

 General Directorate of Mobility and Roads	Bridge inspection report		Main inspection		RC
			N°: 4	Date: 01.06.2023	
Marcolet cut-and-cover tunnel - Crissier					NO.: 082TC2834

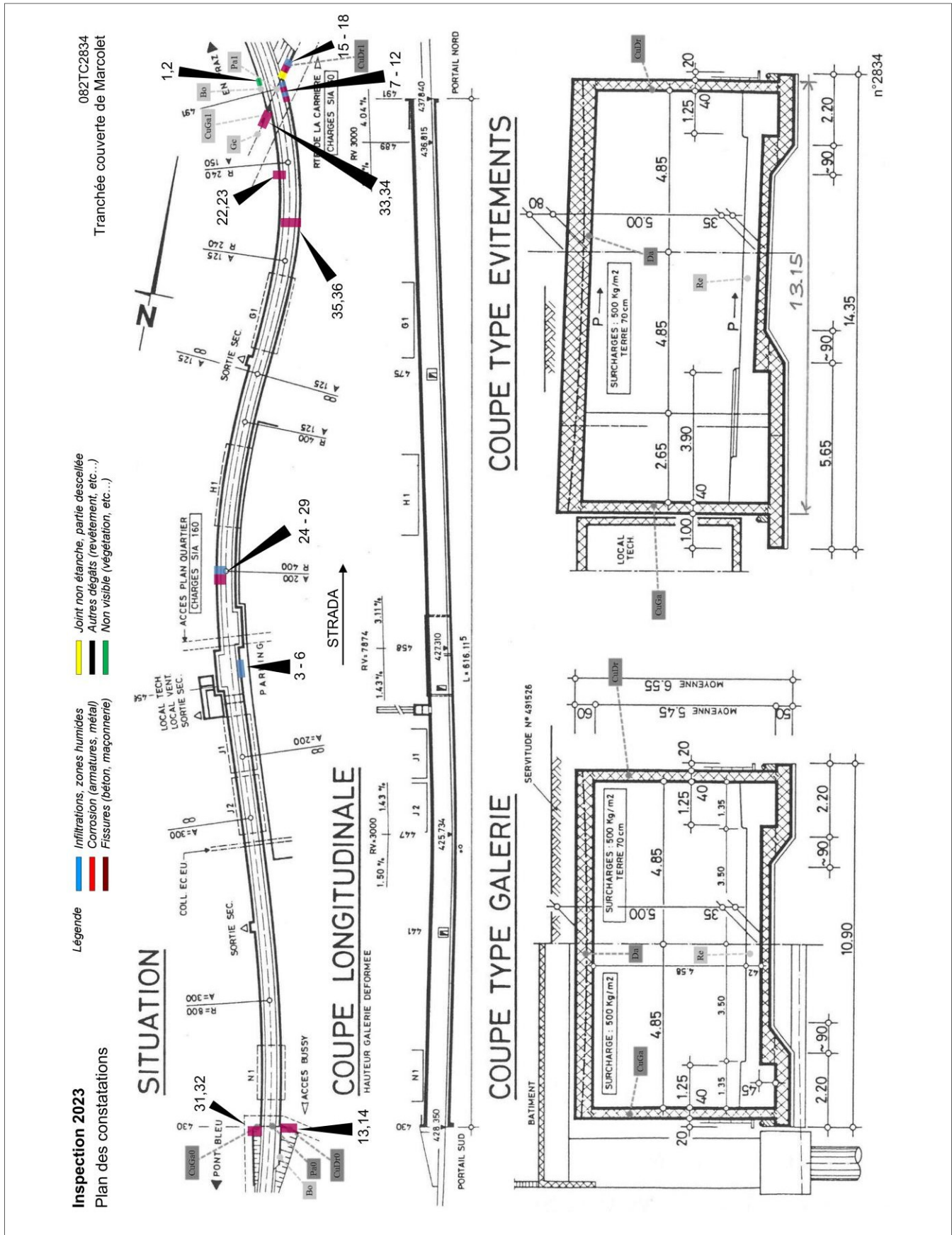
Maintenance :	2553				km Maintenance axis :		4.297		
Starting point	375	U [m]	234.0	V [m]	0.0	W [m]	0.0	km	0.003
Fine reference point	450	U [m]	115.1	V [m]	0.0	W [m]	0.0	km	0.004
Coordinates E/N :	2'533'895 / 1'155'036				Altitude [m]		520.00		
Municipality :	Crissier				Region		CENTER		
Type of work :	Rectangular cut-and-cover				Weather conditions:		fine (cloudless, serene) 20.0 °C		
Owner :	Canton of Vaud				Next inspection:		01.06.2028		
Resp. management :	Canton of Vaud				RC N° :		82		
Office :	MPAIC consulting engineers				Date :		Visa :		
Inspector:	Stephan Mühlberg								

	Info. Additional :
	<i>Total length:</i> 620.00 m <i>Total width :</i> 10.00 m <i>Total surface :</i> 6200.00 m² <i>area</i> <i>Usable roadway width</i> 7.00 m <i>:</i> <i>Historic monument :</i> ☐ yes ☒ no <i>Waterproofing of bearing slab :</i> ☒ yes ☐ no
Year of construction: 1993	Intervention:

Condition assessment						Recommendation	
Structural elements :	2	Border				Recommended action :	Maintenance (routine upkeep)
	2	Wing wall Right Axis 0				Estimated costs:	2110.0 kfr.
	2	Left wing wall Axis 0					
Equipment items :	Bodyguards					Recommended action :	Maintenance (routine upkeep)
						Estimated costs:	20.0 kfr.
Overall score :	1	2	3	4	5	Costs are. total:	2130.0 kfr.
Complementary inspection :						Safety measures :	
Controlled by :						Options :	

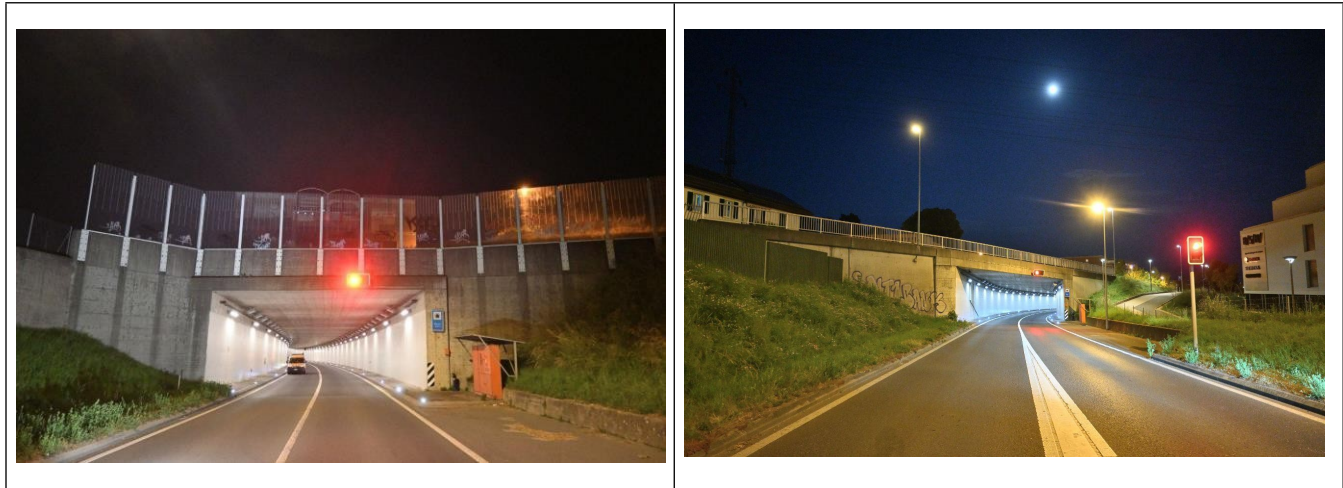
	General Directorate of Mobility and Roads	Bridge inspection report	Main inspection		RC RS
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Inspection sketch: 082TC2834_Constatations_2023



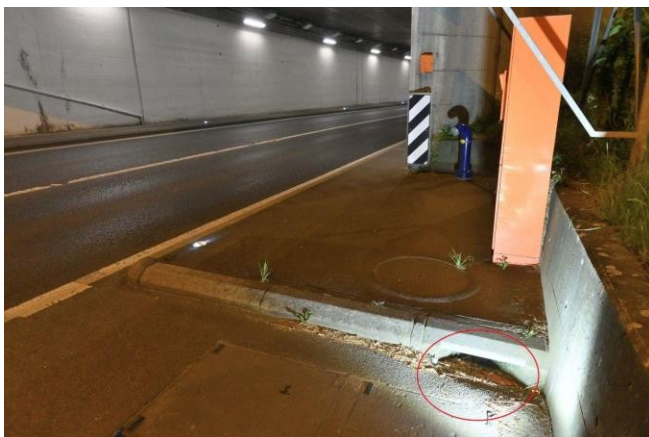
	General Directorate of Mobility and Roads	Bridge inspection report	Main inspection		RC ^{en}
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Photo table - Overview



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Table of photos - Findings



Bo Bordure
411 Malfunctions
Drain near left edge of Axis 1. Drain partially blocked by garbage.

Photo N°: 1 / 36



Bo Bordure
411 Malfunctions
Drain near left edge of Axis 1. Drain partially blocked by garbage.

Photo N°: 2 / 36



CuDr Straight Cillwall
301 Wetlands
Lower part of wall (150m N). Leaky joint, causing seepage.

Photo N°: 3 / 36



CuDr Straight Cillwall
301 Wetlands
Lower part of wall (150m N). Leaky joint, causing seepage.

Photo N°: 4 / 36

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CuDr Straight Cillwall
301 Wetlands
Lower part of wall (150m N). Leaky joint, causing seepage.

Photo N°: 5 / 36



CuDr Straight Cillwall
301 Wetlands
Lower part of wall (150m N). Leaky joint, causing seepage.

Photo N°: 6 / 36



CuDr Straight Cillwall
301 Wetlands
Piping zone - Axis 1 exit (3m N). Concrete spalling and seepage.

Photo N°: 7 / 36



CuDr Straight Cillwall
301 Wetlands
Piping zone - Axis 1 exit (3m N). Concrete spalling and seepage.

Photo N°: 8 / 36



CuDr Straight Cillwall
301 Wetlands
Piping zone - Axis 1 exit (3m N). Concrete spalling and seepage.

Photo N°: 9 / 36



CuDr Straight Cillwall
301 Wetlands
Piping zone - Axis 1 exit (3m N). Concrete spalling and seepage.

Photo N°: 10 / 36

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CuDr Straight Cillwall
301 Wetlands
Pipe zone - Axis 1 exit (3m N). Concrete spalling and seepage.

Photo N°: 11 / 36



CuDr Straight Cillwall
301 Wetlands
Pipe zone - Axis 1 exit (3m N). Concrete spalling and seepage.

Photo N°: 12 / 36



CuDr0 Wing wall Straight Axis 0
1216 other cracks
Front face of gate. Surface microcracks.

Photo N°: 13 / 36



CuDr0 Wing wall Straight Axis 0
1216 other cracks
Front face of gate. Surface microcracks.

Photo N°: 14 / 36



CuDr1 Wing wall Right Axis 1
1209 Joint cracks
Upper part of the infrastructure object. The rubber is partially torn off.

Photo N°: 15 / 36



CuDr1 Wing wall Right Axis 1
1209 Joint cracks
Upper part of the infrastructure object. The rubber is partially torn off.

Photo N°: 16 / 36

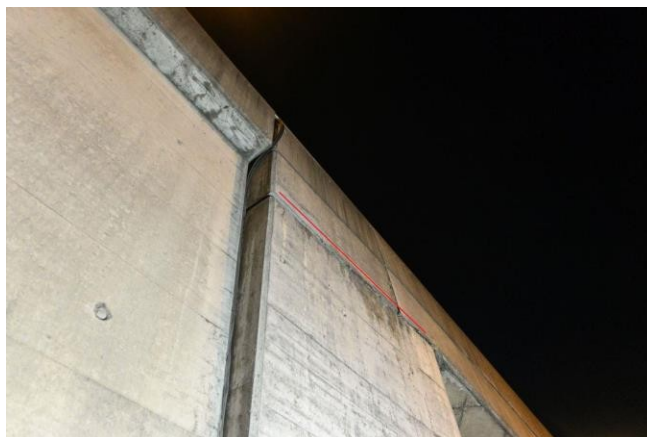
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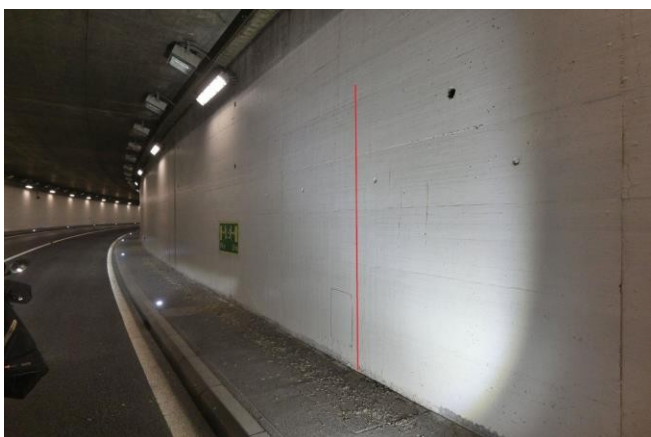
CuDr1 Wing wall Right Axis 1
1303 Eclats
At the center of the infrastructure object. Concrete spalling and cracking.

Photo N°: 17 / 36



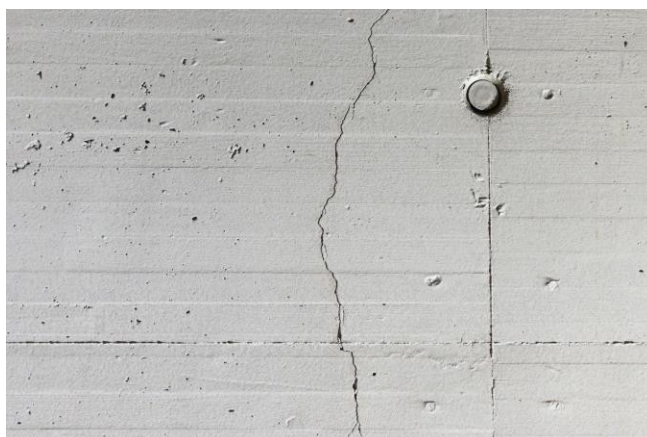
CuDr1 Wing wall Right Axis 1
301 Wetlands
Upper part of the infrastructure object. Non-tight joint.

Photo N°: 18 / 36



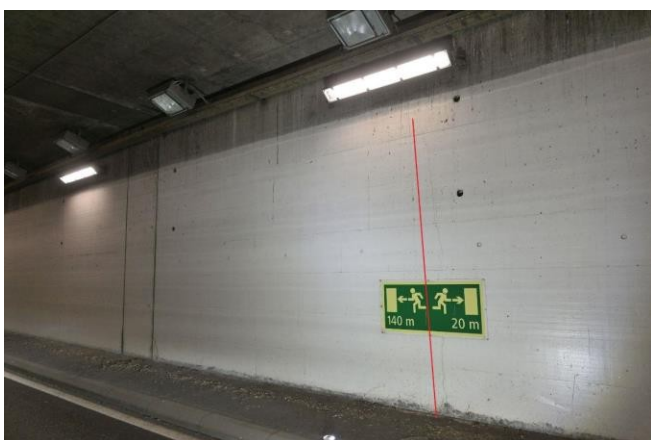
CuGa Culée Wall Left
1216 other cracks
Recurrent cracks all along the wall. Microcracks all along the wall.

Photo N°: 19 / 36



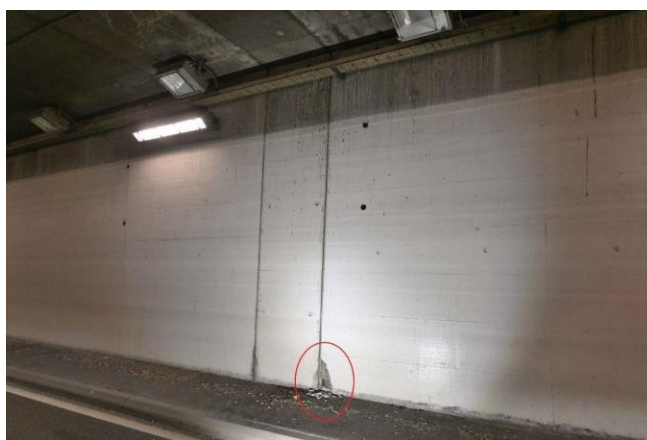
CuGa Culée Wall Left
1216 other cracks
Recurrent cracks all along the wall. Microcracks all along the wall.

Photo N°: 20 / 36



CuGa Culée Wall Left
1216 other cracks
Recurrent, all along the wall. Microcracks all over height.

Photo N°: 21 / 36



CuGa Culée Wall Left
1303 Eclats
Lower part of the wall (25m N). Shattering of the coating.

Photo N°: 22 / 36

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Table of photos - Findings



CuGa Culée Wall Left
1303 Eclats
Lower part of the wall (25m N). Shattering of the coating.

Photo N°: 23 / 36



CuGa Culée Wall Left
301 Wetlands
Over the entire height of the wall (140m N). Infiltration weakening the concrete.

Photo N°: 24 / 36



CuGa Culée Wall Left
301 Wetlands
Over the entire height of the wall (140m N). Infiltration weakening the concrete.

Photo N°: 25 / 36



CuGa Culée Wall Left
301 Wetlands
Over the entire height of the wall (140m N). Infiltration weakening the concrete.

Photo N°: 26 / 36



CuGa Culée Wall Left
301 Wetlands
Over the entire height of the wall (140m N). Infiltration weakening the concrete.

Photo N°: 27 / 36



CuGa Culée Wall Left
301 Wetlands
Over the entire height of the wall (140m N). Infiltration weakening the concrete.

Photo N°: 28 / 36

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CuGa Culée Wall Left
301 Wetlands
Over the entire height of the wall (140m N). Infiltration weakening the concrete.

Photo N°: 29 / 36



CuGa Culée Wall Left
309 Fouling
Upper part of the wall (50m N). Bird droppings.

Photo N°: 30 / 36



CuGa0 Left wing wall Axis 0
1216 other cracks
Entire wall. Surface microcracks.

Photo N°: 31 / 36



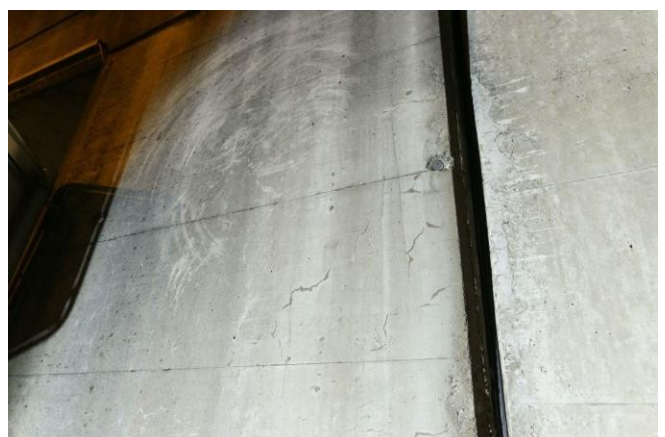
CuGa0 Left wing wall Axis 0
1216 other cracks
Entire wall. Surface microcracks.

Photo N°: 32 / 36



CuGa1 Left wing wall Axis 1
1216 other cracks
Close to rubber gasket. Scattered cracks.

Photo N°: 33 / 36



CuGa1 Left wing wall Axis 1
1216 other cracks
Close to rubber gasket. Scattered cracks.

Photo N°: 34 / 36

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Table of photos - Findings



Da Dalle
1216 other cracks
Above the track on the right (70m N). Microcracks
marked with red spray.

Photo N°: 35 / 36



Da Dalle
1216 other cracks
Above the track on the right (70m N). Microcracks
marked with red spray.

Photo N°: 36 / 36

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Structural element						
Description and abbreviation :		N° KUBA :	Risk class :	Qualif.:	Description:	Photo gallery: Condition class :
Parapet Axe 1	Pa1		I	A		1
Coating	Re		I	A		1
Parapet Axis 0	Pa0		I	A		1
Border	Bo	411	I	C	Drain partially blocked by garbage.	1, 2 2
Wing wall Right Axis 0	CuDr0	1216	II	C	Surface microcracks.	13, 14 2
Left wing wall Axis 0	CuGa0	1216	II	C	Surface microcracks.	31, 32 2
Culée Wall Left	CuGa	1216, 1303, 301, 309	II	C	Full-height microcracks, Shattered coating, Infiltration weakening concrete, Bird droppings.	19, 20, 21, 22, 23, 24, 25, 26, 27, 28, 29, 30 2
Wing wall Right Axis 1	CuDr1	1209, 1303, 301	II	C	Rubber gasket partially torn off, concrete splintering and cracking, leaky joint.	15, 16, 17, 18 2
Left wing wall Axis 1	CuGa1	1216	II	C	Distributed cracks.	33, 34 2
Slab	Da	1216	II	C	Transverse microcracks marked with red spray.	35, 36 2
Right Culée wall	CuDr	301, 301	II	C	Leaky joint, causing seepage, concrete spalling and seepage.	3, 4, 5, 6, 7, 8, 9, 10, 11, 12 2

Equipment item						
Description and abbreviation :		N° KUBA :	Risk class :	Qualif.:	Description:	Photo gallery: Condition class :

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Conclusions:

Serviceability : The structure's serviceability is guaranteed.

Degree of urgency : No particular urgency.

Structural safety : Overall, the structural safety of the structure is guaranteed.

Degree of urgency : No particular urgency.

Comments (description) :

The structure is in acceptable condition (2). Routine maintenance measures (treatment of joints, cleaning, anti-pigeon device) are recommended.

Structural part :

Estimated costs according to "RRVD 2020 OA, costs of structures" :

Structural costs: $6200 \text{ m}^2 * 3400 \text{ CHF/m}^2 * 0.1 = 2110 \text{ kCHF}$

(Structure area = 6200 m² / Concrete structure / Restoration cost per m² = 3400CHF/m² / Overall score = 2 / Red curve / Degradation rate = 0.1)

Equipment section :

Estimated equipment costs: 20 kCHF (pipe rehabilitation).

Degree of urgency *Work recommended before 2028.*
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