



Caribbean Industrial Research Institute

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REPORT

Attn: -

Project Code: EC03826561/24

Client: TRINIDAD AND TOBAGO BUREAU OF STANDARDS

Client Address: Century Drive, Trincity Industrial Estate

Report Title: Testing of 4 inch concrete blocks

Report No: 0393/24/01

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Reviewed By:

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Date: 2024/01/31

Authorized By:

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Date: 2024/01/31

Copy No:

1 of 1

Appendices:

Report Version:

ORIGINAL

RE-ISSUE

AMENDED

Introduction

The client submitted twelve (12) 4 inch concrete blocks for determination of parameters identified in Table 1. The samples were submitted on December 07, 2023 and were assigned CARIRI Identification numbers T240497 to T231596.

Table 1: Sample identification and tests requested

CARIRI ID	Client ID	Test
T240497 to T240499	B-4"-1 to B-4"-3	Compressive strength
T240500 to T240502	B-4"-4 to B-4"-6	Water absorption
T240503 to T240505	B-4"-7 to B-4"-9	Dimensional checks
T240506 to T240508	B-4"-10 to B-4"-12	Surface finish

Approach

Guidelines given in *ASTM C140-18a: Standard test method for sampling and testing of concrete masonry units* were used in the investigation. Gypsum capping was used for end preparation.

Results

Testing period: January 15 to 23, 2024.

Test results are presented in Tables 2 to 5.

Table 2: Compressive strength results of 4 inch concrete blocks

CARIRI ID	Client ID	Avg. overall dimensions LxBxH (mm)	Net cross-sectional area (mm ²)	Load (N)	Net area compressive strength (N/mm ²)	Requirements of ASTM C90-16a	
T240497	B-4"-1	390.0×90.0×190.0	22 250	394 000	17.7	Min. net area compressive strength Average of 3 units - 13.8 N/mm ² Individual unit - 12.4 N/mm ²	
T240498	B-4"-2	390.0×90.0×190.0	22 250	561 900	25.3		
T240499	B-4"-3	390.0×90.0×190.0	22 250	507 450	22.8		
					Average	21.9	

Date tested: January 17 to 23, 2024

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Table 3: Water absorption results of 4 inch concrete blocks

CARIRI ID	Client ID	Oven dry density (kg/m ³)	Water absorption (kg/m ³)	Requirements of ASTM C90-16a
T240500	B-4"-4	2140	128	Max. water absorption For conc. density >2000 kg/m ³ Average of 3 units - 208 kg/m ³ Individual unit – 240 kg/m ³
T240501	B-4"-5	2106	129	
T240502	B-4"-6	2094	129	
	Average	2113	129	

Date tested: January 15 to 17, 2024

Table 4: Dimensional check results of 4 inch concrete blocks

CARIRI ID	Client ID	Dimensions (mm)						Normalized Web Area (mm ² /m ²)
		Average Length	Average Breadth	Average Height	Average Shell Thickness	Average Web Thickness	Average Web Height	
T240503	B-4"-7	387.5	90.0	190.0	24.00	23.50	190.0	162500
T240504	B-4"-8	387.5	90.0	190.0	24.25	23.75	190.0	165000
T240505	B-4"-9	387.5	90.0	190.0	23.50	23.75	190.0	165000

Date tested: January 26, 2024

Table 5: Surface finish results

CARIRI ID	Client ID	Chips (>25.4mm)		Cracks (>0.5mm)		Imperfections visible from 20ft away	
		Yes	No	Yes	No	Yes	No
T240506	B-4"-10		✓		✓		✓
T240507	B-4"-11	34.9			✓		✓
T240508	B-4"-12	32.5			✓		✓

Date tested: January 26, 2024

END OF REPORT

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