



# CONSOLID Facts

TECHNICAL BULLETIN

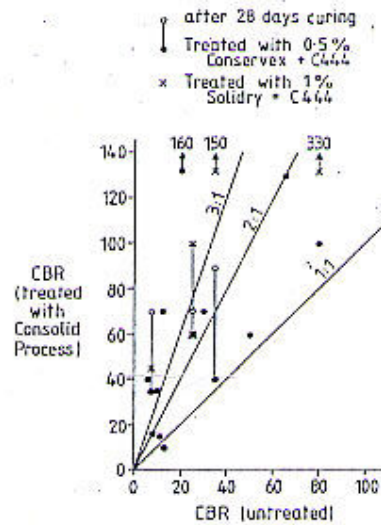
2 - 2004

## DEGREE OF IMPROVEMENT WITH ALL KINDS OF SOIL, VOL.2

### CALIFONIS BEARING RATIO

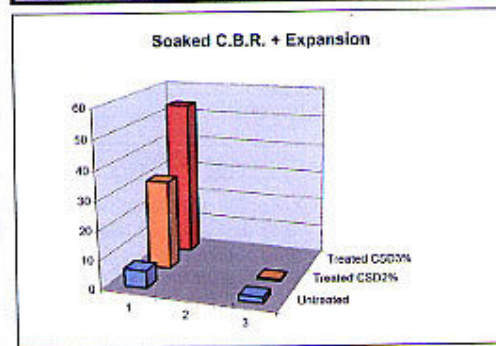
Values shows in a convincing way the effective ness of the CONSOLID SYSTEM, with vol.2 we continue the collection of test results with soaked C.B.R. values results from all over the world, where the CONSOLID SYSTEM confirms with all different types of soil the fact, that this system really improves 100% of all soils in a reliable, permanent way.

Taking the average of improvement, you can count on a increase of the soaked CBR values with treated soil of 3 to 5 times, and in more than 50% of cases even more than 5 times. The lower the soaked CBR of untreated soil the greater the improvement.



Recently the Turkish General Directory of Highways by the Directory of Top Bae Construction carried out laboratory tests with a A-7-6 clay, being the worst material for base course layers. The test results have been amazing to them because such soils could not be used in a road embankment today. The CONSOLID SYSTEM allows now to upgrade such soil type not only in the sub-grade, but also to use them in the sub-base and for lower class roads even in the base course. In higher classified roads the addition of coarse material would bring the soaked C.B.R. values ar above 100%. The cost saving potential is substantial.

TURKEY: GD Highways, Top Base Constr., 2.2004		
Soil Type	A-7-6	d:1,680/m <sup>3</sup> , w :19,2%
<b>C.B.R.</b>	<b>100%</b>	<b>Expansion</b>
Untreated	6.1	1.9
Treated CSD2%	30.9	0.60
Treated CSD3%	53.8	



C.B.R. Increase 5 times 9 times -3.2 times Expansion

General Directory Of Highways  
Directory of Top Base Construction

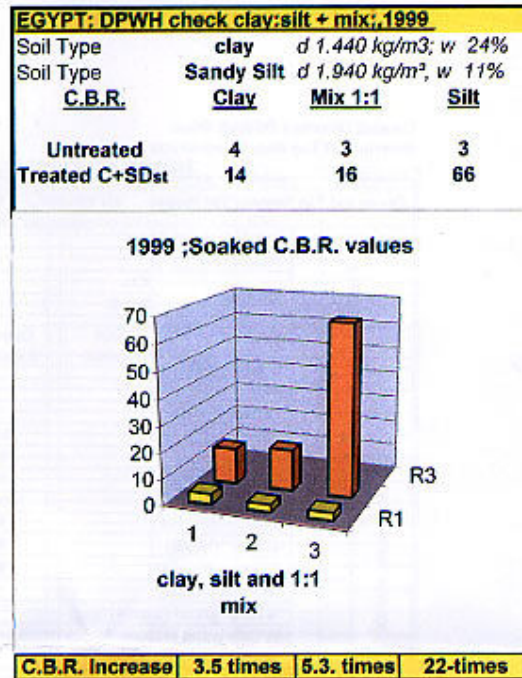
TOPRAK DENEYLERİ RAPORU

TOPRAK DENEYLERİ RAPORU					Date	11.02.2004
Owner and The Name of The Project		Consolid 444 and Solidry Stabilisation Project			Report No.	
SAMPLE	Lab No.					
	Sample No.					
	Site Place	Km.				
		Depth				
Cinsi	Untreated	%2 Treated	%3 Treated			
PIECE DIMENSION DISPERSION	Sieve Analysis (% of Passed)	75mm (3")				
		50 (2")				
		37.5mm (1 1/2")				
		25mm (1")	100			
		19mm (3/4")	99			
		9.5mm (3/8")	98			
		4.75mm (No.4)	95			
		2mm (No.10)	92			
		425um (No.40)	87			
		75um (No.200)	80			
		%Gravel (>2mm)				
	% Large Gravel (2mm-420um)					
	% Thin Gravel (420um-75um)					
	% Silt (75um-2um)					
% Clay (2um-1um)						
% Colloidal Clay (<1um)						
75mm Uzerinde Kalan						
Atterberg Limits	Likidity limit %	47	45	51		
	Plastisite Index %	27	14	15		
Organic Material %						
Soil Type	AASHTO	A-7-6				
	BZS	CL				
Strength (Na <sub>2</sub> SO <sub>4</sub> )						
Max. Dry Density Ag. t/m <sup>3</sup>	Standart	1,680	1,744	1,770		
	Modified					
	Vibration					
Optimum Su Icerigi %	Standart	19,2	17,4	16,2		
	Modifiye					
	Vibrasyonlu					
CBR	Dry Density.					
	Water Content					
	Wet %	6,1	30,9*	53,8*		
	Dry %					
Swelling (Sursarj.....Kg) %		1,9	0,6	0,7		
Engineer	Name Surname	Birul ATBAS	Service Director	Name Surname	Cihat AVSAR	
	Signature			Signature		

\*These values are the wet CBR test results.

NOTE: %2 treated tests for 6 kg. Soil, 120 gr Solidry (Solid) and 120ml. Consolid (liquid); %3 treated test for 6 kg. Soil, 180 gr Solidry (solid) and 180ml. Consolid (liquid) were used. The samples were dried back for 6 days at room temperature and the slides of the mould were covered with parafine (In order to permit water just from the top and bottom of the sample) and The Wet CBR test were done

Silts are those types of soil which have the greatest sensitivity against softening by moisture. The CONSOLID SYSTEM is capable to bring this characteristic fully under control as shown on another example of test results with such soil in Egypt. Whilst the improvement of the clay and clay : silt mix has been in the lower range, the silt could be improved substantially, despite the fact that probably the test has not been carried out as recommended. We recommend that C.B.R. test blocks are not soaked at O.M.C., but dried back from 50% to 70% of O.M.C. to be better comparable with the conditions in the field.



The other example originates from a road construction in PAKISTAN by the DHA, the Highway Authority. Their silty soils, which differed in the composition remarkably, has been tested and brought a convincing upgrading by increasing the soaked C.B.R. values by 7 to 10 times. These results show that the improvement can be really tailored to the requirement by adding to the in situ soil enough of missing fractions to develop with the same investment in the CONSOLID SYSTEM the utmost betterment. The fact that such results can be already secured by simple laboratory tests ahead of any field application allows the customer to maximize the “added value” of the treated soil.

