

**GOVERNMENT OF KHYBER PAKHTUNKHWA
DIRECTORATE GENERAL SMALL DAMS
IRRIGATION DEPARTMENT**



BID DRAWINGS

**CONSTRUCTION OF SANAM DAM PROJECT,
DISTRICT DIR LOWER**

Volume - II

APRIL 2022

DETAILED DESIGN REVIEW OF SANAM DAM , DISTRICT LOWER DIR
DRAWINGS - VOLUME-II
LIST OF DRAWINGS

SERIAL NO.	DRAWING NO.	TITLE
GENERAL		
1	BQB-SDP-GEN-01	PROJECT LOCATION MAP
2	BQB-SDP-GEN-02	PROJECT VICINITY MAP
3	BQB-SDP-GEN-03	TOPOGRAPHIC SURVEY
4	BQB-SDP-GEN-04	SATELLITE IMAGERY
5	BQB-SDP-GEN-05	DRAINAGE AREA SATELLITE IMAGERY
MAIN DAM		
6	BQB-SDP-MD-01	PROJECT LAYOUT PLAN
7	BQB-SDP-MD-02	EMBANKMENT DAM SETTING OUT PLAN
8	BQB-SDP-MD-03	EMBANKMENT DAM LONGITUDINAL SECTION
9	BQB-SDP-MD-04	EMBANKMENT DAM EXCAVATION PLAN
10	BQB-SDP-MD-05	EMBANKMENT EXCAVATION X-SECTION AT RD 0+000
11	BQB-SDP-MD-06	EMBANKMENT EXCAVATION X-SECTION AT RD 0+050
12	BQB-SDP-MD-07	EMBANKMENT EXCAVATION X-SECTION AT RD 0+100
13	BQB-SDP-MD-08	EMBANKMENT EXCAVATION X-SECTION AT RD 0+150
14	BQB-SDP-MD-09	EMBANKMENT EXCAVATION X-SECTION AT RD 0+200
15	BQB-SDP-MD-10	EMBANKMENT EXCAVATION X-SECTION AT RD 0+250
16	BQB-SDP-MD-11	EMBANKMENT EXCAVATION X-SECTION AT RD 0+300
17	BQB-SDP-MD-12	EMBANKMENT EXCAVATION X-SECTION AT RD 0+350
18	BQB-SDP-MD-13	EMBANKMENT EXCAVATION X-SECTION AT RD 0+400
19	BQB-SDP-MD-14	EMBANKMENT EXCAVATION X-SECTION AT RD 0+450
20	BQB-SDP-MD-15	EMBANKMENT EXCAVATION X-SECTION AT RD 0+500
21	BQB-SDP-MD-16	EMBANKMENT EXCAVATION X-SECTION AT RD 0+550
22	BQB-SDP-MD-17	EMBANKMENT EXCAVATION X-SECTION AT RD 0+600
23	BQB-SDP-MD-18	EMBANKMENT EXCAVATION X-SECTION AT RD 0+650
24	BQB-SDP-MD-19	EMBANKMENT EXCAVATION X-SECTION AT RD 0+700
25	BQB-SDP-MD-20	EMBANKMENT EXCAVATION X-SECTION AT RD 0+750
26	BQB-SDP-MD-21	EMBANKMENT EXCAVATION X-SECTION AT RD 0+800
27	BQB-SDP-MD-22	EMBANKMENT EXCAVATION X-SECTION AT RD 0+840
28	BQB-SDP-MD-23	EMBANKMENT EXCAVATION X-SECTION AT RD 0+884
29	BQB-SDP-MD-24	EMBANKMENT DAM GROUTING NOTES

SERIAL NO.	DRAWING NO.	TITLE
30	BQB-SDP-MD-25	EMBANKMENT DAM & SPILLWAY GROUTING
31	BQB-SDP-MD-26	EMBANKMENT DAM PLAN
32	BQB-SDP-MD-27	MAIN EMBANKMENT X-SECTION AT RD 0+000
33	BQB-SDP-MD-28	MAIN EMBANKMENT X-SECTION AT RD 0+050
34	BQB-SDP-MD-29	MAIN EMBANKMENT X-SECTION AT RD 0+100
35	BQB-SDP-MD-30	MAIN EMBANKMENT X-SECTION AT RD 0+150
36	BQB-SDP-MD-31	MAIN EMBANKMENT X-SECTION AT RD 0+200
37	BQB-SDP-MD-32	MAIN EMBANKMENT X-SECTION AT RD 0+250
38	BQB-SDP-MD-33	MAIN EMBANKMENT X-SECTION AT RD 0+300
39	BQB-SDP-MD-34	MAIN EMBANKMENT X-SECTION AT RD 0+350
40	BQB-SDP-MD-35	MAIN EMBANKMENT X-SECTION AT RD 0+400
41	BQB-SDP-MD-36	MAIN EMBANKMENT X-SECTION AT RD 0+450
42	BQB-SDP-MD-37	MAIN EMBANKMENT X-SECTION AT RD 0+500
43	BQB-SDP-MD-38	MAIN EMBANKMENT X-SECTION AT RD 0+550
44	BQB-SDP-MD-39	MAIN EMBANKMENT X-SECTION AT RD 0+600
45	BQB-SDP-MD-40	MAIN EMBANKMENT X-SECTION AT RD 0+650
46	BQB-SDP-MD-41	MAIN EMBANKMENT X-SECTION AT RD 0+700
47	BQB-SDP-MD-42	MAIN EMBANKMENT X-SECTION AT RD 0+750
48	BQB-SDP-MD-43	MAIN EMBANKMENT X-SECTION AT RD 0+800
49	BQB-SDP-MD-44	MAIN EMBANKMENT X-SECTION AT RD 0+840
50	BQB-SDP-MD-45	MAIN EMBANKMENT X-SECTION AT RD 0+884
51	BQB-SDP-MD-46	SPECIFICATION GRADING LIMITS FOR FILL MATERIAL
52	BQB-SDP-MD-47	MAIN EMBANKMENT TYPICAL INSTRUMENTATION
53	BQB-SDP-MD-48	LEFT ABUTMENT ACCESS ROAD LAYOUT PLAN
54	BQB-SDP-MD-48A	LEFT ABUTMENT ACCESS ROAD PLAN & PROFILE RD 0+000 TO 0+750
55	BQB-SDP-MD-49	LEFT ABUTMENT ACCESS ROAD PLAN & PROFILE RD 0+750 TO 1+471
56	BQB-SDP-MD-50	LEFT ABUTMENT ACCESS ROAD TYPICAL SECTIONS
57	BQB-SDP-MD-51	RIVER DIVERSION PLAN
58	BQB-SDP-MD-52	RIVER DIVERSION SECTION
59	BQB-SDP-MD-53	RIVER DIVERSION SECTIONS
60	BQB-SDP-MD-54	PROJECT DISPOSAL / DUMPING AREAS LAYOUT PLAN

DETAILED DESIGN REVIEW OF SANAM DAM , DISTRICT LOWER DIR
DRAWINGS - VOLUME-II
LIST OF DRAWINGS

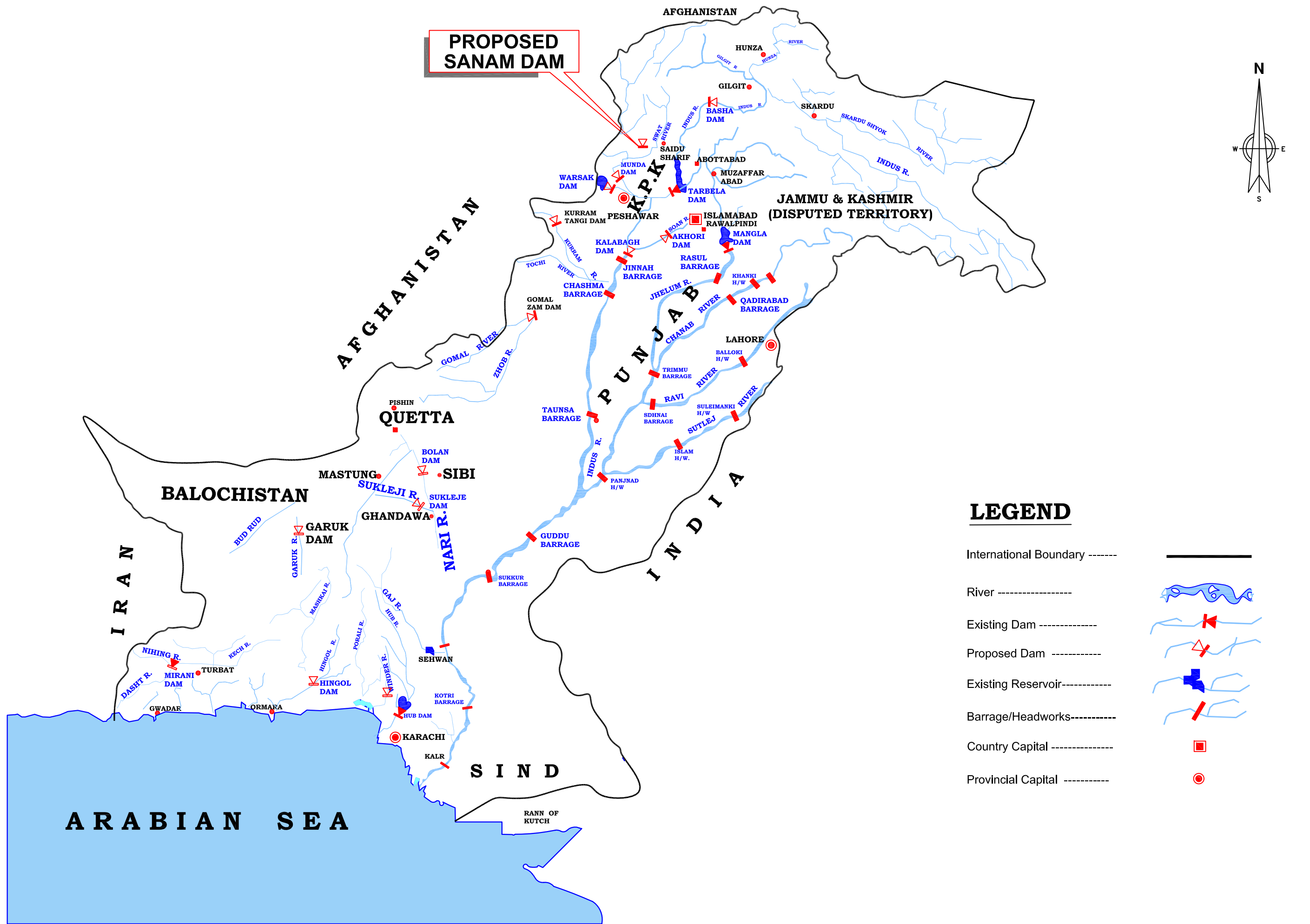
SERIAL NO.	DRAWING NO.	TITLE
SPILLWAY		
61	BQB-SDP-SP-01	SPILLWAY GENERAL LAYOUT PLAN
62	BQB-SDP-SP-02	SPILLWAY STRUCTURE PLAN
63	BQB-SDP-SP-03	SPILLWAY CROSS SECTION AT CENTERLINE
64	BQB-SDP-SP-04	SPILLWAY CROSS SECTION RD 0+885
65	BQB-SDP-SP-05	SPILLWAY CROSS SECTIONS RD 0+900 & 0+925
66	BQB-SDP-SP-06	SPILLWAY CROSS SECTIONS RD 0+950 & 0+975
67	BQB-SDP-SP-07	SPILLWAY CROSS SECTIONS RD 1+000 & 1+025
68	BQB-SDP-SP-08	SPILLWAY CROSS SECTIONS RD 1+050 & 1+075
69	BQB-SDP-SP-09	SPILLWAY CROSS SECTIONS RD 1+100 & 1+125
70	BQB-SDP-SP-10	SPILLWAY CROSS SECTION X-SEC-1
71	BQB-SDP-SP-11	SPILLWAY CROSS SECTION X-SEC-2
72	BQB-SDP-SP-12	SPILLWAY CROSS SECTION X-SEC-3
73	BQB-SDP-SP-13	SPILLWAY CROSS SECTION X-SEC-4
74	BQB-SDP-SP-14	SPILLWAY CROSS SECTION X-SEC-5
75	BQB-SDP-SP-15	SPILLWAY CROSS SECTION X-SEC-6
76	BQB-SDP-SP-16	SPILLWAY CROSS SECTION X-SEC-7 & X-SEC-8
77	BQB-SDP-SP-17	SPILLWAY CROSS SECTION X-SEC-9 & X-SEC-10
78	BQB-SDP-SP-18	GENERAL NOTES FOR STRUCTURES
79	BQB-SDP-SP-19	CONCRETE OUTLINE SECTIONS
80	BQB-SDP-SP-20	CONCRETE OUTLINE SECTIONS
81	BQB-SDP-SP-21	SPILLWAY & STILLING BASIN REINFORCEMENT
82	BQB-SDP-SP-22	PIER & GALLERY REINFORCEMENT
83	BQB-SDP-SP-23	JOINT DETAILS

INTAKE & OUTLET STRUCTURE		
84	BQB-SDP-INT-01	INTAKE & OUTLET STRUCTURE LAYOUT PLAN
85	BQB-SDP-INT-02	INTAKE & OUTLET STRUCTURE L-SECTION AT RD 0+300
86	BQB-SDP-INT-03	INTAKE STRUCTURE PLAN & SECTION
87	BQB-SDP-INT-04	OUTLET STRUCTURE PLAN & SECTION
88	BQB-SDP-INT-05	INTAKE STRUCTURE, CONDUIT REINFORCEMENT
89	BQB-SDP-INT-06	OUTLET STRUCTURE REINFORCEMENT

IRRIGATION SYSTEM		
90	BQB-SDP-IN-GEN-01	GENERAL NOTES FOR IRRIGATION STRUCTURES

SERIAL NO.	DRAWING NO.	TITLE
91	BQB-SDP-IN-P-01	IRRIGATION NETWORK PLAN
92	BQB-SDP-M-CA-01	COMMAND AREA CHAKBANDI LAYOUT PLAN
93	BQB-SDP-MC-PP-01	MAIN CHANNEL PLAN & PROFILE FROM RD 0+000 TO 3+500
94	BQB-SDP-MC-PP-02	MAIN CHANNEL PLAN & PROFILE FROM RD 3+500 TO 7+000
95	BQB-SDP-MC-PP-03	MAIN CHANNEL PLAN & PROFILE FROM RD 7+000 TO 10+500
96	BQB-SDP-MC-PP-04	MAIN CHANNEL PLAN & PROFILE FROM RD 10+500 TO 14+000
97	BQB-SDP-MC-PP-05	MAIN CHANNEL PLAN & PROFILE FROM RD 14+000 TO 17+500
98	BQB-SDP-MC-PP-06	MAIN CHANNEL PLAN & PROFILE FROM RD 17+500 TO 21+000
99	BQB-SDP-MC-PP-07	MAIN CHANNEL PLAN & PROFILE FROM RD 21+000 TO 24+500
100	BQB-SDP-MC-PP-08	MAIN CHANNEL PLAN & PROFILE FROM RD 24+500 TO 25+719
101	BQB-SDP-MC-CS-01	MAIN CHANNEL CROSS SECTIONS FROM RD 0+000 TO 2+000
102	BQB-SDP-MC-CS-02	MAIN CHANNEL CROSS SECTIONS FROM RD 2+500 TO 6+000
103	BQB-SDP-MC-CS-03	MAIN CHANNEL CROSS SECTIONS FROM RD 7+000 TO 10+000
104	BQB-SDP-MC-CS-04	MAIN CHANNEL CROSS SECTIONS FROM RD 11+000 TO 15+000
105	BQB-SDP-MC-CS-05	MAIN CHANNEL CROSS SECTIONS FROM RD 17+000 TO 23+500
106	BQB-SDP-MC-CS-06	MAIN CHANNEL CROSS SECTIONS FROM RD 24+500 TO 25+500
107	BQB-SDP-ID-PP-01	IRRIGATION DISTRIBUTARY PLAN & PROFILE FROM RD 0+000 TO 3+500
108	BQB-SDP-ID-PP-02	IRRIGATION DISTRIBUTARY PLAN & PROFILE FROM RD 3+500 TO 7+000
109	BQB-SDP-ID-PP-03	IRRIGATION DISTRIBUTARY PLAN & PROFILE FROM RD 7+000 TO 10+500
110	BQB-SDP-ID-PP-04	IRRIGATION DISTRIBUTARY PLAN & PROFILE FROM RD 10+500 TO 14+000
111	BQB-SDP-ID-PP-05	IRRIGATION DISTRIBUTARY PLAN & PROFILE FROM RD 14+000 TO 17+436
112	BQB-SDP-ID-CS-01	IRRIGATION DISTRIBUTARY CROSS SECTION FROM RD 0+000 TO 3+500
113	BQB-SDP-ID-CS-02	IRRIGATION DISTRIBUTARY CROSS SECTION FROM RD 4+500 TO 7+000
114	BQB-SDP-ID-CS-03	IRRIGATION DISTRIBUTARY CROSS SECTION FROM RD 8+000 TO 10+500
115	BQB-SDP-ID-CS-04	IRRIGATION DISTRIBUTARY CROSS SECTION FROM RD 11+000 TO 14+000
116	BQB-SDP-ID-CS-05	IRRIGATION DISTRIBUTARY CROSS SECTION FROM RD 15+000 TO 17+000
117	BQB-SDP-MC-C-01	CHANNEL SECTIONS (TYP.)
118	BQB-SDP-FS-01	FALL STRUCTURE (TYP.) DETAILS
119	BQB-SDP-DB-01	DISTRIBUTARY BOX (TYP.) DETAILS
120	BQB-SDP-AQS-01	AQUEDUCT STRUCTURE (TYP.) PLAN & SECTIONS
121	BQB-SDP-AQS-02	AQUEDUCT STRUCTURE (TYP.) SECTION & DETAIL
122	BQB-SDP-CHS-01	CHUTE STRUCTURE (TYP.) DETAILS
123	BQB-SDP-SYS-01	SYPHON STRUCTURE (TYP.) DETAILS
124	BQB-SDP-MC-C-01	COORDINATES OF MAIN CHANNEL
125	BQB-SDP-D-C-01	COORDINATES OF DISTRIBUTARY

GENERAL



PROPOSED SANAM DAM

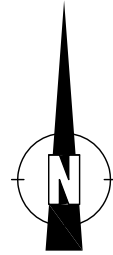
LEGEND

- International Boundary -----
- River -----
- Existing Dam -----
- Proposed Dam -----
- Existing Reservoir-----
- Barrage/Headworks-----
- Country Capital -----
- Provincial Capital -----

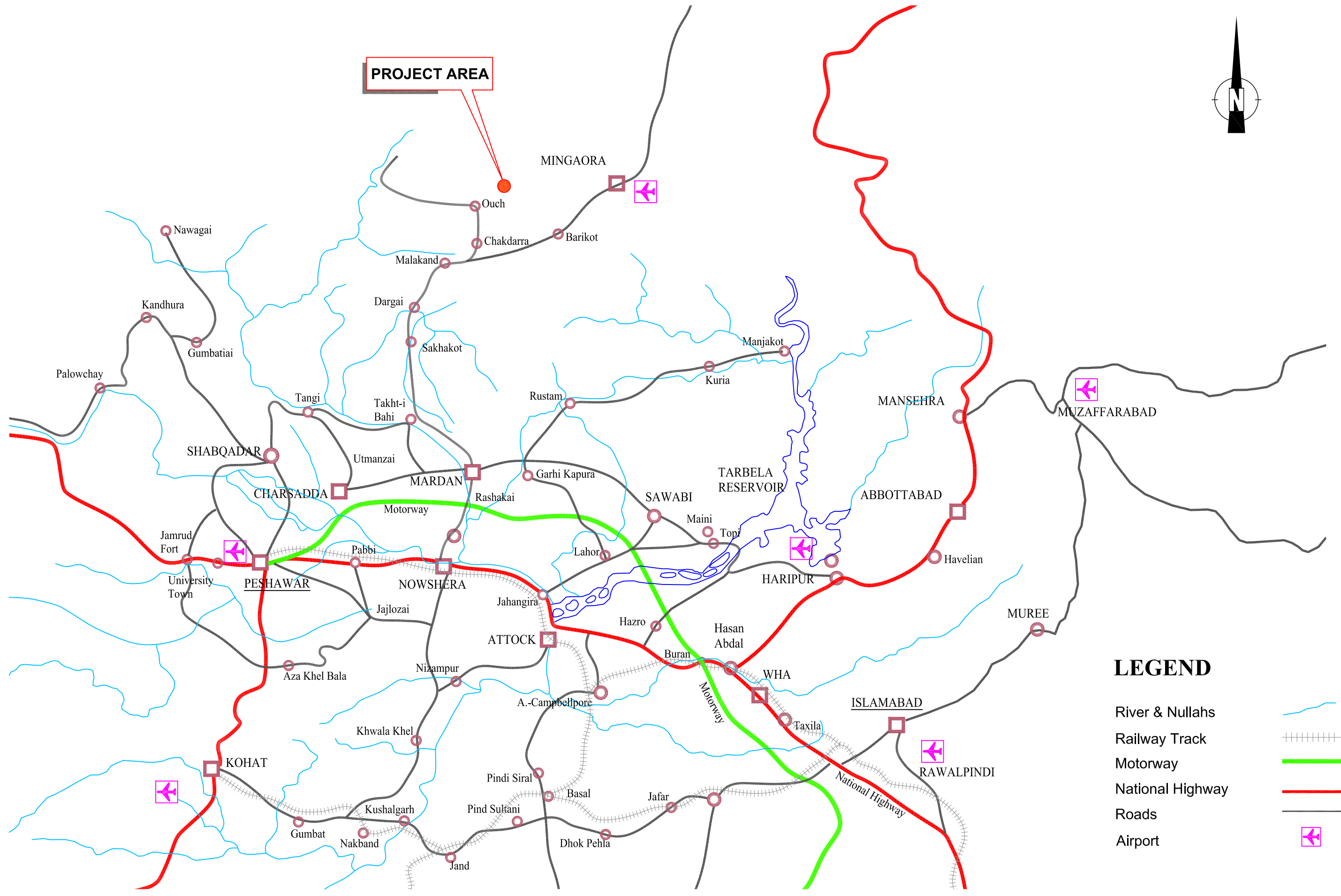
REV.	DATE	DESCRIPTION

DRAWN	IMTIAZ AHMAD
CHECKED	DR. M. IRFAN
SUBMITTED	DR. M. IRFAN
APPROVED	MANZAR MUMTAZ

PROJECT LOCATION MAP	
DATE:	May, 2021
DRAWING NO.	BQB-SDP-GEN-01



PROJECT AREA



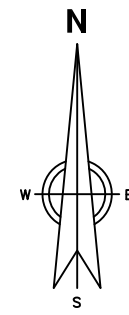
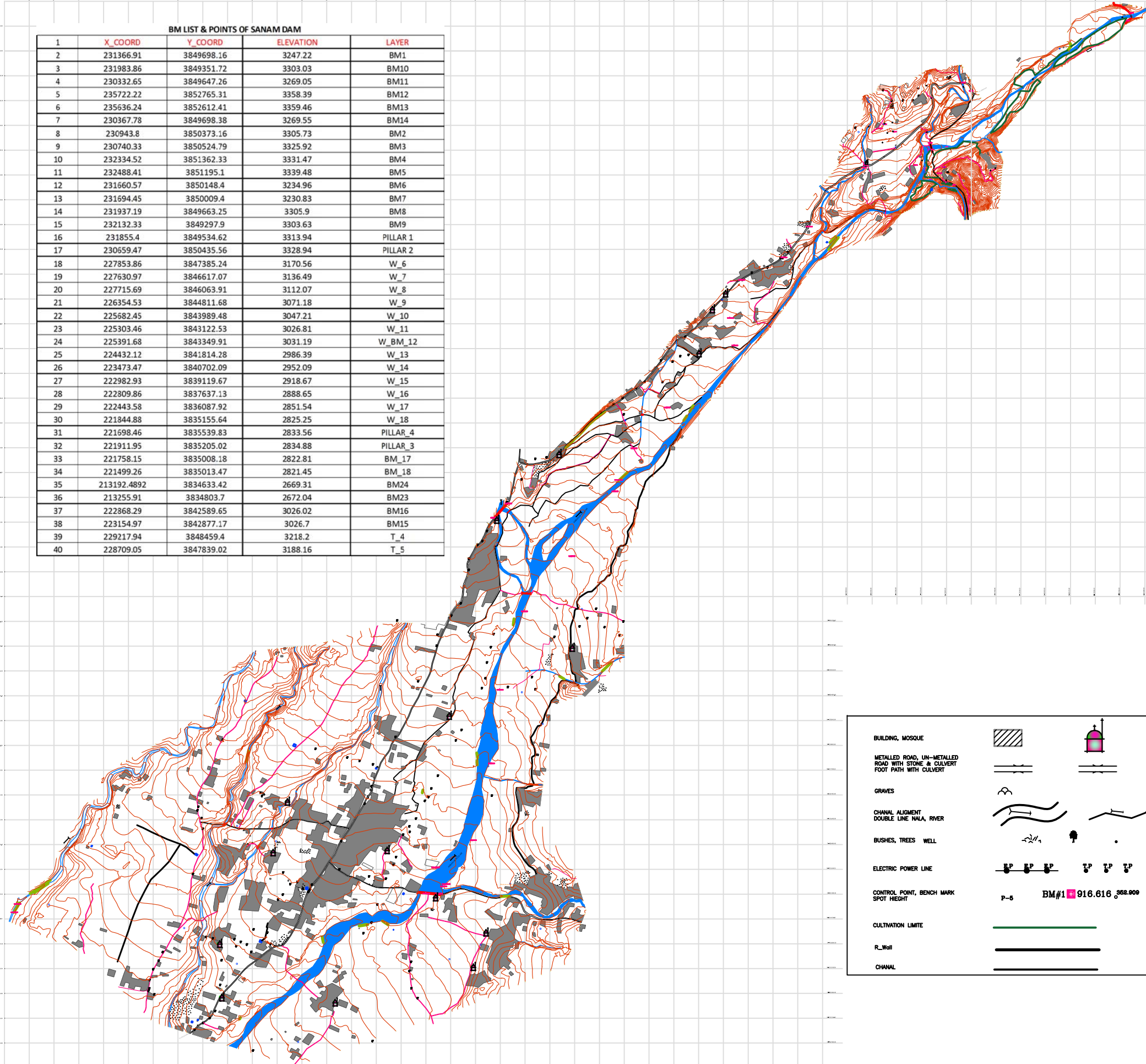
LEGEND

- River & Nullahs
- Railway Track
- Motorway
- National Highway
- Roads
- Airport

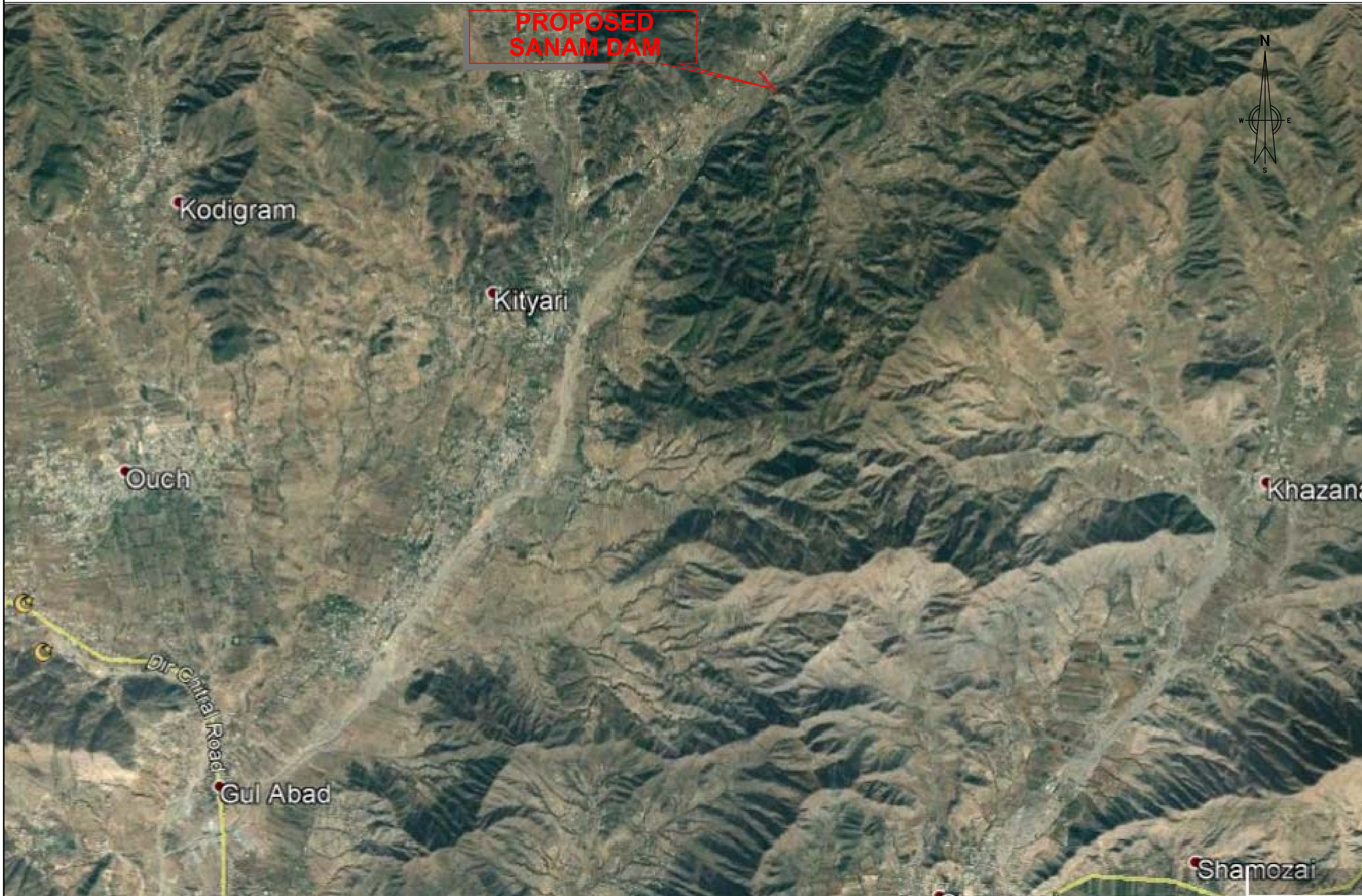
REV.	DATE	DESCRIPTION

DRAWN	IMTIAZ AHMAD
CHECKED	DR. M. IRFAN
SUBMITTED	DR. M. IRFAN
APPROVED	MANZAR MUMTAZ

BM LIST & POINTS OF SANAM DAM				
	X_COORD	Y_COORD	ELEVATION	LAYER
1				
2	231366.91	3849698.16	3247.22	BM1
3	231983.86	3849351.72	3303.03	BM10
4	230332.65	3849647.26	3269.05	BM11
5	235722.22	3852765.31	3358.39	BM12
6	235636.24	3852612.41	3359.46	BM13
7	230367.78	3849698.38	3269.55	BM14
8	230943.8	3850373.16	3305.73	BM2
9	230740.33	3850524.79	3325.92	BM3
10	232334.52	3851362.33	3331.47	BM4
11	232488.41	3851195.1	3339.48	BM5
12	231660.57	3850148.4	3234.96	BM6
13	231694.45	3850009.4	3230.83	BM7
14	231937.19	3849663.25	3305.9	BM8
15	232132.33	3849297.9	3303.63	BM9
16	231855.4	3849534.62	3313.94	PILLAR 1
17	230659.47	3850435.56	3328.94	PILLAR 2
18	227853.86	3847385.24	3170.56	W_6
19	227630.97	3846617.07	3136.49	W_7
20	227715.69	3846063.91	3112.07	W_8
21	226354.53	3844811.68	3071.18	W_9
22	225682.45	3843989.48	3047.21	W_10
23	225303.46	3843122.53	3026.81	W_11
24	225391.68	3843349.91	3031.19	W_BM_12
25	224432.12	3841814.28	2986.39	W_13
26	223473.47	3840702.09	2952.09	W_14
27	222982.93	3839119.67	2918.67	W_15
28	222809.86	3837637.13	2888.65	W_16
29	222443.58	3836087.92	2851.54	W_17
30	221844.88	3835155.64	2825.25	W_18
31	221698.46	3835539.83	2833.56	PILLAR_4
32	221911.95	3835205.02	2834.88	PILLAR_3
33	221758.15	3835008.18	2822.81	BM_17
34	221499.26	3835013.47	2821.45	BM_18
35	213192.4892	3834633.42	2669.31	BM24
36	213255.91	3834803.7	2672.04	BM23
37	222868.29	3842589.65	3026.02	BM16
38	223154.97	3842877.17	3026.7	BM15
39	229217.94	3848459.4	3218.2	T_4
40	228709.05	3847839.02	3188.16	T_5

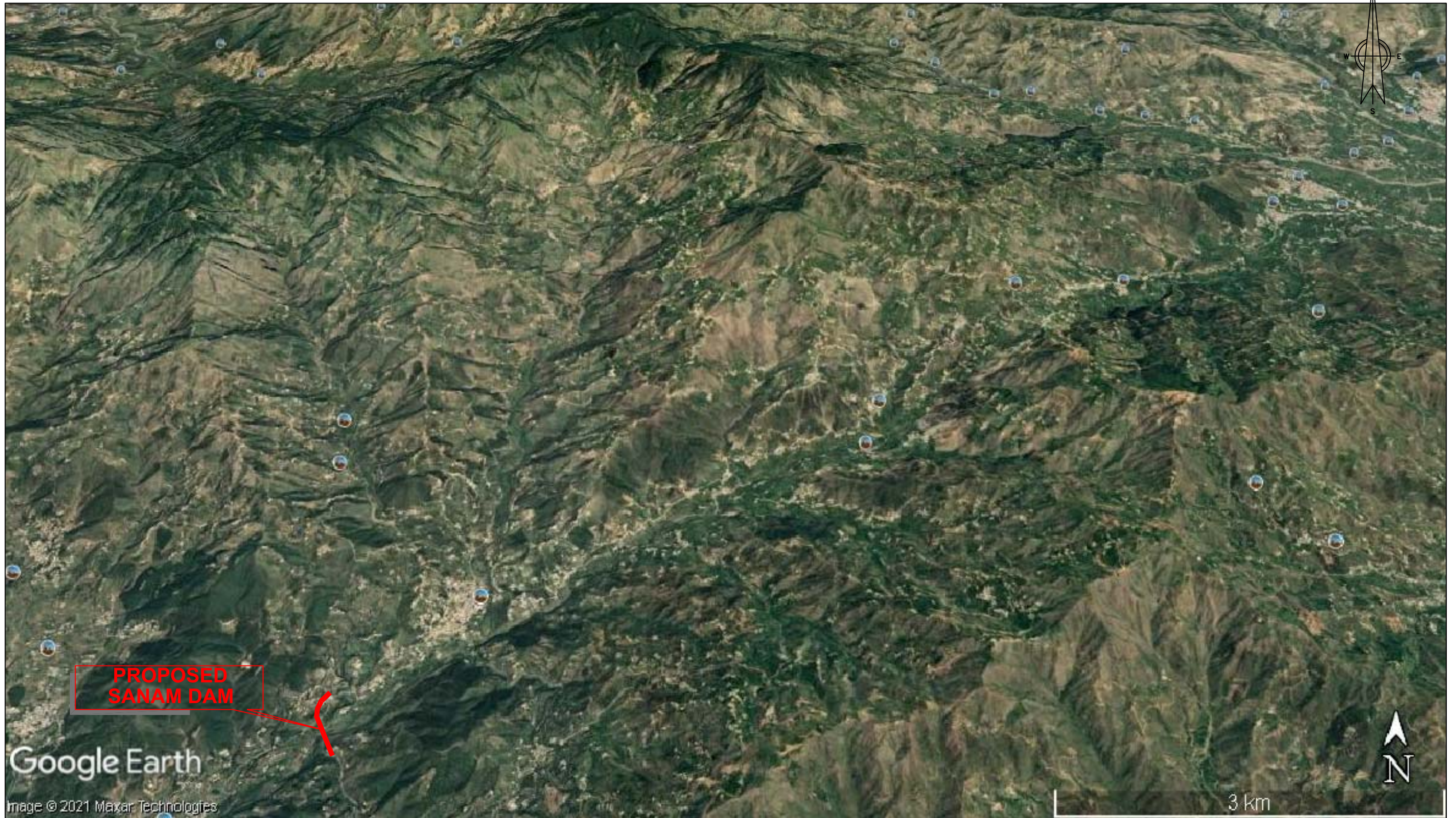


BUILDING, MOSQUE		
METALLED ROAD, UN-METALLED ROAD WITH STONE & CULVERT FOOT PATH WITH CULVERT		
GRAVES		
CHANAL ALIGNMENT DOUBLE LINE NAHA, RIVER		
BUSHES, TREES WELL		
ELECTRIC POWER LINE		
CONTROL POINT, BENCH MARK SPOT HEIGHT	P-5	BM#1 916.616 352.909
CULTIVATION LIMITE		
R_Well		
CHANAL		



REV.	DATE	DESCRIPTION

DRAWN	IMTIAZ AHMAD
CHECKED	DR. M. IRFAN
SUBMITTED	DR. M. IRFAN
APPROVED	MANZAR MUMTAZ



SMALL DAMS ORGANIZATION
GOVERNMENT OF KHYBER PAKHTUNKHWA

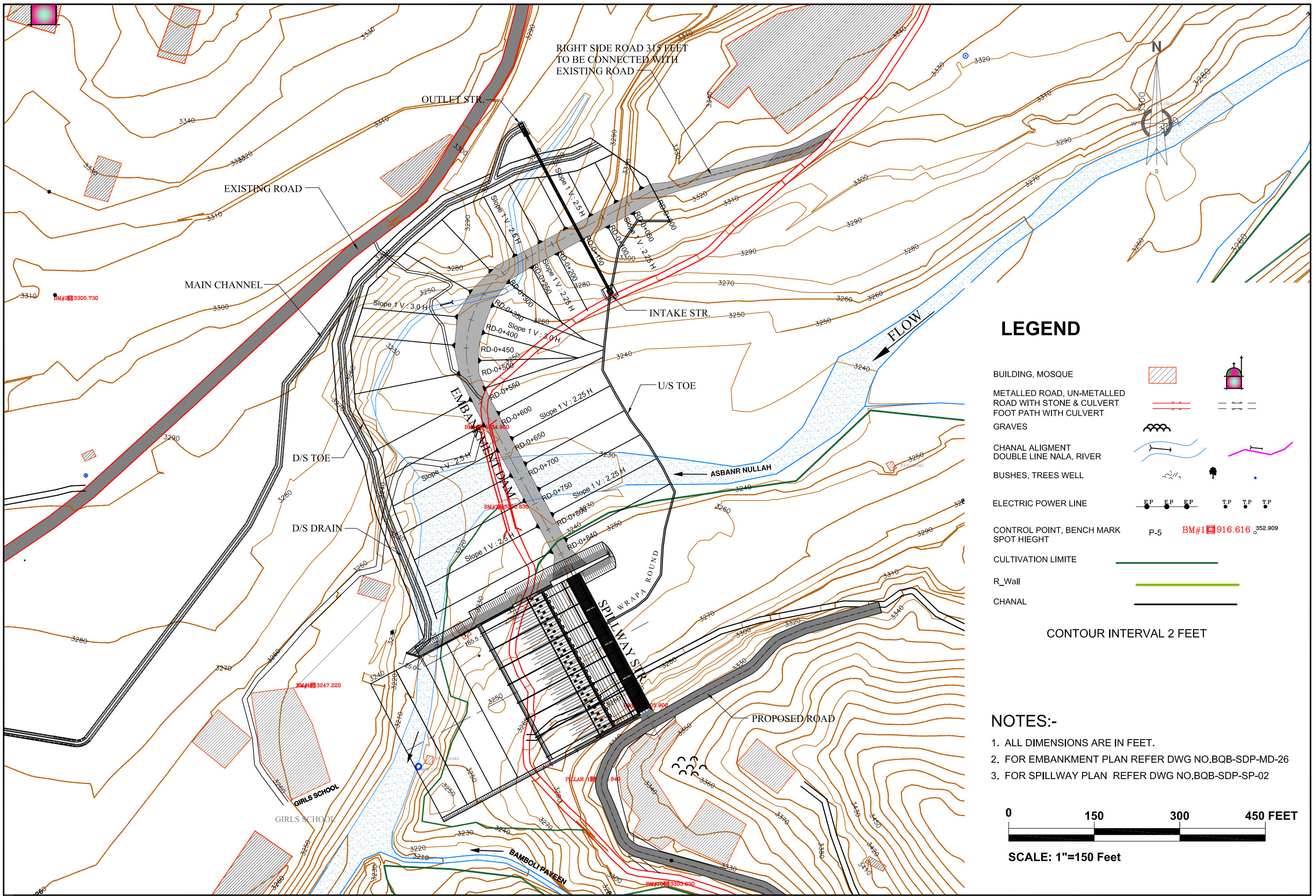


BARQAAB CONSULTING SERVICES
(PVT)LIMITED LAHORE







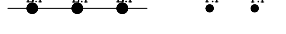






SANAM DAM PROJECT
LOWER DIR

			DRAWN	IMTIAZ AHMAD	DRAINAGE AREA SATELLITE IMAGERY DATE: June, 2021 DRAWING NO. BQB-SDP-GEN-05
			CHECKED	ALI ARSLAN	
			SUBMITTED	ALI ARSLAN	
REV.	DATE	DESCRIPTION	APPROVED	MANZAR MUMTAZ	

MAIN DAM



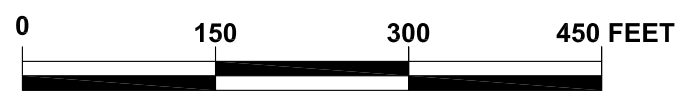
LEGEND

- BUILDING, MOSQUE 
- METALLED ROAD, UN-METALLED ROAD WITH STONE & CULVERT 
- FOOT PATH WITH CULVERT 
- GRAVES 
- CHANAL ALIGNMENT 
- DOUBLE LINE NALA, RIVER 
- BUSHES, TREES WELL 
- ELECTRIC POWER LINE 
- CONTROL POINT, BENCH MARK 
- SPOT HIEGHT 
- CULTIVATION LIMITE 
- R_Wall 
- CHANAL 

CONTOUR INTERVAL 2 FEET

NOTES:-

1. ALL DIMENSIONS ARE IN FEET.
2. FOR EMBANKMENT PLAN REFER DWG NO.BQB-SDP-MD-26
3. FOR SPILLWAY PLAN REFER DWG NO.BQB-SDP-SP-02



SCALE: 1"=150 Feet

REV.	DATE	DESCRIPTION

DRAWN	IMTIAZ AHMAD
CHECKED	DR. M. IRFAN
SUBMITTED	DR. M. IRFAN
APPROVED	MANZAR MUMTAZ

PROJECT LAYOUT PLAN	
DATE: May, 2021	DRAWING NO. BQB-SDP-MD-01

232600 E 232600 E 232600 E 232600 E 232600 E 232600 E 232600 E 232600 E 232600 E 232600 E

3849400 N

3849400 N

3849400 N

3849400 N

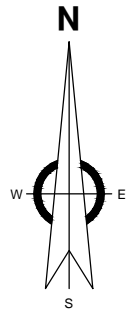
3849400 N

3849400 N

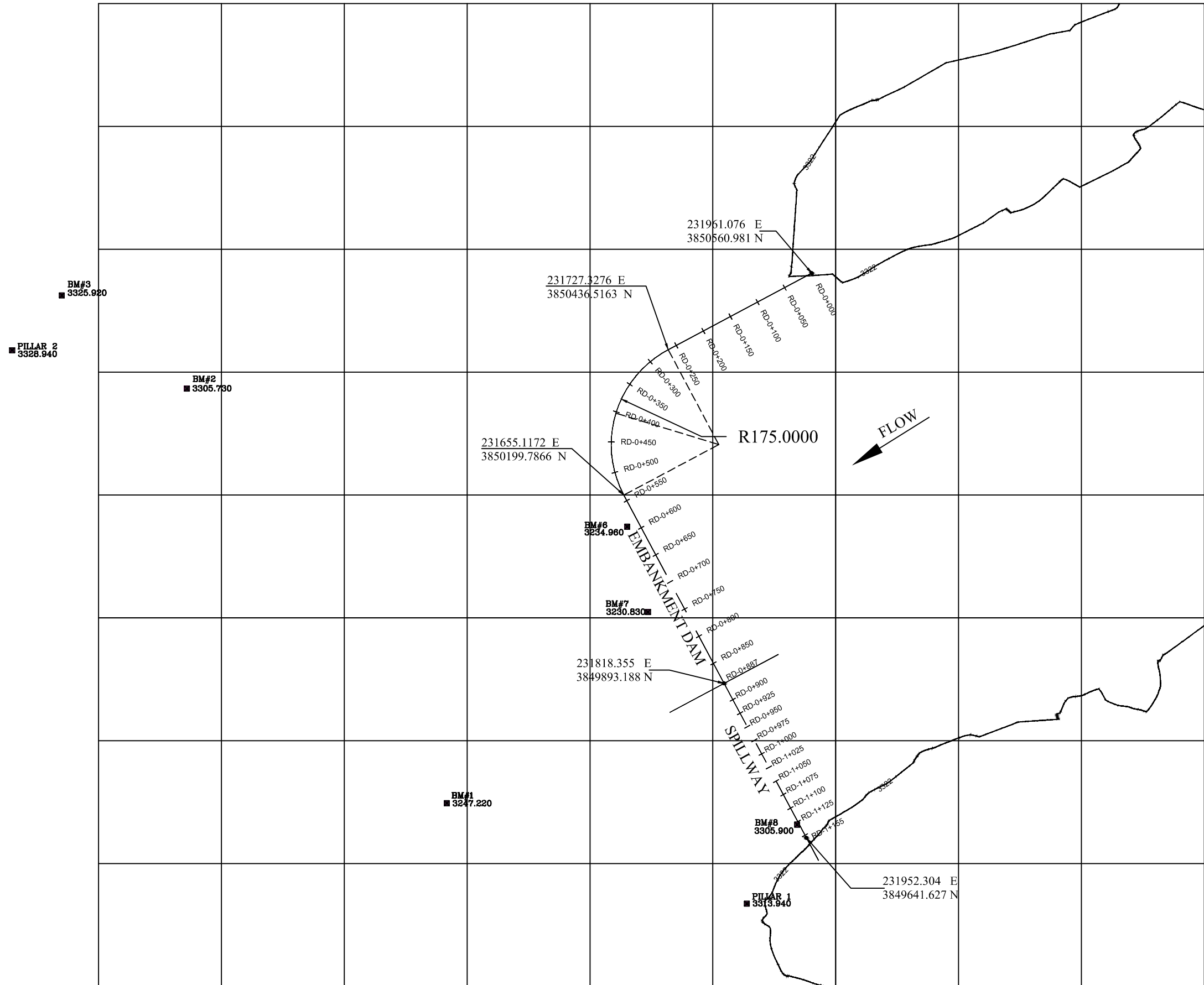
3849400 N

3849400 N

3849400 N

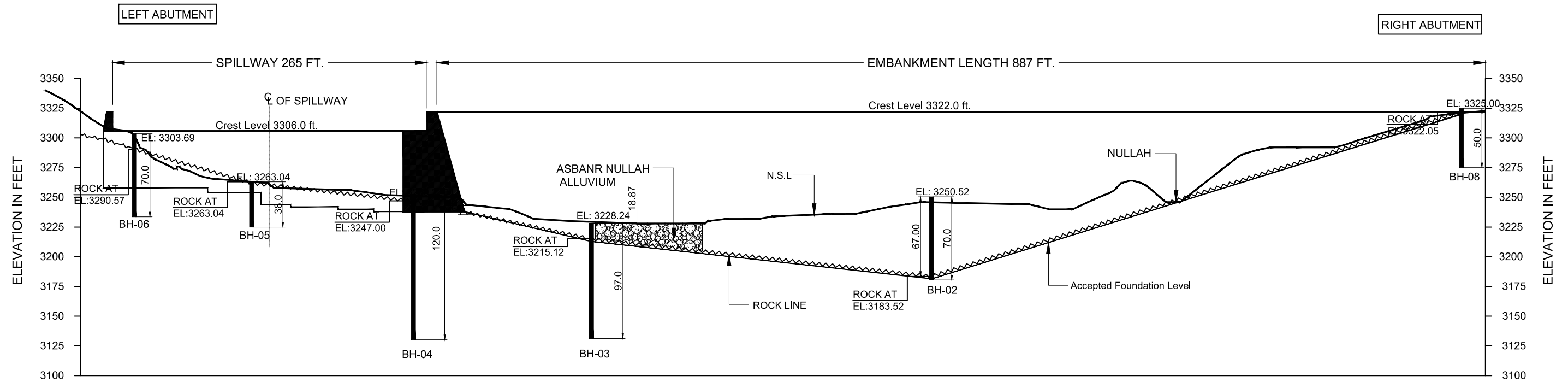


DESCRIPTION	COORDINATES
Dam Right Abutment	231961.076 E 3850560.981 N
Start of Curve Dam	231727.3276 E 3850436.5163 N
End of Curve Dam	231655.1172 E 3850199.7866 N
Dam Left Abutment	231818.355 E 3849893.188 N
Spillway Right Abutment	231818.355 E 3849893.188 N
Spillway Left Abutment	231952.304 E 3849641.627 N
Pillar - 1	231855.400 E 3849534.620 N
Pillar - 2	230659.470 E 3850435.560 N
BM - 1	231366.910 E 3849698.160 N
BM - 2	230943.800 E 3850373.160 N
BM - 3	230740.220 E 3850524.820 N
BM - 6	231660.570 E 3850148.400 N
BM - 7	231694.450 E 3850009.410 N
BM - 8	231937.190 E 3849663.250 N



NOTES:-

1. ALL DIMENSIONS ARE IN FEET.
2. FOR PLAN REFER DWG NO. BQB-SDP-MD-04 & 26
3. FOR X-SECTIONS REFER DWG NO. BQB-SDP-MD-05 TO 23 & 27 TO 45



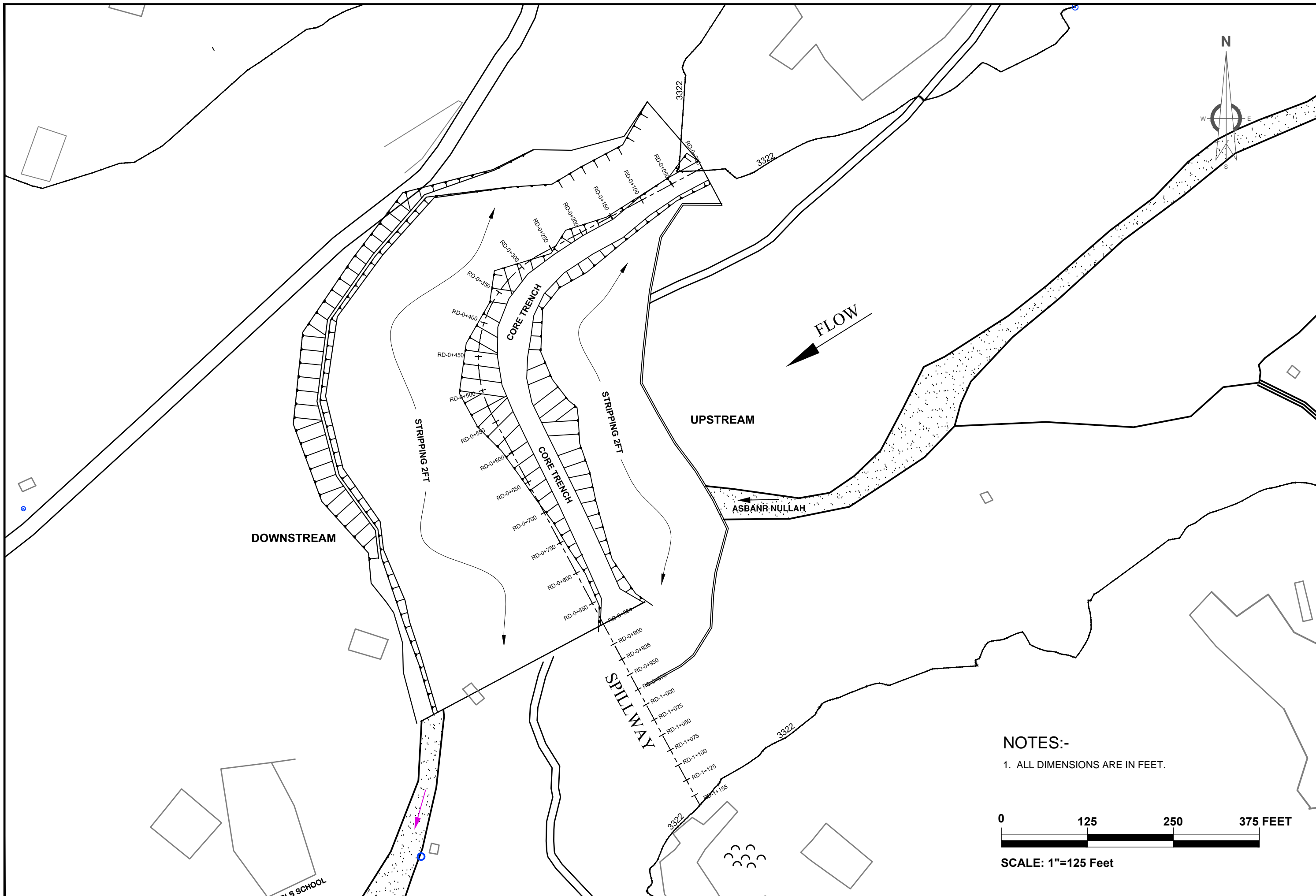
N.S.L	3322.83	3315.00	00+000
A.F.L	3315.68	3312.00	00+050
RDs	3300.25	3295.17	00+100
	3292.00	3279.67	00+150
	3287.63	3264.17	00+200
	3251.68	3248.68	00+250
	3264.00	3233.18	00+300
	3240.00	3217.69	00+350
	3244.36	3202.19	00+400
	3245.49	3186.70	00+450
	3242.35	3185.14	00+500
	3236.00	3190.63	00+550
	3234.02	3196.12	00+600
	3230.67	3201.62	00+650
	3228.06	3207.12	00+700
	3229.24	3212.61	00+750
	3231.84	3223.07	00+800
	3242.99	3234.06	00+850
	3250.28	3239.56	00+875
	3251.09	3240.00	00+900
	3251.91	3241.00	00+925
	3255.22	3244.00	00+950
	3256.59	3246.00	00+975
	3257.35	3246.00	01+000
	3261.42	3247.00	01+025
	3263.88	3254.00	01+050
	3266.95	3260.00	01+075
	3275.19	3268.00	01+100
	3284.82	3268.00	01+125
	3306.55	3268.00	01+150

LEGEND

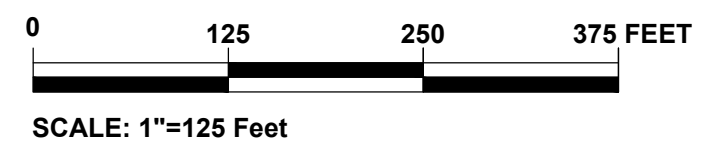
- Natural Surface Level (N.S.L)
- Accepted Foundation Level (A.F.L)
- ~ Rock Line

NOTES:-

1. ALL DIMENSIONS ARE IN FEET.



NOTES:-
 1. ALL DIMENSIONS ARE IN FEET.



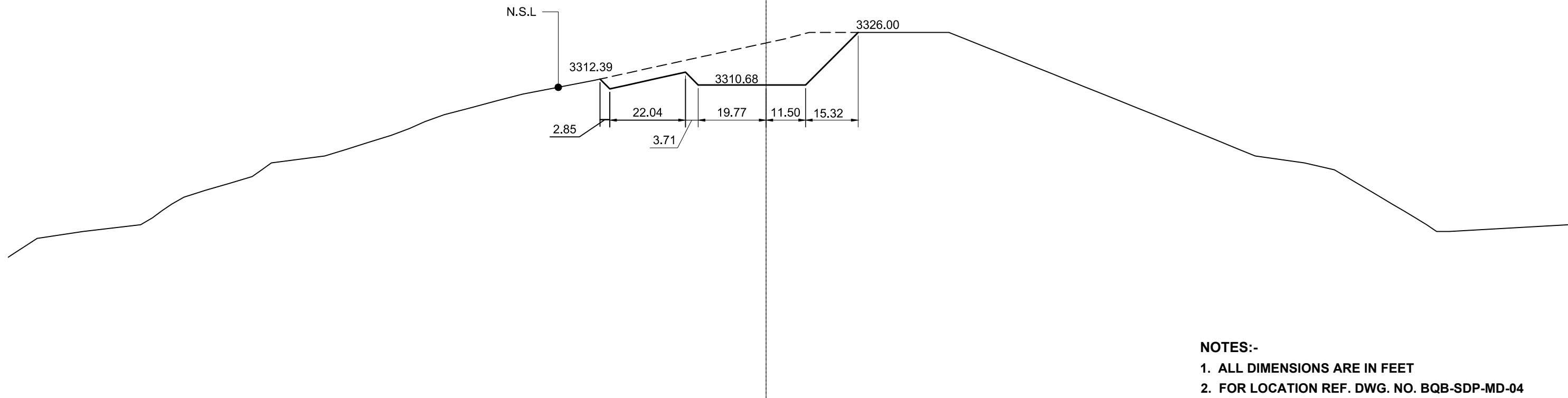
REV.	DATE	DESCRIPTION

DRAWN	IMTIAZ AHMAD
CHECKED	DR. M. IRFAN
SUBMITTED	DR. M. IRFAN
APPROVED	MANZAR MUMTAZ

U/S

D/S

☉ OF DAM AXIS



NOTES:-

1. ALL DIMENSIONS ARE IN FEET
2. FOR LOCATION REF. DWG. NO. BQB-SDP-MD-04
3. DAM BODY SHOULD BE PLACED ON SOUND ROCK OR AS DIRECTED BY ENGINEER AT SITE



SCALE: 1"=30 Feet



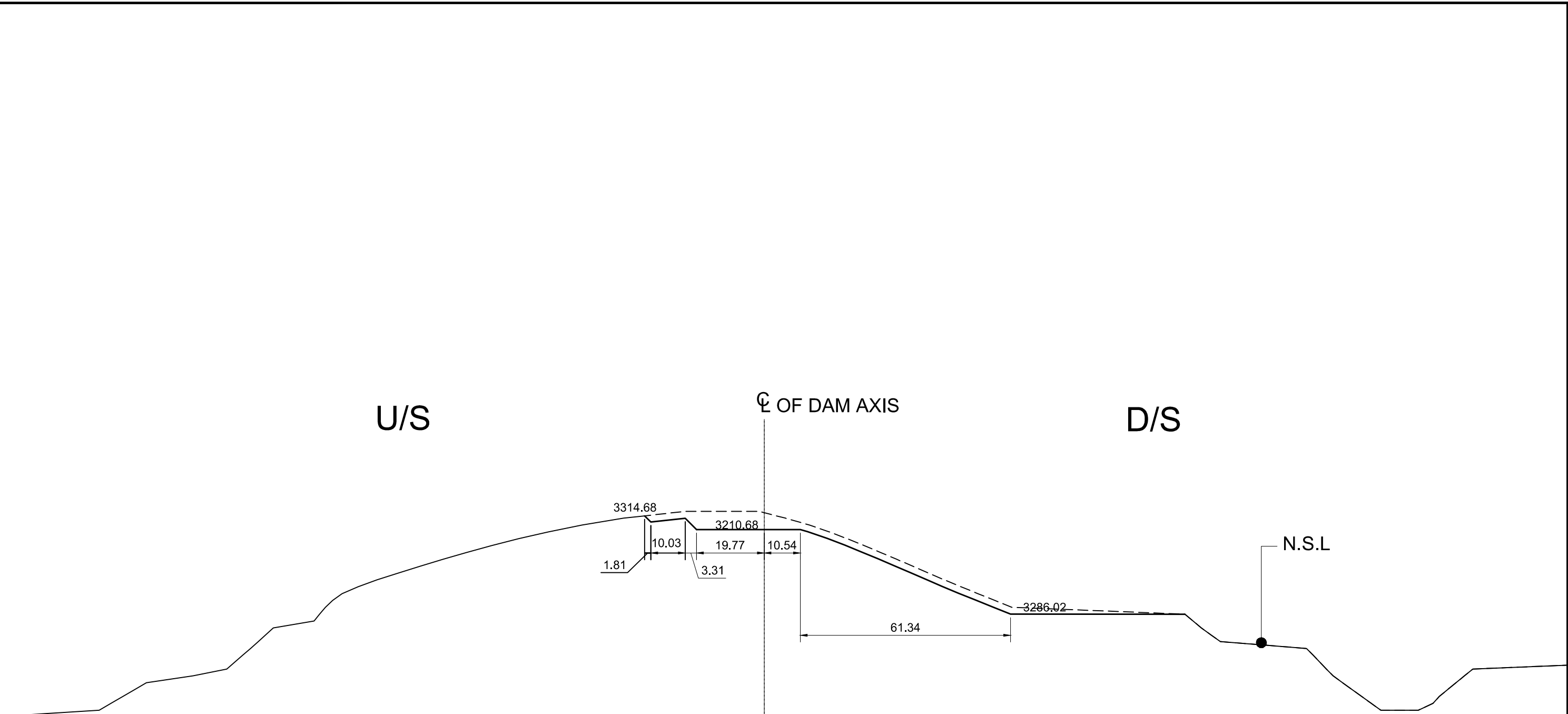
SMALL DAMS ORGANIZATION
GOVERNMENT OF KHYBER PAKHTUNKHWA



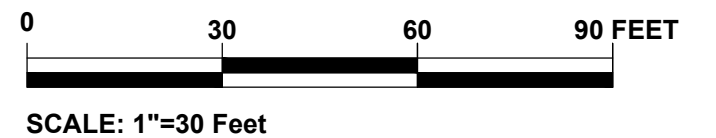
BARQAAB CONSULTING SERVICES
(PVT)LIMITED LAHORE

SANAM DAM PROJECT
LOWER DIR

REV.	DATE	DESCRIPTION	DRAWN	IMTIAZ AHMAD	EMBANKMENT EXCAVATION X-SECTION AT RD 0+000 DATE: June, 2021 DRAWING NO. BQB-SDP-MD-05
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			SUBMITTED	DR. M. IRFAN	
			APPROVED	MANZAR MUMTAZ	



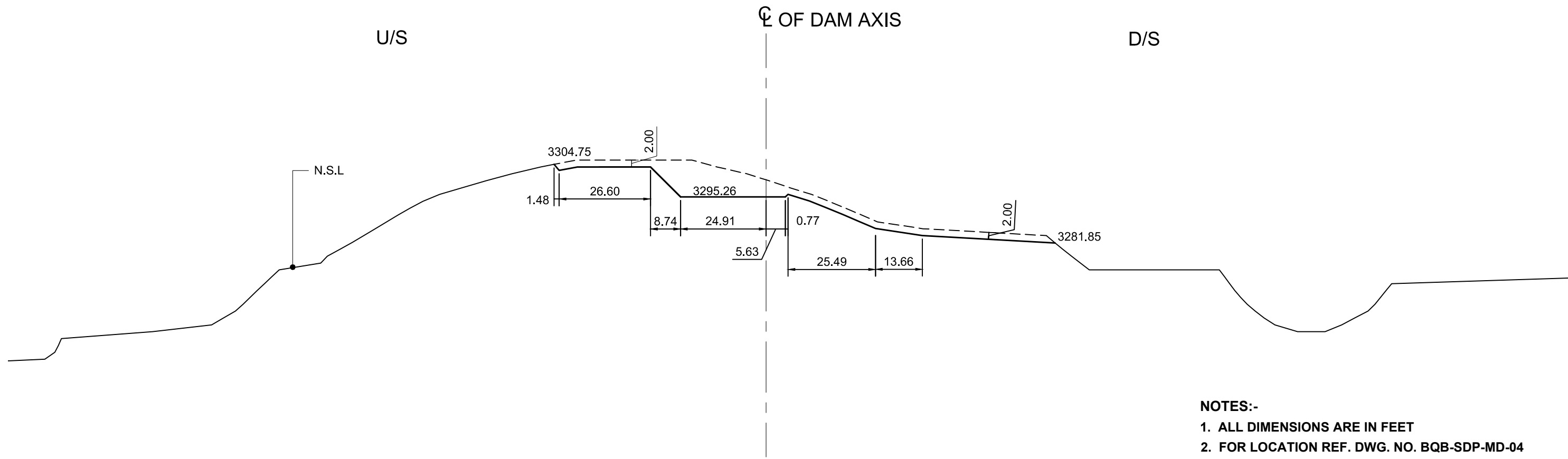
- NOTES:-**
1. ALL DIMENSIONS ARE IN FEET
 2. FOR LOCATION REF. DWG. NO. BQB-SDP-MD-04
 3. DAM BODY SHOULD BE PLACED ON SOUND ROCK OR AS DIRECTED BY ENGINEER AT SITE



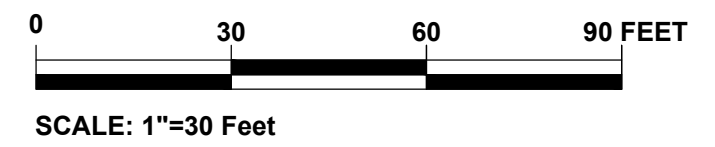
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CHECKED	DR. M. IRFAN
SUBMITTED	DR. M. IRFAN
APPROVED	MANZAR MUMTAZ

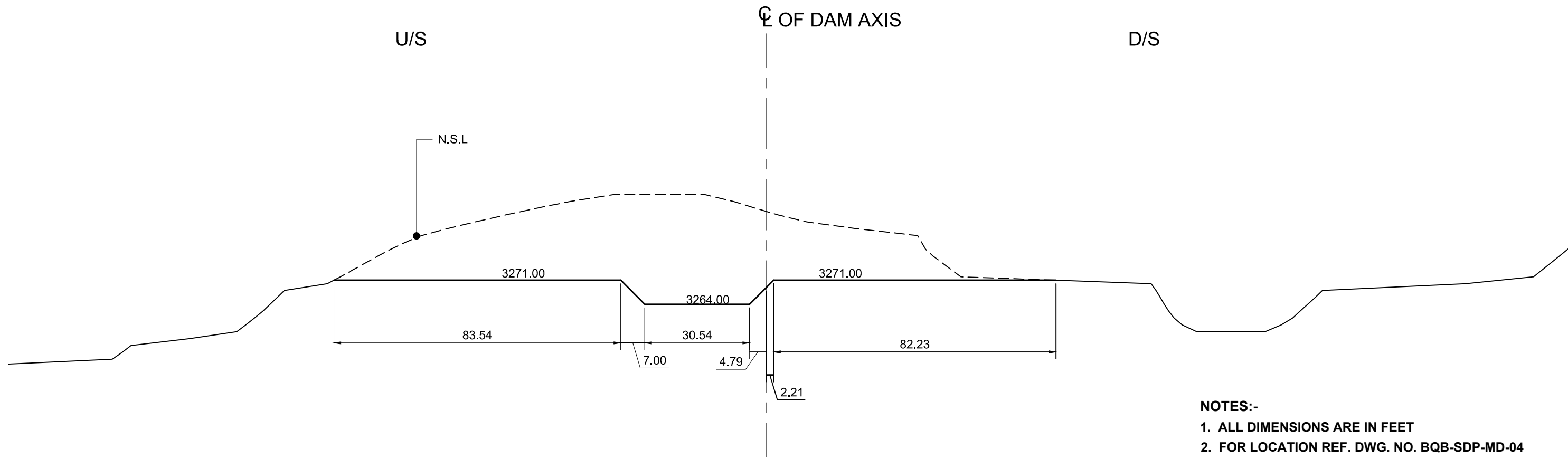
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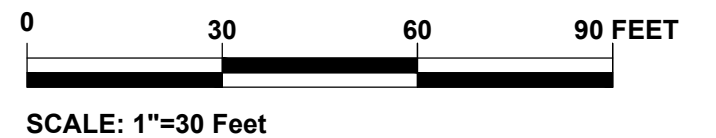
- NOTES:-**
1. ALL DIMENSIONS ARE IN FEET
 2. FOR LOCATION REF. DWG. NO. BQB-SDP-MD-04
 3. DAM BODY SHOULD BE PLACED ON SOUND ROCK OR AS DIRECTED BY ENGINEER AT SITE



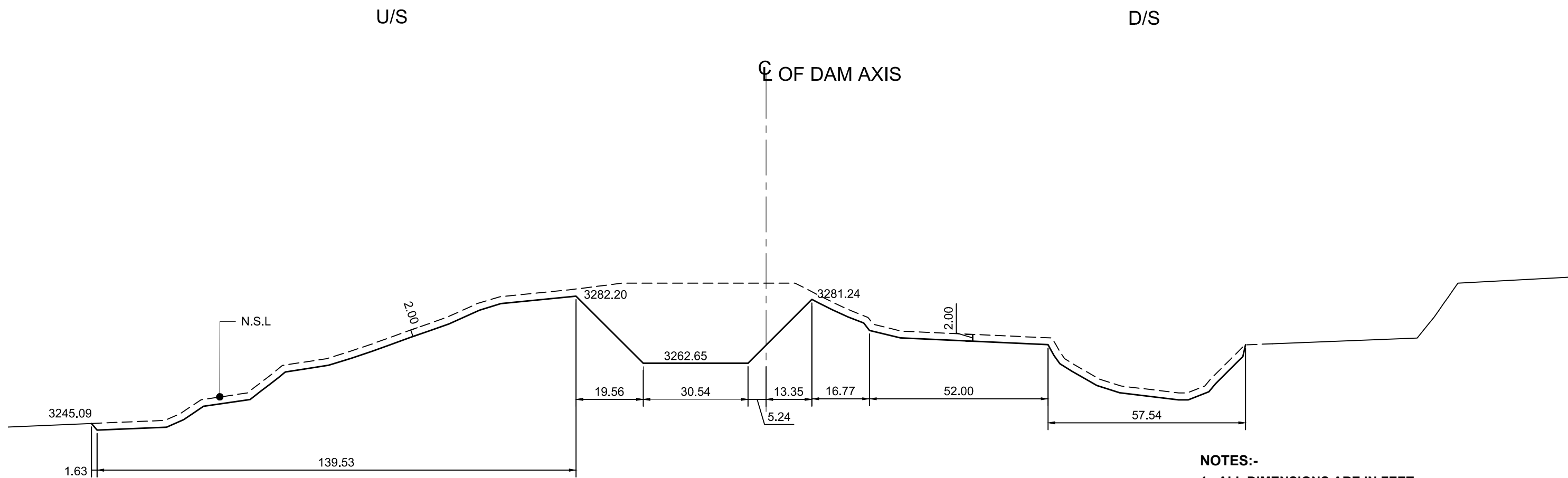
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			CHECKED	DR. M. IRFAN	SUBMITTED	DR. M. IRFAN			DATE:
			REV.	DATE	DESCRIPTION	APPROVED	MANZAR MUMTAZ		



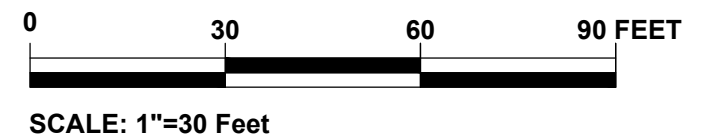
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1. ALL DIMENSIONS ARE IN FEET
 2. FOR LOCATION REF. DWG. NO. BQB-SDP-MD-04
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 SMALL DAMS ORGANIZATION GOVERNMENT OF KHYBER PAKHTUNKHWA	 BARQAAB CONSULTING SERVICES (PVT)LIMITED LAHORE	SANAM DAM PROJECT LOWER DIR	DRAWN	IMTIAZ AHMAD	EMBANKMENT EXCAVATION X-SECTION AT RD 0+150
			CHECKED	DR. M. IRFAN	
			SUBMITTED	DR. M. IRFAN	DATE:
			APPROVED	MANZAR MUMTAZ	June, 2021
			REV.	DATE	DESCRIPTION
					DRAWING NO. BQB-SDP-MD-08



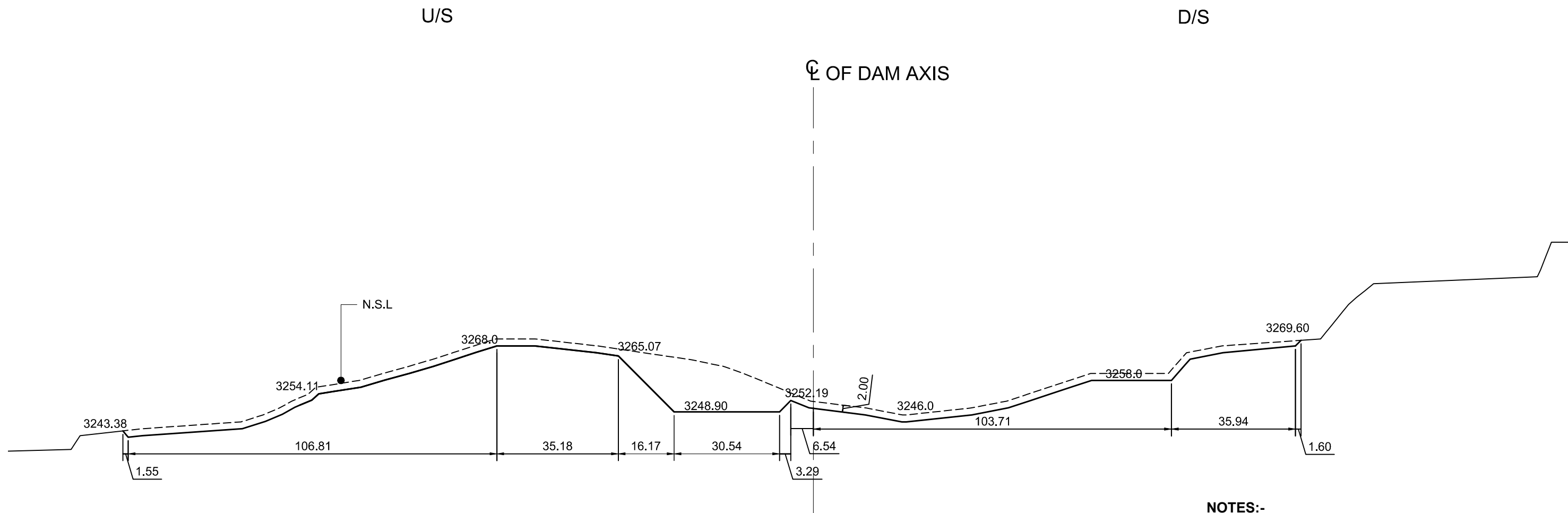
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 2. FOR LOCATION REF. DWG. NO. BQB-SDP-MD-04
 3. DAM BODY SHOULD BE PLACED ON SOUND ROCK OR AS DIRECTED BY ENGINEER AT SITE



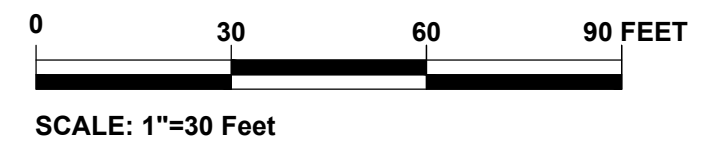
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DRAWN	IMTIAZ AHMAD
CHECKED	DR. M. IRFAN
SUBMITTED	DR. M. IRFAN
APPROVED	MANZAR MUMTAZ

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DATE: June, 2021	DRAWING NO. BQB-SDP-MD-09



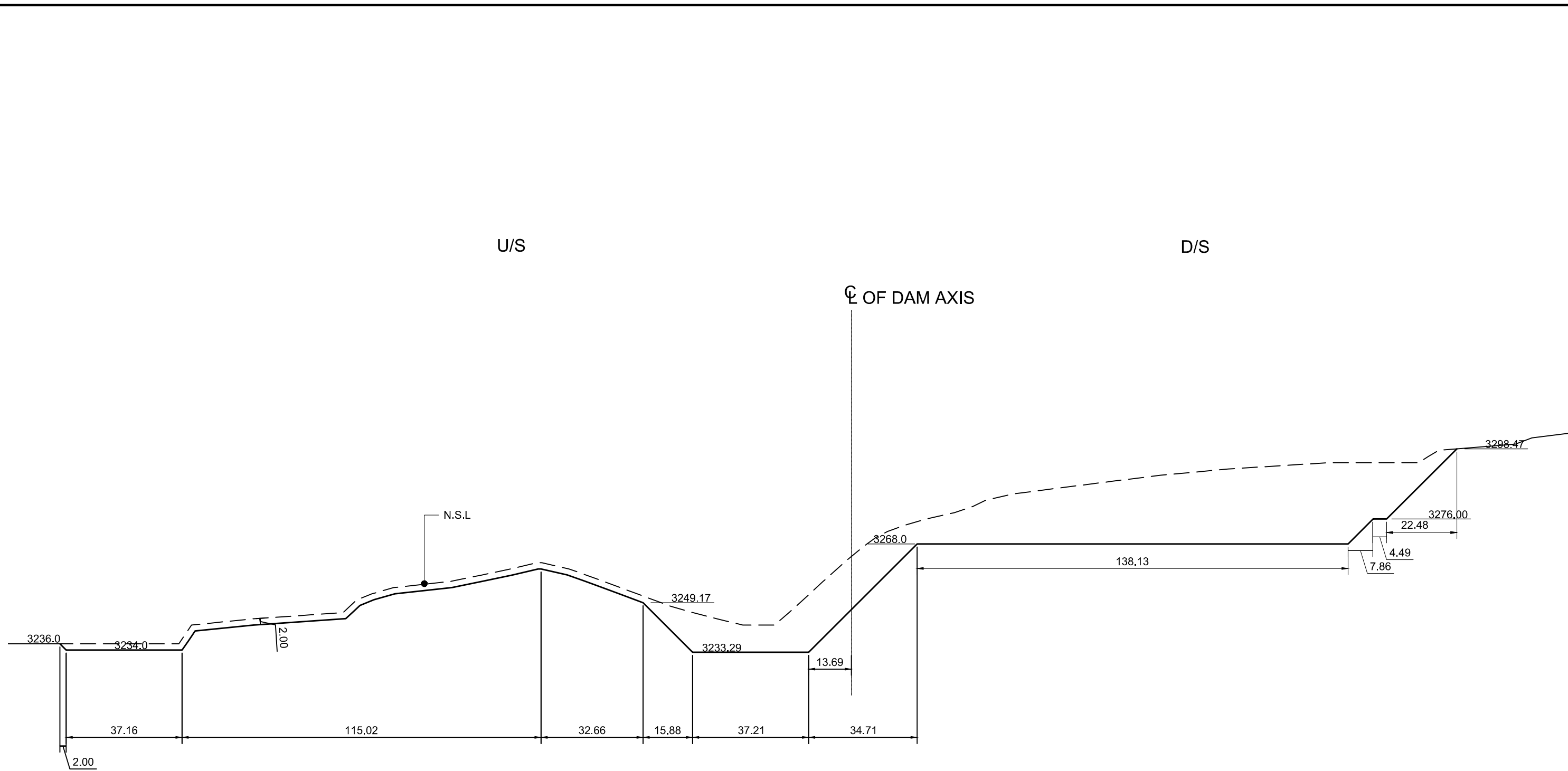
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 3. DAM BODY SHOULD BE PLACED ON SOUND ROCK OR AS DIRECTED BY ENGINEER AT SITE



REV.	DATE	DESCRIPTION

DRAWN	IMTIAZ AHMAD
CHECKED	DR. M. IRFAN
SUBMITTED	DR. M. IRFAN
APPROVED	MANZAR MUMTAZ

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DATE: June, 2021	DRAWING NO. BQB-SDP-MD-10

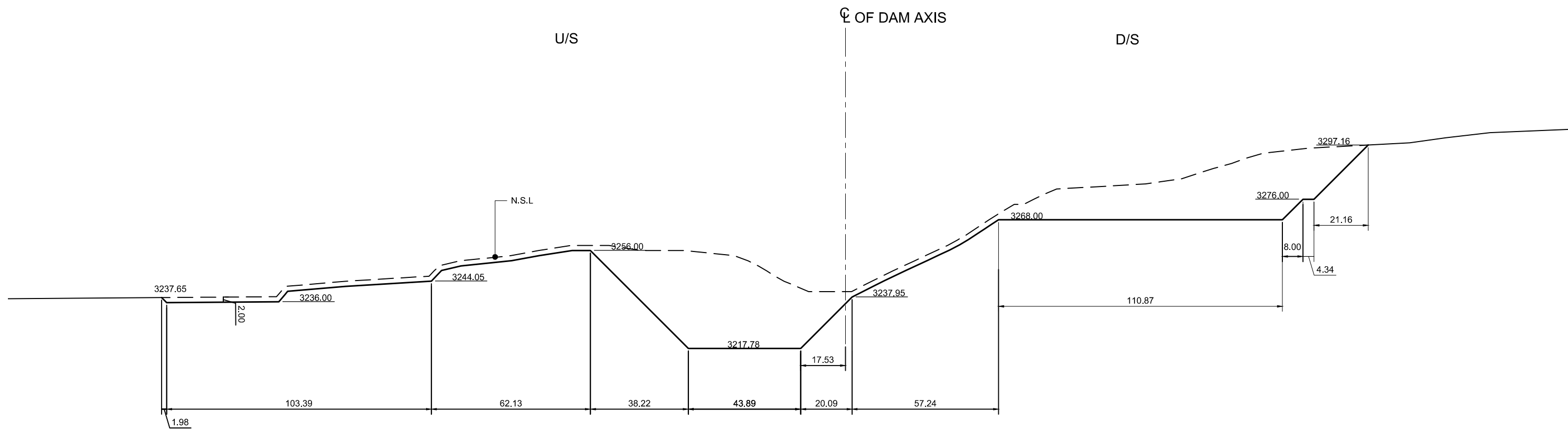


- NOTES:-**
1. ALL DIMENSIONS ARE IN FEET
 2. FOR LOCATION REF. DWG. NO. BQB-SDP-MD-04
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SCALE: 1"=30 Feet

 SMALL DAMS ORGANIZATION GOVERNMENT OF KHYBER PAKHTUNKHWA	 BARQAAB CONSULTING SERVICES (PVT)LIMITED LAHORE	SANAM DAM PROJECT LOWER DIR	DRAWN	IMTIAZ AHMAD	EMBANKMENT EXCAVATION X-SECTION AT RD 0+300
			CHECKED	DR. M. IRFAN	
			SUBMITTED	DR. M. IRFAN	DATE:
			APPROVED	MANZAR MUMTAZ	June, 2021
			REV.	DATE	DESCRIPTION
					DRAWING NO. BQB-SDP-MD-11



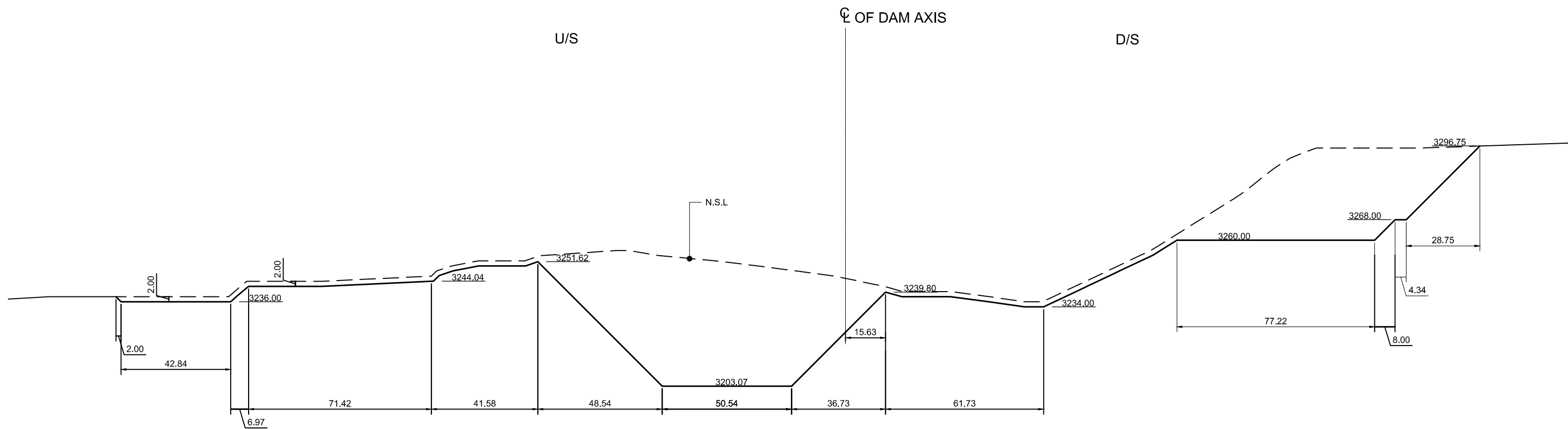
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1. ALL DIMENSIONS ARE IN FEET
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 3. DAM BODY SHOULD BE PLACED ON SOUND ROCK OR AS DIRECTED BY ENGINEER AT SITE



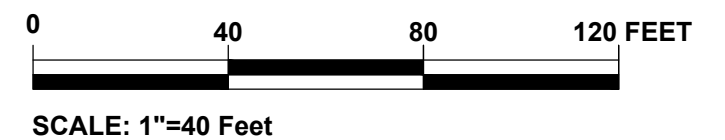
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REV.	DATE	DESCRIPTION

DRAWN	IMTIAZ AHMAD
CHECKED	DR. M. IRFAN
SUBMITTED	DR. M. IRFAN
APPROVED	MANZAR MUMTAZ

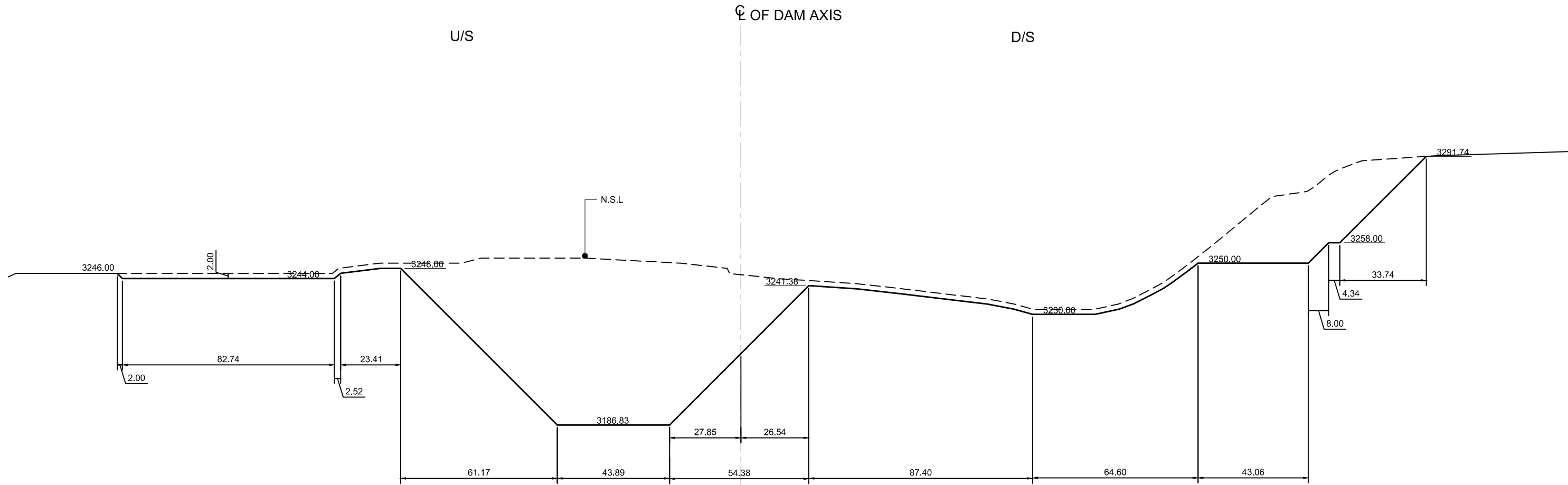


- NOTES:-**
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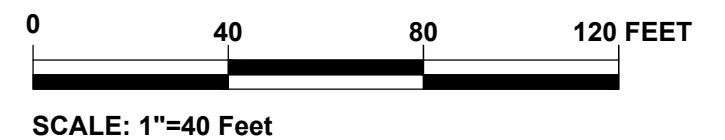


REV.	DATE	DESCRIPTION

DRAWN	IMTIAZ AHMAD
CHECKED	DR. M. IRFAN
SUBMITTED	DR. M. IRFAN
APPROVED	MANZAR MUMTAZ



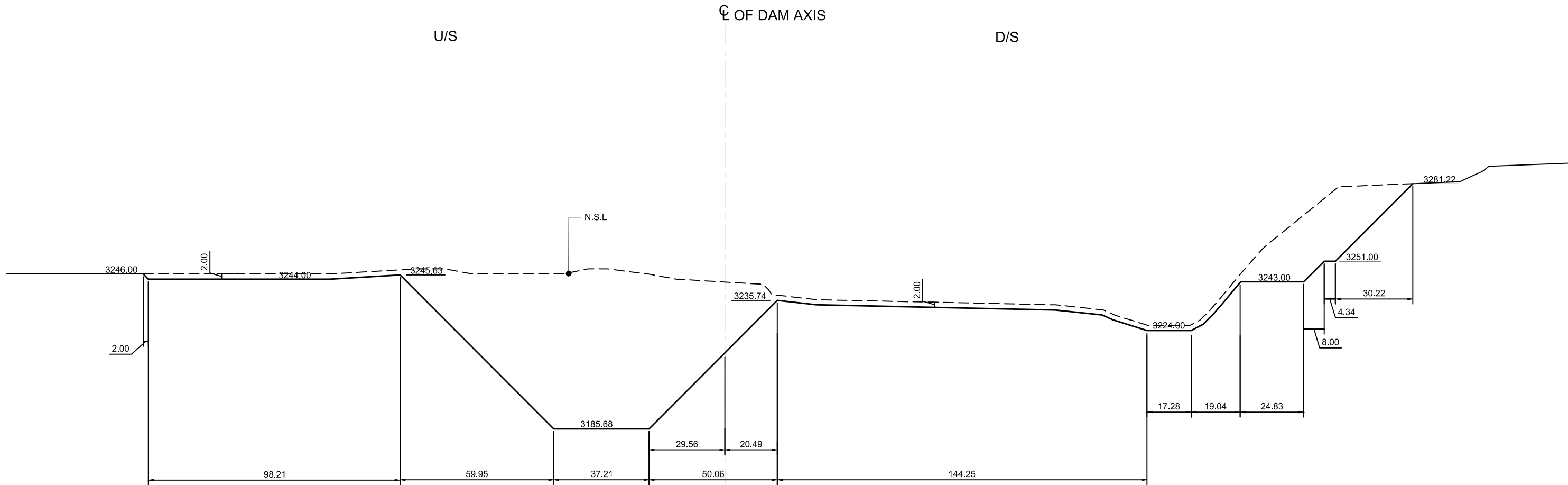
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 3. DAM BODY SHOULD BE PLACED ON SOUND ROCK OR AS DIRECTED BY ENGINEER AT SITE



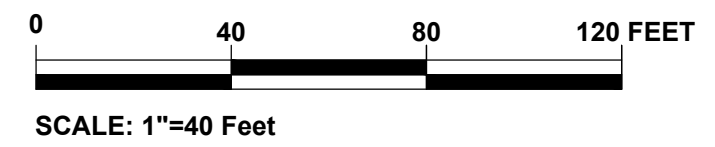
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DRAWN	IMTIAZ AHMAD
CHECKED	DR. M. IRFAN
SUBMITTED	DR. M. IRFAN
APPROVED	MANZAR MUMTAZ

EMBANKMENT EXCAVATION X-SECTION AT RD 0+450	
DATE: June, 2021	DRAWING NO. BQB-SDP-MD-14

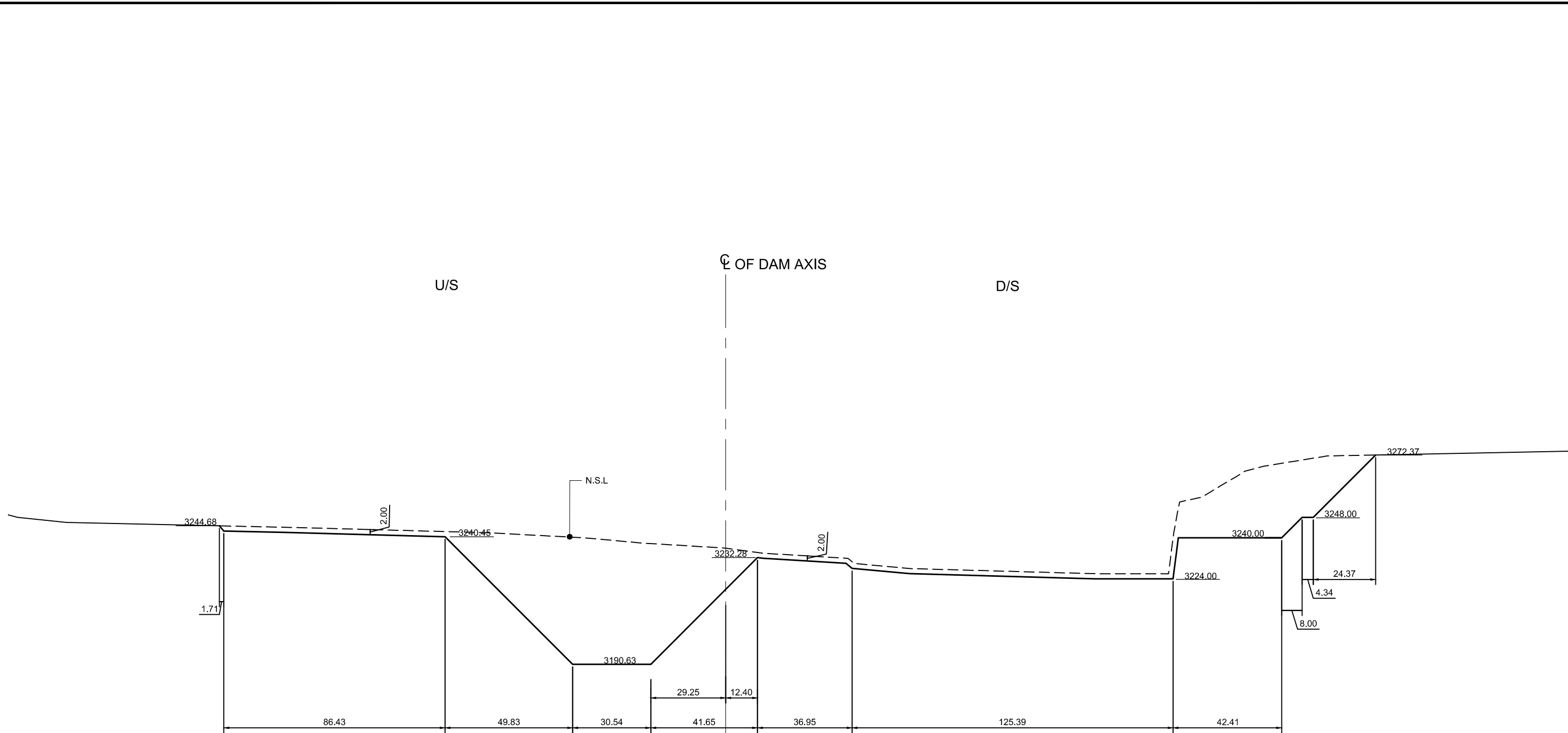


- NOTES:-**
1. ALL DIMENSIONS ARE IN FEET
 2. FOR LOCATION REF. DWG. NO. BQB-SDP-MD-04
 3. DAM BODY SHOULD BE PLACED ON SOUND ROCK OR AS DIRECTED BY ENGINEER AT SITE

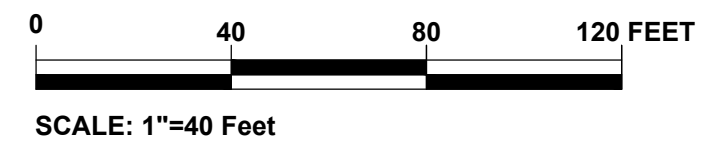


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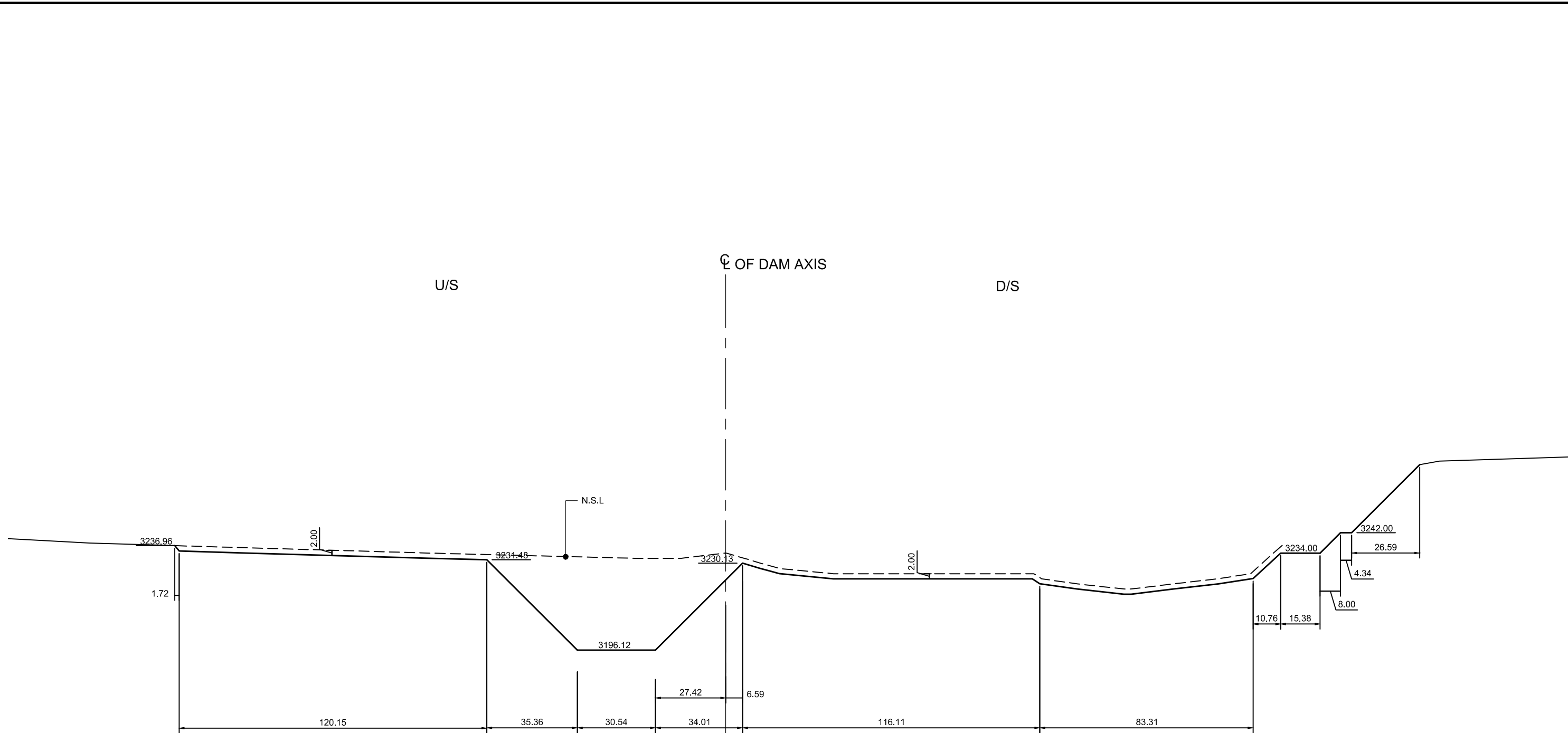
DRAWN	IMTIAZ AHMAD
CHECKED	DR. M. IRFAN
SUBMITTED	DR. M. IRFAN
APPROVED	MANZAR MUMTAZ



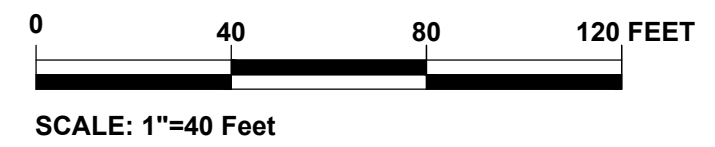
- NOTES:-**
1. ALL DIMENSIONS ARE IN FEET
 2. FOR LOCATION REF. DWG. NO. BQB-SDP-MD-04
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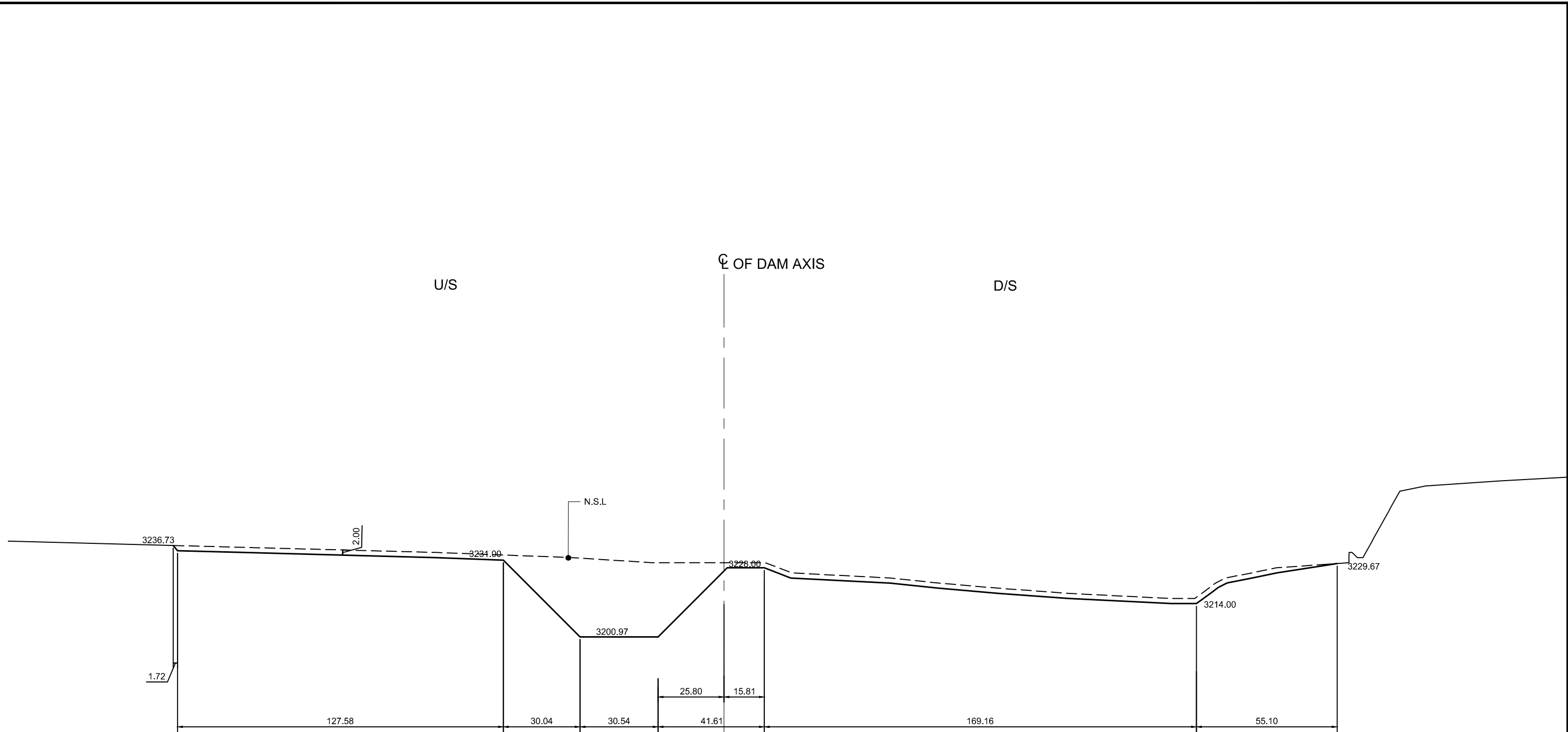
 SMALL DAMS ORGANIZATION GOVERNMENT OF KHYBER PAKHTUNKHWA	 BARQAAB CONSULTING SERVICES (PVT)LIMITED LAHORE	SANAM DAM PROJECT LOWER DIR	DRAWN	IMTIAZ AHMAD	EMBANKMENT EXCAVATION X-SECTION AT RD 0+550
			CHECKED	DR. M. IRFAN	
			SUBMITTED	DR. M. IRFAN	DATE:
			APPROVED	MANZAR MUMTAZ	June, 2021
			REV.	DATE	DESCRIPTION
					DRAWING NO.
					BQB-SDP-MD-16



- NOTES:-**
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 SMALL DAMS ORGANIZATION GOVERNMENT OF KHYBER PAKHTUNKHWA	 BARQAAB CONSULTING SERVICES (PVT)LIMITED LAHORE	SANAM DAM PROJECT LOWER DIR				DRAWN	IMTIAZ AHMAD	EMBANKMENT EXCAVATION X-SECTION AT RD 0+600	
						CHECKED	DR. M. IRFAN		
						SUBMITTED	DR. M. IRFAN	DATE:	DRAWING NO.
			REV.	DATE	DESCRIPTION	APPROVED	MANZAR MUMTAZ	June, 2021	BQB-SDP-MD-17



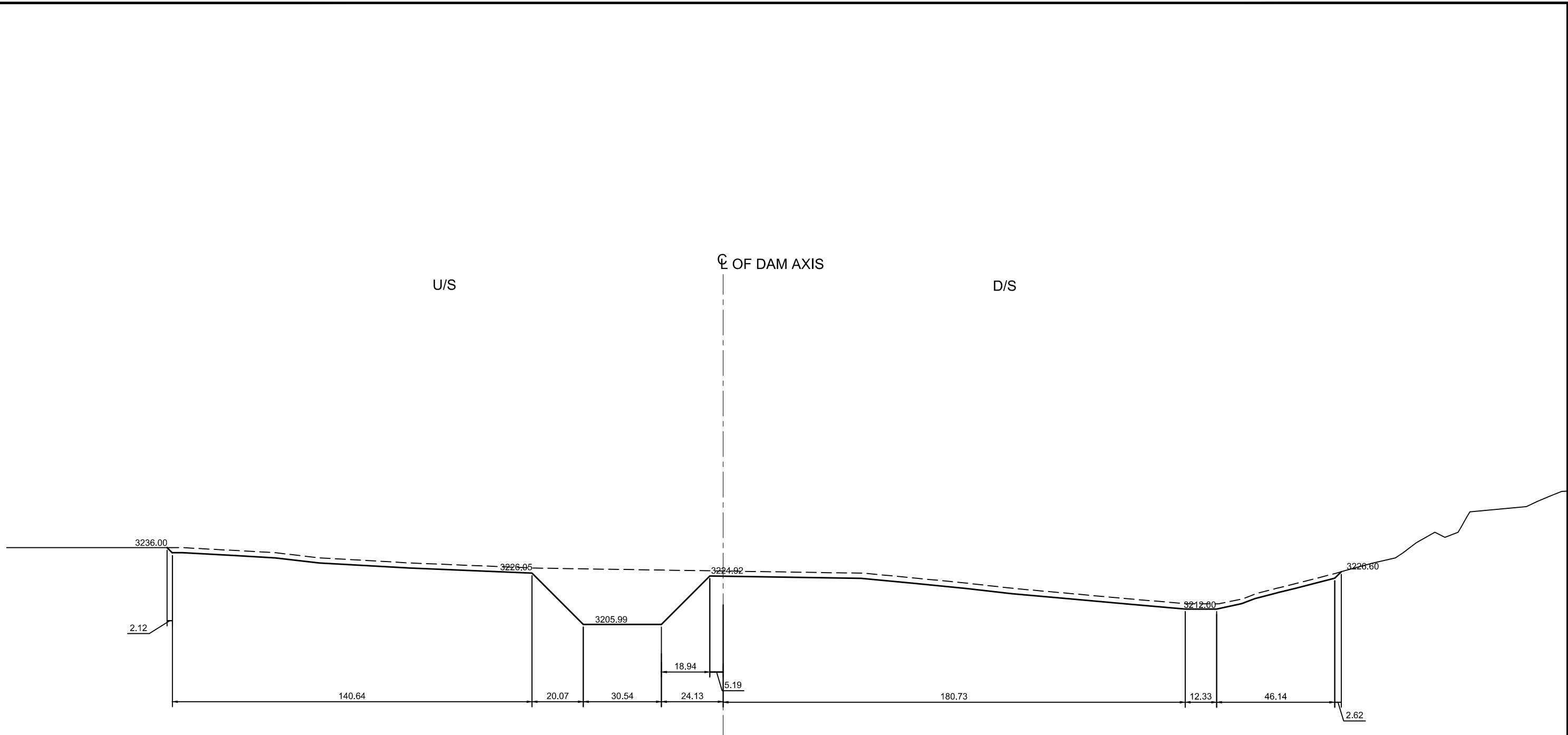
- NOTES:-**
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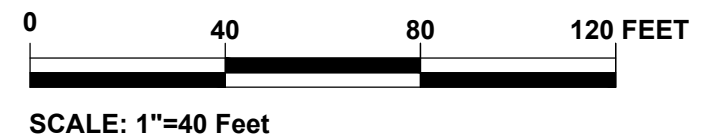
SCALE: 1"=40 Feet

REV.	DATE	DESCRIPTION

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CHECKED	DR. M. IRFAN
SUBMITTED	DR. M. IRFAN
APPROVED	MANZAR MUMTAZ

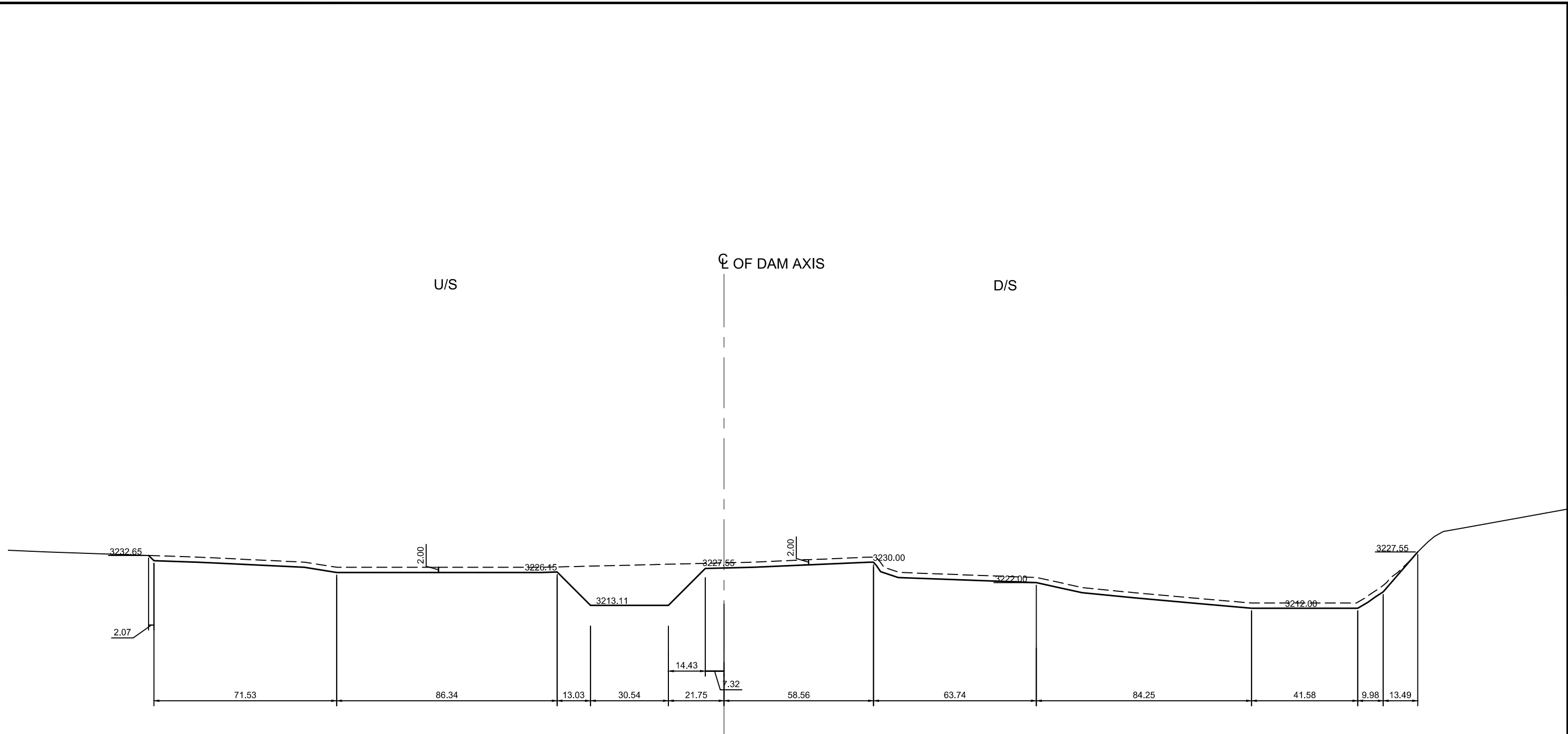


- NOTES:-**
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 3. DAM BODY SHOULD BE PLACED ON SOUND ROCK OR AS DIRECTED BY ENGINEER AT SITE

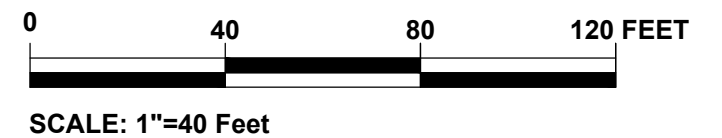


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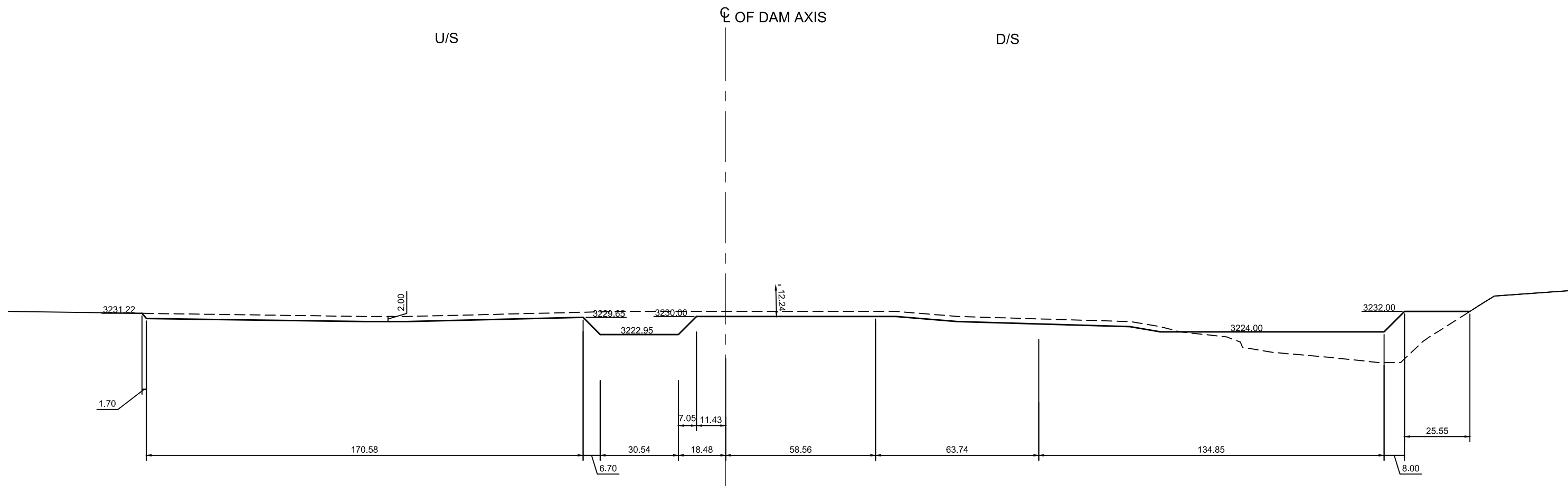
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CHECKED	DR. M. IRFAN
SUBMITTED	DR. M. IRFAN
APPROVED	MANZAR MUMTAZ



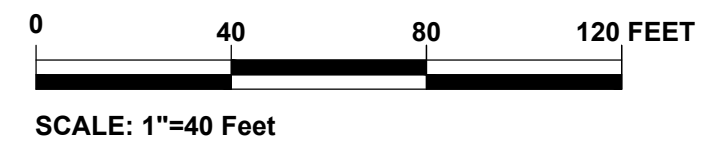
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 SMALL DAMS ORGANIZATION GOVERNMENT OF KHYBER PAKHTUNKHWA	 BARQAAB CONSULTING SERVICES (PVT)LIMITED LAHORE	SANAM DAM PROJECT LOWER DIR			DRAWN	IMTIAZ AHMAD	EMBANKMENT EXCAVATION X-SECTION AT RD 0+750	
			REV.	DATE	DESCRIPTION	CHECKED		
					SUBMITTED	DR. M. IRFAN		
					APPROVED	MANZAR MUMTAZ	June, 2021	BQB-SDP-MD-20



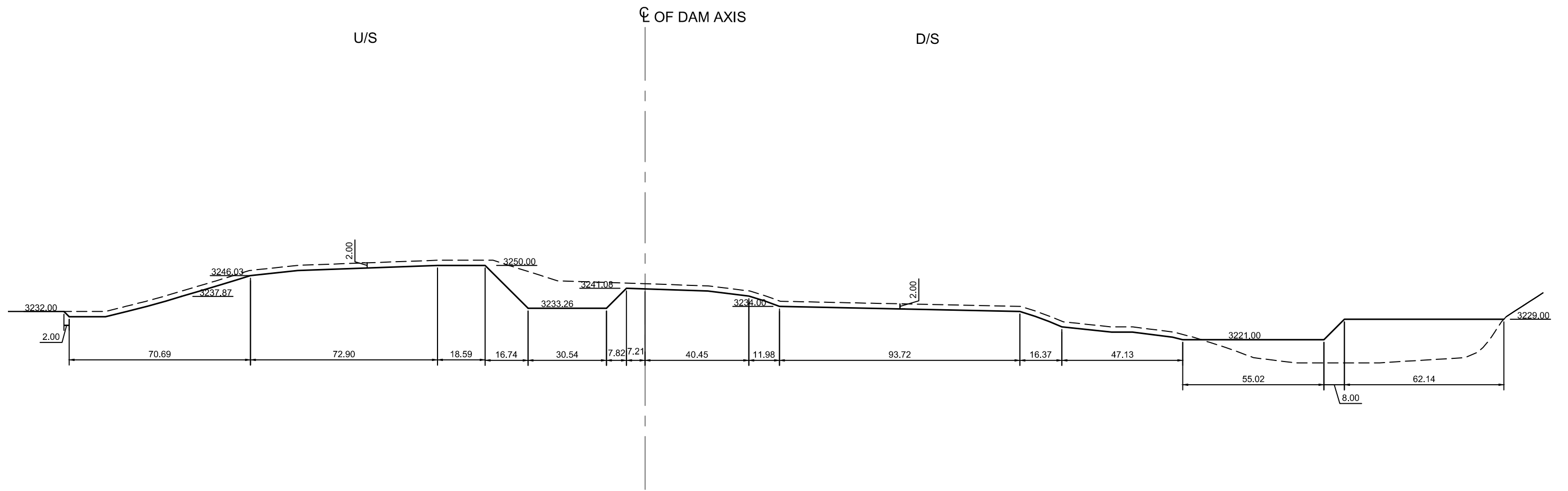
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 3. DAM BODY SHOULD BE PLACED ON SOUND ROCK OR AS DIRECTED BY ENGINEER AT SITE



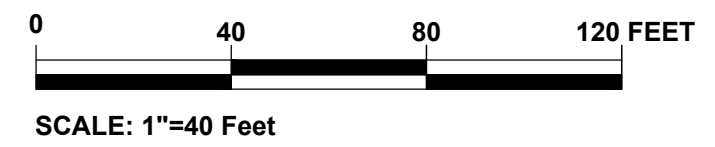
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CHECKED	DR. M. IRFAN
SUBMITTED	DR. M. IRFAN
APPROVED	MANZAR MUMTAZ

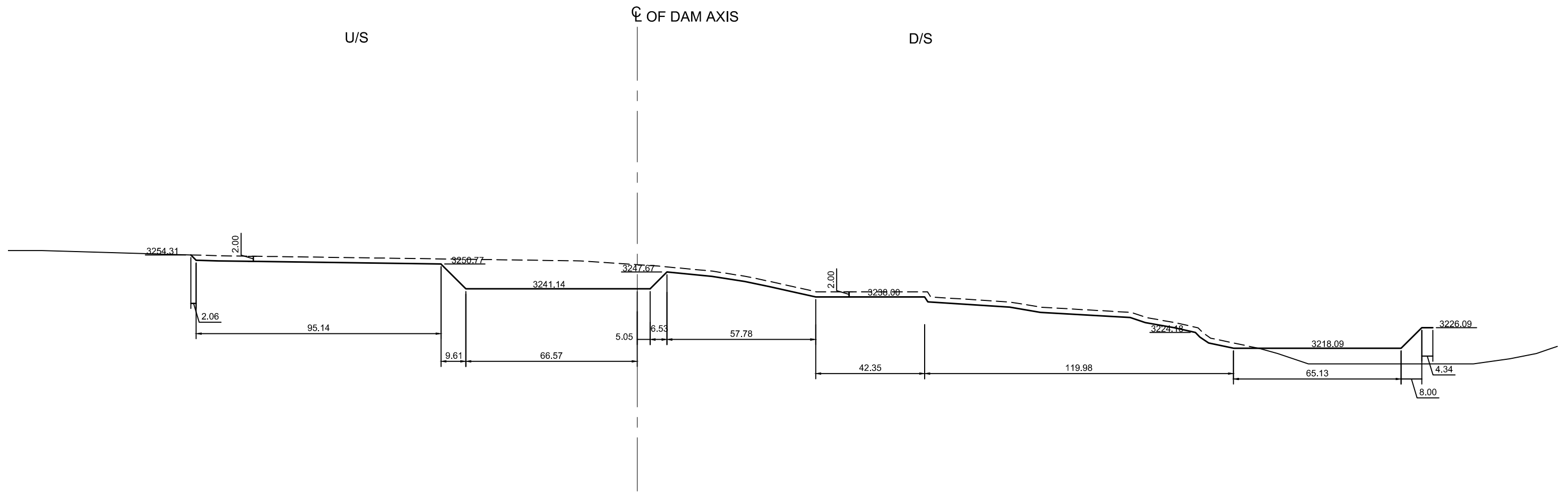
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DATE: June, 2021	DRAWING NO. BQB-SDP-MD-21



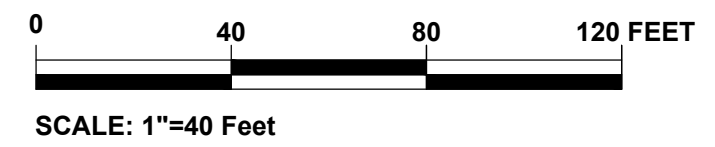
- NOTES:-**
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 2. FOR LOCATION REF. DWG. NO. BQB-SDP-MD-04
 3. DAM BODY SHOULD BE PLACED ON SOUND ROCK OR AS DIRECTED BY ENGINEER AT SITE



 SMALL DAMS ORGANIZATION GOVERNMENT OF KHYBER PAKHTUNKHWA	 BARQAAB CONSULTING SERVICES (PVT)LIMITED LAHORE	SANAM DAM PROJECT LOWER DIR				DRAWN	IMTIAZ AHMAD	EMBANKMENT EXCAVATION X-SECTION AT RD 0+840	
						CHECKED	DR. M. IRFAN		
			REV.	DATE	DESCRIPTION	APPROVED	MANZAR MUMTAZ		



- NOTES:-**
1. ALL DIMENSIONS ARE IN FEET
 2. FOR LOCATION REF. DWG. NO. BQB-SDP-MD-04
 3. DAM BODY SHOULD BE PLACED ON SOUND ROCK OR AS DIRECTED BY ENGINEER AT SITE



REV.	DATE	DESCRIPTION

DRAWN	IMTIAZ AHMAD
CHECKED	DR. M. IRFAN
SUBMITTED	DR. M. IRFAN
APPROVED	MANZAR MUMTAZ

EMBANKMENT EXCAVATION X-SECTION AT RD 0+884	
DATE: June, 2021	DRAWING NO. BQB-SDP-MD-23

LIST OF ABBREVIATIONS

Abbreviation	Description
U/S	Upstream
D/S	Downstream
BM	Bench Mark
BH	Bore Hole
NSL	Natural Surface Level
CL	Center Line
El.	Elevation
AFL	Accepted Foundation Level
RD	Reduced Distance
V	Vertical
H	Horizontal

INSTRUCTIONS FOR GROUTING

The grouting works consist of curtain grouting in abutment of the dam.

The spacing and depth of grout holes are subject to variation during grouting based on the results and evaluations of permeability and grout-take data.

The grout mix comprises cement suspension stabilized with bentonite.

Some important details for execution of grouting are given below.

- Slush grouting will be required for sealing the rock surface of the structures foundation after cleaning. It will contain 2 to 3 parts of sand to one part of portland cement. The sand will be well graded conforming to ASTM concrete. Its moisture content will be sufficient to produce a mixture which can be poured to penetrate and fill open joints, fissures and fractures in the rock surface and can be broomed over and into the rock surface to fill minor surface discontinuities and irregularities.
- All superficial joints and fissure within the rock surface near the grout hole will be sealed by slush grouting, as directed by the engineer.
- Inflatable or mechanical packers, having a sealing element of minimum length of 8 times of the hole diameter, will be used. Mechanical packers will be preferred for near surface grouting stage.
- Grout pressures will depend upon the depth of grout section. In general, the maximum pressure as measured at the collar of the hole (gauge pressure) shall not exceed 0.07kg/cm² per 0.30m(one psi per foot) of depth when measured normal to the ground surface to the middle of the grout section. Table shows typical pressures for grouting sections.

- Grouting will start with water cement ratio 3:1 with 2% bentonite which may be switched to a thicker mix (water cement 2:1 by volume), in case of fast take or when maximum pressure is not obtained, or when grout-take does not show change even after 30 kg of cement per foot. Switch to thinner mix (water cement 5:1 by volume), in case of very low initial take.
- The bentonite slurry will be pre-activated (soaked and homogenized) over a period of 10 hours in a mix of 1 kg bentonite to 10 liter water.
- During grouting operation, all leaks noticed in the adjacent areas will be plugged immediately and no rock movement will be allowed.
- Grouting of a hole will continue until the hole takes grout at a rate of less than one cubic foot (0.0283 cubic meter) of the grout mixture in 10 minutes at the allowable gauge pressure. The grouting rate during the end phase will not exceed 2 liter per m.
- Once refusal is achieved, the in-let and return valves will be closed and packer will be kept inflated or in-place till dissipation of the gauge pressure.
- Wait for 12 hours before next stage grouting to let the grout stone hardened.
- Take sounding of the hole after completion of waiting time after final stage grouting and backfill with neat cement slurry (water cement ratio 1:1) by tremie method.
- No adjacent grout hole will be grouted simultaneously.
- All testing and grouting record will be maintained and summaries will be prepared or as directed.
- Upon completion of grouting works a comprehensive grouting plan will be prepared along with cross section indicating cement-take quantities.
- Embankment construction in any section will only be started after thorough examination and review of all relevant data.
- Material requirement for all grouting works are briefly describe below.
 - a) Water absorption potential of the bentonite shall be at least 500 percent. flow properties of the grout mix shall correspond to marsh flow time >30 seconds.
 - b) The water cement ratio shall not preferably vary beyond the limits of 1:1 to 4:1 or as directed.
 - c) In case of excessively large grout-take, the cement suspension may be blended with clay, stone dust, fly ash or similar material.



SMALL DAMS ORGANIZATION
GOVERNMENT OF KHYBER PAKHTUNKHWA

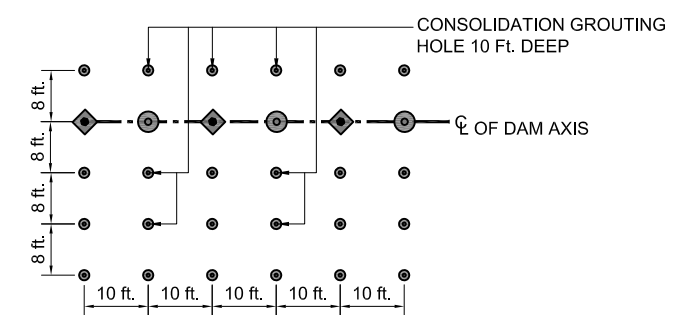
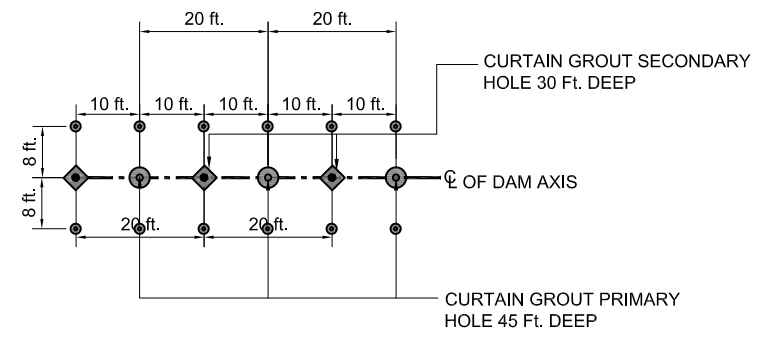
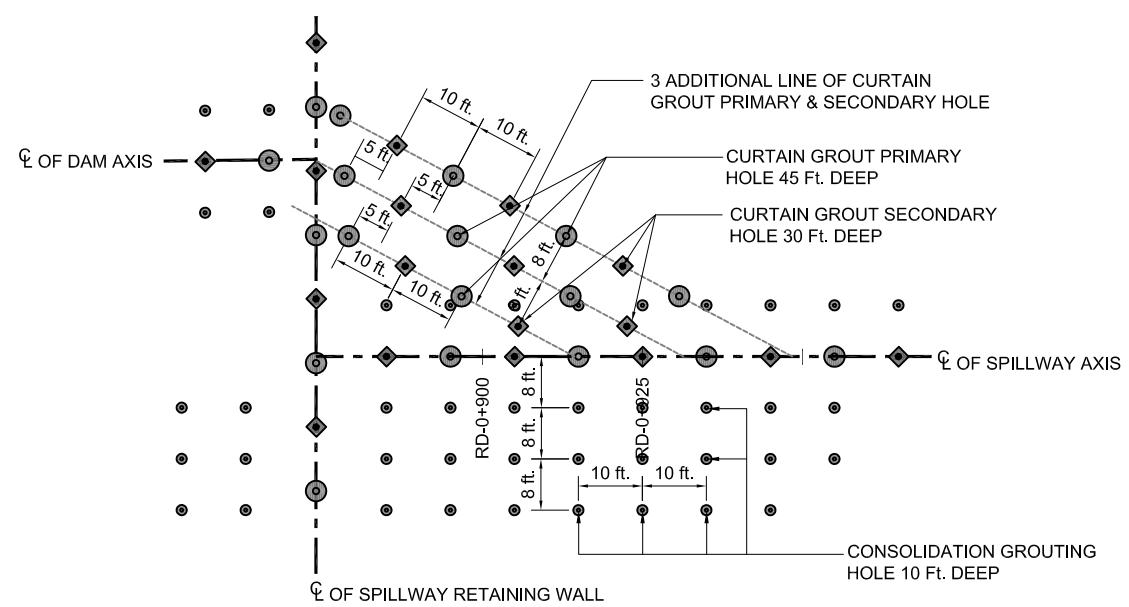
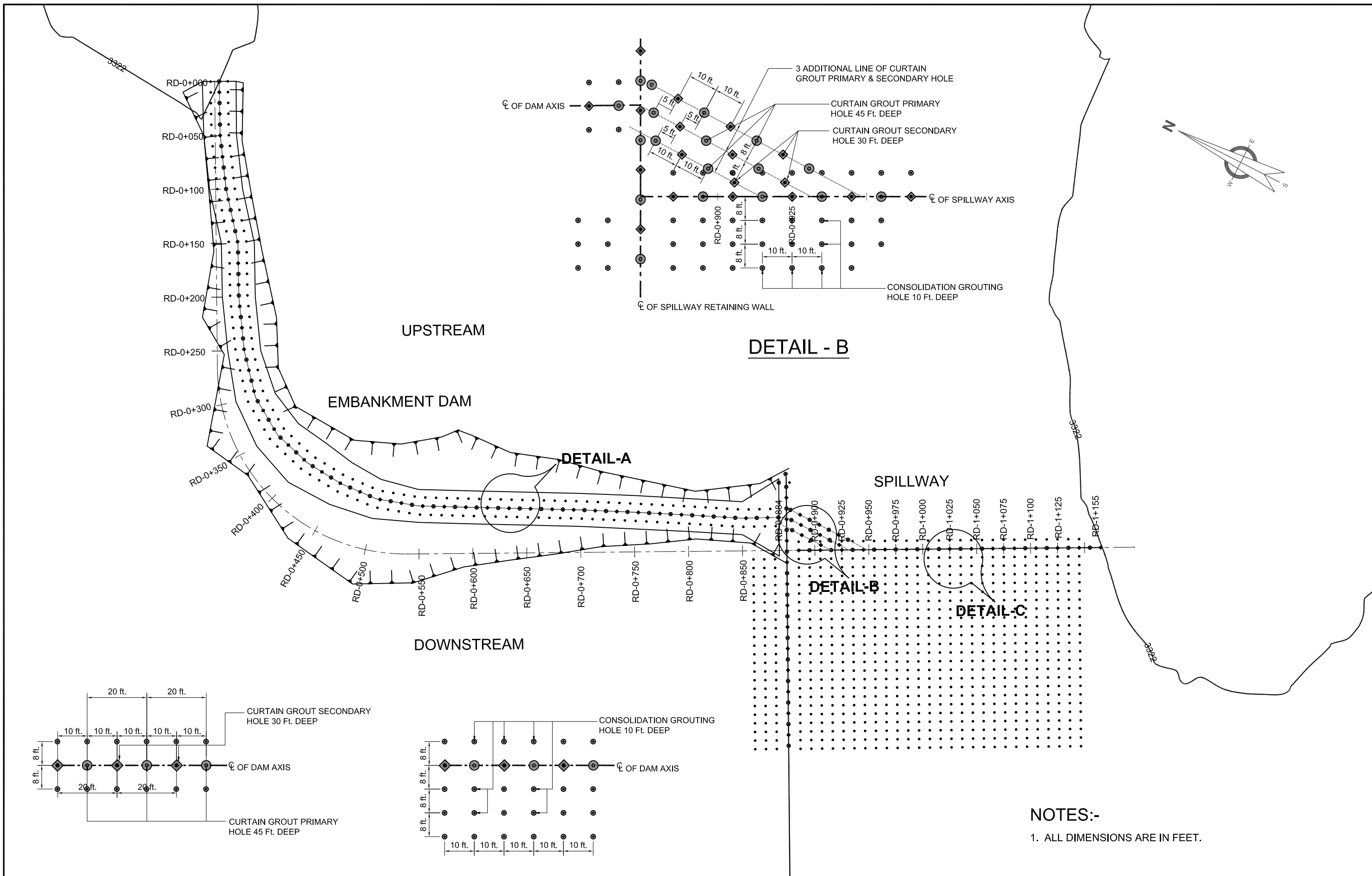


BARQAAB CONSULTING SERVICES
(PVT)LIMITED LAHORE

SANAM DAM PROJECT
LOWER DIR

REV.	DATE	DESCRIPTION	DRAWN	IMTIAZ AHMAD	DATE: May, 2021	DRAWING NO. BQB-SDP-MD-24
			CHECKED	ALI ARSLAN		
			SUBMITTED	DR. M. IRFAN		
			APPROVED	MANZAR MUMTAZ		

**EMBANKMENT DAM
GENERAL NOTES**

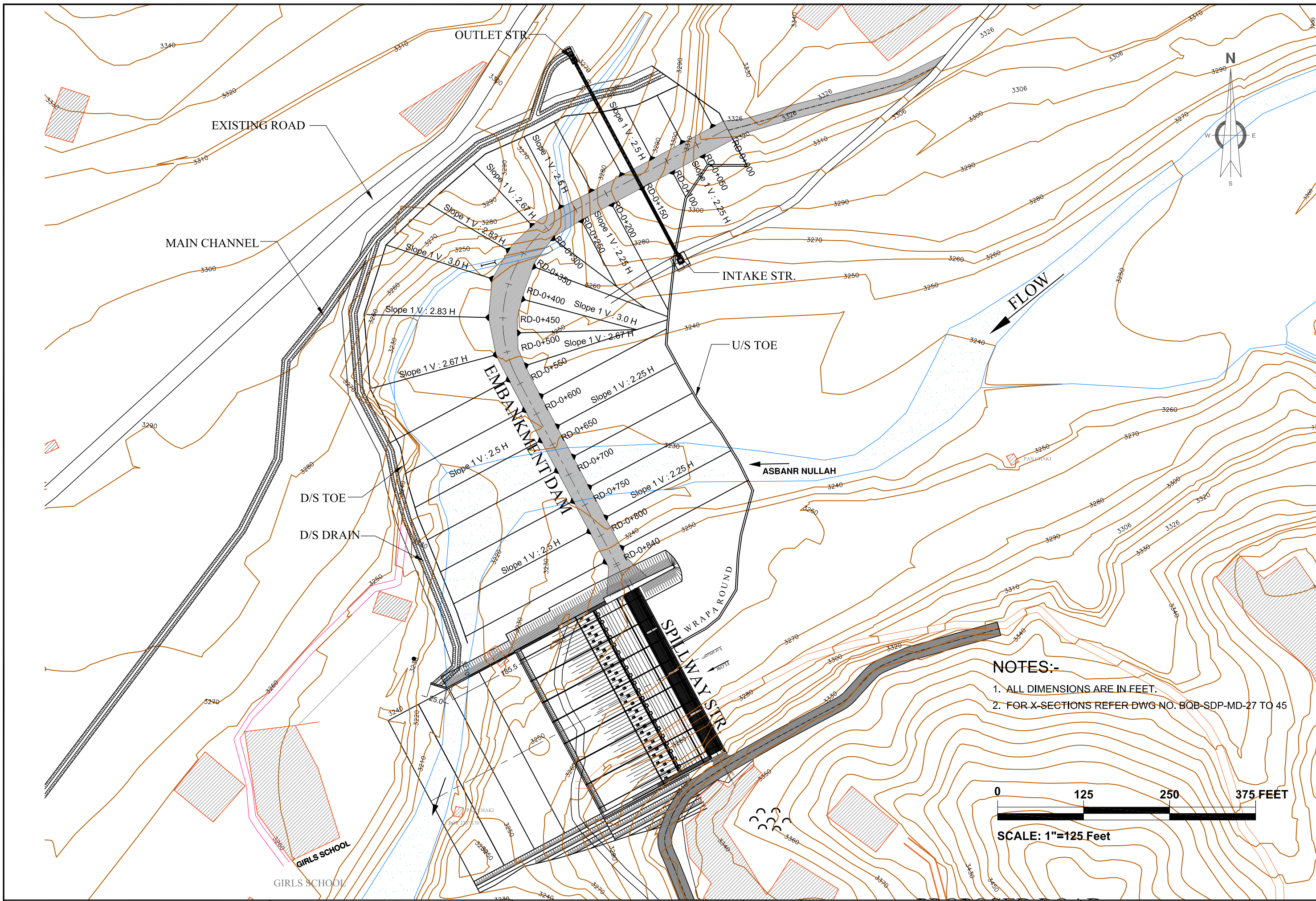


NOTES:-
1. ALL DIMENSIONS ARE IN FEET.

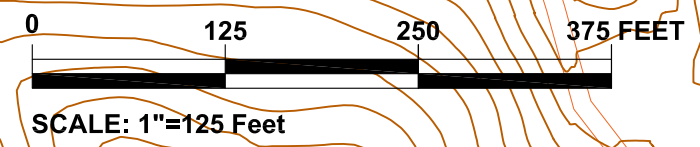
REV.	DATE	DESCRIPTION

DRAWN	IMTIAZ AHMAD
CHECKED	DR. M. IRFAN
SUBMITTED	DR. M. IRFAN
APPROVED	MANZAR MUMTAZ

EMBANKMENT DAM & SPILLWAY GROUTING PLAN	
DATE: May, 2021	DRAWING NO. BQB-SDP-MD-25



- NOTES:-**
1. ALL DIMENSIONS ARE IN FEET.
 2. FOR X-SECTIONS REFER DWG NO. BQB-SDP-MD-27 TO 45



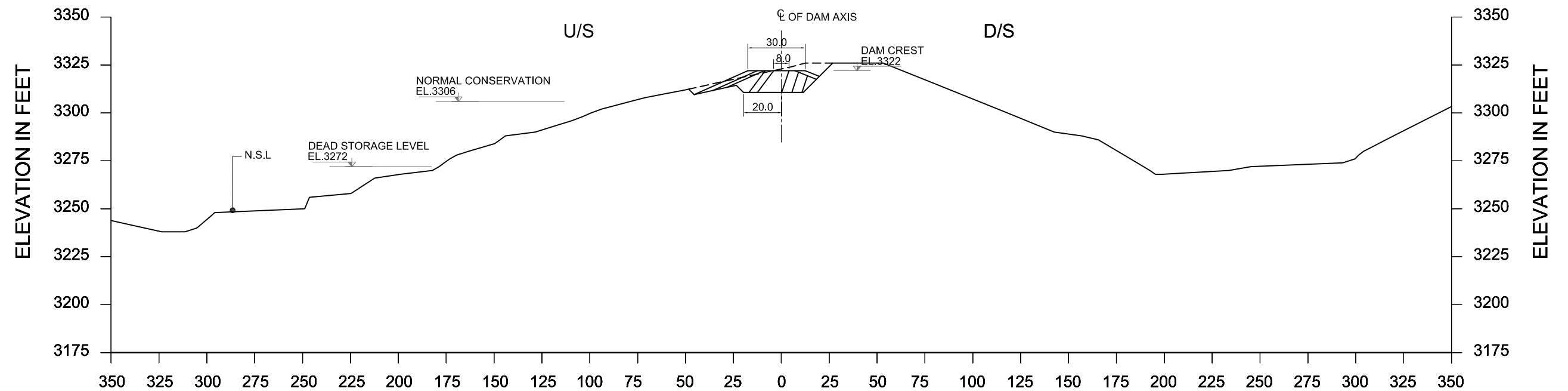
REV.	DATE	DESCRIPTION

DRAWN	IMTIAZ AHMAD
CHECKED	DR. M. IRFAN
SUBMITTED	DR. M. IRFAN
APPROVED	MANZAR MUMTAZ

EMBANKMENT DAM PLAN		DATE:	DRAWING NO. BQB-SDP-MD-26
		May, 2021	

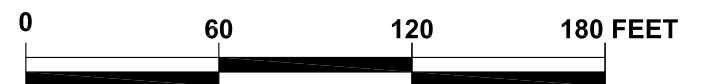
EMBANKMENT MATERIALS

ZONE	MATERIAL
1	SILTY CLAY
2	FINE SAND FILTER
3	COARSE SAND FILTER
4	SANDY GRAVEL FILL
5	BEDDING FOR RIP RAP - WASHED GRAVEL
6	RIP RAP - SELECTED QUARRIED
7	GRAVEL DRAIN
8	COBBLES & BOULDERS



NOTES:-

1. ALL DIMENSIONS ARE IN FEET
2. FOR LOCATION REF. DWG. NO. BQB-SDP-MD-26
3. DAM CORE SHOULD BE PLACED ON SOUND ROCK OR AS DIRECTED BY ENGINEER AT SITE
4. FILTER MATERIAL WILL REQUIRED PROCESSING /SCREENING FROM SUITABLE AVAILABLE MATERIAL AT SITE



SCALE: 1"=60 Feet

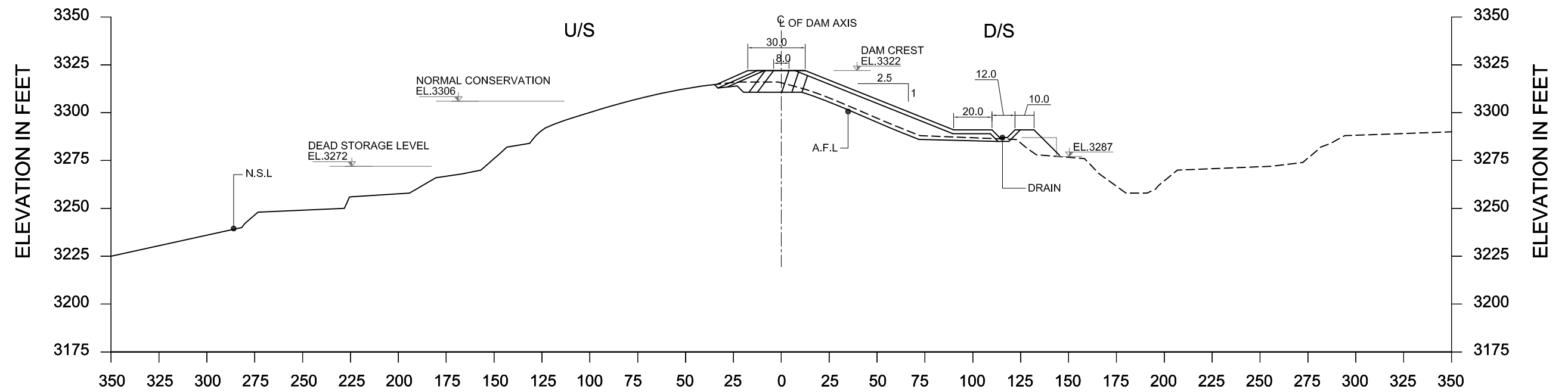
REV.	DATE	DESCRIPTION

DRAWN	IMTIAZ AHMAD
CHECKED	DR. M. IRFAN
SUBMITTED	DR. M. IRFAN
APPROVED	MANZAR MUMTAZ

MAIN EMBANKMENT X-SECTION AT RD 0+000	
DATE: May, 2021	DRAWING NO. BQB-SDP-MD-27

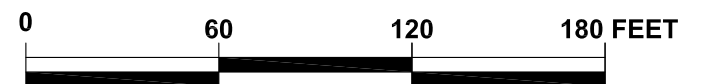
EMBANKMENT MATERIALS

ZONE	MATERIAL
1	SILTY CLAY
2	FINE SAND FILTER
3	COARSE SAND FILTER
4	SANDY GRAVEL FILL
5	BEDDING FOR RIP RAP - WASHED GRAVEL
6	RIP RAP - SELECTED QUARRIED
7	GRAVEL DRAIN
8	COBBLES & BOULDERS



NOTES:-

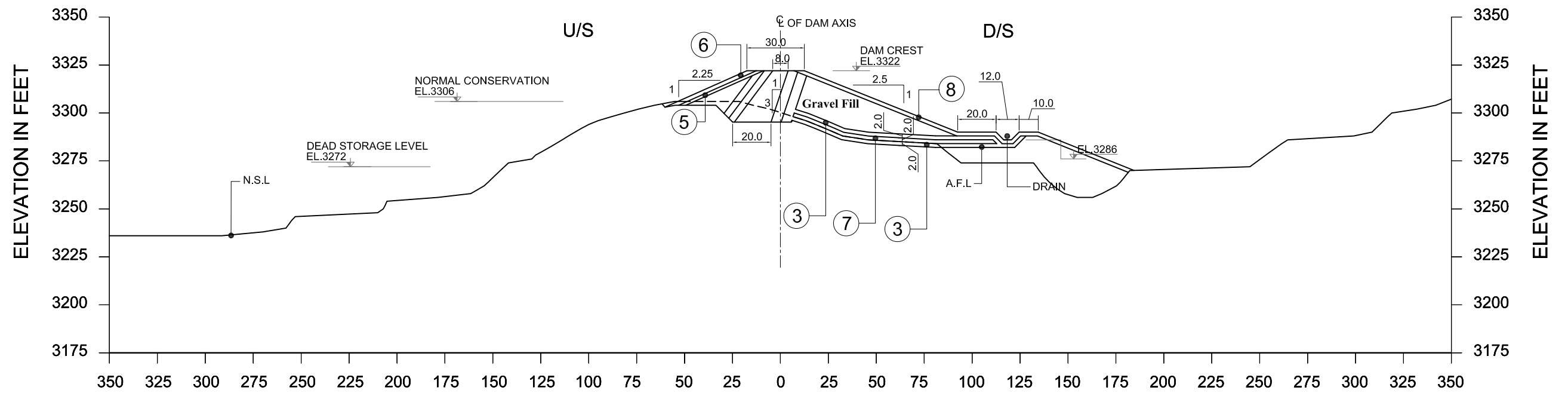
1. ALL DIMENSIONS ARE IN FEET
2. FOR LOCATION REF. DWG. NO. BQB-SDP-MD-26
3. DAM CORE SHOULD BE PLACED ON SOUND ROCK OR AS DIRECTED BY ENGINEER AT SITE
4. FILTER MATERIAL WILL REQUIRED PROCESSING /SCREENING FROM SUITABLE AVAILABLE MATERIAL AT SITE



SCALE: 1"=60 Feet

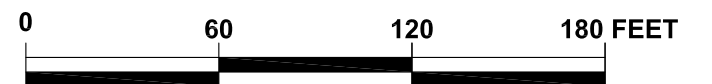
EMBANKMENT MATERIALS

ZONE	MATERIAL
1	SILTY CLAY
2	FINE SAND FILTER
3	COARSE SAND FILTER
4	SANDY GRAVEL FILL
5	BEDDING FOR RIP RAP - WASHED GRAVEL
6	RIP RAP - SELECTED QUARRIED
7	GRAVEL DRAIN
8	COBBLES & BOULDERS



NOTES:-

1. ALL DIMENSIONS ARE IN FEET
2. FOR LOCATION REF. DWG. NO. BQB-SDP-MD-26
3. DAM CORE SHOULD BE PLACED ON SOUND ROCK OR AS DIRECTED BY ENGINEER AT SITE
4. FILTER MATERIAL WILL REQUIRED PROCESSING /SCREENING FROM SUITABLE AVAILABLE MATERIAL AT SITE



SCALE: 1"=60 Feet

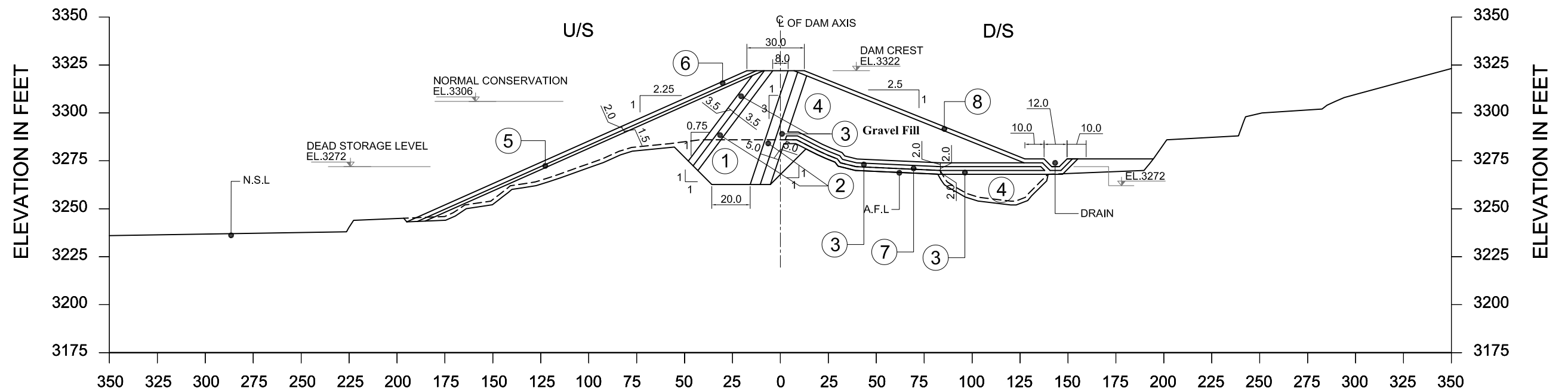
REV.	DATE	DESCRIPTION

DRAWN	IMTIAZ AHMAD
CHECKED	DR. M. IRFAN
SUBMITTED	DR. M. IRFAN
APPROVED	MANZAR MUMTAZ

MAIN EMBANKMENT X-SECTION AT RD 0+100	
DATE: May, 2021	DRAWING NO. BQB-SDP-MD-29

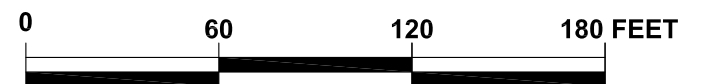
EMBANKMENT MATERIALS

ZONE	MATERIAL
1	SILTY CLAY
2	FINE SAND FILTER
3	COARSE SAND FILTER
4	SANDY GRAVEL FILL
5	BEDDING FOR RIP RAP - WASHED GRAVEL
6	RIP RAP - SELECTED QUARRIED
7	GRAVEL DRAIN
8	COBBLES & BOULDERS



NOTES:-

1. ALL DIMENSIONS ARE IN FEET
2. FOR LOCATION REF. DWG. NO. BQB-SDP-MD-26
3. DAM CORE SHOULD BE PLACED ON SOUND ROCK OR AS DIRECTED BY ENGINEER AT SITE
4. FILTER MATERIAL WILL REQUIRED PROCESSING /SCREENING FROM SUITABLE AVAILABLE MATERIAL AT SITE

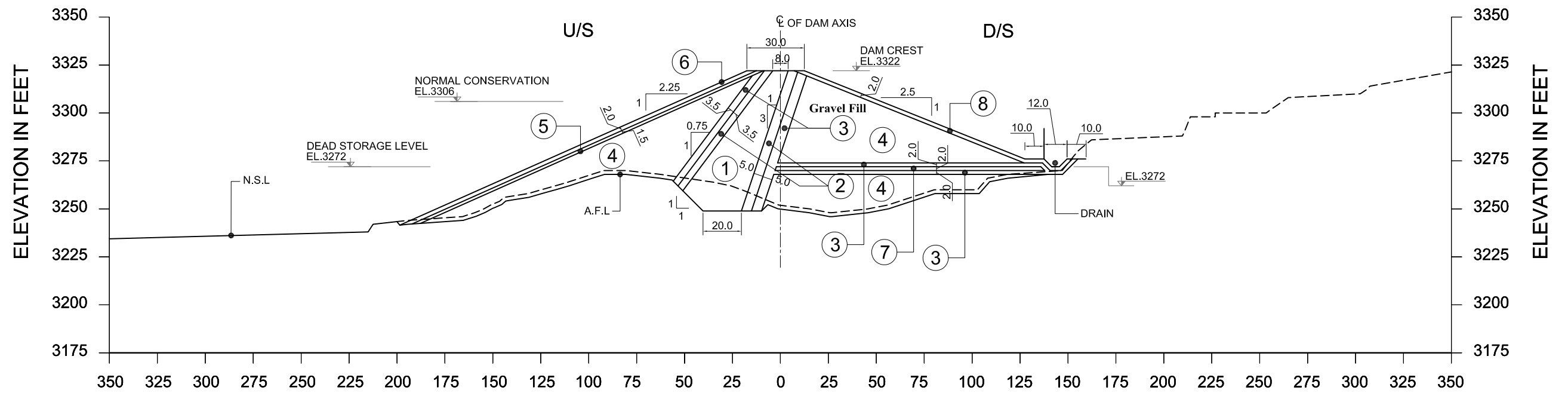


SCALE: 1"=60 Feet

REV.	DATE	DESCRIPTION	DRAWN	IMTIAZ AHMAD	MAIN EMBANKMENT X-SECTION AT RD 0+200 DATE: May, 2021 DRAWING NO. BQB-SDP-MD-31
			CHECKED	DR. M. IRFAN	
			SUBMITTED	DR. M. IRFAN	
			APPROVED	MANZAR MUMTAZ	

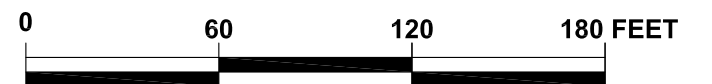
EMBANKMENT MATERIALS

ZONE	MATERIAL
1	SILTY CLAY
2	FINE SAND FILTER
3	COARSE SAND FILTER
4	SANDY GRAVEL FILL
5	BEDDING FOR RIP RAP - WASHED GRAVEL
6	RIP RAP - SELECTED QUARRIED
7	GRAVEL DRAIN
8	COBBLES & BOULDERS



NOTES:-

1. ALL DIMENSIONS ARE IN FEET
2. FOR LOCATION REF. DWG. NO. BQB-SDP-MD-26
3. DAM CORE SHOULD BE PLACED ON SOUND ROCK OR AS DIRECTED BY ENGINEER AT SITE
4. FILTER MATERIAL WILL REQUIRED PROCESSING /SCREENING FROM SUITABLE AVAILABLE MATERIAL AT SITE



SCALE: 1"=60 Feet



SMALL DAMS ORGANIZATION
GOVERNMENT OF KHYBER PAKHTUNKHWA



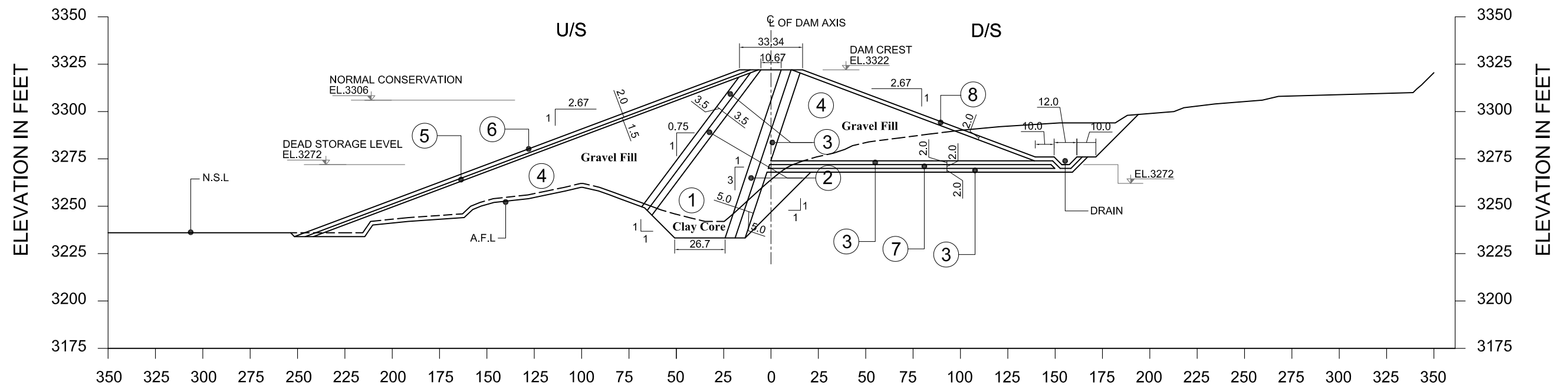
BARQAAB CONSULTING SERVICES
(PVT)LIMITED LAHORE

SANAM DAM PROJECT
LOWER DIR

REV.	DATE	DESCRIPTION	DRAWN	IMTIAZ AHMAD	MAIN EMBANKMENT X-SECTION AT RD 0+250
			CHECKED	DR. M. IRFAN	
			SUBMITTED	DR. M. IRFAN	DATE:
			APPROVED	MANZAR MUMTAZ	May, 2021
					DRAWING NO. BQB-SDP-MD-32

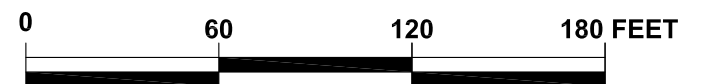
EMBANKMENT MATERIALS

ZONE	MATERIAL
1	SILTY CLAY
2	FINE SAND FILTER
3	COARSE SAND FILTER
4	SANDY GRAVEL FILL
5	BEDDING FOR RIP RAP - WASHED GRAVEL
6	RIP RAP - SELECTED QUARRIED
7	GRAVEL DRAIN
8	COBBLES & BOULDERS



NOTES:-

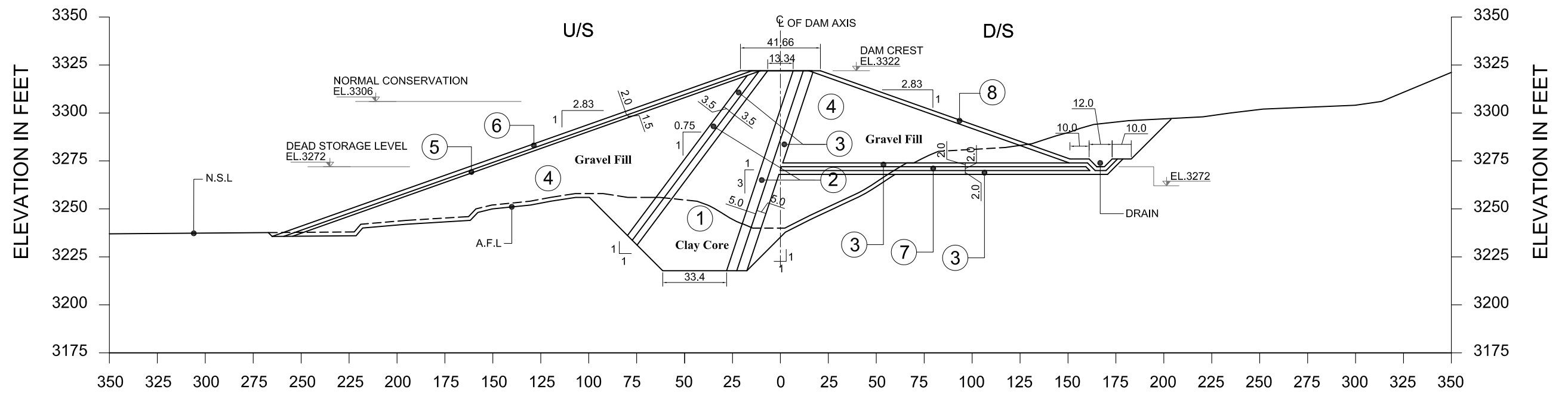
1. ALL DIMENSIONS ARE IN FEET
2. FOR LOCATION REF. DWG. NO. BQB-SDP-MD-26
3. DAM CORE SHOULD BE PLACED ON SOUND ROCK OR AS DIRECTED BY ENGINEER AT SITE
4. FILTER MATERIAL WILL REQUIRED PROCESSING /SCREENING FROM SUITABLE AVAILABLE MATERIAL AT SITE



SCALE: 1"=60 Feet

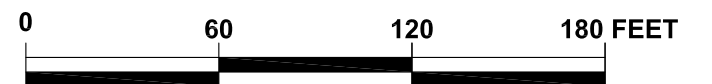
EMBANKMENT MATERIALS

ZONE	MATERIAL
1	SILTY CLAY
2	FINE SAND FILTER
3	COARSE SAND FILTER
4	SANDY GRAVEL FILL
5	BEDDING FOR RIP RAP - WASHED GRAVEL
6	RIP RAP - SELECTED QUARRIED
7	GRAVEL DRAIN
8	COBBLES & BOULDERS



NOTES:-

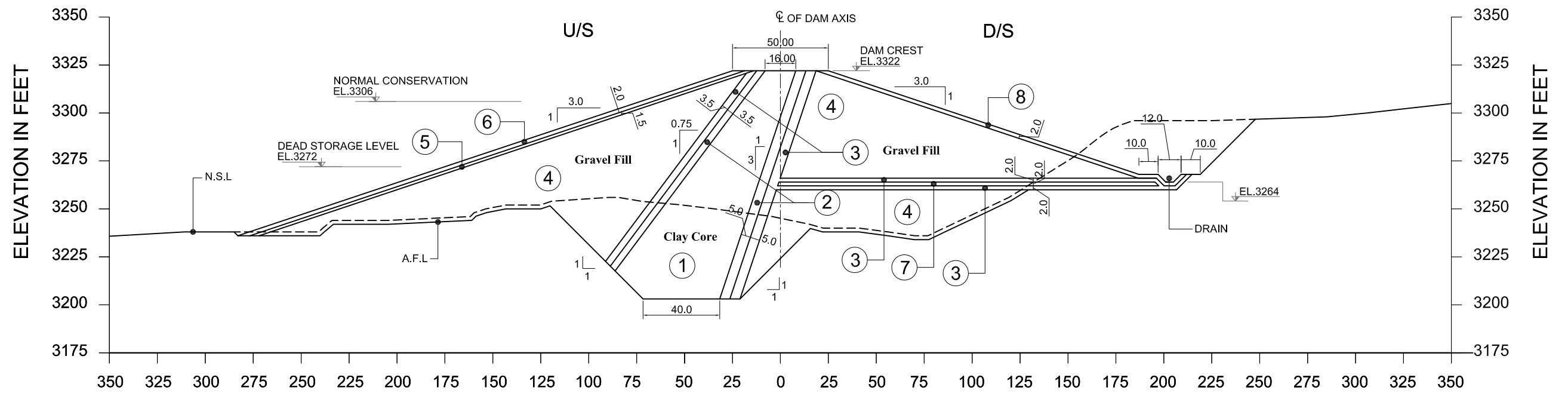
1. ALL DIMENSIONS ARE IN FEET
2. FOR LOCATION REF. DWG. NO. BQB-SDP-MD-26
3. DAM CORE SHOULD BE PLACED ON SOUND ROCK OR AS DIRECTED BY ENGINEER AT SITE
4. FILTER MATERIAL WILL REQUIRED PROCESSING /SCREENING FROM SUITABLE AVAILABLE MATERIAL AT SITE



SCALE: 1"=60 Feet

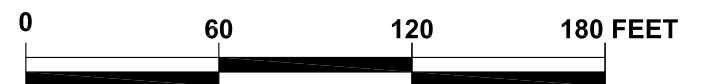
EMBANKMENT MATERIALS

ZONE	MATERIAL
1	SILTY CLAY
2	FINE SAND FILTER
3	COARSE SAND FILTER
4	SANDY GRAVEL FILL
5	BEDDING FOR RIP RAP - WASHED GRAVEL
6	RIP RAP - SELECTED QUARRIED
7	GRAVEL DRAIN
8	COBBLES & BOULDERS



NOTES:-

1. ALL DIMENSIONS ARE IN FEET
2. FOR LOCATION REF. DWG. NO. BQB-SDP-MD-26
3. DAM CORE SHOULD BE PLACED ON SOUND ROCK OR AS DIRECTED BY ENGINEER AT SITE
4. FILTER MATERIAL WILL REQUIRED PROCESSING /SCREENING FROM SUITABLE AVAILABLE MATERIAL AT SITE



SCALE: 1"=60 Feet



SMALL DAMS ORGANIZATION
GOVERNMENT OF KHYBER PAKHTUNKHWA



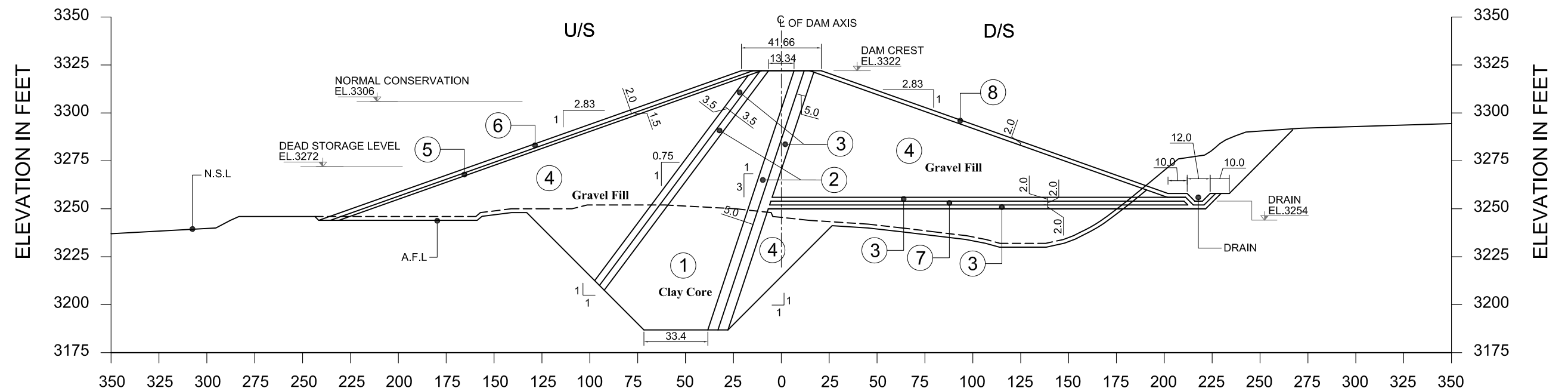
BARQAAB CONSULTING SERVICES
(PVT)LIMITED LAHORE

SANAM DAM PROJECT
LOWER DIR

REV.	DATE	DESCRIPTION	DRAWN	IMTIAZ AHMAD	MAIN EMBANKMENT X-SECTION AT RD 0+400
			CHECKED	DR. M. IRFAN	
			SUBMITTED	DR. M. IRFAN	DATE:
			APPROVED	MANZAR MUMTAZ	May, 2021
					DRAWING NO. BQB-SDP-MD-35

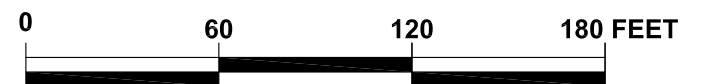
EMBANKMENT MATERIALS

ZONE	MATERIAL
1	SILTY CLAY
2	FINE SAND FILTER
3	COARSE SAND FILTER
4	SANDY GRAVEL FILL
5	BEDDING FOR RIP RAP - WASHED GRAVEL
6	RIP RAP - SELECTED QUARRIED
7	GRAVEL DRAIN
8	COBBLES & BOULDERS



NOTES:-

1. ALL DIMENSIONS ARE IN FEET
2. FOR LOCATION REF. DWG. NO. BQB-SDP-MD-26
3. DAM CORE SHOULD BE PLACED ON SOUND ROCK OR AS DIRECTED BY ENGINEER AT SITE
4. FILTER MATERIAL WILL REQUIRED PROCESSING /SCREENING FROM SUITABLE AVAILABLE MATERIAL AT SITE



SCALE: 1"=60 Feet



SMALL DAMS ORGANIZATION
GOVERNMENT OF KHYBER PAKHTUNKHWA



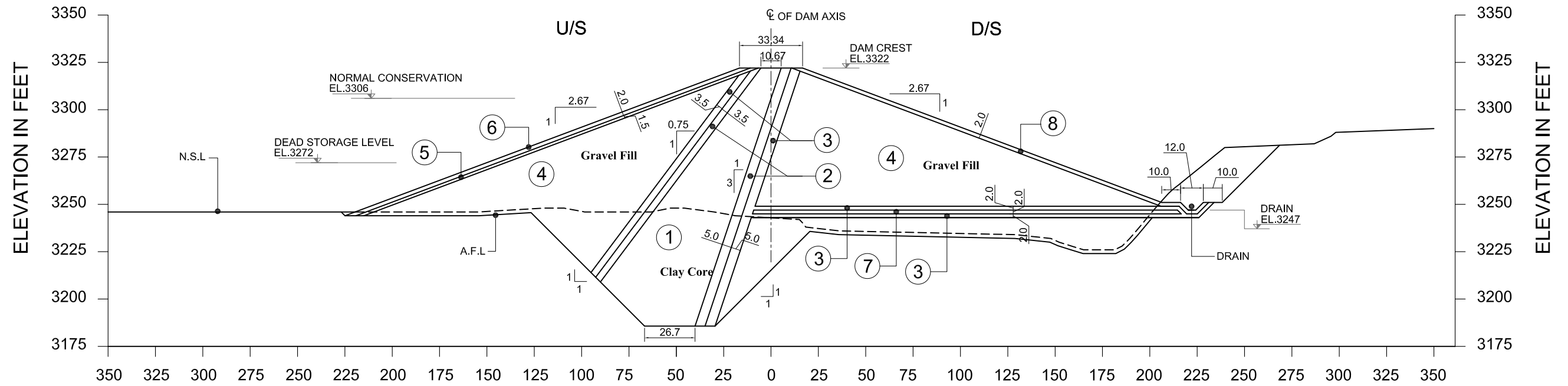
BARQAAB CONSULTING SERVICES
(PVT)LIMITED LAHORE

SANAM DAM PROJECT
LOWER DIR

REV.	DATE	DESCRIPTION	DRAWN	IMTIAZ AHMAD	MAIN EMBANKMENT X-SECTION AT RD 0+450
			CHECKED	DR. M. IRFAN	
			SUBMITTED	DR. M. IRFAN	DATE:
			APPROVED	MANZAR MUMTAZ	May, 2021
					DRAWING NO. BQB-SDP-MD-36

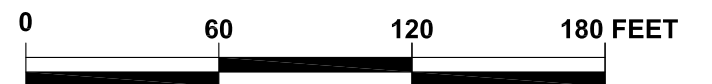
EMBANKMENT MATERIALS

ZONE	MATERIAL
1	SILTY CLAY
2	FINE SAND FILTER
3	COARSE SAND FILTER
4	SANDY GRAVEL FILL
5	BEDDING FOR RIP RAP - WASHED GRAVEL
6	RIP RAP - SELECTED QUARRIED
7	GRAVEL DRAIN
8	COBBLES & BOULDERS



NOTES:-

1. ALL DIMENSIONS ARE IN FEET
2. FOR LOCATION REF. DWG. NO. BQB-SDP-MD-26
3. DAM CORE SHOULD BE PLACED ON SOUND ROCK OR AS DIRECTED BY ENGINEER AT SITE
4. FILTER MATERIAL WILL REQUIRED PROCESSING /SCREENING FROM SUITABLE AVAILABLE MATERIAL AT SITE



SCALE: 1"=60 Feet

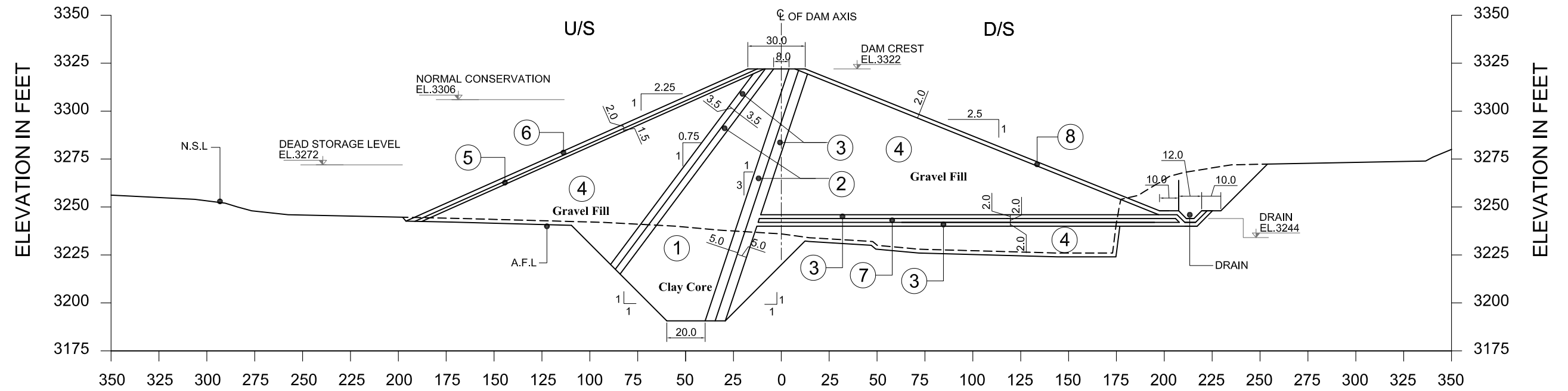
REV.	DATE	DESCRIPTION

DRAWN	IMTIAZ AHMAD
CHECKED	DR. M. IRFAN
SUBMITTED	DR. M. IRFAN
APPROVED	MANZAR MUMTAZ

MAIN EMBANKMENT X-SECTION AT RD 0+500	
DATE: May, 2021	DRAWING NO. BQB-SDP-MD-37

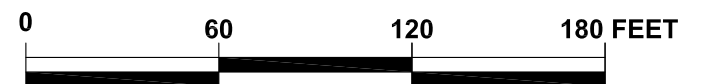
EMBANKMENT MATERIALS

ZONE	MATERIAL
1	SILTY CLAY
2	FINE SAND FILTER
3	COARSE SAND FILTER
4	SANDY GRAVEL FILL
5	BEDDING FOR RIP RAP - WASHED GRAVEL
6	RIP RAP - SELECTED QUARRIED
7	GRAVEL DRAIN
8	COBBLES & BOULDERS



NOTES:-

1. ALL DIMENSIONS ARE IN FEET
2. FOR LOCATION REF. DWG. NO. BQB-SDP-MD-26
3. DAM CORE SHOULD BE PLACED ON SOUND ROCK OR AS DIRECTED BY ENGINEER AT SITE
4. FILTER MATERIAL WILL REQUIRED PROCESSING /SCREENING FROM SUITABLE AVAILABLE MATERIAL AT SITE



SCALE: 1"=60 Feet

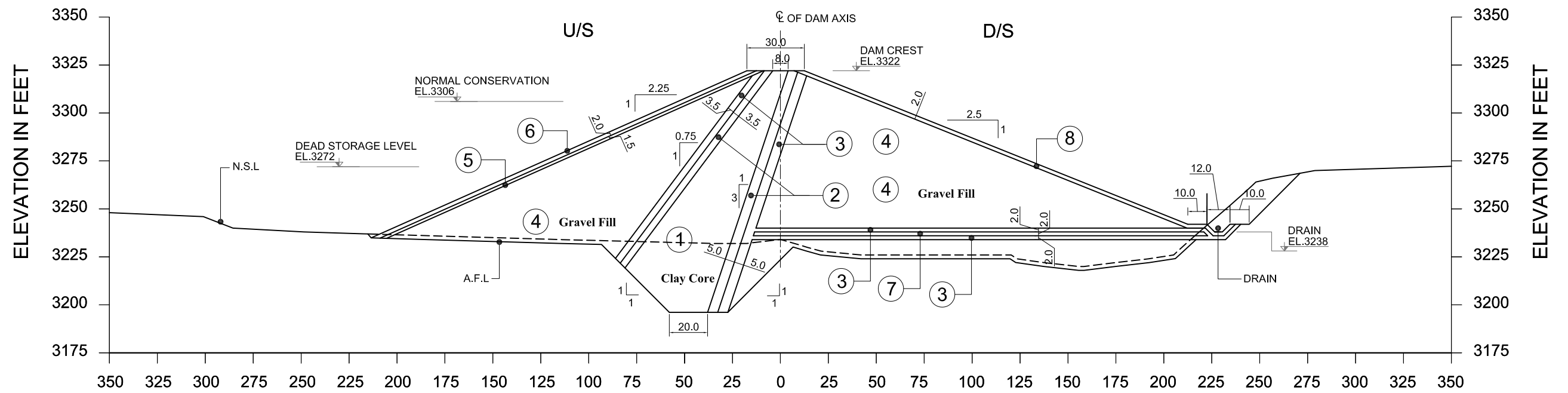
REV.	DATE	DESCRIPTION

DRAWN	IMTIAZ AHMAD
CHECKED	DR. M. IRFAN
SUBMITTED	DR. M. IRFAN
APPROVED	MANZAR MUMTAZ

MAIN EMBANKMENT X-SECTION AT RD 0+550	
DATE: May, 2021	DRAWING NO. BQB-SDP-MD-38

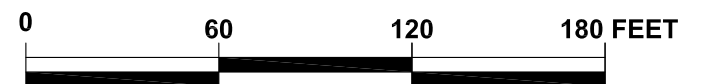
EMBANKMENT MATERIALS

ZONE	MATERIAL
1	SILTY CLAY
2	FINE SAND FILTER
3	COARSE SAND FILTER
4	SANDY GRAVEL FILL
5	BEDDING FOR RIP RAP - WASHED GRAVEL
6	RIP RAP - SELECTED QUARRIED
7	GRAVEL DRAIN
8	COBBLES & BOULDERS



NOTES:-

1. ALL DIMENSIONS ARE IN FEET
2. FOR LOCATION REF. DWG. NO. BQB-SDP-MD-26
3. DAM CORE SHOULD BE PLACED ON SOUND ROCK OR AS DIRECTED BY ENGINEER AT SITE
4. FILTER MATERIAL WILL REQUIRED PROCESSING /SCREENING FROM SUITABLE AVAILABLE MATERIAL AT SITE



SCALE: 1"=60 Feet

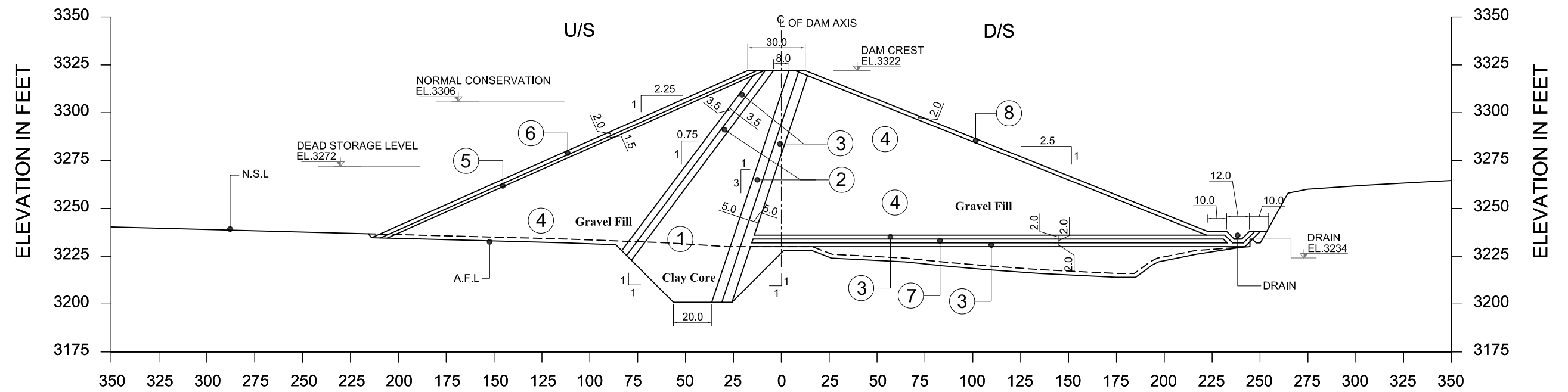
REV.	DATE	DESCRIPTION

DRAWN	IMTIAZ AHMAD
CHECKED	DR. M. IRFAN
SUBMITTED	DR. M. IRFAN
APPROVED	MANZAR MUMTAZ

MAIN EMBANKMENT X-SECTION AT RD 0+600	
DATE: May, 2021	DRAWING NO. BQB-SDP-MD-39

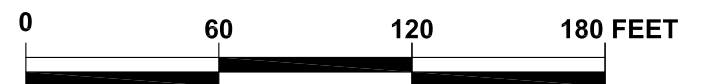
EMBANKMENT MATERIALS

ZONE	MATERIAL
1	SILTY CLAY
2	FINE SAND FILTER
3	COARSE SAND FILTER
4	SANDY GRAVEL FILL
5	BEDDING FOR RIP RAP - WASHED GRAVEL
6	RIP RAP - SELECTED QUARRIED
7	GRAVEL DRAIN
8	COBBLES & BOULDERS



NOTES:-

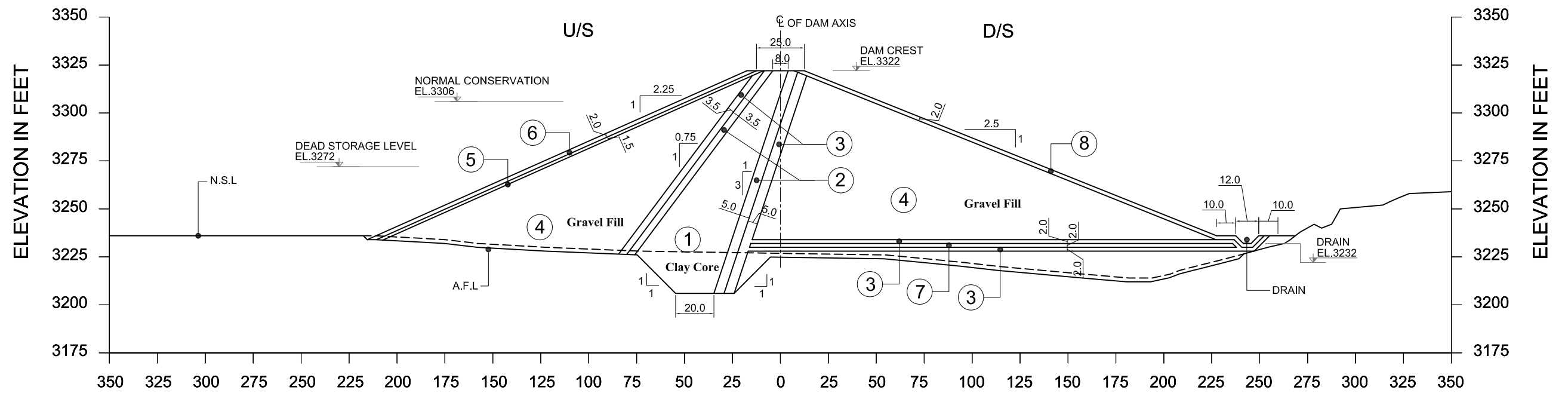
1. ALL DIMENSIONS ARE IN FEET
2. FOR LOCATION REF. DWG. NO. BQB-SDP-MD-26
3. DAM CORE SHOULD BE PLACED ON SOUND ROCK OR AS DIRECTED BY ENGINEER AT SITE
4. FILTER MATERIAL WILL REQUIRED PROCESSING /SCREENING FROM SUITABLE AVAILABLE MATERIAL AT SITE



SCALE: 1"=60 Feet

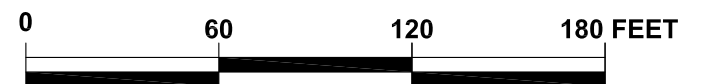
EMBANKMENT MATERIALS

ZONE	MATERIAL
1	SILTY CLAY
2	FINE SAND FILTER
3	COARSE SAND FILTER
4	SANDY GRAVEL FILL
5	BEDDING FOR RIP RAP - WASHED GRAVEL
6	RIP RAP - SELECTED QUARRIED
7	GRAVEL DRAIN
8	COBBLES & BOULDERS



NOTES:-

1. ALL DIMENSIONS ARE IN FEET
2. FOR LOCATION REF. DWG. NO. BQB-SDP-MD-26
3. DAM CORE SHOULD BE PLACED ON SOUND ROCK OR AS DIRECTED BY ENGINEER AT SITE
4. FILTER MATERIAL WILL REQUIRED PROCESSING /SCREENING FROM SUITABLE AVAILABLE MATERIAL AT SITE



SCALE: 1"=60 Feet



SMALL DAMS ORGANIZATION
GOVERNMENT OF KHYBER PAKHTUNKHWA



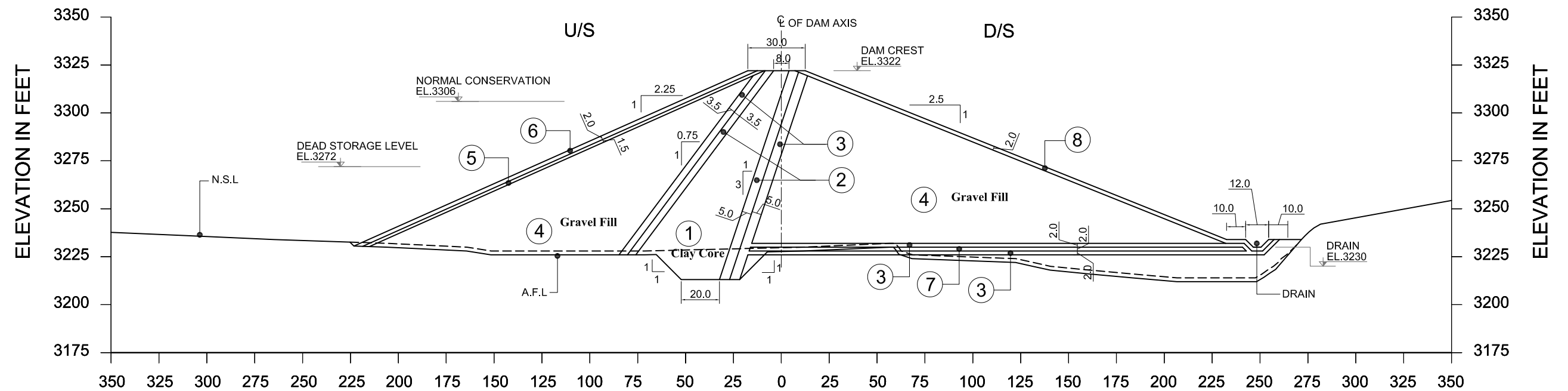
BARQAAB CONSULTING SERVICES
(PVT)LIMITED LAHORE

SANAM DAM PROJECT
LOWER DIR

REV.	DATE	DESCRIPTION	DRAWN	IMTIAZ AHMAD	MAIN EMBANKMENT X-SECTION AT RD 0+700	DRAWING NO. BQB-SDP-MD-41
			CHECKED	DR. M. IRFAN		
			SUBMITTED	DR. M. IRFAN	DATE:	May, 2021
			APPROVED	MANZAR MUMTAZ		

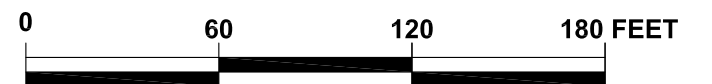
EMBANKMENT MATERIALS

ZONE	MATERIAL
1	SILTY CLAY
2	FINE SAND FILTER
3	COARSE SAND FILTER
4	SANDY GRAVEL FILL
5	BEDDING FOR RIP RAP - WASHED GRAVEL
6	RIP RAP - SELECTED QUARRIED
7	GRAVEL DRAIN
8	COBBLES & BOULDERS



NOTES:-

1. ALL DIMENSIONS ARE IN FEET
2. FOR LOCATION REF. DWG. NO. BQB-SDP-MD-26
3. DAM CORE SHOULD BE PLACED ON SOUND ROCK OR AS DIRECTED BY ENGINEER AT SITE
4. FILTER MATERIAL WILL REQUIRED PROCESSING /SCREENING FROM SUITABLE AVAILABLE MATERIAL AT SITE



SCALE: 1"=60 Feet

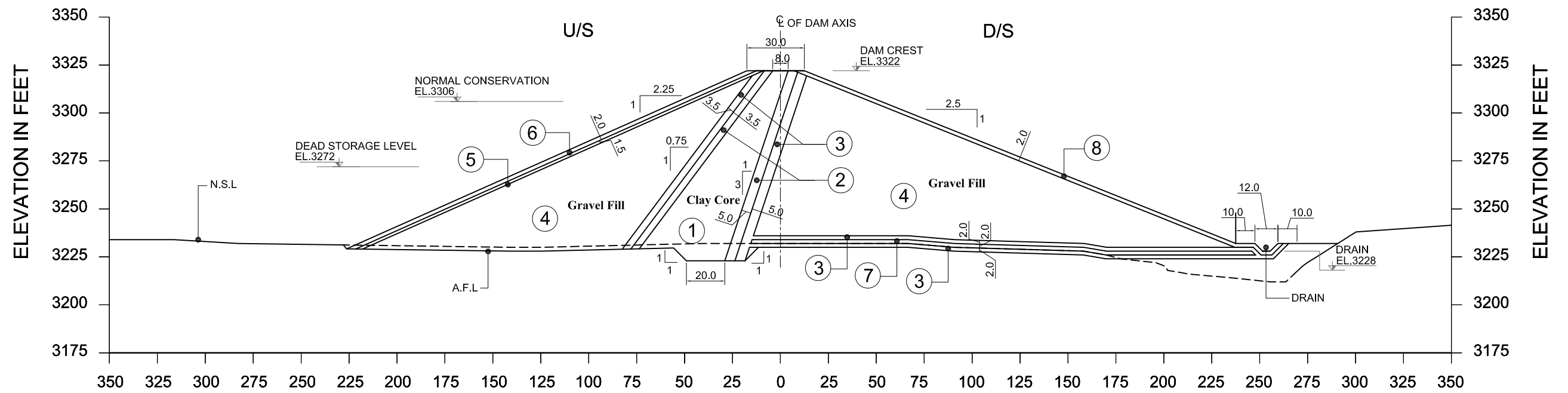
REV.	DATE	DESCRIPTION

DRAWN	IMTIAZ AHMAD
CHECKED	DR. M. IRFAN
SUBMITTED	DR. M. IRFAN
APPROVED	MANZAR MUMTAZ

MAIN EMBANKMENT X-SECTION AT RD 0+750	
DATE: May, 2021	DRAWING NO. BQB-SDP-MD-42

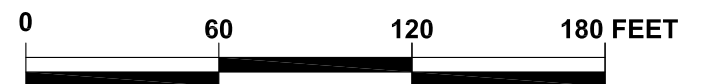
EMBANKMENT MATERIALS

ZONE	MATERIAL
1	SILTY CLAY
2	FINE SAND FILTER
3	COARSE SAND FILTER
4	SANDY GRAVEL FILL
5	BEDDING FOR RIP RAP - WASHED GRAVEL
6	RIP RAP - SELECTED QUARRIED
7	GRAVEL DRAIN
8	COBBLES & BOULDERS



NOTES:-

1. ALL DIMENSIONS ARE IN FEET
2. FOR LOCATION REF. DWG. NO. BQB-SDP-MD-26
3. DAM CORE SHOULD BE PLACED ON SOUND ROCK OR AS DIRECTED BY ENGINEER AT SITE
4. FILTER MATERIAL WILL REQUIRED PROCESSING /SCREENING FROM SUITABLE AVAILABLE MATERIAL AT SITE



SCALE: 1"=60 Feet

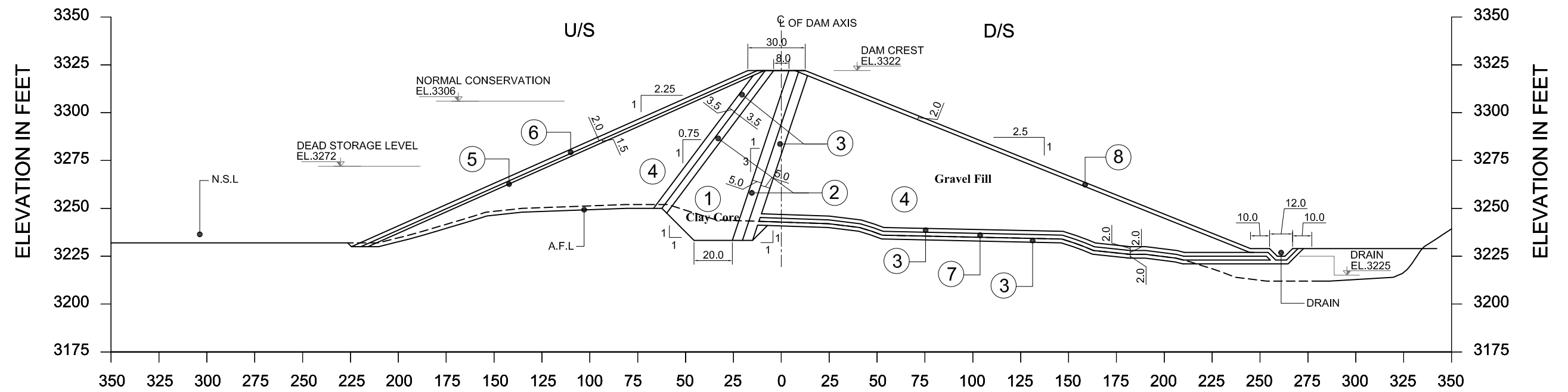
REV.	DATE	DESCRIPTION

DRAWN	IMTIAZ AHMAD
CHECKED	DR. M. IRFAN
SUBMITTED	DR. M. IRFAN
APPROVED	MANZAR MUMTAZ

MAIN EMBANKMENT X-SECTION AT RD 0+800	
DATE: May, 2021	DRAWING NO. BQB-SDP-MD-43

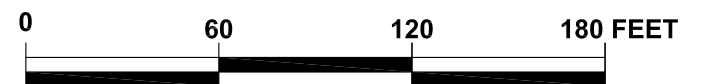
EMBANKMENT MATERIALS

ZONE	MATERIAL
1	SILTY CLAY
2	FINE SAND FILTER
3	COARSE SAND FILTER
4	SANDY GRAVEL FILL
5	BEDDING FOR RIP RAP - WASHED GRAVEL
6	RIP RAP - SELECTED QUARRIED
7	GRAVEL DRAIN
8	COBBLES & BOULDERS



NOTES:-

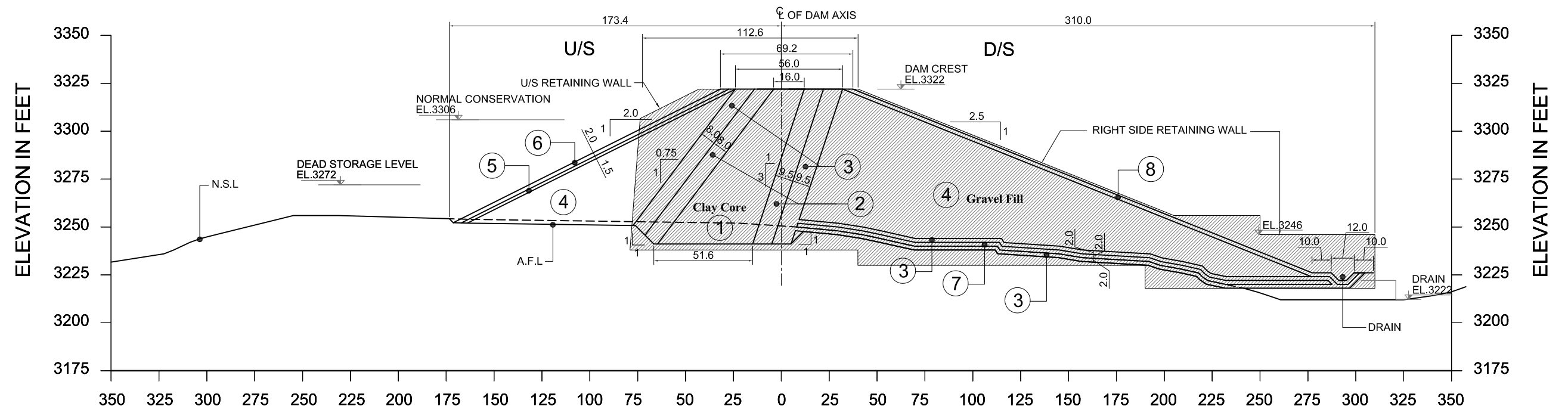
1. ALL DIMENSIONS ARE IN FEET
2. FOR LOCATION REF. DWG. NO. BQB-SDP-MD-26
3. DAM CORE SHOULD BE PLACED ON SOUND ROCK OR AS DIRECTED BY ENGINEER AT SITE
4. FILTER MATERIAL WILL REQUIRED PROCESSING /SCREENING FROM SUITABLE AVAILABLE MATERIAL AT SITE



SCALE: 1"=60 Feet

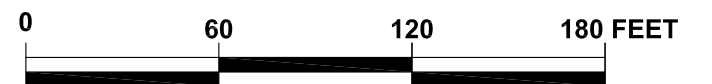
EMBANKMENT MATERIALS

ZONE	MATERIAL
1	SILTY CLAY
2	FINE SAND FILTER
3	COARSE SAND FILTER
4	SANDY GRAVEL FILL
5	BEDDING FOR RIP RAP - WASHED GRAVEL
6	RIP RAP - SELECTED QUARRIED
7	GRAVEL DRAIN
8	COBBLES & BOULDERS



NOTES:-

1. ALL DIMENSIONS ARE IN FEET
2. FOR LOCATION REF. DWG. NO. BQB-SDP-MD-26
3. DAM CORE SHOULD BE PLACED ON SOUND ROCK OR AS DIRECTED BY ENGINEER AT SITE
4. FILTER MATERIAL WILL REQUIRED PROCESSING /SCREENING FROM SUITABLE AVAILABLE MATERIAL AT SITE

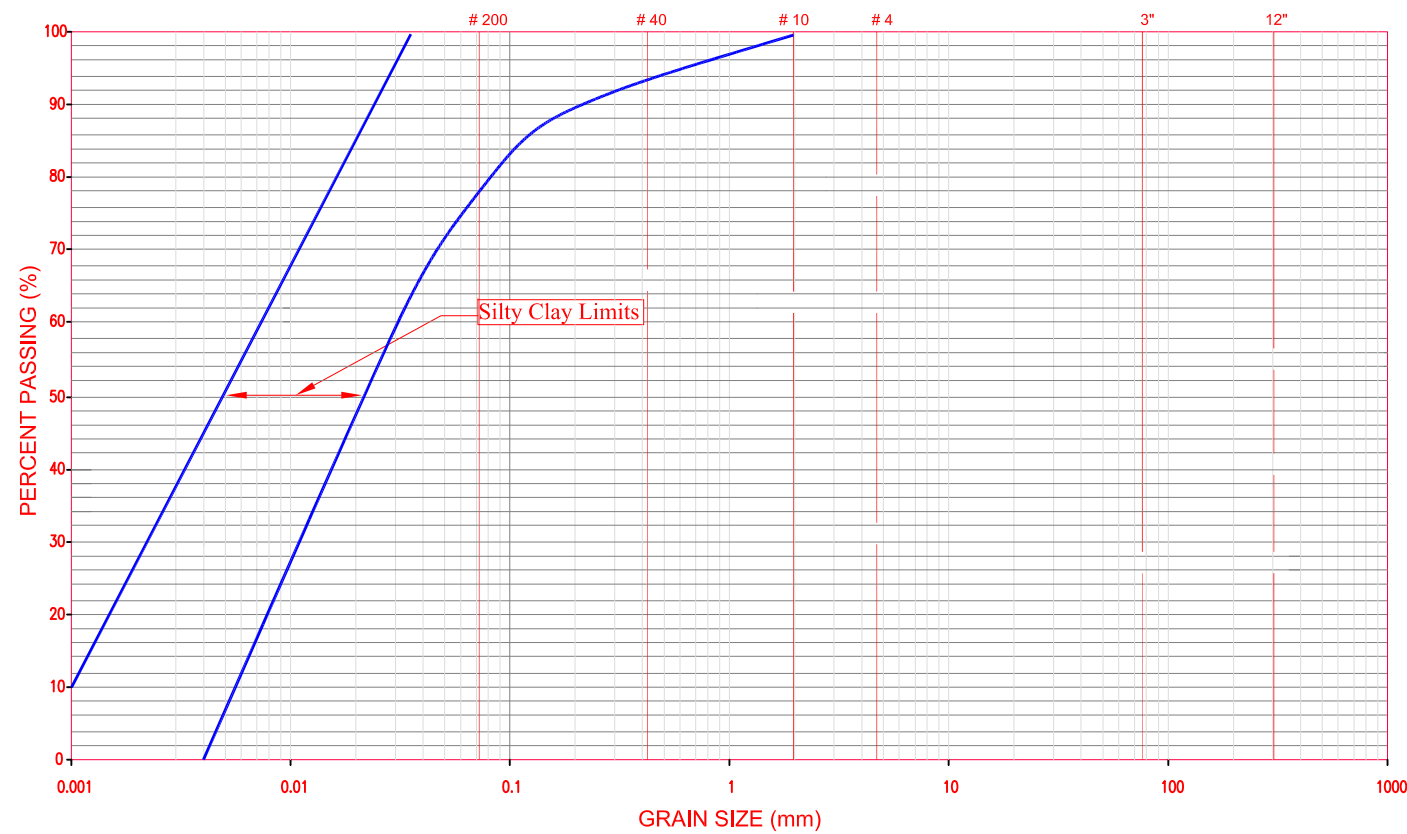


SCALE: 1"=60 Feet

REV.	DATE	DESCRIPTION

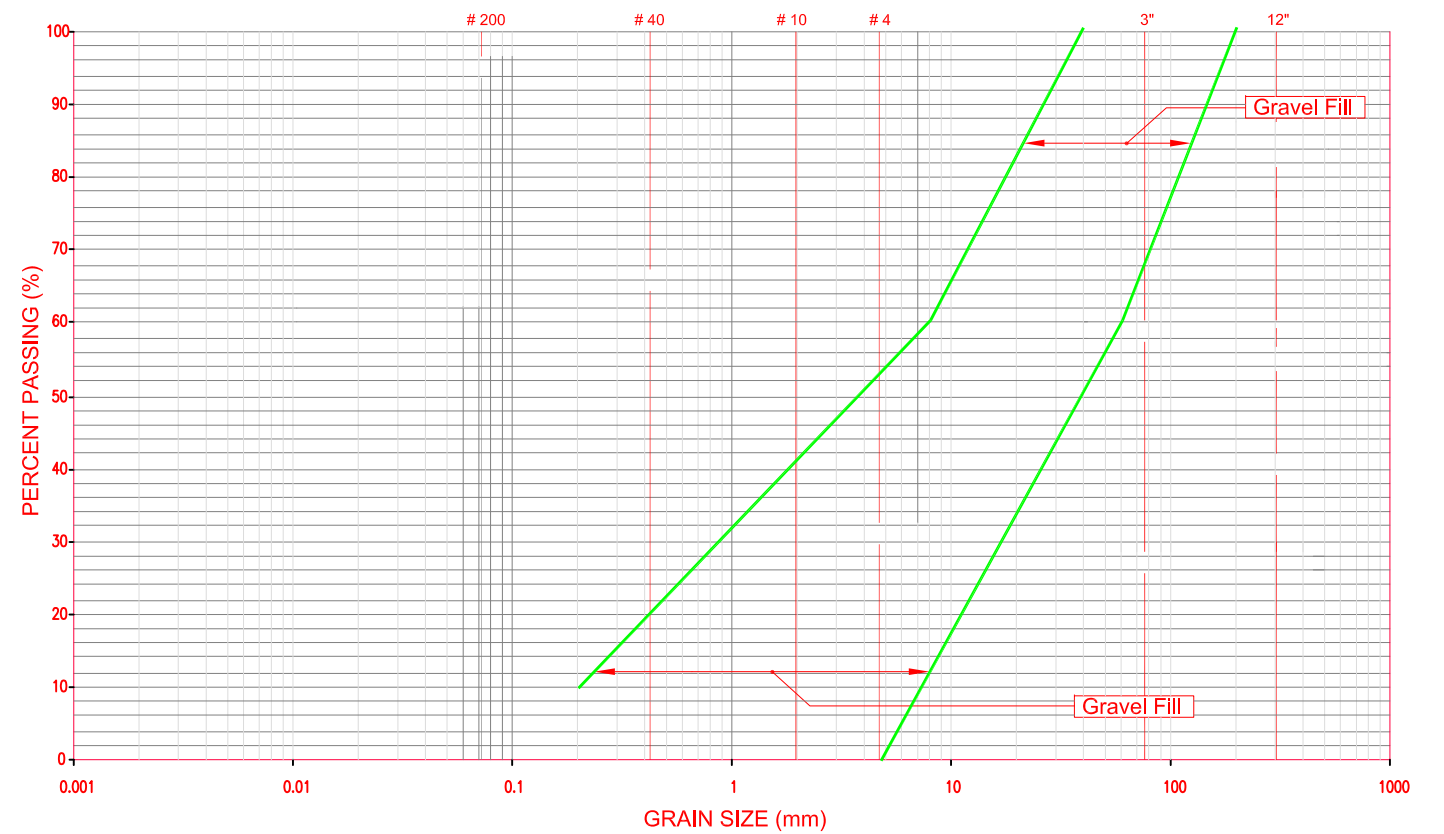
DRAWN	IMTIAZ AHMAD
CHECKED	DR. M. IRFAN
SUBMITTED	DR. M. IRFAN
APPROVED	MANZAR MUMTAZ

MAIN EMBANKMENT X-SECTION AT RD 0+884	
DATE: May, 2021	DRAWING NO. BQB-SDP-MD-45



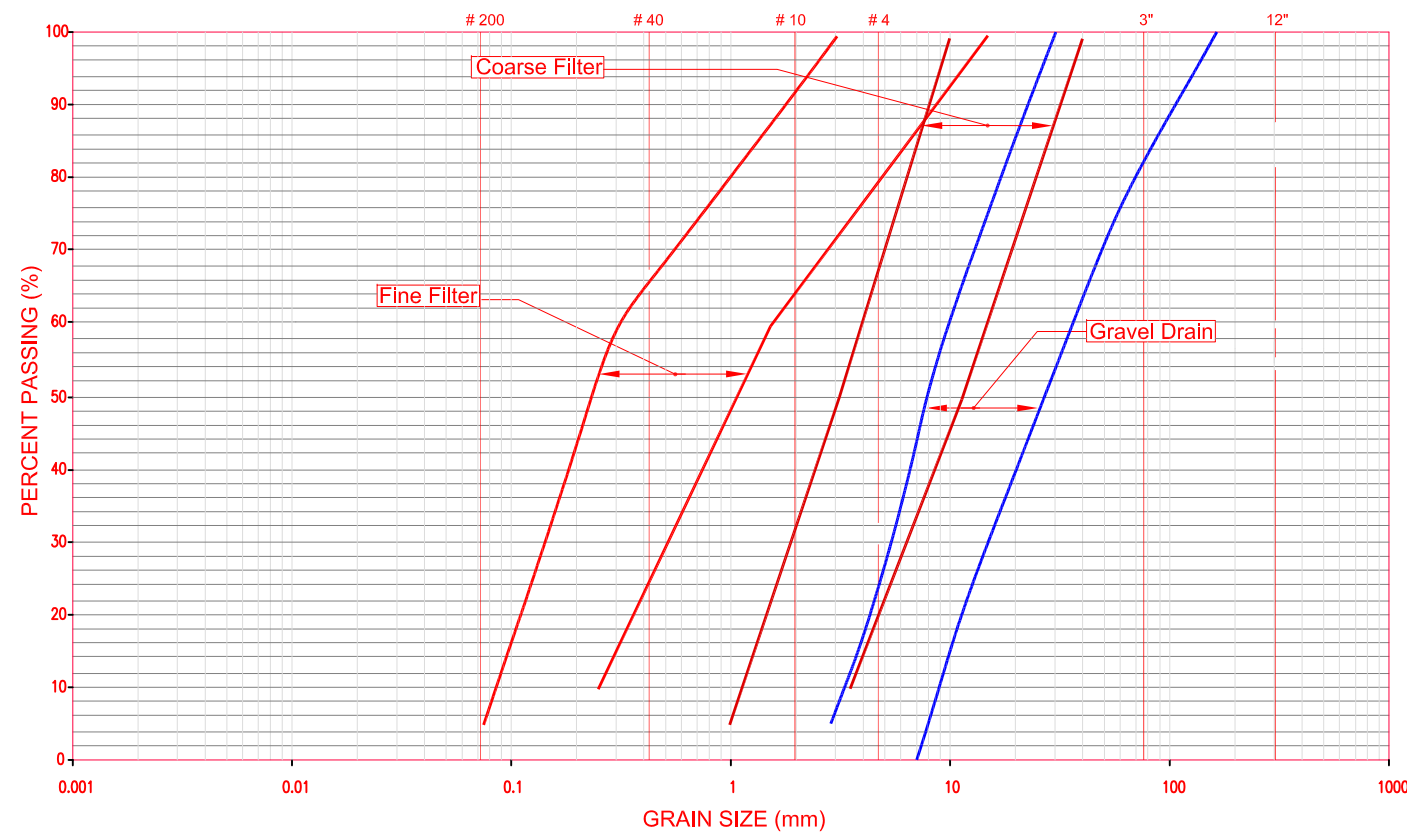
CLAY	SILT	SAND			GRAVEL		COBBLES	BOULDERS
		FINE	MEDIUM	COARSE	FINE	COARSE		

(a) DAM IMPERVIOUS CORE MATERIALS



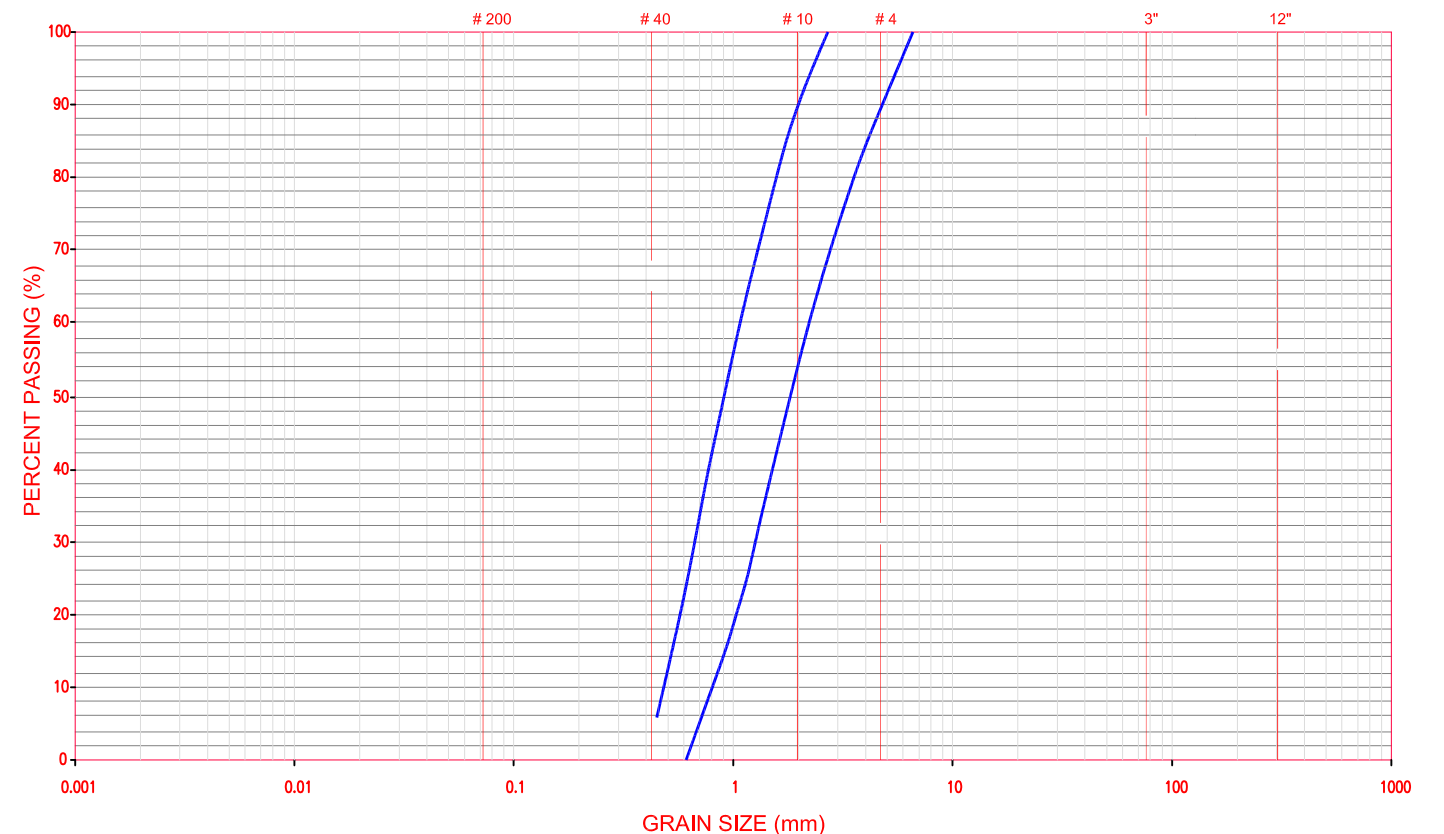
CLAY	SILT	SAND			GRAVEL		COBBLES	BOULDERS
		FINE	MEDIUM	COARSE	FINE	COARSE		

(b) DAM SHOULDER MATERIALS



CLAY	SILT	SAND			GRAVEL		COBBLES	BOULDERS
		FINE	MEDIUM	COARSE	FINE	COARSE		

(c) FILTERS AND GRAVEL DRAIN



CLAY	SILT	SAND			GRAVEL		COBBLES	BOULDERS
		FINE	MEDIUM	COARSE	FINE	COARSE		

(d) FILTER SAND FOR DRAINAGE WELLS AND PIEZOMETER TIPS

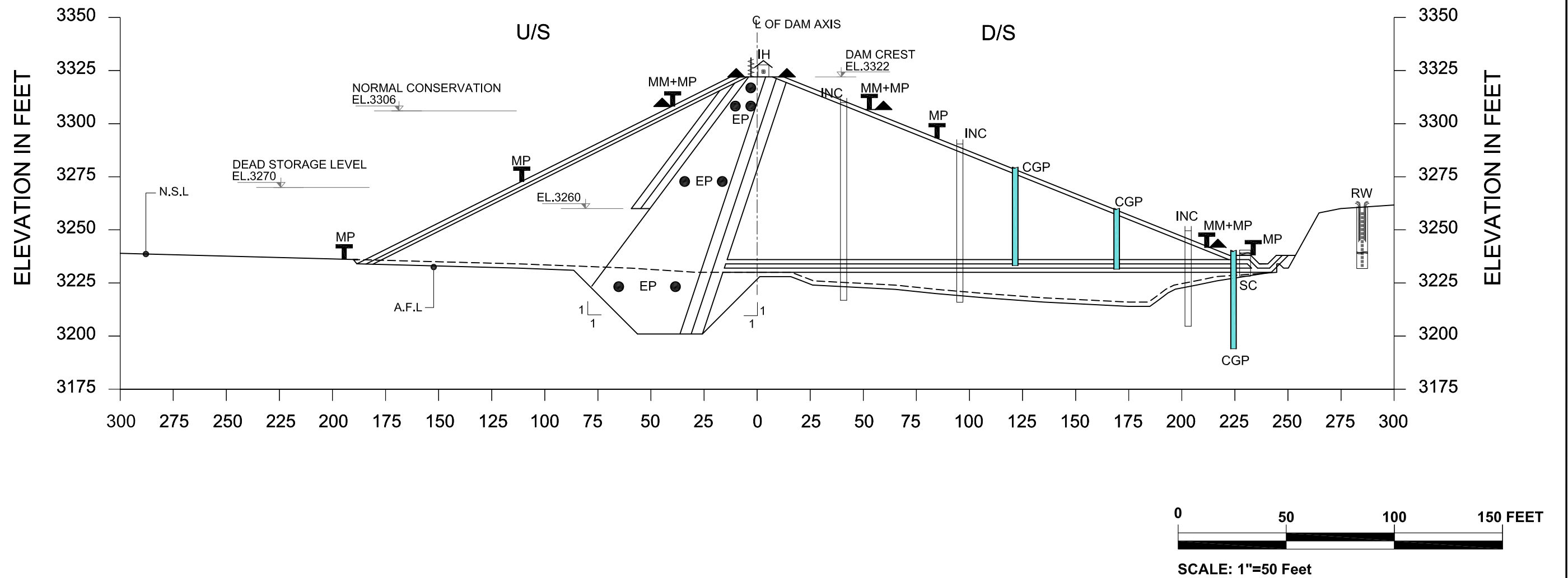


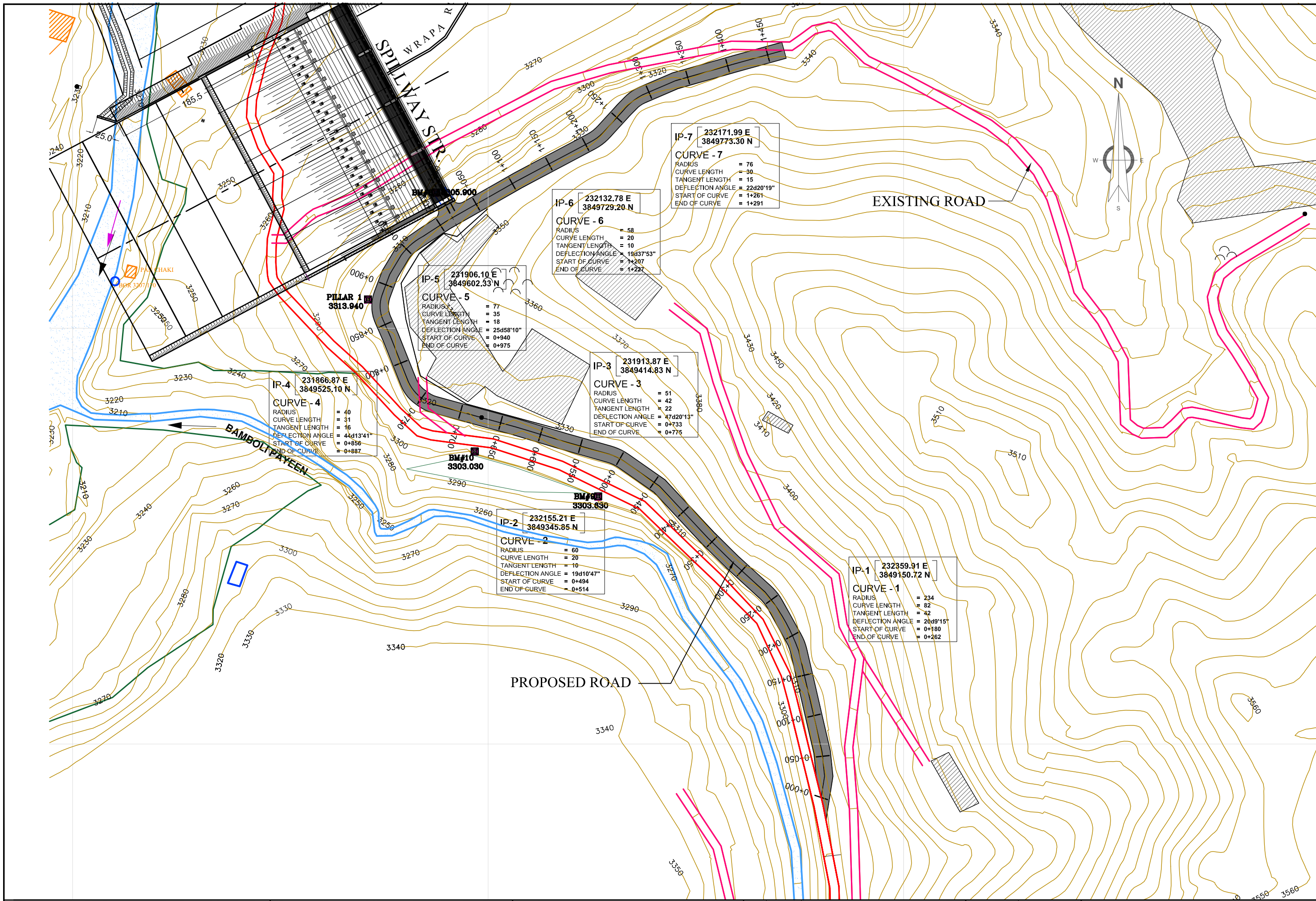
LEGEND

Symbol	Abbreviation	Description	Purpose
T	MP	Movement Pin	To observe horizontal & vertical movements
▲	MM	Movement Marker	To observe horizontal & vertical movements
▮	CGP	Casagrande pots/ Stand pipe Piezometer	To observe pore water pressures
●	EP	Vibrating wire Piezometer	To observe pore water pressures
▮	INC	Inclinometer	To observe lateral movement in fill
□	SC	Seepage Chamber	To Collect Seepage of water from Dam
V	V	V- Notches	To observe Seepage of water from Dam
🏠	IH	Instrument House Panel	Instruments Reading point at Dam Crest
⚡	E	Earthing	To protect the instruments from flashing
🏠	RW	Relief Well	To provide the Relief D/S from ground water pressures

NOTES:-

- ALL DIMENSIONS ARE IN FEET
- CONTROL POINTS I.e CREST MOVEMENT PIN (MP) AND OR MOVEMENT MARKER (MM) HAVE BEEN PROPOSED AT INTERVAL OF 150 FT. OR AS DIRECTED BY ENGINEER AT SITE
- THREE SECTIONS HAVE BEEN PROPOSED FOR INSTALLATION OF INCLINOMETERS PIEZOMETERS ARE PROPOSED AT RD 0+350, 0+450 & 0+840.
- SEEPAGE CHAMBERS AT RD 0+400, 0+650, 0+840 V NOTCHES ALSO BE PROVIDED AT SAID SEEPAGE CHAMBERS.
- INSTALLATION OF INSTRUMENT HOUSE PANEL AT EACH SECTION BE DONE WITH INSITU ARRESTOR INSIDE THE INSTRUMENT HOUSE PANEL & EARTHING TO PROTECT FROM FLASHING.
- DRAINING RELIEF WELLS TO BE INSTALLED ABOUT 40' D/S OF DAM TOE ARE AS UNDER:
@100' C/C FROM RD 0+300 TO RD 0+600
@200' C/C FROM RD 0+000 TO RD 0+300 AND RD 0+600 TO 0+840
- ADDITION OR SUBTRACTION IN RELIEF WELLS IF ANY BE DECIDED BY THE ENGINEER AT SITE.
- APPROACHES AND PROTECTION OF INSTRUMENTS FROM VANDALISM FROM LOCALS ARE MUCH IMPORTANT & MANDATORY.
- LOCATIONS AND INSTALLATION DEPTHS OF INSTRUMENTS TO BE DECIDED BY THE ENGINEER AT SITE.





IP-4 231866.87 E
3849525.10 N
CURVE - 4
RADIUS = 40
CURVE LENGTH = 31
TANGENT LENGTH = 16
DEFLECTION ANGLE = 44d13'41"
START OF CURVE = 0+856
END OF CURVE = 0+887

IP-5 231906.10 E
3849602.33 N
CURVE - 5
RADIUS = 77
CURVE LENGTH = 35
TANGENT LENGTH = 18
DEFLECTION ANGLE = 25d58'10"
START OF CURVE = 0+940
END OF CURVE = 0+975

IP-6 232132.78 E
3849729.20 N
CURVE - 6
RADIUS = 58
CURVE LENGTH = 20
TANGENT LENGTH = 10
DEFLECTION ANGLE = 19d37'53"
START OF CURVE = 1+207
END OF CURVE = 1+227

IP-3 231913.87 E
3849414.83 N
CURVE - 3
RADIUS = 51
CURVE LENGTH = 42
TANGENT LENGTH = 22
DEFLECTION ANGLE = 47d20'13"
START OF CURVE = 0+733
END OF CURVE = 0+775

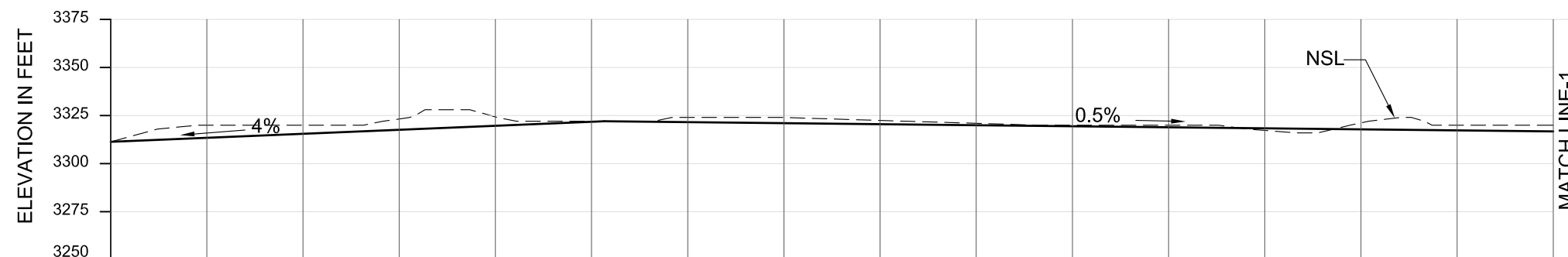
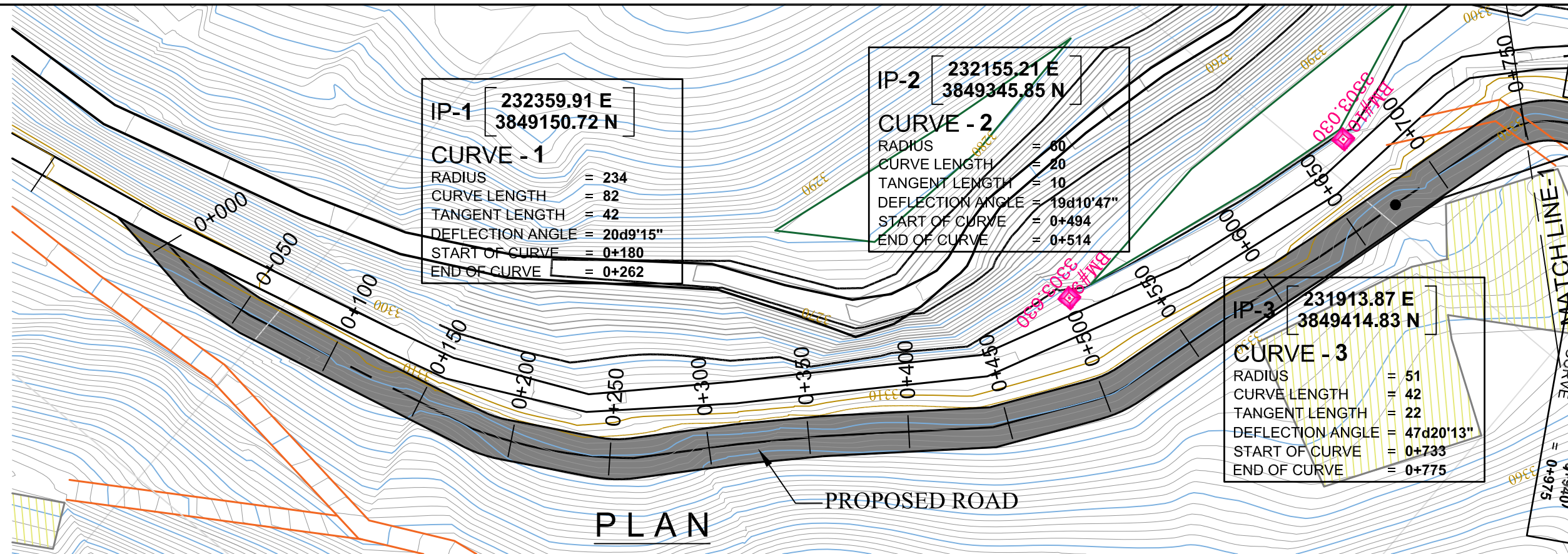
IP-2 232155.21 E
3849345.85 N
CURVE - 2
RADIUS = 60
CURVE LENGTH = 20
TANGENT LENGTH = 10
DEFLECTION ANGLE = 19d10'47"
START OF CURVE = 0+494
END OF CURVE = 0+514

IP-7 232171.99 E
3849773.30 N
CURVE - 7
RADIUS = 76
CURVE LENGTH = 30
TANGENT LENGTH = 15
DEFLECTION ANGLE = 22d20'19"
START OF CURVE = 1+261
END OF CURVE = 1+291

IP-1 232359.91 E
3849150.72 N
CURVE - 1
RADIUS = 234
CURVE LENGTH = 82
TANGENT LENGTH = 42
DEFLECTION ANGLE = 20d9'15"
START OF CURVE = 0+180
END OF CURVE = 0+262

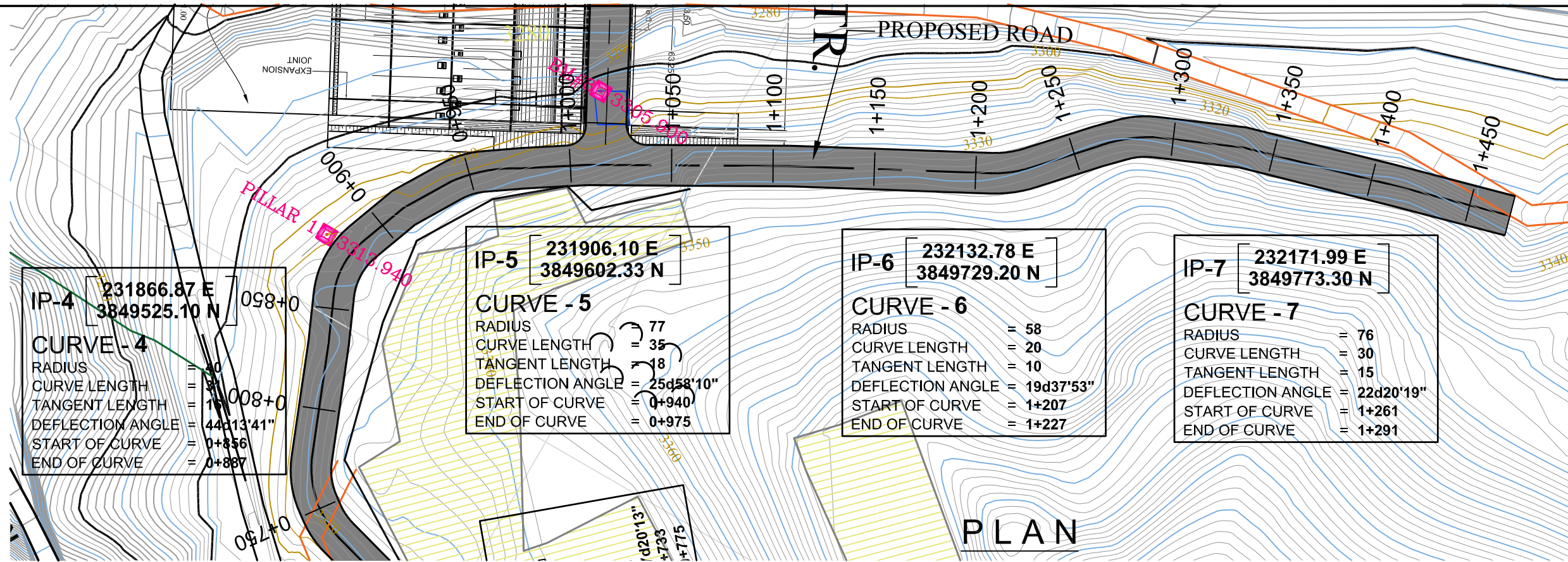
REV.	DATE	DESCRIPTION

DRAWN	IMTIAZ AHMAD
CHECKED	DR. M. IRFAN
SUBMITTED	DR. M. IRFAN
APPROVED	MANZAR MUMTAZ

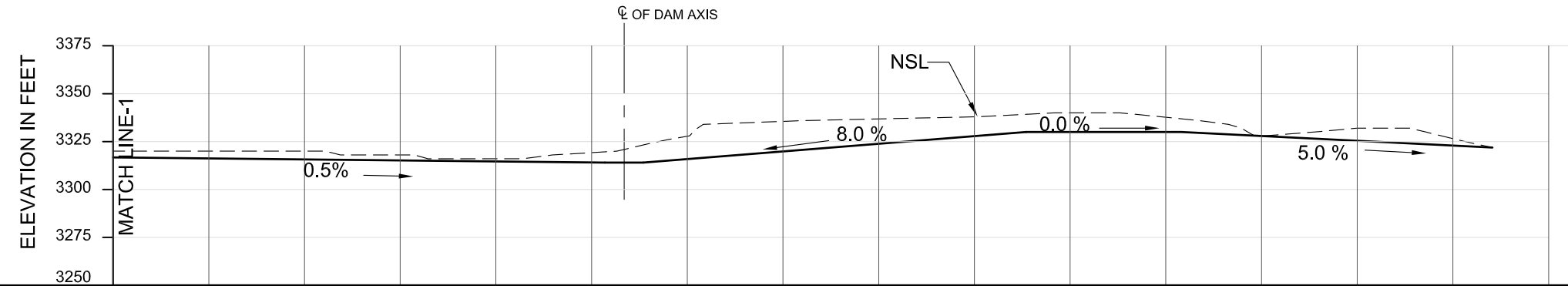


PROPOSED DESIGN	ROAD SLOPE	4.0 %														0.5 %													
	ROAD WIDTH (ft.)	16 FEET																											
	ROAD LEVEL (ft)	3311.33	3313.41	3315.49	3317.57	3319.64	3321.72	3321.54	3321.01	3320.47	3319.94	3319.41	3318.87	3318.34	3317.81	3317.27	3316.74												
	NATURAL SURFACE LEVEL (ft)	3311.33	3320.00	3320.00	3323.21	3324.26	3322.00	3324.00	3323.98	3322.45	3320.95	3320.00	3320.00	3317.26	3321.18	3320.00	3320.00												
	DISTANCE. R.D (ft)	0+000	0+050	0+100	0+150	0+200	0+250	0+300	0+350	0+400	0+450	0+500	0+550	0+600	0+650	0+700	0+750												

PROFILE

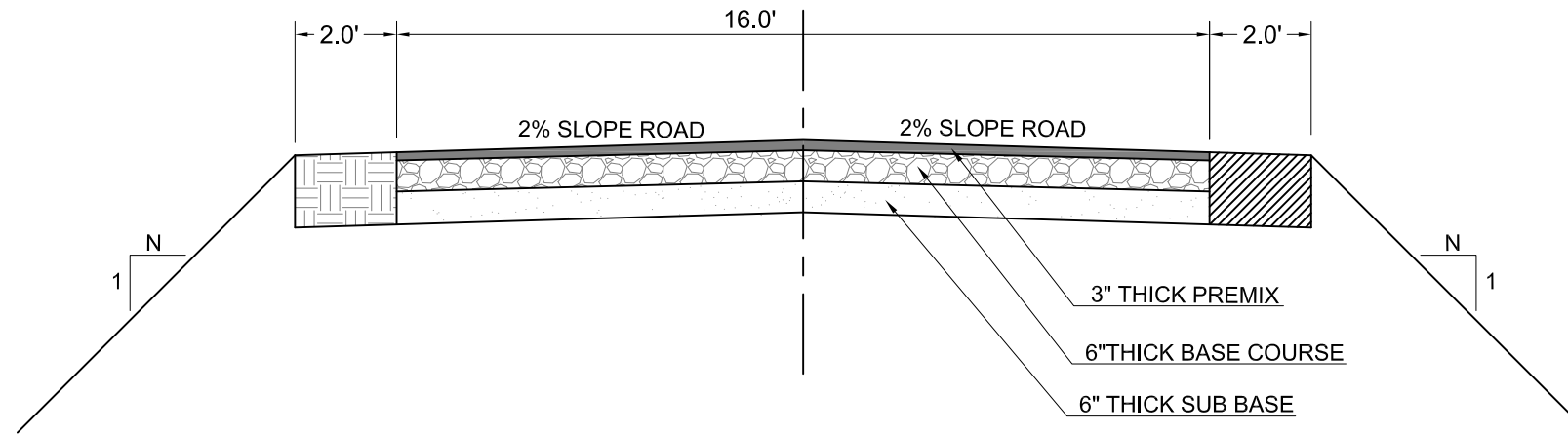


PLAN

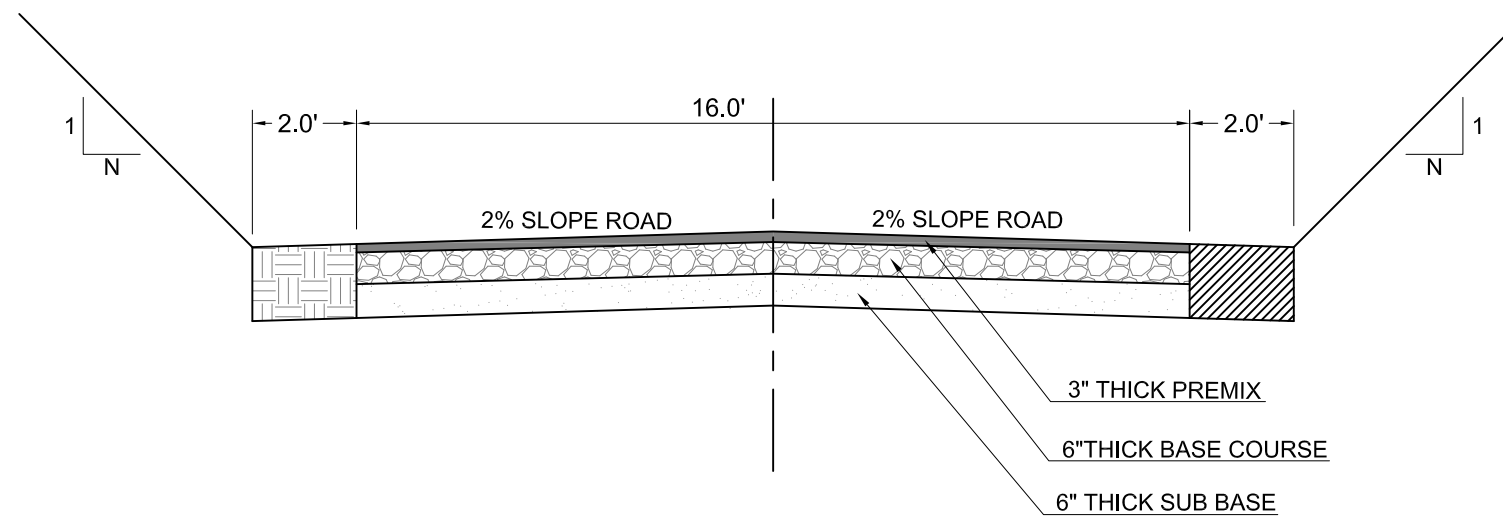


PROPOSED DESIGN	ROAD SLOPE																
	ROAD WIDTH (ft.)	16 FEET															
	ROAD LEVEL (ft)	3316.74	3316.21	3315.67	3315.14	3314.61	3314.07	3315.84	3319.84	3323.84	3327.84	3330.00	3330.00	3327.91	3325.41	3322.91	3321.87
	NATURAL SURFACE LEVEL (ft)	3320.00	3320.00	3320.00	3318.00	3316.00	3319.21	3327.79	3335.54	3336.83	3337.93	3340.00	3337.70	3328.00	3332.00	3326.52	3321.87
	DISTANCE. R.D (ft)	0+750	0+800	0+850	0+900	0+950	1+000	1+050	1+100	1+150	1+200	1+250	1+300	1+350	1+400	1+450	1+471

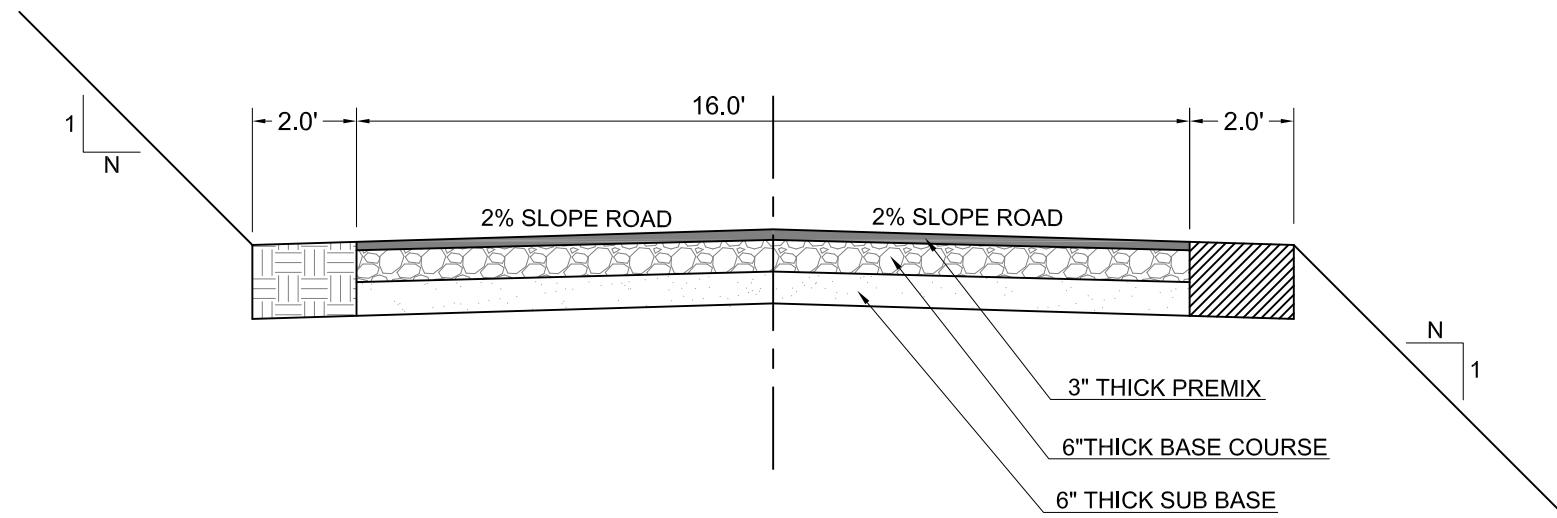
PROFILE



TYPICAL CROSS SECTION OF ROAD (FILL)



TYPICAL CROSS SECTION OF ROAD (CUT)



TYPICAL CROSS SECTION OF ROAD (CUT & FILL)

FILL SLOPE RATIO (TABLE)

HIGHT (H.F)	FILL SLOPE
0 TO 5.0'	1 : 5 : 1
More Then 5.0'	1 : 1

CUT SLOPE RATIO (TABLE)

EARTH	DEPTH	CUT SLOPE (H.V.)
	0 ~ 5.0'	1 : 1
	More Then 5.0'	1 : 25 : 1
	More Then 10.0'	1 : 125 : 1

CUT SLOPE RATIO (TABLE)

HARD ROCK	DEPTH	CUT SLOPE (H.V.)
	0 ~ 5.0'	Vertical
More Then 5.0'	Vertical	

NOTES:
1. ALL DIMENSIONS ARE IN FEET



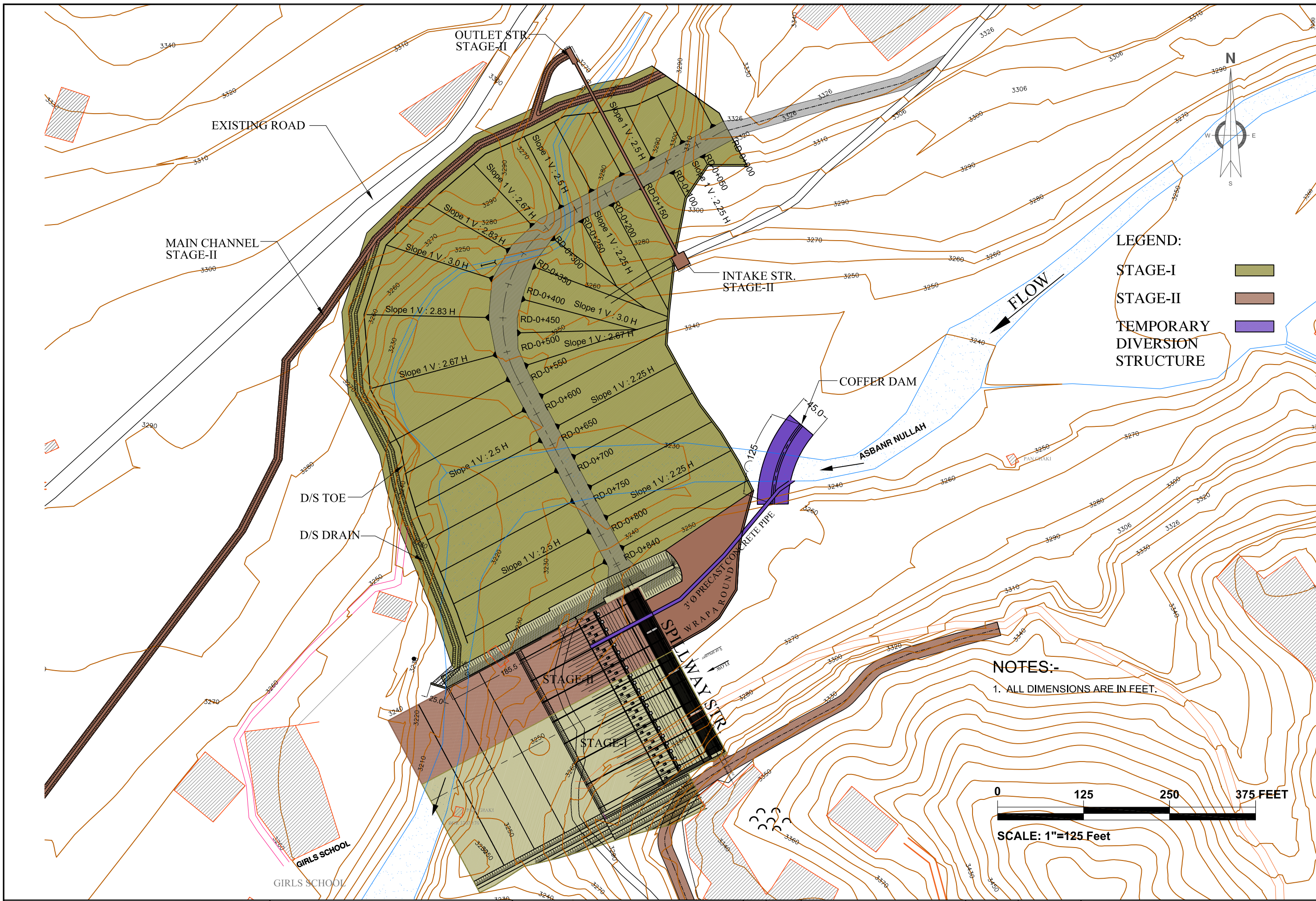
SMALL DAMS ORGANIZATION
GOVERNMENT OF KHYBER PAKHTUNKHWA



BARQAAB CONSULTING SERVICES
(PVT)LIMITED LAHORE

SANAM DAM PROJECT
LOWER DIR

REV.	DATE	DESCRIPTION	DRAWN	IMTIAZ	LEFT ABUTMENT ACCESS ROAD TYPICAL SECTIONS	DATE:	DRAWING NO.
			CHECKED	TANVIR ABBAS		April, 2018	BQB-SDP-MD-50
			SUBMITTED	TANVIR ABBAS			
			APPROVED	M.T.A			



SMALL DAMS ORGANIZATION
GOVERNMENT OF KHYBER PAKHTUNKHWA



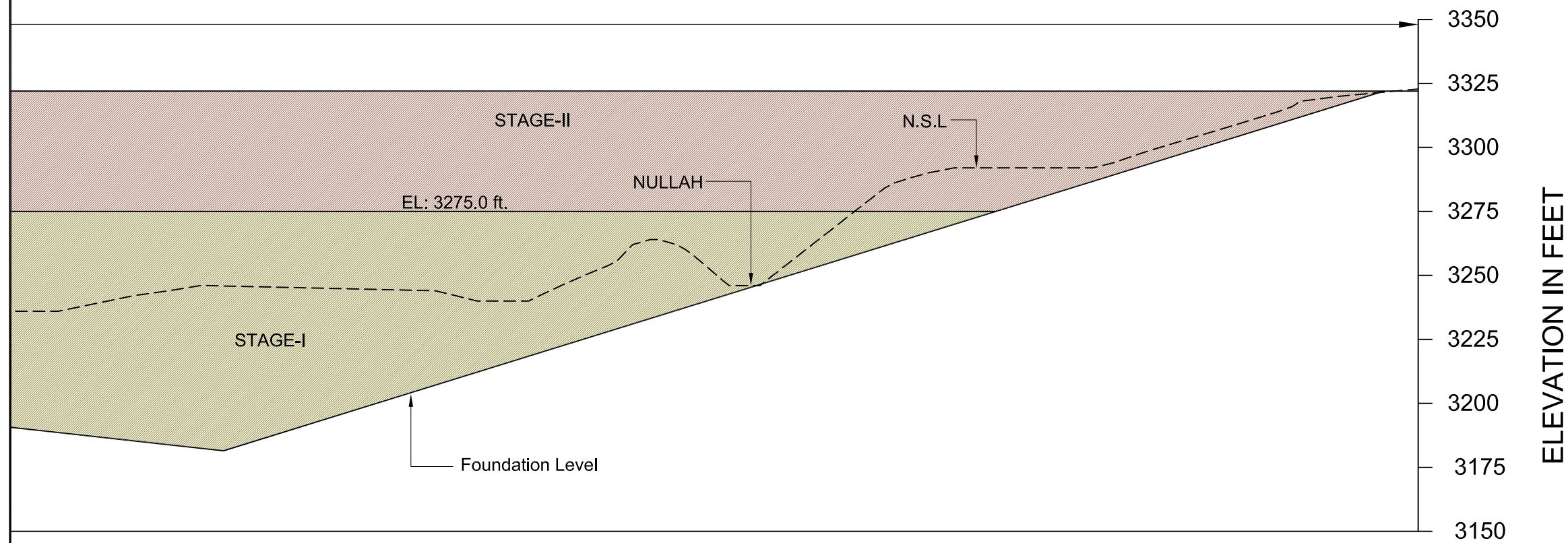
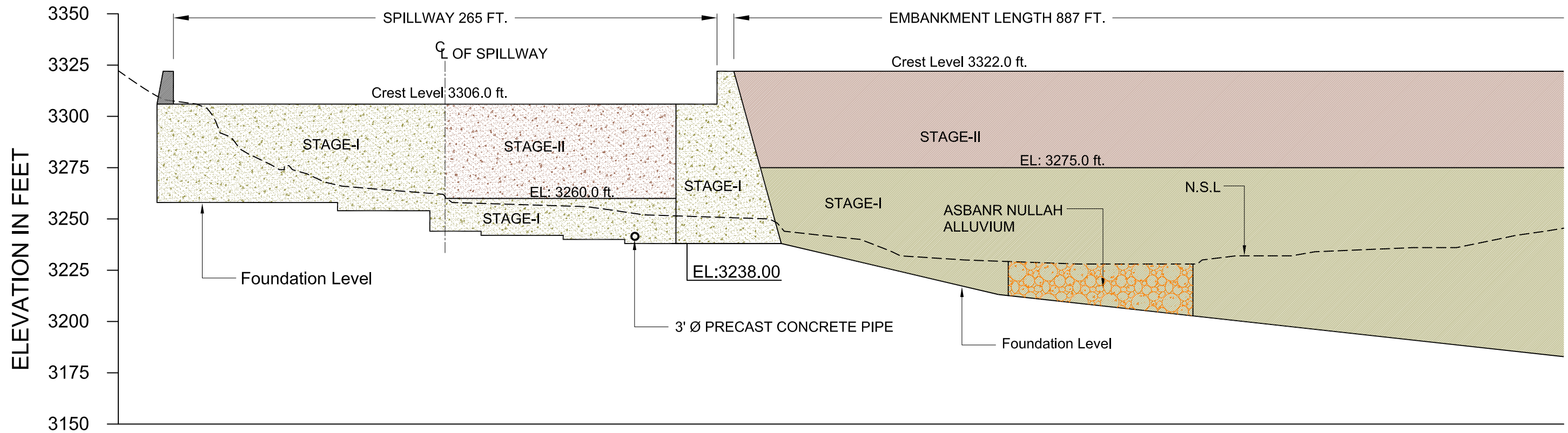
BARQAAB CONSULTING SERVICES
(PVT)LIMITED LAHORE

SANAM DAM PROJECT
LOWER DIR

REV.	DATE	DESCRIPTION

DRAWN	IMTIAZ AHMAD
CHECKED	ALI ARSLAN
SUBMITTED	MANZAR MUMTAZ
APPROVED	MANZAR MUMTAZ

RIVER DIVERSION PLAN		DATE:	June, 2021
		DRAWING NO.	BQB-SDP-MD-51



LEGEND:

- STAGE-I
- STAGE-II
- TEMPORARY DIVERSION STRUCTURE

NOTES:-

1. ALL DIMENSIONS ARE IN FEET.



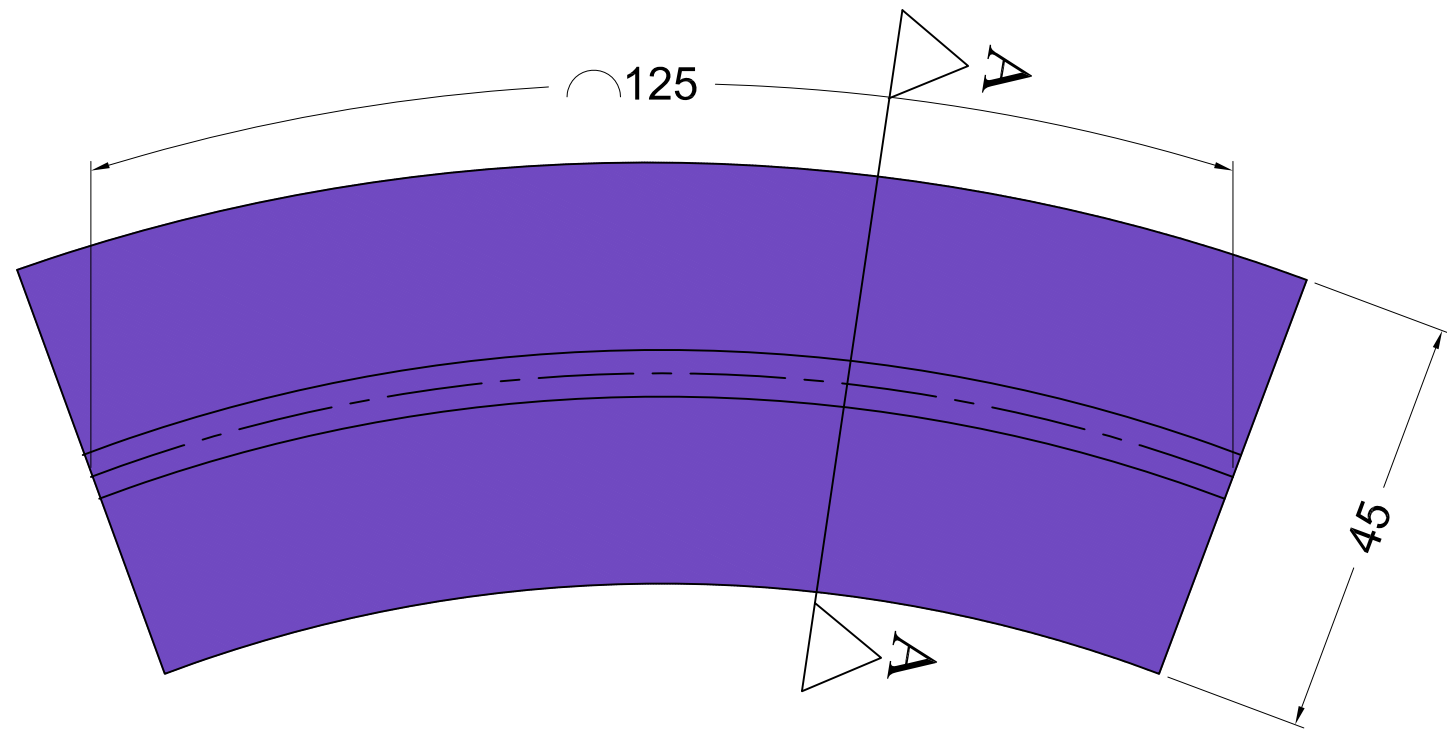
SMALL DAMS ORGANIZATION
GOVERNMENT OF KHYBER PAKHTUNKHWA



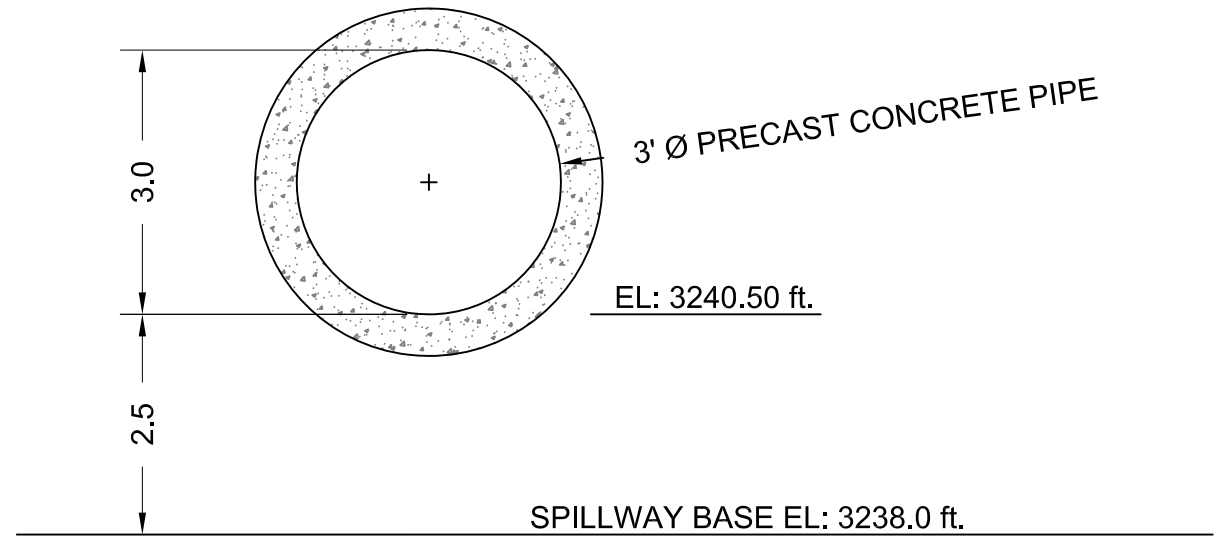
BARQAAB CONSULTING SERVICES
(PVT)LIMITED LAHORE

SANAM DAM PROJECT
LOWER DIR

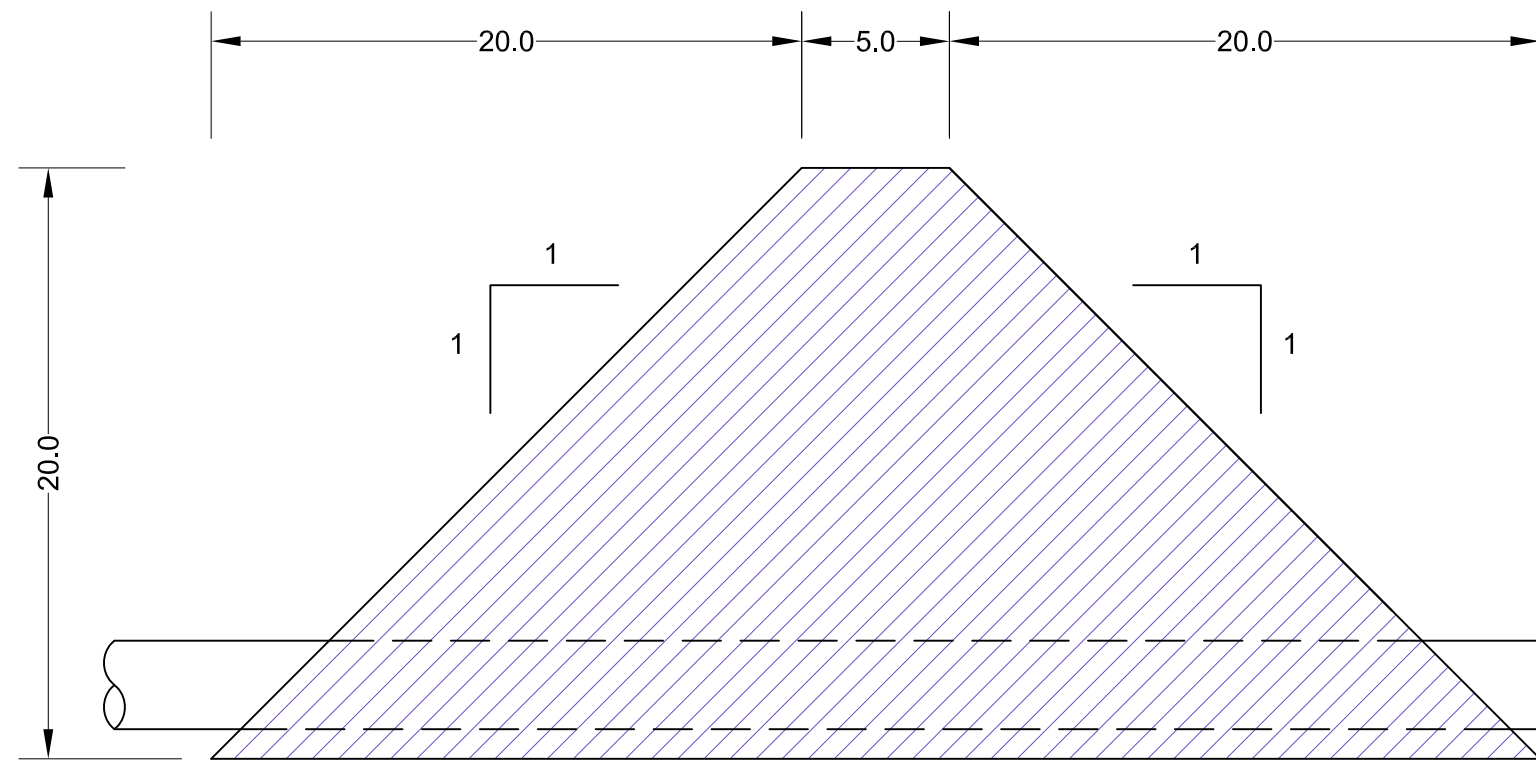
			DRAWN	IMTIAZ AHMAD	RIVER DIVERSION SECTION	
			CHECKED	DR. M. IRFAN		
			SUBMITTED	DR. M. IRFAN	DATE:	DRAWING NO.
REV.	DATE	DESCRIPTION	APPROVED	MANZAR MUMTAZ	May, 2021	BQB-SDP-MD-52



COFFER DAM



DIVERSION PIPE SECTION



SECTION A-A

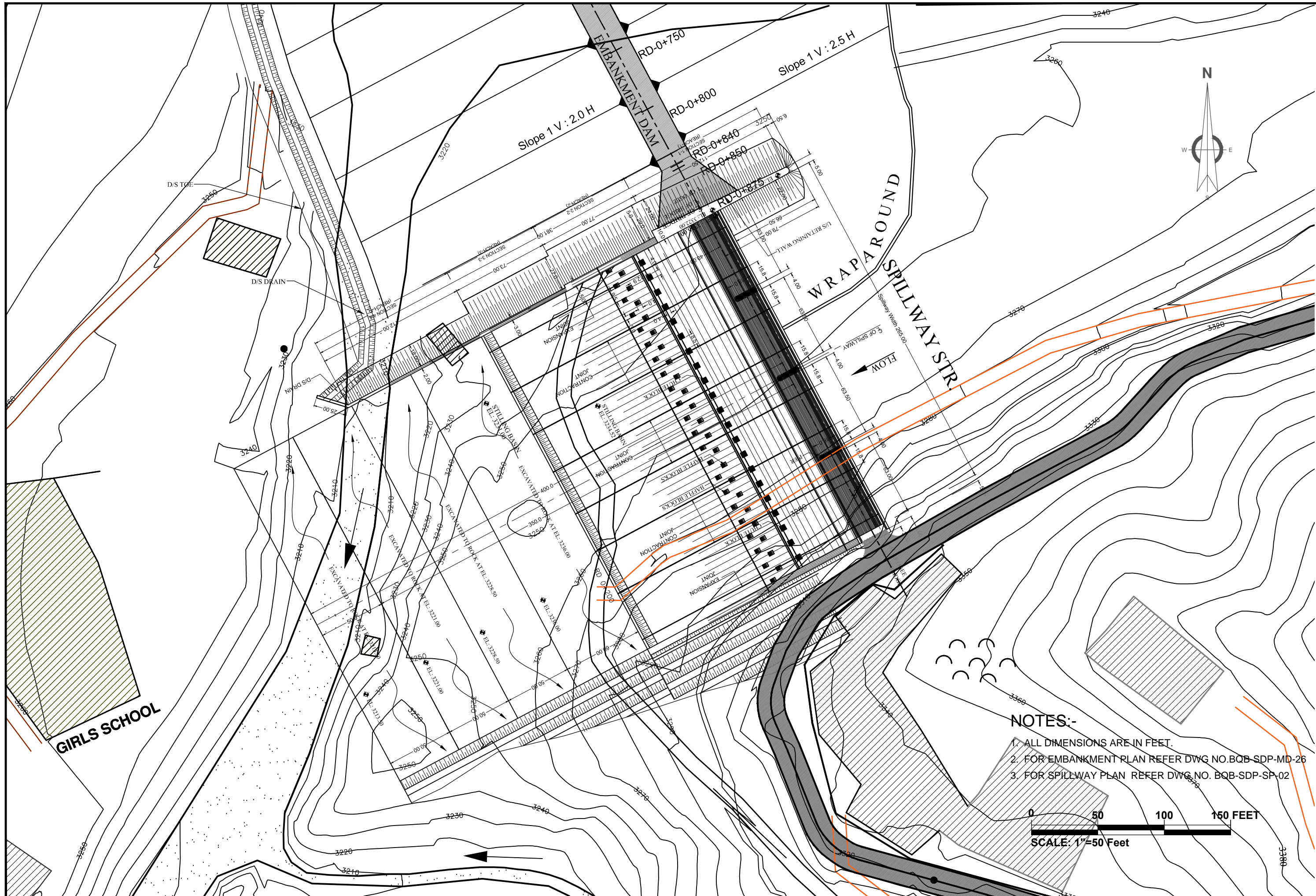
LEGEND:

- PHASE-I
- PHASE-II
- TEMPORARY DIVERSION STRUCTURE

NOTES:-

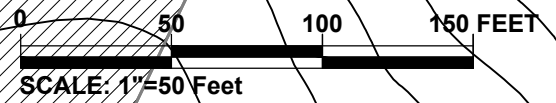
1. ALL DIMENSIONS ARE IN FEET.

SPILLWAY



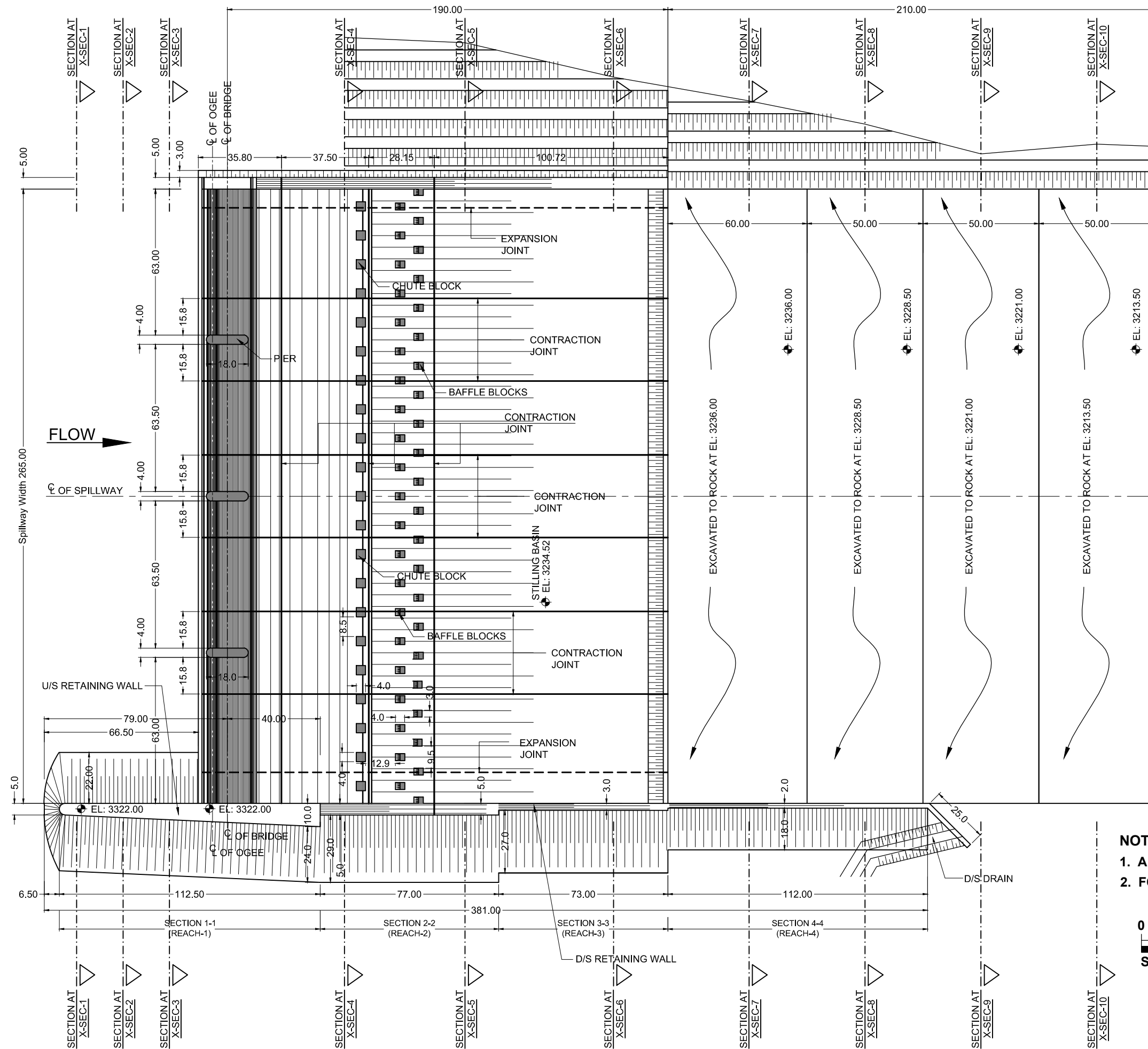
NOTES:-

1. ALL DIMENSIONS ARE IN FEET.
2. FOR EMBANKMENT PLAN REFER DWG NO. BQB-SDP-MD-26
3. FOR SPILLWAY PLAN REFER DWG NO. BQB-SDP-SP-02

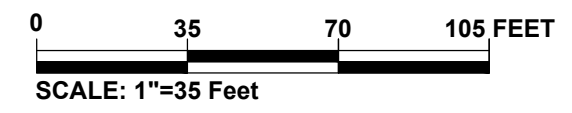


REV.	DATE	DESCRIPTION

DRAWN	IMTIAZ AHMED
CHECKED	MANZAR MUMTAZ
SUBMITTED	MANZAR MUMTAZ
APPROVED	MANZAR MUMTAZ

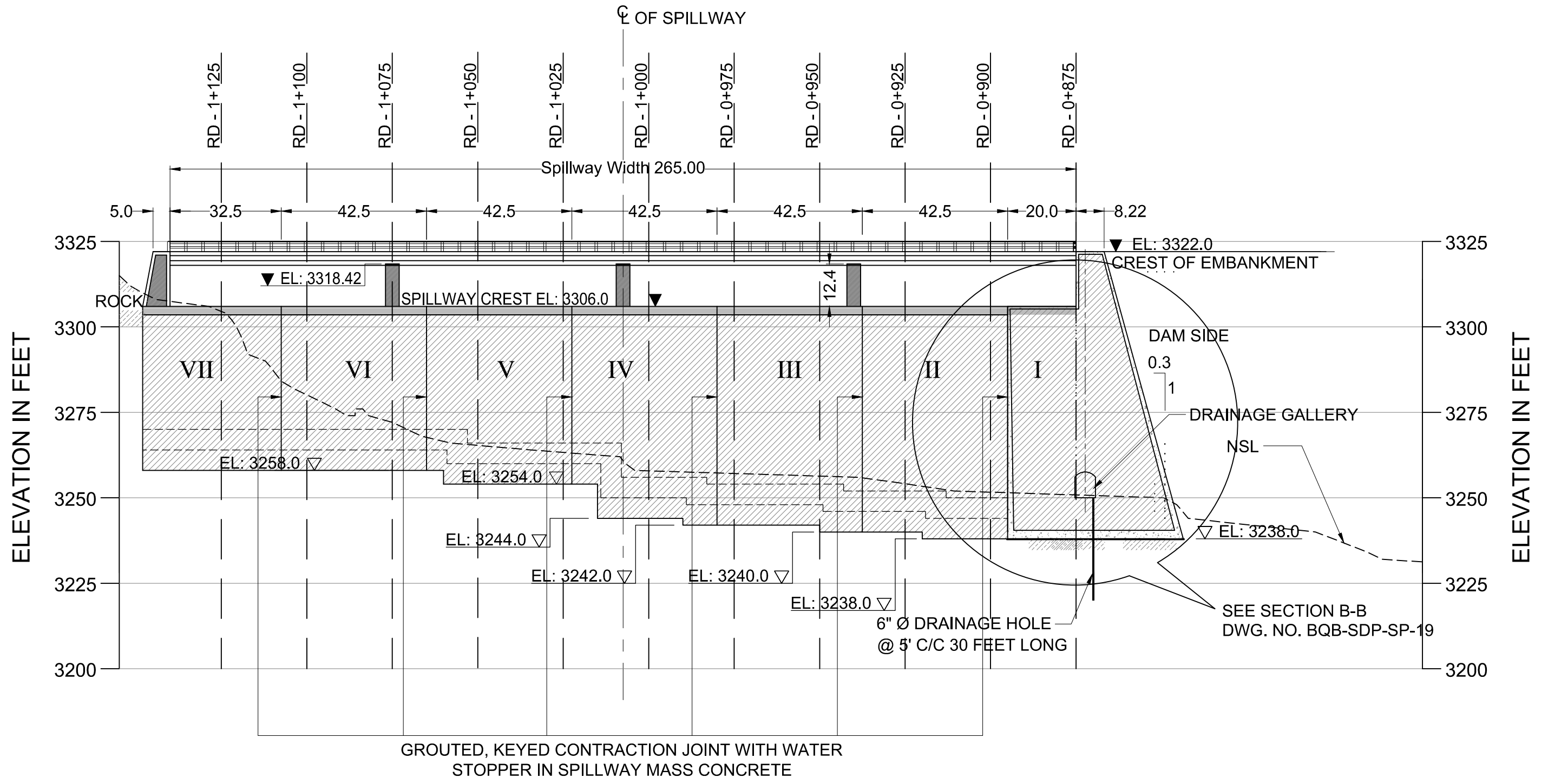


- NOTES:-**
1. ALL DIMENSIONS ARE IN FEET
 2. FOR LOCATION REF. DWG. NO. BQB-SDP-SP-01



REV.	DATE	DESCRIPTION

DRAWN	IMTIAZ AHMED
CHECKED	MANZAR MUMTAZ
SUBMITTED	MANZAR MUMTAZ
APPROVED	MANZAR MUMTAZ

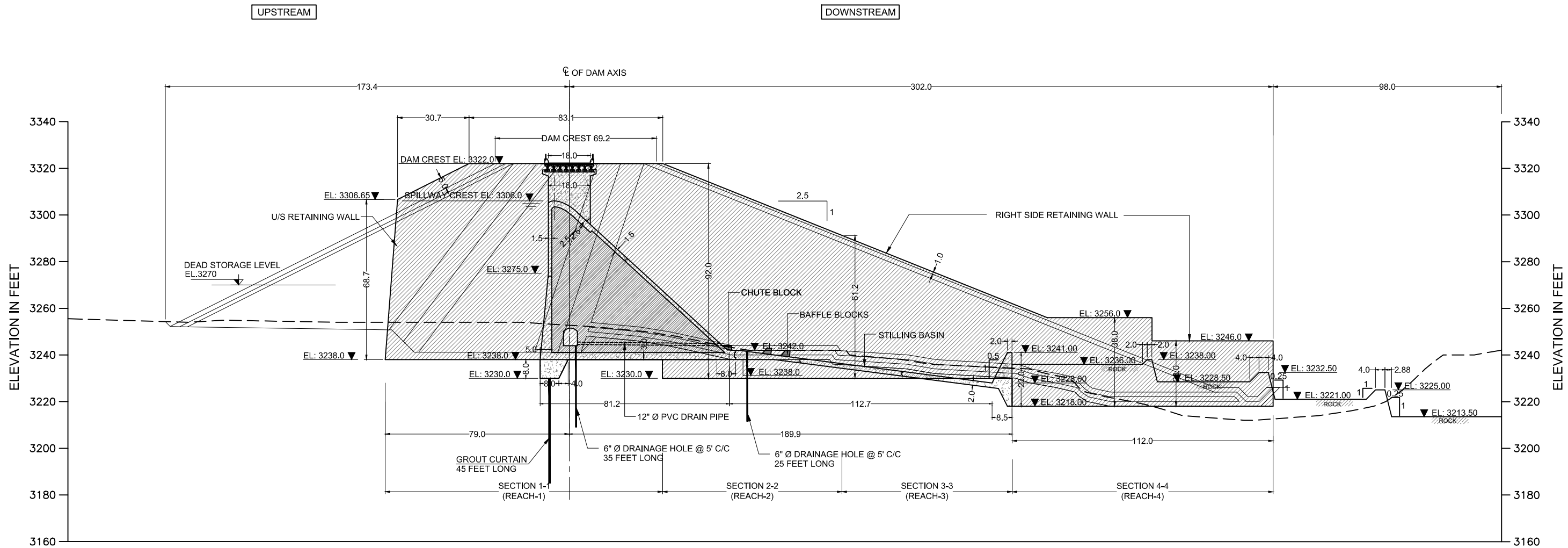


LEGEND

- Concrete (3000 Psi at 90 days)
- Concrete (3000 Psi at 28 days)
- Bed Rock

- NOTES:-**
1. ALL DIMENSIONS ARE IN FEET
 2. FOR LOCATION REF. DWG. NO. BQB-SDP-SP-19

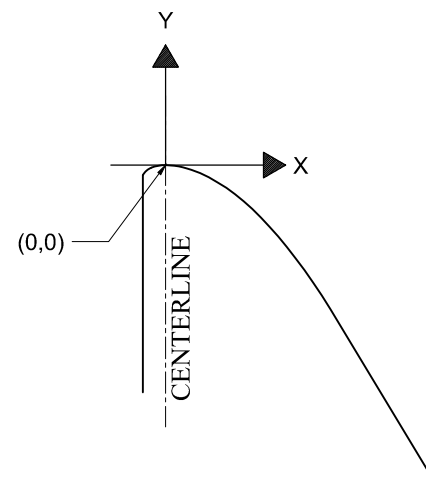
 SMALL DAMS ORGANIZATION GOVERNMENT OF KHYBER PAKHTUNKHWA	 BARQAAB CONSULTING SERVICES (PVT)LIMITED LAHORE	SANAM DAM PROJECT LOWER DIR		DRAWN	IMTIAZ AHMED	SPILLWAY CROSS SECTION AT CENTERLINE	
			REV.	DATE	DESCRIPTION		
				SUBMITTED	MANZAR MUMTAZ	June, 2021	BQB-SDP-SP-03
				APPROVED	MANZAR MUMTAZ		



SPECIAL NOTE:
THE SPILLWAY BASE MUST BE PLACED A MINIMUM OF 6 FEET INTO SOUND ROCK ON ROUGHENED SURFACE.

CO-ORDINATES OF OGEE CREST

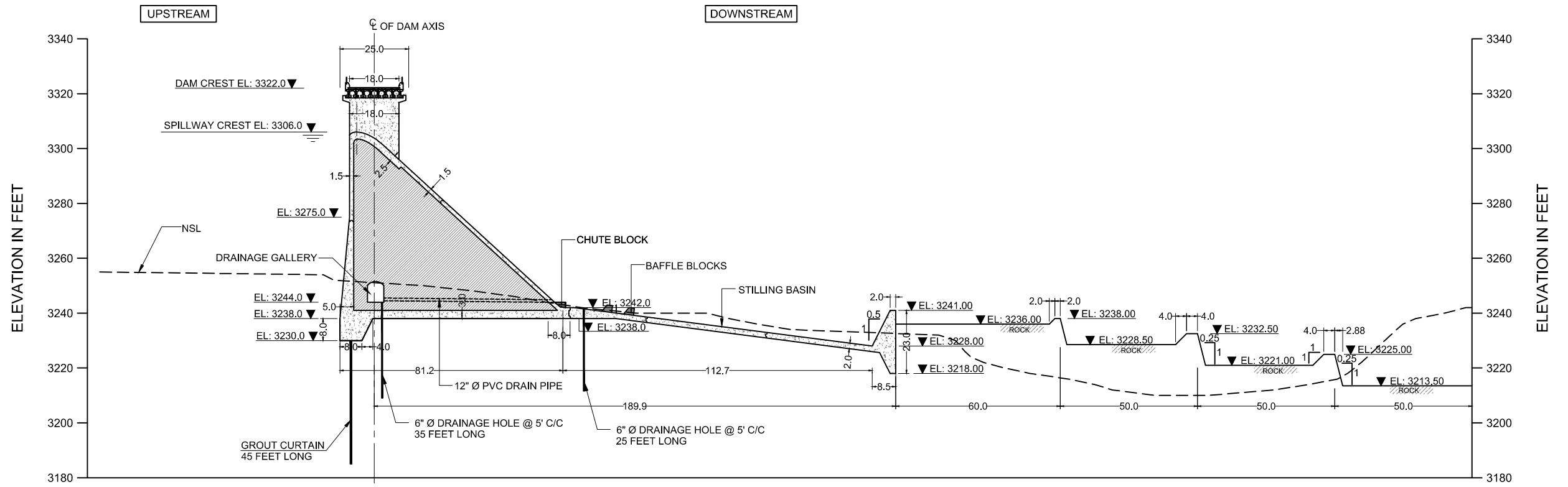
	X	Y		X	Y
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2	-2.6085	1.1484	12	6.0	1.9682
3	0.0	0.0000	13	7.0	2.6177
4	0.5	0.0199	14	8.0	3.3513
5	1.0	0.0715	15	9.0	4.1672
6	1.5	0.1514	16	10.0	5.064
7	2.0	0.2579	17	11.0	6.0405
8	2.5	0.3897	18	12.0	7.0954
9	3.0	0.5459	19	13.0	8.2279
10	4.0	0.9296	20	14.0	9.4369



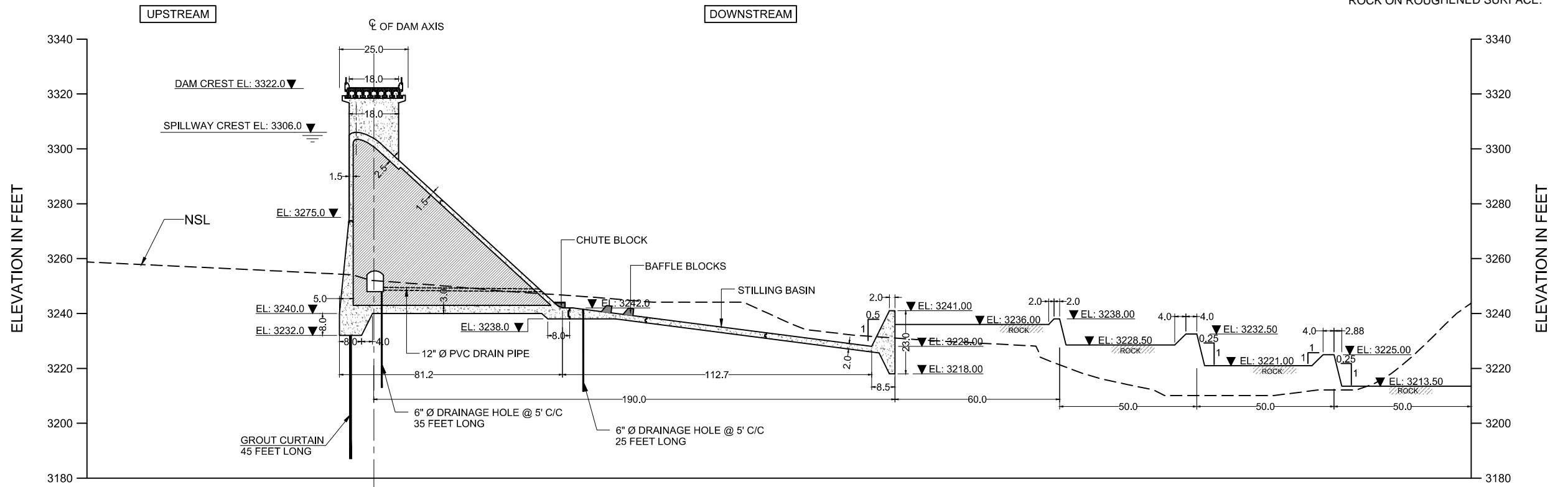
LEGEND

- Concrete (3000 Psi at 90 days)
- Concrete (3000 Psi at 28 days)
- Bed Rock

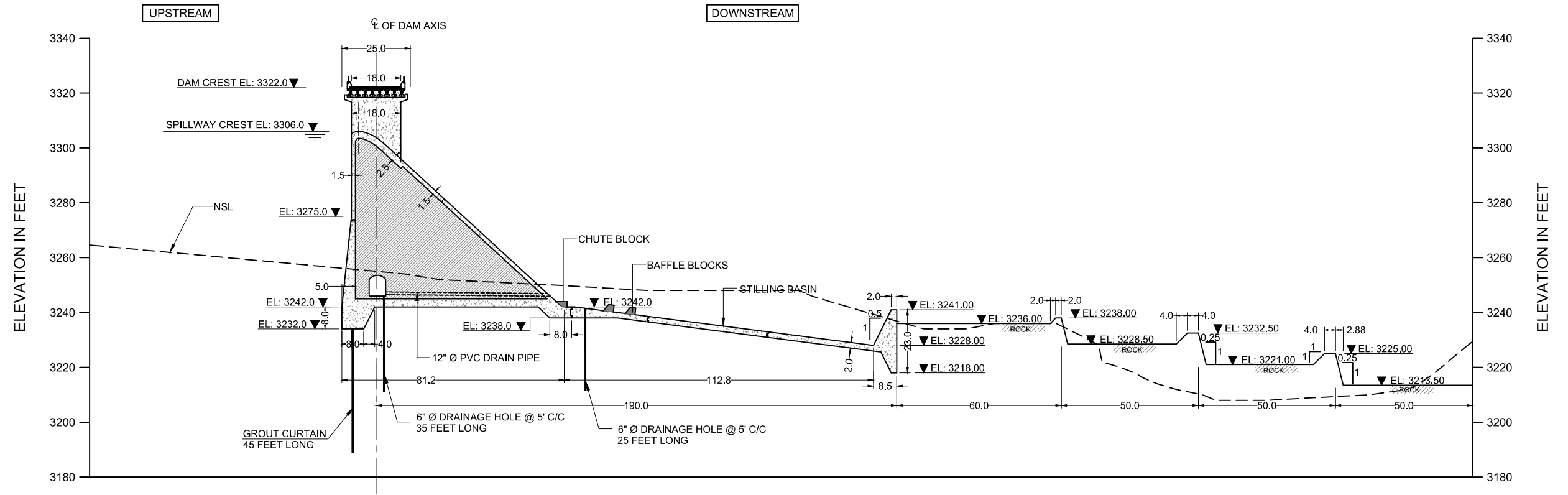
NOTE:
1. ALL DIMENSIONS ARE IN FEET.



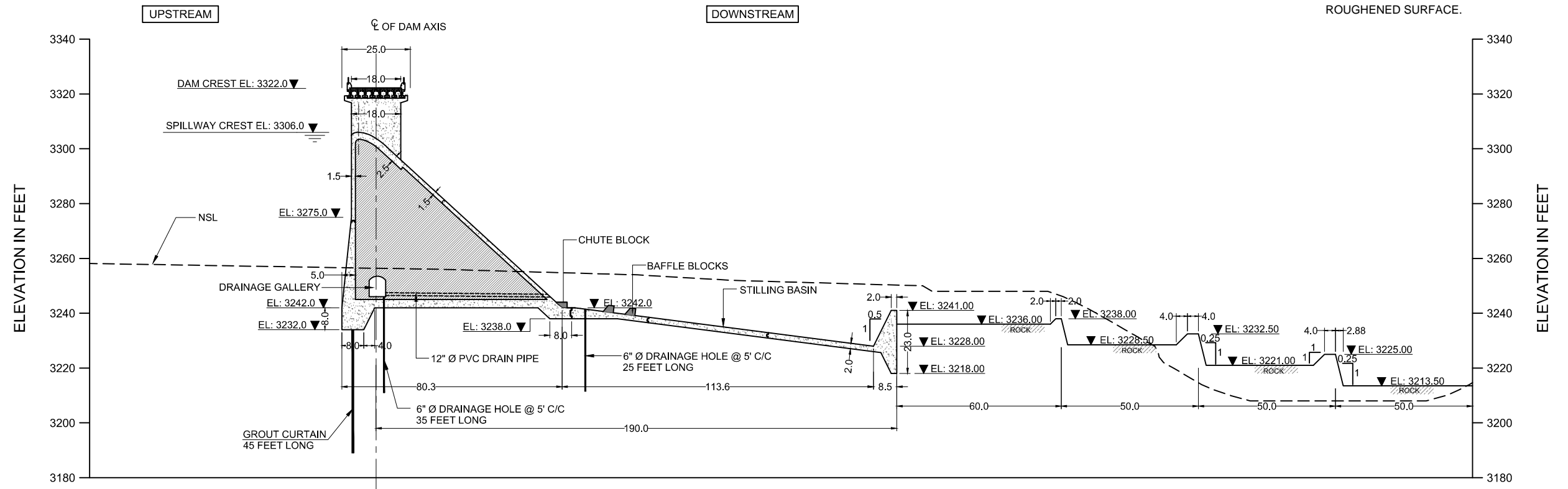
SPECIAL NOTE:
 THE SPILLWAY BASE MUST BE PLACED A MINIMUM OF 6 FEET INTO SOUND ROCK ON ROUGHENED SURFACE.



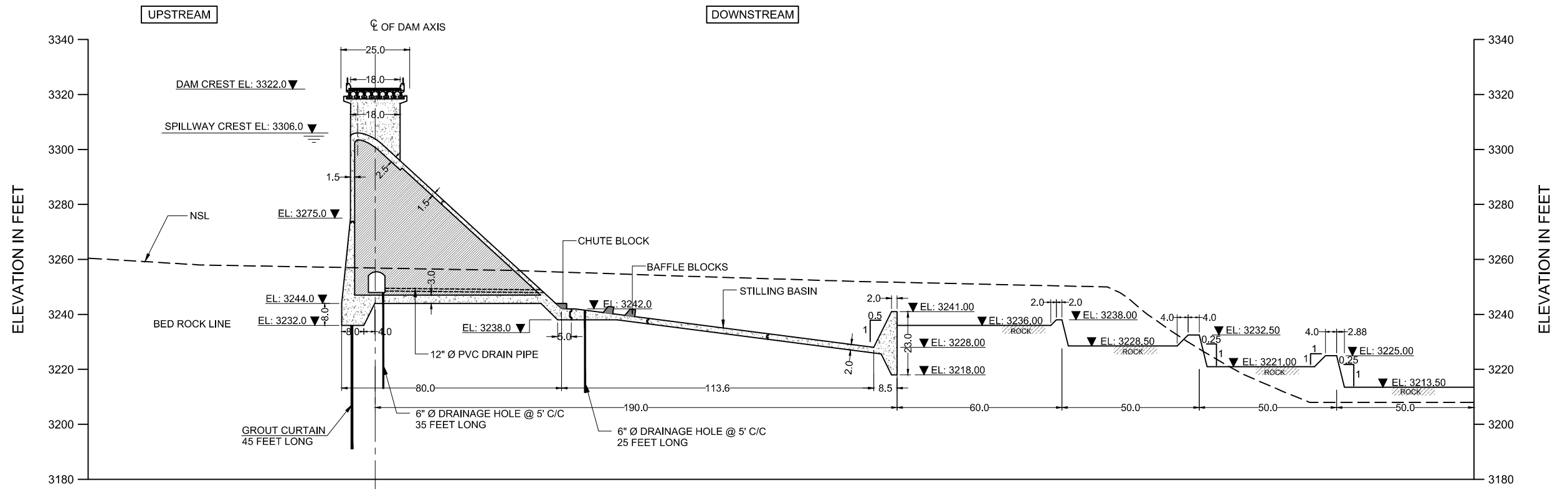
NOTE:
 1. ALL DIMENSIONS ARE IN FEET.



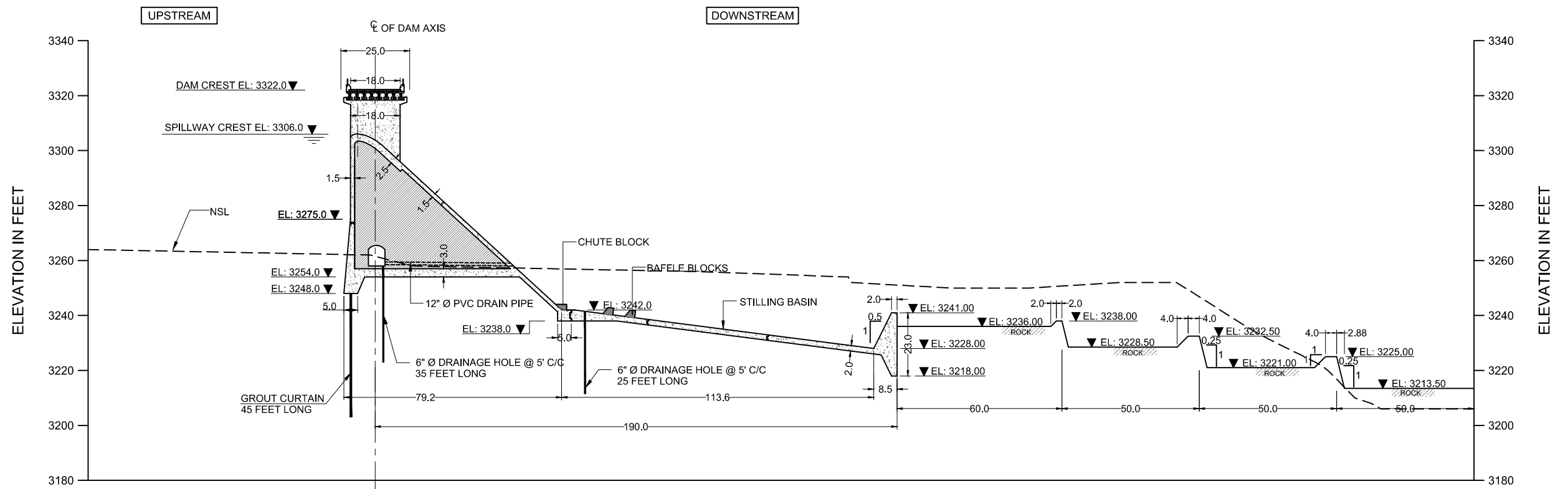
SPECIAL NOTE:
 THE SPILLWAY BASE MUST BE PLACED A MINIMUM OF 6 FEET INTO SOUND ROCK ON ROUGHENED SURFACE.



NOTE:
 1. ALL DIMENSIONS ARE IN FEET.



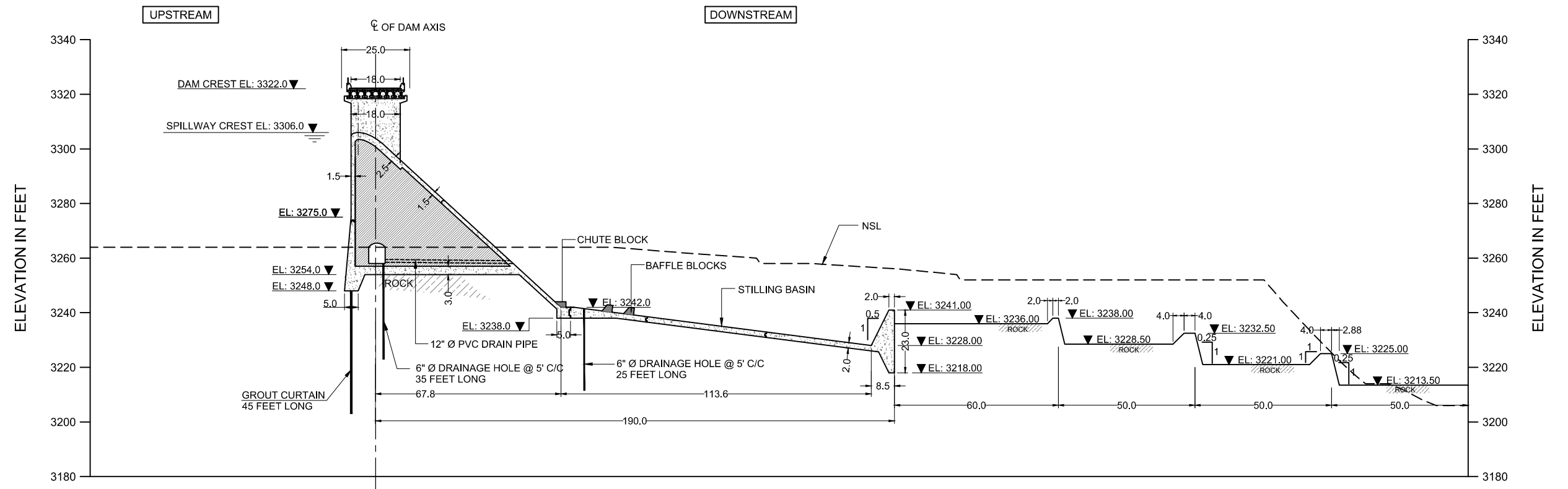
SPECIAL NOTE:
THE SPILLWAY BASE MUST BE PLACED A MINIMUM OF 6 FEET INTO SOUND ROCK ON ROUGHENED SURFACE.



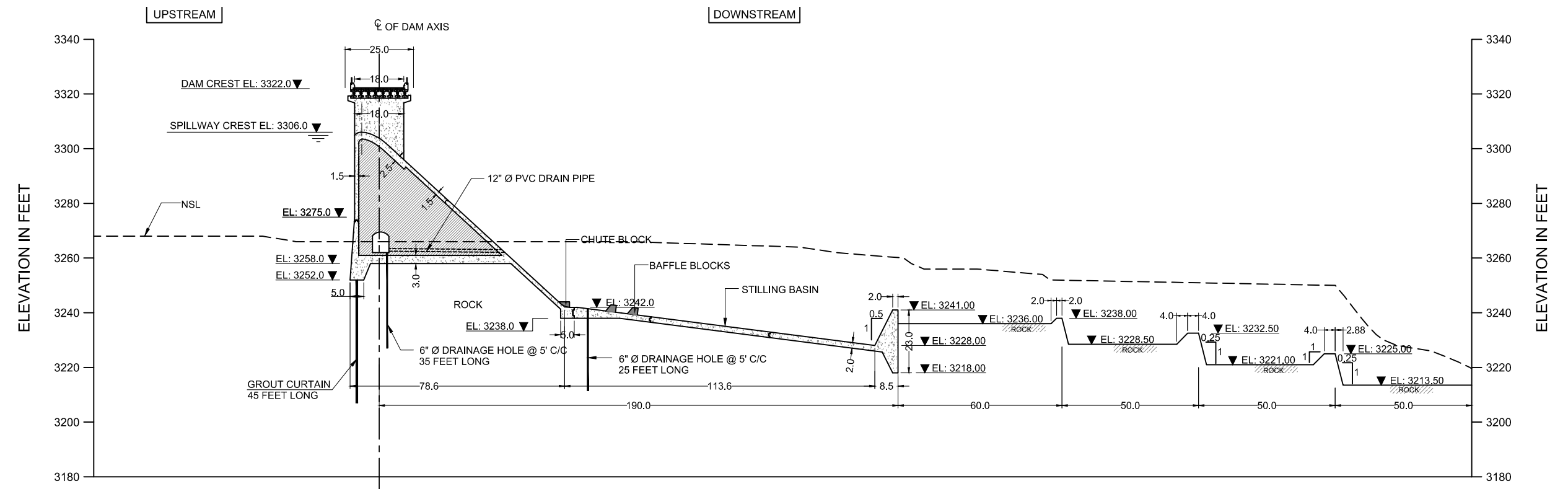
NOTE:
1. ALL DIMENSIONS ARE IN FEET.

REV.	DATE	DESCRIPTION

DRAWN	IMTIAZ AHMED
CHECKED	MANZAR MUMTAZ
SUBMITTED	MANZAR MUMTAZ
APPROVED	MANZAR MUMTAZ



SPECIAL NOTE:
THE SPILLWAY BASE MUST BE PLACED A MINIMUM OF 6 FEET INTO SOUND ROCK ON ROUGHENED SURFACE.

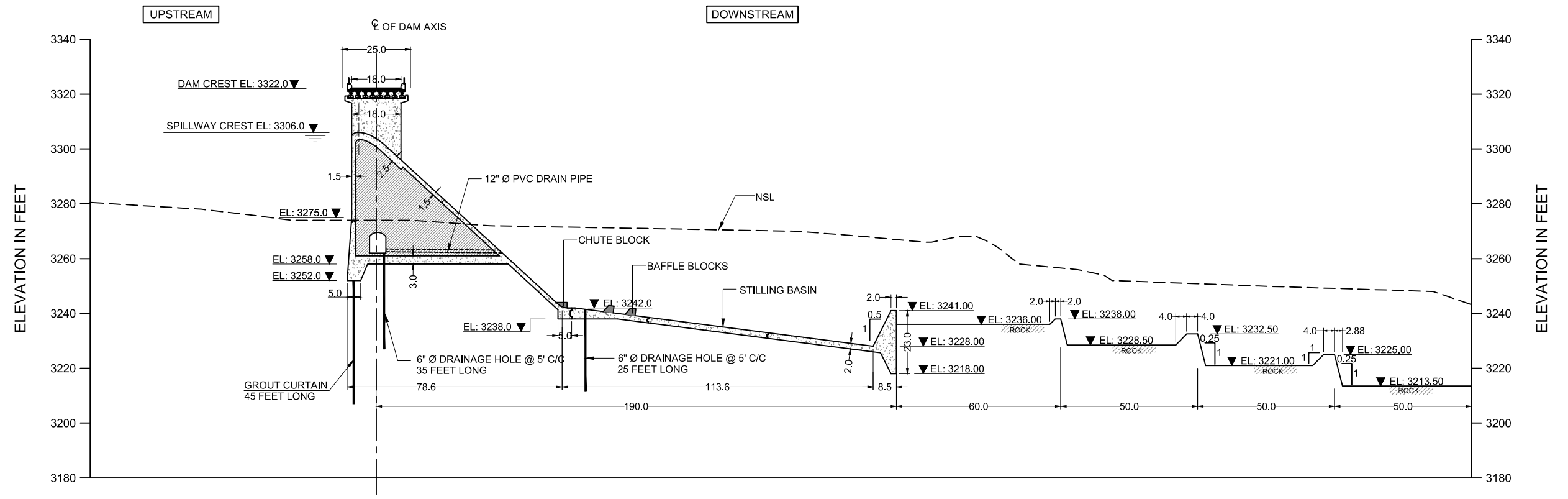


NOTE:
1. ALL DIMENSIONS ARE IN FEET.

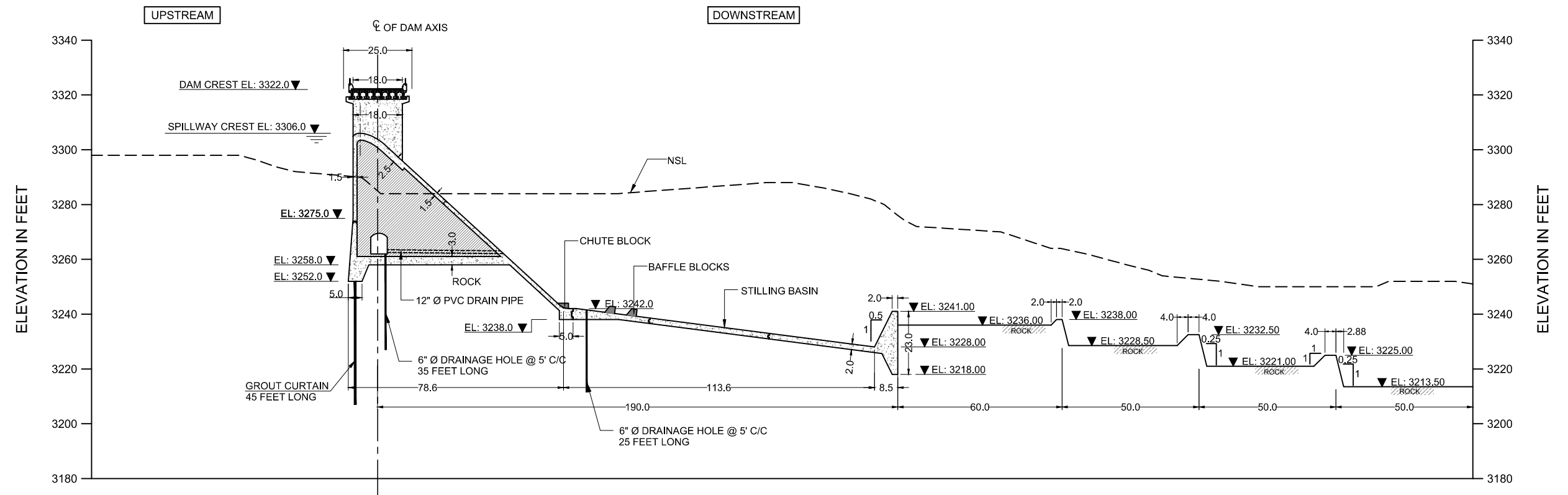
REV.	DATE	DESCRIPTION

DRAWN	IMTIAZ AHMED
CHECKED	MANZAR MUMTAZ
SUBMITTED	MANZAR MUMTAZ
APPROVED	MANZAR MUMTAZ

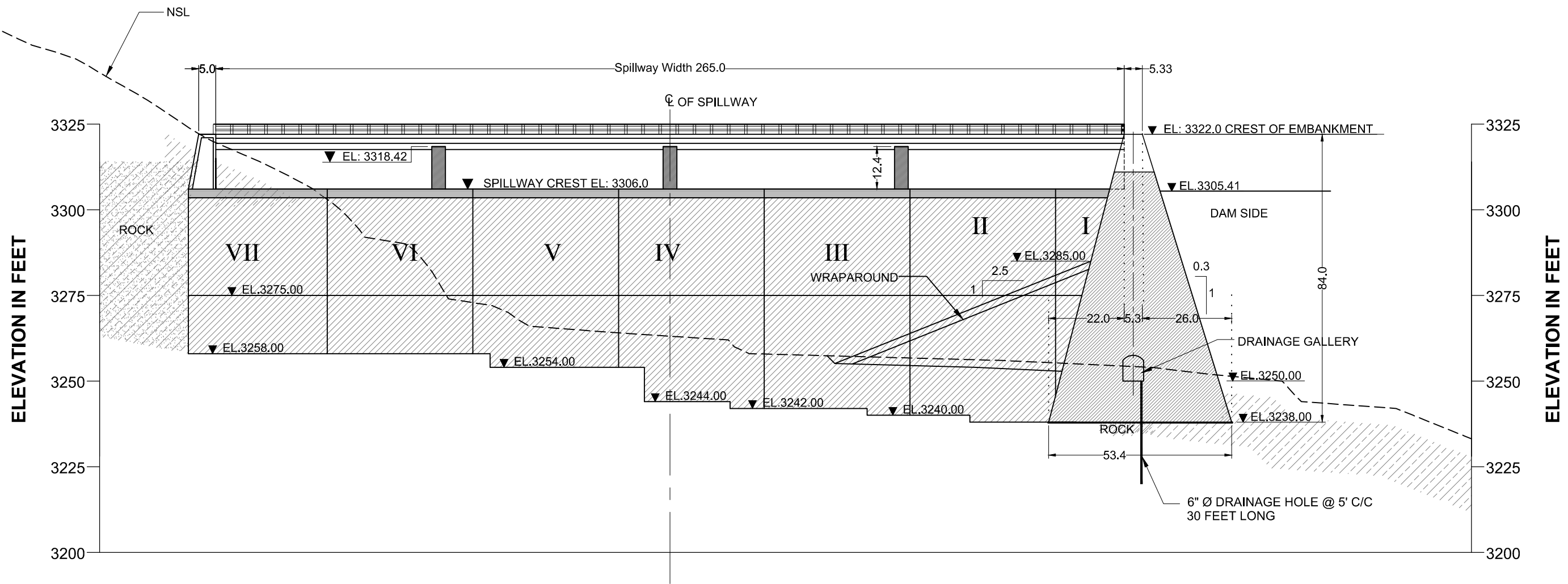
SPILLWAY CROSS SECTIONS RD 1+050 & 1+075	
DATE: June, 2021	DRAWING NO. BQB-SDP-SP-08





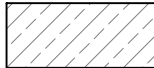
SPECIAL NOTE:
 THE SPILLWAY BASE MUST BE PLACED A MINIMUM OF 6 FEET INTO SOUND ROCK ON ROUGHENED SURFACE.



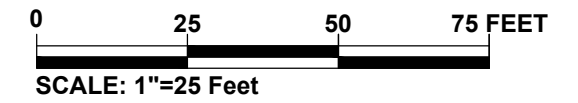
NOTE:
 1. ALL DIMENSIONS ARE IN FEET.



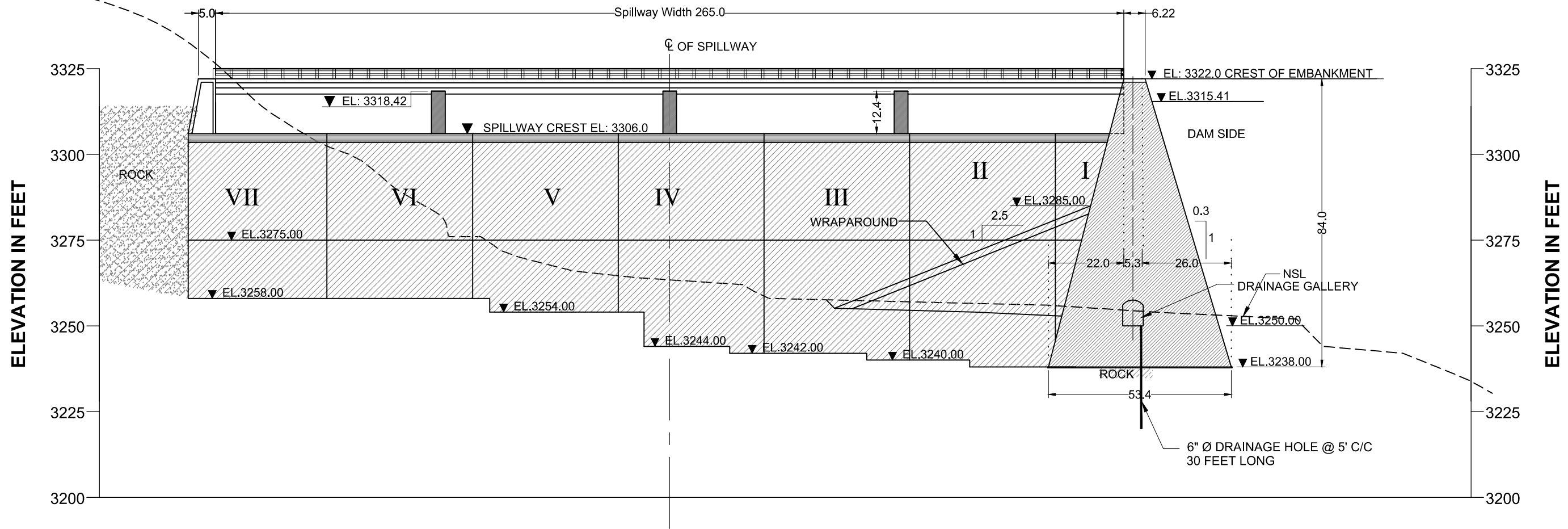
LEGEND

-  Concrete (3000 Psi at 90 days)
-  Concrete (3000 Psi at 28 days)
-  Bed Rock

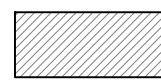
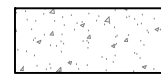
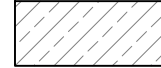
- NOTES:-**
1. ALL DIMENSIONS ARE IN FEET
 2. FOR LOCATION REF. DWG. NO. BQB-SDP-SP-02



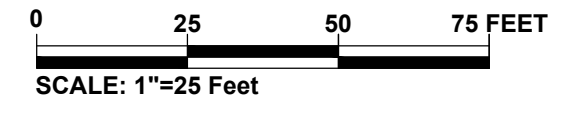
 SMALL DAMS ORGANIZATION GOVERNMENT OF KHYBER PAKHTUNKHWA	 BARQAAB CONSULTING SERVICES (PVT)LIMITED LAHORE	SANAM DAM PROJECT LOWER DIR		DRAWN	IMTIAZ AHMED	SPILLWAY CROSS SECTION X-SEC-1	
				CHECKED	MANZAR MUMTAZ		
				SUBMITTED	MANZAR MUMTAZ	DATE:	DRAWING NO. BQB-SDP-SP-10
			REV.	DATE	DESCRIPTION	APPROVED	



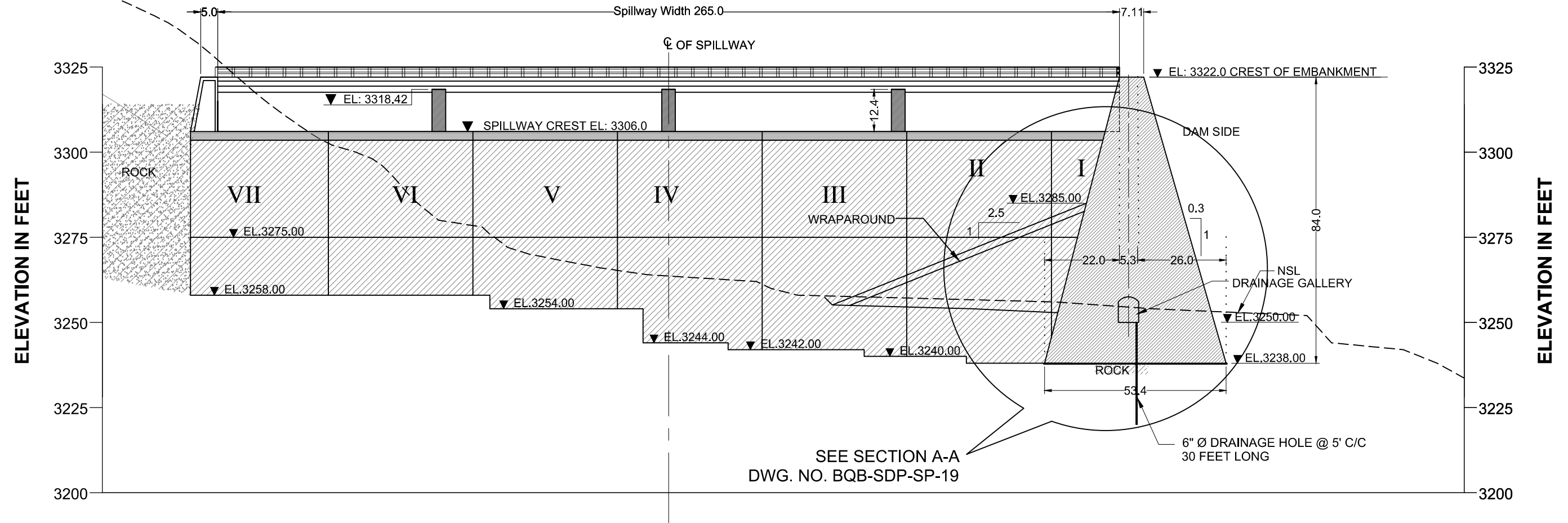
LEGEND

-  Concrete (3000 Psi at 90 days)
-  Concrete (3000 Psi at 28 days)
-  Bed Rock



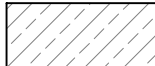
- NOTES:-**
1. ALL DIMENSIONS ARE IN FEET
 2. FOR LOCATION REF. DWG. NO. BQB-SDP-SP-02



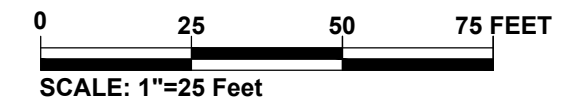
 SMALL DAMS ORGANIZATION GOVERNMENT OF KHYBER PAKHTUNKHWA	 BARQAAB CONSULTING SERVICES (PVT)LIMITED LAHORE	SANAM DAM PROJECT LOWER DIR		DRAWN	IMTIAZ AHMED	SPILLWAY CROSS SECTION X-SEC-2	
				CHECKED	MANZAR MUMTAZ		
				SUBMITTED	MANZAR MUMTAZ	DATE: June, 2021	DRAWING NO. BQB-SDP-SP-11
			REV.	DATE	DESCRIPTION		

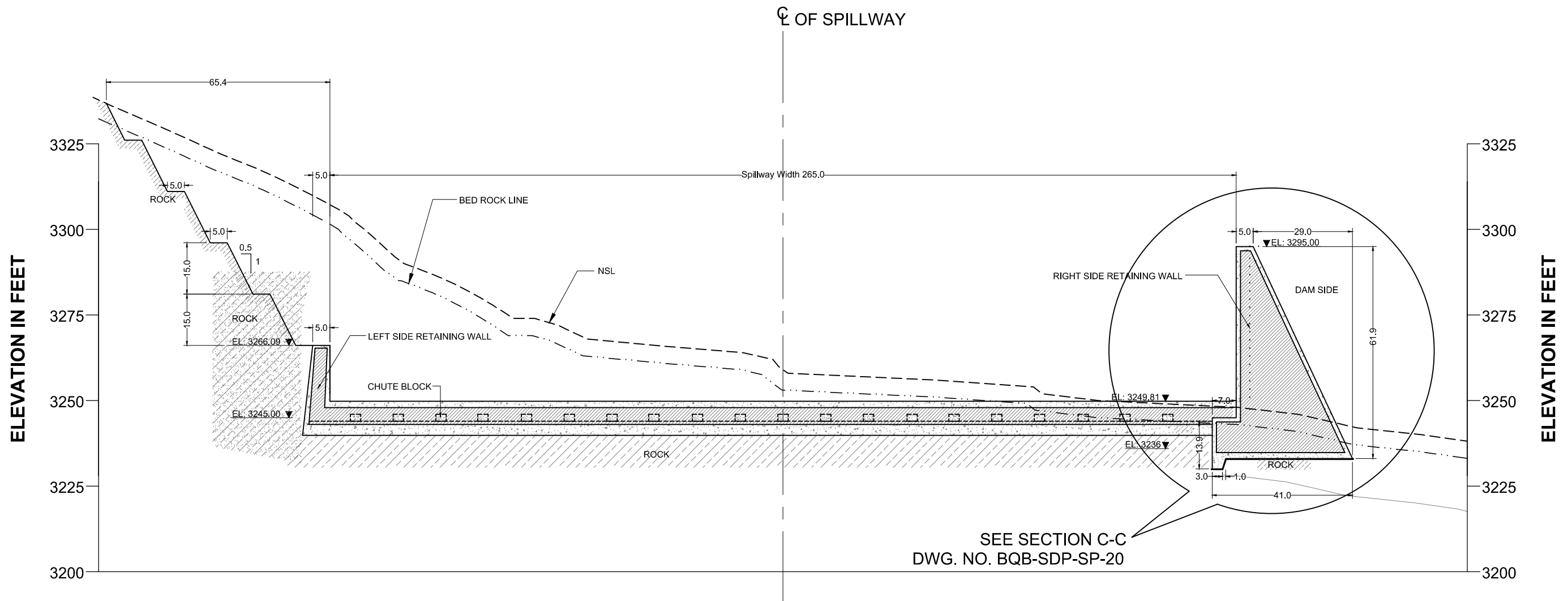


LEGEND


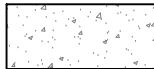
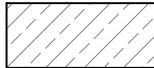
-  Concrete (3000 Psi at 90 days)
-  Concrete (3000 Psi at 28 days)
-  Bed Rock

- NOTES:-**
1. ALL DIMENSIONS ARE IN FEET
 2. FOR LOCATION REF. DWG. NO. BQB-SDP-SP-02

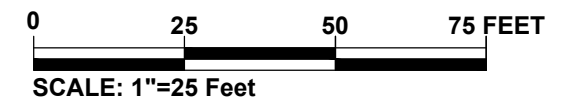




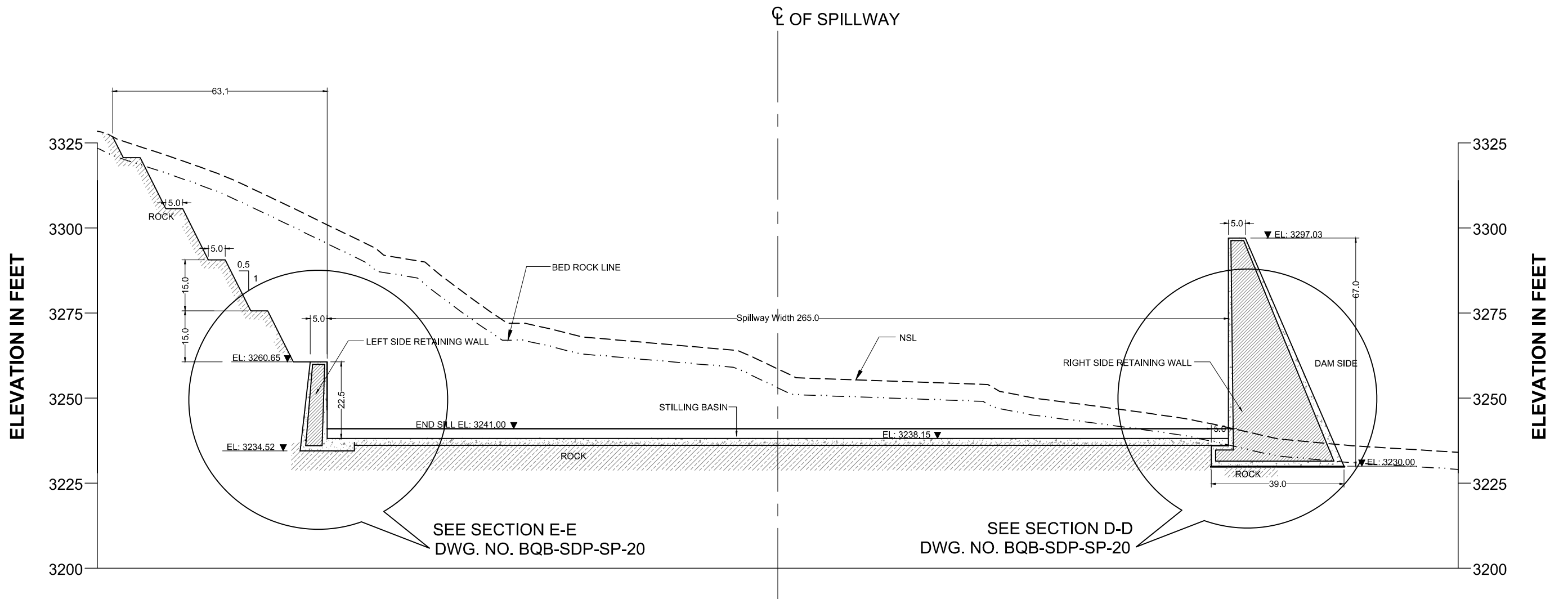
LEGEND

-  Concrete (3000 Psi at 90 days)
-  Concrete (3000 Psi at 28 days)
-  Bed Rock


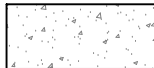

- NOTES:-**
1. ALL DIMENSIONS ARE IN FEET
 2. FOR LOCATION REF. DWG. NO. BQB-SDP-SP-02



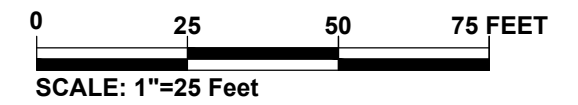
 SMALL DAMS ORGANIZATION GOVERNMENT OF KHYBER PAKHTUNKHWA	 BARQAAB CONSULTING SERVICES (PVT)LIMITED LAHORE	SANAM DAM PROJECT LOWER DIR		DRAWN	IMTIAZ AHMED	SPILLWAY CROSS SECTION X-SEC-4			
				CHECKED	MANZAR MUMTAZ			DATE:	DRAWING NO.
			REV.	DATE	DESCRIPTION	APPROVED	MANZAR MUMTAZ	June, 2021	BQB-SDP-SP-13



LEGEND

-  Concrete (3000 Psi at 90 days)
-  Concrete (3000 Psi at 28 days)
-  Bed Rock

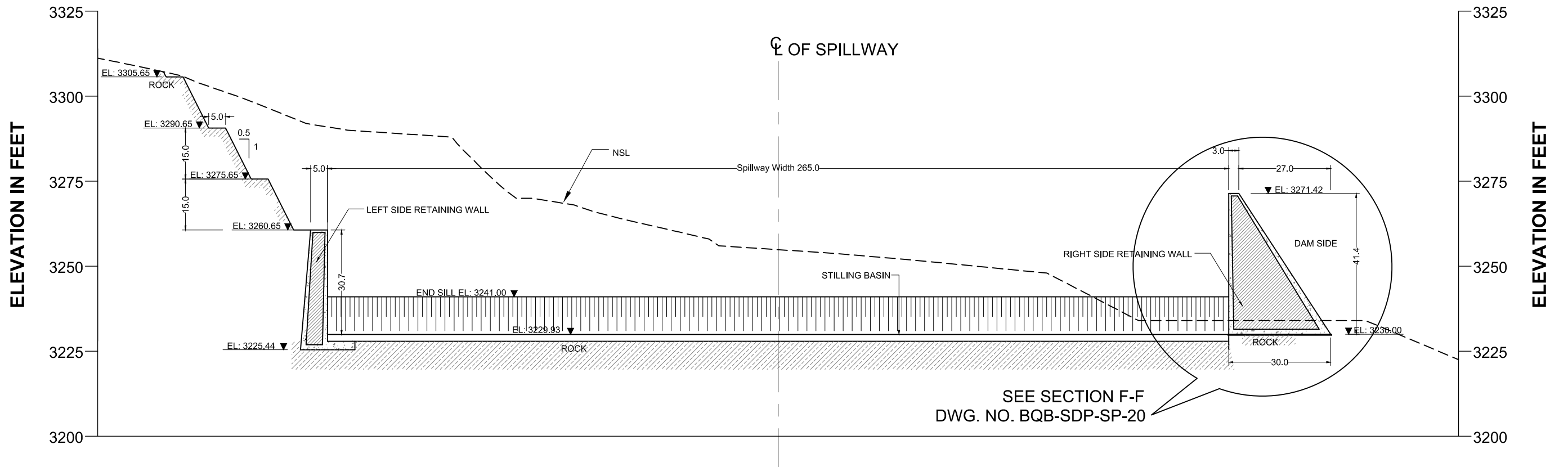
- NOTES:-**
1. ALL DIMENSIONS ARE IN FEET
 2. FOR LOCATION REF. DWG. NO. BQB-SDP-SP-02



REV.	DATE	DESCRIPTION


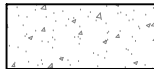
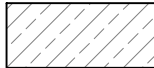
DRAWN	IMTIAZ AHMED
CHECKED	MANZAR MUMTAZ
SUBMITTED	MANZAR MUMTAZ
APPROVED	MANZAR MUMTAZ

SPILLWAY CROSS SECTION	
X-SEC-5	
DATE: June, 2021	DRAWING NO. BQB-SDP-SP-14



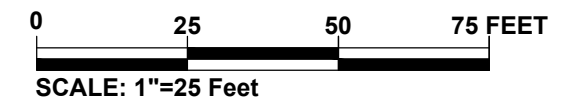
SEE SECTION F-F
DWG. NO. BQB-SDP-SP-20

LEGEND

-  Concrete (3000 Psi at 90 days)
-  Concrete (3000 Psi at 28 days)
-  Bed Rock

NOTES:-

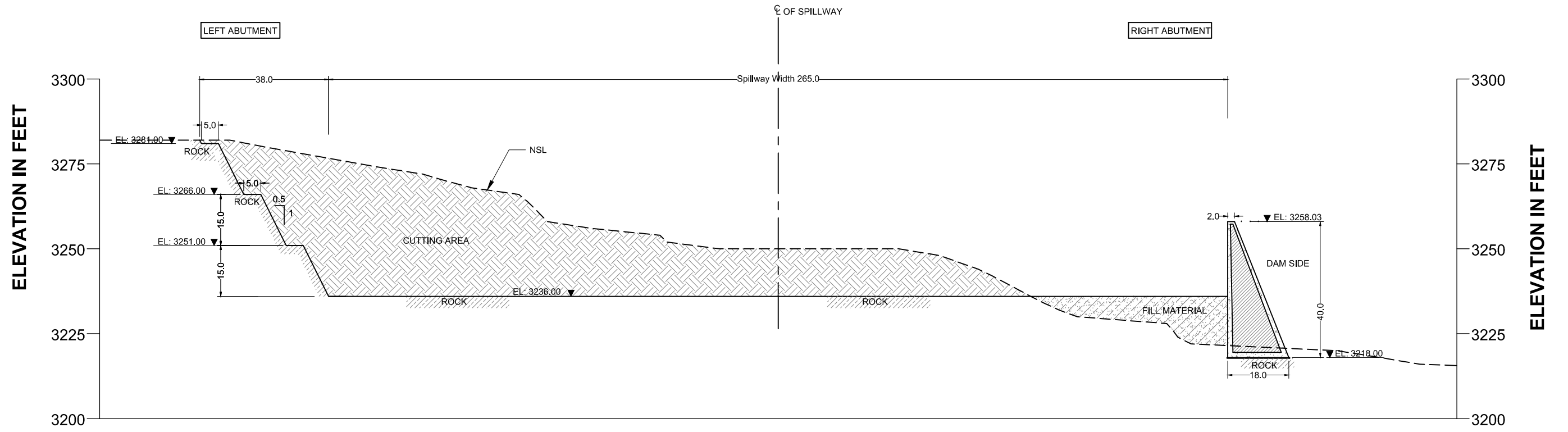
1. ALL DIMENSIONS ARE IN FEET
2. FOR LOCATION REF. DWG. NO. BQB-SDP-SP-02



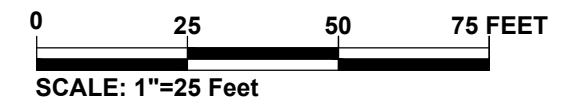
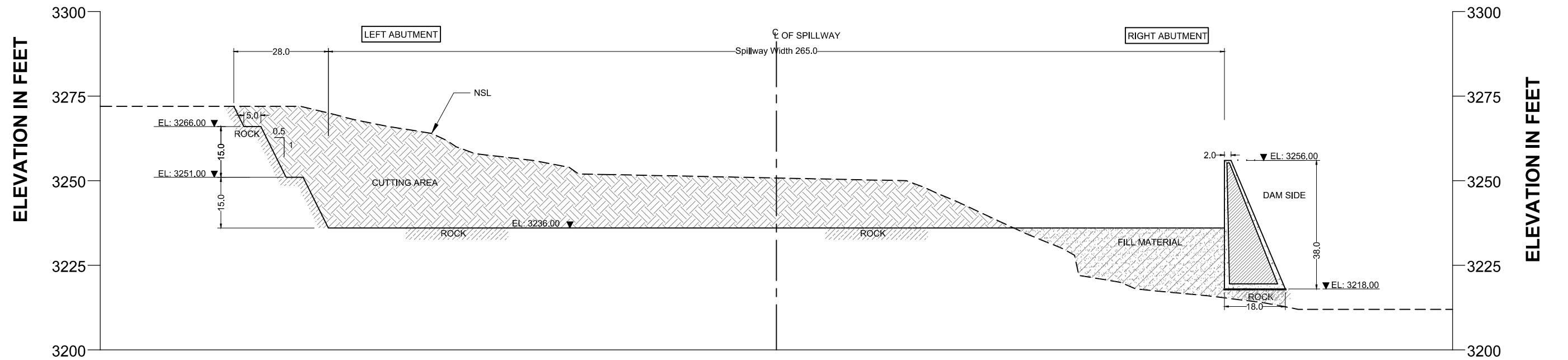
REV.	DATE	DESCRIPTION

DRAWN	IMTIAZ AHMED
CHECKED	MANZAR MUMTAZ
SUBMITTED	MANZAR MUMTAZ
APPROVED	MANZAR MUMTAZ

SPILLWAY CROSS SECTION X-SEC-6	
DATE: June, 2021	DRAWING NO. BQB-SDP-SP-15

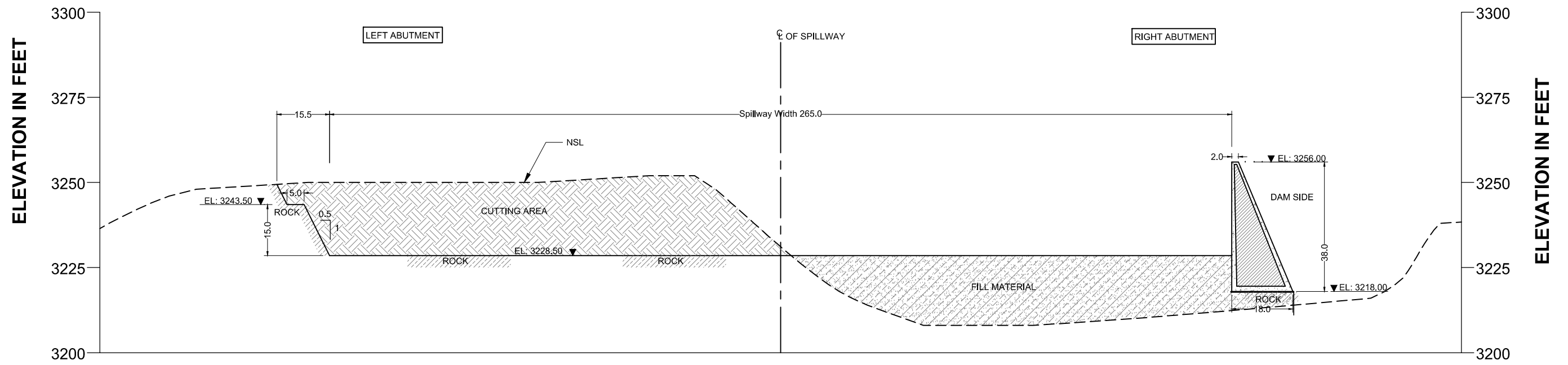


- NOTES:-**
1. ALL DIMENSIONS ARE IN FEET
 2. FOR LOCATION REF. DWG. NO. BQB-SDP-SP-02

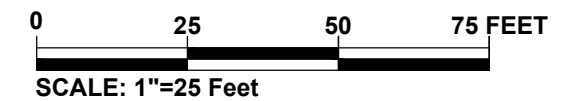
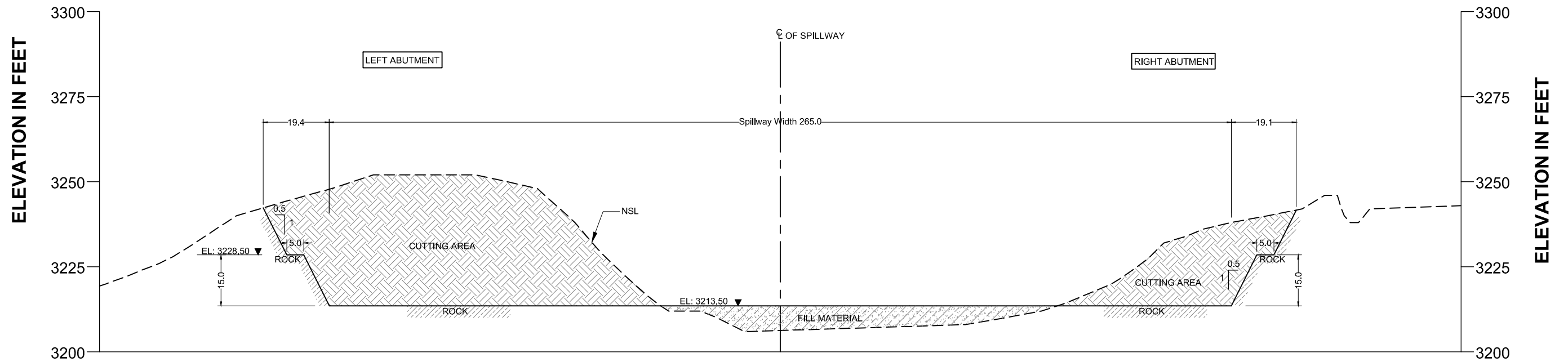


REV.	DATE	DESCRIPTION

DRAWN	IMTIAZ AHMED
CHECKED	MANZAR MUMTAZ
SUBMITTED	MANZAR MUMTAZ
APPROVED	MANZAR MUMTAZ



- NOTES:-**
1. ALL DIMENSIONS ARE IN FEET
 2. FOR LOCATION REF. DWG. NO. BQB-SDP-SP-02



GENERAL NOTES FOR SPILLWAY, OUTLET STRUCTURE, BRIDGE

1. ALL DIMENSIONS ARE IN FEET AND INCHES.
2. ALL THE SITE DATA (LEVELS, ALIGNMENT, RDs, EXISTING FEATURES, ETC.) SHALL BE CHECKED BEFORE CONSTRUCTION.
3. ALL THE WORK SHALL BE CARRIED OUT AS PER SPECIFICATIONS.
4. THE ORDINARY PORTLAND CEMENT SHALL BE USED FOR ALL CONCRETE WORK.
5. CONCRETE STRENGTH FOR VARIOUS STRUCTURES SHALL BE AS MENTIONED IN THE RELEVANT DRAWINGS.
6. ALL REINFORCEMENT SHALL BE DEFORMED STEEL BARS HAVING A MINIMUM YIELD STRENGTH OF 40,000 PSI (276 MPa) UNLESS 60,000 PSI (414 MPa) STEEL IS MENTIONED. TESTS SHALL BE CARRIED OUT AS PER A.S.T.M. STANDARDS.
7. EXPANSION, CONTRACTION AND CONSTRUCTION JOINTS WILL COMPLY WITH IN DETAILS SHOWN.
8. ALL STEEL SURFACES, PARTS, MEMBERS ETC. EXPOSED TO WATER OR ATMOSPHERE SHALL BE PAINTED OR GALVANIZED AS DIRECTED BY THE ENGINEER.
9. THE EARTHWORK AT THE STRUCTURES SHALL BE ADJUSTED/DRESSED AS PER SITE CONDITIONS, AS INSTRUCTED BY THE ENGINEER.

10. UNLESS OTHERWISE SHOWN, PLACE ALL REINFORCEMENT SO THAT THE CLEAR DISTANCE BETWEEN FACE OF CONCRETE AND NEAREST REINFORCEMENT (STIRRUPS, TIES, SPIRALS OR OUTER MOST LAYER OF BARS) IS AS:

DECK SLAB (BRIDGE)	1"
PIERS	3"
WATER RETAINING COMPONENTS	3"
CONCRETE PLACED AGAINST EARTH	3"
RETAINING WALLS/SPILLWAY CHUTE/STILLING BASIN	2½"
APPROACH WALL, INTAKE STRUCTURE	4"

11. THE REINFORCEMENT BARS SHALL BE OVER-LAPPED, WHERE-EVER REQUIRED IN VIEW OF THE SITE SITUATION, AS DETERMINED BY THE ENGINEER.

THE LAP LENGTHS IN DEFORMED BARS SHALL BE AS:-

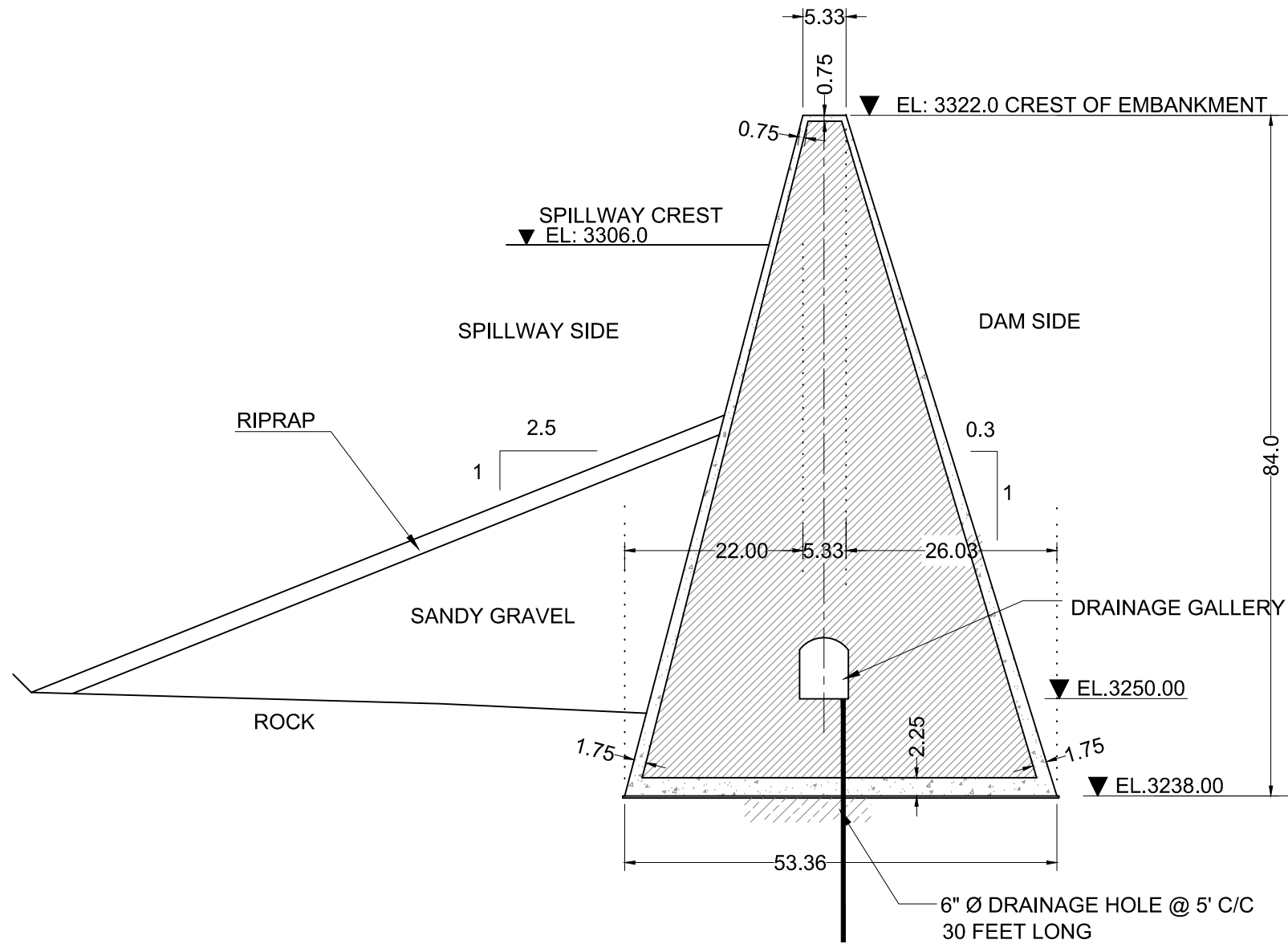
BAR DIA	LAP LENGTH (INCHES)
40,000 PSI STEEL	
#10	88
# 9	78
# 8	55
# 6	31
# 4	18
# 3	14

EMBEDMENT LENGTHS IN DEFORMED BARS SHALL BE AS:-

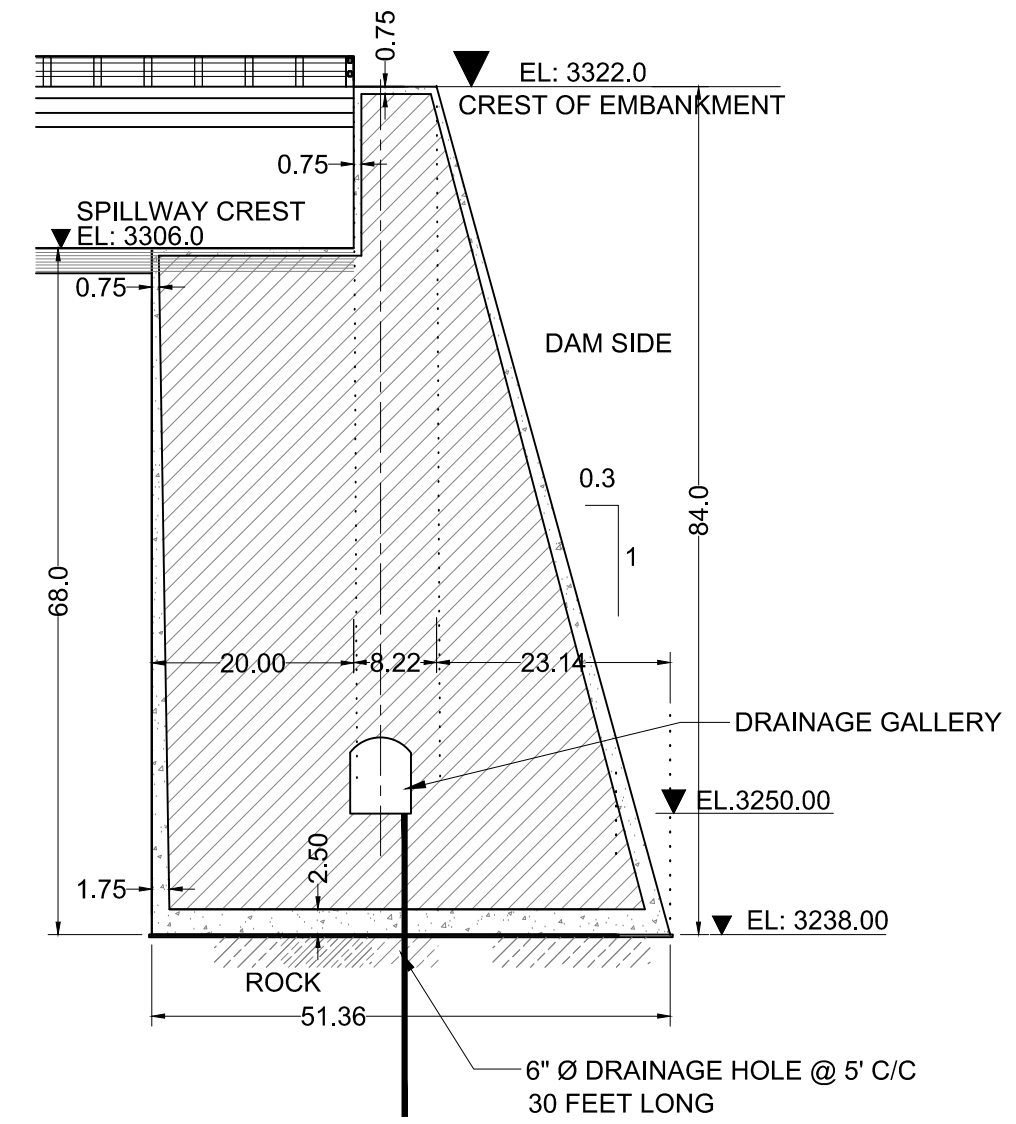
BAR DIA	EMBEDMENT LENGTH (INCHES)
40,000 PSI STEEL	
# 10	52
# 9	41
# 8	32
# 6	18
# 4	12
# 3	12

LIST OF ABBREVIATIONS

Abbreviation	Description
U/S	Upstream
D/S	Downstream
NSL	Natural Surface Level
CL	Center Line
EI.	Elevation
PVC	Polyvinyl Chloride
RD	Reduced Distance
V	Vertical
H	Horizontal






SECTION A-A



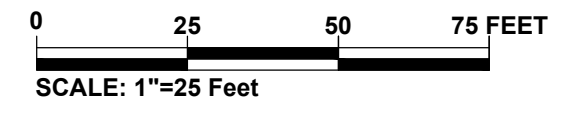
SECTION B-B

LEGEND

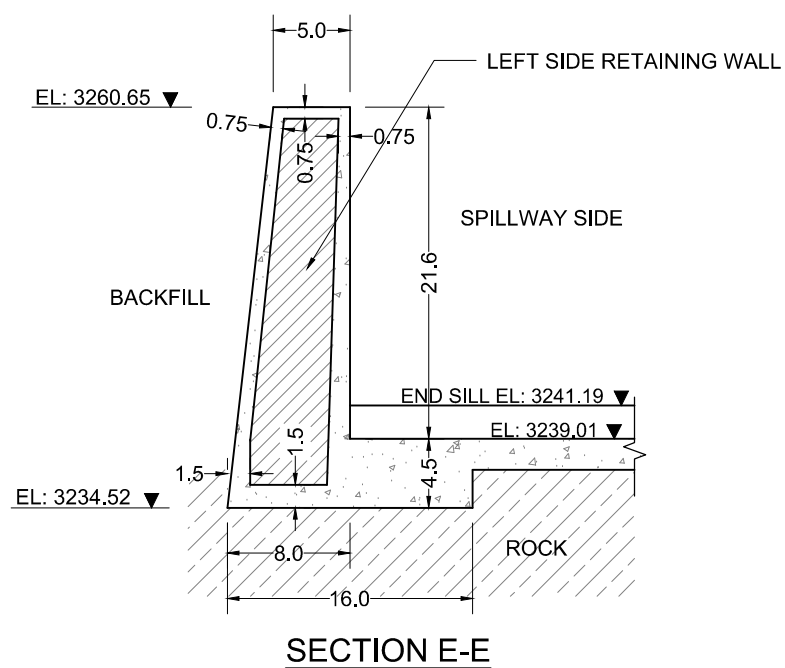
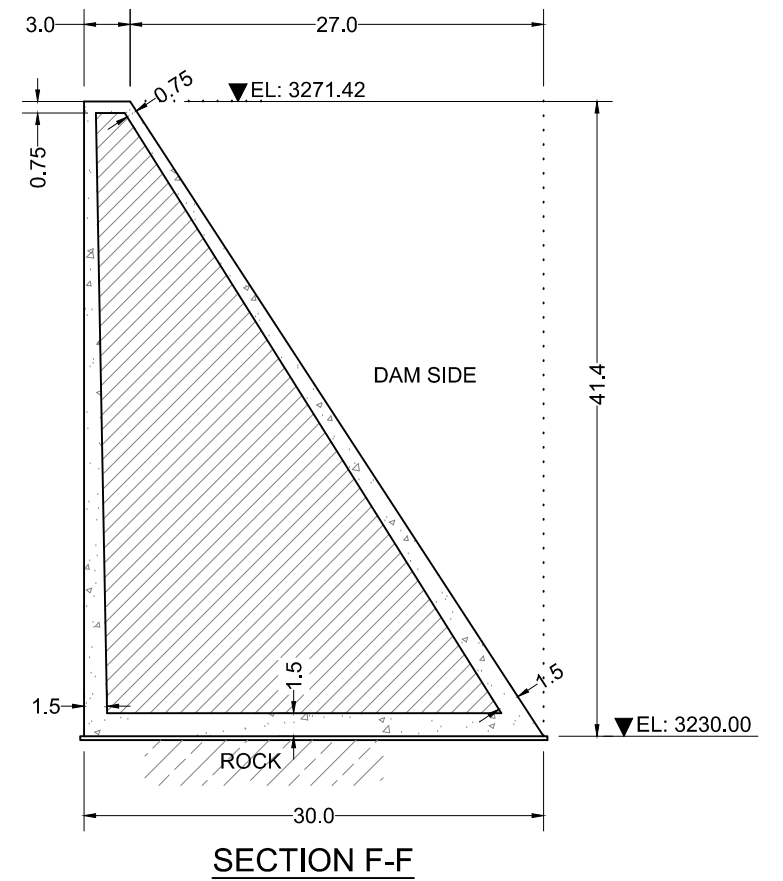
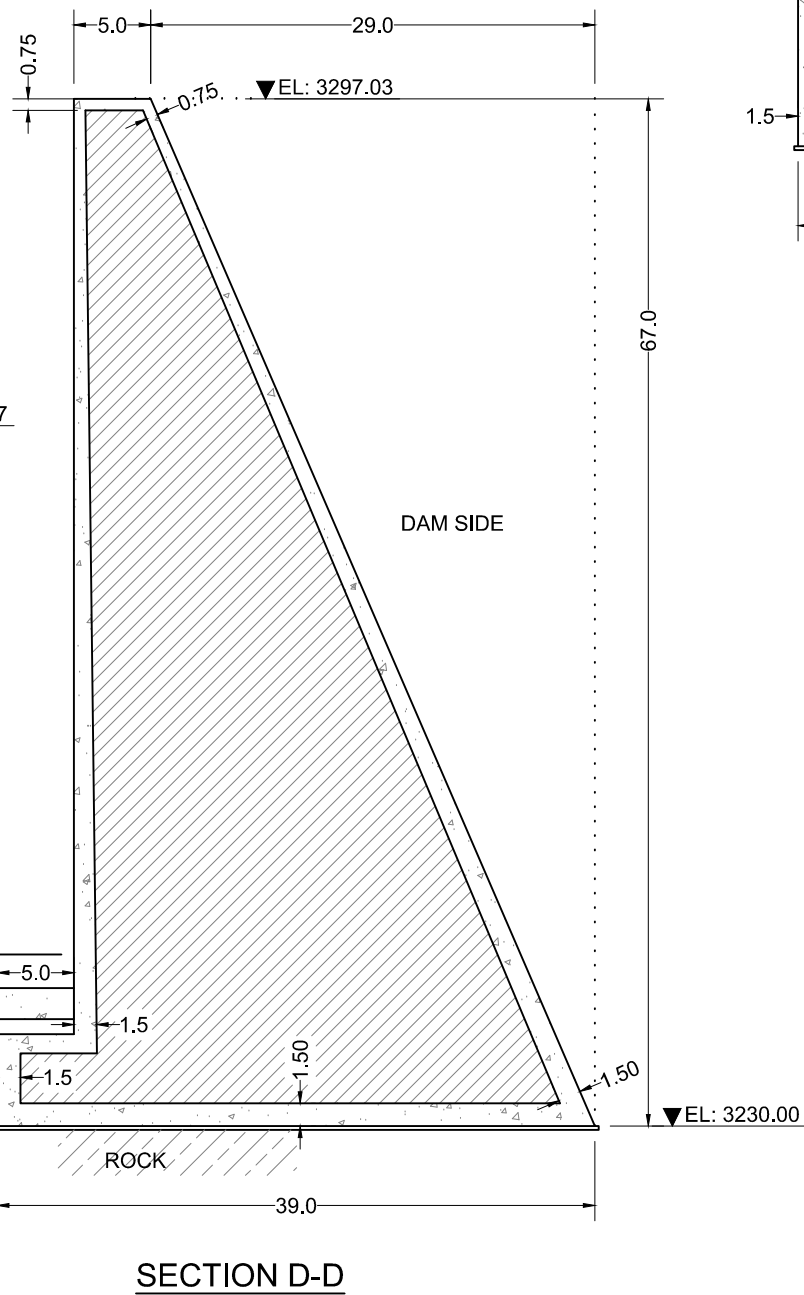
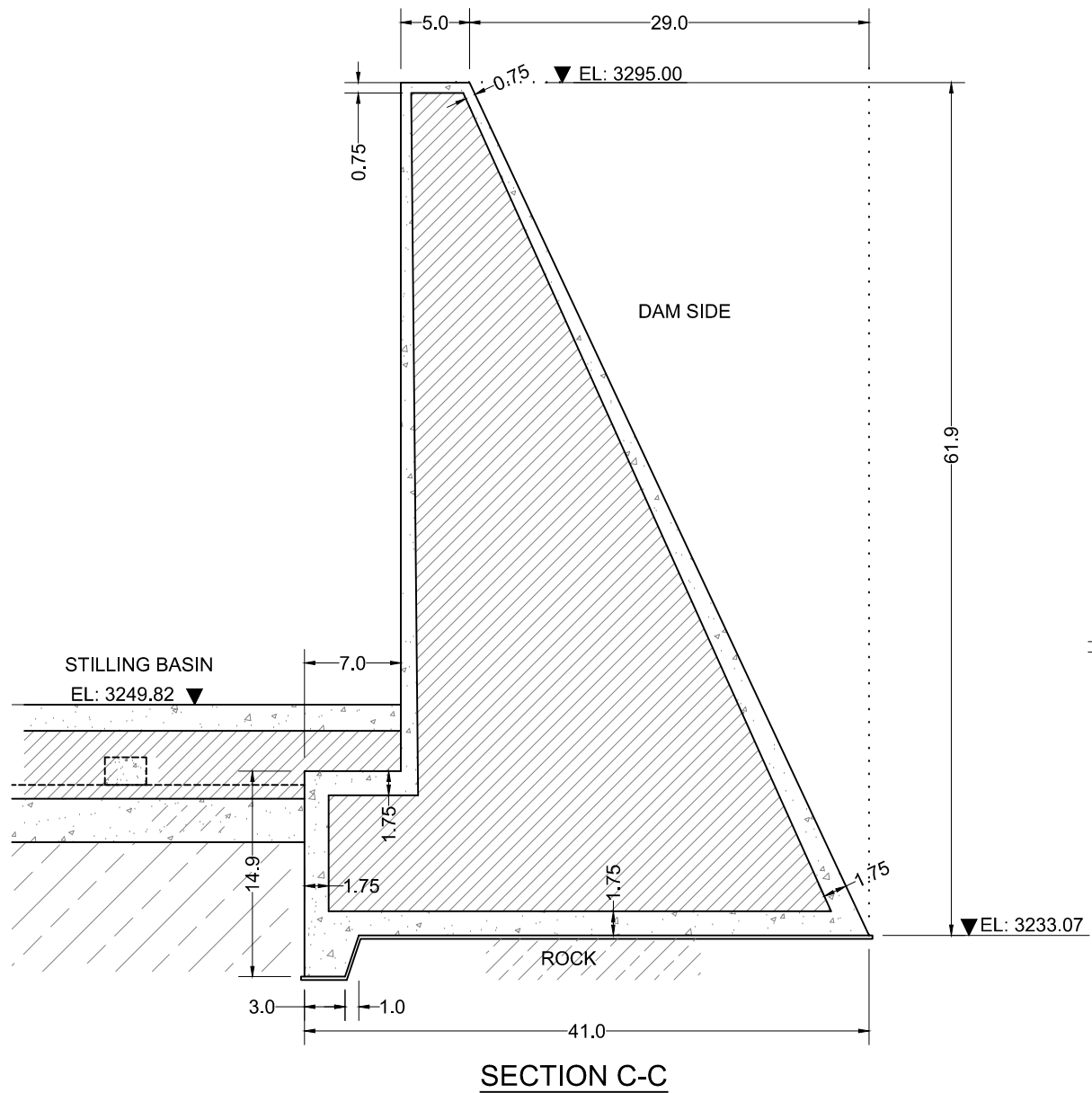
-  Concrete (3000 Psi at 90 days)
-  Concrete (3000 Psi at 28 days)
-  Bed Rock

NOTES:-


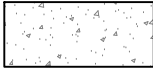

1. ALL DIMENSIONS ARE IN FEET
2. FOR LOCATION REF. DWG. NO. BQB-SDP-03 & 12
3. FOR REINFORCEMENT REF. DWG. NO. BQB-SDP-19,20



 SMALL DAMS ORGANIZATION GOVERNMENT OF KHYBER PAKHTUNKHWA	 BARQAAB CONSULTING SERVICES (PVT)LIMITED LAHORE	SANAM DAM PROJECT LOWER DIR		DRAWN	IMTIAZ AHMED	CONCRETE OUTLINE SECTIONS	
			REV.	DATE	DESCRIPTION		
				SUBMITTED	MANZAR MUMTAZ		
				APPROVED	MANZAR MUMTAZ	June, 2021	BQB-SDP-SP-19

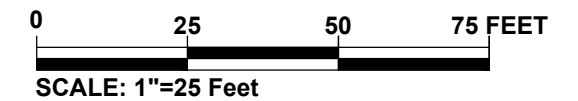


LEGEND

-  Concrete (3000 Psi at 90 days)
-  Concrete (3000 Psi at 28 days)
-  Bed Rock

NOTES:-

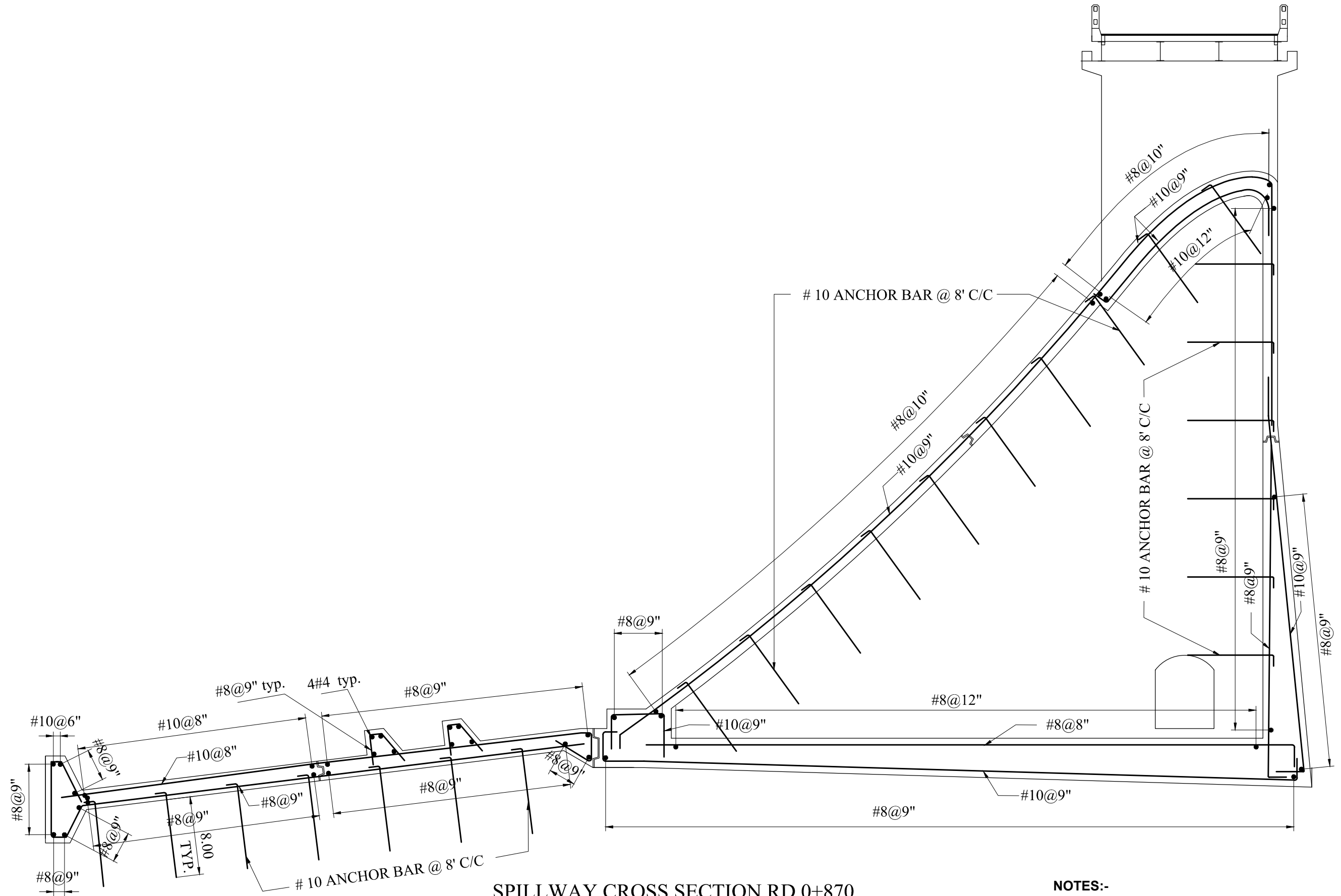
1. ALL DIMENSIONS ARE IN FEET
2. FOR LOCATION REF. DWG. NO. BQB-SDP-13 TO 15
3. FOR REINFORCEMENT REF. DWG. NO. BQB-SDP-19,20



REV.	DATE	DESCRIPTION

DRAWN	IMTIAZ AHMED
CHECKED	MANZAR MUMTAZ
SUBMITTED	MANZAR MUMTAZ
APPROVED	MANZAR MUMTAZ

CONCRETE OUTLINE SECTIONS	
DATE: June, 2021	DRAWING NO. BQB-SDP-SP-20



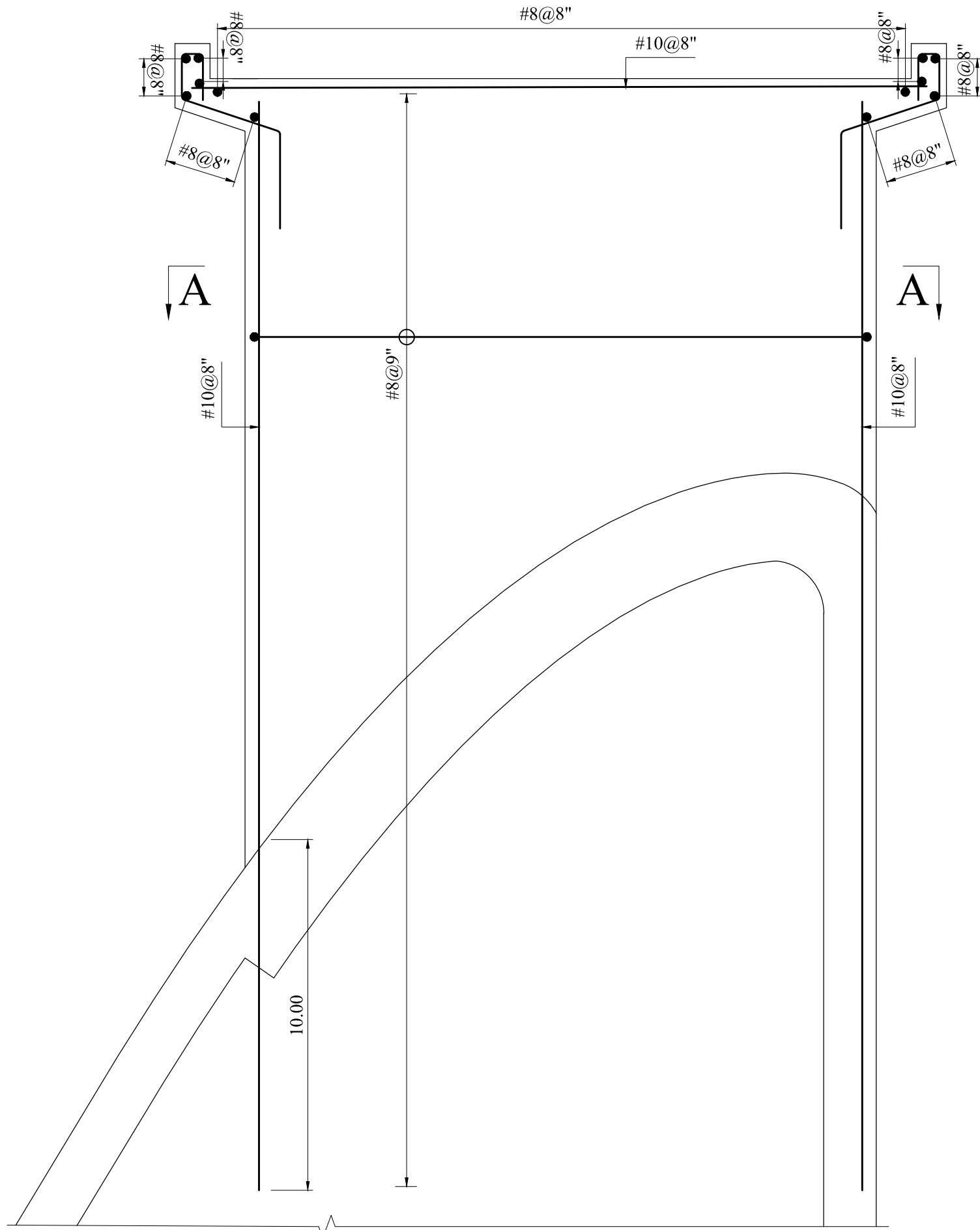
**SPILLWAY CROSS SECTION RD 0+870
REINFORCEMENT**

NOTES:-

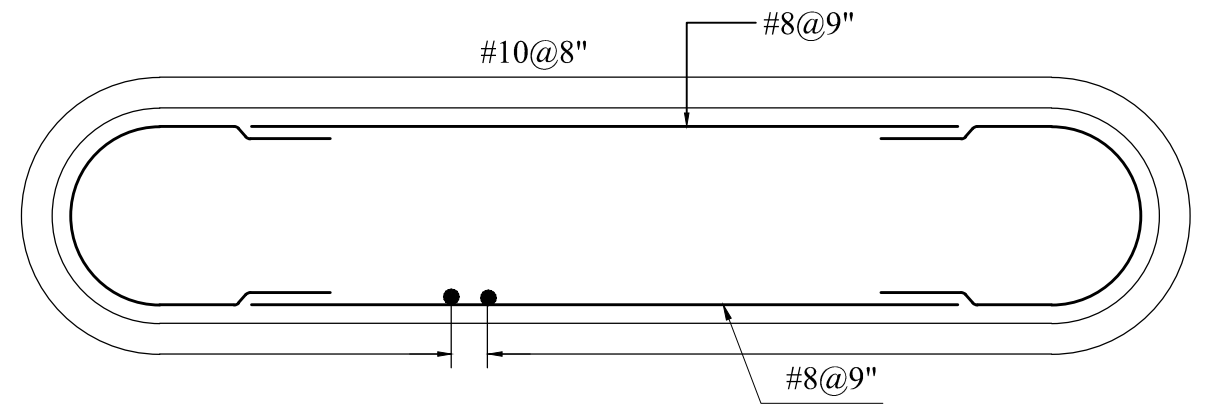
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2. FOR GENERAL NOTES REF. DWG. NO. BQB-SDP-SP-18

REV.	DATE	DESCRIPTION

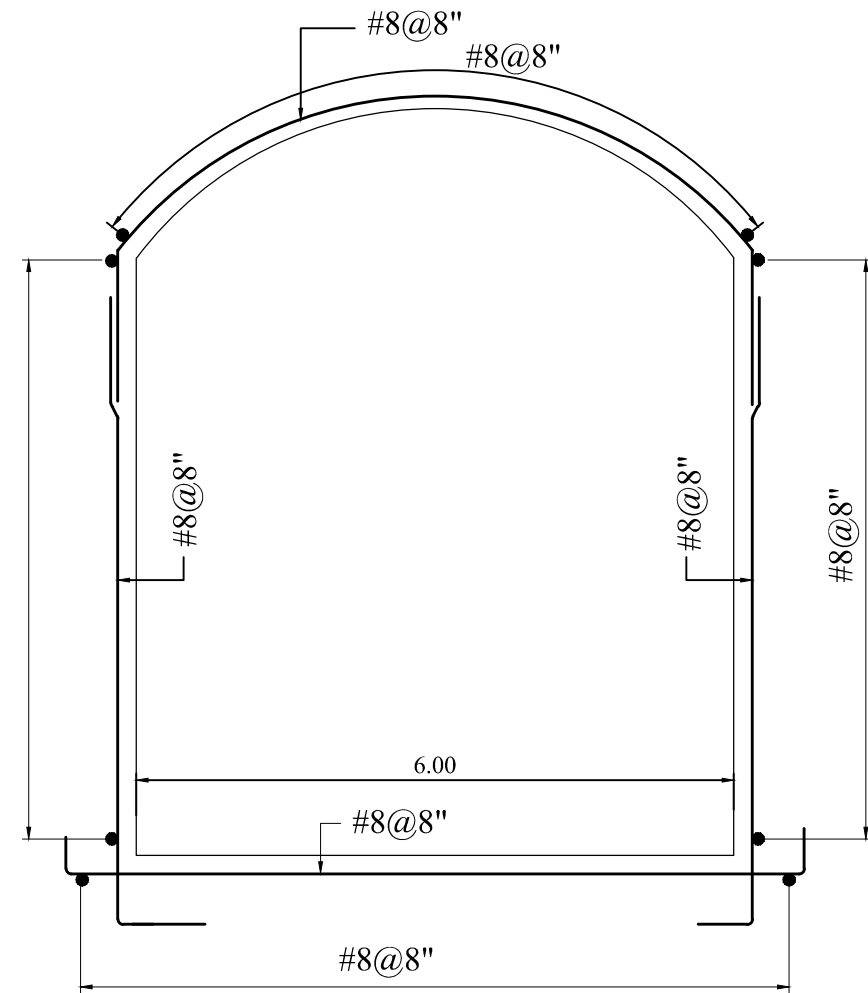
DRAWN	IMTIAZ AHMED
CHECKED	MANZAR MUMTAZ
SUBMITTED	MANZAR MUMTAZ
APPROVED	MANZAR MUMTAZ



TYPICAL SECTION OF PIER



SECTION A-A



GALLERY SECTION
(REINFORCEMENT)

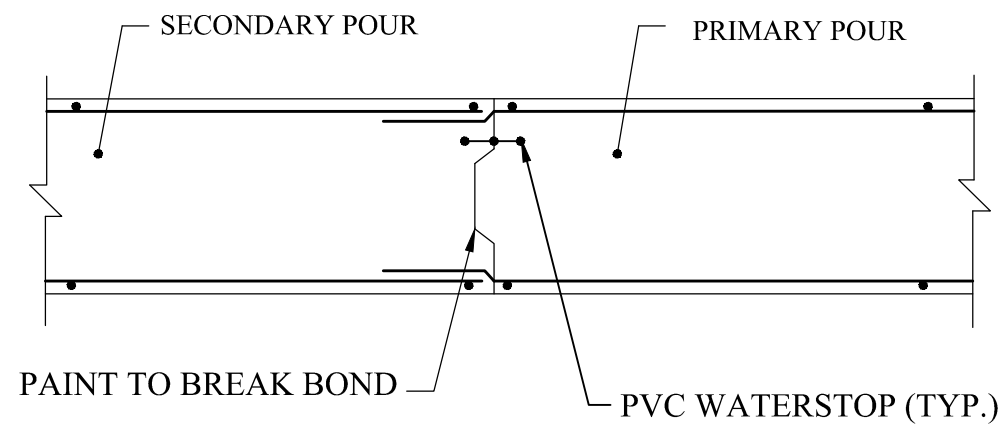
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1. ALL DIMENSIONS ARE IN FEET
2. FOR GENERAL NOTES REF. DWG. NO. BQB-SDP-SP-18

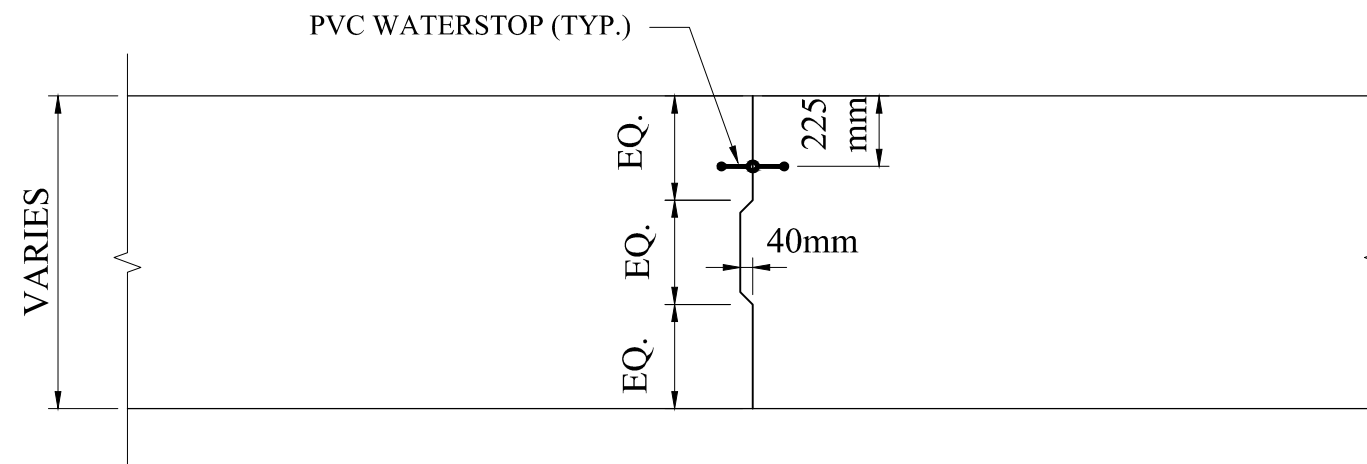
REV.	DATE	DESCRIPTION

DRAWN	IMTIAZ AHMED
CHECKED	MANZAR MUMTAZ
SUBMITTED	MANZAR MUMTAZ
APPROVED	MANZAR MUMTAZ

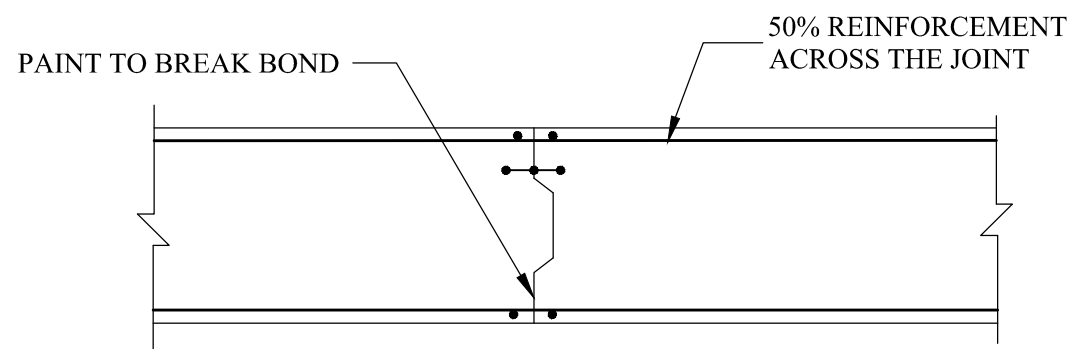
PIER & GALLERY REINFORCEMENT	
DATE: June, 2021	DRAWING NO. BQB-SDP-SP-22



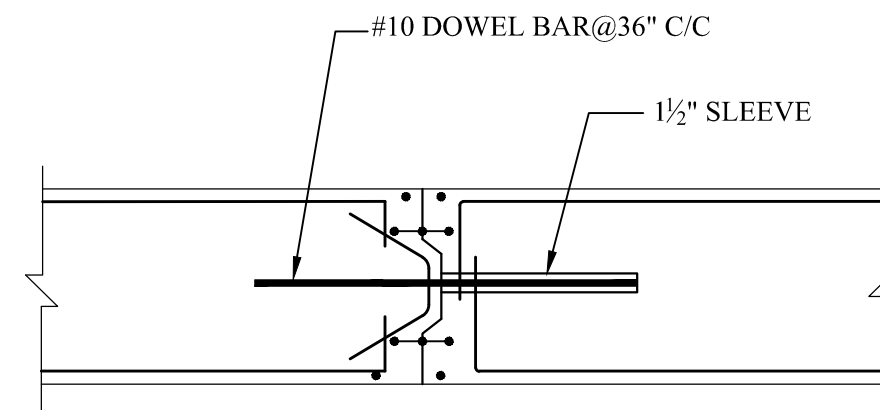
CONSTRUCTION JOINT (C. JT.)



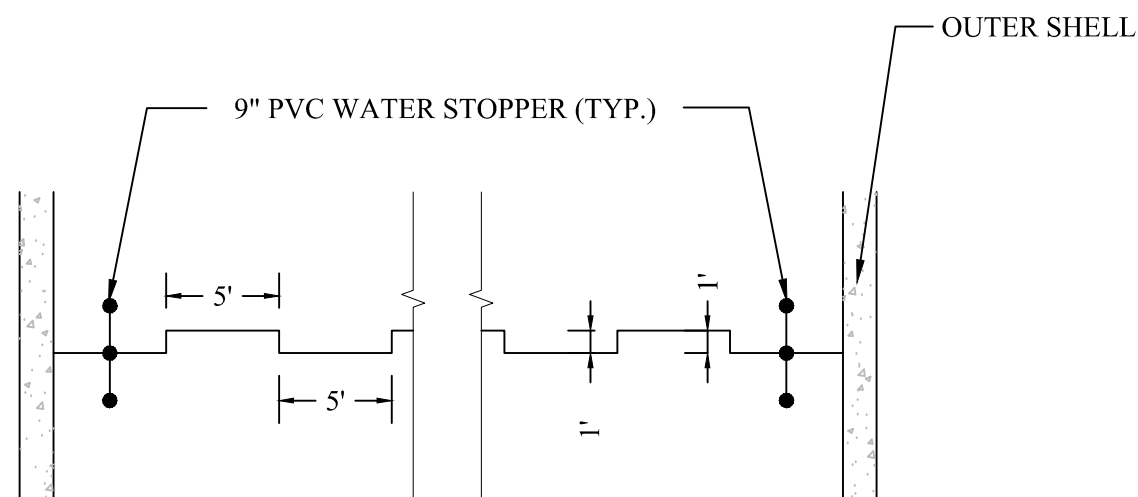
TYPICAL KEY DETAIL



CONTRACTION JOINT
TYPE-1



CONTRACTION JOINT
TYPE-2



GRouted, KEYED CONTRACTION JOINT WITH WATER STOPPER IN SPILLWAY MASS CONCRETE



SMALL DAMS ORGANIZATION
GOVERNMENT OF KHYBER PAKHTUNKHWA



BARQAAB CONSULTING SERVICES
(PVT)LIMITED LAHORE

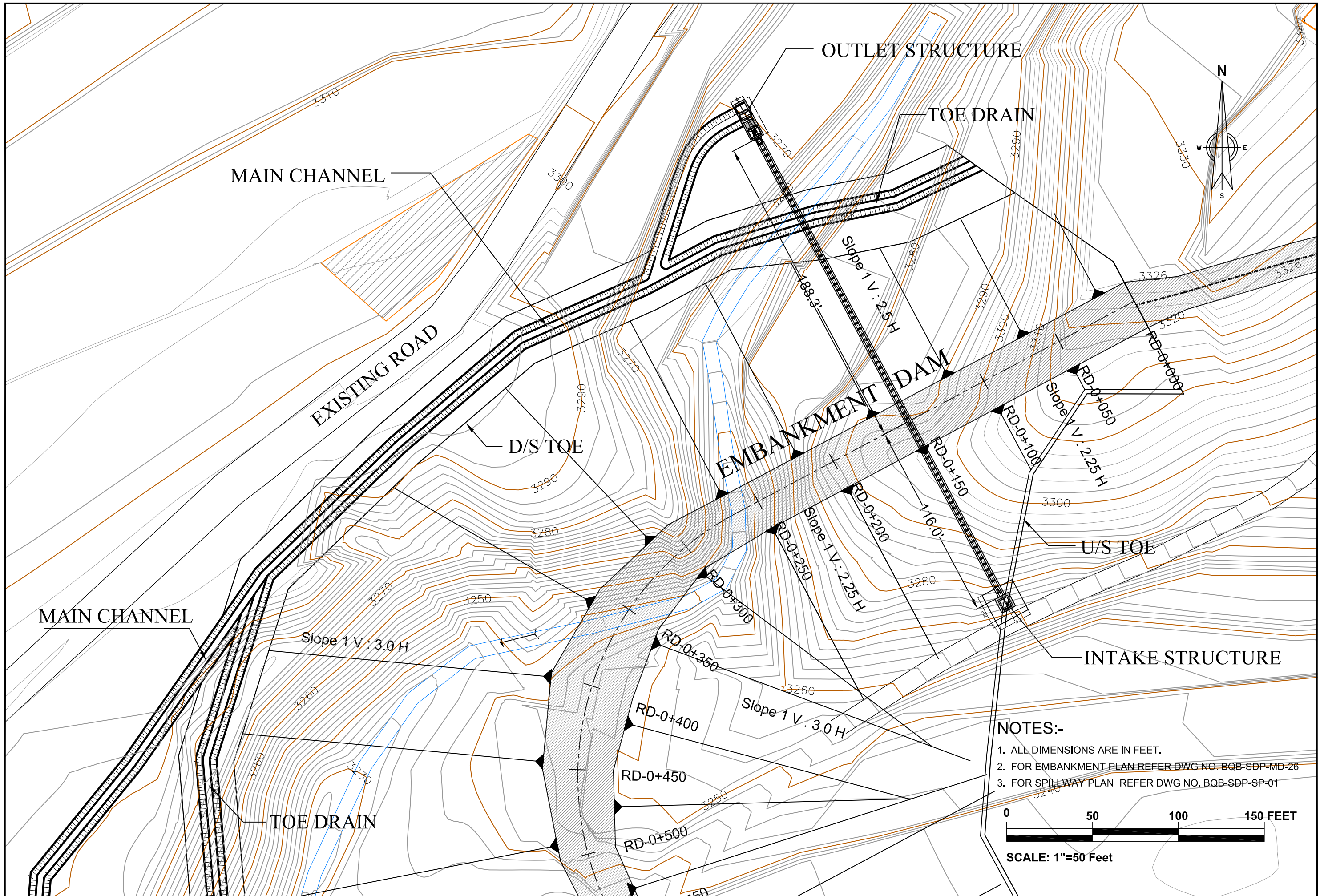
SANAM DAM PROJECT
LOWER DIR

REV.	DATE	DESCRIPTION

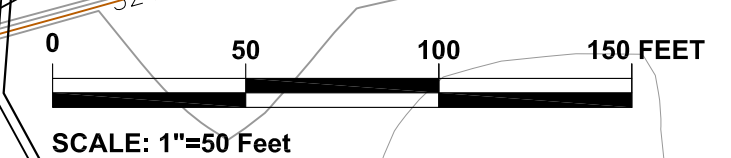
DRAWN	IMTIAZ AHMED
CHECKED	MANZAR MUMTAZ
SUBMITTED	MANZAR MUMTAZ
APPROVED	MANZAR MUMTAZ

JOINT DETAILS	
DATE: June, 2021	DRAWING NO. BQB-SDP-SP-23

INTAKE & OUTLET STRUCTURE



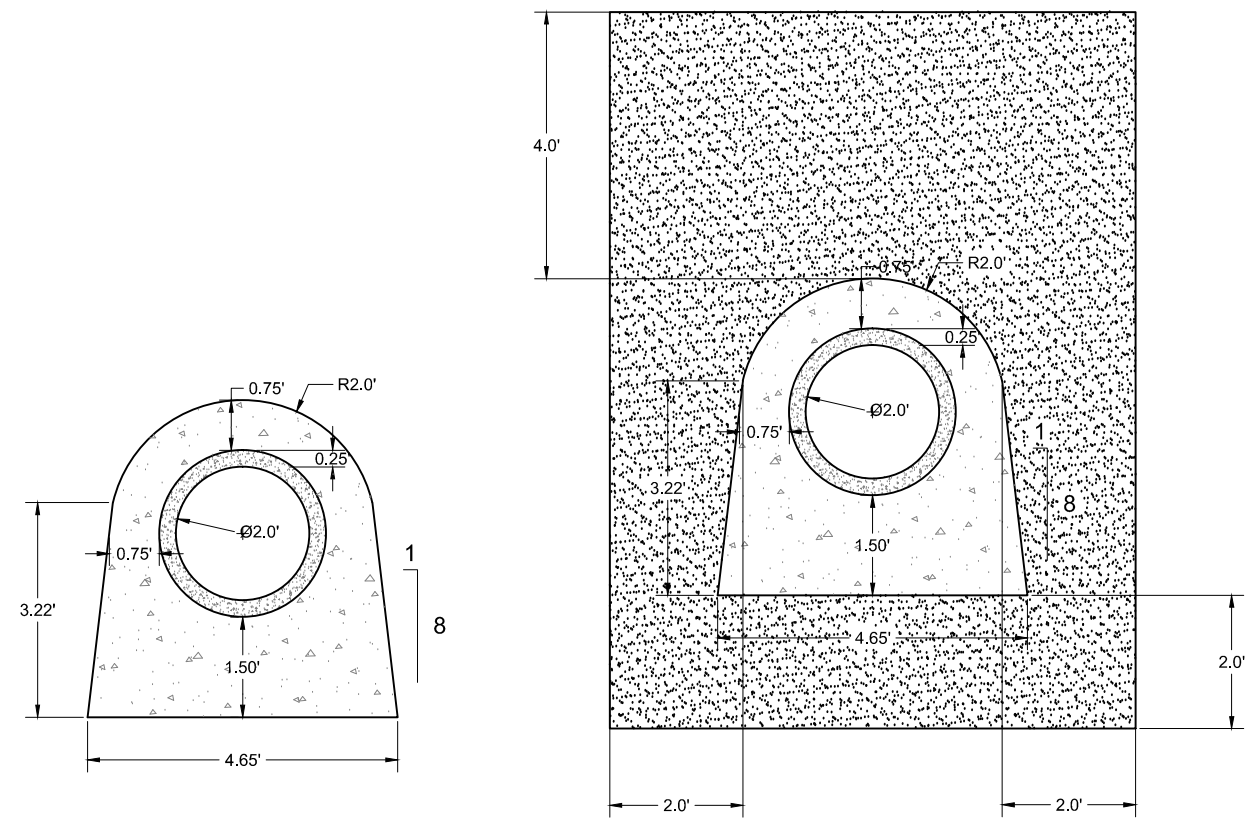
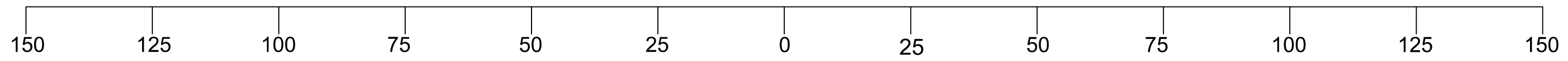
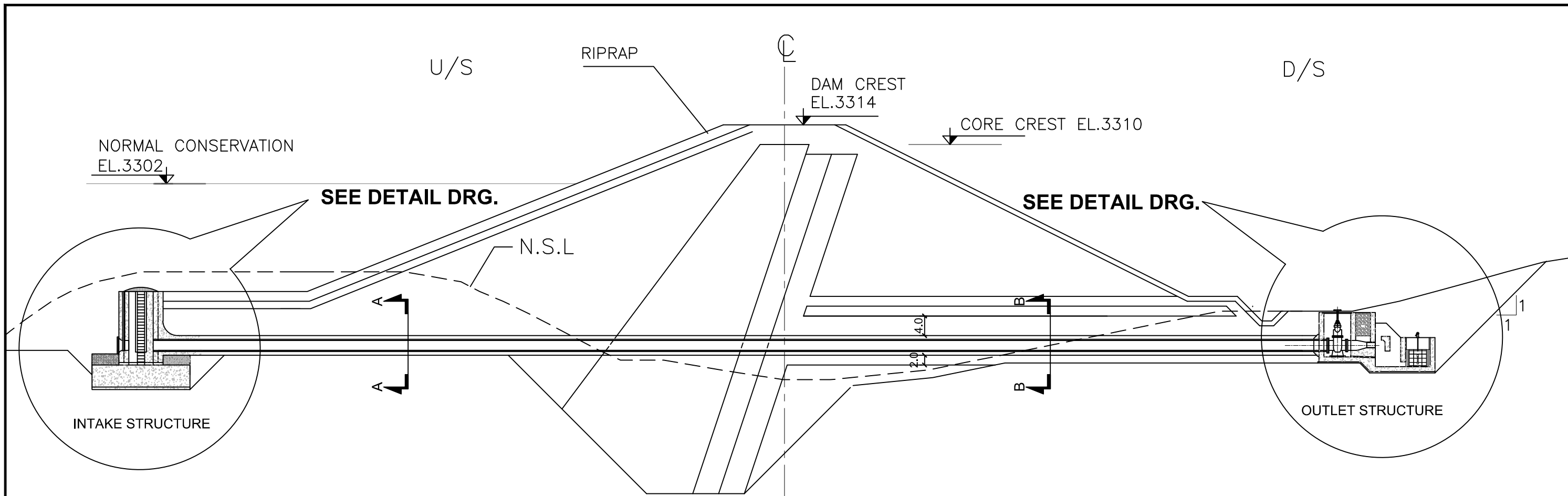
- NOTES:-**
1. ALL DIMENSIONS ARE IN FEET.
 2. FOR EMBANKMENT PLAN REFER DWG NO. BQB-SDP-MD-26
 3. FOR SPILLWAY PLAN REFER DWG NO. BQB-SDP-SP-01



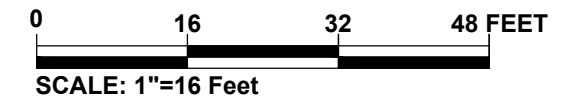
REV.	DATE	DESCRIPTION

DRAWN	IMTIAZ AHMAD
CHECKED	DR. M. IRFAN
SUBMITTED	DR. M. IRFAN
APPROVED	MANZAR MUMTAZ

INTAKE & OUTLET STRUCTURE LAYOUT PLAN		DATE:	May, 2021
		DRAWING NO.	

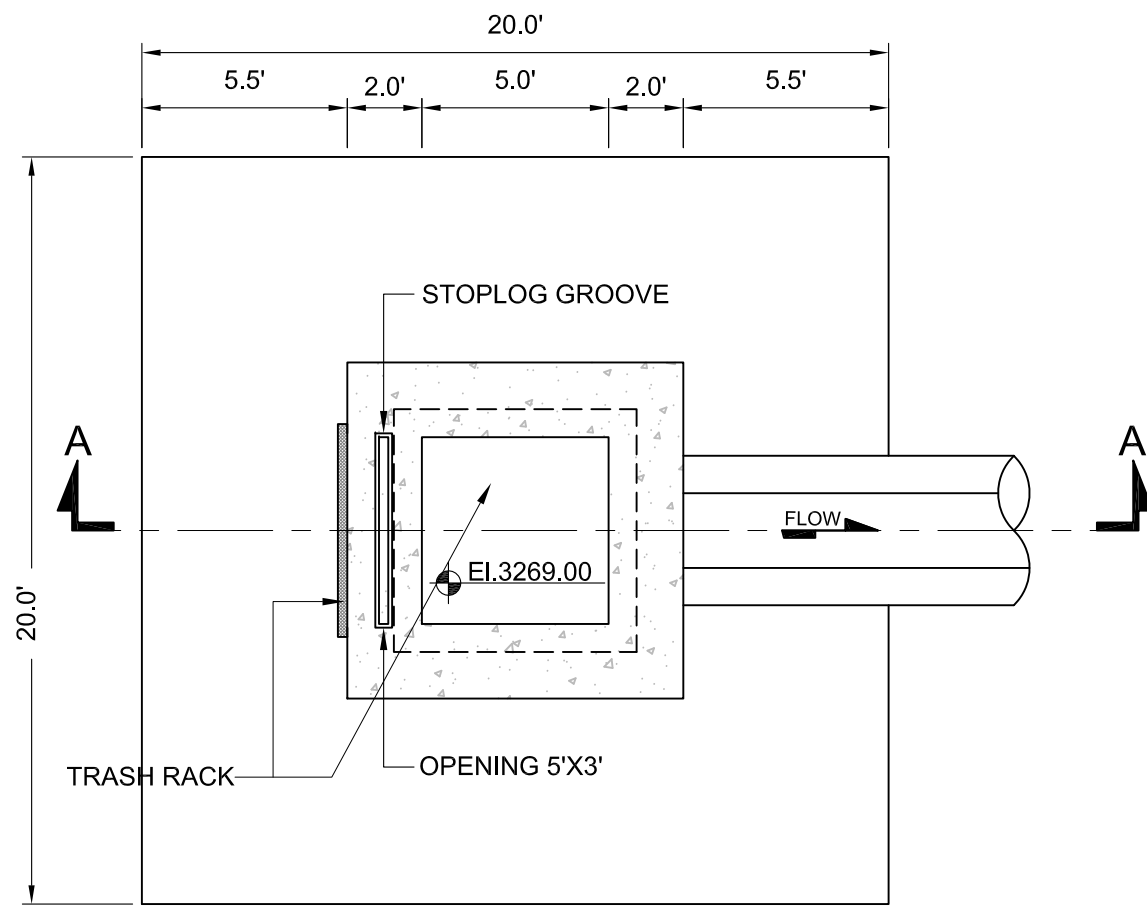


- NOTES:-**
1. ALL DIMENSIONS ARE IN FEET
 2. FOR LOCATION REF. DWG. NO. BQB-SDP-INT-01
 3. DAM CORE SHOULD BE PLACED ON SOUND ROCK OR AS DIRECTED BY ENGINEER AT SITE
 4. FILTER MATERIAL WILL REQUIRED PROCESSING /SCREENING FROM SUITABLE AVAILABLE MATERIAL AT SITE

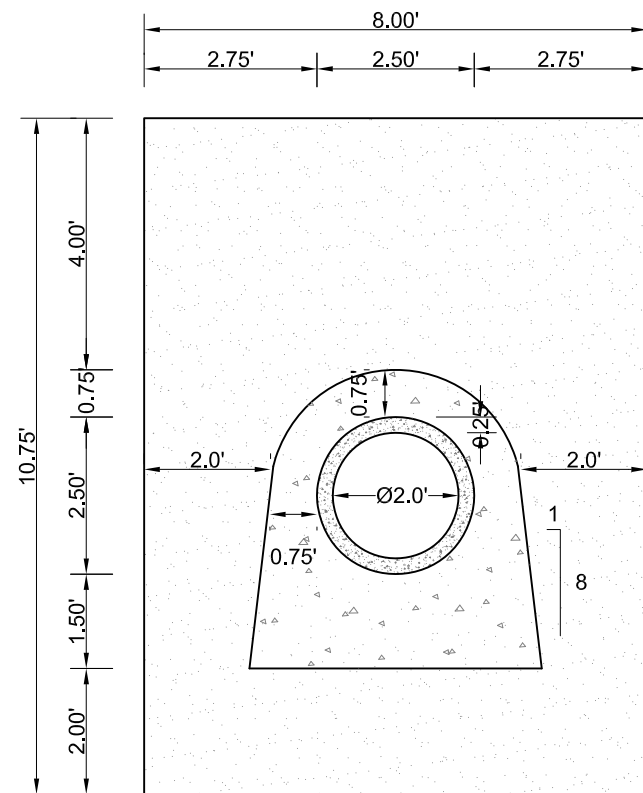


REV.	DATE	DESCRIPTION

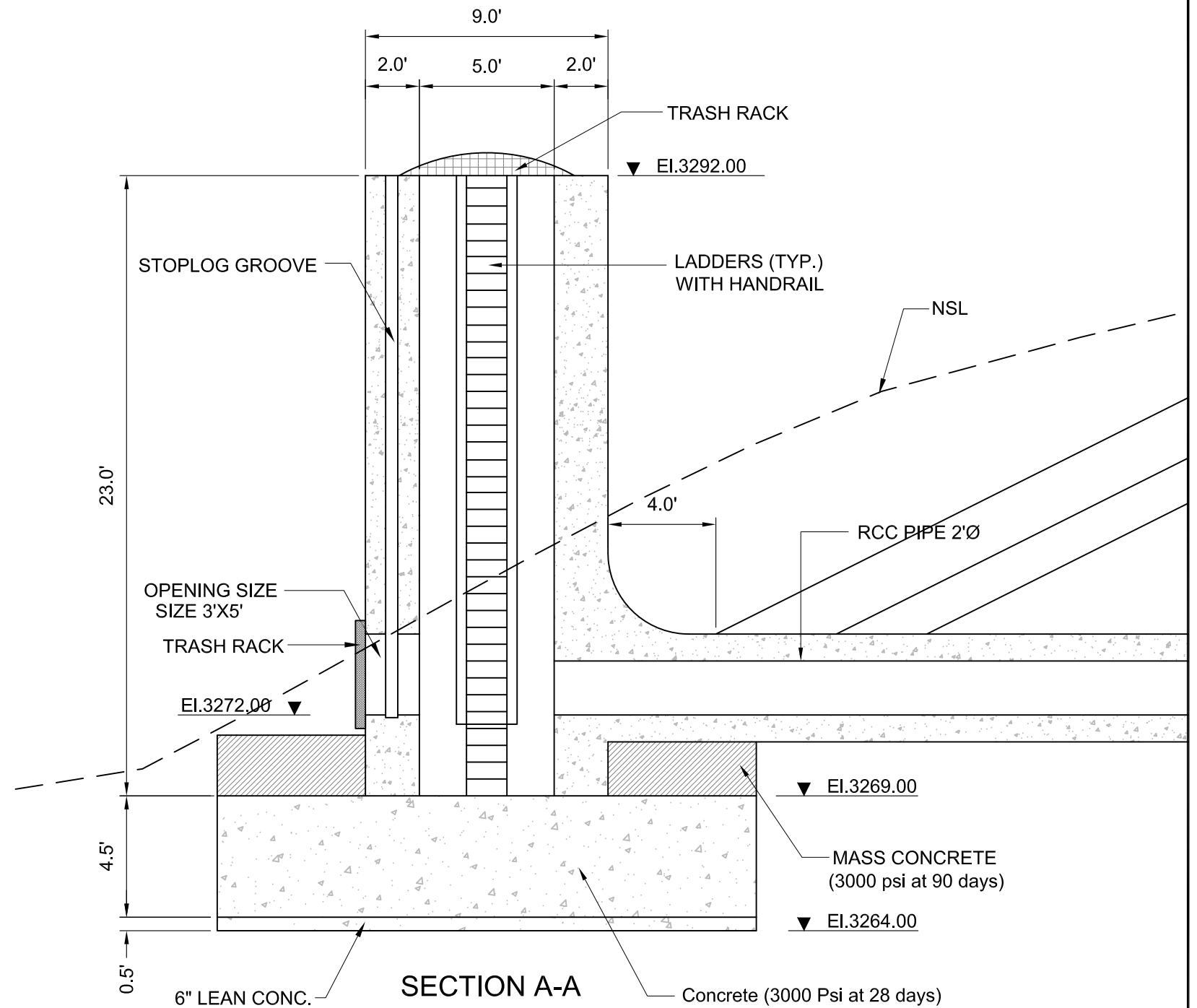
DRAWN	IMTIAZ AHMED
CHECKED	MANZAR MUMTAZ
SUBMITTED	MANZAR MUMTAZ
APPROVED	M.T.A



INTAKE STRUCTURE PLAN



PIPE SECTION (TYP.)



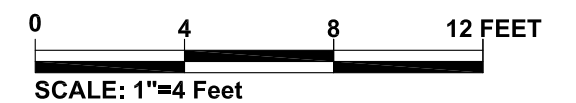
SECTION A-A

LEGEND

- Concrete (3000 Psi at 90 days)
- Concrete (3000 Psi at 28 days)
- Bed Rock

NOTES:-

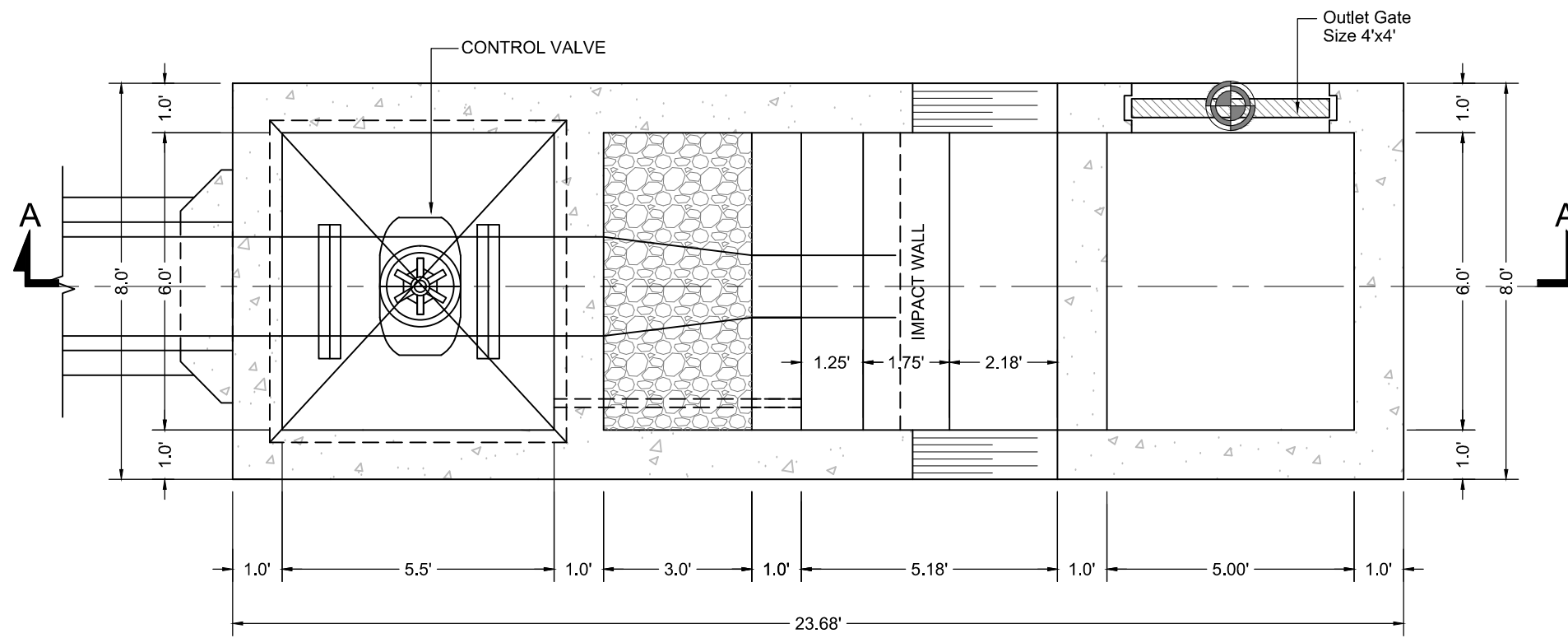
1. ALL DIMENSIONS ARE IN FEET
2. FOR LOCATION REF. DWG. NO. BQB-SDP-INT-01



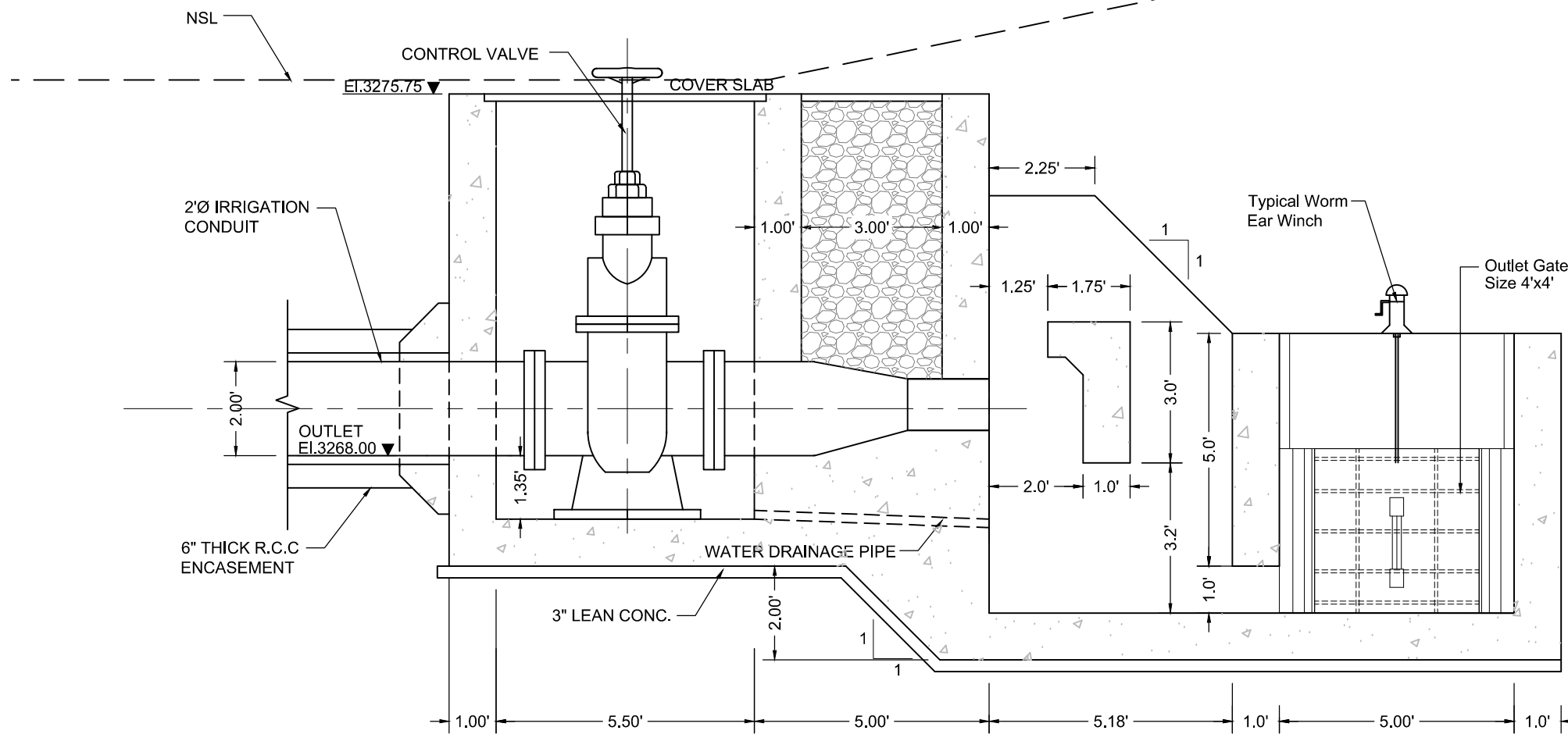
REV.	DATE	DESCRIPTION

DRAWN	IMTIAZ AHMAD
CHECKED	MANZAR MUMTAZ
SUBMITTED	MANZAR MUMTAZ
APPROVED	MANZAR MUMTAZ

INTAKE STRUCTURE PLAN & SECTION	
DATE: May, 2021	DRAWING NO. BQB-SDP-INT-03



OUTLET STRUCTURE PLAN



SECTION A-A

LEGEND

- Concrete (3000 Psi at 90 days)
- Concrete (3000 Psi at 28 days)
- Bed Rock

NOTES:-

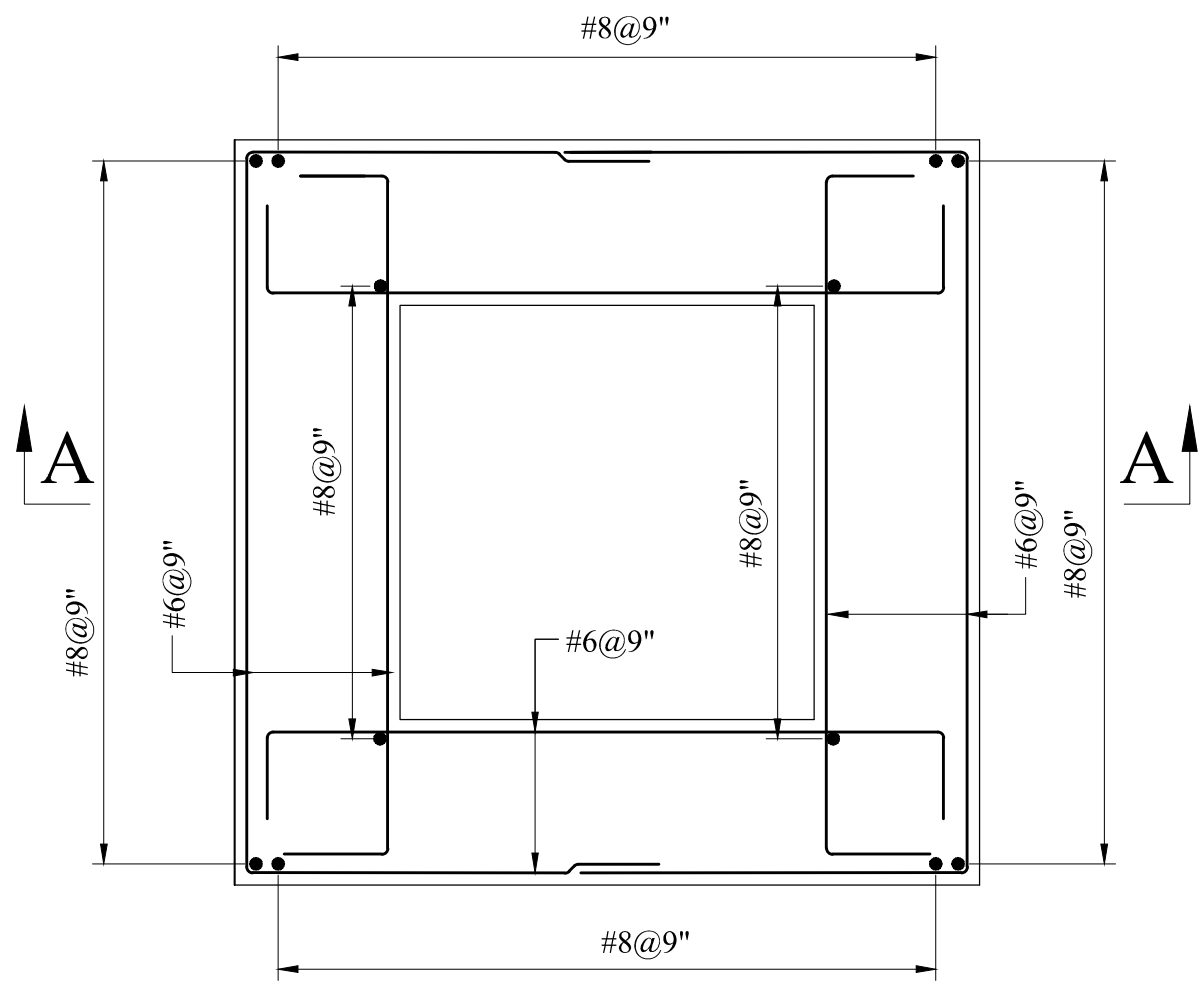
1. ALL DIMENSIONS ARE IN FEET
2. FOR LOCATION REF. DWG. NO. BQB-SDP-INT-01



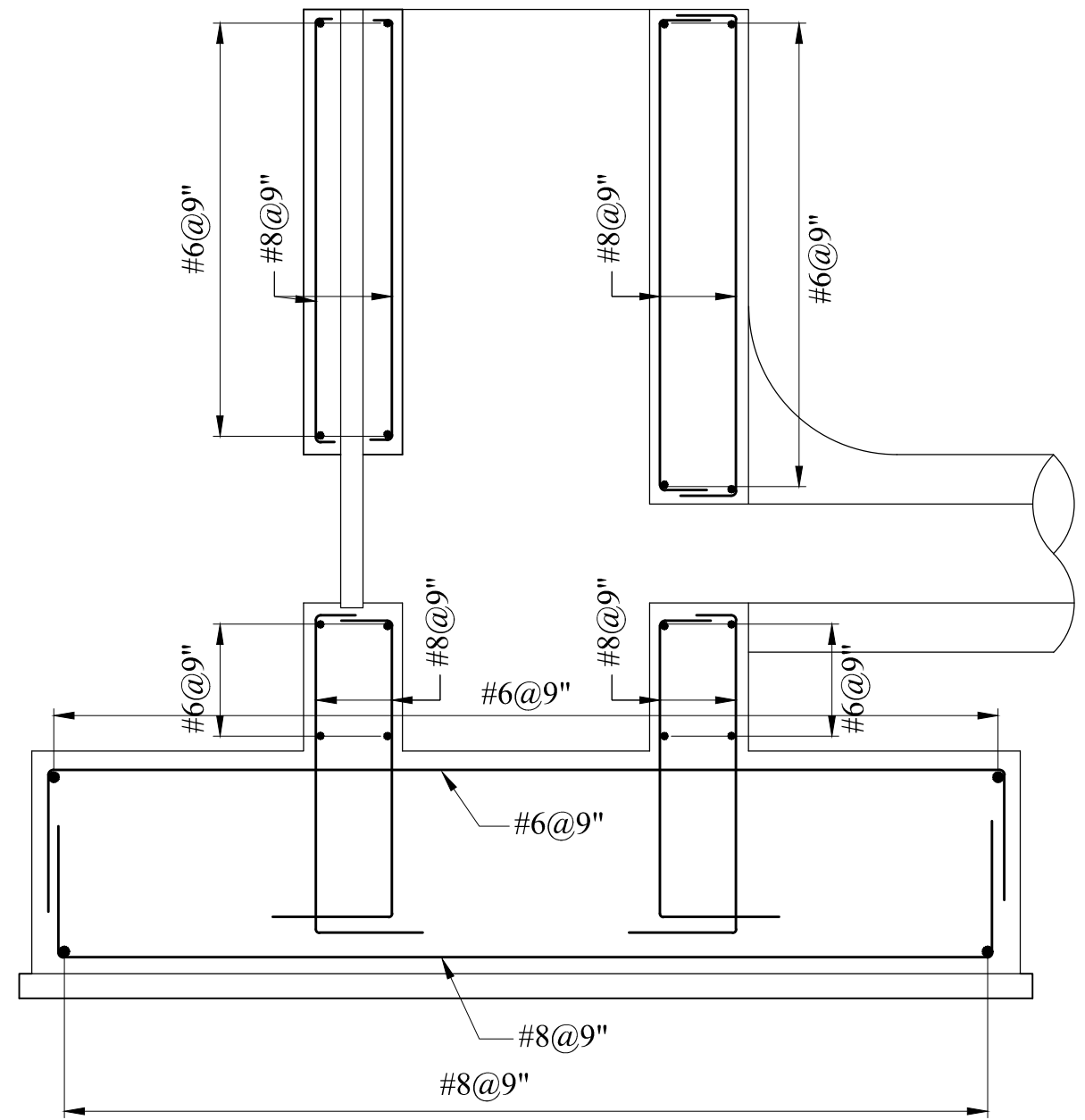
REV.	DATE	DESCRIPTION

DRAWN	IMTIAZ AHMED
CHECKED	MANZAR MUMTAZ
SUBMITTED	MANZAR MUMTAZ
APPROVED	M.T.A

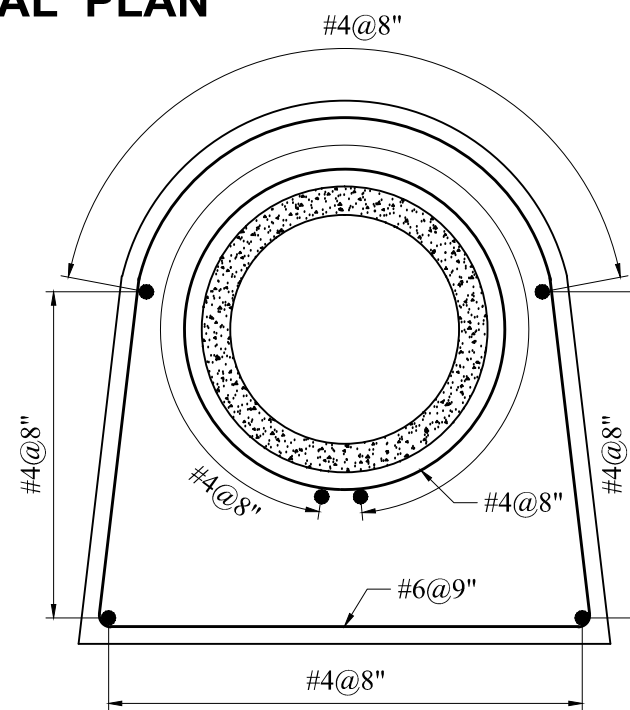
OUTLET STRUCTURE PLAN & SECTION	
DATE: April, 2018	DRAWING NO. BQB-SDP-INT-04



INTAKE STRUCTURE SECTIONAL PLAN
(REINFORCEMENT)



SECTION A-A



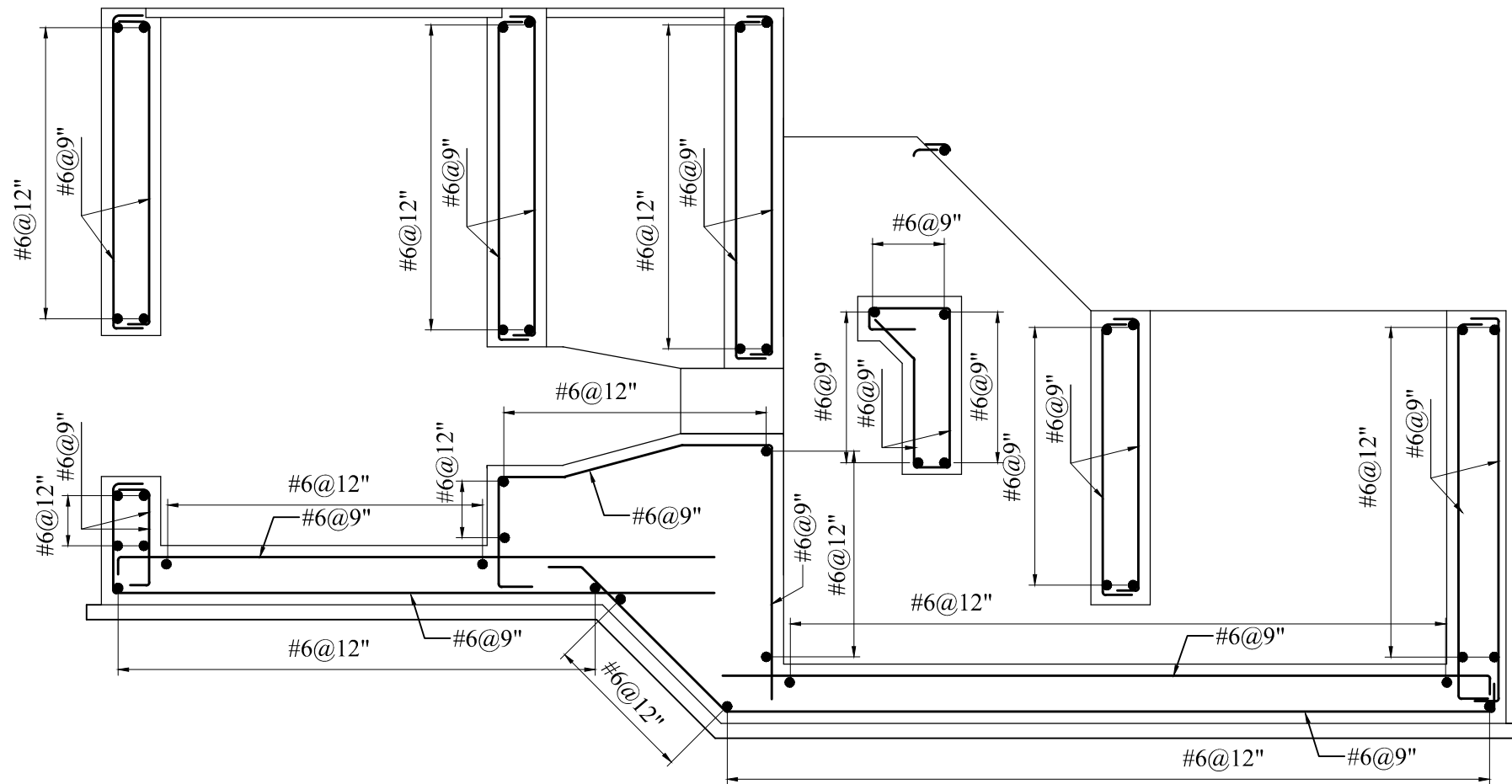
TYPICAL REINFORCEMENT AROUND PIPE

- NOTES:-**
1. ALL DIMENSIONS ARE IN FEET
 2. FOR LOCATION REF. DWG. NO. BQB-SDP-INT-03

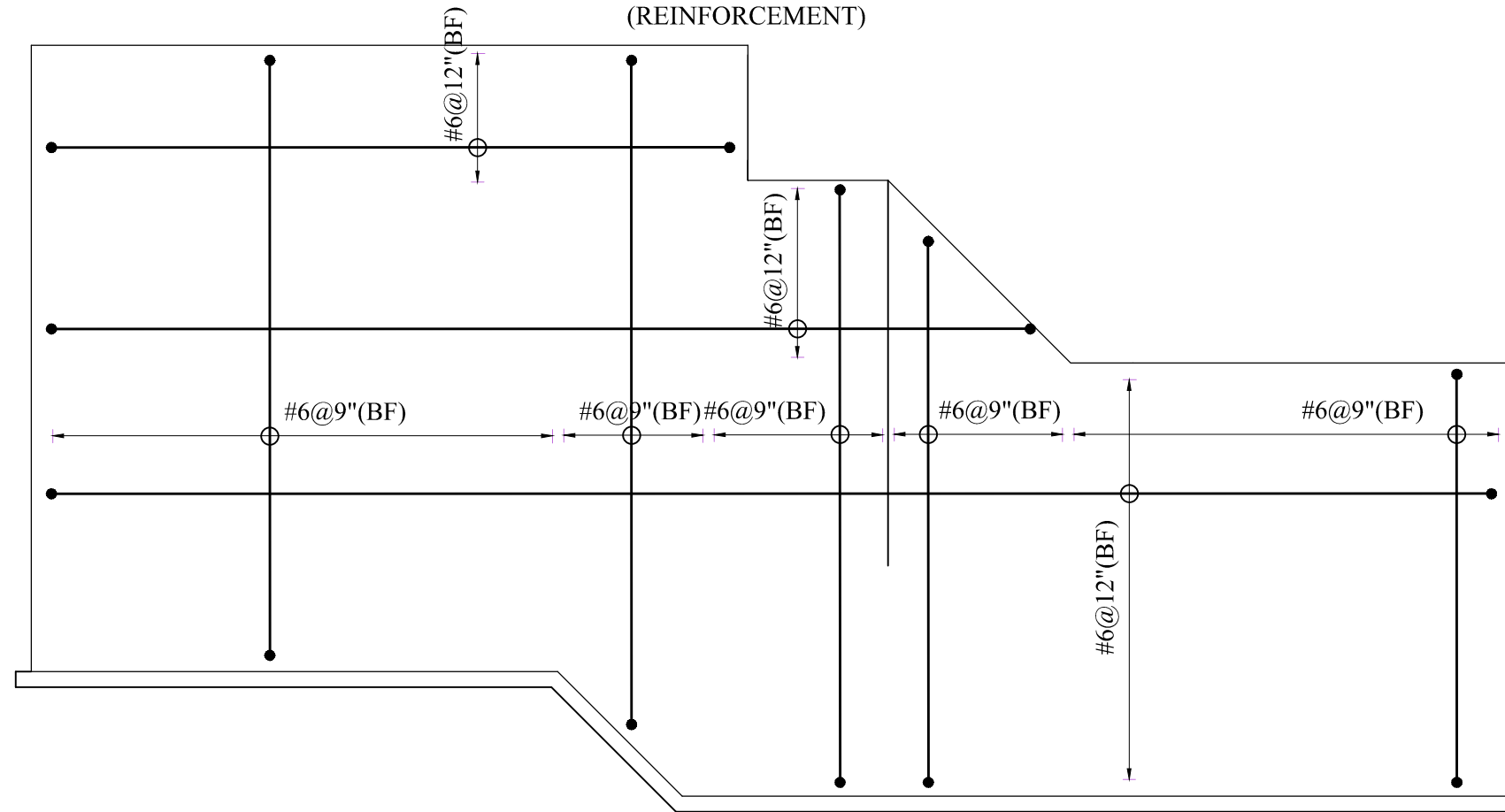
REV.	DATE	DESCRIPTION

DRAWN	IMTIAZ
CHECKED	TANVIR ABBAS
SUBMITTED	TANVIR ABBAS
APPROVED	M.T.A

INTAKE STRUCTURE, CONDUIT REINFORCEMENT	
DATE: May, 2018	DRAWING NO. BQB-SDP-INT-05



TYPICAL SECTION FOR OUTLET STRUCTURE
(REINFORCEMENT)



TYPICAL SIDE WALL ELEVATION FOR OUTLET STRUCTURE
(REINFORCEMENT)

- NOTES:-**
1. ALL DIMENSIONS ARE IN FEET
 2. FOR LOCATION REF. DWG. NO. BQB-SDP-INT-04



SMALL DAMS ORGANIZATION
GOVERNMENT OF KHYBER PAKHTUNKHWA



BARQAAB CONSULTING SERVICES
(PVT)LIMITED LAHORE

SANAM DAM PROJECT
LOWER DIR

REV.	DATE	DESCRIPTION

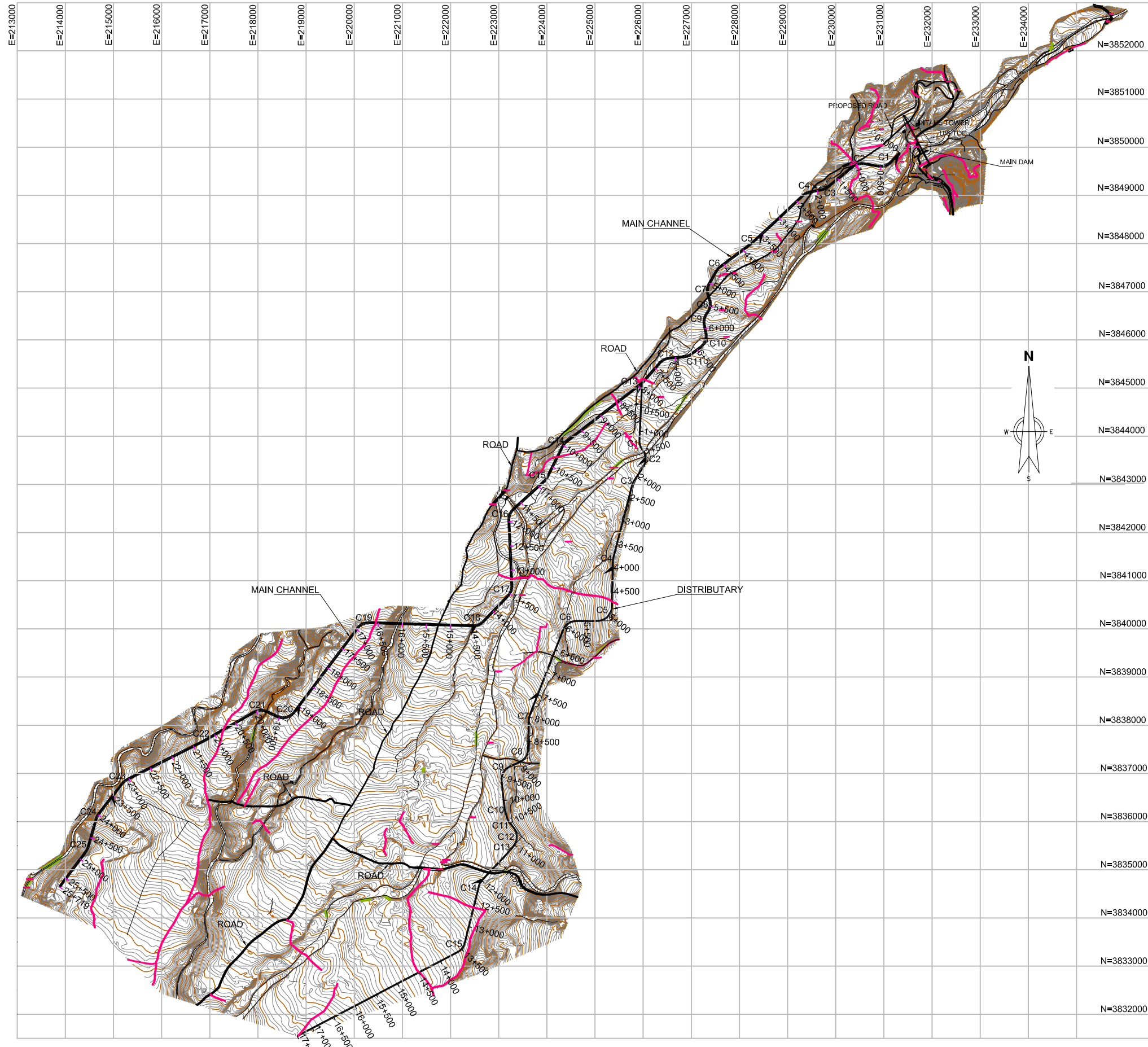
DRAWN	IMTIAZ
CHECKED	TANVIR ABBAS
SUBMITTED	TANVIR ABBAS
APPROVED	M.T.A

**OUTLET STRUCTURE
REINFORCEMENT**

DATE:
May, 2018

DRAWING NO.
BQB-SDP-INT-06

IRRIGATION SYSTEM



LEGEND

- METALLED ROAD, NON-METALLED ROAD WITH STONE & CULVERT, FOOT PATH WITH CULVERT
- CHANNEL ALIGNMENT
- DOUBLE LINE NULLAH, RIVER
- CULTIVATION LIMIT
- EXISTING CHANNEL
- IRRIGATION CHANNEL / DISTRIBUTARY

REV.	DATE	DESCRIPTION

DRAWN	NAVEED ANWAR
CHECKED	NAVEED NAWAZ
SUBMITTED	NAVEED NAWAZ
APPROVED	MANZAR MUMTAZ

IRRIGATION NETWORK PLAN	
DATE: June, 2021	DRAWING NO. BQB-SDP-IN-P-01



LEGEND

- BUILDING, MOSQUE
- METALLED ROAD, NON-METALLED ROAD WITH STONE & CULVERT
- FOOT PATH WITH CULVERT
- GRAVEYARD
- CHANNEL ALIGNMENT
- DOUBLE LINE NULLAH
- BUSHES, TREES & WELL
- ELECTRIC POWER LINE T.P. T.P. T.P.
- CONTROL POINT, BENCH MARK P-5 **BM#1** 916.616 352.909
- CULTIVATION LIMIT
- EXISTING CHANNEL
- PROPOSED MAIN CHANNEL / DISTRIBUTARY



SMALL DAMS ORGANIZATION
GOVERNMENT OF KHYBER PAKHTUNKHWA



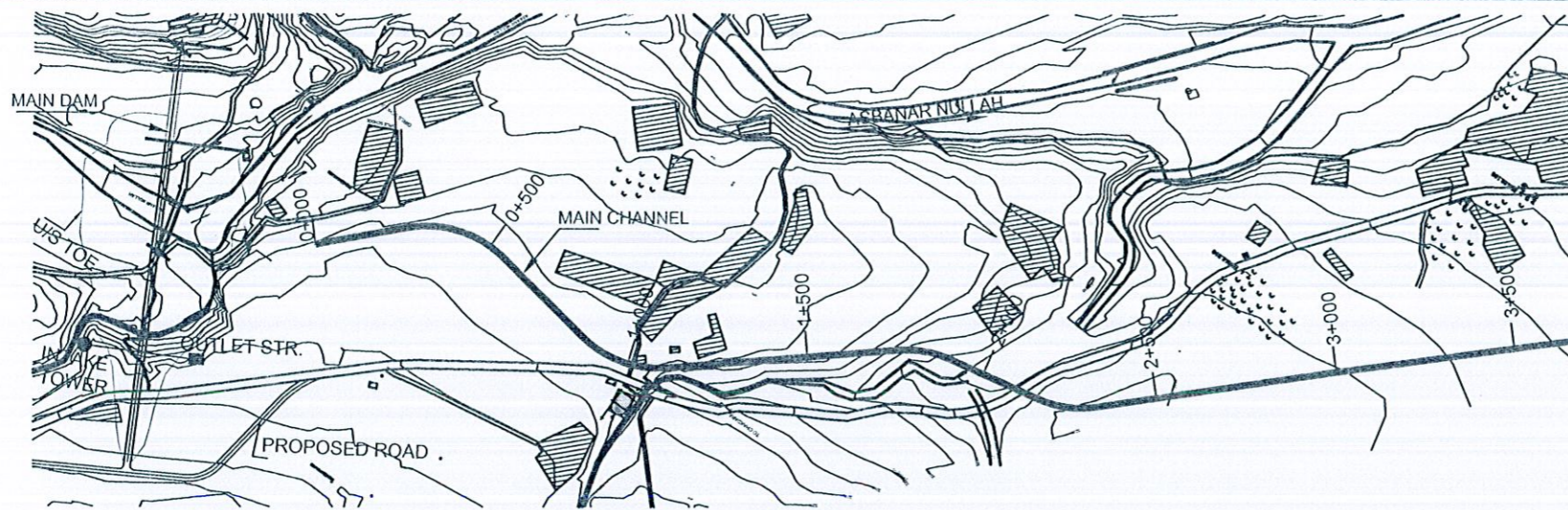
BARQAAB CONSULTING SERVICES
(PVT)LIMITED LAHORE

SANAM DAM PROJECT
LOWER DIR

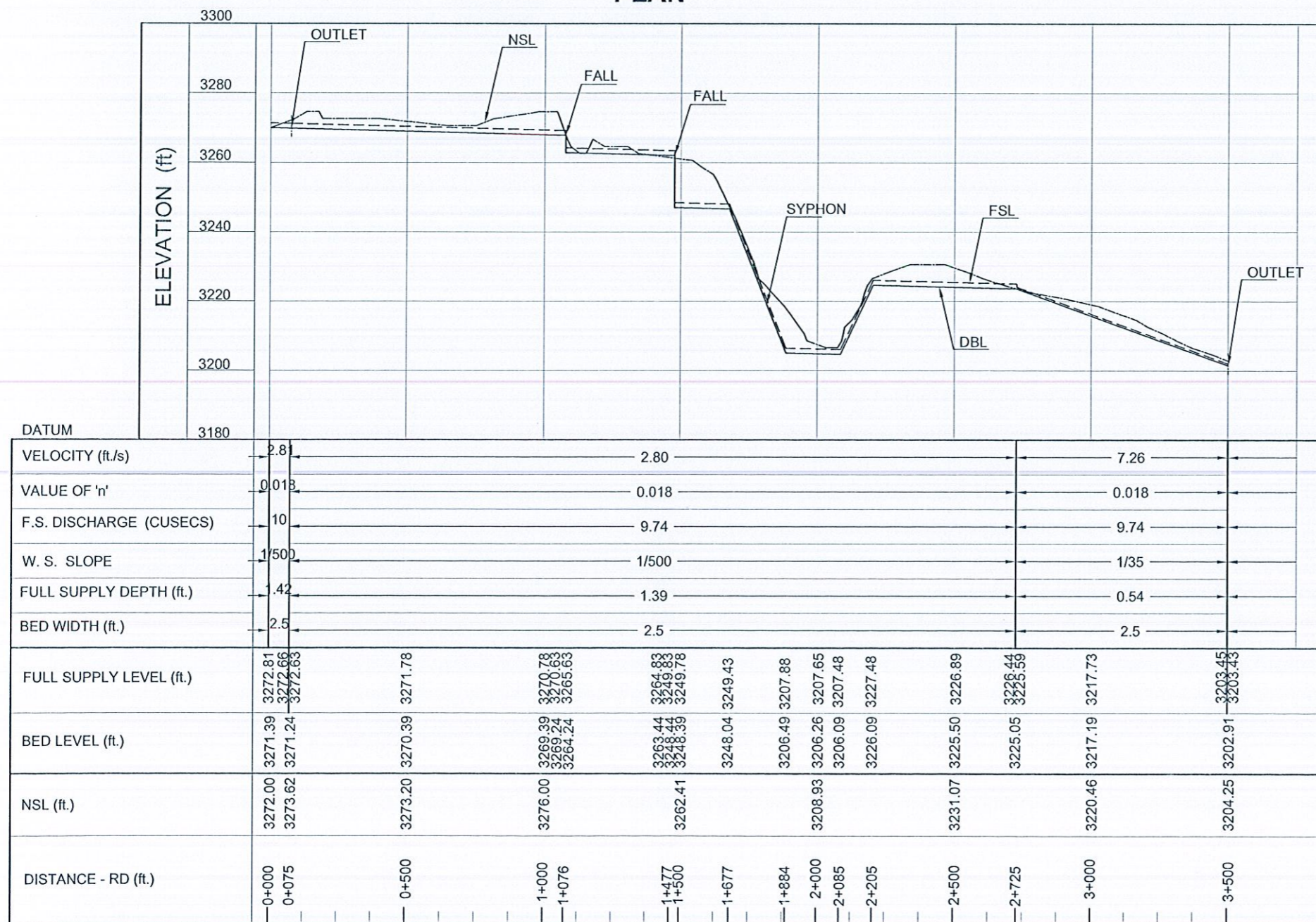
REV.	DATE	DESCRIPTION

DRAWN	NAVEED ANWAR
CHECKED	NAVEED NAWAZ
SUBMITTED	NAVEED NAWAZ
APPROVED	MANZAR MUMTAZ

COMMAND AREA CHAKBANDI LAYOUT PLAN	
DATE:	DRAWING NO.
June, 2021	BQB-SDP-M-CA-01



PLAN



PROFILE

LEGEND:-

DESCRIPTION	SYMBOLS
DESIGNED FSL	-----
DESIGNED BED LEVEL	_____
NATURAL SURFACE LEVEL	~~~~~

ABBREVIATIONS

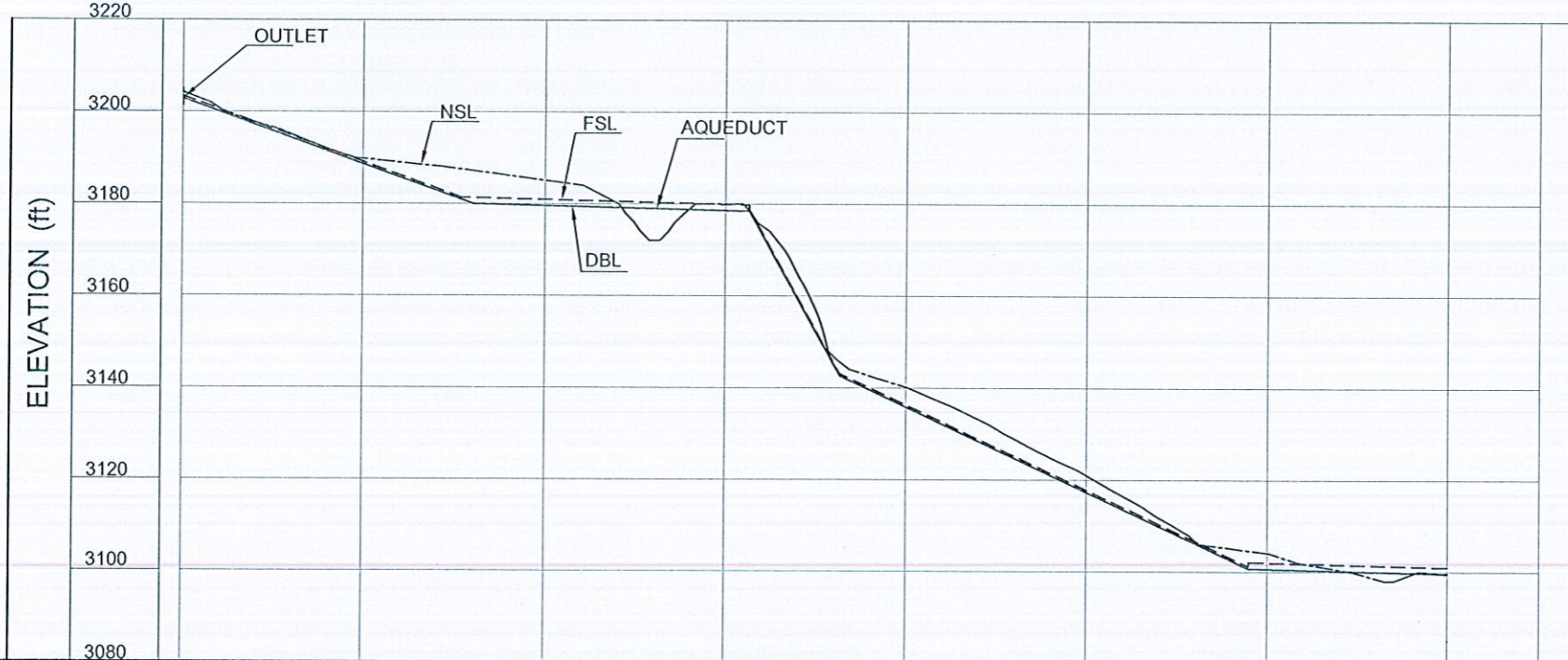
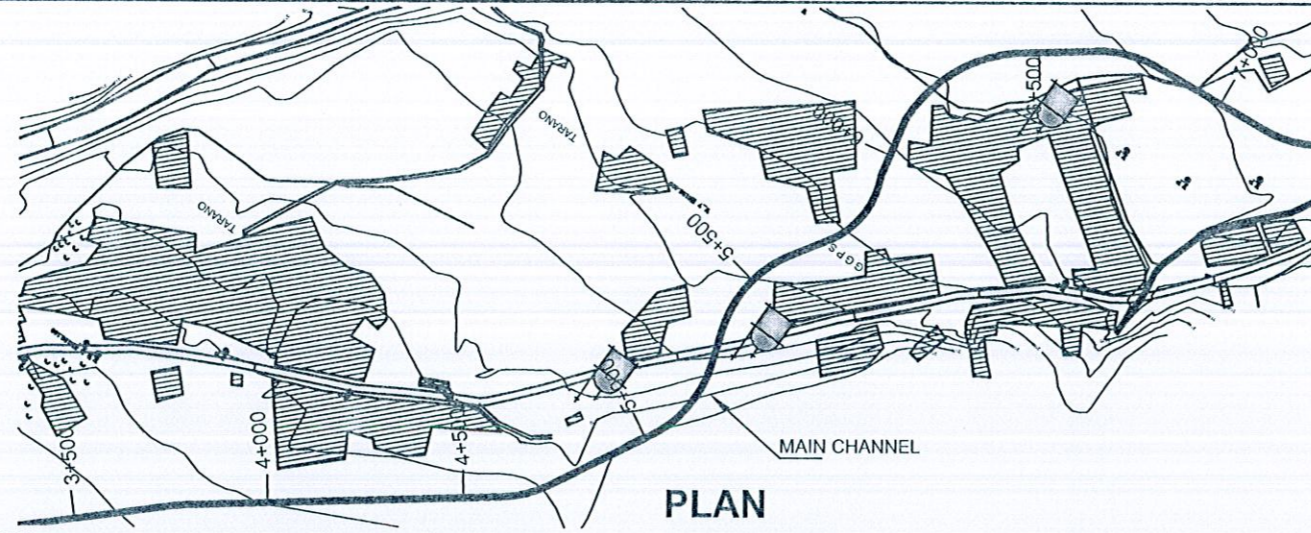
FSL - FULL SUPPLY LEVEL
 DBL - DESIGN BED LEVEL
 NSL - NATURAL SURFACE LEVEL

SCALE:
 VERTICAL = 1" : 40'
 HORIZONTAL = 1" : 500'

REV.	DATE	DESCRIPTION

DRAWN	NAVEED ANWAR
CHECKED	NAVEED NAWAZ
SUBMITTED	NAVEED NAWAZ
APPROVED	M.T.A

MAIN CHANNEL PLAN & PROFILE FROM RD 0+000 TO 3+500		DATE:	DRAWING NO.
		May, 2018	BQB-SDP-MC-PP-01



DATUM	3080									
VELOCITY (ft./s)	7.16		2.77		12.22	7.82		2.77		
VALUE OF 'n'	0.018		0.018		0.018	0.018		0.018		
F.S. DISCHARGE (CUSECS)	9.31		9.31		9.31	9.31		9.31		
W. S. SLOPE	1/35		1/500		1/7	1/27		1/500		
FULL SUPPLY DEPTH (ft.)	0.52		1.35		0.31	0.48		1.35		
BED WIDTH (ft.)	2.5		2.5		2.5	2.5		2.5		
FULL SUPPLY LEVEL (ft.)	3203.45 3203.43	3189.14	3181.34	3180.94	3179.94 3179.81 3178.97	3143.06	3136.29	3117.77	3101.20 3102.07 3101.97	3100.97
BED LEVEL (ft.)	3202.91	3188.62	3179.99	3179.59	3178.59 3178.46	3142.58	3135.81	3117.29	3100.72 3100.62	3099.62
NSL (ft.)	3204.25	3189.81	3185.10	3180.00	3179.99	3140.15	3120.99	3104.07	3099.47	
DISTANCE - RD (ft.)	3+500	4+000	4+302	4+500	5+000 5+066	5+317	5+500	6+000	6+447 6+500	7+000

PROFILE

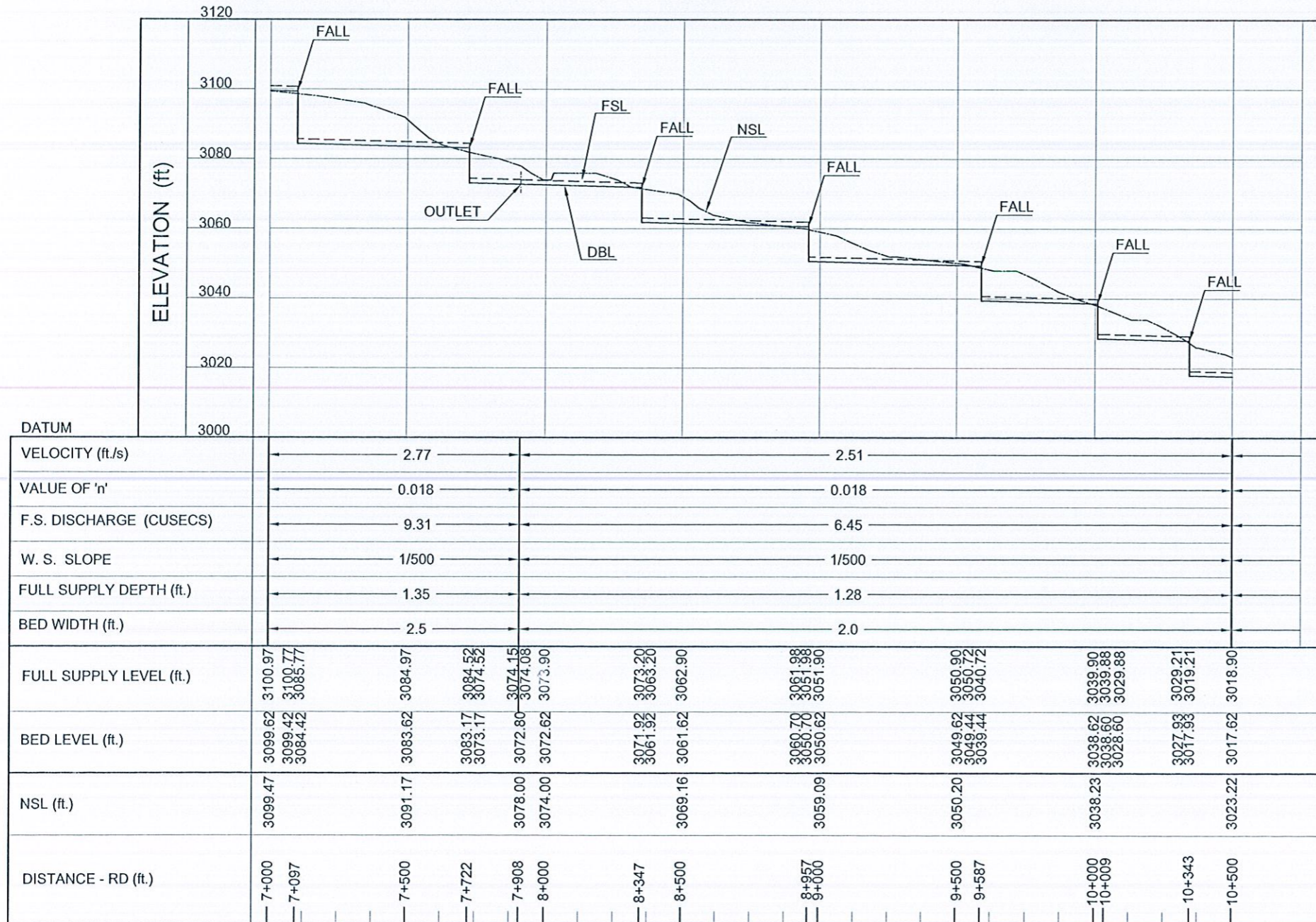
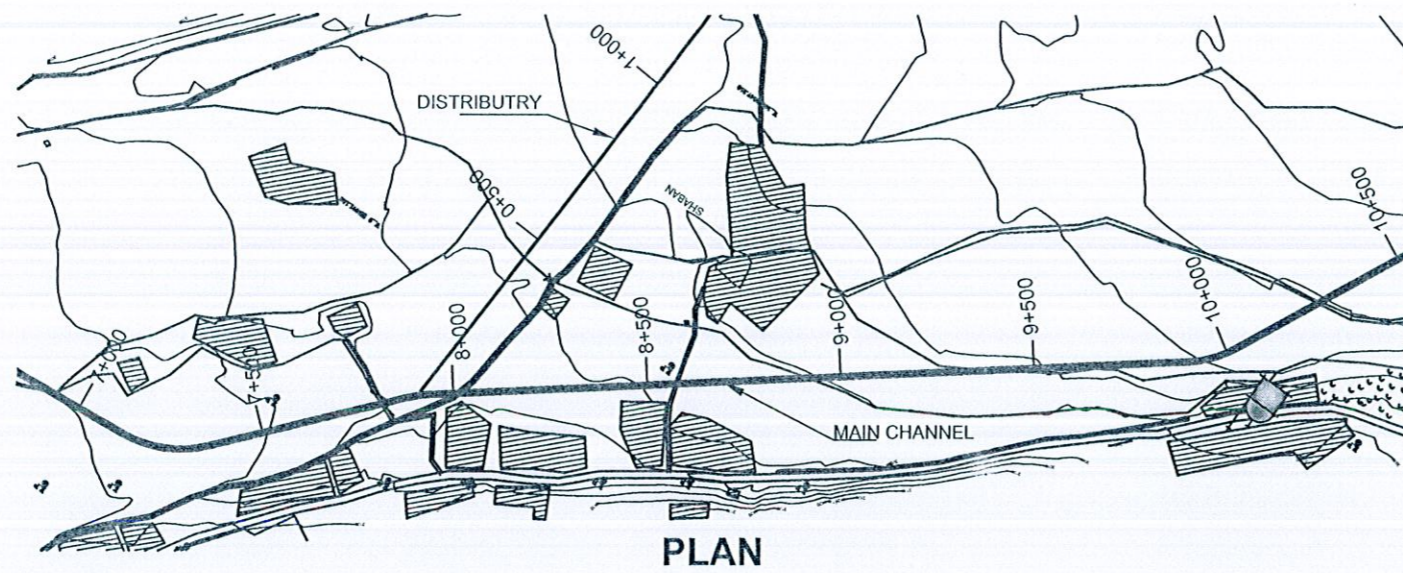
LEGEND:-

DESCRIPTION	SYMBOLS
DESIGNED FSL	-----
DESIGNED BED LEVEL	_____
NATURAL SURFACE LEVEL	-----

ABBREVIATIONS

FSL - FULL SUPPLY LEVEL
 DBL - DESIGN BED LEVEL
 NSL - NATURAL SURFACE LEVEL

SCALE:
 VERTICAL = 1" : 40'
 HORIZONTAL = 1" : 500'



LEGEND:-

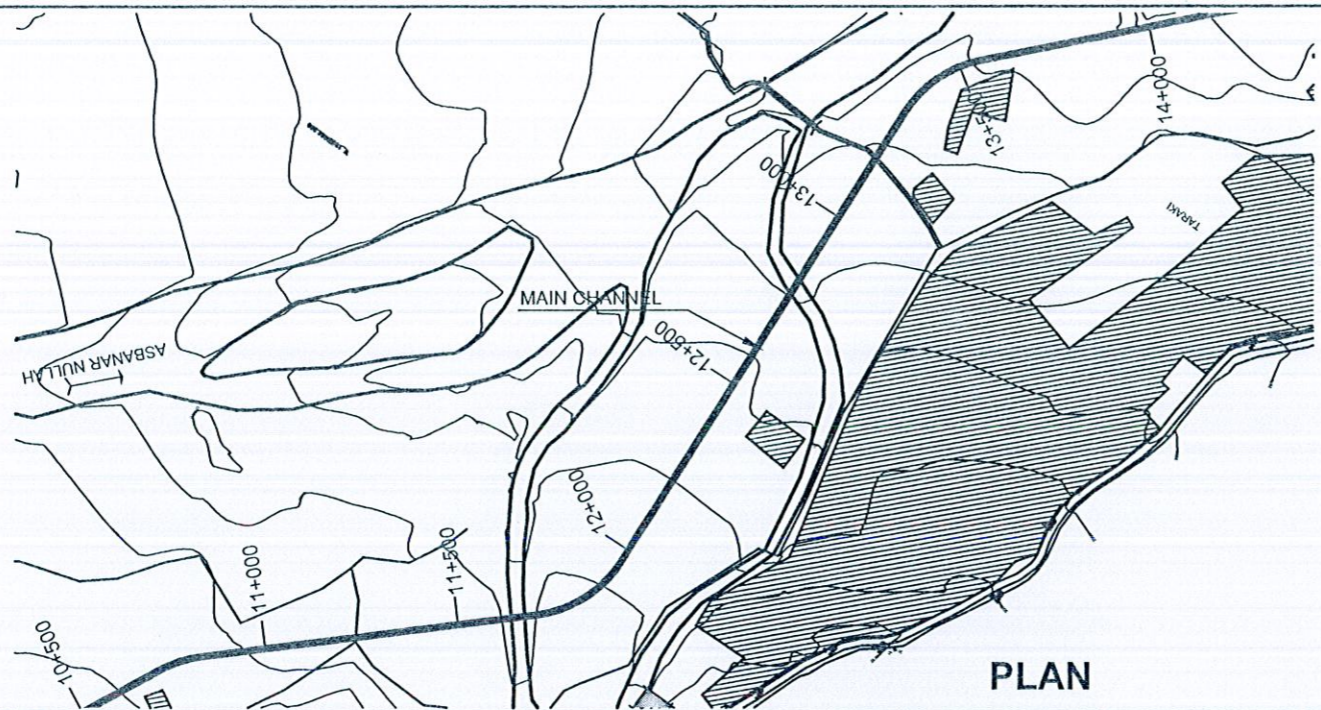
DESCRIPTION	SYMBOLS
DESIGNED FSL	-----
DESIGNED BED LEVEL	—————
NATURAL SURFACE LEVEL

ABBREVIATIONS

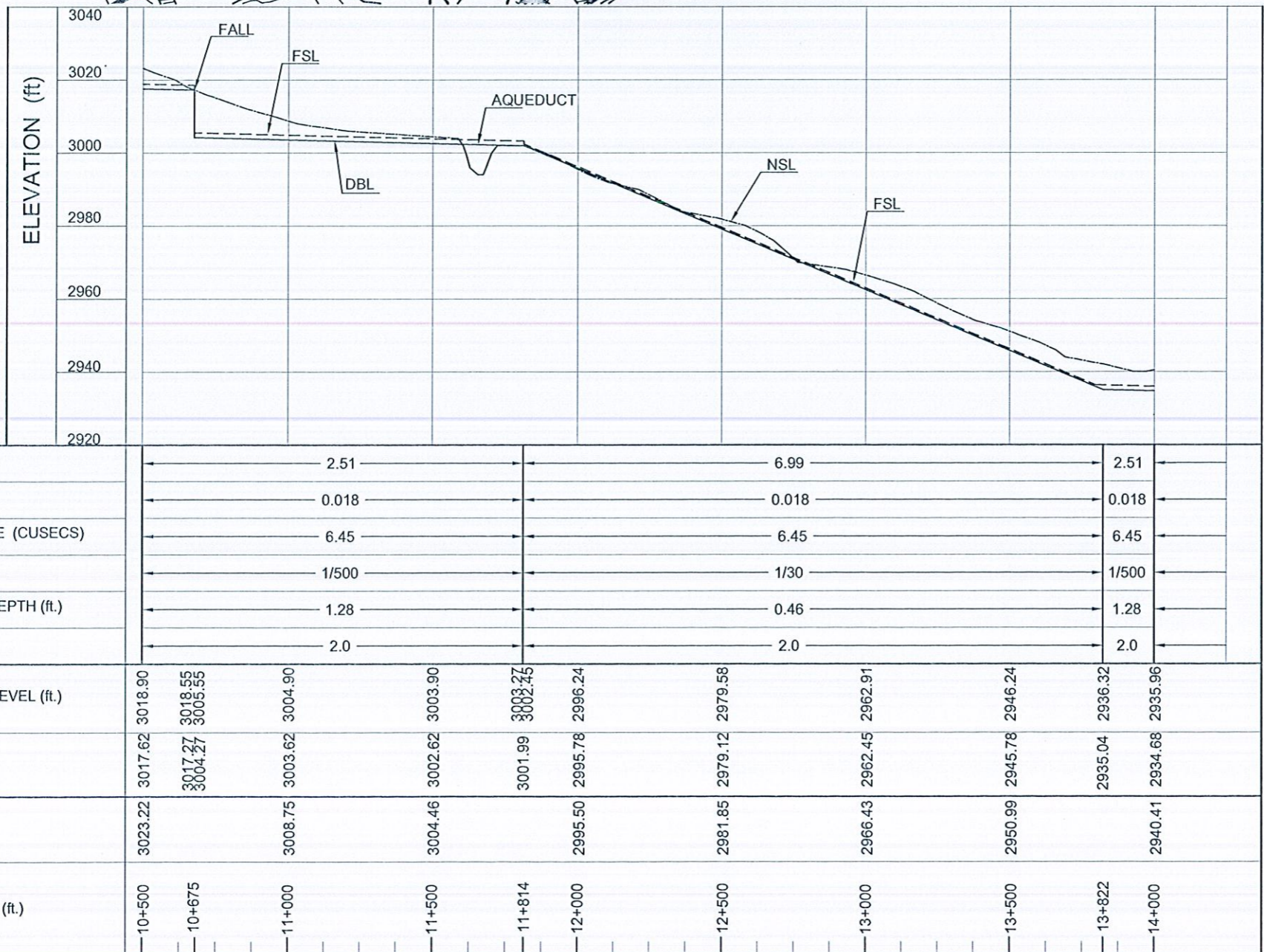
FSL - FULL SUPPLY LEVEL
 DBL - DESIGN BED LEVEL
 NSL - NATURAL SURFACE LEVEL

SCALE:
 VERTICAL = 1" : 40'
 HORIZONTAL = 1" : 500'

PROFILE



PLAN



PROFILE

DATUM	2920										
VELOCITY (ft./s)	2.51					6.99					2.51
VALUE OF 'n'	0.018					0.018					0.018
F.S. DISCHARGE (CUSECS)	6.45					6.45					6.45
W. S. SLOPE	1/500					1/30					1/500
FULL SUPPLY DEPTH (ft.)	1.28					0.46					1.28
BED WIDTH (ft.)	2.0					2.0					2.0
FULL SUPPLY LEVEL (ft.)	3018.90	3018.55	3004.90	3003.90	3003.25	2996.24	2979.58	2962.91	2946.24	2936.32	2935.96
BED LEVEL (ft.)	3017.62	3017.27	3003.62	3002.62	3001.99	2995.78	2979.12	2962.45	2945.78	2935.04	2934.68
NSL (ft.)	3023.22		3008.75	3004.46	3001.99	2995.50	2981.85	2966.43	2950.99	2935.04	2940.41
DISTANCE - RD (ft.)	10+500	10+675	11+000	11+500	11+814	12+000	12+500	13+000	13+500	13+822	14+000

LEGEND:-

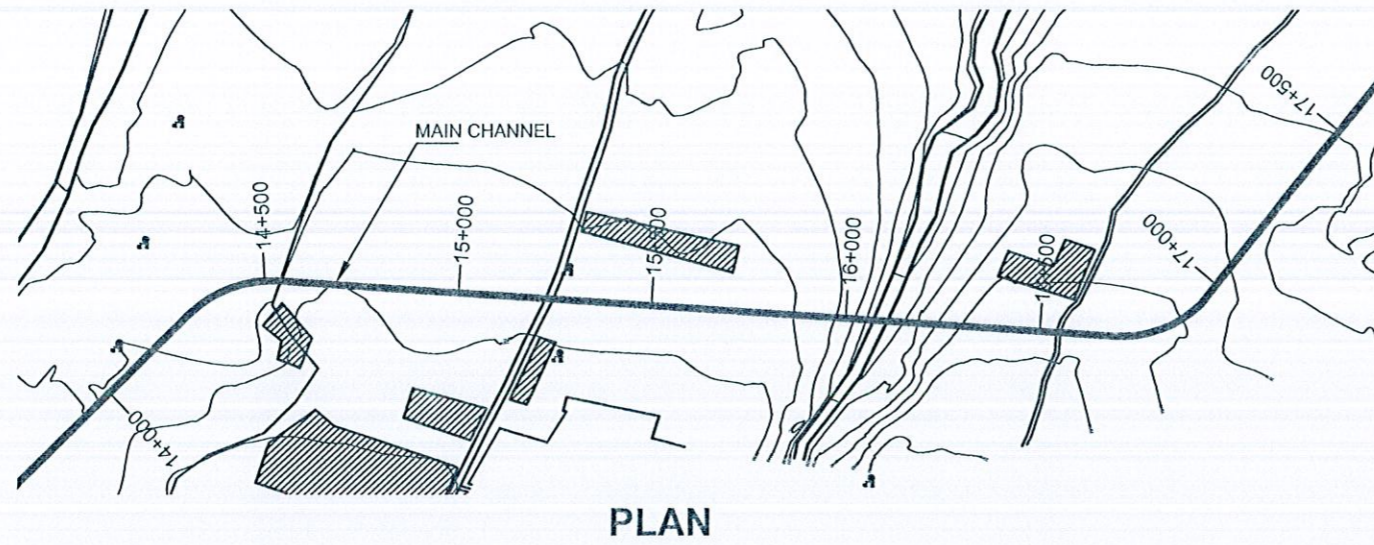
DESCRIPTION	SYMBOLS
DESIGNED FSL	-----
DESIGNED BED LEVEL	—————
NATURAL SURFACE LEVEL	—————

ABBREVIATIONS

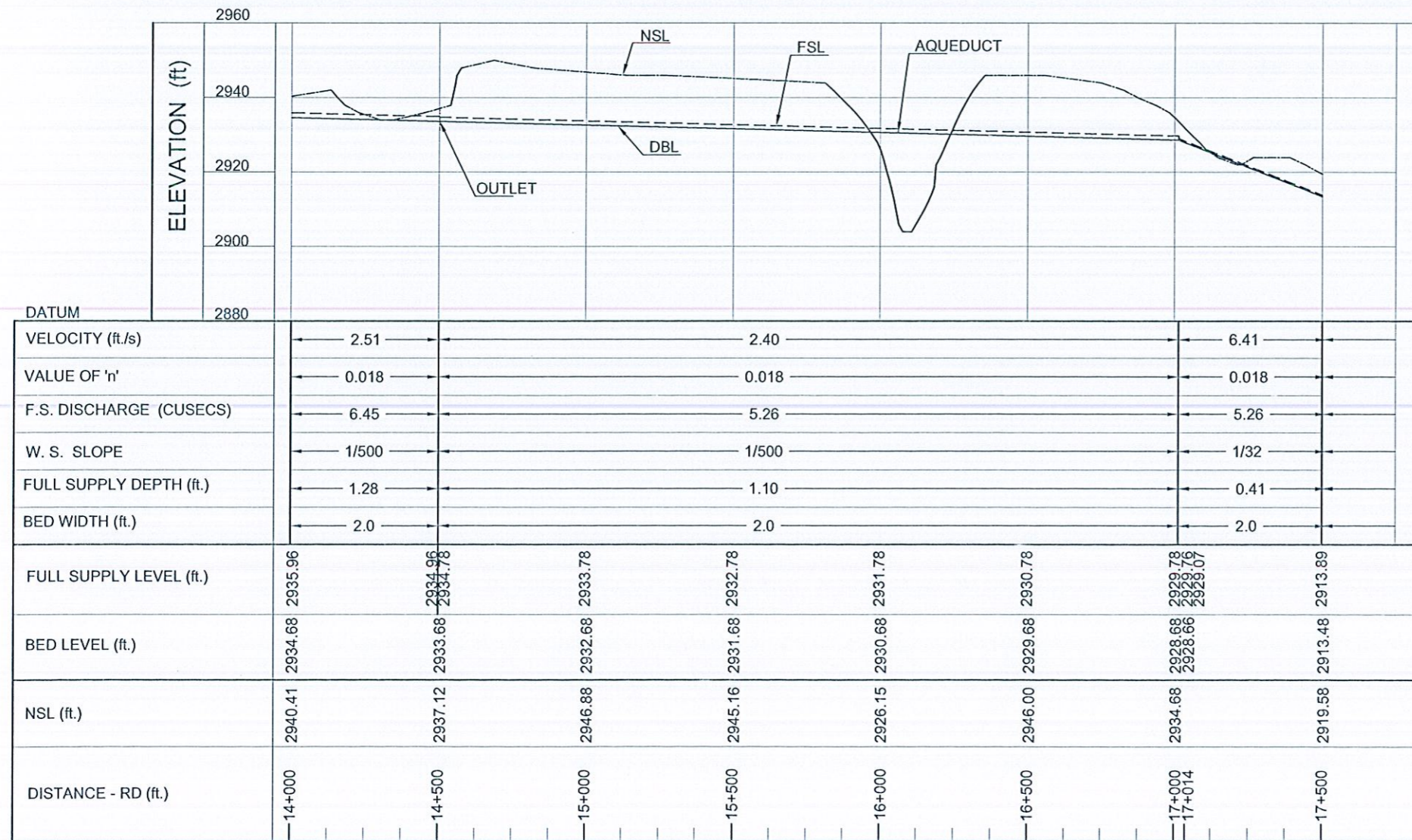
FSL - FULL SUPPLY LEVEL
 DBL - DESIGN BED LEVEL
 NSL - NATURAL SURFACE LEVEL

SCALE:
 VERTICAL = 1" : 40'
 HORIZONTAL = 1" : 500'

<p>SMALL DAMS ORGANIZATION GOVERNMENT OF KHYBER PAKHTUNKHWA</p>	<p>BARQAAB CONSULTING SERVICES (PVT.) LIMITED, LAHORE</p>	<p>SANAM DAM PROJECT LOWER DIR</p>	<p>DRAWN NAVEED ANWAR</p>	<p>MAIN CHANNEL PLAN & PROFILE FROM RD 10+500 TO 14+000</p>
			<p>CHECKED NAVEED NAWAZ</p>	
<p>REV. DATE DESCRIPTION</p>			<p>SUBMITTED NAVEED NAWAZ</p>	<p>DATE: May, 2018</p>
			<p>APPROVED M.T.A</p>	<p>DRAWING NO. BQB-SDP-MC-PP-04</p>



PLAN



LEGEND:-

DESCRIPTION	SYMBOLS
DESIGNED FSL	-----
DESIGNED BED LEVEL	_____
NATURAL SURFACE LEVEL	~~~~~

ABBREVIATIONS

FSL - FULL SUPPLY LEVEL
 DBL - DESIGN BED LEVEL
 NSL - NATURAL SURFACE LEVEL

SCALE:
 VERTICAL = 1" : 40'
 HORIZONTAL = 1" : 500'

PROFILE



SMALL DAMS ORGANIZATION
 GOVERNMENT OF KHYBER PAKHTUNKHWA



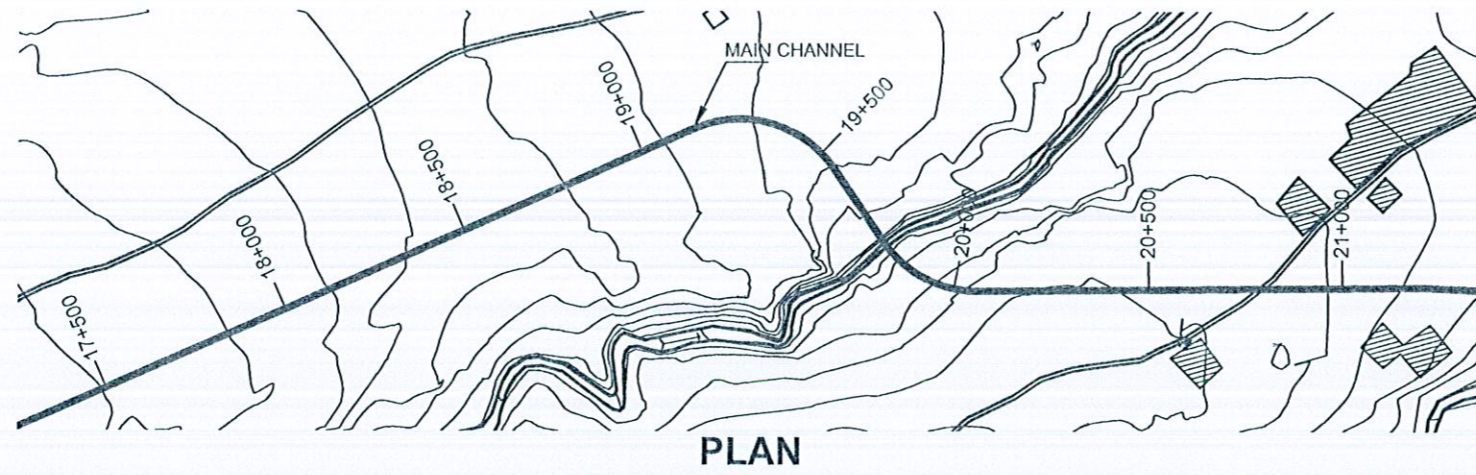
BARQAAB CONSULTING SERVICES
 (PVT.) LIMITED, LAHORE

SANAM DAM PROJECT
 LOWER DIR

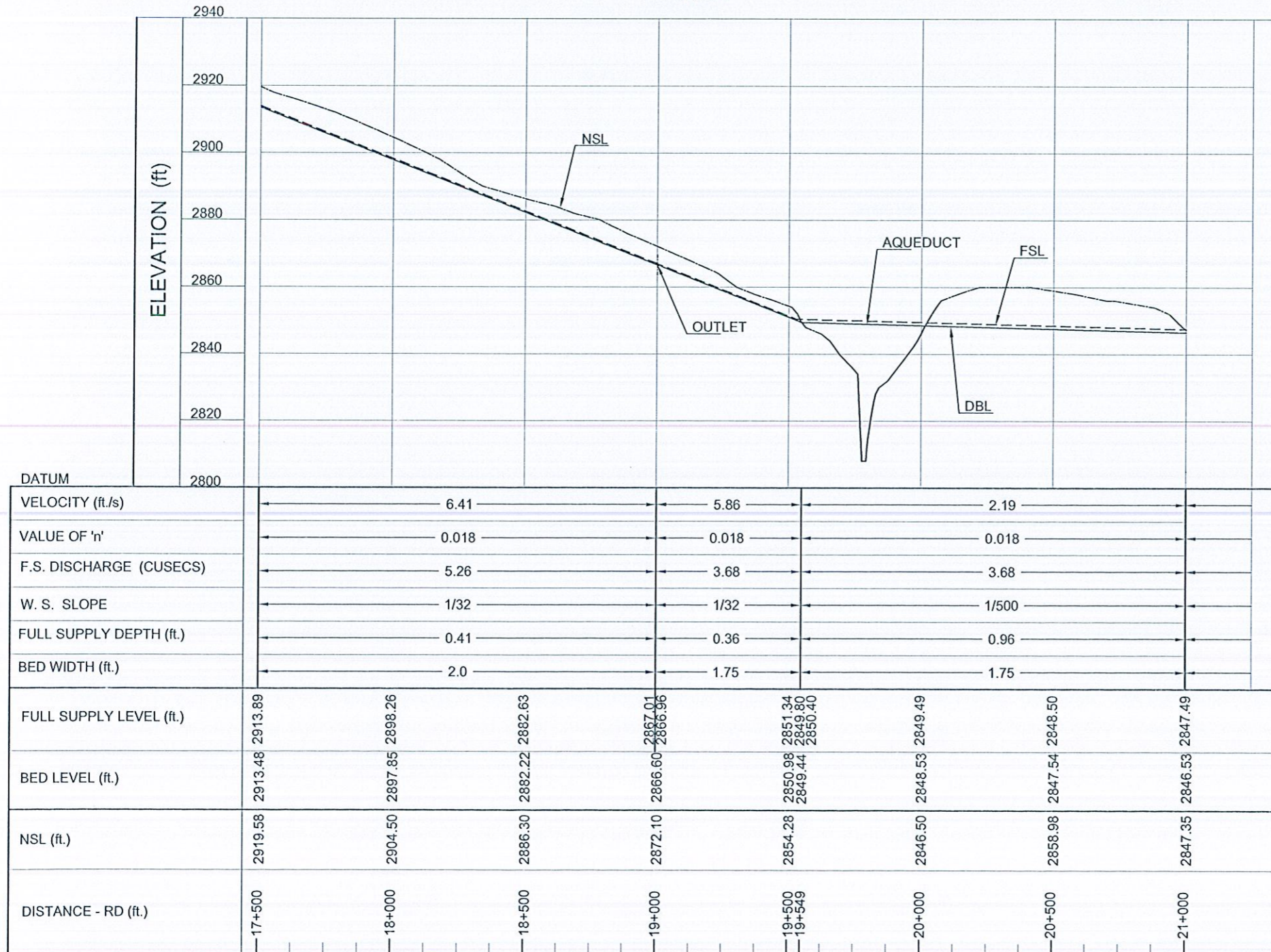
REV.	DATE	DESCRIPTION	DRAWN	NAVEED ANWAR
			CHECKED	NAVEED NAWAZ
			SUBMITTED	NAVEED NAWAZ
			APPROVED	M.T.A

MAIN CHANNEL
PLAN & PROFILE
 FROM RD 14+000 TO 17+500

DATE: May, 2018
 DRAWING NO. **BQB-SDP-MC-PP-05**



PLAN



PROFILE

LEGEND:-

DESCRIPTION	SYMBOLS
DESIGNED FSL	-----
DESIGNED BED LEVEL	—————
NATURAL SURFACE LEVEL	~~~~~

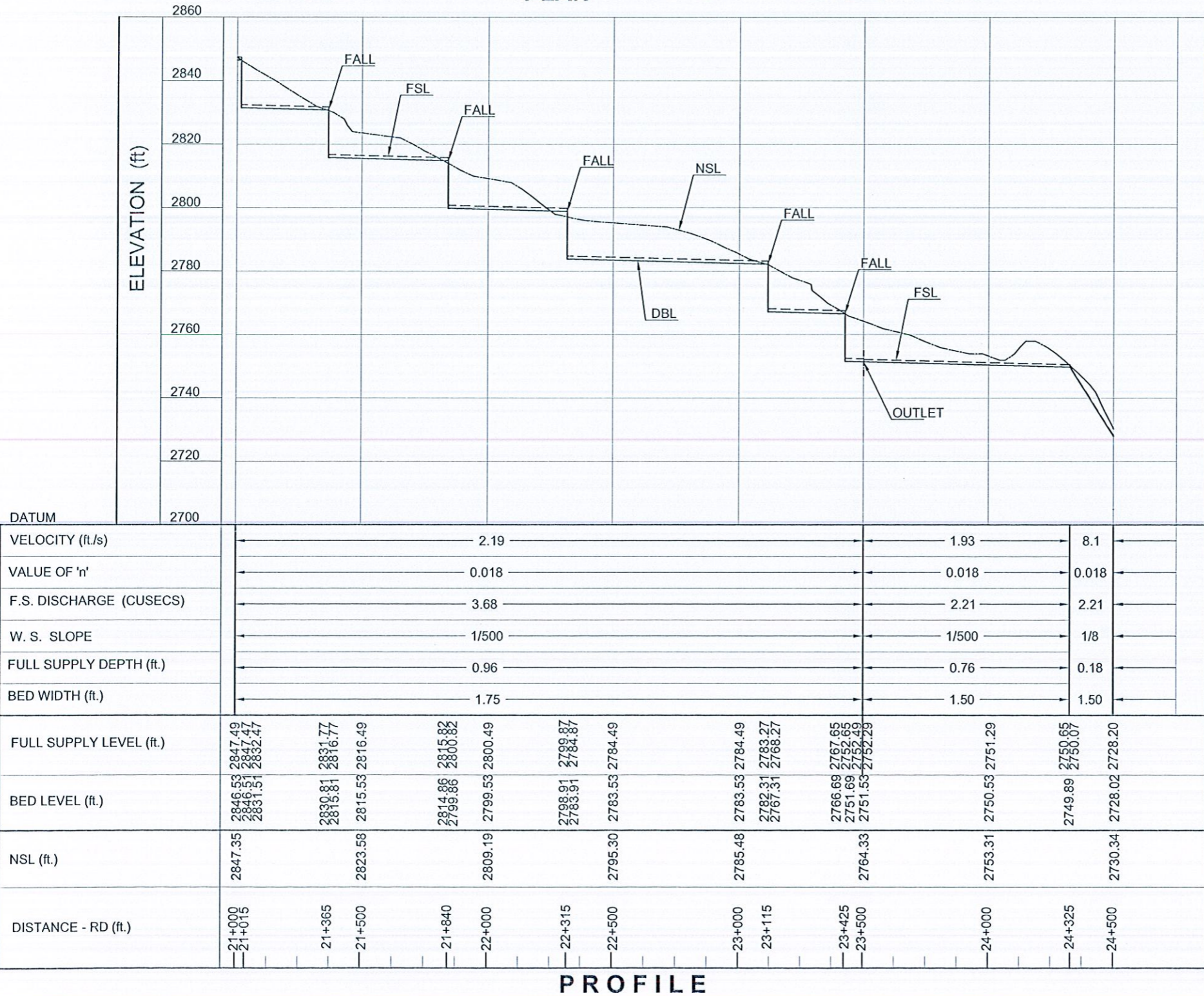
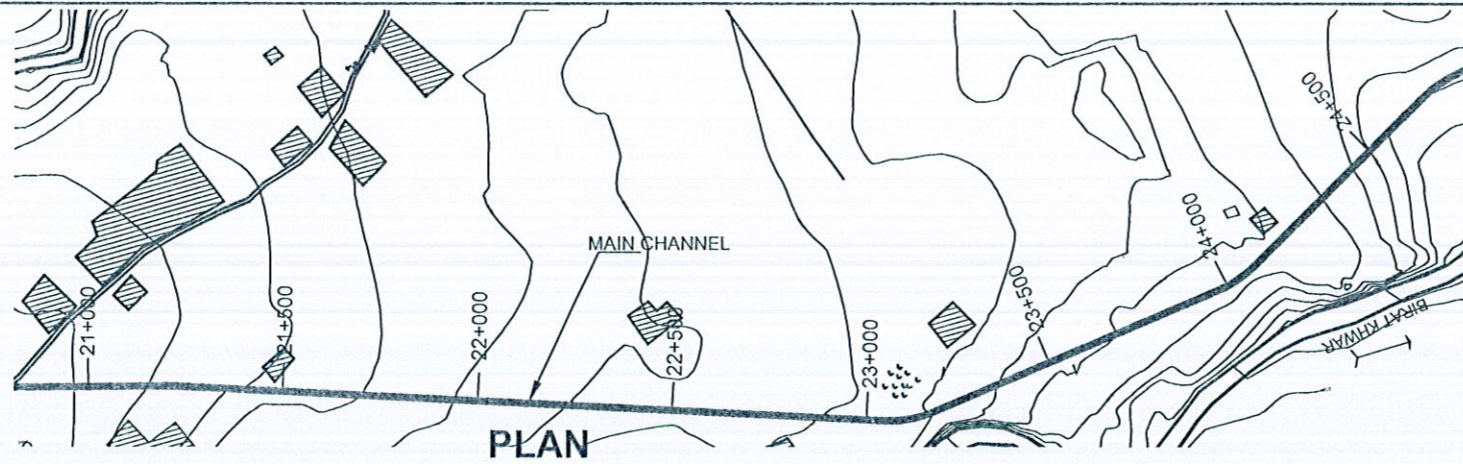
ABBREVIATIONS

- FSL - FULL SUPPLY LEVEL
- DBL - DESIGN BED LEVEL
- NSL - NATURAL SURFACE LEVEL

SCALE:
 VERTICAL = 1" : 40'
 HORIZONTAL = 1" : 500'

REV.	DATE	DESCRIPTION

DRAWN	NAVEED ANWAR
CHECKED	NAVEED NAWAZ
SUBMITTED	NAVEED NAWAZ
APPROVED	M.T.A



LEGEND:-

DESCRIPTION SYMBOLS

DESIGNED FSL - - - - -

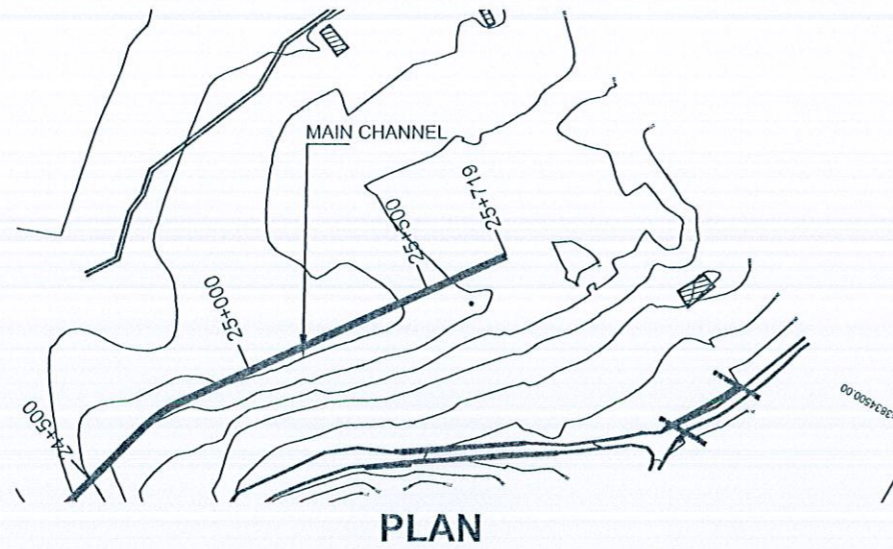
DESIGNED BED LEVEL _____

NATURAL SURFACE LEVEL - - - - -

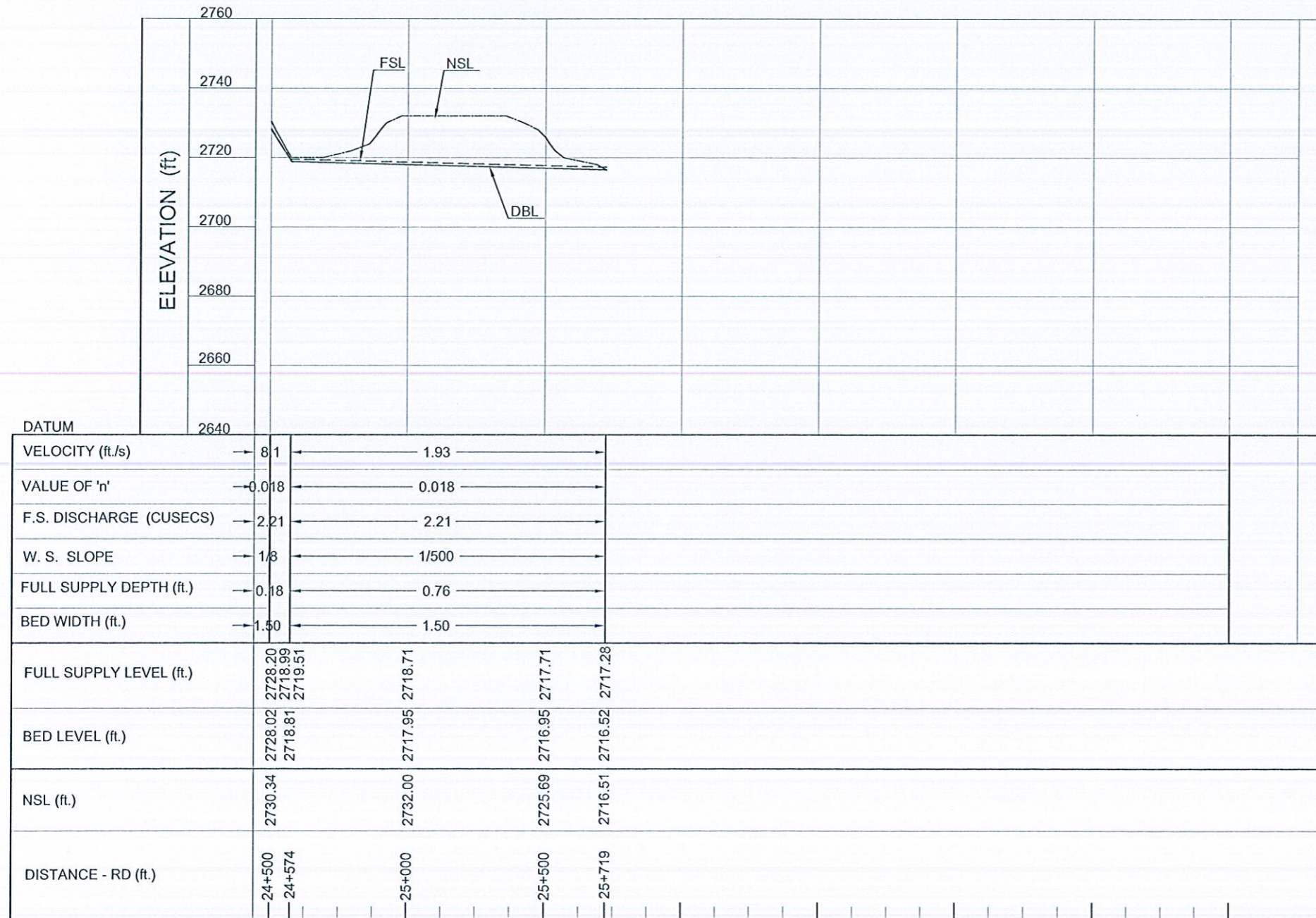
ABBREVIATIONS

FSL - FULL SUPPLY LEVEL
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NSL - NATURAL SURFACE LEVEL

SCALE:
VERTICAL = 1" : 40'
HORIZONTAL = 1" : 500'



PLAN



PROFILE

LEGEND:-

DESCRIPTION	SYMBOLS
DESIGNED FSL	-----
DESIGNED BED LEVEL	—————
NATURAL SURFACE LEVEL	—————

ABBREVIATIONS

- FSL - FULL SUPPLY LEVEL
- DBL - DESIGN BED LEVEL
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SCALE:
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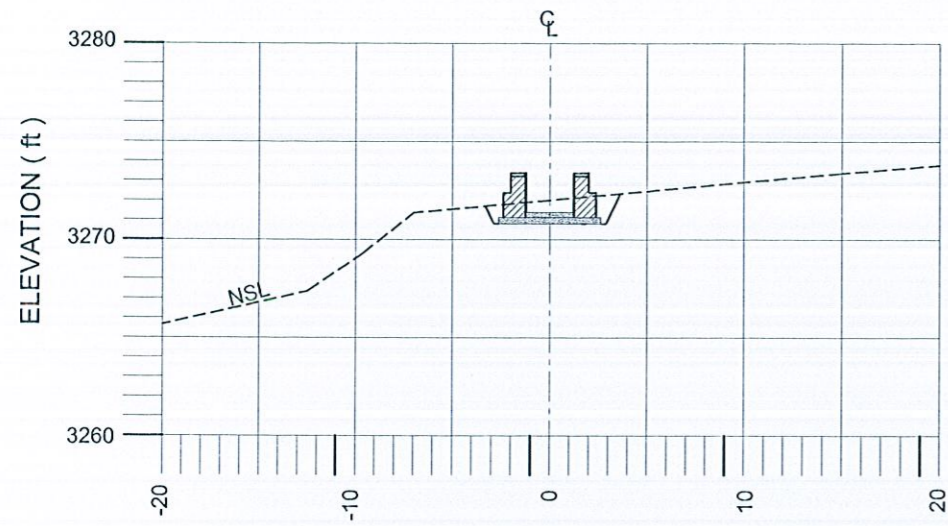
SMALL DAMS ORGANIZATION
GOVERNMENT OF KHYBER PAKHTUNKHWA



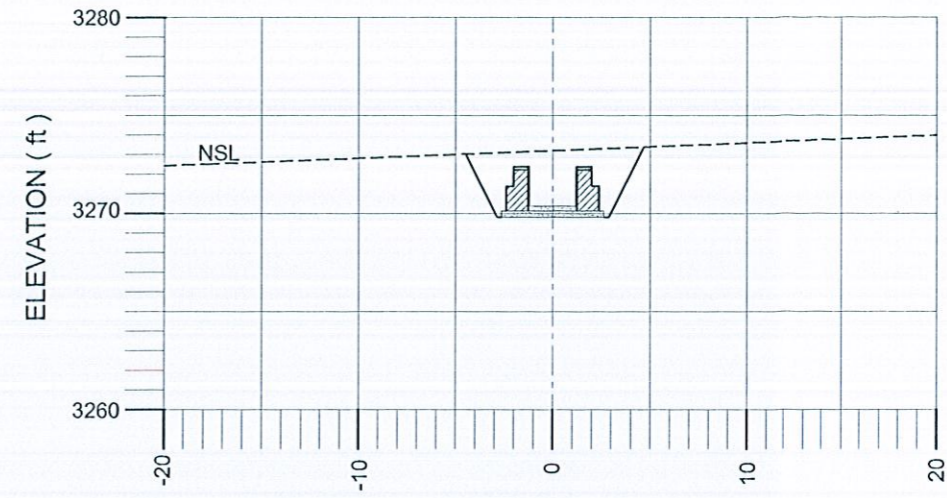
BARQAAB CONSULTING SERVICES
(PVT.) LIMITED, LAHORE

SANAM DAM PROJECT
LOWER DIR

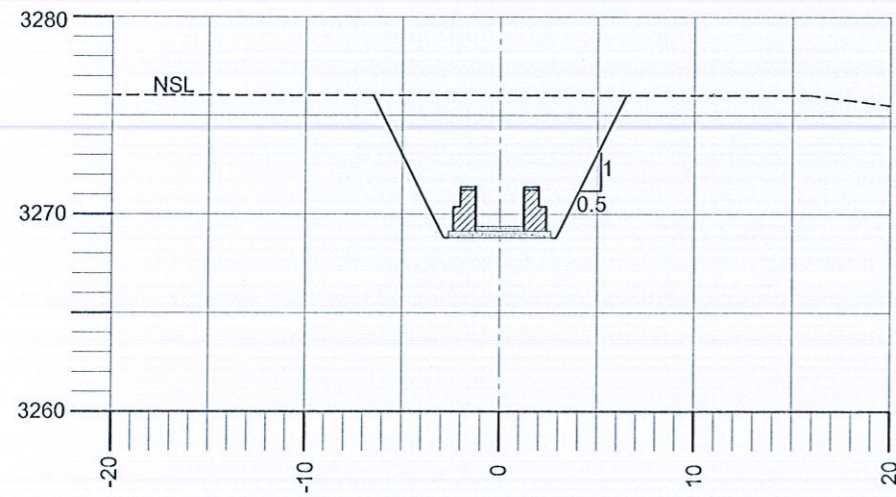
REV.	DATE	DESCRIPTION	DRAWN	NAVEED ANWAR	MAIN CHANNEL PLAN & PROFILE FROM RD 24+500 TO 25+719 DATE: May, 2018 DRAWING NO. BQB-SDP-MC-PP-08
			CHECKED	NAVEED NAWAZ	
			SUBMITTED	NAVEED NAWAZ	
			APPROVED	M.T.A	



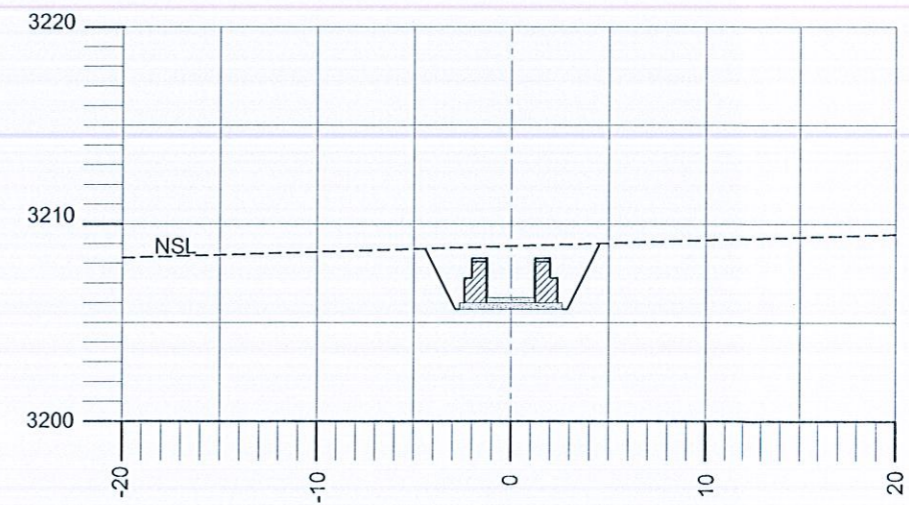
CROSS SECTION AT RD 0+000



CROSS SECTION AT RD 0+500



CROSS SECTION AT RD 1+000



CROSS SECTION AT RD 2+000



SMALL DAMS ORGANIZATION
GOVERNMENT OF KHYBER PAKHTUNKHWA

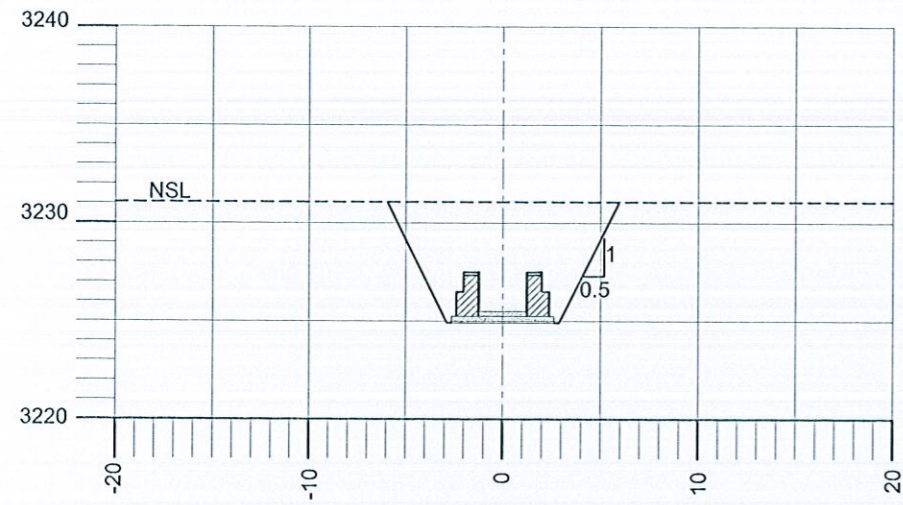


BARQAAB CONSULTING SERVICES
(PVT.) LIMITED, LAHORE

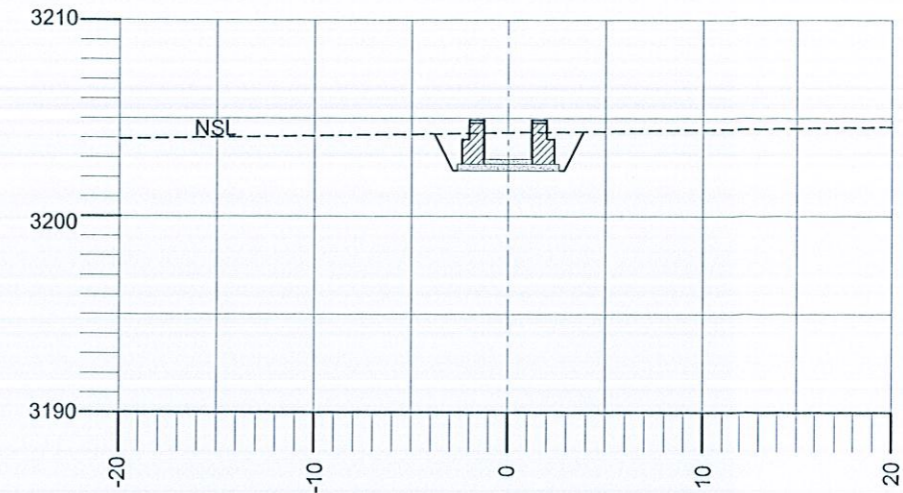
SANAM DAM PROJECT
LOWER DIR

REV.	DATE	DESCRIPTION	DRAWN	NAVEED ANWAR
			CHECKED	NAVEED NAWAZ
			SUBMITTED	NAVEED NAWAZ
			APPROVED	M.T.A

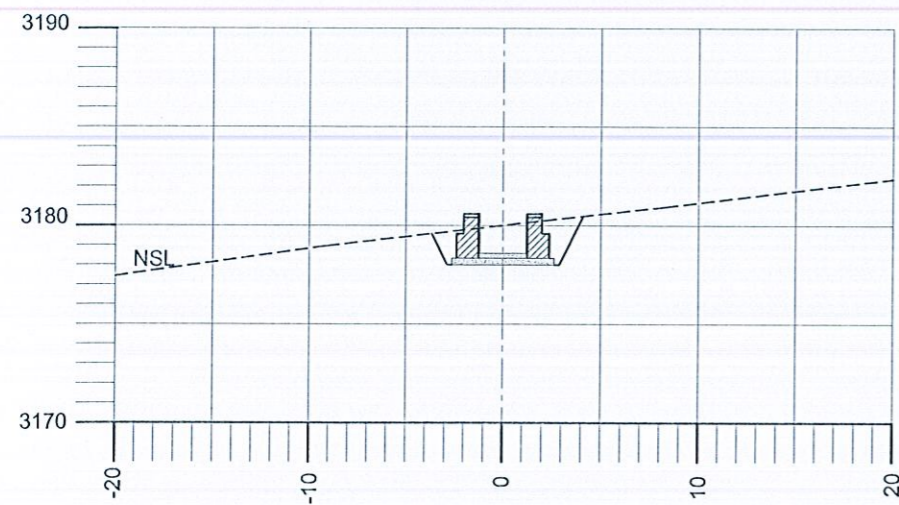
MAIN CHANNEL CROSS SECTIONS FROM RD 0+000 TO 2+000		DATE:	DRAWING NO.
		May, 2018	BQB-SDP-MC-CS-01



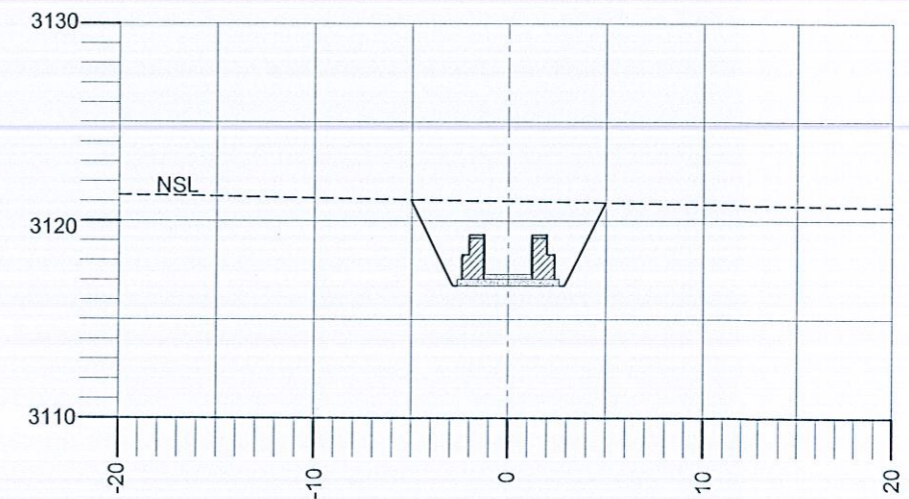
CROSS SECTION AT RD 2+500



CROSS SECTION AT RD 3+500



CROSS SECTION AT RD 5+000



CROSS SECTION AT RD 6+000



SMALL DAMS ORGANIZATION
GOVERNMENT OF KHYBER PAKHTUNKHWA

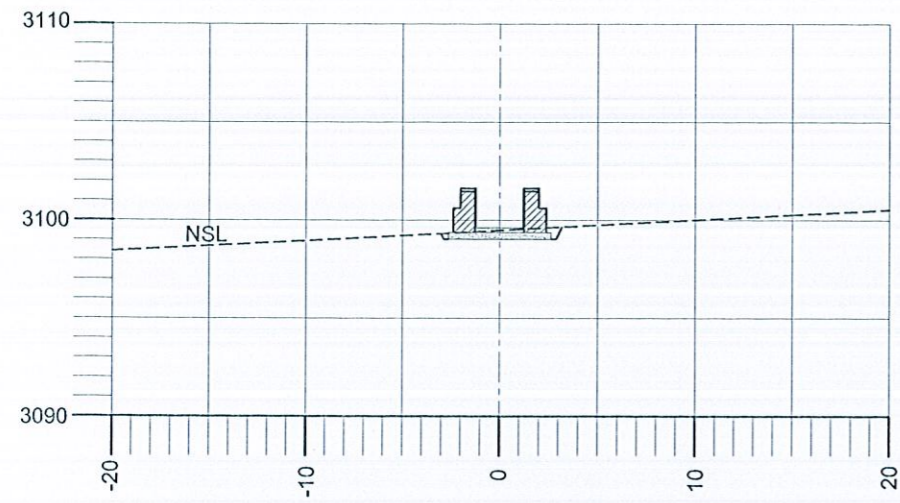


BARQAAB CONSULTING SERVICES
(PVT.) LIMITED, LAHORE

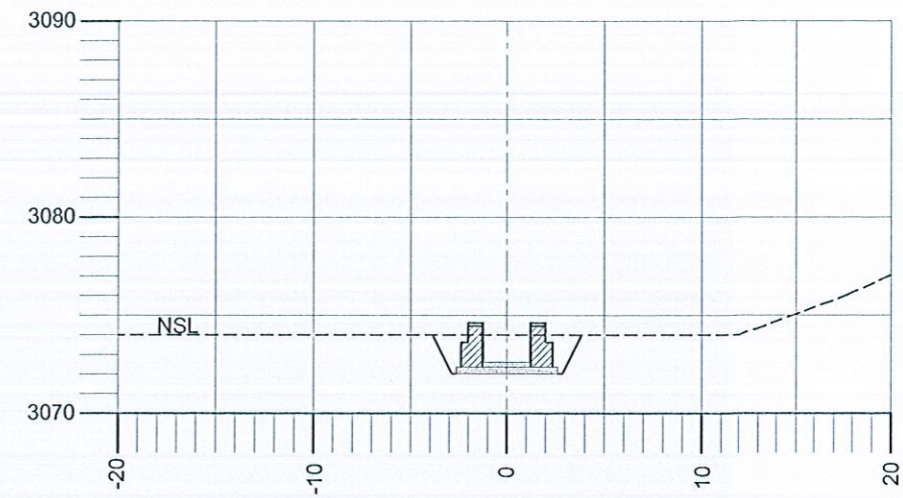
SANAM DAM PROJECT
LOWER DIR

REV.	DATE	DESCRIPTION	DRAWN	NAVEED ANWAR
			CHECKED	NAVEED NAWAZ
			SUBMITTED	NAVEED NAWAZ
			APPROVED	M.T.A

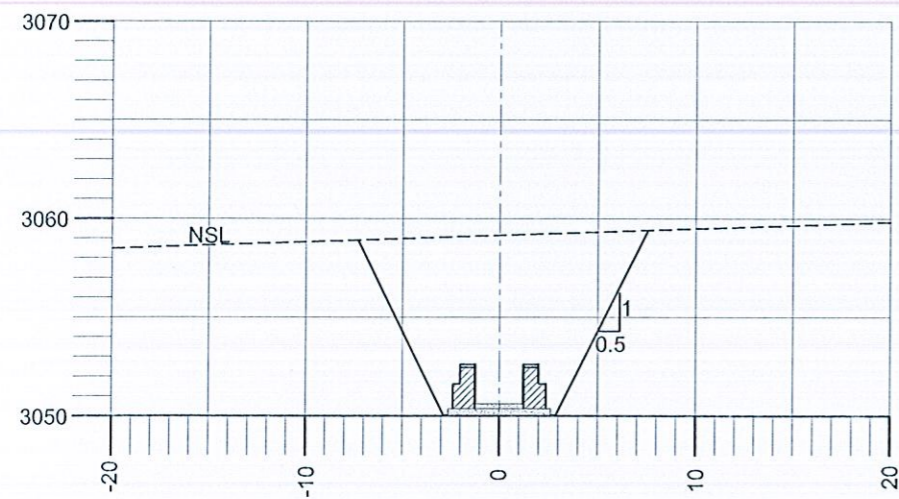
MAIN CHANNEL CROSS SECTION FROM RD 2+500 TO 6+000		DATE:	DRAWING NO.
		May, 2018	BQB-SDP-MC-CS-02



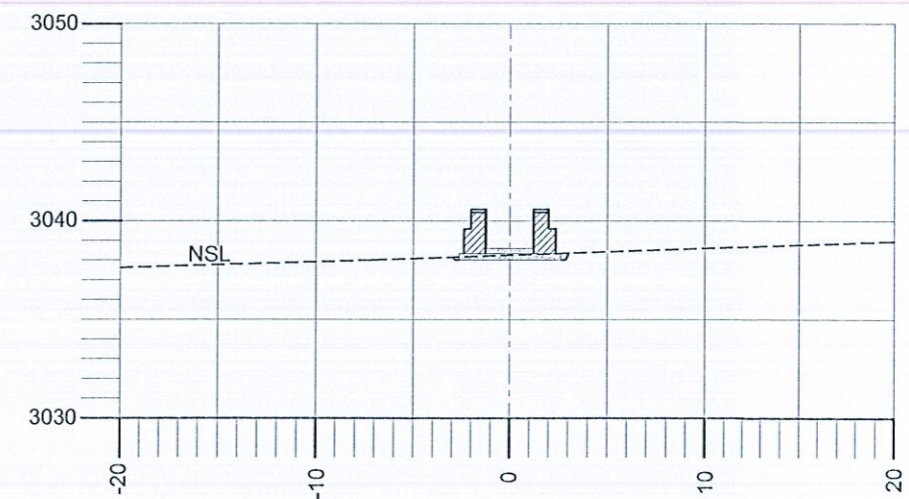
CROSS SECTION AT RD 7+000



CROSS SECTION AT RD 8+000



CROSS SECTION AT RD 9+000



CROSS SECTION AT RD 10+000



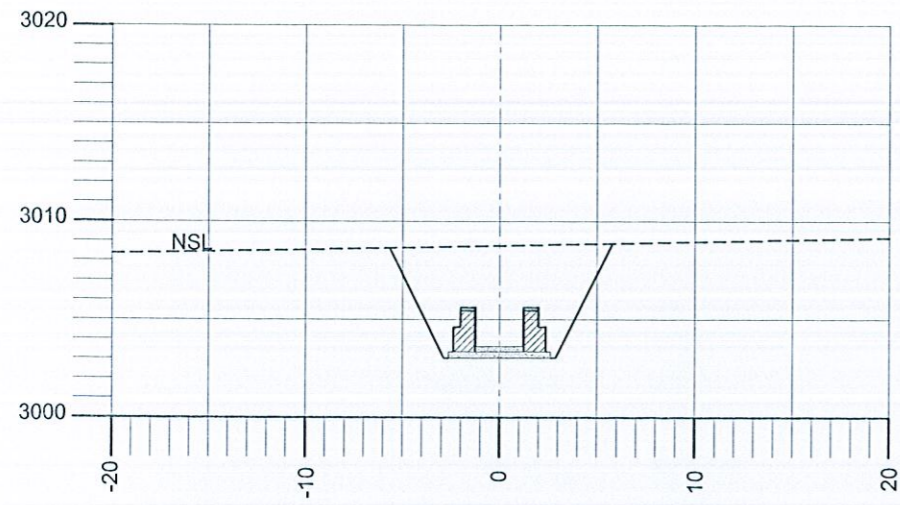
SMALL DAMS ORGANIZATION
GOVERNMENT OF KHYBER PAKHTUNKHWA



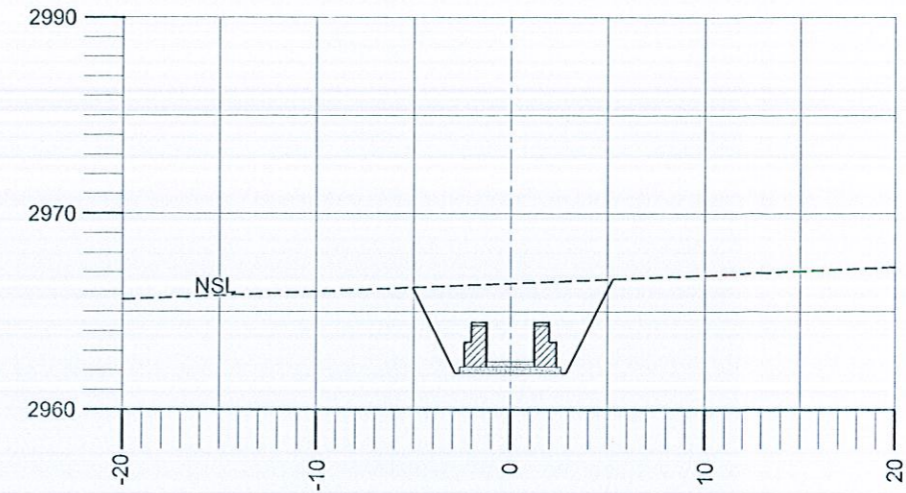
BARQAAB CONSULTING SERVICES
(PVT.) LIMITED, LAHORE

SANAM DAM PROJECT
LOWER DIR

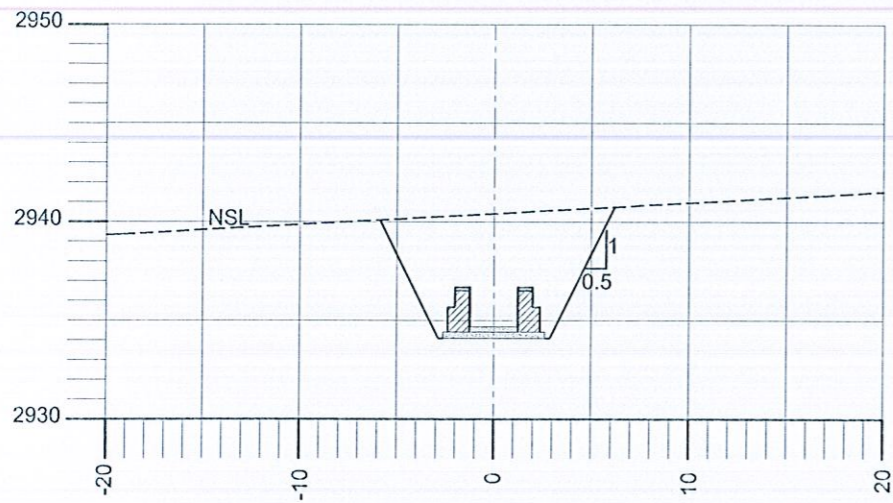
REV.	DATE	DESCRIPTION	DRAWN	NAVEED ANWAR	MAIN CHANNEL CROSS SECTION FROM RD 7+000 TO 10+000 DATE: May, 2018 DRAWING NO. BQB-SDP-MC-CS-03
			CHECKED	NAVEED NAWAZ	
			SUBMITTED	NAVEED NAWAZ	
			APPROVED	M.T.A	



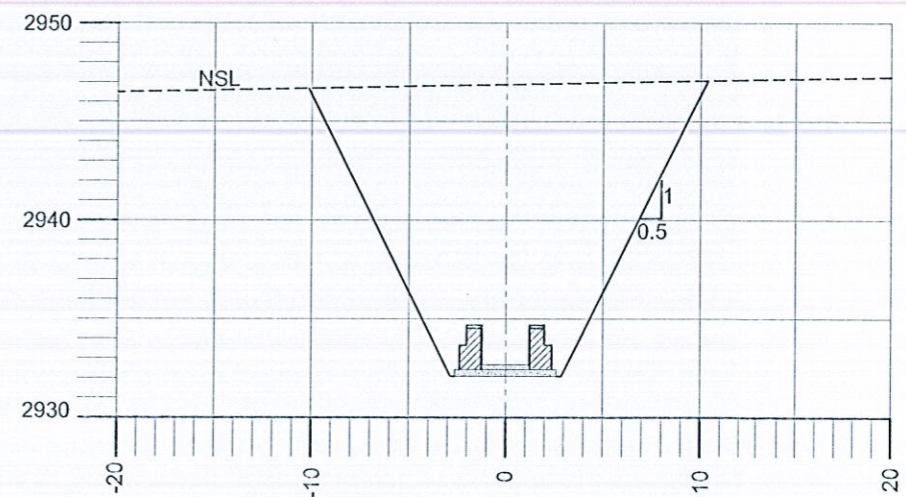
CROSS SECTION AT RD 11+000



CROSS SECTION AT RD 13+000



CROSS SECTION AT RD 14+000



CROSS SECTION AT RD 15+000



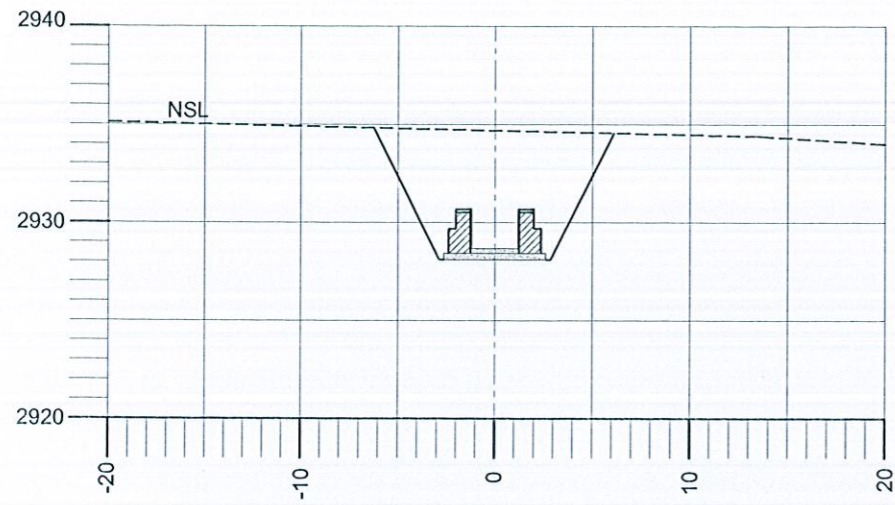
SMALL DAMS ORGANIZATION
GOVERNMENT OF KHYBER PAKHTUNKHWA



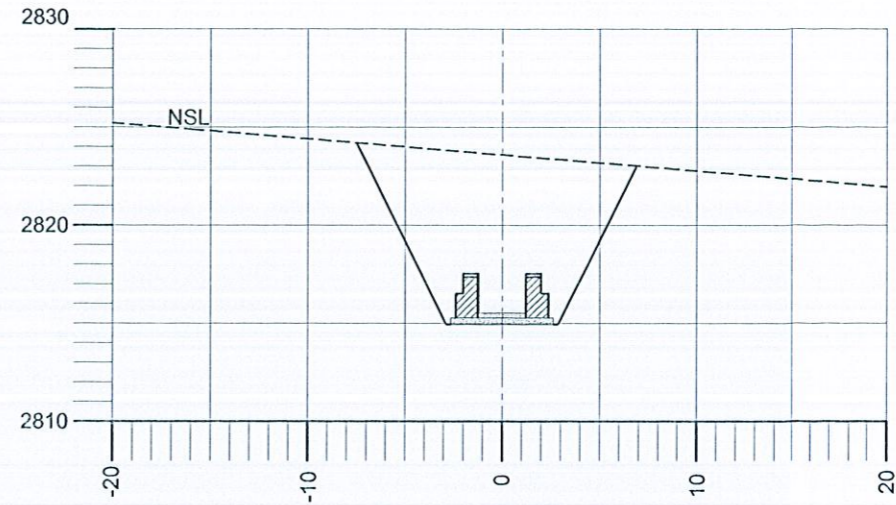
BARQAAB CONSULTING SERVICES
(PVT.) LIMITED, LAHORE

SANAM DAM PROJECT
LOWER DIR

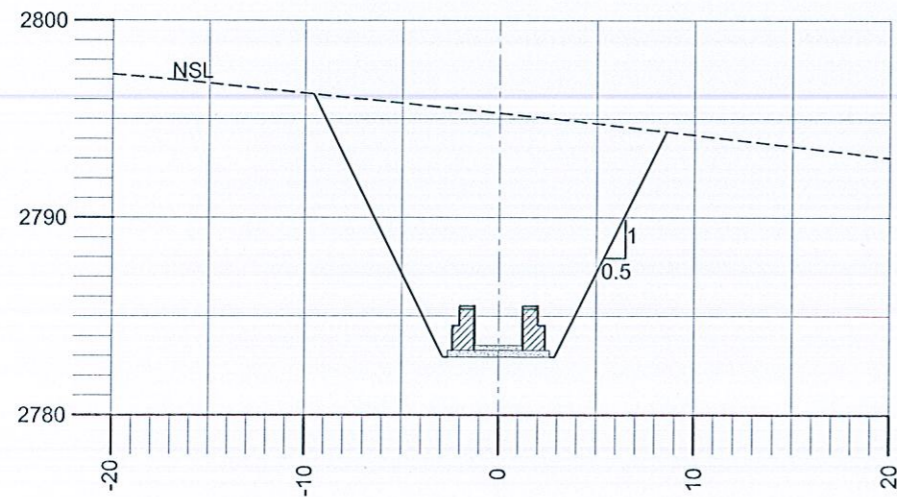
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			CHECKED	NAVEED NAWAZ	
			SUBMITTED	NAVEED NAWAZ	
			APPROVED	M.T.A	



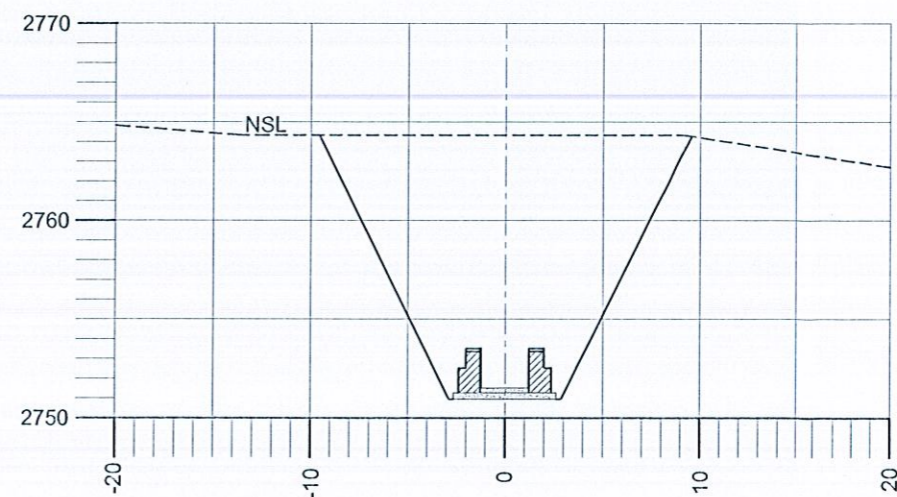
CROSS SECTION AT RD 17+000



CROSS SECTION AT RD 21+500



CROSS SECTION AT RD 22+500



CROSS SECTION AT RD 23+500



SMALL DAMS ORGANIZATION
GOVERNMENT OF KHYBER PAKHTUNKHWA



BARQAAB CONSULTING SERVICES
(PVT.) LIMITED, LAHORE

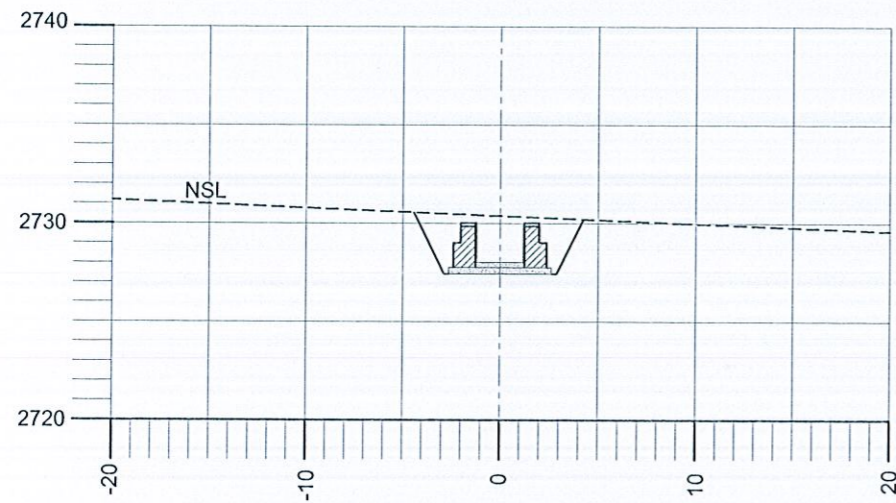
SANAM DAM PROJECT
LOWER DIR

REV.	DATE	DESCRIPTION	DRAWN	NAVEED ANWAR
			CHECKED	NAVEED NAWAZ
			SUBMITTED	NAVEED NAWAZ
			APPROVED	M.T.A

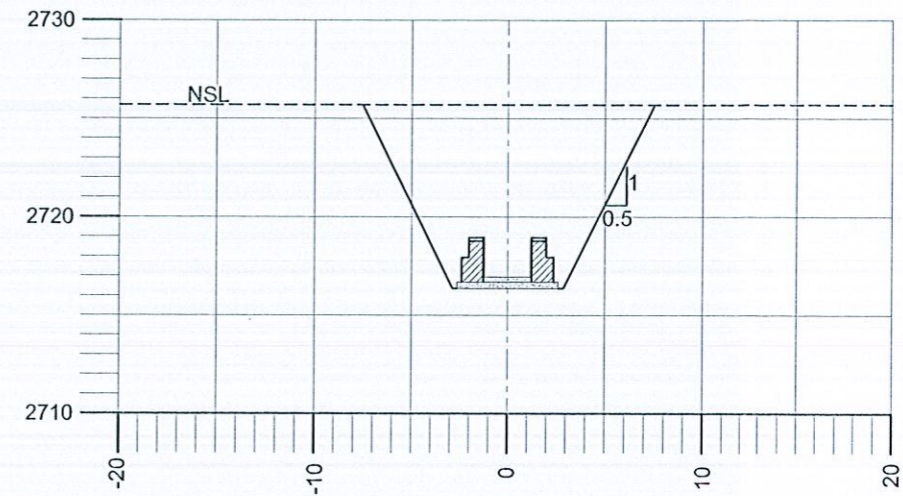
MAIN CHANNEL
CROSS SECTION
FROM RD 17+000 TO 23+500

DATE:
May, 2018

DRAWING NO.
BQB-SDP-MC-CS-05



CROSS SECTION AT RD 24+500



CROSS SECTION AT RD 25+500



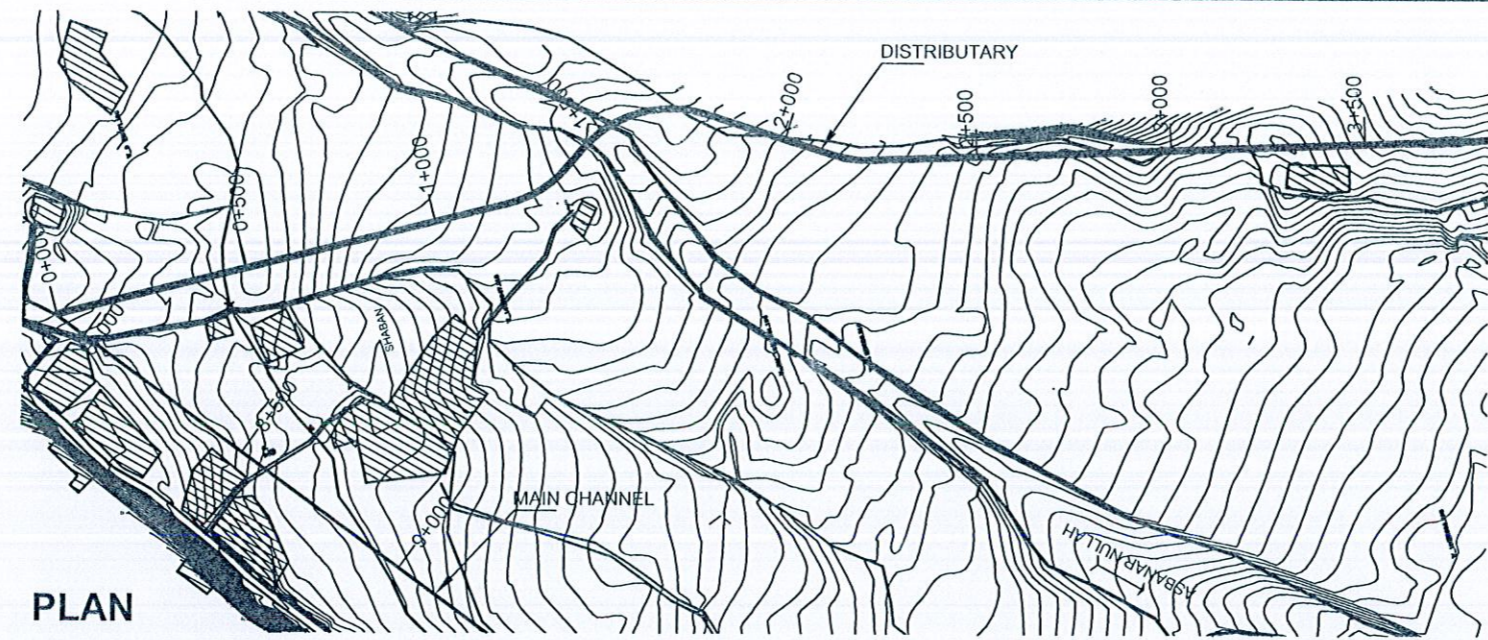
SMALL DAMS ORGANIZATION
GOVERNMENT OF KHYBER PAKHTUNKHWA



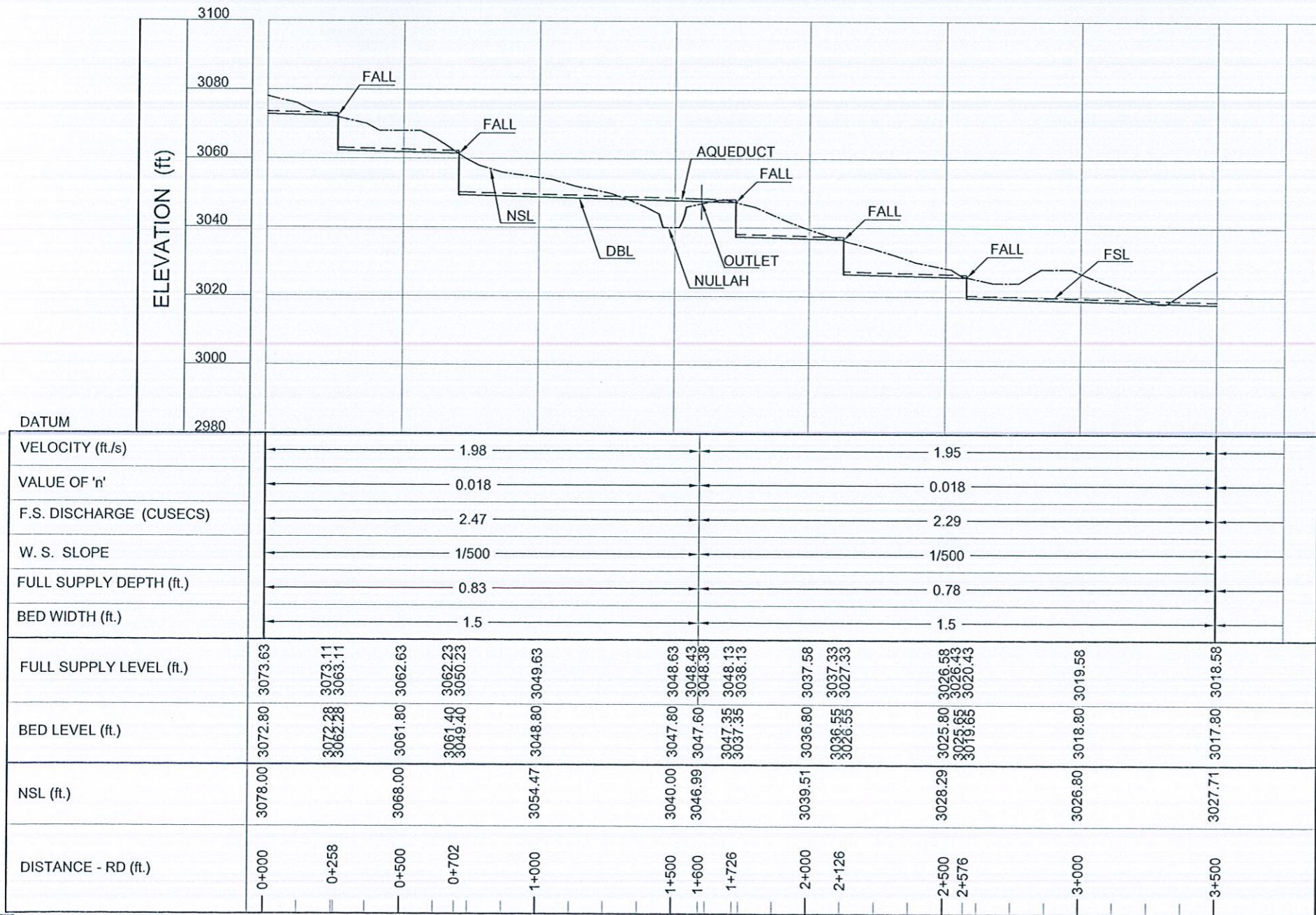
BARQAAB CONSULTING SERVICES
(PVT.) LIMITED, LAHORE

SANAM DAM PROJECT
LOWER DIR

REV.	DATE	DESCRIPTION	DRAWN	NAVEED ANWAR	MAIN CHANNEL CROSS SECTION FROM RD 24+500 TO 25+500
			CHECKED	NAVEED NAWAZ	
			SUBMITTED	NAVEED NAWAZ	
			APPROVED	M.T.A	DATE: May, 2018
					DRAWING NO. BQB-SDP-MC-CS-06



PLAN



PROFILE

LEGEND:-

DESCRIPTION	SYMBOLS
DESIGNED FSL	-----
DESIGNED BED LEVEL	—————
NSL	-----

ABBREVIATIONS

- FSL - FULL SUPPLY LEVEL
- DBL - DESIGN BED LEVEL
- NSL - NATURAL SURFACE LEVEL

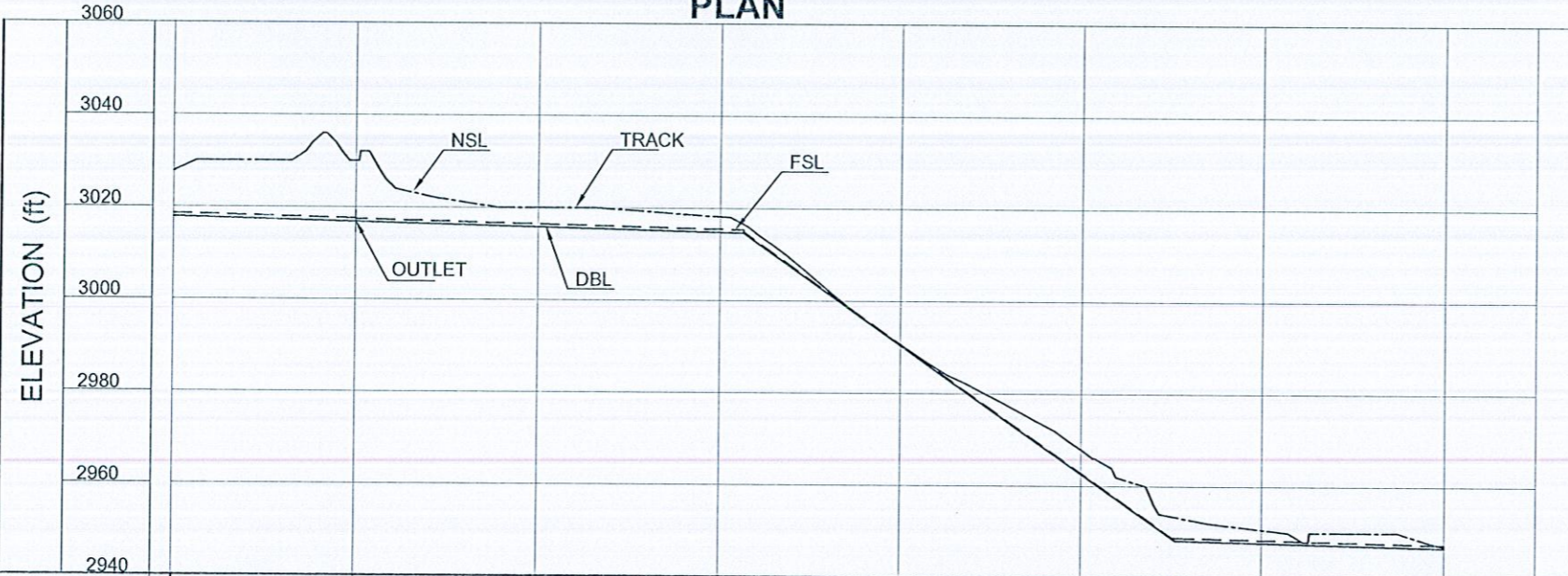
SCALE:
 VERTICAL 1"=40'
 HORIZONTAL 1"=500'

REV.	DATE	DESCRIPTION

DRAWN	NAVEED ANWAR
CHECKED	NAVEED NAWAZ
SUBMITTED	NAVEED NAWAZ
APPROVED	M.T.A



PLAN



DATUM	2940									
VELOCITY (ft./s)	1.95		1.84		5.83			1.84		
VALUE OF 'n'	0.018		0.018		0.018			0.018		
F.S. DISCHARGE (CUSECS)	2.29		1.84		1.84			1.84		
W. S. SLOPE	1/500		1/500		1/18			1/500		
FULL SUPPLY DEPTH (ft.)	0.78		0.67		0.21			0.67		
BED WIDTH (ft.)	1.5		1.5		1.5			1.5		
FULL SUPPLY LEVEL (ft.)	3018.58	3017.58 3017.47	3016.47	3015.47 3015.34 3014.88	2990.61	2962.84	2948.43 2948.89	2948.40	2947.40	
BED LEVEL (ft.)	3017.80	3016.80	3015.80	3014.80 3014.67	2990.40	2962.63	2948.22	2947.73	2946.73	
NSL (ft.)	3027.71	3030.00	3020.00	3018.14 3014.67	2990.56	2967.89	2950.65	2947.07	2947.07	
DISTANCE - RD (ft.)	3+500	4+000	4+500	5+000 5+063	5+500	6+000	6+259	6+500	7+000	

PROFILE

LEGEND:-

DESCRIPTION	SYMBOLS
DESIGNED FSL	-----
DESIGNED BED LEVEL	_____
NSL	- - - - -

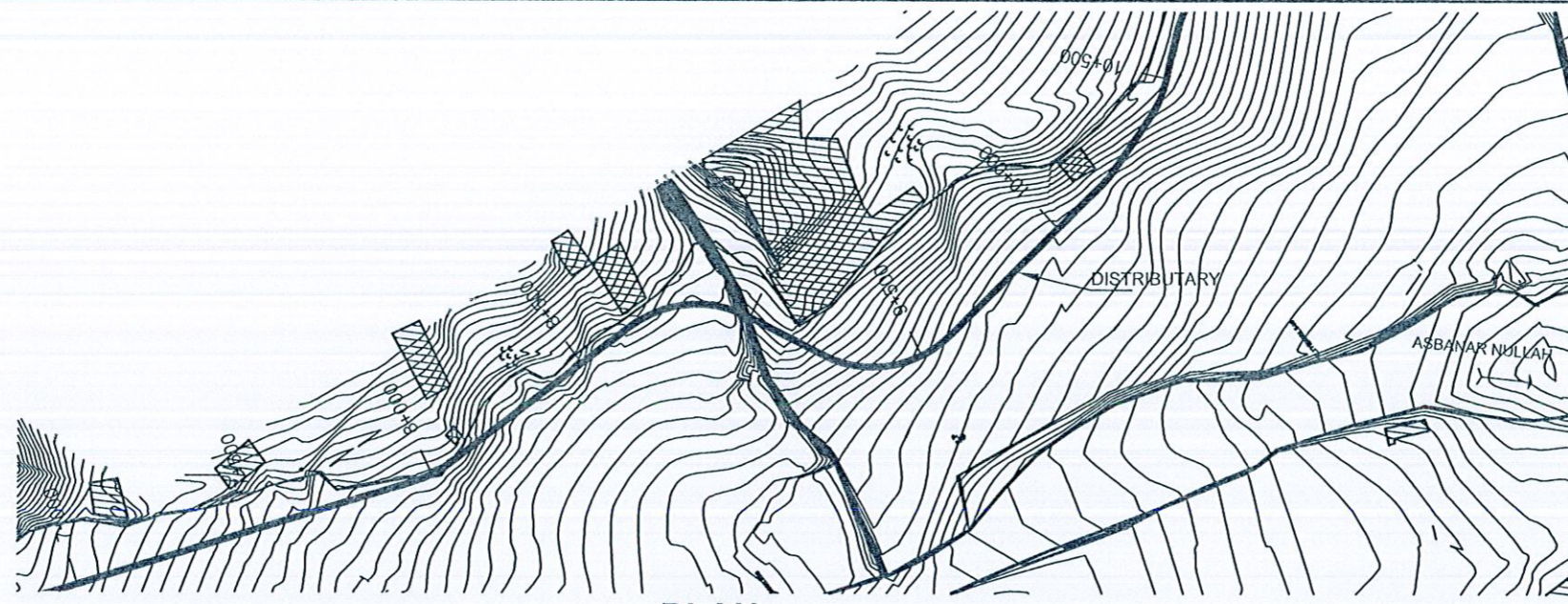
ABBREVIATIONS

- FSL - FULL SUPPLY LEVEL
- DBL - DESIGN BED LEVEL
- NSL - NATURAL SURFACE LEVEL

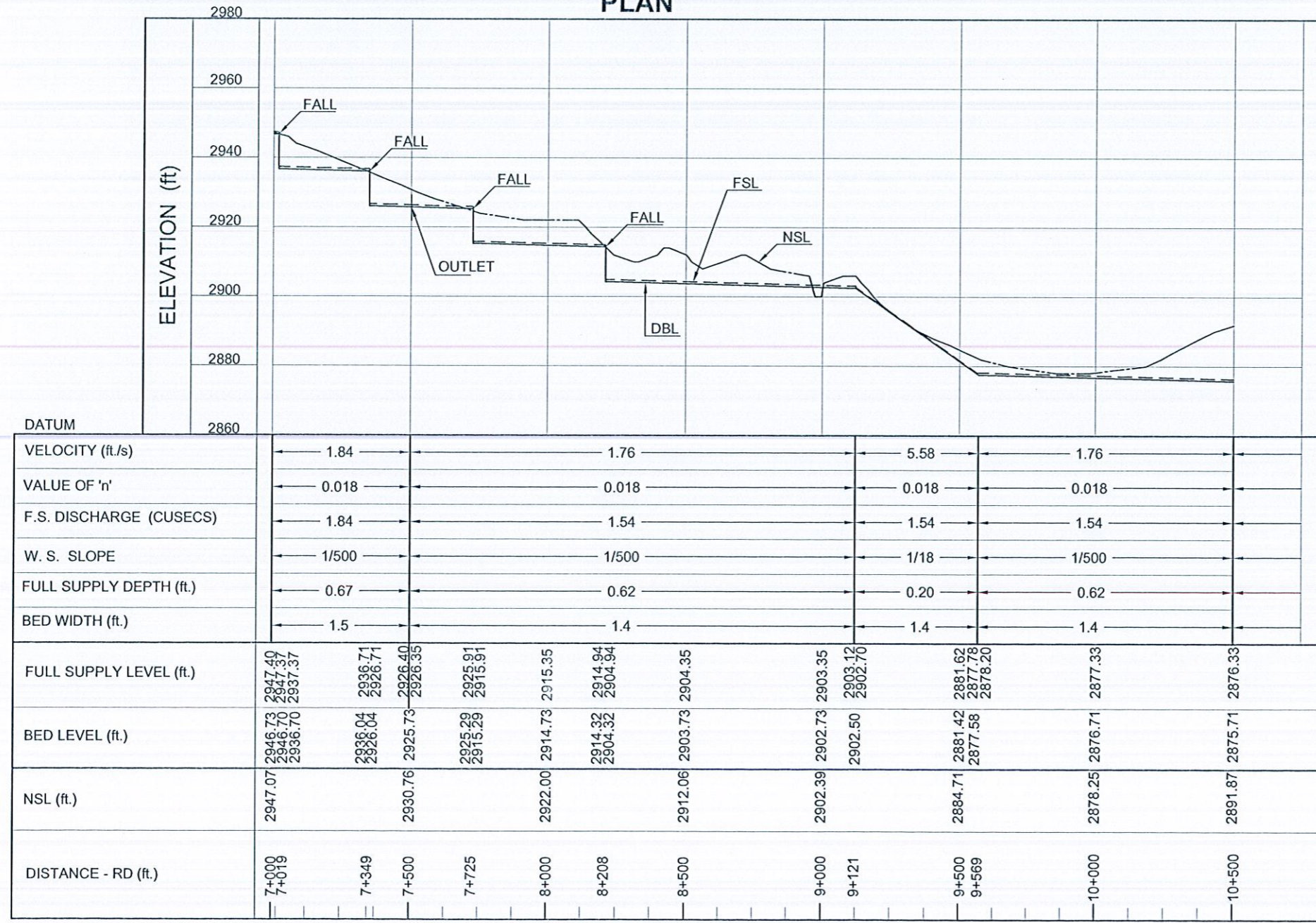
SCALE:
VERTICAL 1"=40'
HORIZONTAL 1"=500'

REV.	DATE	DESCRIPTION

DRAWN	NAVEED ANWAR
CHECKED	NAVEED NAWAZ
SUBMITTED	NAVEED NAWAZ
APPROVED	M.T.A



PLAN



PROFILE

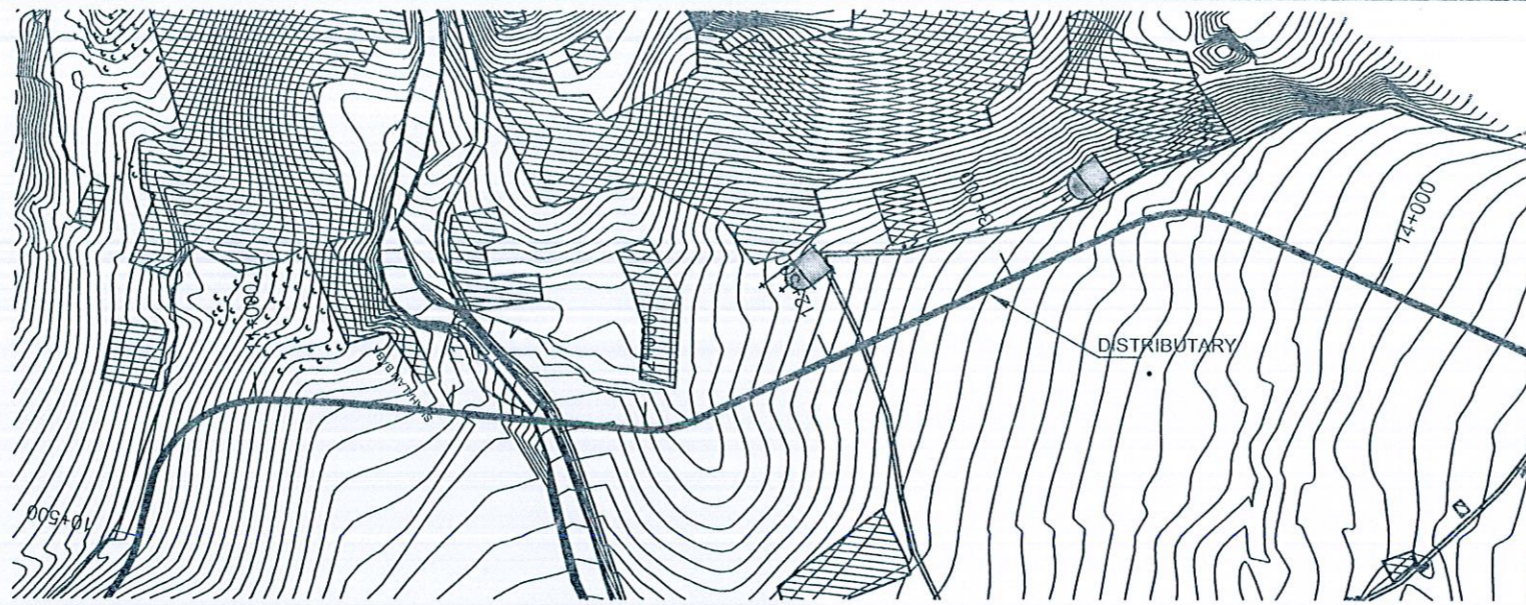
LEGEND:-

DESCRIPTION	SYMBOLS
DESIGNED FSL	-----
DESIGNED BED LEVEL	—————
NSL

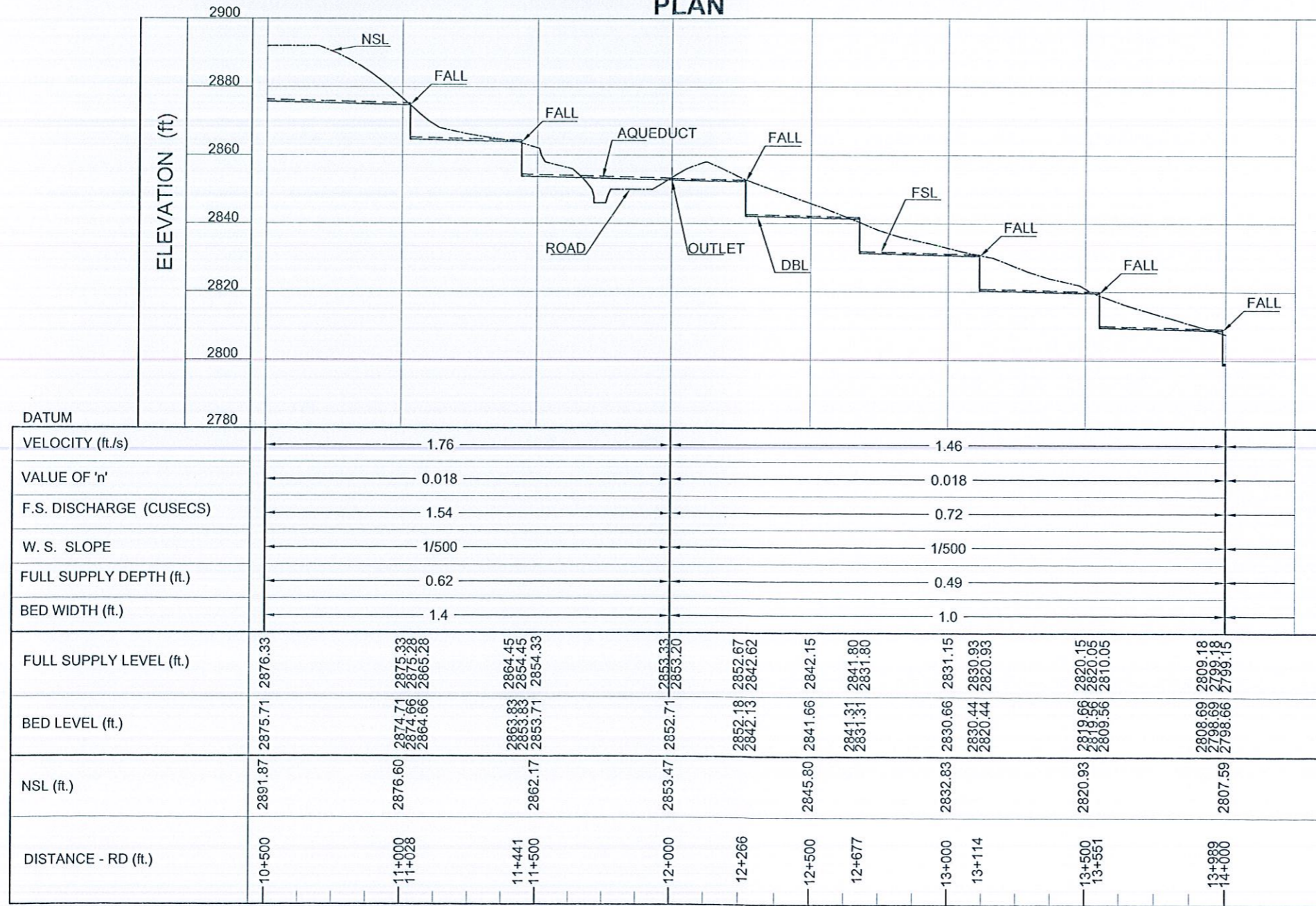
ABBREVIATIONS

- FSL - FULL SUPPLY LEVEL
- DBL - DESIGN BED LEVEL
- NSL - NATURAL SURFACE LEVEL

SCALE:
VERTICAL 1"=40'
HORIZONTAL 1"=500'



PLAN



PROFILE

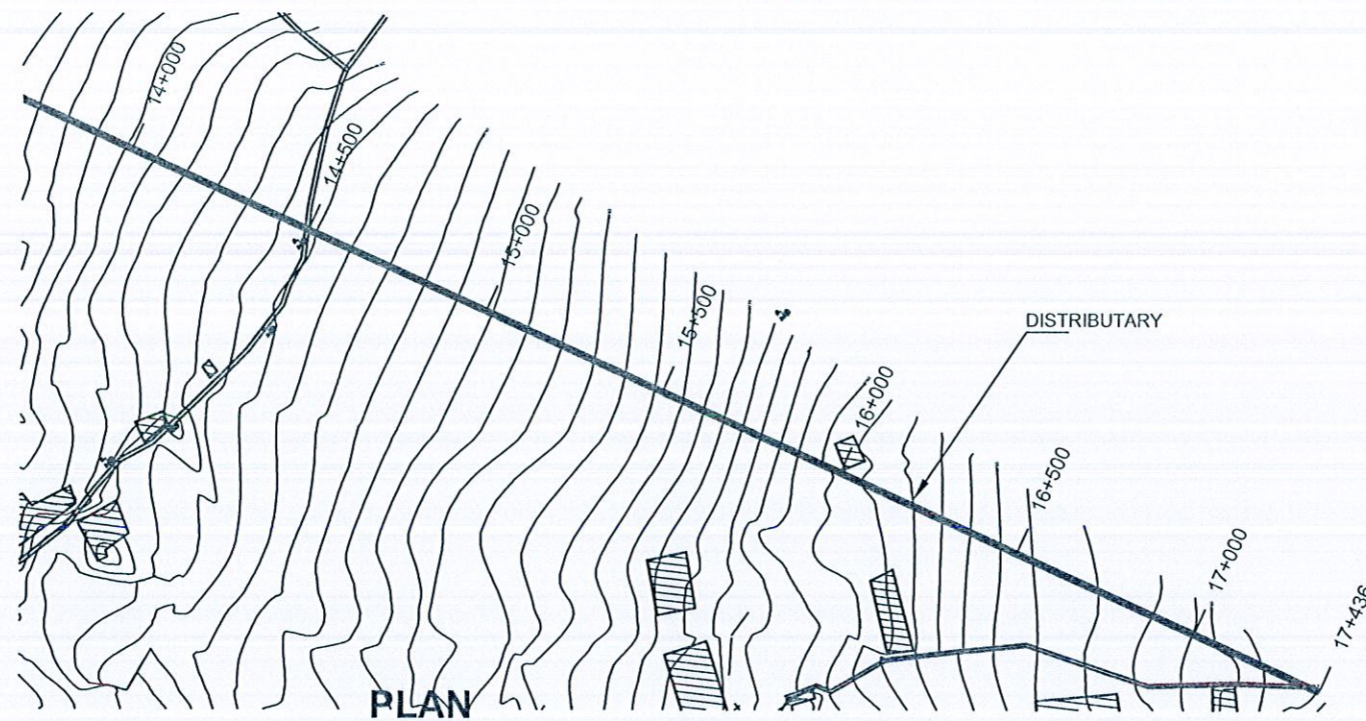
LEGEND:-

DESCRIPTION	SYMBOLS
DESIGNED FSL	-----
DESIGNED BED LEVEL	—————
NSL	-----

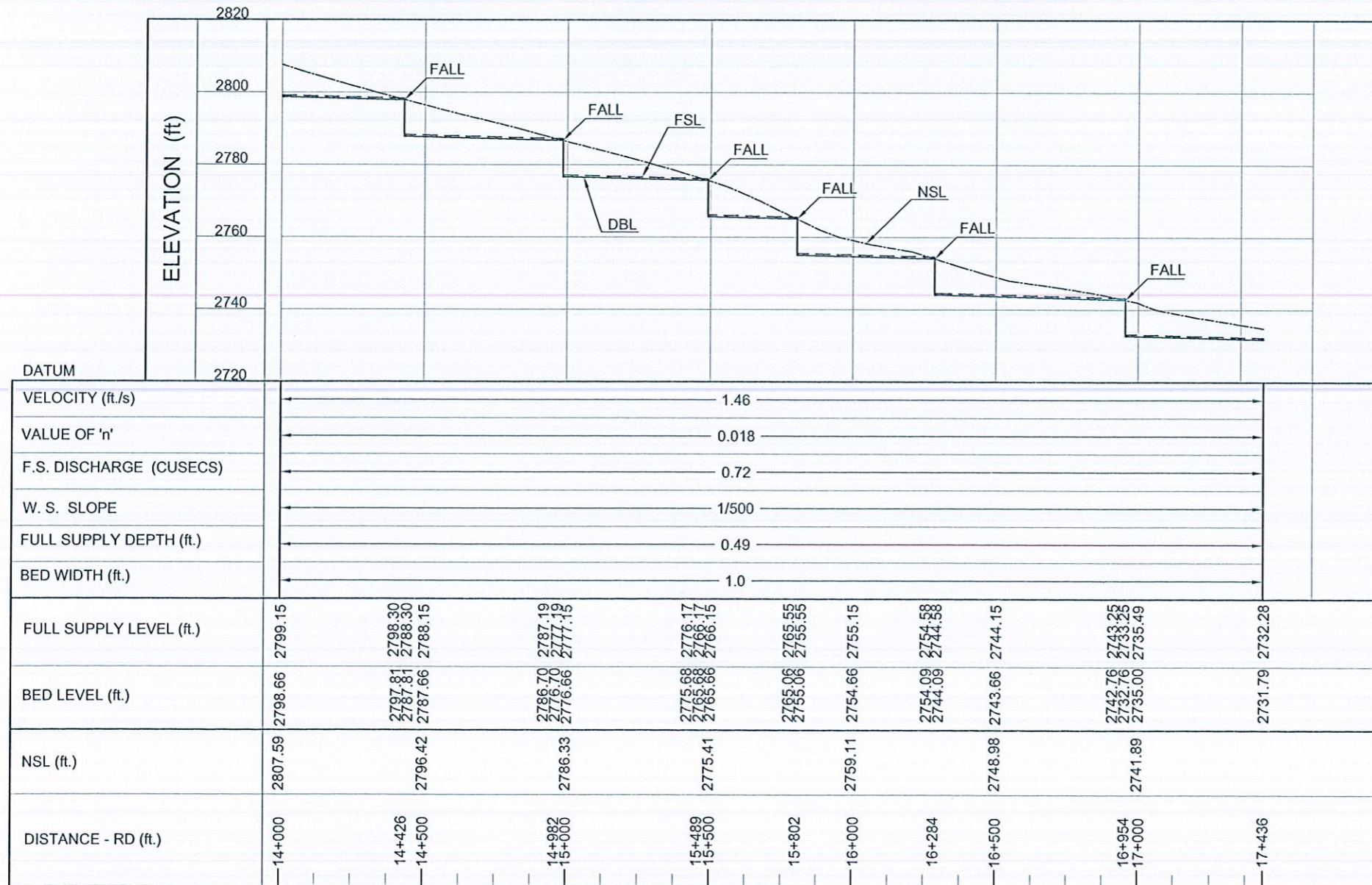
ABBREVIATIONS

FSL - FULL SUPPLY LEVEL
 DBL - DESIGN BED LEVEL
 NSL - NATURAL SURFACE LEVEL

SCALE:
 VERTICAL 1"=40'
 HORIZONTAL 1"=500'



PLAN



PROFILE

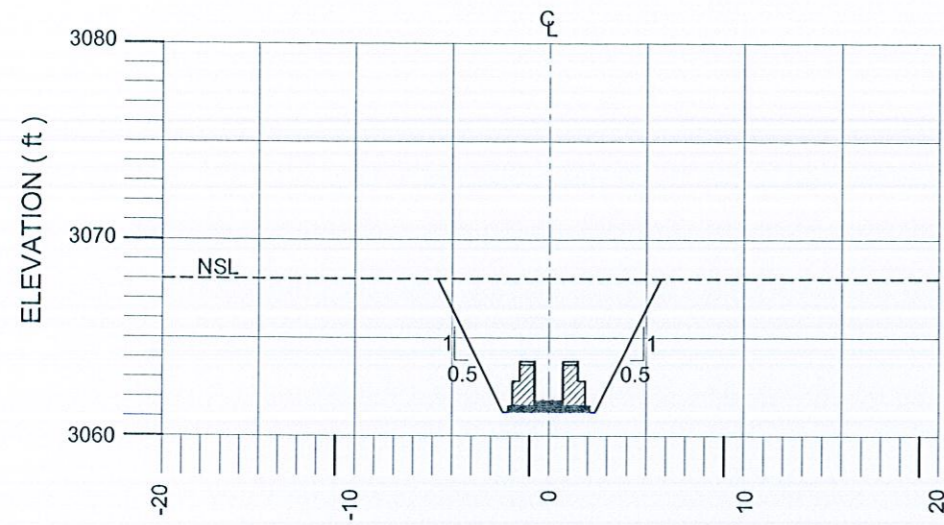
LEGEND:-

DESCRIPTION	SYMBOLS
DESIGNED FSL	-----
DESIGNED BED LEVEL	—————
NSL	- - - - -

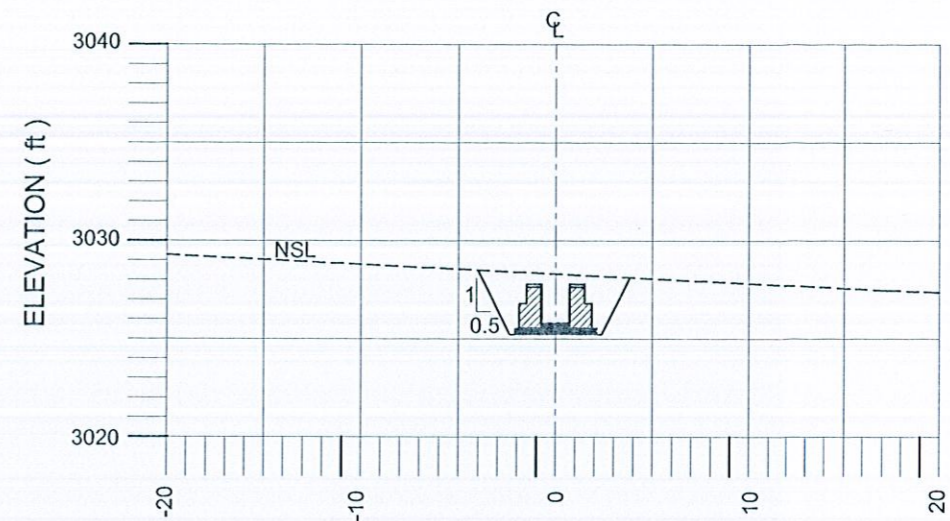
ABBREVIATIONS

FSL - FULL SUPPLY LEVEL
 DBL - DESIGN BED LEVEL
 NSL - NATURAL SURFACE LEVEL

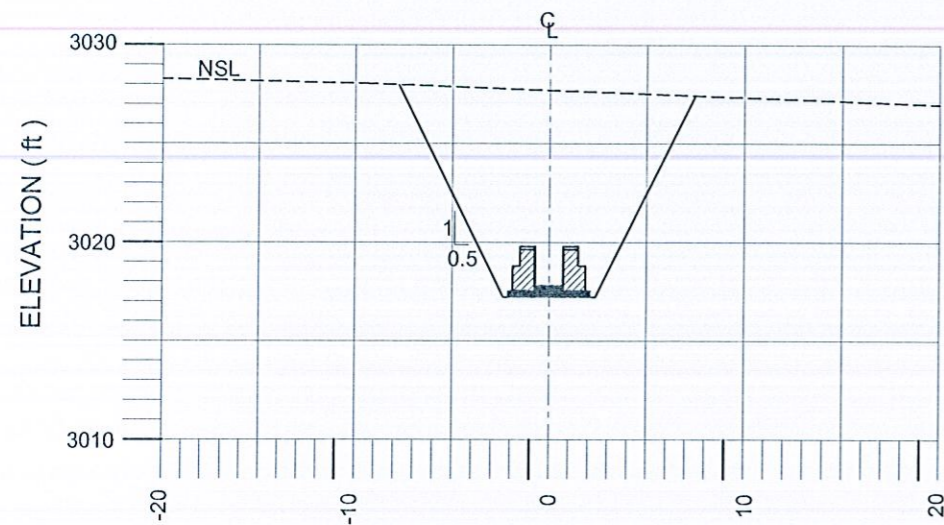
SCALE:
 VERTICAL 1"=40'
 HORIZONTAL 1"=500'



CROSS SECTION AT RD 0+500



CROSS SECTION AT RD 2+500



CROSS SECTION AT RD 3+500

SCALE: 1" : 10'



SMALL DAMS ORGANIZATION
GOVERNMENT OF KHYBER PAKHTUNKHWA



BARQAAB CONSULTING SERVICES
(PVT.) LIMITED, LAHORE

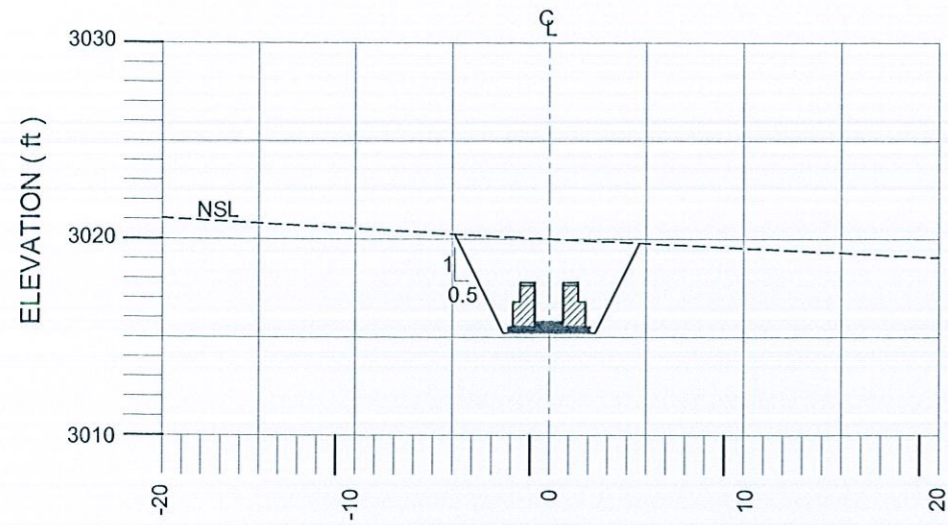
SANAM DAM PROJECT
LOWER DIR

REV.	DATE	DESCRIPTION	DRAWN	NAVEED ANWAR
			CHECKED	NAVEED NAWAZ
			SUBMITTED	NAVEED NAWAZ
			APPROVED	M.T.A

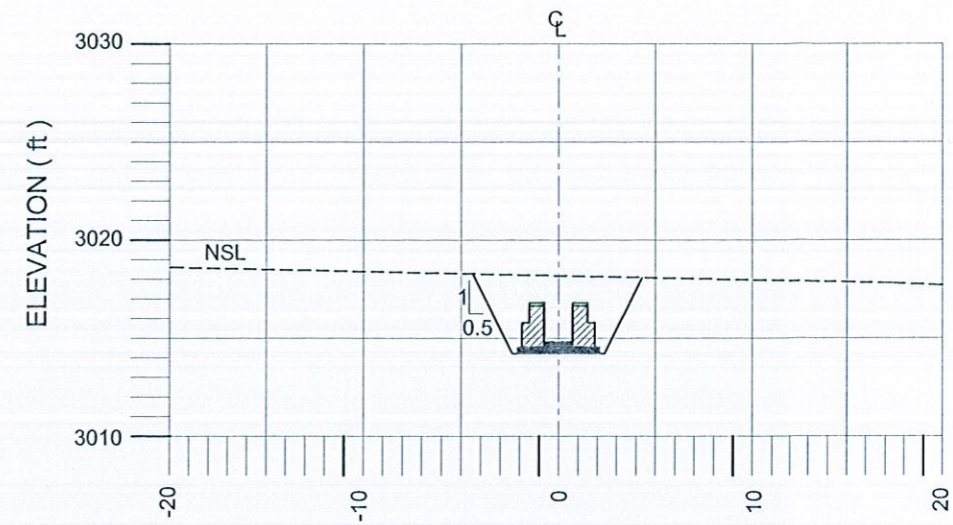
IRRIGATION DISTRIBUTARY
CROSS SECTION
FROM RD 0+000 TO 3+500

DATE:
May, 2018

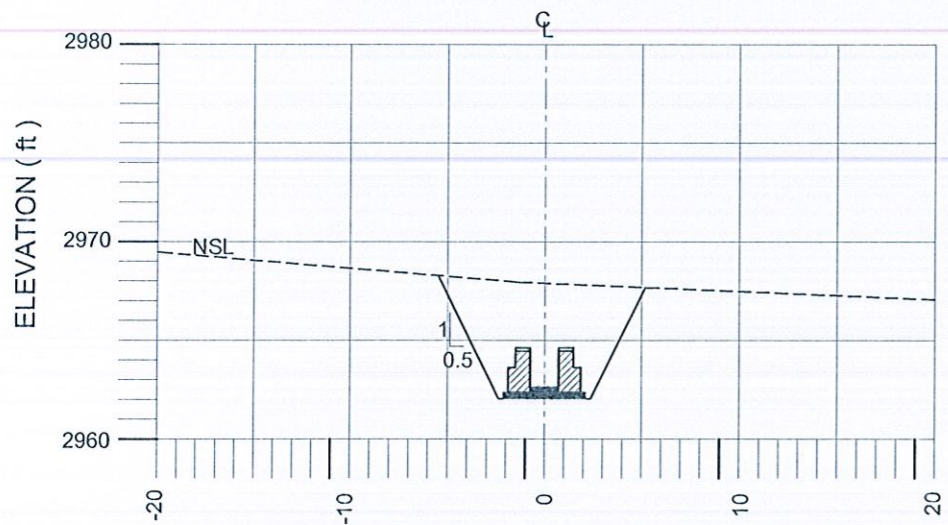
DRAWING NO.
BQB-SDP-ID-CS-01



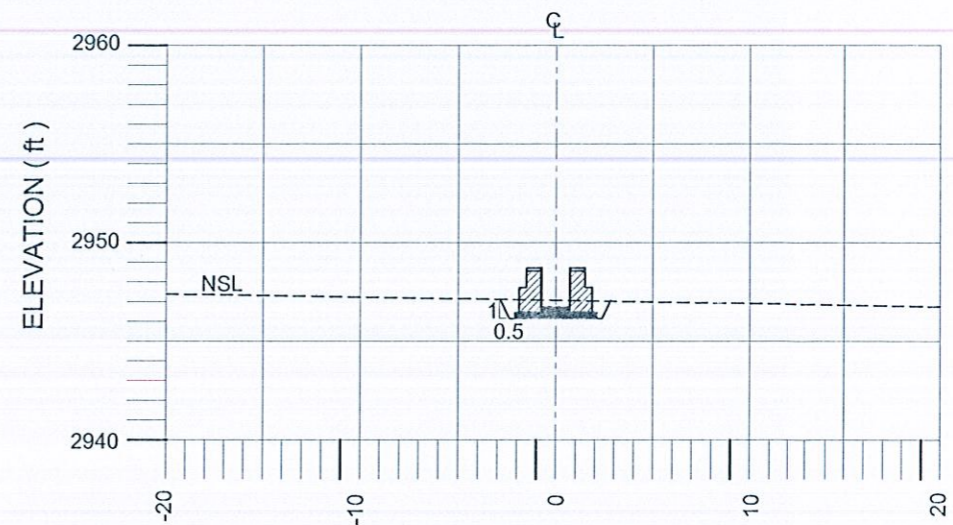
CROSS SECTION AT RD 4+500



CROSS SECTION AT RD 5+000



CROSS SECTION AT RD 6+000



CROSS SECTION AT RD 7+000

SCALE: 1" : 10'



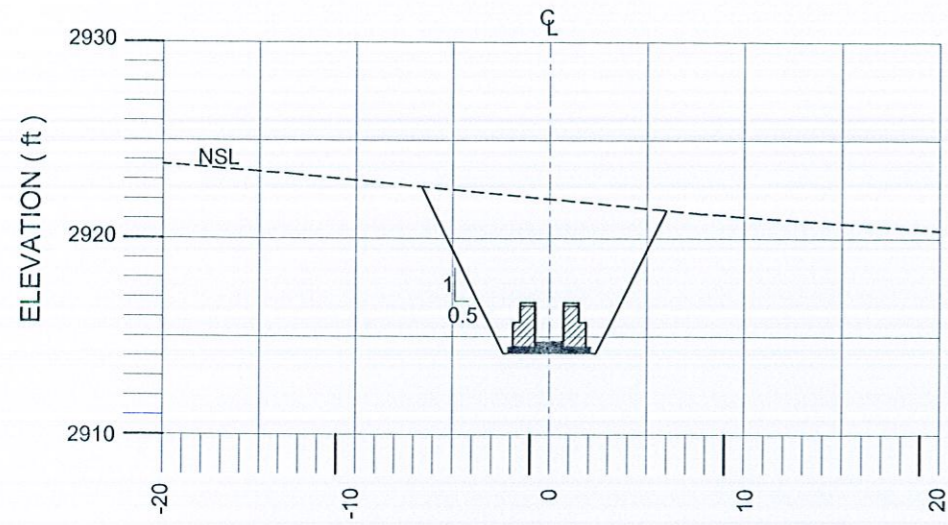
SMALL DAMS ORGANIZATION
GOVERNMENT OF KHYBER PAKHTUNKHWA



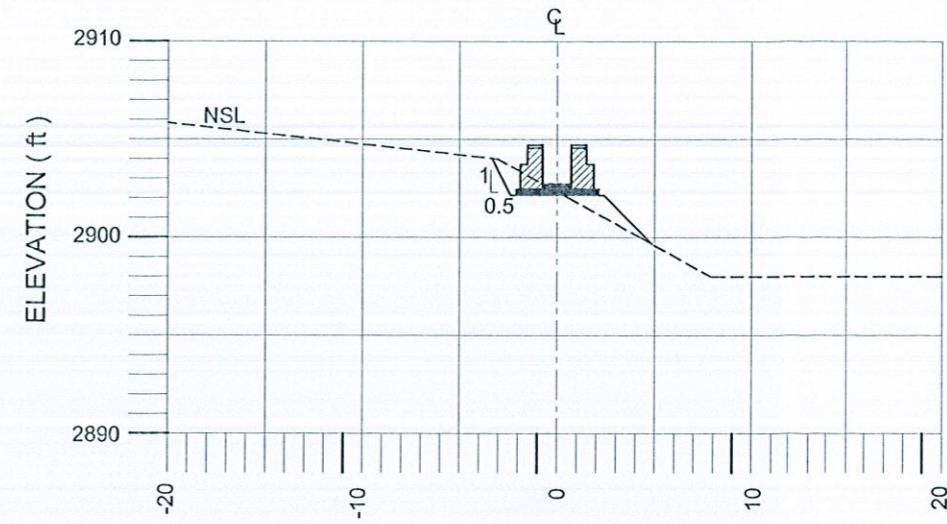
BARQAAB CONSULTING SERVICES
(PVT.) LIMITED, LAHORE

SANAM DAM PROJECT
LOWER DIR

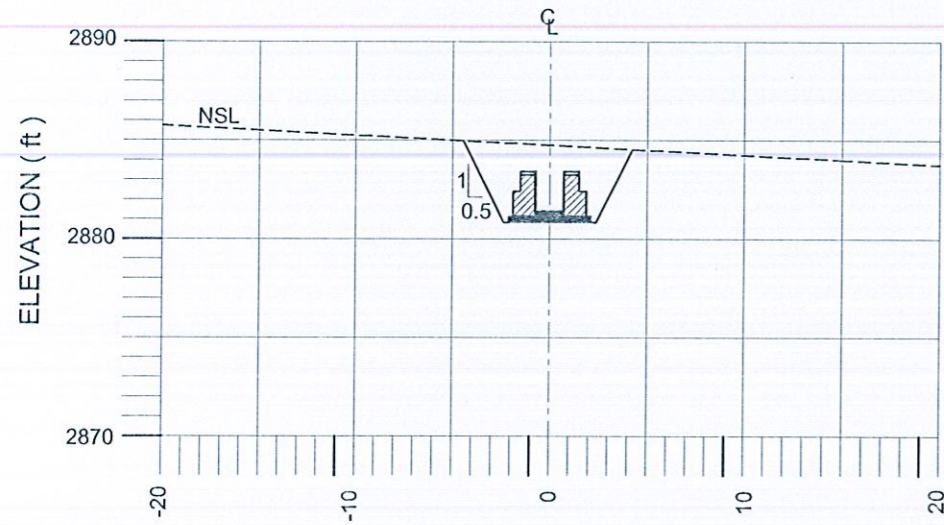
			DRAWN	NAVEED ANWAR	IRRIGATION DISTRIBUTARY CROSS SECTION FROM RD 4+500 TO 7+000
			CHECKED	NAVEED NAWAZ	
			SUBMITTED	NAVEED NAWAZ	
REV.	DATE	DESCRIPTION	APPROVED	M.T.A	DATE: May, 2018
					DRAWING NO. BQB-SDP-ID-CS-02



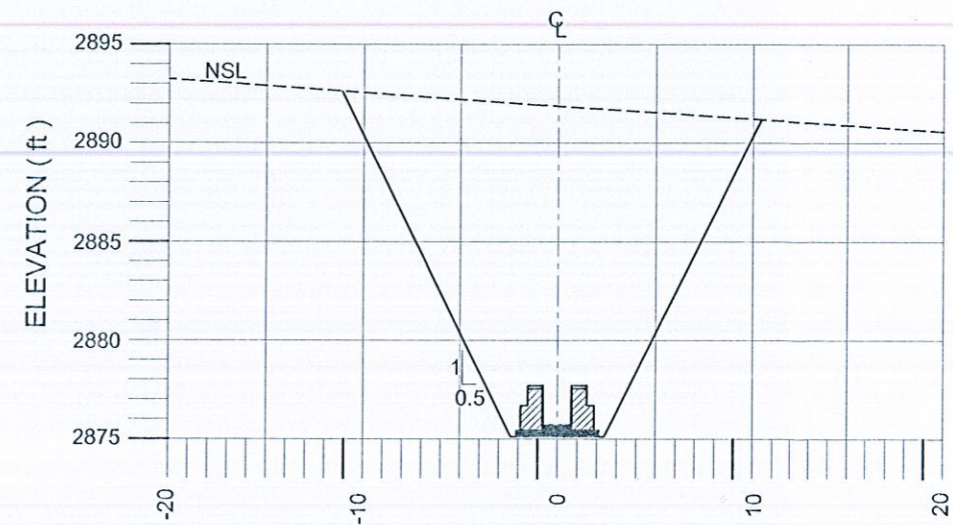
CROSS SECTION AT RD 8+000



CROSS SECTION AT RD 9+000



CROSS SECTION AT RD 9+500



CROSS SECTION AT RD 10+500

SCALE: 1" : 10'



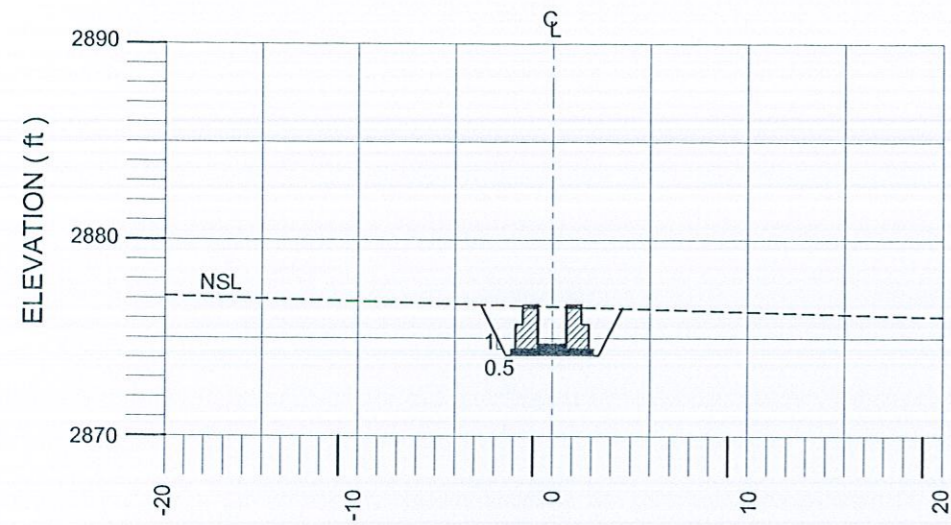
SMALL DAMS ORGANIZATION
GOVERNMENT OF KHYBER PAKHTUNKHWA



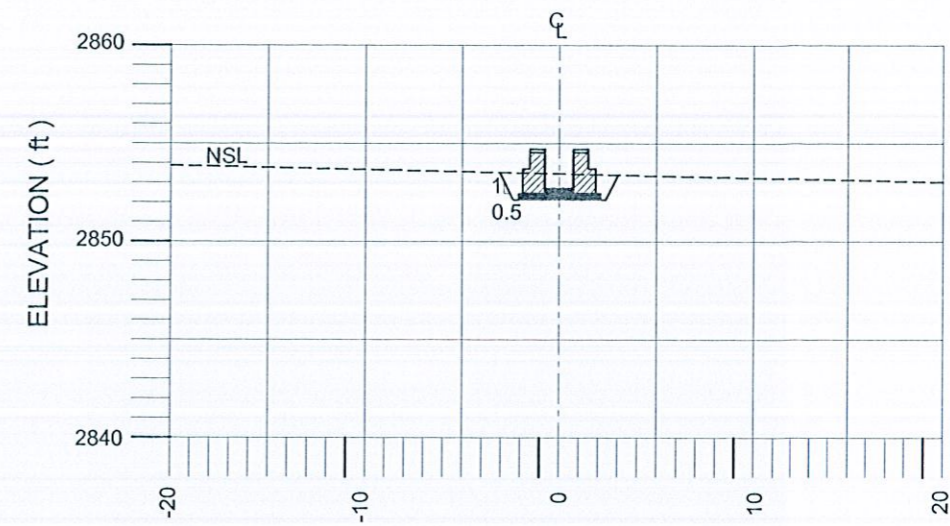
BARQAAB CONSULTING SERVICES
(PVT.) LIMITED, LAHORE

SANAM DAM PROJECT
LOWER DIR

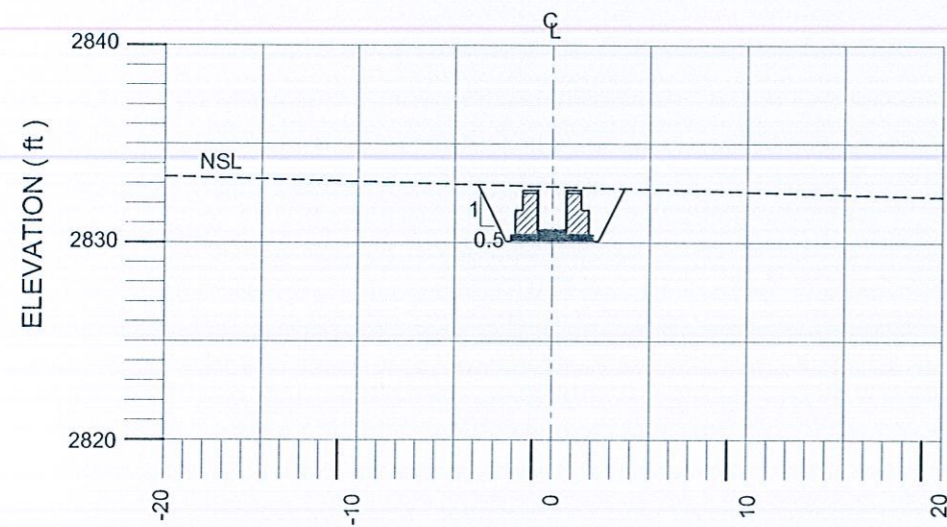
REV.	DATE	DESCRIPTION	DRAWN	NAVEED ANWAR	IRRIGATION DISTRIBUTARY CROSS SECTION FROM RD 8+000 TO 10+500	DATE: May, 2018	DRAWING NO. BQB-SDP-ID-CS-03
			CHECKED	NAVEED NAWAZ			
			SUBMITTED	NAVEED NAWAZ			
			APPROVED	M.T.A			



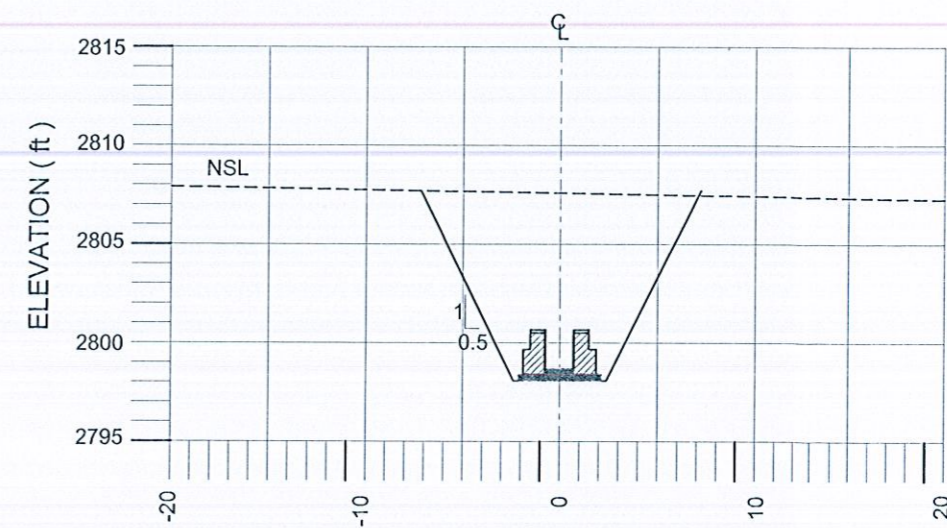
CROSS SECTION AT RD 11+000



CROSS SECTION AT RD 12+000



CROSS SECTION AT RD 13+000



CROSS SECTION AT RD 14+000

SCALE: 1" : 10'



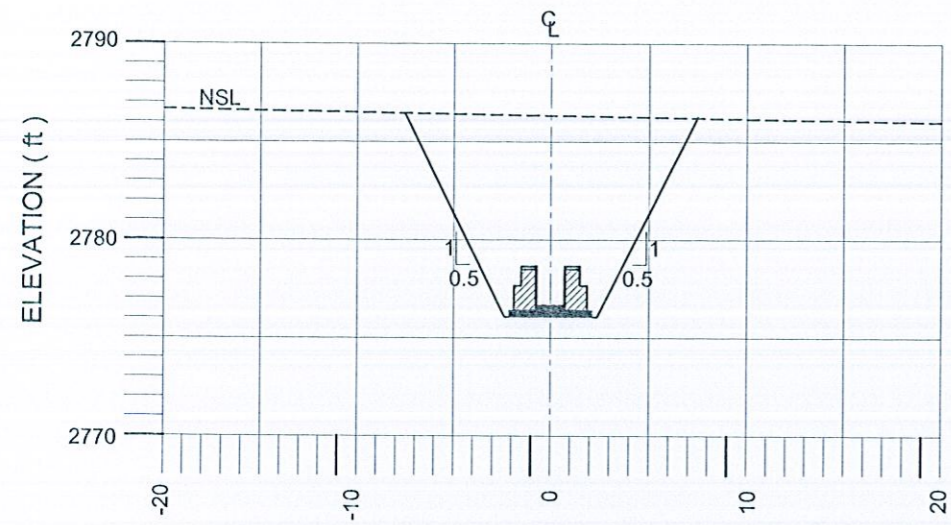
SMALL DAMS ORGANIZATION
GOVERNMENT OF KHYBER PAKHTUNKHWA



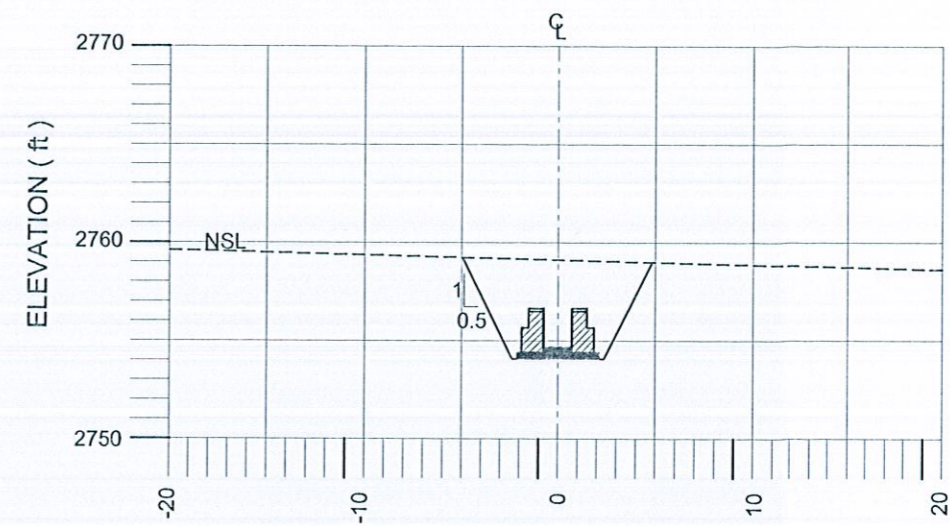
BARQAAB CONSULTING SERVICES
(PVT.) LIMITED, LAHORE

SANAM DAM PROJECT
LOWER DIR

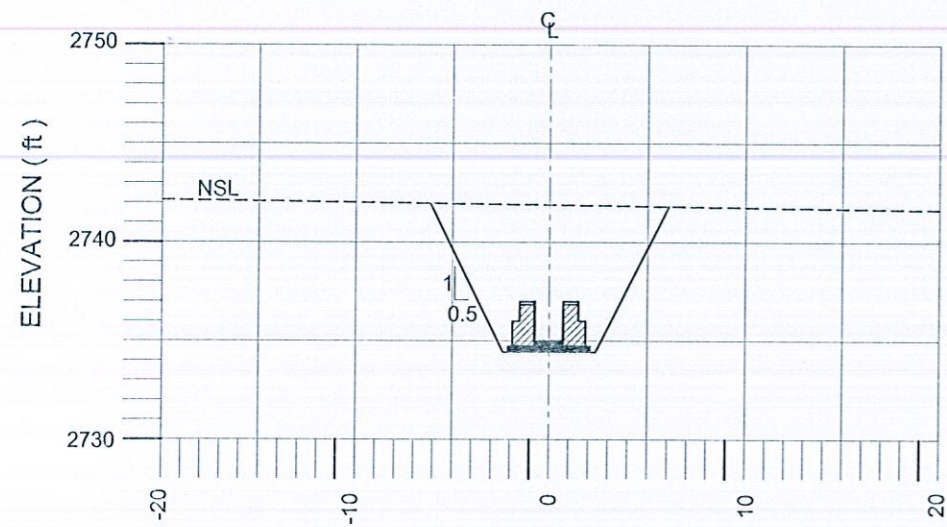
REV.	DATE	DESCRIPTION	DRAWN	NAVEED ANWAR	IRRIGATION DISTRIBUTARY CROSS SECTION FROM RD 11+000 TO 14+000
			CHECKED	NAVEED NAWAZ	
			SUBMITTED	NAVEED NAWAZ	
			APPROVED	M.T.A	DATE: May, 2018
					DRAWING NO. BQB-SDP-ID-CS-04



CROSS SECTION AT RD 15+000



CROSS SECTION AT RD 16+000



CROSS SECTION AT RD 17+000

SCALE: 1" : 10'



SMALL DAMS ORGANIZATION
GOVERNMENT OF KHYBER PAKHTUNKHWA



BARQAAB CONSULTING SERVICES
(PVT.) LIMITED, LAHORE

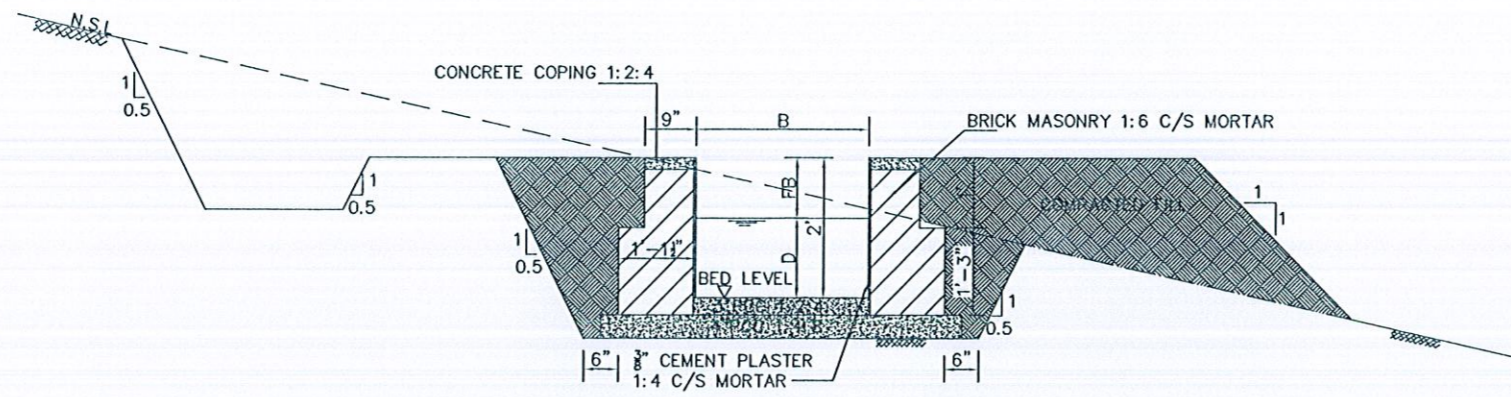
SANAM DAM PROJECT
LOWER DIR

REV.	DATE	DESCRIPTION	DRAWN	NAVEED ANWAR
			CHECKED	NAVEED NAWAZ
			SUBMITTED	NAVEED NAWAZ
			APPROVED	M.T.A

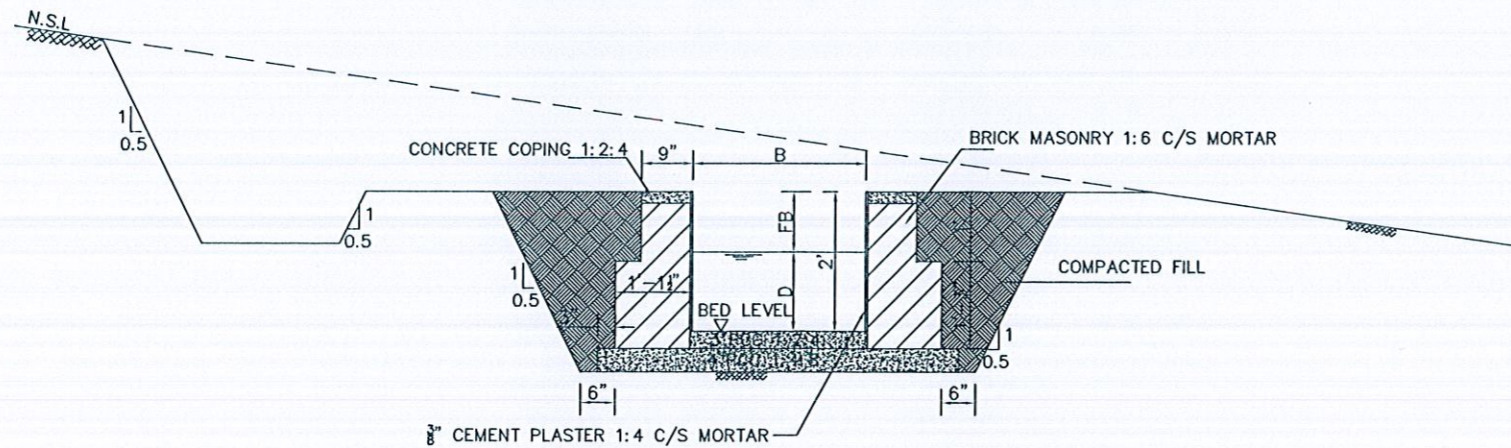
IRRIGATION DISTRIBUTARY
CROSS SECTION
FROM RD 15+000 TO 17+000

DATE:
May, 2018

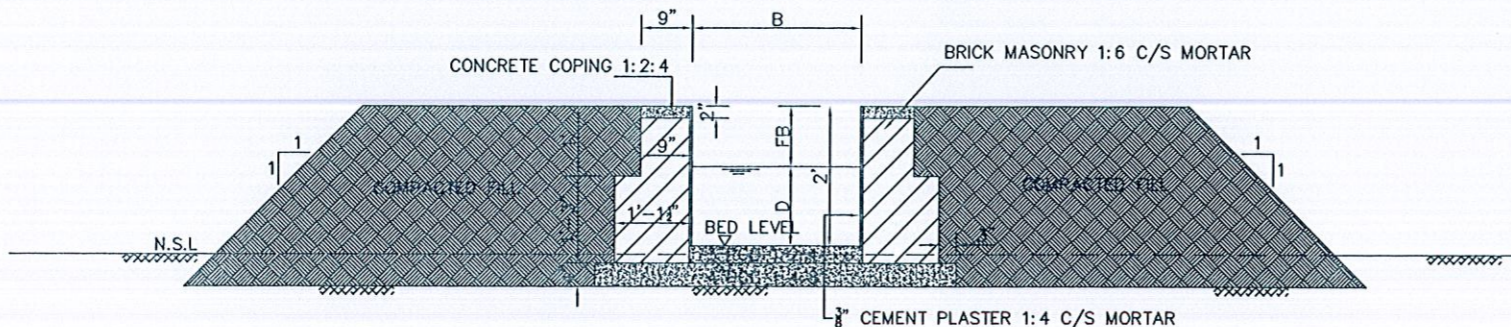
DRAWING NO.
BQB-SDP-ID-CS-05



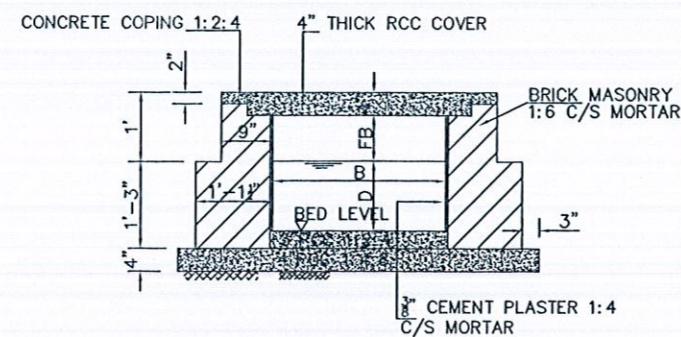
TYPICAL OPEN CHANNEL PARTIALLY IN CUTTING & FILLING



TYPICAL OPEN SECTION IN CUTTING



TYPICAL OPEN SECTION IN FILLING





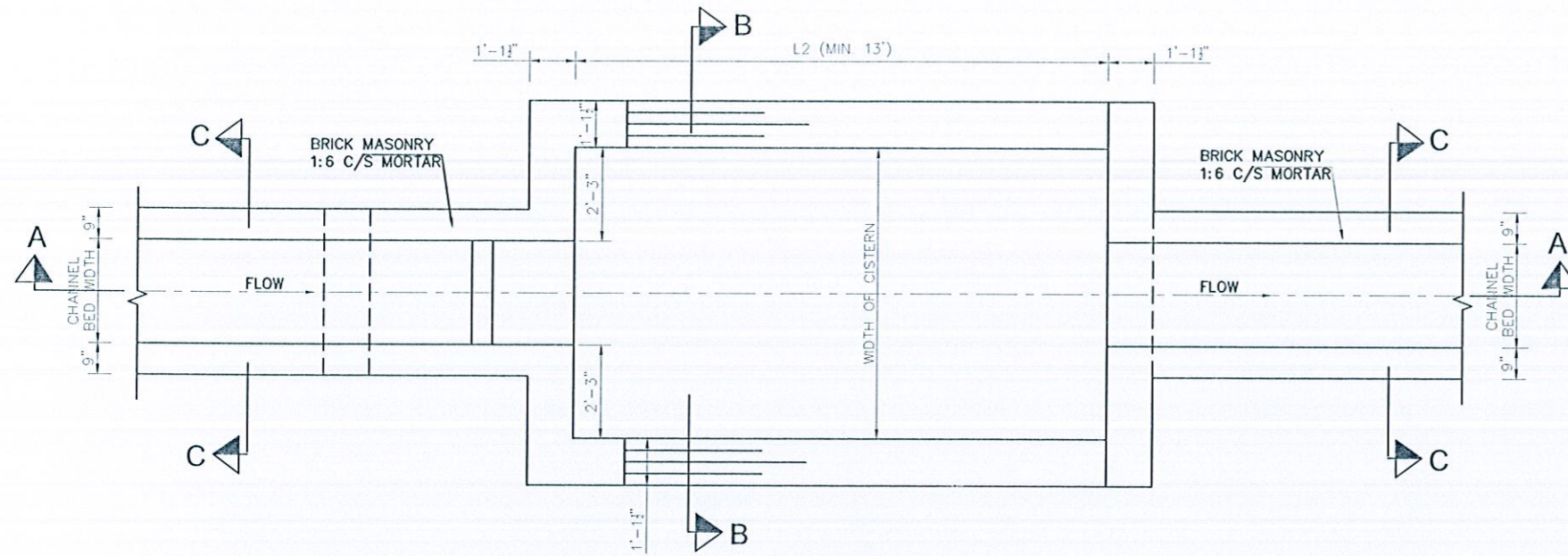
TYPICAL COVERED CHANNEL

ABBREVIATIONS :

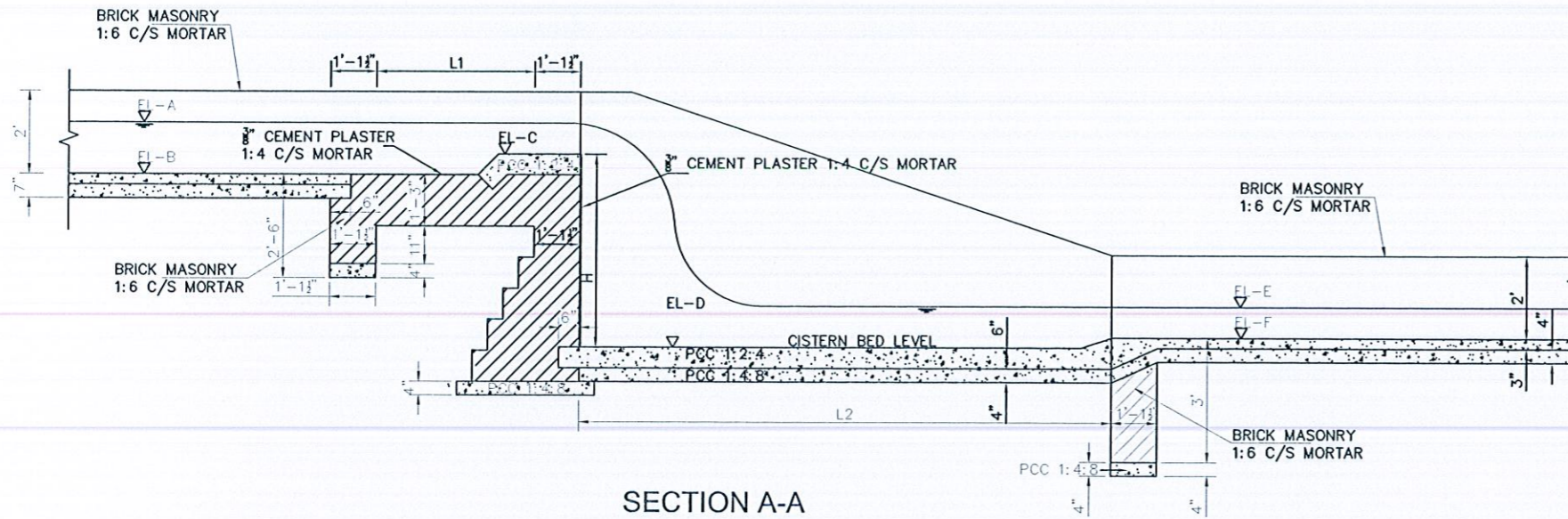
- D = DEPTH OF WATER
- FB = FREE BOARD
- B = BED WIDTH
- C/S = CEMENT SAND

SCALE: 3/8" : 1'

REV.	DATE	DESCRIPTION	
 SMALL DAMS ORGANIZATION GOVERNMENT OF KHYBER PAKHTUNKHWA			
 BARQAAB CONSULTING SERVICES (PVT.) LIMITED LAHORE			
SANAM DAM PROJECT LOWER DIR			
DRAWN	NAVEED ANWAR	CHANNEL SECTIONS (TYPICAL)	
CHECKED	NAVEED NAWAZ		
SUBMITTED	NAVEED NAWAZ		
APPROVED	TANVEER ABBAS		
		DATE:	DRAWING NO.
		May, 2018	BQB-SDP-MC-C-01



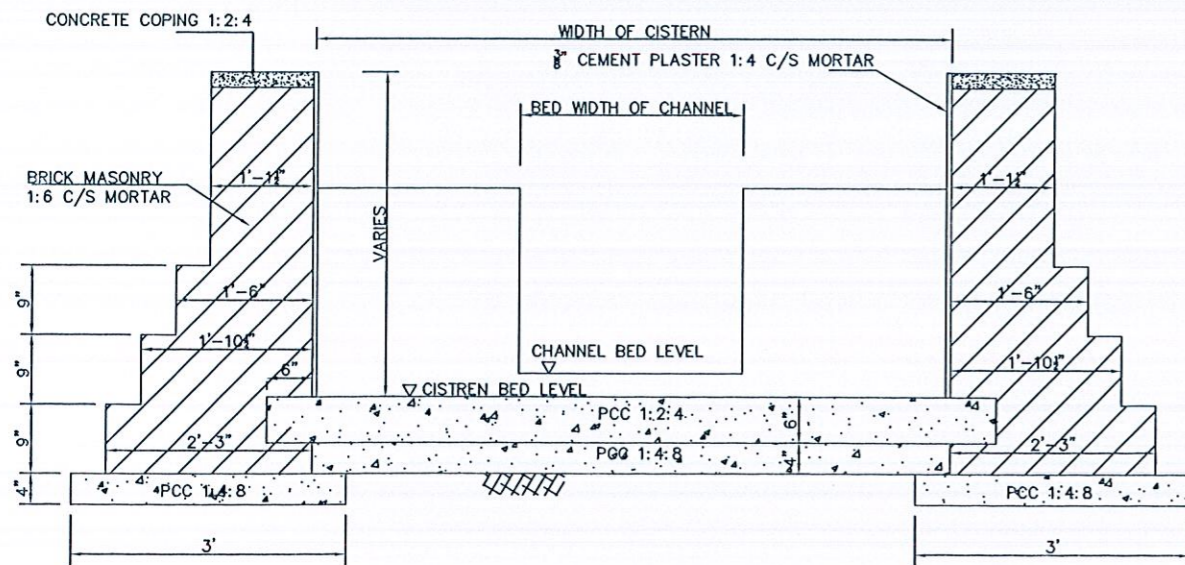
PLAN
SCALE = 1"=4'



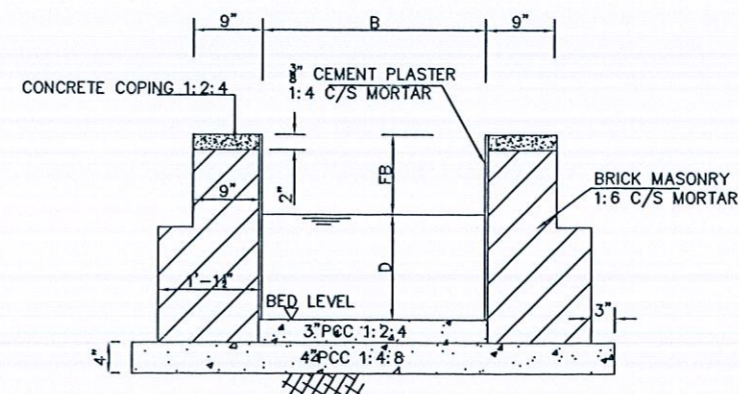
SECTION A-A

ABBREVIATIONS :

- D = DEPTH OF WATER
- FB = FREE BOARD
- B = BED WIDTH
- C/S = CEMENT SAND

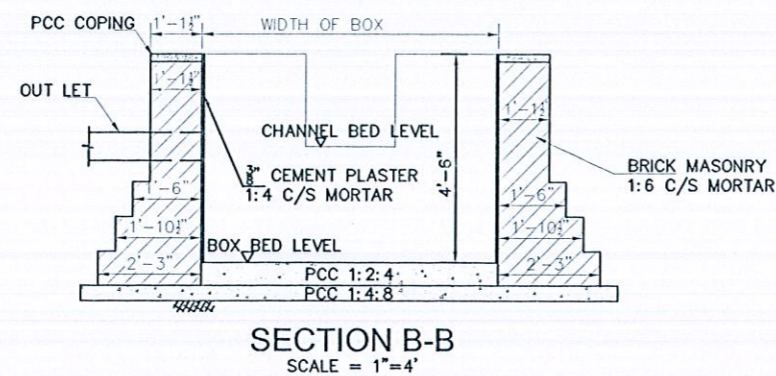
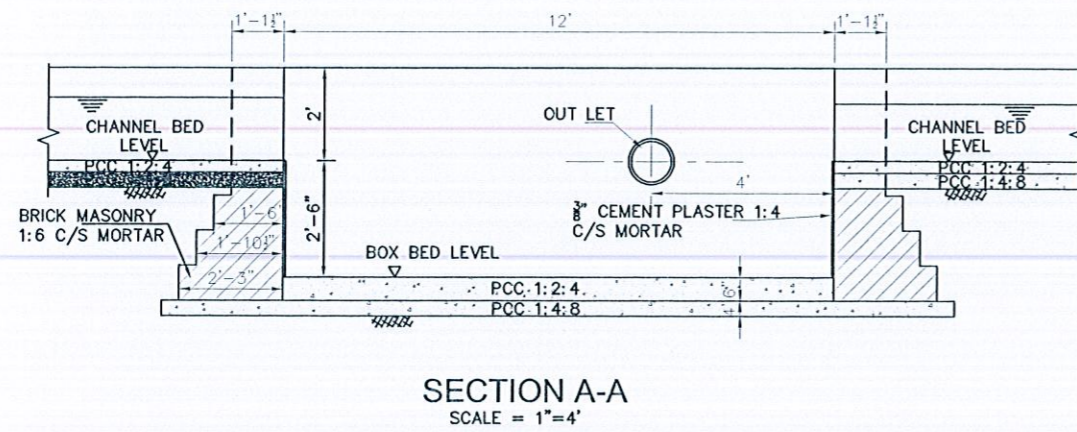
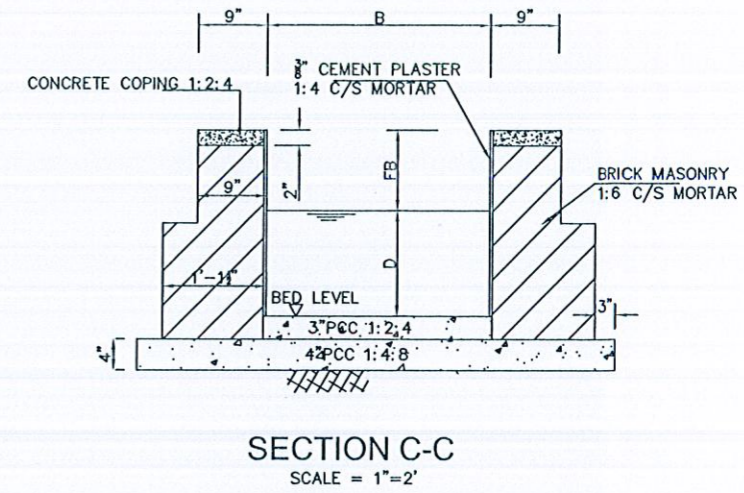
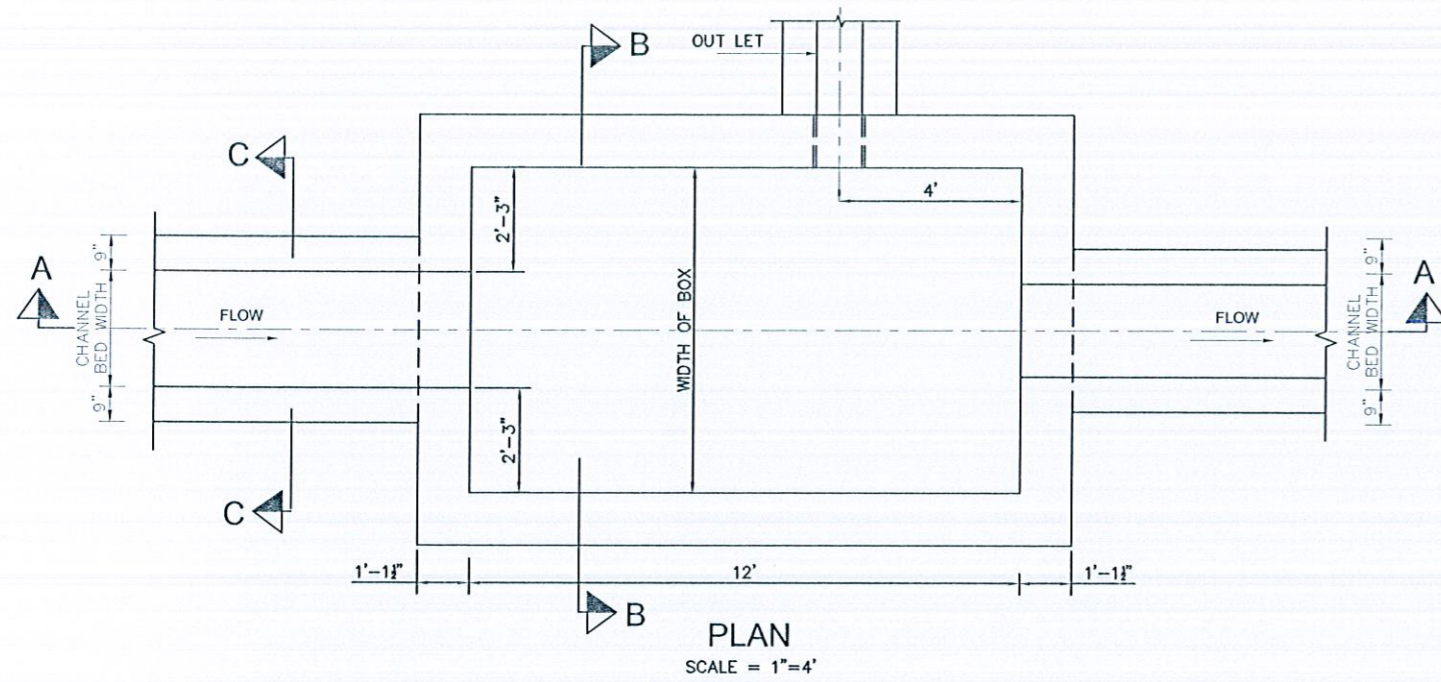


SECTION B-B
SCALE = 1"=2'





SECTION C-C
SCALE = 1"=2'

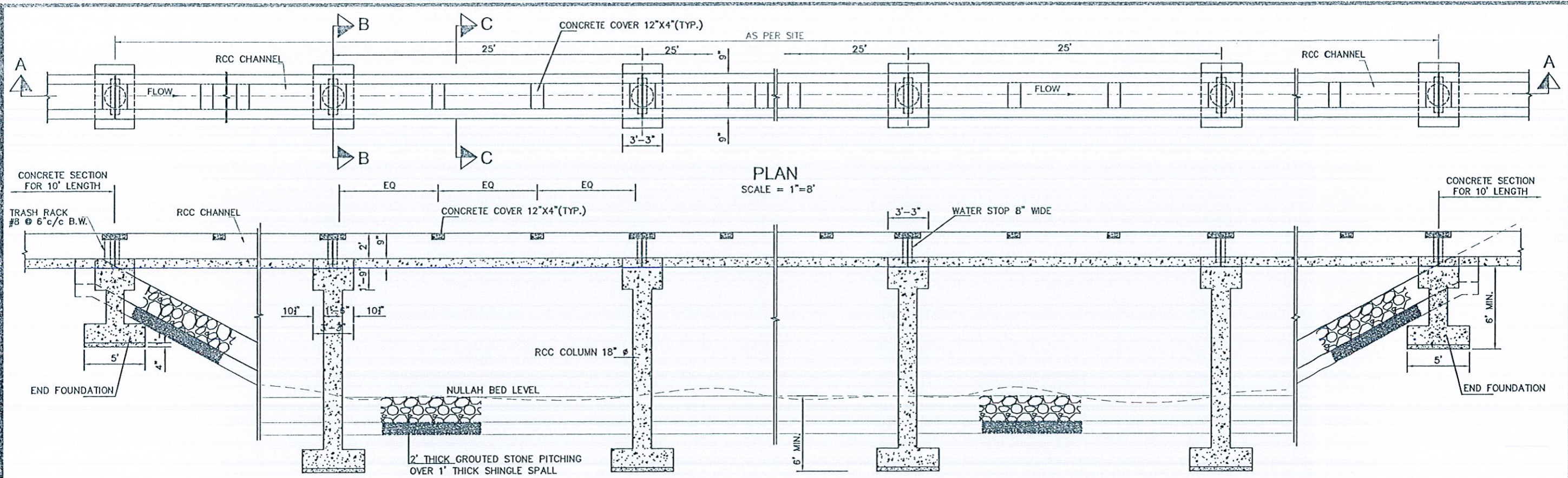
REV.	DATE	DESCRIPTION
 SMALL DAMS ORGANIZATION GOVERNMENT OF KHYBER PAKHTUNKHWA		
 BARQAAB CONSULTING SERVICES (PVT.) LIMITED LAHORE		
SANAM DAM PROJECT LOWER DIR		
DRAWN	NAVEED ANWAR	FALL STRUCTURE (TYP.) DETAILS DATE: May, 2018 DRAWING NO. BQB-SDP-FS-01
CHECKED	NAVEED NAWAZ	
SUBMITTED	NAVEED NAWAZ	
APPROVED	TANVEER ABBAS	



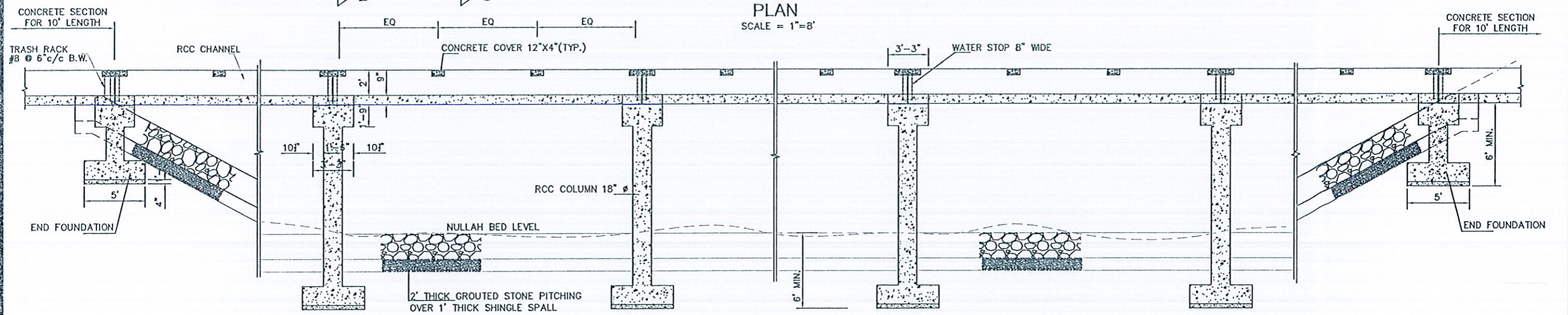
ABBREVIATIONS :

- D = DEPTH OF WATER
- FB = FREE BOARD
- B = BED WIDTH
- C/S = CEMENT SAND

REV.	DATE	DESCRIPTION
 SMALL DAMS ORGANIZATION GOVERNMENT OF KHYBER PAKHTUNKHWA		
 BARQAAB CONSULTING SERVICES (PVT.) LIMITED LAHORE		
SANAM DAM PROJECT LOWER DIR		
DRAWN	NAVEED ANWAR	DISTRIBUTARY BOX (TYP.) DETAILS
CHECKED	NAVEED NAWAZ	
SUBMITTED	NAVEED NAWAZ	
APPROVED	TANVEER ABBAS	
DATE:	May, 2018	
DRAWING NO.		BQB-SDP-DB-01



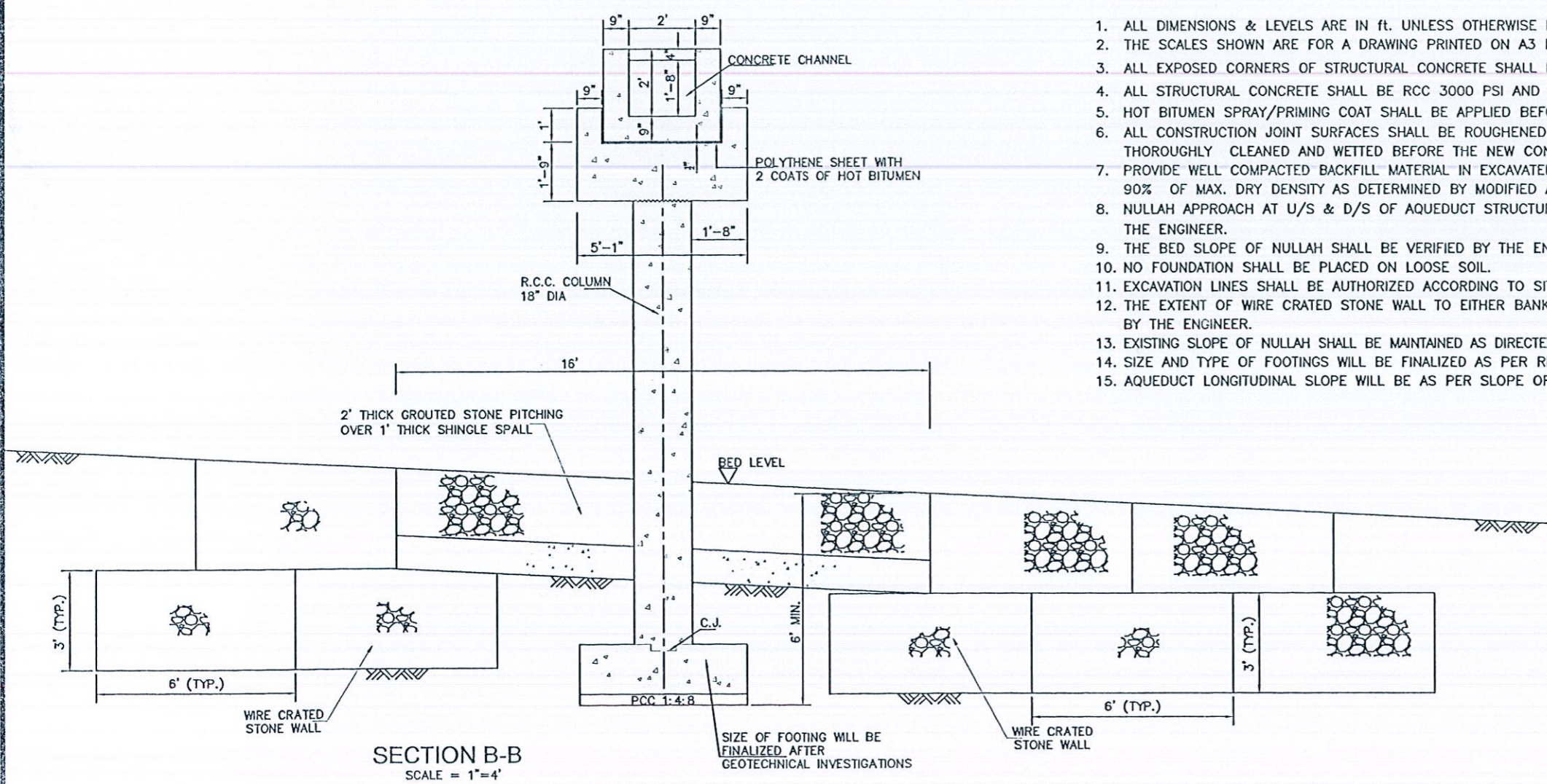
PLAN
SCALE = 1"=8'





SECTION A-A
SCALE = 1"=8'

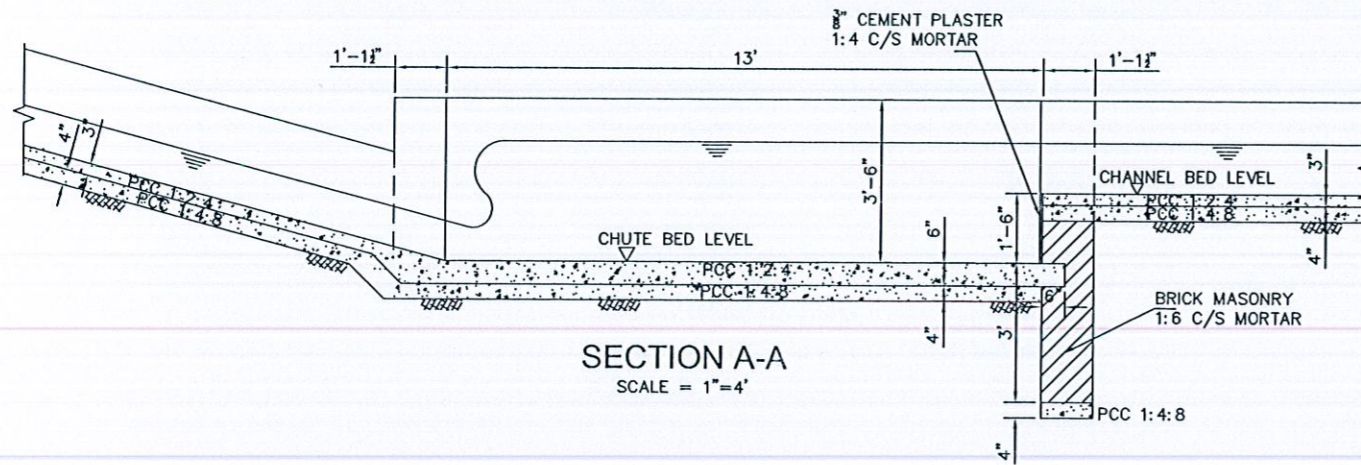
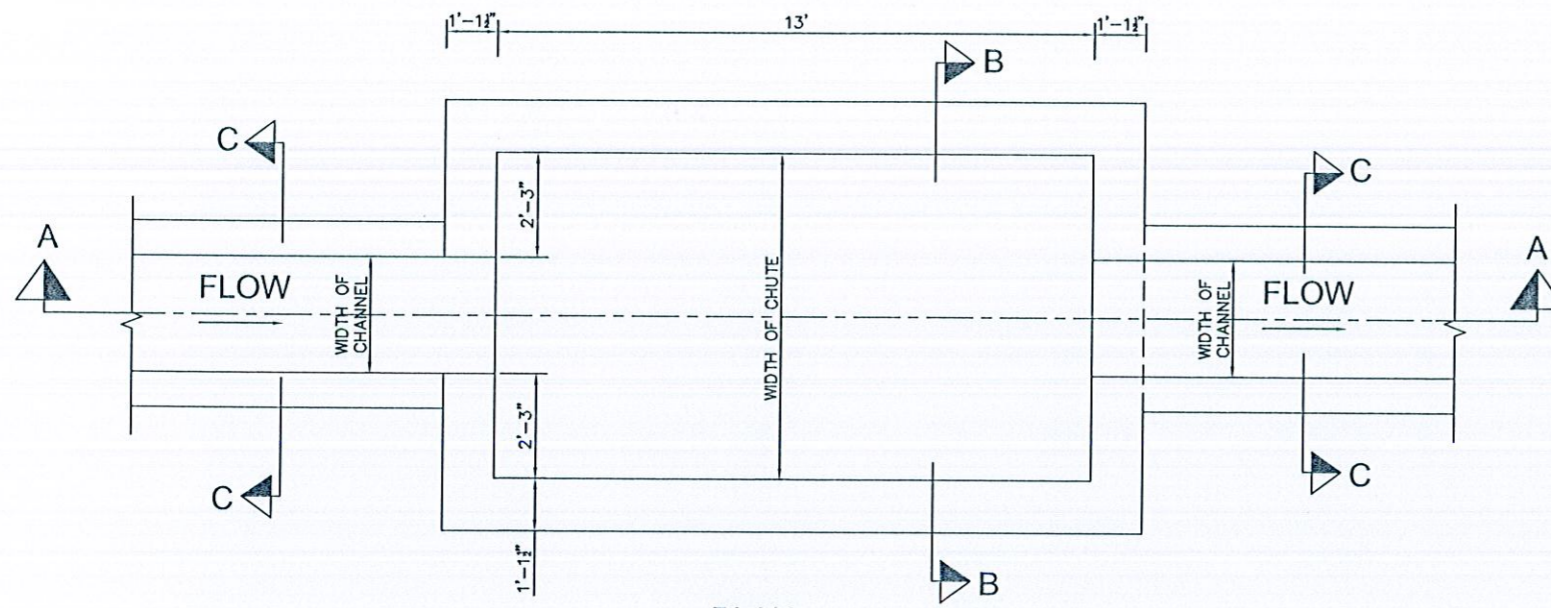
NOTES:

1. ALL DIMENSIONS & LEVELS ARE IN FT. UNLESS OTHERWISE INDICATED.
2. THE SCALES SHOWN ARE FOR A DRAWING PRINTED ON A3 PAPER.
3. ALL EXPOSED CORNERS OF STRUCTURAL CONCRETE SHALL BE CHAMFERED $\frac{3}{4} \times \frac{3}{4}$ " UNLESS OTHERWISE SHOWN.
4. ALL STRUCTURAL CONCRETE SHALL BE RCC 3000 PSI AND THE USE OF OPC/SRC TO BE DECIDED BY THE ENGINEER.
5. HOT BITUMEN SPRAY/PRIMING COAT SHALL BE APPLIED BEFORE LAYING THE PREMIXED BITUMINOUS WEARING COURSE.
6. ALL CONSTRUCTION JOINT SURFACES SHALL BE ROUGHENED TO REMOVE LAITANCE, EXPOSE THE AGGREGATE SURFACE AND BE THOROUGHLY CLEANED AND WETTED BEFORE THE NEW CONCRETE IS PLACED.
7. PROVIDE WELL COMPACTED BACKFILL MATERIAL IN EXCAVATED PORTION AROUND STRUCTURE. THE COMPACTION SHALL NOT BE LESS THAN 90% OF MAX. DRY DENSITY AS DETERMINED BY MODIFIED AASHTO, DESIGNATION; T180-93.
8. NULLAH APPROACH AT U/S & D/S OF AQUEDUCT STRUCTURE SHALL BE ADJUSTED TO SUIT THE SITE CONDITIONS OR AS DIRECTED BY THE ENGINEER.
9. THE BED SLOPE OF NULLAH SHALL BE VERIFIED BY THE ENGINEER PRIOR TO CONSTRUCTION.
10. NO FOUNDATION SHALL BE PLACED ON LOOSE SOIL.
11. EXCAVATION LINES SHALL BE AUTHORIZED ACCORDING TO SITE CONDITIONS AS DIRECTED BY THE ENGINEER.
12. THE EXTENT OF WIRE CRATED STONE WALL TO EITHER BANK OF NULLAH SHALL BE ADJUSTED TO SUIT THE SITE CONDITIONS AS DIRECTED BY THE ENGINEER.
13. EXISTING SLOPE OF NULLAH SHALL BE MAINTAINED AS DIRECTED BY THE ENGINEER.
14. SIZE AND TYPE OF FOOTINGS WILL BE FINALIZED AS PER RECOMMENDATIONS OF GEOTECHNICAL INVESTIGATION REPORT.
15. AQUEDUCT LONGITUDINAL SLOPE WILL BE AS PER SLOPE OF CHANNEL.



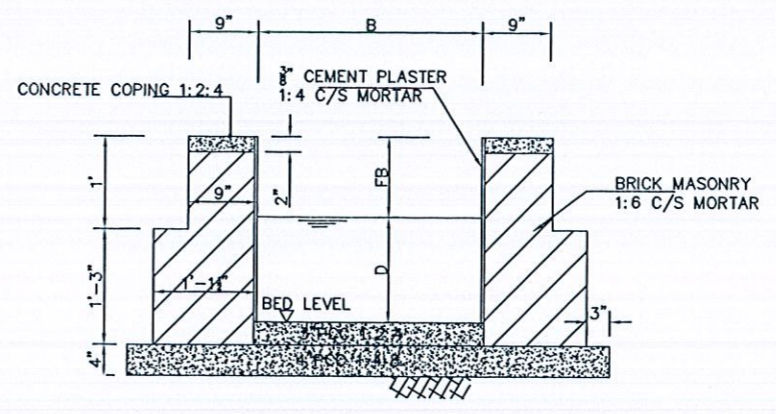
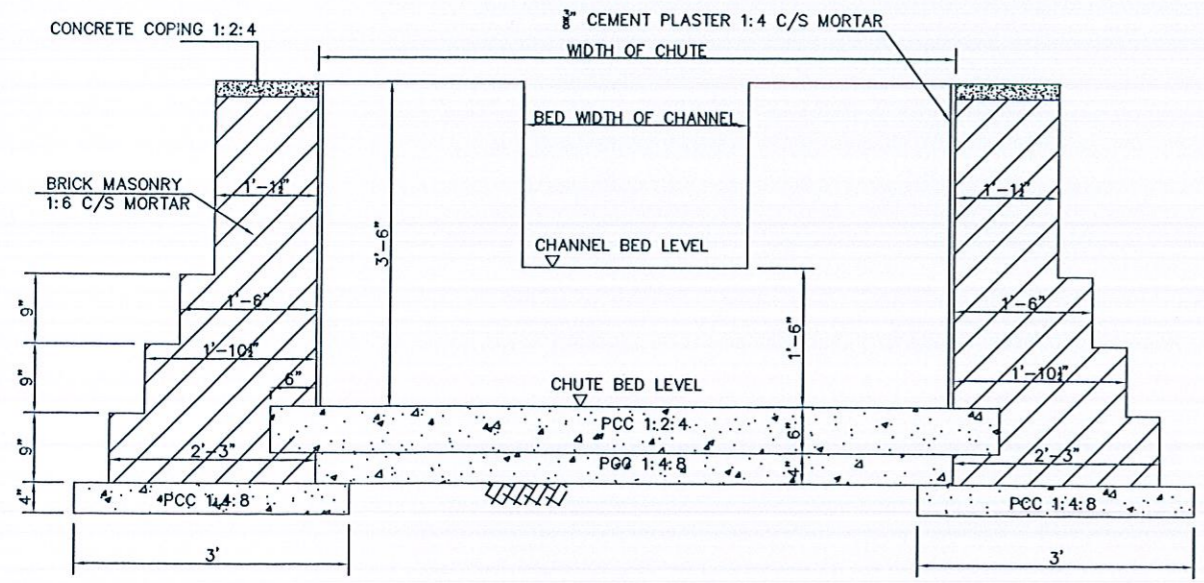
SECTION B-B
SCALE = 1"=4'



REV.	DATE	DESCRIPTION
 SMALL DAMS ORGANIZATION GOVERNMENT OF KHYBER PAKHTUNKHWA		
 BARQAAB CONSULTING SERVICES (PVT.) LIMITED LAHORE		
SANAM DAM PROJECT LOWER DIR		
DRAWN	NAVEED ANWAR	AQUEDUCT STRUCTURE (TYP.) PLAN & SECTIONS
CHECKED	NAVEED NAWAZ	
SUBMITTED	NAVEED NAWAZ	
APPROVED	TANVEER ABBAS	
DATE: May, 2018		DRAWING NO. BQB-SDP-AQS-01

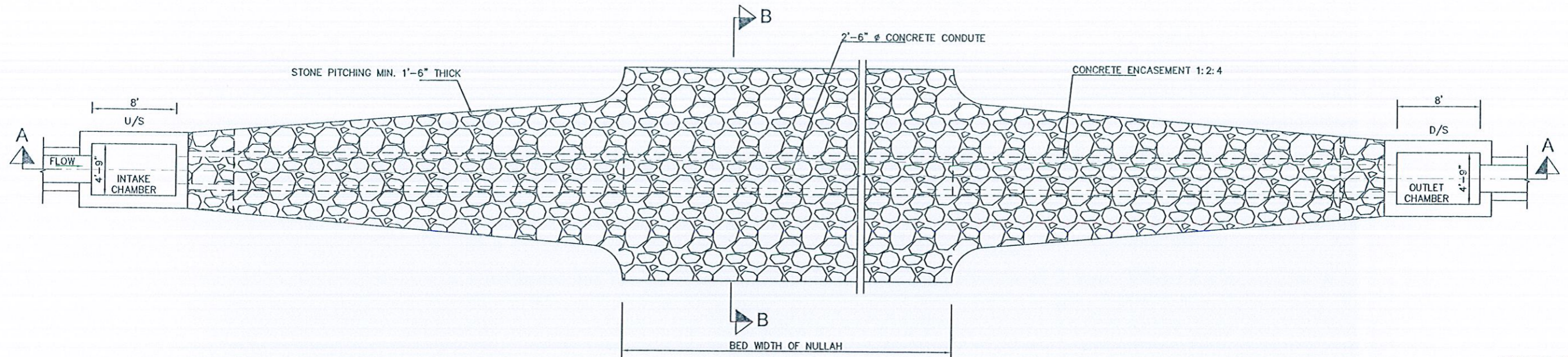


ABBREVIATIONS :

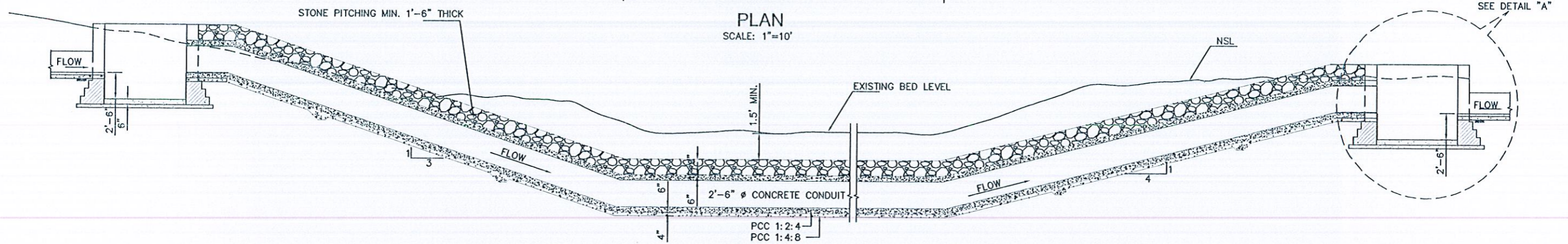
- D = DEPTH OF WATER
- FB = FREE BOARD
- B = BED WIDTH
- C/S = CEMENT SAND



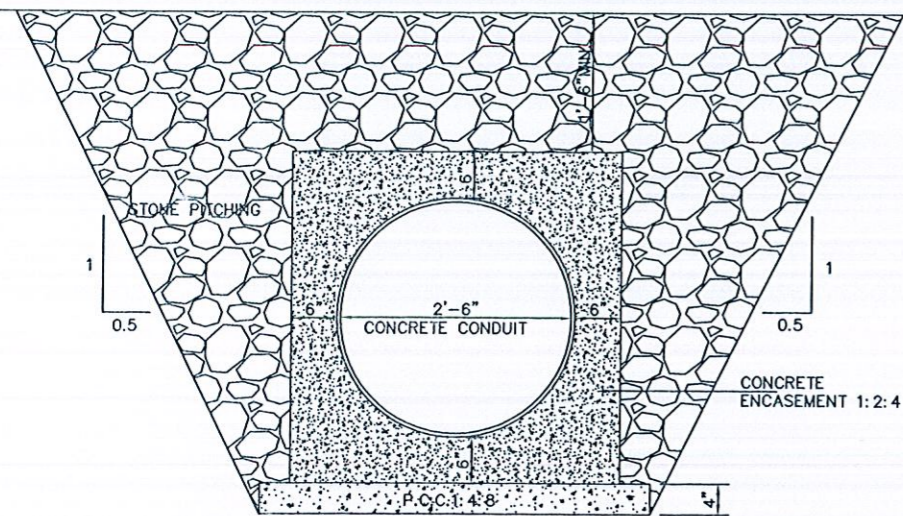
REV.	DATE	DESCRIPTION
 SMALL DAMS ORGANIZATION GOVERNMENT OF KHYBER PAKHTUNKHWA		
 BARQAAB CONSULTING SERVICES (PVT.) LIMITED LAHORE		
SANAM DAM PROJECT LOWER DIR		
DRAWN	NAVEED ANWAR	CHUTE STRUCTURE (TYP.) DETAILS
CHECKED	NAVEED NAWAZ	
SUBMITTED	NAVEED NAWAZ	
APPROVED	TANVEER ABBAS	
DATE: May, 2018		DRAWING NO. BQB-SDP-CHS-01



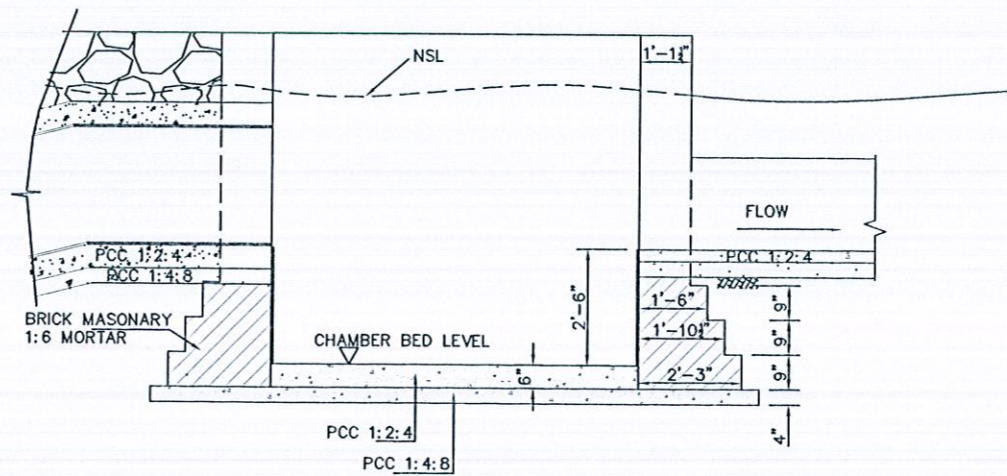
PLAN
SCALE: 1"=10'





SECTION A-A
SCALE: 1"=10'



SECTION B-B
SCALE: 1"=2'



DETAIL - A
SCALE: 1"=4'

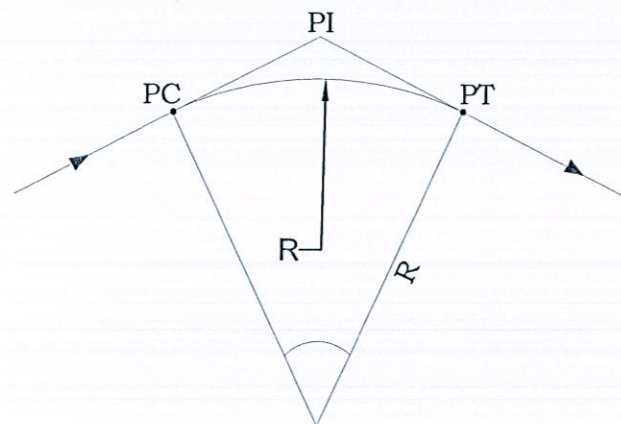
REV.	DATE	DESCRIPTION
 SMALL DAMS ORGANIZATION GOVERNMENT OF KHYBER PAKHTUNKHWA		
 BARQAAB CONSULTING SERVICES (PVT.) LIMITED LAHORE		
SANAM DAM PROJECT LOWER DIR		
DRAWN	NAVEED ANWAR	SYPHON STRUCTURE (TYP.) DETAILS
CHECKED	NAVEED NAWAZ	
SUBMITTED	NAVEED NAWAZ	
APPROVED	TANVEER ABBAS	
DATE:	May, 2018	
DRAWING NO.		BQB-SDP-SYS-01

COORDINATES OF MAIN CHANNEL

Sr. No.	RD	Coordinates		Sr. No.	RD	Coordinates	
		Easting	Northing			Easting	Northing
1	0+000	231,334.753	3,849,873.110	28	13+500	223,224.671	3,840,729.305
2	0+500	230,931.721	3,849,603.748	29	14+000	222,879.437	3,840,368.078
3	1+000	230,438.060	3,849,645.105	30	14+500	222,496.573	3,840,070.832
4	1+500	230,042.027	3,849,343.065	31	15+000	221,997.200	3,840,078.882
5	2+000	229,617.650	3,849,099.345	32	15+500	221,497.410	3,840,093.357
6	2+500	229,187.494	3,848,875.619	33	16+000	220,997.619	3,840,107.833
7	3+000	228,824.564	3,848,531.700	34	16+500	220,497.829	3,840,122.308
8	3+500	228,457.074	3,848,192.657	35	17+000	220,047.415	3,839,988.128
9	4+000	228,074.703	3,847,871.456	36	17+500	219,746.636	3,839,588.713
10	4+500	227,674.482	3,847,571.751	37	18+000	219,445.857	3,839,189.299
11	5+000	227,379.716	3,847,177.713	38	18+500	219,145.078	3,838,789.884
12	5+500	227,285.032	3,846,231.267	39	19+000	218,844.351	3,838,390.430
13	6+000	227,124.014	3,845,797.272	40	19+500	218,440.496	3,838,166.158
14	6+500	227,123.974	3,845,797.325	41	20+000	217,971.372	3,838,294.845
15	7+000	226,667.521	3,845,631.869	42	20+500	217,535.168	3,838,051.354
16	7+500	226,246.941	3,845,410.152	43	21+000	217,101.942	3,837,801.725
17	8+000	225,905.721	3,845,046.319	44	21+500	216,661.091	3,837,566.232
18	8+500	225,510.365	3,844,740.225	45	22+000	216,214.516	3,837,341.352
19	9+000	225,115.009	3,844,434.131	46	22+500	215,767.942	3,837,116.471
20	9+500	224,719.653	3,844,128.037	47	23+000	215,321.367	3,836,891.591
21	10+000	224,337.357	3,843,808.648	48	23+500	214,981.790	3,836,533.344
22	10+500	224,116.628	3,843,360.065	49	24+000	214,676.407	3,836,137.480
23	11+000	223,828.287	3,842,960.280	50	24+500	214,527.030	3,835,661.451
24	11+500	223,458.350	3,842,623.908	51	25+000	214,308.749	3,835,219.327
25	12+000	223,211.325	3,842,218.503	52	25+500	214,010.480	3,834,818.035
26	12+500	223,234.666	3,841,719.048	53	25+719	213,877.437	3,834,644.053
27	13+000	223,258.007	3,841,219.594				



COORDINATES OF MAIN CHANNEL'S CURVES

Sr. No.	Curve Designation	Curve Radius (ft.)	Coordinates					
			PC			PT		
			RD	Easting	Northing	RD	Easting	Northing
1	C1	300	0+265	231,143.590	3,849,691.201	0+564	230,868.075	3,849,611.017
2	C2	300	0+852	230,584.625	3,849,657.720	1+108	230,344.893	3,849,593.087
3	C3	300	1+754	229,846.692	3,849,181.911	1+901	229,714.909	3,849,119.181
4	C4	300	2+165	229,455.986	3,849,067.084	2+333	229,308.679	3,848,990.613
5	C5	300	3+758	228,268.043	3,848,018.286	3+788	228,244.440	3,847,998.648
6	C6	300	4+600	227,595.026	3,847,512.335	4+727	227,512.279	3,847,417.312
7	C7	300	5+015	227,372.925	3,847,165.157	5+262	227,350.763	3,846,925.567
8	C8	300	5+350	227,378.356	3,846,842.413	5+619	227,345.190	3,846,584.486
9	C9	300	5+681	227,311.522	3,846,532.665	5+915	227,269.430	3,846,307.864
10	C10	300	6+079	227,302.855	3,846,147.892	6+418	227,189.881	3,845,847.050
11	C11	300	6+646	227,007.877	3,845,709.733	6+811	226,856.393	3,845,650.643
12	C12	300	7+130	226,538.331	3,845,619.536	7+357	226,341.720	3,845,518.468
13	C13	300	7+881	225,996.427	3,845,123.691	7+939	225,954.271	3,845,083.984
14	C14	300	9+894	224,408.387	3,843,887.124	10+030	224,322.866	3,843,782.362
15	C15	300	10+724	224,016.477	3,843,159.695	10+837	223,949.123	3,843,070.184
16	C16	300	11+704	223,307.992	3,842,487.223	11+968	223,210.142	3,842,251.256
17	C17	300	13+314	223,272.970	3,840,906.873	13+556	223,190.176	3,840,685.591
18	C18	300	14+285	222,686.321	3,840,158.396	14+536	222,461.646	3,840,065.774
19	C19	300	16+691	220,307.310	3,840,128.170	16+933	220,087.742	3,840,041.573
20	C20	300	19+144	218,758.047	3,838,275.823	19+556	218,388.473	3,838,185.885
21	C21	300	19+773	218,192.959	3,838,279.825	20+065	217,912.481	3,838,268.907
22	C22	300	21+153	216,969.264	3,837,725.417	21+288	216,850.472	3,837,661.765
23	C23	300	23+046	215,280.810	3,836,871.335	23+179	215,178.633	3,836,787.186
24	C24	300	23+973	214,692.022	3,836,159.437	24+088	214,640.687	3,836,058.116
25	C25	300	24+696	214,473.466	3,835,473.295	24+804	214,425.801	3,835,376.808



LEGEND

- RD : THE CUMULATIVE DISTANCE OF CANAL ALIGNMENT MEASURED THROUGH THE CURVES.
- PC : POINT OF CURVATURE
- PT : POINT OF TANGENT
- R : RADIUS OF CURVE
- PI : POINT OF INCLINATION

REV.	DATE	DESCRIPTION
 SMALL DAMS ORGANIZATION GOVERNMENT OF KHYBER PAKHTUNKHWA		
 BARQAAB CONSULTING SERVICES (PVT.) LIMITED LAHORE		
SANAM DAM PROJECT LOWER DIR		
DRAWN	NAVEED ANWAR	COORDINATES OF MAIN CHANNEL DRAWING NO. BQB-SDP-MC-C-01
CHECKED	NAVEED NAWAZ	
SUBMITTED	NAVEED NAWAZ	
APPROVED	TANVEER ABBAS	
		DATE: May, 2018

