**mdinare oCxomuris marjvena napiris napirdamcavi gabionis mowyobis samuSaoebi**

**nawili A – satendero dokumentacia**

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sarCevi

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# saproeqto obieqtis sainJinro-geologiuri pirobebis daxasiaTeba

## Sesavali

Cxorowyu-hesis hidrosistema mowyobilia Cxorowyus municipalitetSi, dasaxlebis aRmosavleT daboloebaze, md. xobiswyalze. hesis mier gamomuSavebuli wyali erTvis md. oCxomurs marjvena mxridan. hesis teritoria, romelzedac ganTavsebulia satransformatoro da sxvadasxva daniSnulebis nagebobebi warmoadgens md. oCxomuris marjvena Walis terasas, romelic mdinaris kalapotidan gamoyofilia 0.4-1.7 m simaRlis safexuriT. teritoriis absoluturi niSnulebi 131.2-132.2 m-s Soris meryeobs. mdinaris kalapotis sigane, noRa kalapotianad, 55 m-dan (zeda nawilSi) 75 m-mde (qveda nawilSi) meryeobs.

terasis sigrZe 150 m-s Seadgens, xolo sigane 60 m-mdea. napirgamagrebas eqvemdebareba md. oCxomuris marjvena napiris gaswvriv 60 m-mde sigrZis monakveTi. es monakveTi gasul saukuneSi gamagrebuli iyo betonis blokebiT, romelic mdinaris mier ganviTarebuli gverdiTi da siRrmuli eroziiT, daSlili da gadaadgilebulia. garda amisa, teritoriis dasavleT kuTxeSi aRiniSneba md. oCxomuris 7 m-mde siganis nakalapotari. wyaldidobisas mdinare gadmodis aRniSnul nakalapotarSi da azianebs napirgamagrebis kedels.

1.02.07-87 normebisa da wesebis krebulis danarTi 10-is Tanaxmad, dasaxasiaTebeli teritoria miekuTvneba saSualo sirTulis II kategorias.

pn 01.05-08-is cxrili 20-is Tanaxmad, Cxorowyus municipalitetSi niadagis sezonuri gayinvis siRrme yvela saxeobis gruntisaTvis 0-is tolia.

pn 01.01-09 “seismomedegi mSenebloba”-ze darTuli seismuri saSiSroebis rukis Tanaxmad teritoria Sedis makroseismuri saSiSroebis 9-balian zonaSi, maqsimaluri horizontaluri aCqarebiT 0.30-0.32 erTeuliT, molodinis 50 wliT da gadaWarbebis 2%-iani albaTobiT.

## fizikur-geografiuli da geologiuri pirobebi

municipaluri centri Cxorowyu mdebareobs samegrelos regionSi Tbilisidan 357 km manZilze da ukavSirdeba mas asfaltirebuli saavtomobilo gziT. alternatiuli variantia Tbilisi-senaki, rkinigzis 300 km da senaki-Cxorowyu, saavtomobilo gziT 57 km.

Tanamedrove erovnuli atalsis monacemebiT Cxorowyu Sedis zRvis subtropikuli notion havis olqis Tbili zamTris da cxeli zafxulis notio qvezonaSi, kargad gamosaxuli musonuri xasiaTis qarebiT da naleqebis maqsimaluri raodenobiT zafxul-Semodgomaze.

atmosferuli naleqebis saSualo wliuri raodenoba 2053 mm-s Seadgens.

hesis ganlagebis teritoria warmoadgens ferdobis ZirSi ganviTarebul mcire zomis movakebas. igi Seqmnilia md. oCxomuris mier. teritorias gaaCnia umniSvnelo daxra CrdiloeTidan samxreTisaken da aRmosavleTidan dasavleTisaken, mdinaris dinebis Tanxvedrulad.

garda mdinaris eroziuli moqmedebisa, romelsac Tan axlavs terasis 1-2 m-mde simaRlis safexuris ngreva, sxva egzogenuri procesebis aqtiuroba ar aRiniSneba.

teritoriis geologiur agebulebaSi monawileobas Rebuloben neogenuri asakis meotisuri da ponturi wyebis zRviuri da kontinentaluri molasis konglomeratebi, Tixebi, qviSaqvebi da qviSebi. ZiriTadi qanebi gadafarulia aluviuri kaWar-kenWnaris mZlavri SriT, romlis simZlavre saorientaciod 10-15 m-s aRemateba.

teritoriaze ZiriTadad gavrcelebulia napralovan-forovani miwisqveSa wylebi, romlebic xasiaTdebian dabali mineralizaciiT (0.3-0.5 g/l) da miekuTvnebian hidrokarbonatul-natriumiani wylis tips.

## specialuri nawili

hesis teritoriis samxreTi nawili, romelic eqvemdebareba saproeqto napirgamagrebiT dacvas, warmoadgens md. oCxomuris marjvena Walis terasas. wyalmcirobis periodSi terasa kalapotisagan gamoyofilia 1-2 m simaRlis vertikaluri safexuriT. wyaluxvobis periodSi mdinaris done maRla iwevs, mTlianad faravs da azianebs napirgamagrebis blokebis wyobas.

hidrologiuri gaTvlebiT kalapotis garecxvis siRrme 1.2 m-s Seadgens mdinaris kalapotis fskeris zedapiridan, Sesabamisad napirsamagri konstruqciebis CaRrmaveba gruntebSi unda Seadgendes mdinaris napirze minimum 1.5 m-s.

nagebobis fuZeSi gavrcelebulia qviSiT Sevsebuli kaWar-kenWnari, romelic xasiaTdeba Semdegi sainJinro-geologiuri maCveneblebiT:

* simkvrive bunebrivi, ρ – 2000-2250 kg/m3;
* deformaciis moduli, E – 50 mpa;
* Sinagani xaxunis kuTxe, φ – 30;
* SeWiduloba, C – 0.02 mpa;
* droebiTi winaRoba erTRerZa kumSvaze, R0 – 0.6 mpa;
* damuSavebis jgufi – §6-g;
* damuSavebis kategoria – IV erTCamCiani eqskavatoriT;
* ferdobis qanobi 3 m siRrmemde gawylianebuli gruntis – 1:1;
* seismurobis kategoria II.

# mdinare oCxomuris mokle hidrografiuli daxasiaTeba

## mdinare oCxomuris saerTo daxasiaTeba

mdinare oCxomuri saTaves iRebs samegrelos qedis samxreT-dasavleT kalTebze 1840 metris simaRleze da erTvis md. xobs marcxena mxridan sof. lesiWines samxreT-dasavleTiT 1,2 km-Si. mdinaris mTliani sigrZea 47 km, saerTo vardna 1760 metri, saSualo qanobi 37,4 ‰. wyalSemkrebi auzis farTobi 159 km2, auzis saSualo simaRle ki 360 metria. mdinares erTvis sxvadasxva rigis 126 Senakadi jamuri sigrZiT 191 km. maT Soris yvelaze grZelia md. Coga, sigrZiT 11,0 km.

mdinaris auzi mdebareobs samegrelos qedis dasavleT nawilSi, md. xobisa (dasavleTiT) da md. texuris (aRmosavleTiT) auzebs Soris. mdinaris asimetriuli formis auzi xasiaTdeba gorak-borcviani reliefiT, romlis marcxena mxare Zlier daserilia Senakadebisa da xevebis xeobebiT.

mdinaris auzis zeda zonis geologia warmodgenilia kirqvebiT, auzis danarCeni nawili ki Zveli konglomeratebiT. auzis niadaguri safari warmodgenilia sustad gaewrebuli yviTelmiwa da wiTelmiwa niadagebi. auzis zeda zonaSi gavrcelebulia xSiri foTlovani tye, rac qvemoT icvleba Cais, citrusebisa da Tambaqos plantaciebiT.

mdinaris xeoba saTaveebSi V-s formisaa. misi fskeris sigane 5-15 metrs Seadgens da mTlianad dakavebulia wylis nakadiT. saTavidan 4-5 km-is qvemoT mdinaris xeoba trapeciul formas iRebs, romlis fskeris sigane icvleba 200 metridan (sof. kurzusTan) 0,8-1,5 km-mde (SesarTavTan). xeobis ferdobebi saTaveebSi cicaboa, qvemoT ki SedarebiT damreci. xeobis ferdobebi mTel sigrZeze erwymian mimdebare qedebis kalTebs.

terasebi gvxvdeba mdinaris xeobis Sua da qvemo zonebSi. terasebis simaRle icvleba 3-dan 10-12 metramde, sigane 60-dan 100 metramde, xolo sigrZe 1 km-mde aRwevs. mdinaris Wala gvxvdeba sof. kurzusa da q. Cxorowyus Soris. Walis sigane 20-50 metri, simaRle ki 0,1-0,2 metria. wyaldidobebisa da wyalmovardnebis periodSi Wala ifareba 0,7-1,5 metris simaRlis wylis feniT.

mdinaris kalapoti zomierad klaknili da ZiriTadad dautotavia. calkeul monakveTebze gvxvdeba mcire zomis kunZulebi, romlebic itboreba. nakadis sigane icvleba 5-dan 23 metramde, siRrme 0,6-dan 2,0 metramde, xolo siCqare 0,7-1,2 m/wm-dan 0,1-0,4 m/wm-mde.

mdinaris wylianobis reJimi xasiaTdeba wyalmovardnebiT mTeli wlis ganmavlobaSi. wvimebiT gamowveuli wyalmovardnebi xSiria gazafxulze da Semodgomaze. zafxulis xanmokle wyalmciroba xSirad irRveva wvimebiT gamowveuli wyalmovardnebiT. xanmokle yinulovani movlenebi wanapirebis saxiT aRiniSneba mxolod calkeul civ zamTrebSi.

mdinare sameurneo saqmianobaSi ar gamoiyeneba.

saproeqto kveTamde mdinaris sigrZe 28,6 km, saerTo vardna 1710 metri, saSualo qanobi 60,0‰, wyalSemkrebi auzis farTobi ki 133 km2-ia.

## klimati

mdinare oCxomuris auzi, rogorc zemoT iyo aRniSnuli, mdebareobs samegrelos qedis samxreT ferdobze, kolxeTis dablobis CrdiloeT nawilSi, sadac gabatonebulia kolxeTis dablobisTvis damaxasiaTebeli notio subtropikuli klimati. gabatonebuli klimaturi pirobebis Camoyalibebas ganapirobebs Savi zRvis uSualo siaxlove da dasavleTidan SemoWrili notio haeris masebis gavlena.

vinaidan md. oCxomuris auzSi arsebuli Cxorowyus meteorologiur sadgurze ar arsebobs yvela klimaturi elementis monacemi, amitom sakvlevi teritoriis klimaturi daxasiaTeba Sedgenilia md. oCxomuris auzis siaxloves arsebuli walenjixis meteorologiuri sadguris mravalwliuri dakvirvebis monacemebis safuZvelze.

aRniSnuli metorologiuri sadguris monacemebiT, aq mzis naTebis xangrZlivoba mTeli wlis ganmavlobaSi maRalia da misi saSualo wliuri sidide 1800-dan 2200 saaTamde icvleba. jamobrivi radiaciac sakmaod maRalia da misi sidide 110-130 kkal/sm2-s utoldeba. radiaciuli balansis wliuri maCvenebeli ki 60 kkal/sm2-s Seadgens.

mzis radiaciasTan uSualo kavSirSia klimaturi pirobebis maformirebeli erT-erTi ZiriTadi faqtori \_ haeris temperatura, romlis saSualo Tviuri, wliuri da eqstremaluri mniSvnelobebi, aRniSnuli meteorologiuri sadguris mravalwliuri dakvirvebis monacemebis mixedviT, mocemulia #2-2-1 cxrilSi.

haeris temperaturis saSualo Tviuri, wliuri da

eqstremaluri sidideebi t0C

cxrili #2-2-1

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| metsadguri | temperatura | I | II | III | IV | V | VI | VII | VIII | IX | X | XI | XII | weli |
| walenjixa | saSualo | 4.6 | 5.0 | 7.5 | 11.8 | 16.5 | 19.4 | 21.5 | 21.8 | 18.8 | 15.2 | 10.5 | 6.7 | 13.3 |
| abs.maqsimumi | 23 | 25 | 32 | 35 | 36 | 38 | 39 | 40 | 40 | 33 | 31 | 25 | 40 |
| abs.minimumi | -18 | -15 | -12 | -4 | 1 | 7 | 10 | 9 | 4 | -3 | -11 | -15 | -18 |

rogorc warmodgenili #2-2-1 cxrilidan Cans, gansaxilvel teritoriaze yvelaze cxeli Tvea agvisto, xolo yvelaze civi \_ ianvari.

wayinvebi, anu saSualo dRe-Remuri dadebiTi temperaturebis fonze haeris gaciveba 00-ze qvemoT, saSualod iwyeba dekemberSi da mTavrdeba martSi.

wayinvebis dawyebisa da dasrulebis TariRebi, aseve uyinvo periodis xangrZlivoba dReebSi, imave metsadguris mravalwliuri dakvirvebis monacemebis mixedviT, mocemulia #2-2-2 cxrilSi.

wayinvebis dawyebisa da dasrulebis TariRebi da uyinvo periodis

xangrZlivoba dReebSi

cxrili #2-2-2

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| met. sadguri | wayinvebis TariRi | | | | | | uyinvo periodi dReebSi | | |
| dasawyisi | | | dasasruli | | | saSualo | umciresi | udidesi |
| saSualo | naad-revi | gviani | saSualo | naadrevi | gviani |
| walenjixa | 6.XII. | \_ | \_ | 25.III. | \_ | \_ | 255 | \_ | \_ |

niadagis zedapiris temperatura, romelic damokidebulia niadagis tipze, mis meqanikur Semadgenlobaze, sinotiveze, mis daculobaze mcenareuli safariT zafxulSi da Tovlis safaris simaRleze zamTarSi, iTvaliswinebs niadagis zedapiris ramdenime mm-iani sisqis temperaturas. misi maCveneblebi mWidro kavSirSia haeris temperaturis sidideebTan. amasTan, misi saSualo wliuri maCvenebeli, sakvlev teritoraze, TiTqmis 1,00-iT aRemateba haeris temperaturis saSualo wliur sidides.

niadagis zedapiris saSualo Tviuri, wliuri, saSualo maqsimaluri da saSualo minimaluri mniSvnelobebi, imave metsadguris mravalwliuri dakvirvebis monacemebis mixedviT, mocemulia #2-2-3 cxrilSi.

niadagis zedapiris saSualo Tviuri, wliuri, maqsimaluri da

minimaluri temperaturebi t0C

cxrili #2-2-3

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| metsadguri | temperatura | I | II | III | IV | V | VI | VII | VIII | IX | X | XI | XII | weli |
| walenjixa | saSualo | 3 | 4 | 8 | 13 | 20 | 24 | 26 | 25 | 21 | 15 | 9 | 5 | 14 |
| saS.maqsimumi | 11 | 13 | 20 | 28 | 39 | 42 | 42 | 43 | 37 | 30 | 20 | 13 | 28 |
| saS.minimumi | -2 | -2 | 1 | 5 | 10 | 14 | 17 | 17 | 13 | 8 | 4 | 0 | 7 |

niadagis zedapiris wayinvebis dawyebisa da dasrulebis saSualo TariRebi, aseve uyinvo periodis xangrZlivoba dReebSi, imave metsadguris mravalwliuri dakvirvebis monacemebis mixedviT, mocemulia #2-2-4 cxrilSi.

niadagis zedapiris wayinvebis dawyebisa da dasrulebis saSualo TariRebi

da uyinvo periodis xangrZlivoba dReebSi

cxrili #2-2-4

|  |  |  |  |
| --- | --- | --- | --- |
| metsadguri | wayinvis saSualo TariRi | | uyinvo periodis  xangrZlivoba  dReebSi |
| pirveli  Semodgomaze | saboloo  gazafxulze |
| walenjixa | 19.XI. | 5.IV. | 227 |

atmosferuli naleqebi, romlebic warmoadgenen klimaturi da hidrologiuri reJimis maformirebel erT-erT ZiriTad elements, sakvlev teritoriaze sakmao raodenobiT modis. misi wliuri jami imave metsadguris mravalwliuri dakvirvebis monacemebiT 2016 mm-s Seadgens.

atmosferuli naleqebis saSualo Tviuri raodenoba da wliuri jami, imave metsadguris mravalwliuri dakvirvebis monacemebis mixedviT, mocemulia #2-2-5 cxrilSi.

naleqebis saSualo Tviuri raodenoba da wliuri jami mm-Si

cxrili #2-2-5

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| metsadguri | I | II | III | IV | V | VI | VII | VIII | IX | X | XI | XII | weli |
| walenjixa | 191 | 175 | 157 | 135 | 128 | 171 | 191 | 167 | 196 | 170 | 161 | 174 | 2016 |

haeris sinotive erT-erTi mniSvnelovani klimaturi elementia. mas umTavresad sami sididiT axasiaTeben, esenia: wylis orTqlis drekadoba anu absoluturi sinotive, SefardebiTi sinotive da sinotivis deficiti. pirveli axasiaTebs haerSi wylis orTqlis raodenobas, meore \_ haeris orTqliT gaJRenTvis xarisxs, xolo mesame \_ miuTiTebs SesaZlebeli aorTqlebis sidideze.

aRsaniSnavia, rom haeris wylis orTqliT gajerebisa (absoluturi sinotivis) da misi deficitis maCvenebelis wliuri msvleloba praqtikulad emTxveva haeris temperaturis wliur msvlelobas.

haeris sinotivis maCveneblebis saSualo Tviuri da wliuri sidideebi imaveEmetsdguris mravalwliuri dakvirvebis monacemebis mixedviT, mocemulia #2-2-6 cxrilSi.

haeris sinotivis saSualo Tviuri da wliuri sidideebi

cxrili #2-2-6

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| met.  sadguri | tenianoba | I | II | III | IV | V | VI | VII | VIII | IX | X | XI | XII | weli |
| walenjixa | absoluturi  mb-Si | 6.1 | 6.2 | 6.8 | 9.2 | 13.5 | 17.7 | 21.3 | 21.3 | 17.1 | 12.2 | 8.9 | 6.6 | 12.2 |
| SefardebiTi  %-Si | 70 | 72 | 71 | 70 | 74 | 78 | 83 | 82 | 80 | 74 | 69 | 67 | 74 |
| deficiti  mb-Si | 3.1 | 3.2 | 3.9 | 6.0 | 6.4 | 6.0 | 5.2 | 5.8 | 5.2 | 5.2 | 4.8 | 4.0 | 4.9 |

imave meteorologiuri sadguris mravalwliuri dakvirvebis monacemebis mixedviT, Tovlis safari saSualod yvelaze adre Cndeba noemberSi da yvelaze gvian qreba aprilSi. amasTan, Tovlis safaris saSualo dekaduri simaRle 17 sm-s, maqsimaluri ki 85 sm-s aRwevs.

Tovlis safaris gaCenisa da gaqrobis TariRebi, imave metsadguris mravalwliuri dakvirvebis monacemebis mixedviT, mocemulia #2-2-7 cxrilSi.

Tovlis safaris gaCenisa da gaqrobis TariRebi

cxrili #2-2-7

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| metsadguri | Tovlian  dReTa  ricxvi | Tovlis safaris gaCenis  TariRi | | | Tovlis safaris gaqrobis  TariRi | | |
| saSualo | naadrevi | gviani | saSualo | naadrevi | gviani |
| walenjixa | 24 | 1.I. | 9.XI. | \_ | 16.III. | \_ | 21.IV. |

raionSi qris yvela mimarTulebis qari, magram gabatonebulia samxreT-dasavleTis da Crdilo-dasavleTis mimarTulebis qarebi, rac ganpirobebulia mdinare Waniswylis xeobis mimarTulebiT da kolxeTis dablobze dasavleTidan SemoWrili haeris masebiT.

qarebis mimarTulebebi da Stilebis raodenoba imave metsadguris mravalwliuri dakvirvebis monacemebis mixedviT, mocemulia #2-2-8 cxrilSi.

qarebis mimarTuleba da Stilebis raodenoba %-Si wliuridan

cxrili #2-2-8

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| metsadguri | C | Ca | a | sa | s | sd | d | Cd | Stili |
| walenjixa | 13 | 15 | 5 | 12 | 8 | 23 | 4 | 20 | 9 |

qaris saSualo Tviuri da wliuri siCqareebi, imave metsadguris mravalwliuri dakvirvebis monacemebis mixedviT, mocemulia #2-2-9 cxrilSi, xolo qaris maqsimaluri siCqareebi #2-2-10 cxrilSi.

qaris saSualo Tviuri da wliuri siCqare m/wm-Si

cxrili #2-2-9

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| metsadguri | fliugeris  simaRle | I | II | III | IV | V | VI | VII | VIII | IX | X | XI | XII | weli |
| walenjixa | 12 m. | 3.0 | 3.2 | 3.4 | 3.6 | 3.3 | 3.3 | 3.0 | 3.1 | 2.8 | 3.1 | 3.0 | 2.7 | 3.1 |

qaris maqsimaluri siCqareebi m/wm-Si

cxrili #2-2-10

|  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- |
| metsadguri | qaris maqsimaluri siCqare (m/wm) SesaZlebeli erTjer | | | | |
| 1 welSi | 5 welSi | 10 welSi | 15 welSi | 20 welSi |
| walenjixa | 20 | 23 | 24 | 24 | 25 |

gansaxilvel teritoriaze Rrublianoba sakmaod maRalia. saSualod, wlis ganmavlobaSi, cis TaRis 50-65% dafarulia RrublebiT. Rrublianoba yvelgan metia zamTarSi, naklebia zafxulSi. saerTo Rrublianobis mixedviT moRrubluli dReebi 100-170-s, xolo minimaluri ki 40-65 Soris icvleba.

elWeqi sakmaod xSiri movlenaa \_ 30-45 dRe weliwadSi. calkeul wlebSi ufro metia da 70-s uaxlovdeba. elWeqi aq umTavresad wlis Tbil periodSi icis (TveSi 5-12 dRe). iSviaTad elWeqi zamTarSic aRiniSneba.

elWeqisagan gansxvavebiT setyva mxolod wlis Tbil periodSi icis, yvelaze xSiria mais-ivnisSi. setyvian dReTa ricxvi 1-2 dRes ar aRemateba. calkeul wlebSi setyva 6-7-jer fiqsirdeba.

## wylis maqsimaluri xarjebi

mdinare oCxomuri hidrologiuri TvalsazrisiT ar aris Sesawavlili. amitom, misi maqsimaluri xarjebis saangariSo sidideebi saproeqto kveTSi, dadgenilia detaluri meTodiT, romelic mocemulia ,,kavkasiis pirobebSi mdinareTa maqsimaluri Camonadenis saangariSo teqnikur miTiTebaSi" da hidrologiur cnobarSi ,,ssr kavSiris zedapiruli wylis resursebi, tomi IX, gamoSveba I”.

mdinare oCxomuris wylis maqsimaluri xarjebis saangariSod saWiro morfometriuli elementebis mniSvnelobebi, dadgenili 1:25000 masStabis topografiuli rukis mixedviT, mocemulia #2-3-1 cxrilSi.

mdinare oCxomuris ZiriTadi morfometriuli elementebi

saproeqto kveTSi

cxrili #2-3-1

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| kveTi | km2 | kmL | kal | % | km |  |  |  |  |
| saproeqto | 133 | 28.6 | 0.060 | 36.5 | 43.8 | 0.27 | 0.34 | 8.0 | 1.0 |

mocemuli morfometriuli elementebis safuZvelze dadgenili wylis maqsimaluri xarjebis saangariSod saWiro yvela aucilebeli parametrisa da TviT maqsimaluri xarjebis sidideebi, moyvanilia #2-3-2 cxrilSi

mdinare oCxomuris wylis maqsimaluri xarjebi

cxrili #2-3-2

|  |  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| kveTi | weli |  | wuTi | mm | mm/wT |  |  | m/wm  kal. | m/wm  ferd. | m3/wm |
| saproeqto | 100 | 1 | 237 | 151 | 0.64 | 0.48 | 0.583 | 2.64 | 0.28 | 400 |
| 50 | 2 | 254 | 128 | 0.50 | 0.45 | 0.614 | 2.51 | 0.21 | 310 |
| 20 | 5 | 289 | 104 | 0.36 | 0.42 | 0.657 | 2.35 | 0.19 | 220 |
| 10 | 10 | 311 | 88.2 | 0.28 | 0.40 | 0.685 | 2.23 | 0.17 | 170 |

## wylis maqsimaluri doneebi

mdinare oCxomuris maqsimaluri xarjebis Sesabamisi doneebis niSnulebis dasadgenad saproeqto ubanze, gadaRebuli iqna kalapotis ganivi kveTebi, romelTa safuZvelze dadgenili iqna mdinaris hidravlikuri elementebi. aRniSnuli hidravlikuri elementebis mixedviT ganxorcielda wylis maqsimalur xarjebsa da doneebs Soris damokidebulebis mrudebis ageba, romlebic erTmaneTTan Sebmulia or saangariSo kveTs Soris nakadis hidravlikuri qanobis SerCevis gziT.

kveTSi nakadis saSualo siCqare dadgenilia Sezi-maningis cnobili formuliT, romelsac Semdegi saxe gaaCnia



sadac  – nakadis saSualo siRrmea kveTSi m-Si;

 \_ nakadis hidravlikuri qanobia or saangariSo kveTs Soris;

\_ simqisis koeficientia, romlis sidide specialuri gaTvlebis safuZvelze kalapotisTvis miRebulia 0,042-is, WalisTvis ki 0,055-is toli.

qvemoT, #2-4-1 cxrilSi, mocemulia md. oCxomuris sxvadasxva ganmeorebadobis wylis maqsimaluri xarjebis Sesabamisi doneebis niSnulebi saproeqto, anu hesis teritoriis dacavi kedlis dazianebuli monakveTis ubanze.

mdinare oCxomuris maqsimaluri xarjebis Sesabamisi doneebi

cxrili #2-4-1

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| ganivis  # da  pk | manZili  ganivebs  Soris  m-Si | wylis napiris  niSnulebi  m.abs. | fskeris  udablesi  niSnulebi  m.abs. | w. m. d. | | | |
| 100 wels,  Q=400  m3/wm | 50 wels,  Q=310  m3/wm | 20 wels,  Q=220  m3/wm | 10 wels,  Q=170  m3/wm |
| 1. 0+00 | 50  30  35  68  67  87 | 129.65 | 127.00 | 132.10 | 131.80 | 131.40 | 131.20 |
| 2. 0+50 | 129.60 | 129.11 | 131.80 | 131.50 | 131.10 | 130.90 |
| 3.0+85 (sapr.kveTi) | 129.40 | 127.36 | 131.60 | 131.30 | 130.90 | 130.70 |
| 4. 1+15 | 129.07 | 128.25 | 131.40 | 131.10 | 130.70 | 130.50 |
| 5. 1+83 | 128.37 | 127.70 | 131.10 | 130.80 | 130.45 | 130.20 |
| 6. 2+50 | 128.02 | 127.47 | 130.70 | 130.40 | 130.00 | 129.80 |
| 7. 3+37 | 127.77 | 127.11 | 130.10 | 129.70 | 129.40 | 129.15 |

naxazebze, md. oCxomuris kalapotis ganiv kveTebze, datanilia 100 wliani da 10 wliani ganmeorebadobis wylis maqsimaluri xarjebis Sesabamisi doneebis niSnulebi.

mdinaris hidravlikuri elementebi, romelTa safuZvelze ganxorcielda wylis maqsimalur xarjebsa da doneebs Soris damokidebulebis mrudebis ageba, mocemulia #2-4-2 cxrilSi, xolo TviT damokidebulebis mrudebi #2-4-1 grafikze.

mdinare oCxomuris hidravlikuri elementebi

cxrili #2-4-2

|  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- |
| niSnulebi  m.abs. | kveTis  elementebi | kveTis  farTobi  ωMm2 | nakadis  sigane  Β m | saSualo siRrme  h m | nakadis  qanobi  і | saSualo  siCqare  Mν m/wm | wylis  xarji  Q m3/wm |
| ganivi #7 pk 3+37 | | | | | | | |
| 127.77 | kalapoti | 13.2 | 25.0 | 0.53 | 0.0056 | 1.16 | 15.3 |
| 128.50 | kalapoti | 42.8 | 56.0 | 0.76 | 0.0056 | 1.48 | 63.3 |
| 129.50 | kalapoti | 101 | 60.0 | 1.68 | 0.0056 | 2.52 | 254 |
| 130.00 | kalapoti | 132 | 65.0 | 2.03 | 0.0056 | 2.86 | 378 |
| ganivi #6 pk 2+50. L=87 m. | | | | | | | |
| 128.02 | kalapoti | 6.78 | 17.7 | 0.38 | 0.0029 | 0.67 | 4.54 |
| 129.00 | kalapoti | 29.2 | 28.0 | 1.04 | 0.0060 | 1.89 | 55.2 |
| 129.00 | marjv. Wala | 4.60 | 9.00 | 0.51 | 0.0060 | 1.17 | 5.38 |
|  |  | 33.8 | 37.0 |  |  |  | 60.6 |
| 130.00 | kalapoti | 79.8 | 55.0 | 1.45 | 0.0076 | 2.66 | 212 |
| 131.00 | kalapoti | 142 | 69.0 | 2.06 | 0.0076 | 3.37 | 478 |
| ganivi #5 pk 1+83. L=67 m. | | | | | | | |
| 128.37 | kalapoti | 7.27 | 14.1 | 0.52 | 0.0052 | 1.11 | 8.08 |
| 129.50 | kalapoti | 34.4 | 34.0 | 1.01 | 0.0062 | 1.89 | 65.0 |
| 129.50 | marjv.kalap. | 2.90 | 7.50 | 0.39 | 0.0062 | 1.00 | 2.90 |
|  |  | 37.3 | 41.5 |  |  |  | 67.9 |
| 130.50 | kalapoti | 69.9 | 37.0 | 1.89 | 0.0062 | 2.87 | 201 |
| 130.50 | marjv.kalap. | 14.2 | 15.0 | 0.95 | 0.0062 | 1.81 | 25.7 |
| 130.50 | marjv. Wala | 10.4 | 38.0 | 0.27 | 0.0062 | 0.60 | 6.24 |
|  |  | 94.5 | 90.0 |  |  |  | 233 |
| 131.50 | kalapoti | 139 | 57.0 | 2.44 | 0.0057 | 3.27 | 454 |
| 131.50 | marjv.Wala. | 48.4 | 38.0 | 1.27 | 0.0057 | 1.61 | 77.9 |
|  |  | 187 | 95.0 |  |  |  | 532 |
| ganivi #4 pk 1+15. L=68 m. | | | | | | | |
| 129.07 | marjv.kalap. | 3.40 | 12.0 | 0.28 | 0.0103 | 1.03 | 3.50 |
| 129.07 | marcx.kalap. | 7.56 | 13.2 | 0.57 | 0.0103 | 1.66 | 12.5 |
|  |  | 11.0 | 25.2 |  |  |  | 16.0 |
| 130.00 | kalapoti | 56.4 | 58.0 | 0.97 | 0.0045 | 1.56 | 88.0 |
| 131.00 | kalapoti | 118 | 65.0 | 1.82 | 0.0045 | 2.38 | 281 |
| 131.50 | kalapoti | 150 | 65.0 | 2.31 | 0.0045 | 2.80 | 420 |
| 131.50 | marjv. Wala | 4.35 | 15.0 | 0.29 | 0.0045 | 0.53 | 2.31 |
|  |  | 154 | 80.0 |  |  |  | 422 |
| ganivi #3 pk 0+80. L=35 m. (saproeqto kveTi) | | | | | | | |
| 129.40 | kalapoti | 15.9 | 37.6 | 0.42 | 0.0094 | 1.29 | 20.5 |
| 130.50 | kalapoti | 72.3 | 65.0 | 1.11 | 0.0055 | 1.89 | 137 |
| 131.50 | kalapoti | 142 | 74.0 | 1.92 | 0.0051 | 2.63 | 373 |
| 132.00 | kalapoti | 180 | 80.0 | 2.25 | 0.0050 | 2.89 | 520 |
| ganivi #1 pk 0+00. L=80 m. | | | | | | | |
| 129.65 | kalapoti | 16.9 | 21.0 | 0.80 | 0.0031 | 1.14 | 19.3 |
| 130.50 | kalapoti | 43.2 | 41.0 | 1.05 | 0.0052 | 1.77 | 76.5 |
| 131.50 | kalapoti | 95.7 | 64.0 | 1.49 | 0.0063 | 2.47 | 236 |
| 132.50 | kalapoti | 167 | 78.0 | 2.14 | 0.0062 | 3.12 | 521 |

# mSeneblobis organizacia

mSeneblobis dawyebis periodi SerCeuli unda iqnes is periodi, rodesac md. oCxomuri xasiaTdeba wylis modinebis mcire debetiT.

miuxedavad amisa, mainc aucilebeli iqneba arsebuli daSlili dezebis betonis blokebisagan droebiTi dabmis mowyoba saproeqto kedlis teritoriaze, romelic periodulad gadaadgilebuli unda iqnes aSenebuli ubnebis mixedviT.

aucilebelia mSenebloba daviwyoTmas Semdeg rodesac asaSenebuli ubani momaragebuli iqneba saWiro saamSeneblo masalebiT, romlebic unda dasawyobdes ferdis zeda mxareze SesaZlo wyaldidobisagan dasacavad.

samuSao unda vawarmooT ise, rom yoveldRiurad Sesruldes samuSaos tempis mixedviT, damcavi gabionis konstruqciiT gaTvaliswinebuli sruli simaRle.

# usafrTxoebis teqnika

napirsamagri samuSaoebis Sesrulebis dros aucilebelia moqmedi standartebiTa da normebiT xelmZRvaneloba, maTi moTxovnebis Sesruleba Sromis dacvasa da usafrTxoebis teqnikaSi.

* samSeneblo-samontaJo organizacia valdebulia SeimuSavos instruqcia usafrTxoebis teqnikis Sesaxeb obieqtis Taviseburebebis gaTvaliswinebiT;
* obieqtze momuSaveni uzrunvelyofilni unda iyvnen individualuri dacvis saSualebebiT da agreTve unda sruldebodes saerTo koleqtiuri dacvis RonisZiebebic.
* axlad miRebuli inJiner-teqnikur personalsa da muSebs pasuxismgebeli piris mier unda Cautardes saerTo instruqtaJi usafrTxoebis teqnikis Sesaxeb. aseTive instruqtaJi utardebaT uSualod samuSao adgilze;
* obieqtze unda arsebobdes specialuri Jurnali sadac dafiqsirdeba usafrTxoebis teqnikis darRvevis yvela SemTxveva.

aucilebelia usafrTxoebis teqnikis, sawarmoo sanitariisa da xanZarsawinaaRmdego moqmedi wesebis, normebisa da instruqciebis dacva.

# garemos dacviTi RonisZiebebi

mosamzadebeli samuSaoebisa da uSualod samSeneblo-samontaJo samuSaoTa warmoebisas mSenebeli valdebulia daicvas qvemoT CamoTvlili da sxva Sesabamisi samSeneblo normebiTa da wesebiT gansazRvruli RonisZiebebi;

* ganalagos samSeneblo moedani da droebiTi Senoba-nagebobebi proeqtis mixedviT an obieqtis ganTvisebis zolSi, Tu amis SesaZlebloba arsebobs;
* samuSaoTa damTavrebis Semdeg mSeneblobis adgili da samSeneblo moedani unda gasufTavdes yovelgvari samSeneblo da sayofacxovrebo nagavisagan, maTi gatana unda moxdes adgilobrivi TviTmarTvelobis organoebTan SeTanxmebul adgilebze;
* akrZalulia namusevari navTobproduqtebis CaRvra da sxva nagvis Cayra mdinaris kalapotSi;
* akrZalulia manqana-meqanizmebis recxva mdinaris napirze, maT gasarecxad unda moewyos specialurad aRWurvili adgilebi;
* unda moxdes dazianebuli miwis mcenareuli fenis aRdgena.

q. CxorowyuSi, md. oCxomurze, Cxorowyuhesis mimdebare

teritoriaze napirsamagri gabionis mowyobis

samuSaoTa moculobebis krebsiTi uwyisi

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
| # | samuSaoTa dasaxeleba | ganz. | raodenoba | SeniSvna |
| 1 | 2 | 3 | 4 | 5 |
| 1 | gabionis mosawyobad mesame kat. gruntis damuSaveba da moSandakeba buldozeriT gadaadgileba nayarSi ferdis mxares, e-30 metrze,  igive xeliT ormagi gadayriT | m2/m3 | 300/400 |  |
| 2 | gabionis mosawyobad doriebiTi gzis mowyoba Txemze, gruntis mesame kat. damuSaveba buldozeriT, gadaadgileba – 20 grZ. metrze | m3 | 150 | e-100grZ.m |
| 3 | xreSovani safaris mowyoba sisqiT -12sm, zidva karieridan – 5km, TviTmclelebiT | m2/m3 | 300/36 |  |
| 4 | gabionis leibis wyobis mowyoba 2.7 mm galvanizirebuli mavTuliT, ujredis zomiT 8X 10 sm, zomiT (2X2X0.4) | c/m3 | 62/99.2 | 19.6 kg |
| 5 | gabionis kedlis mowyoba 2.7 mm galvanizirebuli mavTuliT, ujredis zomiT 8X10 sm, gabionis yuTis zoma Seadgens 2X1.0X1.0 | c/m3 | 62/124 | 17.5 kg |
| 6 | gabionis kedlis mowyoba 2.7 mm galvanizirebuli mavTuliT, ujredis zomiT 8 X10 sm, gabionis yuTis zoma Seadgens 2X1.0X1.0 | c/m3 | 62/93 | 13.2 kg |
| 7 | gabionis kedlis mowyoba 2.7 mm galvanizirebuli mavTuliT, ujredis zomiT 8X10 sm, gabionis yuTis zoma Seadgens 2X1.0X0.5 | c/m3 | 31/31 | 8.8 kg |
| 8 | Sesakravi mavTuli e-2,2mm | km | 430 |  |
| 9 | sagabione qvebis SeZena karierze, zidva 5km-ze | m3 | 285 |  |
| 10 | gabionis yuTebis Sevseba qvebiT xeliT da erTmaneTze gadabma | m3 | 347.2 |  |
| 11 | gabionis ukan gruntis miyra buldozeriT da moSandakebiT, gadaadgileba 20 grZ. metrze | m2/m3 | 20/310 |  |
| 12 | betonis arxis mowyoba e-20 grZ.m zomiT 0,4X0,5   1. miwis mesame kat. damuSaveba xeliT 2. uku Cayra | m3  m3 | 2.5  5.0 | B-22.5, F-200,W-6 |
| 13 | teritoriaze arsebuli bet. blokebis gadaadgileba buldozeriT arsebuli kedlis mxares e-40 grZ.m da dageba amwekraniT or iarusad kedlis gaswvriv | c/m3 | 30/30 | bet. dezebi  gadaadgileba orjer L-30მ |