Masterlab Consortium For Engineering Consultations
Consultant Engineer
Dr. / Ahmed Fathy Abdelaziz & partners
Emeritus professor Faculty of Engineering Ain Shams University
Structural Engineering Department

Master-Lab

اتحاد ماسترلاب للاستشارات الهندسية
المهندس الاستشاري
دكتور / احمد فتحي عبد العزيز وشركاه
الاستاذ المتفرغ بكلية الهندسة جامعة عين شمس
قسم الهندسة الانشائية

Report (3) on Pull-out of:

MECHANICAL STEEL ANCHORS FIXED IN

Mockup Masonry Wall Constructed with DELTA BLOCKS

Project:
ICITY NEW CAIRO- Middle Radial Road.
آي سيتي التجمع – الطريق الدائري الاوسطي

Contractor: REDCON

Consultant: MB محرم/باخوم

Submitted to: DELTA BUILDING SYSTEMS

February 12, 2020

Authored by: Masterlab (Dr. Ahmed Fathy Abdel-Aziz)

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Report (3) on Pull Out of:

STEEL ANCHOR BOLTS FIXED IN
Masonry Wall Constructed with Delta Blocks

Sample Specifications

Upon the request of **"DELTA BUILDING SYSTEMS."**, Pull out tests were performed at site on 17 steel mechanical anchor bolts 6, 8, 10& 12 mm diameter, fixed in mockup masonry wall at I City Project, NEW CAIRO- Middle Radial Road –in site. Samples were fixed by "RAWL PLUG", according to the designated data and on its sole responsibility. Tests were made as Destructive/Proof test to provide assurance that tested anchors will support an identified load which specified by the contractor, and to determine the structural response under this definite loading.
The methods used – within – include the application of these standard test methods and codes: BS 5080-1:1974 Methods of test for structural fixings in concrete and masonry. Tensile loading. BS 8539:2012 Code of Practice for the selection and installation of post-installed anchors in concrete and masonry. : E 488 – 96 Standard Test Methods for Strength of Anchors in Concrete and Masonry Elements.

Installation Details and Test Objectives

17 Mechanical Anchor bolts 6, 8, 10& 12 mm diameters, were fixed horizontally in mockup masonry wall constructed with solid blocks "Delta Blocks produced by Dela Building Systems- see attached catalogues". Anchor bolts were installed by client in accordance with the manufacturer's installation instructions or method statement. Drilling diameter and embedment depth were applied as specified respectively.

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Base Material and Test location:

Anchor samples were fixed horizontally in mockup masonry wall constructed with solid blocks "Delta Blocks produced by Delta Building Systems- see attached catalogues" as described in test results - at random locations.

Attendance:

Tests were performed in the presence of:
Eng. Ahmed Elewa, Eng. Malaak Maximos, Eng. Islam Mabrouk, Eng. Amro Eldesouki, Eng. Basant Khaled, Eng. Ahmed Zeinhom, Eng. Esaam Sami

Represent **Delta Building Systems**

Eng. Ahmed Elsayed — Represents Rawl Plug
Eng.Khaled Ahmed — Represents Testing Agent

Test Equipment:

Tensile tests (Pull-Out) were performed on site 12/2/2020 for the tested samples, using Model 2050 tester with quick release hydraulic coupler of 0-50 kN pull-out load range of ± 0.5 % Accuracy (Photo-1). Samples were loaded gradually until failure, or loading was stopped at a specified certain safe load (Proof test load). Then, the maximum reached load or failure mode was registered. Testing system consists of: Load spreading bridge with three telescopic legs, Adjusting steel plates with different thicknesses, hollow rigid base plate, threaded stud adaptor M6, M8,M10& M12 and detachable 50kN digital gauge (Photo-1).

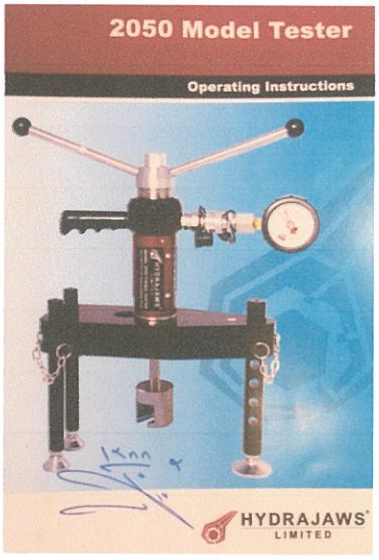

Photo 1. Testing device

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Test Results:

a) **Pull-out tests**

Test No.	Anchor Type	Diameter (mm)	Hole diameter (mm)	Embedded depth (mm)	Base Material	Floor	Maximum load (kN)	Required load (kN)	Failure Notes
1	RAWL PLUG FF1	10	12	50	Delta Block Masonry Wall	H[L] at Mockup Masonry Wall	0.8	1.8	Slipping
2							0.9		Slipping
3	RAWL PLUG FF1	10	10	50			**3.0**	**1.8**	**Slipping**
4							**3.6**		**Slipping**
5	RAWL PLUG R.RLK PM10x75	10	10	75			0.9	2.0	Slipping
6							1.2		Slipping
7	RAWL PLUG RS M6x65	6	10	65			1.1	--	Slipping
8	RAWL PLUG RRBP M6	6	12	35			1.6	1.5	Slipping
9				30			1.1		Slipping
10	RAWL PLUG RRBP M8	8	14	50			1.5	1.6	Slipping
11							1.9		Slipping
12	RAWL PLUG RRBP M10	10	16	80			3.0	1.6	Slipping
13							2.2		Slipping
14	RAWL PLUG RRBP M12	12	12	100			2.8	1.5	Slipping
15							3.4		Slipping
16	RAWL PLUG RFF1 M10x160	12	16	50			1.8	--	Slipping
17							1.8		Slipping

Tested by

Ahmed Hassan.

Revised by

Eng. Khaled Ahmed

Authorized By:
Consulting Engineer
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Report 3 on Pull-Out Tests on: ...

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