



Technical Drawing and Design of Canal of Saljuqi 3

This Project is Funded by European Union



Herat Municipality
Islamic Republic of Afghanistan

ملاحظه شد شاروال

ریس خدمات شهری و سکتوری

آمر خدمات شهری و سکتوری

مدیر عمومی انجینیری

انجینیر ریاست تخنیکسی و سکتوری

انجینیر ناحیه

نماینده برنامه

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EUSHM

Client:
Herat Municipality

Submitted By:
EU Support to Herat Municipality

Location:
Herat, Afghanistan

Date:

Drawing Package

Drawing No 001

Sheet No 002

Project No PR#00-00

Design By:

Project Technical Team

Reviewed By:

EUSHM Project manager

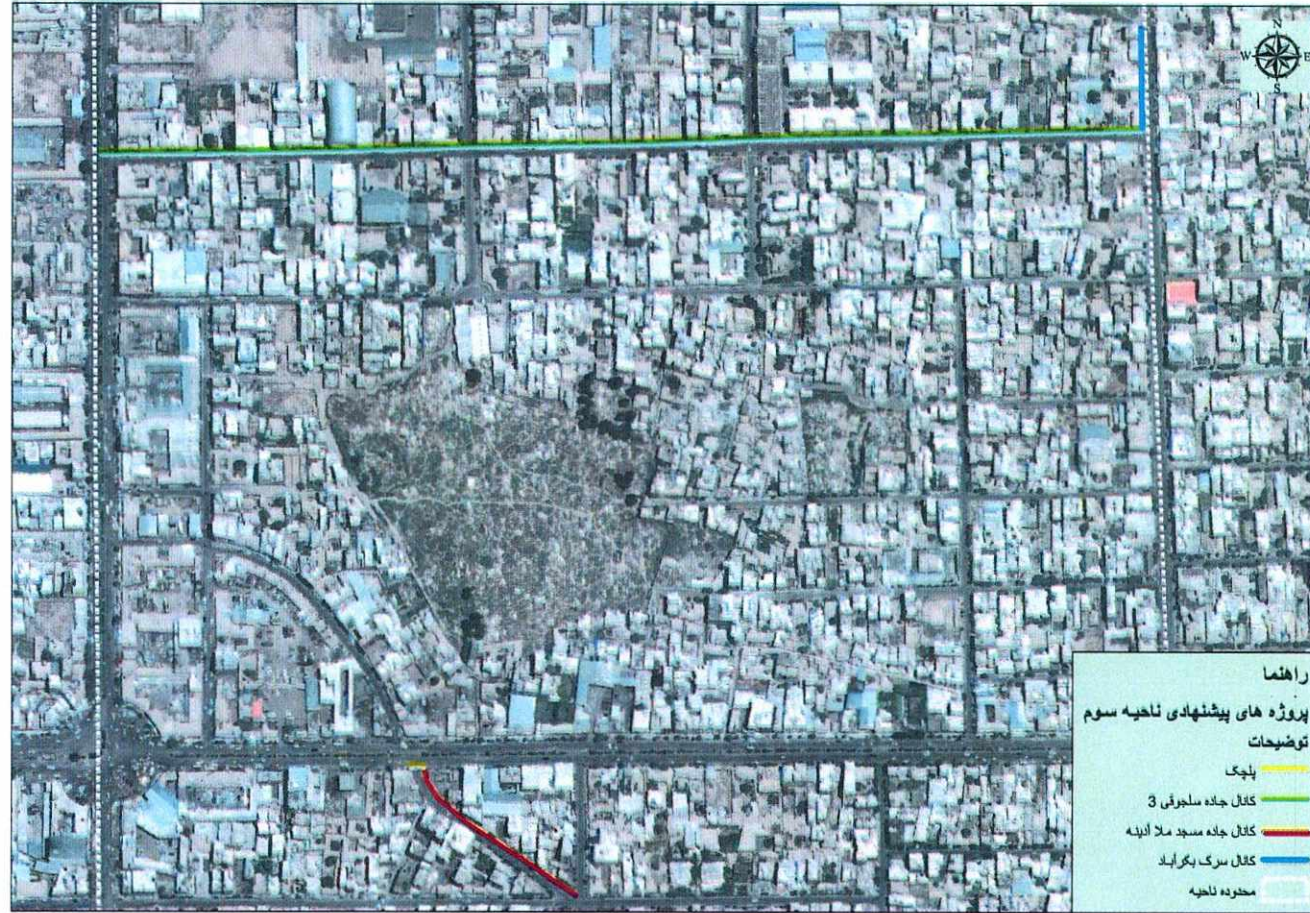
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- 9- Water - The water used for making and curing concrete shall be from a source approved by the Engineer and at the time of use shall be free from polluting matter.
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Location of Saljuqi3 Canal, Adina Mosque Street Canal & Bridge and Bekr Abad Street Canal

ملاحظه شد شاروال
ریس خدماتی شهری و مسکنوری
مدیر عمومی انجمنیبری
انجمنی برنامچه
انجمنی برنامچه

مهرینده برنامچه
انجمنی برنامچه
انجمنی برنامچه
انجمنی برنامچه
انجمنی برنامچه



EUSHM

Client:
Herat Municipality

Submitted By:
EU Support to Herat Municipality

Location:
Herat, Afghanistan

Date:

Drawing Package

Drawing No 002

Sheet No 003

Project No PR#00-00

Design By:
Project Technical Team
Reviewed By:

EUSHM Project manager

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1. GENERAL

- a. THE FOLLOWING DRAWINGS ARE TO BE READ IN CONJUNCTION WITH THE USER NOTES AND THE SPECIFICATION
- b. ALL MATERIALS AND WORKMANSHIP SHALL BE IN ACCORDANCE WITH THE CURRENT CODES OF PRACTICE, EXCEPT WHERE VARIED BY THE SPECIFICATION AND/OR DRAWINGS
- c. ANY CODES OF PRACTICE AND OR STANDARDS REFERRED TO IN THE DRAWINGS AND/OR SPECIFICATION REFER TO THE LATEST ISSUE AND AMENDMENTS CURRENT AT THE TIME OF PREPARING THESE DRAWINGS

d. REQUIREMENTS FOR:

- SHOP DRAWINGS
- PROPPING DOCUMENTATION
- INSPECTION AND TESTING DOCUMENTS
- MATERIAL SPECIFICATION
- TOLERANCES ARE INCLUDED IN THE SPECIFICATION.

2. DIMENSIONS

- a. ALL DIMENSIONS ARE IN MILLIMETERS, UNLESS NOTED OTHERWISE

3. CEMENT

ORDINARY PORTLAND CEMENT

a) SETTING TIME:

INITIAL SETTING TIME : NOT LESS THAN 45 MINUTES
FINAL SETTING TIME : NOT GREATER THAN 8 HOURS

b) STRENGTH:

COMPRESSING STRENGTH (STANDARD CYLINDER) :

3 DAYS : 12.41 N/MM² (1800 PSI)
7 DAYS : 19.30 N/MM² (2800 PSI)
28 DAYS : 24.13 N/MM² (3500 PSI)

4. STONE MASONRY:

- THE MORTAR USED FOR STONE MASONRY SHALL HAVE A MIN STRENGTH OF 15 MPa
- THE STONE USED FOR STONE MASONRY SHALL BE CRASHED AND HAVE A MIN STRENGTH OF 15 MPa
- STONE SHOULD BE IN CUBIC SHAPE.
- THE VOIDS OF STONES MASONRY SHOULD BE FILLED WITH CEMENT MORTAR.
- THE STONE MASONRY SURFACE SHOULD BE POINTED LIKE FULL SURFACE POINTING CEMENT MORTAR(1:3).

5. CONCRETE:

- 1) FOR RETAINING WALLS, SLABS, CREST AND CUTOFF WALLS
28 DAYS STANDARD CYLINDER CRUSHING STRENGTH: $f_c = 25$ MPa (3500 PSI)
OR A RICHER MIX IF THE ABOVE STRENGTH REQUIREMENT IS NOT SATISFIED

6. CONCRETE COVER TO REINFORCEMENT

MINIMUM CONCRETE COVERS ARE GENERALLY SPECIFIED ON INDIVIDUAL DRAWINGS. WHERE NOT SPECIFIED, MINIMUM CONCRETE COVERS SHALL BE AS FOLLOWS:

EXPOSED SITUATION	WALLS (MIN. 50mm THICKNESS)	SLABS	
		TOP SURFACE	BOTTOM SURFACE
EXPOSED TO WEATHER	40	40	40
NOT EXPOSED TO WEATHER	30	30	30

7. REINFORCEMENT:

a) STRENGTH:

YIELD STRENGTH (FY) OF HIGH YIELD STEEL DEFORMED BAR SHALL NOT BE LESS THAN 420 N/MM² (60,000 PSI)
FOR ALL MEMBER AND THE STEEL SHOULD CONFORM ASTM - A615-60.

7.1. PLACING AND SPACING OF REINFORCEMENT

- a. SPLICING OF REINFORCEMENT, WHETHER BY LAPPING OR MECHANICAL SPLICE, SHALL ONLY BE CARRIED OUT AS SHOWN ON THE DRAWINGS
- b. ALL HOOKS ON STIRRUPS AND TIES MUST FIT CLOSELY AROUND MAIN BARS UNO: FIRST STIRRUP TO BE PLACED NOT FURTHER THAN THE LESSER OF HALF THE STIRRUP SPACING OR 50mm FROM SUPPORT FACE.

7.2. LAP SPLICE IN REINFORCEMENT

- a. LAP LENGTH FOR DEFORMED BARS SHALL BE AS SHOWN IN THE FOLLOWING TABLES WHERE SPACING OF ADJACENT BARS IS EQUAL TO OR GREATER THAN 2.5d.
- b. LAP LENGTHS FOR PLAIN ROUND SHALL BE TWICE THOSE SHOWN IN THE FOLLOWING TABLES
- c. ALL BEAM MAIN REINFORCEMENT LAP SPLICES SHALL HAVE CRANKED UNLESS NOTED OTHERWISE

NOTE: RE: USE THE FOLLOWING TABLES

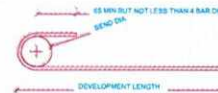
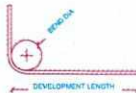
TOP BAR FACTOR IS 1.0 FOR ALL VERTICAL BARS AND FOR HORIZONTAL BARS WITH LESS THAN 300mm OF FRESH CONCRETE CAST BENEATH BAR (TYPICALLY BEAM BOTTOM BAR AND SLAB BAR)
TOP BAR FACTOR IS 1.3 FOR ALL HORIZONTAL BARS WITH MORE THAN 300mm OF FRESH CONCRETE CAST BENEATH THE BAR (TYPICALLY BEAM TOP BARS)

CONCRETE STEEL GRADE	25MPa 420MPa	TOP BAR FACTOR = 1.3	BAR DIAMETER					
			10	12	16	20	25	32
			300	430	470	710	800	1140
		1	300	330	440	500	600	800

7.3. BENDING OF REINFORCEMENT

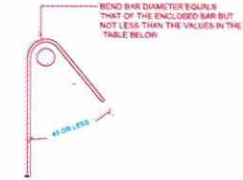
a. BENDING FOR ALL BARS EXCEPT STIRRUPS AND TIES

16 DIA BAR FOR PLAIN BARS



STEEL GRADE	BAR DIAMETER	MINIMUM BEND DIAMETER
GRADE 420	6 TO 20	5 BAR DIAMETER
GRADE 500 FOR CONCRETE STRENGTH EQUAL TO OR GREATER THAN 40 MPa		6 BAR DIAMETER

b. BENDING FOR STIRRUP AND TIES



STEEL GRADE	BAR DIAMETER	MIN BEND DIAMETER	
		PLAIN BARS	DEFORMED BARS
GRADE 300/400	6 TO 20	5 BAR DIAMETERS	4 BAR DIAMETERS
GRADE 300/400	20 TO 32	5 BAR DIAMETERS	6 BAR DIAMETERS

c. BARS PARTIALLY EMBEDDED IN CONCRETE SHALL NOT BE SITE BEND UNLESS SHOWN ON THE DRAWINGS OR SPECIFICALLY APPROVED BY THE ENGINEER

7.4. REINFORCED ANCHORAGE WITH STANDARD HOOKS

- a. DEVELOPMENT LENGTH PAST CRITICAL SECTION (SHOWN SO ON DRAWINGS) FOR DEFORMED BARS SHALL BE AS PER TABLE BELOW
- b. DEVELOPMENT LENGTH FOR PLAIN ROUNDED BARS SHALL BE TWICE THOSE SHOWN IN THE FOLLOWING TABLE



NOTES:

SIDE COVER FACTOR = 0.7 FOR SIDE COVER EQUAL TO OR GREATER THAN 60mm.

WITH HOOK COVER NOT LESS THAN 40mm.

SIDE COVER FACTOR = 1.0

IN ALL OTHER SITUATIONS

CONCRETE STEEL GRADE	25MPa 420MPa	TOP BAR FACTOR = 1 BAR FACTOR = 0.7	BAR DIAMETER					
			10	12	16	20	25	32
			135	160	215	265	330	425
			95	115	150	185	235	295

ملاحظه شد شاروال ریس خدمات شهری و مکتوری مدیر عمومی انجمنی و مکتوری انجمن ریاست تخنیک و مکتوری انجمن ناحیه نماینده برنامه

Handwritten signatures and stamps in blue ink, including the name 'محمد شاد شاروال' and various official seals.



EUSHM

Client:
Herat Municipality

Submitted By:
EU Support to Herat Municipality

Location:
Herat, Afghanistan

Date:

Drawing Package

Drawing No 003

Sheet No 004

Project No PR#00-00

Design By:

Project Technical Team

Reviewed By:

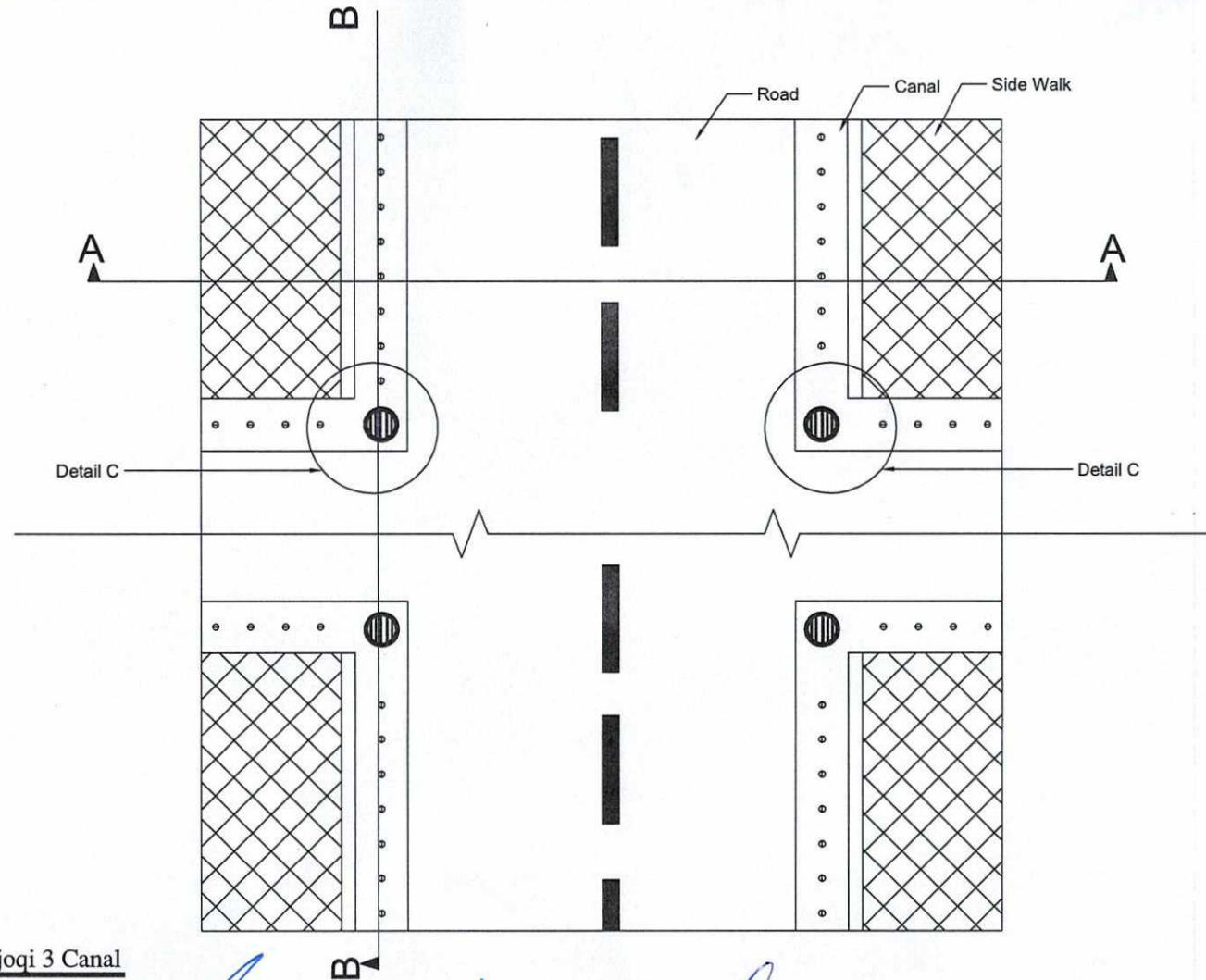
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Plan of Sljoqi 3 Canal

ملاحظه شد شاروال

ریس خدمات شهری و مسکنوری

امر خدمات شهری و مسکنوری

مدیر عمومی انجمن شهری

انجمن عمران ریاست تکنیکی و مسکنوری

انجمن عمران

نماینده برنامه

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Submitted By:
EU Support to Herat Municipality

Location:
Herat, Afghanistan

Date:

Drawing Package

Drawing 004
Sheet No 005

Project PR#00-00

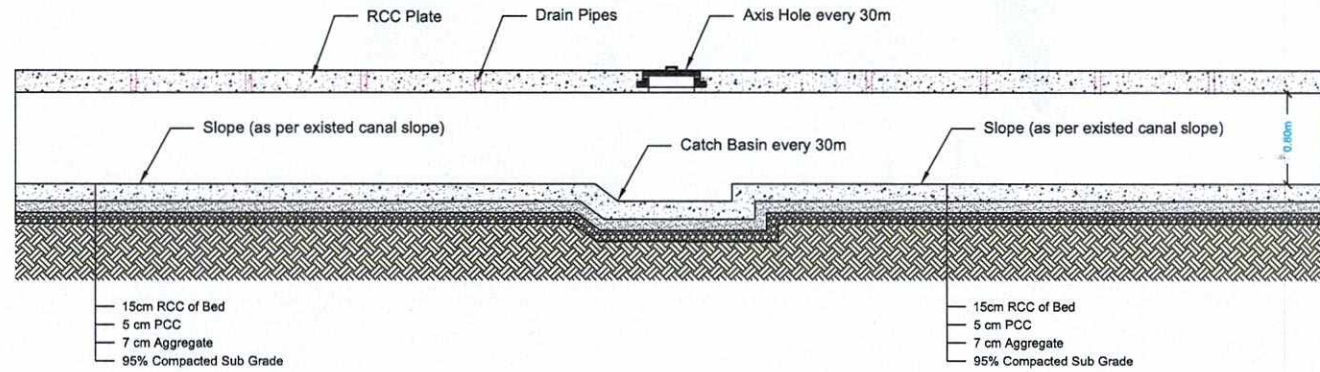
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03 SECTION (B-B)
REF. SCALE: 1:30

Structural Detail of Saljoqi 3 Canal

ملاحظه شد شاروال رئیس خدمات شهری و سکتوری آمر خدمات شهری و سکتوری مدیر عمومی انجمن شهری انجمن پیران ریاست تکنیکی و سکتوری انجمن پیر ناحیه نماینده برنامه

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Herat Municipality
Islamic Republic of Afghanistan

EUSHM

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Herat Municipality

Submitted By:
EU Support to Herat Municipality

Location:
Herat, Afghanistan

Date:

Drawing Package

Drawing No 005

Sheet No 006

Project No PR#00-00

Design By:
Project Technical Team
Reviewed By:

EUSHM Project manager

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11-

12-

13-

14-

15-

16-

17-

18-

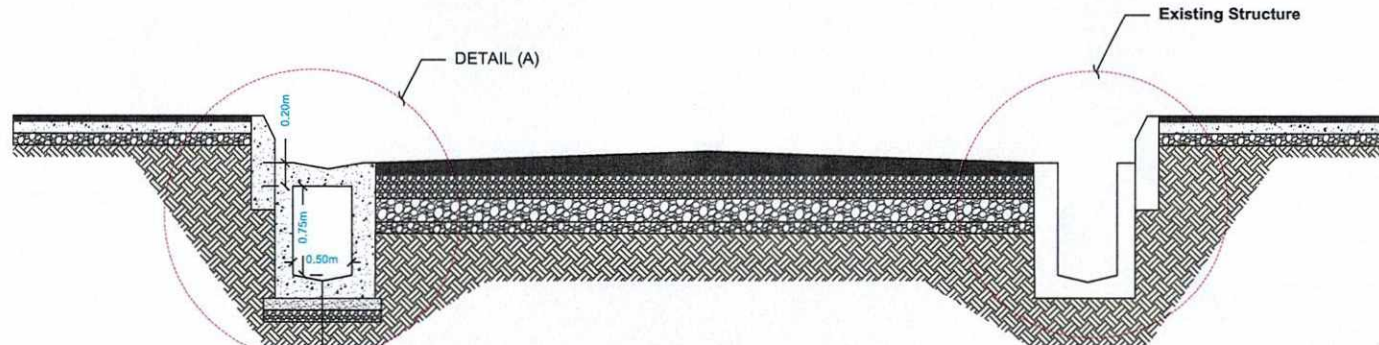
19-

20-

21-

22-

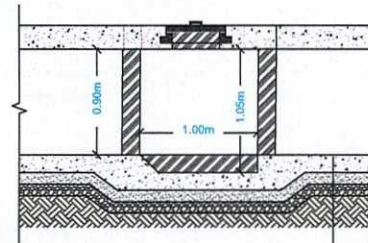
23-



03 SECTION (A-A)

REF.

SCALE: 1:30



03 SECTION (A-A)

REF.

SCALE: 1:30

15cm RCC of Bed
5 cm PCC
7 cm Aggregate
95% Compacted Sub Grade

Structural Detail of Saljoqi 3 Canal

ملاحظه شد شاروال

رئيس خدمات شهري و مسكنوري

امر خدمات شهري و مسكنوري

مدیر عمومی انجمن شهري

انجمن شهريان رياست تخنيکي و مسکنوري

انجمن شهري ناحیه

نظارت بر نامه

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Islamic Republic of Afghanistan

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Submitted By:
EU Support to Herat Municipality

Location:
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Date:

Drawing Package

Drawing No 006
Sheet No 007

Project No PR#00-00

Design By:

Project Technical Team

Reviewed By:

EUSHM Project manager

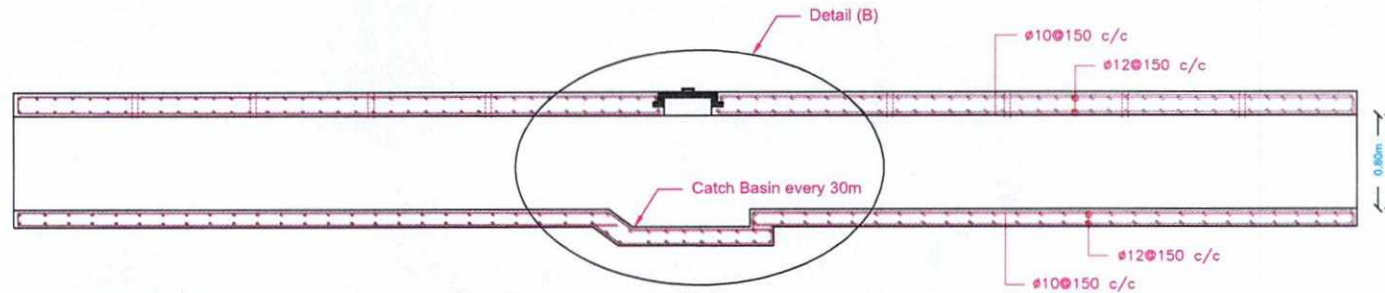
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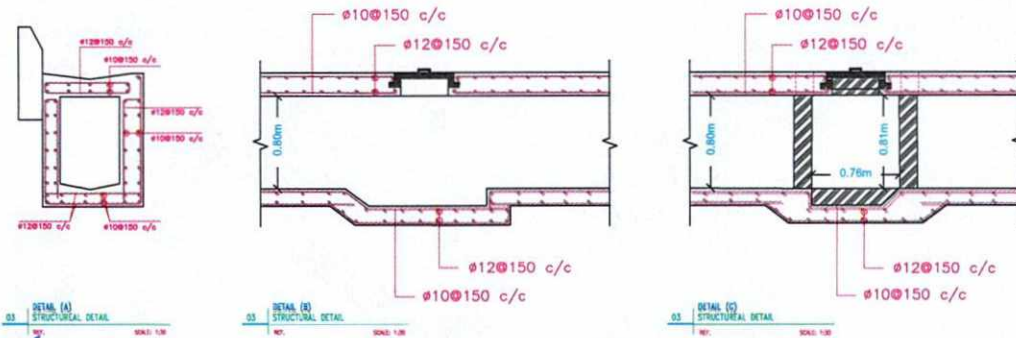


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03 SECTION (B-B)
STRUCTURAL DETAIL

REF. SCALE: 1:30



Reinforcement Detail of Saljoqi Canal

ملاحظه شد شاروال

[Signature]

رئیس خدمات شهری و مکتوری

[Signature]

امور خدمات شهری و مکتوری

[Signature]

مدیر عمومی انجمن شهری

[Signature]

انجمن عمران و ریاست تکنیکی و مکتوری

[Signature]

انجمن سیر ناحیه

[Signature]

معاوننده برنامه

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Technical Drawing and Design
of Adina Mosque Bridge

This Project is Funded by European Union



شاروالی هرات
Herat Municipality
Islamic Republic of Afghanistan

ملاحظه شد شاروال

رئیس خدمات شهری و سکتوری

آمر خدمات شهری و سکتوری

مدیر عمومی انجینیری

انجینیران ریاست تکنیکی و سکتوری

انجینیر ناحیه

نماینده برنامه

مشارکتی در

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Herat Municipality
Islamic Republic of Afghanistan

EUSHM

Client:
Herat Municipality

Submitted By:
EU Support to Herat Municipality

Location:
Herat, Afghanistan

Date:

Drawing Package

Drawing No 001

Sheet No 001

Project No PR#00-00

Design By:
Project Technical Team
Reviewed By:
EUSHM Project manager

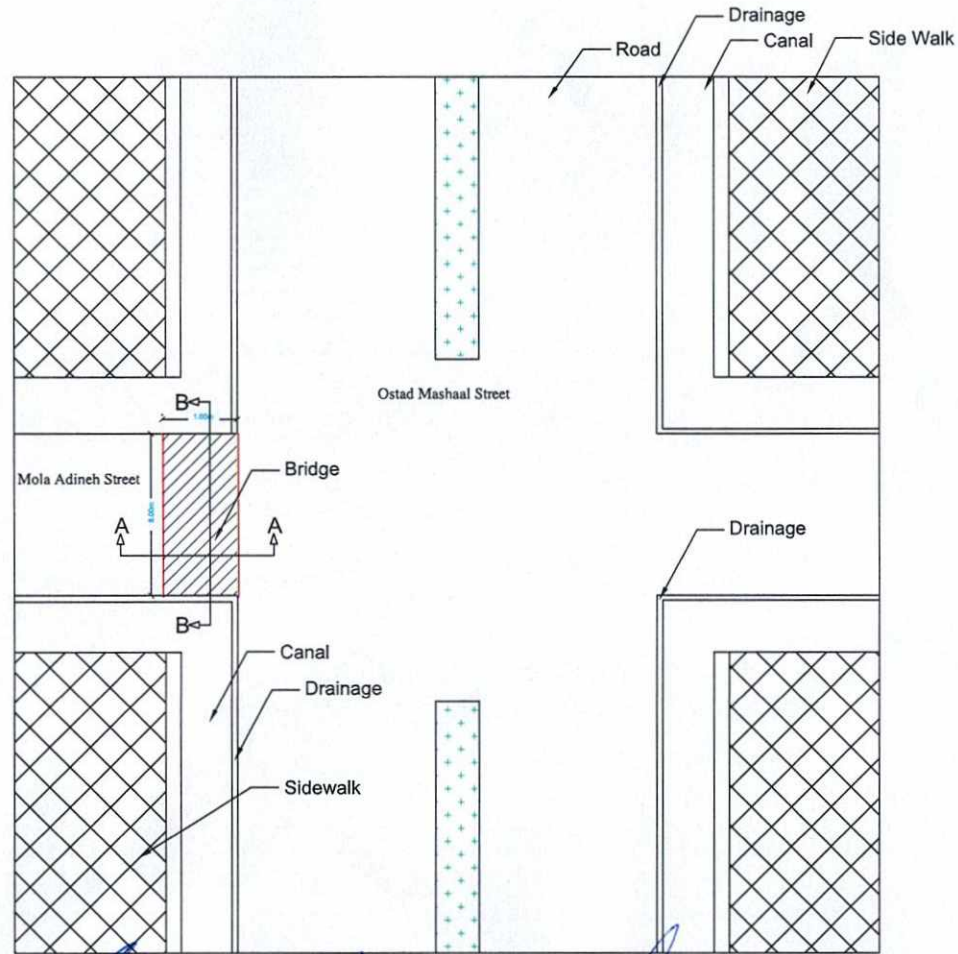
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Plan of Bridge

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Herat Municipality
Islamic Republic of Afghanistan

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Herat, Afghanistan

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Drawing No 002

Sheet No 002

Project No PR#00-00

Design By:
Project Technical Team

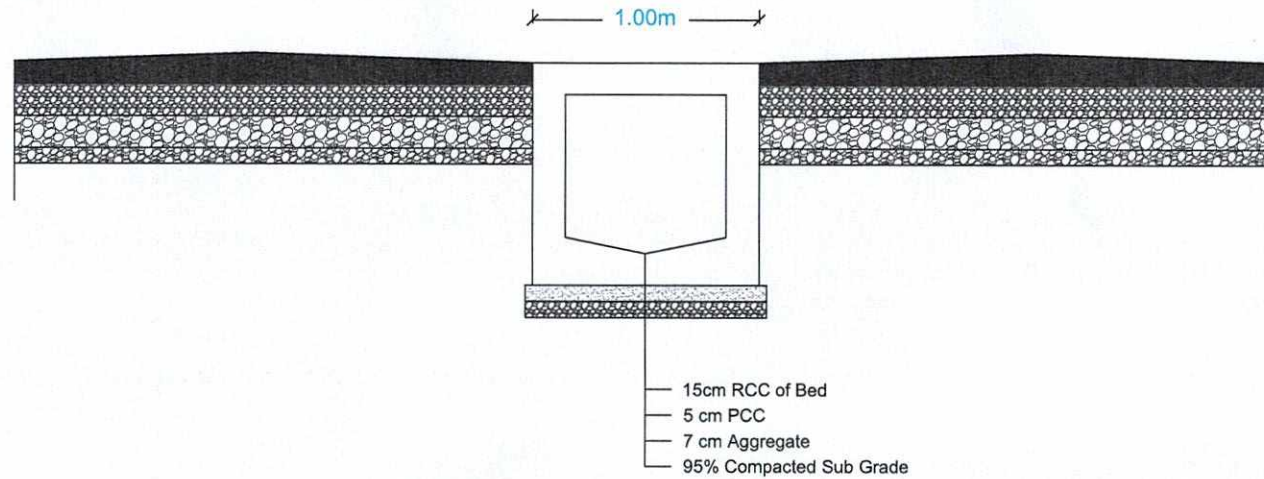
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Section A-A

SCALE : 1/30

Structural Detail

ملاحظه شد شاروال

رئیس خدمات شهری و مسکنوری

رئیس مهندسی شهری و مسکنوری

مدیر عمومی انجمن لاری

انجمن عمران ریاست تکنیکی و مسکنوری

انجمن سیر ناحیه

نماینده برنامه

Handwritten signatures in blue ink, including the signature of the Herat Municipality Mayor and other officials.



EUSHM

Client:
Herat Municipality

Submitted By:
EU Support to Herat Municipality

Location:
Herat, Afghanistan

Date:

Drawing Package

Drawing No 003

Sheet No 003

Project No PR#00-00

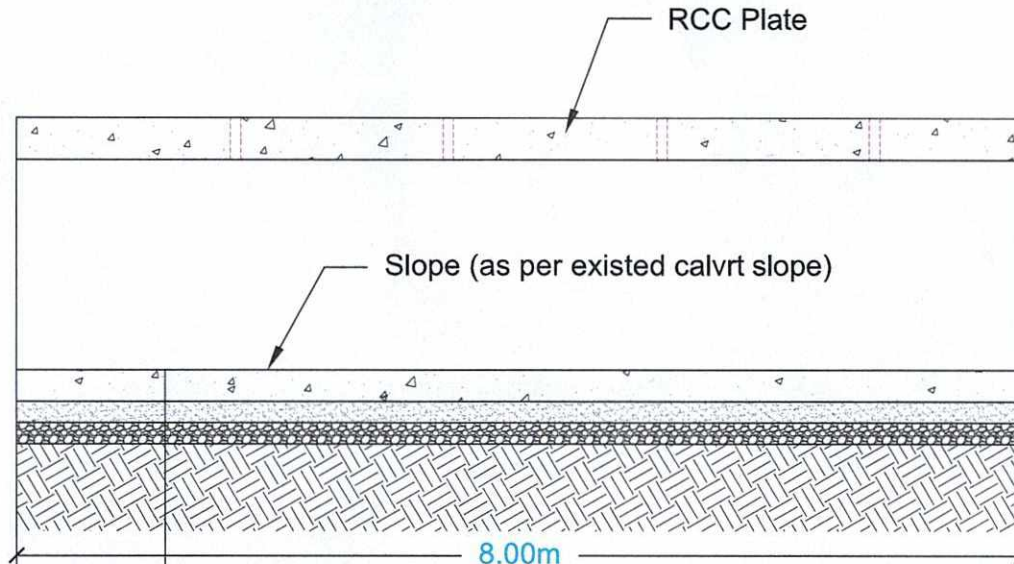
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 - Concrete is poured and vibrated in such a way to form a solid compact concrete.

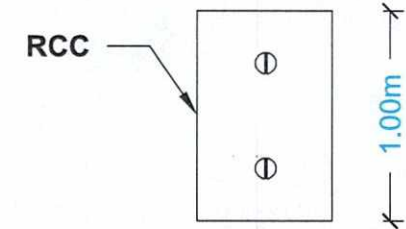


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- 15cm RCC of Bed
- 5 cm PCC
- 7 cm Aggregate
- 95% Compacted Sub Grade

Section B-B
SCALE : 1/30



Section

ملاحظه شد شاروال
مدیر مهندسی انجینیری
رئیس خدمات شهری و مسکنوری
مدیر خدمات شهری و مسکنوری
انجینیران ریاست تکنیکی و مسکنوری
انجینیر ناحیه
کمانده برنامه



Herat Municipality
Islamic Republic of Afghanistan

EUSHM

Client:
Herat Municipality

Submitted By:
EU Support to Herat Municipality

Location:
Herat, Afghanistan

Date:

Drawing Package

Drawing No 004

Sheet No 004

Project No PR#00-00

Design By:
Project Technical Team
Reviewed By:
EUSHM Project manager

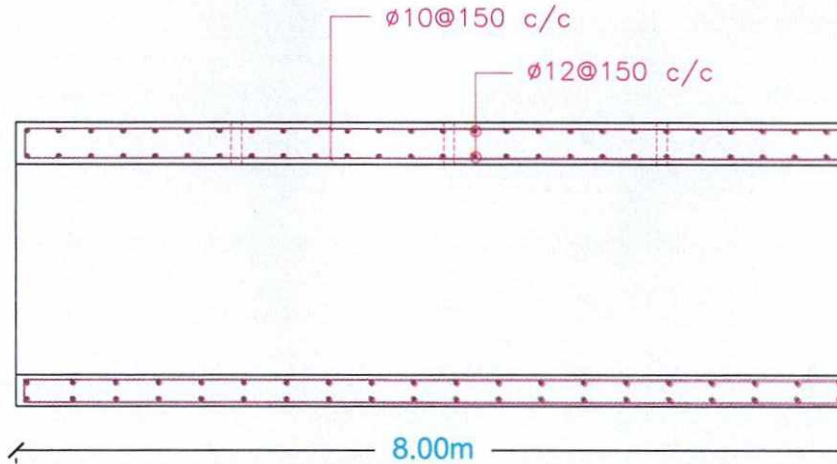
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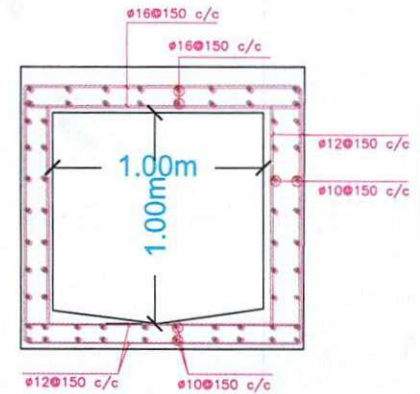
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Section B-B
SCALE :1/30



Section A-A
SCALE :1/30

Reinforcement Detail

ملاحظه شد شاروال

ریس خندان شهری و مسکوری

امر خدمات شهری و مسکوری

مدیر عمومی انجمنی

انجمنییران ریاست تخلیگی و مسکوری

انجمنییر ناحیه

نماینده برنامه








Technical Drawing and Design
of Canal of Bekrabad Street

This Project is Funded by European Union



شاروالی هرات
Herat Municipality
Islamic Republic of Afghanistan

ملاحظه شد شاروال
ریس خدمات شهری و مسکنوری
[Signature]

مدیر عمومی انجمنی
انجمنیان ریاست تکنیکی و مسکنوری
[Signature]

نماینده برنامه
انجمنییر ناحیه
[Signature]



Herat Municipality
Islamic Republic of Afghanistan

EUSHM

Client:
Herat Municipality

Submitted By:
EU Support to Herat Municipality

Location:
Herat, Afghanistan

Date:

Drawing Package

Drawing No 001

Sheet No 001

Project No PR#00-00

Design By:

Project Technical Team

Reviewed By :

EUSHM Project manager

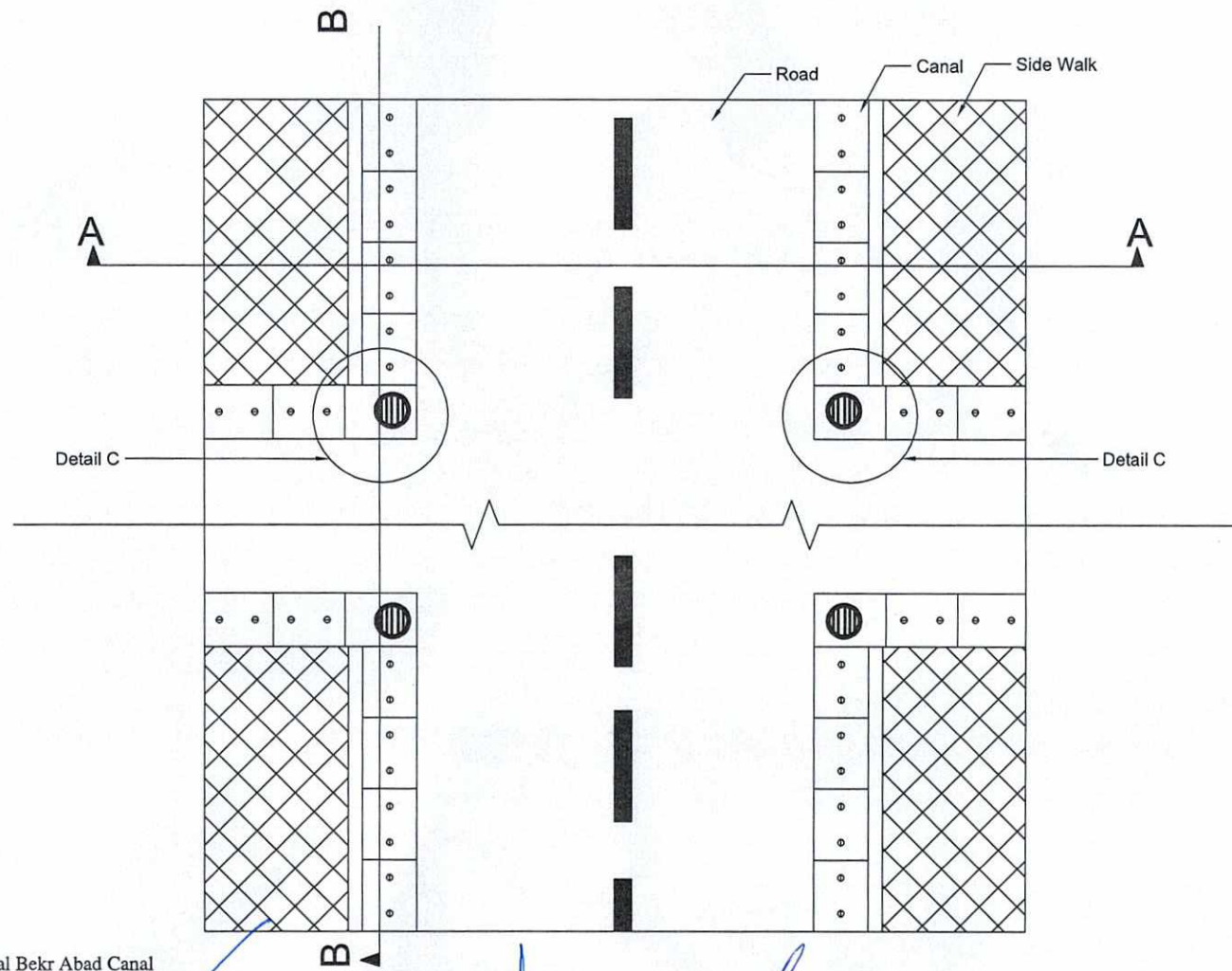
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Plan of Canal Bekr Abad Canal

ملاحظه شهید شاروال

ریس خدمات شهری و مکتوری

مدرسه خدمات شهری و مکتوری

مدیر عمومی انجمن شهری

انجمن عمران ریاست تکنیکی و مکتوری

انجمن برنامه ریزی

نماینده برنامه ریزی

Handwritten signatures in blue ink, including the signature of the Project Manager and other officials.



Herat Municipality
Islamic Republic of Afghanistan

EUSHM

Client:
Herat Municipality

Submitted By:
EU Support to Herat Municipality

Location:
Herat, Afghanistan

Date:

Drawing Package

Drawing No 002

Sheet No 002

Project No PR#00-00

Design By:
Project Technical Team

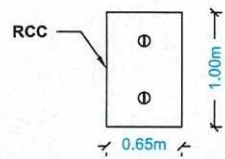
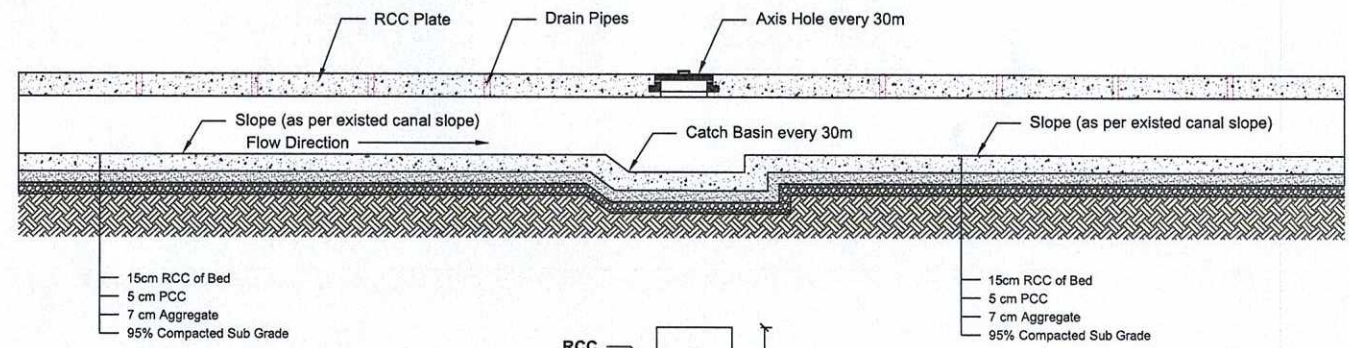
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EUSHM Project manager

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Section B-B
SCALE : 1/30

Structural Detail Bekr Abad Canal

ملاحظه شد شاروال
ریس خدمات شهری و سگتوری
آمر خدمات شهری و سگتوری
مدیر عمومی انجمنیبری
رئیس هیات مدیران ریاست تخنیک و سگتوری
انجمنیر ناحیه
نماینده پرنامه



Herat Municipality
Islamic Republic of Afghanistan

EUSHM

Client:
Herat Municipality

Submitted By:
EU Support to Herat Municipality

Location:
Herat, Afghanistan

Date:

Drawing Package

Drawing No	003
Sheet No	003
Project No	PR#00-00

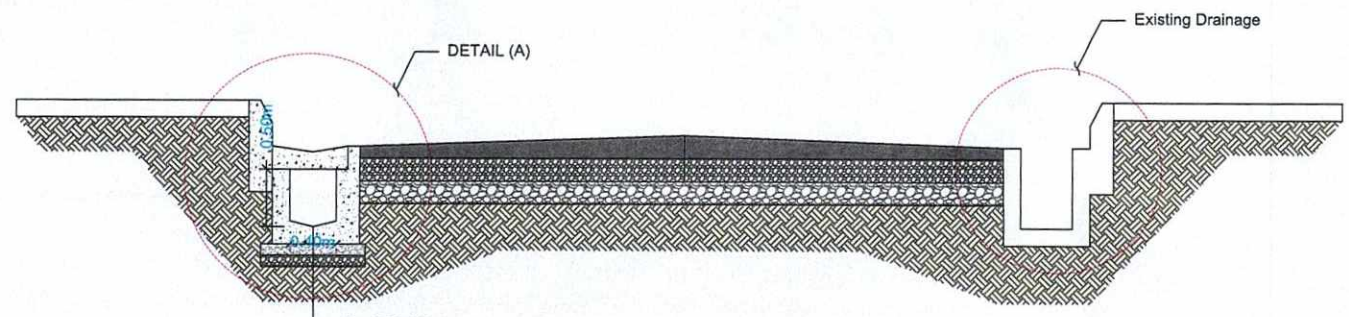
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Reviewed By:
EUSHM Project manager

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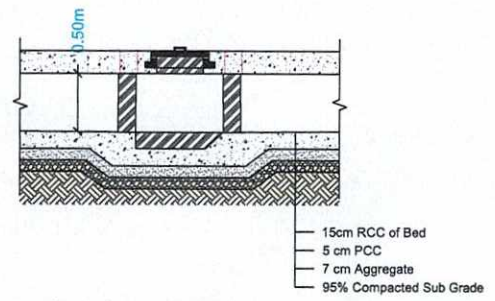
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Section A-A
SCALE :1/30



Section C-C
SCALE :1/30

Structural Detail Bekr Abad Canal

ملاحظه شد شاروال
ریس خدمات شهری و مسکنوری
امر خدمات شهری و مسکنوری
مدیر عمومی انجمنیبری
انجمنیبران ریاست تخنیکسی و مسکنوری
انجمنیبر ناحیه
نماینده برنامه

(Handwritten signatures in blue ink)



Herat Municipality
Islamic Republic of Afghanistan

EUSHM

Client:
Herat Municipality

Submitted By:
EU Support to Herat Municipality

Location:
Herat, Afghanistan

Date:

Drawing Package

Drawing No 004

Sheet No 004

Project No PR#00-00

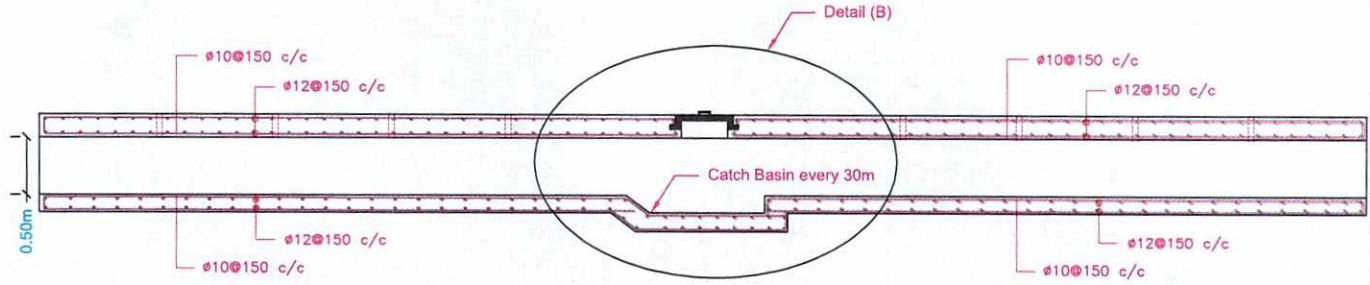
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Reviewed By:
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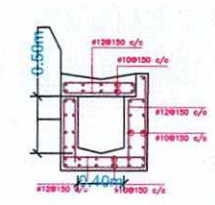
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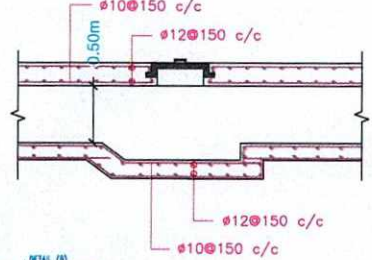
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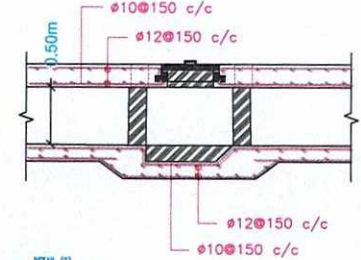
03 SECTION (B-B)
STRUCTUREAL DETAIL
REF. SCALE: 1:30



03 DETAIL (A)
STRUCTUREAL DETAIL
REF. SCALE: 1:30



03 DETAIL (B)
STRUCTUREAL DETAIL
REF. SCALE: 1:30



03 DETAIL (C)
STRUCTUREAL DETAIL
REF. SCALE: 1:30

Reinforcement Detail of Bekr Abad Canal

ملاحظه شد شاروال
رئیس خدمات شهری و مسکنوری
آمر خدمات شهری و مسکنوری
مسئول عمومی انجمنیبری
انجمنیبران ریاست تخنیکس و مسکنوری
انجمنیبر ناحیه
نماینده برنامه



Technical Drawing and Design
of Adina Mosque Street Canal

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شاروالی هرات
Herat Municipality
Islamic Republic of Afghanistan

ملاحظه شد شاروال

ریس خدمات شهری و سکتوری

اور خدمات شهری و سکتوری

مدیر عمومی انجمن سوری

انجمن سوران ریاست تکنیکی و سکتوری

انجمن سوران ناحیه

نماینده برنامه



Herat Municipality
Islamic Republic of Afghanistan

EUSHM

Client:
Herat Municipality

Submitted By:
EU Support to Herat Municipality

Location:
Herat, Afghanistan

Date:

Drawing Package

Drawing No 001

Sheet No 001

Project No PR#00-00

Design By:

Project Technical Team

Reviewed By :

EUSHM Project manager

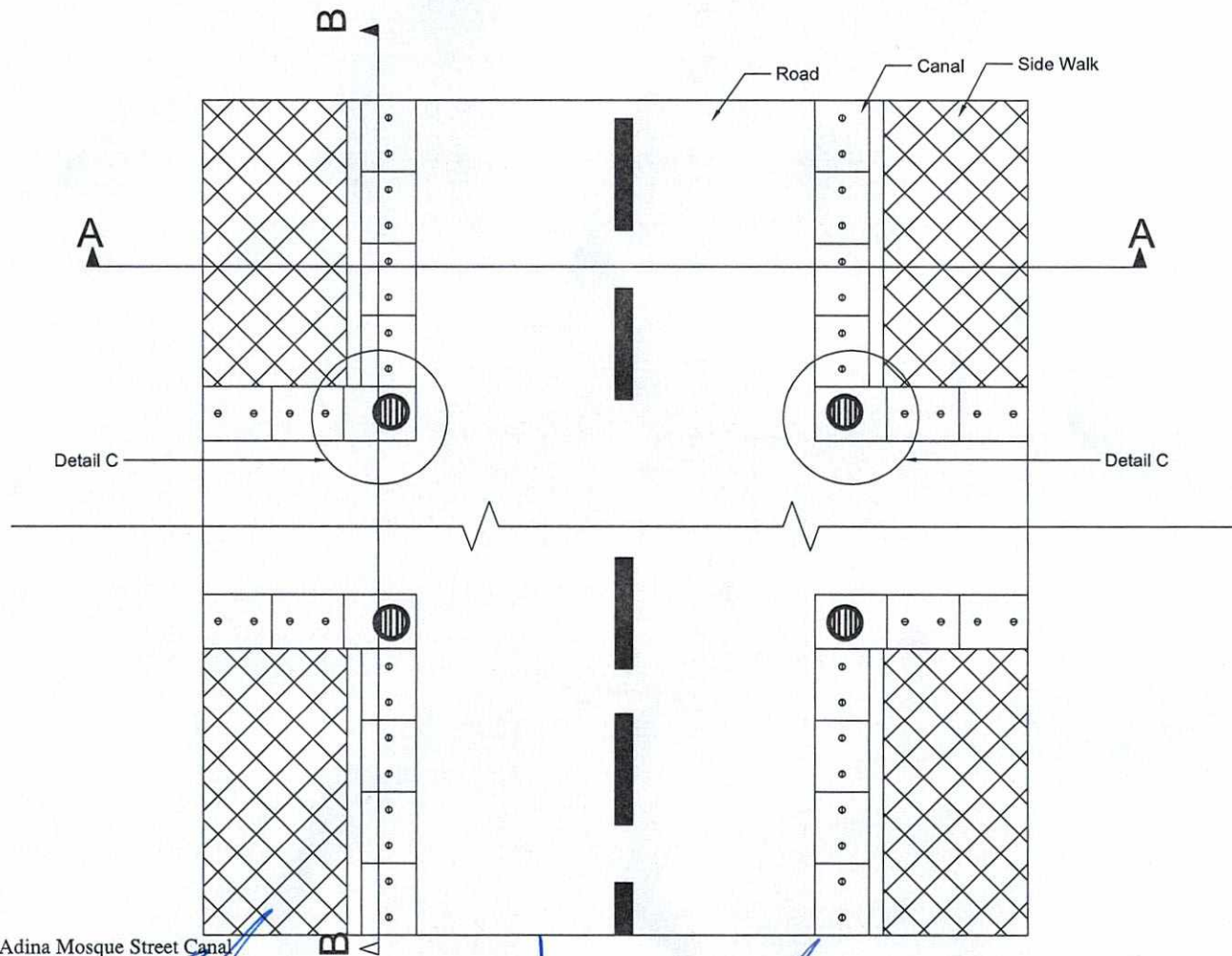
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Plan of Adina Mosque Street Canal

ملاحظه شد شاروال

ریس خدمات شهری و مسکنوری

امیر خدمات شهری و مسکنوری

مدیر عمومی انجمن شهری

انجمن عمران ریاست تکنیک و مسکنوری

انجمنیر ناحیه

نماینده بر نامه

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Islamic Republic of Afghanistan

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Herat Municipality

Submitted By:
EU Support to Herat Municipality

Location:
Herat, Afghanistan

Date:

Drawing Package

Drawing No	002
Sheet No	002
Project No	PR#00-00

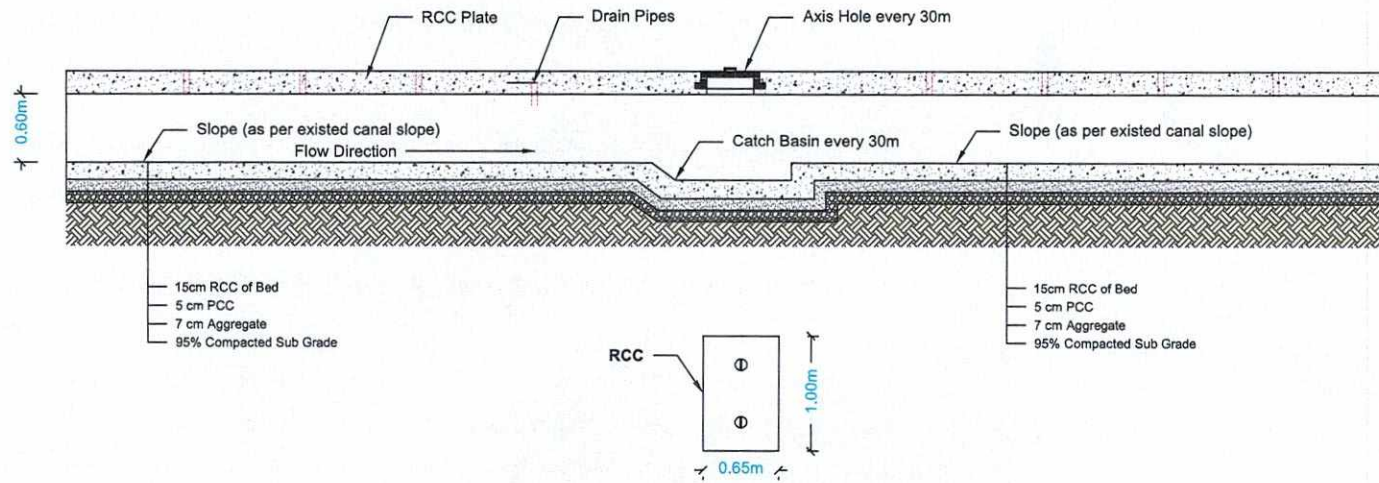
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Reviewed By:
EUSHM Project manager

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Structural Detail Adina Mosque Street Canal

Section B-B

SCALE :1/30

ملاحظه شد شاروال

ریس خدمات شهری و سکتوری

آمر خدمات شهری و سکتوری

مدیر عمومی انجلییری

الجنیران ریاست تخنیکي و سکتوری

الجنیسیر ناچیه

زماننده برنامه

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Herat Municipality
Islamic Republic of Afghanistan

EUSHM

Client:
Herat Municipality

Submitted By:
EU Support to Herat Municipality

Location:
Herat, Afghanistan

Date:

Drawing Package

Drawing No 003

Sheet No 003

Project No PR#00-00

Design By:

Project Technical Team

Reviewed By:

EUSHM Project manager

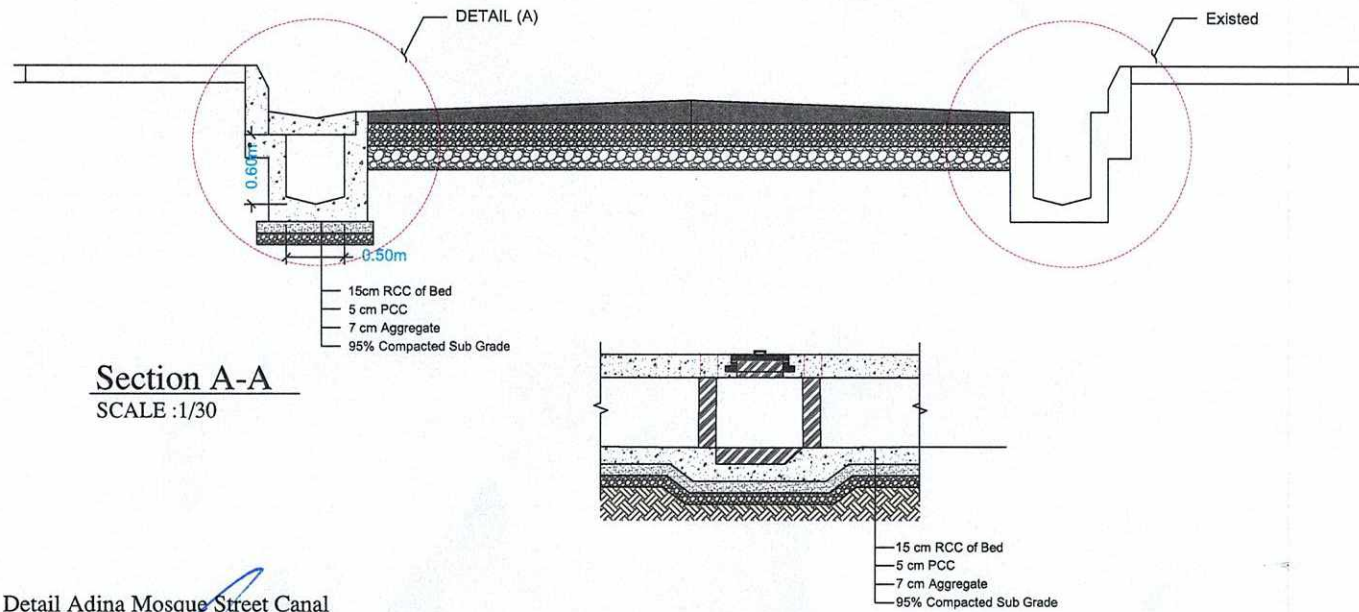
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Structural Detail Adina Mosque Street Canal

ملاحظه شد شاروال

ریس خدمات شهری و سکتوری

امر خدمات شهری و سکتوری

Section C-C

SCALE :1/30

انجینیران ریاست تخنیکي و سکتوری

انجینیر ناظم

نماینده برنامه

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Herat Municipality
Islamic Republic of Afghanistan

EUSHM

Client:
Herat Municipality

Submitted By:
EU Support to Herat Municipality

Location:
Herat, Afghanistan

Date:

Drawing Package

Drawing No 004

Sheet No 004

Project No PR#00-00

Design By:
Project Technical Team

Reviewed By:

EUSHM Project manager

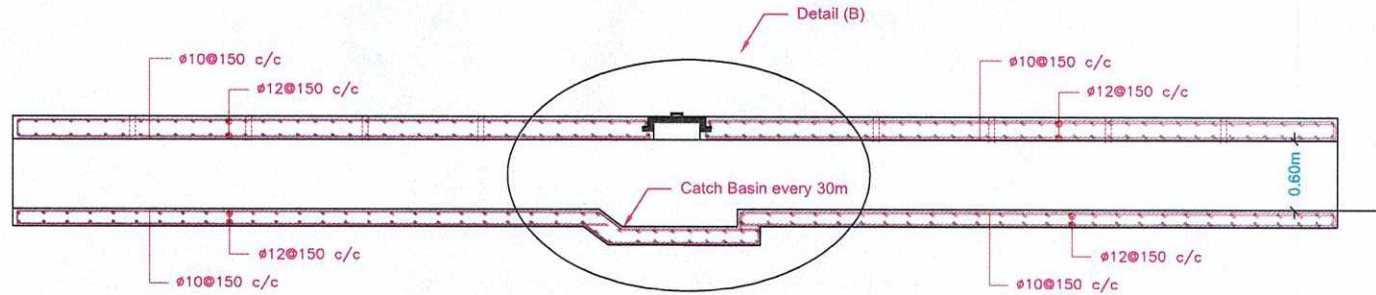
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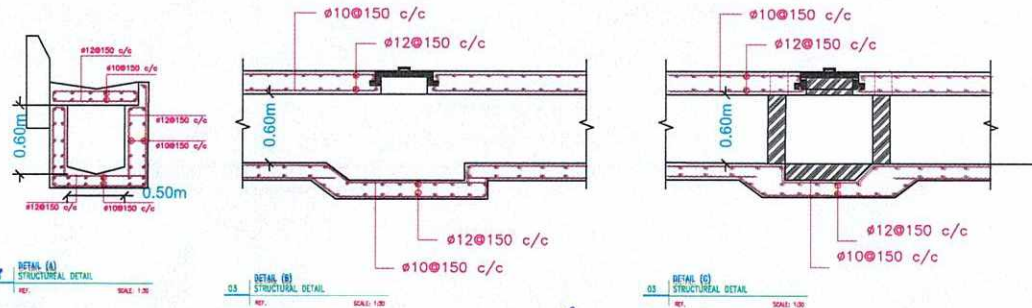
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03 SECTION (B-B)
STRUCTUREAL DETAIL
REF. SCALE: 1:30



Reinforcement Detail Adina Mosque Street Canal

ملاحظه شد شاروال
رئیس خدمات شهرداری و مکتوری
امر خدمات شهرداری و مکتوری
مدیر عمومی انجمن شهرداری
انجمن شهرداری ریاست تخنیک و مکتوری
انجمن شهرداری ناحیه
نماینده برنامه