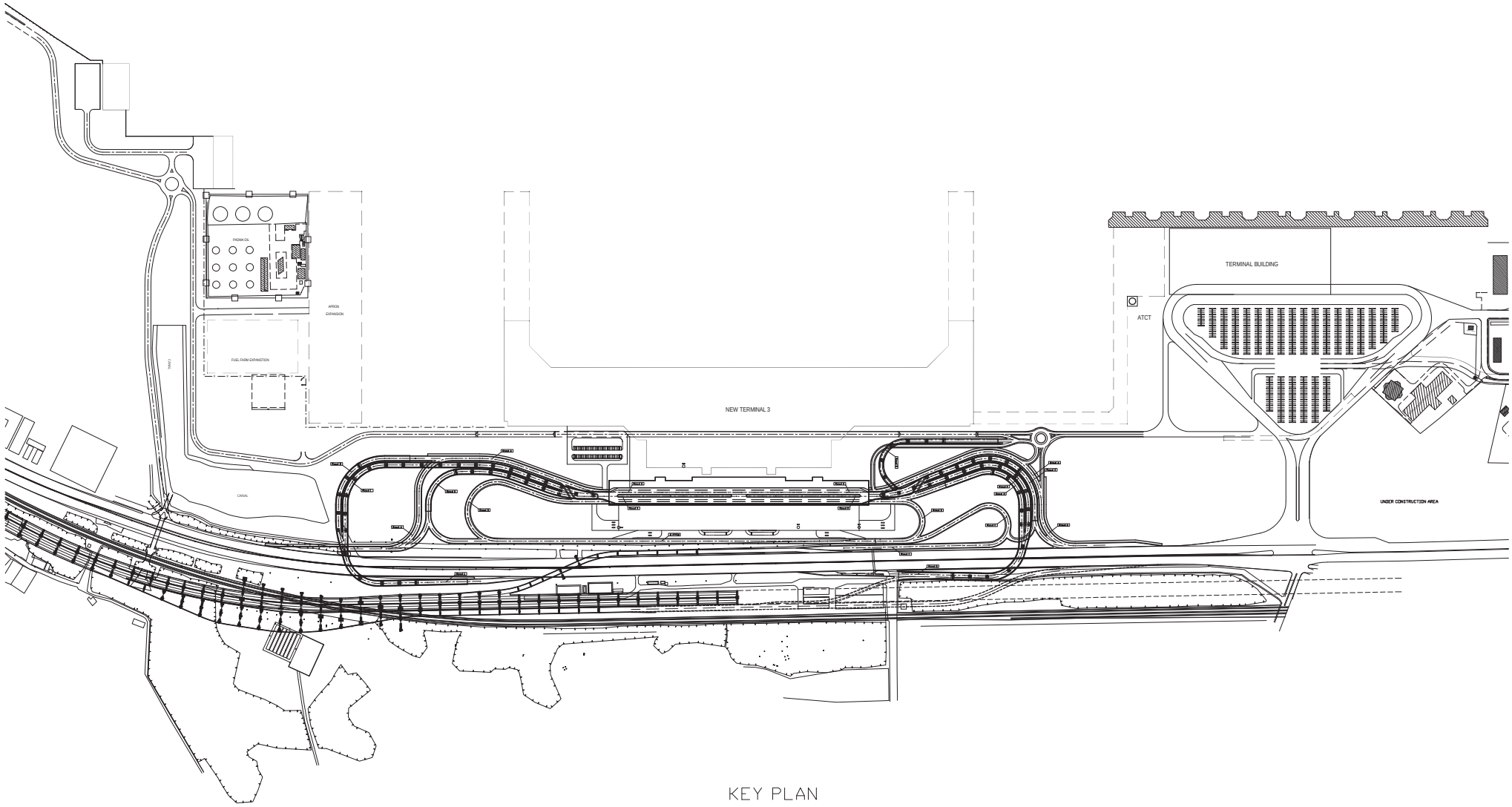
Appendix 10.4 Design Drawings

(Road)

(Intentionally Blank)

Land Side Civil Works (Road & Bridge)

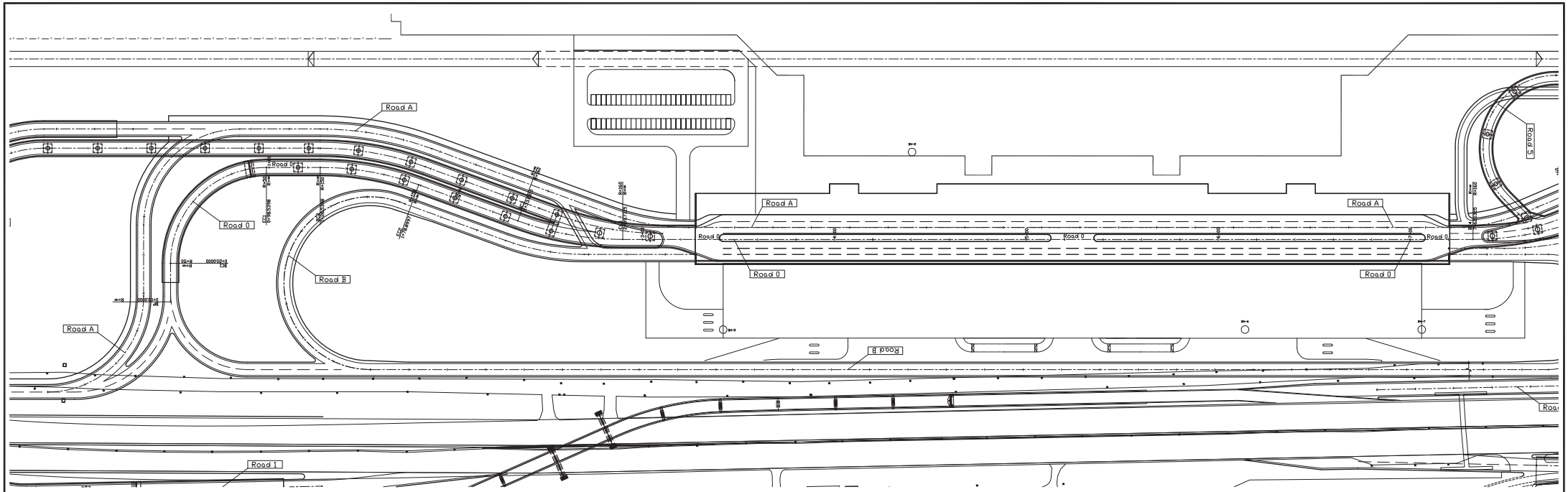
Item	No.	Title	Remarks
Road	01	Key Plan	
	02	Plan & Profile (Road 0) 1/2	
	03	Plan & Profile (Road 0) 2/2	
	04	Plan & Profile (Road 1)	
	05	Plan & Profile (Road 2)	
	06	Plan & Profile (Road 3)	
	07	Plan & Profile (Road 4)	
	08	Plan & Profile (Road 5)	
	09	Plan & Profile (Road A) 1/2	
	10	Plan & Profile (Road A) 2/2	
	11	Plan & Profile (Road B) 1/2	
	12	Plan & Profile (Road B) 2/2	
	13	Plan & Profile (Road C)	
	14	Plan & Profile (VIP 1)	
	15	Plan & Profile (VIP 2) 1/3	
	16	Plan & Profile (VIP 2) 2/3	
	17	Plan & Profile (VIP 2) 3/3	
	18	Plan & Profile (VIP 3)	
	19	Plan & Profile (VIP 4)	
	20	Typical Cross Section 1/2	
	21	Typical Cross Section 2/2	
Elevated Way	22	Elevated Way General View (Road 0) 1/2	
	23	Elevated Way General View (Road 0) 2/2	
	24	Elevated Way General View (Road 1)	
	25	Elevated Way General View (Road 2)	
	26	Elevated Way General View (Road 3)	
	27	Elevated Way General View (Road 4)	
	28	Elevated Way General View (Road 5)	
	29	Elevated Way Substructure	
	30	Elevated Way Approach Structure	



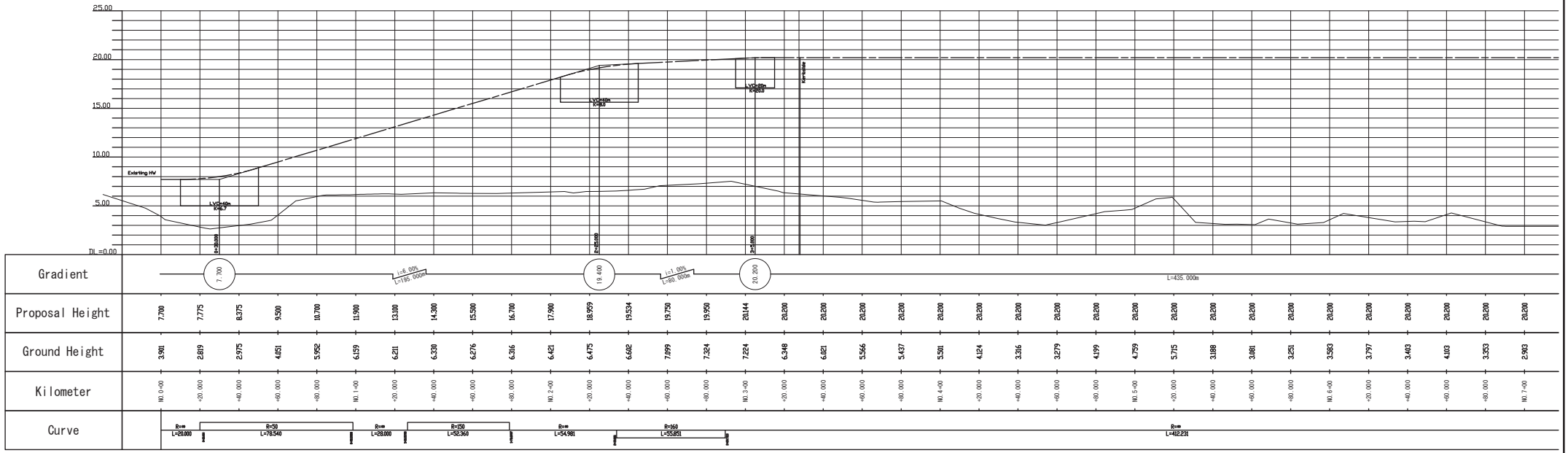
KEY PLAN

A10.4-2

PROJECT NAME :	CLIENT:	CONSULTANT :	DRAWING TITLE :								
HSIA HAZRAT SHAHJALAL INTERNATIONAL AIRPORT PREPARATELY SURVEY OF EXPANSION OF HAZRAT SHAHJALAL INTERNATIONAL AIRPORT	CIVIL AVIATION AUTHORITY OF BANGLADESH KURMITOLA, DHAKA-1229, BANGLADESH		KEY PLAN BASIC DESIGN SCALE : 1/6000 @ A3 DRAWING NO. :			DRAWN BY CHECKED BY APPROVED BY			CHECKED BY: THE ENGINEER	REVIEWED BY: PROJECT DIRECTOR	APPROVED BY: CHIEF ENGINEER



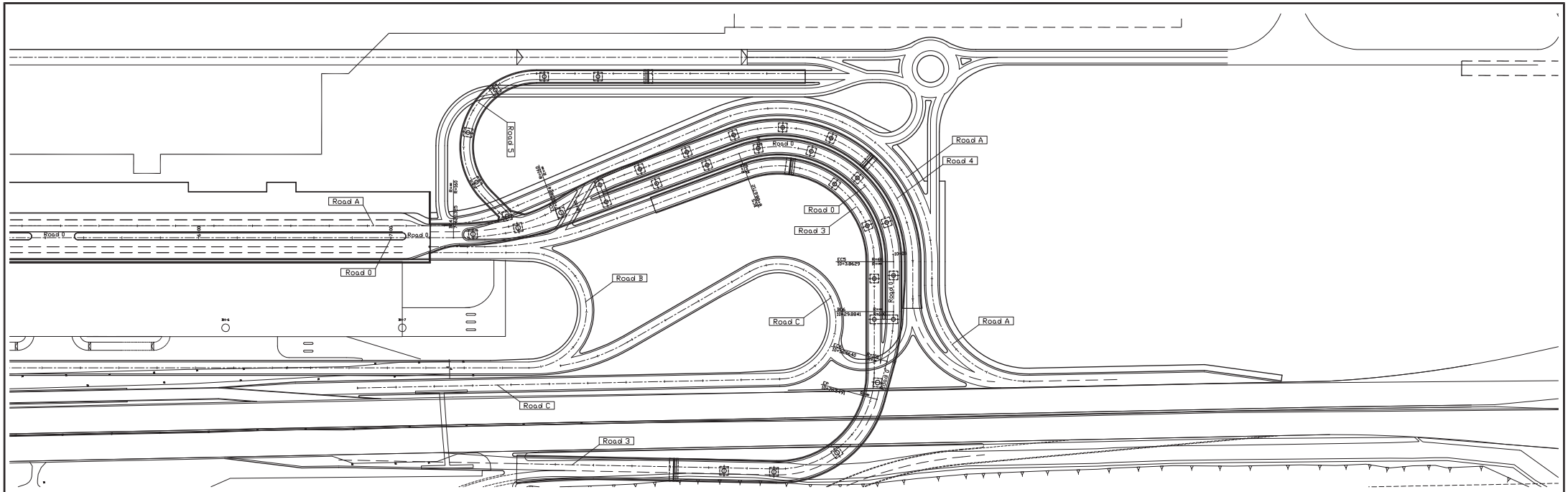
PLAN



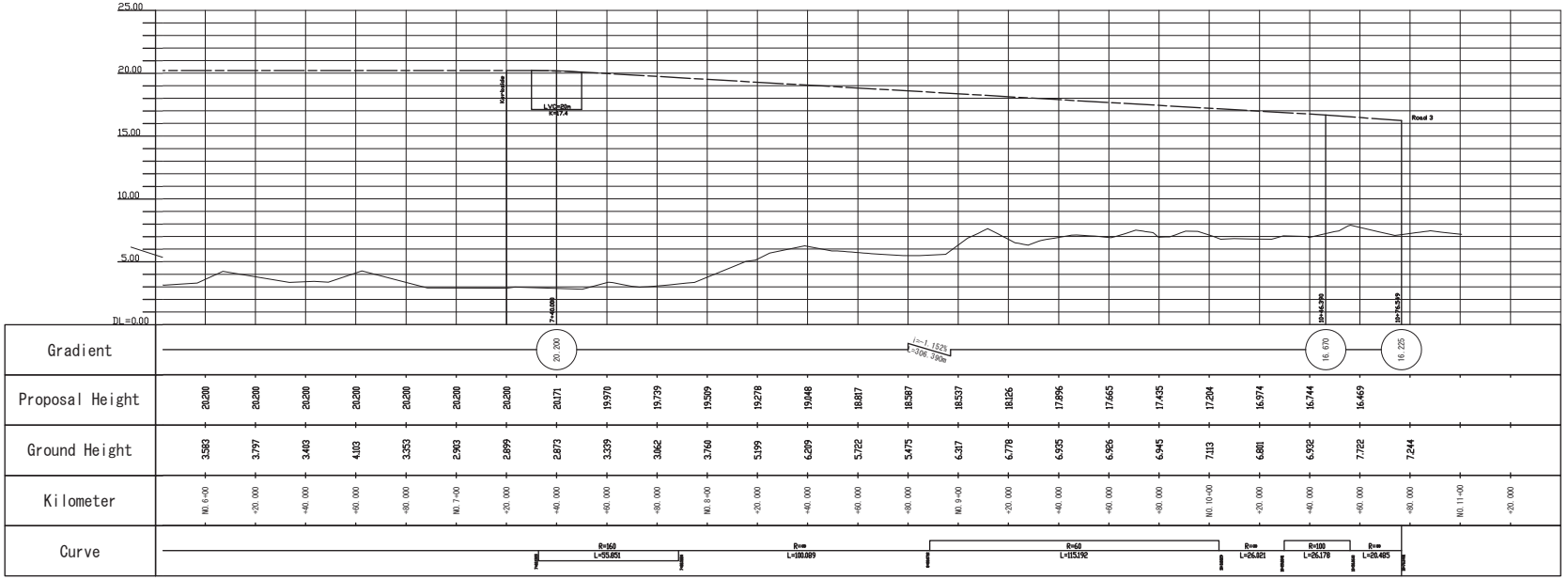
PROFILE

PROJECT NAME : HAZRAT SHAHJALAL INTERNATIONAL AIRPORT PREPARATELY SURVEY OF EXPANSION OF HAZRAT SHAHJALAL INTERNATIONAL AIRPORT	CLIENT: CIVIL AVIATION AUTHORITY OF BANGLADESH KURMITOLA, DHAKA-1229, BANGLADESH	CONSULTANT :	DRAWING TITLE : PLAN & PROFILE (ROAD 0) 1/2 BASIC DESIGN SCALE : H=1/:2,000 V=1/400 @ A3 DRAWING NO. :	DRAWN BY CHECKED BY APPROVED BY	CHECKED BY: THE ENGINEER	REVIEWED BY: PROJECT DIRECTOR	APPROVED BY: CHIEF ENGINEER

A10.4-3



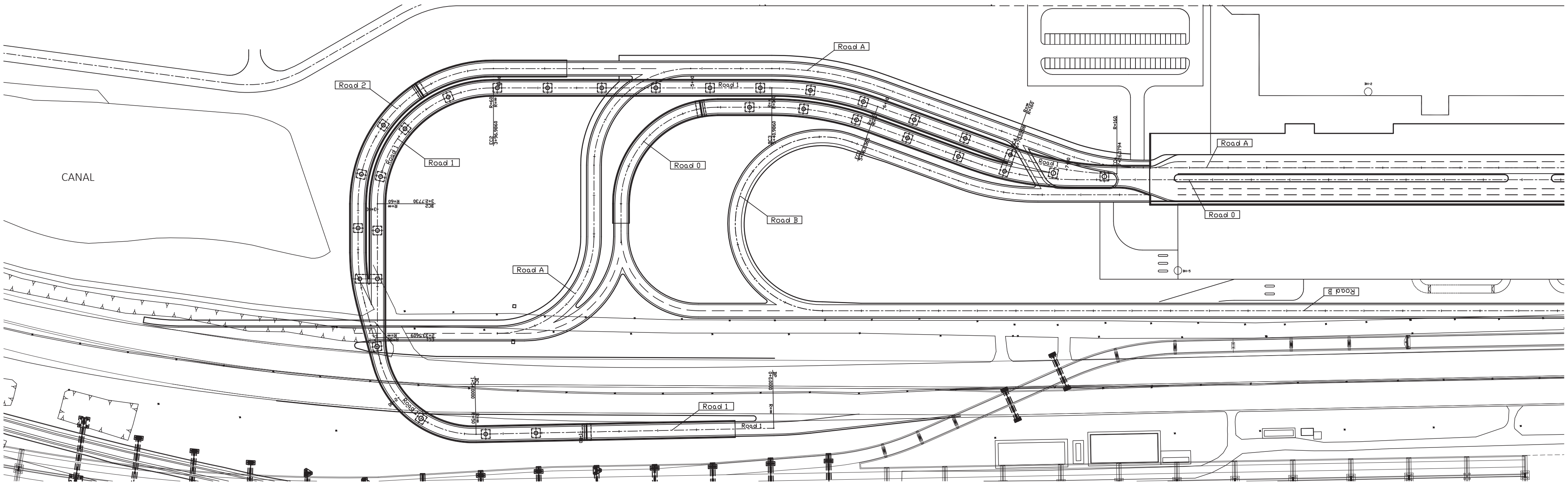
PLAN



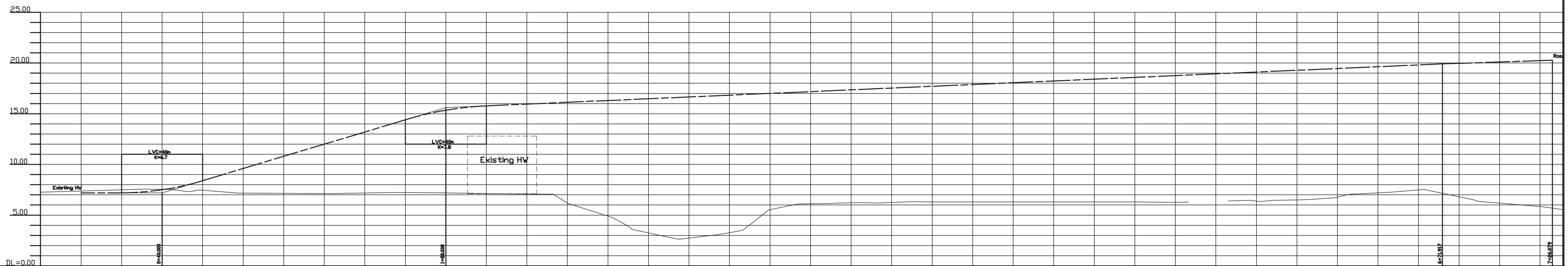
PROFILE

PROJECT NAME :	CLIENT:	CONSULTANT :	DRAWING TITLE :	DRAWN BY	CHECKED BY:
HSIA HAZRAT SHAHJALAL INTERNATIONAL AIRPORT PREPARATELY SURVEY OF EXPANSION OF HAZRAT SHAHJALAL INTERNATIONAL AIRPORT	CIVIL AVIATION AUTHORITY OF BANGLADESH KURMITOLA, DHAKA-1229, BANGLADESH		PLAN & PROFILE (ROAD 0) 2/2 BASIC DESIGN SCALE : H=1/:2,000 V=1/400 @ A3 DRAWING NO. :	CHECKED BY APPROVED BY	REVIEWED BY: APPROVED BY: THE ENGINEER / PROJECT DIRECTOR / CHIEF ENGINEER

A10.4-4



PLAN

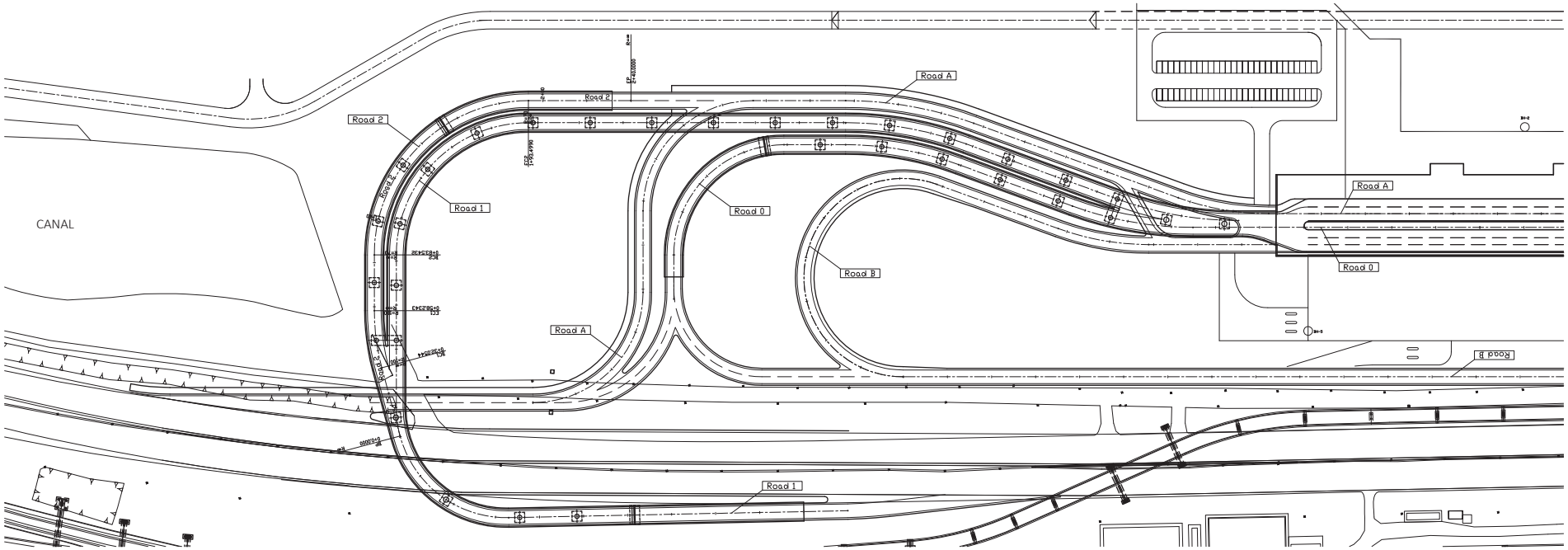


Kilometer	NO.0+00	+20.000	+40.000	+60.000	+80.000	NO.1+00	+20.000	+40.000	+60.000	+80.000	NO.2+00	+20.000	+40.000	+60.000	+80.000	NO.3+00	+20.000	+40.000
Gradient			7.200	i=6.00% L=140.000m						15.600								
Proposal Height	7.200	7.200	7.500	8.400	9.600	10.800	12.000	13.200	14.400	15.344	15.775	15.951	16.126	16.302	16.477	16.652	16.828	17.003
Ground Height	7.325	7.444	7.563	7.386	7.303	7.166	7.137	7.144	7.212	7.221	7.153	7.110	7.079	5.539	3.901	2.819	2.975	4.051
Curve	R=∞ L=154.000								R=50 L=79.561				R=∞ L=69.212			R=60 L=94.248		

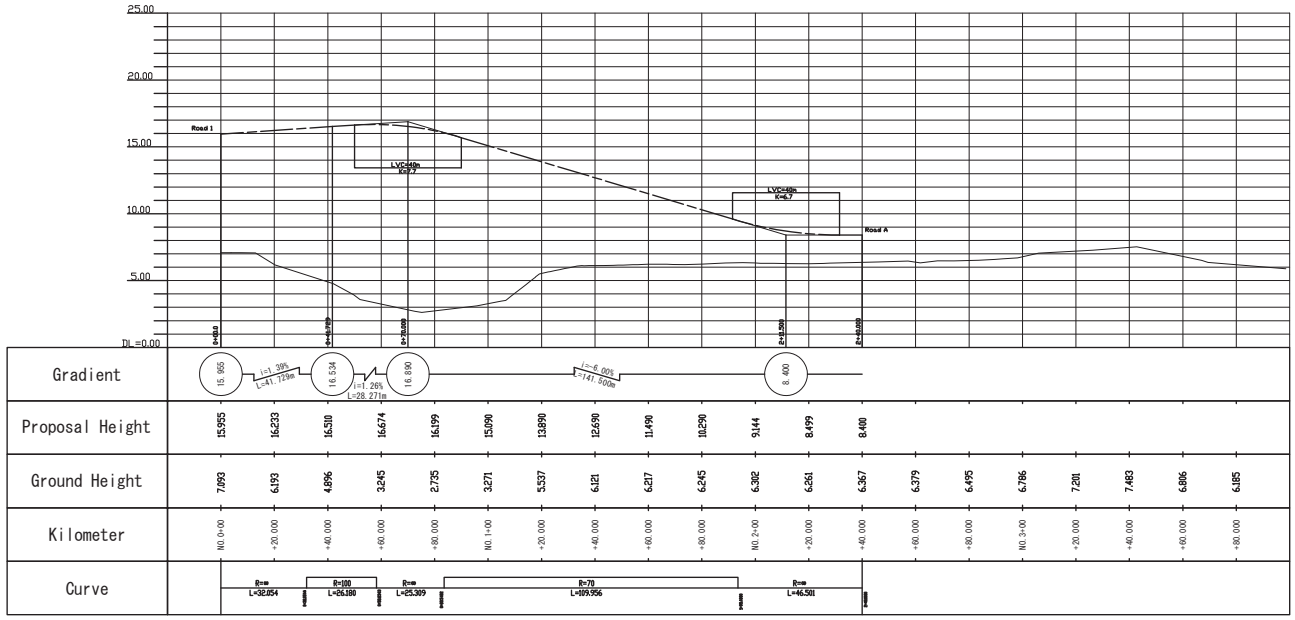
Kilometer	+60.000	+80.000	NO.4+00	+20.000	+40.000	+60.000	+80.000	NO.5+00	+20.000	+40.000	+60.000	+80.000	NO.6+00	+20.000	+40.000	+60.000	+80.000		
Gradient	i=0.88% L=491.917m																19.914		20.272
Proposal Height	17.179	17.354	17.529	17.705	17.880	18.056	18.231	18.406	18.582	18.757	18.933	19.108	19.283	19.459	19.634	19.810	19.968	20.100	20.232
Ground Height	5.952	6.159	6.211	6.330	6.330	6.330	6.330	6.330	6.330	6.276	6.316	6.421	6.475	6.602	7.099	7.324	7.224	6.348	6.021
Curve			R=∞ L=144.000							R=160 L=55.851			R=∞ L=73.392				R=160 L=55.851		

PROFILE

PROJECT NAME :	CLIENT:	CONSULTANT :	DRAWING TITLE :	DRAWN BY	CHECKED BY:	REVIEWED BY:	APPROVED BY:
HSIA HAZRAT SHAHJALAL INTERNATIONAL AIRPORT	CIVIL AVIATION AUTHORITY OF BANGLADESH		PLAN & PROFILE (ROAD 1)	CHECKED BY			
PREPARATELY SURVEY OF EXPANSION OF HAZRAT SHAHJALAL INTERNATIONAL AIRPORT	KURMITOLA, DHAKA-1229, BANGLADESH		BASIC DESIGN	APPROVED BY			
			SCALE : H=1/:2,000 V=1/400 @ A3		THE ENGINEER	PROJECT DIRECTOR	CHIEF ENGINEER
			DRAWING NO. :				



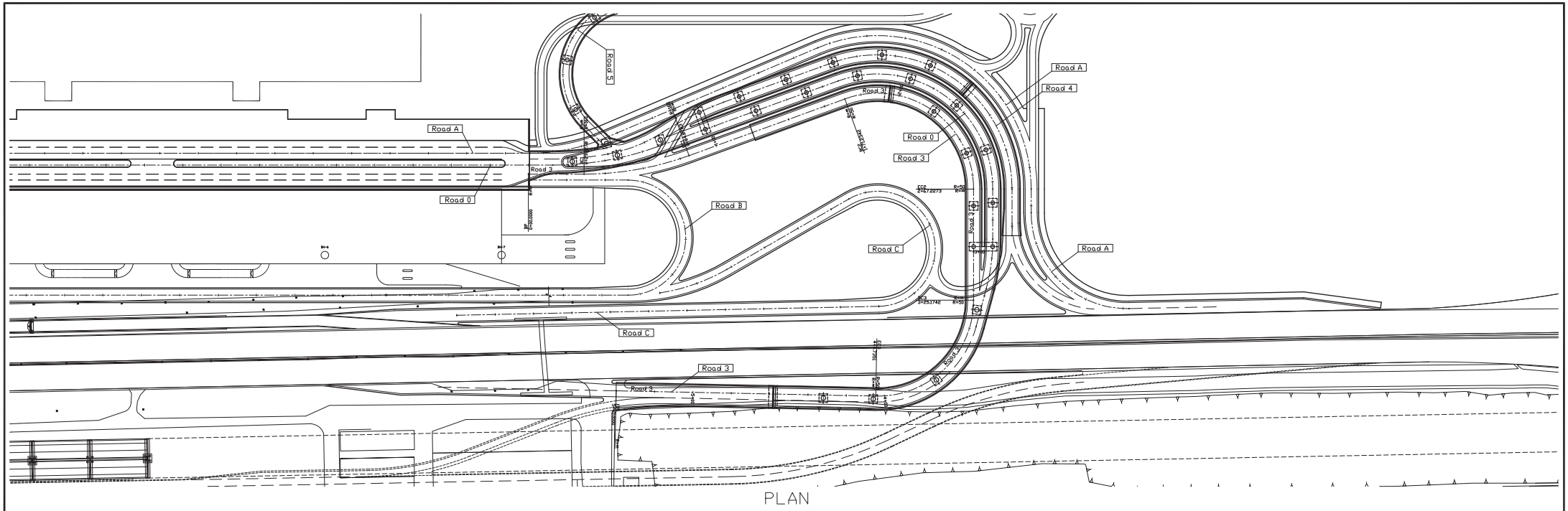
PLAN



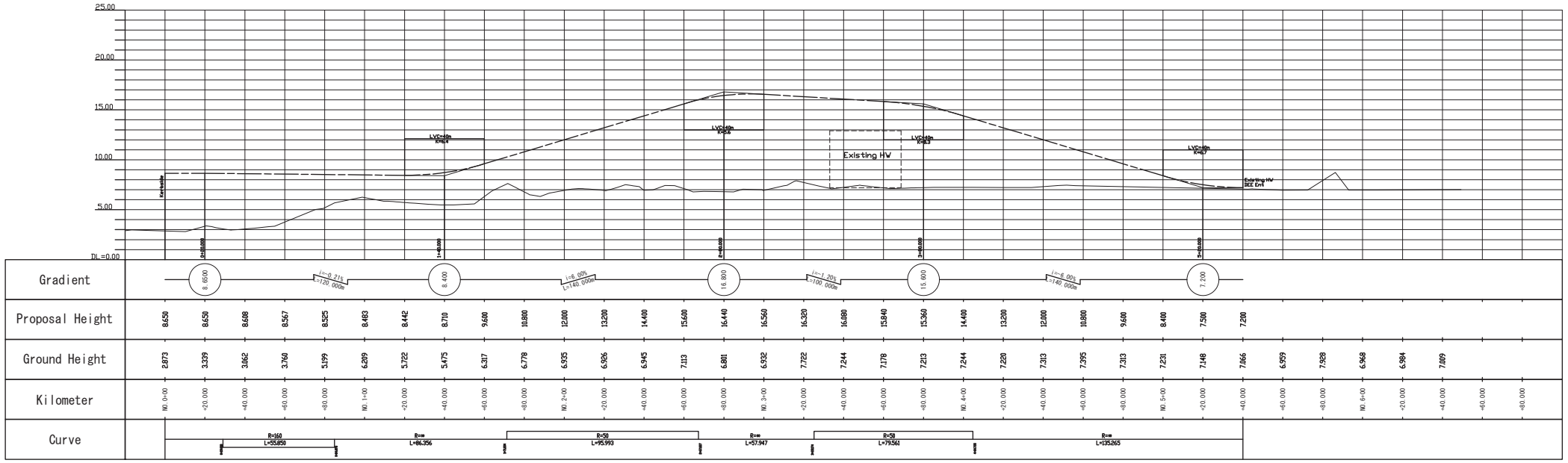
PROFILE

PROJECT NAME : HAZRAT SHAHJALAL INTERNATIONAL AIRPORT PREPARATELY SURVEY OF EXPANSION OF HAZRAT SHAHJALAL INTERNATIONAL AIRPORT	CLIENT: CIVIL AVIATION AUTHORITY OF BANGLADESH KURMITOLA, DHAKA-1229, BANGLADESH	CONSULTANT :	DRAWING TITLE : PLAN & PROFILE (ROAD 2) BASIC DESIGN SCALE : H=1/:2,000 V=1/400 @ A3 DRAWING NO. :	DRAWN BY CHECKED BY APPROVED BY	CHECKED BY: THE ENGINEER REVIEWED BY: PROJECT DIRECTOR APPROVED BY: CHIEF ENGINEER

A10.4-6



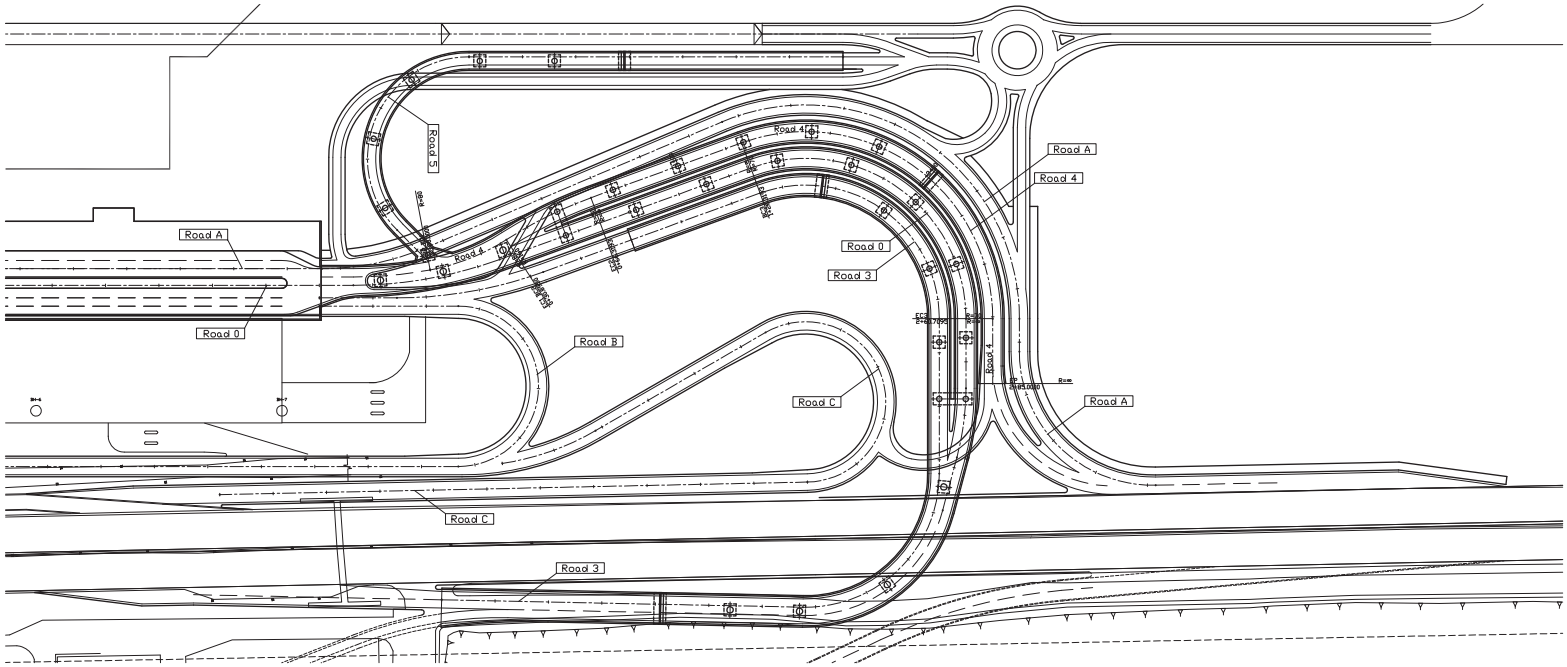
PLAN



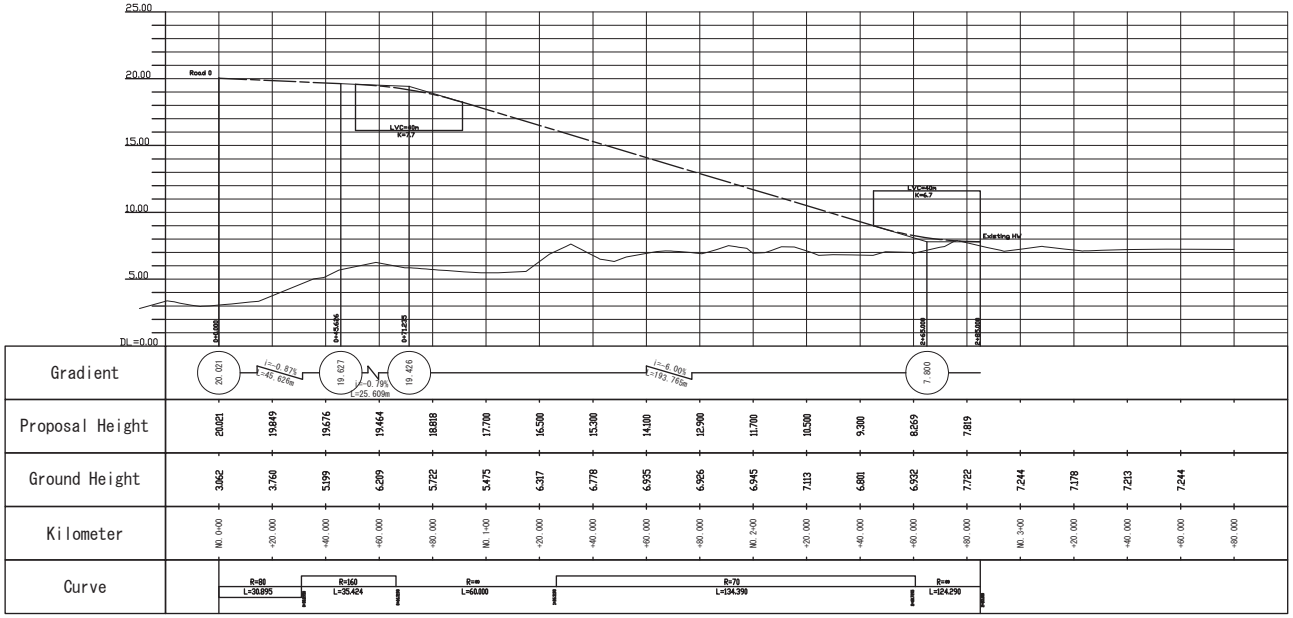
PROFILE

A10.4-7

PROJECT NAME :	CLIENT:	CONSULTANT :	DRAWING TITLE :			
HSIA HAZRAT SHAHJALAL INTERNATIONAL AIRPORT PREPARATELY SURVEY OF EXPANSION OF HAZRAT SHAHJALAL INTERNATIONAL AIRPORT	CIVIL AVIATION AUTHORITY OF BANGLADESH KURMITOLA, DHAKA-1229, BANGLADESH		PLAN & PROFILE (ROAD 3) BASIC DESIGN SCALE : H=1/:2,000 V=1/400 @ A3 DRAWING NO. :	DRAWN BY CHECKED BY APPROVED BY	CHECKED BY: THE ENGINEER	REVIEWED BY: PROJECT DIRECTOR	APPROVED BY: CHIEF ENGINEER



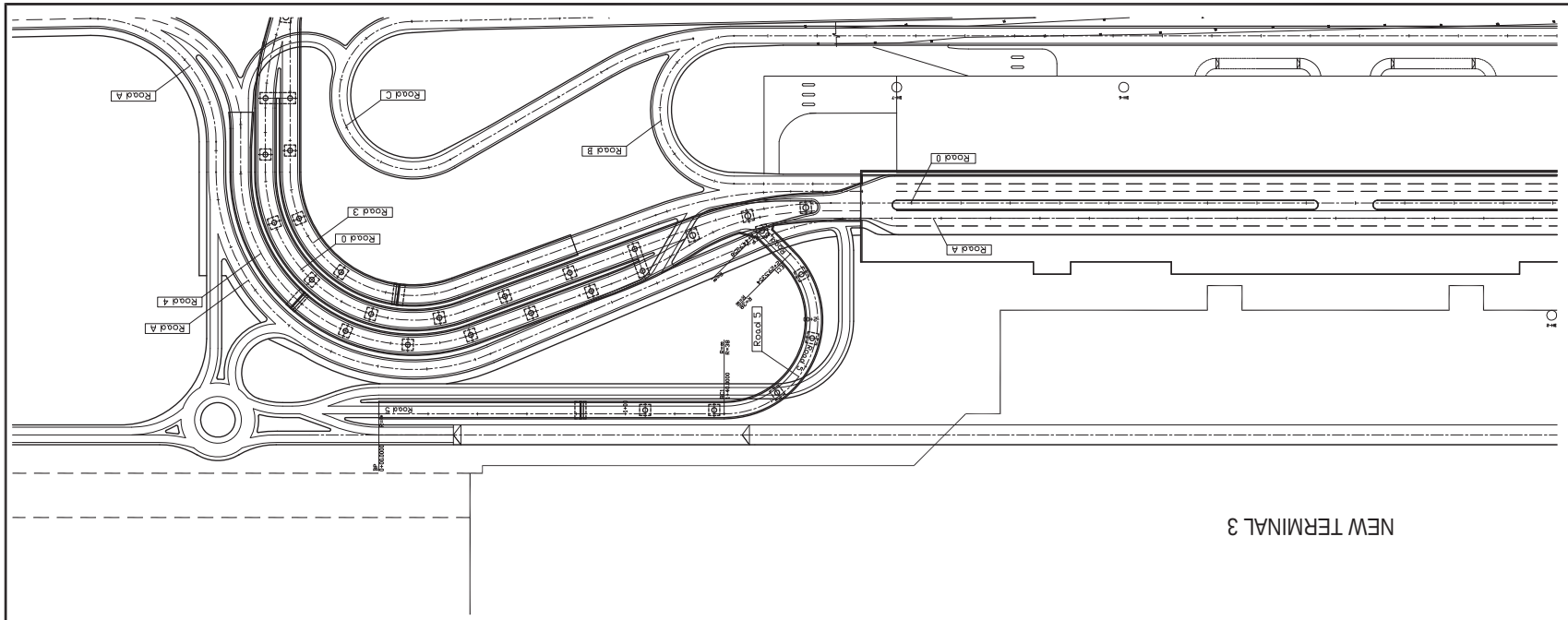
PLAN



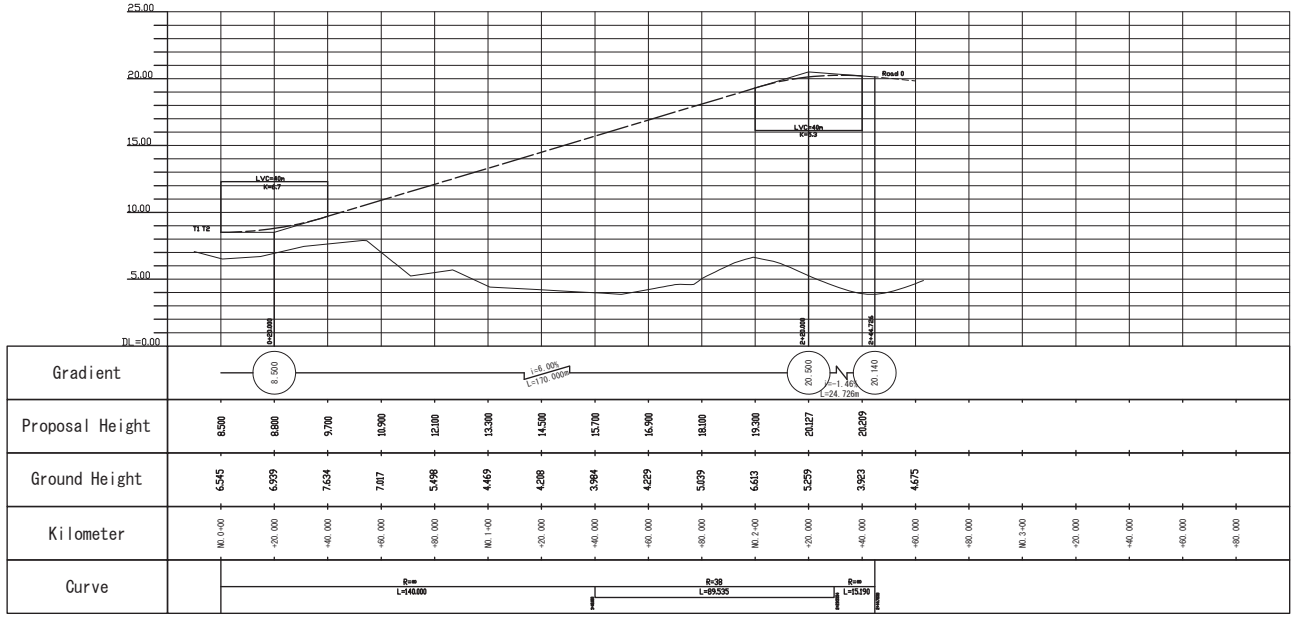
PROFILE

PROJECT NAME :	CLIENT:	CONSULTANT :	DRAWING TITLE :	DRAWN BY	CHECKED BY:	REVIEWED BY:
HSIA HAZRAT SHAHJALAL INTERNATIONAL AIRPORT PREPARATELY SURVEY OF EXPANSION OF HAZRAT SHAHJALAL INTERNATIONAL AIRPORT	CIVIL AVIATION AUTHORITY OF BANGLADESH KURMITOLA, DHAKA-1229, BANGLADESH		PLAN & PROFILE (ROAD 4) BASIC DESIGN SCALE : H=1/:2,000 V=1/400 @ A3 DRAWING NO. :	CHECKED BY APPROVED BY	THE ENGINEER	PROJECT DIRECTOR / CHIEF ENGINEER

A10.4-8



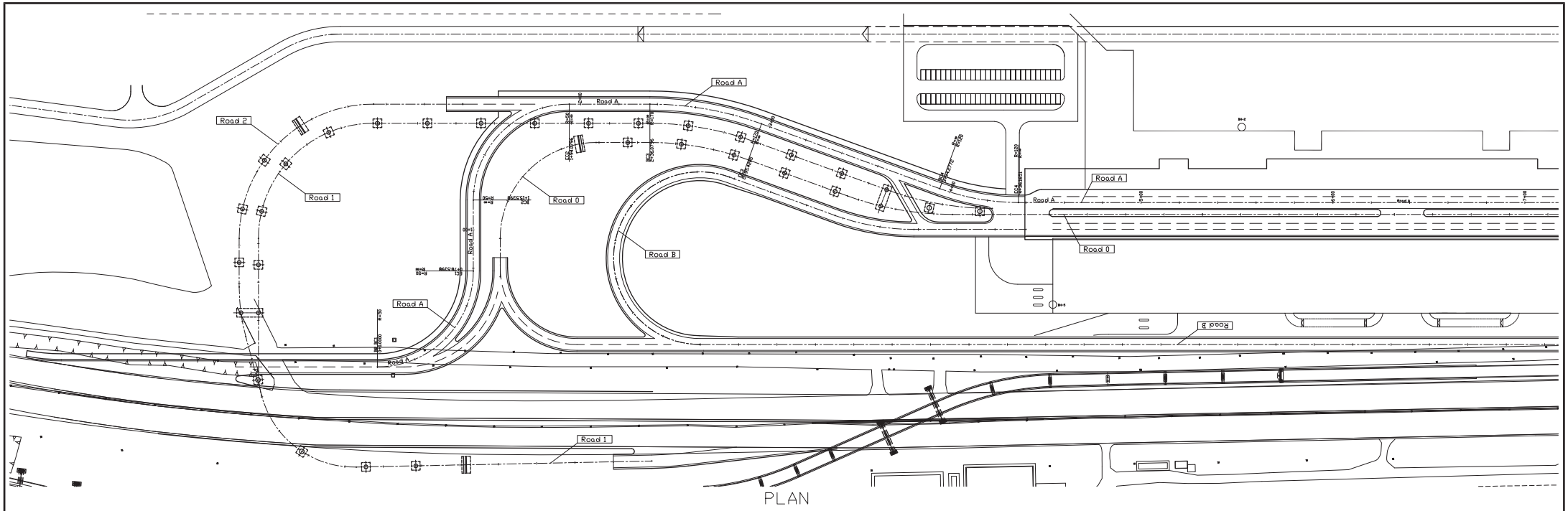
PLAN



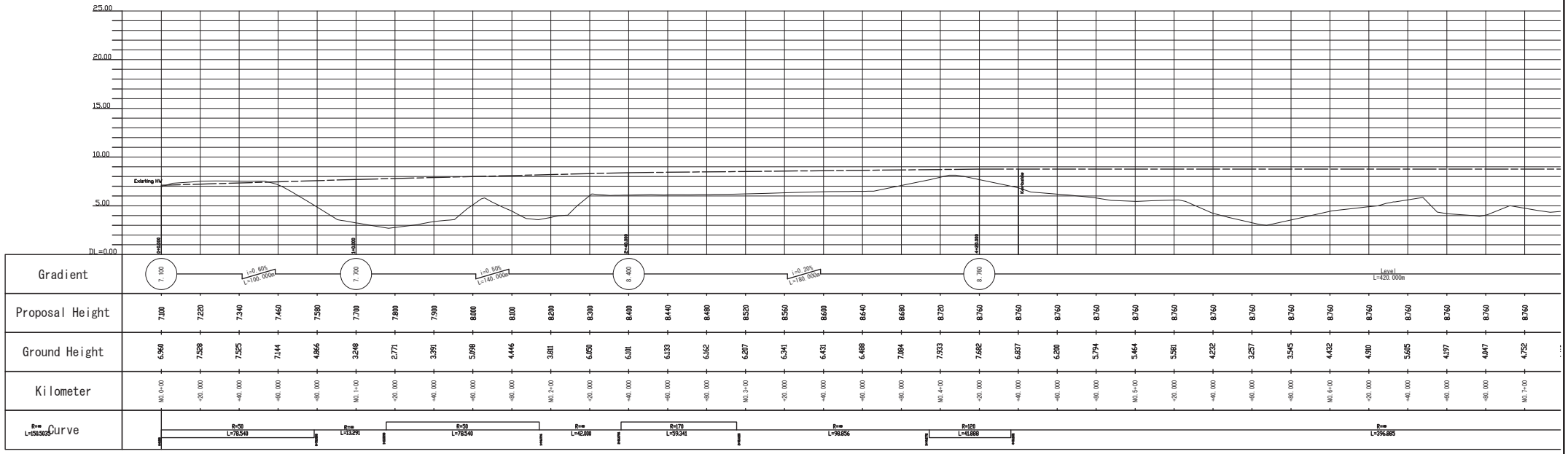
PROFILE

PROJECT NAME :	CLIENT:	CONSULTANT :	DRAWING TITLE :		DRAWN BY		CHECKED BY:	REVIEWED BY:	APPROVED BY:
HSIA HAZRAT SHAHJALAL INTERNATIONAL AIRPORT PREPARATELY SURVEY OF EXPANSION OF HAZRAT SHAHJALAL INTERNATIONAL AIRPORT	CIVIL AVIATION AUTHORITY OF BANGLADESH KURMITOLA, DHAKA-1229, BANGLADESH		PLAN & PROFILE (ROAD 5)		CHECKED BY				
			BASIC DESIGN		APPROVED BY				
			SCALE : H=1/:2,000 V=1/400 @ A3				THE ENGINEER	PROJECT DIRECTOR	CHIEF ENGINEER
			DRAWING NO. :						

A10.4-9



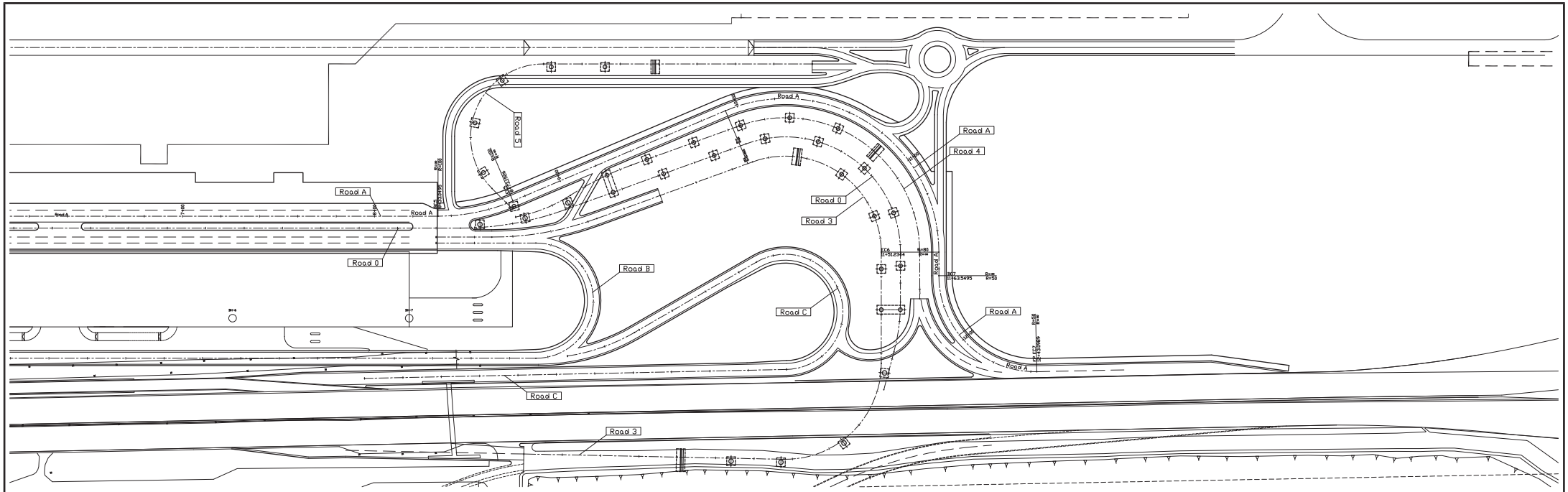
PLAN



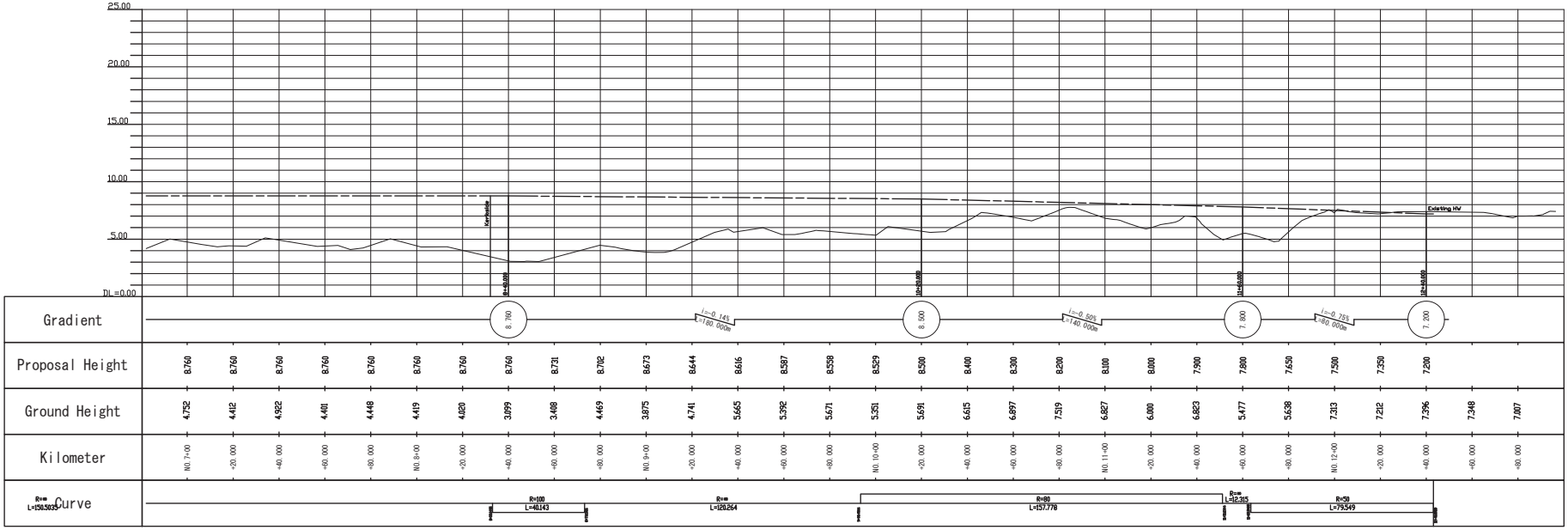
PROFILE

PROJECT NAME : HAZRAT SHAHJALAL INTERNATIONAL AIRPORT PREPARATELY SURVEY OF EXPANSION OF HAZRAT SHAHJALAL INTERNATIONAL AIRPORT	CLIENT: CIVIL AVIATION AUTHORITY OF BANGLADESH KURMITOLA, DHAKA-1229, BANGLADESH	CONSULTANT :	DRAWING TITLE : PLAN & PROFILE (ROAD A) 1/2 BASIC DESIGN SCALE : H=1/:2,000 V=1/400 @ A3 DRAWING NO. :	DRAWN BY CHECKED BY APPROVED BY	CHECKED BY: THE ENGINEER	REVIEWED BY: PROJECT DIRECTOR	APPROVED BY: CHIEF ENGINEER

A10.4-10



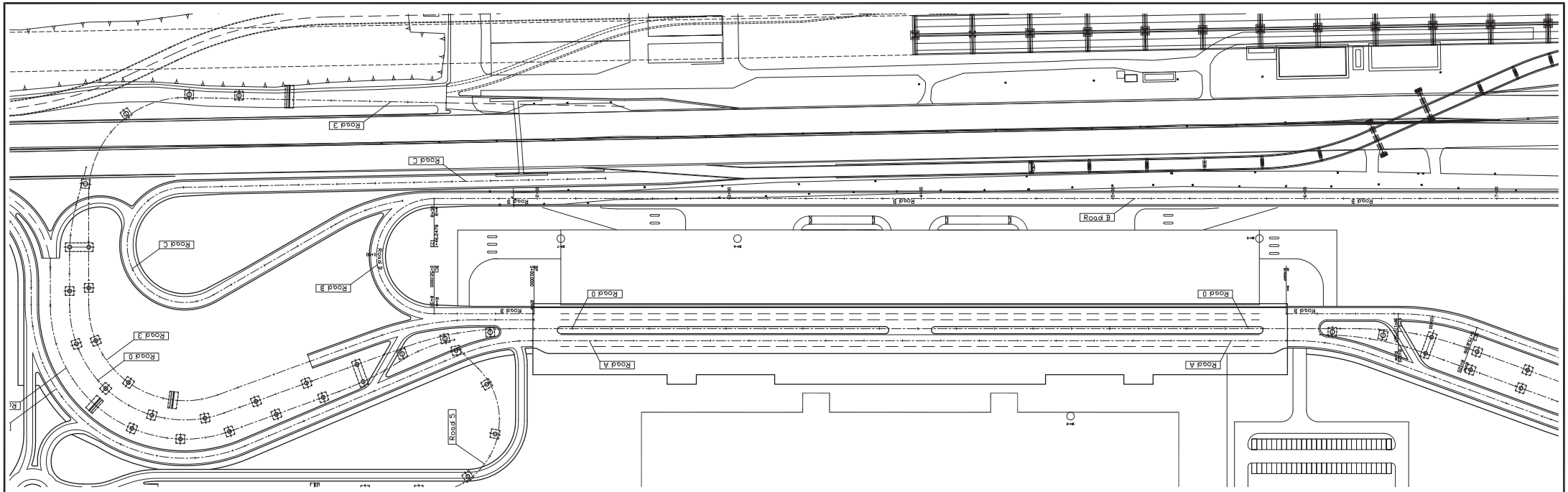
PLAN



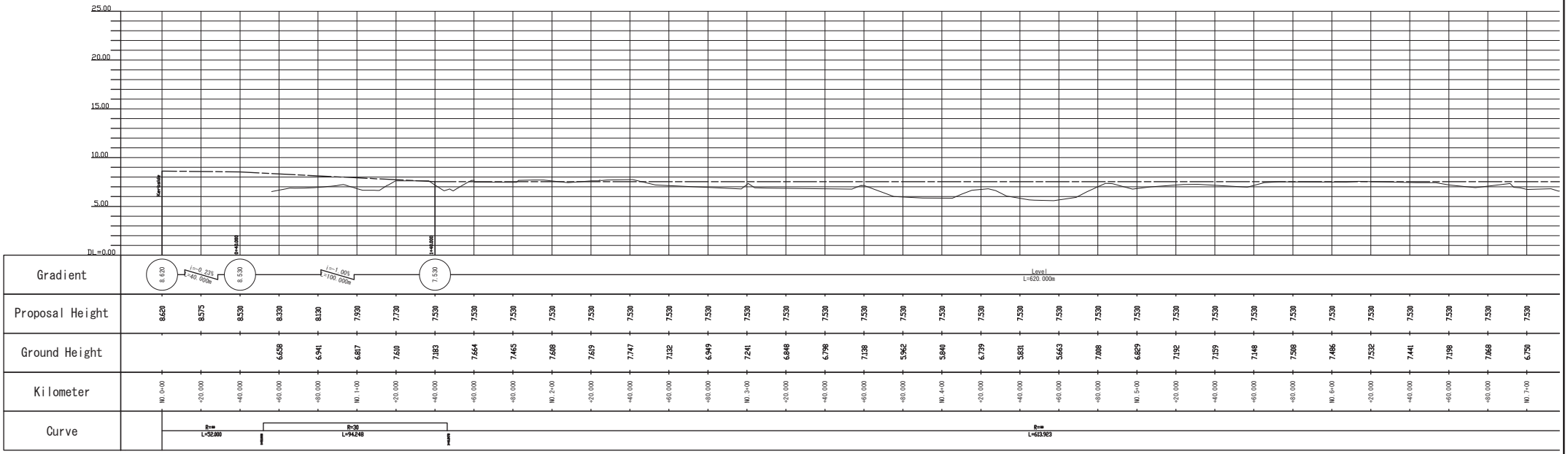
PROFILE

PROJECT NAME : HSIA HAZRAT SHAHJALAL INTERNATIONAL AIRPORT — PREPARATELY SURVEY OF EXPANSION OF HAZRAT SHAHJALAL INTERNATIONAL AIRPORT	CLIENT: CIVIL AVIATION AUTHORITY OF BANGLADESH, KURMITOLA, DHAKA-1229, BANGLADESH	CONSULTANT :	DRAWING TITLE : PLAN & PROFILE (ROAD A) 2/2	DRAWN BY / CHECKED BY / APPROVED BY	CHECKED BY:	REVIEWED BY: / APPROVED BY:
			BASIC DESIGN			
			SCALE : H=1/:2,000 V=1/400 @ A3			
			DRAWING NO. :		THE ENGINEER	PROJECT DIRECTOR / CHIEF ENGINEER

A10.4-11



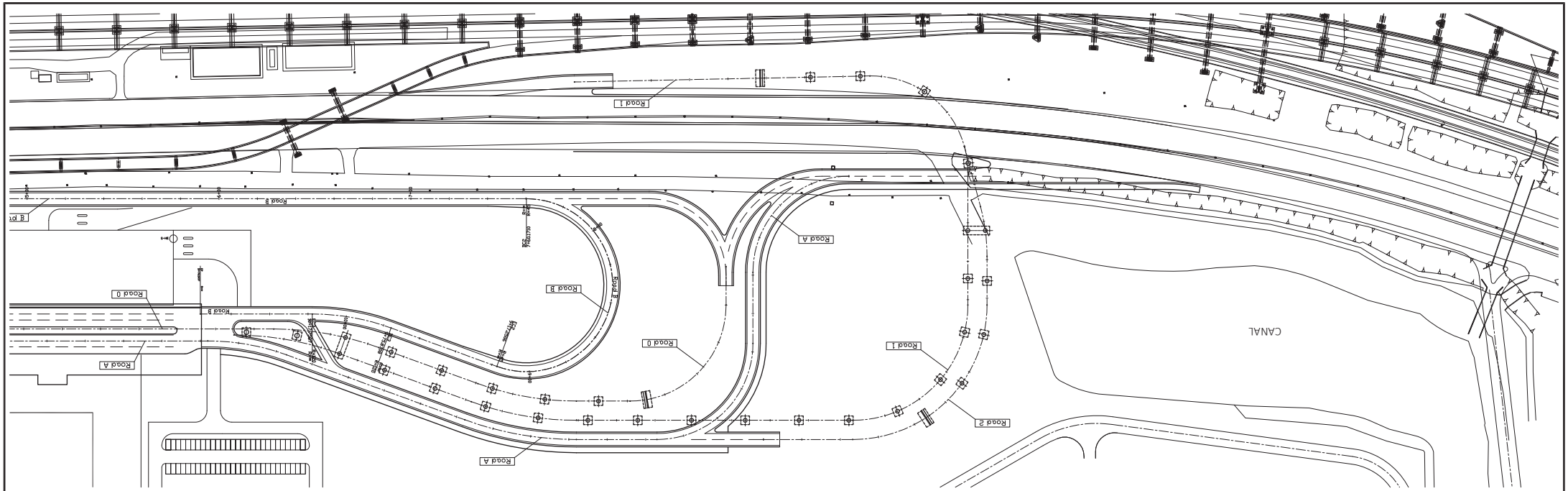
PLAN



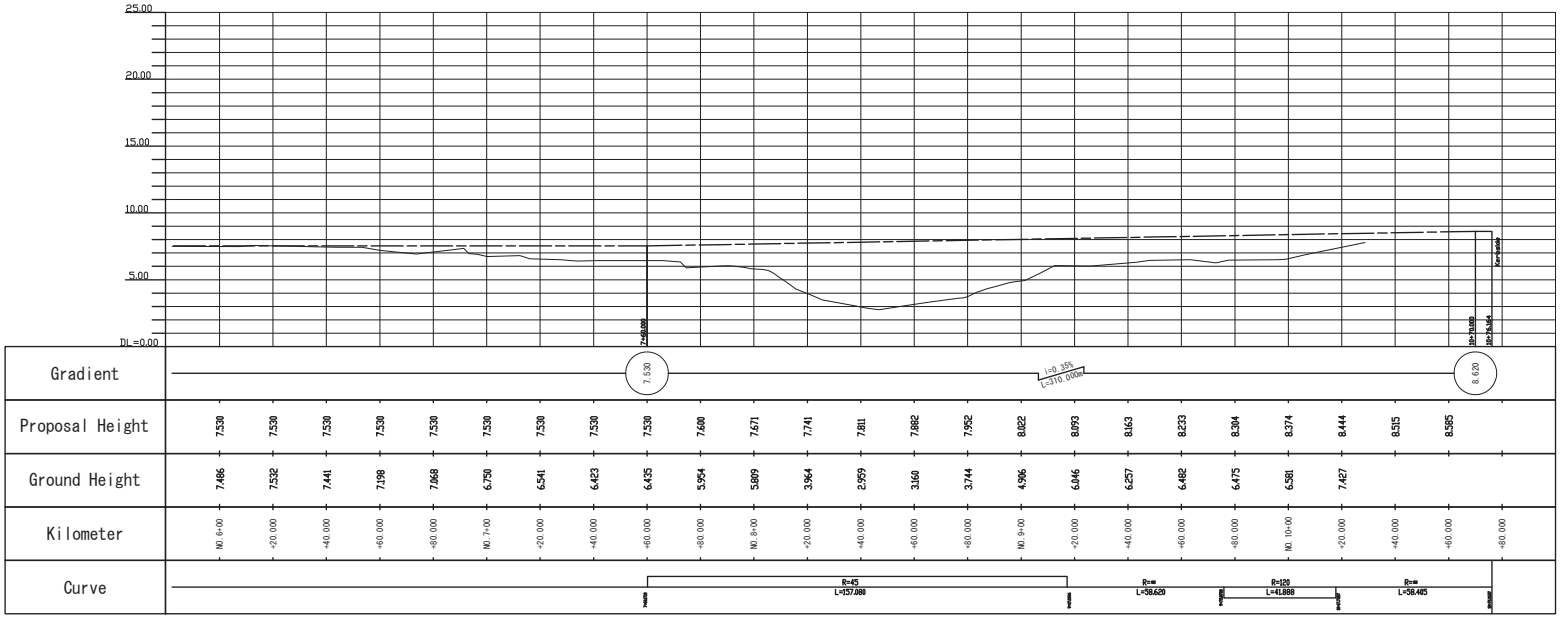
PROFILE

PROJECT NAME :	CLIENT:	CONSULTANT :	DRAWING TITLE :		CHECKED BY:	REVIEWED BY:	APPROVED BY:
HSIA HAZRAT SHAHJALAL INTERNATIONAL AIRPORT PREPARATELY SURVEY OF EXPANSION OF HAZRAT SHAHJALAL INTERNATIONAL AIRPORT	CIVIL AVIATION AUTHORITY OF BANGLADESH KURMITOLA, DHAKA-1229, BANGLADESH		PLAN & PROFILE (ROAD B) 1/2 BASIC DESIGN SCALE : H=1/:2,000 V=1/400 @ A3 DRAWING NO. :	DRAWN BY CHECKED BY APPROVED BY			
					THE ENGINEER	PROJECT DIRECTOR	CHIEF ENGINEER

A10.4-12



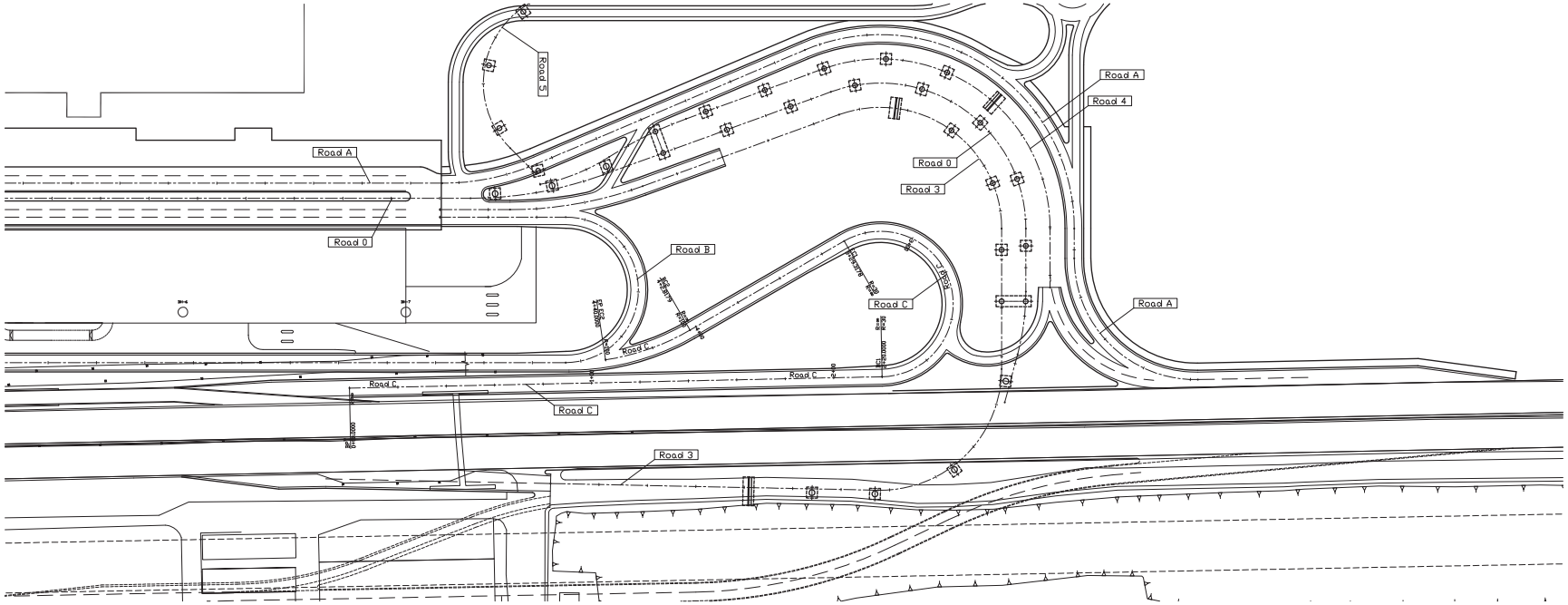
PLAN



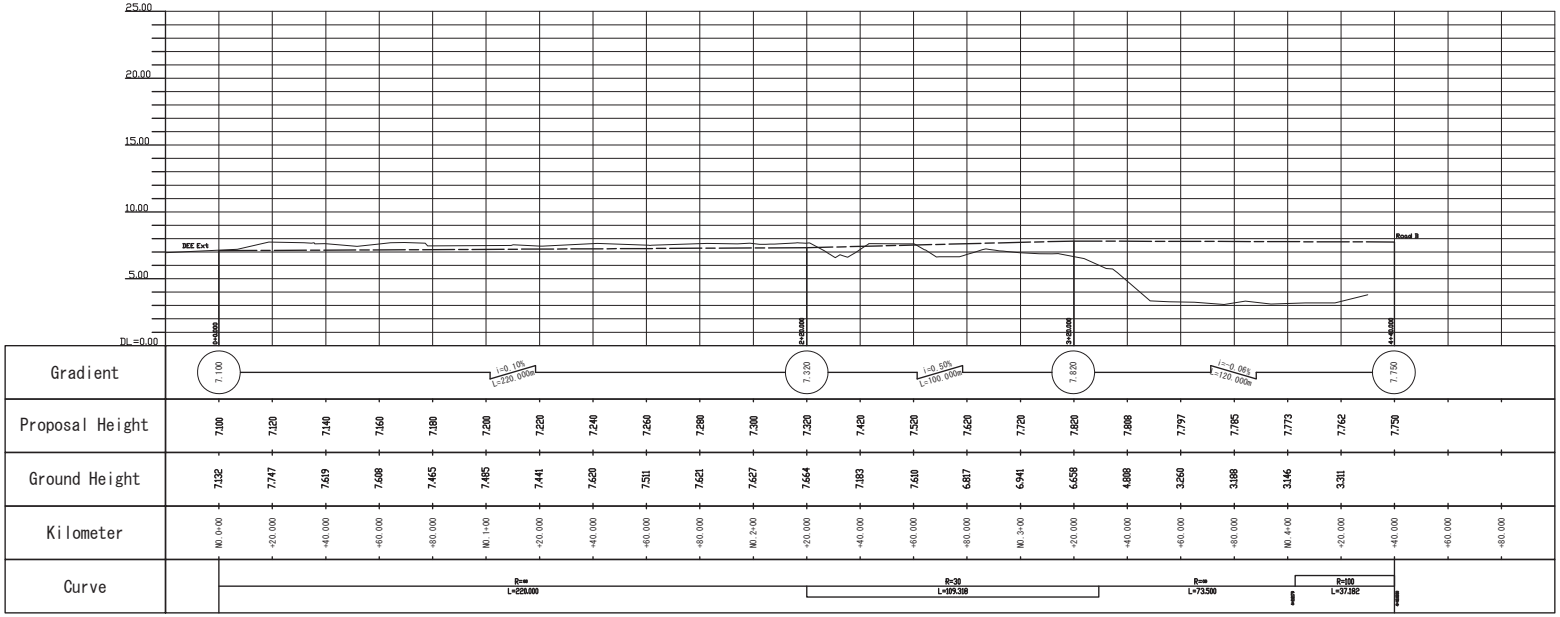
PROFILE

PROJECT NAME :	CLIENT:	CONSULTANT :	DRAWING TITLE :		DRAWN BY		CHECKED BY:
HSIA HAZRAT SHAHJALAL INTERNATIONAL AIRPORT PREPARATELY SURVEY OF EXPANSION OF HAZRAT SHAHJALAL INTERNATIONAL AIRPORT	CIVIL AVIATION AUTHORITY OF BANGLADESH KURMITOLA, DHAKA-1229, BANGLADESH		PLAN & PROFILE (ROAD B) 2/2		CHECKED BY		REVIEWED BY:
			BASIC DESIGN		APPROVED BY		APPROVED BY:
			SCALE : H=1/:2,000 V=1/400 @ A3				THE ENGINEER / PROJECT DIRECTOR / CHIEF ENGINEER
			DRAWING NO. :				

A10.4-13



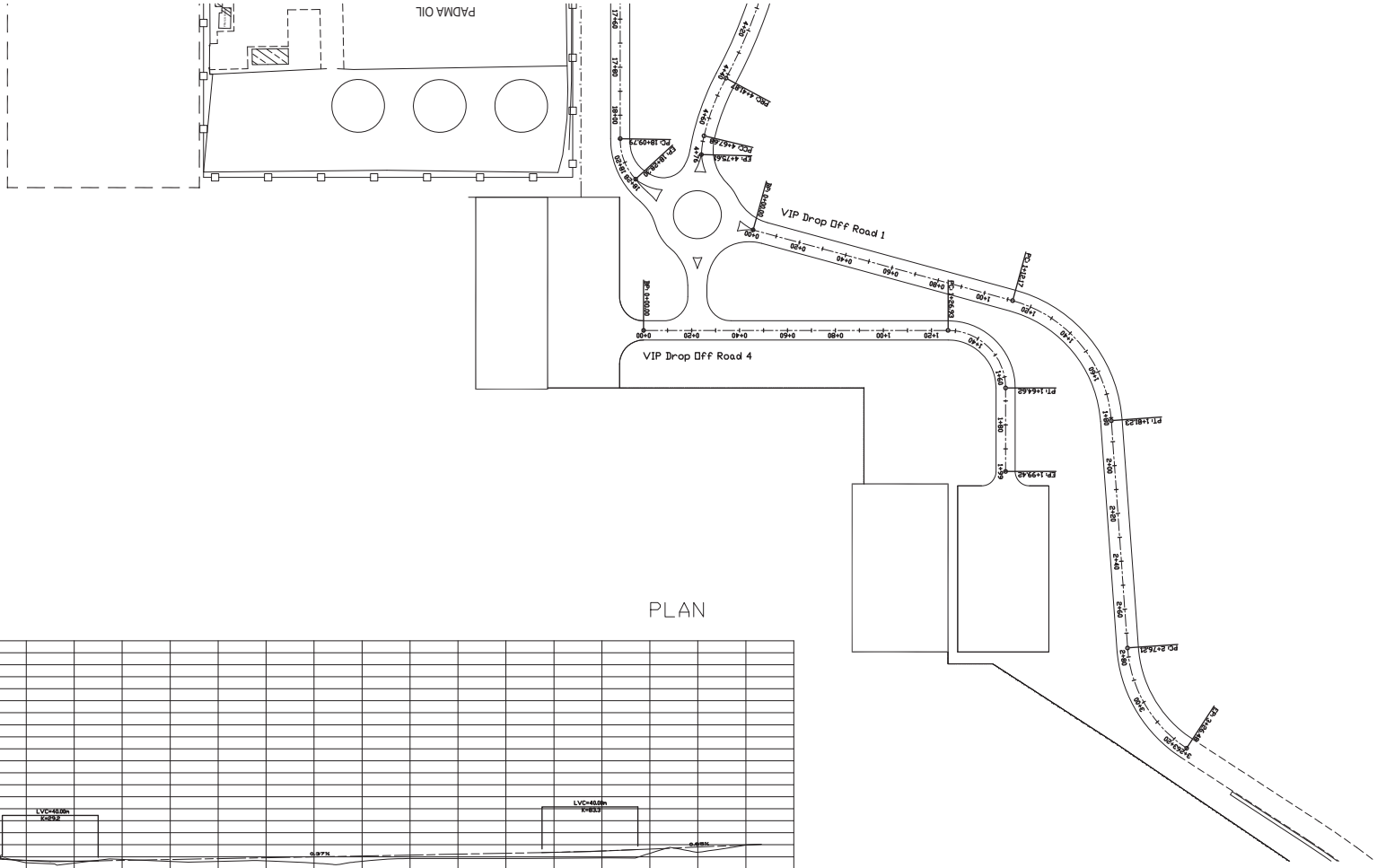
PLAN



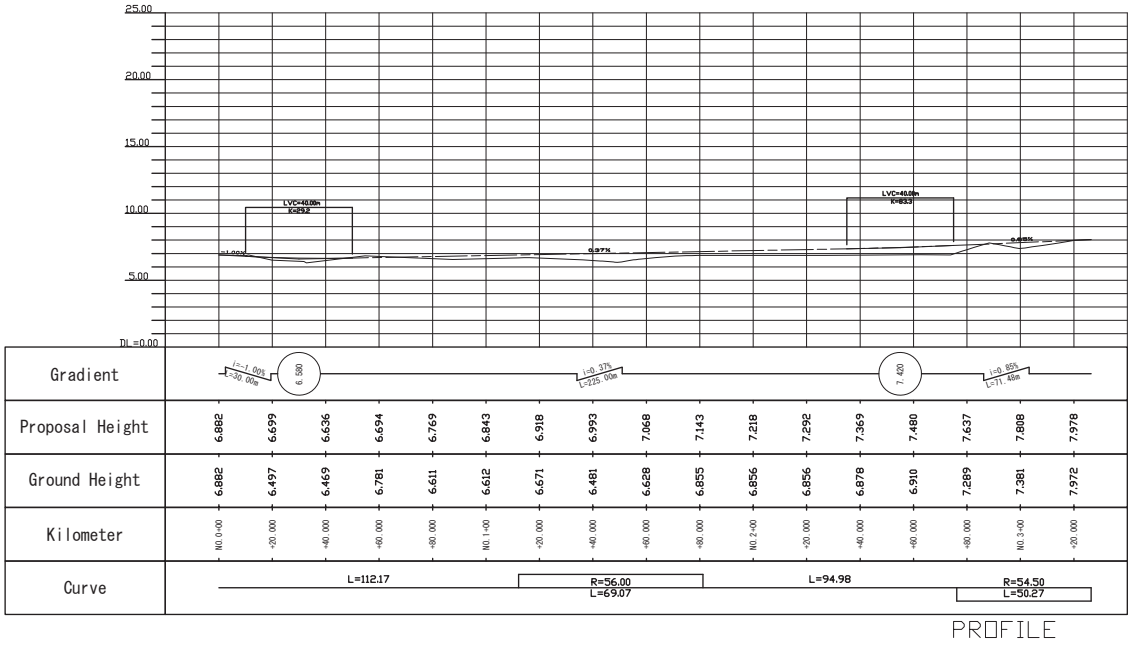
PROFILE

PROJECT NAME :	CLIENT:	CONSULTANT :	DRAWING TITLE :	DRAWN BY	CHECKED BY:	REVIEWED BY:
HSIA HAZRAT SHAHJALAL INTERNATIONAL AIRPORT PREPARATELY SURVEY OF EXPANSION OF HAZRAT SHAHJALAL INTERNATIONAL AIRPORT	CIVIL AVIATION AUTHORITY OF BANGLADESH KURMITOLA, DHAKA-1229, BANGLADESH		PLAN & PROFILE (ROAD C) BASIC DESIGN SCALE : H=1/:2,000 V=1/400 @ A3 DRAWING NO. :	CHECKED BY APPROVED BY	THE ENGINEER	PROJECT DIRECTOR / CHIEF ENGINEER

A10.4-14



PLAN

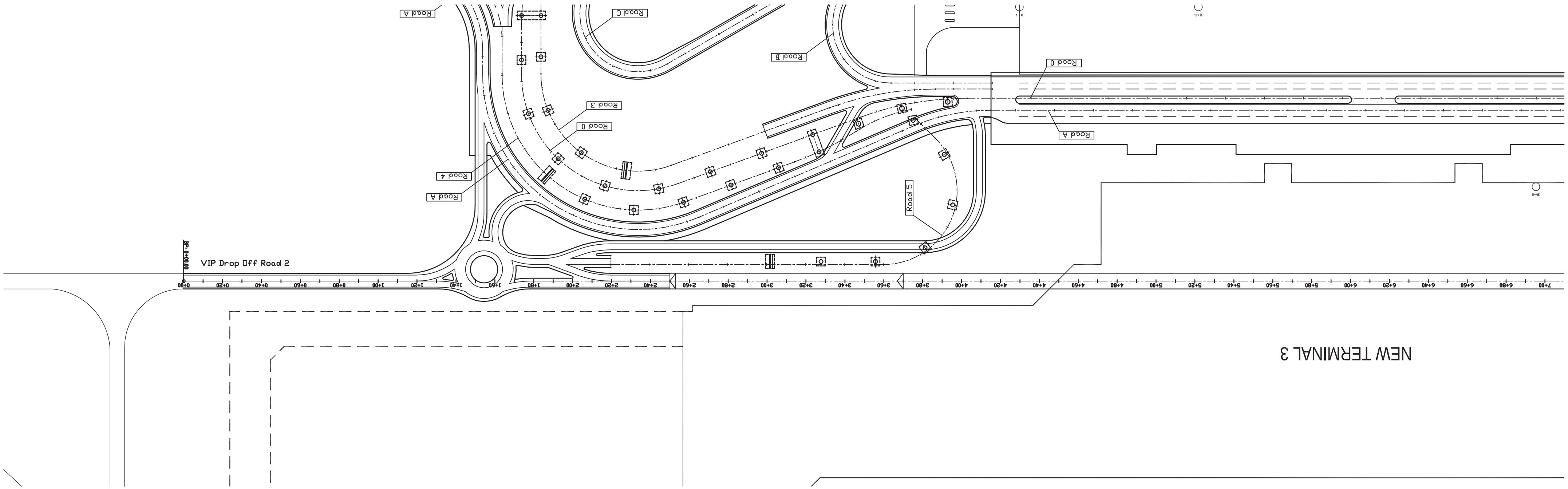


PROFILE

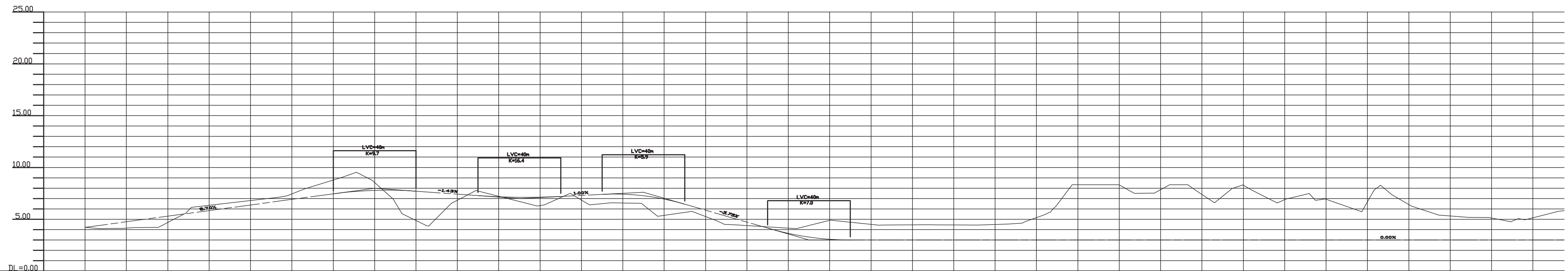
PROJECT NAME :	CLIENT:	CONSULTANT :	DRAWING TITLE :						
HSIA HAZRAT SHAHJALAL INTERNATIONAL AIRPORT PREPARATELY SURVEY OF EXPANSION OF HAZRAT SHAHJALAL INTERNATIONAL AIRPORT	CIVIL AVIATION AUTHORITY OF BANGLADESH KURMITOLA, DHAKA-1229, BANGLADESH		PLAN & PROFILE (VIP 1) BASIC DESIGN SCALE : H=1/:2,000 V=1/400 @ A3 DRAWING NO. :		DRAWN BY CHECKED BY APPROVED BY	CHECKED BY: THE ENGINEER	REVIEWED BY: PROJECT DIRECTOR	APPROVED BY: CHIEF ENGINEER

A10.4-15

A10.4-16



PLAN



	NO.0+00	+20.000	+40.000	+60.000	+80.000	NO.1+00	+20.000	+40.000	+60.000	+80.000	NO.2+00	+20.000
Proposal Height	4.222	4.762	5.301	5.841	6.381	6.921	7.460	7.794	7.714	7.429	7.173	7.131
Ground Height	4.222	4.147	4.700	6.352	6.812	7.446	8.783	8.557	4.884	6.836	7.223	6.314
Kilometer	NO. 0+00	+20.000	+40.000	+60.000	+80.000	NO. 1+00	+20.000	+40.000	+60.000	+80.000	NO. 2+00	+20.000

	+40.000	+60.000	+80.000	NO.3+00	+20.000	+40.000	+60.000	+80.000	NO.4+00	+20.000	+40.000	+60.000
Proposal Height	7.301	7.418	6.943	5.877	4.726	3.647	3.072	3.000	3.000	3.000	3.000	3.000
Ground Height	6.850	6.573	5.376	5.268	4.389	4.142	4.900	4.511	4.457	4.447	4.498	5.156
Kilometer	+40.000	+60.000	+80.000	NO. 3+00	+20.000	+40.000	+60.000	+80.000	NO. 4+00	+20.000	+40.000	+60.000

	+80.000	NO.5+00	+20.000	+40.000	+60.000	+80.000	NO.6+00	+20.000	+40.000	+60.000	+80.000	NO.7+00
Proposal Height	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000	3.000
Ground Height	8.336	8.317	7.861	7.387	8.282	6.901	6.936	6.692	6.413	5.321	5.127	5.142
Kilometer	+80.000	NO. 5+00	+20.000	+40.000	+60.000	+80.000	NO. 6+00	+20.000	+40.000	+60.000	+80.000	NO. 7+00

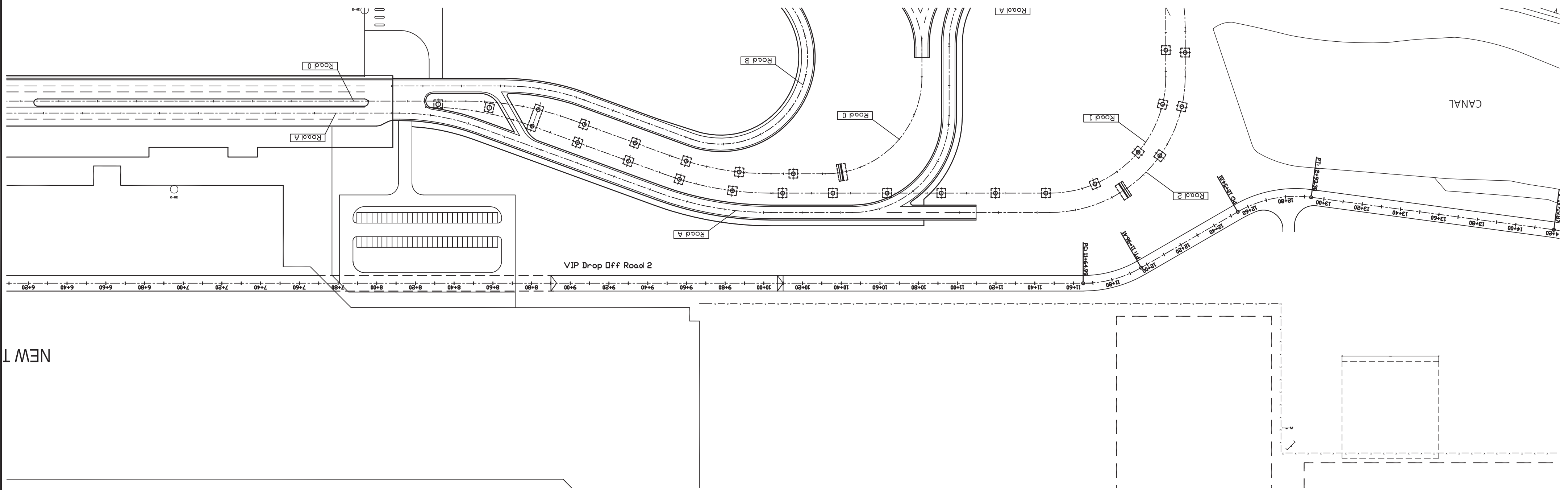
Gradient: i=2.70% L=140.000m; 8.000; i=-1.43% L=70.00m; 7.000; i=1.00% L=60.00m; 7.600; i=-5.75% L=80.00m; 3.000

Curve: L=181.78; R=45.25 L=75.79; L=95.57; R=41.75 L=65.58; L=33.26; R=35.00 L=26.10; L=40.44; R=32.50 L=24.23

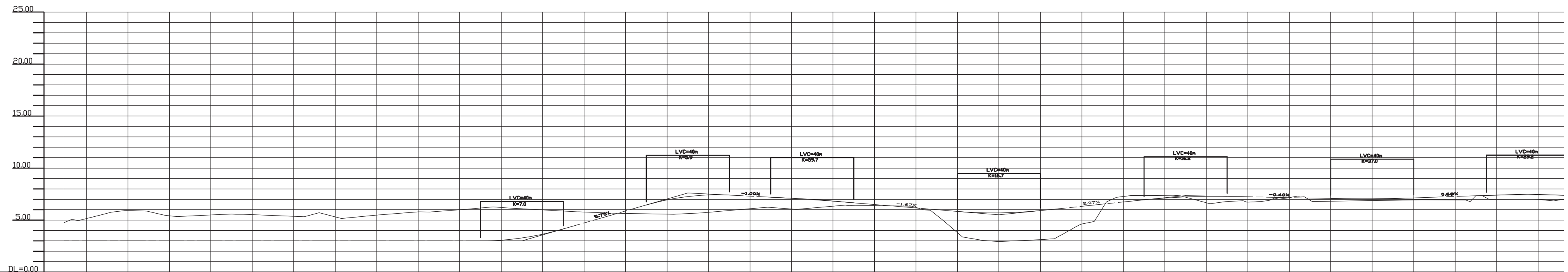
PROFILE

PROJECT NAME :	CLIENT:	CONSULTANT :	DRAWING TITLE :	DRAWN BY	CHECKED BY:	REVIEWED BY:	APPROVED BY:
HSIA HAZRAT SHAHJALAL INTERNATIONAL AIRPORT	CIVIL AVIATION AUTHORITY OF BANGLADESH		PLAN & PROFILE (VIP 2) 1/3	CHECKED BY			
PREPARATELY SURVEY OF EXPANSION OF HAZRAT SHAHJALAL INTERNATIONAL AIRPORT	KURMITOLA, DHAKA-1229, BANGLADESH		BASIC DESIGN	APPROVED BY			
			SCALE : H=1/:2,000 V=1/400 @ A3		THE ENGINEER	PROJECT DIRECTOR	CHIEF ENGINEER
			DRAWING NO. :				

A10.4-17



PLAN



Gradient: 3.000 — i=5.75% L=80.00m — 7.600 — i=-1.00% L=60.00m — 7.000 — i=-1.67% L=90.00m — 5.500 — i=2.07% L=90.00m — 7.360 — i=-0.40% L=90.00m — 7.000 — i=0.68% L=75.00m — 7.510

Kilometer	Proposal Height	Ground Height
NO. 7+00	3.000	5.142
+20.000	3.000	5.926
+40.000	3.000	5.408
+60.000	3.000	5.500
+80.000	3.000	5.517
NO. 8+00	3.000	5.362
+20.000	3.000	5.305
+40.000	3.000	5.475
+60.000	3.000	5.788
+80.000	3.000	5.996
NO. 9+00	3.072	6.209
+20.000	3.647	5.982
+40.000	4.725	5.771
+60.000	5.875	5.639
+80.000	6.941	5.575
NO. 10+00	7.416	5.743
+20.000	7.300	6.101
+40.000	7.092	6.068
+60.000	6.825	6.338
+80.000	6.500	6.386
NO. 11+00	6.167	6.207
+20.000	5.833	3.796
+40.000	5.687	2.933
+60.000	5.913	3.119
+80.000	6.327	4.618
NO. 12+00	6.740	7.271
+20.000	7.122	7.372
+40.000	7.289	6.671
+60.000	7.240	6.725
+80.000	7.160	7.162
NO. 13+00	7.080	6.817
+20.000	7.054	6.874
+40.000	7.136	6.930
+60.000	7.272	6.935
+80.000	7.404	6.993
NO. 14+00	7.437	6.986

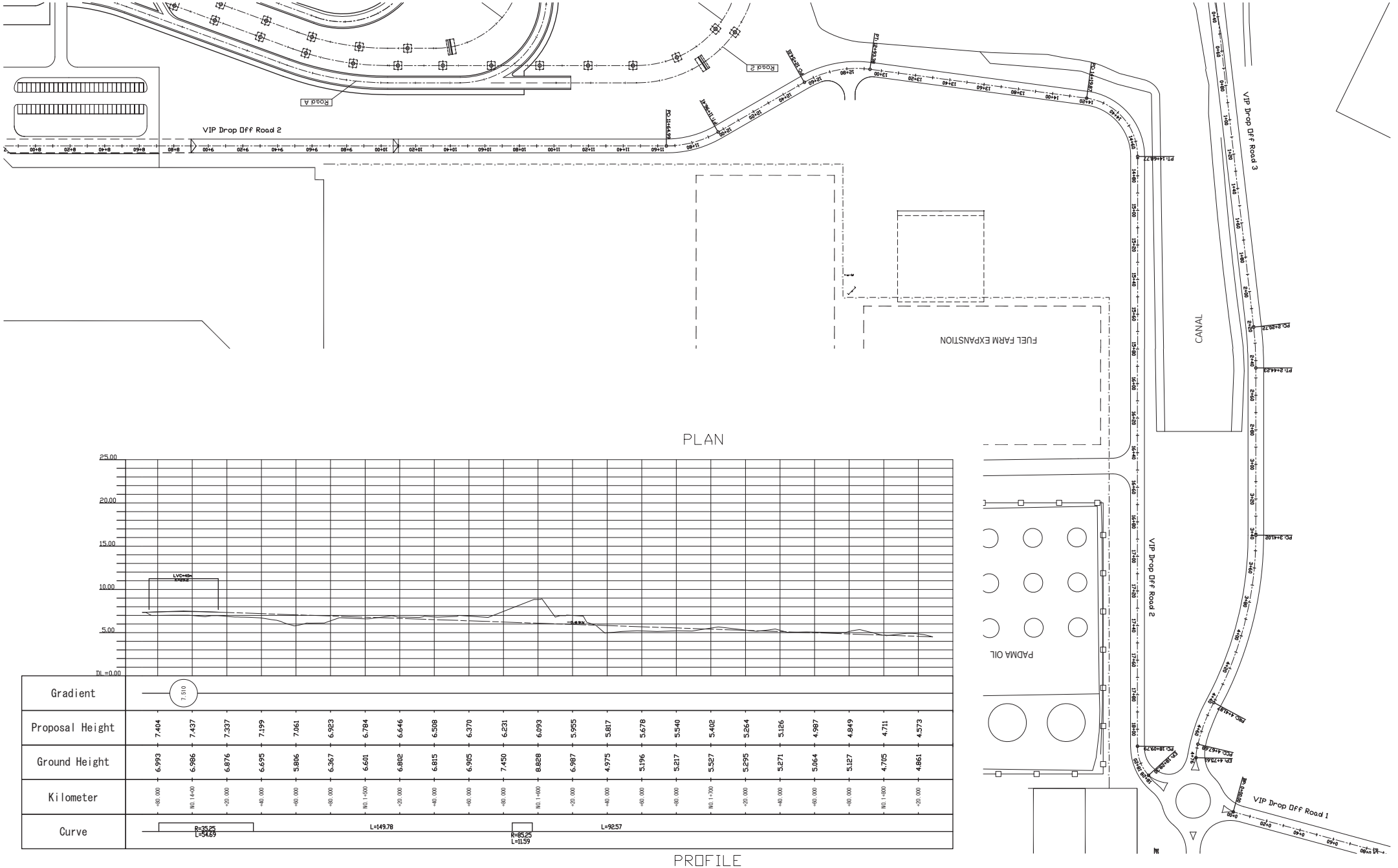
Curve: L=519.67 — R=32.50 L=22.25 — L=68.04 — R=34.75 L=23.79 — L=31.33 — R=52.75 L=82.86 — L=89.97 — R=35.2 L=54.6

PROFILE

PROJECT NAME :	CLIENT:	CONSULTANT :	DRAWING TITLE :
HSIA HAZRAT SHAHJALAL INTERNATIONAL AIRPORT PREPARATELY SURVEY OF EXPANSION OF HAZRAT SHAHJALAL INTERNATIONAL AIRPORT	CIVIL AVIATION AUTHORITY OF BANGLADESH KURMITOLA, DHAKA-1229, BANGLADESH		PLAN & PROFILE (VIP 2) 2/3 BASIC DESIGN SCALE : H=1/:2,000 V=1/400 @ A3 DRAWING NO. :

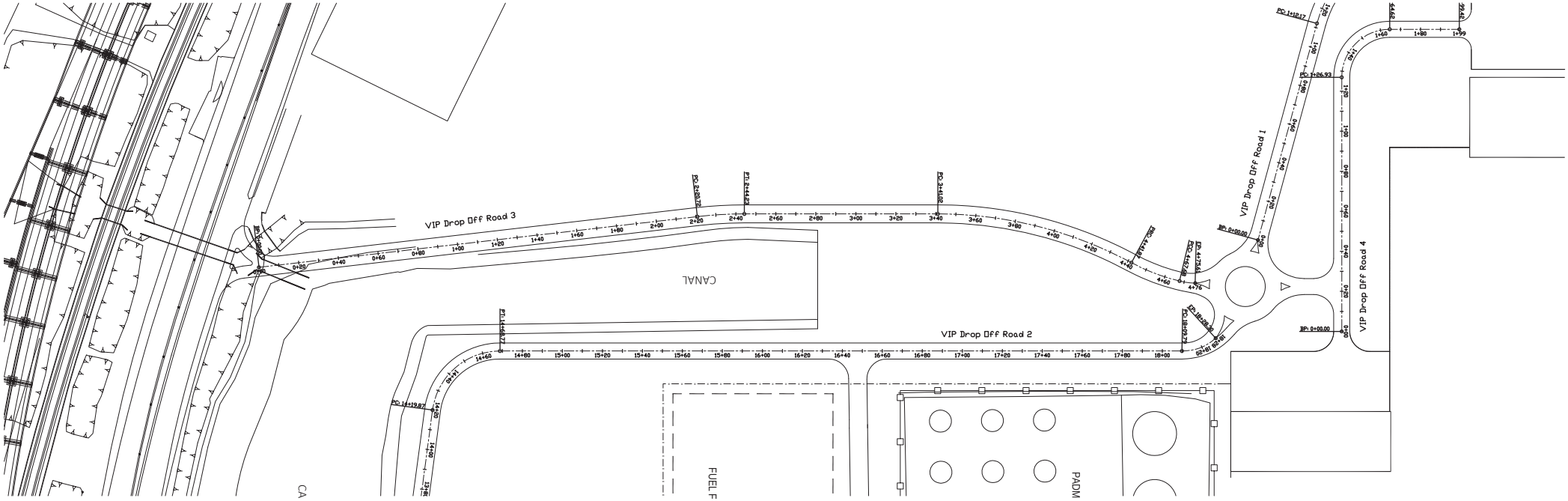
DRAWN BY	
CHECKED BY	
APPROVED BY	

CHECKED BY:	REVIEWED BY:	APPROVED BY:
THE ENGINEER	PROJECT DIRECTOR	CHIEF ENGINEER

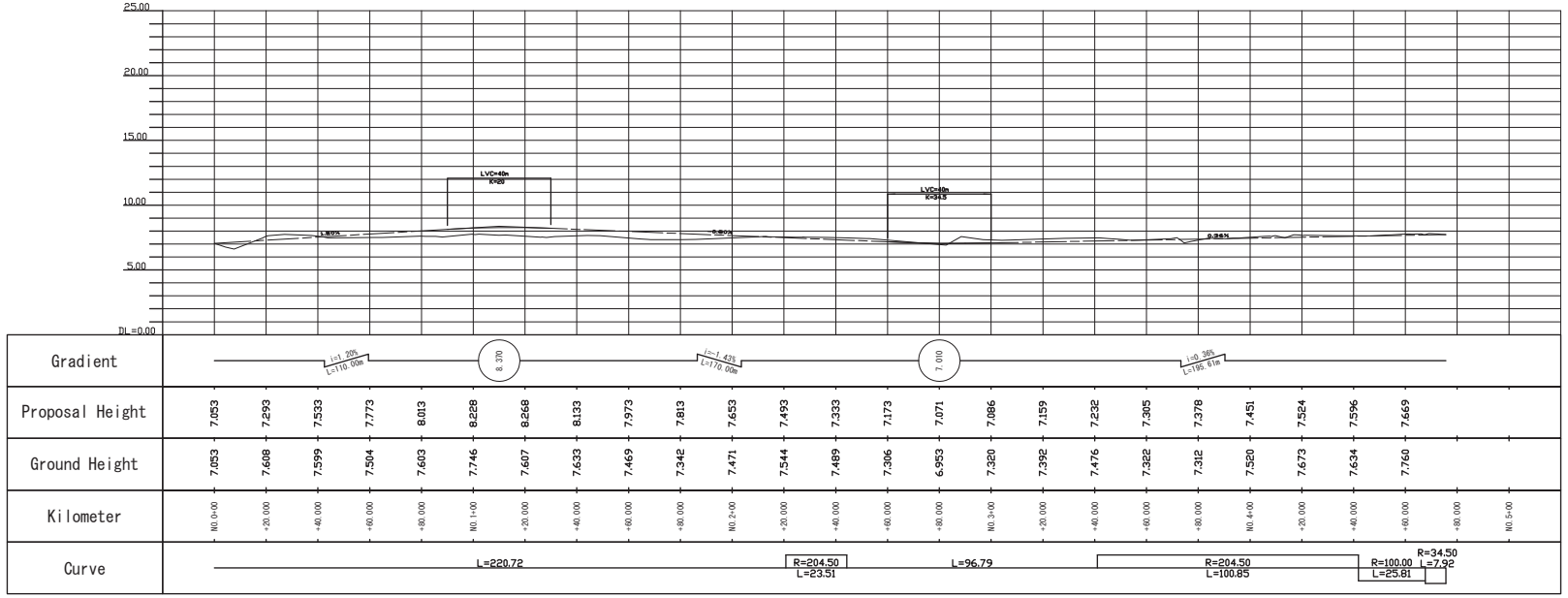


A10.4-18

PROJECT NAME :	CLIENT:	CONSULTANT :	DRAWING TITLE :				CHECKED BY:	REVIEWED BY:	APPROVED BY:
HSIA HAZRAT SHAHJALAL INTERNATIONAL AIRPORT PREPARATELY SURVEY OF EXPANSION OF HAZRAT SHAHJALAL INTERNATIONAL AIRPORT	CIVIL AVIATION AUTHORITY OF BANGLADESH KURMITOLA, DHAKA-1229, BANGLADESH		PLAN & PROFILE (VIP 2) 3/3 BASIC DESIGN SCALE : H=1/:2,000 V=1/400 @ A3 DRAWING NO. :		DRAWN BY CHECKED BY APPROVED BY		THE ENGINEER	PROJECT DIRECTOR	CHIEF ENGINEER



PLAN

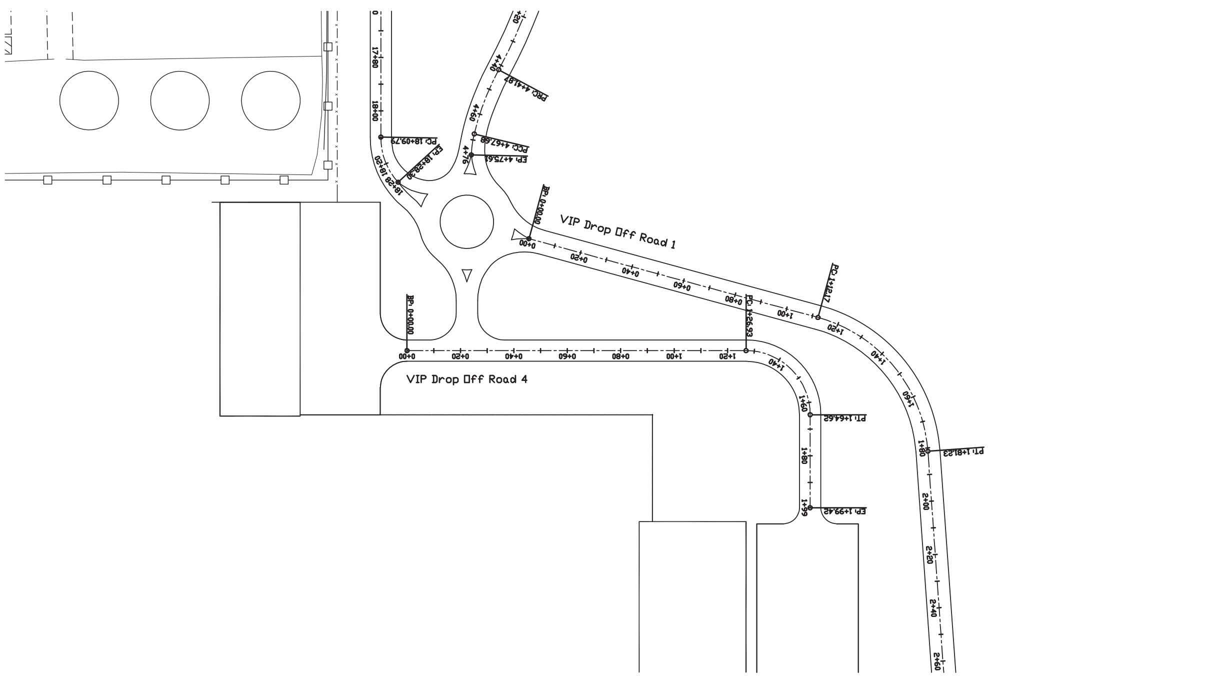


PROFILE

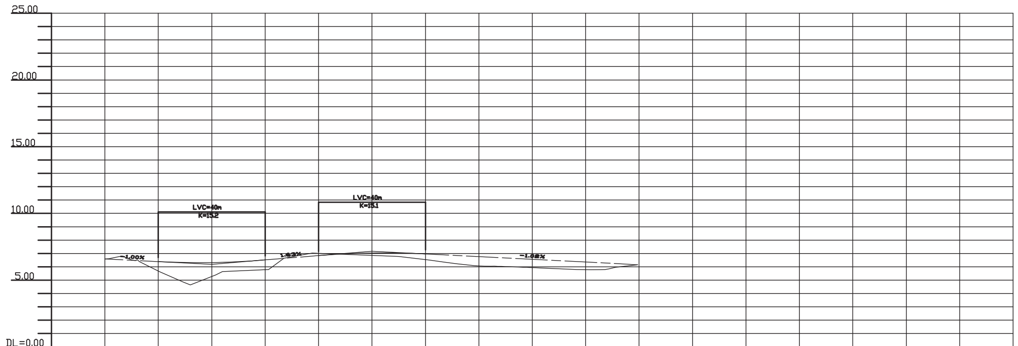
PROJECT NAME :	CLIENT:	CONSULTANT :	DRAWING TITLE :						
HSIA HAZRAT SHAHJALAL INTERNATIONAL AIRPORT PREPARATELY SURVEY OF EXPANSION OF HAZRAT SHAHJALAL INTERNATIONAL AIRPORT	CIVIL AVIATION AUTHORITY OF BANGLADESH KURMITOLA, DHAKA-1229, BANGLADESH		PLAN & PROFILE (VIP 3) BASIC DESIGN SCALE : H=1/:2,000 V=1/400 @ A3 DRAWING NO. :			DRAWN BY CHECKED BY APPROVED BY	CHECKED BY: THE ENGINEER	REVIEWED BY: PROJECT DIRECTOR	APPROVED BY: CHIEF ENGINEER

A10.4-19

A10.4-20



PLAN



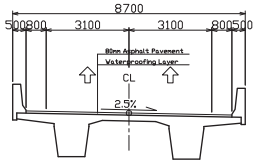
Proposal Height	6.587	6.487	6.387	6.320	6.319	6.384	6.514	6.677	6.841	6.971	7.035	7.033	6.964	6.862	6.761	6.659	6.557	6.456	6.354	6.252							
Ground Height	6.587	6.526	5.677	4.800	5.276	5.697	5.778	6.750	7.005	6.929	6.852	6.773	6.538	6.281	6.066	6.018	5.942	5.852	5.790	5.910							
Kilometer	NO.0+00		+20.000		+40.000		+60.000		+80.000		NO.1+00		+20.000		+40.000		+60.000		+80.000		NO.2+00	+20.000	+40.000	+60.000	+80.000	NO.3+00	+20.000

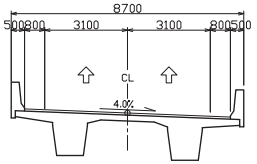
Gradient: i=-1.00% L=40.00m; 8.5000; i=1.63% L=60.00m; 8.5000; i=-1.02% L=99.42m

Curve: L=126.93; R=24.00 L=37.70; L=34.80

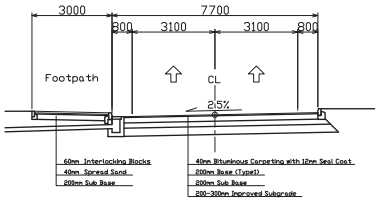
PROFILE

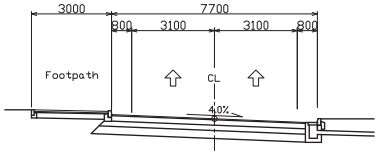
PROJECT NAME :	CLIENT:	CONSULTANT :	DRAWING TITLE :	DRAWN BY	CHECKED BY:	REVIEWED BY:	APPROVED BY:
HSIA HAZRAT SHAHJALAL INTERNATIONAL AIRPORT PREPARATELY SURVEY OF EXPANSION OF HAZRAT SHAHJALAL INTERNATIONAL AIRPORT	CIVIL AVIATION AUTHORITY OF BANGLADESH KURMITOLA, DHAKA-1229, BANGLADESH		PLAN & PROFILE (VIP 4) BASIC DESIGN SCALE : H=1/:2,000 V=1/400 @ A3 DRAWING NO. :	CHECKED BY APPROVED BY	THE ENGINEER	PROJECT DIRECTOR	CHIEF ENGINEER



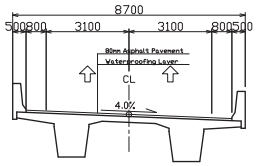


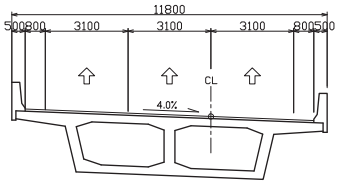
Road 0-4



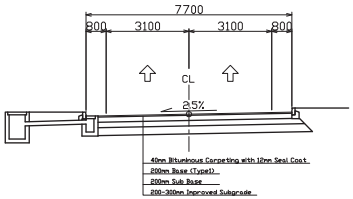


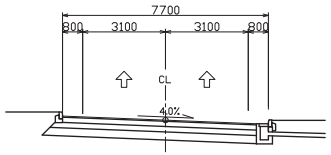
Road A



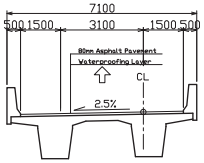


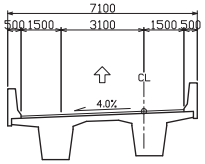
Road 3





Road B & C

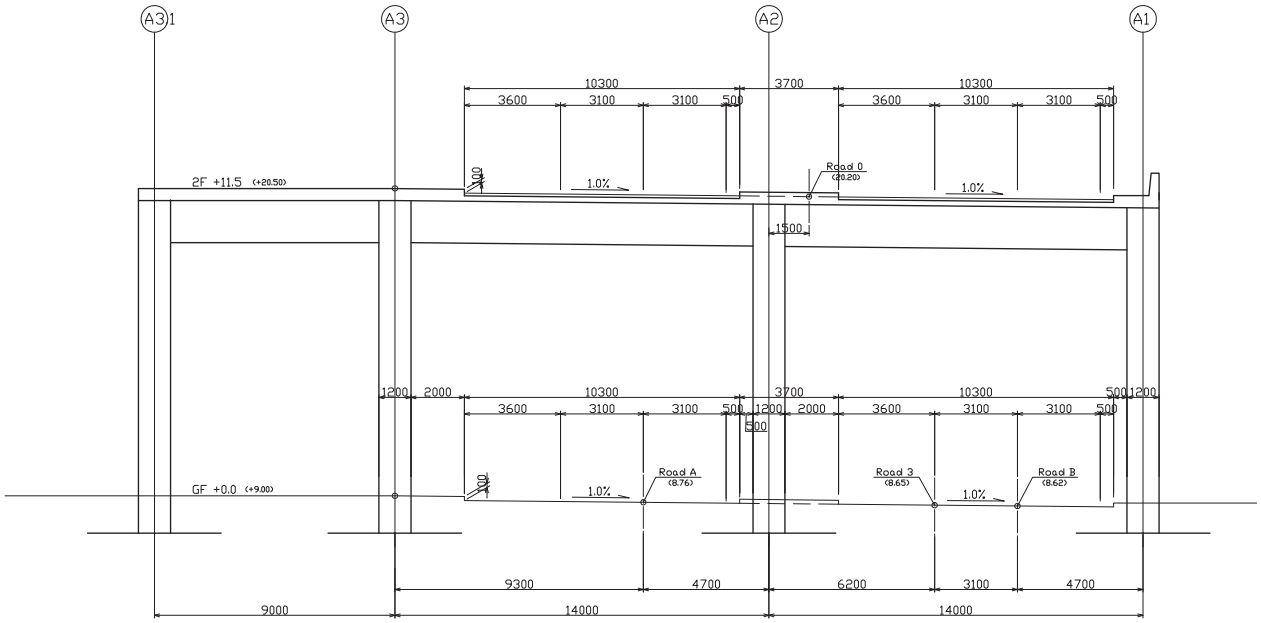




Road 5

A10.4-21

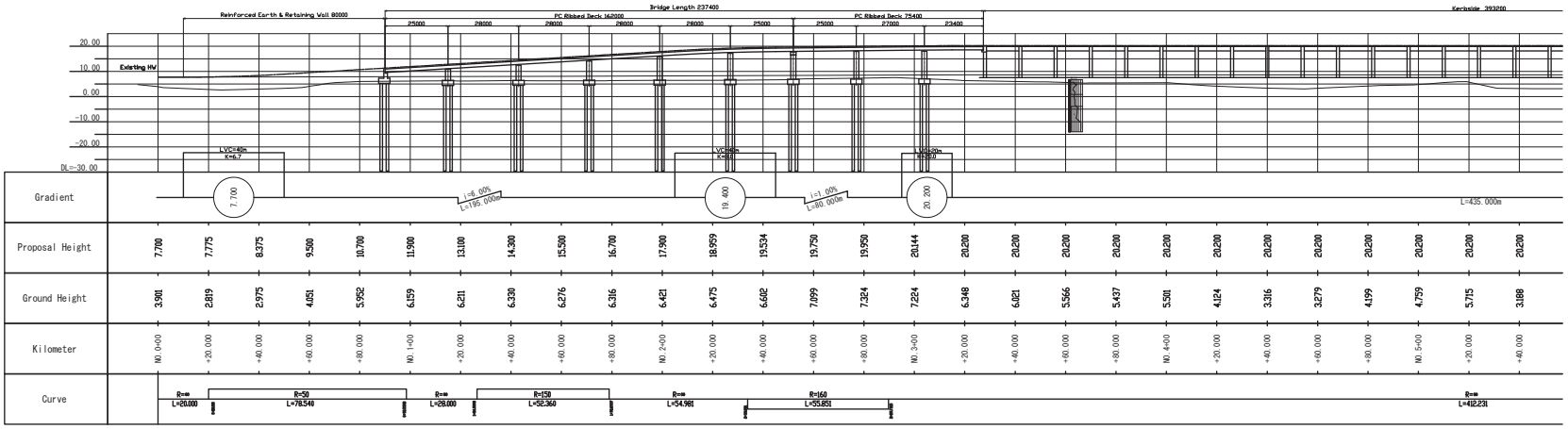
PROJECT NAME :	CLIENT:	CONSULTANT :	DRAWING TITLE :						CHECKED BY:	REVIEWED BY:	APPROVED BY:
HSIA HAZRAT SHAHJALAL INTERNATIONAL AIRPORT PREPARATELY SURVEY OF EXPANSION OF HAZRAT SHAHJALAL INTERNATIONAL AIRPORT	CIVIL AVIATION AUTHORITY OF BANGLADESH KURMITOLA, DHAKA-1229, BANGLADESH		TYPICAL CROSS SECTION 1/2 BASIC DESIGN SCALE : 1/:200 @ A3 DRAWING NO. :				DRAWN BY CHECKED BY APPROVED BY				
									THE ENGINEER	PROJECT DIRECTOR	CHIEF ENGINEER



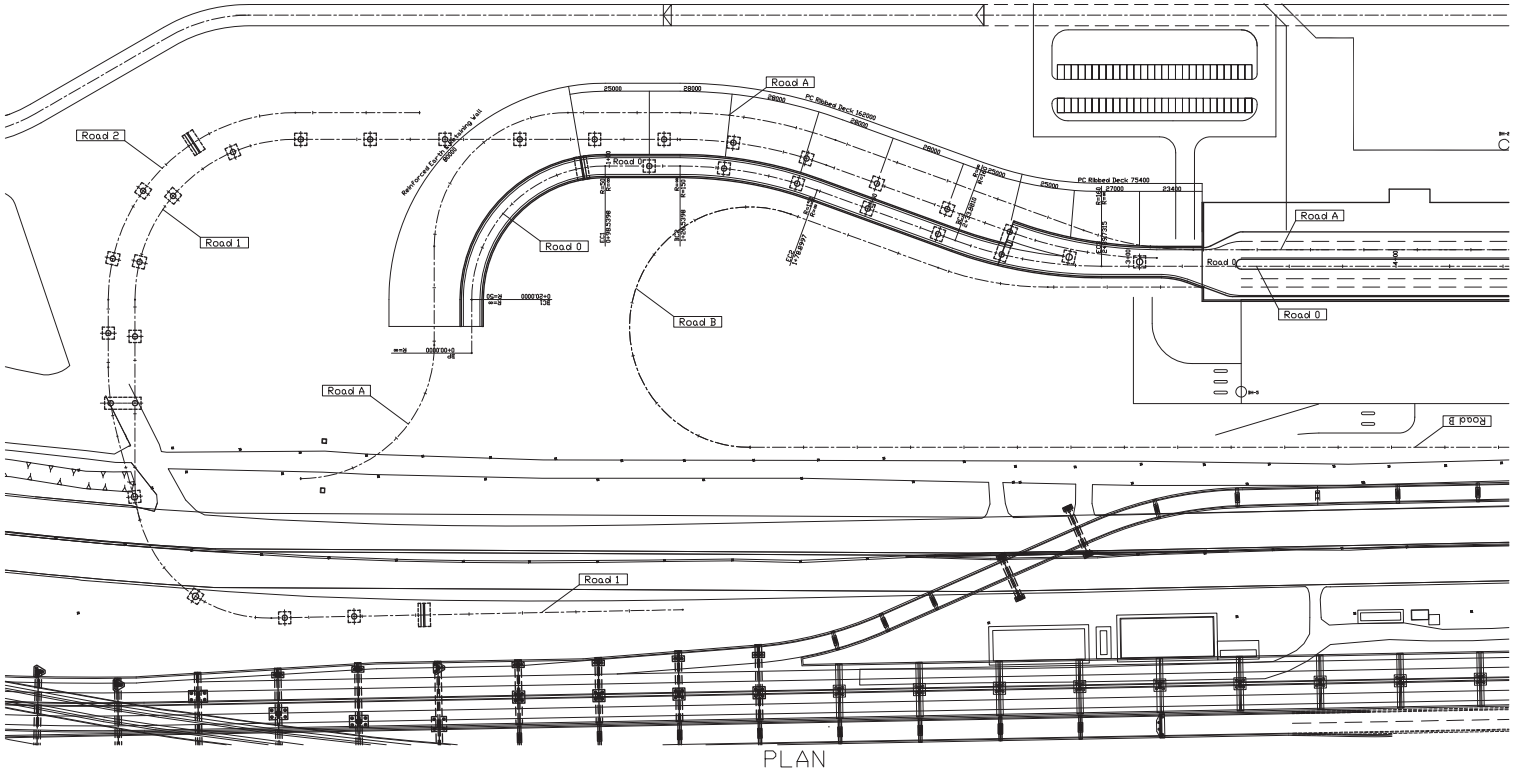
Kerbside

A10.4-22

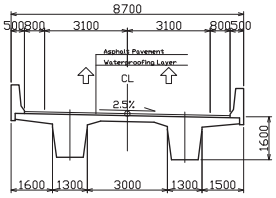
PROJECT NAME :	CLIENT:	CONSULTANT :	DRAWING TITLE :		DRAWN BY		CHECKED BY:	REVIEWED BY:	APPROVED BY:
HSIA HAZRAT SHAHJALAL INTERNATIONAL AIRPORT PREPARATELY SURVEY OF EXPANSION OF HAZRAT SHAHJALAL INTERNATIONAL AIRPORT	CIVIL AVIATION AUTHORITY OF BANGLADESH KURMITOLA, DHAKA-1229, BANGLADESH		TYPICAL CROSS SECTION 2/2 BASIC DESIGN SCALE : 1/:200 @ A3 DRAWING NO. :		CHECKED BY APPROVED BY		THE ENGINEER	PROJECT DIRECTOR	CHIEF ENGINEER



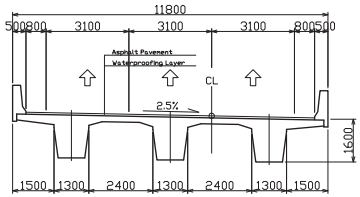
PROFILE



PLAN



PC Ribbed Deck (2-lane)

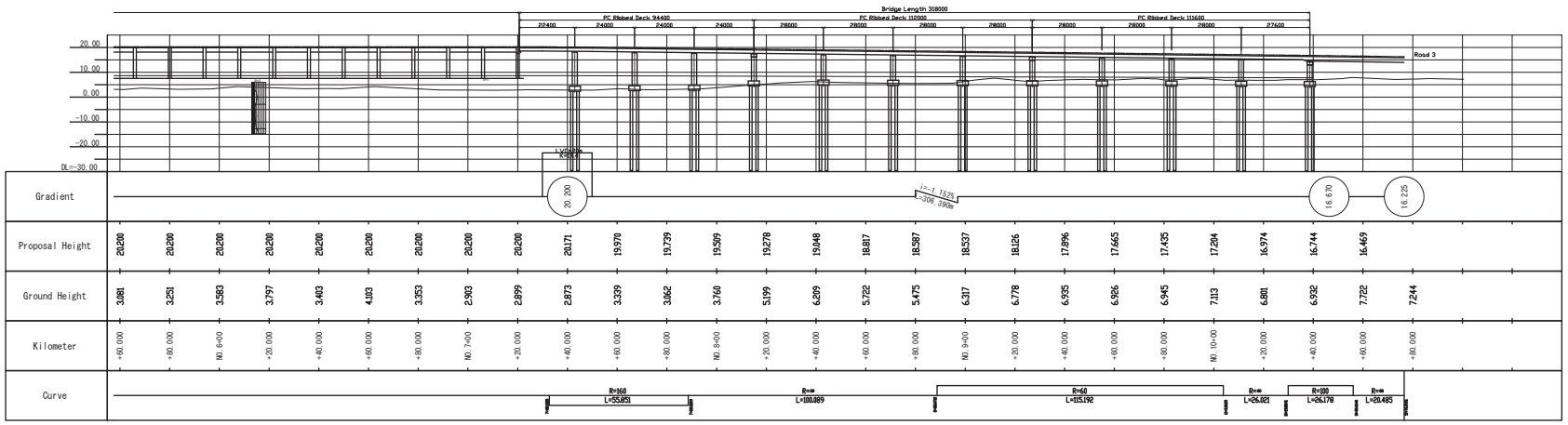


PC Ribbed Deck (3-lane)

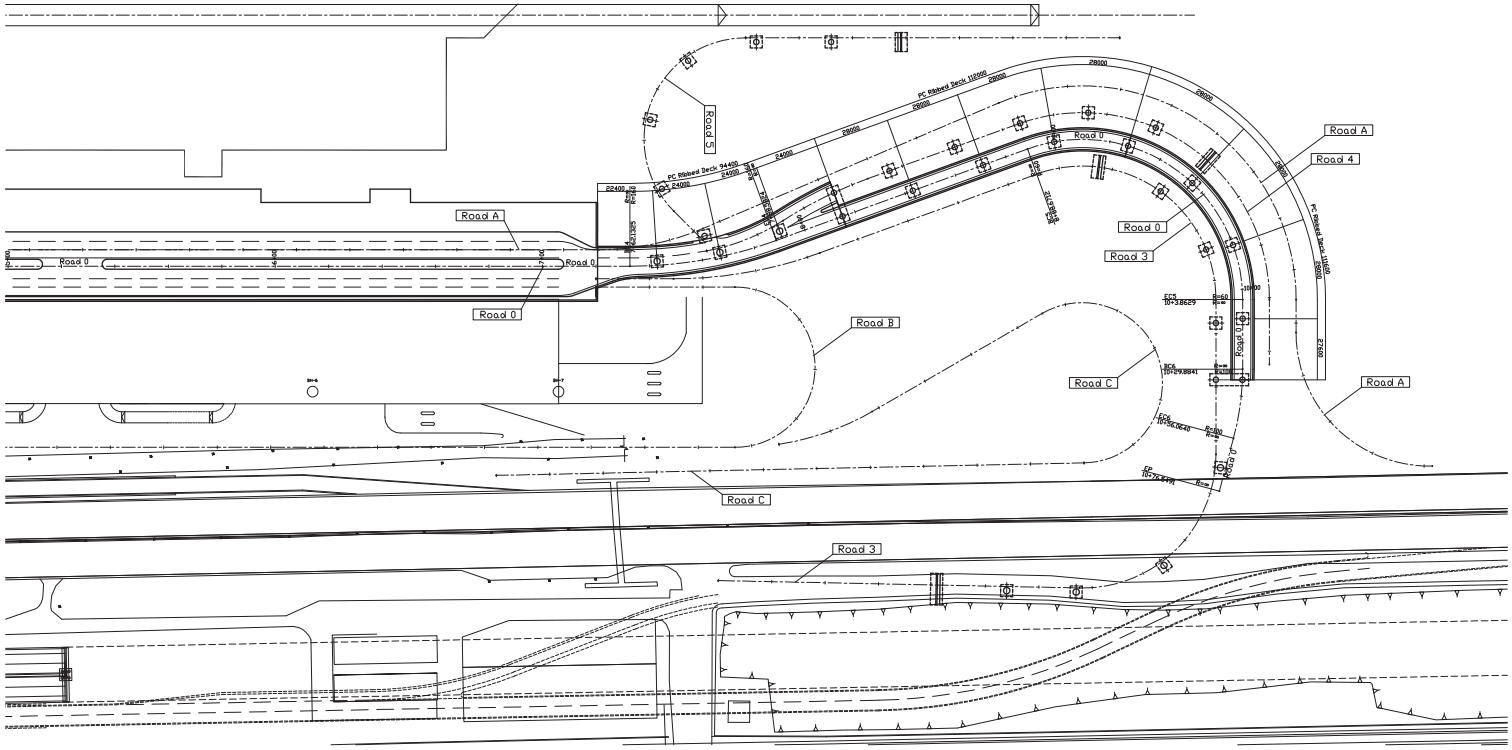
CROSS SECTION

A10.4-23

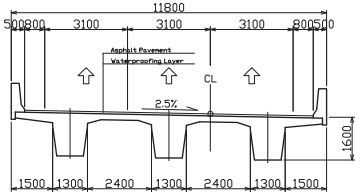
PROJECT NAME :	CLIENT:	CONSULTANT :	DRAWING TITLE :				CHECKED BY:	REVIEWED BY:	APPROVED BY:
HSIA HAZRAT SHAHJALAL INTERNATIONAL AIRPORT PREPARATELY SURVEY OF EXPANSION OF HAZRAT SHAHJALAL INTERNATIONAL AIRPORT	CIVIL AVIATION AUTHORITY OF BANGLADESH KURMITOLA, DHAKA-1229, BANGLADESH		ELEVATED WAY GENERAL VIEW (Road 0) 1/2 BASIC DESIGN SCALE : 1/:2,000 @ A3 DRAWING NO. :	DRAWN BY CHECKED BY APPROVED BY			THE ENGINEER	PROJECT DIRECTOR	CHIEF ENGINEER



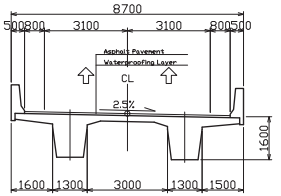
PROFILE



PLAN



PC Ribbed Deck (3-lane)

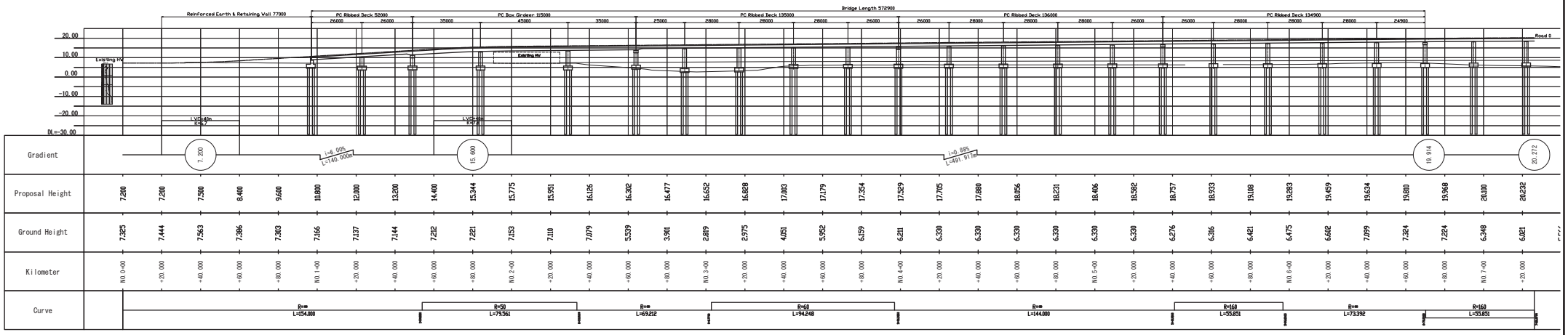


PC Ribbed Deck (2-lane)

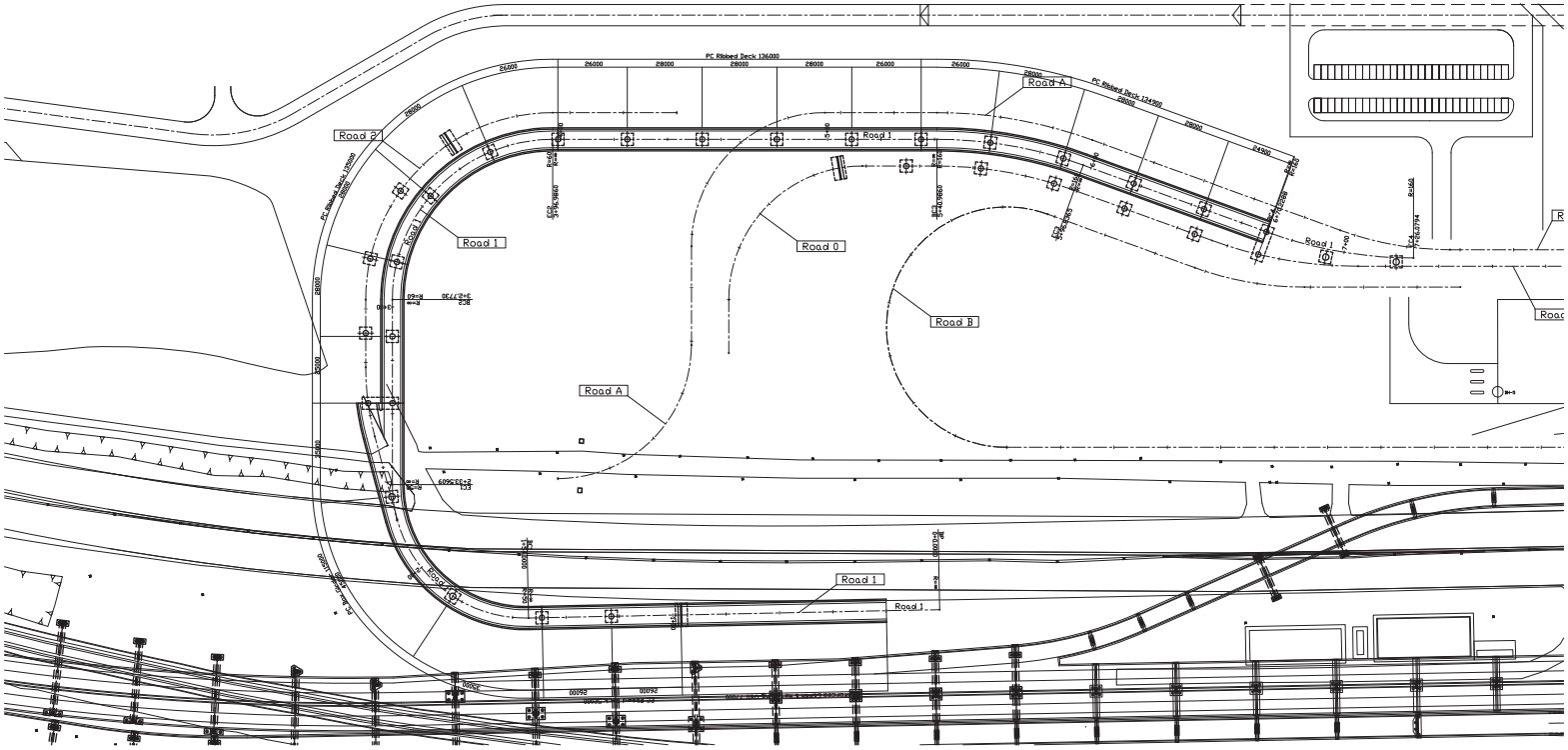
CROSS SECTION

A10.4-24

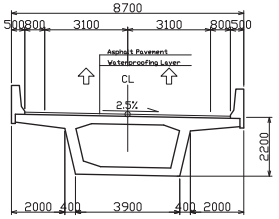
PROJECT NAME :	CLIENT:	CONSULTANT :	DRAWING TITLE :		DRAWN BY		CHECKED BY:	REVIEWED BY:	APPROVED BY:
HSIA HAZRAT SHAHJALAL INTERNATIONAL AIRPORT PREPARATELY SURVEY OF EXPANSION OF HAZRAT SHAHJALAL INTERNATIONAL AIRPORT	CIVIL AVIATION AUTHORITY OF BANGLADESH KURMITOLA, DHAKA-1229, BANGLADESH		ELEVATED WAY GENERAL VIEW (Road 0) 2/2 BASIC DESIGN SCALE : 1/:2,000 @ A3 DRAWING NO. :		CHECKED BY APPROVED BY				
							THE ENGINEER	PROJECT DIRECTOR	CHIEF ENGINEER



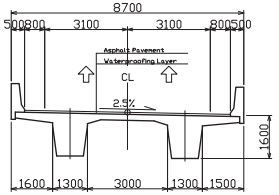
PROFILE



PLAN



PC Box Girder (2-lane)

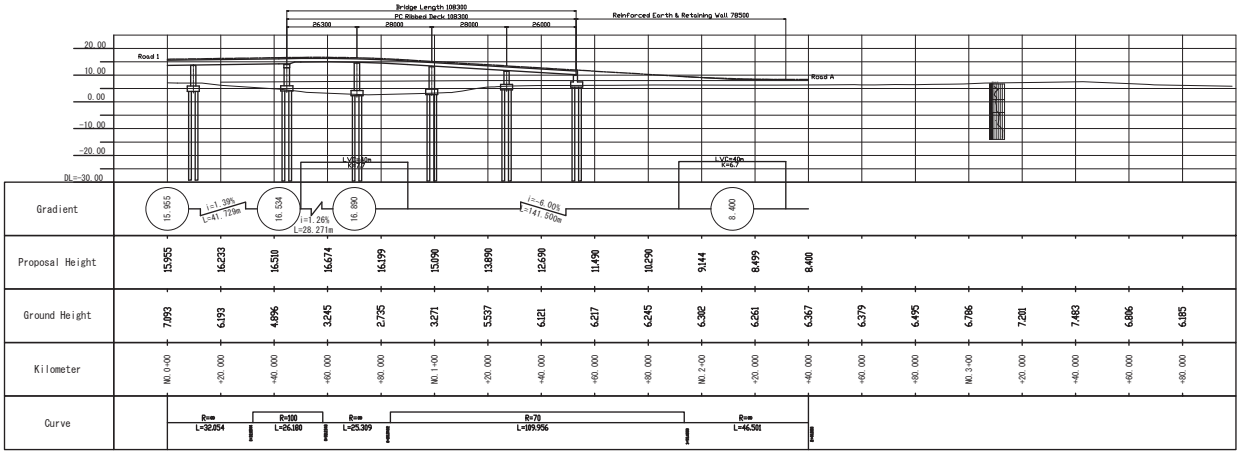


PC Ribbed Deck (2-lane)

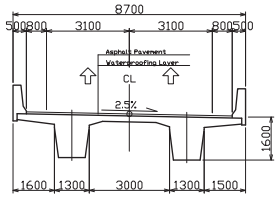
CROSS SECTION

A10.4-25

PROJECT NAME :	CLIENT:	CONSULTANT :	DRAWING TITLE :								
HSIA HAZRAT SHAHJALAL INTERNATIONAL AIRPORT PREPARATELY SURVEY OF EXPANSION OF HAZRAT SHAHJALAL INTERNATIONAL AIRPORT	CIVIL AVIATION AUTHORITY OF BANGLADESH KURMITOLA, DHAKA-1229, BANGLADESH		ELEVATED WAY GENERAL VIEW (Road 1) BASIC DESIGN SCALE : 1/:2,000 @ A3 DRAWING NO. :		DRAWN BY CHECKED BY APPROVED BY		CHECKED BY: THE ENGINEER	REVIEWED BY: PROJECT DIRECTOR	APPROVED BY: CHIEF ENGINEER

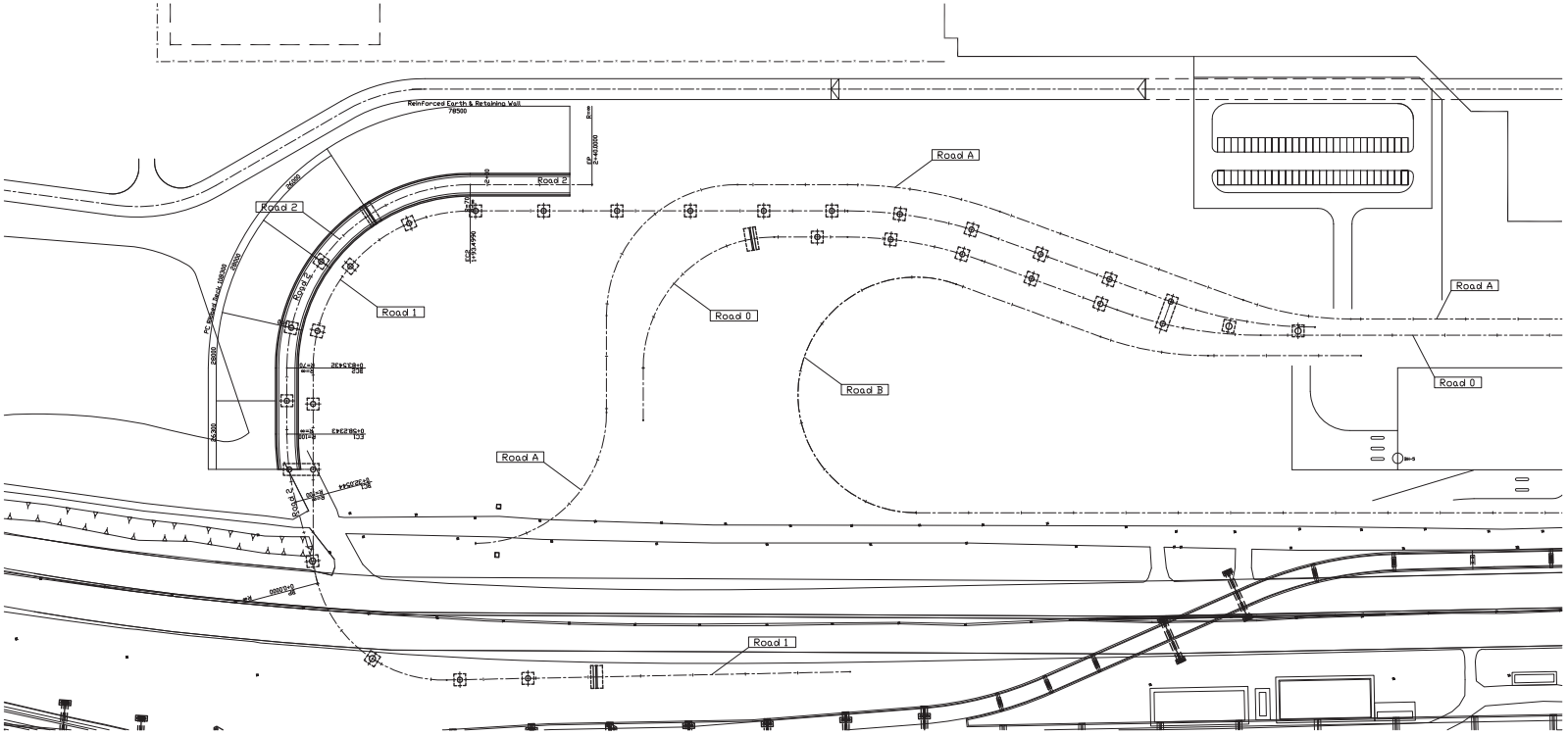


PROFILE



PC Ribbed Deck (2-lane)

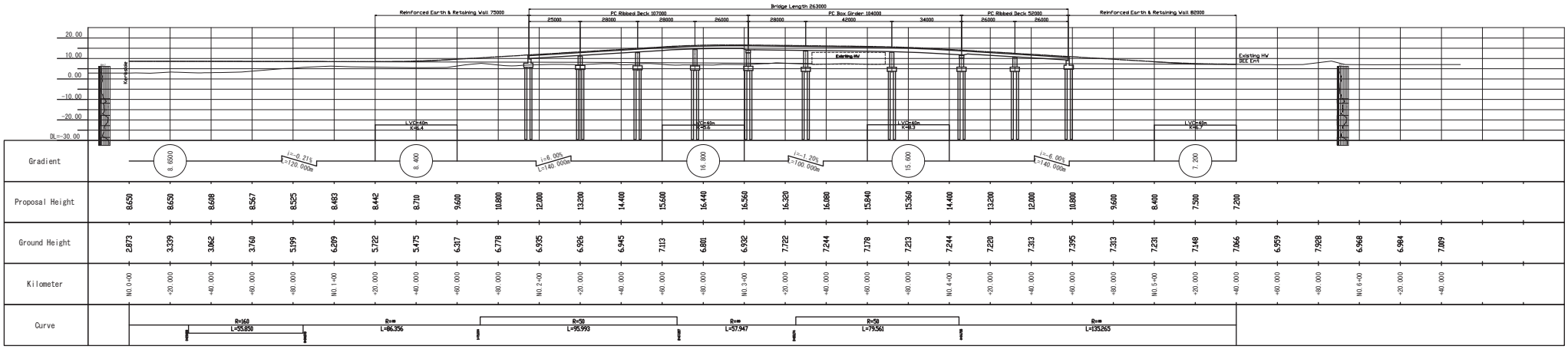
CROSS SECTION



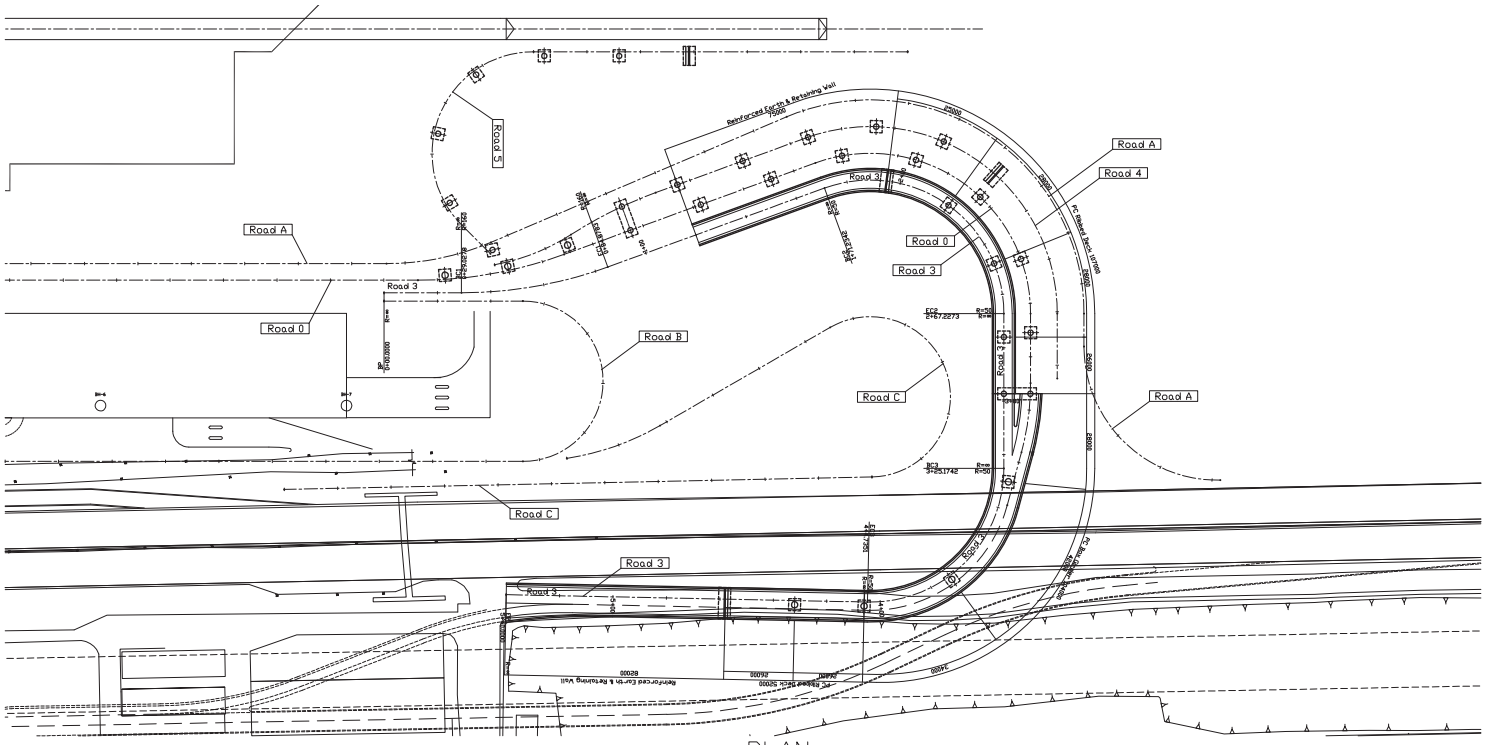
PLAN

PROJECT NAME :	CLIENT:	CONSULTANT :	DRAWING TITLE :		DRAWN BY		CHECKED BY:	REVIEWED BY:	APPROVED BY:
HSIA HAZRAT SHAHJALAL INTERNATIONAL AIRPORT PREPARATELY SURVEY OF EXPANSION OF HAZRAT SHAHJALAL INTERNATIONAL AIRPORT	CIVIL AVIATION AUTHORITY OF BANGLADESH KURMITOLA, DHAKA-1229, BANGLADESH		ELEVATED WAY GENERAL VIEW (Road 2) BASIC DESIGN SCALE : 1/:2,000 @ A3 DRAWING NO. :		CHECKED BY APPROVED BY				
							THE ENGINEER	PROJECT DIRECTOR	CHIEF ENGINEER

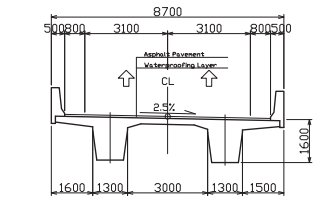
A10.4-26



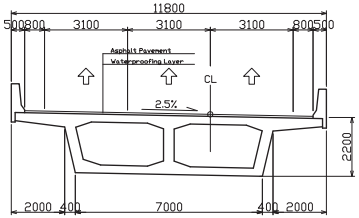
PROFILE



PLAN



PC Ribbed Deck (2-lane)

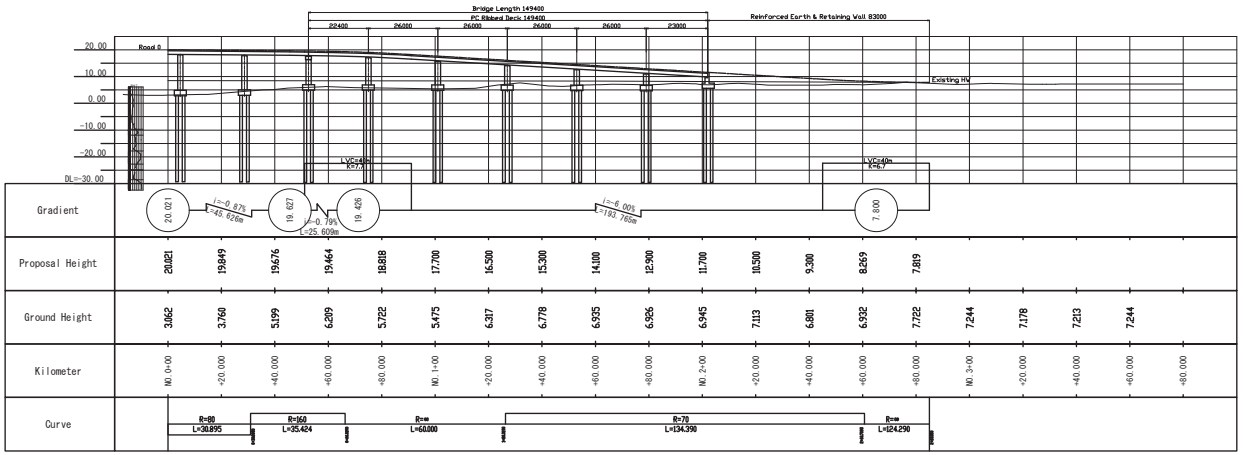


PC Box Girder (3-lane)

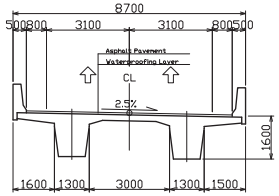
CROSS SECTION

A10.4-27

PROJECT NAME :	CLIENT:	CONSULTANT :	DRAWING TITLE :			DRAWN BY	CHECKED BY:	REVIEWED BY:	APPROVED BY:
HSIA HAZRAT SHAHJALAL INTERNATIONAL AIRPORT PREPARATELY SURVEY OF EXPANSION OF HAZRAT SHAHJALAL INTERNATIONAL AIRPORT	CIVIL AVIATION AUTHORITY OF BANGLADESH KURMITOLA, DHAKA-1229, BANGLADESH		ELEVATED WAY GENERAL VIEW (Road 3) BASIC DESIGN SCALE : 1/:2,000 @ A3 DRAWING NO. :			CHECKED BY APPROVED BY		
							THE ENGINEER	PROJECT DIRECTOR	CHIEF ENGINEER

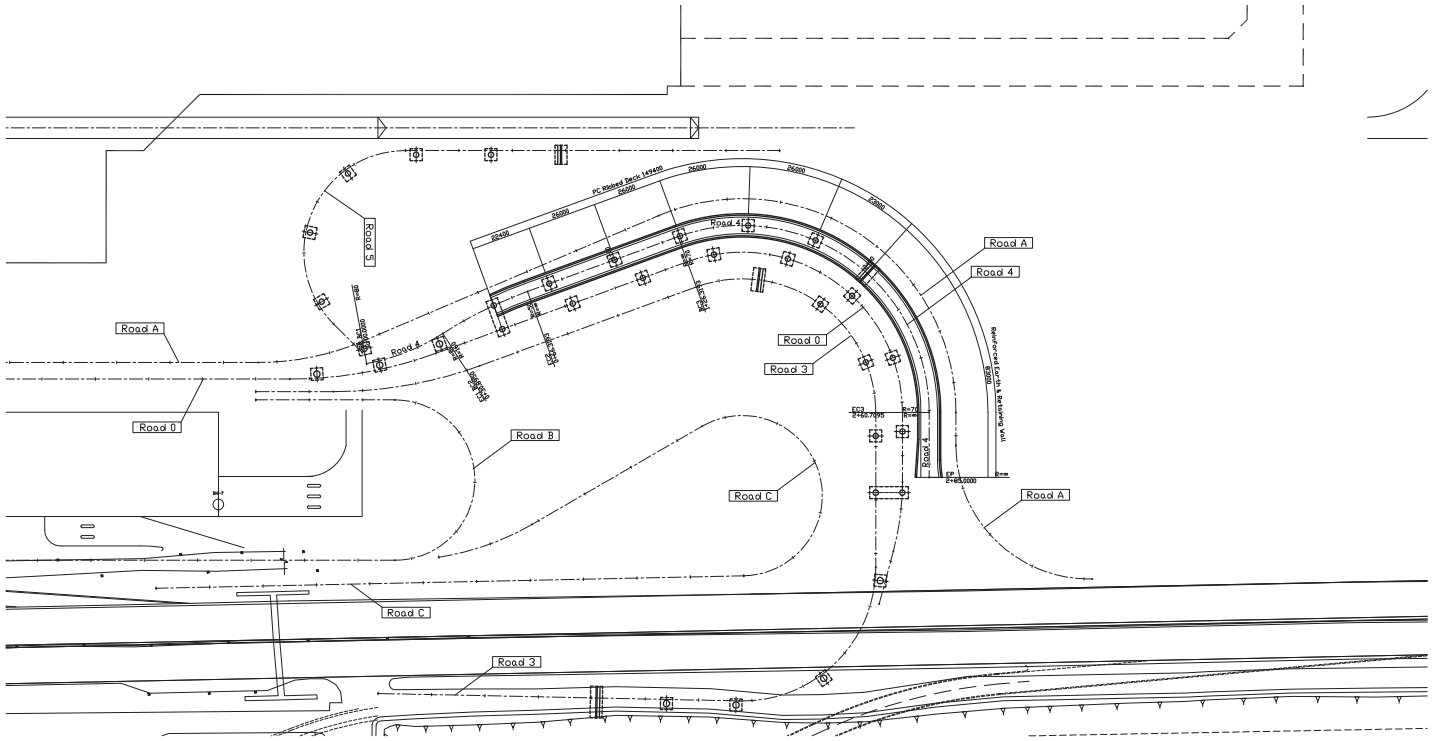


PROFILE



PC Ribbed Deck (2-lane)

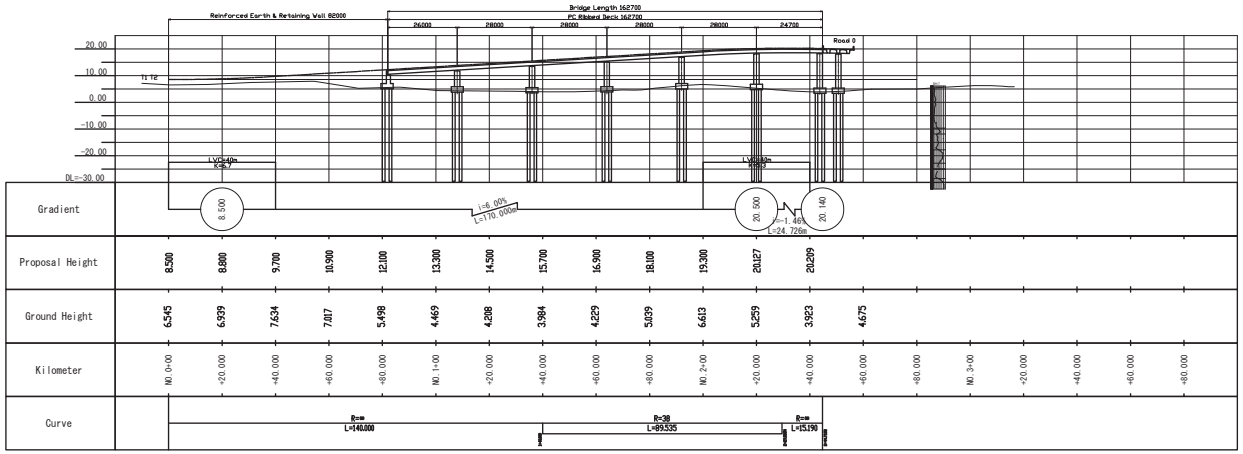
CROSS SECTION



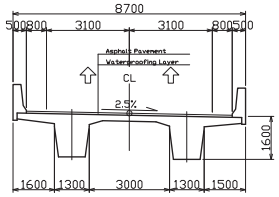
PLAN

PROJECT NAME :	CLIENT:	CONSULTANT :	DRAWING TITLE :			DRAWN BY	CHECKED BY:	REVIEWED BY:	APPROVED BY:
HSIA HAZRAT SHAHJALAL INTERNATIONAL AIRPORT PREPARATELY SURVEY OF EXPANSION OF HAZRAT SHAHJALAL INTERNATIONAL AIRPORT	CIVIL AVIATION AUTHORITY OF BANGLADESH KURMITOLA, DHAKA-1229, BANGLADESH		ELEVATED WAY GENERAL VIEW (Road 4) BASIC DESIGN SCALE : 1/:2,000 @ A3 DRAWING NO. :			CHECKED BY APPROVED BY			
							THE ENGINEER	PROJECT DIRECTOR	CHIEF ENGINEER

A10.4-28

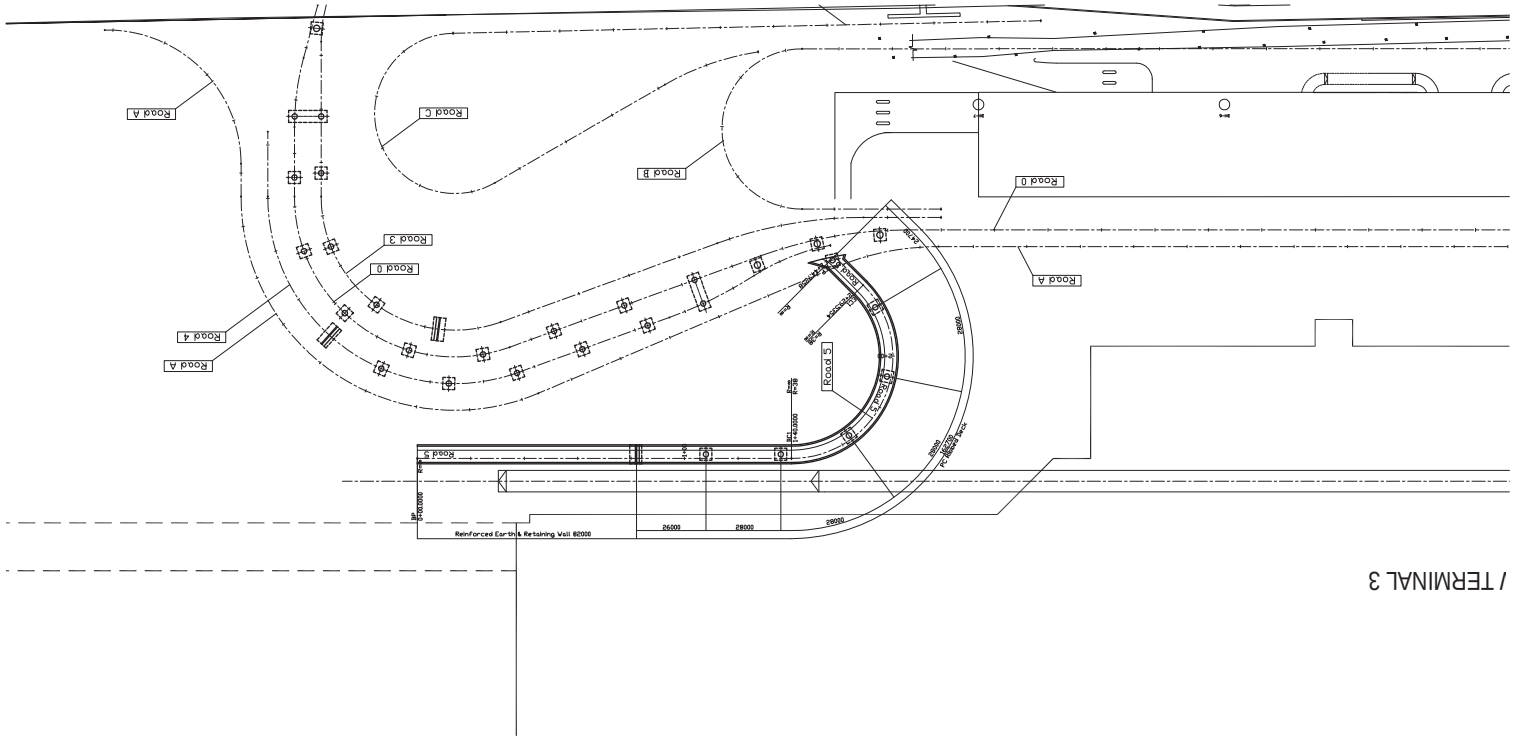


PROFILE



PC Ribbed Deck (2-lane)

CROSS SECTION

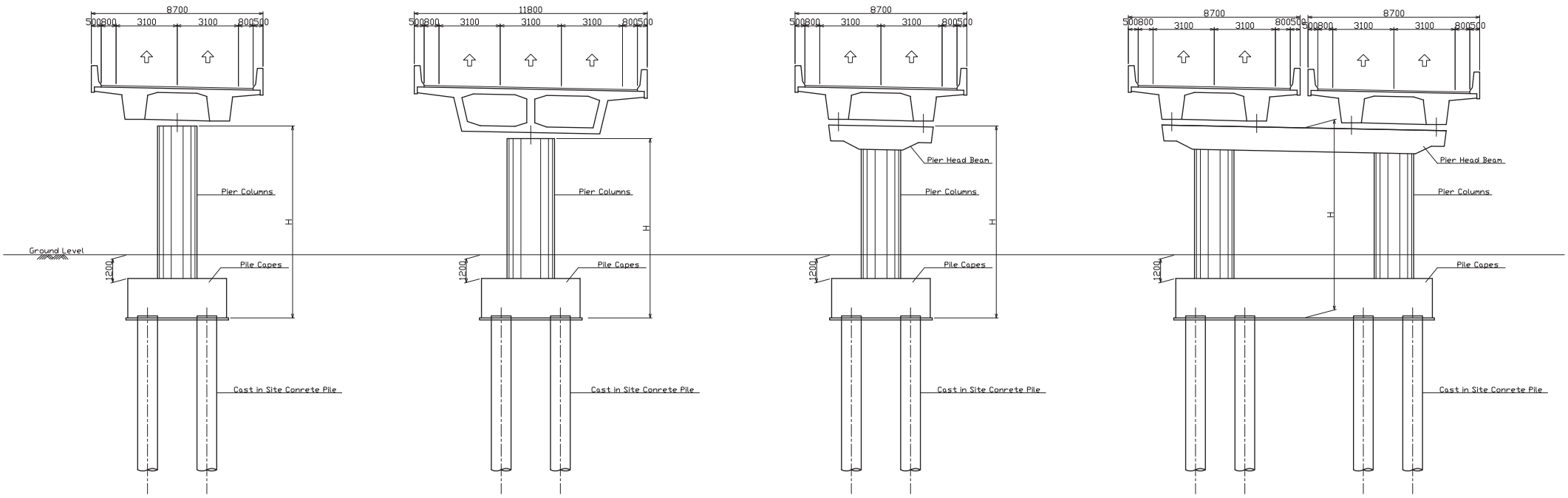


/ TERMINAL 3

PLAN

A10.4-29

PROJECT NAME :	CLIENT:	CONSULTANT :	DRAWING TITLE :							CHECKED BY:	REVIEWED BY:	APPROVED BY:
HSIA HAZRAT SHAHJALAL INTERNATIONAL AIRPORT PREPARATELY SURVEY OF EXPANSION OF HAZRAT SHAHJALAL INTERNATIONAL AIRPORT	CIVIL AVIATION AUTHORITY OF BANGLADESH KURMITOLA, DHAKA-1229, BANGLADESH		ELEVATED WAY GENERAL VIEW (Road 5) BASIC DESIGN SCALE : 1/:2,000 @ A3 DRAWING NO. :				DRAWN BY CHECKED BY APPROVED BY					
										THE ENGINEER	PROJECT DIRECTOR	CHIEF ENGINEER



PC Ribbed Deck (2-lane)

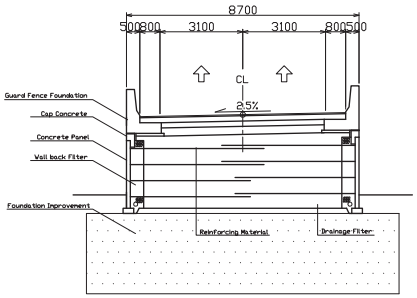
PC Box Girder (3-lane)

Shared Pier

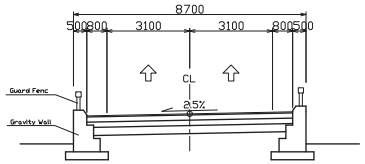
Deverging / Merging Pier

A10.4-30

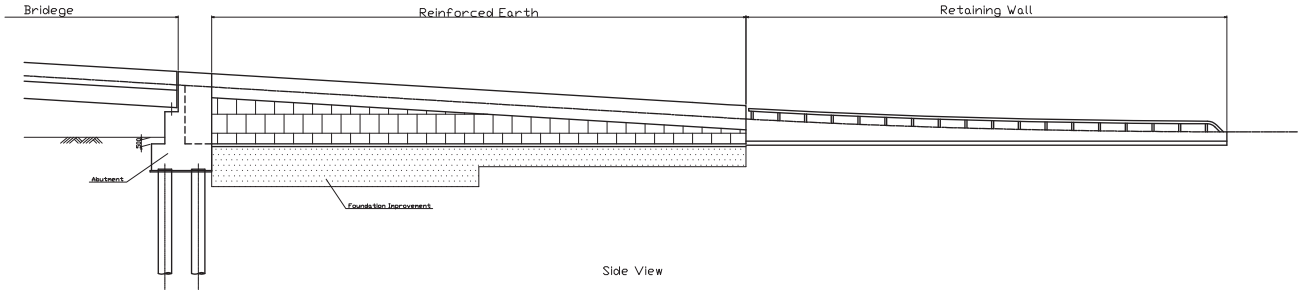
PROJECT NAME :	CLIENT:	CONSULTANT :	DRAWING TITLE :		DRAWN BY		CHECKED BY:	REVIEWED BY:	APPROVED BY:
HSIA HAZRAT SHAHJALAL INTERNATIONAL AIRPORT PREPARATELY SURVEY OF EXPANSION OF HAZRAT SHAHJALAL INTERNATIONAL AIRPORT	CIVIL AVIATION AUTHORITY OF BANGLADESH KURMITOLA, DHAKA-1229, BANGLADESH		ELEVATED WAY SUBSTRUCTURE BASIC DESIGN SCALE : 1/:200 @ A3 DRAWING NO. :		CHECKED BY APPROVED BY		THE ENGINEER	PROJECT DIRECTOR	CHIEF ENGINEER



Reinforced Earth



Retaining Wall



Side View

A10.4-31

PROJECT NAME :	CLIENT:	CONSULTANT :	DRAWING TITLE :								
HSIA HAZRAT SHAHJALAL INTERNATIONAL AIRPORT PREPARATELY SURVEY OF EXPANSION OF HAZRAT SHAHJALAL INTERNATIONAL AIRPORT	CIVIL AVIATION AUTHORITY OF BANGLADESH KURMITOLA, DHAKA-1229, BANGLADESH		ELEVATED WAY APPROACH STRUCTURE BASIC DESIGN SCALE : 1/200 1/400 @ A3 DRAWING NO. :				DRAWN BY CHECKED BY APPROVED BY			CHECKED BY: THE ENGINEER	REVIEWED BY: PROJECT DIRECTOR	APPROVED BY: CHIEF ENGINEER

(Intentionally Blank)

Appendix 13.1 JICA Environmental Checklist

(Intentionally Blank)

JICA Environmental Checklist

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
1 Permits and Explanation	(1) EIA and Environmental Permits	(a) Have EIA reports been already prepared in official process? (b) Have EIA reports been approved by authorities of the host country's government? (c) Have EIA reports been unconditionally approved? If conditions are imposed on the approval of EIA reports, are the conditions satisfied? (d) In addition to the above approvals, have other required environmental permits been obtained from the appropriate regulatory authorities of the host country's government?	(a) Y (b) N (c) TBC (d) N	(a) IEE Report and EIA TOR were submitted to Department of Environment (DOE). DOE approved them on 8th Sep, 2016. Based on the DOE approved TOR, a draft EIA report has been prepared in December 2016; and has been submitted to DOE. The draft EIA is now being updated and final EIA is expected to be submitted by early March. (b) Approval of EIA report will be requested from DOE after draft EIA report is updated. (c) To be confirmed later (d) "No Objection Certificate" will be obtained from relevant local authority and Department of Forest.
	(2) Explanation to the Local Stakeholders	(a) Have contents of the project and the potential impacts been adequately explained to the Local stakeholders based on appropriate procedures, including information disclosure? Is understanding obtained from the Local stakeholders? (b) Have the comment from the stakeholders (such as local residents) been reflected to the project design?	(a) Y (b) Y	(a) Public consultation meeting and information disclosure meeting are conducted during EIA preparation between November 2016 and January 2017. (b) One comment from the stakeholders regarding water logging has been investigated in the EIA preparation and will be addressed in the Project.
	(3) Examination of Alternatives	(a) Have alternative plans of the project been examined with social and environmental considerations?	(a) Y	(a) Various alternative plans including scope, extent, phaseing, location, construction method, etc. have been examined in EIA. Also a "no project' situation has been examined.
2 Pollution Control	(1) Air Quality	(a) Is there a possibility that air pollutants emitted from the project related sources, such as airplanes will affect ambient air quality? Does ambient air quality comply with the country's air quality standards? Are any mitigating measures taken? (b)If the air pollution situation already exceeds the environmental standards near airports and incidental facilities and then the project will detoriorate the air quality, is the countermeasures of air quality taken?	(a) Y (b) N	(a) The current air quality (such as NOx or SOx) in project site is lower than other monitoring point in Dhaka. That means the influence of construction activity and aircraft emission is limited and there will be less possibility to exceeding the criteria of ambient air quality. And on particulate matter (PM10 and PM2.5), it is predicted that the impact from aircraft is small. (b)This project is not expected to deteriorate air quality.
	(2) Water Quality	(a) Do pollutants, such as Suspended Solids (SS), and oils contained in effluents comply with the country's effluent standards (BOD, COD etc)? Is there a possibility that the effluents from the project will cause areas not to comply with the country's ambient water quality standards?	(a) N	(a) The appropriate wastewater treatment plant will be installed complying with national effluent standard, so there will be no risk of pollution during operation stage. Oil seperator will be installed at fuel farm to prevent oil entering into wastewater. During construction period, proper disposal of watewater is responsibility of contractor and that will be ensured by appropriate clauses in the bidding document, for example, treatment for Suspended Solid, septic tank for sewerage, etc.
	(3) Wastes	(a) Are wastes generated from the airports and other project facilities properly treated and disposed of in accordance with the country's regulations?	(a) Y	(a) During construction period, proper disposal of solid waste is responsibility of contractor and that will be ensured by appropriate clauses in the bidding document, for example, separation of waste based on category, storage and disposal based on category, inventory control, etc. During operation stage, CAAB will be responsible to collect and dispose all internally generated solid waste according to Airport Maintenance Manual.
	(4) Noise and Vibration	(a) Does noise from aircraft comply with the country's standards?	(a) Y (b) N	(a) Airport operation is exempted from country's noise regulation. However, updated EIA will compare the aircraft noise with Japanese standard. During construction period, proper noise management is responsibility of contractor and that will be

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
		(b) Is there a possibility that noise and vibrations from various sources, such as airport users vehicles and vehicles for airport operations will adversely affect ambient noise levels? If impacts are anticipated, are adequate noise mitigation measures considered?		ensured by appropriate clauses in the bidding document, for example, periodic maintenance of construction machinary, noise barrier, etc. (b) Not likely.
	(5) Soil Contamination	(a) Has the soil in the project site been contaminated in the past? Are adequate measures taken to prevent soil contamination by leakage of fuels?	(a)Y	(a) According to the result of the soil quality analysis, there are contaminated soil by lead (Pb) in the project site. During construction period, proper management is responsibility of contractor and that will be ensured by appropriate clauses in the bidding document, for example, contaminated soil will be kept isolated from clean soil, and deposited separately. During operation, soil contamination may happen due to fuel leak, but that will be minimaized by appropriate measures, for example, oil seperator at fuel farm and drainage system.
	(6) Subsidence	(a) In the case of extraction of a large volume of groundwater, is there a possibility that the extraction of groundwater will cause subsidence?	(a) N	(a) Soil improvement will be conducted by the Project for reclamation of large ponds with soft soil layers in order to prevent unequal settlement of pavements and to avoid damages by liquifaction during the event of earthquake.
	(7) Odor	(a) Are there any odor sources? Are adequate odor control measures taken?	(a) N	(a) Not likely.
3 Natural Environment	(1) Protected Areas	(a) Is the project site located in protected areas designated by the country's laws or international treaties and conventions? Is there a possibility that the project will affect the protected areas?	(a) N	(a) Project Site is not located within any protected area.
	(2) Ecosystem	(a) Does the project site encompass primeval forests, tropical rain forests, ecologically valuable habitats (e.g., coral reefs, mangroves, or tidal flats)? (b) Does the project site encompass the protected habitats of endangered species designated by the country's laws or international treaties and conventions? (c) If significant ecological impacts are anticipated, are adequate protection measures taken to reduce the impacts on the ecosystem? (d) Is there a possibility that the amount of water (e.g., surface water, groundwater) used by the project will adversely affect aquatic environments, such as rivers? Are adequate measures taken to reduce the impacts on aquatic environments, such as aquatic organisms?	(a) N (b) N (c) N (d) N	(a) No. (b) No. (c) No. (d) No.
	(3) Hydrology	(a) Is there any possibility that alteration of drainage system due to the constructions of airports and related facilities will adversely affect surface water and groundwater flows? (b) Do the facilities affect adversely flow regimes, waves, tides, currents of rivers and etc if the project facilities are constructed on/by the seas?	(a) N (b) N/A	(a) The airport construction will significantly increase the paved surface and reclaim large ponds that works as regulation ponds of storm water. The Project include the construction of new regulation ponds to store increased run off from the paved area and to compensate the reclaimed regulation ponds. (b) Not applicable
	(4) Topography and Geology	(a) Does the project require the large scale change of topographic/geographic features? (b) Is there a possibility that civil works, such as cutting and filling will cause slope failures or landslides? Are	(a) N (b) N (c) N (d) N/A	(a) No. (b) No.

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
		adequate measures considered to prevent slope failures or landslides? (c) Is there a possibility that soil runoff will result from cut and fill areas, waste soil disposal sites, and borrow sites? Are adequate measures taken to prevent soil runoff? (d) In the case of offshore projects, is there any possibility that the project will erode natural beaches?		(c) Not likely during operation. During construction period, proper management is responsibility of contractor and that will be ensured by appropriate clauses in the bidding document, for example, protective measures for steep slope. (d) No.
4 Social Environment	(1) Resettlement	(a) Is involuntary resettlement caused by project implementation? If involuntary resettlement is caused, are efforts made to minimize the impacts caused by the resettlement? (b) Is adequate explanation on compensation and resettlement assistance given to affected people prior to resettlement? (c) Is the resettlement plan, including compensation with full replacement costs, restoration of livelihoods and living standards developed based on socioeconomic studies on resettlement? (d) Are the compensations going to be paid prior to the resettlement? (e) Are the compensation policies prepared in document? (f) Does the resettlement plan pay particular attention to vulnerable groups or people, including women, children, the elderly, people below the poverty line, ethnic minorities, and indigenous peoples? (g) Are agreements with the affected people obtained prior to resettlement? (h) Is the organizational framework established to properly implement resettlement? Are the capacity and budget secured to implement the plan? (i) Are any plans developed to monitor the impacts of resettlement? (j) Is the grievance redress mechanism established?	(a) N (b) N/A (c) N/A (d)N/A (e) N/A (f) N/A (g) N/A (h) N/A (i) N/A (j) N/A	(a) No. (b) Not applicable (c) Not applicable (d) Not applicable (e) Not applicable (f) Not applicable (g) Not applicable (h) Not applicable (i) Not applicable (j) Not applicable
	(2) Living and Livelihood	(a) Is there any possibility that the project will adversely affect the living conditions of inhabitants? Are adequate measures considered to reduce the impacts, if necessary? (b) Is there any possibility that the project causes the change of land uses in the neighboring areas to affect adversely livelihood of local people? (c) Is there any possibility that diseases, including infectious diseases, such as HIV will be brought due to immigration of workers associated with the project? Are adequate considerations given to public health, if necessary?	(a) N/A (b) N (c) Y (d) Y (e) N	(a), (b) Basically this project will be executed in airport area without land acquisition. Therefore, there are no impacts on the living conditions of inhabitants. (c) Workers will increase during construction. When the detailed plan is considered, adequate mitigation measures should be prepared for the risk of diseases. There will be a clause on HIV/AIDS prevention measures. (d) New access road is included in this project. Also, hauling road to construction site will be secured. (e) The projects have no impacts on sunshading and radio interference.

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
		(d) Is sufficient infrastructure (e.g., roads) available for the project implementation? If the existing infrastructure is insufficient, is a plan developed to construct new infrastructure or improve the existing infrastructure? (e) Is there any possibility that the airports and other project structures will cause a sun shading and radio interference?		
	(3) Heritage	(a) Is there a possibility that the project will damage the local archeological, historical, cultural, and religious heritage? Are adequate measures considered to protect these sites in accordance with the country's laws?	(a) N	(a) No
	(4) Landscape	(a) Is there a possibility that the project will adversely affect the local landscape? Are necessary measures taken?	(a) N	(a) No
	(5) Ethnic Minorities and Indigenous Peoples	(a) Are considerations given to reduce impacts on the culture and lifestyle of ethnic minorities and indigenous peoples? (b) Are all of the rights of ethnic minorities and indigenous peoples in relation to land and resources respected?	(a) N/A (b) N/A	(a), (b) Basically this project will be executed in airport area without land acquisition. Therefore, the projects have no impacts on the culture and lifestyle of ethnic minorities and indigenous peoples.
	(6) Working Conditions	(a) Is the project proponent not violating any laws and ordinances associated with the working conditions of the country which the project proponent should observe in the project? (b) Are tangible safety considerations in place for individuals involved in the project, such as the installation of safety equipment which prevents industrial accidents, and management of hazardous materials? (c) Are intangible measures being planned and implemented for individuals involved in the project, such as the establishment of a safety and health program, and safety training (including traffic safety and public health) for workers etc.? (d) Are appropriate measures taken to ensure that security guards involved in the project not to violate safety of other individuals involved, or local residents?	(a) N (b) Y (c) Y (d) Y	(a) No (b) Included in EIA (e.g. Using Personal Protective Equipment (PPE), hearing protection for workers on demolition of concrete). Also, JICA construction safety guidelines will be included in the Contractor's bid document. (c) Mentioned in EIA, will be included in contractor's bid document as Environmental Construction Specification (ECS) and Occupational Health and Safety (OHS) Manual. Also, JICA construction safety guidelines will be included in the Contractor's bid document. (d) Will be included in contractor's bid document as Contractor's responsibility.
5 Others	(1) Impacts during Construction	(a) Are adequate measures considered to reduce impacts during construction (e.g., noise, vibrations, turbid water, dust, exhaust gases, and wastes)? (b) If construction activities adversely affect the natural environment (ecosystem), are adequate measures considered to reduce impacts? (c) If construction activities adversely affect the social environment, are adequate measures considered to reduce impacts?	(a) Y (b) Y (c) Y	(a) Environmental mitigation measures during construction were studied and draft EMP has already prepared. After this, these measures and plan will be modified corresponding with final EIA study. (b) Not likely to have such impact (c) Not likely to have such impact

Category	Environmental Item	Main Check Items	Yes: Y No: N	Confirmation of Environmental Considerations (Reasons, Mitigation Measures)
	(2) Monitoring	(a) Does the proponent develop and implement monitoring program for the environmental items that are considered to have potential impacts? (b) What are the items, methods and frequencies of the monitoring program? (c) Does the proponent establish an adequate monitoring framework (organization, personnel, equipment, and adequate budget to sustain the monitoring framework)? (d) Are any regulatory requirements pertaining to the monitoring report system identified, such as the format and frequency of reports from the proponent to the regulatory authorities?	(a) Y (b) Y (c) Y (d) Y	Draft environmental monitoring plan has already prepared. After this these measures and plan will be modified corresponding with final EIA study. The items, methods, frequency and framework of monitoring are described in draft EMoF.
6 Note	Reference to Checklist of Other Sectors	(a) Where necessary, pertinent items described in the Roads, Railways, and Bridges checklist should also be checked (e.g., projects including large areas of deforestation). (b) If the airport is constructed on the sea, pertinent items described in the Ports and Harbors checklist should also be checked (e.g., projects including installation of power transmission lines and/or electric distribution facilities). (c) Where necessary, pertinent items described in the Forestry Projects checklist should also be checked (e.g., projects including large areas of deforestation).	(a) N/A (b) N/A (c) N/A	Not applicable
	Note on Using Environmental Checklist	(a) If necessary, the impacts to transboundary or global issues should be confirmed, if necessary (e.g., the project includes factors that may cause problems, such as transboundary waste treatment, acid rain, destruction of the ozone layer, or global warming).	(a) N	(a)It is expected that the impact of these issues is small.

Appendix 13.2 Environmental Management Plan

(Intentionally Blank)

Environmental Management Plan

Parameter	Mitigation Measures	Responsible for Implementation	Responsible for Monitoring	Parameters to be Monitored	Frequency of Monitoring	Guidelines/ Standards
Planning Phase						
Updating of safeguard documents	- IEE/ EMP will be updated at the time of detailed design and will be revised by the DSC team if needed.	DSC with input from the contractor	PIU	Updated IEE/EMP	---	JICA Environment Guideline, 2010 ECR 1997
Capacity Building	- Develop and submit for approval a capacity building and training program to to achieve the expected standards.	Contractors	DSC PIU	Capacity building and training program	---	All applicable laws and regulations
Work schedule	- Ensure careful planning and scheduling of the activities (CEMP).	Contractors	DSC PIU	Plan and schedules	Prior to start of construction	EIA report All applicable laws and regulations
Traffic Management Plan	- Prepare a traffic management plan and road safety plan.	Contractors	DSC PIU	Plan and schedules	Prior to start of construction	EIA report All applicable laws and regulations
Barricades and warning signs	- Use easily transportable barricades and warning signs such as those made of high reflector plastic materials. - Also use aluminized rolled warning signs to warn the public.	Contractors	DSC PIU	Lists and samples of warning signs and barricades	Prior to start of construction	Detailed design documents
Workers	- Employ workers with adequate experience, training, and know-how.	Contractors	DSC PIU	Workers list (for internal monitoring)	Prior to start of construction	Detailed Design documents
Legislation, permits, and agreements	- In all instances, CAAB, contractors and consultants must remain in compliance with relevant local and	PIU Contractor	DSC PIU	All applicable permits and approvals	Prior to start of civil works and as necessary	Ensure location clearance and ECC from DOE as per guidance provided in ECR 1997 is obtained

Parameter	Mitigation Measures	Responsible for Implementation	Responsible for Monitoring	Parameters to be Monitored	Frequency of Monitoring	Guidelines/ Standards
	national legislation. - A copy of the EIA must be kept on-site and disclosed in CAAB websites.					
Access to site	- Access to site will be via existing roads. The contractor will need to ascertain the existing condition of the roads and repair damage due to construction.	Contractor	DSC PIU	Traffic management plan Road condition	Prior to start of construction	Minimal traffic disturbance
Setting up of construction camp	Finding Suitable location as approved by the concerning authority.	Contractor	DSC PIU	Location plan Facilities plan	Prior to start of construction	Approved location plan Construction method Facilities plan
Establishing equipment lay-down and storage area	- Storage areas should be secure to minimize the risk of crime and should be safe from access by children, animals, etc. - Hazardous materials should store at secure place.	Contractor	DSC PIU	Location plan Facilities plan	Prior to start of construction	Approved location plan Construction method Facilities plan
Education of site staff on general and environmental conduct	- Environmental awareness training for staffs. - Staff must be trained up for operating equipment - All employees must undergo safety training.	Contractor	DSC PIU	Records of training	Prior to start of civil works and every new employee	Revised/Updated IEE/EMP (capacity building) Bid document CEMP
Construction Phase						
Occupational health and safety	-Using PPE, hearing protection for workers on demolition of concrete -Avoiding direct	Contractor	DSC	-The number of workers and the number of installation of hearing protections on demolition site	As work progresses	Construction method Detailed design documents Bid document JICA Construction Safety Guidelines

Parameter	Mitigation Measures	Responsible for Implementation	Responsible for Monitoring	Parameters to be Monitored	Frequency of Monitoring	Guidelines/ Standards
	contact with the contaminated water and soil			Use of PPE		
Construction camps and storage areas	-Open areas or surrounding bushes are not being used as toilet facility. - Litter is to be collected daily. - Bins and/or skips should be emptied regularly and waste should be disposed of at the pre-approved site. - Camp and working areas are kept clean and tidy at all times. - Camp is to be checked for spills of substances i.e. oil, paint, etc. - Camp is to be remake to its initial situation.	Contractor	DSC	As mentioned in relevant impacts & mitigation section of the report	As work progresses	Approved location plan Bid document JICA Construction Safety Guidelines
Dust and air pollution	-Sprinkling water to the carrying road and working site in the airport area. -Cleaning of carrying route in airport area and around the entrance of the airport. -Using of low air pollutant emission type machinery for construction	Contractor	DSC	-The number of sprinkling times and the number of cleaning times to the carrying road and entrance of the airport	As work progresses	No visible increase in dust and particulate matters Compare against baseline data Bid document JICA Construction Safety Guidelines

Parameter	Mitigation Measures	Responsible for Implementation	Responsible for Monitoring	Parameters to be Monitored	Frequency of Monitoring	Guidelines/ Standards
Noise levels	-Using of low noise type machinery for construction	Contractor	DSC	Complaints from community Noise level monitoring record	Regular monitoring during construction (e.g. 3 monthly)	ECR 1997 Compare against baseline data Bid document JICA Construction Safety Guidelines
Water quality	-Using appropriate measures for avoiding spread of pollution based on chemical analysis -Using wastewater treatment such as sedimentation tank for discharge to the canals (if any)	Contractor	DSC	Complaints from community Waste disposal manifest/record -The concentration of SS in the treated discharge water	-Regular monitoring during discharging (e.g. 3 monthly)	No increase in water pollution due to the project Compare against baseline data Bid document JICA Construction Safety Guidelines
Waste management	-Segregation and sorting of the waste	Contractor	DSC	Complaints from community Waste disposal manifest/record	Regular monitoring during construction (e.g. 3 monthly)	No dumped wastes and litter at work sites at all times Bid document JICA Construction Safety Guidelines
Conservation of natural environment	-Avoid unnecessary tree cutting -Plantation of tree	Contractor	DSC	-The number of cutting tree and planting tree	-Before the construction and after the construction	
Cultural and historical environment	-Complying with relevant law and order of relevant department	Contractor	DSC	sudden finding	As necessary	All finding shall be reported and turned over to the Department of Archaeology.
Operation and Maintenance phase						
Land contamination	-Securing that contaminated soil will be isolated from clean soil.	Contractor (up to service delivery period) CAAB	CAAB Independent Monitoring Agency	Specifications in the O&M Manual	As determined in the O&M Manual	As specified in the O&M Manual and all applicable laws and regulations
Wastewater	- After treatment, the discharge standards need to be followed similar to the standards mentioned in Schedule 10 of the ECR 1997 for inland	Contractor (up to service delivery period) CAAB	CAAB Independent Monitoring Agency	Specifications in the O&M Manual	As determined in the O&M Manual	ECR 1997 (Rule 13: The standard limits of the discharge of liquid wastes shall be determine in accordance with the standards specified in Schedule 10)

Parameter	Mitigation Measures	Responsible for Implementation	Responsible for Monitoring	Parameters to be Monitored	Frequency of Monitoring	Guidelines/ Standards
	water discharge					
Air quality	Implementation of the multistory parking for reducing exhaust gas from cars waiting for entering to the parking.	Contractor (up to service delivery period) CAAB	CAAB Independent Monitoring Agency	Specifications in the O&M Manual	As determined in the O&M Manual	As specified in the O&M Manual and all applicable laws and regulations
Noise	-Implement of the complaint section for noise. CAAB will accept the complain of aircraft noise and will consider remedial measures.	Contractor (up to service delivery period) CAAB	CAAB Independent Monitoring Agency	Specifications in the O&M Manual	As determined in the O&M Manual	As specified in the O&M Manual and all applicable laws and regulations
Water use	- Minimize water use through dedicated metering of water consumption	Contractor (up to service delivery period) CAAB	CAAB Independent Monitoring Agency	Specifications in the O&M Manual	As determined in the O&M Manual	As specified in the O&M Manual and all applicable laws and regulations
Health, hygiene, and safety	-Safety training for all staff	Contractor (up to service delivery period) CAAB	CAAB Independent Monitoring Agency	Specifications in the O&M Manual	As determined in the O&M Manual	As specified in the O&M Manual and all applicable laws and regulations

Note: DSC = Design and Supervision Consultants, PIU = Project Implementation Unit

Appendix 13.3 Environmental Monitoring Plan

(Intentionally Blank)

Environmental Monitoring Plan

Project stage	Monitoring Item	Parameter	Method of monitoring	Monitoring area/ point	Term / Frequency	Place of submission
Construction Phase	Occupational health and safety	1.W=The number of workers on demolition site 2.I=The number of installation of hearing protections on demolition site 3. Ratio (IR)=I/W 4. Number of PPE must be equal or more than W.	To monitor the state of implementation/ Collecting implementation data from contractor	Whole of the project site	During the demolition of concrete/ Reporting for once in 3 months	CAAB, DOE
	Dust, Air pollution	1. The number of times of water sprinkling to the carrying road and entrance of the airport 2. The number of times of cleaning of the equipment and work site	To monitor the state of implementation/ Collecting implementation data from contractor	Carrying road and entrance of the airport Equipment and work site	During the construction/ reporting for once in 3 months	CAAB, DOE
	Noise	Construction Noise	Noise survey	Around the construction area	During the construction/ Every 3-month survey at a.m. and p.m. of typical day	CAAB, DOE
	Water quality	pH, Temp, Turbidity, EC	Water quality survey	Discharging point to the canal	During the construction/ Every 3-month survey at typical day	CAAB, DOE
	Solid waste	1.Types of waste 2.Monthly quantity of waste	Collecting data from contractor	Whole of the project site	During the construction/ Reporting for once in 3 months	CAAB, DOE
	Natural environment	1.The number of cutting tree 2.The number of planting tree	1.Inventory survey 2.Implementation survey	Whole of the project site	1.Befor the construction 2.After the construction	CAAB, DOE
Operation	Land	1.Quantity of	To monitor the state of	Whole of the	During operation/	CAAB,

Project stage	Monitoring Item	Parameter	Method of monitoring	Monitoring area/ point	Term / Frequency	Place of submission
and Maintenance Phase	contamination	contaminated soil 2.Method of the storing and managing contaminated soil	implementation	project site	Annual report	DOE
	Air quality	NOx, SO2, PM10, PM2.5	Air quality survey	Project site	During operation/ Annual report	CAAB, DOE
	Wastewater	pH, Temp, SS, EC, TDS, NH3, COD, BOD, Coli, Oil & Grease	Water quality survey with laboratory analysis	Discharging point of the treated water	During operation/ Annual report	CAAB, DOE
	Noise	1.The status of implementation complaint section 2.Ambient noise level(Leq) 3. Aircraft noise (Lden)	1.To monitor the state of implementation 2.Ambient noise level monitoring 3.Continuous measurement and calculating L(den) and compare with baseline	1. Project site 2. Bboudary of the project area 3. At the point of near residential area	1,2. During operation/ Annual report 3. During operation/ Once	CAAB, DOE

Appendix 13.4 Environmental Monitoring Form

(Intentionally Blank)

Construction Phase

Monitoring Item: Occupational health and safety

Company:	Monitoring period
Monitoring area/ Point:	
Project activity: Demolition of the existing apron/ Others (please mention)	
Monitoring method: Collecting implementation data	
Equipment used: -	
All workers using PPE: YES NO	

Date	Time	Parameter1	Parameter2	Parameter3	Remark
		W=The number of workers on demolition site	I=The number of installation of hearing protections on demolition site	Ratio=I/W	

I certify that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based upon my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature	Date

Monitoring Item: Dust, Air pollution

Company:	Monitoring period
Monitoring area/ Point:	
Project activity: Carrying construction materials	
Monitoring method: Collecting implementation data	
Equipment used: -	

Date	Time	Parameter1	Parameter2	Parameter3	Remark
		Sprinkling	Cleaning		
		☐	☐		
		☐	☐		
		☐	☐		
		☐	☐		
		☐	☐		
		☐	☐		
		☐	☐		
		☐	☐		
		☐	☐		
		☐	☐		
		☐	☐		
		☐	☐		
		☐	☐		
		☐	☐		
		☐	☐		
		☐	☐		
		☐	☐		
		☐	☐		
Total					

I certify that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based upon my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature	Date

Monitoring Item: Construction Noise

Company:	Monitoring Date
Monitoring area/ Point: As shown below figure	
Project activity:	
Monitoring method: Construction noise survey	
Equipment used: - Sound level meter Type ****	

Survey point	Time	Parameter1		Criteria	Remark
		Measured value LAeq(dB)	Baseline value LAeq,10min(dB)	LAeq(dB)	
No.1	A.M.		67.1(max.) 53,5(min.) 58.6(ave.)	70 (Commercial zone at daytime) 60 (Commercial zone at night time)	
	P.M.				
No.2	A.M.		63.4(max.) 50.4(min.) 54.8(ave.)		
	P.M.				
No.3	A.M.		-		
	P.M.				
No.4	A.M.		-		
	P.M.				

I certify that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based upon my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature	Date

Monitoring Item: Water quality

Company:		Monitoring Date
Monitoring area/ Point: As shown below figure		
Project activity:		
Monitoring method: Onsite water quality survey		
Equipment used: Multi-parameter water quality meter		

Survey point	Time	Parameters	Measured Value	Baseline value	Criteria	Remark
SW-1		pH		7.48	6.5-8.5	
		Temp			-	
		Turbidity(NTU)		8.77	10	
		EC(μ S/cm)		229	700	
SW-2		pH		7.08	6.5-8.5	
		Temp			-	
		Turbidity(NTU)		69.4	10	
		EC(μ S/cm)		209	700	
SW-3		pH		6.99	6.5-8.5	
		Temp			-	
		Turbidity(NTU)		45.4	10	
		EC(μ S/cm)		279	700	

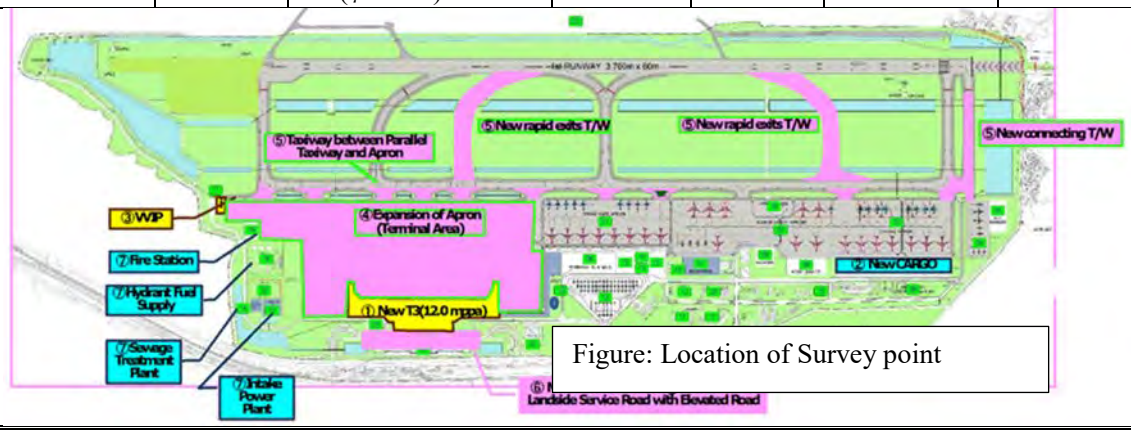


Figure: Location of Survey point

I certify that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based upon my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature	Date

Monitoring Item: Solid waste

Company:	Monitoring period
Monitoring area/ Point:	
Project activity:	
Monitoring method: Data collecting	
Equipment used: -	

Types of the waste	Category (Hazardous/Non-Hazardous)	Parameter1 Monthly quantity	unit	Remark

I certify that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based upon my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature	Date

Monitoring Natural environment

Company:	Monitoring period
Monitoring area/ Point:	
Project activity:	
Monitoring method: Inventory survey	
Equipment used: -	

Types of the tree	Parameter1 Number of tree	Remark
Total		

I certify that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based upon my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature	Date

Operation and Maintenance phase

Monitoring Item: Land (Soil) contamination

Company:	Monitoring Date
Monitoring area/ Point: As shown below figure	
Project activity: Storing and managing contaminated soil	
Monitoring method: Data collecting	
Equipment used: -	

Storing area	Storing quantity	Contained chemical substances	Method of management

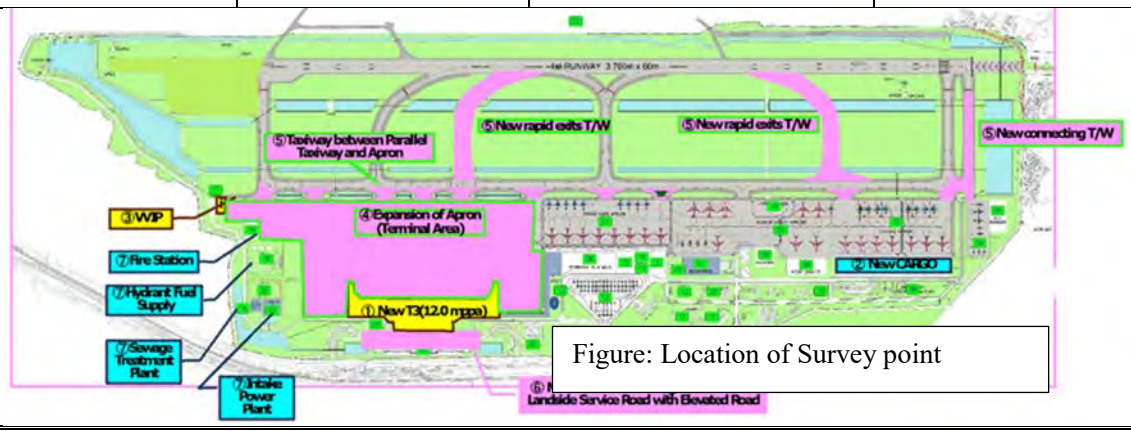


Figure: Location of Survey point

I certify that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based upon my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature	Date

Monitoring Item: air quality

Company:	Monitoring Date
Monitoring area/ Point: As shown below figure	
Project activity:	
Monitoring method:	
Equipment used:	

Survey point	Parameters	Measured Value	Baseline value	Criteria	Remark
AAQ-1	NOx (μ g/m^3)		57.20	100	
	SO2 (μ g/m^3)		8.62	365	
	PM10 (μ g/m^3)		145.45	150	
	PM2.5 (μ g/m^3)		74.66	65	
AAQ-2	NOx (μ g/m^3)		55.10	100	
	SO2 (μ g/m^3)		8.12	365	
	PM10 (μ g/m^3)		142.50	150	
	PM2.5 (μ g/m^3)		71.54	65	
AAQ-3	NOx (μ g/m^3)		58.12	100	
	SO2 (μ g/m^3)		9.01	365	
	PM10 (μ g/m^3)		148.52	150	
	PM2.5 (μ g/m^3)		76.88	65	

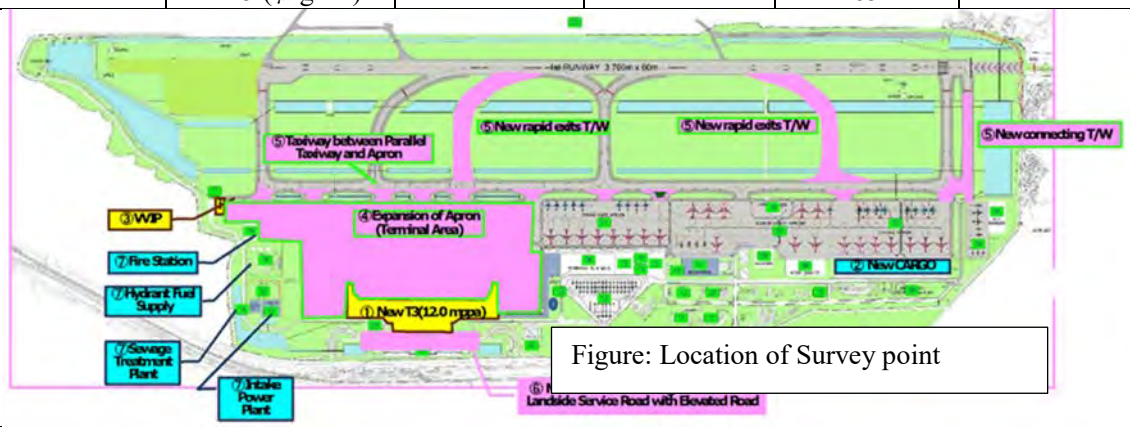


Figure: Location of Survey point

I certify that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based upon my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature	Date

Monitoring Item: Waste water quality

Company:	Monitoring Date
Monitoring area/ Point: As shown below figure	
Project activity:	
Monitoring method: Laboratory analysis	
Equipment used:	

Survey point	Parameters	Measured Value	Baseline value	Criteria	Remark
	pH				
	Temp				
	TSS(㎎/L)				
	EC(㎲/cm)				
	TDS(㎎/L)				
	NH3(㎎/L)				
	COD(㎎/L)				
	BOD(㎎/L)				
	Coli(MPN)				
	Oil&Grease(㎎/L)				

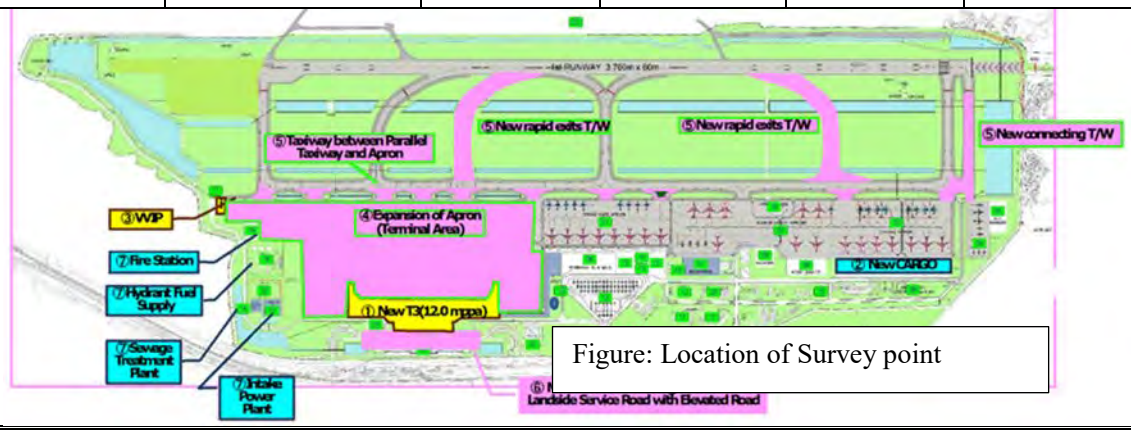


Figure: Location of Survey point

I certify that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based upon my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature	Date

Monitoring Item: Ambient noise level

Company:	Monitoring Date
Monitoring area/ Point: As shown below figure	
Project activity:	
Monitoring method: Construction noise survey	
Equipment used: - Sound level meter Type ****	

Survey point	Time	Parameter1		Criteria	Remark
		Measured value LAeq(dB)	Baseline value LAeq,10min(dB)	LAeq(dB)	
No.1	A.M.		67.1(max.) 53,5(min.) 58.6(ave.)	70 (Commercial zone at daytime) 60 (Commercial zone at night time)	
	P.M.				
No.2	A.M.		63.4(max.) 50.4(min.) 54.8(ave.)		
	P.M.				
No.3	A.M.		-		
	P.M.				
No.4	A.M.		-		
	P.M.				

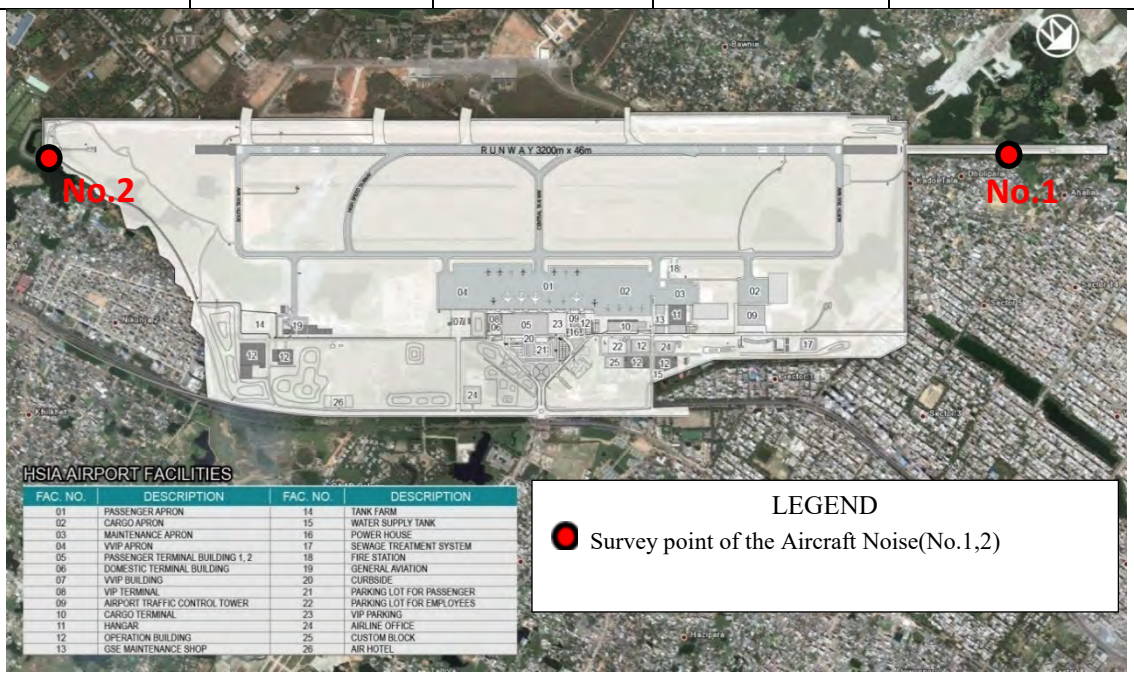
I certify that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based upon my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature	Date

Monitoring Item: Aircraft Noise

Company:	Monitoring Date
Monitoring area/ Point: As shown below figure	
Project activity:	
Monitoring method: Ambient noise survey	
Equipment used: - Sound level meter Type ****	

Survey point	Parameter1		Criteria	Remark
	Measured value Lden(dB)	Baseline value Lden (dB)	(dB)	
No.1		75(74.9)	62	
No.2		75(75.2)	62	



FAC. NO.	DESCRIPTION	FAC. NO.	DESCRIPTION
01	PASSENGER APRON	14	TANK FARM
02	CARGO APRON	15	WATER SUPPLY TANK
03	MAINTENANCE APRON	16	POWER HOUSE
04	VVIP APRON	17	SEWAGE TREATMENT SYSTEM
05	PASSENGER TERMINAL BUILDING 1, 2	18	FIRE STATION
06	DOMESTIC TERMINAL BUILDING	19	GENERAL AVIATION
07	VVIP BUILDING	20	CURBSIDE
08	VIP TERMINAL	21	PARKING LOT FOR PASSENGER
09	AIRPORT TRAFFIC CONTROL TOWER	22	PARKING LOT FOR EMPLOYEES
10	CARGO TERMINAL	23	VIP PARKING
11	HANGAR	24	AIRLINE OFFICE
12	OPERATION BUILDING	25	CUSTOM BLOCK
13	GSE MAINTENANCE SHOP	26	AIR HOTEL

I certify that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based upon my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations.

Signature	Date

(Intentionally Blank)

Appendix 14 Annual Fund Requirement

(Intentionally Blank)

Annual Fund Requirement

78,387 35,169 126,920

Base Year for Cost Estimation: Jan, 2017 — FC & Total: million JPY
Exchange Rates BDT = JPY 1.38 — LC : million BDT
Price Escalation: FC: 1.6% LC: 10.1%
Physical Contingency 5%
Physical Contingency for Consultant 5%

Item		Total			2016			2017		
		FC	LC	Total	FC	LC	Total	FC	LC	Total
A. ELIGIBLE PORTION										
I)	Procurement / Construction	85,484	46,492	149,643	0	0	0	0	0	0
	A:Building Work	57,595	17,922	82,327	0	0	0	0	0	0
	B:Civil Work	10,527	15,933	32,515	0	0	0	0	0	0
	C:Utility Work	10,265	1,314	12,078	0	0	0	0	0	0
	D			0	0	0	0	0	0	0
	Dispute Board	64	0	64	0	0	0	0	0	0
	Base Cost for JICA Financing	78,451	35,169	126,984	0	0	0	0	0	0
	Price Escalation	2,962	9,109	15,533	0	0	0	0	0	0
	Physical Contingency	4,071	2,214	7,126	0	0	0	0	0	0
II)	Consulting Services	3,940	856	5,121	0	0	0	1,415	216	1,712
	Base Cost	3,672	698	4,636	0	0	0	1,347	205	1,631
	Price Escalation	80	117	241	0	0	0	0	0	0
	Physical Contingency	188	41	244	0	0	0	67	10	82
Total (I+II)		89,423	47,348	154,764	0	0	0	1,415	216	1,712
B. NON ELIGIBLE PORTION										
a	Procurement / Construction	0	0	0	0	0	0	0	0	0
	Base Cost for GoB Financing	0	0	0	0	0	0	0	0	0
	Price Escalation	0	0	0	0	0	0	0	0	0
	Physical Contingency	0	0	0	0	0	0	0	0	0
b	Land Acquisition	0	0	0	0	0	0	0	0	0
	Base Cost	0	0	0	0	0	0	0	0	0
	Price Escalation	0	0	0	0	0	0	0	0	0
	Physical Contingency	0	0	0	0	0	0	0	0	0
c	Administration Cost	0	224	310	0	0	0	0	2	3
d	VAT (Contractor & Consultant)	0	3,346	4,618	0	0	0	0	186	257
e	Import Tax	0	12,389	17,097	0	0	0	0	0	0
f	Corporate Tax	0	0	0	0	0	0	0	0	0
g	Income Tax (Contractor)	0	7,591	10,475	0	0	0	0	0	0
h	Income Tax (Consultant)	0	445	615	0	0	0	0	149	205
Total (a+b+c+d+e+f+g+h)		0	23,995	33,114	0	0	0	0	338	466
TOTAL (A+B)		89,423	71,344	187,878	0	0	0	1,415	553	2,178
C. Interest during Construction		3,776	0	3,776	0	0	0	0	0	0
	Interest during Construction (Construction)	3,774	0	3,774	0	0	0	0	0	0
	Interest during Construction (C/S)	2	0	2	0	0	0	0	0	0
D. Front End Fee		317	0	317	0	0	0	317	0	317
GRAND TOTAL (A+B+C+D)		93,516	71,344	191,971	0	0	0	1,732	553	2,496
E. JICA Finance Portion (A)		89,423	47,348	154,764	0	0	0	1,415	216	1,712

G. GoB Finace Portion (B+C+D)		4,093	23,995	37,207	0	0	0	317	338	783

Administration Cost = 0.2% Import Tax / Contractor = 20.0% of the expenditure in foreign currency of the e
VAT / Contractor = 6.0% of the expenditure in local currency of the eli
VAT / Consultant = 15.0%

2018			2019			2020			2021			2022		
FC	LC	Total	FC	LC	Total	FC	LC	Total	FC	LC	Total	FC	LC	Total
27,815	13,516	46,466	20,687	10,888	35,713	21,018	11,988	37,562	11,506	7,113	21,322	4,457	2,987	8,579
19,146	5,958	27,368	14,010	4,359	20,026	14,010	4,359	20,026	7,550	2,349	10,792	2,880	896	4,116
3,500	5,297	10,809	2,561	3,876	7,909	2,561	3,876	7,909	1,380	2,089	4,262	526	797	1,626
3,412	437	4,015	2,497	320	2,938	2,497	320	2,938	1,346	172	1,583	513	66	604
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
15	0	15	20	0	20	20	0	20	9	0	9	1	0	1
26,073	11,691	42,207	19,087	8,555	30,892	19,087	8,555	30,892	10,284	4,610	16,646	3,921	1,758	6,347
417	1,181	2,047	616	1,815	3,121	931	2,863	4,881	674	2,164	3,661	324	1,086	1,823
1,325	644	2,213	985	518	1,701	1,001	571	1,789	548	339	1,015	212	142	409
807	175	1,048	800	206	1,084	692	184	946	214	69	310	12	7	22
756	151	965	738	162	961	629	131	809	191	45	253	11	4	16
12	15	33	24	34	71	31	44	91	13	21	42	1	2	4
38	8	50	38	10	52	33	9	45	10	3	15	1	0	1
28,622	13,690	47,515	21,487	11,094	36,797	21,711	12,172	38,508	11,720	7,182	21,632	4,469	2,994	8,601
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	69	95	0	53	74	0	56	77	0	31	43	0	12	17
0	925	1,276	0	771	1,064	0	822	1,134	0	460	635	0	182	251
0	4,031	5,563	0	2,998	4,137	0	3,046	4,204	0	1,668	2,301	0	646	891
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
0	2,357	3,253	0	1,812	2,500	0	1,905	2,629	0	1,082	1,493	0	435	601
0	91	126	0	94	130	0	82	113	0	27	37	0	2	3
0	7,473	10,313	0	5,728	7,905	0	5,912	8,158	0	3,268	4,510	0	1,277	1,762
28,622	21,163	57,827	21,487	16,823	44,702	21,711	18,083	46,666	11,720	10,450	26,141	4,469	4,271	10,363
326	0	326	576	0	576	839	0	839	988	0	988	1,048	0	1,048
325	0	325	575	0	575	838	0	838	987	0	987	1,048	0	1,048
0	0	0	0	0	0	0	0	0	1	0	1	1	0	1
0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
28,947	21,163	58,153	22,063	16,823	45,278	22,549	18,083	47,504	12,708	10,450	27,129	5,517	4,271	11,411
28,622	13,690	47,515	21,487	11,094	36,797	21,711	12,172	38,508	11,720	7,182	21,632	4,469	2,994	8,601

326	7,473	10,638	576	5,728	8,481	839	5,912	8,997	988	3,268	5,498	1,048	1,277	2,810

ligible portion	Corporate (Profit) Tax =	12%	FALSE	0	0%	included in the Billing Rate
gible portion	Income Tax / Contracor =	7%	TRUE	1	7%	
	Income Tax / Consultant =	12%	TRUE	1	12%	

2023			2024			2025		
FC	LC	Total	FC	LC	Total	FC	LC	Total
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0
0	0	0	0	0	0	0	0	0

(Intentionally Blank)

Appendix 17 Financial and Economic Cash Flow of Incremental Case

(Intentionally Blank)

Financial Cashflow of Incremental Case (Million BDT) USD 1 = 78.4 BDT BDT 1 = 1.38 JPY Physical Contingency = 5%

Project FIRR = 5.570% **(Operation period =** 25 **years)**

Pax Forecast	**-3**	**-2**	**-1**	**0**	**1**	**2**	**3**	**4**	**5**	**6**	**7**	**8**	**9**	**10**	**11**
	2017	**2018**	**2019**	**2020**	**2021**	**2022**	**2023**	**2024**	**2025**	**2026**	**2027**	**2028**	**2029**	**2030**	**2031**
1. Aeronautical Revenue	0	0	0	0	1,107	2,329	3,630	5,017	6,495	7,943	9,469	11,082	12,786	14,624	14,666
2. Non-Aeronautical Revenue	0	0	0	0	2,819	3,075	3,348	3,637	3,945	4,240	4,552	4,881	5,228	5,601	5,622
Total Revenue	0	0	0	0	3,926	5,404	6,978	8,655	10,440	12,184	14,021	15,962	18,014	20,225	20,288
Expenditure															
1. Capital Expenditures															
(1) Procurement / Construction															
A:Building Work	0	19,832	14,511	14,511	7,820	2,983	0	0	0	0	0	0	0	0	0
B:Civil Work	0	7,833	5,731	5,731	3,088	1,178	0	0	0	0	0	0	0	0	0
C:Utility Work	0	2,910	2,129	2,129	1,147	438	0	0	0	0	0	0	0	0	0
D. Dispute Board	0	13	14	14	3	2	0	0	0	0	0	0	0	0	0
Base Cost for JICA Financing	0	30,587	22,386	22,386	12,059	4,601	0	0	0	0	0	0	0	0	0
Physical Contingency	0	1,529	1,119	1,119	603	230	0	0	0	0	0	0	0	0	0
Sub Total (1)	0	33,600	25,766	27,042	15,314	6,152	0	0	0	0	0	0	0	0	0
(2) Consulting Services	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Base Cost	1,182	699	696	587	139	8	0	0	0	0	0	0	0	0	0
Physical Contingency	59	35	35	29	7	0	0	0	0	0	0	0	0	0	0
Sub Total (2)	1,241	758	783	682	155	9	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(3) Administration Cost	2	69	53	56	31	12	0	0	0	0	0	0	0	0	0
(4) VAT (Contractor & Consultant)	186	925	771	822	450	181	0	0	0	0	0	0	0	0	0
(5) Import Tax	0	4,032	2,998	3,046	1,667	646	0	0	0	0	0	0	0	0	0
Sub Total (3)-(5)	189	5,025	3,823	3,924	2,148	839	0	0	0	0	0	0	0	0	0
Total Capex (1)+(2)+(3)+(4)+(5)	1,430	39,383	30,372	31,648	17,616	7,000	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2. Operation expenses	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(9) Personnel Expenses	0	0	0	0	298	298	298	298	298	298	298	298	298	298	298
(10) Maintenance Expenses	0	0	0	0	1,839	1,839	1,839	1,839	1,839	1,839	1,839	1,839	1,839	1,839	1,839
(11) Other Administrative Expenses	0	0	0	0	2,670	2,670	2,670	2,670	2,670	2,670	2,670	2,670	2,670	2,670	2,670
Total Opex (9)+(10)+(11)	0	0	0	0	4,807	4,807	4,807	4,807	4,807	4,807	4,807	4,807	4,807	4,807	4,807
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Expenditure 1+2	1,430	39,383	30,372	31,648	22,424	11,808	4,807	4,807	4,807	4,807	4,807	4,807	4,807	4,807	4,807
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Net Cash from Operational Activities	-1,430	-39,383	-30,372	-31,648	-18,498	-6,404	2,171	3,847	5,632	7,376	9,213	11,155	13,206	15,418	15,480

Financial Cashflow of Incremental Case (Million BDT)

Project FIRR =

Pax Forecast	**12**	**13**	**14**	**15**	**16**	**17**	**18**	**19**	**20**	**21**	**22**	**23**	**24**	**25**
	2032	**2033**	**2034**	**2035**	**2036**	**2037**	**2038**	**2039**	**2040**	**2041**	**2042**	**2043**	**2044**	**2045**
1. Aeronautical Revenue	14,707	14,749	14,790	14,832	14,832	14,832	14,832	14,832	14,832	14,832	14,832	14,832	14,832	14,832
2. Non-Aeronautical Revenue	5,643	5,663	5,684	5,705	5,705	5,705	5,705	5,705	5,705	5,705	5,705	5,705	5,705	5,705
Total Revenue	20,350	20,412	20,474	20,537	20,537	20,537	20,537	20,537	20,537	20,537	20,537	20,537	20,537	20,537
Expenditure														
1. Capital Expenditures														
(1) Procurement / Construction														
A:Building Work	0	0	0	7,933	0	0	0	0	0	0	0	0	0	0
B:Civil Work	0	0	0	0	0	0	0	0	0	0	0	0	0	0
C:Utility Work	0	0	0	0	0	0	0	0	0	0	0	0	0	0
D. Dispute Board	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Base Cost for JICA Financing	0	0	0	7,933	0	0	0	0	0	0	0	0	0	0
Physical Contingency	0	0	0	397	0	0	0	0	0	0	0	0	0	0
Sub Total (1)	0	0	0	8,330	0	0	0	0	0	0	0	0	0	0
(2) Consulting Services	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Base Cost	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Physical Contingency	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub Total (2)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(3) Administration Cost	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(4) VAT (Contractor & Consultant)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(5) Import Tax	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub Total (3)-(5)	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Capex (1)+(2)+(3)+(4)+(5)	0	0	0	8,330	0	0	0	0	0	0	0	0	0	0
	0	0	0	0	0	0	0	0	0	0	0	0	0	0
2. Operation expenses	0	0	0	0	0	0	0	0	0	0	0	0	0	0
(9) Personnel Expenses	298	298	298	298	298	298	298	298	298	298	298	298	298	298
(10) Maintenance Expenses	1,839	1,839	1,839	1,839	1,839	1,839	1,839	1,839	1,839	1,839	1,839	1,839	1,839	1,839
(11) Other Administrative Expenses	2,670	2,670	2,670	2,670	2,670	2,670	2,670	2,670	2,670	2,670	2,670	2,670	2,670	2,670
Total Opex (9)+(10)+(11)	4,807	4,807	4,807	4,807	4,807	4,807	4,807	4,807	4,807	4,807	4,807	4,807	4,807	4,807
	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Expenditure 1+2	4,807	4,807	4,807	13,137	4,807	4,807	4,807	4,807	4,807	4,807	4,807	4,807	4,807	4,807
	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Net Cash from Operational Activities	15,542	15,605	15,667	7,400	15,729	15,729	15,729	15,729	15,729	15,729	15,729	15,729	15,729	15,729

Economic Cashflow of Incremental Case (Million BDT)	USD 1 =	78.4	BDT	BDT 1 =	1.38	JPY	Conversion Factor =	95%	Physical Contingency =	5%						
Project EIRR =	22.518%															
	-3	-2	-1	0	1	2	3	4	5	6	7	8	9	10	11	
	2017	2018	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2031	
Economic Benefit																
Domestic flights																
Consumer surplus of Incremental Bangladesh passengers	0	0	0	0	1,058	1,368	1,680	2,012	2,366	2,713	3,081	3,471	3,884	4,323	4,323	
International flights	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Consumer surplus of Incremental Bangladesh passengers	0	0	0	0	6,990	13,862	21,146	28,867	37,051	45,003	53,393	62,244	71,582	81,434	81,434	
Saved time for Existing Bangladesh passenger	0	0	0	0	1,332	1,332	1,332	1,332	1,332	1,332	1,332	1,332	1,332	1,332	1,332	
Total of Economic Benefit	0	0	0	0	9,381	16,562	24,158	32,211	40,749	49,048	57,806	67,047	76,799	87,089	87,089	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Economic Cost	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
1. Capital Economic Cost	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
(1) Procurement / Construction	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
A:Building Work	0	19,538	14,296	14,296	7,704	2,939	0	0	0	0	0	0	0	0	0	
B:Civil Work	0	7,571	5,540	5,540	2,985	1,139	0	0	0	0	0	0	0	0	0	
C:Utility Work	0	2,888	2,113	2,113	1,139	434	0	0	0	0	0	0	0	0	0	
D. Dispute Board	0	13	14	14	3	2	0	0	0	0	0	0	0	0	0	
Base Cost for JICA Financing	0	30,011	21,964	21,964	11,831	4,514	0	0	0	0	0	0	0	0	0	
Physical Contingency	0	1,572	1,207	1,268	719	289	0	0	0	0	0	0	0	0	0	
Sub Total (1)	0	31,583	23,171	23,232	12,550	4,803	0	0	0	0	0	0	0	0	0	
(2) Consulting Services	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Base Cost	1,172	692	688	580	139	8	0	0	0	0	0	0	0	0	0	
Physical Contingency	59	35	35	30	7	0	0	0	0	0	0	0	0	0	0	
Sub Total (2)	1,230	727	724	610	146	8	0	0	0	0	0	0	0	0	0	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
(3) Administration Cost	2	65	51	53	30	12	0	0	0	0	0	0	0	0	0	
Total Capital Economic Cost (1)+(2)+(3)	1,233	32,375	23,945	23,895	12,726	4,823	0	0	0	0	0	0	0	0	0	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
2. Operational Economic Cost	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
(4) Personnel Expences	0	0	0	0	283	283	283	283	283	283	283	283	283	283	283	
(5) Maintenance Expenses	0	0	0	0	1,749	1,749	1,749	1,749	1,749	1,749	1,749	1,749	1,749	1,749	1,749	
(6) Other Administrative Expenses	0	0	0	0	2,539	2,539	2,539	2,539	2,539	2,539	2,539	2,539	2,539	2,539	2,539	
Total Operational Economic Cost (4)+(5)+(6)	0	0	0	0	4,570	4,570	4,570	4,570	4,570	4,570	4,570	4,570	4,570	4,570	4,570	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Total Economic Cost 1+2	1,233	32,375	23,945	23,895	17,296	9,394	4,570	4,570	4,570	4,570	4,570	4,570	4,570	4,570	4,570	
	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	
Net Cash from Operational Activities	-1,764	-40,353	-31,204	-32,522	-13,261	4,816	19,587	27,640	36,178	44,478	53,236	62,477	72,229	82,519	82,519	

Economic Cashflow of Incremental Case (Million BDT)

Project EIRR =

		12	13	14	15	16	17	18	19	20	21	22	23	24	25
		2032	2033	2034	2035	2036	2037	2038	2039	2040	2041	2042	2043	2044	2045
Economic Benefit															
Domestic flights															
Consumer surplus of Incremental Bangladesh passengers		4,323	4,323	4,323	4,323	4,323	4,323	4,323	4,323	4,323	4,323	4,323	4,323	4,323	4,323
International flights		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Consumer surplus of Incremental Bangladesh passengers		81,434	81,434	81,434	81,434	81,434	81,434	81,434	81,434	81,434	81,434	81,434	81,434	81,434	81,434
Saved time for Existing Bangladesh passenger		1,332	1,332	1,332	1,332	1,332	1,332	1,332	1,332	1,332	1,332	1,332	1,332	1,332	1,332
Total of Economic Benefit		87,089	87,089	87,089	87,089	87,089	87,089	87,089	87,089	87,089	87,089	87,089	87,089	87,089	87,089
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Economic Cost		0	0	0	0	0	0	0	0	0	0	0	0	0	0
1. Capital Economic Cost		0	0	0	0	0	0	0	0	0	0	0	0	0	0
(1) Procurement / Construction		0	0	0	0	0	0	0	0	0	0	0	0	0	0
A:Building Work		0	0	0	7,679	0	0	0	0	0	0	0	0	0	0
B:Civil Work		0	0	0	0	0	0	0	0	0	0	0	0	0	0
C:Utility Work		0	0	0	0	0	0	0	0	0	0	0	0	0	0
D. Dispute Board		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Base Cost for JICA Financing		0	0	0	7,679	0	0	0	0	0	0	0	0	0	0
Physical Contingency		0	0	0	384	0	0	0	0	0	0	0	0	0	0
Sub Total (1)		0	0	0	8,063	0	0	0	0	0	0	0	0	0	0
(2) Consulting Services		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Base Cost		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Physical Contingency		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Sub Total (2)		0	0	0	0	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
(3) Administration Cost		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Capital Economic Cost	(1)+(2)+(3)	0	0	0	8,063	0	0	0	0	0	0	0	0	0	0
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
2. Operational Economic Cost		0	0	0	0	0	0	0	0	0	0	0	0	0	0
(4) Personnel Expences		283	283	283	283	283	283	283	283	283	283	283	283	283	283
(5) Maintenance Expenses		1,749	1,749	1,749	1,749	1,749	1,749	1,749	1,749	1,749	1,749	1,749	1,749	1,749	1,749
(6) Other Administrative Expenses		2,539	2,539	2,539	2,539	2,539	2,539	2,539	2,539	2,539	2,539	2,539	2,539	2,539	2,539
Total Operational Economic Cost	(4)+(5)+(6)	4,570	4,570	4,570	4,570	4,570	4,570	4,570	4,570	4,570	4,570	4,570	4,570	4,570	4,570
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Economic Cost	1+2	4,570	4,570	4,570	12,633	4,570	4,570	4,570	4,570	4,570	4,570	4,570	4,570	4,570	4,570
		0	0	0	0	0	0	0	0	0	0	0	0	0	0
Net Cash from Operational Activities		82,519	82,519	82,519	74,456	82,519	82,519	82,519	82,519	82,519	82,519	82,519	82,519	82,519	82,519