



**ISLAMIC REPUBLIC OF AFGHANISTAN
NATIONAL WATER AFFAIRS REGULATION AUTHORITY
CENTRAL PROJECT MANAGEMENT OFFICE
Wardak Province
Saeedabad District**

Wardak Universtiy Check Dam (WDK-SAD-004)

Project DRAWINGS

Sep – 2020

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 f_y 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 $W = 2400$ kg/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.

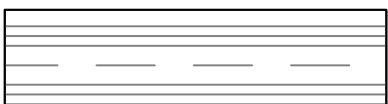
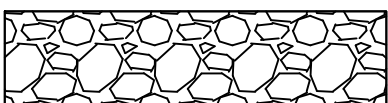
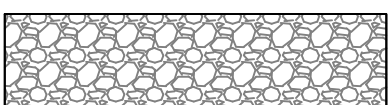
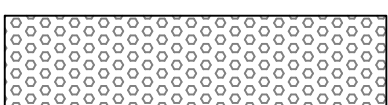
34- where weir or protection walls are touch to hard rock, dowel bar 20mm with epoxy should be used.

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.

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				WAD-SAD-004	Technical Specifications	Surveyed by :	Designed by:	Drawn by:	Checked by:	Croos Checked by:	Approved by:	1/9
						Abdul Husain and Saifulraman	Faridoon Danesh	Faridoon Danesh	Eng. Muhammad Akram Paktinyar	Eng. Fardeen Azimi	Eng. Said Moqeen Sadat	Date: Sep-2020

Legend Table

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



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				WAD-SAD-004	Google Map	Surveyed by :	Designed by:	Drawn by:	Checked by:	Cross Checked by:	Approved by:	3/9
						Abdul Husain and Saifulraman	Faridoon Danesh	Faridoon Danesh	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

WAD-SAD-004

Drawing Content

Contour Map

Employer

Surveyed by :

Abdul Husain and
Saifulraman

Designed by:

Faridoon Danesh

Drawn by:

Faridoon
Danesh

Checked by:

Eng. Muhammad
Akram Paktinyar

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Approved by:

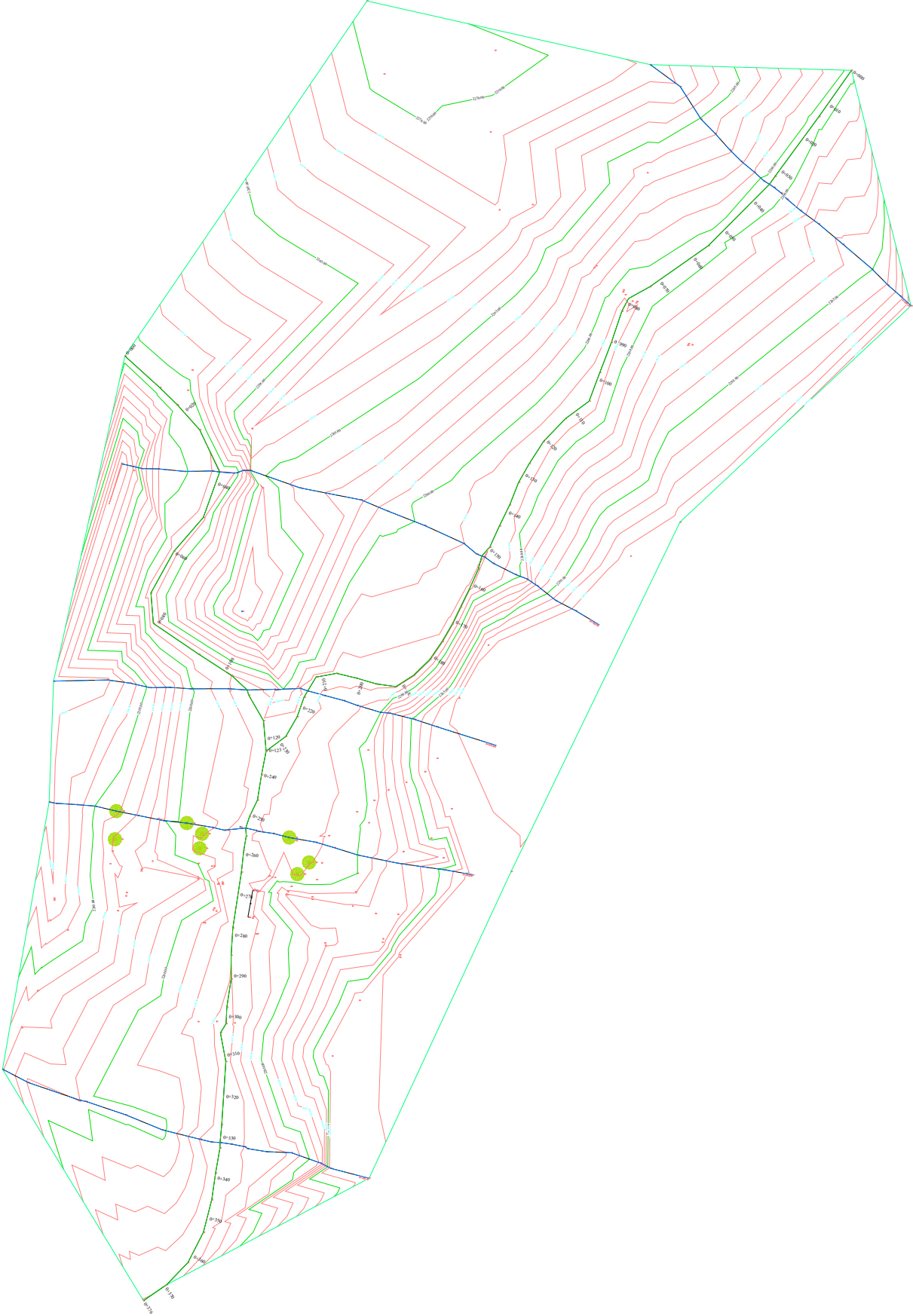
Eng. Said Moqem
Sadat

DWG NO

4/9

Date:
Sep-2020

Contour Map of Wardak University Check Dam

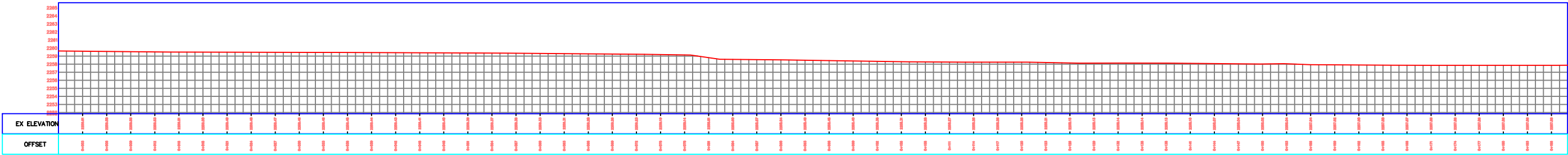


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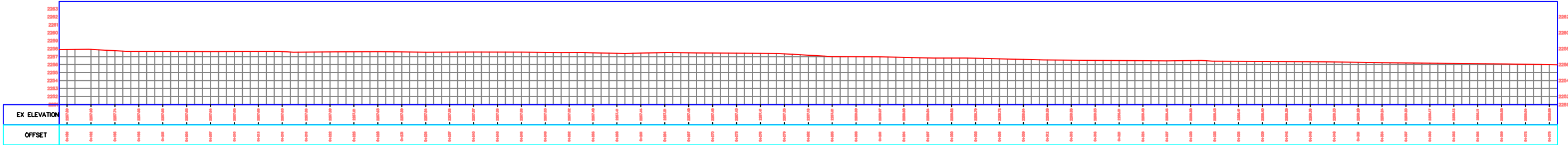
 Islamic Republic of Afghanistan	 National Water Affairs Regulation Authority	 Asian Development Bank (ADB)	 Central Project Management Office	Project	Drawing Content	Employer						DWG NO
				WAD-SAD-004	Topography Map	Surveyed by :	Designed by:	Drawn by:	Checked by:	Cross Checked by:	Approved by:	5/9
						Abdul Husain and Saifulraman	Faridoon Danesh	Faridoon Danesh	Eng. Muhammad Akram Paktinyar	Eng. Fardeen Azimi	Eng. Said Moqeen Sadat	Date: Sep-2020

Profile of Wardak University Check Dam

Alignment – MIN-CINTER LINE PROFILE



Alignment – MIN-CINTER LINE PROFILE



Islamic Republic of
Afghanistan



National Water Affair
Regulation Authority



Asian Development
Bank (ADB)



Central Project
Management Office

Project

WAD-SAD-004

Drawing Content

Longitudinal Section

Employer

Surveyed by :

Abdul Husain and
Saifulraman

Designed by:

Faridoon Danesh

Drawn by:

Faridoon
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Checked by:

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Croos Checked by:

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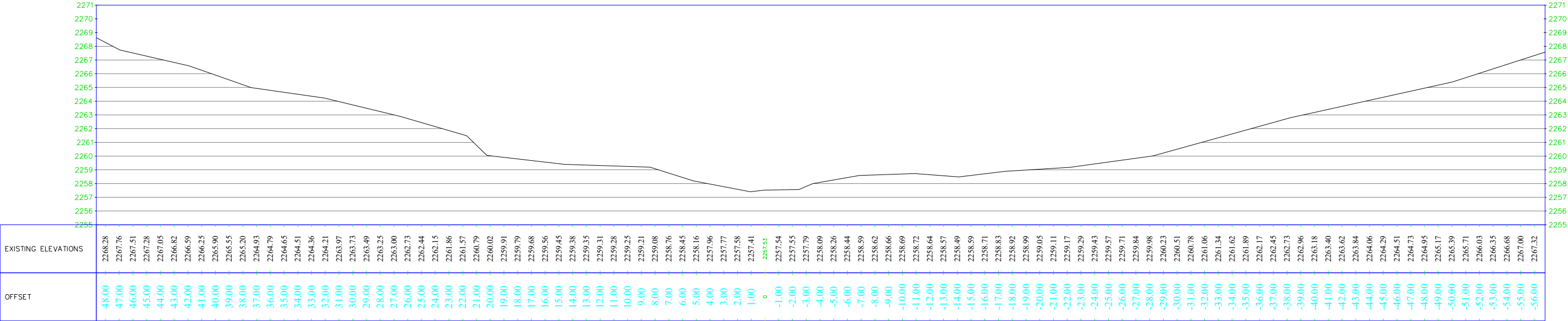
DWG NO

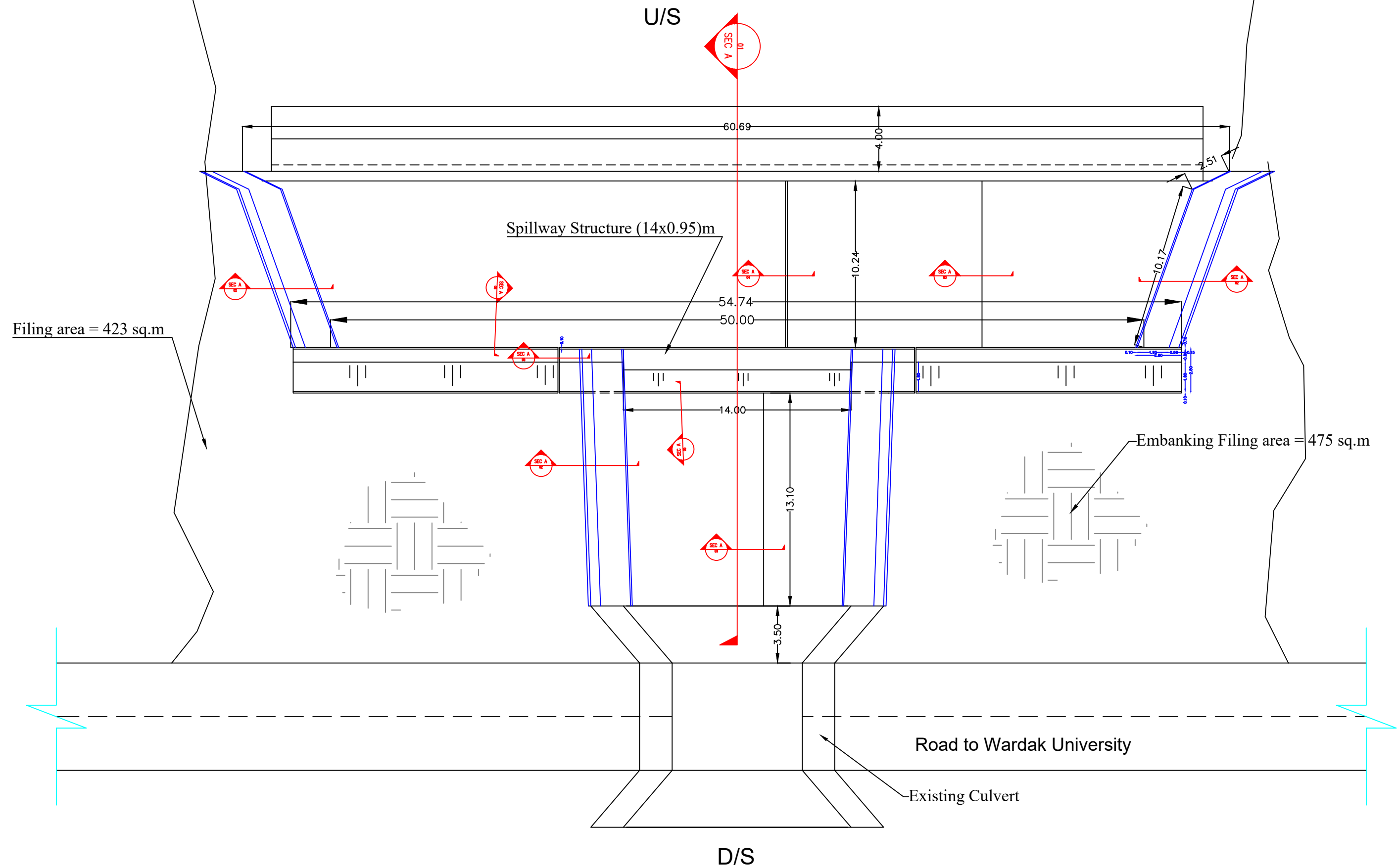
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Date:
Sep-2020

Cross Section of Wardak University Check Dam
RD (0+253.61)

0+253.61





Islamic Republic of
Afghanistan



National Water Affairs
Regulation Authority



Asian Development
Bank (ADB)



Central Project
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Project

WAD-SAD-004

Drawing Content

Plan

Employer

Surveyed by :
Abdul Husain and
Saifulraman

Designed by:
Faridoon Danesh

Drawn by:
Faridoon
Danesh

Checked by:
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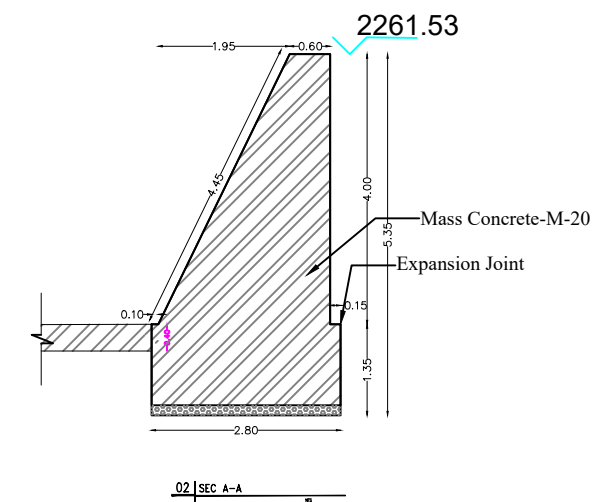
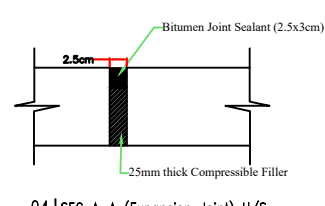
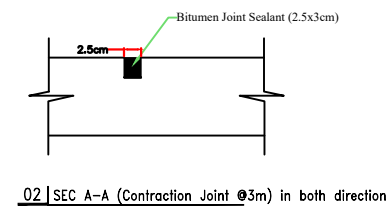
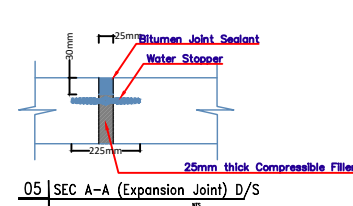
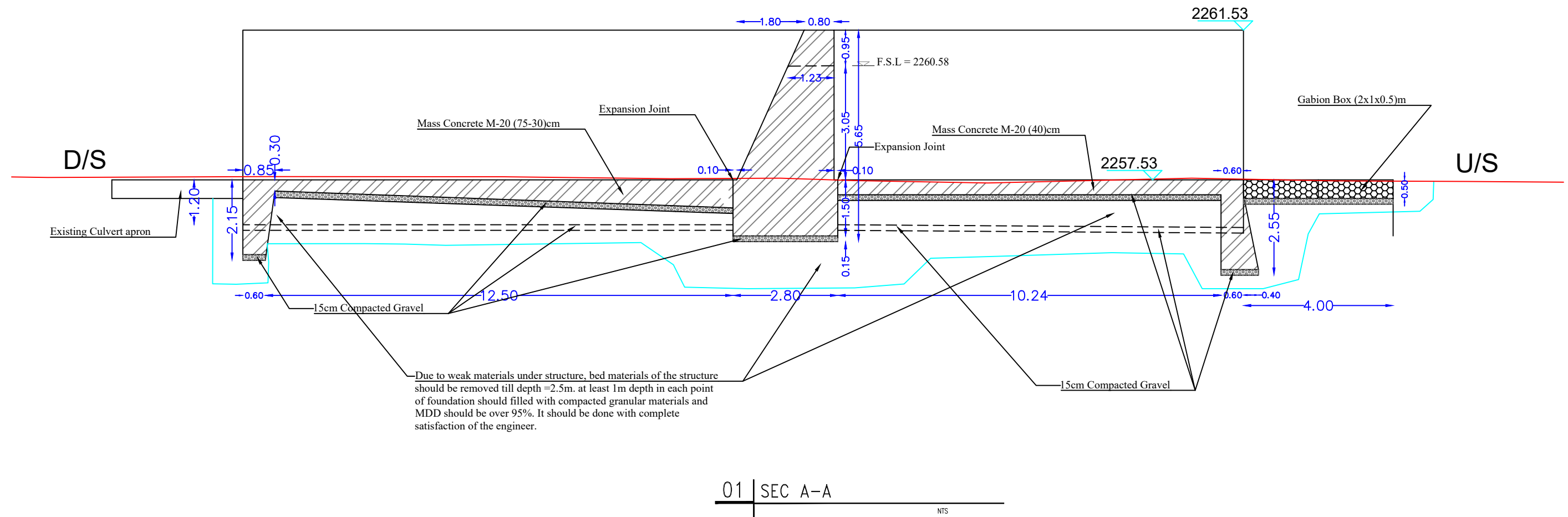
Croos Checked by:
Eng. Fardeen
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Approved by:
Eng. Said Moqeen
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DWG NO

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Date:
Sep-2020



Note: If contractor faced with any technical problem which needs testing like any change in soil type of foundation, contact with designer.

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				WAD-SAD-004	Section 01	Surveyed by :	Designed by:	Drawn by:	Checked by:	Croos Checked by:	Approved by:	9/9
						Abdul Husain and Saifulraman	Faridoon Danesh	Faridoon Danesh	Eng. Muhammad Akram Paktinyar	Eng. Fardeen Azimi	Eng. Said Moqeen Sadat	Date: Sep-2020