

3. melléklet

A szivárgási tényező meghatározása

3.1. Alkalmazott összefüggések és forrásaik a HydroGeoSieveXL szerint

3.2. A fúrások elhelyezkedése az MBFSZ fúráspon téréképe alapján

3.3. Szemeloszlások

3.4. Szivárgási tényezők

3.1. melléklet

Alkalmazott összefüggések és forrásaik a HydrogeoSieveXL szerint

3.1.1. Az összefüggések (Devlin, 2015)

3.1.2. Források (Devlin, 2015)

3.1.1. Az összefüggések (Devlin, 2015)

„Adopting the equation form presented in Vukovic and Soro (1992), $k = \frac{\rho g}{\mu} N \varphi(n) d_e^2$ the following values and equations are substituted into the appropriate terms to evaluate the models listed in the table below. The values of d_e to be entered should be in cm units. The values of K calculated have the units cm/s, except for the Alyamani and Sen model (see footnote).”

Source	N	$\varphi(n)$	d_e	Applicable Conditions
Hazen simplified (Freeze and Cherry, 1979)	$10 \frac{\mu}{\rho g}$	1	d_{10}	uniformly graded sand, $n = 0.375$ $T = 10$ °C
Hazen (1892) ^a	6×10^{-4}	$[1 + 10(n - 0.26)]$	d_{10}	$0.01 \text{ cm} < d_{10} < 0.3 \text{ cm}$ $U < 5$
Slichter (1898) ^a	1×10^{-2}	$n^{3.287}$	d_{10}	$0.01 \text{ cm} < d_{10} < 0.5 \text{ cm}$
Terzaghi (1925) ^a	10.7×10^{-3} smooth grains 6.1×10^{-3} coarse grains	$\left(\frac{n - 0.13}{\sqrt[3]{1 - n}}\right)^2$	d_{10}	sandy soil, coarse sand
Beyer (1964) ^a	$5.2 \times 10^{-4} \log \frac{500}{U}$	1	d_{10}	$0.006 \text{ cm} < d_{10} < 0.06 \text{ cm}$ $1 < U < 20$
Sauerbrei (1932) ^a (Vuković and Soro, 1992)	$(3.75 \times 10^{-5}) \times \tau$ $\tau \cong 1.093 \times 10^{-4} T^2$ $+ 2.102 \times 10^{-2} T$ $+ 0.5889$	$\frac{n^3}{(1 - n)^2}$	d_{10}	sand and sandy clay $d_{17} < 0.05 \text{ cm}$
Krüger (1919) ^a	4.35×10^{-4}	$\frac{n}{(1 - n)^2}$	$\frac{1}{\sum_{i=1}^n \frac{\Delta w_i}{d_i}}$	medium sand $U > 5$ $T = 0$ °C
Kozeny-Carmen (1953) ^a	8.3×10^{-3}	$\frac{n^3}{(1 - n)^2}$	d_{10} or 1 $\frac{3 \Delta w_1}{2 d_1} + \sum_{i=2}^n \Delta g_i \frac{d_i^g + d_i^d}{2 d_i^g d_i^d}$ $d_1 = \frac{1}{\frac{1}{2} \left(\frac{1}{d_i^g} + \frac{1}{d_i^d} \right)}$	Coarse sand
Zunker (1930) ^a	0.7×10^{-3} for nonuniform, clayey, angular grains 1.2×10^{-3} for nonuniform 1.4×10^{-3} for uniform, coarse grains 2.4×10^{-3} for uniform sand, well rounded grains	$\frac{n}{(1 - n)}$	$\frac{1}{\sum_{i=1}^n \Delta g_i \frac{d_i^g - d_i^d}{d_i^g d_i^d \ln \left(\frac{d_i^g}{d_i^d} \right)}}$	no fractions finer than $d = 0.0025 \text{ mm}$
Zamarin (1928) ^a	8.65×10^{-3}	$\frac{n^3}{(1 - n)^2} C_n$ $C_n = (1.275 - 1.5n)^2$	$\frac{1}{\sum_{i=1}^n \Delta g_i \frac{\ln \left(\frac{d_i^g}{d_i^d} \right)}{d_i^g - d_i^d}}$	Large grained sands with no fractions having $d < 0.00025 \text{ mm}$

USBR (United States Bureau of Reclamation) (Bialas, 1966) ^a	$(4.8 \times 10^{-4})(10^{0.3})$	1.0	$d_{20}^{1.15}$	Medium grained sands with $U < 5$; derived for $T = 15^\circ\text{C}$
Barr (2001)	$\frac{1}{(36)5C_s^2}$ $C_s^2 = 1$ for spherical grains $C_s^2 = 1.35$ for angular grains	$\frac{n^3}{(1-n)^2}$	d_{10}	unspecified
Alyamani and Sen (1993)	1300	1.0	$[I_o + 0.025(d_{50} - d_{10})]$	unspecified
Chapuis (2004)	$\frac{\mu}{\rho g}$	$10^{1.291\xi - 0.6435}$ $\xi = \frac{n}{1-n}$	$d_{10} \left(\frac{10^{(0.5504 - 0.2937\xi)}}{2} \right)$	$0.3 < n < 0.7$ $0.10 < d_{10} < 2.0 \text{ mm}$ $2 < U < 12$ $d_{10}/d_5 < 1.4$
Krumbein and Monk (1942)	7.501×10^{-6}	$e^{(-1.31 \times \sigma_\phi)}$ $\sigma_\phi = \frac{d_{84\phi} - d_{16\phi}}{\frac{4}{d_{50\phi} - d_{5\phi}} - 6.6}$	$2 \left(\frac{d_{16\phi} + d_{50\phi} + d_{84\phi}}{3} \right)$	natural sands with lognormal grain size distribution

* indicates formulas were taken from Vuković and Soro, (1992)

N = constant dependent on characteristics of the porous medium

$\varphi(n)$ = function of porosity

T = water temp. ($^\circ\text{C}$)

$g = 980 \text{ cm s}^{-2}$

$\rho = 3.1 \times 10^{-8} T^3 - 7.0 \times 10^{-6} T^2 + 4.19 \times 10^{-5} T + 0.99985$

$\mu = -7.0 \times 10^{-8} T^3 + 1.002 \times 10^{-5} T^2 - 5.7 \times 10^{-4} T + 0.0178$

$\tau = 1.093 \times 10^{-4} T^2 + 2.102 \times 10^{-2} T + 0.5889$

n = porosity as fraction of aquifer volume

d_i^g = the maximum grain diameter in fraction i

d_i^d = the minimum grain diameter in fraction i

d_{10} = grain size (cm) corresponding to 10% by weight passing through the sieves

d_{20} = grain size (cm) corresponding to 20% by weight passing through the sieves

d_{50} = grain size (cm) corresponding to 50% by weight passing through the sieves

d_{60} = grain size (cm) corresponding to 60% by weight passing through the sieves

$U = d_{60}/d_{10}$

Δg_i = the fraction of mass that passes between sieves i and $i+1$ where i is the smaller sieve

Δw_i = fraction of total weight of sample with fraction identifier ' i '

d_i = mean grain diameter of the fraction i

$d_{i\phi}$ = mean grain diameter of the fraction i in phi units ($\phi = \log_2 (d_e/d_o)$, d_e in mm, $d_o = 1 \text{ mm}$)

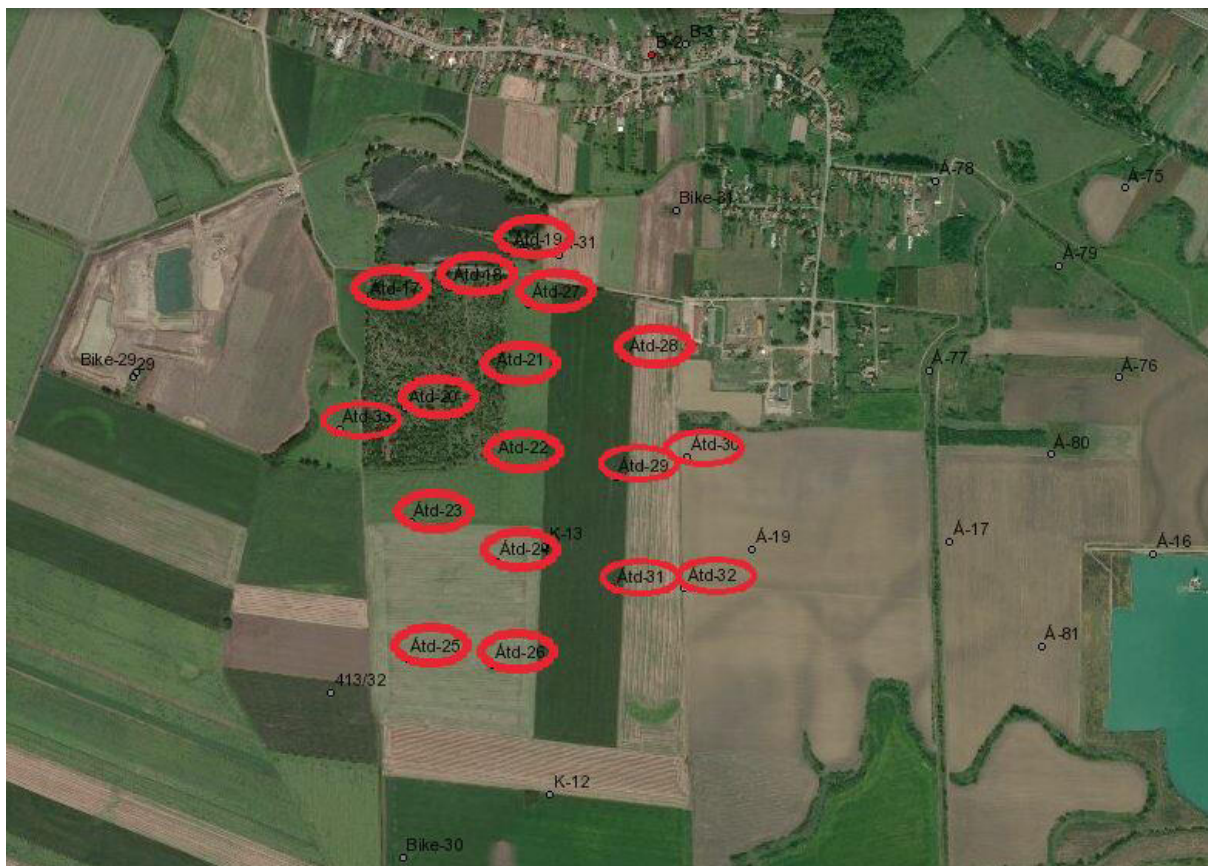
I_o = x-intercept (grain size) of a percent grain retention curve plotted on arithmetic axes and focussing on data below 50% retained

3.1.2. *Források (Devlin, 2015)*

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3.2. melléklet

A fúrások elhelyezkedése az MBFSZ fúráspon t é r k é p e a l a p j á n



3.2. melléklet: A fúrások elhelyezkedése az MBFSZ fúráspon téréképe alapján

3.3. melléklet

Szemeloszlások



Grain Size Analysis Report

Date:

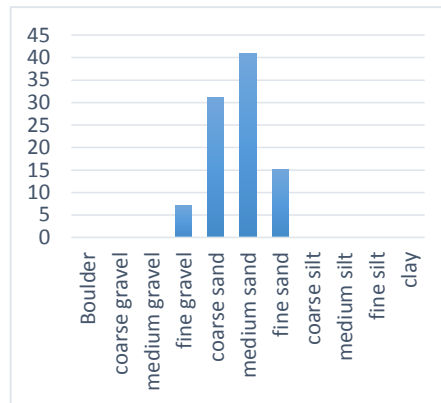
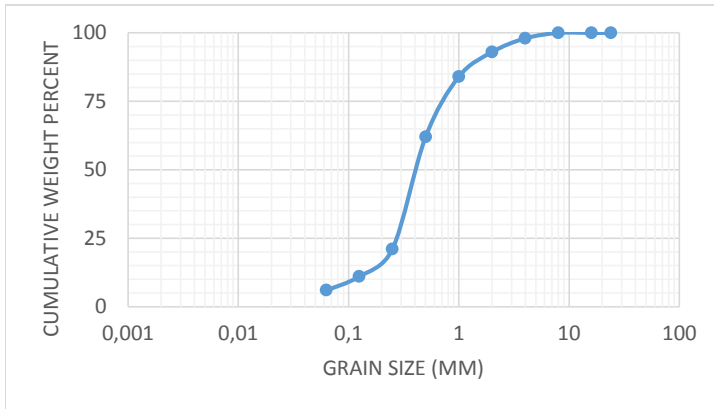
2020. november 27.

Sample Name: Átd-17 fúrás 1,1 - 11,1 m mélységben

Mass Sample (g):

T (oC)

Moderately well sorted sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	0	0	100
4	2	0,02	98
2	5	0,05	93
1	9	0,09	84
0,5	22	0,22	62
0,25	41	0,41	21
0,125	10	0,1	11
0,063	5	0,05	6

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,113	Uniformity Coef.	4,33
d17	0,200	n computed	0,37
d20	0,238	g (cm/s ²)	980,00
d50	0,427	ρ (g/cm ³)	0,9981
d60	0,488	μ (g/cm s)	0,0098
de (Kruger)	0,395	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,351	tau (Sauerbrei)	1,053
de (Zunker)	0,365	d _{geometric mean}	0,507
de (Zamarin)	0,380	σ _φ	1,473
lo (Alyameni)	0,034		
mm		0	% in sample
>64		Boulder	
16 - 64		coarse gravel	0
8 - 16		medium gravel	0
2 - 8		fine gravel	7
0.5 - 2		coarse sand	31
0.25 - 0.5		medium sand	41
0.063 - 0.25		fine sand	15
0.016 - 0.063		coarse silt	
0.008 - 0.016		medium silt	
0.002 - 0.008		fine silt	
<0.002		clay	



Grain Size Analysis Report

Date:

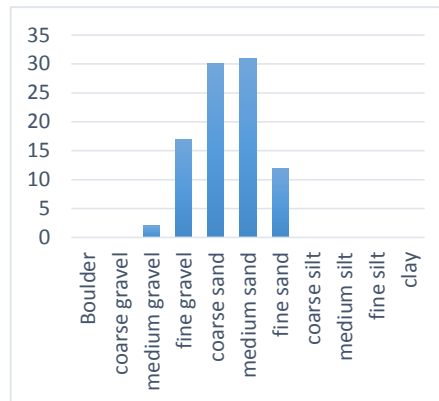
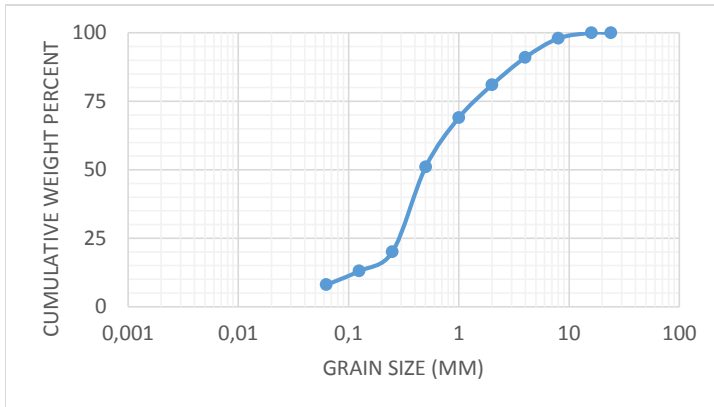
2020. november 27.

Sample Name: Árt-17 fúrás 11,1 - 18,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	2	0,02	98
4	7	0,07	91
2	10	0,1	81
1	12	0,12	69
0,5	18	0,18	51
0,25	31	0,31	20
0,125	7	0,07	13
0,063	5	0,05	8

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,088	Uniformity Coef.	8,54
d17	0,196	n computed	0,31
d20	0,250	g (cm/s ²)	980,00
d50	0,492	ρ (g/cm ³)	0,9981
d60	0,750	μ (g/cm s)	0,0098
de (Kruger)	0,477	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,424	tau (Sauerbrei)	1,053
de (Zunker)	0,441	d _{geometric mean}	0,732
de (Zamarin)	0,458	σ _φ	2,075
lo (Alyameni)	-0,013		
	mm	0	% in sample
	>64	Boulder	
	16 - 64	coarse gravel	0
	8 - 16	medium gravel	2
	2 - 8	fine gravel	17
	0,5 - 2	coarse sand	30
	0,25 - 0,5	medium sand	31
	0,063 - 0,25	fine sand	12
	0,016 - 0,063	coarse silt	
	0,008 - 0,016	medium silt	
	0,002 - 0,008	fine silt	
	<0,002	clay	



Grain Size Analysis Report

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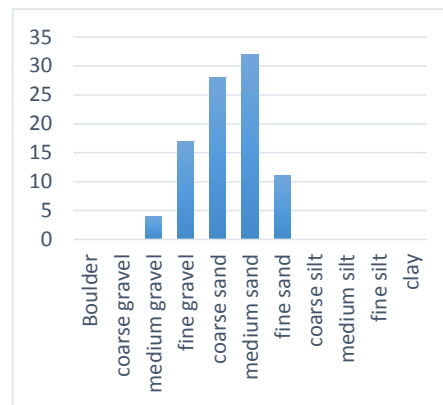
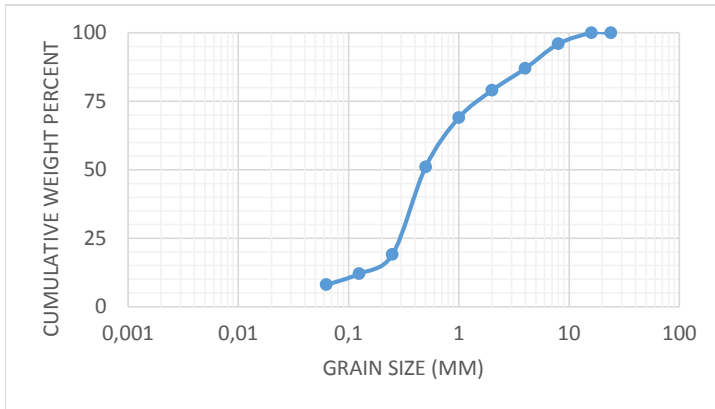
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Sample Name: Ártd-17 fúrás 18,0 - 22,7 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	4	0,04	96
4	9	0,09	87
2	8	0,08	79
1	10	0,1	69
0,5	18	0,18	51
0,25	32	0,32	19
0,125	7	0,07	12
0,063	4	0,04	8

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,094	Uniformity Coef.	7,98
d17	0,214	n computed	0,31
d20	0,258	g (cm/s ²)	980,00
d50	0,492	ρ (g/cm ³)	0,9981
d60	0,750	μ (g/cm s)	0,0098
de (Kruger)	0,499	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,444	tau (Sauerbrei)	1,053
de (Zunker)	0,461	d _{geometric mean}	0,785
de (Zamarin)	0,480	σ _φ	2,161
lo (Alyameni)	-0,006		
mm		0	% in sample
>64		Boulder	
16 - 64		coarse gravel	0
8 - 16		medium gravel	4
2 - 8		fine gravel	17
0.5 - 2		coarse sand	28
0.25 - 0.5		medium sand	32
0.063 - 0.25		fine sand	11
0.016 - 0.063		coarse silt	
0.008 - 0.016		medium silt	
0.002 - 0.008		fine silt	
<0.002		clay	



Grain Size Analysis Report

Date:

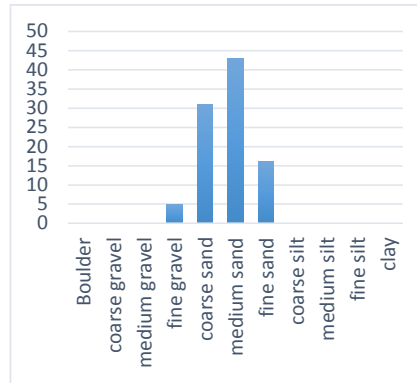
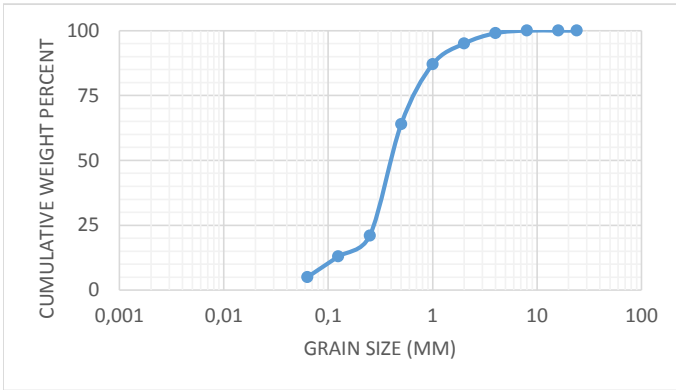
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Sample Name: Átd-18 fúrás 1,0 - 5,0 m mélységben

Mass Sample (g):

T (oC)

Moderately well sorted sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	0	0	100
4	1	0,01	99
2	4	0,04	95
1	8	0,08	87
0,5	23	0,23	64
0,25	43	0,43	21
0,125	8	0,08	13
0,063	8	0,08	5

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,102	Uniformity Coef.	4,69
d17	0,188	n computed	0,36
d20	0,234	g (cm/s ²)	980,00
d50	0,419	ρ (g/cm ³)	0,9981
d60	0,477	μ (g/cm s)	0,0098
de (Kruger)	0,357	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,318	tau (Sauerbrei)	1,053
de (Zunker)	0,330	d _{geometric mean}	0,462
de (Zamarin)	0,344	σ _φ	1,367
lo (Alyameni)	0,023		
mm		0	% in sample
>64		Boulder	
16 - 64		coarse gravel	0
8 - 16		medium gravel	0
2 - 8		fine gravel	5
0.5 - 2		coarse sand	31
0.25 - 0.5		medium sand	43
0.063 - 0.25		fine sand	16
0.016 - 0.063		coarse silt	
0.008 - 0.016		medium silt	
0.002 - 0.008		fine silt	
<0.002		clay	



Grain Size Analysis Report

Date:

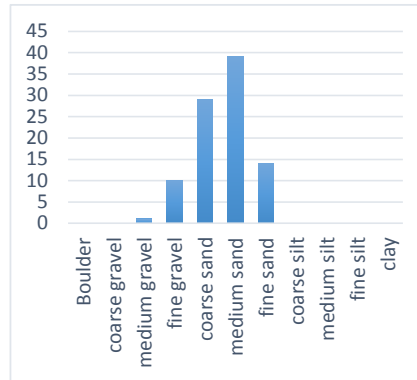
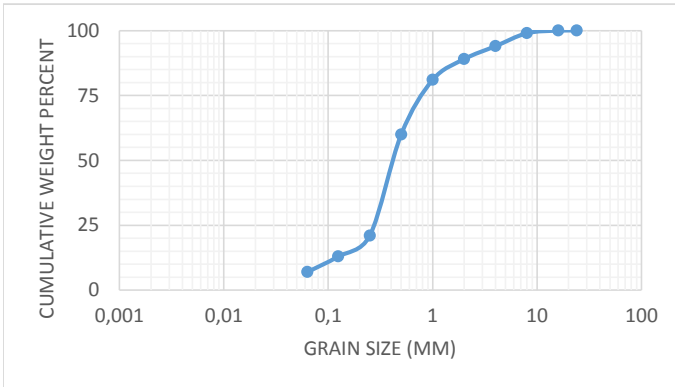
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Sample Name: Átd-18 fúrás 5,0 - 16,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	1	0,01	99
4	5	0,05	94
2	5	0,05	89
1	8	0,08	81
0,5	21	0,21	60
0,25	39	0,39	21
0,125	8	0,08	13
0,063	6	0,06	7

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,094	Uniformity Coef.	5,32
d17	0,188	n computed	0,35
d20	0,234	g (cm/s ²)	980,00
d50	0,436	ρ (g/cm ³)	0,9981
d60	0,500	μ (g/cm s)	0,0098
de (Kruger)	0,406	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,361	tau (Sauerbrei)	1,053
de (Zunker)	0,375	d _{geometric mean}	0,565
de (Zamarin)	0,390	σ _φ	1,771
lo (Alyameni)	0,009		
mm		0	% in sample
>64		Boulder	
16 - 64		coarse gravel	0
8 - 16		medium gravel	1
2 - 8		fine gravel	10
0.5 - 2		coarse sand	29
0.25 - 0.5		medium sand	39
0.063 - 0.25		fine sand	14
0.016 - 0.063		coarse silt	
0.008 - 0.016		medium silt	
0.002 - 0.008		fine silt	
<0.002		clay	



Grain Size Analysis Report

Date:

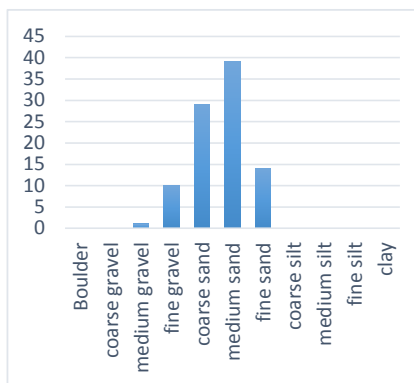
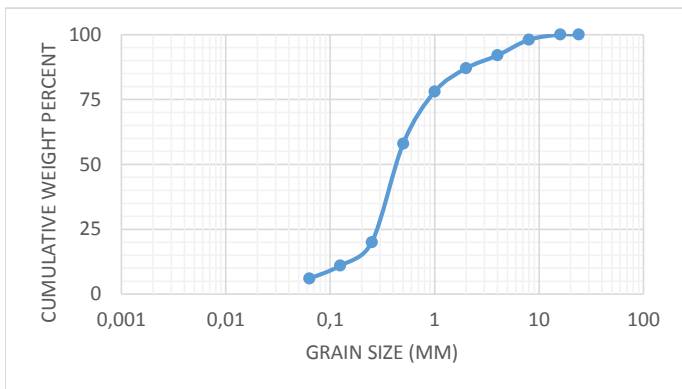
2020. november 27.

Sample Name: Átd-18 fúrás 16,0 - 23,8 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	1	0,01	98
4	5	0,05	92
2	5	0,05	87
1	8	0,08	78
0,5	21	0,21	58
0,25	39	0,39	20
0,125	8	0,08	11
0,063	6	0,06	6

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,094	Uniformity Coef.	5,32
d17	0,188	n computed	0,35
d20	0,234	g (cm/s ²)	980,00
d50	0,436	ρ (g/cm ³)	0,9981
d60	0,500	μ (g/cm s)	0,0098
de (Kruger)	0,406	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,361	tau (Sauerbrei)	1,053
de (Zunker)	0,375	d _{geometric mean}	0,565
de (Zamarin)	0,390	σ _φ	1,771
lo (Alyameni)	0,009		
mm	0	% in sample	
>64	Boulder		
16 - 64	coarse gravel		0
8 - 16	medium gravel		1
2 - 8	fine gravel		10
0.5 - 2	coarse sand		29
0.25 - 0.5	medium sand		39
0.063 - 0.25	fine sand		14
0.016 - 0.063	coarse silt		
0.008 - 0.016	medium silt		
0.002 - 0.008	fine silt		
<0.002	clay		



Grain Size Analysis Report

Date:

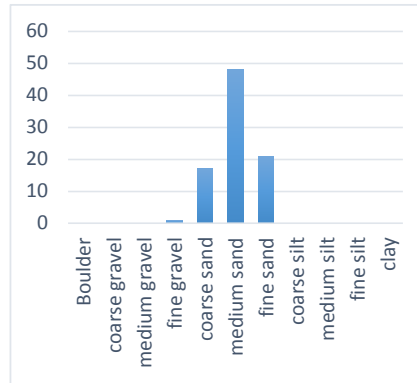
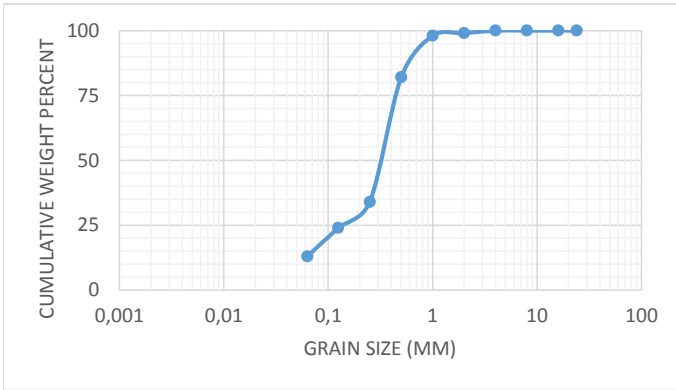
2020. november 27.

Sample Name: Átd-19 fúrás 1,8 - 5,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	0	0	100
4	0	0	100
2	1	0,01	99
1	1	0,01	98
0,5	16	0,16	82
0,25	48	0,48	34
0,125	10	0,1	24
0,063	11	0,11	13

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,048	Uniformity Coef.	7,95
d17	0,086	n computed	0,31
d20	0,102	g (cm/s ²)	980,00
d50	0,333	ρ (g/cm ³)	0,9981
d60	0,385	μ (g/cm s)	0,0098
de (Kruger)	0,312	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,277	tau (Sauerbrei)	1,053
de (Zunker)	0,288	d _{geometric mean}	0,375
de (Zamarin)	0,300	σ _φ	1,496
lo (Alyameni)	-0,023		
mm		0	% in sample
>64		Boulder	
16 - 64		coarse gravel	0
8 - 16		medium gravel	0
2 - 8		fine gravel	1
0.5 - 2		coarse sand	17
0.25 - 0.5		medium sand	48
0.063 - 0.25		fine sand	21
0.016 - 0.063		coarse silt	
0.008 - 0.016		medium silt	
0.002 - 0.008		fine silt	
<0.002		clay	



Grain Size Analysis Report

Date:

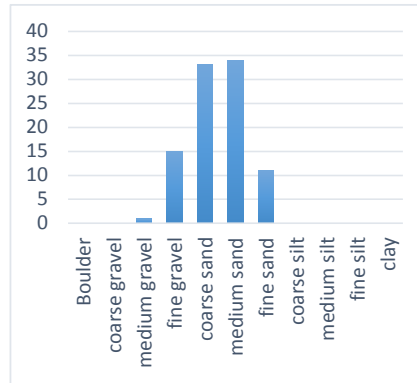
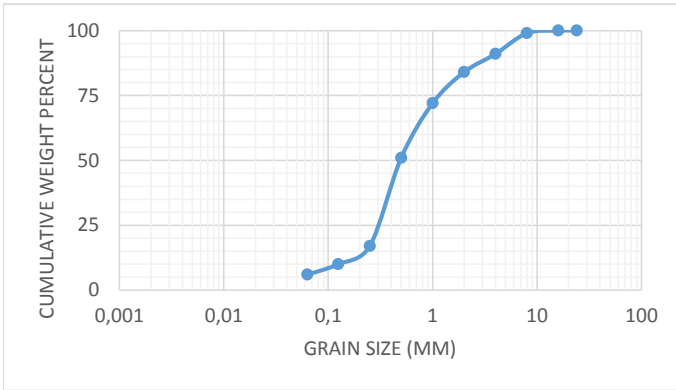
2020. november 27.

Sample Name: Átd-19 fúrás 5,0 - 15,5 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	1	0,01	99
4	8	0,08	91
2	7	0,07	84
1	12	0,12	72
0,5	21	0,21	51
0,25	34	0,34	17
0,125	7	0,07	10
0,063	4	0,04	6

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,125	Uniformity Coef.	5,71
d17	0,250	n computed	0,34
d20	0,272	g (cm/s ²)	980,00
d50	0,493	ρ (g/cm ³)	0,9981
d60	0,714	μ (g/cm s)	0,0098
de (Kruger)	0,476	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,423	tau (Sauerbrei)	1,053
de (Zunker)	0,440	d _{geometric mean}	0,693
de (Zamarin)	0,457	σ _φ	1,813
lo (Alyameni)	0,033		
mm		0	% in sample
>64		Boulder	
16 - 64		coarse gravel	0
8 - 16		medium gravel	1
2 - 8		fine gravel	15
0.5 - 2		coarse sand	33
0.25 - 0.5		medium sand	34
0.063 - 0.25		fine sand	11
0.016 - 0.063		coarse silt	
0.008 - 0.016		medium silt	
0.002 - 0.008		fine silt	
<0.002		clay	



Grain Size Analysis Report

Date:

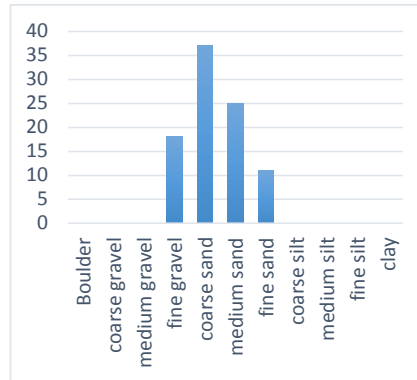
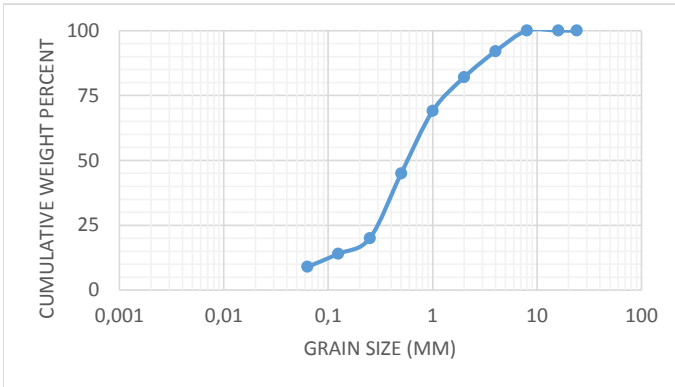
2020. november 27.

Sample Name: Átd-19 fúrás 15,5 - 21,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	0	0	100
4	8	0,08	92
2	10	0,1	82
1	13	0,13	69
0,5	24	0,24	45
0,25	25	0,25	20
0,125	6	0,06	14
0,063	5	0,05	9

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,075	Uniformity Coef.	10,78
d17	0,188	n computed	0,29
d20	0,250	g (cm/s ²)	980,00
d50	0,604	ρ (g/cm ³)	0,9981
d60	0,813	μ (g/cm s)	0,0098
de (Kruger)	0,507	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,451	tau (Sauerbrei)	1,053
de (Zunker)	0,469	d _{geometric mean}	0,755
de (Zamarin)	0,488	σ _φ	2,067
lo (Alyameni)	-0,057		
mm	0	% in sample	
>64	Boulder		
16 - 64	coarse gravel		0
8 - 16	medium gravel		0
2 - 8	fine gravel		18
0.5 - 2	coarse sand		37
0.25 - 0.5	medium sand		25
0.063 - 0.25	fine sand		11
0.016 - 0.063	coarse silt		
0.008 - 0.016	medium silt		
0.002 - 0.008	fine silt		
<0.002	clay		



Grain Size Analysis Report

Date:

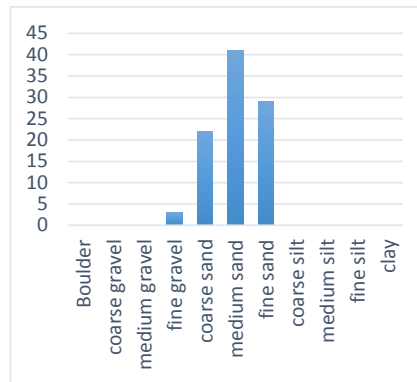
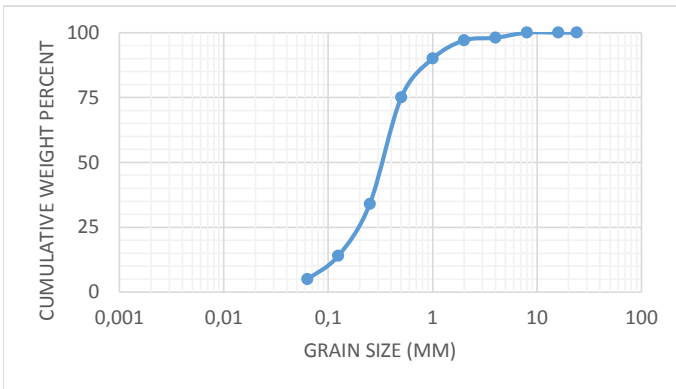
2020. november 27.

Sample Name: Átd-20 fúrás 1,0 - 7,0 m mélységben

Mass Sample (g):

T (oC)

Moderately well sorted sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	0	0	100
4	2	0,02	98
2	1	0,01	97
1	7	0,07	90
0,5	15	0,15	75
0,25	41	0,41	34
0,125	20	0,2	14
0,063	9	0,09	5

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,097	Uniformity Coef.	4,19
d17	0,144	n computed	0,37
d20	0,163	g (cm/s ²)	980,00
d50	0,348	ρ (g/cm ³)	0,9981
d60	0,409	μ (g/cm s)	0,0098
de (Kruger)	0,297	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,264	tau (Sauerbrei)	1,053
de (Zunker)	0,274	d _{geometric mean}	0,378
de (Zamarin)	0,285	σ _φ	1,357
lo (Alyameni)	0,035		
mm	0	% in sample	
>64	Boulder		
16 - 64	coarse gravel		0
8 - 16	medium gravel		0
2 - 8	fine gravel		3
0.5 - 2	coarse sand		22
0.25 - 0.5	medium sand		41
0.063 - 0.25	fine sand		29
0.016 - 0.063	coarse silt		
0.008 - 0.016	medium silt		
0.002 - 0.008	fine silt		
<0.002	clay		



Grain Size Analysis Report

Date:

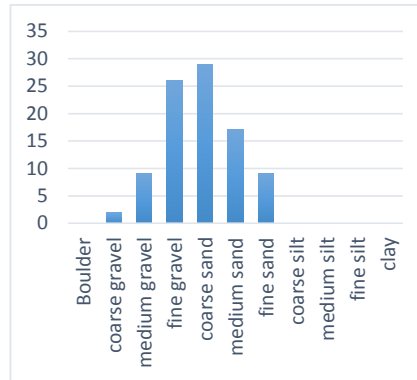
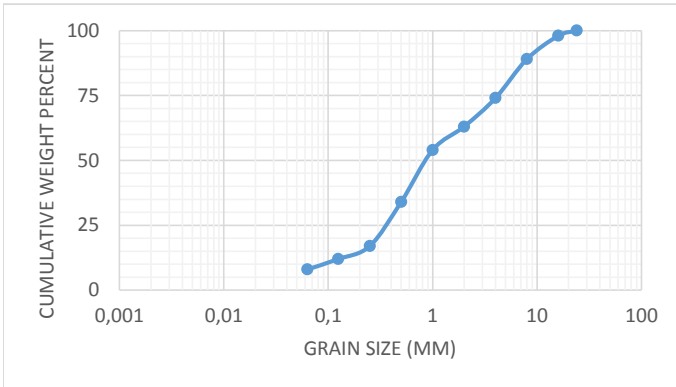
2020. november 27.

Sample Name: Átd-20 fúrás 10,0 - 14,7 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	2	0,02	98
8	9	0,09	89
4	15	0,15	74
2	11	0,11	63
1	9	0,09	54
0,5	20	0,2	34
0,25	17	0,17	17
0,125	5	0,05	12
0,063	4	0,04	8

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,094	Uniformity Coef.	17,73
d17	0,250	n computed	0,26
d20	0,294	g (cm/s ²)	980,00
d50	0,900	ρ (g/cm ³)	0,9981
d60	1,667	μ (g/cm s)	0,0098
de (Kruger)	0,648	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,577	tau (Sauerbrei)	1,053
de (Zunker)	0,600	d _{geometric mean}	1,289
de (Zamarin)	0,624	σ _φ	2,496
lo (Alyameni)	-0,108		
	mm	0	% in sample
	>64	Boulder	
	16 - 64	coarse gravel	2
	8 - 16	medium gravel	9
	2 - 8	fine gravel	26
	0.5 - 2	coarse sand	29
	0.25 - 0.5	medium sand	17
	0.063 - 0.25	fine sand	9
	0.016 - 0.063	coarse silt	
	0.008 - 0.016	medium silt	
	0.002 - 0.008	fine silt	
	<0.002	clay	



Grain Size Analysis Report

Date:

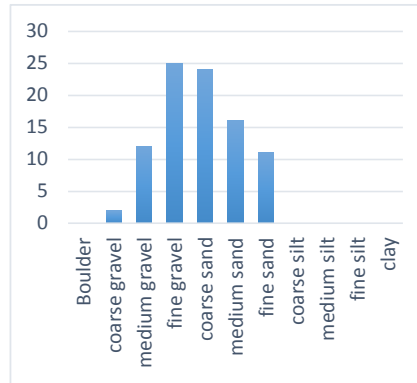
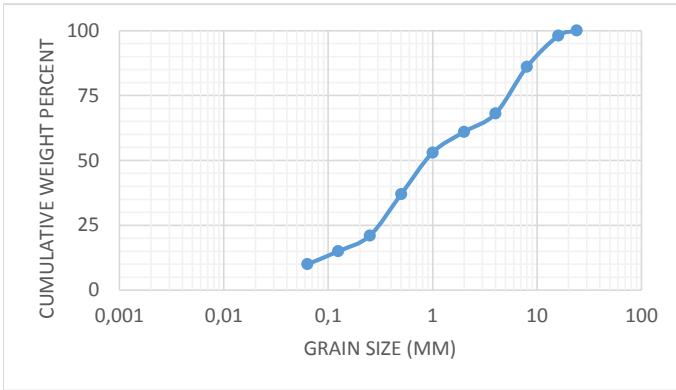
2020. november 27.

Sample Name: Átd-20 fúrás 14,0 - 23,2 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	2	0,02	98
8	12	0,12	86
4	18	0,18	68
2	7	0,07	61
1	8	0,08	53
0,5	16	0,16	37
0,25	16	0,16	21
0,125	6	0,06	15
0,063	5	0,05	10

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,063	Uniformity Coef.	29,76
d17	0,167	n computed	0,26
d20	0,229	g (cm/s ²)	980,00
d50	0,906	ρ (g/cm ³)	0,9981
d60	1,875	μ (g/cm s)	0,0098
de (Kruger)	0,621	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,553	tau (Sauerbrei)	1,053
de (Zunker)	0,575	d _{geometric mean}	1,372
de (Zamarin)	0,598	σ _φ	2,757
lo (Alyameni)	-0,148		
mm		0	% in sample
>64		Boulder	
16 - 64		coarse gravel	2
8 - 16		medium gravel	12
2 - 8		fine gravel	25
0.5 - 2		coarse sand	24
0.25 - 0.5		medium sand	16
0.063 - 0.25		fine sand	11
0.016 - 0.063		coarse silt	
0.008 - 0.016		medium silt	
0.002 - 0.008		fine silt	
<0.002		clay	



Grain Size Analysis Report

Date:

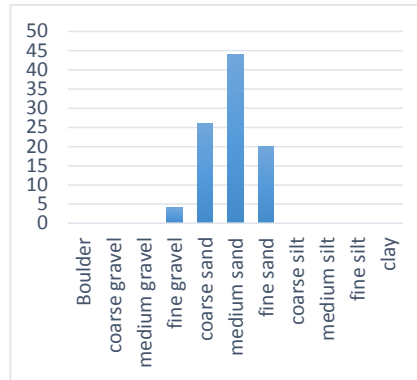
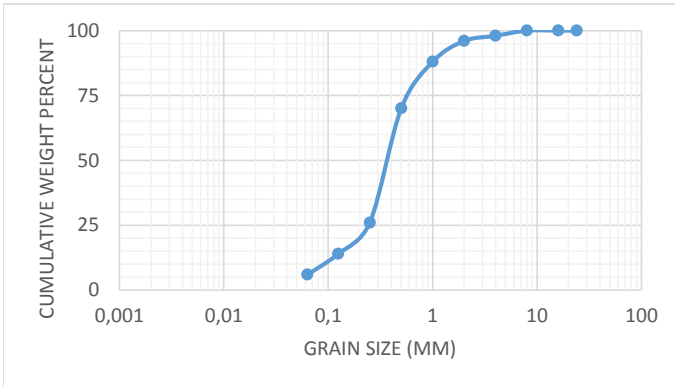
2020. november 27.

Sample Name: Átd-21 fúrás 1,2 - 6,7 m mélységben

Mass Sample (g):

T (oC)

Moderately well sorted sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	0	0	100
4	2	0,02	98
2	2	0,02	96
1	8	0,08	88
0,5	18	0,18	70
0,25	44	0,44	26
0,125	12	0,12	14
0,063	8	0,08	6

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,094	Uniformity Coef.	4,71
d17	0,156	n computed	0,36
d20	0,188	g (cm/s ²)	980,00
d50	0,386	ρ (g/cm ³)	0,9981
d60	0,443	μ (g/cm s)	0,0098
de (Kruger)	0,337	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,300	tau (Sauerbrei)	1,053
de (Zunker)	0,312	d _{geometric mean}	0,432
de (Zamarin)	0,324	σ _φ	1,434
lo (Alyameni)	0,021		
mm	0	% in sample	
>64	Boulder		
16 - 64	coarse gravel		0
8 - 16	medium gravel		0
2 - 8	fine gravel		4
0.5 - 2	coarse sand		26
0.25 - 0.5	medium sand		44
0.063 - 0.25	fine sand		20
0.016 - 0.063	coarse silt		
0.008 - 0.016	medium silt		
0.002 - 0.008	fine silt		
<0.002	clay		



Grain Size Analysis Report

Date:

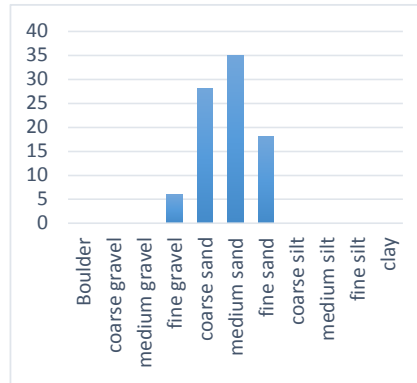
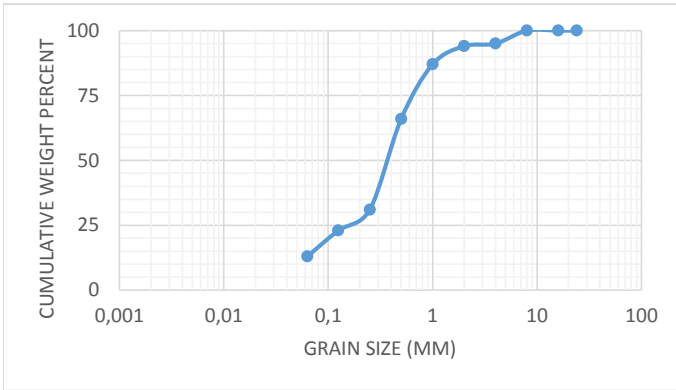
2020. november 27.

Sample Name: Átd-21 fúrás 6,7 - 10,2 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	0	0	100
4	5	0,05	95
2	1	0,01	94
1	7	0,07	87
0,5	21	0,21	66
0,25	35	0,35	31
0,125	8	0,08	23
0,063	10	0,1	13

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,048	Uniformity Coef.	9,43
d17	0,088	n computed	0,30
d20	0,106	g (cm/s ²)	980,00
d50	0,386	ρ (g/cm ³)	0,9981
d60	0,457	μ (g/cm s)	0,0098
de (Kruger)	0,362	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,322	tau (Sauerbrei)	1,053
de (Zunker)	0,335	d _{geometric mean}	0,498
de (Zamarin)	0,348	σ _φ	1,993
lo (Alyameni)	-0,036		
mm	0	% in sample	
>64	Boulder		
16 - 64	coarse gravel		0
8 - 16	medium gravel		0
2 - 8	fine gravel		6
0.5 - 2	coarse sand		28
0.25 - 0.5	medium sand		35
0.063 - 0.25	fine sand		18
0.016 - 0.063	coarse silt		
0.008 - 0.016	medium silt		
0.002 - 0.008	fine silt		
<0.002	clay		



Grain Size Analysis Report

Date:

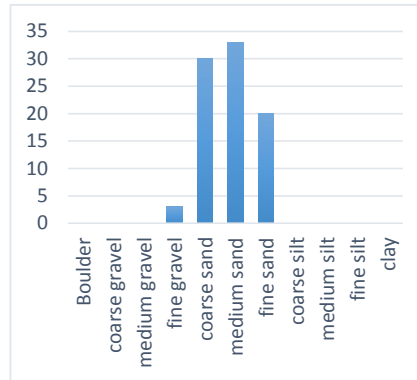
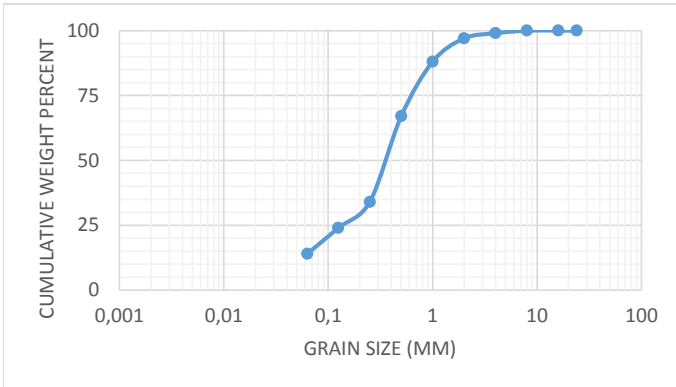
2020. november 27.

Sample Name: Átd-21 fúrás 10,2 - 15,1 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	0	0	100
4	1	0,01	99
2	2	0,02	97
1	9	0,09	88
0,5	21	0,21	67
0,25	33	0,33	34
0,125	10	0,1	24
0,063	10	0,1	14

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,045	Uniformity Coef.	9,93
d17	0,082	n computed	0,30
d20	0,100	g (cm/s ²)	980,00
d50	0,371	ρ (g/cm ³)	0,9981
d60	0,447	μ (g/cm s)	0,0098
de (Kruger)	0,354	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,315	tau (Sauerbrei)	1,053
de (Zunker)	0,327	d _{geometric mean}	0,467
de (Zamarin)	0,341	σ _φ	1,851
lo (Alyameni)	-0,037		
mm		0	% in sample
>64		Boulder	
16 - 64		coarse gravel	0
8 - 16		medium gravel	0
2 - 8		fine gravel	3
0.5 - 2		coarse sand	30
0.25 - 0.5		medium sand	33
0.063 - 0.25		fine sand	20
0.016 - 0.063		coarse silt	
0.008 - 0.016		medium silt	
0.002 - 0.008		fine silt	
<0.002		clay	



Grain Size Analysis Report

Date:

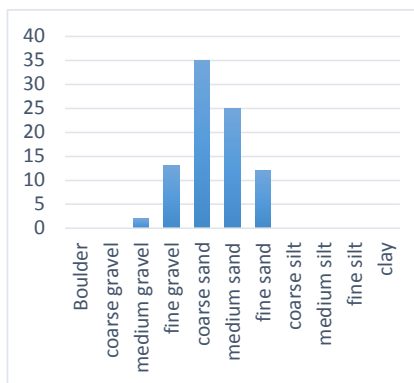
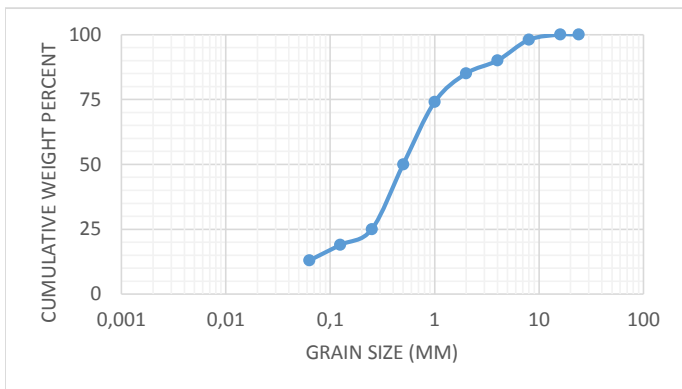
2020. november 27.

Sample Name: Átd-21 fúrás 15,1 - 19,4 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	2	0,02	98
4	8	0,08	90
2	5	0,05	85
1	11	0,11	74
0,5	24	0,24	50
0,25	25	0,25	25
0,125	6	0,06	19
0,063	6	0,06	13

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,048	Uniformity Coef.	14,62
d17	0,104	n computed	0,27
d20	0,146	g (cm/s ²)	980,00
d50	0,500	ρ (g/cm ³)	0,9981
d60	0,708	μ (g/cm s)	0,0098
de (Kruger)	0,488	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,434	tau (Sauerbrei)	1,053
de (Zunker)	0,451	d _{geometric mean}	0,730
de (Zamarin)	0,469	σ _φ	2,308
lo (Alyameni)	-0,064		
mm	0	% in sample	
>64	Boulder		
16 - 64	coarse gravel		0
8 - 16	medium gravel		2
2 - 8	fine gravel		13
0.5 - 2	coarse sand		35
0.25 - 0.5	medium sand		25
0.063 - 0.25	fine sand		12
0.016 - 0.063	coarse silt		
0.008 - 0.016	medium silt		
0.002 - 0.008	fine silt		
<0.002	clay		



Grain Size Analysis Report

Date:

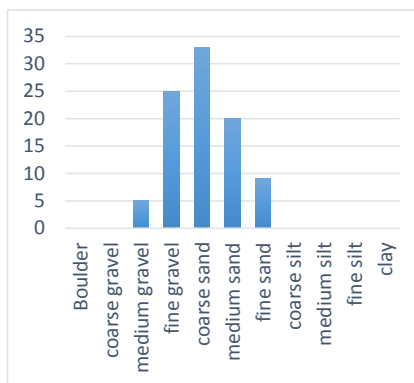
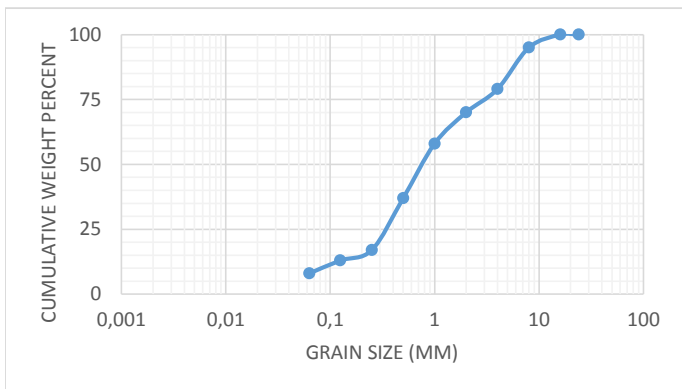
2020. november 27.

Sample Name: Átd-21 fúrás 19,4- 23,8 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	5	0,05	95
4	16	0,16	79
2	9	0,09	70
1	12	0,12	58
0,5	21	0,21	37
0,25	20	0,2	17
0,125	4	0,04	13
0,063	5	0,05	8

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,088	Uniformity Coef.	13,29
d17	0,250	n computed	0,28
d20	0,288	g (cm/s ²)	980,00
d50	0,810	ρ (g/cm ³)	0,9981
d60	1,167	μ (g/cm s)	0,0098
de (Kruger)	0,588	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,523	tau (Sauerbrei)	1,053
de (Zunker)	0,544	d _{geometric mean}	1,065
de (Zamarin)	0,566	σ _φ	2,308
lo (Alyameni)	-0,093		
mm		0	% in sample
>64		Boulder	
16 - 64		coarse gravel	0
8 - 16		medium gravel	5
2 - 8		fine gravel	25
0.5 - 2		coarse sand	33
0.25 - 0.5		medium sand	20
0.063 - 0.25		fine sand	9
0.016 - 0.063		coarse silt	
0.008 - 0.016		medium silt	
0.002 - 0.008		fine silt	
<0.002		clay	



Grain Size Analysis Report

Date:

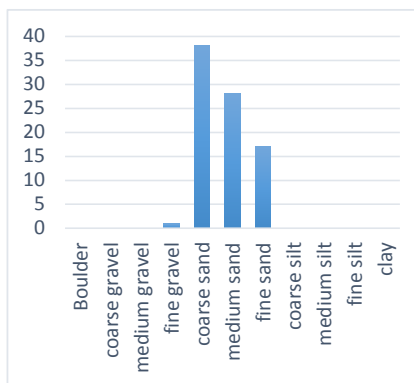
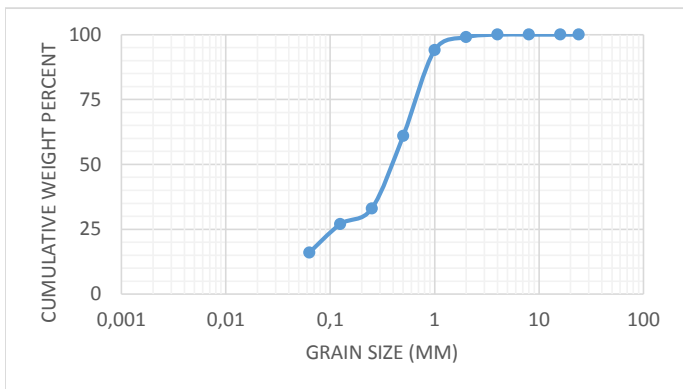
2020. november 27.

Sample Name: Átd-22 fúrás 2,9 - 5,1 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	0	0	100
4	0	0	100
2	1	0,01	99
1	5	0,05	94
0,5	33	0,33	61
0,25	28	0,28	33
0,125	6	0,06	27
0,063	11	0,11	16

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,039	Uniformity Coef.	12,47
d17	0,069	n computed	0,28
d20	0,086	g (cm/s ²)	980,00
d50	0,402	ρ (g/cm ³)	0,9981
d60	0,491	μ (g/cm s)	0,0098
de (Kruger)	0,369	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,328	tau (Sauerbrei)	1,053
de (Zunker)	0,341	d _{geometric mean}	0,473
de (Zamarin)	0,355	σ _φ	1,836
lo (Alyameni)	-0,051		
mm		0	% in sample
>64		Boulder	
16 - 64		coarse gravel	0
8 - 16		medium gravel	0
2 - 8		fine gravel	1
0.5 - 2		coarse sand	38
0.25 - 0.5		medium sand	28
0.063 - 0.25		fine sand	17
0.016 - 0.063		coarse silt	
0.008 - 0.016		medium silt	
0.002 - 0.008		fine silt	
<0.002		clay	



Grain Size Analysis Report

Date:

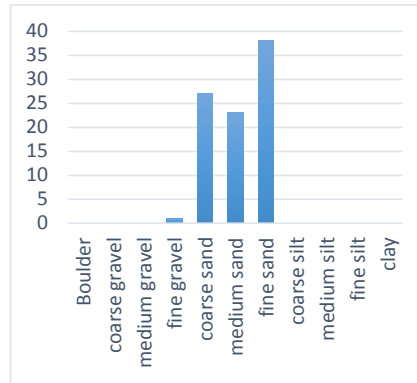
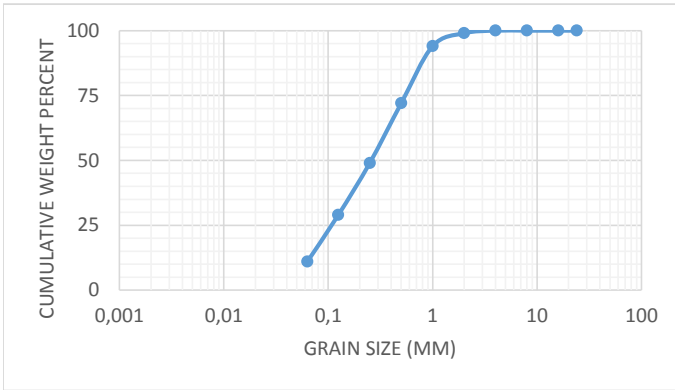
2020. november 27.

Sample Name: Átd-22 fúrás 5,1 - 8,2 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	0	0	100
4	0	0	100
2	1	0,01	99
1	5	0,05	94
0,5	22	0,22	72
0,25	23	0,23	49
0,125	20	0,2	29
0,063	18	0,18	11

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,057	Uniformity Coef.	6,45
d17	0,084	n computed	0,33
d20	0,094	g (cm/s ²)	980,00
d50	0,261	ρ (g/cm ³)	0,9981
d60	0,370	μ (g/cm s)	0,0098
de (Kruger)	0,255	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,227	tau (Sauerbrei)	1,053
de (Zunker)	0,236	d _{geometric mean}	0,343
de (Zamarin)	0,245	σ _φ	1,633
lo (Alyameni)	0,006		
mm		0	% in sample
>64		Boulder	
16 - 64		coarse gravel	0
8 - 16		medium gravel	0
2 - 8		fine gravel	1
0.5 - 2		coarse sand	27
0.25 - 0.5		medium sand	23
0.063 - 0.25		fine sand	38
0.016 - 0.063		coarse silt	
0.008 - 0.016		medium silt	
0.002 - 0.008		fine silt	
<0.002		clay	



Grain Size Analysis Report

Date:

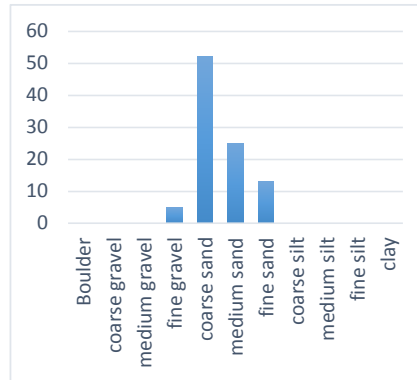
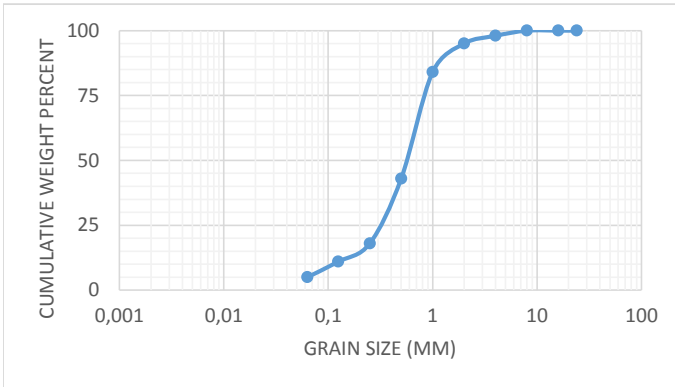
2020. november 27.

Sample Name: Átd-22 fúrás 8,2 -13,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	0	0	100
4	2	0,02	98
2	3	0,03	95
1	11	0,11	84
0,5	41	0,41	43
0,25	25	0,25	18
0,125	7	0,07	11
0,063	6	0,06	5

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,115	Uniformity Coef.	6,17
d17	0,232	n computed	0,34
d20	0,270	g (cm/s ²)	980,00
d50	0,585	ρ (g/cm ³)	0,9981
d60	0,707	μ (g/cm s)	0,0098
de (Kruger)	0,433	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,385	tau (Sauerbrei)	1,053
de (Zunker)	0,400	d _{geometric mean}	0,569
de (Zamarin)	0,416	σ _φ	1,311
lo (Alyameni)	-0,003		
mm		0	% in sample
>64		Boulder	
16 - 64		coarse gravel	0
8 - 16		medium gravel	0
2 - 8		fine gravel	5
0.5 - 2		coarse sand	52
0.25 - 0.5		medium sand	25
0.063 - 0.25		fine sand	13
0.016 - 0.063		coarse silt	
0.008 - 0.016		medium silt	
0.002 - 0.008		fine silt	
<0.002		clay	



Grain Size Analysis Report

Date:

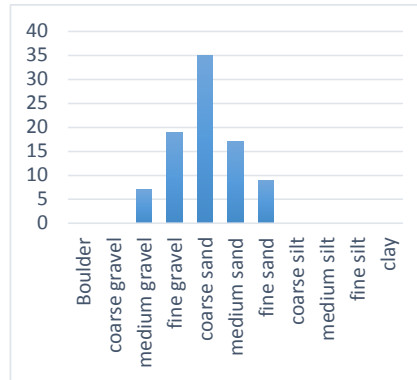
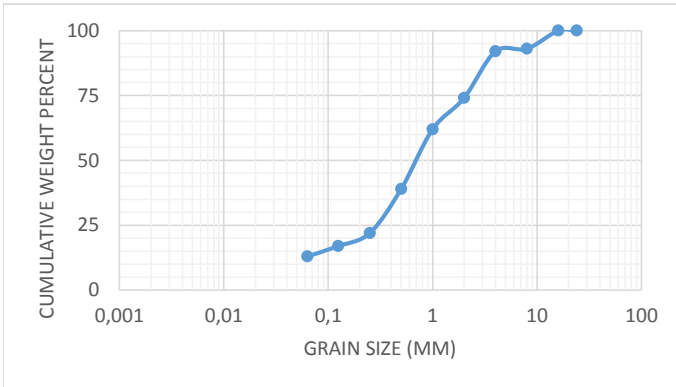
2020. november 27.

Sample Name: Átd-22 fúrás 13,0 - 22,8 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	7	0,07	93
4	1	0,01	92
2	18	0,18	74
1	12	0,12	62
0,5	23	0,23	39
0,25	17	0,17	22
0,125	5	0,05	17
0,063	4	0,04	13

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,048	Uniformity Coef.	19,74
d17	0,125	n computed	0,26
d20	0,200	g (cm/s ²)	980,00
d50	0,739	ρ (g/cm ³)	0,9981
d60	0,957	μ (g/cm s)	0,0098
de (Kruger)	0,625	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,556	tau (Sauerbrei)	1,053
de (Zunker)	0,578	d _{geometric mean}	0,976
de (Zamarin)	0,601	σ _φ	2,530
lo (Alyameni)	-0,124		
mm	0	% in sample	
>64	Boulder		
16 - 64	coarse gravel		0
8 - 16	medium gravel		7
2 - 8	fine gravel		19
0.5 - 2	coarse sand		35
0.25 - 0.5	medium sand		17
0.063 - 0.25	fine sand		9
0.016 - 0.063	coarse silt		
0.008 - 0.016	medium silt		
0.002 - 0.008	fine silt		
<0.002	clay		



Grain Size Analysis Report

Date:

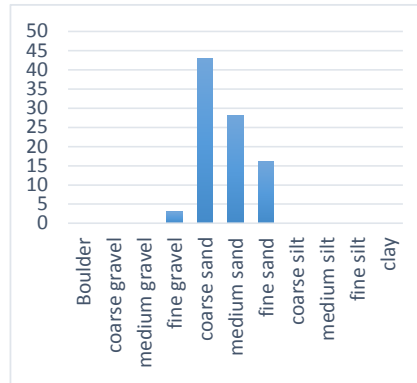
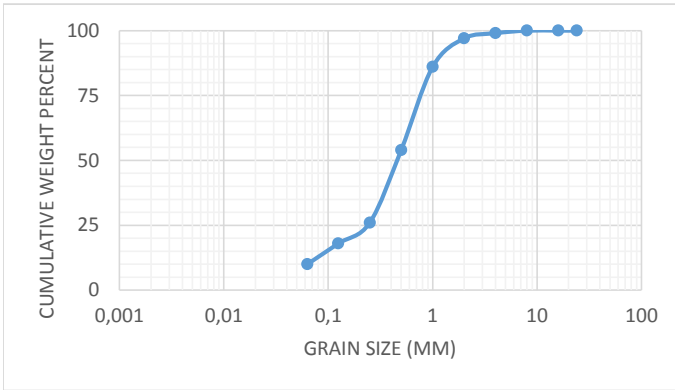
2020. november 27.

Sample Name: Átd-23 fúrás 3,0 - 6,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	0	0	100
4	1	0,01	99
2	2	0,02	97
1	11	0,11	86
0,5	32	0,32	54
0,25	28	0,28	26
0,125	8	0,08	18
0,063	8	0,08	10

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,063	Uniformity Coef.	9,42
d17	0,117	n computed	0,30
d20	0,156	g (cm/s ²)	980,00
d50	0,464	ρ (g/cm ³)	0,9981
d60	0,594	μ (g/cm s)	0,0098
de (Kruger)	0,395	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,351	tau (Sauerbrei)	1,053
de (Zunker)	0,365	d _{geometric mean}	0,518
de (Zamarin)	0,380	σ _φ	1,673
lo (Alyameni)	-0,037		
mm		0	% in sample
>64		Boulder	
16 - 64		coarse gravel	0
8 - 16		medium gravel	0
2 - 8		fine gravel	3
0.5 - 2		coarse sand	43
0.25 - 0.5		medium sand	28
0.063 - 0.25		fine sand	16
0.016 - 0.063		coarse silt	
0.008 - 0.016		medium silt	
0.002 - 0.008		fine silt	
<0.002		clay	



Grain Size Analysis Report

Date:

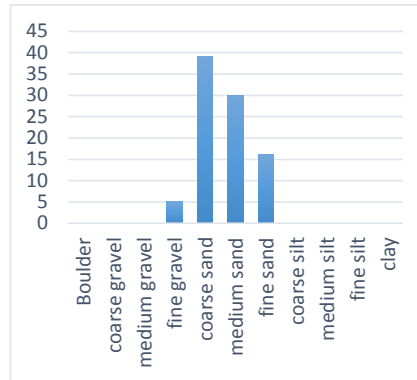
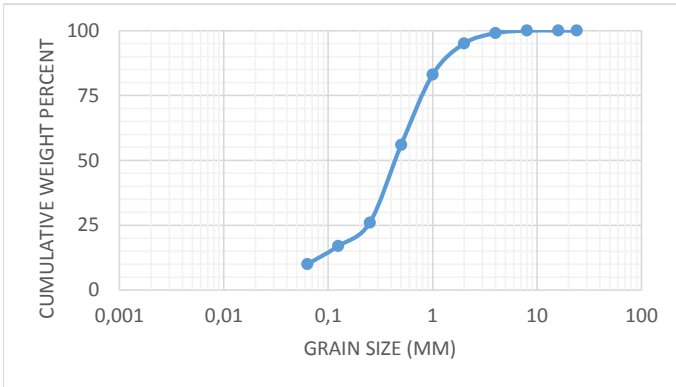
2020. november 27.

Sample Name: Átd-23 fúrás 6,0 -11,3 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	0	0	100
4	1	0,01	99
2	4	0,04	95
1	12	0,12	83
0,5	27	0,27	56
0,25	30	0,3	26
0,125	9	0,09	17
0,063	7	0,07	10

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,063	Uniformity Coef.	9,11
d17	0,125	n computed	0,30
d20	0,167	g (cm/s ²)	980,00
d50	0,450	ρ (g/cm ³)	0,9981
d60	0,574	μ (g/cm s)	0,0098
de (Krugler)	0,403	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,359	tau (Sauerbrei)	1,053
de (Zunker)	0,373	d _{geometric mean}	0,532
de (Zamarin)	0,388	σ _φ	1,713
lo (Alyameni)	-0,034		
mm	0	% in sample	
>64	Boulder		
16 - 64	coarse gravel		0
8 - 16	medium gravel		0
2 - 8	fine gravel		5
0.5 - 2	coarse sand		39
0.25 - 0.5	medium sand		30
0.063 - 0.25	fine sand		16
0.016 - 0.063	coarse silt		
0.008 - 0.016	medium silt		
0.002 - 0.008	fine silt		
<0.002	clay		



Grain Size Analysis Report

Date:

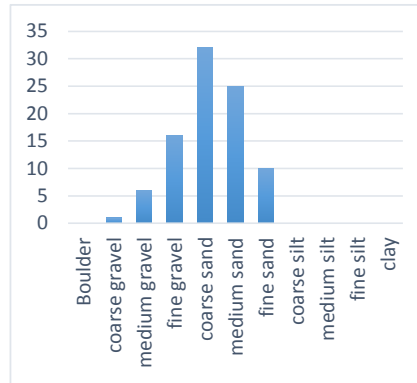
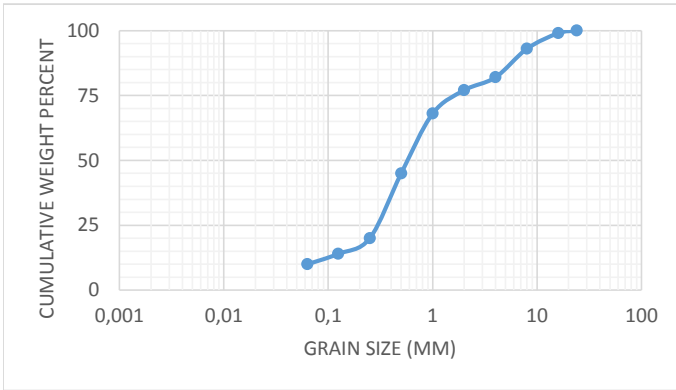
2020. november 27.

Sample Name: Átd-23 fúrás 11,3 - 20,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	1	0,01	99
8	6	0,06	93
4	11	0,11	82
2	5	0,05	77
1	9	0,09	68
0,5	23	0,23	45
0,25	25	0,25	20
0,125	6	0,06	14
0,063	4	0,04	10

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,063	Uniformity Coef.	13,11
d17	0,188	n computed	0,28
d20	0,250	g (cm/s ²)	980,00
d50	0,609	ρ (g/cm ³)	0,9981
d60	0,826	μ (g/cm s)	0,0098
de (Kruger)	0,550	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,489	tau (Sauerbrei)	1,053
de (Zunker)	0,508	d _{geometric mean}	0,913
de (Zamarin)	0,529	σ _φ	2,480
lo (Alyameni)	-0,073		
mm		0	% in sample
>64		Boulder	
16 - 64		coarse gravel	1
8 - 16		medium gravel	6
2 - 8		fine gravel	16
0.5 - 2		coarse sand	32
0.25 - 0.5		medium sand	25
0.063 - 0.25		fine sand	10
0.016 - 0.063		coarse silt	
0.008 - 0.016		medium silt	
0.002 - 0.008		fine silt	
<0.002		clay	



Grain Size Analysis Report

Date:

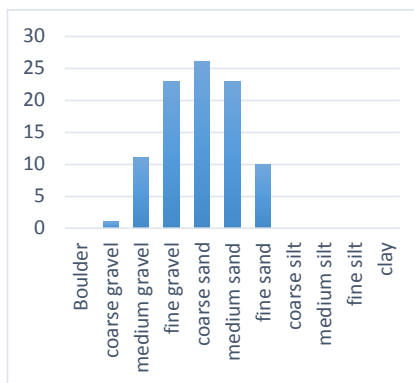
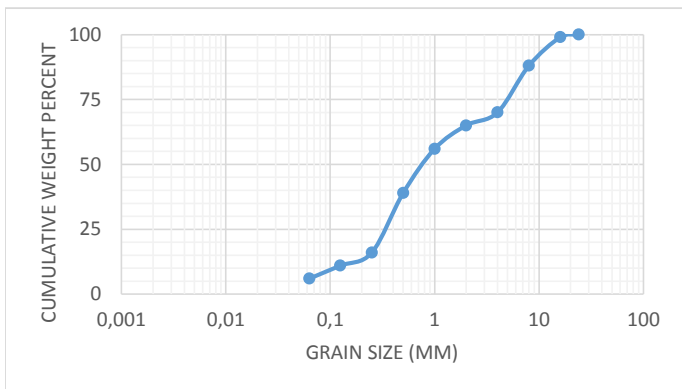
2020. november 27.

Sample Name: Átd-23 fúrás 20,0 - 23,2 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	1	0,01	99
8	11	0,11	88
4	18	0,18	70
2	5	0,05	65
1	9	0,09	56
0,5	17	0,17	39
0,25	23	0,23	16
0,125	5	0,05	11
0,063	5	0,05	6

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,113	Uniformity Coef.	12,83
d17	0,261	n computed	0,28
d20	0,293	g (cm/s ²)	980,00
d50	0,824	ρ (g/cm ³)	0,9981
d60	1,444	μ (g/cm s)	0,0098
de (Kruger)	0,570	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,507	tau (Sauerbrei)	1,053
de (Zunker)	0,527	d _{geometric mean}	1,204
de (Zamarin)	0,548	σ _φ	2,414
lo (Alyameni)	-0,065		
mm		0	% in sample
>64		Boulder	
16 - 64		coarse gravel	1
8 - 16		medium gravel	11
2 - 8		fine gravel	23
0.5 - 2		coarse sand	26
0.25 - 0.5		medium sand	23
0.063 - 0.25		fine sand	10
0.016 - 0.063		coarse silt	
0.008 - 0.016		medium silt	
0.002 - 0.008		fine silt	
<0.002		clay	



Grain Size Analysis Report

Date:

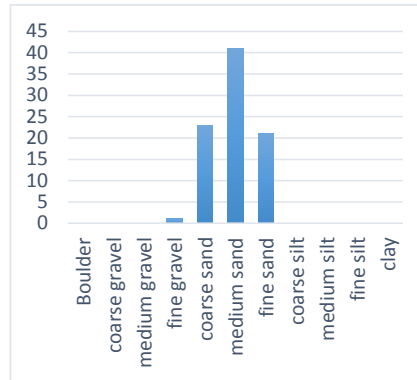
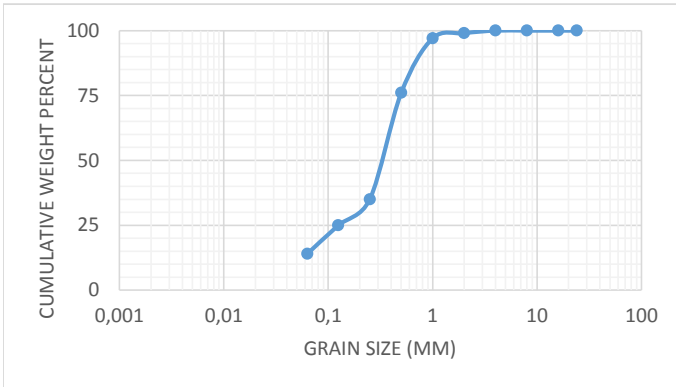
2020. november 27.

Sample Name: Átd-24 fúrás 4,0 -12,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	0	0	100
4	0	0	100
2	1	0,01	99
1	2	0,02	97
0,5	21	0,21	76
0,25	41	0,41	35
0,125	10	0,1	25
0,063	11	0,11	14

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,045	Uniformity Coef.	8,94
d17	0,080	n computed	0,30
d20	0,097	g (cm/s ²)	980,00
d50	0,341	ρ (g/cm ³)	0,9981
d60	0,402	μ (g/cm s)	0,0098
de (Kruger)	0,323	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,288	tau (Sauerbrei)	1,053
de (Zunker)	0,299	d _{geometric mean}	0,398
de (Zamarin)	0,311	σ _φ	1,623
lo (Alyameni)	-0,029		
mm		0	% in sample
>64		Boulder	
16 - 64		coarse gravel	0
8 - 16		medium gravel	0
2 - 8		fine gravel	1
0.5 - 2		coarse sand	23
0.25 - 0.5		medium sand	41
0.063 - 0.25		fine sand	21
0.016 - 0.063		coarse silt	
0.008 - 0.016		medium silt	
0.002 - 0.008		fine silt	
<0.002		clay	



Grain Size Analysis Report

Date:

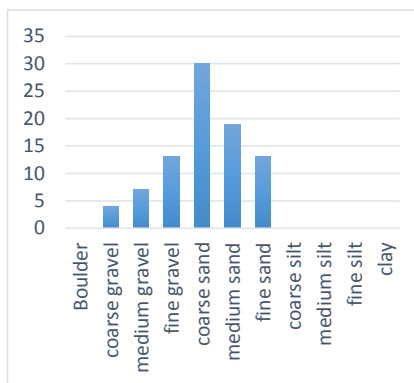
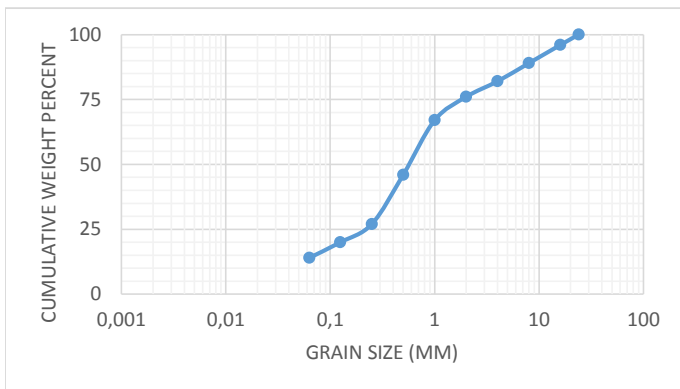
2020. november 27.

Sample Name: Átd-24 fúrás 12,0 - 18,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	4	0,04	96
8	7	0,07	89
4	7	0,07	82
2	6	0,06	76
1	9	0,09	67
0,5	21	0,21	46
0,25	19	0,19	27
0,125	7	0,07	20
0,063	6	0,06	14

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,045	Uniformity Coef.	18,52
d17	0,094	n computed	0,26
d20	0,125	g (cm/s ²)	980,00
d50	0,595	ρ (g/cm ³)	0,9981
d60	0,833	μ (g/cm s)	0,0098
de (Kruger)	0,527	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,469	tau (Sauerbrei)	1,053
de (Zunker)	0,487	d _{geometric mean}	0,967
de (Zamarin)	0,507	σ _φ	2,905
lo (Alyameni)	-0,093		
mm		0	% in sample
>64		Boulder	
16 - 64		coarse gravel	4
8 - 16		medium gravel	7
2 - 8		fine gravel	13
0.5 - 2		coarse sand	30
0.25 - 0.5		medium sand	19
0.063 - 0.25		fine sand	13
0.016 - 0.063		coarse silt	
0.008 - 0.016		medium silt	
0.002 - 0.008		fine silt	
<0.002		clay	



Grain Size Analysis Report

Date:

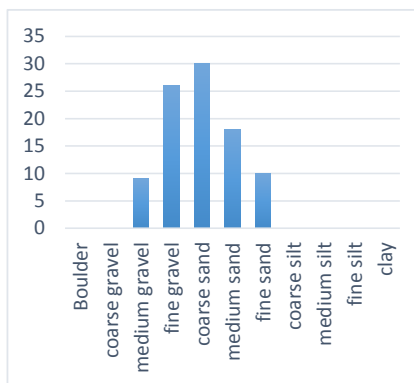
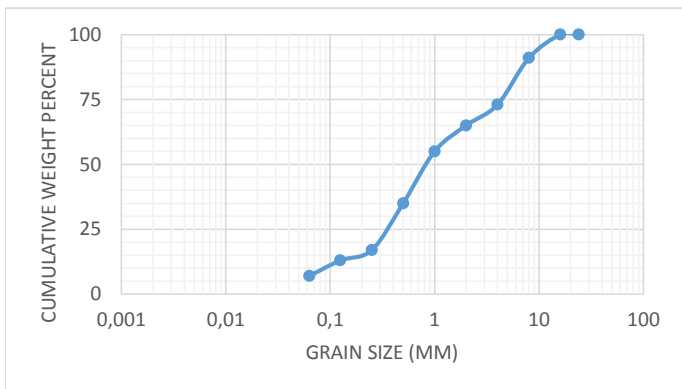
2020. november 27.

Sample Name: Átd-24 fúrás 18,0 - 25,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	9	0,09	91
4	18	0,18	73
2	8	0,08	65
1	10	0,1	55
0,5	20	0,2	35
0,25	18	0,18	17
0,125	4	0,04	13
0,063	6	0,06	7

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,094	Uniformity Coef.	15,96
d17	0,250	n computed	0,27
d20	0,292	g (cm/s ²)	980,00
d50	0,875	ρ (g/cm ³)	0,9981
d60	1,500	μ (g/cm s)	0,0098
de (Kruger)	0,578	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,515	tau (Sauerbrei)	1,053
de (Zunker)	0,535	d _{geometric mean}	1,194
de (Zamarin)	0,556	σ _φ	2,433
lo (Alyameni)	-0,101		
mm		0	% in sample
>64		Boulder	
16 - 64		coarse gravel	0
8 - 16		medium gravel	9
2 - 8		fine gravel	26
0.5 - 2		coarse sand	30
0.25 - 0.5		medium sand	18
0.063 - 0.25		fine sand	10
0.016 - 0.063		coarse silt	
0.008 - 0.016		medium silt	
0.002 - 0.008		fine silt	
<0.002		clay	



Grain Size Analysis Report

Date:

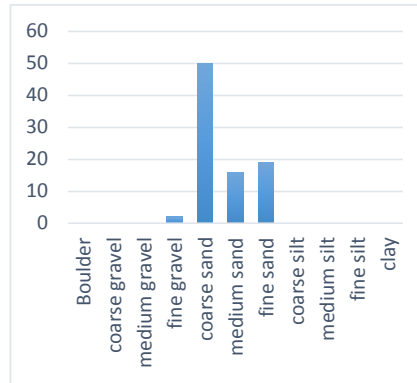
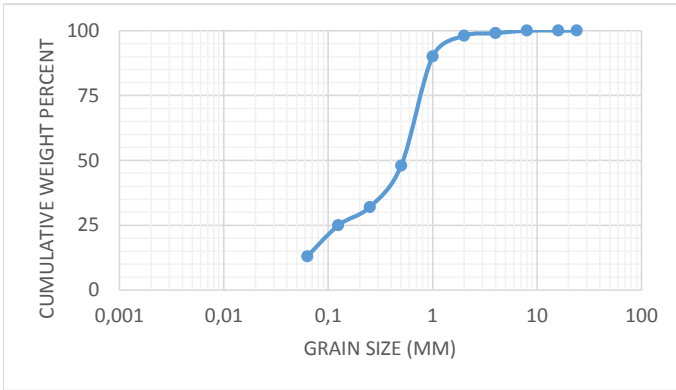
2020. november 27.

Sample Name: Átd-25 fúrás 2,1 - 5,2 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	0	0	100
4	1	0,01	99
2	1	0,01	98
1	8	0,08	90
0,5	42	0,42	48
0,25	16	0,16	32
0,125	7	0,07	25
0,063	12	0,12	13

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,048	Uniformity Coef.	13,27
d17	0,084	n computed	0,28
d20	0,099	g (cm/s ²)	980,00
d50	0,524	ρ (g/cm ³)	0,9981
d60	0,643	μ (g/cm s)	0,0098
de (Kruger)	0,371	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,330	tau (Sauerbrei)	1,053
de (Zunker)	0,343	d _{geometric mean}	0,513
de (Zamarin)	0,357	σ _φ	1,810
lo (Alyameni)	-0,070		
mm	0	% in sample	
>64	Boulder		
16 - 64	coarse gravel		0
8 - 16	medium gravel		0
2 - 8	fine gravel		2
0.5 - 2	coarse sand		50
0.25 - 0.5	medium sand		16
0.063 - 0.25	fine sand		19
0.016 - 0.063	coarse silt		
0.008 - 0.016	medium silt		
0.002 - 0.008	fine silt		
<0.002	clay		



Grain Size Analysis Report

Date:

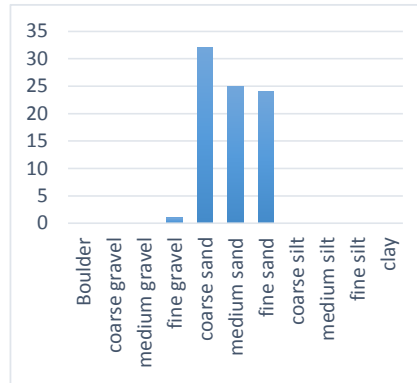
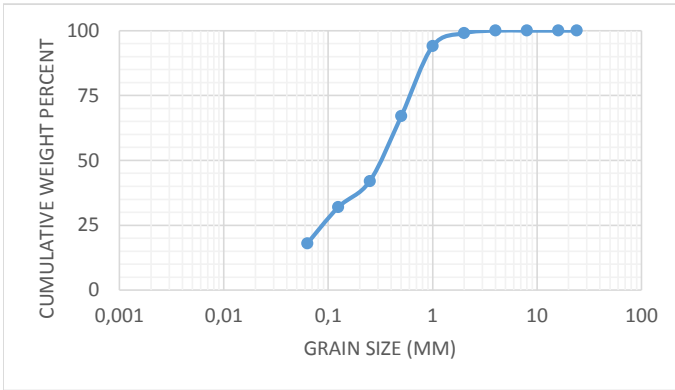
2020. november 27.

Sample Name: Átd-25 fúrás 5,2 - 9,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	0	0	100
4	0	0	100
2	1	0,01	99
1	5	0,05	94
0,5	27	0,27	67
0,25	25	0,25	42
0,125	10	0,1	32
0,063	14	0,14	18

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,035	Uniformity Coef.	12,29
d17	0,060	n computed	0,28
d20	0,072	g (cm/s ²)	980,00
d50	0,330	ρ (g/cm ³)	0,9981
d60	0,430	μ (g/cm s)	0,0098
de (Kruger)	0,324	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,288	tau (Sauerbrei)	1,053
de (Zunker)	0,300	d _{geometric mean}	0,433
de (Zamarin)	0,312	σ _φ	1,890
lo (Alyameni)	-0,039		
mm		0	% in sample
>64		Boulder	
16 - 64		coarse gravel	0
8 - 16		medium gravel	0
2 - 8		fine gravel	1
0.5 - 2		coarse sand	32
0.25 - 0.5		medium sand	25
0.063 - 0.25		fine sand	24
0.016 - 0.063		coarse silt	
0.008 - 0.016		medium silt	
0.002 - 0.008		fine silt	
<0.002		clay	



Grain Size Analysis Report

Date:

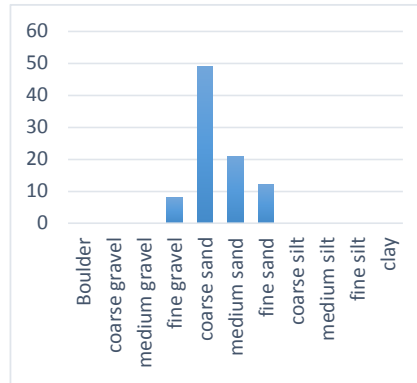
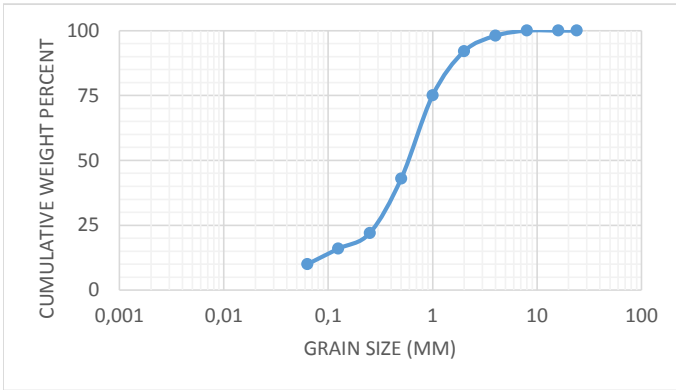
2020. november 27.

Sample Name: Átd-25 fúrás 9,0 - 14,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	0	0	100
4	2	0,02	98
2	6	0,06	92
1	17	0,17	75
0,5	32	0,32	43
0,25	21	0,21	22
0,125	6	0,06	16
0,063	6	0,06	10

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,063	Uniformity Coef.	12,15
d17	0,146	n computed	0,28
d20	0,208	g (cm/s ²)	980,00
d50	0,609	ρ (g/cm ³)	0,9981
d60	0,766	μ (g/cm s)	0,0098
de (Kruger)	0,480	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,427	tau (Sauerbrei)	1,053
de (Zunker)	0,444	d _{geometric mean}	0,655
de (Zamarin)	0,462	σ _φ	1,899
lo (Alyameni)	-0,074		
mm	0	% in sample	
>64	Boulder		
16 - 64	coarse gravel		0
8 - 16	medium gravel		0
2 - 8	fine gravel		8
0.5 - 2	coarse sand		49
0.25 - 0.5	medium sand		21
0.063 - 0.25	fine sand		12
0.016 - 0.063	coarse silt		
0.008 - 0.016	medium silt		
0.002 - 0.008	fine silt		
<0.002	clay		



Grain Size Analysis Report

Date:

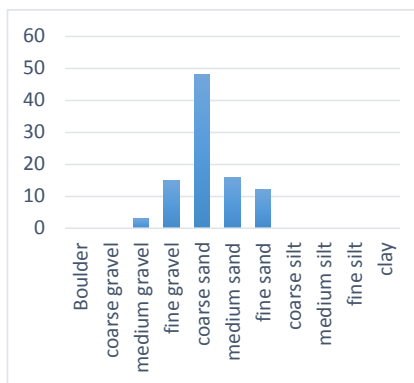
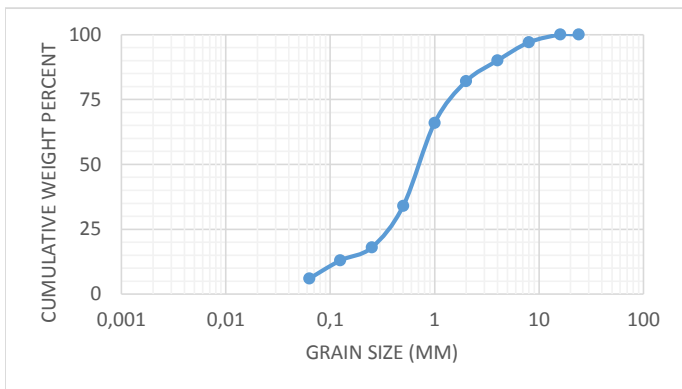
2020. november 27.

Sample Name: Átd-25 fúrás 14,0 - 20,2 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	3	0,03	97
4	7	0,07	90
2	8	0,08	82
1	16	0,16	66
0,5	32	0,32	34
0,25	16	0,16	18
0,125	5	0,05	13
0,063	7	0,07	6

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,098	Uniformity Coef.	9,21
d17	0,225	n computed	0,30
d20	0,281	g (cm/s ²)	980,00
d50	0,750	ρ (g/cm ³)	0,9981
d60	0,906	μ (g/cm s)	0,0098
de (Kruger)	0,497	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,442	tau (Sauerbrei)	1,053
de (Zunker)	0,460	d _{geometric mean}	0,818
de (Zamarin)	0,478	σ _φ	1,976
lo (Alyameni)	-0,064		
mm	0	% in sample	
>64	Boulder		
16 - 64	coarse gravel		0
8 - 16	medium gravel		3
2 - 8	fine gravel		15
0.5 - 2	coarse sand		48
0.25 - 0.5	medium sand		16
0.063 - 0.25	fine sand		12
0.016 - 0.063	coarse silt		
0.008 - 0.016	medium silt		
0.002 - 0.008	fine silt		
<0.002	clay		



Grain Size Analysis Report

Date:

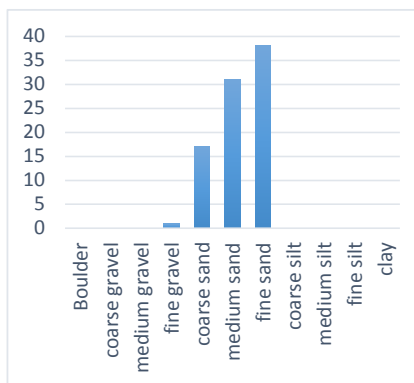
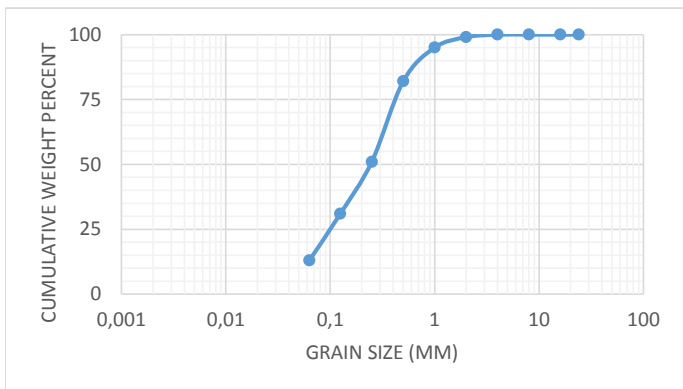
2020. november 27.

Sample Name: Átd-26 fúrás 1,8 - 10,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	0	0	100
4	0	0	100
2	1	0,01	99
1	4	0,04	95
0,5	13	0,13	82
0,25	31	0,31	51
0,125	20	0,2	31
0,063	18	0,18	13

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,048	Uniformity Coef.	6,66
d17	0,077	n computed	0,33
d20	0,087	g (cm/s ²)	980,00
d50	0,244	ρ (g/cm ³)	0,9981
d60	0,323	μ (g/cm s)	0,0098
de (Kruger)	0,249	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,222	tau (Sauerbrei)	1,053
de (Zunker)	0,231	d _{geometric mean}	0,324
de (Zamarin)	0,240	σ _φ	1,557
lo (Alyameni)	0,000		
mm	0	% in sample	
>64		Boulder	
16 - 64		coarse gravel	0
8 - 16		medium gravel	0
2 - 8		fine gravel	1
0.5 - 2		coarse sand	17
0.25 - 0.5		medium sand	31
0.063 - 0.25		fine sand	38
0.016 - 0.063		coarse silt	
0.008 - 0.016		medium silt	
0.002 - 0.008		fine silt	
<0.002		clay	



Grain Size Analysis Report

Date:

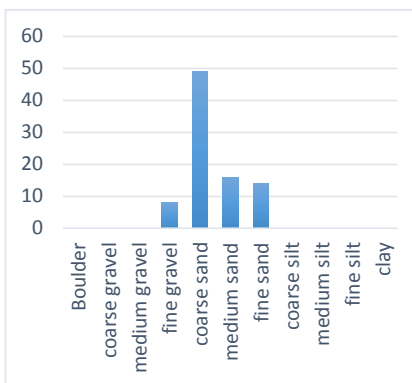
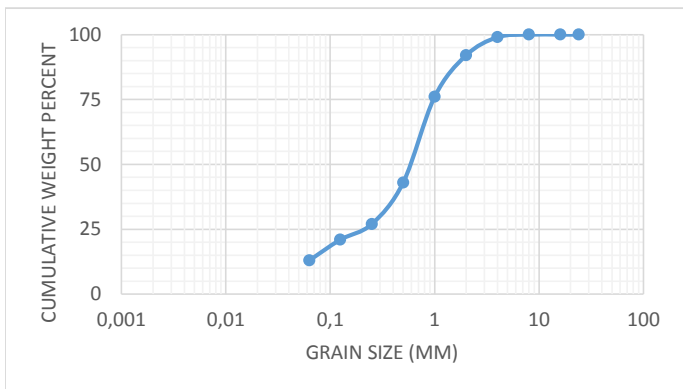
2020. november 27.

Sample Name: Átd-26 fúrás 10,0 - 11,8 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	0	0	100
4	1	0,01	99
2	7	0,07	92
1	16	0,16	76
0,5	33	0,33	43
0,25	16	0,16	27
0,125	6	0,06	21
0,063	8	0,08	13

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,048	Uniformity Coef.	15,63
d17	0,094	n computed	0,27
d20	0,117	g (cm/s ²)	980,00
d50	0,606	ρ (g/cm ³)	0,9981
d60	0,758	μ (g/cm s)	0,0098
de (Kruger)	0,461	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,410	tau (Sauerbrei)	1,053
de (Zunker)	0,426	d _{geometric mean}	0,649
de (Zamarin)	0,443	σ _φ	2,073
lo (Alyameni)	-0,091		
mm		0	% in sample
>64		Boulder	
16 - 64		coarse gravel	0
8 - 16		medium gravel	0
2 - 8		fine gravel	8
0.5 - 2		coarse sand	49
0.25 - 0.5		medium sand	16
0.063 - 0.25		fine sand	14
0.016 - 0.063		coarse silt	
0.008 - 0.016		medium silt	
0.002 - 0.008		fine silt	
<0.002		clay	



Grain Size Analysis Report

Date:

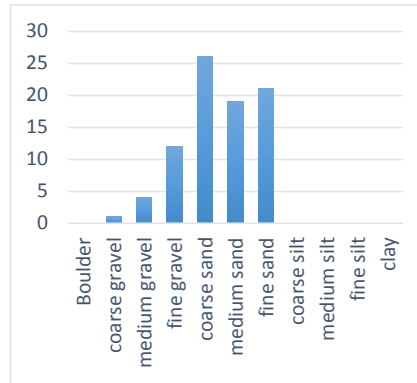
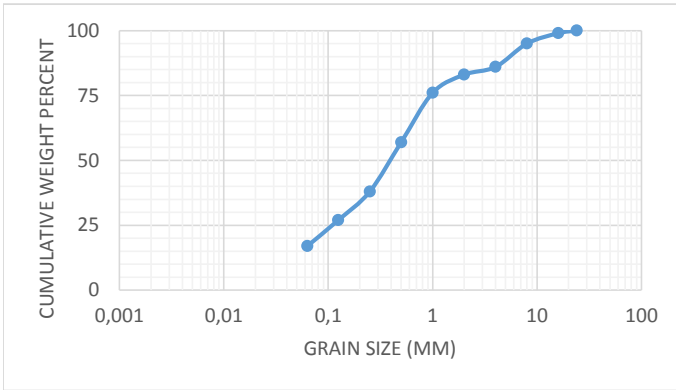
2020. november 27.

Sample Name: Átd-26 fúrás 11,8 - 16,1 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	1	0,01	99
8	4	0,04	95
4	9	0,09	86
2	3	0,03	83
1	7	0,07	76
0,5	19	0,19	57
0,25	19	0,19	38
0,125	11	0,11	27
0,063	10	0,1	17

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,037	Uniformity Coef.	15,62
d17	0,063	n computed	0,27
d20	0,082	g (cm/s ²)	980,00
d50	0,408	ρ (g/cm ³)	0,9981
d60	0,579	μ (g/cm s)	0,0098
de (Kruger)	0,402	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,358	tau (Sauerbrei)	1,053
de (Zunker)	0,372	d _{geometric mean}	0,699
de (Zamarin)	0,387	σ _φ	2,699
lo (Alyameni)	-0,056		
mm		0	% in sample
>64		Boulder	
16 - 64		coarse gravel	1
8 - 16		medium gravel	4
2 - 8		fine gravel	12
0.5 - 2		coarse sand	26
0.25 - 0.5		medium sand	19
0.063 - 0.25		fine sand	21
0.016 - 0.063		coarse silt	
0.008 - 0.016		medium silt	
0.002 - 0.008		fine silt	
<0.002		clay	



K from Grain Size Analysis Report

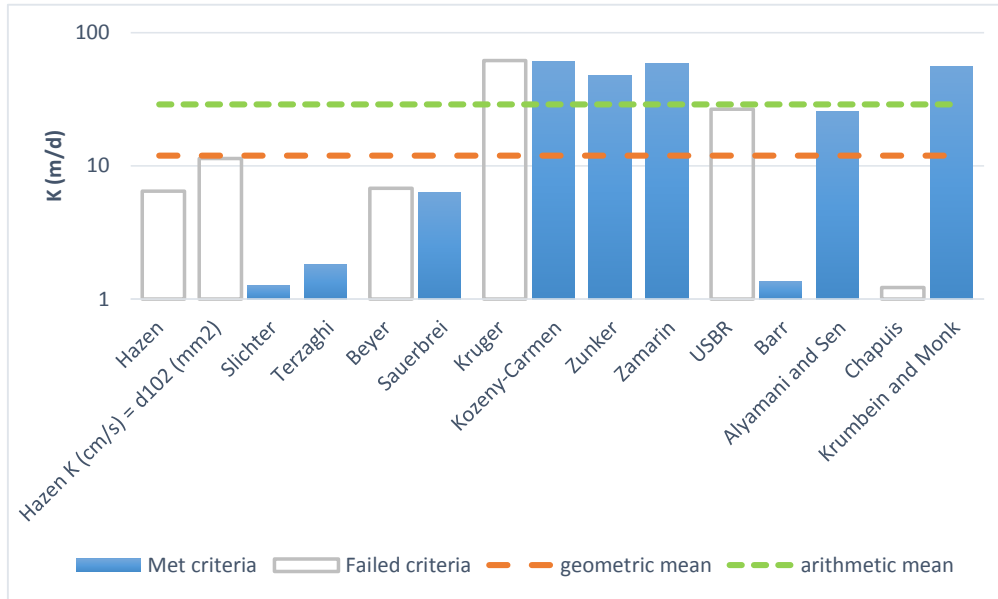
Date: 2020. november 27.

Sample Name: Átd-26 fúrás 16,1 - 23,1 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,747E-02	,747E-04	6,46	
Hazen K (cm/s) = d ₁₀ (mm)	,131E-01	,131E-03	11,36	
Slichter	,147E-02	,147E-04	1,27	
Terzaghi	,210E-02	,210E-04	1,81	
Beyer	,785E-02	,785E-04	6,78	
Sauerbrei	,736E-02	,736E-04	6,36	
Kruger	,713E-01	,713E-03	61,62	
Kozeny-Carmen	,703E-01	,703E-03	60,73	
Zunker	,555E-01	,555E-03	47,97	
Zamarin	,681E-01	,681E-03	58,86	
USBR	,307E-01	,307E-03	26,55	
Barr	,158E-02	,158E-04	1,36	
Alyamani and Sen	,298E-01	,298E-03	25,77	
Chapuis	,141E-02	,141E-04	1,22	
Krumbein and Monk	,644E-01	,644E-03	55,66	
geometric mean	,138E-01	,138E-03	11,93	
arithmetic mean	,334E-01	,334E-03	28,87	



Grain Size Analysis Report

Date:

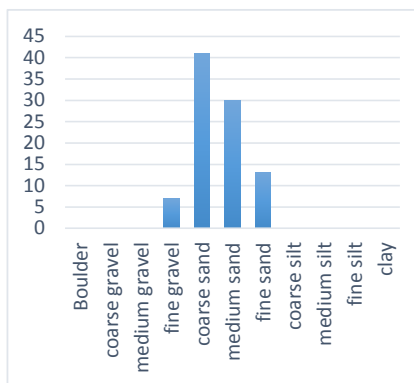
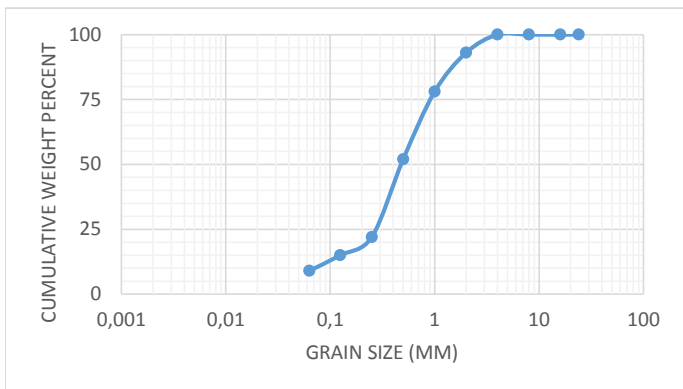
2020. november 27.

Sample Name: Átd-27 fúrás 2,5 - 5,3 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	0	0	100
4	0	0	100
2	7	0,07	93
1	15	0,15	78
0,5	26	0,26	52
0,25	30	0,3	22
0,125	7	0,07	15
0,063	6	0,06	9

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,073	Uniformity Coef.	8,92
d17	0,161	n computed	0,30
d20	0,214	g (cm/s ²)	980,00
d50	0,483	ρ (g/cm ³)	0,9981
d60	0,654	μ (g/cm s)	0,0098
de (Kruger)	0,438	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,390	tau (Sauerbrei)	1,053
de (Zunker)	0,405	d _{geometric mean}	0,580
de (Zamarin)	0,422	σ _φ	1,762
lo (Alyameni)	-0,029		
mm		0	% in sample
>64		Boulder	
16 - 64		coarse gravel	0
8 - 16		medium gravel	0
2 - 8		fine gravel	7
0.5 - 2		coarse sand	41
0.25 - 0.5		medium sand	30
0.063 - 0.25		fine sand	13
0.016 - 0.063		coarse silt	
0.008 - 0.016		medium silt	
0.002 - 0.008		fine silt	
<0.002		clay	



Grain Size Analysis Report

Date:

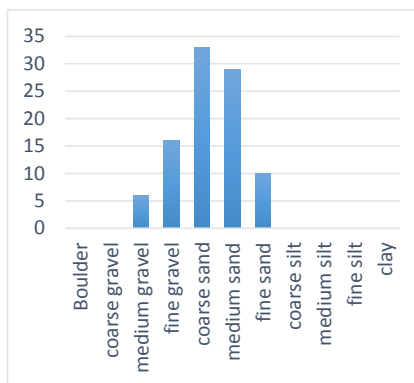
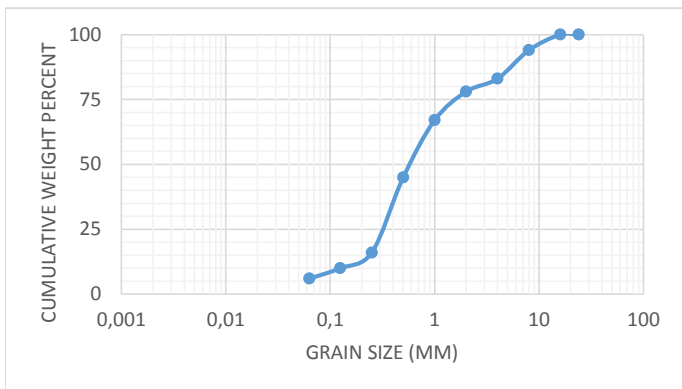
2020. november 27.

Sample Name: Átd-27 fúrás 10,4 - 19,7 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	6	0,06	94
4	11	0,11	83
2	5	0,05	78
1	11	0,11	67
0,5	22	0,22	45
0,25	29	0,29	16
0,125	6	0,06	10
0,063	4	0,04	6

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,125	Uniformity Coef.	6,73
d17	0,259	n computed	0,33
d20	0,284	g (cm/s ²)	980,00
d50	0,614	ρ (g/cm ³)	0,9981
d60	0,841	μ (g/cm s)	0,0098
de (Kruger)	0,519	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,462	tau (Sauerbrei)	1,053
de (Zunker)	0,480	d _{geometric mean}	0,859
de (Zamarin)	0,500	σ _φ	2,164
lo (Alyameni)	0,003		
mm		0	% in sample
>64		Boulder	
16 - 64		coarse gravel	0
8 - 16		medium gravel	6
2 - 8		fine gravel	16
0.5 - 2		coarse sand	33
0.25 - 0.5		medium sand	29
0.063 - 0.25		fine sand	10
0.016 - 0.063		coarse silt	
0.008 - 0.016		medium silt	
0.002 - 0.008		fine silt	
<0.002		clay	



Grain Size Analysis Report

Date:

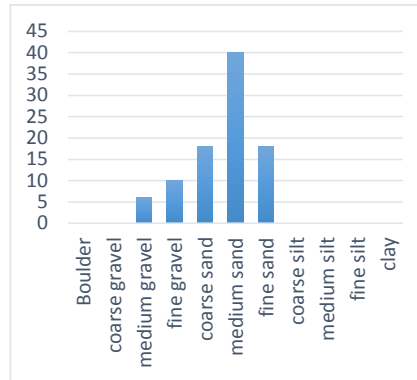
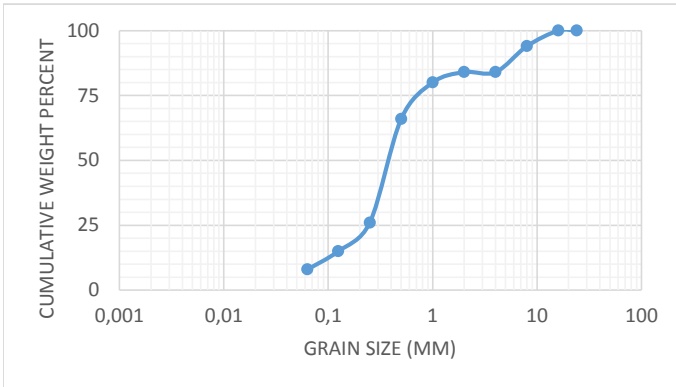
2020. november 27.

Sample Name: Átd-27 fúrás 5,3 - 10,4 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	6	0,06	94
4	10	0,1	84
2	0	0	84
1	4	0,04	80
0,5	14	0,14	66
0,25	40	0,4	26
0,125	11	0,11	15
0,063	7	0,07	8

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,081	Uniformity Coef.	5,73
d17	0,148	n computed	0,34
d20	0,182	g (cm/s ²)	980,00
d50	0,400	ρ (g/cm ³)	0,9981
d60	0,463	μ (g/cm s)	0,0098
de (Kruger)	0,380	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,338	tau (Sauerbrei)	1,053
de (Zunker)	0,351	d _{geometric mean}	0,611
de (Zamarin)	0,365	σ _φ	2,164
lo (Alyameni)	0,001		
mm	0	% in sample	
>64	Boulder		
16 - 64	coarse gravel		0
8 - 16	medium gravel		6
2 - 8	fine gravel		10
0.5 - 2	coarse sand		18
0.25 - 0.5	medium sand		40
0.063 - 0.25	fine sand		18
0.016 - 0.063	coarse silt		
0.008 - 0.016	medium silt		
0.002 - 0.008	fine silt		
<0.002	clay		



Grain Size Analysis Report

Date:

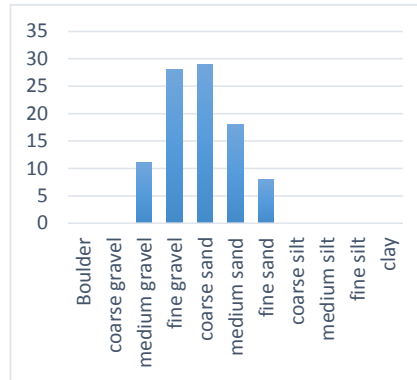
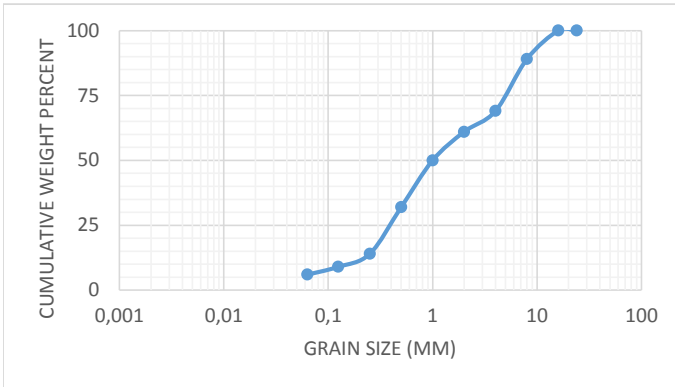
2020. november 27.

Sample Name: Átd-27 fúrás 19,7 - 23,8 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	11	0,11	89
4	20	0,2	69
2	8	0,08	61
1	11	0,11	50
0,5	18	0,18	32
0,25	18	0,18	14
0,125	5	0,05	9
0,063	3	0,03	6

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,150	Uniformity Coef.	12,73
d17	0,292	n computed	0,28
d20	0,333	g (cm/s ²)	980,00
d50	1,000	ρ (g/cm ³)	0,9981
d60	1,909	μ (g/cm s)	0,0098
de (Kruger)	0,690	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,614	tau (Sauerbrei)	1,053
de (Zunker)	0,638	d _{geometric mean}	1,385
de (Zamarin)	0,664	σ _φ	2,358
lo (Alyameni)	-0,063		
mm		0	% in sample
>64		Boulder	
16 - 64		coarse gravel	0
8 - 16		medium gravel	11
2 - 8		fine gravel	28
0.5 - 2		coarse sand	29
0.25 - 0.5		medium sand	18
0.063 - 0.25		fine sand	8
0.016 - 0.063		coarse silt	
0.008 - 0.016		medium silt	
0.002 - 0.008		fine silt	
<0.002		clay	



Grain Size Analysis Report

Date:

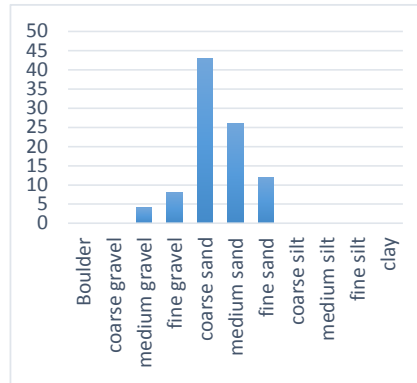
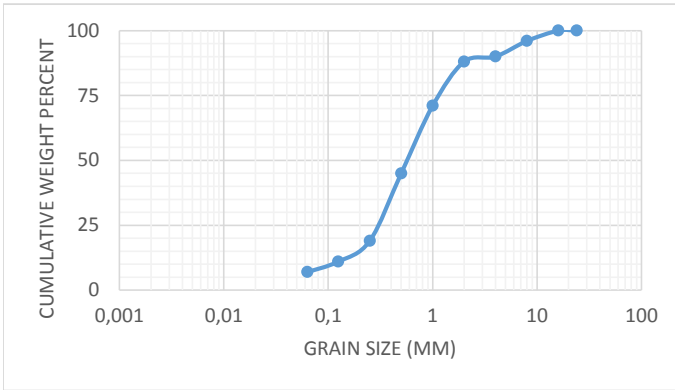
2020. november 27.

Sample Name: Átd-28 fúrás 5,2 - 10,3 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	4	0,04	96
4	6	0,06	90
2	2	0,02	88
1	17	0,17	71
0,5	26	0,26	45
0,25	26	0,26	19
0,125	8	0,08	11
0,063	4	0,04	7

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,110	Uniformity Coef.	7,20
d17	0,219	n computed	0,32
d20	0,260	g (cm/s ²)	980,00
d50	0,596	ρ (g/cm ³)	0,9981
d60	0,788	μ (g/cm s)	0,0098
de (Kruger)	0,494	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,439	tau (Sauerbrei)	1,053
de (Zunker)	0,456	d _{geometric mean}	0,730
de (Zamarin)	0,475	σ _φ	1,893
lo (Alyameni)	-0,012		
mm	0	% in sample	
>64	Boulder		
16 - 64	coarse gravel		0
8 - 16	medium gravel		4
2 - 8	fine gravel		8
0.5 - 2	coarse sand		43
0.25 - 0.5	medium sand		26
0.063 - 0.25	fine sand		12
0.016 - 0.063	coarse silt		
0.008 - 0.016	medium silt		
0.002 - 0.008	fine silt		
<0.002	clay		



Grain Size Analysis Report

Date:

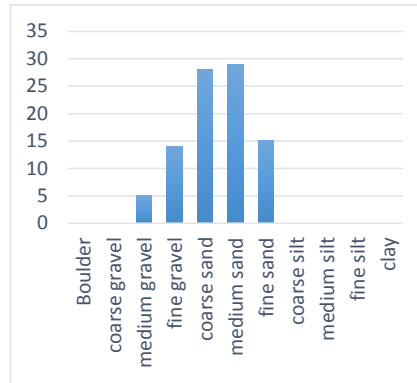
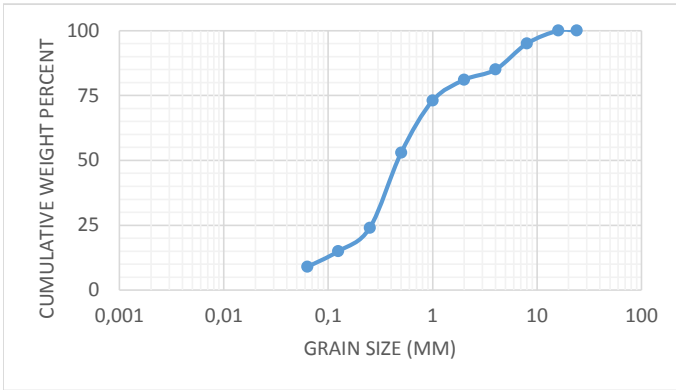
2020. november 27.

Sample Name: Átd-28 fúrás 10,3 - 15,7 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	5	0,05	95
4	10	0,1	85
2	4	0,04	81
1	8	0,08	73
0,5	20	0,2	53
0,25	29	0,29	24
0,125	9	0,09	15
0,063	6	0,06	9

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,073	Uniformity Coef.	9,20
d17	0,153	n computed	0,30
d20	0,194	g (cm/s ²)	980,00
d50	0,474	ρ (g/cm ³)	0,9981
d60	0,675	μ (g/cm s)	0,0098
de (Kruger)	0,445	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,396	tau (Sauerbrei)	1,053
de (Zunker)	0,412	d _{geometric mean}	0,735
de (Zamarin)	0,428	σ _φ	2,351
lo (Alyameni)	-0,027		
mm		0	% in sample
>64		Boulder	
16 - 64		coarse gravel	0
8 - 16		medium gravel	5
2 - 8		fine gravel	14
0.5 - 2		coarse sand	28
0.25 - 0.5		medium sand	29
0.063 - 0.25		fine sand	15
0.016 - 0.063		coarse silt	
0.008 - 0.016		medium silt	
0.002 - 0.008		fine silt	
<0.002		clay	



Grain Size Analysis Report

Date:

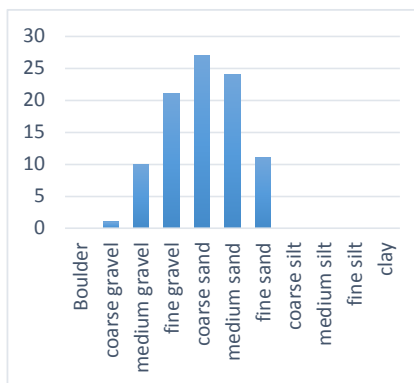
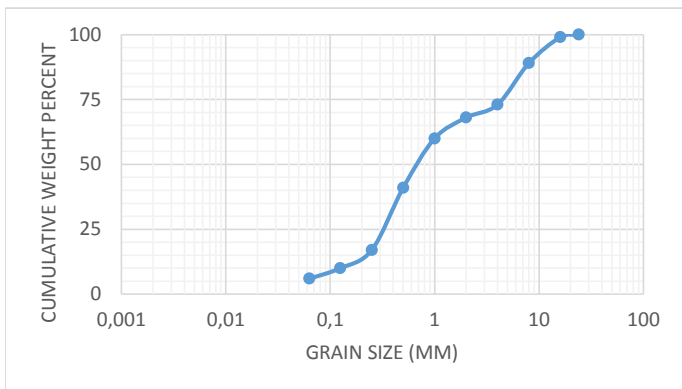
2020. november 27.

Sample Name: Átd-28 fúrás 15,7 -25,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	1	0,01	99
8	10	0,1	89
4	16	0,16	73
2	5	0,05	68
1	8	0,08	60
0,5	19	0,19	41
0,25	24	0,24	17
0,125	7	0,07	10
0,063	4	0,04	6

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,125	Uniformity Coef.	8,00
d17	0,250	n computed	0,31
d20	0,281	g (cm/s ²)	980,00
d50	0,737	ρ (g/cm ³)	0,9981
d60	1,000	μ (g/cm s)	0,0098
de (Kruger)	0,556	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,495	tau (Sauerbrei)	1,053
de (Zunker)	0,514	d _{geometric mean}	1,100
de (Zamarin)	0,535	σ _φ	2,417
lo (Alyameni)	-0,028		
mm	0	% in sample	
>64		Boulder	
16 - 64		coarse gravel	1
8 - 16		medium gravel	10
2 - 8		fine gravel	21
0.5 - 2		coarse sand	27
0.25 - 0.5		medium sand	24
0.063 - 0.25		fine sand	11
0.016 - 0.063		coarse silt	
0.008 - 0.016		medium silt	
0.002 - 0.008		fine silt	
<0.002		clay	



Grain Size Analysis Report

Date:

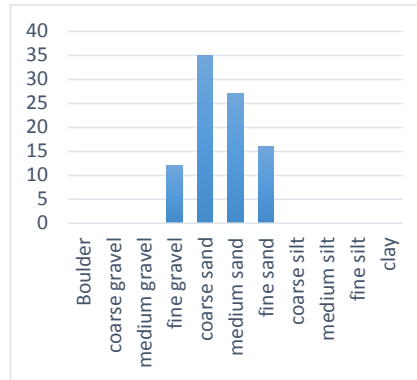
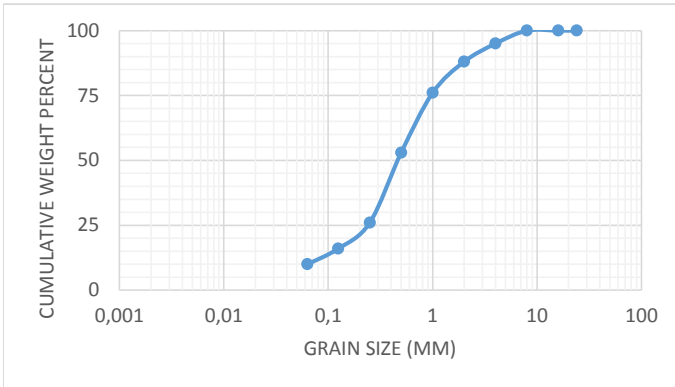
2020. november 27.

Sample Name: Átd-28 fúrás 2,0 - 5,2 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	0	0	100
4	5	0,05	95
2	7	0,07	88
1	12	0,12	76
0,5	23	0,23	53
0,25	27	0,27	26
0,125	10	0,1	16
0,063	6	0,06	10

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,063	Uniformity Coef.	10,35
d17	0,138	n computed	0,29
d20	0,175	g (cm/s ²)	980,00
d50	0,472	ρ (g/cm ³)	0,9981
d60	0,652	μ (g/cm s)	0,0098
de (Kruger)	0,433	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,385	tau (Sauerbrei)	1,053
de (Zunker)	0,400	d _{geometric mean}	0,620
de (Zamarin)	0,416	σ _φ	1,993
lo (Alyameni)	-0,039		
mm		0	% in sample
>64		Boulder	
16 - 64		coarse gravel	0
8 - 16		medium gravel	0
2 - 8		fine gravel	12
0.5 - 2		coarse sand	35
0.25 - 0.5		medium sand	27
0.063 - 0.25		fine sand	16
0.016 - 0.063		coarse silt	
0.008 - 0.016		medium silt	
0.002 - 0.008		fine silt	
<0.002		clay	



Grain Size Analysis Report

Date:

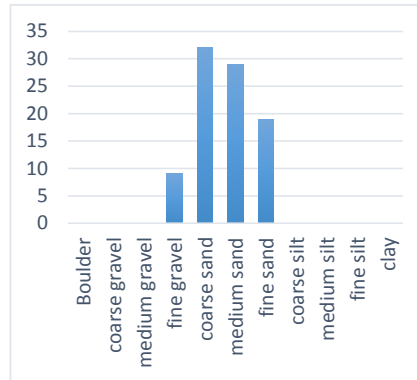
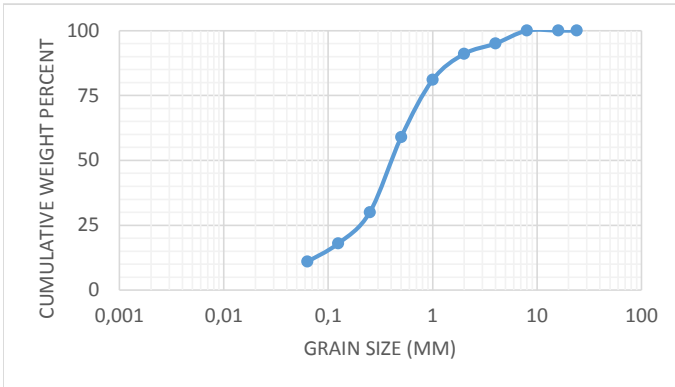
2020. november 27.

Sample Name: Átd-29 fúrás 21,3 - 25,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	0	0	100
4	5	0,05	95
2	4	0,04	91
1	10	0,1	81
0,5	22	0,22	59
0,25	29	0,29	30
0,125	12	0,12	18
0,063	7	0,07	11

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,057	Uniformity Coef.	9,13
d17	0,116	n computed	0,30
d20	0,146	g (cm/s ²)	980,00
d50	0,422	ρ (g/cm ³)	0,9981
d60	0,523	μ (g/cm s)	0,0098
de (Krugler)	0,394	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,350	tau (Sauerbrei)	1,053
de (Zunker)	0,364	d _{geometric mean}	0,553
de (Zamarin)	0,379	σ _φ	1,979
lo (Alyameni)	-0,034		
mm	0	% in sample	
>64	Boulder		
16 - 64	coarse gravel		0
8 - 16	medium gravel		0
2 - 8	fine gravel		9
0.5 - 2	coarse sand		32
0.25 - 0.5	medium sand		29
0.063 - 0.25	fine sand		19
0.016 - 0.063	coarse silt		
0.008 - 0.016	medium silt		
0.002 - 0.008	fine silt		
<0.002	clay		



Grain Size Analysis Report

Date:

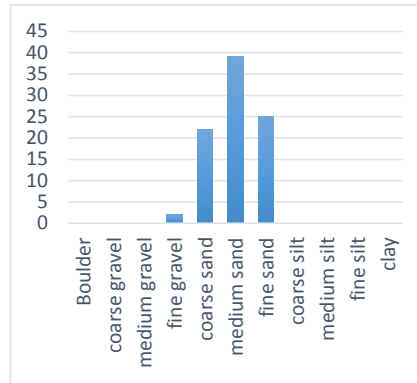
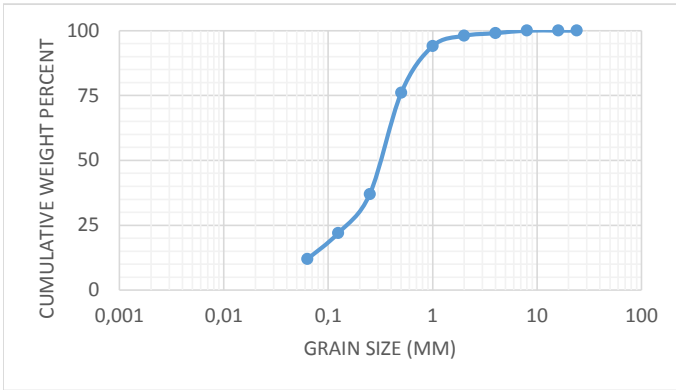
2020. november 27.

Sample Name: Átd-29 fúrás 2,8 - 5,3 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	0	0	100
4	1	0,01	99
2	1	0,01	98
1	4	0,04	94
0,5	18	0,18	76
0,25	39	0,39	37
0,125	15	0,15	22
0,063	10	0,1	12

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,053	Uniformity Coef.	7,57
d17	0,094	n computed	0,32
d20	0,113	g (cm/s ²)	980,00
d50	0,333	ρ (g/cm ³)	0,9981
d60	0,397	μ (g/cm s)	0,0098
de (Kruger)	0,315	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,280	tau (Sauerbrei)	1,053
de (Zunker)	0,291	d _{geometric mean}	0,395
de (Zamarin)	0,303	σ _φ	1,605
lo (Alyameni)	-0,018		
mm		0	% in sample
>64		Boulder	
16 - 64		coarse gravel	0
8 - 16		medium gravel	0
2 - 8		fine gravel	2
0.5 - 2		coarse sand	22
0.25 - 0.5		medium sand	39
0.063 - 0.25		fine sand	25
0.016 - 0.063		coarse silt	
0.008 - 0.016		medium silt	
0.002 - 0.008		fine silt	
<0.002		clay	



Grain Size Analysis Report

Date:

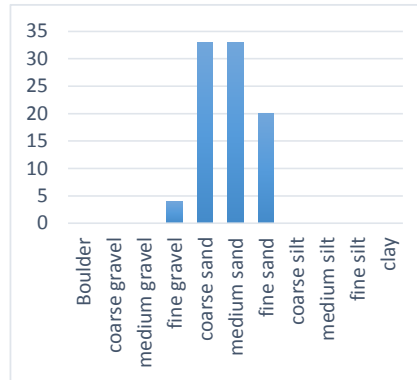
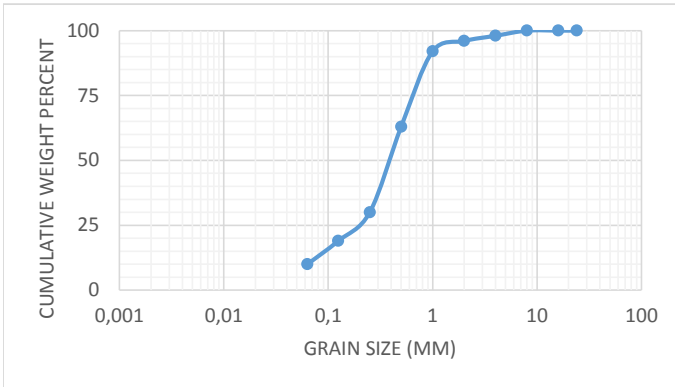
2020. november 27.

Sample Name: Átd-29 fúrás 5,3 - 10,1 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	0	0	100
4	2	0,02	98
2	2	0,02	96
1	4	0,04	92
0,5	29	0,29	63
0,25	33	0,33	30
0,125	11	0,11	19
0,063	9	0,09	10

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,063	Uniformity Coef.	7,58
d17	0,111	n computed	0,32
d20	0,136	g (cm/s ²)	980,00
d50	0,402	ρ (g/cm ³)	0,9981
d60	0,477	μ (g/cm s)	0,0098
de (Kruger)	0,351	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,312	tau (Sauerbrei)	1,053
de (Zunker)	0,325	d _{geometric mean}	0,457
de (Zamarin)	0,338	σ _φ	1,640
lo (Alyameni)	-0,022		
mm		0	% in sample
>64		Boulder	
16 - 64		coarse gravel	0
8 - 16		medium gravel	0
2 - 8		fine gravel	4
0.5 - 2		coarse sand	33
0.25 - 0.5		medium sand	33
0.063 - 0.25		fine sand	20
0.016 - 0.063		coarse silt	
0.008 - 0.016		medium silt	
0.002 - 0.008		fine silt	
<0.002		clay	



Grain Size Analysis Report

Date:

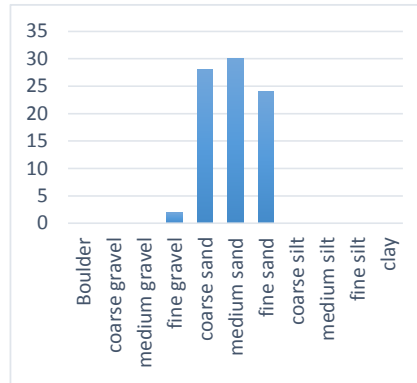
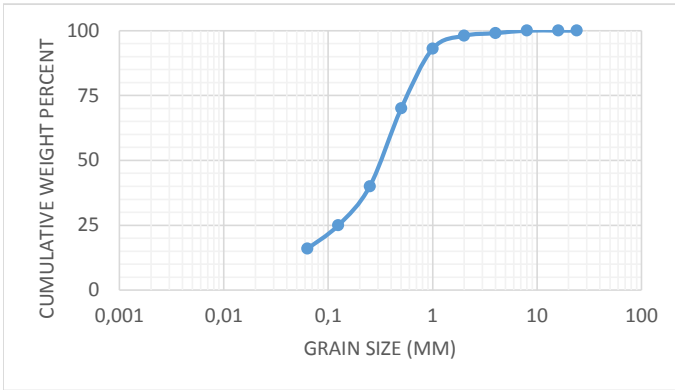
2020. november 27.

Sample Name: Átd-29 fúrás 10,1 - 15,5 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	0	0	100
4	1	0,01	99
2	1	0,01	98
1	5	0,05	93
0,5	23	0,23	70
0,25	30	0,3	40
0,125	15	0,15	25
0,063	9	0,09	16

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,039	Uniformity Coef.	10,58
d17	0,070	n computed	0,29
d20	0,091	g (cm/s ²)	980,00
d50	0,333	ρ (g/cm ³)	0,9981
d60	0,417	μ (g/cm s)	0,0098
de (Kruger)	0,345	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,307	tau (Sauerbrei)	1,053
de (Zunker)	0,319	d _{geometric mean}	0,438
de (Zamarin)	0,331	σ _φ	1,851
lo (Alyameni)	-0,034		
mm	0	% in sample	
>64	Boulder		
16 - 64	coarse gravel		0
8 - 16	medium gravel		0
2 - 8	fine gravel		2
0.5 - 2	coarse sand		28
0.25 - 0.5	medium sand		30
0.063 - 0.25	fine sand		24
0.016 - 0.063	coarse silt		
0.008 - 0.016	medium silt		
0.002 - 0.008	fine silt		
<0.002	clay		



Grain Size Analysis Report

Date:

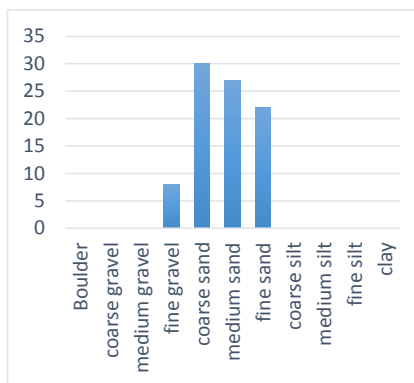
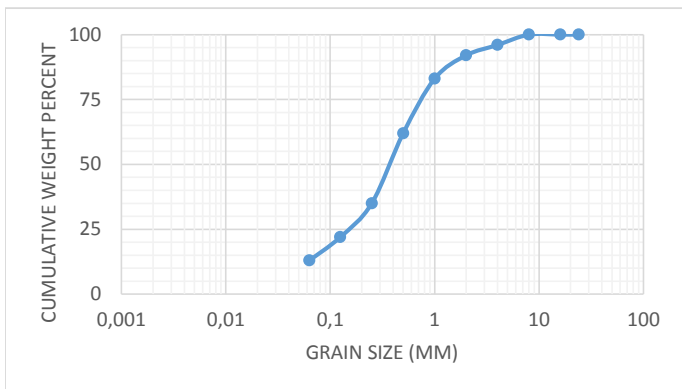
2020. november 27.

Sample Name: Átd-29 fúrás 15,5 - 21,3 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	0	0	100
4	4	0,04	96
2	4	0,04	92
1	9	0,09	83
0,5	21	0,21	62
0,25	27	0,27	35
0,125	13	0,13	22
0,063	9	0,09	13

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,048	Uniformity Coef.	9,94
d17	0,091	n computed	0,30
d20	0,111	g (cm/s ²)	980,00
d50	0,389	ρ (g/cm ³)	0,9981
d60	0,481	μ (g/cm s)	0,0098
de (Kruger)	0,366	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,326	tau (Sauerbrei)	1,053
de (Zunker)	0,339	d _{geometric mean}	0,520
de (Zamarin)	0,352	σ _φ	2,020
lo (Alyameni)	-0,037		
mm		0	% in sample
>64		Boulder	
16 - 64		coarse gravel	0
8 - 16		medium gravel	0
2 - 8		fine gravel	8
0.5 - 2		coarse sand	30
0.25 - 0.5		medium sand	27
0.063 - 0.25		fine sand	22
0.016 - 0.063		coarse silt	
0.008 - 0.016		medium silt	
0.002 - 0.008		fine silt	
<0.002		clay	



Grain Size Analysis Report

Date:

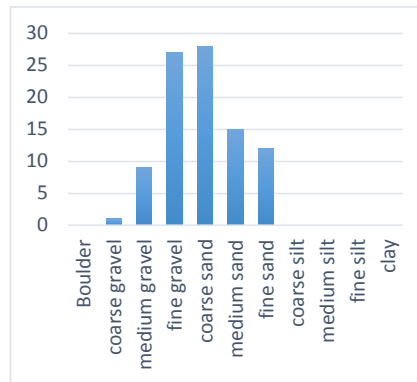
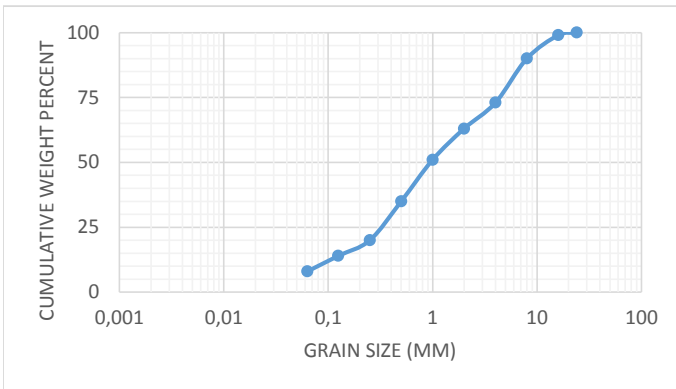
2020. november 27.

Sample Name: Átd-30 fúrás 18,0 - 25,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	1	0,01	99
8	9	0,09	90
4	17	0,17	73
2	10	0,1	63
1	12	0,12	51
0,5	16	0,16	35
0,25	15	0,15	20
0,125	6	0,06	14
0,063	6	0,06	8

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,084	Uniformity Coef.	20,92
d17	0,188	n computed	0,26
d20	0,250	g (cm/s ²)	980,00
d50	0,969	ρ (g/cm ³)	0,9981
d60	1,750	μ (g/cm s)	0,0098
de (Kruger)	0,581	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,517	tau (Sauerbrei)	1,053
de (Zunker)	0,537	d _{geometric mean}	1,256
de (Zamarin)	0,559	σ _φ	2,584
lo (Alyameni)	-0,138		
mm		0	% in sample
>64		Boulder	
16 - 64		coarse gravel	1
8 - 16		medium gravel	9
2 - 8		fine gravel	27
0.5 - 2		coarse sand	28
0.25 - 0.5		medium sand	15
0.063 - 0.25		fine sand	12
0.016 - 0.063		coarse silt	
0.008 - 0.016		medium silt	
0.002 - 0.008		fine silt	
<0.002		clay	



Grain Size Analysis Report

Date:

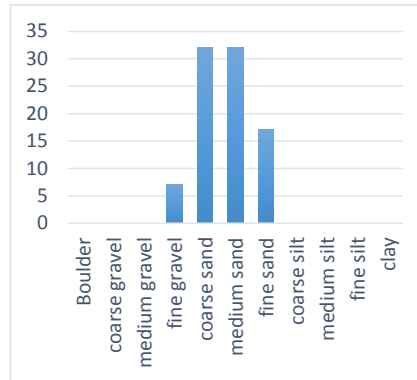
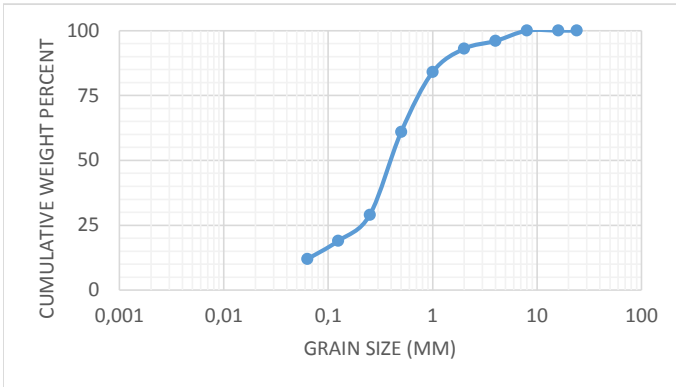
2020. november 27.

Sample Name: Átd-30 fúrás 2,9 - 8,2 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	0	0	100
4	4	0,04	96
2	3	0,03	93
1	9	0,09	84
0,5	23	0,23	61
0,25	32	0,32	29
0,125	10	0,1	19
0,063	7	0,07	12

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,053	Uniformity Coef.	9,38
d17	0,107	n computed	0,30
d20	0,138	g (cm/s ²)	980,00
d50	0,414	ρ (g/cm ³)	0,9981
d60	0,492	μ (g/cm s)	0,0098
de (Kruger)	0,398	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,354	tau (Sauerbrei)	1,053
de (Zunker)	0,368	d _{geometric mean}	0,536
de (Zamarin)	0,383	σ _φ	1,895
lo (Alyameni)	-0,038		
mm		0	% in sample
>64		Boulder	
16 - 64		coarse gravel	0
8 - 16		medium gravel	0
2 - 8		fine gravel	7
0.5 - 2		coarse sand	32
0.25 - 0.5		medium sand	32
0.063 - 0.25		fine sand	17
0.016 - 0.063		coarse silt	
0.008 - 0.016		medium silt	
0.002 - 0.008		fine silt	
<0.002		clay	



Grain Size Analysis Report

Date:

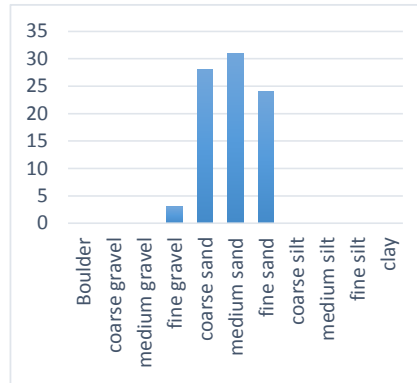
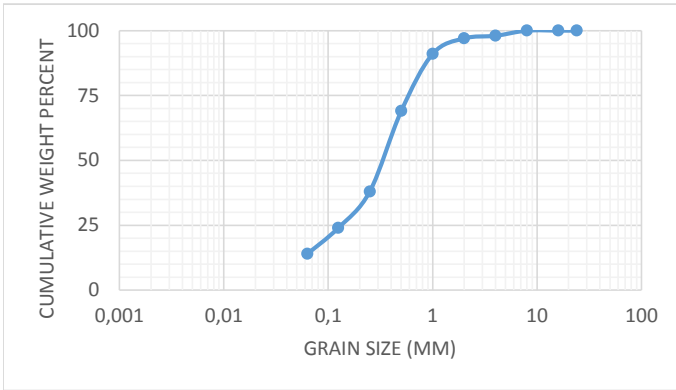
2020. november 27.

Sample Name: Átd-30 fúrás 8,2 - 18,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	0	0	100
4	2	0,02	98
2	1	0,01	97
1	6	0,06	91
0,5	22	0,22	69
0,25	31	0,31	38
0,125	14	0,14	24
0,063	10	0,1	14

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,045	Uniformity Coef.	9,50
d17	0,082	n computed	0,30
d20	0,100	g (cm/s ²)	980,00
d50	0,347	ρ (g/cm ³)	0,9981
d60	0,427	μ (g/cm s)	0,0098
de (Kruger)	0,336	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,299	tau (Sauerbrei)	1,053
de (Zunker)	0,311	d _{geometric mean}	0,442
de (Zamarin)	0,323	σ _φ	1,811
lo (Alyameni)	-0,030		
mm		0	% in sample
>64		Boulder	
16 - 64		coarse gravel	0
8 - 16		medium gravel	0
2 - 8		fine gravel	3
0.5 - 2		coarse sand	28
0.25 - 0.5		medium sand	31
0.063 - 0.25		fine sand	24
0.016 - 0.063		coarse silt	
0.008 - 0.016		medium silt	
0.002 - 0.008		fine silt	
<0.002		clay	



Grain Size Analysis Report

Date:

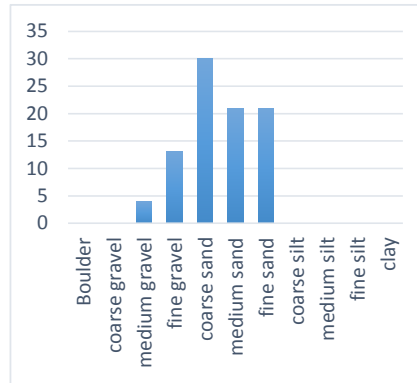
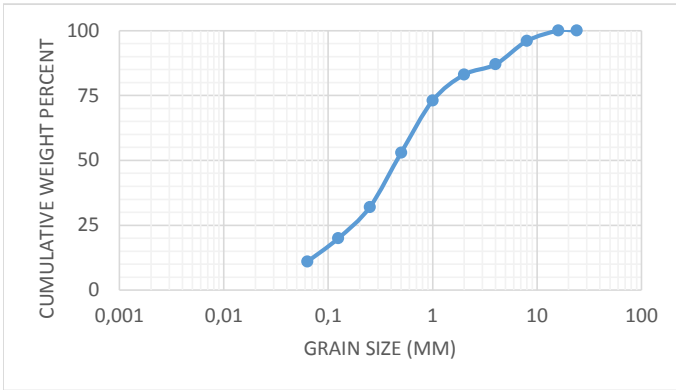
2020. november 27.

Sample Name: Átd-31 fúrás 15,0 - 20,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	4	0,04	96
4	9	0,09	87
2	4	0,04	83
1	10	0,1	73
0,5	20	0,2	53
0,25	21	0,21	32
0,125	12	0,12	20
0,063	9	0,09	11

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,057	Uniformity Coef.	11,79
d17	0,104	n computed	0,28
d20	0,125	g (cm/s ²)	980,00
d50	0,464	ρ (g/cm ³)	0,9981
d60	0,675	μ (g/cm s)	0,0098
de (Kruger)	0,396	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,353	tau (Sauerbrei)	1,053
de (Zunker)	0,367	d _{geometric mean}	0,681
de (Zamarin)	0,381	σ _φ	2,389
lo (Alyameni)	-0,044		
mm		0	% in sample
>64		Boulder	
16 - 64		coarse gravel	0
8 - 16		medium gravel	4
2 - 8		fine gravel	13
0.5 - 2		coarse sand	30
0.25 - 0.5		medium sand	21
0.063 - 0.25		fine sand	21
0.016 - 0.063		coarse silt	
0.008 - 0.016		medium silt	
0.002 - 0.008		fine silt	
<0.002		clay	



Grain Size Analysis Report

Date:

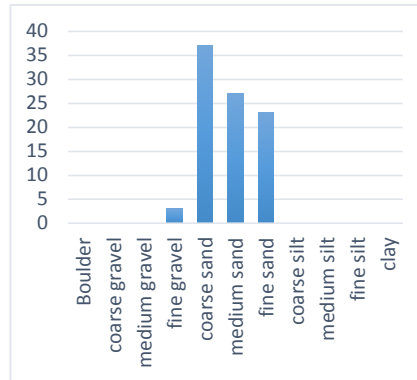
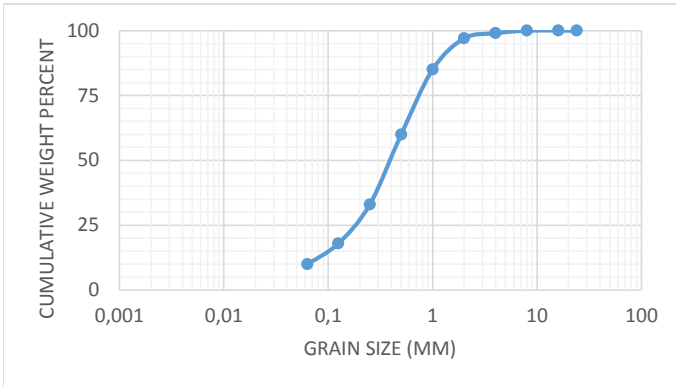
2020. november 27.

Sample Name: Átd-31 fúrás 20,0 - 25,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	0	0	100
4	1	0,01	99
2	2	0,02	97
1	12	0,12	85
0,5	25	0,25	60
0,25	27	0,27	33
0,125	15	0,15	18
0,063	8	0,08	10

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,063	Uniformity Coef.	7,94
d17	0,117	n computed	0,31
d20	0,142	g (cm/s ²)	980,00
d50	0,407	ρ (g/cm ³)	0,9981
d60	0,500	μ (g/cm s)	0,0098
de (Kruger)	0,358	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,319	tau (Sauerbrei)	1,053
de (Zunker)	0,331	d _{geometric mean}	0,476
de (Zamarin)	0,344	σ _φ	1,679
lo (Alyameni)	-0,023		
mm	0	% in sample	
>64	Boulder		
16 - 64	coarse gravel		0
8 - 16	medium gravel		0
2 - 8	fine gravel		3
0.5 - 2	coarse sand		37
0.25 - 0.5	medium sand		27
0.063 - 0.25	fine sand		23
0.016 - 0.063	coarse silt		
0.008 - 0.016	medium silt		
0.002 - 0.008	fine silt		
<0.002	clay		



Grain Size Analysis Report

Date:

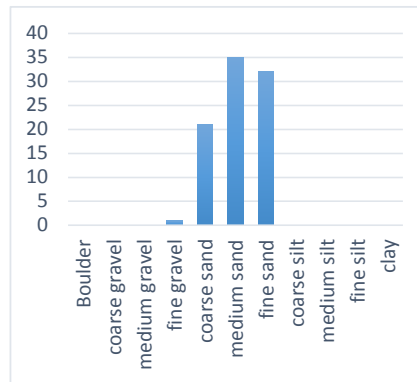
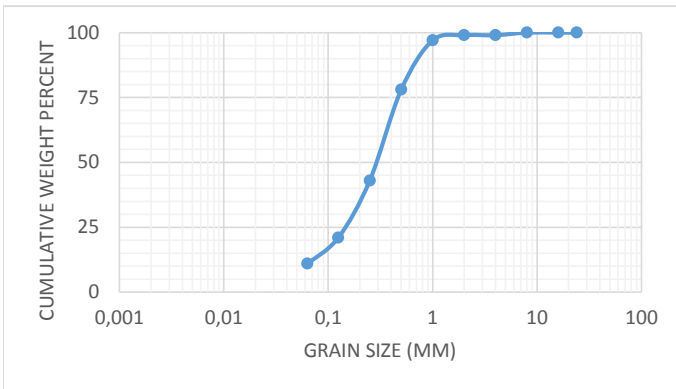
2020. november 27.

Sample Name: Átd-31 fúrás 2,4 - 5,7 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	0	0	100
4	1	0,01	99
2	0	0	99
1	2	0,02	97
0,5	19	0,19	78
0,25	35	0,35	43
0,125	22	0,22	21
0,063	10	0,1	11

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,057	Uniformity Coef.	6,49
d17	0,100	n computed	0,33
d20	0,119	g (cm/s ²)	980,00
d50	0,300	ρ (g/cm ³)	0,9981
d60	0,371	μ (g/cm s)	0,0098
de (Kruger)	0,291	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,259	tau (Sauerbrei)	1,053
de (Zunker)	0,269	d _{geometric mean}	0,357
de (Zamarin)	0,280	σ _φ	1,467
lo (Alyameni)	-0,003		
mm		0	% in sample
>64		Boulder	
16 - 64		coarse gravel	0
8 - 16		medium gravel	0
2 - 8		fine gravel	1
0.5 - 2		coarse sand	21
0.25 - 0.5		medium sand	35
0.063 - 0.25		fine sand	32
0.016 - 0.063		coarse silt	
0.008 - 0.016		medium silt	
0.002 - 0.008		fine silt	
<0.002		clay	



Grain Size Analysis Report

Date:

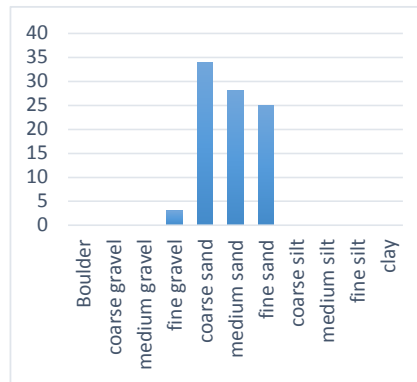
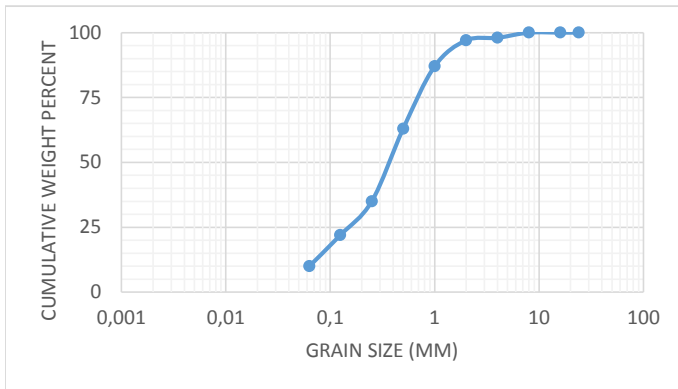
2020. november 27.

Sample Name: Átd-31 fúrás 5,7 - 15,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	0	0	100
4	2	0,02	98
2	1	0,01	97
1	10	0,1	87
0,5	24	0,24	63
0,25	28	0,28	35
0,125	13	0,13	22
0,063	12	0,12	10

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,063	Uniformity Coef.	7,51
d17	0,099	n computed	0,32
d20	0,115	g (cm/s ²)	980,00
d50	0,384	ρ (g/cm ³)	0,9981
d60	0,473	μ (g/cm s)	0,0098
de (Kruger)	0,322	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,286	tau (Sauerbrei)	1,053
de (Zunker)	0,297	d _{geometric mean}	0,445
de (Zamarin)	0,309	σ _φ	1,714
lo (Alyameni)	-0,017		
mm		0	% in sample
>64		Boulder	
16 - 64		coarse gravel	0
8 - 16		medium gravel	0
2 - 8		fine gravel	3
0.5 - 2		coarse sand	34
0.25 - 0.5		medium sand	28
0.063 - 0.25		fine sand	25
0.016 - 0.063		coarse silt	
0.008 - 0.016		medium silt	
0.002 - 0.008		fine silt	
<0.002		clay	



Grain Size Analysis Report

Date:

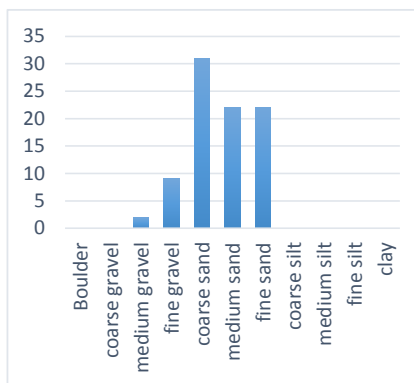
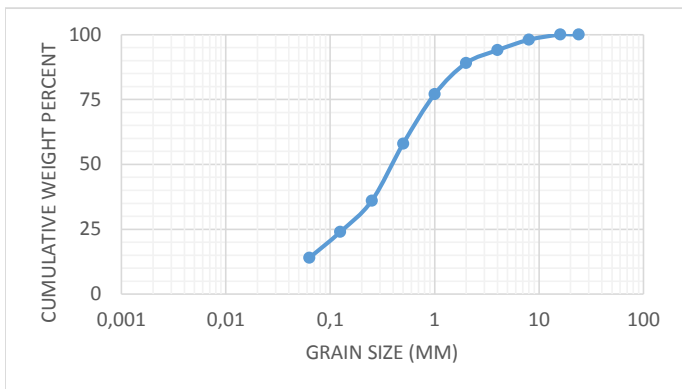
2020. november 27.

Sample Name: Átd-32 fúrás 15,4 - 20,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	#HIV!
16	0	0	#HIV!
8	2	0,02	#HIV!
4	4	0,04	#HIV!
2	5	0,05	#HIV!
1	12	0,12	#HIV!
0,5	19	0,19	#HIV!
0,25	22	0,22	#HIV!
0,125	12	0,12	#HIV!
0,063	10	0,1	#HIV!

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,045	Uniformity Coef.	12,28
d17	0,082	n computed	0,28
d20	0,100	g (cm/s ²)	980,00
d50	0,409	ρ (g/cm ³)	0,9981
d60	0,553	μ (g/cm s)	0,0098
de (Krugler)	0,378	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,336	tau (Sauerbrei)	1,053
de (Zunker)	0,349	d _{geometric mean}	0,587
de (Zamarin)	0,363	σ _φ	2,279
lo (Alyameni)	-0,046		
mm		0	% in sample
>64		Boulder	
16 - 64		coarse gravel	0
8 - 16		medium gravel	2
2 - 8		fine gravel	9
0.5 - 2		coarse sand	31
0.25 - 0.5		medium sand	22
0.063 - 0.25		fine sand	22
0.016 - 0.063		coarse silt	
0.008 - 0.016		medium silt	
0.002 - 0.008		fine silt	
<0.002		clay	



Grain Size Analysis Report

Date:

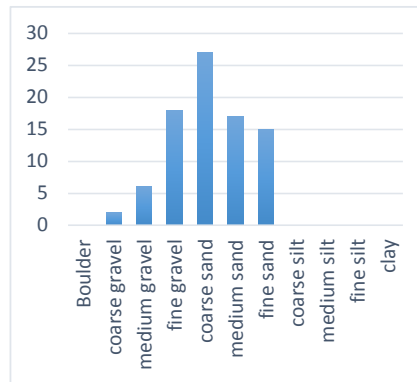
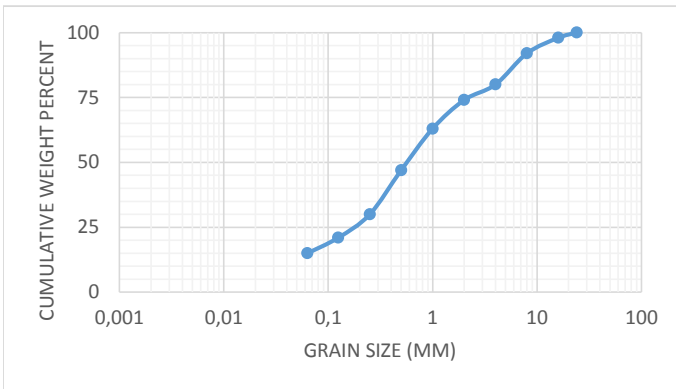
2020. november 27.

Sample Name: Átd-32 fúrás 20,0 - 25,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	#HIV!
16	2	0,02	#HIV!
8	6	0,06	#HIV!
4	12	0,12	#HIV!
2	6	0,06	#HIV!
1	11	0,11	#HIV!
0,5	16	0,16	#HIV!
0,25	17	0,17	#HIV!
0,125	9	0,09	#HIV!
0,063	6	0,06	#HIV!

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,042	Uniformity Coef.	21,58
d17	0,084	n computed	0,26
d20	0,115	g (cm/s ²)	980,00
d50	0,594	ρ (g/cm ³)	0,9981
d60	0,906	μ (g/cm s)	0,0098
de (Kruger)	0,525	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,467	tau (Sauerbrei)	1,053
de (Zunker)	0,486	d _{geometric mean}	0,980
de (Zamarin)	0,505	σ _φ	2,934
lo (Alyameni)	-0,096		
mm		0	% in sample
>64		Boulder	
16 - 64		coarse gravel	2
8 - 16		medium gravel	6
2 - 8		fine gravel	18
0.5 - 2		coarse sand	27
0.25 - 0.5		medium sand	17
0.063 - 0.25		fine sand	15
0.016 - 0.063		coarse silt	
0.008 - 0.016		medium silt	
0.002 - 0.008		fine silt	
<0.002		clay	



Grain Size Analysis Report

Date:

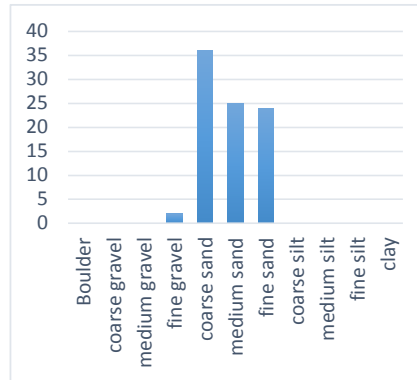
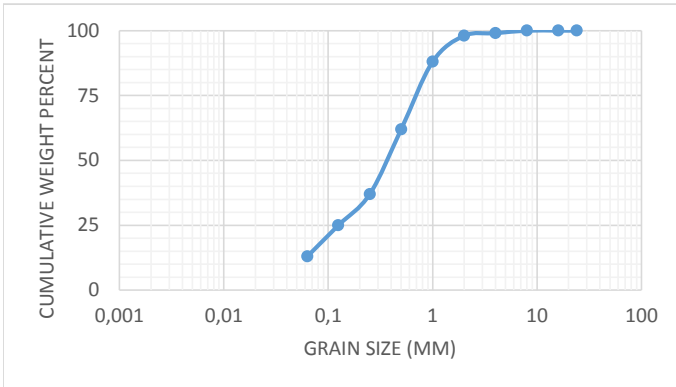
2020. november 27.

Sample Name: Átd-32 fúrás 3,5 - 6,2 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	100
16	0	0	100
8	0	0	100
4	1	0,01	99
2	1	0,01	98
1	10	0,1	88
0,5	26	0,26	62
0,25	25	0,25	37
0,125	12	0,12	25
0,063	12	0,12	13

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,048	Uniformity Coef.	9,90
d17	0,084	n computed	0,30
d20	0,099	g (cm/s ²)	980,00
d50	0,380	ρ (g/cm ³)	0,9981
d60	0,480	μ (g/cm s)	0,0098
de (Krugler)	0,333	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,296	tau (Sauerbrei)	1,053
de (Zunker)	0,308	d _{geometric mean}	0,456
de (Zamarin)	0,321	σ _φ	1,818
lo (Alyameni)	-0,034		
mm	0	% in sample	
>64	Boulder		
16 - 64	coarse gravel		0
8 - 16	medium gravel		0
2 - 8	fine gravel		2
0.5 - 2	coarse sand		36
0.25 - 0.5	medium sand		25
0.063 - 0.25	fine sand		24
0.016 - 0.063	coarse silt		
0.008 - 0.016	medium silt		
0.002 - 0.008	fine silt		
<0.002	clay		



Grain Size Analysis Report

Date:

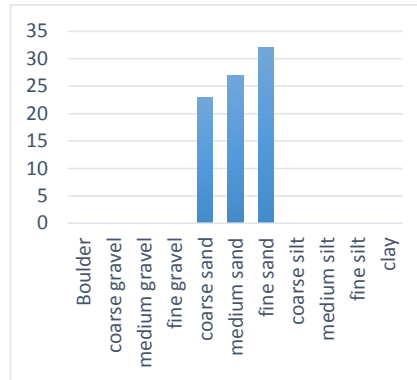
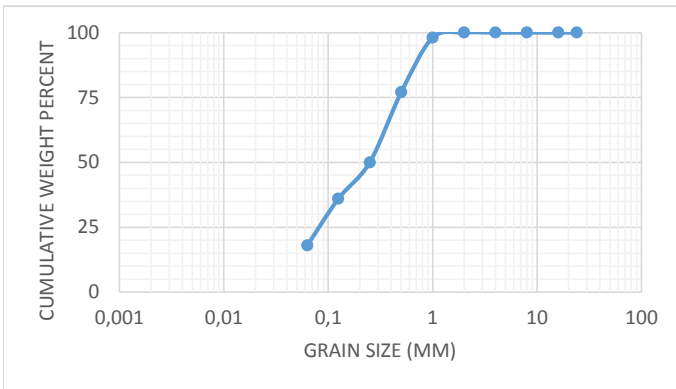
2020. november 27.

Sample Name: Átd-32 fúrás 3,5 - 6,2 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	#HIV!
16	0	0	#HIV!
8	0	0	#HIV!
4	0	0	#HIV!
2	0	0	#HIV!
1	2	0,02	#HIV!
0,5	21	0,21	#HIV!
0,25	27	0,27	#HIV!
0,125	14	0,14	#HIV!
0,063	18	0,18	#HIV!

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,035	Uniformity Coef.	9,79
d17	0,060	n computed	0,30
d20	0,070	g (cm/s ²)	980,00
d50	0,250	ρ (g/cm ³)	0,9981
d60	0,343	μ (g/cm s)	0,0098
de (Kruger)	0,272	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,242	tau (Sauerbrei)	1,053
de (Zunker)	0,252	d _{geometric mean}	0,359
de (Zamarin)	0,262	σ _φ	1,761
lo (Alyameni)	-0,019		
mm		0	% in sample
>64		Boulder	
16 - 64		coarse gravel	0
8 - 16		medium gravel	0
2 - 8		fine gravel	0
0.5 - 2		coarse sand	23
0.25 - 0.5		medium sand	27
0.063 - 0.25		fine sand	32
0.016 - 0.063		coarse silt	
0.008 - 0.016		medium silt	
0.002 - 0.008		fine silt	
<0.002		clay	



Grain Size Analysis Report

Date:

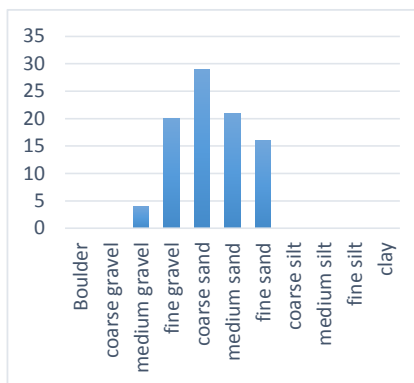
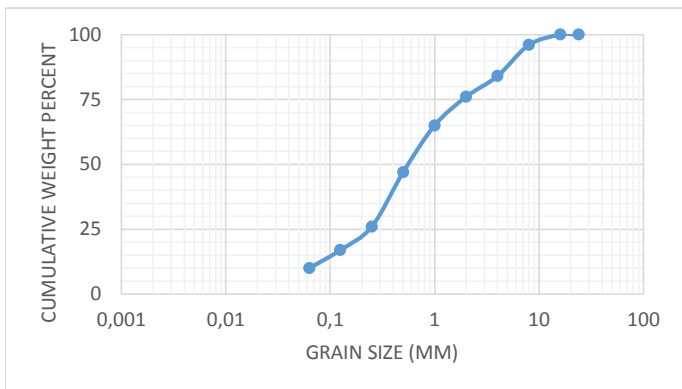
2020. november 27.

Sample Name: Átd-33 fúrás 15,0 - 25,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	#HIV!
16	0	0	#HIV!
8	4	0,04	#HIV!
4	12	0,12	#HIV!
2	8	0,08	#HIV!
1	11	0,11	#HIV!
0,5	18	0,18	#HIV!
0,25	21	0,21	#HIV!
0,125	9	0,09	#HIV!
0,063	7	0,07	#HIV!

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,063	Uniformity Coef.	13,67
d17	0,125	n computed	0,27
d20	0,167	g (cm/s ²)	980,00
d50	0,583	ρ (g/cm ³)	0,9981
d60	0,861	μ (g/cm s)	0,0098
de (Kruger)	0,466	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,414	tau (Sauerbrei)	1,053
de (Zunker)	0,431	d _{geometric mean}	0,835
de (Zamarin)	0,448	σ _φ	2,478
lo (Alyameni)	-0,067		
mm		0	% in sample
>64		Boulder	
16 - 64		coarse gravel	0
8 - 16		medium gravel	4
2 - 8		fine gravel	20
0.5 - 2		coarse sand	29
0.25 - 0.5		medium sand	21
0.063 - 0.25		fine sand	16
0.016 - 0.063		coarse silt	
0.008 - 0.016		medium silt	
0.002 - 0.008		fine silt	
<0.002		clay	



Grain Size Analysis Report

Date:

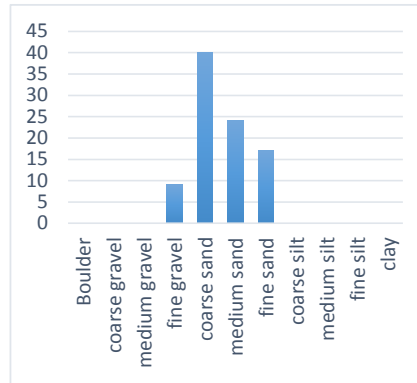
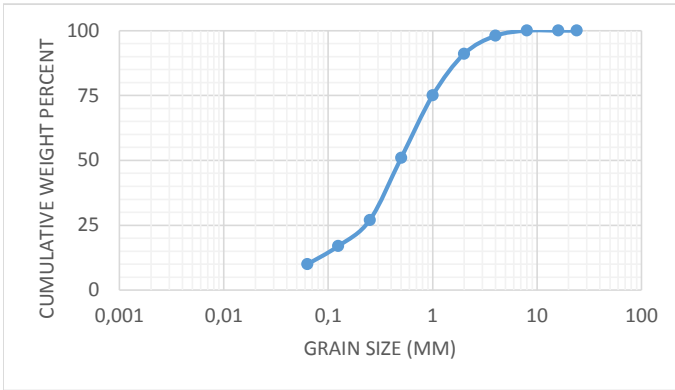
2020. november 27.

Sample Name: Átd-33 fúrás 2,1 - 5,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	#HIV!
16	0	0	#HIV!
8	0	0	#HIV!
4	2	0,02	#HIV!
2	7	0,07	#HIV!
1	16	0,16	#HIV!
0,5	24	0,24	#HIV!
0,25	24	0,24	#HIV!
0,125	10	0,1	#HIV!
0,063	7	0,07	#HIV!

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,063	Uniformity Coef.	10,91
d17	0,125	n computed	0,29
d20	0,163	g (cm/s ²)	980,00
d50	0,490	ρ (g/cm ³)	0,9981
d60	0,688	μ (g/cm s)	0,0098
de (Kruger)	0,422	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,375	tau (Sauerbrei)	1,053
de (Zunker)	0,390	d _{geometric mean}	0,599
de (Zamarin)	0,406	σ _φ	1,944
lo (Alyameni)	-0,044		
mm	0	% in sample	
>64	Boulder		
16 - 64	coarse gravel		0
8 - 16	medium gravel		0
2 - 8	fine gravel		9
0.5 - 2	coarse sand		40
0.25 - 0.5	medium sand		24
0.063 - 0.25	fine sand		17
0.016 - 0.063	coarse silt		
0.008 - 0.016	medium silt		
0.002 - 0.008	fine silt		
<0.002	clay		



Grain Size Analysis Report

Date:

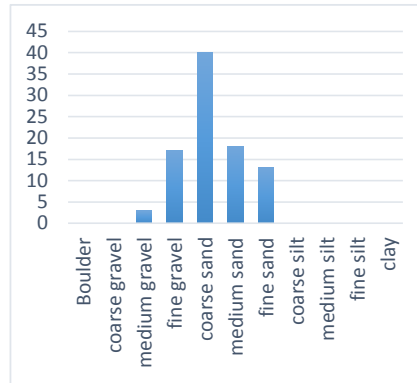
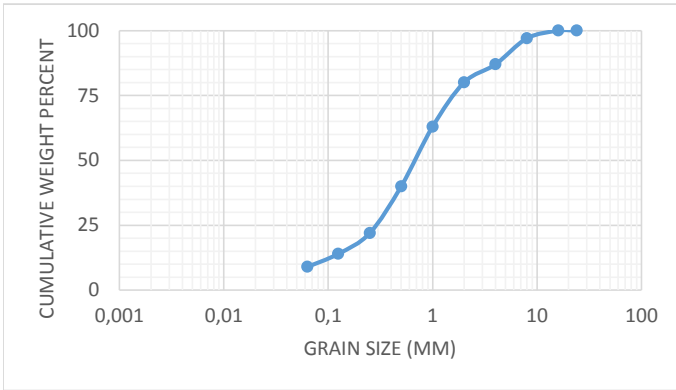
2020. november 27.

Sample Name: Átd-33 fúrás 5,0 - 7,2 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	#HIV!
16	0	0	#HIV!
8	3	0,03	#HIV!
4	10	0,1	#HIV!
2	7	0,07	#HIV!
1	17	0,17	#HIV!
0,5	23	0,23	#HIV!
0,25	18	0,18	#HIV!
0,125	8	0,08	#HIV!
0,063	5	0,05	#HIV!

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,075	Uniformity Coef.	12,40
d17	0,172	n computed	0,28
d20	0,219	g (cm/s ²)	980,00
d50	0,717	ρ (g/cm ³)	0,9981
d60	0,935	μ (g/cm s)	0,0098
de (Kruger)	0,526	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,468	tau (Sauerbrei)	1,053
de (Zunker)	0,486	d _{geometric mean}	0,862
de (Zamarin)	0,506	σ _φ	2,247
lo (Alyameni)	-0,085		
mm		0	% in sample
>64		Boulder	
16 - 64		coarse gravel	0
8 - 16		medium gravel	3
2 - 8		fine gravel	17
0.5 - 2		coarse sand	40
0.25 - 0.5		medium sand	18
0.063 - 0.25		fine sand	13
0.016 - 0.063		coarse silt	
0.008 - 0.016		medium silt	
0.002 - 0.008		fine silt	
<0.002		clay	



Grain Size Analysis Report

Date:

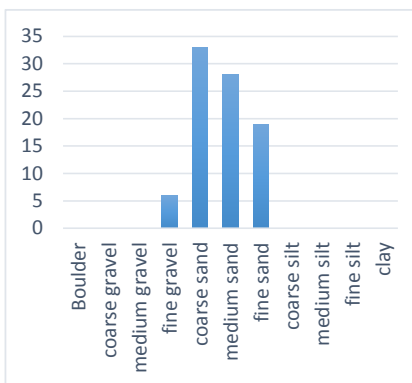
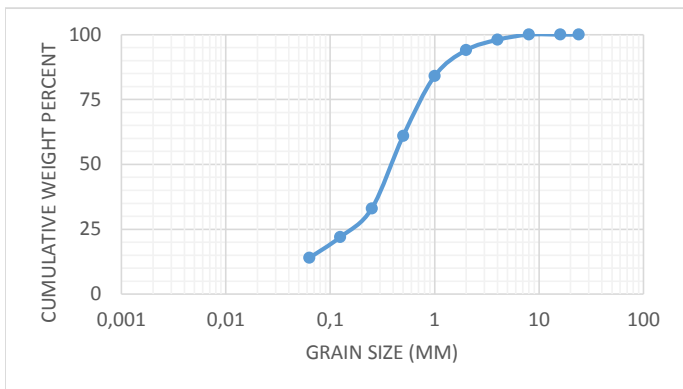
2020. november 27.

Sample Name: Átd-33 fúrás 7,2 - 15,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	#HIV!
16	0	0	#HIV!
8	0	0	#HIV!
4	2	0,02	#HIV!
2	4	0,04	#HIV!
1	10	0,1	#HIV!
0,5	23	0,23	#HIV!
0,25	28	0,28	#HIV!
0,125	11	0,11	#HIV!
0,063	8	0,08	#HIV!

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,045	Uniformity Coef.	10,91
d17	0,086	n computed	0,29
d20	0,110	g (cm/s ²)	980,00
d50	0,402	ρ (g/cm ³)	0,9981
d60	0,491	μ (g/cm s)	0,0098
de (Krugler)	0,388	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,346	tau (Sauerbrei)	1,053
de (Zunker)	0,359	d _{geometric mean}	0,525
de (Zamarin)	0,374	σ _φ	1,947
lo (Alyameni)	-0,044		
mm	0	% in sample	
>64		Boulder	
16 - 64		coarse gravel	0
8 - 16		medium gravel	0
2 - 8		fine gravel	6
0.5 - 2		coarse sand	33
0.25 - 0.5		medium sand	28
0.063 - 0.25		fine sand	19
0.016 - 0.063		coarse silt	
0.008 - 0.016		medium silt	
0.002 - 0.008		fine silt	
<0.002		clay	



Grain Size Analysis Report

Date:

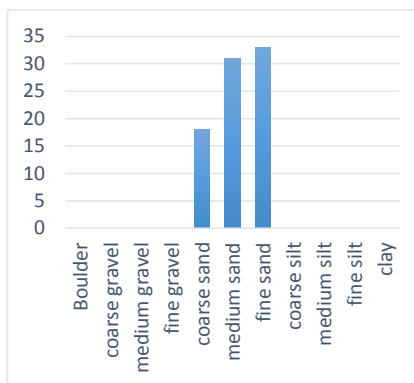
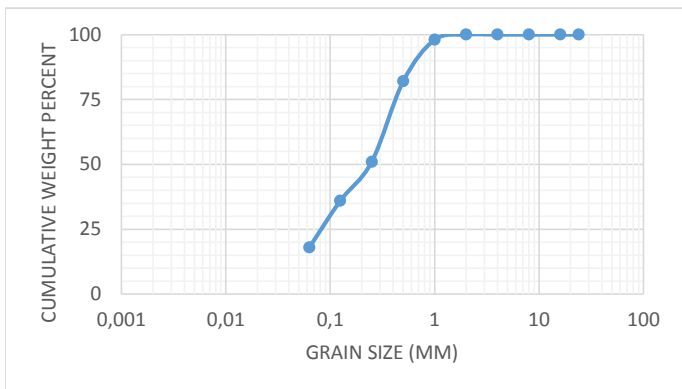
2020. november 27.

Sample Name: Átd fúrások felső burkológörbéje

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	#HIV!
16	0	0	#HIV!
8	0	0	#HIV!
4	0	0	#HIV!
2	0	0	#HIV!
1	2	0,02	#HIV!
0,5	16	0,16	#HIV!
0,25	31	0,31	#HIV!
0,125	15	0,15	#HIV!
0,063	18	0,18	#HIV!

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,035	Uniformity Coef.	9,22
d17	0,060	n computed	0,30
d20	0,070	g (cm/s ²)	980,00
d50	0,242	ρ (g/cm ³)	0,9981
d60	0,323	μ (g/cm s)	0,0098
de (Kruger)	0,265	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,236	tau (Sauerbrei)	1,053
de (Zunker)	0,245	d _{geometric mean}	0,344
de (Zamarin)	0,255	σ _φ	1,695
lo (Alyameni)	-0,017		
mm		0	% in sample
>64		Boulder	
16 - 64		coarse gravel	0
8 - 16		medium gravel	0
2 - 8		fine gravel	0
0.5 - 2		coarse sand	18
0.25 - 0.5		medium sand	31
0.063 - 0.25		fine sand	33
0.016 - 0.063		coarse silt	
0.008 - 0.016		medium silt	
0.002 - 0.008		fine silt	
<0.002		clay	



Grain Size Analysis Report

Date:

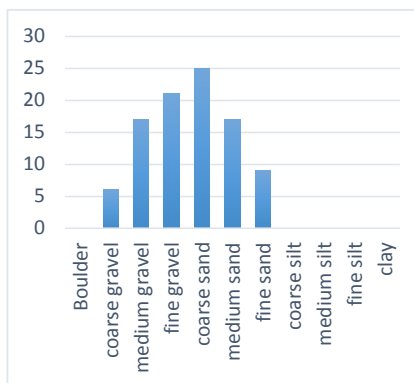
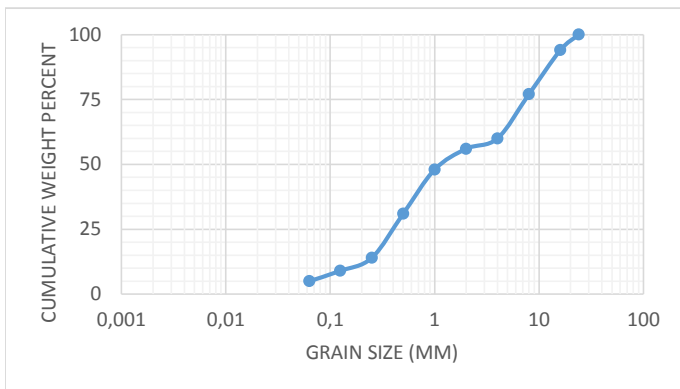
2020. november 27.

Sample Name: Átd fúrások alsó burkológörbéje

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Sieve opening (ps) di (mm)	Mass of retained (mr) (g)	mass fraction (mf)	Percent Passing (pp)
24	0	0	#HIV!
16	6	0,06	#HIV!
8	17	0,17	#HIV!
4	17	0,17	#HIV!
2	4	0,04	#HIV!
1	8	0,08	#HIV!
0,5	17	0,17	#HIV!
0,25	17	0,17	#HIV!
0,125	5	0,05	#HIV!
0,063	4	0,04	#HIV!

Effective Grain Diameters (mm)		Other Useful Parameters	
d10	0,150	Uniformity Coef.	26,67
d17	0,294	n computed	0,26
d20	0,338	g (cm/s ²)	980,00
d50	1,250	ρ (g/cm ³)	0,9981
d60	4,000	μ (g/cm s)	0,0098
de (Kruger)	0,674	ρg/μ (1/cm s)	9,9327E+04
de (Kozeny)	0,599	tau (Sauerbrei)	1,053
de (Zunker)	0,623	d _{geometric mean}	1,709
de (Zamarin)	0,648	σ _φ	2,562
lo (Alyameni)	-0,125		
mm		0	% in sample
>64		Boulder	
16 - 64		coarse gravel	6
8 - 16		medium gravel	17
2 - 8		fine gravel	21
0.5 - 2		coarse sand	25
0.25 - 0.5		medium sand	17
0.063 - 0.25		fine sand	9
0.016 - 0.063		coarse silt	
0.008 - 0.016		medium silt	
0.002 - 0.008		fine silt	
<0.002		clay	

3.4. melléklet

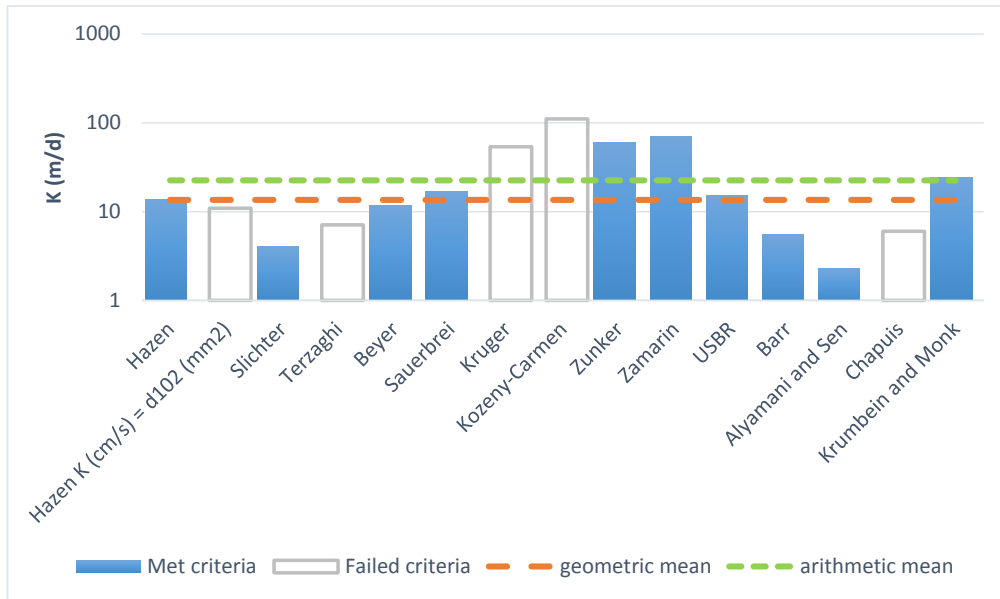
Szivárgási tényezők



K from Grain Size Analysis Report

Date: 2020. november 27.Sample Name: Ártd-17 fúrás 1,1 - 11,1 m mélységbenMass Sample (g): T (oC)

Moderately well sorted sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,158E-01	,158E-03	13,63	
Hazen K (cm/s) = d ₁₀ (mm)	,127E-01	,127E-03	10,95	
Slichter	,474E-02	,474E-04	4,10	
Terzaghi	,819E-02	,819E-04	7,08	
Beyer	,135E-01	,135E-03	11,67	
Sauerbrei	,197E-01	,197E-03	17,06	
Kruger	,624E-01	,624E-03	53,89	
Kozeny-Carmen	,128E+00	,128E-02	110,60	
Zunker	,701E-01	,701E-03	60,53	
Zamarin	,813E-01	,813E-03	70,27	
USBR	,175E-01	,175E-03	15,10	
Barr	,637E-02	,637E-04	5,50	
Alyamani and Sen	,264E-02	,264E-04	2,28	
Chapuis	,694E-02	,694E-04	6,00	
Krumbein and Monk	,278E-01	,278E-03	24,03	
geometric mean	,157E-01	,157E-03	13,59	
arithmetic mean	,259E-01	,259E-03	22,42	



K from Grain Size Analysis Report

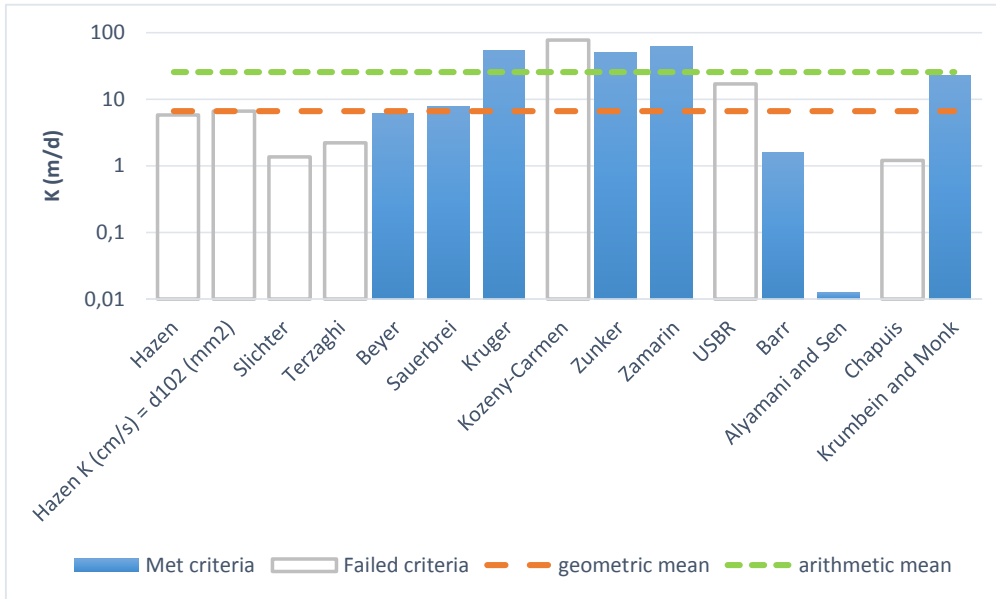
Date: 2020. november 27.

Sample Name: Átd-17 fúrás 11,1 - 18,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,675E-02	,675E-04	5,83	
Hazen K (cm/s) = d ₁₀ (mm)	,771E-02	,771E-04	6,66	
Slichter	,158E-02	,158E-04	1,36	
Terzaghi	,257E-02	,257E-04	2,22	
Beyer	,704E-02	,704E-04	6,08	
Sauerbrei	,911E-02	,911E-04	7,87	
Kruger	,627E-01	,627E-03	54,16	
Kozeny-Carmen	,891E-01	,891E-03	77,01	
Zunker	,586E-01	,586E-03	50,63	
Zamarin	,721E-01	,721E-03	62,30	
USBR	,197E-01	,197E-03	16,99	
Barr	,185E-02	,185E-04	1,60	
Alyamani and Sen	,147E-04	,147E-06	0,01	
Chapuis	,140E-02	,140E-04	1,21	
Krumbein and Monk	,264E-01	,264E-03	22,78	
geometric mean	,769E-02	,769E-04	6,64	
arithmetic mean	,297E-01	,297E-03	25,68	



K from Grain Size Analysis Report

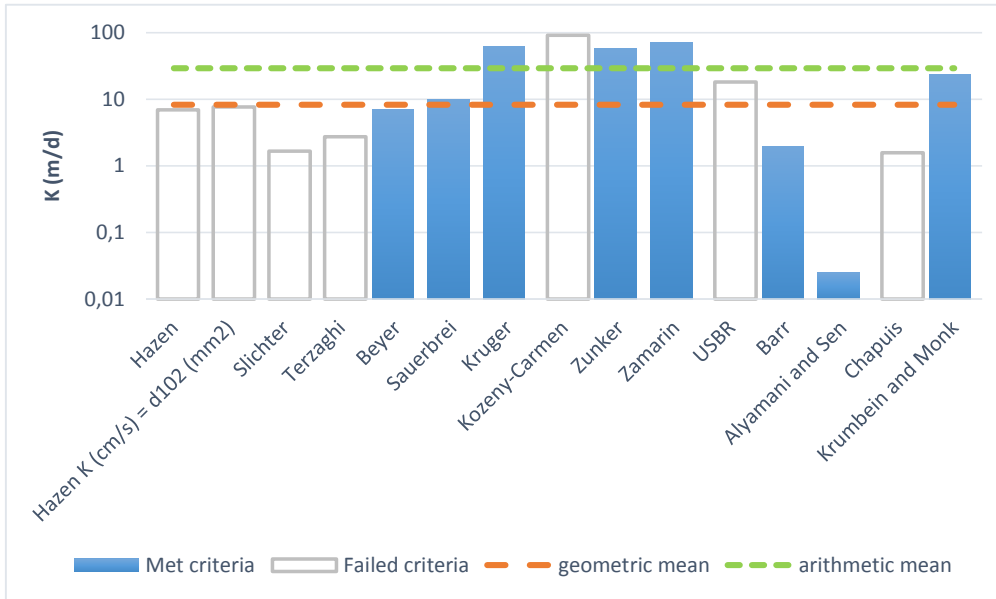
Date: 2020. november 27.

Sample Name: Átd-17 fúrás 18,0 - 22,7 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,804E-02	,804E-04	6,95	
Hazen K (cm/s) = d ₁₀ (mm)	,884E-02	,884E-04	7,63	
Slichter	,192E-02	,192E-04	1,66	
Terzaghi	,316E-02	,316E-04	2,73	
Beyer	,820E-02	,820E-04	7,09	
Sauerbrei	,117E-01	,117E-03	10,07	
Kruger	,712E-01	,712E-03	61,53	
Kozeny-Carmen	,105E+00	,105E-02	90,78	
Zunker	,678E-01	,678E-03	58,59	
Zamarin	,832E-01	,832E-03	71,90	
USBR	,211E-01	,211E-03	18,23	
Barr	,228E-02	,228E-04	1,97	
Alyamani and Sen	,292E-04	,292E-06	0,03	
Chapuis	,183E-02	,183E-04	1,58	
Krumbein and Monk	,270E-01	,270E-03	23,36	
geometric mean	,955E-02	,955E-04	8,25	
arithmetic mean	,339E-01	,339E-03	29,32	



K from Grain Size Analysis Report

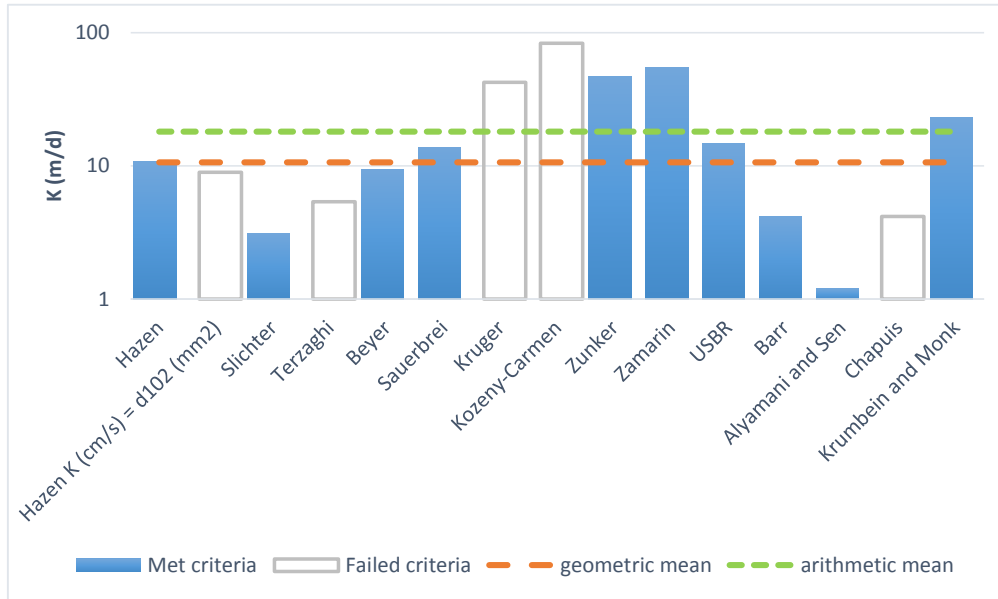
Date: 2020. november 27.

Sample Name: Átd-18 fúrás 1,0 - 5,0 m mélységben

Mass Sample (g):

T (oC)

Moderately well sorted sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,124E-01	,124E-03	10,74	
Hazen K (cm/s) = d ₁₀ (mm)	,104E-01	,104E-03	8,95	
Slichter	,363E-02	,363E-04	3,13	
Terzaghi	,624E-02	,624E-04	5,39	
Beyer	,108E-01	,108E-03	9,37	
Sauerbrei	,160E-01	,160E-03	13,81	
Kruger	,489E-01	,489E-03	42,24	
Kozeny-Carmen	,965E-01	,965E-03	83,36	
Zunker	,539E-01	,539E-03	46,53	
Zamarin	,631E-01	,631E-03	54,55	
USBR	,169E-01	,169E-03	14,64	
Barr	,479E-02	,479E-04	4,14	
Alyamani and Sen	,140E-02	,140E-04	1,21	
Chapuis	,483E-02	,483E-04	4,17	
Krumbein and Monk	,265E-01	,265E-03	22,92	
geometric mean	,123E-01	,123E-03	10,64	
arithmetic mean	,210E-01	,210E-03	18,10	



K from Grain Size Analysis Report

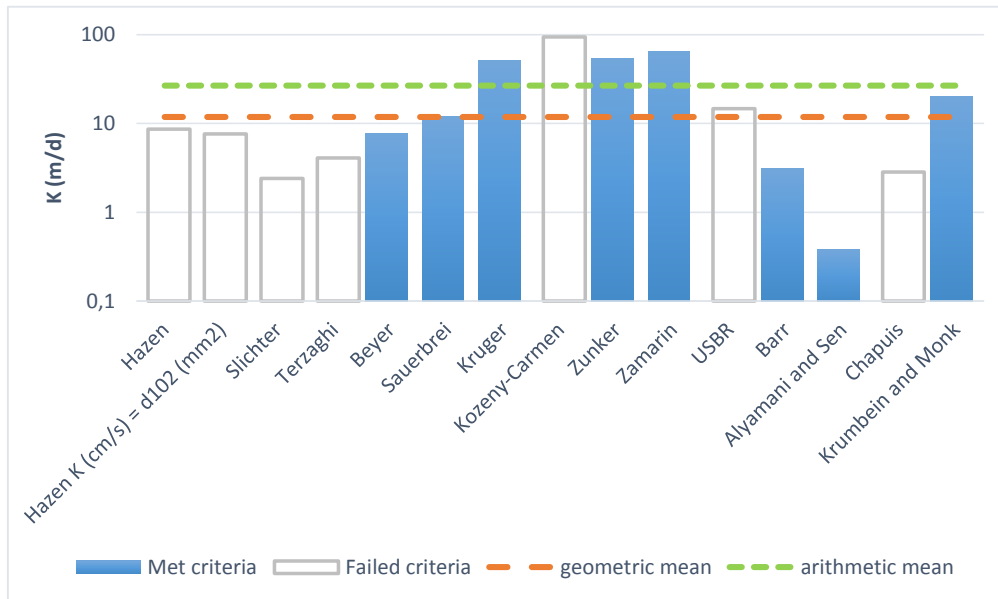
Date: 2020. november 27.

Sample Name: Átd-18 fúrás 5,0 - 16,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,999E-02	,999E-04	8,63	
Hazen K (cm/s) = d ₁₀ (mm)	,884E-02	,884E-04	7,63	
Slichter	,277E-02	,277E-04	2,40	
Terzaghi	,474E-02	,474E-04	4,09	
Beyer	,900E-02	,900E-04	7,78	
Sauerbrei	,139E-01	,139E-03	12,04	
Kruger	,588E-01	,588E-03	50,82	
Kozeny-Carmen	,109E+00	,109E-02	93,80	
Zunker	,627E-01	,627E-03	54,13	
Zamarin	,745E-01	,745E-03	64,41	
USBR	,169E-01	,169E-03	14,64	
Barr	,357E-02	,357E-04	3,08	
Alyamani and Sen	,439E-03	,439E-05	0,38	
Chapuis	,328E-02	,328E-04	2,83	
Krumbein and Monk	,233E-01	,233E-03	20,17	
geometric mean	,137E-01	,137E-03	11,86	
arithmetic mean	,308E-01	,308E-03	26,60	



K from Grain Size Analysis Report

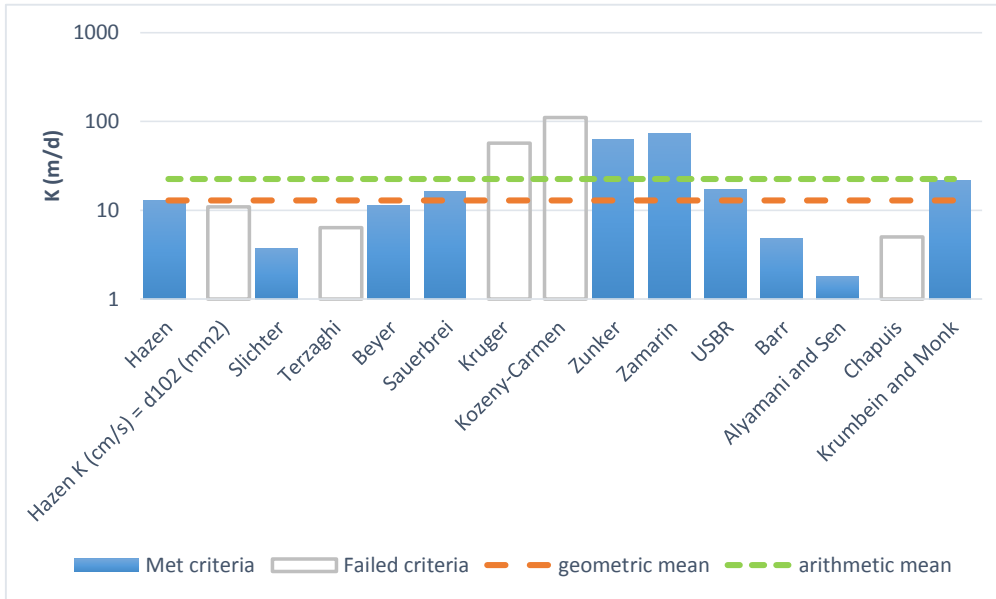
Date: 2020. november 27.

Sample Name: Átd-18 fúrás 16,0 - 23,8 m mélységben

Mass Sample (g):

T (oC)

Moderately well sorted gravelly sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,149E-01	,149E-03	12,90	
Hazen K (cm/s) = d ₁₀ (mm)	,127E-01	,127E-03	10,95	
Slichter	,429E-02	,429E-04	3,71	
Terzaghi	,736E-02	,736E-04	6,36	
Beyer	,132E-01	,132E-03	11,37	
Sauerbrei	,189E-01	,189E-03	16,30	
Kruger	,661E-01	,661E-03	57,11	
Kozeny-Carmen	,128E+00	,128E-02	110,24	
Zunker	,720E-01	,720E-03	62,21	
Zamarin	,849E-01	,849E-03	73,31	
USBR	,197E-01	,197E-03	16,99	
Barr	,561E-02	,561E-04	4,85	
Alyamani and Sen	,209E-02	,209E-04	1,81	
Chapuis	,580E-02	,580E-04	5,01	
Krumbein and Monk	,253E-01	,253E-03	21,84	
geometric mean	,150E-01	,150E-03	12,94	
arithmetic mean	,261E-01	,261E-03	22,53	



K from Grain Size Analysis Report

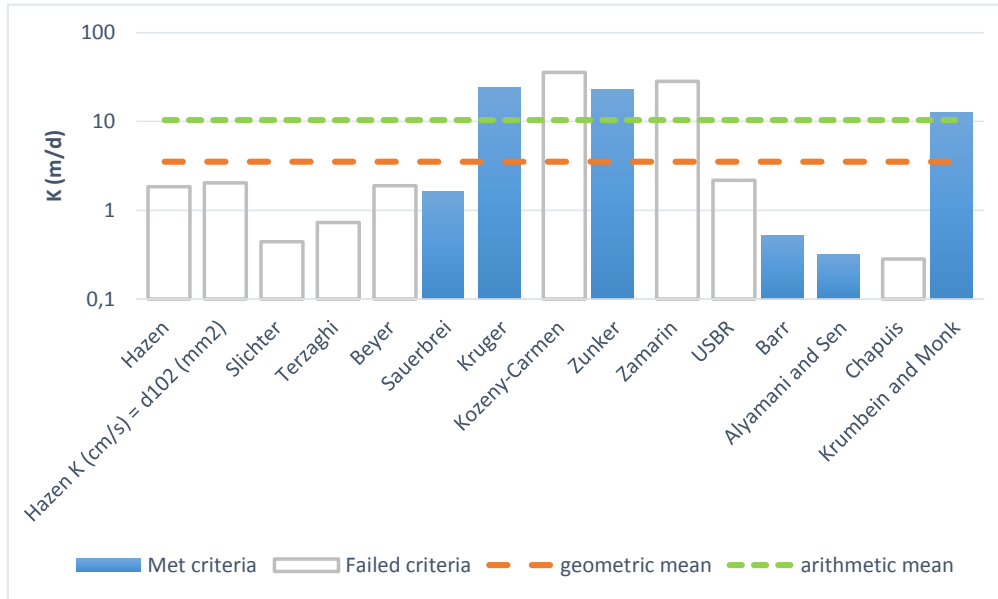
Date: 2020. november 27.

Sample Name: Átd-19 fúrás 1,8 - 5,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,214E-02	,214E-04	1,85	
Hazen K (cm/s) = d ₁₀ (mm)	,235E-02	,235E-04	2,03	
Slichter	,512E-03	,512E-05	0,44	
Terzaghi	,842E-03	,842E-05	0,73	
Beyer	,218E-02	,218E-04	1,88	
Sauerbrei	,186E-02	,186E-04	1,61	
Kruger	,279E-01	,279E-03	24,06	
Kozeny-Carmen	,412E-01	,412E-03	35,60	
Zunker	,266E-01	,266E-03	22,95	
Zamarin	,326E-01	,326E-03	28,15	
USBR	,253E-02	,253E-04	2,18	
Barr	,609E-03	,609E-05	0,53	
Alyamani and Sen	,368E-03	,368E-05	0,32	
Chapuis	,326E-03	,326E-05	0,28	
Krumbein and Monk	,148E-01	,148E-03	12,77	
geometric mean	,407E-02	,407E-04	3,52	
arithmetic mean	,120E-01	,120E-03	10,37	



K from Grain Size Analysis Report

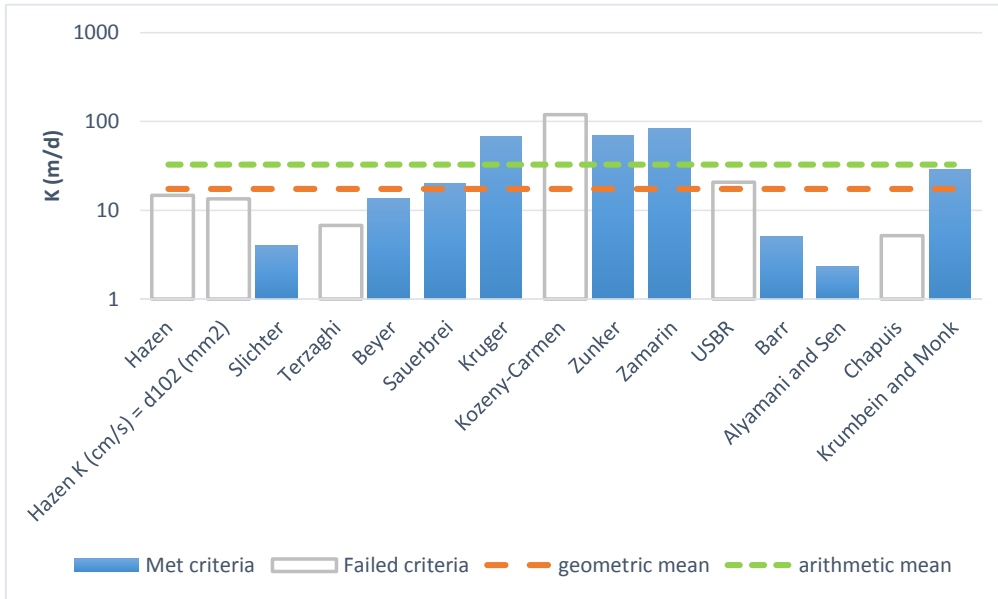
Date: 2020. november 27.

Sample Name: Átd-19 fúrás 5,0 - 15,5 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,170E-01	,170E-03	14,72	
Hazen K (cm/s) = d ₁₀ (mm)	,156E-01	,156E-03	13,50	
Slichter	,460E-02	,460E-04	3,98	
Terzaghi	,782E-02	,782E-04	6,76	
Beyer	,157E-01	,157E-03	13,54	
Sauerbrei	,229E-01	,229E-03	19,78	
Kruger	,776E-01	,776E-03	67,04	
Kozeny-Carmen	,138E+00	,138E-02	118,99	
Zunker	,810E-01	,810E-03	70,02	
Zamarin	,971E-01	,971E-03	83,93	
USBR	,239E-01	,239E-03	20,63	
Barr	,583E-02	,583E-04	5,04	
Alyamani and Sen	,269E-02	,269E-04	2,32	
Chapuis	,598E-02	,598E-04	5,17	
Krumbein and Monk	,333E-01	,333E-03	28,74	
geometric mean	,201E-01	,201E-03	17,33	
arithmetic mean	,379E-01	,379E-03	32,71	



K from Grain Size Analysis Report

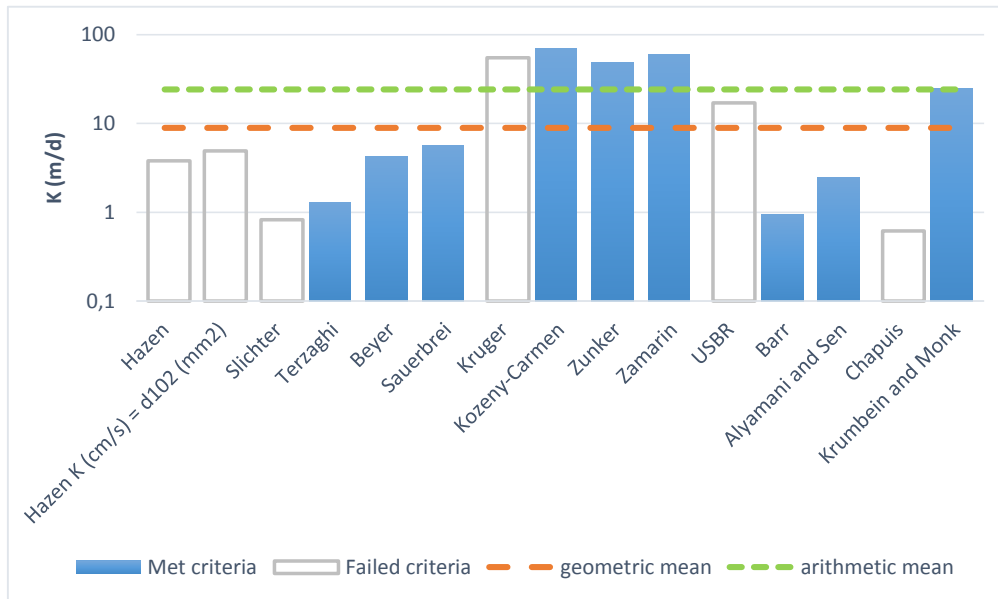
Date: 2020. november 27.

Sample Name: Átd-19 fúrás 15,5 - 21,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,438E-02	,438E-04	3,78	
Hazen K (cm/s) = d ₁₀ (mm)	,569E-02	,569E-04	4,91	
Slichter	,957E-03	,957E-05	0,83	
Terzaghi	,151E-02	,151E-04	1,30	
Beyer	,489E-02	,489E-04	4,23	
Sauerbrei	,660E-02	,660E-04	5,71	
Kruger	,636E-01	,636E-03	54,97	
Kozeny-Carmen	,804E-01	,804E-03	69,43	
Zunker	,561E-01	,561E-03	48,43	
Zamarin	,693E-01	,693E-03	59,88	
USBR	,197E-01	,197E-03	16,99	
Barr	,109E-02	,109E-04	0,94	
Alyamani and Sen	,286E-02	,286E-04	2,47	
Chapuis	,715E-03	,715E-05	0,62	
Krumbein and Monk	,283E-01	,283E-03	24,48	
geometric mean	,103E-01	,103E-03	8,93	
arithmetic mean	,279E-01	,279E-03	24,10	



K from Grain Size Analysis Report

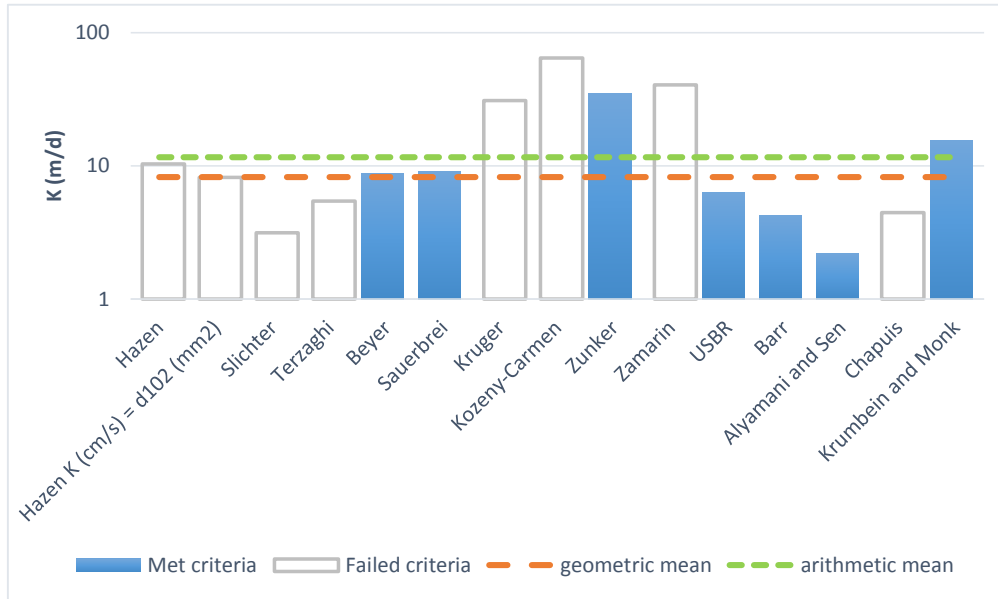
Date: 2020. november 27.

Sample Name: Átd-20 fúrás 1,0 - 7,0 m mélységben

Mass Sample (g):

T (oC)

Moderately well sorted sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,120E-01	,120E-03	10,35	
Hazen K (cm/s) = d ₁₀ (mm)	,950E-02	,950E-04	8,20	
Slichter	,365E-02	,365E-04	3,15	
Terzaghi	,631E-02	,631E-04	5,45	
Beyer	,102E-01	,102E-03	8,80	
Sauerbrei	,106E-01	,106E-03	9,12	
Kruger	,358E-01	,358E-03	30,95	
Kozeny-Carmen	,747E-01	,747E-03	64,57	
Zunker	,406E-01	,406E-03	35,05	
Zamarin	,469E-01	,469E-03	40,51	
USBR	,730E-02	,730E-04	6,31	
Barr	,494E-02	,494E-04	4,26	
Alyamani and Sen	,255E-02	,255E-04	2,20	
Chapuis	,517E-02	,517E-04	4,47	
Krumbein and Monk	,180E-01	,180E-03	15,52	
geometric mean	,954E-02	,954E-04	8,24	
arithmetic mean	,134E-01	,134E-03	11,61	



K from Grain Size Analysis Report

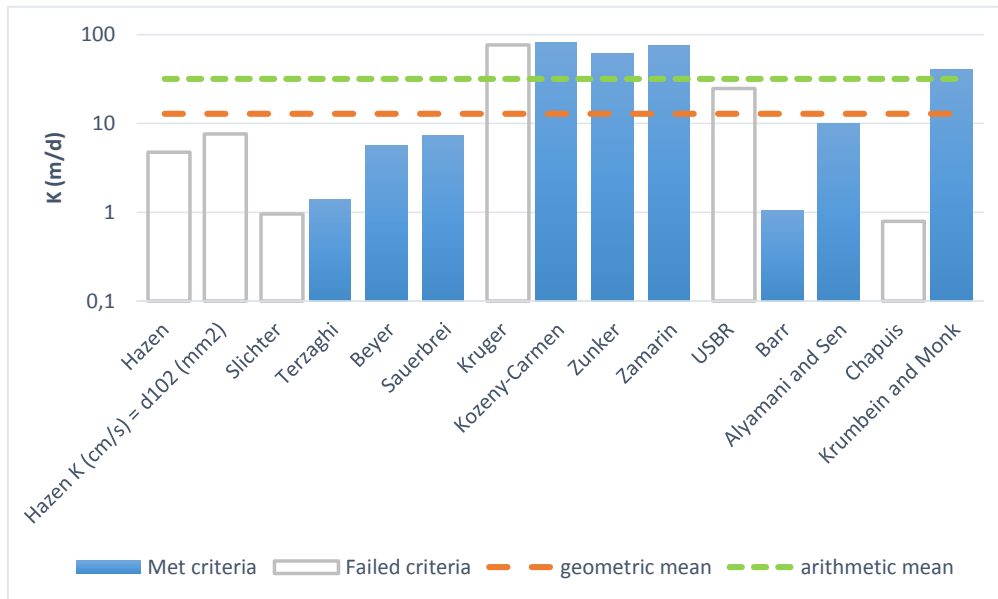
Date: 2020. november 27.

Sample Name: Átd-20 fúrás 10,0 - 14,7 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,550E-02	,550E-04	4,75	
Hazen K (cm/s) = d ₁₀ (mm)	,884E-02	,884E-04	7,63	
Slichter	,111E-02	,111E-04	0,96	
Terzaghi	,163E-02	,163E-04	1,41	
Beyer	,662E-02	,662E-04	5,72	
Sauerbrei	,837E-02	,837E-04	7,23	
Kruger	,887E-01	,887E-03	76,66	
Kozeny-Carmen	,936E-01	,936E-03	80,90	
Zunker	,715E-01	,715E-03	61,75	
Zamarin	,881E-01	,881E-03	76,10	
USBR	,286E-01	,286E-03	24,68	
Barr	,120E-02	,120E-04	1,04	
Alyamani and Sen	,115E-01	,115E-03	9,92	
Chapuis	,913E-03	,913E-05	0,79	
Krumbein and Monk	,471E-01	,471E-03	40,67	
geometric mean	,148E-01	,148E-03	12,81	
arithmetic mean	,366E-01	,366E-03	31,64	



K from Grain Size Analysis Report

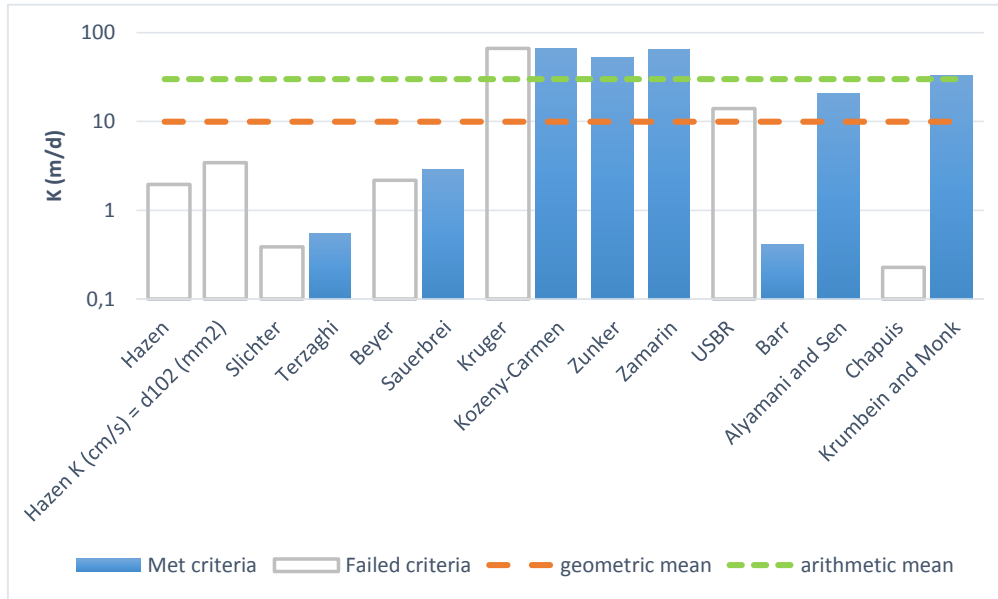
Date: 2020. november 27.

Sample Name: Átd-20 fúrás 14,0 - 23,2 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,227E-02	,227E-04	1,96	
Hazen K (cm/s) = d ₁₀ (mm)	,397E-02	,397E-04	3,43	
Slichter	,447E-03	,447E-05	0,39	
Terzaghi	,640E-03	,640E-05	0,55	
Beyer	,251E-02	,251E-04	2,17	
Sauerbrei	,330E-02	,330E-04	2,85	
Kruger	,771E-01	,771E-03	66,64	
Kozeny-Carmen	,763E-01	,763E-03	65,96	
Zunker	,602E-01	,602E-03	51,98	
Zamarin	,739E-01	,739E-03	63,81	
USBR	,161E-01	,161E-03	13,91	
Barr	,480E-03	,480E-05	0,41	
Alyamani and Sen	,242E-01	,242E-03	20,88	
Chapuis	,264E-03	,264E-05	0,23	
Krumbein and Monk	,379E-01	,379E-03	32,74	
geometric mean	,115E-01	,115E-03	9,97	
arithmetic mean	,346E-01	,346E-03	29,90	



K from Grain Size Analysis Report

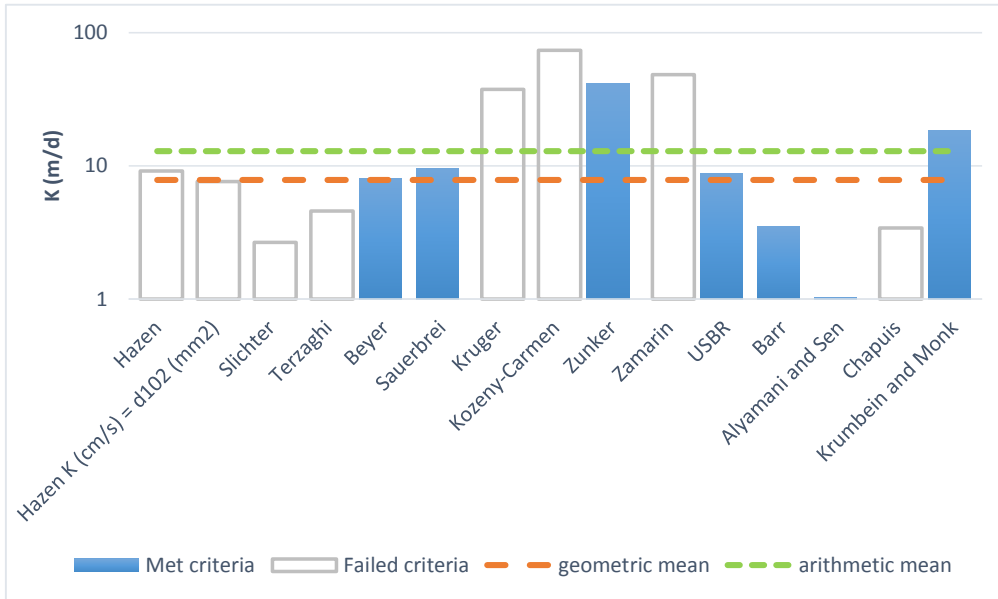
Date: 2020. november 27.

Sample Name: Átd-21 fúrás 1,2 - 6,7 m mélységben

Mass Sample (g):

T (oC)

Moderately well sorted sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,106E-01	,106E-03	9,14	
Hazen K (cm/s) = d ₁₀ (mm)	,884E-02	,884E-04	7,63	
Slichter	,308E-02	,308E-04	2,66	
Terzaghi	,530E-02	,530E-04	4,58	
Beyer	,924E-02	,924E-04	7,99	
Sauerbrei	,110E-01	,110E-03	9,52	
Kruger	,434E-01	,434E-03	37,46	
Kozeny-Carmen	,853E-01	,853E-03	73,68	
Zunker	,477E-01	,477E-03	41,19	
Zamarin	,559E-01	,559E-03	48,33	
USBR	,101E-01	,101E-03	8,76	
Barr	,406E-02	,406E-04	3,51	
Alyamani and Sen	,120E-02	,120E-04	1,04	
Chapuis	,395E-02	,395E-04	3,41	
Krumbein and Monk	,213E-01	,213E-03	18,40	
geometric mean	,909E-02	,909E-04	7,85	
arithmetic mean	,149E-01	,149E-03	12,92	



K from Grain Size Analysis Report

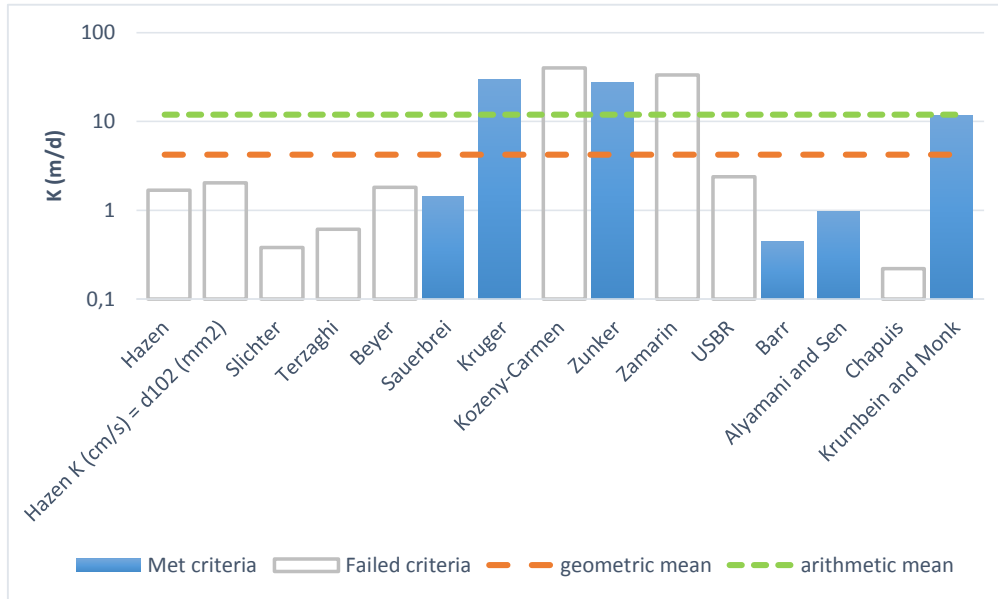
Date: 2020. november 27.

Sample Name: Átd-21 fúrás 6,7 - 10,2 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,195E-02	,195E-04	1,68	
Hazen K (cm/s) = d ₁₀ (mm)	,235E-02	,235E-04	2,03	
Slichter	,441E-03	,441E-05	0,38	
Terzaghi	,709E-03	,709E-05	0,61	
Beyer	,209E-02	,209E-04	1,81	
Sauerbrei	,164E-02	,164E-04	1,42	
Kruger	,345E-01	,345E-03	29,77	
Kozeny-Carmen	,465E-01	,465E-03	40,19	
Zunker	,314E-01	,314E-03	27,12	
Zamarin	,387E-01	,387E-03	33,46	
USBR	,276E-02	,276E-04	2,38	
Barr	,510E-03	,510E-05	0,44	
Alyamani and Sen	,113E-02	,113E-04	0,98	
Chapuis	,256E-03	,256E-05	0,22	
Krumbein and Monk	,136E-01	,136E-03	11,75	
geometric mean	,491E-02	,491E-04	4,24	
arithmetic mean	,138E-01	,138E-03	11,91	



K from Grain Size Analysis Report

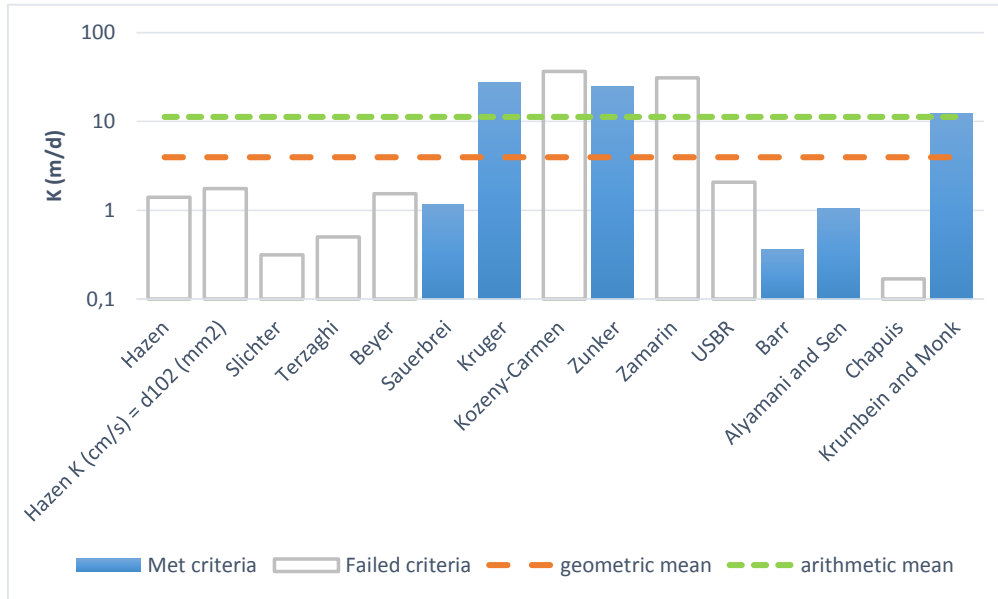
Date: 2020. november 27.

Sample Name: Átd-21 fúrás 10,2 - 15,1 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,163E-02	,163E-04	1,41	
Hazen K (cm/s) = d ₁₀ (mm)	,203E-02	,203E-04	1,75	
Slichter	,364E-03	,364E-05	0,31	
Terzaghi	,581E-03	,581E-05	0,50	
Beyer	,178E-02	,178E-04	1,54	
Sauerbrei	,135E-02	,135E-04	1,17	
Kruger	,321E-01	,321E-03	27,77	
Kozeny-Carmen	,423E-01	,423E-03	36,52	
Zunker	,289E-01	,289E-03	24,97	
Zamarin	,357E-01	,357E-03	30,83	
USBR	,240E-02	,240E-04	2,07	
Barr	,418E-03	,418E-05	0,36	
Alyamani and Sen	,121E-02	,121E-04	1,05	
Chapuis	,196E-03	,196E-05	0,17	
Krumbein and Monk	,144E-01	,144E-03	12,40	
geometric mean	,457E-02	,457E-04	3,95	
arithmetic mean	,131E-01	,131E-03	11,28	



K from Grain Size Analysis Report

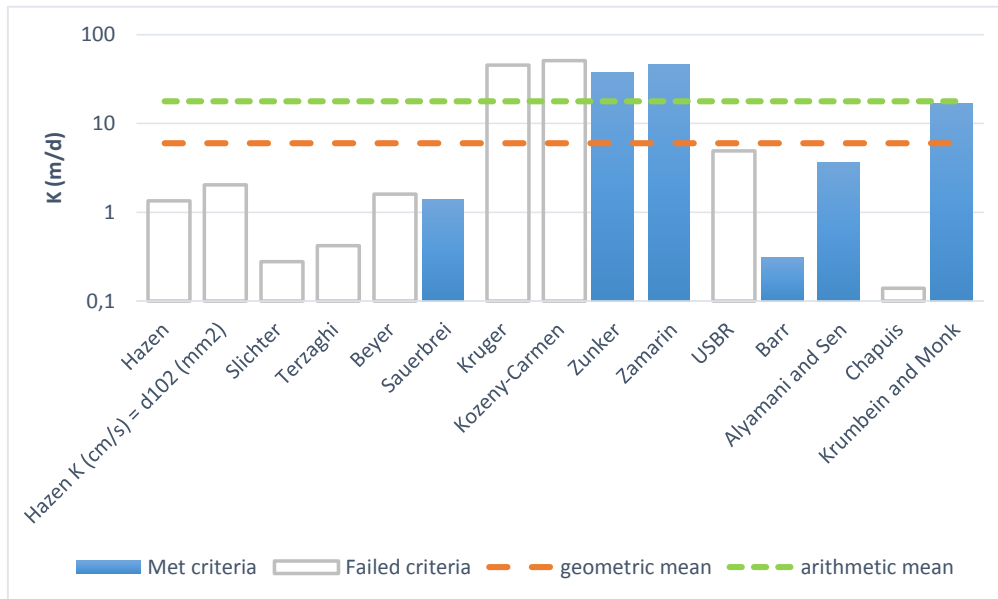
Date: 2020. november 27.

Sample Name: Átd-21 fúrás 15,1 - 19,4 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,156E-02	,156E-04	1,35	
Hazen K (cm/s) = d ₁₀ (mm)	,235E-02	,235E-04	2,03	
Slichter	,322E-03	,322E-05	0,28	
Terzaghi	,486E-03	,486E-05	0,42	
Beyer	,186E-02	,186E-04	1,61	
Sauerbrei	,162E-02	,162E-04	1,40	
Kruger	,527E-01	,527E-03	45,52	
Kozeny-Carmen	,587E-01	,587E-03	50,75	
Zunker	,436E-01	,436E-03	37,68	
Zamarin	,539E-01	,539E-03	46,54	
USBR	,569E-02	,569E-04	4,92	
Barr	,355E-03	,355E-05	0,31	
Alyamani and Sen	,425E-02	,425E-04	3,67	
Chapuis	,162E-03	,162E-05	0,14	
Krumbein and Monk	,193E-01	,193E-03	16,66	
geometric mean	,693E-02	,693E-04	5,98	
arithmetic mean	,205E-01	,205E-03	17,71	



K from Grain Size Analysis Report

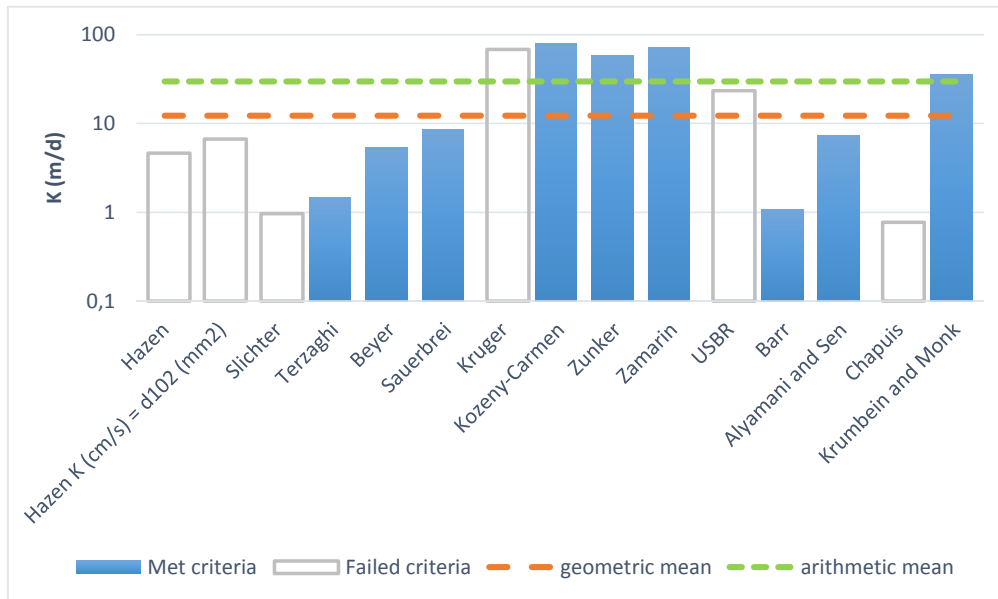
Date: 2020. november 27.

Sample Name: Átd-21 fúrás 19,4- 23,8 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,535E-02	,535E-04	4,62	
Hazen K (cm/s) = d ₁₀ (mm)	,771E-02	,771E-04	6,66	
Slichter	,112E-02	,112E-04	0,97	
Terzaghi	,171E-02	,171E-04	1,48	
Beyer	,627E-02	,627E-04	5,42	
Sauerbrei	,989E-02	,989E-04	8,55	
Kruger	,790E-01	,790E-03	68,25	
Kozeny-Carmen	,912E-01	,912E-03	78,77	
Zunker	,665E-01	,665E-03	57,49	
Zamarin	,822E-01	,822E-03	71,06	
USBR	,271E-01	,271E-03	23,43	
Barr	,124E-02	,124E-04	1,07	
Alyamani and Sen	,837E-02	,837E-04	7,23	
Chapuis	,895E-03	,895E-05	0,77	
Krumbein and Monk	,411E-01	,411E-03	35,48	
geometric mean	,141E-01	,141E-03	12,22	
arithmetic mean	,343E-01	,343E-03	29,62	



K from Grain Size Analysis Report

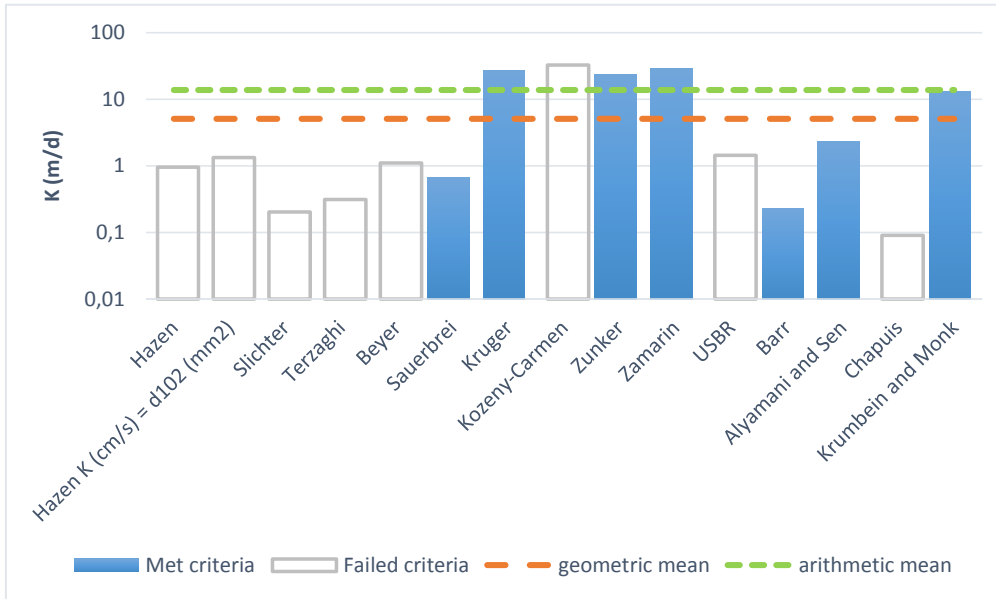
Date: 2020. november 27.

Sample Name: Átd-22 fúrás 2,9 - 5,1 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,111E-02	,111E-04	0,96	
Hazen K (cm/s) = d ₁₀ (mm)	,155E-02	,155E-04	1,34	
Slichter	,234E-03	,234E-05	0,20	
Terzaghi	,362E-03	,362E-05	0,31	
Beyer	,128E-02	,128E-04	1,11	
Sauerbrei	,782E-03	,782E-05	0,68	
Kruger	,317E-01	,317E-03	27,38	
Kozeny-Carmen	,375E-01	,375E-03	32,42	
Zunker	,270E-01	,270E-03	23,36	
Zamarin	,334E-01	,334E-03	28,88	
USBR	,167E-02	,167E-04	1,44	
Barr	,262E-03	,262E-05	0,23	
Alyamani and Sen	,268E-02	,268E-04	2,31	
Chapuis	,105E-03	,105E-05	0,09	
Krumbein and Monk	,151E-01	,151E-03	13,01	
geometric mean	,586E-02	,586E-04	5,06	
arithmetic mean	,158E-01	,158E-03	13,69	



K from Grain Size Analysis Report

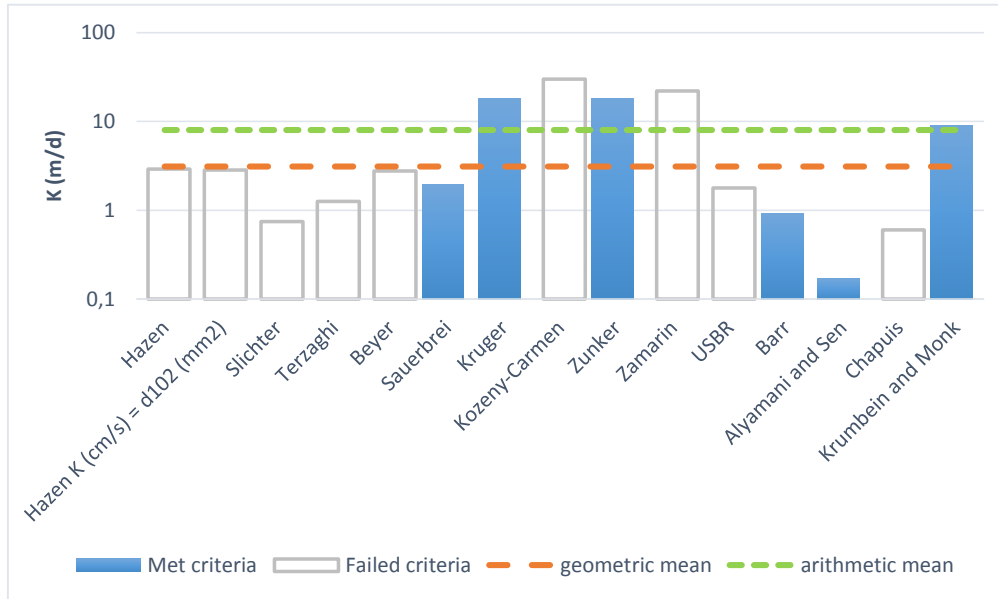
Date: 2020. november 27.

Sample Name: Átd-22 fúrás 5,1 - 8,2 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,336E-02	,336E-04	2,90	
Hazen K (cm/s) = d ₁₀ (mm)	,328E-02	,328E-04	2,83	
Slichter	,866E-03	,866E-05	0,75	
Terzaghi	,146E-02	,146E-04	1,26	
Beyer	,320E-02	,320E-04	2,77	
Sauerbrei	,224E-02	,224E-04	1,94	
Kruger	,208E-01	,208E-03	17,99	
Kozeny-Carmen	,346E-01	,346E-03	29,90	
Zunker	,211E-01	,211E-03	18,19	
Zamarin	,255E-01	,255E-03	22,02	
USBR	,207E-02	,207E-04	1,79	
Barr	,107E-02	,107E-04	0,92	
Alyamani and Sen	,198E-03	,198E-05	0,17	
Chapuis	,697E-03	,697E-05	0,60	
Krumbein and Monk	,103E-01	,103E-03	8,91	
geometric mean	,359E-02	,359E-04	3,10	
arithmetic mean	,928E-02	,928E-04	8,02	



K from Grain Size Analysis Report

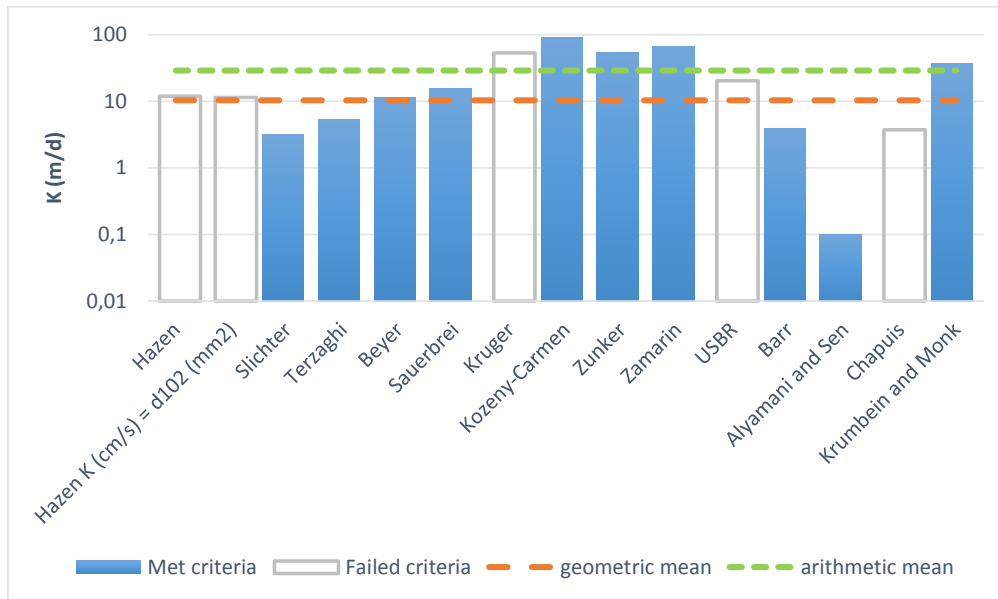
Date: 2020. november 27.

Sample Name: Átd-22 fúrás 8,2 -13,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,138E-01	,138E-03	11,90	
Hazen K (cm/s) = d ₁₀ (mm)	,131E-01	,131E-03	11,36	
Slichter	,362E-02	,362E-04	3,12	
Terzaghi	,610E-02	,610E-04	5,27	
Beyer	,130E-01	,130E-03	11,20	
Sauerbrei	,181E-01	,181E-03	15,67	
Kruger	,615E-01	,615E-03	53,17	
Kozeny-Carmen	,105E+00	,105E-02	90,52	
Zunker	,630E-01	,630E-03	54,40	
Zamarin	,760E-01	,760E-03	65,65	
USBR	,235E-01	,235E-03	20,27	
Barr	,451E-02	,451E-04	3,89	
Alyamani and Sen	,115E-03	,115E-05	0,10	
Chapuis	,433E-02	,433E-04	3,74	
Krumbein and Monk	,432E-01	,432E-03	37,33	
geometric mean	,119E-01	,119E-03	10,31	
arithmetic mean	,332E-01	,332E-03	28,72	



K from Grain Size Analysis Report

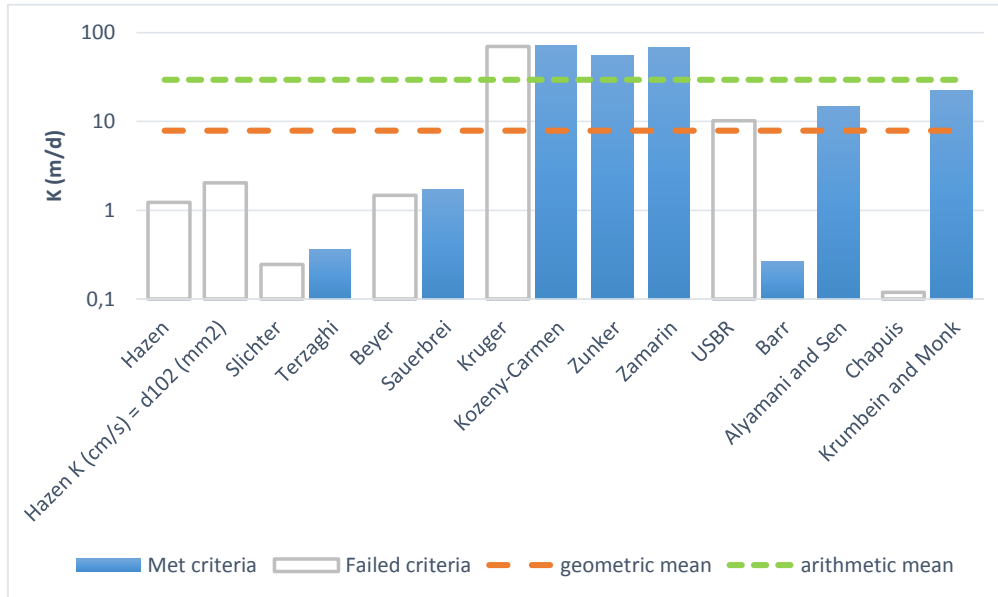
Date: 2020. november 27.

Sample Name: Átd-22 fúrás 13,0 - 22,8 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,142E-02	,142E-04	1,23	
Hazen K (cm/s) = d ₁₀ (mm)	,235E-02	,235E-04	2,03	
Slichter	,284E-03	,284E-05	0,25	
Terzaghi	,414E-03	,414E-05	0,36	
Beyer	,170E-02	,170E-04	1,47	
Sauerbrei	,201E-02	,201E-04	1,73	
Kruger	,809E-01	,809E-03	69,92	
Kozeny-Carmen	,835E-01	,835E-03	72,16	
Zunker	,645E-01	,645E-03	55,69	
Zamarin	,793E-01	,793E-03	68,55	
USBR	,118E-01	,118E-03	10,17	
Barr	,307E-03	,307E-05	0,27	
Alyamani and Sen	,172E-01	,172E-03	14,87	
Chapuis	,138E-03	,138E-05	0,12	
Krumbein and Monk	,258E-01	,258E-03	22,31	
geometric mean	,914E-02	,914E-04	7,89	
arithmetic mean	,341E-01	,341E-03	29,49	



K from Grain Size Analysis Report

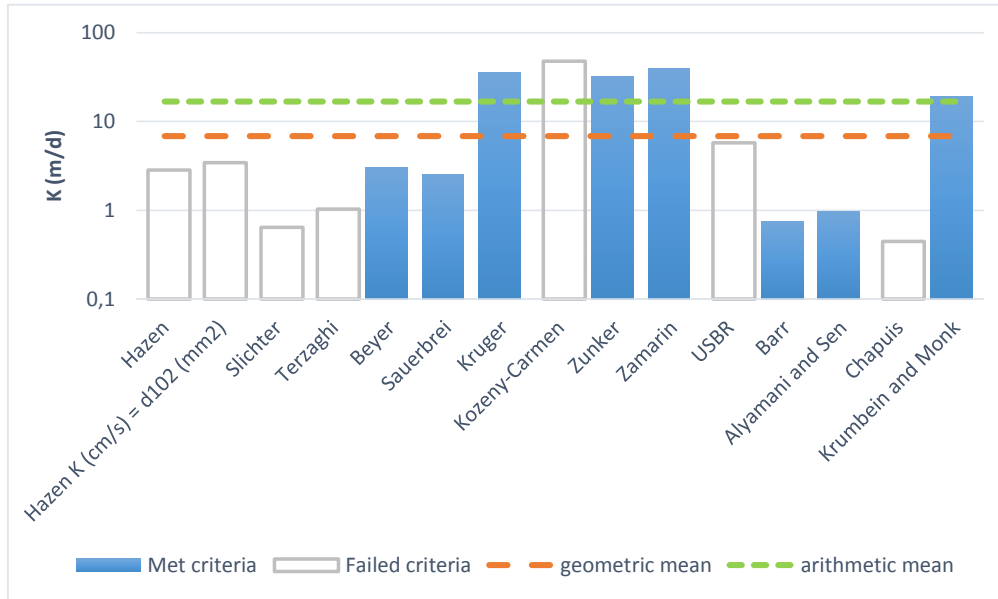
Date: 2020. november 27.

Sample Name: Átd-23 fúrás 3,0 - 6,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,329E-02	,329E-04	2,84	
Hazen K (cm/s) = d ₁₀ (mm)	,397E-02	,397E-04	3,43	
Slichter	,746E-03	,746E-05	0,64	
Terzaghi	,120E-02	,120E-04	1,04	
Beyer	,354E-02	,354E-04	3,05	
Sauerbrei	,293E-02	,293E-04	2,54	
Kruger	,410E-01	,410E-03	35,42	
Kozeny-Carmen	,554E-01	,554E-03	47,84	
Zunker	,374E-01	,374E-03	32,28	
Zamarin	,461E-01	,461E-03	39,82	
USBR	,667E-02	,667E-04	5,76	
Barr	,863E-03	,863E-05	0,75	
Alyamani and Sen	,112E-02	,112E-04	0,97	
Chapuis	,515E-03	,515E-05	0,45	
Krumbein and Monk	,223E-01	,223E-03	19,29	
geometric mean	,794E-02	,794E-04	6,86	
arithmetic mean	,194E-01	,194E-03	16,76	



K from Grain Size Analysis Report

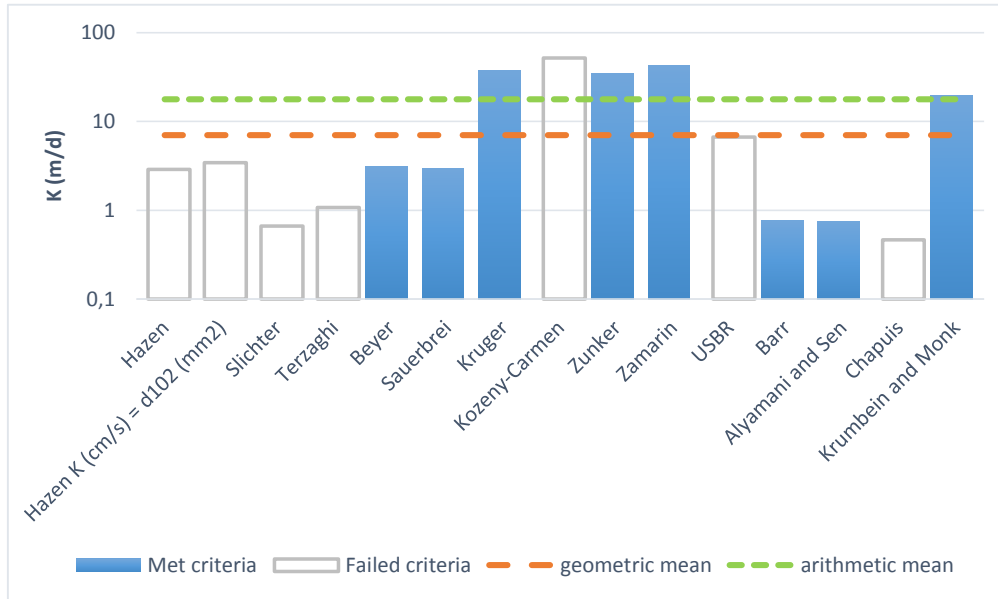
Date: 2020. november 27.

Sample Name: Átd-23 fúrás 6,0 -11,3 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,335E-02	,335E-04	2,90	
Hazen K (cm/s) = d ₁₀ (mm)	,397E-02	,397E-04	3,43	
Slichter	,767E-03	,767E-05	0,66	
Terzaghi	,124E-02	,124E-04	1,07	
Beyer	,357E-02	,357E-04	3,08	
Sauerbrei	,345E-02	,345E-04	2,98	
Kruger	,435E-01	,435E-03	37,56	
Kozeny-Carmen	,597E-01	,597E-03	51,62	
Zunker	,400E-01	,400E-03	34,52	
Zamarin	,493E-01	,493E-03	42,56	
USBR	,774E-02	,774E-04	6,68	
Barr	,892E-03	,892E-05	0,77	
Alyamani and Sen	,872E-03	,872E-05	0,75	
Chapuis	,538E-03	,538E-05	0,46	
Krumbein and Monk	,224E-01	,224E-03	19,35	
geometric mean	,809E-02	,809E-04	6,99	
arithmetic mean	,205E-01	,205E-03	17,70	



K from Grain Size Analysis Report

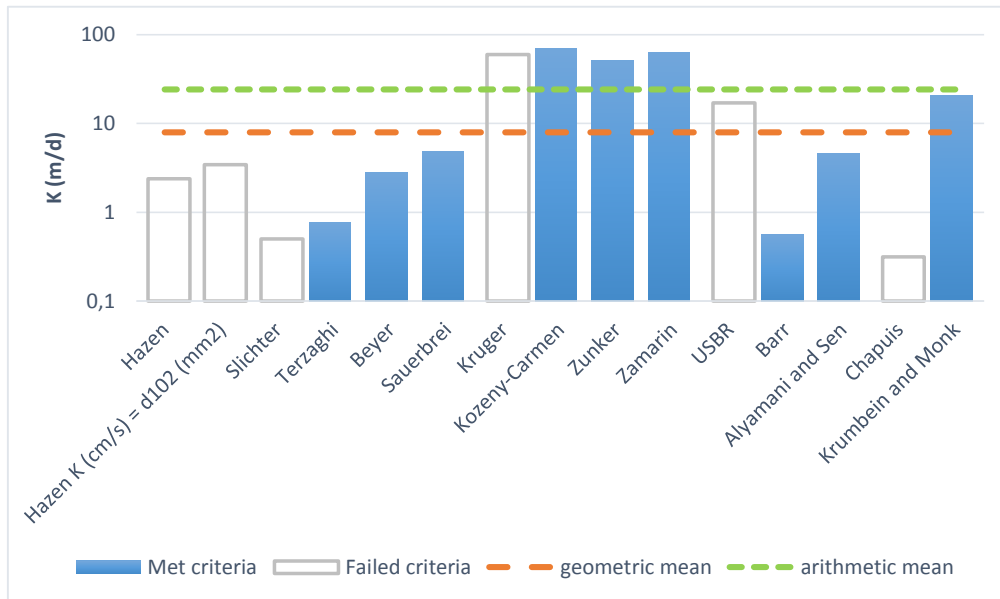
Date: 2020. november 27.

Sample Name: Átd-23 fúrás 11,3 - 20,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,277E-02	,277E-04	2,39	
Hazen K (cm/s) = d ₁₀ (mm)	,397E-02	,397E-04	3,43	
Slichter	,581E-03	,581E-05	0,50	
Terzaghi	,890E-03	,890E-05	0,77	
Beyer	,324E-02	,324E-04	2,80	
Sauerbrei	,562E-02	,562E-04	4,85	
Kruger	,692E-01	,692E-03	59,82	
Kozeny-Carmen	,803E-01	,803E-03	69,37	
Zunker	,585E-01	,585E-03	50,50	
Zamarin	,723E-01	,723E-03	62,44	
USBR	,197E-01	,197E-03	16,99	
Barr	,646E-03	,646E-05	0,56	
Alyamani and Sen	,538E-02	,538E-04	4,65	
Chapuis	,364E-03	,364E-05	0,31	
Krumbein and Monk	,241E-01	,241E-03	20,82	
geometric mean	,917E-02	,917E-04	7,93	
arithmetic mean	,279E-01	,279E-03	24,08	



K from Grain Size Analysis Report

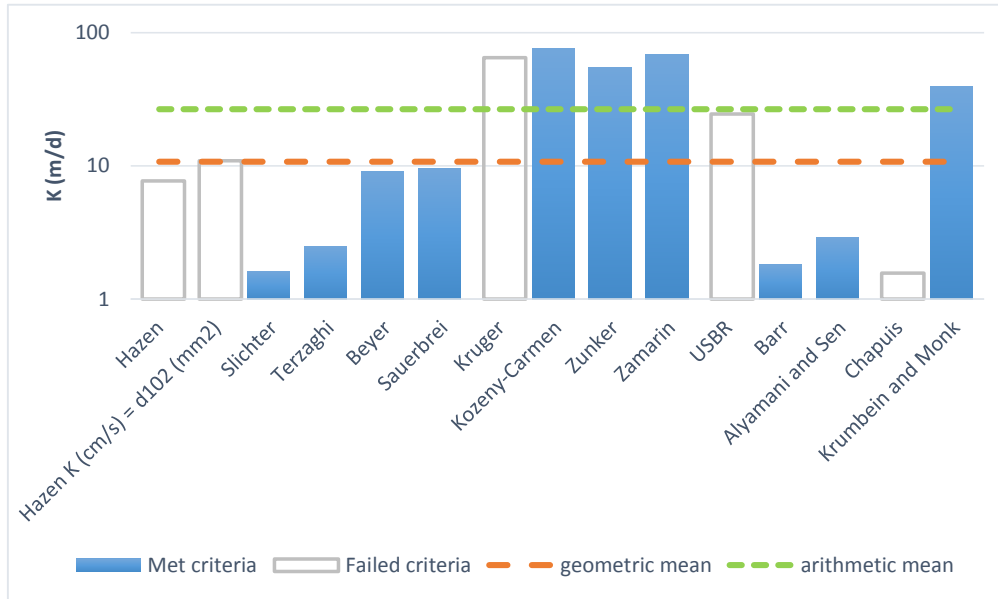
Date: 2020. november 27.

Sample Name: Átd-23 fúrás 20,0 - 23,2 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,894E-02	,894E-04	7,73	
Hazen K (cm/s) = d ₁₀ (mm)	,127E-01	,127E-03	10,95	
Slichter	,188E-02	,188E-04	1,63	
Terzaghi	,289E-02	,289E-04	2,50	
Beyer	,104E-01	,104E-03	9,00	
Sauerbrei	,111E-01	,111E-03	9,55	
Kruger	,750E-01	,750E-03	64,79	
Kozeny-Carmen	,877E-01	,877E-03	75,81	
Zunker	,636E-01	,636E-03	54,95	
Zamarin	,786E-01	,786E-03	67,93	
USBR	,284E-01	,284E-03	24,56	
Barr	,210E-02	,210E-04	1,81	
Alyamani and Sen	,337E-02	,337E-04	2,92	
Chapuis	,182E-02	,182E-04	1,57	
Krumbein and Monk	,457E-01	,457E-03	39,52	
geometric mean	,124E-01	,124E-03	10,75	
arithmetic mean	,307E-01	,307E-03	26,56	



K from Grain Size Analysis Report

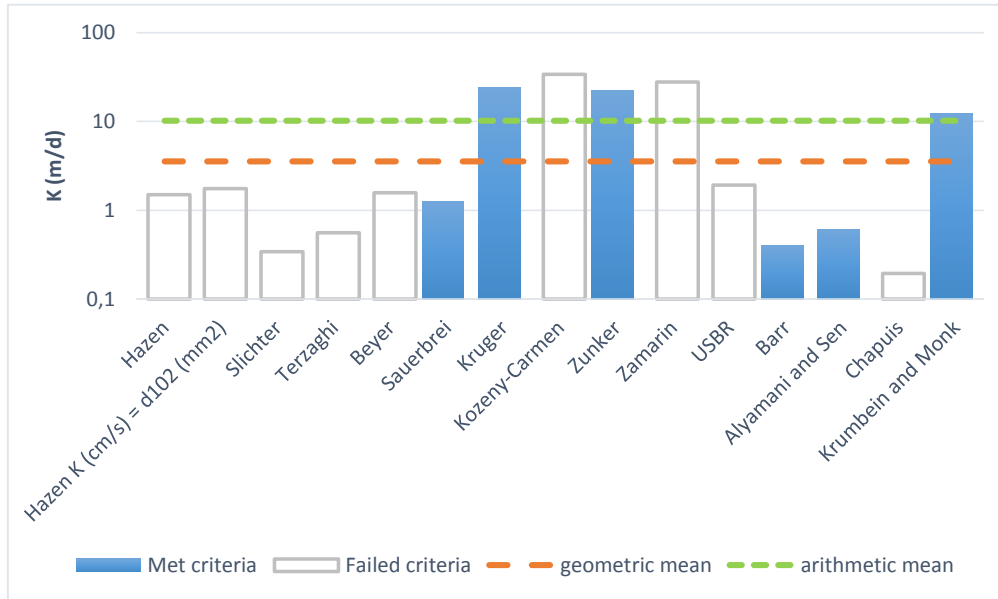
Date: 2020. november 27.

Sample Name: Átd-24 fúrás 4,0 -12,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,173E-02	,173E-04	1,49	
Hazen K (cm/s) = d ₁₀ (mm)	,203E-02	,203E-04	1,75	
Slichter	,398E-03	,398E-05	0,34	
Terzaghi	,645E-03	,645E-05	0,56	
Beyer	,183E-02	,183E-04	1,58	
Sauerbrei	,144E-02	,144E-04	1,24	
Kruger	,282E-01	,282E-03	24,36	
Kozeny-Carmen	,391E-01	,391E-03	33,82	
Zunker	,260E-01	,260E-03	22,50	
Zamarin	,321E-01	,321E-03	27,72	
USBR	,222E-02	,222E-04	1,92	
Barr	,464E-03	,464E-05	0,40	
Alyamani and Sen	,709E-03	,709E-05	0,61	
Chapuis	,226E-03	,226E-05	0,20	
Krumbein and Monk	,141E-01	,141E-03	12,16	
geometric mean	,412E-02	,412E-04	3,56	
arithmetic mean	,118E-01	,118E-03	10,21	



K from Grain Size Analysis Report

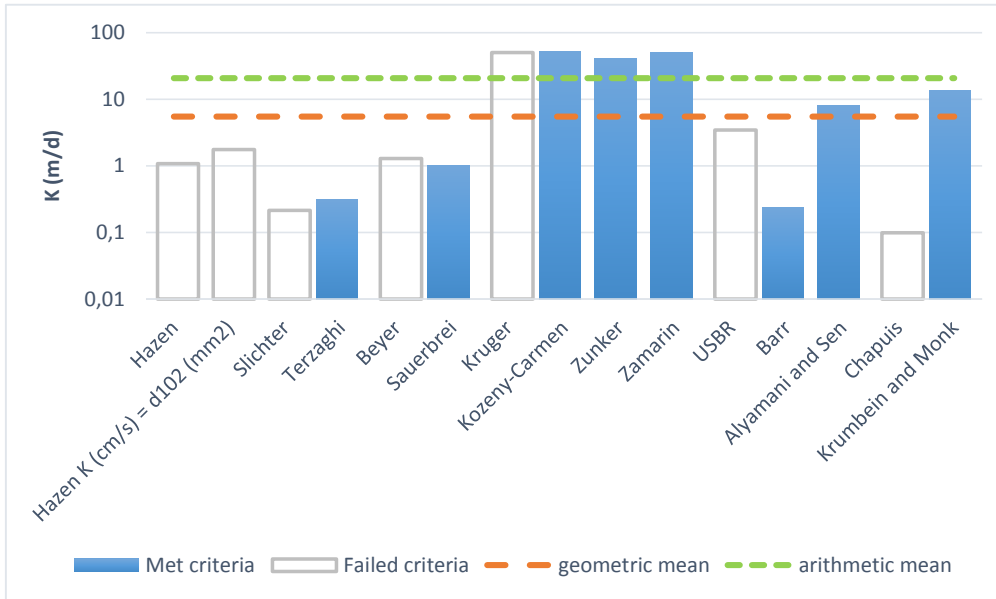
Date: 2020. november 27.

Sample Name: Átd-24 fúrás 12,0 - 18,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,124E-02	,124E-04	1,07	
Hazen K (cm/s) = d ₁₀ (mm)	,203E-02	,203E-04	1,75	
Slichter	,250E-03	,250E-05	0,22	
Terzaghi	,367E-03	,367E-05	0,32	
Beyer	,150E-02	,150E-04	1,29	
Sauerbrei	,116E-02	,116E-04	1,00	
Kruger	,581E-01	,581E-03	50,22	
Kozeny-Carmen	,608E-01	,608E-03	52,50	
Zunker	,466E-01	,466E-03	40,26	
Zamarin	,574E-01	,574E-03	49,59	
USBR	,399E-02	,399E-04	3,45	
Barr	,271E-03	,271E-05	0,23	
Alyamani and Sen	,934E-02	,934E-04	8,07	
Chapuis	,115E-03	,115E-05	0,10	
Krumbein and Monk	,155E-01	,155E-03	13,40	
geometric mean	,637E-02	,637E-04	5,51	
arithmetic mean	,239E-01	,239E-03	20,67	



K from Grain Size Analysis Report

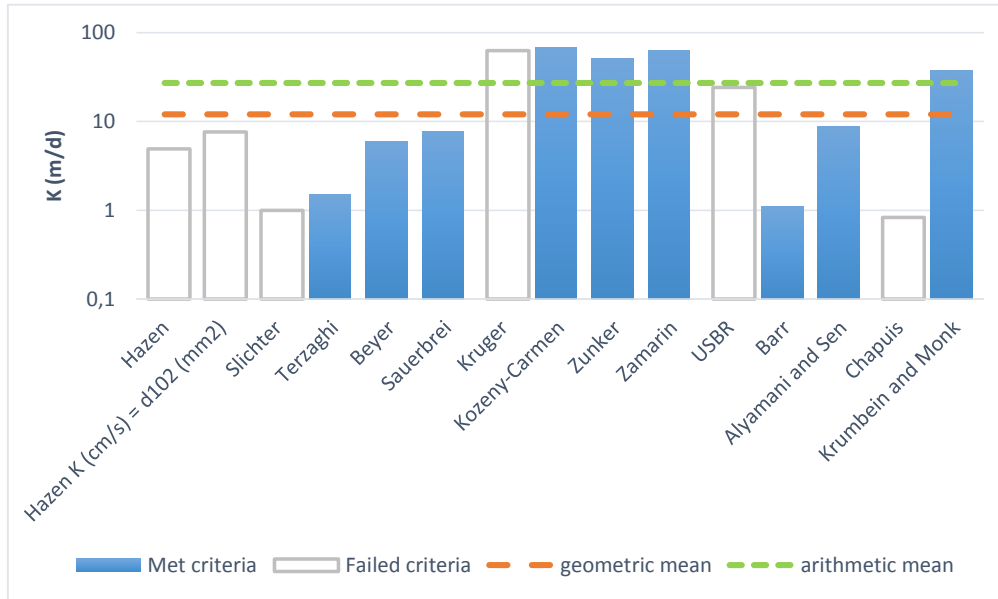
Date: 2020. november 27.

Sample Name: Átd-24 fúrás 18,0 - 25,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,569E-02	,569E-04	4,92	
Hazen K (cm/s) = d ₁₀ (mm)	,884E-02	,884E-04	7,63	
Slichter	,116E-02	,116E-04	1,00	
Terzaghi	,173E-02	,173E-04	1,49	
Beyer	,683E-02	,683E-04	5,90	
Sauerbrei	,881E-02	,881E-04	7,61	
Kruger	,723E-01	,723E-03	62,46	
Kozeny-Carmen	,785E-01	,785E-03	67,79	
Zunker	,591E-01	,591E-03	51,02	
Zamarin	,729E-01	,729E-03	62,95	
USBR	,280E-01	,280E-03	24,21	
Barr	,127E-02	,127E-04	1,10	
Alyamani and Sen	,100E-01	,100E-03	8,68	
Chapuis	,960E-03	,960E-05	0,83	
Krumbein and Monk	,438E-01	,438E-03	37,86	
geometric mean	,139E-01	,139E-03	12,03	
arithmetic mean	,314E-01	,314E-03	27,16	



K from Grain Size Analysis Report

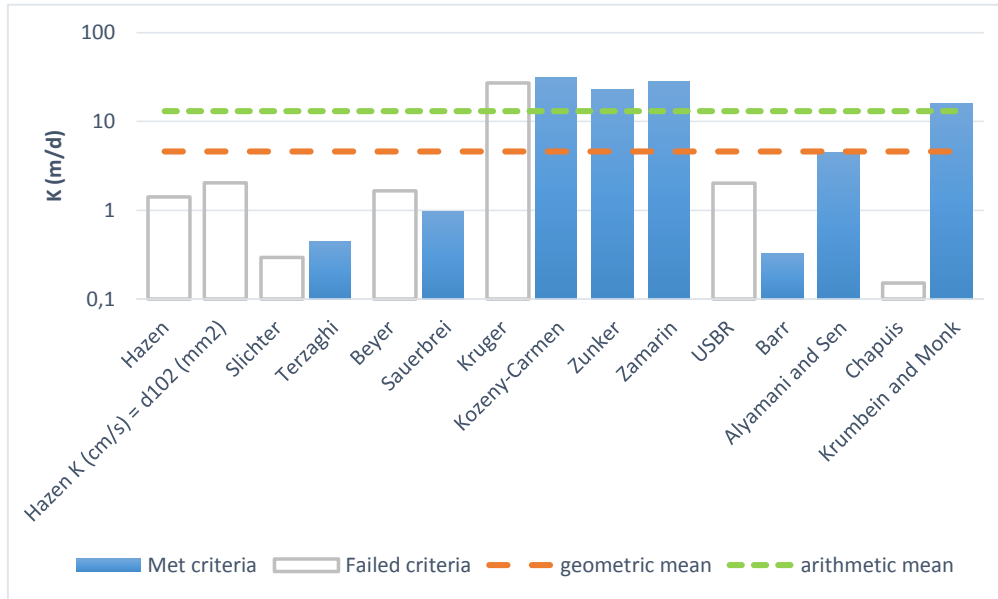
Date: 2020. november 27.

Sample Name: Átd-25 fúrás 2,1 - 5,2 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,163E-02	,163E-04	1,41	
Hazen K (cm/s) = d ₁₀ (mm)	,235E-02	,235E-04	2,03	
Slichter	,341E-03	,341E-05	0,29	
Terzaghi	,522E-03	,522E-05	0,45	
Beyer	,191E-02	,191E-04	1,65	
Sauerbrei	,111E-02	,111E-04	0,96	
Kruger	,314E-01	,314E-03	27,16	
Kozeny-Carmen	,363E-01	,363E-03	31,39	
Zunker	,265E-01	,265E-03	22,89	
Zamarin	,327E-01	,327E-03	28,29	
USBR	,234E-02	,234E-04	2,03	
Barr	,379E-03	,379E-05	0,33	
Alyamani and Sen	,515E-02	,515E-04	4,45	
Chapuis	,176E-03	,176E-05	0,15	
Krumbein and Monk	,183E-01	,183E-03	15,78	
geometric mean	,533E-02	,533E-04	4,60	
arithmetic mean	,151E-01	,151E-03	13,07	



K from Grain Size Analysis Report

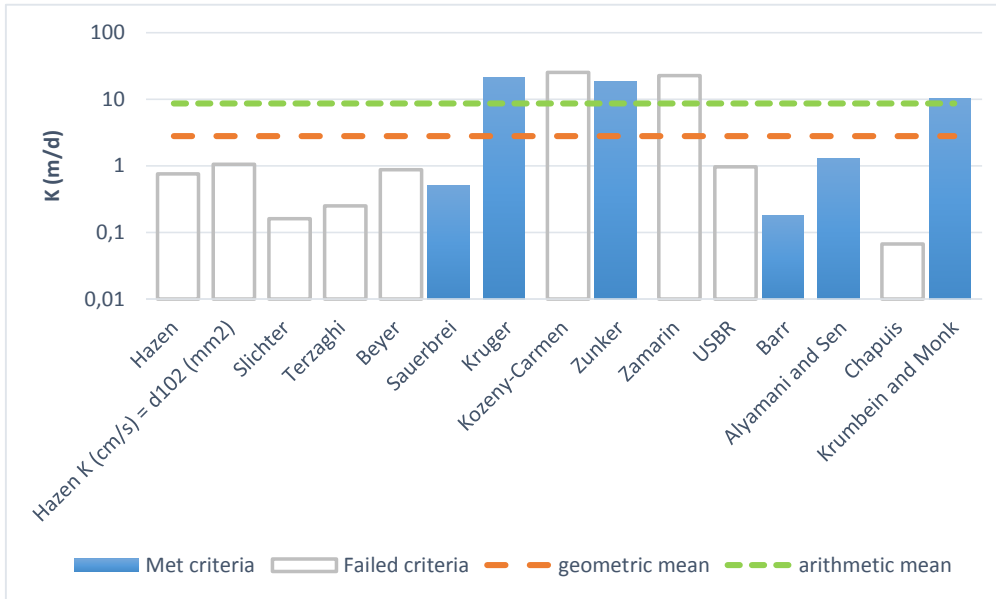
Date: 2020. november 27.

Sample Name: Átd-25 fúrás 5,2 - 9,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,882E-03	,882E-05	0,76	
Hazen K (cm/s) = d ₁₀ (mm)	,123E-02	,123E-04	1,06	
Slichter	,187E-03	,187E-05	0,16	
Terzaghi	,290E-03	,290E-05	0,25	
Beyer	,102E-02	,102E-04	0,88	
Sauerbrei	,595E-03	,595E-05	0,51	
Kruger	,246E-01	,246E-03	21,29	
Kozeny-Carmen	,294E-01	,294E-03	25,38	
Zunker	,211E-01	,211E-03	18,23	
Zamarin	,261E-01	,261E-03	22,53	
USBR	,112E-02	,112E-04	0,97	
Barr	,209E-03	,209E-05	0,18	
Alyamani and Sen	,148E-02	,148E-04	1,28	
Chapuis	,777E-04	,777E-06	0,07	
Krumbein and Monk	,117E-01	,117E-03	10,13	
geometric mean	,322E-02	,322E-04	2,79	
arithmetic mean	,996E-02	,996E-04	8,60	



K from Grain Size Analysis Report

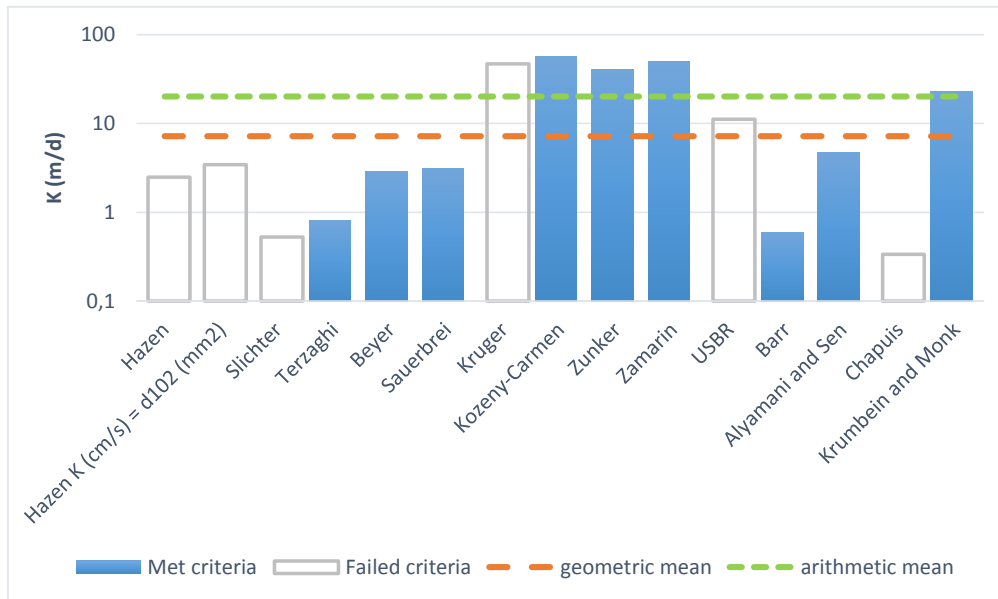
Date: 2020. november 27.

Sample Name: Átd-25 fúrás 9,0 - 14,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,287E-02	,287E-04	2,48	
Hazen K (cm/s) = d ₁₀ (mm)	,397E-02	,397E-04	3,43	
Slichter	,611E-03	,611E-05	0,53	
Terzaghi	,947E-03	,947E-05	0,82	
Beyer	,331E-02	,331E-04	2,86	
Sauerbrei	,360E-02	,360E-04	3,11	
Kruger	,544E-01	,544E-03	46,97	
Kozeny-Carmen	,651E-01	,651E-03	56,21	
Zunker	,466E-01	,466E-03	40,29	
Zamarin	,577E-01	,577E-03	49,82	
USBR	,129E-01	,129E-03	11,17	
Barr	,685E-03	,685E-05	0,59	
Alyamani and Sen	,540E-02	,540E-04	4,67	
Chapuis	,390E-03	,390E-05	0,34	
Krumbein and Monk	,266E-01	,266E-03	22,97	
geometric mean	,834E-02	,834E-04	7,20	
arithmetic mean	,233E-01	,233E-03	20,15	



K from Grain Size Analysis Report

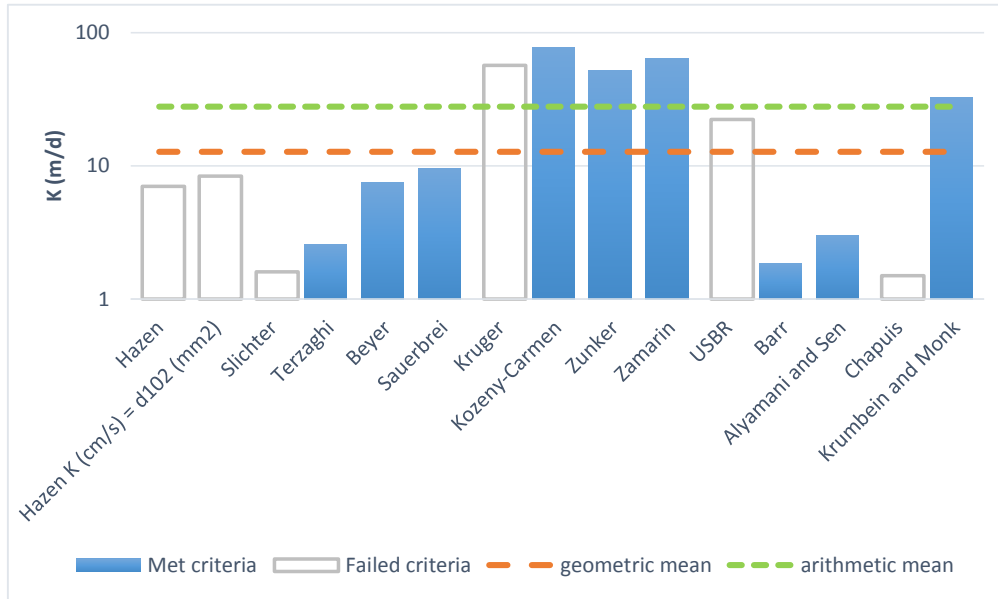
Date: 2020. november 27.

Sample Name: Átd-25 fúrás 14,0 - 20,2 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,813E-02	,813E-04	7,03	
Hazen K (cm/s) = d ₁₀ (mm)	,969E-02	,969E-04	8,37	
Slichter	,186E-02	,186E-04	1,60	
Terzaghi	,300E-02	,300E-04	2,59	
Beyer	,868E-02	,868E-04	7,50	
Sauerbrei	,111E-01	,111E-03	9,56	
Kruger	,657E-01	,657E-03	56,75	
Kozeny-Carmen	,898E-01	,898E-03	77,60	
Zunker	,602E-01	,602E-03	52,04	
Zamarin	,743E-01	,743E-03	64,16	
USBR	,258E-01	,258E-03	22,27	
Barr	,216E-02	,216E-04	1,86	
Alyamani and Sen	,349E-02	,349E-04	3,02	
Chapuis	,173E-02	,173E-04	1,50	
Krumbein and Monk	,375E-01	,375E-03	32,37	
geometric mean	,147E-01	,147E-03	12,72	
arithmetic mean	,322E-01	,322E-03	27,85	



K from Grain Size Analysis Report

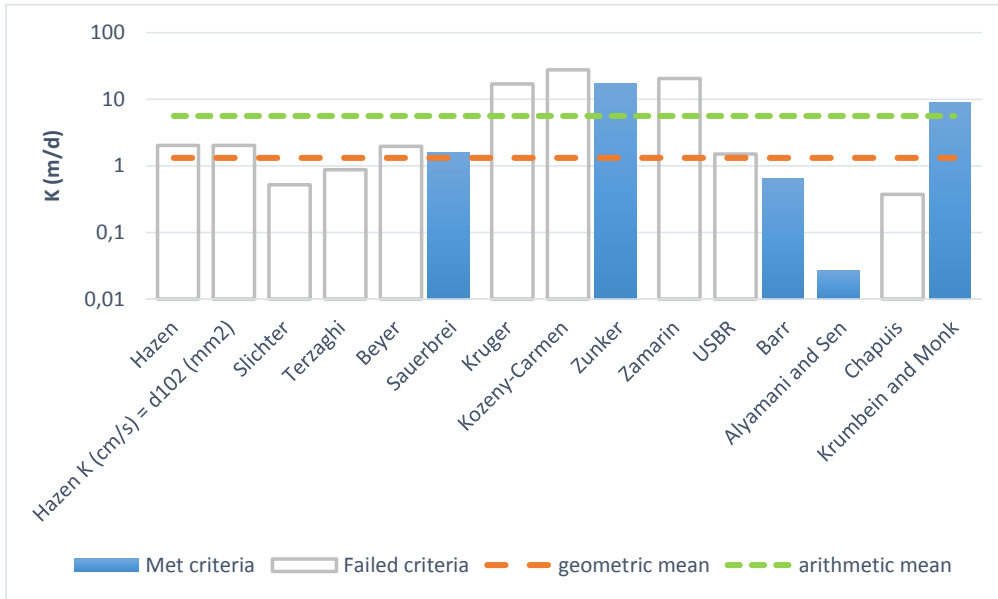
Date: 2020. november 27.

Sample Name: Átd-26 fúrás 1,8 - 10,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,236E-02	,236E-04	2,04	
Hazen K (cm/s) = d ₁₀ (mm)	,235E-02	,235E-04	2,03	
Slichter	,602E-03	,602E-05	0,52	
Terzaghi	,101E-02	,101E-04	0,87	
Beyer	,228E-02	,228E-04	1,97	
Sauerbrei	,182E-02	,182E-04	1,58	
Kruger	,196E-01	,196E-03	16,93	
Kozeny-Carmen	,320E-01	,320E-03	27,65	
Zunker	,196E-01	,196E-03	16,97	
Zamarin	,238E-01	,238E-03	20,59	
USBR	,174E-02	,174E-04	1,50	
Barr	,740E-03	,740E-05	0,64	
Alyamani and Sen	,308E-04	,308E-06	0,03	
Chapuis	,433E-03	,433E-05	0,37	
Krumbein and Monk	,102E-01	,102E-03	8,81	
geometric mean	,153E-02	,153E-04	1,32	
arithmetic mean	,649E-02	,649E-04	5,60	



K from Grain Size Analysis Report

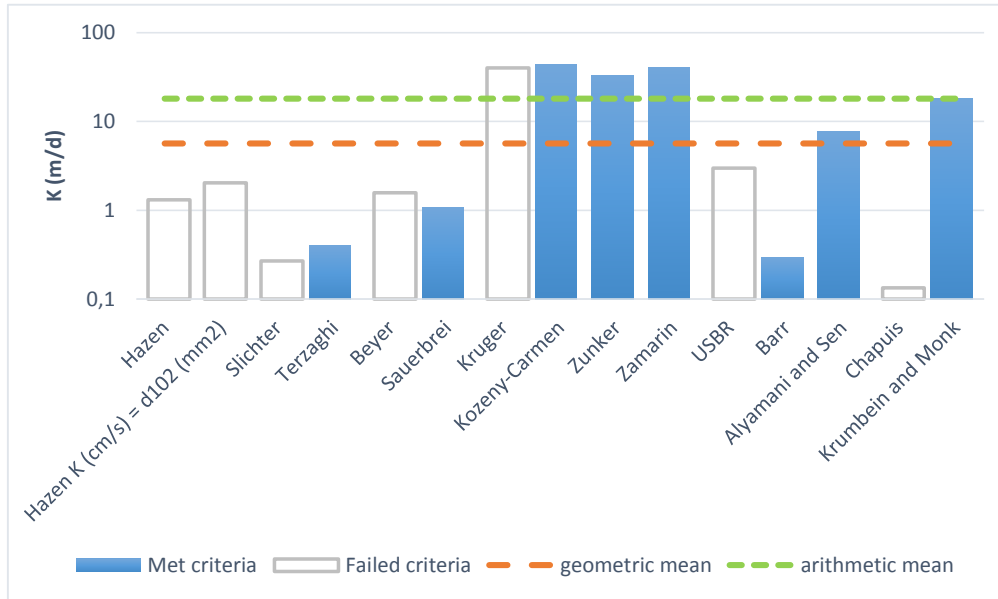
Date: 2020. november 27.

Sample Name: Átd-26 fúrás 10,0 - 11,8 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,152E-02	,152E-04	1,32	
Hazen K (cm/s) = d ₁₀ (mm)	,235E-02	,235E-04	2,03	
Slichter	,311E-03	,311E-05	0,27	
Terzaghi	,465E-03	,465E-05	0,40	
Beyer	,183E-02	,183E-04	1,58	
Sauerbrei	,126E-02	,126E-04	1,09	
Kruger	,462E-01	,462E-03	39,89	
Kozeny-Carmen	,504E-01	,504E-03	43,56	
Zunker	,378E-01	,378E-03	32,69	
Zamarin	,467E-01	,467E-03	40,33	
USBR	,345E-02	,345E-04	2,98	
Barr	,341E-03	,341E-05	0,29	
Alyamani and Sen	,892E-02	,892E-04	7,71	
Chapuis	,155E-03	,155E-05	0,13	
Krumbein and Monk	,207E-01	,207E-03	17,92	
geometric mean	,653E-02	,653E-04	5,64	
arithmetic mean	,208E-01	,208E-03	18,00	



K from Grain Size Analysis Report

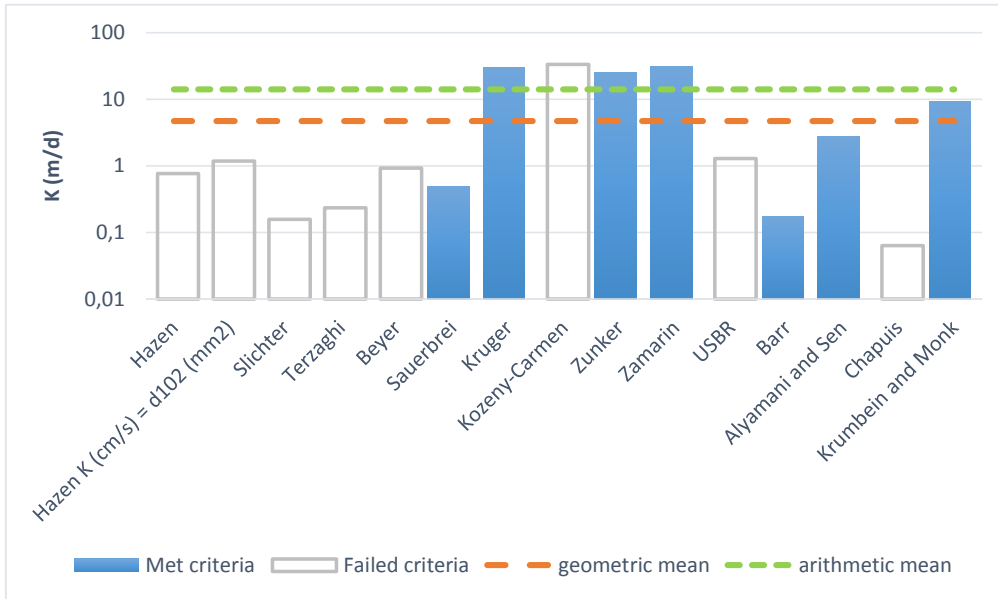
Date: 2020. november 27.

Sample Name: Átd-26 fúrás 11,8 - 16,1 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,891E-03	,891E-05	0,77	
Hazen K (cm/s) = d ₁₀ (mm)	,137E-02	,137E-04	1,19	
Slichter	,182E-03	,182E-05	0,16	
Terzaghi	,272E-03	,272E-05	0,24	
Beyer	,107E-02	,107E-04	0,92	
Sauerbrei	,566E-03	,566E-05	0,49	
Kruger	,352E-01	,352E-03	30,38	
Kozeny-Carmen	,384E-01	,384E-03	33,19	
Zunker	,288E-01	,288E-03	24,90	
Zamarin	,356E-01	,356E-03	30,73	
USBR	,150E-02	,150E-04	1,29	
Barr	,199E-03	,199E-05	0,17	
Alyamani and Sen	,324E-02	,324E-04	2,80	
Chapuis	,738E-04	,738E-06	0,06	
Krumbein and Monk	,106E-01	,106E-03	9,16	
geometric mean	,543E-02	,543E-04	4,69	
arithmetic mean	,163E-01	,163E-03	14,09	



K from Grain Size Analysis Report

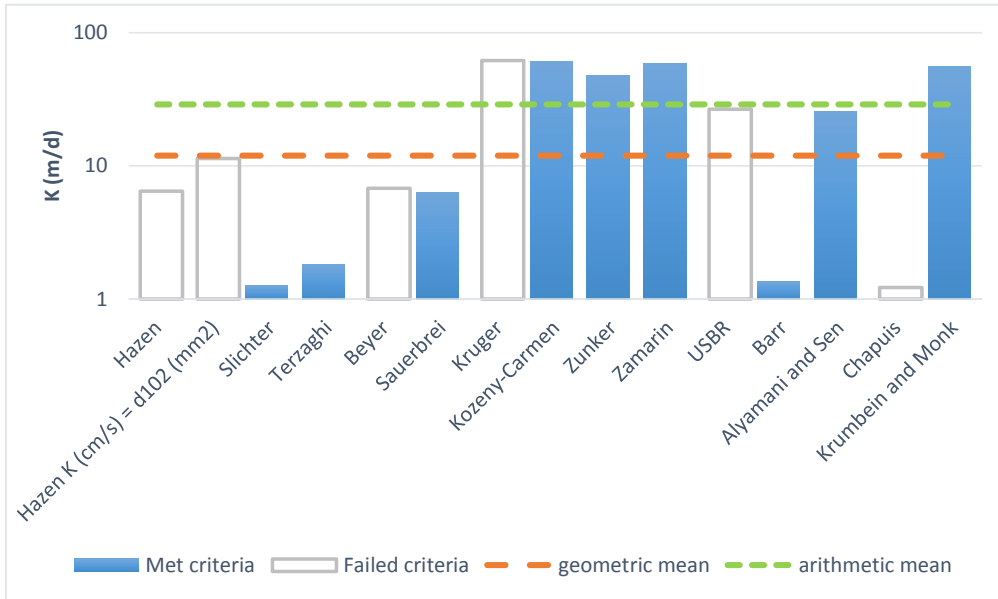
Date: 2020. november 27.

Sample Name: Átd-26 fúrás 16,1 - 23,1 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,747E-02	,747E-04	6,46	
Hazen K (cm/s) = d ₁₀ (mm)	,131E-01	,131E-03	11,36	
Slichter	,147E-02	,147E-04	1,27	
Terzaghi	,210E-02	,210E-04	1,81	
Beyer	,785E-02	,785E-04	6,78	
Sauerbrei	,736E-02	,736E-04	6,36	
Kruger	,713E-01	,713E-03	61,62	
Kozeny-Carmen	,703E-01	,703E-03	60,73	
Zunker	,555E-01	,555E-03	47,97	
Zamarin	,681E-01	,681E-03	58,86	
USBR	,307E-01	,307E-03	26,55	
Barr	,158E-02	,158E-04	1,36	
Alyamani and Sen	,298E-01	,298E-03	25,77	
Chapuis	,141E-02	,141E-04	1,22	
Krumbein and Monk	,644E-01	,644E-03	55,66	
geometric mean	,138E-01	,138E-03	11,93	
arithmetic mean	,334E-01	,334E-03	28,87	



K from Grain Size Analysis Report

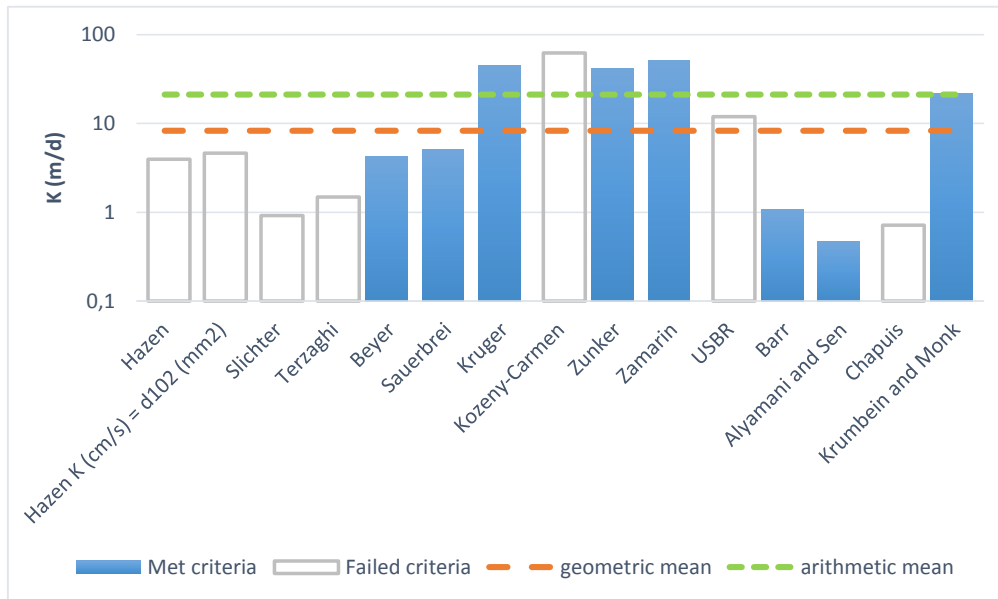
Date: 2020. november 27.

Sample Name: Átd-27 fúrás 2,5 - 5,3 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,460E-02	,460E-04	3,97	
Hazen K (cm/s) = d ₁₀ (mm)	,538E-02	,538E-04	4,65	
Slichter	,106E-02	,106E-04	0,92	
Terzaghi	,172E-02	,172E-04	1,48	
Beyer	,486E-02	,486E-04	4,20	
Sauerbrei	,583E-02	,583E-04	5,04	
Kruger	,519E-01	,519E-03	44,84	
Kozeny-Carmen	,721E-01	,721E-03	62,33	
Zunker	,480E-01	,480E-03	41,45	
Zamarin	,591E-01	,591E-03	51,07	
USBR	,138E-01	,138E-03	11,92	
Barr	,124E-02	,124E-04	1,07	
Alyamani and Sen	,538E-03	,538E-05	0,47	
Chapuis	,827E-03	,827E-05	0,71	
Krumbein and Monk	,249E-01	,249E-03	21,56	
geometric mean	,955E-02	,955E-04	8,25	
arithmetic mean	,245E-01	,245E-03	21,21	



K from Grain Size Analysis Report

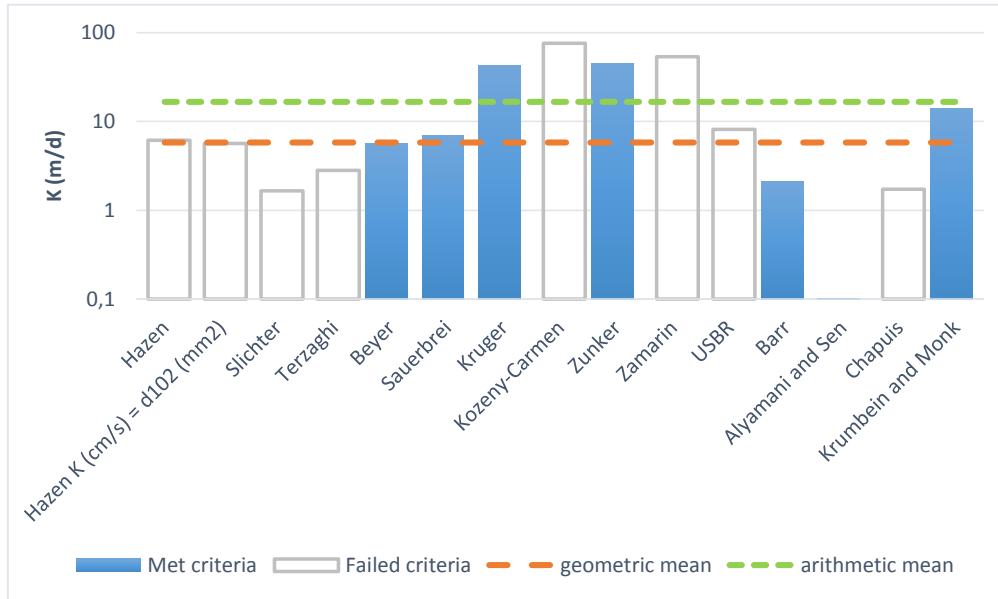
Date: 2020. november 27.

Sample Name: Átd-27 fúrás 5,3 - 10,4 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,709E-02	,709E-04	6,13	
Hazen K (cm/s) = d ₁₀ (mm)	,651E-02	,651E-04	5,63	
Slichter	,191E-02	,191E-04	1,65	
Terzaghi	,325E-02	,325E-04	2,81	
Beyer	,653E-02	,653E-04	5,64	
Sauerbrei	,797E-02	,797E-04	6,89	
Kruger	,494E-01	,494E-03	42,70	
Kozeny-Carmen	,876E-01	,876E-03	75,71	
Zunker	,516E-01	,516E-03	44,58	
Zamarin	,619E-01	,619E-03	53,44	
USBR	,945E-02	,945E-04	8,17	
Barr	,242E-02	,242E-04	2,09	
Alyamani and Sen	,119E-03	,119E-05	0,10	
Chapuis	,200E-02	,200E-04	1,73	
Krumbein and Monk	,164E-01	,164E-03	14,14	
geometric mean	,673E-02	,673E-04	5,81	
arithmetic mean	,192E-01	,192E-03	16,59	



K from Grain Size Analysis Report

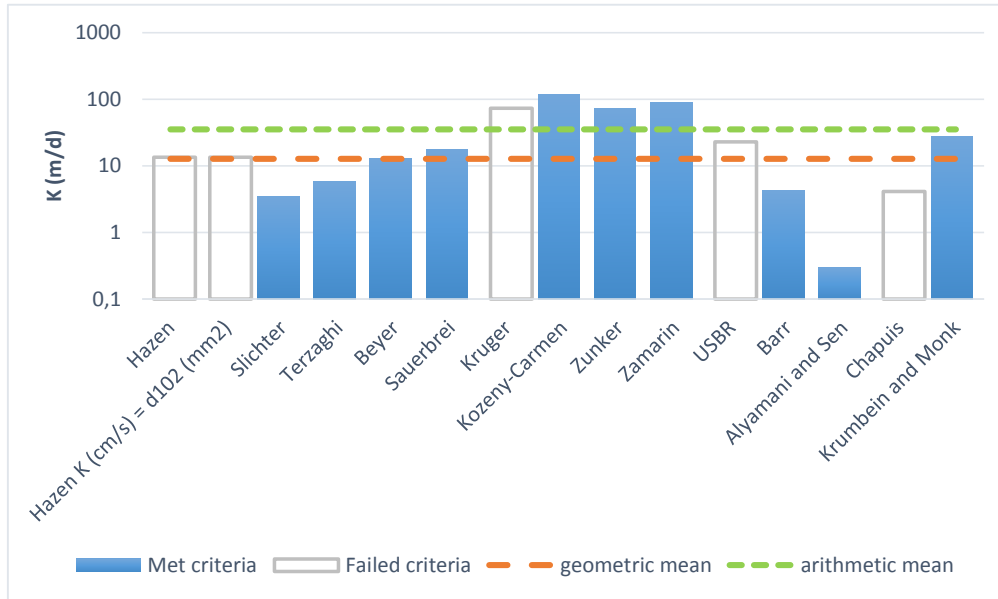
Date: 2020. november 27.

Sample Name: Átd-27 fúrás 10,4 - 19,7 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,156E-01	,156E-03	13,50	
Hazen K (cm/s) = d ₁₀ (mm)	,156E-01	,156E-03	13,50	
Slichter	,397E-02	,397E-04	3,43	
Terzaghi	,665E-02	,665E-04	5,74	
Beyer	,151E-01	,151E-03	13,05	
Sauerbrei	,205E-01	,205E-03	17,67	
Kruger	,845E-01	,845E-03	73,05	
Kozeny-Carmen	,137E+00	,137E-02	118,47	
Zunker	,844E-01	,844E-03	72,93	
Zamarin	,103E+00	,103E-02	88,62	
USBR	,265E-01	,265E-03	22,86	
Barr	,486E-02	,486E-04	4,20	
Alyamani and Sen	,341E-03	,341E-05	0,29	
Chapuis	,478E-02	,478E-04	4,13	
Krumbein and Monk	,323E-01	,323E-03	27,88	
geometric mean	,148E-01	,148E-03	12,82	
arithmetic mean	,408E-01	,408E-03	35,23	



K from Grain Size Analysis Report

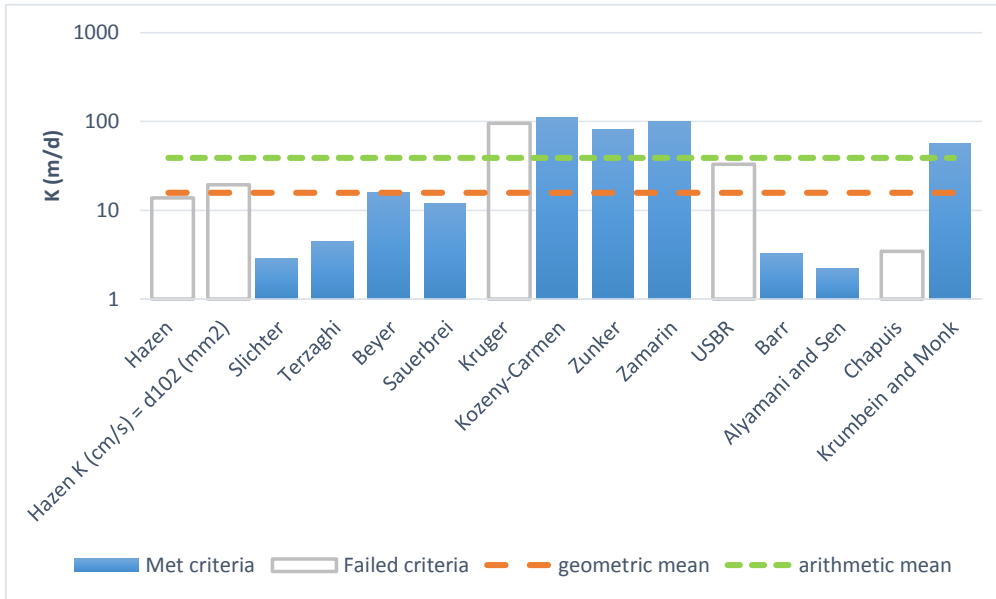
Date: 2020. november 27.

Sample Name: Átd-27 fúrás 19,7 - 23,8 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,159E-01	,159E-03	13,76	
Hazen K (cm/s) = d ₁₀ (mm)	,225E-01	,225E-03	19,44	
Slichter	,336E-02	,336E-04	2,90	
Terzaghi	,517E-02	,517E-04	4,47	
Beyer	,185E-01	,185E-03	16,01	
Sauerbrei	,139E-01	,139E-03	12,01	
Kruger	,110E+00	,110E-02	95,40	
Kozeny-Carmen	,130E+00	,130E-02	111,92	
Zunker	,938E-01	,938E-03	81,01	
Zamarin	,116E+00	,116E-02	100,17	
USBR	,381E-01	,381E-03	32,92	
Barr	,374E-02	,374E-04	3,23	
Alyamani and Sen	,256E-02	,256E-04	2,21	
Chapuis	,401E-02	,401E-04	3,46	
Krumbein and Monk	,651E-01	,651E-03	56,28	
geometric mean	,182E-01	,182E-03	15,70	
arithmetic mean	,452E-01	,452E-03	39,02	



K from Grain Size Analysis Report

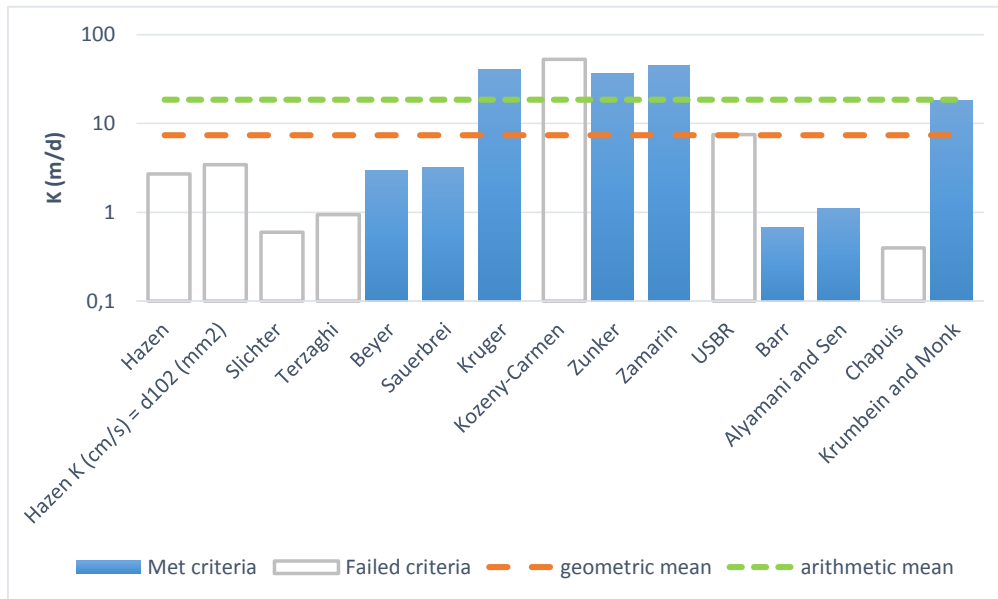
Date: 2020. november 27.

Sample Name: Átd-28 fúrás 2,0 - 5,2 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,312E-02	,312E-04	2,70	
Hazen K (cm/s) = d ₁₀ (mm)	,397E-02	,397E-04	3,43	
Slichter	,690E-03	,690E-05	0,60	
Terzaghi	,109E-02	,109E-04	0,95	
Beyer	,345E-02	,345E-04	2,98	
Sauerbrei	,369E-02	,369E-04	3,18	
Kruger	,472E-01	,472E-03	40,77	
Kozeny-Carmen	,608E-01	,608E-03	52,50	
Zunker	,420E-01	,420E-03	36,27	
Zamarin	,519E-01	,519E-03	44,82	
USBR	,866E-02	,866E-04	7,48	
Barr	,788E-03	,788E-05	0,68	
Alyamani and Sen	,127E-02	,127E-04	1,10	
Chapuis	,460E-03	,460E-05	0,40	
Krumbein and Monk	,210E-01	,210E-03	18,18	
geometric mean	,851E-02	,851E-04	7,35	
arithmetic mean	,214E-01	,214E-03	18,50	



K from Grain Size Analysis Report

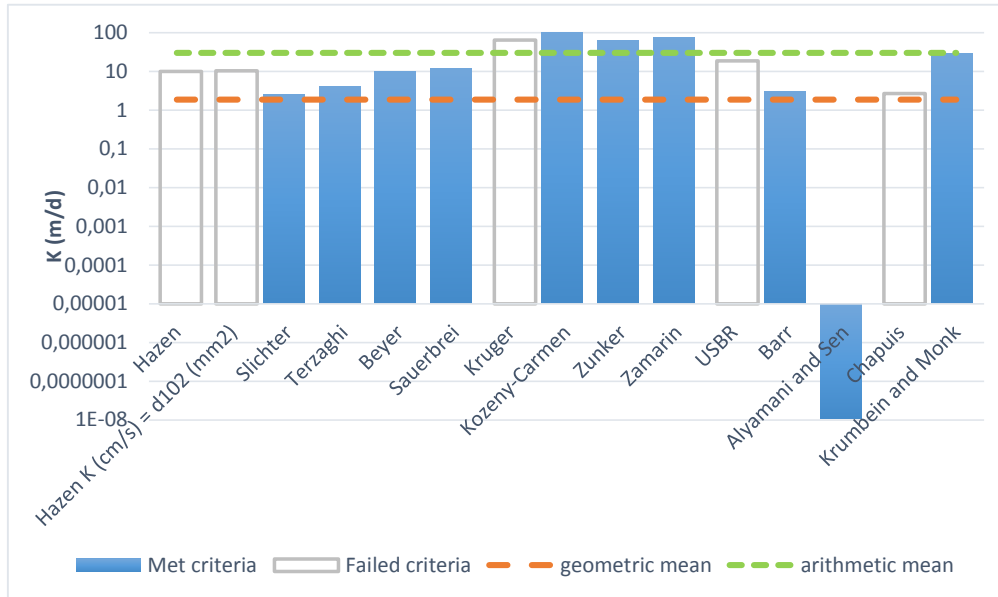
Date: 2020. november 27.

Sample Name: Átd-28 fúrás 5,2 - 10,3 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,116E-01	,116E-03	9,98	
Hazen K (cm/s) = d ₁₀ (mm)	,120E-01	,120E-03	10,36	
Slichter	,286E-02	,286E-04	2,47	
Terzaghi	,476E-02	,476E-04	4,11	
Beyer	,114E-01	,114E-03	9,85	
Sauerbrei	,136E-01	,136E-03	11,73	
Kruger	,736E-01	,736E-03	63,61	
Kozeny-Carmen	,115E+00	,115E-02	99,32	
Zunker	,721E-01	,721E-03	62,31	
Zamarin	,880E-01	,880E-03	76,06	
USBR	,214E-01	,214E-03	18,53	
Barr	,346E-02	,346E-04	2,99	
Alyamani and Sen	,125E-10	,125E-12	0,00	
Chapuis	,311E-02	,311E-04	2,69	
Krumbein and Monk	,332E-01	,332E-03	28,70	
geometric mean	,216E-02	,216E-04	1,87	
arithmetic mean	,344E-01	,344E-03	29,75	



K from Grain Size Analysis Report

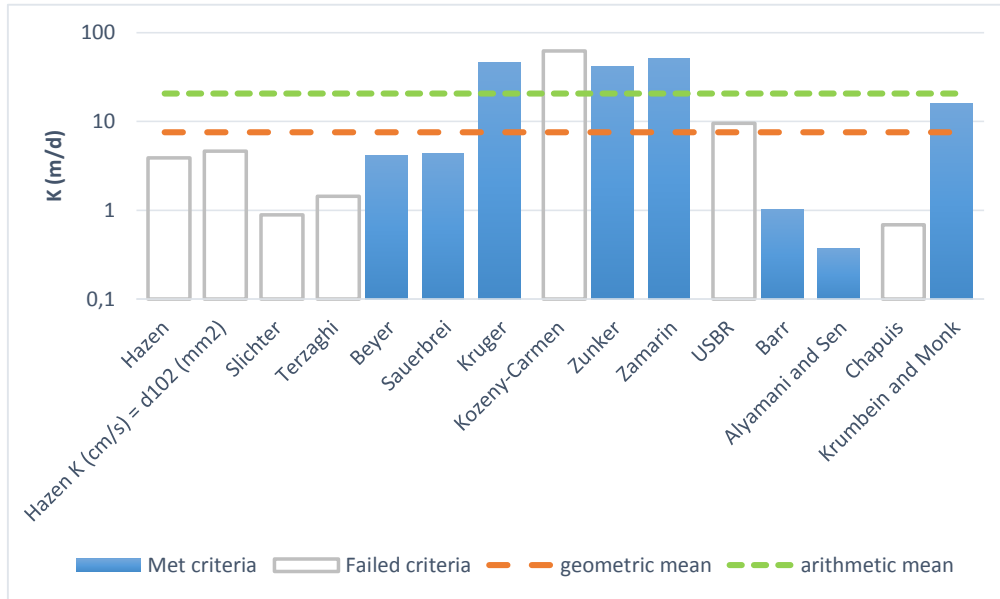
Date: 2020. november 27.

Sample Name: Átd-28 fúrás 10,3 - 15,7 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,452E-02	,452E-04	3,90	
Hazen K (cm/s) = d ₁₀ (mm)	,538E-02	,538E-04	4,65	
Slichter	,103E-02	,103E-04	0,89	
Terzaghi	,166E-02	,166E-04	1,44	
Beyer	,482E-02	,482E-04	4,16	
Sauerbrei	,510E-02	,510E-04	4,41	
Kruger	,527E-01	,527E-03	45,57	
Kozeny-Carmen	,721E-01	,721E-03	62,28	
Zunker	,483E-01	,483E-03	41,77	
Zamarin	,596E-01	,596E-03	51,51	
USBR	,110E-01	,110E-03	9,53	
Barr	,120E-02	,120E-04	1,03	
Alyamani and Sen	,427E-03	,427E-05	0,37	
Chapuis	,794E-03	,794E-05	0,69	
Krumbein and Monk	,185E-01	,185E-03	15,97	
geometric mean	,878E-02	,878E-04	7,59	
arithmetic mean	,238E-01	,238E-03	20,60	



K from Grain Size Analysis Report

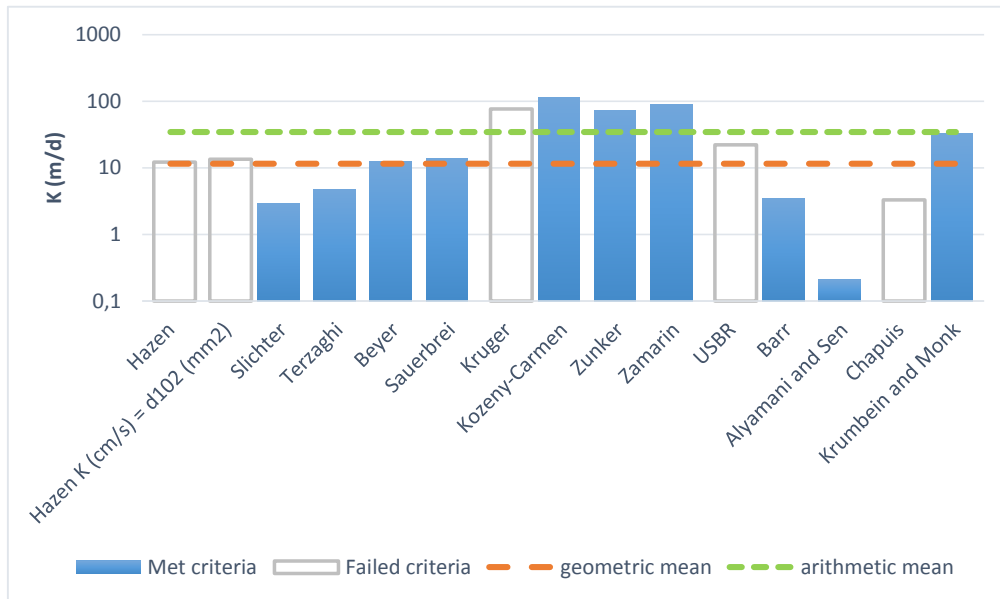
Date: 2020. november 27.

Sample Name: Átd-28 fúrás 15,7 -25,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,142E-01	,142E-03	12,26	
Hazen K (cm/s) = d ₁₀ (mm)	,156E-01	,156E-03	13,50	
Slichter	,339E-02	,339E-04	2,93	
Terzaghi	,557E-02	,557E-04	4,81	
Beyer	,145E-01	,145E-03	12,52	
Sauerbrei	,158E-01	,158E-03	13,66	
Kruger	,884E-01	,884E-03	76,34	
Kozeny-Carmen	,130E+00	,130E-02	112,49	
Zunker	,841E-01	,841E-03	72,66	
Zamarin	,103E+00	,103E-02	89,17	
USBR	,258E-01	,258E-03	22,27	
Barr	,402E-02	,402E-04	3,48	
Alyamani and Sen	,241E-03	,241E-05	0,21	
Chapuis	,384E-02	,384E-04	3,32	
Krumbein and Monk	,380E-01	,380E-03	32,87	
geometric mean	,134E-01	,134E-03	11,54	
arithmetic mean	,399E-01	,399E-03	34,48	



K from Grain Size Analysis Report

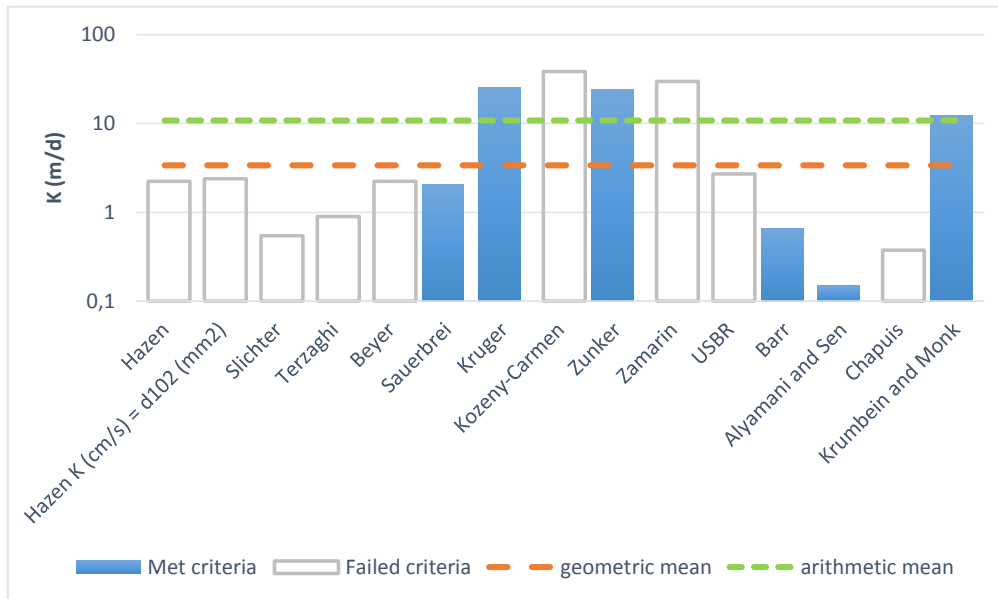
Date: 2020. november 27.

Sample Name: Átd-29 fúrás 2,8 - 5,3 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,258E-02	,258E-04	2,23	
Hazen K (cm/s) = d ₁₀ (mm)	,276E-02	,276E-04	2,38	
Slichter	,629E-03	,629E-05	0,54	
Terzaghi	,104E-02	,104E-04	0,90	
Beyer	,259E-02	,259E-04	2,24	
Sauerbrei	,237E-02	,237E-04	2,05	
Kruger	,292E-01	,292E-03	25,19	
Kozeny-Carmen	,443E-01	,443E-03	38,29	
Zunker	,282E-01	,282E-03	24,35	
Zamarin	,345E-01	,345E-03	29,80	
USBR	,314E-02	,314E-04	2,71	
Barr	,754E-03	,754E-05	0,65	
Alyamani and Sen	,172E-03	,172E-05	0,15	
Chapuis	,433E-03	,433E-05	0,37	
Krumbein and Monk	,142E-01	,142E-03	12,29	
geometric mean	,391E-02	,391E-04	3,38	
arithmetic mean	,125E-01	,125E-03	10,78	



K from Grain Size Analysis Report

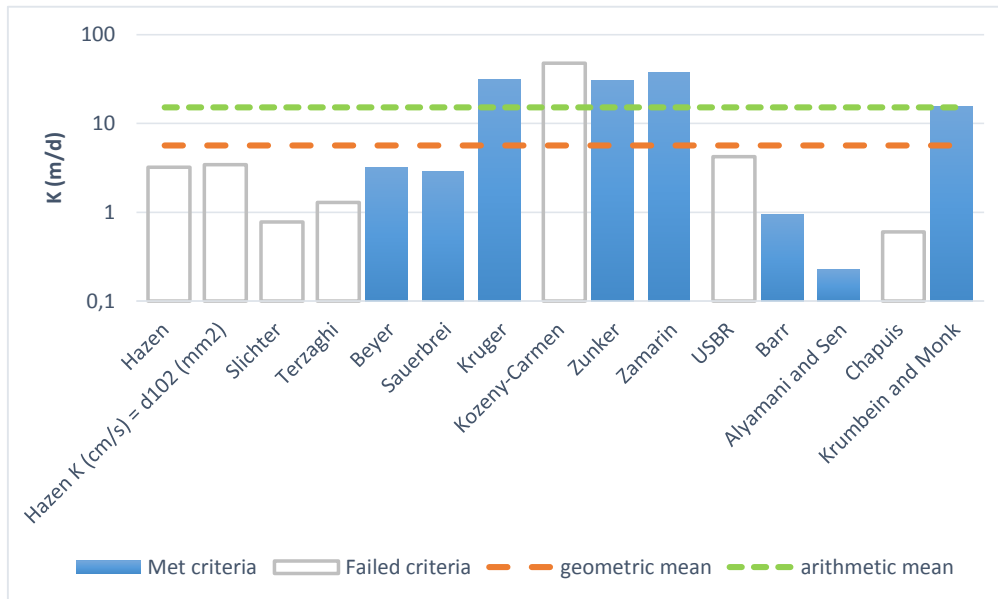
Date: 2020. november 27.

Sample Name: Átd-29 fúrás 5,3 - 10,1 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,372E-02	,372E-04	3,21	
Hazen K (cm/s) = d ₁₀ (mm)	,397E-02	,397E-04	3,43	
Slichter	,905E-03	,905E-05	0,78	
Terzaghi	,150E-02	,150E-04	1,29	
Beyer	,373E-02	,373E-04	3,22	
Sauerbrei	,332E-02	,332E-04	2,87	
Kruger	,362E-01	,362E-03	31,32	
Kozeny-Carmen	,551E-01	,551E-03	47,58	
Zunker	,350E-01	,350E-03	30,27	
Zamarin	,429E-01	,429E-03	37,04	
USBR	,488E-02	,488E-04	4,21	
Barr	,108E-02	,108E-04	0,94	
Alyamani and Sen	,261E-03	,261E-05	0,23	
Chapuis	,694E-03	,694E-05	0,60	
Krumbein and Monk	,182E-01	,182E-03	15,69	
geometric mean	,657E-02	,657E-04	5,67	
arithmetic mean	,176E-01	,176E-03	15,20	



K from Grain Size Analysis Report

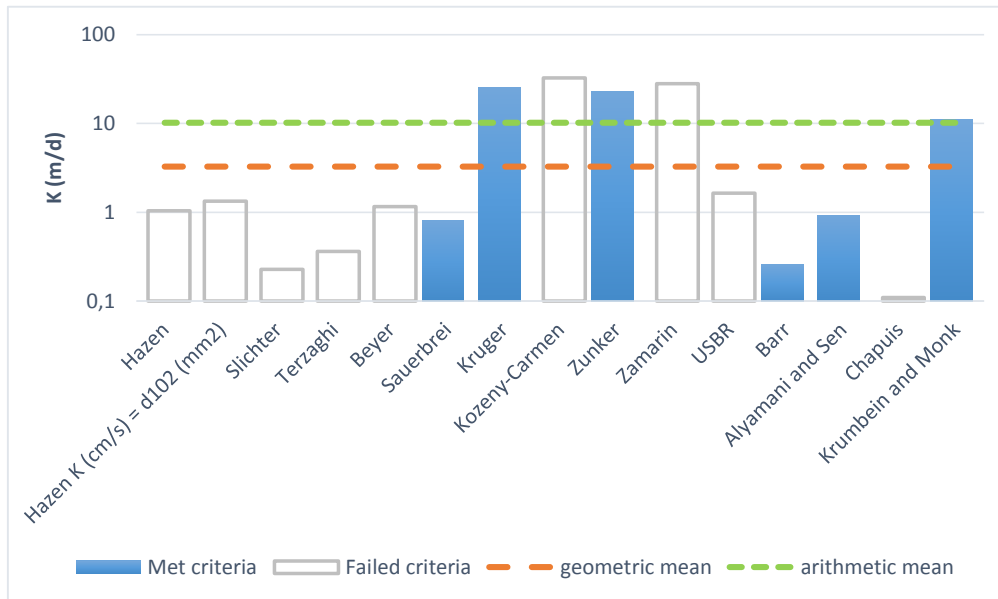
Date: 2020. november 27.

Sample Name: Átd-29 fúrás 10,1 - 15,5 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,121E-02	,121E-04	1,04	
Hazen K (cm/s) = d ₁₀ (mm)	,155E-02	,155E-04	1,34	
Slichter	,265E-03	,265E-05	0,23	
Terzaghi	,419E-03	,419E-05	0,36	
Beyer	,134E-02	,134E-04	1,16	
Sauerbrei	,933E-03	,933E-05	0,81	
Kruger	,296E-01	,296E-03	25,57	
Kozeny-Carmen	,377E-01	,377E-03	32,59	
Zunker	,262E-01	,262E-03	22,64	
Zamarin	,324E-01	,324E-03	27,98	
USBR	,190E-02	,190E-04	1,64	
Barr	,301E-03	,301E-05	0,26	
Alyamani and Sen	,108E-02	,108E-04	0,93	
Chapuis	,127E-03	,127E-05	0,11	
Krumbein and Monk	,127E-01	,127E-03	10,95	
geometric mean	,379E-02	,379E-04	3,28	
arithmetic mean	,118E-01	,118E-03	10,19	



K from Grain Size Analysis Report

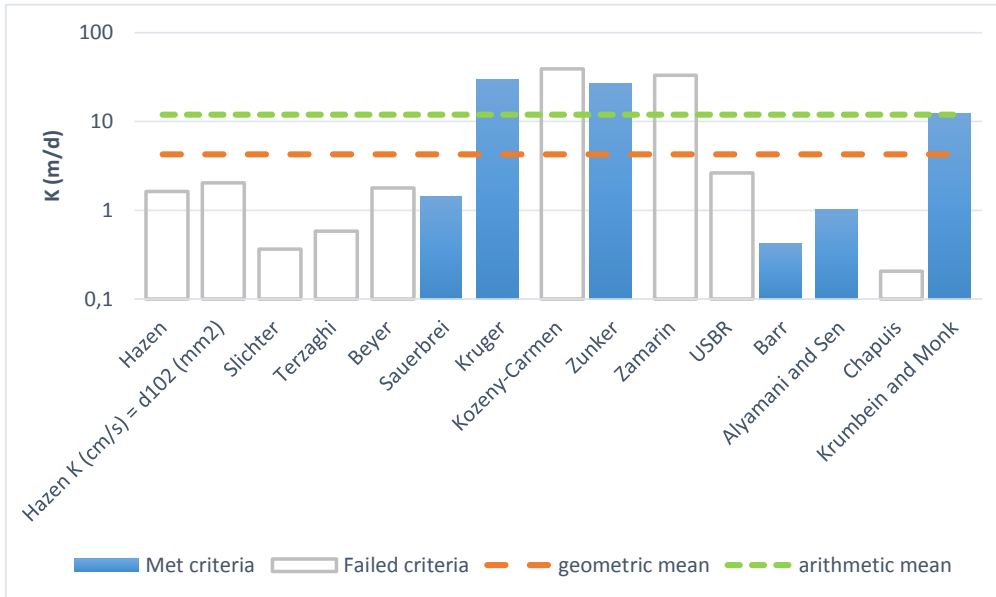
Date: 2020. november 27.

Sample Name: Átd-29 fúrás 15,5 - 21,3 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,189E-02	,189E-04	1,63	
Hazen K (cm/s) = d ₁₀ (mm)	,235E-02	,235E-04	2,03	
Slichter	,422E-03	,422E-05	0,36	
Terzaghi	,674E-03	,674E-05	0,58	
Beyer	,206E-02	,206E-04	1,78	
Sauerbrei	,166E-02	,166E-04	1,44	
Kruger	,344E-01	,344E-03	29,72	
Kozeny-Carmen	,452E-01	,452E-03	39,08	
Zunker	,309E-01	,309E-03	26,72	
Zamarin	,382E-01	,382E-03	33,00	
USBR	,305E-02	,305E-04	2,64	
Barr	,485E-03	,485E-05	0,42	
Alyamani and Sen	,119E-02	,119E-04	1,03	
Chapuis	,239E-03	,239E-05	0,21	
Krumbein and Monk	,143E-01	,143E-03	12,33	
geometric mean	,494E-02	,494E-04	4,27	
arithmetic mean	,138E-01	,138E-03	11,94	



K from Grain Size Analysis Report

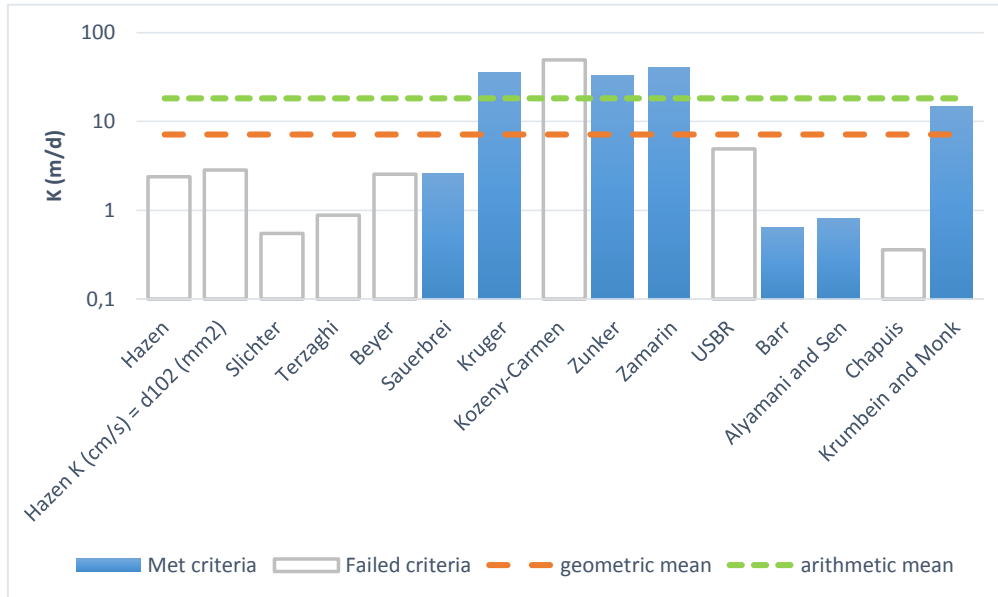
Date: 2020. november 27.

Sample Name: Átd-29 fúrás 21,3 - 25,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,277E-02	,277E-04	2,39	
Hazen K (cm/s) = d ₁₀ (mm)	,328E-02	,328E-04	2,83	
Slichter	,633E-03	,633E-05	0,55	
Terzaghi	,102E-02	,102E-04	0,88	
Beyer	,295E-02	,295E-04	2,55	
Sauerbrei	,297E-02	,297E-04	2,57	
Kruger	,414E-01	,414E-03	35,78	
Kozeny-Carmen	,569E-01	,569E-03	49,13	
Zunker	,380E-01	,380E-03	32,87	
Zamarin	,469E-01	,469E-03	40,52	
USBR	,569E-02	,569E-04	4,92	
Barr	,736E-03	,736E-05	0,64	
Alyamani and Sen	,932E-03	,932E-05	0,80	
Chapuis	,417E-03	,417E-05	0,36	
Krumbein and Monk	,170E-01	,170E-03	14,72	
geometric mean	,824E-02	,824E-04	7,12	
arithmetic mean	,211E-01	,211E-03	18,27	



K from Grain Size Analysis Report

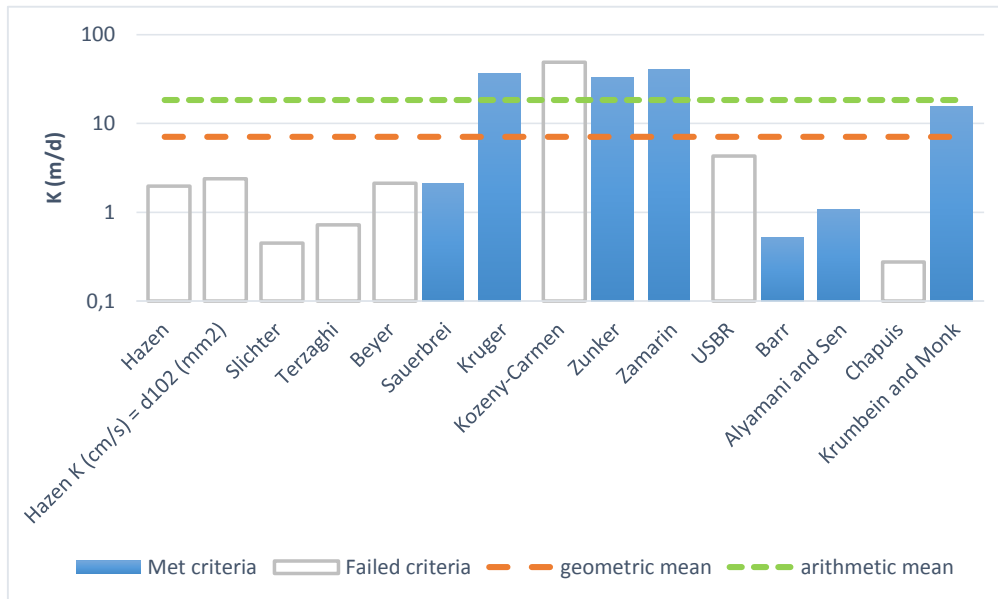
Date: 2020. november 27.

Sample Name: Átd-30 fúrás 2,9 - 8,2 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,229E-02	,229E-04	1,98	
Hazen K (cm/s) = d ₁₀ (mm)	,276E-02	,276E-04	2,38	
Slichter	,520E-03	,520E-05	0,45	
Terzaghi	,837E-03	,837E-05	0,72	
Beyer	,246E-02	,246E-04	2,12	
Sauerbrei	,247E-02	,247E-04	2,13	
Kruger	,417E-01	,417E-03	36,02	
Kozeny-Carmen	,564E-01	,564E-03	48,77	
Zunker	,380E-01	,380E-03	32,86	
Zamarin	,469E-01	,469E-03	40,54	
USBR	,497E-02	,497E-04	4,29	
Barr	,602E-03	,602E-05	0,52	
Alyamani and Sen	,125E-02	,125E-04	1,08	
Chapuis	,319E-03	,319E-05	0,28	
Krumbein and Monk	,179E-01	,179E-03	15,45	
geometric mean	,819E-02	,819E-04	7,08	
arithmetic mean	,213E-01	,213E-03	18,37	



K from Grain Size Analysis Report

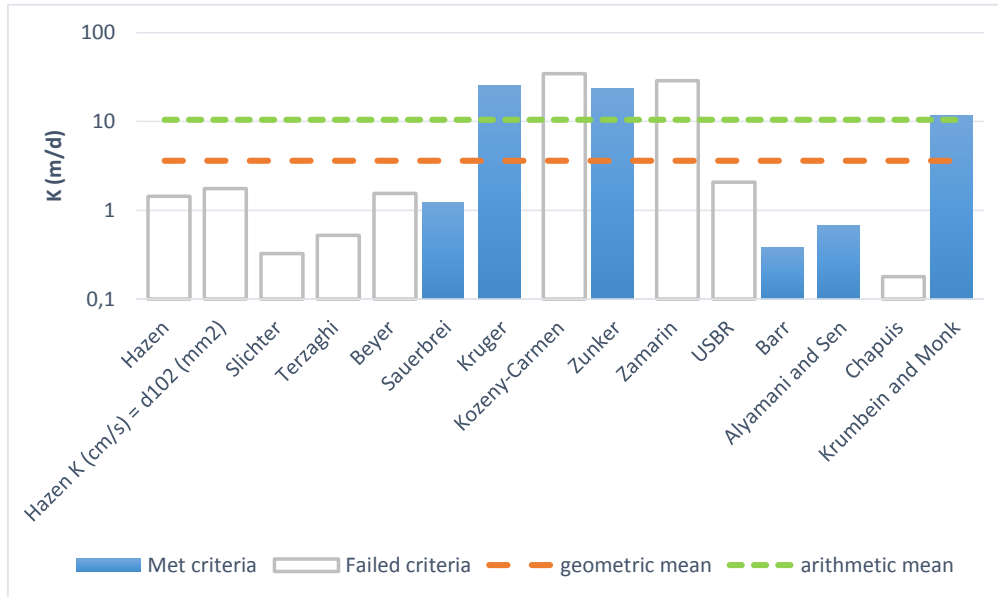
Date: 2020. november 27.

Sample Name: Átd-30 fúrás 8,2 - 18,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,167E-02	,167E-04	1,44	
Hazen K (cm/s) = d ₁₀ (mm)	,203E-02	,203E-04	1,75	
Slichter	,378E-03	,378E-05	0,33	
Terzaghi	,607E-03	,607E-05	0,52	
Beyer	,180E-02	,180E-04	1,56	
Sauerbrei	,141E-02	,141E-04	1,22	
Kruger	,296E-01	,296E-03	25,54	
Kozeny-Carmen	,398E-01	,398E-03	34,36	
Zunker	,269E-01	,269E-03	23,23	
Zamarin	,332E-01	,332E-03	28,66	
USBR	,240E-02	,240E-04	2,07	
Barr	,437E-03	,437E-05	0,38	
Alyamani and Sen	,789E-03	,789E-05	0,68	
Chapuis	,208E-03	,208E-05	0,18	
Krumbein and Monk	,135E-01	,135E-03	11,70	
geometric mean	,417E-02	,417E-04	3,60	
arithmetic mean	,121E-01	,121E-03	10,46	



K from Grain Size Analysis Report

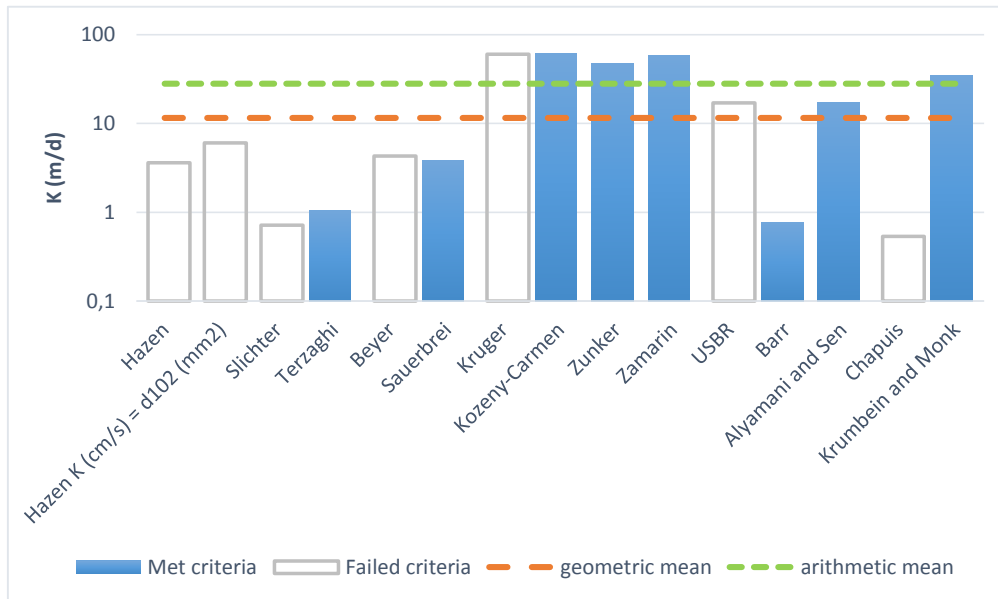
Date: 2020. november 27.

Sample Name: Átd-30 fúrás 18,0 - 25,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,418E-02	,418E-04	3,61	
Hazen K (cm/s) = d ₁₀ (mm)	,700E-02	,700E-04	6,05	
Slichter	,832E-03	,832E-05	0,72	
Terzaghi	,121E-02	,121E-04	1,05	
Beyer	,498E-02	,498E-04	4,31	
Sauerbrei	,444E-02	,444E-04	3,83	
Kruger	,693E-01	,693E-03	59,89	
Kozeny-Carmen	,709E-01	,709E-03	61,24	
Zunker	,550E-01	,550E-03	47,49	
Zamarin	,676E-01	,676E-03	58,41	
USBR	,197E-01	,197E-03	16,99	
Barr	,899E-03	,899E-05	0,78	
Alyamani and Sen	,201E-01	,201E-03	17,34	
Chapuis	,622E-03	,622E-05	0,54	
Krumbein and Monk	,398E-01	,398E-03	34,35	
geometric mean	,134E-01	,134E-03	11,54	
arithmetic mean	,325E-01	,325E-03	28,06	



K from Grain Size Analysis Report

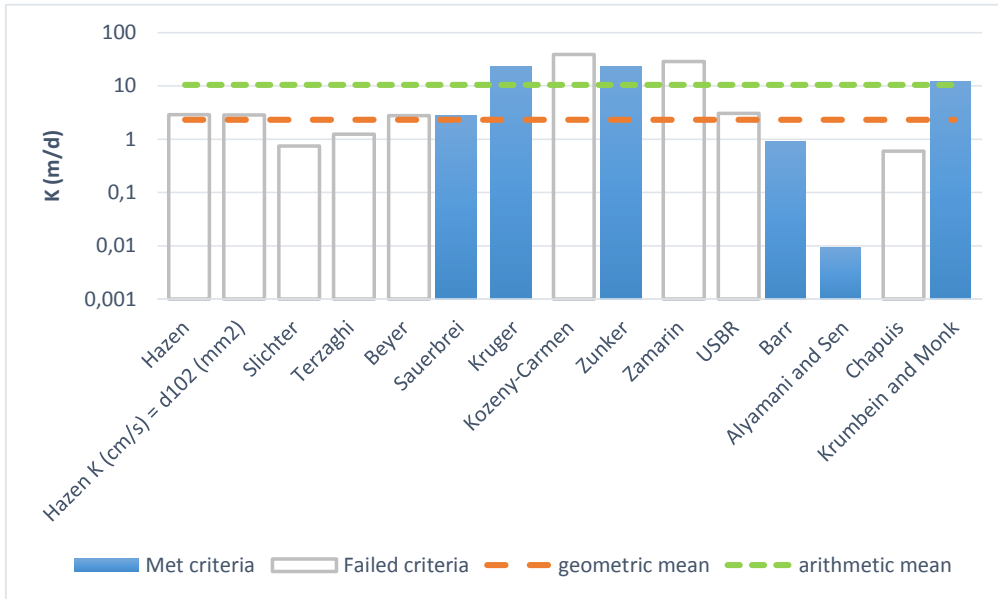
Date: 2020. november 27.

Sample Name: Átd-31 fúrás 2,4 - 5,7 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,335E-02	,335E-04	2,89	
Hazen K (cm/s) = d ₁₀ (mm)	,328E-02	,328E-04	2,83	
Slichter	,862E-03	,862E-05	0,74	
Terzaghi	,145E-02	,145E-04	1,25	
Beyer	,320E-02	,320E-04	2,76	
Sauerbrei	,320E-02	,320E-04	2,76	
Kruger	,270E-01	,270E-03	23,37	
Kozeny-Carmen	,448E-01	,448E-03	38,70	
Zunker	,273E-01	,273E-03	23,58	
Zamarin	,331E-01	,331E-03	28,57	
USBR	,355E-02	,355E-04	3,07	
Barr	,106E-02	,106E-04	0,92	
Alyamani and Sen	,106E-04	,106E-06	0,01	
Chapius	,692E-03	,692E-05	0,60	
Krumbein and Monk	,139E-01	,139E-03	12,04	
geometric mean	,268E-02	,268E-04	2,32	
arithmetic mean	,121E-01	,121E-03	10,45	



K from Grain Size Analysis Report

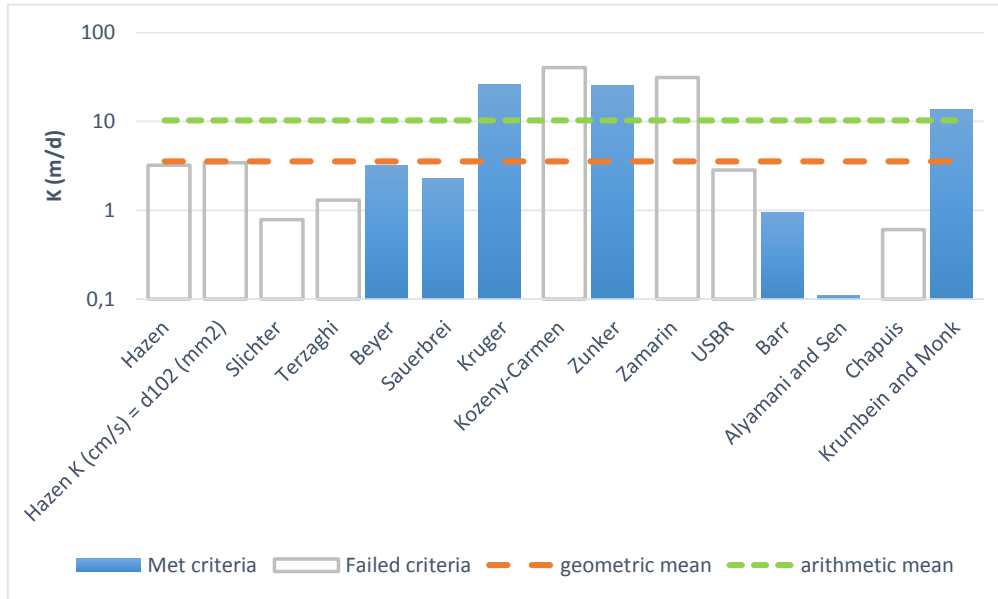
Date: 2020. november 27.

Sample Name: Átd-31 fúrás 5,7 - 15,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,374E-02	,374E-04	3,23	
Hazen K (cm/s) = d ₁₀ (mm)	,397E-02	,397E-04	3,43	
Slichter	,912E-03	,912E-05	0,79	
Terzaghi	,151E-02	,151E-04	1,30	
Beyer	,374E-02	,374E-04	3,23	
Sauerbrei	,266E-02	,266E-04	2,30	
Kruger	,305E-01	,305E-03	26,37	
Kozeny-Carmen	,466E-01	,466E-03	40,27	
Zunker	,296E-01	,296E-03	25,56	
Zamarin	,362E-01	,362E-03	31,26	
USBR	,327E-02	,327E-04	2,83	
Barr	,109E-02	,109E-04	0,95	
Alyamani and Sen	,128E-03	,128E-05	0,11	
Chapuis	,703E-03	,703E-05	0,61	
Krumbein and Monk	,156E-01	,156E-03	13,48	
geometric mean	,410E-02	,410E-04	3,55	
arithmetic mean	,119E-01	,119E-03	10,29	



K from Grain Size Analysis Report

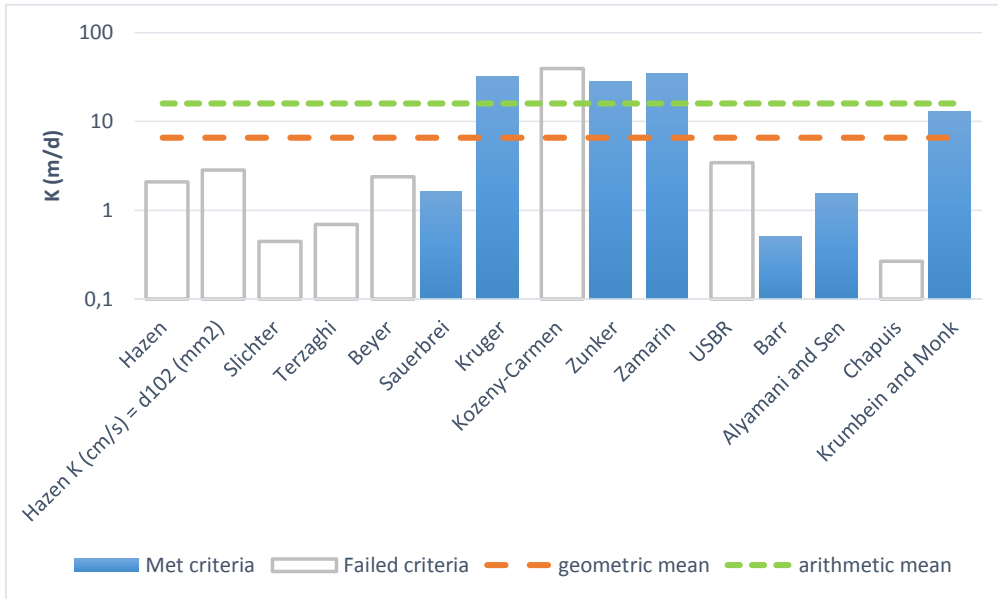
Date: 2020. november 27.

Sample Name: Átd-31 fúrás 15,0 - 20,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,241E-02	,241E-04	2,08	
Hazen K (cm/s) = d ₁₀ (mm)	,328E-02	,328E-04	2,83	
Slichter	,516E-03	,516E-05	0,45	
Terzaghi	,804E-03	,804E-05	0,69	
Beyer	,276E-02	,276E-04	2,38	
Sauerbrei	,189E-02	,189E-04	1,63	
Kruger	,375E-01	,375E-03	32,37	
Kozeny-Carmen	,454E-01	,454E-03	39,27	
Zunker	,324E-01	,324E-03	27,96	
Zamarin	,400E-01	,400E-03	34,57	
USBR	,399E-02	,399E-04	3,45	
Barr	,580E-03	,580E-05	0,50	
Alyamani and Sen	,177E-02	,177E-04	1,53	
Chapuis	,310E-03	,310E-05	0,27	
Krumbein and Monk	,151E-01	,151E-03	13,05	
geometric mean	,757E-02	,757E-04	6,54	
arithmetic mean	,185E-01	,185E-03	15,94	



K from Grain Size Analysis Report

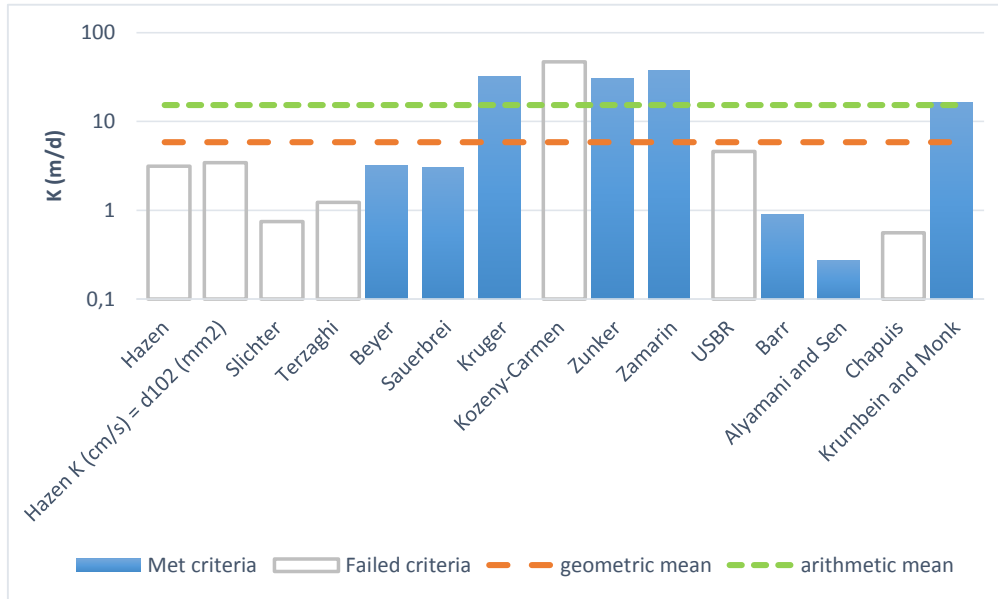
Date: 2020. november 27.

Sample Name: Átd-31 fúrás 20,0 - 25,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,362E-02	,362E-04	3,13	
Hazen K (cm/s) = d ₁₀ (mm)	,397E-02	,397E-04	3,43	
Slichter	,867E-03	,867E-05	0,75	
Terzaghi	,143E-02	,143E-04	1,23	
Beyer	,369E-02	,369E-04	3,19	
Sauerbrei	,351E-02	,351E-04	3,03	
Kruger	,368E-01	,368E-03	31,77	
Kozeny-Carmen	,544E-01	,544E-03	47,03	
Zunker	,351E-01	,351E-03	30,30	
Zamarin	,430E-01	,430E-03	37,17	
USBR	,532E-02	,532E-04	4,60	
Barr	,103E-02	,103E-04	0,89	
Alyamani and Sen	,316E-03	,316E-05	0,27	
Chapuis	,649E-03	,649E-05	0,56	
Krumbein and Monk	,188E-01	,188E-03	16,20	
geometric mean	,677E-02	,677E-04	5,85	
arithmetic mean	,178E-01	,178E-03	15,35	



K from Grain Size Analysis Report

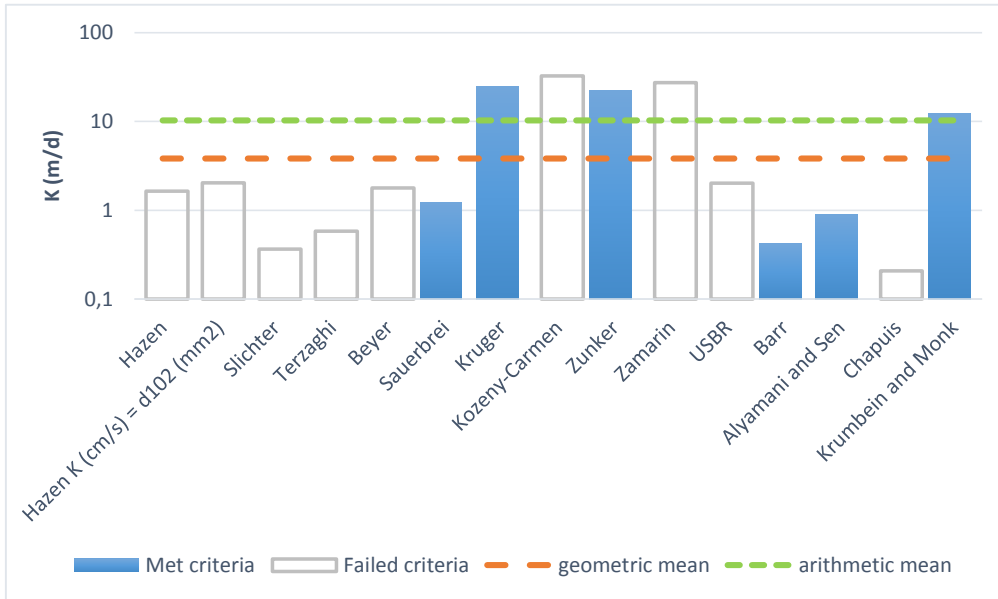
Date: 2020. november 27.

Sample Name: Átd-32 fúrás 3,5 - 6,2 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,189E-02	,189E-04	1,64	
Hazen K (cm/s) = d ₁₀ (mm)	,235E-02	,235E-04	2,03	
Slichter	,423E-03	,423E-05	0,37	
Terzaghi	,676E-03	,676E-05	0,58	
Beyer	,207E-02	,207E-04	1,78	
Sauerbrei	,142E-02	,142E-04	1,23	
Kruger	,285E-01	,285E-03	24,63	
Kozeny-Carmen	,376E-01	,376E-03	32,45	
Zunker	,257E-01	,257E-03	22,17	
Zamarin	,317E-01	,317E-03	27,38	
USBR	,234E-02	,234E-04	2,03	
Barr	,486E-03	,486E-05	0,42	
Alyamani and Sen	,103E-02	,103E-04	0,89	
Chapuis	,240E-03	,240E-05	0,21	
Krumbein and Monk	,143E-01	,143E-03	12,34	
geometric mean	,442E-02	,442E-04	3,82	
arithmetic mean	,119E-01	,119E-03	10,28	



K from Grain Size Analysis Report

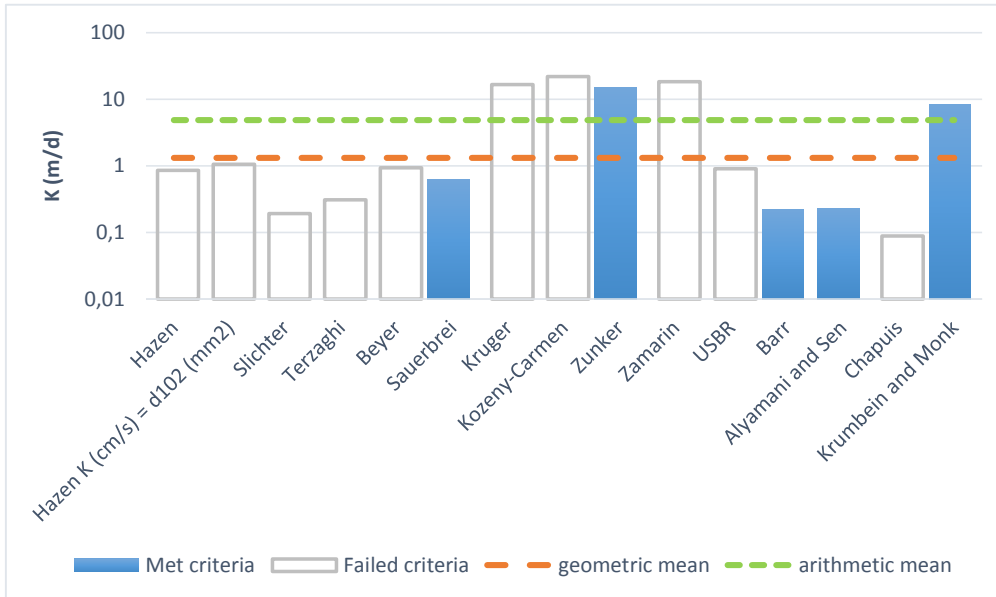
Date: 2020. november 27.

Sample Name: Átd-32 fúrás 6,2 - 15,4 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,994E-03	,994E-05	0,86	
Hazen K (cm/s) = d ₁₀ (mm)	,123E-02	,123E-04	1,06	
Slichter	,223E-03	,223E-05	0,19	
Terzaghi	,357E-03	,357E-05	0,31	
Beyer	,108E-02	,108E-04	0,93	
Sauerbrei	,728E-03	,728E-05	0,63	
Kruger	,191E-01	,191E-03	16,53	
Kozeny-Carmen	,254E-01	,254E-03	21,91	
Zunker	,173E-01	,173E-03	14,92	
Zamarin	,213E-01	,213E-03	18,42	
USBR	,105E-02	,105E-04	0,91	
Barr	,256E-03	,256E-05	0,22	
Alyamani and Sen	,269E-03	,269E-05	0,23	
Chapuis	,102E-03	,102E-05	0,09	
Krumbein and Monk	,954E-02	,954E-04	8,24	
geometric mean	,153E-02	,153E-04	1,32	
arithmetic mean	,561E-02	,561E-04	4,85	



K from Grain Size Analysis Report

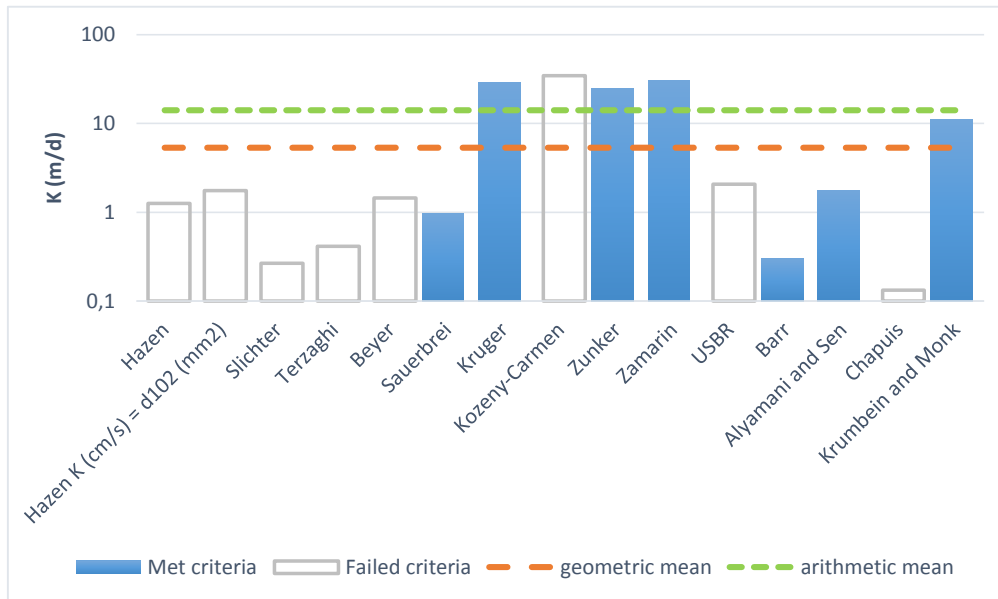
Date: 2020. november 27.

Sample Name: Átd-32 fúrás 15,4 - 20,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,146E-02	,146E-04	1,26	
Hazen K (cm/s) = d ₁₀ (mm)	,203E-02	,203E-04	1,75	
Slichter	,310E-03	,310E-05	0,27	
Terzaghi	,479E-03	,479E-05	0,41	
Beyer	,168E-02	,168E-04	1,45	
Sauerbrei	,112E-02	,112E-04	0,97	
Kruger	,334E-01	,334E-03	28,90	
Kozeny-Carmen	,399E-01	,399E-03	34,44	
Zunker	,286E-01	,286E-03	24,74	
Zamarin	,354E-01	,354E-03	30,58	
USBR	,240E-02	,240E-04	2,07	
Barr	,346E-03	,346E-05	0,30	
Alyamani and Sen	,205E-02	,205E-04	1,77	
Chapuis	,154E-03	,154E-05	0,13	
Krumbein and Monk	,129E-01	,129E-03	11,19	
geometric mean	,619E-02	,619E-04	5,35	
arithmetic mean	,163E-01	,163E-03	14,06	



K from Grain Size Analysis Report

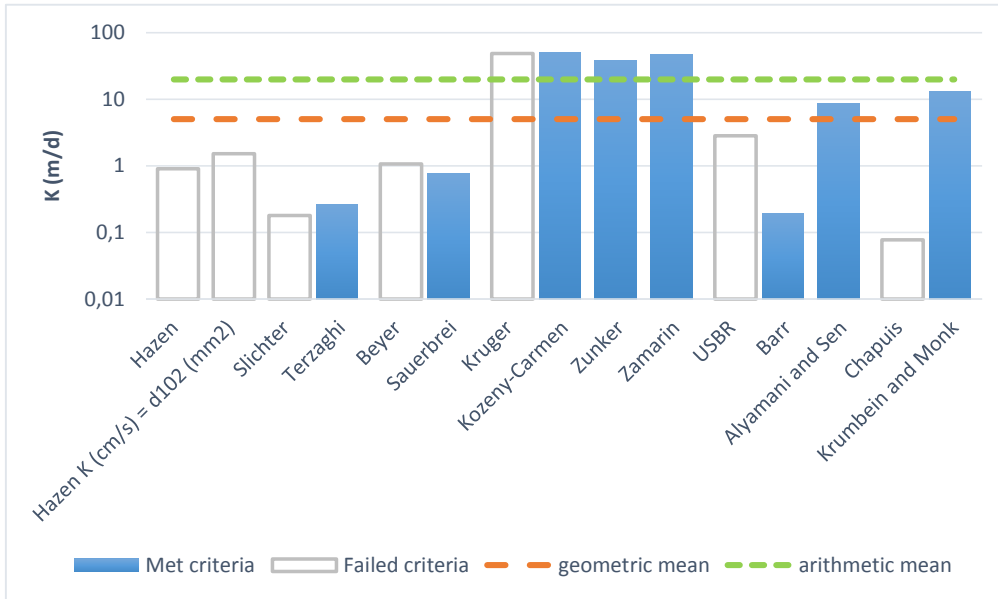
Date: 2020. november 27.

Sample Name: Átd-32 fúrás 20,0 - 25,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,105E-02	,105E-04	0,90	
Hazen K (cm/s) = d ₁₀ ² (mm)	,176E-02	,176E-04	1,52	
Slichter	,208E-03	,208E-05	0,18	
Terzaghi	,302E-03	,302E-05	0,26	
Beyer	,124E-02	,124E-04	1,07	
Sauerbrei	,876E-03	,876E-05	0,76	
Kruger	,564E-01	,564E-03	48,74	
Kozeny-Carmen	,574E-01	,574E-03	49,60	
Zunker	,446E-01	,446E-03	38,55	
Zamarin	,549E-01	,549E-03	47,41	
USBR	,327E-02	,327E-04	2,83	
Barr	,225E-03	,225E-05	0,19	
Alyamani and Sen	,102E-01	,102E-03	8,77	
Chapuis	,895E-04	,895E-06	0,08	
Krumbein and Monk	,153E-01	,153E-03	13,25	
geometric mean	,581E-02	,581E-04	5,02	
arithmetic mean	,230E-01	,230E-03	19,85	



K from Grain Size Analysis Report

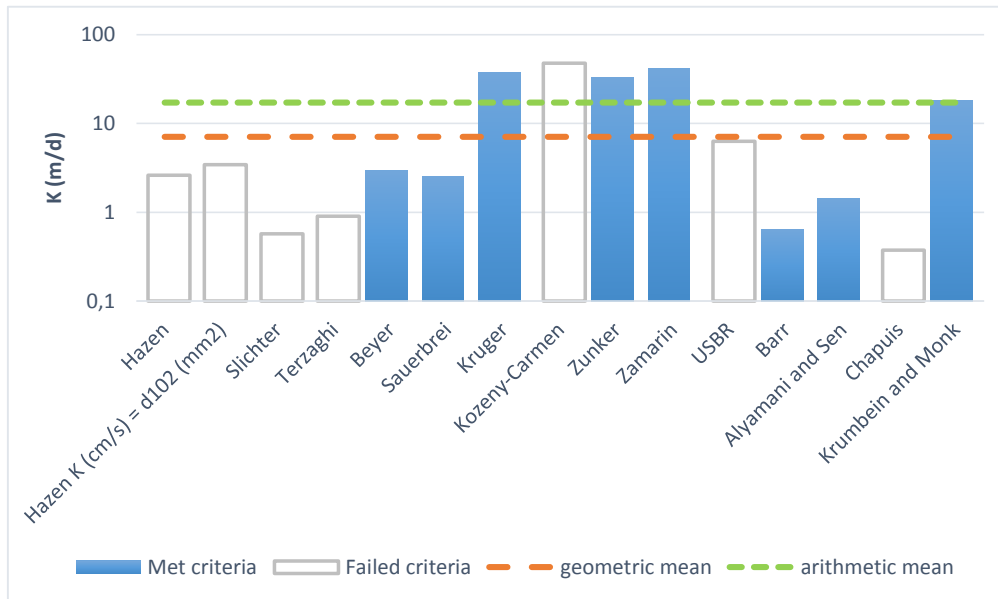
Date: 2020. november 27.

Sample Name: Átd-33 fúrás 2,1 - 5,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,304E-02	,304E-04	2,62	
Hazen K (cm/s) = d ₁₀ (mm)	,397E-02	,397E-04	3,43	
Slichter	,662E-03	,662E-05	0,57	
Terzaghi	,104E-02	,104E-04	0,90	
Beyer	,341E-02	,341E-04	2,94	
Sauerbrei	,290E-02	,290E-04	2,51	
Kruger	,438E-01	,438E-03	37,80	
Kozeny-Carmen	,549E-01	,549E-03	47,48	
Zunker	,384E-01	,384E-03	33,22	
Zamarin	,475E-01	,475E-03	41,06	
USBR	,730E-02	,730E-04	6,31	
Barr	,751E-03	,751E-05	0,65	
Alyamani and Sen	,164E-02	,164E-04	1,41	
Chapuis	,434E-03	,434E-05	0,38	
Krumbein and Monk	,209E-01	,209E-03	18,10	
geometric mean	,819E-02	,819E-04	7,08	
arithmetic mean	,199E-01	,199E-03	17,21	



K from Grain Size Analysis Report

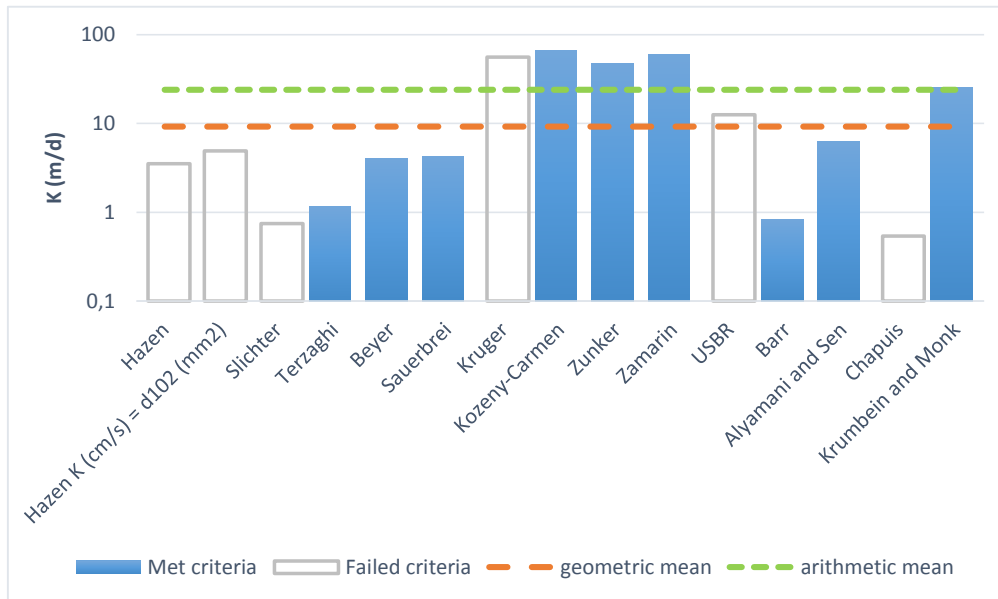
Date: 2020. november 27.

Sample Name: Átd-33 fúrás 5,0 - 7,2 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,408E-02	,408E-04	3,52	
Hazen K (cm/s) = d ₁₀ (mm)	,569E-02	,569E-04	4,91	
Slichter	,863E-03	,863E-05	0,75	
Terzaghi	,133E-02	,133E-04	1,15	
Beyer	,471E-02	,471E-04	4,07	
Sauerbrei	,493E-02	,493E-04	4,26	
Kruger	,647E-01	,647E-03	55,90	
Kozeny-Carmen	,768E-01	,768E-03	66,32	
Zunker	,553E-01	,553E-03	47,74	
Zamarin	,683E-01	,683E-03	59,03	
USBR	,145E-01	,145E-03	12,49	
Barr	,965E-03	,965E-05	0,83	
Alyamani and Sen	,717E-02	,717E-04	6,20	
Chapuis	,625E-03	,625E-05	0,54	
Krumbein and Monk	,291E-01	,291E-03	25,18	
geometric mean	,107E-01	,107E-03	9,23	
arithmetic mean	,276E-01	,276E-03	23,86	



K from Grain Size Analysis Report

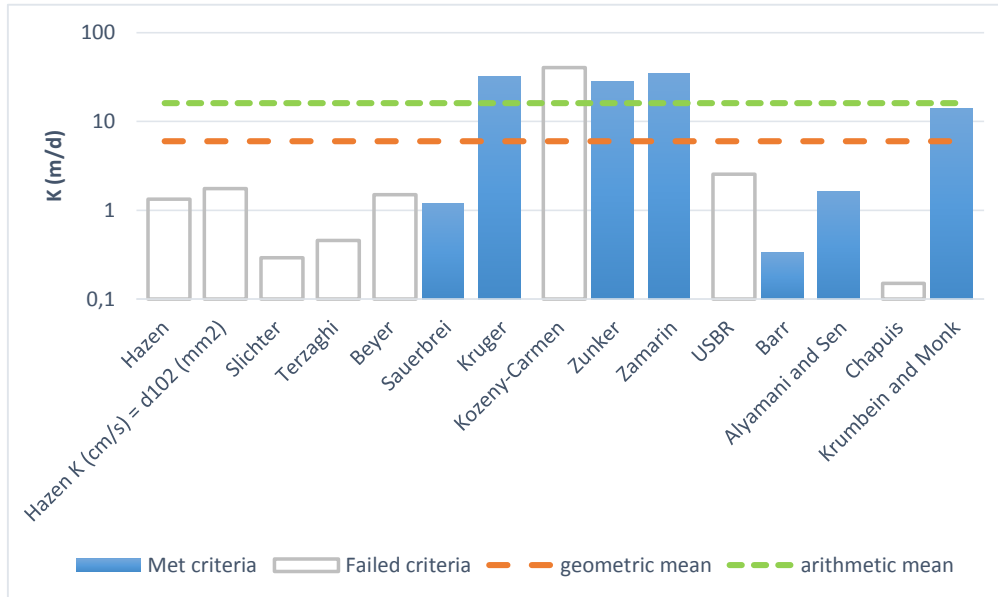
Date: 2020. november 27.

Sample Name: Átd-33 fúrás 7,2 - 15,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,155E-02	,155E-04	1,34	
Hazen K (cm/s) = d ₁₀ (mm)	,203E-02	,203E-04	1,75	
Slichter	,338E-03	,338E-05	0,29	
Terzaghi	,532E-03	,532E-05	0,46	
Beyer	,174E-02	,174E-04	1,50	
Sauerbrei	,138E-02	,138E-04	1,19	
Kruger	,371E-01	,371E-03	32,08	
Kozeny-Carmen	,466E-01	,466E-03	40,29	
Zunker	,326E-01	,326E-03	28,19	
Zamarin	,403E-01	,403E-03	34,84	
USBR	,294E-02	,294E-04	2,54	
Barr	,383E-03	,383E-05	0,33	
Alyamani and Sen	,187E-02	,187E-04	1,62	
Chapuis	,175E-03	,175E-05	0,15	
Krumbein and Monk	,160E-01	,160E-03	13,84	
geometric mean	,694E-02	,694E-04	6,00	
arithmetic mean	,185E-01	,185E-03	16,01	



K from Grain Size Analysis Report

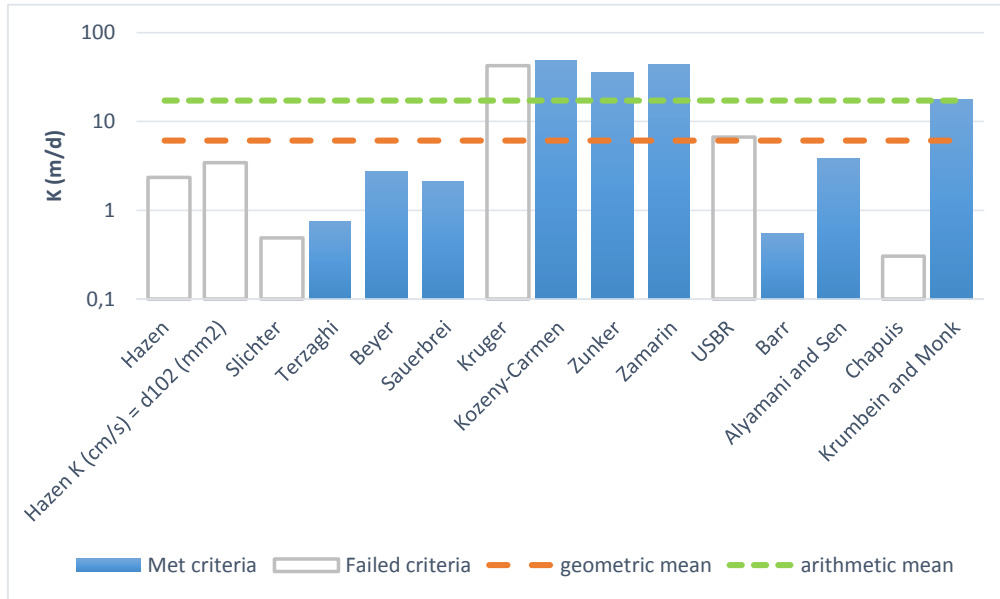
Date: 2020. november 27.

Sample Name: Átd-33 fúrás 15,0 - 25,0 m mélységben

Mass Sample (g):

T (oC)

Poorly sorted gravelly sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,272E-02	,272E-04	2,35	
Hazen K (cm/s) = d ₁₀ (mm)	,397E-02	,397E-04	3,43	
Slichter	,566E-03	,566E-05	0,49	
Terzaghi	,862E-03	,862E-05	0,75	
Beyer	,320E-02	,320E-04	2,77	
Sauerbrei	,242E-02	,242E-04	2,09	
Kruger	,490E-01	,490E-03	42,32	
Kozeny-Carmen	,559E-01	,559E-03	48,33	
Zunker	,410E-01	,410E-03	35,46	
Zamarin	,507E-01	,507E-03	43,82	
USBR	,774E-02	,774E-04	6,68	
Barr	,627E-03	,627E-05	0,54	
Alyamani and Sen	,440E-02	,440E-04	3,80	
Chapuis	,352E-03	,352E-05	0,30	
Krumbein and Monk	,202E-01	,202E-03	17,49	
geometric mean	,706E-02	,706E-04	6,10	
arithmetic mean	,199E-01	,199E-03	17,23	



K from Grain Size Analysis Report

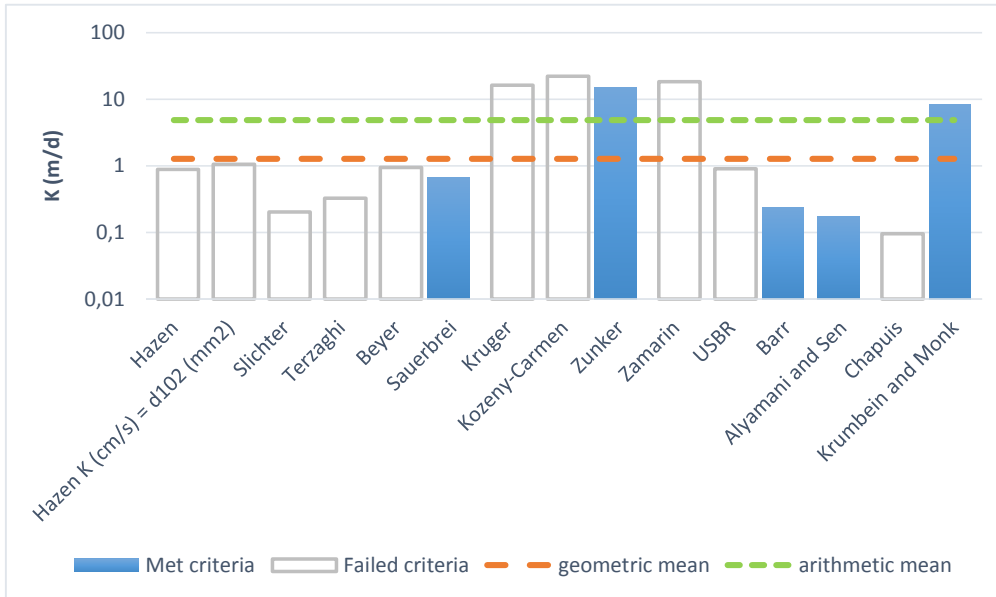
Date: 2020. november 27.

Sample Name: Átd fúrások felső burkológörbéje

Mass Sample (g):

T (oC)

Poorly sorted sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,103E-02	,103E-04	0,89	
Hazen K (cm/s) = d ₁₀ (mm)	,123E-02	,123E-04	1,06	
Slichter	,235E-03	,235E-05	0,20	
Terzaghi	,378E-03	,378E-05	0,33	
Beyer	,110E-02	,110E-04	0,95	
Sauerbrei	,773E-03	,773E-05	0,67	
Kruger	,187E-01	,187E-03	16,17	
Kozeny-Carmen	,256E-01	,256E-03	22,12	
Zunker	,172E-01	,172E-03	14,83	
Zamarin	,212E-01	,212E-03	18,28	
USBR	,105E-02	,105E-04	0,91	
Barr	,272E-03	,272E-05	0,24	
Alyamani and Sen	,199E-03	,199E-05	0,17	
Chapuis	,111E-03	,111E-05	0,10	
Krumbein and Monk	,958E-02	,958E-04	8,28	
geometric mean	,147E-02	,147E-04	1,27	
arithmetic mean	,560E-02	,560E-04	4,84	



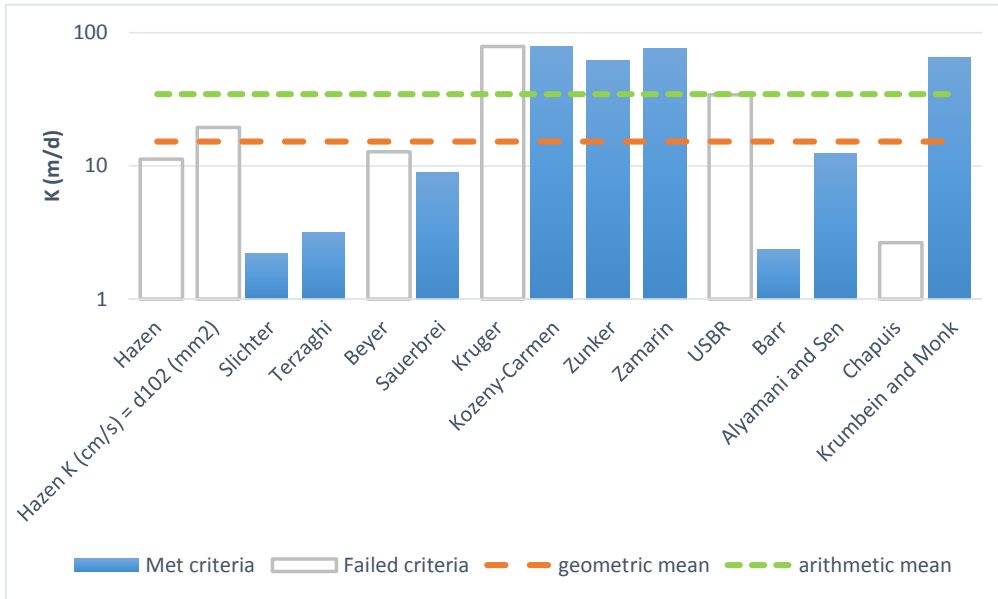
K from Grain Size Analysis Report

Date: 2020. november 27.

Sample Name: Átd fúrások alsó burkológrébéje

Mass Sample (g): T (oC)

Poorly sorted gravelly sand low in fines



Estimation of Hydraulic Conductivity	cm/s	m/s	m/d	de
Hazen	,130E-01	,130E-03	11,21	
Hazen K (cm/s) = d ₁₀ (mm)	,225E-01	,225E-03	19,44	
Slichter	,256E-02	,256E-04	2,21	
Terzaghi	,368E-02	,368E-04	3,18	
Beyer	,148E-01	,148E-03	12,78	
Sauerbrei	,104E-01	,104E-03	8,98	
Kruger	,912E-01	,912E-03	78,76	
Kozeny-Carmen	,908E-01	,908E-03	78,43	
Zunker	,713E-01	,713E-03	61,62	
Zamarin	,876E-01	,876E-03	75,68	
USBR	,394E-01	,394E-03	34,04	
Barr	,275E-02	,275E-04	2,38	
Alyamani and Sen	,143E-01	,143E-03	12,36	
Chapuis	,306E-02	,306E-04	2,65	
Krumbein and Monk	,758E-01	,758E-03	65,50	
geometric mean	,176E-01	,176E-03	15,25	
arithmetic mean	,399E-01	,399E-03	34,48	