

Resultater av overvannsberegning sone1

Oppdrag	Hovedsykkelerute Tonstad-Sluppen del 1		Oppdragsnr.	10231960	
Dato	10.05.2023	Utført av	NOEKAT	Kontrollert av	NOMARF
Revisjon					



Forutsetninger for beregningen

Gjentaksintervall (år)	200
Konsentrasjonstid for hele nedbørsfeltet (min)	60
Klimafaktor	1,4
Maks tillatt videreført vannmengde (l/s)	0

Nedbørsfelt

Beskrivelse	Areal (m ²)	Avrenningskoeffisient
Asfalt	1 365	0,9
Grønt areal	1 260	0,3
Sum areal (m2)	2 625	
Gjennomsnittlig avrenningskoeffisient		0,61
Sum red.a. (m2)	1 607	

Fortsetter på neste side

IVF-kurver

Målestasjon	Snitt Trondheim	Måleperiode	1965-2021	Antall serier	
-------------	-----------------	-------------	-----------	---------------	--

År	1 min.	2 min.	3 min.	5 min.	10 min.	15 min.	20 min.	30 min.	45 min.	60 min.	90 min.	120 min.	180 min.	360 min.	720 min.	1440 min.
2	172,0	144,0	128,0	106,0	75,0	59,0	49,0	38,0	30,0	25,0	20,0	17,0	14,0	10,0	7,0	5,0
5	250,0	213,0	198,0	157,0	110,0	87,0	72,0	54,0	41,0	34,0	26,0	22,0	18,0	13,0	9,0	6,0
10	311,0	264,0	236,0	196,0	136,0	108,0	88,0	66,0	50,0	41,0	31,0	26,0	21,0	15,0	10,0	7,0
20	369,0	318,0	285,0	234,0	162,0	128,0	105,0	79,0	59,0	48,0	36,0	30,0	24,0	17,0	12,0	8,0
25	386,0	336,0	304,0	248,0	171,0	135,0	110,0	83,0	62,0	50,0	37,0	31,0	25,0	18,0	12,0	8,0
50	447,0	392,0	358,0	292,0	199,0	158,0	129,0	97,0	73,0	58,0	43,0	36,0	28,0	20,0	13,0	9,0
100	514,0	454,0	417,0	338,0	230,0	181,0	148,0	112,0	84,0	66,0	48,0	40,0	31,0	23,0	15,0	10,0
200	581,0	522,0	481,0	389,0	263,0	207,0	170,0	129,0	96,0	76,0	55,0	45,0	35,0	25,0	17,0	11,0

Dimensjonerende avrenning fra feltet (l/s)	2,2	3,9	5,4	7,3	9,9	11,6	12,7	14,5	16,2	17,1	12,4	10,1	7,9	5,6	3,8	2,5
--	-----	-----	-----	-----	-----	------	------	------	------	------	------	------	-----	-----	-----	-----

Største vannføring (ved uregulert utløp):

Varighet (min)	60	Q dim (l/s)	17,09
----------------	----	-------------	-------

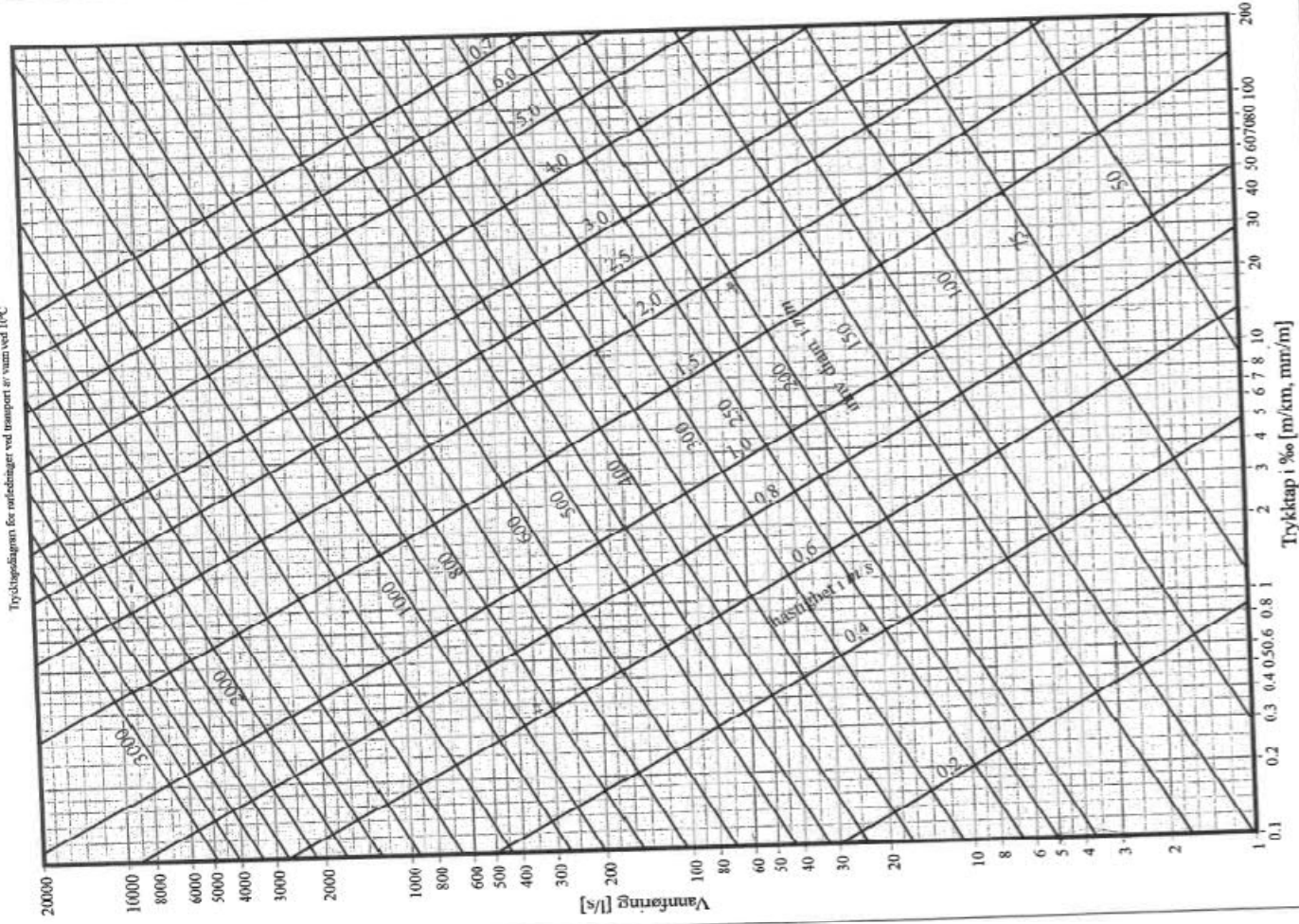
NB: Vannmengden Q_{dim} inkluderer overvann fra gang og sykkelveg og annet grønt areal med fall mot grøft.
Beregningene refererer til F101 tegning i henhold til normalprofil ved fylling.

Gjennomsnitt fall på trase 1 er 6 promille
Dimensjon på overvannsledning er 200 mm

plast

Colebrooks formel for $k = 0.2 \text{ mm}$

Trykspødsagnen for rørdimensioner ved transport af vand ved 15°C



Resultater av overvannsberegning sone2

Oppdrag	Hovedsykkelrute Tonstad-Sluppen del 1		Oppdragsnr.	10231960	
Dato	10.05.2023	Utført av	NOEKAT	Kontrollert av	NOMARF
Revisjon					



Forutsetninger for beregningen

Gjentaksintervall (år)	200
Konsentrasjonstid for hele nedbørsfeltet (min)	50
Klimafaktor	1,4
Maks tillatt videreført vannmengde (l/s)	0

Nedbørsfelt

Beskrivelse	Areal (m ²)	Avrenningskoeffisient
Asfalt	1 398	0,9
Grønt areal	1 290	0,3
Sum areal (m2)		2 688
Gjennomsnittlig avrenningskoeffisient		0,61
Sum red.a. (m2)		1 645

Fortsetter på neste side

IVF-kurver

Målestasjon	Snitt Trondheim	Måleperiode	1965-2021	Antall serier	
-------------	-----------------	-------------	-----------	---------------	--

År	1 min.	2 min.	3 min.	5 min.	10 min.	15 min.	20 min.	30 min.	45 min.	60 min.	90 min.	120 min.	180 min.	360 min.	720 min.	1440 min.
2	172,0	144,0	128,0	106,0	75,0	59,0	49,0	38,0	30,0	25,0	20,0	17,0	14,0	10,0	7,0	5,0
5	250,0	213,0	198,0	157,0	110,0	87,0	72,0	54,0	41,0	34,0	26,0	22,0	18,0	13,0	9,0	6,0
10	311,0	264,0	236,0	196,0	136,0	108,0	88,0	66,0	50,0	41,0	31,0	26,0	21,0	15,0	10,0	7,0
20	369,0	318,0	285,0	234,0	162,0	128,0	105,0	79,0	59,0	48,0	36,0	30,0	24,0	17,0	12,0	8,0
25	386,0	336,0	304,0	248,0	171,0	135,0	110,0	83,0	62,0	50,0	37,0	31,0	25,0	18,0	12,0	8,0
50	447,0	392,0	358,0	292,0	199,0	158,0	129,0	97,0	73,0	58,0	43,0	36,0	28,0	20,0	13,0	9,0
100	514,0	454,0	417,0	338,0	230,0	181,0	148,0	112,0	84,0	66,0	48,0	40,0	31,0	23,0	15,0	10,0
200	581,0	522,0	481,0	389,0	263,0	207,0	170,0	129,0	96,0	76,0	55,0	45,0	35,0	25,0	17,0	11,0

Dimensjonerende avrenning fra feltet (l/s)	2,7	4,8	6,6	9,0	12,1	14,3	15,7	17,8	19,9	17,5	12,7	10,4	8,1	5,8	3,9	2,5
--	-----	-----	-----	-----	------	------	------	------	------	------	------	------	-----	-----	-----	-----

Største vannføring (ved uregulert utløp):

Varighet (min)	45	Q dim (l/s)	19,89
----------------	----	-------------	-------

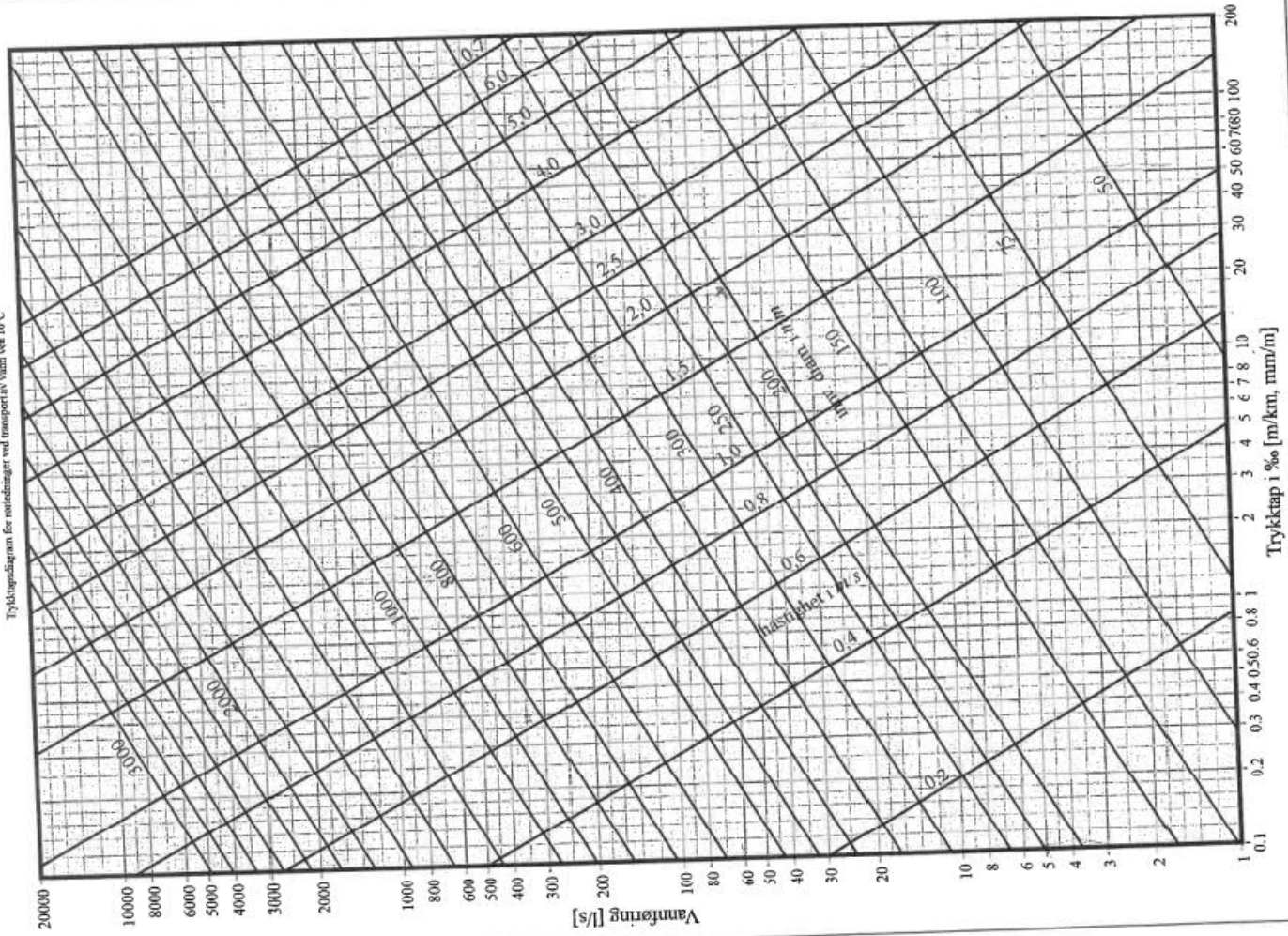
NB: Vannmengden Q_{dim} inkluderer overvann fra gang og sykkelveg og annet grønt areal med fall mot grøft. Beregningene refererer til F101 tegning i henhold til normalprofil ved fylling.

Gjennomsnitt fall på trase 2 (sone 2) er 35 promille
Dimensjon på overvannsledning er 200 mm

plast

Colebrooks formel for $k = 0.2 \text{ mm}$

Trykknedsagnen for rørledninger ved transport i vand ved 10°C



Trykknedsagn i % [m/km, mm/m]

Overskrift	Resultater av overvannsberegning sone 3
Oppdrag	Hovedsykkelerute Tonstad-Sluppen del 1
Oppdragsnr.	10231960
Utført dato	10.05.2023
Utført av	NOEKAT
Kontrollert av	NOMARF
Revisjon	

Resultater av overvannsberegning sone 3

Oppdrag	Hovedsykkelerute Tonstad-Sluppen del 1		Oppdragsnr.	10231960	
Dato	10.05.2023	Utført av	NOEKAT	Kontrollert av	NOMARF
Revisjon					



Forutsetninger for beregningen

Gjentaksintervall (år)	200
Konsentrasjonstid for hele nedbørsfeltet (min)	45
Klimafaktor	1,4
Maks tillatt videreført vannmengde (l/s)	0

Nedbørsfelt

Beskrivelse	Areal (m ²)	Avrenningskoeffisient
Asfalt	3 583	0,9
Grønt areal	4 730	0,3
Sum areal (m2)	8 313	
Gjennomsnittlig avrenningskoeffisient		0,56
Sum red.a. (m2)	4 643	

Fortsetter på neste side

IVF-kurver

Målestasjon	Snitt Trondheim	Måleperiode	1965-2021	Antall serier	
-------------	-----------------	-------------	-----------	---------------	--

År	1 min.	2 min.	3 min.	5 min.	10 min.	15 min.	20 min.	30 min.	45 min.	60 min.	90 min.	120 min.	180 min.	360 min.	720 min.	1440 min.
2	172,0	144,0	128,0	106,0	75,0	59,0	49,0	38,0	30,0	25,0	20,0	17,0	14,0	10,0	7,0	5,0
5	250,0	213,0	198,0	157,0	110,0	87,0	72,0	54,0	41,0	34,0	26,0	22,0	18,0	13,0	9,0	6,0
10	311,0	264,0	236,0	196,0	136,0	108,0	88,0	66,0	50,0	41,0	31,0	26,0	21,0	15,0	10,0	7,0
20	369,0	318,0	285,0	234,0	162,0	128,0	105,0	79,0	59,0	48,0	36,0	30,0	24,0	17,0	12,0	8,0
25	386,0	336,0	304,0	248,0	171,0	135,0	110,0	83,0	62,0	50,0	37,0	31,0	25,0	18,0	12,0	8,0
50	447,0	392,0	358,0	292,0	199,0	158,0	129,0	97,0	73,0	58,0	43,0	36,0	28,0	20,0	13,0	9,0
100	514,0	454,0	417,0	338,0	230,0	181,0	148,0	112,0	84,0	66,0	48,0	40,0	31,0	23,0	15,0	10,0
200	581,0	522,0	481,0	389,0	263,0	207,0	170,0	129,0	96,0	76,0	55,0	45,0	35,0	25,0	17,0	11,0

Dimensjonerende avrenning fra feltet (l/s)	8,4	15,1	20,8	28,1	38,0	44,9	49,1	55,9	62,4	49,4	35,8	29,3	22,8	16,3	11,1	7,2
--	-----	------	------	------	------	------	------	------	------	------	------	------	------	------	------	-----

Største vannføring (ved uregulert utløp):

Varighet (min)	45	Q dim (l/s)	62,41
----------------	----	-------------	-------

NB: Vannmengden Qdim inkluderer overvann fra gang og sykkelveg og annet grønt areal med fall mot grøft.

Beregningene refererer til F101 tegning i henhold til normalprofil ved fylling; normalprofil ne rabatt og fylling ; normalprofil ved skjæring.

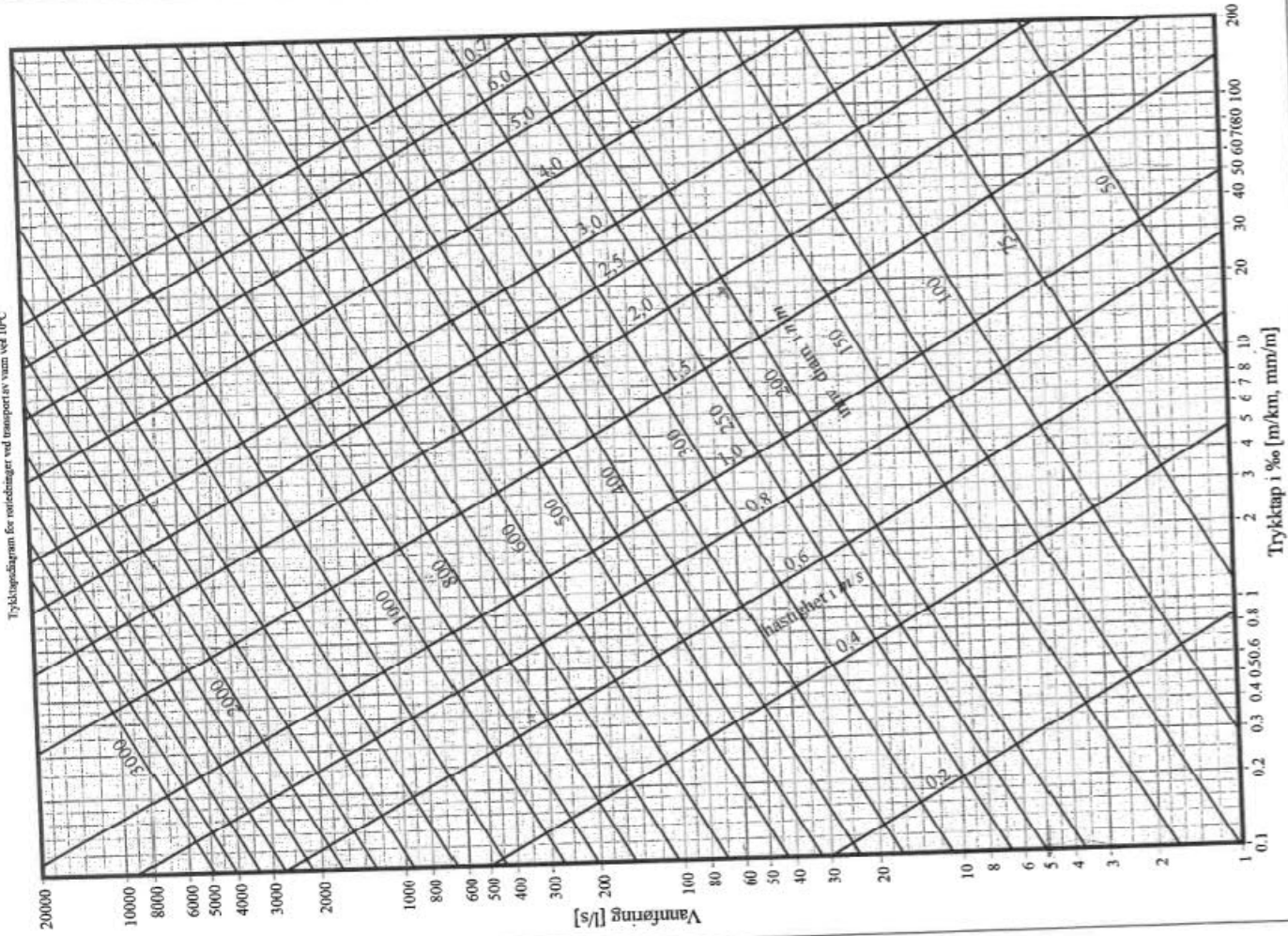
Gjennomsnitt fall på trase 3 (sone 3) er 80 promille.

Dimensjon på overvannsledning er 200 mm

plast

Colebrooks formel for $k = 0.2 \text{ mm}$

Trykkløbsdiagram for rørledninger ved transportvæsker ved 10°C



Resultater av overvannsberegning sone 3

Oppdrag	Hovedsykkelrute Tonstad-Sluppen del 1		Oppdragsnr.	10231960	
Dato	10.05.2023	Utført av	NOEKAT	Kontrollert av	NOMARF
Revisjon					



Forutsetninger for beregningen

Gjentaksintervall (år)	200
Konsentrasjonstid for hele nedbørsfeltet (min)	50
Klimafaktor	1,4
Maks tillatt videreført vannmengde (l/s)	0

Nedbørsfelt

Beskrivelse	Areal (m ²)	Avrenningskoeffisient
Asfalt	3 940	0,9
grøft	1 170	0,3
Sum areal (m ²)	5 110	
Gjennomsnittlig avrenningskoeffisient		0,76
Sum red.a. (m ²)	3 897	

Fortsetter på neste side

IVF-kurver

Målestasjon	Snitt Trondheim	Måleperiode	1965-2021	Antall serier	
-------------	-----------------	-------------	-----------	---------------	--

År	1 min.	2 min.	3 min.	5 min.	10 min.	15 min.	20 min.	30 min.	45 min.	60 min.	90 min.	120 min.	180 min.	360 min.	720 min.	1440 min.
2	172,0	144,0	128,0	106,0	75,0	59,0	49,0	38,0	30,0	25,0	20,0	17,0	14,0	10,0	7,0	5,0
5	250,0	213,0	198,0	157,0	110,0	87,0	72,0	54,0	41,0	34,0	26,0	22,0	18,0	13,0	9,0	6,0
10	311,0	264,0	236,0	196,0	136,0	108,0	88,0	66,0	50,0	41,0	31,0	26,0	21,0	15,0	10,0	7,0
20	369,0	318,0	285,0	234,0	162,0	128,0	105,0	79,0	59,0	48,0	36,0	30,0	24,0	17,0	12,0	8,0
25	386,0	336,0	304,0	248,0	171,0	135,0	110,0	83,0	62,0	50,0	37,0	31,0	25,0	18,0	12,0	8,0
50	447,0	392,0	358,0	292,0	199,0	158,0	129,0	97,0	73,0	58,0	43,0	36,0	28,0	20,0	13,0	9,0
100	514,0	454,0	417,0	338,0	230,0	181,0	148,0	112,0	84,0	66,0	48,0	40,0	31,0	23,0	15,0	10,0
200	581,0	522,0	481,0	389,0	263,0	207,0	170,0	129,0	96,0	76,0	55,0	45,0	35,0	25,0	17,0	11,0

Dimensjonerende avrenning fra feltet (l/s)	6,3	11,4	15,7	21,2	28,7	33,9	37,1	42,2	47,1	41,5	30,0	24,6	19,1	13,6	9,3	6,0
--	-----	------	------	------	------	------	------	------	------	------	------	------	------	------	-----	-----

Største vannføring (ved uregulert utløp):

Varighet (min)	45	Q dim (l/s)	47,14
----------------	----	-------------	-------

NB: Vannmengden Qdim inkluderer overvann fra gang og sykkelveg og annet grønt areal med fall mot grøft.

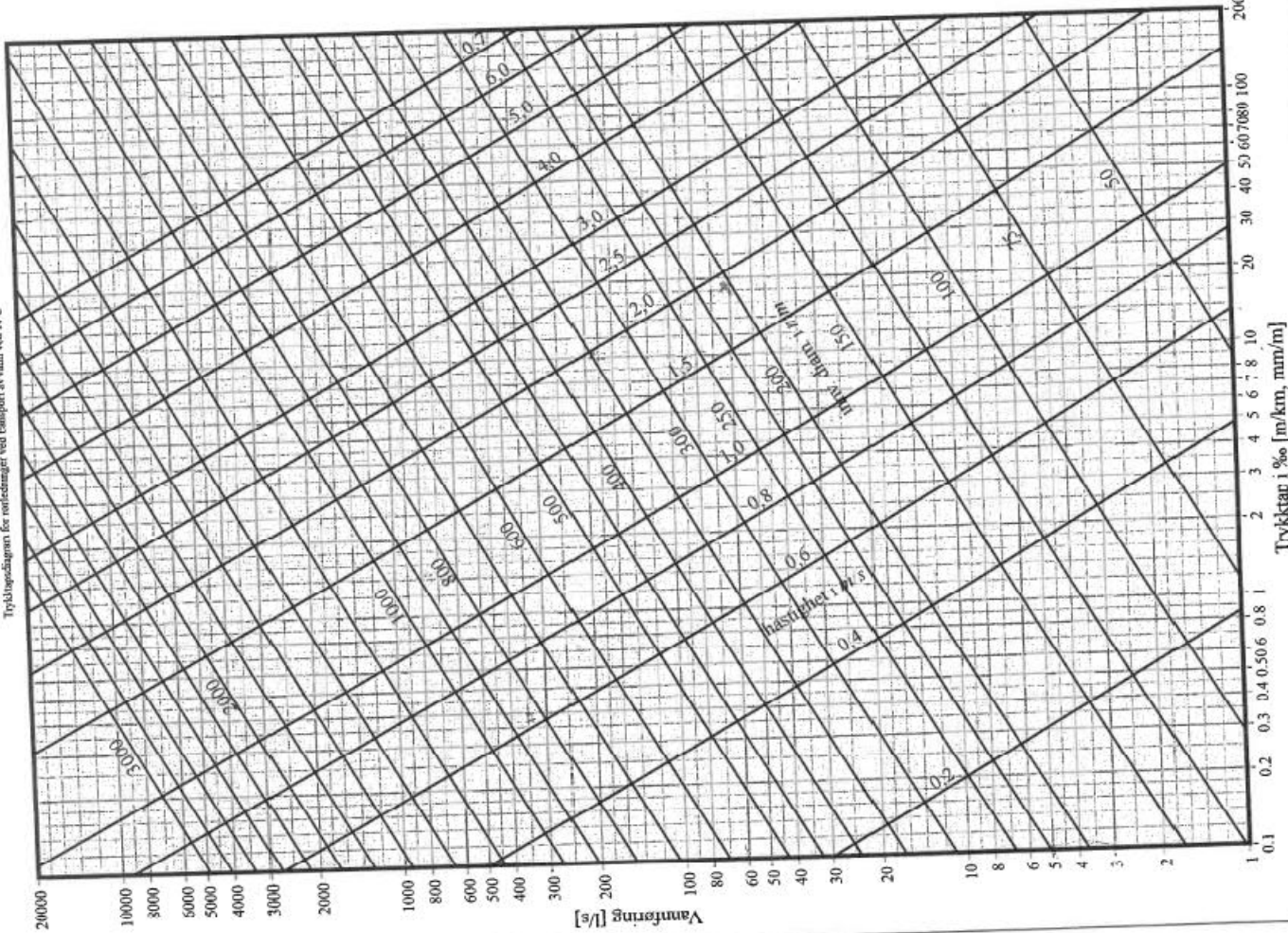
Beregningene refererer til F101 tegning i henhold til normalprofil ved fylling; normalprofil ne rabatt og fylling ; normalprofil ved skjæring.

Gjennomsnitt fall på trase 4 (sone 4) er 50 promille

Dimensjon på overvannsledning er 200 mm

Colebrooks formel for $k = 0.2 \text{ mm}$ *plast*

Tryklopediagram for rørfødsinger ved transport svømm ved LPC



Resultater av overvannsberegning sone 3

Oppdrag	Hovedsykkelrute Tonstad-Sluppen del 1		Oppdragsnr.	10231960	
Dato	10.05.2023	Utført av	NOEKAT	Kontrollert av	NOMARF
Revisjon					



Forutsetninger for beregningen

Gjentaksintervall (år)	200
Konsentrasjonstid for hele nedbørsfeltet (min)	40
Klimafaktor	1,4
Maks tillatt videreført vannmengde (l/s)	0

Nedbørsfelt

Beskrivelse	Areal (m ²)	Avrenningskoeffisient
Asfalt	2 358	0,9
Grønt areal	1 170	0,3
Sum areal (m2)		3 528
Gjennomsnittlig avrenningskoeffisient		0,70
Sum red.a. (m2)		2 473

Fortsetter på neste side

IVF-kurver

Målestasjon	Snitt Trondheim	Måleperiode	1965-2021	Antall serier	
-------------	-----------------	-------------	-----------	---------------	--

År	1 min.	2 min.	3 min.	5 min.	10 min.	15 min.	20 min.	30 min.	45 min.	60 min.	90 min.	120 min.	180 min.	360 min.	720 min.	1440 min.
2	172,0	144,0	128,0	106,0	75,0	59,0	49,0	38,0	30,0	25,0	20,0	17,0	14,0	10,0	7,0	5,0
5	250,0	213,0	198,0	157,0	110,0	87,0	72,0	54,0	41,0	34,0	26,0	22,0	18,0	13,0	9,0	6,0
10	311,0	264,0	236,0	196,0	136,0	108,0	88,0	66,0	50,0	41,0	31,0	26,0	21,0	15,0	10,0	7,0
20	369,0	318,0	285,0	234,0	162,0	128,0	105,0	79,0	59,0	48,0	36,0	30,0	24,0	17,0	12,0	8,0
25	386,0	336,0	304,0	248,0	171,0	135,0	110,0	83,0	62,0	50,0	37,0	31,0	25,0	18,0	12,0	8,0
50	447,0	392,0	358,0	292,0	199,0	158,0	129,0	97,0	73,0	58,0	43,0	36,0	28,0	20,0	13,0	9,0
100	514,0	454,0	417,0	338,0	230,0	181,0	148,0	112,0	84,0	66,0	48,0	40,0	31,0	23,0	15,0	10,0
200	581,0	522,0	481,0	389,0	263,0	207,0	170,0	129,0	96,0	76,0	55,0	45,0	35,0	25,0	17,0	11,0

Dimensjonerende avrenning fra feltet (l/s)	5,0	9,0	12,5	16,8	22,8	26,9	29,4	33,5	33,2	26,3	19,0	15,6	12,1	8,7	5,9	3,8
--	-----	-----	------	------	------	------	------	------	------	------	------	------	------	-----	-----	-----

Største vannføring (ved uregulert utløp):

Varighet (min)	30	Q dim (l/s)	33,49
----------------	----	-------------	-------

NB: Vannmengden Qdim inkluderer overvann fra gang og sykkelveg og annet grønt areal med fall mot grøft.

Beregningene refererer til F101 tegning i henhold til normalprofil ved fylling; normalprofil ne rabatt og fylling ; normalprofil ved skjæring; normalprofil langs vegarm til Selsbakk

Gjennomsnitt fall på trase 5 (sone 5) er 60 promille

Dimensjon på overvannsledning er 200 mm

Colebrooks formel for $k = 0.2 \text{ mm}$ *plast*

Trykspødsdiagram for rørbømlinger ved transport af vand ved 10°C

