REPUBLIQUE DU CAMEROUN

Paix – Travail - Patrie

TECHNICAL SPECIFICATIONS

DESCRIPTIVE AND COST ESTIMATES

PROPOSED CONSTRUCTION PROJECT OF NDES VOCATIONAL AND SPORT CENTER-BUEA

PRESENTED BY:

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A) GENERAL DESCRIPTION

The present project whose specifications are described hereafter concerns The construction of a vocational institute .

The Building shall comprise of:

- **BLOCK A**
- OFFICES
- reception
- toilets
- LIBARY
- **BLOCK B**
  - -WORKSHOPS
  - -TIOLETS
- **BLOCK C**
  - -TWO bedrooms apartment

B) GENERALITIES

The technical description hereafter serves to define the mode of realization of the various phases of works, the quality, consistency of work, and the nature of materials to be used, the works consistency, and the procedure of works execution according to the code of practice.

This prescribed standards and payments in this document result from the unified technical document (D.T.U).

C) CONSISTENCY OF WORKS

The consistency of Works is defined in the execution plans in appendix, the quantitative, cost and descriptive estimates.

The various works involved in the construction of this structure includes the supply and startup of all internal and external installation, (electricity, sanitary) etc. and are subdivided in ten distinct lots as follows:

- Lot 1 : Preliminary Works- earthworks
- Lot 2 : Foundations
- Lot 3 : Masonry- elevation
- Lot 4 : Carpentry – Roof Covering – ceiling works
- Lot 5 : Floor & walls coverings or coating

- Lot 6 : woodwork + metals
- Lot 7 : Plumbing and sanitary installations
- Lot 8 : Electricity
- Lot 9 : Painting
- Lot 10 : Drive-way and various services

D) PROCEDURE OR METHOD OF WORK

LOT 1: PRELIMENARY WORKS

1-1: SITE CLEARING

This involves the removal of vegetable soil within the building site and preparing the platform for material storage.

1-2: Stripping

This includes the removal of the topsoil or vegetable soil to a depth of 20cm.The excavated ground shall be stored to be reused for refill or landscaping. The debris or exceeding soil shall be carried to a public pit.

LOT 2: FOUNDATIONS

2-1: Setting out

This will be carried out using pegs of 4x8cm placed at 1m. Setting out will be done using perfectly horizontal and straight pegs placed 1m away from the external edges of the excavation to ease handling. Excavation edges shall be marked out using nails 60mm, the axis with nails 90mm, while foundation walls with nails of 80mm.The linear excavation shall be 50cm wide while the depth for the footings of pad foundation shall respect the specifications from the engineering and graphical documents.

2-2: Lean Concrete

A 5cm lean concrete mixed at 150kg/m3 shall be laid to cover the 60 cm width of exaction and the footing bases before any reinforced concrete work commences.

2-3: Reinforced Concrete (R.C.) on Foundation

All reinforced concrete works on foundation shall be done with a mixture of 350kg/m3.The type of steel (rod), diameter, shape etc. shall rigorously respect the directives of engineering calculations. The foundation walls be constructed with blocks of 20x20x40 cm and the ground beams shall respect the sections from engineering calculation.

2-4: Ground Floor Slab

It shall be 10cm thick and carried out in using ordinary cement mixed at 250kg on a surface previously leveled and compacted.

Lot 3: Masonry-Elevation

3-1 Walls

The walls shall be built with cement blocks of 15x20x40 and 10x20x40 on 11 courses for the halls on the ground floor before the tie beams to attain the level of 2.60m while 10 courses for the mezzanine (if any) considering the height of beams to be 40cm to attain 2.40m height following the architectural and engineering plans attached to this file. The cement mortar mix to respect shall be 300kg/ m^3 (i.e. 1bag of cement: 1.5wheelbarrow soft sand: 1.5 wheelbarrow sharp sand).

3-2: Reinforced Concrete on Elevation

The rest of the floor slabs apart from the ground floor shall be realized with hollow blocks and rib beams with the compression slab of 4cm .The beams pillars, tie beams , lintels & staircase shall be cast using the mixture of 350 kg/m^3 (1bag of cement ,1 wheelbarrow of river sand, 2 wheelbarrows of gravel 5/15). The steel rods shall be as follows:

The Pillars: see reinforcement drawings annexed to the present file.

a) **The Lintels :** (20x20 cm^2 or 15x20 cm^2) respectively on walls of 20 and of 15 : 4 steels TOR of 8 maintained by smooth round steel frames of 6 spaced at 20 cm each.
b) **Beams:** the formwork, the steel shall have to be set up in accordance with the directives of the reinforcement plans attached to the present file.
c) **Chain beam:** The formwork, the steel rods shall be in accordance with the reinforcement plans as well.

LOT 4: THE ROOF – ROOF COVERING – CEILING WORKS

4-1: RAFTERS

They shall be of section 5 x 15cm² and shall be realized with wood as specified and according to the plans. (See section attached).

4-2: PURLINS

They shall be of section 5 X 7cm² and realized equally in conformity with the plans.

4-3: ROOF COVERING

The zinc type shall be aluminum sheet 6/10e and fixed to the purlins in conformity with the plans.

4-4: CEILING JOISTS

They shall be Sapeli or iroko wood of section 4x8 preliminarily treated with xylamon. The section of this joist will have to be submitted first to the project owner for approval before work commences.

LOT 5: FLOOR AND WALL COVERING

5-1: FLOORING

The floors shall be realized with cement mortar mixed at 300kg/m3 to a thickness of 1.5cm.The walls shall be plastered using the same mixture.

5-2: TILING OF FLOORS& TOILET WALLS

The choice of color, type and the sizes of the tiles shall be subjected to the appreciation of the project owner.

LOT 6: WOOD AND METAL WORKS

6-1: ***METAL FITTINGS***

The handrails, railings at the balcony, metallic doors and windows shall be made out of steel tubes.

6-2: ***WOOD WORKS***

The door and window frames shall be realized in iroko or sapeli wood.

6-3: Joineries

Doors

The doors shall be in panels of bubinga or iroko, varnished and equipped with a « Vachette lock » or « Laperche » with canon or similar.

LOT 7: PLUMBING & SANITARY INSTALLATIONS

7-1: DRAINS

The distribution network shall be of PVC with pressure of suitable diameters. The drainage of rainwater and foul water shall equally be PVC tubes and shall respect the specifications submitted in the present file.

LOT 8: ELECTRICITY

8-1: CONDUITS PIPES OR SLEEVES

They will be of orange pipe of section13mm², 11mm² and embedded in masonry works.

8-2: CABLES

The cables will be of TH.
In general, the following sections will be used:

- TH of 1.5mm² for the lighting circuits
- TH of 2.5mm² for the sockets circuits

Each circuit shall comprise a maximum of 8 apparatus and shall be protected by fuses of 10A for lighting circuits and 16A for sockets circuits. Each cable and earth rod shall be of sections 2.5mm² and 1.8mm² respectively.

8-3: APPARATUS

The recommended marks shall be 'Legrand; Ingelec; Mazda or Philips.

LOT 9: PAINTING

9-1: Impression

The surfaces to be painted shall be suitably prepared and whitewashed.

9-2: FINISHINGS (External & Internal)

9-2-1 Internal walls/ceiling: pantex 800 or similar in 2layers
9-2-2 External walls/others: pantex 1300 or similar in 2layers
9-2-3 Metal fittings/wood
9-2-3-1 doors: All doors shall be varnished in 2layers
9-2-3-2 Metal Fittings: The 1000S or glycérophtaliq

LOT 10: DRIVEWAYS AND VARIOUS SERVICES

10-1: Gutters
A peripheral gutter of 8cm thick with the width 40cm and a depth of 30cm shall be executed with R.C. mixed at 350kg/m3 and the bottom smoothed with cement mortar of 400kg/m3.To facilitate the water run-off, a slope of 2% shall be realized at the bottom of the aforementioned gutters with prefabricated slabs for covers.

QUANTITATIVE AND COST ESTIMATES

1) BILL OF QAUNTITIES FOR BLOCK A(DAMINSTRATION)

BILL OF QUANTITIES AND ESTIMATE FOR THE CONSTRUCTION OF BLOCK A					
N°	**DESIGNATION OF WORKS**	**U**	**QTY**	**Unit Price**	**AMOUNT**
	I - PRELIMINARY WORKS				
101	Preparation of site	m2	394	500	197,000
103	Installation of water on the site and setting out	FF	2	150,000	300,000
	SUB TOTAL 1				**497,000**
	II - EARTH WORKS				
200	Levelling of the site	m2	567	250	141,750
201	Excavation of foundation trenches	m3	325	1,000	325,000
202	Back fill of foundation	m3	897	1,000	897,000
	SUB TOTAL 2				**1,363,750**
	III - FOUNDATION				
300	Foundation block wall of 20*20*40 cement blocks	m2	2,347	1,250	2,933,750
301	RC for footings and half pillars	m3	5.981	165,000	986,865
302	RC for ground beams	m3	4.984	165,000	822,360
303	Concrete floor 10cm	m3	98.4	10,500	1,033,200
	SUB TOTAL 3				**5,776,175**
	IV - ELEVATION BLOCK WALLS				
400	15x20x40 cement block walls	m2	3,601	2,000	7,202,000
402	Plastering with cement mortar dosed at 350kg/m3	m2	2,256	2,000	4,512,000
403	RC for pillars,lintels,tie beams and chain beams	m3	14.21	165,000	2,344,650
404	Cement floor screed of 5cm thick	m2	4,634	1,000	4,634,000
	SUB TOTAL 4				**18,692,650**
	V - ROOFING AND CEILING WORKS				
500	Complete wooden roof truss	m3	18.104	75,000	1,357,800
501	6x8 purlins with 4x4 noggings	m3	12.24	50,000	612,000
502	Ceiling plywood boards	m2	225	6,000	1,350,000
503	roofing sheet with fascia board sheets	m2	386	3,500	1,351,000
504	Alu ridge piece	U	56	2,500	140,000
505	Fascia board	U	216	4,500	972,000
506	Alu gable edge piece	U	18	5,500	99,000
	SUB TOTAL 5				**5,881,800**
	VI - OPENINGS				
600	90x210cm metal main door	U	3	70,000	210,000
601	90x220cm wooden door	U	29	55,000	1,595,000
609	100x110cm glass windows	U	30	45,000	1,350,000
	SUB TOTAL 6				**3,155,000**
	VII - SANITARY INSTALLATIONS				
700	100mm PVC pipes	U	5	6,000	30,000
701	63mm PVC pipes	U	6	6,000	36,000
702	Galvanized pipes	U	8	10,000	80,000
703	Construction of 01 septic tank & soakaway	FF	2	500,000	1,000,000
704	WC seat	U	15	65,000	975,000
705	Wash hand basin	U	15	25,000	375,000
706	Toilet paper sling	U	15	5,000	75,000
707	Towel sling	U	15	15,000	225,000

709	Toilet wall tiles	m2	363	5,000	1,815,000
710	Toilet floor tiles	m2	298	7,500	2,235,000
	SUB TOTAL 7				**6,846,000**
	VIII - ELECTRICAL INSTALLATIONS				
800	11mm PVC flexible conduit pipes	roll	15	18,000	270,000
801	1,5 VGV cables for sockets (FS)	roll	18	20,000	360,000
802	1,5 VGV cables for lighting points (FS)	roll	23	20,000	460,000
803	0,60m fluorescent complete lamps PHILIP	U	47	4,500	211,500
804	13amp complete sockets LEGRAND	U	98	2,700	264,600
805	One way one gang complete switch	U	61	2,000	122,000
807	Earth complete wiring cables	roll	8	45,000	360,000
808	Accessories, domino, etc,,	FF	15	100,000	1,500,000
	SUB TOTAL 8				**3,548,100**
	IX - PAINTING				
900	Application of 01 coat quicklime on block walls	m2	101	900	90,900
901	Application of 02 coats pantex 800 on ceiling and internal walls	m2	511	2,000	1,022,000
902	Application of 02 coats pantex 1300 on external walls	m2	233	2,800	652,400
903	Application of 01 coat oil paint on skirting	m2	524	3,000	1,572,000
	SUB TOTAL 9				**3,337,300**
	X - DRAINAGE				
1000	Drain gutter in concrete behind building	ml	273	2,000	546,000
1001	Laying of concrete on area between building and gutter	m3	20.3	20,000	406,000
	SUB TOTAL 10				**952,000**
	SUMMARY				
	100: PRELIMINARY WORKS				497,000
	200: EARTH WORKS				1,363,750
	300: FOUNDATION				5,776,175
	400:ELEVATION WALLS				18,692,650
	500: ROOFING AND CEILING WORKS				5,881,800
	600: OPENINGS				3,155,000
	700:SANITARY INSTALLATIONS				6,846,000
	800: ELECTRICAL INSTALLATIONS				3,548,100
	900: PAINTING				3,337,300
	1000: DRAINAGE				952,000
	TOTAL AMOUNT				**50,049,775**

END THIS PRESENT ESTIMATES AT THE SUM OF: **NINTY FOUR MILLION eigt HUNDRED AND NINTY FIVE THOUSAND eight HUNDRED AND tweleve** (**94,895,812**) frans CFA.

2) - BILL OF QUANTITIES AND ESTIMATE FOR BLOCK B

BILL OF QUANTITIES AND ESTIMATE FOR THE CONSTRUCTION OF BLOCK B					
N°	**DESIGNATION OF WORKS**	**U**	**QTY**	**Unit Price**	**AMOUNT**
	I - PRELIMINARY WORKS				
101	Preparation of site	m2	394	500	197,000
103	Installation of water on the site and setting out	FF	2	150,000	300,000
	SUB TOTAL 1				**497,000**
	II - EARTH WORKS				
200	Levelling of the site	m2	567	250	141,750
201	Excavation of foundation trenches	m3	325	1,000	325,000
202	Back fill of foundation	m3	897	1,000	897,000
	SUB TOTAL 2				**1,363,750**
	III - FOUNDATION				
300	Foundation block wall of 20*20*40 cement blocks	m2	2,247	1,250	2,808,750
301	RC for footings and half pillars	m3	4.981	165,000	821,865
302	RC for ground beams	m3	4.984	165,000	822,360
303	Concrete floor 10cm	m3	98.4	10,500	1,033,200
	SUB TOTAL 3				**5,486,175**
	IV - ELEVATION BLOCK WALLS				
400	15x20x40 cement block walls	m2	3,601	2,000	7,202,000
402	Plastering with cement mortar dosed at 350kg/m3	m2	1,256	2,000	2,512,000
403	RC for pillars,lintels,tie beams and chain beams	m3	10.21	165,000	1,684,650
404	Cement floor screed of 5cm thick	m2	2,634	1,000	2,634,000
	SUB TOTAL 4				**14,032,650**
	V - ROOFING AND CEILING WORKS				
500	Complete wooden roof truss	m3	18.104	75,000	1,357,800
501	6x8 purlins with 4x4 noggings	m3	12.24	50,000	612,000
502	Ceiling plywood boards	m2	225	6,000	1,350,000
503	roofing sheet with fascia board sheets	m2	286	3,500	1,001,000
504	Alu ridge piece	U	56	2,500	140,000
505	Fascia board	U	216	4,500	972,000
506	Alu gable edge piece	U	18	5,500	99,000
	SUB TOTAL 5				**5,531,800**
	VI - OPENINGS				
600	90x210cm metal main door	U	7	70,000	490,000
601	90x220cm wooden door	U	20	55,000	1,100,000
609	100x110cm glass windows	U	30	45,000	1,350,000
	SUB TOTAL 6				**2,940,000**
	VII - SANITARY INSTALLATIONS				
700	100mm PVC pipes	U	5	6,000	30,000
701	63mm PVC pipes	U	6	6,000	36,000
702	Galvanized pipes	U	8	10,000	80,000
703	Construction of 01 septic tank & soakaway	FF	2	500,000	1,000,000
704	WC seat	U	8	65,000	520,000
705	Wash hand basin	U	8	25,000	200,000
706	Toilet paper sling	U	8	5,000	40,000
707	Towel sling	U	8	15,000	120,000

709	Toilet wall tiles	m2	363	5,000	1,815,000
710	Toilet floor tiles	m2	198	7,500	1,485,000
	SUB TOTAL 7				**5,326,000**
	VIII - ELECTRICAL INSTALLATIONS				
800	11mm PVC flexible conduit pipes	roll	15	18,000	270,000
801	1,5 VGV cables for sockets (FS)	roll	18	20,000	360,000
802	1,5 VGV cables for lighting points (FS)	roll	23	20,000	460,000
803	0,60m fluorescent complete lamps PHILIP	U	47	4,500	211,500
804	13amp complete sockets LEGRAND	U	98	2,700	264,600
805	One way one gang complete switch	U	61	2,000	122,000
807	Earth complete wiring cables	roll	8	45,000	360,000
808	Accessories, domino, etc,,	FF	5	100,000	500,000
	SUB TOTAL 8				**2,548,100**
	IX - PAINTING				
900	Application of 01 coat quicklime on block walls	m2	101	900	90,900
901	Application of 02 coats pantex 800 on ceiling and internal walls	m2	111	2,000	222,000
902	Application of 02 coats pantex 1300 on external walls	m2	233	2,800	652,400
903	Application of 01 coat oil paint on skirting	m2	324	3,000	972,000
	SUB TOTAL 9				**1,937,300**
	X - DRAINAGE				
1000	Drain gutter in concrete behind building	ml	173	2,000	346,000
1001	Laying of concrete on area between building and gutter	m3	10.3	20,000	206,000
	SUB TOTAL 10				**552,000**
	SUMMARY				
	100: PRELIMINARY WORKS				497,000
	200: EARTH WORKS				1,363,750
	300: FOUNDATION				5,486,175
	400:ELEVATION WALLS				14,032,650
	500: ROOFING AND CEILING WORKS				5,531,800
	600: OPENINGS				2,940,000
	700:SANITARY INSTALLATIONS				5,326,000
	800: ELECTRICAL INSTALLATIONS				2,548,100
	900: PAINTING				1,937,300
	1000: DRAINAGE				552,000
	TOTAL AMOUNT				**40,214,775**

END THIS PRESENT ESTIMATES AT THE SUM OF: **FORTY MILLION TWO HUNDRED AND FORTEEN THOUSANDS SEVEN HUNDRED AND SEVENTY FIVE FRANCS (40,214,775)CFA**

2) BLOCK C (APPARTMENTS)

BILL OF QUANTITIES AND ESTIMATE FOR THE CONSTRUCTION OF BLOCK A					
N°	**DESIGNATION OF WORKS**	**U**	**QTY**	**Unit Price**	**AMOUNT**
	I - PRELIMINARY WORKS				
101	Preparation of site	m2	194	500	97,000
103	Installation of water on the site and setting out	FF	2	150,000	300,000
	SUB TOTAL 1				**397,000**
	II - EARTH WORKS				
200	Levelling of the site	m2	267	250	66,750
201	Excavation of foundation trenches	m3	225	1,000	225,000
202	Back fill of foundation	m3	297	1,000	297,000
	SUB TOTAL 2				**588,750**
	III - FOUNDATION				
300	Foundation block wall of 20*20*40 cement blocks	m2	347	1,250	433,750
301	RC for footings and half pillars	m3	2.981	165,000	491,865
302	RC for ground beams	m3	1.984	165,000	327,360
303	Concrete floor 10cm	m3	98.4	10,500	1,033,200
	SUB TOTAL 3				**2,286,175**
	IV - ELEVATION BLOCK WALLS				
400	15x20x40 cement block walls	m2	1,601	2,000	3,202,000
402	Plastering with cement mortar dosed at 350kg/m3	m2	2,256	2,000	4,512,000
403	RC for pillars,lintels,tie beams and chain beams	m3	8.21	165,000	1,354,650
404	Cement floor screed of 5cm thick	m2	2,634	1,000	2,634,000
	SUB TOTAL 4				**11,702,650**
	V - ROOFING AND CEILING WORKS				
500	Complete wooden roof truss	m3	7.104	75,000	532,800
501	6x8 purlins with 4x4 noggings	m3	12.24	50,000	612,000
502	Ceiling plywood boards	m2	125	6,000	750,000
503	roofing sheet with fascia board sheets	m2	186	3,500	651,000
504	Alu ridge piece	U	56	2,500	140,000
505	Fascia board	U	116	4,500	522,000
506	Alu gable edge piece	U	18	5,500	99,000
	SUB TOTAL 5				**3,306,800**
	VI - OPENINGS				
600	90x210cm metal main door	U	3	70,000	210,000
601	90x220cm wooden door	U	10	55,000	550,000
609	100x110cm glass windows	U	20	45,000	900,000
	SUB TOTAL 6				**1,660,000**
	VII - SANITARY INSTALLATIONS AND TILLING				
700	100mm PVC pipes	U	5	6,000	30,000
701	63mm PVC pipes	U	6	6,000	36,000
702	Galvanized pipes	U	8	10,000	80,000
703	Construction of 01 septic tank & soakaway	FF	2	500,000	1,000,000
704	WC seat	U	4	65,000	260,000
705	Wash hand basin	U	4	25,000	100,000
706	Toilet paper sling	U	4	5,000	20,000
707	Towel sling	U	4	15,000	60,000

709	Toilet wall tiles	m2	363	5,000	1,815,000
710	Toilet floor tiles	m2	298	7,500	2,235,000
	SUB TOTAL 7				**5,636,000**
	VIII - ELECTRICAL INSTALLATIONS				
800	11mm PVC flexible conduit pipes	roll	10	18,000	180,000
801	1,5 VGV cables for sockets (FS)	roll	11	20,000	220,000
802	1,5 VGV cables for lighting points (FS)	roll	10	20,000	200,000
803	0,60m fluorescent complete lamps PHILIP	U	15	4,500	67,500
804	13amp complete sockets LEGRAND	U	28	2,700	75,600
805	One way one gang complete switch	U	21	2,000	42,000
807	Earth complete wiring cables	roll	8	45,000	360,000
808	Accessories, domino, etc,,	FF	4	100,000	400,000
	SUB TOTAL 8				**1,545,100**
	IX - PAINTING				
900	Application of 01 coat quicklime on block walls	m2	101	900	90,900
901	Application of 02 coats pantex 800 on ceiling and internal walls	m2	111	2,000	222,000
902	Application of 02 coats pantex 1300 on external walls	m2	133	2,800	372,400
903	Application of 01 coat oil paint on skirting	m2	124	3,000	372,000
	SUB TOTAL 9				**1,057,300**
	X - DRAINAGE				
1000	Drain gutter in concrete behind building	ml	73	2,000	146,000
1001	Laying of concrete on area between building and gutter	m3	00.75	20,000	15,000
	SUB TOTAL 10				**161,000**
	SUMMARY				
	100: PRELIMINARY WORKS				397,000
	200: EARTH WORKS				588,750
	300: FOUNDATION				2,286,175
	400:ELEVATION WALLS				11,702,650
	500: ROOFING AND CEILING WORKS				3,306,800
	600: OPENINGS				1,660,000
	700:SANITARY INSTALLATIONS				5,636,000
	800: ELECTRICAL INSTALLATIONS				1,545,100
	900: PAINTING				1,057,300
	1000: DRAINAGE				161,000
	TOTAL AMOUNT				**28,340,775**

END THIS PRESENT ESTIMATES AT THE SUM OF: **TWENTY EIGHT MILLION THREE HUNDRED AND FORTY THOUSANDS SEVEN HUNDRED AND SEVENTY FIVE FRANCS(28,340,775)CFA**

TOTAL COST OF PROJECT

1) **BLOCK A…….50,049,775**
2) **BLOCK B…….40,214,775**
3) **BLOCKC (X2)……28,340,775**

TOTAL COST……118,605,325

I end this estimate at the sum of; ***One Hundred and Eighteen Million Six Hundred and Five Thousands Three Hundred and Twenty Five (118,605,325) Francs Cfa***