



## Laboratory Results

Test : CBR (California Bearing Ratio) of Laboratory-Compacted Soils  
Method : DRY  
Standard : ASTM D1883-07

CBR dry			CBR dry		
<b>Sample</b>	Code	50 - 50	<b>Sample</b>	Code	
	Date tested	8-Aug-12		Date tested	
	Max proctor value	1,728 kg/m <sup>3</sup>		Max proctor value	
	Max moisture content	12%		Max moisture content	
	additive			additive	
<b>Tested</b>	weight sample [kg]	4,419	<b>Tested</b>	weight sample [kg]	
<b>sample</b>	volume sample [m <sup>3</sup> ]	2,365	<b>sample</b>	volume sample [m <sup>3</sup> ]	
	density sample [kg/m <sup>3</sup> ]	1,868		density sample [kg/m <sup>3</sup> ]	
<b>Results</b>	Bearing ratio at 0.1" [%]	<b>17.8</b>	<b>Results</b>	Bearing ratio at 0.1"	
	Bearing ratio at 0.2 " [%]	<b>19.3</b>		Bearing ratio at 0.2 "	
	CBR-value [%]	<b>19.3</b>		CBR-value	
	R. moisture cont. top	8.90%		R. moisture cont. top	
	R. moisture cont.bottom	9.10%		R. moisture cont.bottom	
	R. moisture cont. ave.	9%		R. moisture cont. ave.	

Remarks : no remarks

Contractor	: Elite Civil Engineering	Sheet	: 124415	<b>Form</b>
Project	: laboratory study Aggrebind	Date	: 9 Aug. 2012	
Location	: n.a.	Analyst	: Q.G. Kook	<b>CBR</b>
Material	: 50% diabaas 50% crushed asphalt	Checked	: <i>MP</i>	





# Civil, Environmental & Geotechnical Engineers

C A R I B B E A N

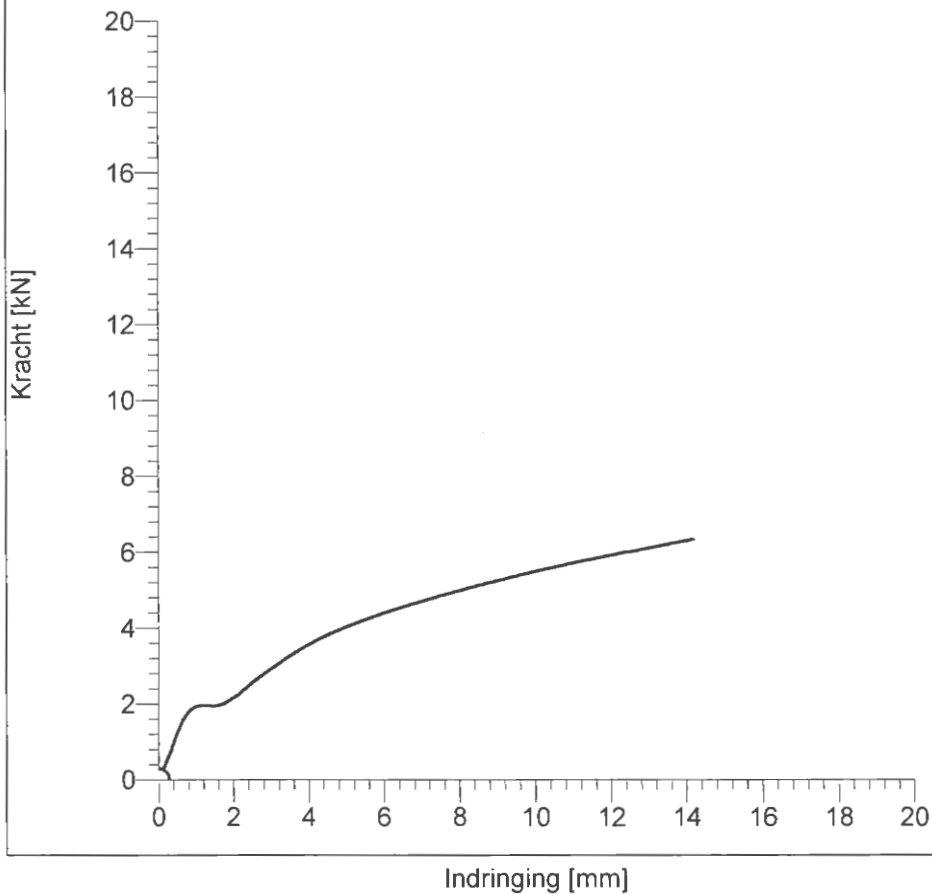
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Opdrachtgever: Elite Civiel Engineering

Project: lab onderzoek aggregbind

Rapport: 124415

test nr: # 1 50 %diabaas 50% crushed asfalt



## CBR-Test

Time des. Min	Penetr. depth des. mm	Time Min	Penetr. depth mm	Axial force kN	Pistilpr. MN/m <sup>2</sup>	Pistilpr. corr. MN/m <sup>2</sup>	Pistilpr. Standard MN/m <sup>2</sup>	CBR-Value %
2,00	2,500	2,29	2,500	2,550	1,299	1,246	7,000	17,80
4,00	5,000	4,41	5,000	4,021	2,048	2,022	10,450	19,35
6,00	7,500	6,50	7,500	4,848	2,470	2,449	13,300	18,41
8,00	10,000	8,60	10,000	5,482	2,793	2,775	16,000	17,35





## Laboratory Results

Test : CBR (California Bearing Ratio) of Laboratory-Compacted Soils  
 Method : DRY  
 Standard : ASTM D1883-07

CBR dry			CBR dry		
<b>Sample</b>	Code	50 - 50 - 15	<b>Sample</b>	Code	
	Date tested	10-Aug-12		Date tested	
	Max proctor value	1,728 kg/m <sup>3</sup>		Max proctor value	
	Max moisture content	12%		Max moisture content	
	additive [ml]	15		additive	
	days	7		days	
<b>Tested</b>	weight sample [kg]	4,663	<b>Tested</b>	weight sample [kg]	
<b>sample</b>	volume sample [m <sup>3</sup> ]	2,335	<b>sample</b>	volume sample [m <sup>3</sup> ]	
	density sample [kg/m <sup>3</sup> ]	1,997		density sample [kg/m <sup>3</sup> ]	
<b>Results</b>	Bearing ratio at 0.1" [%]	<b>37.2</b>	<b>Results</b>	Bearing ratio at 0.1"	
	Bearing ratio at 0.2 " [%]	<b>47.1</b>		Bearing ratio at 0.2 "	
	CBR-value [%]	<b>47.1</b>		CBR-value	
	R. moisture cont. top	n.a.		R. moisture cont. top	
	R. moisture cont.bottom	n.a.		R. moisture cont.bottom	
	R. moisture cont. ave.	n.a.		R. moisture cont. ave.	

Remarks : 15 ml Aggrebind added, tested after 7 days.

Contractor	: Elite Civil Engineering	Sheet	: 124415	<b>Form</b>
Project	: laboratory study Aggrebind	Date	: 10 Aug. 2012	
Location	: n.a.	Analyst	: Q.G. Kook	<b>CBR</b>
Material	: 50% diabaas 50% crushed asphalt 15 ml Aggrebind	Checked	: <i>MP</i>	



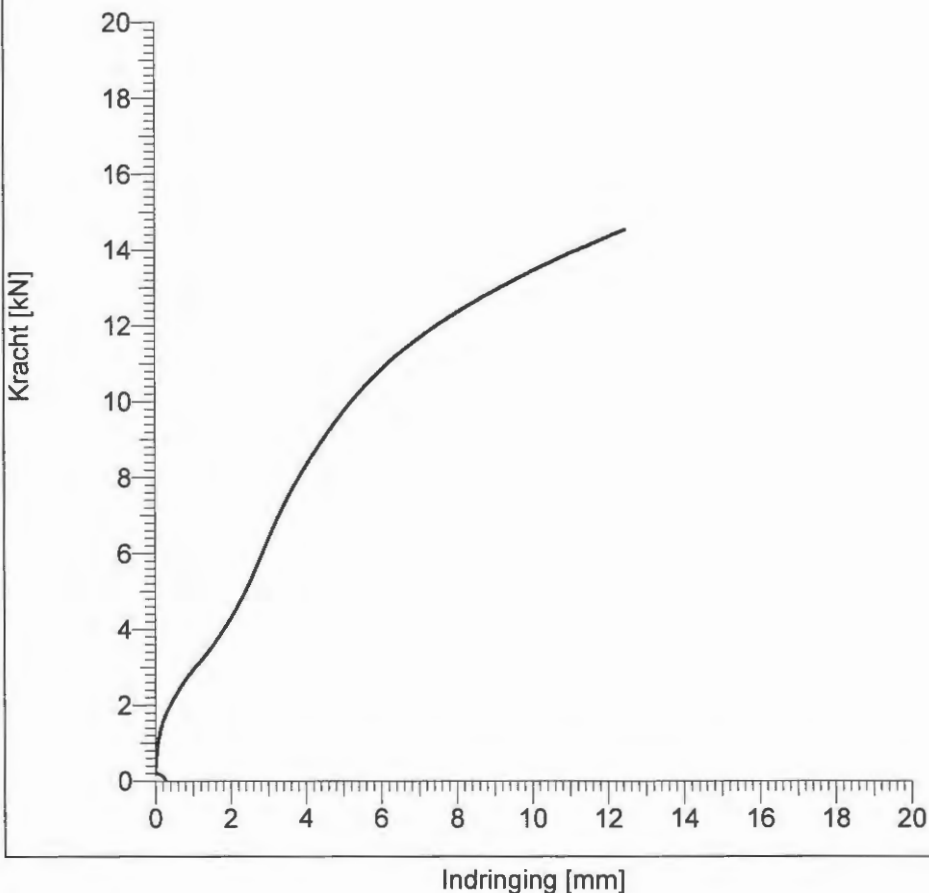


Opdrachtgever: Elite Civil Engineering

Project: lab onderzoek aggrebind

Rapport: 124415

test nr: # 2 met 15ml aggrebind na 7dg



**CBR-Test**

Time des. Min	Penetr. depth des. mm	Time Min	Penetr. depth mm	Axial force kN	Pistilpr. MN/m <sup>2</sup>	Pistilpr. corr. MN/m <sup>2</sup>	Pistilpr. Standard MN/m <sup>2</sup>	CBR-Value %
2,00	2,500	2,21	2,500	5,191	2,644	2,605	7,000	37,22
4,00	5,000	4,42	5,000	9,725	4,954	4,929	10,450	47,17
6,00	7,500	6,57	7,500	12,026	6,126	6,113	13,300	45,96
8,00	10,000	8,68	10,000	13,443	6,848	6,837	16,000	42,73



## Laboratory Results

Test : CBR (California Bearing Ratio) of Laboratory-Compacted Soils  
 Method : DRY  
 Standard : ASTM D1883-07

CBR dry			CBR dry		
<b>Sample</b>	Code	50 - 50 - 20	<b>Sample</b>	Code	
	Date tested	17-Aug-12		Date tested	
	Max proctor value	1,728 kg/m <sup>3</sup>		Max proctor value	
	Max moisture content	12%		Max moisture content	
	additive [ml]	20		additive	
	days	14		days	
<b>Tested</b>	weight sample [kg]	4,776	<b>Tested</b>	weight sample [kg]	
<b>sample</b>	volume sample [m <sup>3</sup> ]	2,353	<b>sample</b>	volume sample [m <sup>3</sup> ]	
	density sample [kg/m <sup>3</sup> ]	2,038		density sample [kg/m <sup>3</sup> ]	
<b>Results</b>	Bearing ratio at 0.1" [%]	<b>42.2</b>	<b>Results</b>	Bearing ratio at 0.1"	
	Bearing ratio at 0.2 " [%]	<b>75.4</b>		Bearing ratio at 0.2 "	
	CBR-value [%]	<b>75.4</b>		CBR-value	
	R. moisture cont. top	n.a.		R. moisture cont. top	
	R. moisture cont.bottom	n.a.		R. moisture cont.bottom	
	R. moisture cont. ave.	n.a.		R. moisture cont. ave.	

Remarks : 20 ml Aggrebind added, tested after 14 days.

Contractor	: Elite Civil Engineering	Sheet	: 124415	<b>Form</b>
Project	: laboratory study Aggrebind	Date	: 3 Sept. 2012	
Location	: n.a.	Analyst	: Q.G. Kook	<b>CBR</b>
Material	: 50% diabaas 50% crushed asphalt 20 ml Aggrebind	Checked	: <i>mp</i>	





# Civil, Environmental & Geotechnical Engineers

C A R I B B E A N

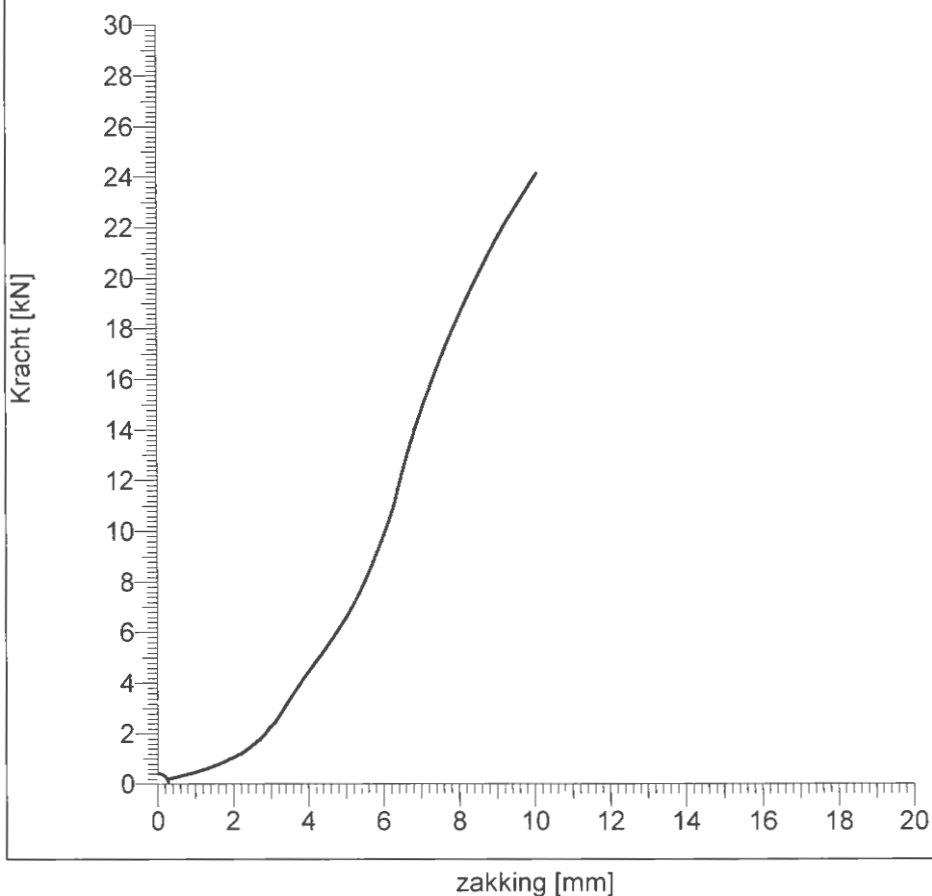
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Opdrachtgever: Elite Civil Engineering

Project: lab onderzoek aggrebind

Rapport: 124415

test nr: # 3 50-50 met 20ml aggrebind na 14dg



## CBR-Test

Time des. Min	Penetr. depth des. mm	Time Min	Penetr. depth mm	Axial force kN	Pistilpr. MN/m <sup>2</sup>	Pistilpr. corr. MN/m <sup>2</sup>	Pistilpr. Standard MN/m <sup>2</sup>	CBR-Value %
2,00	2,500	2,09	2,500	1,477	0,752	2,957	7,000	42,25
4,00	5,000	4,30	5,000	6,517	3,320	7,881	10,450	75,42
6,00	7,500	6,86	7,500	16,708	8,511	11,831	13,300	88,96
8,00	10,000	9,06	10,000	23,954	12,203	12,285	16,000	76,78





## Laboratory Results

Test : CBR (California Bearing Ratio) of Laboratory-Compacted Soils  
 Method : DRY  
 Standard : ASTM D1883-07

CBR dry			CBR dry		
<b>Sample</b>	Code	50 - 50 - 20	<b>Sample</b>	Code	
	Date tested	17-Aug-12		Date tested	
	Max proctor value	1,728 kg/m <sup>3</sup>		Max proctor value	
	Max moisture content	12%		Max moisture content	
	additive [ml]	20		additive	
	days	31		days	
<b>Tested sample</b>	weight sample [kg]	4,792	<b>Tested sample</b>	weight sample [kg]	
	volume sample [m <sup>3</sup> ]	2,334		volume sample [m <sup>3</sup> ]	
	density sample [kg/m <sup>3</sup> ]	2,053		density sample [kg/m <sup>3</sup> ]	
<b>Results</b>	Bearing ratio at 0.1" [%]	<b>58.62</b>	<b>Results</b>	Bearing ratio at 0.1"	
	Bearing ratio at 0.2 " [%]	<b>102.15</b>		Bearing ratio at 0.2 "	
	CBR-value [%]	<b>102.15</b>		CBR-value	
	R. moisture cont. top	n.a.		R. moisture cont. top	
	R. moisture cont.bottom	n.a.		R. moisture cont.bottom	
	R. moisture cont. ave.	n.a.		R. moisture cont. ave.	

Remarks : 20 ml Aggrebind added, tested after 31 days.

Contractor : Elite Civil Engineering	Sheet : 124415	<b>Form</b>
Project : laboratory study Aggrebind	Date : 18 Sept. 2012	
Location : n.a.	Analyst : Q.G. Kook	
Material : 50% diabaas 50% crushed asphalt 20 ml Aggrebind	Checked : <i>VVP</i>	<b>CBR</b>



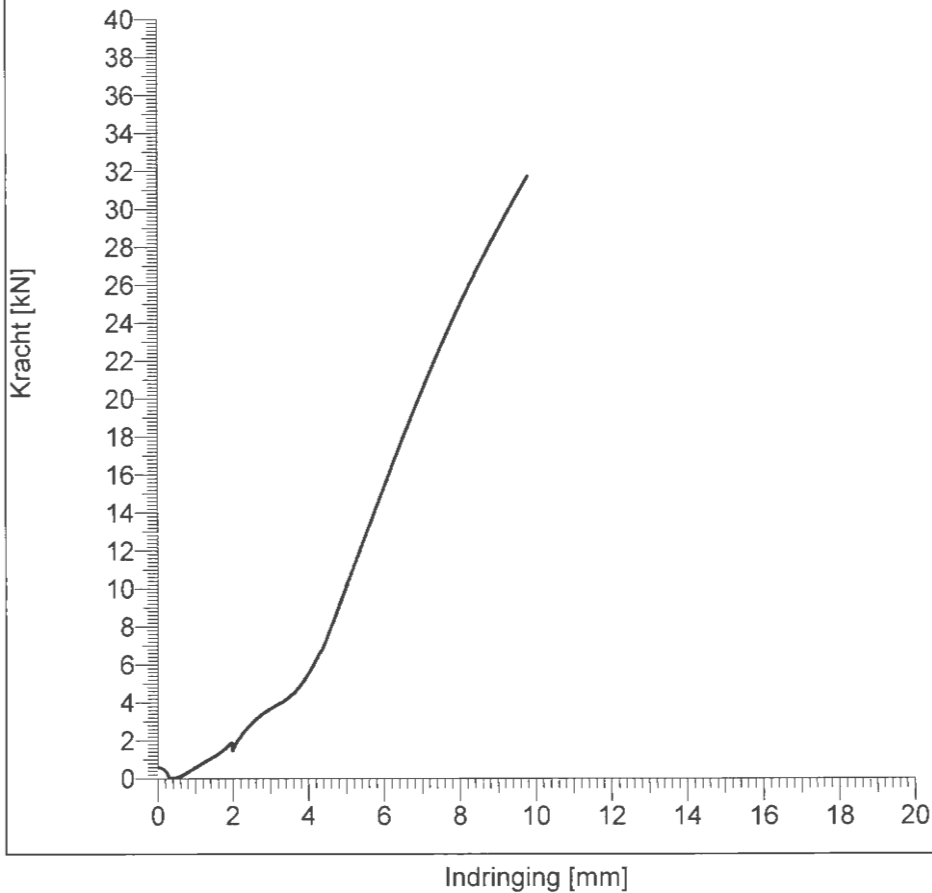


Opdrachtgever: Elite Civil Engineering

Project: lab onderzoek aggregbind

Rapport: 124415

test nr: #4 50 - 50 met 20ml aggregbind na 28 dg



#### CBR-Test

Time des. Min	Penetr. depth des. mm	Time Min	Penetr. depth mm	Axial force kN	Pistilpr. MN/m <sup>2</sup>	Pistilpr. corr. MN/m <sup>2</sup>	Pistilpr. Standard MN/m <sup>2</sup>	CBR-Value %
2,00	2,500	2,17	2,500	2,873	1,464	4,103	7,000	58,62
4,00	5,000	4,46	5,000	10,038	5,114	10,674	10,450	102,15
6,00	7,500	6,78	7,500	22,688	11,558	15,842	13,300	119,12
8,00	10,000	8,82	9,810	31,719	16,158	16,158	16,000	100,99



**Concerning the lab tests done by C.E.G.E.**

**The results of the CBR-tests ,the Proctor-Test and Sieve Analyze are certified by the laboratory: Civil, Environmental & Geotechnical Engineers (C.E.G.E.) – CARIBBEAN - CURACAO.**


**These CBR-tests were performed under the supervision of Miguel Reyes, and were done by qualified and experienced personnel. The CBR-tests were performed according to the ASTM-Designation : D 1883 : Standard Test Method for: CBR ( California Bearing Ratio ) of laboratory-Compacted Soil.**

**The Proctor Test is done according the ASTM-Designation: D 1557 ; Test Method for: Laboratory Compaction Characteristics of Soil Using Modified Effort.**

**CEGE-lab is the only lab nowadays that performed civil engineering tests for the government and others on the island of CURACAO.**

**As an independent Consultant and with years of experience with these test-methods my opinion is that the product Aggrebind improve the quality of the mineral aggregate very well . Aggrebind meets all the standards and is a product that will performed well.**

**Experienced by Miguel Reyes**

  
**Miguel A. Reyes**

**Elite Civil Engineering (E.C.E.)  
Independant Consultant  
Asphalt, Concrete, Soil  
[mareyescurcol@gmail.com](mailto:mareyescurcol@gmail.com)  
Tel: 005999-6911417**

## CURRICULUM VITAE

Full name : Reyes, Miguel Antonio  
Date of birth : 12<sup>th</sup> of June 1946  
Place of birth : ARUBA

Adress : Kaya Kokolishi 54 - CURACAO  
Tel home : 005999-7376498  
Tel. Cel. : 005999- 6911417

**Academic Qualifications:** Civil Engineering (HTS)  
Mathematics and Physics Teacher Degree.

**Courses followed** : Asphalt Technology - Delft – Holland  
Concrete Technology – University of Curacao  
Foundation - University of Curacao

**Number of years of experience:**  
40 years in Asphalt Technology  
28 years in Concrete Technology  
38 years in Soil Mechanics and Foundations  
24 years in Fluid Mechanics

**Work Experiences:**  
1970 - 1982 : Dutch Ministry of Public Works (RijksWaterstaat)  
Department : State Road Engineering Department  
Delft - Holland  
From 1970 - 1974 : Laboratorium of asphalt  
1974 - 1978 : Advisor of the state for mix-design of  
asphalt for the High Ways of Holland.  
1978 - 1982 : Advisor and instructor for the road  
engineers and technicians of all Road  
Departments of the State.

1982 - 2006 : University of Curacao:  
Jan Noorduynweg 11 - CURACAO  
Lab Instructor for the students of the Civil Engineering  
Department.  
Has been Involved in the following projects:  
Quality engineering/management for the reconstruction of the  
runway of the “Reina Beatrix” Airport in Aruba (1987).  
Plate bearing and concrete tests for several contractors in Aruba ,  
Curacao and Bonaire. Plate bearing test for DOW- Aruba.  
Plate bearing and density tests for the foundations of several hotels  
in Aruba for the Arubaanse Wegenbouw and Albo-Aruba; for  
example the Hyatt-Hotel, Divi-Hoptel, Marriott Hotel and the  
Mariniers Kazerne.

Quality Engineering for several project in Curacao.  
Material-testing, soil and concrete quality control and supervising, for the “Terminal Expansion Project “ of the “Reina Beatrix” International Airport in Aruba (1997 - 1999) ;  
Supervisor of quality control of the Concrete Plant of Bo Beton in Curacao (2000 – 2001).  
For the new construction of a highway in Aruba all the preliminary investigation were done by my company Elite Civil Engineering at the end of 2011.

**Summery of experiences:**

**Teaching experiences:**

On the University: Lab. Instructor for soil mechanics, foundations, asphalt and fluid mechanics.

**On the evening** (Avond MTS) : Concrete Technology and Bouw fysica.

Experience in performing the following tests:

All asphalt tests; concrete test : slump test, compressive strength test, mix-design, sieve analyse; plate bearing test; field density test, lab-test for the maximum dry density (Proctor test) Californian Bearing Ratio Test (CBR), in situ and in the lab., the plastic limit test, the consolidation test, the Los Angeles Abriasion Test.

**Workshop given.**

For Albo-Aruba: Materials and Concrete

For Arubaanse Wegenbouw Maatschappij: Asphalt

For DOW-Curacao: Asphalt

For ATCO-Aruba: Materials and Concrete

Has an ACI-certificate for Field Technician Grade 1.

Has his own Consultancy Company.

“Elite Civil Engineering”

**Miguel Antonio Reyes**  
**Elite Civil Engineering**  
**Consultancy Civil Engineering**  
**Asphalt, Concrete and Soil Mechanics**  
**Kaya Kokolishi 54**  
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