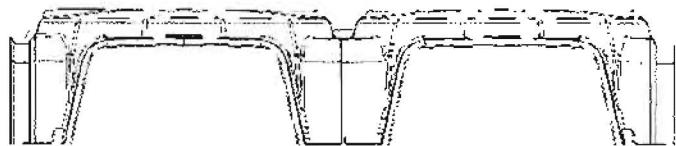




Final Report on

Load Test on Reinforced Concrete Slabs with Plastic Disposable Forms



Submitted to

Tanal General Trading and Contracting

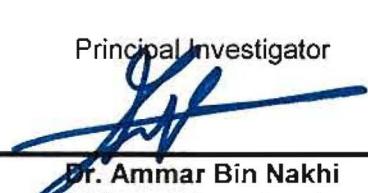
Submitted by

Center of Excellence in Management - College of Business Administration
Kuwait University

June 9, 2019

Signed by:

Principal Investigator


Dr. Ammar Bin Nakhi
Technical Team Leader
Department of Civil Engineering

Authorizing Official


Dr. Mohammad Zainal
Director of Consultations and Studies
Center of Excellence in Management



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1. Disclaimer

This work is intended solely for Tanal general trading and contracting. Any use which a third party makes of the work, or any reliance on or decisions to be made based on it, are the responsibility of such third parties. Decisions made or actions taken as a result of our work shall be the responsibility of the parties directly involved in the decisions or actions.

2. Introduction:

Upon the request of Tanal general trading and contracting, represented by Mr. Ahmad Al-Majid (CEO), a load testing plan for reinforced concrete slabs with ABS plastic disposable formwork was performed. The ABS plastic formwork is made in Turkey and a brochure of the product is included in Appendix C. Three groups of reinforced concrete slabs were tested (3 slabs per group). All samples were load tested after concrete casting by five weeks (around 38 days). Detailed results in a tabulated form for all conducted tests with graphs, remarks, photos, will be presented in the report.

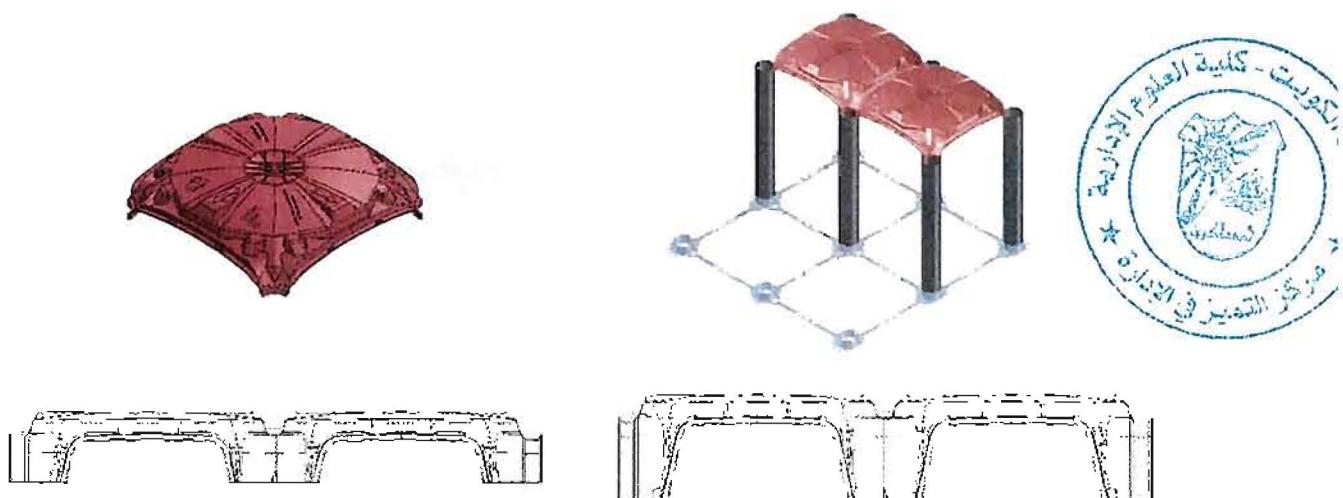


Figure 1: ABS plastic disposable formwork for reinforced concrete slab construction.

LOAD TEST ON REINFORCED CONCRETE SLABS WITH ABS PLASTIC DISPOSABLE FORMWORK

3. Samples preparation

Three slab groups were established. Each group consists of three slab samples. Group (I) consists of three reinforced concrete slabs of size 225cm x 225 cm casted on a disposable ABS plastic formwork and supported by equally spaced circular pipe reinforced concrete columns of 11.8 cm diameter and 85 cm height (the overall height of the slab sample was approximately 110 cm from top of the slab to the bottom of the supporting reinforced concrete columns). A total of 9 plastic forms, each of size 71 cm x 71 cm, were used for each sample of Group (I) The center-to-center spacing of circular columns was 75 cm. Columns were reinforced with an 8 mm diameter steel reinforcement in a U-shape manner (i.e. column was reinforced with $2\phi 8$).



Figure 2: Group (I) slab sample preparation.

A single mesh of $15 \phi 8 \text{ mm} \times 15 \phi 8 \text{ mm}$ steel reinforcement was placed on the top of the disposable formwork surface with a concrete cover of less than 1 cm. The average slab thicknesses for Group (I) samples was 13.3 cm (12.5 cm , 13.5 cm , 14 cm). Normal weight concrete with an average cube compressive strength of 26.36 MPa (268.70 Kg/cm^2) was used for casting. As for Group (II), three reinforced concrete slabs with an approximate size of $108 \text{ cm} \times 108 \text{ cm}$ casted on a disposable formwork without the circular pipe reinforced concrete columns. Nevertheless, the slabs had a 15 cm legs height (plastic form had a leg height of 10 cm measured from top of the form to the bottom of the legs). A single mesh of $10 \phi 8 \text{ mm} \times 10 \phi 8 \text{ mm}$ steel reinforcement was placed on the top of the disposable formwork with a concrete cover of less than 1 cm. The average slab thicknesses for Group (II) samples was 4.77 cm (4.2 cm , 4.6 cm , 5.5 cm). Normal weight concrete with an average cube compressive strength of 26.36 MPa (268.70 Kg/cm^2) was used for casting.



Figure 3: ABS disposable formwork with mesh steel reinforcement prior to concrete casting for sample Group (II) [normal concrete] and Group (III) [fiber concrete].



Finally, three additional reinforced concrete slabs with an approximate size of 108 cm x 108 cm casted on a disposable formwork and directly placed on the floor ground (without the circular pipe reinforced concrete columns). A single mesh of 8 Ø8 mm x 8 Ø8 mm steel reinforcement was placed on the top of the disposable formwork with a concrete cover of less than 1 cm. The average slab thicknesses for Group (III) samples was 5.93 cm (5.5 cm, 5.8 cm, 6.5 cm). Fiber reinforced concrete with an average cube compressive strength of 25.14 MPa (256.27 Kg/cm²) was used for casting the slabs of Group (III). It should be mentioned that the fibers did have an improved control on surface shrinkage cracks when compared with the Group (I) and Group (II) slab samples. All slabs were constructed in the concrete laboratory at college of engineering and petroleum at Kuwait university by out-of-campus well-experienced handymen. All slab samples were stored outside the lab and open to the environment and water cured (similar to site curing conditions) for 4 weeks.



Figure 4: water curing the slab samples.



4. Load Test Results

All samples were load tested by a loading frame with mounted hydraulic load jack with an ultimate load capacity of 1000 KN. A circular steel plate of 28.5 cm diameter and 5 cm thick was placed on the top of the slab surface with an 8mm rubber sheet in-between. In addition, a ball-mounted steel plate was placed between the load cell platen and the 28.5 cm steel plate, in order to reduce the effect of any load concentration due to unleveled slab surface. The load was applied at the slab's center point for all samples. A digital LVDT was placed underneath the slab surface at the location of load application in order to aquacise vertical displacement reading during the load application. The rate of loading was kept at 0.1661 KN/sec for all slab samples. The results are summarized in Table1, Table2, Figure 5, Figure 6, and Figure 7.

Table 1: Load test results for all slab samples

Group	Sample	Slab size (cm x cm)	Total height (with columns) (mm)	Thickness (mm)	Steel Reinf. mesh	Max. Load (KN)	Vertical def. at max. load (mm)
Group (I)	S1	225 x 225	110.5	13.5	15Φ8	355.37	15.12
	S2	225 x 225	110.0	12.5	15Φ8	286.79	13.69
	S3	225 x 225	110.0	14.0	15Φ8	300.93	16.91
Group (II)	S1	108 x 108	20.8	5.8	8Φ8	202.55	4.72
	S2	108 x 108	20.5	5.5	8Φ8	163.03	9.07
	S3	108 x 108	20.5	6.5	8Φ8	231.41	4.16
Group (III)	S1	108 x 108	14.6	4.6	10Φ8	202.27	10.25
	S2	108 x 108	15.5	5.5	10Φ8	221.15	7.58
	S3	108 x 108	14.2	4.2	10Φ8	175.13	4.47



Table 2: Average load test results for different group samples

Group	Slab size (cm x cm)	Total height (with columns) (mm)	Average Thickness (mm)	Steel Reinf. mesh	Average cube comp. strength (MPa)	Average Max. Load (KN)	Average Vertical deflection at max. load (mm)
Group (I)	225 x 225	110.0	13.3	15@8	26.36	314.36	15.24
Group (II)	108 x 108	20.6	5.9	8@8	26.36	199	5.98
Group (III)	108 x 108	14.8	4.8	10@8	25.14	199.52	7.43

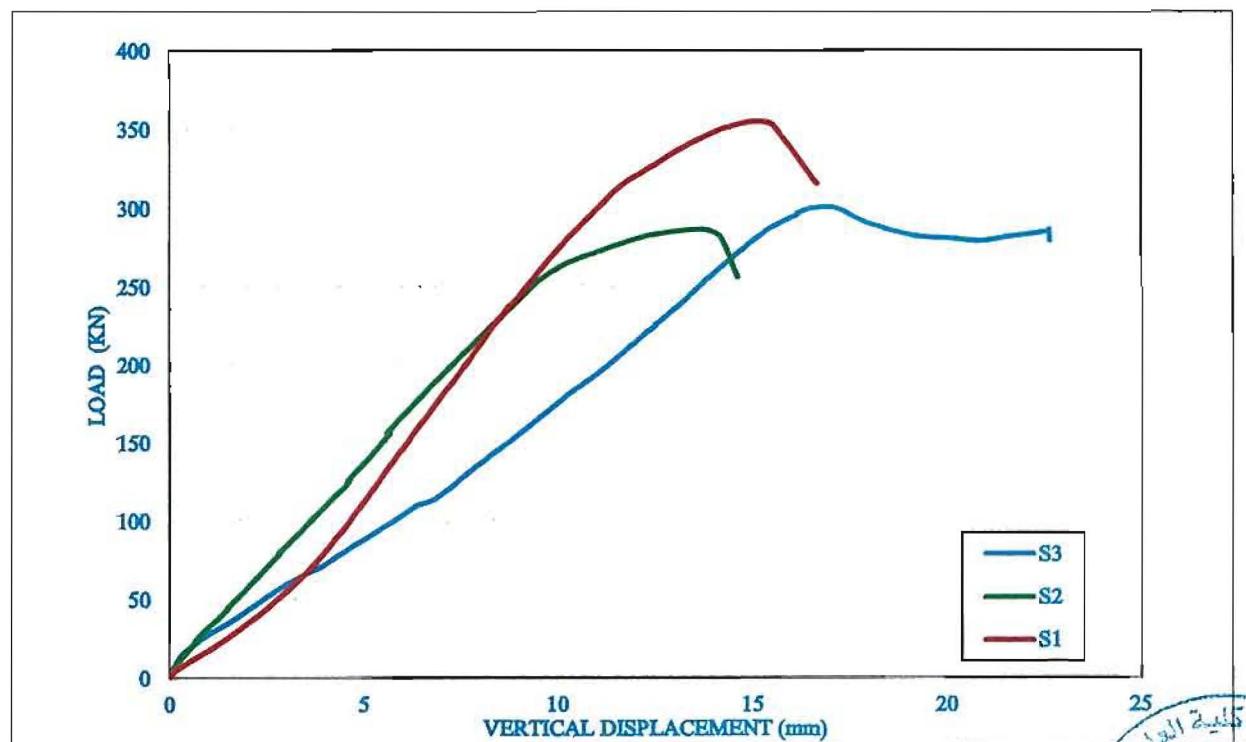


Figure 5: Load-vertical displacement curve for Group (I) samples.

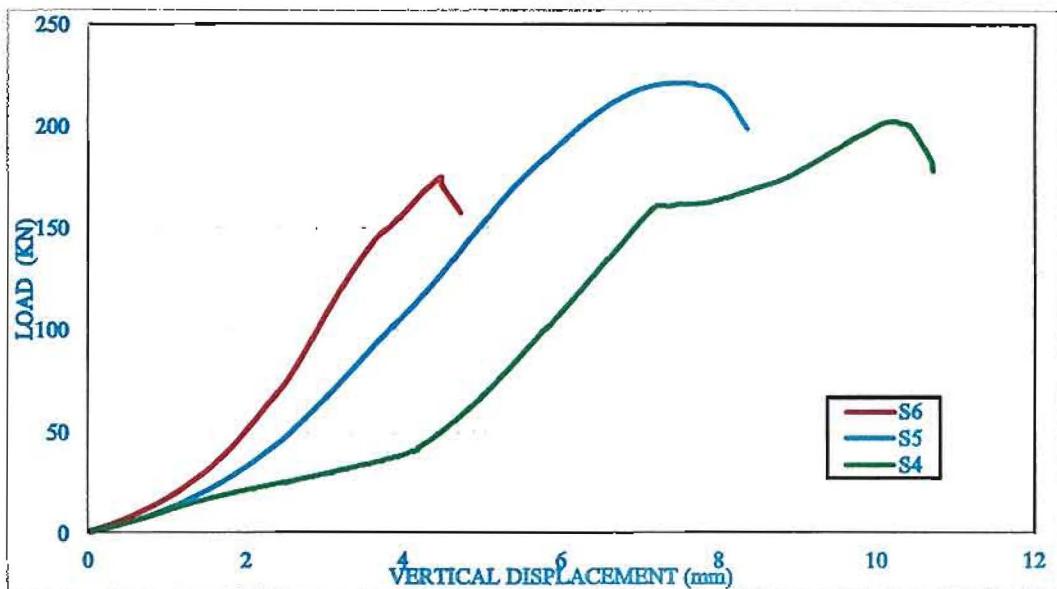


Figure 6: Load-vertical displacement curve for Group (II) samples.

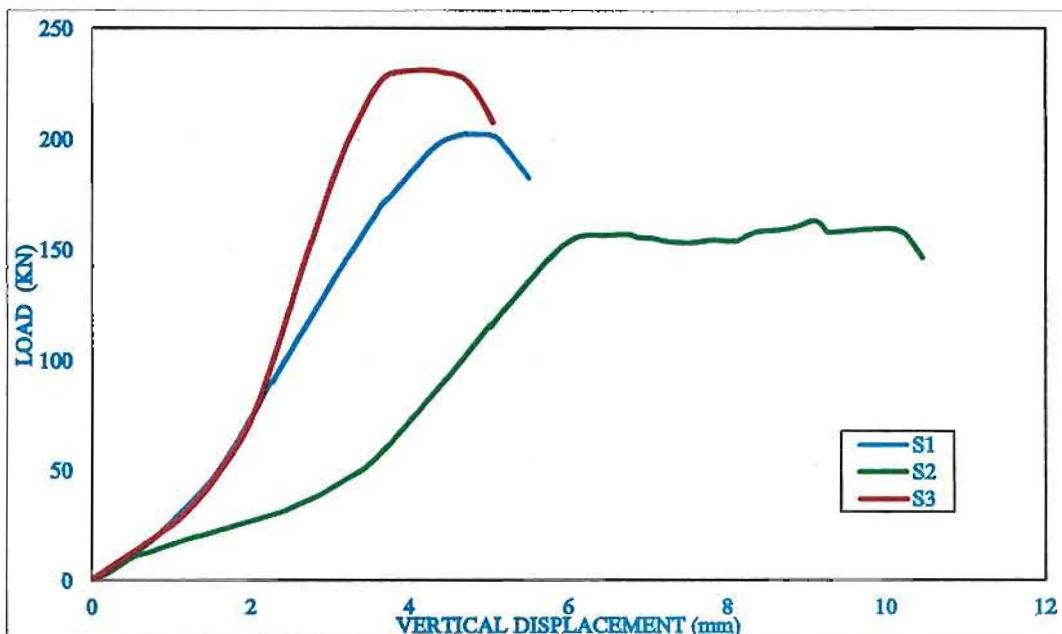


Figure 7: Load-vertical displacement curve for Group (III) samples.

Principal Investigator:
 Dr. Ammar Ben-Nakhi
 Civil Engineering Department
 Dr. Ammar Ben-Nakhi



5. References:

1. Handbook of Concrete Engineering, Second Edition, Edited by Mark Fintel.
2. BS EN 12390-3:2009, Testing hardened concrete. Compressive strength of test specimens.



Appendix (A)

Compressive strength test results for concrete cubes

Data Sheet
Compressive Strength of Concrete Cubes

According to BS EN 12390-3:2009

Test No.: _____

Date: 6 / 5 / 2019

Cube No.	Length (mm)	Width (mm)	Height (mm)	Weight (g)	Density (kg/m ³)	Ultimate Compressive Load (KN)	Ultimate Compressive Strength (MPa)
1	153.08	154.01	151.71	8.10	2.26	618.60	26.24
2	151.67	153.98	150.04	8.15	2.33	575.10	24.63
3	150.87	152.36	149.44	8.10	2.36	663.50	28.86
4	151.68	152.88	148.63	8.15	2.36	599.10	25.84
5	152.75	152.85	149.66	127.60	36.52	612.30	26.23
Average Ultimate Strength =							26.36

Data Sheet
Compressive Strength of Fiber Concrete Cubes

According to BS EN 12390-3:2009

Test No.: _____

Date: 6 / 5 / 2019

Cube No.	Length (mm)	Width (mm)	Height (mm)	Weight (g)	Density (kg/m ³)	Ultimate Compressive Load (KN)	Ultimate Compressive Strength (MPa)
1	147.21	151.43	152.82	8.00	2.35	566.20	25.40
2	150.23	151.33	151.41	8.05	2.34	575.10	25.30
3	151.37	151.98	152.92	8.10	2.30	580.50	25.23
4	151.56	152.59	149.84	8.25	2.38	604.20	26.13
5	151.78	152.40	149.80	8.15	2.35	547.50	23.67
						Average Ultimate Strength =	25.14

Appendix (B)

Load-Displacement curves for all samples

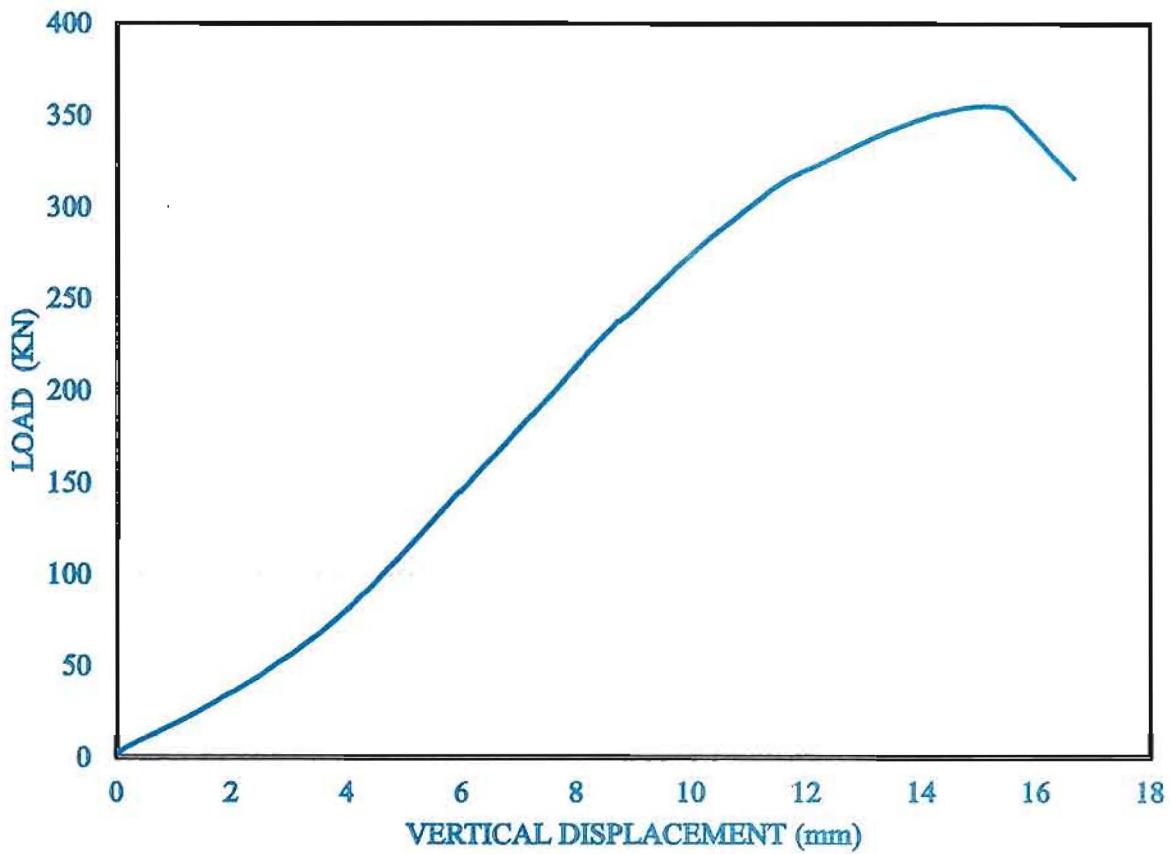


Figure Appendix B1: load vs. vertical deflection of slab sample S1 of Group (I)

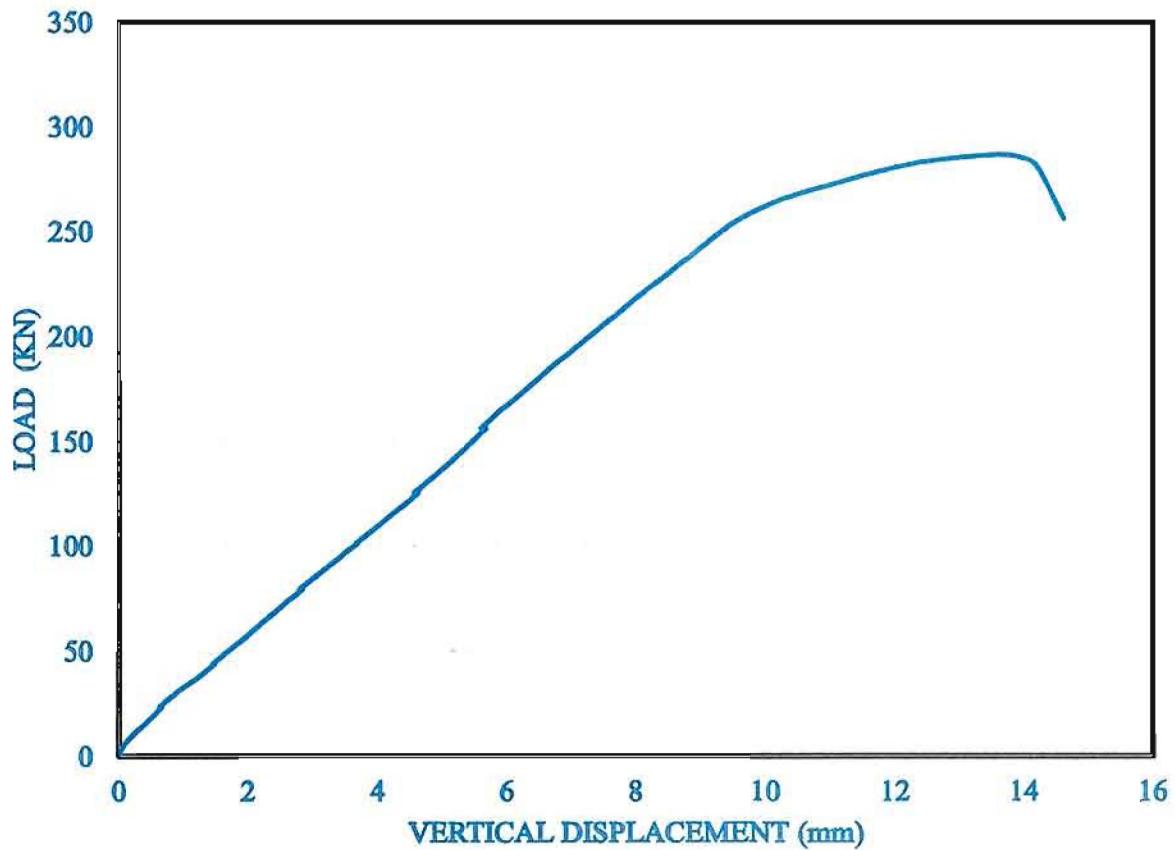


Figure Appendix B2: load vs. vertical deflection of slab sample S2 of Group (I)

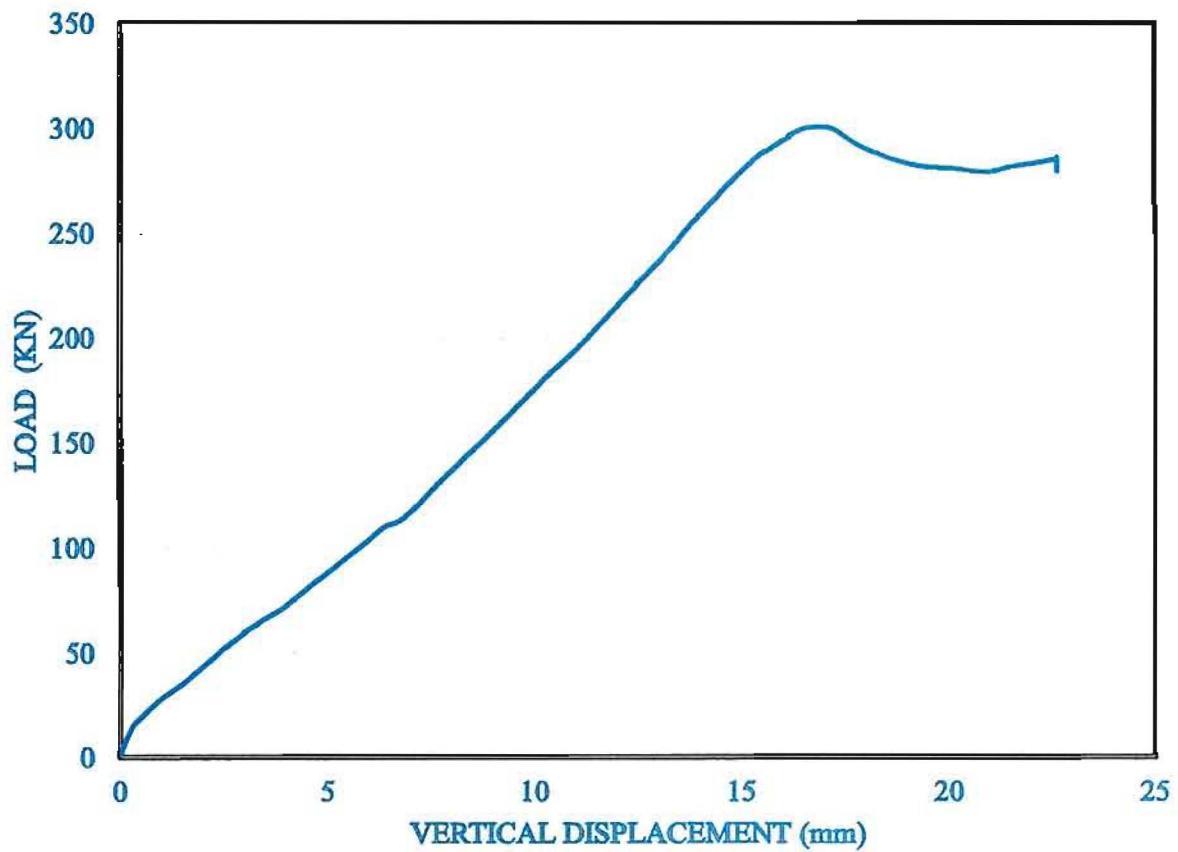


Figure Appendix B3: load vs. vertical deflection of slab sample S3 of Group (I)

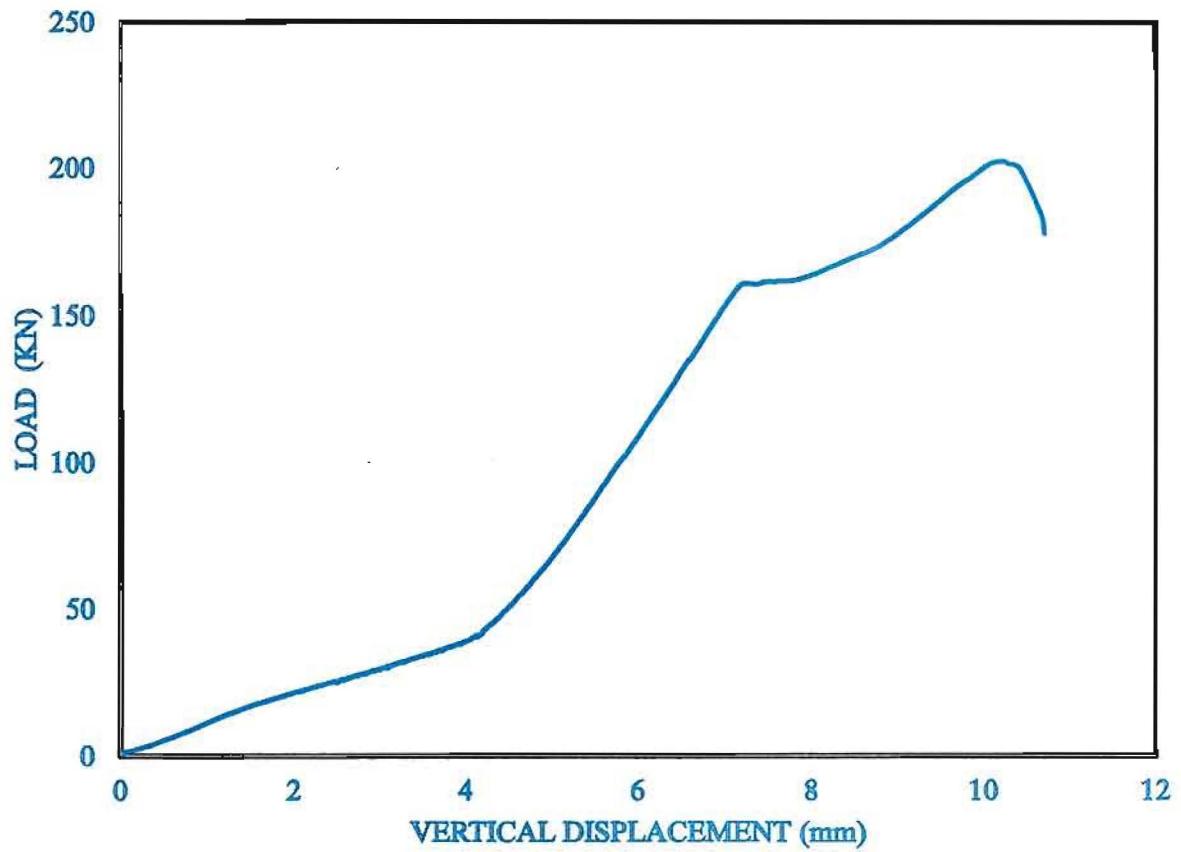


Figure Appendix B4: load vs. vertical deflection of slab sample S1 of Group (II)

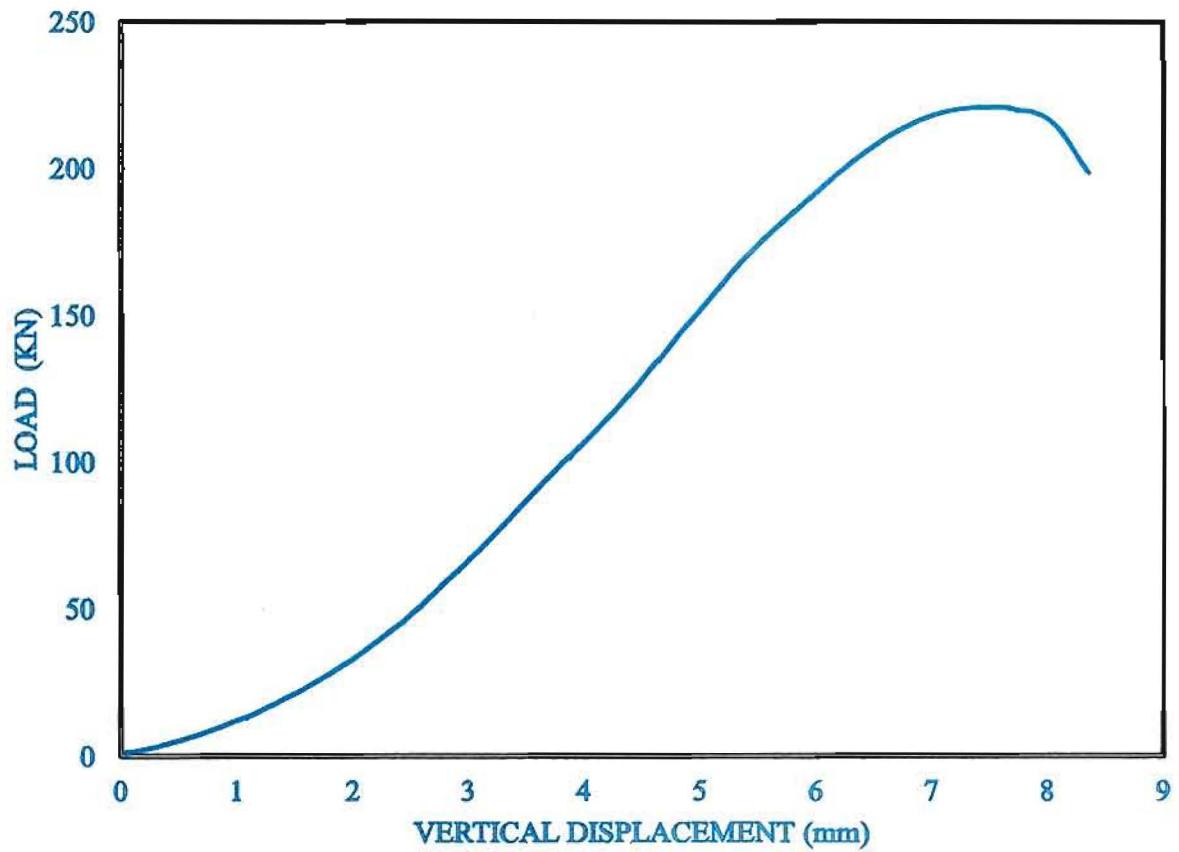


Figure Appendix B5: load vs. vertical deflection of slab sample S2 of Group (II)

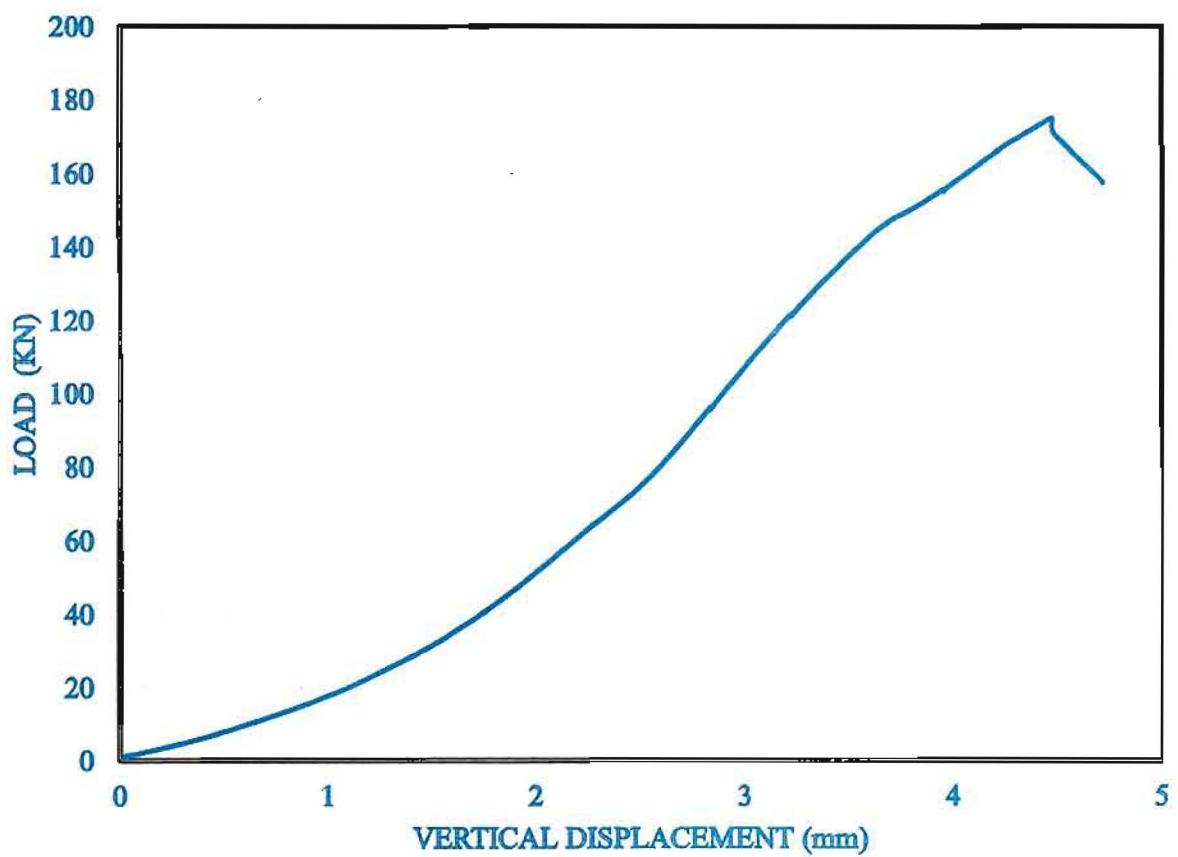


Figure Appendix B6: load vs. vertical deflection of slab sample S3 of Group (II)

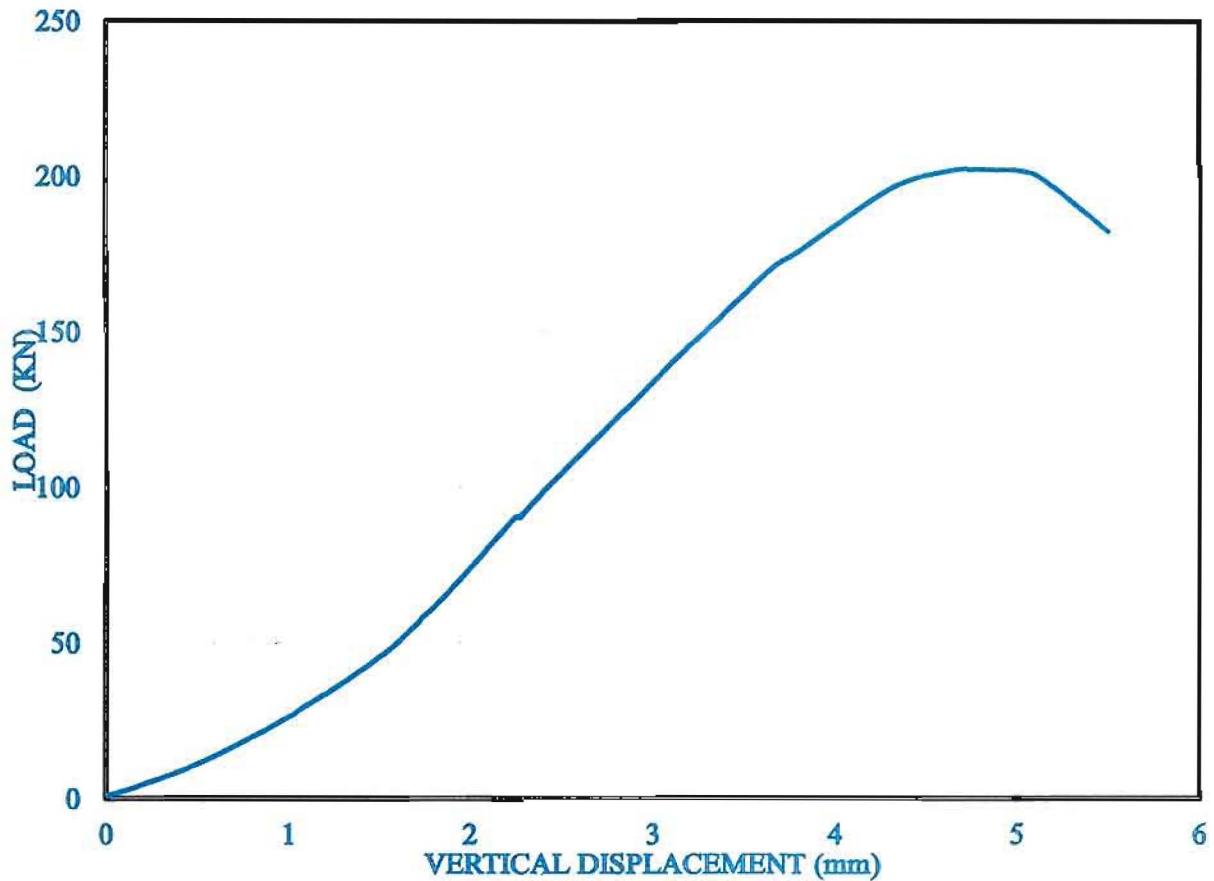


Figure Appendix B7: load vs. vertical deflection of slab sample S1 of Group (III)

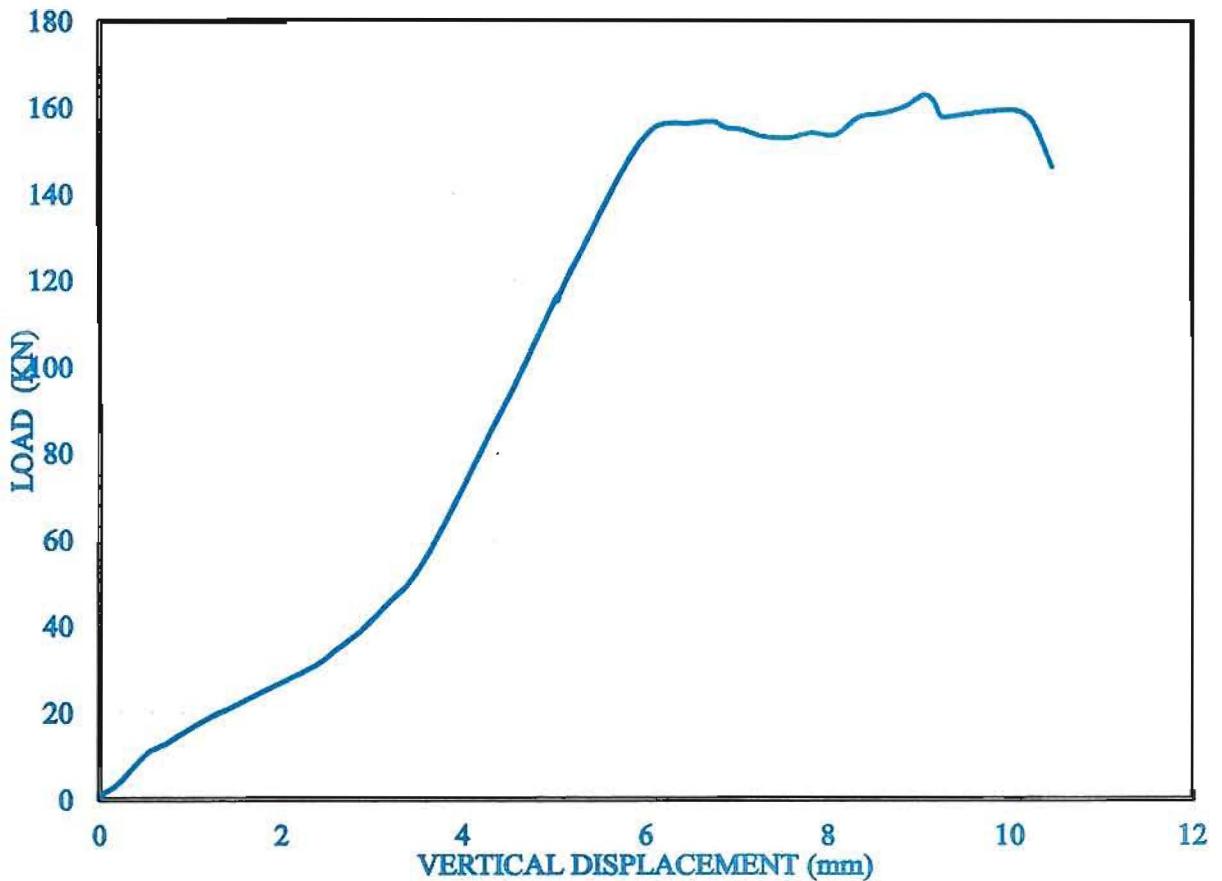


Figure Appendix B8: load vs. vertical deflection of slab sample S2 of Group (III)

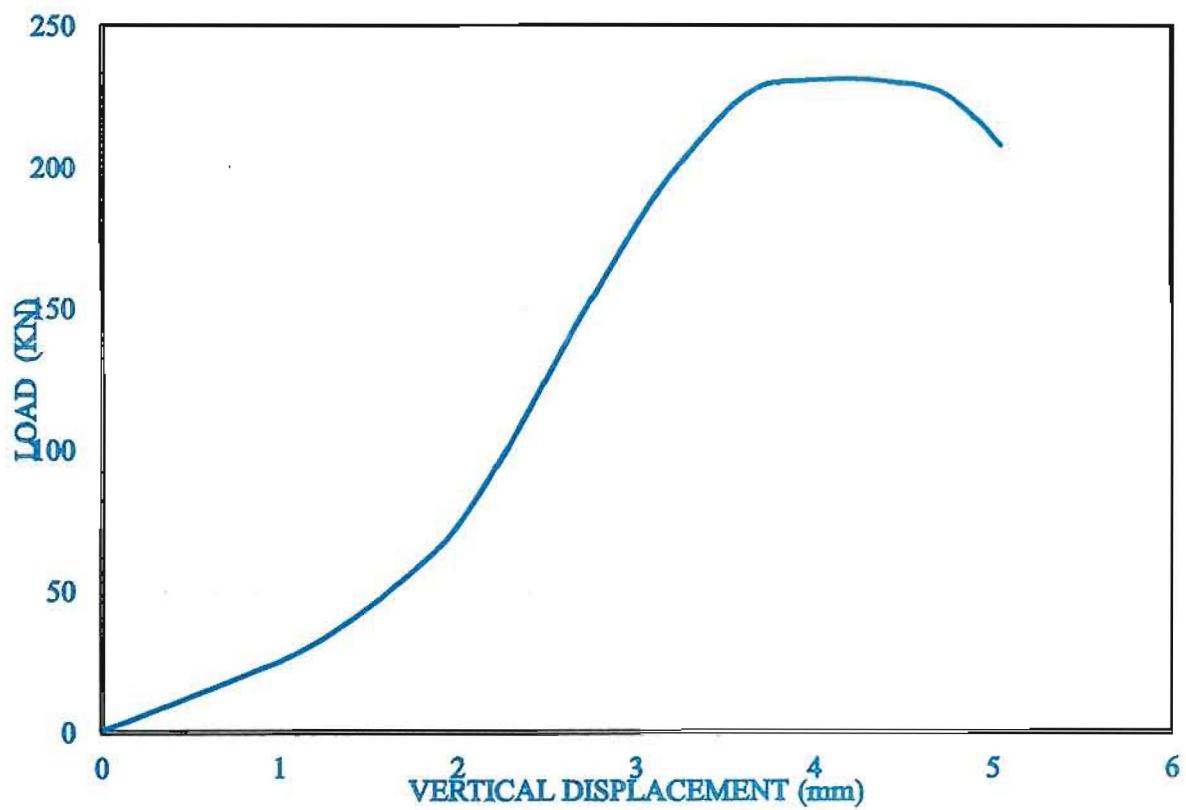


Figure Appendix B9: load vs. vertical deflection of slab sample S3 of Group (III)

Appendix (C)

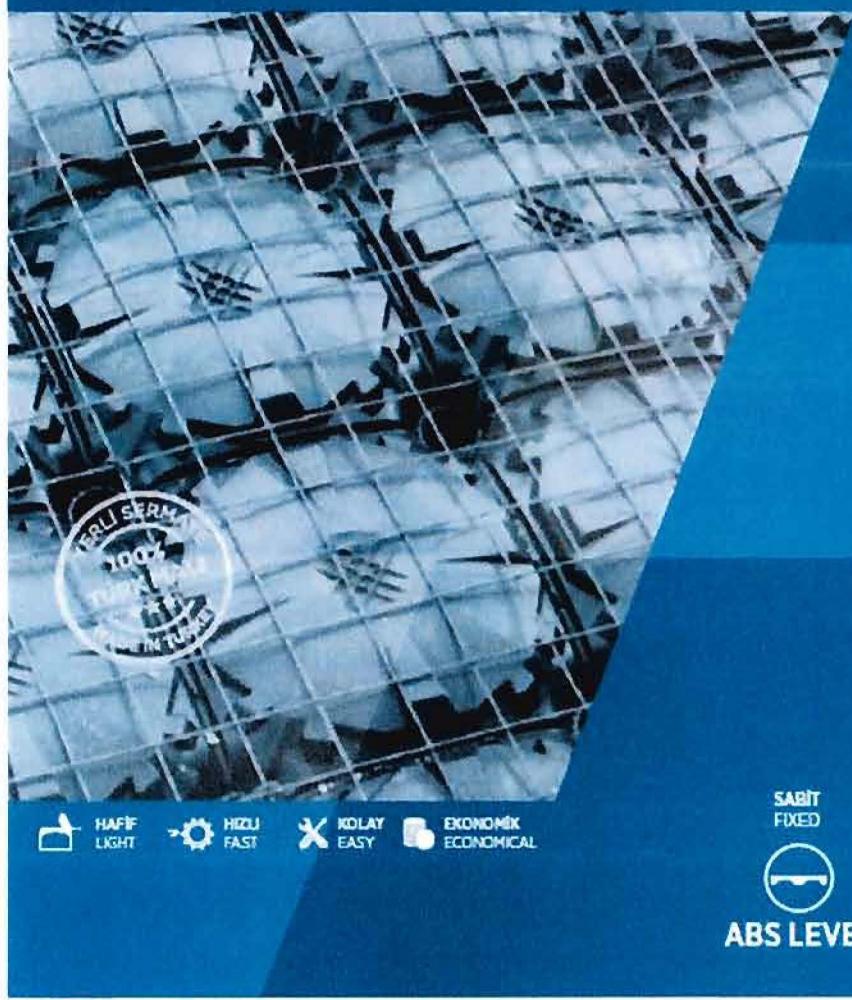
ABS plastic disposable formwork brochure

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Formworks

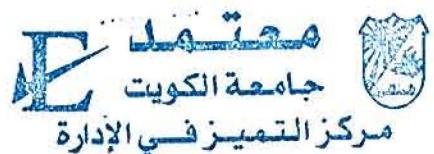
HAFİF DOLGU KÖR KALIP SİSTEMLERİ

DISPOSABLE FORMWORKS FOR LIGHTWEIGHT FILLINGS



absyapi

Yenilikçi Yapısal Çözümler | Innovative Smart Solutions



LOAD TEST ON REINFORCED CONCRETE SLABS WITH ABS PLASTIC DISPOSABLE FORMWORK

ABS HAFİF DOLGU KÖR KALIPLARI / ABS DISPOSABLE FORMWORKS FOR LIGHTWEIGHT FILLINGS



ABS PLUS

ABS HAFİF DOLGU KÖR KALİPLARI

AES Hafıza Döngü Kör Kalıpları genetik olarak farklılığından dolayı adımların takaslanması kolaydır. Bu nedenle AES Hafıza Döngü Kör Kalıpları genetik olarak farklılığından dolayı adımların takaslanması kolaydır.

AKS Kör Kapıları her türlü şartlı dolgu Uygulamasını kolaylaştırıyor. Bütün kırılanın sınırları ölçük ölçümle boyanır ve boyanmış alanlar, her türlü dolguya hizmet vermektedir. Kırılımın tamamlandıktan sonra dolgunun boyanmış alanın içinden çıkarılır. Böylece Kör Kapıları dolguya hizmet veren teknoloji, dolguya boyanma ve boyanmış alanın temizlenmesini kolaylaştırır.

ABS DISPOSABLE FORMWORKS FOR LIGHT-WEIGHT FILLINGS

ABG (probable) formamide and conjugate shaping structures made of polyacrylate blocks. It has a low η_{sp}/η_{sp}^0 ratio (0.1–0.2), which is typical for a homopolymer of acrylate. The monomer contains a hydroxyl group and a carboxylic acid group. It is soluble in water and organic solvents and can be used to synthesize various structures. Reinforced concrete structures are strengthened after exposure to water and are able to withstand high temperatures and harsh environments.

Anti-oxidative enzymes can reduce the level of ROS in the cytoplasm. Enzymes such as superoxide dismutase (SOD), catalase, and glutathione peroxidase (GPx) have been shown to reduce the level of ROS in the cytoplasm. The anti-oxidative enzymes are constitutive in nature and are present in all cells. In addition, induced enzymes such as SOD, catalase, and GPx are induced by various stimuli.



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LOAD TEST ON REINFORCED CONCRETE SLABS WITH ABS PLASTIC DISPOSABLE FORMWORK

ABS LEVEL

YÜKSEKLİĞİ SABİT (5, 10, 15 cm)
FIXED HEIGHT(5, 10, 15 cm)



ABS LEVEL / YÜKSEKLİĞİ SABİT HAFIF DOLGU KÖR KALıPLARI (5, 10, 15 cm)

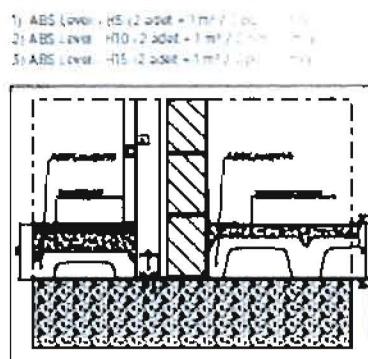
ABS Kör Kalıplarının 5, 10 ve 15 cm sabit yüksekliklerde 'Level' versi. İt Uçan veya enzimatik yosunla betonarme kullanılmış bir hizmet kör kalıp ve son derece ekonomik bir şekilde oluşturulabilir. Geni sönmezlik yüzeyleri ile birlikte kırılmaz kalıp. Ürdün'de kırılmaz kalıp teknolojisi ile üretilen hafif betonlu geçici hibevi teknoloji kullanılmıştır.

Ürdün metal ayağı ile tüm modüler yükseltimlerde doğaçevre alternatif olarak kullanılır. Ayrıca hafiflik birlikte kurulumda hızlı olmak, ABS Level kör kalıpları ve bu kalıpları kurumsal betonarme yükseltimlerde doğaçevre alternatif olarak kullanılır. Bu hafiflik, hafiflik, hızlı, yapımı kolaylık sonuna dahil edilmiş, hafiflik elektrik ve diğer testlerde değerlendirilebilir.

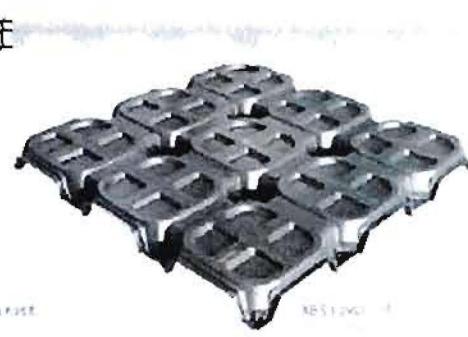
ABS LEVEL / FIXED HEIGHT DISPOSABLE FORMWORKS FOR REINFORCED CONCRETE WALLS

The Level version of ABS disposable formwork is made of light weight material and has a ribbed surface. It is used for concrete walls with constant height. It is a very economic solution for creating a formwork. The formwork is made of a non-combustible material and is a very durable formwork. It is made of a non-combustible material and is a very durable formwork.

The product range also includes the following products: ABS Level - H5 (2 adet + 1 m² / kg), ABS Level - H10 (2 adet + 1 m² / kg) and ABS Level - H15 (2 adet + 1 m² / kg).



Örnek Uygulama Kısıtları
Örnek Uygulama Kısıtları



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LOAD TEST ON REINFORCED CONCRETE SLABS WITH ABS PLASTIC DIPOSABLE FORMWORK

ABS PLUS

YÜKSEKLİĞİ AYARLANABİLİR (20 cm - 300 cm)
ADJUSTABLE HEIGHT (20 cm - 300 cm)



ABS PLUS | YÖKSEKLİĞİ AYARLANABİLİR HAFIF DOLGU KÖR KALIP SİSTEMİ / 20 cm - 300 cm

ABS Plus, genel ölçütlerdeki püsküllerin yanı sıra ekstra güçlü şaraplarla birlikte sunulan bir şarap türüdür.

Benzenevin koyulsa sistemde 2 ayagi yerde dolayla na ihm evantajlarini hizlenen uygulama kolayligi, belirle ve dolum basimina da saglar.

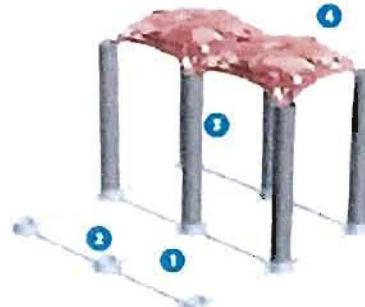
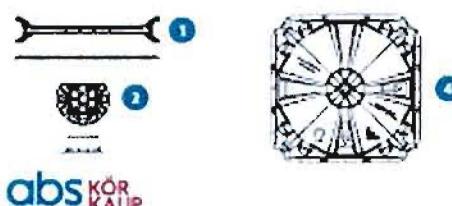
ABS PLUS ADJUSTABLE HEIGHT DISPOSABLE FORMWORK SYSTEM FOR REINFORCED CONCRETE

401(b)(9)(B) exhibits large increases during the first quarter of the year.

99 m transconducting length and 2.59 nm transconducting width. The μ -TSMC 0.18 μ m process was used to fabricate the device.

United States, 1990. The 1990 Population Census of the United States: Subject Reports. Vol. 1. General Population. U.S. Bureau of the Census, Washington, D.C.

- 1) ABS Plus - Kılıçvari (Projeye gerek mide olun $\varnothing 2$ cm hizasına 4 adet)
ABS Plus - Spear mide $\varnothing 2$ cm 4 adet $\varnothing 2$ cm diameter in the project
 - 2) ABS Plus - Taban $\varnothing 2$ adet - $\varnothing 1$ ml (Ø125 mm - H:2,5 cm)
ABS Plus - Base $\varnothing 1$ ml Ø125 mm - H:2,5 cm
 - 3) PVC Boru Ø125 (Projeye uygun uzunlukta kesimler 2 adet - ~ 1 ml)
PVC Pipe Ø125 - same as the lengths required by the project - 2 pieces
 - 4) ABS Plus - HB Küpler (2 adet - $\varnothing 1$ ml)
ABS Plus - HB Cubes (2 pieces - Ø1 ml)



KULLANIM ALANLARI / USAGE AREAS

Katta Hafif Dolgu Lightweight Filling	Düplik Döşeme Dolgusu Twin Wall Joint Filling	Polyjet Dolgusu Polyjet Filling
Ters King Dolgusu Inverted King Filling	Tümü Pobugan Arasında Dolgu Tiling Between Tiles Joint Filling	Üçpark Yarımpatlı Three Park Semi-Patented
Havuz Etrafında Dolgu Swimming Pool Filling	Asansör, Merdiven Hörd Dolgusu Elevator, Staircase Head Filling	Sarı İsimle İndirimli Dolgusu Special Price with Yellow Name



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LOAD TEST ON REINFORCED CONCRETE SLABS WITH ABS PLASTIC DISPOSABLE FORMWORK

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REFERANS UYGULAMA / REFERENCE APPLICATION

KATTA HARİF DOLGU LIGHTWEIGHT FILLING ON FLOOR

PROJE	AND Pazarı İNEKÇİLER
YER	Kartal, İstanbul Marmara Denizi
ÜRÜN	ABS Plus, değişen yükseltiler 400x600x100 mm
UYGULAMA	Otopark bölgemesi üzerinde seit zeminin değiştirilmek ichâfî dolgu uygulaması lightweight filling application above the car park area by changing the floor



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LOAD TEST ON REINFORCED CONCRETE SLABS WITH ABS PLASTIC DISPOSABLE FORMWORK

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REFERANS UYGULAMA / REFERENCE APPLICATION

KATTA HAFIF DOLGU LIGHTWEIGHT FILLING ON FLOOR

PROJE PROJECT	Sakintekkai Konut Sakintekkai Apartments
YEO LOCATION	Kadıköy, İstanbul Istanbul, Turkey
Ürün Product	ABS Plus 42,5 cm 8,52 kg/m ³ - 1,15 m ³
UYGULAMA APPLICATION	Otopark ödemesi Üzerinde seit zemin hazırlamak için hafif dolgu uygulaması Lightweight filling application for preparing the surface of the parking garage roof



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LOAD TEST ON REINFORCED CONCRETE SLABS WITH ABS PLASTIC DISPOSABLE FORMWORK

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REFERANS UYGULAMA / REFERENCE APPLICATION

KATTA HAFIF DOLGU LIGHTWEIGHT FILLING ON FLOOR

PROJE	Gateway Viba Merkezi
YER	Cankaya, Ankara,
YIL	Temmuz 2009
GRUN	ABS Plus 435 cm ³
Ürün	ABS Plus 435 cm ³
UYGULAMA	Katta 35 cm hafif dolgu uygulaması
DEĞERLENDİRME	100 kg/m ² yüküne dayanıklılık testi



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REFERANS UYGULAMA / REFERENCE APPLICATION

TEMEL PABUÇLARI ARASINDA DOLGU FILLING BETWEEN FOUNDATION FOOTINGS

PROJE	Portofolio Hotel
YER	Hatay Nov. Kardeş
ÜRÜN	ABS Plus H135 cm
UYGULAMA	Radyo fəsəli üzəndə təmizləşdiricilərin arxasında vənində yoxlanılmış gerçək dəyərli dəngə uyğulaması



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REFERANS UYGULAMA / REFERENCE APPLICATION

DÜŞÜK DÖŞEME DOLGUSU SÜRKEN SI ABS FİLING

PROJE	Ant & Daniel Genel Müdürlüğü Mimarlar Odası İkametgâhı
YER	Ataşehir, İstanbul Turquie, France
ÜRÜN	ABS Plus HES cm VTS Plus cm
UYGULAMA	Zemin katta 65 cm düşük döşeme dolgu uygulaması Ground floor low height floor slab application



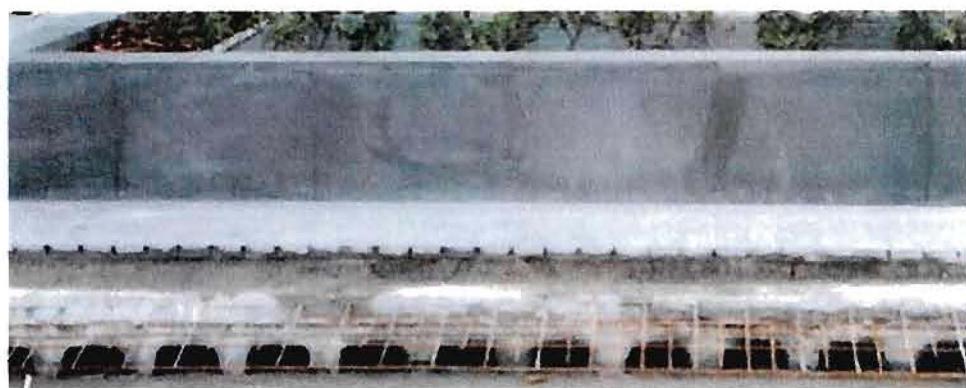
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LOAD TEST ON REINFORCED CONCRETE SLABS WITH ABS PLASTIC DISPOSABLE FORMWORK

REFERANS KULLANIM ALANLARI / REFERENCE APPLICATIONS

PEYZAJ DOLGUSU LANDSCAPE FILLING

PROJELER	Emaar Square AVM İstanbul 2014 - 2016
YER	İstiklal Caddesi İstiklal Caddesi İstiklal Caddesi
ÜRÜN	Köf Kalıp HPS
UYGULAMA	Podium katı üzerinde sera zemin oluşturmak için hafif peyzaj dozlu uygulanması Kötü orta ve ağır orta peyzaj dozları peyzaj dolgusu oluşturmak için



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LOAD TEST ON REINFORCED CONCRETE SLABS WITH ABS PLASTIC DISPOSABLE FORMWORK

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REFERANS KULLANIM ALANLARI / REFERENCE APPLICATIONS

PEYZAJ DOLGUSU LANDSCAPE FILLING

DÖNÜŞ	Gaziantep İconica İzmir Çelikhan
YER	Merkaz, Gaziantep İzmir Çelikhan
ÜRÜN	ABS Plus 450 cm ABS Plus 300 cm
UYGULAMA	Podium katı üzerinde 14 t. zemin hazırlamak için haftalık peçeli dolgu uygulaması Düzenleme: 1400 m ³ - 450 cm Tıkanıklık: 1000 m ² - 450 cm Dolgu: 1000 m ² - 450 cm
UYGULAMA Araştırma / Uygulama	



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REFERANS UYGULAMA / REFERENCE APPLICATION

TEMEL PABUÇLARI ARASINDA DOLGU FILLING BETWEEN FOUNDATION FOOTINGS

DOĞRU	İstanbul Tesisleri Tuzla, İstanbul
YER	Bakırtaş, İstanbul Tuzla, Türkiye
ÜRÜN	KÖF K100 H=20 cm Aşırı kalınlık: 50 cm
UYGULAMA AŞAĞIDA	Radyo təməl üzərində formlu pabuçları arasında dolgu uygulanması Rəqəmli təməl üzərində formlu pabuçları arasında dolgu uygulanması



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REFERANS UYGULAMA / REFERENCE APPLICATION

TEMEL PABÜCLERİ ARASINDA DOLGU FILLING BETWEEN FOUNDATION FOOTINGS

PROJE	Borusan Ola
YIL	2013
YER	Sancaktepe, İstanbul
ÜRÜN	KÖR KALIP
UYGULAMA	Radyo tamiri üzerinde temel pabuçları arasında dolgu uygulaması Filling application between foundation footings under the radio repair building



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REFERANS UYGULAMA / REFERENCE APPLICATION

OTOPARK RAMPA CARPARK RAMPS

PROJE	Vadikoru İstanbul Otopark Rampları
YER	Filya, İstanbul Avrupa Mah.
URUN	ABS Plus, doğanın yükselişinde
UYGULAMA	Otopark desenleri üzerinde otopark rampası yapımı 40,48 m x 10,4 m x 1,20 m - 40,48 m x 10,4 m x 1,20 m



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REFERANS UYGULAMA / REFERENCE APPLICATION

OTOPARK RAMPA CARPARK RAMP

PROJE	Emirzai Square AVM
YER	Tekirdağ, İstanbul TÜRKİYE
URUN	Kör Kalıp® KÖR-KALIP®
UYGULAMA	Karzinler otoparkı örtülmüş勤奋地 tekerleklerde otopark rampası yapımı Kördünya® Kör Kalıp® teknolojisi kullanılarak yapılmıştır.



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REFERANS UYGULAMA / REFERENCE APPLICATION

HAVUZ ETRAFINDA DOLGU POOL DECK FILLING

PROJE	Teknoloji Sitesi
YER	Kadıköy, İstanbul
Ürün	ABS Plastik 450 cm ³
Uygulama	Otopark otopark üzerinde ve yüzme havuzu etrafında serin zemin oluşturmak için hafif dolgu uygulaması
	Öğrenciler, işçiler ve teknisyenlerin kullanımını üzerinde test etmek üzere 100 ton lastik kamyon



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REFERANS UYGULAMA / REFERENCE APPLICATION

HAVUZ ETRAFINDA DOLGU POOL DECK FILLING

PROJELİ	Metro City Batumi Metropol City Batumi
YERİ	Batum, Gürcistan 14.07.2017 - 15.07.2017
ÜRÜN	KÖR Kalıp H250 Kör Kalıp İmalat Sanayii A.Ş.
UYGULAMA	Kat öncesi yapı izleme ve yüzme havuzu etrafında kat zemin hazırlamak için hafif dolgu uygulaması KÖR Kalıp İmalat Sanayii A.Ş. tarafından yapılmıştır. İmza: KÖR Kalıp İmalat Sanayii A.Ş. Tarih: 15.07.2017



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REFERANS UYGULAMA / REFERENCE APPLICATION

TERS KİRİŞ DOLGUSU INVERTED BEAM FILLING

PROJE	İC İCTAS Genel Merkez İç İctas General Center
YER	Sarıyer, İstanbul Sarıyer, Istanbul
ODUN	Kor Kapı HSO Kor Kapı HSO
COŞKUN	+
UYGULAMA	Ters katlanır kiriş dolgusu Inverted beam filling



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REFERANS UYGULAMA / REFERENCE APPLICATION

BETONARME YÜKSELTİLMİŞ DÖŞEME REINFORCED CONCRETE RAISED FLOORING

PROJE	Centrum Kızılayı
YER	Kadıköy, İstanbul
ÜRÜN	Kör Kapı H5 cm
DEĞERLENDİRME	İsteğe bağlı (İşteğe bağlı)
UYGULAMA	Bu kör kapısı, kütahya kırılımından testin 50 geçimblebilir betonarme yükseltimli döşeme uygulaması. Aşağıda, 10 tonlu kör kapı ile 40 tonlu lastik lastik aracının 1000 kg'lık ağırlığına dayanım testi yapılmıştır.



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REFERANS UYGULAMA / REFERENCE APPLICATION

BETONARME YÜKSELTİLMİŞ DÖŞEME
REINFORCED CONCRETE RAISED FLOORS

PROJE	Lapstone
İSİM	Alihan
YER	Kartal, İstanbul
YIL	2008
URUN	Köf Karp PO Em Tıpkıbuşlu İğne 10 cm
UYGULAMA	Bu işteki kılınçlarla ilgili olarak, da geçmişlerden beri normale yükseltme ölçümü uygulanmış.
SONUÇ	İşteki kılınçlarla ilgili olarak, da geçmişlerden beri normale yükseltme ölçümü uygulanmış.



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REFERANS UYGULAMA / REFERENCE APPLICATION

BETONARME YÜKSELTİLMİŞ DÖŞEME REINFORCED CONCRETE RAISED FLOOR

PROJESİ	Sarıtepe Binası
YER	Yenimahalle - Ankara
ÜRÜN	Maket, Ankara
UYGULAMA	Kör Kalıp HS
ÖZELLİKLER	Betonarme yükseltilemeyen modüller ve betonarme yükseltilmiş döşemelerin benimsenmesi modülasyon teknolojisi, inşaat teknolojisi ve inşaat işçilerinin güvenliği konusunda sayıda.



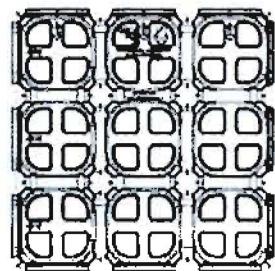
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50

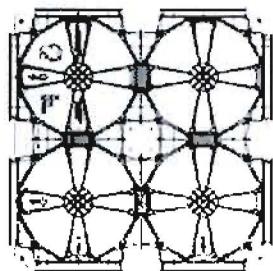
ABS LEVEL

TEKNİK BİLGİ FÖYÜ
TECHNICAL DATA

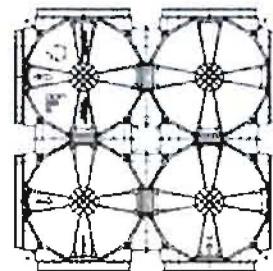
ABS Level - H5



ABS Level - H10



ABS Level - H15



Ebatlar / Dimensions

2 karp + 1 maf + 1 tırtılık + 1 kırma
Her karp 9 kubbe / 1 tırtılık 10 kubbe
71 x 71 x 5 cm
1,78 kg/adet / 1,64

2 karp + 1 maf + 1 tırtılık + 1 kırma
Her karp 4 kubbe / 1 tırtılık 10 kubbe
71 x 71 x 10 cm
1,96 kg/adet / 1,74

2 karp + 1 maf + 1 tırtılık + 1 kırma
Her karp 4 kubbe / 1 tırtılık 10 kubbe
71 x 71 x 15 cm
2,16 kg/adet / 1,92

Net satıcı paketi / Net unit packing

10 cm genişlik / width
4 cm yükseklik / height

23 cm genişlik / width
6 cm yükseklik / height

26 cm genişlik / width
7 cm yükseklik / height

Beton tüketimi / Concrete consumption

0,070 (ml/m³)

0,022 (ml/m³)

0,126 (ml/m³)

Palet ebatları / Pallet dimensions

75 x 50 x 255 cm

75 x 50 x 260 cm

75 x 50 x 265 cm

Palet başına adet ve kapladığı alan / Pallet per unit and area covered

180 adet vs 90 m² (141 kg / 201,60 m³)

180 adet vs 90 m² (141 kg / 201,60 m³)

180 adet vs 23 m²

Palet ağırlığı / Pallet weight

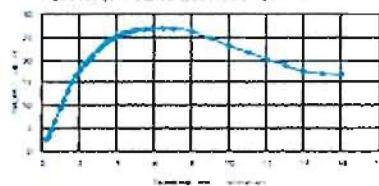
320 kg

353 kg

354 kg

Matzeme: Gert döngölümüş PP / Material: recycled PP

Uygunlama hızı: Döküldüğün bir anda 100 m² adam-sat / Application speed: 100 m²/min Adam-sat / 470 kg/m² - 750 kg/m²

KALIP YÜKLEME RAPORU /
FORMWORK LOAD BEARING REPORT

Mesafe No Distance no.	Mesafe Uzaklığı Distance	Mesafe Dönüşüm Distance conversion	Palet Ağırlığı Pallet weight	Mesafe artı Toplam Topluk Total length
1	100 cm	100 cm	320 kg	100 cm



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ABS LEVEL**UYGULAMALAR
APPLICATIONS**

Betonarme Yükseltme Döşeme Uygulamaları / Reinforced Concrete Paved Floor



Uygulama Aşamaları / Application Steps



Farklı Şartlandırma Sekilleri / Various / Infill Types

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ABS PLUS

TEKNİK BİLGİ FÖYÜ **TECHNICAL DATA**

Estate / DEATHS

Reset Dictionary / Reset structure

Paste Occhiofisch (Kübler)	1/4 kg	Shrimps	250 g	On 250 cm
Pasteelhaarschotel (Kübler)	1/4 kg	Shrimps	250 g	On 250 cm
Pasteel Kapoedragh (Kübler)	1/4 kg	Shrimps	250 g	On 250 cm
Pasteel Kip (Kübler)	1/4 kg	Shrimps	250 g	On 250 cm

Manejo de riego sobre un sistema con desague CTC basado en estimación de DAE

Mazotun kabilesi, taban ve siyasiye genel derneklerini P.P. denetliyor.

National parks, flora and fauna recycled for 100% post-consumer paper usage by Printline for more than 20 years now.

Uygulama hizi: Eldeki öngörün bir sırada 20 ml'adır.

Environ Biol Fish (2010)

For more details about other film series, see [the Standard Programs section](#).

h - istiyac duyguları hankası yolu şıraza hissedenlerin klobu ıstırakçılarının

4. 指定的子句（*SELECT* 子句）將會被執行，並回傳查詢結果。

It is also an advantage that ABS Plus retains its strength when heated.

10-12-2021 / 06:00:00 AM - 10-12-2021 / 06:00:00 PM

Aşağıda verilen cm/cm² değerleri - 4, 15 cm · 25 cm

Tablo: ABS Plus Sistemi İçin İzin Verilen Maksimum Yüzeş



Journal of Clinical Anesthesia, Vol 11, No 6, December 1999, pp 529-533

abs

ABS PLUS

KURULUM KİLAZU
INSTALLATION GUIDE

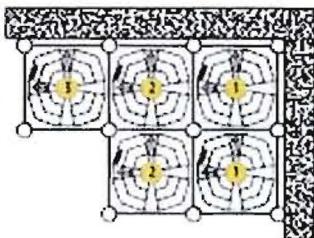
1. Tabanlıdır. Üst层面层层板或砖块等硬质材料上安装时，必须使用膨胀螺栓。膨胀螺栓的直径应与基材厚度一致。

1. Check the base layer, make sure that the base slab is adjacent to the wall, cut the panel so that its second edge is at least 10 cm from a corner.



2. Çiftgenlik yapan yüzeydeki kemerlerin (Y) konumunu işaretleyerek, tabanlıdır. İkinci katın duvarı yerleştirin.

2. Indicate the Y-shaped points on the base slab, which is adjacent to the wall, cut the panel so that its second edge is at least 10 cm from a corner.



3. Üçgenlik (V) konumunda kurulacak olan panelin konumunu işaretleyerek, tabanlıdır. İkinci katın duvarı yerleştirin. Üçgenlik (V) konumunda kurulacak olan panelin konumunu işaretleyerek, tabanlıdır. İkinci katın duvarı yerleştirin.

3. Indicate the V-shaped points on the base slab, which is adjacent to the wall, cut the panel so that its second edge is at least 10 cm from a corner.



4. Üçgenlik (V) konumundaki panelin ikinci katın duvarına yakın konumda kurulması gereklidir.

4. Inserting the end of ABS PLUS panels, which are adjacent to the wall, into the holes of the wall.



5. Üçgenlik (V) konumundaki panelin ikinci katın duvarına yakın konumda kurulması gereklidir.

5. Inserting the end of ABS PLUS panels, which are adjacent to the wall, into the holes of the wall.



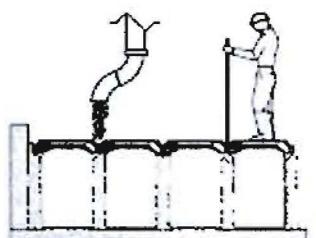
6. Üçgenlik (V) konumundaki panelin ikinci katın duvarına yakın konumda kurulması gereklidir.

6. Inserting the end of ABS PLUS panels, which are adjacent to the wall, into the holes of the wall.



7. Beton ve demir (Ø 12 mm) kâşnaklarla tıraş edilmiş yüzeydeki kemerlerin (Y) konumunu işaretleyerek, tabanlıdır. İkinci katın duvarına yakın konumda kurulmalıdır.

7. Panelin şeritli şeritli tıraş edilmiş yüzeylerin (Y) konumuna uygun şekilde kurulmalıdır. ABS PLUS paneli, tıraş edilmiş yüzeylerdeki (Y) konumuna uygun şekilde kurulmalıdır.



8. Üçgenlik (V) konumundaki panelin ikinci katın duvarına yakın konumda kurulması gereklidir.

8. Üçgenlik (V) konumundaki panelin ikinci katın duvarına yakın konumda kurulması gereklidir.



9. Üçgenlik (V) konumundaki panelin ikinci katın duvarına yakın konumda kurulması gereklidir.

9. Üçgenlik (V) konumundaki panelin ikinci katın duvarına yakın konumda kurulması gereklidir.

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