

AIRPORTS COMPANY SOUTH AFRICA SOC LIMITED



AIRPORTS COMPANY
SOUTH AFRICA

PROJECT

COMPLETION OF BRAVO TAXIWAY & FOXTROT APRON STANDS AT KING SHAKA INTERNATIONAL AIRPORT

PROJECT NO. : KSIA7806/2025/RFP

MAY 2025

VOLUME 4: BOOK OF TENDER DRAWINGS

PART A - CIVIL WORKS

CLIENT:



AIRPORTS COMPANY SOUTH AFRICA
KING SHAKA INTERNATIONAL AIRPORT
KWAZULU NATAL,
4407

CONSULTING ENGINEER:



GATEWAY OFFICE PARK,
1 SUGAR CLOSE, UMHLANGA, 4319
TEL: (031) 536 8310
EMAIL: nankhoo@nadbn.co.za

AIRPORTS COMPANY SOUTH AFRICA SOC LIMITED



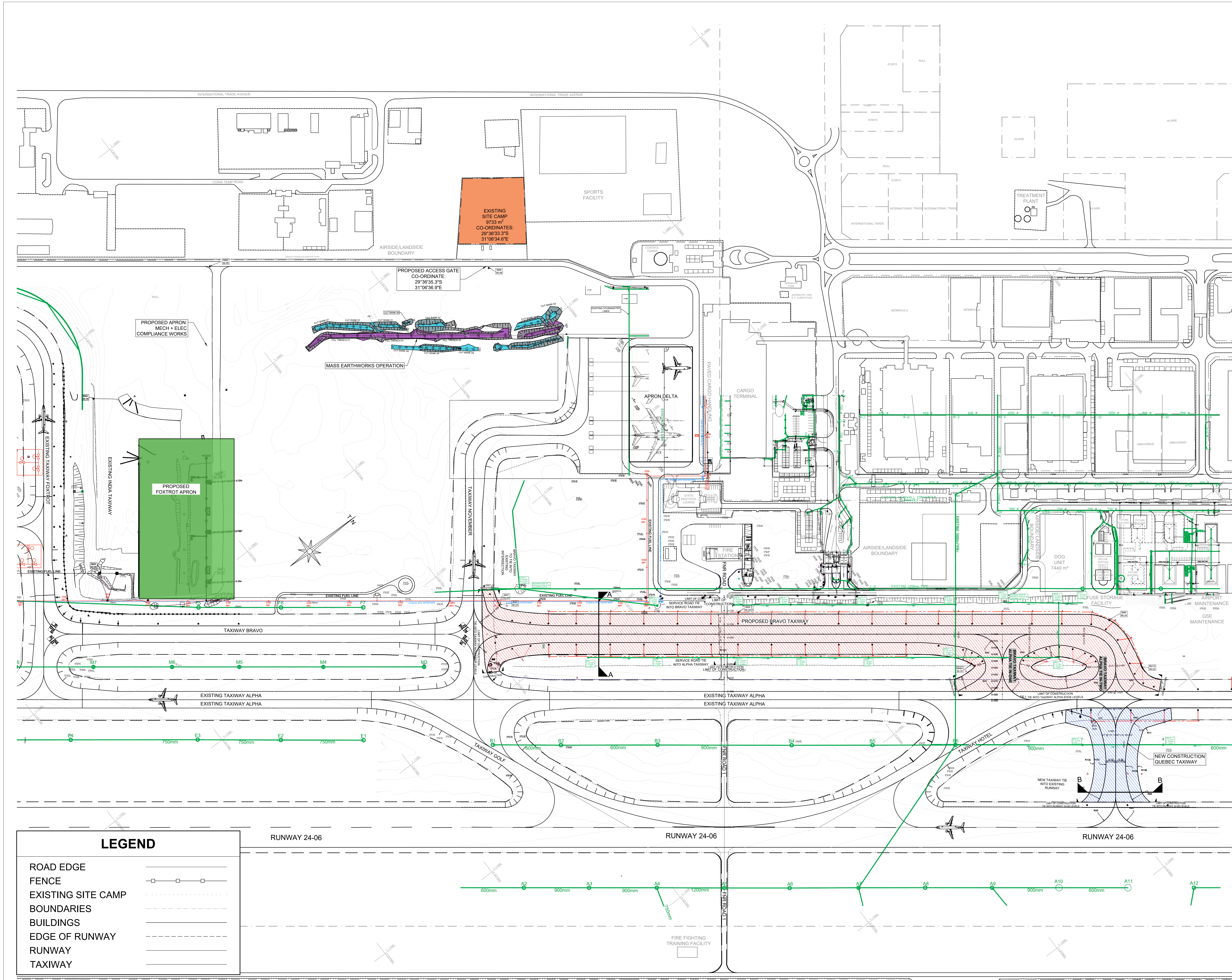
COMPLETION OF BRAVO TAXIWAY & FOXTROT APRON STANDS

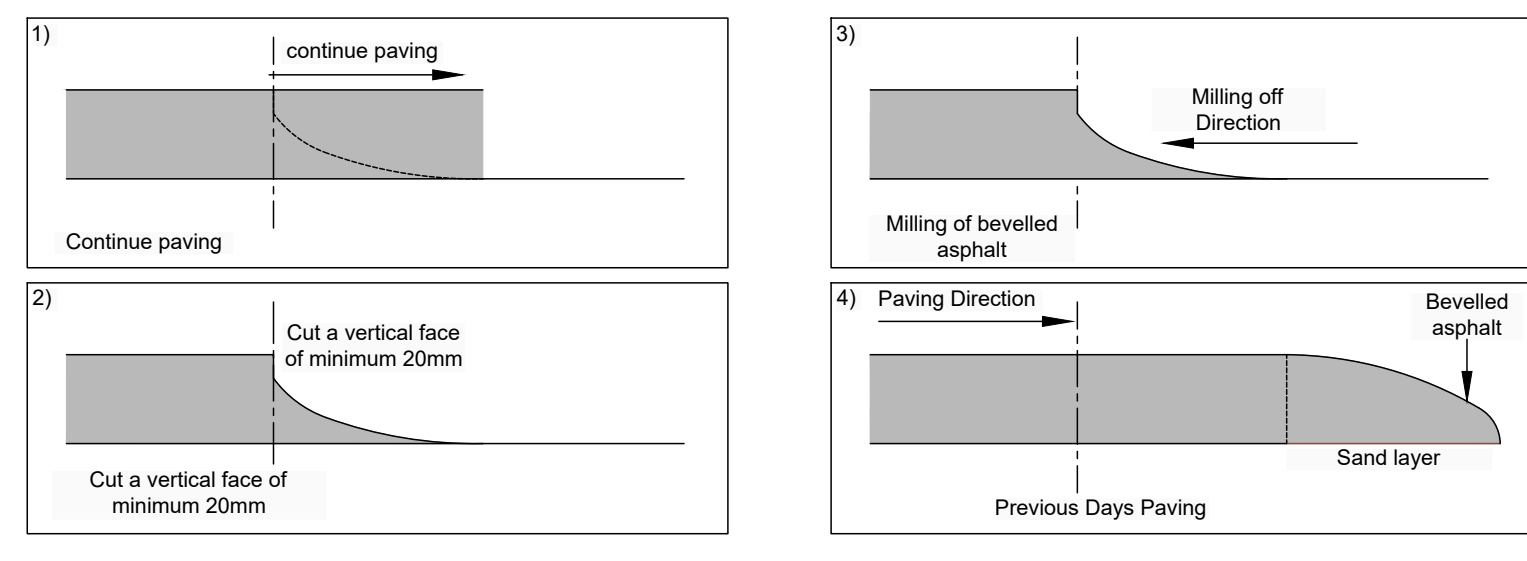
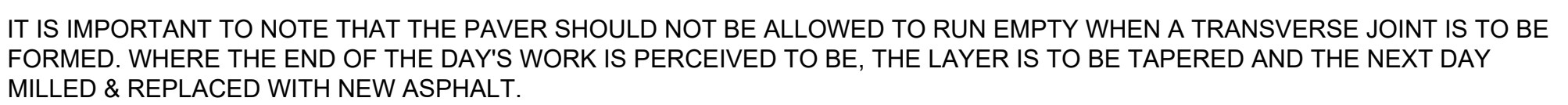
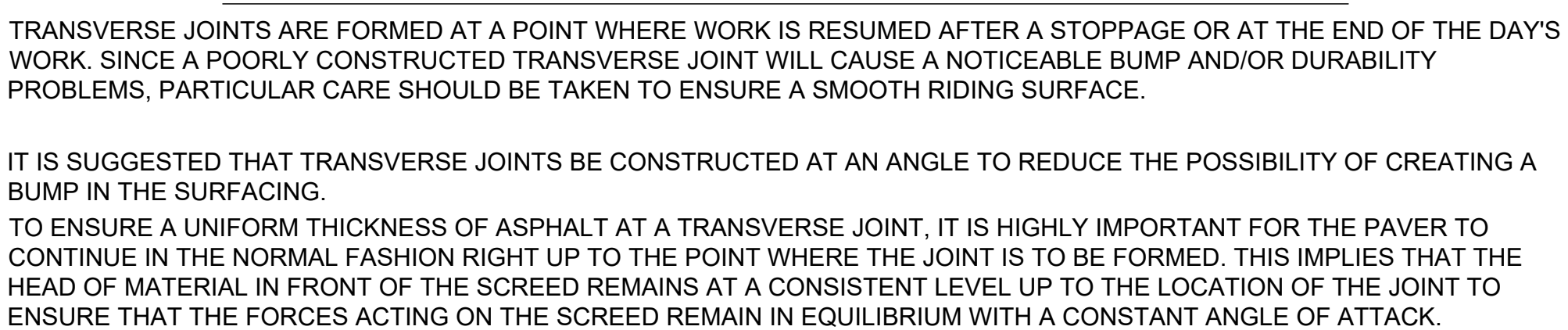
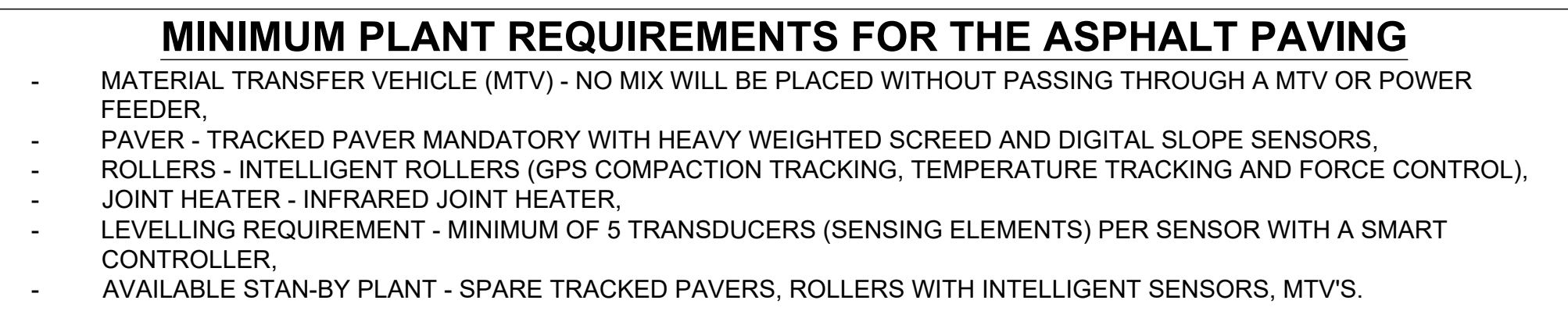
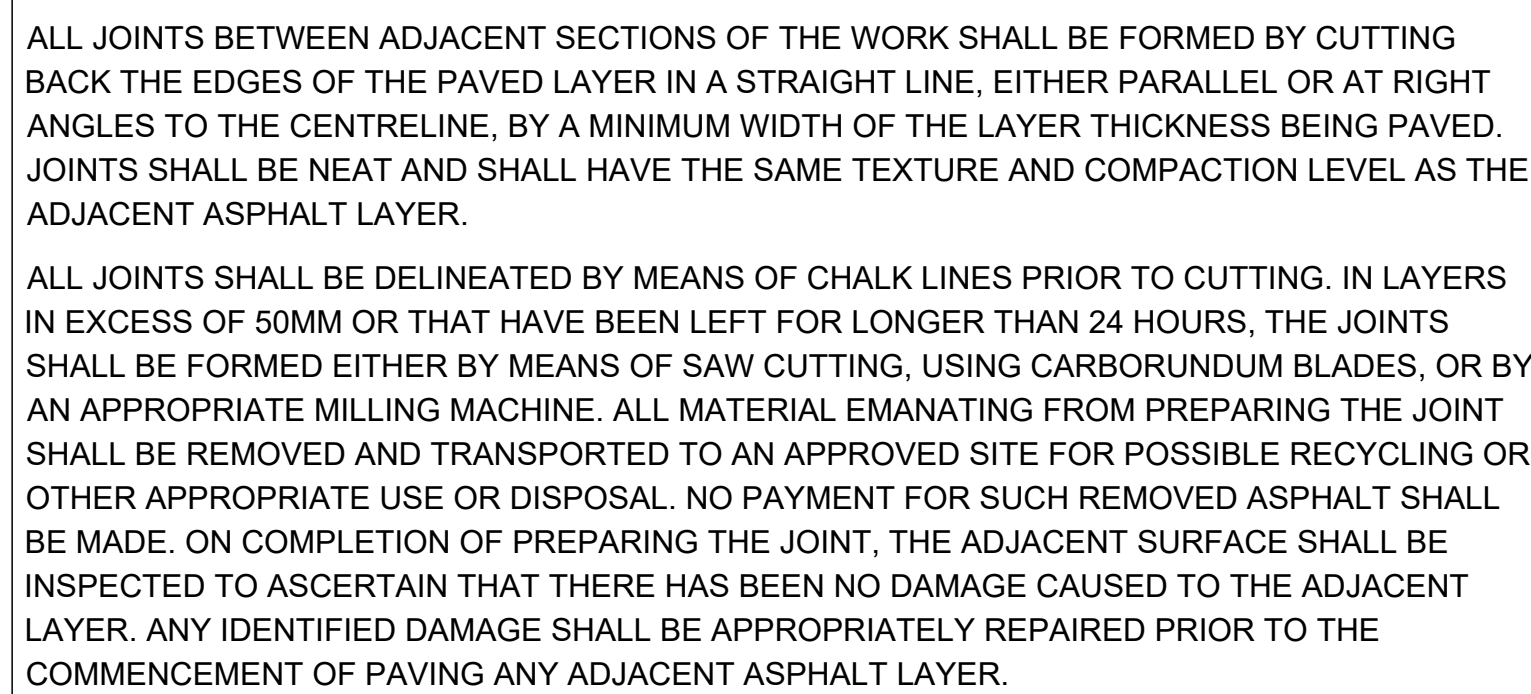
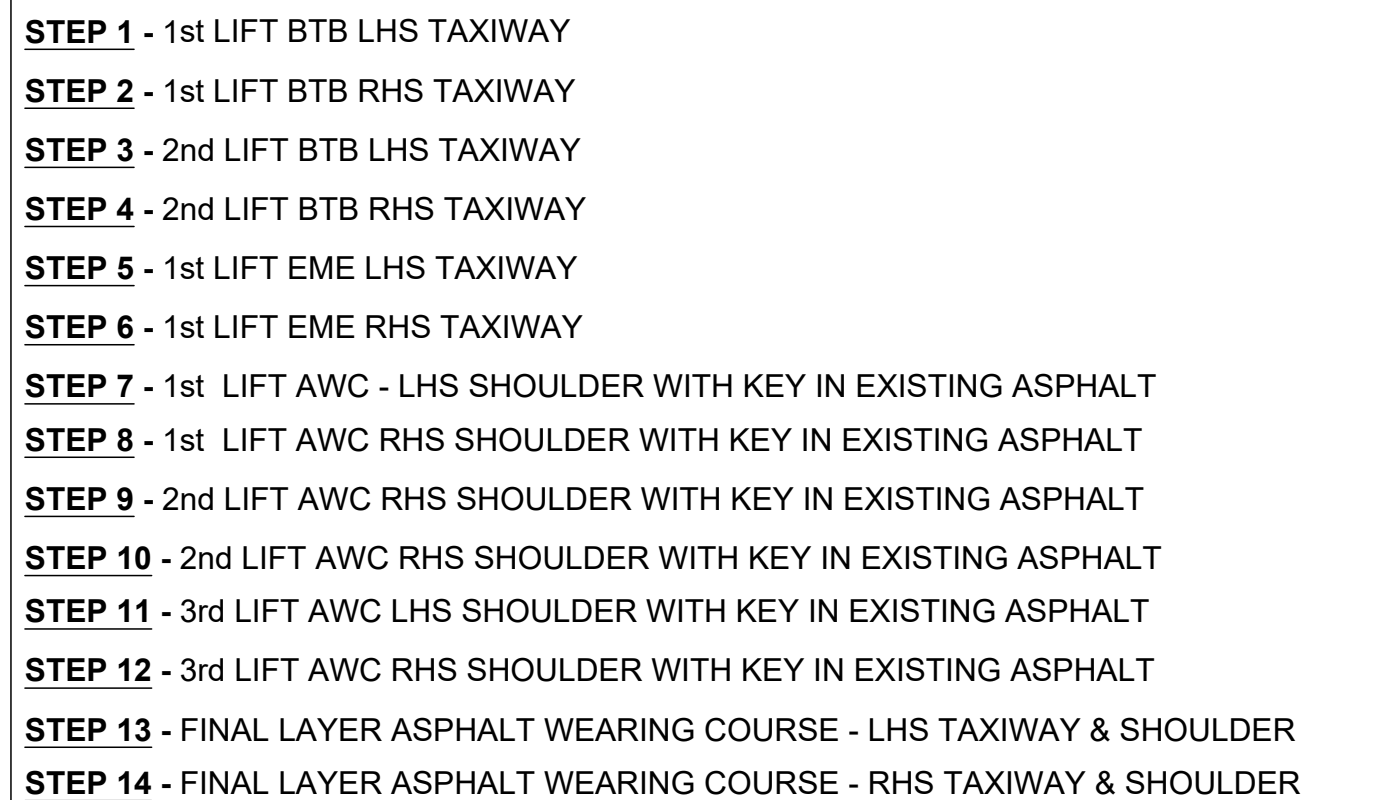
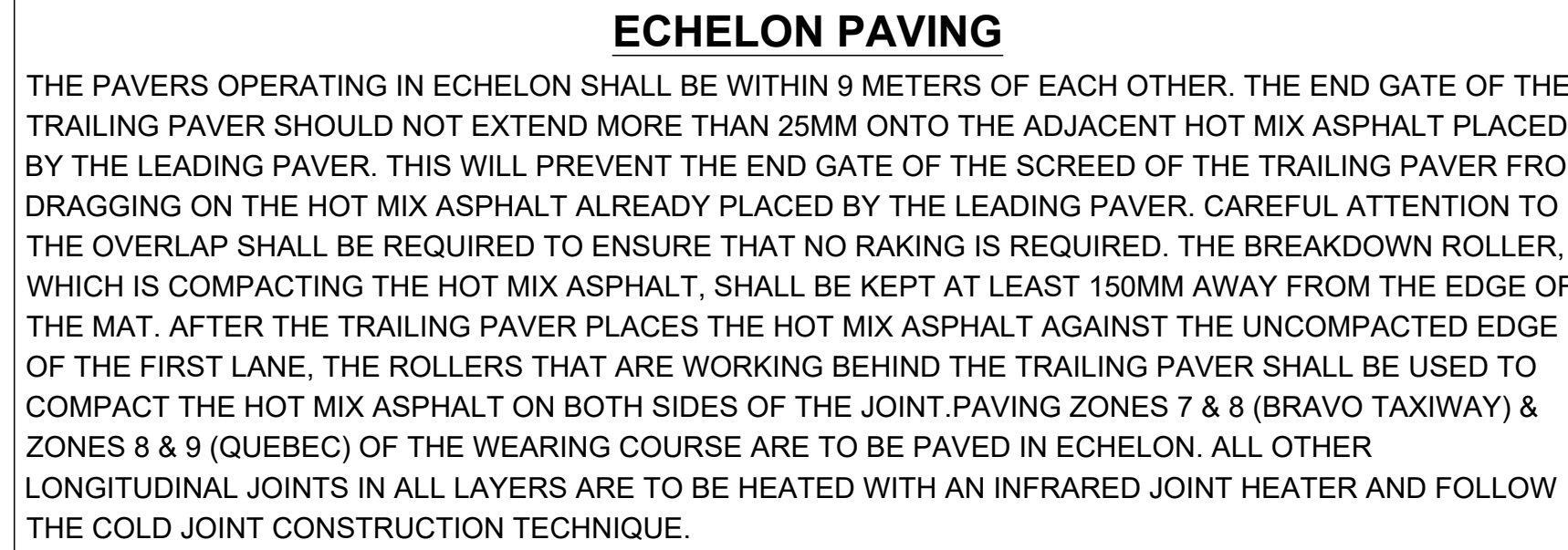
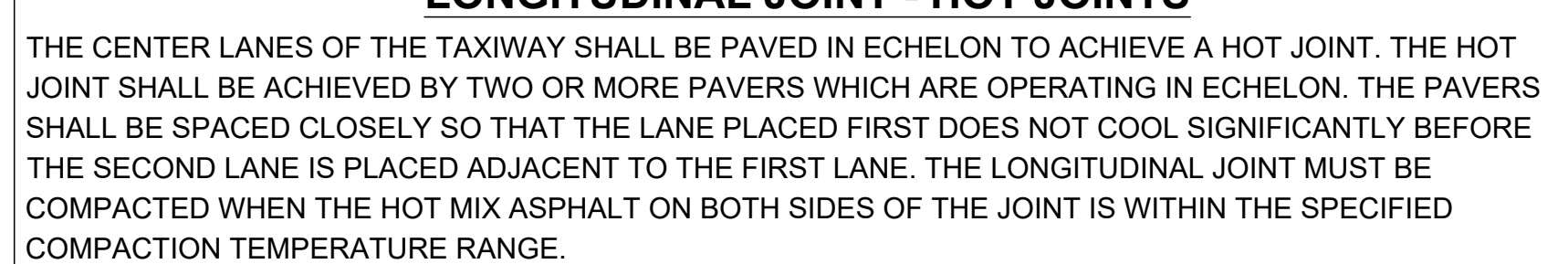
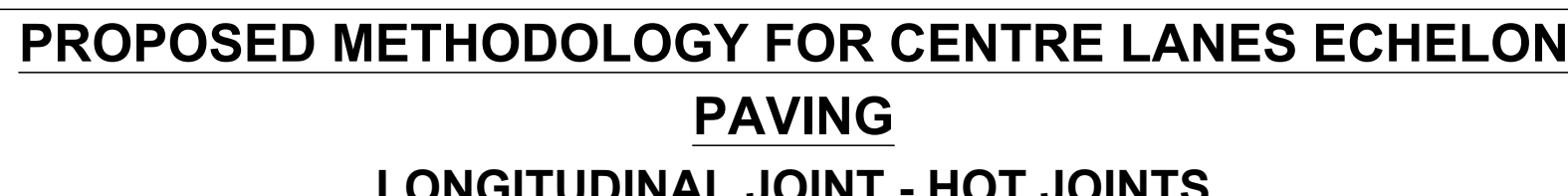
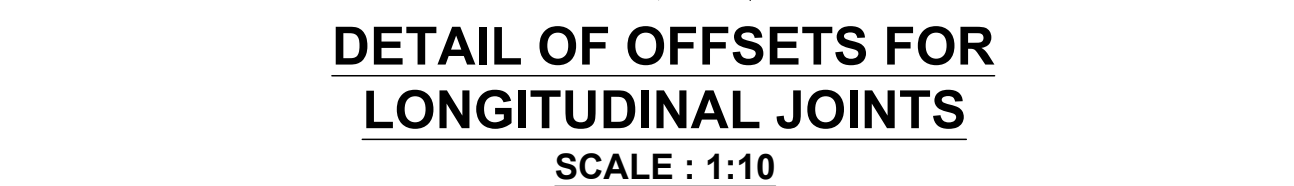
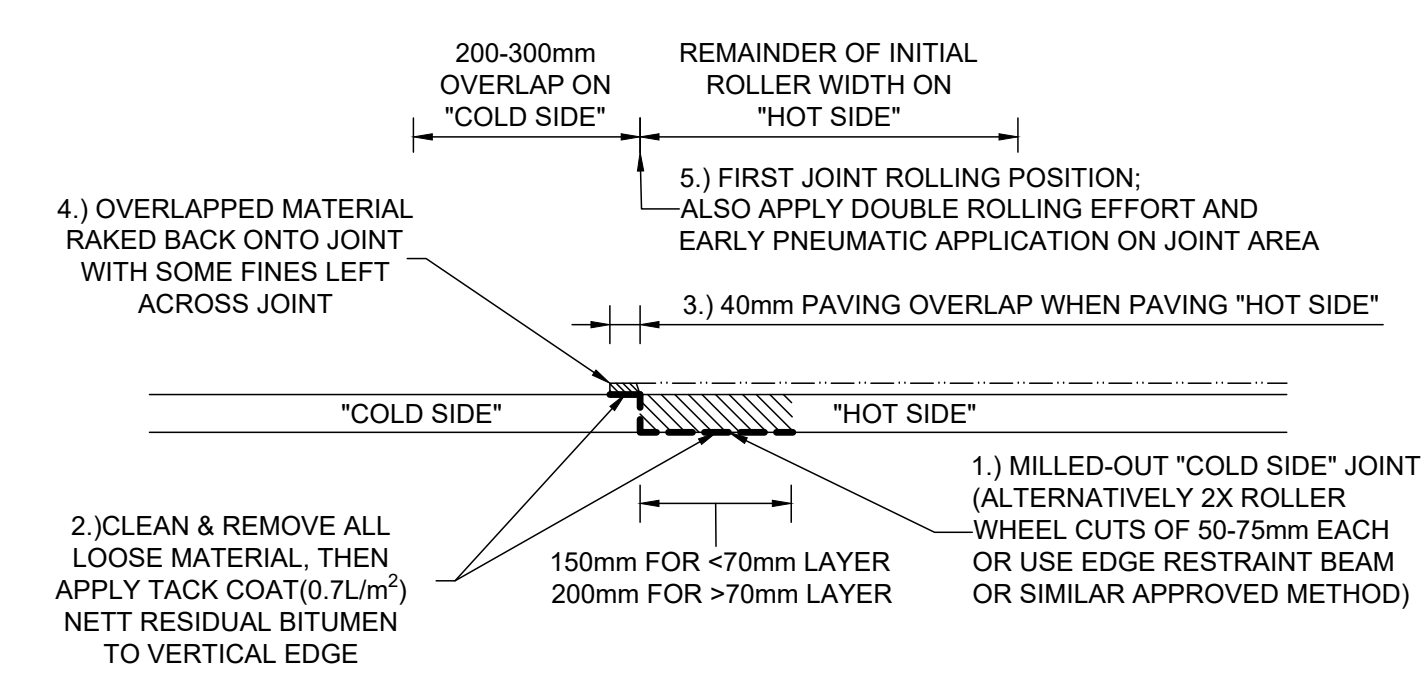
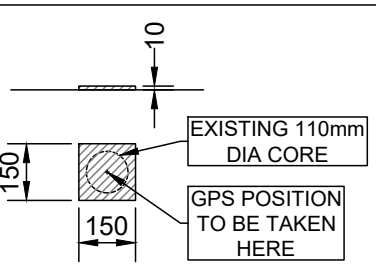
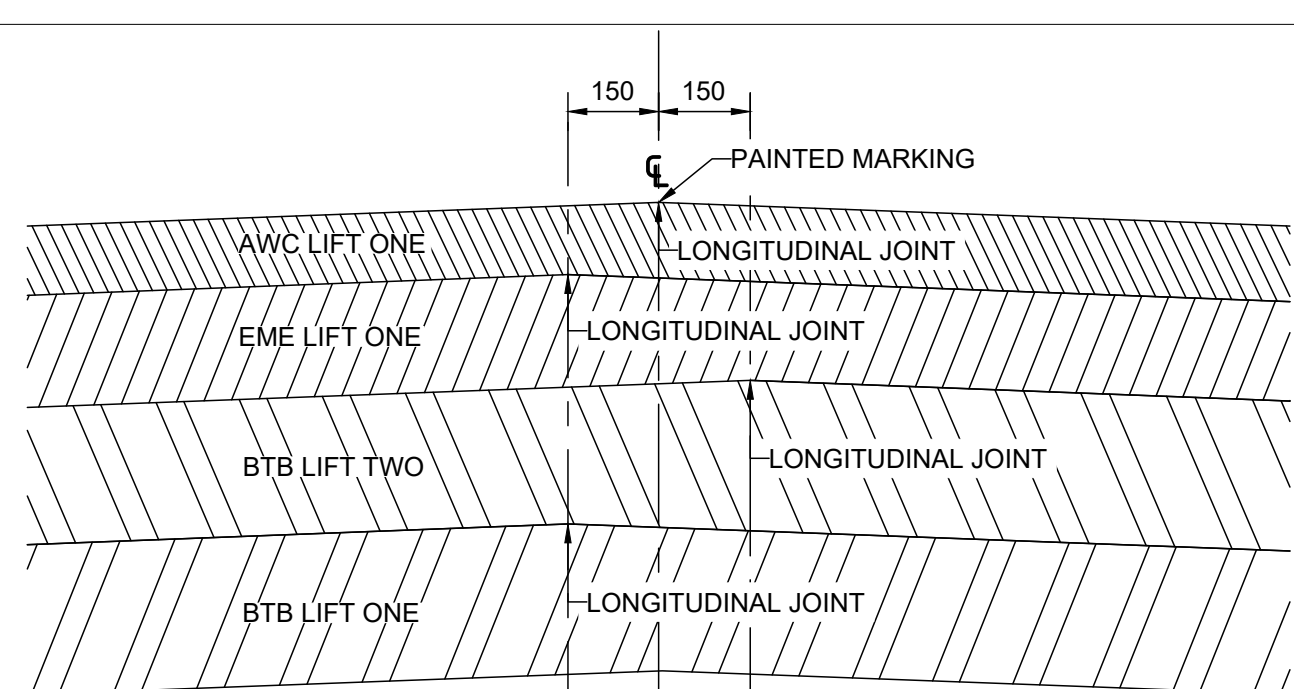
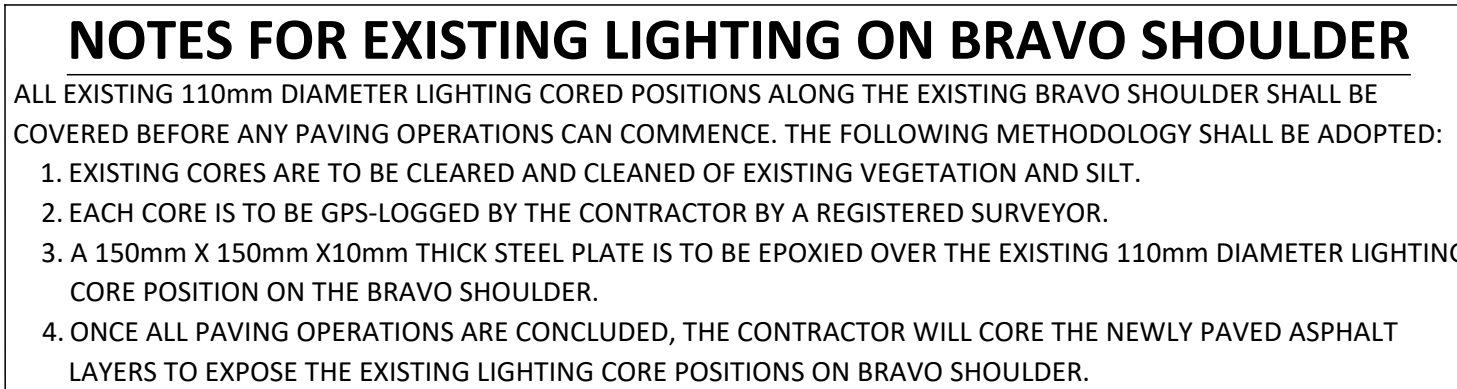
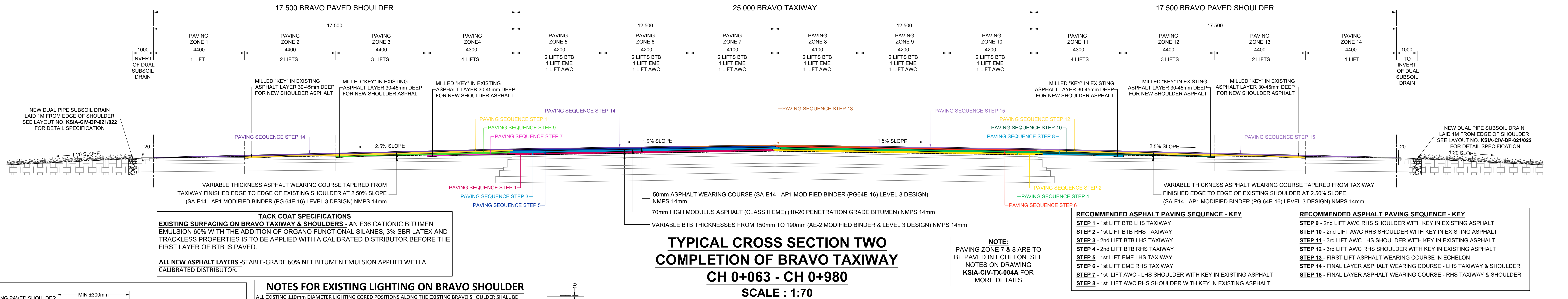
AT KING SHAKA INTERNATIONAL AIRPORT

LIST OF DRAWINGS

PART A : CIVIL WORKS

<u>DATE PUBLISHED</u>	<u>DRAWING NO.</u>	<u>DESCRIPTION</u>	<u>DATE PUBLISHED</u>	<u>DRAWING NO.</u>	<u>DESCRIPTION</u>
26/05/2025	KSIA-CIV-CP-001	COVER PAGE	26/05/2025	KSIA-CIV-CS-018D	EARTHWORKS LONGITUDINAL & CROSS SECTIONS SHEET 03 OF 04
26/05/2025	KISA-CIV-DL-002A	CIVIL WORKS DRAWING LIST	26/05/2025	KSIA-CIV-CS-018E	EARTHWORKS LONGITUDINAL & CROSS SECTIONS SHEET 04 OF 04
26/05/2025	KISA-CIV-LA-003	SITE LAYOUT PLAN	26/05/2025	KSIA-CIV-PM-019A	PAINTED MARKING SETTING OUT PLAN 1
26/05/2025	KSIA-CIV-TX-004A	BRAVO TYPICAL PAVEMENT CROSS SECTIONS SHEET 01 OF 02	26/05/2025	KSIA-CIV-PM-019B	PAINTED MARKING SETTING OUT PLAN 2
26/05/2025	KSIA-CIV-TX-004B	BRAVO TYPICAL PAVEMENT CROSS SECTIONS SHEET 02 OF 02	26/05/2025	KSIA-CIV-PM-019C	PAINTED MARKING SCHEDULES
26/05/2025	KSIA-CIV-TX-004C	QUEBEC TYPICAL PAVEMENT CROSS SECTIONS SHEET 01 OF 01	26/05/2025	KSIA-CIV-PM-020	STANDARD DETAILS - PAINTED MARKINGS
26/05/2025	KSIA-CIV-PL-005	PLAN OF PAVING ZONES FOR BRAVO TAXIWAY	26/05/2025	KSIA-CIV-DP-021	BRAVO STORMWATER PLAN 01 OF 02
26/05/2025	KSIA-CIV-PL-006	PLAN OF PAVING ZONES FOR QUEBEC TAXIWAY	26/05/2025	KSIA-CIV-DP-022	BRAVO STORMWATER PLAN 02 OF 02
26/05/2025	KSIA-CIV-PL-006A	BRAVO - CIVIL WORKS FOR ELECTRICAL SLEEVE INSTALLATION	26/05/2025	KSIA-CIV-DP-023	QUEBEC STORMWATER PLAN 01 OF 01
26/05/2025	KSIA-CIV-PL-006B	QUEBEC - CIVIL WORKS FOR ELECTRICAL SLEEVE INSTALLATION	26/05/2025	KSIA-CIV-DL-024	BRAVO STORMWATER LONGITUDINAL SECTIONS SHEET 01 OF 08
26/05/2025	KSIA-CIV-LL-007	BRAVO TAXIWAY GEOMETRIC PLAN & LONGITUDINAL SECTION	26/05/2025	KSIA-CIV-DL-025	BRAVO STORMWATER LONGITUDINAL SECTIONS SHEET 02 OF 08
26/05/2025	KSIA-CIV-CS-008	BRAVO TAXIWAY CROSS SECTIONS 01 OF 06	26/05/2025	KSIA-CIV-DL-026	BRAVO STORMWATER LONGITUDINAL SECTIONS SHEET 03 OF 08
26/05/2025	KSIA-CIV-CS-009	BRAVO TAXIWAY CROSS SECTIONS 02 OF 06	26/05/2025	KSIA-CIV-DL-027	BRAVO STORMWATER LONGITUDINAL SECTIONS SHEET 04 OF 08
26/05/2025	KSIA-CIV-CS-010	BRAVO TAXIWAY CROSS SECTIONS 03 OF 06	26/05/2025	KSIA-CIV-DL-028	BRAVO STORMWATER LONGITUDINAL SECTIONS SHEET 05 OF 08
26/05/2025	KSIA-CIV-CS-011	BRAVO TAXIWAY CROSS SECTIONS 04 OF 06	26/05/2025	KSIA-CIV-DL-029	BRAVO STORMWATER LONGITUDINAL SECTIONS SHEET 06 OF 08
26/05/2025	KSIA-CIV-CS-012	BRAVO TAXIWAY CROSS SECTIONS 05 OF 06	26/05/2025	KSIA-CIV-DL-030	BRAVO STORMWATER LONGITUDINAL SECTIONS SHEET 07 OF 08
26/05/2025	KSIA-CIV-CS-013	BRAVO TAXIWAY CROSS SECTIONS 06 OF 06	26/05/2025	KSIA-CIV-DL-031	BRAVO STORMWATER LONGITUDINAL SECTIONS SHEET 08 OF 08
26/05/2025	KSIA-CIV-LL-014	ALPHA TIE IN- ONE - GEOMETRIC PLAN & LONGITUDINAL SECTION	26/05/2025	KSIA-CIV-DL-032	QUEBEC STORMWATER LONGITUDINAL SECTIONS SHEET 01 OF 01
26/05/2025	KSIA-CIV-CS-015	ALPHA TIE IN- ONE - CROSS SECTIONS	26/05/2025	KSIA-CIV-DL-032A	STANDARD DETAILS SHEET 01 OF 02
26/05/2025	KSIA-CIV-LL-016	QUEBEC TAXIWAY - GEOMETRIC DESIGN PLAN & LONGITUDINAL SECTION	26/05/2025	KSIA-CIV-DL-032B	STANDARD DETAILS SHEET 02 OF 02
26/05/2025	KSIA-CIV-CS-017	QUEBEC TAXIWAY - CROSS SECTIONS 01 OF 02	26/05/2025	KSIA-CIV-DL-032C	TEMPORARY CONSTRUCTION FENCE DETAILS
26/05/2025	KSIA-CIV-CS-018	QUEBEC TAXIWAY - CROSS SECTIONS 02 OF 02	26/05/2025	KSIA-CIV-RS-032D	ELECTRICAL ILLUMINATED SIGNAGE - CONCRETE BASE DETAILS
26/05/2025	KSIA-CIV-CS-018A	EXISTING CHANNEL - EARTHWORKS ACTIVITIES PLAN & COMPLETION OF STORMWATER SYSTEM	26/05/2025	KSIA-CIV-PP-033	CONSTRUCTION PHASING AND TEMPORARY TRAFFIC CONTROL PLAN
26/05/2025	KSIA-CIV-CS-018B	EARTHWORKS LONGITUDINAL & CROSS SECTIONS SHEET 01 OF 04	26/05/2025	KSIA-CIV-RS-034	CONSTRUCTION CONTRACT SIGN BOARD DETAIL
26/05/2025	KSIA-CIV-CS-018C	EARTHWORKS LONGITUDINAL & CROSS SECTIONS SHEET 02 OF 04			





NOTES										
A	28/05/25	FOR TENDER PURPOSES								
SYMBOL	DATE	DESCRIPTION				CHECKED	SIGNED			
REVISION SCHEDULE										

FOR DISCUSSION		DESIGNED BY:	Y NANKHOO(Pr.Eng. 2023027373)
NANKHOO CONSULTING ENGINEERS RETAINS COPYRIGHT OVER ALL INTELLECTUAL PROPERTY, INCLUDING DESIGNS AND DOCUMENTS CREATED UNDER THIS AGREEMENT. IF ANY SPECIFIED PROJECT, THE CLIENT MAY ONLY USE THESE DESIGNS AND DOCUMENTS FOR THEIR INTENDED PURPOSE ON THIS PROJECT. NO FURTHER PAYMENT FOR THE DESIGN HAS BEEN RECEIVED ANY OTHER USE, WHETHER OR NOT PAYMENT HAS BEEN MADE, CONSTITUTES A COPYRIGHT INFRINGEMENT, AND ALL RIGHTS ARE RESERVED.		CHECKED BY:	A N. SUKURAM(Pr. TechEng 201670173)
		DRAWN BY:	K RAMSUROOP
		CHECKED BY:	A N. SUKURAM(Pr. TechEng 201670173)
ALL DIMENSIONS MUST BE CONFIRMED ON-SITE BEFORE WORK BEGINS. ANY DISCREPANCIES MUST BE REFERRED TO THE ENGINEER.		DATE OF APPROVAL:	

<p>CLIENT:</p> <div data-bbox="1178 1921 1231 1940"> </div> <p>AIRPORTS COMPANY SOUTH AFRICA</p>	<p>CONSULTANT:</p> <div data-bbox="1338 1921 1380 1936"> </div> <p>NANKHOO Consulting Engineers</p> <p>GATEWAY OFFICE PARK, 1 SUGAR CROVE, UMLANGA 4021</p> <p>TEL: (031) 5068310 FAX: 0865 162332 EMAIL: nankhoo@qnet.co.za</p>
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<h1 style="text-align: center;">AS BUILT</h1>	CONSULTING ENGINEER		

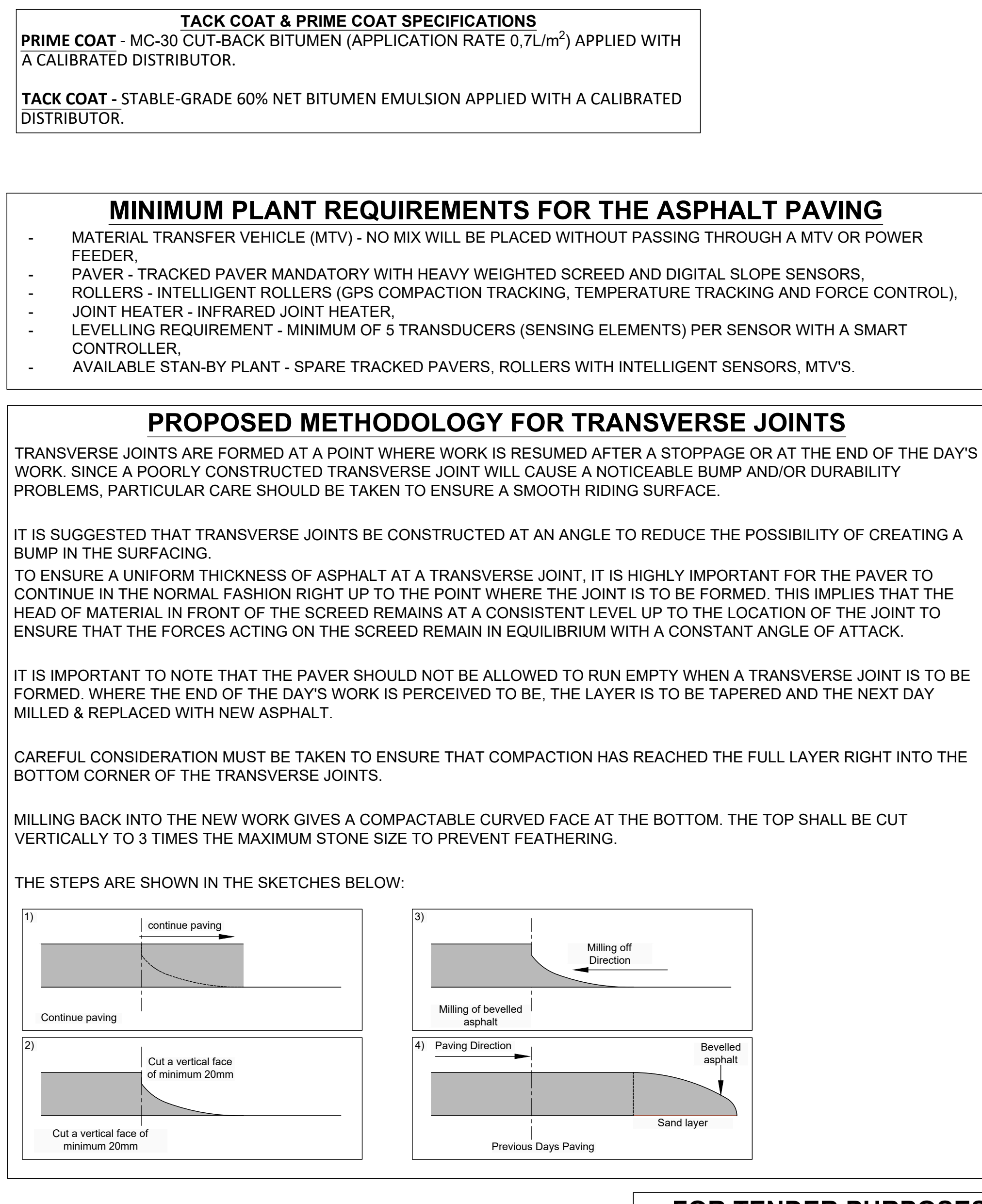
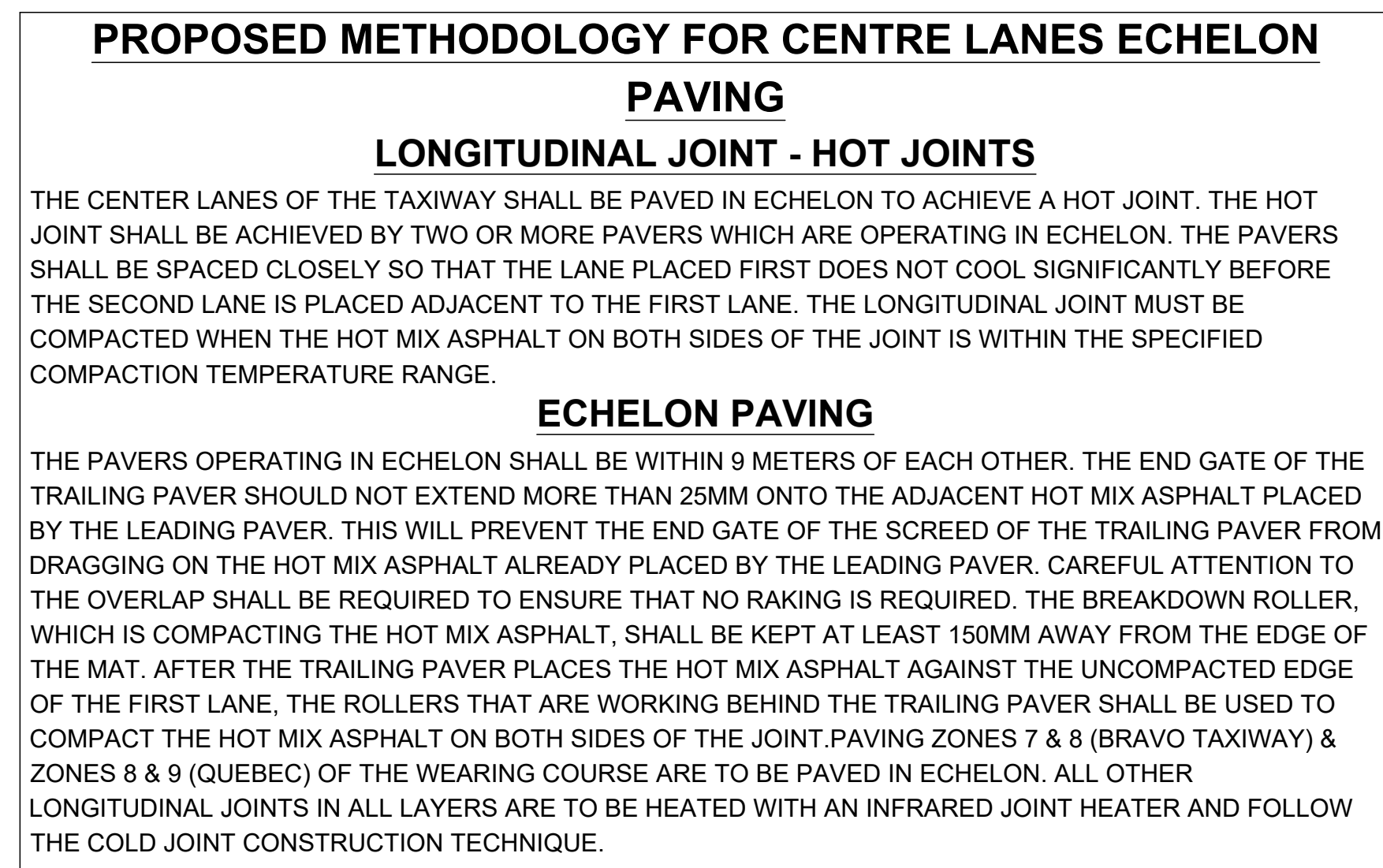
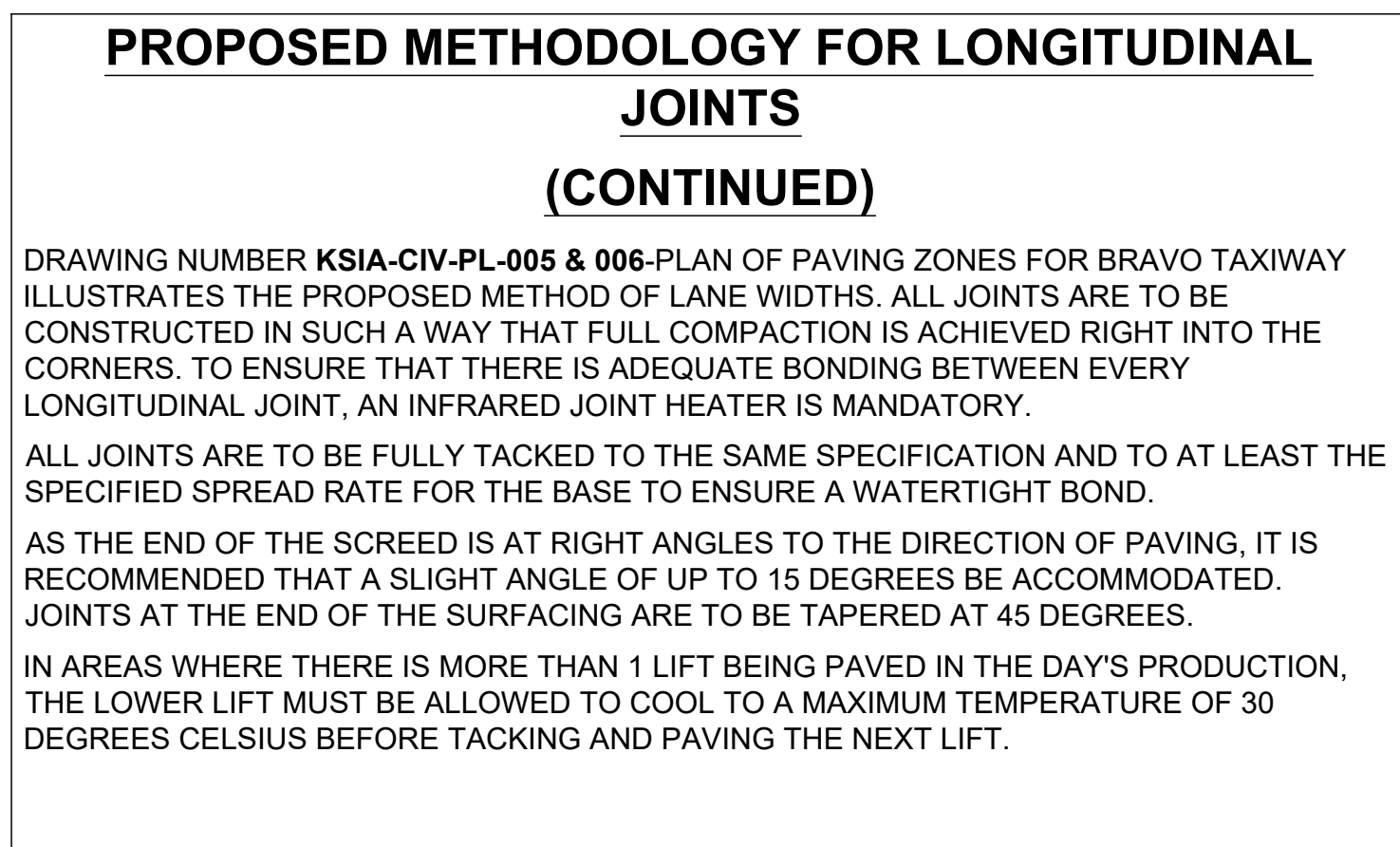
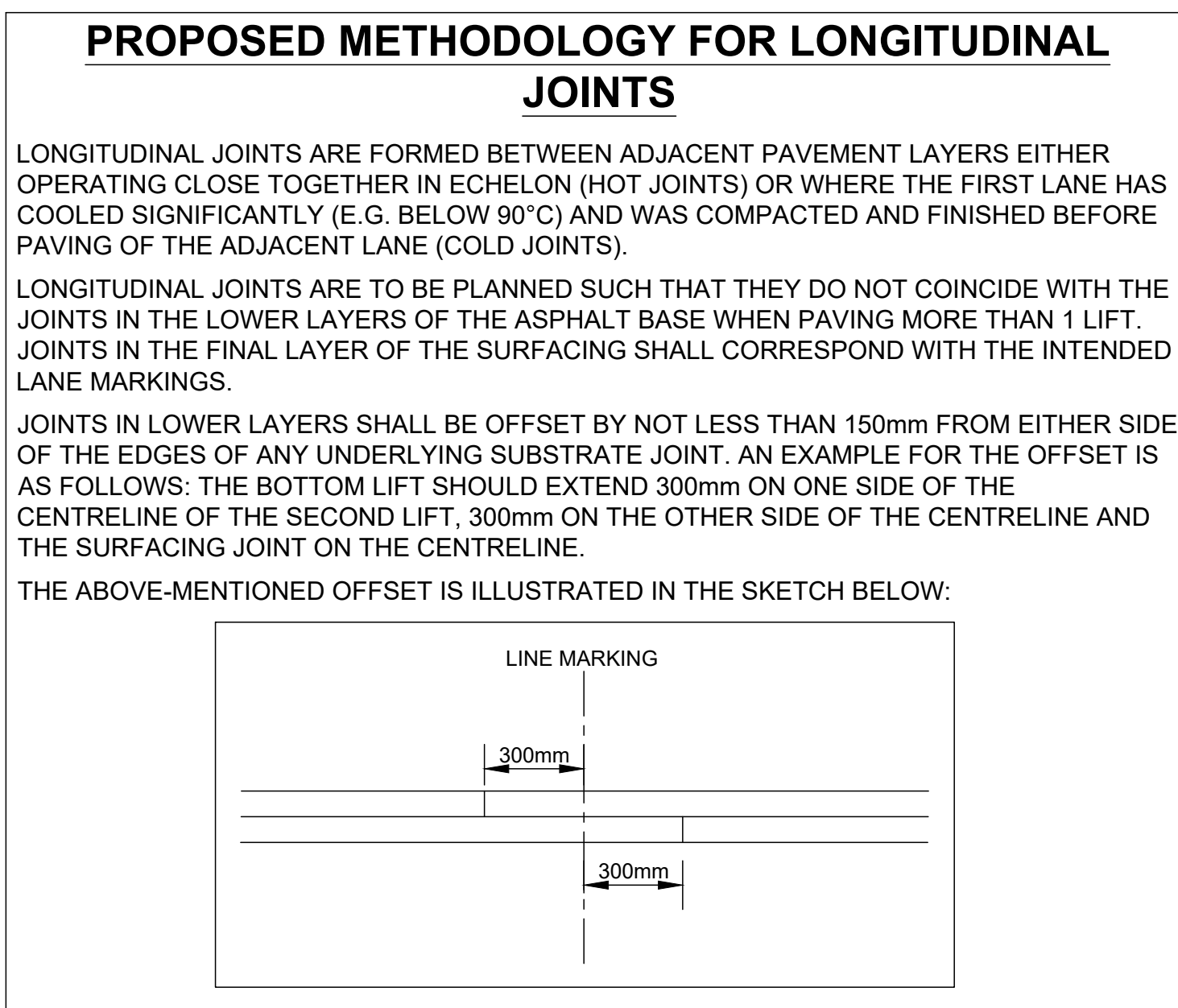
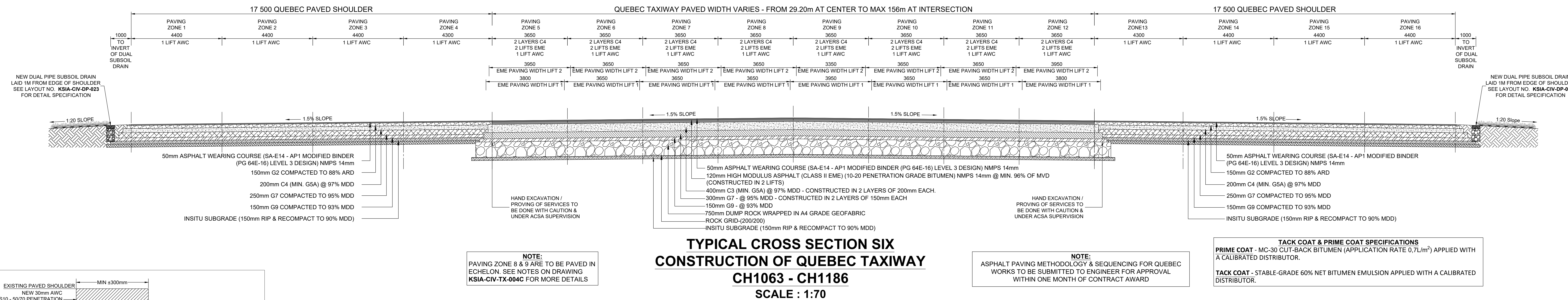
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	CLIENT		

SUPERVISING ENGINEER	DATE		

SUPERVISING AUTHORITY	DATE		

AIRPORTS COMPANY SOUTH AFRICA
KING SHAKA INTERNATIONAL AIRPORT

COMPLETION OF BRAVO TAXIWAY
CH 0+000 TO CH 1+223
BRAVO TYPICAL PAVEMENT CROSS SECTIONS SHEET 01 OF 02

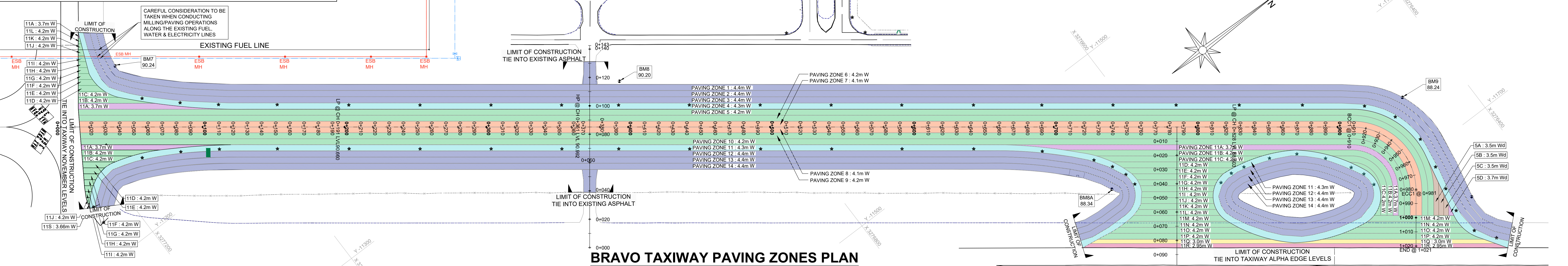


FOR TENDER PURPOSES			
ORIGINAL SIZE	SCALE	SHEET	06
A0	AS SHOWN	OF	49
<p>PLAN NO.:-</p> <p>KSIA-CIV-TX-004C</p>			

GENERAL NOTES

1. ALL LEVELS, DIMENSIONS AND SETTING OUT DETAILS TO BE VERIFIED BY THE CONSULTANT, SITE ENGINEER AND CONTRACTORS ON SITE PRIOR TO CONSTRUCTION.
2. ALL EXISTING DRAINAGE CULVERTS ARE TO BE INSPECTED, AND ANY FOUND IN UNSERVICEABLE CONDITION ARE TO BE REPLACED - TO BE CONFIRMED BY SITE ENGINEER.
3. CULVERT INVERTS ARE TO BE DECIDED BY ENGINEER ON SITE UNLESS SHOWN OTHERWISE, MIN. SLOPE = 2%.
4. MINIMUM SUBSOIL DRAIN SLOPES = 0.50%.
5. FOR EROSION CONTROL, RENO MATS ARE RECOMMENDED AT CULVERT OUTLETS, TO BE CONFIRMED BY ENGINEER ON SITE.
6. EARTH BERMS ARE TO BE CONSTRUCTED AT CULVERT INLETS TO DIRECT STORM WATER INTO CULVERTS WHERE NECESSARY, TO BE CONFIRMED BY ENGINEER ON SITE.
7. EXISTING SERVICES AND FENCING AFFECTED BY CONSTRUCTION ARE TO BE REMOVED/RELOCATED WHERE NECESSARY, TO BE CONFIRMED BY ENGINEER ON SITE.
8. HAND EXCAVATION / PROVING OF SERVICES TO BE DONE WITH CAUTION & UNDER ACSA SUPERVISION.
9. ALL NEW ROAD MARKING REQUIREMENTS ARE TO CONFORM TO THE INTERNATIONAL CIVIL AVIATION ORGANIZATION STANDARDS (ICAO).
10. ALL WORK IS TO BE CARRIED OUT IN ACCORDANCE WITH COTO SPECIFICATIONS FOR ROAD WORKS FOR STATE ROAD AUTHORITIES.
11. ALL SURVEY AND SETTING OUT DATA PROVIDED IS BASED ON (WGS 84).
12. NEW FILLS AND EXPOSED CUTTINGS ARE TO BE TOP-SOILED AND VEGETATED IMMEDIATELY AFTER CONSTRUCTION TO PREVENT EROSION, TO BE CONFIRMED BY ENGINEER ON SITE.

NOTE:
REFER TO NIGHT WORKS LOCATION



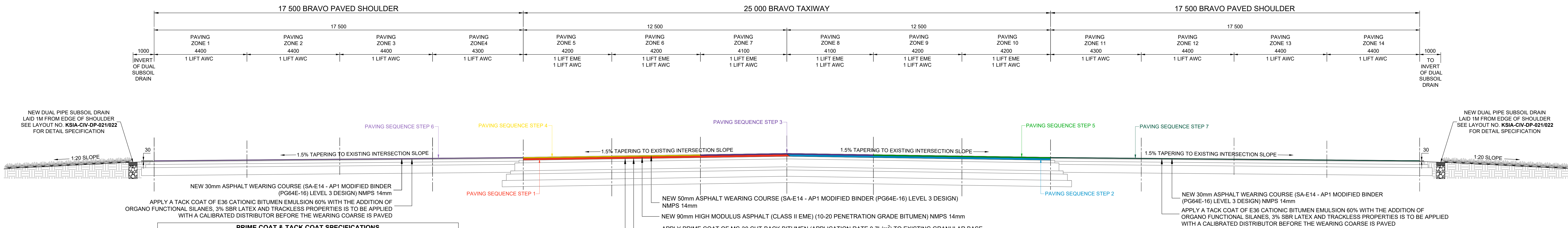
BRAVO TAXIWAY PAVING ZONES PLAN
SCALE 1:1000

BRAVO TAXIWAY PROPOSED PAVING ZONES		
PAVING ZONE NO.	WIDTH TO PAVE (m)	
1	4.40	
2	4.40	
3	4.40	
4	4.30	
5	4.20	
5A	3.50	
5B	3.50	
5C	3.50	
5D	3.70	

BRAVO TAXIWAY PROPOSED PAVING ZONES		
PAVING ZONE NO.	WIDTH TO PAVE (m)	
6	4.20	
7	4.10	
8	4.10	
9	4.20	
10	4.20	
11	4.20	
11A	3.70	
11B	4.20	
11C	4.20	

BRAVO TAXIWAY PROPOSED PAVING ZONES		
PAVING ZONE NO.	WIDTH TO PAVE (m)	
11D	4.20	
11E	4.20	
11F	4.20	
11G	4.20	
11H	4.20	
11I	4.20	
11J	4.20	
11K	4.20	
11L	4.20	

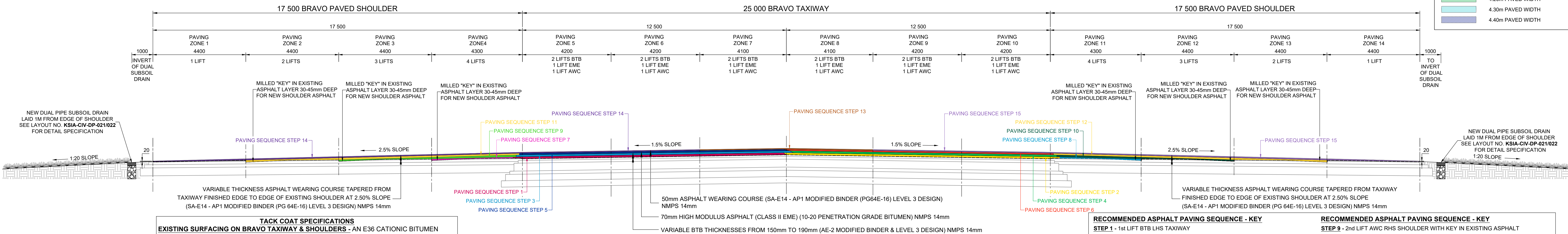
BRAVO TAXIWAY PROPOSED PAVING ZONES		
PAVING ZONE NO.	WIDTH TO PAVE (m)	
11M	4.20	
11N	4.20	
11O	4.20	
11P	4.20	
11Q	3.00	
11R	2.95	
11S	3.66	
12	4.40	
13	4.40	
14	4.40	



TYPICAL CROSS SECTION ONE
COMPLETION OF BRAVO TAXIWAY - TIE- IN'S
CH 0+013 - CH 0+063 & CH 0+980 - CH 1+016
SCALE : 1:70

RECOMMENDED ASPHALT PAVING SEQUENCE - KEY
STEP 1 - 1st LIFT EME LHS TAXIWAY
STEP 2 - 1st LIFT EME RHS TAXIWAY
STEP 3 - 1st LIFT ASPHALT WEARING COURSE IN ECHELON
STEP 4 - 1st LIFT AWC ON REMAINDER OF LHS TAXIWAY
STEP 5 - 1st LIFT AWC ON REMAINDER OF RHS TAXIWAY
STEP 6 - 1st LIFT AWC ON LHS SHOULDER
STEP 7 - 1st LIFT AWC ON RHS SHOULDER

LEGEND	
	SETTING OUT CONTROL POINTS
	2.95m PAVED WIDTH
	3.00m PAVED WIDTH
	3.50m PAVED WIDTH
	3.66m PAVED WIDTH
	3.70m PAVED WIDTH
	4.10m PAVED WIDTH
	4.20m PAVED WIDTH
	4.30m PAVED WIDTH
	4.40m PAVED WIDTH



TYPICAL CROSS SECTION TWO
COMPLETION OF BRAVO TAXIWAY
CH 0+063 - CH 0+980
SCALE : 1:70

RECOMMENDED ASPHALT PAVING SEQUENCE - KEY
STEP 1 - 1st LIFT LHS TAXIWAY
STEP 2 - 1st LIFT BTB RHS TAXIWAY
STEP 3 - 2nd LIFT BTB LHS TAXIWAY
STEP 4 - 2nd LIFT BTB RHS TAXIWAY
STEP 5 - 1st LIFT EME LHS TAXIWAY
STEP 6 - 1st LIFT EME RHS TAXIWAY
STEP 7 - 1st LIFT AWC - LHS SHOULDER WITH KEY IN EXISTING ASPHALT
STEP 8 - 1st LIFT AWC RHS SHOULDER WITH KEY IN EXISTING ASPHALT

RECOMMENDED ASPHALT PAVING SEQUENCE - KEY
STEP 9 - 2nd LIFT AWC RHS SHOULDER WITH KEY IN EXISTING ASPHALT
STEP 10 - 2nd LIFT AWC RHS SHOULDER WITH KEY IN EXISTING ASPHALT
STEP 11 - 3rd LIFT AWC LHS SHOULDER WITH KEY IN EXISTING ASPHALT
STEP 12 - 3rd LIFT AWC RHS SHOULDER WITH KEY IN EXISTING ASPHALT
STEP 13 - FIRST LIFT ASPHALT WEARING COURSE IN ECHELON
STEP 14 - FINAL LAYER ASPHALT WEARING COURSE - LHS TAXIWAY & SHOULDER
STEP 15 - FINAL LAYER ASPHALT WEARING COURSE - RHS TAXIWAY & SHOULDER

NOTES

FOR DISCUSSION

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CLIENT:

AIRPORTS COMPANY SOUTH AFRICA

CONSULTANT:

NANKHOO Consulting Engineers

AS BUILT

SUPERVISING ENGINEER
DATE
SUPERVISING AUTHORITY

CONSULTING ENGINEER

SIGNATURE
PR NO.
DATE
CLIENT
SIGNATURE
DESIGNED
DRAWN
CHECKED
Y.NANKHOO
K.RAMSUROOP
A.N.SUKURAM

AIRPORTS COMPANY SOUTH AFRICA
KING SHAKA INTERNATIONAL AIRPORT

COMPLETION OF BRAVO TAXIWAY
CH 0+000 TO CH 1+020
PLAN OF PAVING ZONES FOR BRAVO TAXIWAY

FOR TENDER PURPOSES

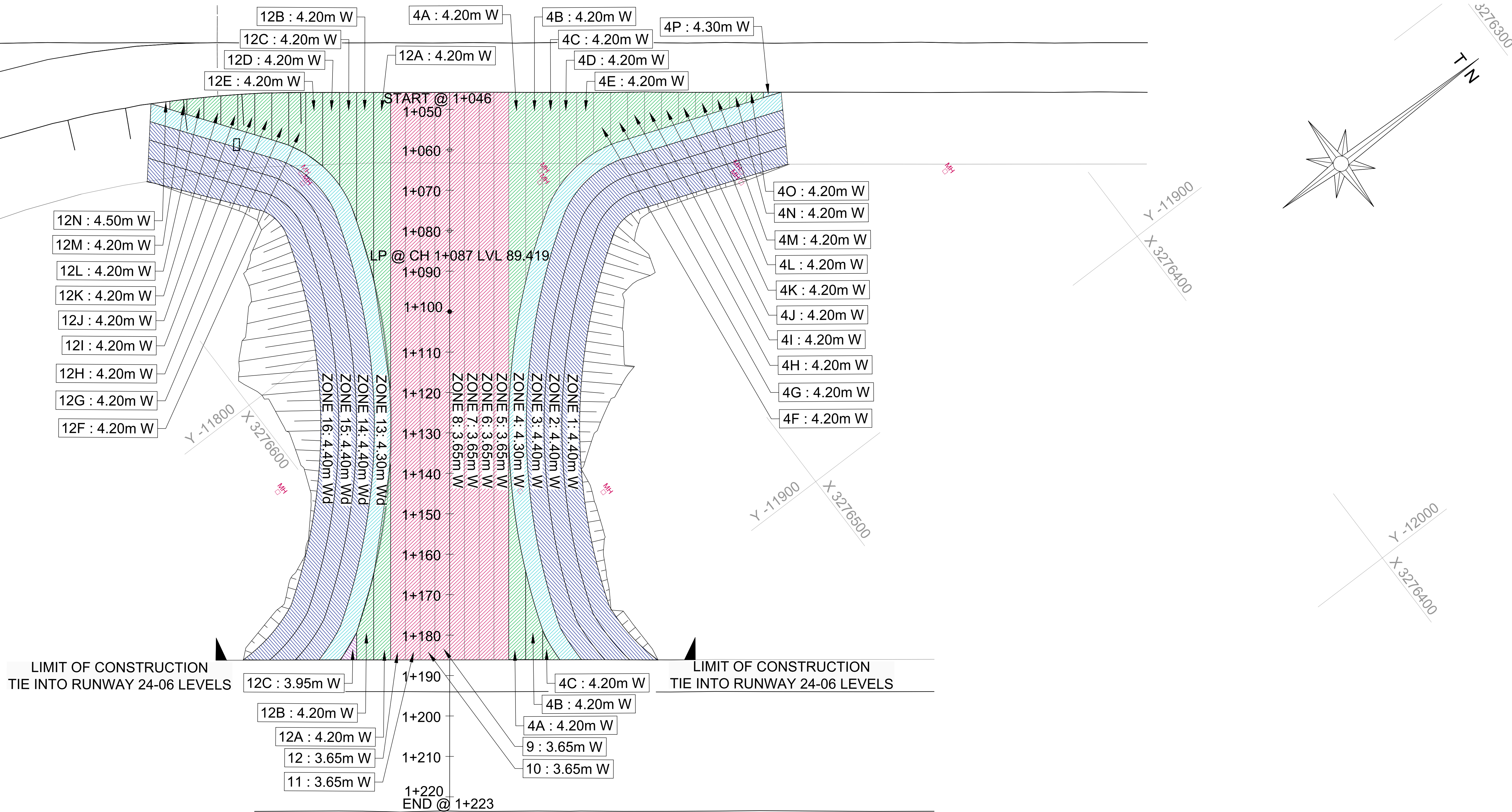
ORIGINAL SIZE
A0
SCALE
AS SHOWN
SHEET OF
07 49

PLAN NO.:-
KSIA-CIV-PL-005

KSIA-CIV-PL-005

GENERAL NOTES

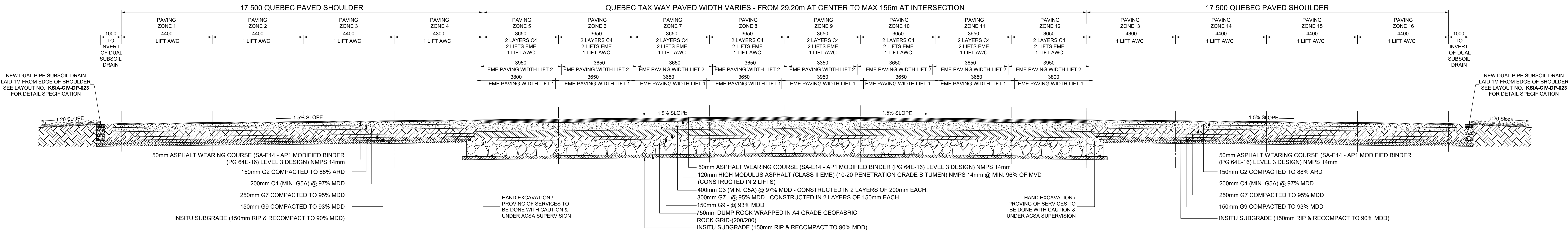
1. ALL LEVELS, DIMENSIONS AND SETTING OUT DETAILS TO BE VERIFIED BY THE CONSULTANT, SITE ENGINEER AND CONTRACTORS ON SITE PRIOR TO CONSTRUCTION.
2. ALL EXISTING DRAINAGE CULVERTS ARE TO BE INSPECTED, AND ANY FOUND IN UNSERVICEABLE CONDITION ARE TO BE REPLACED - TO BE CONFIRMED BY SITE ENGINEER.
3. CULVERT INVERTS ARE TO BE DECIDED BY ENGINEER ON SITE UNLESS SHOWN OTHERWISE, MIN. SLOPE = 2%.
4. MINIMUM SUBSOIL DRAIN SLOPES = 0.50%.
5. FOR EROSION CONTROL RENO MATRESSES ARE RECOMMENDED AT CULVERT OUTLETS, TO BE CONFIRMED BY ENGINEER ON SITE.
6. EARTH BERMS ARE TO BE CONSTRUCTED AT CULVERT INLETS TO DIRECT STORM WATER INTO CULVERTS WERE NECESSARY, TO BE CONFIRMED BY ENGINEER ON SITE.
7. EXISTING SERVICES AND FENCING AFFECTED BY CONSTRUCTION ARE TO BE REMOVED /RELOCATED WHERE NECESSARY, TO BE CONFIRMED BY ENGINEER ON SITE.
8. HAND EXCAVATION / PROVING OF SERVICES TO BE DONE WITH WITH CAUTION & UNDER ACSA SUPERVISION.
9. ALL NEW ROAD MARKING REQUIREMENTS ARE TO CONFORM TO THE INTERNATIONAL CIVIL AVIATION ORGANIZATION STANDARDS (ICAO).
10. ALL WORK IS TO BE CARRIED OUT IN ACCORDANCE WITH COTO SPECIFICATIONS FOR ROAD WORKS FOR STATE ROAD AUTHORITIES.
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12. NEW FILLS AND EXPOSED CUTTINGS ARE TO BE TOP-SOILED AND VEGETATED IMMEDIATELY AFTER CONSTRUCTION TO PREVENT EROSION, TO BE CONFIRMED BY ENGINEER ON SITE.



QUEBEC TAXIWAY PAVING ZONES PLAN (NIGHT WORKS ONLY)
SCALE 1:500

QUEBEC TAXIWAY PROPOSED PAVING ZONES		QUEBEC TAXIWAY PROPOSED PAVING ZONES		QUEBEC TAXIWAY PROPOSED PAVING ZONES		QUEBEC TAXIWAY PROPOSED PAVING ZONES		QUEBEC TAXIWAY PROPOSED PAVING ZONES	
PAVING ZONE NO.	WIDTH TO PAVE (m)	PAVING ZONE NO.	WIDTH TO PAVE (m)	PAVING ZONE NO.	WIDTH TO PAVE (m)	PAVING ZONE NO.	WIDTH TO PAVE (m)	PAVING ZONE NO.	WIDTH TO PAVE (m)
1	4.40	4G	4.20	5	3.65	12C	3.95	12M	4.20
2	4.40	4H	4.20	6	3.65	12D	4.20	12N	4.50
3	4.40	4I	4.20	7	3.65	12E	4.20	13	4.30
4	4.30	4J	4.20	8	3.65	12F	4.20	14	4.40
4A	4.20	4K	4.20	9	3.65	12G	4.20	15	4.40
4B	4.20	4L	4.20	10	3.65	12H	4.20	16	4.40
4C	4.20	4M	4.20	11	3.65	12I	4.20		
4D	4.20	4N	4.20	12	3.65	12J	4.20		
4E	4.20	4O	4.20	12A	4.20	12K	4.20		
4F	4.20	4P	4.30	12B	4.20	12L	4.20		

LEGEND	
	SETTING OUT CONTROL POINTS
	3.65m PAVED WIDTH
	3.95m PAVED WIDTH
	4.10m PAVED WIDTH
	4.20m PAVED WIDTH
	4.30m PAVED WIDTH
	4.40m PAVED WIDTH



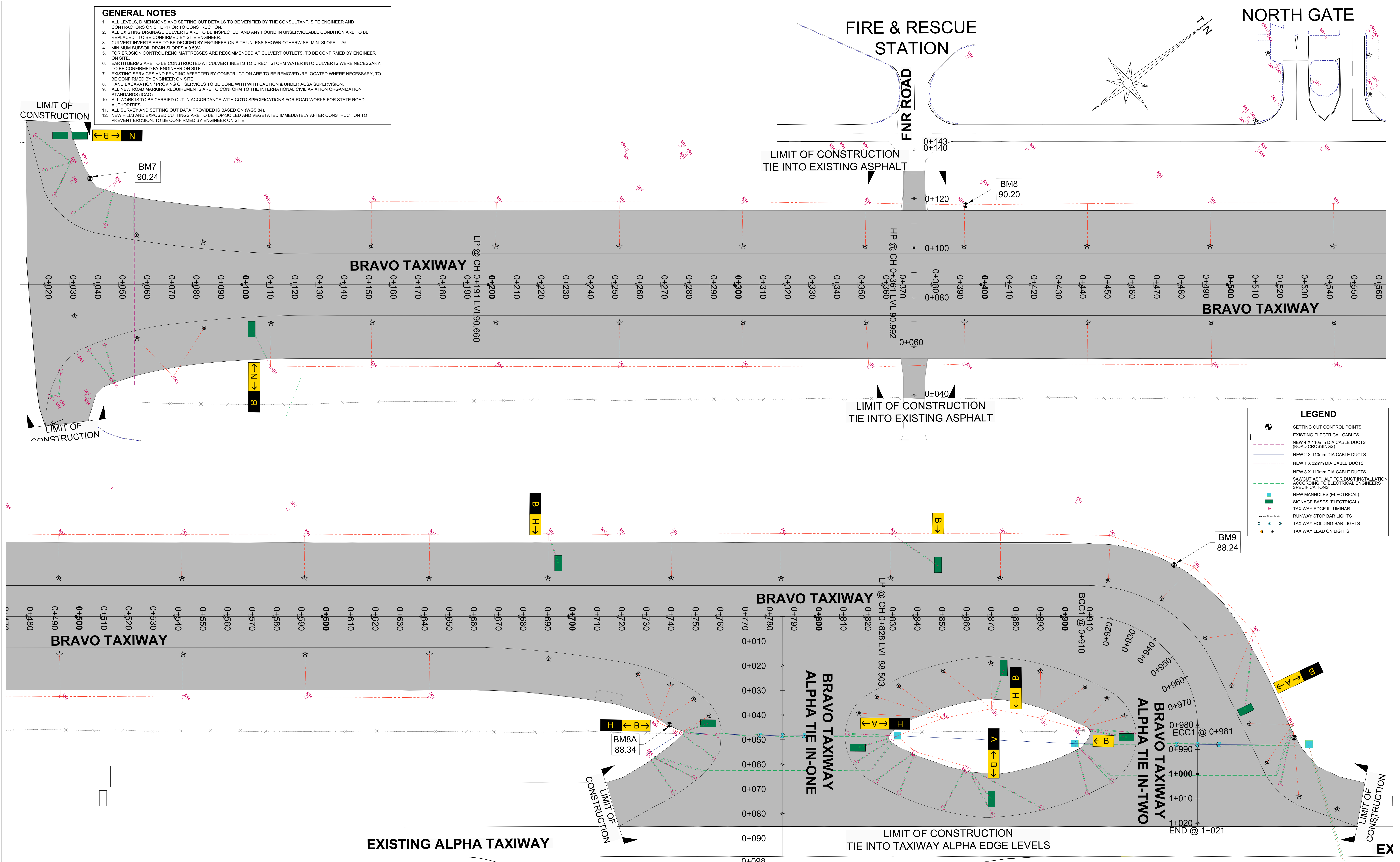
TYPICAL CROSS SECTION SIX
CONSTRUCTION OF QUEBEC TAXIWAY
CH1063 - CH1186
SCALE : 1:70

NOTE:
PAVING ZONE 8 & 9 ARE TO BE PAVED IN
ECHELON. SEE NOTES ON DRAWING
KSIA-CIV-TX-004C FOR MORE DETAILS

NOTE:
ASPHALT PAVING METHODOLOGY & SEQUENCING FOR QUEBEC
WORKS TO BE SUBMITTED TO ENGINEER FOR APPROVAL
WITHIN ONE MONTH OF CONTRACT AWARD

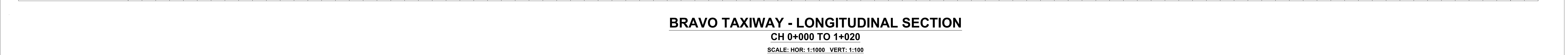
TACK COAT & PRIME COAT SPECIFICATIONS
PRIME COAT - MC-30 CUT-BACK BITUMEN (APPLICATION RATE 0.7L/m²) APPLIED WITH
A CALIBRATED DISTRIBUTOR.
TACK COAT - STABLE-GRADE 60% NET BITUMEN EMULSION APPLIED WITH A CALIBRATED
DISTRIBUTOR.

NOTES				FOR DISCUSSION				DESIGNED BY: Y.NANKHOO(Pr.Eng. 202302737)		CLIENT:		CONSULTANT:		AS BUILT		CONSULTING ENGINEER		AIRPORTS COMPANY SOUTH AFRICA KING SHAKA INTERNATIONAL AIRPORT				ORIGINAL A0	SCALE AS SHOWN	SHEET OF	08 49		
				NANKHOO CONSULT TWO ENGINEERS RETAINS COPYRIGHT OVER ALL INTELLECTUAL PROPERTY, INCLUDING DESIGNS AND DOCUMENTS CREATED UNDER THIS CONTRACT FOR THE SPECIFIED PROJECT. THE CLIENT MAY ONLY USE THESE DESIGNS AND DOCUMENTS FOR THEIR INTENDED PURPOSE ON THIS PROJECT. PROVIDED PAYMENT FOR THE DESIGN HAS BEEN RECEIVED. ANY OTHER USE, WHETHER OR NOT PAYMENT HAS BEEN MADE, CONSTITUTES A COPYRIGHT INFRINGEMENT. AND ALL RIGHTS ARE RESERVED.				CHECKED BY: A.N.SUKURAM(Pr.TechEng.201670173)						GATEWAY OFFICE PARK, 1 SUGAR CLOSE, UMLANGA 4021 TEL: (031) 5368310 FAX: 0965160330 EMAIL: nankhoo@ncoe.co.za		SIGNATURE _____ PR NO. _____ DATE _____ CLIENT _____		SIGNATURE _____ PR NO. _____ DATE _____ DESIGNED Y.NANKHOO DRAWN K.RAMSUROOP CHECKED A.N.SUKURAM		COMPLETION OF BRAVO TAXIWAY CH 1+040 TO CH 1+223 PLAN OF PAVING ZONES FOR QUEBEC TAXIWAY				PLAN NO.:- KSIA-CIV-PL-006			
								DRAWN BY: K.RAMSUROOP																			
								CHECKED BY: A.N.SUKURAM(Pr.TechEng.201670173)																			
								DATE OF APPROVAL:																			
A 26/05/25 FOR TENDER PURPOSES																											
SYMBOL		DATE		DESCRIPTION		CHECKED		SIGNED																			
REVISION SCHEDULE																											
				ALL DIMENSIONS MUST BE CONFIRMED ON-SITE BEFORE WORK BEGINS. ANY DISCREPANCIES MUST BE REFERRED TO THE ENGINEER.																							



										FOR TENDER PURPOSES																													
NOTES										ORIGINAL SIZE A0										SCALE 1:500										SHEET 09 OF 49									

1. ALL LEVELS, DIMENSIONS AND SETTING OUT DETAILS TO BE VERIFIED BY THE CONSULTANT, SITE ENGINEER AND CONTRACTORS ON SITE PRIOR TO CONSTRUCTION.
2. ALL EXISTING DRAINAGE CULVERTS ARE TO BE INSPECTED, AND ANY FOUND IN UNSERVICEABLE CONDITION ARE TO BE REPLACED - TO BE CONFIRMED BY SITE ENGINEER.
3. CULVERT INVERTS ARE TO BE DECIDED BY ENGINEER ON SITE UNLESS SHOWN OTHERWISE, MIN. SLOPE = 2%.
4. ALL EXISTING DRAINAGE CULVERTS ARE TO BE INSPECTED, AND ANY FOUND IN UNSERVICEABLE CONDITION ARE TO BE REPLACED - TO BE CONFIRMED BY SITE ENGINEER.
5. FOR EROSION CONTROL, RENO MATS ARE RECOMMENDED AT CULVERT OUTLETS, TO BE CONFIRMED BY ENGINEER ON SITE.
6. EARTH BERMS ARE TO BE CONSTRUCTED AT CULVERT INLETS TO DIRECT STORM WATER INTO CULVERTS WERE NECESSARY, TO BE CONFIRMED BY ENGINEER ON SITE.
7. EXISTING SERVICES AND FENCING AFFECTED BY CONSTRUCTION ARE TO BE REMOVED/RELOCATED WHERE NECESSARY, TO BE CONFIRMED BY SITE ENGINEER.
8. HAND EXCAVATION / PROVING OF SERVICES TO BE DONE WITH CAUTION & UNDER A/C SUPERVISION.
9. ALL NEW ROAD MARKING REQUIREMENTS ARE TO CONFORM TO THE INTERNATIONAL CIVIL AVIATION ORGANIZATION STANDARDS.
10. ALL WORK IS TO BE CARRIED OUT IN ACCORDANCE WITH COTO SPECIFICATIONS FOR ROAD WORKS FOR STATE ROAD AUTHORITIES.
11. ALL SURVEY AND SETTING OUT DATA PROVIDED IS BASED ON AWS 84.
12. NEW FILLS AND EXPOSED CUTTINGS ARE TO BE TOP-SOILED AND VEGETATED IMMEDIATELY AFTER CONSTRUCTION TO PREVENT EROSION, TO BE CONFIRMED BY ENGINEER ON SITE.



SCALE: HOR: 1:1000 VERT: 1:100

<h1>FOR DISCUSSION</h1> <p>NANKHO CONSULTING ENGINEERS RETAINS COPYRIGHT OVER ALL INTELLECTUAL PROPERTY, INCLUDING DESIGNS AND DOCUMENTS CREATED UNDER THIS APPOINTMENT FOR THE SPECIFIED PROJECT. THE CLIENT MAY ONLY USE THESE DESIGNS AND DOCUMENTS FOR THEIR INTENDED PURPOSE ON THIS PROJECT. PROHIBITS PAYMENT FOR THE DESIGN. IF NOT RECEIVED, ANY USE, WHETHER OR NOT PAYMENT HAS BEEN MADE, CONSTITUTES A COPYRIGHT INFRINGEMENT, AND ALL RIGHTS ARE RESERVED.</p> <p>ALL DIMENSIONS MUST BE CONFIRMED ON-SITE BEFORE WORK BEGINS. ANY DISCREPANCIES MUST BE REFERRED TO THE ENGINEER.</p>		<p>DESIGNED BY: Y NANKHOO(Pr.Eng. 2023027373)</p> <p>CHECKED BY: A.N.SUKUR(MP/Pr.TechEng.201670173)</p> <p>DRAWN BY: K.RAMSUROOP</p> <p>CHECKED BY: A.N.SUKUR(MP/Pr.TechEng.201670173)</p> <p>DATE OF APPROVAL:</p>	
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CONSULTING ENGINEER		
SIGNATURE	PR NO.	DATE
CLIENT		
SIGNATURE	DATE	
DESIGNED Y.NANKHOO	DRAWN K.RAMSUROOP	CHECKED A.N.SUKURAM

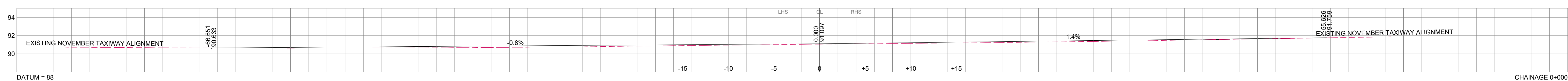
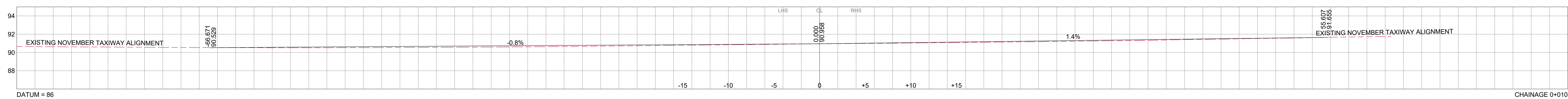
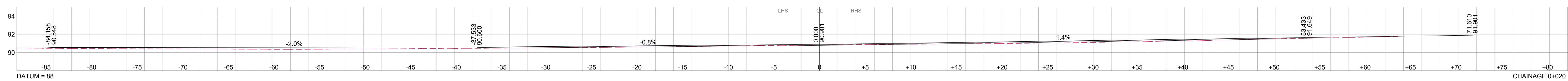
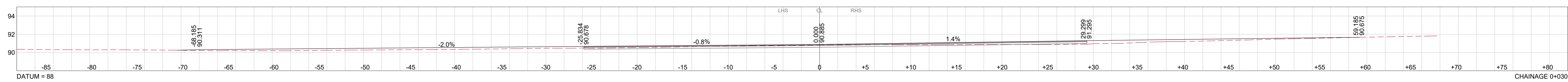
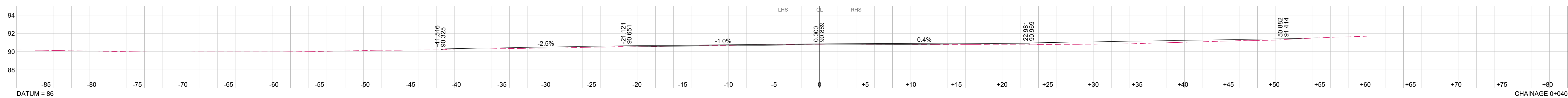
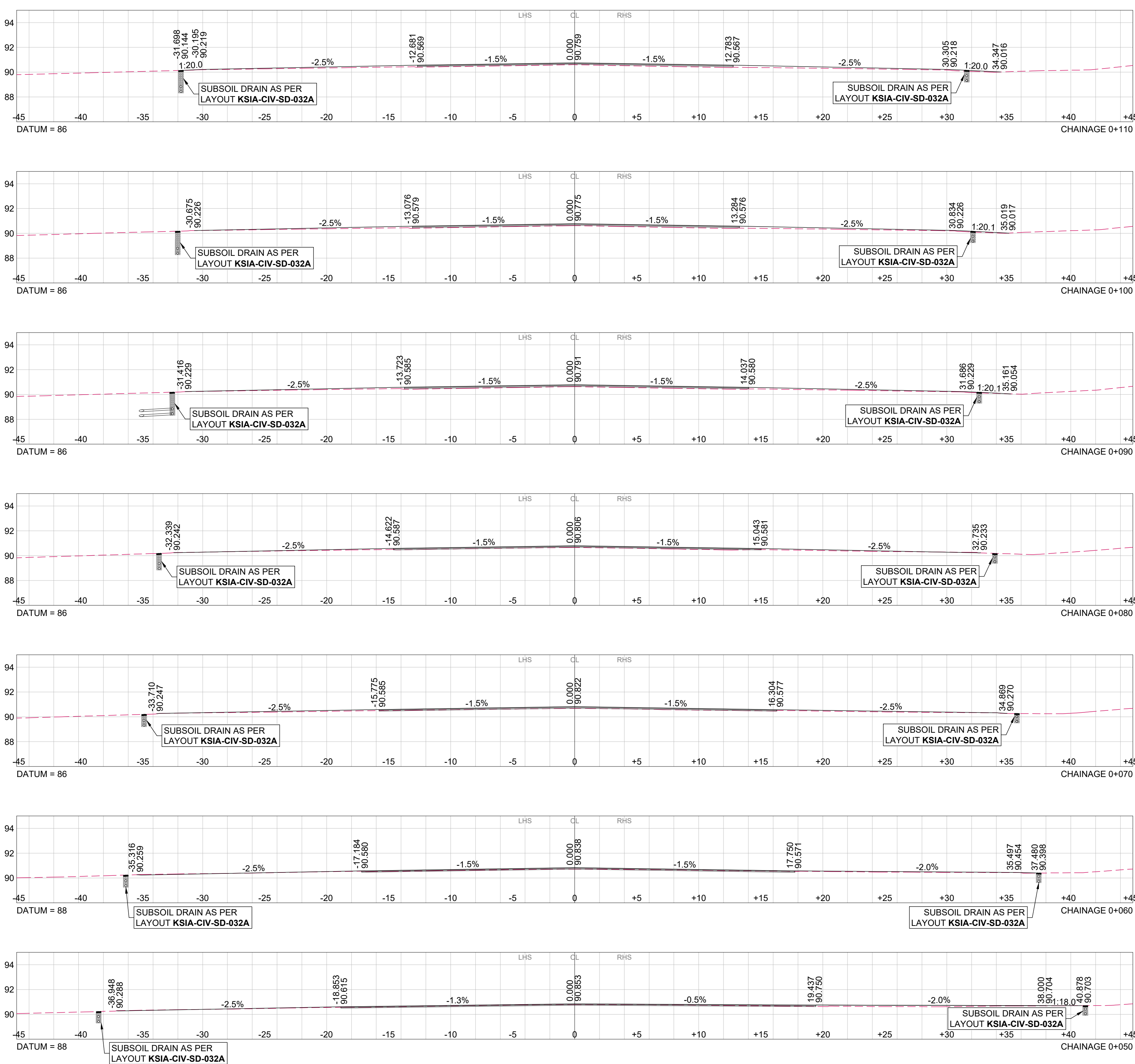
COMPLETION OF BRAVO TAXIWAY

CH 0+000 TO CH 1+020

BRAVO - GEOMETRIC PLAN & LONGITUDINAL SECTION

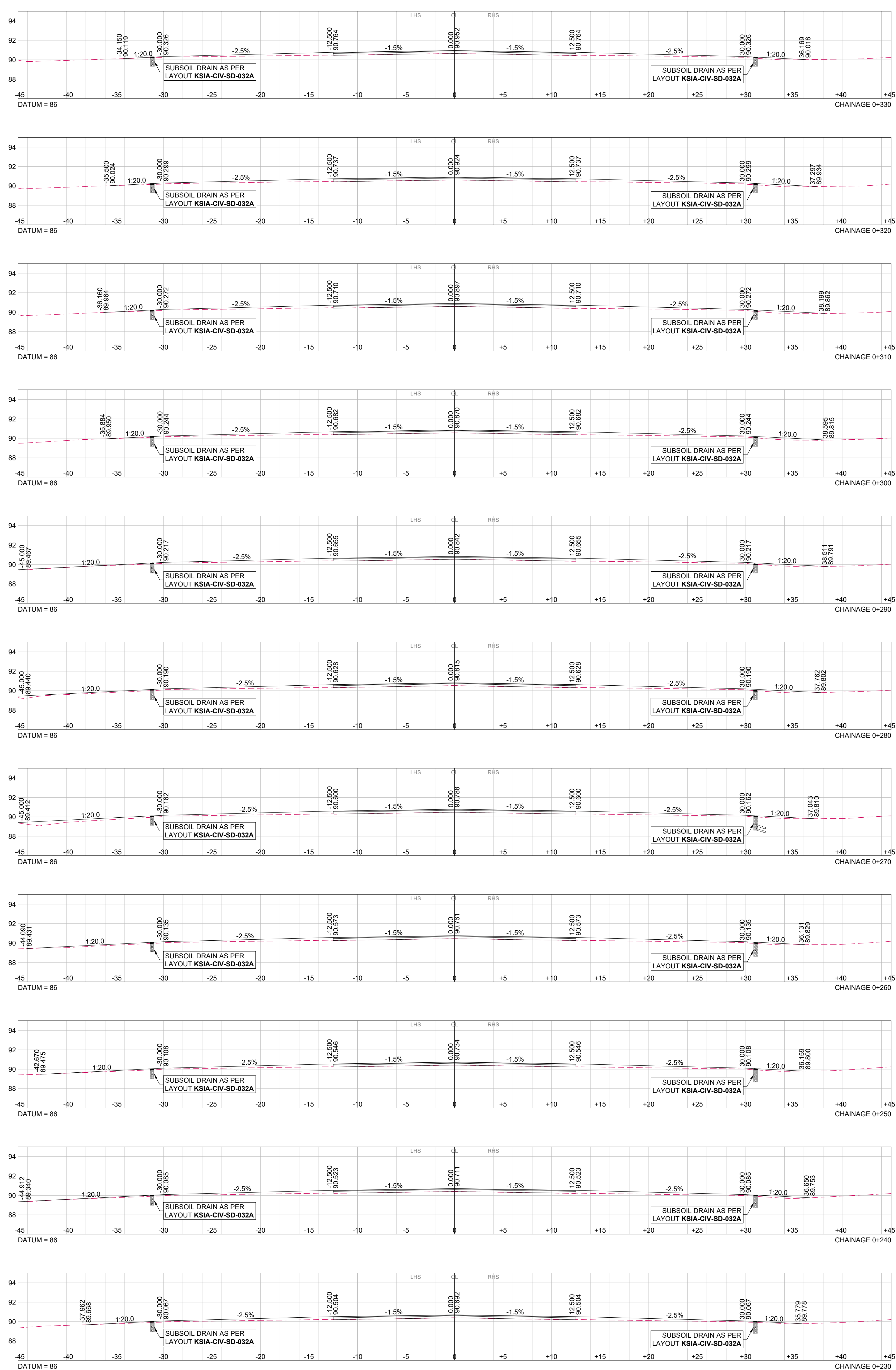
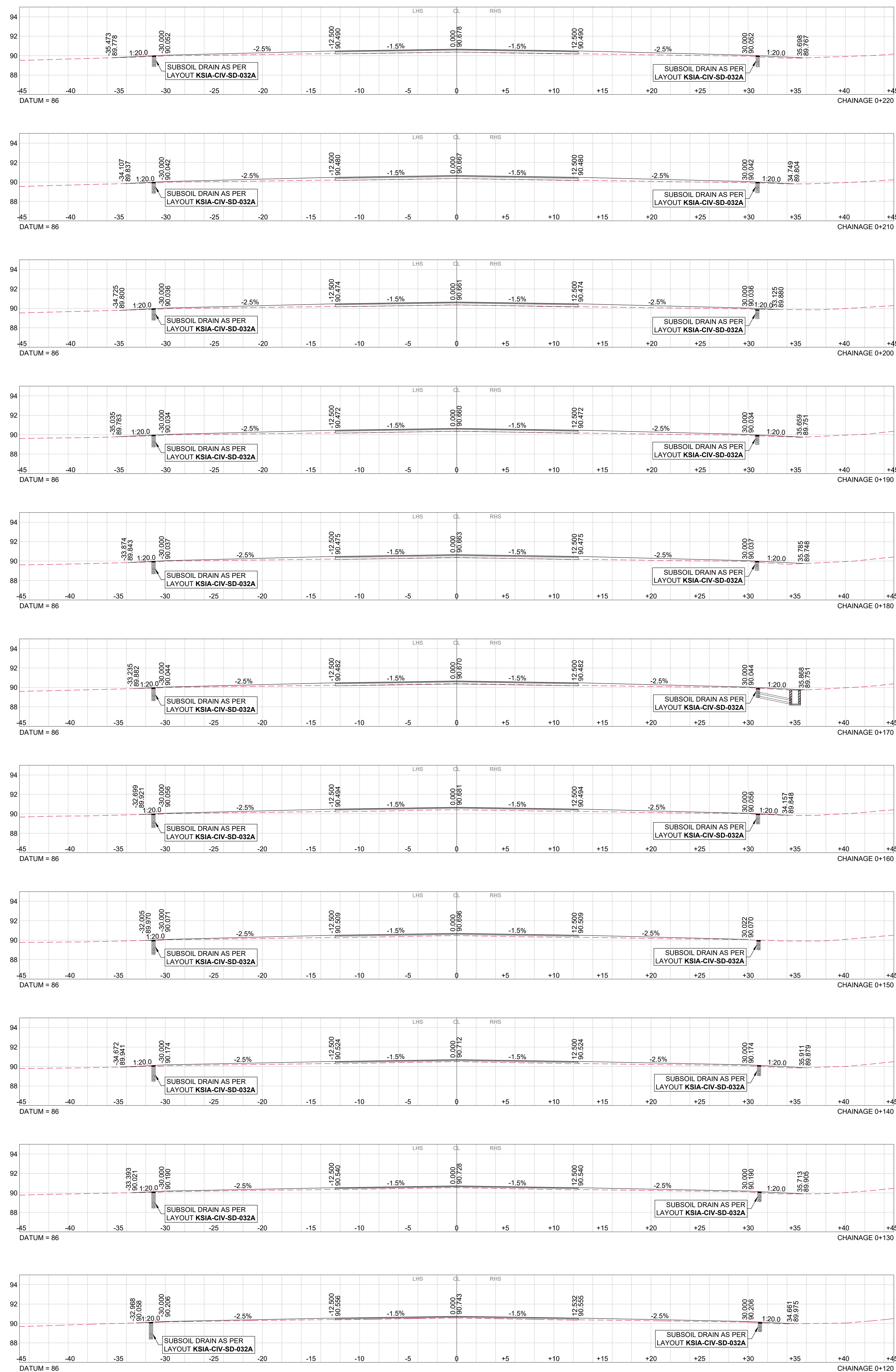
KSIA-CIV-LL-007

NOTE:
SEE LAYOUTS **KSIA-CIV-DP-021 & 022**
FOR STORMWATER SETTING OUT &
LAYOUTS **KSIA-CIV-DL-024 TO 031** FOR
STORMWATER LONGITUDINAL
SECTIONS

[illegible]

KSIA-CIV-CS-008

NOTE:
SEE LAYOUTS **KSIA-CIV-DP-021 & 022**
FOR STORMWATER SETTING OUT &
LAYOUTS **KSIA-CIV-DL-024 TO 031** FOR
STORMWATER LONGITUDINAL
SECTIONS

[illegible]

FOR DISCUSSION		DESIGNED BY:	Y.NANKHOOP/PrE
<p>NANKHO CONSULTING ENGINEERS RETAINS COPYRIGHT OVER ALL INTELLECTUAL PROPERTY INCLUDING DESIGN AND DOCUMENTS CREATED UNDER THIS APPOINTMENT FOR THE SPECIFIED PROJECT. THE CLIENT MAY ONLY USE THESE DESIGNS AND DOCUMENTS FOR THE SPECIFIED PROJECT. ANY OTHER USE, REPRODUCTION, OR REUSE OF ANY PART OF THE DESIGN OR DOCUMENTS WITHOUT THE WRITTEN PERMISSION OF NANKHO CONSULTING ENGINEERS SHALL BE CONSIDERED A VIOLATION OF THE AGREEMENT AND WILL BE TREATED AS A COPYRIGHT INFRINGEMENT, AND ALL RIGHTS ARE RESERVED.</p>		CHECKED BY:	A.N.SUKURAMP/PrEEng2016070173
		DRAWN BY:	K.RAMSUROOP
		CHECKED BY:	A.N.SUKURAMP/PrEEng2016070173
<p>ALL DIMENSIONS MUST BE CONFIRMED ON-SITE BEFORE WORK BEGINS. ANY DISCREPANCIES MUST BE REFERRED TO THE PROJECT MANAGER/OWNER.</p>			

CLIENT:
ing: 202302737)



AIRPORTS COMPANY
SOUTH AFRICA

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 **NANKHOO**
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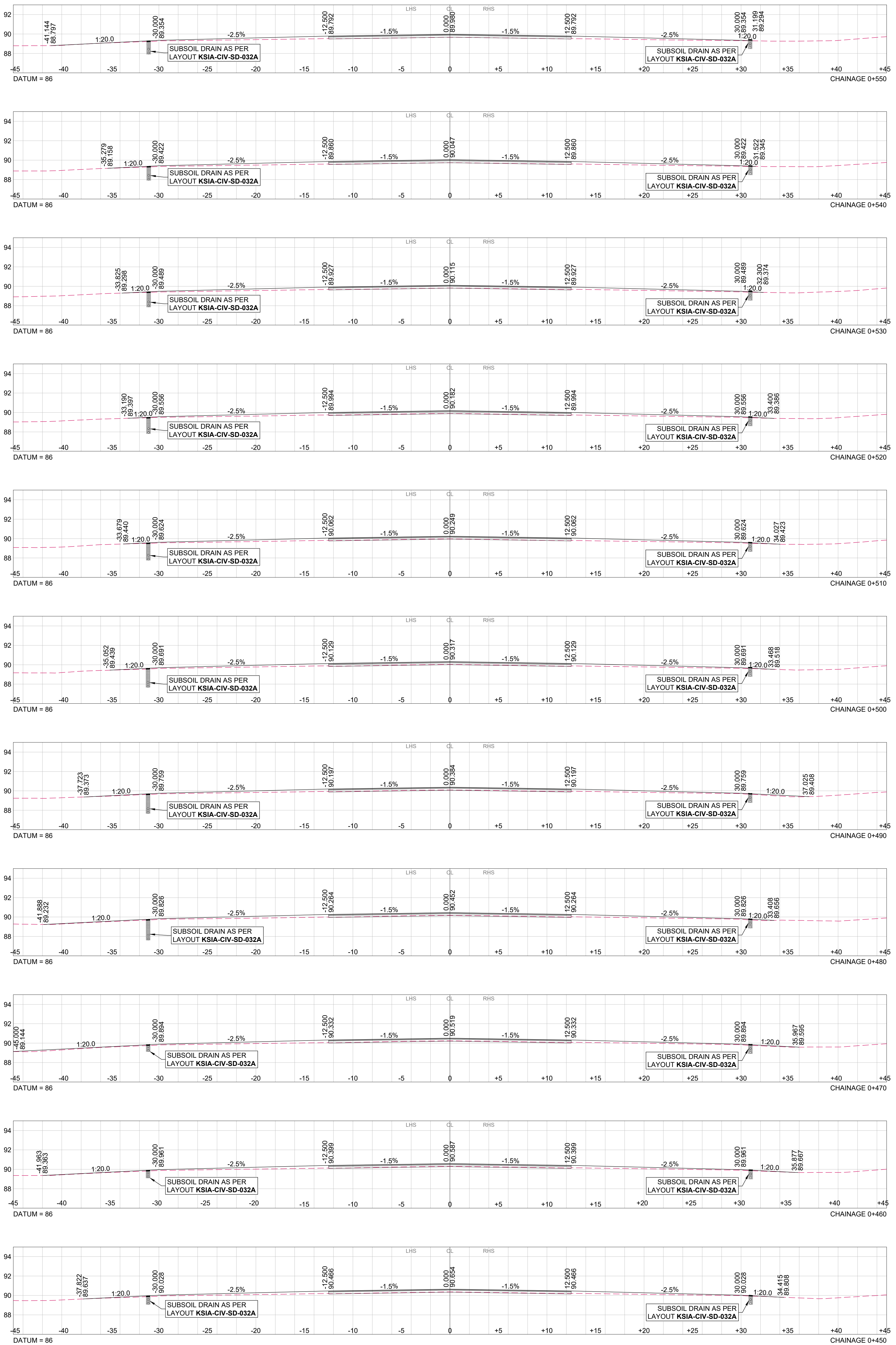
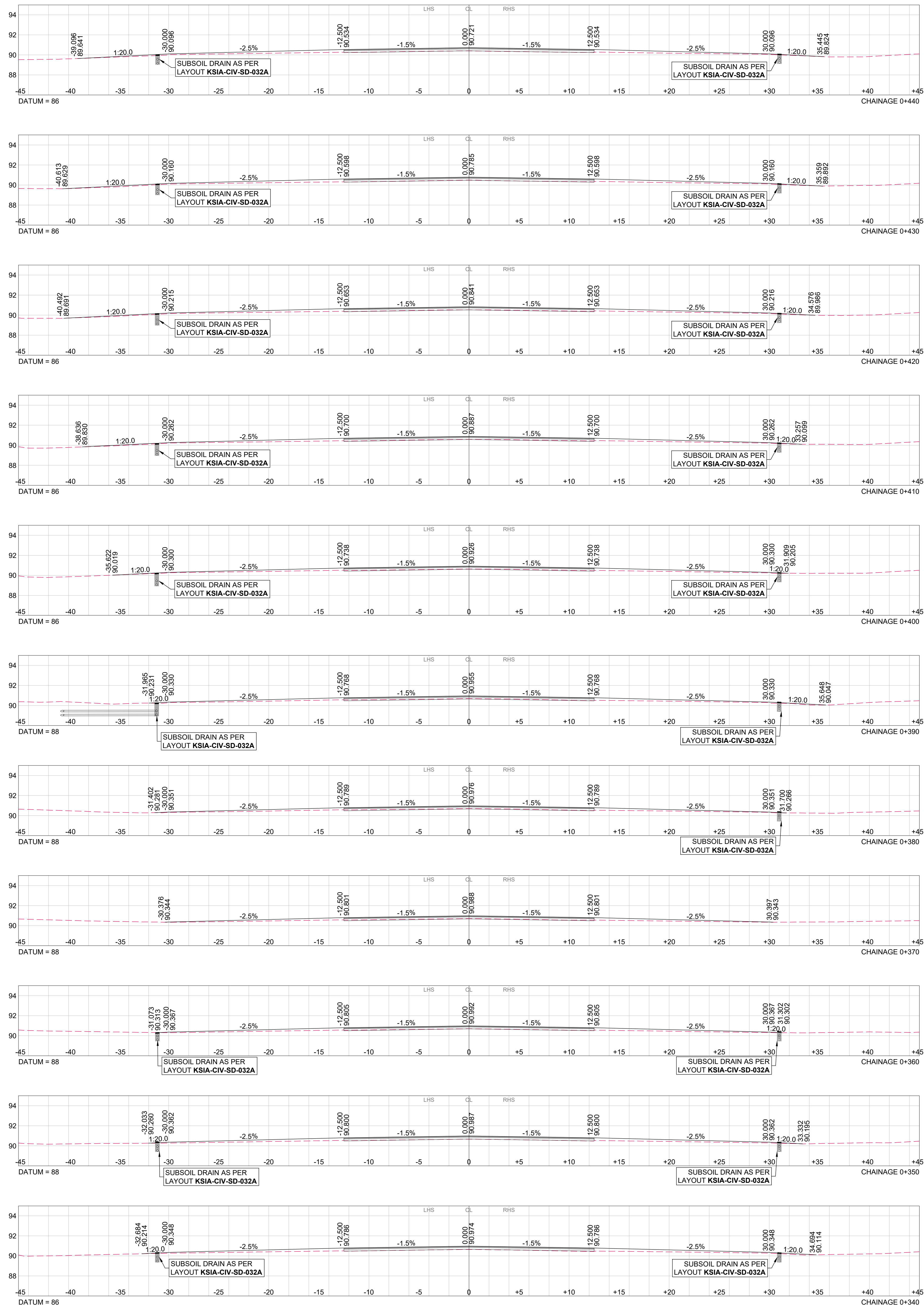
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		SIGNATURE				
		PR NO.				
		DATE				
		CLIENT				
SUPERVISING ENGINEER		DATE				
-----		-----				
SUPERVISING AUTHORITY		SIGNATURE		DATE		
		DESIGNED		DRAWN		
		Y. NANKHOO		K.RAMSUROOP		
				CHECKED		
				A.N. SUKURAM		

AIRPORTS COMPANY SOUTH AFRICA
KING SHAKA INTERNATIONAL AIRPORT

COMPLETION OF BRAVO TAXIWAY
CH 0+000 TO CH 1+020
BRAVO - CROSS SECTIONS 02 OF 06

FOR TENDER PURPOSES			
ORIGINAL SIZE A0	SCALE HOR: 200 VERT: 200	SHEET OF	13 49
PLAN NO.:- KSIA-CIV-CS-009			

NOTE:
SEE LAYOUTS **KSIA-CIV-DP-021 & 022**
FOR STORMWATER SETTING OUT &
LAYOUTS **KSIA-CIV-DL-024 TO 031** FOR
STORMWATER LONGITUDINAL
SECTIONS



NOTES									
A	28/05/25	FOR TENDER PURPOSES							
SYMBOL	DATE	DESCRIPTION				CHECKED	SIGNED		
REVISION SCHEDULE									

FOR DISCUSSION

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DESIGNED BY:	Y.NANKHOOT(Pr.Eng: 202302737)
CHECKED BY:	A.N.SUKURAM(Pr.TechEng:201670173)
DRAWN BY:	K.RAMSUROOP
CHECKED BY:	A.N.SUKURAM(Pr.TechEng:201670173)
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SUPERVISING ENGINEER

SUPERVISING AUTHORITY

CONSULTING ENGINEER

SIGNATURE	PR NO.	DATE
CLIENT		

SIGNATURE		DATE
DESIGNED	DRAWN	CHECKED
Y.NANKHOO	K.RAMSUROOP	A.N.SUKURAM

AIRPORTS COMPANY SOUTH AFRICA
KING SHAKA INTERNATIONAL AIRPORT

COMPLETION OF BRAVO TAXIWAY
CH 0+000 TO CH 1+020
BRAVO - CROSS SECTIONS 03 OF 06

FOR TENDER PURPOSES

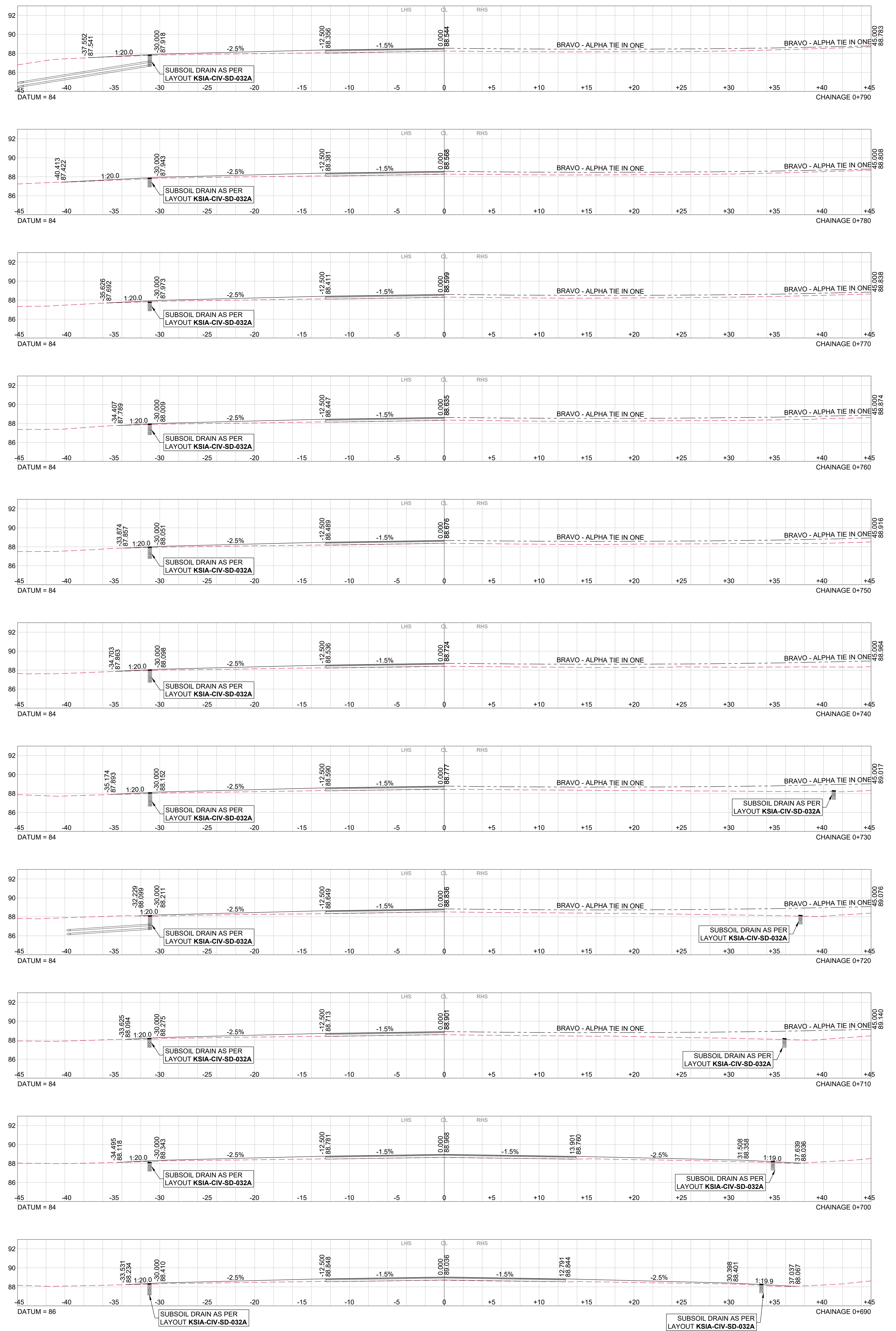
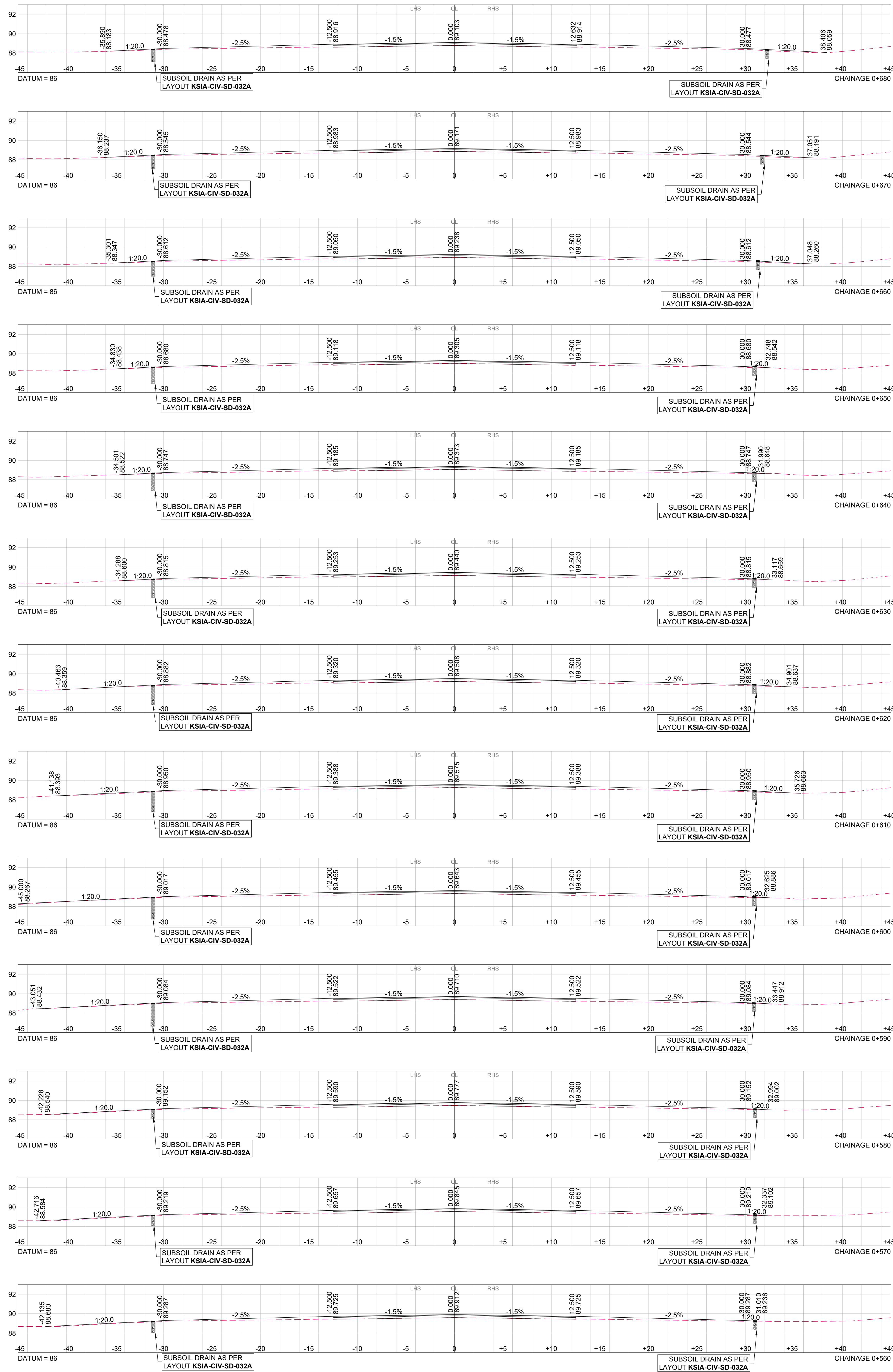
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PLAN NO.:-

KSIA-CIV-CS-010

KSIA-CIV-CS-010

NOTE:
SEE LAYOUTS **KSIA-CIV-DP-021 & 022**
FOR STORMWATER SETTING OUT &
LAYOUTS **KSIA-CIV-DL-024 TO 031** FOR
STORMWATER LONGITUDINAL
SECTIONS



NOTES					
	A	28/05/25	FOR TENDER PURPOSES		
	SYMBOL	DATE	DESCRIPTION	CHECKED	SIGNED
	REVISION SCHEDULE				

FOR DISCUSSION

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DESIGNED BY: Y.NANKHOO(Pr.Eng: 202302737)

CHECKED BY: A.N.SUKURAM(Pr.TechEng:201670173)

DRAWN BY: K.RAMSUROOP

CHECKED BY _____

DATE OF APPROVAL: _____

CLIENT:



CONSULTANT:



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SUPERVISING ENGINEER

SUPERVISING AUTHORITY

CONSULTING ENGINEER

SIGNATURE	PR NO.	DATE
CLIENT		
SIGNATURE	DATE	
DESIGNED	DRAWN	CHECKED
Y.NANKHOO	K.RAMSUROOP	A.N.SUKURAM

AIRPORTS COMPANY SOUTH AFRICA
KING SHAKA INTERNATIONAL AIRPORT

COMPLETION OF BRAVO TAXIWAY
CH 0+000 TO CH 1+020
BRAVO - CROSS SECTIONS 04 OF 06

FOR TENDER PURPOSES

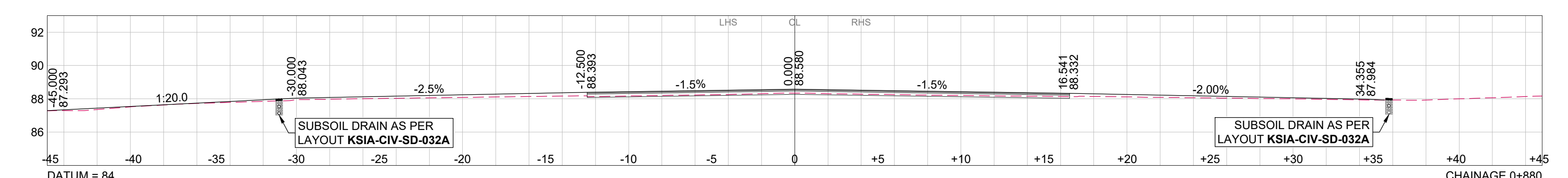
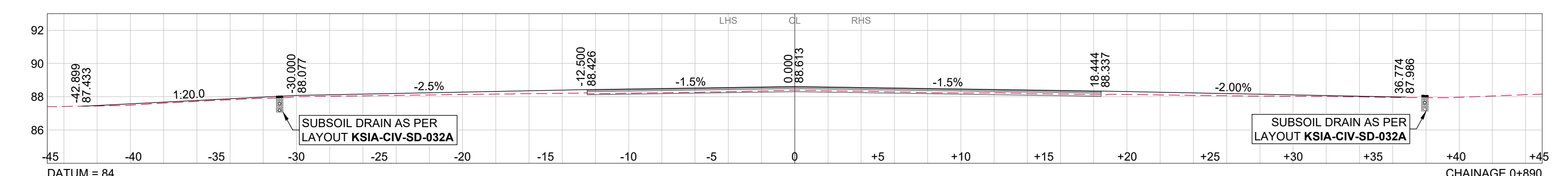
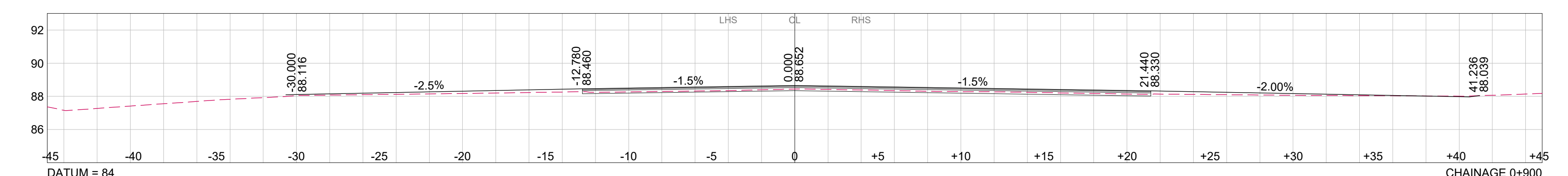
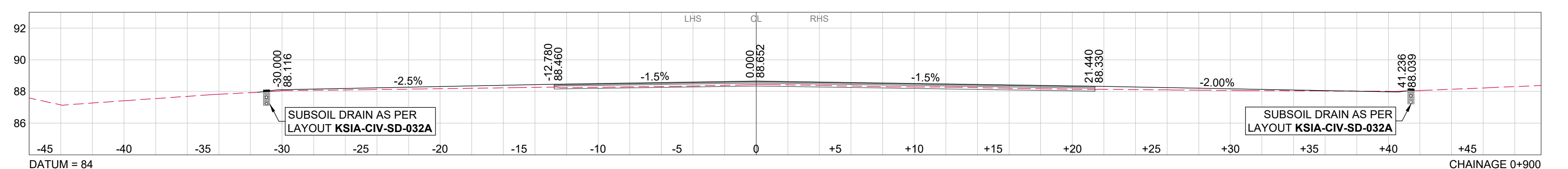
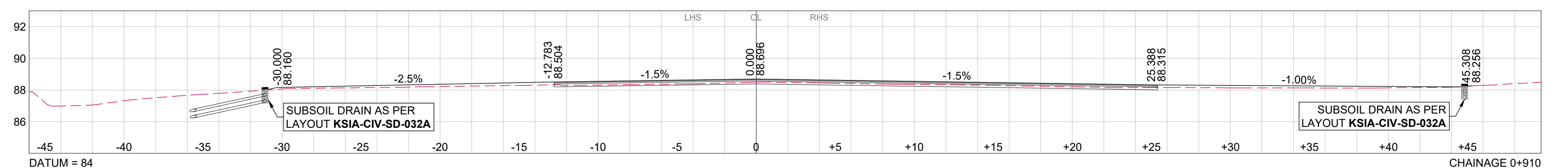
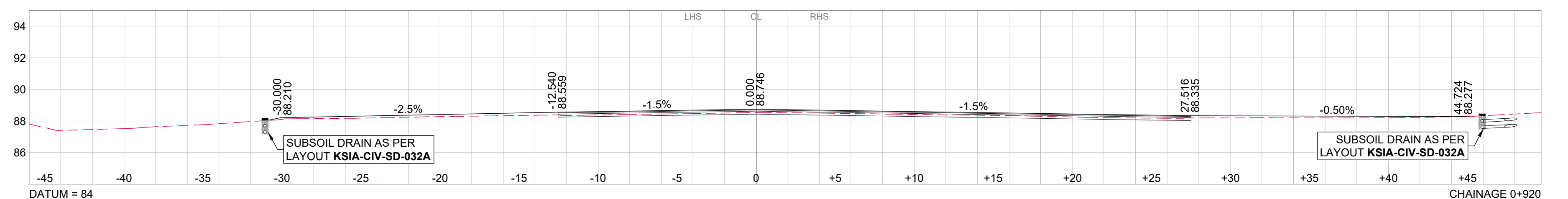
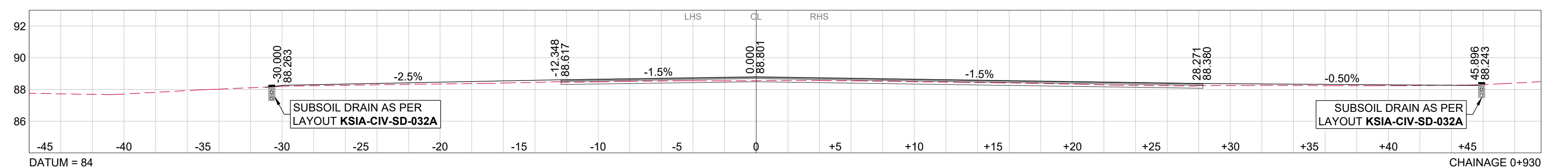
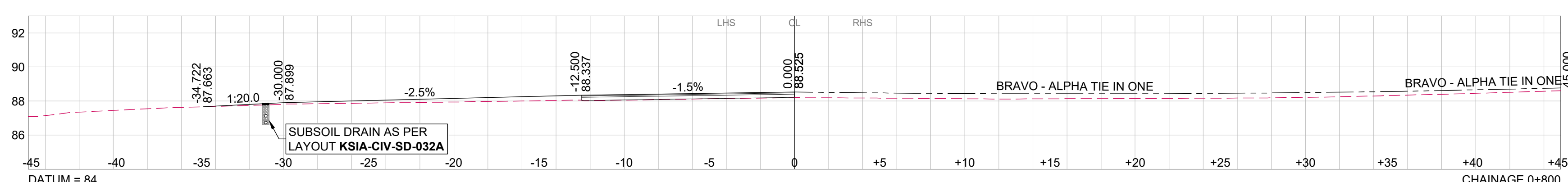
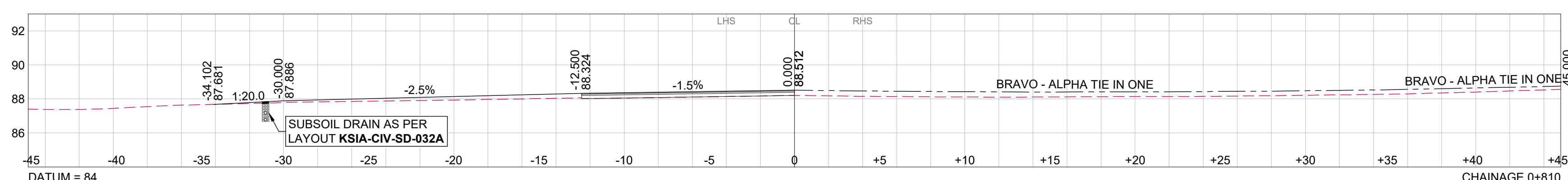
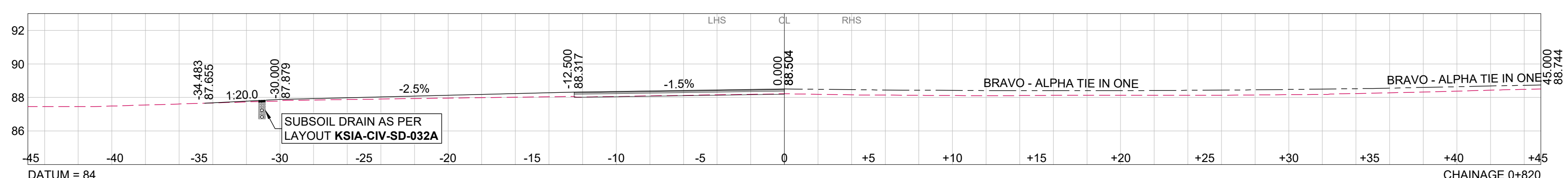
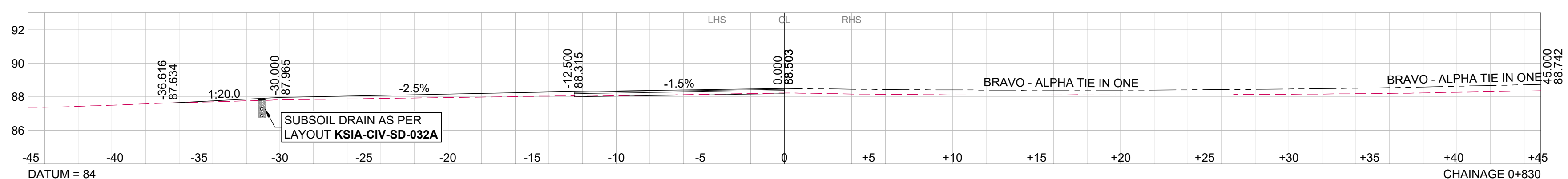
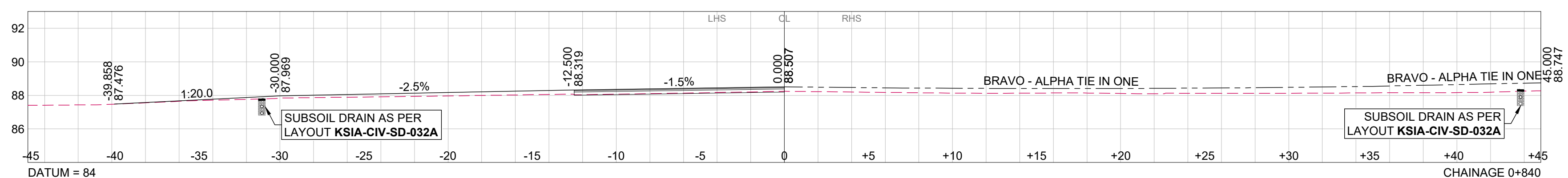
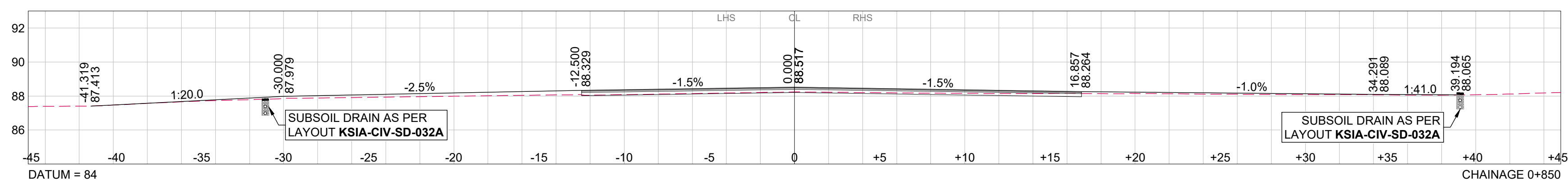
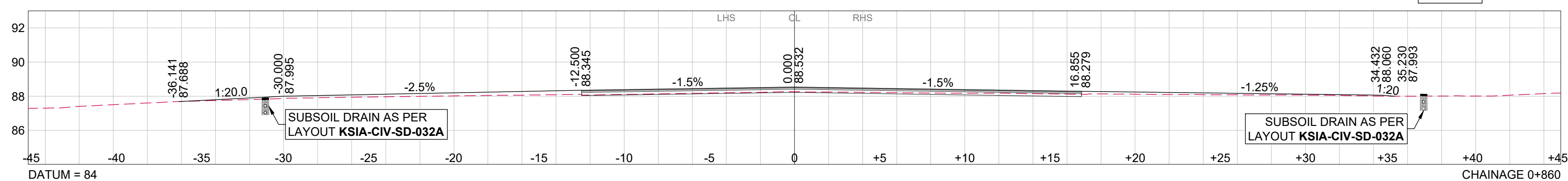
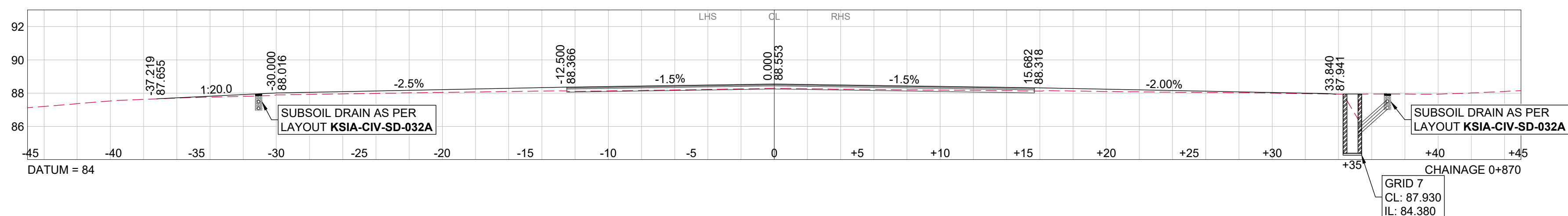
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PLAN NO.:-

KSIA-CIV-CS-011

KSIA-CIV-CS-011

NOTE:
SEE LAYOUTS **KSIA-CIV-DP-021 & 022**
FOR STORMWATER SETTING OUT &
LAYOUTS **KSIA-CIV-DL-024 TO 031** FOR
STORMWATER LONGITUDINAL
SECTIONS



NOTES							
	A	26/05/25	FOR TENDER PURPOSES				
	SYMBOL	DATE	DESCRIPTION			CHECKED	SIGNED
	REVISION SCHEDULE						

FOR DISCUSSION

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 ENGINEER.

DESIGNED BY: Y.NANKHOO(Pr.Eng: 202302737)

CHECKED BY: A.N.SUKURAM(Pr.TechEng:201670173)

DRAWN BY: K.RAMSUROOP

CHECKED BY: A.N.SUKURAM(Pr.TechEng:201670173)

DATE OF APPROVAL:

CLIENT:	
---------	--



CONSULTANT:



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AS BUILT

SUPERVISING ENGINEER

SUPERVISING AUTHORITY

CONSULTING ENGINEER

SIGNATURE	PR NO.	DATE
-----------	--------	------

060111

SIGNATURE		DATE
DESIGNED	DRAWN	CHECKED

T. NANKHOO	K. RAMSISOOF	A. N. SORURAM
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AIRPORTS COMPANY SOUTH AFRICA
KING SHAKA INTERNATIONAL AIRPORT

COMPLETION OF BRAVO TAXIWAY

CH 0+000 TO CH 1+020

BRAVO - CROSS SECTIONS 05 OF 06

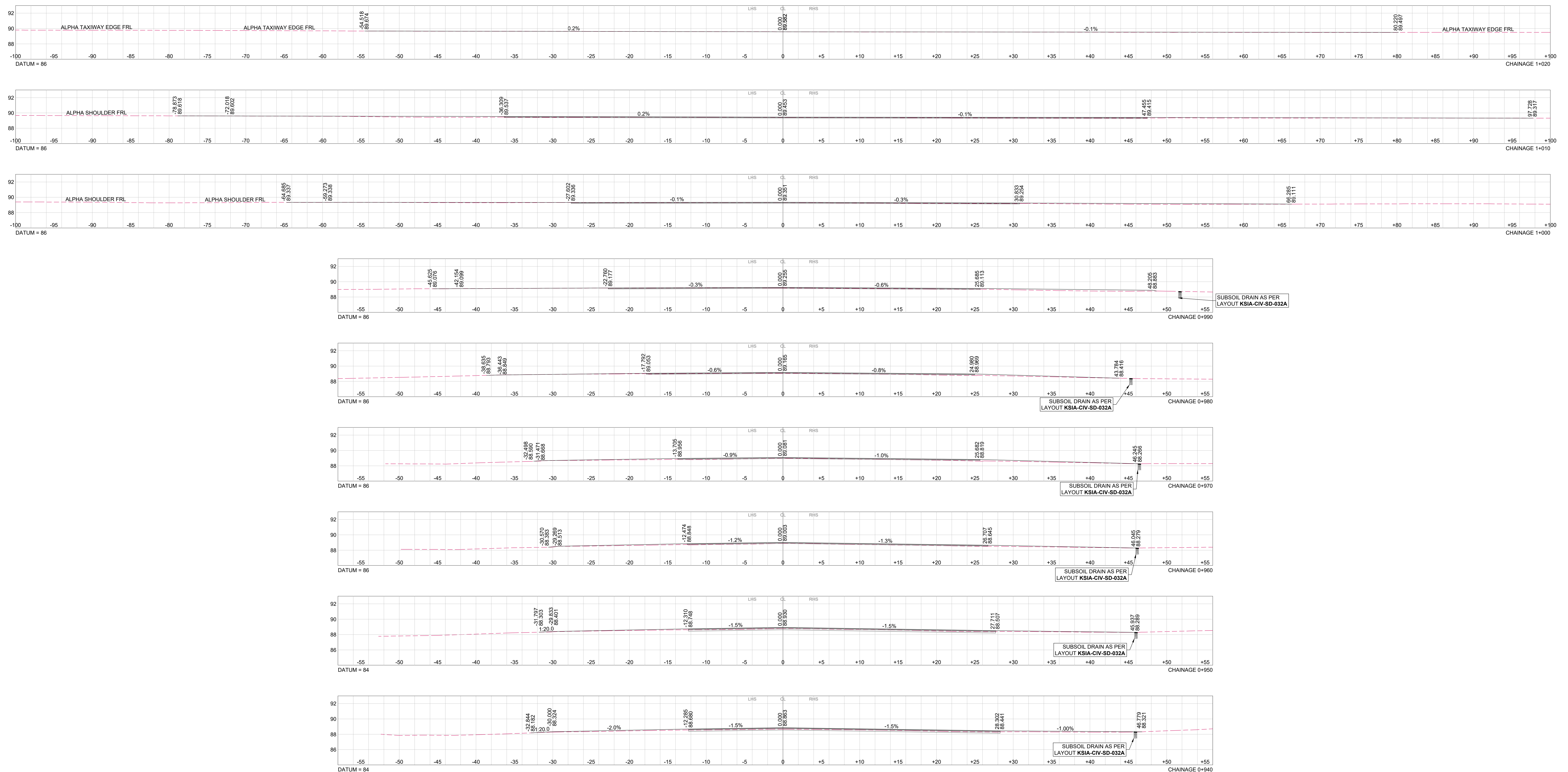
FOR TENDER PURPOSES

ORIGINAL SIZE A0	SCALE HOR: 200 VERT: 200	SHEET OF	16 49
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PLAN NO.:-

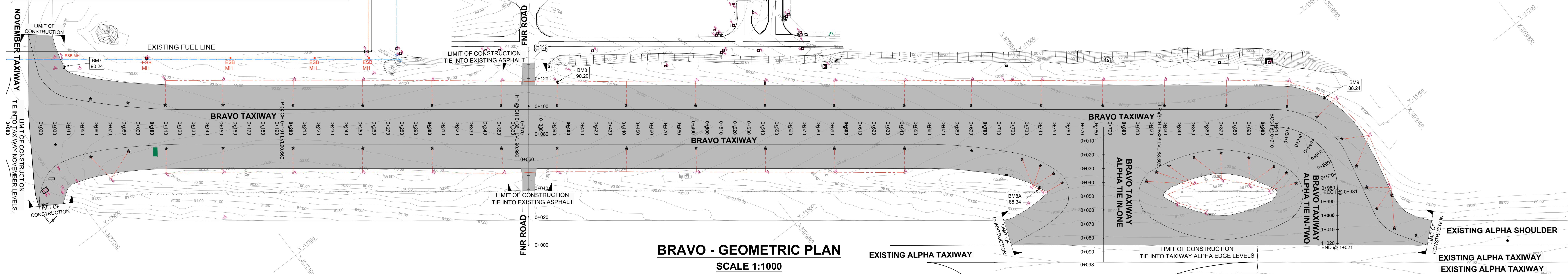
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NOTE:
SEE LAYOUTS **KSIA-CIV-DP-021 & 022**
FOR STORMWATER SETTING OUT &
LAYOUTS **KSIA-CIV-DL-024 TO 031** FOR
STORMWATER LONGITUDINAL
SECTIONS



NOTES					FOR DISCUSSION					DESIGNED BY: Y.NANKHOO(P:Eng: 202302737)		CLIENT:		CONSULTANT:		AS BUILT		CONSULTING ENGINEER			AIRPORTS COMPANY SOUTH AFRICA KING SHAKA INTERNATIONAL AIRPORT			ORIGINAL SIZE A0	SCALE HOR: 200 VERT: 200	SHEET OF	17 49					
NANKHOO CONSULTING ENGINEERS RETAINS COPYRIGHT OVER ALL INTELLECTUAL PROPERTY, INCLUDING DESIGNS AND DRAWINGS CREATED UNDER THE AGREEMENT FOR THIS SPECIFIED PROJECT. THE CLIENT MAY ONLY USE THESE DESIGNS AND DOCUMENTS FOR THEIR INTENDED PURPOSE ON THIS PROJECT. PROVIDED PAYMENT FOR THE DESIGN HAS BEEN RECEIVED ANY OTHER USE, WHETHER OR NOT PAYMENT HAS BEEN MADE, CONSTITUTES A COPYRIGHT INFRINGEMENT, AND ALL RIGHTS ARE RESERVED.					ALL DIMENSIONS MUST BE CONFIRMED ON-SITE BEFORE WORK BEGINS. ANY DISCREPANCIES MUST BE REFERRED TO THE ENGINEER.					CHECKED BY: A.N.SUKURAM(P:TechEng201670173)		 AIRPORTS COMPANY SOUTH AFRICA		 NANKHOO Consulting Engineers		SUPERVISING ENGINEER		DATE		SIGNATURE			PR.NO		DATE		COMPLETION OF BRAVO TAXIWAY CH 0+000 TO CH 1+020 BRAVO - CROSS SECTIONS 06 OF 06			PLAN NO.:- KSIA-CIV-CS-013		
										DRAWN BY: K.RAMSUROOP										SIGNATURE			DRAWN		CHECKED							
										A		26/05/25		FOR TENDER PURPOSES		CHECKED BY: A.N.SUKURAM(P:TechEng201670173)		DATE OF APPROVAL:		SIGNATURE			DESIGNED		DRAWN		CHECKED					
SYMBOL		DATE		DESCRIPTION		CHECKED		SIGNED																								
REVISION SCHEDULE																																

- GENERAL NOTES**
1. ALL LEVELS, DIMENSIONS AND SETTING OUT DETAILS TO BE VERIFIED BY THE CONSULTANT, SITE ENGINEER AND CONTRACTORS ON SITE PRIOR TO CONSTRUCTION.
 2. ALL EXISTING DRAINAGE CULVERTS ARE TO BE INSPECTED, AND ANY FOUND IN UNSERVICEABLE CONDITION ARE TO BE REPLACED - TO BE CONFIRMED BY SITE ENGINEER.
 3. CULVERT INVERTS ARE TO BE DECIDED BY ENGINEER ON SITE UNLESS OTHERWISE, MIN. SLOPE = 2%.
 4. MINIMUM SUBSOIL DRAIN SLOPES = 0.50%.
 5. FOR EROSION CONTROL, RENO MATTRESSES ARE RECOMMENDED AT CULVERT OUTLETS, TO BE CONFIRMED BY ENGINEER ON SITE.
 6. EARTH BERMS ARE TO BE CONSTRUCTED AT CULVERT INLETS TO DIRECT STORM WATER INTO CULVERTS WHERE NECESSARY, TO BE CONFIRMED BY ENGINEER ON SITE.
 7. EXISTING SERVICES AND FENCING AFFECTED BY CONSTRUCTION ARE TO BE REMOVED /RELOCATED WHERE NECESSARY, TO BE CONFIRMED BY ENGINEER ON SITE.
 8. HAND EXCAVATION / PROVING OF SERVICES TO BE DONE WITH CAUTION & UNDER ACSA SUPERVISION.
 9. ALL NEW ROAD MARKING REQUIREMENTS ARE TO CONFORM TO THE INTERNATIONAL CIVIL AVIATION ORGANIZATION STANDARDS (ICAO).
 10. ALL WORK IS TO BE CARRIED OUT IN ACCORDANCE WITH COTO SPECIFICATIONS FOR ROAD WORKS FOR STATE ROAD AUTHORITIES.
 11. ALL SURVEY AND SETTING OUT DATA PROVIDED IS BASED ON (WGS 84).
 12. NEW FILLS AND EXPOSED CUTTINGS ARE TO BE TOP-SOILED AND VEGETATED IMMEDIATELY AFTER CONSTRUCTION TO PREVENT EROSION, TO BE CONFIRMED BY ENGINEER ON SITE.



SETTING OUT - CONTROL POINTS			
POINT	Y CO-ORDINATE	X CO-ORDINATE	LEVEL
BM7	11091.050	-3277150.108	90.24
BM8	11315.132	-3276874.010	90.20
BM8A	11586.149	-3276644.266	88.34
BM9	11658.861	-3276442.022	88.24
BM10	11744.149	-3276445.717	89.02

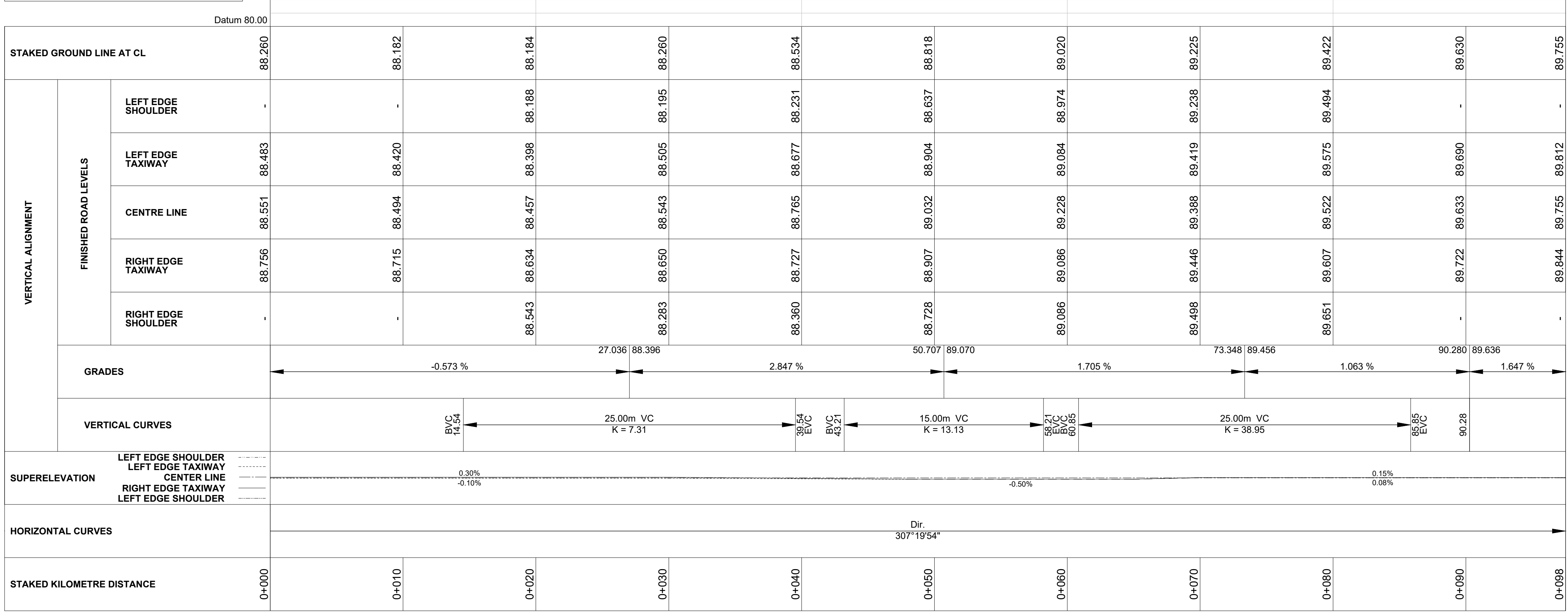
BRAVO TAXIWAY - ALPHA TIE IN - CURVE SETTING OUT DATA (WGS 84)							
POSITION	CHAINAGE	Y CO-ORDINATE	X CO-ORDINATE	RADIUS (m)	CURVE NO.	TANGENT LENGTH (m)	DEFLECTION
START	0+000	-11579.090	3276581.120	0.00	0	0.00	0°00'00"
END	0+098	-11656.620	3276640.250	0.00	1	0.00	0°00'00"

FNR ROAD - CURVE SETTING OUT DATA (WGS 84)							
POSITION	CHAINAGE	Y CO-ORDINATE	X CO-ORDINATE	RADIUS (m)	CURVE NO.	TANGENT LENGTH (m)	DEFLECTION
START	0+000	-11395.710	3276961.860	0.00	0	0.00	0°00'00"
END	0+143	-11282.369	3276875.412	0.00	1	0.00	0°00'00"

KEY PLAN

NATURAL GROUND LINE - - - - -

FINISHED ROAD LEVEL - - - - -

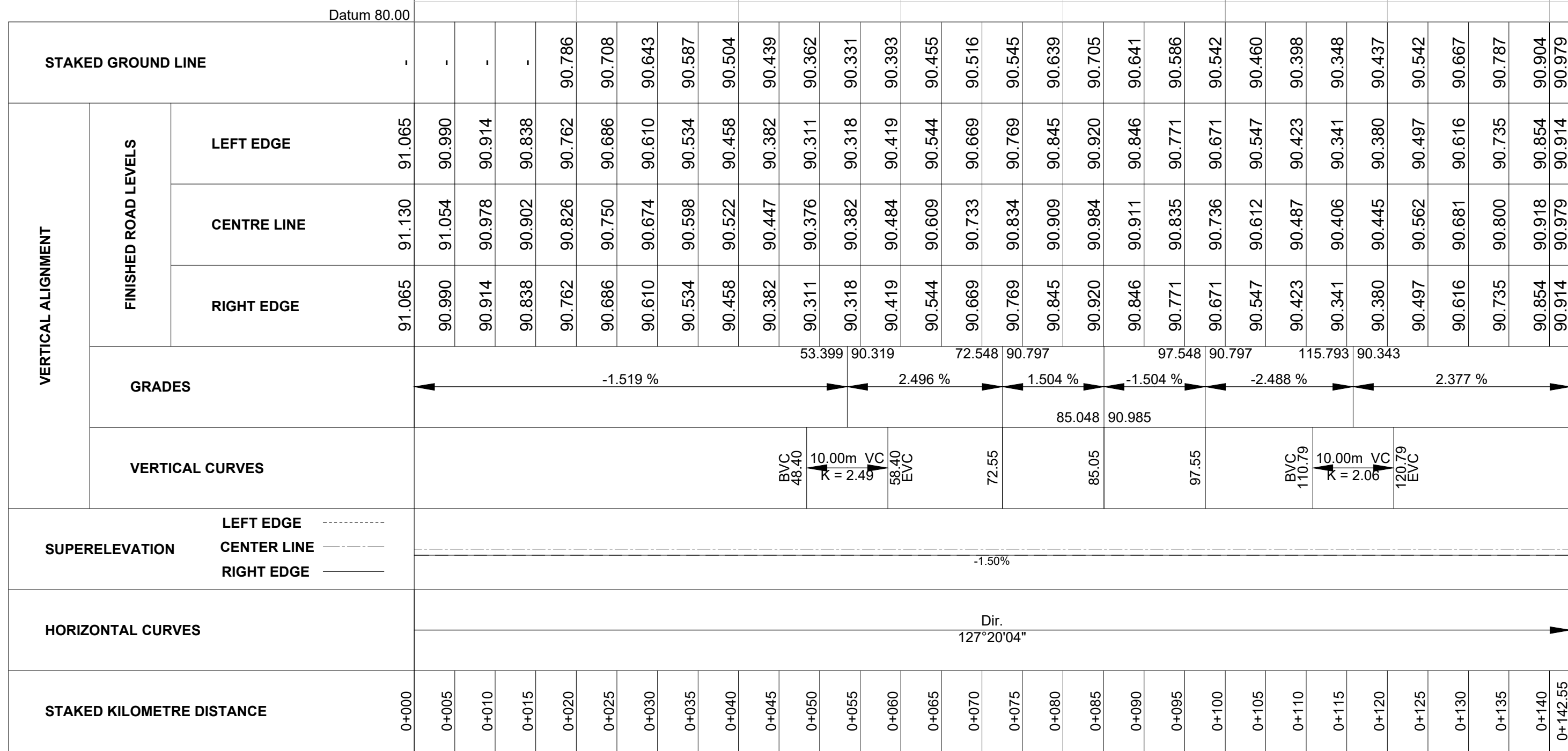


ALPHA TIE IN- ONE - LONGITUDINAL SECTION
CH 0+000 TO CH 0+098
SCALE: HOR: 1:200 VERT: 1:200

KEY PLAN

NATURAL GROUND LINE - - - - -

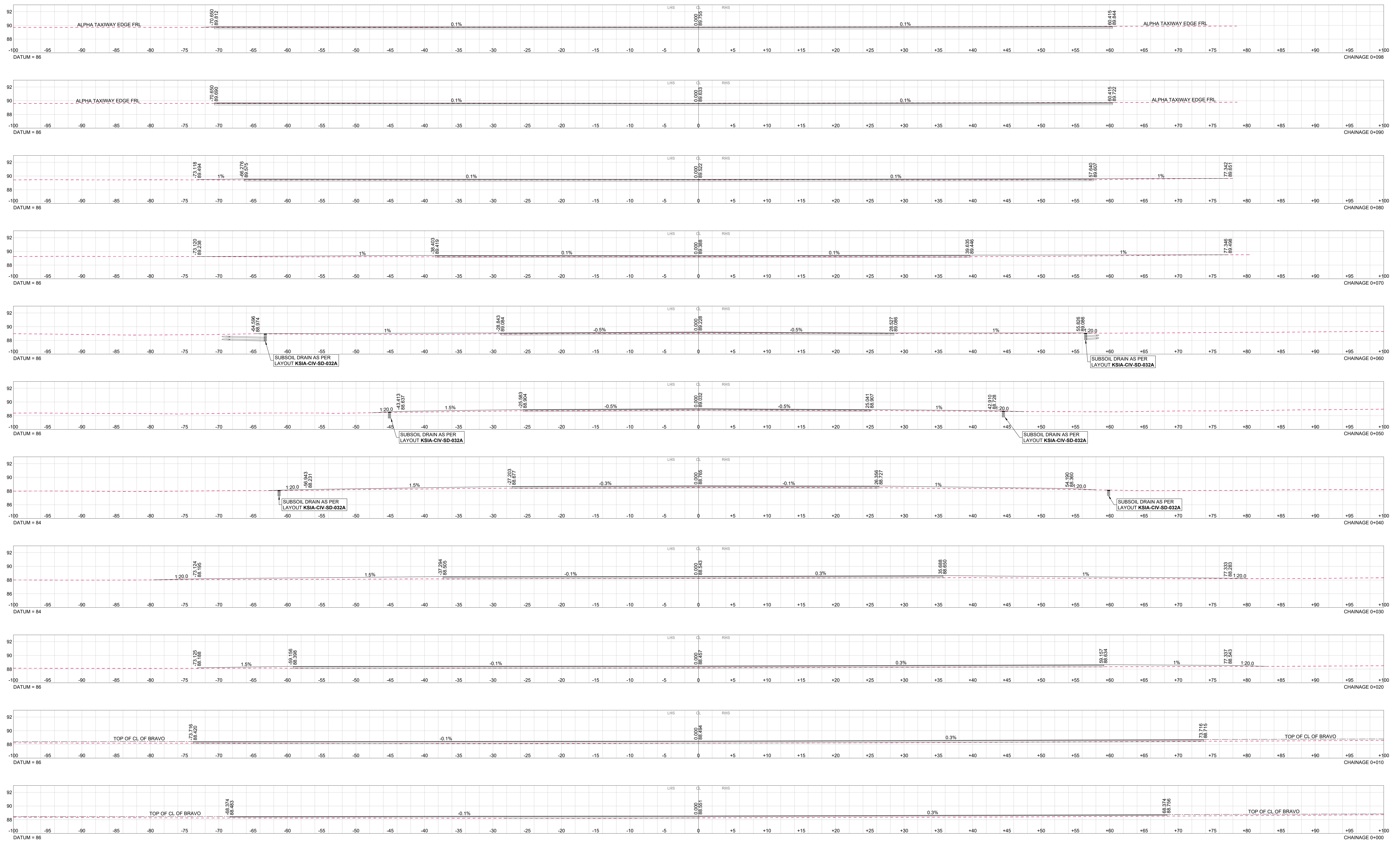
FINISHED ROAD LEVEL - - - - -



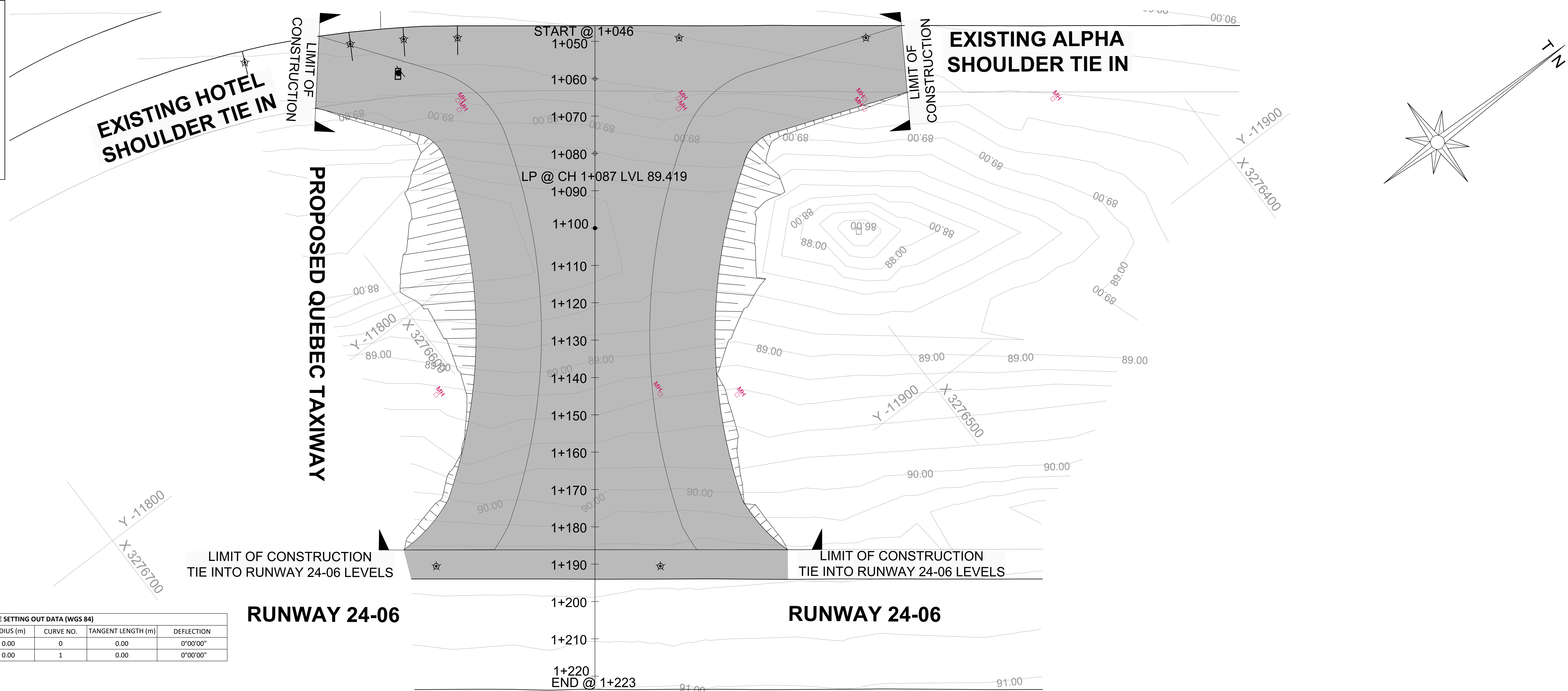
FNR - ROLLOVER LONGITUDINAL SECTION
CH 0+000 TO CH 0+143
SCALE: HOR: 1:500 VERT: 1:200

NOTES					FOR DISCUSSION					CONSULTANT:					AS BUILT					CONSULTING ENGINEER					AIRPORTS COMPANY SOUTH AFRICA KING SHAKA INTERNATIONAL AIRPORT					ORIGINAL SIZE A0	SCALE AS SHOWN	SHEET OF	18 49																					
					DESIGNED BY: Y. NANKHOO(Pr.Eng: 202302737)															SIGNATURE _____ PR NO. _____ DATE _____																																		
					CHECKED BY: A. N.SUKURAM(Pr. TechEng:201670173)										SUPERVISING ENGINEER _____ DATE _____					CLIENT _____																																		
					DRAWN BY: K.RAMSUROOP															SIGNATURE _____ PR NO. _____ DATE _____																																		
					CHECKED BY: A. N.SUKURAM(Pr. TechEng:201670173)															DRAWN _____					CHECKED _____																													
					DATE OF APPROVAL: _____															Y. NANKHOO					K.RAMSUROOP					A. N.SUKURAM																								
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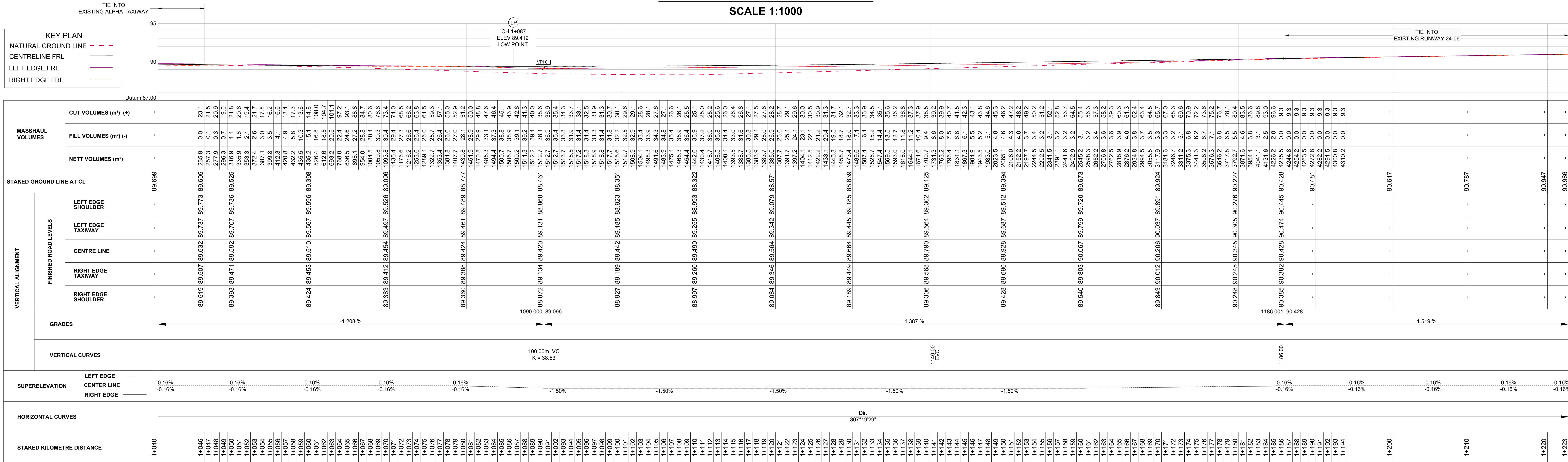
NOTE:
SEE LAYOUT **KSIA-CIV-DP-022** FOR
STORMWATER SETTING OUT & LAYOUT
KSIA-CIV-DL-027 FOR STORMWATER
LONGITUDINAL SECTIONS

[illegible]

1. ALL LEVELS, DIMENSIONS AND SETTING OUT DETAILS TO BE VERIFIED BY THE CONSULTANT, SITE ENGINEER AND CONTRACTORS ON SITE PRIOR TO CONSTRUCTION.
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12. NEW FILLS AND EXPOSED CUTTINGS ARE TO BE TOP-SOILED AND VEGETATED IMMEDIATELY AFTER CONSTRUCTION TO PREVENT EROSION, TO BE CONFIRMED BY ENGINEER ON SITE.



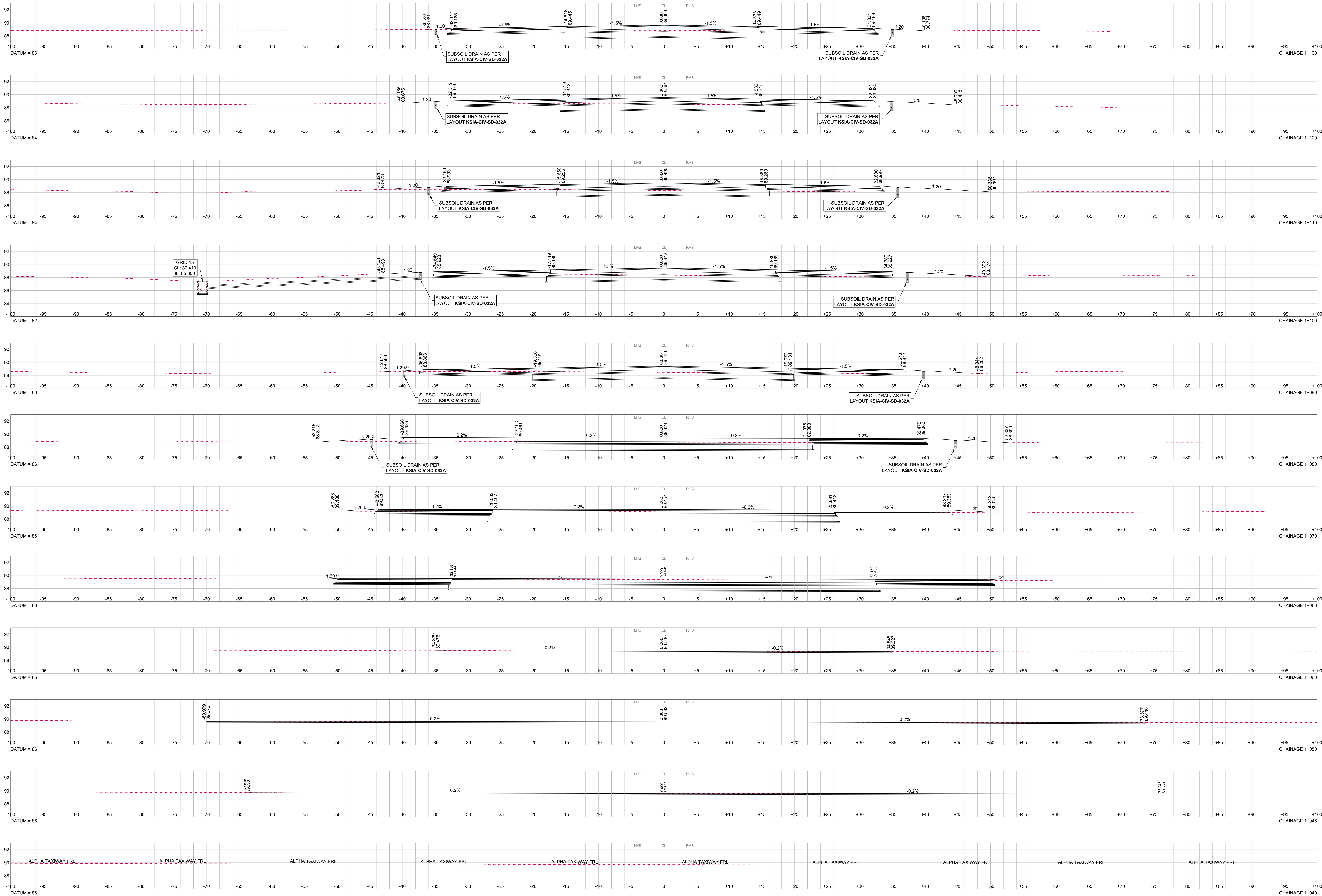
QUEBEC TAXIWAY - CURVE SETTING OUT DATA (WGS 84)							
POSITION	CHAINAGE	Y CO-ORDINATE	X CO-ORDINATE	RADIUS (m)	CURVE NO.	TANGENT LENGTH (m)	DEFLECTION
START	1+040	-11763.960	3276510.130	0.00	0	0.00	0°00'00"
END	1+223	-11909.270	3276620.920	0.00	1	0.00	0°00'00"



SCALE: HOR: 1:200 VERT: 1:200

NOTES					FOR DISCUSSION					DESIGNED BY: Y NANKHOO(Pr. Eng: 202302737)					CLIENT:					CONSULTANT:					AS BUILT					CONSULTING ENGINEER					AIRPORTS COMPANY SOUTH AFRICA KING SHAKA INTERNATIONAL AIRPORT					ORIGINAL SIZE A0	SCALE AS SHOWN	SHEET OF	20 49	
					NANKHOO CONSULTING ENGINEERS RETAINS COPYRIGHT OVER ALL INTELLECTUAL PROPERTY, INCLUDING DESIGNS AND DOCUMENTS CREATED UNDER THIS AGREEMENT FOR THE SPECIFIED PROJECT. THE CLIENT MAY ONLY USE THESE DESIGNS AND DOCUMENTS FOR THEIR INTENDED PURPOSE ON THIS PROJECT. PROVIDED PAYMENT FOR THE DESIGN HAS BEEN RECEIVED. ANY OTHER USE, WHETHER OR NOT PAYMENT HAS BEEN MADE, CONSTITUTES A COPYRIGHT INFRINGEMENT, AND ALL RIGHTS ARE RESERVED.					CHECKED BY: A.N.SUKURAM(Pr.TechEng:201607173)					 AIRPORTS COMPANY SOUTH AFRICA					 NANKHOO Consulting Engineers					-----SUPERVISING ENGINEER-----DATE----- -----SUPERVISING AUTHORITY-----					SIGNATURE-----PR NO.-----DATE----- CLIENT SIGNATURE-----DATE----- DESIGNED Y NANKHOO DRAWN K.RAMSUROOP CHECKED A.N.SUKURAM					COMPLETION OF BRAVO TAXIWAY CH 1+040 TO CH 1+223 QUEBEC TAXIWAY - GEOMETRIC DESIGN PLAN & LONGITUDINAL SECTION					PLAN NO.:- KSIA-CIV-LL-016				
A 26/05/25 FOR TENDER PURPOSES					DRAWN BY: K.RAMSUROOP					CHECKED BY: A.N.SUKURAM(Pr.TechEng:201607173)																																		
SYMBOL DATE DESCRIPTION CHECKED SIGNED					DATE OF APPROVAL:																																							
REVISIONS SCHEDULE					ALL DIMENSIONS MUST BE CONFIRMED ON-SITE BEFORE WORK BEGINS. ANY DISCREPANCIES MUST BE REFERRED TO THE ENGINEER																																							

NOTE:
SEE LAYOUT KSIA-CIV-DP-023 FOR
STORMWATER SETTING OUT & LAYOUT
KSIA-CIV-DL-032 FOR STORMWATER
LONGITUDINAL SECTIONS



NOTES

FOR DISCUSSION

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DESIGNED BY: Y.NANKHOO(Pr.Eng: 202302737)

CHECKED BY: A.N.SUKURAM(Pr.TechEng 201670173)

DRAWN BY: K.RAMSUROOP

CHECKED BY: A.N.SUKURAM(Pr.TechEng 201670173)

DATE OF APPROVAL:

AIRPORTS COMPANY SOUTH AFRICA

NANKHOO Consulting Engineers

GATEWAY OFFICE PARK, 1 BUSAR CLOSE, UMLHANGE 4021

TEL: (031) 5388310 FAX: 0861162352 EMAIL: nankhoo@nadb.co.za

AS BUILT

SUPERVISING ENGINEER DATE

SUPERVISING AUTHORITY

CONSULTING ENGINEER

SIGNATURE PR NO. DATE

CLIENT

SIGNATURE PR NO. DATE

DESIGNED Y.NANKHOO DRAWN K.RAMSUROOP CHECKED A.N.SUKURAM

AIRPORTS COMPANY SOUTH AFRICA KING SHAKA INTERNATIONAL AIRPORT

COMPLETION OF BRAVO TAXIWAY CH 1+040 TO CH 1+130 QUEBEC TAXIWAY - CROSS SECTIONS 01 OF 02

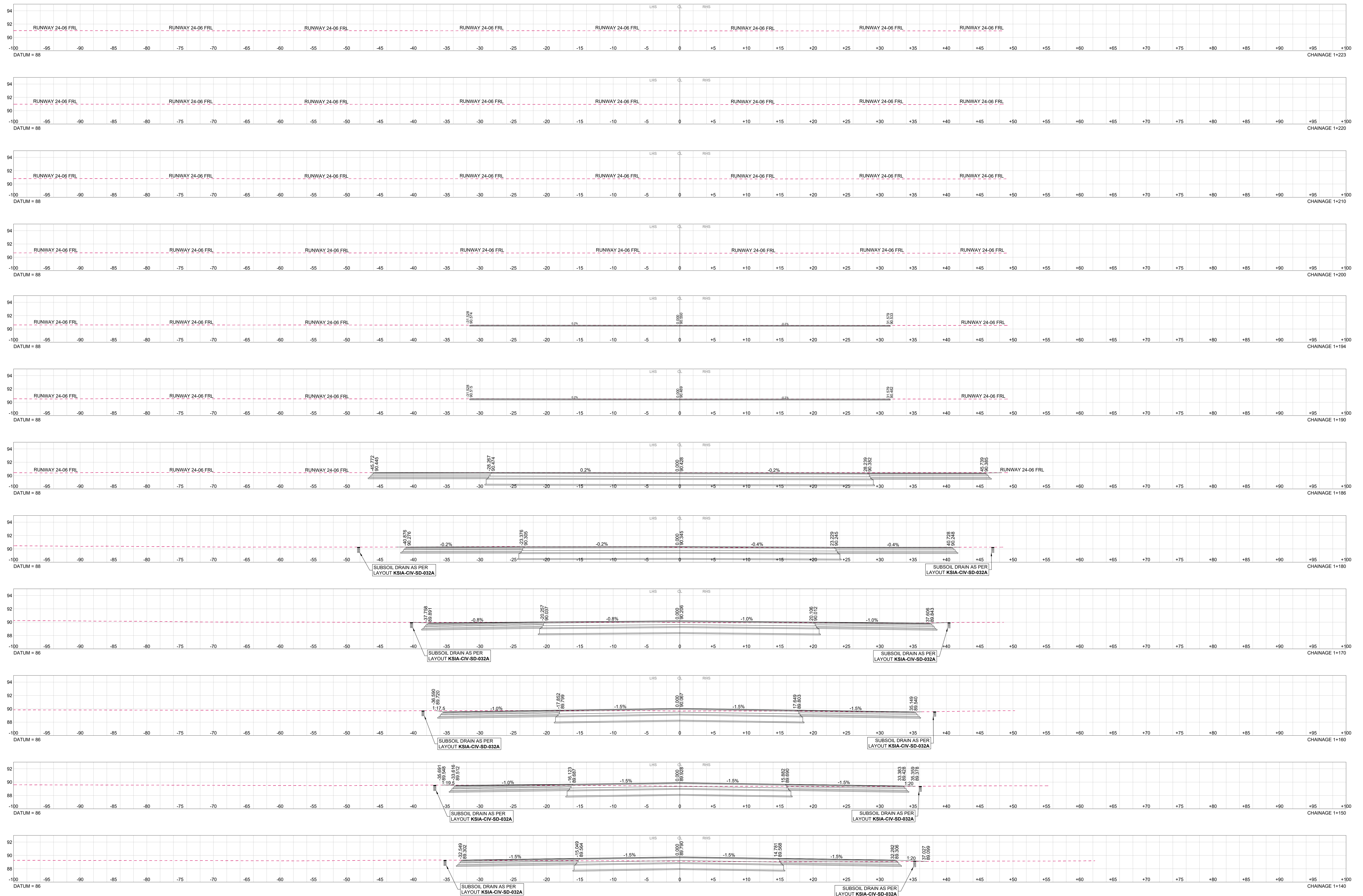
FOR TENDER PURPOSES

ORIGINAL SIZE A0 SCALE HOR: 200 VERT: 200 SHEET 21 OF 49

PLAN NO.:- KSIA-CIV-CS-017

KSIA-CIV-CS-017

NOTE:
SEE LAYOUT **KSIA-CIV-DP-023** FOR
STORMWATER SETTING OUT & LAYO
KSIA-CIV-DL-032 FOR STORMWATER
LONGITUDINAL SECTIONS

[illegible]

FILL TRENCH -1 - CURVE SETTING OUT DATA (WGS 84)							
POSITION	CHAINAGE	Y CO-ORDINATE	X CO-ORDINATE	RADIUS(m)	CURVE NO.	TANGENT LENGTH (m)	DEFLECTION
START	0+000	-10614.620	3277146.410	0.00	0	0.00	0°00'00"
P11	0+030	-10613.040	3277116.900	0.00	1	0.00	38°03'20"
P12	0+049	-10624.090	3277101.100	0.00	2	0.00	1°41'20"
P13	0+099	-10654.190	3277060.700	0.00	3	0.00	0°45'31"
P14	0+164	-10693.840	3277060.700	0.00	4	0.00	0°05'13"
P15	0+228	-10732.170	3276958.690	0.00	5	0.00	0°46'31"
P16	0+286	-10767.080	3276911.640	0.00	6	0.00	1°00'12"
P17	0+310	-10781.800	3276892.520	0.00	7	0.00	7°47'52"
P18	0+320	-10788.930	3276885.480	0.00	8	0.00	16°37'57"
P19	0+343	-10799.740	3276865.780	0.00	9	0.00	4°59'47"
END	0+393	-10819.850	3276820.050	0.00	10	0.00	0°00'00"

CUT BANK 03 - CURVE SETTING OUT DATA (WGS 84)							
POSITION	CHAINAGE	Y CO-ORDINATE	X CO-ORDINATE	RADIUS(m)	CURVE NO.	TANGENT LENGTH (m)	DEFLECTION
START	0+000	-10777.290	3276877.670	0.00	0	0.00	0°00'00"
PI1	0+042	-10794.420	3276839.090	0.00	1	0.00	22°12'14"
END	0+070	-10795.250	3276811.660	0.00	2	0.00	0°00'00"

CUT BANK 04 - CURVE SETTING OUT DATA (WGS 84)							
POSITION	CHAINAGE	Y CO-ORDINATE	X CO-ORDINATE	RADIUS(m)	CURVE NO.	TANGENT LENGTH (m)	DEFLECTION
START	0+000	-10687.840	3277044.430	0.00	0	0.00	0°00'00"
PI1	0+102	-10752.180	3276964.790	0.00	1	0.00	0°03'05"
END	0+129	-10768.810	3276944.170	0.00	2	0.00	0°00'00"

CUT BANK C/S - CURVE SETTING OUT DATA (WGS 84)							
POSITION	CHAINAGE	Y CO-ORDINATE	X CO-ORDINATE	RADIUS(m)	CURVE NO.	TANGENT LENGTH (m)	DEFLECTION
START	0+000	-10780.530	3276924.580	0.00	0	0.00	0°00'00"
P11	0+011	-10786.060	3276914.640	0.00	1	0.00	5°58'42"
P12	0+045	-10805.260	3276887.290	0.00	2	0.00	2°56'43"
P13	0+056	-10812.410	3276878.140	0.00	3	0.00	15°43'38"
END	0+103	-10830.200	3276834.750	0.00	4	0.00	0°00'00"

CUT BANK 06 - CURVE SETTING OUT DATA (WGS 84)							
POSITION	CHAINAGE	Y CO-ORDINATE	X CO-ORDINATE	RADIUS(m)	CURVE NO.	TANGENT LENGTH (m)	DEFLECTION
START	0+000	-10670.890	3277010.960	0.00	0	0.00	0°00'00"
END	0+016	-10675.810	3276995.730	0.00	1	0.00	0°00'00"

CUT BANK 01 - CURVE SETTING OUT DATA (WGS 84)							
POSITION	CHAINAGE	Y CO-ORDINATE	X CO-ORDINATE	RADIUS (m)	NO.	TANGENT LENGTH (m)	DEFLECTION
START	0+000	-10597.390	3277122.910	0.00	0	0.00	0°00'00"
P1	0+025	-10605.700	3277098.970	0.00	1	21°42'02"	
P2	0+084	-10643.940	3277054.740	0.00	2	11°34'51"	
P3	0+101	-10652.420	3277039.610	0.00	3	6°54'42"	
P4	0+123	-10665.260	3277022.050	0.00	4	17°19'36"	
END	0+142	-10680.570	3277010.730	0.00	5	0°00'00"	

CUT BANK 02 - CURVE SETTING OUT DATA (WGS 84)							
POSITION	CHAINAGE	Y CO-ORDINATE	X CO-ORDINATE	RADIUS(m)	CURVE NO.	TANGENT LENGTH (m)	DEFLECTION
START	0+000	-10683.010	3276996.550	0.00	0	0.00	0°00'00"
END	0+045	-10708.790	3276959.640	0.00	1	0.00	0°00'00"

AIRSIDE/LANDSIDE BOUNDARY

EXISTING
SITE CAMP
9733 m²
CO-ORDINATES:
29°36'33.3"S
31°06'34.6"E

SPORTS FACILITY

PROPOSED ACCESS GATE
CO-ORDINATE:
29°36'35.3"S
31°06'36.9"E






BM6
90.08

EXISTING STORMWATER

EARTHWORKS PLAN FOR EXISTING CHANNEL

NOTE:
PIPE NETWORK HAS BEEN
PARTIALLY INSTALLED.
CONTRACTOR TO COMPLETE
THE PIPE INSTALLATION AND
CONNECT THE STORMWATER
SYSTEM

EXISTING ELECTRICAL LINES

LEGEND	
	SETTING OUT CONTROL POINTS
	EXISTING CUT BANK
	EXISTING FILL BANK
	BANKS TO BE EXCAVATED FOR FILL
	CHANNEL TO BE FILLED

NOTES																		

FOR DISCUSSION

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DESIGNED BY:	Y.NANKHOO(Pr.Eng: 202302737)
CHECKED BY:	A.N.SUKURAM(Pr.TechEng:201670173)
DRAWN BY:	K.RAMSUROOP
CHECKED BY:	A.N.SUKURAM(Pr.TechEng:201670173)
DATE OF APPROVAL:	

CLIENT:



CONSULTANT:



GATEWAY OFFICE PARK,
1 SUGAR CLOSE, UMHLANGA
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TEL: (031) 5368310
FAX: 0865162332
EMAIL: nankhco@nadb.co.za

AS BUILT

SUPERVISING ENGINEER

SUPERVISING AUTHORITY

CONSULTING ENGINEER

SIGNATURE	PR NO.	DATE
CLIENT		
SIGNATURE	DATE	
DESIGNED Y.NANKHOO	DRAWN K.RAMSUROOP	CHECKED A.N.SUKURAM

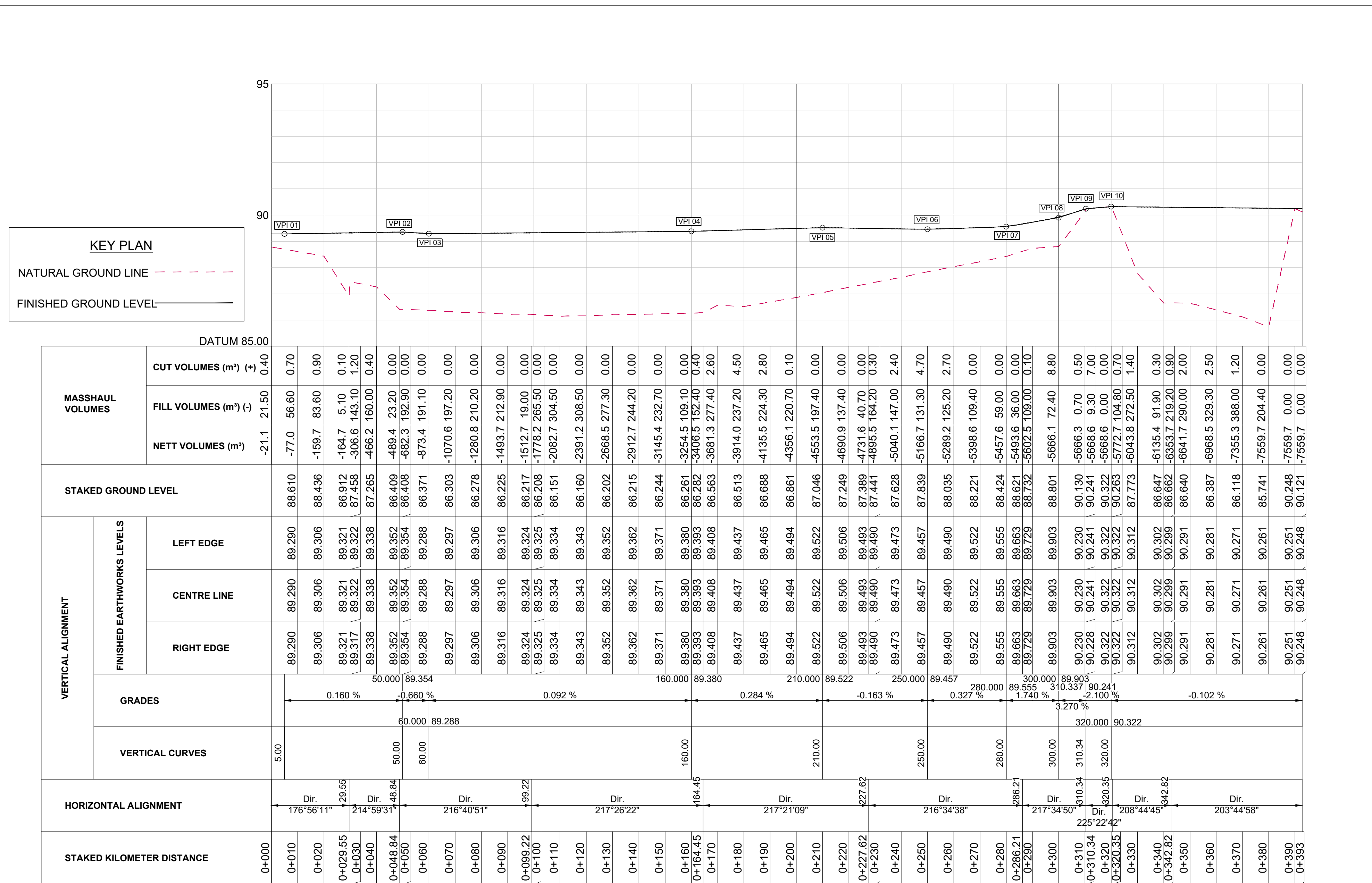
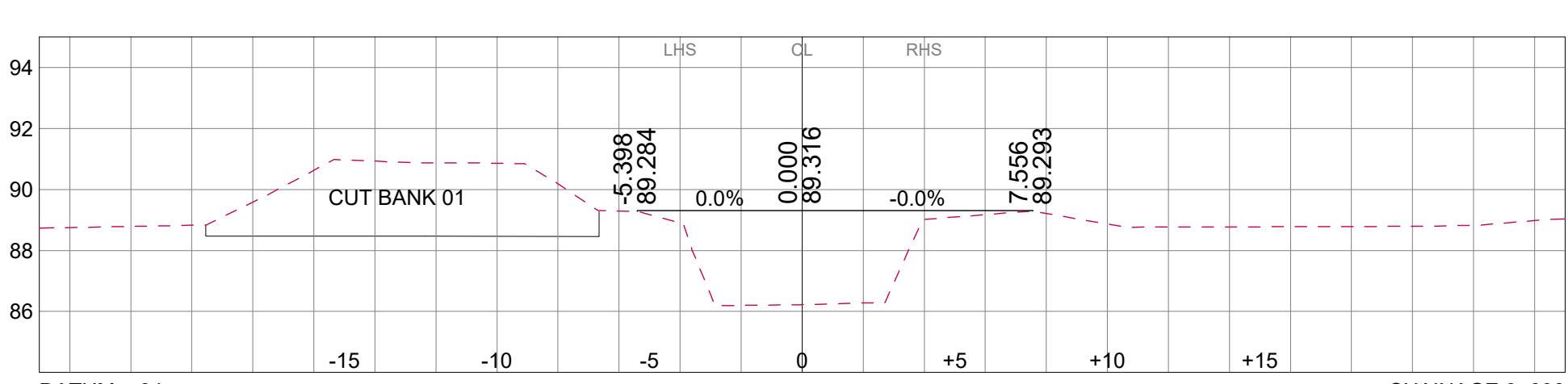
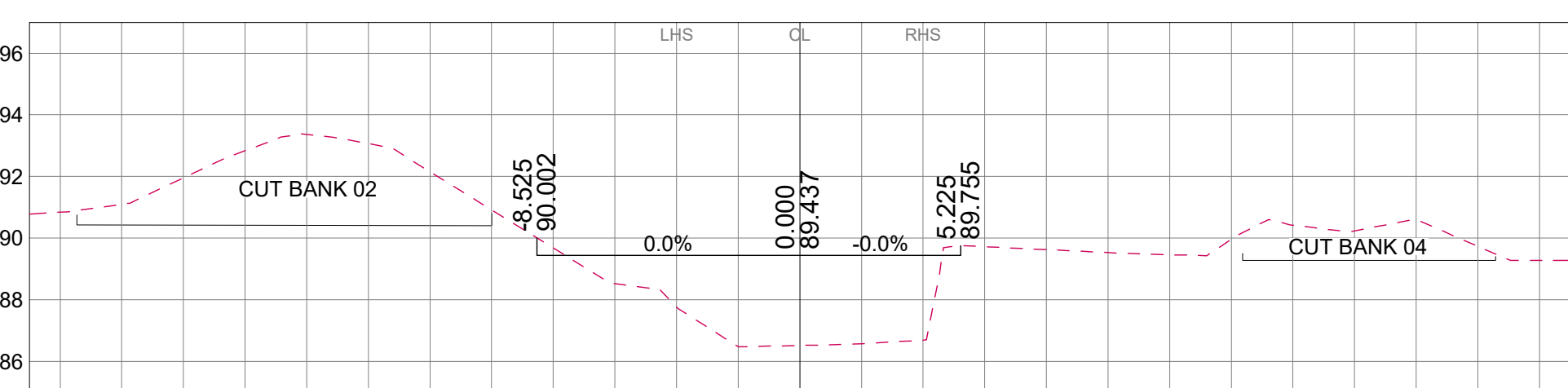
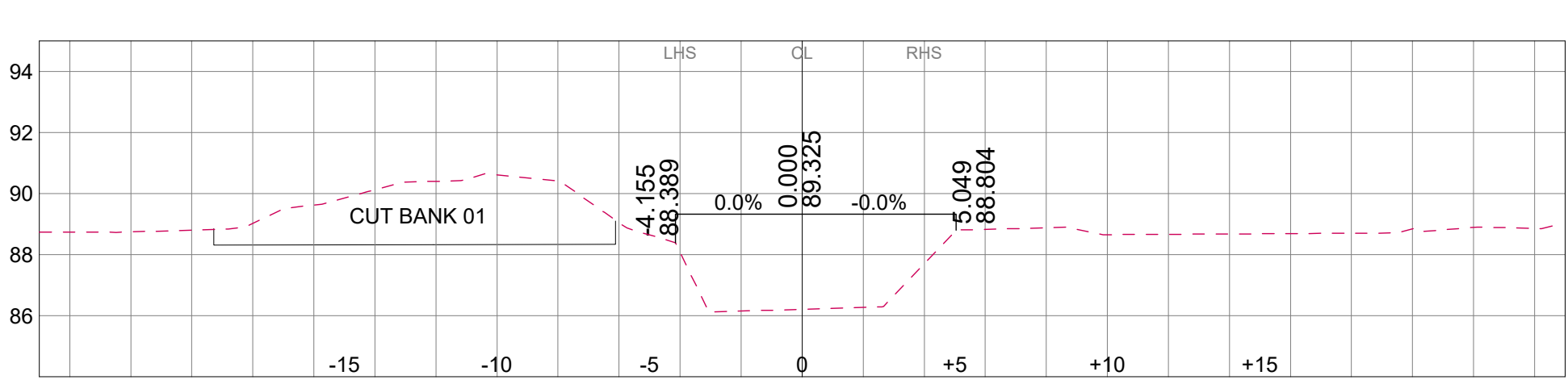
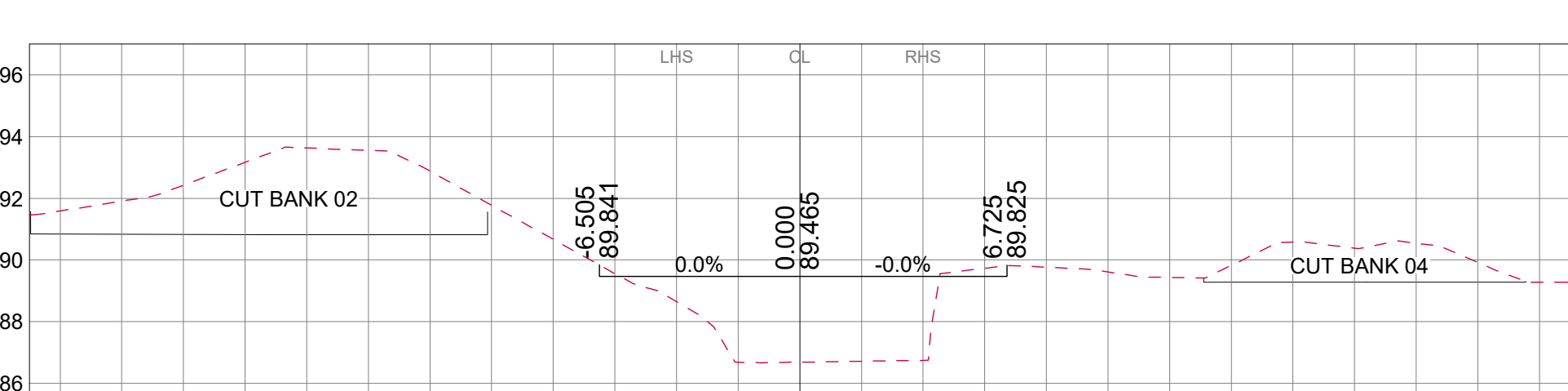
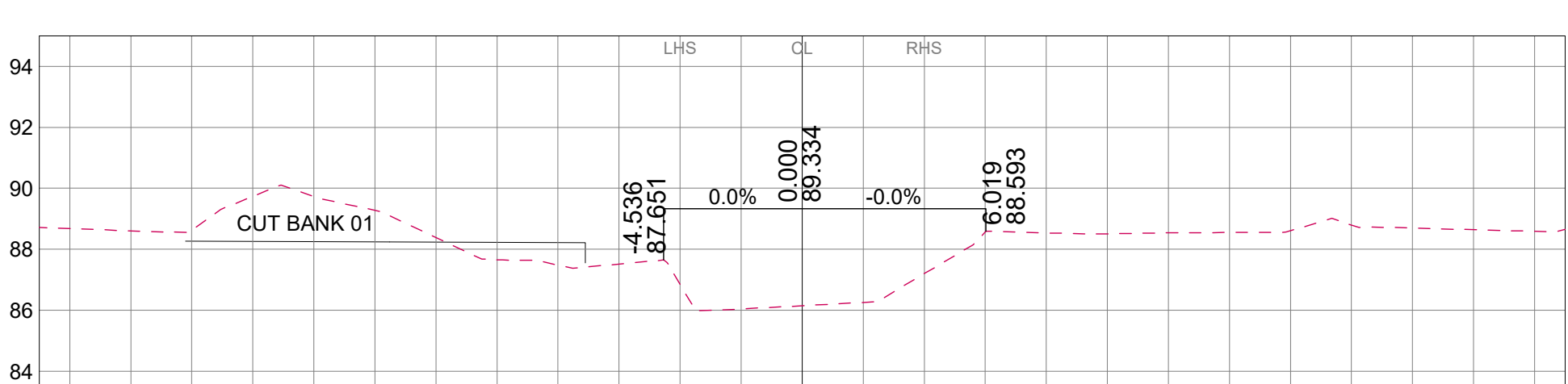
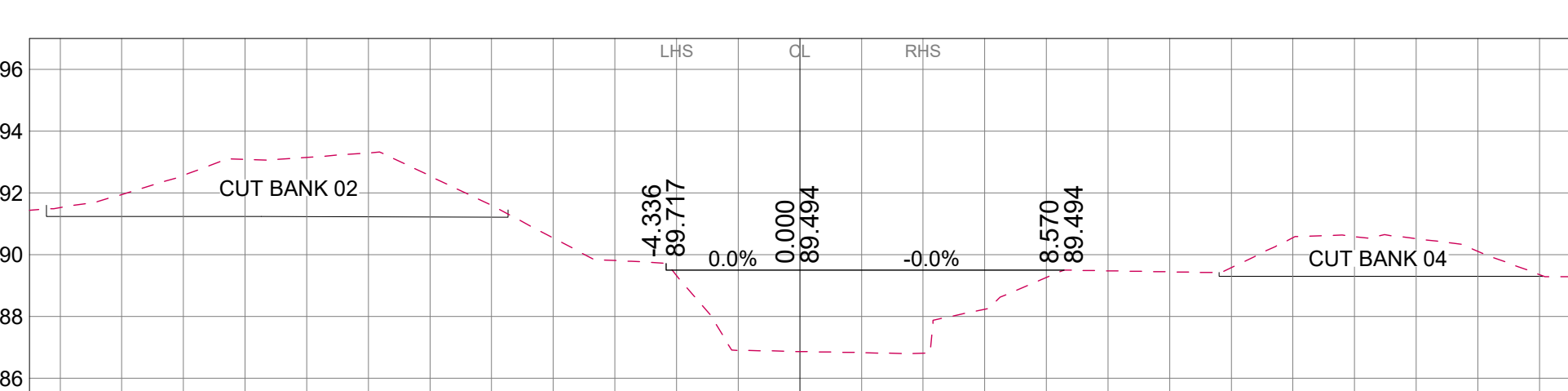
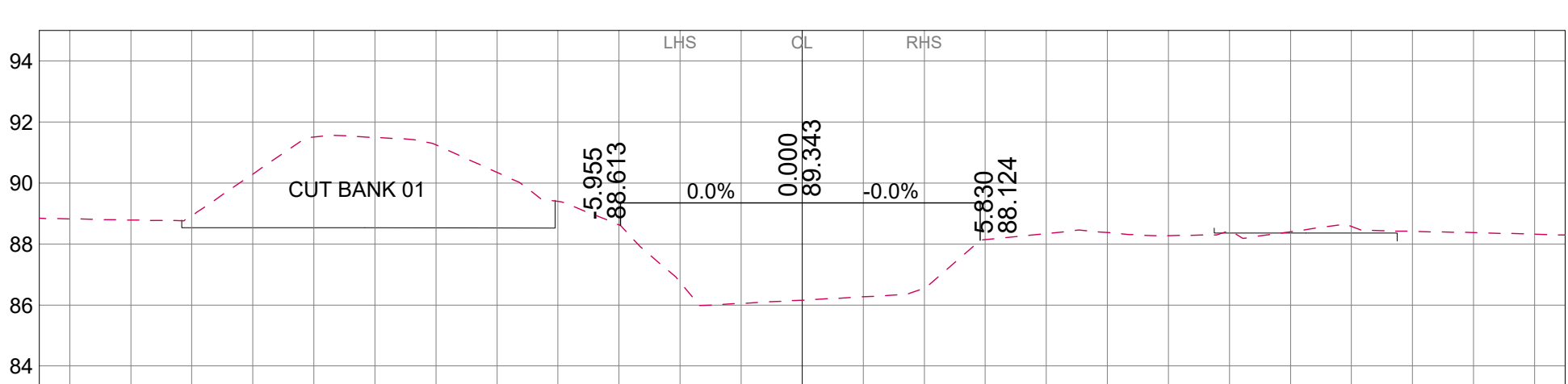
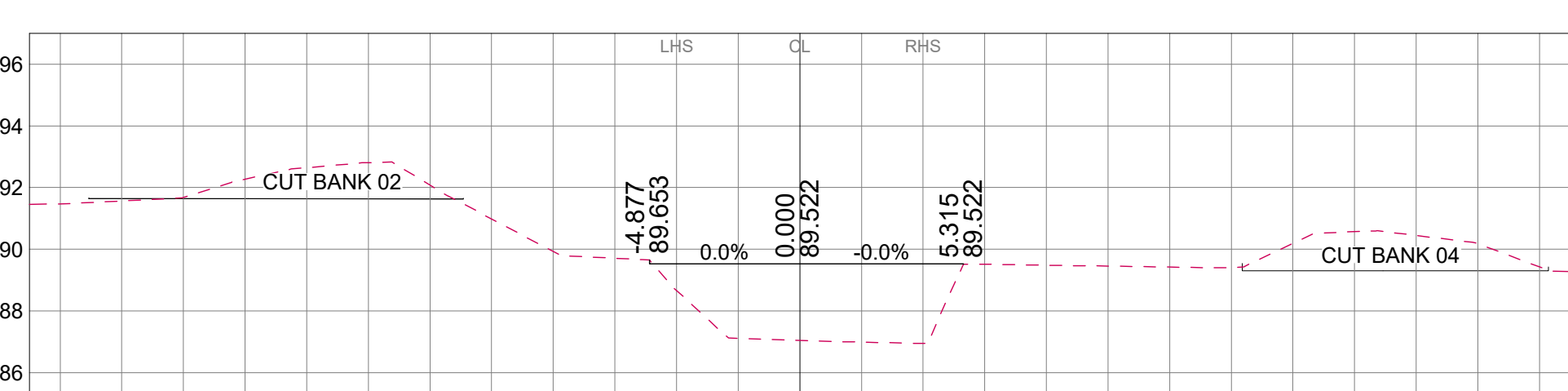
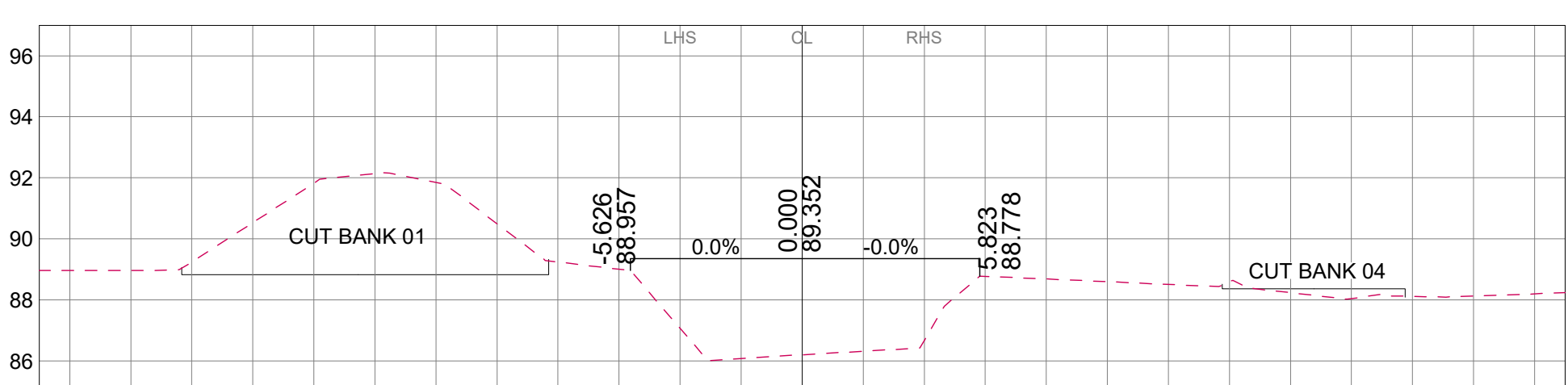
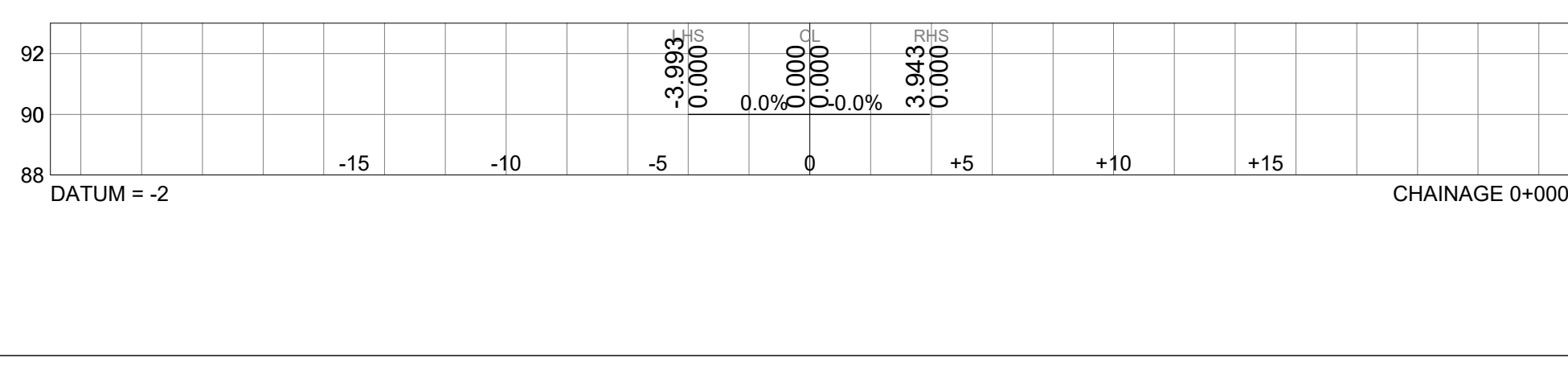
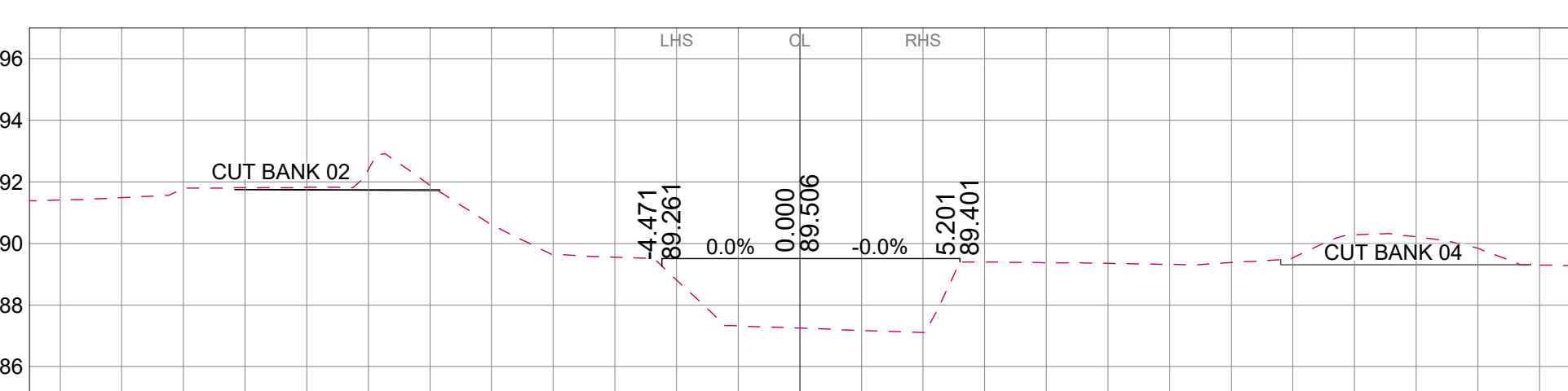
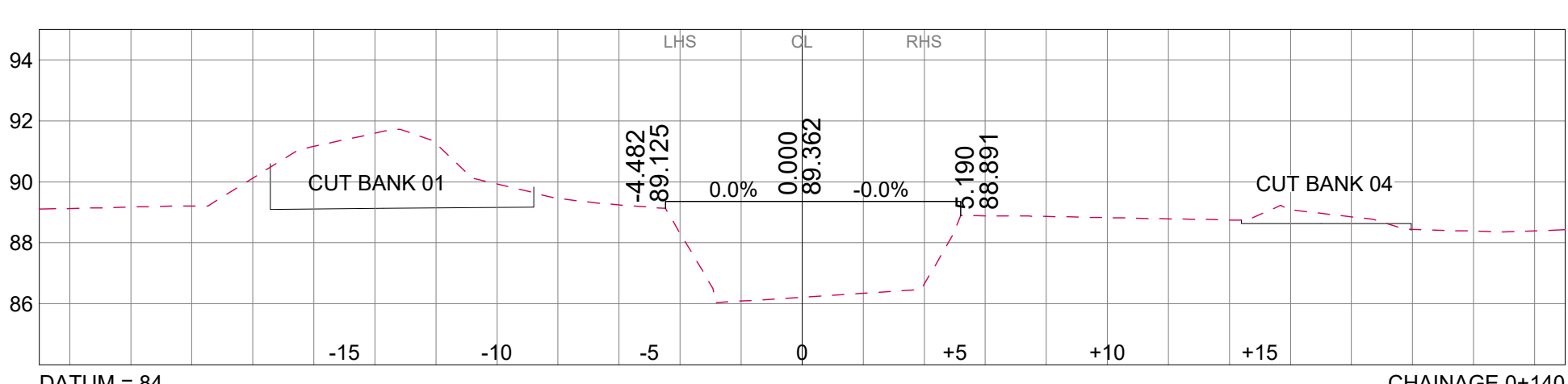
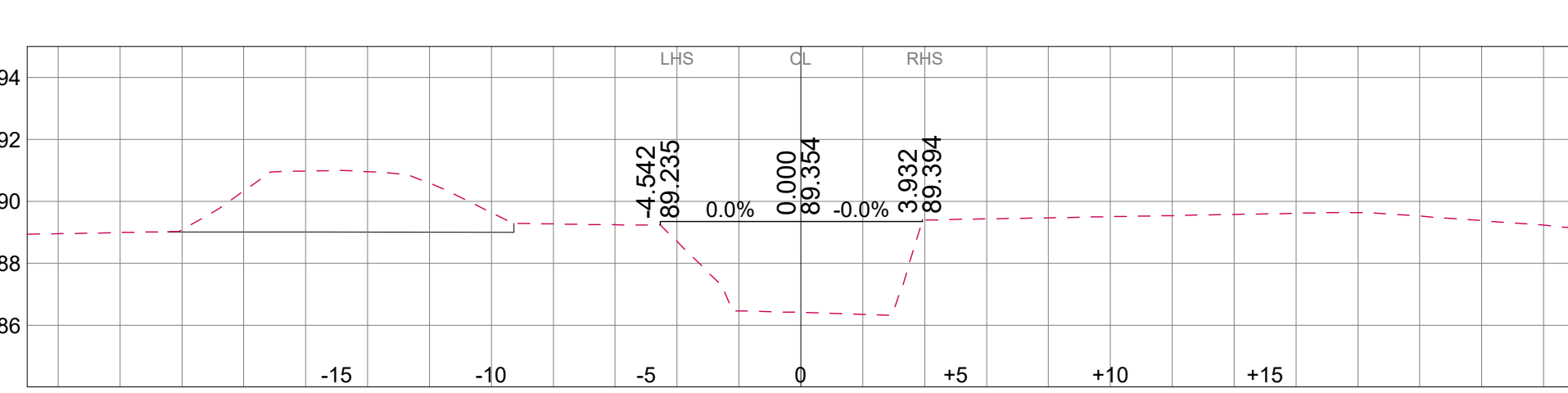
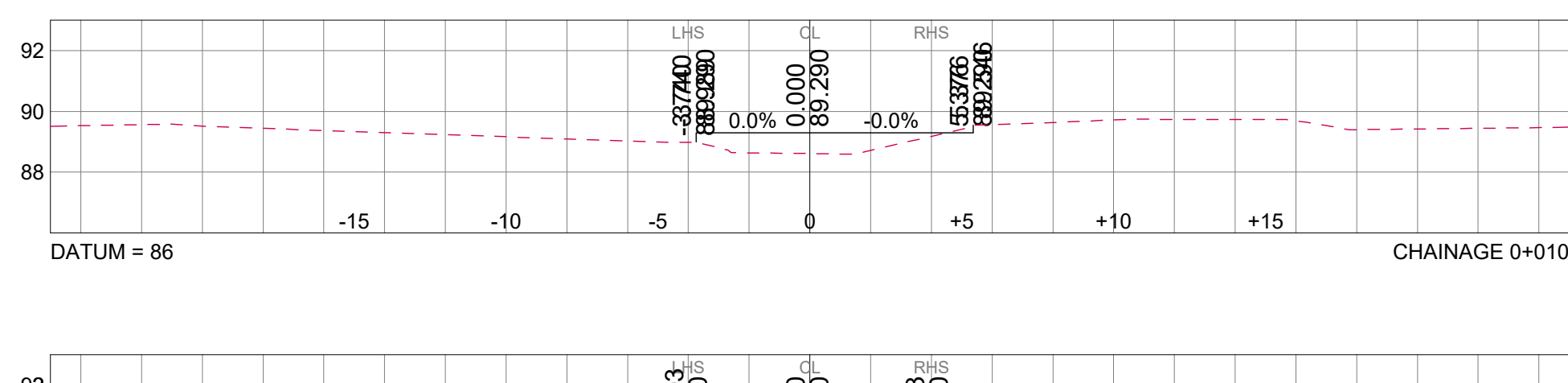
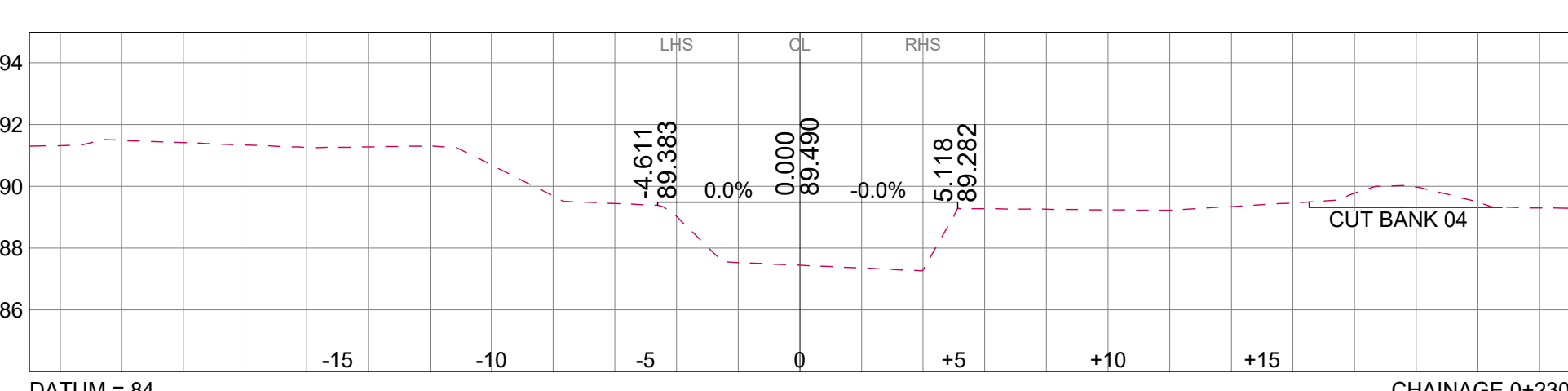
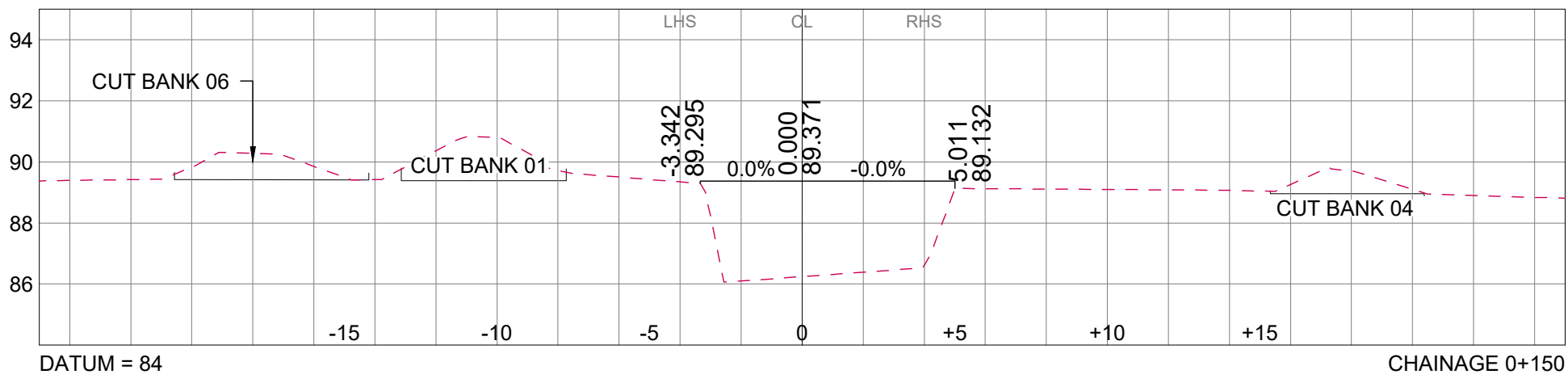
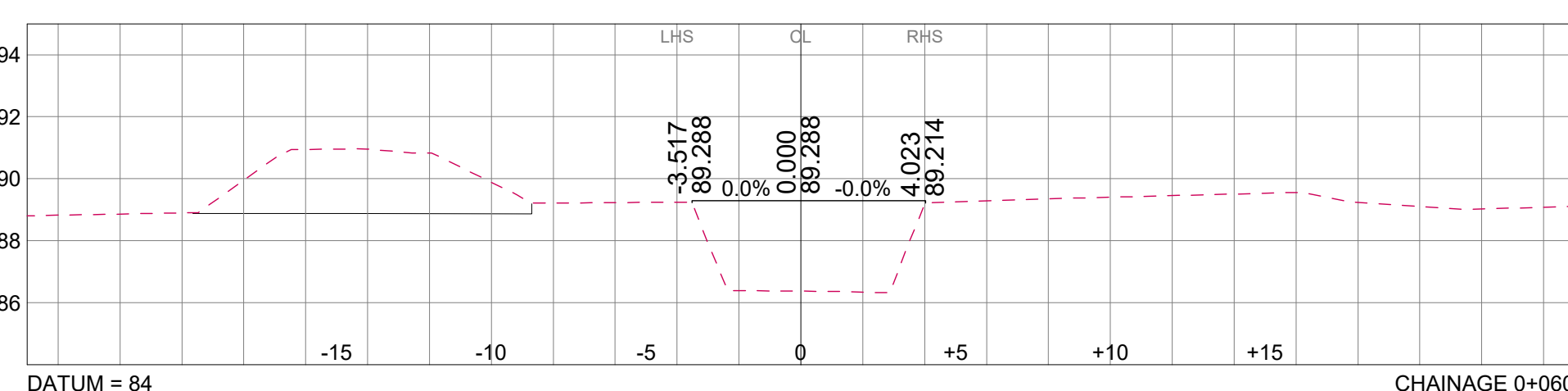
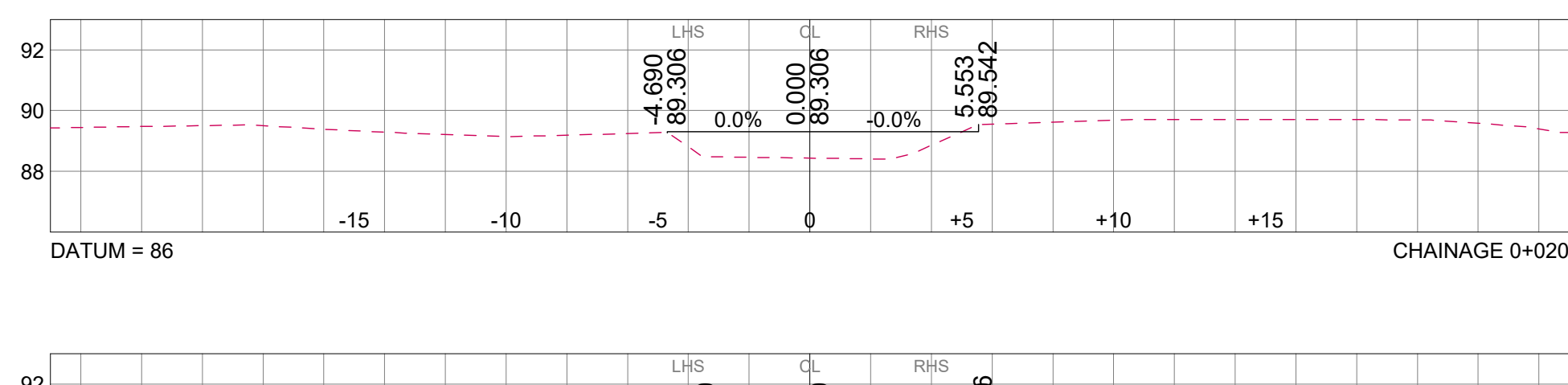
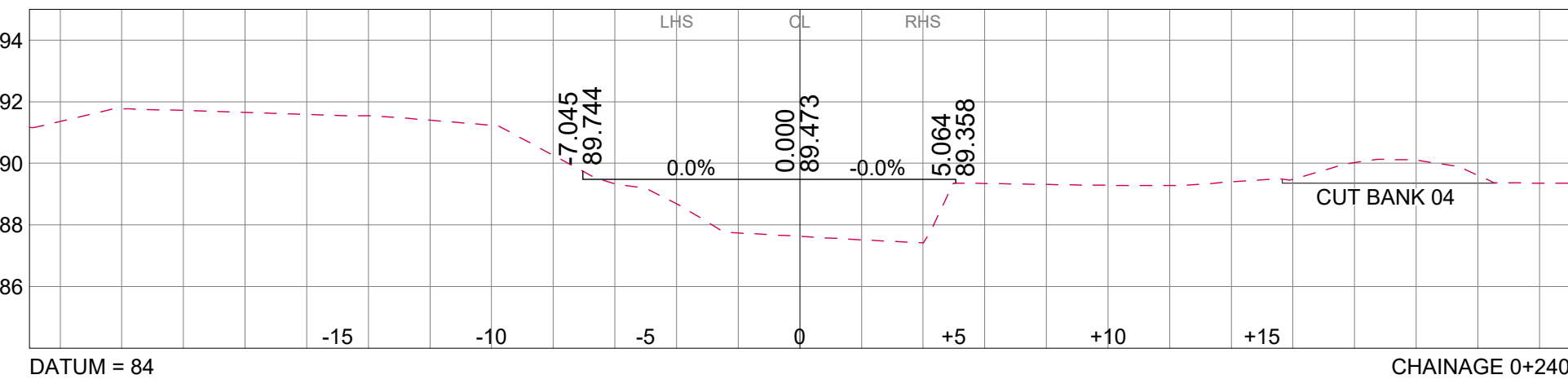
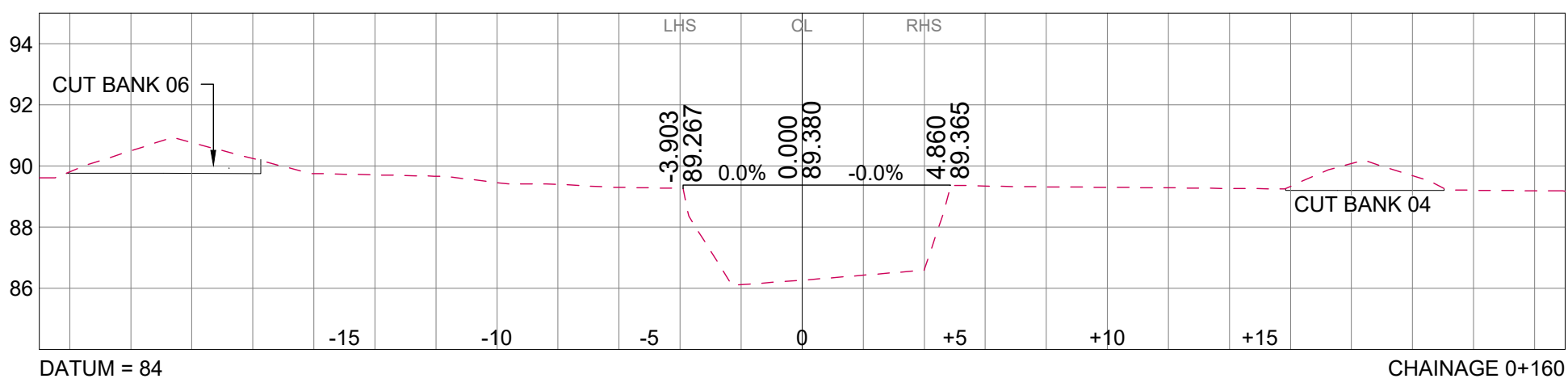
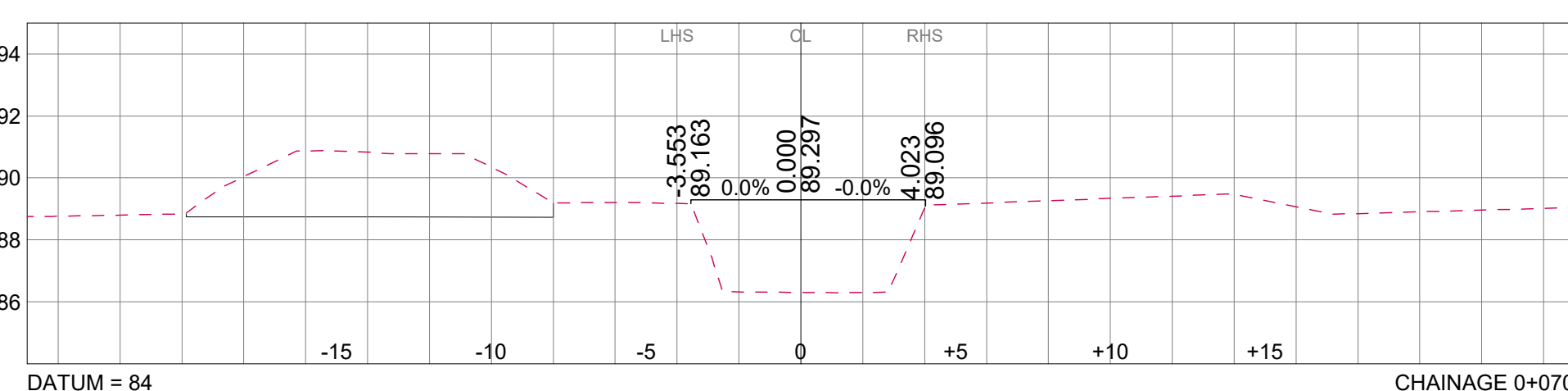
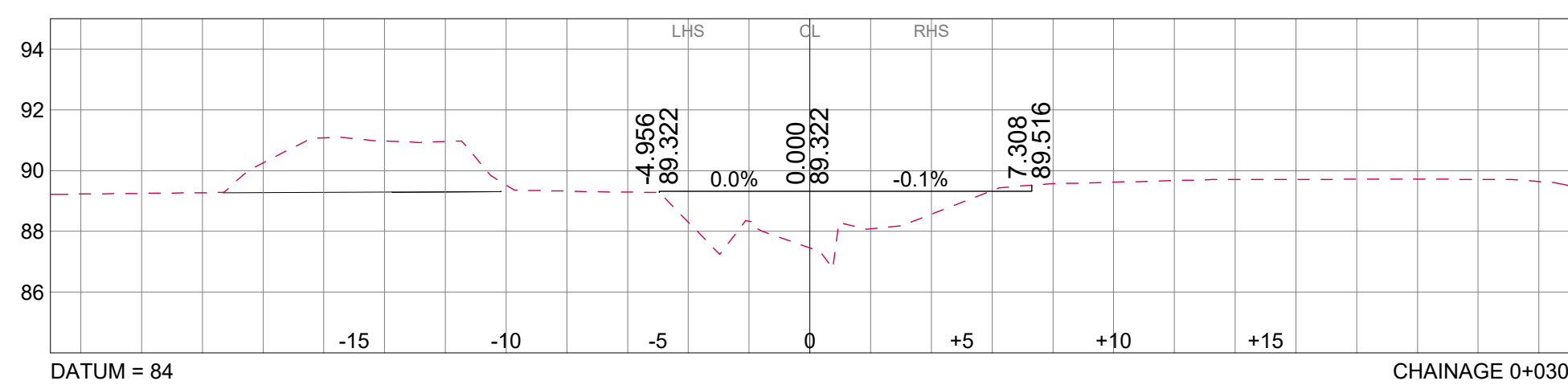
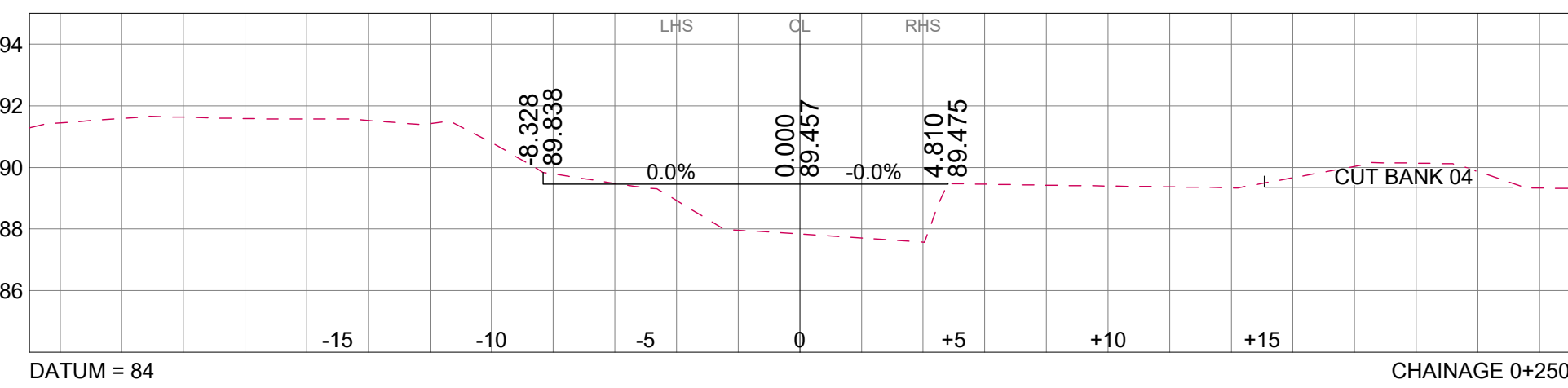
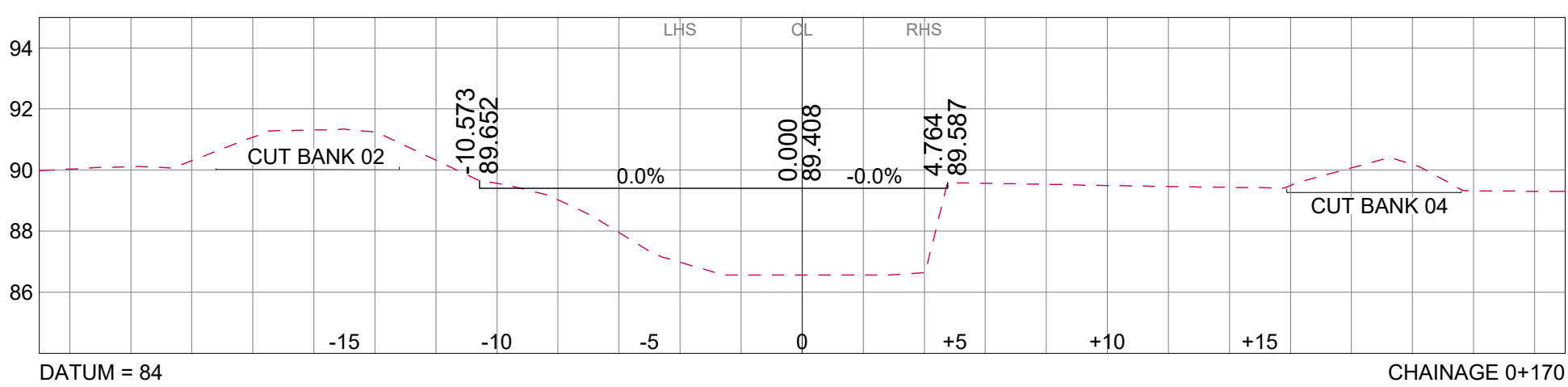
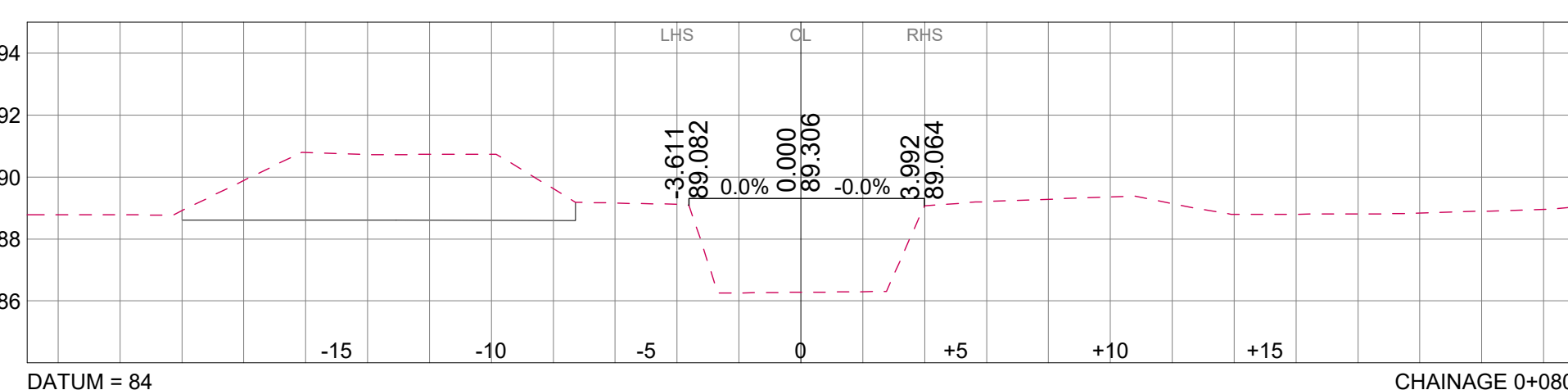
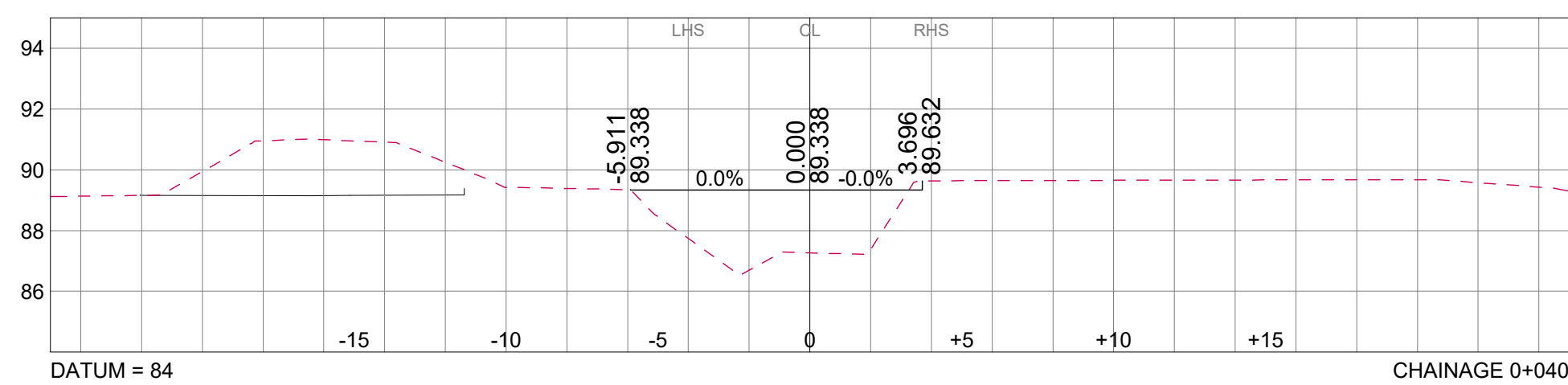
AIRPORTS COMPANY SOUTH AFRICA
KING SHAKA INTERNATIONAL AIRPORT

COMPLETION OF BRAVO TAXIWAY

EXISTING CHANNEL - EARTHWORKS ACTIVITIES PLAN AND COMPLETION OF STORMWATER SYSTEM

FOR TENDER PURPOSES			
ORIGINAL SIZE A0	SCALE 1:500	SHEET OF	23 49
<p>PLAN NO.:-</p> <p>KSIA-CIV-LL-018A</p>			

KSIA-CIV-LL-018A



FILL TRENCH 01
LONGITUDINAL SECTION - CH 0+000 TO 0+393

SCALE: HOR: 1:1000 VERT: 1:100

CHAINAGE 0+090

FILL TRENCH 01

CROSS SECTIONS - CH 0+000 TO 0+393

SCALE: HOR: 1:200 VERT: 1:200

[illegible]

<h1>FOR DISCUSSION</h1>		DESIGNED BY: Y NANKHOO(Pr.Eng: 202307237)
NANKHOO CONSULTING ENGINEERS RETAINS COPYRIGHT OVER ALL INTELLECTUAL PROPERTY, INCLUDING DESIGNS AND DOCUMENTS CREATED UNDER THIS AGREEMENT FOR THE SPECIFIED PROJECT. THE CLIENT MAY ONLY USE THESE DESIGNS AND DOCUMENTS FOR THEIR INTENDED PURPOSE ON THIS PROJECT. PROVIDED PAYMENT FOR THE DESIGN HAS BEEN RECEIVED, ANY OTHER USE, WHETHER OR NOT PAYMENT HAS BEEN MADE, CONSTITUTES A COPYRIGHT INFRINGEMENT, AND ALL RIGHTS ARE RESERVED.		CHECKED BY: A N SUKURAM(Pr.TechEng:2016071073) DRAWN BY: K RAMSUROOP CHECKED BY: A N SUKURAM(Pr.TechEng:2016071073)
ALL DIMENSIONS MUST BE CONFIRMED ON-SITE BEFORE WORK BEGINS. ANY DISCREPANCIES MUST BE REFERRED TO THE ENGINEER.		DATE OF APPROVAL:

CLIENT:



AIRPORTS COMPANY
SOUTH AFRICA

CONSULTANT:

 **NANKHOO**
Consulting Engineers

GATEWAY OFFICE PARK,
1 SUGAR CLOSE, UMHLANGA
4021

TEL: (031) 5368310
FAX: 0665162332
EMAIL : nankhoo@nadb.co.za

<div>AS BUILT</div> <div>SUPERVISING ENGINEER</div> <div>DATE</div> <div>SUPERVISING AUTHORITY</div>		CONSULTING ENGINEER		
		SIGNATURE		DATE
		PR NO.		
		CLIENT		
		DATE		
<div>SUPERVISING AUTHORITY</div>		SIGNATURE		DATE
		DESIGNED	DRAWN	CHECKED
		Y.NANKHOO	K.RAMSUROOP	A.N.SUKURAM

AIRPORTS COMPANY SOUTH AFRICA
KING SHAKA INTERNATIONAL AIRPORT

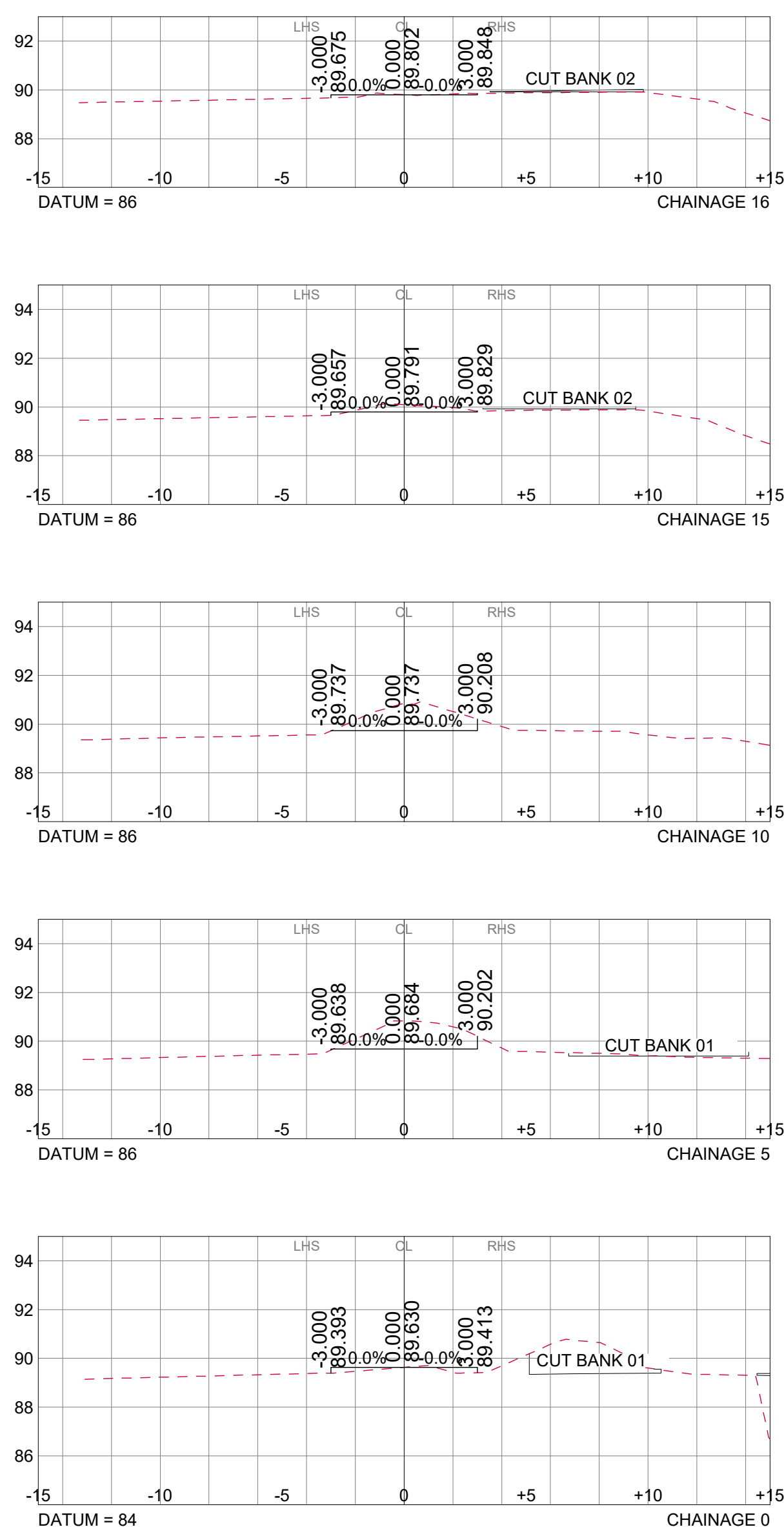
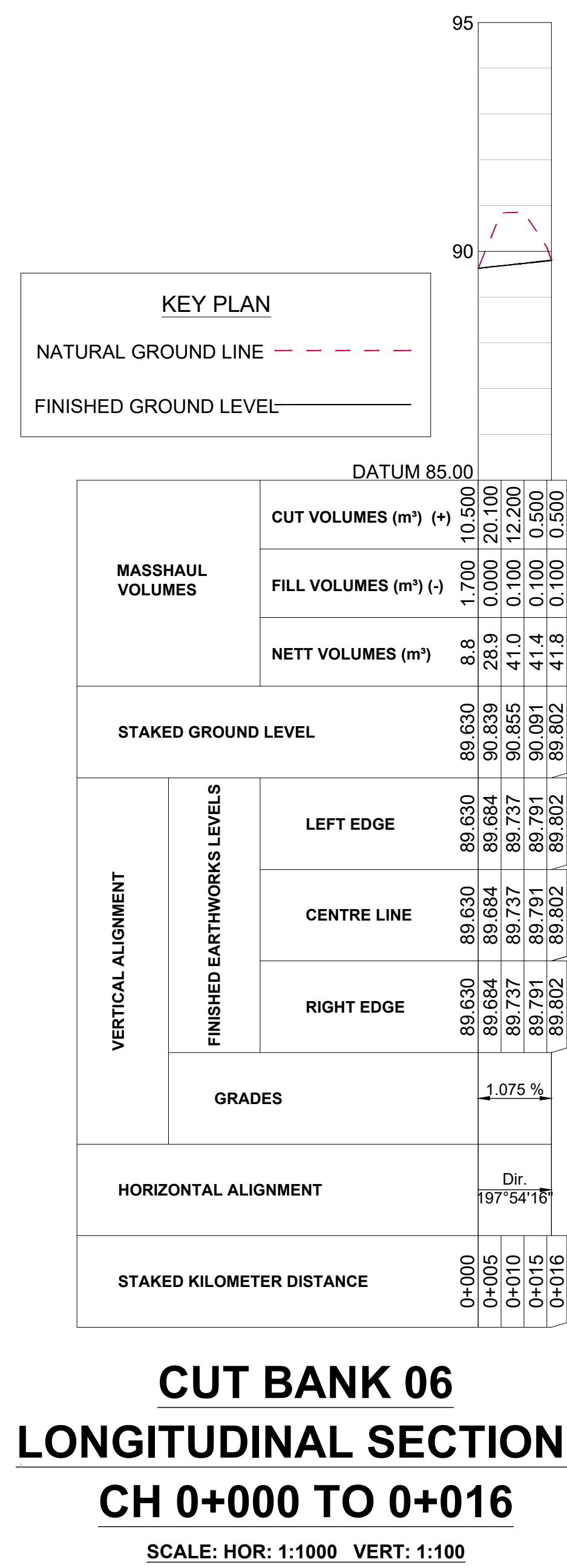
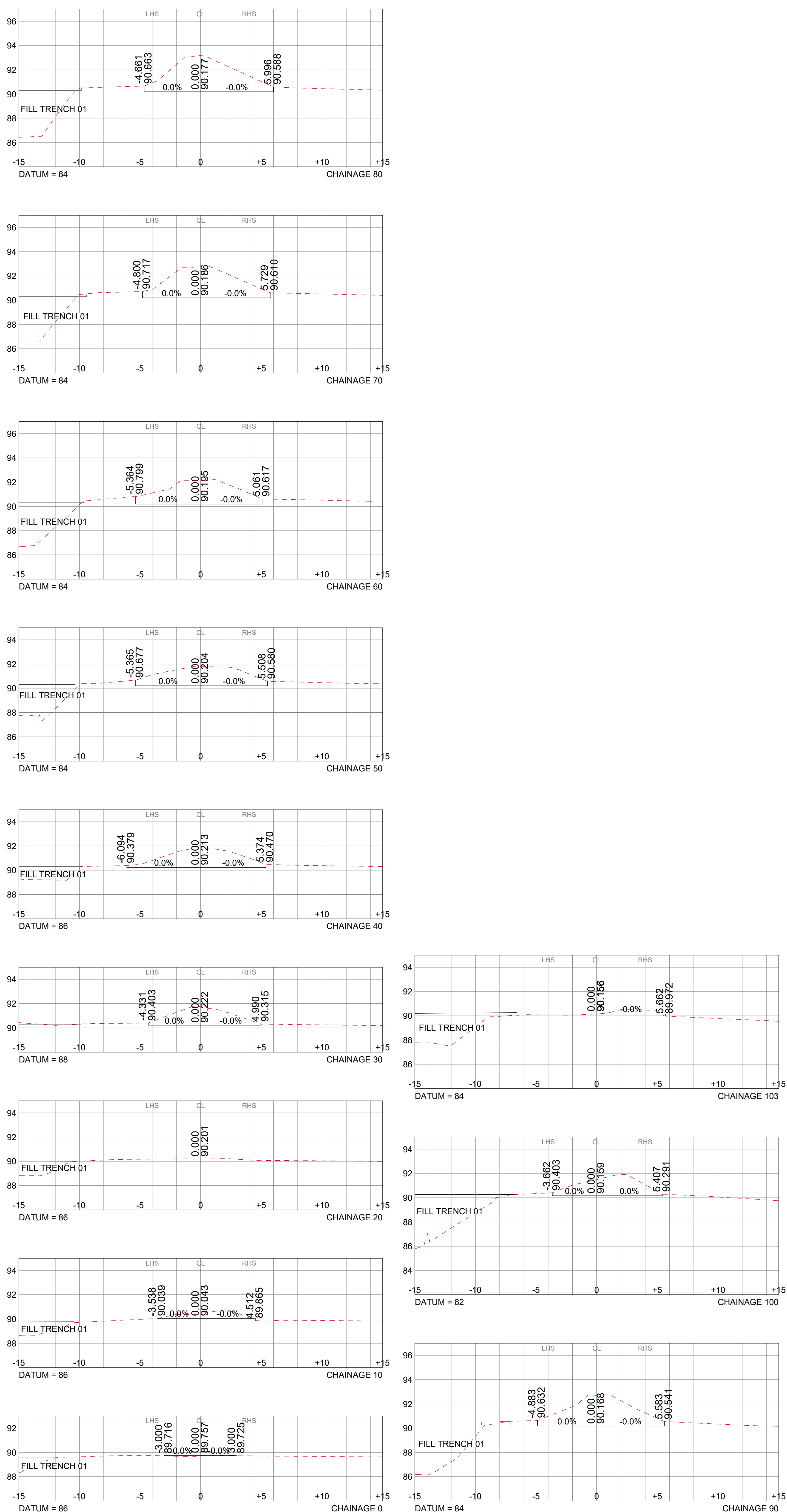
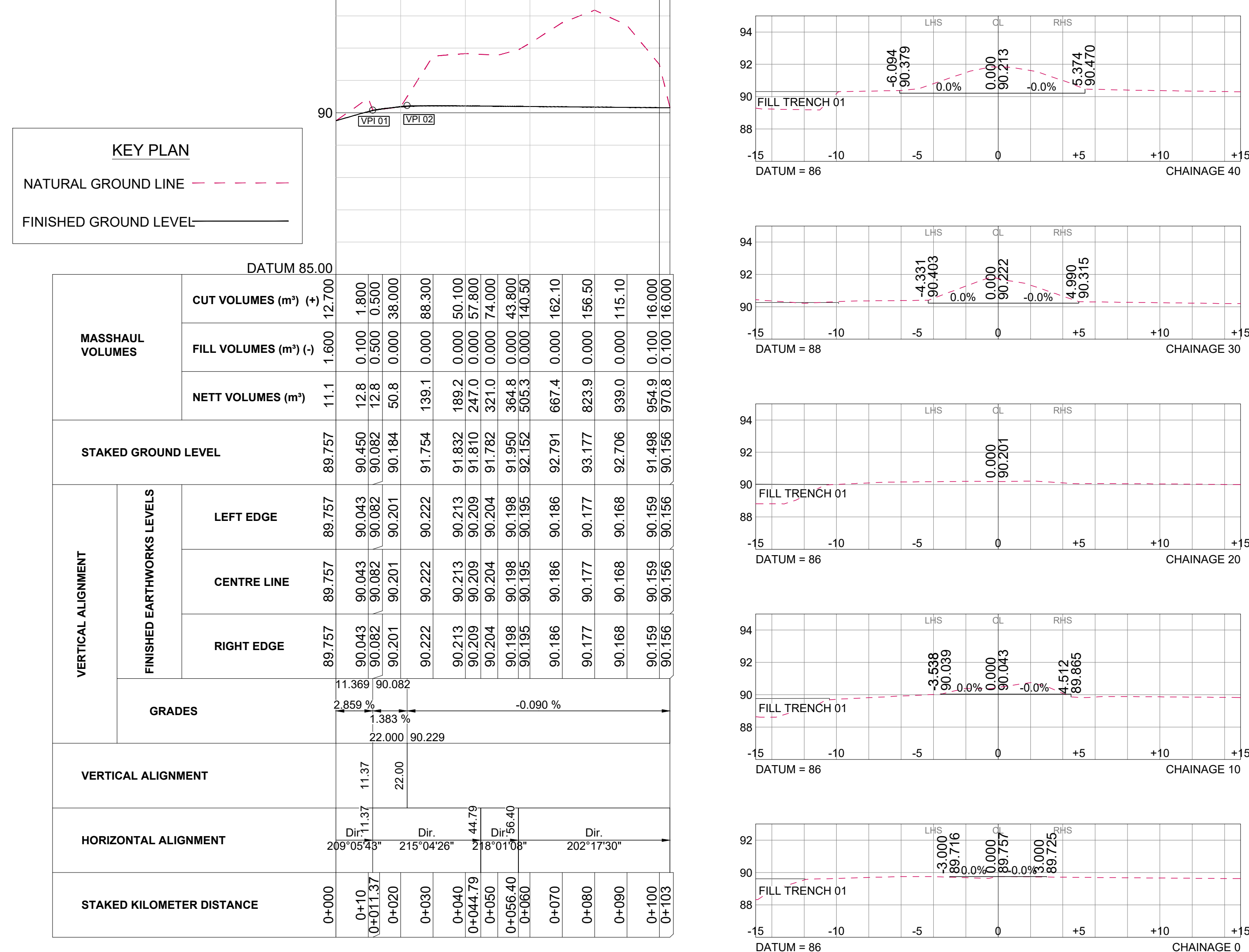
COMPLETION OF BRAVO TAXIWAY

EARTHWORKS LONGITUDINAL & CROSS SECTIONS SHEET 01 OF 04

FOR TENDER PURPOSES			
ORIGINAL SIZE	SCALE	SHEET	24
A0	AS SHOWN	OF	49

PLAN NO.:-

KSIA-CIV-LL-018B



NOTES									
							</		

<h1>FOR DISCUSSION</h1> <p>NANKHO CONSULTING ENGINEERS RETAINS COPYRIGHT OVER ALL INTELLECTUAL PROPERTY, INCLUDING DESIGN AND DOCUMENTS CREATED UNDER THIS APPOINTMENT FOR THE SERVICES PROVIDED. THIS CLAUSE MAY NOT APPLY TO THESE DOCUMENTS IF THEY ARE USED FOR A PROJECT OTHER THAN THE PROJECT. PAYMENT FOR THE DESIGN HAS BEEN RECEIVED AND THE DESIGN IS NOT BEING REPRODUCED OR USED FOR ANY OTHER PROJECT. ANY REUSE OF THE DESIGN HAS BEEN MADE, CONSTITUTES A COPYRIGHT INFRINGEMENT, AND ALL RIGHTS ARE RESERVED.</p> <p>ALL DIMENSIONS MUST BE CONFIRMED ON-SITE BEFORE WORK BEGINS. ANY DISCREPANCIES MUST BE REFERRED TO THE PROJECT OWNER.</p>		<p>DESIGNED BY:</p> <p>CHECKED BY: A. N. SUKURAMP(MP, TechEng16010718)</p> <p>DRAWN BY: K. RAMSUROOP</p> <p>CHECKED BY: A. N. SUKURAMP(MP, TechEng16010718)</p> <p>DATE OF APPROVAL:</p>	
---	--	--	--

CLIENT:



AIRPORTS COMPANY
SOUTH AFRICA

CONSULTANT:

 **NANKHOO**
Consulting Engineers

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EMAIL: nankhoo@nadb.co.za

AS BUILT

SUPERVISING ENGINEER DATE

SUPERVISING AUTHORITY

CONSULTING ENGINEER		
SIGNATURE	PR NO.	DATE
CLIENT		
SIGNATURE	DATE	
DESIGNED Y.NANKHOO	DRAWN K.RAMSUROOP	CHECKED A.N.SUKURAM

AIRPORTS COMPANY SOUTH AFRICA
KING SHAKA INTERNATIONAL AIRPORT

COMPLETION OF BRAVO TAXIWAY

EARTHWORKS LONGITUDINAL & CROSS SECTIONS SHEET 04 OF 04

FOR TENDER PURPOSES			
ORIGINAL SIZE	SCALE	SHEET	27
A0	AS SHOWN	OF	49
PLAN NO.:-			
KSIA-CIV-LL-018E			



BM7	90.24
-----	-------

BRAVO TAXIWAY

LP @ CH 0+191 LVL 90.660

000+0

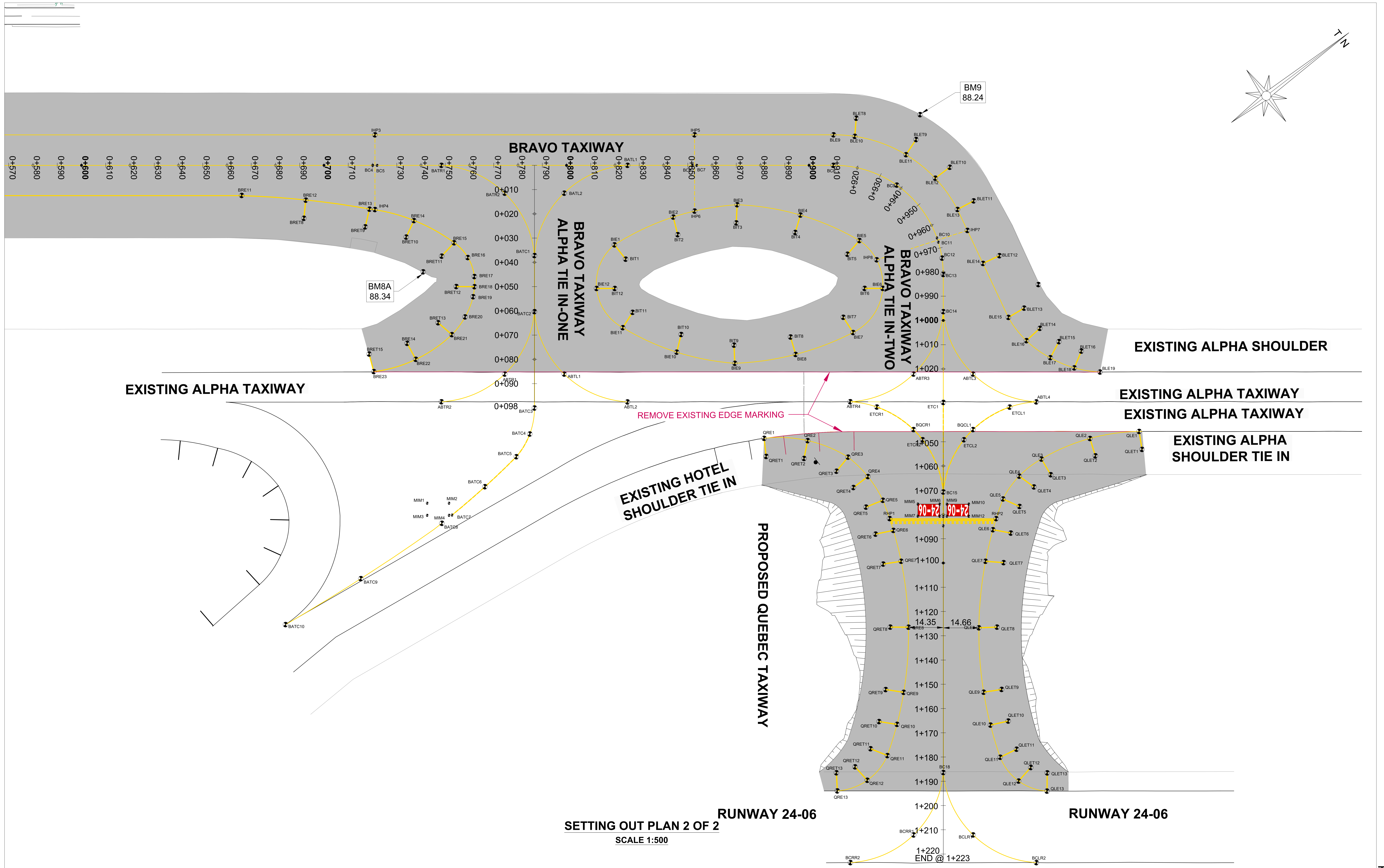
MAX 3930

MAX SPAN
36M

REMOVE EXISTING EDGE MARKING ACROSS BRAVO

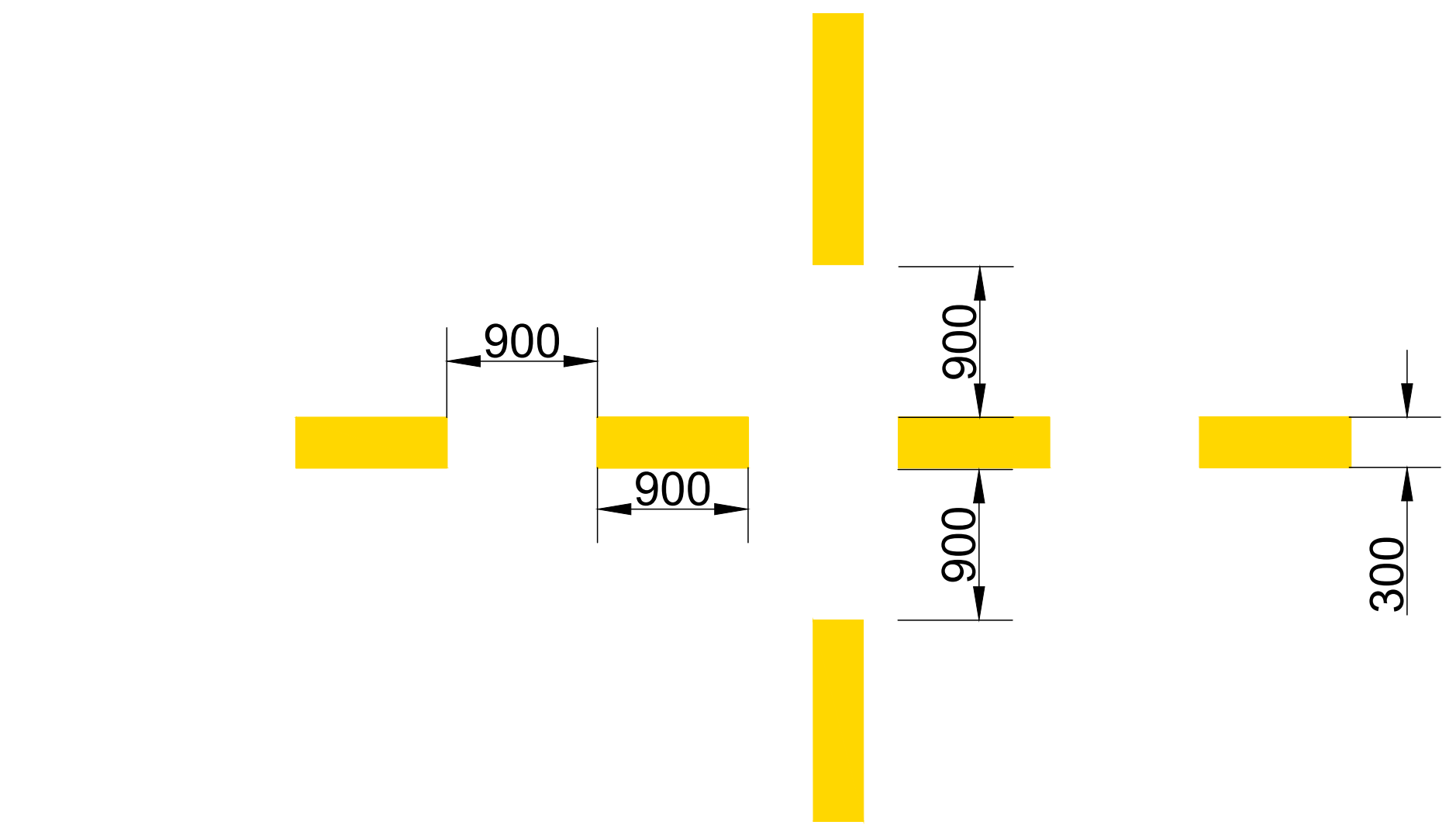
SETTING OUT PLAN 1 OF 2
SCALE 1:250

KSIA-CIV-PM-019A

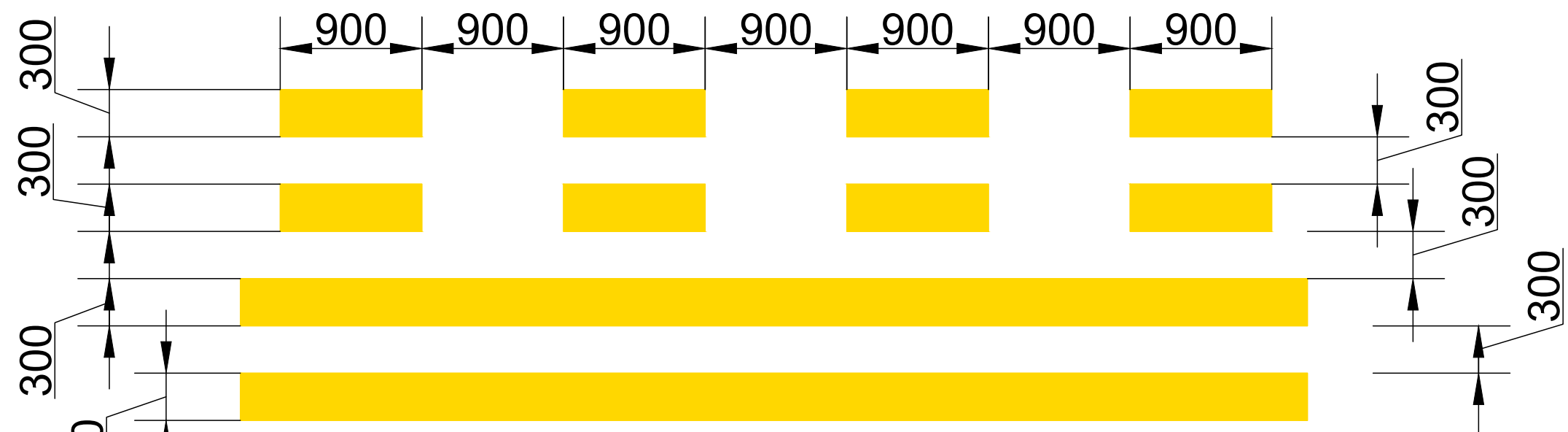


FOR TENDER PURPOSES			
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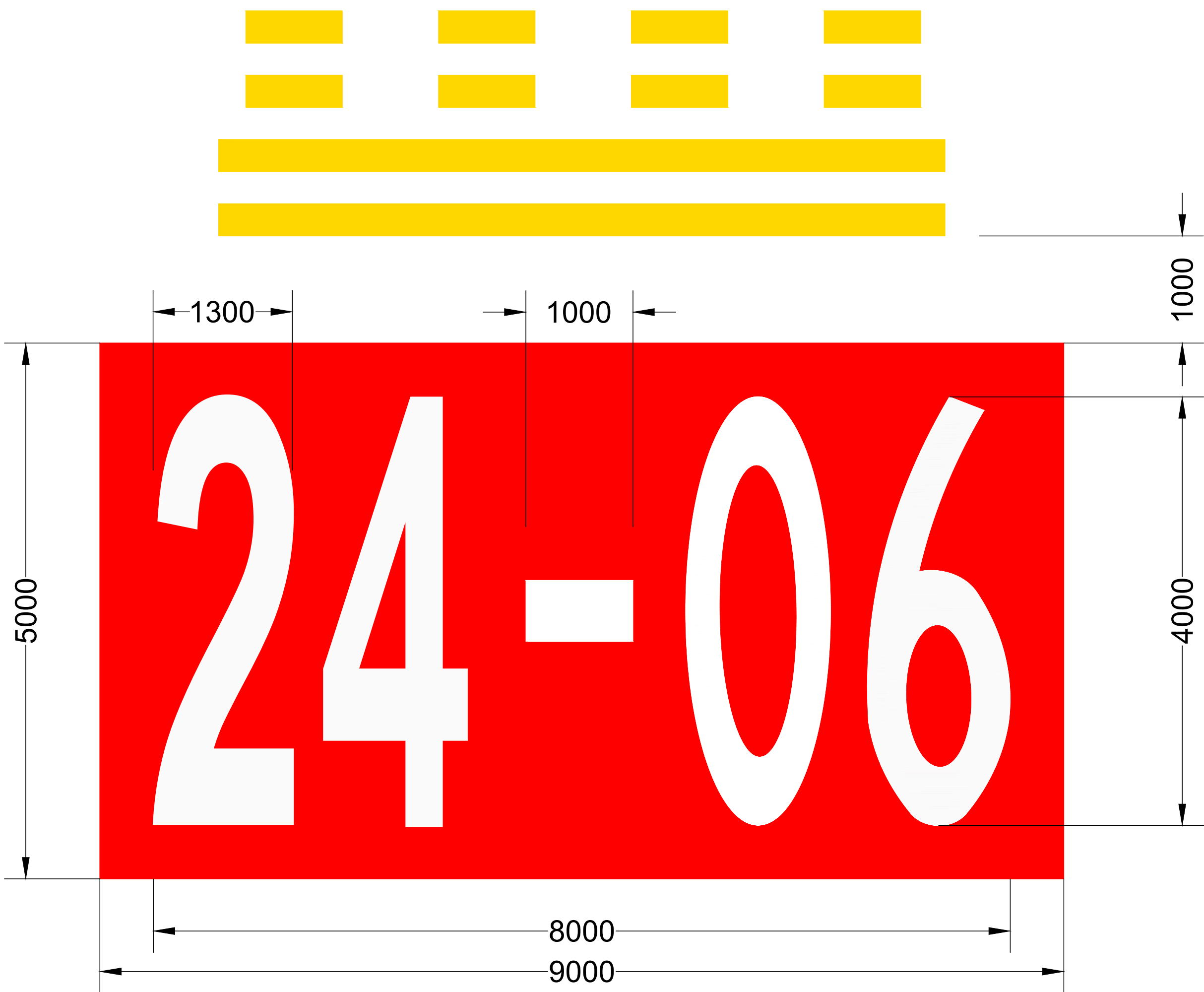
NOTES					
	A	28/05/25	FOR TENDER PURPOSES		
	SYMBOL	DATE	DESCRIPTION	CHECKED	SIGNED
	REVISION SCHEDULE				



INTERMEDIATE HOLDING POSITION MARKING

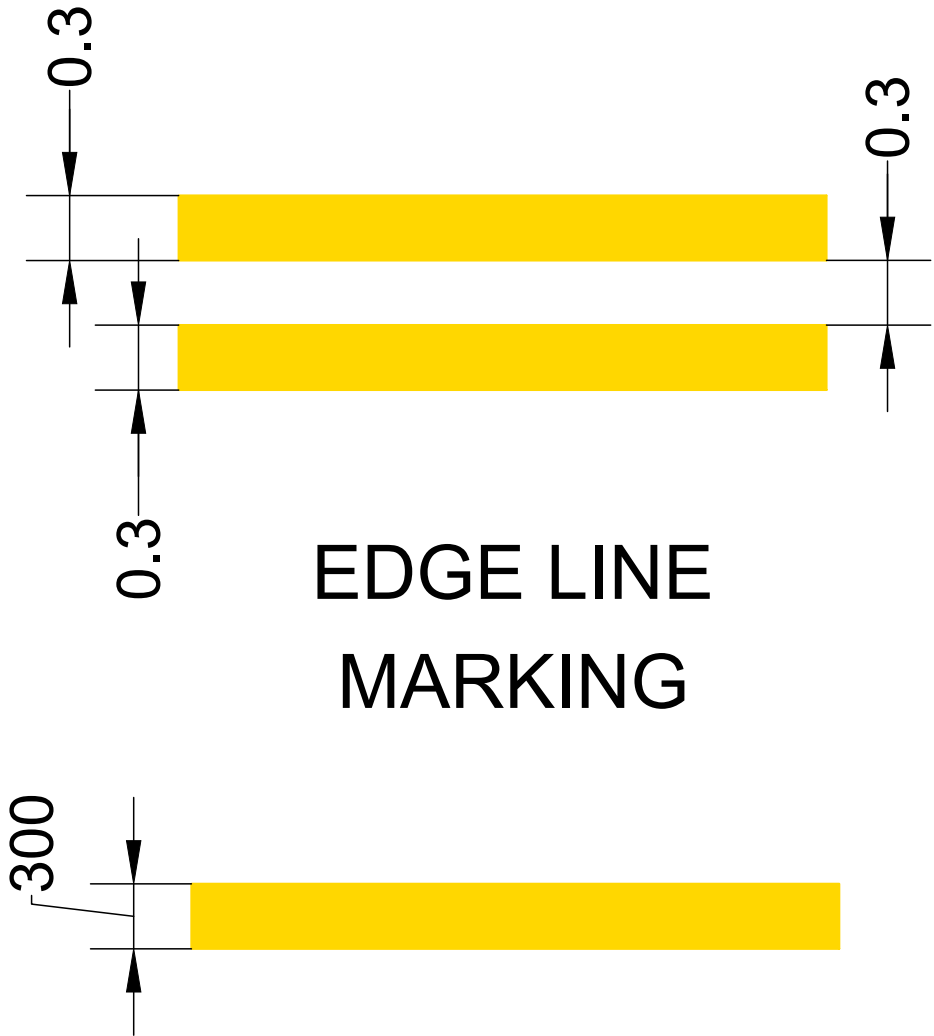


RUNWAY-HOLDING POSITION MARKINGS



MANDATORY INSTRUCTION MARKING

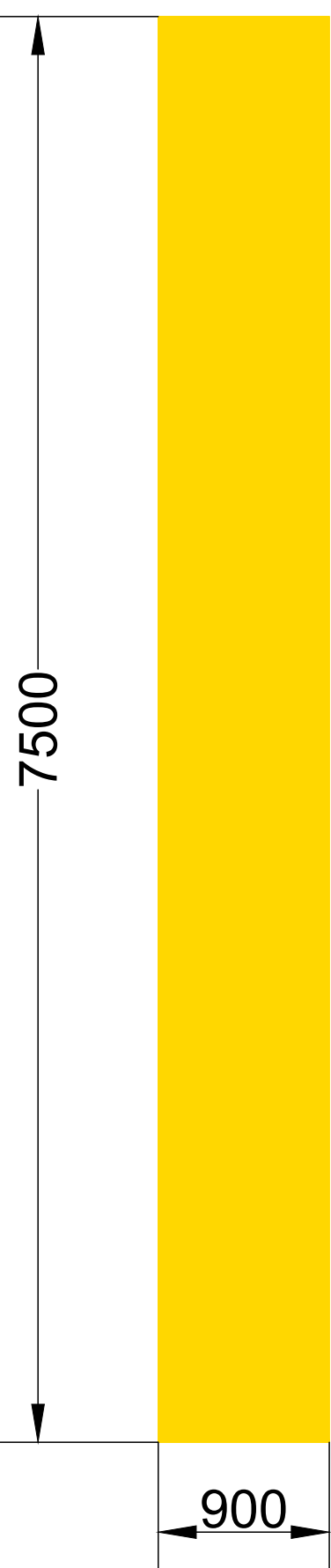
THE DIMENSIONS OF THESE NUMBERS ARE TO BE IN LINE WITH ICAO ANNEX 14, VOL 1, 8TH ED. - APPENDIX 3



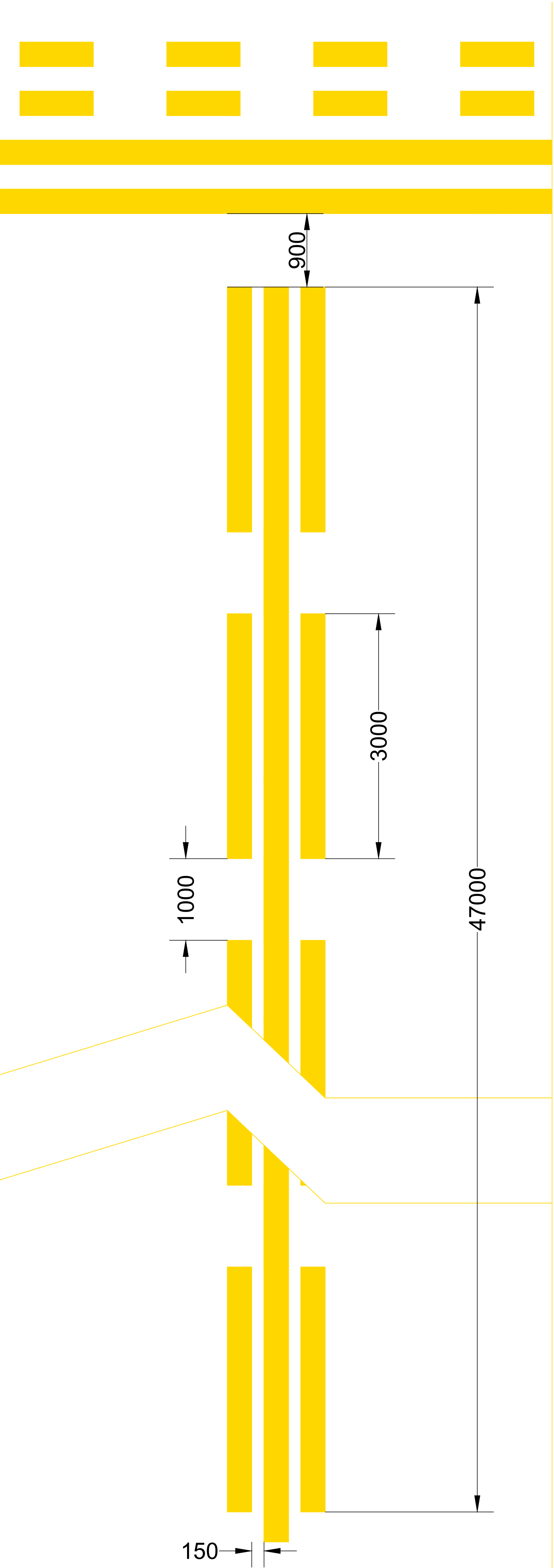
EDGE LINE MARKING



CENTRE LINE MARKING



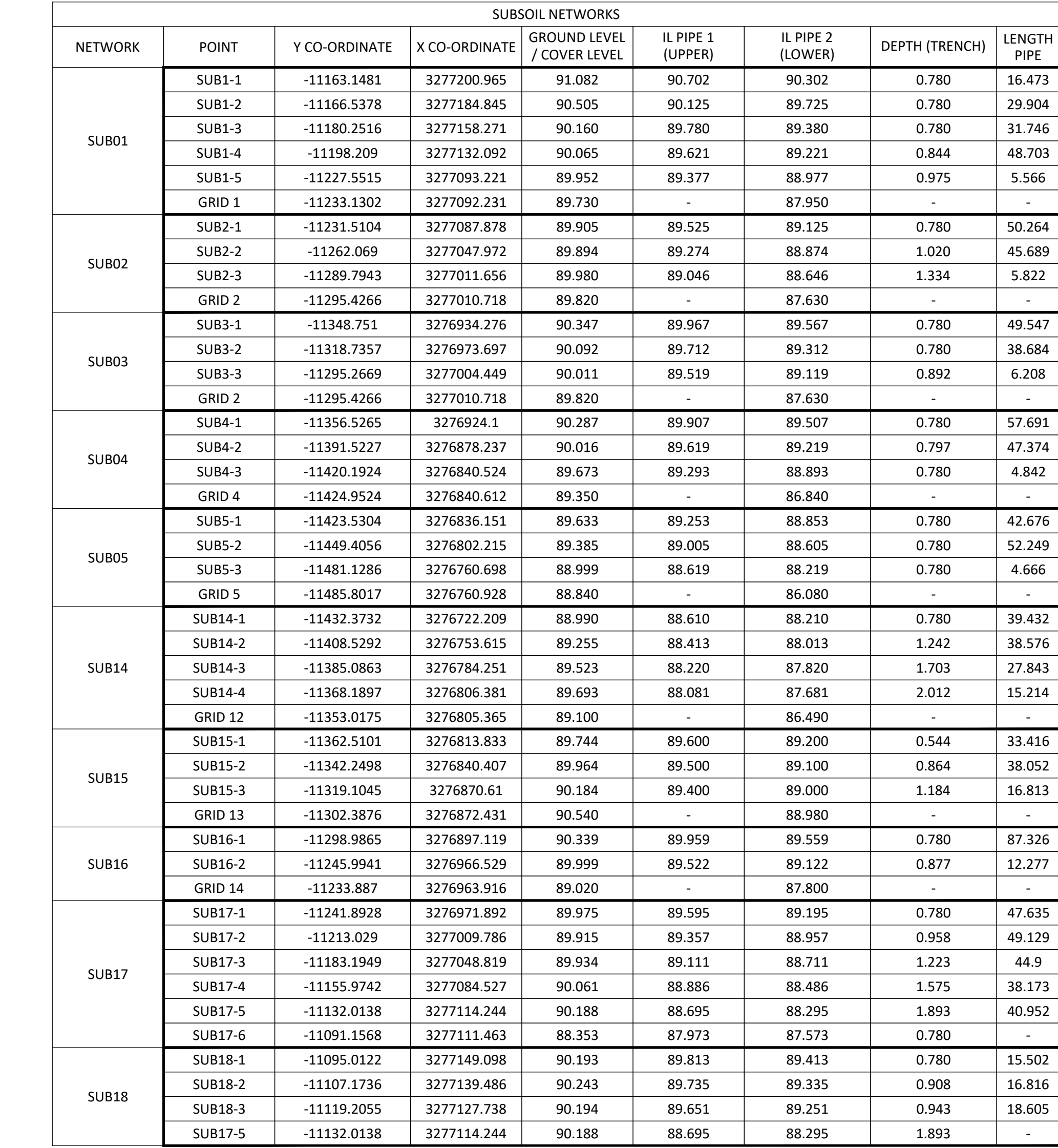
TRANSVERSE STRIPS



ENHANCED TAXIWAY CENTRE LINE MARKING

**TYPICAL DETAIL FOR PAINT MARKINGS FOR BRAVO
AND QUEBEC TAXIWAYS
SCALE 1:36**

NOTES					FOR DISCUSSION					DESIGNED BY: Y.NANKHOO(Pr.Eng: 202302737)		CLIENT:  AIRPORTS COMPANY SOUTH AFRICA	CONSULTANT:  NANKHOO Consulting Engineers		AS BUILT		CONSULTING ENGINEER			AIRPORTS COMPANY SOUTH AFRICA KING SHAKA INTERNATIONAL AIRPORT			ORIGINAL SIZE A0	SCALE 1:36	SHEET OF	31 49
					NANKHOO CONSULTING ENGINEERS RETAINS COPYRIGHT OVER ALL INTELLECTUAL PROPERTY, INCLUDING DESIGNS AND DOCUMENTS CREATED UNDER AN AGREEMENT FOR THE SPECIFIED PROJECT. THE CLIENT MAY ONLY USE THESE DESIGNS AND DOCUMENTS FOR THEIR INTENDED PURPOSE. ON THIS PROJECT, PROVIDED PAYMENT FOR THE DESIGN HAS BEEN RECEIVED, ANY OTHER USE, WHETHER OR NOT PAYMENT HAS BEEN MADE, CONSTITUTES A COPYRIGHT INFRINGEMENT, AND ALL RIGHTS ARE RESERVED.					CHECKED BY: A.N.SUKURAM(Pr.TechEng:201670173)			DRAWN BY: M.SCOTT		SUPERVISING ENGINEER		DATE		SIGNATURE PR.NO. DATE							
										CHECKED BY: A.N.SUKURAM(Pr.TechEng:201670173)							SIGNATURE DESIGNED Y.NANKHOO			DRAWN M.SCOTT			CHECKED A.N.SUKURAM			
										DATE OF APPROVAL:																
					ALL DIMENSIONS MUST BE CONFIRMED ON-SITE BEFORE WORK BEGINS. ANY DISCREPANCIES MUST BE REFERRED TO THE ENGINEER.																					
A 26/05/25 FOR TENDER PURPOSES																										
SYMBOL DATE DESCRIPTION CHECKED SIGNED																										
REVISION SCHEDULE																										



PAVED SHOULDER
2.5% SLOPE

1:20 SLOPE

MINIMUM 150mm FREE DRAINING MATERIAL OVER GEOTEKSTILE

SELECTED AGGREGATE CLASS 2

1600 PERFORATED GEOPIPE MINIMUM 0.50% SLOPE (IL PIPE 1)

BIDIM A2 GEOTEKSTILE

1600 PERFORATED GEOPIPE MINIMUM 0.50% SLOPE (IL PIPE 2)

DEPTH VARIES

400

30

400

TYPICAL AGGREGATE PERMEABILITY

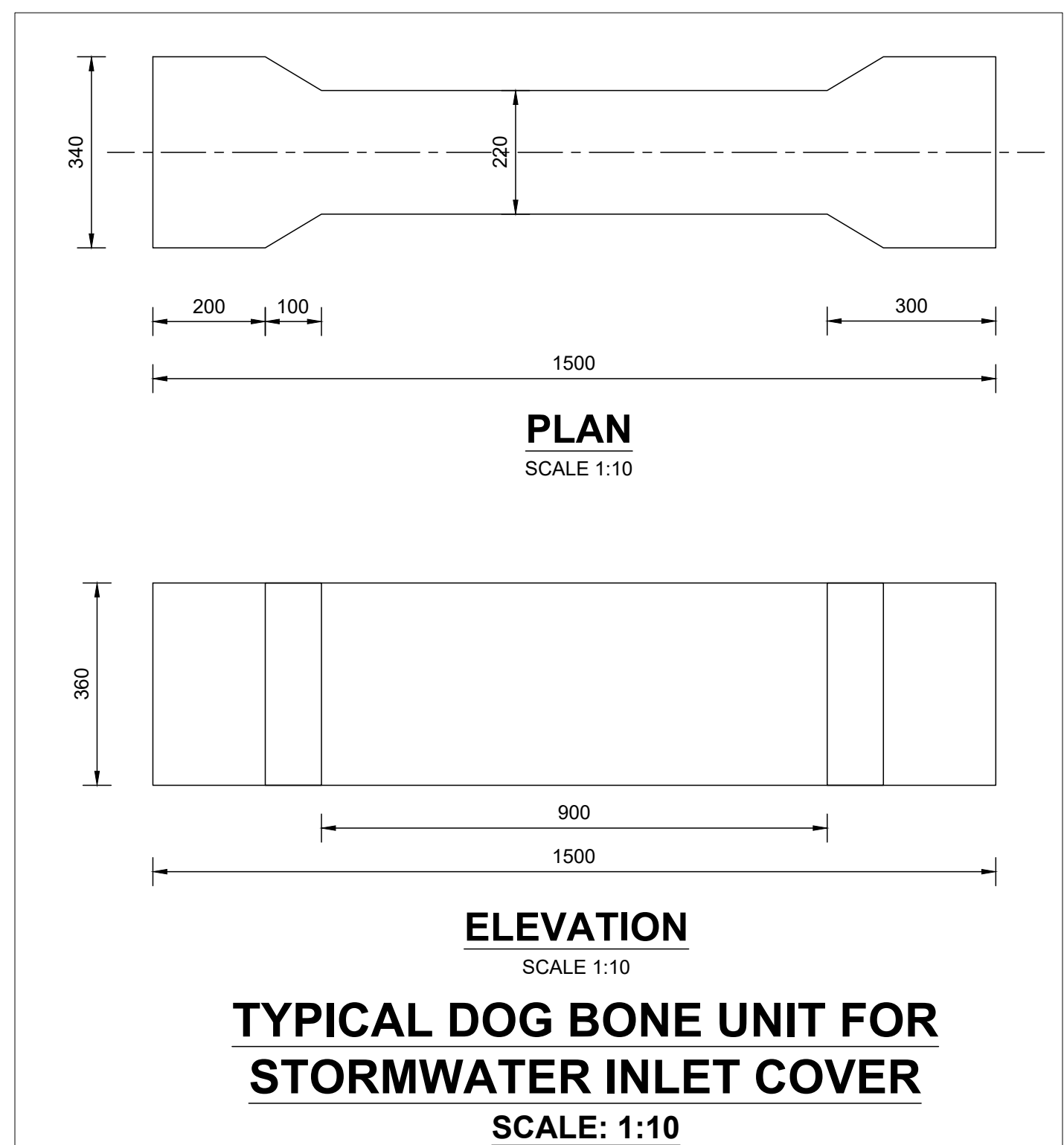
Size (mm)	Permeability (m/s)
25-38	0.50
9-20	0.13

NOTES: PIPE BEDDING
CLASS 1 - CRUSHED ROCK STONE AGGREGATE WITH LITTLE OR NO FINES (9-38mm)

CLEANING EYES TO BE AS FOLLOWS:

1. 100m MAX ON STRAIGHT SECTIONS.
2. AT ALL BENDS.
3. OR AS DIRECTED BY ENGINEER.

DUAL PIPE SUBSOIL DETAIL
SCALE:1:10



FOR TENDER PURPOSES			
ORIGINAL SIZE	SCALE	SHEET	32
A0	AS SHOWN	OF	49
PLAN NO.:-			
KSIA-CIV-DP-021			

FOR DISCUSSION

DESIGNED BY:	Y.NANKHOOD(Pr.Eng: 202302737)
CHECKED BY:	A.N.SUKURAM(Pr.TechEng:201670173)
DRAWN BY:	K.RAMSUROOP
CHECKED BY:	A.N.SUKURAM(Pr.TechEng:201670173)
DATE OF APPROVAL:	



AS BUILT

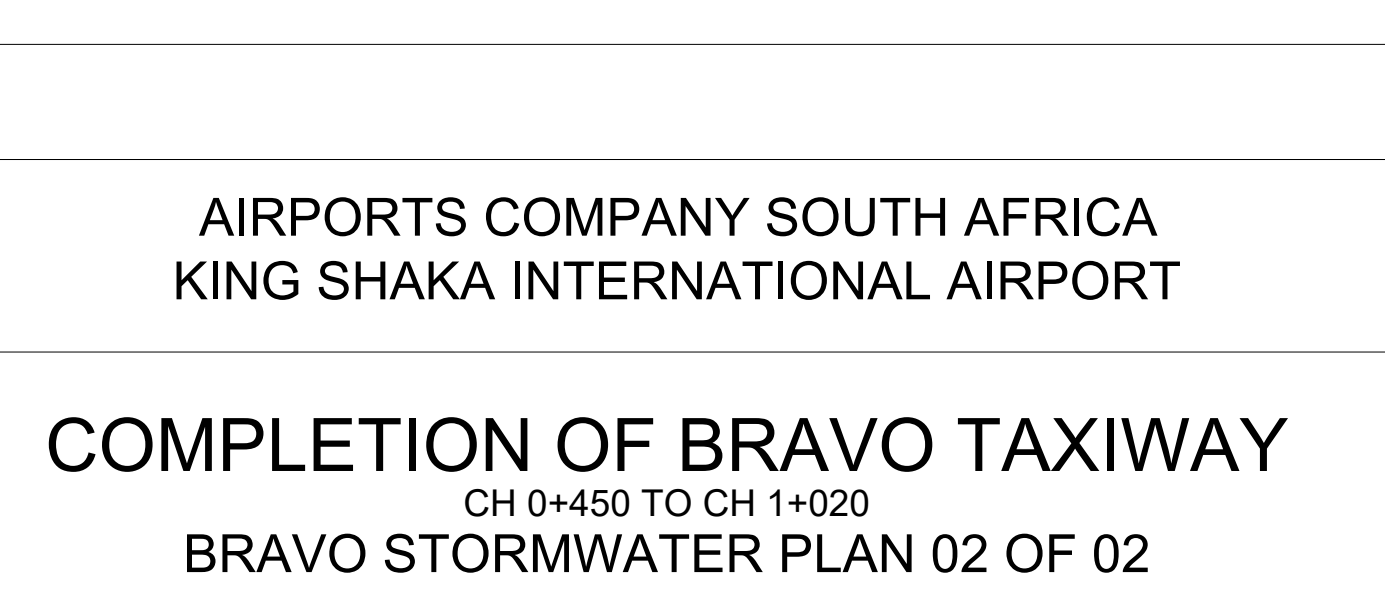
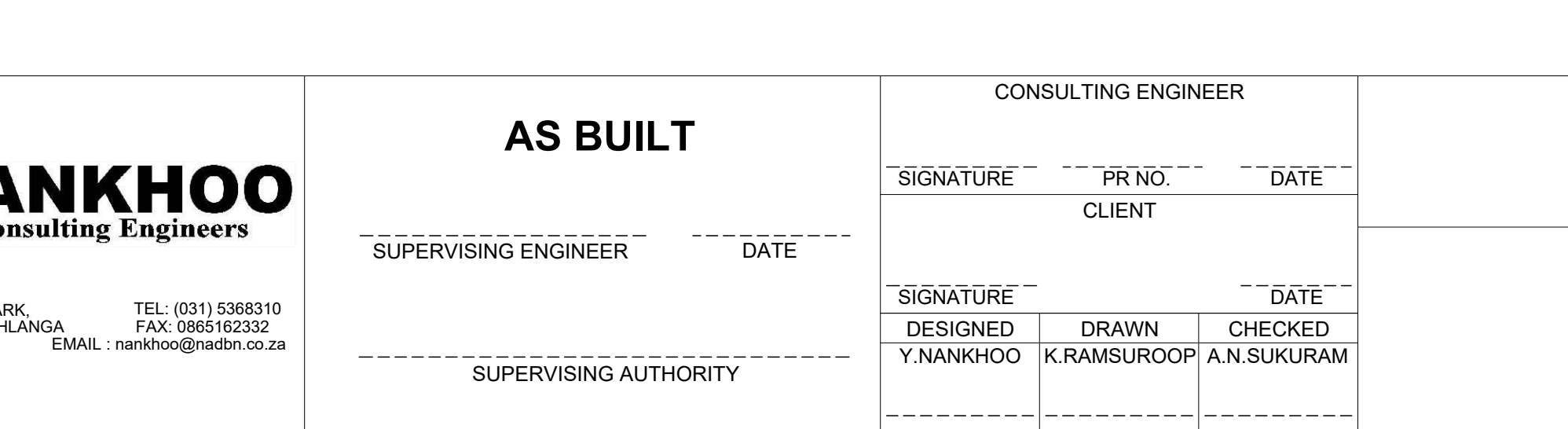
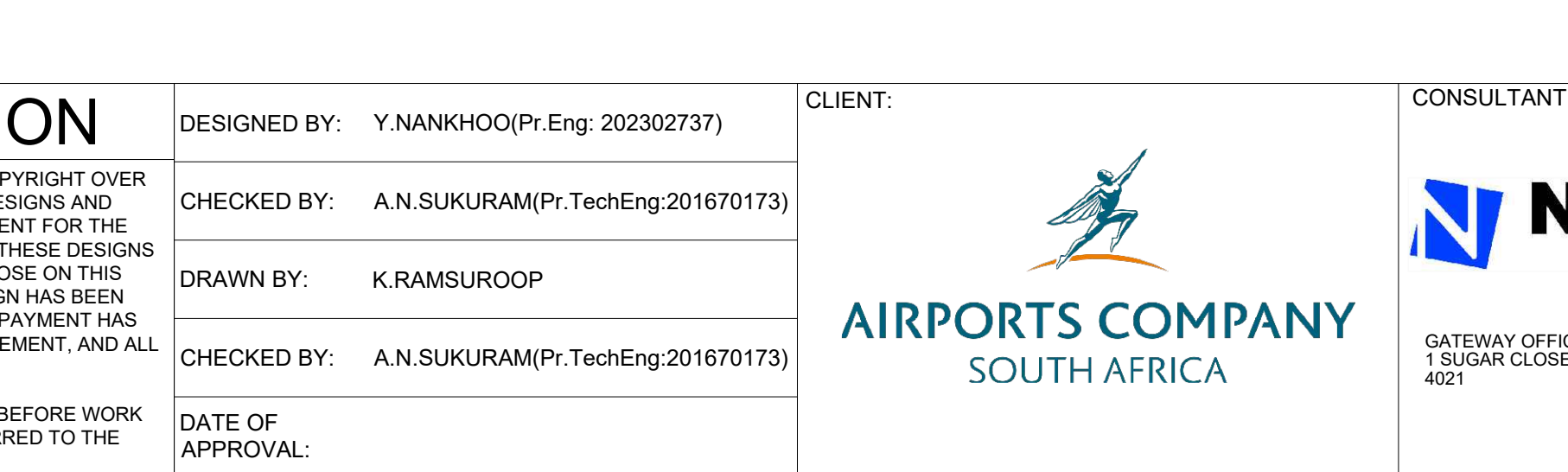
----- SUPERVISING ENGINEER	----- DATE
----- SUPERVISING AUTHORITY	

CONSULTING ENGINEER		
SIGNATURE	PR NO.	DATE
CLIENT		
SIGNATURE	DATE	
DESIGNED	DRAWN	CHECKED
Y.NANKHOO	K.RAMSUROOP	A.N.SUKURAM

COMPLETION OF BRAVO TAXIWAY
CH 0+000 TO CH 0+550
BRAVO STORMWATER PLAN 01 OF 02



NOTES								FOR DISCUSSION
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A	26/05/25	FOR TENDER PURPOSES						
SYMBOL	DATE	DESCRIPTION	CHECKED	SIGNED	ALL DIMENSIONS MUST BE CONFIRMED BEGINNING ANY DISCREPANCIES MUST BE ENGINEERED			
REVISION SCHEDULE								

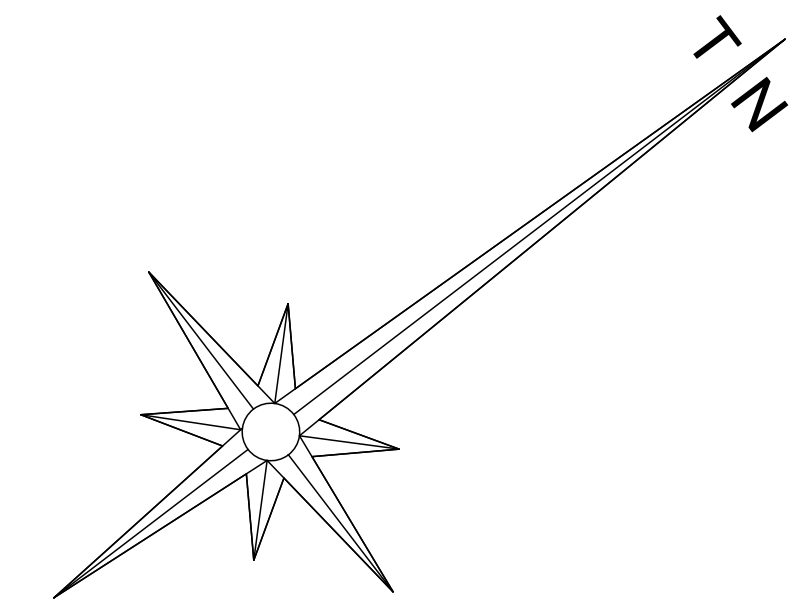


FOR TENDER PURPOSES			
ORIGINAL SIZE A0	SCALE AS SHOWN	SHEET OF	33 49
<p>PLAN NO.:-</p> <p>KSIA-CIV-DP-022</p>			

FOR TENDER PURPOSES			
ORIGINAL SIZE	SCALE	SHEET	33
A0	AS SHOWN	OF	49

PLAN NO.:-

KSIA-CIV-DP-022



QUEBEC TAXIWAY
STORMWATER PLAN
SCALE 1:500

MINIMUM 1000

1:20 SLOPE

PAVED SHOULDER
1.5% SLOPE

MINIMUM 150mm FREE DRAINING
MATERIAL OVER GEOTEXTILE

SELECTED AGGREGATE
CLASS 2

1600 PERFORATED GEOTRIPPE
MINIMUM 0.50% SLOPE
(IL PIPE 1)

BIDIM A2 GEOTEXTILE

1600 PERFORATED GEOTRIPPE
MINIMUM 0.50% SLOPE
(IL PIPE 2)

400

30

400

VARIES

DEPTH VARIES

TYPICAL AGGREGATE PERMEABILITY

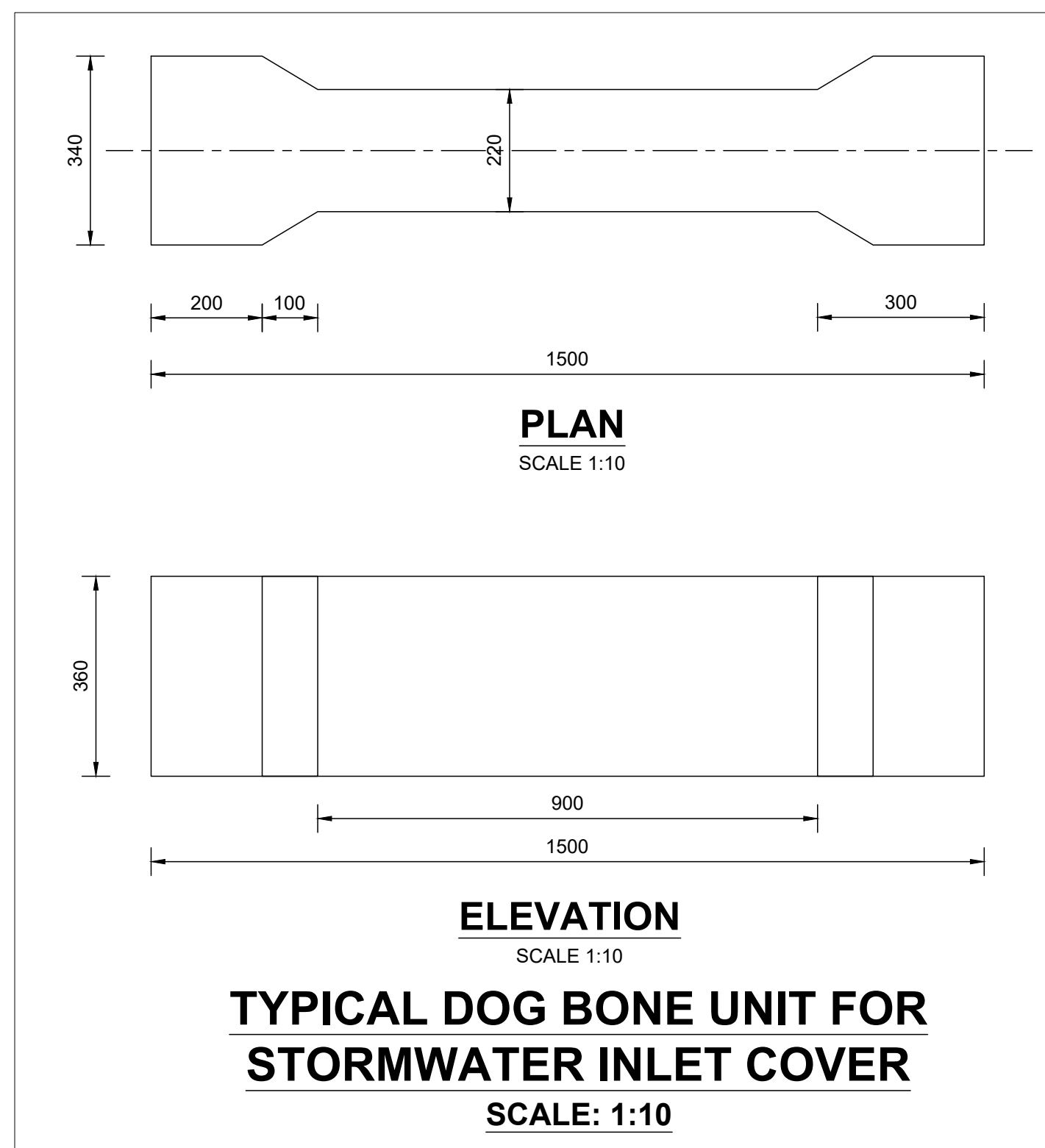
SIZE (mm)	PERMEABILITY (m/s)
25-38	0.50
9-20	0.13

NOTES: PIPE BEDDING
CLASS 1 - CRUSHED ROCK STONE
AGGREGATE WITH LITTLE OR NO FINES
(9-38mm)






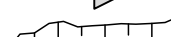


CLEANING EYES TO BE AS FOLLOWS:

1. 100m MAX ON STRAIGHT SECTIONS.
2. AT ALL BENDS.
3. OR AS DIRECTED BY ENGINEER.

**DUAL PIPE SUBSOIL DETAIL
(QUEBEC)**
SCALE:1:10



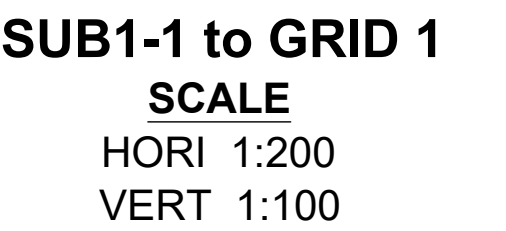
LEGEND

	ROAD EDGE LINE
	SETTING OUT CONTROL POINTS
	ROAD CENTER LINE
	FLOW DIRECTION ARROW
	CUT BANK
	FILL BANK
	EXISTING STORMWATER MANHOLES
	PROPOSED SUBSOIL DRAINS

AIRPORTS COMPANY SOUTH AFRICA
KING SHAKA INTERNATIONAL AIRPORT

COMPLETION OF BRAVO TAXIWAY
CH 1+046 TO CH 1+223
QUEBEC STORMWATER PLAN 01 OF 01

FOR TENDER PURPOSES			
ORIGINAL SIZE	SCALE	SHEET	34
A0	AS SHOWN	OF	49
PLAN NO.:-			
KSIA-CIV-DP-023			



<h1>FOR DISCUSSION</h1>		DESIGNED BY: Y NANKHOO(Pt.Eng: 202307237)
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ALL DIMENSIONS MUST BE CONFIRMED ON-SITE BEFORE WORK BEGINS. ANY DISCREPANCIES MUST BE REFERRED TO THE ENGINEER.		DRAWN BY: K RAMSUROOP CHECKED BY: A N SUKURAM(Pt.TechEng:2016071073)
DATE OF APPROVAL:		

CONSULTANT:

 **NANKHOO**
Consulting Engineers

GATEWAY OFFICE PARK,
1 SUGAR CLOSE, UMHLANGA
4021

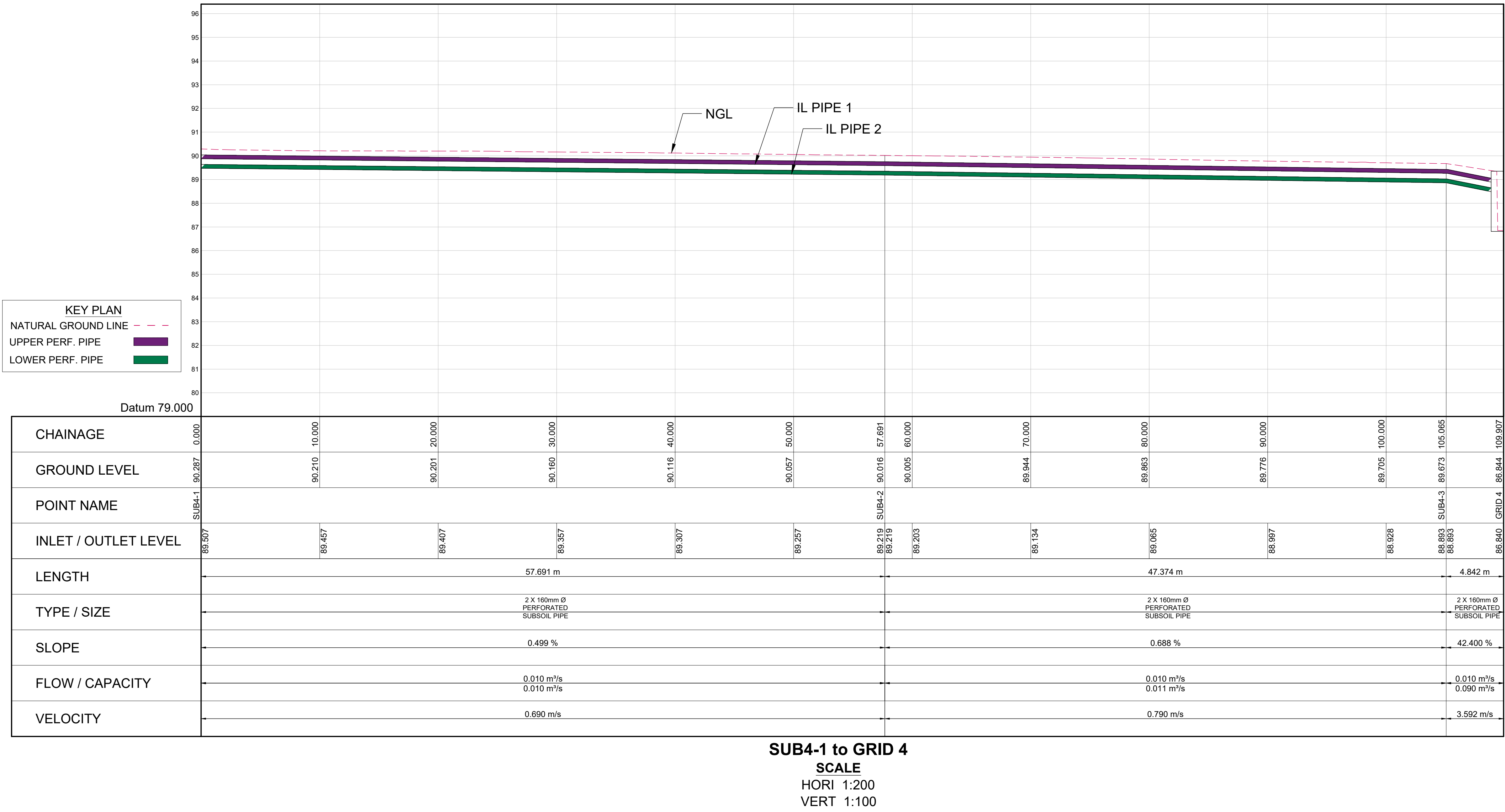
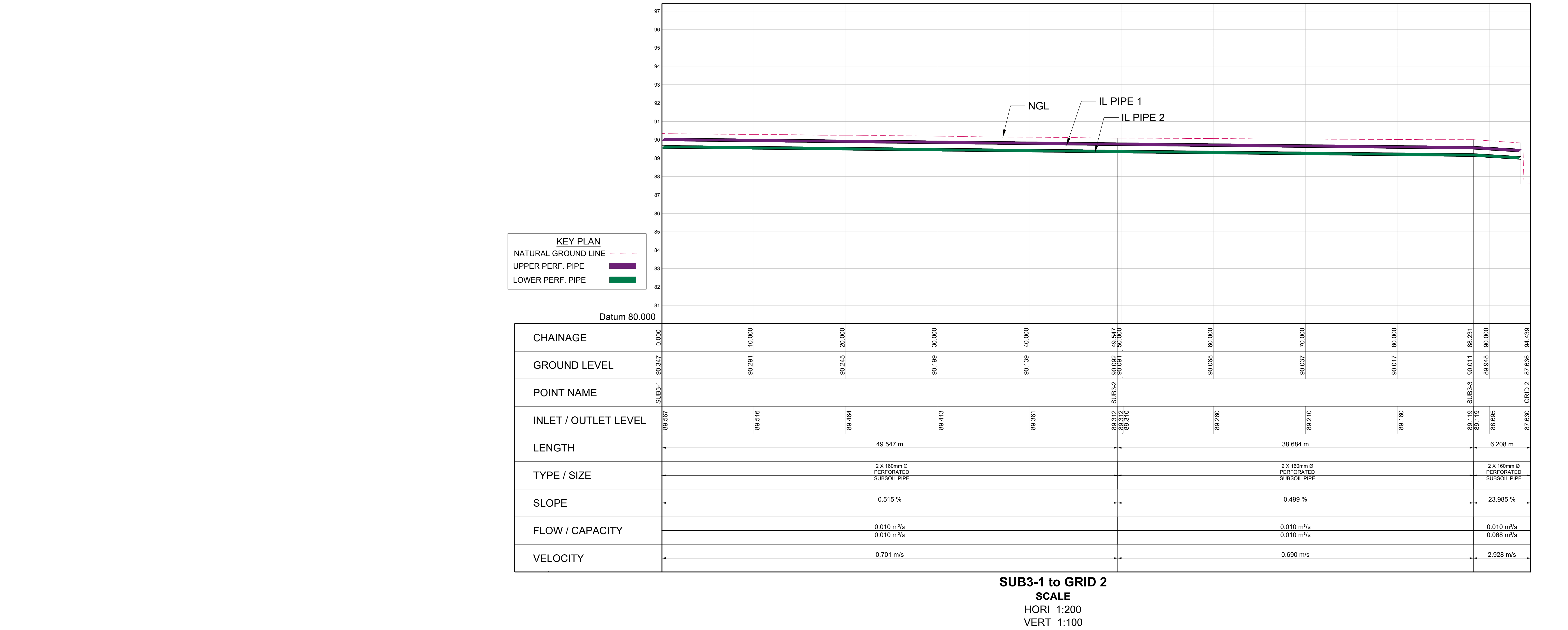
TEL: (031) 5368310
FAX: 0665162332
EMAIL : nankhoo@nadbn.co.za

CONSULTING ENGINEER		
SIGNATURE	PR NO.	DATE
CLIENT		
SIGNATURE	DATE	
DESIGNED Y.NANKHOO	DRAWN K.RAMSUROOP	CHECKED A.N.SUKURAM

AIRPORTS COMPANY SOUTH AFRICA
KING SHAKA INTERNATIONAL AIRPORT

COMPLETION OF BRAVO TAXIWAY
CH 0+000 TO CH 1+223
BRAVO STORMWATER LONGITUDINAL SECTIONS SHEET 01 OF 08

FOR TENDER PURPOSES			
ORIGINAL SIZE A0	SCALE	SHEET	35
	HOR: 200 VERT: 100	OF	49
<p>PLAN NO.:-</p> <p>KSIA-CIV-DL-024</p>			



NOTES

A	26/05/25	FOR TENDER PURPOSES		
SYMBOL	DATE	DESCRIPTION	CHECKED	SIGNED
REVISION SCHEDULE				

FOR DISCUSSION

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ALL DIMENSIONS MUST BE CONFIRMED ON-SITE BEFORE WORK BEGINS. ANY DISCREPANCIES MUST BE REFERRED TO THE ENGINEER.

DESIGNED BY: Y.NANKHOO(Pr.Eng: 202302737)

CHECKED BY: A.N.SUKURAM(Pr.TechEng 201670173)

DRAWN BY: K.RAMSUROOP

CHECKED BY: A.N.SUKURAM(Pr.TechEng 201670173)

DATE OF APPROVAL:

CLIENT:



CONSULTANT:



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TEL: (031) 5388310
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EMAIL: nankhoo@nabn.co.za

AS BUILT

SUPERVISING ENGINEER

DATE

SUPERVISING AUTHORITY

CONSULTING ENGINEER

SIGNATURE

PR NO.

DATE

CLIENT

SIGNATURE

DATE

DESIGNED

DRAWN

CHECKED

Y.NANKHOO

K.RAMSUROOP

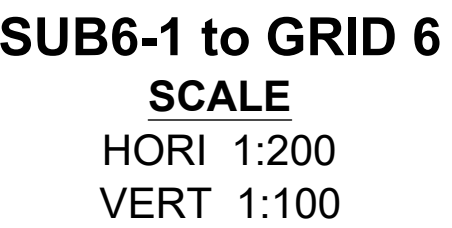
A.N.SUKURAM

AIRPORTS COMPANY SOUTH AFRICA
KING SHAKA INTERNATIONAL AIRPORT

COMPLETION OF BRAVO TAXIWAY
CH 0+000 TO CH 1+223
BRAVO STORMWATER LONGITUDINAL SECTIONS SHEET 02 OF 08

FOR TENDER PURPOSES		
ORIGINAL SIZE A0	SCALE HOR: 200 VERT: 100	SHEET 36 OF 49
PLAN NO.:- KSIA-CIV-DL-025		

KSIA-CIV-DL-025



<h2 style="text-align: center;">FOR DISCUSSION</h2> <p>NANKOO CONSULTING ENGINEERS RETAINS COPYRIGHT OVER ALL INTELLECTUAL PROPERTY, INCLUDING DESIGNS AND PATENTS, FOR THE PROJECT. THE CLIENT MAY ONLY USE THE SPECIFIED PROJECT. THE CLIENT MAY ONLY USE THESE DESIGNS AND PATENTS FOR THEIR INTENDED APPLICABLE PROJECT. PROPOSED PAYMENT FOR THE DESIGN HAS BEEN MADE AND WILL BE PAID. HOWEVER, THE DESIGN HAS BEEN MADE. CONSTITUTES A COPYRIGHT INFRINGEMENT, AND ALL RIGHTS ARE RESERVED.</p> <p>ALL DIMENSIONS MUST BE CONFIRMED ON-SITE BEFORE WORK BEGINS. ANY DISCREPANCIES MUST BE REFERRED TO THE ENGINEER.</p>		<p>DESIGNED BY: Y.NANKOOH(P:Eng, 2023027373)</p> <p>CHECKED BY: A.N.SUKRAM(P, TechEng 201670173)</p> <p>DRAWN BY: K.SAMUROP</p> <p>CHECKED BY: A.N.SUKRAM(P, TechEng 201670173)</p> <p>DATE OF APPROVAL:</p>	
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CONSULTANT:

 **NANKHOO**
Consulting Engineers

GATEWAY OFFICE PARK,
1 SUGAR CLOSE, UMHLANGA
4021

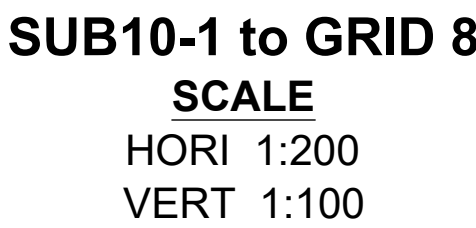
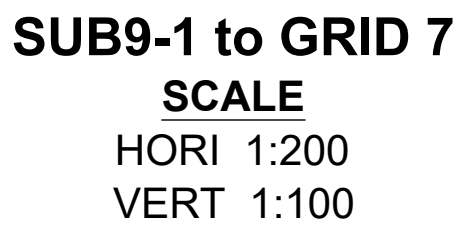
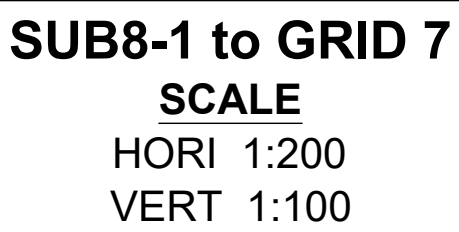
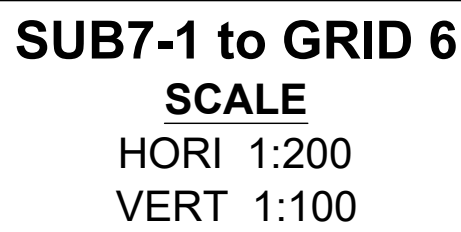
TEL: (031) 5368310
FAX: 0865162332
EMAIL: nankhoo@nadb.co.za

CONSULTING ENGINEER		
SIGNATURE	PR NO.	DATE
CLIENT		
SIGNATURE	DATE	
DESIGNED	DRAWN	CHECKED
Y.NANKHOO	K.RAMSUROOP	A.N.SUKURAM

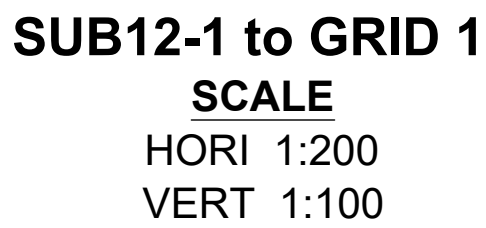
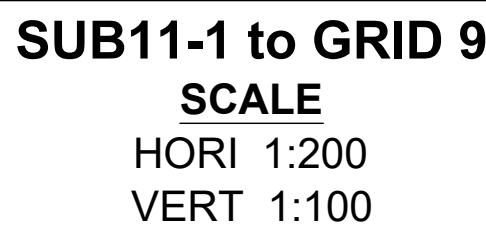
AIRPORTS COMPANY SOUTH AFRICA
KING SHAKA INTERNATIONAL AIRPORT

COMPLETION OF BRAVO TAXIWAY
CH 0+000 TO CH 1+223
BRAVO STORMWATER LONGITUDINAL SECTIONS SHEET 03 OF 08

FOR TENDER PURPOSES			
ORIGINAL SIZE A0	SCALE	SHEET	37
	HOR: 200 VERT: 100	OF	49
<p>PLAN NO.:-</p> <p>KSIA-CIV-DL-026</p>			



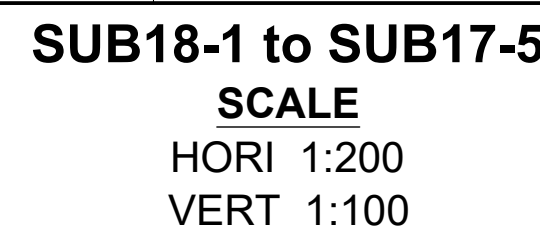
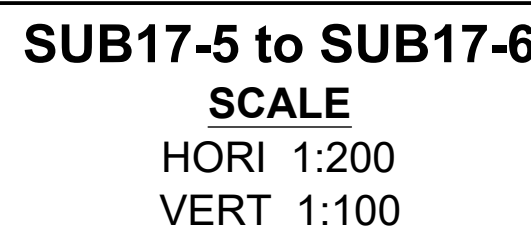
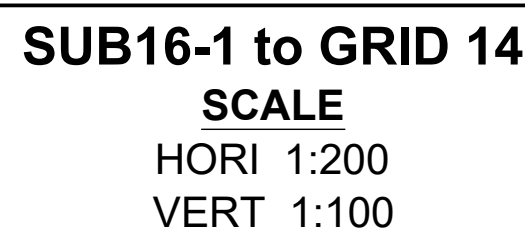
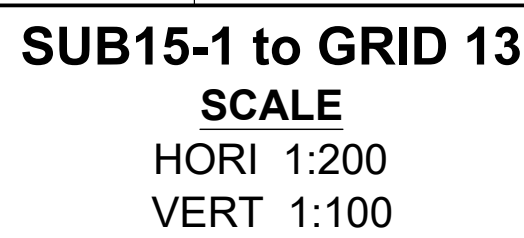
FOR TENDER PURPOSES			
ORIGINAL SIZE A0	SCALE	SHEET	38
	HOR: 200 VERT: 100	OF	49
<p>PLAN NO.:-</p> <p>KSIA-CIV-DL-027</p>			



FOR TENDER PURPOSES			
ORIGINAL SIZE A0	SCALE	SHEET	39
	HOR: 200 VERT: 100	OF	49
<p>PLAN NO.:-</p> <p>KSIA-CIV-DL-028</p>			



ORIGINAL SIZE A0	SCALE HOR: 200 VERT: 100	SHEET 40 OF 49
<p>PLAN NO.:-</p> <p>KSIA-CIV-DL-029</p>		



FOR DISCUSSION

CLIENT:



AIRPORTS COMPANY
SOUTH AFRICA

AS BUILT

----- SUPERVISING ENGINEER	----- DATE
----- SUPERVISING AUTHORITY	

AIRPORTS COMPANY SOUTH AFRICA
KING SHAKA INTERNATIONAL AIRPORT

COMPLETION OF BRAVO TAXIWAY
CH 0+000 TO CH 1+223
BRAVO STORMWATER LONGITUDINAL SECTIONS SHEET 07 OF 08

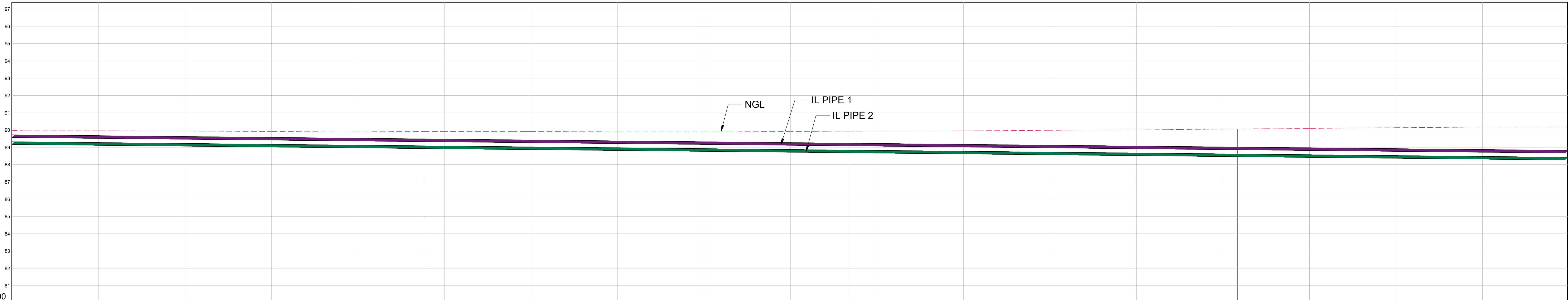
FOR TENDER PURPOSES			
ORIGINAL SIZE A0	SCALE	SHEET	41
	HOR: 200 VERT: 100	OF	49
<p>PLAN NO.:-</p> <p>KSIA-CIV-DL-030</p>			

KEY PLAN

NATURAL GROUND LINE

UPPER PERF. PIPE

LOWER PERF. PIPE



CHAINAGE																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											</
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SUB17-1 to SUB17-5
SCALE
HORI 1:200
VERT 1:100

NOTES				
A	26/05/25	FOR TENDER PURPOSES		
SYMBOL	DATE	DESCRIPTION	CHECKED	SIGNED
REVISION SCHEDULE				

FOR DISCUSSION

NANKHOO CONSULTING ENGINEERS RETAINS COPYRIGHT OVER ALL INTELLECTUAL PROPERTY, INCLUDING DESIGNS AND DOCUMENTS CREATED UNDER THIS APPOINTMENT FOR THE SPECIFIED PROJECT. THE CLIENT MAY ONLY USE THESE DESIGNS AND DOCUMENTS FOR THEIR INTENDED PURPOSE ON THIS PROJECT. PROVIDED PAYMENT FOR THE DESIGN HAS BEEN RECEIVED. ANY OTHER USE, WHETHER OR NOT PAYMENT HAS BEEN MADE, CONSTITUTES A COPYRIGHT INFRINGEMENT, AND ALL RIGHTS ARE RESERVED.

ALL DIMENSIONS MUST BE CONFIRMED ON-SITE BEFORE WORK BEGINS. ANY DISCREPANCIES MUST BE REFERRED TO THE ENGINEER.

DESIGNED BY: Y.NANKHOO(Pr.Eng: 202302737)

CHECKED BY: A.N.SUKURAM(Pr.TechEng 201670173)

DRAWN BY: K.RAMSUROOP

CHECKED BY: A.N.SUKURAM(Pr.TechEng 201670173)

DATE OF APPROVAL:

CLIENT:

AIRPORTS COMPANY
SOUTH AFRICA

CONSULTANT:

NANKHOO
Consulting Engineers

GATEWAY OFFICE PARK,
1 BUDAR CLOSE, UMLHANGA
4021

TEL: (031) 5388310
FAX: 0860162352
EMAIL: nankhoo@nabn.co.za

AS BUILT

SUPERVISING ENGINEER

DATE

SUPERVISING AUTHORITY

CONSULTING ENGINEER

SIGNATURE

PR NO.

DATE

CLIENT

SIGNATURE

DATE

DESIGNED

DRAWN

CHECKED

Y.NANKHOO

K.RAMSUROOP

A.N.SUKURAM

AIRPORTS COMPANY SOUTH AFRICA
KING SHAKA INTERNATIONAL AIRPORT

COMPLETION OF BRAVO TAXIWAY
CH 0+000 TO CH 1+223
BRAVO STORMWATER LONGITUDINAL SECTIONS SHEET 08 OF 08

FOR TENDER PURPOSES

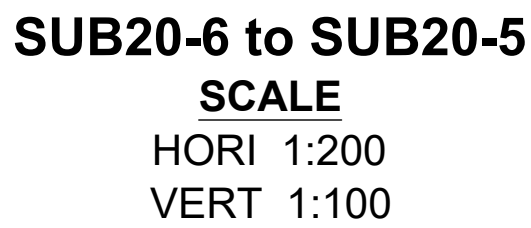
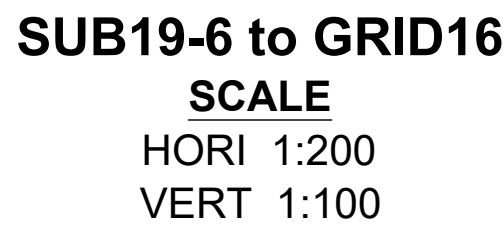
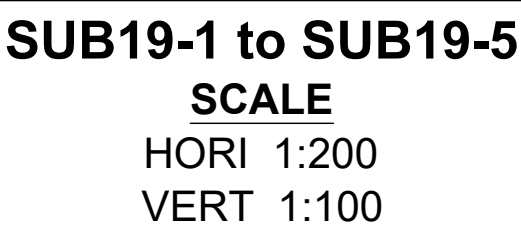
ORIGINAL SIZE A0

SCALE HOR: 200 VERT: 100

SHEET 42 OF 49

PLAN NO.:-
KSIA-CIV-DL-031

KSIA-CIV-DL-031



FOR DISCUSSION		DESIGNED BY: Y. NANKHOO(P.Eng. 2020302737)
NANKHOO CONSULTING ENGINEERS RETAINS COPYRIGHT OVER ALL INTELLECTUAL PROPERTY, INCLUDING DESIGNS AND DOCUMENTS CREATED UNDER THIS AGREEMENT FOR THE SPECIFIED PROJECT. THE CLIENT MAY ONLY USE THESE DESIGNS AND DOCUMENTS FOR THEIR INTENDED PURPOSE FOR THE PROJECT. PROVIDED PAYMENT FOR THE DESIGN HAS BEEN RECEIVED, ANY USE OTHER, WHETHER OR NOT PAYMENT HAS BEEN MADE, CONSTITUTE A COPYRIGHT INFRINGEMENT, AND ALL RIGHTS ARE RESERVED.		CHECKED BY: A. N. SUKURAMI(P.1,techEng 1901670173)
ALL DIMENSIONS MUST BE CONFIRMED ON-SITE BEFORE WORK BEGINS. ANY DISCREPANCIES MUST BE REFERRED TO THE ENGINEER.		DRAWN BY: K.RAMSARAO
		CHECKED BY: A. N. SUKURAMI(P.1,techEng 1901670173)
		DATE OF APPROVAL:

CONSULTANT:

 **NANKHOO**
Consulting Engineers

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4021

TEL: (031) 5368310
FAX: 0865 162332
EMAIL : nankhoo@nadb.co.za

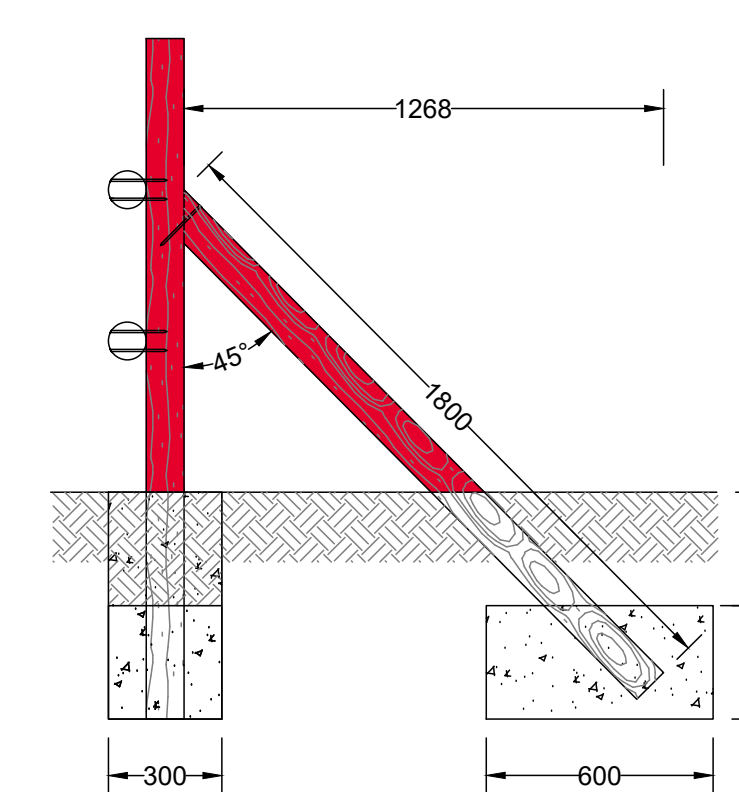
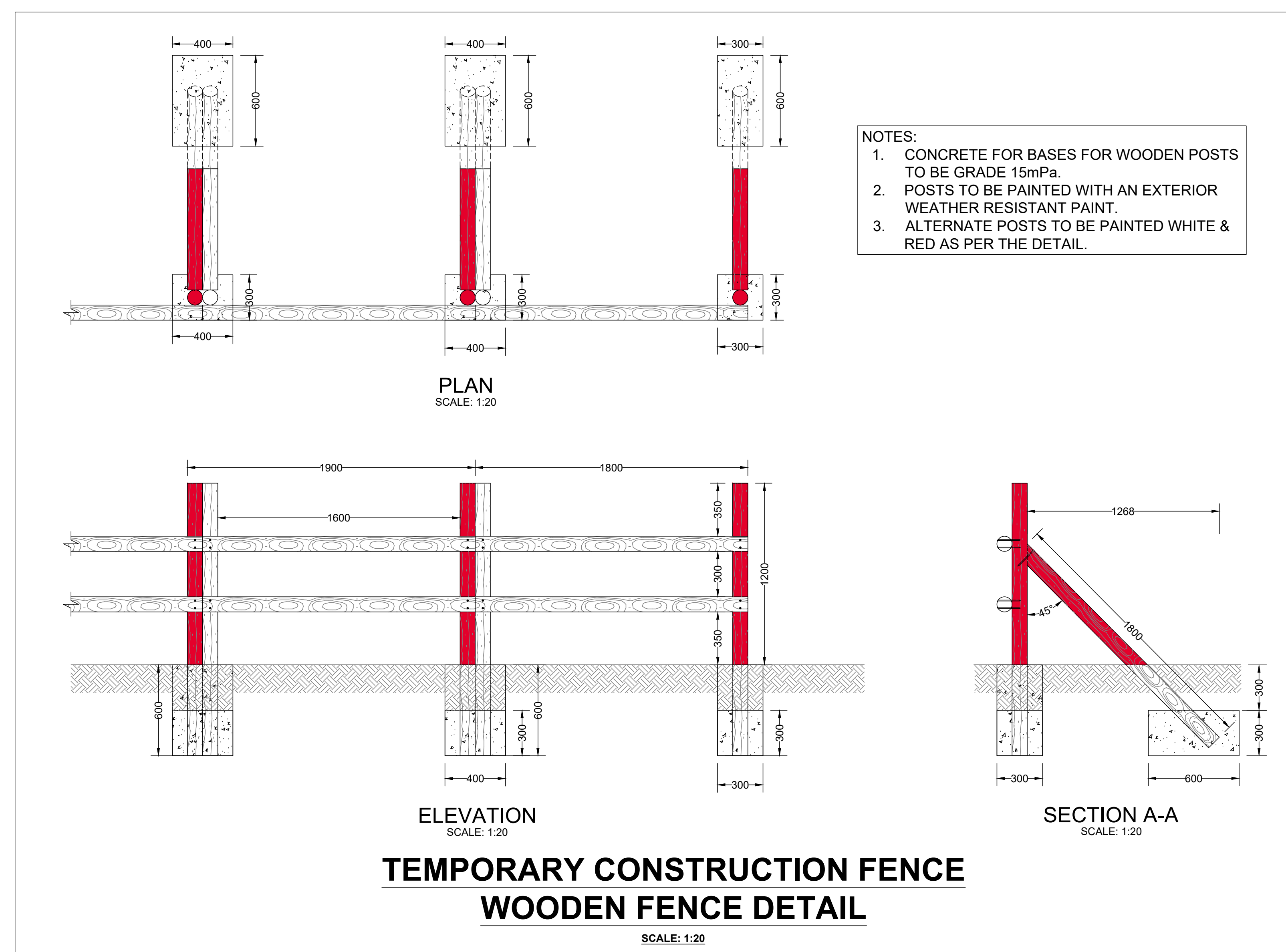
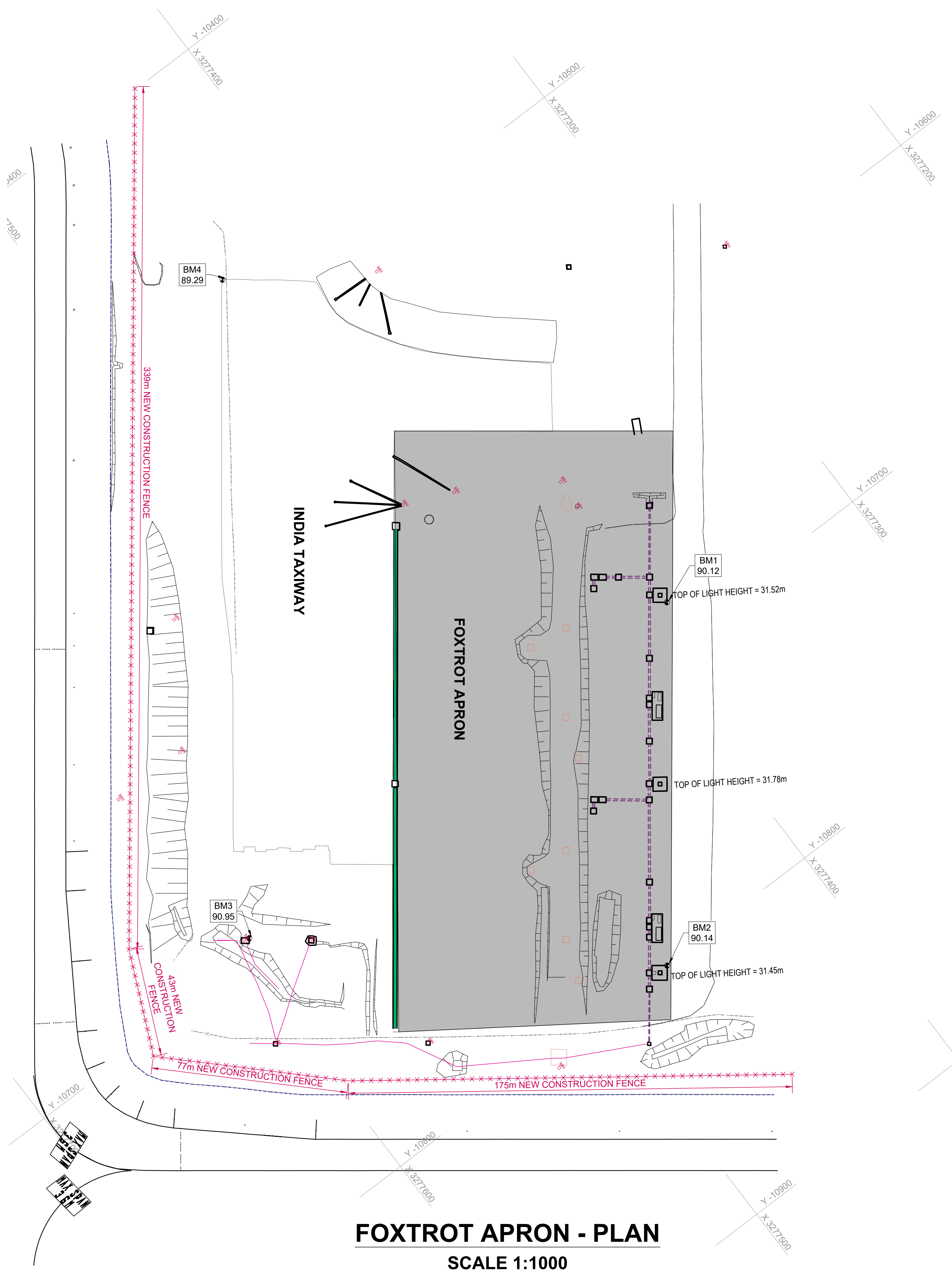
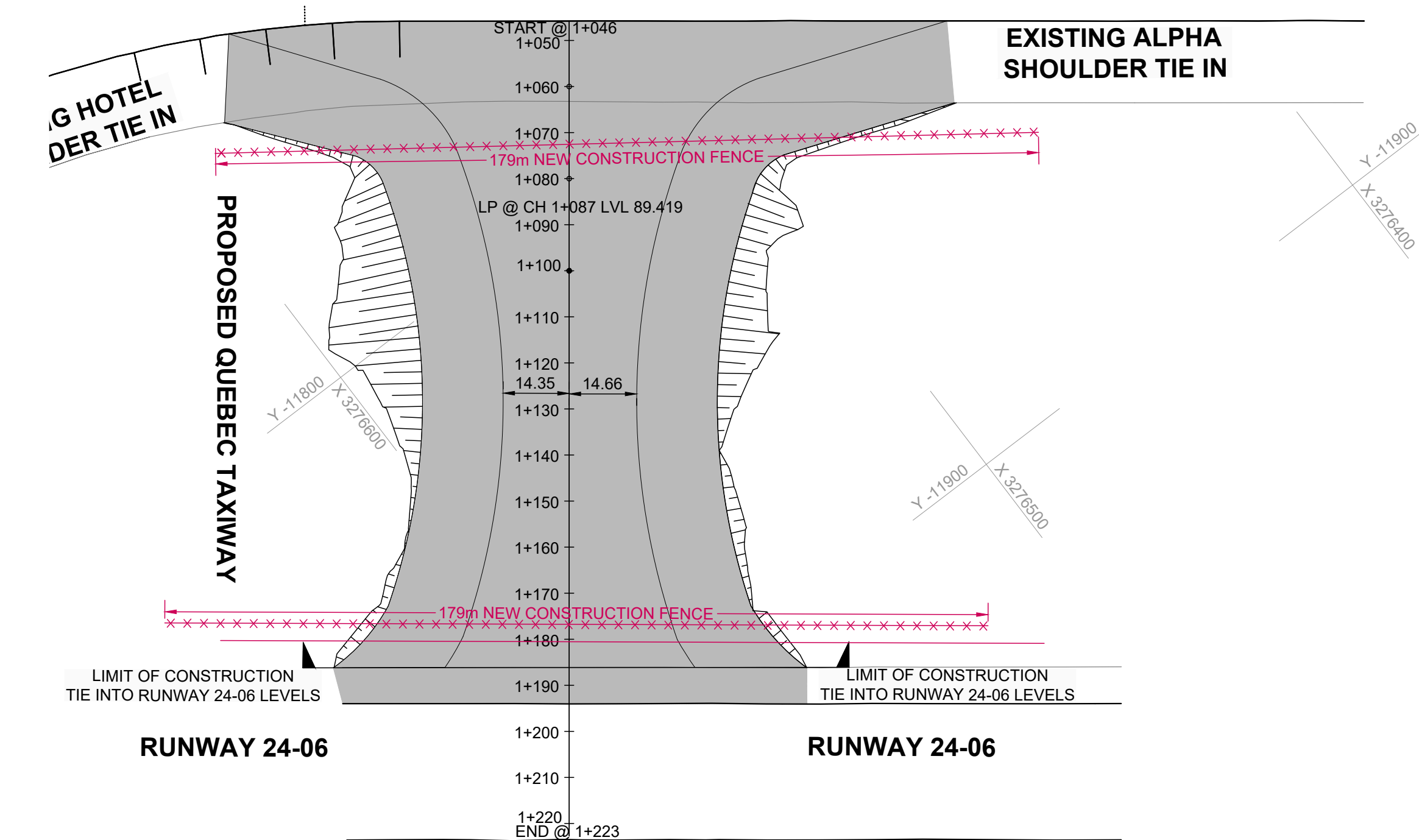
AIRPORTS COMPANY SOUTH AFRICA
KING SHAKA INTERNATIONAL AIRPORT






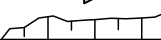

COMPLETION OF BRAVO TAXIWAY
CH 0+000 TO CH 1+223
QUEBEC STORMWATER LONGITUDINAL SECTIONS SHEET 01 OF 01

FOR TENDER PURPOSES			
ORIGINAL SIZE A0	SCALE	SHEET	43
	HOR: 200 VERT: 100	OF	49

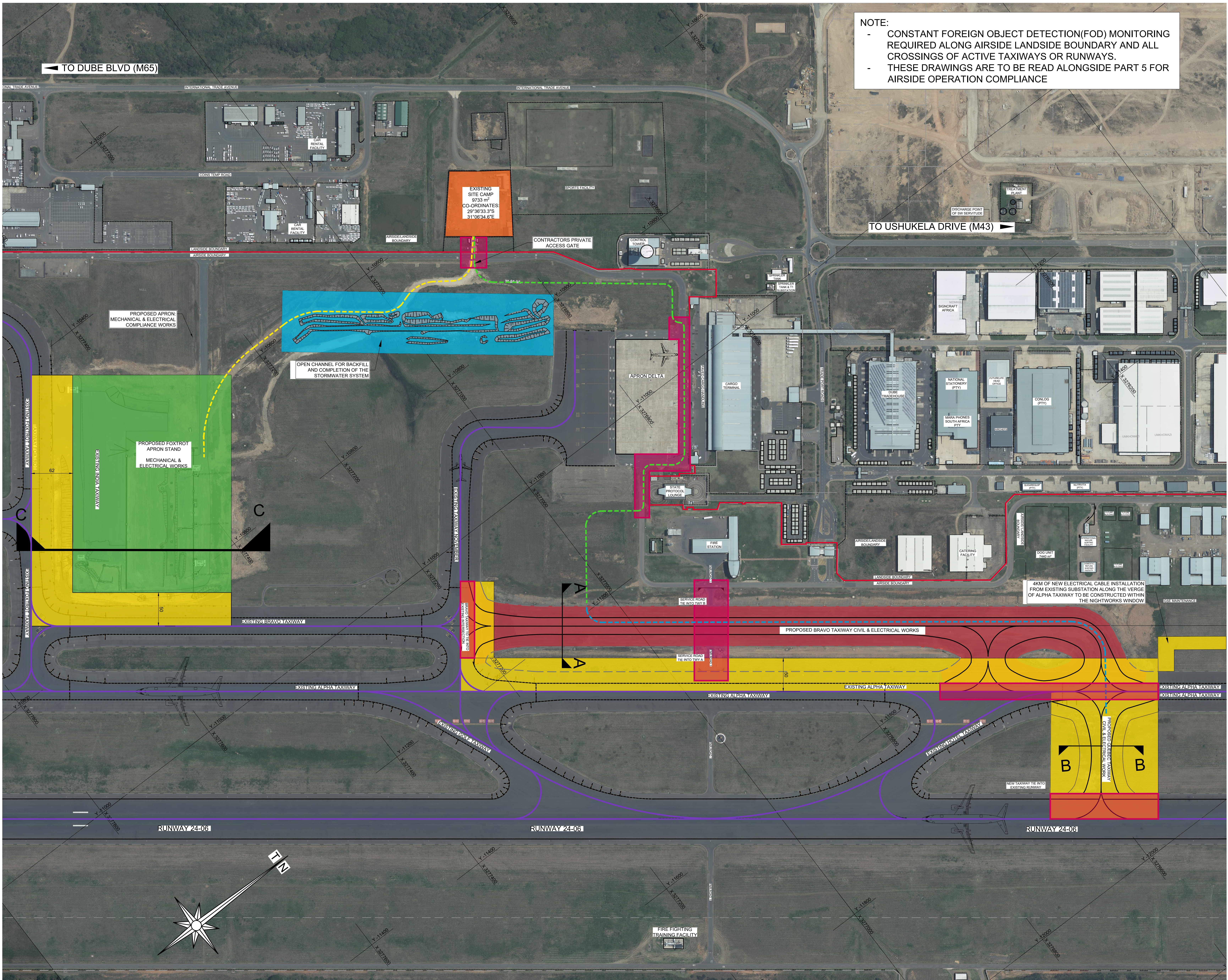
PLAN NO.:-

KSIA-CIV-DL-032



LEGEND	
	ROAD EDGE LINE
	SETTING OUT CONTROL POINTS
	ROAD CENTER LINE
	FLOW DIRECTION ARROW
	CUT BANK
	FILL BANK
	NEW TEMPORARY CONSTRUCTION FENCE

TEMPORARY CONSTRUCTION FENCE DETAILS



NOTE:

- CONSTANT FOREIGN OBJECT DETECTION(FOD) MONITORING REQUIRED ALONG AIRSIDE LANDSIDE BOUNDARY AND ALL CROSSINGS OF ACTIVE TAXIWAYS OR RUNWAYS.
- THESE DRAWINGS ARE TO BE READ ALONGSIDE PART 5 FOR AIRSIDE OPERATION COMPLIANCE

INDICATIVE CONSTRUCTION PHASING

- PHASE 1 (BRAVO TAXIWAY)
- PHASE 2 (FOXTROT APRON)
- PHASE 3 (OPEN CHANNEL)
- NIGHT WORK (QUEBEC TAXIWAY & TIE IN'S TO EXISTING TAXIWAYS)
- EXISTING SITE CAMP

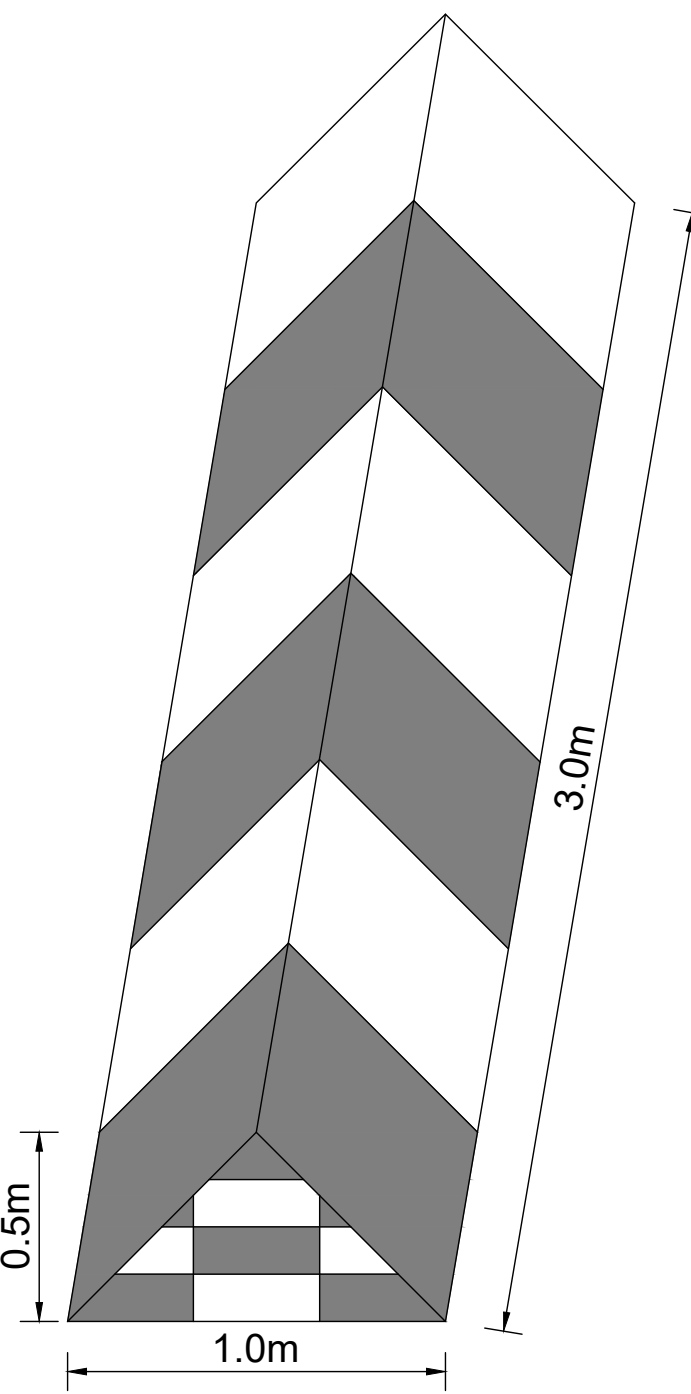
LEGEND

- PROPOSED HAULAGE ROUTE 01 (FOXTROT APRON)
- PROPOSED HAULAGE ROUTE 02 (BRAVO TAXIWAY)
- PROPOSED HAULAGE ROUTE 03 (QUEBEC TAXIWAY)
- AIRSIDE / LANDSIDE BOUNDARY
- ACTIVE AIRCRAFT ROUTES
- FULL TIME FOD (FOREIGN OBJECT DETECTION) MONITORING-STAFF REQUIRED

BOUNDARY MARKERS

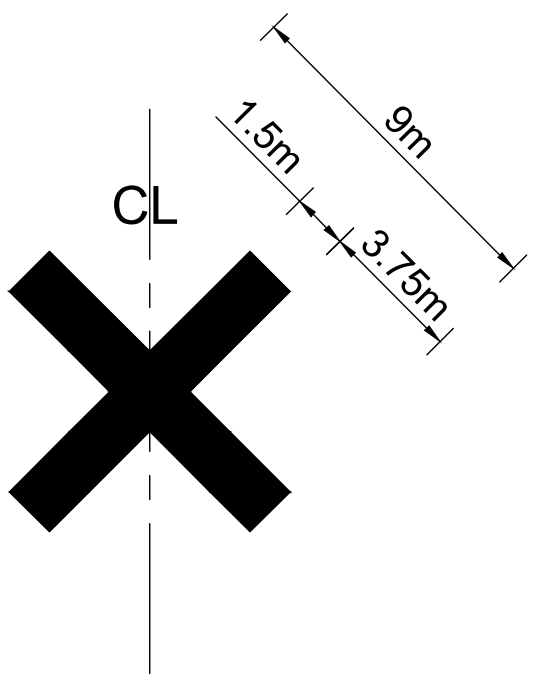
COLOUR BANDS:

- TO BE PERPENDICULAR TO LONGEST DIMENSION.
- WIDTH OF LONGEST DIMENSION.
- BANDS SHOULD CONTRAST WITH BACKGROUND AGAINST WHICH THEY WILL BE SEEN.
- ORANGE/RED AND WHITE SHOULD BE USED, EXCEPT WHERE SUCH COLOURS ARE NOT CONSPICUOUS WHEN VIEWED AGAINST THE BACKGROUND.
- BAND OF THE EXTREMITIES SHOULD BE OF DARKER COLOUR ON OBJECT.
- SHOULD BE RECOGNIZABLE IN CLEAR WEATHER FROM AT LEAST 1000m FOR AN OBJECT TO BE VIEWED FROM THE AIR AND 300m FOR AN OBJECT TO BE VIEWED FROM THE GROUND IN ALL DIRECTIONS IN WHICH AIRCRAFT IS LIKELY TO APPROACH.
- SHAPE MUST BE DISTINCT TO THE EXTENT NECESSARY TO ENSURE THAT THEY ARE NOT MISTAKEN FOR MARKERS THAT MAY CONVEY OTHER INFORMATION.
- TO BE PLACED AT EACH END OF THE CLOSED TAXIWAY AND INTERSECTION WITH OTHER TAXIWAYS AS PER SAFETY AND OPERATIONAL MANUAL OR AS OTHERWISE INSTRUCTED.



CLOSED TAXIWAY TEMPORARY MARKING

- PLACED AT EACH END OF THE TAXIWAY OR PORTION THERE OF, DECLARED THE TAXIWAY CLOSED.
- MAX. INTERVAL NOT EXCEEDING 300m.
- YELLOW SHOULD BE USED.



NOTES

FOR DISCUSSION

NANKHO CONSULTING ENGINEERS RETAINS COPYRIGHT OVER ALL INTELLECTUAL PROPERTY, INCLUDING DESIGNS AND DOCUMENTS CREATED UNDER THIS APPOINTMENT FOR THE SPECIFIED PROJECT. THE CLIENT MAY ONLY USE THESE DESIGNS AND DOCUMENTS FOR THEIR INTENDED PURPOSE ON THIS PROJECT. PROVIDED PAYMENT FOR THE DESIGN HAS BEEN RECEIVED. ANY OTHER USE, WHETHER OR NOT PAYMENT HAS BEEN MADE, CONSTITUTES A COPYRIGHT INFRINGEMENT, AND ALL RIGHTS ARE RESERVED.

ALL DIMENSIONS MUST BE CONFIRMED ON-SITE BEFORE WORK BEGINS. ANY DISCREPANCIES MUST BE REFERRED TO THE ENGINEER.

Designed by:- Y.NANKHO(Pr.Eng: 202302737)

Checked by:- A.N.SUKURAM(Pr.TechEng 201670173)

Drawn by:- N.GOVENDER

Checked by:- A.N.SUKURAM(Pr.TechEng 201670173)

Date of Approval:-

CLIENT:



CONSULTANT:



AS BUILT

SUPERVISING ENGINEER DATE

SUPERVISING AUTHORITY

CONSULTING ENGINEER

SIGNATURE PPR NO DATE

CLIENT

SIGNATURE DESIGNED DRAWN CHECKED

Y.NANKHO N.GOVENDER A.N.SUKURAM

AIRPORTS COMPANY SOUTH AFRICA
KING SHAKA INTERNATIONAL AIRPORT

COMPLETION OF BRAVO TAXIWAY

CONSTRUCTION PHASING AND TEMPORARY TRAFFIC CONTROL PLAN

FOR TENDER PURPOSES

ORIGINAL SIZE	SCALE	SHEET	48
A0	1:2000	OF	49

PLAN NO.:-

KSIA-CIV-PP-033

KSIA-CIV-PP-033

AIRPORTS COMPANY SOUTH AFRICA SOC LIMITED



AIRPORTS COMPANY
SOUTH AFRICA

PROJECT

COMPLETION OF BRAVO TAXIWAY & FOXTROT APRON STANDS AT KING SHAKA INTERNATIONAL AIRPORT

PROJECT NO. : KSIA7806/2025/RFP

MAY 2025

VOLUME 4: BOOK OF TENDER DRAWINGS

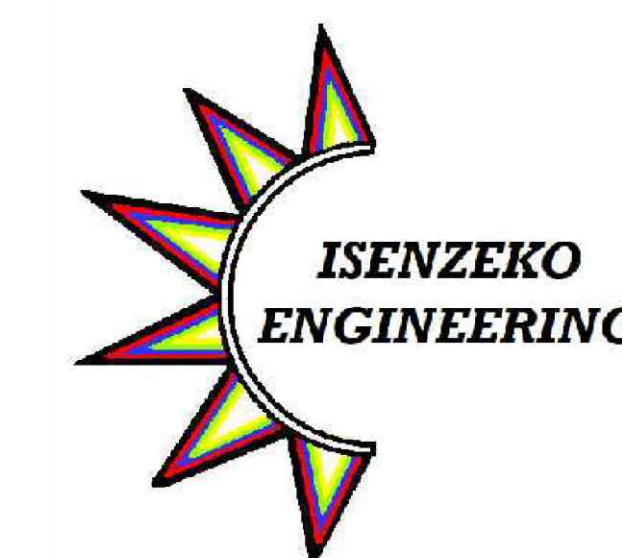
PART B - ELECTRICAL WORKS

CLIENT:



AIRPORTS COMPANY SOUTH AFRICA
KING SHAKA INTERNATIONAL AIRPORT
KWAZULU NATAL,
4407

SUB-CONSULTING ENGINEER:



GLEN ASHLEY,
DURBAN NORTH,
4153
TEL:031 562 0291

AIRPORTS COMPANY SOUTH AFRICA SOC LIMITED



COMPLETION OF BRAVO TAXIWAY & FOXTROT APRON STANDS AT KING SHAKA INTERNATIONAL AIRPORT LIST OF DRAWINGS

PART B : ELECTRICAL WORKS

<u>DRAWING NO.</u>	<u>DESCRIPTION</u>
KSIA-ELEC-CP-001	COVER PAGE
KSIA-ELEC-DL-002C	ELECTRICAL WORKS DRAWING LIST
KSIA-OV-EW-00	OVERVIEW OF ALL ELECTRICAL WORKS
KSIA-ELEC-TX-001	PROPOSED TAXIWAY SLEEVE & SIGNAGE LAYOUT-SHEET 1
KSIA-ELEC-TX-002	PROPOSED TAXIWAY LIGHTING CIRCUIT LAYOUT-SHEET 1
KSIA-ELEC-SLD-001	PROPOSED SUBSTATION SINGLE LINE DIAGRAM
KSIA-ELEC-SLD-002	PROPOSED SUBSTATION SINGLE LINE DIAGRAM

SCOPE OF ELECTRICAL WORKS

BRAVO TAXIWAY

Install new taxiway lights to be supplied from the existing circuits, which are supplied from CCR 57 and CCR 58 in substation AS1

Install 6mm2 primary cable from manhole to manhole

Install 4 mm2 secondary cable from series transformer in manhole to each taxiway light

Install all signs as per engineer's design.

FOXTROT APRON

All connections to electrical equipment to be connected to LV side of Mini-Sub as per engineer's design.

Specialist to test and commission generators that are already installed.

Specialist to design and reduce the height of light mast 3.

QUEBEC LINK

Install new taxiway lights to be supplied from the existing circuits, which are supplied from CCR 57 and CCR 58 in substation AS1

Install 6mm2 primary cable from manhole to manhole. New primary cable to be installed from substation AS4(Approximately 4km).

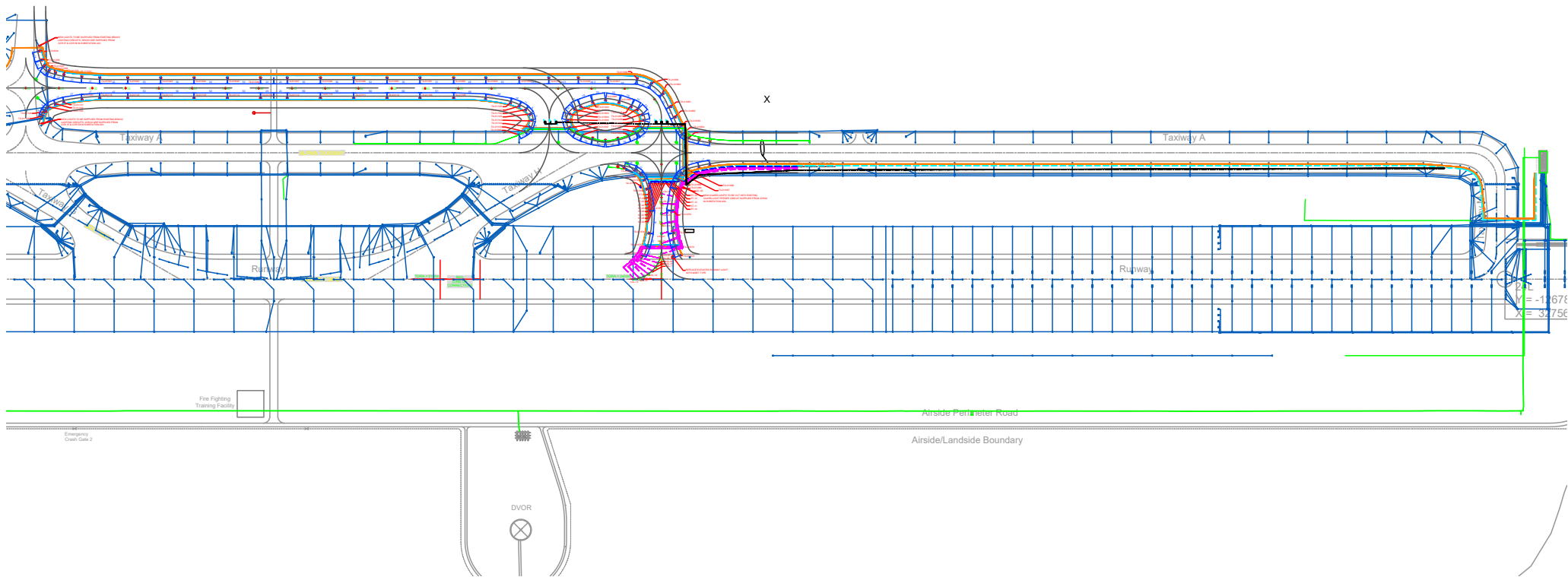
Install 4 mm2 secondary cable from series transformer in manhole to each taxiway light

Install new Stop bar lights to be fed from 2 circuits each connected to a new 4kW CCR.

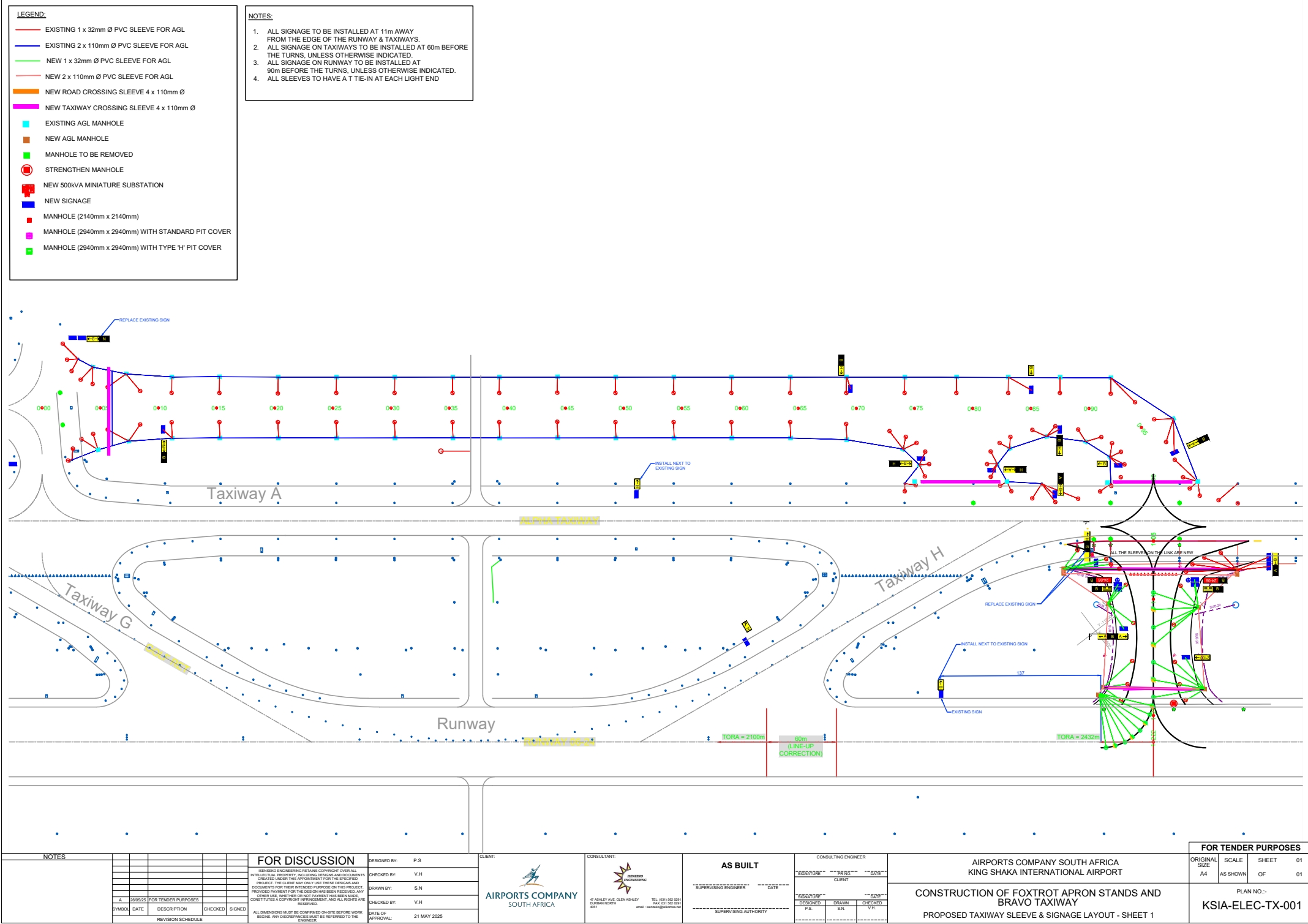
Install new Lead on lights to be fed from 2 circuits each connected to a new 4kW CCR.

Install new Guard lights to be fed from the new 4kW CCR.

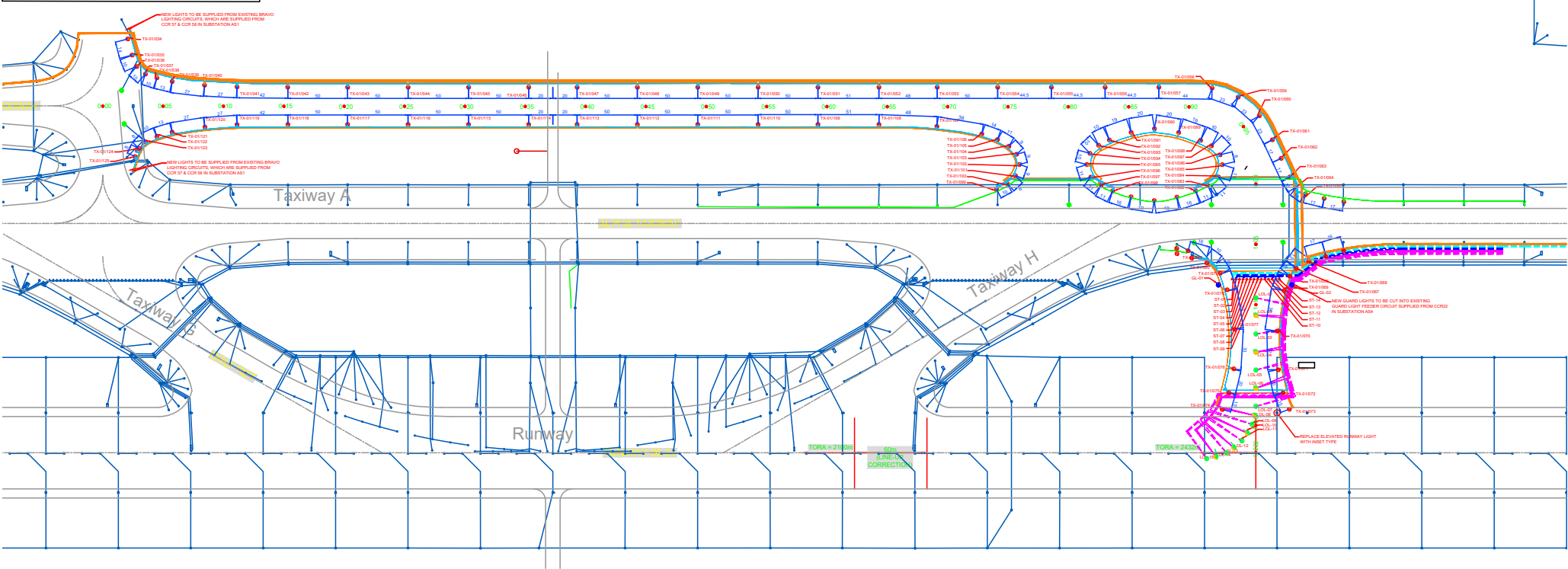
Install all signs as per engineer's design.







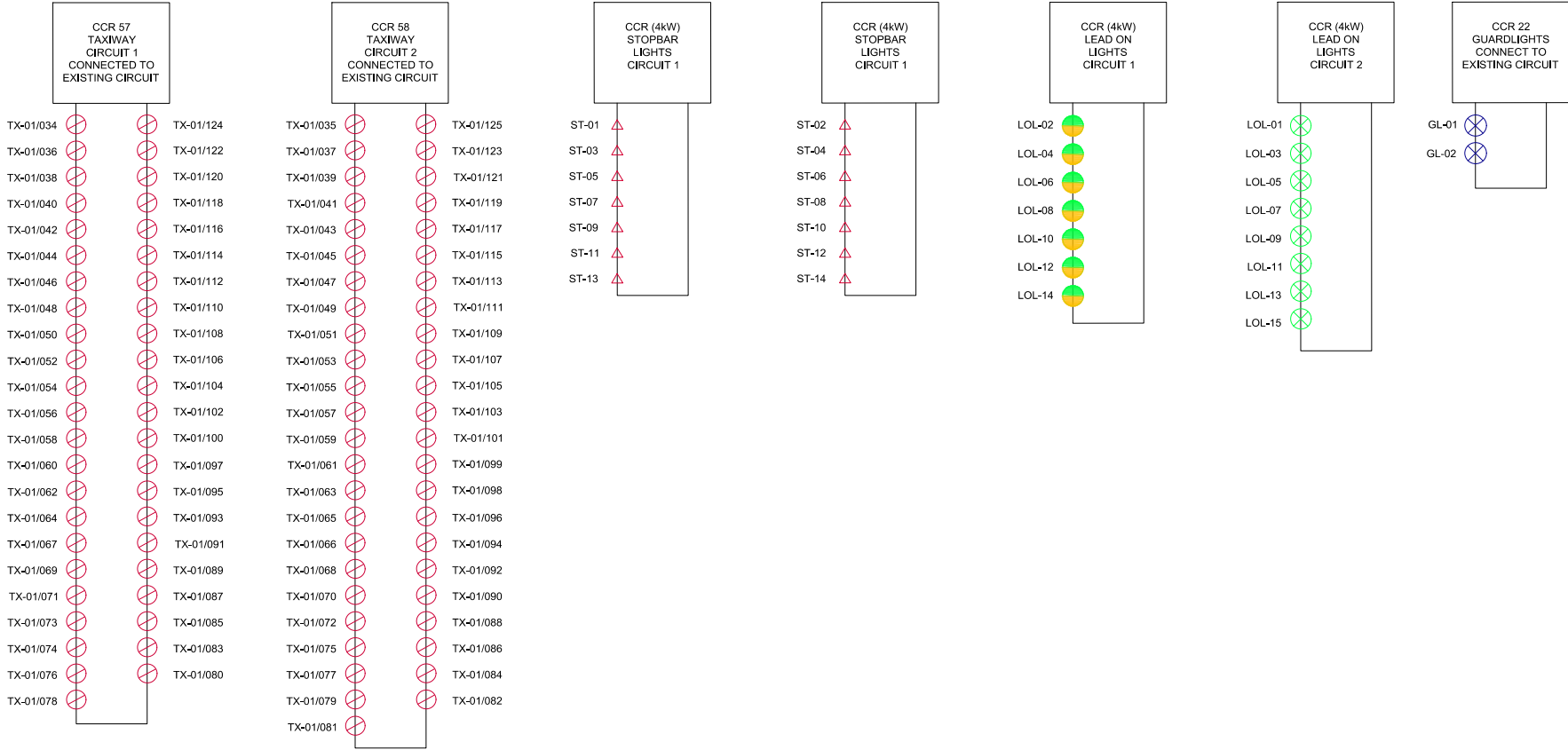
NOTES										FOR TENDER PURPOSES			
<div>FOR DISCUSSION</div> <div>RENDERED ENGINEERING RETAINS COPYRIGHT OVER ALL INTELLECTUAL PROPERTY, INCLUDING DESIGNS AND DOCUMENTS CREATED UNDER THE AGREEMENT FOR THE SPECIFIC PROJECT. THE CLIENT MAY ONLY USE THESE DESIGNS AND DOCUMENTS FOR THE INTENDED PURPOSE ON THIS PROJECT. PROVIDED PAYMENT FOR THE DESIGN HAS BEEN RECEIVED AND OTHER USE, WHETHER OF NOT PAYMENT HAS BEEN MADE, CONSTITUTES A COPYRIGHT INFRINGEMENT, AND ALL RIGHTS ARE RESERVED.</div> <div>ALL DIMENSIONS MUST BE CONFIRMED ON-SITE BEFORE WORK BEGINS. ANY DISCREPANCIES MUST BE REFERRED TO THE ENGINEER.</div>										ORIGINAL SIZE	SCALE	SHEET	01
										A4	AS SHOWN	OF	01
<div>DESIGNED BY: P.S.</div> <div>CHECKED BY: V.H.</div> <div>DRAWN BY: S.N.</div> <div>CHECKED BY: V.H.</div> <div>DATE OF APPROVAL: 21 MAY 2025</div>										PLAN NO.:- KSIA-OV-EW-00			
<div>CLIENT: AIRPORTS COMPANY SOUTH AFRICA</div> <div>CONSULTANT: JENKINS ENGINEERING</div> <div>AS BUILT</div> <div>CONSULTING ENGINEER</div> <div>AIRPORTS COMPANY SOUTH AFRICA KING SHAKA INTERNATIONAL AIRPORT</div> <div>CONSTRUCTION OF FOXTROT APRON STANDS AND BRAVO TAXIWAY OVERVIEW OF ALL ELECTRICAL WORKS</div>													
<div>REVISION SCHEDULE</div> <div>SYMBOL</div> <div>DATE</div> <div>DESCRIPTION</div> <div>CHECKED</div> <div>SIGNED</div>													
A 26/05/25 FOR TENDER PURPOSES													



- LEGEND:
- EXISTING LIGHTS
 - NEW TAXIWAY LIGHTS
 - LIGHTS TO BE REMOVED
 - HIGH MAST LIGHTS
 - LEAD ON LIGHTS (OMNI-DIRECTIONAL)
 - LEAD ON LIGHTS (BI-DIRECTIONAL) (GREEN-YELLOW)
 - GUARD LIGHTS
 - STOP BAR LIGHTS (UNI-DIRECTIONAL)
 - 150mm² / 3C PILC COPPER CABLE
 - 35mm² / 4C CABLE
 - 70mm² / 4C CABLE
 - 10mm² / 3C CABLE
 - 185mm² / 4C CABLE
 - NEW TAXIWAY LIGHT CIRCUITS
 - NEW TAXIWAY LIGHT CIRCUITS
 - LEAD ON LIGHTS CIRCUIT 1
 - LEAD ON LIGHTS CIRCUIT 2
 - STOPBAR LIGHTS CIRCUIT 1
 - STOPBAR LIGHTS CIRCUIT 2
 - EXISTING TAXIWAY CIRCUIT
 - NEW 500kVA MINIATURE SUBSTATION



NOTES					FOR DISCUSSION		DESIGNED BY: P.S	CLIENT:	CONSULTANT:	AS BUILT	CONSULTING ENGINEER	AIRPORTS COMPANY SOUTH AFRICA KING SHAKA INTERNATIONAL AIRPORT		ORIGINAL SIZE	SCALE	SHEET	01			
					FOR DISCUSSION		CHECKED BY: V.H			SUPERVISING ENGINEER	DATE	"DESIGNED" "BY" "DATE"		A4	AS SHOWN	OF	01			
					CHECKED BY: V.H		CLIENT													
					DRAWN BY: S.N															
					CHECKED BY: V.H															
A 26/5/25 FOR TENDER PURPOSES					ALL DIMENSIONS MUST BE CONFIRMED ON-SITE BEFORE WORK BEGINS. ANY DISCREPANCIES MUST BE REFERRED TO THE ENGINEER		DATE OF APPROVAL: 21 MAY 2025			SUPERVISING AUTHORITY	DATE	"DESIGNED" "BY" "DATE"		CONSTRUCTION OF FOXTROT APRON STANDS AND BRAVO TAXIWAY				PLAN NO.:-		
SYMBOL DATE DESCRIPTION CHECKED SIGNED							DESIGNED DRAWN CHECKED					P.S S.N V.H						KSIA-ELEC-TX-002		
REVISION SCHEDULE																				
</																				



NOTES										FOR TENDER PURPOSES			
<div>FOR DISCUSSION</div> <div>ISSUED ENGINEERING RETAINS COPYRIGHT OVER ALL INTELLECTUAL PROPERTY INCLUDING DESIGNS AND DOCUMENTS CREATED UNDER THE AGREEMENT FOR THE SERVICES PROJECT. THE CLIENT MAY ONLY USE THESE DESIGNS AND DOCUMENTS FOR THE WORKED PURPOSE ON THIS PROJECT PROVIDED PAYMENT FOR THE DESIGN HAS BEEN RECEIVED. ANY OTHER USE, WHETHER OR NOT PAYMENT HAS BEEN MADE, CONSTITUTES A COPYRIGHT INFRINGEMENT, AND ALL RIGHTS ARE RESERVED.</div> <div>ALL DIMENSIONS MUST BE CONFIRMED ON-SITE BEFORE WORK BEGINS. ANY DISCREPANCIES MUST BE REFERRED TO THE ENGINEER.</div>										ORIGINAL SIZE	SCALE	SHEET	01
										A4	AS SHOWN	OF	01
										PLAN NO.:-			
										KSIA-ELEC-SLD-002			
										CONSTRUCTION OF FOXTROT APRON STANDS AND BRAVO TAXIWAY PROPOSED SUBSTATION SINGLE LINE DIAGRAM			
DESIGNED BY: P.S. CHECKED BY: V.H. DRAWN BY: S.N. CHECKED BY: V.H. DATE OF APPROVAL: 21 MAY 2025										CONSULTING ENGINEER AIRPORTS COMPANY SOUTH AFRICA KING SHAKA INTERNATIONAL AIRPORT			
AS BUILT SUPERVISING AUTHORITY										CONSULTING ENGINEER AIRPORTS COMPANY SOUTH AFRICA KING SHAKA INTERNATIONAL AIRPORT			
AIRPORTS COMPANY SOUTH AFRICA										CONSULTING ENGINEER AIRPORTS COMPANY SOUTH AFRICA KING SHAKA INTERNATIONAL AIRPORT			
CONSULTANT: 40 ADELEY AVE, CLEV ADELEY, DURBAN NORTH 4021										CONSULTING ENGINEER AIRPORTS COMPANY SOUTH AFRICA KING SHAKA INTERNATIONAL AIRPORT			
CONSULTING ENGINEER AIRPORTS COMPANY SOUTH AFRICA KING SHAKA INTERNATIONAL AIRPORT										CONSULTING ENGINEER AIRPORTS COMPANY SOUTH AFRICA KING SHAKA INTERNATIONAL AIRPORT			

AIRPORTS COMPANY SOUTH AFRICA SOC LIMITED



AIRPORTS COMPANY
SOUTH AFRICA

PROJECT

COMPLETION OF BRAVO TAXIWAY & FOXTROT APRON STANDS AT KING SHAKA INTERNATIONAL AIRPORT

PROJECT NO. : KSIA7806/2025/RFP

MAY 2025

VOLUME 4: BOOK OF TENDER DRAWINGS

PART C - MECHANICAL WORKS

CLIENT:



AIRPORTS COMPANY SOUTH AFRICA
KING SHAKA INTERNATIONAL AIRPORT
KWAZULU NATAL,
4407

SUB-CONSULTING ENGINEER:



KANTEY & TEMPLER
CONSULTING ENGINEERS
ESTABLISHED 1953

IMPERIAL OFFICE PARK,
WESTVILLE, DURBAN,
3630
TEL: 031 266 6535

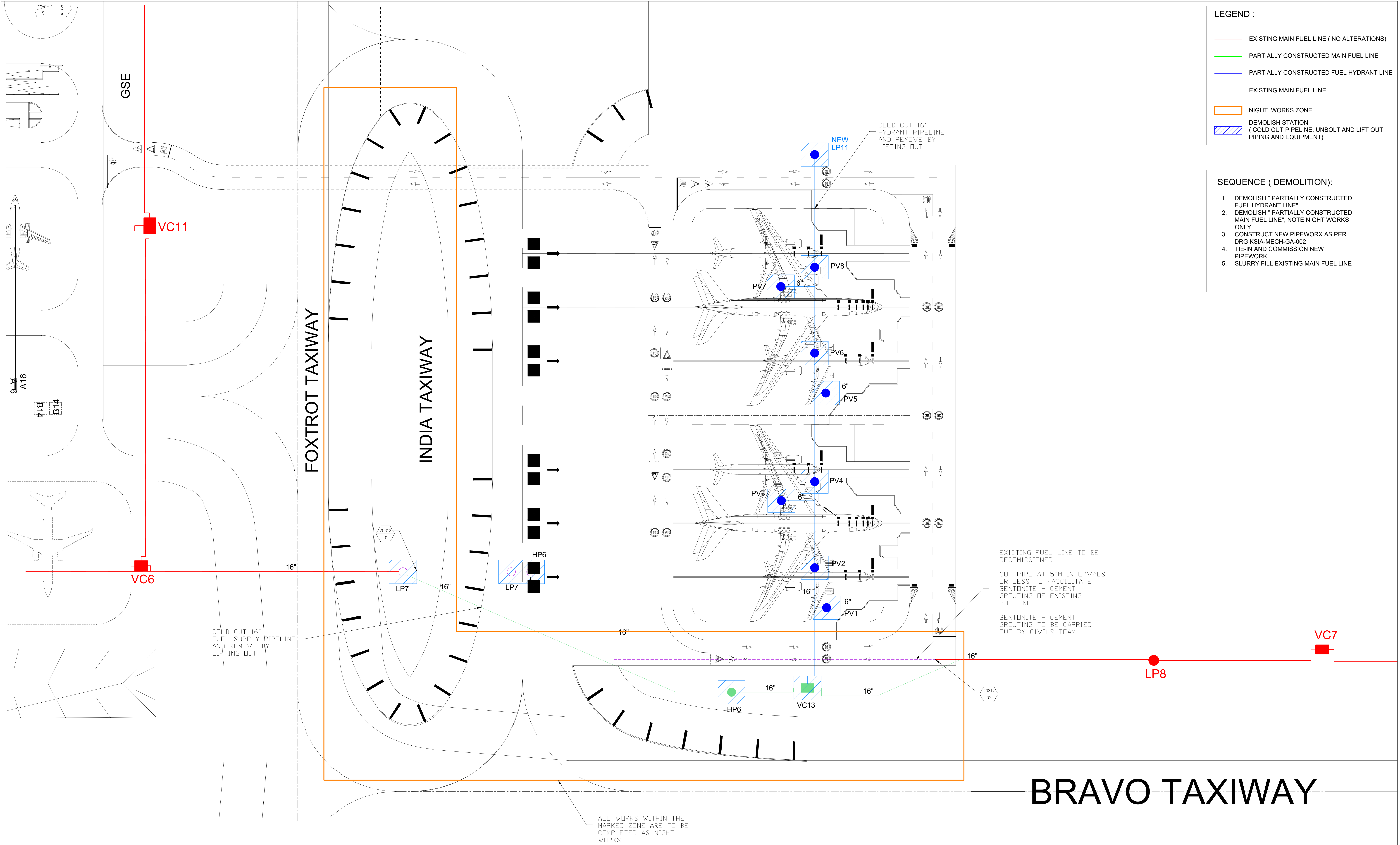
AIRPORTS COMPANY SOUTH AFRICA SOC LIMITED

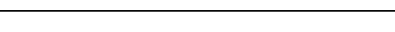



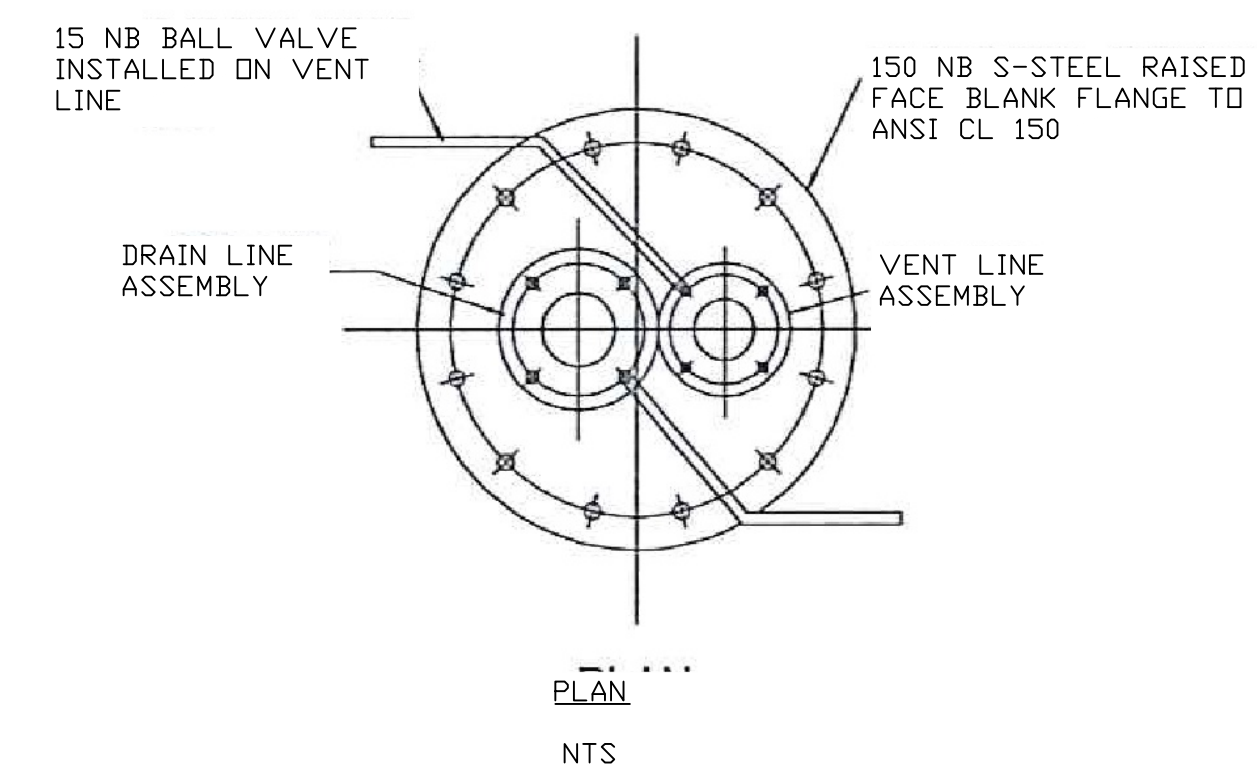
COMPLETION OF BRAVO TAXIWAY & FOXTROT APRON STANDS AT KING SHAKA INTERNATIONAL AIRPORT LIST OF DRAWINGS



PART C : MECHANICAL WORKS

<u>DRAWING NO.</u>	<u>DESCRIPTION</u>
KSIA-MECH-CP-001	COVER PAGE
KISA-MECH-DL-002B	MECHANICAL WORKS DRAWING LIST 1
KISA-MECH-GA-001	FOXTROT APRON GENERAL ARRANGEMENT DEMOLITION
KISA-MECH-GA-002	FOXTROT APRON GENERAL ARRANGEMENT CONSTRUCTION
KISA-MECH-GA-003	LOW POINT GENERAL ARRANGEMENT DETAIL
KISA-MECH-GA-004	HIGH POINT 6 GENERAL ARRANGEMENT DETAIL
KISA-MECH-GA-005	VALVE CHAMBER 13 GENERAL ARRANGEMENT DETAIL
KISA-MECH-GA-006	LOW POINT 7 GENERAL ARRANGEMENT DETAIL
KISA-MECH-GA-007	LOW POINT 11 GENERAL ARRANGEMENT DETAIL
KISA-MECH-GA-008	TYPICAL DETAILS GENERAL ARRANGEMENT
KISA-MECH-GA-009	HYDRANT CATHODIC PROTECTION GENERAL ARRANGEMENT
KISA-MECH-GA-010	PIPE SUPPORT DETAILS IN VALVE CHAMBER 13
KISA-MECH-GA-011	TYPICAL HYDRANT DETAIL AT VALVE PIT
KISA-MECH-GA-012	TYPICAL PIPE TRENCH DETAILS
KISA-MECH-PID-001	FUEL FEEDER LINES & FUEL HYDRANT P&ID

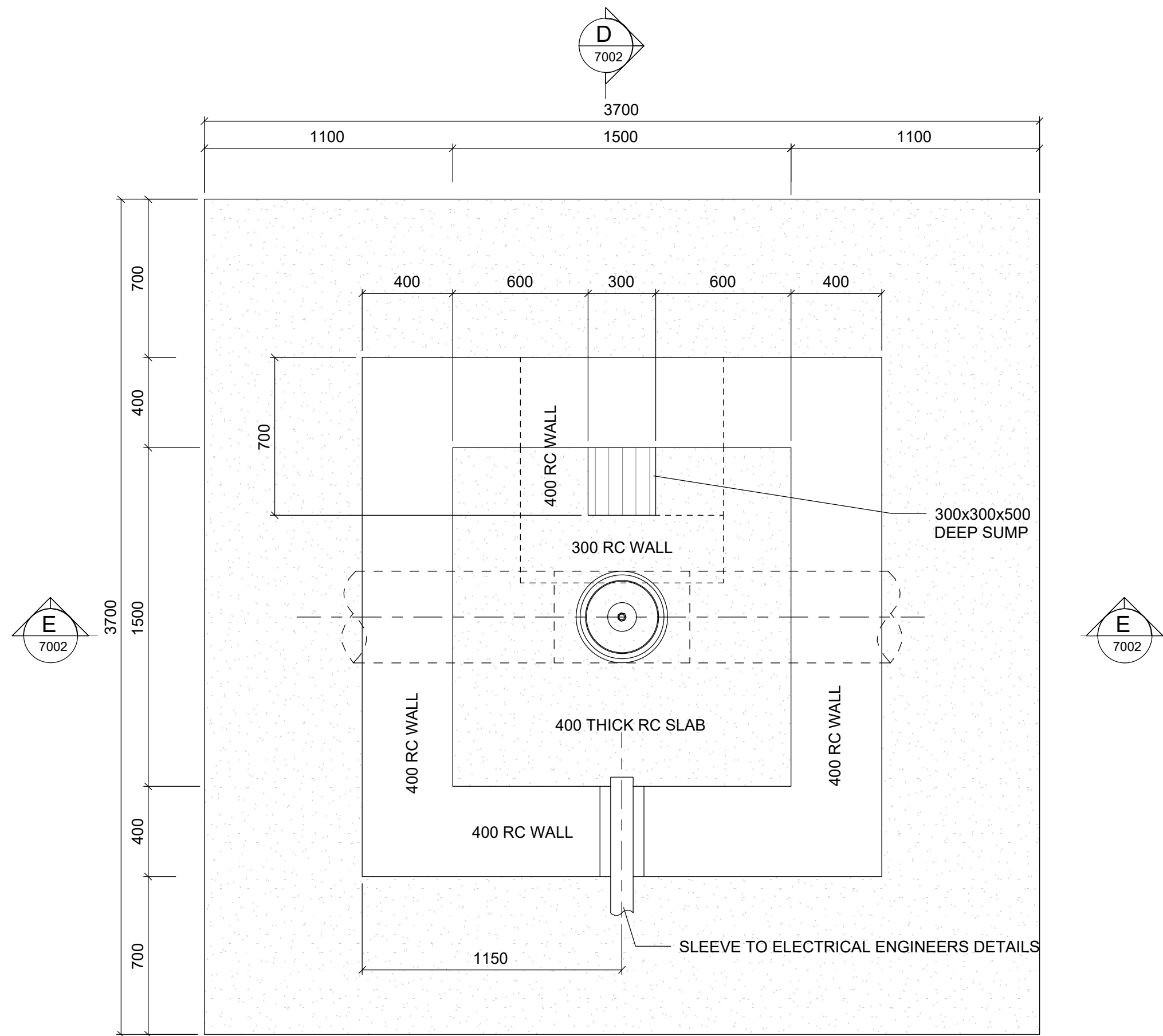


FOR DISCUSSION										FOR TENDER													
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ALL DIMENSIONS MUST BE CONFIRMED ON-SITE BEFORE WORK BEGINS. ANY DISCREPANCIES MUST BE REFERRED TO THE ENGINEER.										Checked by: CLIFFORD IRELAND (PR: 20097287)		Drawn by: SAMANTHA VERSTER		Checked by:-		Design Leader		COMPLETION OF BRAVO TAXIWAY AND FOXTROT APRON STANDS FOXTROT APRON GENERAL ARRANGEMENT DEMOLITION				Plan No.:- KSIA-MECH-GA-001	
AMENDMENTS										Date of Approval:-		SIGNATURE		DATE		For Client							

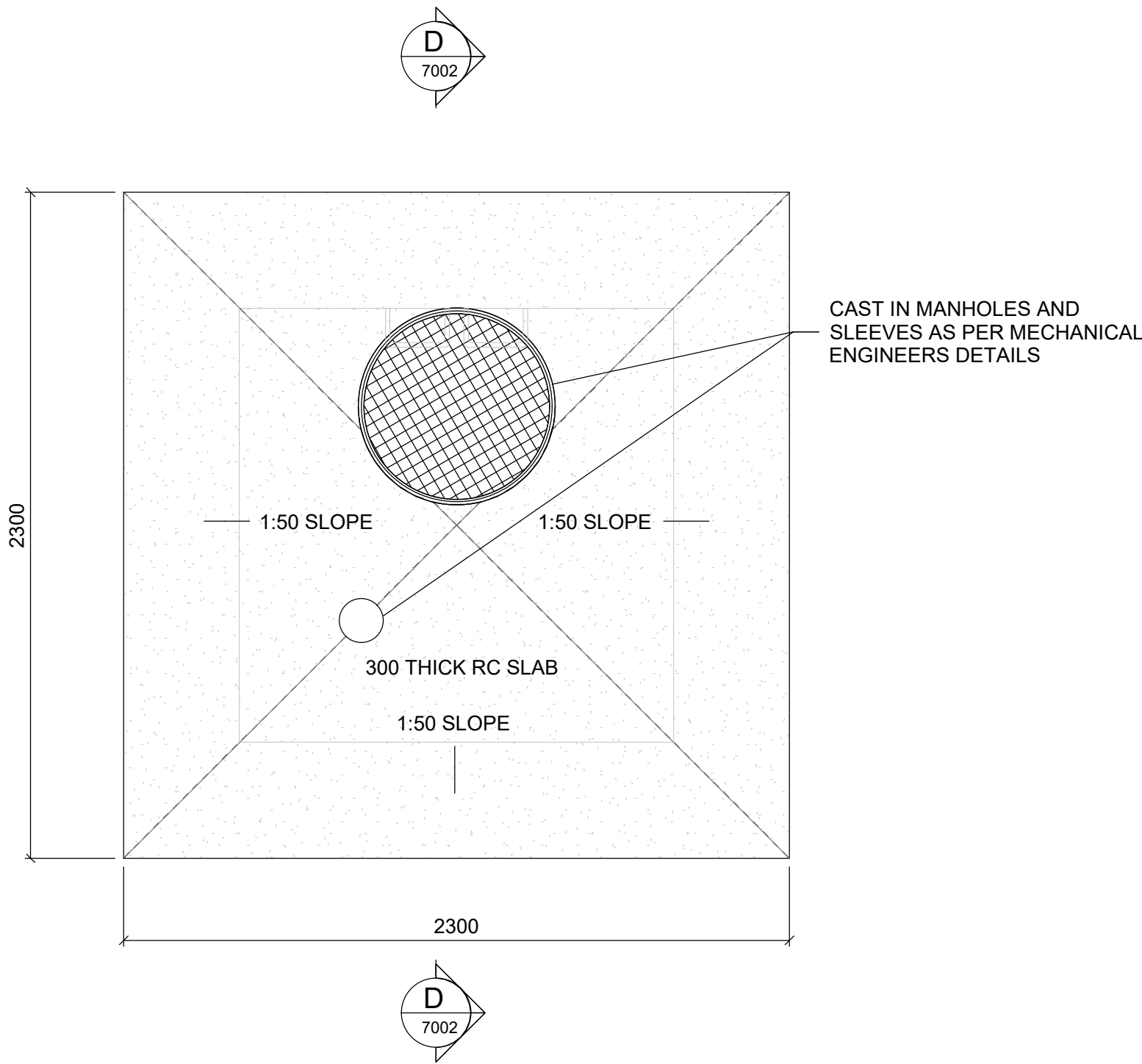


					FOR DISCUSSION		Designed by: BIBI FATHIMA ALLI		<div>CLIENT:</div> <div></div> <div>AIRPORTS COMPANY SOUTH AFRICA</div>	<div>CONSULTANT:</div> <div></div> <div>KANTLEY & TEMPLE CONSULTING ENGINEERS ESTABLISHED 1953</div>	<div>Design Leader</div> <div>For Client</div>	AIRPORTS COMPANY SOUTH AFRICA KING SHAKA INTERNATIONAL AIRPORT			Original Size A0	Scale AS SHOWN	Sheet of	03 12
B 21/05/25 FOR TENDER A 15/04/25 FOR TENDER				Checked by: CLIFFORD IRELAND (PR: 20097287)		Drawn by: SAMANTHA VERSTER		COMPLETION OF BRAVO TAXIWAY AND FOXTROT APRON STANDS LOW POINT GENERAL ARRANGEMENT DETAIL				Plan No.:- KSIA-MECH-GA-003						
Symbol	Date	Description	Checked	Signed	Checked by:-		Date of Approval:-											
AMENDMENTS																		

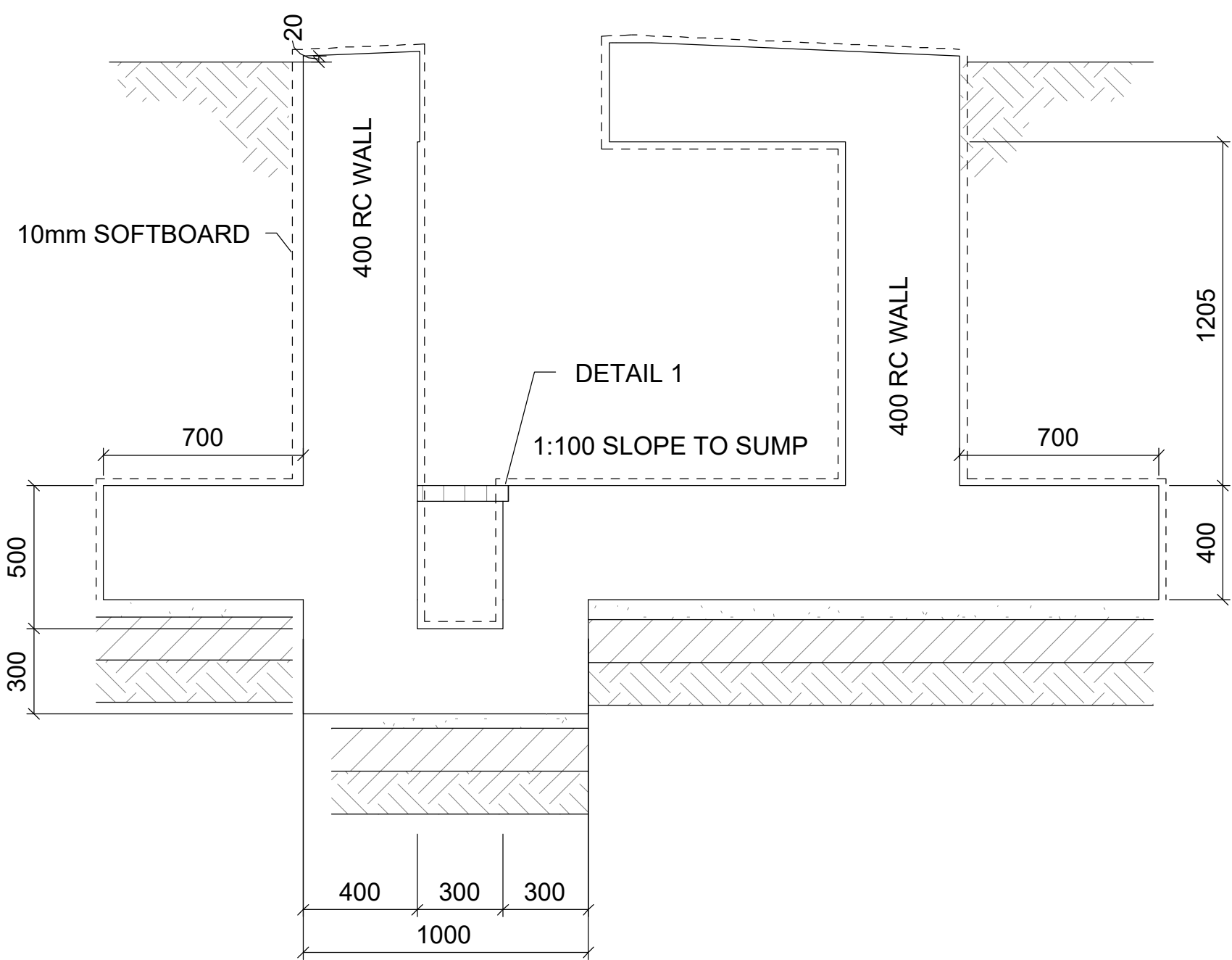
- NOTES:
- SETTING OUT OF PIPEWORK AND SLEEVES AS PER MECHANICAL AND ELECTRICAL ENGINEERS DETAILS
 - SETTING OUT CO-ORDINATES AS PER CIVIL ENGINEERS DETAILS.



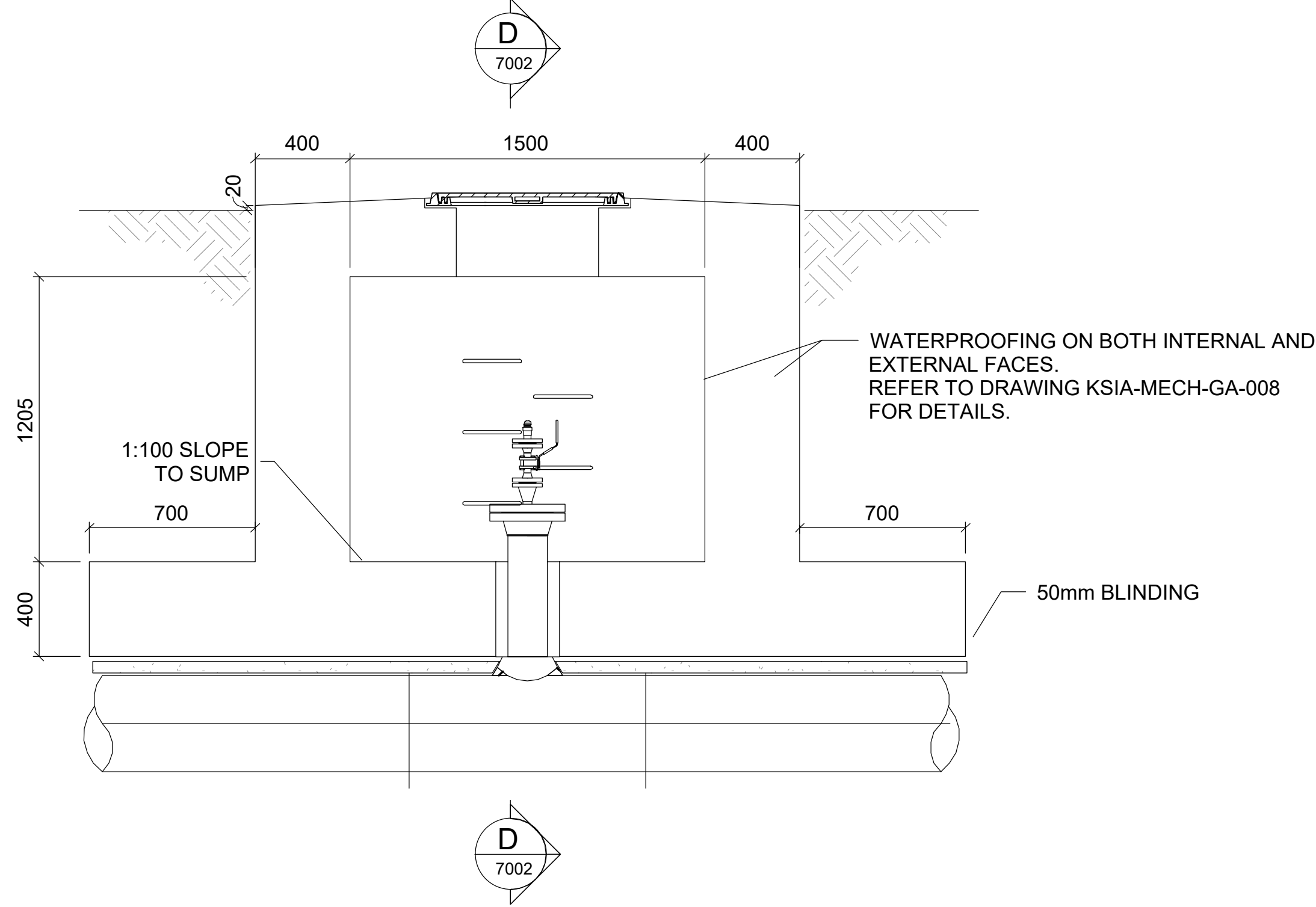
HP6 GROUND FLOOR SLAB LAYOUT
SCALE 1 : 20



HP6 ROOF SLAB LAYOUT
SCALE 1 : 20



D SECTION D-D
SCALE 1 : 25



E SECTION E-E
SCALE 1 : 25

Symbol	Date	Description	Checked	Signed
B	21/05/25	FOR TENDER		
A	15/04/25	FOR TENDER		
AMENDMENTS				

FOR DISCUSSION				
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ALL DIMENSIONS MUST BE CONFIRMED ON-SITE BEFORE WORK BEGINS. ANY DISCREPANCIES MUST BE REFERRED TO THE ENGINEER.				

Designed by: BIBI FATHIMA ALLI
Checked by: CLIFFORD IRELAND (PR: 20097287)
Drawn by: SAMANTHA VERSTER
Checked by:-
Date of Approval:-

CLIENT:

AIRPORTS COMPANY SOUTH AFRICA

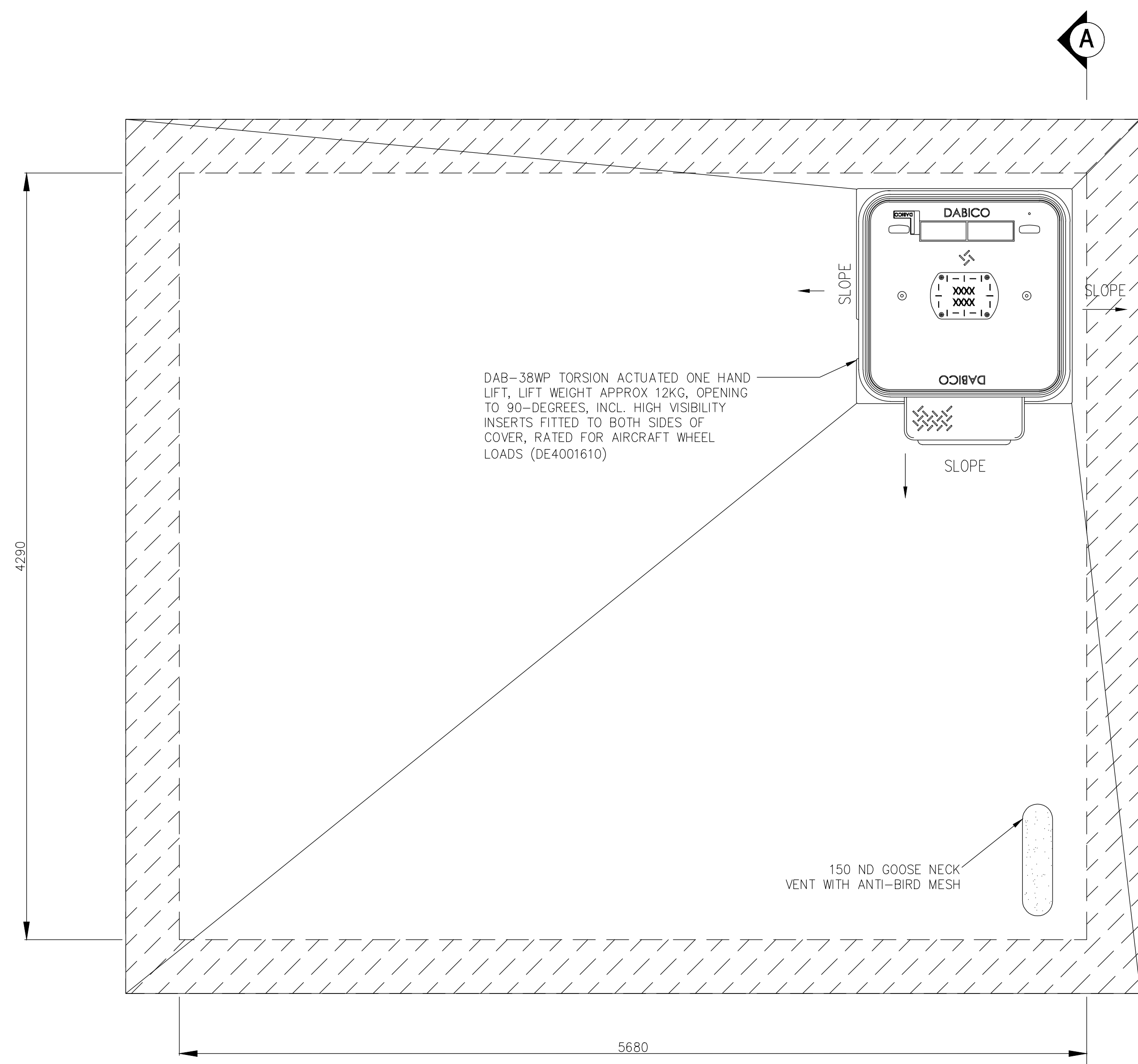
CONSULTANT:

KANTEY & TEMPLER CONSULTING ENGINEERS ESTABLISHED 1993
SIGNATURE DATE

Design Leader
For Client

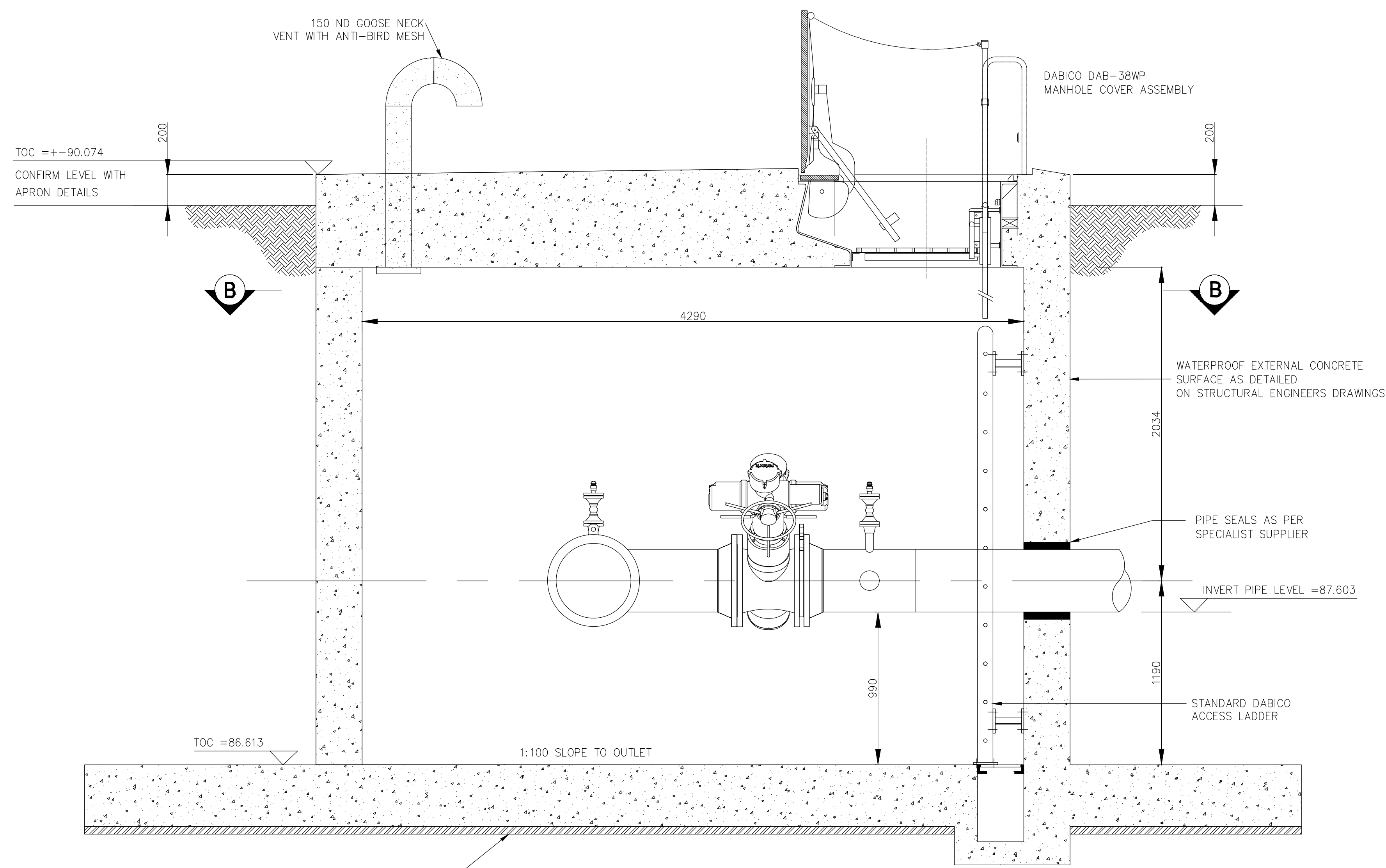
AIRPORTS COMPANY SOUTH AFRICA KING SHAKA INTERNATIONAL AIRPORT
COMPLETION OF BRAVO TAXIWAY AND FOXTROT APRON STANDS HIGH POINT 6 GENERAL ARRANGEMENT DETAIL

Original Size	Scale	Sheet	04
A0	AS SHOWN	of	12
Plan No.:- KSIA-MECH-GA-004			



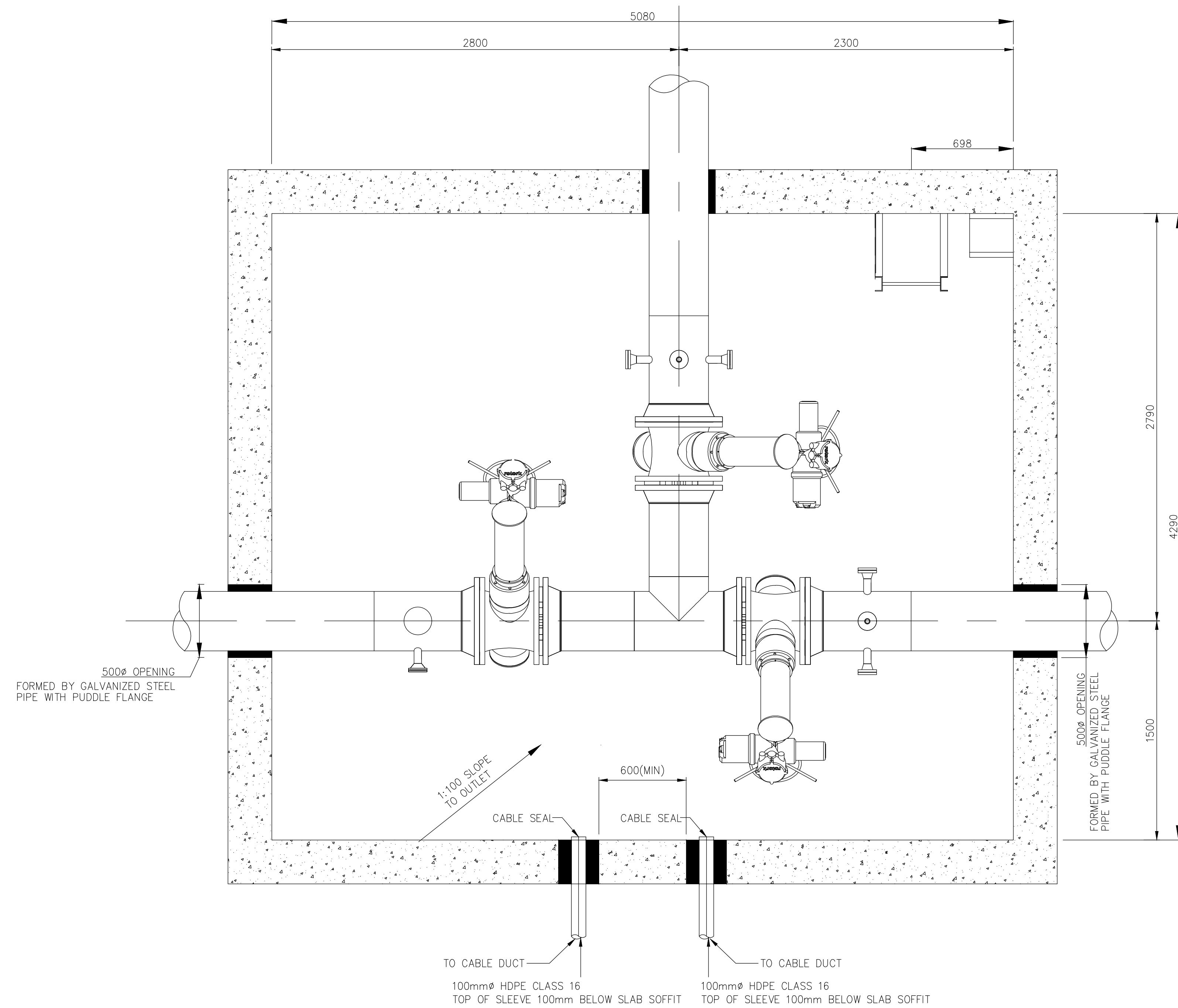
COVER SLAB DETAIL
VALVE CHAMBER 13

SCALE 1:20



SECTION A-A
VALVE CHAMBER 13

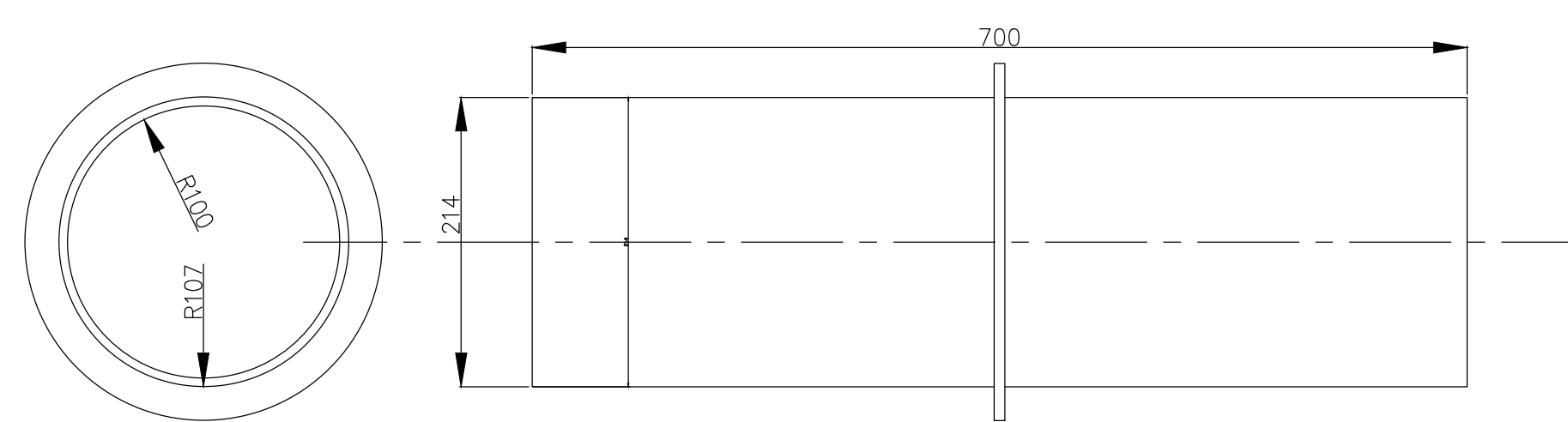
SCALE 1:20



SECTION B-B
PLAN VIEW NEW VALVE CHAMBER 13

SCALE 1:20

TYPE	DI (mm/")	DO (mm/")	L (mm/")
SLRS-200	201/7.913	214/8.425	700/27.559

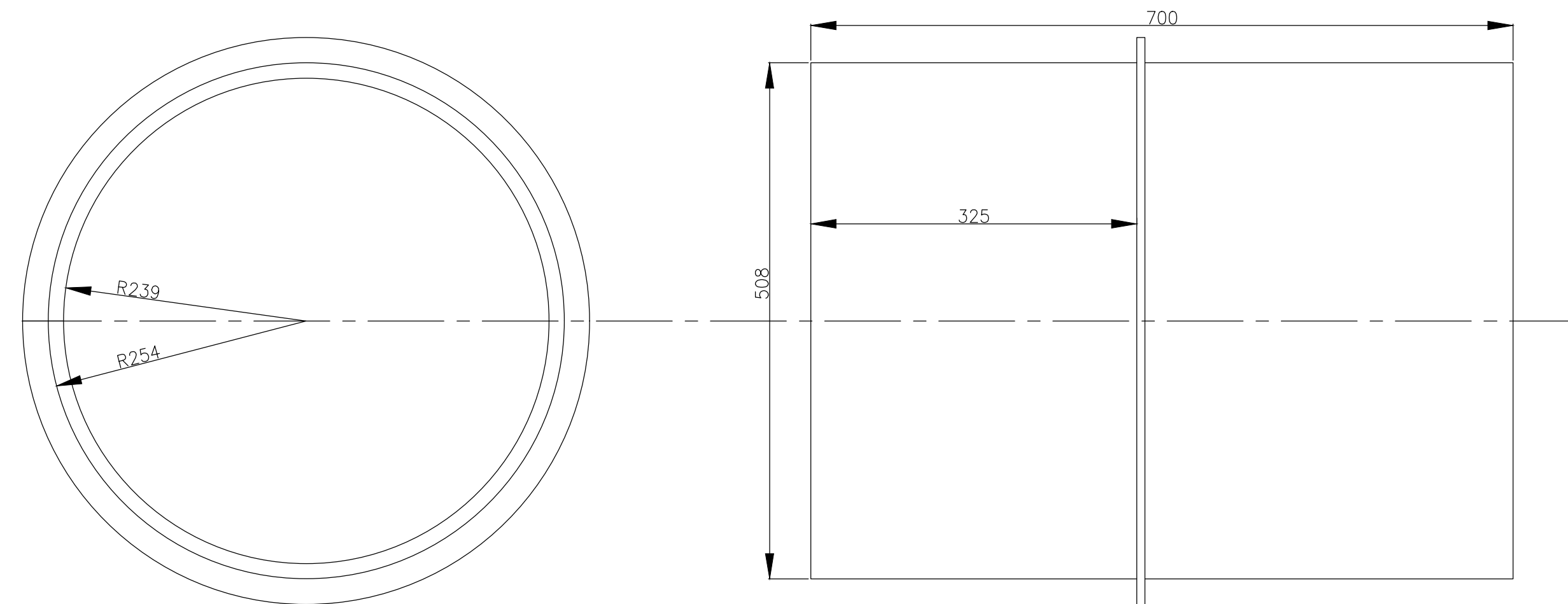


SLEEVE DETAIL FOR RS200 SEALS

SCALE 1:5

TYPE	DI (mm)	DO (mm)	L (mm)
SAF	496	508	700
PUDDLE FLANGE	510	660	8

NOTE:
TO BE COATED WITH NON
ORGANIC RED OXIDE PRIMER



SLEEVE DETAIL FOR RS500 SEALS

SCALE 1:5

NOTE:
1.) CONTRACTOR TO ENSURE THAT SURROUNDING AREA IS
ADEQUATELY SLOPED SO THAT NO RAIN WATER
WILL ACCUMULATE WITHIN THE CHAMBER AREA.

FOR TENDER

Original Size	Scale	Sheet	of
A0	AS SHOWN	05	12

Plan No.:-

KSIA-MECH-GA-005

FOR DISCUSSION

NANKHID CONSULTING ENGINEERS RETAINS COPYRIGHT OVER ALL INTELLECTUAL PROPERTY, INCLUDING DESIGNS AND DOCUMENTS CREATED UNDER THIS APPOINTMENT FOR THE SPECIFIED PROJECT. THE CLIENT MAY ONLY USE THESE DESIGNS AND DOCUMENTS FOR THEIR INTENDED PURPOSE ON THIS PROJECT. PROVIDED PAYMENT FOR THE DESIGN HAS BEEN RECEIVED. ANY OTHER USE, WHETHER OR NOT PAYMENT HAS BEEN MADE, CONSTITUTES A COPYRIGHT INFRINGEMENT, AND ALL RIGHTS ARE RESERVED.

ALL DIMENSIONS MUST BE CONFIRMED ON-SITE BEFORE WORK BEGINS. ANY DISCREPANCIES MUST BE REFERRED TO THE ENGINEER.

Designed by: BIBI FATHIMA ALLI

Checked by: CLIFFORD IRELAND (PR: 20097287)

Drawn by: SAMANTHA VERSTER

Checked by:-

Date of Approval:-

CLIENT:



CONSULTANT:



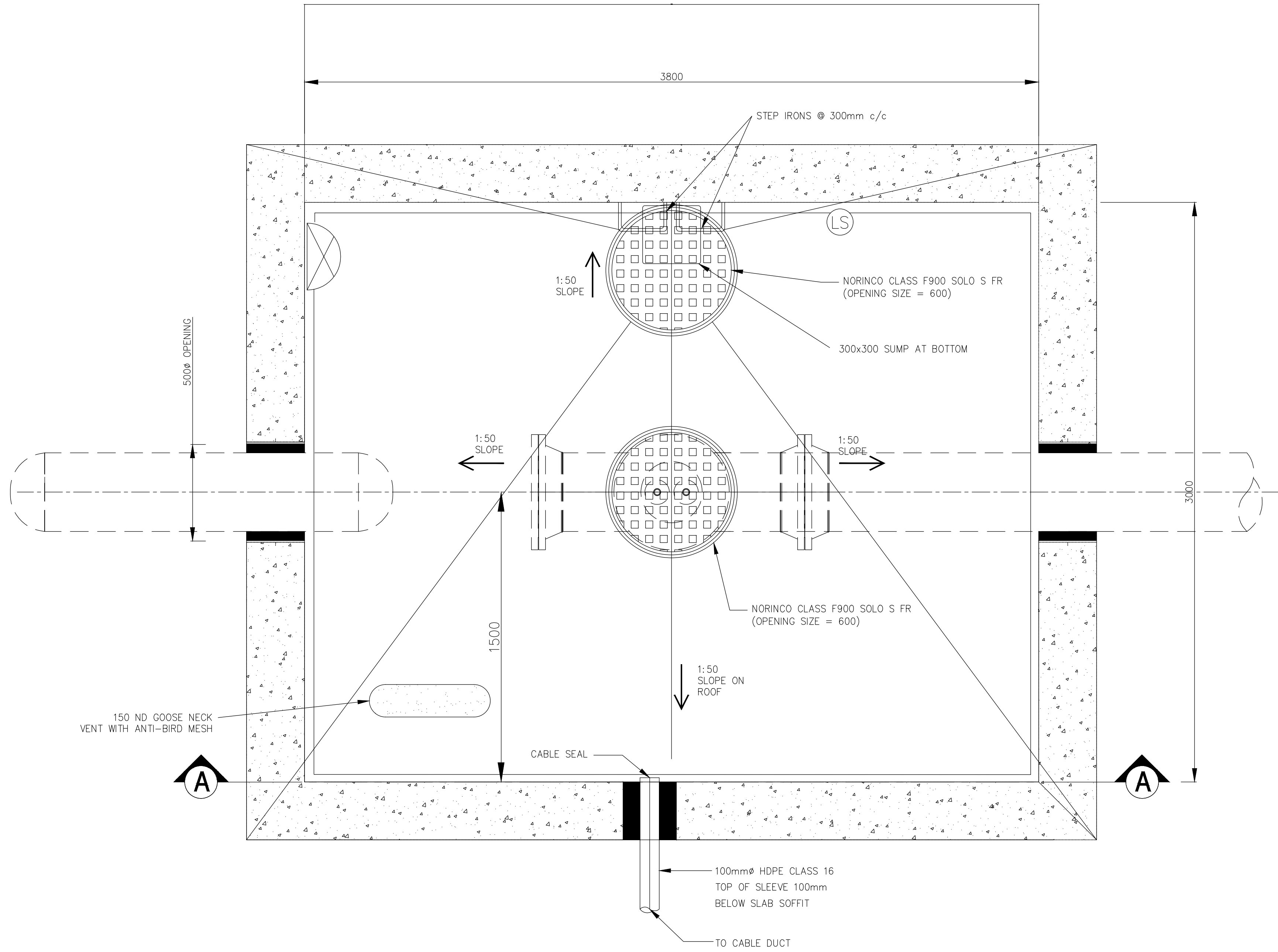
SIGNATURE DATE

Design Leader

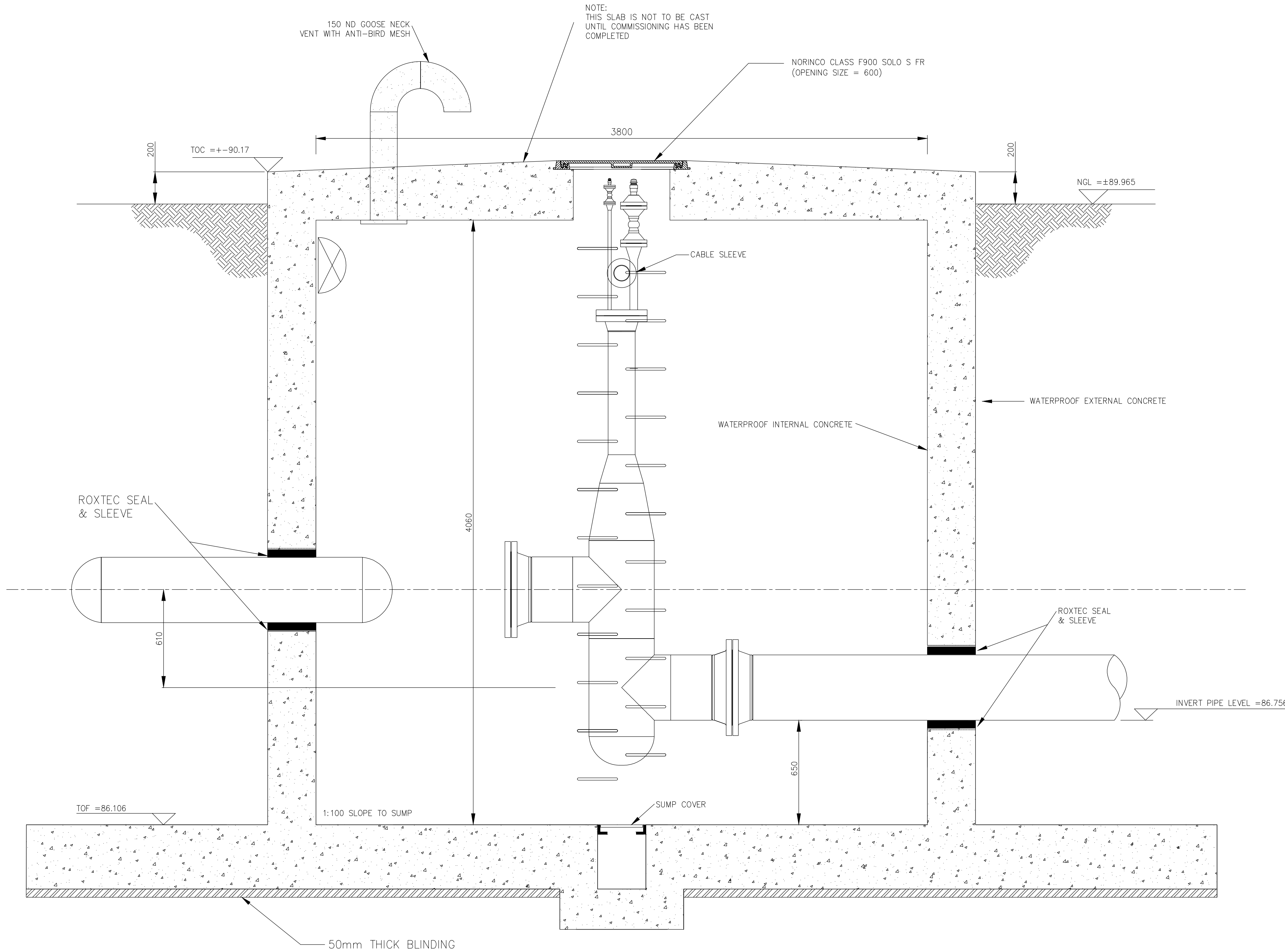
For Client

AIRPORTS COMPANY SOUTH AFRICA
KING SHAKA INTERNATIONAL AIRPORT

COMPLETION OF BRAVO TAXIWAY
FOXTROT APRON STANDS
VALVE CHAMBER 13 GENERAL ARRANGEMENT DETAIL

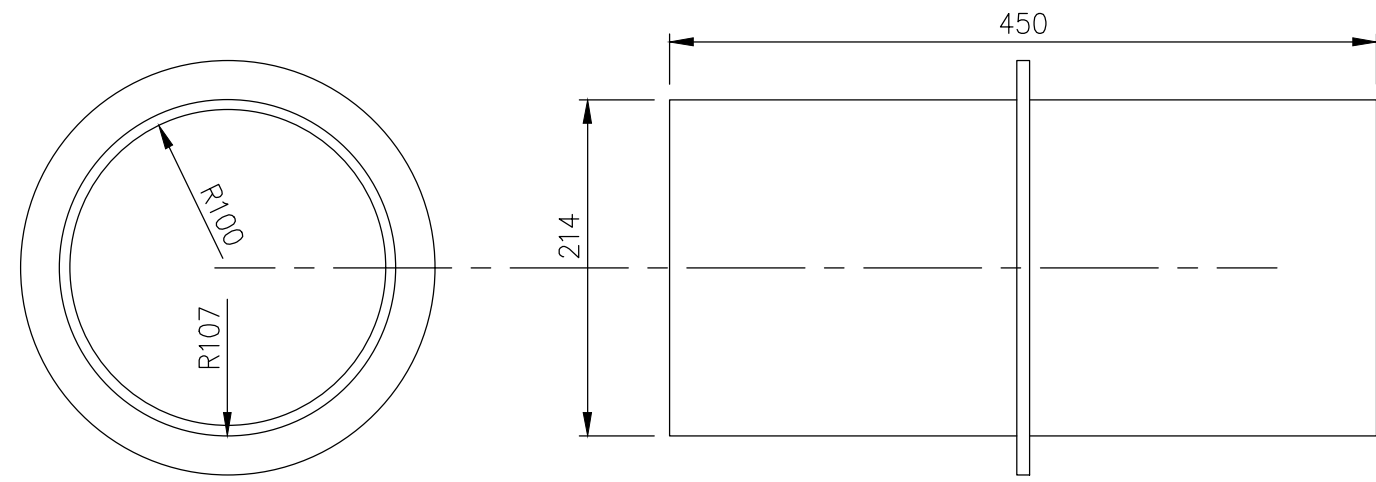


GENERAL PLAN LAYOUT LOW POINT 11
SCALE 1:15



SECTION A-A
LOW POINT 11
SCALE 1:15

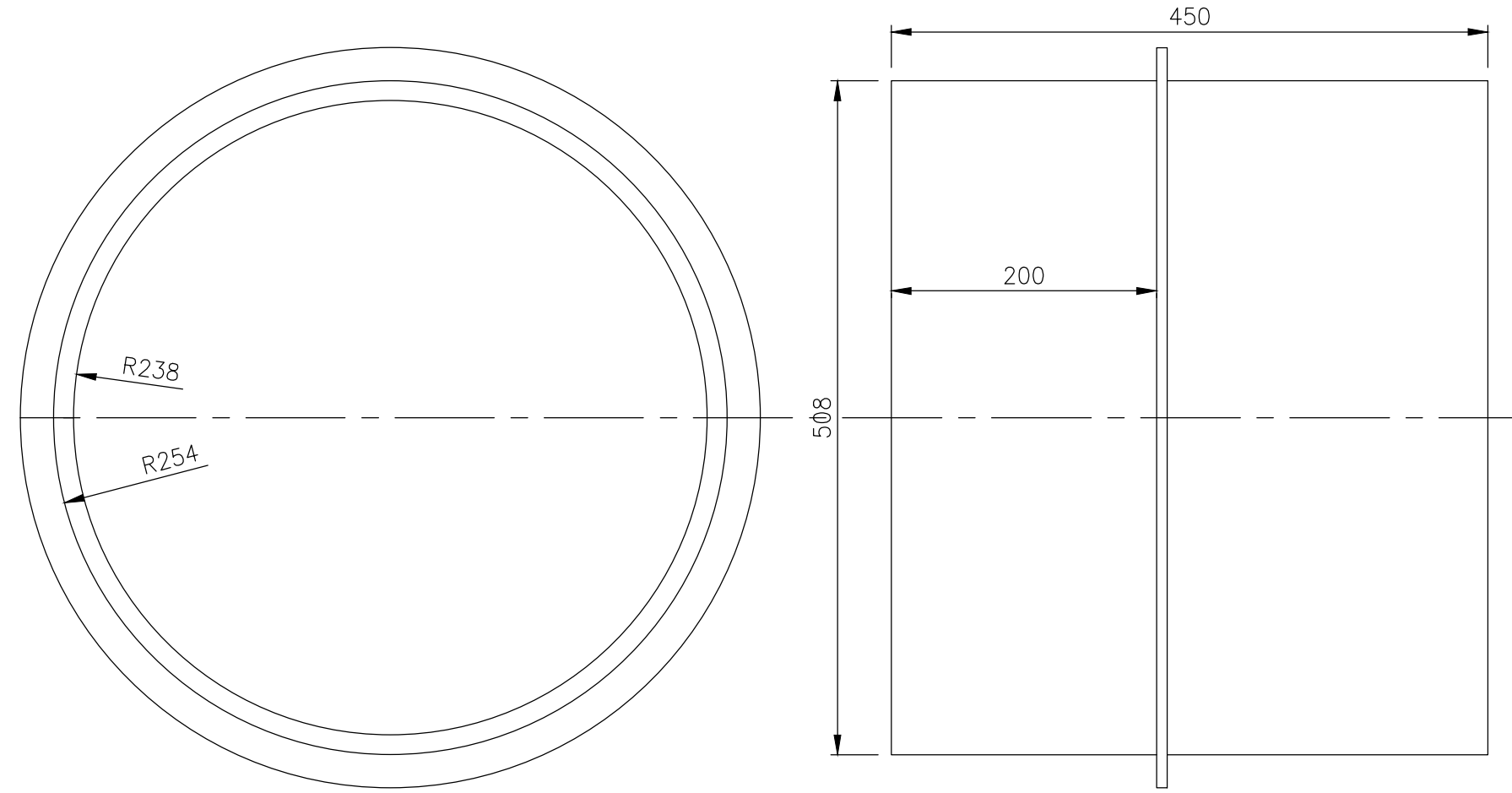
TYPE	DI (mm/')	DO (mm/')	L (mm/')
SLRS-200	201/7.913	214/8.425	450/17.716



SLEEVE DETAIL FOR RS200 SEALS
SCALE 1:5

TYPE	DI (mm)	DO (mm)	L (mm)
SAF	496	508	450
PUDDLE FLANGE	510	660	8

NOTE:
TO BE COATED WITH NON
ORGANIC RED OXIDE PRIMER



SLEEVE DETAIL FOR RS500 SEALS
SCALE 1:5

Symbol	Date	Description	Checked	Signed
B	21/05/25	FOR TENDER		
A	15/04/25	FOR TENDER		

FOR DISCUSSION				
NANKHOD CONSULTING ENGINEERS RETAINS COPYRIGHT OVER ALL INTELLECTUAL PROPERTY, INCLUDING DESIGNS AND DOCUMENTS CREATED UNDER THIS APPOINTMENT FOR THE SPECIFIED PROJECT. THE CLIENT MAY ONLY USE THESE DESIGNS AND DOCUMENTS FOR THEIR INTENDED PURPOSE ON THIS PROJECT, PROVIDED PAYMENT FOR THE DESIGN HAS BEEN RECEIVED. ANY OTHER USE, WHETHER OR NOT PAYMENT HAS BEEN MADE, CONSTITUTES A COPYRIGHT INFRINGEMENT, AND ALL RIGHTS ARE RESERVED.				
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Designed by: BIBI FATHIMA ALLI	Checked by: CLIFFORD IRELAND (PR: 2008/287)	Drawn by: SAMANTHA VERSTER	Checked by:	Date of Approval:-
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CLIENT:	AIRPORTS COMPANY SOUTH AFRICA
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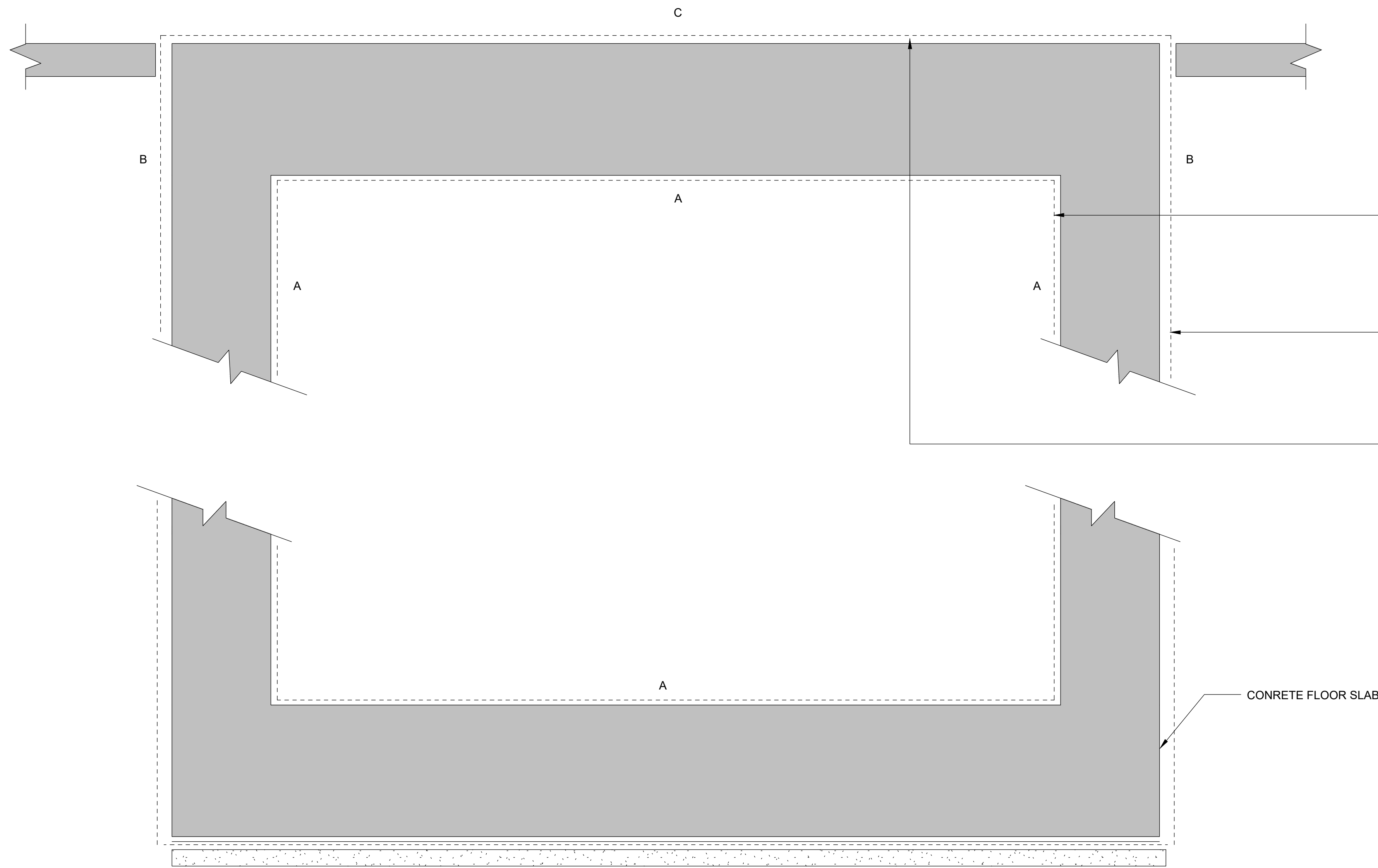
CONSULTANT:	KANTY & TEMPLER CONSULTING ENGINEERS
SIGNATURE	DATE

Design Leader	For Client
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Design Leader	For Client
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AIRPORTS COMPANY SOUTH AFRICA KING SHAKA INTERNATIONAL AIRPORT	COMPLETION OF BRAVO TAXIWAY & FOXTROT APRON STANDS LOW POINT 11 GENERAL MANAGEMENT DETAIL
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FOR TENDER			
Original Size	Scale	Sheet	of
A0	AS SHOWN	07	12
Plan No.:- KSIA-MECH-GA-007			



WATERPROOFING

WATERPROOF AND PROTECTIVE COATING SYSTEM

*THE WATERPROOFING SYSTEM PRESENTED HERE IS IN GENERAL AGREEMENT WITH CIVIL/ STURCTURAL SPECIFICATIONS AND SHOULD BE SUPPLIED BY THE SAME PRODUCT MANUFACTURER TO ENSURE CONSISTENT CHEMICAL NATURE AND CONTINUITY OF PROTECTION.

THE SCOPE OF WATERPROOFING AND PROTECTIVE SURFACE TREATMENTS SHALL BE AS FOLLOWS:

A. ALL INSIDE CHAMBER SURFACES:

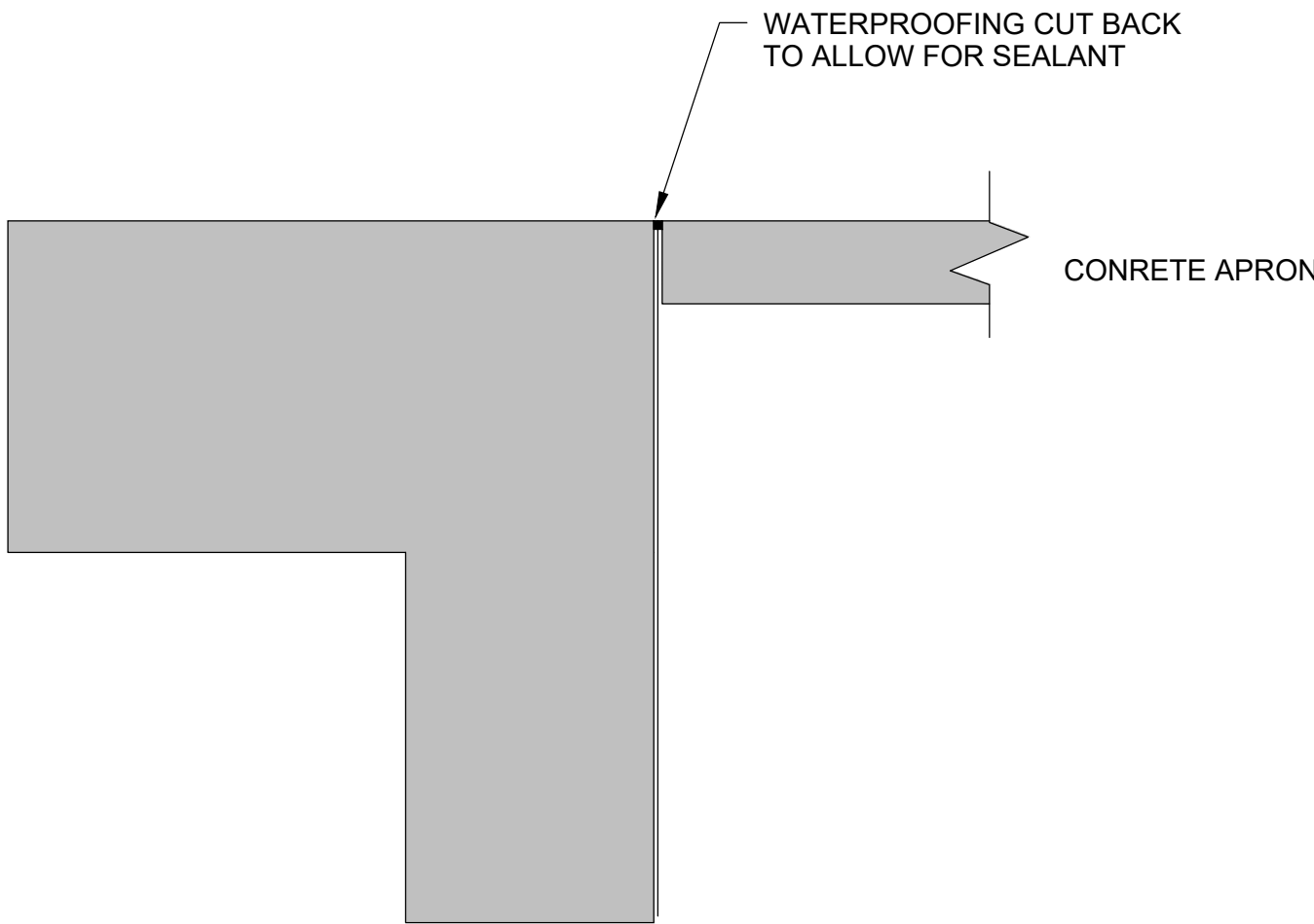
CLEANING AND SURFACE PREPARATION USING HIGH-PRESSURE WATER JETTING, MINIMUM 250-BAR, PREWETTING OF SURFACE, THEN APPLY ONE COAT OF XYPEX CONCENTRATE (OR APPROVED EQUIVALENT) WITH A COVERAGE RATE OF 1.0 KG/M2, FOLLOWED BY ONE COAT OF XYPEX MODIFIED (OR APPROVED EQUIVALENT) WITH A COVERAGE RATE OF 0.8 KG/M2.

B. OUTER CHAMBER SURFACES, UP TO 50MM ABOVE FINAL GROUND LEVEL:

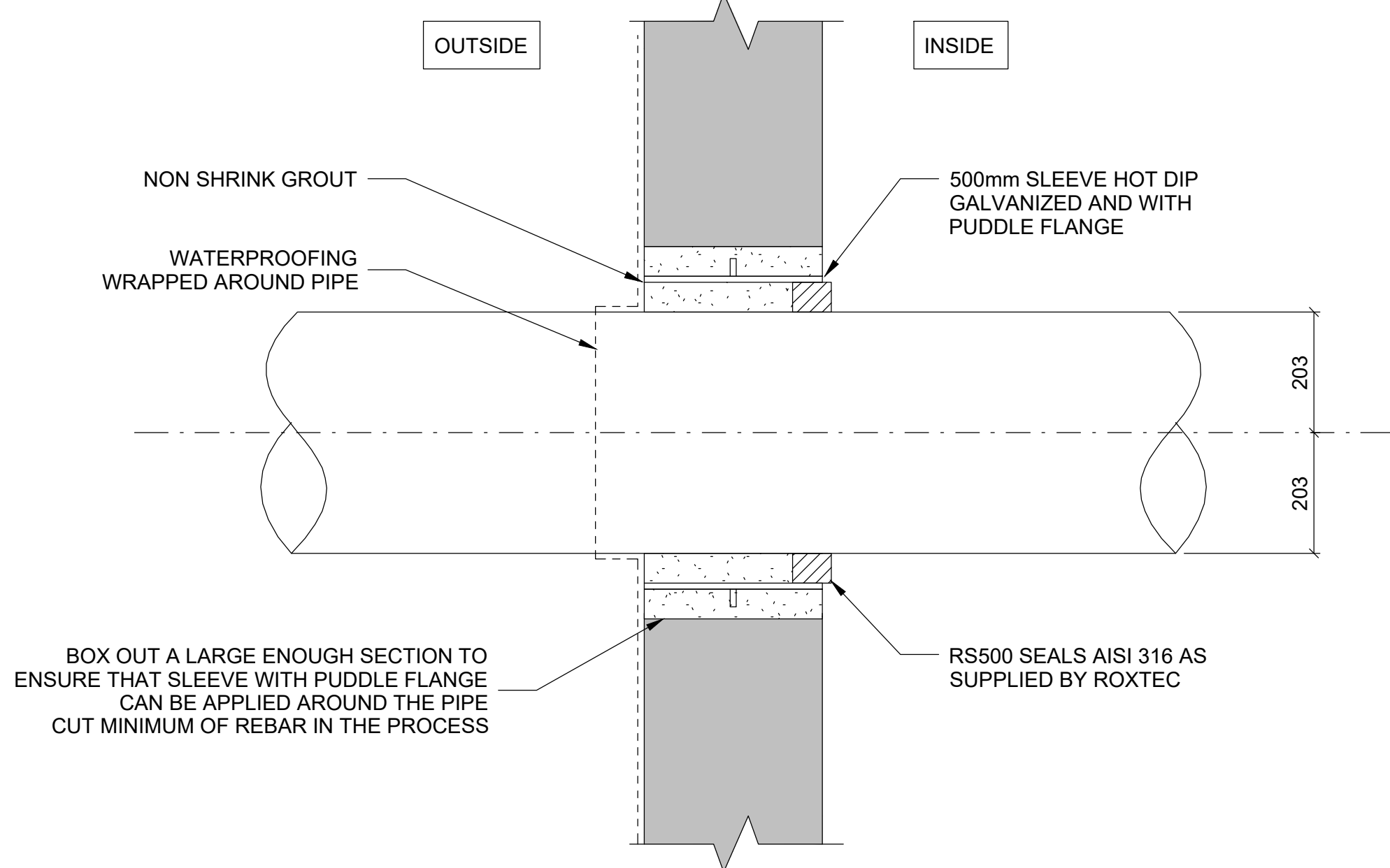
CLEANING AND SURFACE PREPARATION USING HIGH-PRESSURE WATER JETTING, MINIMUM 250-BAR, PREWETTING OF SURFACE, THEN APPLY TWO COATS OF XYPEX CONCENTRATE (OR APPROVED EQUIVALENT) EACH COAT HAVING A COVERAGE RATE OF 1.0 KG/M2 APPLIED TO ALL BURIED OUTER SURFACES BELOW FINAL GROUND LEVEL.

C. OUTER CHAMBER SURFACES ABOVE FINAL GROUND LEVEL OVERLAPPING 100MM WITH SYSTEM APPLIED BELOW FINAL GROUND LEVEL.

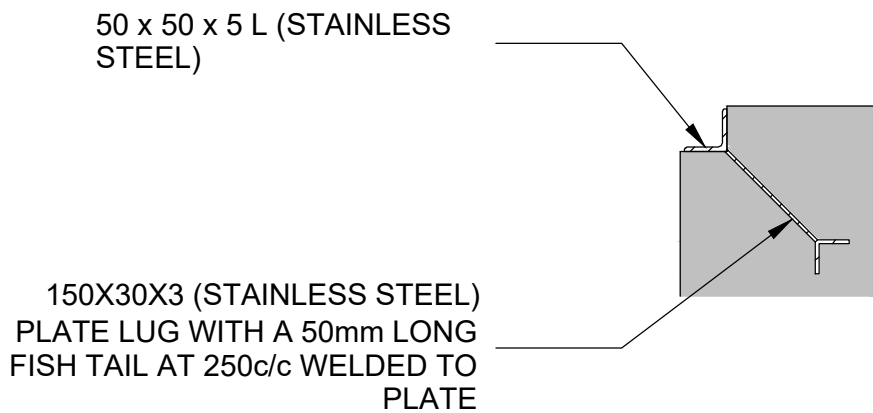
CLEANING AND SURFACE PREPARATION USING HIGH-PRESSURE WATER JETTING, MINIMUM 250-BAR, ALLOW THE SUBSTRATE TO DRY NATURALLY (I.E. DO NOT PREWET/DAMPEN), THEN APPLY TWO COATS OF SIKALASTIC 152 (OR APPROVED EQUIVALENT), EACH COAT HAVING A THICKNESS OF 1MM (WITH A COVERAGE RATE OF 1.8KG/M2).



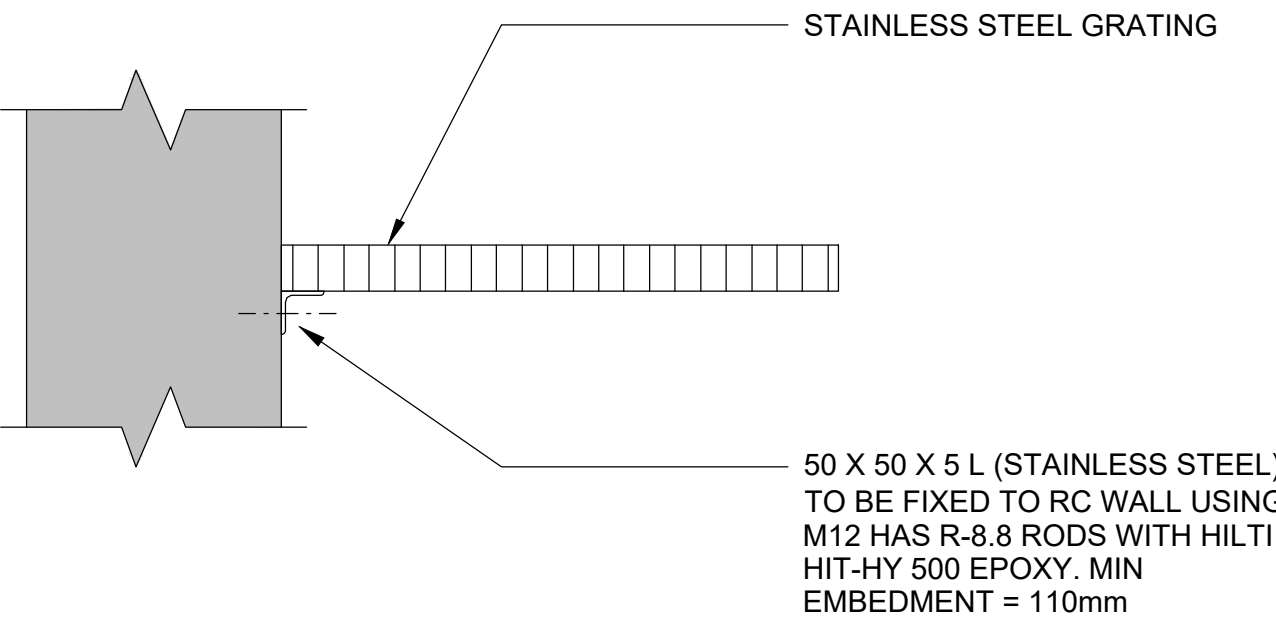
WATERPROOFING DETAIL AT APRON LEVEL
SCALE 1 : 10



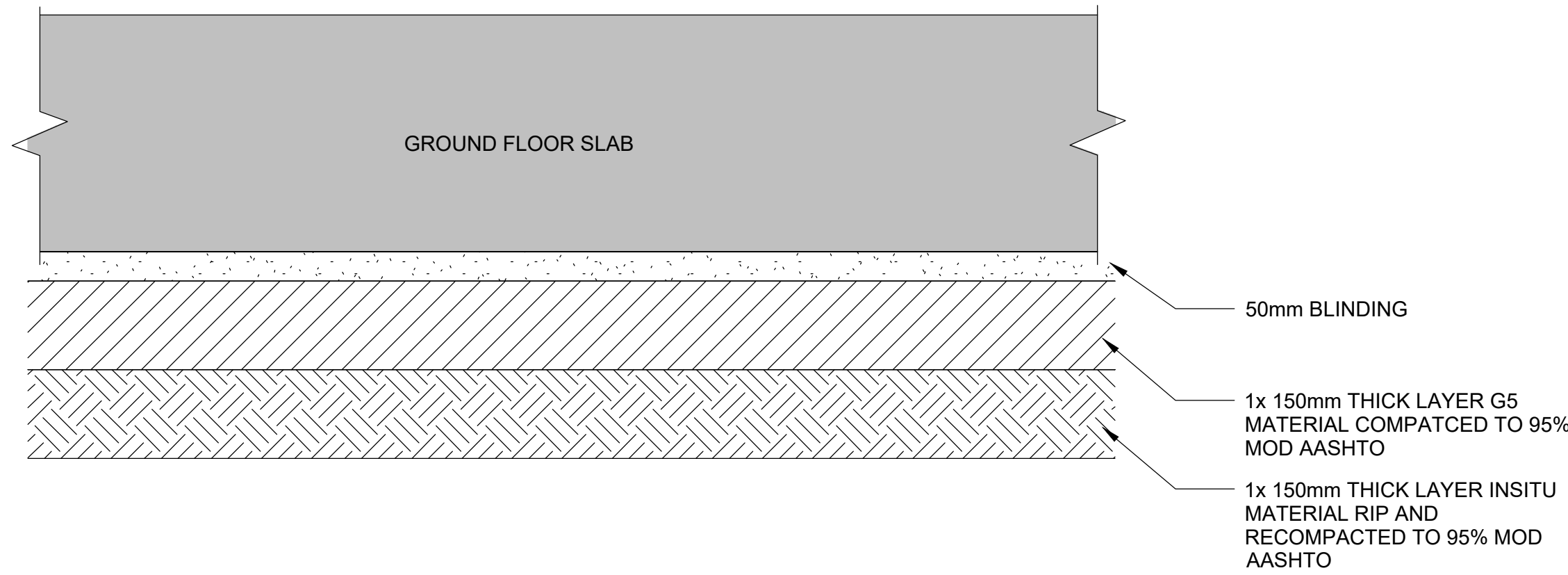
DETAIL AT PIPE/SLEEVE PENETRATIONS







GRATING DETAIL 1

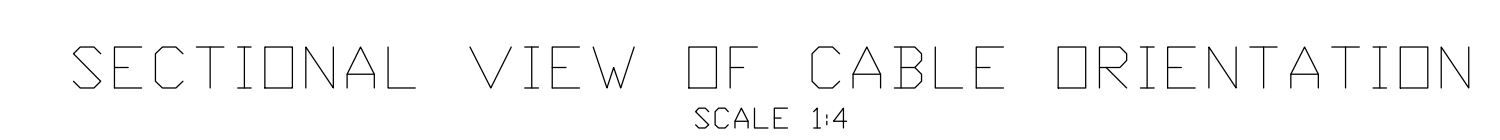


GRATING DETAIL 2


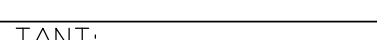


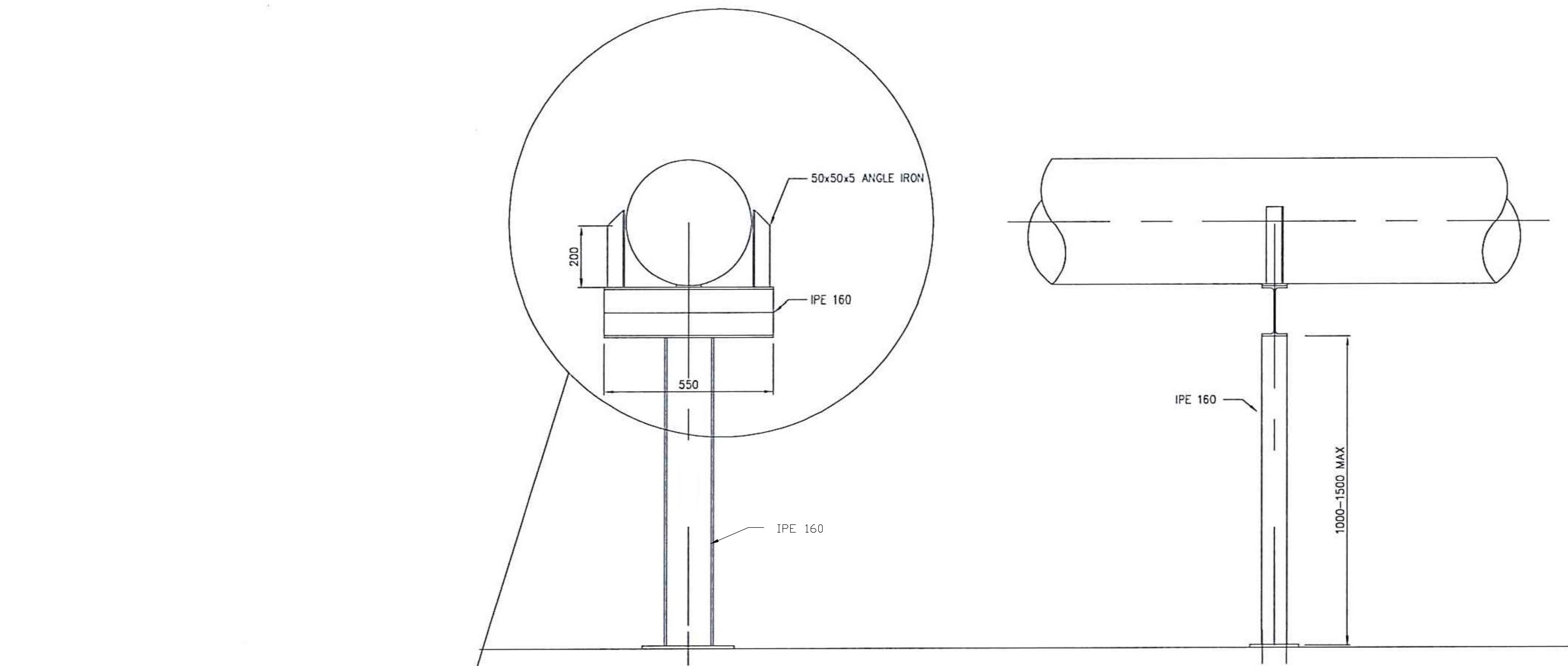
DETAIL A - LAYERWORKS DETAIL

						FOR DISCUSSION		Designed by: BIBI FATHIMA ALLI		CLIENT:		CONSULTANT:				AIRPORTS COMPANY SOUTH AFRICA KING SHAKA INTERNATIONAL AIRPORT		Original Size A0	Scale AS SHOWN	Sheet of	08 12		
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B 21/05/25		FOR TENDER				Drawn by: SAMANTHA VERSTER								Design Leader									
A 15/04/25		FOR TENDER				Checked by:-																	
Symbol		Date		Description		Checked		Signed										COMPLETION OF BRAVO TAXIWAY AND FOXTROT APRON STANDS TYPICAL DETAILS GENERAL ARRANGEMENT		Plan No.:- KSIA-MECH-GA-008			
				AMENDMENTS						Date of Approval:-				SIGNATURE		DATE							

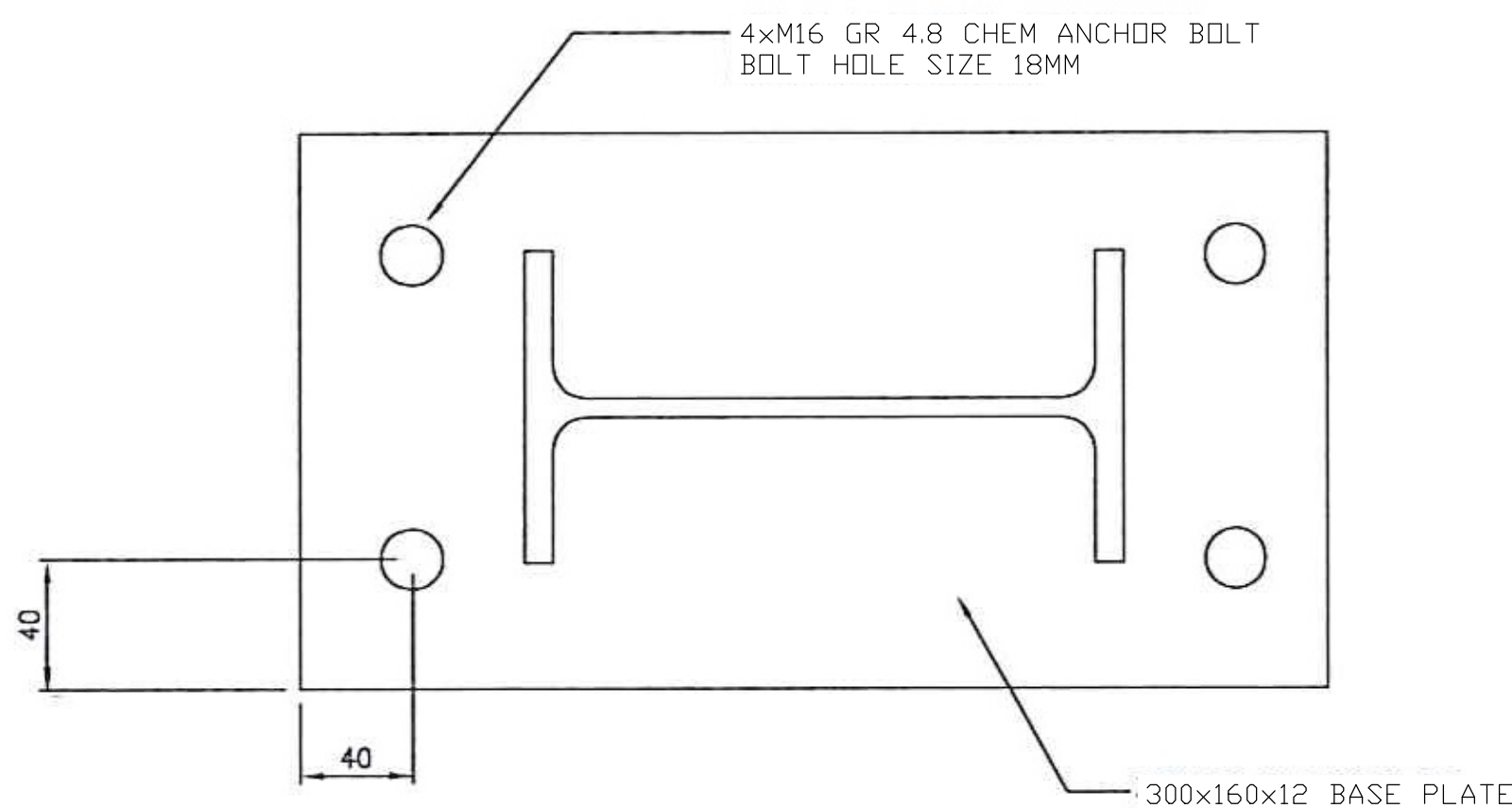
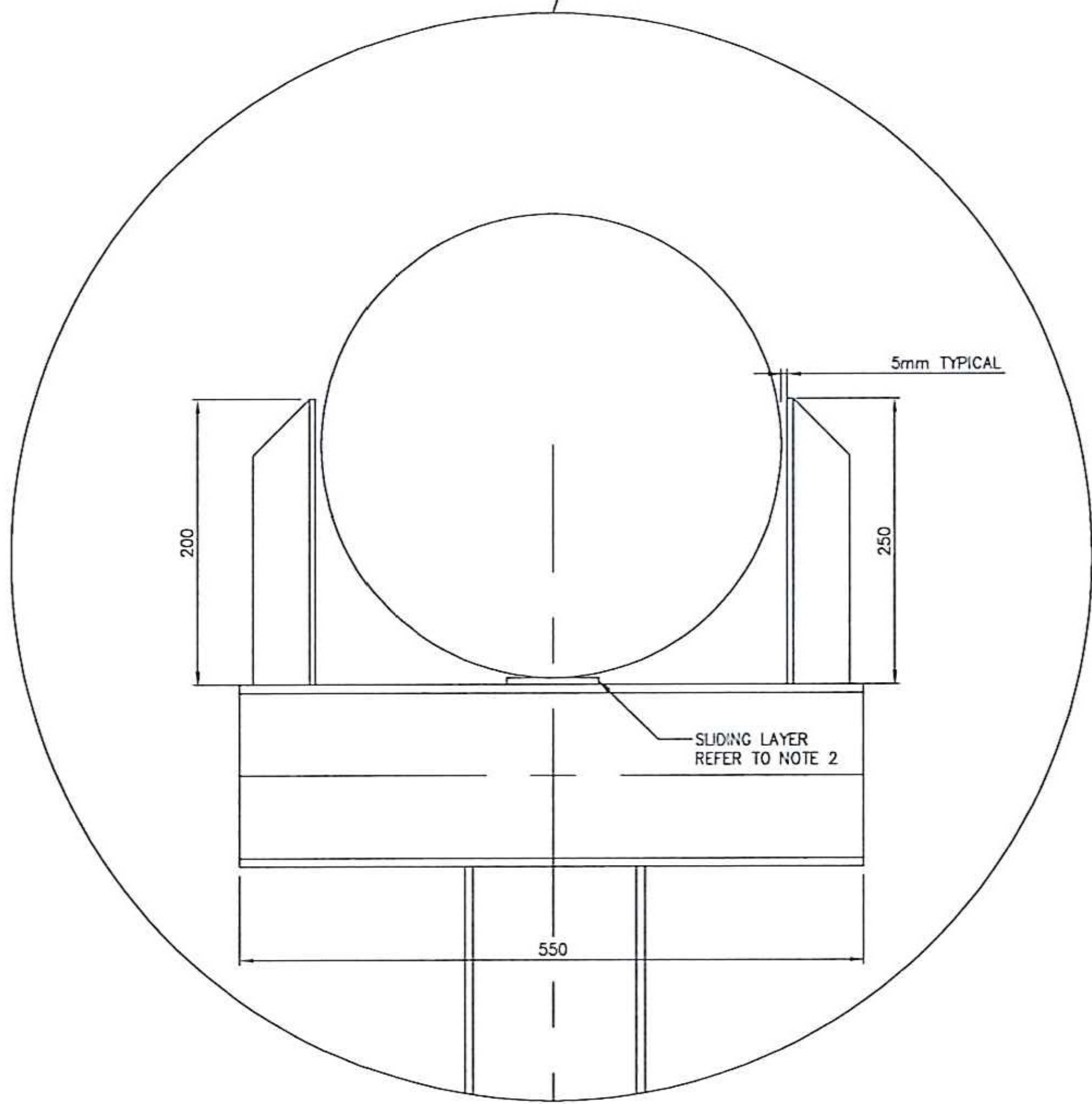


NOTE:
1.) YORK TYPE ENCLOSURE TO BE
POSITIONED WITHIN REACH OF
DABICO ACCESS MANWAY COVER

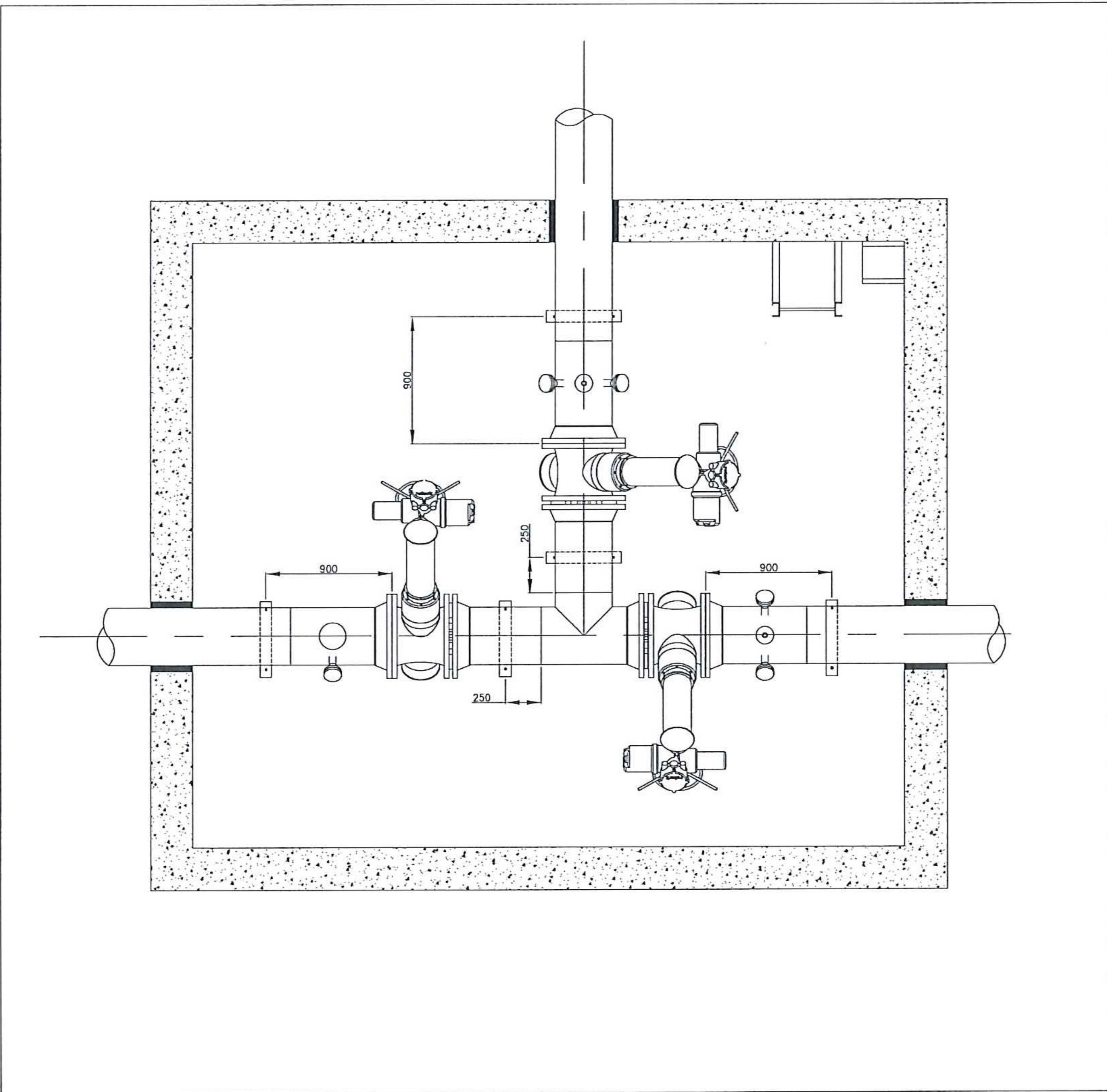
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B 15/04/25 FOR TENDER							Drawn by: SAMANTHA VERSTER				Design Leader		COMPLETION OF BRAVO TAXIWAY AND FOXTROT APRON STANDS		Plan No.:-	
A 15/04/25 FOR TENDER							Checked by:-				For Client		HYDRANT CATHODIC PROTECTION GENERAL ARRANGEMENT		KSIA-MECH-GA-009	
Symbol Date Description Checked Signed					ALL DIMENSIONS MUST BE CONFIRMED ON-SITE BEFORE WORK BEGINS. ANY DISCREPANCIES MUST BE REFERRED TO THE ENGINEER.		Date of Approval:-									
AMENDMENTS																



PIPE SUPPORT DETAIL
SCALE 1:10





BASE PLATE DETAIL
SCALE 1:2





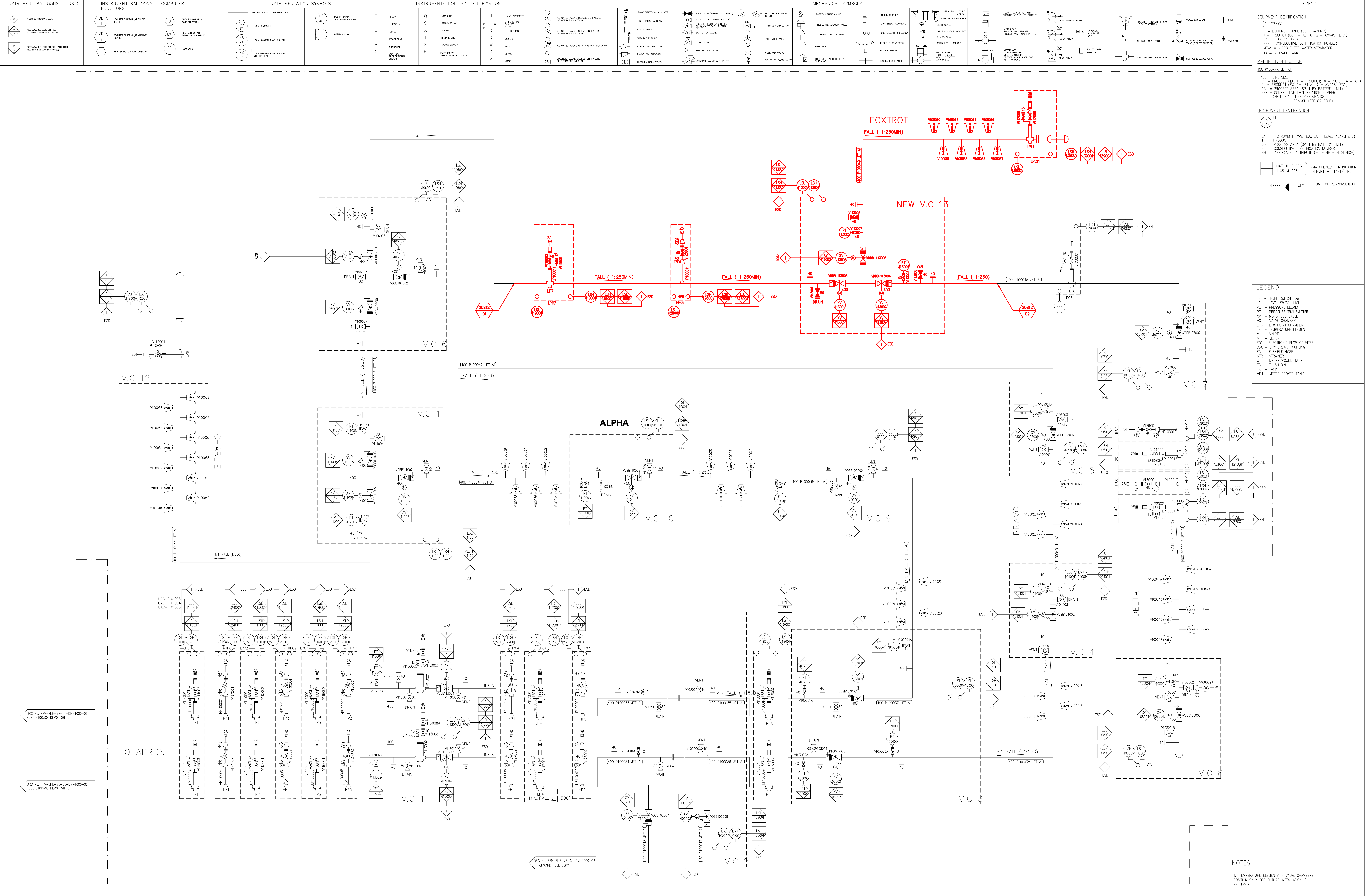
PIPE SUPPORT ARRANGEMENT IN VALVE CHAMBER 13
SCALE 1:20

- NOTES:
- 1) ALL STEEL TO BE HOT DIPPED GALVANISED IN ACCORDANCE TO SANS 121:2011
 - 2) SLIDING LAYER OF 2x2MM GALVANISED PLATES WITH GREASE IN BETWEEN
 - 3) GENERAL SPECIFICATION FOR STEEL WORK SANS 10152-1 AND SANS 1200H
 - 4) ALL BOLTS AND NUTS TO COMPLY WITH SANS 1700-S
 - 5) ALL BOLTS AND NUTS MUST BE GRADE 4.8
 - 6) ALL WELDING TO COMPLY WITH SANS 10044 AND AWS 011 AND SANS 2001-CSL
 - 7) ALL ANCHOR BOLTS ARE HILTY HVZ ADHESIVE ANCHORS OR SIV LAR APPROVED
 - 8) ALL WELDS MUST BE CONTINUOUS FULL STRENGTH WELDS

FOR DISCUSSION										Designed by: BIBI FATHIMA ALLI		<div>CLIENT:</div> <div></div> <div>AIRPORTS COMPANY SOUTH AFRICA</div>	<div>CONSULTANT:</div> <div></div> <div>KANTHEY & TEMPIER CONSULTING ENGINEERS ESTABLISHED 1955</div>				AIRPORTS COMPANY SOUTH AFRICA KING SHAKA INTERNATIONAL AIRPORT		FOR TENDER		
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AMENDMENTS										Checked by:-							Plan No.:- KSIA-MECH-GA-01				
Symbol Date Description Checked Signed										Date of Approval:-		<div>SIGNATURE</div> <div>DATE</div>		Design Leader		For Client		COMPLETION OF BRAVO TAXIWAY AND FOXTROT APRON STANDS PIPE SUPPORT DETAILS IN VALVE CHAMBER 13			



										FOR DISCUSSION				Designed by: BIBI FATHIMA ALLI		CLIENT:		CONSULTANT:				AIRPORTS COMPANY SOUTH AFRICA KING SHAKA INTERNATIONAL AIRPORT		FOR TENDER PURPOSES	
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										Drawn by: SAMANTHA VERSTER								COMPLETION OF BRAVO TAXIWAY AND FOXTROT APRON STANDS TYPICAL PIPE TRENCH DETAILS		Plan No.- KSIA-MECH-GA-012					
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AMENDMENTS																									



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Drawn by: SAMANTHA VERSTER				Plan No.:- KSIA-MECH-PID-001	
Checked by:-					
Date of Approval:-					
CLIENT: AIRPORTS COMPANY SOUTH AFRICA					
CONSULTANT: K&T KANTLEY & TEMPLE CONSULTING ENGINEERS ESTABLISHED 1983					
Design Leader					
For Client					
AIRPORTS COMPANY SOUTH AFRICA KING SHAKA INTERNATIONAL AIRPORT					
COMPLETION OF BRAVO TAXIWAY AND APRON STANDS FUEL FEEDER LINES AND FUEL HYDRANT P&ID					