



ADB



**ISLAMIC REPUBLIC OF AFGHANISTAN
NATIONAL WATER AFFAIRS REGULATION AUTHORITY
CENTRAL PROJECT MANAGEMENT OFFICE**

Wardak Province

District Chak

Guli Sing (WDK-CAK-005) Check Dams





Sub Project DRAWINGS

September - 2020

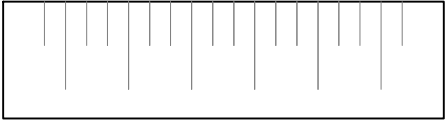
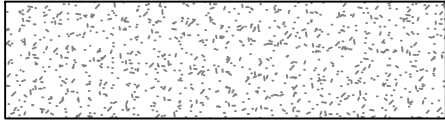
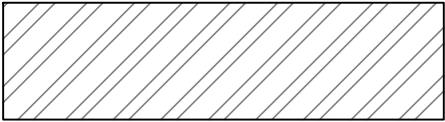
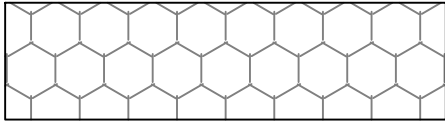
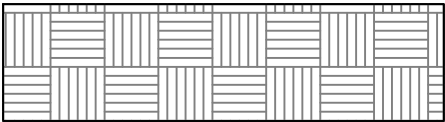
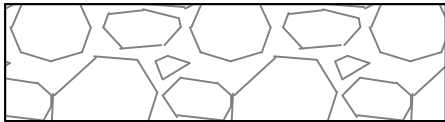
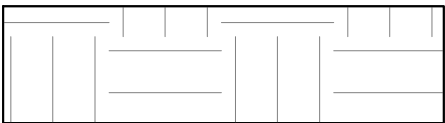
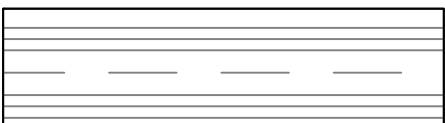
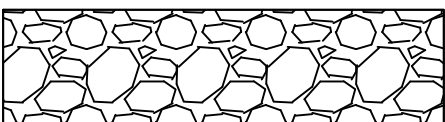
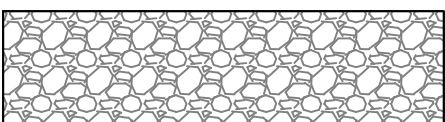
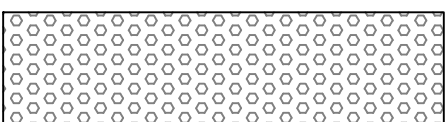
SUMMARY OF TECHNICAL SPECIFICATIONS





- 1- Mass Concrete M-20: Supplying, placing, adding boulders, compacting and curing mass concrete M-20 (1:1.5:3) including frameworks and expansion joints sealing works as per relevant drawing, specification and to the complete satisfaction of the site engineer. crushed aggregates should be used
- 2-A good quality Stone for stone masonry, mass concrete, gabion and All stone related construction work should be of and approved by The Engineer.
- 3-All Grouted stone pitching in stilling basin and foundations should be with ratio of 1:3.
- 4-All Masonry cutoff wall shall be with 1:4 Cement Sand Mortar or as specified on the drawing.
- 5-Bitumen coating should be used in all contraction / expansion joints.
- 6-Percentage of boulder in the mass concrete should be between (25-40)% of total volume, also the sizes of the boulder should not be neither more than 1/5th of the lateral dimension of the structural element, nor 20 cm, whichever is less)
- 7-Backfilling material should be properly tested and selected to be suitable as per standard practice.
- 8-For backfilling maximum thickness of each loose soil layer should not more than 15 cm.
- 9-Standard Compaction tests should be carried out for the backfilling.
- 10-The percentage of compaction should be not less than 95% of the maximum dry density.
- 11-All Quality control field tests should be carried out by the Contractor in a specified laboratory as accepted by the client.
- 12-Expansion joints for Mass Concrete and weir walls should be provided as (12-15)m center to center.
- 13-Stone size for gabion shall range from (20-30) cm.
- 14-Galvanized iron wire of specified thickness (3mm) should be properly woven and knotted together to form the required mesh in hexagonal / rectangular shape of size (6-8)cm for gabion basket and (10-12)cm for gabion mattress to fabricate gabion boxes to the satisfaction of the Engineer.
- 15-Principal wire along the gabion edges (selvedges) for Gabion boxes should be of Galvanized Iron having minimum thickness of 4mm
- 16- Gabion Galvanized Iron wire tensile strength should be 350-575 N/mm². two type of Gabions should be used (1.5X0.5X1)M WITH 18.5KG/BOX OF WEIGHT AT THE TOP OF AND (2X1X1)M WITH 25KG/BOX OF WEIGHT AT BASE OF THE STRUCTURE.
- 17- All PCC under footings to have cement, sand and aggregate as specified on the drawings.
- 18- Reinforcement yield stress fy shall not be less than 2500 kg/cm².
- 19- Concrete design should be based on a compressive strength of $f_c = 200$ kg/cm² as specified on the drawings.
- 20- Weight per unit volume of concrete $W = 2400$ kgf/m³
- 21- Sand or fine aggregate shall be free from salt, alkali, calcium sulphate or vegetation and it shall not contain more than 0.5 percent by weight of clay.
- 22- Aggregate:- Coarse aggregate shall consist of crushed gravel with the max. size of 20mm.
- 23- The maximum slump for Mass concrete should be between (2.5-4) cm.
- 24- To increase the workability of the concrete provide the chemical admixture (Super plasticizer)
- 25- Water used for concrete mixture and concrete curing shall be from a source approved by the Engineer and at the time of use shall be free from contaminants.
- 26- Concrete compaction should be done by using concrete vibrator at the time of pouring in such a way to form a solid compact concrete.
- 27- Concrete curing should be continued for 14 days.
- 28- During Cold weather concreting should be stopped or the contractor has to consider cold weather concreting procedure as accepted by the engineer.
- 29- Concrete shuttering/framework should be of Steel type.
- 30-Concrete shuttering can be removed as per below minimum duration:

Side of beams,walls,columns	16-24 hours
Forms from beneath the slabs(spaning upto 6m)	14 days
Forms from beneath the slabs(spaning above 6m)	21days
- 31- As the geo technical survey is not conducted in the site of check dam, so any changes in the quantities of the contract is changeable due to need of site and guide of the site engineers and project manager.
- 32- Further, air-entraining admixture (AEA) to be added during mixing of concrete according to ASTM C260.
- 33- In-place, air content shall range 5 to 6 percent of the volume of concrete.
- 34- where weir or protection walls are touch to hard rock, dowel bar 20mm with epoxy should be used.
- 35- in mass concrete when cold and warm joint occur, stone grubbing should be used.
- 36- In expansion joints should have water stopper. installation of best quality PVC water stopper with 22.5 cm width(The water stopper shall be of extruded polyvinyl chloride complying with BS 2571: Class 3, Compound Type G4) and (2) cm thick cork filling as per relevant design drawings, technical specification and with satisfaction of Engineer Supervisor.

 Islamic Republic of Afghanistan	 National Water Affair Regulation Authority	 Asian Development Bank (ADB)	 Central Project Management Office	Project	Drawing Content	Employer						DWG NO
				WDK-CAK-005	Technical Specifications	Surveyed by :	Designed by:	Drawn by:	Checked by:	Croos Checked by:	Approved by:	1/14
						Ab. Hussain & Saifurahman	Eng. Muhammad Akram Paktinyar	Eng.Munir Wardak	Eng. Muhammad Akram Paktinyar	Eng. Fardeen Azimi	Eng. Said Moqeen Sadat	Date: Sep-2020

Legend Table




	Slope		PCC
	Mass concrete		Gabion
	Compacted Backfilling		Stone Masonry
	Ground		
	Embankment Backfilling		
	Dry Stone pitching		
	Gravel		
	Gravel Filter		

 Islamic Republic of Afghanistan	 National Water Affair Regulation Authority	 Asian Development Bank (ADB)	 Central Project Management Office	Project	Drawing Content	Employer					DWG NO	
				WDK-CAK-005	Legends	Surveyed by :	Designed by:	Drawn by:	Checked by:	Croos Checked by:	Approved by:	2/14
						Ab. Hussain & Saifurahman	Eng. Muhammad Akram Paktinyar	Eng.Munir Wardak	Eng. Muhammad Akram Paktinyar	Eng. Fardeen Azimi	Eng. Said Moqeen Sadat	Date: Sep-2020

Gulising Sangbaba

Gulising Check Dam





Legend

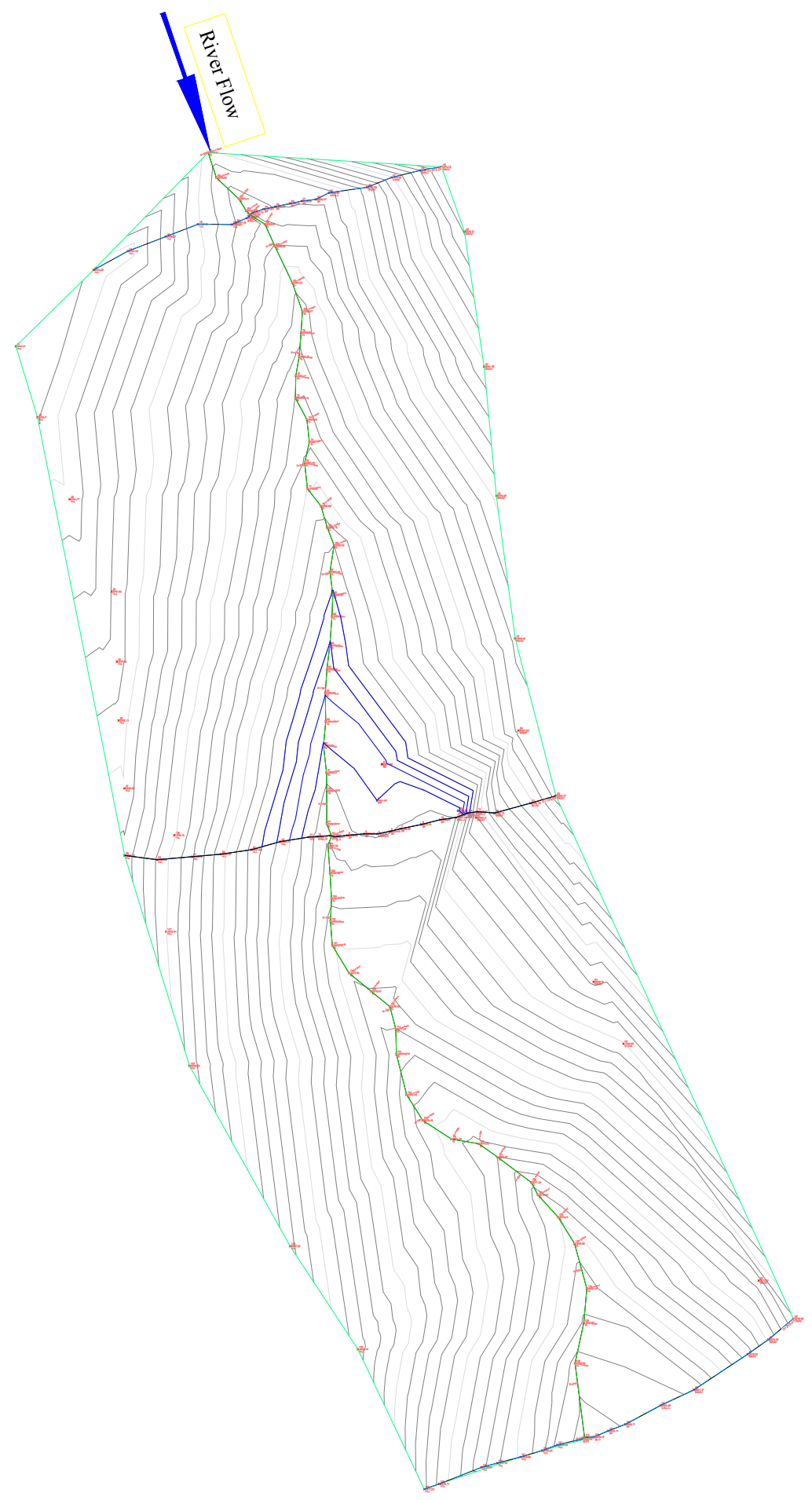
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-  Caharmurda
-  Catchment Area=4







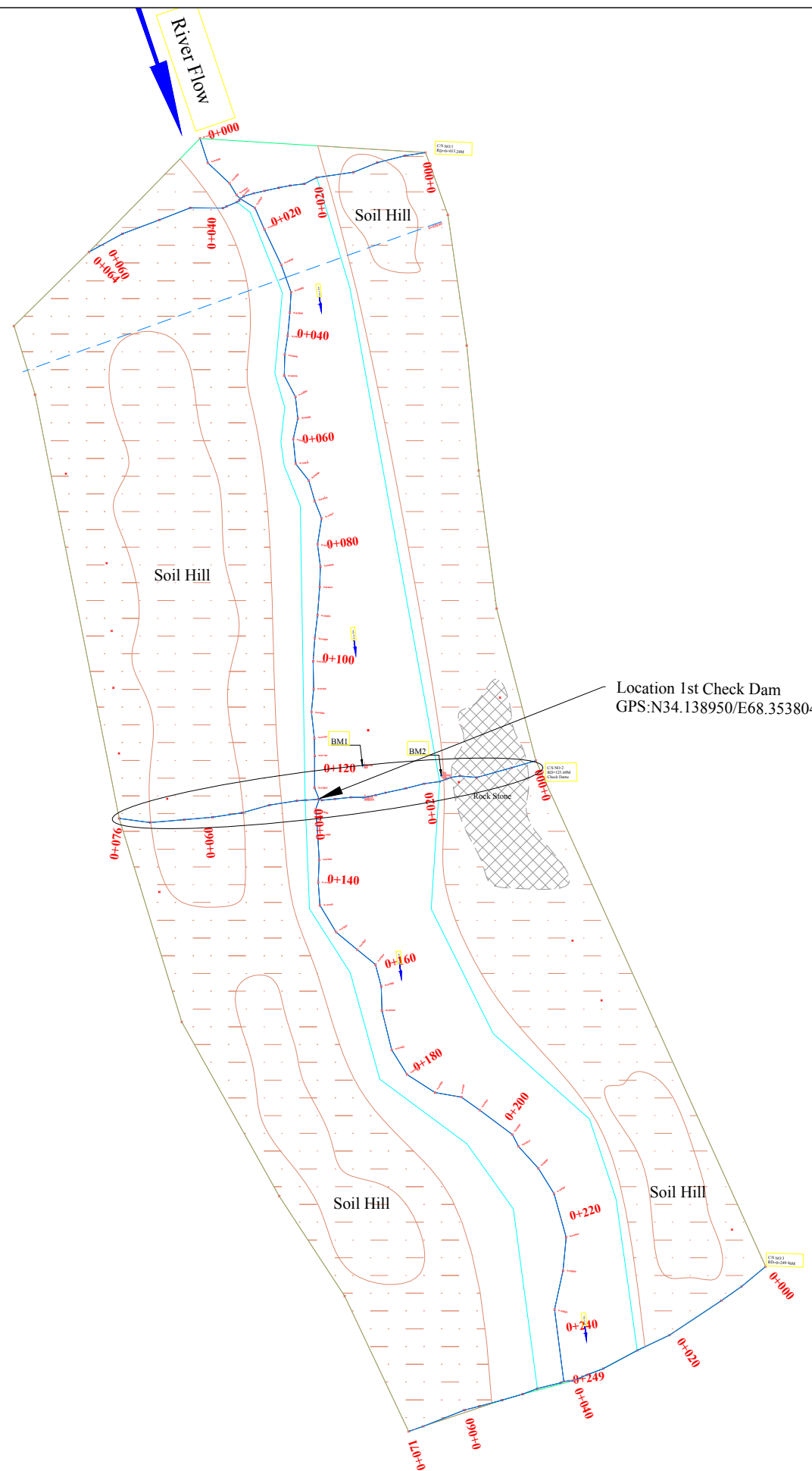
Google Earth

Image © 2020 CNES / Airbus
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 Islamic Republic of Afghanistan	 National Water Affairs Regulation Authority	 Asian Development Bank (ADB)	 Central Project Management Office	Project	Drawing Content	Employer						DWG NO
				WDK-CAK-005	Google Map	Surveyed by :	Designed by:	Drawn by:	Checked by:	Cross Checked by:	Approved by:	3/14
						Ab. Hussain & Saifurahman	Eng. Muhammad Akram Paktinyar	Eng. Munir Wardak	Eng. Muhammad Akram Paktinyar	Eng. Fardeen Azimi	Eng. Said Moqem Sadat	Date: Sep-2020

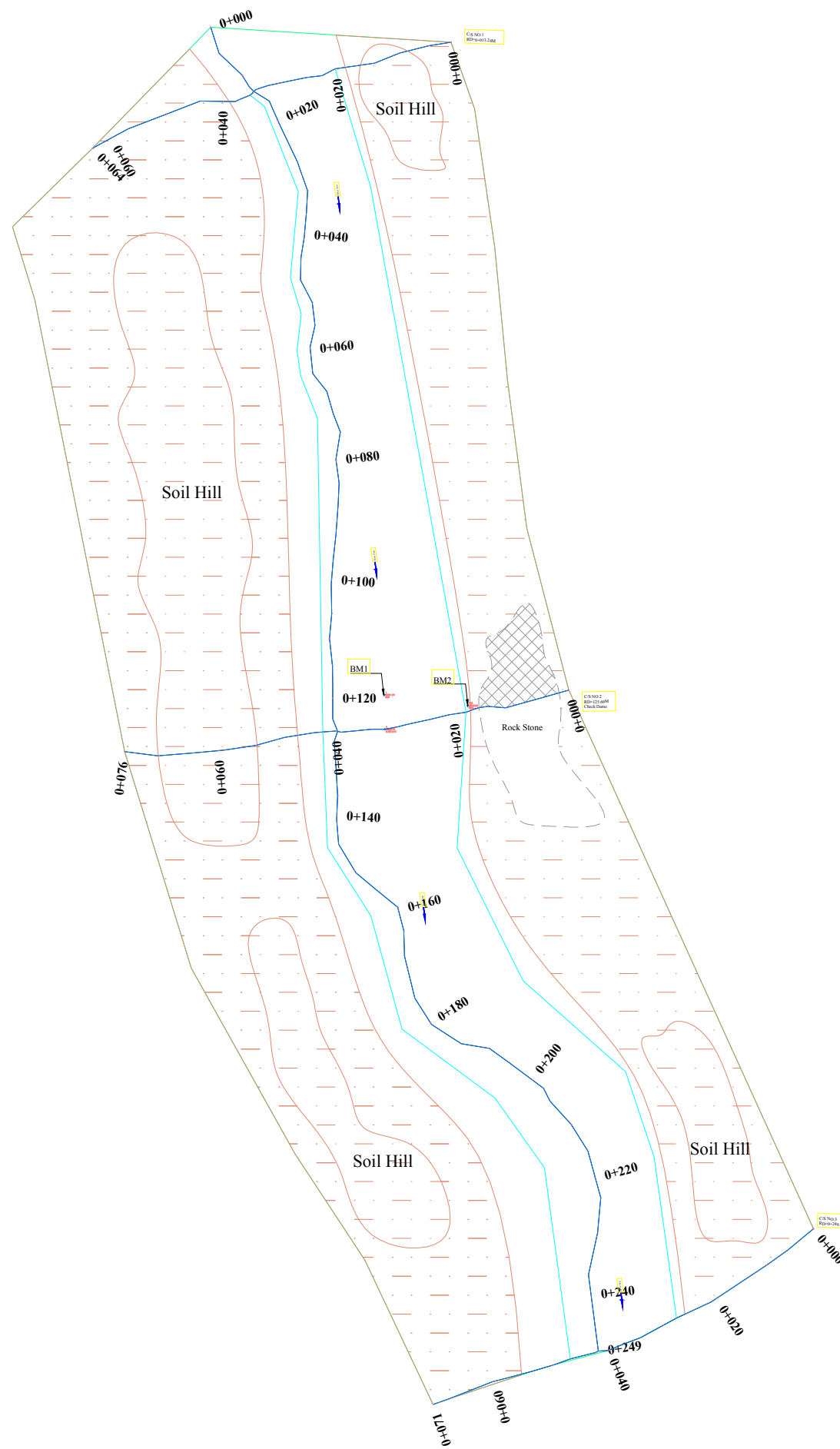


 Islamic Republic of Afghanistan	 National Water Affairs Regulation Authority	 Asian Development Bank (ADB)	 Central Project Management Office	Project	Drawing Content	Employer					DWG NO
				WDK-CAK-005	Contour Map	Surveyed by : Ab. Hussain & Saifurahman	Designed by: Eng. Muhammad Akram Paktinyar	Drawn by: Eng. Munir Wardak	Checked by: Eng. Muhammad Akram Paktinyar	Cross Checked by: Eng. Fardeen Azimi	Approved by: Eng. Said Moqeesm Sadat



Legend	
Bench marck	
Check Dam Site	
Gravel,Sand,Clay Mountain	
Rock Stone	
River Bank	
River Cinter line	

 Islamic Republic of Afghanistan	 National Water Affair Regulation Authority	 Asian Development Bank (ADB)	 Central Project Management Office	Project	Drawing Content	Employer					DWG NO	
				WDK-CAK-005	Topography Map	Surveyed by :	Designed by:	Drawn by:	Checked by:	Croos Checked by:	Approved by:	5/14
						Ab. Hussain & Saifurahman	Eng. Muhammad Akram Paktinyar	Eng.Munir Wardak	Eng. Muhammad Akram Paktinyar	Eng. Fardeen Azimi	Eng. Said Moqeen Sadat	Date: Sep-2020



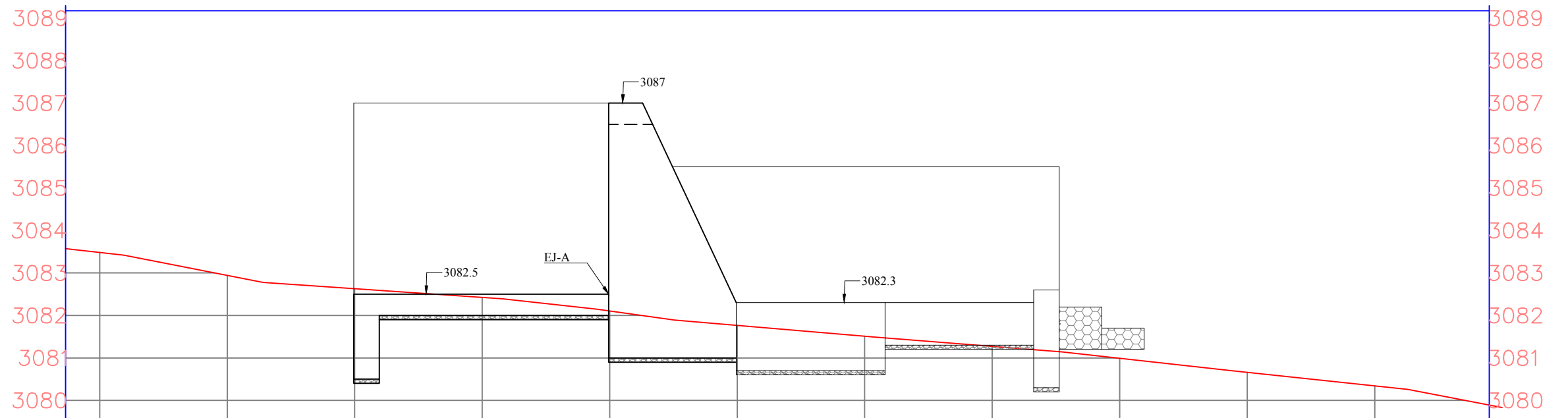
Legend

Bench marck	
Check Dam Site	
Gravel,Sand,Clay Mountain	
Rock Stone	
River Bank	
River Cinter line	





Banchmark Table

Point #	Elevation	Latitude	Longitude	Description
1	3084.00	N34.139002	E68.353803	BM1
139	3083.52	N34.138987	E68.353955	BM2

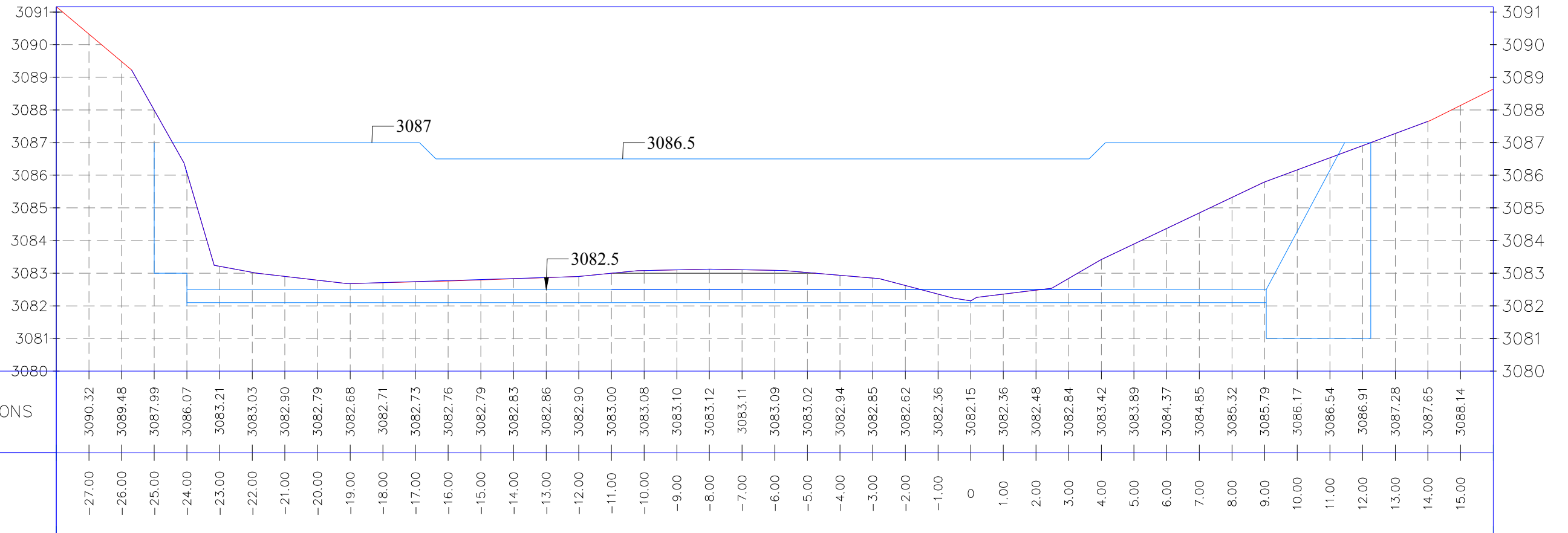
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				WDK-CAK-005	Site plan	Surveyed by : Ab. Hussain & Saifurahman	Designed by: Eng. Muhammad Akram Paktinyar	Drawn by: Eng.Munir Wardak	Checked by: Eng. Muhammad Akram Paktinyar	Croos Checked by: Eng. Fardeen Azimi	Approved by: Eng. Said Moqeeem Sadat



EX ELEVATION	3083.48	3082.94	3082.63	3082.42	3082.11	3081.77	3081.51	3081.27	3080.99	3080.66	3080.34
OFFSET	0+114	0+117	0+120	0+123	0+126	0+129	0+132	0+135	0+138	0+141	0+144

 Islamic Republic of Afghanistan	 National Water Affair Regulation Authority	 Asian Development Bank (ADB)	 Central Project Management Office	Project	Drawing Content	Employer					DWG NO
				WDK-CAK-005	Longitudinal Section	Surveyed by : Ab. Hussain & Saifurahman	Designed by: Eng. Muhammad Akram Paktinyar	Drawn by: Eng. Munir Wardak	Checked by: Eng. Muhammad Akram Paktinyar	Cross Checked by: Eng. Fardeen Azimi	Approved by: Eng. Said Moqem Sadat
											Date: Sep-2020

0+125.69



Islamic Republic of Afghanistan



National Water Affairs Regulation Authority



Asian Development Bank (ADB)



Central Project Management Office

Project

WDK-CAK-005

Drawing Content

Cross Section

Employer

Surveyed by :

Ab. Hussain & Saifurahman

Designed by:

Eng. Muhammad Akram Paktinyar

Drawn by:

Eng. Munir Wardak

Checked by:

Eng. Muhammad Akram Paktinyar

Cross Checked by:

Eng. Fardeen Azimi

Approved by:

Eng. Said Moqeen Sadat

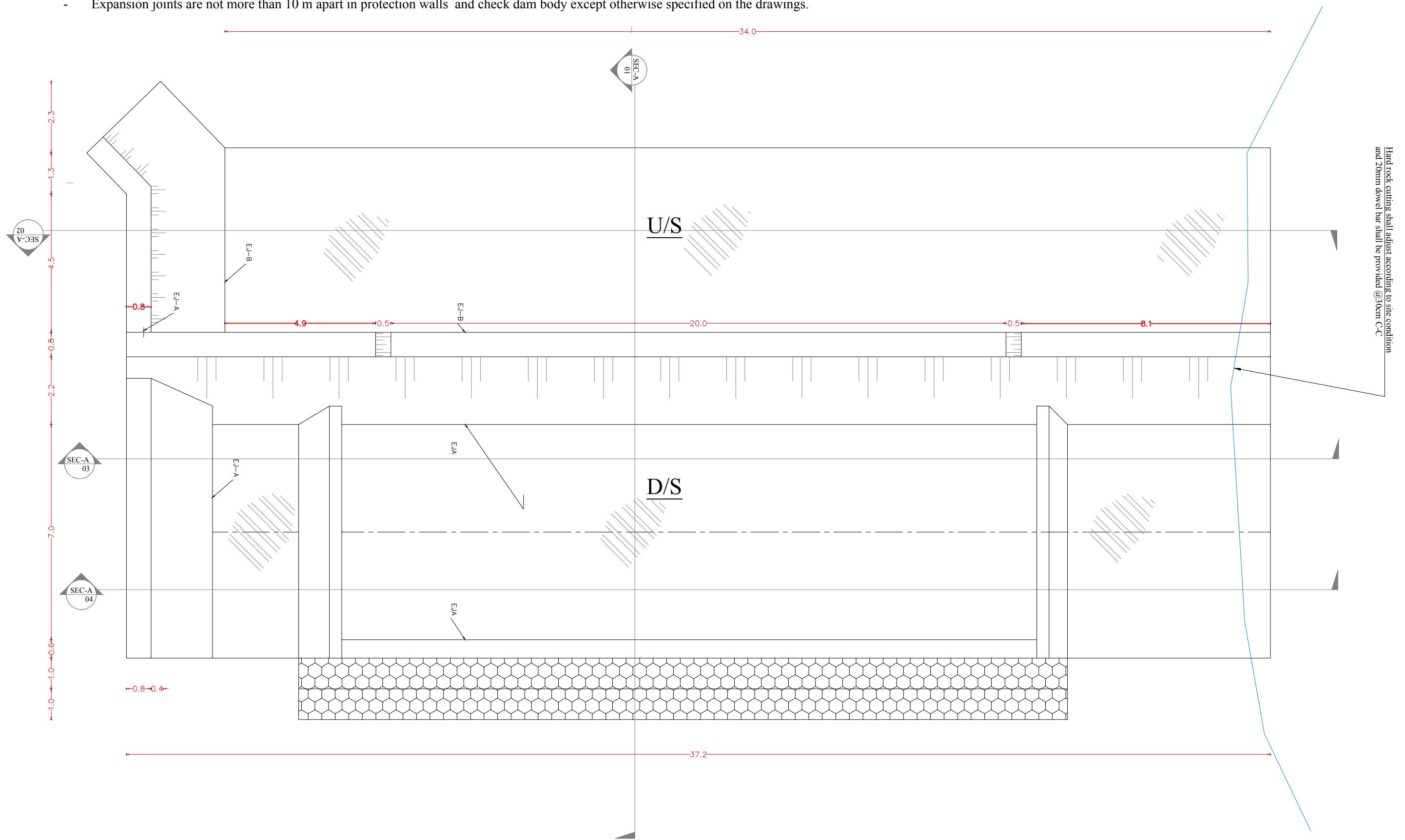
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8/14

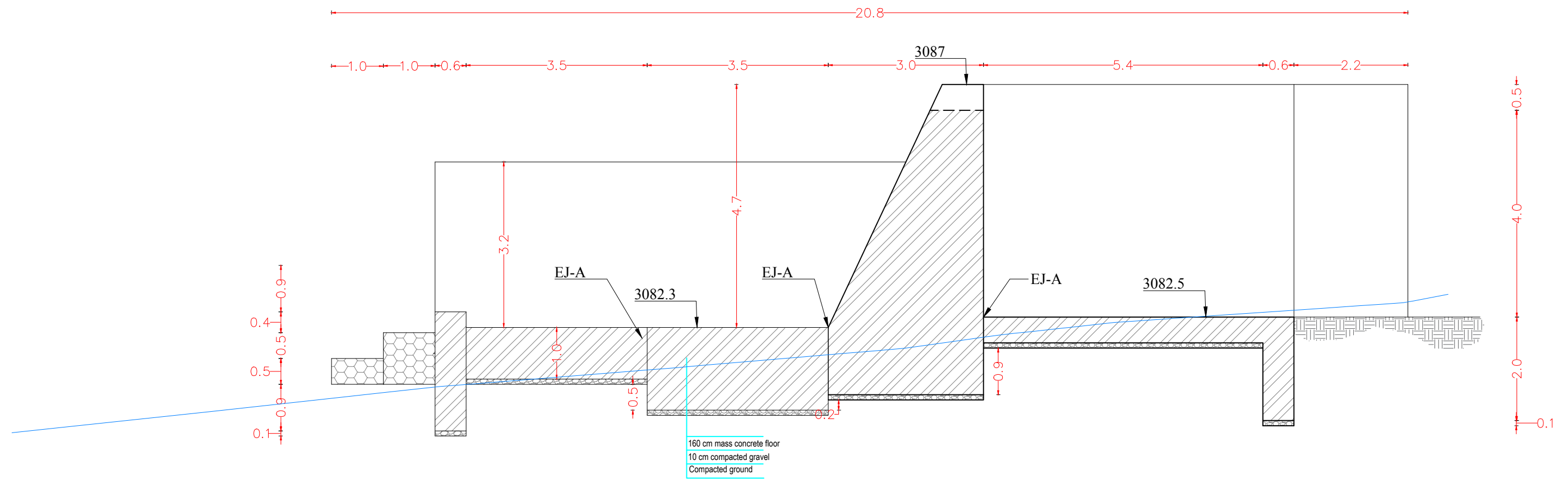
Date:
Sep-2020

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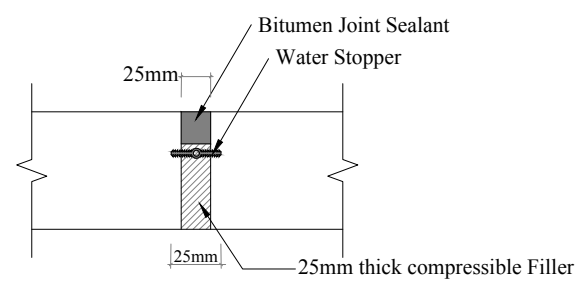
- All expansion joints at upstream are type B except otherwise mentioned on the drawing.
- All expansion joint at the downstream are type A except otherwise mentioned on the drawing.
- Contraction joint should not be more than 3m a parts in both directions in up stream and down stream aprons.
- Expansion joints are not more than 10 m apart in protection walls and check dam body except otherwise specified on the drawings.



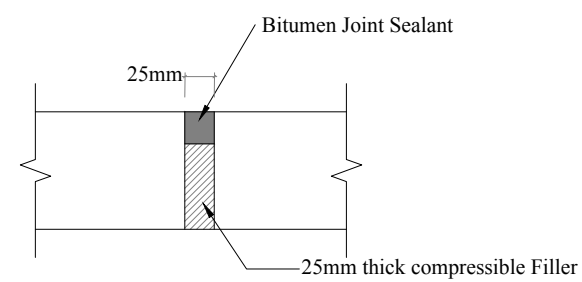
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											Date: Sep-2020	



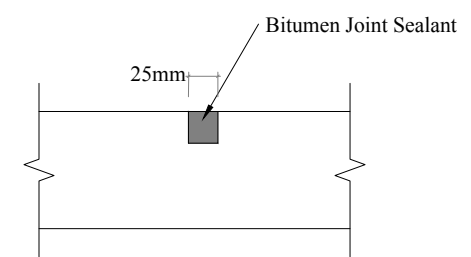
SEC A-A | 01







Expansion joint Type (A)
Scale: NTS

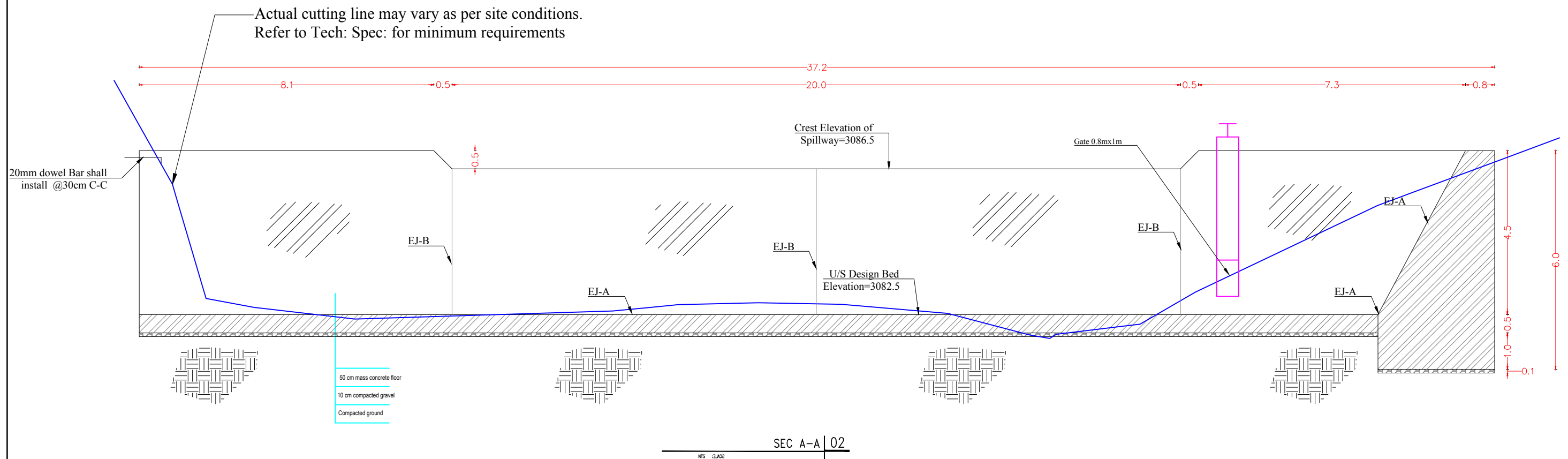






Expansion joint Type (B)
Scale: NTS



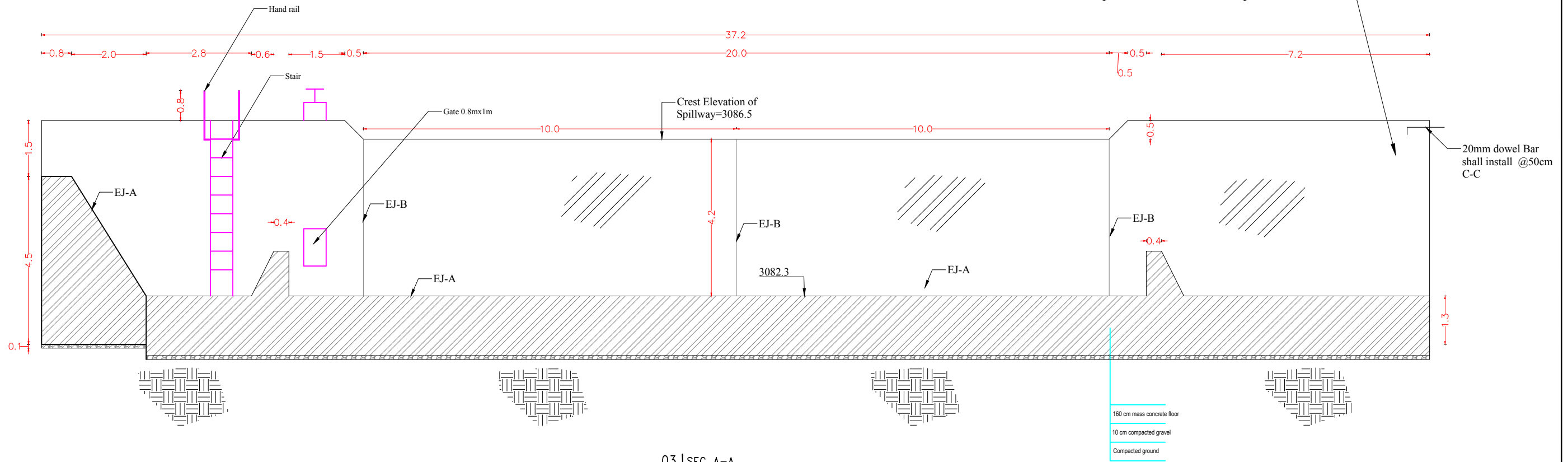
Contraction joint (CTJ)
Scale: NTS

 Islamic Republic of Afghanistan	 National Water Affair Regulation Authority	 Asian Development Bank (ADB)	 Central Project Management Office	Project	Drawing Content	Employer					DWG NO
				WDK-CAK-005	Section 01 & Joints Details	Surveyed by : Ab. Hussain & Saifurahman	Designed by: Eng. Muhammad Akram Paktinyar	Drawn by: Eng. Munir Wardak	Checked by: Eng. Muhammad Akram Paktinyar	Cross Checked by: Eng. Fardeen Azimi	Approved by: Eng. Said Moqem Sadat



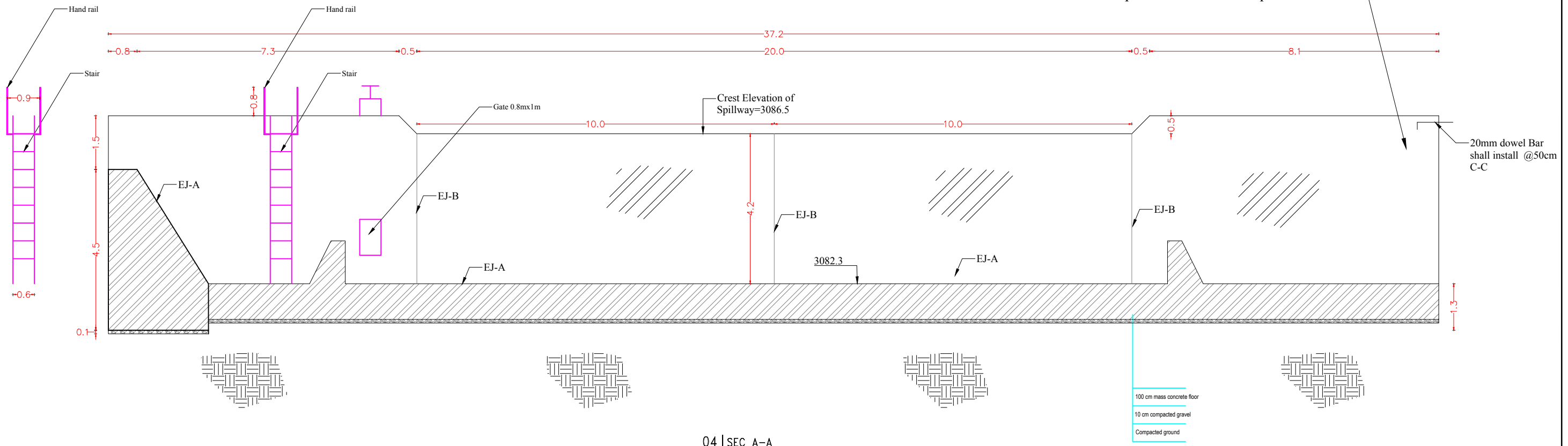
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						Ab. Hussain & Saifurahman	Eng. Muhammad Akram Paktinyar	Eng.Munir Wardak	Eng. Muhammad Akram Paktinyar	Eng. Fardeen Azimi	Eng. Said Moqeesm Sadat	Date: Sep-2020

Actual cutting line may vary as per site conditions.
Refer to Tech: Spec: for minimum requirements







03 | SEC A-A
SCALE: NTS

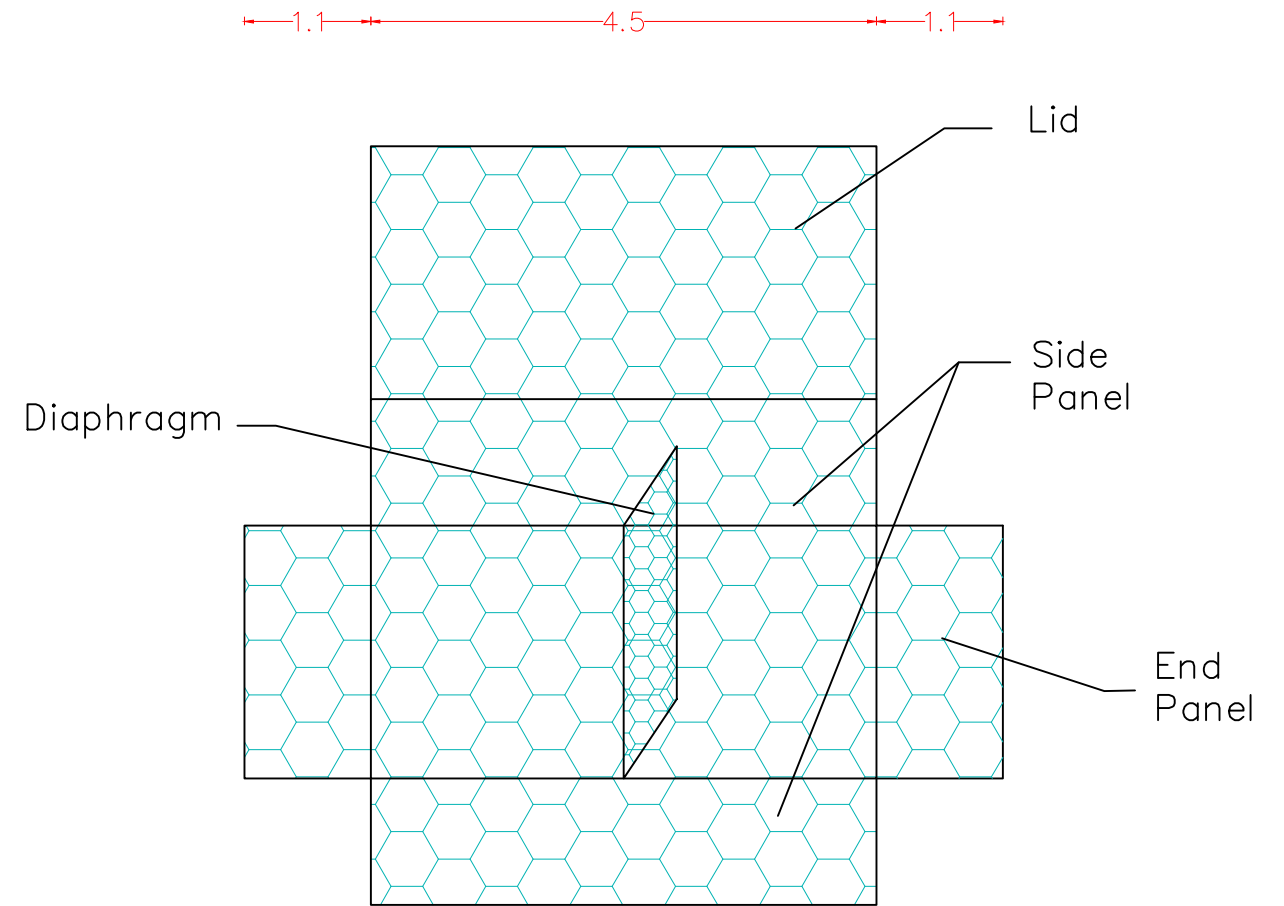
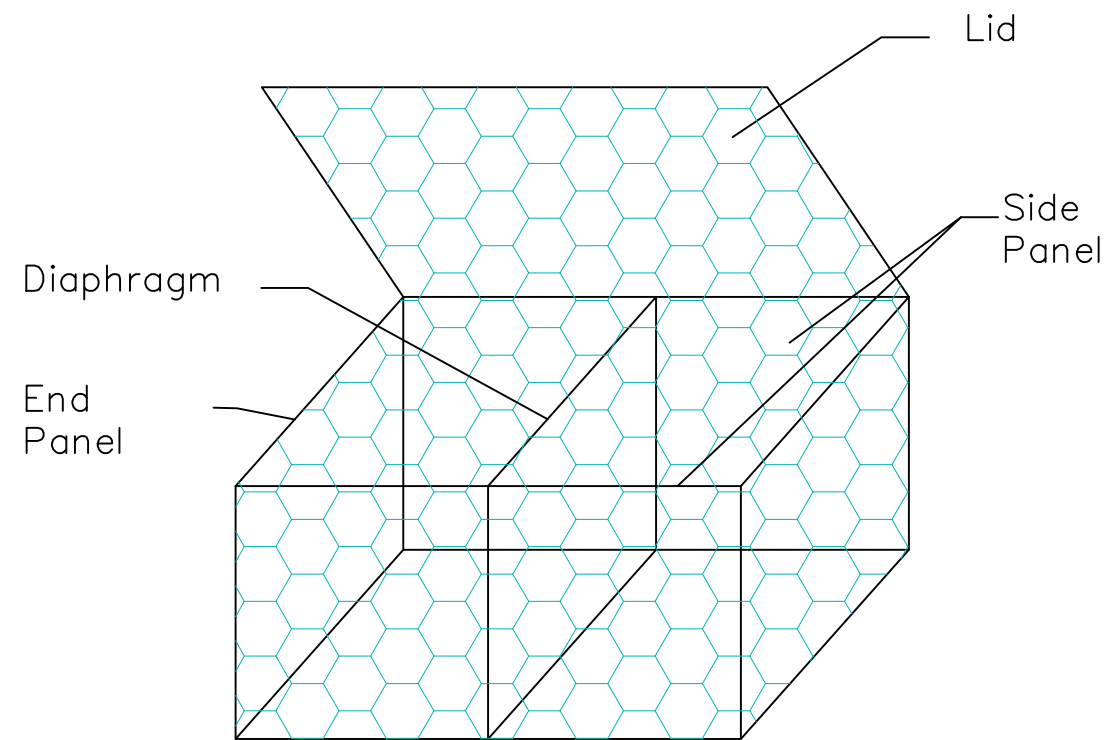
Actual cutting line may vary as per site conditions.
Refer to Tech: Spec: for minimum requirements



04 | SEC A-A
SCALE: NTS

 Islamic Republic of Afghanistan	 National Water Affair Regulation Authority	 Asian Development Bank (ADB)	 Central Project Management Office	Project	Drawing Content	Employer					DWG NO
				WDK-CAK-005	Section-03-04	Surveyed by : Ab. Hussain & Saifurahman	Designed by: Eng. Muhammad Akram Paktinyar	Drawn by: Eng. Munir Wardak	Checked by: Eng. Muhammad Akram Paktinyar	Croos Checked by: Eng. Fardeen Azimi	Approved by: Eng. Said Moqeeem Sadat

Gabion Formed into Box shape on site (2*1*0.5)



Note:

1. Gabions shall be manufactured from triple twist hexagonal woven wire mesh according to specification and drawing
2. Diaphragms to be at nominal 1m centers on the unit length, except for 1.5m long gabion which have no internal diaphragm
3. The mesh openings shall be hexagonal and of a nominal dimension of (10x8)cm
4. The wire mesh diameter for the body of the gabion should be 3 mm in diameter and of a 4mm diameter for the edge selvedge wire. which should be anti rusted or galvanized,
5. For gabion boxes's steel mish leaf liaising that 3mm diameter steel wire to be utilized.
6. In order to prevent from curvature that cross bearing steel wire to be placed in every 50 cm space of height as well as width

Technical Specification:

Tensional Strength:

- Tensional resistance of the wire should be about (38-50)kg/m²

Torsion Strength:





- When a simple of 20m lenght wire is entwine on its axis and could keep its status with out any changes.

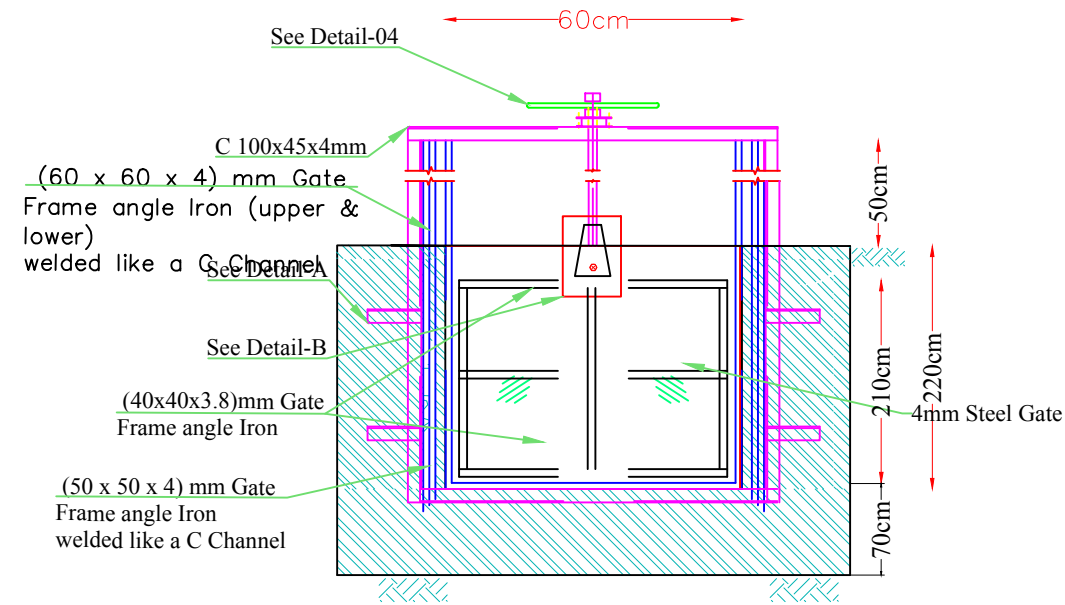
Liner Expansion:

- Liner expansion should not be more than 12% in a 30cm lengthen wire.

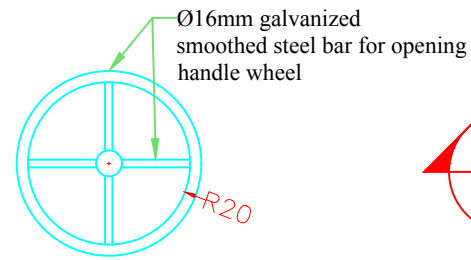
Stone or Rock for Fill:

- The size of stones to be placed inside the gabions must not be less than one and a half the largest opening of the mesh.
- Gabion fill shall be hard and durable and non frost susceptible rock or stone type.

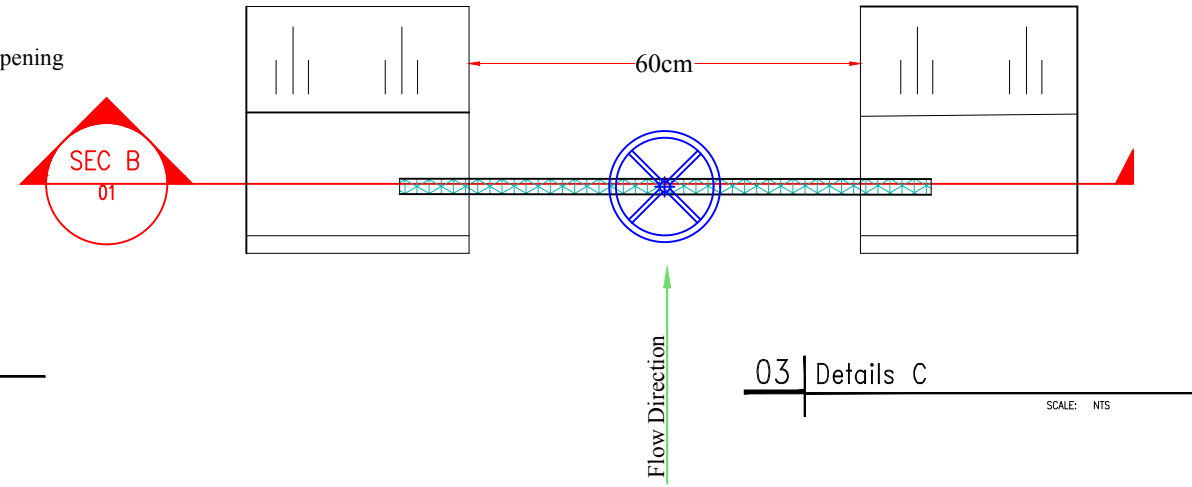
 Islamic Republic of Afghanistan	 National Water Affair Regulation Authority	 Asian Development Bank (ADB)	 Central Project Management Office	Project	Drawing Content	Employer						DWG NO
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											Date: Sep-2020	



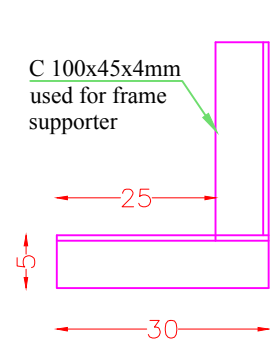
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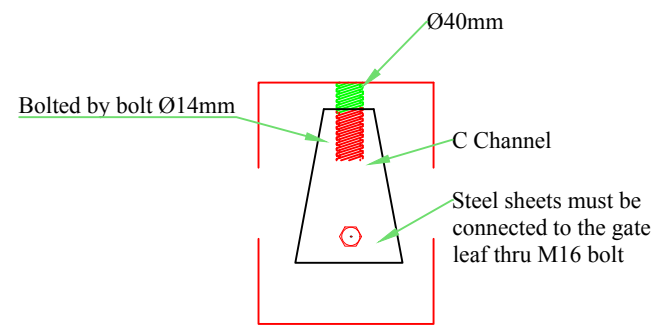
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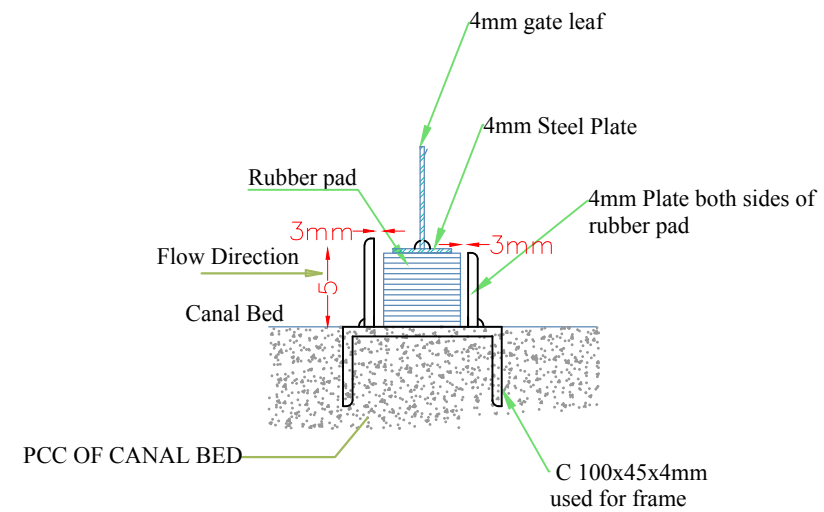
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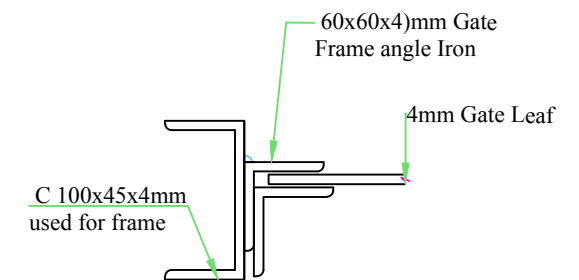
05 | Detail-A
SCALE: NTS







06 | Detail-B
SCALE: NTS



07 | Details of Beneath the Frame
SCALE: NTS



08 | Details of Frame Side
SCALE: NTS

 Islamic Republic of Afghanistan	 National Water Affair Regulation Authority	 Asian Development Bank (ADB)	 Central Project Management Office	Project	Drawing Content	Employer						DWG NO
				WDK-CAK-005	Steering Gate Details	Surveyed by : Ab. Hussain & Saifurahman	Designed by: Eng. Muhammad Akram Paktinyar	Drawn by: Eng. Munir Wardak	Checked by: Eng. Muhammad Akram Paktinyar	Cross Checked by: Eng. Fardeen Azimi	Approved by: Eng. Said Moqeesm Sadat	14/14 Date: Sep-2020