



GPR CONCRETE SCANNING REPORT

Date: 01/09/26 Time: 7:00am-2:00pm Report: 1814

Company Name: Scan Report Example

Site Contact: John

Location: Whyalla Area #'s: See list

GPR Examination of: Concrete Culverts

Criteria: Slab information
MPa
CMM

Test Units: ☒ Proceq GP8000 ☐ RD 7200 ☒ Schmidt Hammer ☒ CMM

Test Method: ☒ GP Radar ☒ Line Scan ☐ Grid Scan ☐ EMF Locator

Disclaimer: The value of GPR concrete scanning is a risk reduction method. Whilst every effort is taken to interpret the radar images correctly, this is not 100% accurate in any circumstance. Scan Core S.A Pty Ltd does not guarantee that the interpretations of the radar images will be interpreted correctly in any circumstance.

In no event, regardless of the cause, will Scan Core S.A Pty Ltd be liable for any indirect, special, incidental or consequential damage or damages of any kind to reinforcing, services or structures from the outcome of scanning or testing.

This GPR concrete scanning report is not permission to cut, core, drill, break, or excavate. Permission should be obtained by the relevant authorities.

In some circumstances the markings and marked targets will be slightly off due to the density, depth, moisture content and existing floor coverings of the concrete structure.

Technician : Shane Andresen Sign: 

Site Contact: John Sign: _____



Summary :

INTRODUCTION—

Ground-penetrating radar (GPR) slab scanning was done to assess slab thickness and reinforcing layout and to provide an overview of structural construction.

CMM (Concrete Moisture Metre), Rebound hammer (Schmidt hammer) testing was also carried out within the same areas to provide an indicative assessment of moisture level & in-situ concrete compressive strength.

Schmidt hammer testing is a non-destructive method that estimates concrete compressive strength by measuring the rebound of a spring-loaded mass impacting the concrete surface. Results are indicative only.

CMM readings provide a non-destructive indication of the moisture condition of the concrete. Final suitability for a specific flooring, adhesive or coating system should be confirmed against the relevant manufacturer's moisture requirements.

CMM INTERPRETATION GUIDE—

PosiTector CMM Surface Meter (0.0%–6.0%)

0.0–0.5% – VERY DRY

Extremely dry concrete.

0.6–1.0% – DRY / ACCEPTABLE

Generally considered a low moisture condition.

1.1–2.0% – SLIGHTLY MOIST

May be acceptable for many coating systems.

2.1–3.0% – MOIST

Extended drying may be required prior to coating.

3.1–4.0% – HIGH MOISTURE

Increased risk of flooring or coating failure.

4.1–6.0%+ – VERY HIGH MOISTURE

Concrete may be unsuitable for moisture-sensitive coatings or flooring systems without further assessment or treatment.

Continued...



Summary :

GPR REINFORCEMENT SURVEY – PRECAST CULVERTS

SCOPE—

GPR scanning was undertaken to identify and document the reinforcing configuration within the top and base slabs of Culverts CV1, CV2, CV3, CV4, CV5, CV6(CV6 information is different, info to on following pages), CV7 and CV8.

Individual GPR scan images and associated site photographs have been labelled with the corresponding culvert identification numbers.

The reinforcing arrangements described below are based on interpretation of the GPR data obtained at the areas scanned.

Reinforcing bar diameters are estimated.

TOP CULVERT SLABS—

The precast top slabs were measured at approximately 300mm overall thickness.

Two layers of reinforcing were identified.

TOP REINFORCING LAYER—

- Estimated bar diameter: Ø16mm
- Reinforcing spacing: 150mm centres in both directions
- Cover from top surface: approximately 100mm

BOTTOM REINFORCING LAYER—

- Estimated bar diameter: Ø16mm
- Cross bars: approximately 150mm centres
- Longitudinal bars: approximately 30mm centres
- Cover from underside of slab: approximately 25–40mm

Continued...



Summary :

DELAMINATION – TOP CULVERT SLABS—

GPR results indicate a possible delamination or separation plane in the vicinity of the bottom reinforcing layer of the top culvert slabs, at approximately 260–270mm depth from the top surface.

This corresponds with the location of the bottom reinforcing layer, which has approximately 25–40mm concrete cover from the underside of the slab.

Photographic evidence of visible delamination has also been recorded and included within the report for the affected culverts, supporting the GPR observations.

The GPR findings should be considered indicative of the conditions within the areas scanned. Further investigation may be undertaken where required to determine the extent and condition of the affected concrete.

BASE CULVERT SLABS—

The precast culvert base slabs were measured at approximately 300mm overall thickness.

Two layers of reinforcing were identified.

TOP REINFORCING LAYER

- Estimated bar diameter: Ø16mm
- Cross bars: approximately 150mm centres
- Longitudinal bars: approximately 100mm centres
- Cover from top surface: approximately 40–55mm

BOTTOM REINFORCING LAYER—

- Estimated bar diameter: Ø16mm
- Reinforcing spacing: approximately 150mm centres in both directions
- Depth from top surface: approximately 215mm

CULVERT IDENTIFICATION—

The above reinforcing configurations relate to the following surveyed culverts:

CV1, CV2, CV3, CV4, CV5, CV7 and CV8.

The relevant GPR scan images and photographs have been labelled with their corresponding CV number to provide direct correlation between the reported findings and each surveyed culvert.



Summary :

CULVERT 6 – GPR REINFORCEMENT SURVEY

TOP CULVERT SLAB—

The precast top slab to Culvert 6 was measured at approximately 300mm overall thickness.

Two layers of reinforcing were identified.

TOP REINFORCING LAYER—

- Estimated bar diameter: Ø16mm
- Longitudinal bars: approximately 100mm centres
- Cross bars: approximately 500mm centres
- Cover from top surface: approximately 100mm

BOTTOM REINFORCING LAYER—

- Estimated bar diameter: Ø16mm
- Longitudinal bars: approximately 100mm centres
- Cross bars: approximately 500mm centres
- Cover from underside of slab: approximately 25–45mm

DELAMINATION OBSERVATIONS—

GPR scanning of the top slab indicated **little to no evidence of delamination** within the areas surveyed.

This differs from the delamination identified in the vicinity of the bottom reinforcing layer within the other surveyed culvert top slabs.

BASE CULVERT SLAB—

GPR scanning of the base slab to Culvert 6 was unable to be undertaken due to access restrictions at the time of the survey.

As a result, no reinforcing configuration, spacing, cover depths or delamination observations have been reported for the base slab of Culvert 6.



Summary :

GPR SURVEY NOTES—

The reinforcing arrangement identified within the top slab of Culvert 6 differs from that detected within Culverts CV1, CV2, CV3, CV4, CV5, CV7 and CV8.

All reinforcing locations, spacing, cover depths and bar diameters stated within this report are approximate and based on GPR interpretation at the specific areas scanned.

Reinforcing bar diameters are estimated from the GPR responses and have not been physically verified.

GPR results represent conditions detected along the scan paths and within the surveyed areas and should not be interpreted as confirmation that reinforcing spacing, cover depths, delamination or concrete conditions remain uniform throughout the entirety of the culvert slab.

CONCRETE CONDITION ASSESSMENT SUMMARY—

Concrete Moisture Meter (CMM) testing and Schmidt rebound hammer testing were undertaken in conjunction with the GPR survey to provide additional information regarding the condition of the surveyed culvert top slabs.

CMM RESULTS—

Elevated moisture readings were recorded across all surveyed culvert top slabs.

- CMM readings ranged from approximately 3.7% to 6.0%.
- The results indicate elevated to very high surface moisture conditions across the surveyed culverts.
- Elevated moisture was not isolated to a single culvert and was observed throughout the structures tested.

SCHMIDT REBOUND HAMMER RESULTS—

Schmidt rebound hammer testing was undertaken to provide an indicative assessment of concrete surface hardness and estimated compressive strength.

Continued...



Summary :

- CV1, CV2, CV3, CV4 and CV6 generally recorded results within the 40.0+ MPa range.
- CV5 recorded comparatively lower results, generally within the mid-30 MPa range.
- CV7 was not tested using the Schmidt rebound hammer and therefore no estimated MPa result is reported for this culvert.
- CV8 produced significantly more variable and inconsistent rebound results than the other culverts.
- Median results recorded at CV8 ranged from approximately 20.0 MPa at the lowest test location to approximately 30.1 MPa at the highest.
- Individual rebound readings at CV8 varied considerably between strikes. This variability was observed in areas where apparent delamination was also identified and should therefore be interpreted with caution.

OVERALL CONDITION OBSERVATIONS—

Of the culverts surveyed, CV8 appeared to be in the poorest overall condition based on the combined GPR observations, visible condition and inconsistent Schmidt rebound hammer results.

Apparent delamination was identified within CV8, and the substantial variation between individual Schmidt hammer impacts indicates that the concrete surface response was not uniform within the areas tested. The lower median result of approximately 20.0 MPa was also substantially below the results obtained from the majority of the other surveyed culverts.

In comparison, CV6 appeared to be in better overall condition within the areas accessible for testing. GPR scanning of the CV6 top slab indicated little to no evidence of delamination, while Schmidt hammer results were generally within the 40.0+ MPa range.

The remaining culverts generally produced Schmidt hammer results within the 40.0+ MPa range, with the exception of CV5, which recorded results within the mid-30 MPa range.

Elevated CMM readings of approximately 3.7% to 6.0% were recorded across all surveyed culvert top slabs and should be considered alongside the GPR, Schmidt hammer and visual observations when assessing the overall condition of the structures.



Summary :

TESTING LIMITATIONS—

Schmidt rebound hammer results provide an indicative assessment of concrete surface hardness and should not be considered equivalent to laboratory compressive strength testing of extracted concrete cores.

Results can be influenced by surface condition, moisture, carbonation, aggregate, local defects and delamination. In particular, the inconsistent results recorded at CV8 may have been influenced by the apparent delamination observed within the tested areas.

CMM readings provide an indication of moisture conditions at the concrete surface and near-surface region and should not be interpreted as a direct measurement of moisture throughout the full depth of the slab.

The results should therefore be considered collectively with the GPR findings, photographic evidence and visual observations when assessing the condition of the surveyed culverts.



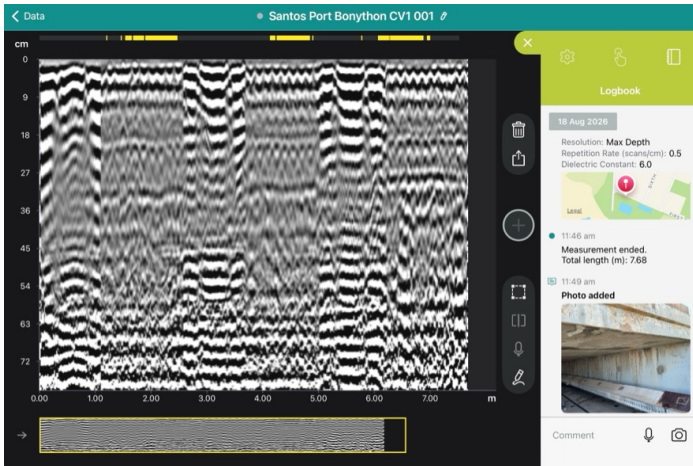
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Site Images



Home S0065 Santos CV11 1

EN 12504-2

None

Type N
R ~85°

100 100 R angle corrected

41.0 43.5

#7 1 1

43.0	$\bar{x}$	45.4
39.0	#1	41.6
51.0	#2	53.1
43.0	#3	45.4
44.0	#4	46.4
49.0	#5	51.2
40.0	#6	42.5
41.0	#7	43.5

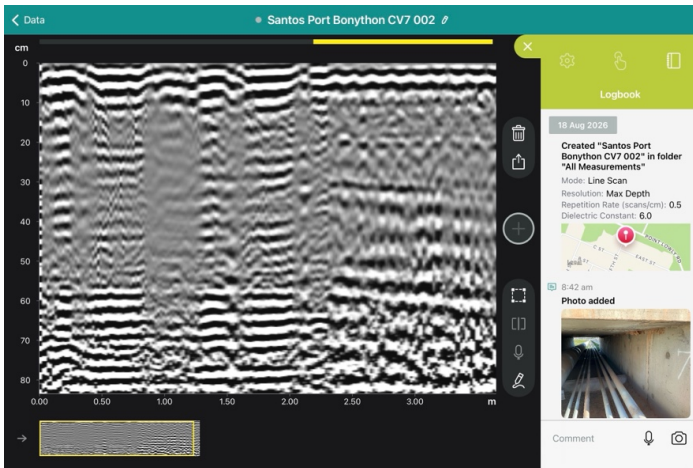




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Site Images



Home S0064 Santos CV2 1

EN 12504-2

None

Type N R ~81°

100 100 R angle corrected

#7 1 1

40.0	$\bar{x}$	42.6
40.0	#1	42.5
48.0	#2	50.2
34.0	#3	36.8
42.0	#4	44.5
34.0	#5	36.8
44.0	#6	46.4
39.0	#7	41.6





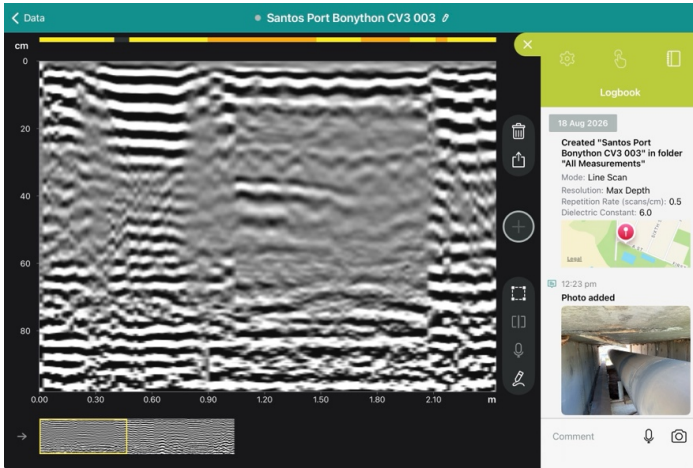
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Home S0066 Santos CV3 1

EN 12504-2

None

Type N R ~84°

100 100 R angle corrected

#7 1 1

27.0	$\bar{x}$	30.1
24.0	#1	27.3
26.0	#2	29.1
31.0	#3	33.9
30.0	#4	33.0
27.0	#5	30.1
24.0	#6	27.2
28.0	#7	31.1





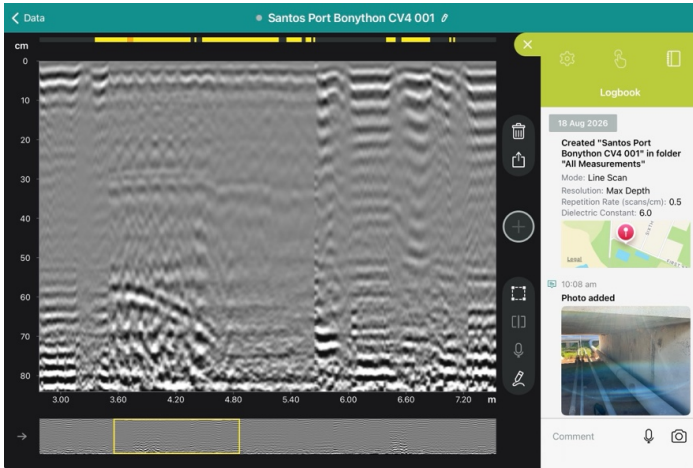
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Type N	R	R angle corrected	R
~83°	37.0	39.7	
#7	1	1	
	37.0	$\bar{x}$	39.7
	39.0	#1	41.6
	29.0	#2	32.0
	37.0	#3	39.7
	39.0	#4	41.5
	36.0	#5	38.7
	41.0	#6	43.5
	37.0	#7	39.7





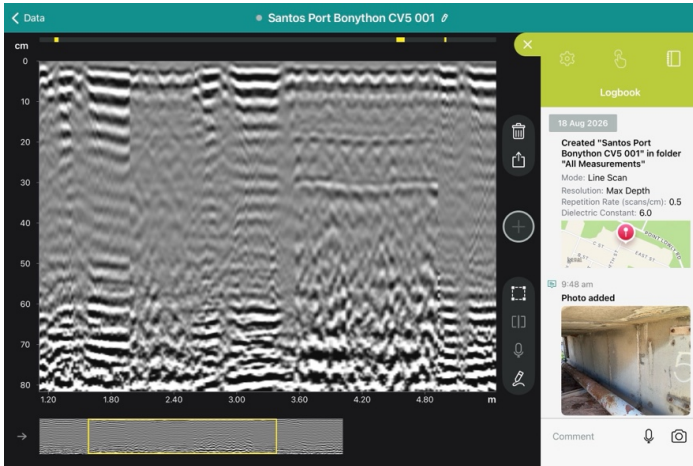
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Site images



Back S0063 Santos CV5 1

EN 12504-2

None

Type N R 100 100 R angle corrected

49.0 51.1

#11 1 1

32.5	$\bar{x}$	35.4
33.0	#1	35.9
34.0	#2	36.8
27.0	#3	30.1
32.0	#4	34.9
36.0	#5	38.7
32.0	#6	34.9
12.0	#7	15.7
13.0	#8	16.6





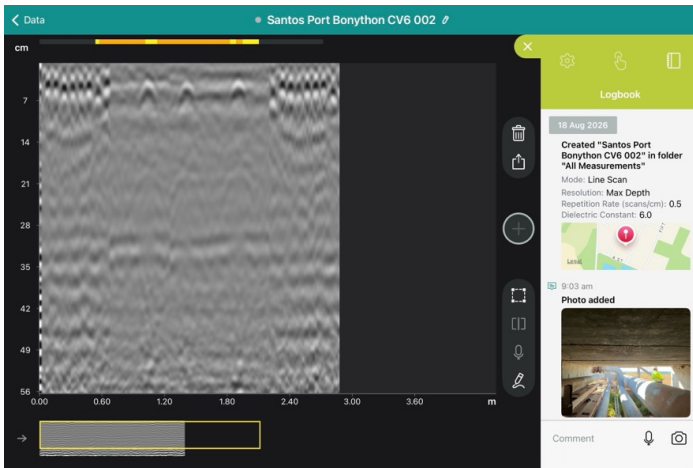
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Type N	R	R angle corrected
42.0	100	100
42.0	1	1
42.0	1	1
42.0	1	1
42.0	1	1
42.0	1	1
42.0	1	1





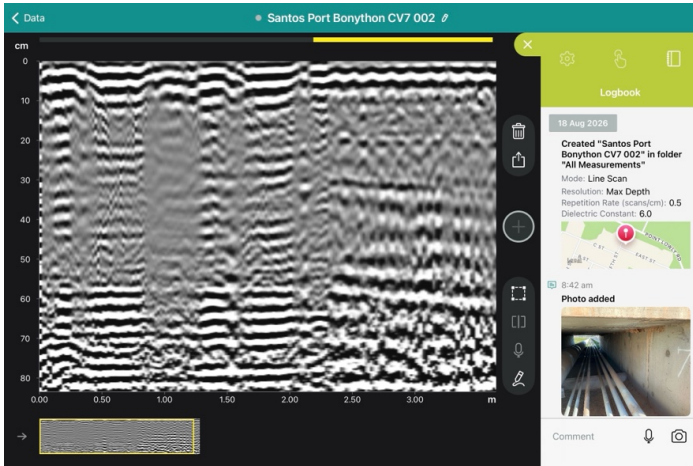
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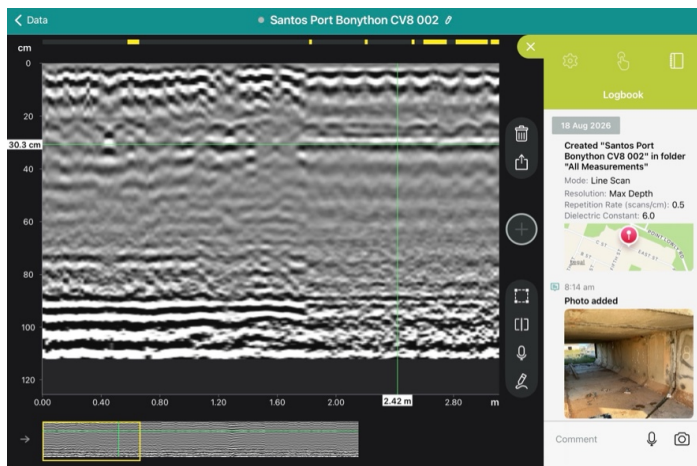
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S0061 Santos CV8 1		
EN 12504-2		
None		
Type N R ~82°	100 32.0	100 34.9
#12	1	1
34.5 $\bar{x}$ 37.3		
33.0	#1	35.8
32.0	#2	34.9
36.0	#3	38.7
21.0	#4	24.3
21.0	#5	24.4
22.0	#6	25.3
15.0	#7	18.6
39.0	#8	41.6

S0061 Santos CV8 1		
EN 12504-2		
None		
Type N R ~82°	100 32.0	100 34.9
#12	1	1
34.5 $\bar{x}$ 37.3		
21.0	#5	24.4
22.0	#6	25.3
15.0	#7	18.6
39.0	#8	41.6
40.0	#9	42.5
28.0	#10	31.1
36.0	#11	38.7
32.0	#12	34.9

S0061 Santos CV8 rhs1		
EN 12504-2		
None		
Type N R ~80°	100 22.0	100 25.3
#7	1	1
27.0 $\bar{x}$ 30.1		
40.0	#1	42.5
25.0	#2	28.2
27.0	#3	30.1
28.0	#4	31.0
35.0	#5	37.8
36.0	#6	38.7
22.0	#7	25.3

S0061 Santos CV8 1		
EN 12504-2		
None		
Type N R ~82°	100 32.0	100 34.9
#12	1	1
34.5 $\bar{x}$ 37.3		
21.0	#5	24.4
22.0	#6	25.3
15.0	#7	18.6
39.0	#8	41.6
40.0	#9	42.5
28.0	#10	31.1
36.0	#11	38.7
32.0	#12	34.9





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