

**The conservation of Bender Fortress**  
**(Phase 1)**

(the name of the objective)

Form No. 1  
WinCmeta

## LOCAL ESTIMATE OF COSTS NO. 2-1-1

### Structural interventions

Based on current prices:

No.	Regulation Symbol and Resource Code	Works and expenses	M.U.	Qty according to project data	Estimated cost, \$	
					Per unit of measure incl. wages	Total incl. wages
1	2	3	4	5	6	7
		<b>1. The citadel of the fortress</b> <b>1.1. Tower A6</b>				
1	RCsB29B k=16,2	The drilling of perforated holes in stone masonry at slow rotation speed, including guidance works, the cleaning of perforations, and the removal of debris, by means of a diamond core drill with a diameter of: 30 mm L = 180 cm Manpower coefficient = 16.2000 Materials coefficient = 16.2000 Equipment coefficient = 16.2000	item	3.00		
2	RCsB29B k=27	The drilling of perforated holes in stone masonry at slow rotation speed, including guidance works, the cleaning of perforations, and the removal of debris, by means of a diamond core drill with a diameter of: 30 mm L = 300 cm Manpower coefficient = 27.0000 Materials coefficient = 27.0000 Equipment coefficient = 27.0000	item	5.00		
3	RCsB29B k=9	The drilling of perforated holes in stone masonry at slow rotation speed, including guidance works, the cleaning of perforations, and the removal of debris, by means of a diamond core drill with a diameter of: 30 mm L = 100 cm Manpower coefficient = 9.0000 Materials coefficient = 9.0000 Equipment coefficient = 9.0000	item	8.00		
4	RCsU02A	Metalworks made on site and mounted into the masonry to strengthen the slabs at the elevation marks of 25.50 and 30.31, including the cutting of tie rods/crossbeams to size (tie rods – 175.38 kg, metal plates 40 x 10 mm – 376.50 kg, stainless steel fastening for the through bar 80 x 60 x 800 mm – 512.00 kg, bolts, stud bolts, etc. – 100 kg)	kg	1,163.88		
5	IzD05B	The manual priming of metal constructions with a layer of mono-component rustproof paint	t	1.164		
6	RMA16A	The injection of wall-mounted	m	28.40		

1	2	3	4	5	6	7
	Ksal=0.5	metallic bars with M1 NHL 5 liquid hydraulic lime-based mortar with shrinkage-reducing agent (see the explanatory note on pages 6 – 8) by means of a proper low-pressure injection device, the demand of M1 NHL 5 mortar – 0.0007 m <sup>3</sup> /m Manpower coefficient = 0.5000				
7	RCsK01H1	Subfloor made of planed and rabbeted 20 mm-thick oak boards laid on the existing joists	m2	155.00		
8	RMF41A	The fireproofing of the surfaces of timber structures with a fire retardant applied by: brushing	m2	310.00		
9	RMF40A	Timber treatment with solutions against biological attacks applied by: brushing in 2 layers	m2	310.00		
10	CG04A	Flooring of planed oak boards with tongue-and-groove joints, final thickness of 25 mm, laid side by side in one layer on oak bars	m2	155.00		
11	RMF41A	The fireproofing of the surfaces of timber structures with a fire retardant applied by: brushing	m2	310.00		
12	RMF40A	Timber treatment with solutions against biological attacks applied by: brushing in 2 layers	m2	310.00		
13	CG07C	The finishing of timber flooring by: lacquering in three layers	m2	155.00		
14	RMA16A	The injection of large fissures and cracks in the walls with M1 NHL 5 liquid hydraulic lime-based mortar (see the explanatory note on pages 6 – 8) by means of a proper low-pressure injection device, the demand of M1 NHL 5 mortar – 0.01 m <sup>3</sup> /m	m	22.00		
15	R4B04A Ks=0.1K <sub>m</sub> =0.83	The making of an insertion stand in surfaces of smooth, flat 25 cm-thick limestone Materials coefficient = 0.8333 Equipment coefficient = 0.8333 Manpower coefficient = 0.1000	dm2	2,210.00		
16	R4B01A	The restoration of structural elements and architectural details of monuments made of natural stone by sectors of minimum 0.3 m <sup>2</sup> where portions of stone damaged by the making of insertions were replaced	dm2	2,210.00		
17	RMA25B	The cleaning of gaps in the stone masonry to refill them	m2	53.63		
18	RMD06B	The filling of gaps in stone masonry with M3 NHL 3.5 liquid hydraulic mortar with shrinkage-reducing agent (see the explanatory note on pages 6 – 8), period rubble stone masonry	m2	53.63		
		<i>Total</i>	\$			
		<b>Total Tower A6 Incl. wages</b>				
		<b>1.2. Towers A2 and A4</b>				
19	RCsJ37A	The stripping of the vegetation and	m2	145.00		

1	2	3	4	5	6	7
		soil accumulated on the tops of the towers, including the removal of trash				
20	CD02G	Masonry with dressed stone chiseled into regular blocks for constructions made with M1 NHL 5 hydraulic lime-based mortar (see the explanatory note on pages 6 – 8), made of: quarry stone chiseled on site into regular blocks Masonry for bringing up to the elevation mark.	m3	21.75		
21	RCsB29A k=6.12	The drilling of holes in stone masonry by means of a diamond core drill with a diameter of: 20 mm, L = 680 mm Manpower coefficient = 6.1200 Materials coefficient = 6.1200 Equipment coefficient = 6.1200	item	165.00		
22	RCsB29A k=4.23	The drilling of holes in stone masonry by means of a diamond core drill with a diameter of: 20 mm, L = 470 mm Manpower coefficient = 4.2300 Materials coefficient = 4.2300 Equipment coefficient = 4.2300	item	33.00		
23	RCsU02A	Metalworks for reinforcement steel with a thickness of 10 mm, frames	kg	1,169.74		
24	IzD05B	The manual priming of metal constructions with a layer of mono-component rustproof paint	t	1.17		
25	CL57A	The installation of M10 zinc-plated threaded rods into drilled holes / Small and mounting expendables (petroleum jelly, cloths, petroleum, etc.) = 1.0100	kg	142.56		
26	CF17D	High-performance two-component chemical anchors like Epojet EN 1504-6 or a similar one for the fastening of embedded reinforcement steel (see the explanatory note on page 8)	l	44.40		
27	RMC04A	Framing for domes, turrets, and towers isolated on complex layers of polished oak with secondary elements (rafters, chamomille-like roof caps, collar ties, etc.) of polished oak balk, including ironware for fastening and mounting	m3	50.88		
28	RMF40A	Timber treatment with solutions against biological attacks applied by: brushing in 2 layers	m2	848.00		
29	RMC06A	Batten for shingle covering, made of planed oak planks 100 x 100 mm in cross section fastened with dowel pins with a length of L = 120 mm	m2	650.00		
30	CE30A1	Sheathing for the covering made of planed 20 mm-thick oak boards for regular constructions, domes, and turrets	m2	650.00		
31	RMF40A	Timber treatment with solutions against biological attacks applied by:	m2	2,600.00		

1	2	3	4	5	6	7
		brushing in 2 layers				
32	RMF31A k=0.4	Oak shingle covering (KD) laid in 1 layer for turrets, with a lattice size of: 35 x 10 x 2 cm, fastened with dowel pins L = 60 mm, including the treatment of the shingle requisite solutions Manpower coefficient = 0.4000 Materials coefficient = 0.4000 Equipment coefficient = 0.4000	m2	650.00		
		<i>Total</i>	\$			
		<b>Total Towers A2 and A4 Incl. wages</b>				
		<b>1.3. Towers A3 and A6</b>				
33	RCsI41C	The dismantling of roof elements – clay tile covering	m2	650.00		
34	RCsH33C	The dismantling of roof elements – the butter of the covering	m2	650.00		
35	RCsH33B	The dismantling of the roof framing with the removal of all component elements, including the sorting of the resulted materials	m2	650.00		
36	RCsB29A k=6.12	The drilling of holes in stone masonry by means of a diamond core drill with a diameter of: 20 mm, L = 680 mm Manpower coefficient = 6.1200 Materials coefficient = 6.1200 Equipment coefficient = 6.1200	item	165.00		
37	RCsB29A k=4.23	The drilling of holes in stone masonry by means of a diamond core drill with a diameter of: 20 mm, L = 470 mm Manpower coefficient = 4.2300 Materials coefficient = 4.2300 Equipment coefficient = 4.2300	item	33.00		
38	RCsU02A	Metalworks for reinforcement steel with a thickness of 10 mm, frames	kg	1,169.74		
39	IzD05B	The manual priming of metal constructions with a layer of mono-component rustproof paint	t	1.17		
40	CL57A	The installation of M10 zinc-plated threaded rods into drilled holes / Small and mounting expendables (petroleum jelly, cloths, petroleum, etc.) = 1.0100	kg	142.56		
41	CF17D	High-performance two-component chemical anchors like Epojet EN 1504-6 or a similar one for the fastening of embedded reinforcement steel (see the explanatory note on page 8)	l	44.40		
42	RMC04A	Framing for domes, turrets, and towers isolated on complex layers of polished oak with secondary elements (rafters, chamomile-like roof caps, collar ties, etc.) of polished oak balk, including ironware for fastening and mounting	m3	50.88		
43	RMF40A	Timber treatment with solutions against biological attacks applied by: brushing in 2 layers	m2	848.00		
44	RMC06A	Batten for shingle covering, made of	m2	650.00		

1	2	3	4	5	6	7
		planed oak planks 100 x 100 mm in cross section fastened with dowel pins with a length of L = 120 mm				
45	CE30A1	Sheathing for the covering made of planed 20 mm-thick oak boards for regular constructions, domes, and turrets	m2	650.00		
46	RMF40A	Timber treatment with solutions against biological attacks applied by: brushing in 2 layers	m2	2,600.00		
47	RMF31A k=0.4	Oak shingle covering (KD) laid in 1 layer for turrets, with a lattice size of: 35 x 10 x 2 cm, fastened with dowel pins L = 60 mm, including the treatment of the shingle requisite solutions Manpower coefficient = 0.4000 Materials coefficient = 0.4000 Equipment coefficient = 0.4000	m2	650.00		
		<i>Total</i>	\$			
		<b>Total Towers A3 and A6 Incl. wages</b>				
		<b>1.4. The reinforcement of the wall between Towers A6 and A7 (the experimental sector)</b>				
48	RCsB29C k=23.4	The drilling of perforated holes in stone masonry at slow rotation speed, including guidance works, the cleaning of perforations, and the removal of debris, by means of a diamond core drill with a diameter of: 40 mm L = 260 cm Manpower coefficient = 23.4000 Materials coefficient = 23.4000 Equipment coefficient = 23.4000	item	4.00		
49	RCsU02A	Metalworks made on site and mounted into the masonry to strengthen the wall, including the cutting of tie rods/crossbeams to size (A240 rods – 16.43 kg, metal plates – 11.20 kg, bolts, stud bolts, etc. – 2 kg)	kg	29.63		
50	IzD05B	The manual priming of metal constructions with a layer of mono-component rustproof paint	t	0.03		
51	RMA16A Ksal=0.5	The injection of wall-mounted metallic bars with M1 NHL 5 liquid hydraulic lime-based mortar with shrinkage-reducing agent (see the explanatory note on pages 6 – 8) by means of a proper low-pressure injection device, the demand of M1 NHL 5 mortar – 0.0029 m <sup>3</sup> /m Manpower coefficient = 0.5000	m	10.40		
52	RMA16A Ksal=0.5	The injection of cavities resulted from wood decay with M1 NHL 5 liquid hydraulic lime-based mortar with shrinkage-reducing agent (see the explanatory note on pages 6 – 8) by means of a proper low-pressure injection device, the demand of M1	m	48.00		

1	2	3	4	5	6	7
		NHL 5 mortar – 0.075 m <sup>3</sup> /m Manpower coefficient = 0.5000				
53	R4B04A Ks=0.1Km =0.83	The making of an insertion stand in surfaces of smooth, flat 25 cm-thick limestone Materials coefficient = 0.8333 Equipment coefficient = 0.8333 Manpower coefficient = 0.1000	dm2	392.00		
54	R4B01A	The restoration of structural elements and architectural details of monuments made of natural stone by sectors of minimum 0.3 m <sup>2</sup> where portions of stone damaged by the making of insertions were replaced	dm2	392.00		
		<i>Total</i>	\$			
		<b>Total The reinforcement of the wall between Towers A6 and A7 (the experimental sector) Incl. wages</b>				
		<i>Total</i>	\$			
		<b>Total The citadel of the fortress Incl. wages</b>				
		<b>2. Lower fortress</b>				
		<b>2.1. Water tower</b>				
55	RCsA02A	Digging at wall underpinnings in regular work conditions and positions to a depth of 1.5 m. Category II soil	m3	13.00		
56	TsH92B	The loading of excavated spoil with boulders and rocks into dump trucks	t	24.70		
57	TsI50A1	The transportation of spoil by dump trucks with a capacity of 5 t to a distance of up to 1 km	t	24.70		
58	TsC51B	The unloading of spoil at a warehouse, category II ground	100 m <sup>3</sup>	0.13		
59	RCsB29A k=2.25	The drilling of perforated holes in stone masonry at slow rotation speed, including guidance works, the cleaning of perforations, and the removal of debris, by means of a diamond core drill with a diameter of: 20 mm, L = 25 cm Manpower coefficient = 2.2500 Materials coefficient = 2.2500 Equipment coefficient = 2.2500	item	130.00		
60	CF17D	High-performance two-component chemical anchors like Epojet EN 1504-6 or a similar one for the fastening of embedded reinforcement steel (see the explanatory note on page 8)	l	5.20		
61	RMA03A	C12/15 concrete poured into underpinning elements or foundation reinforcements under special conditions, limited spaces at sections and phases of work (prepared manually)	m3	1.30		
62	RMA04A	C25/30 concrete poured into reinforcement elements; for concrete type, see the explanatory note on pages 6 – 8	m3	5.60		
63	RMA12B	B450C reinforcement steel for	kg	704.00		

1	2	3	4	5	6	7
		foundations and underpinnings modeled and assembled on site at limited sections 1 to 3 m in length in accordance with effective regulations				
64	RMA06A	Fir formwork with raised gutters in the upper part for pouring concrete into underpinnings, including supports of up to 3 m	m2	10.50		
65	RCsB29B k=8,1	The drilling of perforated holes in stone masonry at slow rotation speed, including guidance works, the cleaning of perforations, and the removal of debris, by means of a diamond core drill with a diameter of: 30 mm L = 90 cm Manpower coefficient = 8.1000 Materials coefficient = 8.1000 Equipment coefficient = 8.1000	item	4.00		
66	RCsB29B k=6.3	The drilling of perforated holes in stone masonry at slow rotation speed, including guidance works, the cleaning of perforations, and the removal of debris, by means of a diamond core drill with a diameter of: 30 mm L = 70 cm Manpower coefficient = 6.3000 Materials coefficient = 6.3000 Equipment coefficient = 6.3000	item	4.00		
67	CL57A	The assemblage and fastening of pieces embedded into monolithic reinforced concrete Small and mounting expendables (petroleum jelly, cloths, petroleum, etc.) = 1.0100	kg	433.65		
68	IzD05B	The manual priming of metal constructions with a layer of mono-component rustproof paint	t	0.434		
69	RMA16A	The injection of embedded metal rebars with M1 NHL 5 liquid hydraulic lime-based mortar with shrinkage-reducing agent (see the explanatory note on pages 6 – 8) by means of a proper low-pressure injection device, the demand of M1 NHL 5 mortar – 0.0007 m <sup>3</sup> /m	m	6.40		
70	RMA16A	The injection of large fissures and cracks in the walls with M1 NHL 5 liquid hydraulic lime-based mortar (see the explanatory note on pages 6 – 8) by means of a proper low-pressure injection device, the demand of M1 NHL 5 mortar – 0.01 m <sup>3</sup> /m	m	31.80		
71	R4B04A Ks=0.1Km =2.33	The making of an insertion stand in stone surfaces, smooth 70 cm-thick limestone slab Manpower coefficient = 0.1000 Materials coefficient = 2.3334 Equipment coefficient = 2.3334	dm2	180.00		
72	R4B01A	The restoration of structural elements and architectural details of monuments made of natural stone by sectors of minimum 0.3 m <sup>2</sup> where portions of stone damaged by the making of insertions were replaced	dm2	180.00		

1	2	3	4	5	6	7
73	RMA25B	The cleaning of gaps in the stone masonry to refill them	m2	32.30		
74	RMD06B	The filling of gaps in stone masonry with M3 NHL 3.5 liquid hydraulic mortar with shrinkage-reducing agent (see the explanatory note on pages 6 – 8), period rubble stone masonry	m2	32.30		
		<i>Total</i>	\$			
		<b>Total Water tower Incl. wages</b>				
		<b>2.2. Tower B3</b>				
75	RCsA02A	Digging at wall underpinning in regular work conditions and positions to a depth of 1.5 m	m3	96.60		
76	RCsU09C	The direct carrying of loads of up to 50 kg by manual means to a distance of 60 m	t	183.54		
77	TsH92B	The loading of excavated spoil with boulders and rocks into dump trucks	t	183.54		
78	TsI50A1	The transportation of spoil by dump trucks with a capacity of 5 t to a distance of up to 1 km	t	183.54		
79	TsC51B	The unloading of spoil at a warehouse, category II ground	100 m <sup>3</sup>	0.966		
80	RMA25B	The cleaning of gaps in the stone masonry to refill them	m2	53.20		
81	RMD06B	The filling of gaps in stone masonry with M3 NHL 3.5 liquid hydraulic mortar with shrinkage-reducing agent (see the explanatory note on pages 6 – 8), period rubble stone masonry	m2	53.20		
82	RCsB29D k=13,5	The drilling of perforated holes in stone masonry at slow rotation speed, including guidance works, the cleaning of perforations, and the removal of debris, by means of a diamond core drill with a diameter of: 50 mm L = 150 cm Manpower coefficient = 13.5000 Materials coefficient = 13.5000 Equipment coefficient = 13.5000	item	4.00		
83	CL57A	The mounting and fastening of tie rods Small and mounting expendables (petroleum jelly, cloths, petroleum, etc.) = 1.0100	kg	40.00		
84	CF17D	High-performance two-component chemical anchors like Epojet EN 1504-6 or a similar one for the fastening of embedded reinforcement steel (see the explanatory note on page 8)	1	12.00		
85	RMA25B	The cleaning of gaps in the stone masonry to refill them	m2	53.20		
86	RMD06B	The filling of gaps in stone masonry with M3 NHL 3.5 liquid hydraulic mortar with shrinkage-reducing agent (see the explanatory note on pages 6 – 8), period rubble stone masonry	m2	53.20		
87	R4B04A Ks=0.1Km	The making of an insertion stand in stone surfaces, smooth 60 cm-thick	dm2	1,770.00		



1	2	3	4	5	6	7
	=2	limestone slab Materials coefficient = 2.0000 Equipment coefficient = 2.0000 Manpower coefficient = 0.1000				
88	R4B01A	The restoration of structural elements and architectural details of monuments made of natural stone by sectors of minimum 0.3 m <sup>2</sup> where portions of stone damaged by the making of insertions were replaced	dm2	1,770.00		
89	CG22A k=0.6	Flooring of smoothed 6 cm-thick hydraulic mortar screed poured on site in rooms with a surface area larger than 16 m Manpower coefficient = 0.6000 Materials coefficient = 0.6000 Equipment coefficient = 0.6000	m2	70.80		
90	RMA16A	The injection of large fissures and cracks in the walls with M1 NHL 5 liquid hydraulic lime-based mortar (see the explanatory note on pages 6 – 8) by means of a proper low-pressure injection device, the demand of M1 NHL 5 mortar – 0.01 m <sup>3</sup> /m	m	25.50		
91	R4B04A Ks=0.1Km =1.67	The making of an insertion stand in stone surfaces, smooth 50 cm-thick limestone slab Manpower coefficient = 0.1000 Materials coefficient = 1.6667 Equipment coefficient = 1.6667	dm2	240.00		
92	R4B04A Ks=0.1Km =1.33	The making of an insertion stand in stone surfaces, smooth 40 cm-thick limestone slab Materials coefficient = 1.3334 Equipment coefficient = 1.3334 Manpower coefficient = 0.1000	dm2	500.00		
93	R4B01A	The restoration of structural elements and architectural details of monuments made of natural stone by sectors of minimum 0.3 m <sup>2</sup> where portions of stone damaged by the making of insertions were replaced	dm2	740.00		
		<i>Total</i>	\$			
		<b>Total Tower B3 Incl. wages</b>				
		<i>Total</i>	\$			
		<b>Total LOWER FORTRESS Incl. wages</b>				
		<b>3. Interventions throughout the fortress</b>				
94	RMA16A	The injection of large fissures and cracks in the walls with M1 NHL 5 liquid hydraulic lime-based mortar (see the explanatory note on pages 6 – 8) by means of a proper low-pressure injection device, the demand of M1 NHL 5 mortar – 0.01 m <sup>3</sup> /m Localization Exterior Masonry A2 – A8 L = 24.5 ml Masonry A8 – A6 L = 29.1 ml Masonry A6 – A4 L = 19.1 ml Masonry A4 – A2 L = 18.2 ml	m	159.12		

1	2	3	4	5	6	7
		Water tower, the eastern and southern facades L = 7.6 ml Tower B1 L = 4.2 ml Masonry B7 – A8 L = 9.2 ml Interior Masonry A8 – A6 L = 4 ml Masonry A6 – A4 L = 6.5 ml				
95	R4B04A Ks=0.1Km =2	The making of an insertion stand in stone surfaces, smooth 60 cm-thick limestone slab Exterior Masonry A6 – A4 S = 2.8 m <sup>2</sup> Masonry A4 – A2 S = 1.44 m <sup>2</sup> Water tower S = 3.2 + 2.4 m <sup>2</sup> Masonry B7 – D8 S = 4.8 m <sup>2</sup> Interior Masonry A6 – A4 S = 2.0 + 1.2 m <sup>2</sup> Materials coefficient = 2.0000 Equipment coefficient = 2.0000 Manpower coefficient = 0.1000	dm2	2,226.00		
96	R4B01A	The restoration of structural elements and architectural details of monuments made of natural stone by sectors of minimum 0.3 m <sup>2</sup> where portions of stone damaged by the making of insertions were replaced Exterior Masonry A6 – A4 S = 2.8 m <sup>2</sup> Masonry A4 – A2 S = 1.44 m <sup>2</sup> Water tower S = 3.2 + 2.4 m <sup>2</sup> Masonry B7 – D8 S = 4.8 m <sup>2</sup> Interior Masonry A6 – A4 S = 2.0 + 1.2 m <sup>2</sup> Materials coefficient = 2.0000 Equipment coefficient = 2.0000 Manpower coefficient = 0.1000	dm2	2,226.00		
97	CD02G	Masonry with dressed stone chiseled into regular blocks for constructions made with M1 NHL 5 hydraulic lime-based mortar (see the explanatory note on pages 6 – 8), made of: quarry stone chiseled on site into regular blocks Masonry A4 – A2 Tower B1 south Masonry B7	m3	75.60		
98	R4B04A Ks=0.1	The making of an insertion stand in stone surfaces, smooth 30 cm-thick limestone slab Works on Bulwark B7 Manpower coefficient = 0.1000	dm2	7,815.00		
99	R4B04A Ks=0.1Km =1.33	The making of an insertion stand in stone surfaces, smooth 40 cm-thick limestone slab Works on Bulwark B7 Materials coefficient = 1.3334 Equipment coefficient = 1.3334 Manpower coefficient = 0.1000	dm2	9,160.00		
100	R4B04A Ks=0.1Km =1.66	The making of an insertion stand in stone surfaces, smooth 50 cm-thick limestone slab Works on Bulwark B7 Materials coefficient = 1.6667	dm2	312.50		

1	2	3	4	5	6	7
		Equipment coefficient = 1.6667 Manpower coefficient = 0.1000				
101	R4B04A Ks=0.1Km =2	The making of an insertion stand in stone surfaces, smooth 60 cm-thick limestone slab Works on Bulwark B7 Materials coefficient = 2.0000 Equipment coefficient = 2.0000 Manpower coefficient = 0.1000	dm2	2,220.00		
102	R4B01A	The restoration of structural elements and architectural details of monuments made of natural stone by sectors of minimum 0.3 m <sup>2</sup> where portions of stone damaged by the making of insertions were replaced Works on Bulwark B7	dm2	19,507.50		
103	CD70A	Simple masonry with limestone blocks (white limestone ashlar) for walls with the manual preparation of M1 NHL 5 lime-based mortar (see the explanatory note on pages 6 – 8)	m3	5.63		
104	RCsA02A	Digging at wall underpinning in regular work conditions and positions to a depth of 1.5 m	m3	100.00		
105	TsH92B	The loading of excavated spoil with boulders and rocks into dump trucks	t	190.00		
106	TsI50A5	The transportation of spoil by dump trucks with a capacity of 5 t to a distance of up to 5 km	t	190.00		
107	TsC51B	The unloading of spoil at a warehouse, category II ground	100 m <sup>3</sup>	1.00		
		Total	\$			
		Total ALL THE FORTRESS Incl. wages				
		Total	\$			
		Social and medical insurance	22.5%			
		Transportation costs	%			
		Stockpiling and storage costs	%			
		Total				
		Overhead costs	%			
		Total				
		Estimated profit	%			
		Total estimate: Incl. wages				

**The conservation of Bender Fortress**  
**(Phase 1)**

(the name of the objective)

Form No. 1  
WinCmeta

## LOCAL ESTIMATE OF COSTS NO. 2-1-2

### Conservation and restoration work

Based on current prices:

No.	Regulation Symbol and Resource Code	Works and expenses	M.U.	Qty according to project data	Estimated cost, \$	
					Per unit of measure incl. wages	Total incl. wages
1	2	3	4	5	6	7
		<b>1. Citadel</b> <b>1.1. Restoration interventions</b> <b>1.1.1. The masonry of the citadel</b>				
1	RpIzA01F	The cleaning of large surfaces by tangential sandblasting with a device that uses compressed air and silica sand. Sandblasting material (see the explanatory note on pages 6 – 8)	m2	6,540.00		
2	RpIzA03A	The priming of masonry surfaces by cleaning dust and soil. Type A	m2	164.00		
3	CN54B	The strengthening of stone artifacts by impregnation with a solution by means of brushes, syringes, and droppers. The strengthening material to be chosen after tests (see the explanatory note on pages 6 – 8). Type A	m2	1,091.81		
4	RMA16A	The injection of fissures in the wall masonry with M2 NHL 3.5 liquid hydraulic lime-based mortar (see the explanatory note on pages 6 – 8) by means of a proper injection device, the demand of M2 NHL 3.5 mortar – 0.005 m <sup>3</sup> /m. Type A	m	655.09		
5	RpIzA03A	The priming of masonry surfaces by cleaning dust and soil	m2	152.00		
6	CN54B	The strengthening of stone artifacts by impregnation with a solution by means of brushes, syringes, and droppers. The strengthening material to be chosen after tests (see the explanatory note on pages 6 – 8). Type B	m2	1,009.70		
7	RMA16A	The injection of fissures in the wall masonry with M2 NHL 3.5 liquid hydraulic lime-based mortar (see the explanatory note on pages 6 – 8) by means of a proper injection device, the demand of M2 NHL 3.5 mortar – 0.005 m <sup>3</sup> /m. Type B	m	605.82		
8	RMD06B	The filling of gaps in stone masonry with M3 NHL 3.5 liquid hydraulic mortar with shrinkage-reducing agent (see the explanatory note on pages 6 – 8), period rubble stone masonry.	m2	1,009.70		

1	2	3	4	5	6	7
		Type B				
9	RpIzA03A	The priming of masonry surfaces by cleaning dust and soil. Type C	m2	60.00		
10	CN54B	The strengthening of stone artifacts by impregnation with a solution by means of brushes, syringes, and droppers. The strengthening material to be chosen after tests (see the explanatory note on pages 6 – 8). Type C	m2	395.60		
11	RMA16A	The injection of fissures in the wall masonry with M2 NHL 3.5 liquid hydraulic lime-based mortar (see the explanatory note on pages 6 – 8) by means of a proper injection device, the demand of M2 NHL 3.5 mortar – 0.005 m <sup>3</sup> /m. Type C	m	237.00		
12	R4B04A Ks=0.1Km =0.83	The making of an insertion stand in surfaces of smooth, flat 25 cm-thick limestone Materials coefficient = 0.8333 Equipment coefficient = 0.8333 Manpower coefficient = 0.1000	dm2	39,560.00		
13	R4B01A	The restoration of structural elements and architectural details of monuments made of natural stone by sectors of minimum 0.3 m <sup>2</sup> where portions of stone damaged by the making of insertions were replaced. Type C	dm2	39,560.00		
14	RpIzA03A	The priming of masonry surfaces by cleaning dust and soil. Type A + B + C) /	m2	10.40		
15	CN54B	The strengthening of stone artifacts by impregnation with a solution by means of brushes, syringes, and droppers. The strengthening material to be chosen after tests (see the explanatory note on pages 6 – 8). Type A + B + C)	m2	69.00		
16	RMA16A	The injection of fissures in the wall masonry with M2 NHL 3.5 liquid hydraulic lime-based mortar (see the explanatory note on pages 6 – 8) by means of a proper injection device, the demand of M2 NHL 3.5 mortar – 0.005 m <sup>3</sup> /m. Type A + B + C)	m	41.40		
17	RMD06B	The filling of gaps in stone masonry with M3 NHL 3.5 liquid hydraulic mortar with shrinkage-reducing agent (see the explanatory note on pages 6 – 8), period rubble stone masonry Type A + B + C	m2	69.00		
18	R4B04A Ks=0.1Km =0.83	The making of an insertion stand in surfaces of smooth, flat 25 cm-thick limestone Type A + B + C Materials coefficient = 0.8333 Equipment coefficient = 0.8333 Manpower coefficient = 0.1000	dm2	6,900.00		
19	R4B01A	The restoration of structural elements and architectural details of	dm2	6,900.00		

1	2	3	4	5	6	7
		monuments made of natural stone by sectors of minimum 0.3 m <sup>2</sup> where portions of stone damaged by the making of insertions were replaced. Type A + B + C) /				
20	RMD06B	The filling of gaps in stone masonry with M3 NHL 3.5 liquid hydraulic mortar with shrinkage-reducing agent (see the explanatory note on pages 6 – 8), period rubble stone masonry Type A + B + C	m2	69.00		
21	CN53A	The stripping of vegetation with shallow rooting by spraying biacids. The type of biacid to be chosen after tests (see the explanatory note on pages 6 – 8)	m2	2,827.85		
22	RMD06B	The filling of gaps in stone masonry with M3 NHL 3.5 liquid hydraulic mortar with shrinkage-reducing agent (see the explanatory note on pages 6 – 8), period rubble stone masonry	m2	734.96		
23	CF62A applied	Rough covering (antique patina) on all interior and exterior, vertical and horizontal wall structures (lime, hydraulic lime, bricks, stone) with mortar based on special hydraulic binders. Dosage – 3 kg/m <sup>2</sup> , maximal thickness – 2 mm.	m2	314.98		
24	RCsJ37A	The removal of smoothed exterior plaster from walls	m2	140.00		
25	TsH92B	The loading of the resulted debris into trucks	t	8.40		
26	TsI50A1	The transportation of debris by dump trucks with a capacity of 5 t to a distance of up to 1 km	t	8.40		
27	TsC51B	The unloading of debris into a waste dump	100 m <sup>3</sup>	0.042		
28	R4B04A Ks=0.1	The making of an insertion stand in stone surfaces, smooth 30 cm-thick limestone slab Masonry between Towers A4 and A5 Manpower coefficient = 0.1000	dm2	531.00		
29	R4B01A	The restoration of structural elements and architectural details of monuments made of natural stone by sectors of minimum 0.3 m <sup>2</sup> where portions of stone damaged by the making of insertions were replaced. The masonry between Towers A4 and A5	dm2	531.00		
30	RMD06B	The filling of gaps in stone masonry with M3 NHL 3.5 liquid hydraulic mortar with shrinkage-reducing agent (see the explanatory note on pages 6 – 8), period rubble stone masonry Masonry between Towers A4 and A5	m2	280.00		
31	R4B04A Ks=0.1	The making of an insertion stand in stone surfaces, smooth 30 cm-thick limestone slab The repair of walkways	dm2	5,440.00		

1	2	3	4	5	6	7
		Manpower coefficient = 0.1000				
32	R4B01A	The restoration of structural elements and architectural details of monuments made of natural stone by sectors of minimum 0.3 m <sup>2</sup> where portions of stone damaged by the making of insertions were replaced. The repair of walkways	dm2	5,440.00		
33	R10A02L applied	The removal of cohesive surface deposits, incrustations, concretions, and affixed modifications by applying compresses impregnated with inorganic salts or a solution of saturated ammonium carbonate; the dissolved deposits will be removed by a brush, a scalpel, or a pair of tongs; deposits with thin consistency and surface adherence, by a cycle of applying (the removal of graffiti)	m2	20.00		
		<i>Total</i>	\$			
		<b>Total The wall of the citadel Incl. wages</b>				
		<b>1.1.2. The reconstruction of the crenels and the wall between Towers A2 – A3</b>				
34	CD02G	Masonry with dressed stone chiseled into regular blocks for constructions made with M1 NHL 5 hydraulic lime-based mortar (see the explanatory note on pages 6 – 8), made of: quarry stone chiseled on site into regular blocks	m3	32.40		
35	R4B04A Ks=0.1	The making of an insertion stand in stone surfaces, smooth 30 cm-thick limestone slab The wall between Towers A2 – A3 Manpower coefficient = 0.1000	dm2	5,250.00		
36	R4B01A	The restoration of structural elements and architectural details of monuments made of natural stone by sectors of minimum 0.3 m <sup>2</sup> where portions of stone damaged by the making of insertions were replaced. The wall between Towers A2 – A3	dm2	5,250.00		
37	CD70A	Simple masonry with limestone blocks (white limestone ashlar) for walls with the manual preparation of mortar	m3	6.51		
38	RMD06B	The filling of gaps in stone masonry with M3 NHL 3.5 liquid hydraulic mortar with shrinkage-reducing agent (see the explanatory note on pages 6 – 8), period rubble stone masonry The wall between Towers A2 – A3	m2	310.84		
39	RMD13A	The installation of 4.5 cm-thick clay tile, 4.5 x 15 x 30 cm, on a 3 cm-thick layer of mortar on crenels and surfaces with a regular shape	m2	22.95		
		<i>Total</i>	\$			

1	2	3	4	5	6	7
		<b>Total The reconstruction of the crenels and the wall between Towers A2 – A3 Incl. wages</b>				
		<b>1.1.3. Plaster on the towers</b>				
40	RMD02B	Period-style plaster: on masonry of stone with NHL 3.5 hydraulic lime mortar (see the explanatory note on pages 6 – 8) Towers A1, A7, A5, and A3	m2	114.70		
		<i>Total</i>	MDL			
		<b>Total The reconstruction of the crenels and the wall between Towers A2 – A3 Incl. wages Incl. wages</b>				
		<b>1.1.4. Water tower</b>				
41	RpIzA01F	The cleaning of large surfaces by tangential sandblasting with a device that uses compressed air and silica sand. Sandblasting material (see the explanatory note on pages 6 – 8)	m2	25.00		
42	RpIzA03A	The priming of masonry surfaces by cleaning dust and soil. Type A + B + C	m2	3.75		
43	CN54B	The strengthening of stone artifacts by impregnation with a solution by means of brushes, syringes, and droppers. The strengthening material to be chosen after tests (see the explanatory note on pages 6 – 8). Type A + B + C	m2	25.00		
44	RMA16A	The injection of fissures in the wall masonry with M2 NHL 3.5 liquid hydraulic lime-based mortar (see the explanatory note on pages 6 – 8) by means of a proper injection device, the demand of M2 NHL 3.5 mortar – 0.005 m <sup>3</sup> /m. Type A + B + C)	m	25.00		
45	RMD06B	The filling of gaps in stone masonry with M3 NHL 3.5 liquid hydraulic mortar with shrinkage-reducing agent (see the explanatory note on pages 6 – 8), period rubble stone masonry	m2	5.00		
46	R4B04A Ks=0.1K <sub>m</sub> =0.83	The making of an insertion stand in surfaces of smooth, flat 25 cm-thick limestone Materials coefficient = 0.8333 Equipment coefficient = 0.8333 Manpower coefficient = 0.1000	dm2	800.00		
47	R4B01A	The restoration of structural elements and architectural details of monuments made of natural stone by sectors of minimum 0.3 m <sup>2</sup> where portions of stone damaged by the making of insertions were replaced	dm2	800.00		
		<i>Total</i>	\$			
		<b>Total Water tower Incl. wages</b>				
		<b>1.1.5. The restoration of the crenels</b>				



1	2	3	4	5	6	7
48	RCsM33H	The dismantling of clay tile plating mounted on an underlay of mortar	m2	135.00		
49	RCsJ37A	The removal of exterior putty made of materials that are incompatible with the object	m2	13.50		
50	RMD13A	The installation of 4.5 cm-thick clay tile, 4.5 x 15 x 30 cm, on a 3 cm-thick layer of mortar on crenels and surfaces with a regular shape	m2	116.10		
51	RpIzA01F	The cleaning of large surfaces by tangential sandblasting with a device that uses compressed air and silica sand. Sandblasting material (see the explanatory note on pages 6 – 8)	m2	25.65		
52	RpIzA03A	The priming of masonry surfaces by cleaning dust and soil	m2	3.85		
53	CN54B	The strengthening of stone artifacts by impregnation with a solution by means of brushes, syringes, and droppers. The strengthening material to be chosen after tests (see the explanatory note on pages 6 – 8)	m2	25.65		
54	RMD06B	The filling of gaps in stone masonry with M3 NHL 3.5 liquid hydraulic mortar with shrinkage-reducing agent (see the explanatory note on pages 6 – 8), period rubble stone masonry	m2	25.65		
		<i>Total</i>	\$			
		<b>Total The restoration of the crenels</b>				
		<i>Total</i>	\$			
		<b>Total Restoration interventions Incl. wages</b>				
		<b>1.2. Other interventions (the staircase of Tower A6</b>				
55	RCsA02A	Digging at wall underpinnings in regular work conditions and positions to a depth of 1.5 m. Category II soil	m3	12.60		
56	TsH92B	The loading of excavated spoil with boulders and rocks into dump trucks	t	23.94		
57	TsI50A1	The transportation of spoil by dump trucks with a capacity of 5 t to a distance of up to 1 km	t	23.94		
58	TsC51B	The unloading of spoil at a warehouse, category II ground	100 m <sup>3</sup>	0.126		
59	RMA03A	C12/15 concrete poured into underpinning elements or foundation reinforcements under special conditions, limited spaces at sections and phases of work (prepared manually)	m3	0.78		
60	RCsD08D	The installation of mesh welded to reinforcements and shrink-fitted interference fits Expendables = 1.0500	kg	17.86		
61	RCsB15A	Priming surfaces to ensure the adhesion of a new layer of mortar Expendables (Decofrol, etc.) = 1.0500	m2	9.07		
62	CP21B	The laying of mortar	m3	1.814		

1	2	3	4	5	6	7
63	IzF01B k=3	The priming of surfaces with a suspension of fillerized bitumen (Subif) in 3 layers for the application of a diffusion layer, a vapor barrier, and waterproofing on horizontal surfaces (Figure 63) / Manpower coefficient = 3.0000 Materials coefficient = 3.0000 Equipment coefficient = 3.0000	m2	11.83		
64	CE13D	Coverings with membranes of modified bitumen glued by a torch into a mono-layer system on a seamless support on vertical surfaces	m2	11.83		
65	CD70A	Simple masonry with limestone blocks (white limestone ashlar) for walls with the manual preparation of mortar	m3	0.55		
66	RCsM15E	Straight, linear, stone, and molded elements: baguettes with a width of 30 cm and a thickness of 3 cm fastened with lime mortar with gaps filled with mortar of white cement and stone dust	m	5.00		
67	TsH92B	The loading of debris into trucks	t	7.60		
68	TsI50A1	The transportation of debris by dump trucks with a capacity of 5 t to a distance of up to 1 km	t	7.60		
69	RCsA06A	Moistened and thoroughly compacted earth fill arranged in horizontal layers 20 – 30 cm in thickness, in quantities of up to 20 m <sup>3</sup> per operation spot, including the spreading of the earth into layers with a hand tamper	m3	4.00		
70	CH01A	Exterior stone steps 235 x (35 + 16) cm chiseled in accordance with the job instructions, mounted with lime mortar on an existing foundation, including adjustment and bush hammering or rubbing them	m	14.10		
		<i>Total</i>	\$			
		<b>Total Other interventions (the staircase of Tower A6 Incl. wages</b>				
		<b>1.3. Scaffolding for the citadel</b>				
71	CB14A	The rental of tubular metallic scaffolding for 25 days (200 hours) for working on vertical surfaces at heights of up to 30 m, including the mounting of protection against the accidental fall of construction materials and equipment	m2	8,239.35		
72	CB14A1 k=125	The rental of tubular metallic scaffolding for 25 days (200 hours) for working on vertical surfaces at heights of up to 30 m; for every additional or non-used day of rental, an addition is calculated as K = 5 months x 25 days = 125 Manpower coefficient = 125.0000 Materials coefficient = 125.0000 Equipment coefficient = 125.0000	m2	3,920.70		

1	2	3	4	5	6	7
73	CB14A1 k=50	The rental of tubular metallic scaffolding for 25 days (200 hours) for working on vertical surfaces at heights of up to 30 m; for every additional or non-used day of rental, an addition is calculated as K = 2 months x 25 days = 50 Manpower coefficient = 50.0000 Materials coefficient = 50.0000 Equipment coefficient = 50.0000	m2	4,318.65		
74	CE35A	Reusable safety net Expendables (rope, etc.) = 1.0500	m2	8,239.35		
75	bidder's price	The use of an aerial lift, including an operator, fuel, lubricant, etc.: for heights of up to 16 m	h-ut	64.00		
		<i>Total</i>	\$			
		<b>Total Scaffolding for the citadel Incl. wages</b>				
		<i>Total</i>	\$			
		<b>Total Citadel Incl. wages</b>				
		<b>2. Lower fortress scaffolding 2.1. Scaffolding</b>				
76	CB14A	The rental of tubular metallic scaffolding for 25 days (200 hours) for working on vertical surfaces at heights of up to 30 m, including the mounting of protection against the accidental fall of construction materials and equipment	m2	552.30		
77	CB14A1 k=50	The rental of tubular metallic scaffolding for 25 days (200 hours) for working on vertical surfaces at heights of up to 30 m; for every additional or non-used day of rental, an addition is calculated as K = 2 months x 25 days = 50 Manpower coefficient = 50.0000 Materials coefficient = 50.0000	m2	552.30		
78	CE35A	Reusable safety net Expendables (rope, etc.) = 1.0500	m2	552.30		
79	CB14E	The rental of tubular metallic scaffolding for 15 days (120 hours) for the finishing of ceilings at heights of 10 m<=H<15 m	m2	268.00		
80	CB14E1 k=45	The rental of tubular metallic scaffolding for 15 days (120 hours) for the finishing of ceilings at heights of 10 m<=H<15 m. For each additional or unused day of rental, an addition is calculated as Manpower coefficient = 45.0000 Materials coefficient = 45.0000 Equipment coefficient = 45.0000	m2	268.00		
		<i>Total</i>	\$			
		<b>Total SCAFFOLDINGS Incl. wages</b>				
		<i>Total</i>	\$			
		<b>Total LOWER FORTRESS Incl. wages</b>				
		<i>Total</i>	\$			

1	2	3	4	5	6	7
		Social and medical insurance	22.5%			
		Transportation costs	%			
		Stockpiling and storage costs	%			
		Total				
		Overhead costs	%			
		Total				
		Estimated profit	%			
		<b>Total estimate: Incl. wages</b>				

# The conservation of Bender Fortress (Phase 1)

Form No. 1  
WinCmeta

(the name of the objective)

## LOCAL ESTIMATE OF COSTS NO. 2-1-3 Balustrades/railing

Based on current prices:

No.	Regulation Symbol and Resource Code	Works and expenses	M.U.	Qty according to project data	Estimated cost, \$	
					Per unit of measure incl. wages	Total incl. wages
1	2	3	4	5	6	7
		<b>1. Railing for a safe access to walls</b>				
1	RCsP45A	The dismantling of metallic balustrades (257.60 m <sup>2</sup> x 25 kg/m <sup>2</sup> = 6,440 kg)	kg	6,440.00		
2	RCsB29B k=2.7	The drilling of perforated holes in stone masonry at slow rotation speed, including guidance works, the cleaning of perforations, and the removal of debris, by means of a diamond core drill with a diameter of 30 mm, L = 30 cm Manpower coefficient = 2.7000 Materials coefficient = 2.7000 Equipment coefficient = 2.7000	item	360.00		
3	CL57A	The installation of M16 zinc-plated threaded rods into drilled holes / Small and mounting expendables (petroleum jelly, cloths, petroleum, etc.) = 1.0100	kg	285.00		
4	CF17D	High-performance two-component chemical anchors like Epojet EN 1504-6 or a similar one for the fastening of embedded reinforcement steel (see the explanatory note on page 8)	l	91.00		
5	CL17B	The making and installation of a balustrade, or the installation of a prefabricated one, from Corten A steel (S355JOWP), including elements for fastening to the support layer. For detailed design and specifications, see the project drawings.	kg	13,766.40		
6	CN14A	Transparent finishes with two- component aliphatic polyurethane for the surfaces of Corten elements	m2	1,210.00		
		<i>Total</i>	\$			
		<b>Total Railing for a safe access to walls Incl. wages</b>				
		<b>2. The dismantling of railings</b>				
7	RCsP45D	The dismantling of balustrades, grates, parapets, and metallic fences L = 60 m	kg	3,000.00		
8	TsH92B	The loading of excavated spoil with boulders and rocks into dump trucks	t	3.00		
9	TsI50A5	The transportation of spoil by dump trucks with a capacity of 5 t to a distance of up to 5 km	t	3.00		
		<i>Total</i>	\$			
		<b>Total The dismantling of railings Incl. wages</b>				

1	2	3	4	5	6	7
		<b>3. The arrangement of a detour between Towers B7 and B4</b>				
10	TsC59B	The mechanical excavation of spoil with an excavator with a bucket of 0.15 m <sup>3</sup> and the unloading into a dump truck: category 2 ground	100 m <sup>3</sup>	0.48		
11	TsI50A5	The transportation of spoil by dump trucks with a capacity of 5 t to a distance of up to 5 km	t	91.20		
12	TsC51B	The unloading of spoil at a warehouse, category II ground	100 m <sup>3</sup>	0.48		
13	DA18A	Foundation layer of optimal mixes of aggregates laid manually	m3	32.00		
14	DA06A1	Roller-compacted layer of natural aggregates with the function of filtering resistance, insulation, aeration, protection against frost weathering, and anti-capillary protection, with the manual laying of granite gravel in 3 layers, where the first, 4 cm-thick layer has a size of 6/12 mm and is properly moistened and compacted through at least 2 rolling rounds, the second, 4 cm-thick layer has a size of 3/6 mm and is properly moistened and compacted through at least 4 rolling rounds, and the final, 2 cm-thick layer has a size of 1/3 mm and compacted like previous layers through at least 4 rolling rounds	m3	16.00		
15	CO04B	St. Andrew's fence of impregnated fir posts 10 x 12 cm in diameter, consisting of a balustrade and diagonals at a distance of 2 m from the center, with the vertical diagonals being circular in cross section, with the height above the ground – 1.10 m, with the assemblage ironwork of zinc-plated steel complemented with foundation supports of 30 x 30 x 30 cm; the price includes all small digging and transportation of spoil for the construction of the foundation supports	m	16.00		
		<i>Total</i>	\$			
		<b>Total The arrangement of a detour between Towers B7 and B4 Incl. wages</b>				
		Total	\$			
		Social and medical insurance	22.5%			
		Transportation costs	%			
		Stockpiling and storage costs	%			
		Total				
		Overhead costs	%			
		Total				
		Estimated profit	%			
		<b>Total estimate: Incl. wages</b>				

**The conservation of Bender Fortress**  
**(Phase 1)**

(the name of the objective)

Form No. 1  
WinCmeta

## LOCAL ESTIMATE OF COSTS NO. 2-1-4

### Drainage system

Based on current prices:

No.	Regulation Symbol and Resource Code	Works and expenses	M.U.	Qty according to project data	Estimated cost, \$	
					Per unit of measure incl. wages	Total incl. wages
1	2	3	4	5	6	7
		<b>1. The arrangement of drainage inside the citadel</b>				
1	TsC59B	The mechanical excavation of spoil with an excavator with a bucket of 0.15 m <sup>3</sup> and the unloading into a dump truck: category 2 ground	100 m <sup>3</sup>	0.936		
2	TsI50A5	The transportation of spoil by dump trucks with a capacity of 5 t to a distance of up to 5 km	t	177.84		
3	TsC51B	The unloading of spoil at a warehouse, category II ground	100 m <sup>3</sup>	0.936		
4	AcA08B	The pulling of PVC pipes 400 mm in diameter underground for SN2 sewerage, with socket joints	m	55.00		
5	AcE06A	The supply and installation of prefabricated concrete channels with an integrated longitudinal slope and the minimal internal section of 0.06 m <sup>2</sup> , complemented with a cast iron grating and a honeycomb mesh, ID = 250 mm, L = 1000 mm Expendables (water, cement, levels, etc.) = 1.0200	item	160.00		
6	DI 119	Monolithic foundations of B20 concrete at artificial edifices Other equipment = 1.0300	m3	4.80		
7	AcE13A	The construction of circular inspection chambers of prefabricated reinforced concrete for sewerage, with a cross section of 1.0 x 1.0 m, on a site without underground water Expendables (clips, water) = 1.0070	m3	1.80		
8	supplier's price	The base of an inspection chamber with a poured raft foundation with the bottom of the following size: (inside 80 x 80 cm (outside 101 x 101 cm), Hutil = 75 cm	item	2.00		
9	supplier's price	Intermediary element (ring) – inside 80 x 80 cm (outside 101 x 101 cm), Hutil = 75 cm	item	2.00		
10	supplier's price	Cover slab with a hole for a frame and a carriageable cover – outside 101 x 101 cm, Hutil = 20 cm	item	2.00		
11	AcE10A1	Carriageable cast iron cover and frame, type C250	item	2.00		
12	RpAcH06A	The manual cleaning of non-cohesive	m3	40.00		

1	2	3	4	5	6	7
		deposits in open culverts with depth of up to 2 m and width of under 2.5 m				
13	TsH92B	The loading of the spoil resulted from the cleaning of the channel into a truck	t	66.00		
14	TsA01F1	Manual digging in large spaces in open channels, with the stripping of the vegetation layer with a thickness of 10 – 30 cm, in the ground with natural humidity and loading into trucks at H of 0.61 – 2 m; average ground /	m3	50.00		
15	TsI50A5	The transportation of spoil by dump trucks with a capacity of 5 t to a distance of up to 5 km	t	148.50		
16	TsC51B	The unloading of spoil at a warehouse, category II ground	100 m <sup>3</sup>	0.90		
17	RpCB02B	Concrete poured in formworks for continuous foundations and light load raft foundations; the concrete is prepared with a concrete mixer on site and poured with classical means with simple C-10/8 Bc10 (B150) concrete Expendables (timber, wire, nails, etc.) = 1.0150	m3	5.00		
18	DI 119	Monolithic foundations of B20 concrete at artificial edifices Other equipment = 1.0300	m3	3.00		
19	CN10B	Exterior dyeing with a two-component epoxy resin-based paint, the mechanized application of 1 layer of primer for epoxy paints and 2 layers of epoxy paint	m2	60.00		
20	RCsA02A	Digging at wall underpinning in regular work conditions and positions to a depth of 1.5 m	m3	6.75		
21	RMA03A	C12/15 reinforced concrete poured into underpinning elements or foundation reinforcements under special conditions, limited spaces at sections and phases of work (prepared manually)	m3	0.45		
22	RMA03A	C25/30 concrete poured into reinforcement elements; for concrete type, see the explanatory note on pages 6 – 8	m3	1.71		
23	RMA12B	B450C reinforcement steel for foundations and underpinnings modeled and assembled on site at limited sections 1 to 3 m in length in accordance with effective regulations	kg	98.40		
24	RMA06A	Fir formwork with raised gutters in the upper part for pouring concrete into underpinnings, including supports of up to 3 m	m2	13.60		
25	CK14A	Metallic grates from prefabricated round cast iron profiles, including requisite accessories	m2	2.09		
26	TsA01B1	Manual digging in large spaces, in	m3	3.37		



1	2	3	4	5	6	7
		open channels, with the stripping of the vegetation layer with a thickness of 10 – 30 cm, in the ground with natural humidity and loading into trucks at H <0.60 m; average ground				
27	TsD04B	The compacting of refilling with a hand tamper in horizontal excavations, including the moistening of each individual layer of cohesive spoil with a thickness of 10 cm	m3	3.37		
		Total	\$			
		Total The arrangement of drainage inside the citadel Incl. wages				
		Total	\$			
		Social and medical insurance	%			
		Transportation costs	%			
		Stockpiling and storage costs	%			
		Total				
		Overhead costs	%			
		Total				
		Estimated profit	%			
		Total estimate: Incl. wages				

# The conservation of Bender Fortress (Phase 1)

Form No. 1  
WinCmeta

(the name of the objective)

## LOCAL ESTIMATE OF COSTS NO. 2-1-5 Laboratory tests

Based on current prices:

Based on current prices:						
No.	Regulation Symbol and Resource Code	Works and expenses	M.U.	Qty according to project data	Estimated cost, \$	
					Per unit of measure incl. wages	Total incl. wages
<sup>1</sup>	2	3	4	5	6	<sup>7</sup>
1	supplier's price	Petrographic analysis: The quantitative assay of salts in rocks (sulphates, nitrates, chlorides, etc.)	Sampl es	10		
2	supplier's price	Petrographic analysis: Stratigraphic/morphological Analysis on a glossy section under an optical microscope	Sampl es	10		
3	supplier's price	The chemical and physical analysis of mortar Including characterization by means of XRD-Roentgen diffraction	Sampl es	10		
4	supplier's price	Petrographic analysis for gravel used as filler Minimum 2 samples from each of 5 stone quarries	Sampl es	10		
5	supplier's price	The analysis of the physical- mechanical properties of the mortars used for the restoration	Sampl es	In accordance with the technologic al process but not less than 30		
		Total	\$			
		<b>Total estimate: Incl. wages</b>				

**Note** All tests will be performed strictly in accordance with these regulations:

- UNI 11176:2006 - Cultural heritage - Petrographic description of a mortar
- UNI 11305:2009 - Cultural Heritage - Historical mortars - Guidelines for mineralogical-petrographic, physical, and chemical characterization of mortars
- UNI 10922:2001 - Cultural heritage - Natural and artificial stone materials - Preparation of thin sections and glossy sections of stone materials colonized by biodeteriogens
- UNI 11085: 2003 - Cultural heritage - Natural and artificial stone materials - Determination of the water content: Weight method
- UNI BC 11087: "DETERMINATION OF THE CONTENT OF SOLUBLE SALTS" - Natural and artificial stone materials
- NorMaL Recommendations 23/87 - Technical Terminology: Definition and Description of Mortars
- NorMaL Recommendations 3/80 - Stone Materials: Sampling
- NorMaL Recommendations - Stone Materials: Analysis of clayey materials by XRD
- CP H.04.04.2018 standard *Betoane și mortare. Beton. Specificație, performanță, producție și conformitate*,

**The conservation of Bender Fortress  
(Phase 1)**

(the name of the objective)

Form No. 1  
WinCmeta

## LOCAL ESTIMATE OF COSTS NO. 2-1-5

### The updating of drawings with degradations and the 3D model

Based on current prices:

No.	Regulation Symbol and Resource Code	Works and expenses	M.U.	Qty according to project data	Estimated cost, \$	
					Per unit of measure incl. wages	Total incl. wages
1	2	3	4	5	6	7
1	supplier's price	The checking and updating of drawings with degradations Drawings based on orthofotomaps (1:50) must be updated and checked after the installation of scaffolding for work, with the possibility of observing and analyzing surfaces closely. The updating will be performed by a restorer of cultural heritage that has official accreditations and certifications. Drawings will be coordinated with the project author, the technical director, and a representative of EU-CBM program	SET	1		
2	supplier's price	The updating of the BIM model. During the work and after it is finished, the contractor will add all information concerning the materials, the stratigraphy of all elements (masonry, flooring, and roofing, etc.) and performed interventions to the BIM model. After the intervention, the model will be updated with all elements necessary for retrieving drawings for subsequent phases.	SET	1		
		Total	\$			
		<b>Total estimate: Incl. wages</b>				

**The conservation of Bender Fortress**  
**(Phase 1)**

Form No. 1  
WinCmeta

(the name of the objective)

## LOCAL ESTIMATE OF COSTS NO. 2-1-7

### Costs for the organization and maintenance of the construction site

Based on current prices:

Based on current prices:						
No.	Regulation Symbol and Resource Code	Works and expenses	M.U.	Qty according to project data	Estimated cost, \$	
					Per unit of measure <div>incl. wages</div>	Total <div>incl. wages</div>
1	2	3	4	5	6	7
1	supplier's price	The rental of containers for the accommodation of the personnel involved in the conservation project (the contractor will determine the containers' number and surface area required for proper sanitation and hygiene conditions, as well as modern conveniences for the personnel individually).	SET	1		
2	supplier's price	Closed storage facility for materials (according to the contractor's needs)	SET	1		
3	supplier's price	Open-air storage facility for materials (according to the contractor's needs)	m2	min. 300		
4	supplier's price	Composting toilets	item	3		
5	supplier's price	Fire alarm control panel (see the explanatory note)	item	4		
6	supplier's price	The maintenance of temporary access roads	m2	4650		
7	supplier's price	The fencing of the construction site (in accordance with the size of the construction camp and the elements under intervention)	SET	1		
8	supplier's price	The connection of temporary constructions to the power grid and the installation of floodlights on the construction site	SET	1		
9	supplier's price	The connection of temporary constructions and the construction site to the water system	SET	1		
10	supplier's price	The installation of a local cesspit (2 pools V = 5.0 m³) for temporary constructions	SET	1		
11	supplier's price	The installation of a temporary alarm system for the site	SET	1		
12	supplier's price	Bills for electrical power	In accordance with the contractor's calculations			
13	supplier's price	Bills for electrical power	In accordance with the contractor's calculations			
14	supplier's price	Cesspit maintenance cost	In accordance with the contractor's calculations			
		Total	\$			
		<b>Total estimate:</b>				

1	2	3	4	5	6	7
		<b>Incl. wages</b>				

**Note:** The contractor will pay the bills for electrical power and water to the account of the beneficiary, Military Historical Complex of Bender Fortress.