




THE CONSOLID SYSTEM

BULGARIA has officially tested through all AASHTO-classes of their dominant soils to find out the improving influence of the CONSOLID SYSTEM to their performance; the following results speaks for themselves - there is no better system existing.

The test series was carried out without our knowledge and without requesting our assistance or guidelines. We appreciate this on the one hand; on other hand the results would have been even better if they had followed our recommendation - which at the same time is the only desired modification of the usual testing specifications - to dry back the sample blocks before soaking to approx. 50% of their moisture optimum (w opt). The difference between untreated and treated blocks would in this way have even more impressive and also more accurate to the performance of untreated and treated soil in the field.


 **ЦЕНТРАЛНА ЛАБОРАТОРИЯ ПО ПЪТИЩА И МОСТОВЕ**
Изпълнителна агенция "ПЪТИЩА"

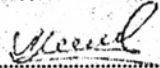
СТАНОВИЩЕ

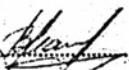
НА СЕКТОР: "Изпитване на строителни почви и каменни материали"


ОТДЕЛ: "Пътни конструкции и геотехника" при ЦЛПМ

ОТНОСНО: Изследване на въздействието на композиционния материал "Консолид" върху някои основни физико-механични показатели на стабилизирани него почви

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The Road Research Institute of BULGARIA issued with this testimonial the first comprehensive study on all the dominant soils of their country – checking all kinds of soil classes, following the accepted specifications developed by AASHTO.

All 25 selected soils from A-2-4 to A-7-6 showed remarkable improvements in their stability against the deteriorating effect of water, and their findings culminate in the fact that there is no better existing to improve soil stability than the CONSOLID SYSTEM.



THE CONSOLID SYSTEM

A-2-4 AASHTO M 145; WI = 36.15%; lp = 9.7%; Fines < 0.075 mm = 24.7%

Specification: Measurement in: Untreated: Treated with CONSOLID SYSTEM:

Density:	AASHTO T180	g/cm ³	1.85	1.90
w opt	AASHTO T180	%	14.0	12.0
C.B.R.max.				
w=w opt	AASHTO T193	%	19.0	96.2
C.B.R.min.				
w=w opt	AASHTO T193	%	10.8	89.5
Swelling	AASHTO T193	%	0.87	0.00

A-2-4 AASHTO M 145; WI = 31.6%; lp = 9.6%; Fines < 0.075 mm = 20.0%

Specification: Measurement in: Untreated: Treated with CONSOLID SYSTEM:

Density:	AASHTO T180	g/cm ³	1.95	2.01
w opt	AASHTO T180	%	11.5	9.5
C.B.R.max.				
w=w opt	AASHTO T193	%	10.5	85.5
C.B.R.min.				
w=w opt	AASHTO T193	%	6.4	75.0
Swelling	AASHTO T193	%	0.44	0.00

A-2-4 AASHTO M 145; WI = 28.40%; lp = 4.9%; Fines < 0.075 mm = 12.5%

Specification: Measurement in: Untreated: Treated with CONSOLID SYSTEM:

Density:	AASHTO T180	g/cm ³	1.91	1.95
w opt	AASHTO T180	%	11.0	9.5
C.B.R.max.				
w=w opt	AASHTO T193	%	32.4	87.0
C.B.R.min.				
w=w opt	AASHTO T193	%	25.8	65.3
Swelling	AASHTO T193	%	0.36	0.02

A-2-6 AASHTO M 145; WI = 35.6%; lp = 17.2%; Fines < 0.075 mm = 28.7%

Specification: Measurement in: Untreated: Treated with CONSOLID SYSTEM:

Density:	AASHTO T180	g/cm ³	1.93	1.97
w opt	AASHTO T180	%	12.5	11.5
C.B.R.max.				
w=w opt	AASHTO T193	%	13.3	63.2
C.B.R.min.				
w=w opt	AASHTO T193	%	8.1	56.0
Swelling	AASHTO T193	%	1.08	0.04



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A-2-6 AASHTO M 145; WI = 35.4%; lp = 17.0%; Fines < 0.075 mm = 23.2%

Specification: Measurement in: Untreated: Treated with CONSOLID SYSTEM:

Density:	AASHTO T180	g/cm ³	1.87	1.92
w opt	AASHTO T180	%	13.0	11.5
C.B.R.max. w=w opt	AASHTO T193	%	8.4	63.8
C.B.R.min. w=w opt	AASHTO T193	%	4.9	54.5
Swelling	AASHTO T193	%	0.48	0.00

A-2-6 AASHTO M 145; WI = 32.5%; lp = 11.7%; Fines < 0.075 mm = 34.8%

Specification: Measurement in: Untreated: Treated with CONSOLID SYSTEM:

Density:	AASHTO T180	g/cm ³	1.78	1.83
w opt	AASHTO T180	%	14.5	12.5
C.B.R.max. w=w opt	AASHTO T193	%	19.6	59.4
C.B.R.min. w=w opt	AASHTO T193	%	10.8	45.5
Swelling	AASHTO T193	%	0.62	0.05

A-4 AASHTO M 145; WI = 27.5%; lp = 9.3%; Fines < 0.075 mm = 91.1%

Specification: Measurement in: Untreated: Treated with CONSOLID SYSTEM:

Density:	AASHTO T180	g/cm ³	1.87	1.91
w opt	AASHTO T180	%	11.5	10.0
C.B.R.max. w=w opt	AASHTO T193	%	26.3	46.5
C.B.R.min. w=w opt	AASHTO T193	%	10.5	28.7
Swelling	AASHTO T193	%	4.43	0.42

A-4 AASHTO M 145; WI = 21.6%; lp = 7.8%; Fines < 0.075 mm = 36.4%

Specification: Measurement in: Untreated: Treated with CONSOLID SYSTEM:

Density:	AASHTO T180	g/cm ³	2.08	2.12
w opt	AASHTO T180	%	8.0	7.5
C.B.R.max. w=w opt	AASHTO T193	%	27.4	115.5
C.B.R.min. w=w opt	AASHTO T193	%	15.0	109.0
Swelling	AASHTO T193	%	0.56	0.09



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A-4 AASHTO M 145; WI = 32.6%; lp = 7.4%; Fines < 0.075 mm = 38.6%

Specification: Measurement in: Untreated: Treated with CONSOLID SYSTEM:

Density:	AASHTO T180	g/cm ³	1.67	1.72
w opt	AASHTO T180	%	18.5	16.0
C.B.R.max.				
w=w opt	AASHTO T193	%	3.2	28.6
C.B.R.min.				
w=w opt	AASHTO T193	%	2.7	16.4
Swelling	AASHTO T193	%	0.45	0.15

A-4 AASHTO M 145; WI = 31.5%; lp = 8.6%; Fines < 0.075 mm = 40.2%

Specification: Measurement in: Untreated: Treated with CONSOLID SYSTEM:

Density:	AASHTO T180	g/cm ³	1.7	1.74
w opt	AASHTO T180	%	17.2	16.2
C.B.R.max.				
w=w opt	AASHTO T193	%	5,8	30.2
C.B.R.min.				
w=w opt	AASHTO T193	%	2.9	21.8
Swelling	AASHTO T193	%	1.35	0.21

A-5 AASHTO M 145; WI = 53.3%; lp = 4.7%; Fines < 0.075 mm = 68.2%

Specification: Measurement in: Untreated: Treated with CONSOLID SYSTEM:

Density:	AASHTO T180	g/cm ³	1.42	1.46
w opt	AASHTO T180	%	21.5	18.5
C.B.R.max.				
w=w opt	AASHTO T193	%	19.5	39.7
C.B.R.min.				
w=w opt	AASHTO T193	%	15.9	20.0
Swelling	AASHTO T193	%	1.22	0.12

A-5 AASHTO M 145; WI = 46.7%; lp = -9.9%; Fines < 0.075 mm = 79.1%

Specification: Measurement in: Untreated: Treated with CONSOLID SYSTEM:

Density:	AASHTO T180	g/cm ³	1.49	1.53
w opt	AASHTO T180	%	19.0	17.0
C.B.R.max.				
w=w opt	AASHTO T193	%	12.1	26.4
C.B.R.min.				
w=w opt	AASHTO T193	%	6.7	17.3
Swelling	AASHTO T193	%	1.6	0.18



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A-5 AASHTO M 145; WI = 44.8%; lp = 9.2%; Fines < 0.075 mm = 56.2%

Specification: Measurement in: Untreated: Treated with CONSOLID SYSTEM:

Density:	AASHTOT180	g/cm ³	1.56	1.61
w opt	AASHTO T180	%	17.8	16.5
C.B.R.max.				
w=w opt	AASHTO T193	%	10.2	31.2
C.B.R.min.				
w=w opt	AASHTO T193	%	4.3	18.3
Swelling	AASHTO T193	%	1.48	0.14

A-6 AASHTO M 145; WI = 36.4% lp = 19.8%; Fines < 0.075 mm = 74.0%

Specification: Measurement in: Untreated: Treated with CONSOLID SYSTEM:

Density.	AASHTO T180	g/cm ³	1.87	1.91
w opt	AASHTO T180	%	13.0	12.0
C.B.R.max.				
w=w opt	AASHTO T193	%	11.0	34.2
C.B.R.min.				
w=w opt	AASHTO T193	%	2.5	16.4
Swelling	AASHTO T193	%	2.3	1.47

A-6 AASHTO M 145; WI = 26.1%; lp = 11.4%; Fines < 0.075 mm = 45.9%

Specification: Measurement in: Untreated: Treated with CONSOLID SYSTEM:

Density:	AASHTO T180	g/cm ³	1.97	1.99
w opt	AASHTO T180	%	10.0	9.5
C.B.R.max.				
w=w opt	AASHTO T193	%	11.0	71.8
C.B.R.min.				
w=w opt	AASRTOT193	%	6.1	66.0
Swelling	AASHTO T193	%	1.54	0.03

A-6 AASHTO M 145; WI = 30.7%; lp = 15.3%; Fines < 0.075 mm = 50.7%

Specification: Measurement in: Untreated: Treated with CONSOLID SYSTEM:

Density:	AASHTO T180	g/cm ³	1.92	1.95
w opt	AASHTO T180	%	9.0	8.5
C.B.R.max.				
w=w opt	AASHTO T193	%	30.0	72.3
C.B.R.min.				
w=w opt	AASHTO T193	%	3.3	42.7
Swelling	AASHTO T193	%	2.88	0.23



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A-6 AASHTO M 145; WI = 39.9%; lp = 23.2% Fines < 0.075 mm = 53.7%

Specification: Measurement in: Untreated: Treated with CONSOLID SYSTEM:

Density:	AASHTO T180	g/cm ³	1.89	1.91
w opt	AASHTO T180	%	12.0	11.2
C.B.R.max. w=w opt	AASHTO T193	%	10.1	73.8
C.B.R.min. w=w opt	AASHTO T193	%	1.7	49.0
Swelling	AASHTO T193	%	2.43	0.18

A-6 AASHTO M 145; WI = 38.8% lp = 22.0% Fines < 0.075 mm = 59.8%

Specification Measurement in: Untreated: Treated with CONSOLID SYSTEM:

Density:	AASHTO T180	g/cm ³	1.84	1.97
w opt	AASHTO T180	%	11.0	10.0
C.B.R.max. w=w opt	AASHTO T193	%	20.7	69.6
C.B.R.min. w=w opt	AASHTO T193	%	2.0	35.2
Swelling	AASHTO T193	%	3.74	0.72

A-6 AASHTO M 145; WI = 29.9%; lp = 14.6%; Fines < 0.075 mm = 56.7%

Specification: Measurement in: Untreated: Treated with CONSOLID SYSTEM:

Density:	AASHTO	g/cm ³	1.98	2.03
w opt	AASHTO, T180	%	11.4	9.0
C.B.R.max. w=w opt	AASHTO T193	%	12.1	70.5
C.B.R.min. w=w opt	AASHTO T193	%	9.2	41.8
Swelling	AASHTO T193	%	0A6	0.08

A-7-6 AASHTO M 145; WI = 41.8%; lp = 21.4% < 0.075 mm = 70.1%

Specification: Measurement in: Untreated: Treated with CONSOLID SYSTEM:

Density:	AASHTO T180	g/cm ³	1.74	1.78
w opt	AASHTO T180	%	19.0	15.5
C.B.R.max. w=w opt	AASHTO T193	%	4.8	34.7
C.B.R.min. w=w opt	AASHTO T193	%	4-0	24.8
Swelling	AASHTO T193	%	1.96	0.42



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A-7-6 AASHTO M 145; WI = 51.3%; lp = 32.9%; Fines < 0.075 mm = 68.1%

Specification: Measurement in: Untreated: Treated with CONSOLID SYSTEM:

Density:	AASHTO T180	g/cm ³	1.76	1.80
w opt	AASHTO T180	%	18.0	16.5
C.B.R.max.				
w opt	AASHTO T193	%	5.3	19.0
C.B.R.min				
w=w opt	AASHTO T193	%	1.5	12.6
Swelling	AASHTO T193	%	1.7	0.41

A-7-6 AASHTO M 145; WI = 58.2% lp= 38.8%; Fines< 0.075 mm = 88.9%

Specification: Measurement in: Untreated: Treated with CONSOLID SYSTEM:

Density:	AASHTO T180	g/cm ³	1.74	1.79
w opt	AASHTO T180	%	19.0	16.5
C.B.R.max.				
w=w opt	AASHTO T193	%	8.1	29.5
C.B.R.min.				
w=w opt	AASHTO T193	%	4.0	21.0
Swelling	AASHTO T193	%	0.74	0.06

A-7-6 AASHTO M 145; WI = 57.8%; lp = 38.4%; Fines < 0.075 mat = 88.5%

Specification: Measurement in: Untreated: Treated with CONSOLID SYSTEM:

Density:	AASHTO T180	g/cm ³	1.70	1.73
w opt	AASHTO T180	%	18.5	17.0
C.B.R.max.				
w=w opt	AASHTO T193	%	5.8	21.0
C.B.R.min.				
w=w opt	AASHTO T193	%	1.7	13.5
Swelling	AASHTO T193	%	1.47	0.30

A-7-6 AASHTO M 145; WI = 44.3%; lp = 24.9%; Fines < 0.075 mm = 64.0%

Specification: Measurement in: Untreated: Treated with CONSOLID SYSTEM:

Density:	AASHTO T180	g/cm ³	1.69	1.73
w opt	AASHTO T180	%	16.0	16.5
C.B.R.max.				
w=w opt	AASHTO T193	%	15.4	42.5
C.B.R.min.				
w=w opt	AASHTO T193	%	1.0	26.2
Swelling	AASHTO T193	%	5.7	0.28



THE CONSOLID SYSTEM

A-7-6

AASHTO M 145 W= 53.9%; Ip= 31.8%; Fines < 0.75 mm = 56.2%

Specification: Measurement in: Untreated: Treated with CONSOLID SYSTEM:

Density:	AASHTO T180	g/cm ³	1.74	1.76
w opt	AASHTO T180	%	17.0	15.3
C.B.R.max.				
w=w opt	AASHTO T193	%	8.7	36.6
C.B.R.min.				
w=w opt	AASHTO T193	%	1.0	24.5
Swelling	AASHTO T193	%	7.6	0.37