

PROJECT	Al Khor Expressway	LOCATION	Al Khor, Qatar
SURVEYOR	Asjad Mehmood	CHECKED BY	Senior Surveyor
INSTRUMENT	Leica TS16 2"	DATE	2026-10-11

1. Level run details

Run type	Closed (checked on a known benchmark)
Reduction method	Rise & Fall
Starting benchmark	BM-01 RL 4.215 m
Closing benchmark	BM-01 RL 4.215 m
Instrument set-ups	3

2. Closure check

ACCEPTED - within the allowable misclosure

Misclosure = computed RL 4.213 - known RL 4.215 = -2.0 mm

Allowable $\pm 10 \text{ mm} \times \sqrt{3} \text{ set-ups} = \pm 17.3 \text{ mm}$

Correction applied equally per set-up: 0.67 mm per set-up (cumulative).

3. Arithmetic checks

Check	Left side (m)	Right side (m)	Result
Sum BS - Sum FS = Last RL - First RL	-0.0020	-0.0020	OK
Sum Rise - Sum Fall = Last RL - First RL	-0.0020	-0.0020	OK
HI method and Rise & Fall method give the same RLs	max diff 0.0000		OK

4. Level book

Station	BS	IS	FS	Rise	Fall	RL	Corr. (mm)	Adjusted RL	Remark
BM-01	1.512					4.215	0.0	4.215	Benchmark
TP-1	1.388		0.866	0.646		4.861	0.7	4.862	Change point
IP-1		2.034			0.646	4.215	1.3	4.216	Kerb top
TP-2	1.604		0.801	1.233		5.448	1.3	5.449	Change point
BM-01			2.839		1.235	4.213	2.0	4.215	Close on benchmark
Sum	4.504		4.506	1.879	1.881				

SURVEYED BY

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Senior Surveyor

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APPROVED BY

Signature / Date