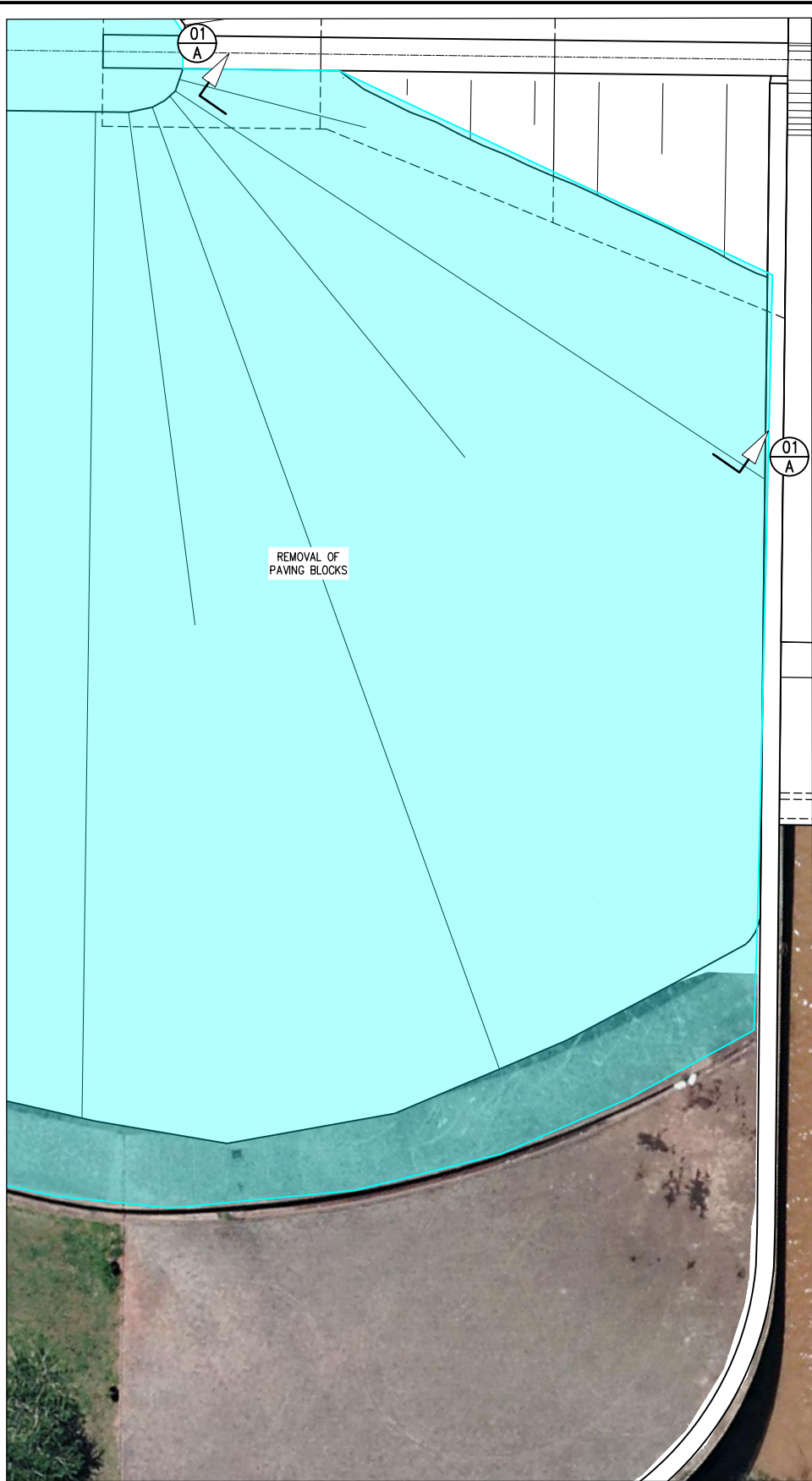


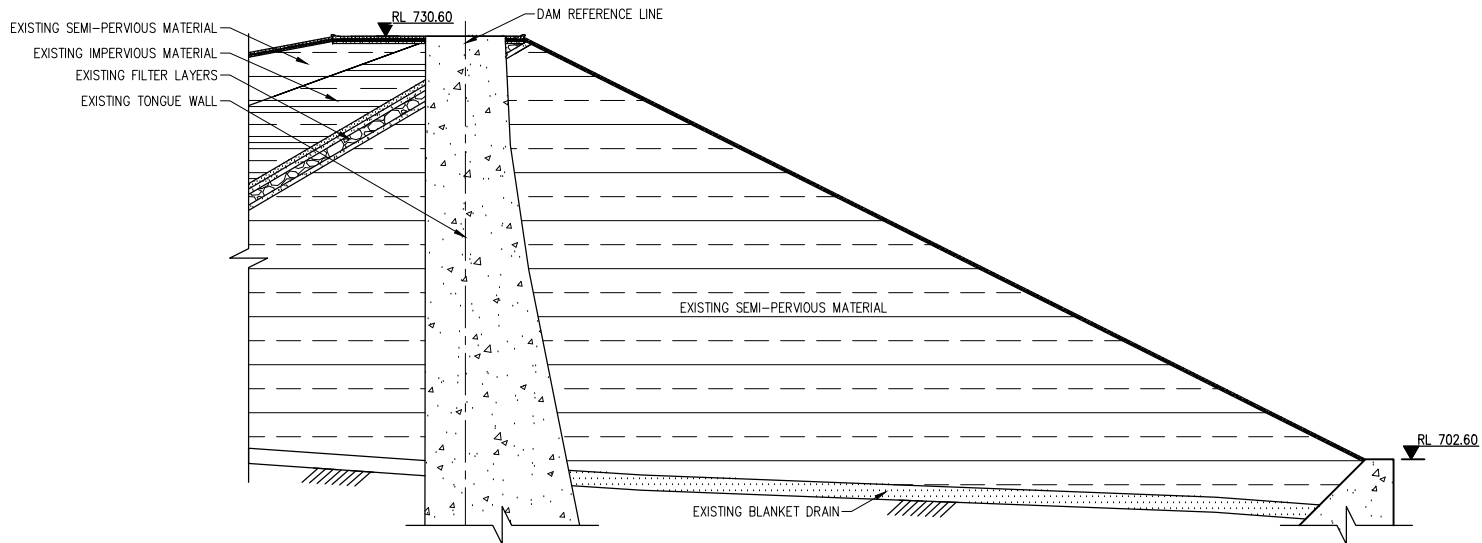
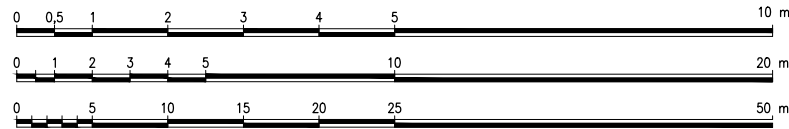


CONSTRUCTION PHASE 1 PLAN LAYOUT
SCALE 1:250

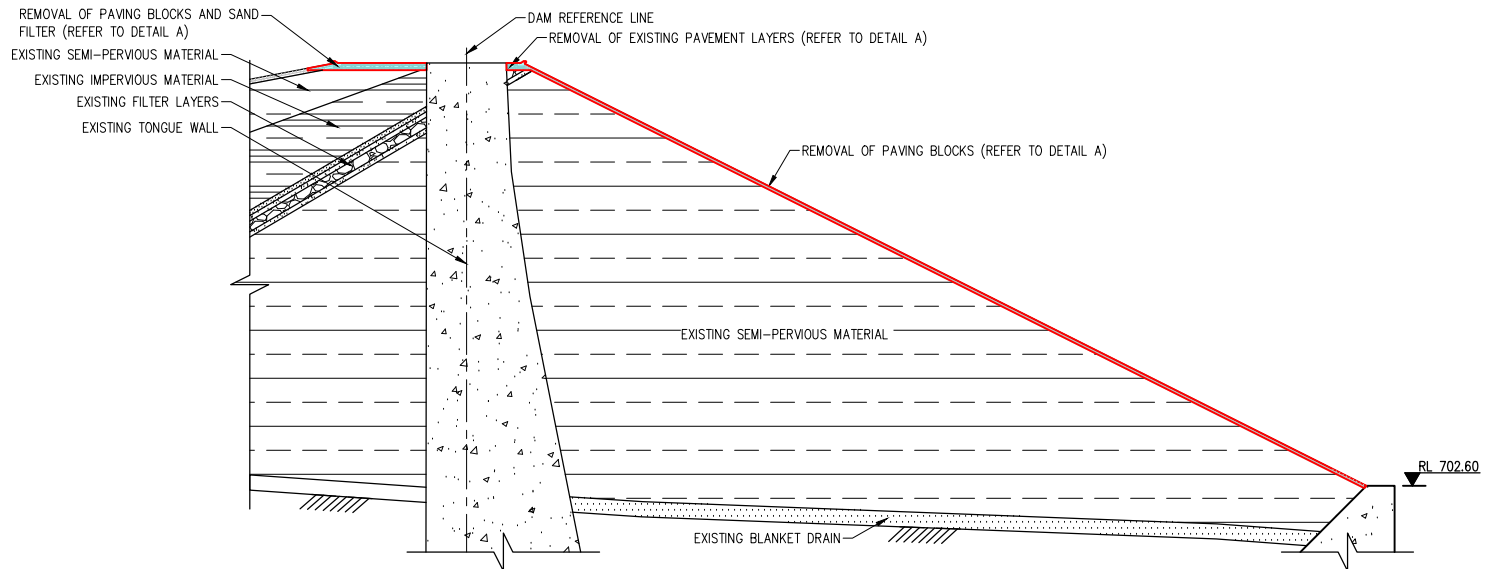
SCALE 1:50

SCALE 1:100

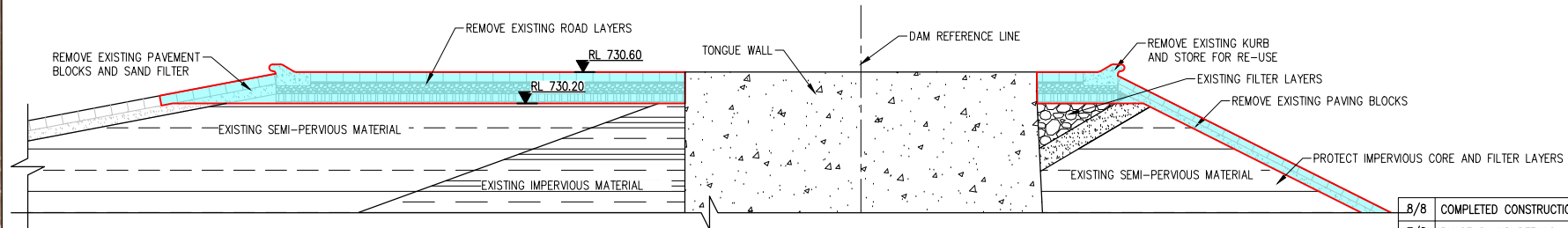
SCALE 1:250



SECTION A-A EXISTING EMBANKMENT
SCALE 1:250



PHASE 1 - REMOVAL OF PAVING BLOCKS AND SAND FILTERS
SCALE 1:250



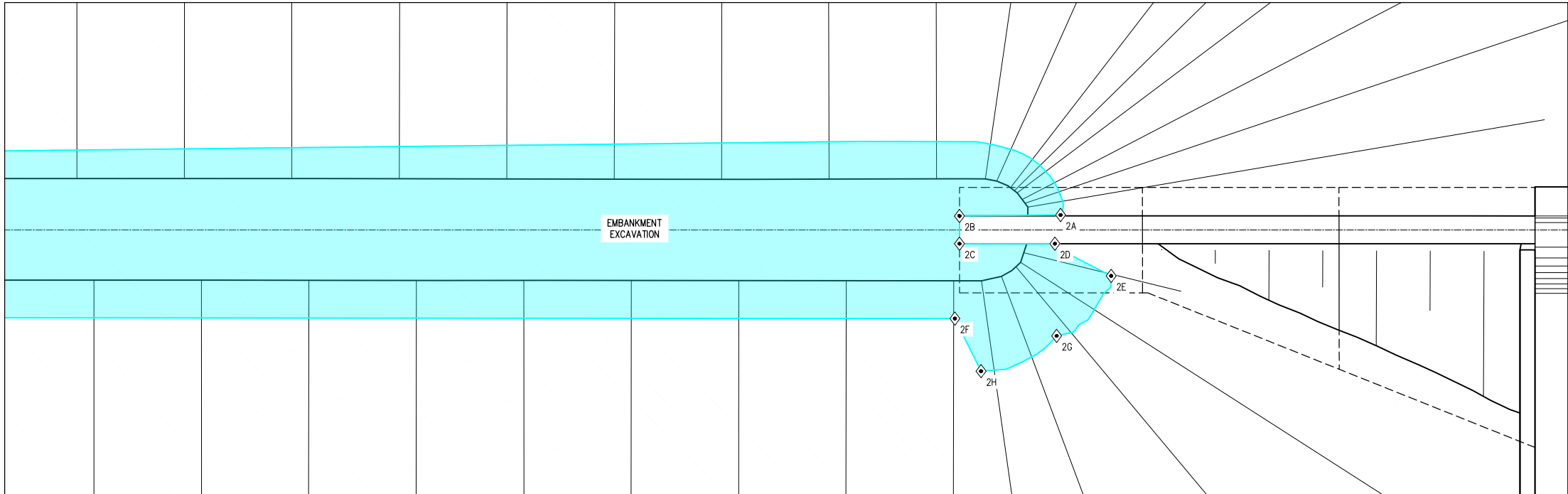
DETAIL A
SCALE 1:50

NOTES:

1. PHASE 1:
 - 1.1. REMOVAL OF EXISTING PAVING BLOCKS, SAND FILTERS AND ROAD LAYERS ON EMBANKMENT CREST. STOCKPILE FOR LATER USE.
 - 1.2. PROTECT IMPERVIOUS CORE AND FILTER LAYERS.

SHEET	DESCRIPTION	OTHER No.	REV. No.
8/8	COMPLETED CONSTRUCTION	9368-247	X
7/8	PHASE 8 AND DETAILS	9368-246	X
6/8	PHASE 7 AND DETAILS	9368-245	X
5/8	PHASE 6 AND DETAILS	9368-244	X
4/8	PHASE 4 AND 5	9368-243	X
3/8	PHASE 3 AND DETAILS	9368-242	X
2/8	PHASE 2 AND DETAILS	9368-241	X
1/1	LIST OF DRAWINGS	9368-015	X

PREPARED BY:		REVISION		FOR		DWS		DEPARTMENT OF WATER AND SANITATION REPUBLIC OF SOUTH AFRICA		GROOT LETABA RIVER WATER DEVELOPMENT PROJECT (GLWaP)	
MOD No.		DATE		DESCRIPTION		FOR		HEAD OFFICE ENGINEERING SERVICES PRIVATE BAG X313 PRETORIA 0001		SEDIBENG BUILDING 185 FRANCIS BAARD STREET PRETORIA (012) 336-7500	
01		03/23		ISSUE FOR CONSTRUCTION		QS		D.M. MASHITSHO DIRECTOR GENERAL		TZANEEN DAM RAISING	
								M. BLAESER CHECKED:		DESIGN: HJ. WRIGHT DATE: FS	
								HJ. WRIGHT ENGINEER:		EXT. APPROVAL / DESIGN CHECKED: DATE:	
								Q. SHAW CHIEF ENGINEER / APP (Pr. Eng):		DATE: DIRECTOR (Pr. Eng): DATE:	
								PROVINCE: LIMPOPO		DISTRICT: TZANEEN	
								LOCALITY No.: -		TENDER/ CONTRACT No.: -	
								CALCULATION FILE: -		KEYCODES: - - - - -	
								SHEET 1 OF 8		OTHER NUMBER 9368-240	
										REV. X	
										9368-240	

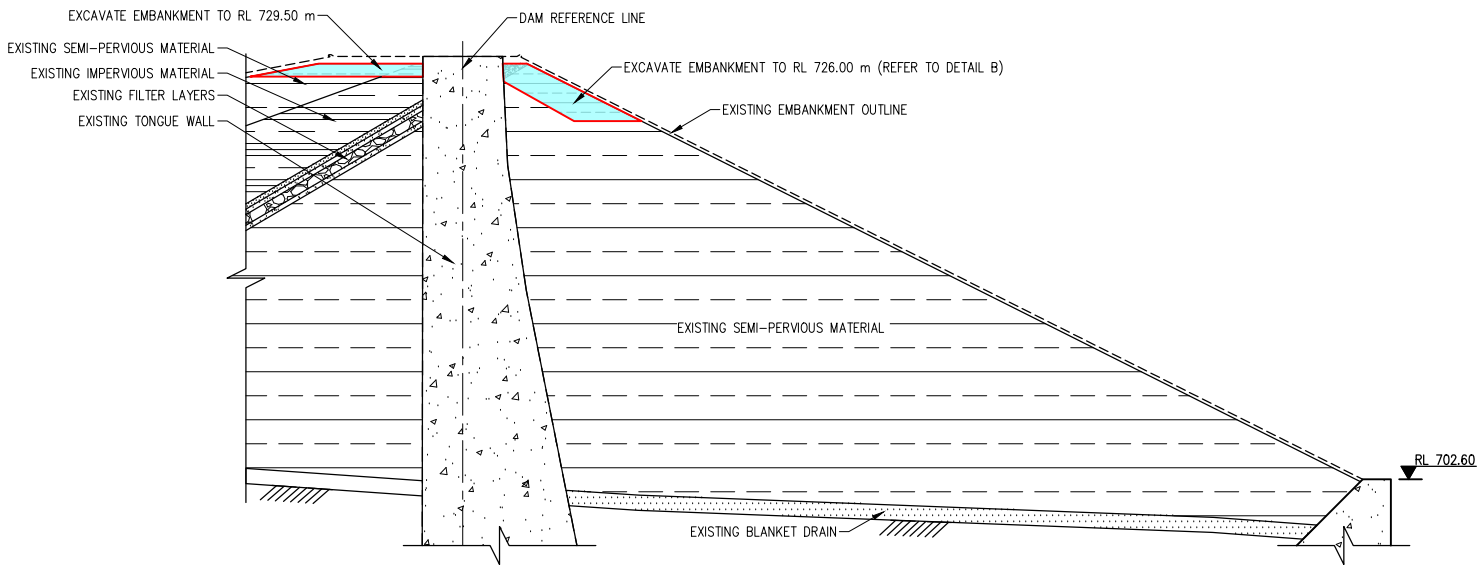


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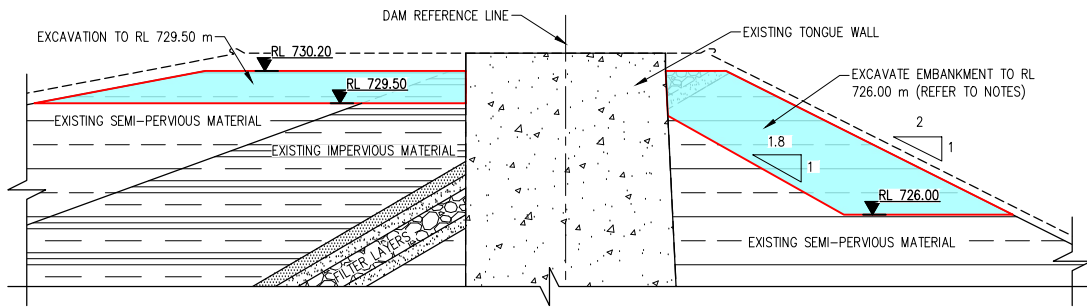
1. PHASE 1:
 - 1.1. REMOVAL OF EXISTING PAVING BLOCKS, SAND FILTERS AND ROAD LAYERS AND STOCKPILE FOR RE-USE.
2. PHASE 2:
 - 2.1. EXCAVATE EMBANKMENT TO RL 729.50 m.
 - 2.2. FURTHER EXCAVATE ON THE D/S SIDE OF THE TONGUE WALL TO RL 726.00 m.
 - 2.3. ALL EXCAVATION SLOPES TO BE CONFIRMED ON SITE.

EXCAVATION SETTING OUT DATA (WGS84 : LO 19)			
NO.	NAME	Y-COORDINATES	X-COORDINATES
6	2A	023° 47' 59,46" SOUTH	030° 09' 56,10" EAST
7	2B	023° 47' 59,68" SOUTH	030° 09' 55,87" EAST
8	2C	023° 47' 59,74" SOUTH	030° 09' 55,93" EAST
9	2D	023° 47' 59,53" SOUTH	030° 09' 56,15" EAST
10	2E	023° 47' 59,48" SOUTH	030° 09' 56,36" EAST
11	2F	023° 47' 59,91" SOUTH	030° 09' 56,09" EAST
12	2G	023° 47' 59,73" SOUTH	030° 09' 56,37" EAST
13	2H	023° 47' 59,96" SOUTH	030° 09' 56,28" EAST

CONSTRUCTION PHASE 2 PLAN LAYOUT
SCALE 1:250



PHASE 2 – EMBANKMENT EXCAVATIONS
SCALE 1:250



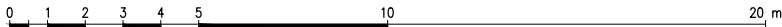
DETAIL B
SCALE 1:100

8/8	COMPLETED CONSTRUCTION	9368-247	X
7/8	PHASE 8 AND DETAILS	9368-246	X
6/8	PHASE 7 AND DETAILS	9368-245	X
5/8	PHASE 6 AND DETAILS	9368-244	X
4/8	PHASE 4 AND 5	9368-243	X
3/8	PHASE 3 AND DETAILS	9368-242	X
1/8	EXISTING EMBANKMENT AND PHASE 1	9368-240	X
1/1	LIST OF DRAWINGS	9368-015	X
SHEET	DESCRIPTION	OTHER No.	REG. No.

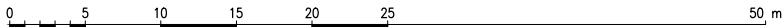
LIST OF DRAWINGS

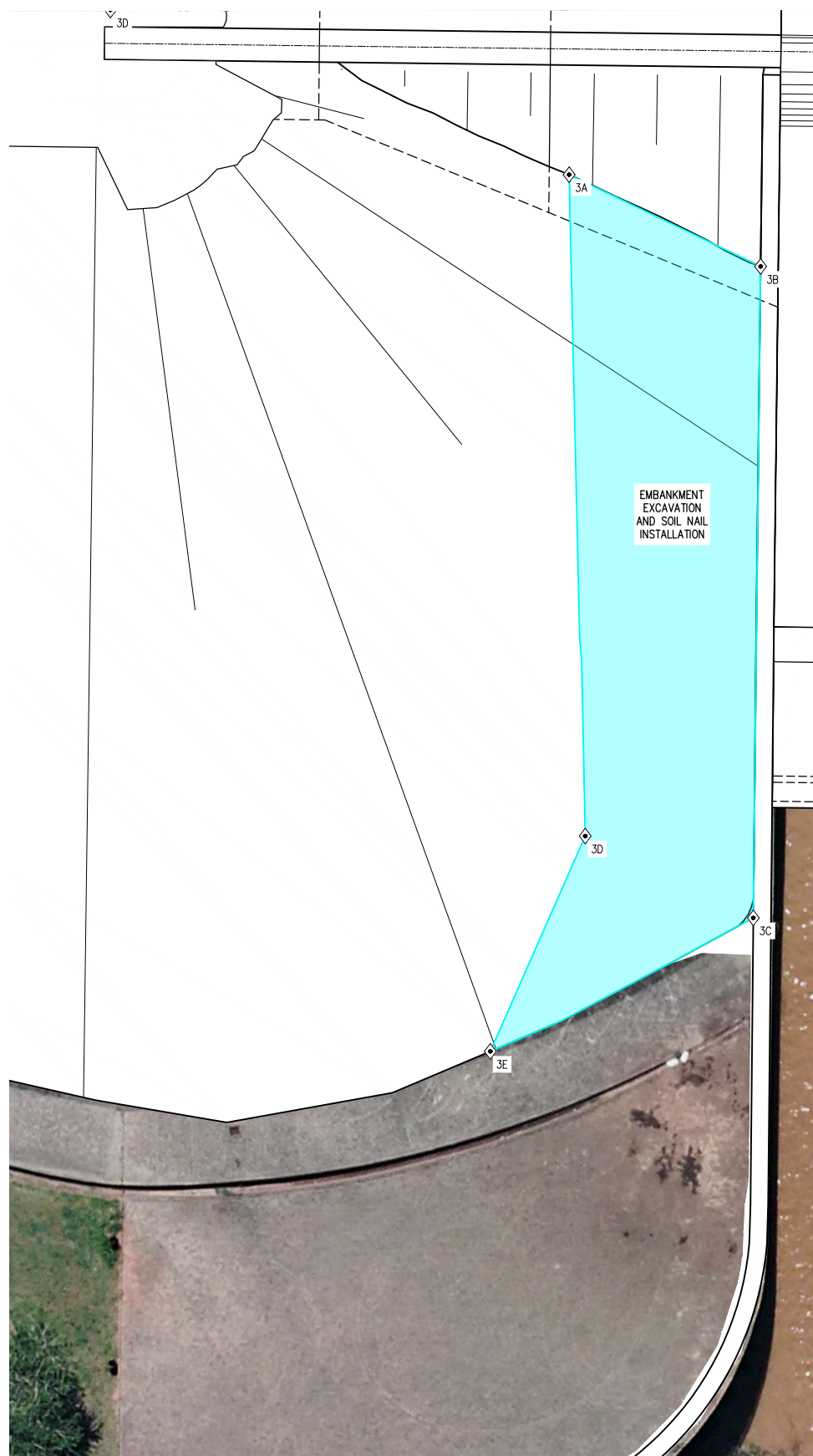
PREPARED BY:		REVISION		FOR		DWS		DEPARTMENT OF WATER AND SANITATION REPUBLIC OF SOUTH AFRICA		GROOT LETABA RIVER WATER DEVELOPMENT PROJECT (GLeWaP)	
MOD No.		DATE		DESCRIPTION		FOR		HEAD OFFICE ENGINEERING SERVICES PRIVATE BAG X313 PRETORIA 0001		SEDIBENG BUILDING 185 FRANCIS BAARD STREET PRETORIA (012) 336-7500	
01		03/23		ISSUE FOR CONSTRUCTION		QS		D.M. MASHITSHO DIRECTOR GENERAL		TZANEEN DAM RAISING	
								M BLAESER		DESIGN: HJ WRIGHT	
								CHECKED:		DATE: DRAWN: FS	
								HJ WRIGHT			
								ENGINEER:		DATE: EXT. APPROVAL / DESIGN CHECKED: DATE:	
								Q SHAW			
								CHIEF ENGINEER / APP (Pr. Eng):		DATE: DIRECTOR (Pr. Eng): DATE:	
										PROVINCE: LIMPOPO	
										DISTRICT: TZANEEN	
										KEYCODES: - - - - -	
										OTHER NUMBER 9368-241	
										LOCALITY No.: -	
										TENDER/ CONTRACT No.: -	
										SHEET REG. No.	
										2 OF 8	
										CALCULATION FILE: -	
										X	
										REV. 01	

SCALE 1:100



SCALE 1:250



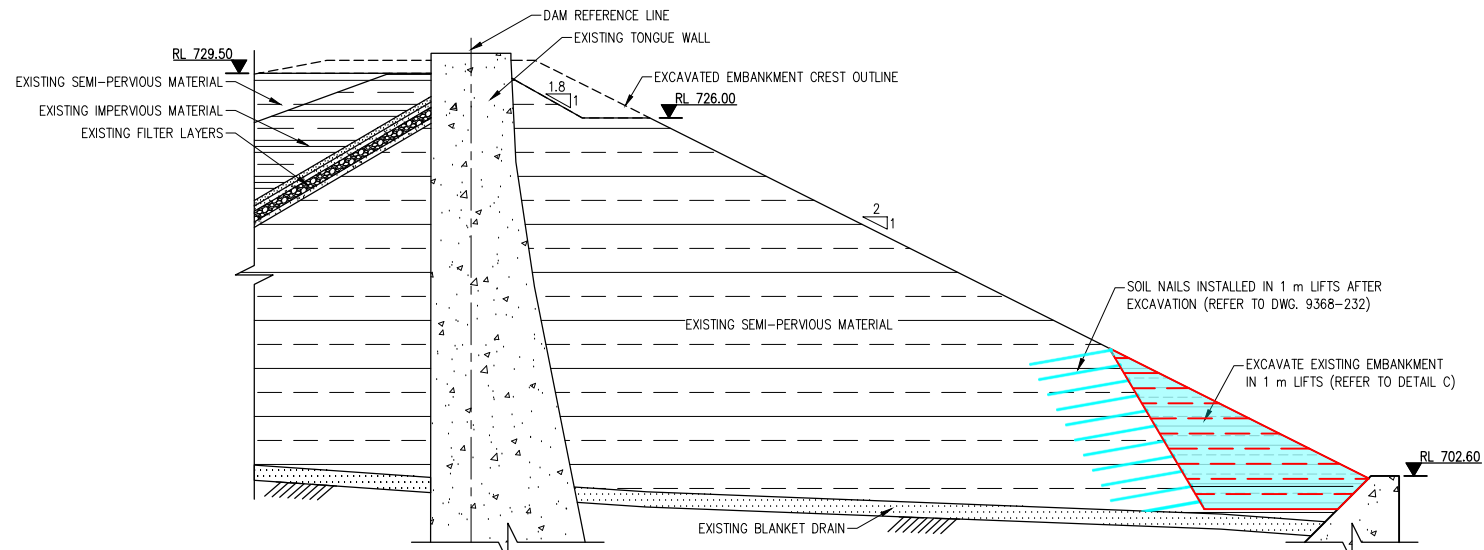
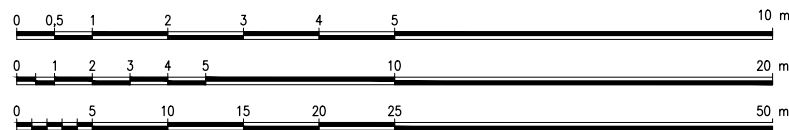


CONSTRUCTION PHASE 3 PLAN LAYOUT
SCALE 1:250

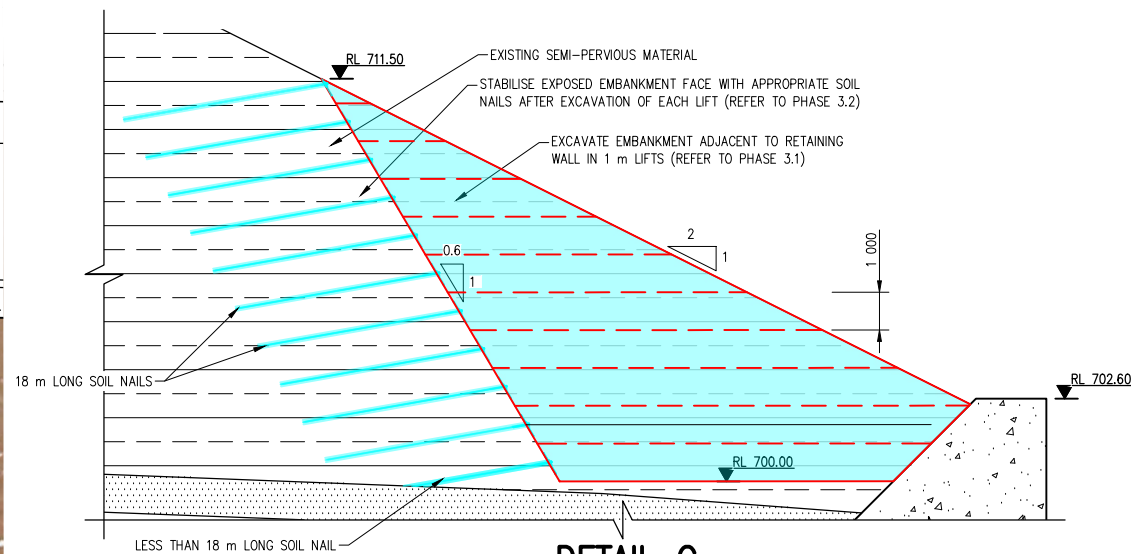
SCALE 1:50

SCALE 1:100

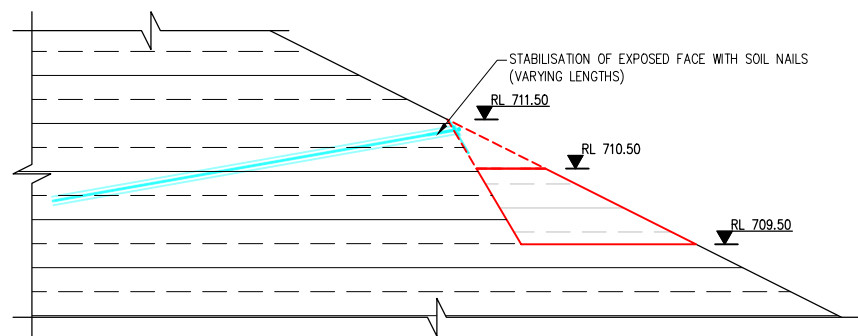
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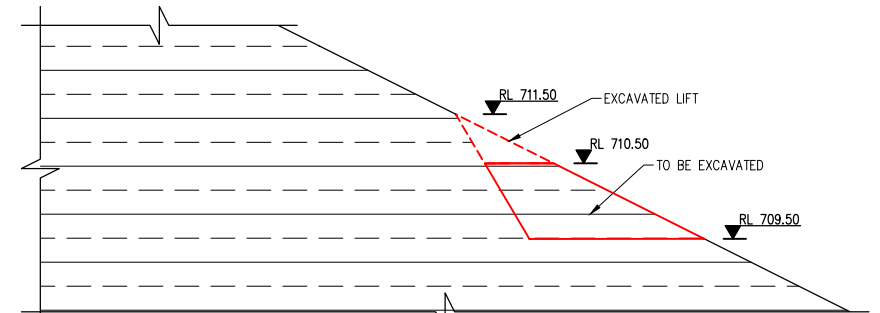
PHASE 3 - EXCAVATION OF EMBANKMENT ADJACENT TO RETAINING WALL
SCALE 1:250



DETAIL C
SCALE 1:100



PHASE 3.2 - STABILISATION WITH APPROVED SOIL NAIL
SCALE 1:50



PHASE 3.1 - EXCAVATION IN 1 m LIFTS
SCALE 1:50

NOTES:

- PHASE 1:
 - REMOVAL OF EXISTING PAVING BLOCKS, SAND FILTERS AND ROAD LAYERS AND STOCKPILE FOR RE-USE.
- PHASE 2:
 - EXCAVATE EMBANKMENT TO RL 729.50 m.
 - FURTHER EXCAVATE ON THE RIGHT SIDE OF THE TONGUE WALL TO RL 726.00 m.
 - ALL EXCAVATION SLOPES TO BE CONFIRMED ON SITE.
- PHASE 3:
 - EXCAVATE EMBANKMENT ADJACENT TO RETAINING WALL IN 1 m LIFTS (FROM TOP RL 711.50 TO BOTTOM RL 700.00).
 - STABILISE EXPOSED SLOPE WITH APPROVED SOIL NAIL BEFORE EXCAVATING THE NEXT LIFT.
 - CONTINUE EXCAVATION AND STABILISATION TO RL 700.00 m.

EXCAVATION SETTING OUT DATA (WGS84 : LO 19)			
NO.	NAME	Y-COORDINATES	X-COORDINATES
1	3A	023° 47' 59,09" SOUTH	030° 09' 57,07" EAST
2	3B	023° 47' 58,90" SOUTH	030° 09' 57,62" EAST
3	3C	023° 48' 00,08" SOUTH	030° 09' 58,91" EAST
4	3D	023° 48' 00,24" SOUTH	030° 09' 58,42" EAST
5	3E	023° 48' 00,80" SOUTH	030° 09' 58,67" EAST

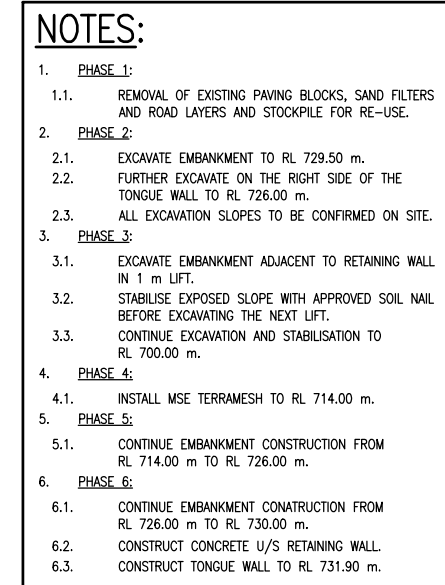
8/8	COMPLETED CONSTRUCTION	9368-247	X
7/8	PHASE 8 AND DETAILS	9368-246	X
6/8	PHASE 7 AND DETAILS	9368-245	X
5/8	PHASE 6 AND DETAILS	9368-244	X
4/8	PHASE 4 AND 5	9368-243	X
2/8	PHASE 2 AND DETAILS	9368-241	X
1/8	EXISTING EMBANKMENT AND PHASE 1	9368-240	X
1/1	LIST OF DRAWINGS	9368-015	X
SHEET	DESCRIPTION	OTHER No.	REG. No.
LIST OF DRAWINGS			

PREPARED BY:	MOD No.	DATE	REVISION	FOR	DWS	DEPARTMENT OF WATER AND SANITATION REPUBLIC OF SOUTH AFRICA	PROVINCE: LIMPOPO	DISTRICT: TZANEEN	KEYCODES: - - - - -	OTHER NUMBER	9368-242	REV.
ARQ CONSULTING ENGINEERS	01	03/23	ISSUE FOR CONSTRUCTION	QS		HEAD OFFICE ENGINEERING SERVICES PRIVATE BAG X313 PRETORIA 0001	LOCALITY No.: -	TENDER/ CONTRACT No. -	SHEET	REG. No.		
						D.M. MASHTISHO DIRECTOR GENERAL	CALCULATION FILE: -		3 of 8	X		01
						M BLAESER CHECKED: HJ WRIGHT ENGINEER: Q SHAW						
						DESIGN: HJ WRIGHT DATE: DRAWN: FS						
						EXT. APPROVAL / DESIGN CHECKED: DATE:						
						DATE: DIRECTOR (Pr. Eng): DATE:						

GROOT LETABA RIVER WATER DEVELOPMENT PROJECT (GLWaP)

TZANEEN DAM RAISING

EMBANKMENT CONSTRUCTION STAGES
PHASE 3 AND DETAILS



CONSTRUCTION OF RETAINING WALL (REFER TO DETAIL D)

EXISTING SEMI-PERVIOUS MATERIAL

EXISTING IMPERVIOUS MATERIAL

EXISTING FILTER LAYERS

DAM REFERENCE LINE

RAISING OF THE EXISTING TONGUE WALL (REFER TO DETAIL D)

SELECTED STRUCTURAL FILL (REFER TO DETAIL D)

SELECTED SEMI-PERVIOUS MATERIAL

EXISTING SEMI-PERVIOUS MATERIAL

EXISTING BLANKET DRAIN

RL 729.50

RL 730.00

RL 726.00

RL 714.00

RL 702.60

RL 700.00

2.6:1

CONSTRUCTION OF RETAINING WALL

DAM REFERENCE LINE

RAISING OF THE EXISTING TONGUE WALL

CONSTRUCTION JOINT

TONGUE WALL

SELECTED STRUCTURAL FILL TO RL 730.00 m

EXISTING SEMI-PERVIOUS MATERIAL

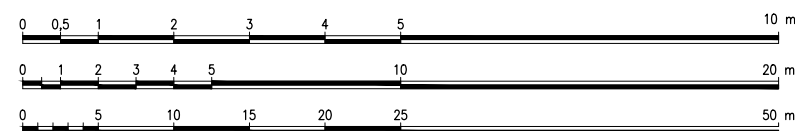
EXISTING IMPERVIOUS MATERIAL

DETAIL D

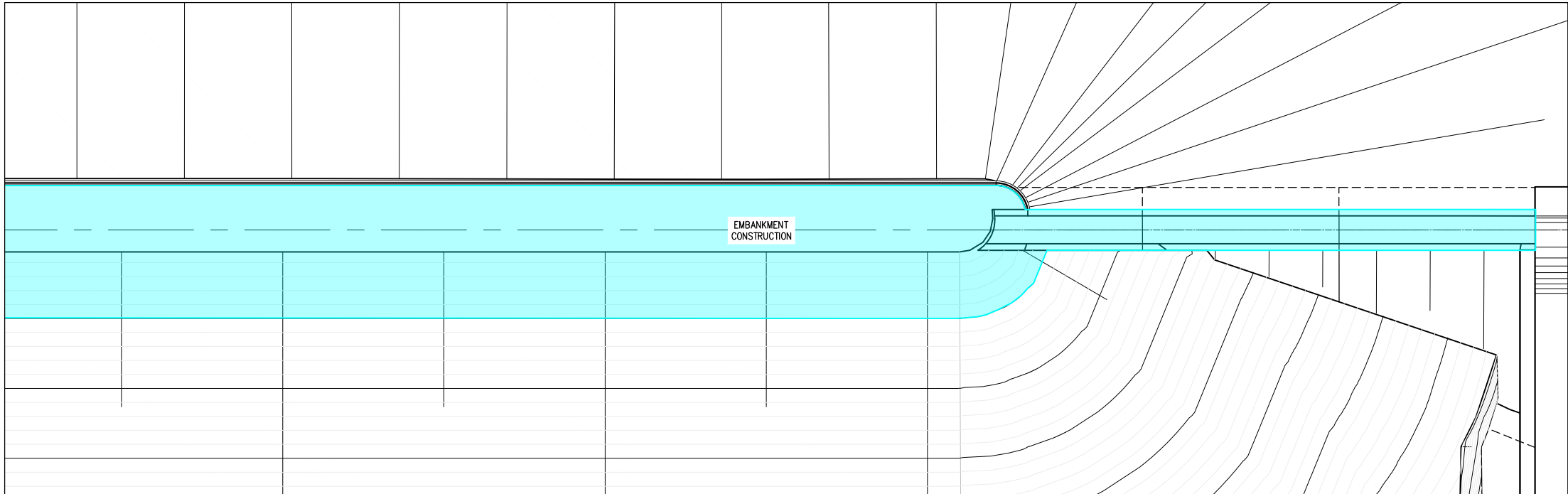
SCALE 1:100

8/8	COMPLETED CONSTRUCTION	9368-247
-----	------------------------	----------

8/8	COMPLETED CONSTRUCTION	9368-247	X
7/8	PHASE 8 AND DETAILS	9368-246	X
6/8	PHASE 7 AND DETAILS	9368-245	X
4/8	PHASE 4 AND 5	9368-243	X
3/8	PHASE 3 AND DETAILS	9368-242	X
2/8	PHASE 2 AND DETAILS	9368-241	X
1/8	EXISTING EMBANKMENT AND PHASE 1	9368-240	X
1/1	LIST OF DRAWINGS	9368-015	X
SHEET	DESCRIPTION	OTHER No.	REG. No.
LIST OF DRAWINGS			



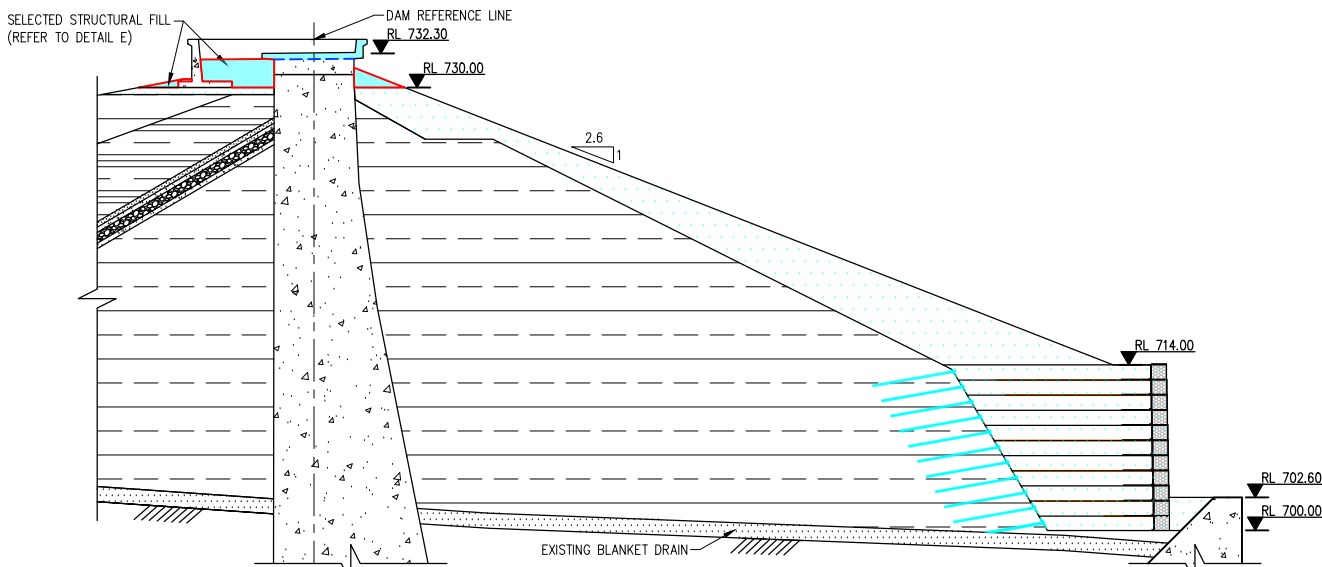
PREPARED BY: 	REVISION		DEPARTMENT OF WATER AND SANITATION REPUBLIC OF SOUTH AFRICA		GROOT LETABA RIVER WATER DEVELOPMENT PROJECT (GLWaP)																																																
	MOD No.	DATE	DESCRIPTION	FOR	DWS	HEAD OFFICE ENGINEERING SERVICES PRIVATE BAG X313 PRETORIA 0001		 185 FRANCIS BAARD STREET PRETORIA (012) 336-7500		TZANEEN DAM RAISING EMBANKMENT CONSTRUCTION STAGES PHASE 6 AND DETAILS																																											
	01	03/23	ISSUE FOR CONSTRUCTION	QS																																																	
										<table border="1"> <tr> <td>PROVINCE:</td> <td>LIMPOPO</td> <td>DISTRICT:</td> <td>TZANEEN</td> <td>KEYCODES:</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>-</td> <td>OTHER NUMBER</td> <td>9368-244</td> </tr> <tr> <td>LOCALITY No.</td> <td>-</td> <td>TENDER/CONTRACT No.</td> <td>-</td> <td>SHEET</td> <td colspan="5">REG. No.</td> <td rowspan="2">X</td> <td rowspan="2">01</td> </tr> <tr> <td colspan="4">CALCULATION FILE:</td> <td>-</td> <td colspan="5">5 of 8</td> </tr> </table>										PROVINCE:	LIMPOPO	DISTRICT:	TZANEEN	KEYCODES:	-	-	-	-	-	OTHER NUMBER	9368-244	LOCALITY No.	-	TENDER/CONTRACT No.	-	SHEET	REG. No.					X	01	CALCULATION FILE:				-	5 of 8				
	PROVINCE:	LIMPOPO	DISTRICT:	TZANEEN	KEYCODES:	-	-	-	-											-	OTHER NUMBER	9368-244																															
	LOCALITY No.	-	TENDER/CONTRACT No.	-	SHEET	REG. No.														X	01																																
	CALCULATION FILE:				-	5 of 8																																															
						M BLAESER		DESIGN: HJ WRIGHT																																													
						CHECKED:		DATE: FS																																													
						HJ WRIGHT		ENGINEER:																																													
					DATE:		EXT. APPROVAL / DESIGN CHECKED: DATE:																																														
					Q SHAW																																																
					CHIEF ENGINEER / APP (Pr. Eng):		DATE:		DIRECTOR (Pr. Eng):		DATE:																																										



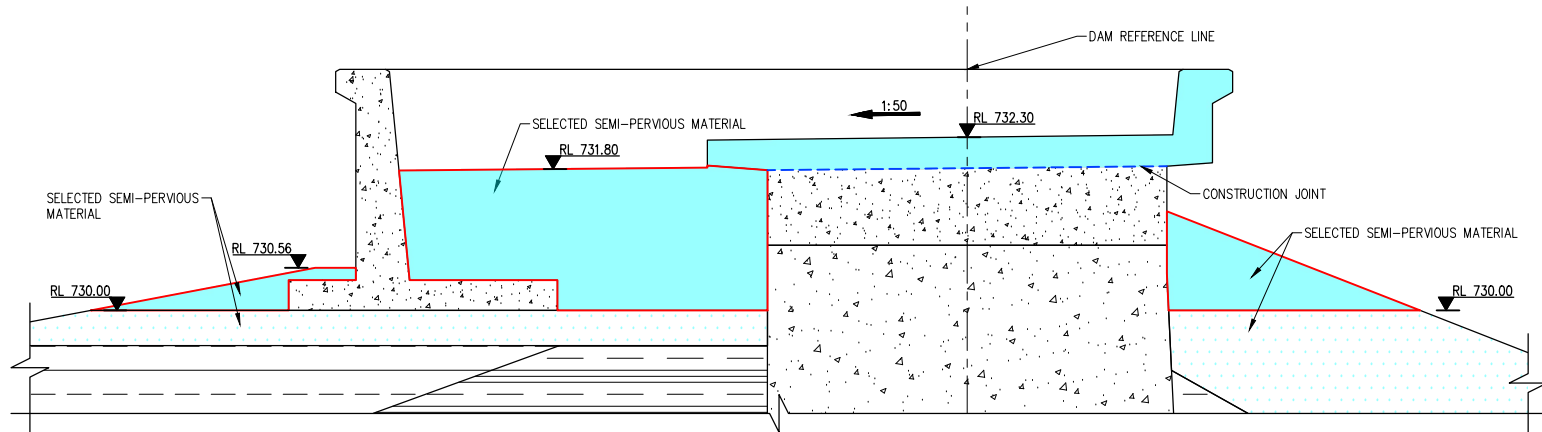
NOTES:

1. **PHASE 1:**
 - 1.1. REMOVAL OF EXISTING PAVING BLOCKS, SAND FILTERS AND ROAD LAYERS AND STOCKPILE FOR RE-USE.
2. **PHASE 2:**
 - 2.1. EXCAVATE EMBANKMENT TO RL 729.50 m.
 - 2.2. FURTHER EXCAVATE ON THE RIGHT SIDE OF THE TONGUE WALL TO RL 726.00 m.
 - 2.3. ALL EXCAVATION SLOPES TO BE CONFIRMED ON SITE.
3. **PHASE 3:**
 - 3.1. EXCAVATE EMBANKMENT ADJACENT TO RETAINING WALL IN 1 m LIFT.
 - 3.2. STABILISE EXPOSED SLOPE WITH APPROVED SOIL NAIL BEFORE EXCAVATING THE NEXT LIFT.
 - 3.3. CONTINUE EXCAVATION AND STABILISATION TO RL 700.00 m.
4. **PHASE 4:**
 - 4.1. INSTALL MSE TERRAMESH TO RL 714.00 m.
5. **PHASE 5:**
 - 5.1. CONTINUE EMBANKMENT CONSTRUCTION FROM RL 714.00 m TO RL 726.00 m.
6. **PHASE 6:**
 - 6.1. CONTINUE EMBANKMENT CONSTRUCTION FROM RL 726.00 m TO RL 730.00 m.
 - 6.2. CONSTRUCT CONCRETE U/S RETAINING WALL, AND TONGUE WALL RAISING (INCLUDING PARAPET WALLS).
7. **PHASE 7:**
 - 7.1. CONTINUE EMBANKMENT CONSTRUCTION TO RL 730.60 m ON U/S SIDE, AND FROM RL 730.00 m TO RL 731.80 m ON D/S SIDE.
 - 7.2. COMPLETE TONGUE WALL CONSTRUCTION (INCLUDING PARAPET WALL) TO RL 733.20 m.

CONSTRUCTION PHASE 7 PLAN LAYOUT
SCALE 1:250



PHASE 7 - CONSTRUCTING EMBANKMENT CREST
SCALE 1:250

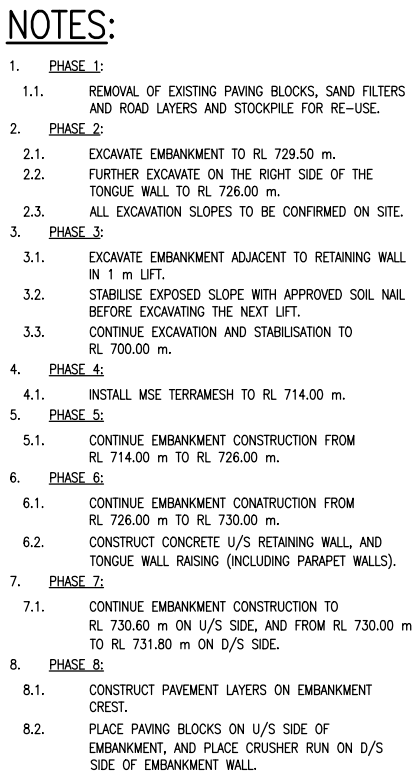


DETAIL E
SCALE 1:50

8/8	COMPLETED CONSTRUCTION	9368-247	X
7/8	PHASE 8 AND DETAILS	9368-246	X
5/8	PHASE 6 AND DETAILS	9368-244	X
4/8	PHASE 4 AND 5	9368-243	X
3/8	PHASE 3 AND DETAILS	9368-242	X
2/8	PHASE 2 AND DETAILS	9368-241	X
1/8	EXISTING EMBANKMENT AND PHASE 1	9368-240	X
1/1	LIST OF DRAWINGS	9368-015	X
SHEET	DESCRIPTION	OTHER No.	REG. No.

LIST OF DRAWINGS

PREPARED BY:  ARQ CONSULTING ENGINEERS	REVISION					DEPARTMENT OF WATER AND SANITATION REPUBLIC OF SOUTH AFRICA					GROOT LETABA RIVER WATER DEVELOPMENT PROJECT (GLeWaP)															
	MOD No.	DATE	DESCRIPTION		FOR	DWS	HEAD OFFICE ENGINEERING SERVICES PRIVATE BAG X313 PRETORIA 0001					SEDIBENG BUILDING 185 FRANCIS BAARD STREET PRETORIA (012) 336-7500					TZANEEN DAM RAISING EMBANKMENT CONSTRUCTION STAGES PHASE 7 AND DETAILS									
	01	02/23	ISSUE FOR CONSTRUCTION		QS		 D.M. MASHITISHO DIRECTOR GENERAL					M BLAESER DESIGN: HJ WRIGHT CHECKED: DATE: DRAWN: FS														
							HJ WRIGHT ENGINEER: DATE: EXT. APPROVAL / DESIGN CHECKED: DATE:					PROVINCE: LIMPOPO					DISTRICT: TZANEEN		KEYCODES: - - - - -		OTHER NUMBER 9368-2		REV			
							Q SHAW					LOCALITY No.: -					TENDER/ CONTRACT No. -		SHEET 6 of 8		REG. No.			X		
							CHIEF ENGINEER / APP (Pr. Eng): DATE: DIRECTOR (Pr. Eng): DATE:					CALCULATION FILE: -									0					



The diagram illustrates a cross-section of a dam structure with the following components and labels:

- ROAD LAYER WORKS (REFER TO DETAIL F)**: Located at the top left of the structure.
- INSTALLATION OF SAND FILTER AND PAVEMENT BLOCKS**: Indicated at the top left, near the road layer works.
- EXISTING SEMI-PERVIOUS MATERIAL**: Labeled in two locations: one on the left side of the dam body and one in the center of the dam body.
- EXISTING IMPERVIOUS MATERIAL**: Located on the left side, below the semi-pervious material.
- EXISTING FILTER LAYERS**: Located on the left side, below the impervious material.
- DAM REFERENCE LINE RL 732.30**: A horizontal line at the top of the dam structure.
- INSTALLATION OF SAND FILTER AND CRUSHER RUN**: A sloped layer on the right side of the dam body.
- RL 726.00**: A reference level marker on the right side of the dam body.
- 2.6**: A slope ratio indicator (2.6 horizontal to 1 vertical) for the right side of the dam body.
- RL 714.00**: A reference level marker at the bottom right of the dam body.
- BLANKET DRAIN**: A horizontal layer at the base of the dam body.
- RL 702.60** and **RL 700.00**: Reference level markers at the bottom right, indicating the water level and the base of the structure.

DETAIL F
SCALE 1:50

Labels in the diagram include:
 - DAM REFERENCE LINE
 - ROAD LAYER WORKS (REFER TO DWG. 9368-205)
 - 1:50 (slope indicator)
 - RL 732.30
 - RL 733.20
 - 100 mm CRUSHER RUN
 - 100 mm SELECTED FILTER
 - NEW SELECTED SEMI-PERVIOUS MATERIAL
 - 150 mm PAVING BLOCKS
 - 150 mm SELECTED FILTER
 - RL 730.60
 - SELECTED SEMI-PERVIOUS MATERIAL

SCALE 1:50

0 0,5 1 2 3 4 5 10 m

SCALE 1:250

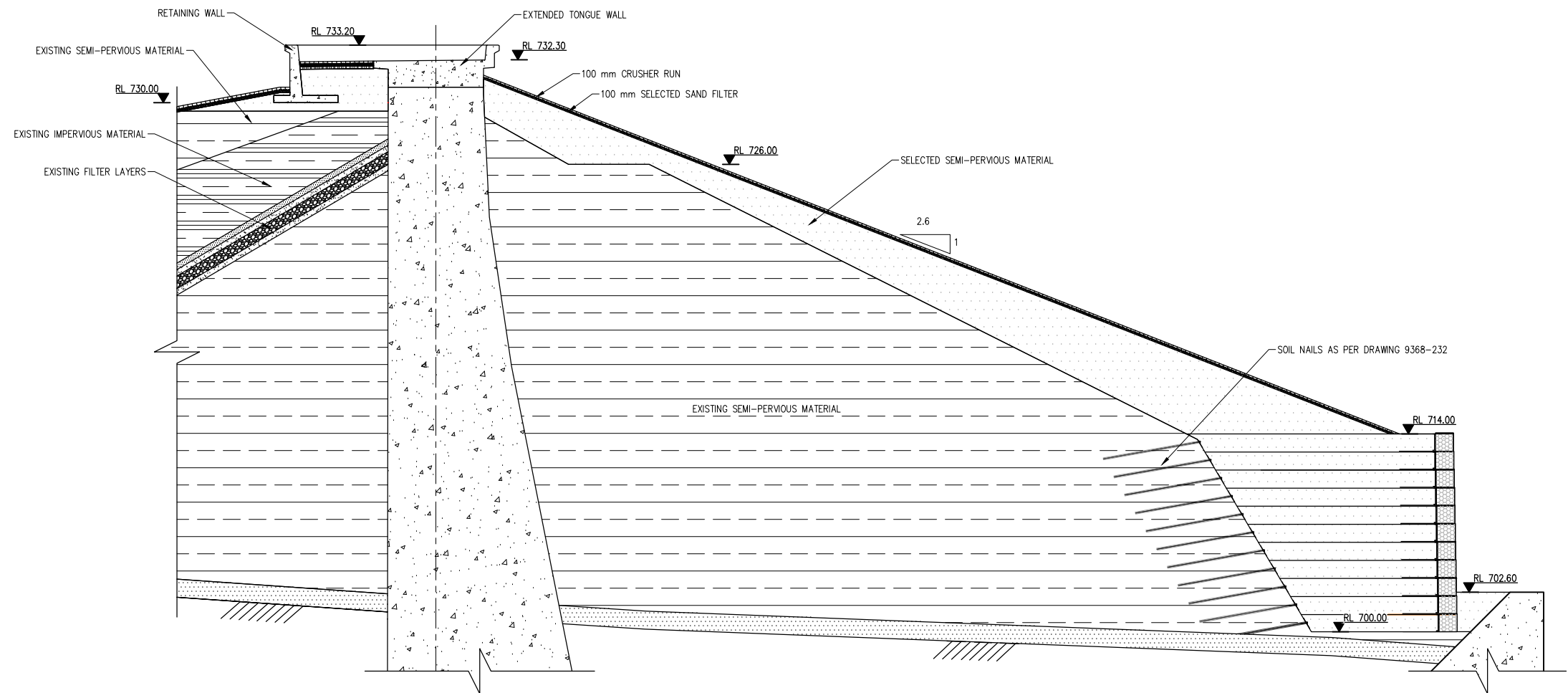
0 5 10 15 20 25 50 m

PREPARED BY:



ARQ
CONSULTING
ENGINEERS

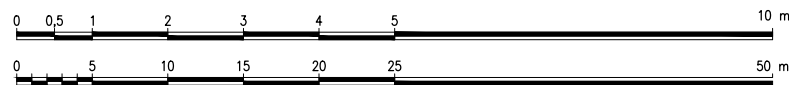
REVISION				
MOD No.	DATE	DESCRIPTION	FOR	DWS
01	02/23	ISSUE FOR CONSTRUCTION	QS	



SECTION A-A COMPLETED CONSTRUCTION
SCALE 1:150

SCALE 1:50

SCALE 1:250



7/8	PHASE 8 AND DETAILS	9368-246	X
6/8	PHASE 7 AND DETAILS	9368-245	X
5/8	PHASE 6 AND DETAILS	9368-244	X
4/8	PHASE 4 AND 5	9368-243	X
3/8	PHASE 3 AND DETAILS	9368-242	X
2/8	PHASE 2 AND DETAILS	9368-241	X
1/8	EXISTING EMBANKMENT AND PHASE 1	9368-240	X
1/1	LIST OF DRAWINGS	9368-015	X
SHEET	DESCRIPTION	OTHER No.	REG. No.
LIST OF DRAWINGS			

PREPARED BY:	REVISION	DEPARTMENT OF WATER AND SANITATION REPUBLIC OF SOUTH AFRICA	GROOT LETABA RIVER WATER DEVELOPMENT PROJECT (GLeWaP)	
ARQ CONSULTING ENGINEERS	MOD No. DATE DESCRIPTION FOR DWS	HEAD OFFICE ENGINEERING SERVICES PRIVATE BAG X313 PRETORIA 0001	SEDIBENG BUILDING 185 FRANCIS BAARD STREET PRETORIA (012) 336-7500	
	01 02/23 ISSUE FOR CONSTRUCTION QS	D.M. MASHITSHO DIRECTOR GENERAL		
		M BLAESER	DESIGN: HJ WRIGHT	
		CHECKED:	DATE: DRAWN: FS	
		HJ WRIGHT		
		ENGINEER:	DATE: EXT. APPROVAL / DESIGN CHECKED: DATE:	
		Q SHAW		
		CHIEF ENGINEER / APP (Pr. Eng):	DATE: DIRECTOR (Pr. Eng): DATE:	
			PROVINCE: LIMPOPO	DISTRICT: TZANEEN
			LOCALITY No.: -	TENDER/ CONTRACT No. -
			CALCULATION FILE: -	KEYCODES: - - - - - OTHER NUMBER 9368-247
			SHEET 8 OF 8	REV. X 01