

Document 9.2.4 (3) Tableau des coûts des travaux (Coûts des travaux des gros ouvrages pour élargissement de 4 voies à 6 voies)

Travaux de construction de 6 voies avec intersections à niveaux séparés (Ensemble)

Travaux	Quantité	Unité	en Yens		en Zaires		Total converti en Yens	Travaux	Quantité	Unité	en Yens		en Zaires		Total converti en Yens	
			Prix Unitaire	Montant	Prix Unitaire	Montant					Prix Unitaire	Montant				
1. Travaux de terrassement:																
Déblai	8,832	m3	804	7,100,928	504	4,451,328	8,903,716	Chaussée (Béton)	98,303	m2	1,978	160,075,760	13,632	1,104,328,320	607,328,730	
Remblai	29,924	m3	141	4,219,284	119	3,560,956	5,661,471	Chaussées (Asphalte)	12,987	m2	934	0	11,418	0	0	
Sous-sol	6,533	m3	182	1,199,006	170	1,110,610	1,638,803	Accotements (Asphalte)	19,146	m2	420	0	4,997	0	0	
Matériaux d'emprunt	30,315	m3	0	0	5,628	170,612,820	69,098,192	Trottoir (Blocs en béton)	39,054	m2	156	0	12,858	0	0	
Total				12,509,218		179,735,714	85,302,182	Travaux de bordure	8,185	m	356	8,239,976	8,424	194,981,904	87,207,647	
2. Travaux de talus:																
Talus de déblai		m2	218	0	1,021	0	0	Blocs en béton de bornage	16,370	m	118	0	3,564	0	0	
Talus de remblai		m2	178	0	849	0	0	Total				168,315,738	1,299,310,224	694,538,377		
Total				0		0	0	7. Installations de contrôle								
3. Travaux de ponceaux:																
Dalot 2x2x1		m	53,071	0	298,372	0	0	Travaux pour panneaux de signalisation	12,990	m	816	0	214	0	0	
Dalot 2x2x2		m	100,486	0	600,862	0	0	Glissière de sécurité	3,622	m	6,865	0	1,601	0	0	
Dalot 2x2x3		m	138,062	0	725,336	0	0	Eclairage	145	m	1,100,000	327,860,000	280,800	83,678,400	361,688,752	
Dalot 4x3x1		m	171,570	0	4,178	0	0	Feux de signalisation	7	points	1,000,900	0	3,243,400	0	0	
Ponceaux tubulaires RC D=1,0m		m	207,321	0	991,564	0	0	Marquage au sol	38,970	m	253	5,927,790	0	0	5,927,790	
Ponceaux tubulaires CB D=1,2m		m	4,180	0	153,169	0	0	Total				333,727,790	83,678,400	367,617,542		
Ponceaux tubulaires CB D=1,2m		m	94	0	142,573	0	0	3. Travaux divers								
Ponceaux tubulaires CB D=1,2m		m	212	0	151,819	0	0	Plantation	11,808	m	0	0	916	0	0	
Total				0		0	0	Piquets-limites	1,282	unités	0	0	2,895	0	0	
4. Travaux de drainage:																
Caniveaux en U 1,5x1,5		m	9,238	0	103,385	0	0	Aqueducs	100	m	64,300	0	284,445	0	0	
Caniveaux en U 1,0x1,0		m	4,963	0	70,726	0	0	Total				0	0	0	0	
Fossés en terre 2,0x1,5		m	397	0	3,329	0	0	Total des coûts des travaux des ouvrages								
Fossés en terre 1,0x1,0		m	143	0	2,160	0	0									
Caniveaux transversaux D=0,75m		m	4,136	0	151,545	0	0							997,277,806	4,481,177,633	2,812,154,747
Caniveaux longitudinaux		m	4,731	0	58,123	0	0	5. Travaux de ponts								
Avalloirs		no	15,759	0	78,137	0	0	Ponts	756	m2	67,540	51,060,240	213,535	161,432,460	116,440,366	
Total				0		0	0	Revêtement des ponts	756	m2	405	308,180	4,521	3,417,676	1,690,420	
5. Travaux de ponts:																
Ponts	756	m2	67,540	51,060,240	213,535	161,432,460	116,440,366	Maconnerie en pierre	191	m2	2,151	410,841	35,883	6,853,653	3,186,570	
Revêtement des ponts	756	m2	405	308,180	4,521	3,417,676	1,690,420	Total				51,777,261	171,703,989	121,317,377		
Maconnerie en pierre	191	m2	2,151	410,841	35,883	6,853,653	3,186,570									
Total				51,777,261		171,703,989	121,317,377									

Document 9.2.4 (4) Tableau des coûts des travaux (Coûts des travaux des intersections à niveaux séparés)

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Travaux de construction des intersections à niveaux séparés (Ensemble)

Travaux	Quantité	Unité	en Yens		en Zaïres		Total converti en Yens	Travaux	Quantité	Unité	en Yens		en Zaïres		Total converti en Yens		
			Prix Unitaire	Montant	Prix Unitaire	Montant					Prix Unitaire	Montant	Prix Unitaire	Montant			
1. Travaux de terrassement																	
Déblai		m3	804	0	504	0	0	6. Travaux de revêtement		m2	1,976	81,316,352	13,632	560,984,054	308,514,898		
Remblai	228,160	m3	141	32,170,560	119	27,151,040	43,166,731	Chaussée (Béton)	12,987	m2	934	0	11,418	0	0		
Sous-sol	35,496	m3	182	6,460,272	170	6,034,320	8,904,172	Chaussée (Asphalte)	19,146	m2	420	1,656,480	4,997	19,708,188	9,638,288		
Matériaux d'emprunt	263,656	m3	0	0	5,628	1,483,855,968	600,961,867	Accotement (Asphalte)	38,054	m2	156	0	12,858	0	0		
Total				38,630,832		1,517,041,328	653,032,570	Trottoir (Blocs en béton)	8,185	m	356	2,808,128	8,424	66,448,512	29,719,775		
2. Travaux de talus																	
Talus de talus		m2	218	0	1,021	0	0	Travaux de bordure	16,370	m	118	0	3,564	0	0		
Talus de déblai	31,355	m2	178	5,581,190	849	26,620,395	16,362,450	Blocs en béton de bordure				85,780,960	647,140,744	347,872,961			
Total				5,581,190		26,620,395	16,362,450	Total									
3. Travaux de pontons																	
Dalet 2x2x1		m	53,071	0	298,372	0	0	7. installations de contrôle									
Dalet 2x2x2		m	100,486	0	600,862	0	0	Travaux pour panneaux de signalisation	12,990	m	816	1,746,240	214	457,960	1,931,714		
Dalet 2x2x3		m	138,062	0	725,336	0	0	Glissière de sécurité	3,522	m	6,665	26,286,760	1,601	6,314,344	28,844,069		
Dalet 2x2x3x3		m	171,570	0	4,178	0	0	Eclairage	145	本	1,100,000	125,400,000	280,800	32,011,200	138,364,536		
Dalet 4x2x1		m	207,321	0	991,564	0	0	Feux de signalisation	7	points	1,900,000	0	3,243,400	0	0		
Ponceaux tubulaires RC D=1.0m		m	4,180	0	153,169	0	0	Marquage au sol	38,970	m	253	3,248,520	0	0	3,248,520		
Ponceaux tubulaires CS D=1.2m		m	94	0	142,573	0	0	Total				156,681,520	38,783,504	172,388,839			
Ponceaux tubulaires CS D=1.5m		m	212	0	151,819	0	0	3. Travaux divers									
Total				0	0	0	0	Plantation	11,808	m	0	0	916	1,806,352	731,573		
4. Travaux de drainage																	
Caniveaux en U 1,0x1,0		m	9,238	0	103,385	0	0	Piquets-limites	1,202	unités	0	0	2,835	0	0		
Caniveaux en U 1,0x1,0		m	4,963	0	70,726	0	0	Acrotères	100	m	64,800	0	284,445	0	0		
Fosse en terre 2,0x1,5		m	397	0	3,529	0	0	Total					1,806,352	731,573			
Fosse en terre 1,0x1,0		m	149	0	2,160	0	0	Total des coûts des travaux des pontons							430,947,801	2,746,749,306	1,543,361,270
Caniveaux transversaux 500x500 D=1,0m	172	m	4,136	711,392	151,545	26,065,740	11,268,017										
Caniveaux longitudinaux	615	m	4,731	2,909,565	58,123	35,745,645	17,386,551										
Avaloirs	78	個	15,759	1,229,202	78,137	6,094,686	3,697,550										
Total				4,650,159		67,906,071	32,352,118										
5. Travaux de ponts																	
Ponts	2,052	m2	67,540	138,592,060	213,535	438,173,820	316,052,477										
Revêtement des ponts	2,052	m2	405	831,060	4,521	9,277,092	4,588,282										
Maconnerie en pierre		m2	2,151	0	35,883	0	0										
Total				139,423,140		447,450,912	320,640,759										

Document 10.4.1 Entretien et gestion

Item	Fréquence	Coût/an	Remarques
Entretien courant - Berges, Talus - Rechange de lampe - Feux	1 fois/an 1 fois/3-10 an	1100 x 10 ³ Z 350 x 10 ³ Z	Logueur totale Route principale 11.715 m Accès 3.380 m
Total		1450 x 10 ³	
Entretien périodique - Chaussée - Marquage au sol - Ressaut - Pont	1 fois/an 1 fois/5 ans 1 fois/3 ans 1 fois/20 ans	520 x 10 ³ Z 50 x 10 ³ Z 120 x 10 ³ Z 30 x 10 ³ Z	Frais par voie
Total		720 x 10 ³ Z	
Entretien régulier - Rechargement pour la couche de surface		10500 x 10 ³ Z	Frais par voie

Document 11.2.1 Analyse des coûts et bénéfices pour le plan optimal

SDR 12%		,000,000										UNIT-MIL Z		
		CASH FLOW ANALYSIS				SENSITIVITY-1				SENSITIVITY-2				
YEAR	INITIAL	COST		BENEFIT		FLOW		FLOW		FLOW		FLOW		
		MAINT	SUB-TOT	DIRECT	INDIRECT	SUB-TOTAL	B-C	B-C	B-C	B-C	B-C	B-C	B-C	
0	1991	5,995.00	0.00	5,995.00	0.00	0.00	0.00	-5,995.00	7,194.00	0.00	-7,194.00	7,194.00	0.00	-7,194.00
1	1992	3,892.00	0.00	3,892.00	0.00	0.00	0.00	-3,892.00	4,670.40	0.00	-4,670.40	4,670.40	0.00	-4,670.40
2	1993	6,343.00	0.00	6,343.00	0.00	0.00	0.00	-6,343.00	7,611.60	0.00	-7,611.60	7,611.60	0.00	-7,611.60
3	1994	4,180.00	0.00	4,180.00	0.00	0.00	0.00	-4,180.00	5,016.00	0.00	-5,016.00	5,016.00	0.00	-5,016.00
4	1995	0.00	33.86	33.86	5,441.00	0.00	5,441.00	4,352.80	4,312.17	40.63	5,441.00	40.63	5,441.00	5,400.37
5	1996	0.00	33.86	33.86	4,833.00	0.00	4,833.00	4,799.14	40.63	3,866.40	3,825.77	40.63	4,833.00	4,792.37
6	1997	0.00	33.86	33.86	4,224.00	0.00	4,224.00	4,190.14	40.63	3,379.20	3,338.57	40.63	4,224.00	4,183.37
7	1998	0.00	33.86	33.86	3,616.00	0.00	3,616.00	3,582.14	40.63	2,852.17	2,811.54	40.63	3,616.00	3,575.37
8	1999	0.00	33.86	33.86	3,007.00	0.00	3,007.00	2,973.14	40.63	2,405.60	2,364.97	40.63	3,007.00	2,966.37
9	2000	0.00	33.86	33.86	2,399.00	0.00	2,399.00	2,365.14	40.63	1,919.20	1,878.57	40.63	2,399.00	2,358.37
10	2001	1,284.00	33.86	1,317.86	2,927.00	0.00	2,927.00	1,609.14	1,581.43	2,341.60	760.17	1,581.43	2,927.00	1,345.57
11	2002	5,081.00	33.86	5,114.86	3,455.00	0.00	3,455.00	-1,659.86	6,137.83	2,764.00	-3,373.83	6,137.83	3,455.00	-2,882.83
12	2003	8,281.00	33.86	8,314.86	3,982.00	0.00	3,982.00	-4,332.86	9,977.83	3,185.60	-6,792.23	9,977.83	3,982.00	-5,995.83
13	2004	5,458.00	33.86	5,491.86	4,510.00	0.00	4,510.00	-981.86	6,590.23	3,608.00	-2,982.23	6,590.23	4,510.00	-2,060.23
14	2005	0.00	65.37	65.37	7,964.00	0.00	7,964.00	7,898.63	78.44	6,371.20	6,292.76	78.44	7,964.00	7,885.56
15	2006	0.00	65.37	65.37	9,240.00	0.00	9,240.00	9,174.53	78.44	7,392.00	7,313.56	78.44	9,240.00	9,161.56
16	2007	0.00	65.37	65.37	10,518.00	0.00	10,518.00	10,452.63	78.44	8,414.40	8,335.96	78.44	10,518.00	10,439.56
17	2008	0.00	65.37	65.37	11,795.00	0.00	11,795.00	11,729.63	78.44	9,436.00	9,357.56	78.44	11,795.00	11,716.56
18	2009	798.00	65.37	863.37	13,073.00	0.00	13,073.00	12,209.63	1,036.04	10,458.40	9,422.36	1,036.04	13,073.00	12,036.96
19	2010	3,158.00	65.37	3,223.37	14,350.00	0.00	14,350.00	11,126.63	3,868.04	11,480.00	7,611.98	3,868.04	14,350.00	10,481.96
20	2011	5,147.00	65.37	5,212.37	15,258.00	0.00	15,258.00	10,043.63	6,254.84	12,204.80	5,949.96	6,254.84	15,258.00	9,001.16
21	2012	3,392.00	65.37	3,457.37	16,162.00	0.00	16,162.00	12,704.63	4,148.84	12,929.60	8,780.76	4,148.84	16,162.00	12,013.16
22	2013	0.00	82.24	82.24	19,691.00	0.00	19,691.00	19,608.76	98.69	15,752.80	15,554.11	98.69	19,691.00	19,592.31
23	2014	0.00	82.24	82.24	21,139.00	0.00	21,139.00	21,056.76	98.69	16,911.20	16,812.51	98.69	21,139.00	21,040.31
24	2015	0.00	328.26	328.26	22,587.00	0.00	22,587.00	22,256.74	393.91	18,069.60	17,675.69	393.91	22,587.00	22,193.09
25	2016	0.00	82.24	82.24	24,035.00	0.00	24,035.00	23,952.76	98.69	19,228.00	19,129.31	98.69	24,035.00	23,936.31
26	2017	0.00	82.24	82.24	25,483.00	0.00	25,483.00	25,400.76	98.69	20,386.40	20,287.71	98.69	25,483.00	25,384.31
27	2018	0.00	82.24	82.24	26,930.00	0.00	26,930.00	26,847.76	98.69	21,544.00	21,445.31	98.69	26,930.00	26,831.31
28	2019	0.00	82.24	82.24	28,378.00	0.00	28,378.00	28,295.76	98.69	22,702.40	22,603.71	98.69	28,378.00	28,279.31
29	2020	0.00	82.24	82.24	29,826.00	0.00	29,826.00	29,743.76	98.69	23,860.80	23,762.11	98.69	29,826.00	29,727.31
30	2021	0.00	82.24	82.24	31,274.00	0.00	31,274.00	31,191.76	98.69	25,019.20	24,920.51	98.69	31,274.00	31,175.31
31	2022	0.00	82.24	82.24	32,722.00	0.00	32,722.00	32,639.76	98.69	26,177.60	26,078.91	98.69	32,722.00	32,623.31
32	2023	0.00	82.24	82.24	34,169.00	0.00	34,169.00	34,086.76	98.69	27,335.20	27,236.51	98.69	34,169.00	34,070.31
33	2024	0.00	82.24	82.24	35,617.00	0.00	35,617.00	35,534.76	98.69	28,493.60	28,394.91	98.69	35,617.00	35,518.31
34	2025	0.00	82.24	82.24	37,065.00	0.00	37,065.00	36,982.76	98.69	29,650.00	29,550.31	98.69	37,065.00	36,966.31
TOTAL	53,009.00	2,176.70	55,185.70	505,668.00	450,482.30	0.00	505,668.00	450,482.30	66,222.84	404,534.40	338,311.56	66,222.84	505,668.00	439,445.16
DV	21,451.30	246.16	21,737.46	39,956.23	18,258.77	0.00	39,956.23	18,258.77	26,084.95	31,986.99	6,912.04	26,084.95	39,956.23	13,911.28
0.12					18.29%			18.29%			13.92%			16.21%
B/C					1.84			1.84			1.23			1.53
NPV					18,258.77			18,258.77			5912.04			13911.28

Document 11.2.2 Analyse des coûts et bénéfiques pour le plan de base

SDR	.000,000													UNIT: MIL Z											
	CASH FLOW ANALYSIS						SENSITIVITY-1						SENSITIVITY-2												
	YEAR	INITIAL	COST MAINT.	SUB-TOT	DIRECT	BENEFIT IN-DIRECT	SUB-TOTAL	FLOW B-C	FLOW B-C	B*0.8	COST*1.2	FLOW B-C	B*1.0	FLOW B-C											
0	1991	5,995.00	0.00	5,995.00	0.00	0.00	5,995.00	0.00	-7,194.00	7,194.00	0.00	-7,194.00	0.00	-7,194.00											
1	1992	3,892.00	0.00	3,892.00	0.00	0.00	-3,892.00	0.00	-4,670.40	4,670.40	0.00	-4,670.40	0.00	-4,670.40											
2	1993	6,343.00	0.00	6,343.00	0.00	0.00	-6,343.00	0.00	-7,611.60	7,611.60	0.00	-7,611.60	0.00	-7,611.60											
3	1994	4,160.00	0.00	4,160.00	0.00	0.00	-4,160.00	0.00	-5,016.00	5,016.00	0.00	-5,016.00	0.00	-5,016.00											
4	1995	0.00	33.86	33.86	5,441.00	0.00	5,441.00	5,441.00	4,352.80	40.63	4,352.80	4,352.80	5,441.00	5,441.00											
5	1996	0.00	33.86	33.86	4,833.00	0.00	4,833.00	4,799.14	3,866.40	40.63	3,866.40	3,826.77	4,833.00	4,792.37											
6	1997	0.00	33.86	33.86	4,224.00	0.00	4,224.00	4,190.14	3,379.20	40.63	3,379.20	3,338.57	4,224.00	4,183.37											
7	1998	0.00	33.86	33.86	3,616.00	0.00	3,616.00	3,582.14	2,692.80	40.63	2,692.80	2,652.17	3,616.00	3,575.37											
8	1999	0.00	33.86	33.86	3,007.00	0.00	3,007.00	2,973.14	2,405.60	40.63	2,405.60	2,364.97	3,007.00	2,966.37											
9	2000	0.00	33.86	33.86	2,399.00	0.00	2,399.00	2,365.14	1,919.20	40.63	1,919.20	1,878.57	2,399.00	2,358.37											
10	2001	1,284.00	0.00	1,317.86	2,927.00	0.00	2,927.00	1,609.14	1,581.43	2,341.60	780.17	1,581.43	2,927.00	1,345.57											
11	2002	5,081.00	0.00	5,114.86	3,455.00	0.00	3,455.00	-1,839.86	5,137.83	2,764.00	-3,373.63	6,137.83	3,455.00	-2,682.83											
12	2003	8,281.00	0.00	8,314.86	3,982.00	0.00	3,982.00	-4,332.86	9,977.83	3,185.60	-6,792.23	9,977.83	3,982.00	-5,995.83											
13	2004	5,456.00	0.00	5,491.86	4,510.00	0.00	4,510.00	-981.86	5,590.23	3,608.00	-2,982.23	5,590.23	4,510.00	-2,080.23											
14	2005	0.00	65.37	65.37	7,964.00	0.00	7,964.00	7,898.63	78.44	8,371.20	6,292.76	78.44	7,964.00	7,885.56											
15	2006	0.00	65.37	65.37	9,240.00	0.00	9,240.00	9,174.63	78.44	9,392.00	7,313.56	78.44	9,240.00	9,151.56											
16	2007	0.00	65.37	65.37	10,518.00	0.00	10,518.00	10,452.63	78.44	8,414.40	8,335.96	78.44	10,518.00	10,438.56											
17	2008	0.00	65.37	65.37	11,795.00	0.00	11,795.00	11,729.63	78.44	9,436.00	8,357.56	78.44	11,795.00	11,715.56											
18	2009	0.00	65.37	65.37	13,073.00	0.00	13,073.00	13,007.63	78.44	10,458.40	10,379.96	78.44	13,073.00	12,994.56											
19	2010	0.00	65.37	65.37	14,350.00	0.00	14,350.00	14,284.63	78.44	11,480.00	11,401.56	78.44	14,350.00	14,271.56											
20	2011	798.00	0.00	863.37	15,256.00	0.00	15,256.00	14,392.63	1,036.04	12,204.80	11,168.76	1,036.04	15,256.00	14,219.96											
21	2012	3,158.00	0.00	3,223.37	16,162.00	0.00	16,162.00	12,938.63	3,868.04	12,929.60	9,061.56	3,868.04	16,162.00	12,233.96											
22	2013	5,147.00	0.00	5,212.37	17,067.00	0.00	17,067.00	11,854.63	6,254.84	13,653.60	7,398.76	6,254.84	17,067.00	10,812.16											
23	2014	3,392.00	0.00	3,457.37	17,973.00	0.00	17,973.00	14,515.63	4,148.84	14,378.40	10,229.56	4,148.84	17,973.00	13,824.16											
24	2015	0.00	328.26	328.26	22,587.00	0.00	22,587.00	22,258.74	393.91	18,089.60	17,679.68	393.91	22,587.00	22,133.09											
25	2016	0.00	82.24	82.24	24,035.00	0.00	24,035.00	23,952.76	98.69	19,228.00	19,129.31	98.69	24,035.00	23,936.31											
26	2017	0.00	82.24	82.24	25,483.00	0.00	25,483.00	25,400.76	98.69	20,368.40	20,267.71	98.69	25,483.00	25,384.31											
27	2018	0.00	82.24	82.24	26,930.00	0.00	26,930.00	26,847.76	98.69	21,544.00	21,445.31	98.69	26,930.00	26,851.31											
28	2019	0.00	82.24	82.24	28,378.00	0.00	28,378.00	28,295.76	98.69	22,702.40	22,603.71	98.69	28,378.00	28,279.31											
29	2020	0.00	82.24	82.24	29,826.00	0.00	29,826.00	29,743.76	98.69	23,860.80	23,762.11	98.69	29,826.00	29,773.31											
30	2021	0.00	82.24	82.24	31,274.00	0.00	31,274.00	31,191.76	98.69	25,019.20	24,920.51	98.69	31,274.00	31,175.31											
31	2022	0.00	82.24	82.24	32,722.00	0.00	32,722.00	32,639.76	98.69	26,177.60	26,078.91	98.69	32,722.00	32,623.31											
32	2023	0.00	82.24	82.24	34,189.00	0.00	34,189.00	34,086.76	98.69	27,335.20	27,236.51	98.69	34,189.00	34,070.31											
33	2024	0.00	82.24	82.24	35,617.00	0.00	35,617.00	35,534.76	98.69	28,493.60	28,394.91	98.69	35,617.00	35,518.31											
34	2025	0.00	82.24	82.24	37,065.00	0.00	37,065.00	36,982.76	98.69	29,652.00	29,553.31	98.69	37,065.00	36,986.31											
TOTAL													53,009.00	2,142.96	55,151.96	489,878.00	0.00	489,878.00	444,726.04	66,182.35	399,502.40	333,720.05	66,182.35	499,878.00	433,695.65
DV	21,252.84	243.81	21,496.65	39,594.03	0.00	39,594.03	18,097.58	18.29%	25,795.74	31,675.22	5,879.49	25,795.74	39,594.03	13,798.29											
0.12					IRR		18.29%				13.92%		15.21%												
					B/C		1.84				1.23		1.53												
					NPV		18,097.58				5,879.49		13,798.29												

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