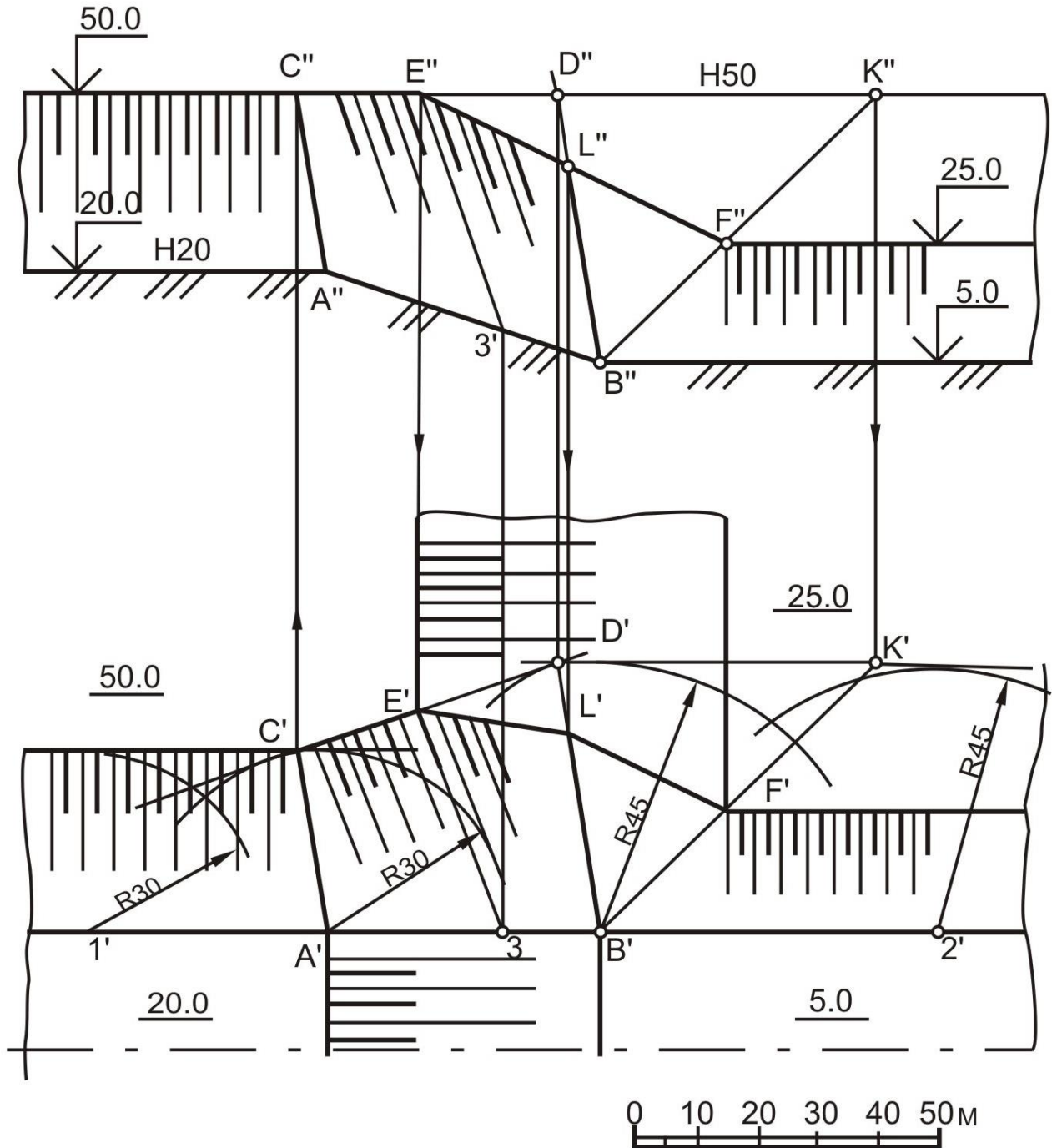


GIDROTEKNIK KOTLOVAN

Masalaning sharti: planda quyi chiziqlarining va bo'ylama qirgimda esa quyi va yuqori chiziqlarining proeksiyalari hamda ularning son belgilari bilan berilgan gidrotexnik inshootning yonbag'ir tekisliklari qurilsin. Yonbag'ir tekisliklar qiyaligi 45° qilib olinsin.

Gidrotexnikada inshootlarining kotlovanlari chizmalarini chizishga doir bir necha misollarni ko'rib chiqamiz.

1-misol. (1-chizma).



1-chizma

Yasash algoritmi:

1. Kotlovan tubidagi nishab tekisligining A' va B' xarakterli hamda uning tubida $1'$, $2'$ nuqtalari belgilanadi. $1'$ va A' nuqtalar bitta H_{20} tekisligida yotgani uchun ya'ni ularning sonli belgilari bir xil bo'lgani uchun $1'$ va A' nuqtalarni markaz qilib $R=L=(h_{yu} - h_q) \times m = (50.0-20.0) \times 1 = 30m$. R_{30} radius chiziqli masshtab bo'yicha aylana yoylari chiziladi. Bu yoylarga urinma o'tkaziladi.

2. Xuddi shuningdek, B' va $2'$ nuqtalar bitta H_5 tekisligida yotgani uchun B' va $2'$ nuqtalarni markaz qilib $R=L=(h_{yu} - h_q) \times m = (50.0-5.0) \times 1 = 45 m$. R_{45} radius bilan chiziqli masshtab bo'yicha yoylar chiziladi.

3. Qo'shni yoylarga urinmalar o'tkaziladi. O'zaro qo'shni urinmalarning kesishuv nuqtalari, C' va D' lar aniqlanadi. $A'B'$ va $B'D'$ nuqtalar tutashtirilsa planda kotlovan nishab tekisliklarining o'zaro kesishgan chiziqlari hosil bo'ladi. So'ngra $A'C'$ va $B'D'$ chiziqlarning $A''C''$ va $B''D''$ proeksiyalari yasaladi. Chizmadan H_{50} gorizont tekislik E' nuqtadan boshlab davom ettirilgan bo'lib kotlovanning bir qismi mavhum tuproq bilan to'ldirilgan deb faraz qilinadi.

4. Bo'ylama qirqimda nishab tekisliklarining xarakterli E'' va F'' nuqtalari belgilanadi. Ularning plandagi E'' va F'' proeksiyalari $C'D'$ va $B'K'$ ustida olinadi.

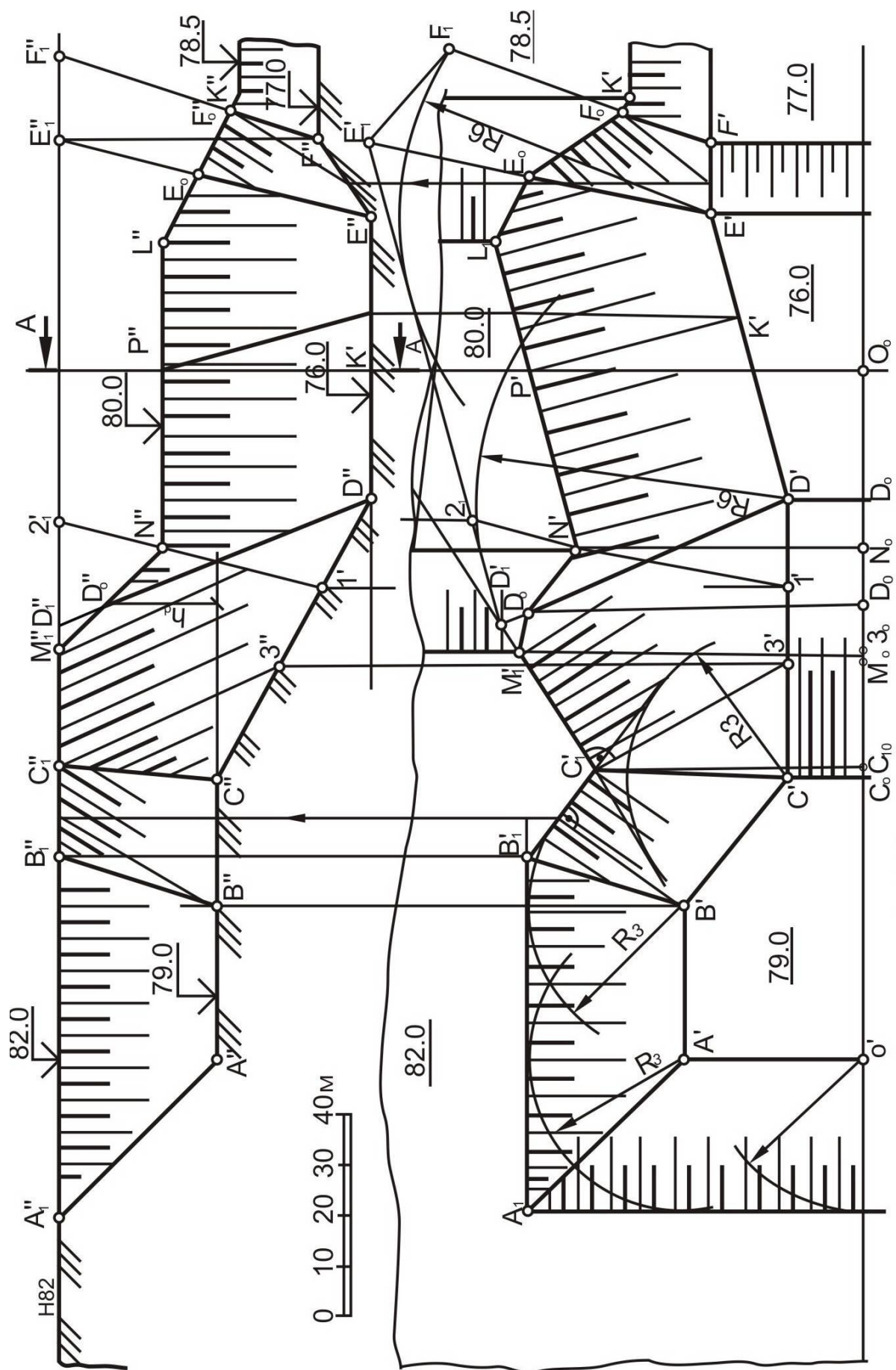
Nishab tekisliklarining kesishuv chizig'i $B''D''$ bo'ylanma qirqim konturi $E''F''$ bilan kesishib L'' nuqtani beradi. So'ngra L' uning proeksiyasi planda belgilanadi.

Kotlovanni barcha nishab tekisliklarining bergshtrixlarini yasash chizmada ko'rsatilgan. Tekis yer kotlovanning $E(E', E'')$ nuqtasidan boshlab $F(F', F'')$ nuqtasigacha qiyalikda bo'lgani uchun ELF tekisligining bergshtrixlari yuqoridan 50-belgidan pastga 25-belgiga qarab yo'nalgan bo'ladi.

2-misol. Tezoqar kotlovanning chizmasi planda quyi chiziqlarining va bo'ylama qirqimda esa quyi va yuqori chiziqlarining proeksiyalari hamda ularni son belgilari bilan berilgan. (2-chizma). Kotlovan nishab tekisliklarining o'zaro va ularni tekis yer sirti bilan kesishgan chiziqlari aniqlansin.

Yasash algoritmi quyidagicha:

1. Kotlovan planida O' , A' , B' , C' , D' , E' , F' va bo'ylama qirqimda esa M'' , N'' , L'' , K'' kabi xarakterli nuqtalar belgilanadi.



2-chizma

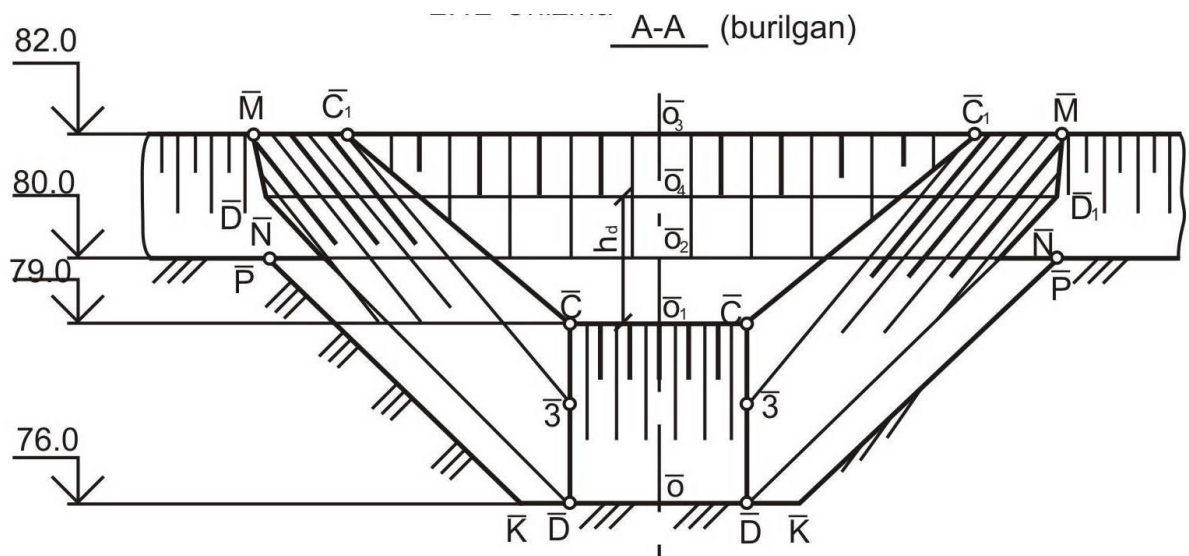
2. O' , A' , B' va C' nuqtalarni markaz qilib, $R = L = (h_{yu} - h_q) \times m = (82.0 - 79.0) \times 1 = 3m$. $R3$ radius bilan chiziqli masshtab bo'yicha yo'ylar chizamiz. Bu yo'larga urinmalar o'tkazib, ularni o'zaro kesishgan A'_1 , V'_1 va S'_1 nuqtalari aniqlanadi.

3. M''_1 nuqta orqali H_{82} gorizont tekislik o'tkazamiz. So'ngra D' va E' nuqtalarni markaz qilib, $R=L=(82.0-76.0) \times 1 = 6m$. $R6$ radius bilan chiziqli masshtab bo'yicha yo'ylar chiziladi. Qo'shni yo'larga urinmalar o'tkazib, qo'shni urinmalarni o'zaro kesishgan C'_1 , D'_1 va E' nuqtalari belgilanadi. Hosil bo'lgan nuqtalar kotlovan tubidagi mos nuqtalar bilan tutashtiriladi. Natijada kotlovan nishab tekisliklarining o'zaro H_{82} tekislik bilan kesishgan chiziqlari hosil bo'ladi.

4. Nishab tekisliklarining kesishuv chiziqlarini bo'ylama qirquimdagi proeksiyalari $A''A''_1$, $B''B''_1$, $C''C''_1$ va hokazo chiziqlar yasaladi. Bo'ylama qirquimdagi M''_1 , D''_0 , N'' , E_0 , F''_0 va hokazo nuqtalarning plandagi proeksiyalari mos ravishda $C'_1D'_1$, $D'D'_1$, $1'2'$, $E'E'_1$, $F'F'_1$ chiziqlar ustida yotadi.

5. Nishab tekisliklarining bergshtrixlari gorizont proeksiyalardagi urinmalarga perpendikular qilib o'tkaziladi. So'ngra ularni frontal proeksiyalari yasaladi.

2-chizmada kotlovanni uzunasiga (bo'ylama), 3-chizmada esa uning A-A ko'ndalang qirqimini yasash keltirilgan. Buning uchun:

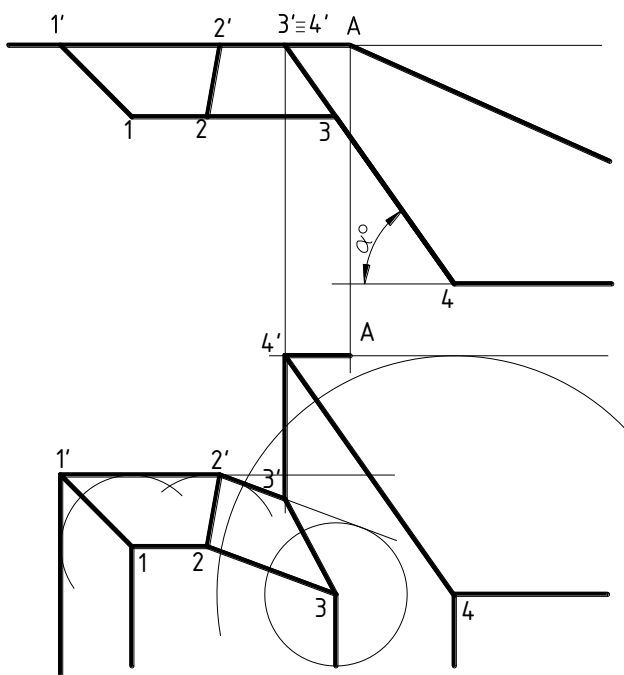


3-chizma

7 Kotlovanning o'qi vertikal qilib chiziladi va unga preperdikulyar qilib 82.0, 80.0, 79.0 va 76.0 son belgisi gorizont chiziqlar chiziqli masshtab bo'yicha o'tkaziladi.

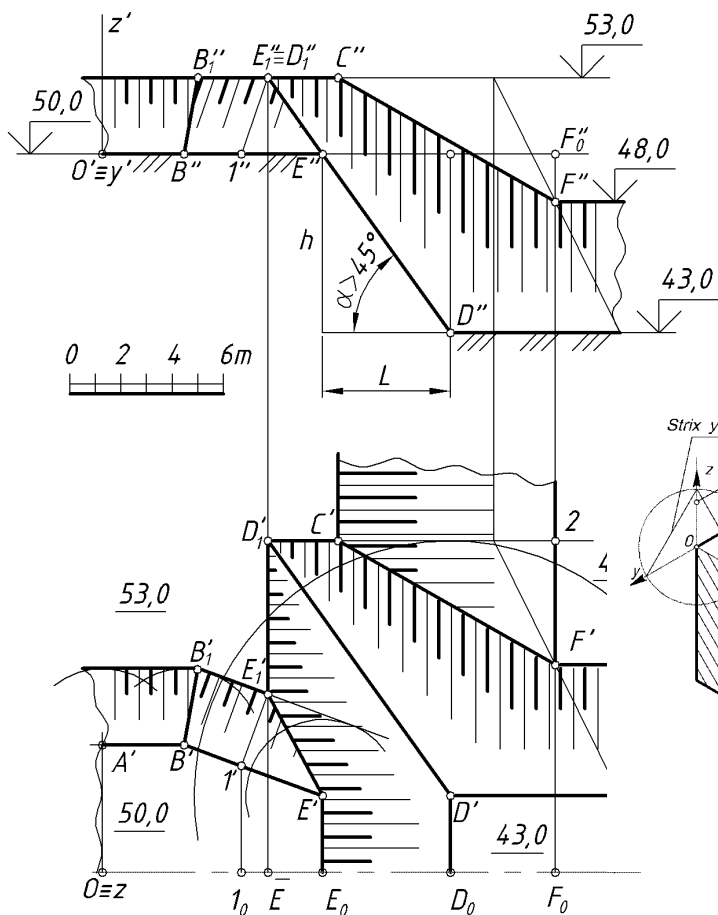
8 Bu gorizont chiziqlarga mos ravishda 2-chizmada A-A kesuvchi tekislikda va uning orqasidagi har bir nuqtalarning kotlovan o'qidan uzoqligi, ya'ni ordinatalari o'lchab qo'yiladi. Masalan: $O_0K' = \bar{O} \bar{K}$ va $D_0D' = \bar{O} \bar{D}$ nuqtalarni 76.0 gorizontga, $C_0C' = \bar{O}_1 \bar{C}$ nuqtalarni 79.0 gorizontga $O_0P' = \bar{O}_2 \bar{P}$, $N_0N' = \bar{O}_2 \bar{N}$ nuqtalarni esa 80.0 gorizontga va hokazo kesmalar 2-chizmadan o'lchab olib 3-

chizmaga qo'yiladi. Hosil bo'lgan nuqtalar tartib bilan tutashtiriladi. Natijada kotlovanning A-A bo'yicha ko'ndalang qirqimi hosil bo'ladi.

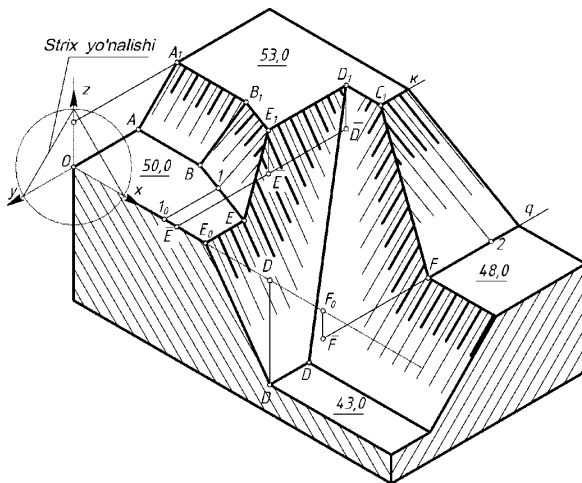


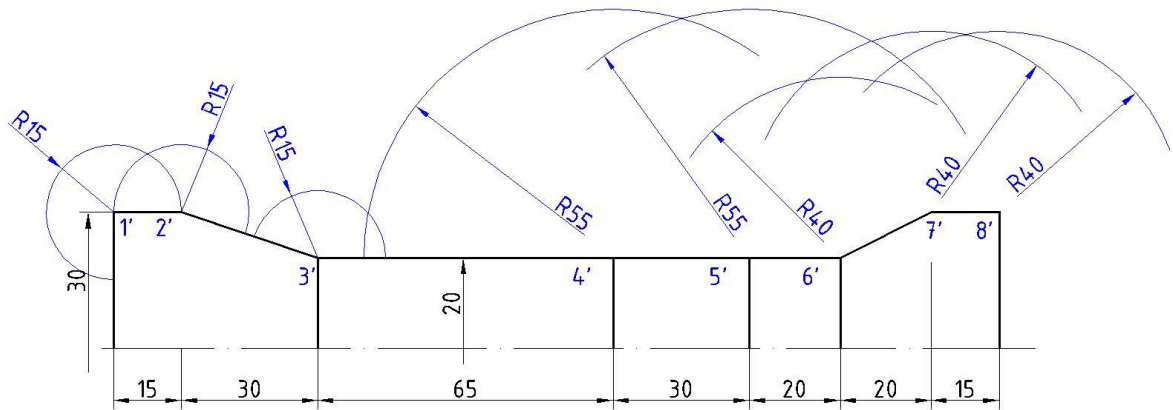
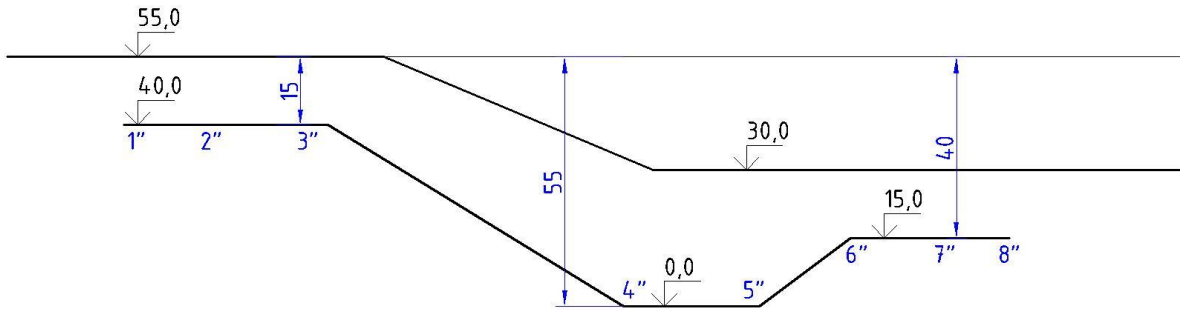
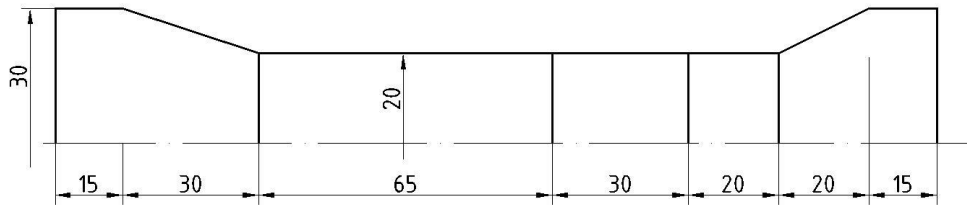
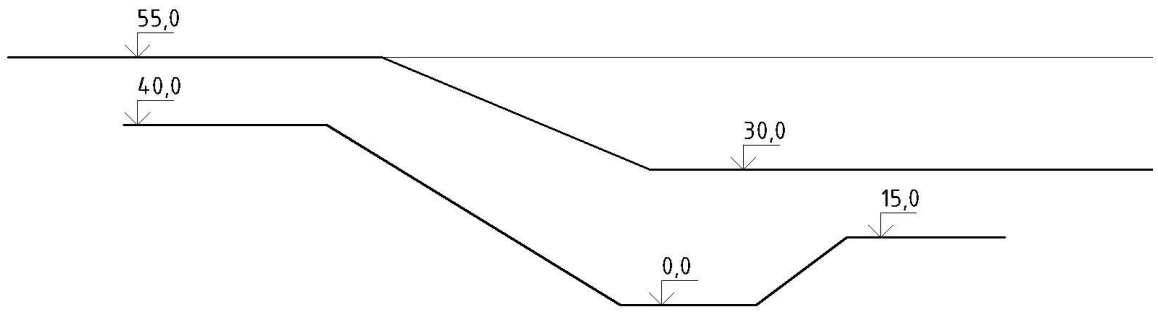
Sharshara varianti, (4-chizma) ya'ni α burchak 45° dan katta bo'lganda quyidagicha ish tutiladi: bo'ylama qirqimdagi 3 4 kesma yuqori befni kesgunga qadar davom ettiriladi va 3'4' nuqtalar topiladi. Bu nuqtalarning plandagi proeksiyalari markazlari 2 3 va 4 5 nuqtalar bo'lgan aylanalarga o'tkazilgan urinmalarda bo'ladi. Bu yerda ikki tekislik qo'shib qoladi va plandagi 3 4 qirra yo'qoladi.

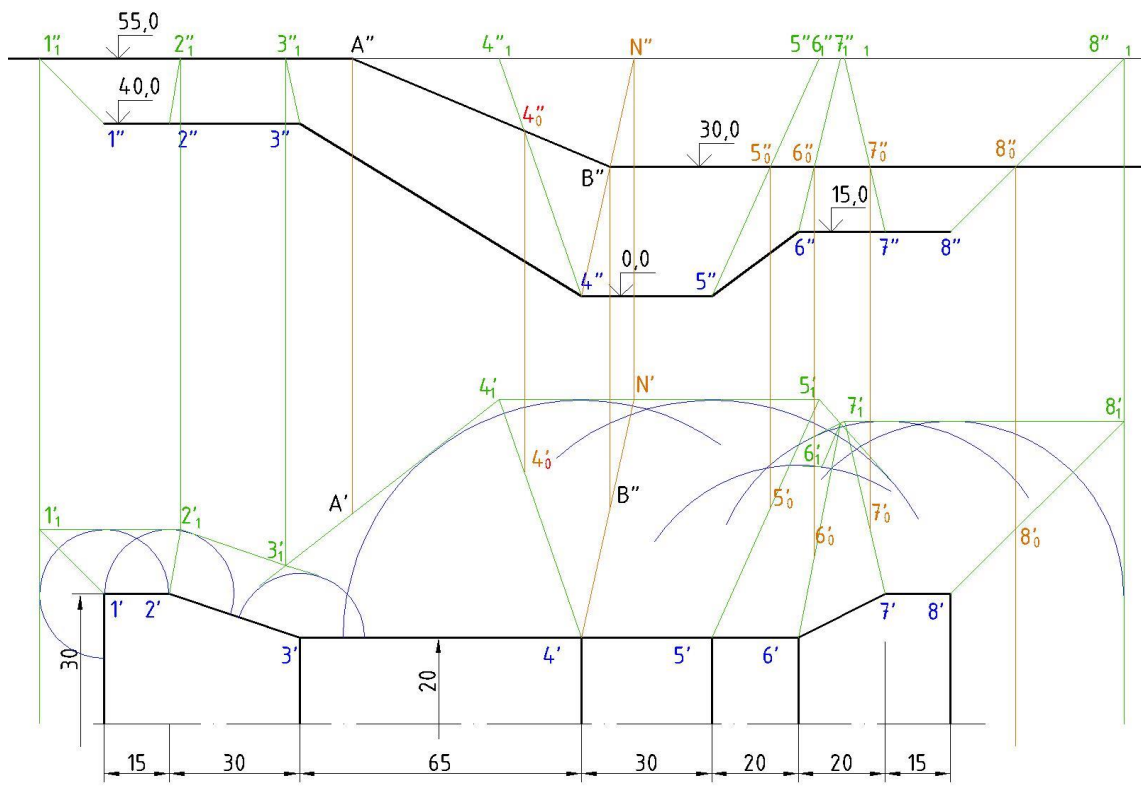
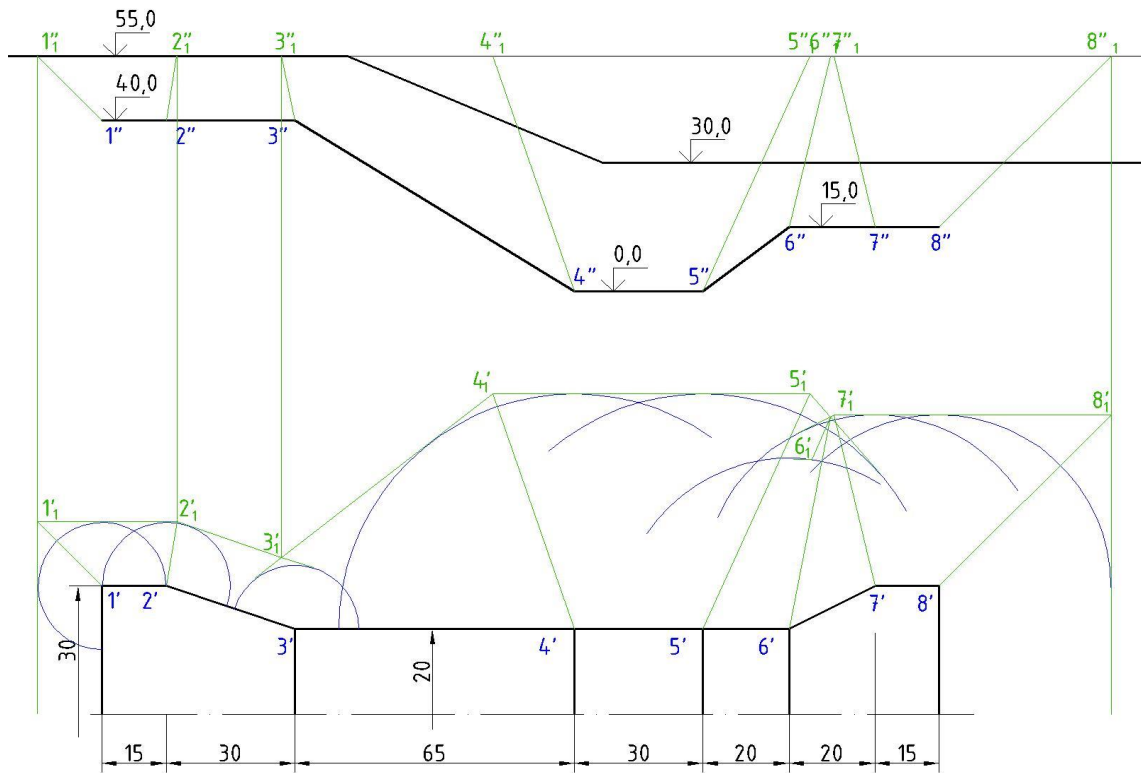
4-chizma

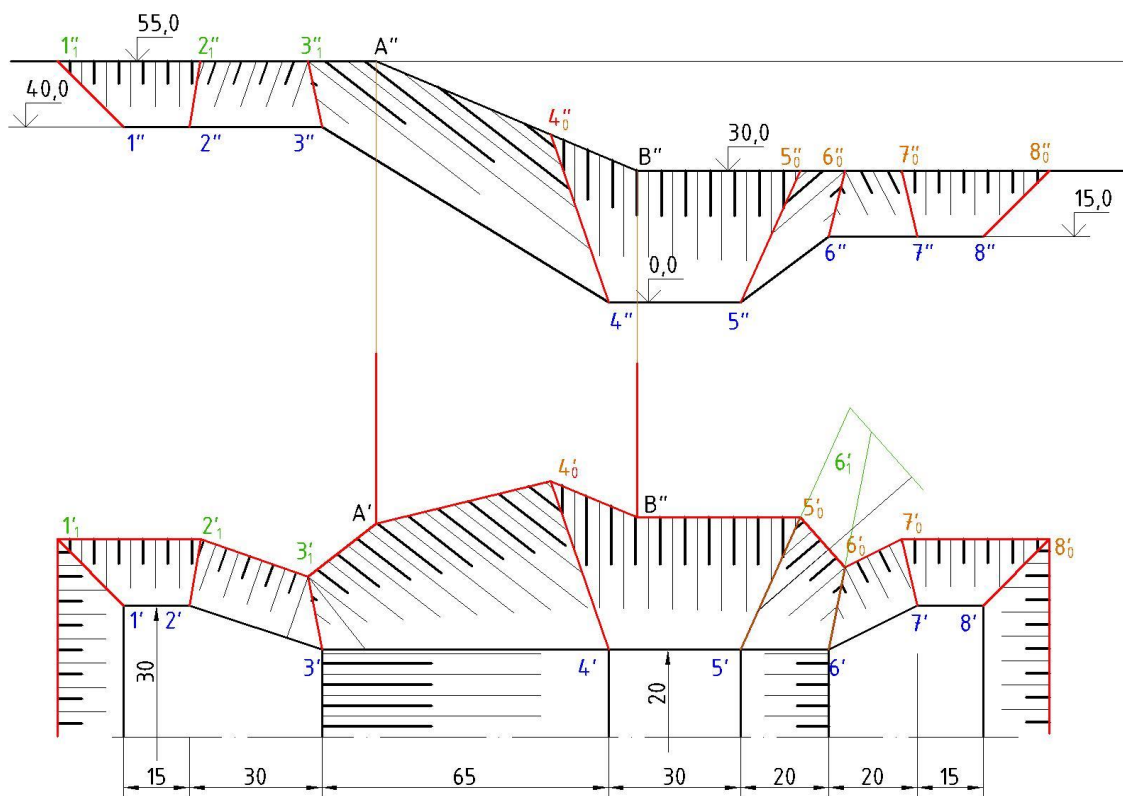
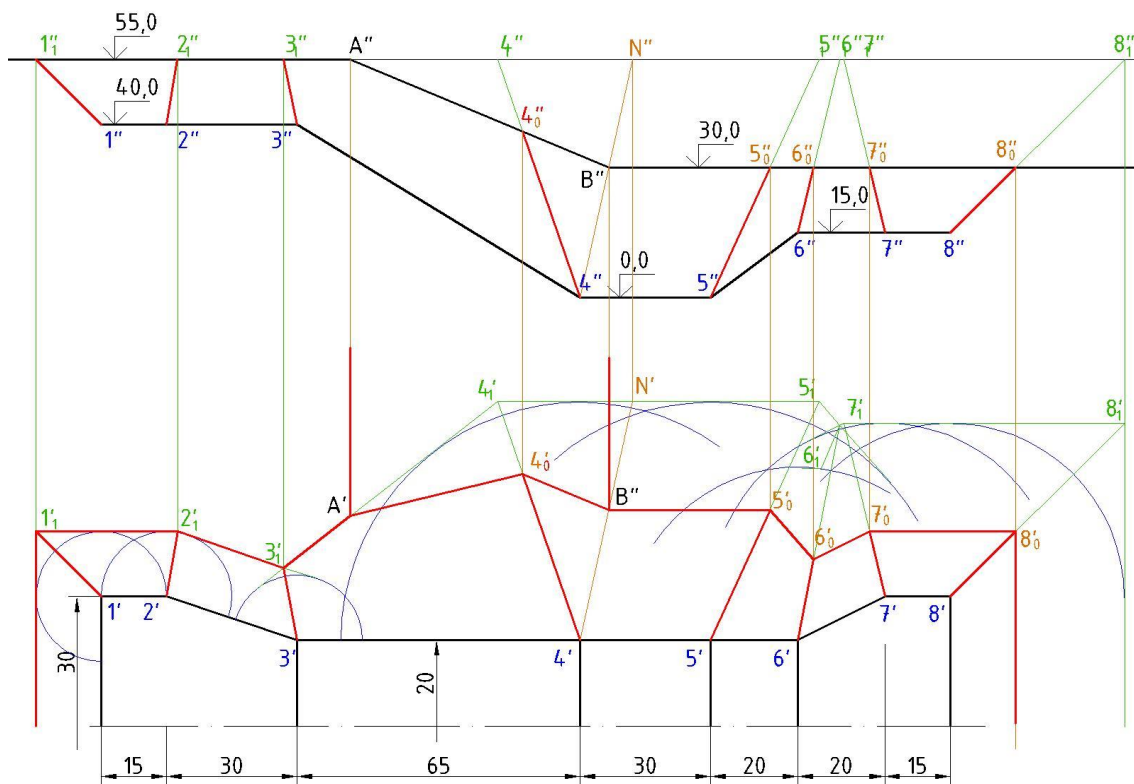


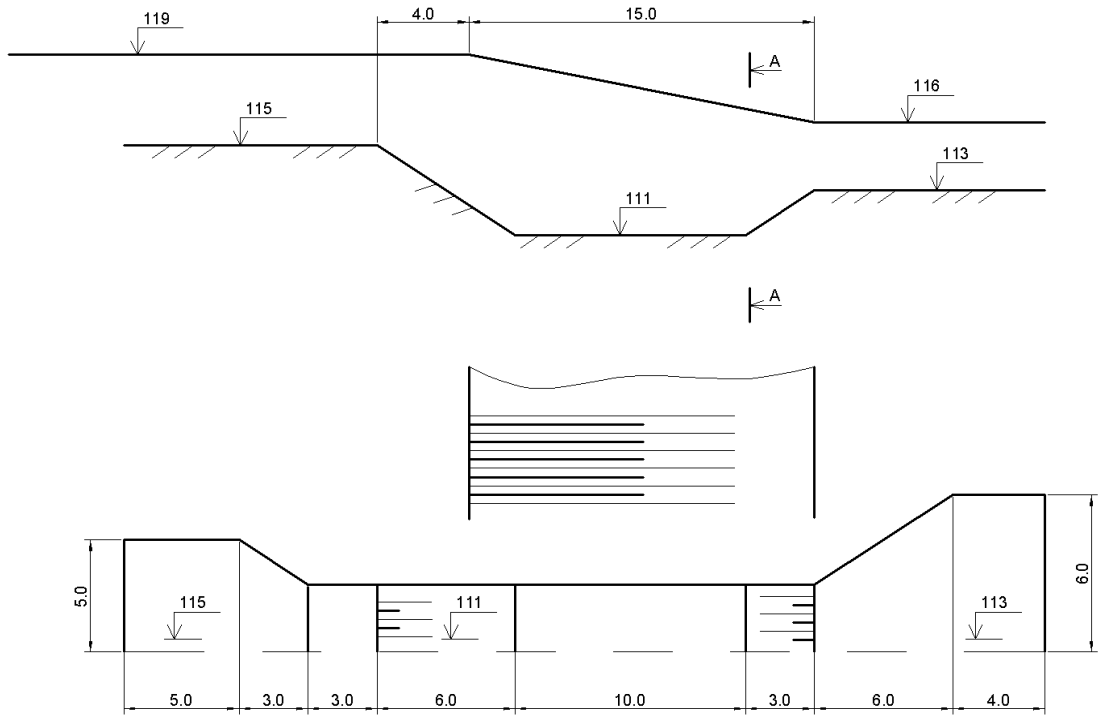
Shovvasimon kotlovan chizmasi. E va D nuqtalarning topilishi





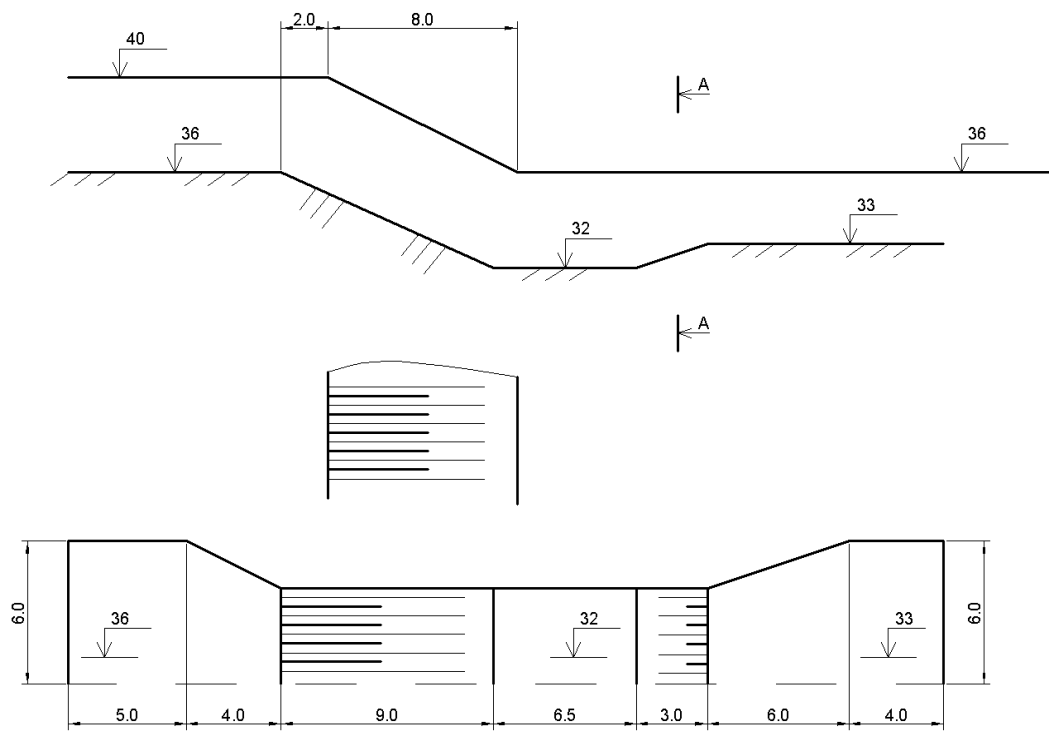






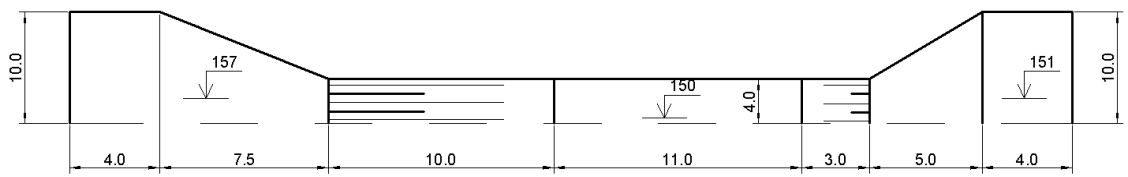
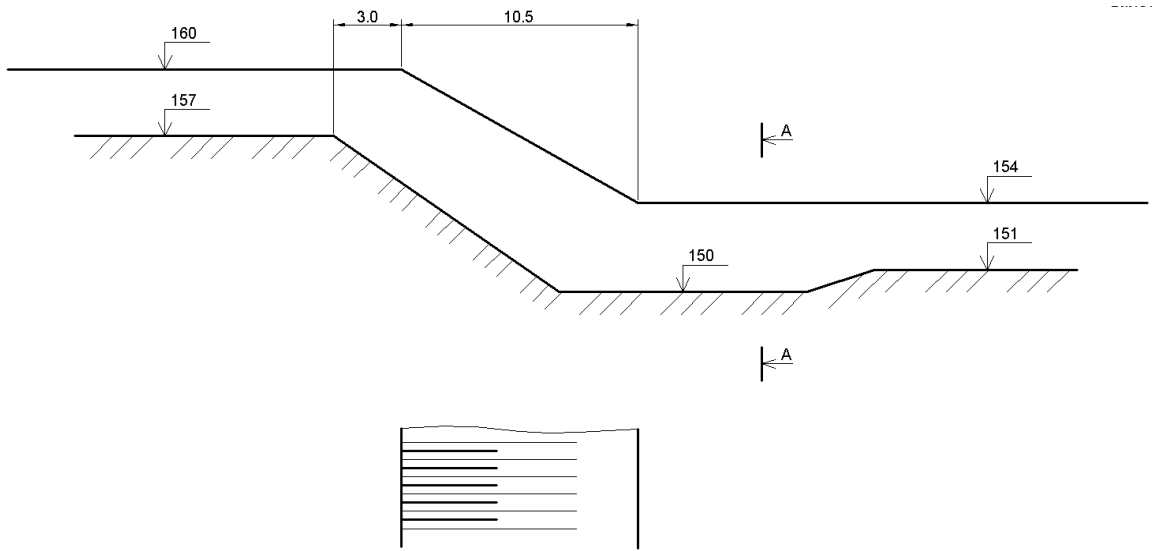
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1-variant



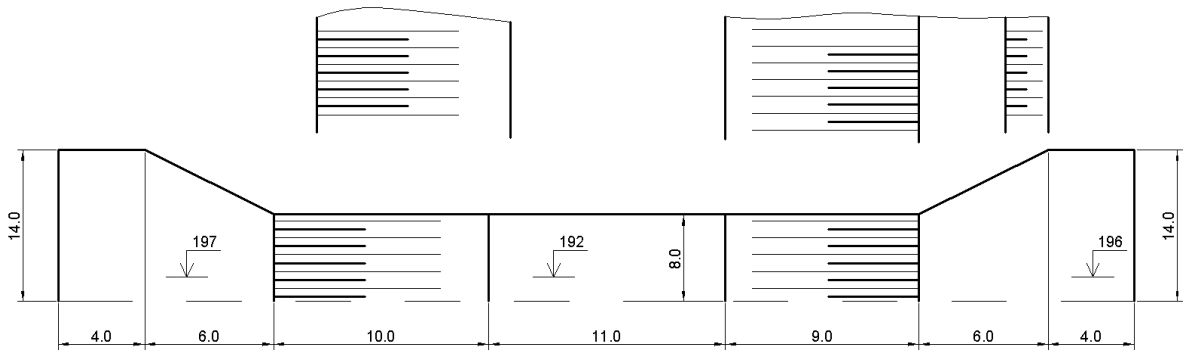
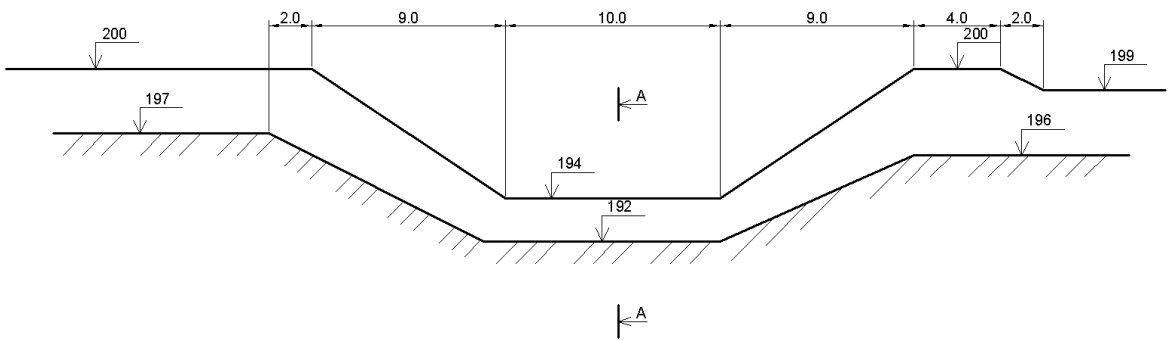
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2-variant



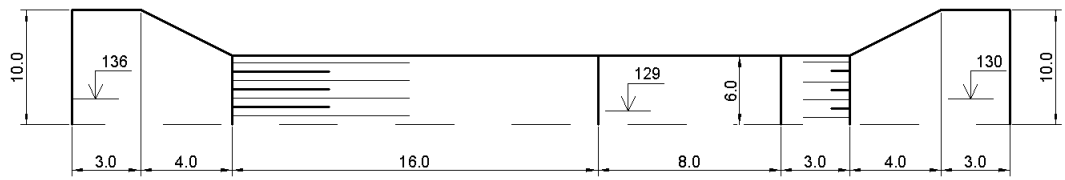
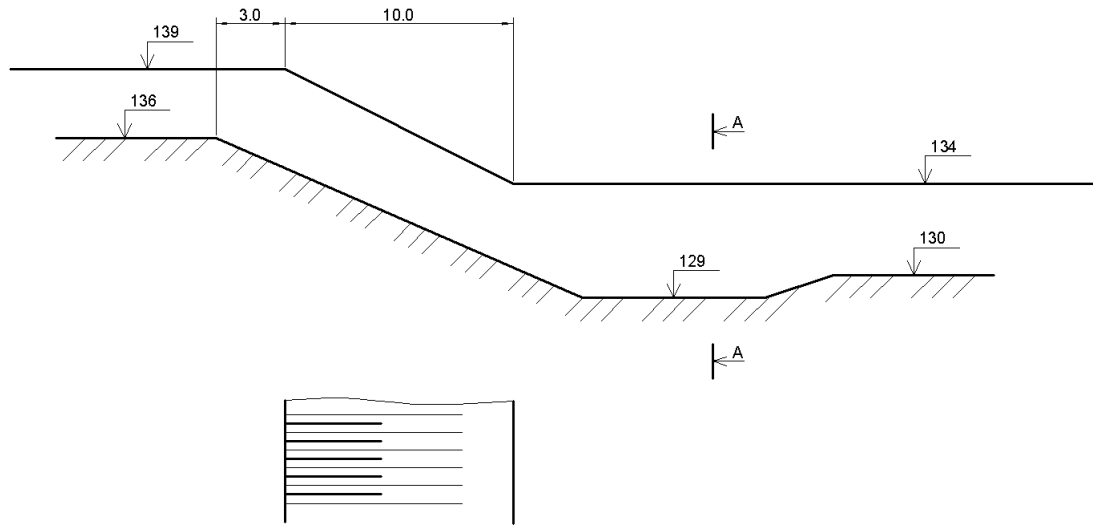
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3-variant



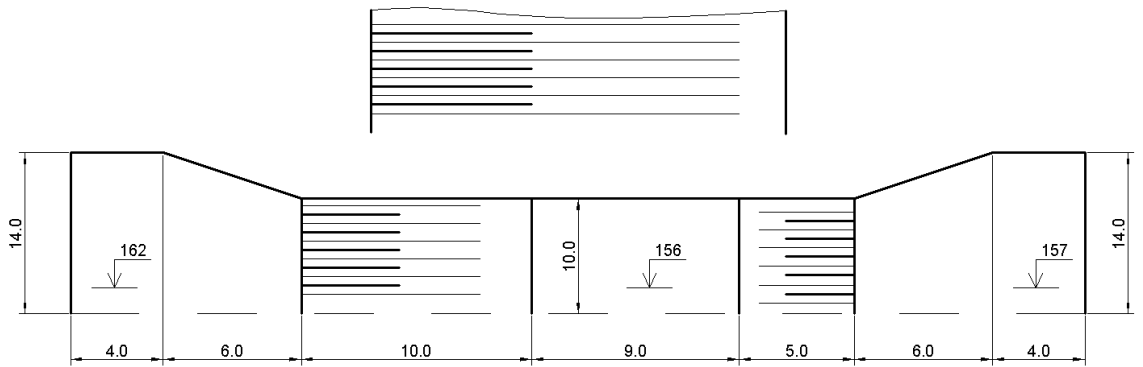
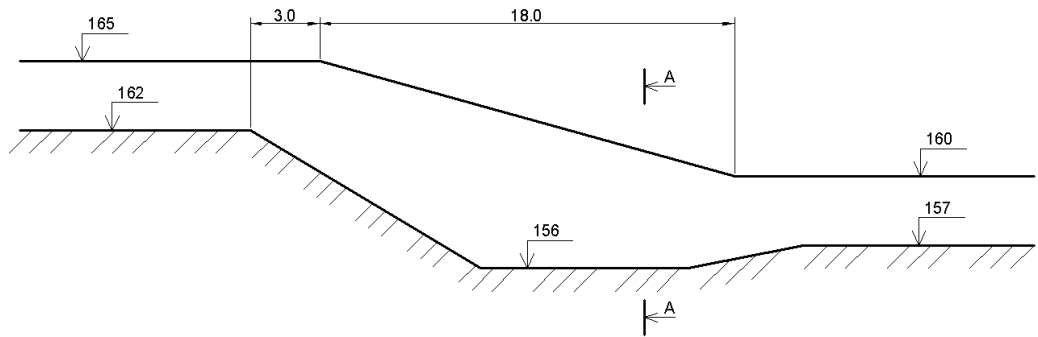
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4-variant



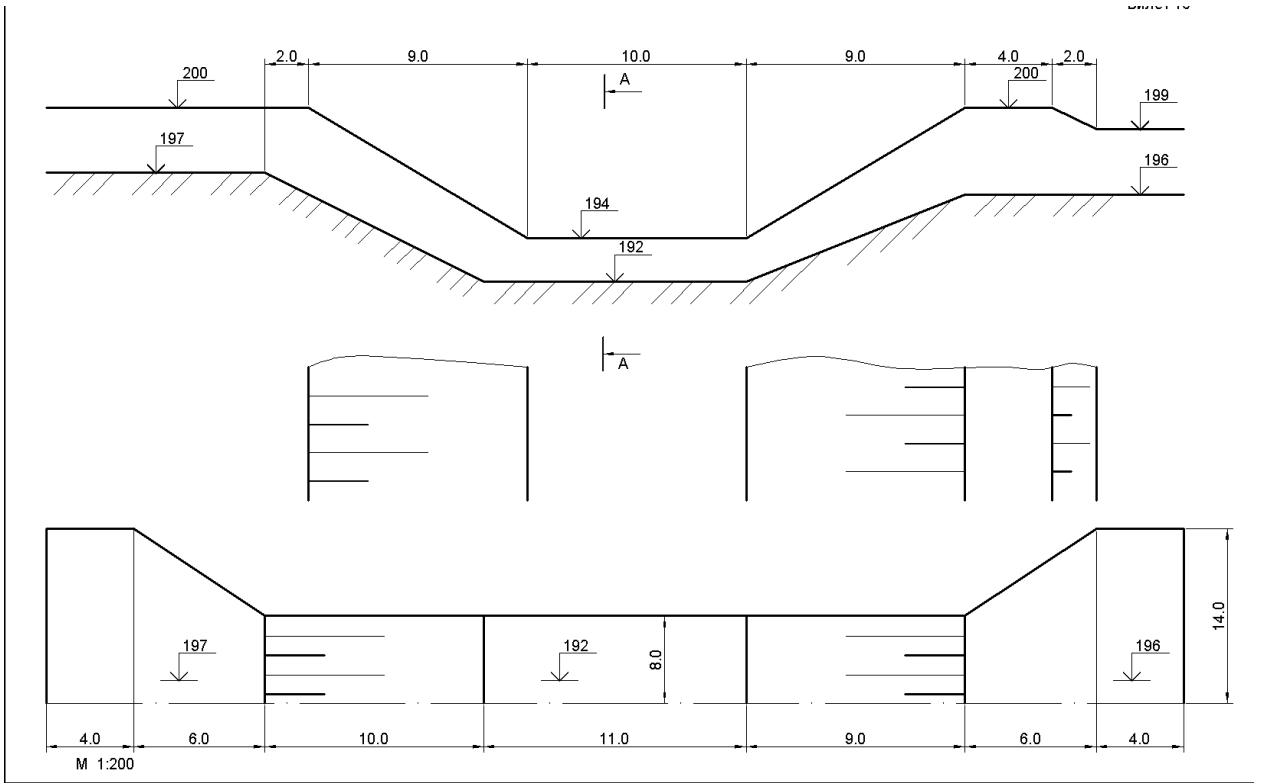
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5-variant

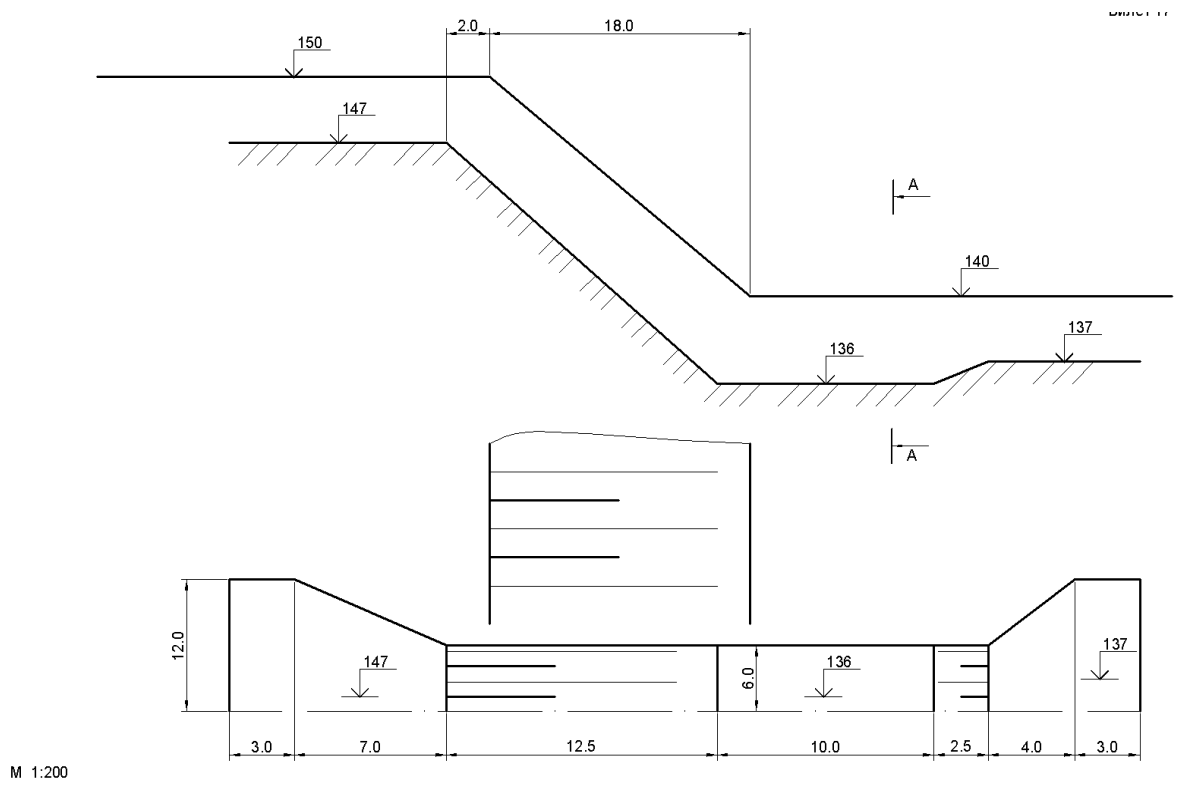


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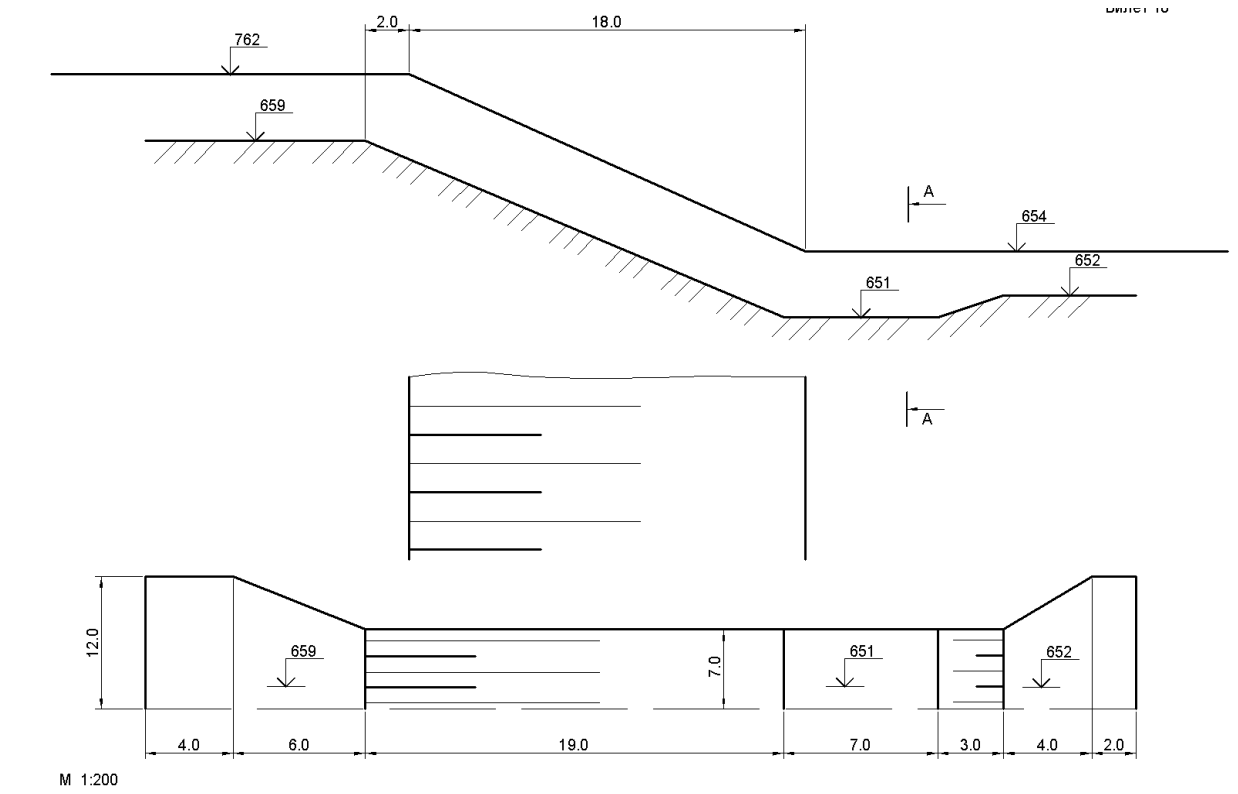
6-variant



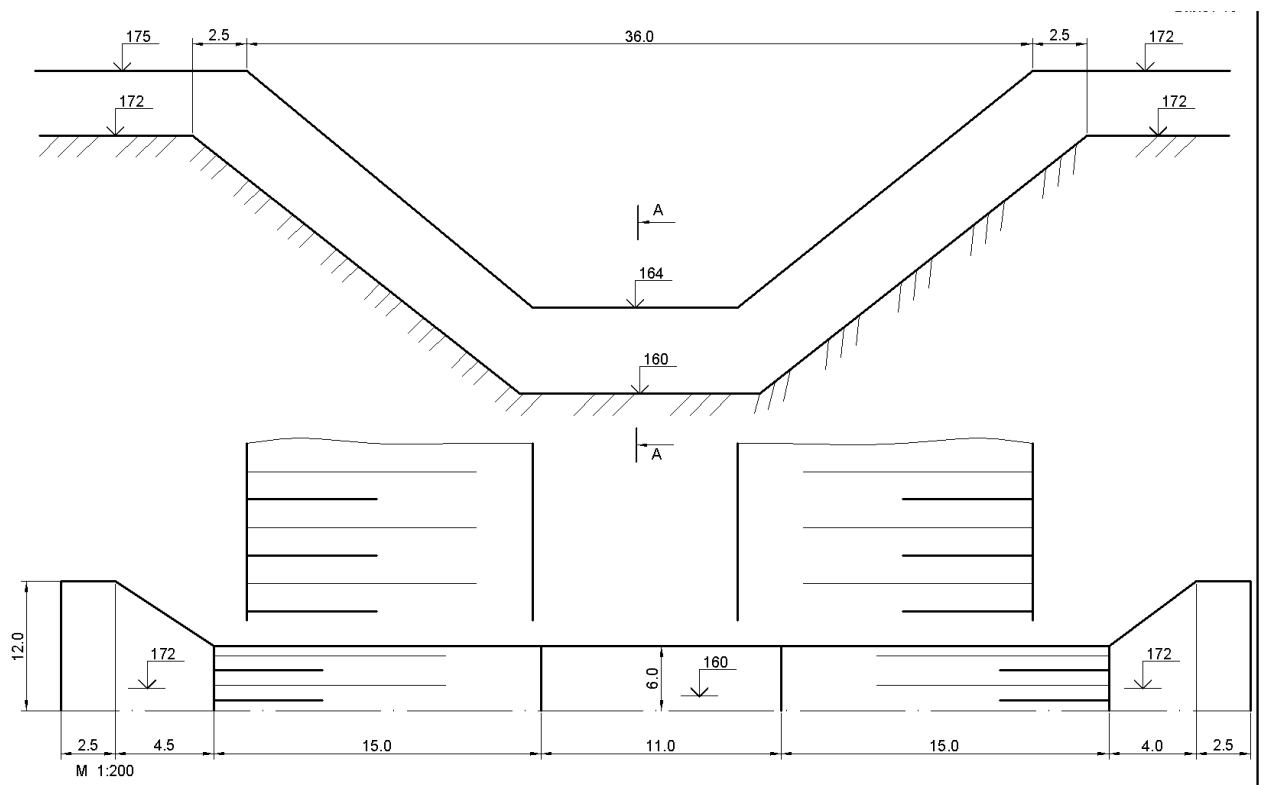
7-variant



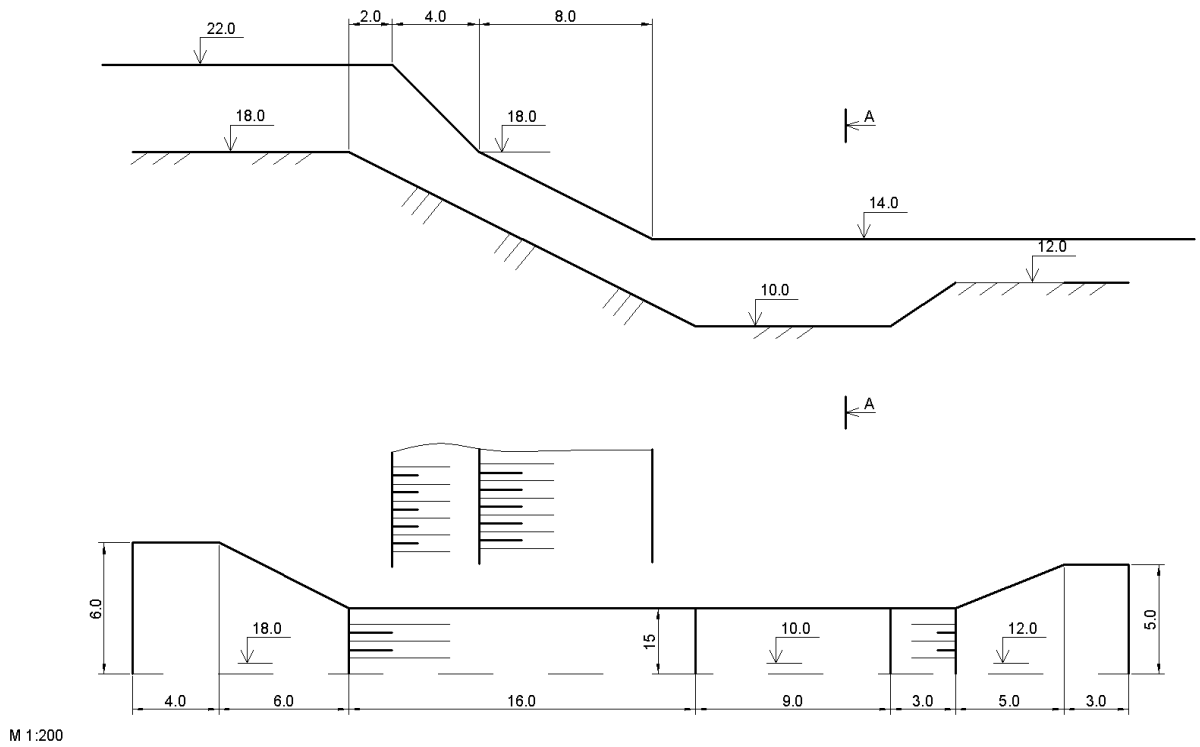
8-variant



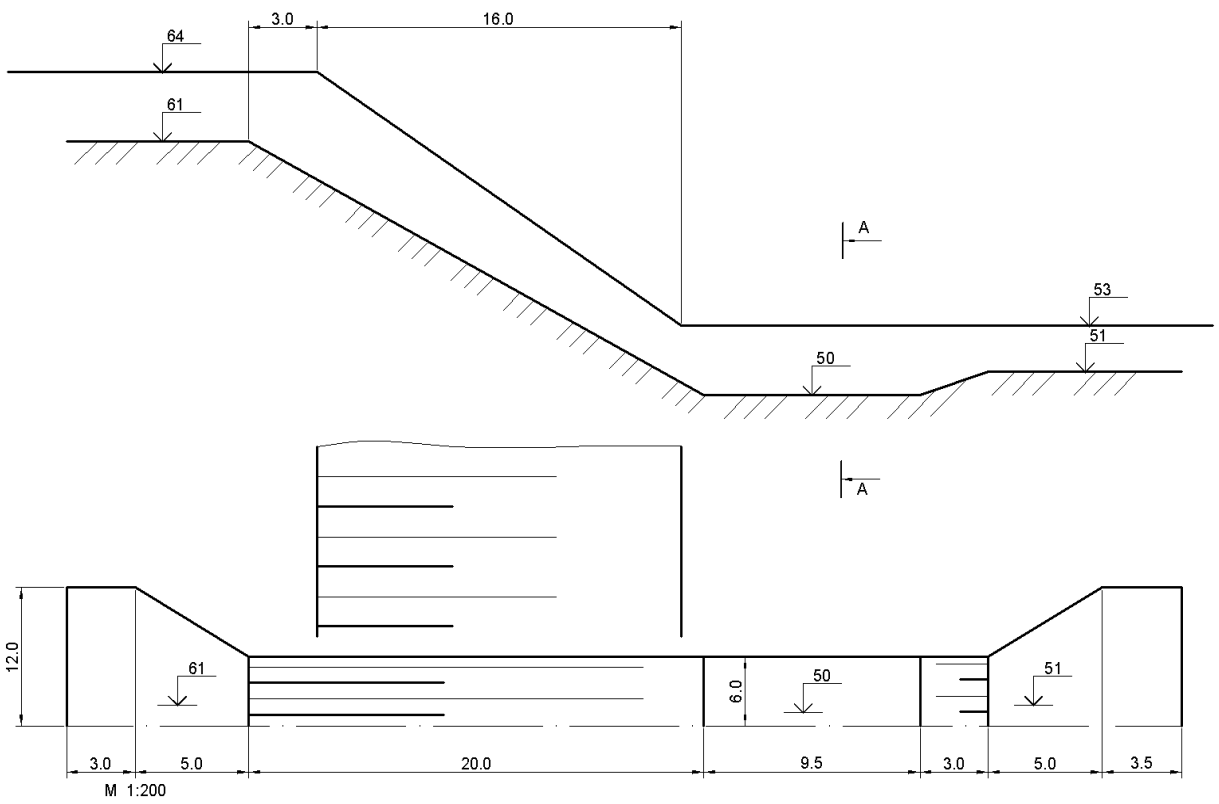
9-variant



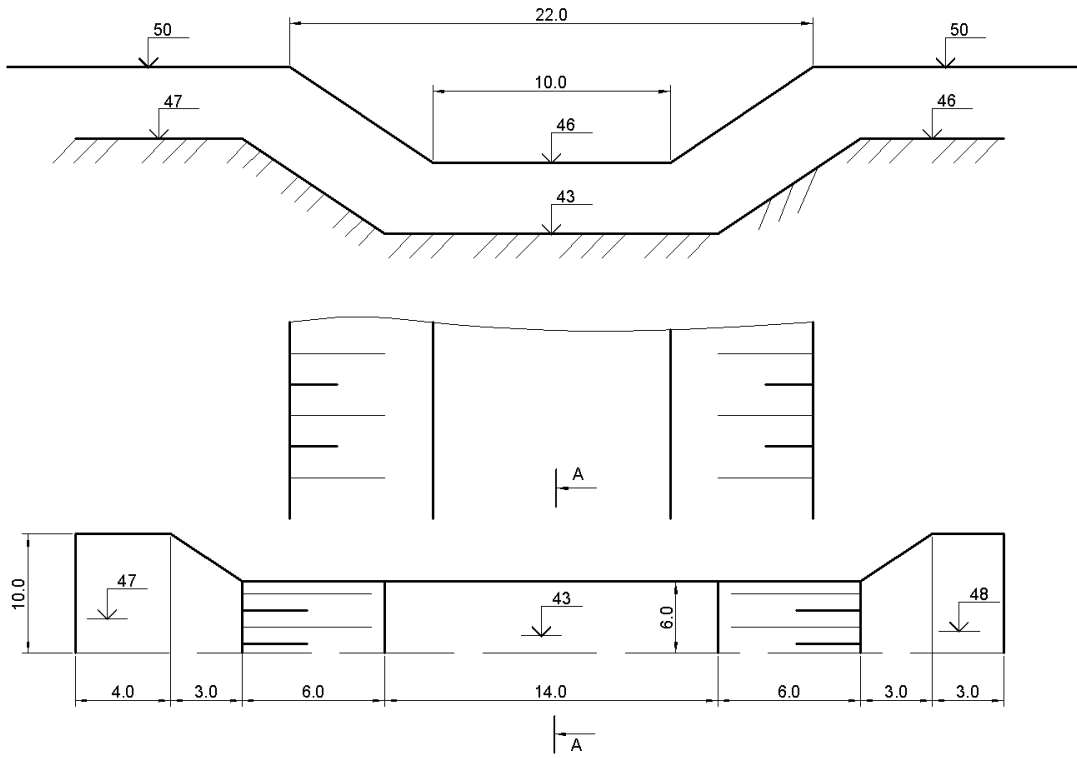
10-variant



11-variant

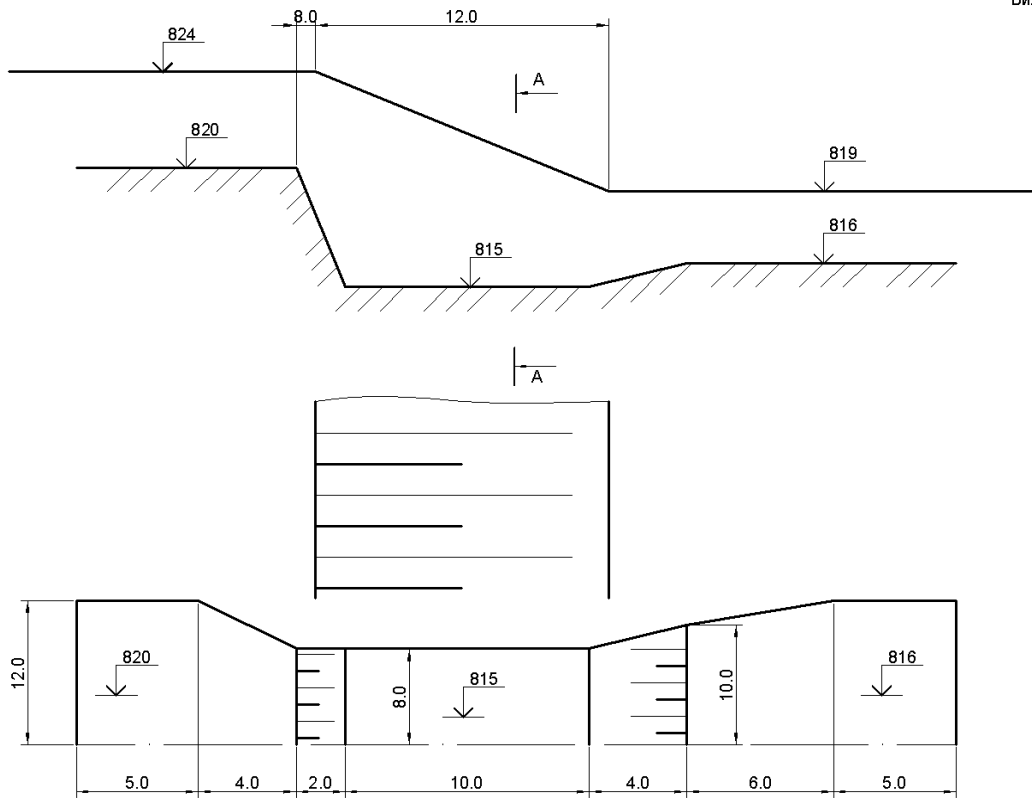


12-variant



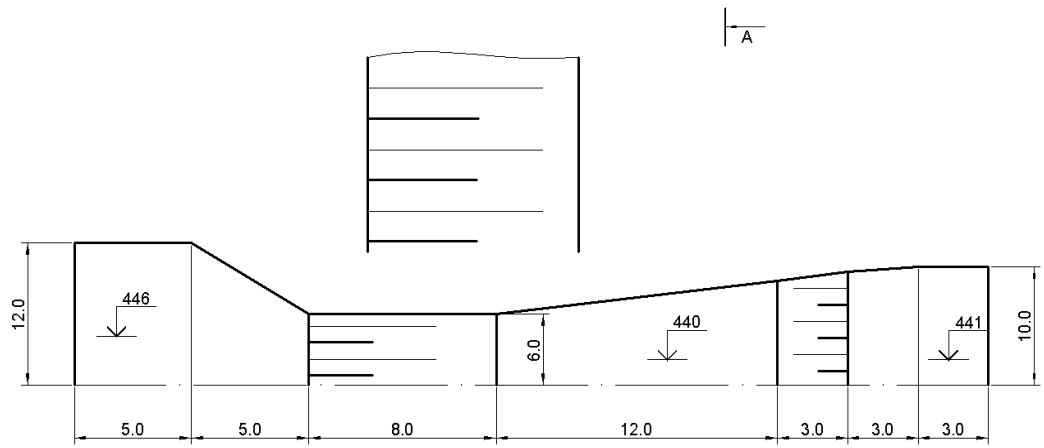
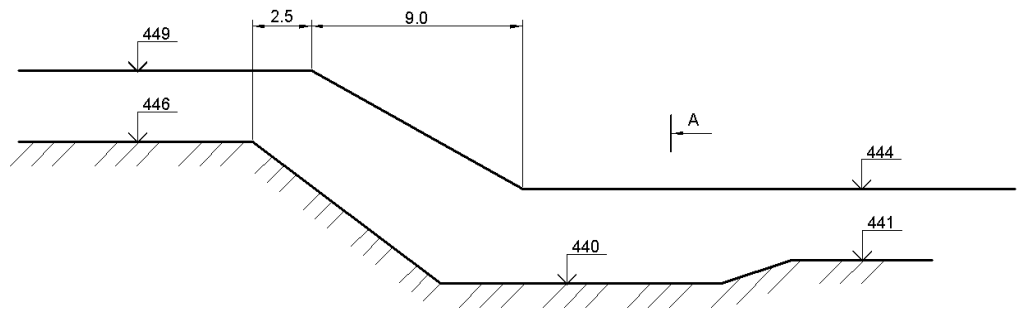
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13-variant



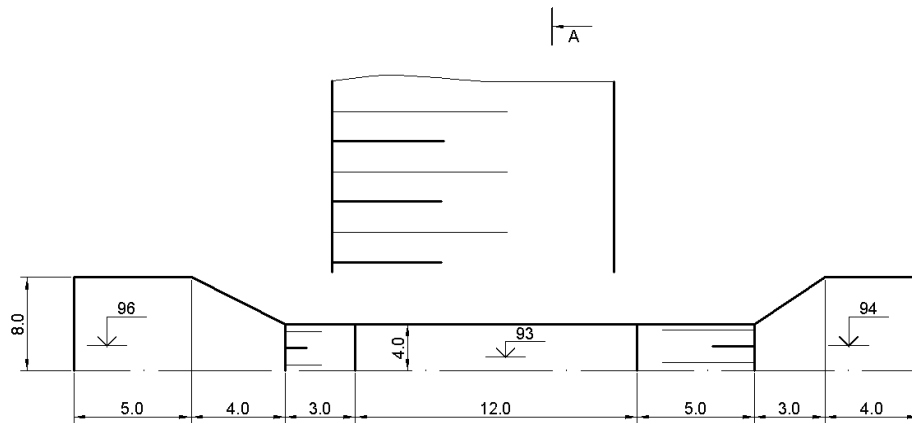
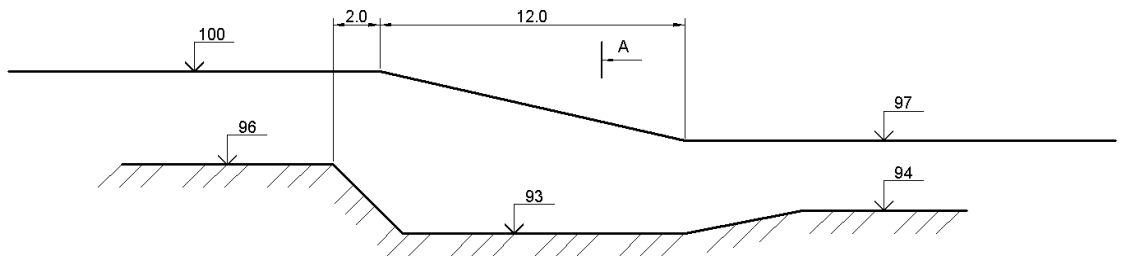
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14-variant



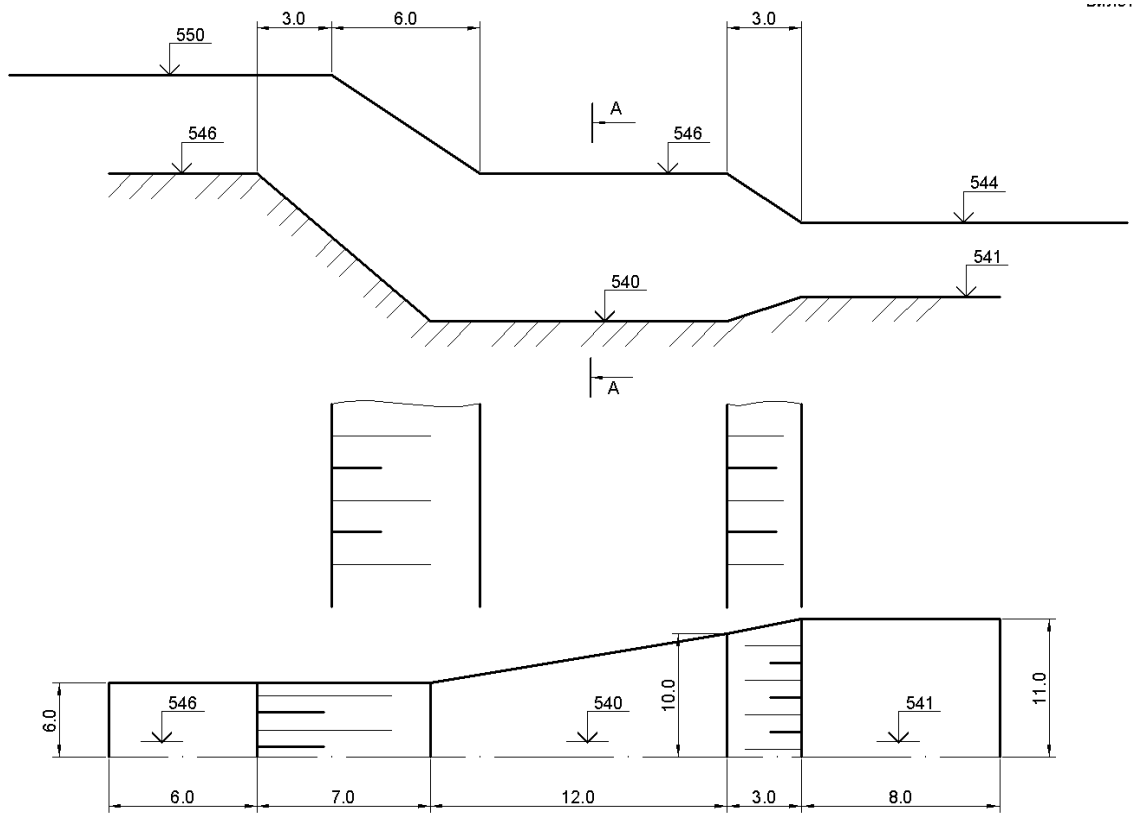
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15-variant



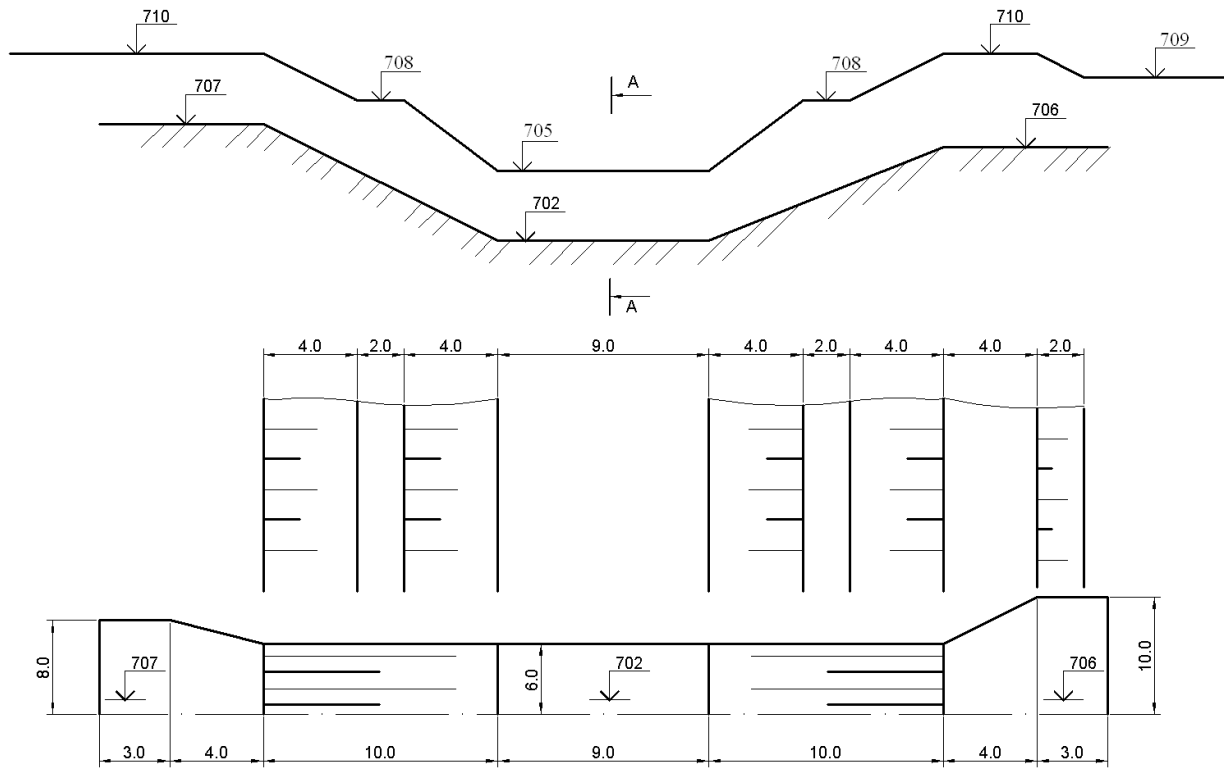
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16-variant



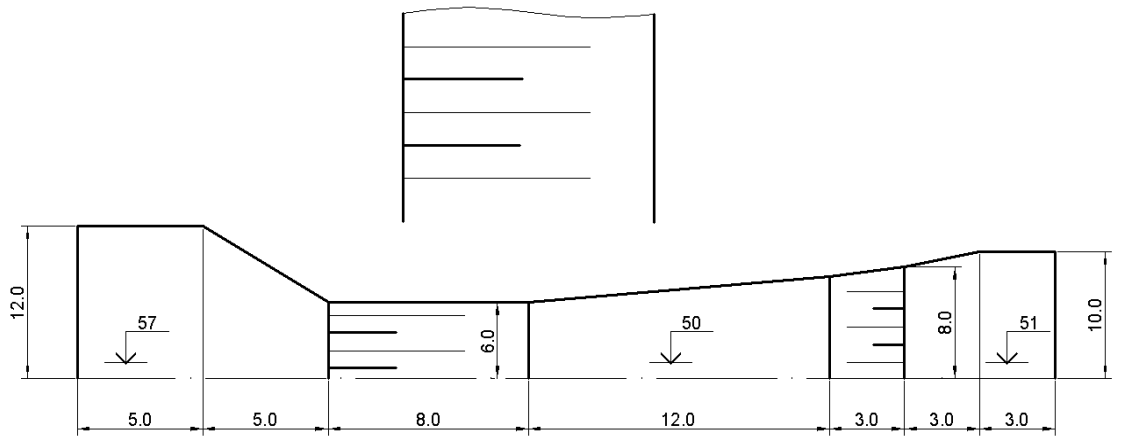
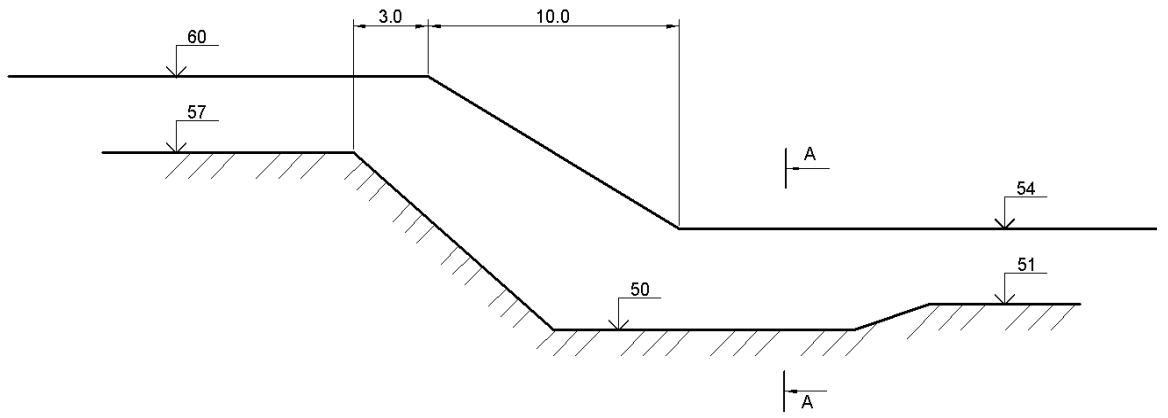
M 1:200

17-variant



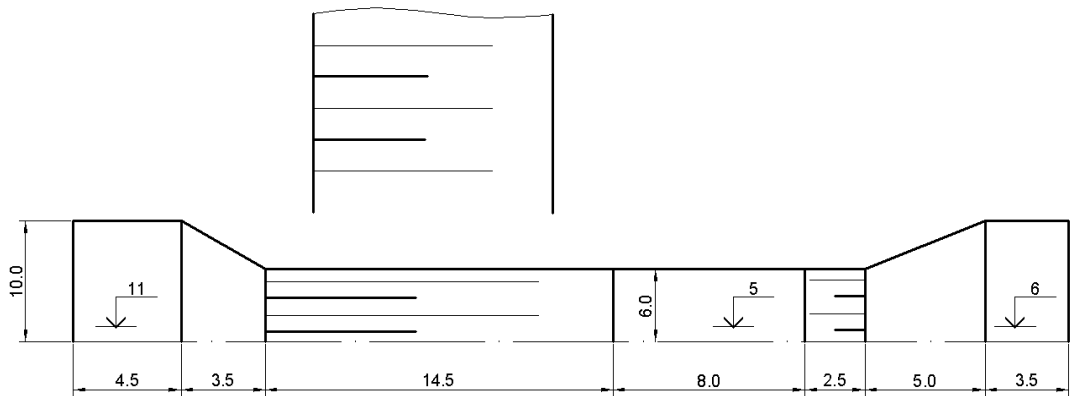
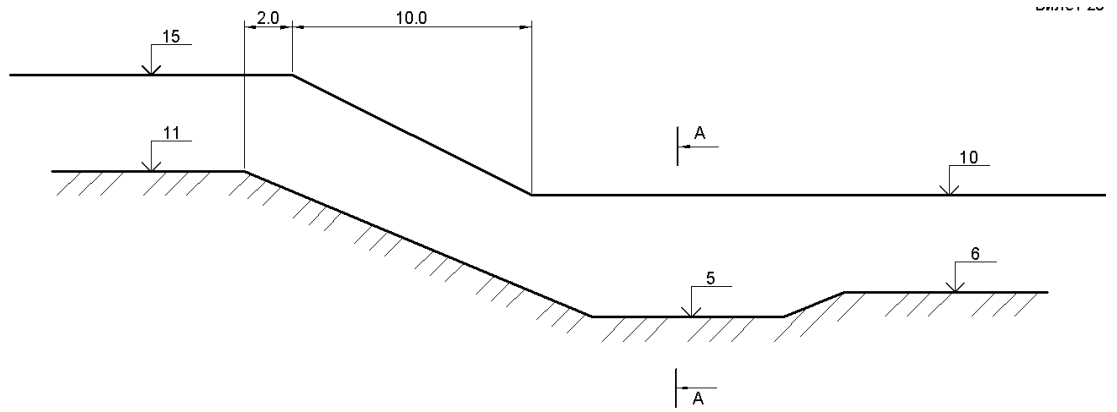
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18-variant



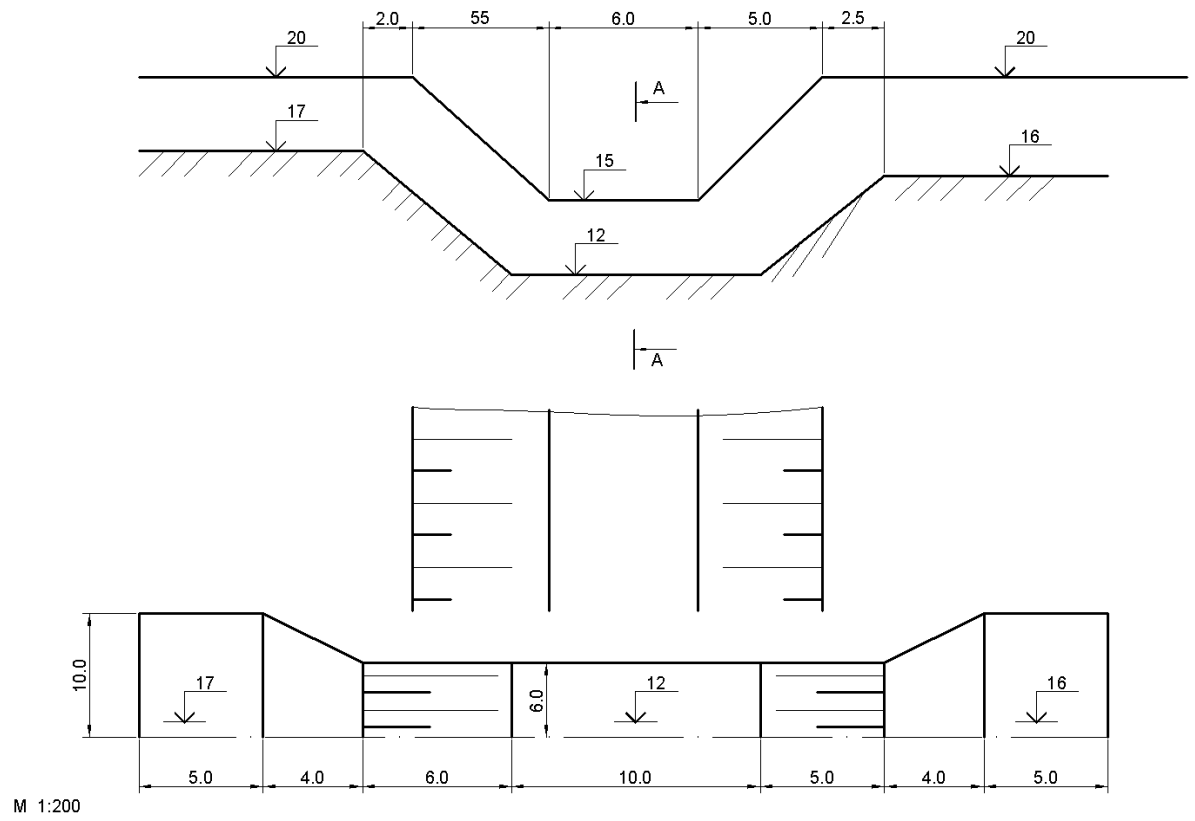
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19-variant

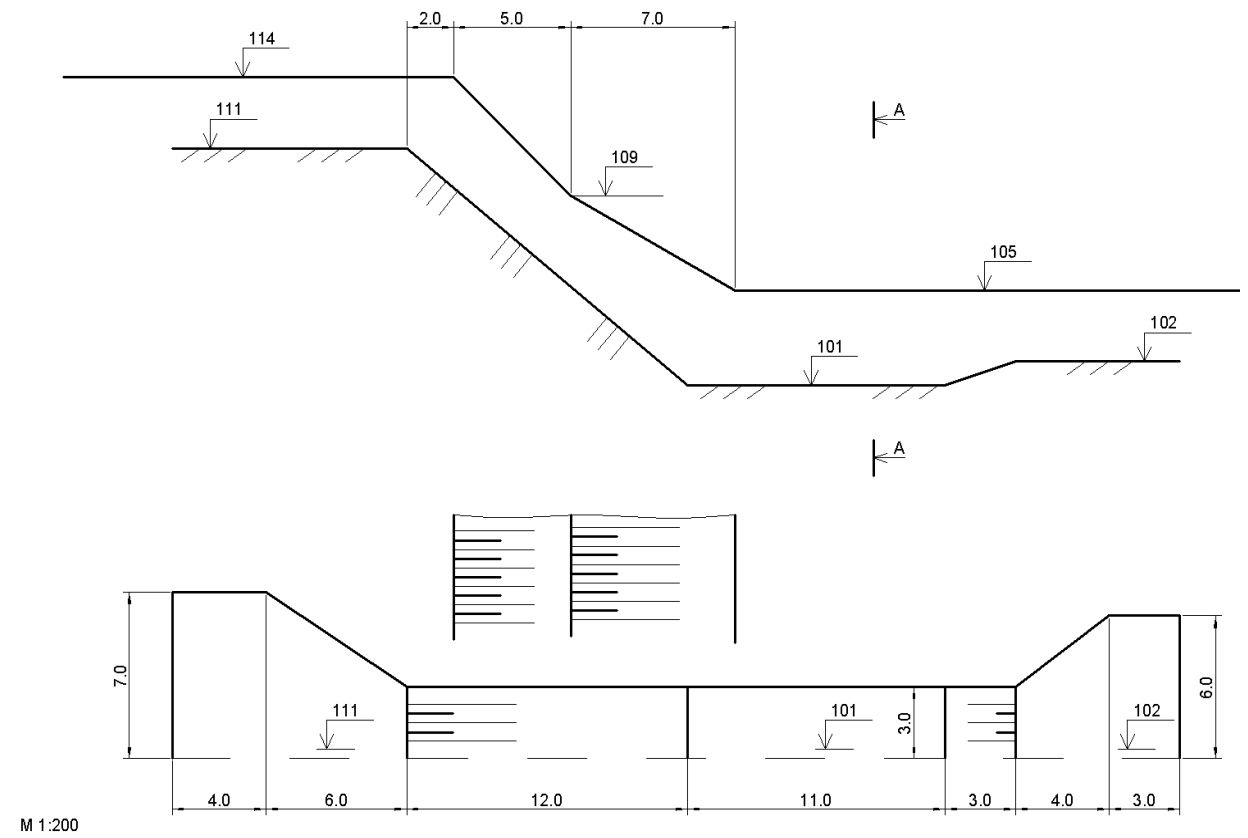


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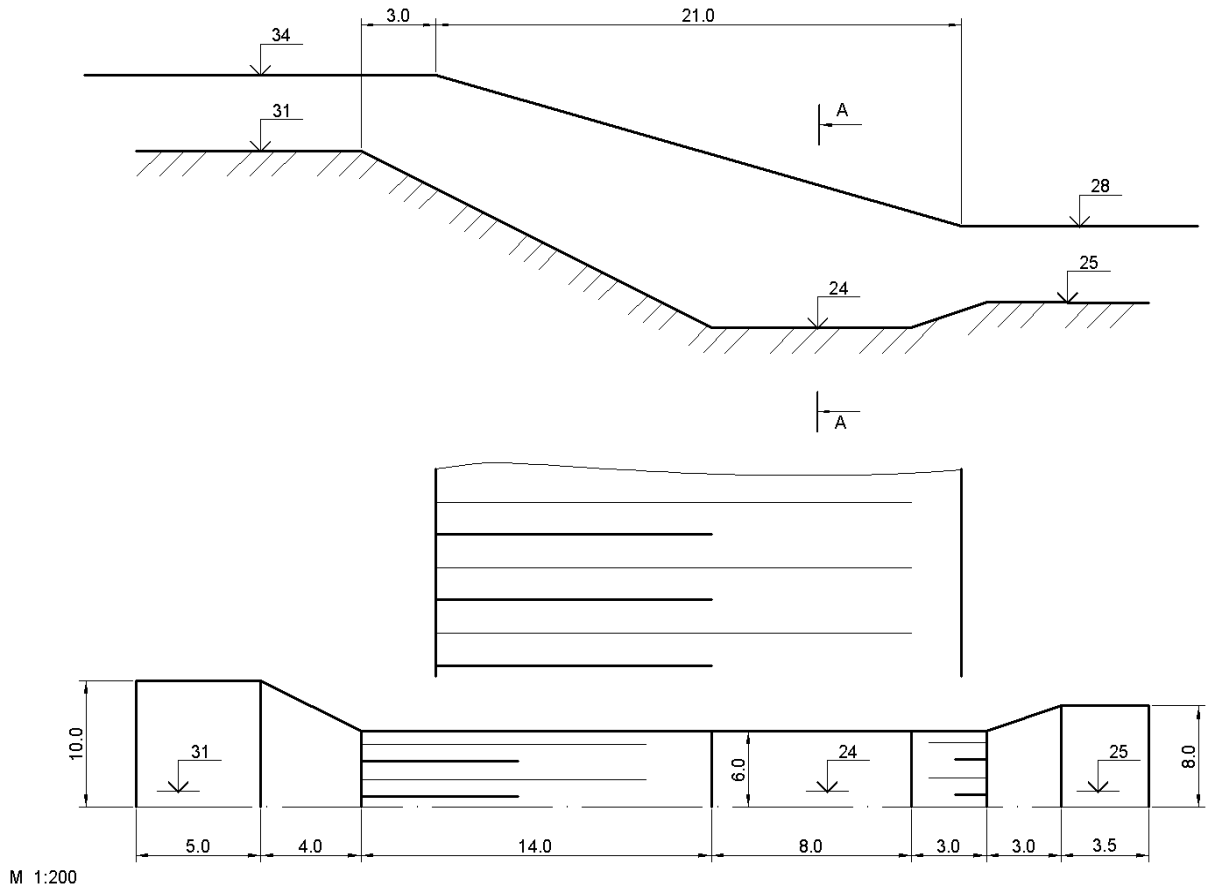
20-variant



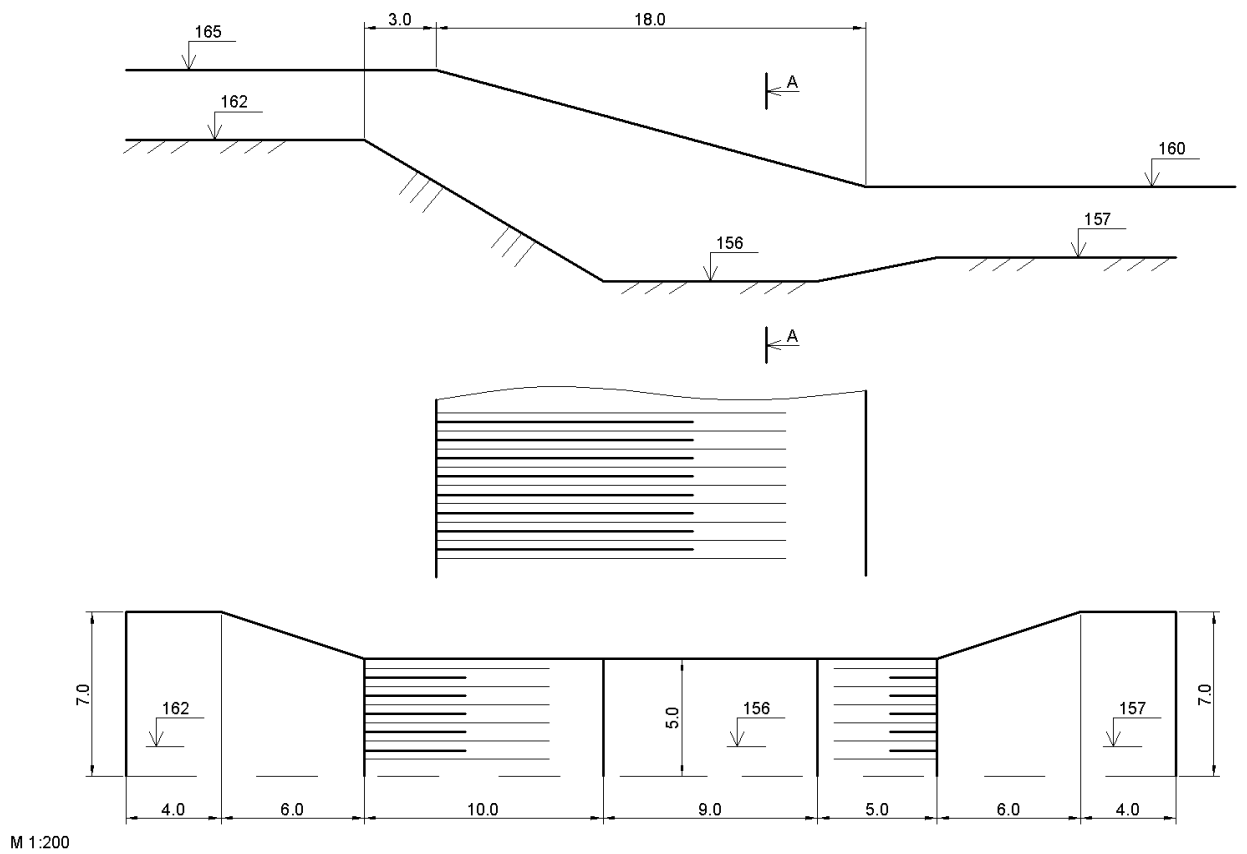
21-variant



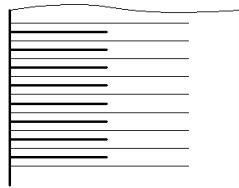
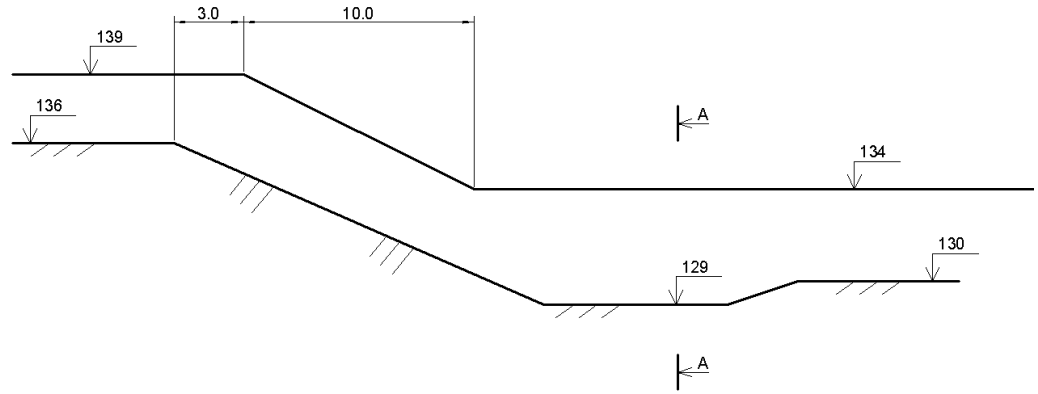
22-variant



23-variant

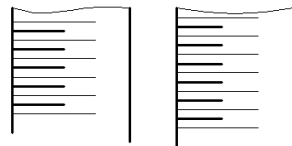
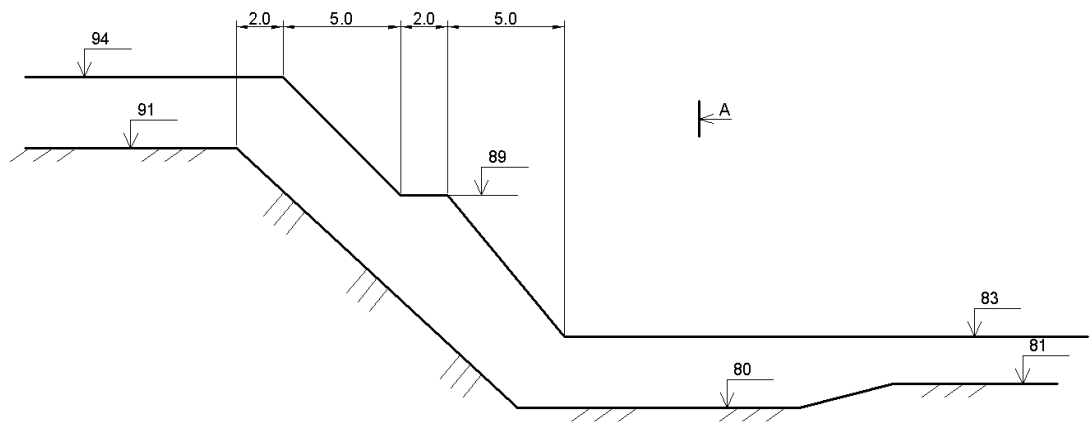


24-variant



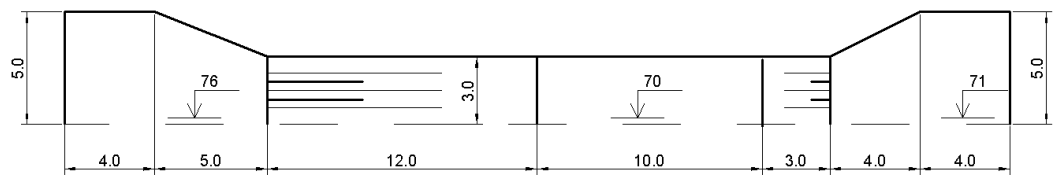
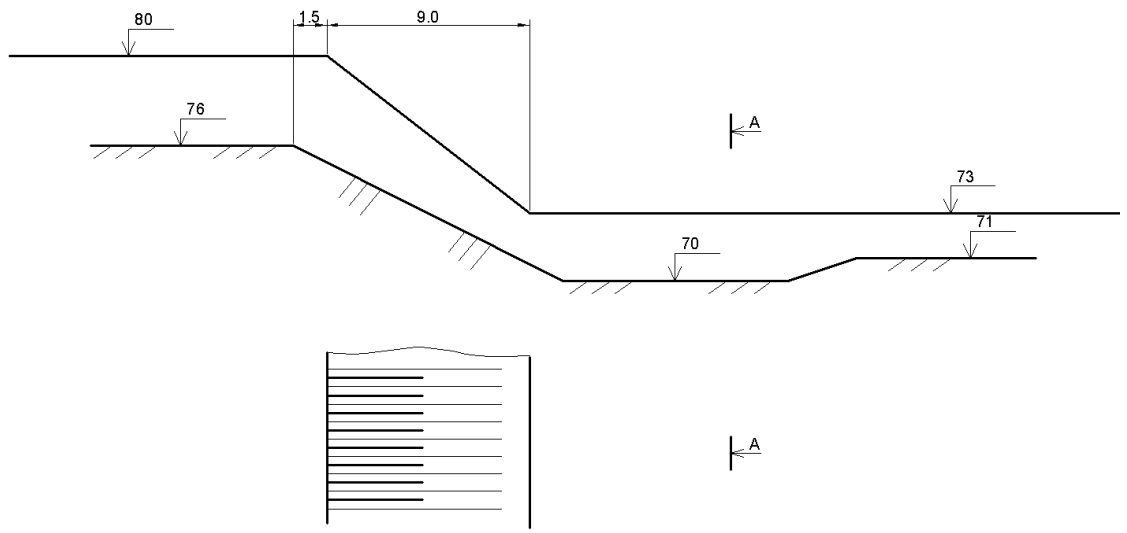
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25-variant



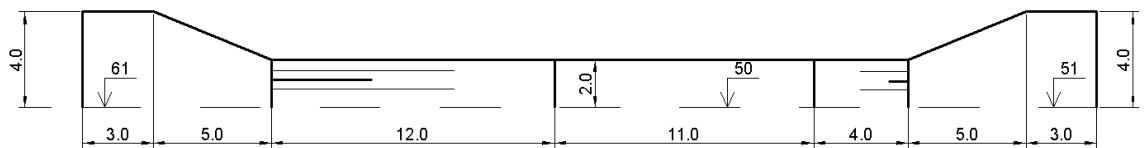
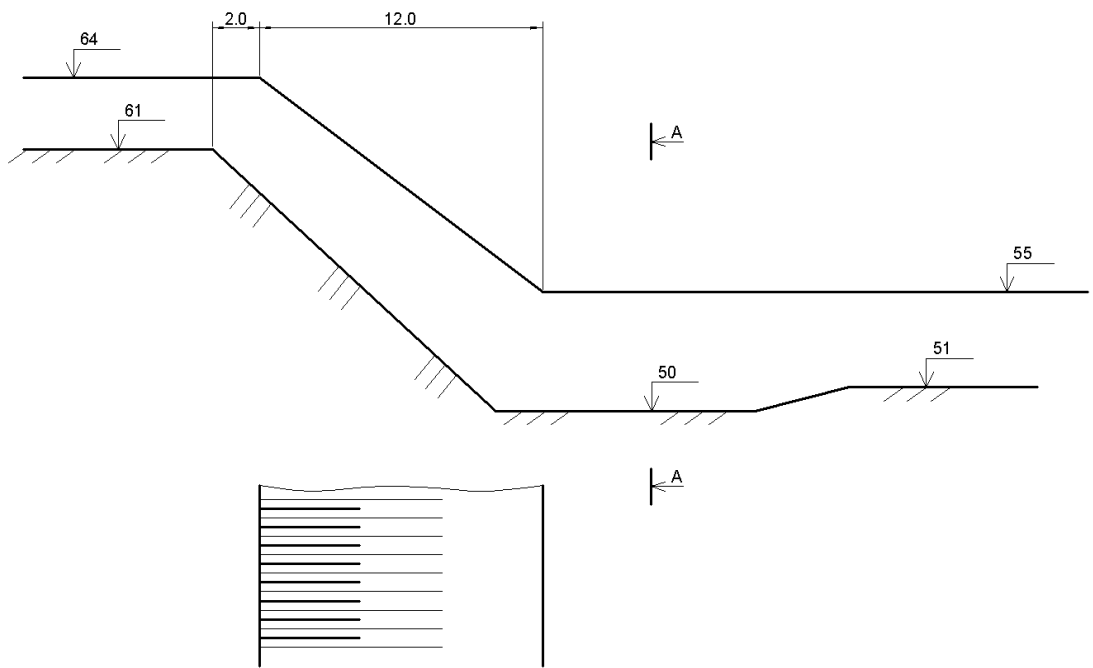
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26-variant



M 1:200

27-variant



M 1:200

28-variant