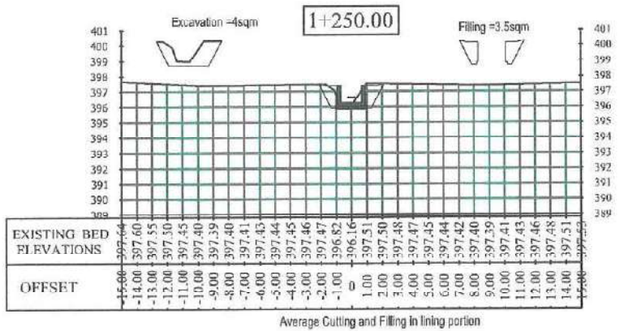
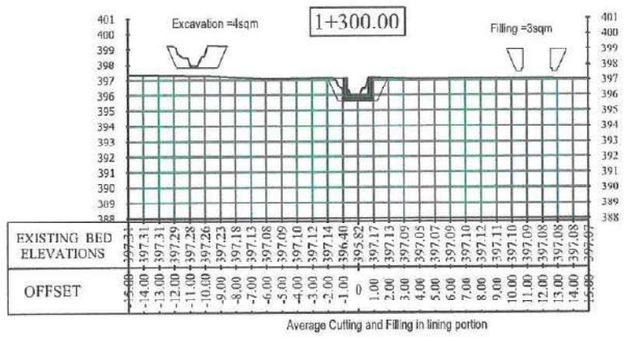
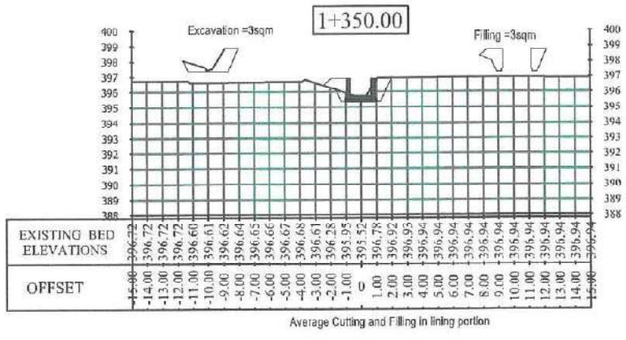
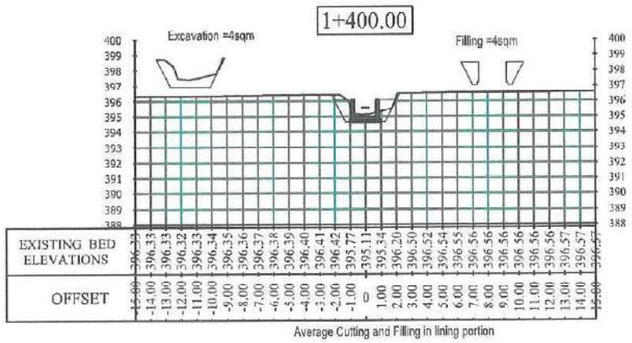
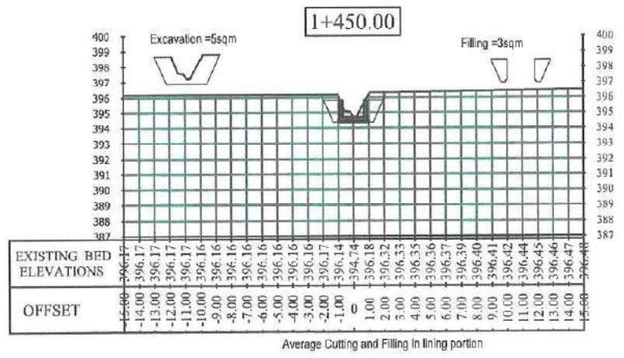
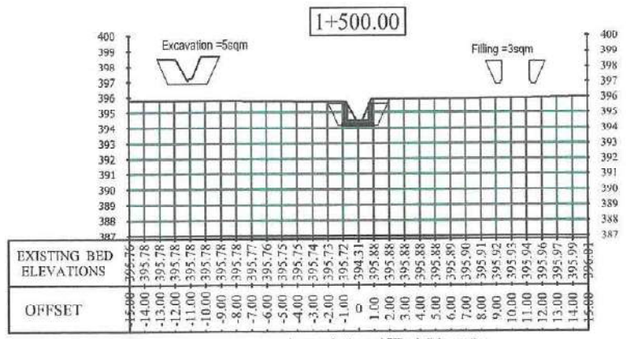


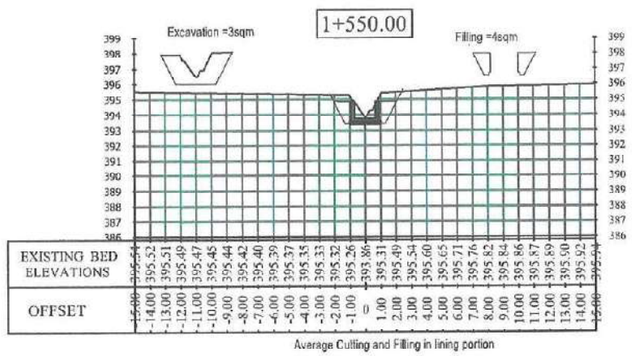


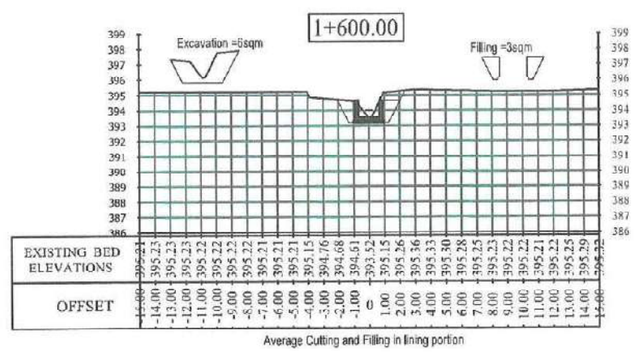


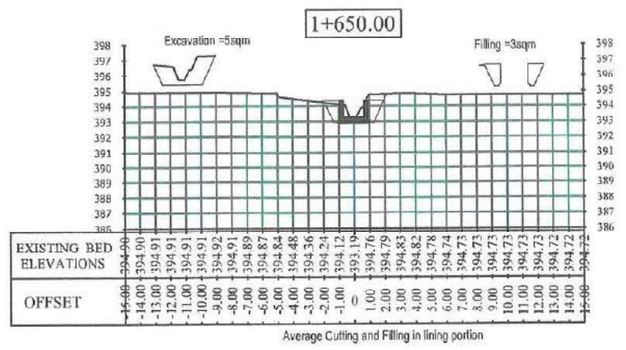


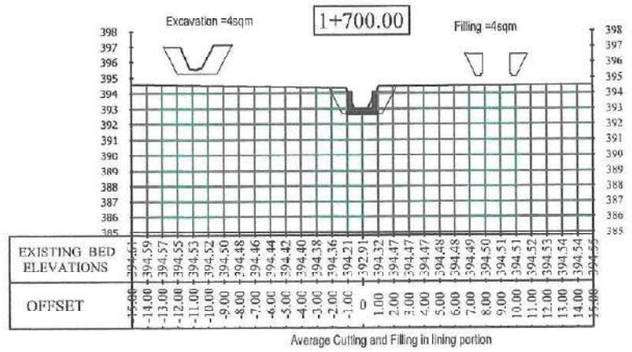


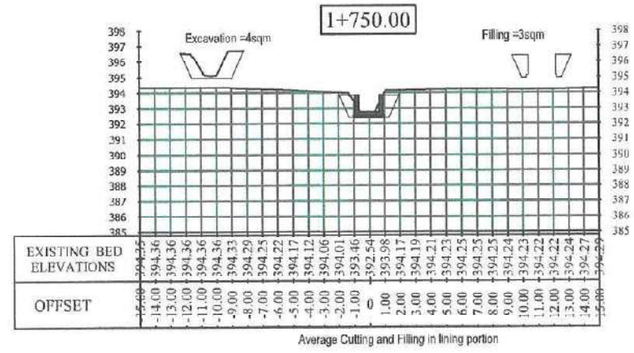


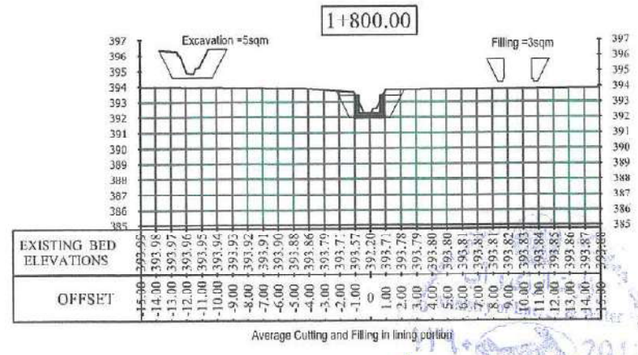






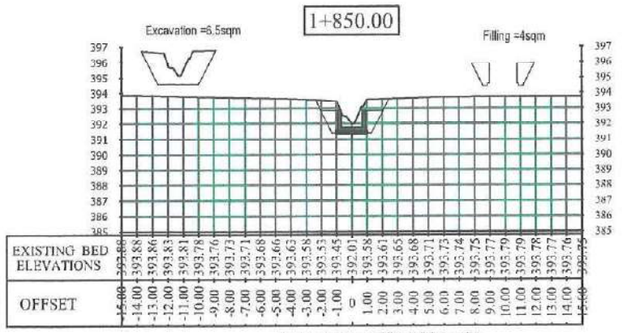


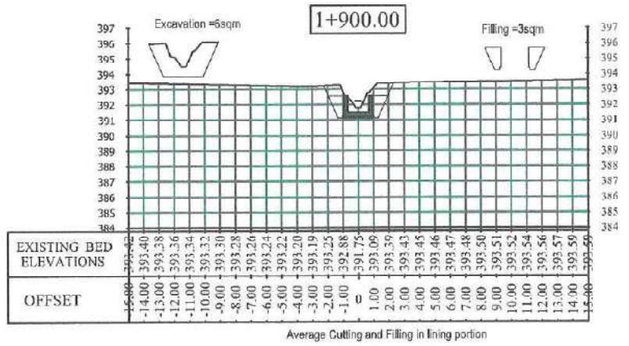


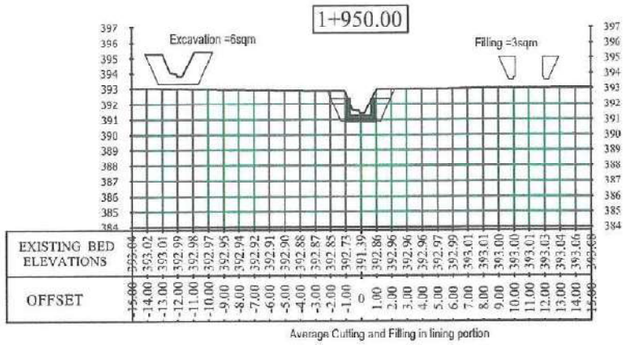


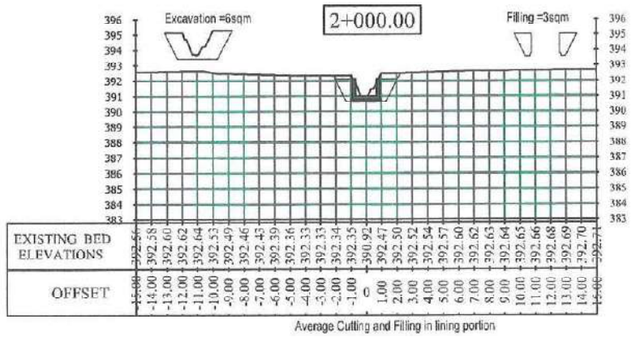
USAID FROM THE AMERICAN PEOPLE	STRENGTHENING WATERSHED & IRRIGATION MANAGEMENT SWIM	CANAL NAME: CHOCHMAN MAIN CANAL DEH-NAW BRANCH	LOCATION: DISTRICT: KHULM PROVINCE: SAMANGAN	DRAWING TITLE: SURVEY SECTION	SURVEYED BY: SWIM	DRAWING AND DESIGN BY: MOHAMMAD AFZAL MUJAHID ENGINEER (HYDRAULIC SPECIALIST) DATE: 6/21/2020	REVIEWED AND CHECKED BY: GERALD MALONEY IRRIGATION ENGINEER EXPERT DATE: 21-6-2020	SWIM APPROVAL: HOPPY MAZIEL CHIEF OF PARTY DATE: 21-6-2020	MEW/RBA, APPROVAL DATE:	SHEET NO. 77/94

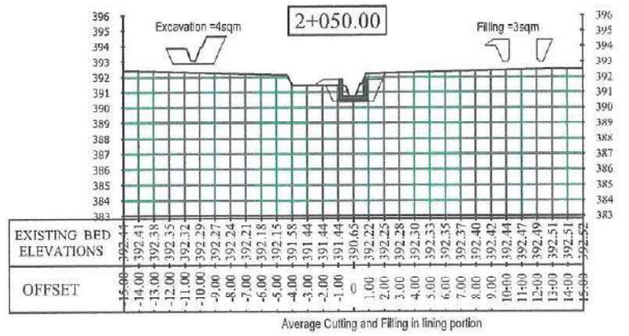
For H.M

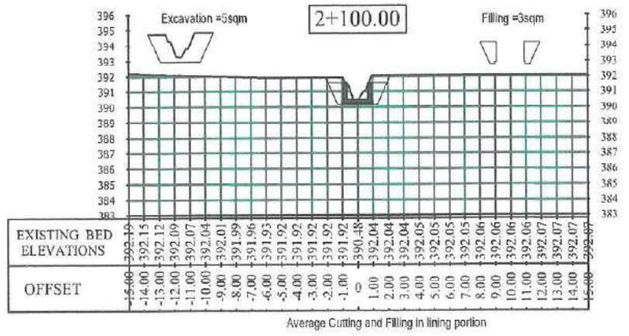


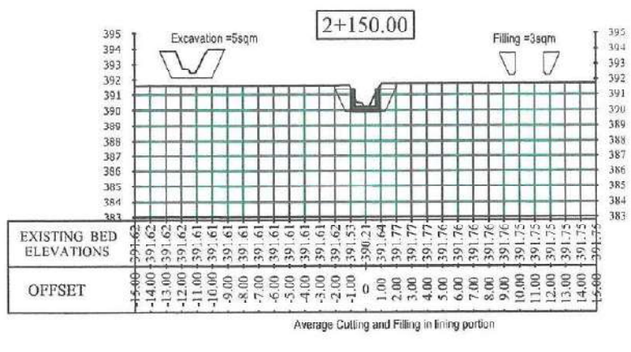


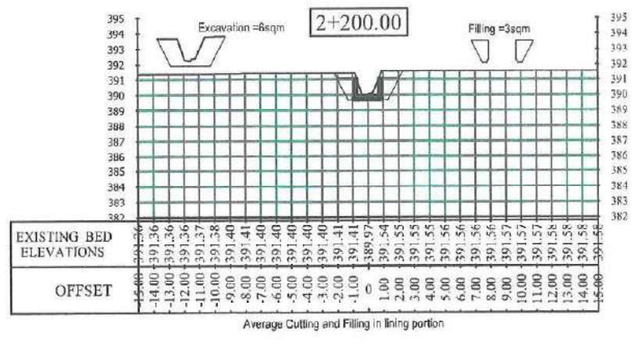


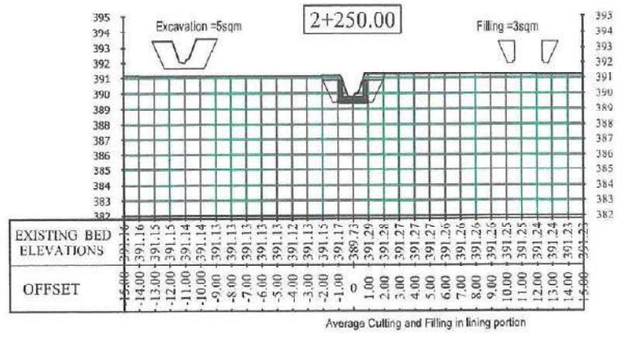


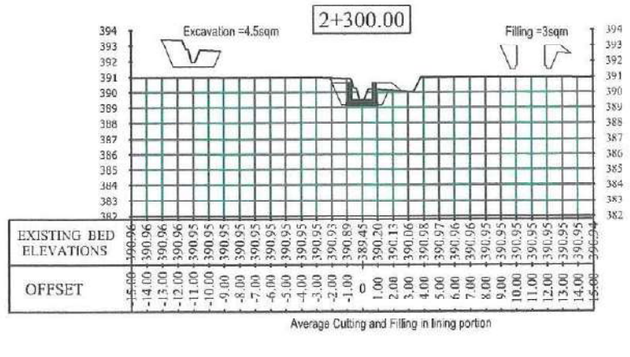


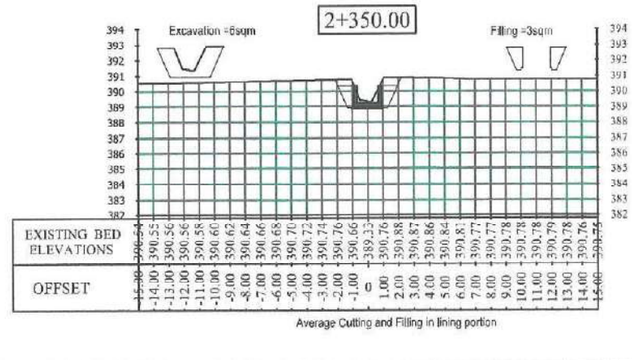


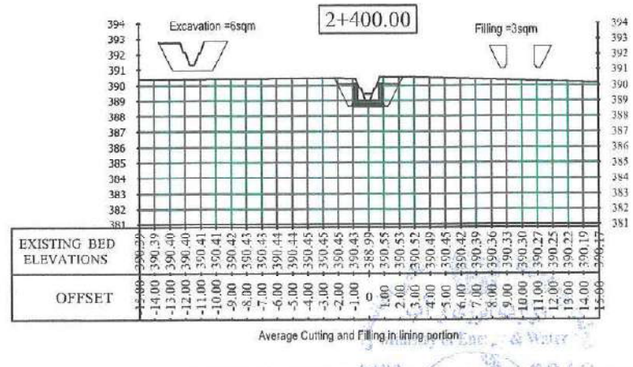






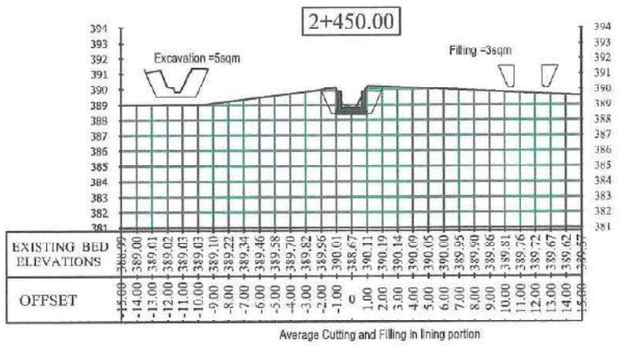


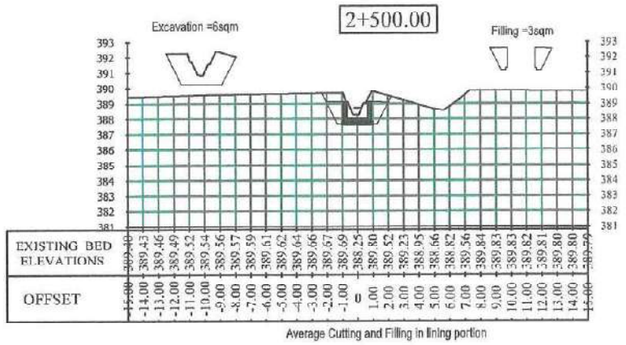


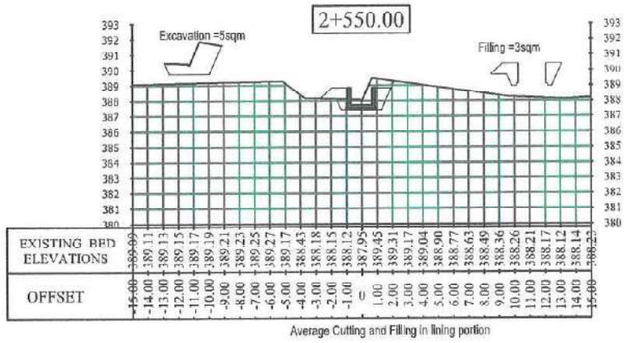


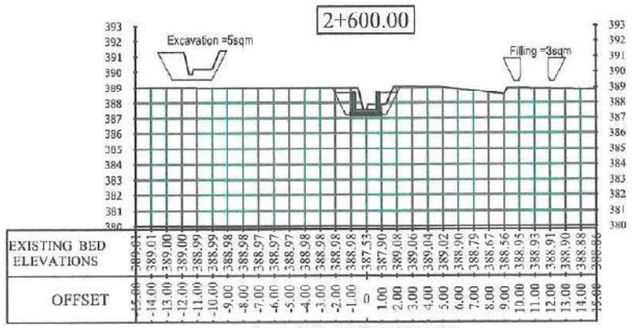
USAID FROM THE AMERICAN PEOPLE	STRENGTHENING WATERSHED & IRRIGATION MANAGEMENT WIM	CANAL NAME: CHOCHMAN MAIN CANAL DEH-NAW BRANCH	LOCATION: DISTRICT: KHULM PROVINCE: SAMANGAN	DRAWING TITLE: SURVEY SECTION	SURVEYED BY: SWIM	DRAWING AND DESIGN BY: MOHAMMAD AFZAL MUJAHID ENGINEER (HYDRAULIC SPECIALIST) DATE: 6/21/2020	REVIEWED AND CHECKED BY: GERALD MALONE IRRIGATION MANAGER-EXPERT DATE: 21-6-2020	SWIM APPROVAL: HOPPY MAZIER CHIEF OF PARTY DATE: 21-6-2020	MEW/RBA, APPROVAL: DATE:	SHEET NO. 78/94

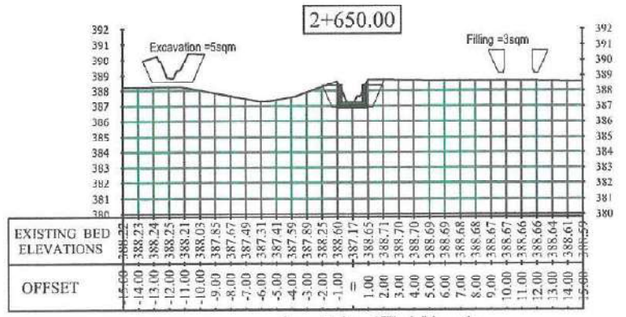
For H.M

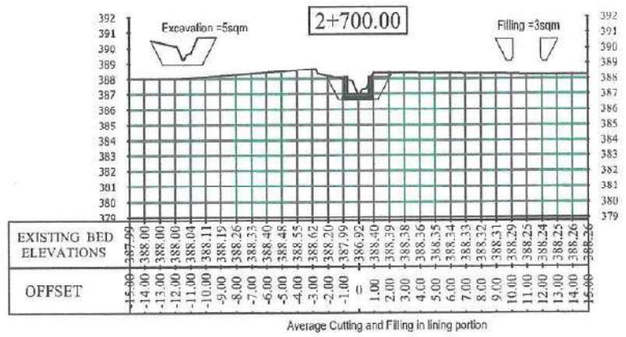


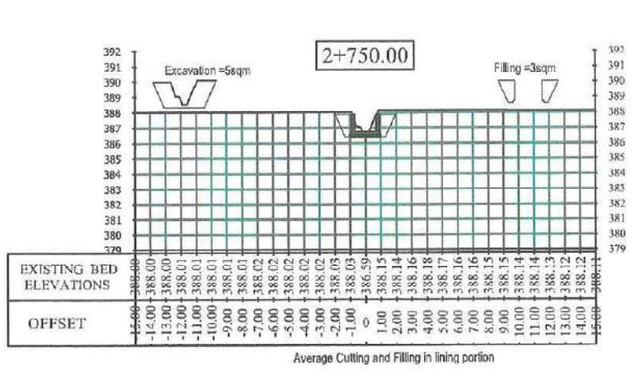


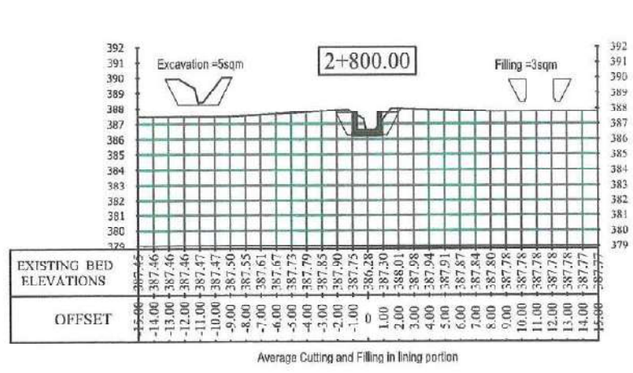


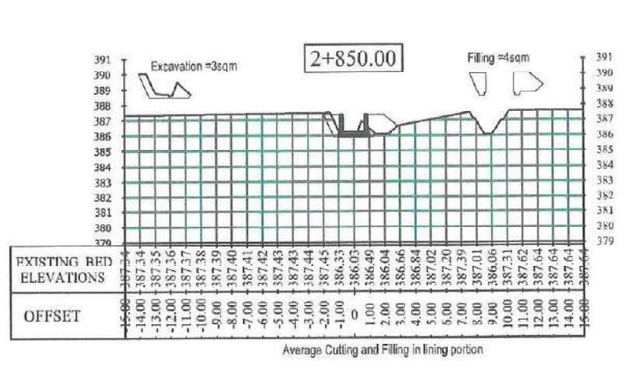


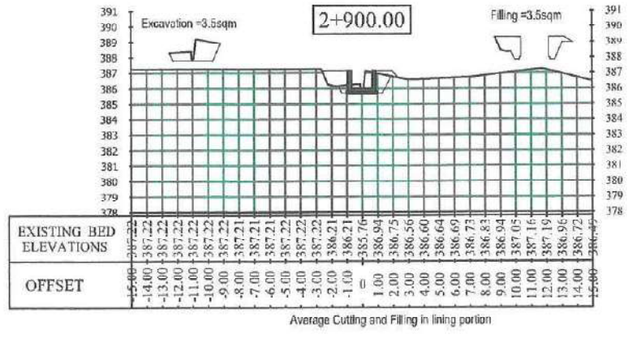


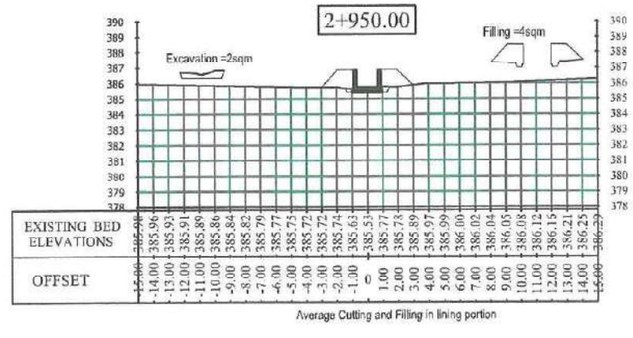


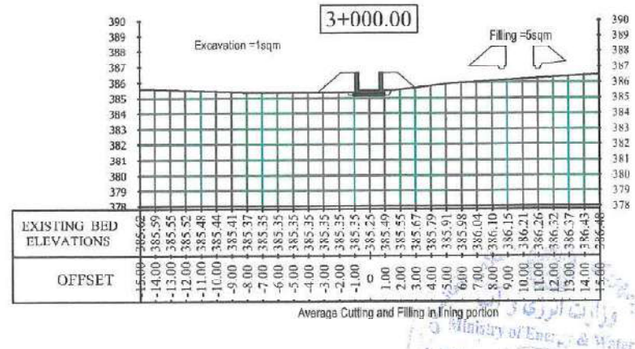






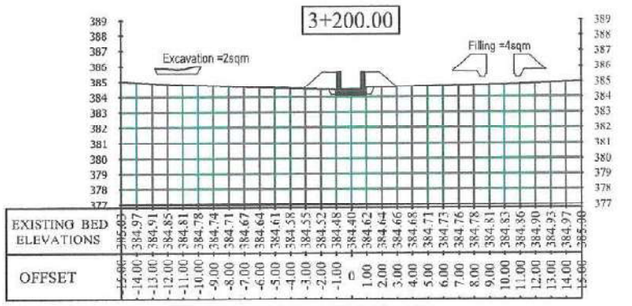


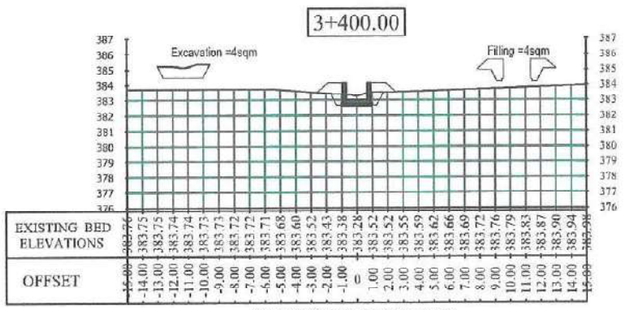


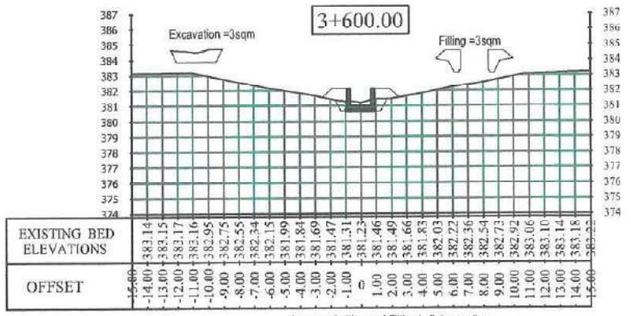


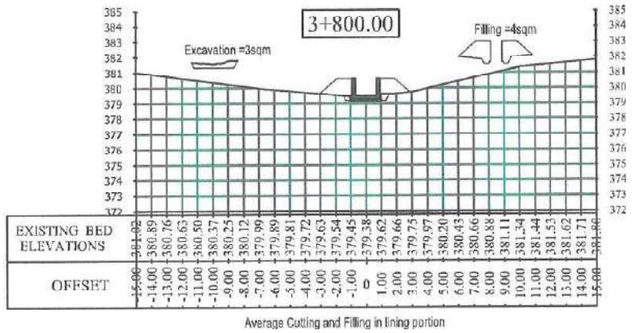
USAID FROM THE AMERICAN PEOPLE	STRENGTHENING WATERSHED & IRRIGATION MANAGEMENT SWIM	CANAL NAME CHOCHMAN MAIN CANAL DEH-NAW BRANCH	LOCATION DISTRICT: KHULM PROVINCE: SAMANGAN	DRAWING TITLE SURVEY SECTION	SURVEYED BY SWIM	DRAWING AND DESIGN BY MOHAMMAD AFZAL MUJAHID ENGINEER (HYDRAULIC SPECIALIST) DATE: 6/21/2020	REVIEWED AND CHECKED BY GERALD MALONEY IRRIGATION/WATER USER EXPERT DATE: 21-6-2020	SWIM APPROVAL HOPPY MAZIER CHIEF OF PARTY DATE: 21-6-2020	MEW/RBA APPROVAL DATE:	SHEET NO. 79/94

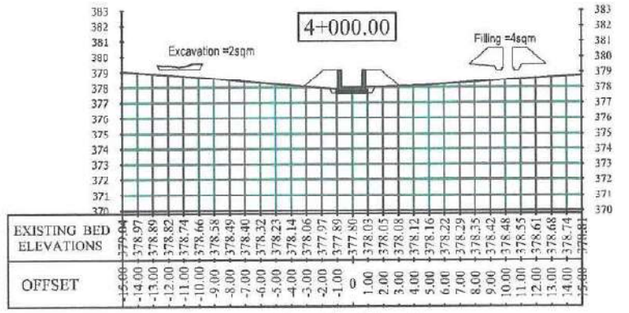
For H.M

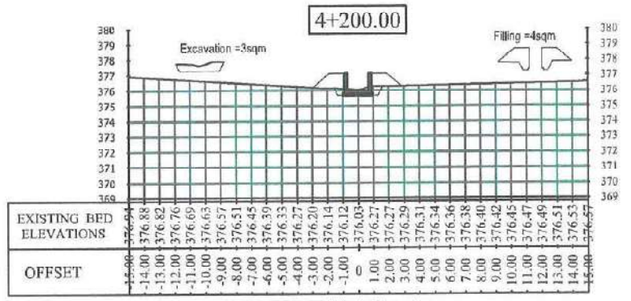


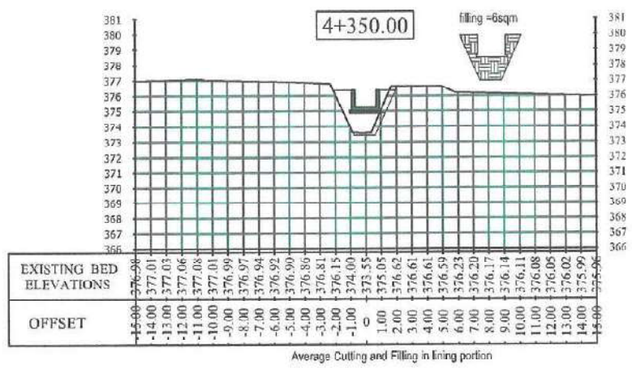


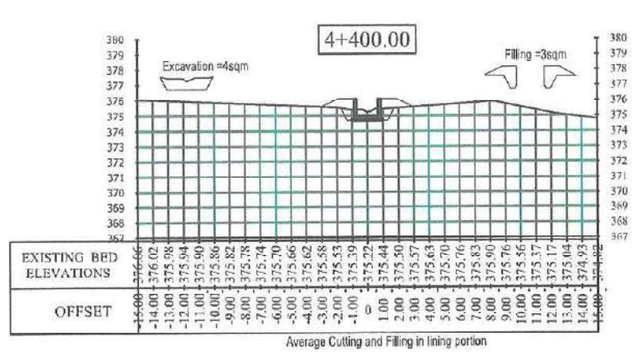


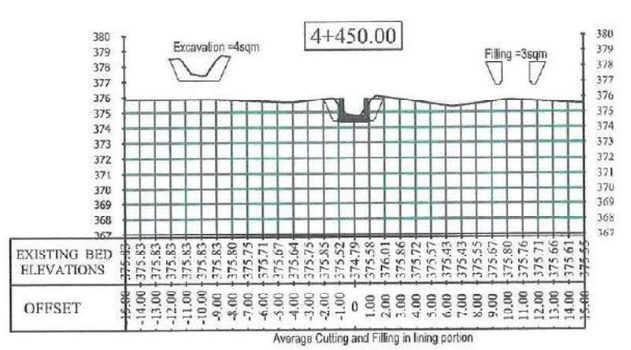


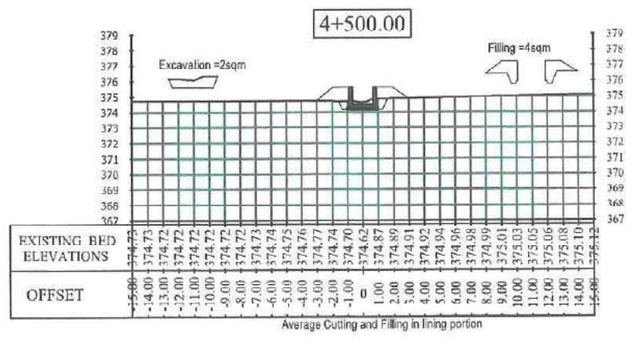


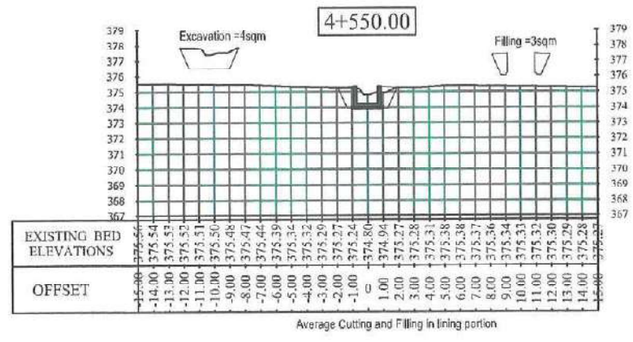


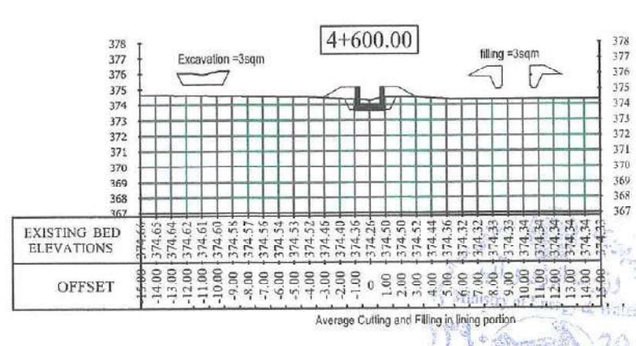












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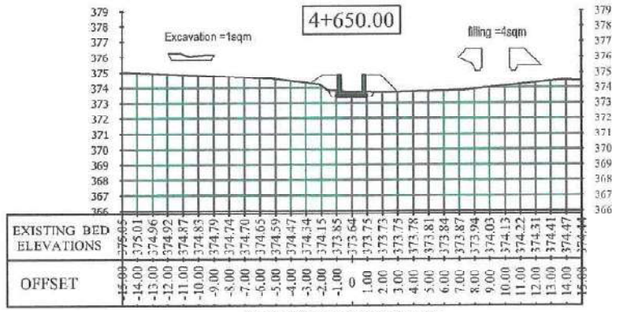
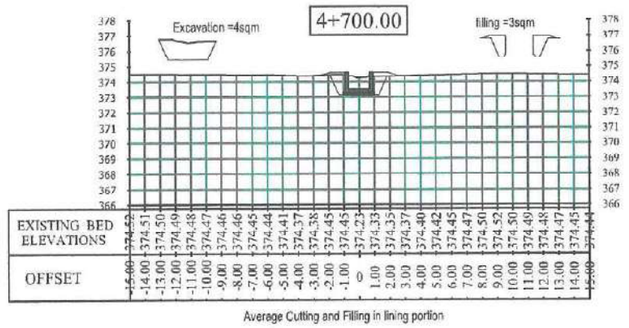
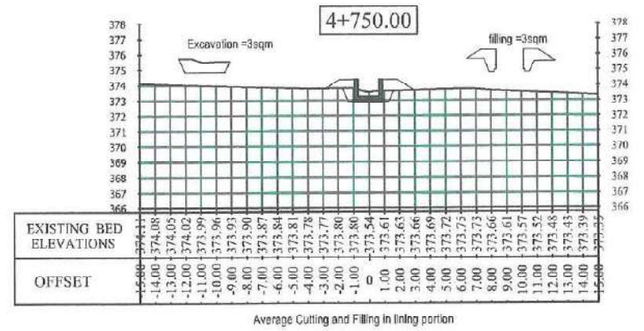
For H.M



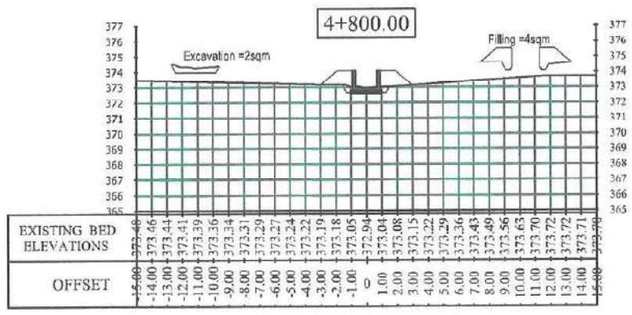
Average Cutting and Filling in lining portion



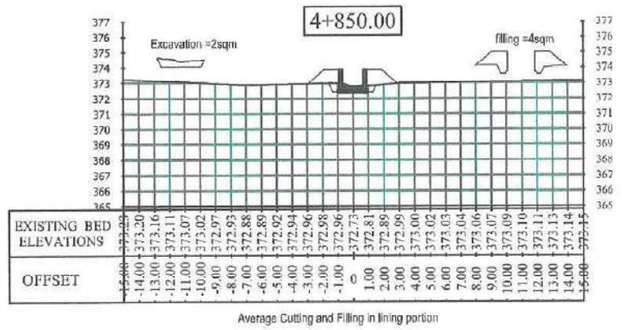
Average Cutting and Filling in lining portion



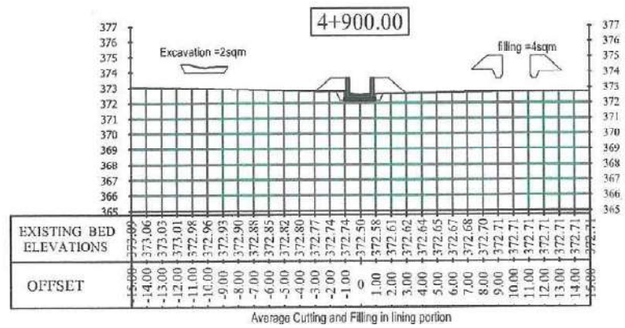
Average Cutting and Filling in lining portion



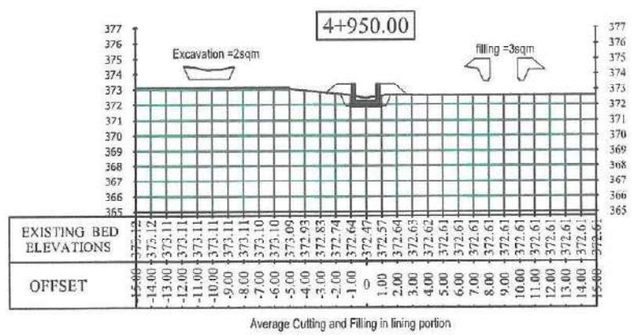
Average Cutting and Filling in lining portion



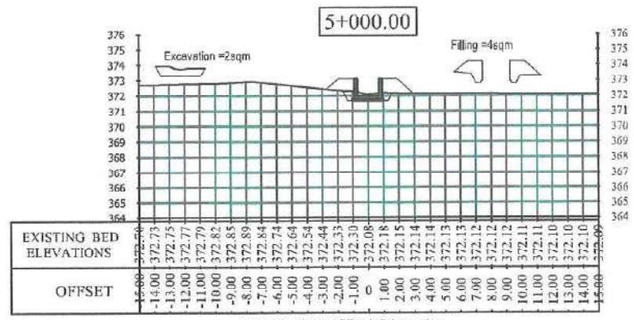
Average Cutting and Filling in lining portion



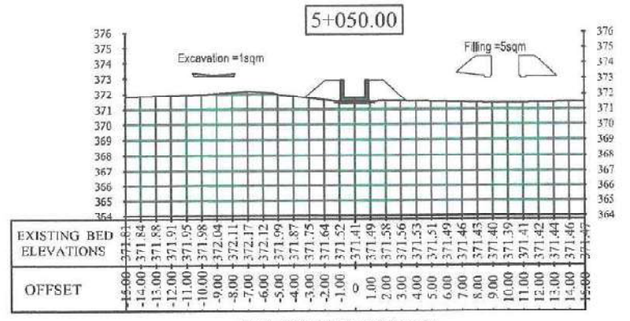
Average Cutting and Filling in lining portion



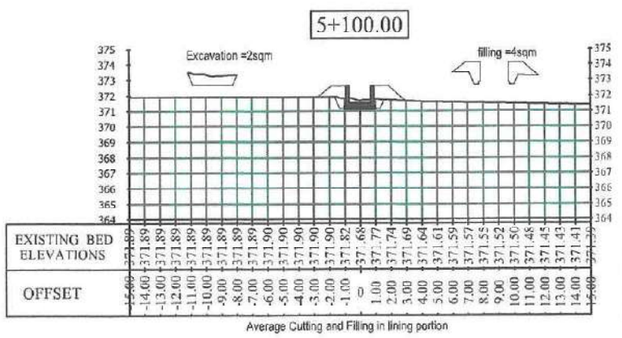
Average Cutting and Filling in lining portion



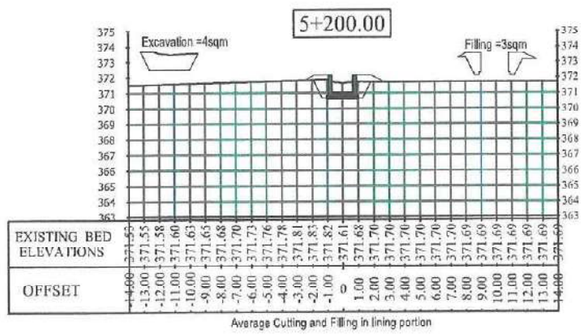
Average Cutting and Filling in lining portion



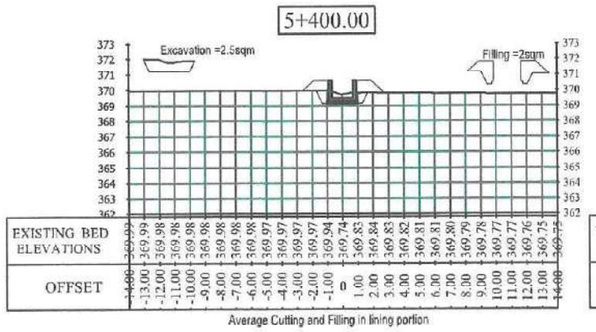
Average Cutting and Filling in lining portion



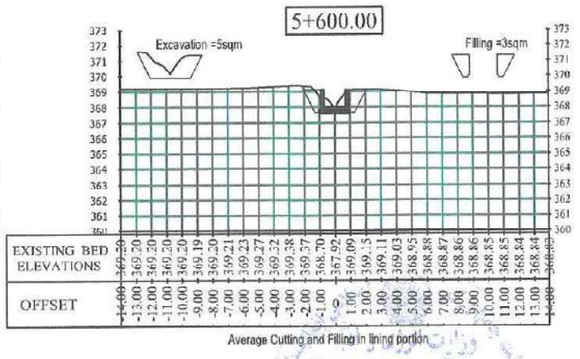
Average Cutting and Filling in lining portion



Average Cutting and Filling in lining portion



Average Cutting and Filling in lining portion



Average Cutting and Filling in lining portion

USAID FROM THE AMERICAN PEOPLE	STRENGTHENING WATERSHED & IRRIGATION MANAGEMENT SWIM	CANAL NAME: CHOCHMAN MAIN CANAL DEH-NAW BRANCH	LOCATION: DISTRICT: KHULM PROVINCE: SAMANGAN	DRAWING TITLE: SURVEY SECTIONS	SURVEYED BY: SWIM	DRAWING AND DESIGN BY: MOHAMMAD AFZAL MUJAHID ENGINEER (HYDRAULIC SPECIALIST) DATE: 6/21/2020	REVIEWED AND CHECKED BY: GERALD MAYON IRRIGATION ENGINEER EXPERT DATE: 21-6-2020	SWIM APPROVAL: HOPPY MAZIER CHIEF OF PARTY DATE: 21-6-2020	MEW&RBA APPROVAL: DATE:	SHEET NO. 81/94

Ministry of Energy & Water

For H.M

CHOCHMAN MAIN CANAL (DEH-NAW BRANCH) PROPOSED TURNOUTS STRUCTURE LIST

S/N	STATION	NORTING	EASTING	DESCRIPTION
1	7+150	36.75228	67.62604	PROPOSED TURNOUT (TYPE 1)
2	7+350	36.75323	67.62382	PROPOSED TURNOUT (TYPE 1)
3	7+600.	36.75449	67.62204	PROPOSED TURNOUT (TYPE 1)
4	8+000	36.75707	67.619112	PROPOSED TURNOUT (TYPE 1)
5	9+150	36.76.253	67.61063	PROPOSED TURNOUT (TYPE 1)
6	3+000	36.72900	67.65500	PROPOSED TURNOUT (TYPE 2)

CHOCHMAN MAIN CANAL (DEH-NAW BRANCH) PROPOSED BOX CULVERT STRUCTURE LIST

S/N	STATION	NORTING	EASTING	DESCRIPTION
1	0+440	36.72017	67.63303	PROPOSED BOX CULVERT
2	0+545	36.72004	67.62544	PROPOSED BOX CULVERT
3	0+800	36.73421	67.59439	PROPOSED BOX CULVERT
4	1+060	36.71403	67.66512	PROPOSED BOX CULVERT

CHOCHMAN MAIN CANAL (DEH-NAW BRANCH) PROPOSED LINING STRUCTURE LIST

S/N	STATION		NORTING	EASTING	DESCRIPTION
1	0+000	5+650	36.71107	67.67286	PROPOSED LINING OF CANAL L= 5650M

CHOCHMAN MAIN CANAL (DEH-NAW BRANCH) PROPOSED PUBLIC UTILITY STRUCTURE LIST

S/N	STATION	NORTING	EASTING	DESCRIPTION
1	0+600	36.713	67.667	PROPOSED PUBLIC UTILITY STRUCTURE
2	2+250	36.724	67.659	PROPOSED PUBLIC UTILITY STRUCTURE
3	3+900	36.735	67.651	PROPOSED PUBLIC UTILITY STRUCTURE
4	4+900	36.741	67.644	PROPOSED PUBLIC UTILITY STRUCTURE

CHOCHMAN MAIN CANAL (DEH-NAW BRANCH) PROPOSED FOOT CULVERTS STRUCTURE LIST

S/N	STATION	NORTING	EASTING	DESCRIPTION
1	0+136	36.74	67.672	PROPOSED FOOT CULVERT
2	2+200	36.724	67.659	PROPOSED FOOT CULVERT
3	3+850	36.735	67.65	PROPOSED FOOT CULVERT
4	4+850	36.74	67.644	PROPOSED FOOT CULVERT

CHOCHMAN MAIN CANAL (DEH-NAW BRANCH) EXISTING SLAB CULVERT STRUCTURE LIST

S/N	STATION	NORTING	EASTING	DESCRIPTION
1	4+010	36.73625	67.64885	EXISTING SLAB CULVERT

CHOCHMAN MAIN CANAL (DEH-NAW BRANCH) PROPOSED DROP STRUCTURE LIST

S/No	STATION	NORTHING	EASTHING	BED ELEVATION	Description
1	0+035	36.711	67.673	407.325	PROPOSED DROP STRUCTURE
2	0+150	36.711	67.671	406.25	PROPOSED DROP STRUCTURE
3	0+225	36.711	67.6709	405.375	PROPOSED DROP STRUCTURE
4	0+400	36.712	67.669	404.00	PROPOSED DROP STRUCTURE
5	0+525	36.713	67.668	402.875	PROPOSED DROP STRUCTURE
6	0+625	36.713	67.667	401.875	PROPOSED DROP STRUCTURE
7	0+700	36.714	67.666	401.00	PROPOSED DROP STRUCTURE
8	0+788	36.714	67.665	400.06	PROPOSED DROP STRUCTURE
9	0+875	36.714	67.664	399.125	PROPOSED DROP STRUCTURE
10	0+975	36.715	67.664	398.125	PROPOSED DROP STRUCTURE
11	1+050	36.715	67.663	397.75	PROPOSED DROP STRUCTURE
12	1+375	36.718	67.661	395.125	PROPOSED DROP STRUCTURE
13	1+520	36.719	67.661	393.9	PROPOSED DROP STRUCTURE
14	1+950	36.722	67.66	391.75	PROPOSED DROP STRUCTURE
15	2+500	36.725	67.657	388.00	PROPOSED DROP STRUCTURE
16	3+325	36.731	67.653	383.375	PROPOSED DROP STRUCTURE
17	3+525	36.732	67.652	381.875	PROPOSED DROP STRUCTURE
18	3+600	36.733	67.651	381.00	PROPOSED DROP STRUCTURE
19	3+750	36.734	67.65	379.75	PROPOSED DROP STRUCTURE
20	3+875	36.735	67.649	378.625	PROPOSED DROP STRUCTURE
21	4+025	36.736	67.649	377.375	PROPOSED DROP STRUCTURE
22	4+100	36.737	67.648	376.50	PROPOSED DROP STRUCTURE
23	5+375	36.744	67.641	369.625	PROPOSED DROP STRUCTURE
24	5+561	36.746	67.641	368.25	PROPOSED DROP STRUCTURE

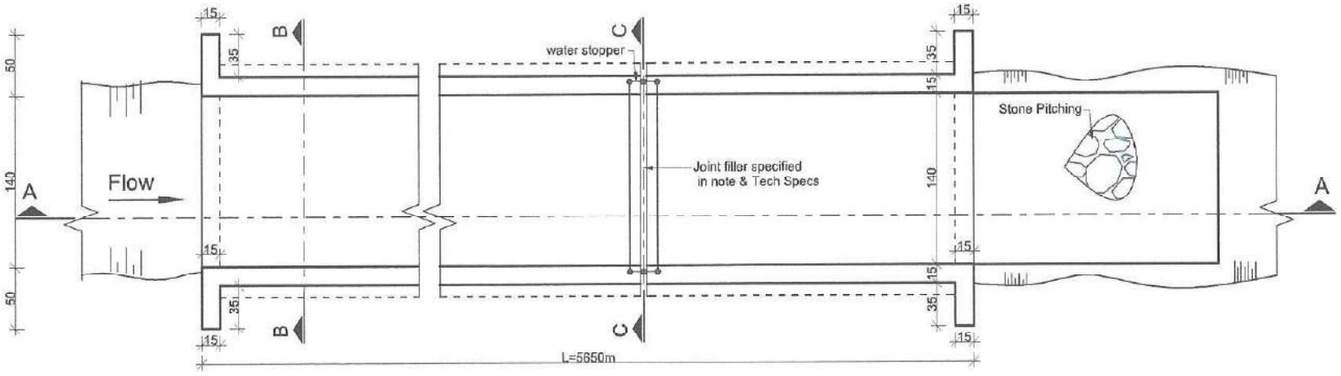
USAID FROM THE AMERICAN PEOPLE

STRENGTHENING WATERSHED & IRRIGATION MANAGEMENT SWIM	CANAL NAME	LOCATION	DRAWING TITLE	SURVEYED BY	DRAWING AND DESIGN BY	REVIEWED AND CHECKED BY	SWIM APPROVAL	MEW/RBA, APPROVAL	SHEET NO.
	CHOCHMAN MAIN CANAL DEH-NAW BRANCH	DISTRICT: KHULM PROVINCE: SAMANGAN	STRUCTURE LIST	SWIM	MOHAMMAD AFZAL MUJAHID ENGINEER (HYDRAULIC SPECIALIST) DATE 6/21/2020	GERALD MALONEY IRRIGATION ENGINEER EXPERT DATE: 21-6-2020	HOPPY MAZIER CHIEF OF PARTY DATE: 21-6-2020	DATE:	82/94

For H.M

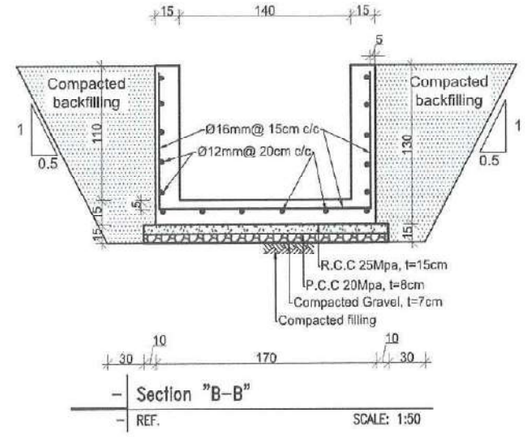
TABLE OF LINING

No	Canal Lining Detail	Dimensions (M) Length	High	Wide	Start and End Station		Canal Slope	Remark
1	Chochman Main Canal Deh-Naw Branch	5650	1.1	1.4	Start (St: 0+000)	End (St: 5+650)	0.005	



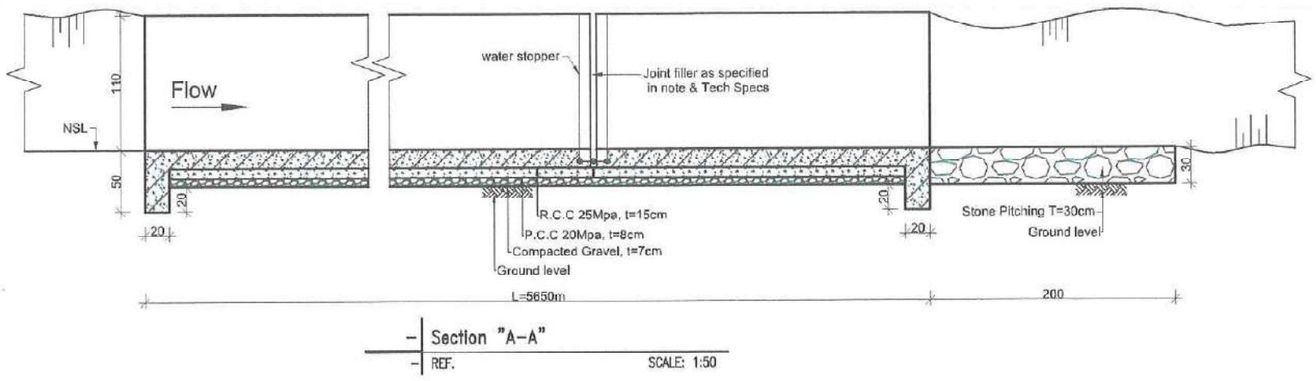
Plan of R.C.C Lining, L=5650m

REF. St: (0+000 to 5+650) SCALE: 1:50



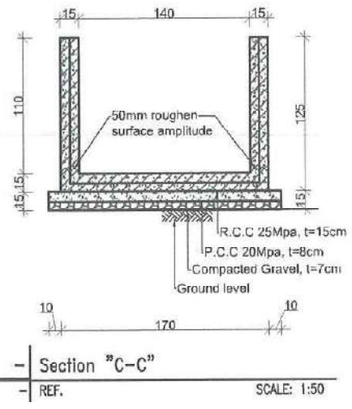
Section "B-B"

REF. SCALE: 1:50



Section "A-A"

REF. SCALE: 1:50



Section "C-C"

REF. SCALE: 1:50

Note:

1. Unless noted otherwise, linear dimensions shown on drawing are in centimeters (cm), and elevations are in meters(m).
2. The construction joints are recommended after each segment of 10M length of R.C.C Lining along the canal .
3. The joint's gape will be around (3 to 4)cm and should be filled properly as specified in technical specification.
4. Excavation for the Foundation should be checked by the site Engineer as per drawing and Tech Specs.
5. Sand and Gravel should be clean and free from organic material.
6. All filling should be compacted properly in layers of 15cm each as specified in drawing and technical specification.
7. Fresh cement to be used.
9. Compressive strength of Reinforced cement concrete is 25MPa
10. Mild steel Grad 60 rebar to be used.
11. Clean water should be used as specified in technical specification
12. Angle of walls to be adjusted by SWIM engineer as per site conditions.
13. The alignment of wall should be straight as possible, and curved the alignment breaks.
14. Installation of PVC or HDPE water stoppers must be securely positioned in the forms to prevent deflection or misalignment during concrete placement. Type of water stopper shall be conform with ASTM D 2240 and wide of water stopper $W \geq 20$cm

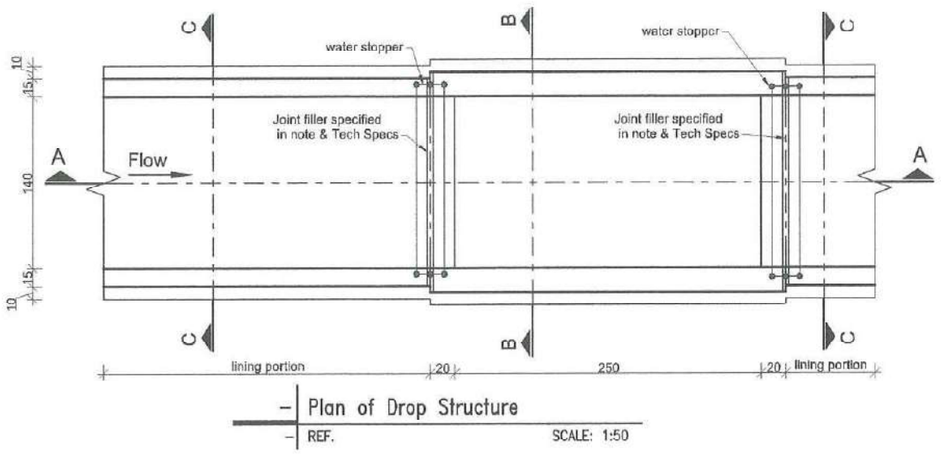
Bar Schedule (No. of bars and total bar length presented for 1m Lining)

Member	Bar Diameter	Shape Code	No. of Bars	Segment length (mm) a	b	c	d	e	Total length - *varies* (metres)
Slab and wall	16	a, a, b	5	1100	1550				27
Slab	12	a	5	1000					5.00
Wall	12	—	5	1000					5.00

Note: No. of bars and total bar length Should be calculate as per required length

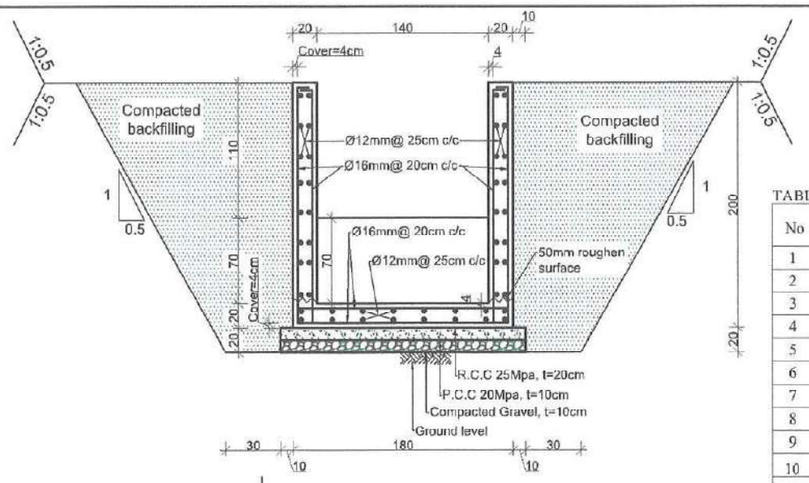
	STRENGTHENING WATERSHED & IRRIGATION MANAGEMENT	CANAL NAME	LOCATION	DRAWING TITLE	SURVEYED BY	DRAWING AND DESIGN BY	REVIEWED AND CHECKED BY	SWIM APPROVAL	MEW/RBA, APPROVAL	SHEET NO.
USAID FROM THE AMERICAN PEOPLE / SWIM		CHOCHMAN MAIN CANAL DEH-NAW BRANCH	DISTRICT: KHULM PROVINCE: SAMANGAN	R.C.C Lining Plan and Sections	SWIM	MOHAMMAD AFZAL MUJAHID ENGINEER (HYDRAULIC SPECIALIST) DATE: 6/21/2020	GERALD MAICH IRRIGATION ENGINEER EXPERT DATE: 21-6-2020	HOPPY MAZIER CHIEF OF PARTY DATE: 21-6-2020	DATE:	83/94

For H.M



Plan of Drop Structure

REF. SCALE: 1:50

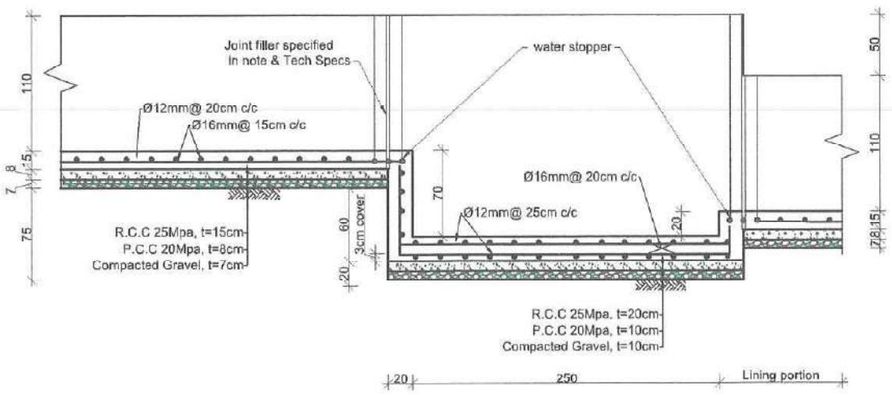


Section B-B of Drop

REF. St: SCALE: 1:50

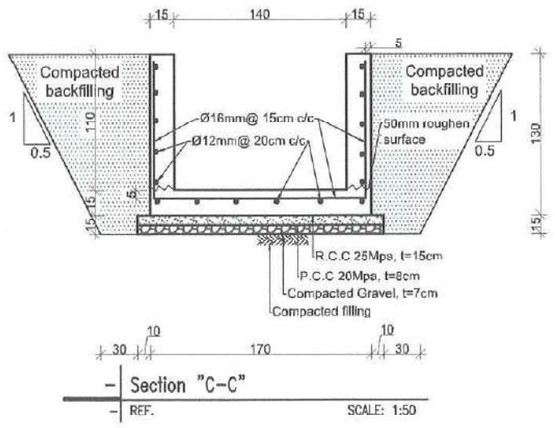
TABLE OF DROP

No	Station	Description (Drop in lining portion)	Dimensions (M)			Remark
			Length	High	Wide	
1	0+035	Drop Structure	2.5	0.7	1.40	
2	0+150	Drop Structure	2.5	0.7	1.40	
3	0+225	Drop Structure	2.5	0.7	1.40	
4	0+400	Drop Structure	2.5	0.7	1.40	
5	0+525	Drop Structure	2.5	0.7	1.40	
6	0+625	Drop Structure	2.5	0.7	1.40	
7	0+700	Drop Structure	2.5	0.7	1.40	
8	0+788	Drop Structure	2.5	0.7	1.40	
9	0+875	Drop Structure	2.5	0.7	1.40	
10	0+975	Drop Structure	2.5	0.7	1.40	
11	1+050	Drop Structure	2.5	0.7	1.40	
12	1+375	Drop Structure	2.5	0.7	1.40	
13	1+520	Drop Structure	2.5	0.7	1.40	
14	1+950	Drop Structure	2.5	0.7	1.40	
15	2+500	Drop Structure	2.5	0.7	1.40	
16	3+325	Drop Structure	2.5	0.7	1.40	
17	3+525	Drop Structure	2.5	0.7	1.40	
18	3+600	Drop Structure	2.5	0.7	1.40	
19	3+750	Drop Structure	2.5	0.7	1.40	
20	3+875	Drop Structure	2.5	0.7	1.40	
21	4+025	Drop Structure	2.5	0.7	1.40	
22	4+100	Drop Structure	2.5	0.7	1.40	
23	5+375	Drop Structure	2.5	0.7	1.40	
24	5+561	Drop Structure	2.5	0.7	1.40	



Section A-A of Drop

REF. SCALE: 1:50



Section "C-C"

REF. SCALE: 1:50

Note:

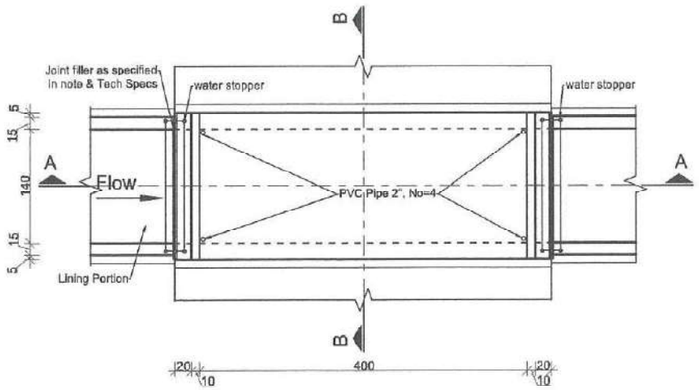
1. Unless noted otherwise, linear dimensions shown on drawing are in centimeters (cm), and elevations are in meters (m).
2. Excavation for the Foundation should be checked by the site Engineer as per drawing and Tech Specs.
3. Sand and Gravel should be clean and free from organic material.
4. All filling should be compacted properly in layers of 15cm each as specified in technical specification.
5. Fresh cement to be used.
6. Clean water should be used as specified in technical specification.
7. Angle of walls to be adjusted by SWIM engineer as per site conditions.
8. Compressive strength of plain cement concrete is 20MPa
9. Compressive strength of Reinforced cement concrete is 25MPa
10. Mild steel Grad 60 rebar to be used.
11. The canal alignment should be straight as possible, and curved the alignment breaks.
12. Installation of PVC or HDPE water stoppers must be securely positioned in the forms to prevent deflection or misalignment during concrete placement. Type of water stopper shall be conform with ASTM D 2240 and wide of water stopper $W \geq 20cm$

	STRENGTHENING WATERSHED & IRRIGATION MANAGEMENT	CANAL NAME	LOCATION	DRAWING TITLE	SURVEYED BY	DRAWING AND DESIGN BY	REVIEWED AND CHECKED BY	SWIM APPROVAL	MEW,RBA, APPROVAL	
USAID FROM THE AMERICAN PEOPLE	SWIM	CHOCHMAN MAIN CANAL DEH-NAW BRANCH	DISTRICT: KHULM PROVINCE: SAMANGAN	DROP STRUCTURE PLAN AND SECTIONS	SWIM	MOHAMMAD AFZAL MUJAHID ENGINEER (HYDRAULIC SPECIALIST) DATE: 6/21/2020	GERALD MALONE IRRIGATION WATER USER EXPERT DATE: 21-6-2020	HOPPY MATIES CHIEF OF PARTY DATE: 21-6-2020	DATE:	SHEET NO. 84/94

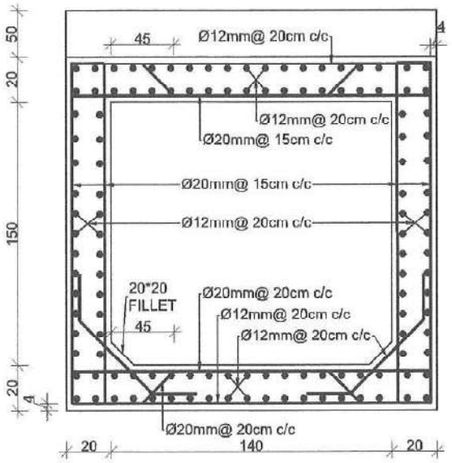
For H.M

TABLE OF BOX CULVERT

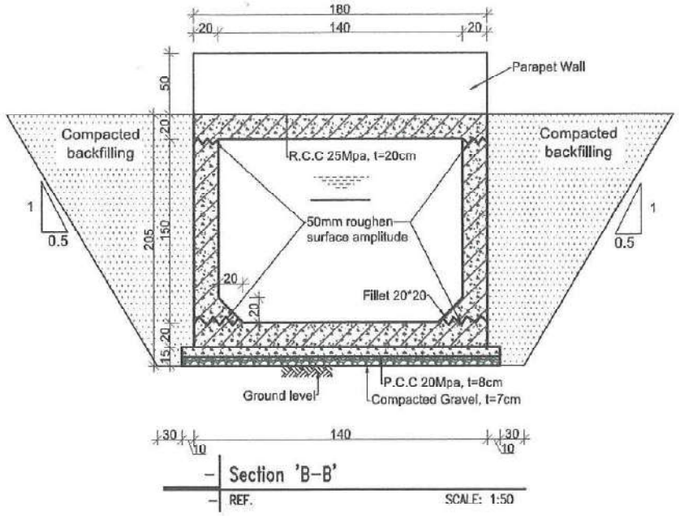
No	Station	Description	Dimensions (M)			GPS Point		Remarks
			Length	High	Wide	North	East	
1	0+440	Box Culvert	4.0	1.50	1.4	36.72017	67.63303	
2	0+545	Box Culvert	4.0	1.50	1.4	36.72004	67.62544	
1	0+800	Box Culvert	4.0	1.50	1.4	36.73421	67.59439	
2	1+060	Box Culvert	4.0	1.50	1.4	36.71403	67.66512	



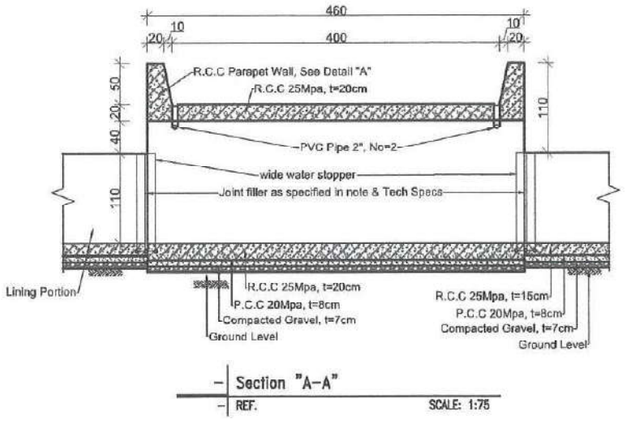
Plan of Box Culvert
REF. SCALE: 1:75



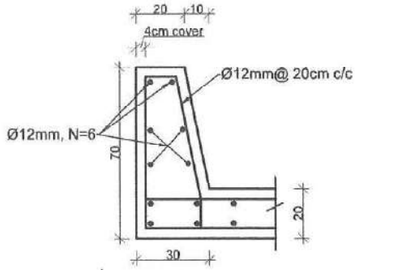
SECTION "B–B", REBAR DETAILS OF TOP SLAB, BOTTOM SLAB, & VERTICAL MEMBERS
REF. SCALE: 1:75



Section 'B–B'
REF. SCALE: 1:50



Section "A–A"
REF. SCALE: 1:75



Detail "A"
REF. SCALE: 1:25

Note:

1. Unless noted otherwise, linear dimensions shown on drawing are in centimeters (cm), and elevations are in meters(m).
2. The joint's gape will be around (3 to 4)cm and should be filled properly as specified in technical specification.
3. Excavation for the Foundation should be checked by the site Engineer as per drawing and Tech Specs.
4. Sand and Gravel should be clean and free from organic material.
5. All filling should be compacted properly in layers of 15cm each as specified in drawing and technical specification.
6. Stone masonry should be done by Mortar (1:4).
7. Fresh cement to be used.
9. Compressive strength of Reinforced cement concrete is 25MPa
10. Mild steel Grad 60 rebar to be used.
11. Clean water should be used as specified in technical specification
12. Angle of walls to be adjusted by SWIM engineer as per site conditions.
13. The alignment of wall should be straight as possible, and curved the alignment breaks.
14. Installation of PVC or HDPE water stoppers must be securely positioned in the forms to prevent deflection or misalignment during concrete placement. Type of water stopper shall be conform with ASTM D412 and ASTM D 2240 and wide of water stopper W≥20cm

Bar Schedule (No. of bars and total bar length presented for 1m Box Culvert)

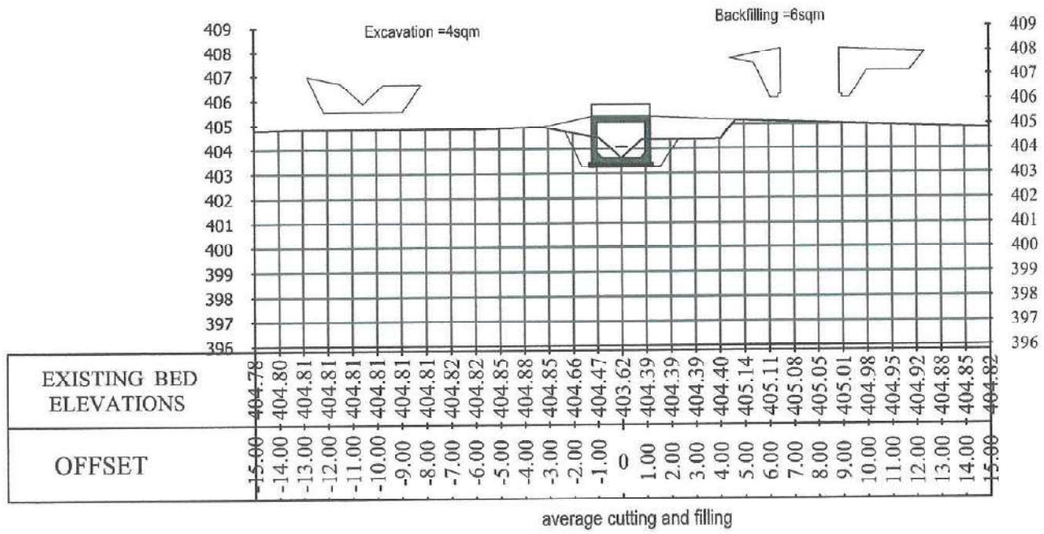
Member	Bar Diameter	Shape Code	No. of Bars	Segment length (mm)					Total length - *varies* (metres)
				a	b	c	d	e	
Bot Slab	12	a b a	5	120	1792				10.2
Bot Slab	20	b a a	5	120	1792				10.2
Bot Slab	12	a	5	1000					5.00
Bot Slab	12		5	1000					5.00
Bot Slab	20	a b c b a	5	400	425	1100			13.75
Bot Slab	12	a a b	5	300	900				7.50
Wall	20	a b a	7	160	1882				15.5
Wall	20	a b a	7	160	1882				15.5
Wall	12	a	5	1000					5.00
Wall	12	a	5	1000					5.00
Top Slab	12	b a a	5	120	1792				10.2
	20	a a b	7	120	1792				14.23
	12	a	5	1000					5.00
	12	a	5	1000					5.00
	20	a b c b a	7	400	425	1100			13.75
Parapet Wall	12	e a b d c	5	660	460	160	220	120	8.1
	12	a	6	1000					6.00

Note: No. of bars and total bar length Should be calculate as per required length

	STRENGTHENING WATERSHED & IRRIGATION MANAGEMENT	CANAL NAME	LOCATION	DRAWING TITLE	SURVEYED BY	DRAWING AND DESIGN BY	REVIEWED AND CHECKED BY	SWIM APPROVAL	MRW/RBA, APPROVAL	SHEET NO.
USAID FROM THE AMERICAN PEOPLE	SWIM	CHOCHMAN MAIN CANAL DEH-NAW BRANCH	DISTRICT: KHULM PROVINCE: SAMANGAN	BOX CULVERT PLAN, SECTIONS & DETAIL	SWIM	MOHAMMAD AFZAL MUJADID ENGINEER (HYDRAULIC SPECIALIST) DATE: 6/21/2020	GERALD MATINGO IRRIGATION ENGINEER EXPERT DATE: 21-6-2020	HOPPY MAZIEP CHIEF OF PARTY DATE: 21-6-2020	DATE:	85/94

For H.M

0+450.00



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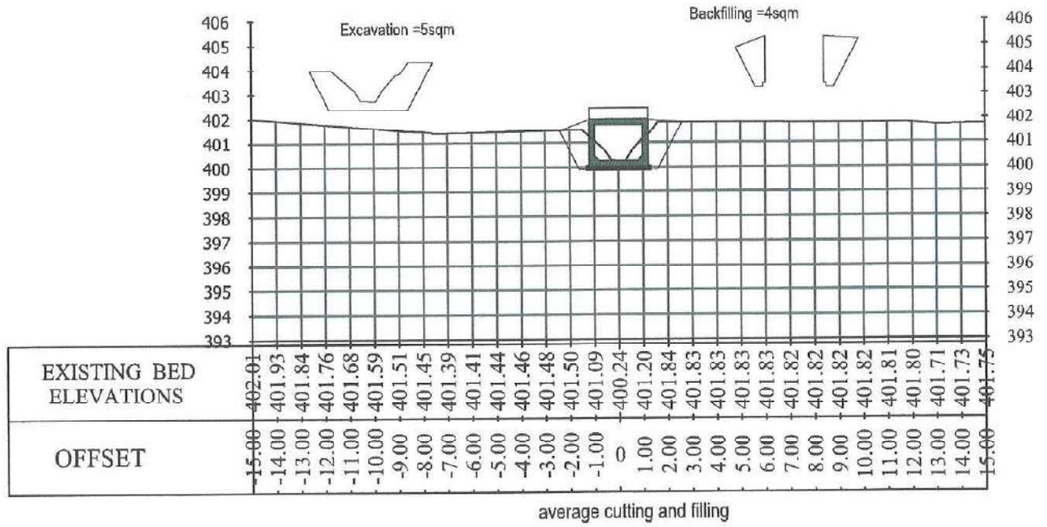

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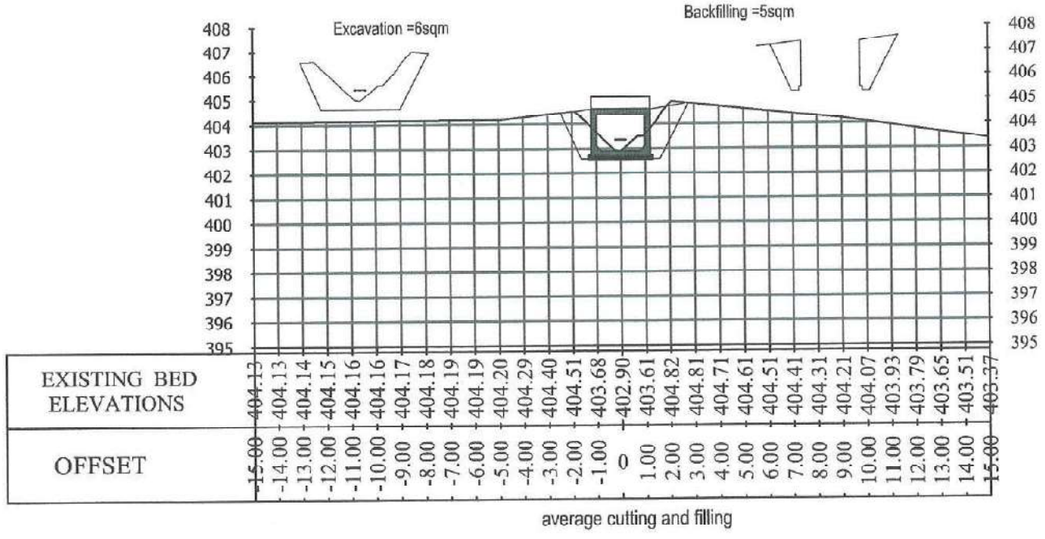

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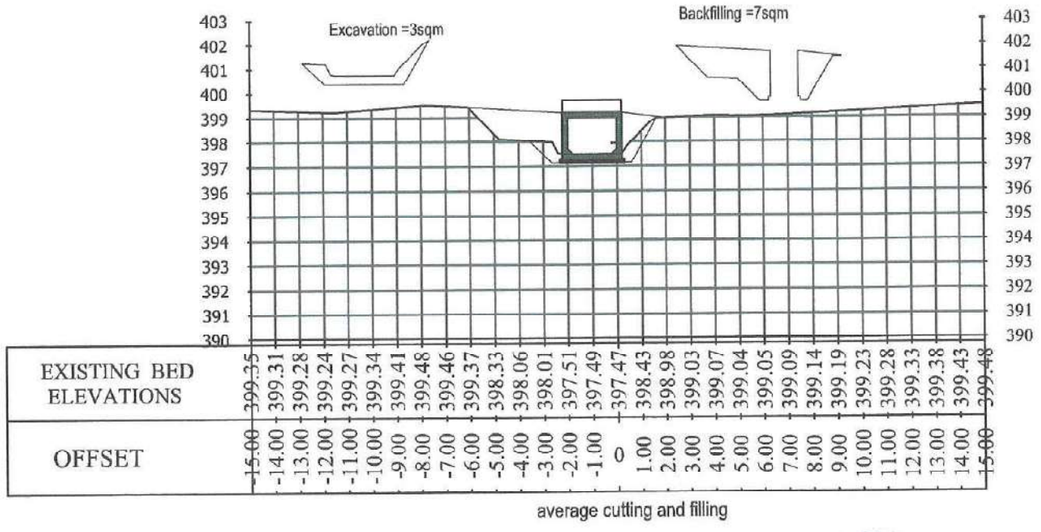


Scale: 1:250

USAID FROM THE AMERICAN PEOPLE	STRENGTHENING WATERSHED & IRRIGATION MANAGEMENT SWIM	CANAL NAME	LOCATION	DRAWING TITLE	SURVEYED BY	DRAWING AND DESIGN BY	REVIEWED AND CHECKED BY	SWIM APPROVAL	MEW/RBA, APPROVAL	SHEET NO. 86/94
		CHOCHMAN MAIN CANAL DEH-NAW BRANCH	DISTRICT: KHULM PROVINCE: SAMANGAN	BOX CULVERT SURVEY SECTIONS	SWIM	MOHAMMAD AFZAL MUJAHID ENGINEER (HYDRAULIC SPECIALIST) DATE: 6/21/2020	GERALD MANGNO IRRIGATION ENGINEER-EXPERT DATE: 21-6-2020	HOPPY MAZIER CHIEF OF PARTY DATE: 21-6-2020	DATE:	

For H.M

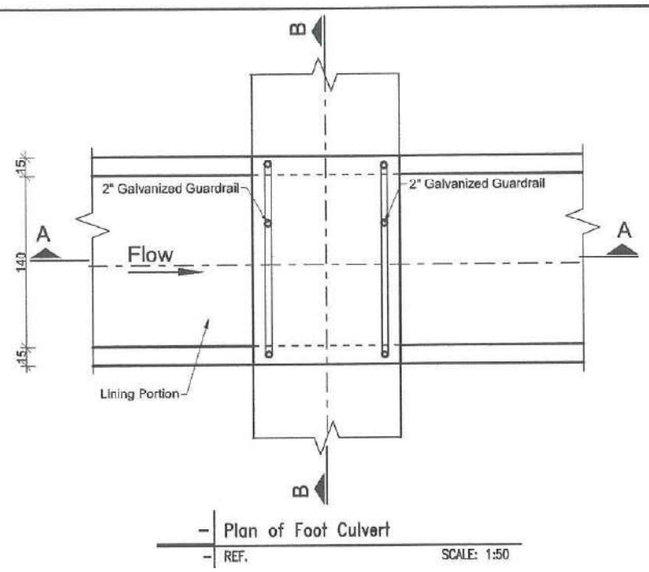
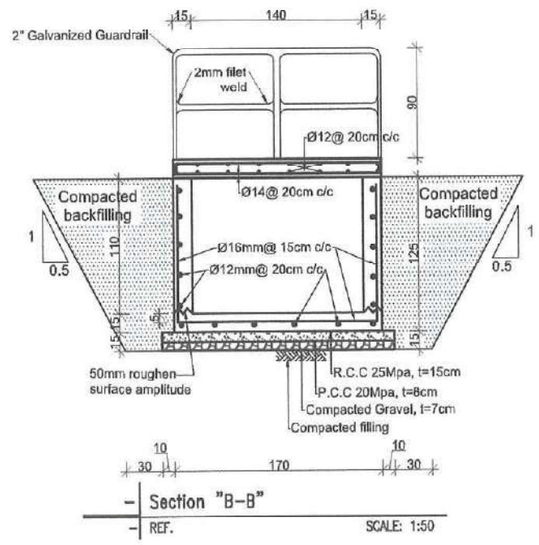


TABLE OF FOOT CULVERT

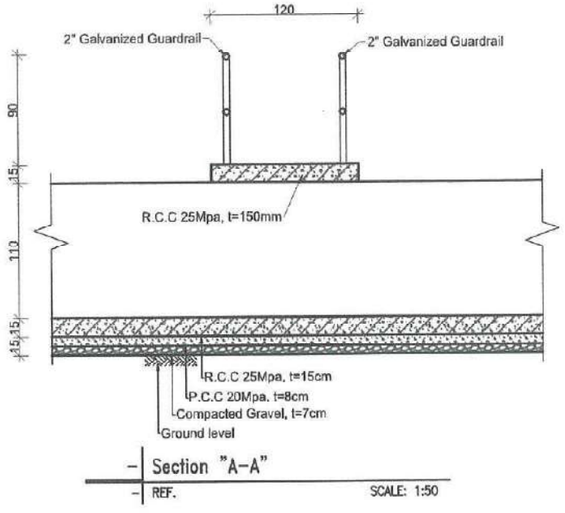
No	Station	Description	Dimensions (M)			Remarks
			Length	High	Wide	
1	0+136	Foot Culvert	1.4	1.1	1.20	
2	2+200	Foot Culvert	1.4	1.1	1.20	
3	3+850	Foot Culvert	1.4	1.1	1.20	
4	4+950	Foot Culvert	1.4	1.1	1.20	

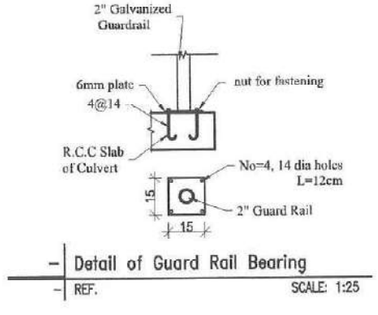


Bar Schedule (No. of bars and total bar length presented for 1m Lining)

Member	Bar Diameter	Shape Code	No. of Bars	Segment length (mm)					Total length - ***varies*** (metres)
				a	b	c	d	e	
Slab and wall	16	a b a	5	1100	1550				27
Slab	12	a	5	1000					5.00
Wall	12		5	1000					5.00
Top Slab	14	b a a	5	90	1640				9.1
	14	a a b	5	90	1640				9.1
	12	b a a	5	90	1140				6.6
	12	a a b	5	90	1140				6.6

Note: No. of bars and total bar length Should be calculate as per required length





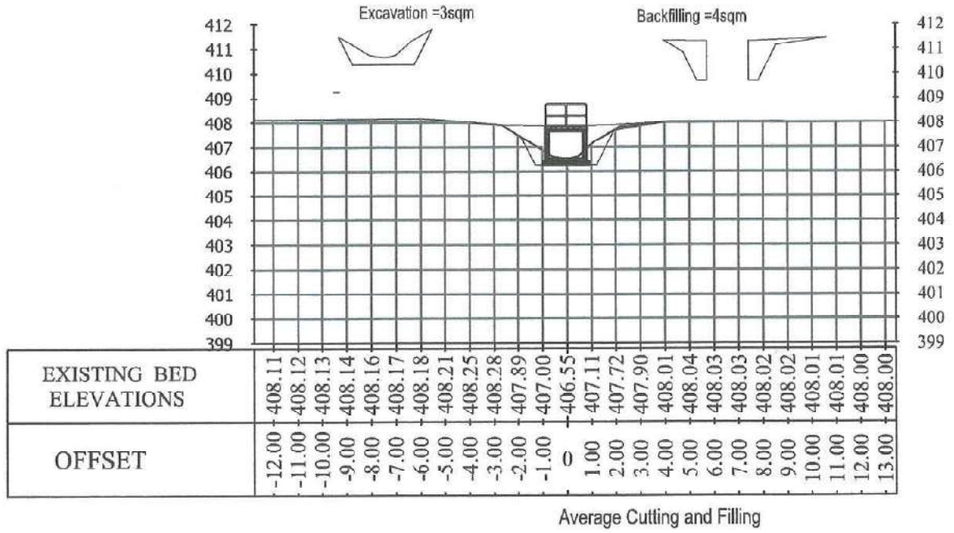
Note:

1: Unless noted otherwise, linear dimensions shown on drawing are in centimeters (cm), and elevations are in meters (m).
2: Excavation for the Foundation should be checked by the site Engineer,
3: Sand and Gravel should be clean and free from organic material
4: All filling should be compacted properly in layers of 15cm each as specified in Tech Specs
5: Stone masonry should be done by Mortar (1:4)
6: Mild steel Grad 60 rebar to be used.
7: Fresh cement to be used
8: Clean water should be used (suitable for drinking)
9: Angle and length of wing walls to be adjusted by SWIM engineer as per site conditions
10: The anchors will be placed during concrete pouring
11. The cold galvanization paint shall be provided over the welded areas after welding is completed.
12: 2mm Fillet weld shall be provided for the guardrail with electrode strength of EX70.
13: The thickness of guardrail is 2mm with schedule No 80
14: Steel grade of guardrail shall be provided as per ASTM A36
15: steel grade of anchor bolts shall comply with the minimum requirements of ASTM F1554

	STRENGTHENING WATERSHED & IRRIGATION MANAGEMENT	CANAL NAME	LOCATION	DRAWING TITLE	SURVEYED BY	DRAWING AND DESIGN BY	REVIEWED AND CHECKED BY	SWIM APPROVAL	MEW/RBA, APPROVAL	SHEET NO.
USAID FROM THE AMERICAN PEOPLE	SWIM	CHOCHMAN MAIN CANAL DEH-NAW BRANCH	DISTRICT: KHULM PROVINCE: SAMANGAN	FOOT CULVERT PLAN AND SECTIONS	SWIM	MOHAMMAD AFZAL MUJADD ENGINEER (HYDRAULIC SPECIALIST) DATE: 6/21/2020	GERALD MALONZO IRRIGATION ENGINEER EXPERT DATE: 21-6-2020	HOPPY MAZIER CHIEF OF PARTY DATE: 21-6-2020	DATE:	87/94

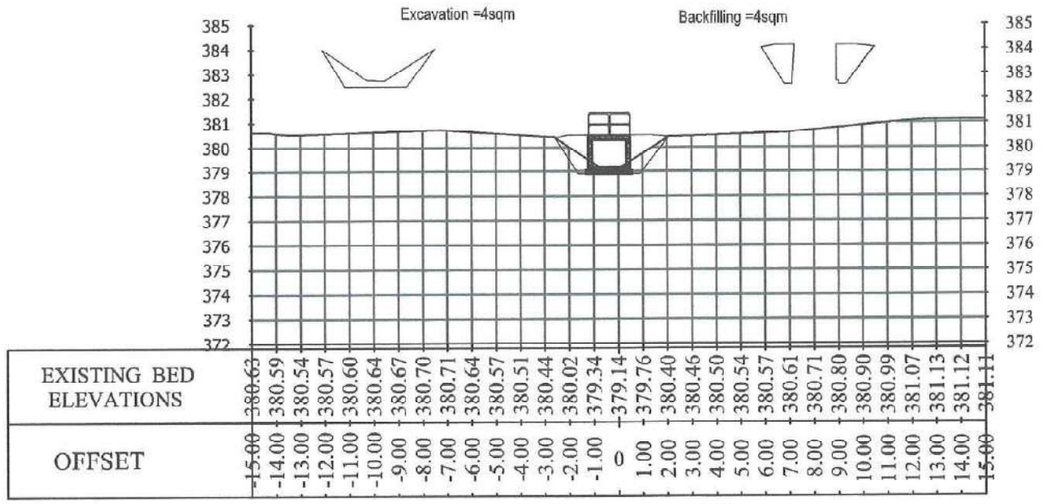
For H.M

0+136



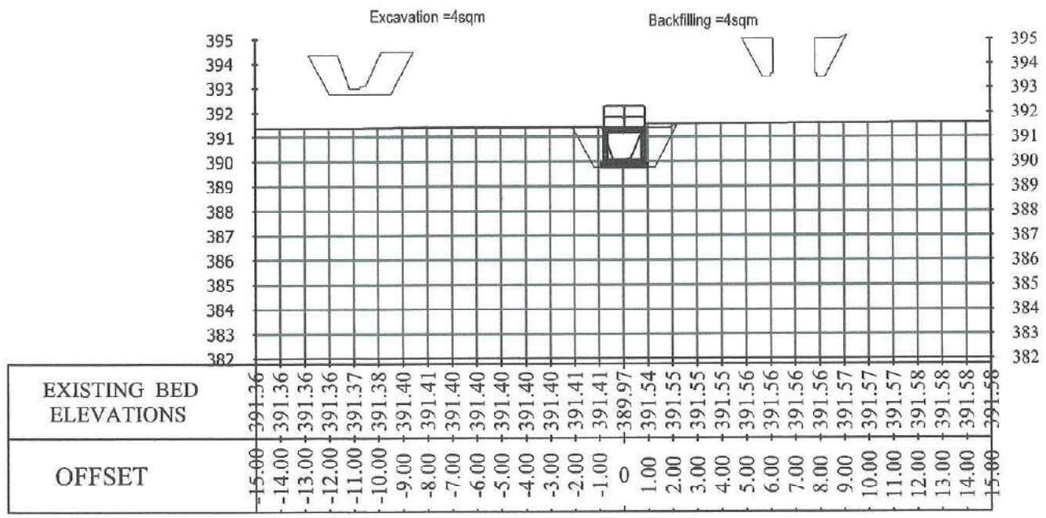
Average Cutting and Filling

3+850.00



Average Cutting and Filling

2+200.00



Average Cutting and Filling

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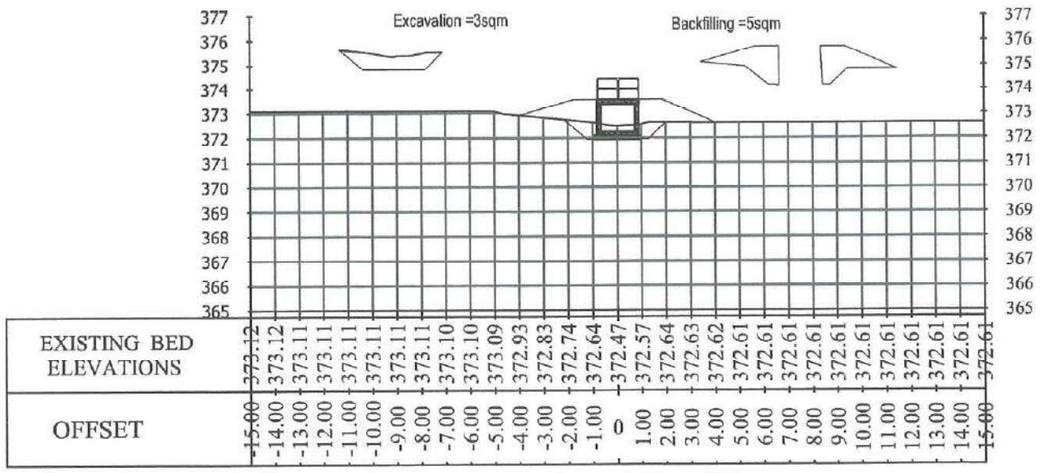
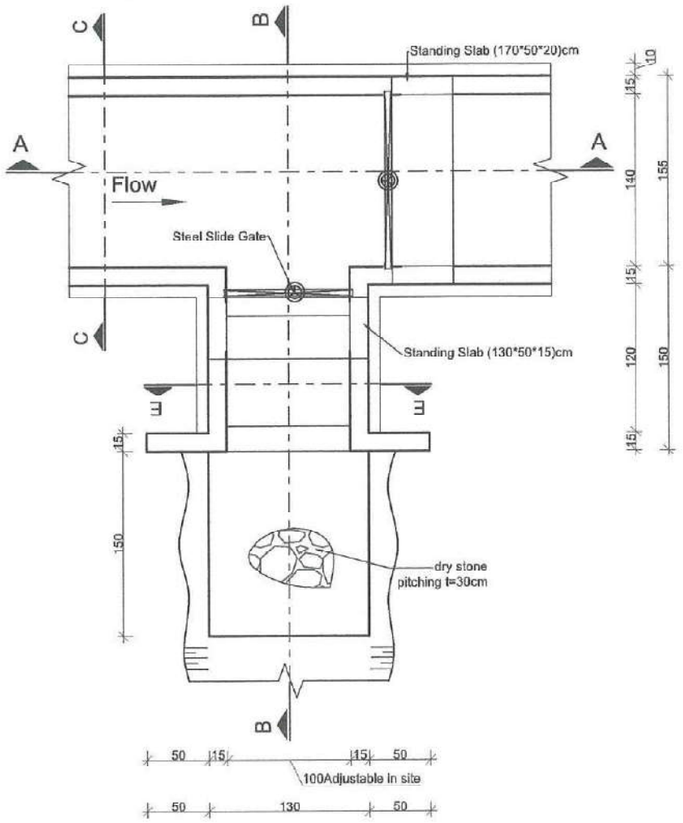


Average Cutting and Filling

Scale : 1:250

USAID FROM THE AMERICAN PEOPLE	STRENGTHENING WATERSHED & IRRIGATION MANAGEMENT SWIM	CANAL NAME: CHOCHMAN MAIN CANAL DEH-NAW BRANCH	LOCATION: DISTRICT: KHULM PROVINCE: SAMANGAN	DRAWING TITLE: FOOT CULVERT SURVEY SECTIONS	SURVEYED BY: SWIM	DRAWING AND DESIGN BY: MOHAMMAD AFZAL MUJAHID ENGINEER (HYDRAULIC SPECIALIST) DATE: 6/21/2020	REVIEWED AND CHECKED BY: GERALD MALONEY IRRIGATION ASSOCIATE-EXPERT DATE: 21-6-2020	SWIM APPROVAL: HOPPY MAZIER CHIEF OF PARTY DATE: 21-6-2020	MEW/RBA, APPROVAL DATE:	SHEET NO. 88/94

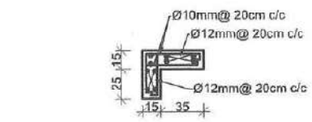
For H.M



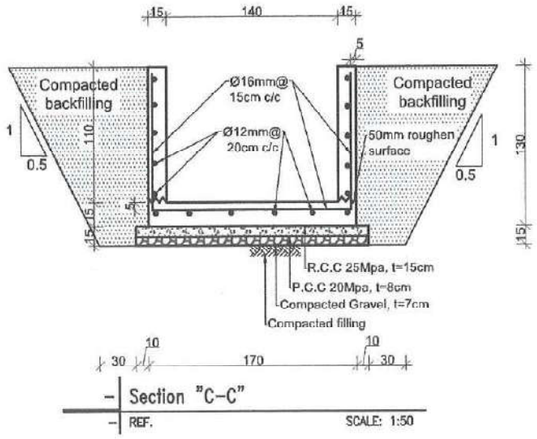
– Plan of Turnout
– REF. SCALE: 1:50

TABLE OF TURNOUT

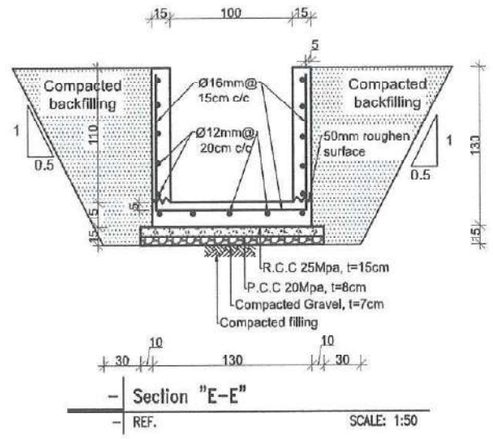
No	Station	Description	Dimensions (M)			GPS Coordinate		Remarks
			Length	High	Wide	Northing	Easthing	
1	3+000	Turnout (Type-2)	1.50	1.4	1	**36.729**	**67.655**	



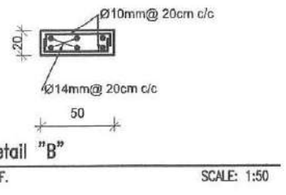
– Detail "A"
– Breast wall and operation slab
– REF. SCALE: 1:50



– Section "C–C"
– REF. SCALE: 1:50



– Section "E–E"
– REF. SCALE: 1:50

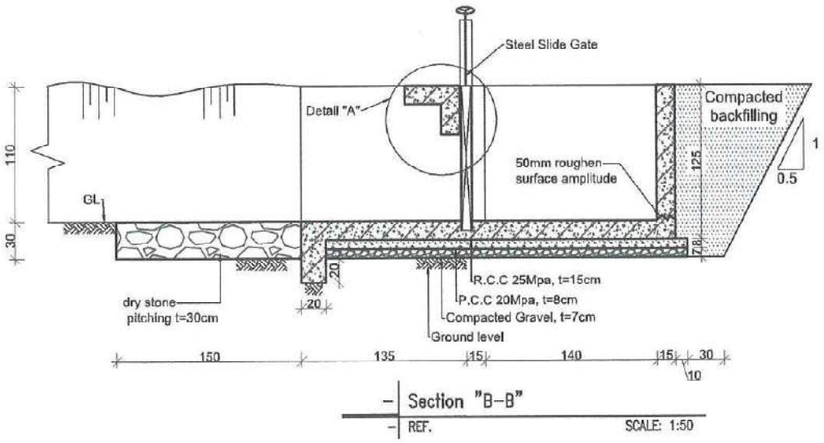


– Detail "B"
– REF. SCALE: 1:50

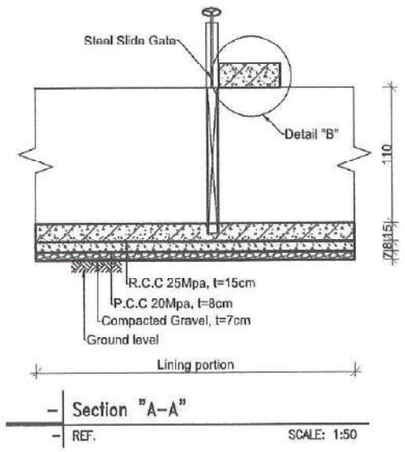
Bar Schedule (No. of bars and total bar length presented for 1m Lining)

Member	Bar Diameter	Shape Code	No. of Bars	Segment length (mm)					Total length - *varies* (metres)
				a	b	c	d	e	
Slab	16	a b a	5	90	1640				9.1
Slab	16	b a a	5	90	1640				9.1
Slab	12	a	4	1000					4.00
Slab	12	a	4	1000					4.00
Wall	16	a b a	5	90	1190				7.4
Wall	16	a b a	5	90	1190				7.4
Wall	12	a	4	1000					4.00
Wall	12	a	4	1000					4.00

Note: No. of bars and total bar length Should be calculate as per required length



– Section "B–B"
– REF. SCALE: 1:50



– Section "A–A"
– REF. SCALE: 1:50

Note:
1. Unless noted otherwise, linear dimensions shown on drawing are in centimeters (cm), and elevations are in meters (m).
2. Excavation for the Foundation should be checked by the site Engineer as per drawing and Tech Specs.
3. Sand and Gravel should be clean and free from organic material.
4. All filling should be compacted properly in layers of 15cm each as specified in drawing and technical specification.
5. Fresh cement to be used.
6. Clean water should be used as specified in technical specs
7. Angle of walls to be adjusted by SWIM engineer as per site conditions.
8. Compressive strength of plain cement concrete is 20MPa
9. Compressive strength of Reinforced cement concrete is 25MPa
10. Mild steel Grad 60 rebar to be used.

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Ministry of Energy & Water

USAID FROM THE AMERICAN PEOPLE	STRENGTHENING WATERSHED & IRRIGATION MANAGEMENT SWIM	CANAL NAME	LOCATION	DRAWING TITLE	SURVEYED BY	DRAWING AND DESIGN BY	REVIEWED AND CHECKED BY	SWIM APPROVAL	MEW/RBA, APPROVAL	SHEET NO.
		CHOCHMAN MAIN CANAL DEH-NAW BRANCH	DISTRICT: KHULM PROVINCE:SAMANGAN	TURNOUT (TYPE-2) Plan and Sections	SWIM	MOHAMMAD AFZAL MUJAHID ENGINEER (HYDRAULIC SPECIALIST)	GERALD MALONE IRRIGATION ENGINEER-EXPERT	HOPPY MAZIER CHIEF OF PARTY		89/94
						DATE: 6/21/2020	DATE: 21-6-2020	DATE: 21-6-2020	DATE:	

For H.M

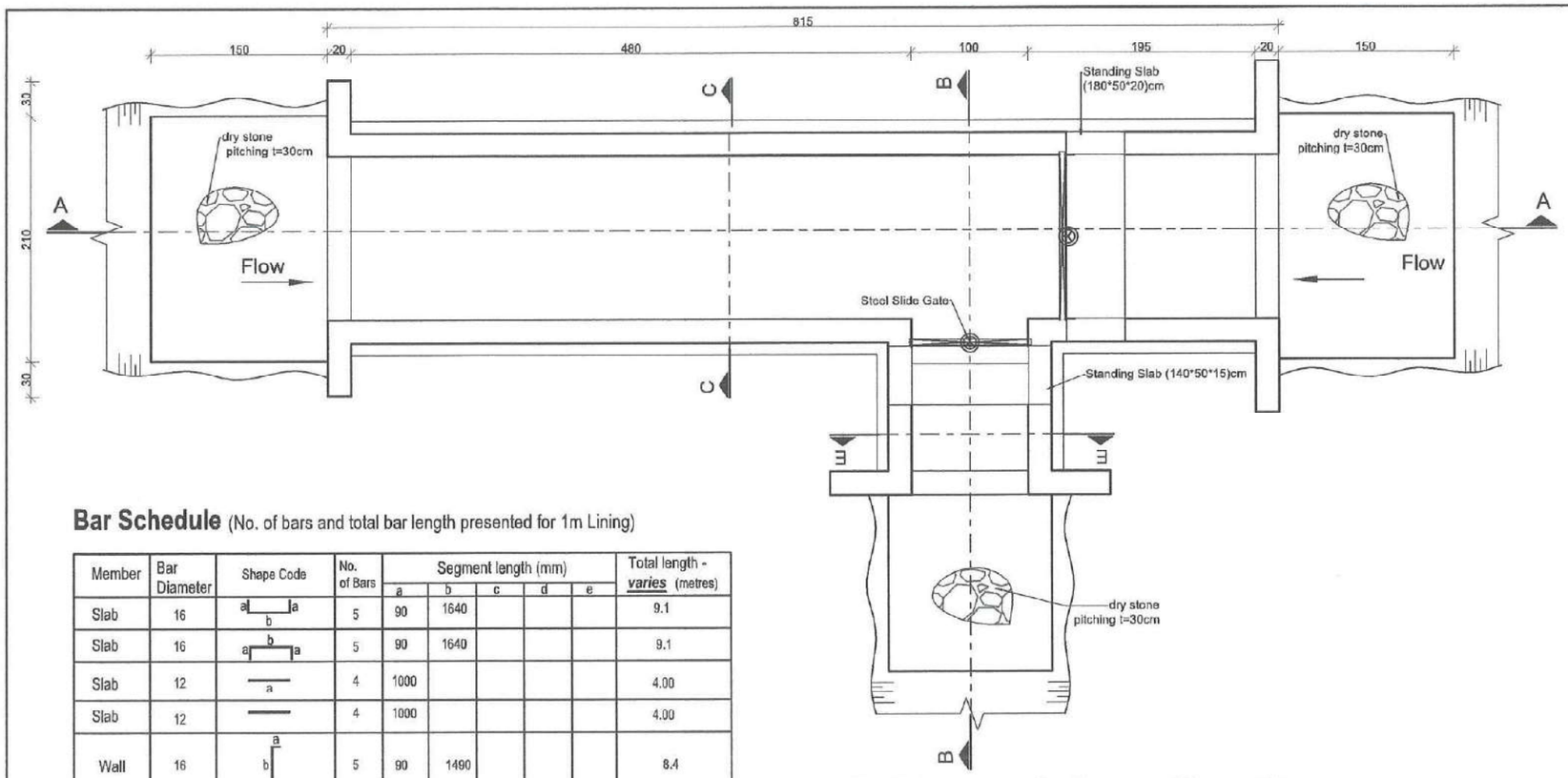
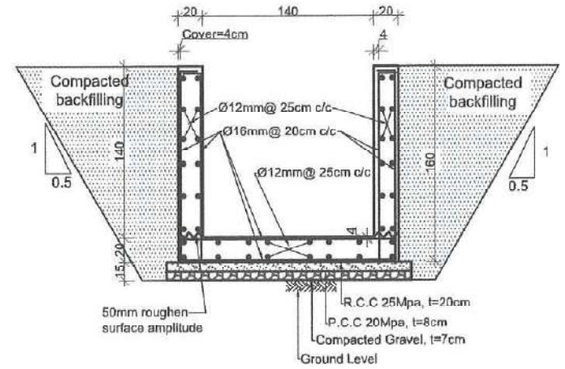
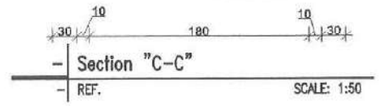
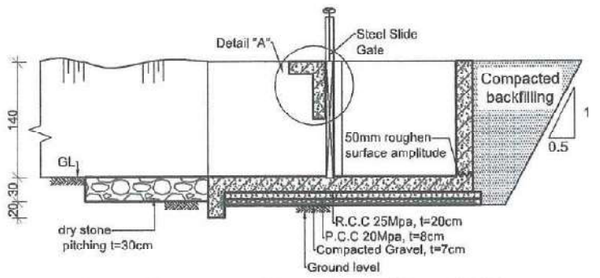


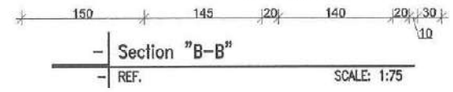
TABLE OF TURNOUNTS

No	Station	Description	Dimensions (M)			GPS Coordinate		Remarks
			Length	High	Wide	Northing	Easthing	
1	7+150	Turnout (Type-1)	1.50	1.4	1	36.75228	67.62604	
1	7+350	Turnout (Type-1)	1.50	1.4	1	36.75323	67.62382	
1	7+600	Turnout (Type-1)	1.50	1.4	1	36.75449	67.62204	
1	8+000	Turnout (Type-1)	1.50	1.4	1	36.75707	67.619112	
1	9+150	Turnout (Type-1)	1.50	1.4	1	36.76253	67.61063	





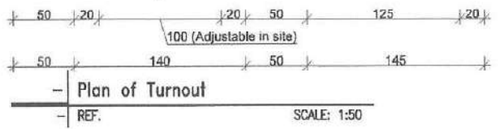


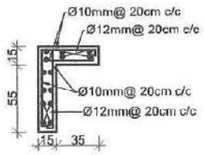


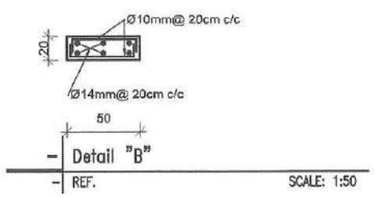
Bar Schedule (No. of bars and total bar length presented for 1m Lining)

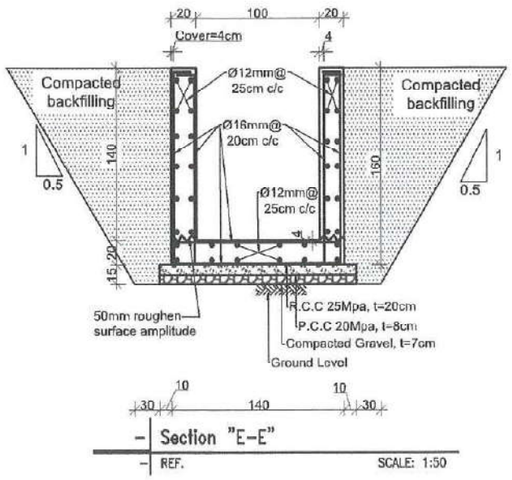
Member	Bar Diameter	Shape Code	No. of Bars	Segment length (mm) a	b	c	d	e	Total length - *varies* (metres)
Slab	16	a b a	5	90	1640				9.1
Slab	16	b a a	5	90	1640				9.1
Slab	12	a	4	1000					4.00
Slab	12		4	1000					4.00
Wall	16	a b a	5	90	1490				8.4
Wall	16	a b a	5	90	1490				8.4
Wall	12	a	4	1000					4.00
Wall	12	a	4	1000					4.00

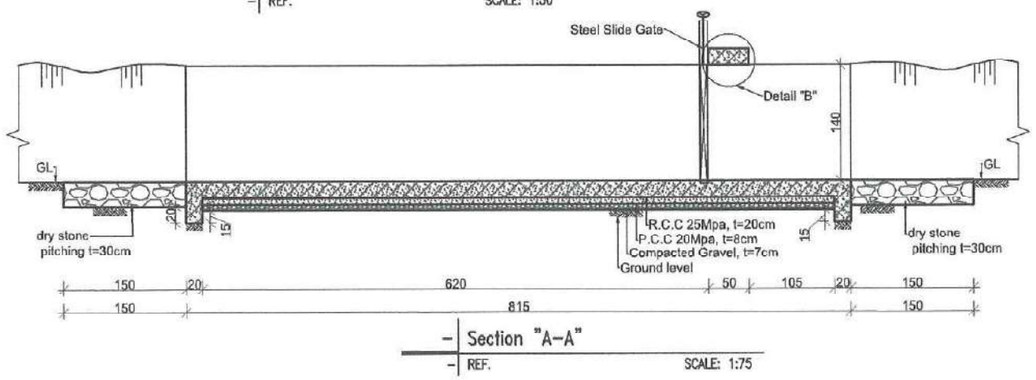
Note: No. of bars and total bar length Should be calculate as per required length











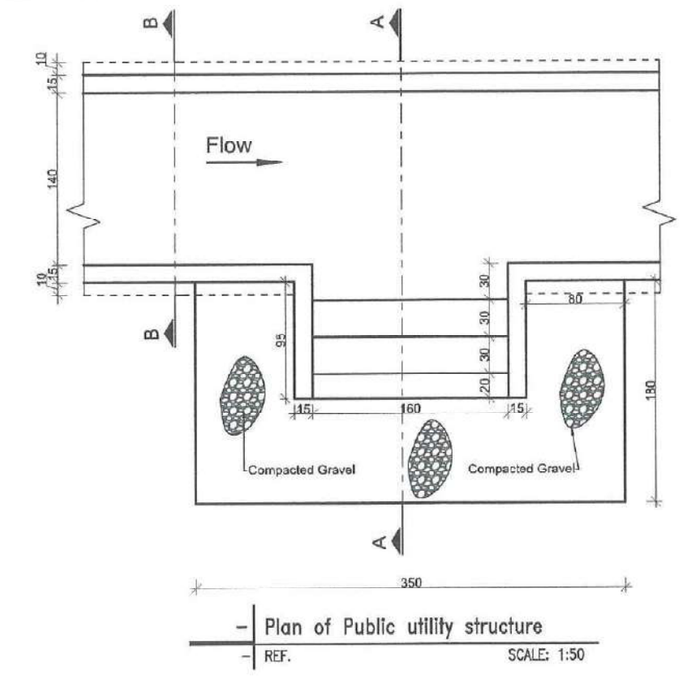
Note:

1. Unless noted otherwise, linear dimensions shown on drawing are in centimeters (cm), and elevations are in meters (m).
2. Excavation for the Foundation should be checked by the site Engineer as per drawing and Tech Specs.
3. Sand and Gravel should be clean and free from organic material.
4. All filling should be compacted properly in layers of 15cm each as specified in drawing and technical specification.
5. Fresh cement to be used.
6. Clean water should be used as specified in technical specs
7. Angle of walls to be adjusted by SWIM engineer as per site conditions.
8. Compressive strength of plain cement concrete is 20MPa
9. Compressive strength of Reinforced cement concrete is 25MPa
10. Mild steel Grad 60 rebar to be used.

Ministry of Energy & Water

	STRENGTHENING WATERSHED & IRRIGATION MANAGEMENT	CANAL NAME	LOCATION	DRAWING TITLE	SURVEYED BY	DRAWING AND DESIGN BY	REVIEWED AND CHECKED BY	SWIM APPROVAL	MEW/RRA, APPROVAL	SHEET NO.
USAID FROM THE AMERICAN PEOPLE	SWIM	CHOCHMAN MAIN CANAL DEH-NAW BRANCH	DISTRICT: KHULM PROVINCE:SAMANGAN	TURNOUT (TYPE-1) Plan and Sections	SWIM	MOHAMMAD AFZAL MUJAHID ENGINEER (HYDRAULIC SPECIALIST) DATE: 6/21/2020	GERALD MALONE IRRIGATION ENGINEER EXPERT DATE: 21-6-2020	HOPPY MAZIER CHIEF OF PARTY DATE: 21-6-2020	DATE:	90/94

For H.M

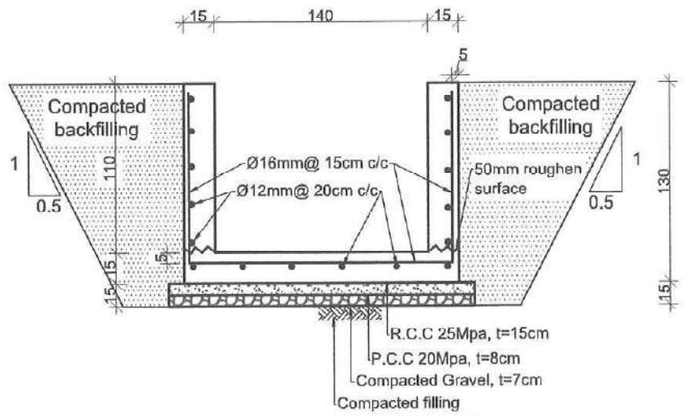


Plan of Public utility structure

REF. SCALE: 1:50

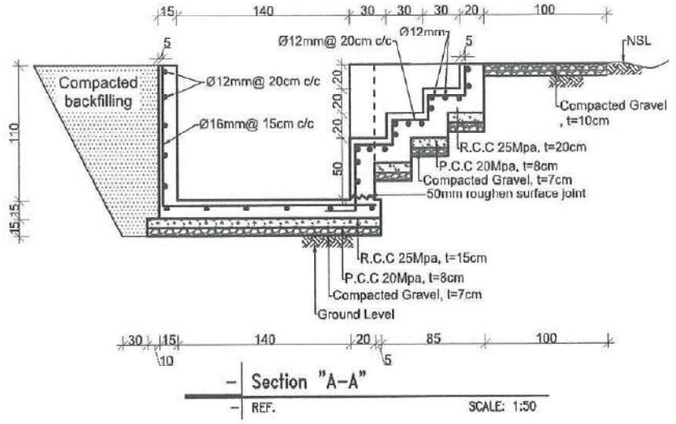
TABLE OF PUBLIC UTILITY STRUCTURE

No	Description	Station	Remark
1	Chochman Main Canal(DEH-NAW BRANCH)	0+600	
2	Chochman Main Canal(DEH-NAW BRANCH)	2+250	
3	Chochman Main Canal(DEH-NAW BRANCH)	3+900	
4	Chochman Main Canal(DEH-NAW BRANCH)	4+900	



Section "B–B"

REF. SCALE: 1:50



Section "A–A"

REF. SCALE: 1:50

Note:

1. Unless noted otherwise, linear dimensions shown on drawing are in centimeters (cm), and elevations are in meters (m).
2. Excavation for the Foundation should be checked by the site Engineer as per drawing and Tech Specs.
3. Sand and Gravel should be clean and free from organic material.
4. All filling should be compacted properly in layers of 15cm each as specified in drawing and technical specification.
5. Fresh cement to be used.
6. Clean water should be used as specified in technical specification.
7. Angle of walls to be adjusted by SWIM engineer as per site conditions.
8. Compressive strength of plain cement concrete is 20MPa
9. Compressive strength of Reinforced cement concrete is 25MPa
10. Mild steel Grad 60 rebar to be used.
11. The canal alignment should be straight as possible, and curved the alignment breaks.

Bar Schedule (No. of bars and total bar length presented for 1m Lining)

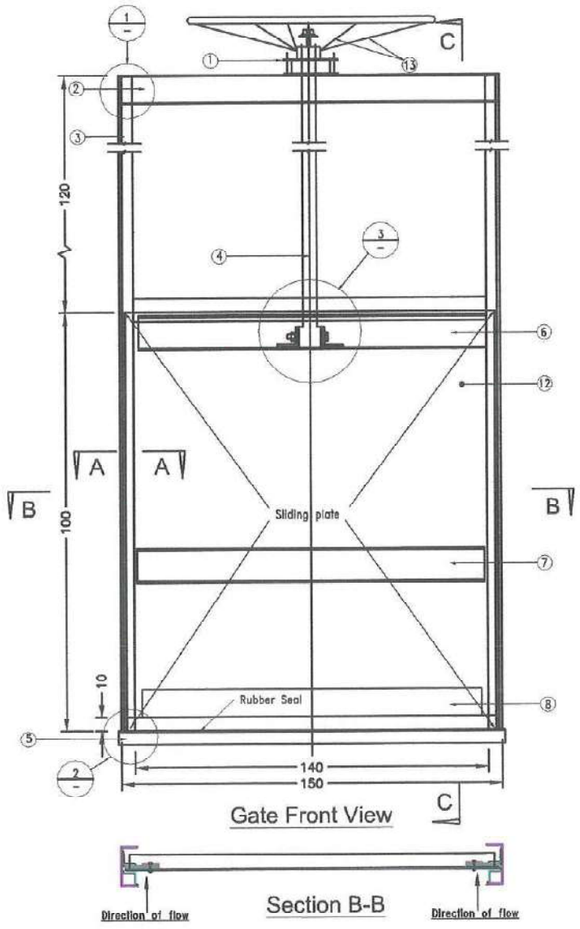
Member	Bar Diameter	Shape Code	No. of Bars	Segment length (mm)					Total length - *varies* (metres)
				a	b	c	d	e	
Slab and wall	16	a, a, b	5	1100	1550				27
Slab	12	a	5	1000					5.00
Wall	12	—	5	1000					5.00

Note: No. of bars and total bar length Should be calculate as per required length

USAID FROM THE AMERICAN PEOPLE	STRENGTHENING WATERSHED & IRRIGATION MANAGEMENT SWIM	CANAL NAME	LOCATION	DRAWING TITLE	SURVEYED BY	DRAWING AND DESIGN BY	REVIEWED AND CHECKED BY	SWIM APPROVAL	MEW/RBA. APPROVAL	SHEET NO. 91/94
		CHOCHMAN MAIN CANAL DEH-NAW BRANCH	DISTRICT: KHULM PROVINCE: SAMANGAN	PUBLIC UTILITY STRUCTURE PLAN AND SECTIONS	SWIM	MOHAMMAD AFZAL MUJADI ENGINEER (HYDRAULIC SPECIALIST) DATE: 6/21/2020	GERALD MALONEY IRRIGATION ENGINEER EXPERT DATE: 21-6-2020	HOPPY MAZIEL CHIEF OF PARTY DATE: 21-6-2020	DATE:

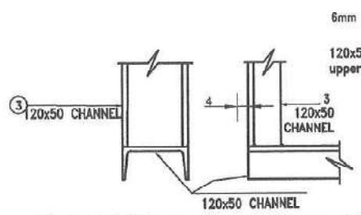
For H.M

Steel Slide Gate Detail For Check Size (150*100)cm

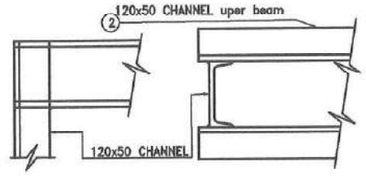


Gate Front View

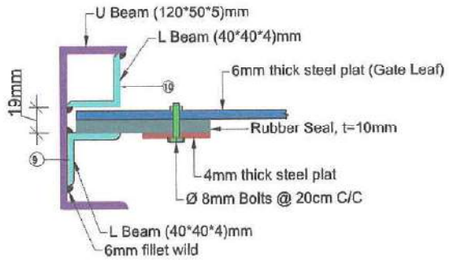
Section B-B



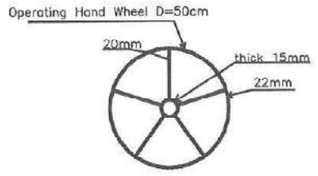
Detail 2 (Frame Cross Beam at Bottom)



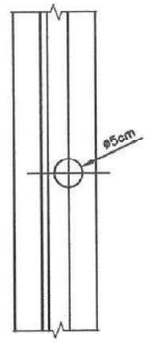
Detail 1 (Frame Cross Beam at Top)



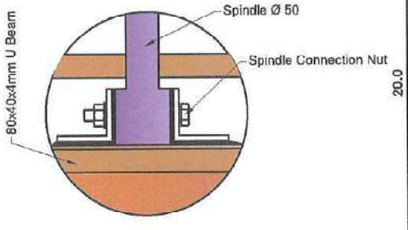
Section A-A



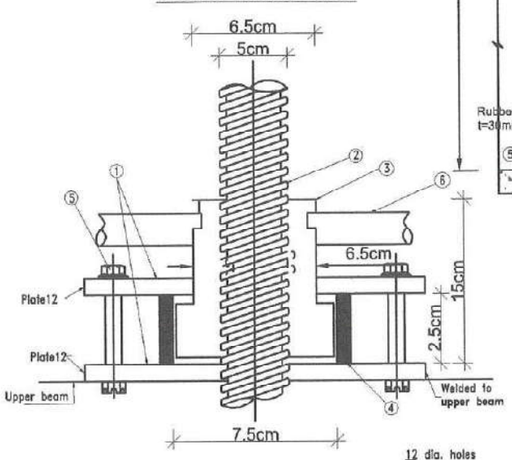
Plan of Hand Wheel

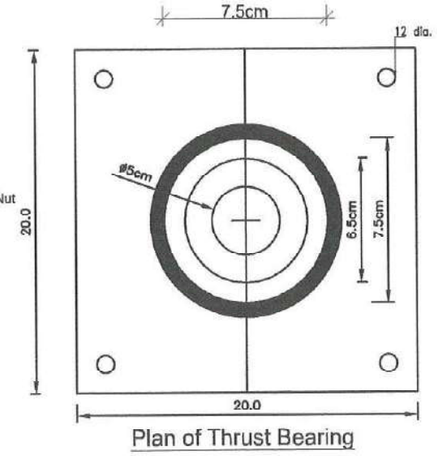


Section of Detail 3

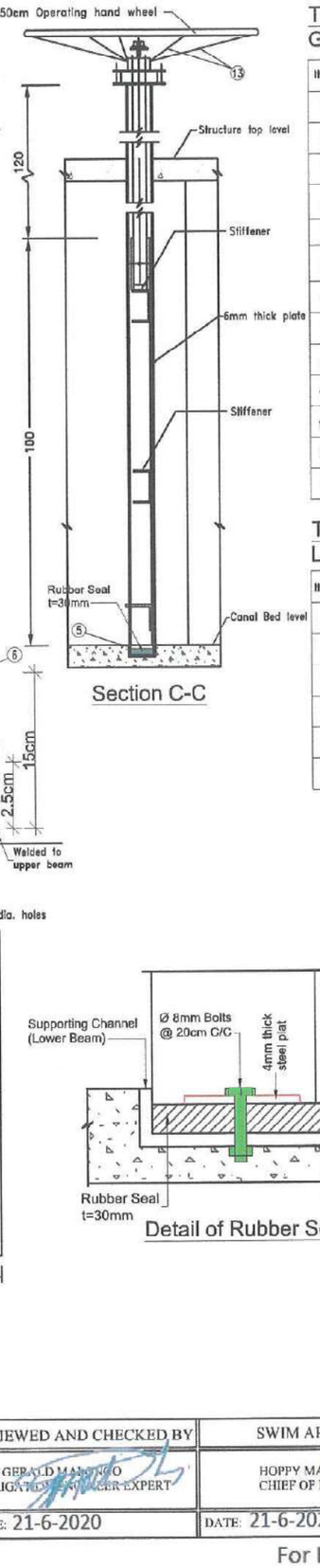


Detail 3 (Detail & Section)
Lifting Brackets





Plan of Thrust Bearing



Section C-C

Detail of Rubber Seal at Bottom of Stiffener

Table 1
Gate Component

Item	Description
1	Thrust bearing/nut assembly
2	[120x50x5 Channel Upper beam
3	[120x50x5 Channel
4	Spindle ø 50mm
5	[120x50x5 Channel (Lower beam)
6	Stiffener [80X40X4
7	Stiffener [80X40X4
8	Stiffener L 50X50X5
9	L 40X40X4
10	L 40X40X4
11	[80X40X4
12	Plate 6 mm
13	5ø20mm Solid Rods, Angle=15°

Table 2
Lifting Component

Item	Description
1	Upper&lower plate 20x20x12mm
2	Spindle Dia 50mm
3	Bearing nut
4	Spacer
5	Four M12 bolts , nuts
6	ø500mm handle

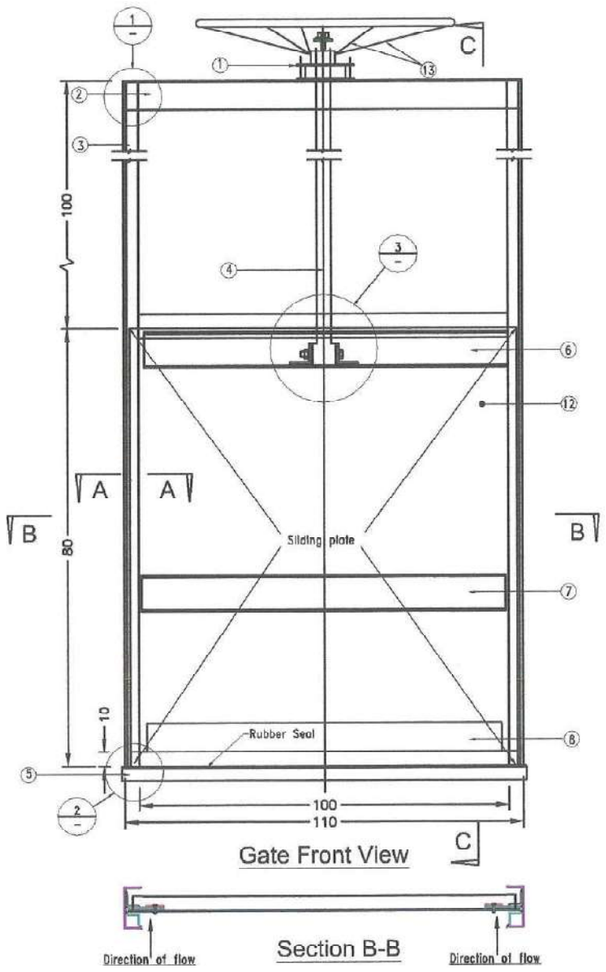
NOTE:

1. For protection of the gate three coats of enamel paint (one coat of red-oxide+ two coat of enamel paint) shall be used.
2. Operation of the gates to be done by Mirab as per their scheduling.
3. Steel doors should be placed in a dry place to prevent from the oxidization before placement and installation.
4. During stone masonry work an open space shall be provided in location of each steel gate as per SWIM engineer direction. The steel channels shall be installed in the recommended space by using P.C.C 20Mpa (part of Steel work).
5. For water leakage control the subcontractor shall provide rubber strip of 3cm thickness at the bottom of stiffener and 1cm thickness at both side with all fixing requirements.
6. During installation/transportation, if any damages made to the gates, the subcontractor shall submit a comprehensive methodology of fixing the gate to the client. Fixing of the gate does not have additional cost.

USAID FROM THE AMERICAN PEOPLE	STRENGTHENING WATERSHED & IRRIGATION MANAGEMENT SWIM	CANAL NAME	LOCATION	DRAWING TITLE	SURVEYED BY	DRAWING AND DESIGN BY	REVIEWED AND CHECKED BY	SWIM APPROVAL	MEW/RBA APPROVAL	SHEET NO. 92/94
		CHOCHMAN MAIN CANAL DEH-NAW BRANCH	DISTRICT: KHULM PROVINCE: SAMANGAN	STEEL SLIDE GATE FOR CHECK	SWIM	MOHAMMAD AFZAL MUJAHID ENGINEER (HYDRAULIC SPECIALIST) DATE: 6/21/2020	GERALD MANGO IRRIGATION ... EXPERT DATE: 21-6-2020	HOPPY MAZIER CHIEF OF PARTY DATE: 21-6-2020	DATE:	

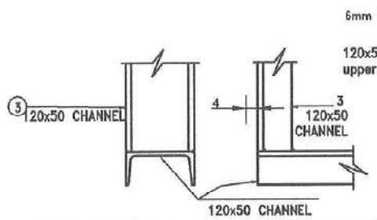
For H.M

Steel Slide Gate Detail For Turnout Size (110*80)cm

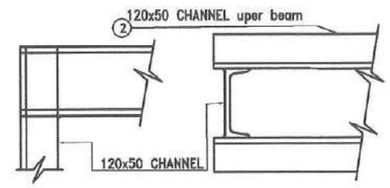


Gate Front View

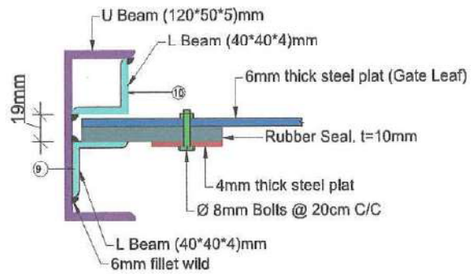
Section B-B



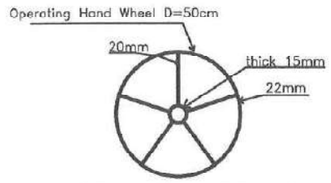
Detail 2 (Frame Cross Beam at Bottom)



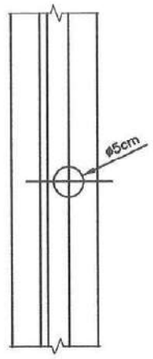
Detail 1 (Frame Cross Beam at Top)



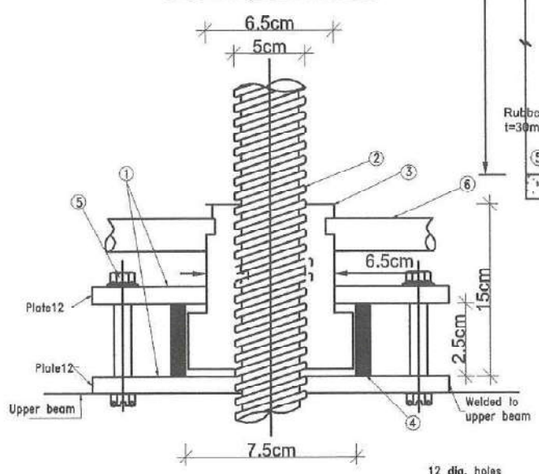
Section A-A

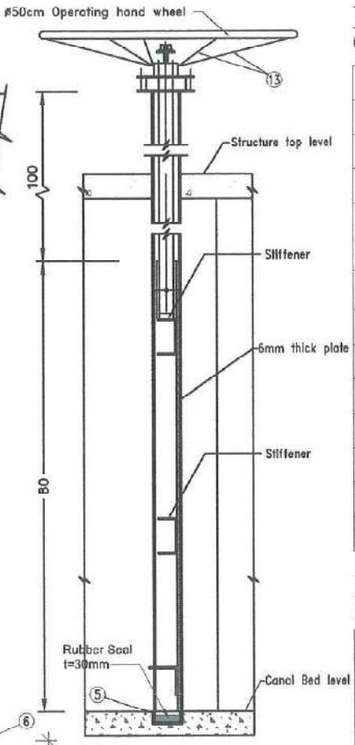


Plan of Hand Wheel

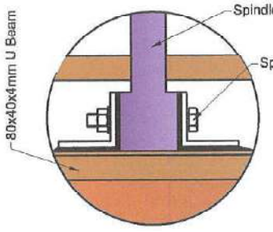


Section of Detail 3

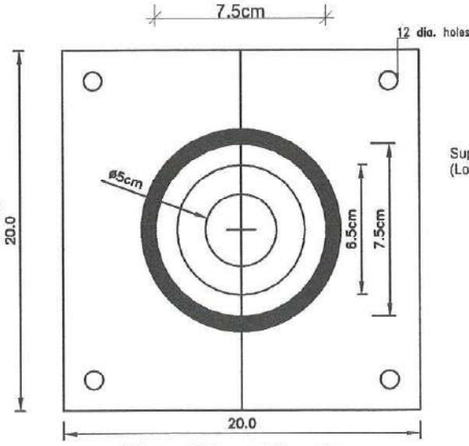




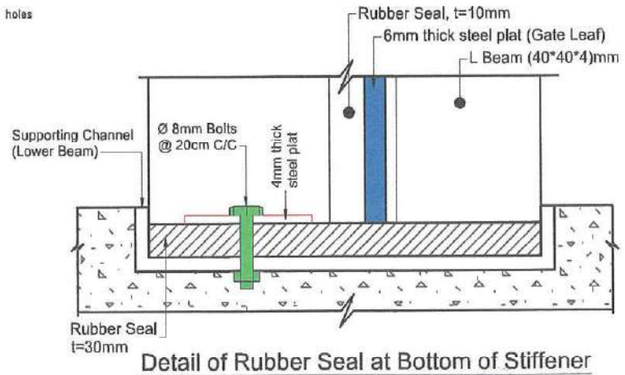
Section C-C



Detail 3 (Detail & Section)
Lifting Brackets



Plan of Thrust Bearing



Detail of Rubber Seal at Bottom of Stiffener

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Lifting Component

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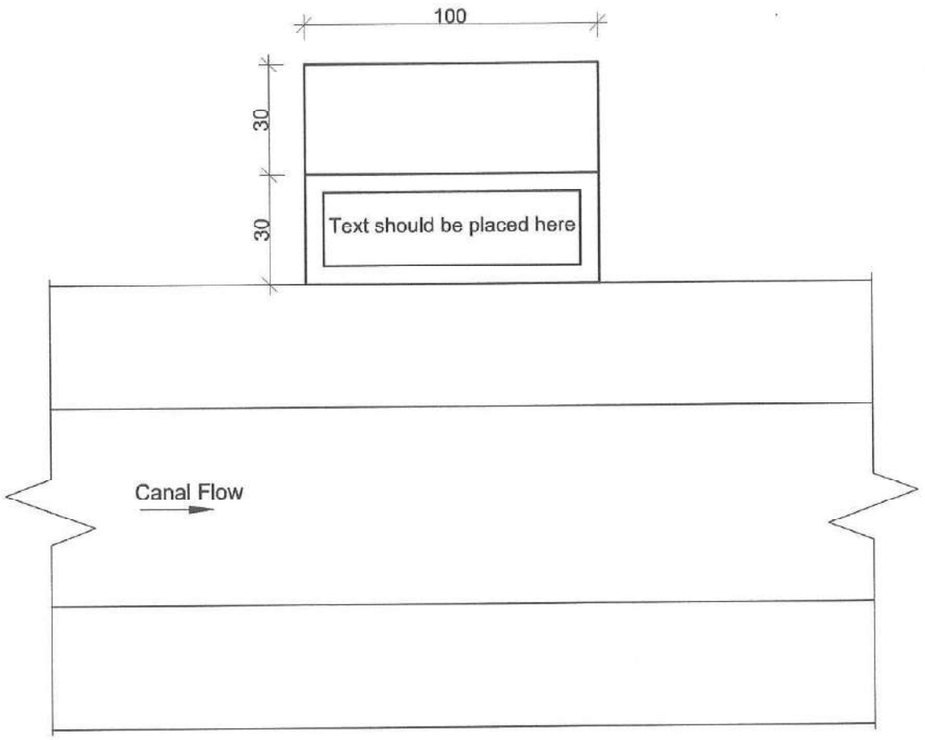
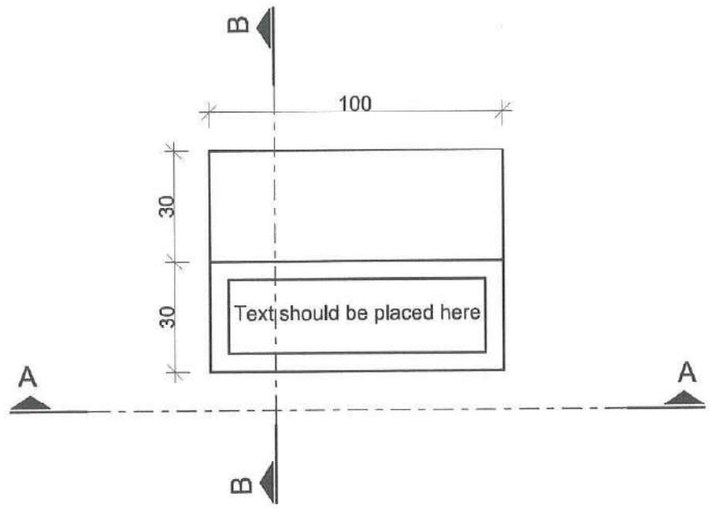
	STRENGTHENING WATERSHED & IRRIGATION MANAGEMENT	CANAL NAME	LOCATION	DRAWING TITLE	SURVEYED BY	DRAWING AND DESIGN BY	REVIEWED AND CHECKED BY	SWIM APPROVAL	MEW/RBA, APPROVAL	SHEET NO.
USAID FROM THE AMERICAN PEOPLE	SWIM	CHOCHMAN MAIN CANAL DEH-NAW BRANCH	DISTRICT: KHULM PROVINCE: SAMANGAN	STEEL SLIDE GATE FOR TURNOUT	SWIM	MOHAMMAD AFZAL MUJADID ENGINEER (HYDRAULIC SPECIALIST) DATE: 6/21/2020	GERALD MALCOLM IRRIGATION ENGINEER EXPERT DATE: 21-6-2020	HOPPY MAJID CHIEF OF PARTY DATE: 21-6-2020	DATE:	93/94

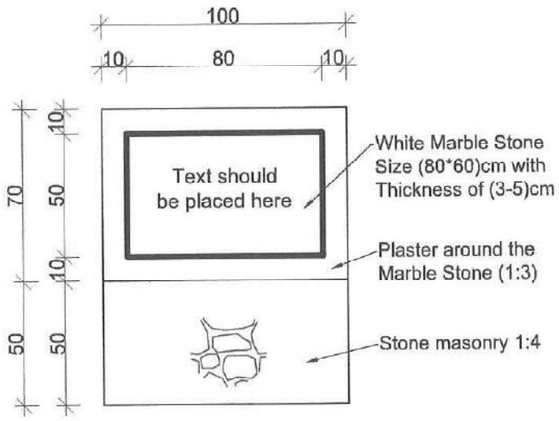
For H.M



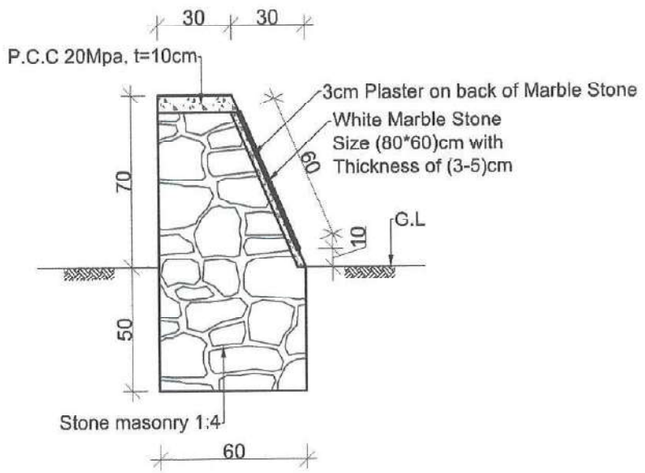
Sign Board location in site
REF. SCALE: 1:25



Plan of Sign Board
REF. SCALE: 1:25



Front View (A–A)
REF. SCALE: 1:25



Section (B–B)
REF. SCALE: 1:25

USAID FROM THE AMERICAN PEOPLE	STRENGTHENING WATERSHED & IRRIGATION MANAGEMENT SWIM	CANAL NAME	LOCATION	DRAWING TITLE	SURVEYED BY	DRAWING AND DESIGN BY	REVIEWED AND CHECKED BY	SWIM APPROVAL	MEW/RBA, APPROVAL	SHEET NO. 94/94
		CHOCHMAN MAIN CANAL DEH-NAW BRANCH	DISTRICT: KHULM PROVINCE: SAMANGAN	SIGN BOARD LOCATION PLAN AND SECTIONS	SWIM	MOHAMMAD AFZAL MUJAHID ENGINEER (HYDRAULIC SPECIALIST) DATE: 6/21/2020	GERALD MALONGO IRRIGATION ENGINEER EXPERT DATE: 21-6-2020	HOPPY MAZIER CHIEF OF PARTY DATE: 21-6-2020	DATE:	

For H.M