UNITED NATIONS DEVELOPMENT PROGRAMME

FEASIBILITY ASSESSMENT AND DESIGN FOR THE UPGRADE OF IRRIGATION NETWORKS IN NORTH LEBANON AND THE BEKAA

TALL HAYAT
IRRIGTION CANALS

Tender Drawings

January 2017

LIST OF DRAWINGS

GENERAL NOTES

1. Particular Specifications
   The present General Notes and the specifications shown on the present set of drawings are to be considered as Particular Specifications and prevail over the General Specifications.

2. Construction Drawings
   The present set of drawings is for tendering purpose only and therefore is not suitable for construction.
   It is the Contractor's responsibility to prepare his own construction drawings and shop drawings and submit for the approval of the Engineer.

3. Topographical Survey
   The general layout (drawing 01) shows the actual location of the channels on the ground, which is not necessarily within the cadastral boundaries of a public domain and may well go through private properties.
   Moreover, the Longitudinal Profiles (Drawings 03 and above) are given for information only and are not suitable for construction in particular as regards to the levels shown.
   It is the Contractor's responsibility to carry out his own surveying and to approach the relevant Cadastral Authorities in order to get the layout of the public domains and make sure that the concrete canals shall NOT be constructed through private properties.
   It is also the Contractor's responsibility to take his own level measurements and to establish his own Longitudinal Profiles.
   The proposed canals' layout and Longitudinal Profiles shall be submitted for the approval of the Engineer prior to any construction work.

4. Dimensions and Levels
   Unless otherwise explicitly mentioned on the drawings, all dimensions are in cm. and all levels are "meters above see level" (masl).

5. Concrete Specifications
   Reinforced concrete for ground slab and walls shall be Class 45 Dosage 400 kg/m³.
   Lean concrete shall be Class 45, Dosage 250 kg/m³

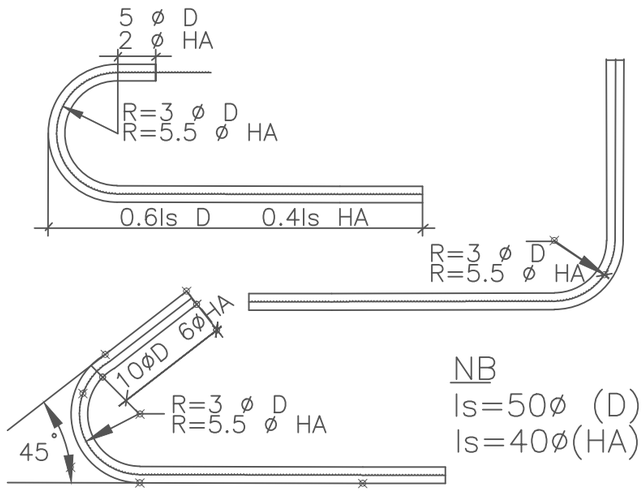
6. Reinforcement Steel
   High Adherence steel (HA) limit of elasticity : 4 000 Kg/cm²
   Mild steel : Limit of elasticity : 2 400 Kg/cm²

7. Reinforcement bars Cover
   Min 5 cm

8. Reinforcement bars overlapping
   Min 40 cm

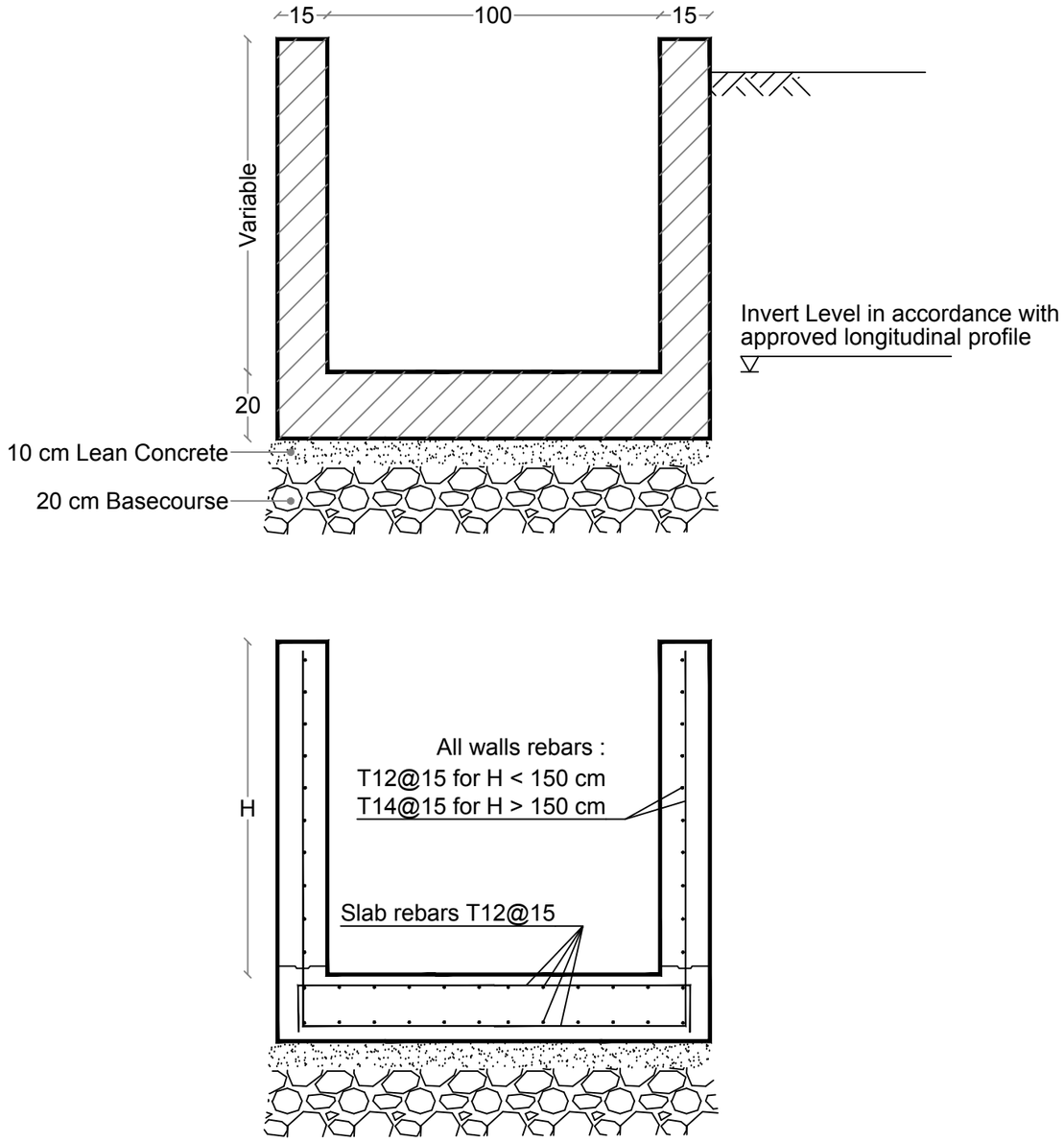
9. Bars Bending
   - Ø > 12 mm : Mechanically
   - Ø <= 12 mm Manually accepted

   Unbending is not allowed

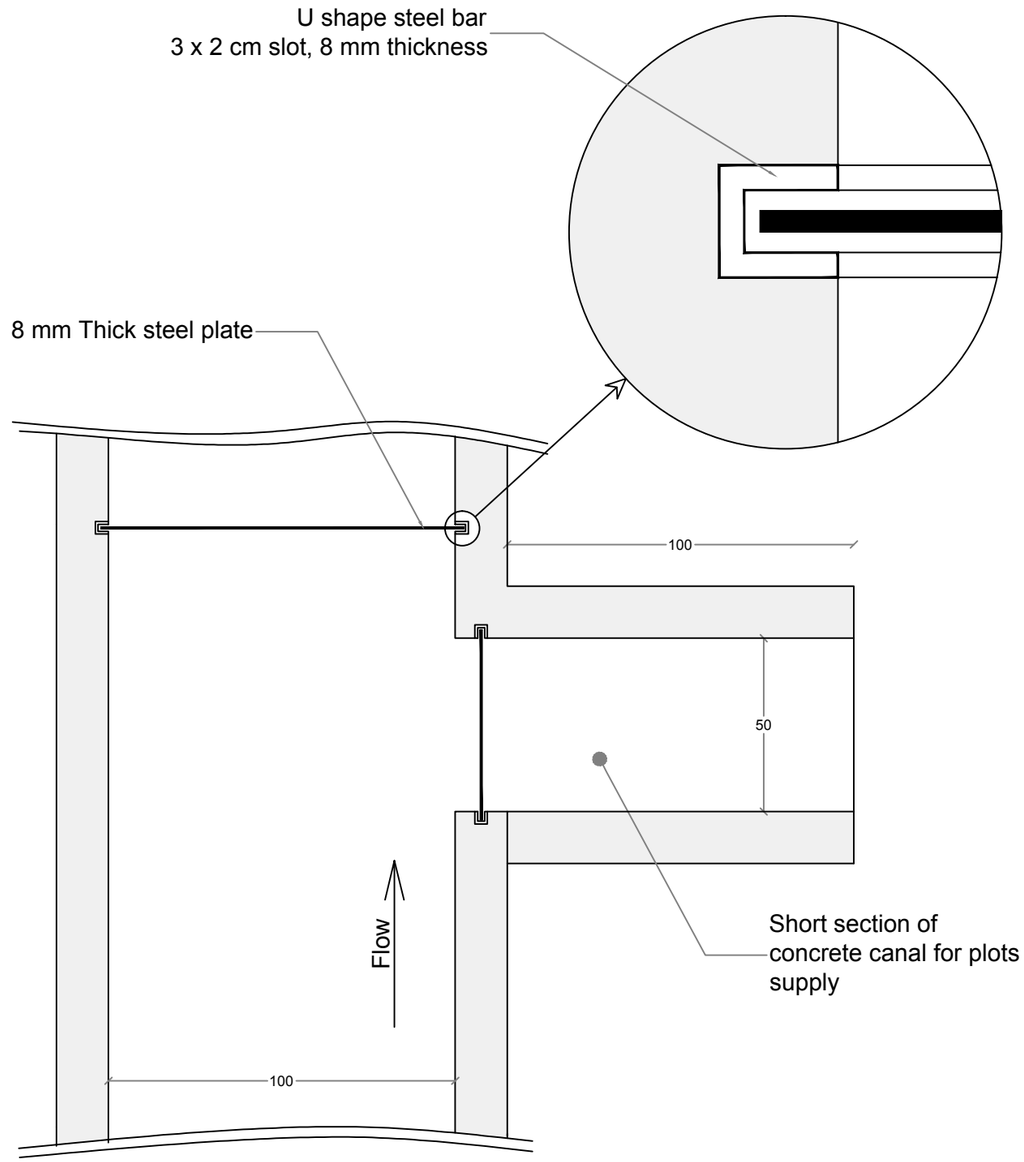


UNITED NATIONS DEVELOPMENT PROGRAMME	FEASIBILITY ASSESSMENT AND DESIGN FOR THE UPGRADE OF IRRIGATION NETWORKS IN NORTH LEBANON AND THE BEKAA TENDER DRAWINGS	**TAL HAYAT** **IRRIGATION CANALS**	**GENERAL NOTES**	January 2017

UNITED NATIONS DEVELOPMENT PROGRAMME	FEASIBILITY ASSESSMENT AND DESIGN FOR THE UPGRADE OF IRRIGATION NETWORKS IN NORTH LEBANON AND THE BEKAA TENDER DRAWINGS	**TAL HAYAT** **IRRIGATION CANALS**	**GENERAL LAYOUT**	Dwg № 01 January 2017 Scale : 1/15 000

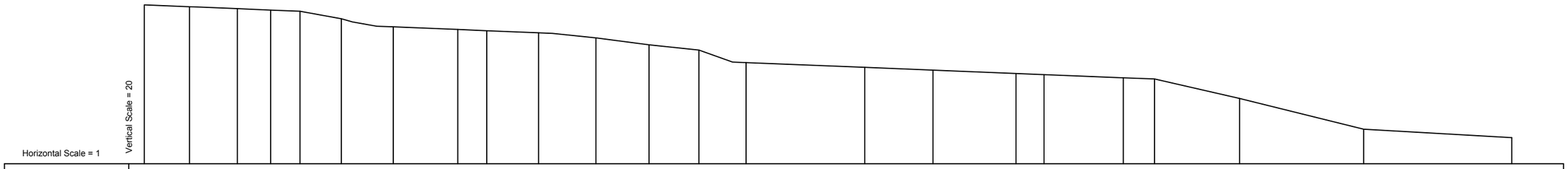


Canal Typical Cross Section



Sluice Gate Typical Arrangement (PlanView)

UNITED NATIONS DEVELOPMENT PROGRAMME	FEASIBILITY ASSESSMENT AND DESIGN FOR THE UPGRADE OF IRRIGATION NETWORKS IN NORTH LEBANON AND THE BEKAA TENDER DRAWINGS	TAL HAYAT IRRIGATION CANALS	CANAL'S TYPICAL CROSS SECTION	Dwg № 02 January 2017 Scale : NTS



Chainage	A1	A2	A4	A5	A6	A7	A10	A11	A12	A13	A15	A16	A17	A19	A20	A21	A22	A23	A24	A25	A26	A27	A28
Cumulated (Partial) Distance	0.00	43.53	89.81	121.88	150.16	190.04	240.20	302.44	330.46	380.41	435.83	487.05	535.24	580.74	695.23	761.01	841.09	868.22	944.79	974.78	1 056.88	1 176.62	1 319.55
		(43.53)	(46.28)	(32.07)	(28.28)	(39.88)	(50.16)	(62.24)	(28.02)	(49.96)	(55.41)	(51.23)	(48.19)	(55.41)	(114.49)	(65.79)	(80.08)	(27.13)	(76.57)	(30.00)	(82.10)	(119.74)	(142.93)
Gradiant (m/Km)		2.07	2.00	2.07	2.00	9.04	7.80	2.00	2.00	2.00	4.52	6.46	5.31	11.00	2.00	2.00	2.00	2.00	2.00	2.00	11.43	12.29	2.89
Ground Level	13.61	13.52	13.43	13.36	13.46	12.94	12.64	13.65	13.24	12.50	12.02	11.69	11.44	11.10	11.06	10.98	10.94	10.94	10.65	10.43	9.11	7.63	7.22
Invert Level	13.61	13.52	13.43	13.36	13.30	12.94	12.55	12.43	12.37	12.27	12.02	11.69	11.44	10.83	10.60	10.47	10.31	10.26	10.10	10.04	9.11	7.63	7.22
Dept of excavation	0.40	0.40	0.40	0.40	0.56	0.40	0.49	1.63	1.27	0.63	0.40	0.40	0.40	0.67	0.86	0.91	1.03	1.09	0.94	0.79	0.40	0.40	0.40
Heigth of walls	1.25	1.10	0.95	1.00	1.00	0.65	0.75	0.80	0.85	0.60	0.65	0.75	0.80	0.80	1.00	1.15	1.25	1.20	1.35	1.20	0.80	0.80	0.80

UNITED NATIONS DEVELOPMENT PROGRAMME

FEASIBILITY ASSESSMENT AND DESIGN FOR THE UPGRADE OF IRRIGATION NETWORKS IN NORTH LEBANON AND THE BEKAA

TENDER DRAWINGS

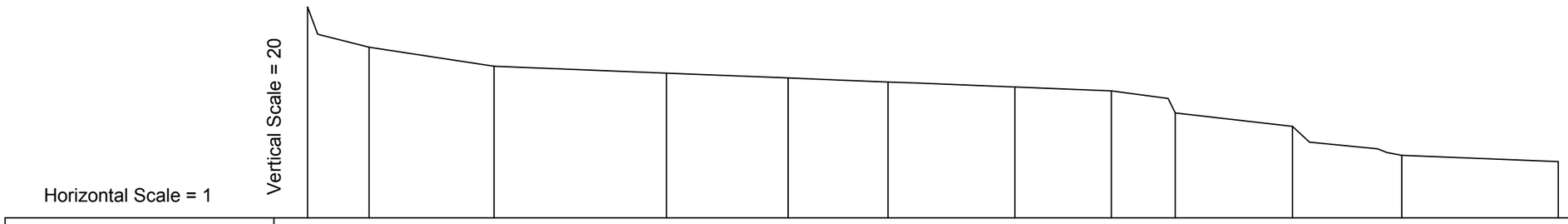
TAL HAYAT
IRRIGATION CANALS

Longitudinal profile Line A

Dwg № 03

January 2017

Scale : NTS



Chainage	B1	B3	B4	B5	B6	B8	B10	B11	B13	B14	B18	B19
Cumulated (Partial) Distance	0.00	27.48	83.16	160.07	214.44	258.99	315.57	358.60	387.11	439.37	488.22	558.05
	(27.48)	(55.68)	(76.91)	(54.37)	(44.55)	(56.58)	(43.03)	(28.50)	(52.26)	(48.86)	(69.82)	
Gradiant (m/Km)	32.40	7.61	2.00	2.00	10.55	2.00	2.00	17.20	5.74	13.00	2.00	
Ground Level	11.06	10.17	9.74	9.86	10.30	9.83	9.47	9.26	8.70	8.40	7.76	7.65
Invert Level	11.06	10.17	9.74	9.59	9.48	9.39	9.28	9.19	8.70	8.40	7.76	7.62
Dept of excavation	0.40	0.40	0.40	0.67	1.22	0.84	0.60	0.47	0.40	0.40	0.40	0.43
Heigth of walls	2.10	0.65	0.60	0.65	0.90	0.55	0.40	0.40	0.40	0.40	0.40	0.40

UNITED NATIONS DEVELOPMENT PROGRAMME

FEASIBILITY ASSESSMENT AND DESIGN FOR THE UPGRADE OF IRRIGATION NETWORKS IN NORTH LEBANON AND THE BEKAA

TENDER DRAWINGS

TAL HAYAT

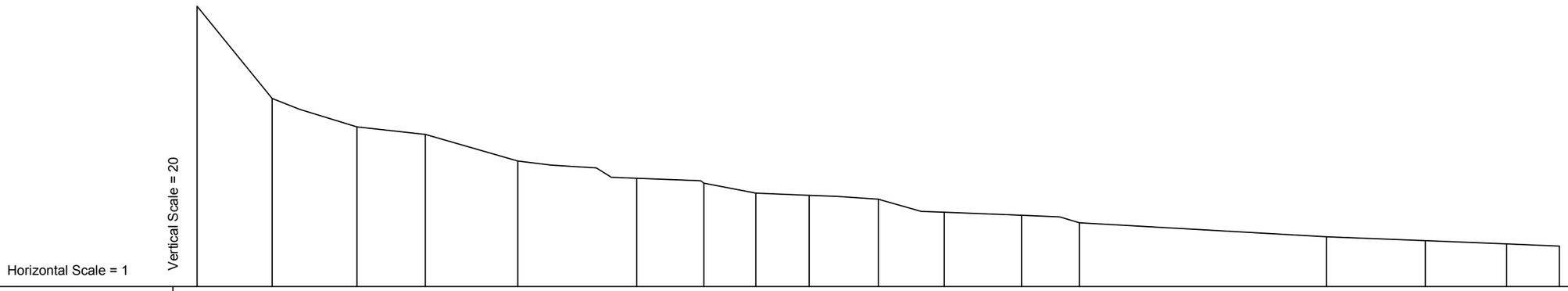
IRRIGATION CANALS

Longitudinal profile Line B

Dwg № 04

January 2017

Scale : NTS



Chainage	D1	D2	D4	D5	D6	D10	D12	D13	D14	D16	D18	D19	D21	D22	D23	D24	D25
Cumulated (Partial) Distance	0.00	46.46	98.99	141.37	198.78	272.46	314.15	346.30	379.38	422.27	463.15	511.05	546.87	700.05	761.37	811.69	844.39
		(46.46)	(52.54)	(42.38)	(57.41)	(73.67)	(41.69)	(32.15)	(33.07)	(42.89)	(40.88)	(47.90)	(35.82)	(153.18)	(61.31)	(50.32)	(32.70)
Gradiant (m/Km)		61.48	16.75	5.54	14.34	7.20	3.60	9.74	2.00	3.00	10.00	2.00	6.50	2.81	2.00	2.00	2.00
Ground Level	34.35	31.49	30.61	30.38	29.55	29.30	28.87	28.56	28.63	28.37	28.45	28.26	27.64	27.21	27.10	27.10	26.95
Invert Level	34.35	31.49	30.61	30.38	29.55	29.02	28.87	28.56	28.49	28.37	27.97	27.87	27.64	27.21	27.09	26.99	26.92
Dept of excavation	0.40	0.40	0.40	0.40	0.40	0.68	0.40	0.40	0.54	0.40	0.88	0.78	0.40	0.40	0.41	0.51	0.43
Heigth of walls	0.65	0.50	1.00	0.90	1.35	1.10	1.05	1.35	1.30	1.35	1.50	1.55	1.55	1.35	1.15	1.10	1.00

UNITED NATIONS DEVELOPMENT PROGRAMME

FEASIBILITY ASSESSMENT AND DESIGN FOR THE UPGRADE OF IRRIGATION NETWORKS IN NORTH LEBANON AND THE BEKAA

TENDER DRAWINGS

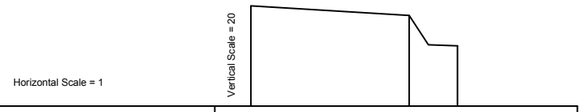
TAL HAYAT
IRRIGATION CANALS

Longitudinal profile Line D

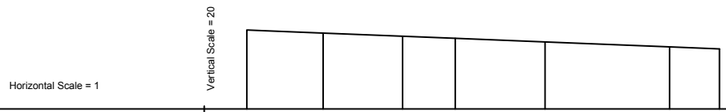
Dwg № 05

January 2017

Scale : NTS



Chainage	C1		C2	C4
Cumulated (Partial) Distance	0.00	(65.87)	65.87	85.98 (20.12)
Gradiant (m/Km)		3.04	32.00	
Ground Level	11.70		11.50	10.89
Invert Level	11.70		11.50	10.86
Dept of excavation	0.40		0.40	0.42
Heigth of walls	1.85		2.00	2.25



Chainage	F1	F3	F4	F5	F6	F7	F9
Cumulated (Partial) Distance	0.00 (31.75)	31.75 (33.09)	64.84 (21.97)	86.81 (37.31)	124.12	(51.87) 175.99	(20.77) 196.76
Gradiant (m/Km)	2.00	2.00	2.00	2.00	2.00	2.00	
Ground Level	22.55	22.98	23.37	23.11	23.22	23.16	23.29
Invert Level	22.55	22.48	22.42	22.37	22.30	22.20	22.15
Dept of excavation	0.40	0.89	1.36	1.13	1.32	1.36	1.53
Heigth of walls	1.60	0.60	1.10	0.85	1.05	1.10	1.25

UNITED NATIONS DEVELOPMENT PROGRAMME

FEASIBILITY ASSESSMENT AND DESIGN FOR THE UPGRADE OF IRRIGATION NETWORKS IN NORTH LEBANON AND THE BEKAA

TENDER DRAWINGS

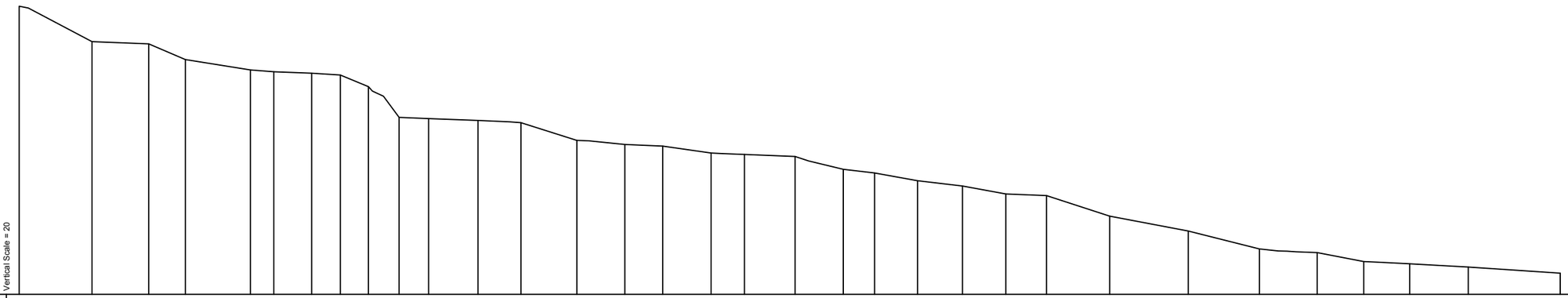
TAL HAYAT
IRRIGATION CANALS

Longitudinal profile Lines C& F

Dwg № 06

January 2017

Scale : NTS



Chainage	E1	E3	E4	E5	E6	E7	E8	E9	E10	E13	E14	E15	E17	E18	E20	E22	E23	E25	E26	E28	E29	E30	E31	E32	E33	E34	E35	E36	E40	E41	E43	E44	E45
Cumulated (Partial) Distance	0.00	86.26	153.56	197.07	274.05	301.71	346.72	380.53	413.73	450.11	485.10	543.71	594.50	660.83	717.56	762.53	819.74	859.45	919.36	976.47	1 013.44	1 064.46	1 117.67	1 168.97	1 217.06	1 292.17	1 385.09	1 469.39	1 537.87	1 593.13	1 647.51	1 716.87	1 825.82
	(86.26)	(67.30)	(43.51)	(76.99)	(27.66)	(45.01)	(33.81)	(33.19)	(36.40)	(34.99)	(58.61)	(50.79)	(66.33)	(56.73)	(44.97)	(57.21)	(39.72)	(59.91)	(57.11)	(36.97)	(51.02)	(53.21)	(51.30)	(48.09)	(75.11)	(92.92)	(84.30)	(68.47)	(55.26)	(54.38)	(69.36)	(108.95)	
Gradiant (m/Km)	24.22	2.00	21.34	8.05	3.62	2.00	3.25	20.49	50.00	2.00	2.00	2.00	15.74	4.23	2.00	7.34	2.00	2.00	13.50	5.68	9.04	5.84	9.05	2.00	16.31	9.48	12.55	3.22	9.59	2.40	2.84	3.32	
Ground Level	29.27	27.18	27.33	26.12	25.50	25.40	25.40	25.20	24.52	22.70	22.68	22.61	22.39	21.34	21.10	21.08	20.59	20.61	20.56	19.62	19.41	18.95	18.64	18.18	18.49	16.85	15.97	14.92	14.73	14.17	14.04	13.84	13.48
Invert Level	29.27	27.18	27.05	26.12	25.50	25.40	25.31	25.20	24.52	22.70	22.63	22.51	22.39	21.34	21.10	21.01	20.59	20.51	20.39	19.62	19.41	18.95	18.64	18.18	18.08	16.85	15.97	14.92	14.70	14.17	14.04	13.84	13.48
Dept of excavation	0.40	0.40	0.68	0.40	0.40	0.40	0.49	0.40	0.40	0.40	0.45	0.50	0.40	0.40	0.40	0.47	0.40	0.50	0.57	0.40	0.40	0.40	0.40	0.40	0.81	0.40	0.40	0.40	0.43	0.40	0.40	0.40	0.40
Heigth of walls	0.50	0.50	0.50	0.75	0.50	0.50	0.60	0.65	0.70	1.80	1.65	1.10	0.60	0.50	0.50	0.65	0.50	0.65	0.70	0.50	0.50	0.90	0.75	1.10	0.70	1.05	1.25	1.45	0.85	0.90	1.00	0.80	1.00

UNITED NATIONS DEVELOPMENT PROGRAMME

FEASIBILITY ASSESSMENT AND DESIGN FOR THE UPGRADE OF IRRIGATION NETWORKS IN NORTH LEBANON AND THE BEKAA

TENDER DRAWINGS

TAL HAYAT
IRRIGATION CANALS

Longitudinal profile Line I (Part 1)

Dwg № 07
January 2017
Scale : NTS