

AL JAZZAR

MOHAMMED OMAR JAZZAR CONSULTING ENGINEERS CO.



الـجـازـار
شركة محمد عمر جزار للإستشارات الهندسية

**STRUCTURAL LOAD TESTING
(R-2022-101)**

**SMALL-SCALE HOLLOW BLOCK SLAB PROJECT, ALSAADAH REGION,
RIYADH, KINGDOM OF SAUDI ARABIA.**

Prepared for:
**M/S. ATWAR AL-KON FOR CONTRACTING,
RIYADH,
Kingdom of Saudi Arabia.**

Client File # R-20222-101

August 2022

AL JAZZAR

MOHAMMED OMAR JAZZAR CONSULTING ENGINEERS CO
Design, Supervision, Studies & Survey
Geotechnical, Materials Testing, Environmental, Water
LICENSE (CONSULT . 219, GEOTECH - 3)
MEMBERSHIP NO.: 9946 RIYADH / 6213 MADINA



ISO/IEC 17025 (2017) ACCREDITED
TUNAC ACCREDITATION NO. 2 - 0129

الجازار

شركة محمد عمر جزار للإستشارات الهندسية
تصميم - إشراف - دراسات - مساحة
فحص تربة ، اختبار مواد ، بيئة ، مياه
ترخيص هندسي : ٢١٩ / فحص تربة - ٣
رقم العضوية : ٩٩٤٦ الرياض / ٦٢١٣ المدينة

Client File # R-2022-101

Messrs.

ATWAR AL-KON FOR CONTRACTING,

Riyadh,

Kingdom of Saudi Arabia

P. O. Box 41956

Riyadh - 11531

Saudi Arabia.

4th August 2022

**SUB: - STRUCTURAL LOAD TEST REPORT ON A HOLLOW BLOCK MODEL (SMALL SCALE)
PREPARED BY THE CLIENT, ALSAADAH REGION, RIYADH, K.S.A.**

Dear Sirs,

We are pleased to hereby transmit one (01) original and one (01) photocopy of our structural load test Report for the captioned project.

Should you have any questions, please do not hesitate to contact this office.

We note that our final report is deemed acceptable to you, if we do not hear from you in writing within 14 calendar days from the date that you received it.

It has been a pleasure being of service to you on this project. Assuring you of our continued co-operation, we remain.

Yours very truly,

FOR OMAR JAZZAR CONSULTING ENGINEERS

(Geotechnical & Materials Engineers)

Engr. Hosny Fakhri,
Operations Manager



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شركة محمد عمر جزار للإستشارات الهندسية

REPORT



STRUCTURAL LOAD TEST REPORT

SMALL-SCALE HOLLOW BLOCK SLAB PROJECT, ALSAADAH REGION, RIYADH,
KINGDOM OF SAUDI ARBIA

INTRODUCTION

This report presents the results of the Structural load test, carried out by **AL JAZZAR (MOHAMMED OMAR JAZZAR CONSULTING ENGINEERS CO.)**, for a hollow block model (small scale) prepared by the client, Alsaadah region, Riyadh, K.S.A. The load tests were carried out based on ACI-318-19 recommended procedure, at the test location.

The work was authorized by **M/s. Atwar al-kon for contracting**, Kingdom of Saudi Arabia.

One (01) Structural load test was carried out as shown in photos to carry the load during its service and in addition up to the final loads based on the loads suggested by ACI Specification (ACI 318-19).

Testing was carried out at the captioned project dated 27th July 2022.

SCOPE OF WORK

A. Field Work

In four increments, the final loads are applied in order to assess the performance of the slab under the calculated final loads as per the client's request.

The recommended structural load test was performed as per American Concrete Institute (ACI 318-19) recommended procedure.

Test Load = 3.50 kN/m² and consider a live load

1. LOADING & RESPONSE MEASUREMENT CRITERIA.

- 1.1 Measurements were made at locations where the maximum response is expected.
- 1.2 Test load was applied in four (04) increments with respect to total test load and member. (Load increment and corresponding deflections are mentioned in the attached table of results).
- 1.3 Uniformly distributed test load was applied in a manner to ensure uniform distribution of the load is transmitted to the slab tested. cement bags were spread uniformly to produce an equally distributed load on the slab.



STRUCTURAL LOAD TEST REPORT
SMALL-SCALE HOLLOW BLOCK SLAB PROJECT, ALSAADAH REGION, RIYADH,
KINGDOM OF SAUDI ARBIA

- 1.4 Response measurements were made after each load increment is applied. After the total load has been fully applied to the slab, observations were made to see if there is any development of hair cracks at the slab tested. But during the entire test process, there were no cracks observed.

2. Acceptance Criteria

- 2.1 The portion of the structure tested showed no sort of evidence of hairline cracks even at the final load.
- 2.2 As per ACI-318-2019, Residual deflection after complete unloading (Δ_r) shall be less than 25% of the Maximum Measured test deflection (Δ_1) as shown in the following equation

$$\Delta_r \leq \frac{\Delta_1}{4} = \frac{1.70}{4} = 0.425 \text{ mm}$$

Where,

Δ_1 = Maximum Measured test deflection in mm= 1.70 mm

Δ_r = Residual deflection after complete unloading in mm= 0.17 mm

In addition, the average percentage of recovery is about 90% as shown in the Attached results.

TABLE: 1
 Summary of test results & maximum allowable deflection.

Test No.	Slab area, M ²	Slab Thickness, mm	Maximum Test Deflection, mm	Residual deflection after complete unloading, mm	Recovery After unloading, mm	Average Recovery, %
				(Δ_r)		
1	1.0 *6.0	200	1.70	0.17	1.53	90

Measurements were taken upon every loading and unloading until the gauge needle reached to a complete stop. Increments of load were applied and the test loads were removed after the application of the final load in stages.



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SMALL-SCALE HOLLOW BLOCK SLAB PROJECT, ALSAADAH REGION, RIYADH,
KINGDOM OF SAUDI ARBIA

STRUCTURAL LOAD TEST

Results are given in table -1. The test load was applied as per the recommendations of ACI-318-19 (American Concrete Institute), applied as a static load. The idea of conducting such a test is to assess the structural adequacy of the existing slab.

The loads were applied in four equal intervals and the deflections were recorded by means of Micro-gauges fitted with magnetic clamps fixed rigidly on the steel base.

DISCUSSION ON TEST RESULT

One (01) structural load test was performed on a small-scale Hollow Slab Concrete Element with dimensions of 1m x 6m as requested by the client. These dimensions have been given from the client

The test results indicated maximum deflections of (0.80, 1.64, and 0.76) mm after 24 hours of loading. However, at final loading for 72 hours, the test results indicated maximum deflections of (0.81, 1.70, and 0.77) mm. The Test Load value is given and approved by the client. In addition, no cracks were noticed up to the application of the final load, hence satisfactory.

COMMENTS

1. No cracks were observed even after the application of the final test load.
2. Deflection criteria is satisfied.
3. Recovery percentage of the total deflection after 72 hrs is 90% which fulfilled the ACI requirement.



STRUCTURAL LOAD TEST REPORT
SMALL-SCALE HOLLOW BLOCK SLAB PROJECT, ALSAADAH REGION, RIYADH,
KINGDOM OF SAUDI ARBIA

CONCLUSION

Based upon the aforementioned calculation as per ACI recommended code and other observations, it is concluded that the tested model slab is satisfying the requirements. Hence, the tested element is acceptable for use at the given live load value. However, when a higher value of loading is required, large scale for the proposed slab should be tested.

Yours very truly,
FOR OMAR JAZZAR CONSULTING ENGINEERS
(Geotechnical & Materials Engineers)

Engr. Reda Ali
Structural and Geotechnical Manger



Engr. Mazahir Haider.
Geotechnical Engineer

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الـجـزـار

شركة محمد عمر جزار للإستشارات الهندسية

TEST RESULT

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LICENCE (CONSULT.219 - GEOTECH 3)

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مختبرات فحص منظمة
مهندسون المواد والخصائص
ترخيص مهني ٢١٩ / فحص تربة ٣
رقم الترخيص ٩٩٤٦

STRUCTURAL LOAD TEST

Client : M/s. Atwar al-kon for contracting
Project : Small-Scale Hollow Block Slab Project
Location : Alsaadah Region, Riyadh, K.S.A.
Test location : Existing Slab

TEST # 1

Guage Reading, mm

Date	Time	READING	Load kg	Guage - 1		Guage - 2		Guage - 3		Deflection mm	Remarks
				0.01 mm	mm	0.01 mm	mm	0.01 mm	mm		
27-7-2022	LOADING	1 ST STAGE READING	535	9	0.09	17	0.17	9	0.09		
		2 ND STAGE READING	1070	17	0.17	44	0.44	16	0.16		
		3 RD STAGE READING	1605	50	0.5	99	0.99	47	0.47		
		4 TH STAGE READING	2150	80	0.8	164	1.64	76	0.76		
		5 TH STAGE READING	2150	81	0.81	170	1.7	77	0.77		
30-07-2022	> 72 Hrs	LOADING		81	0.81	170	1.7	77	0.77		
30-07-2022		READING		81	0.81	170	1.70	77	0.77		
30-11-2021	> 24 Hrs	READING	1605	75	0.75	149	1.49	74	0.74		
		READING	1070	59	0.59	109	1.09	67	0.67		
		READING	535	32	0.32	67	0.67	30	0.3		
		READING	0	0	0	0.17	17	0.17	9	0.09	
23-11-2021		READING		10	0.1	65	0.65	5	0.05		
			% of Recovery =	100%		90%			88%		

Maximum Deflection: 1.70 mm

Average % of Recovery: 93%

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MEMBERSHIP NO. 9946

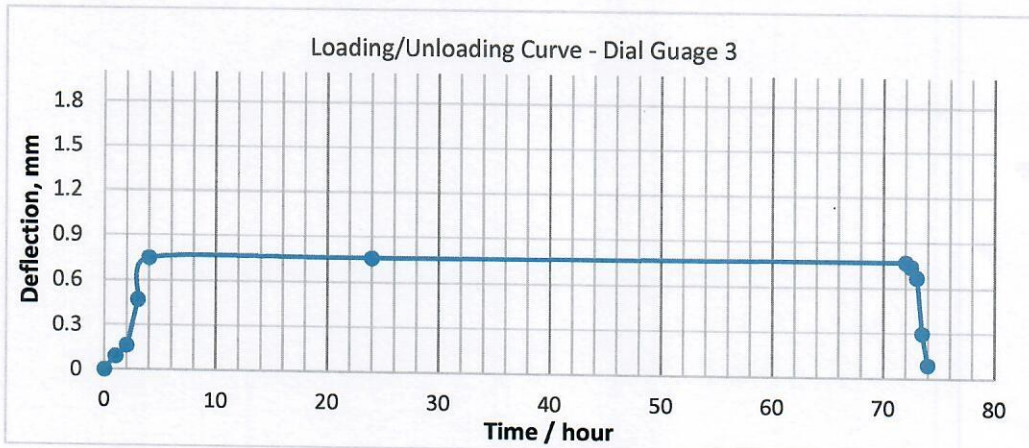
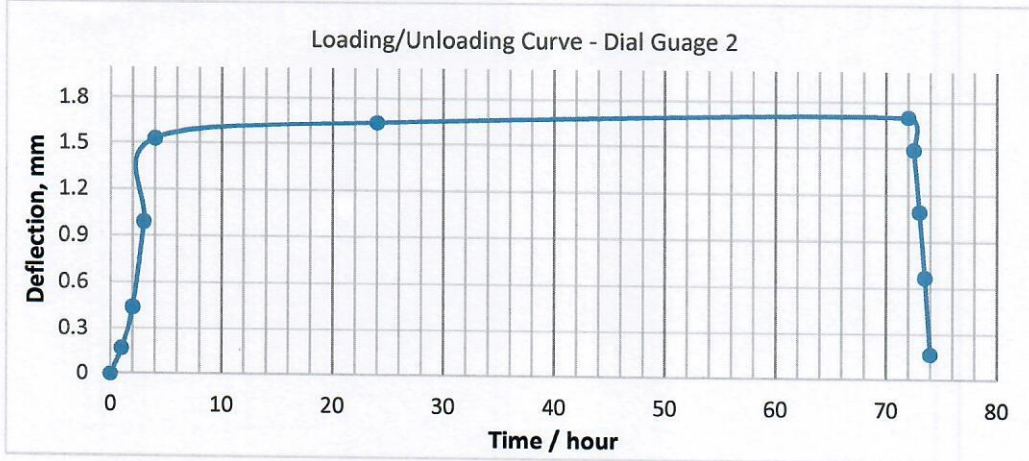
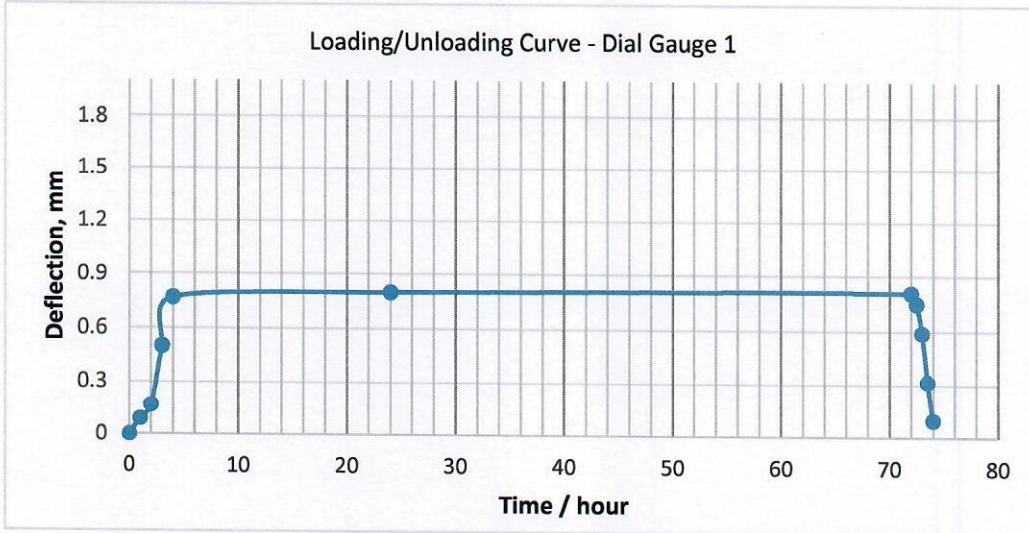


الجزار
عمر جزار مهندسون استشاريون
مختبرات فحص متعلقة
مهندسون لترية وفحص المواد
ترخيص هندسي ٢١٩ / فحص ترية ٣
رقم العضوية ٩٩٤٦

STRUCTURAL LOAD TEST

Client : M/s. Atwar al-kon for contracting
Project : Small-Scale Hollow Block Slab Project
Location : Alsaadah Region, Riyadh, K.S.A.
Test location : Existing Slab

Client No : R-2021-081
Date of Test : 21-23/11/2021
Test No. : 01



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TESTING PHOTO

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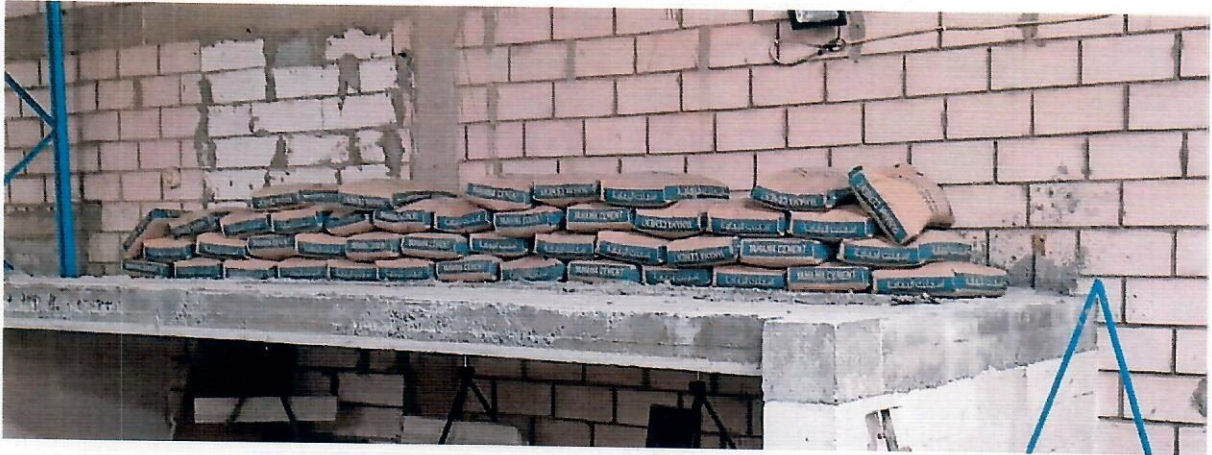
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TEST PHOTO



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