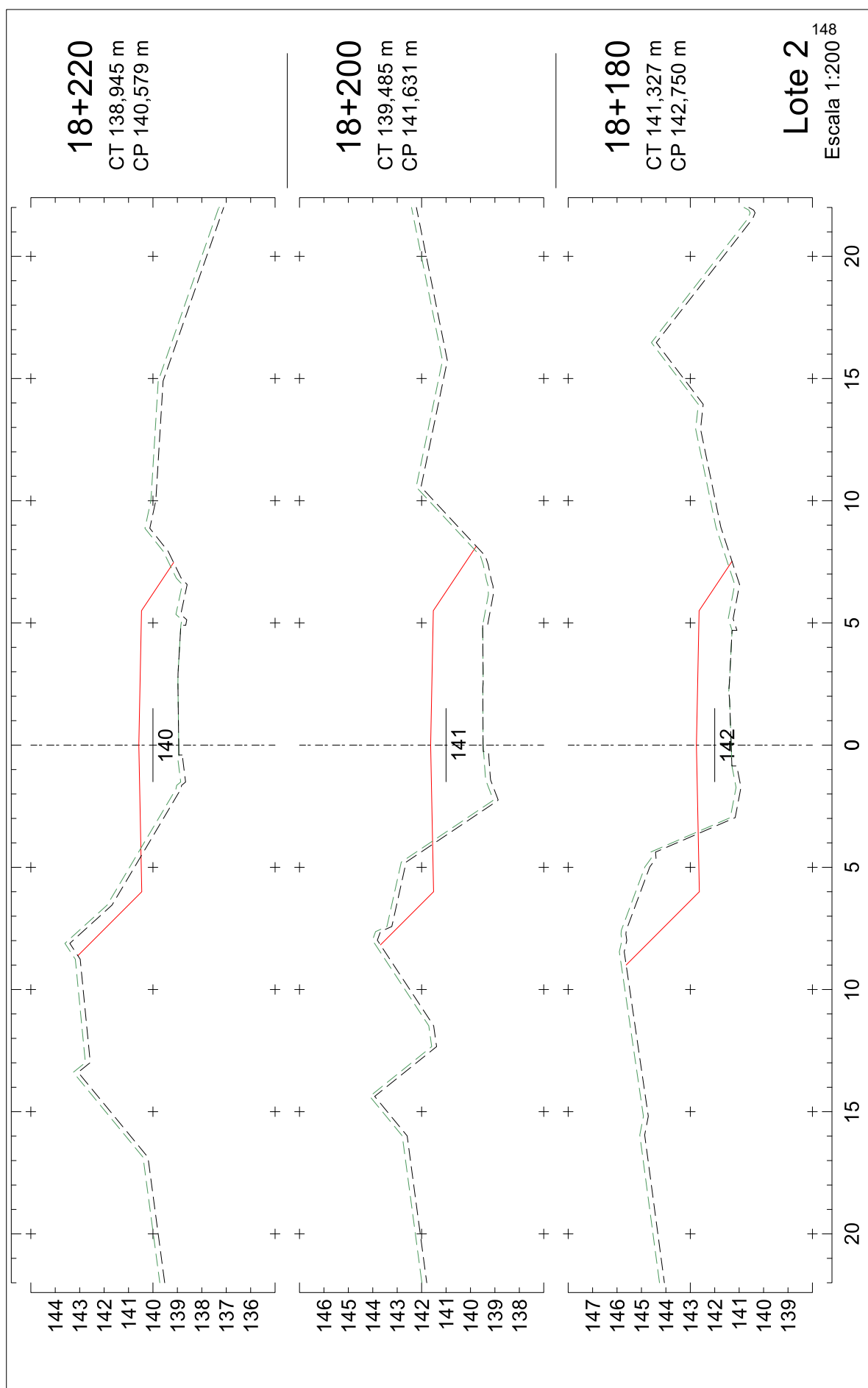


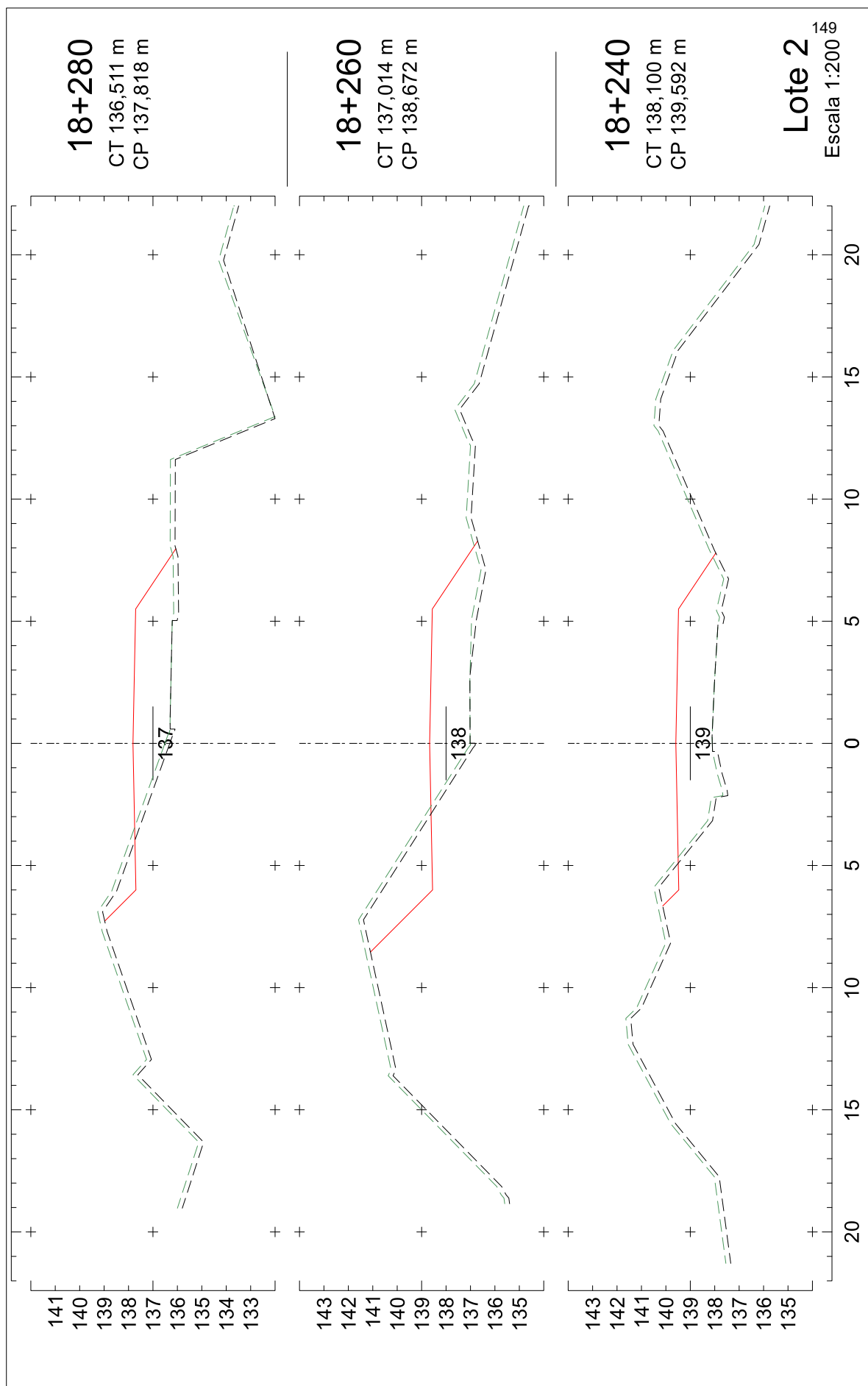


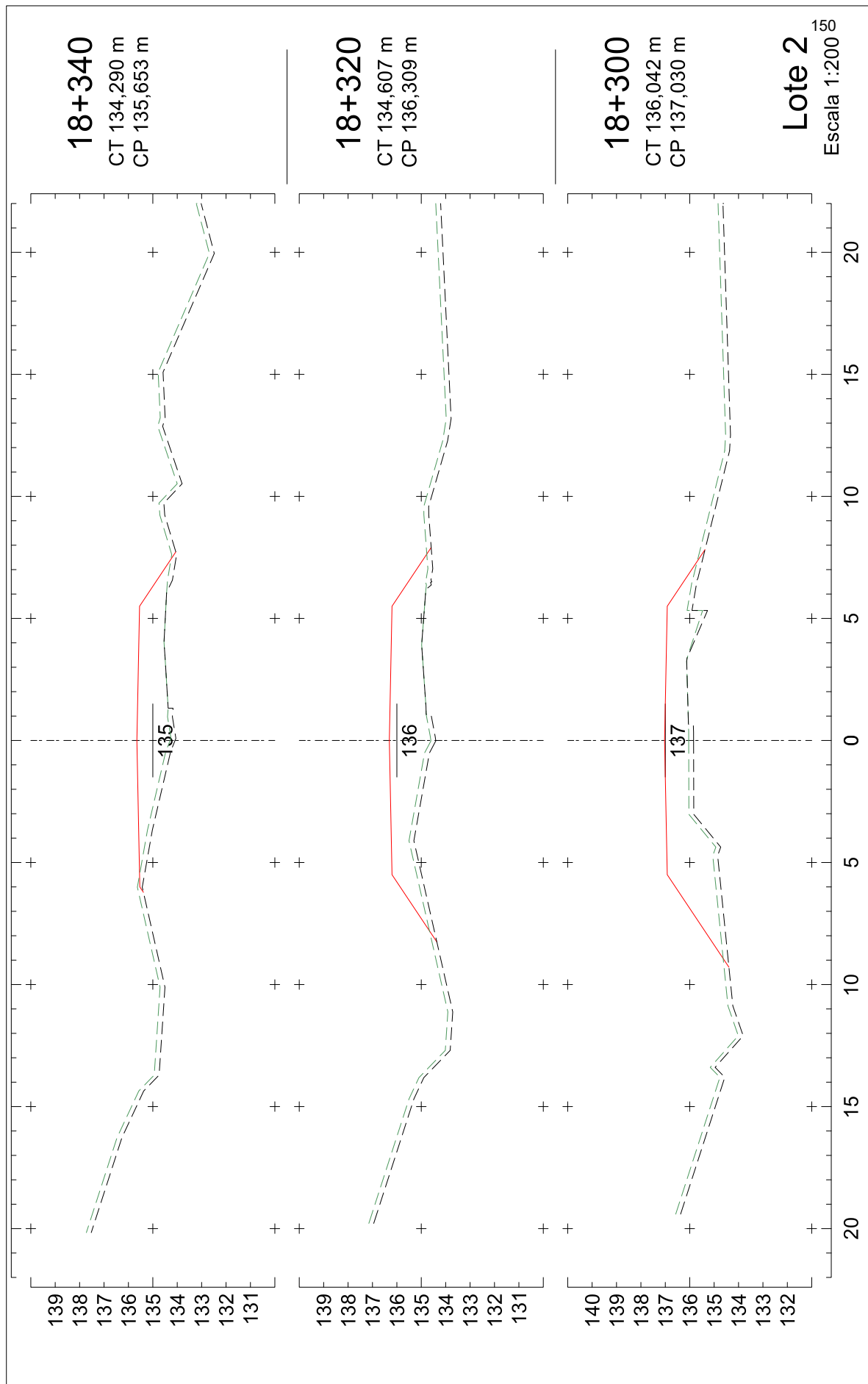


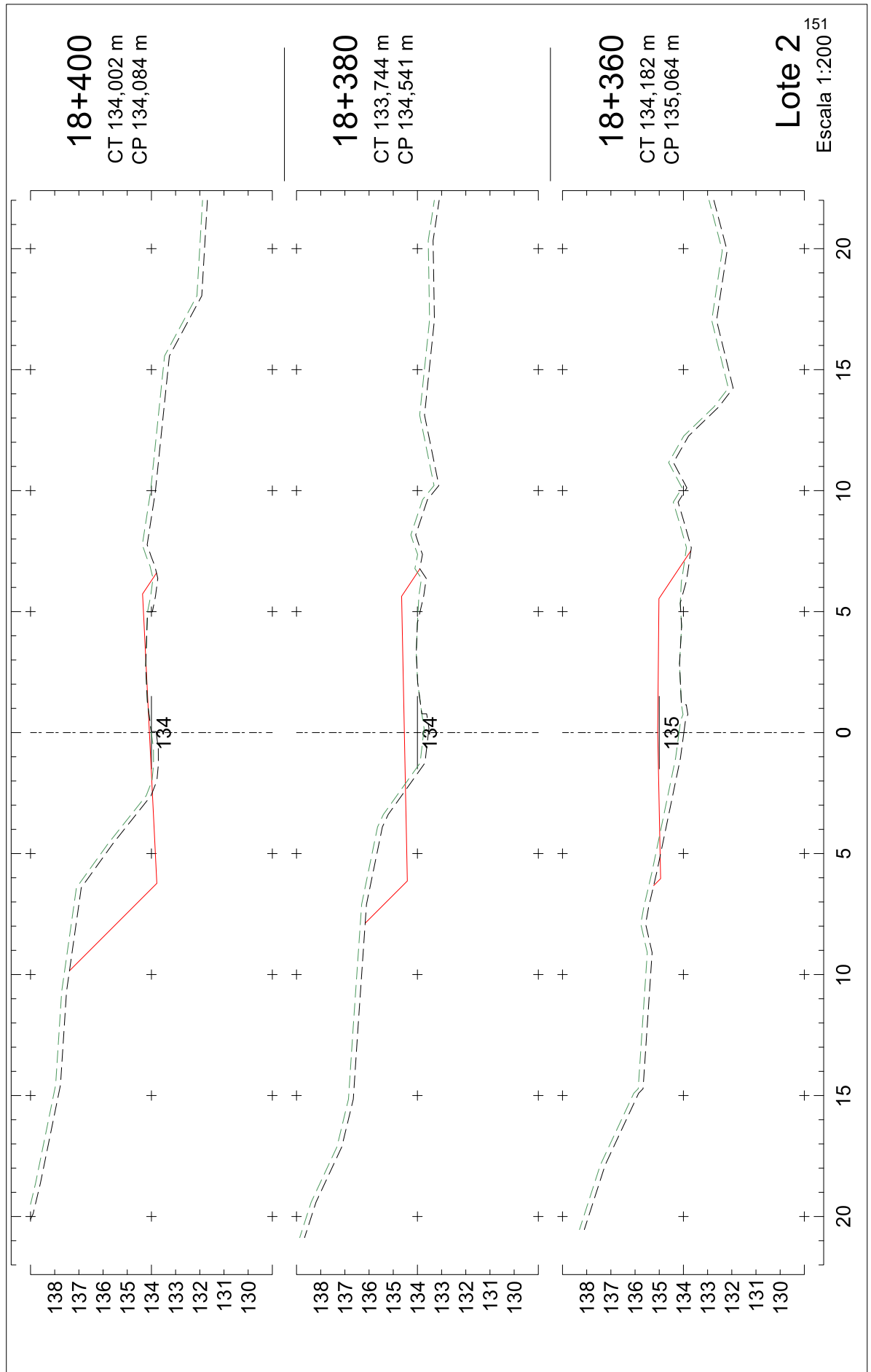


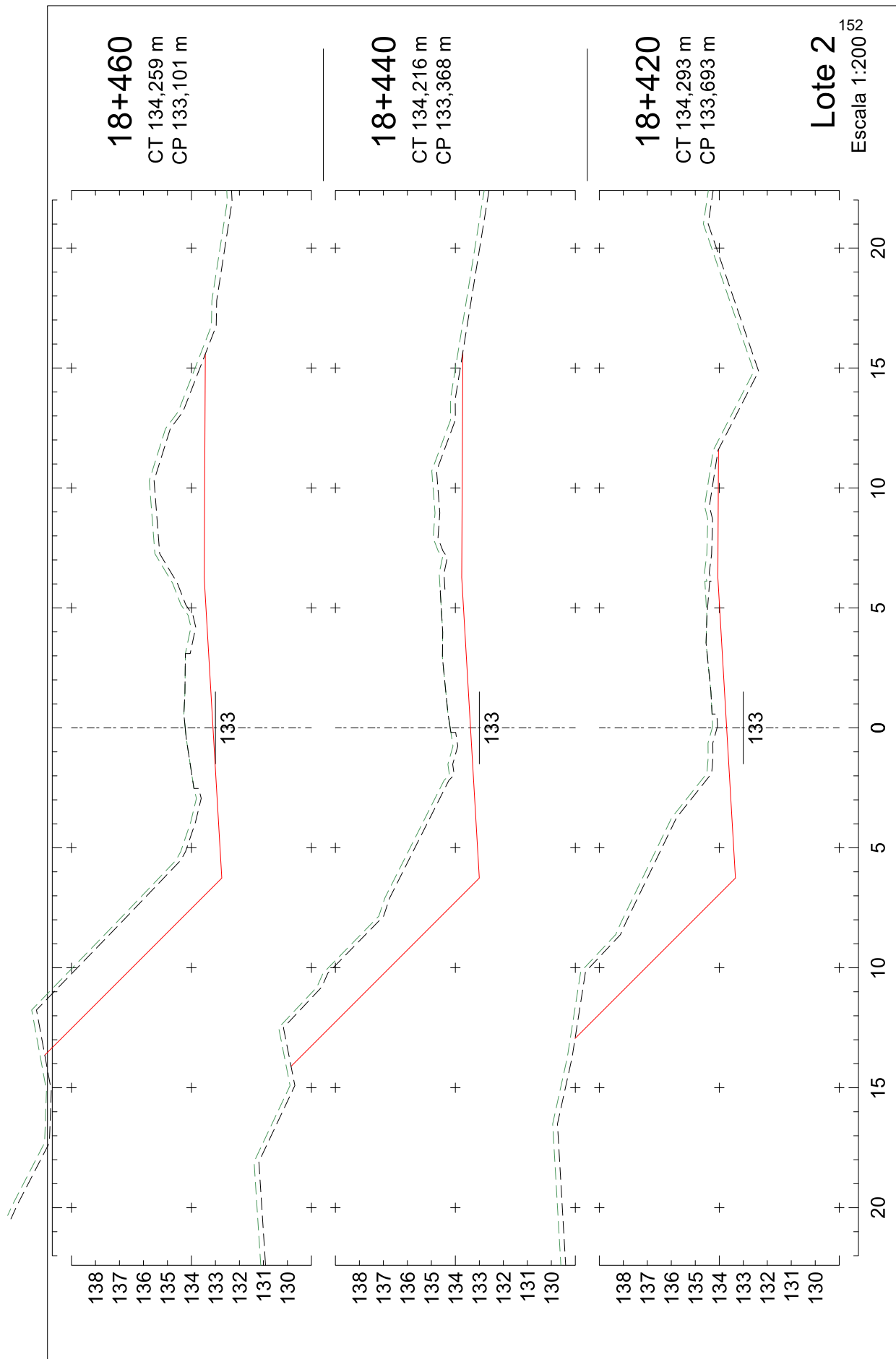


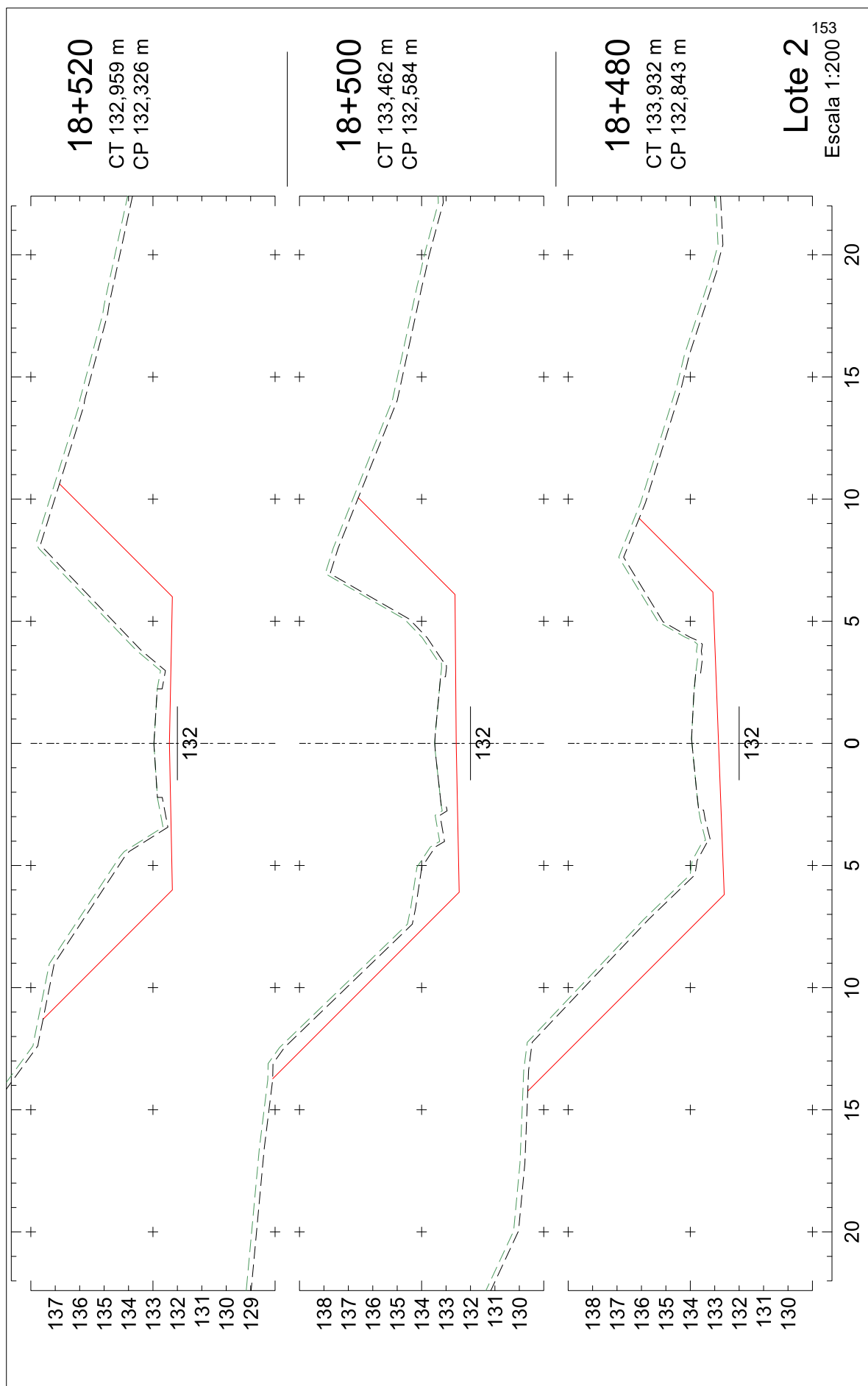


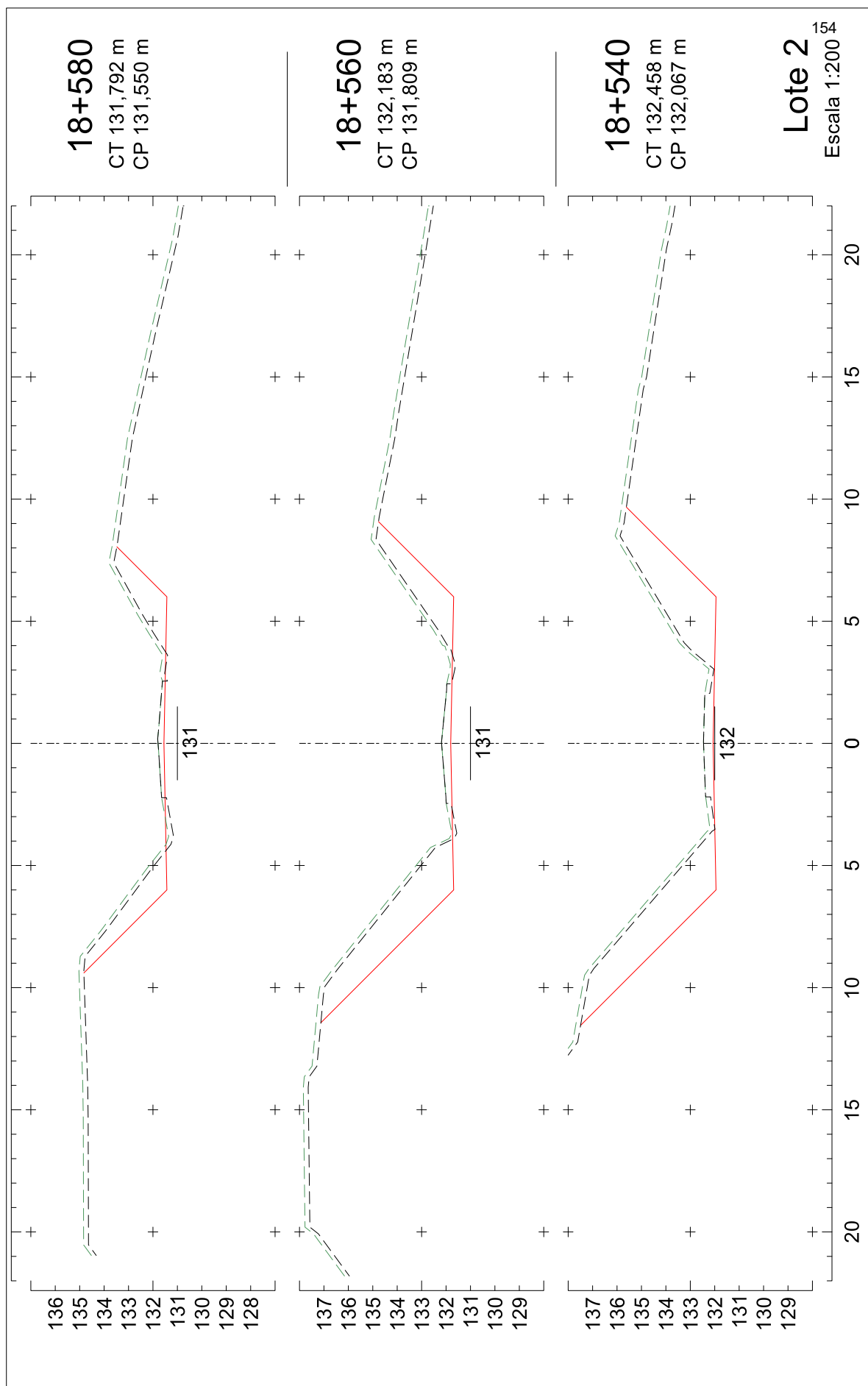


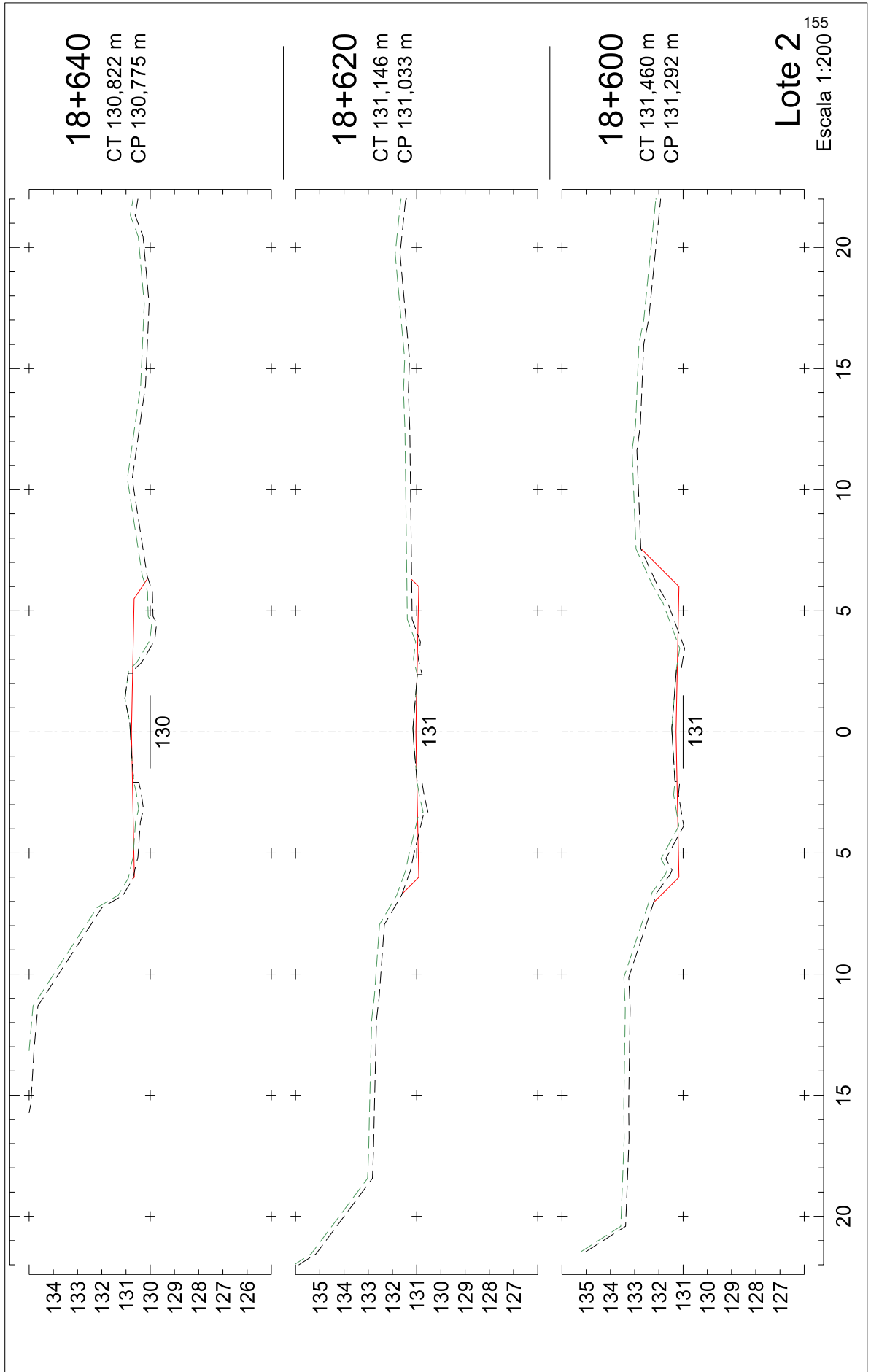


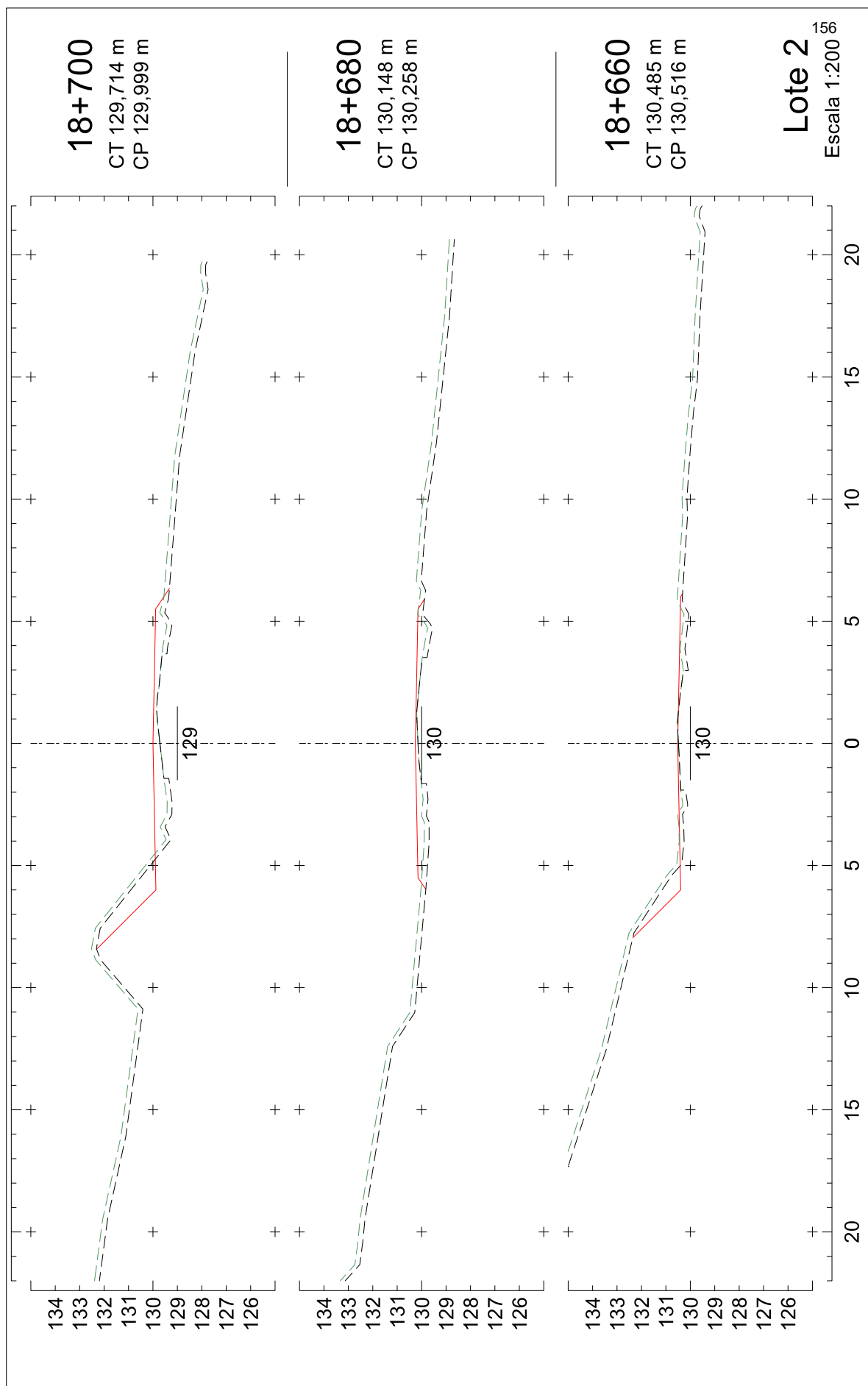


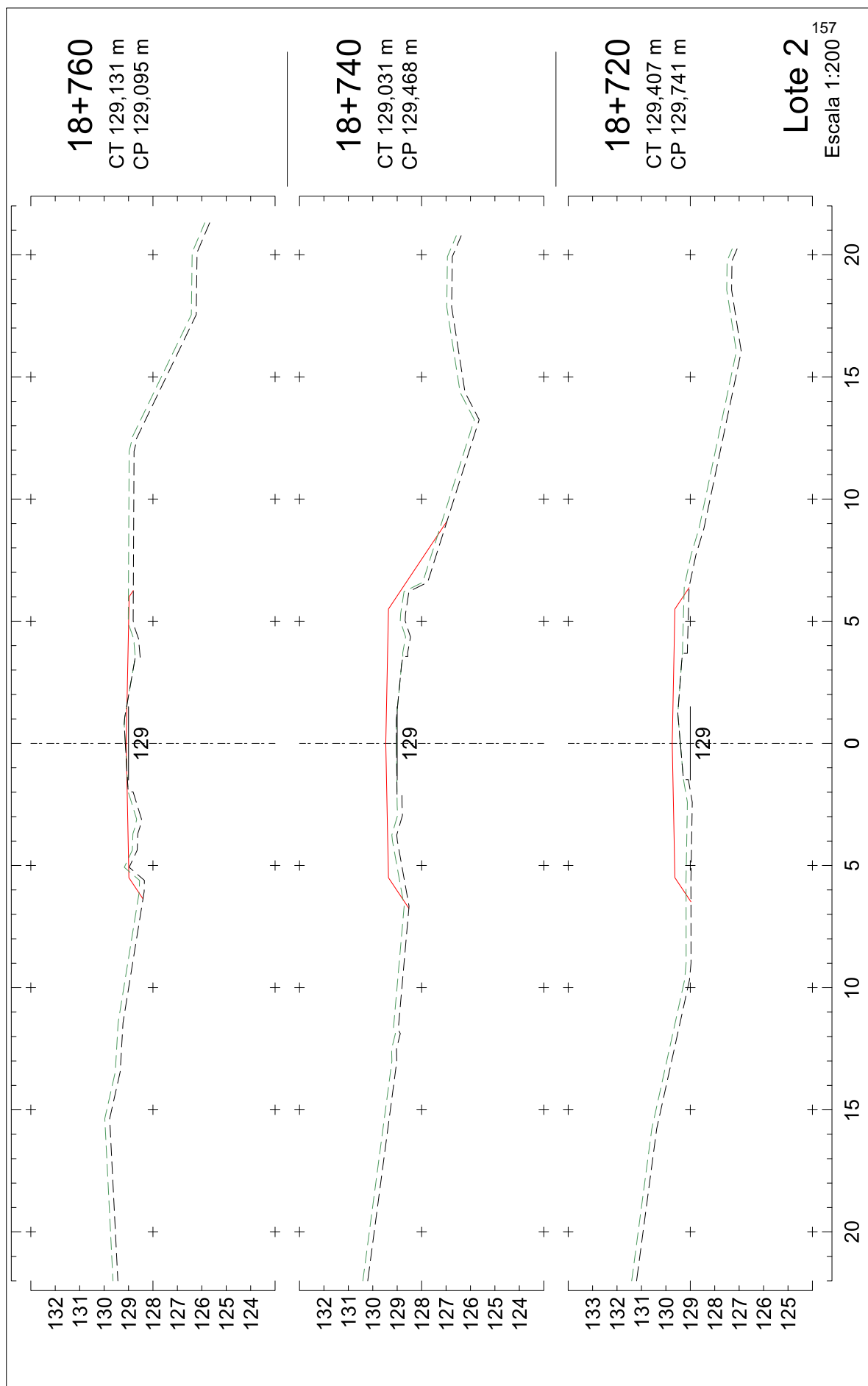


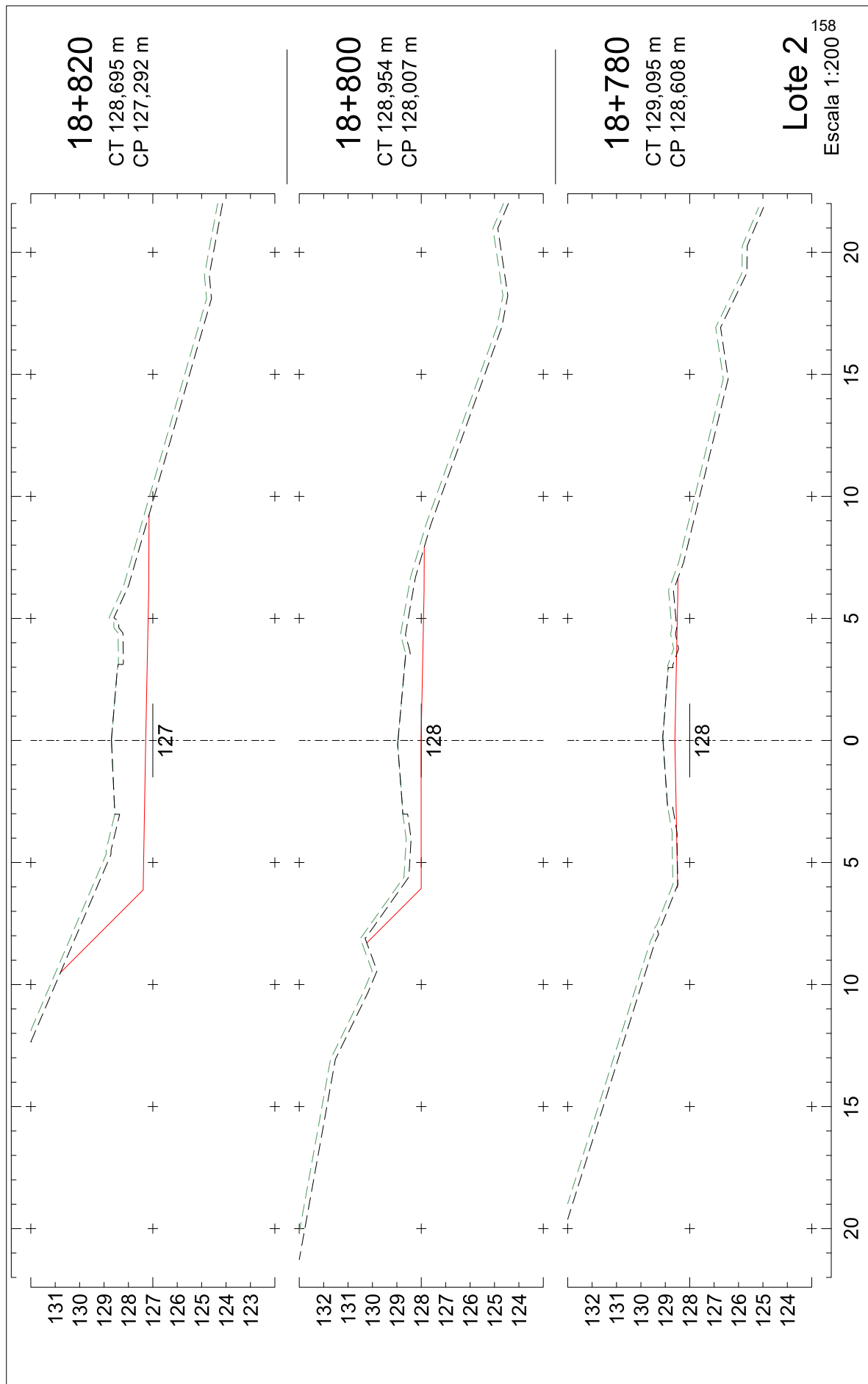


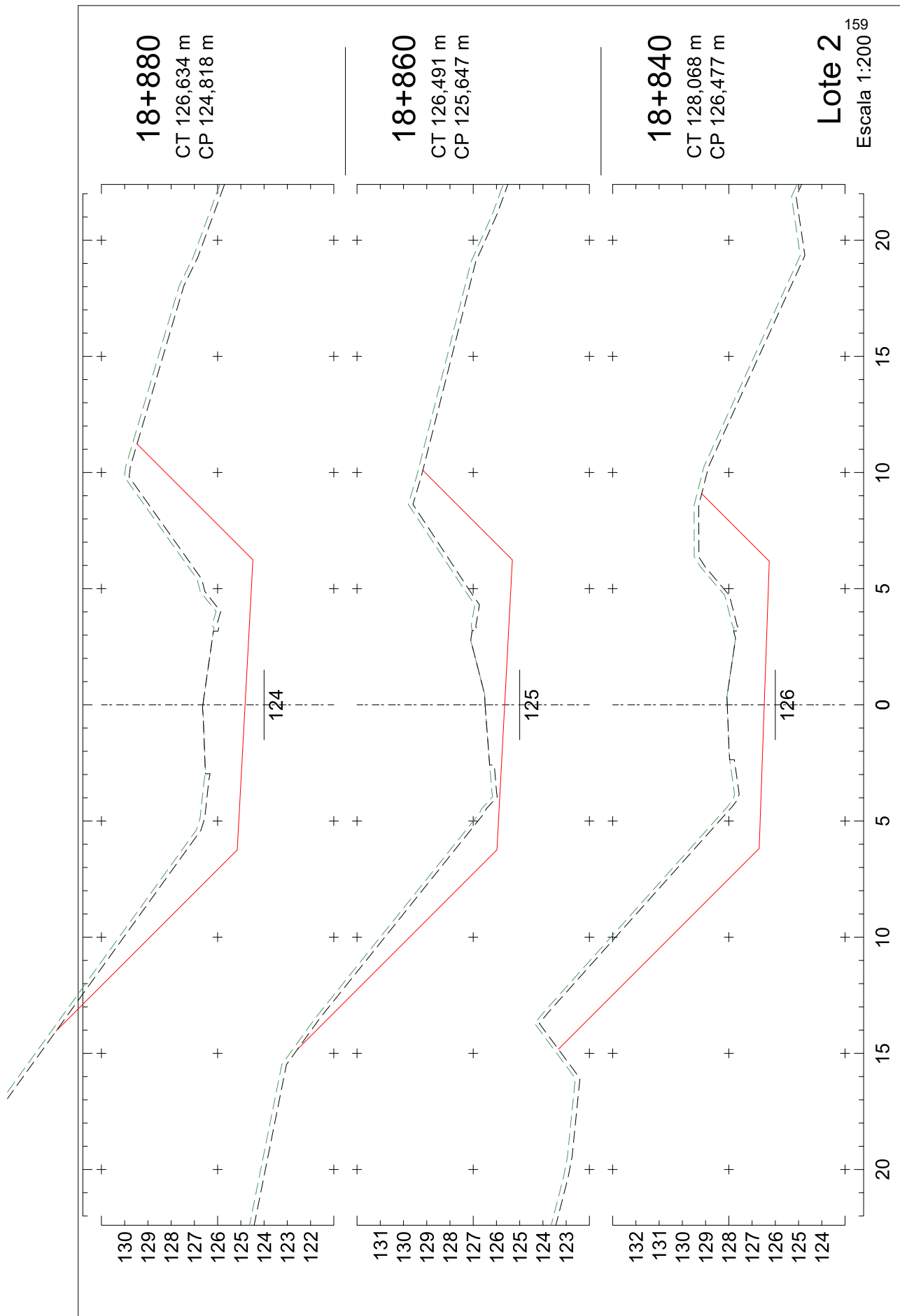


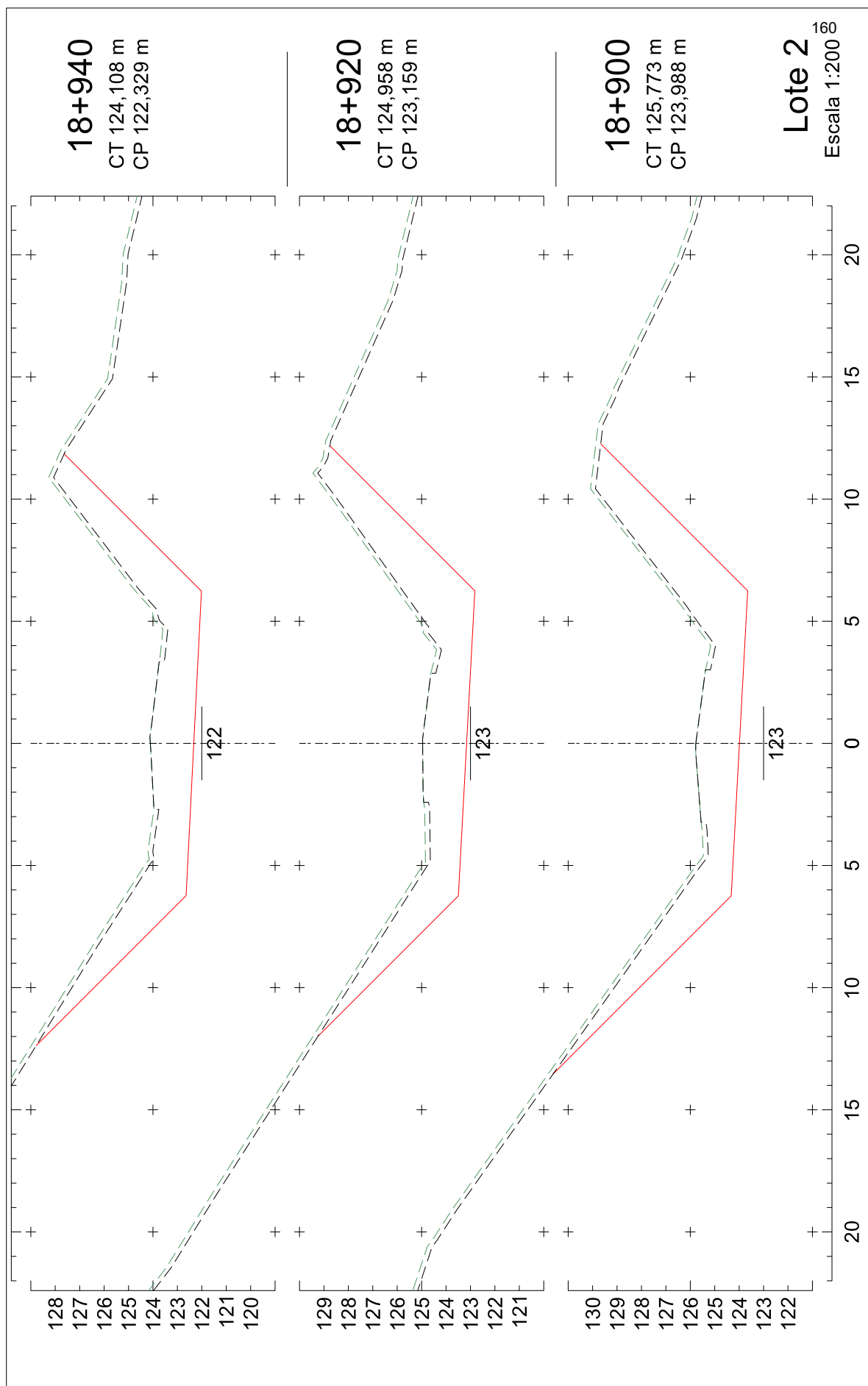


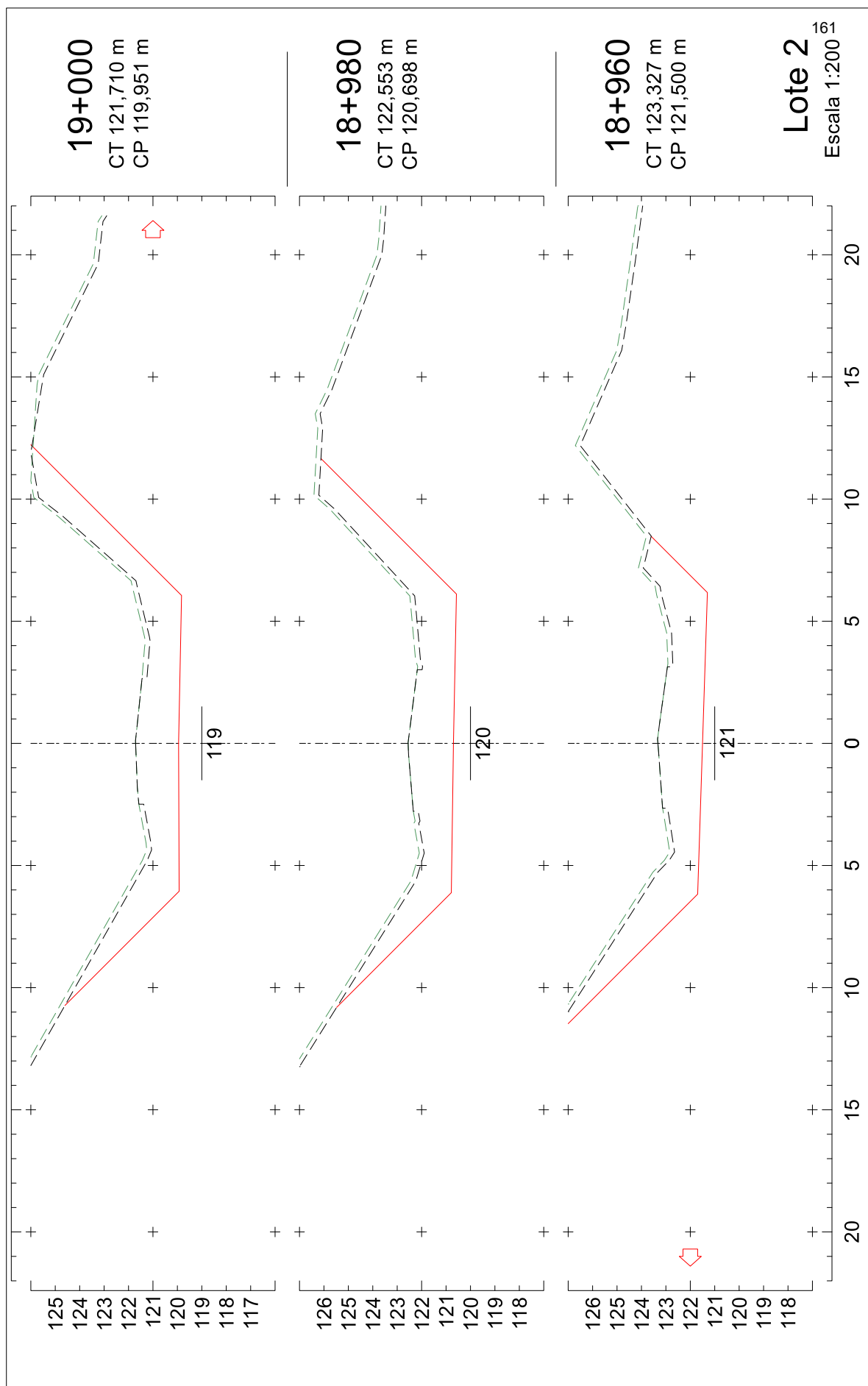


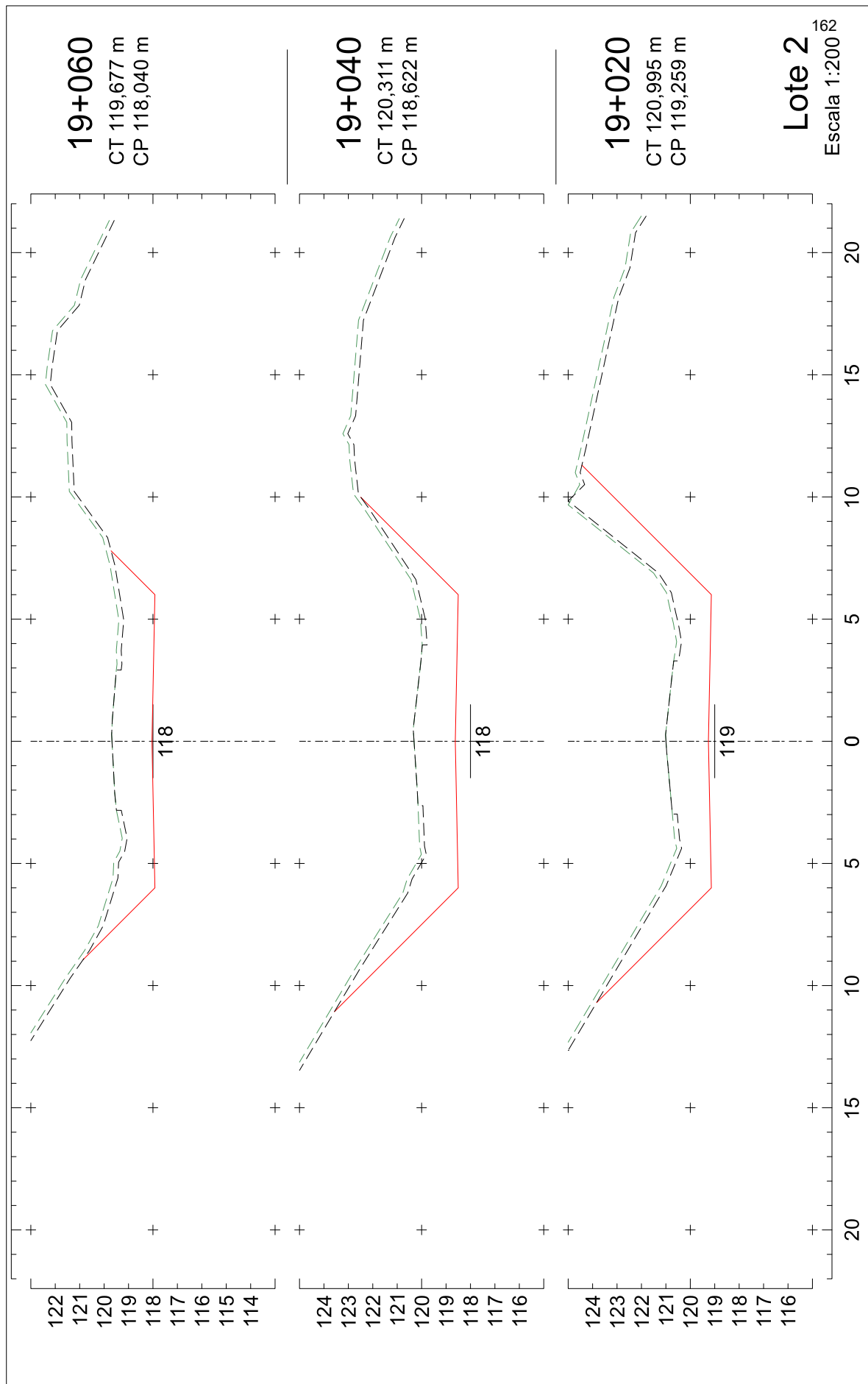


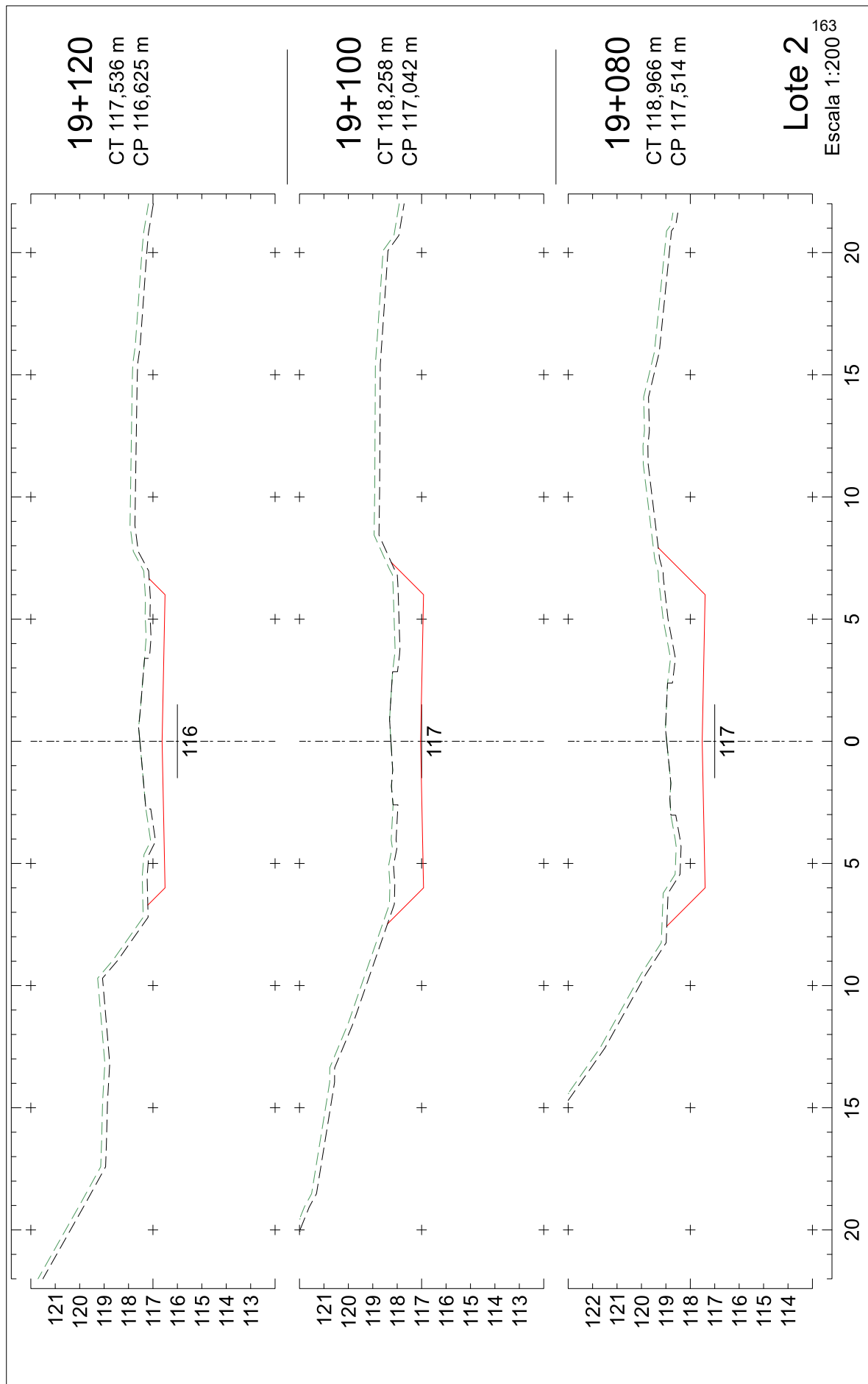


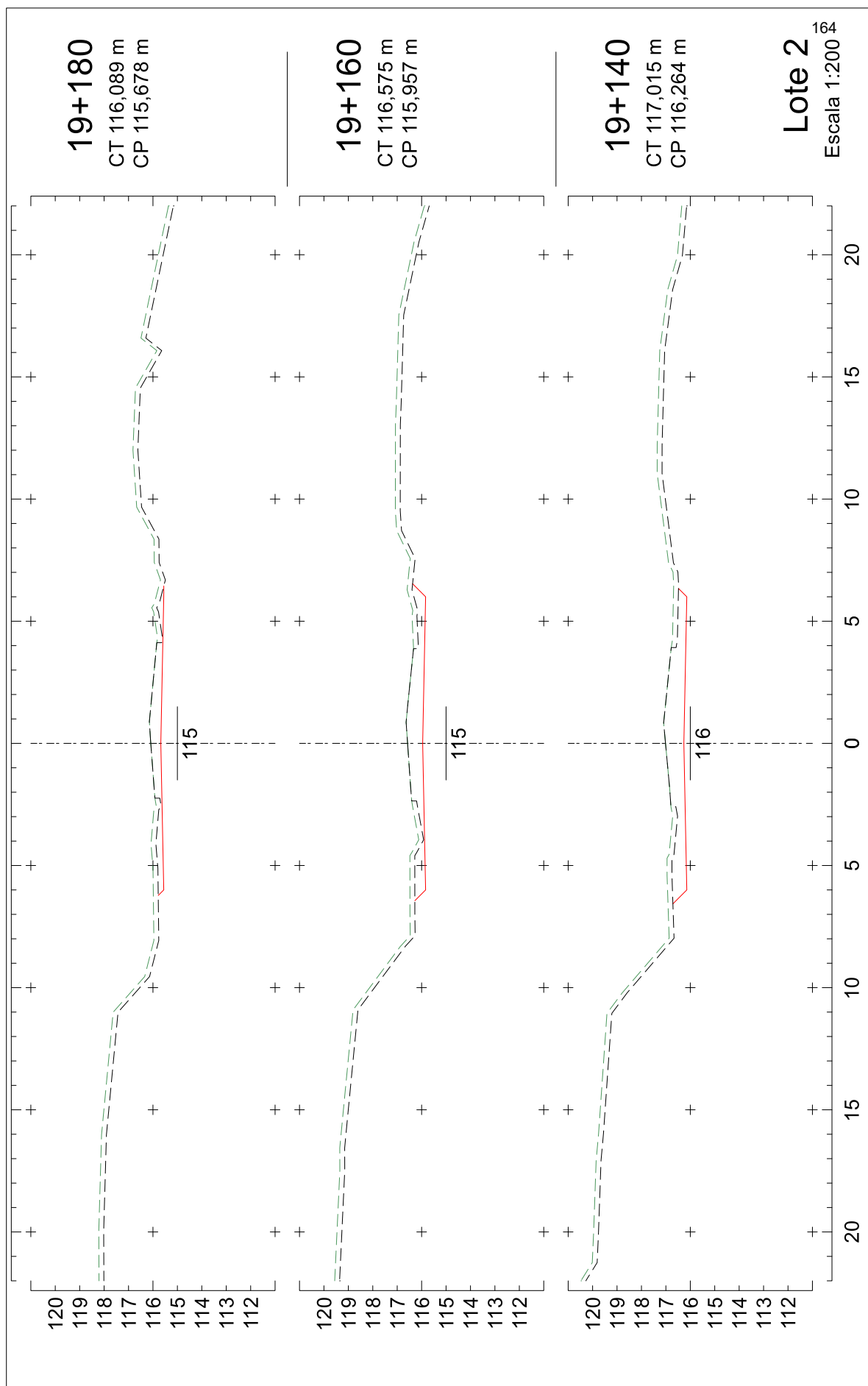


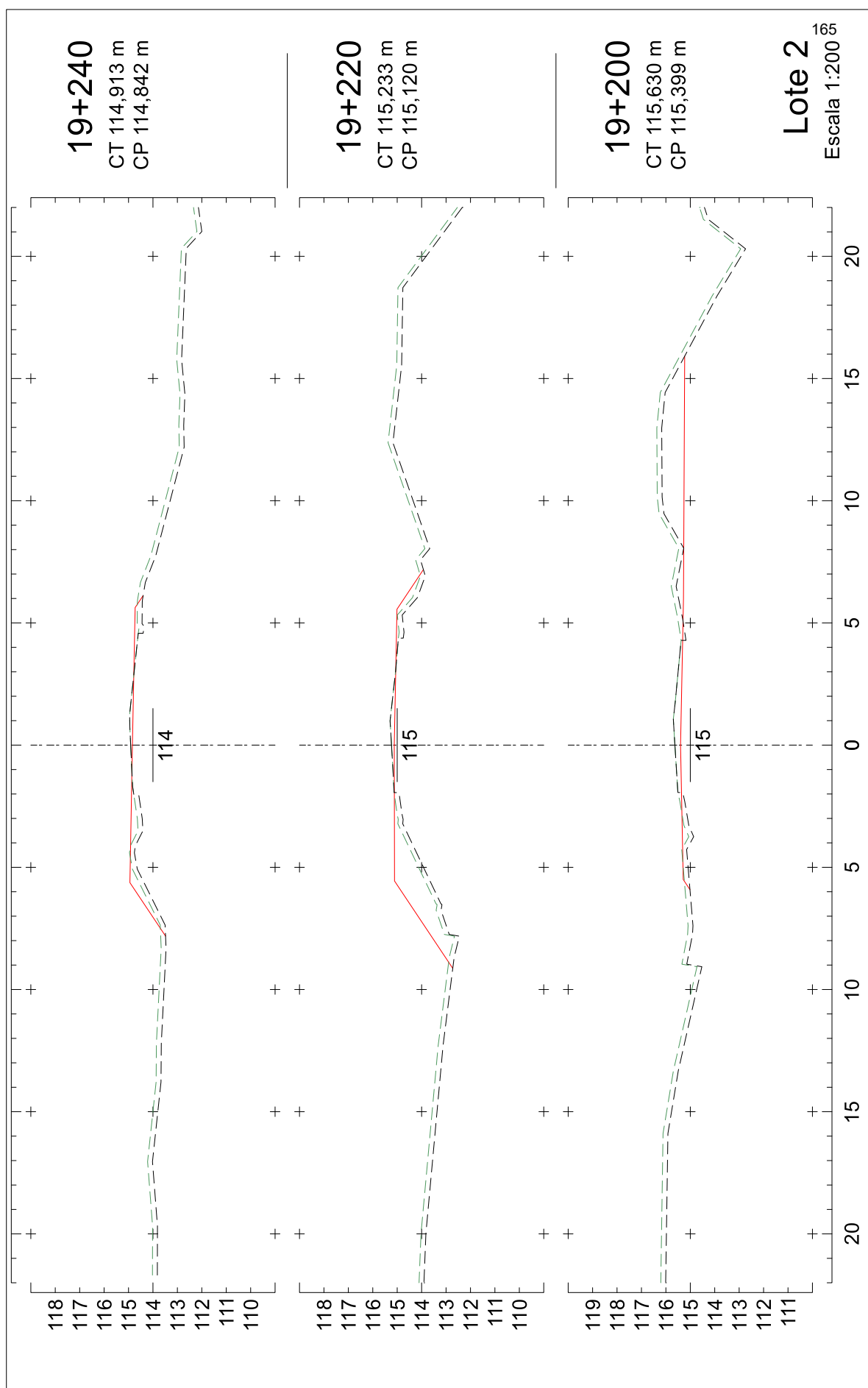


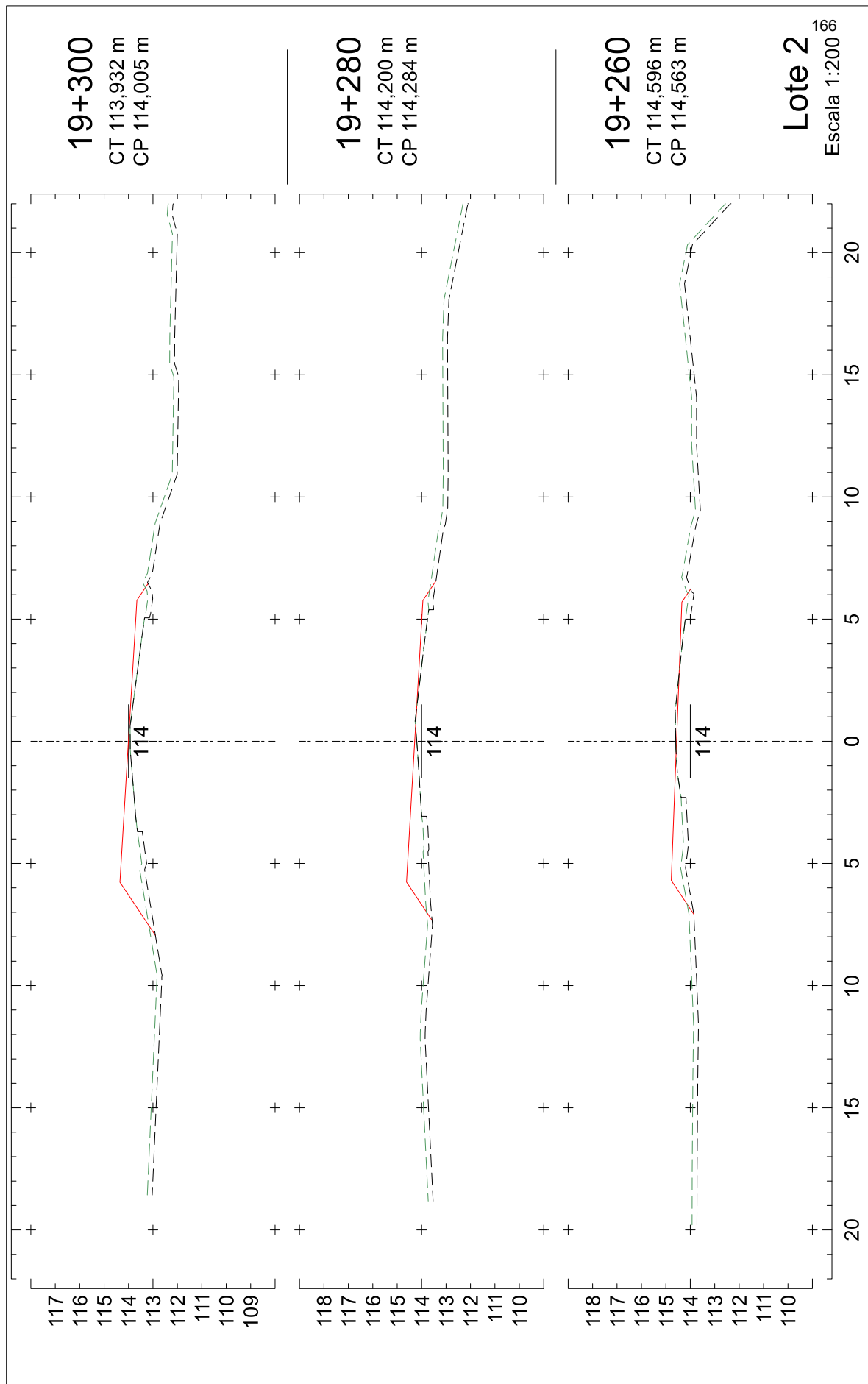


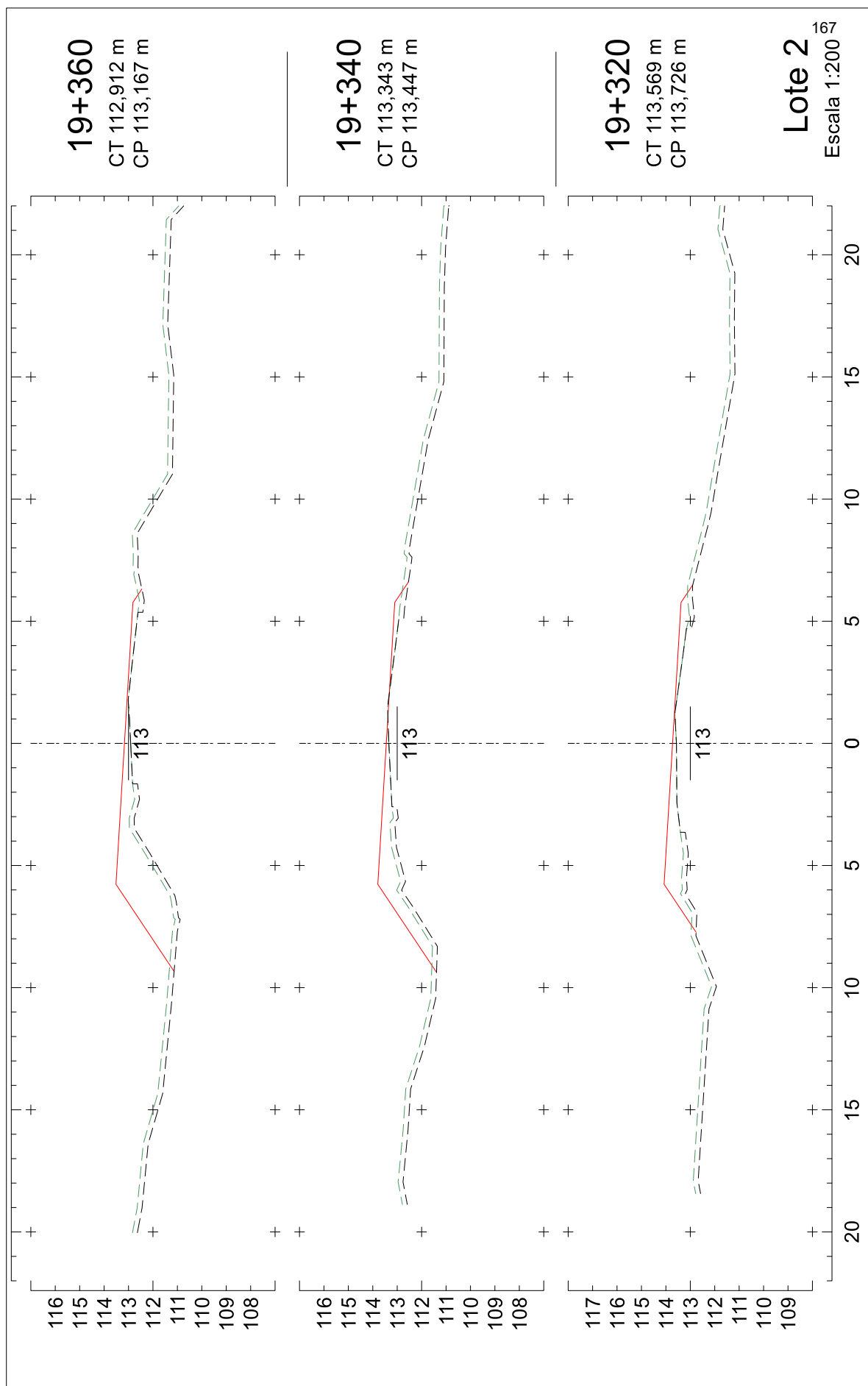


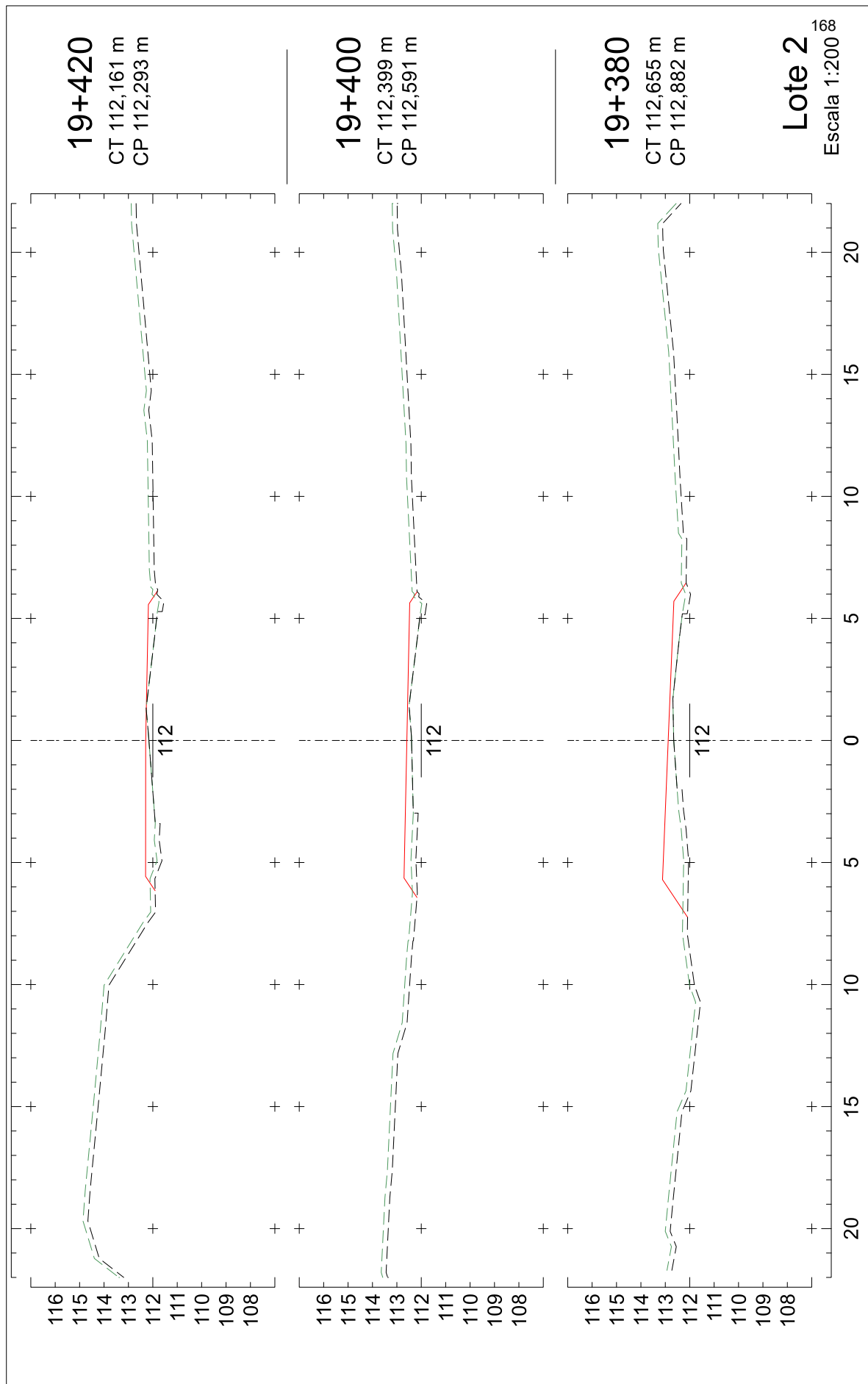


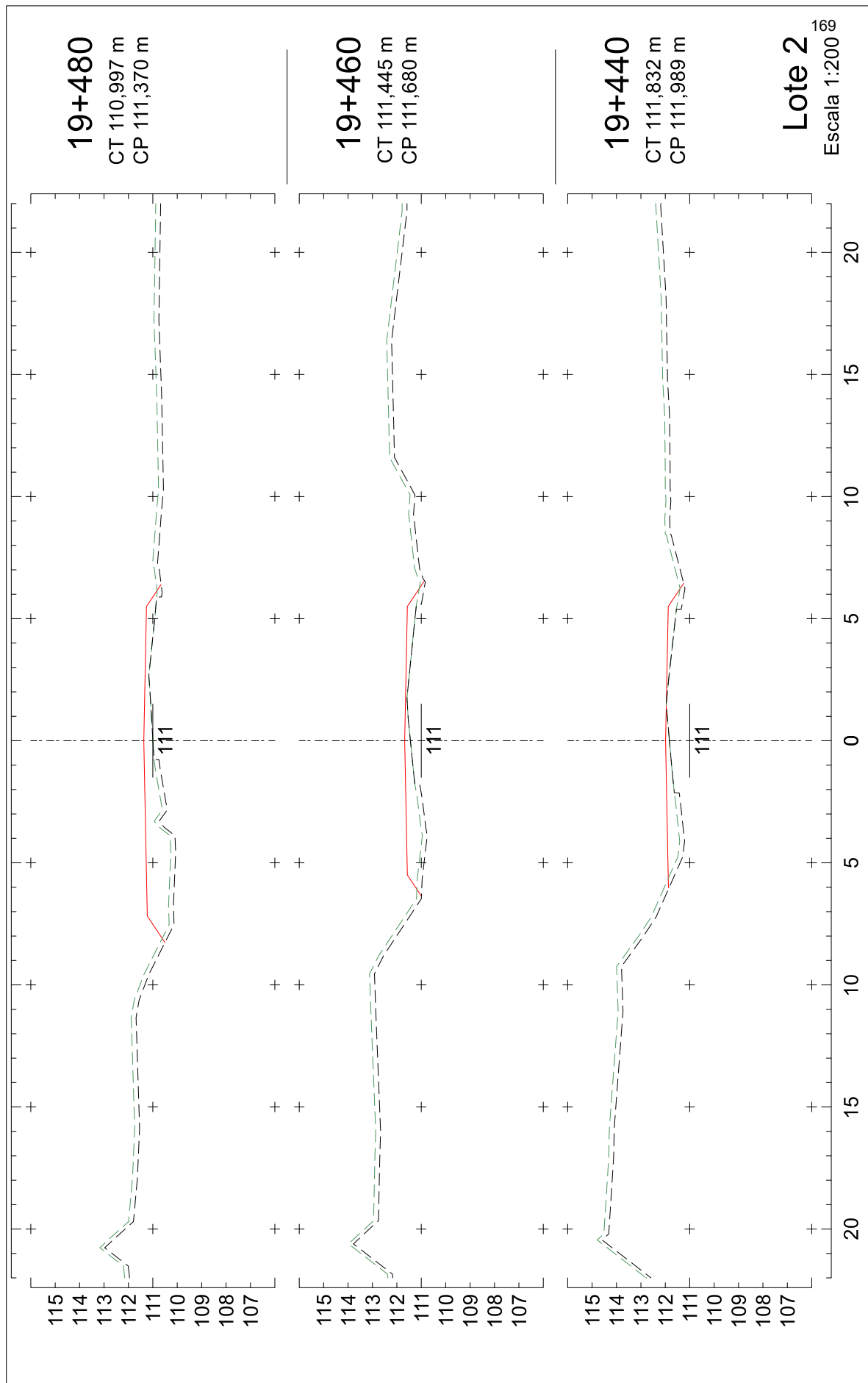


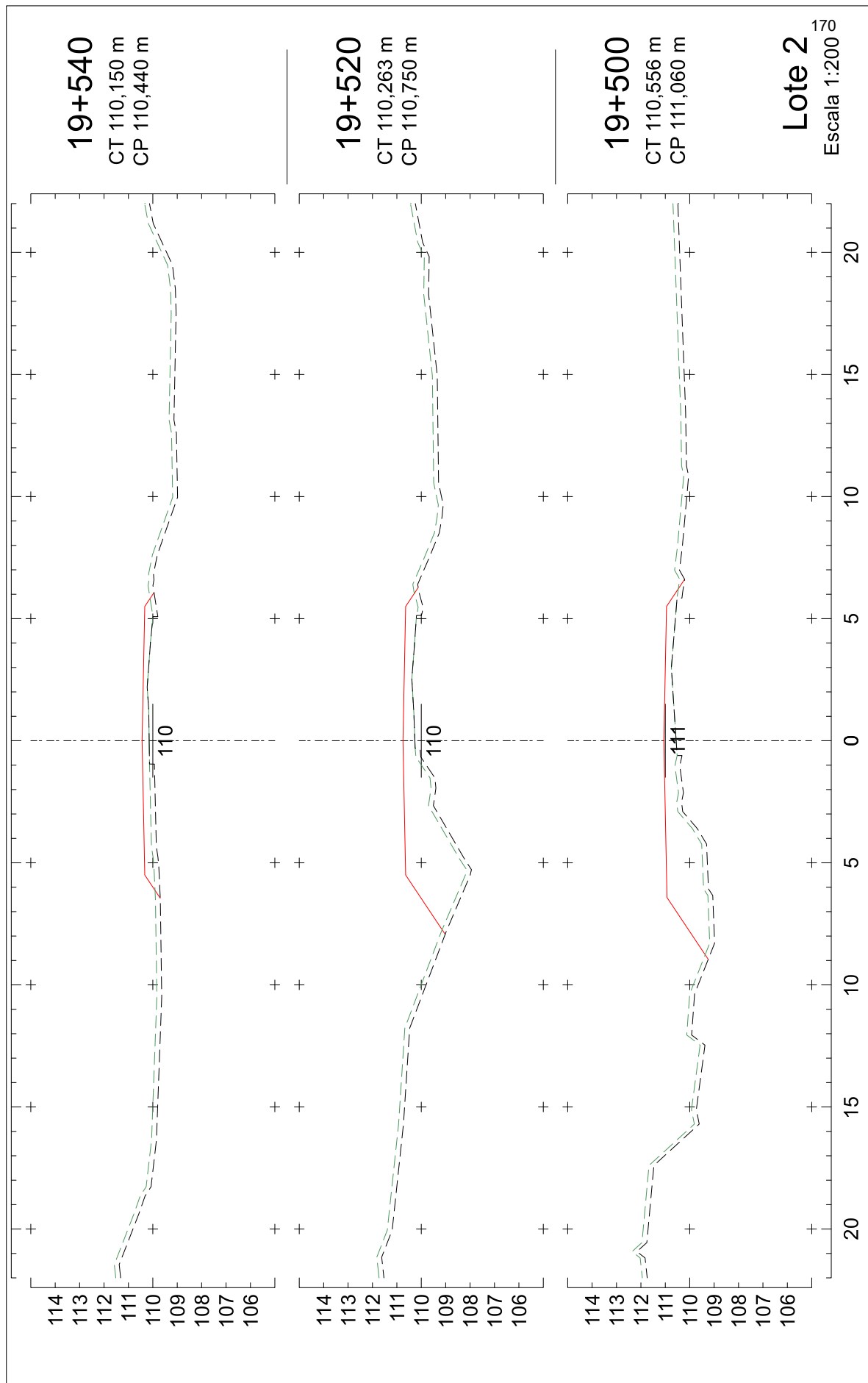


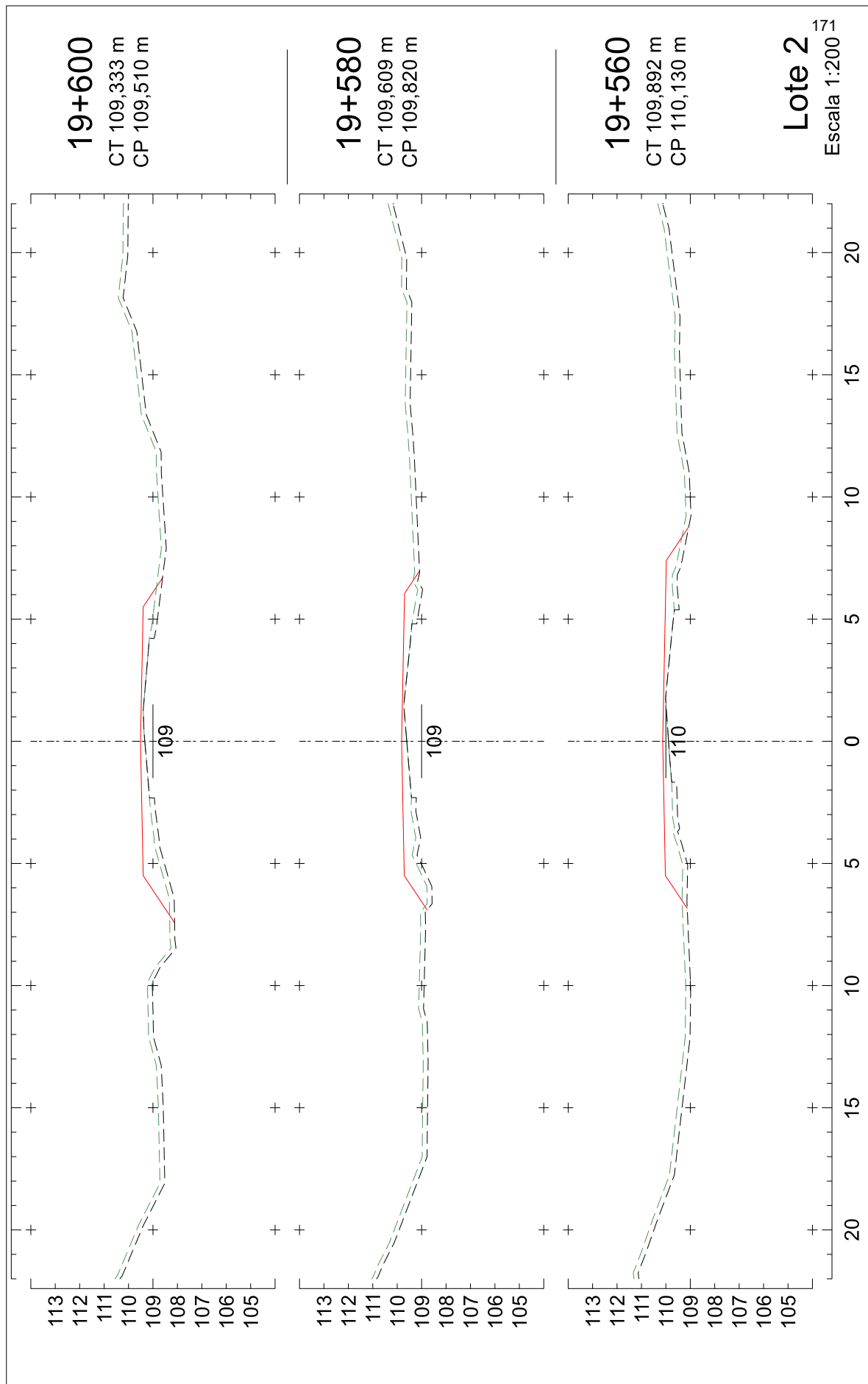


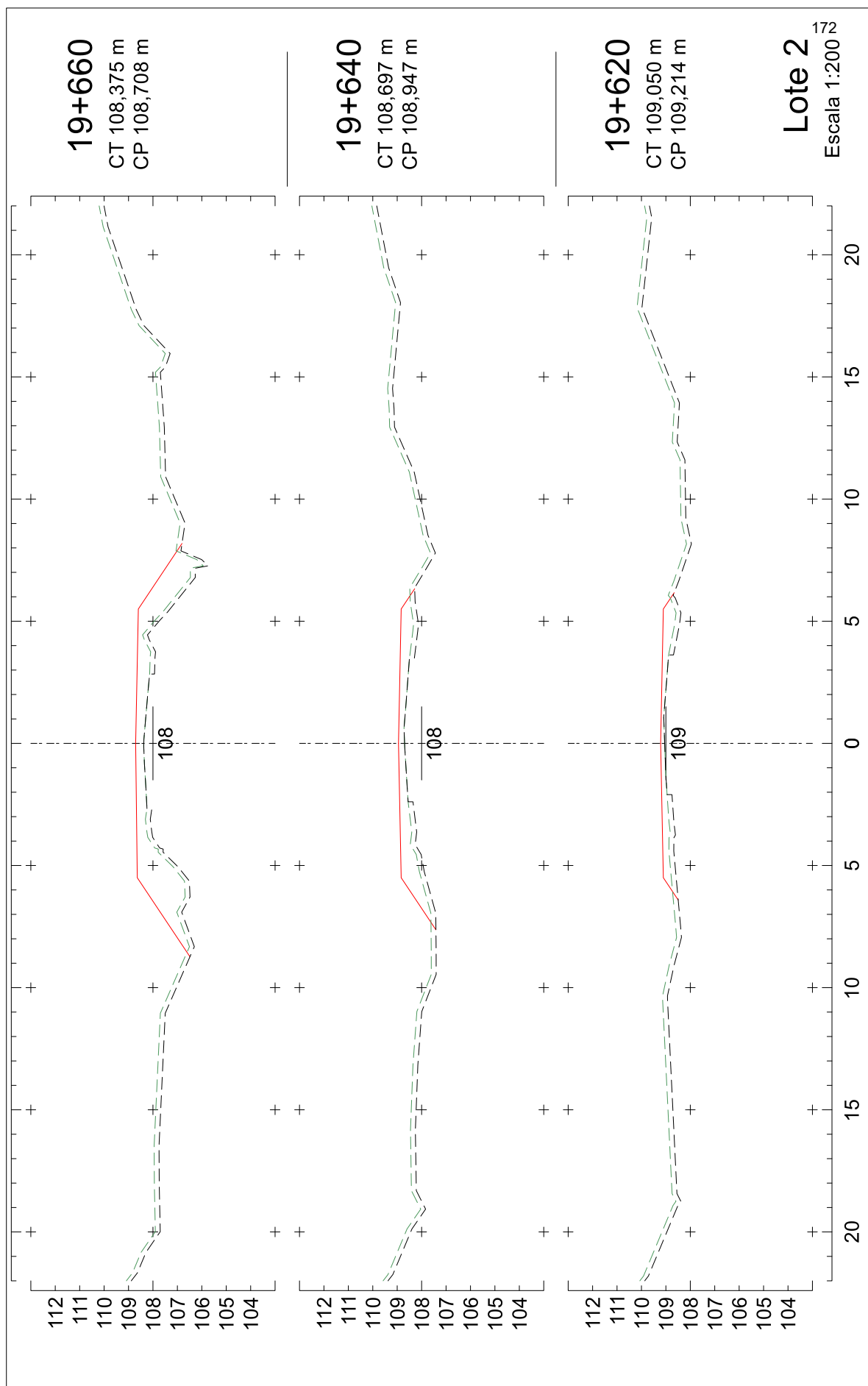




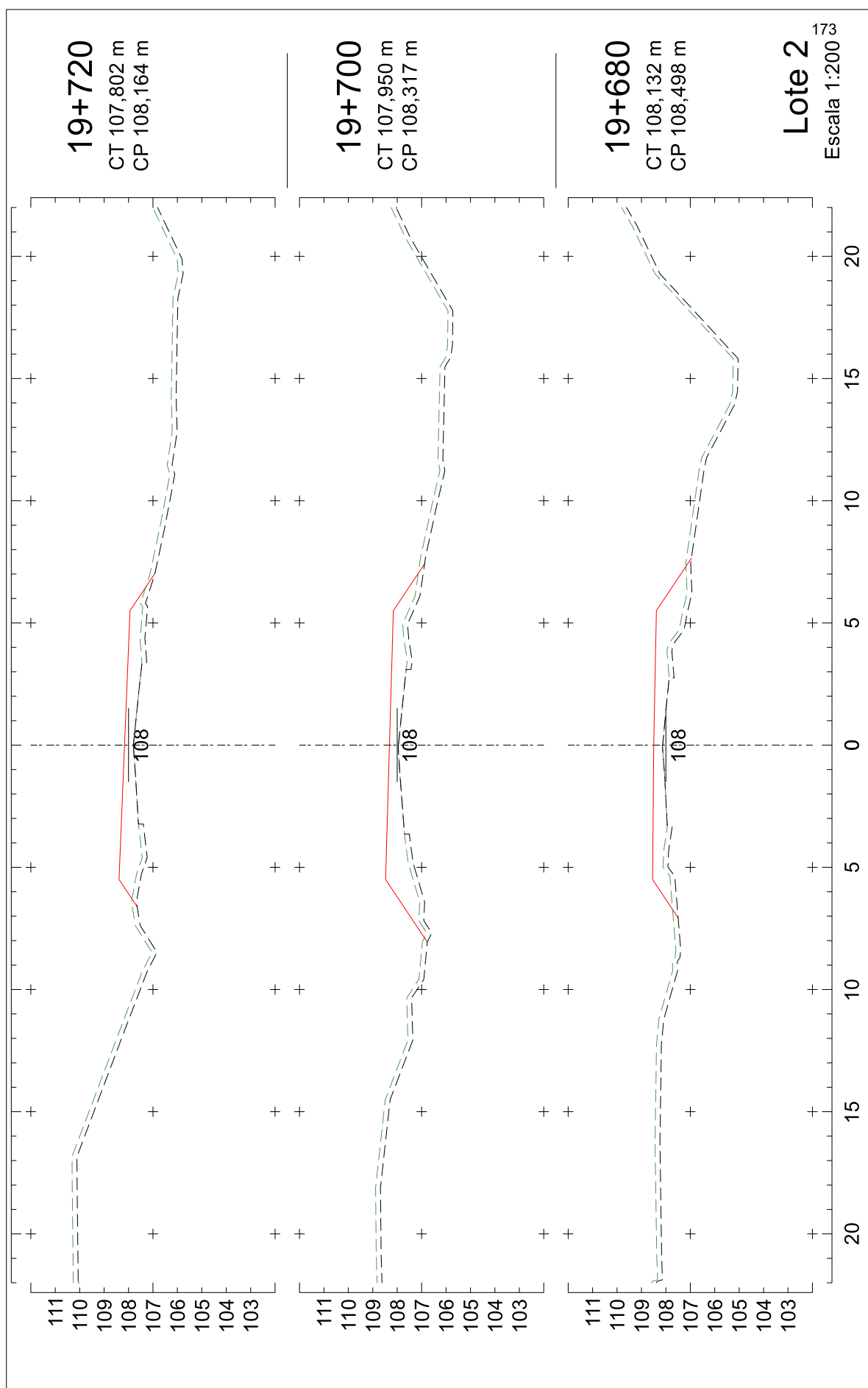


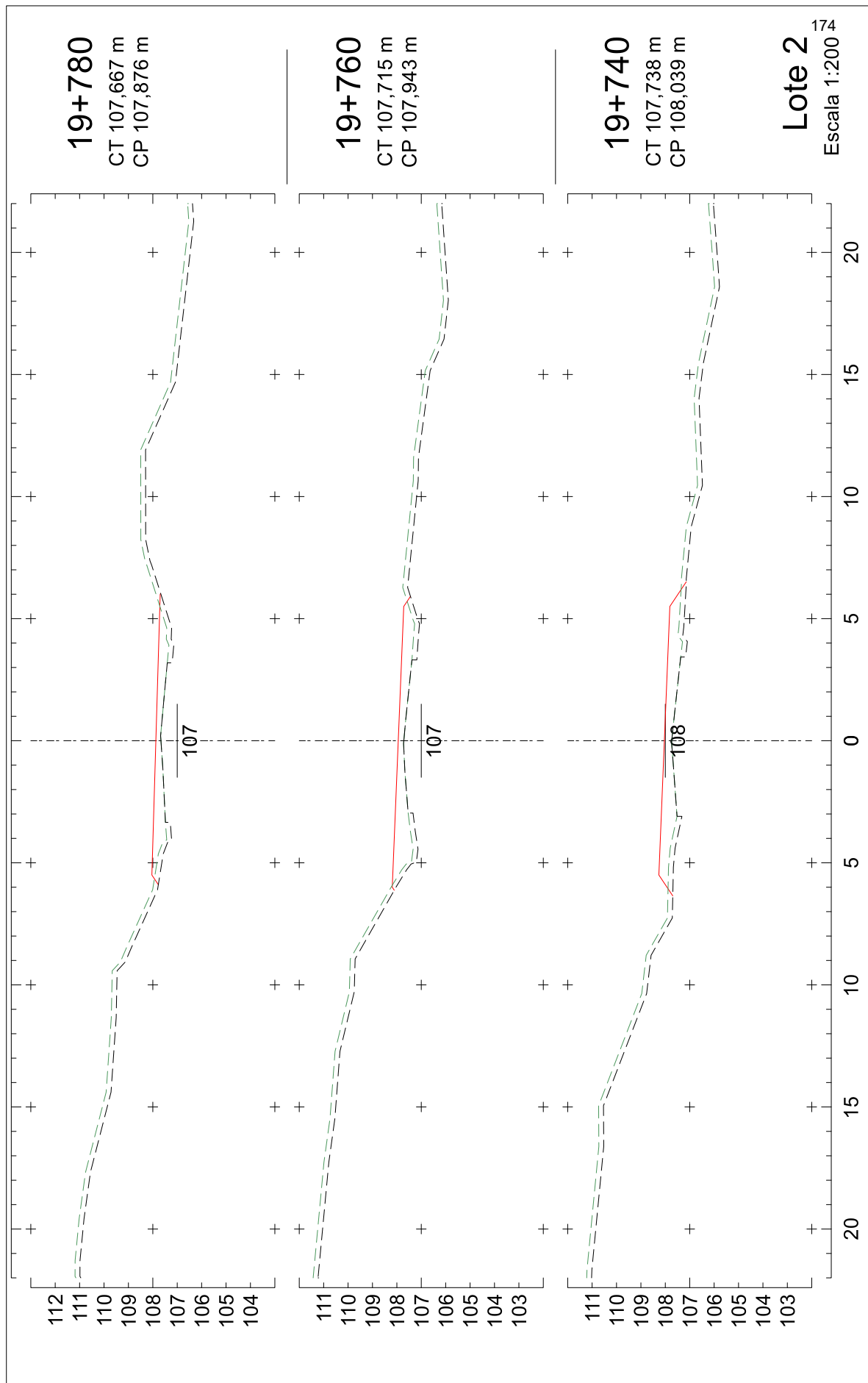


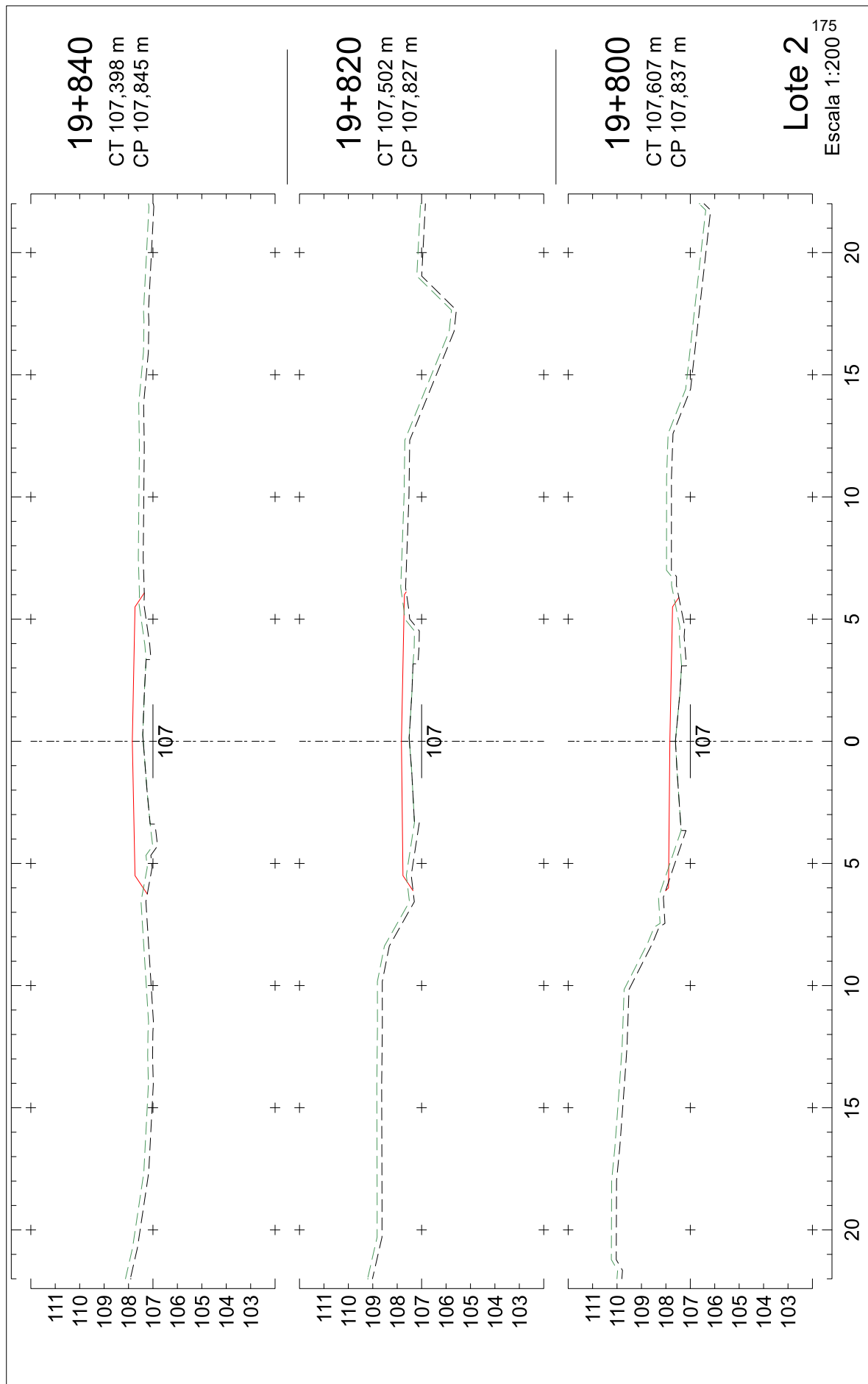


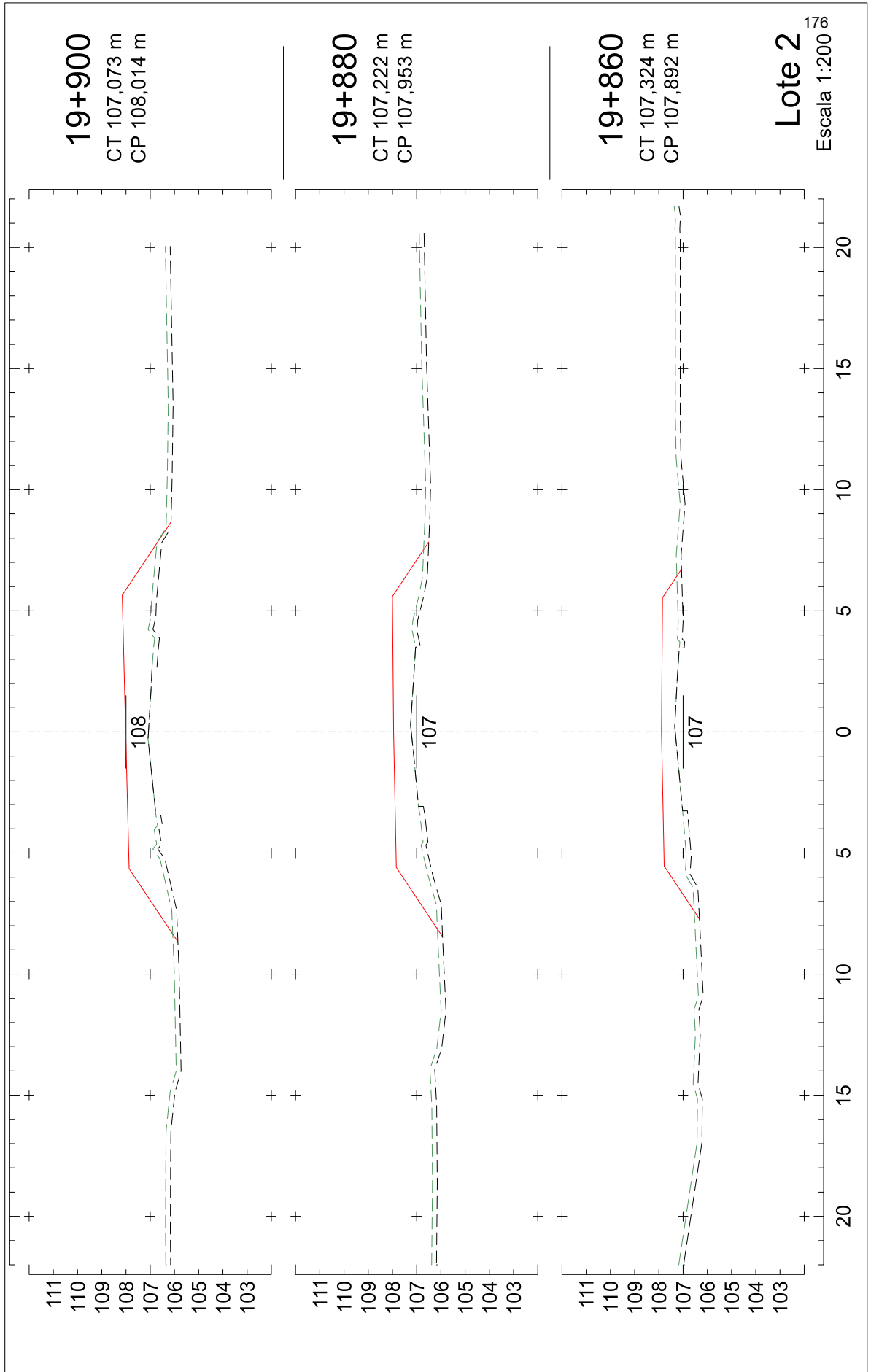


Lote 2
Escala 1:200

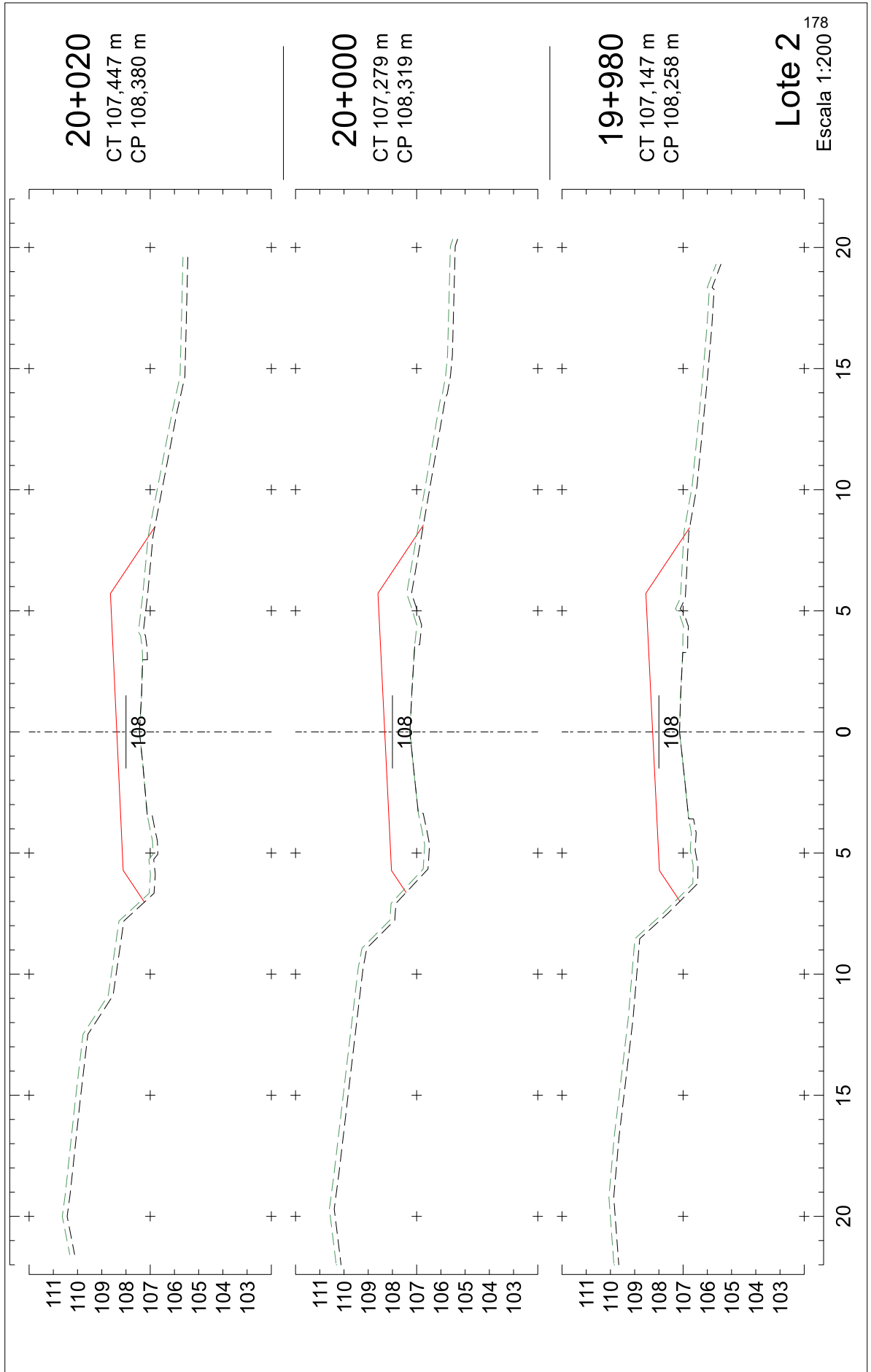


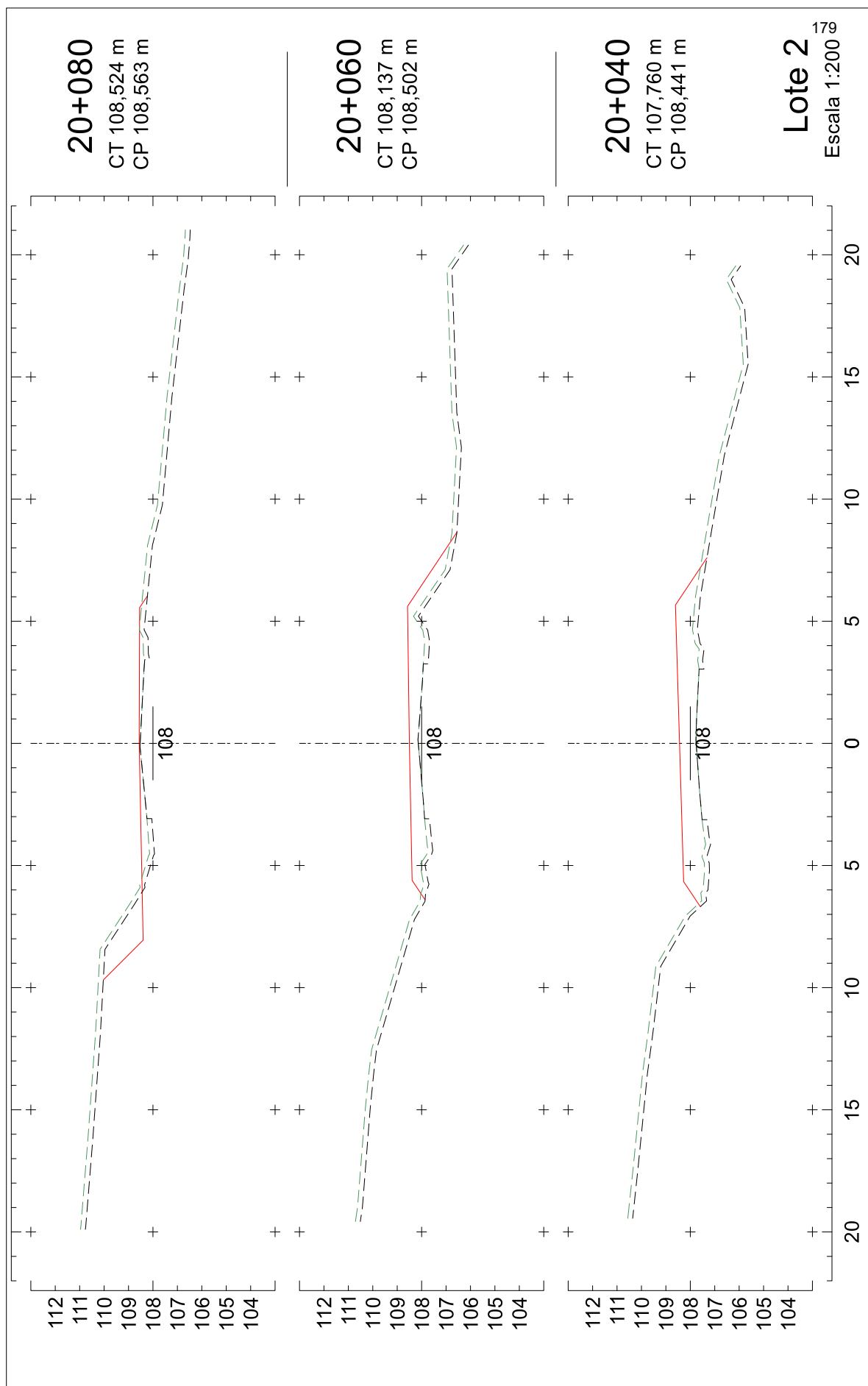


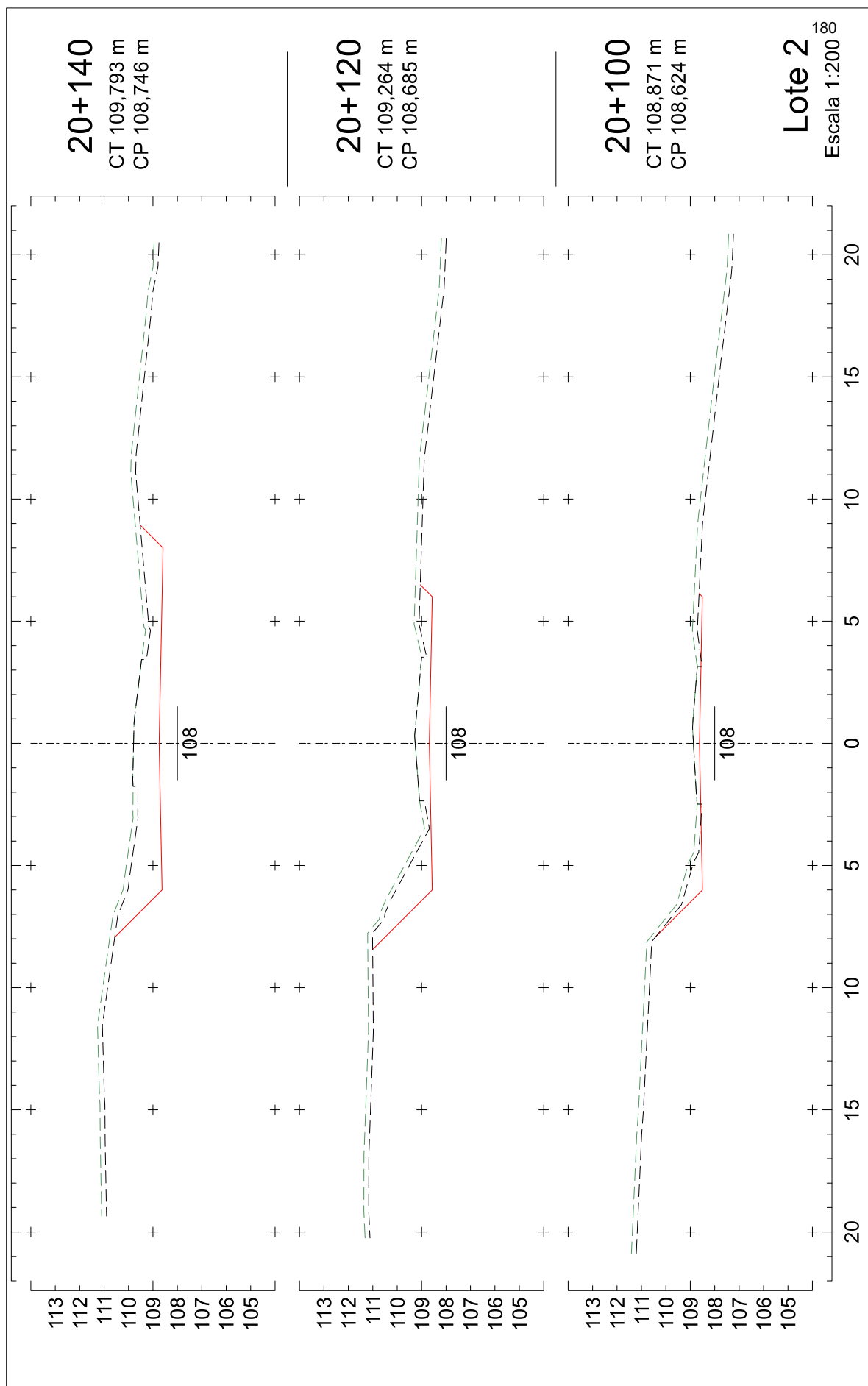


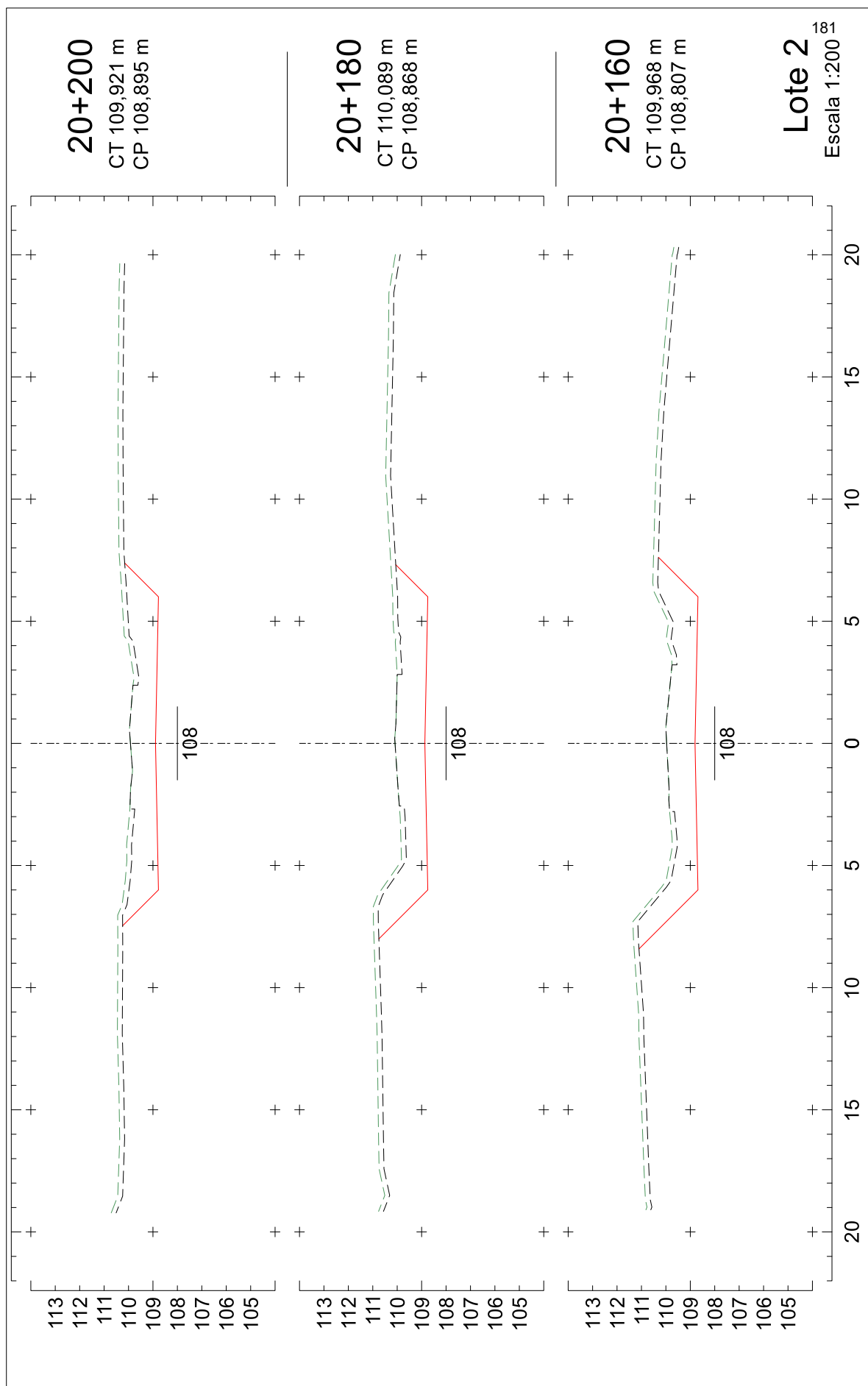


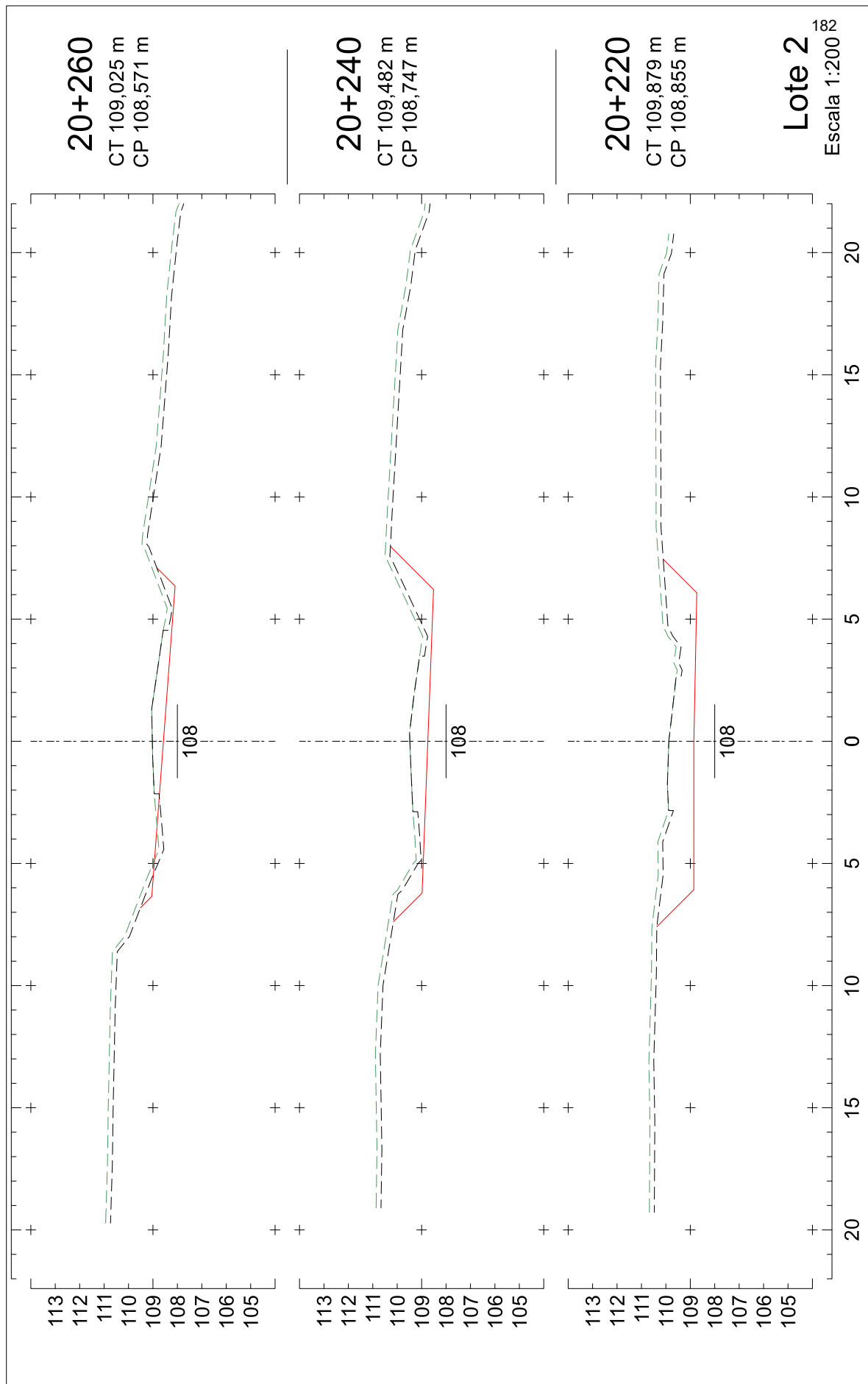


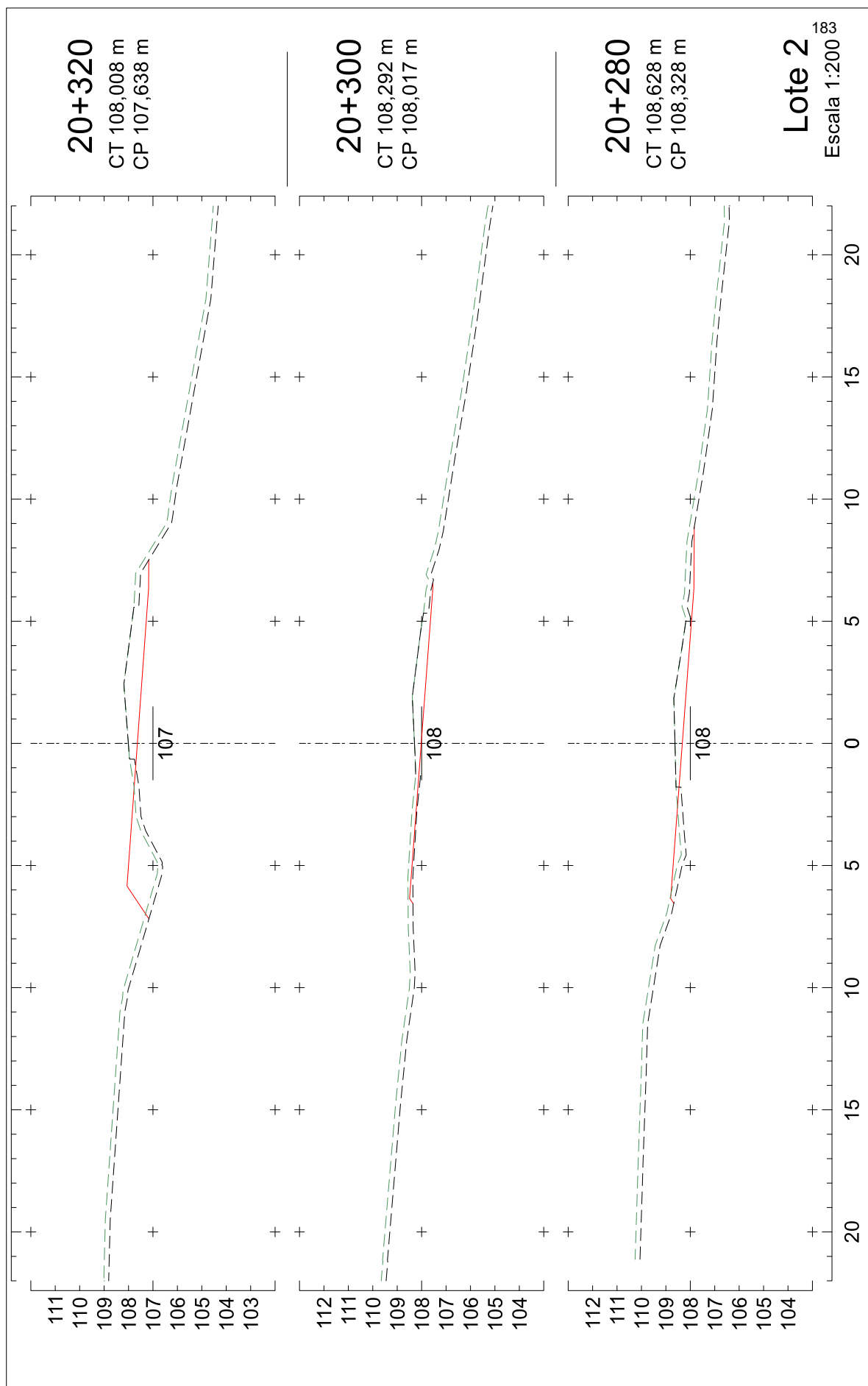


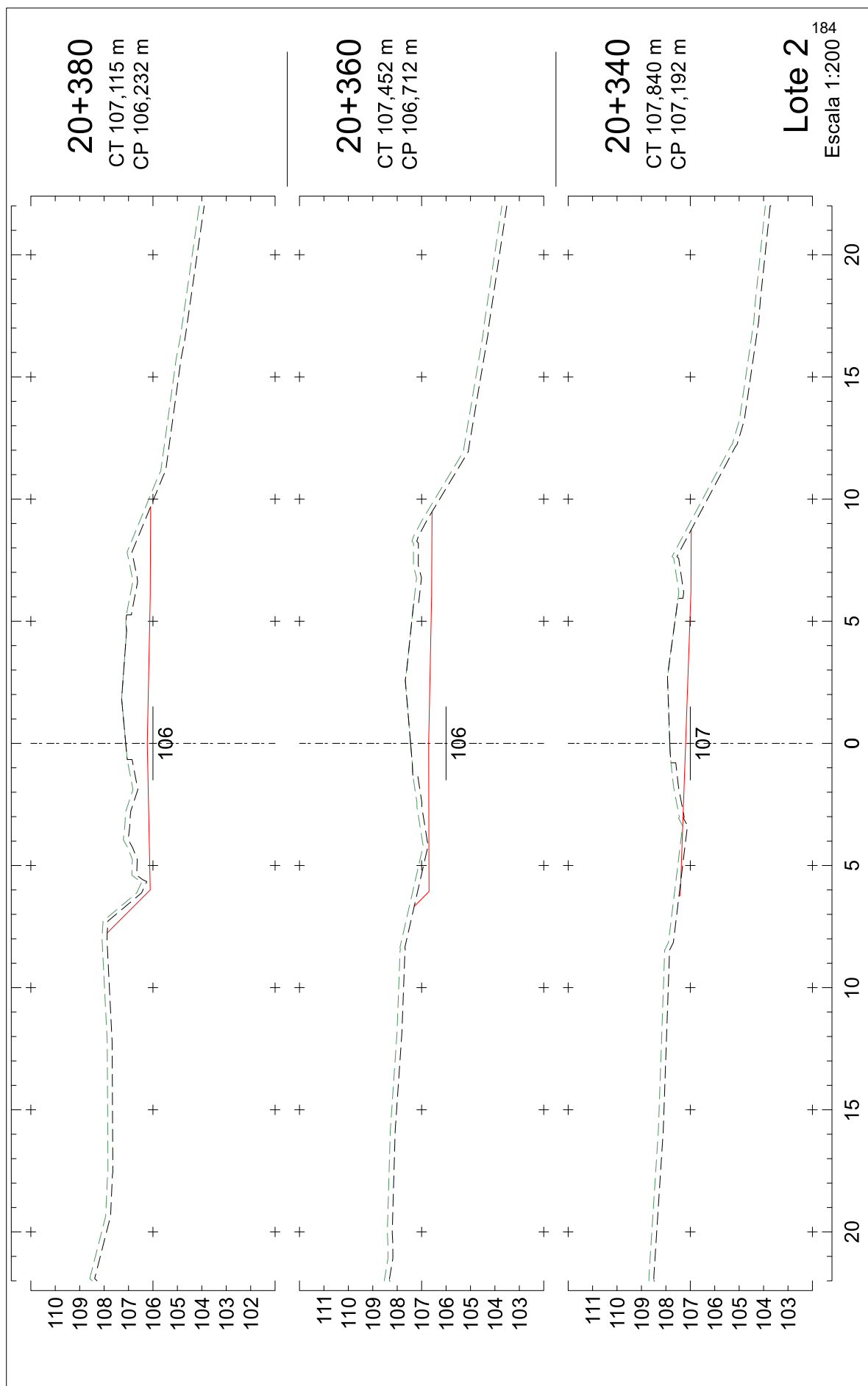


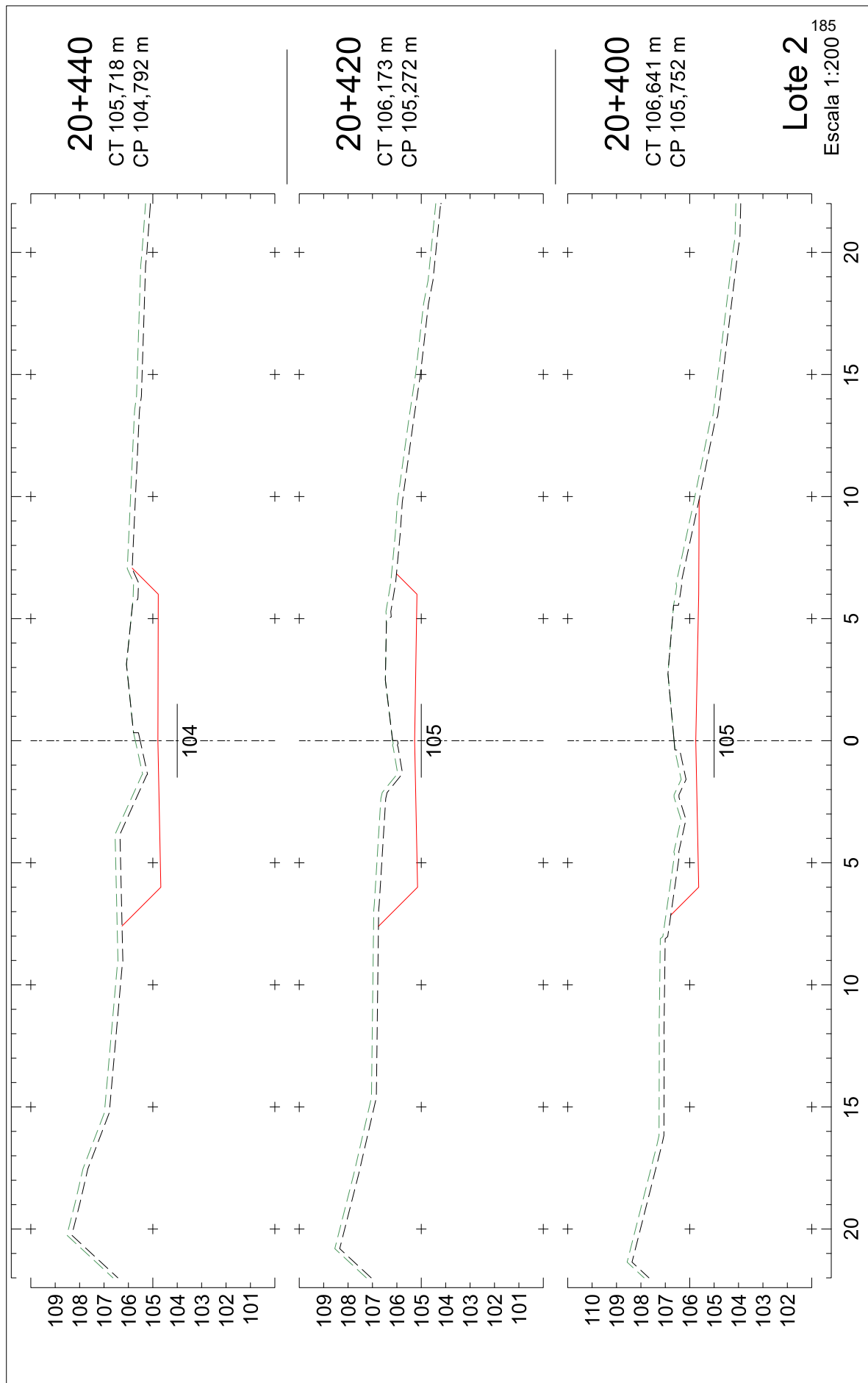




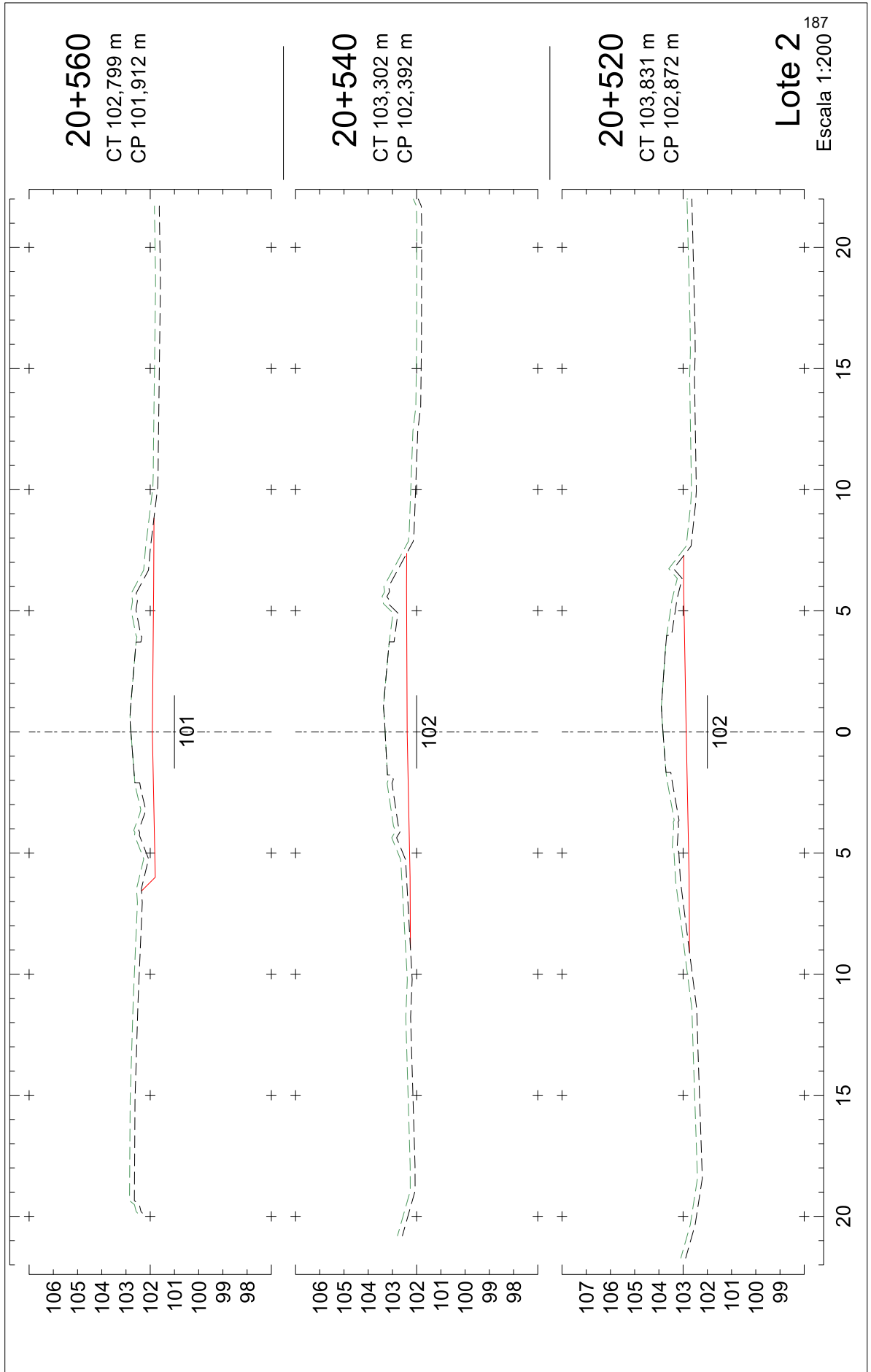


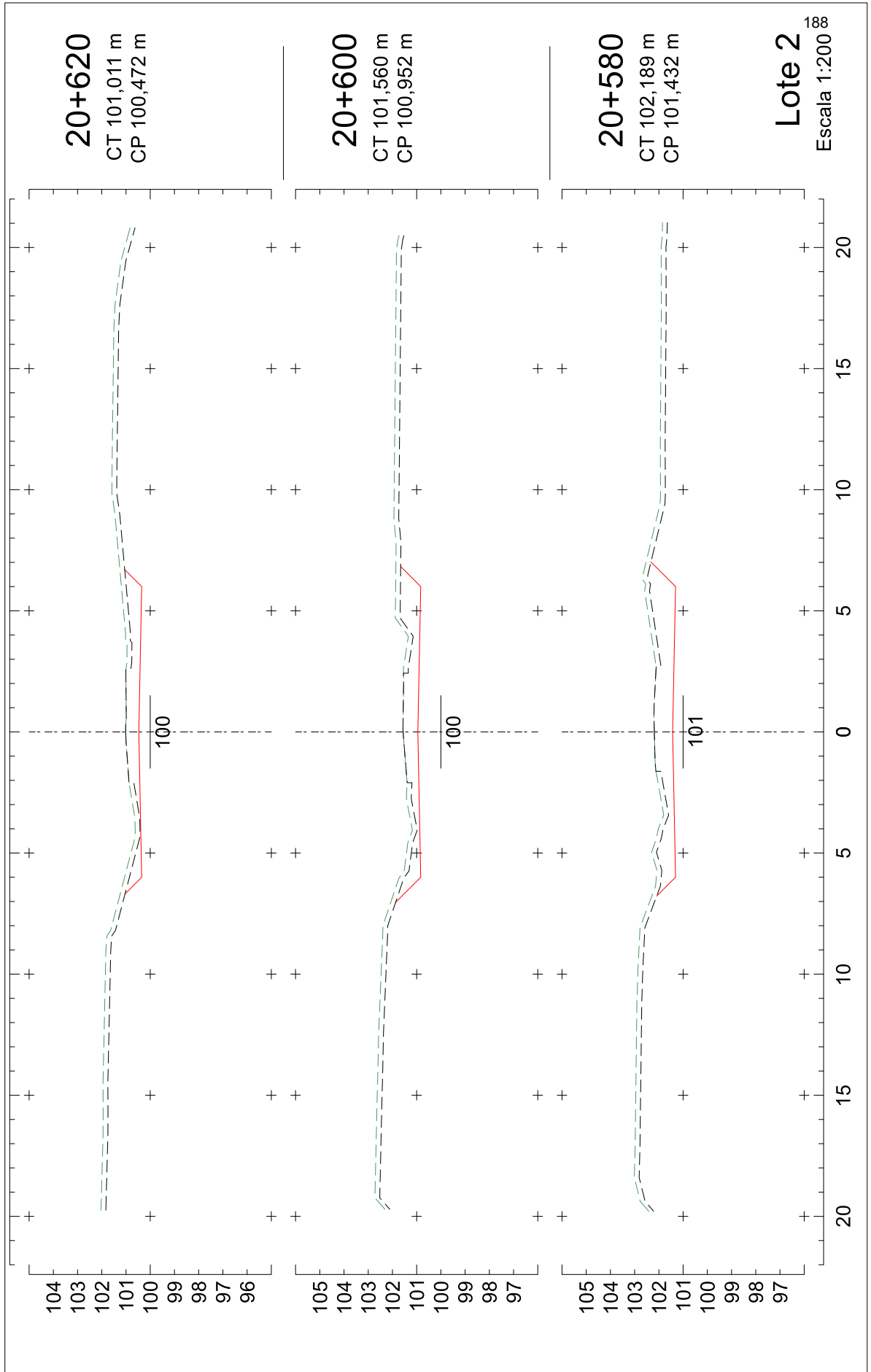


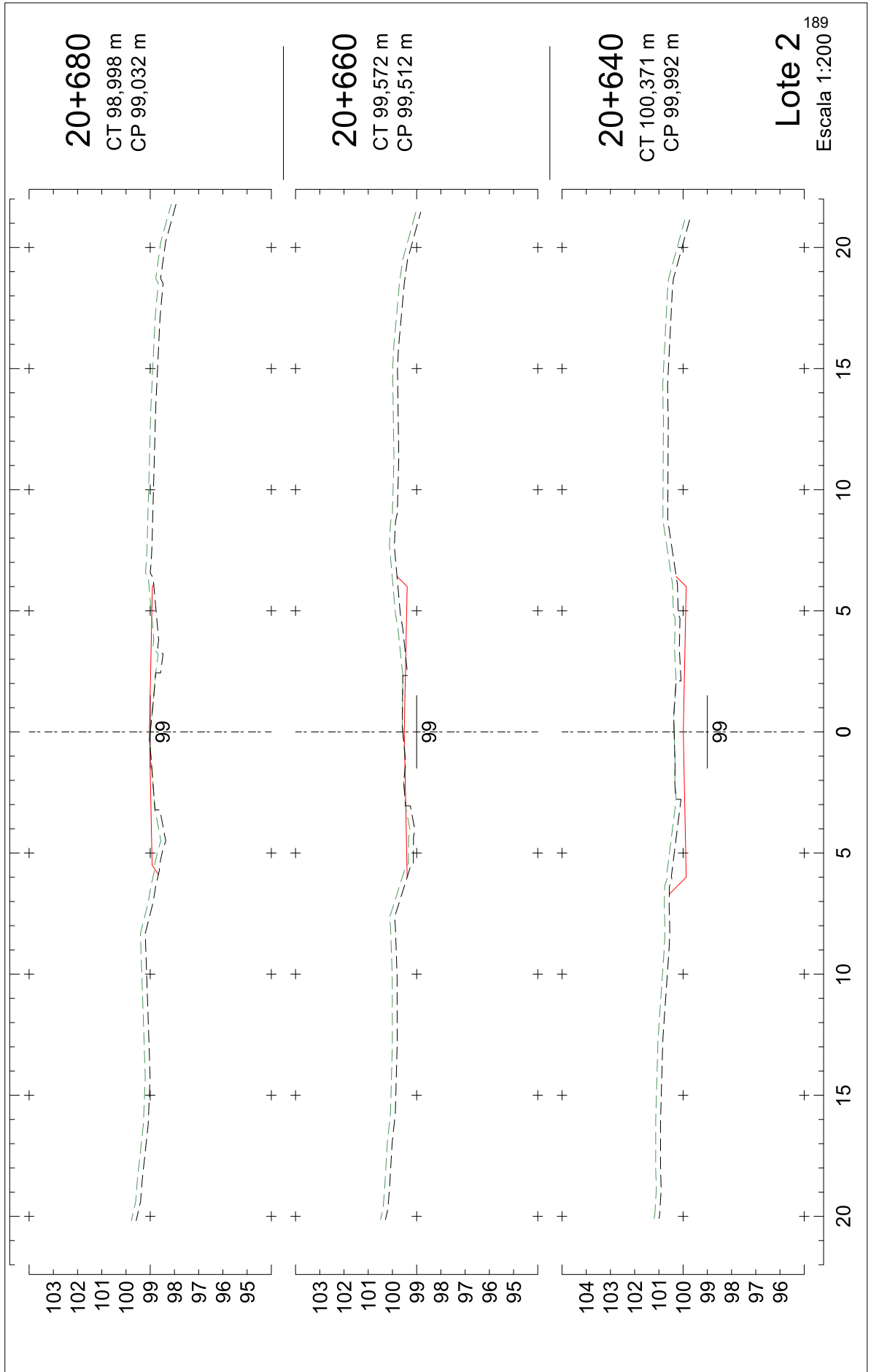


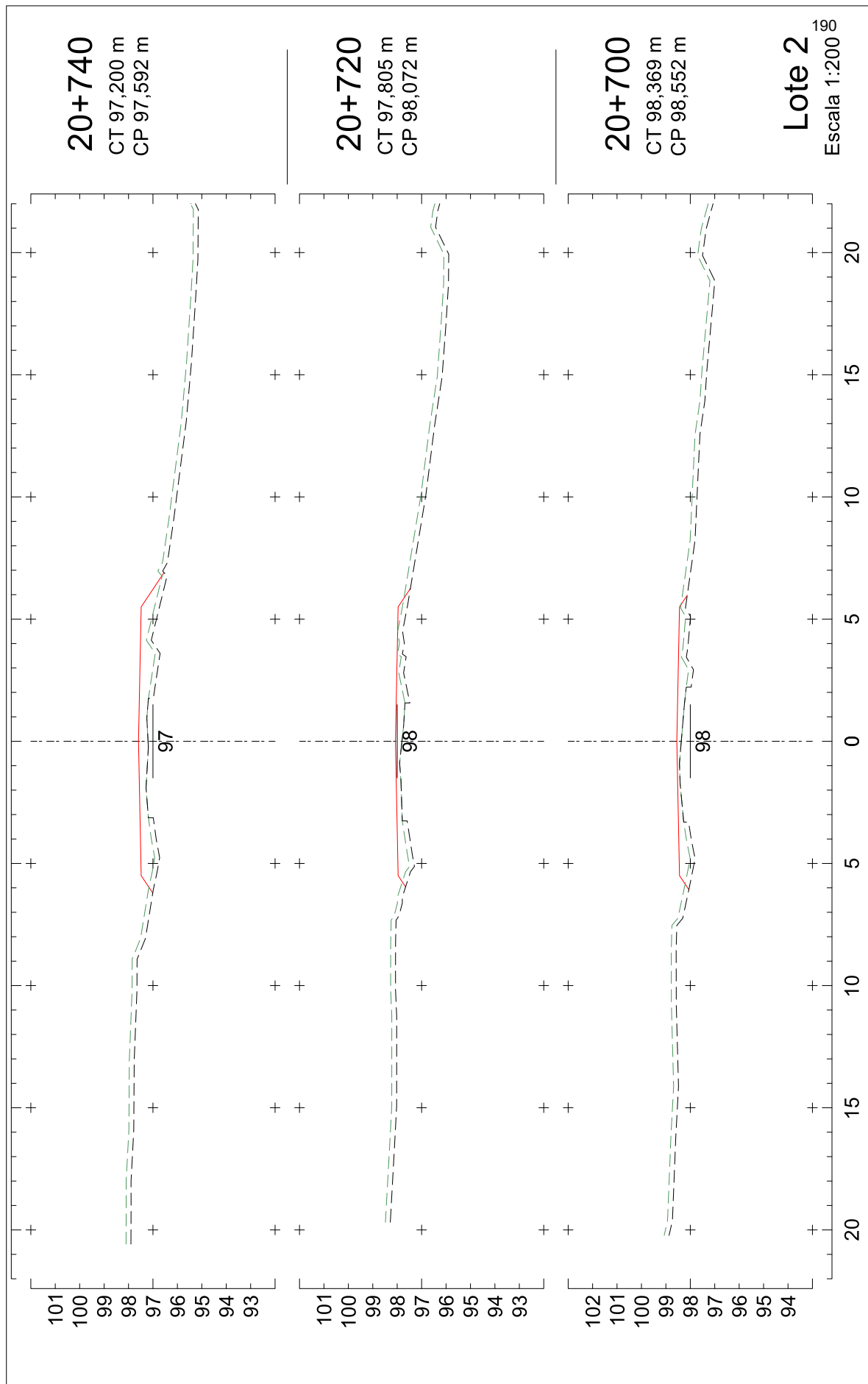


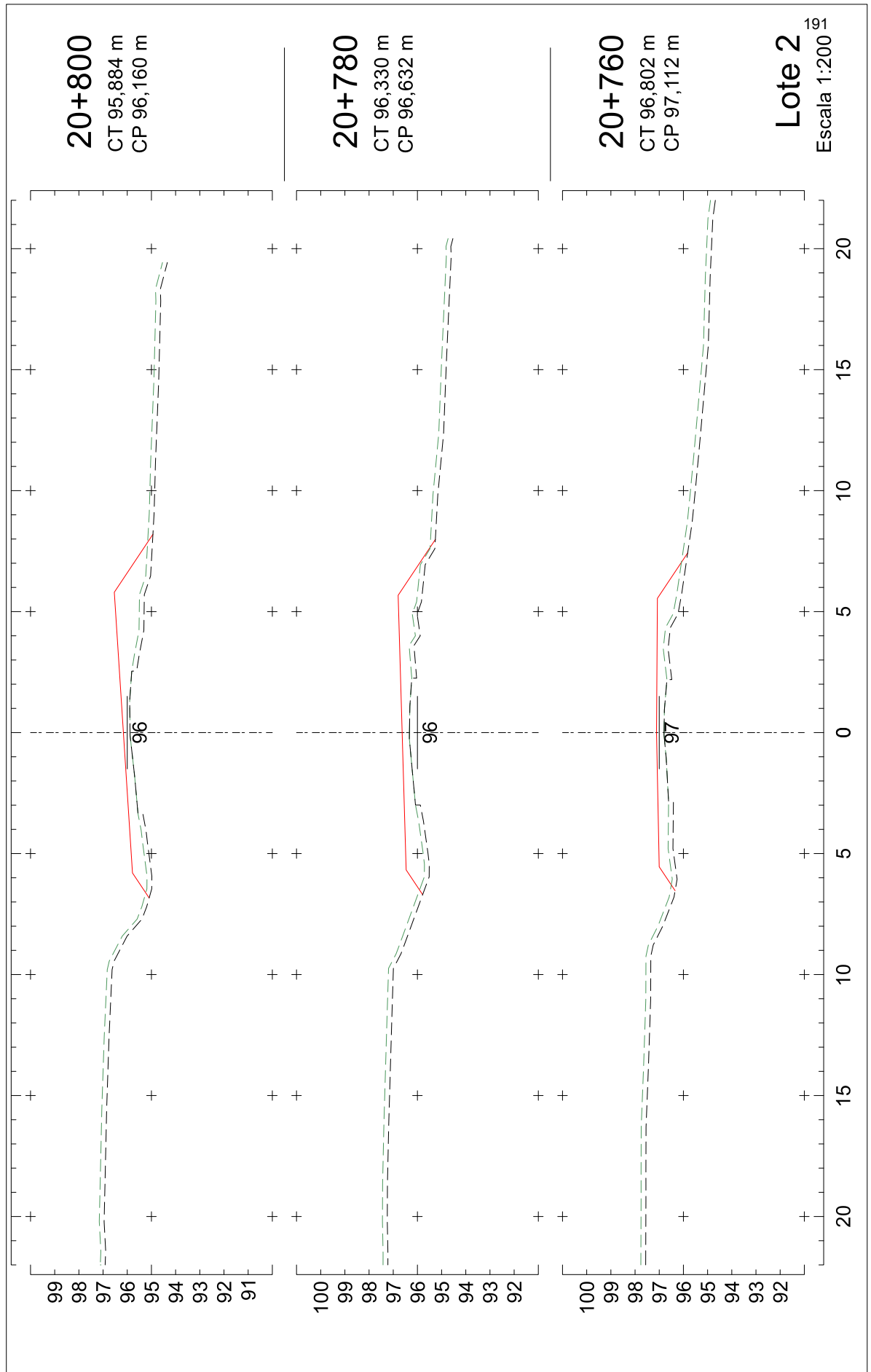


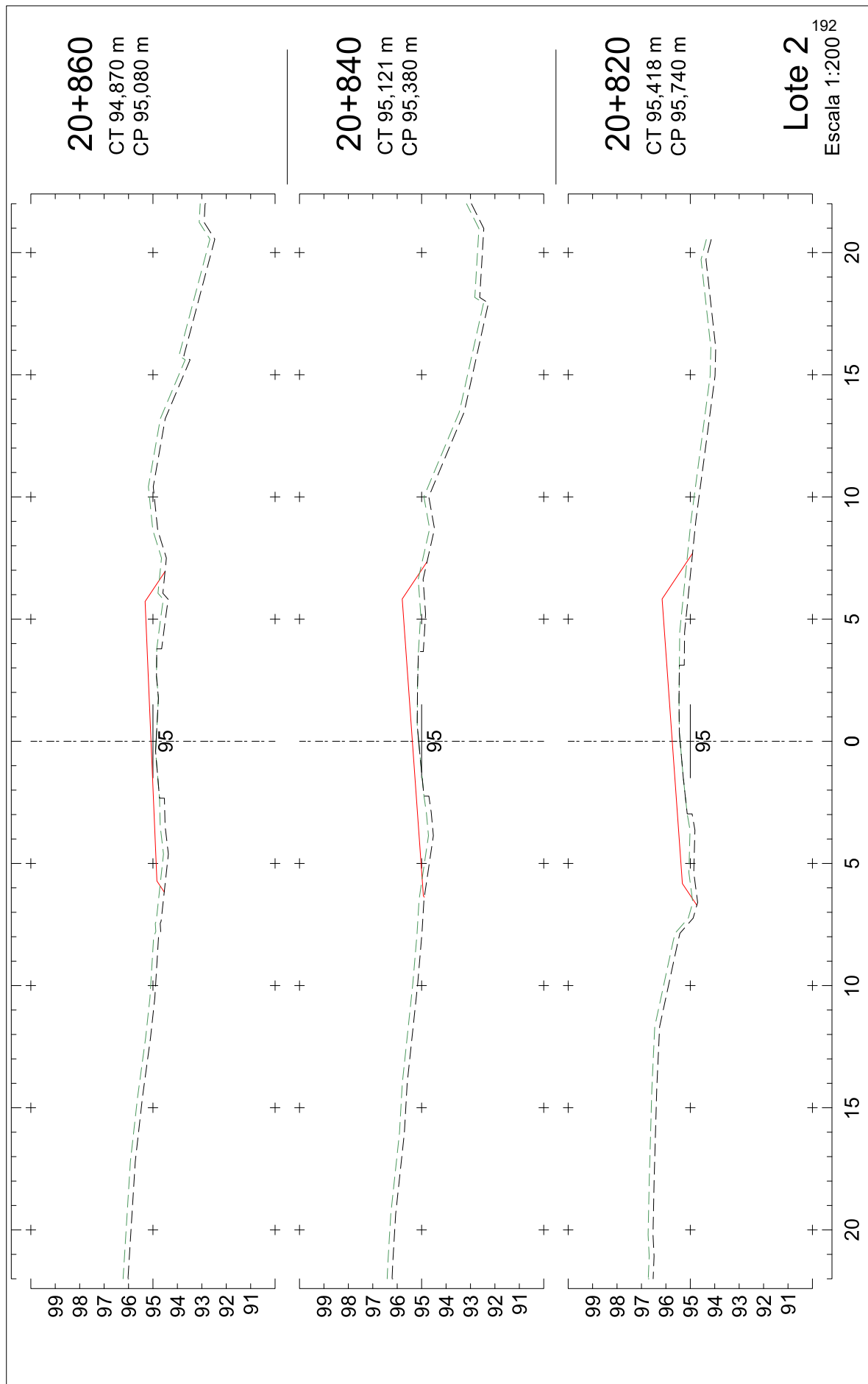


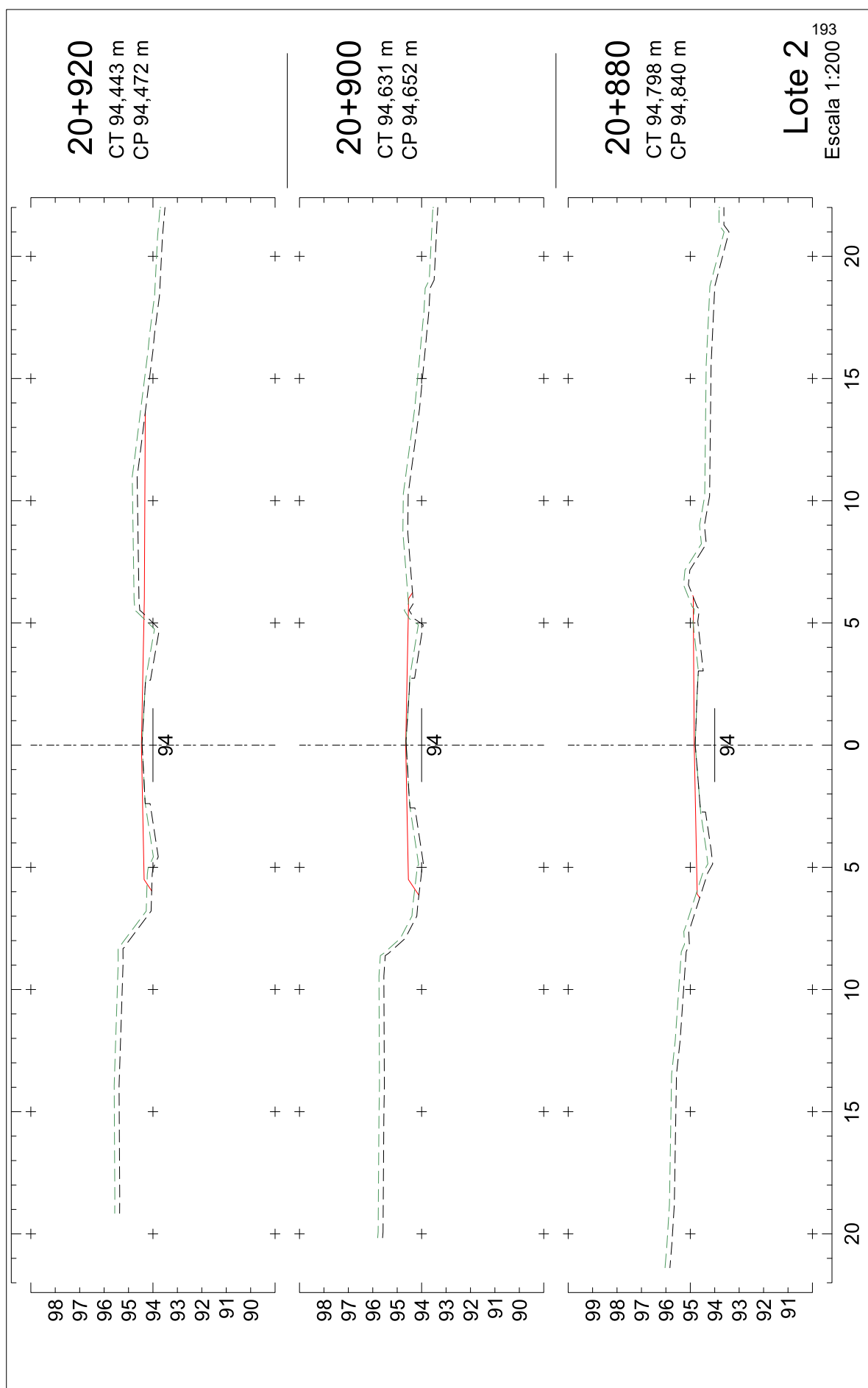


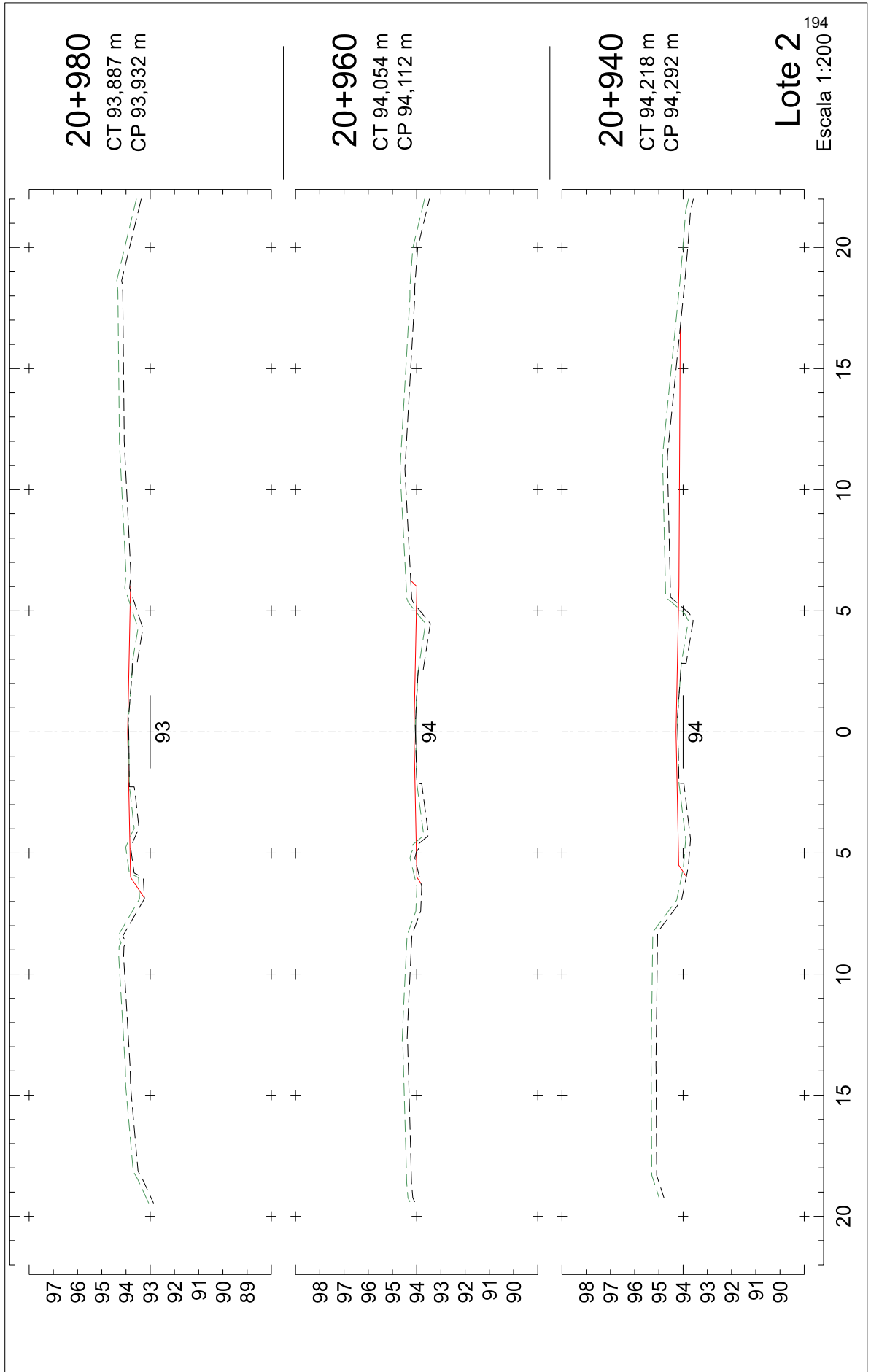


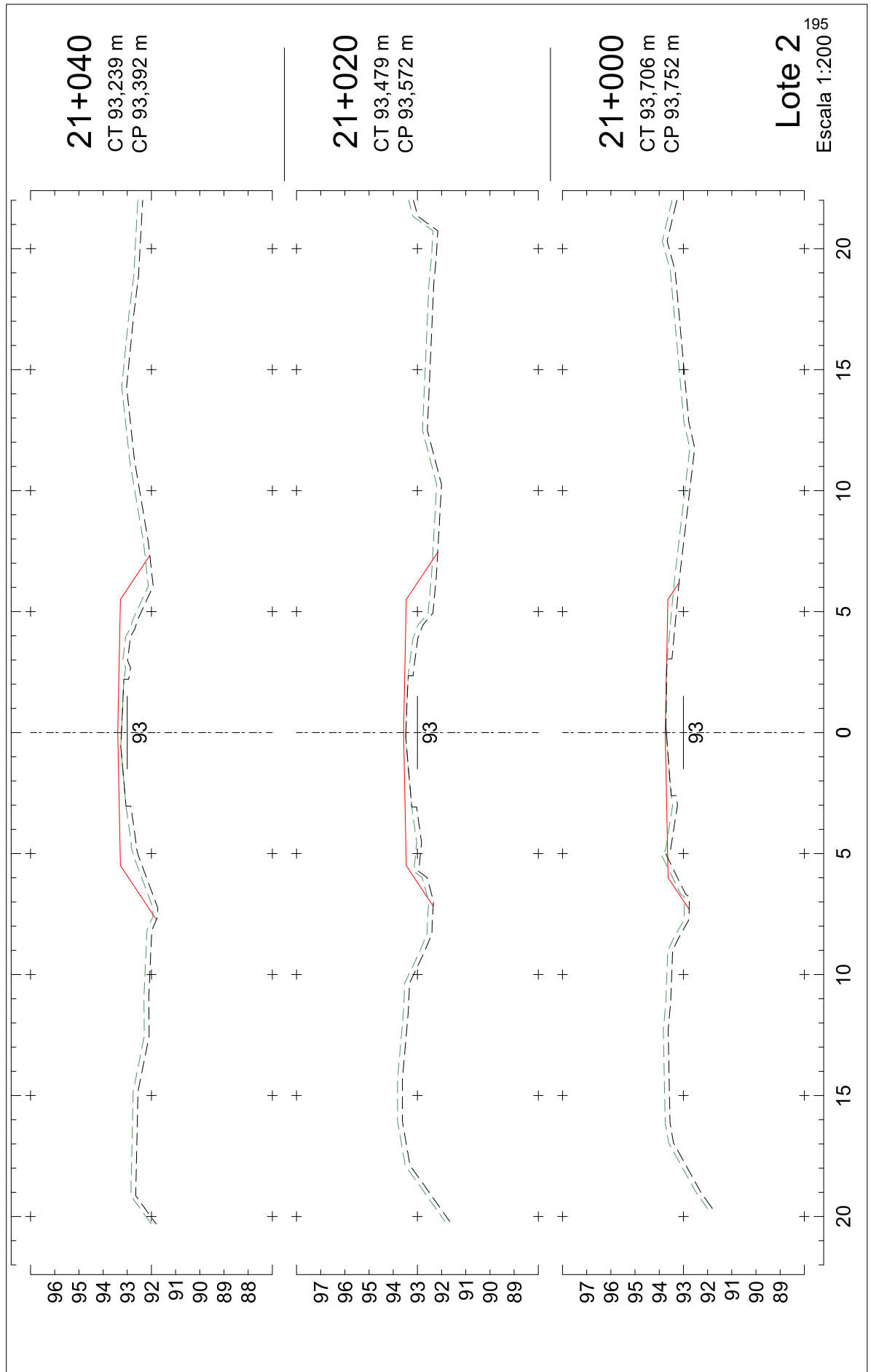


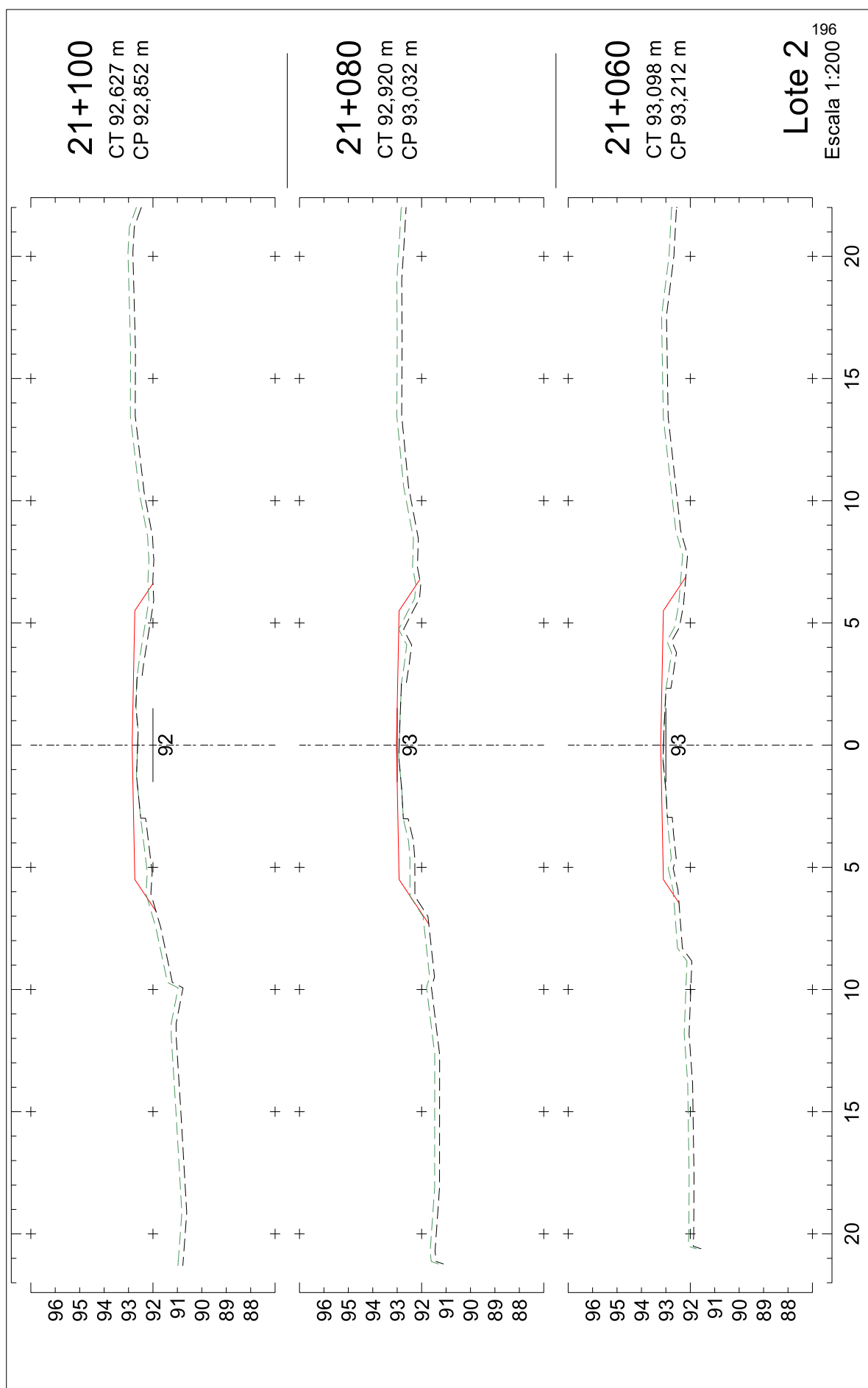


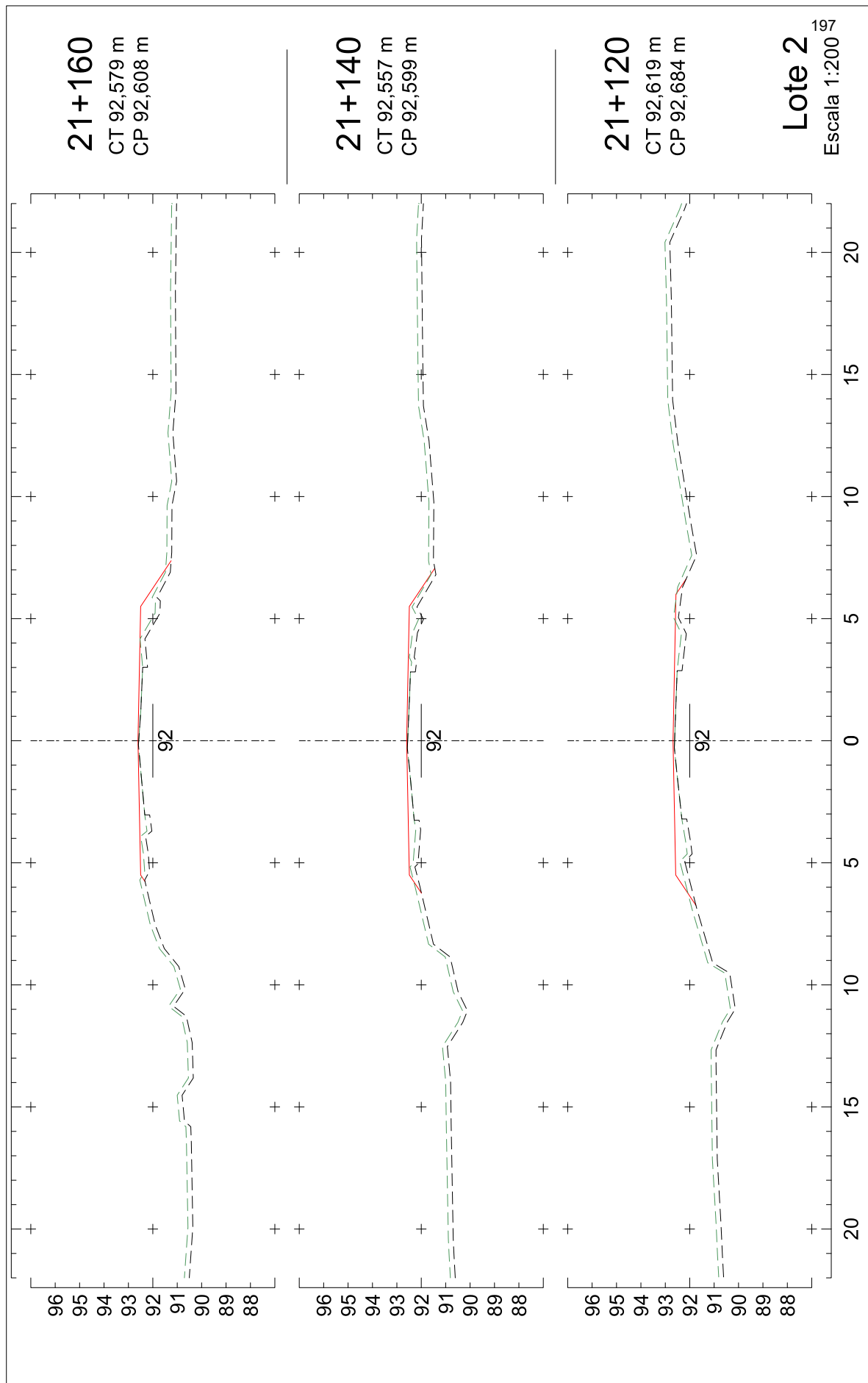


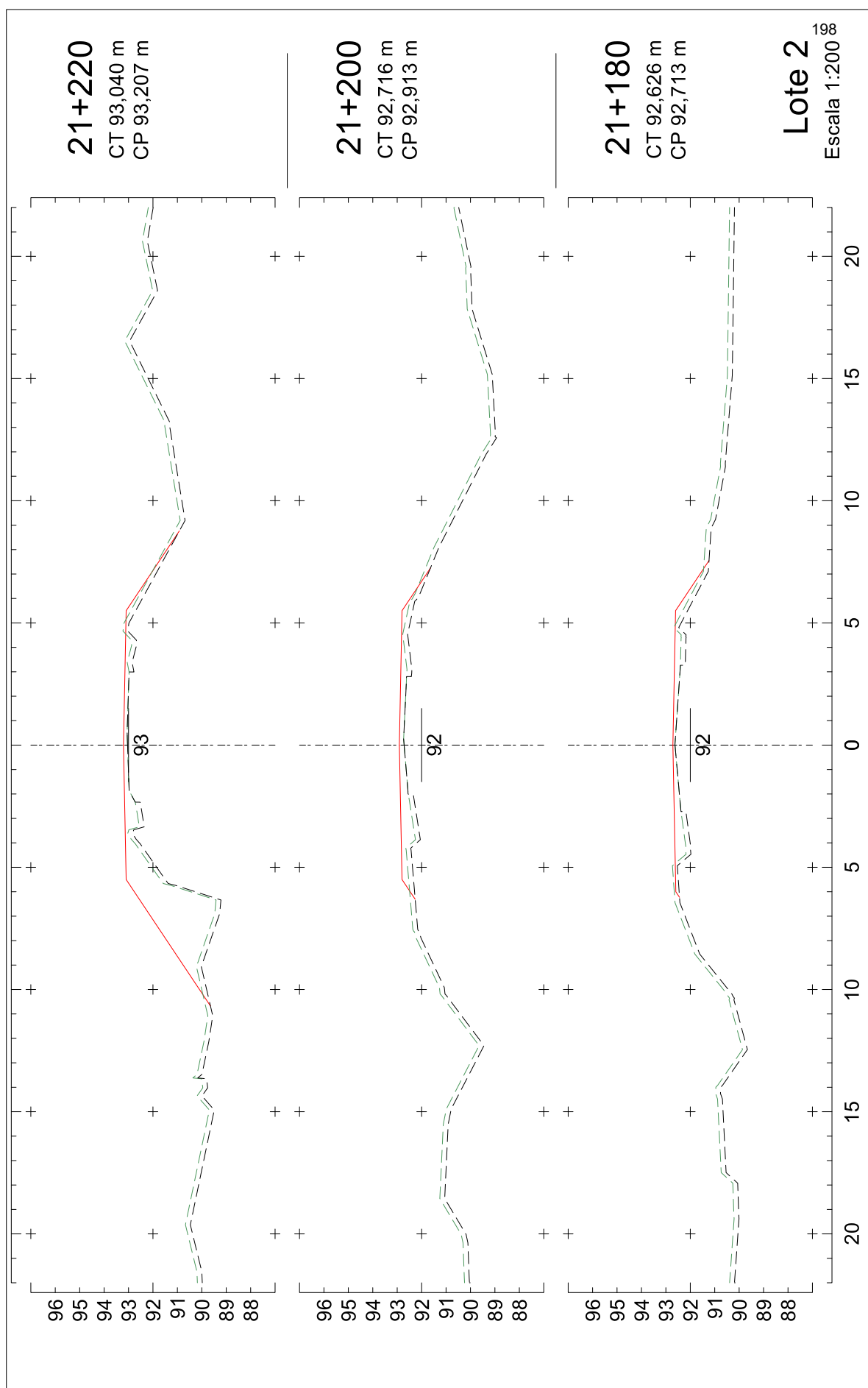


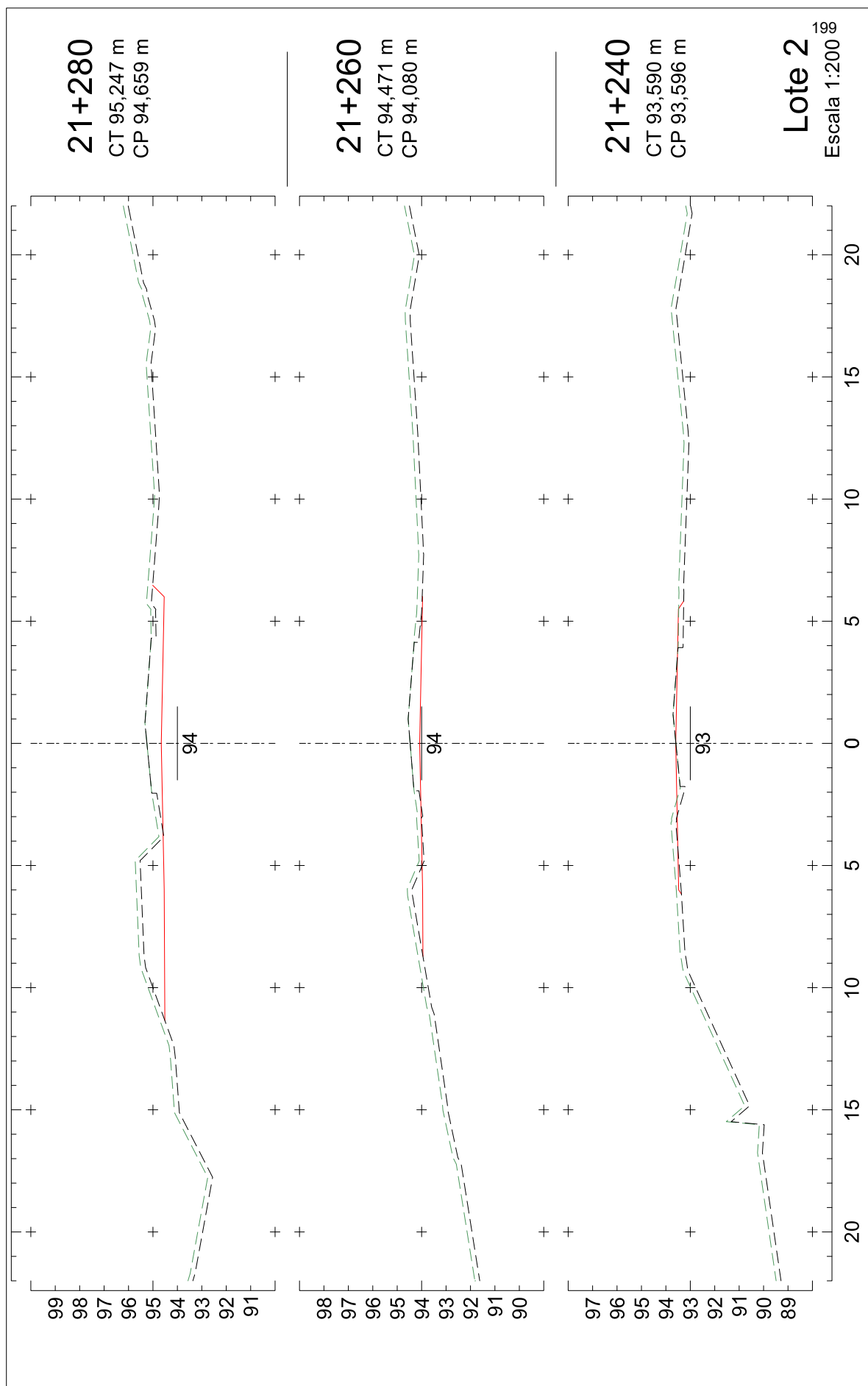


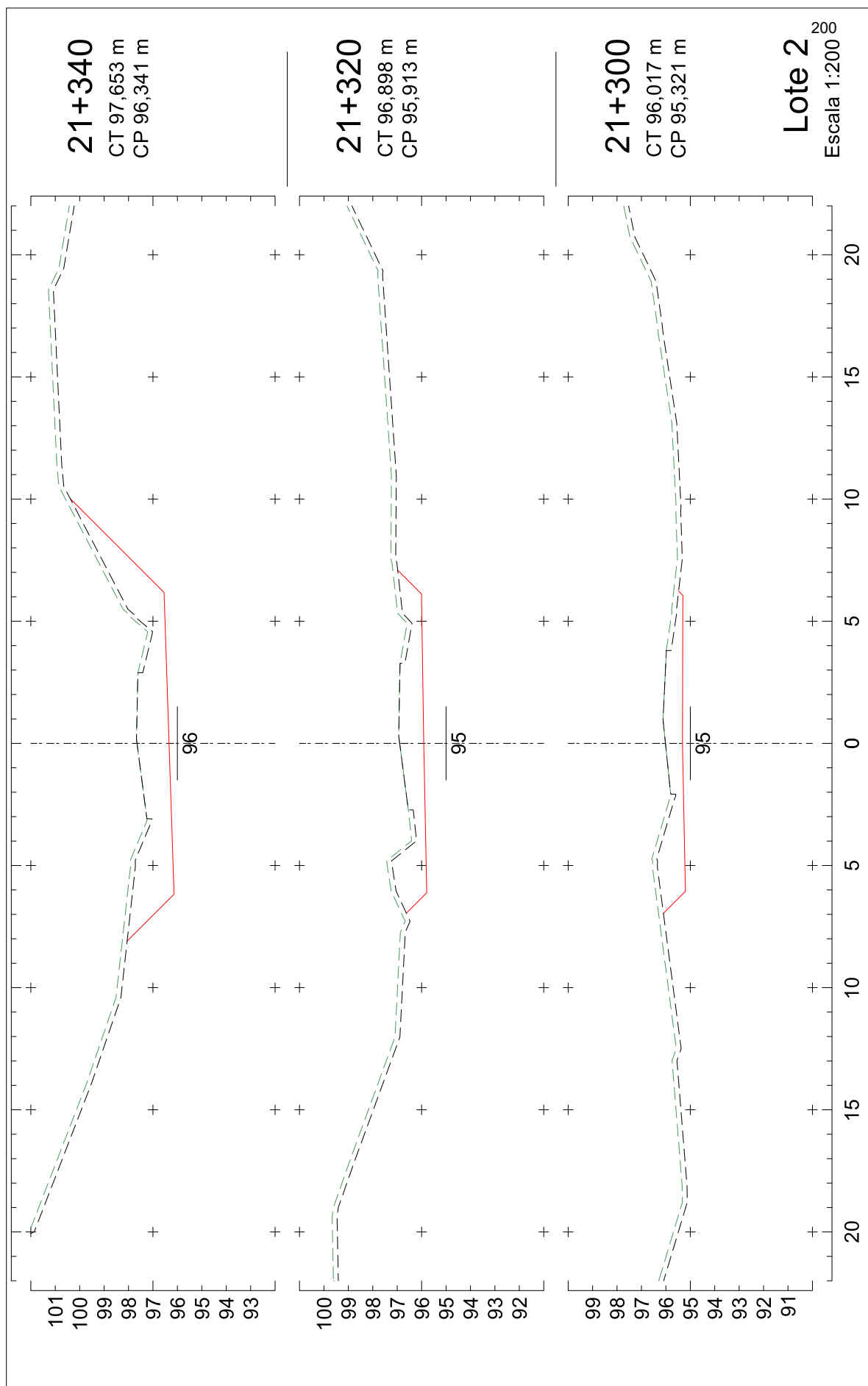


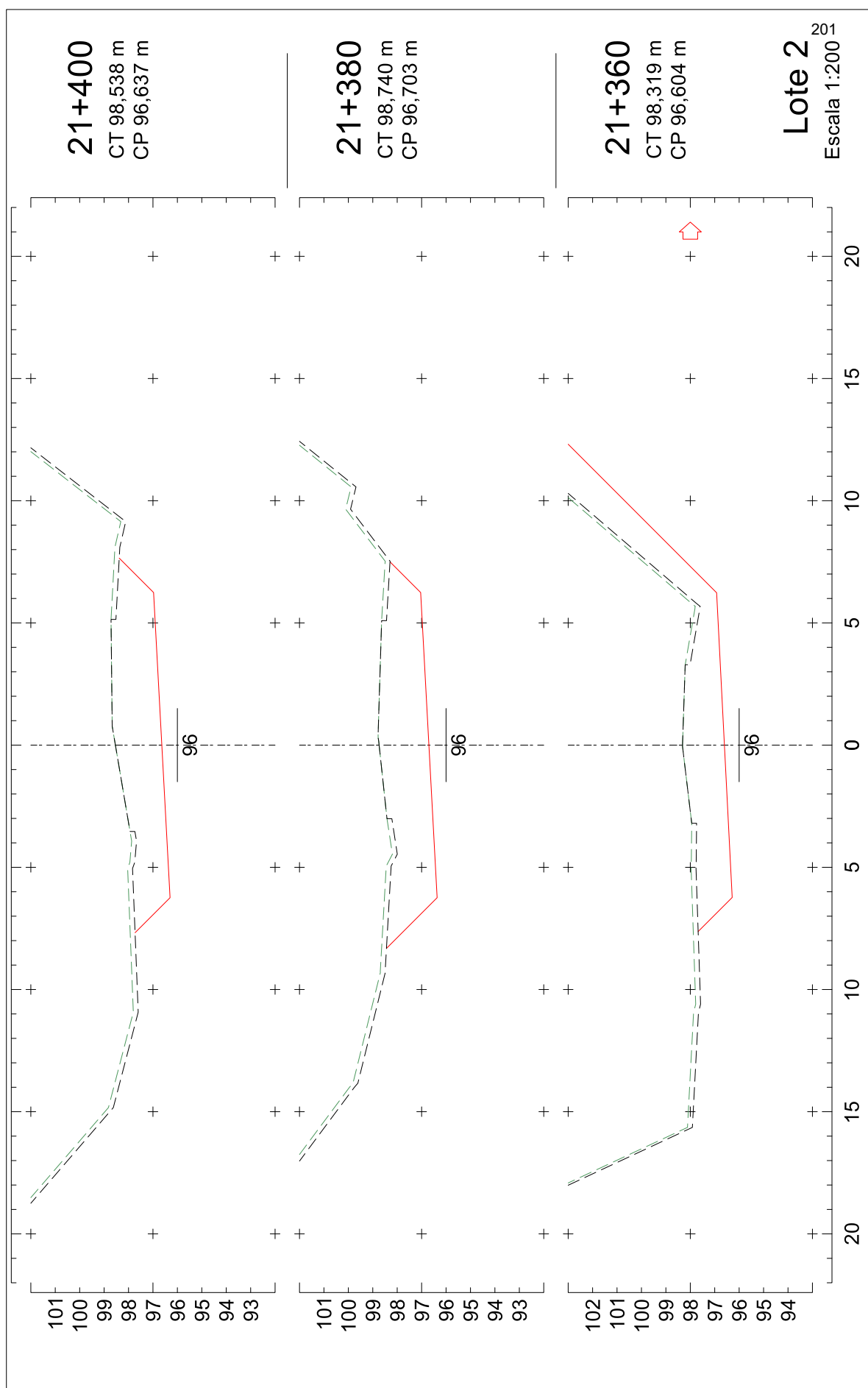


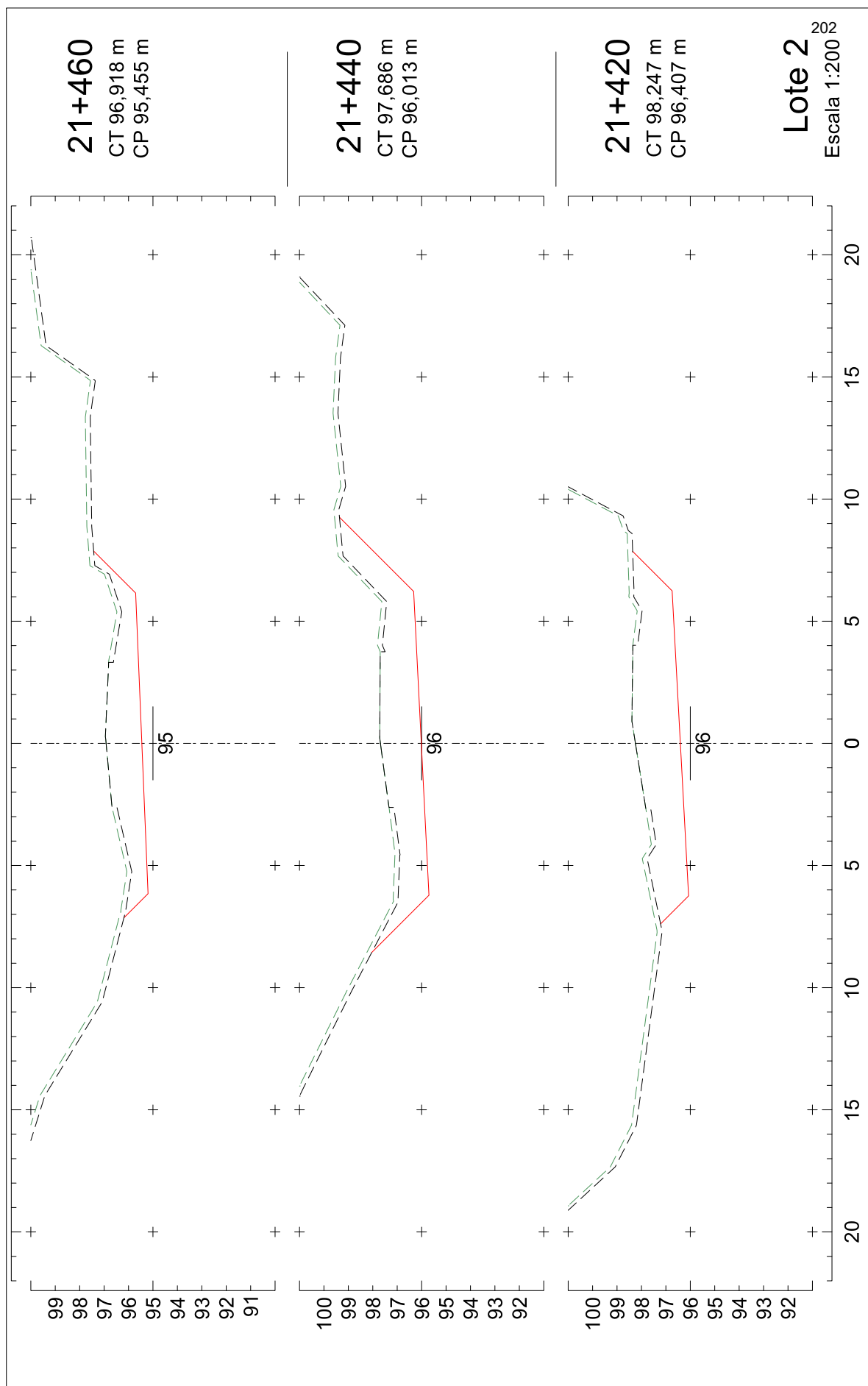


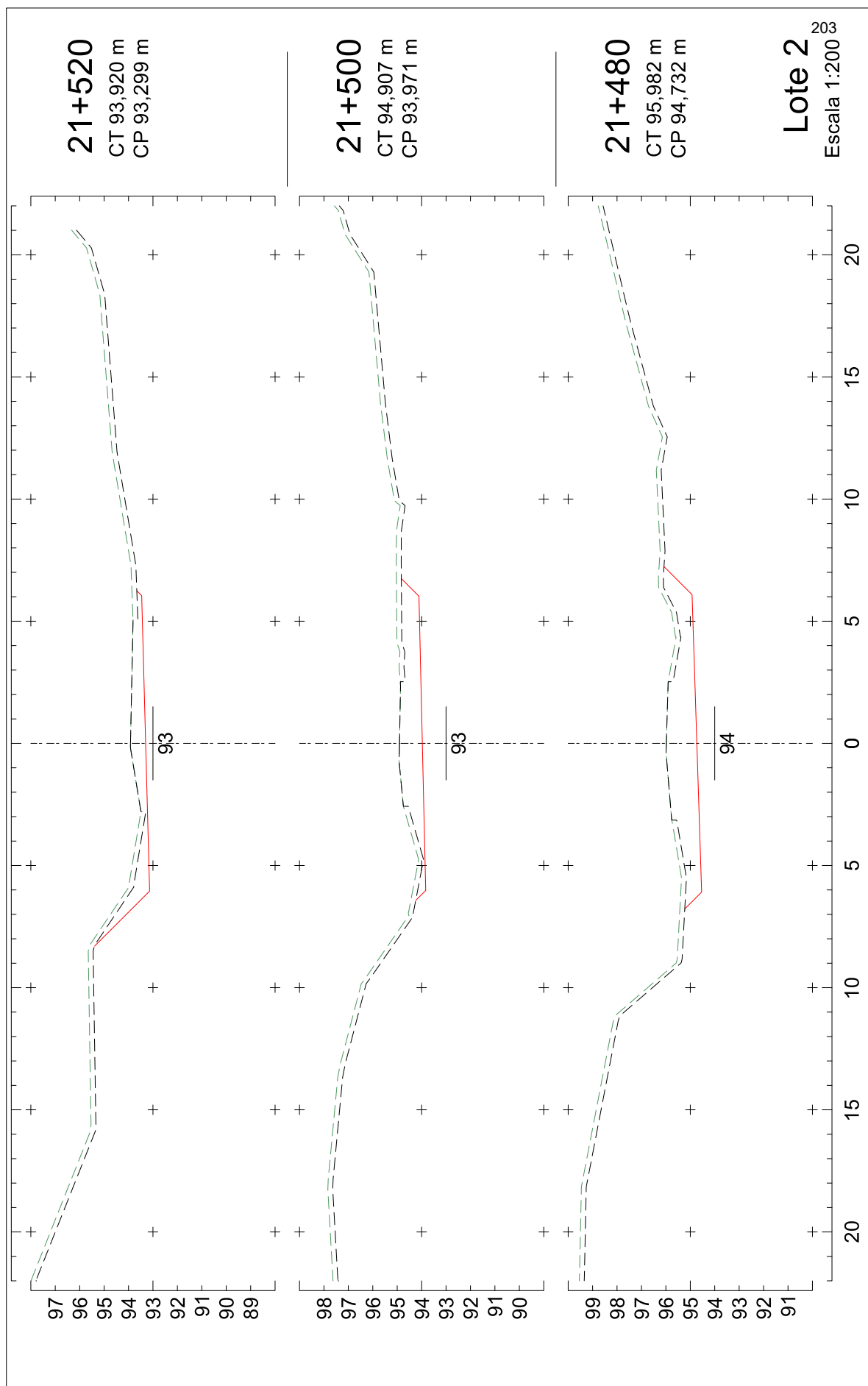


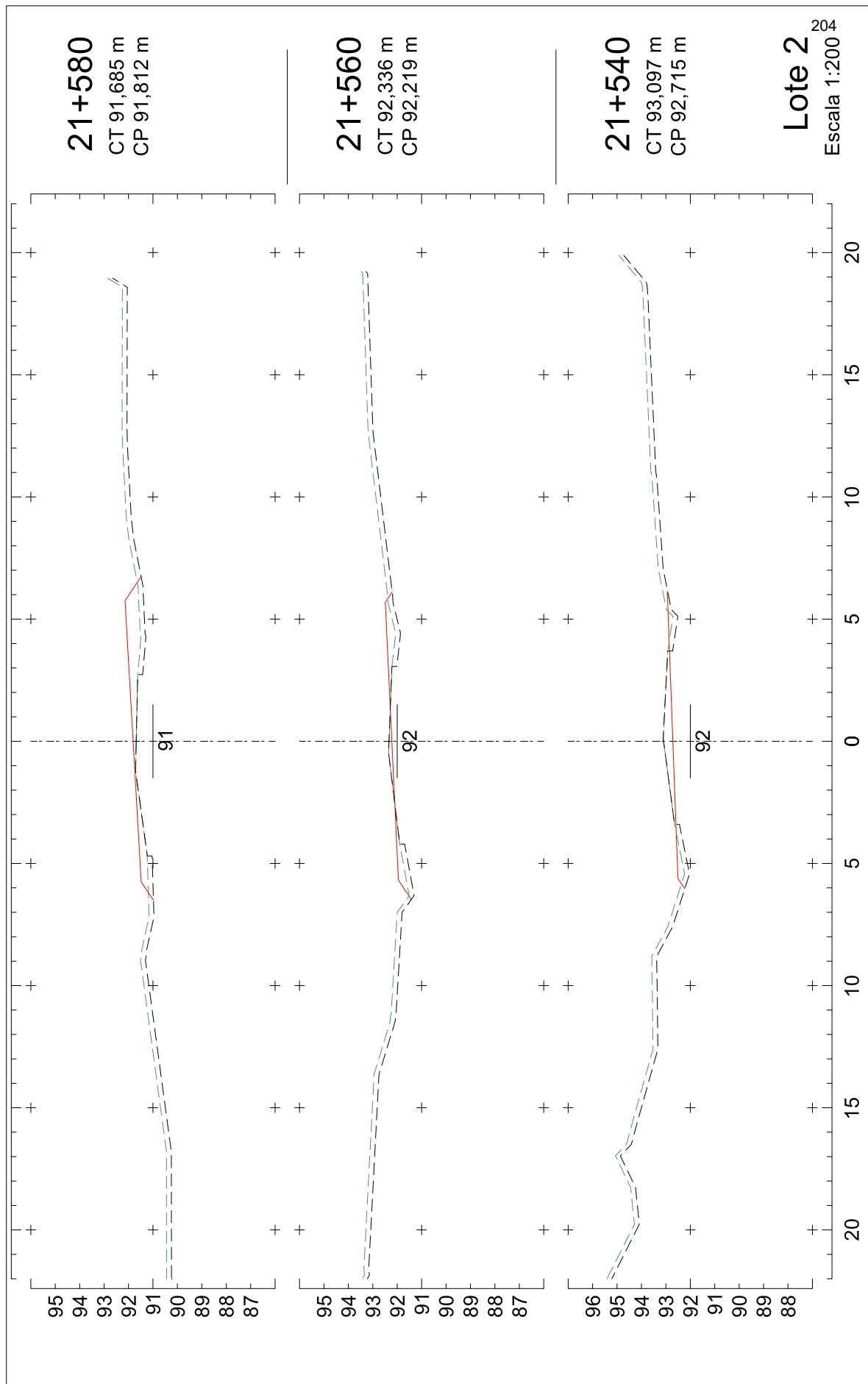


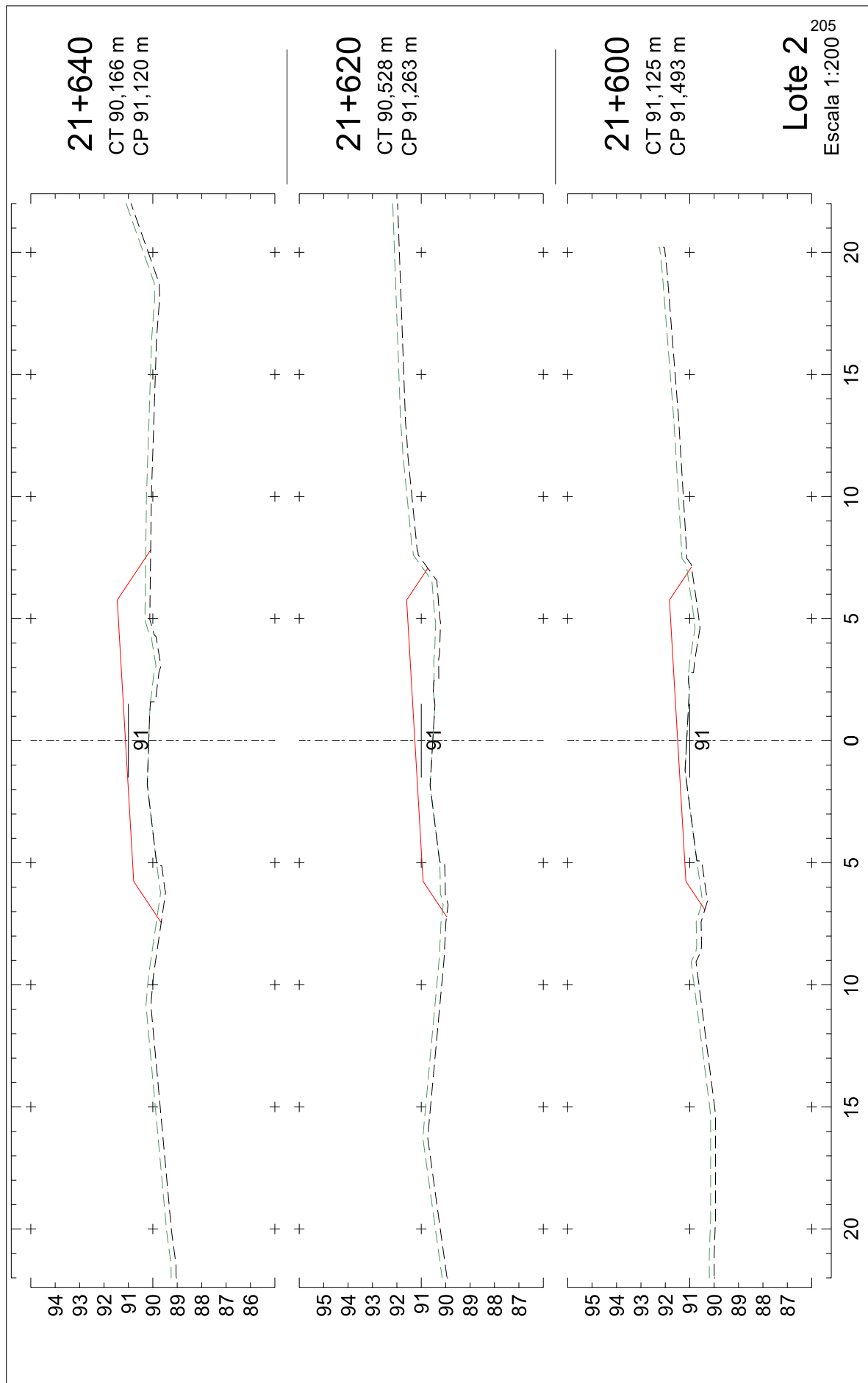


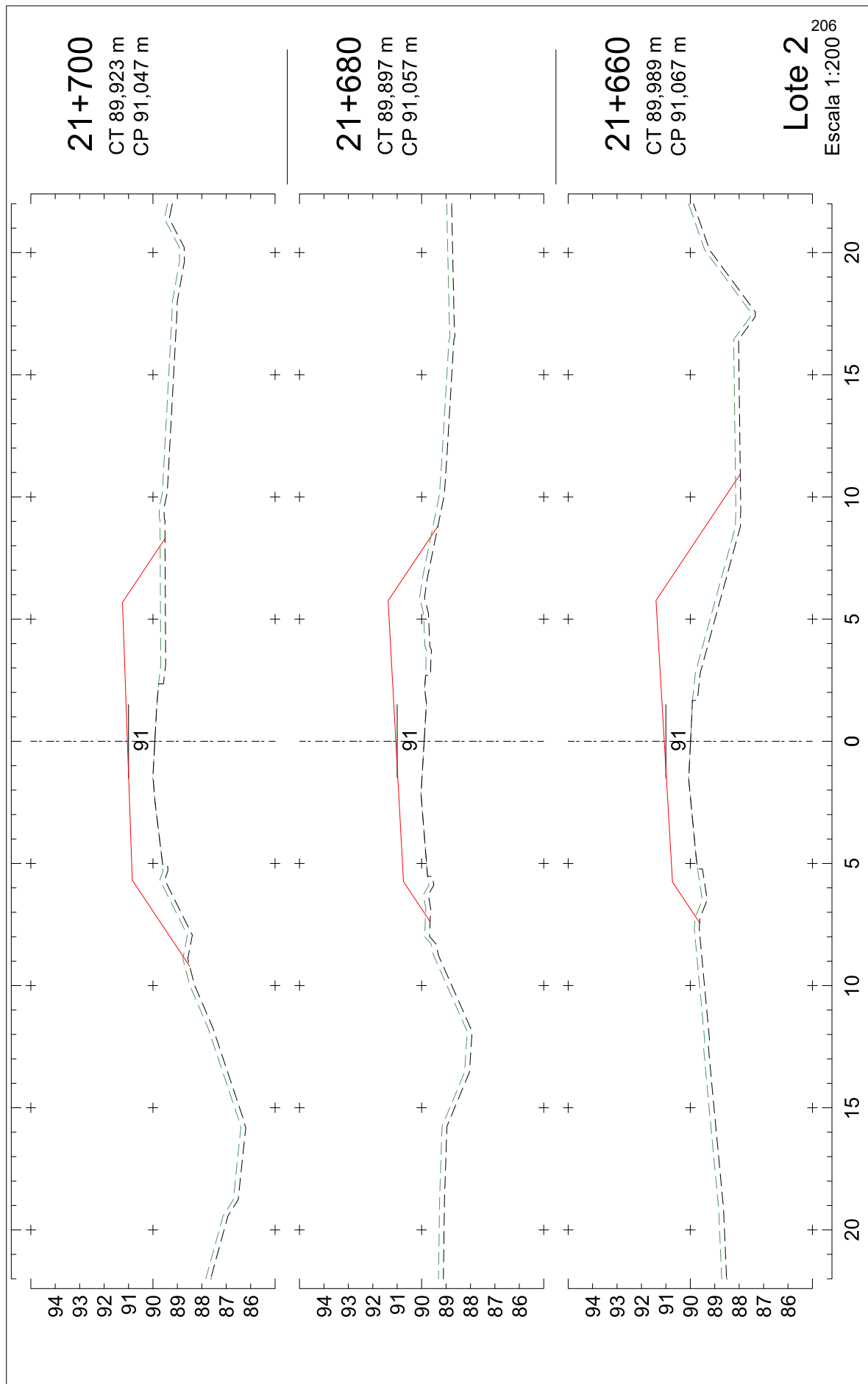


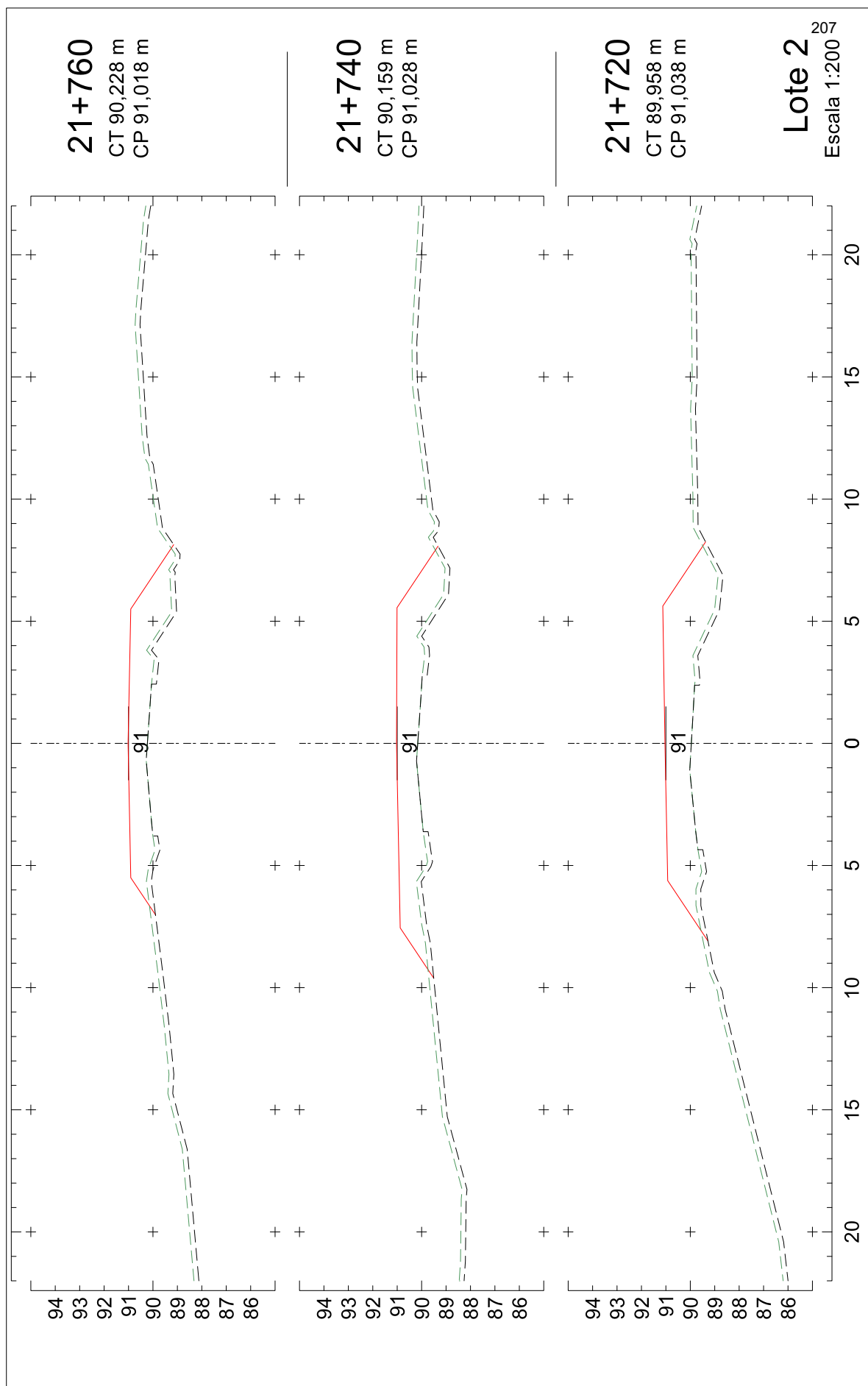


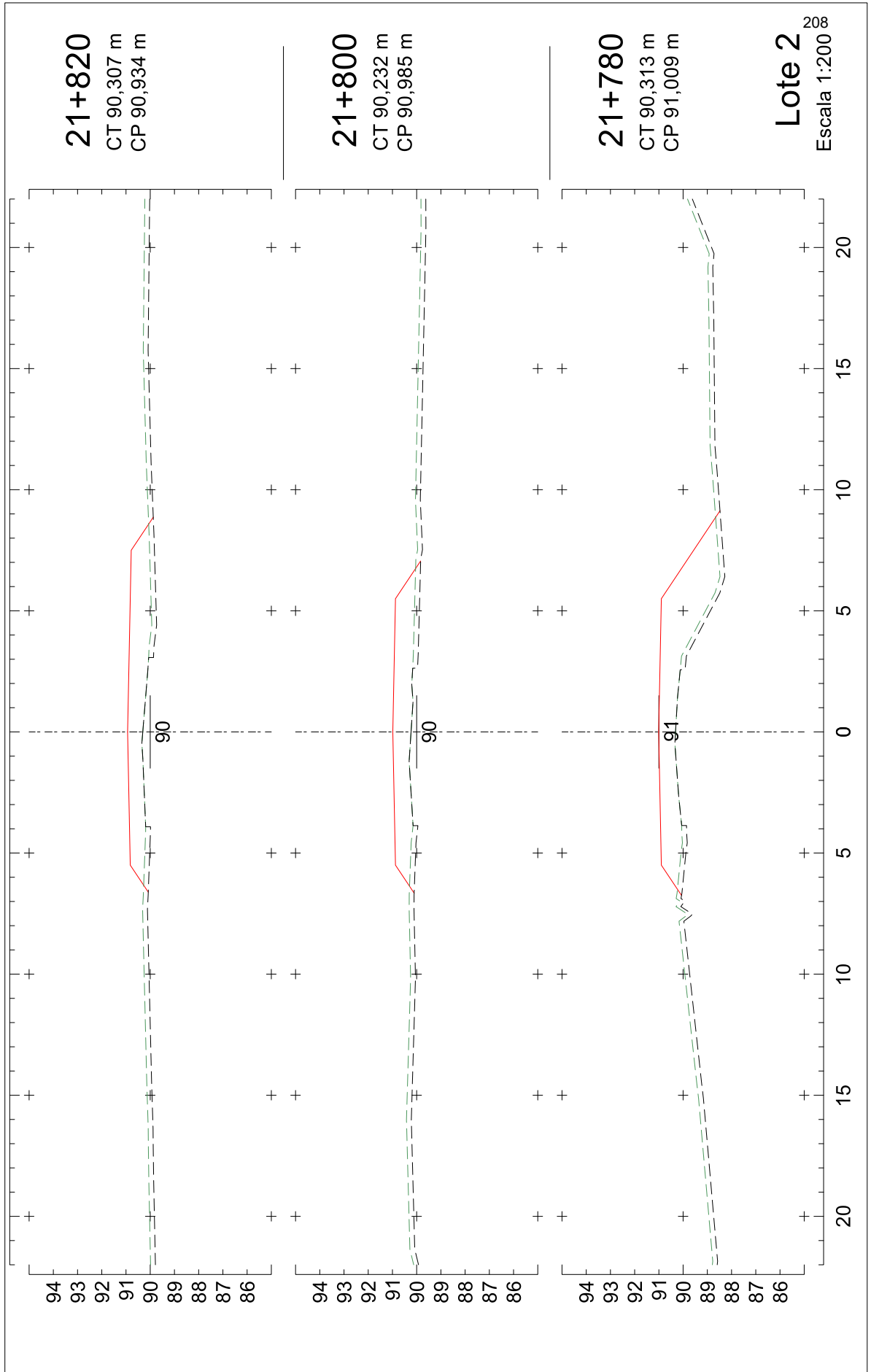


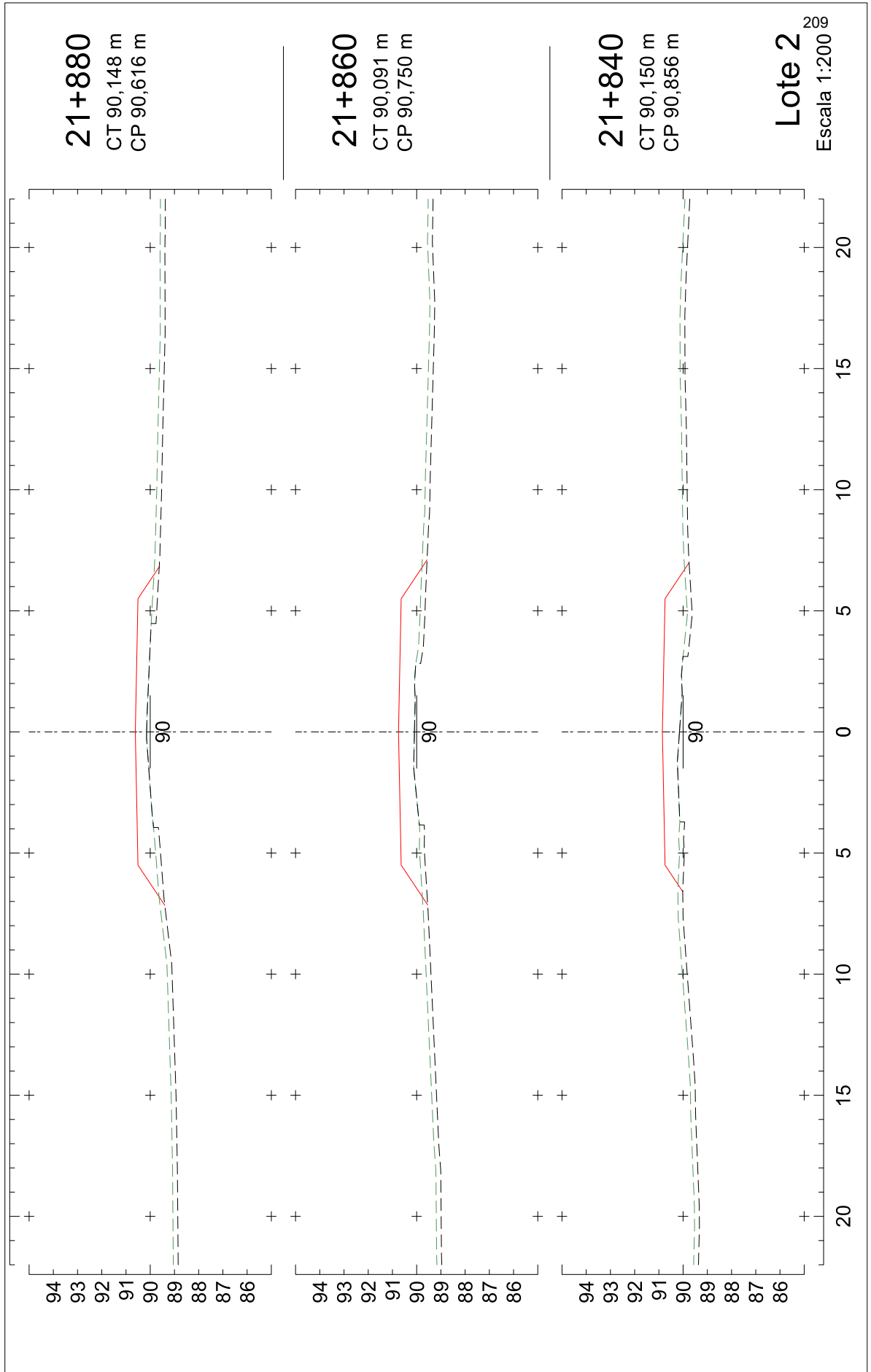




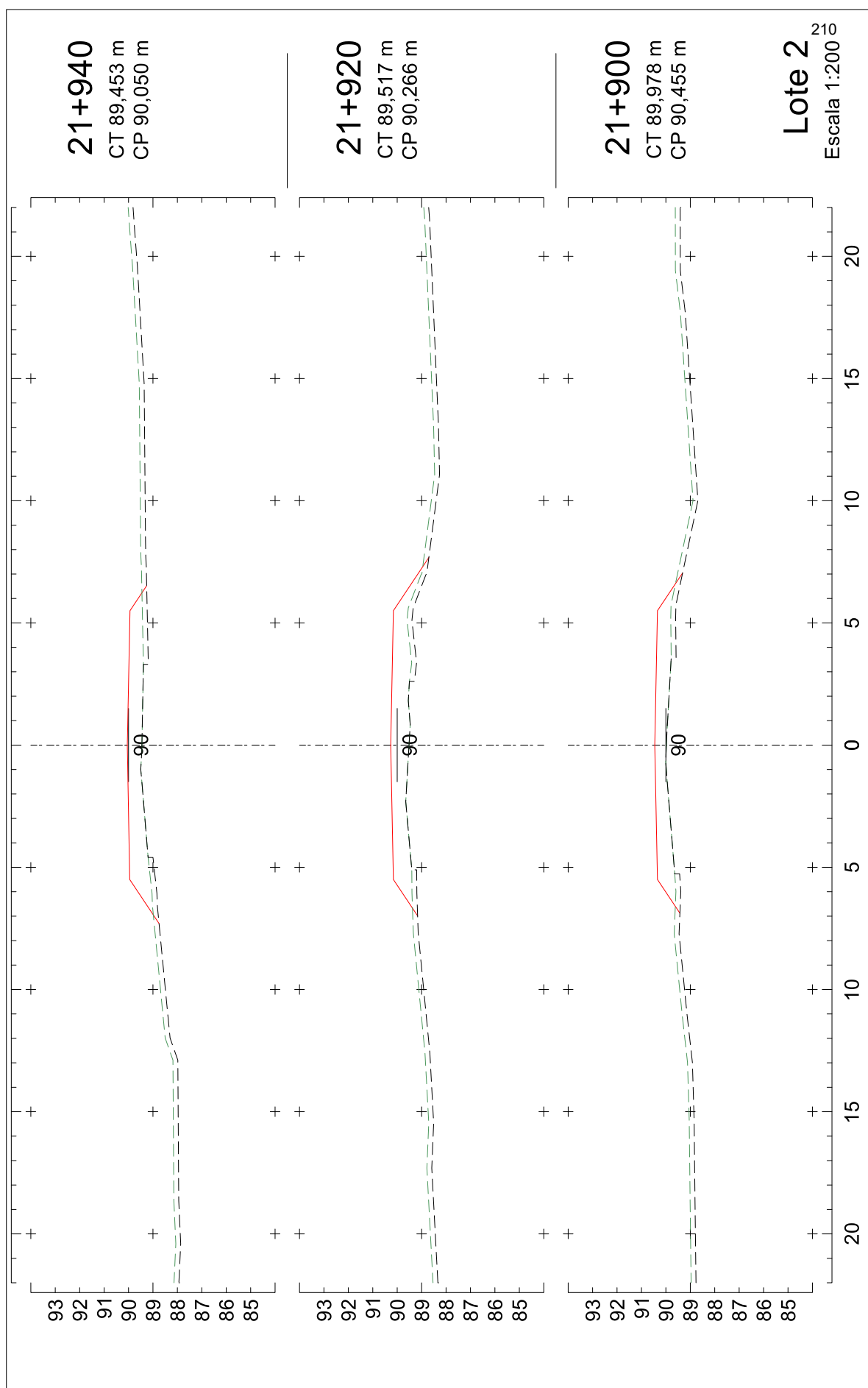


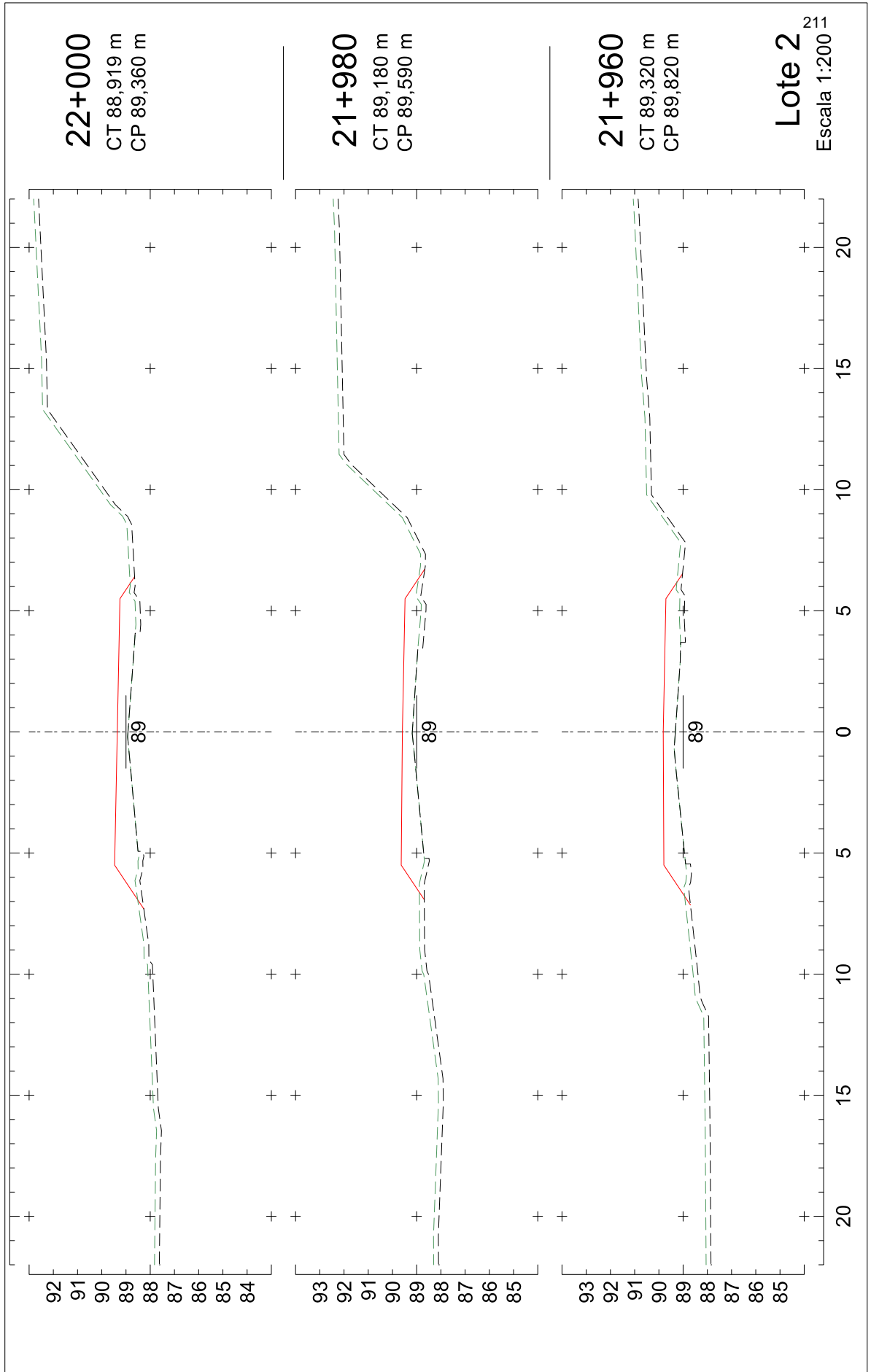


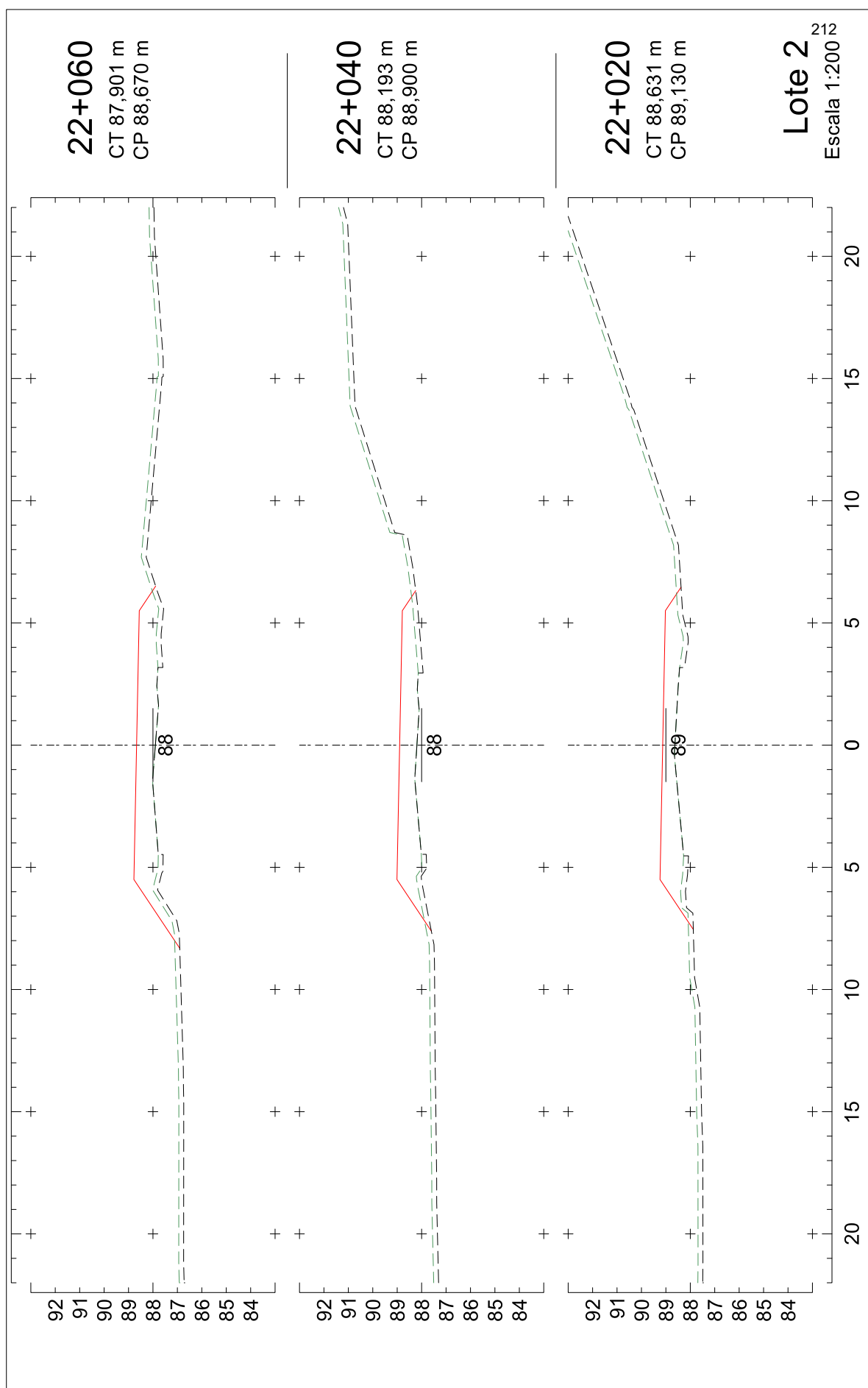


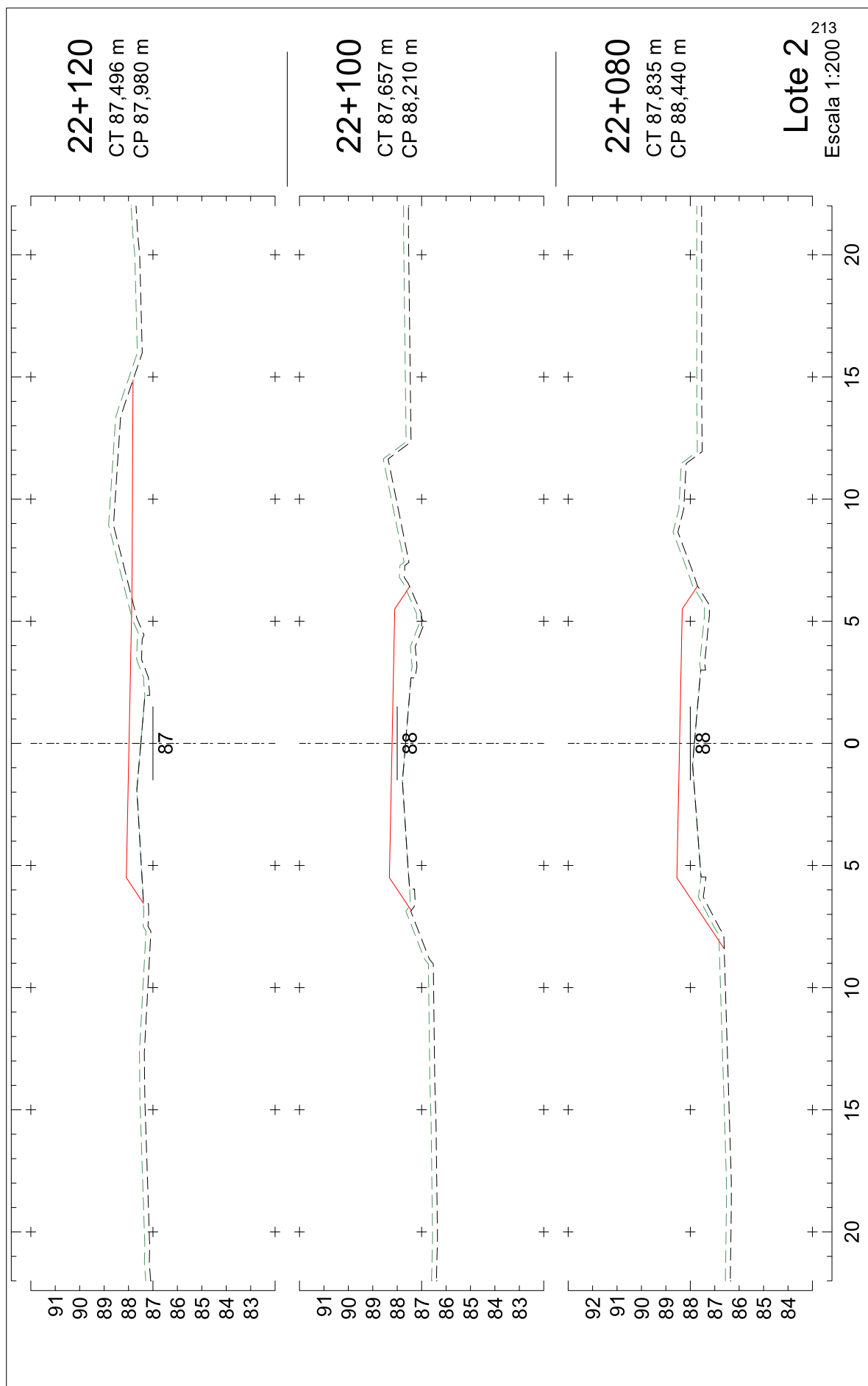


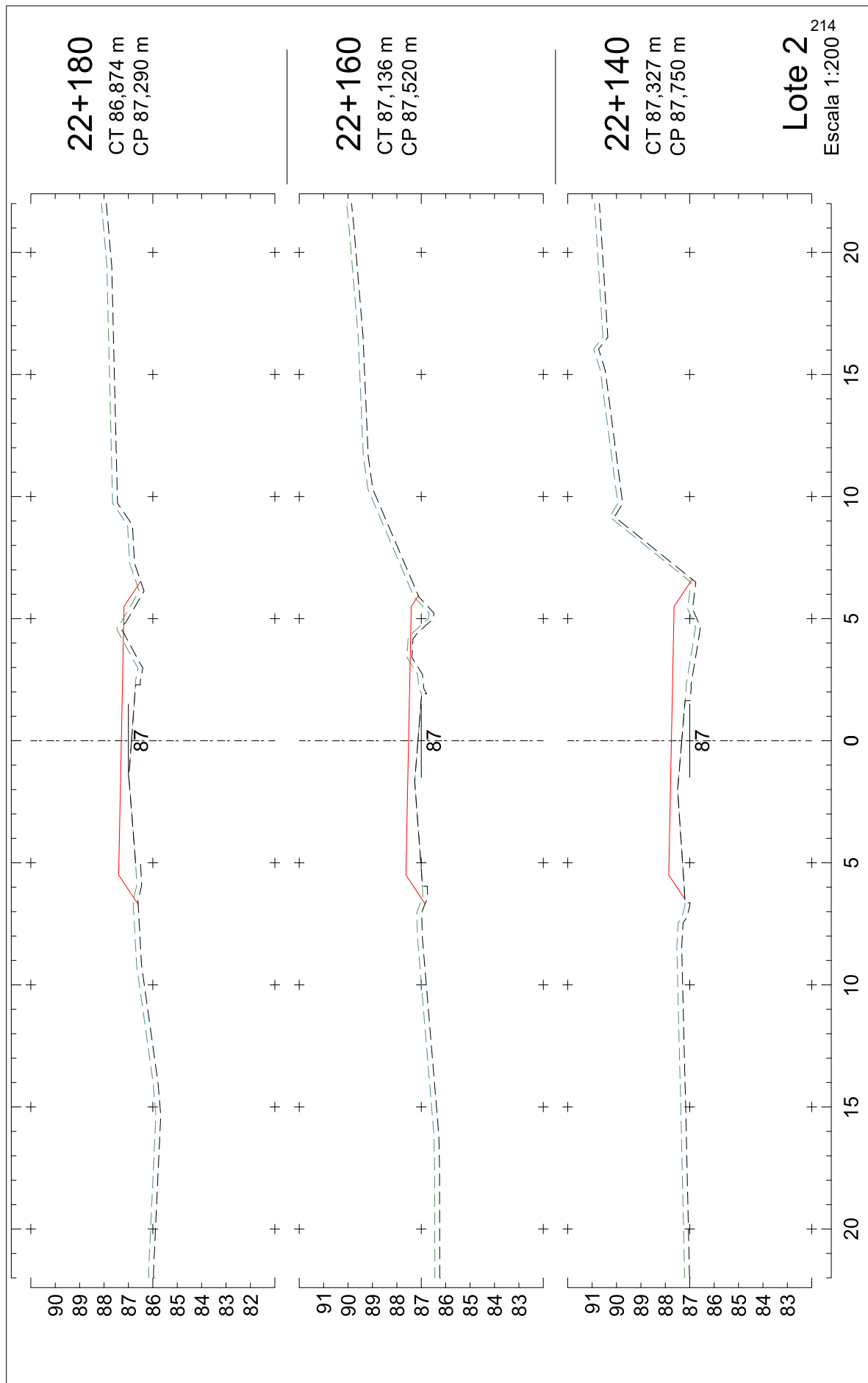
Lote 2²⁰⁹
Escala 1:200

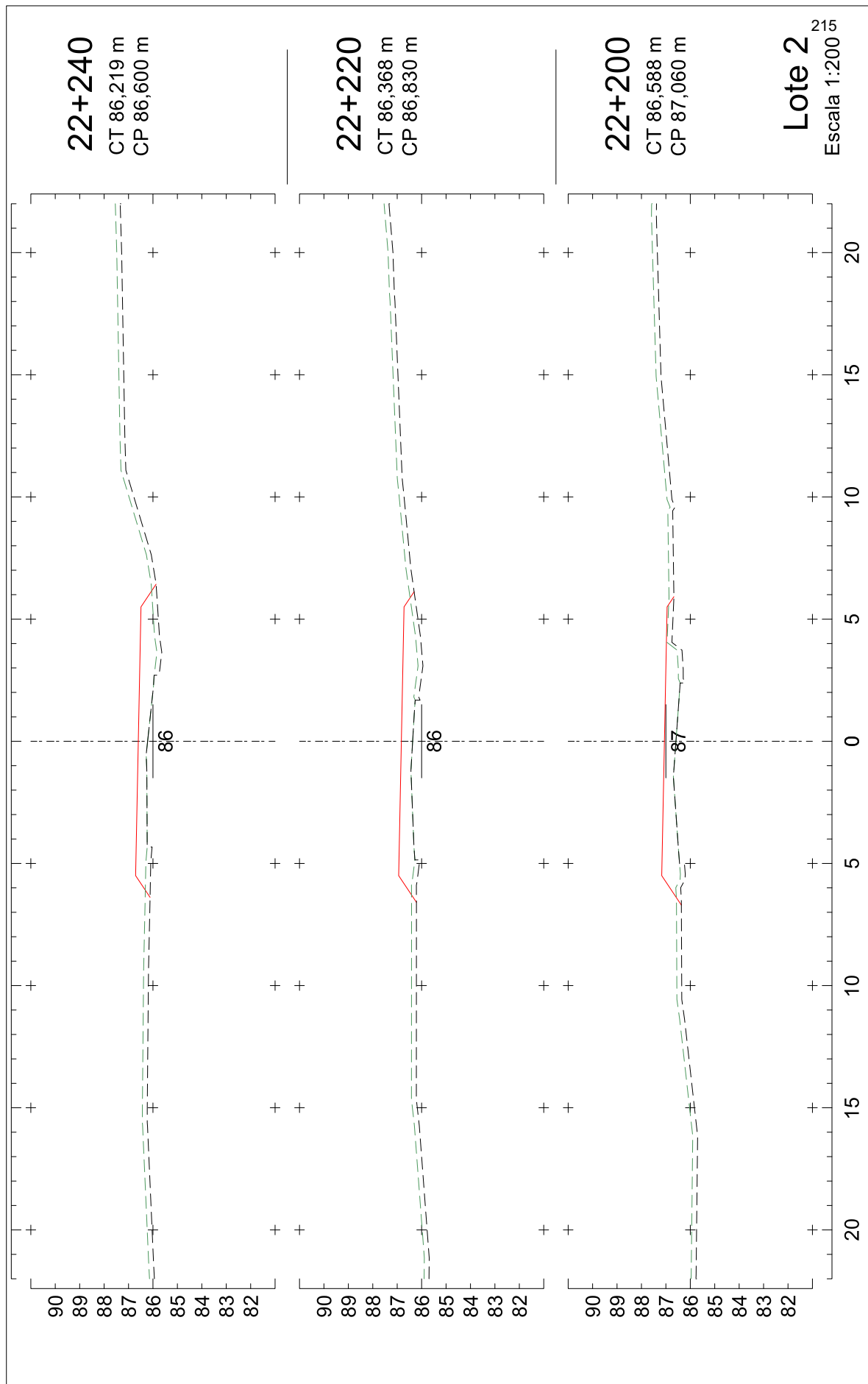


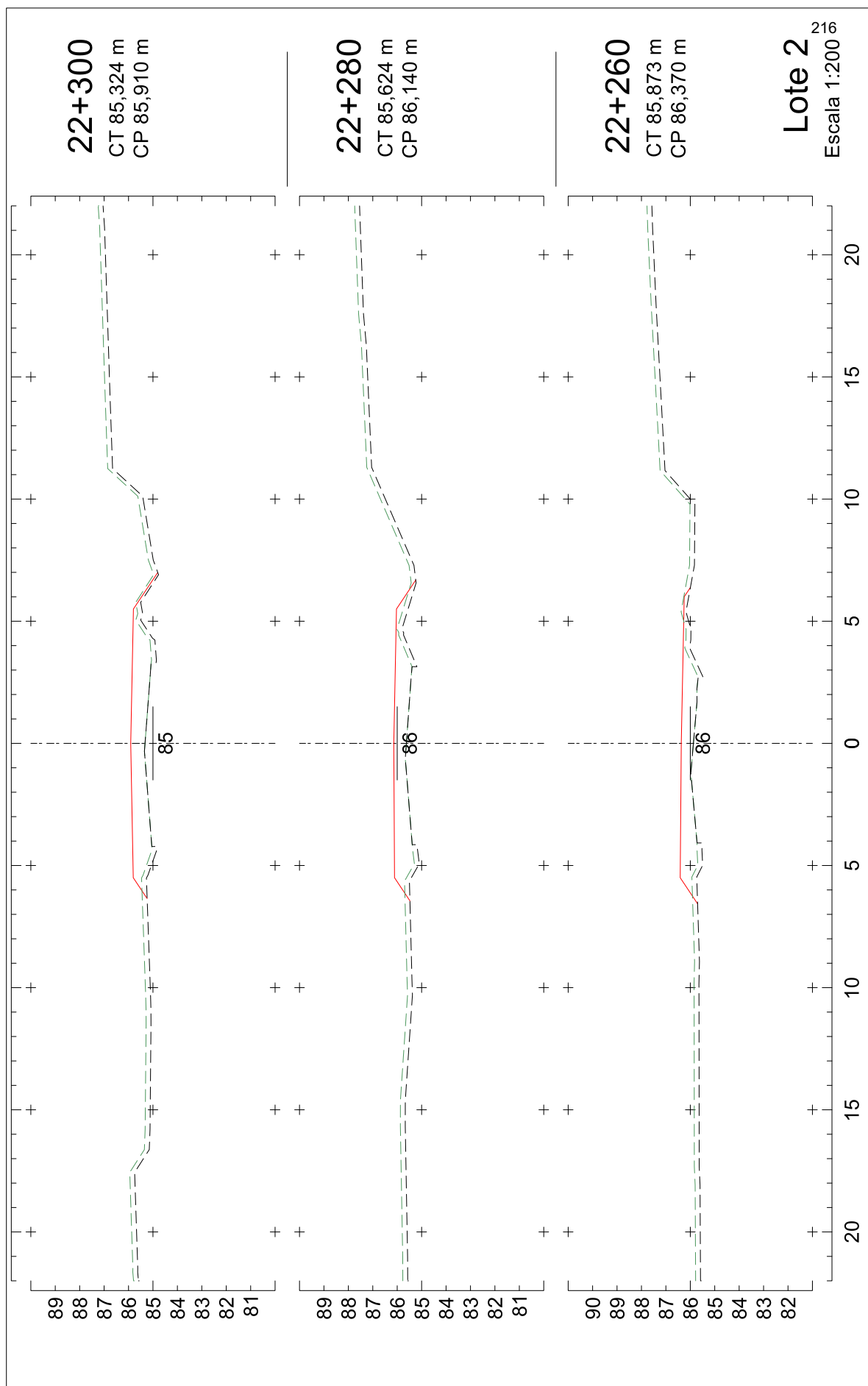


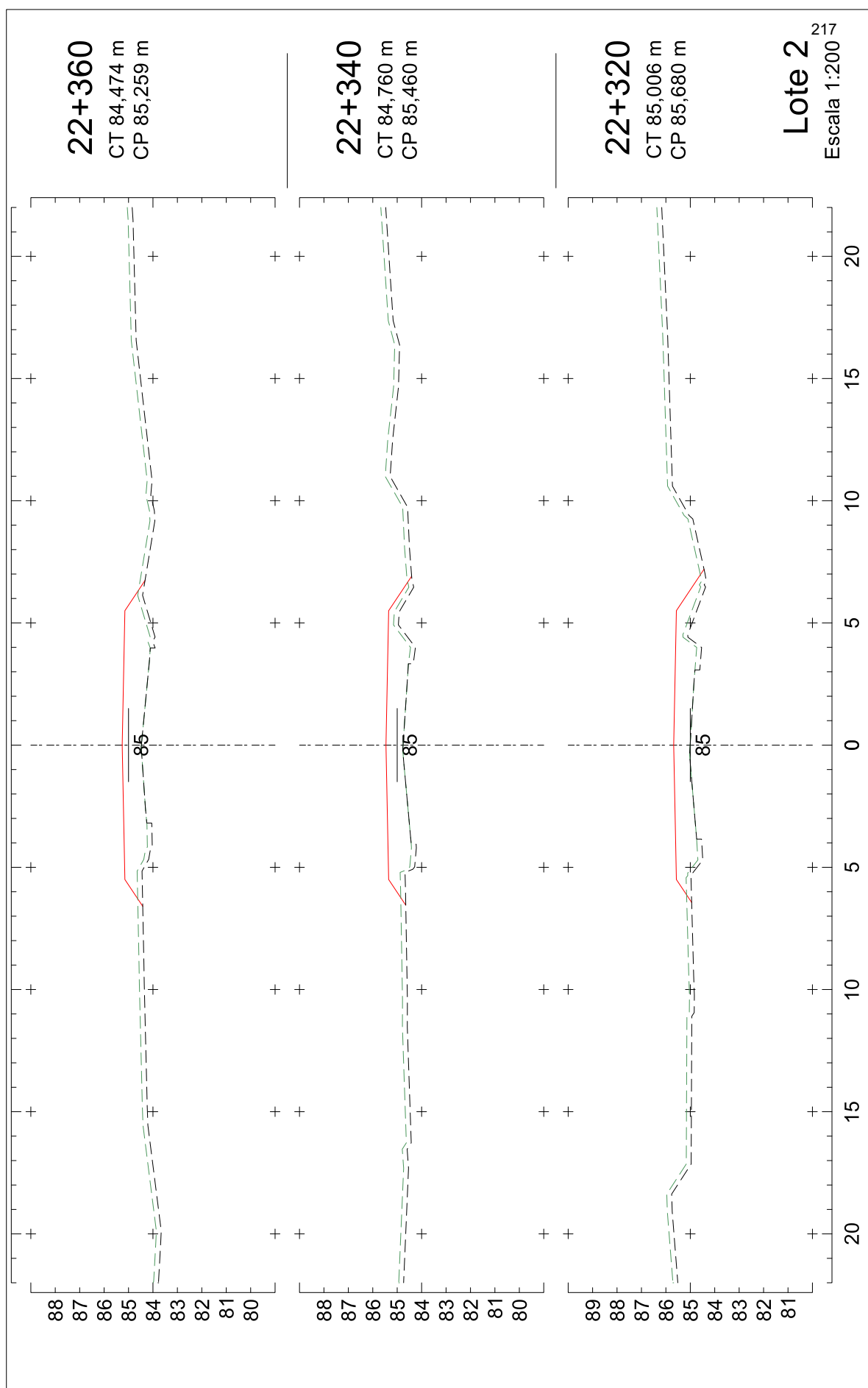


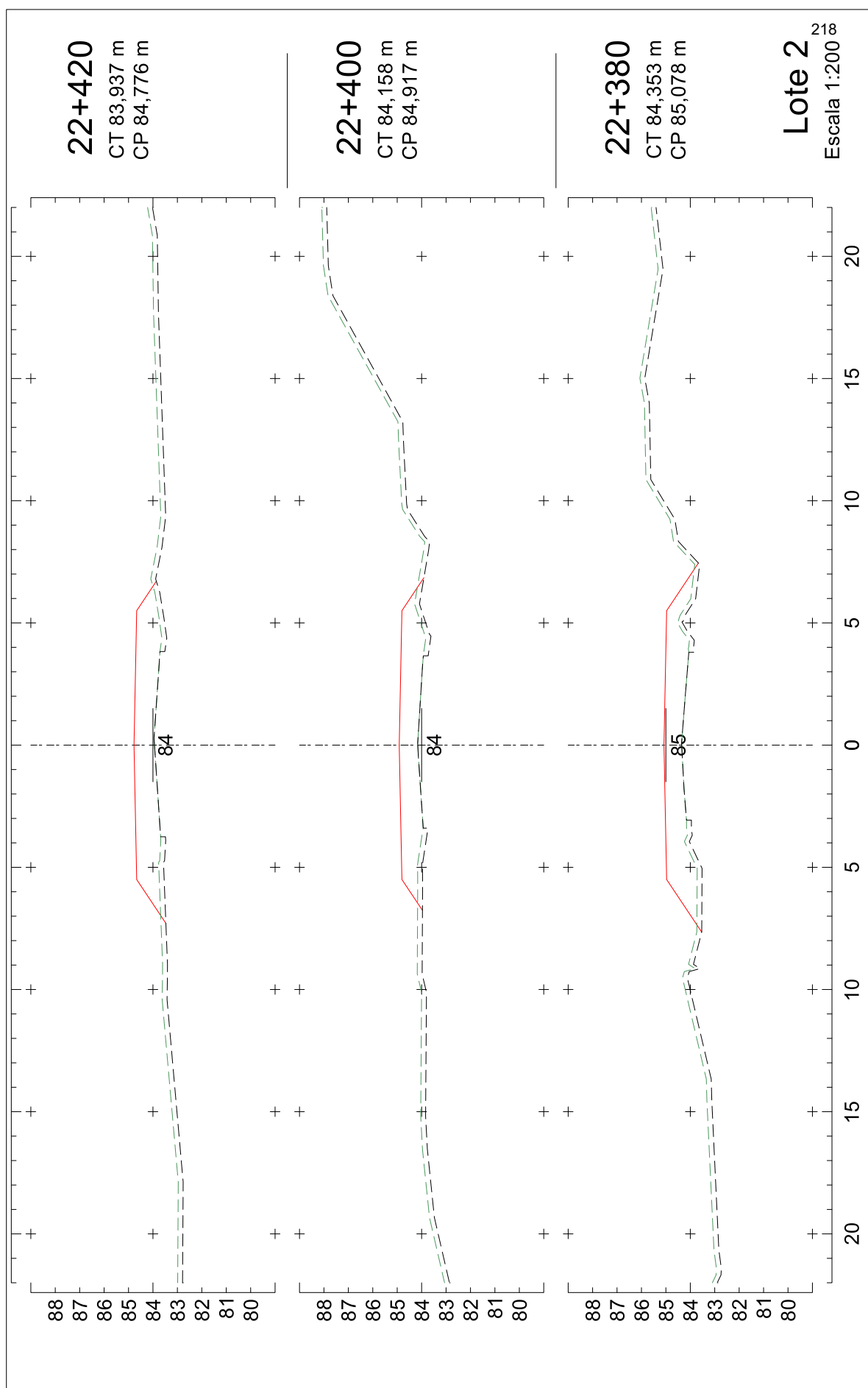


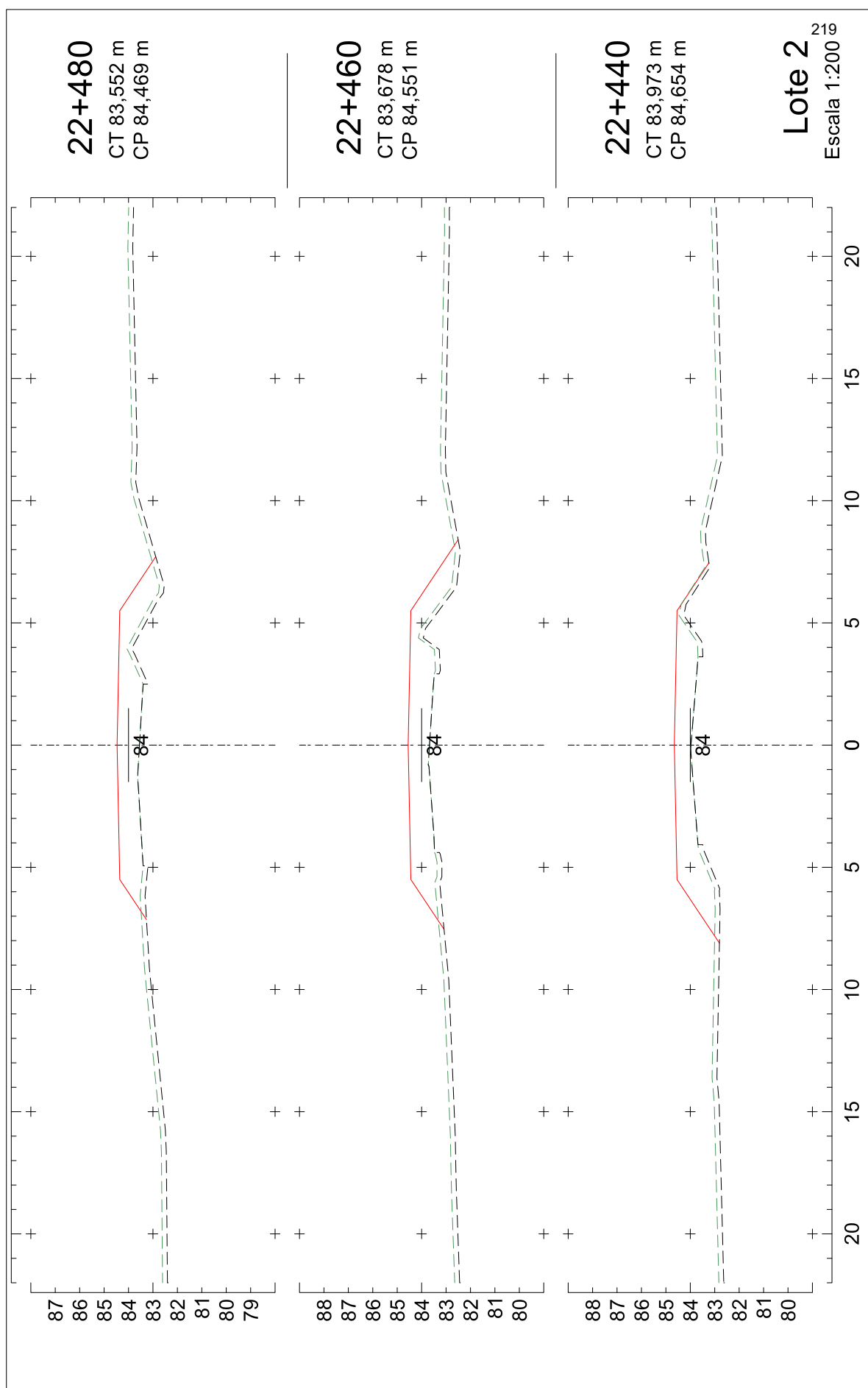


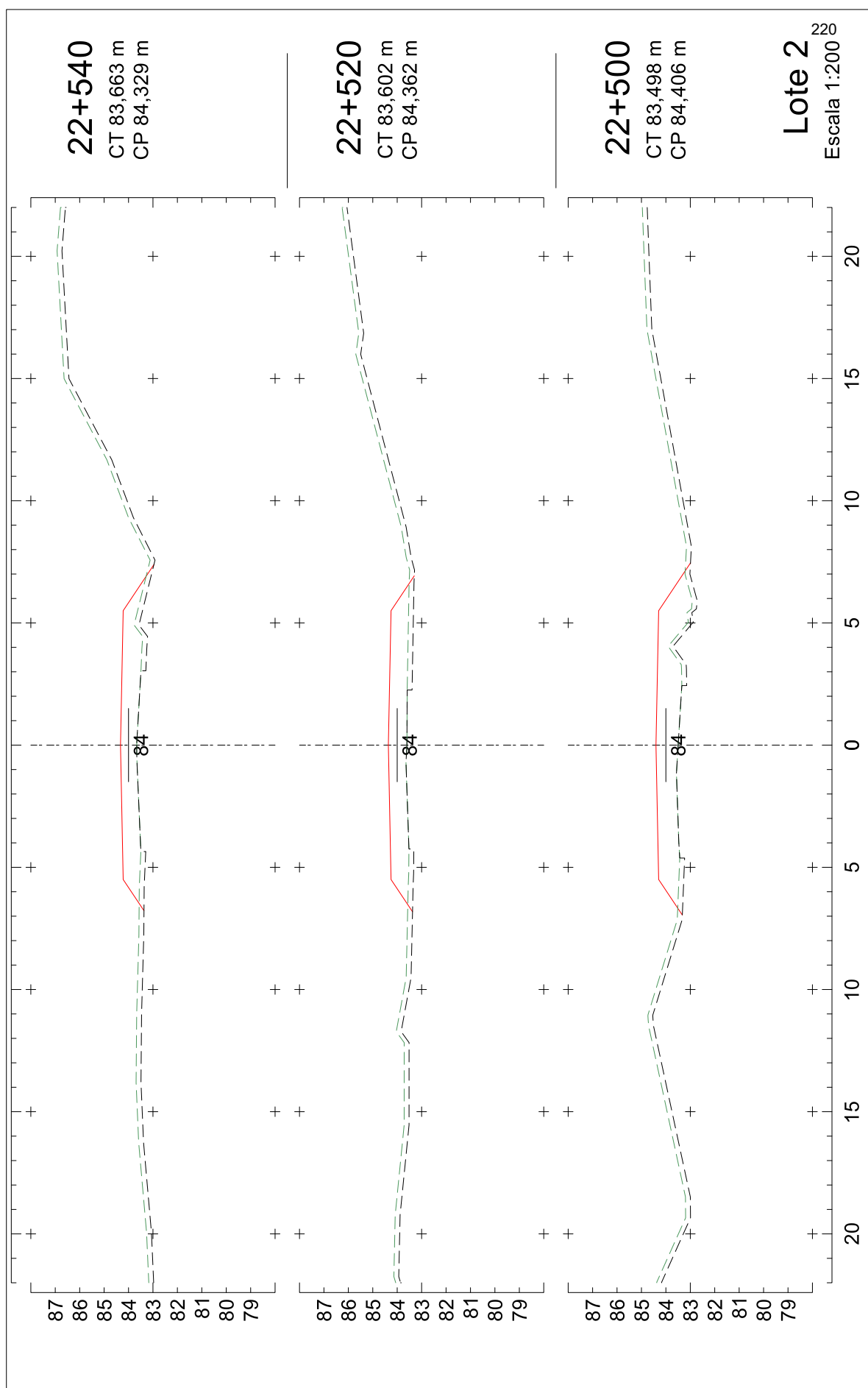


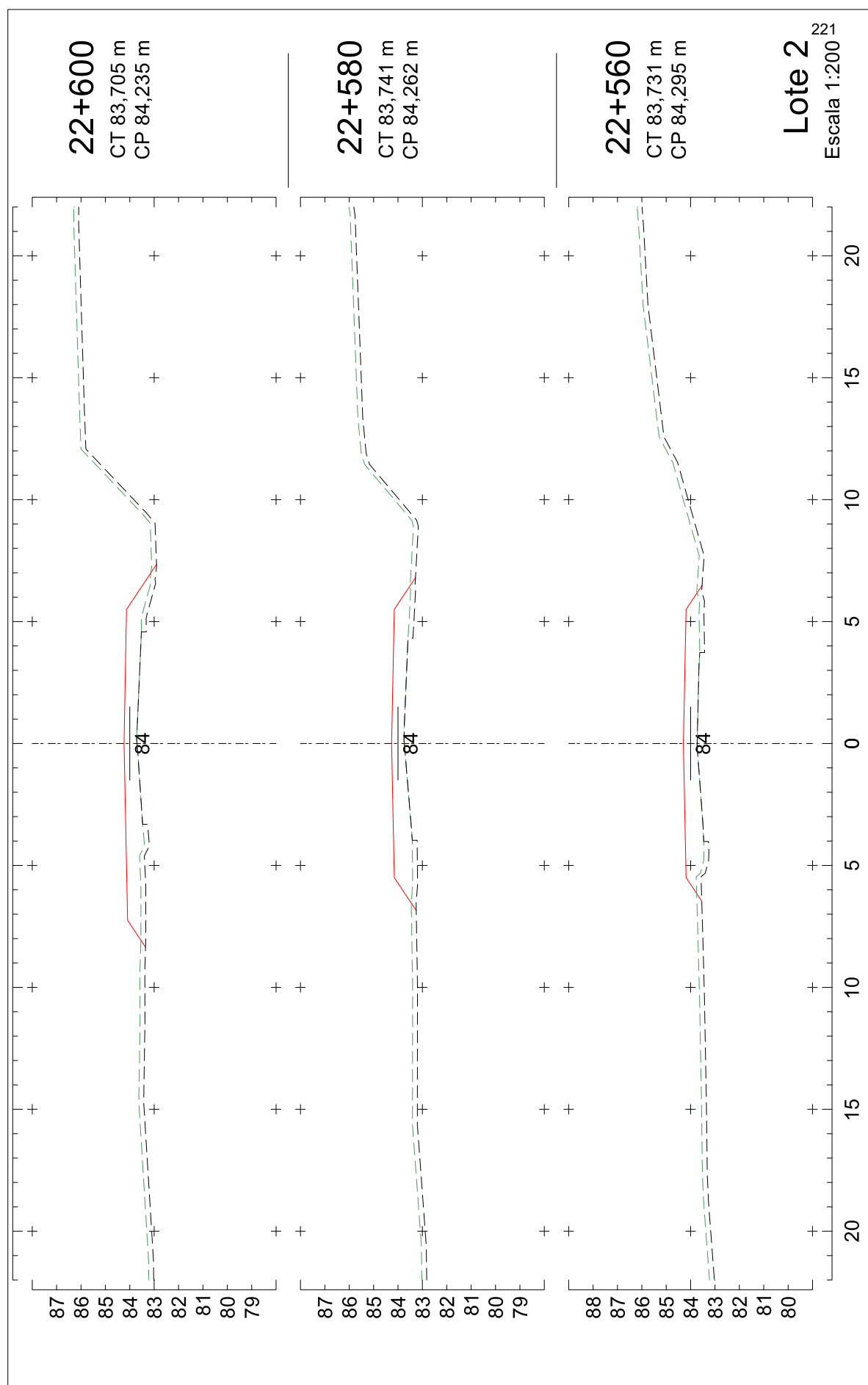


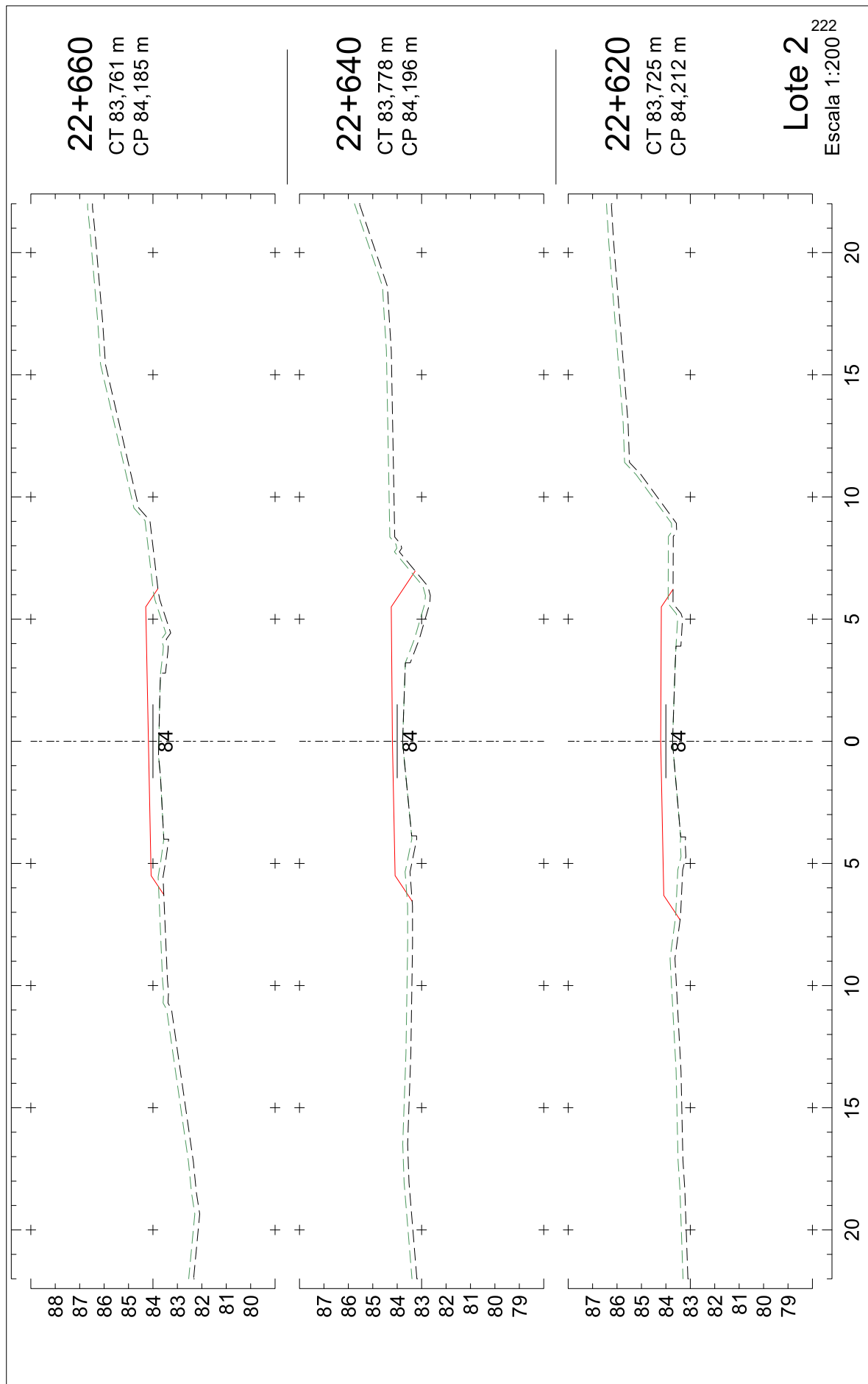


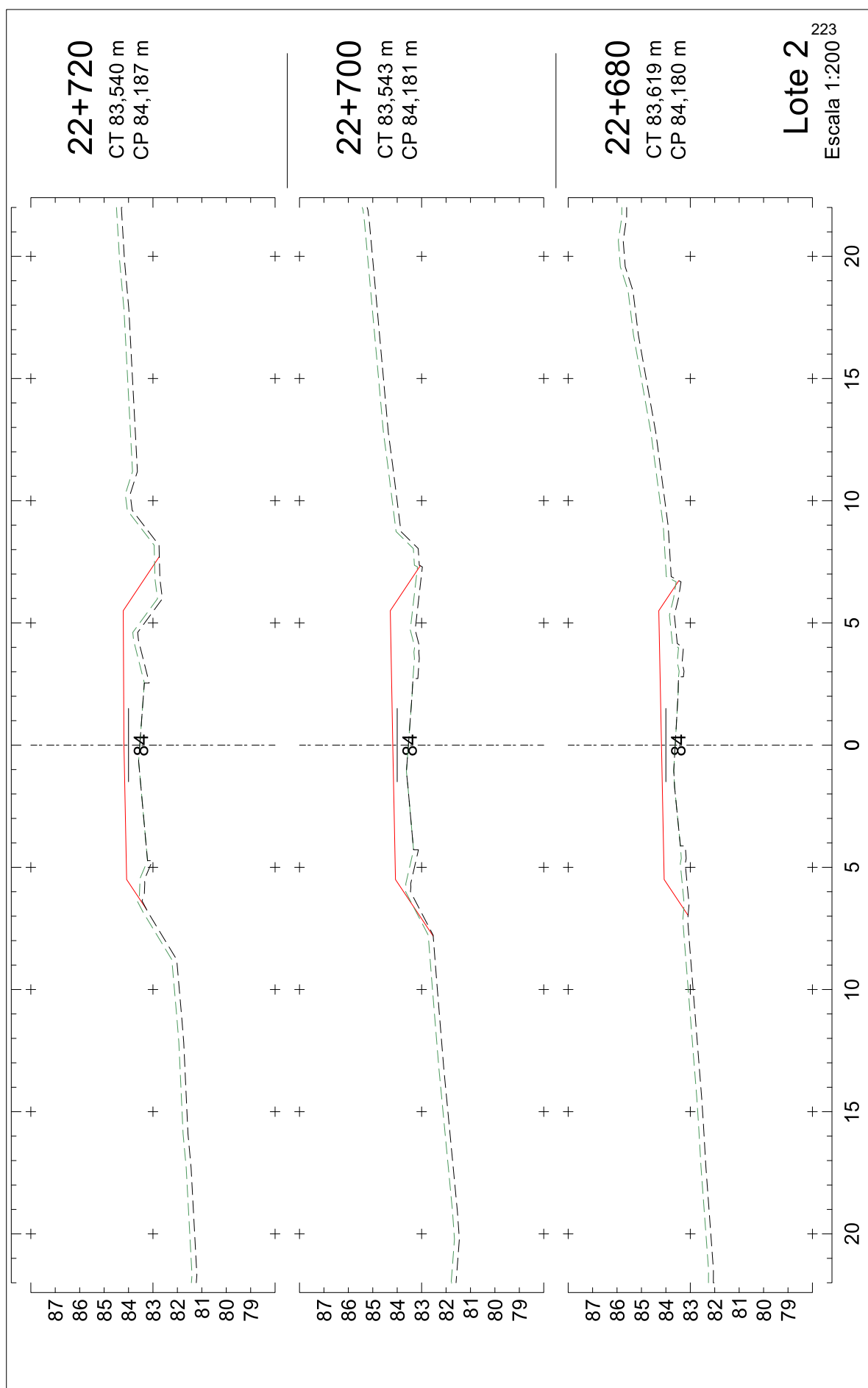




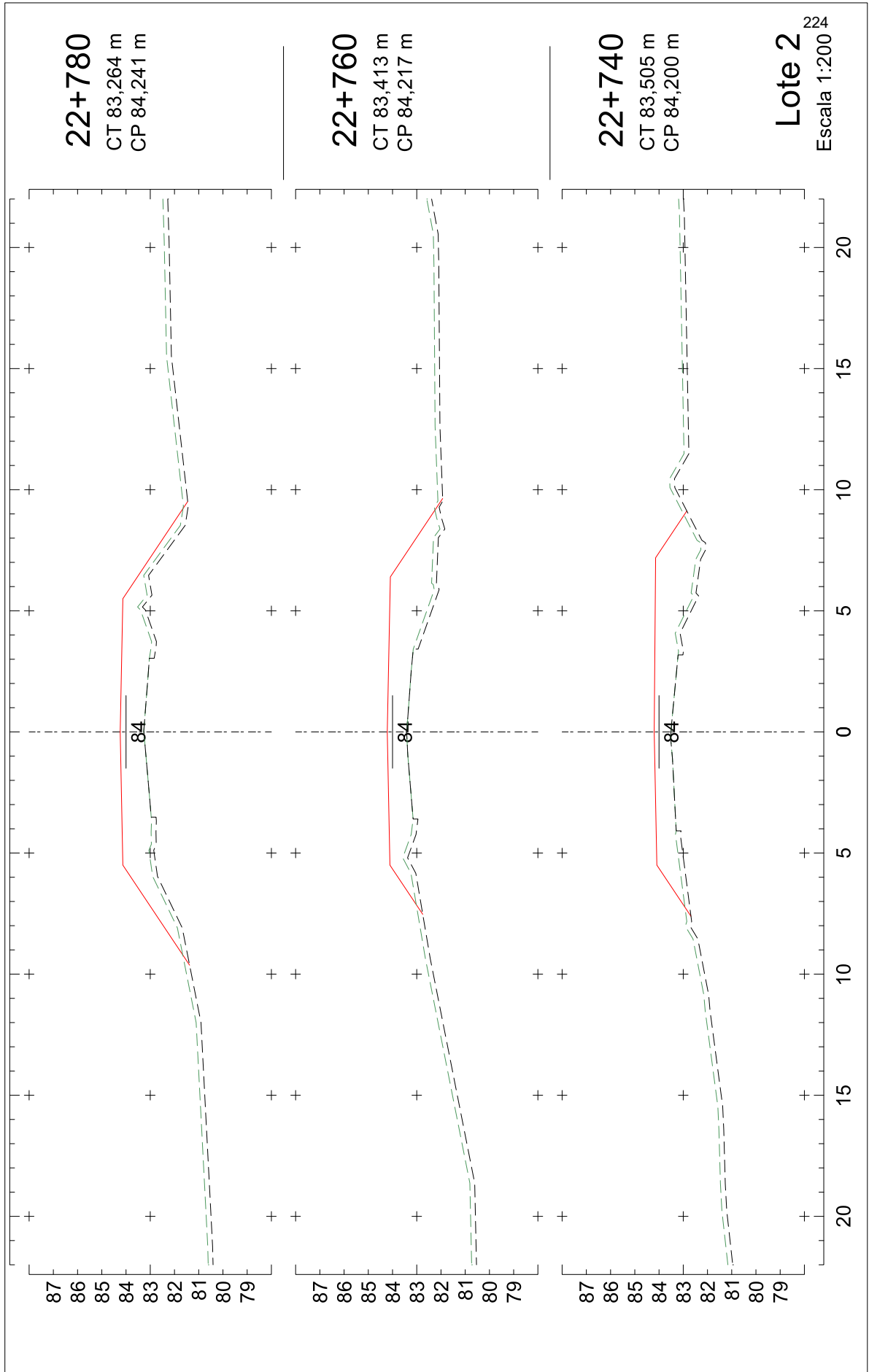


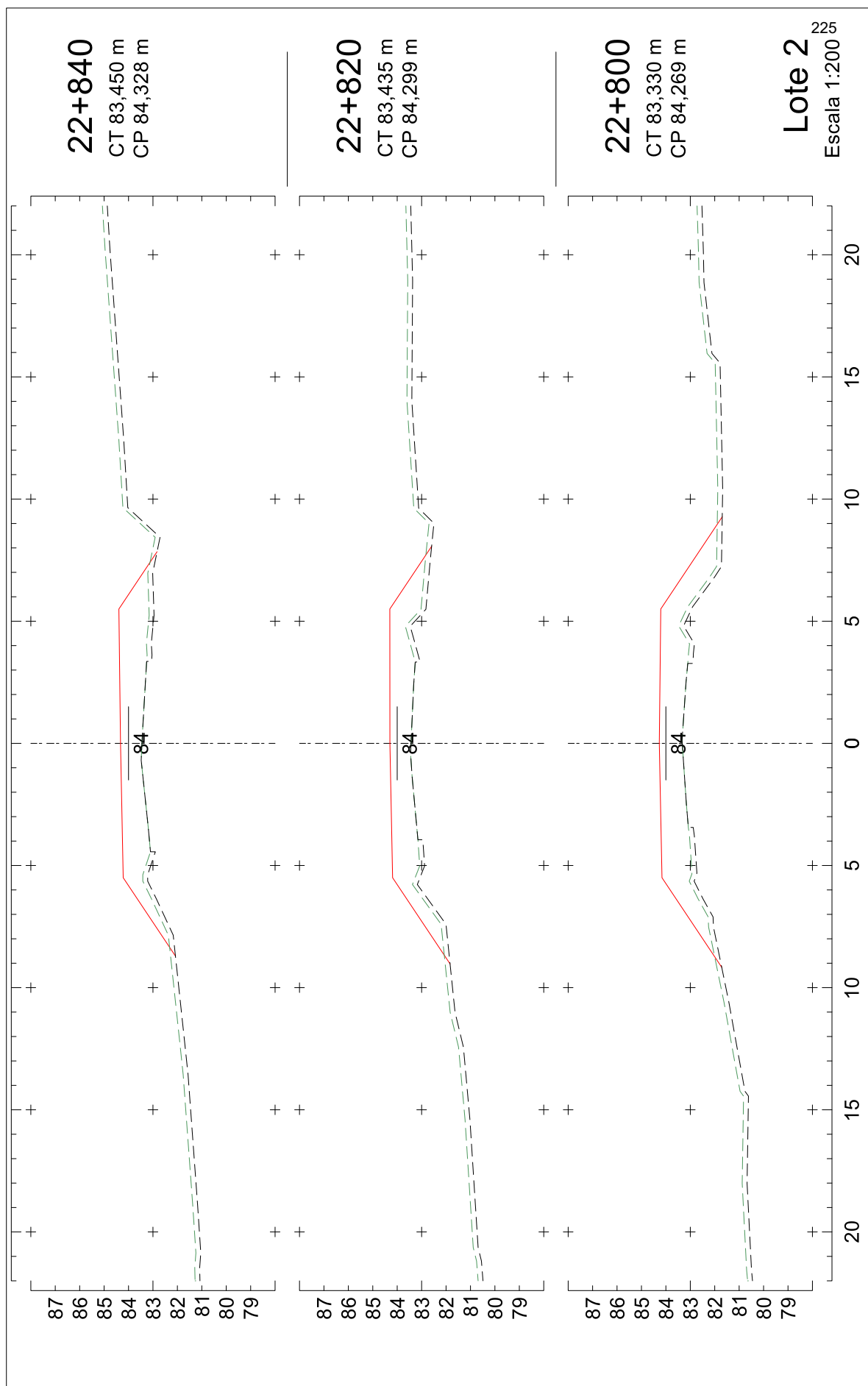


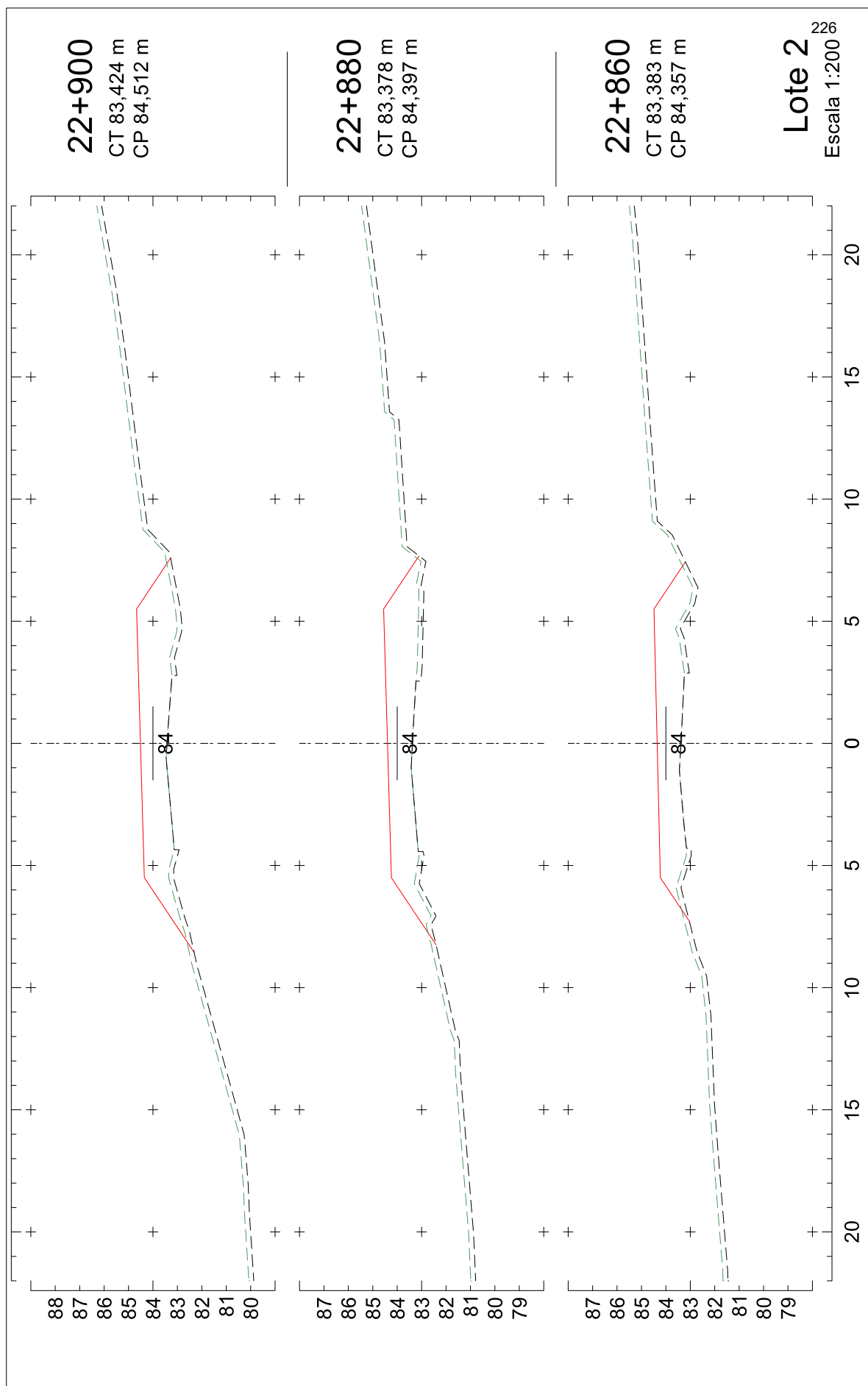


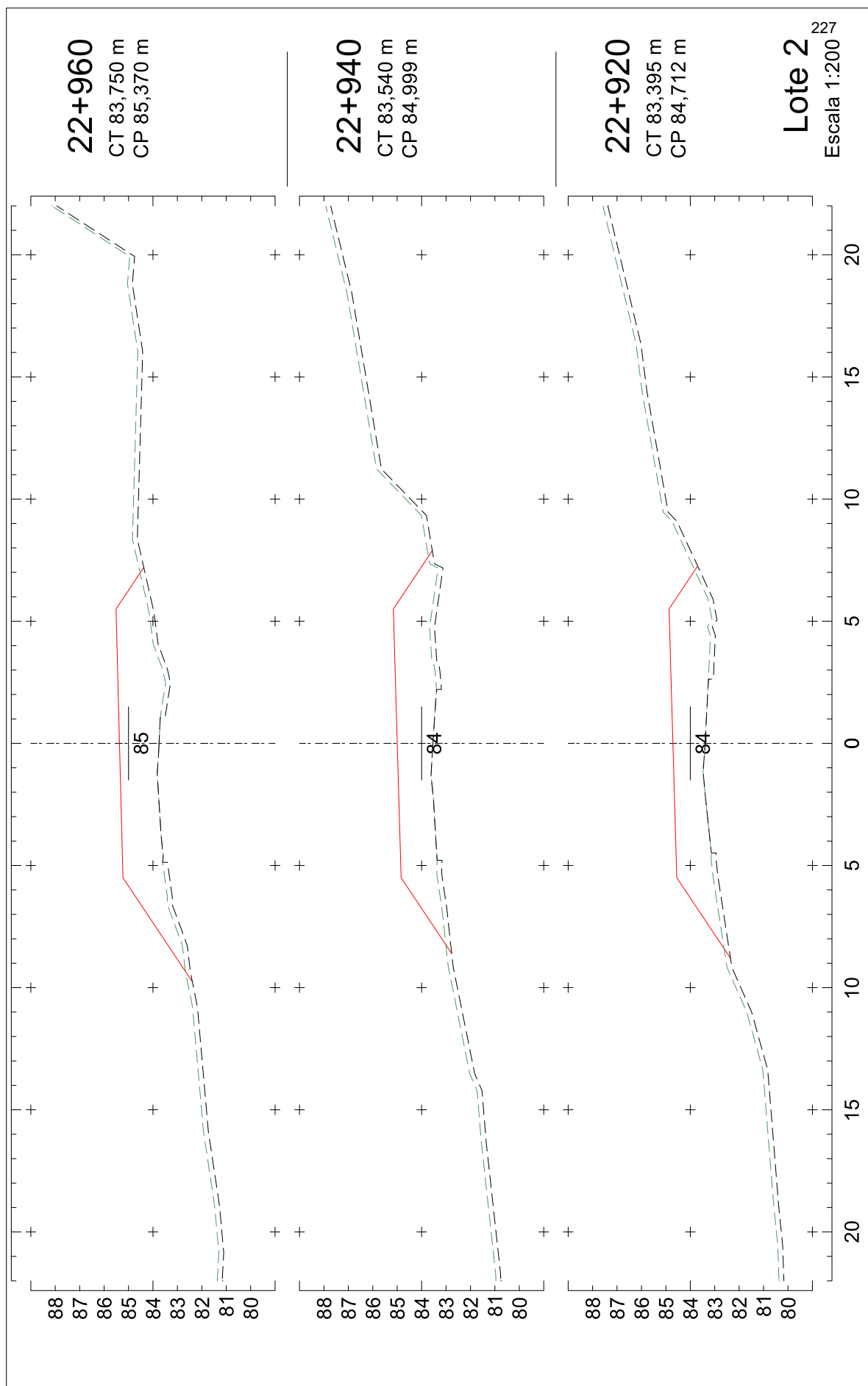


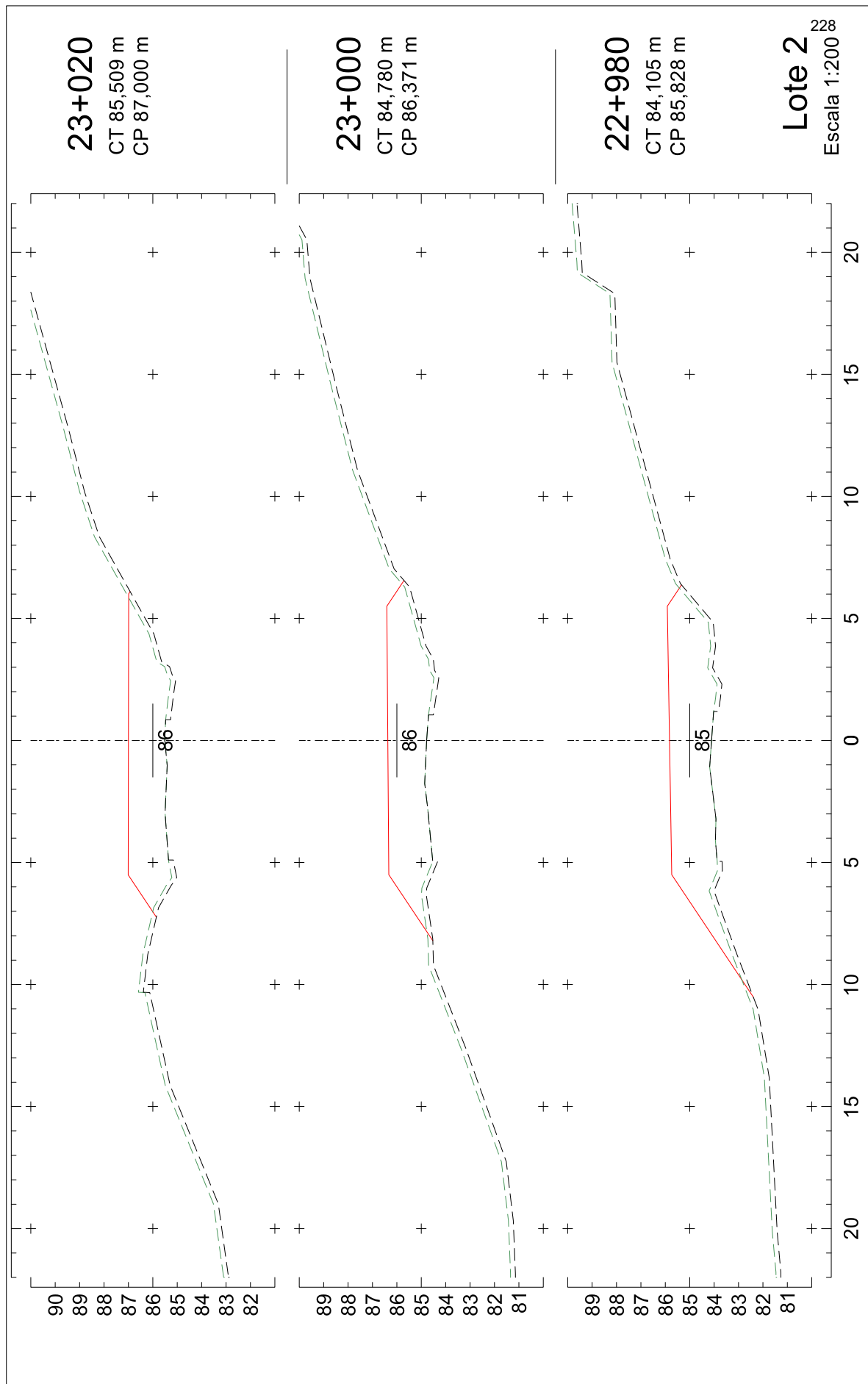
Lote 2²²³
Escala 1:200

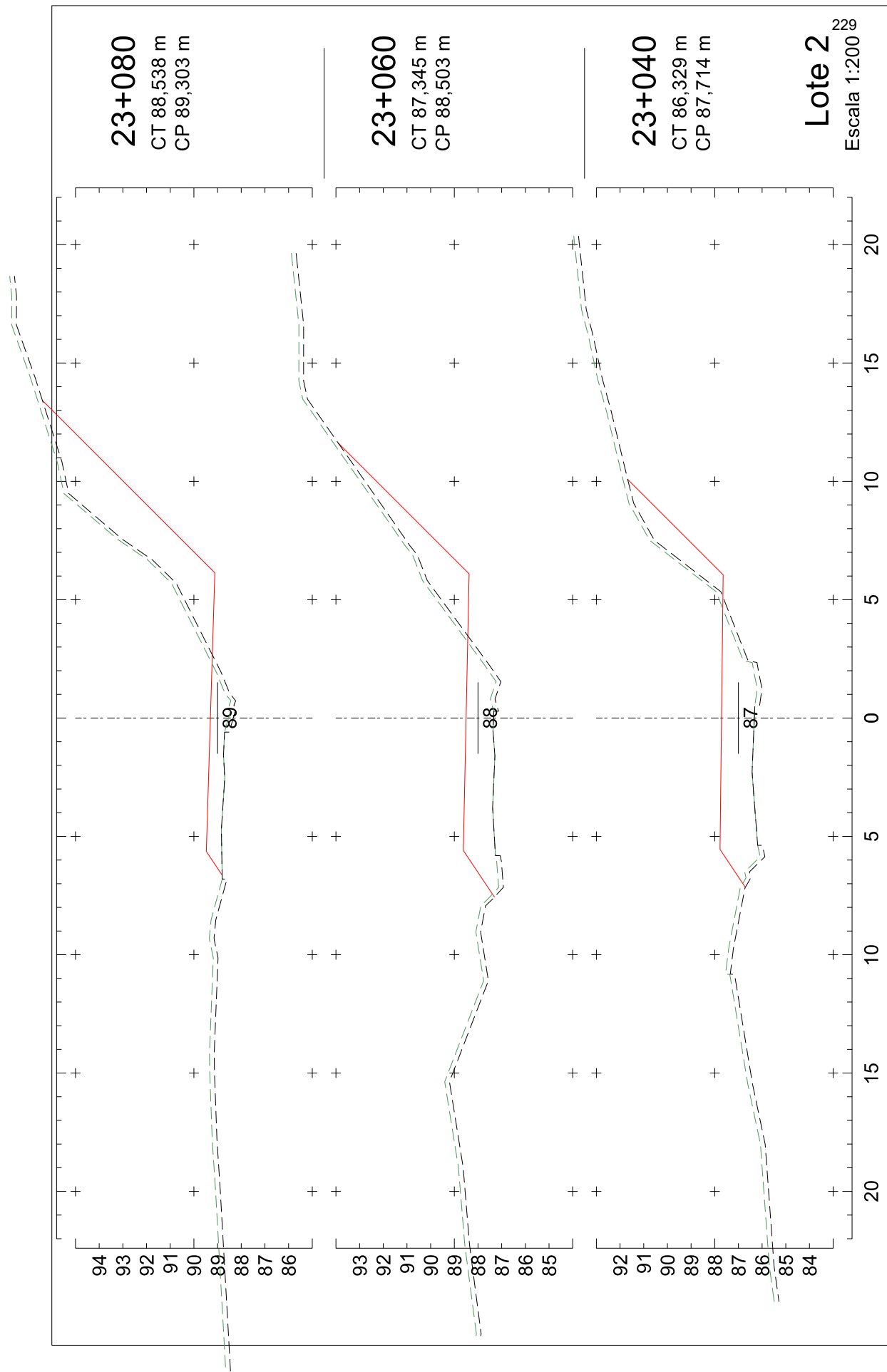


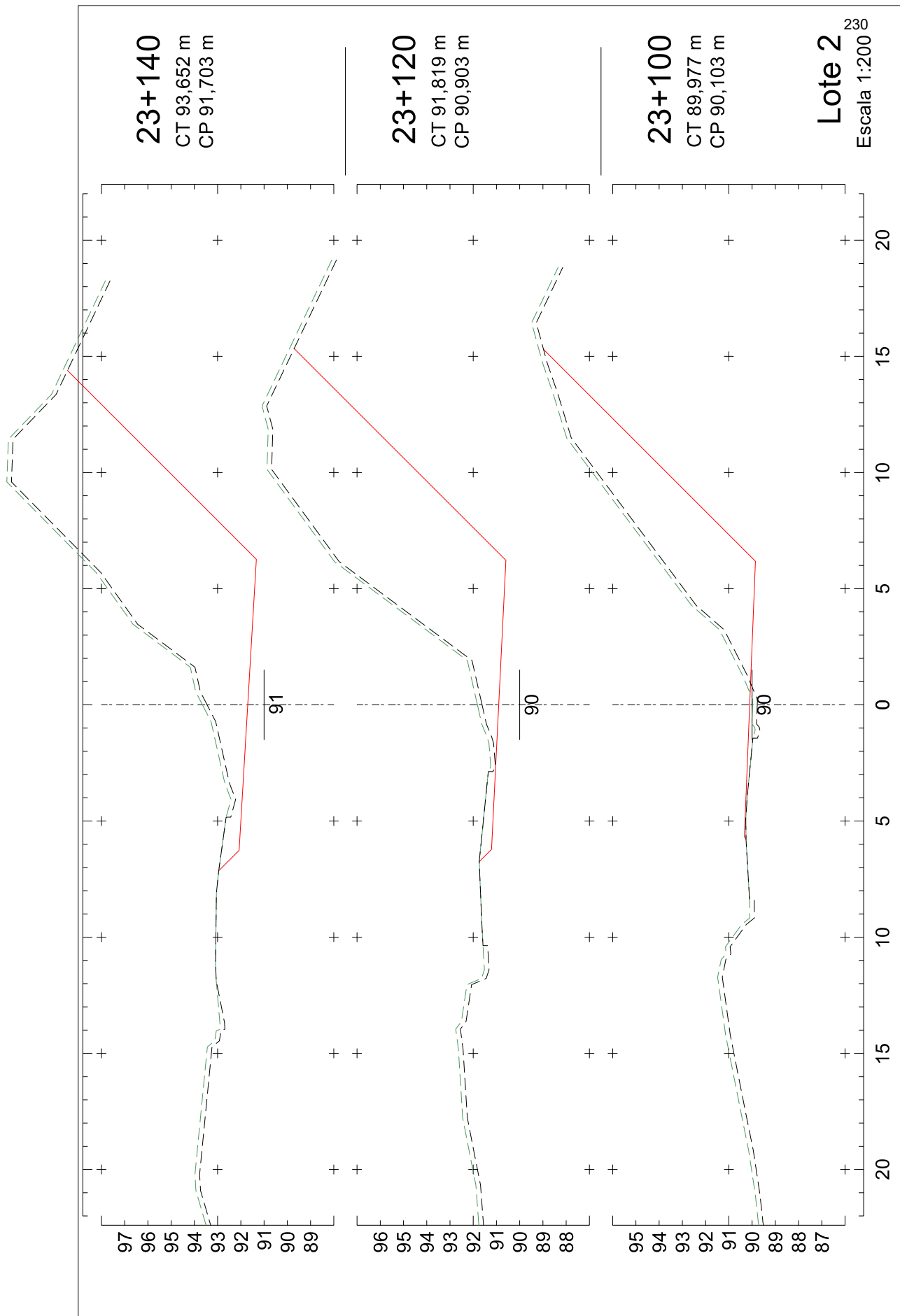


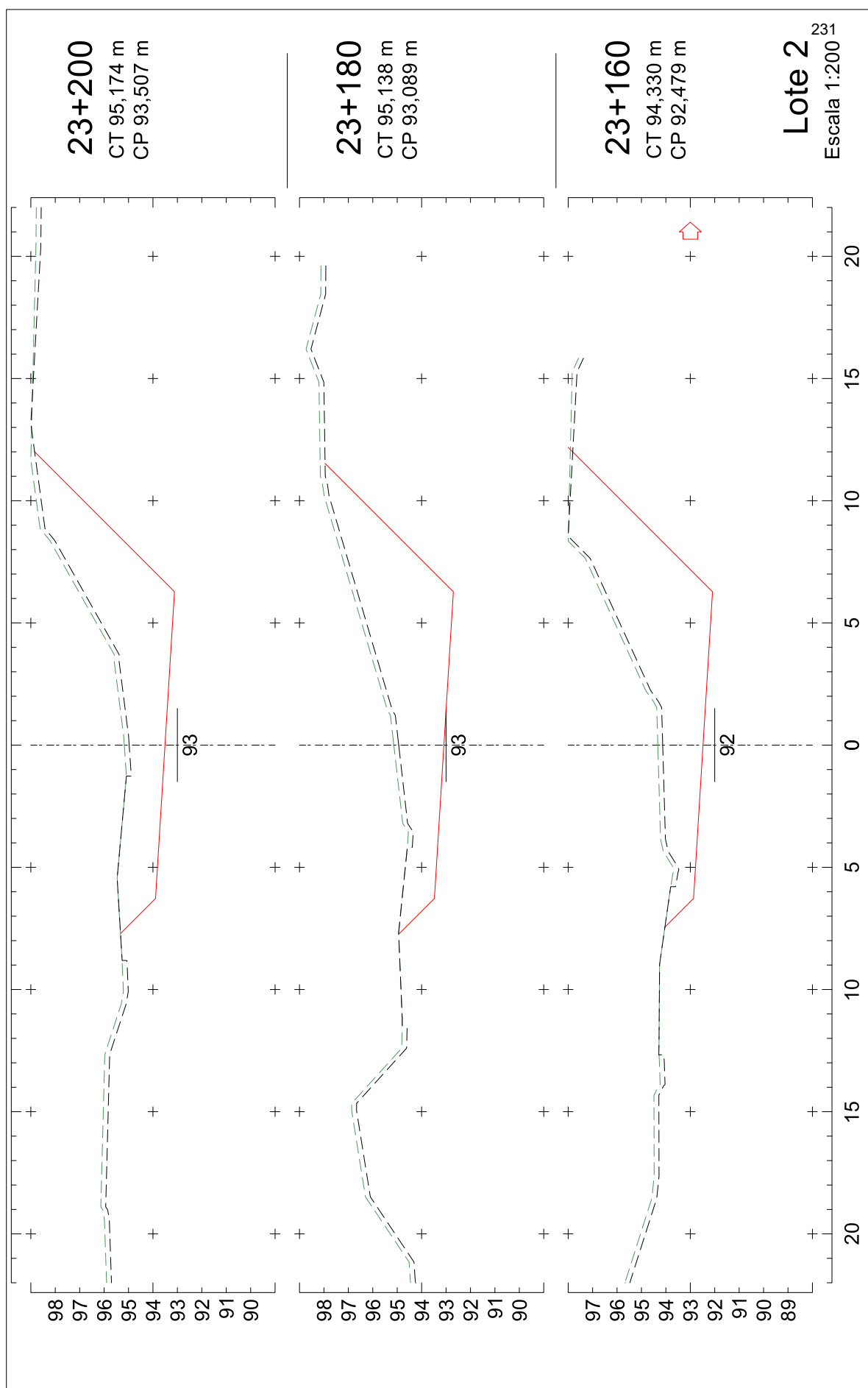


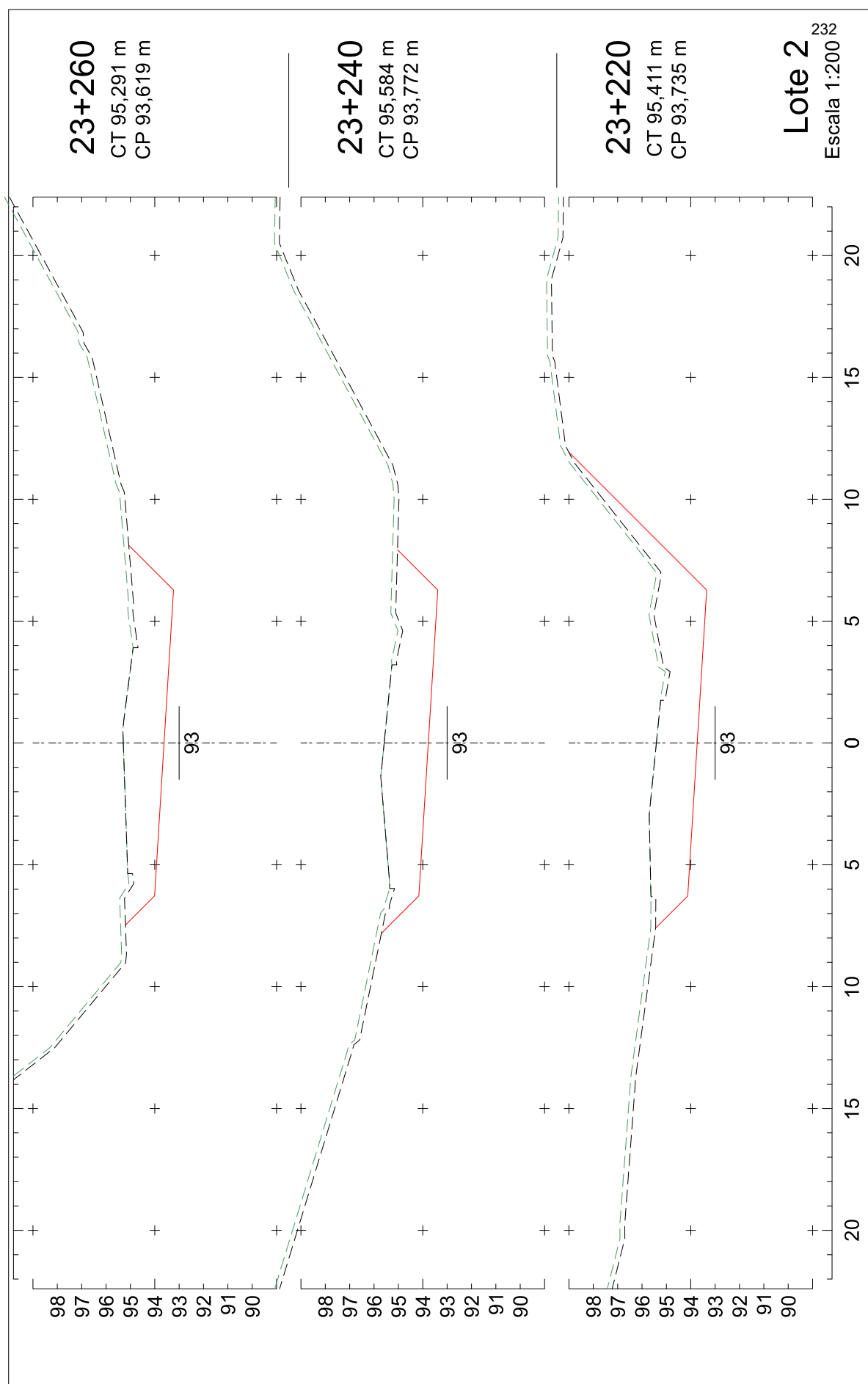


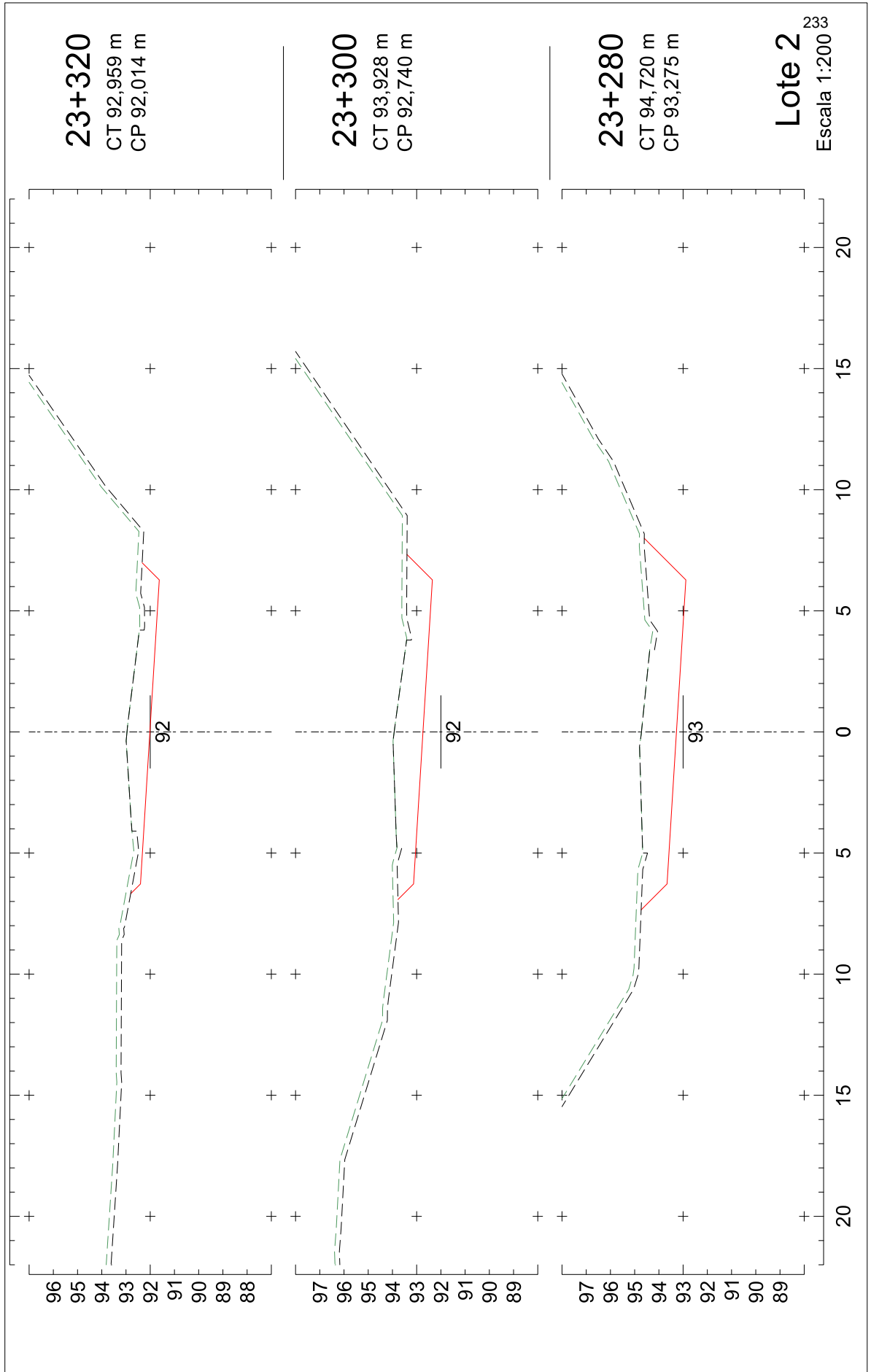


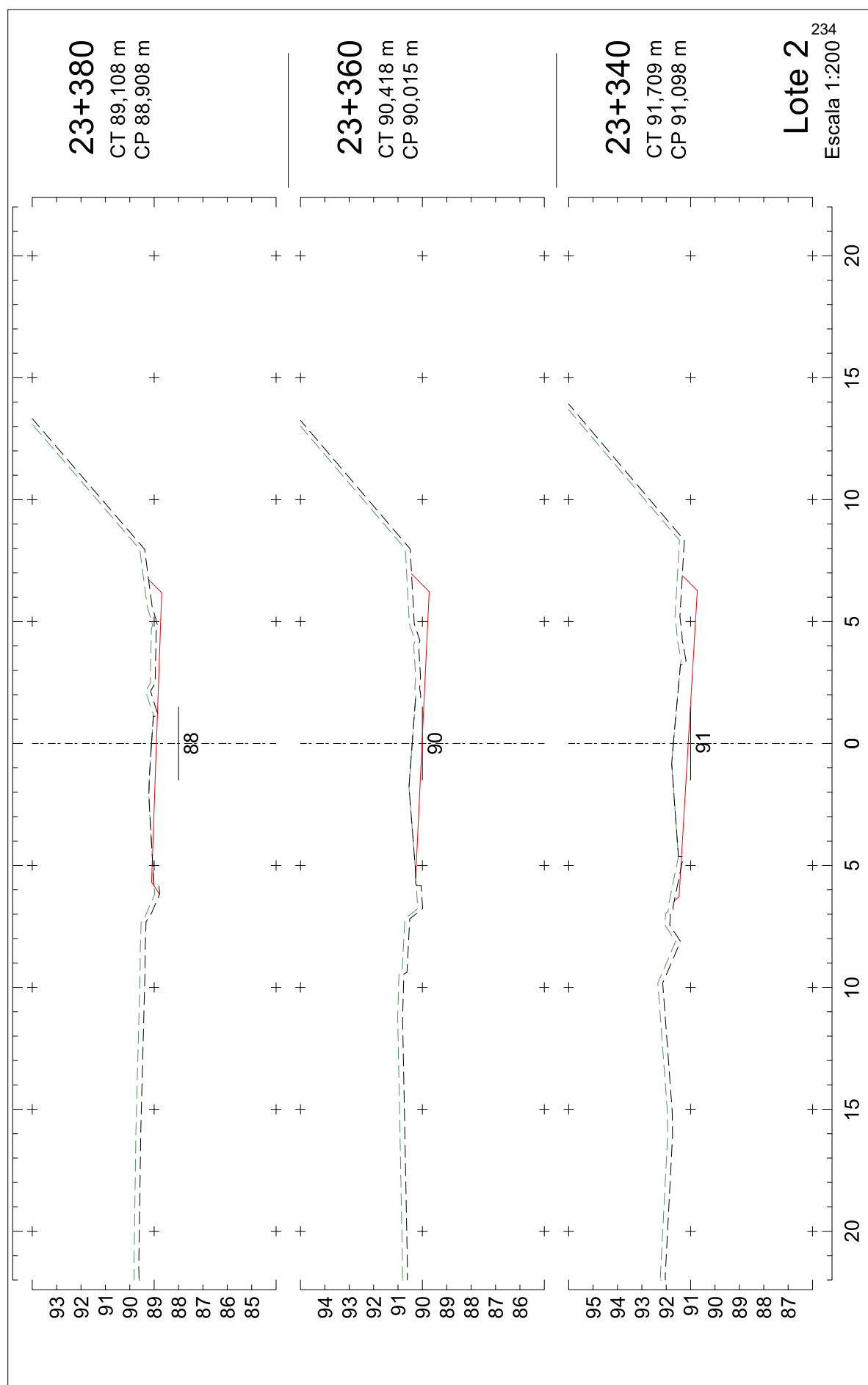


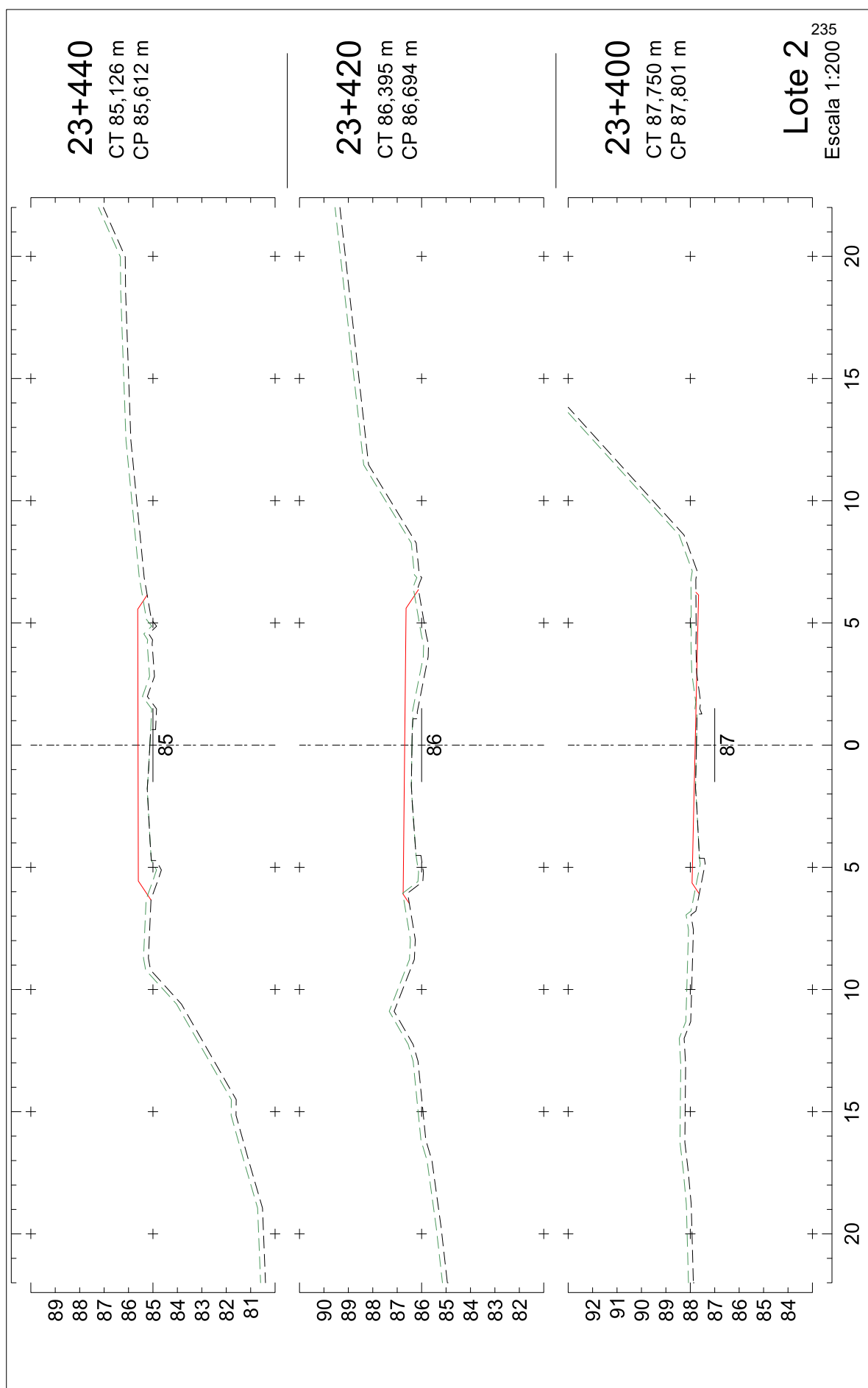


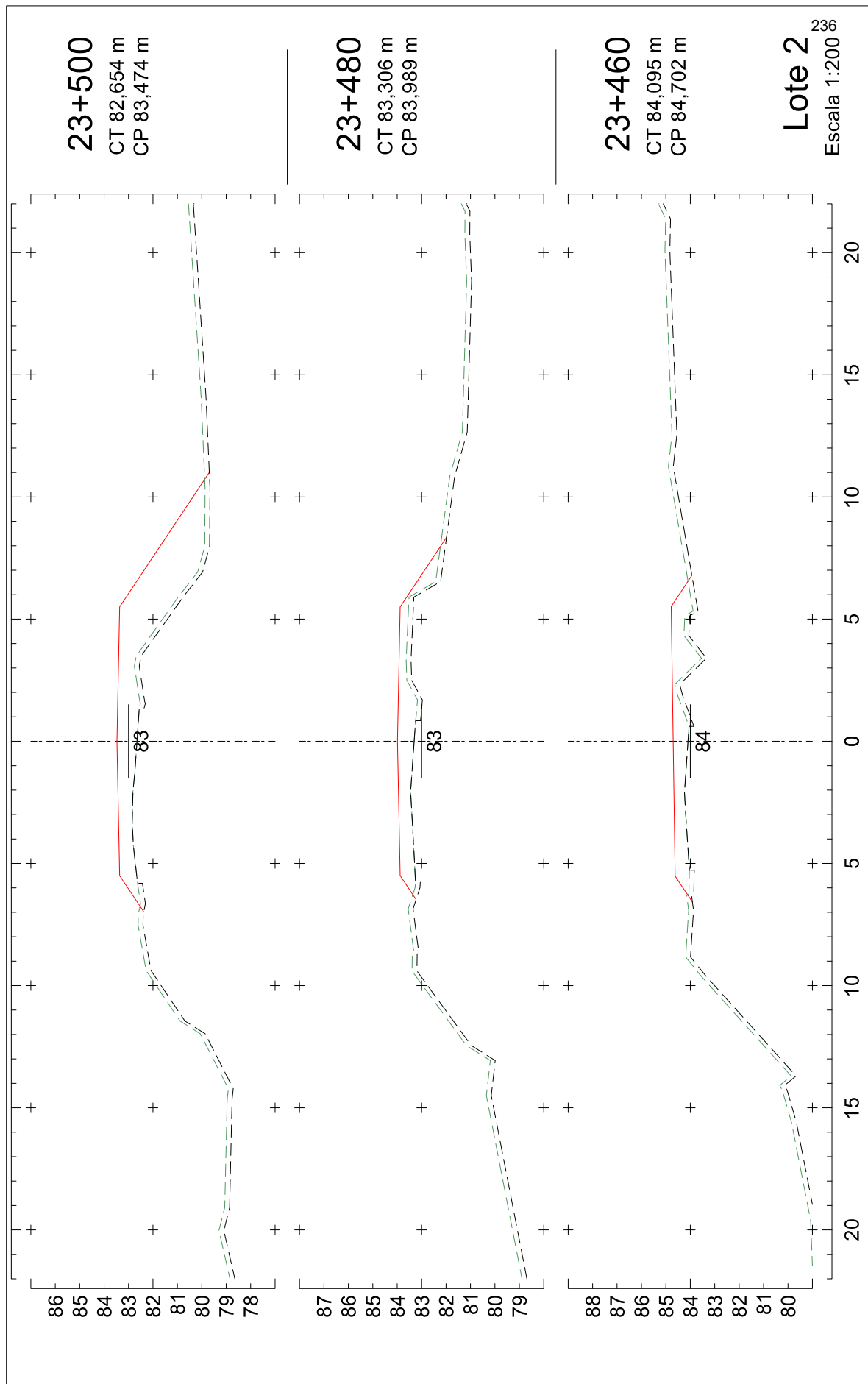


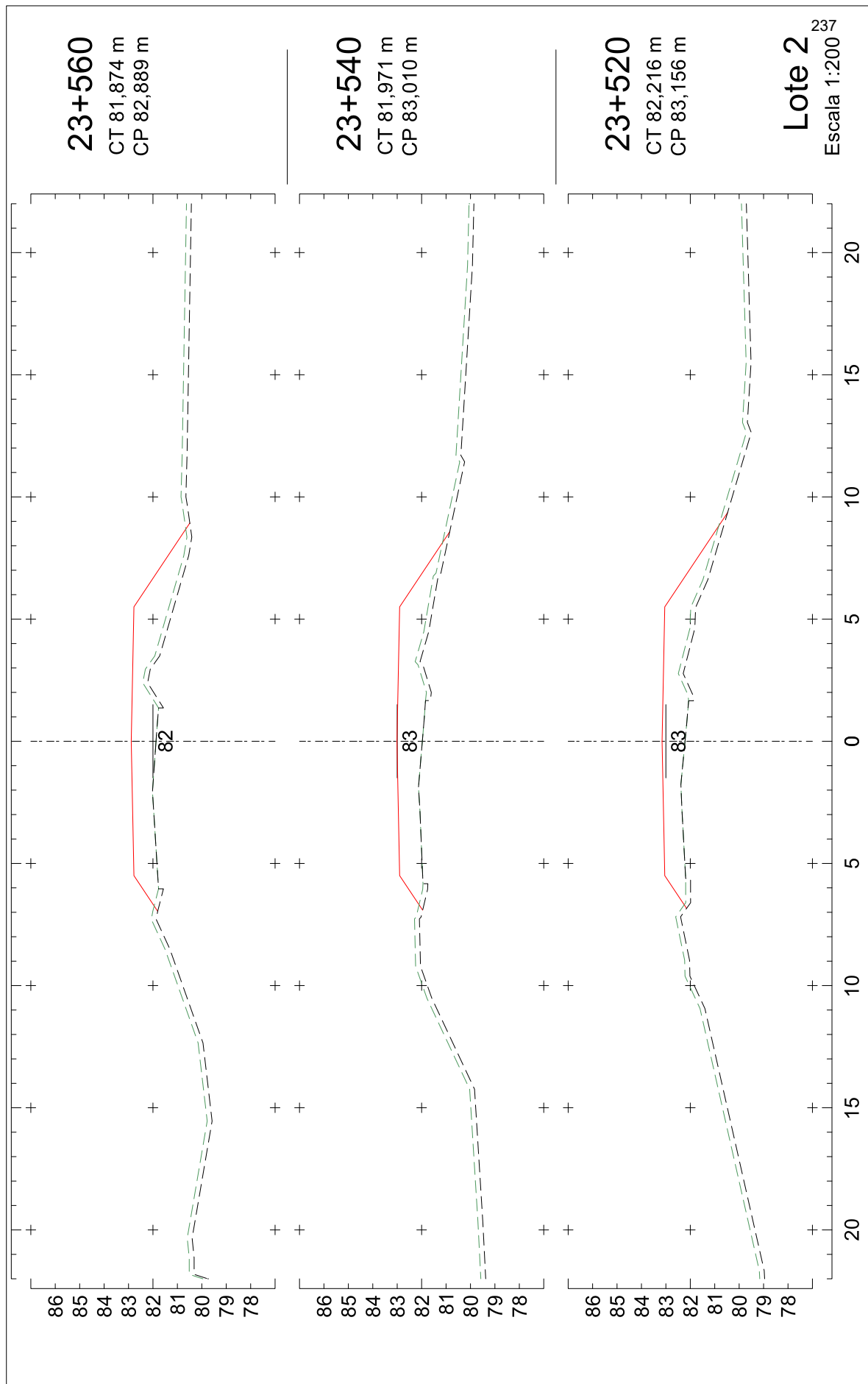


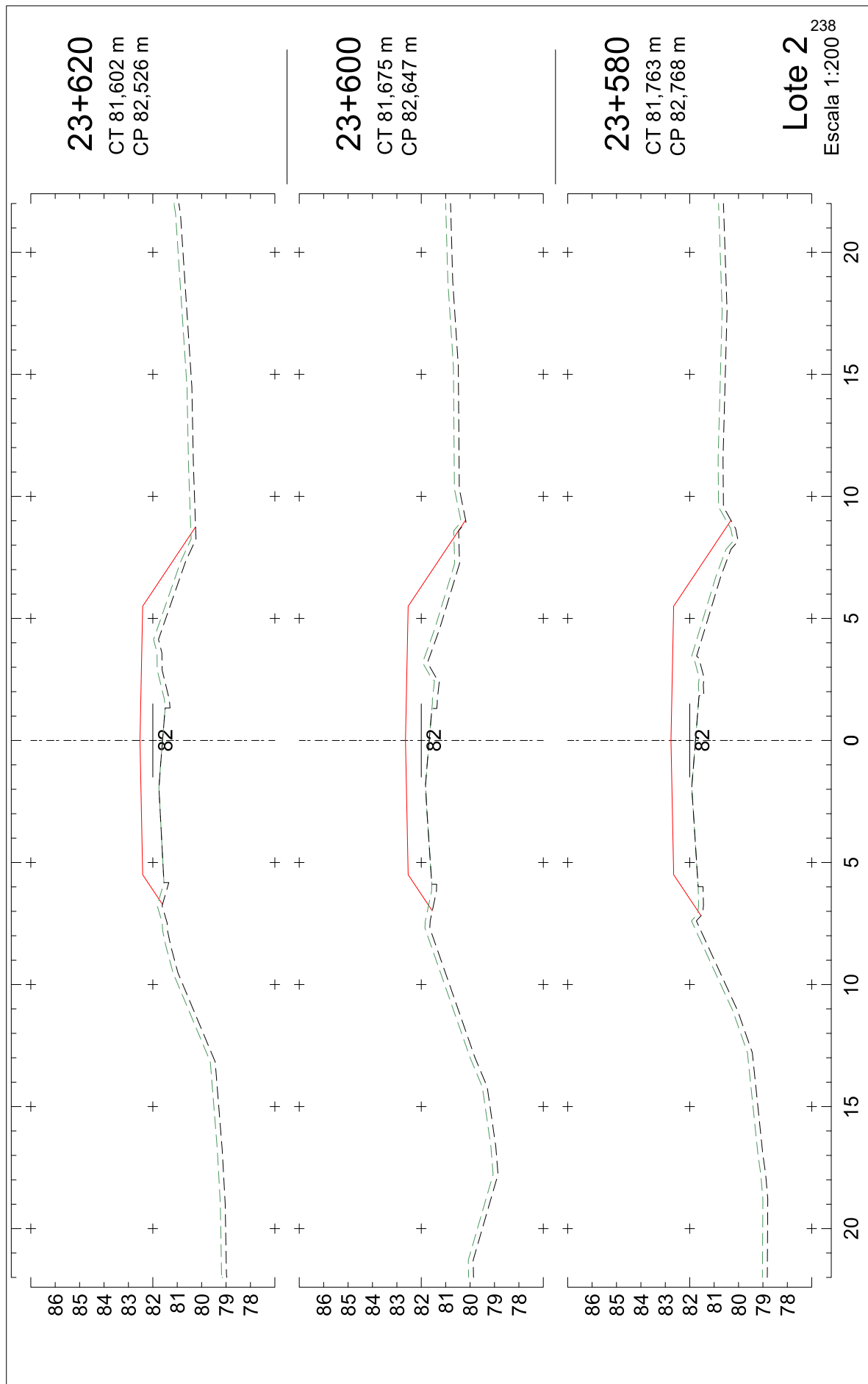


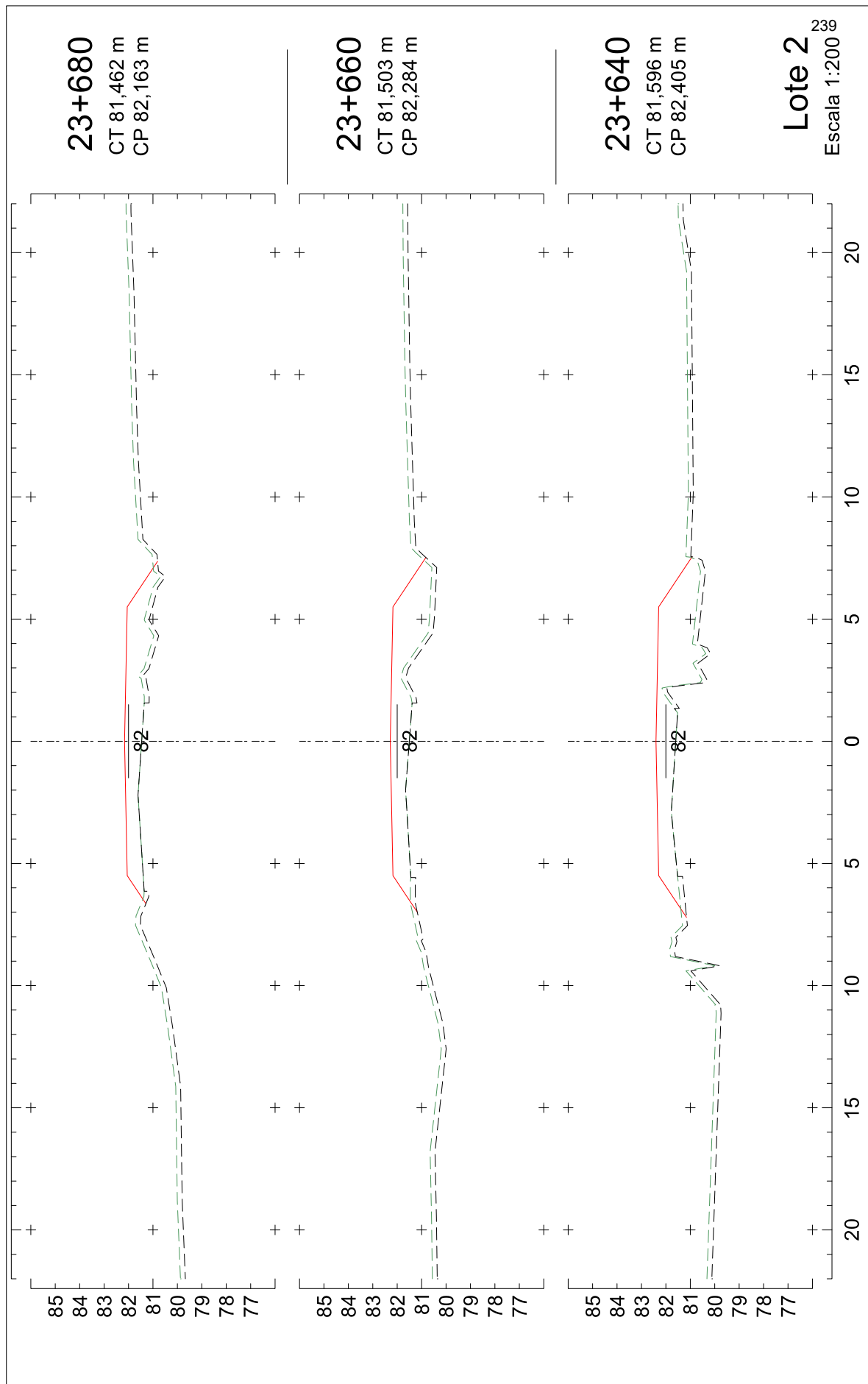


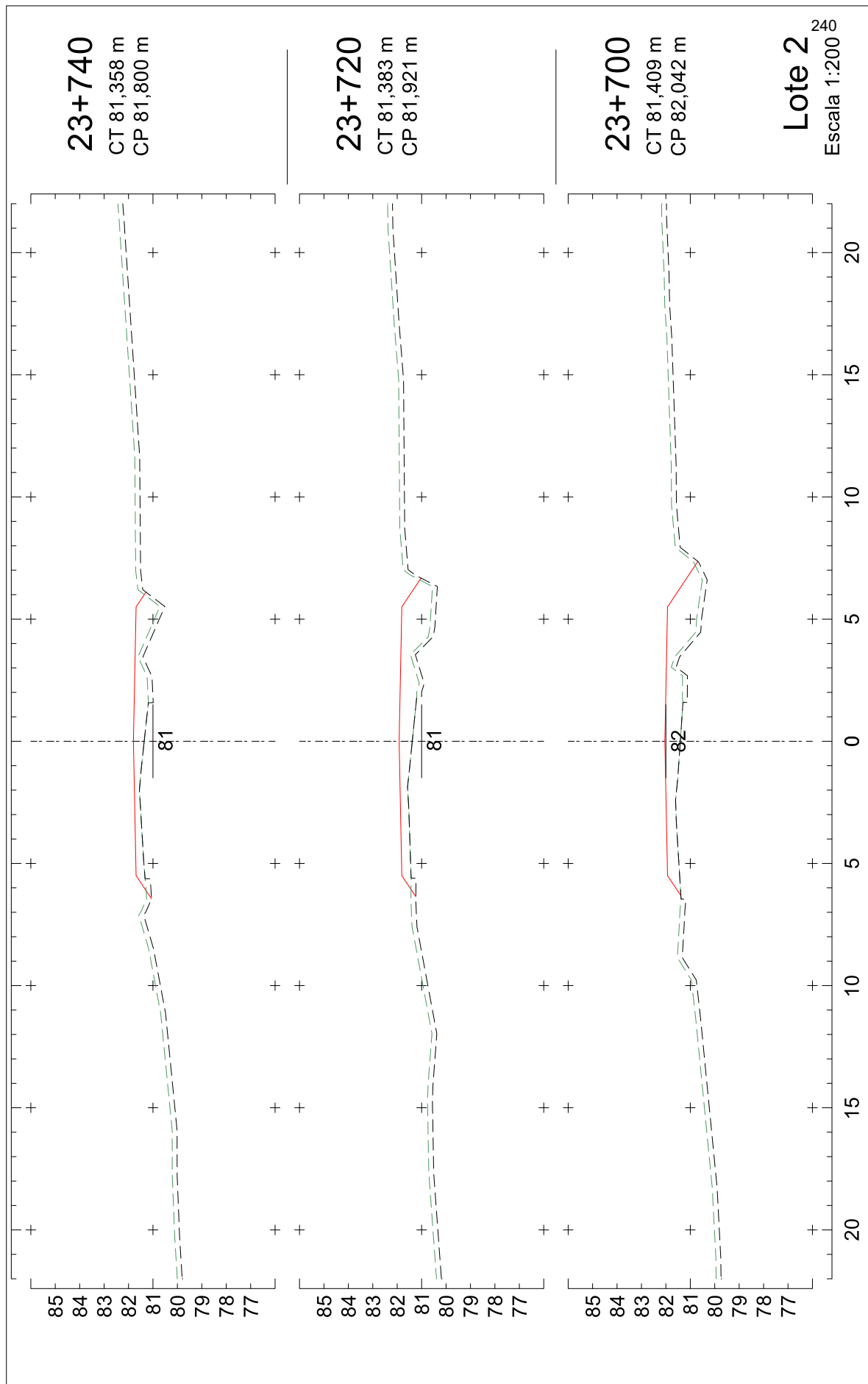


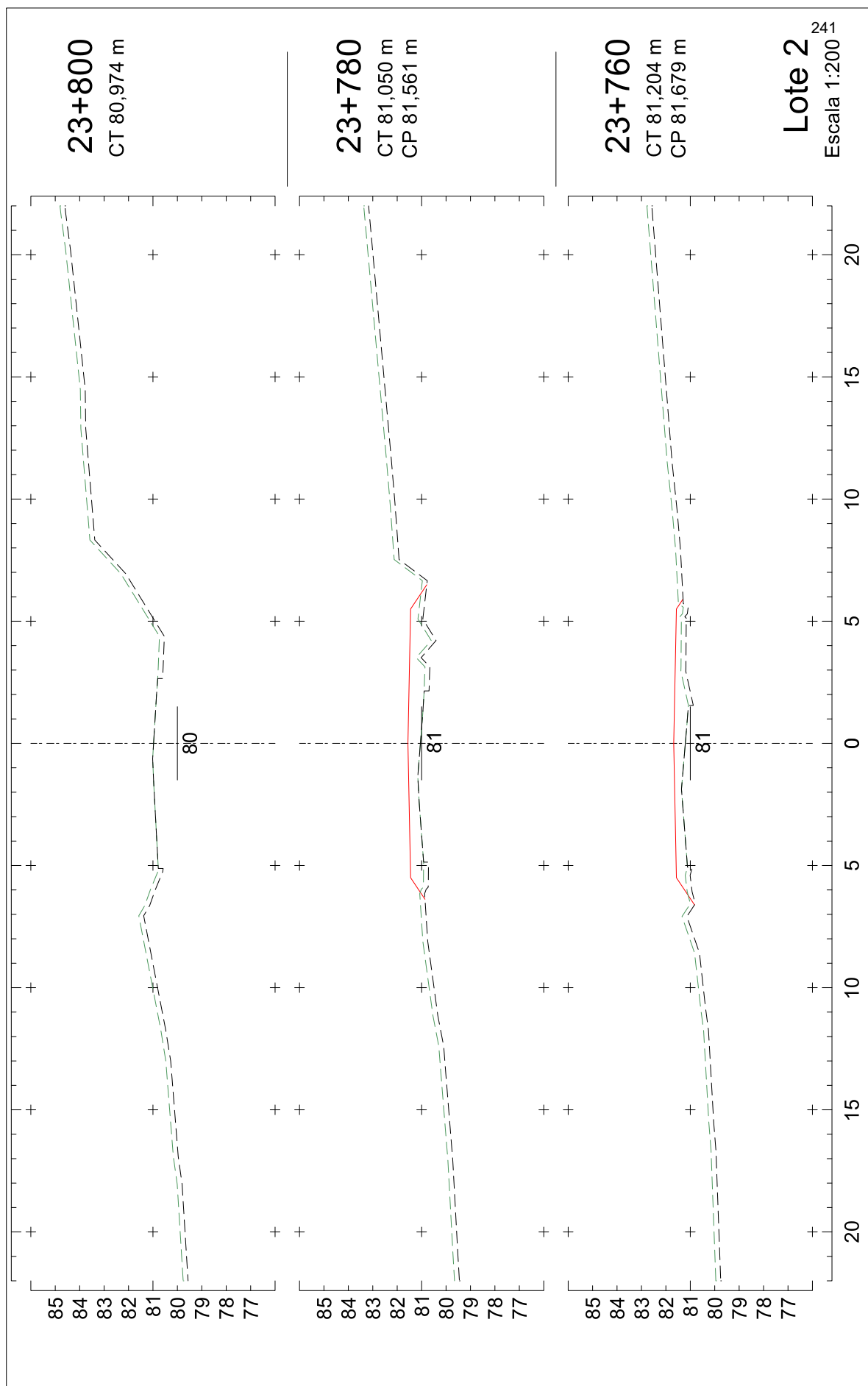


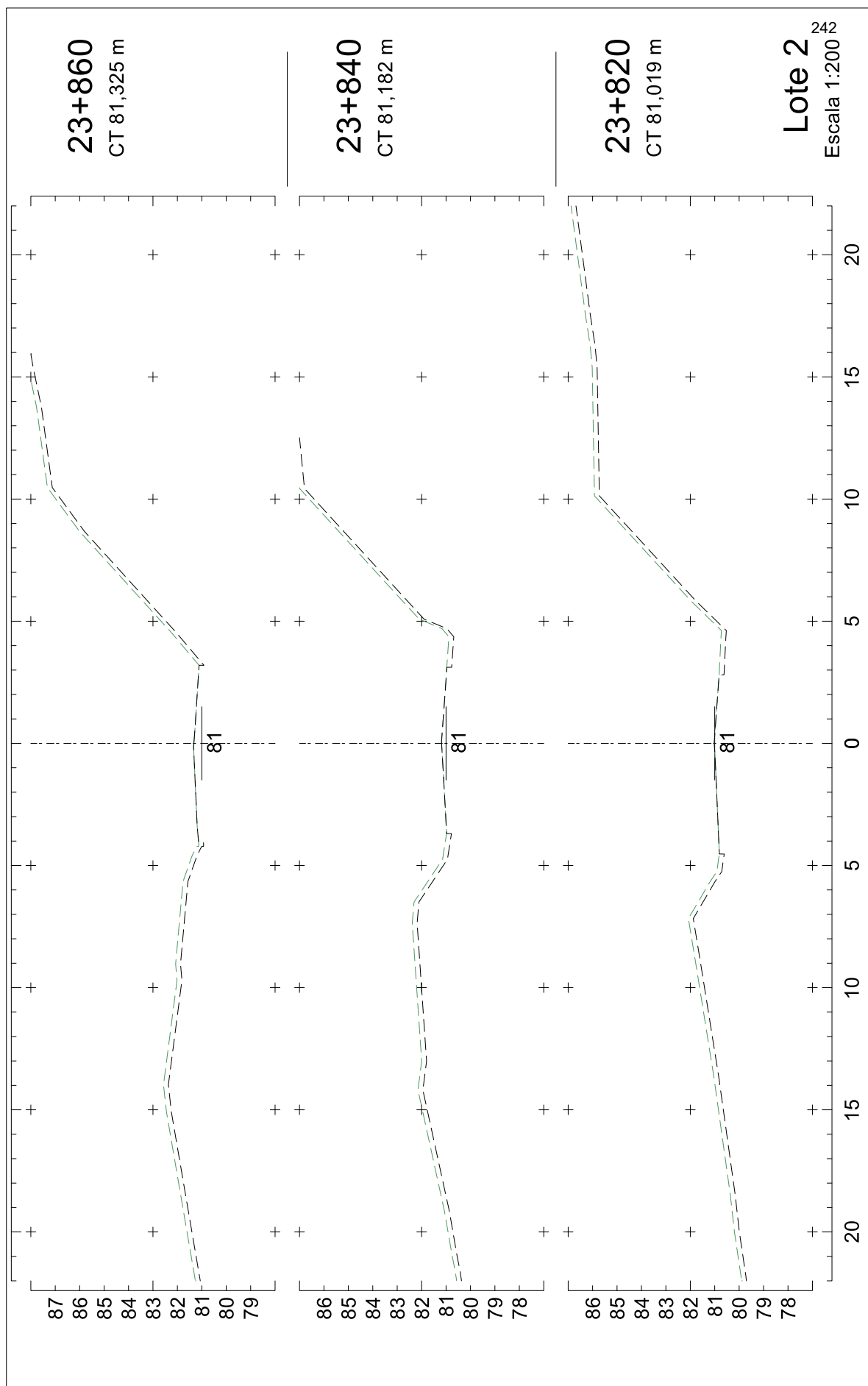


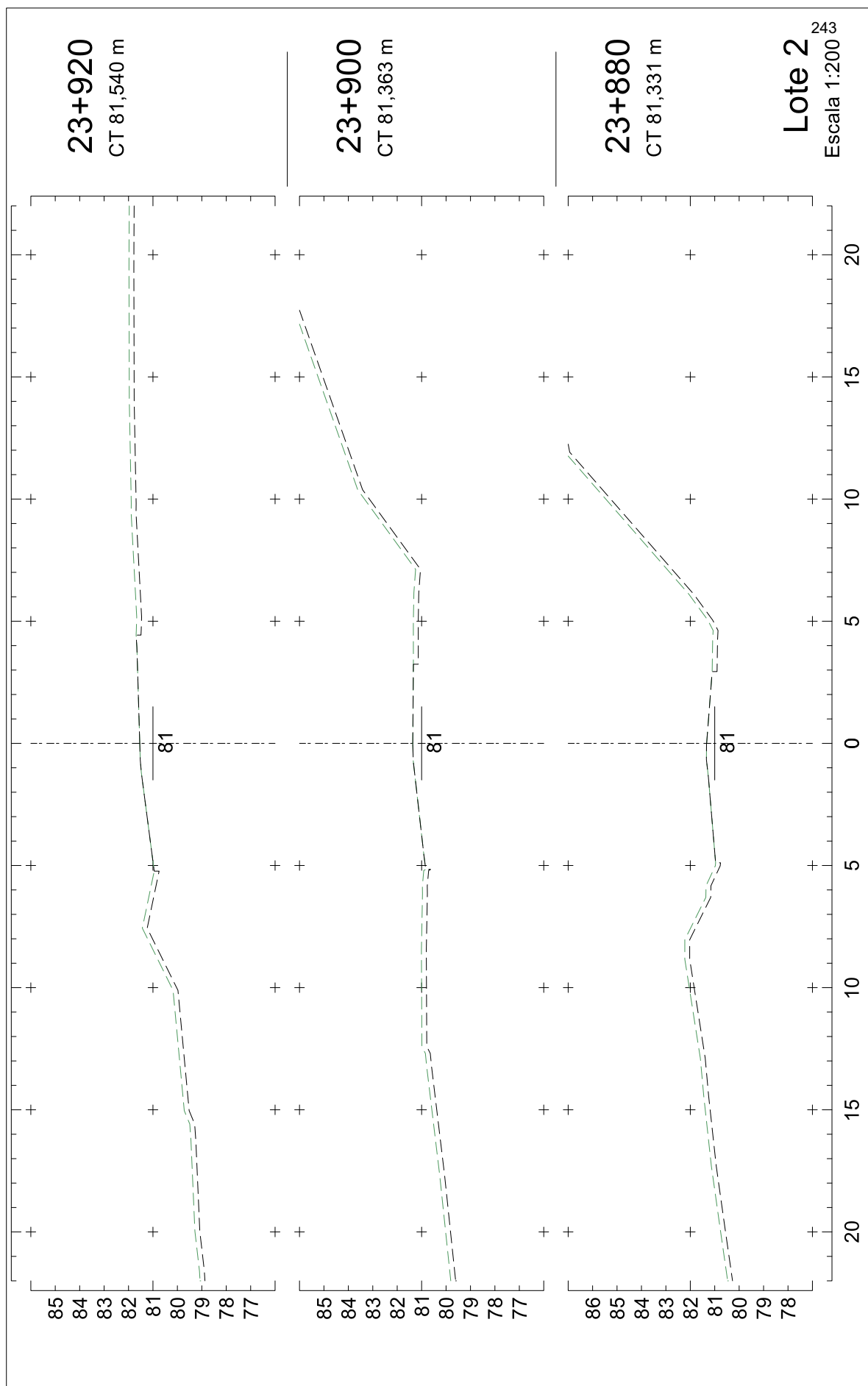


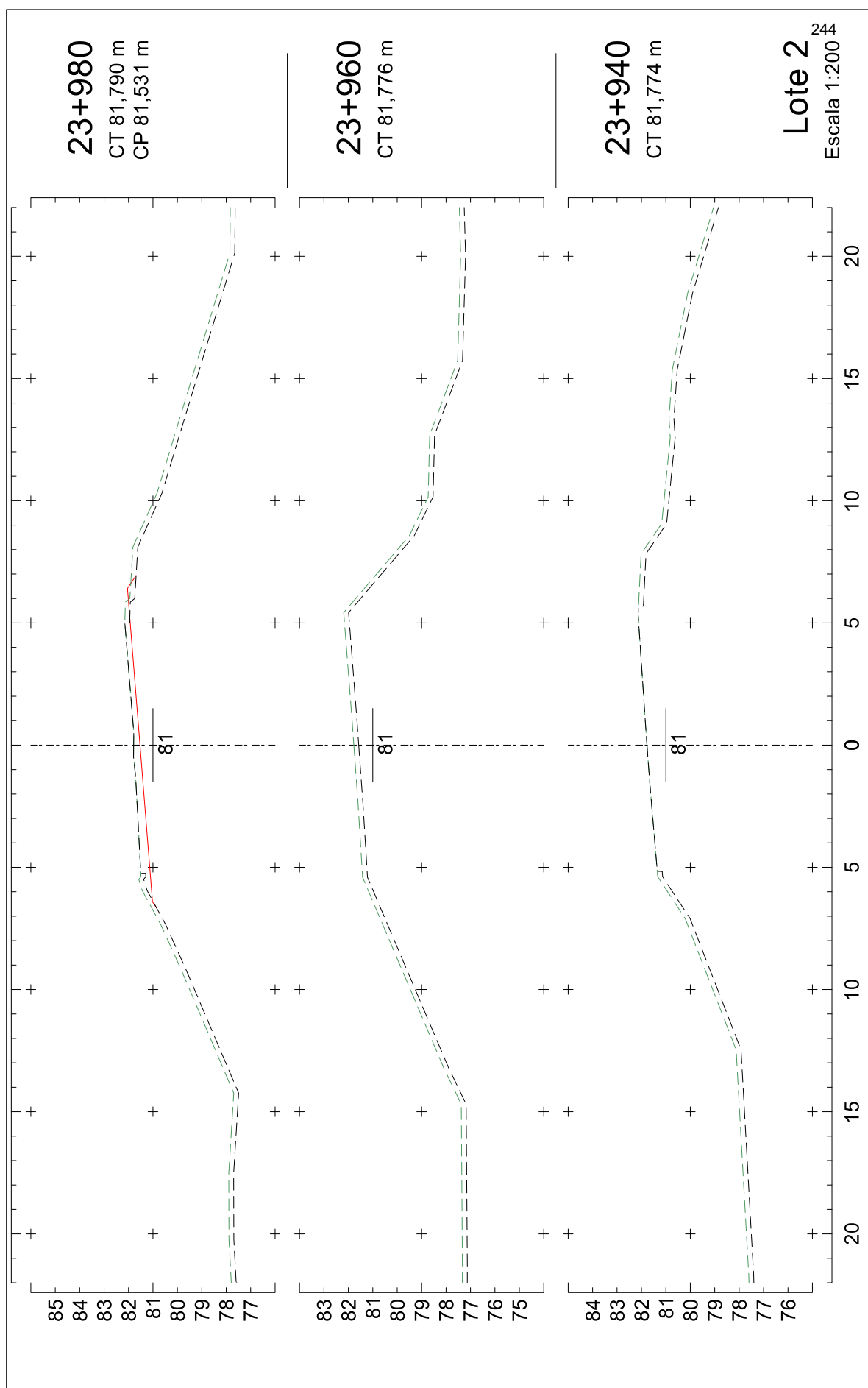


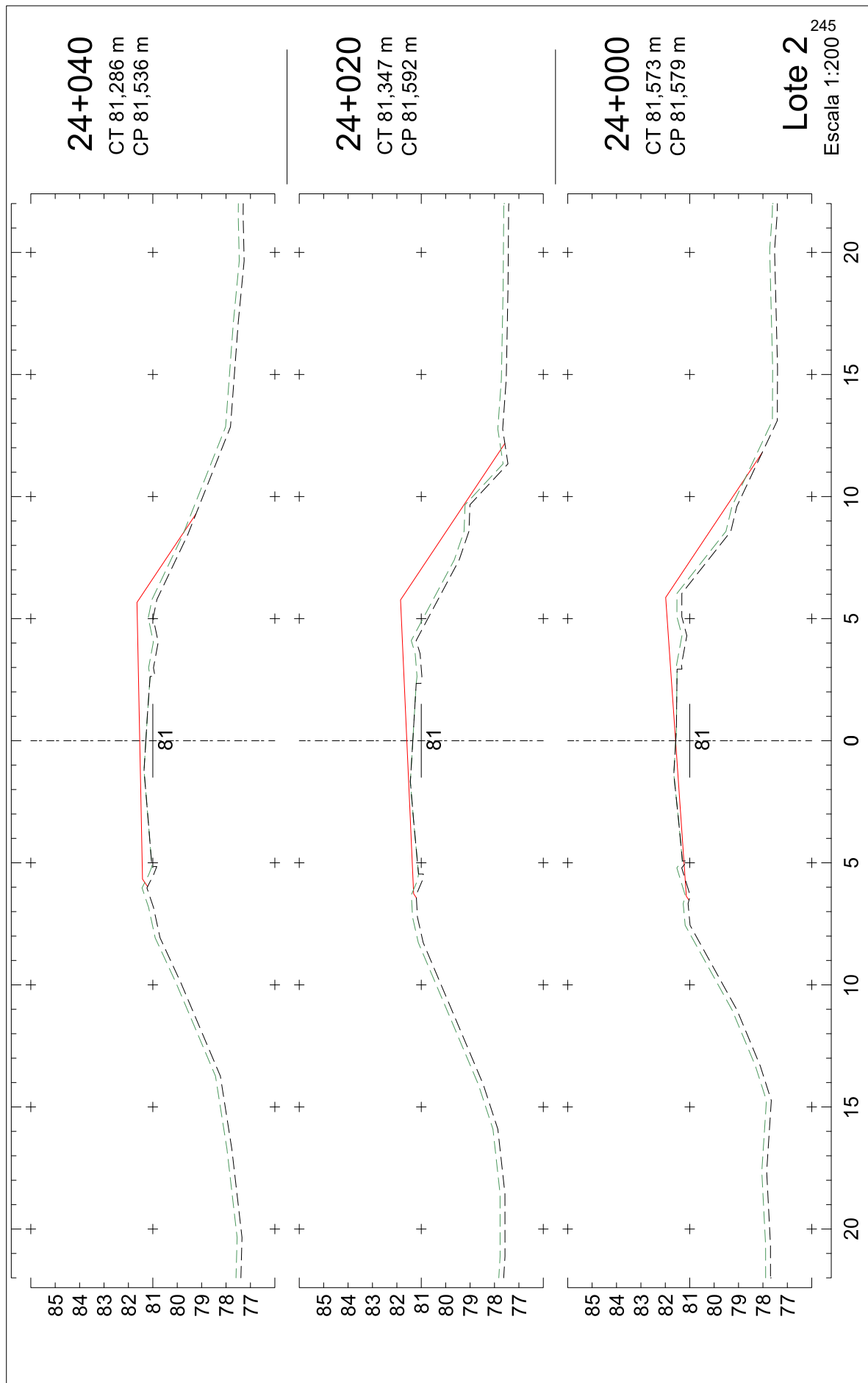


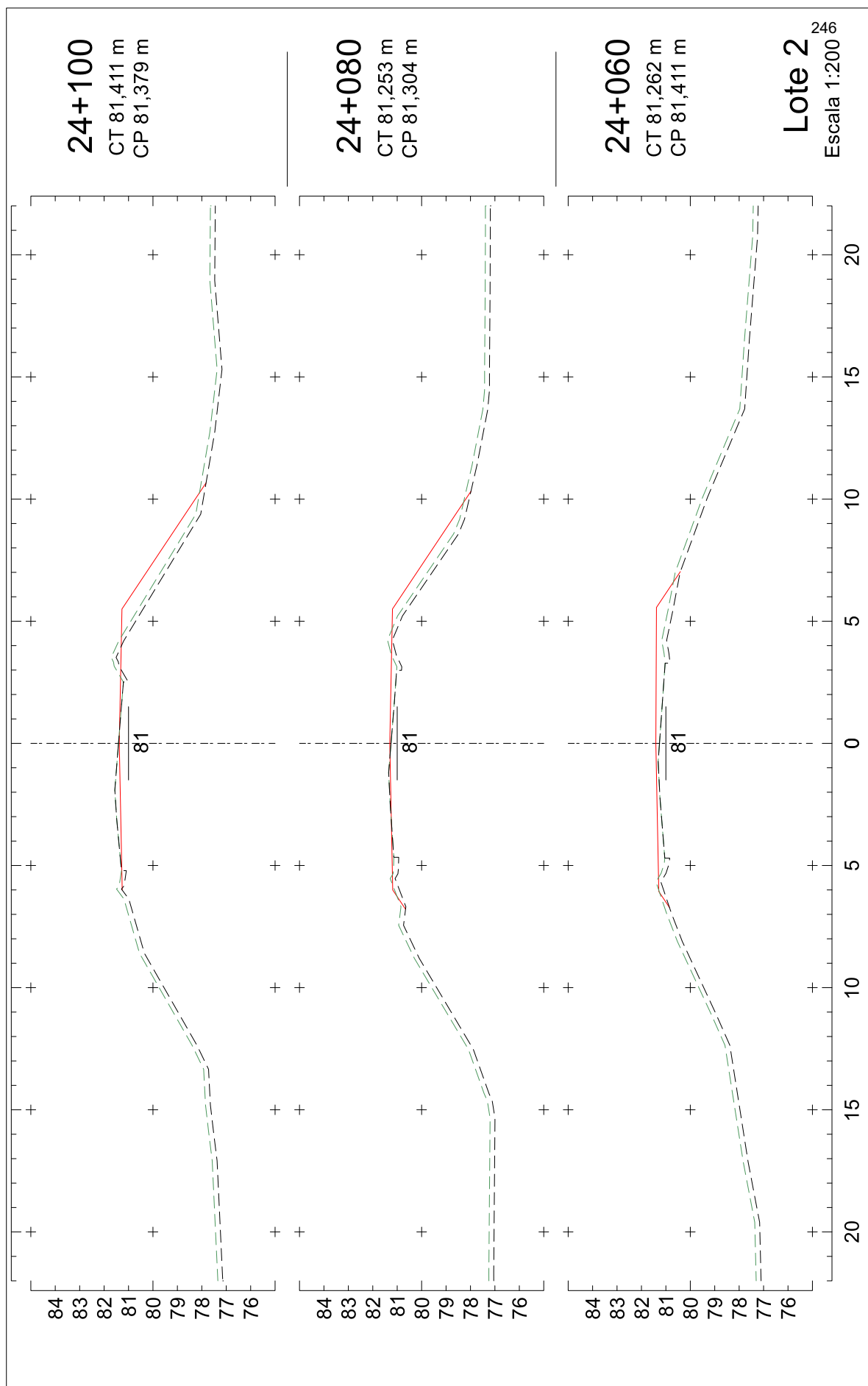


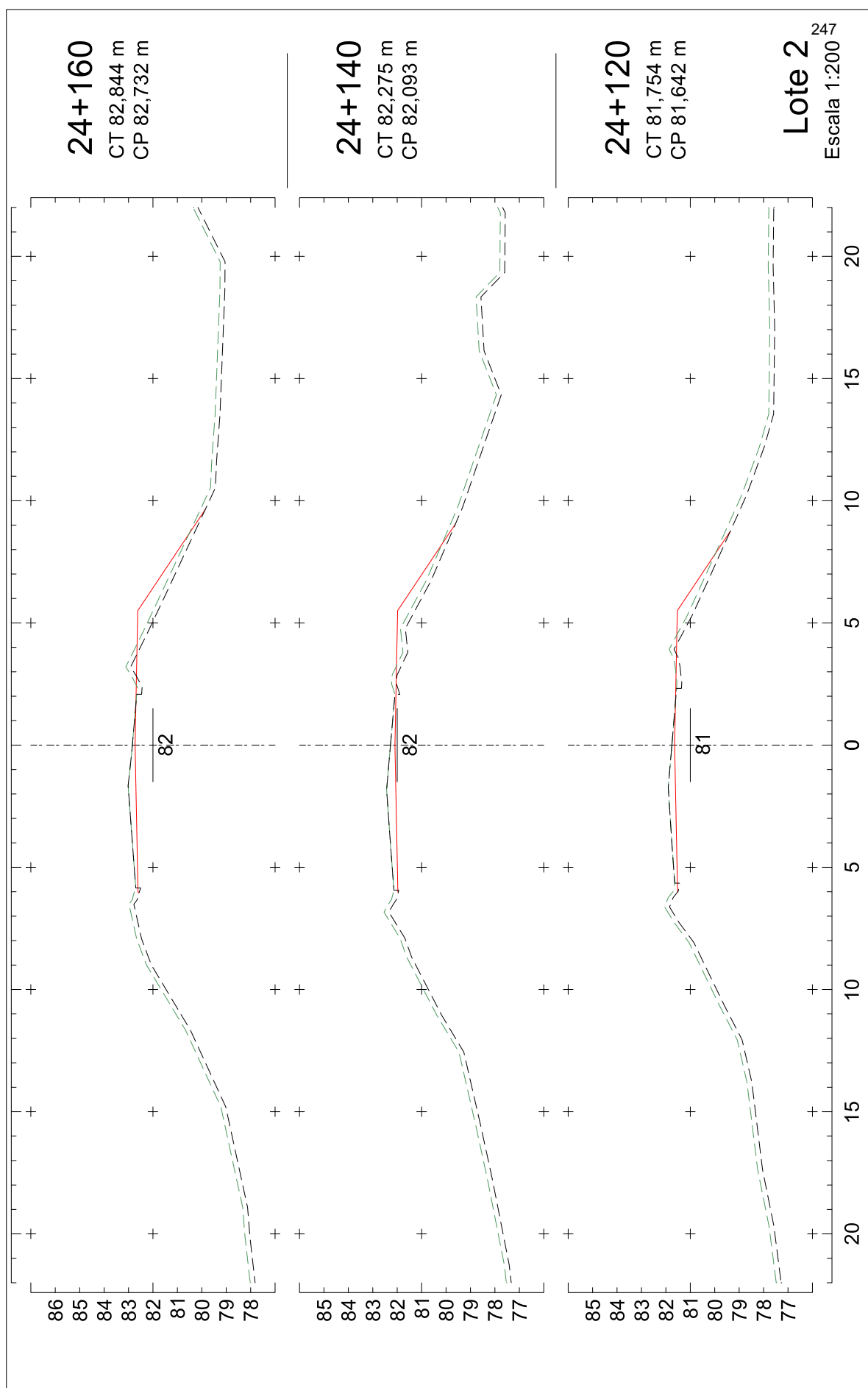


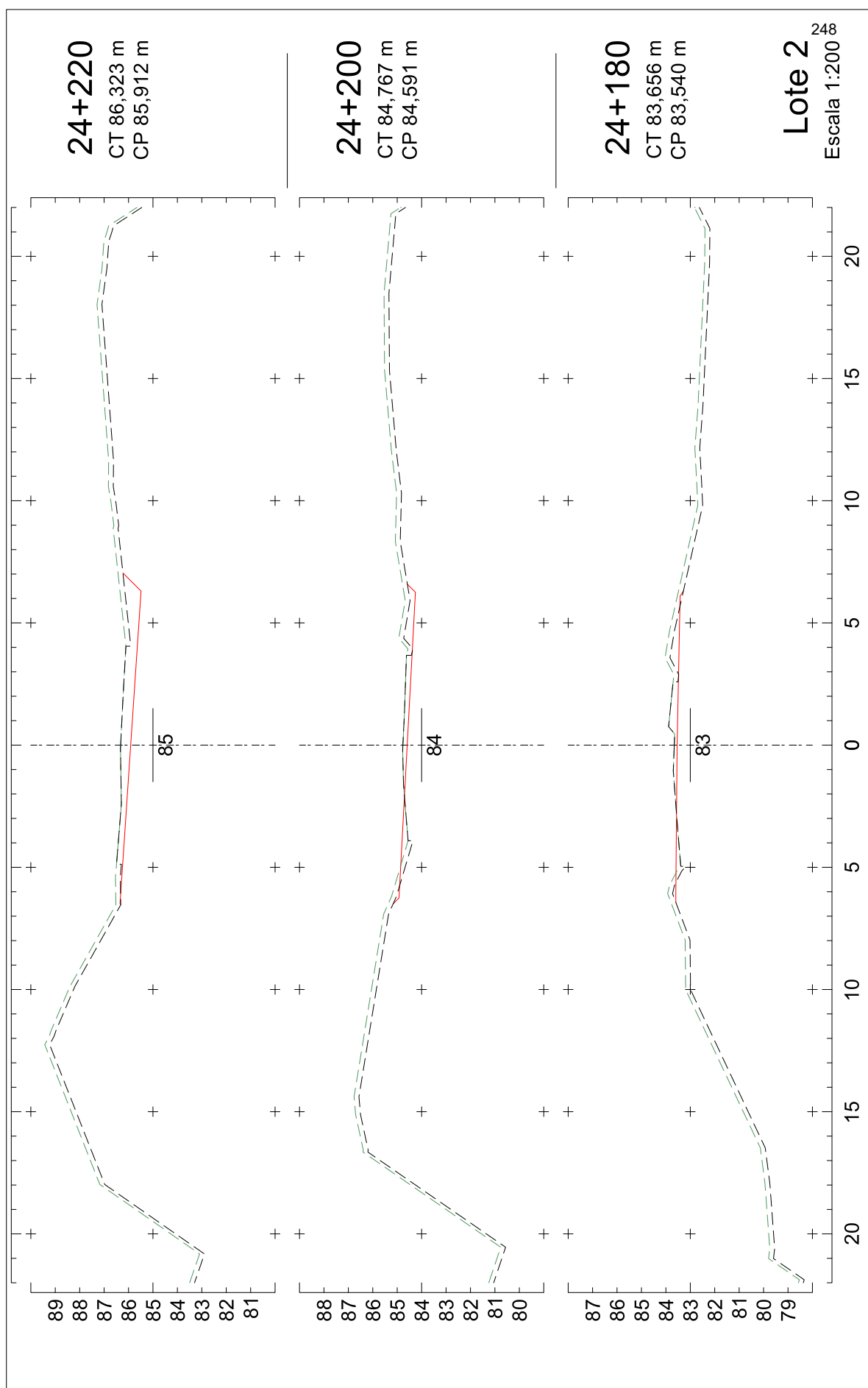


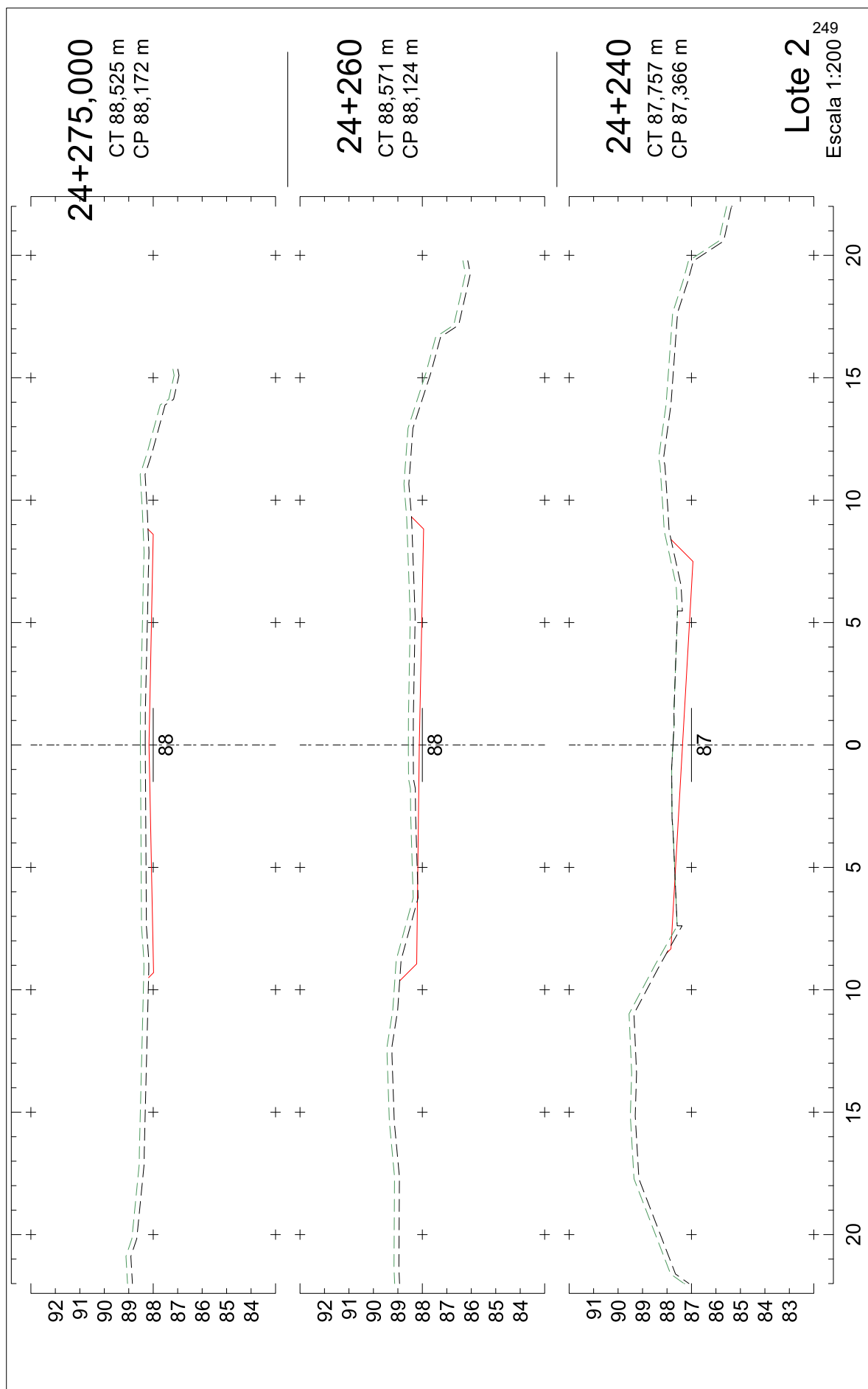














3.2 INTERSEÇÃO 02 – KM 23+880

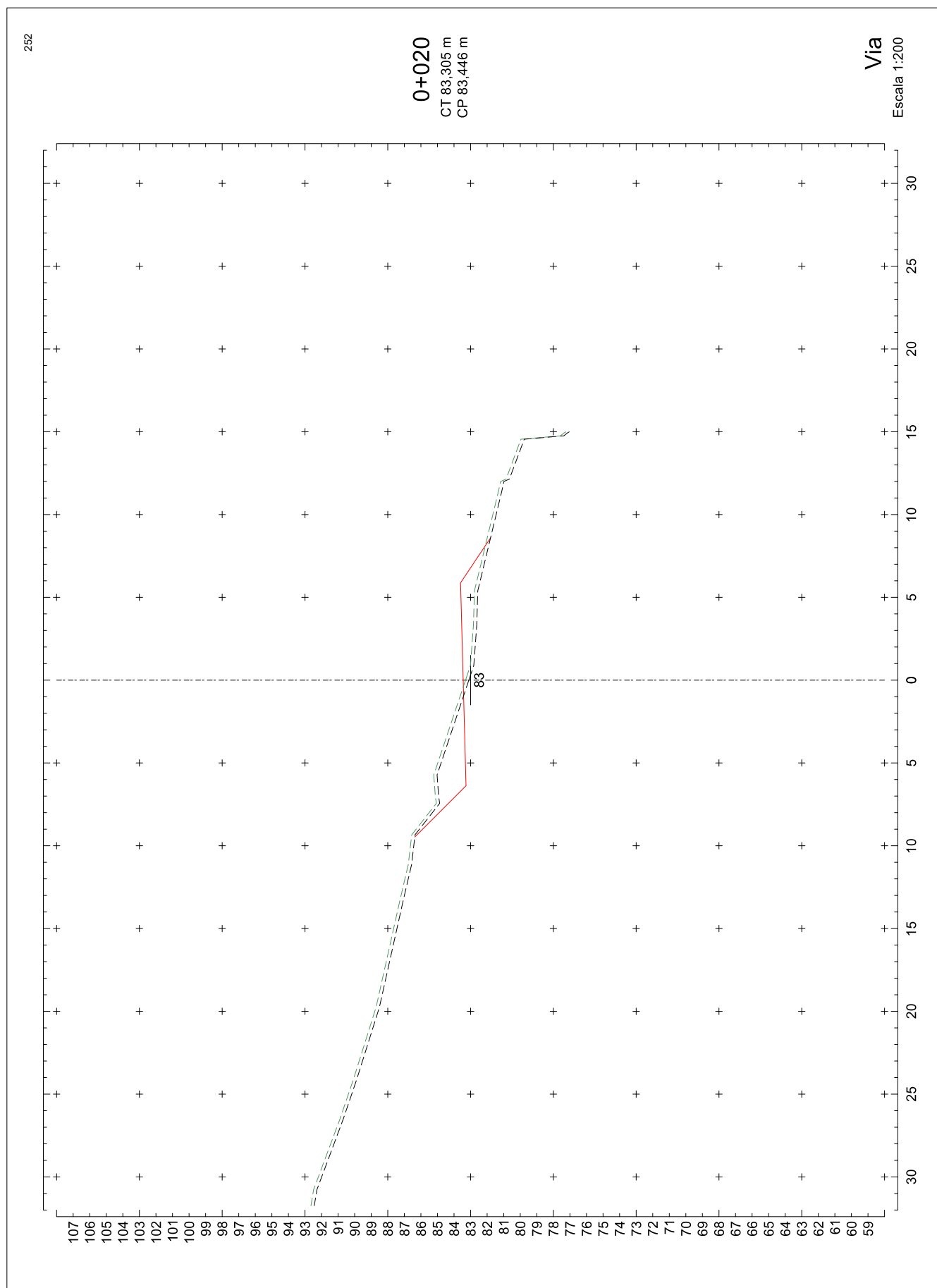


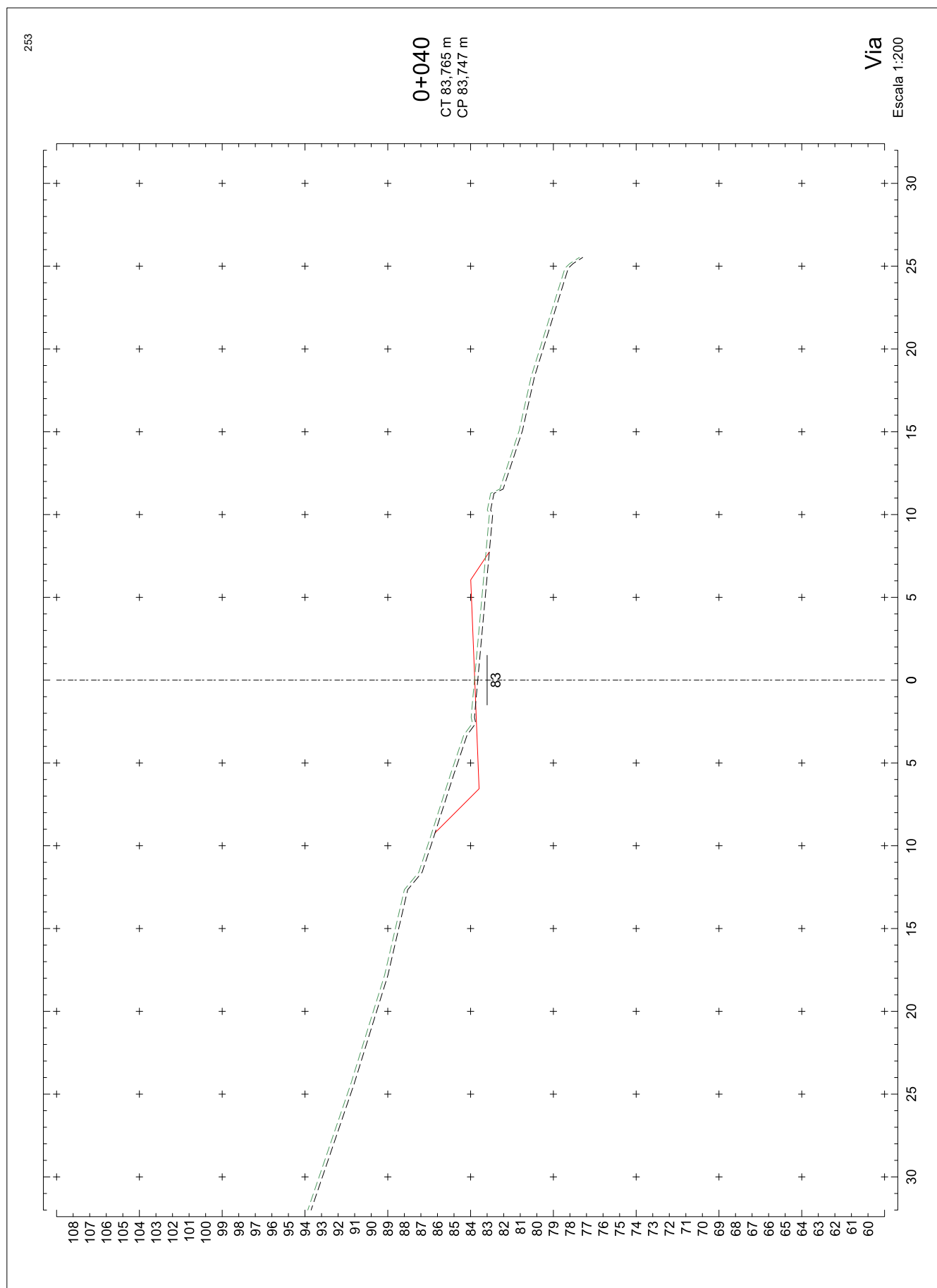
251

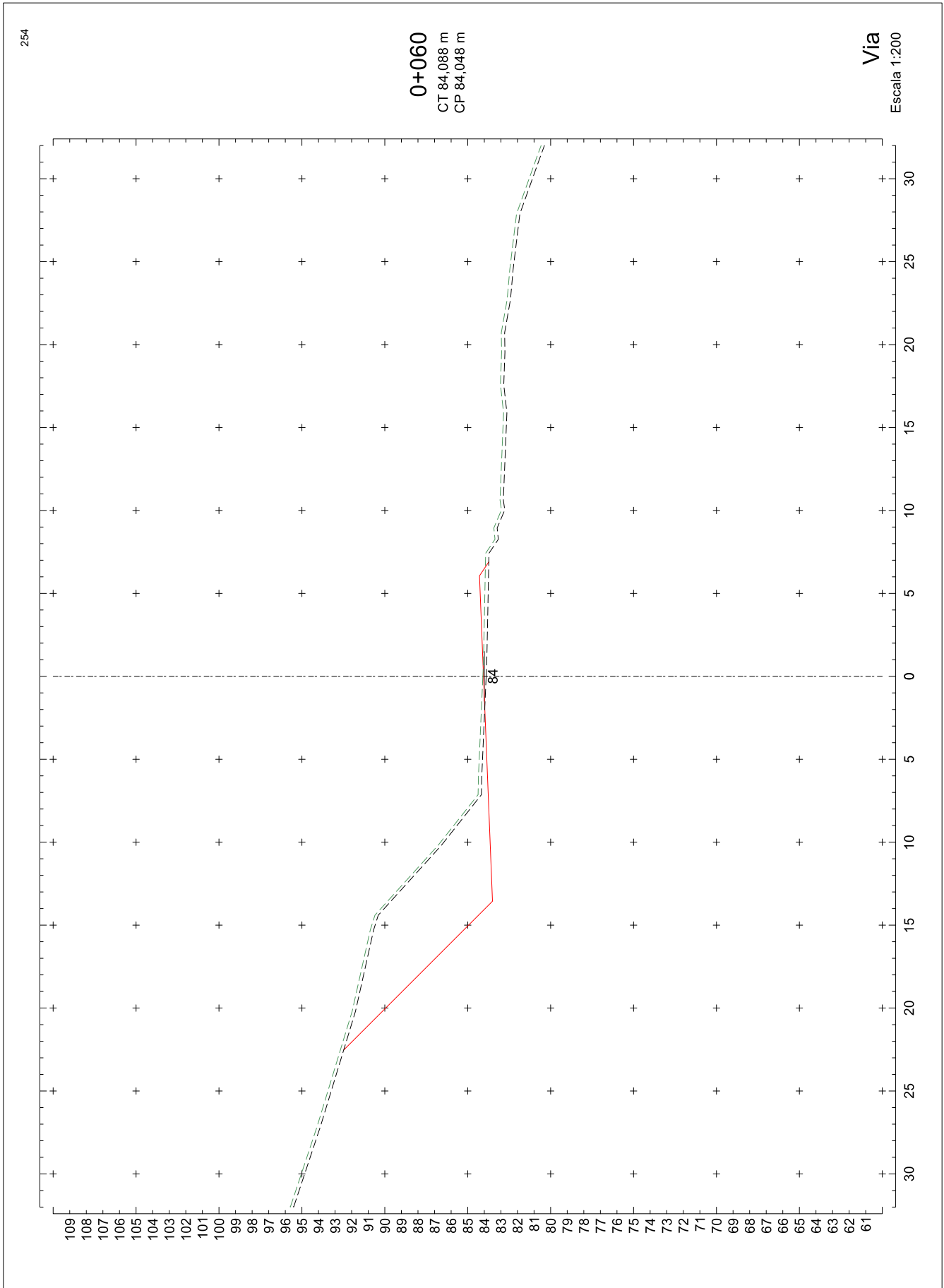


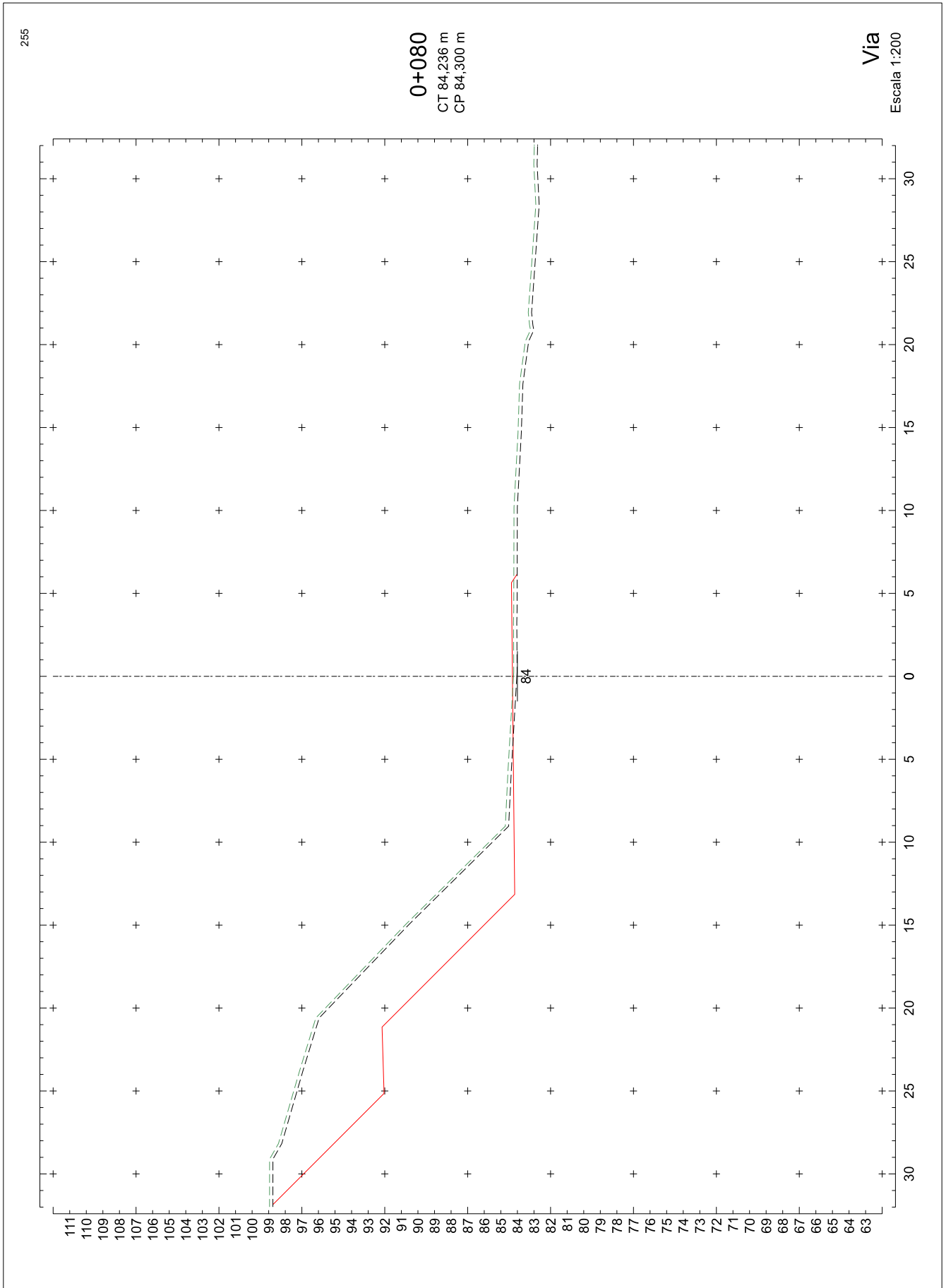
VIA

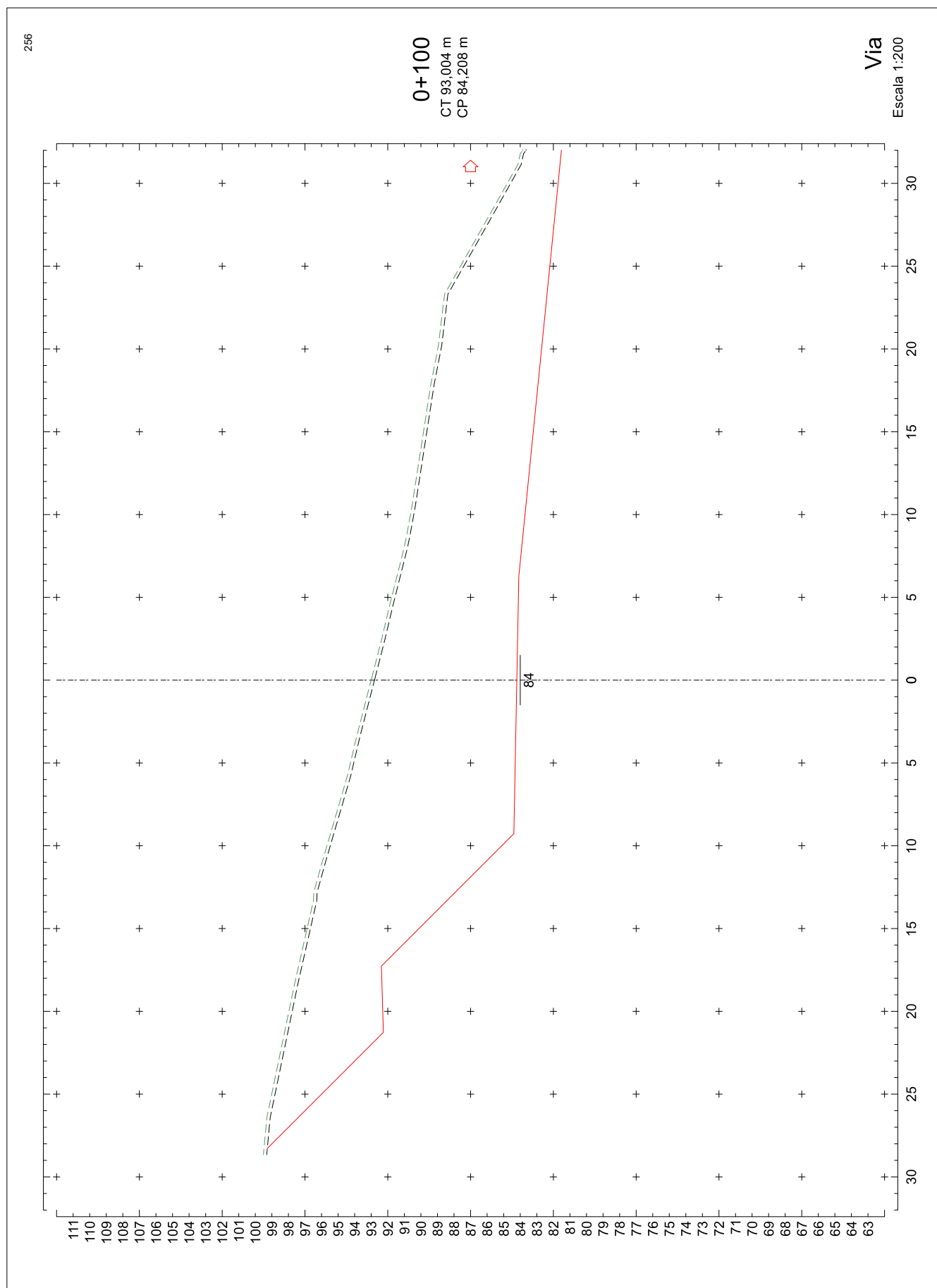
ERS-715 - PROJETO FINAL DE ENGENHARIA

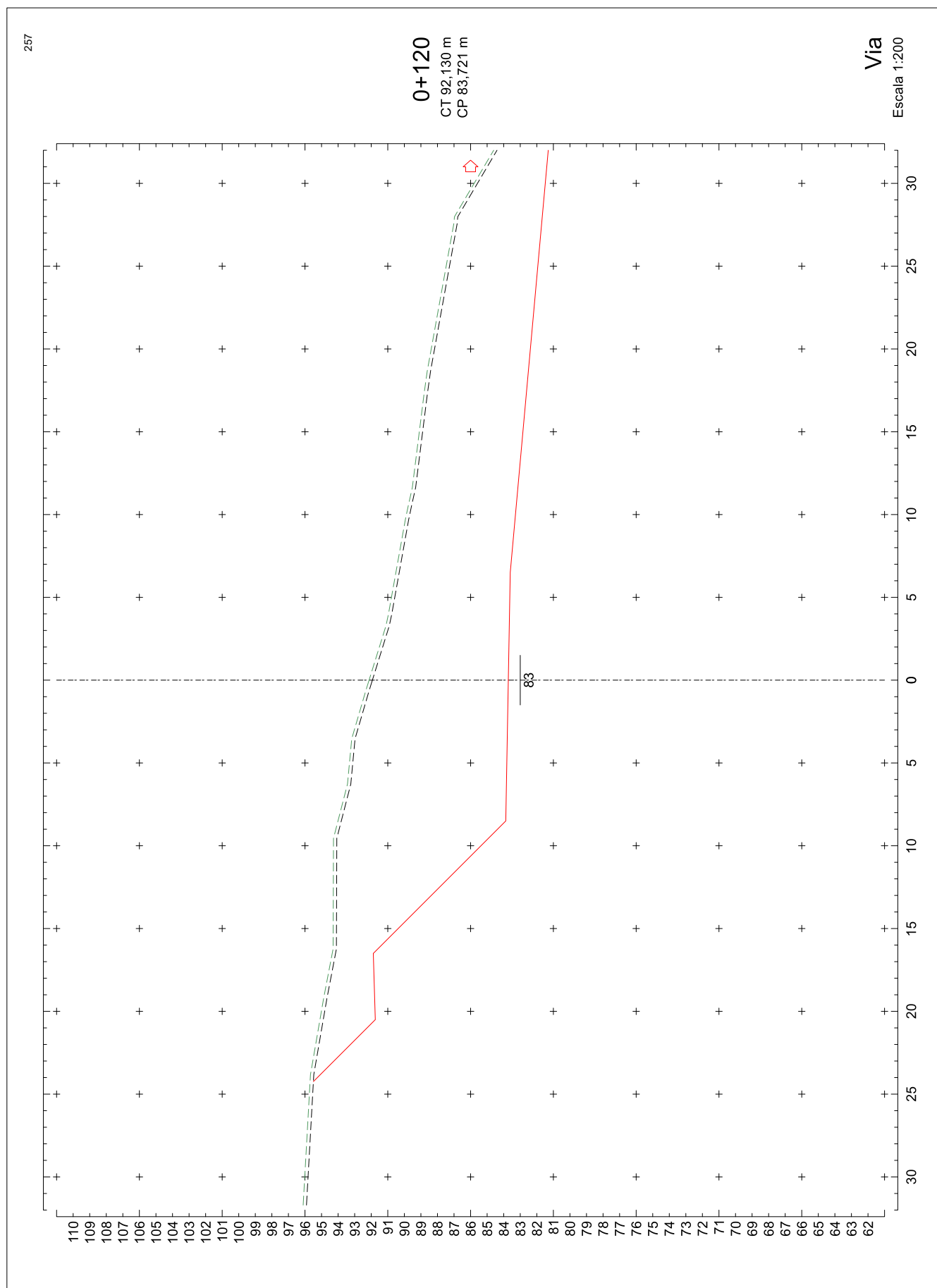


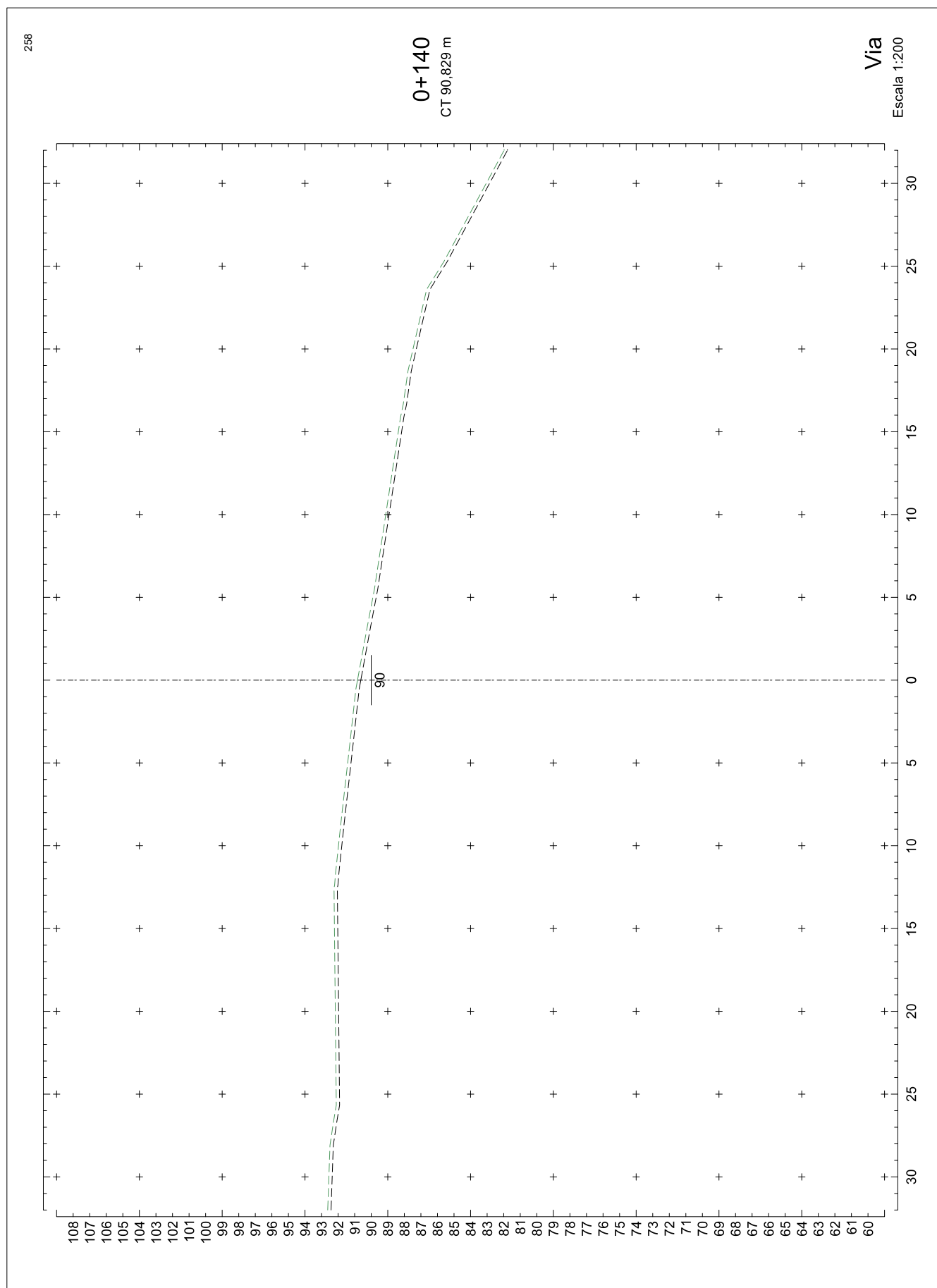


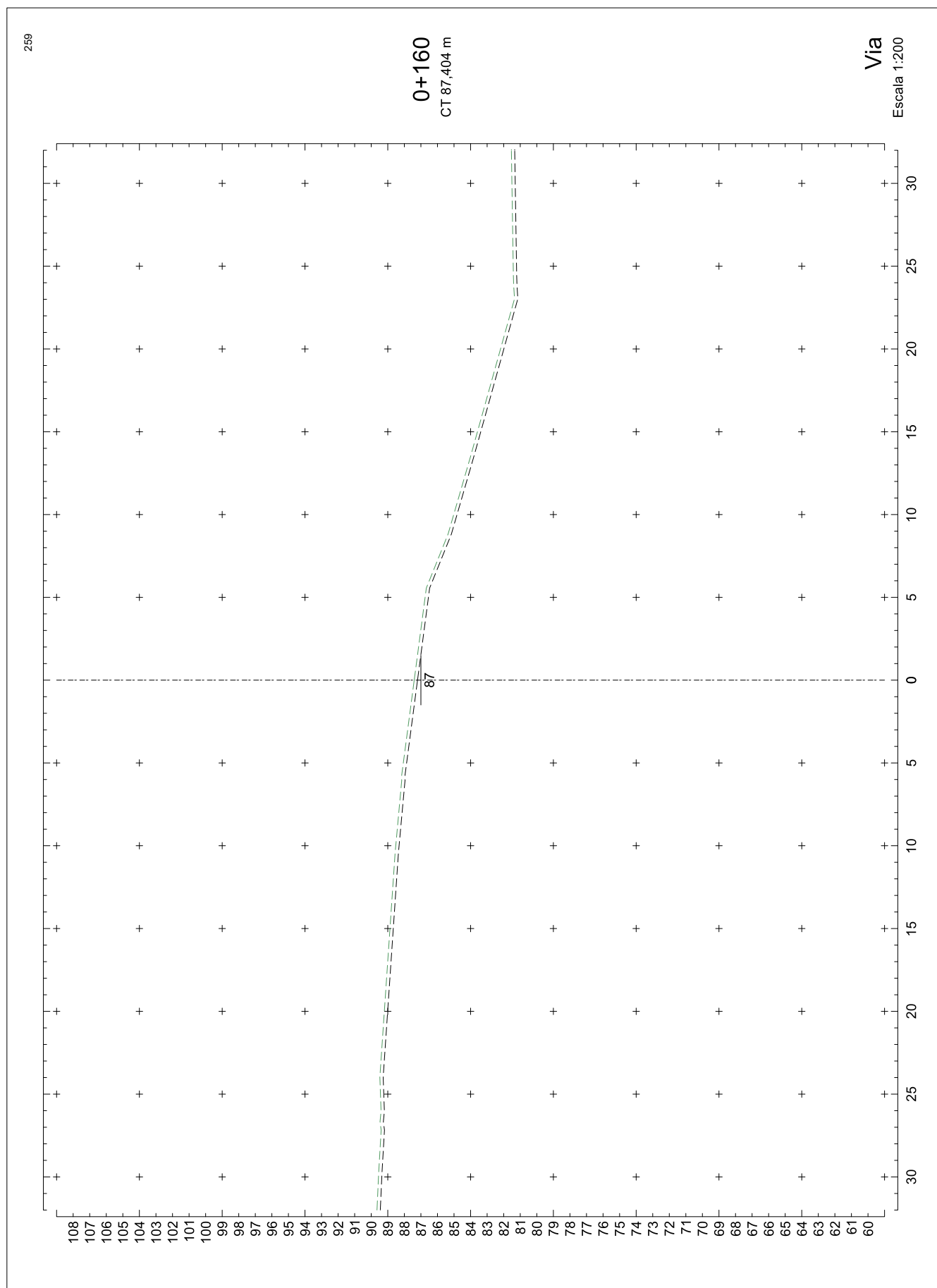


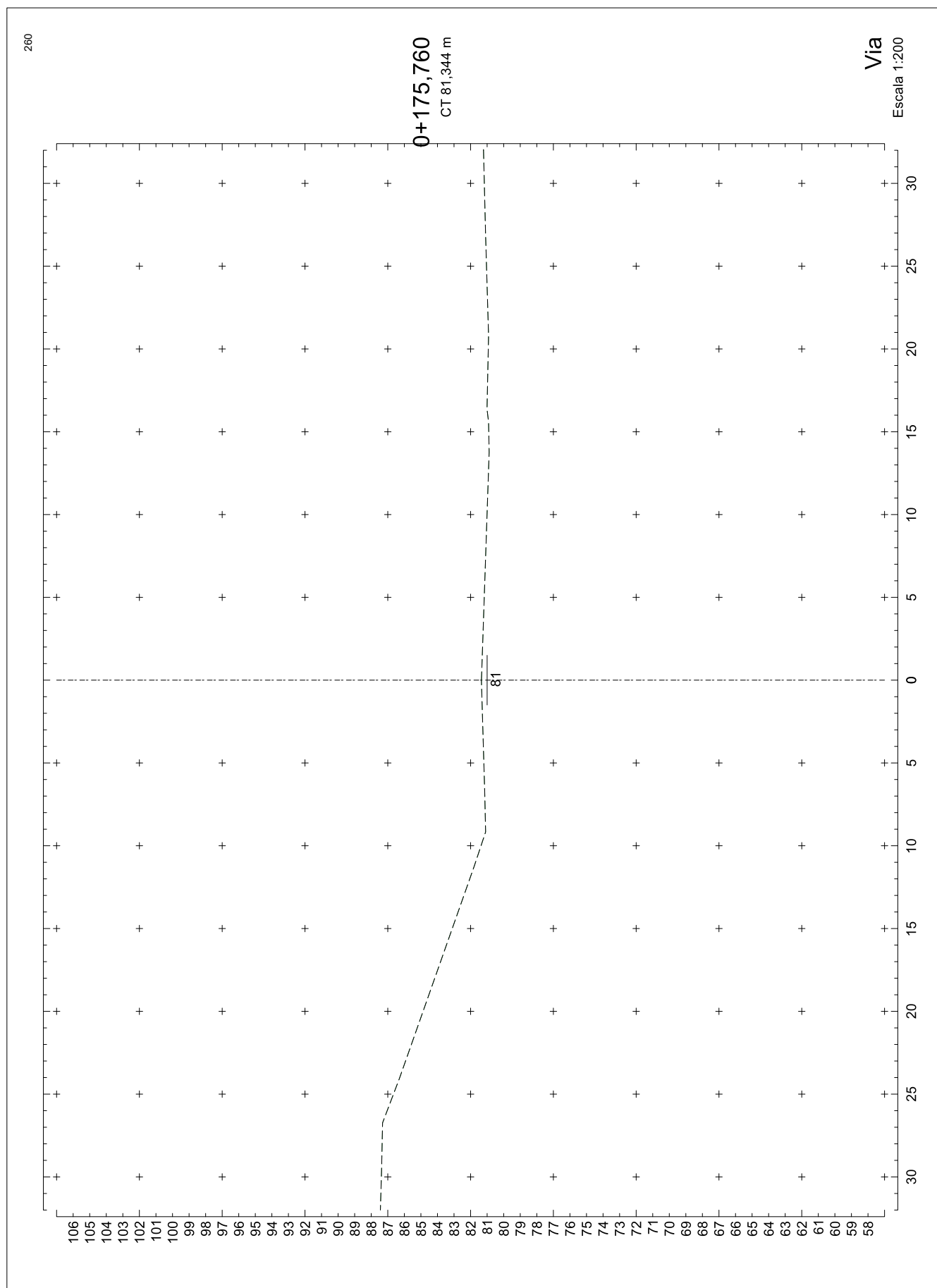














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RAMO A

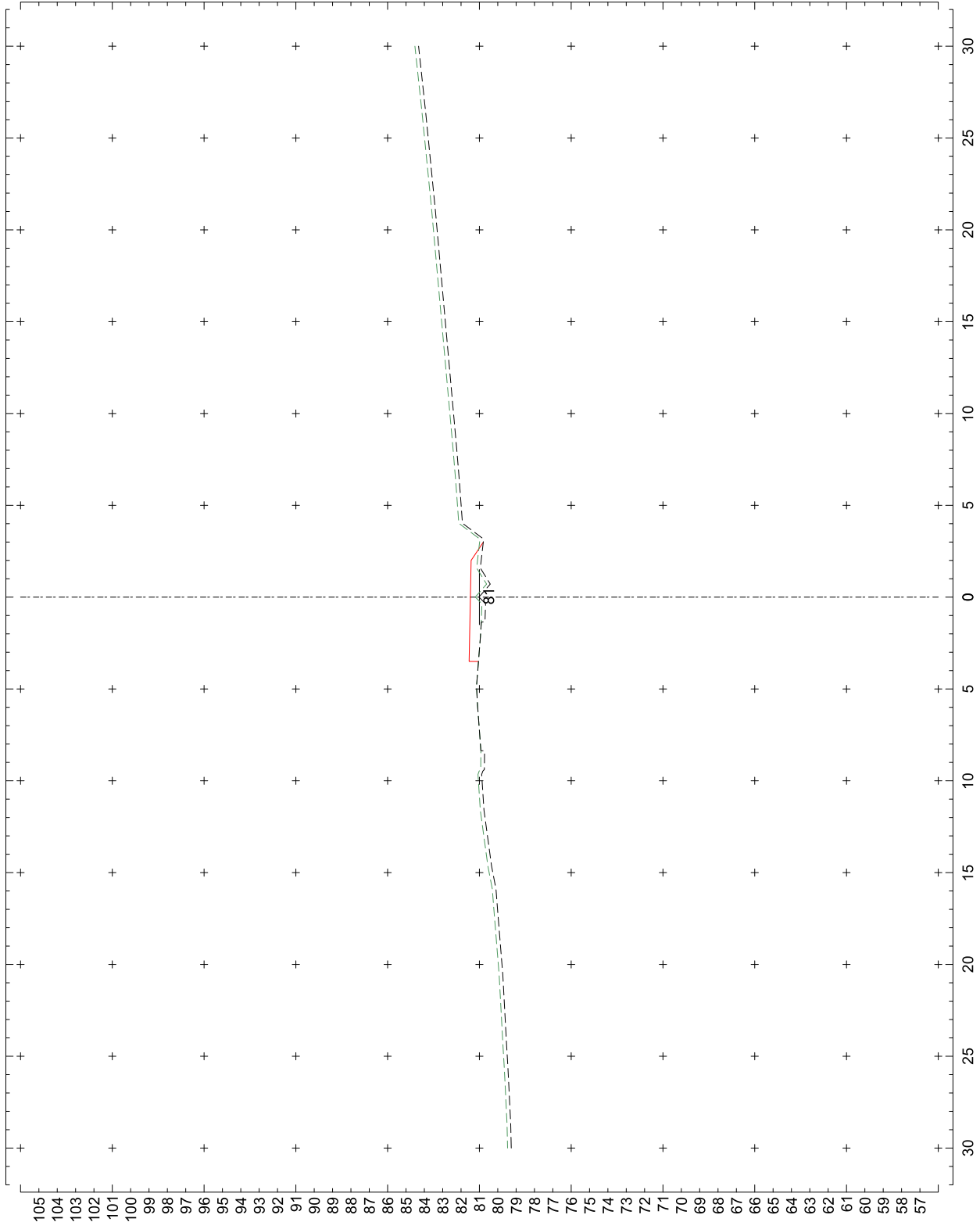
ERS-715 - PROJETO FINAL DE ENGENHARIA

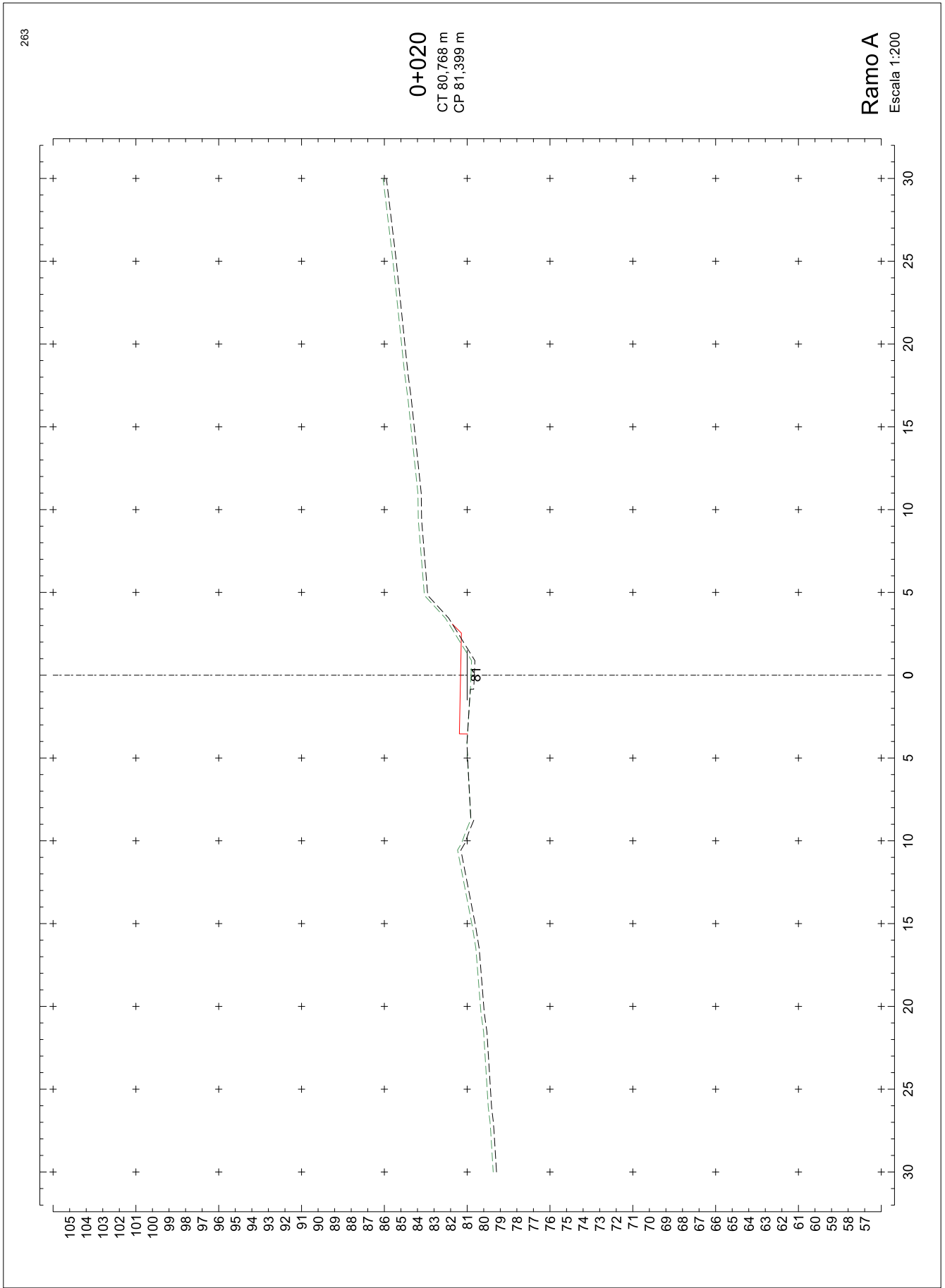


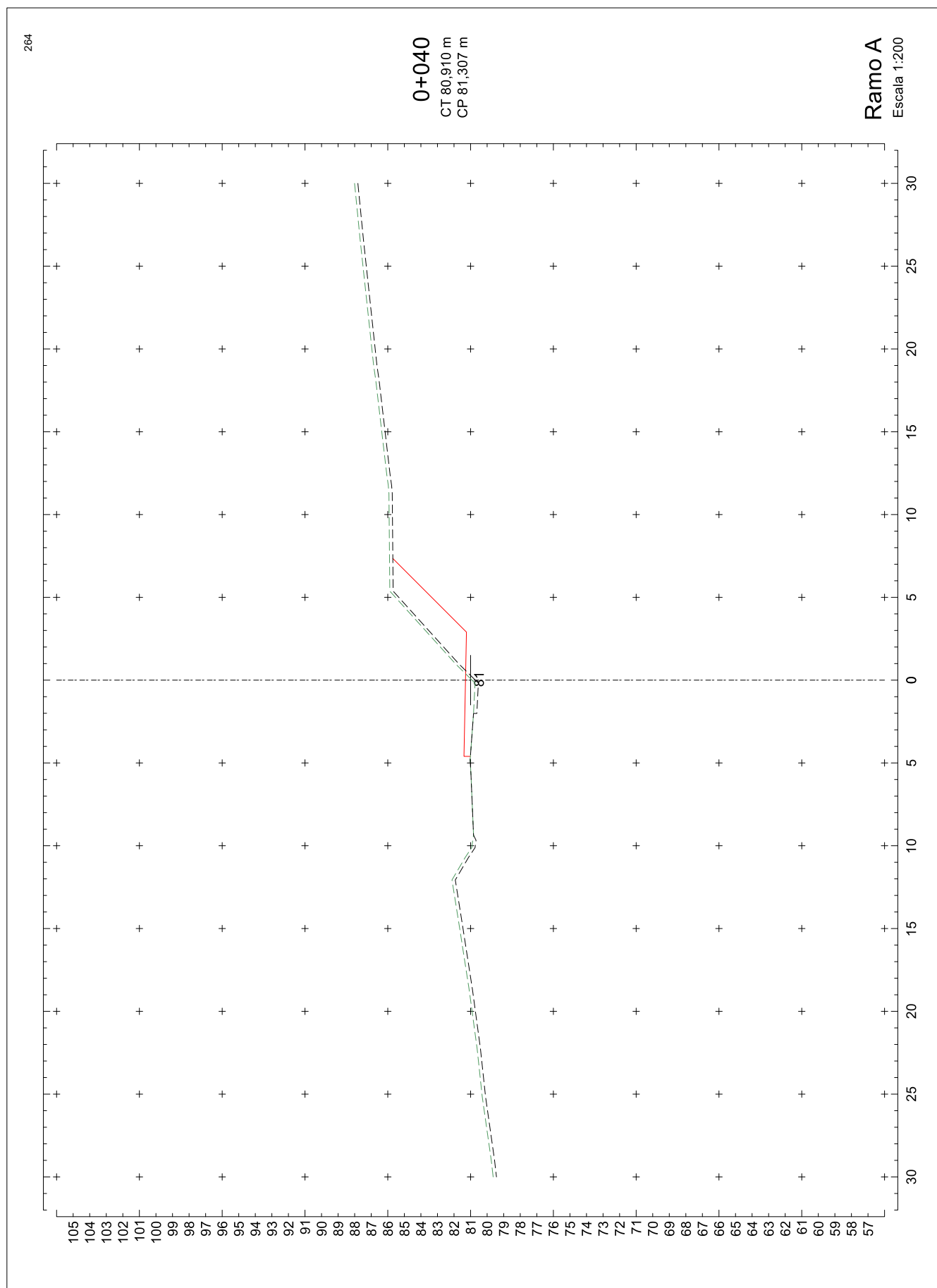
262

0+000
CT 81,215 m
CP 81,491 m

Ramo A
Escala 1:200





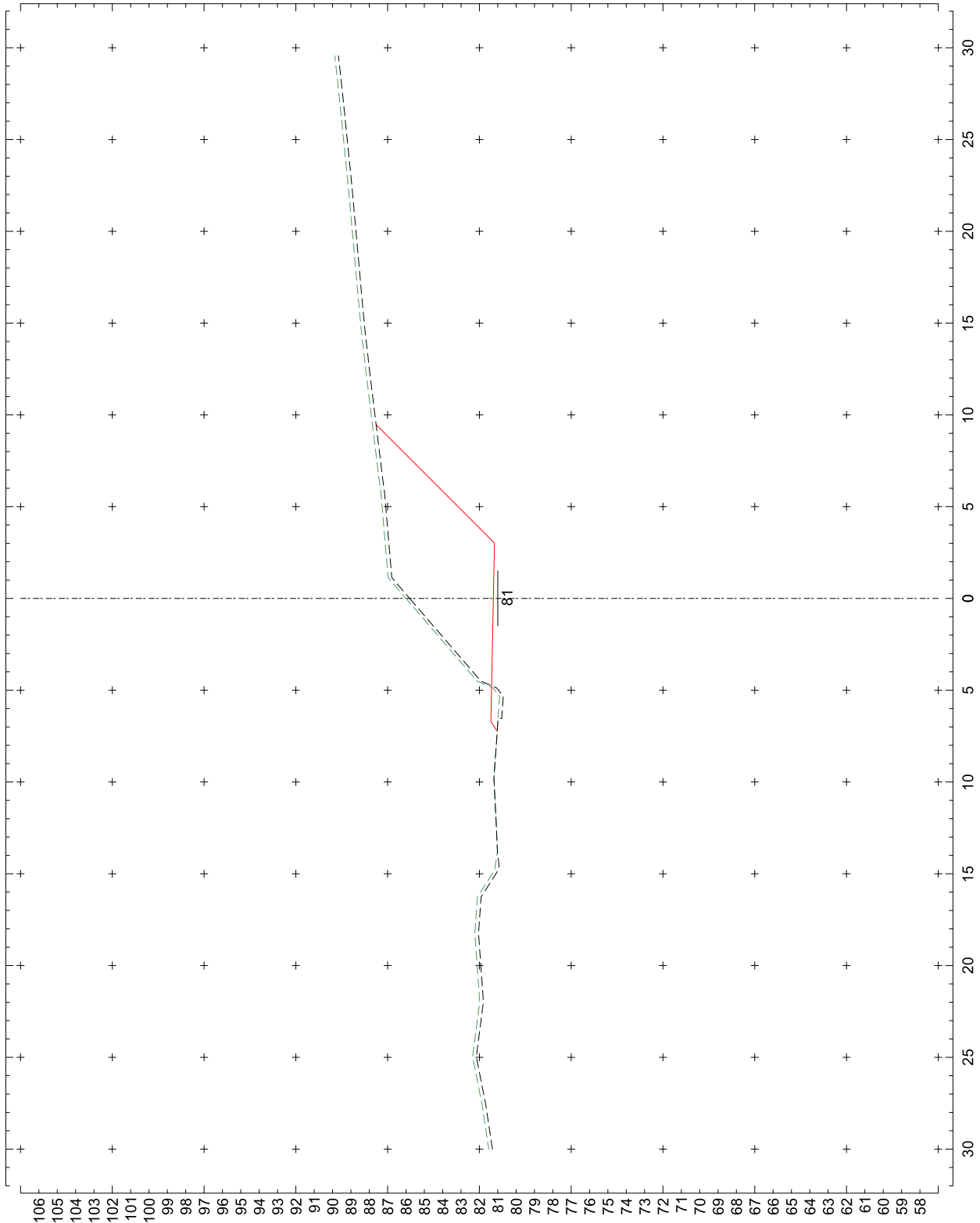


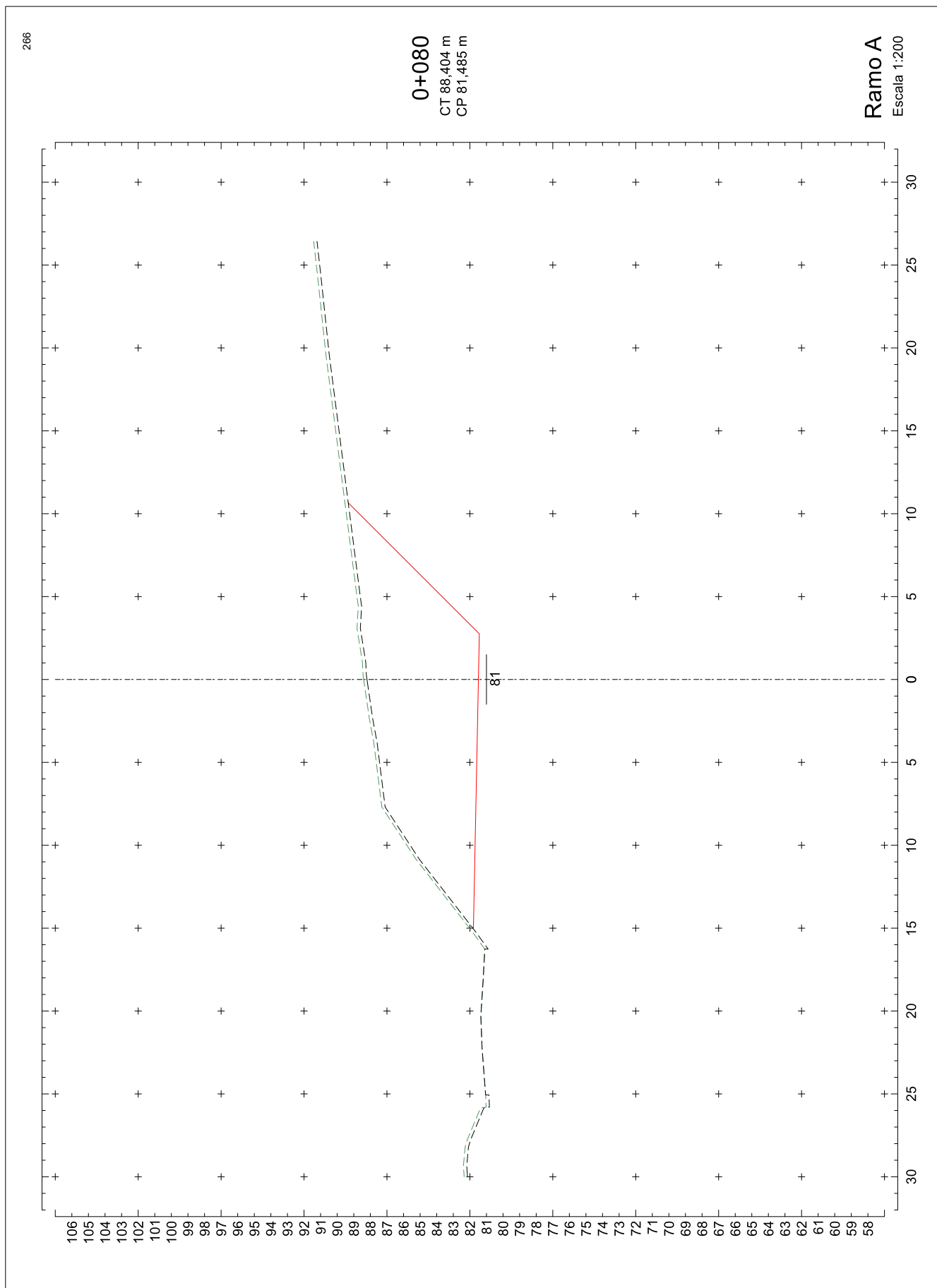


265

0+060
CT 86,000 m
CP 81,239 m

Ramo A
Escala 1:200



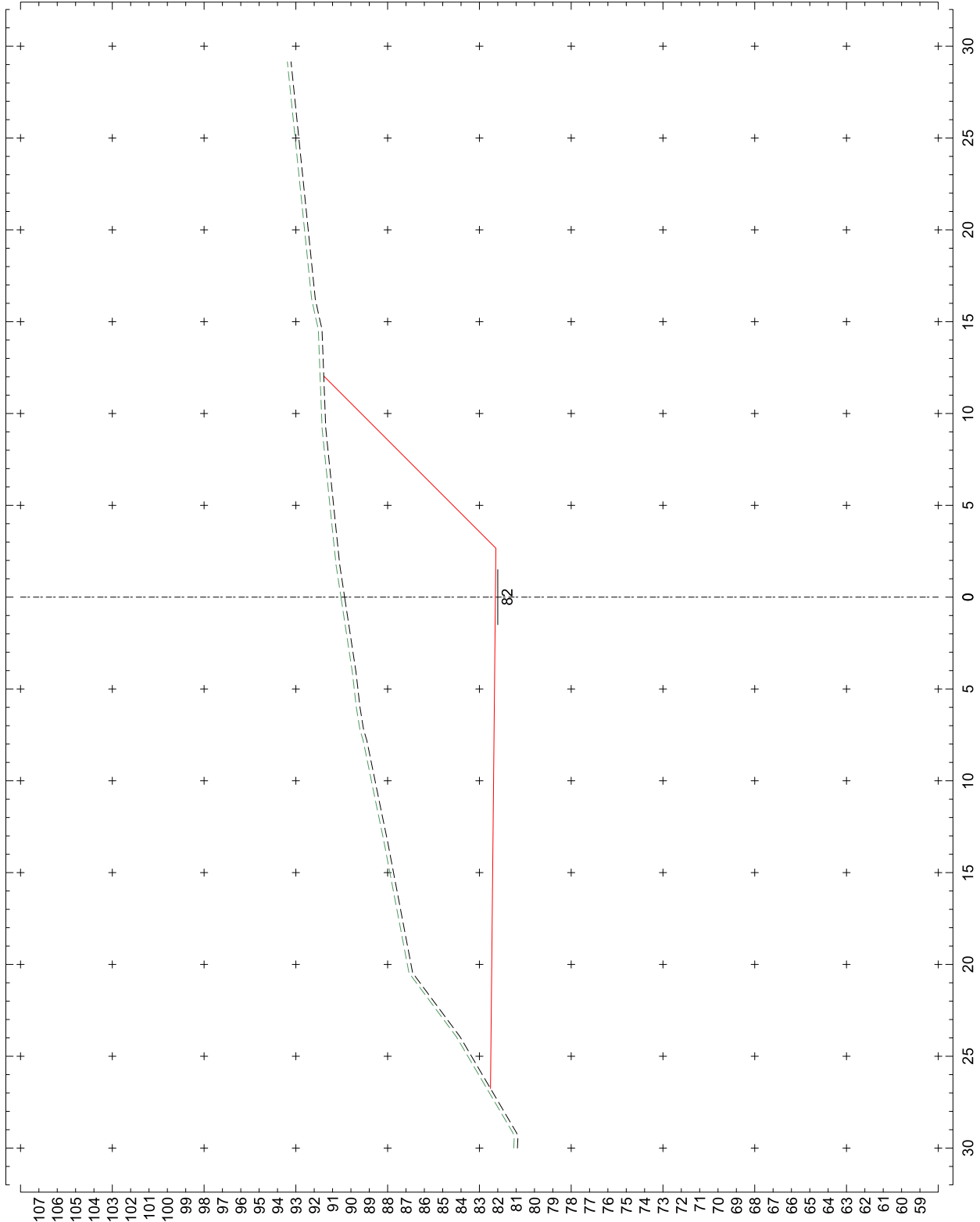


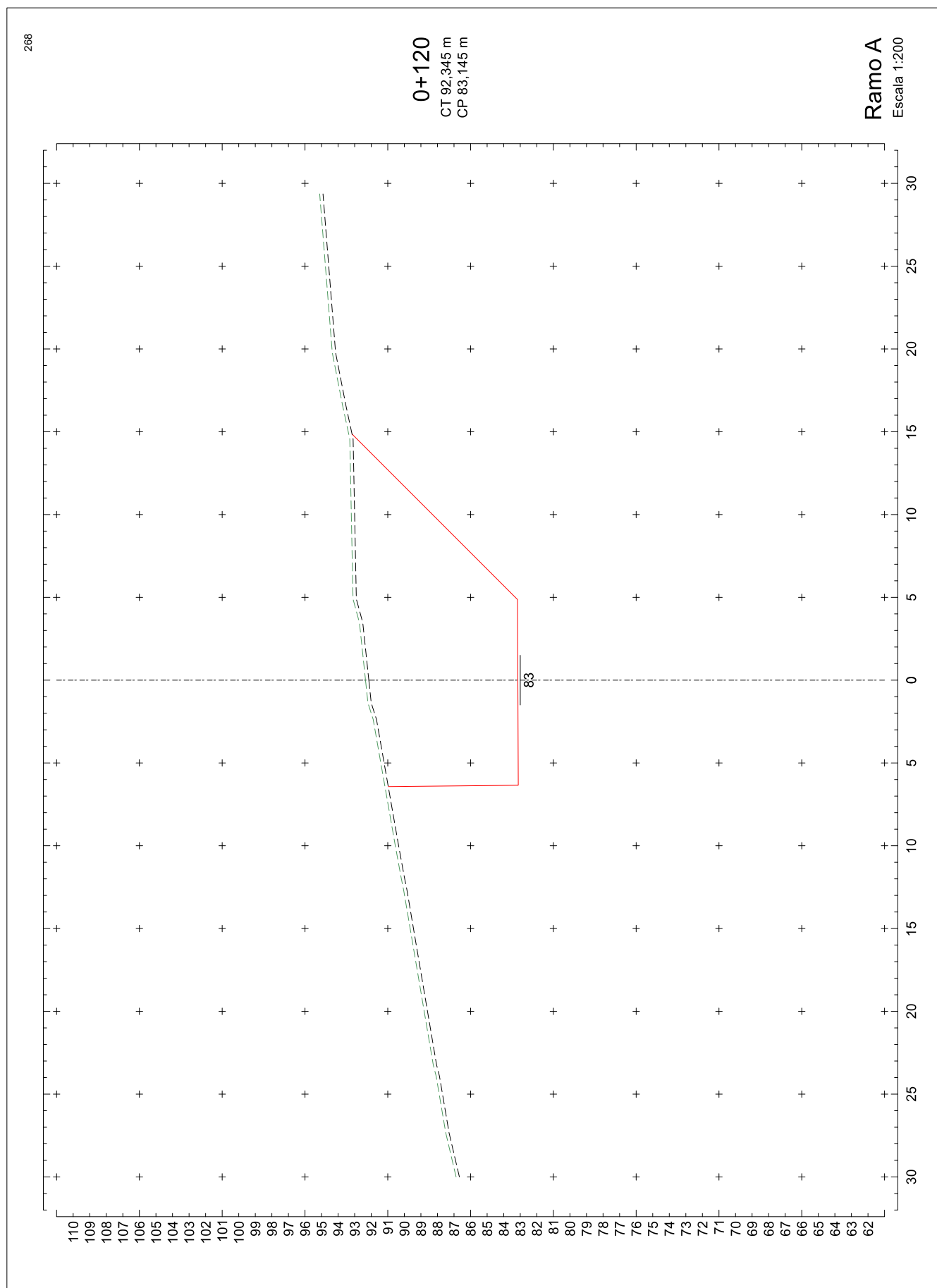


267

0+100
CT 90,543 m
CP 82,128 m

Ramo A
Escala 1:200

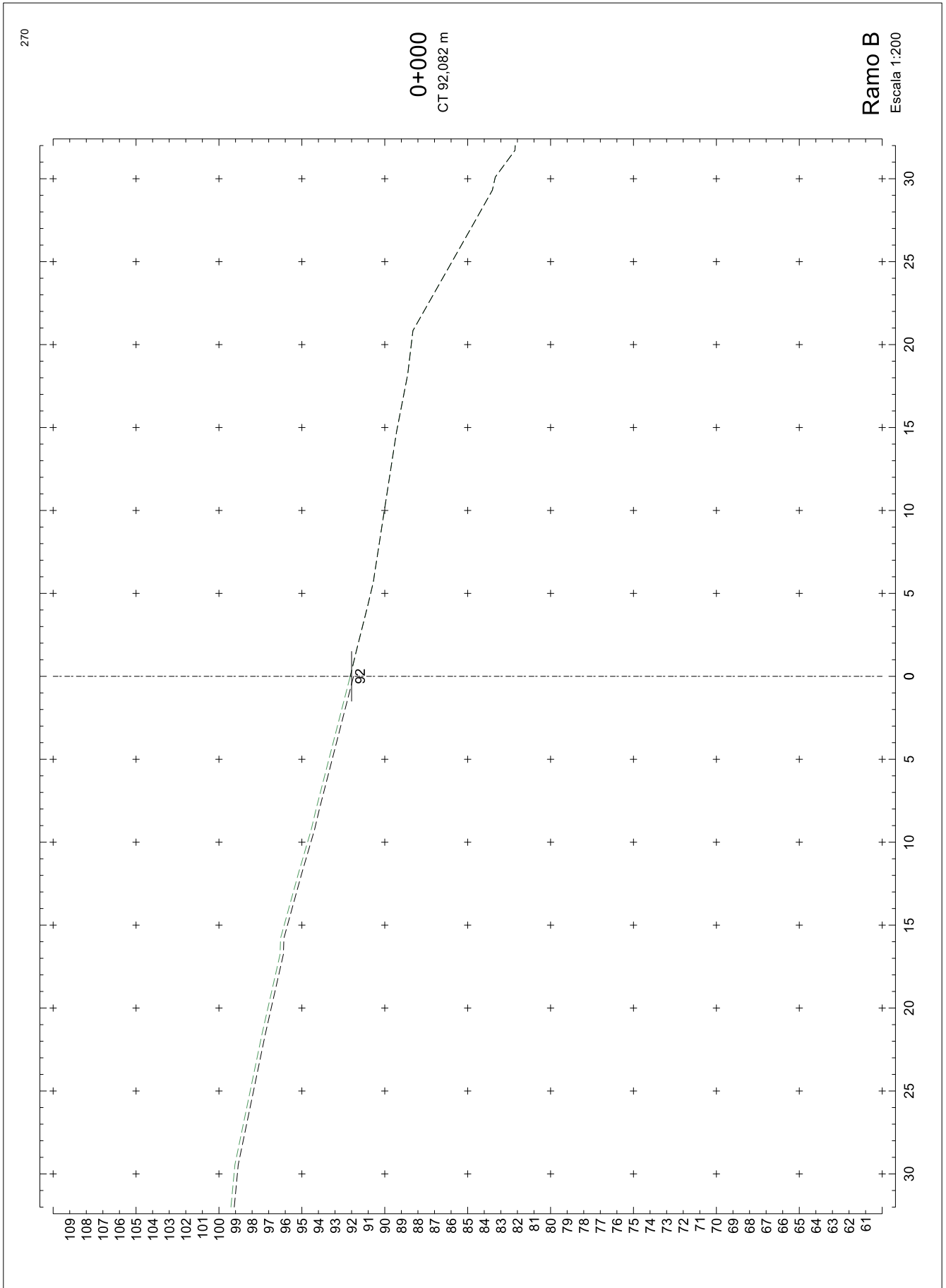


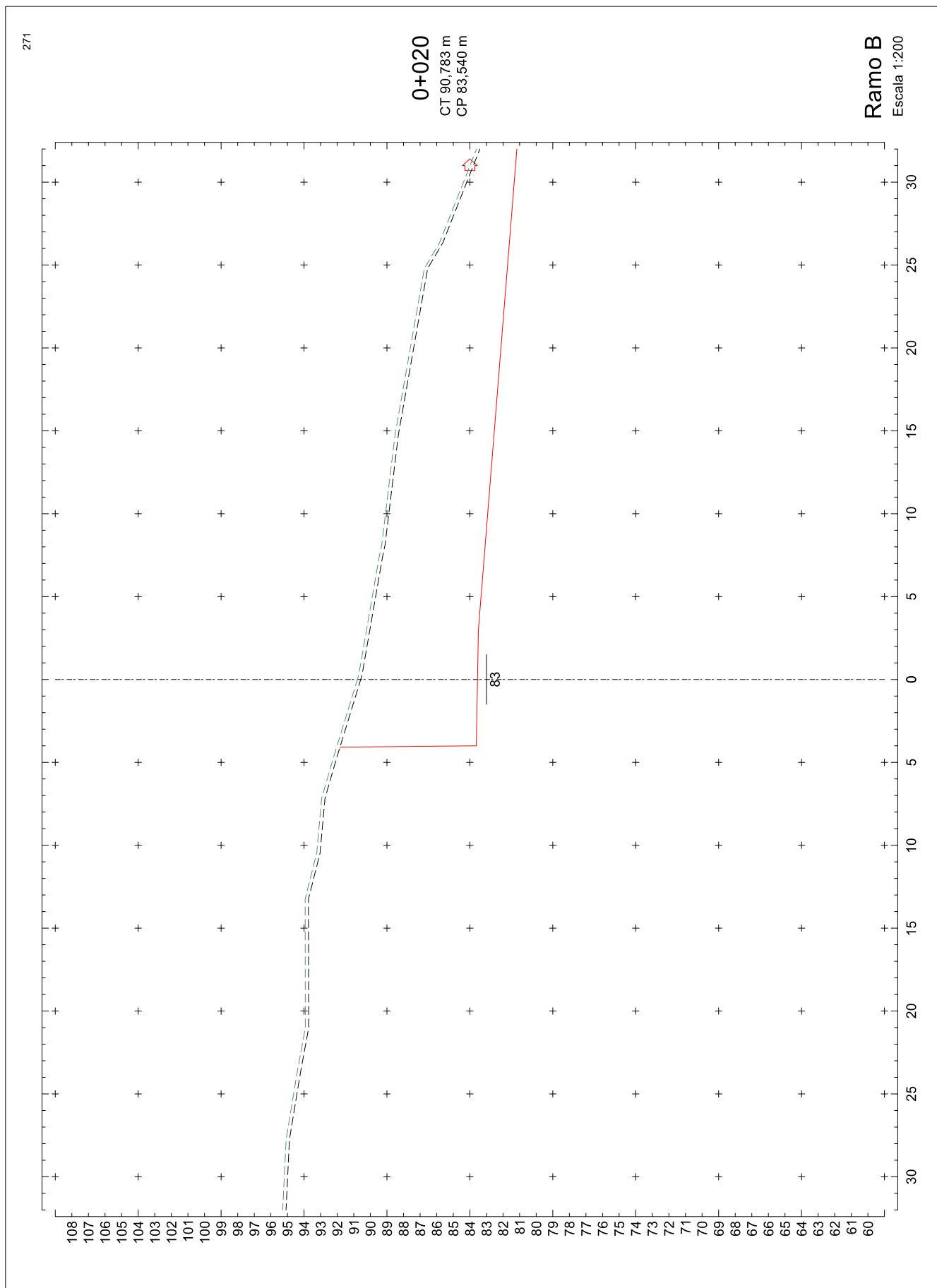




RAMO B

ERS-715 - PROJETO FINAL DE ENGENHARIA



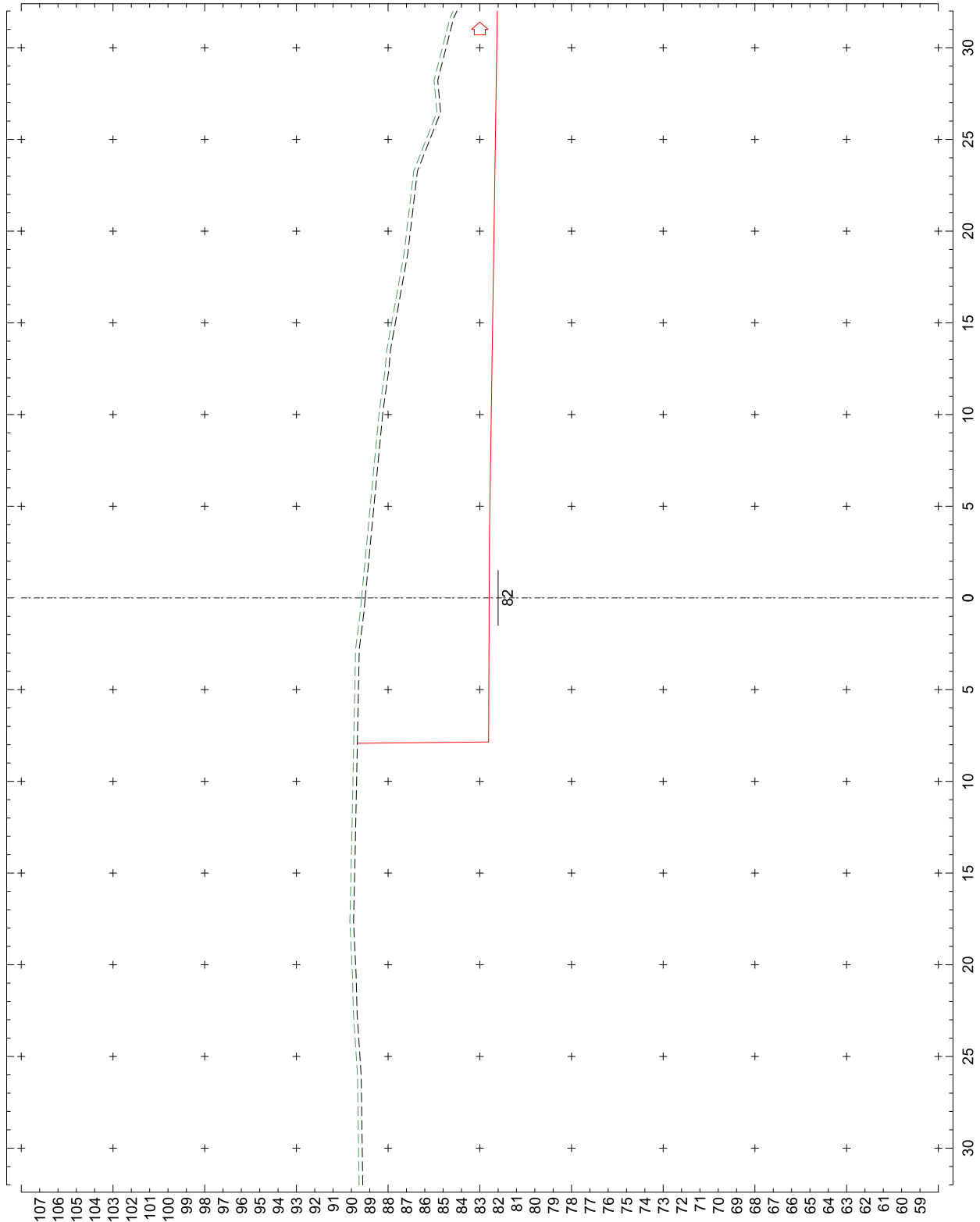


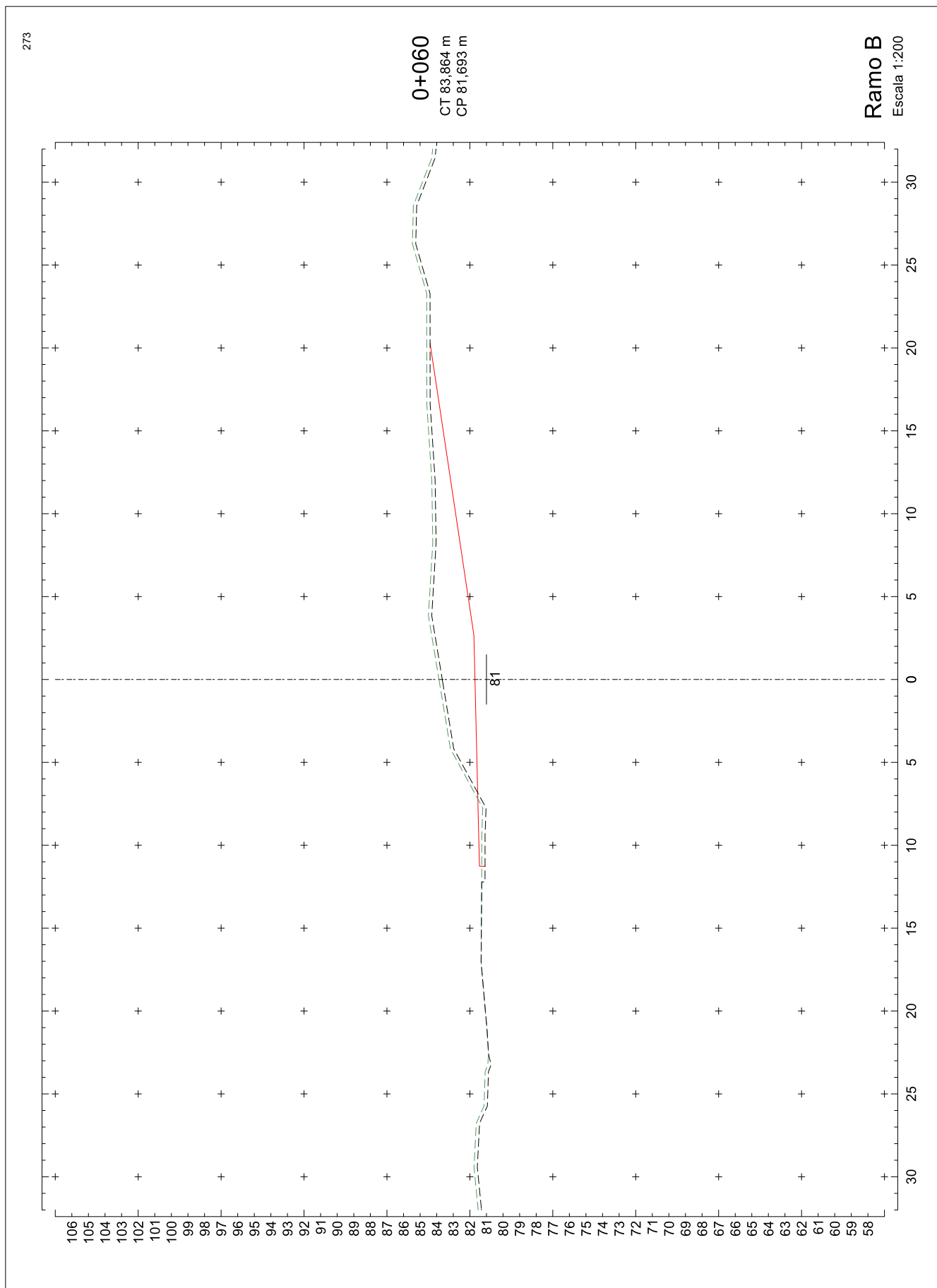


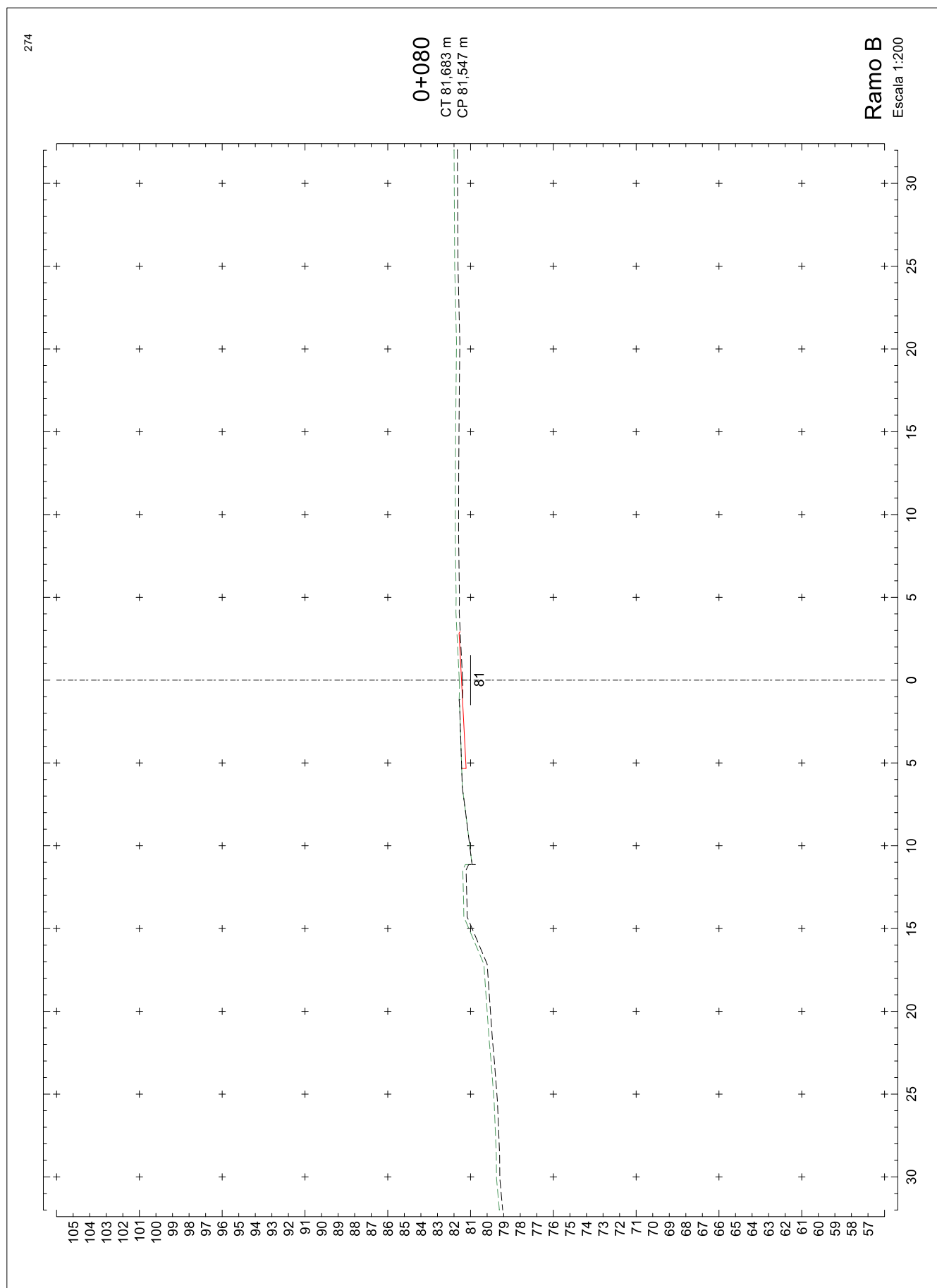
272

0+040
CT 89,448 m
CP 82,488 m

Ramo B
Escala 1:200









275



RAMO C

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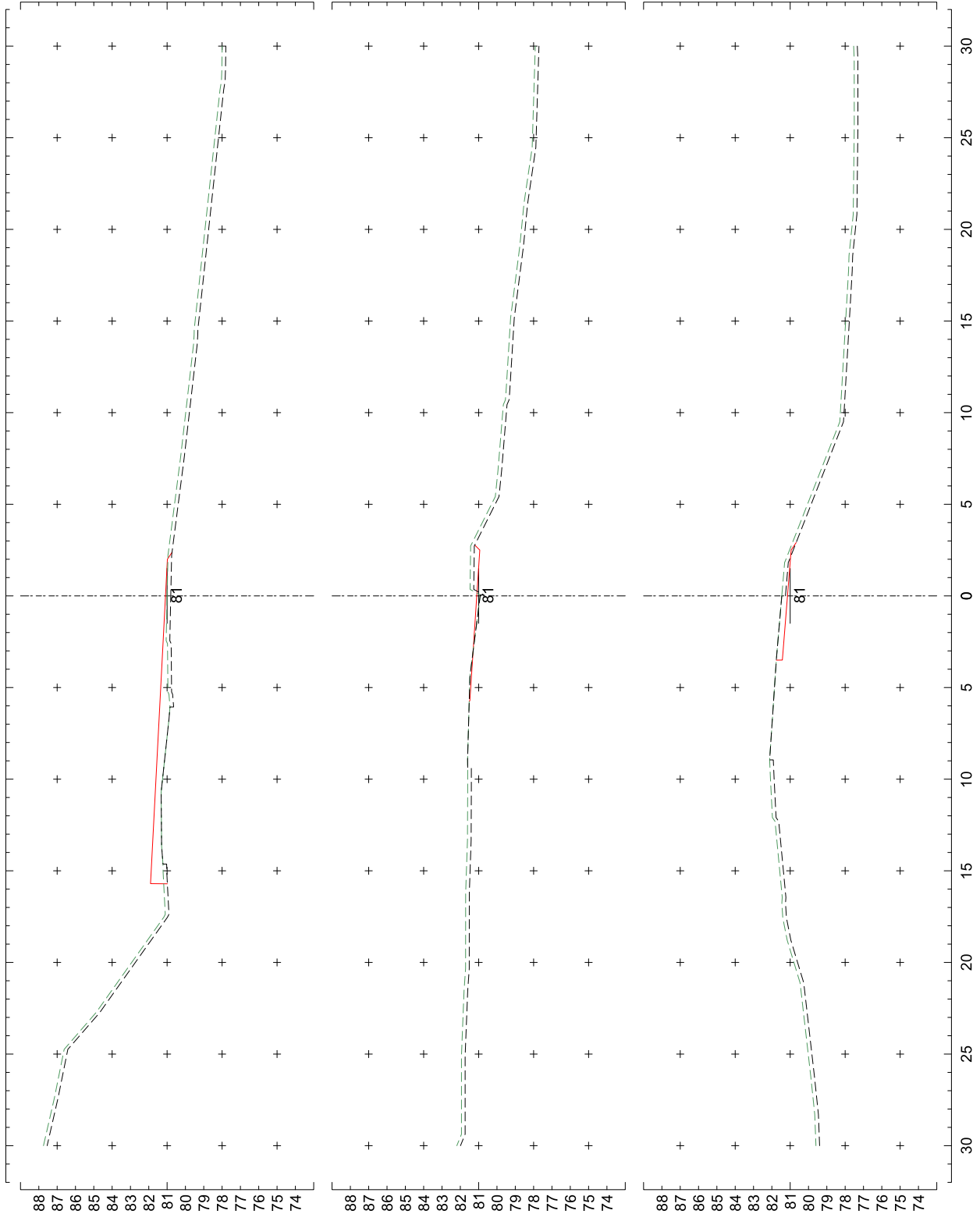
276

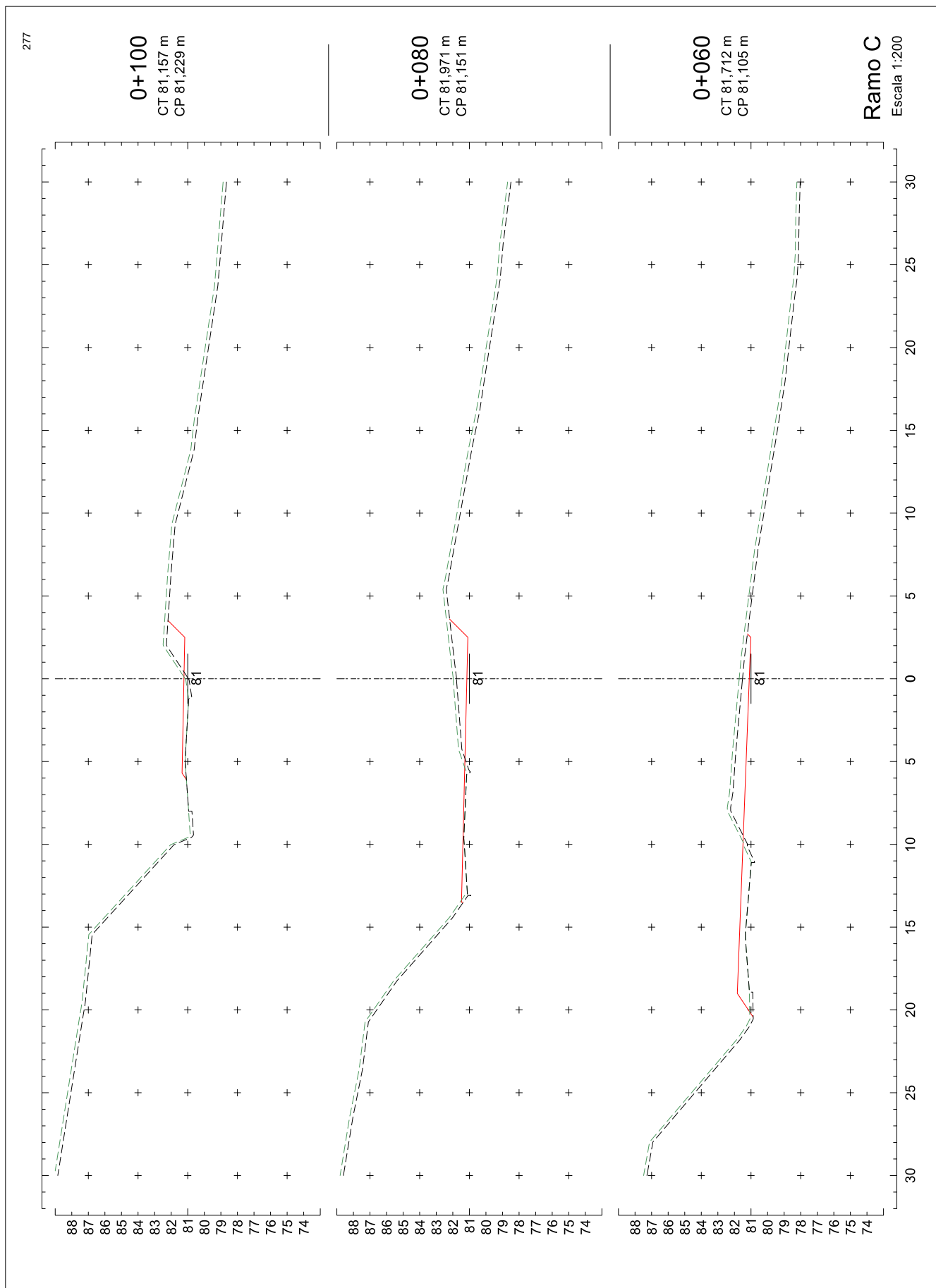
0+040
CT 81,000 m
CP 81,088 m

0+020
CT 80,917 m
CP 81,102 m

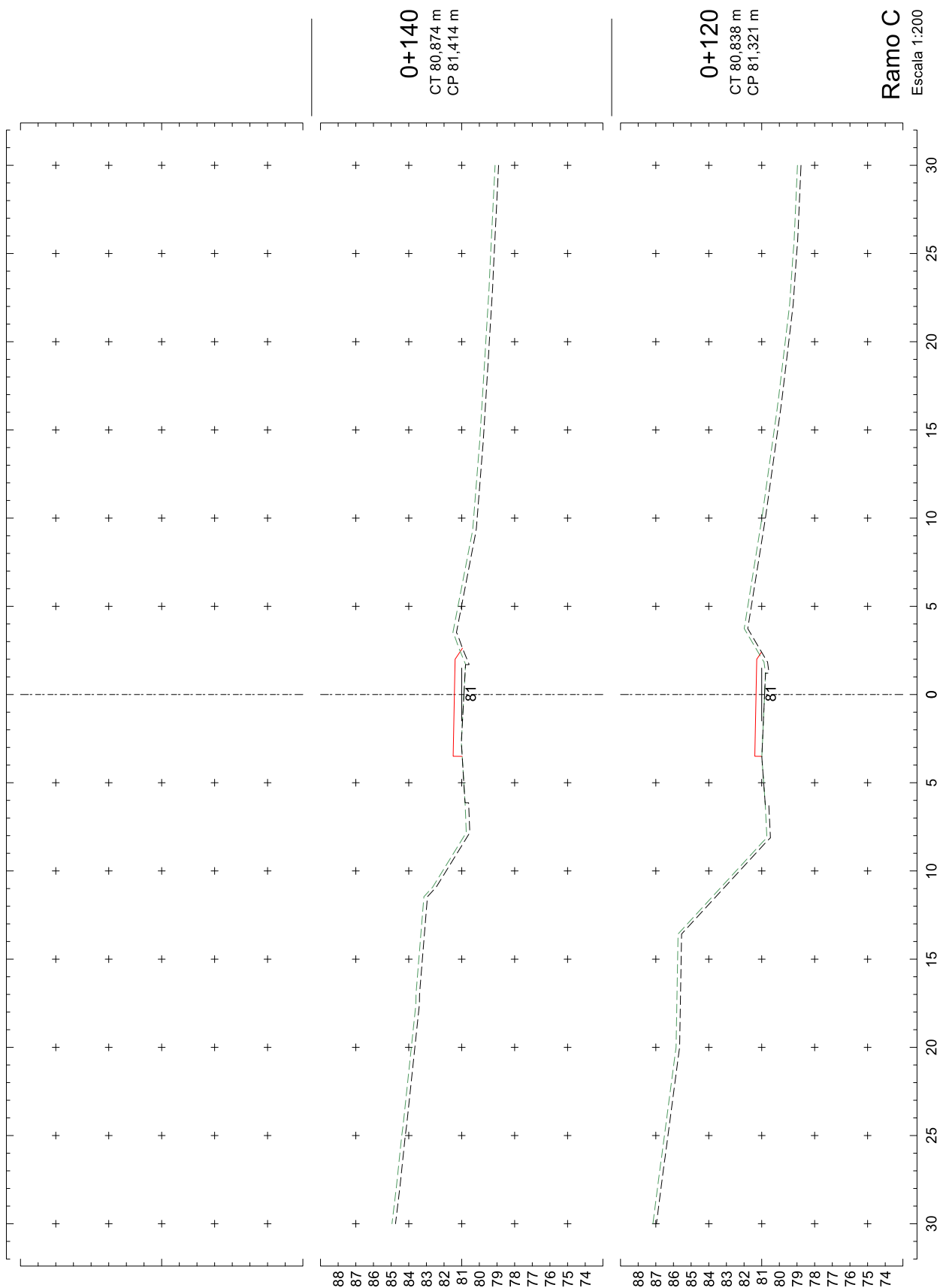
0+000
CT 81,458 m
CP 81,147 m

Ramo C
Escala 1:200





278





4. TERMO DE ENCERRAMENTO

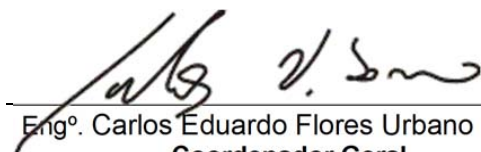
ERS-715 - PROJETO FINAL DE ENGENHARIA



4. TERMO DE ENCERRAMENTO

O presente volume, denominado **VOLUME ANEXO 1C – SEÇÕES TRANSVERSAIS – LOTE 2**, referente a “Elaboração de Readequação de Projeto Final de Engenharia”, para implantação e pavimentação asfáltica da rodovia ERS-715, trecho Sentinela do Sul (fim Trv.) – Cerro Grande do Sul, código SRE 715ERS0030, Lote 2, segmento do km 10,10 (14,10 – SRE) ao km 24,28 (28,28 – SRE), com uma extensão total de 14,18 km, é composto de 280 (duzentos e oitenta) páginas, incluindo esta, numeradas sequencialmente de 1 a 280.

Porto Alegre, 29 de maio de 2023.


Engº. Carlos Eduardo Flores Urbano
Coordenador Geral