社会開発調査部報告書

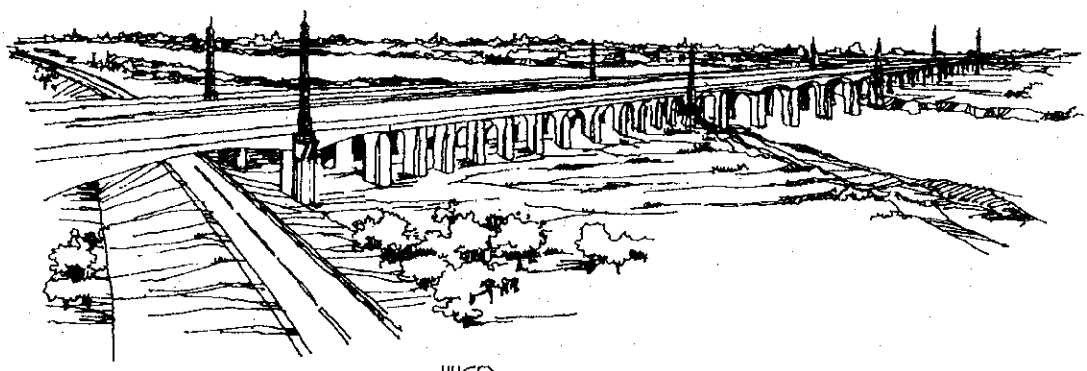
No. 32

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)
PROJECT MANAGEMENT UNIT THANG LONG
MINISTRY OF TRANSPORT
THE SOCIALIST REPUBLIC OF VIET NAM

THE DETAILED DESIGN OF THE RED RIVER BRIDGE (THANH TRI BRIDGE) CONSTRUCTION PROJECT IN THE SOCIALIST REPUBLIC OF VIET NAM

FINAL REPORT

VOLUME VI : ENGINEER'S COST ESTIMATES



June 2000

PACIFIC CONSULTANTS INTERNATIONAL

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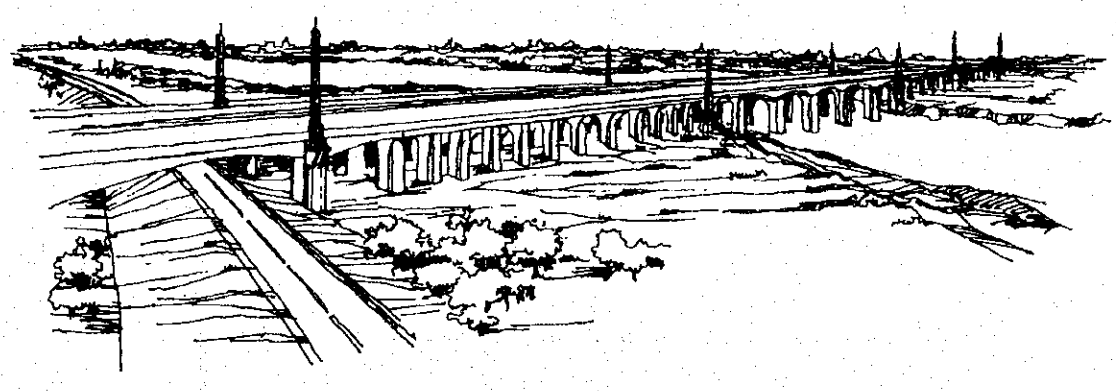

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NOTE

The following exchange rate is applied

US$ 1.00 = VN Dong 14,000
VN Dong 1.00 = JP Yen 0.01
(as of February 2000)

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THE DETAILED DESIGN
OF
THE RED RIVER BRIDGE (THANH TRI BRIDGE) CONSTRUCTION PROJECT
IN
THE SOCIALIST REPUBLIC OF VIETNAM

FINAL REPORT – Volume VI: Engineer's Cost Estimates

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PACKAGE 1
RED RIVER BRIDGE

BID PRICE SCHEDULE
BASIC BID

SUMMARY

ITEM NO.	TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
SECTION 1 - General	1,701,100,000	104,111,000,000	-
SECTION 2 - Site Clearing	-	-	-
SECTION 3 - Demolition	-	-	-
SECTION 4 - Road Earthwork	-	-	-
SECTION 5 - Structure Excavation	847,786,240	29,177,824,000	-
SECTION 6 - Drainage	-	-	-
SECTION 7 - Subgrade	-	-	-
SECTION 8 - Sub-Base and Base	-	-	-
SECTION 9 - Pavement	3,885,840	5,583,606,200	-
SECTION 10 - Concrete Structure	6,888,069,242	420,943,005,788	-
SECTION 12 - Miscellaneous	8,080	19,354,800	-
SECTION 13 - Utilities	119,700,000	6,991,845,840	-
SECTION 15 - Diversion of existing Utilities	-	-	-
Subtotal	9,560,549,402	566,826,636,628	-
SECTION 16 - Day work (1% of Subtotal)	95,605,494	5,668,266,366	-
SECTION 17 - Contingency (15% from section 2 to section 13)	1,178,917,410	69,407,345,494	-
TOTAL	**10,835,072,306**	**641,902,248,488**	**-**

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 1
RED RIVER BRIDGE

BID PRICE SCHEDULE
BASIC BID

DESCRIPTION			TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
			FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
(1)	-	DIRECT COST	10,835,072,306	641,902,248,488	-
(2)	(1) x 5%	CONTRACTOR'S OVERHEAD	541,753,615	32,095,112,424	-
(3)	[(1) + (2)] x 6%	CONTRACTOR'S PROFIT & TAX	682,609,555	40,439,841,655	-
(4)	(1) + (2) + (3)	TOTAL COST	12,059,435,476	714,437,202,567	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 1
RED RIVER BRIDGE

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 1 - GENERAL

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
-	Mobilisation and Demobilisation	LS	-	-	-	785,900,000	69,407,300,000	
-	Maintenance and Administration Equipment	LS	-	-	-	325,700,000	-	
-	River Training and Pier Protection System	LS	-	-	-	589,500,000	34,703,700,000	
SECTION 1 - TOTAL TO SUMMARY						**1,701,100,000**	**104,111,000,000**	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 1
RED RIVER BRIDGE
BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 2 - SITE CLEARING

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
2.01	Clearing and Grubbing	sq.m	-	-	-	-	-	
SECTION 2 - TOTAL TO SUMMARY						-	-	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 1
RED RIVER BRIDGE

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 3 - DEMOLITION

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
3.01(1)	Removal of Masonry and Concrete Structures including Remaining Parts of Housing	cu.m	-	-	-	-	-	
3.01(2)	Removal of Existing Curb	lin.m	-	-	-	-	-	
3.01(3)	Removal of Existing Asphalt Pavement	cu.m	-	-	-	-	-	
3.01(4)	Removal of Existing Lighting Pole	each	-	-	-	-	-	
3.01(5)	Removal of Existing Bridge (Steel Bridge)	sq.m	-	-	-	-	-	
SECTION 3 - TOTAL TO SUMMARY						-	-	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 1
RED RIVER BRIDGE

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 4 - ROAD EARTHWORK

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
4.03	Common Excavation	cu.m	-	-	-	-	-	
4.04(1)	Borrow Material	cu.m	-	-	-	-	-	
4.04(2)	Surchage with Borrow Material	cu.m	-	-	-	-	-	
4.05	Monitoring of Settlement	LS	-	-	-	-	-	
4.06	Unsuitable Material	cu.m	-	-	-	-	-	
4.07	Sand Fill Material	cu.m	-	-	-	-	-	
4.08	Granular Backfill	cu.m	-	-	-	-	-	
4.09	Permeable Backfill	cu.m	-	-	-	-	-	
4.10(2)	Vertical Soil Drains (Fibre)	lin.m	-	-	-	-	-	
4.11(2)	Geo-Textile Non-Woven Sheet	sq.m	-	-	-	-	-	
SECTION 4 - TOTAL TO SUMMARY						-	-	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 1
RED RIVER BRIDGE

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 5 - STRUCTURE EXCAVATION

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
5.01(1)	Structure Excavation	cu.m	113,380	800	37,800	90,704,000	4,285,764,000	
5.01(2)	Structure Excavation in the Red River Channel	cu.m	48,400	15,640	501,300	756,976,000	24,262,920,000	
5.01(3)	Blinding Stone	cu.m	3,320	32	189,500	106,240	629,140,000	
SECTION 5 - TOTAL TO SUMMARY						**847,786,240**	**29,177,824,000**	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 1
RED RIVER BRIDGE

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 6 - DRAINAGE

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
6.06(1)	U-Ditch, Type D-1	lin.m	-	-	-	-	-	
6.06(2)	U-Ditch, Type D-2	lin.m	-	-	-	-	-	
6.06(3)	U-Ditch, Type D-3	lin.m	-	-	-	-	-	
SECTION 6 - TOTAL TO SUMMARY						-	-	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

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RED RIVER BRIDGE

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 7 - SUBGRADE

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
7.01	Subgrade Preparation	sq.m	-	-	-	-	-	
SECTION 7 - TOTAL TO SUMMARY						-	-	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

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RED RIVER BRIDGE

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BASIC BID

WORK ITEM: SECTION 8 - SUB-BASES AND BASES

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
8.01	Sub-Base	cu.m	-	-	-	-	-	
8.02	Granular Base Course	cu.m	-	-	-	-	-	
SECTION 8 - TOTAL TO SUMMARY						-	-	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 1
RED RIVER BRIDGE

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 9 - PAVEMENTS

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
9.04	Bituminous Prime Coat	kg	-	-	-	-	-	
9.05	Bituminous Tack Coat	kg	40,430	-	3,460	-	139,887,800	
9.07(1)	Asphalt Treated Base Course	ton	-	-	-	-	-	
9.07(2)	Asphalt Concrete Binder Course	ton	-	-	-	-	-	
9.07(3)	Asphalt Concrete Surface Course	ton	-	-	-	-	-	
9.07(3)A	Asphalt Concrete Surface Course (thickness 7.5cm)	sq.m	92,520	42	34,420	3,885,840	3,184,538,400	
9.07(4)	Asphalt Cement	ton	978	-	2,310,000	-	2,259,180,000	
SECTION 9 - TOTAL TO SUMMARY						**3,885,840**	**5,583,606,200**	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

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RED RIVER BRIDGE

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 10 - CONCRETE STRUCTURE

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
10.01(A-1)	Structural Concrete, Class A-1	cu.m	43,578	21,700	1,405,300	945,642,600	61,240,163,400	
10.01(A-2)	Structural Concrete, Class A-2	cu.m	36,251	20,580	1,607,790	746,045,580	58,283,995,290	
10.01(C-1)	Structural Concrete, Class C-1	cu.m	6,942	1,410	832,320	9,788,220	5,777,965,440	
10.01(C-4)	Structural Concrete, Class C-4	cu.m	123,907	1,360	832,320	168,513,520	103,130,274,240	
10.01(E-1)	Structural Concrete, Class E-1	cu.m	126	708	737,190	89,208	92,885,940	
10.01(G)	Structural Concrete, Class G	cu.m	1,656	840	449,300	1,391,040	744,040,800	
10.02	Reinforcing Steel Bars	ton	23,890	29,000	1,971,000	692,810,000	47,087,190,000	
10.03(1)	PC Tendon, Strand Type A (12T15.2)	kg	2,479,200	310	6,810	768,552,000	16,883,352,000	
10.03(2)	PC Tendon, Strand Type B (4T15.2)	kg	29,600	320	20,430	9,472,000	604,728,000	
10.03(3)	PC Tendon, Strand Type C (3T15.2)	kg	546,200	324	27,240	176,968,800	14,878,488,000	
SUB-TOTAL CARRIED FORWARD						*3,519,272,968*	*308,723,083,110*	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 1
RED RIVER BRIDGE

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 10 - CONCRETE STRUCTURE

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	EQUIVALENT TOTAL COST (VND)
SUB-TOTAL BROUGHT FORWARD						*3,519,272,968*	*308,723,083,110*	-
10.03(4)	PC Tendon, Strand Type D (12T12.7)	kg	286,100	380	9,530	108,718,000	2,726,533,000	
10.03(5)	PC Tendon, Strand Type E (7T12.7)	kg	-	-	-	-	-	
10.03(6)	PC Tendon, Bar Type F (Φ32)	kg	67,600	620	4,770	41,912,000	322,452,000	
10.03(7)	PC I-Girder Length 20m; Height 1.65m	each	7	821,860	37,574,940	5,753,020	263,024,580	
10.03(9)	PC I-Girder Length 28m; Height 1.65m	each	14	1,074,740	49,136,460	15,046,360	687,910,440	
10.03(10)	PC I-Girder Length 33m; Height 1.65m	each	168	1,264,400	57,807,600	212,419,200	9,711,676,800	
SUB-TOTAL CARRIED FORWARD						*3,903,121,548*	*322,434,679,930*	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

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RED RIVER BRIDGE

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 10 - CONCRETE STRUCTURE

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
SUB-TOTAL BROUGHT FORWARD						*3,903,121,548*	*322,434,679,930*	-
10.07(1)	Cast-In-Place Concrete Pile, D = 1000mm	lin.m	8,550	9,983	855,380	85,354,650	7,313,499,000	
10.07(2)	Cast-In-Place Concrete Pile, D = 1500mm	lin.m	32,670	19,178	1,740,410	626,545,260	56,859,194,700	
10.07(3)	Cast-In-Place Concrete Pile, D = 2000mm	lin.m	8,210	29,504	2,778,890	242,227,840	22,814,686,900	
10.07(T)	Ultra-Sonic and Pile Integrity Testing	Provisional Sum	-	-	-	-	625,000,000	
10.08(1)	Test Drilling for Soil Investigation, General	lin.m	-	-	-	-	-	
10.08(2)	Test Drilling for Soil Investigation, in the Red River Channel	lin.m	500	5,130	391,500	2,565,000	195,750,000	
10.08(3)	Test Drilling for Soft Ground Investigation	lin.m	-	-	-	-	-	
10.09(1)	Bridge Parapet and Railing, Complete (Type A)	lin.m	10,600	44,038	330,700	466,802,800	3,505,420,000	
10.09(2)	Bridge Parapet and Railing, Complete (Type B)	lin.m	1,736	43,964	262,280	76,321,504	455,318,080	
SUB-TOTAL CARRIED FORWARD						*5,402,938,602*	*414,203,548,610*	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 1
RED RIVER BRIDGE

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 10 - CONCRETE STRUCTURE

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
SUB-TOTAL BROUGHT FORWARD						*5,402,938,602*	*414,203,548,610*	-
10.10(1)	Expansion Joint, Type A 40mm	lin.m	93	50,230	159,300	4,671,390	14,814,900	
10.10(2)	Expansion Joint, Type B 109mm	lin.m	-	-	-	-	-	
10.10(3)	Expansion Joint, Type C 150mm	lin.m	93	113,530	159,300	10,558,290	14,814,900	
10.10(4)	Expansion Joint, Type D 230mm	lin.m	156	176,270	159,300	27,498,120	24,850,800	
10.11(1)A	Reaction Distribution Bearing, Type A 175t	each	3	929,200	3,759,900	2,787,600	11,279,700	
10.11(1)B	Reaction Distribution Bearing, Type B 300t	each	57	1,818,000	5,300,100	103,626,000	302,105,700	
10.11(1)C	Reaction Distribution Bearing, Type C 650t	each	3	4,797,500	13,204,200	14,392,500	39,612,600	
10.11(1)D	Reaction Distribution Bearing, Type D 800t	each	78	6,565,000	17,296,700	512,070,000	1,349,142,600	
10.11(1)E	Reaction Distribution Bearing, Type E 850t	each	57	7,701,300	18,835,500	438,974,100	1,073,623,500	
SUB-TOTAL CARRIED FORWARD						*6,517,516,602*	*417,033,793,310*	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 1
RED RIVER BRIDGE

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 10 - CONCRETE STRUCTURE

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
SUB-TOTAL BROUGHT FORWARD						*6,517,516,602*	*417,033,793,310*	-
10.11(2)A	Pot Bearing, Type A 350t	each	-	-	-	-	-	
10.11(2)B	Pot Bearing, Type B 400t	each	36	1,302,900	5,926,200	46,904,400	213,343,200	
10.11(2)C	Pot Bearing, Type C 450t	each	-	-	-	-	-	
10.11(2)D	Pot Bearing, Type D 950t	each	-	-	-	-	-	
10.11(2)E	Pot Bearing, Type E 2,250t	each	12	24,240,000	55,402,200	290,880,000	664,826,400	
10.11(3)A	Elastomeric Bearing Pad, Type A 510*310*56	each	168	44,900	618,450	7,543,200	103,899,600	
10.11(3)B	Elastomeric Bearing Pad, Type B 510*310*44	each	14	36,360	618,450	509,040	8,658,300	
10.11(3)C	Elastomeric Bearing Pad, Type C 510*310*36	each	182	27,050	618,450	4,923,100	112,557,900	
10.11(3)D	Elastomeric Bearing Pad, Type D 510*260*40	each	14	28,900	618,450	404,600	8,658,300	
SUB-TOTAL CARRIED FORWARD						*6,868,680,942*	*418,145,737,010*	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 1
RED RIVER BRIDGE

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 10 - CONCRETE STRUCTURE

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
SUB-TOTAL BROUGHT FORWARD						*6,868,680,942*	*418,145,737,010*	-
10.12(1)	PVC Drain Pipe, D = 15cm	lin.m	-	-	-	-	-	
10.12(2)	PVC Drain Pipe, D = 20cm	lin.m	2,480	9	226,170	22,320	560,901,600	
10.12(3)	Deck Drain Box	each	356	436	562,040	155,216	200,086,240	
10.12(4)	Precast RC Plate, Type A	sq.m	8,178	1,138	140,271	9,306,564	1,147,136,238	
10.12(5)	Bridge Deck Waterproofing, Type A	sq.m	97,100	102	9,157	9,904,200	889,144,700	
SECTION 10 - TOTAL TO SUMMARY						**6,888,069,242**	**420,943,005,788**	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

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BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 12 - MISCELLANEOUS

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	EQUIVALENT TOTAL COST (VND)
12.01(1)	Grassed Area, Solid Sodding	sq.m	-	-	-	-	-	
12.02	Stone Masonry	cu.m	-	-	-	-	-	
12.03(3)	Rock Filled Gabion Baskets	sq.m	-	-	-	-	-	
12.05(1)	Motared Stonework for Slope Protection	sq.m	-	-	-	-	-	
12.05(2)	Motared Stonework for Slope Protection (below River Water Level)	sq.m	-	-	-	-	-	
12.06(1)	Vehicle Guardrail, Type A	lin.m	-	-	-	-	-	
12.06(2)	Pipe Guardrail, Type B, Movable	lin.m	-	-	-	-	-	
12.07(1)	Regulatory and Warning Signs Type-A (1 Board)	each	-	-	-	-	-	
12.07(2)	Regulatory and Warning Signs Type-C (2 Board)	each	-	-	-	-	-	
12.09(1)	Road Marking, Type A (General Application)	sq.m	-	-	-	-	-	
SUB-TOTAL CARRIED FORWARD						-	-	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 1
RED RIVER BRIDGE

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 12 - MISCELLANEOUS

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	EQUIVALENT TOTAL COST (VND)
SUB-TOTAL BROUGHT FORWARD						-	-	-
12.09(2)	Road Marking, Type A (Special Application)	sq.m	-	-	-	-	-	
12.12(1)	Concrete Curb, Type A	lin.m	-	-	-	-	-	
12.12(2)	Concrete Curb, Type B	lin.m	-	-	-	-	-	
12.12(3)	Asphalt Concrete Curb	lin.m	-	-	-	-	-	
12.21	Bronze Bridge Name Plaques	each	8	1,010	2,419,350	8,080	19,354,800	
SECTION 12 - TOTAL TO SUMMARY						**8,080**	**19,354,800**	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 1
RED RIVER BRIDGE

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 13 - UTILITIES

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
13.01(2)	Road Lighting Unit, Type A4.1	each	176	-	8,450,000	-	1,487,200,000	
13.01(4)	Road Lighting Unit, Type F1	each	6	-	6,755,000	-	40,530,000	
13.01(6)	Power Supply Receiving Panel (SS)	each	1	-	5,748,300	-	5,748,300	
13.01(7)	Low Voltage Distribution Panel (MDP)	each	1	-	11,366,200	-	11,366,200	
13.01(8)	Lighting Panel (DB)	each	14	-	7,699,900	-	107,798,600	
13.01(10)	Cable, X-LPE Armer Type 4c - 25mm2	lin.m	160	-	115,310	-	18,449,600	
13.01(11)	Cable, X-LPE Armer Type 4c - 16mm2	lin.m	9,138	-	96,470	-	881,542,860	
13.01(12)	Cable, X-LPE Armer Type 4c - 10mm2	lin.m	6,738	-	64,440	-	434,196,720	
13.01(13)	Cable, X-LPE/ PVC 4c - 10mm2	lin.m	340	-	47,800	-	16,252,000	
13.01(14)	Grounding Wire, BCC 6mm2	lin.m	6,752	-	78,000	-	526,656,000	
SUB-TOTAL CARRIED FORWARD						-	*3,529,740,280*	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 1
RED RIVER BRIDGE

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 13 - UTILITIES

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
SUB-TOTAL BROUGHT FORWARD						-	*3,529,740,280*	-
13.01(15)	PVC Conduit, 50mm dia with Fittings	lin.m	28,372	-	92,000	-	2,610,224,000	
13.01(16)	Pull Box, Type F	each	190	-	940,400	-	178,676,000	
13.01(17)	Pull Box, Type G	each	36	-	884,000	-	31,824,000	
13.01(18)	Power Receiving, 30 kVA	each	1	-	380,000,000	-	380,000,000	
13.01(19)	Application for Power Connection	each	1	-	50,000,000	-	50,000,000	
13.01(20)	Watt Hour Meter Box and Panel	each	1	-	2,550,000	-	2,550,000	
13.01(21)	Protection of Expansion Joint	each	120	-	250,000	-	30,000,000	
13.01(22)	Buried Cable Protector	lin.m	466	-	84,160	-	39,218,560	
13.01(23)	Marker for Underground Cables	each	233	-	181,000	-	42,173,000	
SUB-TOTAL CARRIED FORWARD						-	*6,894,405,840*	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 1
RED RIVER BRIDGE

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 13 - UTILITIES

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	EQUIVALENT TOTAL COST (VND)
SUB-TOTAL BROUGHT FORWARD						-	*6,894,405,840*	-
13.01(24)	Navigation Light	set	6	19,950,000	3,990,000	119,700,000	23,940,000	
13.01(32)	Power Connection for Package 1	LS	1	-	13,100,000	-	13,100,000	
13.02(1)	Duct Bank, Type A	lin.m	140	-	380,000	-	53,200,000	
13.02(3)	Manhole, Type A	each	6	-	1,200,000	-	7,200,000	
SECTION 13 - TOTAL TO SUMMARY						**119,700,000**	**6,991,845,840**	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 2
GIA LAM SECTION
BID PRICE SCHEDULE
BASIC BID

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 2
GIA LAM SECTION

BID PRICE SCHEDULE
BASIC BID

SUMMARY

ITEM NO.	TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
SECTION 1 - General	126,064,265	9,370,611,592	-
SECTION 2 - Site Clearing	2,265,480	118,056,680	-
SECTION 3 - Demolition	-	-	-
SECTION 4 - Road Earthwork	822,273,575	32,254,450,884	-
SECTION 5 - Structure Excavation	16,831,264	978,941,500	-
SECTION 6 - Drainage	9,658,769	8,299,688,878	-
SECTION 7 - Subgrade	2,022,600	82,252,400	-
SECTION 8 - Sub-Base and Base	5,791,280	9,469,991,750	-
SECTION 9 - Pavement	63,129,550	17,957,491,690	-
SECTION 10 - Concrete Structure	1,542,364,140	98,537,290,078	-
SECTION 12 - Miscellaneous	56,948,644	5,764,470,831	-
SECTION 13 - Utilities	-	13,949,597,140	-
SECTION 15 - Diversion of existing Utilities	-	-	-
Subtotal	2,647,349,567	196,782,843,423	-
SECTION 16 - Day work (1% of Subtotal)	26,473,496	1,967,828,434	-
SECTION 17 - Contingency (15% from section 2 to section 13)	378,192,795	28,111,834,775	-
TOTAL	**3,052,015,858**	**226,862,506,632**	**-**

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 2
GIA LAM SECTION

BID PRICE SCHEDULE
BASIC BID

DESCRIPTION			TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
			FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
(1)	-	DIRECT COST	3,052,015,858	226,862,506,632	-
(2)	(1) x 5%	CONTRACTOR'S OVERHEAD	152,600,793	11,343,125,332	-
(3)	[(1) + (2)] x 6%	CONTRACTOR'S PROFIT & TAX	192,276,999	14,292,337,918	-
(4)	(1) + (2) + (3)	TOTAL COST	3,396,893,650	252,497,969,882	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 2
GIA LAM SECTION

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 1 - GENERAL

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
-	General	LS	-	-	-	126,064,265	9,370,611,592	
SECTION 1 - TOTAL TO SUMMARY						**126,064,265**	**9,370,611,592**	**-**

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 2
GIA LAM SECTION

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 2 - SITE CLEARING

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
2.01	Clearing and Grubbing	sq.m	251,720	9	469	2,265,480	118,056,680	
SECTION 2 - TOTAL TO SUMMARY						**2,265,480**	**118,056,680**	**-**

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 2
GIA LAM SECTION

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 3 - DEMOLITION

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
3.01(1)	Removal of Masonry and Concrete Structures including Remaining Parts of Housing	cu.m	-	-	-	-	-	
3.01(2)	Removal of Existing Curb	lin.m	-	-	-	-	-	
3.01(3)	Removal of Existing Asphalt Pavement	cu.m	-	-	-	-	-	
3.01(4)	Removal of Existing Lighting Pole	each	-	-	-	-	-	
3.01(5)	Removal of Existing Bridge (Steel Bridge)	sq.m	-	-	-	-	-	
SECTION 3 - TOTAL TO SUMMARY						-	-	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 2
GIA LAM SECTION

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 4 - ROAD EARTHWORK

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
4.03	Common Excavation	cu.m	118,450	110	1,930	13,029,500	228,608,500	
4.04(1)	Borrow Material	cu.m	910,065	223	13,316	202,944,495	12,118,425,540	
4.06	Unsuitable Material	cu.m	113,300	182	7,429	20,620,600	841,705,700	
4.07	Sand Fill Material	cu.m	409,160	511	21,963	209,080,760	8,986,381,080	
4.08	Granular Backfill	cu.m	14,538	81	108,954	1,177,578	1,583,973,252	
4.09	Permeable Backfill	cu.m	434	83	113,338	36,022	49,188,692	
4.10(2)	Vertical Soil Drains (Fibre)	lin.m	2,549,140	143	2,158	364,527,020	5,501,044,120	
4.11(2)	Geo-Textile Non-Woven Sheet	sq.m	339,300	32	8,680	10,857,600	2,945,124,000	
SECTION 4 - TOTAL TO SUMMARY						**822,273,575**	**32,254,450,884**	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 2
GIA LAM SECTION

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 5 - STRUCTURE EXCAVATION

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
5.01(1)	Structure Excavation	cu.m	21,000	800	37,800	16,800,000	793,800,000	
5.01(3)	Blinding Stone	cu.m	977	32	189,500	31,264	185,141,500	
SECTION 5 - TOTAL TO SUMMARY						**16,831,264**	**978,941,500**	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 2
GIA LAM SECTION

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 6 - DRAINAGE

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
6.05(4)	RC Pipe, D=75cm Type A-1	lin.m	2,018	490	916,717	988,820	1,849,934,906	
6.05(5)	RC Pipe, D=75cm Type A-2	lin.m	152	2,826	1,547,261	429,552	235,183,672	
6.05(7)	RC Pipe, D=125cm Type A-2	lin.m	405	4,420	3,183,800	1,790,100	1,289,439,000	
6.05(8)	RC Pipe, D=125cm Type B-2	lin.m	156	8,030	5,788,700	1,252,680	903,037,200	
6.05(9)	RC Pipe, D=150cm Type A-2	lin.m	243	5,590	3,929,900	1,358,370	954,965,700	
6.05(10)	RC Pipe, D=150cm Type B-2	lin.m	115	10,160	7,145,200	1,168,400	821,698,000	
6.06(1)	U-Ditch, Type U-1	lin.m	1,520	74	213,294	112,480	324,206,880	
6.06(2)	U-Ditch, Type U-2	lin.m	860	117	134,044	100,620	115,277,840	
6.06(2A)	U-Ditch, Type U-4	lin.m	70	181	207,768	12,670	14,543,760	
6.06(3)	U-Ditch, Type U-3	lin.m	1,468	111	127,342	162,948	186,938,056	
SUB-TOTAL CARRIED FORWARD						*7,376,640*	*6,695,225,014*	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 2
GIA LAM SECTION

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 6 - DRAINAGE

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
SUB-TOTAL BROUGHT FORWARD						*7,376,640*	*6,695,225,014*	-
6.06(5)	Mortared Stone Channel, Type C-1	lin.m	640	141	274,851	90,240	175,904,640	
6.06(6)	Mortared Stone Channel, Type C-2 & C-4	lin.m	785	169	316,697	132,665	248,607,145	
6.06(8)	Catch Basin, Types R1, R2 and R4	each	26	8,116	2,930,193	211,016	76,185,018	
6.06(9)	Catch Basin, Type R3	each	94	366	612,970	34,404	57,619,180	
6.06(10)	Catch Basin, Type F	each	102	11,768	3,028,153	1,200,336	308,871,606	
6.06(11)	Catch Basin, Type S1	each	71	746	1,661,781	52,966	117,986,451	
6.06(13)	Headwall, for 125-A	each	18	11,951	13,437,481	215,118	241,874,658	
6.06(14)	Headwall, for 125-B	each	4	15,563	19,048,359	62,252	76,193,436	
6.06(15)	Headwall, for 150-A	each	10	15,982	16,124,524	159,820	161,245,240	
SUB-TOTAL CARRIED FORWARD						*9,535,457*	*8,159,712,388*	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 2
GIA LAM SECTION

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 6 - DRAINAGE

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	EQUIVALENT TOTAL COST (VND)
SUB-TOTAL BROUGHT FORWARD						*9,535,457*	*8,159,712,388*	-
6.06(16)	Headwall, for 150-B	each	6	20,552	23,329,415	123,312	139,976,490	
SECTION 6 - TOTAL TO SUMMARY						**9,658,769**	**8,299,688,878**	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 2
GIA LAM SECTION

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 7 - SUBGRADE

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	EQUIVALENT TOTAL COST (VND)
7.01	Subgrade Preparation	sq.m	134,840	15	610	2,022,600	82,252,400	
SECTION 7 - TOTAL TO SUMMARY						**2,022,600**	**82,252,400**	**-**

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 2
GIA LAM SECTION

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 8 - SUB-BASES AND BASES

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
8.01	Sub-Base	cu.m	56,370	74	122,465	4,171,380	6,903,352,050	
8.02	Granular Base Course	cu.m	16,700	97	153,691	1,619,900	2,566,639,700	
SECTION 8 - TOTAL TO SUMMARY						**5,791,280**	**9,469,991,750**	**-**

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 2
GIA LAM SECTION

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 9 - PAVEMENTS

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
9.04	Bituminous Prime Coat	kg	141,270	-	3,494	-	493,597,380	
9.05	Bituminous Tack Coat	kg	88,390	-	3,461	-	305,917,790	
9.07(1)	Asphalt Treated Base Course	ton	87,600	179	152,422	15,680,400	13,352,167,200	
9.07(2)	Asphalt Concrete Binder Course	ton	10,890	235	153,668	2,559,150	1,673,444,520	
9.07(3)	Asphalt Concrete Surface Course	ton	12,800	338	166,591	4,326,400	2,132,364,800	
9.07(4)	Asphalt Cement	ton	1,756	23,100	-	40,563,600	-	
SECTION 9 - TOTAL TO SUMMARY						**63,129,550**	**17,957,491,690**	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 2
GIA LAM SECTION

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 10 - CONCRETE STRUCTURE

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
10.01(A-2)	Structural Concrete, Class A-2	cu.m	3,228	20,580	1,607,790	66,432,240	5,189,946,120	
10.01(C-1)	Structural Concrete, Class C-1	cu.m	7,635	1,410	832,320	10,765,350	6,354,763,200	
10.01(C-4)	Structural Concrete, Class C-4	cu.m	17,914	1,360	832,320	24,363,040	14,910,180,480	
10.01(C-5)	Structural Concrete, Class C-5	cu.m	870	1,510	1,531,370	1,313,700	1,332,291,900	
10.01(D-1)	Structural Concrete, Class D-1	cu.m	-	-	-	-	-	
10.01(E-1)	Structural Concrete, Class E-1	cu.m	348	708	737,190	246,384	256,542,120	
10.01(G)	Structural Concrete, Class G	cu.m	615	840	449,300	516,600	276,319,500	
10.02	Reinforcing Steel Bars	ton	3,657	29,000	1,971,000	106,053,000	7,207,947,000	
10.03(1)	PC Tendon, Strand Type A (12T15.2)	kg	110,960	310	6,810	34,397,600	755,637,600	
10.03(2)	PC Tendon, Strand Type B (4T15.2)	kg	39,863	320	20,430	12,756,160	814,401,090	
SUB-TOTAL CARRIED FORWARD						*256,844,074*	*37,098,029,010*	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 2
GIA LAM SECTION

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 10 - CONCRETE STRUCTURE

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
SUB-TOTAL BROUGHT FORWARD						*256,844,074*	*37,098,029,010*	-
10.03(4)	PC Tendon, Strand Type D (12T12.7)	kg	523,497	380	9,530	198,928,860	4,988,926,410	
10.03(7)	PC I-Girder Length 20.0m; Height 1.65m	each	20	821,860	37,574,940	16,437,200	751,498,800	
10.03(8)	PC I-Girder Length 28.0m; Height 1.50m	each	79	1,011,520	46,246,080	79,910,080	3,653,440,320	
10.03(10)	PC I-Girder Length 33.0m; Height 1.65m	each	251	1,264,400	57,807,600	317,364,400	14,509,707,600	
10.03(11)	PC I-Girder Length 35.0m; Height 1.75m	each	16	1,390,840	63,588,360	22,253,440	1,017,413,760	
10.07(1)	Cast-In-Place Concrete Pile, D = 1000mm	lin.m	16,385	9,983	855,380	163,571,455	14,015,401,300	
10.07(2)	Cast-In-Place Concrete Pile, D = 1500mm	lin.m	3,655	19,178	1,740,410	70,095,590	6,361,198,550	
10.07(3)	Cast-In-Place Concrete Pile, D = 2000mm	lin.m	3,912	29,504	2,778,890	115,419,648	10,871,017,680	
10.07(T)	Ultra-Sonic and Pile Integrity Testing	Provisional Sum	-	-	-	-	625,000,000	
SUB-TOTAL CARRIED FORWARD						*1,240,824,747*	*93,891,633,430*	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 2
GIA LAM SECTION

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 10 - CONCRETE STRUCTURE

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
SUB-TOTAL BROUGHT FORWARD						*1,240,824,747*	*93,891,633,430*	-
10.08(1)	Test Drilling for soill Investigation, General	lin.m	300	1,968	206,025	590,400	61,807,500	
10.08(3)	Test Drilling for Soft Ground Investigation	lin.m	600	1,968	206,025	1,180,800	123,615,000	
10.09(1)	Bridge Parapet and Railing, Complete (Type A)	lin.m	700	44,038	330,700	30,826,600	231,490,000	
10.09(2)	Bridge Parapet and Railing, Complete (Type B)	lin.m	3,414	43,964	262,280	150,093,096	895,423,920	
10.10(1)	Expansion Joint, Type A 40mm	lin.m	388	50,230	159,300	19,489,240	61,808,400	
10.10(2)	Expansion Joint, Type B 109mm	lin.m	60	81,820	159,300	4,909,200	9,558,000	
10.11(2)A	Pot Bearing, Type A 350t	each	12	1,131,200	4,256,000	13,574,400	51,072,000	
10.11(2)C	Pot Bearing, Type C 450t	each	4	1,504,900	5,772,200	6,019,600	23,088,800	
10.11(2)D	Pot Bearing, Type D 950t	each	6	4,747,000	16,139,100	28,482,000	96,834,600	
SUB-TOTAL CARRIED FORWARD						*1,495,990,083*	*95,446,331,650*	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 2
GIA LAM SECTION

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 10 - CONCRETE STRUCTURE

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	EQUIVALENT TOTAL COST (VND)
SUB-TOTAL BROUGHT FORWARD						*1,495,990,083*	*95,446,331,650*	-
10.11(3)A	Elastomeric Bearing Pad, Type A 510*310*56	each	267	44,900	618,450	11,988,300	165,126,150	
10.11(3)B	Elastomeric Bearing Pad, Type B 510*310*44	each	79	36,360	618,450	2,872,440	48,857,550	
10.11(3)C	Elastomeric Bearing Pad, Type C 510*310*36	each	346	27,050	618,450	9,359,300	213,983,700	
10.11(3)D	Elastomeric Bearing Pad, Type D 510*260*40	each	40	28,900	618,450	1,156,000	24,738,000	
10.11(3)E	Elastomeric Bearing Pad, Type E 330*330*54	each	16	30,930	618,450	494,880	9,895,200	
10.11(3)F	Elastomeric Bearing Pad, Type F 510*510*44	each	4	59,820	618,450	239,280	2,473,800	
10.11(3)G	Elastomeric Bearing Pad, Type G 510*510*26	each	12	50,200	618,450	602,400	7,421,400	
10.11(3)H	Elastomeric Bearing Pad, Type H 480*480*44	each	4	44,470	618,450	177,880	2,473,800	
10.12(2)	PVC Drain Pipe, D = 20cm	lin.m	1,109	9	226,170	9,981	250,822,530	
SUB-TOTAL CARRIED FORWARD						*1,522,890,544*	*96,172,123,780*	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 2
GIA LAM SECTION

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 10 - CONCRETE STRUCTURE

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
SUB-TOTAL BROUGHT FORWARD						*1,522,890,544*	*96,172,123,780*	-
10.12(3)	Deck Drain Box	each	132	436	562,040	57,552	74,189,280	
10.12(4)	Precast RC Plate, Type A	sq.m	14,378	1,138	140,271	16,362,164	2,016,816,438	
10.12(5)	Bridge Deck Waterproofing, Type A	sq.m	29,940	102	9,157	3,053,880	274,160,580	
SECTION 10 - TOTAL TO SUMMARY						**1,542,364,140**	**98,537,290,078**	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 2
GIA LAM SECTION

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 12 - MISCELLANEOUS

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
12.01(1)	Grassed Area, Solid Sodding	sq.m	100,000	-	23,594	-	2,359,400,000	
12.02	Stone Masonry	cu.m	730	143	440,219	104,390	321,359,870	
12.05(2)	Motared Stonework for Slope Protection (below River Water Level)	sq.m	540	-	121,853	-	65,800,620	
12.06(1)	Vehicle Guardrail, Type A	lin.m	14,960	3,560	13,294	53,257,600	198,878,240	
12.06(2)	Pipe Guardrail, Type B, Movable	lin.m	1,530	938	26,918	1,435,140	41,184,540	
12.07(1)	Regulatory and Warning Signs Type-A (1 Board)	each	12	257	812,884	3,084	9,754,608	
12.07(2)	Regulatory and Warning Signs Type-C (2 Board)	each	12	257	1,201,066	3,084	14,412,792	
12.07(3)	Precast Concrete Km Indicator Post	each	6	19	375,970	114	2,255,820	
12.07(4)	Precast Concrete Guide Post	each	76	13	169,928	988	12,914,528	
12.07(5)	Guide Sign, Type A	each	20	513	1,773,367	10,260	35,467,340	
SUB-TOTAL CARRIED FORWARD						*54,814,660*	*3,061,428,358*	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 2
GIA LAM SECTION

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 12 - MISCELLANEOUS

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
SUB-TOTAL BROUGHT FORWARD						*54,814,660*	*3,061,428,358*	-
12.09(1)	Road Marking, Type A (General Application)	sq.m	610	60	16,142	36,600	9,846,620	
12.09(2)	Road Marking, Type A (Special Application)	sq.m	5,130	66	17,756	338,580	91,088,280	
12.12(1)	Concrete Curb, Type A	lin.m	11,270	101	101,461	1,138,270	1,143,465,470	
12.12(2)	Concrete Curb, Type B	lin.m	6,460	76	76,096	490,960	491,580,160	
12.12(3)	Asphalt Concrete Curb	lin.m	5,403	18	19,847	97,254	107,233,341	
12.13	Concrete Slab Paving	sq.m	10,750	-	70,597	-	758,917,750	
12.17	Queen Crape-Myrtle	each	510	-	46,062	-	23,491,620	
12.21	Bronze Bridge Name Plaques	each	32	1,010	2,419,351	32,320	77,419,232	
SECTION 12 - TOTAL TO SUMMARY						**56,948,644**	**5,764,470,831**	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 2
GIA LAM SECTION

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 13 - UTILITIES

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
13.01(1)	Road Lighting Unit, Type A2.1	each	167	-	8,655,000	-	1,445,385,000	
13.01(2)	Road Lighting Unit, Type A4.1	each	52	-	8,450,000	-	439,400,000	
13.01(3)	Road Lighting Unit, Type B2.1	each	75	-	15,660,000	-	1,174,500,000	
13.01(4)	Road Lighting Unit, Type F1	each	22	-	6,755,000	-	148,610,000	
13.01(5)	Road Lighting Unit, Type G1	each	6	-	570,000	-	3,420,000	
13.01(6)	Power Supply Receiving Panel (SS)	each	7	-	5,748,300	-	40,238,100	
13.01(7)	Low Voltage Distribution Panel (MDP)	each	7	-	11,366,200	-	79,563,400	
13.01(8)	Lighting Panel (DB)	each	28	-	7,699,900	-	215,597,200	
13.01(9)	Cable, X-LPE Armer Type 4c - 50mm2	lin.m	1,750	-	200,220	-	350,385,000	
13.01(10)	Cable, X-LPE Armer Type 4c - 25mm2	lin.m	7,200	-	115,310	-	830,232,000	
SUB-TOTAL CARRIED FORWARD						-	*4,727,330,700*	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 2
GIA LAM SECTION

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 13 - UTILITIES

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
SUB-TOTAL BROUGHT FORWARD						-	*4,727,330,700*	-
13.01(11)	Cable, X-LPE Armer Type 4c - 16mm2	lin.m	7,350	-	96,470	-	709,054,500	
13.01(12)	Cable, X-LPE Armer Type 4c - 10mm2	lin.m	17,750	-	64,440	-	1,143,810,000	
13.01(13)	Cable, X-LPE/ PVC 4c - 10mm2	lin.m	3,220	-	47,800	-	153,916,000	
13.01(14)	Grounding Wire, BCC 6mm2	lin.m	4,186	-	78,000	-	326,508,000	
13.01(15)	PVC Conduit, 50mm dia with Fittings	lin.m	18,200	-	92,000	-	1,674,400,000	
13.01(16)	Pull Box, Type F	each	64	-	940,400	-	60,185,600	
13.01(17)	Pull Box, Type G	each	18	-	884,000	-	15,912,000	
13.01(18)	Power Receiving, 30 kVA	each	7	-	380,000,000	-	2,660,000,000	
13.01(19)	Application for Power Connection	each	7	-	50,000,000	-	350,000,000	
SUB-TOTAL CARRIED FORWARD						-	*11,821,116,800*	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 2
GIA LAM SECTION

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 13 - UTILITIES

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
SUB-TOTAL BROUGHT FORWARD						-	*11,821,116,800*	-
13.01(20)	Watt Hour Meter Box and Panel	each	7	-	2,550,000	-	17,850,000	
13.01(21)	Protection of Expansion Joint	each	36	-	250,000	-	9,000,000	
13.01(22)	Buried Cable Protector	lin.m	16,269	-	84,160	-	1,369,199,040	
13.01(23)	Marker for Underground Cables	each	542	-	181,000	-	98,102,000	
13.01(25)	Control Cable, X-LPE 7c-10mm2	lin.m	630	-	88,310	-	55,635,300	
13.01(26)	Traffic Control Master Unit	each	3	-	22,448,000	-	67,344,000	
13.01(27)	Manual Push Botton	each	9	-	750,000	-	6,750,000	
13.01(28)	Traffic Signal Unit, Type 1	each	8	-	11,450,000	-	91,600,000	
13.01(29)	Traffic Signal Unit, Type 2	each	16	-	8,630,500	-	138,088,000	
SUB-TOTAL CARRIED FORWARD						-	*13,674,685,140*	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 2
GIA LAM SECTION

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 13 - UTILITIES

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
SUB-TOTAL BROUGHT FORWARD						-	*13,674,685,140*	-
13.01(30)	Emergency Back-Up Unit	each	3	-	3,854,000	-	11,562,000	
13.01(32)	Power Connection for Package 2	LS	1	-	6,550,000	-	6,550,000	
13.02(1)	Duct Bank, Type A	lin.m	600	-	380,000	-	228,000,000	
13.02(3)	Manhole, Type A	each	24	-	1,200,000	-	28,800,000	
SECTION 13 - TOTAL TO SUMMARY						-	**13,949,597,140**	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3
THANH TRI SECTION
BID PRICE SCHEDULE
BASIC BID

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3
THANH TRI SECTION

BID PRICE SCHEDULE
BASIC BID

SUMMARY

ITEM NO.	TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
SECTION 1 - General	233,949,208	15,494,799,692	-
SECTION 2 - Site Clearing	4,365,360	227,483,760	-
SECTION 3 - Demolition	844,000	14,160,000	-
SECTION 4 - Road Earthwork	2,476,997,625	75,317,133,182	-
SECTION 5 - Structure Excavation	54,556,160	3,025,190,000	-
SECTION 6 - Drainage	19,791,978	19,572,187,989	-
SECTION 7 - Subgrade	5,331,000	216,794,000	-
SECTION 8 - Sub-Base and Base	13,016,300	21,246,403,100	-
SECTION 9 - Pavement	169,298,790	21,648,552,050	-
SECTION 10 - Concrete Structure	1,731,404,736	123,591,233,674	-
SECTION 12 - Miscellaneous	99,864,220	17,118,642,409	-
SECTION 13 - Utilities	-	22,848,224,680	-
SECTION 14 - Toll Plaza and Control Building	103,514,000	3,569,989,000	
SECTION 15 - Diversion of existing Utilities	-	1,500,000,000	-
Subtotal	4,912,933,377	325,390,793,536	-
SECTION 16 - Day work (1% of Subtotal)	49,129,334	3,253,907,935	-
SECTION 17 - Contingency (15% from section 2 to section 15)	701,847,625	46,484,399,077	-
TOTAL	**5,663,910,336**	**375,129,100,548**	**-**

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3
THANH TRI SECTION

BID PRICE SCHEDULE
BASIC BID

DESCRIPTION			TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
			FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
(1)	-	DIRECT COST	5,663,910,336	375,129,100,548	-
(2)	(1) x 5%	CONTRACTOR'S OVERHEAD	283,195,517	18,756,455,027	-
(3)	[(1) + (2)] x 6%	CONTRACTOR'S PROFIT & TAX	356,826,351	23,633,133,334	-
(4)	(1) + (2) + (3)	TOTAL COST	6,303,932,204	417,518,688,909	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3
THANH TRI SECTION

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 1 - GENERAL

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
-	General	LS	-	-	-	233,949,208	15,494,799,692	
SECTION 1 - TOTAL TO SUMMARY						**233,949,208**	**15,494,799,692**	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3
THANH TRI SECTION

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 2 - SITE CLEARING

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
2.01	Clearing and Grubbing	sq.m	485,040	9	469	4,365,360	227,483,760	
SECTION 2 - TOTAL TO SUMMARY						**4,365,360**	**227,483,760**	**-**

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3
THANH TRI SECTION

BID PRICE SCHEDULE

WORK ITEM: SECTION 3 - DEMOLITION

BASIC BID

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
3.01(1)	Removal of Masonry and Concrete Structures including Remaining Parts of Housing	cu.m	-	-	-	-	-	
3.01(2)	Removal of Existing Curb	lin.m	-	-	-	-	-	
3.01(3)	Removal of Existing Asphalt Pavement	cu.m	-	-	-	-	-	
3.01(4)	Removal of Existing Lighting Pole	each	-	-	-	-	-	
3.01(5)	Removal of Existing Bridge (Steel Bridge)	sq.m	400	2,110	35,400	844,000	14,160,000	
SECTION 3 - TOTAL TO SUMMARY						**844,000**	**14,160,000**	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3
THANH TRI SECTION

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 4 - ROAD EARTHWORK

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
4.03	Common Excavation	cu.m	246,600	110	1,930	27,126,000	475,938,000	
4.04(1)	Borrow Material	cu.m	1,461,000	223	13,316	325,803,000	19,454,676,000	
4.04(2)	Surchage with Borrow Material	cu.m	-	-	-	-	-	
4.06	Unsuitable Material	cu.m	239,800	182	7,429	43,643,600	1,781,474,200	
4.07	Sand Fill Material	cu.m	994,400	511	21,963	508,138,400	21,840,007,200	
4.08	Granular Backfill	cu.m	19,014	81	108,954	1,540,134	2,071,651,356	
4.09	Permeable Backfill	cu.m	1,477	83	113,338	122,591	167,400,226	
4.10(1)	Vertical Soil Drains (Sand, 40cm dia).	lin.m	1,775,100	733	11,370	1,301,148,300	20,182,887,000	
4.10(2)	Vertical Soil Drains (Fibre)	lin.m	1,740,400	143	2,158	248,877,200	3,755,783,200	
4.11(2)	Geo-Textile Non-Woven Sheet	sq.m	643,700	32	8,680	20,598,400	5,587,316,000	
SECTION 4 - TOTAL TO SUMMARY						**2,476,997,625**	**75,317,133,182**	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3
THANH TRI SECTION

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 5 - STRUCTURE EXCAVATION

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
5.01(1)	Structure Excavation	cu.m	68,100	800	37,800	54,480,000	2,574,180,000	
5.01(3)	Blinding Stone	cu.m	2,380	32	189,500	76,160	451,010,000	
SECTION 5 - TOTAL TO SUMMARY						**54,556,160**	**3,025,190,000**	**-**

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3
THANH TRI SECTION

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 6 - DRAINAGE

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
6.05(4)	RC Pipe, D=75cm Type A-1	lin.m	10,405	490	916,717	5,098,450	9,538,440,385	
6.05(5)	RC Pipe, D=75cm Type A-2	lin.m	680	2,826	1,547,261	1,921,680	1,052,137,480	
6.05(7)	RC Pipe, D=125cm Type A-2	lin.m	494	4,420	3,183,800	2,183,480	1,572,797,200	
6.05(8)	RC Pipe, D=125cm Type B-2	lin.m	77	8,030	5,788,700	618,310	445,729,900	
6.06(1)	U-Ditch, Type U-1	lin.m	9,830	74	213,294	727,420	2,096,680,020	
6.06(2)	U-Ditch, Type U-2	lin.m	2,460	117	134,044	287,820	329,748,240	
6.06(3)	U-Ditch, Type U-3	lin.m	1,840	111	127,342	204,240	234,309,280	
6.06(5)	Mortared Stone Channel, Type C-1	lin.m	4,105	141	274,851	578,805	1,128,263,355	
6.06(6)	Mortared Stone Channel, Type C-2 and C-4	lin.m	690	169	316,697	116,610	218,520,930	
6.06(7)	Mortared Stone Channel, Type C-3	lin.m	165	2,891	3,479,468	477,015	574,112,220	
SUB-TOTAL CARRIED FORWARD						*12,213,830*	*17,190,739,010*	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3
THANH TRI SECTION

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 6 - DRAINAGE

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
SUB-TOTAL BROUGHT FORWARD						*12,213,830*	*17,190,739,010*	-
6.06(8)	Catch Basin, Types R1, R2 and R4	each	134	8,116	2,930,193	1,087,544	392,645,862	
6.06(9)	Catch Basin, Type R3	each	140	366	612,970	51,240	85,815,800	
6.06(10)	Catch Basin, Type F	each	525	11,768	3,028,153	6,178,200	1,589,780,325	
6.06(11)	Catch Basin, Type S1	each	20	746	1,661,781	14,920	33,235,620	
6.06(13)	Headwall, for 125-A	each	18	11,951	13,437,481	215,118	241,874,658	
6.06(14)	Headwall, for 125-B	each	2	15,563	19,048,357	31,126	38,096,714	
SECTION 6 - TOTAL TO SUMMARY						**19,791,978**	**19,572,187,989**	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3
THANH TRI SECTION

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 7 - SUBGRADE

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
7.01	Subgrade Preparation	sq.m	355,400	15	610	5,331,000	216,794,000	
SECTION 7 - TOTAL TO SUMMARY						**5,331,000**	**216,794,000**	**-**

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3
THANH TRI SECTION

BID PRICE SCHEDULE

WORK ITEM: SECTION 8 - SUB-BASES AND BASES

BASIC BID

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
8.01	Sub-Base	cu.m	119,400	74	122,465	8,835,600	14,622,321,000	
8.02	Granular Base Course	cu.m	43,100	97	153,691	4,180,700	6,624,082,100	
SECTION 8 - TOTAL TO SUMMARY						**13,016,300**	**21,246,403,100**	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3
THANH TRI SECTION

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 9 - PAVEMENTS

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
9.04	Bituminous Prime Coat	kg	243,900	-	3,494	-	852,186,600	
9.05	Bituminous Tack Coat	kg	203,700	-	3,461	-	705,005,700	
9.07(1)	Asphalt Treated Base Course	ton	65,850	179	152,422	11,787,150	10,036,988,700	
9.07(2)	Asphalt Concrete Binder Course	ton	21,800	235	153,668	5,123,000	3,349,962,400	
9.07(3)	Asphalt Concrete Surface Course	ton	33,310	338	166,591	11,258,780	5,549,146,210	
9.07(4)	Asphalt Cement	ton	6,038	23,100	-	139,477,800	-	
9.08(1)	Portland Cement Concrete Pavement (thickness 25cm)	sq.m	3,580	377	277,518	1,349,660	993,514,440	
9.09(1)	Lean Concrete Base	cu.m	360	840	449,300	302,400	161,748,000	
SECTION 9 - TOTAL TO SUMMARY						**169,298,790**	**21,648,552,050**	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3
THANH TRI SECTION

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 10 - CONCRETE STRUCTURE

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
10.01(A-2)	Structural Concrete, Class A-2	cu.m	1,829	20,580	1,607,790	37,640,820	2,940,647,910	
10.01(C-1)	Structural Concrete, Class C-1	cu.m	8,672	1,410	832,320	12,227,520	7,217,879,040	
10.01(C-4)	Structural Concrete, Class C-4	cu.m	32,564	1,360	832,320	44,287,040	27,103,668,480	
10.01(C-5)	Structural Concrete, Class C-5	cu.m	2,507	1,510	1,531,370	3,785,570	3,839,144,590	
10.01(D-1)	Structural Concrete, Class D-1	cu.m	-	-	-	-	-	
10.01(E-1)	Structural Concrete, Class E-1	cu.m	549	708	737,190	388,692	404,717,310	
10.01(G)	Structural Concrete, Class G	cu.m	1,074	840	449,300	902,160	482,548,200	
10.02	Reinforcing Steel Bars	ton	5,718	29,000	1,971,000	165,822,000	11,270,178,000	
10.03(1)	PC Tendon, Strand Type A (12T15.2)	kg	73,908	310	6,810	22,911,480	503,313,480	
10.03(2)	PC Tendon, Strand Type B (4T15.2)	kg	23,987	320	20,430	7,675,840	490,054,410	
SUB-TOTAL CARRIED FORWARD						*295,641,122*	*54,252,151,420*	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3
THANH TRI SECTION

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 10 - CONCRETE STRUCTURE

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
SUB-TOTAL BROUGHT FORWARD						*295,641,122*	*54,252,151,420*	-
10.03(4)	PC Tendon, Strand Type D (12T12.7)	kg	612,953	380	9,530	232,922,140	5,841,442,090	
10.03(8)	PC I-Girder Length 28.0m; Height 1.50m	each	75	1,011,520	46,246,080	75,864,000	3,468,456,000	
10.03(10)	PC I-Girder Length 33.0m; Height 1.65m	each	273	1,264,400	57,807,600	345,181,200	15,781,474,800	
10.03(11)	PC I-Girder Length 35.0m; Height 1.75m	each	58	1,390,840	63,588,360	80,668,720	3,688,124,880	
10.07(1)	Cast-In-Place Concrete Pile, D = 1000mm	lin.m	23,886	9,983	855,380	238,453,938	20,431,606,680	
10.07(2)	Cast-In-Place Concrete Pile, D = 1500mm	lin.m	8,104	19,178	1,740,410	155,418,512	14,104,282,640	
10.07(T)	Ultra-Sonic and Pile Integrity Testing	Provisional Sum	-	-	-	-	625,000,000	
10.08(1)	Test Drilling for Soill Investigation, General	lin.m	600	1,968	206,025	1,180,800	123,615,000	
10.08(3)	Test Drilling for Soft Ground Investigation	lin.m	600	1,968	206,025	1,180,800	123,615,000	
SUB-TOTAL CARRIED FORWARD						*1,426,511,232*	*118,439,768,510*	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3
THANH TRI SECTION

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 10 - CONCRETE STRUCTURE

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	EQUIVALENT TOTAL COST (VND)
SUB-TOTAL BROUGHT FORWARD						*1,426,511,232*	*118,439,768,510*	-
10.09(1)	Bridge Parapet and Railing, Complete (Type A)	lin.m	400	44,038	330,700	17,615,200	132,280,000	
10.09(2)	Bridge Parapet and Railing, Complete (Type B)	lin.m	4,070	43,964	262,280	178,933,480	1,067,479,600	
10.10(1)	Expansion Joint, Type A 40mm	lin.m	546	50,230	159,300	27,425,580	86,977,800	
10.11(2)C	Pot Bearing, Type C 450t	each	16	1,504,900	5,772,200	24,078,400	92,355,200	
10.11(3)A	Elastomeric Bearing Pad, Type A 510*310*56	each	331	44,900	618,450	14,861,900	204,706,950	
10.11(3)B	Elastomeric Bearing Pad, Type B 510*310*44	each	75	36,360	618,450	2,727,000	46,383,750	
10.11(3)C	Elastomeric Bearing Pad, Type C 510*310*36	each	406	27,050	618,450	10,982,300	251,090,700	
10.11(3)D	Elastomeric Bearing Pad, Type D 510*260*40	each	-	-	-	-	-	
10.11(3)E	Elastomeric Bearing Pad, Type E 330*330*54	each	48	30,930	618,450	1,484,640	29,685,600	
SUB-TOTAL CARRIED FORWARD						*1,704,619,732*	*120,350,728,110*	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3
THANH TRI SECTION

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 10 - CONCRETE STRUCTURE

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
SUB-TOTAL BROUGHT FORWARD						*1,704,619,732*	*120,350,728,110*	-
10.11(3)F	Elastomeric Bearing Pad, Type F 510*510*44	each	12	59,820	618,450	717,840	7,421,400	
10.11(3)G	Elastomeric Bearing Pad, Type G 510*510*26	each	36	50,200	618,450	1,807,200	22,264,200	
10.11(3)H	Elastomeric Bearing Pad, Type H 480*480*44	each	12	44,470	618,450	533,640	7,421,400	
10.12(1)	PVC Drain Pipe, D = 15cm	lin.m	-	-	-	-	-	
10.12(2)	PVC Drain Pipe, D = 20cm	lin.m	1,436	9	226,170	12,924	324,780,120	
10.12(3)	Deck Drain Box	each	148	436	562,040	64,528	83,181,920	
10.12(4)	Precast RC Plate, Type A	sq.m	17,644	1,138	140,271	20,078,872	2,474,941,524	
10.12(5)	Bridge Deck Waterproofing, Type A	sq.m	35,000	102	9,157	3,570,000	320,495,000	
SECTION 10 - TOTAL TO SUMMARY						**1,731,404,736**	**123,591,233,674**	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3
THANH TRI SECTION

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 12 - MISCELLANEOUS

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
12.01(1)	Grassed Area, Solid Sodding	sq.m	200,000	-	23,594	-	4,718,800,000	
12.02	Stone Masonry	cu.m	7,590	143	440,219	1,085,370	3,341,262,210	
12.05(1)	Motared Stonework for Slope Protection	sq.m	2,740	-	101,544	-	278,230,560	
12.05(2)	Motared Stonework for Slope Protection (below River Water Level)	sq.m	3,640	-	121,853	-	443,544,920	
12.06(1)	Vehicle Guardrail, Type A	lin.m	22,890	3,560	13,294	81,488,400	304,299,660	
12.06(2)	Pipe Guardrail, Type B, Movable	lin.m	12,140	938	26,918	11,387,320	326,784,520	
12.07(1)	Regulatory and Warning Signs Type-A (1 Board)	each	12	257	812,884	3,084	9,754,608	
12.07(2)	Regulatory and Warning Signs Type-C (2 Board)	each	12	257	1,201,066	3,084	14,412,792	
12.07(3)	Precast Concrete Km Indicator Post	each	10	19	375,970	190	3,759,700	
12.07(4)	Precast Concrete Guide Post	each	144	13	169,928	1,872	24,469,632	
SUB-TOTAL CARRIED FORWARD						*93,969,320*	*9,465,318,602*	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3
THANH TRI SECTION

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 12 - MISCELLANEOUS

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
SUB-TOTAL BROUGHT FORWARD						*93,969,320*	*9,465,318,602*	-
12.07(5)	Guide Sign, Type A	each	20	513	1,773,367	10,260	35,467,340	
12.09(1)	Road Marking, Type A (General Application)	sq.m	4,210	60	16,142	252,600	67,957,820	
12.09(2)	Road Marking, Type A (Special Application)	sq.m	8,670	66	17,756	572,220	153,944,520	
12.12(1)	Concrete Curb, Type A	lin.m	33,600	101	101,461	3,393,600	3,409,089,600	
12.12(2)	Concrete Curb, Type B	lin.m	18,900	76	76,096	1,436,400	1,438,214,400	
12.12(3)	Asphalt Concrete Curb	lin.m	9,850	18	19,847	177,300	195,492,950	
12.13	Concrete Slab Paving	sq.m	30,565	-	70,597	-	2,157,797,305	
12.17	Queen Crape-Myrtle	each	1,510	-	46,062	-	69,553,620	
12.21	Bronze Bridge Name Plaques	each	52	1,010	2,419,351	52,520	125,806,252	
SECTION 12 - TOTAL TO SUMMARY						**99,864,220**	**17,118,642,409**	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3
THANH TRI SECTION

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 13 - UTILITIES

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
13.01(1)	Road Lighting Unit, Type A2.1	each	523	-	8,655,000	-	4,526,565,000	
13.01(2)	Road Lighting Unit, Type A4.1	each	42	-	8,450,000	-	354,900,000	
13.01(3)	Road Lighting Unit, Type B2.1	each	131	-	15,660,000	-	2,051,460,000	
13.01(4)	Road Lighting Unit, Type F1	each	37	-	6,755,000	-	249,935,000	
13.01(5)	Road Lighting Unit, Type G1	each	44	-	570,000	-	25,080,000	
13.01(6)	Power Supply Receiving Panel (SS)	each	12	-	5,748,300	-	68,979,600	
13.01(7)	Low Voltage Distribution Panel (MDP)	each	12	-	11,366,200	-	136,394,400	
13.01(8)	Lighting Panel (DB)	each	48	-	7,699,900	-	369,595,200	
13.01(9)	Cable, X-LPE Armer Type 4c - 50mm2	lin.m	750	-	200,220	-	150,165,000	
13.01(10)	Cable, X-LPE Armer Type 4c - 25mm2	lin.m	1,800	-	115,310	-	207,558,000	
SUB-TOTAL CARRIED FORWARD						-	*8,140,632,200*	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3
THANH TRI SECTION

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 13 - UTILITIES

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
SUB-TOTAL BROUGHT FORWARD						-	*8,140,632,200*	-
13.01(11)	Cable, X-LPE Armer Type 4c - 16mm2	lin.m	12,600	-	96,470	-	1,215,522,000	
13.01(12)	Cable, X-LPE Armer Type 4c - 10mm2	lin.m	36,750	-	64,440	-	2,368,170,000	
13.01(13)	Cable, X-LPE/ PVC 4c - 10mm2	lin.m	3,730	-	47,800	-	178,294,000	
13.01(14)	Grounding Wire, BCC 6mm2	lin.m	370	-	78,000	-	28,860,000	
13.01(15)	PVC Conduit, 50mm dia with Fittings	lin.m	244	-	92,000	-	22,448,000	
13.01(16)	Pull Box, Type F	each	42	-	940,400	-	39,496,800	
13.01(17)	Pull Box, Type G	each	88	-	884,000	-	77,792,000	
13.01(18)	Power Receiving, 30 kVA	each	12	-	380,000,000	-	4,560,000,000	
13.01(19)	Application for Power Connection	each	12	-	50,000,000	-	600,000,000	
SUB-TOTAL CARRIED FORWARD						-	*17,231,215,000*	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3
THANH TRI SECTION

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 13 - UTILITIES

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
SUB-TOTAL BROUGHT FORWARD						-	*17,231,215,000*	-
13.01(20)	Watt Hour Meter Box and Panel	each	12	-	2,550,000	-	30,600,000	
13.01(21)	Protection of Expansion Joint	each	65	-	250,000	-	16,250,000	
13.01(22)	Buried Cable Protector	lin.m	36,750	-	84,160	-	3,092,880,000	
13.01(23)	Marker for Underground Cables	each	1,225	-	181,000	-	221,725,000	
13.01(25)	Control Cable, X-LPE 7c-10mm2	lin.m	928	-	88,310	-	81,951,680	
13.01(26)	Traffic Control Master Unit	each	13	-	22,448,000	-	291,824,000	
13.01(27)	Manual Push Botton	each	58	-	750,000	-	43,500,000	
13.01(28)	Traffic Signal Unit, Type 1	each	58	-	11,450,000	-	664,100,000	
13.01(29)	Traffic Signal Unit, Type 2	each	54	-	8,630,500	-	466,047,000	
SUB-TOTAL CARRIED FORWARD						-	*22,140,092,680*	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3
THANH TRI SECTION

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 13 - UTILITIES

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
SUB-TOTAL BROUGHT FORWARD						-	*22,140,092,680*	-
13.01(30)	Emergency Back-Up Unit	each	13	-	3,854,000	-	50,102,000	
13.01(32)	Power Connection for Package 3	LS	1	-	6,550,000	-	6,550,000	
13.02(1)	Duct Bank, Type A	lin.m	966	-	380,000	-	367,080,000	
13.02(3)	Manhole, Type A	each	237	-	1,200,000	-	284,400,000	
SECTION 13 - TOTAL TO SUMMARY						-	**22,848,224,680**	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3
THANH TRI SECTION

BID PRICE SCHEDULE

WORK ITEM: SECTION 14 - TOLL PLAZA AND CONTROL BUILDING **BASIC BID**

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
14.02(1)	Roof Structure for Toll Gates, including Foundations	sq.m	228	-	2,750,000	-	627,000,000	
14.02(2)	Toll Booth, Type A (Standard Type)	each	4	2,259,000	-	9,036,000	-	
14.02(3)	Toll Booth, Type B (Long Type)	each	1	5,523,000	-	5,523,000	-	
14.03(1)	Control Building	sq.m	779	-	1,870,000	-	1,456,730,000	
14.03(2)	Guard House	sq.m	8	-	990,000	-	7,920,000	
14.03(3)	Garage and Motorbike Keeping	sq.m	107	-	990,000	-	105,930,000	
14.03(4)	Pump Station	sq.m	35	-	990,000	-	34,650,000	
14.03(5)	Elevated Water Tank, 5cu.m	LS	-	-	-	-	5,780,000	
14.03(6)	Deep Well and Water Treatment	LS	-	-	-	-	69,300,000	
SUB-TOTAL CARRIED FORWARD						*14,559,000*	*2,307,310,000*	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3
THANH TRI SECTION

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 14 - TOLL PLAZA AND CONTROL BUILDING

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
SUB-TOTAL BROUGHT FORWARD						*14,559,000*	*2,307,310,000*	-
14.03(7)	Underground Water Storage Tank, 80cu.m	LS	-	-	-	-	27,280,000	
14.03(8)	Fire Pump and Hydrant and Exterior Water Lines	LS	-	-	-	-	154,550,000	
14.03(9)	Concrete Septic Tank, 27 cu.m	LS	-	-	-	-	9,800,000	
14.03(10)	Exterior Storm Sewer and Sanitary Sewer Lines	LS	-	-	-	-	5,280,000	
14.03(11)	Landscaping	sq.m	320	-	275,000	-	88,000,000	
14.04(1)	Road Lighting Unit, Type A2.1	each	26	-	9,520,000	-	247,520,000	
14.04(2)	Power Supply Receiving Panel (SS)	each	1	-	6,320,000	-	6,320,000	
14.04(3)	Low Voltage Distribution Panel (MDP)	each	1	-	12,500,000	-	12,500,000	
SUB-TOTAL CARRIED FORWARD						*14,559,000*	*2,858,560,000*	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3
THANH TRI SECTION

BID PRICE SCHEDULE

WORK ITEM: SECTION 14 - TOLL PLAZA AND CONTROL BUILDING **BASIC BID**

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
SUB-TOTAL BROUGHT FORWARD						*14,559,000*	*2,858,560,000*	-
14.04(4)	Lighting Panel (DB)	each	3	-	8,470,000	-	25,410,000	
14.04(5)	Cable, X-LPE Armor Type 4c-16mm2	lin.m	57	-	106,000	-	6,042,000	
14.04(6)	Cable, X-LPE Armor Type 4c-10mm2	lin.m	184	-	71,000	-	13,064,000	
14.04(7)	PVC Conduit, 50mm dia. with Fittings	lin.m	42	-	101,000	-	4,242,000	
14.04(8)	Power Receiving, 50kVA	each	1	-	60,500,000	-	60,500,000	
14.04(9)	Application for Power Connection	each	1	-	82,500,000	-	82,500,000	
14.04(10)	Watt Hour Meter Box and Panel	each	1	-	4,026,000	-	4,026,000	
14.04(11)	Buried Cable Protector	lin.m	945	-	93,000	-	87,885,000	
14.04(12)	Marker for Underground Cables	each	32	-	199,000	-	6,368,000	
SUB-TOTAL CARRIED FORWARD						*14,559,000*	*3,148,597,000*	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3
THANH TRI SECTION

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 14 - TOLL PLAZA AND CONTROL BUILDING

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
SUB-TOTAL BROUGHT FORWARD						*14,559,000*	*3,148,597,000*	-
14.04(13)	Manhole, Type A	each	12	-	1,320,000	-	15,840,000	
14.04(14)	Duct Bank, Type B	lin.m	96	-	787,000	-	75,552,000	
14.04(15)	Generator, 30kVA	set	1	-	330,000,000	-	330,000,000	
14.05A(1)	Fare Display and Toll Collection Terminal	set	6	1,042,000	-	6,252,000	-	
14.05A(2)	Receipt Printer	each	6	402,000	-	2,412,000	-	
14.05A(3)	Toll Collection Terminal Switch Board	each	6	747,000	-	4,482,000	-	
14.05A(4)	Overhead Traffic Light	each	6	90,000	-	540,000	-	
14.05A(5)	Lane Traffic Light	each	6	100,000	-	600,000	-	
SUB-TOTAL CARRIED FORWARD						*28,845,000*	*3,569,989,000*	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3
THANH TRI SECTION

BID PRICE SCHEDULE

WORK ITEM: SECTION 14 - TOLL PLAZA AND CONTROL BUILDING **BASIC BID**

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
SUB-TOTAL BROUGHT FORWARD						*28,845,000*	*3,569,989,000*	-
14.05A(6)	Violation Alarm Unit	each	6	75,000	-	450,000	-	
14.05A(7)	Loop Coil Vehicle Detection Unit	each	12	137,000	-	1,644,000	-	
14.05A(8)	Automatic Vehicle Classification Unit	each	6	1,595,000	-	9,570,000	-	
14.05A(9)	Lane Open/Close Barrier	set	12	502,000	-	6,024,000	-	
14.05A(10)	Uninterruptible Power Supply, 5kVA 40 minutes	each	6	918,000	-	5,508,000	-	
14.05A(11)	Power Distribution Board	each	1	532,000	-	532,000	-	
14.05A(12)	Booth Communication Unit	set	6	23,000	-	138,000	-	
14.05A(13)	Car Call System	set	6	251,000	-	1,506,000	-	
14.05A(14)	Closed Circuit Television System	set	6	2,926,000	-	17,556,000	-	
SUB-TOTAL CARRIED FORWARD						*71,773,000*	*3,569,989,000*	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3
THANH TRI SECTION

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 14 - TOLL PLAZA AND CONTROL BUILDING

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
SUB-TOTAL BROUGHT FORWARD						*71,773,000*	*3,569,989,000*	-
14.05A(15)	Documentation Device	LS	-	-	-	132,000	-	
14.05A(16)	Spare Parts	LS	-	-	-	3,125,000	-	
14.05B(1)	Central Data Processing Unit	each	1	2,360,000	-	2,360,000	-	
14.05B(2)	Printer	each	1	186,000	-	186,000	-	
14.05B(3)	Central Data Server	each	1	2,794,000	-	2,794,000	-	
14.05B(4)	Closed Circuit Television Master Unit	each	1	3,102,000	-	3,102,000	-	
14.05B(5)	Video and Cabling	LS	-	-	-	616,000	-	
14.05B(6)	Real Time Monitoring Console	each	1	625,000	-	625,000	-	
SUB-TOTAL CARRIED FORWARD						*84,713,000*	*3,569,989,000*	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3
THANH TRI SECTION

BID PRICE SCHEDULE

WORK ITEM: SECTION 14 - TOLL PLAZA AND CONTROL BUILDING **BASIC BID**

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
SUB-TOTAL BROUGHT FORWARD						*84,713,000*	*3,569,989,000*	-
14.05B(7)	Booth Communication Master Unit	each	1	954,000	-	954,000	-	
14.05B(8)	Modulation and Demodulation Interface Unit	set	1	862,000	-	862,000	-	
14.05B(9)	Uninterruptible Power Supply, 5kVA 40 minutes	each	1	918,000	-	918,000	-	
14.05B(10)	Power Distribution Board	each	1	242,000	-	242,000	-	
14.05B(11)	Spare Parts	LS	-	-	-	1,265,000	-	
14.05C	Training	LS	-	-	-	14,560,000	-	
SECTION 14 - TOTAL TO SUMMARY						**103,514,000**	**3,569,989,000**	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3A
EXTENSION OF THANH TRI VIADUCT
BID PRICE SCHEDULE
BASIC BID

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3A
EXTENSION OF THANH TRI VIADUCT

BID PRICE SCHEDULE
BASIC BID

SUMMARY

ITEM NO.	TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
SECTION 1 - General	69,798,454	13,463,524,877	-
SECTION 2 - Site Clearing	-	-	-
SECTION 3 - Demolition	-	-	-
SECTION 4 - Road Earthwork	-	-	-
SECTION 5 - Structure Excavation	17,391,360	1,005,970,000	-
SECTION 6 - Drainage	-	-	-
SECTION 7 - Subgrade	-	-	-
SECTION 8 - Sub-Base and Base	-	-	-
SECTION 9 - Pavement	7,986,300	1,002,495,400	-
SECTION 10 - Concrete Structure	1,370,583,330	85,887,075,810	-
SECTION 12 - Miscellaneous	8,080	19,354,800	-
SECTION 13 - Utilities	-	1,841,936,500	-
SECTION 15 - Diversion of existing Utilities	-	-	-
Subtotal	1,465,767,524	103,220,357,387	-
SECTION 16 - Day work (1% of Subtotal)	14,657,675	1,032,203,574	-
SECTION 17 - Contingency (15% from section 2 to section 13)	209,395,361	13,463,524,877	-
TOTAL	**1,689,820,560**	**117,716,085,837**	**-**

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3A
EXTENSION OF THANH TRI VIADUCT

BID PRICE SCHEDULE
BASIC BID

DESCRIPTION			TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
			FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
(1)	-	DIRECT COST	1,689,820,560	117,716,085,837	-
(2)	(1) x 5%	CONTRACTOR'S OVERHEAD	84,491,028	5,885,804,292	-
(3)	[(1) + (2)] x 6%	CONTRACTOR'S PROFIT & TAX	106,458,695	7,416,113,408	-
(4)	(1) + (2) + (3)	TOTAL COST	1,880,770,283	131,018,003,537	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3A
EXTENSION OF THANH TRI VIADUCT

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 1 - GENERAL

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
-	Mobilisation and Demobilisation	LS	-	-	-	69,798,454	13,463,524,877	
SECTION 1 - TOTAL TO SUMMARY						**69,798,454**	**13,463,524,877**	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3A
EXTENSION OF THANH TRI VIADUCT

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 2 - SITE CLEARING

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
2.01	Clearing and Grubbing	sq.m	-	-	-	-	-	
SECTION 2 - TOTAL TO SUMMARY						-	-	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3A
EXTENSION OF THANH TRI VIADUCT

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 3 - DEMOLITION

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
3.01(1)	Removal of Masonry and Concrete Structures including Remaining Parts of Housing	cu.m	-	-	-	-	-	
3.01(2)	Removal of Existing Curb	lin.m	-	-	-	-	-	
3.01(3)	Removal of Existing Asphalt Pavement	cu.m	-	-	-	-	-	
3.01(4)	Removal of Existing Lighting Pole	each	-	-	-	-	-	
3.01(5)	Removal of Existing Bridge (Steel Bridge)	sq.m	-	-	-	-	-	
SECTION 3 - TOTAL TO SUMMARY						-	-	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3A
EXTENSION OF THANH TRI VIADUCT

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 4 - ROAD EARTHWORK

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
4.03	Common Excavation	cu.m	-	-	-	-	-	
4.04(1)	Borrow Material	cu.m	-	-	-	-	-	
4.04(2)	Surchage with Borrow Material	cu.m	-	-	-	-	-	
4.05	Monitoring of Settlement	LS	-	-	-	-	-	
4.06	Unsuitable Material	cu.m	-	-	-	-	-	
4.07	Sand Fill Material	cu.m	-	-	-	-	-	
4.08	Granular Backfill	cu.m	-	-	-	-	-	
4.09	Permeable Backfill	cu.m	-	-	-	-	-	
4.10(2)	Vertical Soil Drains (Fibre)	lin.m	-	-	-	-	-	
4.11(2)	Geo-Textile Non-Woven Sheet	sq.m	-	-	-	-	-	
SECTION 4 - TOTAL TO SUMMARY						-	-	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3A
EXTENSION OF THANH TRI VIADUCT

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 5 - STRUCTURE EXCAVATION

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
5.01(1)	Structure Excavation	cu.m	21,700	800	37,800	17,360,000	820,260,000	
5.01(3)	Blinding Stone	cu.m	980	32	189,500	31,360	185,710,000	
SECTION 5 - TOTAL TO SUMMARY						**17,391,360**	**1,005,970,000**	**-**

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3A
EXTENSION OF THANH TRI VIADUCT

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 6 - DRAINAGE

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
6.06(1)	U-Ditch, Type U-1	lin.m	-	-	-	-	-	
6.06(2)	U-Ditch, Type U-2	lin.m	-	-	-	-	-	
6.06(3)	U-Ditch, Type U-3	lin.m	-	-	-	-	-	
SECTION 6 - TOTAL TO SUMMARY						-	-	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3A
EXTENSION OF THANH TRI VIADUCT

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 7 - SUBGRADE

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	EQUIVALENT TOTAL COST (VND)
7.01	Subgrade Preparation	sq.m	-	-	-	-	-	
SECTION 7 - TOTAL TO SUMMARY						-	-	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3A
EXTENSION OF THANH TRI VIADUCT

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 8 - SUB-BASES AND BASES

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
8.01	Sub-Base	cu.m	-	-	-	-	-	
8.02	Granular Base Course	cu.m	-	-	-	-	-	
SECTION 8 - TOTAL TO SUMMARY						-	-	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3A
EXTENSION OF THANH TRI VIADUCT

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 9 - PAVEMENTS

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	EQUIVALENT TOTAL COST (VND)
9.05	Bituminous Tack Coat	kg	12,190	-	3,460	-	42,177,400	
9.07(3)A	Asphalt Concrete Surface Course (thickness 7.5cm)	sq.m	27,900	42	34,420	1,171,800	960,318,000	
9.07(4)	Asphalt Cement	ton	295	23,100	-	6,814,500	-	
SECTION 9 - TOTAL TO SUMMARY						**7,986,300**	**1,002,495,400**	**-**

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3A
EXTENSION OF THANH TRI VIADUCT

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 10 - CONCRETE STRUCTURE

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
10.01(A-2)	Structural Concrete, Class A-2	cu.m	915	20,580	1,607,790	18,830,700	1,471,127,850	
10.01(C-1)	Structural Concrete, Class C-1	cu.m	7,948	1,410	832,320	11,206,680	6,615,279,360	
10.01(C-4)	Structural Concrete, Class C-4	cu.m	17,695	1,360	832,320	24,065,200	14,727,902,400	
10.01(C-5)	Structural Concrete, Class C-5	cu.m	1,527	1,510	1,531,370	2,305,770	2,338,401,990	
10.01(E-1)	Structural Concrete, Class E-1	cu.m	67	708	737,190	47,436	49,391,730	
10.01(G)	Structural Concrete, Class G	cu.m	488	840	449,300	409,920	219,258,400	
10.02	Reinforcing Steel Bars	ton	3,738	29,000	1,971,000	108,402,000	7,367,598,000	
10.03(1)	PC Tendon, Strand Type A (12T15.2)	kg	37,000	310	6,810	11,470,000	251,970,000	
10.03(2)	PC Tendon, Strand Type B (4T15.2)	kg	11,500	320	20,430	3,680,000	234,945,000	
10.03(4)	PC Tendon, Strand Type D (12T12.7)	kg	562,800	380	9,530	213,864,000	5,363,484,000	
SUB-TOTAL CARRIED FORWARD						*394,281,706*	*38,639,358,730*	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3A
EXTENSION OF THANH TRI VIADUCT

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 10 - CONCRETE STRUCTURE

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
SUB-TOTAL BROUGHT FORWARD						*394,281,706*	*38,639,358,730*	-
10.03(8)	PC I-Girder Length 28m; Height 1.50m	each	96	1,011,520	46,246,080	97,105,920	4,439,623,680	
10.03(10)	PC I-Girder Length 33m; Height 1.65m	each	276	1,264,400	57,807,600	348,974,400	15,954,897,600	
10.03(11)	PC I-Girder Length 35m; Height 1.75m	each	12	1,390,840	63,588,360	16,690,080	763,060,320	
10.07(1)	Cast-In-Place Concrete Pile, D = 1000mm	lin.m	25,390	9,983	855,380	253,468,370	21,718,098,200	
10.07(2)	Cast-In-Place Concrete Pile, D = 1500mm	lin.m	1,000	19,178	1,740,410	19,178,000	1,740,410,000	
10.07(T)	Ultra-Sonic and Pile Integrity Testing	Provisional Sum	-	-	-	-	625,000,000	
10.08(1)	Test Drilling for Soil Investigation, General	lin.m	300	1,968	206,025	590,400	61,807,500	
10.09(1)	Bridge Parapet and Railing, Complete (Type A)	lin.m	200	44,038	330,700	8,807,600	66,140,000	
10.09(2)	Bridge Parapet and Railing, Complete (Type B)	lin.m	4,026	43,964	262,280	176,999,064	1,055,939,280	
SUB-TOTAL CARRIED FORWARD						*1,316,095,540*	*85,064,335,310*	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3A
EXTENSION OF THANH TRI VIADUCT

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 10 - CONCRETE STRUCTURE

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	EQUIVALENT TOTAL COST (VND)
SUB-TOTAL BROUGHT FORWARD						*1,316,095,540*	*85,064,335,310*	-
10.10(1)	Expansion Joint, Type A 40mm	lin.m	177	50,230	159,300	8,890,710	28,196,100	
10.10(2)	Expansion Joint, Type B 109mm	lin.m	48	81,820	159,300	3,927,360	7,646,400	
10.11(2)C	Pot Bearing, Type C 450t	each	8	1,504,900	5,772,200	12,039,200	46,177,600	
10.11(3)A	Elastomeric Bearing Pad, Type A 510*310*56	each	288	44,900	618,450	12,931,200	178,113,600	
10.11(3)B	Elastomeric Bearing Pad, Type B 510*310*44	each	96	36,360	618,450	3,490,560	59,371,200	
10.11(3)C	Elastomeric Bearing Pad, Type C 510*310*36	each	384	27,050	618,450	10,387,200	237,484,800	
10.11(3)E	Elastomeric Bearing Pad, Type E 330*330*54	each	24	30,930	618,450	742,320	14,842,800	
10.11(3)F	Elastomeric Bearing Pad, Type F 510*510*44	each	16	59,820	618,450	957,120	9,895,200	
10.11(3)G	Elastomeric Bearing Pad, Type G 510*510*26	each	8	50,200	618,450	401,600	4,947,600	
SUB-TOTAL CARRIED FORWARD						*1,369,862,810*	*85,651,010,610*	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3A
EXTENSION OF THANH TRI VIADUCT

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 10 - CONCRETE STRUCTURE

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
SUB-TOTAL BROUGHT FORWARD						*1,369,862,810*	*85,651,010,610*	-
10.11(3)H	Elastomeric Bearing Pad, Type H 480*480*44	each	16	44,470	618,450	711,520	9,895,200	
10.12(2)	PVC Drain Pipe, D = 20cm	lin.m	1,000	9	226,170	9,000	226,170,000	
SECTION 10 - TOTAL TO SUMMARY						**1,370,583,330**	**85,887,075,810**	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3A
EXTENSION OF THANH TRI VIADUCT

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 12 - MISCELLANEOUS

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
12.01(1)	Grassed Area, Solid Sodding	sq.m	-	-	-	-	-	
12.02	Stone Masonry	cu.m	-	-	-	-	-	
12.03(3)	Rock Filled Gabion Baskets	sq.m	-	-	-	-	-	
12.05(1)	Motared Stonework for Slope Protection	sq.m	-	-	-	-	-	
12.05(2)	Motared Stonework for Slope Protection (below River Water Level)	sq.m	-	-	-	-	-	
12.06(1)	Vehicle Guardrail, Type A	lin.m	-	-	-	-	-	
12.06(2)	Pipe Guardrail, Type B, Movable	lin.m	-	-	-	-	-	
12.07(1)	Regulatory and Warning Signs Type-A (1 Board)	each	-	-	-	-	-	
12.07(2)	Regulatory and Warning Signs Type-C (2 Board)	each	-	-	-	-	-	
12.09(1)	Road Marking, Type A (General Application)	sq.m	-	-	-	-	-	
SUB-TOTAL CARRIED FORWARD						-	-	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3A
EXTENSION OF THANH TRI VIADUCT

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 12 - MISCELLANEOUS

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	EQUIVALENT TOTAL COST (VND)
SUB-TOTAL BROUGHT FORWARD						-	-	-
12.09(2)	Road Marking, Type A (Special Application)	sq.m	-	-	-	-	-	
12.12(1)	Concrete Curb, Type A	lin.m	-	-	-	-	-	
12.12(2)	Concrete Curb, Type B	lin.m	-	-	-	-	-	
12.12(3)	Asphalt Concrete Curb	lin.m	-	-	-	-	-	
12.21	Bronze Bridge Name Plaques	each	8	1,010	2,419,350	8,080	19,354,800	
SECTION 12 - TOTAL TO SUMMARY						**8,080**	**19,354,800**	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3A
EXTENSION OF THANH TRI VIADUCT

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 13 - UTILITIES

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
13.01(1)	Road Lighting Unit, Type A2.1	each	6	-	8,655,000	-	51,930,000	
13.01(2)	Road Lighting Unit, Type A4.1	each	60	-	8,450,000	-	507,000,000	
13.01(3)	Road Lighting Unit, Type B2.1	each	0	-	15,660,000	-	-	
13.01(4)	Road Lighting Unit, Type F1	each	4	-	6,755,000	-	27,020,000	
13.01(5)	Road Lighting Unit, Type G1	each	0	-	570,000	-	-	
13.01(6)	Power Supply Receiving Panel (SS)	each	1	-	5,748,300	-	5,748,300	
13.01(7)	Low Voltage Distribution Panel (MDP)	each	1	-	11,366,200	-	11,366,200	
13.01(8)	Lighting Panel (DB)	each	4	-	7,699,900	-	30,799,600	
13.01(9)	Cable, X-LPE Armer Type 4c - 50mm2	lin.m	127	-	200,220	-	25,427,940	
13.01(10)	Cable, X-LPE Armer Type 4c - 25mm2	lin.m	550	-	115,310	-	63,420,500	
SUB-TOTAL CARRIED FORWARD						-	*722,712,540*	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3A
EXTENSION OF THANH TRI VIADUCT

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 13 - UTILITIES

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
SUB-TOTAL BROUGHT FORWARD						-	*722,712,540*	-
13.01(11)	Cable, X-LPE Armer Type 4c - 16mm2	lin.m	788	-	96,470	-	76,018,360	
13.01(12)	Cable, X-LPE Armer Type 4c - 10mm2	lin.m	2,520	-	64,440	-	162,388,800	
13.01(13)	Cable, X-LPE/ PVC 4c - 10mm2	lin.m	480	-	47,800	-	22,944,000	
13.01(14)	Grounding Wire, BCC 6mm2	lin.m	266	-	78,000	-	20,748,000	
13.01(15)	PVC Conduit, 50mm dia with Fittings	lin.m	122	-	92,000	-	11,224,000	
13.01(16)	Pull Box, Type F	each	72	-	940,400	-	67,708,800	
13.01(17)	Pull Box, Type G	each	14	-	884,000	-	12,376,000	
13.01(18)	Power Receiving, 30 kVA	each	1	-	380,000,000	-	380,000,000	
13.01(19)	Application for Power Connection	each	1	-	50,000,000	-	50,000,000	
SUB-TOTAL CARRIED FORWARD						-	*1,526,120,500*	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3A
EXTENSION OF THANH TRI VIADUCT

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 13 - UTILITIES

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	EQUIVALENT TOTAL COST (VND)
SUB-TOTAL BROUGHT FORWARD						-	*1,526,120,500*	-
13.01(20)	Watt Hour Meter Box and Panel	each	1	-	2,550,000	-	2,550,000	
13.01(21)	Protection of Expansion Joint	each	8	-	250,000	-	2,000,000	
13.01(22)	Buried Cable Protector	lin.m	1680	-	84,160	-	141,388,800	
13.01(23)	Marker for Underground Cables	each	56	-	181,000	-	10,136,000	
13.01(24)	Navigation Light	set	0	1,995,000	399,000	-	-	
13.01(25)	Control Cable, X-LPE 7c-10mm2	lin.m	220	-	88,310	-	19,428,200	
13.01(26)	Traffic Control Master Unit	each	1	-	22,448,000	-	22,448,000	
13.01(27)	Manual Push Botton	each	4	-	750,000	-	3,000,000	
13.01(28)	Traffic Signal Unit, Type 1	each	4	-	11,450,000	-	45,800,000	
SUB-TOTAL CARRIED FORWARD						-	*1,772,871,500*	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

PACKAGE 3A
EXTENSION OF THANH TRI VIADUCT

BID PRICE SCHEDULE
BASIC BID

WORK ITEM: SECTION 13 - UTILITIES

ITEM NO.	DESCRIPTION	UNIT	QUANTITY	UNIT COST		TOTAL COST		COMBINED EQUIVALENT TOTAL COST (VND)
				FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	FOREIGN CURRENCY COMPONENT (YEN)	LOCAL CURRENCY COMPONENT (VND)	
SUB-TOTAL BROUGHT FORWARD						-	*1,772,871,500*	-
13.01(29)	Traffic Signal Unit, Type 2	each	2	-	8,630,500	-	17,261,000	
13.01(30)	Emergency Back-up Unit	each	1	-	3,854,000	-	3,854,000	
13.01(32)	Power Connection for Package 3A	LS	1	-	6,550,000	-	6,550,000	
13.02(1)	Duct Bank, Type A	lin.m	90	-	380,000	-	34,200,000	
13.02(2)	Duct Bank, Type B	lin.m	0	-	715,000	-	-	
13.02(3)	Manhole, Type A	each	6	-	1,200,000	-	7,200,000	
13.02(4)	Manhole, Type B	each	0	-	1,080,000	-	-	
SECTION 13 - TOTAL TO SUMMARY						-	**1,841,936,500**	-

RED RIVER BRIDGE CONSTRUCTION PROJECT

LIST OF MATERIAL COST

LIST OF MATERIAL UNIT COST (1)

No.	Material	Standard	Unit	Price		
				Foreign	Local (VND)	
				(J.YEN)	VAT Included	VAT Excluded
1	Steel plate	t=3.2 ~ 6mm	kg	41 x 0.9 = 37	-	-
2	Steel plate	t= 9~25mm	kg	45 x 0.9 = 41	-	-
3	Flat steel	4.5x65~9.0x100	kg	50x0.9=45	-	-
4	Shaped steel	L - 50x50x6 ~ 75x75x9	kg	-	a) 4,620	4,200
5	Shaped steel	L - 125x80x10 ~ 125x125x10	kg	-	a) 4,730	4,300
6	Round bar	(Φ 6 ~ Φ 10)	kg	-	a) 4,279	3,890
7	Round bar	(Φ12)	kg	-	a) 4,224	3,840
8	Round bar	(Φ 14 ~ Φ 22)	kg	-	a) 4,180	3,800
9	Round bar	(Φ>22)	kg	-	4,279	3,890
10	Steel pipe	S.G.P 25A ~ 50A	kg	120x0.9=108	-	-
11	Steel square pipe	100x100x3.2	kg	54x0.9=49	-	-
12	Steel Channel	65mm ~ 120mm	kg	-	4,730	4,300
13	Shaped steel	C 300: 65x100x10	kg	-	a) 4,800	4,364
14	Hand rail	h=0.63 ; W=2.00	m	47,950 x 0.9 = 43,155	-	-
15	I - Section steel		kg	-	4,730	4,300
16	Tees (T1)	200~160	each	-	a) 74,000	67,300
17	Tees (T2)	200	each	-	a) 64,000	58,200
18	Gabion	Mesh 10x10 - Φ 3 ; w=1.2m	m	-	24,200	22,000
19	Gabion					
20	Pipe joint	250 C1 ~200 C2	each	-	a) 56,700	51,500
21	Hanger	Φ 150 ~Φ 200	each	-	a) 36,300	33,000
22	Light gauge shaped steel	150x50x20x3.2	kg	57x0.9=51	-	-
23	Drain box (Cast-iron)	(300x250)mm x 500mm	each	-	a) 320,500	291,400
24	Drain box (Cast-iron)	(300x250)mm x 600mm	each	-	a) 394,000	358,200
25	Carbon steel pile	25 A	kg	60x0.9=54	-	-
26	Carbon steel pile	30A	kg	60x0.9=54	-	-
27	Carbon steel pile	32A	kg	60x0.9=54	-	-
28	Reinforcing steel bar	deformed bar less than 13 mm	ton	24,000		
29	Reinforcing steel bar	deformed bar 13mm ~ 28 mm	ton	23,000	a) 4,180,000	3,800,000
30	Reinforcing steel bar	deformed bar 29mm ~ 32 mm	ton	24,000	-	-
31	Reinforcing steel bar	deformed bar 35mm ~ 36 mm	ton	27,000	-	-
32	Wire rope	Φ16	m	-	22,000	20,000
33	Anchor bolt	with 2 nut ;M 24x600 mm	each	-	a) 27,500	25,000
34	Electroded		kg	-	7,370	6,700
35	Anealed steel wire		kg	-	7,040	6,400
36	Steel angle	50x50x6	kg	34x0.9=31	-	-
37	Steel plate	50~90x4.5	kg	50x0.9=45	-	-
38	Sheath	Φ70	m	369x0.9=332	-	-
39	PC strand	SWPR 7B;12 T15.2	kg	269x0.9=242	-	-
40	Fine ceramics anchor	M 12	each	470 x 0.9 = 423	-	-
41	Anchor bolt	(Fix side) Φ 32mm x760mm	each	280x0.9=250	-	-
42	Anchor bolt	(Mov.side) Φ 32mm x760mm	each	280x0.9=250	-	-
43	Anchor bolt	(Mov.side) Φ 28mm x720mm	each	202x0.9=182	-	-
44	Anchor cap	(Fix side) 32A x350mm	each	109x0.9=98	-	-
45	Anchor cap	(Fix side) 50A x340mm	each	164x0.9=148	-	-
46	Anchor cap	(Mov.side) 65A x350mm	each	235x0.9=211	-	-
47	Anchor plate		set	1,480x0.9=1,332	-	-
48	Expansion joint A	30mm	m	34,200x0.9=30,780	-	-

Note : Foreign price : (Based on price book of Japan)

a) -Price based on the "Market prices"" in Hanoi.

b) - Price based on the Quotation of concrete company added the transportation cost.

LIST OF MATERIAL UNIT COST (2)

No.	Material	Standard	Unit	Price		
				Foreign	Local (VND)	
				(J.YEN)	VAT Included	VAT Excluded
49	Expansion joint B	50mm	m	100,000x0.9=90,000	-	-
50	Expansion joint C	110mm	m	353,000x0.9=317,700	-	-
51	Expansion joint D	150mm	m	353,000x0.9=317,700	-	-
52	Coupler	for PC strand ; 320 ton	each	66,300 x 0.9 = 59,670	-	-
53	Sheath	Φ 55	m	295 x 0.9 = 266	-	-
54	Sheath	Φ 38	m	170 x0.9 = 153	-	-
55	Epoxy resin mortar		kg	2,860x0.9=2,574	-	-
56	Bridge name plaque	760x490x15	each	-	2,139,500	1,945,000
57	Geo-textile sheet	t=0.2mm	m2	-	3,190	2,900
58	Anchor bolt	M 16x160	each	230	-	-
59	Plastics pipe	PVC Φ 30	m	-	a) 4,640	4,220
60	Plastics pipe	PVC Φ 50	m	-	a) 7,780	7,070
61	Steel pipe	Φ 50	m	-	a) 36,500	33,182
62	Street lighting	250W -Sodium lamps	set	-	a) 1,185,800	1,078,000
63	Round poles	Steel ; l=10m	set	-	a) 2,667,500	2,425,000
64	Single arm pole		set	-	a) 176,000	160,000
65	Asphalt joint filler	t=20mm	m2	1,640 x 0.9=1,476	-	-
66	Cut off plate	flat type W=200mm	m	820 x 0.9=738	-	-
67	Octagonal sign	width Φ 900mm	set	-	a) 338,000	307,273
68	Triangular warning sign	900x900x900mm	set	-	a) 208,000	189,091
69	Other warning sign type	Rectangler	m^2	-	a) 560,000	509,091
70	Painted pole	Φ 80 (l=3.5m~3.7m)	set	-	a) 178,000	161,818
71	Portland cement	(Hoang thach PC 40)	kg	-	964	876
72	Non-shrinkage mortar		kg	-	a) 10,000	9,091
73	Admixture	for concrete	liter	-	a) 55,000	50,000
74	R C pipe	Φ750mmx1000mm	m	-	b) 317,300	288,455
75	R C pipe	Φ 1000mmx1000mm	m	-	b) 596,300	542,100
76	R C pipe	Φ1250mmx1000mm	m	-	b) 708,300	643,900
77	R C pipe	Φ1500mmx1000mm	m	-	b) 1,032,300	938,500
78	R C pipe	Φ2000mmx1000mm	m	-	b) 1,981,000	1,800,900
79	Concrete cradle for RC pipe	Φ1000,l=1000mm	each	-	b) 439,000	399,100
80	Concrete cradle for RC pipe	Φ1250,l=1000mm	each	-	b) 535,700	487,000
81	Concrete cradle for RC pipe	Φ1500,l=1000mm	each	-	b) 642,000	583,600
82	Concrete cradle for RC pipe	Φ2000,l=1000mm	each	-	b) 812,000	738,200
83	Cast - iron anchor		each	-	a) 1,375,000	1,250,000
84	Rope	Φ 45	m	980 x 0.9 = 882	-	-
85	bolt nut	M27*80	each	-	a) 13,200	12,000
86	Concrete curb	260*230*1000	m	-	b) 31,570	28,700
87	Anchor bolt	Φ 42 x 600	each	333 x 0.9 = 300	31,570	28,700
88	Tar joint filler	Specific gravity 1.53	kg	570 x 0.9 = 513	-	-
89	Anchor cap	80 A x350mm	each	272 x 0.9 = 245	-	-
90	Km post		each	-	b) 253,000	230,000
91	Traffic post		each	-	b) 69,300	63,000
92	Brick	220x105x60mm	piece	-	327	297
93	Asphalt cement		kg	-	2,540	2,310
94	Asphalt mixture	for surface cosure	ton	-	308,900	280,818
95	Asphalt mixture	for binder cosure	ton	-	287,280	261,164

LIST OF MATERIAL UNIT COST (3)

No.	Material	Standard	Unit	Price		
				Foreign	Local (VND)	
				(J.YEN)	VAT Included	VAT Excluded
96	Anchor bolt	Φ 25 x 600	each	190 x 0.9 = 171	-	-
97	Tar for prime coat		kg	-	3,700	3,360
98	Tar for tack coat		kg	-	3,700	3,360
99	Admixture	for PC grout	kg	212x0.9=190	-	-
100	Yellow sand	for sand pile	m^3	-	a) 55,000	50,000
101	Black sand	for bedding work	m^3	-	a) 28,930	26,300
102	Concrete anchor	M12	each	120x0.9=108	1,850	1,682
103	Anchorage	(Tensioning) 60 ton	each	3,790 x 0.9 = 3,411	-	-
104	Coarse aggregate	for concrete	ton	-	64,300	58,444
105	Anchorage	(Fixed side) 60 ton	each	4,230 x 0.9 = 3,807	-	-
106	Fine aggregate	Yellow sand for concrete	ton	-	a) 55,000	50,000
107	Stone for base course	-	m3	-	-	-
108	Stone for sub- base course		m3	-	a) 96,800	88,000
109	Cobble stone		m^3	-	a) 69,300	63,000
110	Crushed stone	4x6	m^3	-	a) 93,940	85,400
111	Crushed stone	2x4	m^3	-	a) 97,900	89,000
112	Crushed stone	1x2	m^3	-	a) 111,100	101,000
113	Crushed stone	0.5x1	m^3	-	a) 121,000	110,000
114	Claycy soil		m^3	-	a) 15,000	13,640
115	Borrow material	transport about:10 km	m^3	-	a) 15,312	13,920
116	PC Cable	SWPR 19 21.8	kg	296 x 0.9 = 266	-	-
117	H steel	400x400x13x21	ton	39,000x0.9=35,100	-	-
118	Asphalt joint filler	t=10 mm	m2	820 x 0.9 = 738	-	-
119	Jack base		each	1,250 x 0.9 = 1,125	-	-
120	Filler for asphalt mixture		kg	-	253	230
121	Steel rail	30kg/m	ton	115,000x0.9=103,500	-	-
122	Floor plate		m^2day	710	-	-
123	Jack base	Stroke 250 mm	each	1,040 x 0.9 = 936	-	-
124	Bolt nut	M 12x250	each	-	a) 3,146	2,860
125	Connection pin		each	165 x 0.9 = 149	-	-
126	Casing		each	10,300	-	-
127	Rod		each	16,000	-	-
128	Metal crown		each	4,700	-	-
129	Core-tube		each	14,970	-	-
130	Plywood panel	12 x 1220 x 2440	m^2	-	a) 55,990	50,900
131	Quartered log		m^3	-	a) 3,380,300	3,073,000
132	Timber		m^3	-	1,457,000	1,324,600
133	Regular sleeper		m^3	-	a) 1,400,000	1,272,727
134	Diesel oil		liter	-	a) 3,600	3,273
135	Gasoline		liter	-	a) 4,600	4,182
136	Heavy oil		liter	-	a) 3,600	3,273
137	Lawn		m^2	-	a) 5,000	4,545
138	Guard rail	2.67x310x4.0m	m	5,120x0.7=3,580	-	-
139	Guard rail post	2.67x310x4.0m		-	-	-
140	Vinyl chloride pipe	Φ 150	m	-	a) 80,400	73,091
141	Vinyl chloride pipe	Φ 200	m	-	a) 107,000	97,273
142	Bag		each	-	a) 5,000	4,545
143	Steel Wire	Φ 9	m	158x0.9=142	-	-

LIST OF MATERIAL UNIT COST (4)

No.	Material	Standard	Unit	Price		
				Foreign	Local (VND)	
				(J.YEN)	VAT Included	VAT Excluded
144	Flat steel	12x170	kg	54x0.9=49	-	-
145	Flat steel	8x40x(L=200~250)	kg	52x0.9=47	-	-
146	Flat steel	12x20	kg	55x0.9=50	-	-
147	L Shaped steel	100x100x10	ton	43,000x0.9=38,700	-	-
148	Asphalt water proofing		kg	54x0.9=49	-	-
149	Geo-textile sheet	Tensile strength>40KN/m	m^2	-	a) 20,000	18,182
150	Jack(head)	P-H	each	22,200x0.9=19,980	-	-
151	Square shore	300x2000	each	17,000x0.9=15,300	-	-
152	PC strand	SWPR 7A; 12 T12.4	kg	250x0.9=225	-	-
153	Round pipe joint		each	180x0.9=162	-	-
154	Jack(base)	P-B	each	30,200x0.9=27,180	-	-
155	H shaped steel	350x350x12x19	ton	40,000x0.9=36,000	-	-
156	H shaped steel	300x300x10x15	ton	38,000x0.9=34,200	-	-
157	PC steel bar	Φ32	kg	230x0.9=207	-	-
158	Sheath	Φ 40	m	180x0.9=162	-	-
159	Jack base stroke	460mm	each	1,500x0.9=1,350	-	-
160	Clamp		each	220x0.9=198	-	-
161	Sheath	Φ 65 mm	m	342 x 0.9 = 308	-	-
162	Anchorage	(Tensioning) 195 ton	set	18,500 x 0.9 = 16,650	-	-
163	PC steel bar	Φ26	kg	230x0.9=207	-	-
164	Sheath	Φ 32	m	148x0.9=133	-	-
165	H shaped steel	200x200x8x12	ton	38,000x0.9=34,200	-	-
166	Anchorage	SBPRB Φ 32 (Tension side)	each	6,110x0.9=5,500	-	-
167	Anchorage	SBPRB Φ 32(Fixed side)	each	5,140x0.9=4,630	-	-
168	Coupler		each	1,930x0.9=1,740	-	-
169	PC steel bar	Φ32- SBPR - 930/1080	kg	237x0.9=213	-	-
170	Steel sheet pile	typeIV ; 400x170x15.5	ton	82,000x0,9=73,800	-	-
171	Curing compound		kg	500 x 0.9 = 450	-	-
172	Steel sheet pile	typeII ; 400x100x10.5	ton	82,000x0,9=73,800	-	-
173	Curing mat	1.0m x 30 m x 10mm	m2	450 x 0.9 = 405	-	-
174	Water hose	Φ 19mm	m	-	a) 4,400	4,000
175	PVC cap	Φ 50	each	-	a) 3,960	3,600
176	Bentonite		kg	-	a) 880	800
177	Rubber bearing	500x300x59 ; w=100kg	each	232,800x0.9=209,520	-	-
178	Rubber bearing	500x330x63 ; w=107 kg	each	246,400x0.9=221,760	-	-
179	Rubber bearing	500x300x59 ; w=103kg	each	248,600x0.9=223,740	-	-
180	Rubber bearing	510x310x56 ; w=21 kg	each	62,000x0.9=55,800	-	-
181	Rubber bearing	810x610x110 ; w=527 kg	each	876,200x0.9=788,580	-	-
182	Rubber bearing	1,260x1,110x121.5;w=465 kg	each	1,429,700x0.9=1,286,730	-	-
183	Steel pipe	Φ 42.7 mm	kg	56 x 0.9 = 50	-	-
184	Steel pipe	Φ 60.5 mm	kg	56 x 0.9 = 50	-	-
185	Steel pipe	Φ 89.1 mm	kg	56 x 0.9 = 50	-	-
186	Steel pipe	Φ 114.3 mm	kg	57 x 0.9 = 51	-	-
187	Steel pipe	Φ 139.8 mm	kg	57 x 0.9 = 51	-	-
188	panel	SS	set	-	a) 1,717,353	1,561,230
189	panel	MDP	set	-	a) 8,374,424	7,613,113
190	panel	DB	set	-	a) 4,308,909	3,917,190
191	Underground cable 4^Cx25 mm^2		m	-	a) 76,384	69,440

LIST OF MATERIAL UNIT COST (5)

No.	Material	Standard	Unit	Price		
				Foreign	Local (VND)	
				(J.YEN)	VAT Included	VAT Excluded
192	Underground cable 4^cx16 mm^2		m	-	a) 59,013	53,648
193	Underground cable 4^cx10 mm^2		m	-	a) 41,646	37,860
194	Cable 4^c x 10 mm^2		m	-	a) 25,410	23,100
195	Cable 4^c x 16 mm^2		m	-	a) 36,080	32,800
196	Grounding Wire BCC 6mm^2	Copper	m	-	a) 39,996	36,360
197	Grounding Electrode	Copper bar (Φ10;1~1.5m)	each	-	a) 40,247	36,588
198	Duct bank	PVC Φ 100	m	-	a) 27,720	25,200
199	Pull box type - A		each	-	a) 70,110	63,736
200	Power reserving point	31.5 KVA	each	-	a) 116,552.040	105,956,400
201	Watt hour meter and panel box	31.5 KVA	each	-	a) 1,650,000	1,500,000
202	PC strand	SWPR 7B;12 T 12.7	kg	256x0.9=230	-	-
203	PC strand	7 T 12.7	kg	256x0.9=230	-	-
204	Anchorage	(Fix side) 225 ton	set	22,200x0.9=19,980	-	-
205	Anchorage	(Fix side) 130 ton	set	13,930x0.9=12,537	-	-
206	Anchorage	(Tensioning) 225 ton	set	18,500x0.9=16,650	-	-
207	Anchorage	(Tensioning) 130 ton	set	10,080x0.9=9,072	-	-
208	PC strand	SWPR 7B ; 12T15.2	kg	269 x 0.9 = 242	-	-
209	Anchorage	(Fix side) 320 ton	set	31,500 x 0.9 = 28,350	-	-
210	Anchorage	(Tensioning) 320 ton	set	27,000 x 0.9 = 24,300	-	-
211	Covering Sheet	4mx50m	m2	-	1,650	1,500
212	Bolt	Φ 12*75	each		1,850	1,682
213	Bolt	Φ 16*150	each		2,770	2,520
214	Shaped steel	150x90x9	kg		5,650	5,136
215	Steel pipe	Φ 48.6	kg		8,264	7,513
216	Shaped steel	C380x100x10.5	kg		5,500	5,000
217	Shaped steel	C 250x90x9.0	kg		5,500	5,000
218	Steel pipe	Φ 42.7 mm	kg	56x0.9=50	-	-
219	Steel pipe	Φ 60.5mm	kg	56x0.9=50	-	-
220	Steel pipe	Φ 89.1 mm	kg	56x0.9=50	-	-
221	Steel pipe	Φ114.3 mm	kg	57x0.9=51	-	-
222	Steel pipe	Φ139.8 mm	kg	57x0.9=51	-	-
223	Plastic wick	W=98mm ; t=3mm	m		4,345	3,950
224	Rubber bearing	1,010x860x143 ; w=1,108 kg	each	1,995,600x0.9=1,796,040	-	-
225	Steel tube		m		31,192	28,356

LIST OF EQUIPMENT COST

SUMMARY OF UNIT COST OF EQUIPMENT OWNING AND OPERATION (1)

No.	Equipment	Unit	Cost	
			FC Portion (J.YEN)	LC Portion (VND)
1	Generator (60 KVA)	day	3,100	143,000
2	Generator (15 KVA)	day	1,580	45,000
3	Bulldozer (15 ton)	hr	4,030	91,000
4	Swamp bulldozer (16 ton)	hr	3,880	91,000
5	Back hoe (hydraulic 1.0 m3)	hr	4,010	131,000
6	Back hoe (hydraulic 0.6m3)	hr	2,560	92,000
7	Back hoe (hydraulic 0.35 m3)	hr	1,460	64,000
8	Large-sized breaker (600 ~ 800 kg)	day	6,660	-
9	Concrete breaker (20 kg)	day	160	-
10	Tension jack and pump (70 ton)	day	1,360	-
11	Tractor shovel (1.4m3)	hr	2,270	59,000
12	Tractor shovel (0.8 m3)	hr	1,130	48,000
13	Clamshell (0.6m3)	hr	2,830	89,000
14	Motor grader (3.1m)	hr	2,850	58,000
15	Truck crane (hydraulic 120 ton)	hr	24,600	99,000
16	Truck crane (hydraulic 40 ~ 45 ton)	hr	7,320	68,000
17	Truck crane (hydraulic 20 ~ 22 ton)	hr	3,520	55,000
18	Truck crane (hydraulic 15 ~ 16 ton)	hr	3,080	55,000
19	Truck crane (hydraulic 10 ~ 11 ton)	hr	2,260	55,000
20	Truck crane (hydraulic 4.8 ~ 4.9 ton)	hr	1,250	46,000
21	Truck with crane (4 ton truck, 2.9 ton hanging load)	hr	1,080	50,000
22	Concrete pump (55 ~60 m3/hr)	hr	3,820	56,000
23	Crawler crane (40 ton)	hr	4,970	60,000
24	Diesel engine (5.2 ps)	day	310	-
25	Electric hoist	day	1,530	-
26	Boring pump (30 l/min)	day	1,570	-
27	Vibrohammer pile driver (60 KW)	hr	7,920	60,000
28	Boring machine (Φ 86)	day	3,040	-
29	Reverse circulation drill (ϕ max = 3000 mm)	hr	5,470	-
30	Three-wings bit (ϕ 800-1200mm)	day	1,510	-
31	Hammer grab (ϕ 1000mm)	day	8,100	-
32	Hammer crown (ϕ 1200 mm)	day	1,990	-
33	Dump truck (11 ton)	hr	1,650	67,000
34	Truck (11 ton)	hr	2,210	67,000
35	Truck (4 ~ 4.5 ton)	hr	850	51,000
36	Trailer (32 ton)	hr	3,420	87,000
37	Trailer (28 ton)	hr	3,190	87,000
38	Vibrating roller (combined type 3 ~ 4 ton)	hr	1,400	36,000
39	Vibrating roller (0.8 ~ 1.1 ton)	hr	350	29,000
40	Road roller (macadam 10 ~ 12 ton)	hr	2,010	48,000
41	Tired roller (8 ~ 20 ton)	hr	1,990	50,000
42	Tamper (60 ~ 100 kg)	day	610	191,000
43	Asphalt finisher (crawler type 2.4 ~ 5.0m)	hr	8,700	44,000
44	Road sprinkler (5500 ~ 6500 liter)	hr	1,230	42,000
45	Road sprinkler (3800 liter)	hr	930	40,000
46	Tension jack and pump (320 ton)	day	4,640	-
47	Road sweeper (brush type)	hr	3,620	58,000
48	Generator (200 KVA)	day	7,920	464,000
49	Generator (125 KVA)	day	5,180	291,000
50	Generator (100 KVA)	day	4,100	230,000

SUMMARY OF UNIT COST OF EQUIPMENT OWNING AND OPERATION (2)

No.	Equipment	Unit	Cost	
			FC Portion (J.YEN)	LC Portion (VND)
51	Generator (75 KVA)	day	4,030	172,000
52	Generator (10 KVA)	day	1,250	35,000
53	Generator (2KVA)	day	290	24,000
54	Tension jack and pump (200 ton)	day	2,300	-
55	Welding machine (250 A)	day	1,390	31,000
56	Air compressor (10.5 - 11.0 m3/min)	day	7,080	341,000
57	Air compressor (3.5 ~ 3.7 m3/min)	day	2,410	104,000
58	Wagen (3x17m)	day	31,740	-
59	Conveyor belt (10m)	day	980	-
60	Concrete pump (boom type 90 ~ 110m3/hr)	hr	5,330	78,000
61	Truck mixer (3.0 ~ 3.2m3)	hr	1,030	57,000
62	Submergible pump (Φ 200 mm ,pump head 15m)	day	1,150	-
63	Submergible pump (Φ 200 mm ,pump head 20m)	day	1,430	-
64	Grout pump 15 - 30 L/min	day	820	-
65	Grout mixer (200Lx2)	day	960	-
66	Grout mixer (100Lx1)	day	420	-
67	Winch (1.0 t x 40 m/min)	day	1,000	-
68	Grout mixer (200 liter x 1)	day	600	-
69	Hammer drill (38mm)	day	110	-
70	Barge with crane (crawler crane 40 ton, barge 300 ton)	day	35,520	342,000
71	Barge (steel 300 ton)	day	17,220	254,000
72	Barge (steel 100 ton)	day	6,900	254,000
73	Barge with engine (100m3)	day	25,760	1,048,000
74	Tug boat (steel 200 ps)	hr	2,490	222,000
75	Tug boat (steel 100 ps)	hr	1,310	120,000
76	Tension jack and pump (130 ton)	day	1,920	-
77	Bulldozer (11 ton)	hr	3,030	76,000
78	Dump truck (6 ~ 7 ton)	hr	1,180	52,000
79	Concrete mixer (0.3 ~ 0. 6 m3)	day	4,530	-
80	Tired roller (11 ~ 30 ton)	hr	2,420	51,000
81	Asphalt distributor (2000 liter)	day	8,340	168,000
82	Air compressor (7.5 m3/min)	hr	4,660	43,000
83	Submergible pump (Φ 100 mm ,pump head 15m)	day	470	-
84	Diesel hammer (1.3ton)	hr	1,960	-
85	Erection girder	day	28,200	-
86	Girder suspension equipment	day	22,100	-
87	Girder side loading equipment	day	15,700	-
88	Girder drawing out equipment	day	15,900	-
89	Tool for erection	day	5,570	-
90	Instruments for transient of PC Girder	day	24,600	-
91	Barge with crane (crane 25 ton;barge 200 ton)	day	21,900	302,000
92	Line marker (Hand guided type)	hr	190	-
93	Melting tank (200 ~350 kg x2)	hr	510	1,000
94	Guard rail post driving machine	hr	2,140	31,000
95	Chain block (5 ton)	day	100	-
96	Tower crane (Fixed type 60 t.m ;h=50m)	day	18,780	90,000
97	Tractor shovel (1.2 m3)	hr	1,500	59,000
98	Concrete Plant (45 m3/hr)	hr	8,760	-
99	Concrete pump (pipe setting type 90~100m3/hr)	hr	4,930	61,000

SUMMARY OF UNIT COST OF EQUIPMENT OWNING AND OPERATION (3)

No.	Equipment	Unit	Cost	
			FC Portion	LC Portion
			(J.YEN)	(VND)
100	Truck crane (25 ton)	hr	4,250	60,000
101	Truck with crane (2 ton truck, 2 ton hanging load)	hr	670	41,000
102	Sand pile driver (leader length 45 m)	hr	38,640	58,000
103	Water jet for vibrohammer (55KW)	hr	2,510	-
104	Sand pile driver (leader length 30 m)	hr	23,760	50,000
105	Large - sized breaker (1300 kg)	day	10,860	-
106	Generator (20KVA)	day	1,980	50,000
107	Generator (35KVA)	day	2,320	85,000
108	Three wings bit (Φ 1500~2000 mm)	day	2,140	-
109	Hammer grab (Φ 1200)	day	8,520	-
110	Hammer grab (Φ 2000)	day	18,360	-
111	Hammer crown (more than Φ 1300)	day	2,680	-
112	Hydraulic press-in pile driving and extractor (Φ1200)	day	23,460	-
113	Hydraulic press-in pile driving and extractor (Φ1480)	day	24,780	-
114	Hydraulic press-in pile driving and extractor (Φ2250)	day	26,460	-
115	Slushtank ($10m^3$)	day	500	-
116	Slushtank ($20m^3$)	day	640	-
117	Slushtank ($30m^3$)	day	1,060	-
118	Grantry crane (3.0 ton)	day	2,850	-
119	Asphalt finisher (1.6m~3.0m)	hr	3,580	40,000
120	Dump truck (2 ton)	hr	400	38,000
121	Tension jack and pump (225 ton)	day	3,060	-
122	Tension jack and pump (130 ton)	day	1,920	-
123	Tension jack and pump (95 ton)	day	1,520	-
124	Generator (350 KVA)	day	13,560	748,000
125	Plactic board driver	hr	11,270	78,000
126	Truck (2 ton)	hr	490	42,000
127	Line maker (Hand guided type)	hr	130	-
128	Air compressor (17 m3 / min)	day	8,400	84,000

RED RIVER BRIDGE CONSTRUCTION PROJECT

PROCESS COST

RED RIVER BRIDGE CONSTRUCTION PROJECT

LIST OF PROCESS COST

LIST OF PROCESS COST

Number of P/C	Description
1	Transportation of excavated soil
2	Transportation of excavated rock
3	Transport of soil excavation of pier
4	Excavation (for common excavation)
5	Excavation of soil (dry)
6	Excavation under the ground water (soil back hoe,bulldozer)
7	Excavation in rock
8	Excavation (water work,soil,clamshell bucket)
9	Hand excavation
10	Transportation of excavation soil (Stock piling)
11	Transportation of excavation soil (unsuitable)
12	Back-filling work (used excavated soil)
13	Back-filling work (used excavated rock)
14	Back-filling work (used excavated soil in river)
15	Hand backfill
16	Site clearing
17	Bedding work
18	Bedding work
19	Bedding work with back hoe
20	Cut off plate setting work
21	Concrete plant operation
22	Transportation of concrete
23	Setting of concrete curb (W 260xH230xL1000)
24	Filling clayey material for cofferdam (by hand)
25	Temporary cofferdam work for pile
26	Soil pitching for solid sodding
27	Solid sodding work
28	Concrete placing (less than 50 m3/day, R.C structure except RC Slab, Cross beam)
29	Concrete placing (50 m3-100m3/day,concrete pump, R.C structure except RC Slab, Cross beam)
30	Concrete placing (100m3-300m3/day,concrete pump, R.C structure except RC Slab, Cross beam)
31	Concrete placing (300m3-600m3/day,concrete pump, R.C structure except RC Slab, Cross beam)
32	Concrete placing (300 ~ 600m3,pipe setting type concrete pump)
33	Concrete placing (100 ~ 300m3,pipe setting type concrete pump)
34	Concrete placing with chute
35	Scaffolding (h<4m) substructure
36	Scaffolding (h>=4m) substructure
37	Timbering (4<B<8 t/m2) for substructure
38	Form work (wooden form,RC structure, height<4 m)
39	Form work (wooden form,RC structure, height>4 m)

Number of P/C	Description
40	Form work (wooden form,RC structure,)
41	Form work (Cylindrical wooden form,height<4m)
42	Form work (Cylindrical wooden form,height>4m)
43	Form work (Cylindrical wooden form)
44	Bridge Drain pile setting work
45	Concrete anchor setting work for bridge drain pipe
46	Drain pipe (D = 15 cm) setting
47	Drain pipe (D = 20 cm) setting
48	Drain box setting work for PC I Girder
49	Drain box setting work for box Girder
50	Road marking . Type - A (General Application)
51	Sub-grade work (CBR=6) (including material)
52	Sub-grade work (CBR=6) (excluding material)
53	Sub-grade work (CBR>6)
54	Sub-grade preparation
55	Blinding concrete work with chute
56	Blinding concrete work
57	Fabrication and setting of the settlement measuring devices
58	Setting work of the line and level checking stakes
59	Construction joint work
60	Reinforcement work (Diameter less than 13mm)
61	Reinforcement work (Diameter 13mm ~ 28mm)
62	Reinforcement work (Diameter 13mm ~ 28mm)
63	Reinforcement work (Diameter 29mm ~ 32mm)
64	Reinforcement work (Diameter 29mm ~ 32mm)
66	Excavation (back hoe 0.35 m3)
67	Cement mortar(for concrete brick work)
68	Cement mortar(for stone work)
69	Cement mortar M75 (for brick 220x105x60mm work)
70	Setting and removal of floor plate
71	Non-shrinkage mortar
72	Bridge deck water proofing
73	Sand fill
74	Excavator operation (bored pile Φ 1000 mm; L = 8.5 m)
75	Excavator operation (bored pile Φ 1000 mm; L = 10 m)
76	Excavator operation (bored pile Φ1000 mm; L = 16.0 m)
77	Excavator operation (bored pile Φ 1000 mm ; L = 19.5 m)
78	Excavator operation (bored pile Φ 1000 mm; L = 20.0 m)
79	Excavator operation (bored pile Φ 1000 mm; L = 21 m)
80	Excavator operation (bored pile Φ 1000 mm; L = 22.0 m)
81	Excavator operation (bored pile Φ 1000 mm; L = 25.0 m)

Number of P/C	Description
82	Excavator operation (bored pile Φ 1000 mm; L = 26.5 m)
83	Excavator operation (bored pile Φ 1000 mm; L = 28.5 m)
84	Excavator operation (bored pile Φ 1200 mm ; L = 21.0 m)
85	Excavator operation (bored pile Φ 1200 mm ; L = 21.5 m)
86	Excavator operation (bored pile Φ 1200 mm ; L = 24 m)
87	Excavator operation (bored pile Φ 1200 mm; L = 26.5 m)
88	Excavator operation (bored pile Φ 2000 mm; L = 10.5 m)
89	Excavator operation (bored pile Φ 2000 mm; L = 18.5 m)
90	Excavator operation (bored pile Φ 2000 mm; L = 20.0 m)
91	Excavator operation (bored pile Φ 2000 mm; L = 22.5 m)
92	Excavator operation (bored pile Φ 2000 mm; L = 24.5 m)
93	Excavator operation (bored pile Φ 2000 mm; L = 28.0 m)
94	Excavator operation (bored pile Φ 2000 mm; L = 29.5 m)
95	Excavator operation (bored pile Φ 2000 mm; L = 36.0 m)
96	Removal of Existing tree (Root dia < 200mm)
97	Removal of Existing tree (Root dia. > 200)
98	Removal of old Pavement
99	Mat gabion setting work
100	Stone masonry backfill material throw in work (pitching work)
101	Removal and transportation of mud soil
102	Replacement with sand
103	Placing work with geo-textile sheet
104	Placing work with geo - textile sheet (non woven fabric)
105	Soil bag setting
106	Stone masonry (250*250) for retaining wall
107	Guard rail setting work
108	Mortared stone work (type- A)
109	Mortared stone work (for U - Ditch)
110	Mortared stone work (for head wall)
111	Piling work (bored pile, Φ1000mm, pile length L = 8.5 m, reverse circulation drill method)
112	Piling work (bored pile, Φ1000mm, pile length L = 10.0 m , reverse circulation drill method)
113	Piling work (bored pile, Φ1000mm, pile length L = 16.0 m , reverse circulation drill method)
114	Piling work (bored pile, Φ1000mm, pile length L = 19.5 m , reverse circulation drill method)
115	Pilling work (bored pile ϕ1000mm, pile length L = 20m, reverse circulation drill method)
116	Piling work (bored pile, Φ1000mm, pile length L = 21.0 m , reverse circulation drill method)
117	Piling work (bored pile, Φ1000mm, pile length L = 22.0 m , reverse circulation drill method)
118	Piling work (bored pile, Φ1000mm, pile length L = 25.0 m , reverse circulation drill method)
119	Piling work (bored pile, Φ1000mm, pile length L = 26.5 m , reverse circulation drill method)
120	Piling work (bored pile, Φ1000mm, pile length L = 28.5 m , reverse circulation drill method)
121	Piling work (bored pile, Φ1200mm, pile length L = 21.5 m , reverse circulation drill method)
122	Piling work (bored pile, Φ1200mm, pile length L = 23.0 m , reverse circulation drill method)
123	Piling work (bored pile, Φ1200mm, pile length L = 24.0 m , reverse circulation drill method)

Number of P/C	Description
124	Piling work (bored pile, Φ1200mm, pile length L = 26.5 m , reverse circulation drill method)
125	Piling work (bored pile, Φ2000 mm, pile length L = 10.5 m , reverse circulation drill method)
126	Piling work (bored pile, Φ2000mm, pile length L = 20.0 m , reverse circulation drill method)
127	Piling work (bored pile, Φ2000mm, pile length L = 18.5 m , reverse circulation drill method)
128	Piling work (bored pile, Φ2000mm, pile length L = 22.5 m , reverse circulation drill method)
129	Piling work (bored pile, Φ2000mm, pile length L = 24.5 m , reverse circulation drill method)
130	Piling work (bored pile, Φ2000mm, pile length L = 28.0 m , reverse circulation drill method)
131	Piling work (bored pile, Φ2000mm, pile length L = 29.5 m , reverse circulation drill method)
132	Piling work (bored pile, Φ2000mm, pile length L = 36.0 m , reverse circulation drill method)
133	Granular back-filling work
134	Permeable back-filling work
135	Filling work with suitable excavation soil (for common excavation)
136	Vertical sand drain (L=24.5m)
137	Vertical sand drain (L=23.5 m)
138	Vertical sand drain (L=17.0 m)
139	Sand compaction pile
140	Pump setting and removal (for drainage)
141	Pump setting and removal (for drainage)
142	Pump setting and removal (for drainage;sheet pile cofferdam)
143	Pump operation(Whole day)
144	Pump operation(Whole day)
145	Pump operation (working time)
146	Pump operation (working time)
149	Concrete (A-1, A-2; A-3: σ_{ck} = 400kg/cm^2)
150	Concrete (class B-1, σ_{ck} = 350kg/cm^2)
151	Concrete (Class C-1; C-2 ; σ_{ck}=290kg/cm^2)
152	Concrete (class Y σ_{ck}=290kg/cm^2 for cast in place concrete pile)
153	Concrete (Class D-1 ; σ_{ck}=240 kg/cm^2)
154	Concrete (Class E-1 ; E-2 ; σ_{ck}=210 kg/cm^2)
155	Removal of stone masonry
156	Concrete (Class G, σ_{ck}=80kg/cm^2)
157	Concrete (class F, σ_{ck}=130kg/cm^2)
158	Granular sub-base course (t= 40 cm)
159	Granular sub-base course (t= 15 cm)
160	Aggregate base course (t=25cm)
161	Aggregate base course (t=10cm)
162	Asphalt pavement (binder course t=7cm)
163	Asphalt pavement (surface course t=5cm)
164	Asphalt pavement (surface course t=5cm;pavement width less than 5 m))
165	Asphalt pavement (surface course t=5cm;by hand))
166	Asphalt pavement (surface course t=7.5cm;for bridge surface pavement)
167	Asphalt cement

Number of P/C	Description
168	Asphalt cement
169	Asphalt cement(Bridge surface pavement)
170	Bituminous prime coat
171	Bituminous tack coat
172	Regulatory and Warning signs setting work , Type - B
173	Regulatory and Warning signs setting work , Type - C
174	Regulatory and Warning signs setting work , Type - D
175	Demolition of RC structure
176	Demolition of RC structure (concrete breaker)
177	Disposition of concrete trash (back hoe)
178	Disposition of concrete trash (back hoe)
179	Mortared brick work (220x105x60 mm) thick <=11cm
180	U - Ditch (DS - 1)
181	U - Ditch (DS - 2)
182	U - Ditch (DS - 3)
183(1)	R.C pipe (D-75 cm);Type - A1 setting work
183(2)	R.C pipe (D-75 cm);Type - A2 setting work
184	R.C pipe (D-100 cm);Type - A setting work
185	R.C pipe (D-125 cm);Type - B setting work
186	R.C pipe (D-200 cm);Type - C setting work
187	R.C. Pipe(2D=125cm) TypeB - Setting work for headwall
188	R.C. Pipe(3D=200cm) Type C - Setting work for headwall
189	Catch basin (DC-1)
190	Catch basin (DC-2)
191	Headwall DH-5-inlet ; 2 x Φ 1.25m
192	Headwall DH-12-inlet ; 3x Φ2.0 m
193	Headwall DH-5-outlet ; 2 x Φ 1.25m
194	Headwall DH-12-outlet; 3x ϕ 2.0m
195	KM indicator post setting work
196	Traffic post setting work
197	Marker fabrication and setting (100x100x600)
198	Excavation and backfilling of duck track
199	Arrangement bricks on duct track of underground cable
200	Street lighting Pull box (type - A)
201	Distribution panel - type SS
202	Distribution panel - type MDB
203	Street lighting Panel ; (type - DB)
204	Underground cable 4^{c} x 25 mm^2
205	Underground cable 4^{c} x 16 mm^2
206	Underground cable 4^{c} x 10 mm^2
207	Cable 4^{c} x 16 mm^2
208	Cable 4^{c} x 10 mm^2

Number of P/C	Description
209	Grounding Wire BCC 6 mm2
210	PVC conduit D=50 mm
211	Duct bank PVC 2 x F 100 mm
212	Grounding systems setting work
213	Filled up ground work
214	Aggregate surface course (t=15cm) for construction road of bridge
215	Sub-grade work CBR = 5 (including material)
216	Backfill (Open cut,max backfill width W>4m)
217	Transporting of excavated soil (Temporary work)
218	Excavated for unsuitable material (Temporary work)
219	Filling work at ponds
220	Fabrication yards of PC I girders (with 2 track ; W = 3.5m ; t = 15 cm)
221	Access road for bridge work
222	Steel lighting pole setting work (type - A1)
223	Steel lighting pole setting work (type - A)
224	Street lighting pole (type - A1)
225	Street lighting pole (type - A)
226	Manhole 1220x1220x1500 mm (under ground)
227	Form work (Wooden form, small-sized continuos structure)
228	Form work (Wooden form, small-sized continuos structure)
229	Concrete placing (Chute, plain Concrete Structure)
230	Retaining wall work (H = 1.0 m ; H1 = 2.0m)
231(1)	Traffic control and safety
231(2)	Traffic control and safety
232	Form Work (Wooden form ; small-sized scattered structure)
233	Concrete curb setting work
234	Back fill (open cut, max backfill width 1m<W<4m)
235	Dry riprap work
236	Plastic board drain work
237	Transportation of materials
238	Transportation of equipment
239	RC pipe (D=75 cm) - Type B setting work for catch basin
240	RC pipe (D=100 cm) - Type B setting work for catch basin
241	Back fill work W>4 m
242	Road marking type A (Special Application)
243	Monitoring settlement and lateral flow
301	Wagen assemble and disassemble work
302	Wagen removal and setting work
303	Wagen climbing work
304	Wagen pull back work
305	Frame square sets work (5 t/m2;H=5m) for cantilever erection bridge
306	Inner form setting and removal work for cantilever

Number of P/C	Description
307(1)	Scaffolding work for tower crane foundation work
307(2)	Suspended timbering for tower crane foundation work
308	Bracket setting work
309	Timbering on the bracket
310	Timbering of deck slab (overhanging)
310(2)	Timbering of deck slab (overhanging)
311	Inner timbering of pier head
312	Frame square sets work (simple box bridge)
313	Pedestal work for prefabricated
315	Timbering for bottom of side span
315 (2)	Timbering for bottom of side span (3.6 t/m2;L=10m;H=13.6m)
316	Timbering of deck slab (overhanging) of side span (1.6t/m2;L=10m;H=2.5m)
317	Suspended scaffolding for center closing
318	Suspended timbering for center closing
319	Inner timbering for center closing
320	Vertical pre-stressing steel bar setting work (Φ32,SBPR 930/1180)
321	Vertical pre-stressing steel bar anchorage work (Φ32,SBPR 930/1180)
322	Vertical pre-stressing steel bar tensioning work (Φ32,SBPR 930/1180)
322(2)	Vertical pre-stressing steel bar tension releasing work (Φ32,SBPR 930/1180)
323	Miscellaneous work for vertical pre-stressing steel work
323(2)	Depreciable value of tools for Φ 32 SBPR 930 / 1180
324(1)	Inner form fabrication setting and removal work for pier head
324(2)	Inner form fabrication for pier head
325	Inner form setting and removal work for pier head
326(1)	Outer form fabrication setting and removal work for pier head
326(2)	Outer form fabrication for pier head
327	Outer form setting and removal work for pier head
328(1)	Bottom form fabrication setting and removal work for pier head
328(2)	Bottom form fabrication for pier head
329	Bottom form setting and removal work for pier head
330	Killed mold work for pier head
331	Outer timbering (2.0 t / m2) of cantilever
332	Inner timbering (2.0 t / m2) of side span
333	Scaffolding work for box girder (L=60m x 3)
334	Concrete work for approach slab
335(1)	Parapet and railing (PC I girder, abutment)
335(2)	Parapet and railing (Box girder)
336(1)	Outer form fabrication,setting and removal work for side span
336(2)	Outer form fabrication for side span, center closing
337	Inner form setting and removal work for side span ,box girder
337(2)	Outer form setting and removal for center closing
338(1)	Inner form fabrication setting and removal for side span

Number of P/C	Description
338(2)	Inner form fabrication for side span
339	Inner form setting and removal work for side span
339(2)	Inner form setting and removal work for center closing
340(1)	Bottom form fabrication , setting and removal work for side span
340(2)	Bottom form fabrication for side span and box girder
341	Bottom form setting and removal work for side span,box girder
341(2)	Bottom form setting and removal work for center closing
342(1)	Edge form , setting and removal work
342(2)	Edge form work
343(1)	Pressure pipe setting and removal for pier head
343(2)	Pressure pipe setting and removal for center closing
343(3)	Pressure pipe setting and removal for cantilever erection area
343(4)	Pressure pipe setting and removal for pier concrete
343(5)	Pressure pipe setting and removal for pier footing concrete
344	Front side of pier head scaffolding work
345(1)	Front side of pier head scaffolding work
345(2)	Bridge side scaffolding
346	Bridge surface guardrail work
347(1)	Dead head cost of concrete pump (pipe setting type 90~100m3/hr)
347(2)	Dead head cost of concrete pump (boom type 90 ~110 m3/hr)
347(3)	Dead head cost of concrete pump (boom type 55 ~60 m3/hr)
348	Concrete work for pier head
349	Concrete work for side span
350	Concrete work for center closing
351	Concrete work for cantilever erection area
352	Timbering base for box girder
352 (2)	Setting and removal of timbering for box girder (L=60m)
353	Outer form fabrication work for box girder
354	Outer form setting and removal work for box girder
355	Timbering of deck slab (overhanging) for box girder
356	Inner timbering of box girder
357	Tower crane foundation work
358	Setting and removal work of tower crane
359	Inner form fabrication work for box girder
360	Inner form setting and removal work for box girder
361 (1)	Steel sheet piling work (type IV,L=19m)
361(2)	Removal of steel sheet piling
362(1)	Setting and removal of brace and wale
362(2)	Depreciable value and expenses of wale and brace
363	Scaffolding work for pier

Number of P/C	Description
364	Tower crane cost
364(2)	Tower crane cost
365	Track way work for erection girder
366	Equipment depreciable value for erection work by erection girder
367	Main girder erection with erection girder
368	Truck crane cost for assembling and disassembling of erection girder facility
369	Assembling and disassembling of erection girder facility
370	Movement of erection girder frame
371	Anchor work for erection girder work
372	Transportation of erection girder facility
373 (1)	Prevention work against overturning of main girder
373(2)	Transient placing of PC I girder
374(1)	Equipment depreciable value of fabrication work (PC I girder)
374(2)	Equipment depreciable value of fabrication work (PC I girder)
375	Track way work for gantry crane
376	Setting and removal of gantry crane
377	Breaking work with Large - sized breaker (1300 kg)
377(2)	Breaking work with Large - sized breaker (600~800 kg)
378	Concrete placing (with gantry crane)
379	Temporary access road for transportation and erection
380	Truck crane (120 t) assembling and disassembling
381(1)	Erection and setting of main girder (Truck crane)
381(2)	Main girder erection (Truck crane)
382	Transportation of main girder
383(1)	Production cost of steel form (PC I Girder)
383(2)	Install forms and strip form (Steel form)
384(1)	Production cost and depreciable value of steel form (PC I Girder)
384(2)	PC I Girder form work (steel form)
384(3)	PC I Girder form work (steel form)
384(6)	Reinforcement steel work (PC I Girder)
385	Bottom plate subcontract fabrication cost
386	Main girder fabrication stand (Steel form)
387	Rehabilitation of fabrication stand
388	Steel rib material fabrication cost by subcontract for cantilever form
389	Steel rib material fabrication cost for cantilever form
390	Outer form fabrication (metal form) for cantilever
391	Outer form setting and removal work for cantilever
392(1)	Inner form fabrication setting and removal work for cantilever
392(2)	Inner form fabrication for cantilever
393	Inner form setting and removal work for cantilever
394	Scaffolding for setting and removal of brankct
395	Inner timbering for cantilever

Number of P/C	Description
397	Curing of concrete work for cantilever
398	Curing of concrete work for pier head and side span
398 (2)	Curing of concrete work for substructure concrete and others
399	Main girder construction joint roughening work
400	Longitudinal pre-stressing setting steel work (SWPR 7B,12T12-7) (Cantilever erection bridge)
401	Perpendicular pre-stressing setting work (SWPR 7B;7,T12.7) (Cantilever erection bridge)
402	Longitudinal pre-stressing steel anchorage work (Cantilever erection bridge)
403 (1)	Longitudinal pre-stressing steel tensioning work (Cantilever erection bridge)
403(2)	Longitudinal pre-stressing steel tensioning work (Cantilever erection bridge)
404	Perpendicular pre-stressing steel anchorage work
405	Perpendicular pre-stressing steel tensioning work
406 (1)	Depreciable value of equipment and tools for erection (rigid frame bridge and side span)
406 (2)	Depreciable value of equipment and tools for tensioning (rigid frame bridge)
407	Concrete work for simple box girder (L = 60m)
408	Longitudinal pre-stressing steel setting work (SWPR 7B;12T15.2) (box girder,L = 60m)
409	Longitudinal pre-stressing steel tensioning work (box girder,L = 60m)
410	Longitudinal pre-stressing steel tensioning work (box girder,L = 60m)
411	Perpendicular pre-stressing steel setting work (SWPR 7B ; 7T12.7) (box girder,L = 60m)
412	Perpendicular pre-stressing steel tensioning work (box girder,L = 60m)
413 (1)	Depreciable value of tension jack and pump during transportation (box girder)
413 (2)	Depreciable value of tension jack and pump during transportation (box girder)
414	Reinforcement steel work for box girder
415	Reinforcement steel work for cantilever erection bridge
416	Longitudinal pre-stressing steel setting work (PC I Girder)
417	Concrete work for fabrication of PC I Girder
418	Longitudinal pre-stressing steel tensioning work (PC I Girder)
419	Reinforcement steel work for side span
421	From work of cross beam
422	Concrete of cross beam
423	Suspended scaffolding under PC I girder
424	Grout material for PC I girder
425	Perpendicular pre-stressing steel setting work (PC I Girder ; L=33m)
426	Perpendicular pre-stressing steel work (PC I Girder ; L=33m)
427(1)	Depreciable value of Perpendicular pre-stressing work (PC I Girder ; L=33m)
427(2)	Depreciable value of Perpendicular pre-stressing work (PC I Girder ; L=33m)
428	Reinforcement steel work for cross beam (PC I Girder)
428(2)	Reinforcement steel work for deck slab (PC I Girder)
429(1)	Diaphragm concrete work PC I Girder (L=66m x 2)
429 (2)	Diaphragm concrete work PC I Girder (L=99m x 2)
430(1)	Setting work of rubber bearing (less than 60 kg / each)
430(2)	Setting work of rubber bearing (60~100 kg / each)
430(3)	Setting work of rubber bearing (100~500 kg / each)

Number of P/C	Description
430(4)	Setting work of rubber bearing (more than 500 kg / each)
431 (1)	Setting of rubber bearing (Box girder) - fix 1110*1260*122
431 (2)	Setting of rubber bearing (Cantilever) - mov 860*1010*143
431 (3)	Setting of rubber bearing (Box girder) - mov 610*810*110
432 (1)	Setting of rubber bearing (PC I girder - L = 99m; L = 66m) - fix 510*310*56
432 (2)	Setting of rubber bearing (PC I girder - L = 99m) - mov 500*330*63
432 (3)	Setting of rubber bearing (PC I girder - L = 99m; L = 66m) - mov 500*300*59
433 (1)	Fabrication of joint steel plate for connecting pontoons
433(2)	Setting and removal pontoons
434	Supporting facility for pressure pipes in river
435	Expansion joint work , type A
436	Expansion joint work , type B
437	Expansion joint work , type C
438	Expansion joint work , type D
439	Main girder construction joit roughening work
440	Bottom form fabrication for box girder
441	Outer form fabrication for box girder
442	Inner form fabrication for box girder
443 (1)	Setting and removal temporary ladder (height 10 m)at the bridge pier
443(2)	Setting and removal temporary ladder (height 12 m)at the bridge pier
443(3)	Setting and removal temporary ladder (height 15 m)at the bridge pier
444	Reinforcement steel work for deck slab
445	Timbering work for box culvert
445(2)	Timbering work for box girder
446	Concrete work for box culvert (Class E2)
446(2)	Concrete work for box culvert (Class E2)
448	Concrete work for name plate
449	Name plate setting work
450	Boring including undisturbed sampling and standard penetration test
451(1)	Testing Bridge area
451(2)	Testing at embankment area
453 (1)	Deck slab concrete work (PC I Girder , L=66m)
453 (2)	Deck slab concrete work (PC I Girder , L=99m)
454	Fabrication of Pre-cast panel for PC I girder
455	Transportation of Pre-cast panel
456	Unloading pre-cast concrete panel
457	Setting of pre-cast concrete panel
458	Joint work for pre-cast concrete panel
459	Footing concrete work (Abutment and piers)
460	Footing concrete work
461	Wall concrete work (Abutment,height > 4 m)
462	Wall concrete work (Piers, height < 4 m)

Number of P/C	Description
463	Wall concrete work (Piers, height > 4 m)
464	Wall concrete(class D1) work
465	Wall concrete(class B1) work
466	Beam concrete work
467	Beam concrete work

RED RIVER BRIDGE CONSTRUCTION PROJECT

PROCESS COST

Process Cost Nonumber (1 - 243)

PROCESS COST - 1

Transportation of excavated soil

Per : 100 m3 (Hauling distance 1.0 km)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Back hoe	0.6 m3	hr	1.52	2,560	92.000	3,891	139,840	Equipment - 6
2	Dump truck	11 ton	hr	4.35	1,650	67.000	7,178	291,450	Equipment - 33
3	Common labor		person	0.25		80.600	-	20.150	0.1*2.5
	Total						**11,069**	**451,440**	
	Per 1.0m3						111	4,514	

. **Workability of back hoe (0.6 m3)**

$$Q = (3600*q*f_i*E) / C_s$$

$$T = 100/Q$$

q_0 (m3)	K	q (m3)	f_i	E	Cs (sec)	Q (m3 / hr)	T (hr/100m3)
0.6	0.98	0.59	0.71	0.70	16	66.0	1.52

q : Standard bucket capacity

K : Bucket factor

f_i: Soil conversion factor

C_s: Cycle time

. **Workability of dump truck (11 ton)**

$$Q = (60 * qt * f * E) / Cm$$

$$Cm = b\,L + a \;;\; T = 100/Q \;;\; q_t = n*q_o*K$$

L (km)	b	a	Cm (min)	q t (m3)	f	E	Q (m3/hr)	T (hr / 100m3)
1.0	4.8	5.0	10.8	5.88	0.71	0.9	23.0	4.35

L : Transport distance (Km)

b : Factor of transport condition

a : Working factor

f : Soil conversion factor

Cm : Cycle time

E : Efficiency of work

q t: Loanding volume one dump truck

PROCESS COST - 2

Transportation of excavation rock

Per : 100 m3 (transport distance 1.0 km)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Back hoe	0.6 m3	hr	3.1	2,560	92.000	7,936	285,200	Equipment - 6
2	Dump truck	11 ton	hr	8.68	1,650	67.000	14,322	581,560	Equipment - 33
6	Common labor		person	0.25	-	80.600	-	20,150	0.1*2.5
	Total						**22,258**	**886,910**	
	Per 1.0m^3						223	8,869	

. **Workability of back hoe (0.6 m3)**

$Q = (3600*q*f_1*E) / C_s$

T = 100/Q

q_0 (m3)	K	q (m3)	f_1	E	Cs (sec)	Q (m3 / hr)	T (hr/100m3)
0.6	0.7	0.42	0.65	0.70	22	31.27	3.20

q : Standard bucket capacity

K : Bucket factor

f_1: Soil conversion factor

C_s: Cycle time

. **Work ability of dump truck (11 ton)**

Q = (60 * qt * f * E) / Cm

Cm = b L + a ; T = 100/Q

L (km)	b	a	Cm (min)	q t (m3)	f	E	Q (m3/hr)	T (hr / 100m3)
1.0	4.8	8.0	12.8	4.2	0.65	0.9	11.5	8.68

L : Transport distance (Km)

b : Factor of transport condition

a : Working factor

q t: Loanding volume one dump truck

f : Soil conversion factor

Cm : Cycle time

E : Efficiency of work

PROCESS COST - 3

Transportation of soil excavation of pier

Per : 100 m3 (transport distance 1.0 km)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Clamshell	0.6 m3	hr	2.74	2,830	89,000	7,754	243,860	Equipment - 13
2	Dump truck	11 ton	hr	4.48	1,650	67,000	7,392	300,160	Equipment - 33
6	Common labor		person	1	-	80,600	-	80,600	2*0.2*2.5
	Total						**15,146**	**624,620**	
	Per 1.0m^3						151	6,246	

. Workability of clamshell

$q_o = q*K$	K	q_0	f_1	E	C_s (sec)	Q	T(hr/100m3)
0.6	0.85	0.51	0.71	0.7	25	36.5	2.74

$Q = (3600*q_0*f_1*E) / Cs$

$T = 100 / Q$

q : Standard backet capacity (0.6 m3)

K : Backet factor

E : Efficiency of work

C_m : Cycle time

. Work ability of dump truck (11 ton)

$Q = (60 * qt * f * E) / Cm$

$Cm = b\,L + a$; $T = 100/Q$

L (km)	b	a	Cm (min)	q t (m3)	f	E	Q (m3/hr)	T (hr / 100m3)
1.0	4.8	10.0	14.8	6.1	1.0	0.9	22.3	4.48

L : Transport distance (Km)

a : Working factor

f : Soil conversion factor

E : Efficiency of work

b : Factor of transport condition

q t: Loanding volume one dump truck

Cm : Cycle time

PROCESS COST - 4

Excavation (for common excavation)

Per : 100 m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Bulldozer	15 ton	hr	0.94	1,580	45,000	1,485	42,300	Equipment - 3
2	Back hoe	0.6 m3	hr	1.28	2,560	92,000	3,277	117,760	Equipment - 6
3	Common labor		person	0.25	-	80,600	-	20,150	0.1*2.5
	Total						**4,762**	**180,210**	
Per 1.0m^3							48	1,802	

. **Workability of bulldozer (15ton)**

q (m3)	f_1	E	L(m)	C_m (min)	Q (m3 /h)	T(hr/100m3)
2.81	1	0.85	40	1.35	106.0	0.94

$Q = (60 * q * f_1 * E) / C_m$

$C_m = 0.03 * L + 0.15$

$T = 100 / Q$

q : Execution volume (pushing) per one cycle

f_1 : Soil conversion factor

L : Average soil pushing distance

C_m : Cycle time

E : Efficiency of work

. **Workability of back hoe (0.6 m3)**

q_o (m3)	K	q	f	E	C_s (sec)	Q (m3 / hr)	T (hr/100m3)
0.60	0.98	0.59	1.00	0.7	19	78.3	1.28

$Q = (3,600 * q * f * E) / Cs$

$T = 100/Q$; $q = qo * K$

q_o : Standard bucket capacity

K : Bucket factor

f_1: Soil conversion factor

C_s: Cycle time

E : Efficiency of work

q : Excavation volume per one cycle

PROCESS COST - 5

Excavation of soil (dry)

Per : 100 m3(stock pile use to backfill)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Back hoe	0.6 m3	hr	1.06	2,560	92,000	2,714	97,520	Equipment - 6
2	Bulldozer	15 ton	hr	1.56	4,030	91,000	6,287	141,960	Equipment - 3
3	Common labor		person	0.25	-	80,600	-	20,150	0.1*2.5
	Total						**9,000**	**259,630**	
Per 1.0m^3							90	2,596	

. **Workability of back hoe (0.6 m3)**

q_0 (m3)	K	f	E	C_s (sec)	Q (m3 / hr)	T (hr/100m3)
0.60	0.98	8.71	0.8	16	93.9	1.06

$Q = (3{,}600*q*f*E) / Cs$

$T = 100/Q$; $q = qo * K$

q_o : Standard bucket capacity — f_1: Soil conversion factor — **E** : Efficiency of work

K : Bucket factor — C_s: Cycle time — q : Excavation volume per one cycle

. **Workability of bulldozer (15ton)**

q (m3)	f_1	E	L(m)	C_m (min)	Q (m3 /h)	T(hr/100m3)
2.81	1	0.8	40	1.59	60.4	1.56

$Q = (60 * q * f_1 * E) / C_m$

$C_m = 0.027* L + 0.78$

$T = 100 / Q$

q : Execution volume (pushing) per one cycle — f_1 : Soil conversion factor

L : Average soil pushing distance — C_m : Cycle time — **E** : Efficiency of work

PROCESS COST -6

Excavation un der the ground water (soil,back hoe,bulldozer)

Per : 100 m3 (Temporary storage near by excavation , use to backfill)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Back hoe	0.6 m3	hr	1.73	2,560	92,000	4,429	159,160	Equipment - 6
2	Bulldozer	15 ton	hr	1.52	4,030	91,000	6,126	138,320	Equipment - 3
	Total						**10,554**	**297,480**	
	Per 1.0m3						106	2,975	

. Work ability of back hoe (0.6 m3)

Q = (3600*q*f1*E) / Cs

T = 100/Q ; q=qo * K

q 0 (m3)	K	f1	E	Cs (sec)	q (m3)	Q (m3 / hr)	T (hr/100m3)
0.60	0.98	1.00	0.60	27.00	0.59	57.90	1.73

qo : Standard bucket capacity

K : Bucket factor

f1: Soil conversion factor

Cs: Cycle time

E : Efficiency of work

q : Excavation volume per one cycle

. Work ability of bulldozer (15ton)

Q = (60 * q *f1 * E) /Cm)

Cm = 0.027 L + 0.78

T = 100 / Q

q (m3)	f1	E	L(m)	Cm (min)	Q (m3 /h)	T(hr/100m3)
2.920	0.710	0.600	20.000	1.320	66.000	1.520

q : Execution volume (pushing) per one cycle

L : Average soil pushing distance

f1 : Soil conversion factor

Cm : Cycle time

E : Efficiency of work

PROCESS COST -7

Excavation in rock

Per : 65m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Large-sized breaker	1300kg	hr	5.5	6,430	89,000	35,365	489,500	5.5 hrs=1 day ; Process cost - 377
1	Back hoe	0.6 m3	hr	2.36	2,560	92,000	6,042	217,120	Equipment - 6
3	Common labor		person	2.5		80,600	-	201,500	1.2*2.5
	Total						**41,407**	**908,120**	
	Per 1.0m3						637	13,971	

. **Work ability of back hoe (0.6 m3)**

Q = (3600*q*fl*E) / Cs

T = 65/Q ; q=qo * K

q 0 (m3)	K	fl	E	Cs (sec)	Q (m3 / hr)	T (hr/100m3)
0.60	0.70	0.65	0.70	25.00	27.50	2.36

q : Standard bucket capacity

K : Bucket factor

fl: Soil conversion factor

Cs: Cycle time

E : Efficiency of work

q : Excavation volume per one cycle

PROCESS COST - 8

Excavation (water work ;clamshell)

Per : 100 m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Clamshell	0.6 m3	hr	2.48	2,830	89,000	7,018	220,720	Equipment - 13
2	Pontoon	50 ton	day	0.85	-	200,000	-	170,000	
3	Tugboat	100 ps	hr	0.27	1,310	120,000	354	32,400	Equipment - 75
4	Barge	100 ton	day	0.92	6,900	254,000	6,348	233,680	Equipment - 72
5	Foreman		person	0.50	-	183,300	-	91,650	0.2*2.5
6	Common labor		person	0.5	-	80,600	-	40,300	0.2*2.5
	Total						**13,720**	**788,750**	
	Per 1.0m^3						137	7,888	

. Workability of clamshell

$q_o = q*K$	K	f_1	E	C_s (sec)	Q	T(hr/100m3)
0.48	0.8	1	0.7	30	40.3	2.48

Q = (3600*q*K*f_1*E) / Cs

T = 100 / Q

q : Standard backet capacity (0.6 m3)

K : Backet factor

E : Efficiency of work

C_m : Cycle time

PROCESS COST - 9

Hand excavation

Per : 10 m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Common labor		person	5.5	-	80,600	-	443,300	2.2*2.5
	Total						-	**443,300**	
	Per 1.0m^3						-	44,330	

PROCESS COST - 10

Transportation of excavation soil (Stock piling)

Per : 100 m3 (transport distance 1.0 km)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Dump truck	11 ton	hr	3.02	1,650	67,000	4,983	202,340	Equipment - 33
	Total						**4,983**	**202,340**	
	Per 1.0m^3						50	2,023	

Dump truck operation time per one pile

T*(desing excavation volume per one pile) /100m3

Work ability of dump truck (11 ton)

L	C(m3)	f	E	b	a	Q	T
1.0	6.0	1.0	0.9	4.8	5.0	33.0	3.02

Cm = b L + a ; T = 100/Q

Q = (60 * qt * f * E) / Cm

Cm : Cycle time

L: Transport distance

q: Loanding volume one dump truck

b: Factor of transport condition

f : Soil conversion factor

a: working factor

E t : Efficiency of work

CB-30

PROCESS COST - 11

Transportation of excavation soil (unsuitable)

Per : 100 m3 (transport distance 1.0 km)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Dump truck	11 ton	hr	5.07	1,650	67,000	8,366	339,690	Equipment - 33
2	Common labor		person	0.25	-	80,600	-	20,150	0.1*2.5
	Total						**8,366**	**359,840**	
	Per 1.0m^3						84	3,598	

. **Work ability of dump truck (11 ton)**

b=4.8 ; a=10

C(m3)	f	Et	Cmt (min)	Q	T
1.0	1.0	0.9	14.8	22.3	4.48

Cm = b L + a ; T = 100/Q

Q = (60 * qt * f * E) / Cm

C : Transport quantity od a dump truck **C=n*q*K** (n: frequency of loading ; 10 , q : bucket capacity of backhoe; K : bucket factor ; 0.98)

E t : Efficiency of work

f : Soil conversion factor

Cmt : Cycle time (b : factor of transport condition, working factor)

PROCESS COST - 12

Backfilling work (used excavated soil)

Per : 100 m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Bulldozer	15 ton	hr	0.94	4,030	91,000	3,788	85,540	Equipment - 3
2	Back hoe	0.6 m3	hr	0.54	2,560	92,000	1,382	49,680	T*0.5=0.54 ; Equipment - 6
3	Vibrating roller	0.8 ~ 1.1 ton	hr	2.73	350	29,000	956	79,170	Equipment - 39
4	Tamper	60 ~ 100 kg	day	0.11	610	191,000	67	21,010	Equipment - 42
5	Common labor		person	5		80,600	-	403,000	2.0*2.5
	Total						**6,193**	**638,400**	
	Per 1.0m3						62	6,384	

. **Work ability of bulldozer (15ton)**

q (m3)	f1	E	L(m)	Cm (min)	Q (m3 /h)	T(hr/100m3)
2.92	1.00	0.80	20.00	1.32	106.20	0.94

q : Execution volume (pushing) per one cycle

L : Average soil pushing distance

f1 : Soil conversion factor

Cm : Cycle time

Q = (60 * q *f1 * E) /Cm)

Cm = 0.027 L + 0.78

T = 100 / Q

E : Efficiency of work

PROCESS COST - 13

Backfilling work (used excavated rock)

Per : 100 m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Bulldozer	15 ton	hr	0.94	4,030	91,000	3,788	85,540	Equipment - 3
2	Back hoe	0.6 m3	hr	0.65	2,560	92,000	1,664	59,800	T*0.5=0.54 ; Equipment - 6
3	Vibrating roller	0.8 ~ 1.1 ton	hr	3.24	350	29,000	1,134	93,960	Equipment - 39
4	Tamper	60 ~ 100 kg	day	0.11	610	191,000	67	21,010	Equipment - 42
5	Common labor		person	6.25	-	80,600	-	503,750	2.5*2.5
	Total						**6,653**	**764,060**	
	Per 1.0m3						67	7,641	

. Work ability of bulldozer (15ton)

q (m3)	fl	E	L(m)	Cm (min)	Q (m3 /h)	T(hr/100m3)
2.92	1.00	0.80	20.00	1.32	106.20	0.94

Q = (60 * q *fl * E) /Cm)

Cm = 0.027 L + 0.78

T = 100 / Q

q : Execution volume (pushing) per one cycle

L : Average soil pushing distance

fl : Soil conversion factor

Cm : Cycle time

E : Efficiency of work

PROCESS COST - 14

Backfilling work (used excavated soil in river)

Per : 100 m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Common labor		person	2.5	-	80,600	-	201,500	1.0*2.5
2	Clamshell	0.6 m3	hr	3.79	2,830	89,000	10,726	337,310	Equipment - 13
3	Barge	100 ton	day	0.61	6,900	254,000	4,209	154,940	Equipment - 72
4	Tugge	100 ps	hr	0.06	1,310	120,000	79	7,200	Equipment - 75
5	Pontoon	50 ton	day	0.06	-	200,000	-	12,000	
	Total						**15,013**	**712,950**	
							150	7,130	
	Per 1.0m3								

PROCESS COST - 15

Hand backfill

Per : 10 m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Common labor		person	0.5		80.600	-	40.300	0.2*2.5
2	Tamper	60 ~ 100 kg	day	0.16	610	191.000	98	30.560	5 hrs/day*1/4;1 day=8 hrs ; Equipment - 42
	Total						**98**	**70.860**	
	Per 1.0m3						10	7.086	

PROCESS COST - 16

Site clearing

Per : 100 m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Bulldozer	15 ton	hr	0.21	4,030	91,000	846	19,110	30/100*T;Equipment - 3
2	Foreman		person	0.08	-	183,300	-	14,664	30/100*0.1*2.5
3	Common labor		person	0.15	-	80,600	-	12,090	30/100*0.2*2.5
4	Miscellaneous expenses	(Labor cost)*4%	set	1	-	-	-	1,070	
	Total						**846**	**46,934**	
Per 1.0m^2							8	469	

. Workability of bulldozer (15ton)

L(m)	q (m3)	f	E	C_m (min)	Q (m3 /h)	T(hr/100m3)
30	2.91	1	0.8	1.1	139.7	0.72

$Q = (60 * q * f * E)/C_m$

$C_m = 0.03* L + 0.2$

$T = 100 / Q$

$q=q_o*0.96$

L : Excavation and pushing distance

f : Soil conversion factor

q_o : Standard blade capacity

C_m : Cycle time

q : Effective width of blade

E : Efficiency of work

PROCESS COST - 17

Bedding work

Per: 10m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Crusher run		m3	12	-	89,000	-	1,068,000	1+K;k=+0.2; Material - 111
2	Foreman		person	0.75	-	183,300	-	137,475	0.3*2.5
3	Skilled labor		person	1.75	-	170,100	-	297,675	0.7*2.5
4	Common labor		person	3.75	-	80,600	-	302,250	1.5*2.5
5	Miscellaneous expenses	(Labor cost)*4%	set	1			-	29,496	
	Total							**1,834,896**	
	Per 1.0m3							183,490	

PROCESS COST - 18

Bedding work

Per: 10m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Crusher run		m3	12	-	89,000	-	1,068,000	1+K;k=+0.2; Material - 111
2	Foreman		person	0.75	-	183,300	-	137,475	0.3*2.5
3	Skilled labor		person	1.75	-	170,100	-	297,675	0.7*2.5
4	Common labor		person	3.75	-	80,600	-	302,250	1.5*2.5
5	Miscellaneous expenses	(Labor cost)*4%	set	1			-	29,496	
6	Barge with crane	40 ton	day	0.02	35,520	342,000	710	6,840	Equipment - 70
7	Tug boat	100ps	hr	0.07	1,310	120,000	92	8,400	0.02xT;T=3.63; Equipment - 75
	Total						**802**	**1,850,136**	
	Per 1.0m3						80	185,014	

PROCESS COST - 19

Bedding work with back hoe

Per: 10m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Crusher run		m3	12	-	89,000	-	1,068,000	1+K;k=+0.2; Material - 111
2	Foreman		person	0.75	-	183,300	-	137,475	0.3*2.5
3	Skilled labor		person	1.17	-	170,100	-	199,017	0.7*50/150*2.5
4	Common labor		person	2.5	-	80,600	-	201,500	1.5*50/150*2.5
5	Miscellaneous expenses	(Labor cost)*4%	set	1			-	21,520	
6	Back hoe	0.35 m3	hr	0.17	1,460	64,000	248	10,880	100/150*1/T;T=4.0 ; Equipment -7
	Total						**248**	**1,638,392**	
	Per 1.0m3						25	163,839	

PROCESS COST - 20

Cut off setting work

Per: 10m

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Cut off plate	W=200mm	m	10	738	-	7,380	-	Material - 66
2	Carpenter		person	1.25	-	111,700	-	139,625	0.5*2.5
3	Miscellaneous expenses	(Labor cost)*4%	set	1			-	5,585	
	Total						**7,380**	**145,210**	
	Per 1.0m3						738	14,521	

PROCESS COST - 21

Concrete plant operation

Concrete plant (forced mixing) 45m3/hr x 0.7 x 5.67 hr/day = 178.6 m3/day.

Per 178.6 m3/day

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Concrete plant Depreciable value of Equipment	45m3/hr	hr	5.67	8,760	-	49,669	-	t=850/150=5.67 ; Equipment - 98
2	Generator	100 KVA	day	0.71	4,100	230,000	2,911	163,300	5.67/8=0.71 ; Equipment - 50
3	Tractor shovel	1.4m3	hr	2.25	2,270	59,000	5,108	132,750	0.75*T ; T=3.0 ; Equipment -11
4	Conveyor belt	10m	day	1.42	980	-	1,392	-	2*5.67/8=1.42 ; Equipment - 59
5	Generator	10 KVA	day	1.42	1,250	35,000	1,775	49,700	2*5.67/8=1.42 ; Equipment - 52
6	Foreman		person	2.5	-	183,300	-	458,250	1.0 * 2.5
7	Plant operator		person	2.5	-	183,300	-	458,250	1.0 * 2.5
8	Assistant operator		person	2.5	-	111,700	-	279,250	1.0 * 2.5
9	Common labor		person	2.5	-	80,600	-	201,500	1.0 * 2.5
	Total						**60,854**	**1.743,000**	
	Per 1.0m3						341	9,759	

PROCESS COST - 22

Transportation of concrete(go and back time form plant to construction site 30 minuter)

Per 10 m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Truck mixer	30-3.2 m3	hrs	2.7	1,030	57,000	2,781	153,900	Equipment - 61
2	Miscellaneous expenses	(sum above)*1%	set	1	-	-	28	1,539	
	Total						**2,809**	**155,439**	
	Per 1.0 m3						281	15,544	

Truck mixer operation time

Loanding capacity of concrete	C 3.0m3
Go back time from plant to site	X1:30min
Loanding and waiting time	T1: 8min
Stand by time	T3: 10min
Coeficiency of road surface condition	X2: 1.0

Operation tiome per 1.0 m3=(T1+X2+T3)/(C3*60*X2)=(8+30+10)/(3*60*1)=0.27 hrs m3

PROCESS COST - 23

Setting of concrere curb (W260*H230*L1000)

Per : 10m

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Concrete curb setting		m	10.00	-	24,630	-	246,300	Processcost - 233
2	Concrete	class E	m3	0.69	376	382,404	259	263,859	Processcost - 154
3	Concrete placing		m3	0.69	-	57,191	-	39,462	Processcost - 229
4	Form work		m3	4.6	-	82,710	-	380,466	Processcost - 228
5	Cement mortar	for curb	m3	0.05	-	319,477	-	15,974	Processcost - 68
6	Concrete curb	260*230*1000	m	10	-	28,700	-	287,000	Material - 86
	Total						**259**	**1,233,060**	
Per 1.0 m							26	123,306	

PROCESS COST - 24

Filling clayed material for cofferdam(by hand)

Per : 100 m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Clayed matwerial		m3	110.00	-	13,640	-	1,500,400	Material - 114
3	Common labor		person	47.5	-	80,600	-	3,828,500	19*2.5
6	Miscellaneous expenses	(labor cost)*5%	set	1			-	191,425	
	Total						-	**5,520,325**	
Per 1.0 m3							-	55,203	

PROCESS COST - 25

Temporary cofferdam work for piers

Per : 1set

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Hand backfill		m3	253.39	-	13,640	-	3,456,240	Material - 114
3	Setting of soil bag		bag	3,219	-	20,005	-	64,396,095	19*2.5
	Total						-	**67,852,335**	
Per 1set							-	67,852,335	

PROCESS COST - 26

Soil pitching for solid sodding

Per 100 m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Organic soil		m3	30	-	10,920	-	327,600	Transportation cost
2	Common labor		person	5	-	80,600	-	403,000	2*2.5
3	Miscellaneous expenses	(labor cost)*2%	set	1	-	-	-	8,060	
4	Tamper	60~100 kg	day	0.125	610	191,000	76	23,875	Equipment - 42
	Total						**76**	**762,535**	
	Per 1.0 m2						1	7,625	

PROCESS COST - 27

Solid sodding work

Per 100 m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Lawn		m3	100	-	4,545	-	454,500	
2	Foreman		person	1.5	-	183,300	-	274,950	0.6*2.5
3	Common labor		person	10	-	80,600	-	806,000	4.0*2.5
4	Miscellaneous expenses	(Sum of above)*4%	set	1			-	61,418	
	Total						-	1,596,868	
	Per 1.0 m2						-	15,969	

PROCESS COST - 28

Concrete placing (Less than 50m3/day,concrete pump,R.C structure except RC slab , cross beam)

Per: 10m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	0.38	-	183,300	-	69,654	0.15*2.5
2	Skilled labor		person	1.05	-	170,100	-	178,605	0.42*2.5
3	Common labor		person	1.6	-	80,600	-	128,960	0.64*2.5
4	Operation of concrete pump	Boom type 90 ~ 100 m3/hr	hr	0.92	5,330	78,000	4,904	71,760	Equipment - 60
5	Dead head cost of concrete pump		day	0.25	10,660	156,718	2,665	39,180	Process cost - 347(2)
6	Miscellaneous expenses	(Sum of above)*1%	set	1			76	4,882	
	Total						**7,644**	**493,040**	
	Per 1.0m3						764	49,304	

PROCESS COST - 29

Concrete placing (50-100m3/day,concrete pump,R.C structure except RC slab , cross beam)

Per: 10m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	0.28	-	183,300	-	51,324	0.11*2.5
2	Skilled labor		person	0.9	-	170,100	-	153,090	0.36*2.5
3	Common labor		person	1.175	-	80,600	-	94,705	0.47*2.5
4	Operation of concrete pump	Boom type 90 ~ 100 m3/hr	hr	0.68	5,330	78,000	3,624	53,040	Equipment - 60
5	Dead head cost of concrete pump		day	0.14	10,660	156,718	1,492	21,941	Process cost - 347(2)
6	Miscellaneous expenses	(Sum of above)*1%	set	1			51	3,741	
	Total						**5,168**	**377,841**	
	Per 1.0m3						517	37,784	

PROCESS COST - 30

Concrete placing (100-300m3/day,concrete pump,R.C structure except RC slab , cross beam)

Per: 10m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	0.175	-	183,300	-	32,078	0.07*2.5
2	Skilled labor		person	0.7	-	170,100	-	119,070	0.28*2.5
3	Common labor		person	0.78	-	80,600	-	62,868	0.31*2.5
4	Operation of concrete pump	Boom type 90 ~ 100 m3/hr	hr	0.43	5,330	78,000	2,292	33,540	Equipment - 60
5	Dead head cost of concrete pump		day	0.06	10,660	156,718	640	9,403	Process cost - 347(2)
6	Miscellaneous expenses	(Sum of above)*1%	set	1			29	2,570	
	Total						**2,961**	**259,528**	
	Per 1.0m3						296	25,953	

PROCESS COST - 31

Concrete placing (300-600 m3/day,concrete pump,R.C structure except RC slab , cross beam)

Per: 10m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	0.1	-	183,300	-	18,330	0.04*2.5
2	Skilled labor		person	0.675	-	170,100	-	114,818	0.27*2.5
3	Common labor		person	0.5	-	80,600	-	40,300	0.2*2.5
4	Operation of concrete pump	Boom type 90 ~ 100 m3/hr	hr	0.25	5,330	78,000	1,333	19,500	Equipment - 60
5	Dead head cost of concrete pump		day	0.03	10,660	156,718	320	4,702	Process cost - 347(2)
6	Miscellaneous expenses	(Sum of above)*1%	set	1			17	1,976	
	Total						**1,669**	**199,626**	
	Per 1.0m3						167	19,963	

PROCESS COST - 32

Concrete placing (300-600 m3/day,pipe setting type concrete pump)

Per: 10m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	0.1	-	183,300	-	18,330	0.04*2.5
2	Skilled labor		person	0.68	-	170,100	-	115,668	0.27*2.5
3	Common labor		person	0.5	-	80,600	-	40,300	0.2*2.5
4	Operation of concrete pump	Boom type 90 ~ 100 m3/hr	hr	0.25	4,930	61,000	1,233	15,250	Equipment - 99
5	Pressure pipe setting and removal		m3	10	-	1,006	-	10,060	Process cost - 343(5)
6	Miscellaneous expenses	(Sum of above)*1%	set	1	-	-	12	1,996	
7	Dead head cost of concrete pump		day	0.03	10,660	156,718	320	4,702	Process cost - 347(2)
8	Supporting facility for pressure pipes		m3	10	69	114,818	690	1,148,180	Process cost -434
	Total						**2,255**	**1,354,486**	
	Per 1.0m3						225	135,449	

PROCESS COST - 33

Concrete placing (100-300 m3/day,pipe setting type concrete pump)

Per: 10m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	0.1	-	183,300	-	18,330	0.04*2.5
2	Skilled labor		person	0.68	-	170,100	-	115,668	0.27*2.5
3	Common labor		person	0.5	-	80,600	-	40,300	0.2*2.5
4	Operation of concrete pump	Boom type 90 ~ 100 m3/hr	hr	0.5	4,930	61,000	2,465	30,500	2 pump; Equipment - 99
5	Pressure pipe setting and removal		m3	10	-	2,244	-	22,440	Process cost - 343(4)
6	Miscellaneous expenses	(Sum of above)*1%	set	1	-	-	25	2,272	
7	Dead head cost of concrete pump		day	0.13	10,660	156,718	1,386	20,373	Process cost - 347(2)
8	Supporting facility for pressure pipes		m3	10	69	114,818	690	1,148,180	Process cost -434
	Total						**4,565**	**1,398,064**	
	Per 1.0m3						457	139,806	

PROCESS COST - 34

Concrete placing with chute

Per 10 m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	1.025	-	183,300	-	187,883	0.41*2.5
2	Skilled labor		person	1.95	-	170,100	-	331,695	0.78*2.5
3	Common labor		person	3.075	-	80,600	-	247,845	1.23*2.5
4	Miscellaneous expenses	(Labor cost)*4%	set	1	-		-	30,697	
	Total						-	**798,119**	
	Per 1.0m3						-	79,812	

PROCESS COST - 35

Scaffolding (h<4 m) for substructure

Per 100 multiplied m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	5.25	-	183,300	-	962,325	2.1*2.5
2	Rigger		person	9.25	-	153,200	-	1,417,100	3.7*2.5
3	Common labor		person	13.25	-	80,600	-	1,067,950	5.3*2.5
4	Miscellaneous expenses	(Labor cost)*16%	set	1	-		-	551,580	
	Total						-	**3,998,955**	
	Per 1.0m2						-	39,990	

PROCESS COST - 36

Scaffolding (h>=4 m) for substructure

Per 100 multiplied m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	3.25	-	183,300	-	595,725	2.1*2.5
2	Rigger		person	10	-	153,200	-	1,532,000	3.7*2.5
3	Common labor		person	10	-	80,600	-	806,000	5.3*2.5
4	Truck crane	Hydraulic 15-16 ton	hr	3.108	3,080	55,000	9,573	170,940	Equipment 18
5	Miscellaneous expenses	(sum of above)*18%	set	1	-		1,723	558,840	
							-		
	Total						**11,296**	**3,663,505**	
	Per 1.0m2						113	36,635	

PROCESS COST - 37

Timbering(4<B<8 t/m2) for substructure

Per 100 air m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	5.00	-	183,300	-	916,500	2*2.5
2	Carpenter		person	7	-	111,700	-	781,900	2.8*2.5
2	Rigger		person	15.25	-	153,200	-	2,336,300	6.1*2.5
3	Common labor		person	15.5	-	80,600	-	1,249,300	6.2*2.5
4	Truck crane	Hydraulic 15-16 ton	hr	6.216	3,080	55,000	19,145	341,880	1.4*T;T=4.44;Equipment 18
5	Miscellaneous expenses	(sum of above)*21%	set	1	-		4,021	1,181,435	
							-		
	Total						**23,166**	**6,807,315**	
	Per 1.0m2						232	68,073	

PROCESS COST - 38

Form work (wooden form,RC structure, height<4 m)

Per 100m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	7.5	-	183,300	-	1,374,750	3.0*2.5
2	Carpenter		person	37.5	-	111,700	-	4,188,750	15.0*2.5
3	Common labor		person	28	-	80,600	-	2,256,800	11.2*2.5
4	Miscellaneous expenses	(Labor cost)*11%	set	1	-		-	860,233	
	Total							**8,680,533**	
	Per 1.0m2							86,805	

PROCESS COST - 39

Form work (wooden form,RC structure, height>4 m)

Per 100m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	6.25	-	183,300	-	1,145,625	2.5*2.5
2	Carpenter		person	37	-	111,700	-	4,132,900	15.0*2.5
3	Common labor		person	22.5	-	80,600	-	1,813,500	9.0*2.5
4	Miscellaneous expenses	(Labor cost)*11%	set	1			-	780,123	
5	Truck crane	hydraulic 15-16 t	hr	7.1	3,080	55,000	21,868	390,500	1.6*T ; T=4.44;Equipment - 18
	Total						**21,868**	**8,262,648**	
	Per 1.0m2						219	82,626	

PROCESS COST - 40

Form work (wooden form,RC structure)

Per 100m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	6.25	-	183,300	-	1,145,625	2.5*2.5
2	Carpenter		person	37	-	111,700	-	4,132,900	15.0*2.5
3	Common labor		person	22.5	-	80,600	-	1,813,500	9.0*2.5
4	Miscellaneous expenses	(Labor cost)*11%	set	1	-		-	780,123	
5	Barge with crane	25 ton	day	1	21,900	302,000	21,900	302,000	Equipment -91
6	Tug boat	100ps	hr	3.63	1,310	120,000	4,755	435,600	1xT;T=3.63; Equipment -75
	Total						**26,655**	**8,609,748**	
	Per 1.0m2						267	86,097	

PROCESS COST - 41

Form work (Cylindrical wooden form,height<4m)

Per 100m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	9.75	-	183,300	-	1,787,175	3.9*2.5
2	Carpenter		person	52.25	-	111,700	-	5,836,325	20.9*2.5
3	Common labor		person	46.75	-	80,600	-	3,768,050	18.7*2.5
4	Miscellaneous expenses	(Labor cost)*10%	set	1	-		-	1,139,155	
	Total						-	**12,530,705**	
	Per 1.0m2						-	125,307	

PROCESS COST - 42

Form work (Cylindrical wooden form,height>4m)

Per 100m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	14.25	-	183,300	-	2,612,025	5.7*2.5
2	Carpenter		person	56	-	111,700	-	6,255,200	22.4*2.5
3	Common labor		person	36.25	-	80,600	-	2,921,750	14.5*2.5
4	Truck crane	hydraulic 15 ~ 16 ton	hr	4.44	3,080	55,000	13,675	244,200	1*T ; T=4.44 Equipment -18
5	Miscellaneous expenses	(Labor cost)*10%	set	1			-	1,178,898	
	Total						**13,675**	**13,212,073**	
	Per 1.0m2						137	132,121	

PROCESS COST - 43

Form work (Cylindrical wooden form for Piers)

Per 100m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	14.25	-	183,300	-	2,612,025	5.7*2.5
2	Carpenter		person	56	-	111,700	-	6,255,200	22.4*2.5
3	Common labor		person	36.25	-	80,600	-	2,921,750	14.5*2.5
4	Miscellaneous expenses	(Labor cost)*10%	set	1	-		-	1,178,898	
5	Barge with crane	25 ton	day	1	21,900	302,000	21,900	302,000	Equipment -91
6	Tug boat	100ps	hr	3.63	1,310	120,000	4,755	435,600	1xT;T=3.63; Equipment -75
	Total						**26,655**	**13,705,473**	
	Per 1.0m2						267	137,055	

PROCESS COST - 44

Bridge drain pipe setting work

Per 10m

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	0.75	-	183,300	-	137,475	0.3*2.5
2	Skilled labor		person	2.25	-	170,100	-	382,725	0.9*2.5
3	Common labor		person	1.5	-	80,600	-	120,900	0.6*2.5
4	Miscellaneous expenses	(Labor cost)*4%	set	1	-		-	25,644	
	Total						-	**666,744**	
	Per 1.0 m						-	66,674	

PROCESS COST - 45

Concrete anchor setting work for bridge drain pipe

Per 100 anchor

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	2.25	-	183,300	-	412,425	0.9*2.5
2	Skilled labor		person	6.75	-	170,100	-	1,148,175	2.7*2.5
3	Common labor		person	4.5	-	80,600	-	362,700	1.8*2.5
4	Concrete anchor	M12	each	100	-	1,682	-	168,200	Material- 102
5	Hammer drill	ϕ 38mm	day	1.8	110	-	198	-	Equipment - 69
6	Generator	2 KVA	day	1.8	290	24,000	522	43,200	Equipment - 53
7	Miscellaneous expenses	(Labor cost)*4%	set	1	-	-	-	76,932	
	Total						**720**	**2,211,632**	
	Per 1.0 m						7	22,116	

PROCESS COST - 46

Drain pipe (D= 15 cm)

Per 10m

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Drain pipe setting work		m	10	-	66,674	-	666,740	Process cost - 44
2	Drain pipe	PVC ϕ150	m	10	-	73,091	-	730,910	Material - 140
	Total						-	**1,397,650**	
	Per 1.0 m						-	139,765	

PROCESS COST - 47

Drain pipe (D=20cm) setting

Per 10m

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Drain pipe setting work		m	10	-	66,674	-	666,740	Process cost - 44
2	Drain pipe	PVC ϕ 200	m	10	-	97,273	-	972,730	Material - 141
3	Concrete anchor	M12	each	12.21	7	22,116	85	270,036	Process cost - 45
4	Tees	T1(200-160)	each	1.1	-	67,300	-	74,030	Material - 16
5	Tess	T2-200	each	1.1	-	58,200	-	64,020	Material - 17
6	Pipe joint	250-200	each	0.25	-	51,500	-	12,875	Material - 20
7	Hanger	ϕ 200	each	6.1	-	33,000	-	201,300	Material - 21
	Total						**85**	**2,261,731**	
	Per 1.0 m						9	226,173	

Drain box setting work for PC I girder

Per 1each

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	0.25	-	183,300	-	45,825	0.1*2.5
2	Skilled labor		person	0.18	-	170,100	-	30,618	0.07*2.5
3	Common labor		person	1.25	-	80,600	-	100,750	0.5*2.5
4	Miscellaneous expenses	(Labor cost)*4%	set	1	-		-	-	0.15*T;T=4.33;Equipment - 101
5	Truck with crane	2t;2t hanging load	hr	0.65	670	41,000	436	26,650	Material - 23
6	Drain box	300*200*500mm	each	1	-	291,400	-	291,400	
	Total						**436**	**495,243**	

PROCESS COST - 49

Drain box setting work for box girder

Per 1each

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	0.25	-	183,300	-	45,825	0.1*2.5
2	Skilled labor		person	0.18	-	170,100	-	30,618	0.07*2.5
3	Common labor		person	1.25	-	80,600	-	100,750	0.5*2.5
4	Miscellaneous expenses	(Labor cost)*4%	set	1	-		-	-	
5	Truck with crane	2t;2t hanging load	hr	0.65	670	41,000	436	26,650	0.15*T;T=4.33;Equipment - 101
6	Drain box	300*200*600mm	each	1	-	358,200	-	358,200	Material - 24
				-					
	Total						**436**	**562,043**	

PROCESS COST - 50

Road marking Type - A (General application)

Per 150 m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	2.5	-	183,300	-	458,250	1.0*2.5
2	Skilled labor		person	5.75	-	170,100	-	978,075	2.3*2.5
3	Common labor		person	7.5	-	80,600	-	604,500	3.0*2.5
4	Line marker	hand guided capacity 80-120 kg	hr	4.69	190	-	891	-	T=610/130;Equipment -92
5	Melting tank	cepacity 200 kg	hr	4.18	510	1,000	2,132	4,180	T=610/170;Equipment -93
6	Truck	4-4.5 ton	hr	4.69	850	51,000	3,987	239,190	Equipment-35
7	Miscellaneous expenses	Sum of above *6%	set	1			421	137,052	
	Total						**7,430**	**2,421,247**	
	Per 1.0 m						50	16,142	

PROCESS COST - 51

Subgrade work (CBR = 6)(including material)

Per 100m^3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN.D)	Foreign (J.YEN)	Local (VN.D)	
1	Filling material		m3	110	-	13,920	-	1,531,200	Percent of swell and shrinkage 1/0.9 = 1.1 - Material - 115
2	Bull dozer	15 ton	hr	0.44	4,030	91,000	1,773	40,040	Equipment - 3
3	Tired roller	8 ~ 20 ton	hr	0.81	1,990	50,000	1,612	40,500	Equipment - 41
4	Common labor		person	0.125		80,600	-	10,075	0.05*2.5
	Total						**3,385**	**1,621,815**	
Per 1.0m^3							34	16,218	

Work ability of bull dozer

$Q_A = (W * V_1 * D * f_1 * E_1) / N_1$, $T_A = 100/Q$

W_1	V_1	D	f_1	E_1	N_1	Q_A	T_A
2.9	2100	0.2	1/1.25	0.7	3	227.4	0.44

Q_A : quantity of spreading and grading work (m^3/hr)

W_1 : effetive spreading width per one time spreading(m)

E_1: efficiency of work. D: finish thickness (m)

V_1 : spreading and grading speed (m/hr)

N1 : number of spreading and grading work (times)

f1 : soil conversion factor

Work ability of tired roller

$Q_B = (W * V_2 * D * f_2 * E_2) / N_2$, $T_B = 100/Q$

W_2	V_2	D	f_2	E_2	N_2	Q_B	T_B
1.8	4000	0.2	1/0.87	0.6	8	124.2	0.81

Q_B : quantity of compaction (m^3/hr)

W_2: effective compaction width per one time of compaction work (m)

V_2: compaction speed (m/hr)

E_2: efficiency of work. N_2 : numbers of compaction work (times)

D: finish thickness (m)

f2 : soil conversion factor

Subgrade work (CBR = 6)(excluding material)

Per $100m^3$

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN.D)	Foreign (J.YEN)	Local (VN.D)	
1	Bull dozer	15 ton	hr	0.44	4,030	91,000	1,773	40,040	Equipment - 3
2	Tired roller	8 ~ 20 ton	hr	0.81	1,990	50,000	1,612	40,500	Equipment - 41
3	Common labor		person	0.125		80,600		10,075	0.05 * 2.5
	Total						**3,385**	**90,615**	
	Per $1.0m^3$						34	906	

Work ability of bull dozer

$Q_A = (W * V_1 * D * f_1 * E_1)/ N_1$, $T_A = 100/Q$

W_1	V_1	D	f_1	E_1	N_1	Q_A	T_A
2.8	2300	0.2	1/1.25	0.7	5	144.3	0.69

Q_A : quantity of spreading and grading work (m^3/hr)

W_1 : effetive spreading width per one time spreading(m)

E_1: efficiency of work. D: finish thickness (m)

V_1 : spreading and grading speed (m/hr)

N1 : number of spreading and grading work (times)

f1 : soil conversion factor

Work ability of tired roller

$Q_B = (W * V_2 * D * f_2 * E_2)/ N_2$, $T_B = 100/Q$

W_2	V_2	D	f_2	E_2	N_2	Q_B	T_B
1.8	3500	0.2	1/0.87	0.5	10	72.4	1.38

Q_B : quantity of compaction (m^3/hr)

W_2: effective compaction width per one time of compaction work (m)

V_2: compaction speed (m/hr)

E_2: efficiency of work. N_2 : numbers of compaction work (times)

D: finish thickness (m)

f2 : soil conversion factor

PROCESS COST - 53

Subgrade work (CBR > 6)

Per $100m^3$

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN.D)	Foreign (J.YEN)	Local (VN.D)	
1	Filling material	from Borrow pit	m3	110		13,920	-	1,531,200	Percent of sweil and shrinkage 1/0.9 = 1.1 - Material - 115
2	Bull dozer	15 ton	hr	0.69	4,030	91,000	2,781	62,790	Equipment - 3
3	Tired roller	8 ~ 20 ton	hr	1.38	1,990	50,000	2,746	69,000	Equipment - 41
4	Common labor		person	0.125		80,600		10,075	0.05*2.5
	Total						**5,527**	**1,673,065**	
Per $1.0m^3$							55	16,731	

Work ability of bull dozer

$Q_A = (W * V_1 * D * f_1 * E_1) / N_1$, $T_A = 100/Q$

W_1	V_1	D	f_1	E_1	N_1	Q_A	T_A
2.8	2300	0.2	1/1.25	0.6	5	124	0.81

Q_A : quantity of spreading and grading work (m^3/hr)

W_1 : effetive spreading width per one time spreading (m)

E_1: efficiency of work. D: finish thickness (m)

V_1 : spreading and grading speed (m/hr)

N1 : number of spreading and grading work (times)

f1 : soil conversion factor

Work ability of tired roller

$Q_B = (W * V_2 * D * f_2 * E_2) / N_2$, $T_B = 100/Q$

W_2	V_2	D	f_2	E_2	N_2	Q_B	T_B
1.8	3500	0.2	1/0.87	0.5	10	72.4	1.38

Q_B : quantity of compaction (m^3/hr)

W_2: effective compaction width per one time of compaction work (m)

V_2: compaction speed (m/hr)

E_2: efficiency of work. N_2 : numbers of compaction work (times)

D: finish thickness (m)

f2 : soil conversion factor

PROCESS COST - 54

Subgrade preparation

Per : 100 m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Common labor		person	0.33	-	80,600	-	26,598	0.13*2.5
2	Motor grader	3.1m	hr	0.26	2,850	58,000	741	15,080	Equipment - 14
3	Road roller	macadam 10-12 ton	hr	0.15	2,010	48,000	302	7,200	Equipment - 40
4	Tired roller	8-20 ton	hr	0.15	1,990	50,000	299	7,500	Equipment - 41
5	Road sprinkler	5500-6500 l	hr	0.11	1,230	42,000	135	4,620	Equipment - 44
	Total						**1,476**	**60,998**	
Per 1.0m^2							15	610	

PROCESS COST - 55

Blinding concrete work with chute

Per 10 m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
6	Concrete	Class G	m3	10	376	287,042	3,760	2,870,420	Process cost - 156
1	Foreman		person	1.03	-	183,300	-	188,799	0.41*2.5
2	Skilled labor		person	1.95	-	170,100	-	331,695	0.78*2.5
3	Common labor		person	3.08	-	80,600	-	248,248	1.23*2.5
4	Miscellaneous expenses	(Labor cost)*4%	set	1			-	30,750	
5	Curing		m3	10	-	3,978	-	39,780	Process cost - 398(2)
	Total						**3,760**	**3,709,692**	
Per 1.0m^3							376	370,969	

PROCESS COST - 56

Blinding concrete work

Per: 10m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Concrete	Class G	m3	10	376	287,042	3,760	2,870,420	Process cost - 156
2	Foreman		person	0.38	-	183,300	-	69,654	0.15*2.5
3	Skilled labor		person	1.05	-	170,100	-	178,605	0.42*2.5
4	Common labor		person	1.6	-	80,600	-	128,960	0.64*2.5
5	Operation of concrete pump	Boom type 90 ~ 100 m3/hr	hr	0.25	4,930	61,000	1,233	15,250	Equipment -99
6	Pressure pipe setting and removal		m3	10	-	1,006	-	10,060	Process cost - 343(3)
7	Miscellaneous expenses	(Sum of above)*1%	set	1	-	-	49.93	32,729	
8	Dead head cost of concrete pump		day	0.25	10,660	156,718	2,665	39,180	Process cost - 347(2)
9	Supporting facility for pressure pipes		m3	10	69	114,818	690	1,148,180	Process cost -434
	Total						**8,397**	**4,493,038**	
	Per 1.0m3						840	449,304	

PROCESS COST - 57

Fabrication and setting of the settlement measuring devices

Per: 10 place

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Steel plate	500*500*5	kg	100	37		3,700	-	Material - 1
2	Steel bar	ϕ 20	kg	140	-	3,800	-	532,000	Material - 8
3	PVC pipe	ϕ 50	m3	56	-	7,070	-	395,920	Material - 60
4	Cap	PVC	each	10	-	3,600	-	36,000	Material - 175
5	Supplemental material	(Sum of above)*1%	set	1	-	-	37	9,639	
6	Foreman		person	1.0	-	183,300	-	183,300	0.4*2.5
7	Welder		person	0.5	-	111,700	-	55,850	0.2*2.5
8	Common labor		person	6.0	-	80,600	-	483,600	2.4*2.5
9	Miscellaneous expenses	Labor cost *4%	set	1.0			-	28,910	
	Total						**3,737**	**1,725,219**	
	Per 1.place						374	172,522	

PROCESS COST - 58

Setting work of the line and level checking stakes

Per: 6 stakes (15*15*200cm)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Timber		m3	0.09	-	1,324,600	-	119,214	Material - 132
2	Foreman		person	0.250	-	183,300	-	45,825	0.1*2.5
3	Common labor		person	1.00	-	80,600	-	80,600	0.4*2.5
4	Miscellaneous expenses	Labor cost *4%	set	1.0			-	5,057	
	Total						-	**250,696**	
	Per 1stake						-	41,783	

PROCESS COST - 59

Construction joint work

Per 100 m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Asphalt joint filler	t=20mm	m2	110	1,476	-	162,360	-	
2	Supplemental material	(sum of above)*2%	set	1	-	-	3,247	-	
3	Carpenter		person	10.25	-	111,700	-	1,144,925	4.1*2.5
4	Miscellaneous expenses	(labor cost)*4%	set	1			-	45,797	
	Total						**165.607**	**1,190,722**	
	Per :1 m2						1.656	11,907	

PROCESS COST - 60

Reinforcement work (Diameter less than 13mm)

Per one ton

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	1.5	-	183,300	-	274,950	0.6*.25
2	Steel worker		person	10	-	111,700	-	1,117,000	4.0*2.5
3	Common labor		person	7.5	-	80,600	-	604,500	3.0*2.5
4	Miscellaneous expenses	(labor cost)*5%	set	1			-	99,823	
5	Reinforcement		ton	1.03	24,000		24,720	-	loss 3% Material - 28
	Total						**24,720**	**2,096,273**	

PROCESS COST - 61

Reinforcement work (Diameter 13mm ~ 28mm)

Per one ton

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	1.25	-	183,300	-	229,125	0.5*2.5
2	Steel worker		person	8.75	-	111,700	-	977,375	3.5*2.5
3	Common labor		person	6.25	-	80,600	-	503,750	2.5*2.5
4	Miscellaneous expenses	(labor cost)*5%	set	1			-	85,513	
5	Reinforcement		ton	1.03	23,000		23,690	-	loss 3% Material - 29
	Total						**23,690**	**1,795,763**	

PROCESS COST - 62

Reinforcement work (Diameter 13mm ~ 28mm)

Per one ton

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	1.25	-	183,300	-	229,125	0.5 * 2.5
2	Steel worker		person	8.75	-	111,700	-	977,375	3.5*2.5
3	Common labor		person	6.25	-	80,600	-	503,750	2.5*2.5
4	Miscellaneous expenses	(labor cost)*5%	set	1			-	85,513	
5	Reinforcement		ton	1.03	23,000		23,690	-	loss 3% Material - 29
6	Barge with crane	25 ton	day	0.02	21,900	302,000	438	6,040	Equipment -91
7	Tug boat	100ps	hr	0.16	1,310	120,000	210	19,200	0.2* T ; T=3.63 Equipment -75
	Total						**24,338**	**1,821,003**	
	Per :1 ton						**24,338**	**1,821,003**	

PROCESS COST - 63

Reinforcement work (Diameter 29mm ~ 32mm)

Per one ton

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	0.75	-	183,300	-	137,475	0.3 * 2.5
2	Steel worker		person	7.5	-	111,700	-	837,750	3*2.5
3	Common labor		person	5	-	80,600	-	403,000	2*2.5
4	Miscellaneous expenses	(labor cost)*5%	set	1			-	68,911	
5	Reinforcement		ton	1.03	24,000	-	24,720	-	loss 3% Material - 30
	Total						**24,720**	**1,447,136**	

PROCESS COST - 64

Reinforcement work (Diameter 29mm ~ 32mm)

Per one ton

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	0.75	-	183,300	-	137,475	0.3 * 2.5
2	Steel worker		person	7.5	-	111,700	-	837,750	3*2.5
3	Common labor		person	5	-	80,600	-	403,000	2*2.5
4	Miscellaneous expenses	(labor cost)*5%	set	1	-	-	-	68,911	
5	Reinforcement		ton	1.03	24,000	-	24,720	-	loss 3% Material - 30
6	Barge with crane	25 ton	day	0.02	21,900	302,000	438	6,040	Equipment -91
7	Tug boat	100ps	hr	0.16	1,310	120,000	210	19,200	0.2* T ; T=3.63 Equipment -75
	Total						**25,368**	**1,472,376**	
	Per :1 ton						**25,368**	**1,472,376**	

PROCESS COST - 66

Excavation (back hoe 0.35 m3)

Per : 100 m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Back hoe	Hydraulic 0.35 m3	hr	0.03	1,460	64,000	44	1,920	Equipment - 7
	Total						**44**	**1,920**	
	Per 1.0m^3						44	1,920	

. Workability of back hoe (0.6 m3)

q_0 (m3)	K	q	f	E	C_s (sec)	Q (m3 / hr)	T (hr/100m3)
0.35	0.98	0.34	1.00	0.7	27	31.7	0.03

Q = (3,600*q*f*E) / Cs

T = 100/Q ; q=qo * K

q_o : Standard bucket capacity

K : Bucket factor

f_i: Soil conversion factor

C_s: Cycle time

E : Efficiency of work

q : Excavation volume per one cycle

PROCESS COST - 67

Cement mortar (for concrete brick work)

Per : 1 m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Cement	PC 40	kg	361	-	876	-	316,236	Material - 71
2	Fine aggregate		m3	1	-	50,000	-	50,000	Material - 106
3	Miscellaneous expenses	(Sum of above) *3%	Set	1			-	10,987	
	Total						-	**377,223**	
	Per 1 m3						-	377,223	

PROCESS COST - 68

Cement mortar (for concrete stone work)

Per : 1 m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Cement	PC 40	kg	297	-	876	-	260,172	Material - 71
2	Fine aggregate		m3	1	-	50,000	-	50,000	Material - 106
3	Miscellaneous expenses	(Sum of above) *3%	Set	1			-	9,305	
	Total						-	**319,477**	
	Per 1 m3						-	319,477	

PROCESS COST - 69

Cement mortar M75 (for brick 220x105x60mm work)

Per : 1 m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Cement	PC 40	kg	227	-	876	-	198,852	Material - 71
2	Fine aggregate		m3	1.13	-	50,000	-	56,500	Material - 106
3	Miscellaneous expenses	(Sum of above)*3%	Set	1			-	7,661	
	Total						-	**263,013**	
	Per 1 m3						-	263,013	

PROCESS COST - 70

Setting and removal of floor plate

Per 100 sand piles

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	10	-	183,300	-	1,833,000	4*2.5
2	Skilled labor		person	17.5	-	170,100	-	2,976,750	7*2.5
3	Common labor		person	12.5	-	80,600	-	1,007,500	5*2.5
4	Miscellaneous expenses	Labor cost *16%	Set	1			-	930,760	
	Total						-	**6,748,010**	
	Per 1 sand pile								

PROCESS COST - 71

Non - shrinkage mortar

Per 1.0m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Non - shrinkage		kg	1900	-	9,091	-	17,272,900	Material - 72
2	Sub material	3% above	set	1	-		-	518,187	
3	Common labor		person	15	-	80,600	-	1,209,000	6.0*2.5
	Total						-	**19,000,087**	
	Per 1 .0m3								

PROCESS COST - 72

Bridge desk water proofing

Per 100 m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Aspkalt water proofing		kg	200	49		9,800	-	Material -148
2	Foreman		person	1.25	-	183,300	-	229,125	0.5*2.5
3	Skilled labor		person	3	-	170,100	-	510,300	1.2*2.5
4	Common labor		person	1.75	-	80,600	-	141,050	0.7*2.5
5	Miscellaneous expenses	Sum of above *4%	Set	1			392	35,219	
							-		
	Total						**10,192**	**915,694**	
	Per 1.0m2						102	9,157	

Sand fill

Per 100m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Swamp bulldozer	16 ton	hr	1.76	3,880	91,000	6,829	160,160	0.44 * 4 layers ; Equipment - 4
2	Sand	Yellow sand	m3	130	-	50,000	-	6,500,000	100*(1+K), K=0.3, Material -100, K:correction factor
3	Miscellaneous cost	Material cost *2%	Set	1			-	130,000	
	Total						**6,829**	**6,790,160**	
	Per 1.0m3						68	67,902	

W	V	D	fl	E	N	Q	T
3.70	1700.00	0.25	1/ 1.15	0.50	4.00	170.92	0.59

Q = (W*V*D*fl*E)/ N

T = 100 / Q

Q : Spreading and grading volume per one hour (m3/h)

V : Veracity of work (m/hr)

D : Finished thickness of sand mat (m)

fl : Soil conversion factor

E : Efficiency of work

N : Numbers of compaction work

W : Effective compaction width per one time of spreading and grading and compacting work (m)

PROCESS COST -74

Excavator operation (bored pile ϕ 1000 mm; L = 8.5 m)

per one hour

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN.D)	Foreign (J.YEN)	Local (VN.D)	
1	Reverse circulation drill	air lift pump suction using together type	hr	1	5,470	-	5,470	-	Equipment 29
2	Three-wings bit	ϕ 800-1200mm	day	0.18	1,510	-	272	-	D/(N*T_2) ; Equipment-30
3	Hammer grab	ϕ 1000mm	day	0.18	8,100	-	1,458	-	D/(N*T_2) ; Equipment-31
4	Hammer crown	ϕ less than 1300mm	day	0.18	1,990	-	358	-	D/(N*T_2) ; Equipment-32
5	Generator	200KVA	day	0.18	7,920	464,000	1,426	83,520	D/(N*T_2) ; Equipment-48
6	Miscellaneous expenses		set	1			3	480	
	Total						**8,987**	**84,000**	
	per : one hr						8,987	84,000	

D : Duration for Bored pile work ; **40** days

N : Total numbers of Bored pile : **126** each

T_2 : Excavation time ; **1.81** hrs

PROCESS COST - 75

Excavator operation (bored pile ϕ1000 mm; L = 10 m)

per one hour

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN.D)	Foreign (J.YEN)	Local (VN.D)	
1	Reverse circulation drill	air lilt pump suction using together type	hr	1	5,470	-	5,470	-	Equipment 29
2	Three-wings bit	ϕ800-1200mm	day	0.17	1,510	-	257	-	D/(N*T_2) ; Equipment - 30
3	Hammer grab	ϕ 1000mm	day	0.17	8,100	-	1,377	-	D/(N*T_2) ; Equipment-31
4	Hammer crown	ϕ less than 1300mm	day	0.17	1,990	-	338	-	D/(N*T_2) ; Equipment-32
5	Generator	200KVA	day	0.17	7,920	464,000	1,346	78,880	D/(N*T_2) ; Equipment-48
6	Miscellaneous expenses		set	1			3	120	
	Total						**8,791**	**79,000**	
	per one hour						8,791	79,000	

D : Duration for Bored pile work ; **40** days

N : Total numbers of Bored pile ; **126** each

T_2 : Excavation time ; **1.92** hrs

PROCESS COST - 76

Excavator operation (bored pile ϕ 1000 mm; L = 16.0 m)
per one hour

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN.D)	Foreign (J.YEN)	Local (VN.D)	
1	Reverse circulation drill	air lift pump suction using together type	hr	1	5,470	-	5,470	-	Equipment 29
2	Three-wings bit	ϕ 800-1200mm	day	0.11	1,510	-	166	-	D/(N*T_2) ; Equipment - 30
3	Hammer grab	ϕ 1000mm	day	0.11	8,100	-	891	-	D/(N*T_2) ; Equipment-31
4	Hammer crown	ϕ less than 1300mm	day	0.11	1,990	-	219	-	D/(N*T_2) ; Equipment-32
5	Generator	200KVA	day	0.11	7,920	464,000	871	51,040	D/(N*T_2) ; Equipment-48
6	Miscellaneous expenses		set	1			2	960	
	Total						**7,619**	**52,000**	
	per one hour						7,619	52,000	

D : Duration for Bored pile work ; **40** days
N : Total numbers of Bored pile ; **126** each
$\mathbf{T_2}$: Excavation time ; **2.88** hrs

Excavator operation (bored pile ϕ 1000 mm ; L = 19.5 m)

per one hour

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN.D)	Foreign (J.YEN)	Local (VN.D)	
1	Reverse circulation drill	air lift pump suction using together type	hr	1	5,470	-	5,470	-	Equipment 29
2	Three-wings bit	ϕ 800-1200mm	day	0.09	1,510	-	136	-	D/(N*T_2) ; Equipment - 30
3	Hammer grab	ϕ 1000mm	day	0.09	8,100	-	729	-	D/(N*T_2) ; Equipment-31
4	Hammer crown	ϕ less than 1300mm	day	0.09	1,990	-	179	-	D/(N*T_2) ; Equipment-32
5	Generator	200KVA	day	0.09	7,920	464,000	713	41,760	D/(N*T_2) ; Equipment-48
6	Miscellaneous expenses		set	1			2	240	
	Total						**7,229**	**42.000**	
	per one hour						7,229	42,000	

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D : Duration for Bored pile work ; **40** days

N : Total numbers of Bored pile ; **126** each

T_2 : Excavation time ; **3.51** hrs

PROCESS COST - 78

Excavator operation (bored pile ϕ 1000 mm; L = 20.0 m)

per one hour

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN.D)	Foreign (J.YEN)	Local (VN.D)	
1	Reverse circulation drill	air lift pump suction using together type	hr	1	5,470	-	5,470	-	Equipment 29
2	Three-wings bit	ϕ 800-1200mm	day	0.09	1,510	-	136	-	D/(N*T_2) ; Equipment - 30
3	Hammer grab	ϕ 1000mm	day	0.09	8,100	-	729	-	D/(N*T_2) ; Equipment-31
4	Hammer crown	ϕ less than 1300mm	day	0.09	1,990	-	179	-	D/(N*T_2) ; Equipment-32
5	Generator	200KVA	day	0.09	7,920	464,000	713	41,760	D/(N*T_2) ; Equipment-48
6	Miscellaneous expenses		set	1			2	240	
	Total						**7,229**	**42,000**	
	per one hour						7,229	42,000	

D : Duration for Bored pile work ; **40** days

N : Total numbers of Bored pile ; **126** each

$\mathbf{T_2}$: Excavation time ; **3.59** hrs

PROCESS COST - 79

Excavator operation (bored pile ϕ 1000 mm; L = 21 m)

per one hour

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN.D)	Foreign (J.YEN)	Local (VN.D)	
1	Reverse circulation drill	air lift pump suction using together type	hr	1	5,470	-	5,470	-	Equipment 29
2	Three-wings bit	ϕ 800-1200mm	day	0.09	1,510	-	136	-	D/(N*T_2) ; Equipment - 30
3	Hammer grab	ϕ 1000mm	day	0.09	8,100	-	729	-	D/(N*T_2) ; Equipment-31
4	Hammer crown	ϕ less than 1300mm	day	0.09	1,990	-	179	-	D/(N*T_2) ; Equipment-32
5	Generator	200KVA	day	0.09	7,920	464,000	713	41,760	D/(N*T_2) ; Equipment-48
6	Miscellaneous expenses		set	1			2	240	
	Total						**7,229**	**42,000**	
	per one hour						7,229	42,000	

D : Duration for Bored pile work ; **40** days

N : Total numbers of Bored pile ; **126** each

$\mathbf{T_2}$: Excavation time ; **3.59** hrs

PROCESS COST - 80

Excavator operation (bored pile ϕ 1000 mm; L = 22.0 m)

per one hour

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN.D)	Foreign (J.YEN)	Local (VN.D)	
1	Reverse circulation drill	air lift pump suction using together type	hr	1	5,470	-	5,470	-	Equipment 29
2	Three-wings bit	ϕ 800-1200mm	day	0.08	1,510	-	121	-	D/(N*T_2) ; Equipment - 30
3	Hammer grab	ϕ 1000mm	day	0.08	8,100	-	648	-	D/(N*T_2) ; Equipment-31
4	Hammer crown	ϕ less than 1300mm	day	0.08	1,990	-	159	-	D/(N*T_2) ; Equipment-32
5	Generator	200KVA	day	0.08	7,920	464,000	634	37,120	D/(N*T_2) ; Equipment-48
6	Miscellaneous expenses		set	1			8	880	
	Total						**7,040**	**38,000**	
	per one hour						7,040	38,000	

D : Duration for Bored pile work ; **40** days

N : Total numbers of Bored pile ; **126** each

T_2 : Excavation time ; **3.91** hrs

PROCESS COST - 81

Excavator operation (bored pile ϕ1000 mm; L = 25.0 m)

per one hour

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN.D)	Foreign (J.YEN)	Local (VN.D)	
1	Reverse circulation drill	air lift pump suction using together type	hr	1	5,470	-	5,470	-	Equipment 29
2	Three-wings bit	ϕ 800-1200mm	day	0.07	1,510	-	106	-	D/(N*T_2) ; Equipment - 30
3	Hammer grab	ϕ 1000mm	day	0.07	8,100	-	567	-	D/(N*T_2) ; Equipment-31
4	Hammer crown	ϕ less than 1300mm	day	0.07	1,990	-	139	-	D/(N*T_2) ; Equipment-32
5	Generator	200KVA	day	0.07	7,920	464,000	554	32,480	D/(N*T_2) ; Equipment-48
6	Miscellaneous expenses		set	1			3	520	
	Total						**6,839**	**33,000**	
	per one hour						6,839	33,000	

D : Duration for Bored pile work ; **40** days

N : Total numbers of Bored pile ; **126** each

T_2 : Excavation time ; **4.32** hrs

PROCESS COST - 82

Excavator operation (bored pile ϕ1000 mm; L = 26.5 m)

per one hour

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN.D)	Foreign (J.YEN)	Local (VN.D)	
1	Reverse circulation drill	air lift pump suction using together type	hr	1	5,470	-	5,470	-	Equipment 29
2	Three-wings bit	ϕ 800-1200mm	day	0.07	1,510	-	106	-	D/(N*T_2) ; Equipment - 30
3	Hammer grab	ϕ 1000mm	day	0.07	8,100	-	567	-	D/(N*T_2) ; Equipment-31
4	Hammer crown	ϕ less than 1300mm	day	0.07	1,990	-	139	-	D/(N*T_2) ; Equipment-32
5	Generator	200KVA	day	0.07	7,920	464,000	554	32,480	D/(N*T_2) ; Equipment-48
6	Miscellaneous expenses		set	1			3	520	
	Total						**6,839**	**33,000**	
	per one hour						6,839	33,000	

D : Duration for Bored pile work ; **40** days

N : Total numbers of Bored pile ; **126** each

T_2 : Excavation time ; **4.64** hrs

PROCESS COST - 83

Excavator operation (bored pile ϕ 1000 mm; L = 28.5 m)
per one hour

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN.D)	Foreign (J.YEN)	Local (VN.D)	
1	Reverse circulation drill	air lift pump suction using together type	hr	1	5,470	-	5,470	-	Equipment 29
2	Three-wings bit	ϕ 800-1200mm	day	0.07	2,520	-	176	-	D/(N*T_2) ; Equipment - 30
3	Hammer grab	ϕ 1000mm	day	0.07	13,500	-	945	-	D/(N*T_2) ; Equipment-31
4	Hammer crown	ϕ less than 1300mm	day	0.07	3,310	-	232	-	D/(N*T_2) ; Equipment-32
5	Generator	200KVA	day	0.07	7,920	464,000	554	32,480	D/(N*T_2) ; Equipment-48
6	Miscellaneous expenses		set	1			3	520	
	Total						**7,381**	**33,000**	
	per one hour						7,381	33,000	

D : Duration for Bored pile work ; **40** days
N : Total numbers of Bored pile ; **126** each
T_2 : Excavation time ; **4.72** hrs

PROCESS COST - 84

Excavator operation (bored pile ϕ 1200 mm ; L = 21.0 m)

per one hour

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN.D)	Foreign (J.YEN)	Local (VN.D)	
1	Reverse circulation drill	air lift pump suction using together type	hr	1	5,470	-	5,470	-	Equipment 29
2	Three-wings bit	ϕ 800-1200mm	day	0.07	2,520	-	176	-	D/(N*T_2) ; Equipment - 30
3	Hammer grab	ϕ 1200mm	day	0.07	14,200	-	994	-	D/(N*T_2) ; Equipment-109
4	Hammer crown	ϕ less than 1300mm	day	0.07	3,310	-	232	-	D/(N*T_2) ; Equipment-32
5	Generator	200KVA	day	0.07	7,920	464,000	554	32,480	D/(N*T_2) ; Equipment-48
6	Miscellaneous expenses		set	1			4	520	
	Total						**7,431**	**33,000**	
	per one hour						7,431	33,000	

D : Duration for Bored pile work ; **25** days

N : Total numbers of Bored pile ; **73** each

T_2 : Excavation time ; **5.06** hrs

PROCESS COST - 85

Excavator operation (bored pile ϕ 1200 mm ; L = 21.5 m)

per one hour

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN.D)	Foreign (J.YEN)	Local (VN.D)	
1	Reverse circulation drill	air lift pump suction using together type	hr	1	5,470	-	5,470	-	Equipment 29
2	Three-wings bit	ϕ 800-1200mm	day	0.07	1,510	-	106	-	D/(N*T_2) ; Equipment - 30
3	Hammer grab	ϕ 1200mm	day	0.07	8,520	-	596	-	D/(N*T_2) ; Equipment-109
4	Hammer crown	ϕ less than 1300mm	day	0.07	1,990	-	139	-	D/(N*T_2) ; Equipment-32
5	Generator	200KVA	day	0.07	7,920	464,000	554	32,480	D/(N*T_2) ; Equipment-48
6	Miscellaneous expenses		set	1			4	520	
	Total						**6,870**	**33,000**	
	per one hour						6,870	33,000	

D : Duration for Bored pile work ; **25** days

N : Total numbers of Bored pile ; **73** each

T_2 : Excavation time ; **5.14** hrs

PROCESS COST - 86

Excavator operation (bored pile ϕ 1200 mm ; L = 24.0 m)
per one hour

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN.D)	Foreign (J.YEN)	Local (VN.D)	
1	Reverse circulation drill	air lift pump suction using together type	hr	1	5,470	-	5,470	-	Equipment 29
2	Three-wings bit	ϕ 800-1200mm	day	0.06	1,510	-	91	-	D/(N*T_2) ; Equipment - 30
3	Hammer grab	ϕ 1200mm	day	0.06	8,520	-	511	-	D/(N*T_2) ; Equipment-109
4	Hammer crown	ϕ less than 1300mm	day	0.06	1,990	-	119	-	D/(N*T_2) ; Equipment-32
5	Generator	200KVA	day	0.06	7,920	464,000	475	27,840	D/(N*T_2) ; Equipment-48
6	Miscellaneous expenses		set	1			6	160	
	Total						**6,672**	**28,000**	
	per one hour						6,672	28,000	

D : Duration for Bored pile work ; **25** days
N : Total numbers of Bored pile ; 73 each
T_2 : Excavation time ; **5.35** hrs

PROCESS COST - 87

Excavator operation (bored pile ϕ 1200 mm; L = 26.5 m)

per one hour

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN.D)	Foreign (J.YEN)	Local (VN.D)	
1	Reverse circulation drill	air lift pump suction using together type	hr	1	5,470	-	5,470	-	Equipment 29
2	Three-wings bit	ϕ 800-1200mm	day	0.06	1,510	-	91	-	D/(N*T_2) ; Equipment - 30
3	Hammer grab	ϕ 1200mm	day	0.06	8,520	-	511	-	D/(N*T_2) ; Equipment-109
4	Hammer crown	ϕ less than 1300mm	day	0.06	1,990	-	119	-	D/(N*T_2) ; Equipment-32
5	Generator	200KVA	day	0.06	7,920	464,000	475	27,840	D/(N*T_2) ; Equipment-48
6	Miscellaneous expenses		set	1			6	160	
	Total						**6,672**	**28,000**	
	per one hour						6,672	28,000	

D : Duration for Bored pile work ; **25** days

N : Total numbers of Bored pile ; **73** each

T_2 : Excavation time ; **5.67** hrs

PROCESS COST - 88

Excavator operation (bored pile ϕ 2000 mm; L = 10.5 m)
per one hour

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN.D)	Foreign (J.YEN)	Local (VN.D)	
1	Reverse circulation drill	air lift pump suction using together type	hr	1	5,470	-	5,470	-	Equipment 29
2	Three-wings bit	ϕ 1500-2000mm	day	0.11	2,140	-	235	-	D/(N*T_2) ; Equipment - 108
3	Hammer grab	ϕ 2000mm	day	0.11	18,360	-	2,020	-	D/(N*T_2) ; Equipment-110
4	Hammer crown	ϕ more than 1300mm	day	0.11	2,680	-	295	-	D/(N*T_2) ; Equipment-111
5	Generator	200KVA	day	0.11	7,920	464,000	871	51,040	D/(N*T_2) ; Equipment-48
6	Miscellaneous expenses		set	1			10	960	
	Total						**8,901**	**52,000**	
	per one hour						8,901	52,000	

D : Duration for Bored pile work ; **45** days
N : Total numbers of Bored pile ; **94** each
$\mathbf{T_2}$: Excavation time ; **4.44** hrs

PROCESS COST - 89

Excavator operation (bored pile ϕ 2000 mm ; L = 18.5 m)

per one hour

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN.D)	Foreign (J.YEN)	Local (VN.D)	
1	Reverse circulation drill	air lift pump suction using together type	hr	1	5,470	-	5,470	-	Equipment 29
2	Three-wings bit	ϕ 1500-2000mm	day	0.06	2,140	-	128	-	D/(N*T_2) ; Equipment - 108
3	Hammer grab	ϕ 2000mm	day	0.06	18,360	-	1,102	-	D/(N*T_2) ; Equipment-110
4	Hammer crown	ϕ more than 1300mm	day	0.06	2,680	-	161	-	D/(N*T_2) ; Equipment-111
5	Generator	200KVA	day	0.06	7,920	464,000	475	27,840	D/(N*T_2) ; Equipment-48
6	Miscellaneous expenses		set	1			1	160	
	Total						**7,337**	**28,000**	
	per one hour						7,337	28,000	

D : Duration for Bored pile work ; **45** days

N : Total numbers of Bored pile ; **94** each

T_2 : Excavation time ; **7.48** hrs

PROCESS COST - 90

Excavator operation (bored pile ϕ 2000 mm; L = 20.0 m)
per one hour

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN.D)	Foreign (J.YEN)	Local (VN.D)	
1	Reverse circulation drill	air lift pump suction using together type	hr	1	5,470	-	5,470	-	Equipment 29
2	Three-wings bit	ϕ 1500-2000mm	day	0.07	2,140	-	150	-	D/(N*T_2) ; Equipment - 108
3	Hammer grab	ϕ 2000mm	day	0.07	18,360	-	1,285	-	D/(N*T_2) ; Equipment-110
4	Hammer crown	ϕ more than 1300mm	day	0.07	2,680	-	188	-	D/(N*T_2) ; Equipment-111
5	Generator	200KVA	day	0.07	7,920	464,000	554	32,480	D/(N*T_2) ; Equipment-48
6	Miscellaneous expenses		set	1			3	520	
	Total						**7,650**	**33,000**	
	per one hour						7,650	33,000	

D : Duration for Bored pile work ; **45** days
N : Total numbers of Bored pile ; **94** each
T_2 : Excavation time ; **7.10** hrs

PROCESS COST - 91

Excavator operation (bored pile ϕ 2000 mm; L = 22.5 m)

per one hour

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN.D)	Foreign (J.YEN)	Local (VN.D)	
1	Reverse circulation drill	air lift, pump suction using together type	hr	1	5,470	-	5,470	-	Equipment 29
2	Three-wings bit	ϕ 1500-2000mm	day	0.05	2,140	-	107	-	D/(N*T_2) ; Equipment - 108
3	Hammer grab	ϕ 2000mm	day	0.05	18,360	-	918	-	D/(N*T_2) ; Equipment-110
4	Hammer crown	ϕ more than 1300mm	day	0.05	2,680	-	134	-	D/(N*T_2) ; Equipment-111
5	Generator	200KVA	day	0.05	7,920	464,000	396	23,200	D/(N*T_2) ; Equipment-48
6	Miscellaneous expenses		set	1			9	800	
	Total						**7,034**	**24,000**	
	per one hour						7,034	24,000	

D : Duration for Bored pile work ; **45** days

N : Total numbers of Bored pile ; **94** each

T_2 : Excavation time ; **9.0** hrs

PROCESS COST - 92

Excavator operation (bored pile ϕ 2000 mm; L = 24.5 m)

per one hour

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN.D)	Foreign (J.YEN)	Local (VN.D)	
1	Reverse circulation drill	air lift pump suction using together type	hr	1	5,470	-	5,470	-	Equipment 29
2	Three-wings bit	ϕ 1500-2000mm	day	0.05	2,140	-	107	-	D/(N*T_2) ; Equipment - 108
3	Hammer grab	ϕ 2000mm	day	0.05	18,360	-	918	-	D/(N*T_2) ; Equipment-110
4	Hammer crown	ϕ more than 1300mm	day	0.05	2,680	-	134	-	D/(N*T_2) ; Equipment-111
5	Generator	200KVA	day	0.05	7,920	464,000	396	23,200	D/(N*T_2) ; Equipment-48
6	Miscellaneous expenses		set	1			9	800	
	Total						**7,034**	**24,000**	
	per one hour						7,034	24,000	

D : Duration for Bored pile work ; **45** days

N : Total numbers of Bored pile ; **94** each

$\mathbf{T_2}$: Excavation time ; **9.76** hrs

PROCESS COST - 93

Excavator operation (bored pile ϕ 2000 mm; L = 28.0 m)

per one hour

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN.D)	Foreign (J.YEN)	Local (VN.D)	
1	Reverse circulation drill	air lift pump suction using together type	hr	1	5,470	-	5,470	-	Equipment 29
2	Three-wings bit	ϕ 1500-2000mm	day	0.06	2,140	-	128	-	1.3*D/(N*T_2) ; Equipment - 108
3	Hammer grab	ϕ 2000mm	day	0.06	18,360	-	1,102	-	1.3*D/(N*T_2) ; Equipment-110
4	Hammer crown	ϕ more than 1300mm	day	0.06	2,680	-	161	-	1.3*D/(N*T_2) ; Equipment-111
5	Generator	200KVA	day	0.06	7,920	464,000	475	27,840	1.3*D/(N*T_2) ; Equipment-48
6	Miscellaneous expenses		set	1			1	160	
	Total						**7,337**	**28,000**	
	per one hour						7,337	28,000	

D : Duration for Bored pile work ; **45** days

N : Total numbers of Bored pile ; **94** each

T_2 : Excavation time ; **11.09** hrs

PROCESS COST - 94

Excavator operation (bored pile ϕ 2000 mm; L = 29.5 m)

per one hour

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN.D)	Foreign (J.YEN)	Local (VN.D)	
1	Reverse circulation drill	air lift pump suction using together type	hr	1	5,470	-	5,470	-	Equipment 29
2	Three-wings bit	ϕ 1500-2000mm	day	0.04	2,140	-	86	-	D/(N*T_2) ; Equipment - 108
3	Hammer grab	ϕ 2000mm	day	0.04	18,360	-	734	-	D/(N*T_2) ; Equipment-110
4	Hammer crown	ϕ more than 1300mm	day	0.04	2,680	-	107	-	D/(N*T_2) ; Equipment-111
5	Generator	200KVA	day	0.04	7,920	464,000	317	18,560	D/(N*T_2) ; Equipment-48
6	Miscellaneous expenses		set	1			7	440	
	Total						**6,721**	**19,000**	
	per one hour						6,721	19,000	

D : Duration for Bored pile work ; **45** days

N : Total numbers of Bored pile ; **94** each

T_2 : Excavation time ; **11.66** hrs

PROCESS COST - 95

Excavator operation (bored pile ϕ 2000 mm; L = 36.0 m)

per one hour

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN.D)	Foreign (J.YEN)	Local (VN.D)	
1	Reverse circulation drill	air lift pump suction using together type	hr	1	5,470	-	5,470	-	Equipment 29
2	Three-wings bit	ϕ 1500-2000mm	day	0.05	2,140	-	107	-	1.5*D/(N*T_2) ; Equipment - 108
3	Hammer grab	ϕ 2000mm	day	0.05	18,360	-	918	-	1.5*D/(N*T_2) ; Equipment-110
4	Hammer crown	ϕ more than 1300mm	day	0.05	2,680	-	134	-	1.5*D/(N*T_2) ; Equipment-111
5	Generator	200KVA	day	0.05	7,920	464,000	396	23,200	1.5*D/(N*T_2) ; Equipment-48
6	Miscellaneous expenses		set	1			9	800	
	Total						**7,034**	**24,000**	
	per one hour						7,034	24,000	

D : Duration for Bored pile work ; **45** days

N : Total numbers of Bored pile ; **94** each

T_2 : Excavation time ; **14.13** hrs

PROCESS COST - 96

Removal of Existing tree (Root dia < 200mm)

Per 10 trees

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	0.25	-	183,300	-	45,825	0.1 * 2.5
2	Skilled labor		person	2	-	170,100	-	340,200	0.8*2.5
3	Common labor		person	2	-	80,600	-	161,200	0.8*2.5
4	Miscellaneous expenses	(sum of above)*8%	set	1			-	43,778	
	Total						-	**591,003**	
	Per one tree						-	59,100	

PROCESS COST - 97

Removal of Existing tree (Root dia. > 200)

Per 10 trees

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	0.25	-	183,300	-	45,825	0.1 * 2.5
2	Skilled labor		person	2	-	170,100	-	340,200	0.8*2.5
3	Common labor		person	2	-	80,600	-	161,200	0.8*2.5
4	Miscellaneous expenses	(sum of above)*8%	set	1			-	43,778	
5	Back hoe	0.35 m3	hr	1	1,460	64,000	1,460	64,000	Equipment - 7
	Total						**1,460**	**655,003**	
	Per 1.0 tree						146	65,500	

PROCESS COST - 98

Removal of old Pavement

Per 100m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	0.27	-	183,300	-	49,491	(1.7/8)* 0.5 * 2.5
2	Skilled labor		person	1.06	-	170,100	-	180,306	(1.7/8) *2.0 * 2.5
3	Common labor		person	1.06	-	80,600	-	85,436	(1.7/8) *2.0 * 2.5
4	Back hoe	0.6m3	hr	1.7	2,560	92,000	4,352	156,400	Equipment - 6
5	Dump truck	11 ton	hr	1.7	1,650	67,000	2,805	113,900	Equipment - 33
	Total						**7,157**	**585,533**	
	Per 1.0m2						72	5,855	
	Per 1.0m2 = total/(100*0.15)						477	39,036	

PROCESS COST - 99

Mat gabion setting work

Per 10 m

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Cobble stone	150 to 200mm	m3	18.2	-	63,000	-	1,146,600	Material - 109
2	Mat gabion	100*100;width 1,200mm	m	113	-	22,000	-	2,486,000	Material - 18
3	Submaterials	(Sum of above)*0.1%	set	1	-	-	-	36,326	
4	Foreman		person	2.0	-	183,300	-	366,600	0.8*2.5
5	Skilled		person	8.0	-	170,100	-	1,360,800	3.2*2.5
6	Common labor		person	7.0	-	80,600	-	564,200	2.8*2.5
7	Miscellaneous expenses	(Labor cost)*4%	set	1.0	-		-	91,664	
8	Clamshell	0.6m3	hr	1.0	2,830	89,000	2,830	89,000	Equipment - 13
	Total						**2,830**	**6,141,190**	
	Per 1.m = total / 10						283	614,119	
	Per 1.m2 = total / 30						94	204,706	

PROCESS COST - 100

Stone masonry backfill material throw in work (pitching work)

Per 10m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Common labor		person	2.5	-	80,600	-	201,500	1.0*2.5
2	Miscellaneous expenses	(labor cost)*4%	set	1	-	-	-	8,060	
							-		
							-		
	Total							209,560	
	Per 1.0 m3							20,956	

PROCESS COST - 101

Removal and transpostation of mud soil

Per 100m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
2	Back hoe	Hydraulic 1.0 m3	hr	2.16	2,560	92,000	5,530	198,720	Equipment -6
1	Dump truck	11 ton	hr	9.8	1,650	67,000	16,170	656,600	Equipment - 33
4	Common labor		person	0.5	-	80,600	-	40,300	0.2*2.5
	Total						**21,700**	**895,620**	
	Per 1.0 m3						217	8,956	

. Work ability of back hoe (1.0 m3)

q 0	K	f	E	Cs	Q	T
0.60	0.95	0.71	0.70	22.00	46.40	2.16

$Q = (3600*q0*K*f*E) / Cs$

$T = 100/Q$

Q: Quantity of excavation (m3/hr)

qo: Standard bucket capacity (m3)

K; Bucket factor

f: Soil conversion factor

Cs : Cycle time of one excavation (sec.)

E : Efficiency of work

. Workability of dump truck (11 ton)

$Q = (60 * qt * f * E) / Cm$; a=6 ; b=4.8

$Cm=b L + a$; $T=100/Q$; $q_t=n*q_o*K$

L (km)	C	fl	Et	Cm t	Q (m3/hr)	T
5.0	6.0	0.71	1.0	25.0	10.2	9.80

L : Transport distance (Km)

Q: Quantity of hauding work (m3/hr)

C: Capacity of loaded volume per one truck

E : Efficiency of work

f : Soil conversion factor

Cm : Cycle time

n: Frequency of loading per one dump truck

PROCESS COST - 102

Replacement with sand

Per 100m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Swamp bulldozer	16 ton	hr	0.74	3,880	91,000	2,871	67,340	Equipment - 4
2	Back hoe	Hydraulic 1.0 m3	hr	0.63	4,010	131,000	2,526	82,530	T/5;Equipment -5
3	Sand	Black sand	m3	130	-	26,300	-	3,419,000	100*(1+K);K=0.3 Material - 101
4	Common labor		person	0.13	-	80,600	-	10,478	1*2.5
	Total						**5,398**	**3,579,348**	
	Per 1.0 m3						54	35,793	

. **Work ability of Swamp bulldozer (16 ton)**

q	f	E	L	Cm	Q	T
####	1.0	0.70	20.0	0.940	135.40	0.740

Q: quantity of pushing work (m3/hr)
qo: Execution volume (pushing) per one cycle
L: Average soil pushing distance (m)
f: Soil conversion factor

Q = (60 * q * f * E) / Cm
C m = 0.037L+0.2=0.57
T=100/Q(hr/m3)
Cm : Cycle time
E : Efficiency of work

. **Work ability of back hoe (1.0 m3)**

q 0	K	f	E	Cs	Q	T
0.60	0.95	0.71	0.70	22.00	46.40	2.16

Q; Quantity of excavation (m3/hr)
qo: Standard bucket capacity (m3)
K; Bucket factor
f: Soil conversion factor
Cs : Cycle time of one excavation (sec.)
E : Efficiency of work

Q = (3600*q0*K*f*E) / Cs
T = 100/Q

PROCESS COST - 103

Placing work with geo - textile sheet

Per 100 m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Geo - textile sheet	width = 5.25 m	m2	111	-	18,182	-	2,018,202	overlapping width =0.5 m ; Material - 149
2	Foreman		person	1.5	-	183,300	-	274,950	2*0.3*2.5
3	Skilled labor		person	4.5	-	170,100	-	765,450	2*0.9*2.5
4	Common labor		person	5.5	-	80,600	-	443,300	2*1.1*2.5
5	Miscellaneous expenses	(labor cost)*17%	set	1	-		-	252,229	
					-				
	Total						-	3,754,131	
	Per 1.0 m2							37,541	

PROCESS COST - 104

Placing work with geo - textile sheet (non woven fabric)

Per 100 m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Geo - textile sheet	t=0.2mm, width = 4.4 m	m2	110	-	2,900	-	319,000	overlapping width =0.4 m ; Material - 57
2	Foreman		person	0.75	-	183,300	-	137,475	0.3*2.5
3	Skilled labor		person	2.25	-	170,100	-	382,725	0.9*2.5
4	Common labor		person	2.75	-	80,600	-	221,650	1.1*2.5
5	Miscellaneous expenses	(labor cost)*17%	set	1	-			126,115	
	Total							**1,186,965**	
	Per 1.0 m2							13,239	

PROCESS COST - 105

Soil bag setting

Per 100 bags (size 62cm*48cm*25 cm)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Common labor		person	15	-	80,600	-	1,209,000	3*2.5
2	Bag	62*48*25cm	each	100	-	4,545	-	454,500	Material - 142
3	Clayed material		m3	7.44	-	13,640	-	101,482	Material - 114
	Total							1,764,982	
	Per 1.bag							17,650	

PROCESS COST - 106

Stone masonry (250*250) for retaining wall

Per: 1.0 m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Cobble stone	25cm*25cm	m3	1	-	63,000	-	75,600	1+K;K=+0.2; Material - 109
2	Crusher stone	4cm*6cm	m3	0.057	-	85,400	-	4,868	Material - 110
3	Cement mortar		m3	0.42	-	319,477	-	134,180	1+K;K=+0.2; Process cost - 68
4	Foreman		person	0.13	-	183,300	-	23,829	0.05*2.5
5	Block worker		person	0.25	-	111,700	-	27,925	0.3*2.5
6	Common labor		person	1.25	-	80,600	-	100,750	0.5*2.5
7	Miscellaneous expenses	(Labor cost)*4%	set	1			-	6,100	
Total							-	**373,252**	
Per 1.0m^3							-	373,252	

PROCESS COST - 107

Guard rail setting work

Per: 100 m

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	2.0	-	183,300	-	366,600	0.8*2.5
2	Common labor		person	10.0	-	80,600	-	806,000	4.0*2.5
3	Guard rail		m	100	895	-	89,500	-	1 set=4.32m; Materiasl - 138
4	Guard rail post		each	25	-	-	-	-	Material - 139
5	Post driving machine	400 - 600 kg	hr	4.68	2,140	31,000	10,015	145,080	1*T ; T=4.68 ; Equpment - 94
6	Miscellaneous expenses	(Labor cost)*4%	set	1	-	-	-	11,726	
Total							**99,515**	**1,329,406**	
Per 1.0m							995	13,294	

PROCESS COST - 108

Mortared stone work (type - A)
Per: 10 m2 (thickness 20 cm)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Cobble stone		m3	2.30	-	63,000	-	144,900	Material - 109
2	Cement mortar		m3	0.40	-	319,477	-	127,791	Process cost - 68
3	Bedding work		m3	1.05	-	183,490	-	192,665	Process cost - 17
4	Foreman		person	0.50	-	183,300	-	91,650	0.2*2.5
5	Block worker		person	1.75	-	111,700	-	195,475	0.7*2.5
6	Common labor		person	3.00	-	80,600	-	241,800	1.2*2.5
7	Miscellaneous expenses	(Labor cost)*4%	set	1			-	21,157	
Total							**-**	**1,015,437**	
Per 1.0m^2							-	101,544	
Per 1.0m^3							-	507,719	

PROCESS COST - 109

Mortared stone work (For U-ditch)

Per: 10 m2 (thickness 20 cm)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	0.50	-	183,300	-	91,650	0.2*2.5
2	Block worker		person	1.75	-	111,700	-	195,475	0.7*2.5
3	Common labor		person	3.00	-	80,600	-	241,800	1.2*2.5
4	Cobble stone		m3	2.30	-	63,000	-	144,900	Material - 109
5	Cement mortar		m3	0.30	-	319,477	-	95,843	Process cost - 68
7	Miscellaneous expenses	(Labor cost)*4%	set	1			-	21,157	
Total							-	**790,825**	
Per 1.0m^3							-	79,083	
Per 1.0m^3							-	395,413	

PROCESS COST - 110

Mortared stone work (For head wall)

Per: 10 m2 (thickness 25 cm)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Cobble stone		m3	2.88	-	63,000	-	181,440	Material - 109
2	Cement mortar		m3	0.40	-	319,477	-	127,791	Process cost - 68
3	Foreman		person	0.50	-	183,300	-	91,650	0.2*2.5
4	Block worker		person	1.75	-	111,700	-	195,475	0.7*2.5
5	Common labor		person	3.00	-	80,600	-	241,800	1.2*2.5
6	Miscellaneous expenses	(Labor cost)*4%	set	1			-	21,157	
Total							-	**859,313**	
Per 1.0m^3							-	85,931	
Per 1.0m^3							-	343,725	

PROCESS COST - 111

Piling work (bored pile, Φ1000mm, pile length L = 8.5 m, reverse circulation drill method)

Per: one pile

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	2.77	-	183,300	-	507,741	1*Tr*1/t*2.5
2	Skilled labor		person	2.77	-	170,100	-	471,177	1*Tr*1/t*2.5
3	Rigger (hammerman)		person	5.54	-	153,200	-	848,728	2*Tr*1/t*2.5
4	Common labor		person	2.77	-	80,600	-	223,262	1*Tr*1/t*2.5
5	Hydraulic press - in pile driving and extractor	Φ 1200	day	1.11	23,460	-	26,041		Tr*1/t ; t=6.36; Equipment - 112
6	Back hoe	0.6 m^3	hr	1.81	2,560	92,000	4,634	166,520	Equipment - 6
7	Crawler crane	40 ton	hr	4.58	4,970	60,000	22,763	274,800	Tr * 1/7 *T ; T=4.55 ; Equipment - 23
8	Hydraulic clamshell bucket	Crawler 0.6 m^3	hr	1.63	2,830	89,000	4,613	145,070	T_2*0.9 ; Equipment - 13
9	Concrete	class Y	m^3	7.61	376	467,991	2,861	3,561,412	Process cost - 152
10	Reinforcement work	Φ 13 ~ 28 mm	t	0.23	23,690	1,795,763	5,449	413,025	Process cost - 61
11	Reinforcement work	Φ 29 ~ 32 mm	t	0.72	24,720	1,447,136	17,798	1,041,938	Process cost - 63
12	Transportation of excavated soil	Dump truck 11 ton	m^3	8.46	84	3,598	711	30,439	Process cost - 11
13	Miscellaneous expenses	(sum of above)*17%	set	1			14,428	1,306,299	
14	Slush tank	V=20 m^3	day	1.5	640		960		Equipment - 116
	Total						**100,256**	**8,990,411**	

T_1= 2.2; T_2= 0.45 + L_2*(0.22D-0.06)=1.81 T_3 = 2.1 + 0.11*L = 3.04 Tr =T_1+T_2+T_3=7.05; t = 700/110=6.36 (per operation day)

Where T_1: preparation time (hr/pile); T_2: excavation time (hr/pile); T_3: working time from stand pipe press-in to concrete placing (hr/pile)

L_2: excavation length (except excavation length by hammer grab) (m); D: pile diameter (m): L: design pile length (m)

Q : Concrete volume ; $Q = p/4 \times D^2 \times L \times 1.14\ (m^3) = 7.61\ m^3$;

Q e : Volume of Excavated soil $Qe = p/4 \times D^2 \times l\ (m^3) = 8.46\ m^3$ l =10.8 m ; L = 8.5 m ; L_2 = 8.5 m ; D = 1.0 m

PROCESS COST - 112

Piling work (bored pile, Φ1000mm, pile length L = 10.0 m , reverse circulation drill method)

Per: one pile

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	2.88	-	183,300	-	527,904	1*Tr*1/t*2.5
2	Skilled labor		person	2.88	-	170,100	-	489,888	1*Tr*1/t*2.5
3	Rigger (hammerman)		person	5.76	-	153,200	-	882,432	2*Tr*1/t*2.5
4	Common labor		person	2.88	-	80,600	-	232,128	1*Tr*1/t*2.5
5	Hydraulic press - in pile driving and extractor	Φ 1200	day	1.15	23,460	-	26,979		Tr*1/t ; t=6.36; Equipment - 112
6	Back hoe		hr	1.92	2,560	92,000	4,915	176,640	Equipment - 6
7	Crawler crane	40 ton	hr	4.76	4,970	60,000	23,657	285,600	Tr * 1/7 *T ; T=4.55 ; Equipment - 23
8	Hydraulic clamshell bucket	Crawler 0.6 m^3	hr	1.73	2,830	89,000	4,896	153,970	T_2*0.9;Equipment - 13
9	Concrete	class Y	m^3	8.95	376	467,991	3,365	4,188,519	Process cost - 152
10	Reinforcement work	Φ 13 ~ 28 mm	t	0.24	23,690	1,795,763	5,686	430,983	Process cost - 61
11	Reinforcement work	Φ 29 ~ 32 mm	t	0.69	24,720	1,447,136	17,057	998,524	Process cost - 63
12	Transportation of excavated soil	Dump truck 11 ton	m^3	9.66	84	3,598	811	34,757	Process cost - 11
13	Miscellaneous expenses	(sum of above)*17%	set	1			14,852	1,428,229	
14	Slush tank	V = 20 m^3	day	1.5	640		960		Equipment - 116
	Total						**103,179**	**9,829,574**	

T_1= 2.2; T_2= 0.45 + L_2*(0.22D-0.06)=1.92 T_3= 2.1 + 0.11*L = 3.2 Tr =T_1+T_2+T_3=7.32; t = 700/110=6.36 (per operation day)

Where T_1: preparation time (hr/pile); T_2; excavation time (hr/pile); T_3: working time from stand pipe press-in to concrete placing (hr/pile)

L_2: excavation length (except excavation length by hammer grab) (m); D: pile diameter (m): L: design pile length (m)

Q : Concrete volume ; Q = p/4 x D^2 x L x 1.14 (m^3) = 8.95 m^3 ;

Q e : Volume of Excavated soil Qe = p/4 x D^2 x l (m^3) = 9.66 m^3 l =12.3 m ; L = 10.0 m ; L_2= 9.2 m ; D = 1.0 m

PROCESS COST - 113

Piling work (bored pile, Φ1000mm, pile length L = 16.0 m , reverse circulation drill method)

Per: one pile

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	3.51	-	183,300	-	643,383	1*Tr*1/t*2.5
2	Skilled labor		person	3.51	-	170,100	-	597,051	1*Tr*1/t*2.5
3	Rigger (hammerman)		person	7.02	-	153,200	-	1,075,464	2*Tr*1/t*2.5
4	Common labor		person	3.51	-	80,600	-	282,906	1*Tr*1/t*2.5
5	Hydraulic press - in pile driving and extractor	Φ 1200	day	1.41	23,460	-	33,079	-	Tr*1/t ; t=6.36; Equipment - 112
6	Back hoe		hr	2.88	2,560	92,000	7,373	264,960	Equipment - 6
7	Crawler crane	40 ton	hr	5.81	4,970	60,000	28,876	348,600	Tr * 1/7 *T ; T=4.55 ; Equipment - 23
8	Hydraulic clamshell bucket	Crawler 0.6 m^3	hr	2.59	2,830	89,000	7,330	230,510	T_2*0.9;Equipment - 13
9	Concrete	class Y	m^3	14.32	376	467,991	5,384	6,701,631	Process cost - 152
10	Reinforcement work	Φ 13 ~ 28 mm	t	0.30	23,690	1,795,763	7,107	538,729	Process cost - 61
11	Reinforcement work	Φ 29 ~ 32 mm	t	0.83	24,720	1,447,136	20,518	1,201,123	Process cost - 63
12	Transportation of excavated soil	Dump truck 11 ton	m^3	14.37	84	3,598	1,207	51,703	Process cost - 11
13	Miscellaneous expenses	(sum of above)*17%	set	1	-	-	18,848	2,029,130	
14	Slush tank	V = 30 m^3	day	1.5	1,060	-	1,590		Equipment - 117
	Total						**131,311**	**13,965,190**	

T_1= 2.2; T_2= 0.45 + L_2*(0.22D-0.06)=2.88 T_3= 2.1 + 0.11*L = 3.86 Tr =T_1+T_2+T_3=8.94 ; t = 700/110=6.36 (per operation day)

Where T_1: preparation time (hr/pile); T_2; excavation time (hr/pile); T_3: working time from stand pipe press-in to concrete placing (hr/pile)

L_2: excavation length (except excavation length by hammer grab) (m); D: pile diameter (m): L: design pile length (m)

Q : Concrete volume ; Q = p/4 x D^2 x L x 1.14 (m^3) = 14.32 m^3 ;

Q e : Volume of Excavated soil Qe = p/4 x D^2 x 1 (m^3) = 14.37 m^3 l =18.3 m ; L = 16.0 m ; L_2= 15.2 m ; D = 1.0 m

PROCESS COST - 114

Piling work (bored pile, Φ1000mm, pile length L = 19.5 m , reverse circulation drill method)

Per: one pile

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	3.92	-	183,300	-	718,536	1*Tr*1/t*2.5
2	Skilled labor		person	3.92	-	170,100	-	666,792	1*Tr*1/t*2.5
3	Rigger (hammerman)		person	7.84	-	153,200	-	1,201,088	2*Tr*1/t*2.5
4	Common labor		person	3.92	-	80,600	-	315,952	1*Tr*1/t*2.5
5	Hydraulic press - in pile driving and extractor	Φ 1200	day	1.57	23,460	-	36,832		Tr*1/t ; t=6.36; Equipment - 112
6	Back hoe		hr	3.51	2,560	92,000	8,986	322,920	Equipment - 6
7	Crawler crane	40 ton	hr	6.47	4,970	60,000	32,156	388,200	Tr * 1/7 *T ; T=4.55 ; Equipment - 23
8	Hydraulic clamshell bucket	Crawler 0.6 m^3	hr	3.16	2,830	89,000	8,943	281,240	T_2*0.9;Equipment - 13
9	Concrete	class Y	m^3	17.45	376	467,991	6,561	8,166,443	Process cost - 152
10	Reinforcement work	Φ 13 ~ 28 mm	t	0.83	23,690	1,795,763	19,663	1,490,483	Process cost - 61
11	Transportation of excavated soil	Dump truck 11 ton	m^3	18.21	84	3,598	1,530	65,520	Process cost - 11
12	Miscellaneous expenses	(sum of above)*17%	set	1	-	-	19,494	2,314,920	
13	Slush tank	V = 30 m^3	day	2.0	1,060	-	2,120		Equipment - 117
Total							**136,284**	**15,932,093**	

T_1= 2.2; T_2= 0.45 ÷ L_2*(0.22D-0.06)=3.51 T_3 = 2.1 + 0.11*L = 4.25 Tr =T_1+T_2+T_3=9.96 ; t = 700/110=6.36 (per operation day)

Where T_1: preparation time (hr/pile); T_2; excavation time (hr/pile); T_3: working time from stand pipe press-in to concrete placing (hr/pile)

L_2: excavation length (except excavation length by hammer grab) (m); D: pile diameter (m): L: design pile length (m)

Q : Concrete volume ; Q = p/4 x D^2 x L x 1.14 (m^3) = 17.45 m^3 ;

Q e : Volume of Excavated soil Qe = p/4 x D^2 x l (m^3) = 18.21m^3 l =23.2 m ; L = 19.5 m ; L_2= 19.1 m ; D = 1.0 m

PROCESS COST - 115

Piling work (bored pile, Φ1000mm, pile length L = 20 m , reverse circulation drill method)

Per: one pile

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	3.97	-	183,300	-	727,701	1*Tr*1/t*2.5
2	Skilled labor		person	3.97	-	170,100	-	675,297	1*Tr*1/t*2.5
3	Rigger (hammerman)		person	7.94	-	153,200	-	1,216,408	2*Tr*1/t*2.5
4	Common labor		person	3.97	-	80,600	-	319,982	1*Tr*1/t*2.5
5	Hydraulic press - in pile driving and extractor	Φ 1200	day	1.59	23,460	-	37,301		Tr*1/t ; t=6.36; Equipment - 112
6	Back hoe		hr	3.59	2,560	92,000	9,190	330,280	Equipment - 6
7	Crawler crane	40 ton	hr	6.56	4,970	60,000	32,603	393,600	Tr * 1/7 *T ; T=4.55 ; Equipment - 23
8	Hydraulic clamshell bucket	Crawler 0.6 m^3	hr	3.23	2,830	89,000	9,141	287,470	T_2*0.9;Equipment - 13
9	Concrete	class Y	m^3	17.90	376	467,991	6,730	8,377,039	Process cost - 152
10	Reinforcement work	Φ 13 ~ 28 mm	t	0.85	23,690	1,795,763	20,137	1,526,399	Process cost - 61
11	Transportation of excavated soil	Dump truck 11 ton	m^3	18.60	84	3,598	1,562	66,923	Process cost - 11
12	Miscellaneous expenses	(sum of above)*17%	set	1	-	-	19,833	2,366,587	
13	Slush tank	V = 30 m^3	day	2.0	1,060	-	2,120		Equipment - 117
	Total						**138,618**	**16,287,685**	

T_1= 2.2; T_2= 0.45 + L_2*(0.22D-0.06)=3.59 T_3 = 2.1 + 0.11*L = 4.3 Tr =T_1+T_2+T_3=10.09 ; t = 700/110=6.36 (per operation day)

Where T_1: preparation time (hr/pile); T_2; excavation time (hr/pile); T_3: working time from stand pipe press-in to concrete placing (hr/pile)

L_2: excavation length (except excavation length by hammer grab) (m); D: pile diameter (m): L: design pile length (m)

Q : Concrete volume ; Q = p/4 x D^2 x L x 1.14 (m^3) = 17.90 m^3 ;

Q e : Volume of Excavated soil Qe = p/4 x D^2 x l (m^3) = 18.60 m^3 l =23.7 m ; L = 20 m ; L_2= 19.6 m ; D = 1.0 m

PROCESS COST - 116

Piling work (bored pile, Φ1000mm, pile length L = 21.0 m , reverse circulation drill method)

Per: one pile

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	4.00	-	183,300	-	733,200	1*Tr*1/t*2.5
2	Skilled labor		person	4.00	-	170,100	-	680,400	1*Tr*1/t*2.5
3	Rigger (hammerman)		person	8.00	-	153,200	-	1,225,600	2*Tr*1/t*2.5
4	Common labor		person	4.00	-	80,600	-	322,400	1*Tr*1/t*2.5
5	Hydraulic press - in pile driving and extractor	Φ 1200	day	1.60	23,460	-	37,536		Tr*1/t ; t=6.36; Equipment - 112
6	Back hoe		hr	3.59	2,560	92,000	9,190	330,280	Equipment - 6
7	Crawler crane	40 ton	hr	6.63	4,970	60,000	32,951	397,800	Tr * 1/7 *T ; T=4.55 ; Equipment - 23
8	Hydraulic clamshell bucket	Crawler 0.6 m^3	hr	3.23	2,830	89,000	9,141	287,470	T_2*0.9;Equipment - 13
9	Concrete	class Y	m^3	18.79	376	467,991	7,065	8,793,551	Process cost - 152
10	Reinforcement work	Φ 13 ~ 28 mm	t	0.36	23,690	1,795,763	8,528	646,475	Process cost - 61
11	Reinforcement work	Φ 29 ~ 32 mm	t	0.92	24,720	1,447,136	22,742	1,331,365	Process cost - 63
12	Transportation of excavated soil	Dump truck 11 ton	m^3	18.13	84	3,598	1,523	65,232	Process cost - 11
13	Miscellaneous expenses	(sum of above)*17%	set	1.00	-	-	21,875	2,518,341	
14	Slush tank	V = 30 m^3	day	2.00	1,060	-	2,120		Equipment - 117
Total							**152,672**	**17,332,114**	

T_1= 2.2; T_2= 0.45 + L_2*(0.22D-0.06)=3.59 T_3 = 2.1 + 0.11*L = 4.41 Tr =T_1+T_2+T_3=10.20; t = 700/110=6.36 (per operation day)

Where T_1: preparation time (hr/pile); T_2: excavation time (hr/pile); T_3: working time from stand pipe press-in to concrete placing (hr/pile)

L_2: excavation length (except excavation length by hammer grab) (m); D: pile diameter (m): L: design pile length (m)

Q : Concrete volume ; Q = p/4 x D^2 x L x 1.14 (m3) = 18.79 m^3 ;

Q e : Volume of Excavated soil Qe = p/4 x D^2 x l (m3) = 18.13 m^3 l =23.1 m ; L = 21.0 m ; L_2= 19.6 m ; D = 1.0 m

PROCESS COST - 117

Piling work (bored pile, Φ1000mm, pile length L = 22.0 m , reverse circulation drill method)

Per: one pile

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	4.18	-	183,300	-	766,194	1*Tr*1/t*2.5
2	Skilled labor		person	4.18	-	170,100	-	711,018	1*Tr*1/t*2.5
3	Rigger (hammerman)		person	8.36	-	153,200	-	1,280,752	2*Tr*1/t*2.5
4	Common labor		person	4.18	-	80,600	-	336,908	1*Tr*1/t*2.5
5	Hydraulic press - in pile driving and extractor	Φ 1200	day	1.67	23,460	-	39,178		Tr*1/t ; t=6.36; Equipment - 112
6	Back hoe		hr	3.91	2,560	92,000	10,010	359,720	Equipment - 6
7	Crawler crane	40 ton	hr	6.91	4,970	60,000	34,343	414,600	Tr * 1/7 *T ; T=4.55 ; Equipment - 23
8	Hydraulic clamshell bucket	Crawler 0.6 m^3	hr	3.52	2,830	89,000	9,962	313,280	T_2*0.9;Equipment - 13
9	Concrete	class Y	m^3	19.69	1,055	477,766	20,773	9,407,213	Process cost - 152
10	Reinforcement work	Φ 13 ~ 28 mm	t	0.91	23,690	1,795,763	21,558	1,634,144	Process cost - 61
11	Transportation of excavated soil	Dump truck 11 ton	m^3	19.63	84	3,598	1,649	70,629	Process cost - 11
12	Miscellaneous expenses	(sum of above)*17%	set	1	-	-	23,370	2,600,058	
13	Slush tank	V = 30 m^3	day	2.0	1,060	-	2,120		Equipment - 117
	Total						**162,962**	**17,894,515**	

T_1= 2.2; T_2= 0.45 + L_2*(0.22D-0.06)=3.91 T_3 = 2.1 + 0.11*L = 4.52 Tr =T_1+T_2+T_3=10.63 ; t = 700/110=6.36 (per operation day)

Where T_1: preparation time (hr/pile); T_2; excavation time (hr/pile); T_3: working time from stand pipe press-in to concrete placing (hr/pile)

L_2: excavation length (except excavation length by hammer grab) (m); D: pile diameter (m): L: design pile length (m)

Q : Concrete volume ; Q = p/4 x D^2 x L x 1.14 (m3) = 19.69 m^3 ;

Q e : Volume of Excavated soil Qe = p/4 x D^2 x 1 (m3) = 19.63 m^3 1 =25.0 m ; L = 22.0 m ; L_2 = 21.6 m ; D = 1.0 m

PROCESS COST - 118

Piling work (bored pile, Φ1000mm, pile length L = 25.0 m , reverse circulation drill method)

Per: one pile

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	4.47	-	183,300	-	819,351	1*Tr*1/t*2.5
2	Skilled labor		person	4.47	-	170,100	-	760,347	1*Tr*1/t*2.5
3	Rigger (hammerman)		person	8.94	-	153,200	-	1,369,608	2*Tr*1/t*2.5
4	Common labor		person	4.47	-	80,600	-	360,282	1*Tr*1/t*2.5
5	Hydraulic press - in pile driving and extractor	Φ 1200	day	1.79	23,460	-	41,993		Tr*1/t ; t=6.36; Equipment - 112
6	Back hoe		hr	4.32	2,560	92,000	11,059	397,440	Equipment - 6
7	Crawler crane	40 ton	hr	7.39	4,970	60,000	36,728	443,400	Tr * 1/7 *T ; T=4.55 ; Equipment - 23
8	Hydraulic clamshell bucket	Crawler 0.6 m^3	hr	3.89	2,830	89,000	11,009	346,210	T_2*0.9;Equipment - 13
9	Concrete	class Y	m^3	22.37	1,055	477,766	23,600	10,687,625	Process cost - 152
10	Reinforcement work	Φ 13 ~ 28 mm	t	1.06	23,690	1,795,763	25,111	1,903,509	Process cost - 61
11	Transportation of excavated soil	Dump truck 11 ton	m^3	21.27	84	3,598	1,787	76,529	Process cost - 11
12	Miscellaneous expenses	(sum of above)*17%	set	1	-	-	25,719	2,917,931	
13	Slush tank	V = 30 m^3	day	2.0	1,060	-	2,120		Equipment - 117
	Total						**179,127**	**20,082,233**	

T_1= 2.2; T_2= 0.45 + L_2*(0.22D-0.06)=4.32 T_3 = 2.1 + 0.11*L = 4.85 Tr =T_1+T_2+T_3=11.37 ; t = 700/110=6.36 (per operation day)

Where T_1: preparation time (hr/pile); T_2; excavation time (hr/pile); T_3: working time from stand pipe press-in to concrete placing (hr/pile)

L_2: excavation length (except excavation length by hammer grab) (m); D: pile diameter (m): L: design pile length (m)

Q : Concrete volume ; Q = p/4 x D^2 x L x 1.14 (m3) = 22.37 m^3 ;

Q e : Volume of Excavated soil Qe = p/4 x D^2 x l (m3) = 21.27 m^3 l=27.1 m ; L = 25.0 m ; L_2 = 24.2 m ; D = 1.0 m

PROCESS COST - 119

Piling work (bored pile, Φ1000mm, pile length L = 26.5 m , reverse circulation drill method)

Per: one pile

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	4.66	-	183,300	-	854,178	1*Tr*1/t*2.5
2	Skilled labor		person	4.66	-	170,100	-	792,666	1*Tr*1/t*2.5
3	Rigger (hammerman)		person	9.32	-	153,200	-	1,427,824	2*Tr*1/t*2.5
4	Common labor		person	4.66	-	80,600	-	375,596	1*Tr*1/t*2.5
5	Hydraulic press - in pile driving and extractor	Φ 1200	day	1.86	23,460	-	43,636		Tr*1/t ; t=6.36; Equipment - 112
6	Back hoe		hr	4.64	2,560	92,000	11,878	426,880	Equipment - 6
7	Crawler crane	40 ton	hr	7.71	4,970	60.000	38,319	462,600	Tr * 1/7 *T ; T=4.55 ; Equipment - 23
8	Hydraulic clamshell bucket	Crawler 0.6 m^3	hr	4.18	2,830	89.000	11,829	372,020	T_2*0.9;Equipment - 13
9	Concrete	class Y	m^3	23.71	376	467,991	8,915	11,096,067	Process cost - 152
10	Reinforcement work	Φ 13 ~ 28 mm	t	0.43	23,690	1,795,763	10,187	772,178	Process cost - 61
11	Reinforcement work	Φ 29 ~ 32 mm	t	1.40	24,720	1,447,136	34,608	2,025,990	Process cost - 63
12	Transportation of excavated soil	Dump truck 11 ton	m^3	23	84	3,598	1,932	82,754	Process cost - 11
13	Miscellaneous expenses	(sum of above)*17%	set	1	-	-	27,422	3,177,088	
14	Slush tank	V = 30 m^3	day	2.0	1,060	-	2,120		Equipment - 117
	Total						**190,845**	**21,865,841**	

T_1= 2.2; T_2= 0.45 + L_2*(0.22D-0.06)=4.64 T_3 = 2.1 + 0.11*L = 5.02 Tr =T_1+T_2+T_3=11.86; t = 700/110=6.36 (per operation day)

Where T_1: preparation time (hr/pile); T_2; excavation time (hr/pile); T_3: working time from stand pipe press-in to concrete placing (hr/pile)

L_2: excavation length (except excavation length by hammer grab) (m); D: pile diameter (m): L: design pile length (m)

Q : Concrete volume ; Q = p/4 x D^2 x L x 1.14 (m3) = 23.71 m^3 ;

Q e : Volume of Excavated soil Qe = p/4 x D^2 x l (m3) = 23.0 m^3 l =29.3 m ; L = 26.5 m ; L_2 = 26.2 m ; D = 1.0 m

PROCESS COST - 120

Piling work (bored pile, Φ1000mm, pile length L = 28.5 m , reverse circulation drill method)

Per: one pile

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	4.78	-	183,300	-	876,174	1*Tr*1/t*2.5
2	Skilled labor		person	4.78	-	170,100	-	813,078	1*Tr*1/t*2.5
3	Rigger (hammerman)		person	9.56	-	153,200	-	1,464,592	2*Tr*1/t*2.5
4	Common labor		person	4.78	-	80,600	-	385,268	1*Tr*1/t*2.5
5	Hydraulic press - in pile driving and extractor	Φ 1200	day	1.91	23,460	-	44,809	-	Tr*1/t ; t=6.36: Equipment - 112
6	Back hoe		hr	4.72	2,560	92,000	12,083	434,240	Equipment - 6
7	Crawler crane	40 ton	hr	7.90	4,970	60,000	39,263	474,000	Tr * 1/7 *T ; T=4.55 : Equipment - 23
8	Hydraulic clamshell bucket	Crawler 0.6 m^3	hr	4.25	2,830	89,000	12,028	378,250	T_2*0.9;Equipment - 13
9	Concrete	class Y	m^3	25.50	376	467,991	9,588	11,933,771	Process cost - 152
10	Reinforcement work	Φ 13 ~ 28 mm	t	0.46	23,690	1,795,763	10,897	826,051	Process cost - 61
11	Reinforcement work	Φ 29 ~ 32 mm	t	1.24	24,720	1,447,136	30,653	1,794,449	Process cost - 63
12	Transportation of excavated soil	Dump truck 11 ton	m^3	23.16	84	3,598	1,945	83,330	Process cost - 11
13	Miscellaneous expenses	(sum of above)*17%	set	1	-	-	27,415	3,308,744	
14	Slush tank	V = 30 m^3	day	2.0	1,060	-	2,120		Equipment - 117
15	Slush tank	V = 10 m^3	day	2.0	500	-	1,000		Equipment - 115
	Total						**191,801**	**22,771,946**	

T_1= 2.2; T_2= 0.45 + L_2*(0.22D-0.06)=4.72 T_3 = 2.1 + 0.11*L = 5.24 Tr =T_1+T_2+T_3=12.16 ; t = 700/110=6.36 (per operation day)

Where T_1: preparation time (hr/pile); T_2; excavation time (hr/pile); T_3: working time from stand pipe press-in to concrete placing (hr/pile)

L_2: excavation length (except excavation length by hammer grab) (m); D: pile diameter (m): L: design pile length (m)

Q : Concrete volume ; $Q = p/4 \times D^2 \times L \times 1.14\ (m^3) = 25.50\ m^3$;

Q e : Volume of Excavated soil $Qe = p/4 \times D^2 \times l\ (m^3) = 23..16\ m^3$ l =29.5 m ; L = 28.5 m ; L_2= 26.7 m ; D = 1.0 m

PROCESS COST - 121

Piling work (bored pile, Φ1200mm, pile length L = 21.5 m , reverse circulation drill method)

Per: one pile

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	4.64	-	183,300	-	850,512	1*Tr*1/t*2.5
2	Skilled labor		person	4.64	-	170,100	-	789,264	1*Tr*1/t*2.5
3	Rigger (hammerman)		person	9.28	-	153,200	-	1,421,696	2*Tr*1/t*2.5
4	Common labor		person	4.64	-	80,600	-	373,984	1*Tr*1/t*2.5
5	Hydraulic press - in pile driving and extractor	Φ 1480	day	1.86	24,780	-	46,091		Tr*1/t ; t=6.36; Equipment - 113
6	Back hoe		hr	5.14	2,560	92,000	13,158	472,880	Equipment - 6
7	Crawler crane	40 ton	hr	7.68	4,970	60,000	38,170	460,800	Tr * 1/7 *T ; T=4.55 ; Equipment - 23
8	Hydraulic clamshell bucket	Crawler 0.6 m^3	hr	4.63	2,830	89,000	13,103	412,070	T_2*0.9;Equipment - 13
9	Concrete	class Y	m^3	27.71	376	467,991	10,419	12,968,031	Process cost - 152
10	Reinforcement work	Φ 13 ~ 28 mm	t	1.87	23,690	1,795,763	44,300	3,358,077	Process cost - 61
11	Transportation of excavated soil	Dump truck 11 ton	m^3	27.69	84	3,598	2,326	99,629	Process cost - 11
12	Miscellaneous expenses	(sum of above)*17%	set	1	-	-	28,486	3,605,180	
13	Slush tank	V = 30 m^3	day	2.0	1,060	-	2,120		Equipment - 117
	Total						**198,173**	**24,812,122**	

T_1= 2.2; T_2= 0.45 + L_2*(0.22D-0.06)=5.14 T_3= 2.1 + 0.11*L = 4.47 Tr =T_1+T_2+T_3=11.81 ; t = 700/110=6.36 (per operation day)

Where T_1: preparation time (hr/pile); T_2; excavation time (hr/pile); T_3: working time from stand pipe press-in to concrete placing (hr/pile)

L_2: excavation length (except excavation length by hammer grab) (m); D: pile diameter (m): L: design pile length (m)

Q : Concrete volume ; Q = p/4 x D^2 x L x 1.14 (m3) = 27.71 m^3 ;

Q e : Volume of Excavated soil Qe = p/4 x D^2 x 1 (m3) = 27.69 m^3 1=24.5 m ; L = 21.5 m ; L_2= 23.0 m ; D = 1.2 m

PROCESS COST - 122

Piling work (bored pile, Φ1200mm, pile length L = 23.0 m , reverse circulation drill method)

Per: one pile

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	4.67	-	183,300	-	856,011	1*Tr*1/t*2.5
2	Skilled labor		person	4.67	-	170,100	-	794,367	1*Tr*1/t*2.5
3	Rigger (hammerman)		person	9.34	-	153,200	-	1,430,888	2*Tr*1/t*2.5
4	Common labor		person	4.67	-	80,600	-	376,402	1*Tr*1/t*2.5
5	Hydraulic press - in pile driving and extractor	Φ 1480	day	1.87	24,780	-	46,339	-	Tr*1/t ; t=6.36; Equipment - 113
6	Back hoe		hr	5.06	2,560	92,000	12,954	465,520	Equipment - 6
7	Crawler crane	40 ton	hr	7.73	4,970	60,000	38,418	463,800	Tr * 1/7 *T ; T=4.55 ; Equipment - 23
8	Hydraulic clamshell bucket	Crawler 0.6 m^3	hr	4.55	2,830	89,000	12,877	404,950	T_2*0.9;Equipment - 13
9	Concrete	class Y	m^3	29.64	376	467,991	11,145	13,871,253	Process cost - 152
10	Reinforcement work	Φ 13 ~ 28 mm	t	1.70	23,690	1,795,763	40,273	3,052,797	Process cost - 61
11	Transportation of excavated soil	Dump truck 11 ton	m^3	28.94	84	3,598	2,431	104,126	Process cost - 11
12	Miscellaneous expenses	(sum of above)*17%	set	1	-	-	27,954	3,709,419	
13	Slush tank	V = 30 m^3	day	2.0	1,060	-	2,120		30m^3*1 ; Equipment - 117
	Total						**194,509**	**25,529,534**	

T_1= 2.2; T_2= 0.45 + L_2*(0.22D-0.06)=5.06 T_3 = 2.1 + 0.11*L = 4.63 Tr =T_1+T_2+T_3=11.89 t = 700/110=6.36 (per operation day)

Where T_1: preparation time (hr/pile); T_2: excavation time (hr/pile); T_3: working time from stand pipe press-in to concrete placing (hr/pile)

L_2: excavation length (except excavation length by hammer grab) (m); D: pile diameter (m): L: design pile length (m)

Q : Concrete volume ; $Q = p/4 \times D^2 \times L \times 1.14\ (m^3) = 29.64\ m^3$;

Q e : Volume of Excavated soil $Qe = p/4 \times D^2 \times 1\ (m^3) = 28.94\ m^3$ 1 =25.6 m ; L =23.0 m ; L_2 = 22.6 m ; D = 1.2 m

PROCESS COST - 123

Piling work (bored pile, Φ1200mm, pile length L = 24.0 m , reverse circulation drill method)

Per: one pile

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	4.83	-	183,300	-	885,339	1*Tr*1/t*2.5
2	Skilled labor		person	4.83	-	170,100	-	821,583	1*Tr*1/t*2.5
3	Rigger (hammerman)		person	9.66	-	153,200	-	1,479,912	2*Tr*1/t*2.5
4	Common labor		person	4.83	-	80,600	-	389,298	1*Tr*1/t*2.5
5	Hydraulic press - in pile driving and extractor	Φ 1480	day	1.93	24,780	-	47,825	-	Tr*1/t ; t=6.36; Equipment - 113
6	Back hoe		hr	5.35	2,560	92,000	13,696	492,200	Equipment - 6
7	Crawler crane	40 ton	hr	7.99	4,970	60,000	39,710	479,400	Tr * 1/7 *T ; T=4.55 ; Equipment - 23
8	Hydraulic clamshell bucket	Crawler 0.6 m^3	hr	4.82	2,830	89,000	13,641	428,980	T_2*0.9;Equipment - 13
9	Concrete	class Y	m^3	30.93	376	467,991	11,630	14,474,962	Process cost - 152
10	Reinforcement work	Φ 13 ~ 28 mm	t	0.61	23,690	1,795,763	14,451	1,095,415	Process cost - 61
11	Reinforcement work	Φ 29 ~ 32 mm	t	2.33	24,720	1,447,136	57,598	3,371,827	Process cost - 63
12	Transportation of excavated soil	Dump truck 11 ton	m^3	30.52	84	3,598	2,564	109,811	Process cost - 11
13	Miscellaneous expenses	(sum of above)*17%	set	1	-	-	34,189	4,084,884	
14	Slush tank	V = 30 m^3	day	2.0	1,060	-	2,120	-	Equipment - 117
	Total						**237,424**	**28,113,610**	

T_1= 2.2; T_2= 0.45 + L_2*(0.22D-0.06)=5.35 T_3 = 2.1 + 0.11*L = 4.74 Tr =T_1+T_2+T_3=12.29 t = 700/110=6.36 (per operation day)

Where T_1: preparation time (hr/pile); T_2: excavation time (hr/pile); T_3: working time from stand pipe press-in to concrete placing (hr/pile)

L_2: excavation length (except excavation length by hammer grab) (m); D: pile diameter (m): L: design pile length (m)

Q : Concrete volume ; $Q = p/4 \times D^2 \times L \times 1.14\ (m^3) = 30.93\ m^3$;

Q e : Volume of Excavated soil $Qe = p/4 \times D^2 \times 1\ (m^3) = 30.52\ m^3$ 1 =27.0 m ; L =24.0 m ; L_2 = 24.0 m ; D = 1.2 m

PROCESS COST - 124

Piling work (bored pile, Φ1200mm, pile length L = 26.5 m , reverse circulation drill method)

Per: one pile

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	5.08	-	183,300	-	931,164	1*Tr*1/t*2.5
2	Skilled labor		person	5.08	-	170,100	-	864,108	1*Tr*1/t*2.5
3	Rigger (hammerman)		person	10.16	-	153,200	-	1,556,512	2*Tr*1/t*2.5
4	Common labor		person	5.08	-	80,600	-	409,448	1*Tr*1/t*2.5
5	Hydraulic press - in pile driving and extractor	Φ 1480	day	2.03	24,780	-	50,303	-	Tr*1/t ; t=6.36; Equipment - 113
6	Back hoe		hr	5.67	2,560	92,000	14,515	521,640	Equipment - 6
7	Crawler crane	40 ton	hr	8.38	4,970	60,000	41,649	502,800	Tr * 1/7 *T ; T=4.55 ; Equipment - 23
8	Hydraulic clamshell bucket	Crawler 0.6 m^3	hr	5.10	2,830	89,000	14,433	453,900	T_2*0.9;Equipment - 13
9	Concrete	class Y	m^3	34.15	376	467,991	12,840	15,981,893	Process cost - 152
10	Reinforcement work	Φ 13 ~ 28 mm	t	0.66	23,690	1,795,763	15,635	1,185,204	Process cost - 61
11	Reinforcement work	Φ 29 ~ 32 mm	t	2.48	24,720	1,447,136	61,306	3,588,897	Process cost - 63
12	Transportation of excavated soil	Dump truck 11 ton	m^3	32.33	84	3,598	2,716	116,323	Process cost - 11
13	Miscellaneous expenses	(sum of above)*17%	set	1	-	-	36,278	4,439,021	
14	Slush tank	V = 30 m^3	day	2.5	1,060	-	2,650		Equipment - 117
15	Slush tank	V = 10 m^3	day	2.5	500	-	1,250		Equipment - 115
	Total						**253,575**	**30,550,910**	

T_1= 2.2; T_2= 0.45 + L_2*(0.22D-0.06)=5.67 T_3 = 2.1 + 0.11*L = 5.02 Tr =T_1+T_2+T_3=12.89 t = 700/110=6.36 (per operation day)

Where T_1: preparation time (hr/pile); T_2: excavation time (hr/pile); T_3: working time from stand pipe press-in to concrete placing (hr/pile)

L_2: excavation length (except excavation length by hammer grab) (m); D: pile diameter (m): L: design pile length (m)

Q : Concrete volume ; $Q = p/4 \times D^2 \times L \times 1.14\ (m^3) = 34.15\ m^3$;

Q e : Volume of Excavated soil $Qe = p/4 \times D^2 \times l\ (m^3) = 32.33\ m^3$ l =28.6 m ; L =26.5 m ; L_2 = 25.5 m ; D = 1.2 m

PROCESS COST - 125

Piling work (bored pile, Φ2000 mm, pile length L = 10.5 m , reverse circulation drill method)

Per: one pile

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	3.89	-	183,300	-	713,037	1*Tr*1/t*2.5
2	Skilled labor		person	3.89	-	170,100	-	661,689	1*Tr*1/t*2.5
3	Rigger (hammerman)		person	7.78	-	153,200	-	1,191,896	2*Tr*1/t*2.5
4	Common labor		person	3.89	-	80,600	-	313,534	1*Tr*1/t*2.5
5	Hydraulic press - in pile driving and extractor	Φ 2250	day	1.56	26,460	-	41,278	-	Tr*1/t ; t=6.36; Equipment - 114
6	Back hoe		hr	4.44	2,560	92,000	11,366	408,480	Equipment - 6
7	Crawler crane	40 ton	hr	6.44	4,970	60,000	32,007	386,400	Tr * 1/7 *T ; T=4.55 ; Equipment - 23
8	Hydraulic clamshell bucket	Crawler 0.6 m^3	hr	4.00	2,830	89,000	11,320	356,000	T_2*0.9;Equipment - 13
9	Concrete	class Y	m^3	37.59	376	467,991	14,134	17,591,782	Process cost - 152
10	Reinforcement work	Φ 13 ~ 28 mm	t	2.52	23,690	1,795,763	59,699	4,525,323	Process cost - 61
11	Transportation of excavated soil	Dump truck 11 ton	m^3	47.73	84	3,598	4,009	171,733	Process cost - 11
12	Miscellaneous expenses	(sum of above)*17%	set	1	-	-	29,548	4,474,378	
13	Slush tank	V = 30 m^3	day	2.0	1,060	-	2,120	-	30m^3*1 ; Equipment -117
14	Slush tank	V = 20 m^3	day	2.0	640	-	1,280	-	20m^3*1 ; Equipment - 116
	Total						**206,761**	**30,794,251**	

T_1= 2.2; T_2= 0.45 + L_2*(0.22D-0.06)=4.44 T_3 = 2.1 + 0.11*L = 3.26 Tr =T_1+T_2+T_3=9.90 t = 700/110=6.36 (per operation day)

Where T_1: preparation time (hr/pile); T_2; excavation time (hr/pile); T_3: working time from stand pipe press-in to concrete placing (hr/pile)

L_2: excavation length (except excavation length by hammer grab) (m); D: pile diameter (m): L: design pile length (m)

Q : Concrete volume ; Q = p/4 x D^2 x L x 1.14 (m3) = 37.59 m^3 ;

Q e : Volume of Excavated soil Qe = p/4 x D^2 x l (m3) = 47.73 m^3 l =15.2 m ; L =10.5 m ; L_2 = 10.5 m ; D = 2.0 m

PROCESS COST - 126

Piling work (bored pile, Φ2000mm, pile length L = 20.0 m , reverse circulation drill method)

Per: one pile

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	5.43	-	183,300	-	995,319	1*Tr*1/t*2.5
2	Skilled labor		person	5.43	-	170,100	-	923,643	1*Tr*1/t*2.5
3	Rigger (hammerman)		person	10.86	-	153,200	-	1,663,752	2*Tr*1/t*2.5
4	Common labor		person	5.43	-	80,600	-	437,658	1*Tr*1/t*2.5
5	Hydraulic press - in pile driving and extractor	Φ 2250	day	2.17	26,460	-	57,418	-	Tr*1/t ; t=6.36; Equipment - 114
6	Back hoe		hr	7.48	2,560	92,000	19,149	688,160	Equipment - 6
7	Crawler crane	40 ton	hr	8.98	4,970	60,000	44,631	538,800	Tr * 1/7 *T ; T=4.55 ; Equipment - 23
8	Hydraulic clamshell bucket	Crawler 0.6 m^3	hr	6.73	2,830	89,000	19,046	598,970	T_2*0.9;Equipment - 13
9	Concrete	class Y	m^3	66.22	376	467,991	24,899	30,990,364	Process cost - 152
10	Reinforcement work	Φ 13 ~ 28 mm	t	3.97	23,690	1,795,763	94,049	7,129,179	Process cost - 61
11	Transportation of excavated soil	Dump truck 11 ton	m^3	69.39	84	3,598	5,829	249,665	Process cost - 11
12	Miscellaneous expenses	(sum of above)*17%	set	1.00	-	-	45,053	7,516,637	
13	Slush tank	V = 30 m^3	day	2.50	1,060	-	2,650	-	30m^3*1 ; Equipment -117
14	Slush tank	V = 20 m^3	day	5.00	640	-	3,200	-	20m^3*2 ; Equipment - 116
Total							**315,924**	**51,732,147**	

T_1= 2.2; T_2= 0.45 + L_2*(0.22D-0.06)=7.48 T_3 = 2.1 + 0.11*L = 4.14 Tr =T_1+T_2+T_3=13.82 t = 700/110=6.36 (per operation day)

Where T_1: preparation time (hr/pile); T_2; excavation time (hr/pile); T_3: working time from stand pipe press-in to concrete placing (hr/pile)

L_2: excavation length (except excavation length by hammer grab) (m); D: pile diameter (m): L: design pile length (m)

Q : Concrete volume ; Q = p/4 x D^2 x L x 1.14 (m^3) = 66.22 m^3 ;

Q e : Volume of Excavated soil Qe = p/4 x D^2 x 1 (m^3) = 69.39 m^3 l =22.1 m ; L =18.5 m ; L_2 = 18.5 m ; D = 2.0 m

PROCESS COST - 127

Piling work (bored pile, Φ2000mm, pile length L = 18.5 m , reverse circulation drill method)

Per: one pile

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	5.28	-	183,300	-	967,824	1*Tr*1/t*2.5
2	Skilled labor		person	5.28	-	170,100	-	898,128	1*Tr*1/t*2.5
3	Rigger (hammerman)		person	10.56	-	153,200	-	1,617,792	2*Tr*1/t*2.5
4	Common labor		person	5.28	-	80,600	-	425,568	1*Tr*1/t*2.5
5	Hydraulic press - in pile driving and extractor	Φ 2250	day	2.11	26,460	-	55,831	-	Tr*1/t ; t=6.36; Equipment - 114
6	Back hoe		hr	7.10	2,560	92,000	18,176	653,200	Equipment - 6
7	Crawler crane	40 ton	hr	8.74	4,970	60,000	43,438	524,400	Tr * 1/7 *T ; T=4.55 ; Equipment - 23
8	Hydraulic clamshell bucket	Crawler 0.6 m^3	hr	6.39	2,830	89,000	18,084	568,710	T_2*0.9;Equipment - 13
9	Concrete	class Y	m^3	66.22	376	467,991	24,899	30,990,364	Process cost - 152
10	Reinforcement work	Φ 13 ~ 28 mm	t	3.93	23,690	1,795,763	93,102	7,057,349	Process cost - 61
11	Transportation of excavated soil	Dump truck 11 ton	m^3	66.25	84	3,598	5,565	238,368	Process cost - 11
12	Miscellaneous expenses	(sum of above)*17%	set	1.0	-	-	44,046	7,470,089	
13	Slush tank	V = 30 m^3	day	2.5	1,060	-	2,650	-	30m^3*2 ; Equipment -117
14	Slush tank	V = 20 m^3	day	5.0	640	-	3,200	-	20m^3*1 ; Equipment -116
	Total						**308,989**	**51,411,791**	

T_1= 2.2; T_2= 0.45 + L_2*(0.22D-0.06)=7.10 T_3= 2.1 + 0.11*L = 4.14 Tr =T_1+T_2+T_3=13.44 t = 700/110=6.36 (per operation day)

Where T_1: preparation time (hr/pile); T_2; excavation time (hr/pile); T_3: working time from stand pipe press-in to concrete placing (hr/pile)

L_2: excavation length (except excavation length by hammer grab) (m); D: pile diameter (m): L: design pile length (m)

Q : Concrete volume ; Q = p/4 x D^2 x L x 1.14 (m^3) = 66.22 m^3 ;

Q e : Volume of Excavated soil Qe = p/4 x D^2 x l (m^3) = 66.25 m^3 l =21.1 m ; L =18.5 m ; L_2= 17.5 m ; D = 2.0 m

PROCESS COST - 128

Piling work (bored pile, Φ2000mm, pile length L = 22.5 m , reverse circulation drill method)

Per: one pile

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	6.2	-	183,300	-	1,136,460	1*Tr*1/t*2.5
2	Skilled labor		person	6.2	-	170,100	-	1,054,620	1*Tr*1/t*2.5
3	Rigger (hammerman)		person	12.4	-	153,200	-	1,899,680	2*Tr*1/t*2.5
4	Common labor		person	6.2	-	80,600	-	499,720	1*Tr*1/t*2.5
5	Hydraulic press - in pile driving and extractor	Φ 2250	day	2.48	26,460	-	65,621	-	Tr*1/t ; t=6.36; Equipment - 114
6	Back hoe		hr	9.0	2,560	92,000	23,040	828,000	Equipment - 6
7	Crawler crane	40 ton	hr	10.26	4,970	60,000	50,992	615,600	Tr * 1/7 *T ; T=4.55 ; Equipment - 23
8	Hydraulic clamshell bucket	Crawler 0.6 m^3	hr	8.1	2,830	89,000	22,923	720,900	T_2*0.9;Equipment - 13
9	Concrete	class Y	m^3	80.54	376	467.991	30,283	37,691,995	Process cost - 152
10	Reinforcement work	Φ 13 ~ 28 mm	t	4.87	23,690	1,795,763	115,370	8,745,366	Process cost - 61
11	Transportation of excavated soil	Dump truck 11 ton	m^3	94.2	84	3,598	7,913	338,932	Process cost - 11
12	Miscellaneous expenses	(sum of above)*17%	set	1.0	-	-	53,744	9,100,316	
13	Slush tank	V = 30 m^3	day	9.0	1,060	-	9,540		30m^3*3 ; Equipment - 117
14	Slush tank	V = 10 m^3	day	3.0	500	-	1,500		10m^3*1 ; Equipment - 115
	Total						**380,926**	**62,631,589**	

T_1= 2.2; T_2= 0.45 + L_2*(0.22D-0.06)=9.0 T_3 = 2.1 + 0.11*L = 4.58 Tr =T_1+T_2+T_3=15.78 t = 700/110=6.36 (per operation day)

Where T_1: preparation time (hr/pile); T_2; excavation time (hr/pile); T_3: working time from stand pipe press-in to concrete placing (hr/pile)

L_2: excavation length (except excavation length by hammer grab) (m); D: pile diameter (m): L: design pile length (m)

Q : Concrete volume ; Q = p/4 x D^2 x L x 1.14 (m^3) = 80.54 m^3 ;

Q e : Volume of Excavated soil Qe = p/4 x D^2 x l (m^3) = 94.2 m^3 l =30.0m ; L =22.5 m ; L_2= 22.5 m ; D = 2.0 m

PROCESS COST - 129

Piling work (bored pile, Φ2000mm, pile length L = 24.5 m , reverse circulation drill method)

Per: one pile

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	6.59	-	183,300	-	1,207,947	1*Tr*1/t*2.5
2	Skilled labor		person	6.59	-	170,100	-	1,120,959	1*Tr*1/t*2.5
3	Rigger (hammerman)		person	13.18	-	153,200	-	2,019,176	2*Tr*1/t*2.5
4	Common labor		person	6.59	-	80,600	-	531,154	1*Tr*1/t*2.5
5	Hydraulic press - in pile driving and extractor	Φ 2250	day	2.64	26,460	-	69,854	-	Tr*1/t ; t=6.36; Equipment - 114
6	Back hoe		hr	9.76	2,560	92,000	24,986	897,920	Equipment - 6
7	Crawler crane	40 ton	hr	10.89	4,970	60,000	54,123	653,400	Tr * 1/7 *T ; T=4.55 ; Equipment - 23
8	Hydraulic clamshell bucket	Crawler 0.6 m^3	hr	8.78	2,830	89,000	24,847	781,420	T_2*0.9;Equipment - 13
9	Concrete	class Y	m^3	87.70	376	467,991	32,975	41,042,811	Process cost - 152
10	Reinforcement work	Φ 13 ~ 28 mm	t	4.75	23,690	1,795,763	112,528	8,529,874	Process cost - 61
11	Transportation of excavated soil	Dump truck 11 ton	m^3	91.06	84	3,598	7,649	327,634	Process cost - 11
12	Miscellaneous expenses	(sum of above)*17%	set	1.0	-	-	55,584	9,709,090	
13	Slush tank	V = 30 m^3	day	9.0	1,060	-	9,540	-	30m^3*3 ; Equipment - 117
	Total						**392,086**	**66,821,385**	

T_1= 2.2; T_2= 0.45 + L_2*(0.22D-0.06)=9.76 T_3 = 2.1 + 0.11*L = 4.8 Tr =T_1+T_2+T_3=16.76 t = 700/110=6.36 (per operation day)

Where T_1: preparation time (hr/pile); T_2; excavation time (hr/pile); T_3: working time from stand pipe press-in to concrete placing (hr/pile)

L_2: excavation length (except excavation length by hammer grab) (m); D: pile diameter (m): L: design pile length (m)

Q : Concrete volume ; Q = p/4 x D^2 x L x 1.14 (m^3) = 87.7 m^3 ;

Q e : Volume of Excavated soil Qe = p/4 x D^2 x l (m^3) = 91.06 m^3 l =29.0 m ; L =24.5 m ; L_2= 24.5 m ; D = 2.0 m

PROCESS COST - 130

Piling work (bored pile, Φ2000mm, pile length L = 28.0 m , reverse circulation drill method)

Per: one pile

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	7.26	-	183,300	-	1,330,758	1*Tr*1/t*2.5
2	Skilled labor		person	7.26	-	170,100	-	1,234,926	1*Tr*1/t*2.5
3	Rigger (hammerman)		person	14.52	-	153,200	-	2,224,464	2*Tr*1/t*2.5
4	Common labor		person	7.26	-	80,600	-	585,156	1*Tr*1/t*2.5
5	Hydraulic press - in pile driving and extractor	Φ 2250	day	2.9	26,460	-	76,734	-	Tr*1/t ; t=6.36; Equipment - 114
6	Back hoe		hr	11.09	2,560	92,000	28,390	1,020,280	Equipment - 6
7	Barge with crane	40 ton ;300t barge	day	2.54	35,520	342,000	90,221	868,680	(10*Tr)*3/(60*T); T=3.63; Equipment - 70
8	Tug boat	steel 200ps	hr	12.32	2,490	222,000	30,677	2,735,040	2.54*4.85;Equipment - 74
9	Barge with crane	25 ton ;200 t barge	day	2.54	21,900	302,000	55,626	767,080	(10*Tr)*3/(60*T); T=3.63; Equipment - 91
10	Tug boat	100ps	hr	12.32	1,310	120,000	16,139	1,478,400	2.54*4.85;Equipment - 75
11	Hydraulic clamshell bucket	Crawler 0.6 m^3	hr	9.98	2,830	89,000	28,243	888,220	T_2*0.9;Equipment - 13
12	Concrete	class Y	m^3	100.23	1,055	477,766	105,743	47,886,486	Process cost - 152
13	Reinforcement work	Φ 13 ~ 28 mm	t	1.91	23,690	1,795,763	45,248	3,429,907	Process cost - 61
14	Reinforcement work	Φ 29 ~ 32 mm	t	4.33	24,720	1,447,136	107,038	6,266,099	Process cost - 63
15	Transportation of excavated soil	Dump truck 11 ton	m^3	100.48	84	3,598	8,440	361,527	Process cost - 11
16	Miscellaneous expenses	(sum of above)*17%	set	1.0	-	-	100,725	12,083,094	
17	Slush tank	V = 30 m^3	day	10.5	1,060	-	11,130	-	30m^3*3 ; Equipment -117
18	Slush tank	V = 20 m^3	day	7.0	640	-	4,480	-	20m^3*2 ; Equipment -116
	Total						**708,834**	**83,160,117**	

T_1= 2.2; T_2= 0.45 + L_2*(0.22D-0.06)=11.09 T_3 = 2.1 + 0.11*L = 5.18 Tr =T_1+T_2+T_3=18.47 t = 700/110=6.36 (per operation day)

Where T_1: preparation time (hr/pile); T_2; excavation time (hr/pile); T_3: working time from stand pipe press-in to concrete placing (hr/pile)

L_2: excavation length (except excavation length by hammer grab) (m); D: pile diameter (m): L: design pile length (m)

Q : Concrete volume ; Q = p/4 x D^2 x L x 1.14 (m^3) = 100.23 m^3 ;

Q e : Volume of Excavated soil Qe = p/4 x D^2 x l (m^3) = 100.48 m^3 l =32.0 m ; L =28.0 m ; L_2= 28.0 m ; D = 2.0 m

PROCESS COST - 131

Piling work (bored pile, Φ2000mm, pile length L = 29.5 m , reverse circulation drill method)

Per: one pile

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	7.55	-	183,300	-	1,383,915	1*Tr*1/t*2.5
2	Skilled labor		person	7.55	-	170,100	-	1,284,255	1*Tr*1/t*2.5
3	Rigger (hammerman)		person	15.1	-	153,200	-	2,313,320	2*Tr*1/t*2.5
4	Common labor		person	7.55	-	80,600	-	608,530	1*Tr*1/t*2.5
5	Hydraulic press - in pile driving and extractor	Φ 2250	day	3.02	26,460	-	79,909	-	Tr*1/t ; t=6.36; Equipment - 114
6	Back hoe		hr	11.66	2,560	92,000	29,850	1,072,720	Equipment - 6
7	Crawler crane	40 ton	hr	12.49	4,970	60,000	62,075	749,400	Tr*1/7*T ; T=4.55; Equipment - 23
8	Hydraulic clamshell bucket	Crawler 0.6 m^3	hr	10.49	2,830	89,000	29,687	933,610	T_2*0.9;Equipment - 13
9	Concrete	class Y	m^3	105.60	376	467,991	39,706	49,419,850	Process cost - 152
10	Reinforcement work	Φ 13 ~ 28 mm	t	5.35	23,690	1,795,763	126,742	9,607,332	Process cost - 61
11	Transportation of excavated soil	Dump truck 11 ton	m^3	111.47	84	3,598	9,363	401,069	Process cost - 11
12	Miscellaneous expenses	(sum of above)*17%	set	1.0	-	-	64,146	11,521,580	
13	Slush tank	V = 30 m^3	day	17.5	1,060	-	18,550	-	30m^3*5 ; Equipment - 117
	Total						**460,028**	**79,295,581**	

T_1= 2.2; T_2= 0.45 + L_2*(0.22D-0.06)=11.66 T_3 = 2.1 + 0.11*L = 5.35 Tr =T_1+T_2+T_3=19.21 t = 700/110=6.36 (per operation day)

Q : Concrete volume ; Q = p/4 x D^2 x L x 1.14 (m^3) = 105.60 m^3 ; T = 690/190 = 3.63

Q e : Volume of Excavated soil Qe = p/4 x D^2 x 1 (m^3) = 111.47 m^3 ; l =35.5 m ; L =29.5 m ; L_2= 29.5 m ; D = 2.0 m

PROCESS COST - 132

Piling work (bored pile, Φ2000mm, pile length L = 36.0 m , reverse circulation drill method)

Per: one pile

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	8.8	-	183,300	-	1,613,040	1*Tr*1/t*2.5
2	Skilled labor		person	8.8	-	170,100	-	1,496,880	1*Tr*1/t*2.5
3	Rigger (hammerman)		person	17.6	-	153,200	-	2,696,320	2*Tr*1/t*2.5
4	Common labor		person	8.8	-	80,600	-	709,280	1*Tr*1/t*2.5
5	Hydraulic press - in pile driving and extractor	Φ 2250	day	3.52	26,460	-	93,139	-	Tr*1/t ; t=6.36; Equipment - 114
6	Back hoe		hr	14.13	2,560	92,000	36,173	1,299,960	Equipment - 6
7	Barge with crane	40 ton ;300 t barge	day	3.08	35,520	342,000	109,402	1,053,360	(10*Tr)*3/(60*T); T=3.63; Equipment - 70
8	Tug boat	steel 200ps	hr	14.94	2,490	222,000	37,201	3,316,680	3.08*4.85;Equipment - 74
9	Barge with crane	25 ton ;200 t barge	day	3.08	21,900	302,000	67,452	930,160	(10*Tr)*3/(60*T); T=3.63; Equipment - 91
10	Tug boat	100ps	hr	14.94	1,310	120,000	19,571	1,792,800	3.08*4.85;Equipment - 75
11	Hydraulic clamshell bucket	Crawler 0.6 m^3	hr	12.72	2,830	89,000	35,998	1,132,080	T_2*0.9;Equipment - 13
12	Concrete	class Y	m^3	128.87	1,055	477,766	135,958	61,569,704	Process cost - 152
13	Reinforcement work	Φ 13 ~ 28 mm	t	2.26	23,690	1,795,763	53,539	4,058,424	Process cost - 61
14	Reinforcement work	Φ 29 ~ 32 mm	t	5.25	24,720	1,447,136	129,780	7,597,464	Process cost - 63
15	Transportation of excavated soil	Dump truck 11 ton	m^3	125.6	84	3,598	10,550	451,909	Process cost - 11
16	Miscellaneous expenses	(sum of above)*17%	set	1.0	-	-	123,890	15,252,070	
17	Slush tank	V = 30 m^3	day	24.0	1,060	-	25,440	-	30m^3*6 ; Equipment - 117
	Total						**878,093**	**104,970,132**	

T_1= 2.2; T_2= 0.45 ÷ L_2*(0.22D-0.06)=14.13 T_3 = 2.1 + 0.11*L = 6.06 Tr =T_1+T_2+T_3=22.39 t = 700/110=6.36 (per operation day)

Q : Concrete volume ; Q = p/4 x D^2 x L x 1.14 (m^3) = 128.87 m^3 ; T = 690/190 = 3.63

Q e : Volume of Excavated soil Qe = p/4 x D^2 x l (m^3) = 125.60 m^3 ; l =40 .0 m ; L =36.0 m ; L_2= 36.0 m ; D = 2.0 m

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PROCESS COST - 133

Granular back-filling work

Per 100 m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Crushed stone		m3	120	-	85,400	-	10,248,000	1+K;K=+0.2; Material - 110
2	Bulldozer	15 ton	hr	0.94	4,030	91,000	3,788	85,540	T1 ; Equipment - 3
3	Back hoe	0.6m3	hr	0.47	2,560	92,000	1,203	43,240	T1*0.5 ; Equipment - 6
4	Vibrating roller	3~4ton	hr	2.15	1,400	36,000	3,010	77,400	T2 ; Equipment - 38
5	Tamper	60~100 kg	day	0.2	610	191,000	122	38,200	Equipment - 42
6	Common labor		person	5	-	80,600	-	403,000	2.0*2.5
	Total						**8,123**	**10,895,380**	
	Per 1.0 m3						81	108,954	

. **Work ability of vibrating roller (3~4 ton)**

W (m)	V(m/hr)	D	f2	E	P	Q	T2(100/Q)
1.45	1800	0.25	0.95	0.60	8.00	16.03	2.15

Q = (W*V*D*f2 * E) /P

T 2 = 100 / Q

W: Effective width of roller

V : Speed of compaction

D : Depth of one layer

f2 : Soil conversion factor

E : Efficiency of work

P : Time of compaction

. **Work ability of bulldozer (15ton)**

q (m3)	f1	E	L(m)	Cm (min)	Q (m3 /h)	T1(hr/100m3)
2.92	1.00	0.80	20.00	1.32	106.20	0.94

Q = (60 * q *f1 * E) /Cm)

Cm = 0.027 L + 0.78

T1 = 100 / Q

q : Execution volume (pushing) per one cycle

L : Average soil pushing distance

f1 : Soil conversion factor

Cm : Cycle time

E : Efficiency of work

PROCESS COST - 134

Permeable back-filling work

Per 100 m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Crushed stone		m3	120	-	89,000	-	10,680,000	1+K;K=+0.2;Material -111
2	Bulldozer	15 ton	hr	0.94	4,030	91,000	3,788	85,540	T1*0.7;T1=1.08; Equipment -3
3	Back hoe	0.6m3	hr	0.54	2,560	92,000	1,382	49,680	T1*0.5;T1=1.08; Equipment - 6
4	Vibrating roller	3~4ton	hr	2.15	1,400	36,000	3,010	77,400	T2=2.15 ; Equipment - 38
5	Tamper	60~100 kg	day	0.2	610	191,000	122	38,200	Equipment - 42
6	Common labor		person	5	-	80,600	-	403,000	2.0*2.5
	Total						8,303	11.333,820	
	Per 1.0 m3						83	113,338	

PROCESS COST - 135

Filling work with suitable excavation soil (for common excavation)

Per 100 m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Bulldozer	15 ton	hr	0.46	4,030	91,000	1,854	41,860	Equipment -3
2	Tired roller	8 ~ 20 ton	hr	1.07	1,990	50,000	2,129	53,500	Equipment - 41
3	Common labor		person	0.25	-	80,600	-	20,150	0.1*2.5
	Total						**3,983**	**115,510**	
	Per 1.0 m3						40	1,155	

. Workability of bulldozer (15ton)

W(m)	V (m/hr)	H(m)	E	f1	P (time)	Q	T
2.90	2.00	0.20	0.70	0.80	3.00	216.50	0.46

W : Efficiency width of blade
f1 : Soil conversion factor
H: Depth spreading
E : Efficiency of work
V: Spreading velocity
P : Number of spreading (time)

. Workability of tired roller (8~20 ton)

W (m)	V(m/hr)	D(m)	E	f2	P(time)	Q	T2
1.70	4,000	0.20	0.60	1.15	10.00	93.80	1.07

Q=(W*V*H*f2*E)/P
T2 = 100 / Q

W: Effective compaction width per one time of compaction work
V: compaction speed
D: Finishing thickness
E : Efficiency of work
f2 : Soil conversion facto
P : Number of compaction work

PROCESS COST - 136

Vertical sand drain (L=24.5 m)

Per: each

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	0.12	-	183,300	-	21,996	{Tc/(60*t)}*0.8*2.5
2	Skilled labor		person	0.12	-	170,100	-	20,412	{Tc/(60*t)}*0.8*2.5
3	Common labor		person	0.24	-	80,600	-	19,344	{Tc/(60*t)}*1.6*2.5
4	Sand	yellow sand	m3	3.08	-	50,000	-	154,000	Material - 100
5	Sand pile driver	leader length 45 m	hr	0.38	38,640	58,000	14,683	22,040	Tc/60 ; Equipment - 102
6	Air compressor	17.0 m3 / min	day	0.06	8,400	84,000	504	5,040	Tc/(60*t) ; Equipment - 128
7	Generator	350 KVA	day	0.06	13,560	748,000	814	44,880	Tc/(60*t) ; Equipment -124
8	Tractor shovel	1.2 m3	hr	0.38	1,500	59,000	570	22,420	Tc/60 ; Equipment - 97
9	Miscellaneous expenses	(sum of above)*6%	set	1			994	18,608	
	Total						**17,565**	**328,740**	
	Per 1.0 m = Total/24.5						717	13,418	

Tc : Executing time for one sand pile of 24.5 m ; Tc = 0.93*L=22.8 min

t : Operation hours per one operation day ; 670/110=6.09 hr/day

D : Diameter of sand pile ; 0.4 m

L : Design length of sand pile ; 24.5 m

PROCESS COST - 137

Vertical sand drain (L=23.5 m)

Per: each

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	0.12	-	183,300	-	21,996	{Tc/(60*t)}*0.8*2.5
2	Skilled labor		person	0.12	-	170,100	-	20,412	{Tc/(60*t)}*0.8*2.5
3	Common labor		person	0.24	-	80,600	-	19,344	{Tc/(60*t)}*1.6*2.5
4	Sand	yellow sand	m3	2.95	-	50,000	-	147,500	Material - 100
5	Sand pile driver	leader length 45 m	hr	0.37	38,640	58,000	14,297	21,460	Tc/60 ; Equipment - 102
6	Air compressor	17.0 m3 / min	day	0.06	8,400	84,000	504	5,040	Tc/(60*t) ; Equipment -128
7	Generator	350 KVA	day	0.06	13,560	748,000	814	44,880	Tc/(60*t) ; Equipment - 124
8	Tractor shovel	1.2 m3	hr	0.37	1,500	59,000	555	21,830	Tc/60 ; Equipment - 97
9	Miscellaneous expenses	(sum of above)*6%	set	1			970	18,148	
	Total						**17,140**	**320,610**	
	Per 1.0 m = Total/23.5						729	13,643	

Tc : Executing time for one sand pile of 23.5 m ; Tc = 0.93*L=21.9 min

t : Operation hours per one operation day ; 670/110=6.09 hr/day

D : Diameter of sand pile ; 0.4 m

L : Design length of sand pile ; 23.5 m

PROCESS COST - 138

Vertical sand drain (L=17 m)

Per: each

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	0.08	-	183,300	-	14,664	{Tc/(60*t)}*0.8*2.5
2	Skilled labor		person	0.08	-	170,100	-	13,608	{Tc/(60*t)}*0.8*2.5
3	Common labor		person	0.17	-	80,600	-	13,702	{Tc/(60*t)}*1.6*2.5
4	Sand	yellow sand	m3	2.14	-	50,000	-	107,000	Material - 100
5	Sand pile driver	leader length 30 m	hr	0.26	23,760	50,000	6,178	13,000	Tc/60 ; Equipment - 10
6	Air compressor	10.5-11.0 m3/min	day	0.04	7,080	341,000	283	13,640	Tc/(60*t) ; Equipment - 55
7	Generator	200KVA	day	0.04	7,920	464,000	317	18,560	Tc/(60*t) ; Equipment - 45
8	Tractor shovel	0.8m3	hr	0.26	1,130	48,000	294	12,480	Tc/60 ; Equipment - 12
9	Miscellaneous expenses	(sum of above)*6%	set	1			424	12,399	
	Total						**7,496**	**219,053**	
	Per 1.0 m = Total/17m						441	12,885	

Tc : Executing time for one sand pile of 17.0 m ; Tc = 0.93*L=15.8 min

t : Operation hours per one operation day ; 670/110=6.09 hr/day

D : Diameter of sand pile ; 0.4 m

L : Design length of sand pile ; 17 m

Sand compaction pile

Per: 1 pile (L=17m)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Sand	yellow sand	m3	6.54	-	50,000	-	267,486	Material - 100
2	Foreman		person	0.25	-	183,300	-	56,374	A*1*2.5
3	Skilled labor		person	0.25	-	170,100	-	47,216	A*1*2.5
4	Common labor		person	0.5	-	80,600	-	48,152	A*2*2.5
5	Sand pile driver	leader length 30 m	hr	0.62	23,760	50,000	24,552	33,480	B; Equipment - 104
6	Air compressor	7.5~7.6 m3/min	day	0.1	4,660	43,000	776	23,100	A; Equipment - 82
7	Generator	200 KVA	day	0.1	7,920	464,000	1,320	46,400	A; Equipment - 48
8	Tractor shovel	0.8 m3	hr	0.62	1,130	48,000	1,172	32,240	B ; Equipment - 12
9	Miscellaneous expenses	(sum of above)*6%	set	1			1,669	33,267	
	Total						**29,489**	**587,715**	
	Per 1 m = Total/17.0m						1,735	34,571	

Tc : Executing time for one sand compaction pile of 17 m ; Tc = 2.18*17=37.06 min

t : Operation hours per one operation day

D : Diameter of sand pile ; 0.7 m

L : Design length of sand pile ; 17 m

A:Tc/(60*t)=0.10

B:Tc/60=0.62

PROCESS COST - 140

Pump setting and removal (for drainage)

Per: one place

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	0.25	-	183,300	-	45,825	0.1*2.5
2	Common labor		person	0.5	-	80,600	-	40,300	0.2*2.5
3	Miscellaneous expenses	(labor cost)*4%	set	1			-	3,445	
	Total						-	**89,570**	
	Per : one place						-	89,570	

Pump setting and removal (for drainage)

Per: one place

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	0.25	-	183,300	-	45,825	0.1*2.5
2	Common labor		person	0.5	-	80,600	-	40,300	0.2*2.5
3	Miscellaneous expenses	(labor cost)*4%	set	1			-	3,445	
4	Truck crane	hydraulic 4.8-4.9 t	hr	0.44	1,250	46,000	550	20,240	0.1* T ; T= 4.44 Equipment -20
	Total						**550**	**109,810**	
	Per : one place						550	109,810	

PROCESS COST - 142

Pump setting and removal (for drainage;sheet pile cofferdam)

Per: one place

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	0.25	-	183,300	-	45,825	0.1*2.5
2	Common labor		person	0.5	-	80,600	-	40,300	0.2*2.5
3	Miscellaneous expenses	(labor cost)*4%	set	1			-	3,445	
4	Barge with crane	25 ton	day	0.09	21,900	302,000	1,971	27,180	Equipment -91
5	Tug boat	100ps	hr	0.73	1,310	120,000	956	87,600	0.2* T ; T=3.63 Equipment -75
							2,927	**204,350**	
	Total								
	Per : one place						2,927	204,350	

PROCESS COST - 143

Pump operation (whole day)

Per: one day

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Skilled labor		person	0.6	-	17,100	-	10,260	0.24*2.5
2	Submerged pump	100mm;head 15m	day	1	470	-	470	-	Equipment - 83
3	Generator	15 KVA	day	1	1,580	45,000	1,580	45,000	Modified unit running cost;Equipment - 2
4	Miscellaneous expenses	(sum of above)*1%	set	1			21	553	
	Total						**2,071**	**55,813**	
	Per : one day						2,071	55,813	

PROCESS COST - 144

Pump operation (whole day)

Per: one day

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Skilled labor		person	1.2	-	170,100	-	204,120	2*0.24*2.5
2	Submerged pump	Φ 200mm;head 15m	day	2.0	1,150	-	2,300	-	2 pumps*1 day ; Equipment - 62
3	Generator	60 KVA	day	1.0	3,100	143,000	3,100	143,000	Modified unit running cost;Equipment - 1
4	Miscellaneous expenses	(sum of above)*1%	set	1			54	3,471.20	
	Total						**5,454**	**350,591**	
	Per : one day						5,454	350,591	

PROCESS COST - 145

Pump operation (working time)

Per: one day

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Skilled labor		person	0.4	-	170,100	-	68,040	0.16*2.5
2	Submerged pump	Φ 100mm;head 15m	day	0.33	470	-	155	-	Equipment - 83
3	Generator	15 KVA	day	0.33	1,580	45,000	521	14,850	Modified unit running cost;Equipment - 2
4	Miscellaneous expenses	(sum of above)*1%	set	1			7	829	
	Total						**683**	**83,719**	
	Per : one day						683	83,719	

PROCESS COST - 146

Pump operation (working time)

Per: one day

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Skilled labor		person	0.8	-	170,100	-	136,080	2x0.16*2.5
2	Submerged pump	Φ 200mm;head 15m	day	0.66	1,150	-	759	-	2 pumpsx1 day ; Equipment - 62
3	Generator	60 KVA	day	0.33	3,100	143,000	1,023	47,190	Modified unit running cost;Equipment - 1
4	Miscellaneous expenses	(sum of above)*1%	set	1			18	1,833	
	Total						**1,800**	**185,103**	
	Per : one day						1,800	185,103	

PROCESS COST - 149

Concrete (A-1, A - 2;A - 3: sck = 400kg/cm2)

Per 10m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Cement	Portland	kg	4500	-	876	-	3,942,000	Material - 71
2	Coarse aggregate	crushed stone	ton	11	-	58,444	-	642,884	Material - 104
3	Fine aggregate	sand	ton	7.2	-	50,000	-	360,000	Material - 106
4	Concrete plant operation	45m3/hr	m3	10	341	9,759	3,410	97,590	Process cost - 21
5	Transportation of concrete	truck mixer	m3	10	281	15,544	2,810	155,440	Process cost - 22
		3.0 ~ 3.2m3							
	Total.						**6,220**	**5,197,914**	
	Per 1.0m3						634	530,187	Take 2% loss into account at concrete placing

PROCESS COST - 150

Concrete (class B-1, sck = 350kg/cm2)

Per 10m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Cement	Portland	kg	4080	-	876	-	3,574,080	Material - 71
2	Coarse aggregate	crushed stone	ton	10.79	-	58,444	-	630,611	Material - 104
3	Fine aggregate	sand	ton	7.65	-	50,000	-	382,500	Material - 106
4	Concrete plant operation	45m3/hr	m3	10	341	9,759	3,410	97,590	Process cost - 21
5	Transportation of concrete	truck mixer	m3	10	281	15,544	2,810	155,440	Process cost - 22
		3.0 ~ 3.2m3							
	Total						**6,220**	**4,840,221**	
	Per 1.0m3						634	493,703	Take 2% loss into account at concrete placing

PROCESS COST - 151

Concrete (class C-1;C-2; sck=290kg/cm2)

Per 10m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Cement	Portland	kg	3660	-	876	-	3,206,160	Material - 71
2	Coarse aggregate	crushed stone	ton	10.44	-	58,444	-	610,155	Material - 104
3	Fine aggregate	sand	ton	8.19	-	50,000	-	409,500	Material - 106
4	Concrete plant operation	45m3/hr	m3	10	341	9,759	3,410	97,590	Process cost - 21
5	Transportation of concrete	truck mixer	m3	10	281	15,544	2,810	155,440	Process cost - 22
		3.0 ~ 3.2m3							
	Total						**6,220**	**4,478,845**	
	Per 1.0m3						634	456,842	Take 2% loss into account at concrete placing

PROCESS COST - 152

Concrete (Class Y ; sck=290kg/cm2 for cast in place concrete pile)

Per 10m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Cement	Portland	kg	3990	-	876	-	3,495,240	Material - 71
2	Coarse aggregate	crushed stone	ton	10.04	-	58,444	-	586,778	Material - 104
3	Fine aggregate	sand	ton	7.86	-	50,000	-	393,000	Material - 106
4	Concrete plant operation	45m3/hr	m3	10	341	9,759	3,410	97,590	Process cost - 21
5	Transportation of concrete	truck mixer	m3	10	281	15,544	2,810	155,440	Process cost - 22
		3.0 ~ 3.2m3							
	Total						**6,220**	**4,728,048**	
	Per 1.0m3						634	482,261	Take 2% loss into account at concrete placing

PROCESS COST - 153

Concrete (Class D-1 ; sck=240kg/cm2)

Per 10m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Cement	Portland	kg	3180	-	876	-	2,785,680	Material - 71
2	Coarse aggregate	crushed stone	ton	10.41	-	58,444	-	608,402	Material - 104
3	Fine aggregate	sand	ton	8.6	-	50,000	-	430,000	Material - 106
4	Concrete plant operation	45m3/hr	m3	10	341	9,759	3,410	97,590	Process cost - 21
5	Transportation of concrete	truck mixer	m3	10	281	15,544	2,810	155,440	Process cost - 22
		3.0 ~ 3.2m3							
	Total						**6,220**	**4,077,112**	
	Per 1.0m3						634	415,865	Take 2% loss into account at concrete placing

PROCESS COST - 154

Concrete (Class E-1;E-2 ; sck=210kg/cm2)

Per 10m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Cement	Portland	kg	2,950	-	876	-	2,584,200	Material - 71
2	Coarse aggregate	crushed stone	ton	10.39	-	58,444	-	607,233	Material - 104
3	Fine aggregate	sand	ton	8.89	-	50,000	-	444,500	Material - 106
4	Concrete plant operation	45m3/hr	m3	10	341	9,759	3,410	97,590	Process cost - 21
5	Transportation of concrete	truck mixer	m3	10	281	15,544	2,810	155,440	Process cost - 22
		3.0 ~ 3.2m3							
	Total						**6,220**	**3,888,963**	
	Per 1.0m3						634	396,674	Take 2% loss into account at concrete placing

PROCESS COST - 155

Removal of stone masory

Per : 100 m2(thickness 30cm)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Back hoe	0.6 m3	hr	0.37	2,560	92,000	947	34,040	T1*(30/100);Equipment - 6
2	Common labor		person	0.27	-	80,600	-	21,762	(1/T1)*(30/100)*2.5
3	Dump truck	11 ton	hr	19.53	1,650	67,000	32,225	1,308,510	T2*(30/100);Equipment - 33
	Total						**33,172**	**1,364,312**	
	Per $1.0m^2$						332	13,643	

. Work ability of back hoe (0.6 m3)

q_o (m3)	K	q	f	E	C_s (sec)	Q (m3 / hr)	T (hr/100m3)
0.60	0.80	0.50	1.00	0.6	19.0	54.6	1.83

$Q = (3.600*q*f*E) / Cs$

$T1 = 100/Q$; $q = qo * K$

q_o : Standard bucket capacity

K : Bucket factor

f: Soil conversion factor

E : Efficiency of work

C_s: Cycle time

q : Excavation volume per one cycle

. Work ability of dump truck (11 ton)

$Q = (60 * q * f * E) / C_m$

$C_m = b\,L + a$; $T2 = 100/Q$;

L (km)	b	a	C_m (min)	q (m3)	f	E	Q (m3/hr)	T2 (hr / 100m3)
1.0	4.8	10	58	5.5	1	0.9	5.12	19.53

L : Transport distance (Km) **a** : Working factor

b : Factor of transport condit C_m : Cycle time

q : Loanding volume one dump truck

f : Soil conversion factor

E : Efficiency of work

PROCESS COST - 156

Concrete (Class G ; ; sck=80kg/cm2)

Per 10m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Cement	Portland	kg	1,780	-	876	-	1,559,280	Material - 71
2	Coarse aggregate	crushed stone	ton	11.87	-	58,444	-	693,730	Material - 104
3	Fine aggregate	sand	ton	8.96	-	50,000	-	448,000	Material - 106
4	Concrete plant operation	45m3/hr	m3	10	341	9,759	3,410	97,590	Process cost - 21
5	Transportation of concrete	truck mixer	m3	10	281	15,544	2,810	155,440	Process cost - 22
		3.0 ~ 3.2m3							
	Total						**6,220**	**2,954,040**	
	Per 1.0m3						634	301,312	Take 2% loss into account at concrete placing

PROCESS COST - 157

Concrete (Class F ; ; sck=130kg/cm2)

Per 10m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Cement	Portland	kg	2,220	-	876	-	1,944,720	Material - 71
2	Coarse aggregate	crushed stone	ton	11.1	-	58,444	-	648,728	Material - 104
3	Fine aggregate	sand	ton	9.06	-	50,000	-	453,000	Material - 106
4	Concrete plant operation	45m3/hr	m3	10	341	9,759	3,410	97,590	Process cost - 21
5	Transportation of concrete	truck mixer	m3	10	281	15,544	2,810	155,440	Process cost - 22
		3.0 ~ 3.2m3							
	Total						**6,220**	**3,299,478**	
	Per 1.0m3						647	343,146	Take 4% loss into account at concrete placing

PROCESS COST - 158

Granular sub - base course (t = 40 cm)

Per $10m^3$

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Crusher-run	correct factor = 0.28	m3	54.4		88,000		4,787,200	t * $100m^2$ * 1.36, K = +0.36, Material - 108
2	Motor grader	3.1m	hr	0.34	2,850	58,000	969	19,720	T = (40/100)*Tm; T = 1.05; Equipment - 14
3	Road roller	macadam 10~12 ton	hr	0.46	2,010	48,000	925	22,080	Tr = 0.23; Equipment - 40
4	Tired roller	8 ~ 20 ton	hr	0.32	1,990	50,000	637	16,000	Tt = 0.16; Equipment - 41
5	Road sprinkler	5500 ~ 6500 l	hr	0.32	1,230	42,000	394	13,440	T = 2*Tt; Equipment - 44
6	Common labor		person	0.43		80,600		34,658	0.17 * 2.5
7	Miscellaneous expenses	(labor cost) * 4%	set	1				1,386	
	Total						2,924	4,894,484	
	Per $1.0m^2$						29	48,945	

Workability of motor grader (width 3.1)

L	W (m)	H(m)	f_1	E	P	Cm (min)	Q (m3)	Tm
50	2.8	0.2	0.87	0.6	4	1.92	114.2	0.88

Q = (60*W*L*H*f1*E)/P*(

Cm =L/V_1 + L/V_2= 280.5 =

W : Effetive width of blade H : Spread heigth E : Effeciency work; Cm : Cycle time

L : Working length of one time f_1 : Soil conversion factor P : Times of spread out

V_1 : Working speed

V_2 : Returning speed (m/min

Workability of road roller (10 ~12 ton)

W (m)	V (m/hr)	E	P	A (m2)	Tt
2.08	3,200	0.6	9	444	0.23

A = (W * V * E)/ P

Tr = 100/A

W : Effective width of roller V : Speed of compaction E : Efficieccy of work

P : Time of compaction A : Compacted are per one hour

Workability of tired roller (8 ~ 20 ton)

W (m)	V (m/hr)	E	P	A (m2)	Tt
2.3	4,000	0.6	9	613	0.16

A = (W * V * E)/ P

Tt = 100/A

W : Effective width of roller V : Speed of compaction E : Efficieccy of work

P : Time of compaction A : Compacted are per one hour

Granular sub-base course (t = 15 cm)

Per 100m^2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Crusher-run	correct factor = 0.28	m3	20.4		88,000		1,795,200	t * 100m^2 * 1.36, K = +0.36, Material - 108
2	Motor grader	3.1m	hr	0.16	2,850	58,000	456	9,280	T = (40/100)*Tm; T = 1.05; Equipment - 14
3	Road roller	macadam 10~12 ton	hr	0.23	2,010	48,000	462	11,040	Tr = 0.23; Equipment - 40
4	Tired roller	8 ~ 20 ton	hr	0.16	1,990	50,000	318	8,000	Tt = 0.16; Equipment - 41
5	Road sprinkler	5500 ~ 6500 l	hr	0.16	1,230	42,000	197	6,720	T = Tt; Equipment - 44
6	Common labor		person	0.43		80,600		34,658	0.17 * 2.5
7	Miscellaneous expenses	(labor cost) * 4%	set	1				1,386	
	Total						1,434	1,866,284	
	Per 1.0m^2						14	18,663	

Workability of motor grader (width 3.1)

L	W (m)	H(m)	f_1	E	P	Cm (min)	Q (m3)	Tm
50	2.8	0.2	0.87	0.5	4	1.92	95.2	1.05

Q = (60*W*L*H*f1*E)/P*(

Cm = L/V_1 + L/V_2 = 280.5 =1

W : Effetive width of blade
H : Spread heigth
E : Effeciency work; Cm : Cycle time
L : Working length of one time
f_1 : Soil conversion factor
P : Times of spread out
V_1 : Working speed (m/min)
V_2 : Returning speed (m/min

Workability of road roller (10 ~12 ton)

W (m)	V (m/hr)	E	P	A (m2)	Tt
2.08	3,200	0.6	9	444	0.23

A = (W * V * E)/ P
Tr = 100/A

W : Effective width of roller
V : Speed of compaction
E : Efficieccy of work
P : Time of compaction
A : Compacted are per one hour

Workability of tired roller (8 ~ 20 ton)

W (m)	V (m/hr)	E	P	A (m2)	Tt
2.3	4,000	0.6	9	613	0.16

A = (W * V * E)/ P
Tt = 100/A

W : Effective width of roller
V : Speed of compaction
E : Efficieccy of work
P : Time of compaction
A : Compacted are per one hour

PROCESS COST - 160

Granular sub-base course (t = 25 cm)

Per 100m^2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Crusher-run		m3	34		88,000		2,992,000	t * 100m^2 * 1.36, K = +0.36, Material - 108
2	Motor grader	3.1m	hr	0.22	2,850	58,000	627	12,760	T = (40/100)*Tm; T = 1.05; Equipment - 14
3	Road roller	macadam 10~12 ton	hr	0.29	2,010	48,000	583	13,920	Tr = 0.23; Equipment - 40
4	Tired roller	8 ~ 20 ton	hr	0.2	1,990	50,000	398	10,000	Tt = 0.16: Equipment - 41
5	Road sprinkler	5500 ~ 6500 l	hr	0.16	1,230	42,000	197	6,720	T = Tt; Equipment - 44
6	Common labor		person	0.55		80,600		44,330	0.17 * 2.5
7	Miscellaneous expenses	(labor cost) * 4%	set	1				1,773	
	Total						**1,805**	**3,081,503**	
	Per 1.0m^2						18	30,815	

Workability of motor grader (width 3.1)

L	W (m)	H(m)	f_1	E	P	Cm (min)	Q (m3)	Tm
50	2.8	0.2	0.87	0.6	4	1.92	114.2	0.88

Q = (60*W*L*H*f1*E)/P*C

Cm = $L/V_1 + L/V_2$ = 280.5 =1

W : Effetive width of blade

H : Spread heigth

E : Effeciency work ;Cm : Cycle time

V_1 : Working speed (m/min)

L : Working length of one time

f_1 : Soil conversion factor

P : Times of spread out

V_2 : Returning speed (m/min

Workability of road roller (10 ~12 ton)

W (m)	V (m/hr)	E	P	A (m2)	Tt
2.08	3,200	0.6	9	444	0.23

A = (W * V * E)/ P

Tr = 100/A

W : Effective width of roller

V : Speed of compaction

E : Efficieccy of work

P : Time of compaction

A : Compacted are per one hour

Workability of tired roller (8 ~ 20 ton)

W (m)	V (m/hr)	E	P	A (m2)	Tt
2.3	4,000	0.6	9	613	0.16

A = (W * V * E)/ P

Tt = 100/A

W : Effective width of roller

V : Speed of compaction

E : Efficieccy of work

P : Time of compaction

A : Compacted are per one hour

PROCESS COST - 161

Aggregate base course (t = 10 cm)

Per $100m^2$

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Vibrating roller	3-4 ton	hr	1	1,400	36,000	1,400	36,000	Equipment - 38
2	Tamper	60 - 100 kg	day	0.37	610	191,000	226	70,670	Equipment - 42
3	Common labor		person	7.5		80,600	-	604,500	3 * 2.5
4	Miscellaneous expenses	(labor cost)*4%	hr	1			-	24,180	
	Total						**1,626**	**735,350**	
	Per $1.0m^2$						16	7,354	

PROCESS COST - 162

Asphalt pavement (Binder course, t = 7 cm)

Per 100m^2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Asphalt mixture		ton	17.388	-	134,114	-	2,331,974	100m^2* t * 2.30 t/m^3 * 1.08
2	Asphalt finisher	crawler type 2.4 ~ 5.0 m	hr	0.330	8,700	44,000	2,871	14,520	0.33*1 course Equipment - 43
3	Road roller	macadam 10 ~ 12 ton	hr	0.330	2,010	48,000	663	15,840	0.33*1 course Equipment - 40
4	Tired roller	8 ~ 20 ton	hr	0.165	1,990	50,000	328	8,250	0.165*1 course; Equipment - 41
5	Foreman		person	0.100	-	183,300	-	18,330	0.04 * 2.5*1 course
6	Skilled labor		person	0.530	-	170,100	-	90,153	0.21 * 2.5*1 course
7	Common labor		person	0.530	-	80,600	-	42,718	0.21 * 2.5 * 1 course
8	Miscellaneous expenses	(labor cost)*4%	set	1				6,048	
	Total						**3,863**	**2,527,833**	
Per 1.0 m^2							39	25,278	
Per 1.0 ton							235	153,668	

PROCESS COST - 163

Asphalt pavement (surface course, t = 5 cm)

Per $100m^2$

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Asphalt mixture		ton	12.690		138,600		1,758,834	$100m^2$* t * 2.35 t/m^3 * 1.08
2	Asphalt finisher	crawler type 2.4 ~ 5.0 m	hr	0.330	8,700	44,000	2,871	14,520	0.33*1 course Equipment - 43
3	Road roller	macadam 10 ~ 12 ton	hr	0.330	2,010	48,000	663	15,840	0.33*1 course Equipment - 40
4	Tired roller	8 ~ 20 ton	hr	0.220	1,990	50,000	438	11,000	0.165*1 course;Equipment - 41
5	Foreman		person	0.100		183,300		18,330	0.04 * 2.5*1 course
6	Skilled labor		person	0.530		170,100		90,153	0.21 * 2.5*1 course
7	Common labor		person	0.530		80,600		42,718	0.21 * 2.5 * 1 course
8	Miscellaneous expenses	(labor cost)*4%	set	1				6,048	
	Total						3,972	1,957,443	
	Per 1.0 ton						338	166,591	

PROCESS COST - 164

Asphalt pavement (surface course, t = 5 ^{cm},pavement width less than 5 m)

Per 100m^2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Asphalt mixture		ton	12.420		185,934	-	2,309,300	100^{m2}* t * 2.30 $^{t/m3}$ * 1.08 ; Material - 94
2	Asphalt finisher	crawler type 1.6-3.0 t	hr	0.560	3,580	40,000	2,005	22,400	0.56*1 $^{course;}$Equipment-119
3	Dump truck	2.0 ton	hr	0.560	400	38,000	224	21,280	0.56*1 $^{course;}$Equipment-120
4	Vibrating roller	3 - 4 ton	hr	1.120	1,400	36,000	1,568	40,320	0.22*1 ^{course*3}; Equipment - 38
5	Foreman		person	0.225		183,300		41,243	0.09*2.5
6	Skilled labor		person	1.875		170,100		318,938	0.75*2.5
7	Common labor		person	0.475		80,600		38,285	0.19*2.5
8	Miscellaneous expenses	(labor cost)*2%	set	1				7,969.30	
	Total						3,797	2,799,735	
	Per 1.0m^2						38	27,997	
	(Per 1.0m^3)						759	559,947	

PROCESS COST - 165

Asphalt pavement (surface course, by hand)

Per $100m^2$

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Tamper	60-100 kg	day	2.000	610	191,000	1,220	382,000	2 day*1 cuorse
2	Foreman		person	1.000		183,300		183,300	0.4*2.5
3	Skilled labor		person	0.500		170,100		85,050	0.2*2.5
4	Common labor		person	3.250		80,600		261,950	1.3*2.5
5	Miscellaneous expenses	(labor cost)*4%	set	1				21,212	
	Total						1,220	933,512	
	Per $1.0m^2$						12	9,335	
	(Per $1.0m^3$)						244	186,702	

PROCESS COST - 166

Asphalt treated base course (t = 20cm)

Per $100m^2$

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
	Asphalt treated base course	t=20cm	m2	100					
1	Asphalt mixture		ton	50.76	-	133,140	-	6,758,186	100^{m2}* t * 2.35 $^{t/m3}$ * 1.08
2	Asphalt finisher	crawler type 2.4 5.0 m	hr	0.66	8,700	44,000	5,742	29,040	0.33*2 course; Equipment-43
3	Road roller	Macadam 10-12 ton	hr	0.66	2,010	48,000	1,327	31,680	0.33*2 course; Equipment-40
4	Tired roller	8-20t	hr	0.66	1,990	50,000	1,313	33,000	0.33*2 course
5	Foreman		person	0.2		183,300		36,660	
6	Skilled labor		person	1.02		170,100		173,502	
7	Common labor		person	1.02		80,600		82,212	
8	Miscellaneous expenses	(labor cost)*4%	set	1				11,694.96	
	Total						**8,382**	**7,155,975**	

PROCESS COST - 167

Asphalt Cement

Per $100m^2$

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Binder course		ton	0.89822		2,310,000		2,074,888	(16.1 t/100m2)*0.05579; Material - 93
	Total							2,074,888	
	Per $1.0m^2$							20,749	

PROCESS COST - 168

Asphalt Cement

Per $100m^2$

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Binder course		ton	0.69659		2,310,000		1,609,123	(16.1 t/100m2)*0.060573; Material - 93
	Total							1,609,123	
	Per $1.0m^2$							16,091	

PROCESS COST - 169

Asphalt Cement (Bridge surface pavement)

Per $100m^2$

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Surface course		ton	1.04488		2,310,000		2,413,673	(17.25 t/100m2)*0.060573; Material - 93
	Total							2,413.673	
	Per $1.0m^2$							24.137	

PROCESS COST - 170

Bituminous prime coat

Per 100 m^2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Prime coat	1.0 kg/m^2	kg	100		3,360		336,000	Material - 97
2	Miscellaneous expenses	(sum of above)*4%	set	1				13,440	
	Total							349,440	
Per 1.0m^2								3,494	
Per 1.0 kg								3,494	

PROCESS COST - 171

Bituminous tack coat

Per 100 m^2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Tack coat	0.5 kg/m^2	kg	50		3,360		168,000	Material - 98
2	Miscellaneous expenses	(sum of above)*3%	set	1				5,040	
	Total							173,040	
	Per 1.0m^2							1,730	
	Per 1.0 kg							3,461	

PROCESS COST - 172

Regulatory and Warning signs setting work , Type - B

Per : 10 set

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	2	-	183,300	-	366,600	0.8*2.5
2	Common labor		person	6.5	-	80,600	-	523,900	2.6*2.5
3	Traffic sign pole	Φ 80	each	10	-	161,818	-	1,618,180	Material - 70
4	Traffic sign board	900*900*900	each	10	-	189,091	-	1,890,910	Material - 68
5	Excavation	Hydraulic 0.35	m3	24.4	44	1,920	1,074	46,848	Process cost - 66
6	Hand backfill		m3	22.4	10	7,086	224	158,726	Process cost - 15
7	Form work		m2	16	-	86,805	-	1,388,880	Process cost - 38
8	Concrete	Class E	m3	2	634	396,674	1,268	793,348	Process cost - 154
9	Concrete placing		m3	2	-	79,812	-	159,624	Process cost - 34
	Total						**2,566**	**6,947,016**	
	Per : 1 set						257	694,702	

PROCESS COST - 173

Regulatory and Warning signs setting work , Type - C

Per : 10 set

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	2	-	183,300	-	366,600	0.8*2.5
2	Common labor		person	6.5	-	80,600	-	523,900	2.6*2.5
3	Traffic sign pole	Φ 80	each	20	-	161,818	-	3,236,360	Material - 70
4	Traffic sign board	1000*1600	each	10	-	814,546	-	8,145,456	Material - 69
5	Excavation	Hydraulic 0.35	m3	48.8	44	1,920	2,147	93,696	Process cost - 66
6	Hand backfill		m3	44.8	10	7,086	448	317,453	Process cost - 15
7	Form work		m2	32	-	98,258	-	3,144,256	Process cost - 38
8	Concrete	Class E	m3	4	634	396,674	2,536	1,586,696	Process cost - 154
9	Concrete placing		m3	4	-	79,812	-	319,248	Process cost - 34
	Total						**5,131**	**17,733,665**	
	Per : 1 set						513	1,773,366	

PROCESS COST - 174

Regulatory and Warning signs setting work , Type - D

Per : 10 set

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	2	-	183,300	-	366,600	0.8*2.5
2	Common labor		person	6.5	-	80,600	-	523,900	2.6*2.5
3	Traffic sign pole	Φ 80	each	10	-	161,818	-	1,618,180	Material - 70
4	Traffic sign board	width 900mm octagonal	each	10	-	307,273	-	3,072,730	Material - 67
5	Excavation	Hydraulic 0.35	m3	24.4	44	1,920	1,074	46,848	Process cost - 66
6	Hand backfill		m3	22.4	10	7,086	224	158,726	Process cost - 15
7	Form work		m2	16	-	86,805	-	1,388,880	Process cost - 38
8	Concrete	Class E	m3	2	634	396,674	1,268	793,348	Process cost - 154
9	Concrete placing		m3	2	-	79,812	-	159,624	Process cost - 34
	Total						**2,566**	**8,128,836**	
	Per : 1 set						257	812,884	

PROCESS COST - 175

Demolition of RC structure

Per : 10 m3 (with large sized hydraulic more than 5.0m3)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	1.25	-	183,300	-	229,125	0.5*2.5
2	Skilled labor		person	1.25	-	170,100	-	212,625	0.5*2.5
3	Welder		person	1.25	-	111,700	-	139,625	0.5*2.5
4	Common labor		person	2.5	-	80,600	-	201,500	1.0*2.5
5	Breaking work	large sized breaker 600-800kg	hr	3.8	3,760	92,000	14,288	349,600	Process cost - 377 (2)
6	Miscellaneous expenses	(labor cost)*4%	set	1.0	-	-	-	31,315	
7	Disposition of concrete trash		m3	10.0	392	15,733	3,917	157,325	Process cost - 177
8	Truck crane	20 - 22 ton	hr	1.8	3,520	55,000	6,266	97,900	4.0*T;T=800/180=4.44 ; Equipment - 17
	Total						**24,471**	**1,419,015**	
Per : 1 m3							2,447	141,902	

PROCESS COST - 176

Demolition of RC structure (concrete breaker)

Per : 10 m3 (demolition with concrete breaker,amount of demolition less than 5.0m3)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	1.25	-	183,300	-	229,125	0.5*2.5
2	Skilled labor		person	2.50	-	170,100	-	425,250	1.0*2.5
3	Welder		person	1.25	-	111,700	-	139,625	0.5*2.5
4	Common labor		person	5.0	-	80,600	-	403,000	2.0*2.5
5	Conctrete breaker	20 kg class	hr	2.0	160	-	320	0	Equipment - 9
6	Air compressor	3.5 - 3.7 m3 min	hr	1.0	2,410	104,000	2,410	104,000	Equipment - 57
7	Miscellaneous expenses	(Sum of above)*2%	set	1.0	-	-	55	26,020	
8	Disposition of concrete trash		m3	10.0	370	14,960	3,702	149,597	Process cost - 178
	Total						**6,487**	**1,476,617**	
Per : 1 m3							649	147,662	

Disposition of concrete trash (back hoe)

Per : 100 m3 (transport distance 10 km)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Back hoe	0.6 m3	hr	2.12	2,560	92,000	5,427	195,040	Equipment - 6
2	Dump truck	11 ton	hr	20.45	1,650	67,000	33,743	1,370,150	Equipment - 33
3	Common labor		person	0.1	-	80,600	-	8,060	0.4*2.5*1/10
	Total						**39,170**	**1,573,250**	
	Per 1.0m^3						392	15,733	

. **Workability of back hoe (0.6 m3)**

q_0 (m3)	K	q	f	E	C_s (sec)	Q (m3 / hr)	T (hr/100m3)
0.60	0.98	0.59	1.00	0.6	27	47.2	2.12

Q = (3,600*q*f*E) / Cs

T = 100/Q ; q=qo * K

q_o : Standard bucket capacity **f**: Soil conversion factor **E** : Efficiency of work

K : Bucket factor **C_s**: Cycle time **q** : Excavation volume per one cycle

. **Workability of dump truck (11 ton)** **Q = (60 * q * f * E) / C_m**

C_m = b L+a ; T = 100/Q ;

L (km)	b	a	C_m (min)	q (m3)	f	E	Q (m3/hr)	T (hr / 100m3)
1.0	4.8	5	53	4.8	1	0.9	4.89	20.45

L : Transport distance (Km) **a** : Working factor **q** : Loanding volume one dump truck **E** : Efficiency of work

b : Factor of transport condit **C_m** : Cycle time **f** : Soil conversion factor

PROCESS COST - 178

Disposition of concrete trash (back hoe)

Per : 100 m3 (transport distance 10 km)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Back hoe	0.6 m3	hr	1.28	2,560	92,000	3,277	117,760	Equipment - 6
2	Dump truck	11 ton	hr	20.45	1,650	67,000	33,743	1,370,150	Equipment - 33
3	Common labor		person	0.1	-	80,600	-	8,060	0.4*2.5*1/10
	Total						**37,019**	**1,495,970**	
	Per 1.0m^3						370	14,960	

. Workability of back hoe (0.6 m3)

q_0 (m3)	K	q	f	E	C_s (sec)	Q (m3 / hr)	T (hr/100m3)
0.60	0.98	0.59	1	0.6	19	78.3	1.28

Q = (3,600*q*f*E) / Cs

T = 100/Q ; q=qo * K

q_0 : Standard bucket capacity

K : Bucket factor

f: Soil conversion factor

C_s: Cycle time

E : Efficiency of work

q : Excavation volume per one cycle

. Workability of dump truck (11 ton)

Q = (60 * q * f * E) / C_m

C_m = b L+a ; T = 100/Q ;

L (km)	b	a	C_m (min)	q (m3)	f	E	Q (m3/hr)	T (hr / 100m3)
1.0	4.8	5	53	4.8	1	0.9	4.89	20.45

L : Transport distance (Km) **a** : Working factor

b : Factor of transport condit C_m : Cycle time

q : Loanding volume one dump truck **E** : Efficiency of work

f : Soil conversion factor

PROCESS COST - 179

Mortared brick work (220x105x60 mm) thick <=11cm

Per 10 m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	2.5	-	183,300	-	458,250	1.0*2.5
2	Brick worker		person	7.5	-	111,700	-	837,750	3.0*2.5
3	Common labor		person	12.5	-	80,600	-	1,007,500	5.0*2.5
4	Brick	200mmx105mmx 60mm	each	6430	-	297	-	1,909,710	Loss 2 % ; Material - 92
5	Cement mortar	M75	m3	2.3	-	263,013	-	604,930	Process cost - 69
6	Miscellaneous expenses	(labor cost)*7%	set	1				161,245	
							-	**4,979,385**	
	Total						-	497,938	
	Per 1.0 m2						-	55,873	
	Per 1.0 m3=total/(10*8.912)								

PROCESS COST - 180

U - Ditch (DS - 1)

Per 10^{m}

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Dich excavation	Back hoe 0.35^{m3}	m^3	8.74	44	1,920	385	16,781	Process cost - 66
2	Hand excavation		m^3	0.46		44,330		20,392	Process cost - 9
3	Mortared stone work		m^3	4.40		319,477		1,405,699	Process cost - 109
4	Bedding work		m^3	0.71		183,490		130,278	Process cost - 17
	Total						385	**1,573,149**	
Per 1.0m							38	157,315	

PROCESS COST - 181

U - Ditch (DS - 2)

Per 10^{m}

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Dich excavation	Back hoe 0.35^{m3}	m^3	26.6	44	1,920	1,170	51,072	Process cost - 66
2	Hand excavation		m^3	1.4	-	44,330	-	62,062	Process cost - 9
3	Mortared stone work		m^3	6.00	-	319,477	-	1,916,862	Process cost - 109
4	Backfill		m^3	18.83	10	7,086	188	133,429	Process cost - 15
5	Bedding work		m^3	1.00	-	183,490	-	183,490	Process cost - 17
6	Granular material	yellow sand	m^3	21.60	-	50,000	-	1,080,000	1+K;K=+0.15;Material-100
	Total						**1,359**	**3,426,915**	
	Per 1.0m						136	342,692	

PROCESS COST - 182

U - Ditch (DS - 3)

Per 10^{m}

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Dich excavation	Back hoe 0.35^{m3}	m^3	43.0	44	1,920	1,891	82,502	Process cost - 66
2	Hand excavation		m^3	2.26	-	44,330	-	100,186	Process cost - 9
3	Mortared stone work		m^3	8.00	-	319,477	-	2,555,816	Process cost - 109
4	Backfill		m^3	31.73	10	7,086	317	224,839	Process cost - 15
5	Bedding work		m^3	1.00	-	183,490	-	183,490	Process cost - 17
6	Granular material	yellow sand	m^3	36.50	-	50,000	-	1,825,000	1+K;K=+0.15; Material-100
	Total						**2,208**	**4,971,833**	
	Per 1.0m						221	497,183	

PROCESS COST - 183 (1)

R.C. Pipe(D=75cm) Type A1 - Setting work

Per 10 m

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	1	-	183,300	-	183,300	0.4*2.5
2	Skilled labor		person	1	-	170,100	-	170,100	0.4*2.5
3	Common labor		person	2.75	-	80,600	-	221,650	1.1*2.5
4	R.C. pipe	Φ750x1000	each	10	-	288,455	-	2,884,550	Material - 74
5	Truck crane	hydraulic 4.8 ~ 4.9 ton	hr	0.89	1,250	46,000	1,113	40,940	0.2day*800/180; Equipment - 20
6	Miscellaneous expenses	Sum of above 5%	set	1	-	-	56	175,027	
7	Hand excavation		m^3	3.2	-	44,330	-	141,856	Process cost - 9
8	Backfill	W<4	m^3	29.80	35	63,670	1,043	1,897,366	Process cost - 234
9	Bedding work		m^3	3.20	-	183,490	-	587,168	Process cost - 17
10	Cement mortar		m^3	0.20	-	319,477	-	63,895	Process cost - 68
11	Concrete class E-1		m^3	3.8	708	737,190	2,690	2,801,322	including formwork
	Total						**4,902**	**9,167,174**	
	Per 1 m						490	916,717	

PROCESS COST - 183 (2)

R.C. Pipe(D=75cm) Type A2 - Setting work

Per 10 m

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	1	-	183,300	-	183,300	0.4*2.5
2	Skilled labor		person	1	-	170,100	-	170,100	0.4*2.5
3	Common labor		person	2.75	-	80,600	-	221,650	1.1*2.5
4	R.C. pipe	Φ750x1000	each	10	-	288,455	-	2,884,550	Material - 74
5	Truck crane	hydraulic 4.8 ~ 4.9 ton	hr	0.89	1,250	46,000	1,113	40,940	0.2day*800/180; Equipment - 20
6	Miscellaneous expenses	Sum of above 5%	set	1	-	-	56	175,027	
7	Hand excavation		m^3	3.2	-	44,330	-	141,856	Process cost - 9
8	Backfill	W<4	m^3	29.80	35	63,670	1,043	1,897,366	Process cost - 234
9	Bedding work		m^3	3.00	-	183,490	-	550,470	Process cost - 17
10	Cement mortar		m^3	0.20	-	319,477	-	63,895	Process cost - 68
11	Concrete class E-1		m^3	10.7	708	737,190	7,576	7,887,933	including formwork
12	Reinforcing steel		kg	637	29	1,971	18,473	1,255,527	
	Total						**28,260**	**15,472,614**	
	Per 1 m						2,826	1,547,261	

PROCESS COST - 184

R.C. Pipe(D=100cm) TypeA - Setting work

Per 10 m

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	1.25	-	183,300	-	229,125	0.5*2.5
2	Skilled labor		person	1.25	-	170,100	-	212,625	0.5*2.5
3	Common labor		person	3.25	-	80,600	-	261,950	1.3*2.5
4	R.C. pipe	Φ1000x1000	each	10	-	542,100	-	5,421,000	Material - 75
5	Cradle	L=1000;950 kg	each	10	-	399,100	-	3,991,000	Material - 79
6	Truck crane	hydraulic 4.8 ~ 4.9 ton	hr	1.78	1,250	46,000	2,225	81,880	0.4day*800/180; Equipment - 20
7	Miscellaneous expenses	Sum of above 5%	set	1	-	-	111	509,879	
8	Excavation	Back hoe 0.35 m3	m^3	11.11	44	1,920	489	21,331	Process cost - 66
9	Hand excavation		m^3	0.59	-	44,330	-	26,155	Process cost - 9
10	Backfill	W<4	m^3	46.50	35	63,670	1,628	2,960,655	Process cost - 234
11	Bedding work		m^3	1.20	-	183,490	-	220,188	Process cost - 17
12	Cement mortar		m^3	0.40	-	319,477	-	127,791	Process cost - 68
	Total						**4,453**	**14,063,579**	
	Per 1 m						445	1,406,358	

PROCESS COST - 185

R.C. Pipe(2D=125cm) TypeB - Setting work

Per 10 m

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	2.2	-	183,300	-	403,260	0.88*2.5
2	Skilled labor		person	2.2	-	170,100	-	374,220	0.88*2.5
3	Common labor		person	6.88	-	80,600	-	554,528	2.75*2.5
4	R.C. pipe	2* ϕ1250x1000	each	20	-	643,900	-	12,878,000	Material - 76
5	Cradle	L=1000;2*1250 kg	each	20	-	487,000	-	9,740,000	Material - 80
6	Truck crane	hydraulic10 ~ 11 ton	hr	4.3	2,260	55,000	9,718	236,500	0.96day*800/180; Equipment - 19
7	Miscellaneous expenses	Sum of above 5%	set	1	-	-	486	1,209,325	
8	Excavation	Back hoe 0.35 m3	m^3	20.42	44	1,920	898	39,206	Process cost - 66
9	Hand excavation		m^3	1.08	-	44,330	-	47,876	Process cost - 9
10	Backfill	W>5	m^3	60.20	68	64,011	4,094	3,853,462	Process cost - 241
11	Bedding work		m^3	3.20	-	183,490	-	587,168	Process cost - 17
12	Concrete	class E	m^3	9.40	634	396,674	5,960	3,728,736	Process cost - 154
13	Concrete placing		m^3	9.40	-	57,192	-	537,605	Process cost - 229
14	Cement mortar		m^3	0.40	-	319,477	-	127,791	Process cost - 68
	Total						**21,156**	**34,317,678**	
	Per 1 m						2,116	3,431,768	

PROCESS COST - 186

R.C. Pipe(D=200cm) Type C - Setting work

Per 10 m

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	2.5	-	183,300	-	458,250	1.0*2.5
2	Skilled labor		person	2.5	-	170,100	-	425,250	1.0*2.5
3	Common labor		person	7.5	-	80,600	-	604,500	3.0*2.5
4	R.C. pipe	ϕ2000x1000	each	30	-	1,800,900	-	54,027,000	Material - 78
5	Cradle	L=1000;1850 kg	each	30	-	738,200	-	22,146,000	Material - 82
6	Truck crane	hydraulic15 ~ 16 ton	hr	3.11	3,080	55,000	9,582	171,111	0.7day*800/180; Equipment - 18
7	Miscellaneous expenses	Sum of above 5%	set	1	-	-	479	3,891,606	
8	Excavation	Back hoe 0.35 m3	m^3	42.84	44	1,920	1,885	82,253	Process cost - 66
9	Hand excavation		m^3	2.26	-	44,330	-	100,186	Process cost - 9
10	Backfill	W>5	m^3	25.40	68	64,011	1,727	1,625,879	Process cost - 241
11	Bedding work		m^3	7.50	-	183,490	-	1,376,175	Process cost - 17
12	Concrete	class E	m^3	46.80	376	382,404	17,597	17,896,507	Process cost - 154
13	Concrete placing		m^3	46.80	-	57,191	-	2,676,539	Process cost - 229
14	Cement mortar		m^3	2.00	-	319,477	-	638,954	Process cost - 68
	Total						**31,270**	**106,120,210**	
	Per 1 m						3,127	10,612,021	

PROCESS COST - 187

R.C. Pipe(2D=125cm) TypeB - Setting work for headwall

Per 10 m

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	R.C. pipe	2 *ϕ1250x1000	each	20	-	643,900	-	12,878,000	Material - 76
2	Truck crane	hydraulic;10 ~ 11 ton	hr	1.78	2,260	55,000	4,023	97,900	0.96day*0.5*800/180; Equipment - 19
3	Foreman		person	2.2	-	183,300	-	403,260	0.88*2.5
4	Skilled labor		person	2.2	-	170,100	-	374,220	0.88*2.5
5	Common labor		person	6.88	-	80,600	-	554,528	2.75*2.5
6	Miscellaneous expenses	(Labor cost) * 10%	set	1			-	133,201	
	Total						**4,023**	**14,441,109**	
	Per 1 m						402	1,444,111	

PROCESS COST - 188

R.C. Pipe(3D=200cm) TypeC - Setting work for headwall

Per 10 m

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	R.C. pipe	3 *ϕ2000x1000	each	30	-	1,800,900	-	54,027,000	Material - 78
2	Truck crane	hydraulic 15-16ton	hr	1.55	3,080	55,000	4,774	85,250	0.7day*0.5*800/180; Equipment - 18
3	Foreman		person	2.5	-	183,300	-	458,250	0.88*2.5
4	Skilled labor		person	2.5	-	170,100	-	425,250	0.88*2.5
5	Common labor		person	7.5	-	80,600	-	604,500	2.75*2.5
6	Miscellaneous expenses	(Labor cost) * 10%	set	1			-	148,800	
	Total						**4,774**	**55,749,050**	
	Per 1 m						477	5,574,905	

PROCESS COST - 189

Catch basin (DC - 1)

Per: each

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Concrete	Class E	m^3	0.458	634	396,674	290	181,677	Process cost - 154
2	Concrete	Class G	m^3	0.414	634	301,312	262	124,743	Process cost - 156
3	Concrete placing		m^3	0.872	-	57,191	-	49,871	Process cost - 229
4	Reinforced stell		ton	0.007	24,720	2,096,273	173	14,674	Process cost - 60
5	Form work		m^2	4.95	-	82,710	-	409,415	Process cost - 228
6	Cement mortar	for pitching	m^3	0.03	-	263,013	-	7,890	Process cost - 69
7	Mortared brick work	220x105x60mm	m3	3.2	-	55,873	-	178,794	Process cost - 179
8	R C pipe	D=1000mm;type A	m	1	117	647,392	117	647,392	Process cost - 240
9	Bedding work		m3	0.828	-	183,490	-	151,930	Process cost - 17
10	Excavation	Back hoe 0.35 m3	m3	39.1	44	1,920	1,720	75,072	Process cost - 66
11	Hand excavation		m3	1.36	-	44,330	-	60,289	Process cost - 9
12	Backfill		m3	2.06	35	63,670	72	131,160	Process cost - 234
	Total						**2,635**	**2,032,906**	
Per 1each							2,635	2,032,906	

PROCESS COST - 190

Catch basin (DC - 2)

Per: each

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Concrete	Class E	m^3	0.297	634	396,674	188	117,812	Process cost - 154
2	Concrete	Class G	m^3	0.324	634	301,312	205	97,625	Process cost - 156
3	Concrete placing		m^3	0.621	-	57,191	-	35,516	Process cost - 229
4	Reinforced stell		ton	0.005	24,720	2,096,273	124	10,481	Process cost - 60
5	Form work		m^2	3.82	-	82,710	-	315,952	Process cost - 228
6	Cement mortar	for pitching	m^3	0.02	-	263,013	-	5,260	Process cost - 69
7	Mortared brick work	220x105x60mm	m3	2.33	-	55,873	-	130,184	Process cost - 179
8	R C pipe	D=750mm;type A	m	1	117	367,557	117	367,557	Process cost - 239
9	Bedding work		m3	0.648	-	183,490	-	118,902	Process cost - 17
10	Excavation	Back hoe 0.35 m3	m3	25.8	44	1,920	1,135	49,536	Process cost - 66
11	Hand excavation		m3	1.36	-	44,330	-	60,289	Process cost - 9
12	Backfill		m3	23.27	10	7,086	233	164,891	Process cost - 15
13	Granular material	yellow sand	m^3	26.70	-	50,000	-	1,335,000	1+K;K=+0.15 Material - 100
	Total						**2,002**	**2,809,005**	
	Per 1each						2,002	2,809,005	

CB-208

PROCESS COST - 191

Headwall DH-5-inlet ; 2x Φ1.25 m

Per one set

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Excavation	Back hoe 0.35m3	m3	71	44	1,920	3,124	136,320	Process cost - 66
2	Hand excavation		m3	1.92	-	44,330	-	85,114	Process cost - 9
3	Bedding work	Crusher - run	m3	5.95	-	183,490	-	1,091,766	Process cost - 17
4	Rip rap work	cobble stone	m3	3.99	-	96,556	-	385,258	Process cost -235
5	Mortar stone work :		m3	33.33	-	343,725	-	11,456,354	Process cost -110
6	Cement mortar	for plastering	m3	0.28	-	319,477	-	89,454	Process cost - 68
7	R.C. pipe setting work	2 x ϕ1.25 m - type B	m	1	403	1,444,111	403	1,444,111	Process cost - 187
8	Hand backfill	Suitable excavated soil	m3	23.23	10	7,086	232	164,608	Process cost - 15
9	Transportation of spoil	Dump truck 11 ton	m3	49.7	84	3,598	4,175	178,821	Process cost - 11
	Total						**7,934**	**15,031,805**	
	Per one set						7,934	15,031,805	

PROCESS COST - 192

Headwall DH-12-inlet ; 3x Φ2.0 m

Per one set

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Excavation	Back hoe 0.35m3	m3	140	44	1,920	6,160	268,800	Process cost - 66
2	Hand excavation		m3	2.46	-	44,330	-	109,052	Process cost - 9
3	Bedding work	Crusher - run	m3	18.76	-	183,490	-	3,442,272	Process cost - 17
4	Rip rap work	cobble stone	m3	6.9	-	96,556	-	666,236	Process cost -235
5	Mortar stone work :		m3	70.97	-	343,725	-	24,394,163	Process cost -110
6	Cement mortar	for plastering	m3	0.97	-	319,477	-	309,893	Process cost - 68
7	R.C. pipe setting work	3 x ϕ2.0 m - type C	m	1	478	5,574,905	478	5,574,905	Process cost - 188
8	Hand backfill	Suitable excavated soil	m3	44.86	10	7,086	449	317,878	Process cost - 15
9	Transportation of spoil	Dump truck 11 ton	m3	97.6	84	3,598	8,198	351,165	Process cost - 11
	Total						**15,285**	**35,434,364**	
	Per one set						15,285	35,434,364	

PROCESS COST - 193

Headwall DH-5-outlet ; 2x Φ1.25 m

Per one set

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Excavation	Back hoe 0.35m3	m3	51.5	44	1,920	2,266	98,880	Process cost - 66
2	Hand excavation		m3	1.16	-	44,330	-	51,423	Process cost - 9
3	Bedding work	Crusher - run	m3	3.95	-	183,490	-	724,786	Process cost - 17
4	Rip rap work	cobble stone	m3	1.38	-	96,556	-	133,247	Process cost -235
5	Mortar stone work :		m3	28.34	-	343,725	-	9,741,167	Process cost -110
6	Cement mortar	for plastering	m3	0.28	-	319,477	-	89,454	Process cost - 68
7	R.C. pipe setting work	2 x ϕ1.25 m - type B	m	1	403	1,444,111	403	1,444,111	Process cost - 187
8	Hand backfill	Suitable excavated soil	m3	23.23	10	7,086	232	164,608	Process cost - 15
9	Transportation of spoil	Dump truck 11 ton	m3	29.43	84	3,598	2,472	105,889	Process cost - 11
	Total						**5,373**	**12,553,564**	
	Per one set						5,373	12,553,564	

PROCESS COST - 194

Headwall DH-12-outlet ; 3x Φ2.0 m

Per one set

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Excavation	Back hoe 0.35m3	m3	106	44	1,920	4,664	203,520	Process cost - 66
2	Hand excavation		m3	1.7	-	44,330	-	75,361	Process cost - 9
3	Bedding work	Crusher - run	m3	15.45	-	183,490	-	2,834,921	Process cost - 17
4	Rip rap work	cobble stone	m3	1.33	-	96,556	-	128,419	Process cost -235
5	Mortar stone work :		m3	62.68	-	343,725	-	21,544,683	Process cost -110
6	Cement mortar	for plastering	m3	0.97	-	319,477	-	309,893	Process cost - 68
7	R.C. pipe setting work	3 x ϕ 2.0 m - type c	m	1	478	5,574,905	478	5,574,905	Process cost - 188
8	Hand backfill	Suitable excavated soil	m3	44.86	10	7,086	449	317,878	Process cost - 15
9	Transportation of spoil	Dump truck 11 ton	m3	62.84	84	3,598	5,279	226,098	Process cost - 11
	Total						**10,869**	**31,215,678**	
	Per one set						10,869	31,215,678	

PROCESS COST - 195

KM indicator post setting work

Per: 10 post

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Common labor		person	5.00	-	80,600	-	403,000	2.0*2.5
2	KM indicator		each	10.0	-	230,000	-	2,300,000	Material - 90
3	Hand excavation		m3	20.80	-	44,330	-	922,064	Process cost - 9
4	Hand backfill		m3	19.00	10	7,086	190	134,634	Process cost - 15
Total							**190**	**3,759,698**	
Per 1.0m^3							19	375,970	

PROCESS COST - 196

Traffic post setting work

Per: 10 post

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Common labor		person	5.00	-	80,600	-	403,000	2.0*2.5
2	Traffic post		each	10.000	-	63,000	-	630,000	Material - 91
3	Hand excavation		m3	13.00	-	44,330	-	576,290	Process cost - 9
4	Hand backfill		m3	12.70	10	7,086	127	89,992	Process cost - 15
Total							**127**	**1,699,282**	
Per 1.0m^3							13	169,928	

PROCESS COST - 197

Marker fabrication and setting (100x100x600)

Per : 10each

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Form work		m2	1.8	150	132,365	270	238,257	Process cost - 42 (5 times for one form)
2	Reinforcing bar steel	Φ 6 mm	kg	12	24	-	288	-	Material - 28
3	Concrete	Class E-2	m3	0.06	634	396,674	38	23,800	Process cost - 154
4	Concrete placing		m3	0.06	-	79,812	-	4,789	Process cost - 34
5	Paint		m2	0.8	-	2,900	-	2,320	
6	Common labor		person	3	-	80,600	-	241,800	1.5*2.5
7	Miscellaneous expenses	(Labor cost)* 4%	set	1				9,672	
	Total						**596**	**520,638**	
	Per one each						60	52,064	

PROCESS COST - 198

Excavation and back-filling of duct track

Per 100 m

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Excavation	Back hoe 0.35m3	m3	28	90	2,596	2,520	72,688	Process cost - 5
2	Hand backfill		m3	28	10	7,086	280	198,408	Process cost - 15
	Total						**2,800**	**271,096**	
	Per 1m						28	2,711	

PROCESS COST - 199

Arrangement bricks on duct track of underground cable

Per 100 m

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Brick	220x105x60 mm	piece	909	-	297	-	269,973	Material - 92
2	Brick worker		person	3.78	-	111,700	-	422,226	1.51*2.5
	Total						-	**692,199**	
	Per 1m						-	6,922	

PROCESS COST - 200

Street lighting Pull box (type - A)

Per :each

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Pull box	Type A	box	1	-	63,736	-	63,736	Material - 199
2	Sub material	5%*material cost	set	1	-	-	-	3,187	
3	Electrician		person	1	-	111,700	-	111,700	0.4*2.5
	Total						-	**178,623**	
	Per one each						-	178,623	

PROCESS COST - 201

Distribution panel - type SS

Per :each

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Street lighting panel box	Type SS	box	1	-	1,561,230	-	1,561,230	Material - 188
2	Sub material	1%*material cost	set	1	-	-	-	15,612	
3	Electrician		person	1.25	-	111,700	-	139,625	0.5*2.5
	Total						-	**1,716,467**	
	Per one each						-	1,716,467	

PROCESS COST - 202

Distribution panel - type MDP

Per :each

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Street lighting panel box	Type MDP	box	1	-	7,613,113	-	7,613,113	Material - 189
2	Sub material	2%*material cost	set	1	-	-	-	152,262	
3	Foreman		person	1.1	-	183,300	-	201,630	0.44*2.5
4	Electrician		person	3.75	-	111,700	-	418,875	1.5*2.5
5	Common labor		person	7.5	-	80,600	-	604,500	3.0*2.5
6	Hand excavation		m3	0.3	-	44,330	-	13,299	Process cost - 9
7	Concrete	Class E-2	m3	0.24	376	382,404	90	91,777	Process cost - 154
8	Form work		m2	2.16	267	86,097	577	185,970	Process cost - 40
	Total						**667**	**9,281,426**	
	Per one each						667	9,281,426	

PROCESS COST - 203

Street lighting Panel ; (type - DB)

Per :each

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Street lighting panel box	Type DB	box	1	-	3,917,190	-	3,917,190	Material - 190
2	Sub material	2%*material cost	set	1	-	-	-	78,344	
3	Electrician		person	0.75	-	111,700	-	83,775	0.3*2.5
4	Common labor		person	1	-	80,600	-	80,600	0.4*2.5
	Total						-	**4,159,909**	
	Per one each						-	4,159,909	

PROCESS COST - 204

Underground cable 4 c - 25 mm2

Per 100 m

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Underground cable 4c-25 mm2	4 c - 25 mm2	m	102	-	69,440	-	7,082.880	loss 2% ; Material - 191
	Total						-	**7,082,880**	
	Per 1 m						-	70,829	

PROCESS COST - 205

Underground cable 4 c - 16 mm2

Per 100 m

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Underground cable 4c -16 mm2	4c - 16 mm2	m	102	-	53,648	-	5,472,096	loss 2% ; Material - 192
	Total						-	**5,472,096**	
	Per 1 m						-	54,721	

PROCESS COST - 206

Underground cable 4 c - 10 mm2

Per 100 m

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Underground cable 4c-10 mm2	4c - 10 mm2	m	102	-	37,860	-	3,861,720	loss 2% ; Material - 193
	Total						-	**3,861,720**	
	Per 1 m						-	38,617	

PROCESS COST - 207

Cable 4 c - 16 mm2

Per 100 m

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Cable 4c-10 mm2	4c-16 mm2	m	102	-	32,800	-	3,345,600	loss 2% ; Material - 195
	Total						-	**3,345,600**	
	Per 1 m						-	33,456	

PROCESS COST - 208

Cable 4 c - 10 mm2

Per 100 m

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Cable 4c-10 mm2	4c-10 mm2	m	102	-	23,100	-	2,356,200	loss 2% ; Material - 194
							-	**2,356,200**	
	Total						-	23,562	
	Per 1 m								

PROCESS COST - 209

Grounding Wire BCC 6 mm2

Per 100 m

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Grounding Wire BCC 6	copper-6mm2	m	102	-	36,360	-	3,708,720	loss 2% ; Material - 196
	Total						-	**3,708,720**	
	Per 1 m						-	37,087	

PROCESS COST - 210

PVC conduit D=50 mm

Per 100 m

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	PVC conduit	D=50mm	m	102	-	7,070	-	721,140	loss 2% ; Material - 60
2	Electrician		person	4.5	-	111,700	-	502,650	1.8*2.5
3	Miscellaneous expenses	(labor cost)*4%	set	1				20,106	
	Total						-	**1,243,896**	
	Per 1 m						-	12,439	

PROCESS COST - 211

Duct bank PVC 2 x ϕ100 mm

Per 100 m

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	PVC conduit	PVC 2 x ϕ100 mm	m	204	-	25,200	-	5,140,800	loss 2% ; Material - 198
2	Form work		m2	40	-	16,736	-	669,440	Process cost -232 (5 times for one form)
3	Concrete	Class G	m3	6.43	634	301,312	4,077	1,937,436	Process cost -156
4	Concrete placing		m3	6.43	-	57,191	-	367,738	Process cost - 229
5	Electrician		person	12.75	-	111,700	-	1,424,175	5.1*2.5
6	Miscellaneous expenses	(labor cost)*1%	set	1				14,242	
	Total						**4,077**	**9,553,831**	
	Per 1 m						41	95,538	

PROCESS COST - 212

Grounding system setting work

Per :1 place

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
4	Grounding electrode	copper bar ϕ10 x 1.500mm	each	1	-	36,588	-	36,588	Material - 197
4	Grounding wire	BCC 6 mm2	m3	4	-	37,087	-	148,348	Process cost - 209
3	Electrician		person	0.63	-	111,700	-	70,371	0.25*2.5
4	Common labor		person	0.875	-	80,600	-	70,525	0.35*2.5
6	Miscellaneous expenses	(labor cost)*4%	set	1	-		-	5,636	
	Total						-	**331,468**	
	Per :1 place						-	331,468	

PROCESS COST - 213

Filled up ground work

Per 100 m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Banking material	Borrow material	m3	110	-	13,920	-	1,531,200	Percent of swell and shrinkage 1/0.9=1.1 ; Material -115
2	Bull dozer	15 ton	hr	1.29	4,030	91,000	5,199	117,390	Equipment - 3
3	Tired roller	8~20 ton	hr	0.66	1,990	50,000	1,313	33,000	Equipment - 41
4	Common labor		person	0.5	-	80,600	-	40,300	0.2*2.5
	Total						**6,512**	**1,721,890**	
	Per 1.0 m3						65	17,219	

Spreading and grading work ability of bull dozer

E	D (m)	Q (m3/hr)	T (hr/100 m3)
0.6	0.3	77.4	1.292

Q = 10E*(13D+9) ;
T = 100/Q

E : Efficiency of work ; D : Finish thickness

Compaction work ability of tired roller

V(m/hr)	W (m)	D (m)	E	N (time)	Q (m3/hr)	T (hr/100m3)
3500	1.8	0.3	0.4	5	151.20	0.660

Q = V*W*D*E)/N ;
T = 100 / Q

V : Compaction speed (m/hr)
W : Effective compaction width per one time of compaction work (m)
D : Finish thickness (m)
E : Efficiency of work
N : Numbers of compaction work (times)

CB-231

PROCESS COST - 214

Aggregate surface course (t=15cm) for construction road of Bridge

Per : 100 m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Common labor		person	0.21	-	80,600	-	16,926	0.17/2*2.5
2	Crusher - run	correct factor = 0.36	m3	20.4		101,000	-	2,060,400	t*100m2*1.36 ; Material 112
3	Motor grader	3.1 m	hr	0.16	2,850	58,000	456	9,280	Equipment - 14
3	Road roller	macadam 10~20 ton	hr	0.13	2,010	48,000	261	6,240	Equipment - 40
4	Tired roller	8~20 ton	hr	0.13	1,990	50,000	259	6,500	Equipment - 41
5	Road sprinkler	5500 ~ 6500l	hr	0.09	1,230	42,000	111	3,780	Equipment - 44
	Total						**1,087**	**2,103,126**	
	Per : 1.0m2						11	21,031	
	Per : 1.0m3						72	140,208	

CB-232

PROCESS COST - 215

Sub-grade work CBR = 5 (including material)

Per 100 m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Filling material		m3	110	-	13,920	-	1,531,200	Percent of swell and shrinkage 1/0.9=1.1 ; Material -115
2	Bull dozer	15 ton	hr	0.47	4,030	91,000	1,894	42,770	Equipment - 3
3	Tired roller	8~20 ton	hr	0.97	1,990	50,000	1,930	48,500	Equipment - 41
4	Common labor		person	0.125	-	80,600	-	10,075	0.05*2.5
	Total						**3,824**	**1,632,545**	
	Per 1.0 m3						38	16,325	

Work ability of bull dozer

W 1	V 1	D	f 1	E 1	N 1	Q A	T A
2.9	2300.0	0.2	1/1.25	0.6	3.0	213.4	0.470

Q A =(W*V1*D*f1*E1) / N1

T A = 100 / Q

Q A : Quantity of spreading and grading work (m3/ hr)

E1 : Efficiency of work ; D : Finish thickness (m)

N1 : Quantity of spreading and grading work (times)

W 1 : Efficiency spreading width per one time spreading (m)

V 1 : Spreading and grading speed (m / hr)

f1 : Soil conversion factor

Work ability of tired roller

W 2	V 2	D	f 2	E 2	N 2	Q B	T B
1.8	3500.0	0.2	1/0.87	0.5	7.0	103.0	0.970

Q B =(W*V2*D*f2*E2) / N2

T B = 100 / Q

Q B : Quantity of compaction (m3/ hr)

E2 : Efficiency of work ; D : Finish thickness (m)

N2 : Number of compaction work (times)

W 2 : Efficiency compaction width per one time of compaction (m)

V 2 : Compaction speed (m / hr)

f2 : Soil conversion factor

PROCESS COST - 216

Backfill (Open cut,max backfill width W>4m)

Per : 100 m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Common labor		person	4	-	80,600	-	322,400	1.6*2.5
2	Back hoe	0.6 m3	hr	0.93	2,560	92,000	2,381	85,560	T=0.93 ; Equipment - 6
3	Bull dozer	15 ton	hr	0.186	4,030	91,000	750	16,926	T=0.186 ; Equipment - 3
4	Vibrating roller	0.8~1.1 ton	hr	2.73	350	29,000	956	79,170	Equipment - 39
5	Tamper	60~100 ton	day	0.11	610	191,000	67	21,010	Equipment - 42
	Total						**4,153**	**525,066**	
	Per : 1.0m3						42	5,251	

PROCESS COST - 217

Transporting of excavated soil (Temporary work)

Per 100 m3 (Transport distance 1.0 km)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Dump truck	11 ton	hr	5.23	1,650	67,000	8,629.50	350,410	Equipment - 33
2	Common labor		person	0.25	-	80,600	-	20,150	0.1*2.5
	Total						**8,630**	**370,560**	
	Per 1.0 m3						86	3,706	

Q : Quantity of transport (m3 hr)

C : Transported quantity of one Dump truck (m3)

f : Soil conversion factor

Et : Efficiency of work for Dump truck

Cmt : Cycle-time of Dump truck (min.)

Es : Efficiency of factor for back hoe

n : Frequency of loading

a : 5 (min)

n=C/q*K Q = (60 * C * f * Et) Cmt Cmt = 4.8*L+a

L	C	f	Et	Cmt	Cms	n	Q	T (hr / 100)
1.00	5.50	0.71	0.80	9.80	22.00	10.00	19.10	5.23

PROCESS COST - 218

Excavation for unsuitable material (temporary work)

Per 100m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Swamp Bulldozer	16 ton	hr	1.08	3,880	91,000	4,190	98,280	Equipment - 4
2	Back hoe	0.6m3	hr	1.93	2,560	92,000	4,941	177,560	Equipment - 6
	Total						**9,131**	**275,840**	
	per 1.0m3						91	2,758	

Work ability of Swamp bulldozer

qB(m3)	fB	Eb	L (m)	Cm (min.)	Q(m3.hr)	T (hr/100m3)
2.880	1.000	0.700	30.000	1.310	92.336	1.083

Q : Quantity of excavation (m3/ hr)
q : execution volume (pushing) per one cycle
L : average soil pusing distance
f : soil conversion factor
Cm : Cycle time
E : Efficiency of work

Work ability of back hoe

qo(m3)	K	f	E	Cm(sec)	Q (m3/hr)	T(hr/100m3)
0.60	0.98	1.00	0.60	25.00	51.84	1.93

qo: Standard bucket capacity;
E: efficiency of work;
Cm: cycle time.
K:bucket factor;
q: excavation volume per one cycle;
f: soil conversion factor

PROCESS COST - 219

Filling work at ponds

Per : one set

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Fill up ground work	for pond	m3	5344	65	17,219	347,360	92,018,336	Process cost - 213
2	Pump operation	full time	day	1.5	1,800	185,103	2,700	277,655	Process cost - 146
	Total						**350,060**	**92,295,991**	
	per : one set						350,060	92,295,991	

PROCESS COST - 220

Fabrication yards of PC I girders (with 2 track ; W = 3.5m ; t = 15 cm)

Per : one set

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Excavation for unsuitable material(temporary work)		m3	5040	91	2,758	458,640	13,900,320	Process cost - 218
2	Transporting of excavated soil (Temporary work)		m3	5040	86	3,706	433,440	18,678,240	Process cost - 217
3	Borrow material		m3	5544		13,920	-	77,172,480	5.040*1.1 ; material - 115
4	Backfill (Open cut,max backfill width W>4m)	open cut W > 4m	m3	5040	42	5,251	211,680	26,465,040	Process cost - 216
5	Sub-grade work CBR = 5 (including material)	CBR = 5	m3	4956	38	16,325	188,328	80,906,700	Process cost - 215
6	Aggregate surface course (t=15cm) for construction road of Bridge	t=15cm;W=3.5m; 2 track	m3	84	72	140,208	6,048	11,777,472	Process cost - 214
	Total						**1,298,136**	**228,900,252**	
	per : one set						1,298,136	228,900,252	

PROCESS COST - 221

Access road for bridge work

Per : one set

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Excavation for unsuitable material (temporary work)		m3	9075	91	2,758	825,825	25,028,850	Process cost - 218
2	Transporting of excavated soil (Temporary work)		m3	9075	86	3,706	780,450	33,631,950	Process cost - 217
3	Borrow material		m3	9983	-	13,920	-	138,963,360	5.040*1.1 ; material - 115
4	Backfill (Open cut,max backfill width W>4m)	open cut ; W > 4m	m3	9075	42	5,251	381,150	47,652,825	Process cost - 216
5	Sub-grade work CBR = 5 (including material)	CBR = 5	m3	8209	38	16,325	311,942	134,011,925	Process cost - 215
6	Aggregate surface course (t=15cm) for construction road of Bridge	t=15cm;W=3.5m; 2 track	m3	866	72	140,208	62,352	121,420,128	Process cost - 214
	Total						**2,361,719**	**500,709,038**	
	per : one set						2,361,719	500,709,038	

PROCESS COST - 222

Steel lighting pole setting work (type - A1)

Per 10 poles

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Form work		m2	17.3	-	82,710	-	1,430,883	Process cost - 228
2	Concrete	Class C-1	m3	3.9	376	442,572	1,466	1,726,031	Process cost - 151
3	Concrete placing		m3	3.9	-	79,812	-	311,267	Process cost - 34
4	Reinforced steel	D13~D16 mm	ton	0.98	23,690	1,795,763	23,216	1,759,848	Process cost - 61
5	Anchor bolt	M 24*600	each	40	-	25,000	-	1,000,000	Material - 33
6	Truck crane	Hydraulic 4.8~4.9 ton	hr	5.77	1,250	46,000	7,213	265,420	1.3 day*T ; T=4.44 ; Equipment - 20
7	Foreman		person	1.25	-	183,300	-	229,125	0.5*2.5
8	Skilled labor		person	4	-	170,100	-	680,400	1.6*2.5
9	Common labor		person	5.25	-	80,600	-	423,150	2.1*2.5
10	Miscellaneous expenses	(labor cost)*4%	set	1	-		-	53,307	
	Total						**31,895**	**7,879,430**	
	Per 1.0 pole						3,190	787,943	

PROCESS COST - 223

Steel lighting pole setting work (type - A)

Per 10 poles

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Excavation	back hoe 0.35 m3	m3	25	44	1,920	1,100	48,000	Process cost - 66
2	Bedding stone		m3	0.64	-	183,490	-	117,434	Process cost - 17
3	Form work		m2	28.8	-	82,710	-	2,382,048	Process cost - 228
4	Concrete	Class C-1	m3	4.32	376	442,572	1,624	1,911,911	Process cost - 151
5	Concrete placing		m3	4.32	-	79,812	-	344,788	Process cost - 34
6	Reinforced steel	D13~D16	ton	0.36	23,690	1,795,763	8,528	646,475	Process cost - 61
7	Anchor bolt	M 24*600	each	40	-	25,000	-	1,000,000	Material - 33
8	Grounding Electrode	Copper bar ϕ 10x1500 mm	each	10	-	36,588	-	365,880	Material - 197
9	Grounding wire	BBC - 6 mm2	m	20	-	36,360	-	727,200	Material - 196
10	Hand backfill		m3	20.68	10	7,086	207	146,538	Process cost - 15
11	Foreman		person	2.5	-	183,300	-	458,250	1.0*2.5
12	Skilled labor		person	4.5	-	170,100	-	765,450	1.8*2.5
13	Common labor		person	7.5	-	80,600	-	604,500	3.0*2.5
14	Truck crane	Hydraulic 4.8~4.9 ton	hr	5.77	1,250	46,000	7,213	265,420	1.3 day*T ; T = 4.44 ; Equipment - 20
15	Miscellaneous expenses	(labor cost)*2%	set	1			-	36,564	
	Total						**18,672**	**9,820,458**	
	Per : one pole						1,867	982,046	

PROCESS COST - 224

Street lighting pole (type - A1)

Per :each

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Light pole setting work		each	1	3,190	787,943	3,190	787,943	Process cost - 222
2	Round poles	Steel ; l=10m	set	1	-	2,425,000	-	2,425,000	Material - 63
3	Single arm pole	h=2m ; span 1.5m	set	1	-	160,000	-	160,000	Material - 64
4	Street lighting	250W -Sodium lamps	set	1	-	1,078,000	-	1,078,000	Material - 62
	Total						**3,190**	**4,450,943**	
	Per one each						3,190	4,450.943	

PROCESS COST - 225

Street lighting pole (type - A)

Per :each

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Light pole setting work		each	1	1,867	982,046	1,867	982.046	Process cost - 223
2	Round poles	Steel ; l=10m	set	1	-	2,425,000	-	2,425.000	Material - 63
3	Single arm pole	h=2m ; span 1.5m	set	1	-	160,000	-	160.000	Material - 64
4	Street lighting	250W -Sodium lamps	set	1	-	1,078,000	-	1,078.000	Material - 62
	Total						**1,867**	**4,645.046**	
	Per one each						1,867	4,645.046	

PROCESS COST - 226

Manhole 1220x1220x1500 mm (under ground)

Per 10 each

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Excavation	Back hoe 0.35m3	m3	27.04	44	1,920	1,190	51,917	Process cost - 66
2	Form work		m2	21.2	-	82,710	-	1,753,452	Process cost - 228
3	Reinforced steel bar	ϕ<13 mm	ton	0.02	24,000		480	-	Material - 28
4	Shaped steel	L 75x75x7	kg	254.7	-	4,200	-	1,069,740	Material - 4
5	Shaped steel	L 63x63x6	kg	108.3	-	4,200	-	454,860	Material - 4
6	Concrete	Class G	m3	2.25	376	287,042	846	645,845	Process cost - 156
7	Concrete cover	Class C-1	m3	0.51	376	442,572	192	225,712	Process cost - 151
8	Concrete placing		m3	2.76	-	57,191	-	157,847	Process cost - 229
9	Mortar brick work :	Brick 220x105x60	m2	8.2	-	472,981	-	3,878,444	Process cost -179
10	Cement mortar	for plastering	m3	0.5	-	263,013	-	131,507	Process cost -69
	Total						**2,708**	**8,369,323**	
	Per : one each						271	836,932	

PROCESS COST - 227

Form work (Wooden form, small-sized continuos structure)

Per 1each

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Steel plate	6-26 mm	kg	50.25	37	-	1,859	-	Material - 1
2	Bolt	ϕ 12*75	each	4	-	1,682	-	6,728	Material - 212
3	Bolt	ϕ 16*150	each	8	-	2,520	-	20,160	Material - 213
4	Steel bar	F 9	kg	0.76	-	3,800	-	2,888	Material - 8
5	Foreman		person	1.0		183,300	-	183,300	0.4*2.5
6	Skilled labor		person	5.0		170,100	-	850,500	2*2.5
7	Welder		person	3.0		111,700	-	335,100	1.2*2.5
8	Weld machine	250A	day	0.16	1,390	31,000	222	4,960	Equipment - 55
9	General	10KVA	day	0.16	1,250	35,000	200	5,600	Equipment - 52
10	Miscellaneous expenses	(labor cost)*6%	set	1			-	82,134.00	
	Total						**2,282**	**1,491,370**	
Per 1each							2,282	1,491,370	

PROCESS COST - 228

Form work (Wooden form, small-sized continuos structure)

Per 100m^2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	6.25	-	183,300	-	1,145,625	2.5 * 2.5
2	Carpenter		person	30.0	-	111,700	-	3,351,000	12 * 2.5
3	Common labor		person	37.5	-	80,600	-	3,022,500	15 * 2.5
4	Miscellaneous expenses	(sum of above)*10%	set	1			-	751,913	
	Total						-	**8,271,038**	
	Per 1.0m^2							82,710	

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PROCESS COST - 229

Concrete placing (Chute,plain concrete structure)

Per : 10m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	0.25	-	183,300	-	45,825	0.1*2.5
2	Skilled labor		person	1.25	-	170,100	-	212,625	0.5*2.5
3	Common labor		person	3.75	-	80,600	-	302,250	1.5*2.5
4	Miscellaneous expenses	(Sum of above) *2%	set	1			-	11,214	
	Total						-	**571,914**	
	Per 1.0m^3						-	57,191	

CB-247

PROCESS COST - 230

Retaining wall work (H = 1.0 m ; H_1 = 2.0m)

Per: 10.0 m

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Excavation	Back hoe 0.35^{m3}	m^3	17.0	44	1,920	748	32,640	Process cost - 66
2	Hand excavation		m^3	1.0	-	44,330	-	44,330	Process cost - 9
3	Transportation of excavated soil		m^3	18.0	84	3,598	1,512	64,764	Process cost - 11
4	Stone masonry work	Retaining wall	m^3	20.2	-	373,252	-	7,539,690	Process cost - 106
5	P.V.C pipe	ϕ 100mm x 0.8 x 5 each	m	4.0	-	25,200	-	100,800	Material - 198
6	Concrete	Class G	m^3	0.9	647	343,146	582	308,831	Process cost - 157
7	Concrete placing		m^3	0.9	-	57,191	-	51,472	Process cost - 229
8	Form work		m^2	4.0	-	82,710	-	330,840	Process cost - 228
9	Permeable material	Crushed stone	m^3	4.4	-	89,000	-	391,600	I+K;K=+0.1 Material - 111
10	Hand backfill		m^3	4.0	10	7,086	40	28,344	Process cost - 15
Total							**2,882**	**8,893,312**	
Per : 1.0 m (H=1.0 m ; H_1=2.0 m)							288	889,331	
Per : 1.0 m3 = Total/20.2 m3							143	440,263	

PROCESS COST - 231 (1)

Traffic control and safety

Per 1set

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
a)	**Setting and removal of sign panels**								
1	Sign panel	1.2m*0.8m	each	15.00	-	504,000	-	7,560,000	
2	Sub-materials	(Sum of above)*3%	set	1.00	-	-	-	226,800	
3	Common labor		person	75.00	-	80,600	-	6,045,000	2*2.5*15
	Sub total						-	**13,831,800**	
b)	**Setting and removal of sign posts**								
4	Sign post		each	30.00	-	250,000	-	7,500,000	
5	Sub-materials	(Sum of above)*3%	set	1.00	-	-	-	225,000	
6	Common labor		person	150.00	-	80,600	-	12,090,000	3*2.5*20
	Sub total						-	**19,815,000**	
c)	**Setting and removal of barricades**								
7	Barricade	height = 1.3m	m	1,200	-	191,700	-	230,040,000	
8	Round pipe	ϕ 48.6	m	2,844	186	-	528,984	-	0.51*365 days
9	Clamp		each	1,356	59	-	80,004	-	(M-160)*0.3
10	Sub-materials	(Sum of above)*1%	set	1.00	-	-	6,090	2,300,400	
11	Common labor		person	2,000	-	80,600	-	161,200,000	0.8*2.5*10m*100
	Sub total						**615,078**	**393,540,400**	
d)	**Setting and removal of safety cone**								
12	Safety cone	ϕ 250 ; h=0.,7m	each	100	-	150,000	-	15,000,000	
13	Common labor		person	145	-	80,600	-	11,687,000	0.1*2.5*240 days*(29/12)
	Sub total						-	**26,687,000**	

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PROCESS COST - 231 (2)

Traffic control and safety

Per 1set

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
e)	**Setting and removal of temporary**								
14	Frence	height = 2.0~2.7m,w=2.5m	m	600	-	41,200	-	24,720,000	
15	Round pipe	ϕ 48.6	m	2,400	186	-	446,400	-	0.51*365 days
16	Clamp		each	1,200	59	-	70,800	-	(M-160)*0.3
17	Sub-materials	(Sum of above)*1%	set	1	-	-	5,172	247,200	
18	Common labor		person	113	-	80,600	-	9,067,500	0.09*2.5*500
	Sub total						**522,372**	**34,034,700**	
f)	**Setting and removal of warning light**								
19	Lamp	including shade and socket	each	30	-	17,000	-	510,000	
20	Switch	ϕ 48.6	set	30	-	11,444	-	343,320	
21	Electric wire		m	600	-	2,780	-	1,668,000	
22	Sub-materials	(Sum of above)*3%	set	1	-	-	-	75,640	
23	Electrician		person	145	-	111,700	-	16,196,500	0.1*2.5*20*29
	Sub total							**18,793,460**	
24	Miscellaneous expenses	(Labor cost)* 4%	set	1		-	-	**8,651,440**	a) ~ f)
g)	**Traffic control flagman**								
25	Flagman	ordinary traffic	month	174	-	2,020,300	-	351,532,200	6*29 month
26	Flagman	Extra ordinary traffic	person	1,450	-	80,600	-	116,870,000	10*5*29
	Sub total						-	**468,402,200**	
Total							**1,137,450**	**983,756,000**	
Per 1set							1,137,450	983,756,000	

CB-250

PROCESS COST - 232

Form Work (Wooden form ; small-sized scattered structure)

Per 100 m^2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	7.5	-	183,300	-	1,374,750	3.0*2.5
2	Carpenter		person	30	-	111,700	-	3,351,000	12*2.5
3	Common labor		person	37.5	-	80,600	-	3,022,500	15*2.5
4	Miscellaneous expenses	(sum of above)*8%	set	1	-		-	619,860.00	
	Total						-	**8,368,110**	
Per 1.0m^2							-	83,681	

PROCESS COST - 233

Concrete curb setting work

Per 100 m

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	3.00	-	183,300	-	549,900	1.2*2.5
2	Block worker		person	4.50	-	111,700	-	502,650	1.8*2.5
3	Common labor		person	15.50	-	80,600	-	1,249,300	6.2*2.5
4	Miscellaneous expenses	(Labor cost)*7%	set	1	-	-	-	161,130	
	Total						-	**2,462,980**	
	Per 1.0m						-	24,630	

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PROCESS COST - 234

Bacl fill (open cut,max backfill width 1m<W<4 m)

Per 100 m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Common labor		person	5		80,600	-	403,000	2.5*2.5
2	Back hoe	0.6 m3	hr	0.93	2,560	92,000	2,381	85,560	T*0.5=0.54 ; Equipment - 6
3	Vibrating roller	0.8 ~ 1.1 ton	hr	2.65	350	29,000	928	76,850	6 hrday*T;T=460/130;1 day=8 hrs;Equipment - 39
4	Tamper	60 ~ 100 kg	day	0.27	610	191,000	165	51,570	Equipment - 42
5	Granular material	yellow sand	m3	115		50,000	-	5,750,000	loss 15 % ; Material 100
	Total						**3,473**	**6,366,980**	
	Per 1.0m3						35	63,670	

PROCESS COST - 235

Dry riprap work

Per 10m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Cobble stone	200*200*200	m3	12	-	63,000	-	756,000	K = +0.2 Matrrial - 109
2	Back fill material throw in work		m3	10	-	20,956	-	209,560	Process cost - 100
	Total						-	**965,560**	
	Per 1.0m3						-	96,556	

PROCESS COST - 236

Plastic board drain work

Per : 1 each (L=17 m)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Plastic board		m	17.85	-	3,950	-	70,508	1+K ; K=+0.05 ; Material - 223
2	Submaterials	(Sum of above)*0.2%	set	1.00	-	-	-	141	
3	Skilled labor		person	0.09	-	170,100	-	15,309	0.037*2.5
4	Miscellaneous expenses	(Labor cost)* 4%	set	1	-	-	-	612	
5	Plastic board driver		hr	0.05	11,270	78,000	564	3,900	(17/2,088)*T;T=6.1; Equipment - 125
6	Check gauge for driving		day	0.0082	11,460	-	94	-	0.05/T
Total							657	90,470	
Per 1 m = Total / 17 m							39	5,322	

t = Executing time for one plastic board

L = Design length of plastic board (17 m)

V_1 = Velocity of driving casing pipe (0.35 m / sec)

V_2 = Velocity of extracting casing pipe (0.5 m /sec)

$t = t_1 + t_2 + t_3 = 143$ sec

t_1 = Preparation time for plastic board driving (60 sec)

t_2 = Driving time of plastic board (sec) ; $t_2 = L / V_1 = 49$ sec

t_3 = Extracting time of plastic board (sec) ; $t_3 = L / V_2 = 34$ sec

Workability of plastic board driver $L_t = 3{,}600 * T * L * E / C_m = 2{,}610$ m

T(hr/day)	t_1	t_2	t_3	E	C_m(sec)	L_t=(m/day)
6.1	60	49	34	0.8	143	2,088

T : Working hour of plastic board driver E : Efficiency of work, C_m : Cycle time(sec)

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PROCESS COST - 237

Transportation of materials

Per 1 time (transport distance 77 km)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Truck crane	15~16 ton	hr	0.56	3,080	55,000	1,725	30.800	1/8*T ; T=4.44 ; Equipment 18
2	Skilled labor		person	1.0	-	183,300	-	183.300	0.2*2.5*2
3	Common labor		person	1.0	-	80,600	-	80.600	0.2*2.5*2
4	Miscellaneous expenses	(Labor cost) *4%	set	1.0	-		-	10.556	
5	Transportation fee		ton	29		37,861	-	1.097.969	
	Total						**1,725**	**1.403.225**	
							239,747	195.048.275	
	Per 139 times								

CB-256

PROCESS COST - 238

Transportation of equipment

Per 1 time (transport distance 77 km)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Truck crane	20~22 ton	hr	1.11	3,520	55,000	3,907	61,050	2*(1/8)*T;T=4.44 ; Equipment - 17
2	Truck crane	40~45 ton	hr	0.22	7,320	68,000	1,610	14,960	2*(0.2/8)*T ; T=4.44 ; Equipment - 16
3	Foreman		person	0.50	-	183,300	-	91,650	0.1*2.5*2
4	Skilled labor		person	1.25	-	170,100	-	212,625	0.25*2.5*2
5	Common labor		person	1.25	-	80,600	-	100,750	0.25*2.5*2
6	Miscellaneous expenses	(Labor cost) *4%	set	1.00	-		-	16,201	
7	Transportation fee		ton	96.00	-	44,745	-	4,295,520	32 ton * 0.8 = 25.6 ~ 26
	Total						**5,518**	4,792,756	
	Per 133 times						733,841	637,436,548	

PROCESS COST - 239

R.C. Pipe(D=75cm) TypeB - Setting work for catch basin

Per 10 m.

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	1	-	183,300	-	183,300	0.4*2.5
2	Skilled labor		person	1	-	170,100	-	170,100	0.4*2.5
3	Common labor		person	2.75	-	80,600	-	221.650	1.1*2.5
4	R.C. pipe	ϕ750 x1000	each	10	-	288,455	-	2,884.550	Material - 74
5	Truck crane	hydraulic4.8 ~ 4.9 ton	hr	0.89	1,250	46,000	1,113	40.940	0.2day*800/180; Equipment - 20
6	Miscellaneous expenses	Sum of above 5%	set	1	-	-	56	175.027	-
	Total						**1,168**	**3,675.567**	
	Per 1 m						117	367.557	

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PROCESS COST - 240

R.C. Pipe(D=100cm) TypeB - Setting work for catch basin

Per 10 m

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	1.25	-	183,300	-	229.125	0.5*2.5
2	Skilled labor		person	1.25	-	170,100	-	212.625	0.5*2.5
3	Common labor		person	3.25	-	80,600	-	261.950	1.3*2.5
4	R.C. pipe	ϕ1000x1000	each	10	-	542,100	-	5.421.000	Material - 75
5	Truck crane	hydraulic4.8 ~ 4.9 ton	hr	0.89	1,250	46,000	1,113	40.940	0.4*0.5*T;T=800/180; Equipment - 20
6	Miscellaneous expenses	Sum of above 5%	set	1	-	-	56	308.282	
	Total						**1,168**	**6.473.922**	
	Per 1 m						117	647.392	

PROCESS COST - 241

Bacl fill (open cut,max backfill width W>4 m)

Per 100 m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Granular material	yellow sand	m3	115		50,000	-	5,750,000	loss 15 % ; Material 100
2	Bulldozer	15 ton	day	1.08	4,030	91,000	4,352	98,280	Equipment - 3
3	Back hoe	0.6 m3	hr	0.54	2,560	92,000	1,382	49,680	T*0.5=0.54 ; Equipment - 6
4	Vibrating roller	0.8 ~ 1.1 ton	hr	2.73	350	29,000	956	79,170	Equipment - 39
5	Tamper	60 ~ 100 kg	day	0.11	610	191,000	67	21,010	Equipment - 42
6	Common labor		person	5		80,600	-	403,000	2.0*2.5
	Total						**6,757**	**6,401,140**	
							68	64,011	
	Per 1.0m3								

. Work ability of bulldozer (15ton)

q (m3)	fl	E	L(m)	Cm (min)	Q (m3 /h)	T(hr/100m3)
2.92	1.00	0.70	20.00	1.32	92.90	1.08

q : Execution volume (pushing) per one cycle

L : Average soil pushing distance

fl : Soil conversion factor

Cm : Cycle time

Q = (60 * q *fl * E) /Cm)

Cm = 0.027 L ÷ 0.7S

T = 100 / Q

E : Efficiency of work

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PROCESS COST - 242

Road marking Type _ A (Special application)

Per 150 m 2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	2.5	-	183,300	-	458,250	1.0*2.5
2	Skilled labor		person	5.75	-	170,100	-	978,075	2.3*2.5
3	Common labor		person	7.5	-	80,600	-	604,500	3.0*2.5
4	Line marker	Hand guided discharge 1.2 l/min	hr	5.08	130	-	660	-	T=610/120; Equipment - 127
5	Truck crane	2 ton	hr	5.08	490	42,000	2,489	213,360	Equipment - 126
6	Miscellaneous expenses	Sum of above 6%	set	1	-	-	189	135,251	-
	Total						**3,339**	**2,389,436**	
	Per 1 m						22	15,930	

PROCESS COST - 243

Monitoring of settlement and lateral flow

Per : one set

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Surveyor		month	12	-	3,150,000	-	37,800,000	
2	Common labor		month	24	-	1,612,000	-	38,688,000	
3	Miscellaneous expenses	Sum of above 30%	set	1	-	-	-	22,946,400	
	Total						-	**99,434,400**	
	Per one set / month						-	8,286,200	

P/C 244-P/C300 not used

RED RIVER BRIDGE CONSTRUCTION PROJECT

PROCESS COST

Process Cost Nonumber (301 - To the end)

PROCESS COST - 301

Wagen assemble and disassemble work

Per: 1set*1 time

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	45.00	-	183,300	-	8,248,500	1*2.5*18 days
2	Skilled labor		person	270.00	-	170,100	-	45,927,000	6*2.5*18 days
3	Common labor		person	270.00	-	80,600	-	21,762,000	6*2.5*18 days
4	Truck crane	hydraulic 45 ton	hr	79.90	7,320	68,000	584,868	5,433,200	18 days*T;T=4.44 Equipment -16
5	Miscellaneous expenses	(labor cost)*27%	set	1.00	-		-	20,503,125	Refer to A
	Total						**584,868**	**101,873,825**	
	per 1 set*1 time						584,868	101,873,825	

A : Expenses, included the cost of Roof material,Floor material
Protect material,scaffolding material of Wagen and etc.

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PROCESS COST - 302

Wagen removal and setting work

Per: 1set*1 time

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	2.50	-	183,300	-	458,250	1*2.5
2	Skilled labor		person	5.00	-	170,100	-	850,500	2*2.5
3	Common labor		person	7.50	-	80,600	-	604,500	3*2.5
4	Miscellaneous expenses	(labor cost)*30%	set	1.00	-		-	573,975	Refer to B
	Total						-	**2,487,225**	
	per :1 set*1 time						-	2,487,225	

A : Expenses, included the cost of timber,PC steel bar,
Mechanical devices and etc.

PROCESS COST - 303

Wagen climbing work

Per: 1set*1 time

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Chain block	5 ton , lift 3m	day	4.00	100		400	-	Equipment - 95
2	Supplemental material	sum of above *5%	each	1.00			20	-	
3	Foreman		person	2.50	-	183,300	-	458,250	1.0*2.5
4	Skilled labor		person	13.75	-	170,100	-	2,338,875	5.5*2.5
5	Common labor		person	17.50	-	80,600	-	1,410,500	7.0*2.5
	Total						**420**	**4,207,625**	
	per:1 set*1 time						420	4,207,625	

PROCESS COST - 304

Wagen pull back work

Per: 10m

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	1.25	-	183,300	-	229,125	0.5*2.5
2	Skilled labor		person	3.75	-	170,100	-	637,875	1.5*2.5
3	Common labor		person	3.75	-	80,600	-	302,250	1.5*2.5
	Total						-	**1,169,250**	
	per 10 m						-	1,169,250	

PROCESS COST - 305

Frame square sets work (5 t/m^2;H=5m) for centilever erection bridge

Per: 100 air m^3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Square shore	300x2000	each	12	2,728	-	32,736	-	31*110days
2	Jack head	P-H	each	5.3	4,795	-	25,414	-	(Material -150)*0.3
3	Jack base	P-B	each	5.3	6,523	-	34,572	-	(Material -154)*0.3
4	Round pipe	ϕ 48.6	m	156	45	-	7,020	-	0.51*110 days
5	Round pipe joint		each	17	39	-	663	-	(Material -153)*0.3
6	Clamp		each	17	63	-	1,071	-	(Material -160)*0.4
7	Supplemental material	sum of above *5%	set	1.00			5,074	-	
8	Foreman		person	1.75	-	183,300	-	320,775	0.7*2.5
9	Skilled labor		person	7.25	-	170,100	-	1,233,225	2.9*2.5
10	Common labor		person	7.25	-	80,600	-	584,350	2.9*2.5
11	Truck crane	hydraulic 20~22 ton	hr	2.97	3,520	55,000	10,454	163,350	0.67days*T.;.T=4.44; Equipment -17
	Total						**117,004**	**2,301,700**	
Per: 1.0 air m^3							1,170	23,017	

PROCESS COST - 306

Inner form setting and removal work for cantilever

Per: 10 m^2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	1.25	-	183,300	-	229,125	0.5*2.5
2	Carpenter		person	8.25	-	111,700	-	921,525	3.3*2.5
3	Common labor		person	6.00	-	80,600	-	483,600	2.4*2.5
4	Miscellaneous expenses	(labor cost)*10%	set	1.00	-		-	163,425	
	Total						-	**1,797,675**	
Per: 1.0 m^2							-	179,768	

PROCESS COST - 307 (1)

Scaffolding work for tower crane foundation work

Per : 100 Multiplied m^2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	3.25	-	183,300	-	595,725	1.3*2.5
2	Rigger		person	10.00	-	153,200	-	1,532,000	4.0*2.5
3	Common labor		person	10.00	-	80,600	-	806,000	4.0*2.5
4	Barge with crane	40 ton	day	0.50	35,520	342,000	17,760	171,000	0.5 day ; Equipment -70
5	Tug boat	steel 200ps	hr	2.48	2,490	222,000	6,175	550,560	0.5 day *T; T=4.95 ; Equipment -74
6	Miscellaneous expenses	(Sum of above)*18%	set	1.00			4,308	657,951	
Total							**28,244**	**4,313,236**	
Per: 1 Multiplied m^2							282	43,132	

PROCESS COST - 307 (2)

Suspended timbering for tower crane foundation work

Per : 1 set

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	3.13	-	183,300	-	573,729	0.5*2.5*2.5
2	Rigger		person	15.63	-	153,200	-	2,394,516	2.5*2.5*2.5
3	Common labor		person	12.50	-	80,600	-	1,007,500	2.0*2.5*2.5
4	Depreciable value of timbering material		ton	2.5	808	-	2,020	-	101*10 days
5	Miscellaneous expenses	(labor cost)*4%	set	1			-	159,030	
Total							**2,020**	**4,134,775**	
Per: 1 set							2,020	4,134,775	

PROCESS COST - 308

Bracket setting work

Per: one place

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	82.00	-	183,300	-	15,030,600	0.4*Ws*2.5
2	Carpenter		person	41.00	-	111,700	-	4,579,700	0.2*Ws*2.5
3	Skilled labor		person	494.00	-	170,100	-	84,029,400	2.4*Ws*2.5
4	Common labor		person	329.00	-	80,600	-	26,517,400	1.6*Ws*2.5
5	Depreciable value of temporary steels		t.day	36.14	2,376	-	85,869	0	(33/t)*90 days
6	Barge with crane	40 ton	day	24.69	35,520	342,000	876,989	8,443,980	0.3 day *Ws ; Equipment -70
7	Tug boat	steel 200ps	hr	122.20	2,490	222,000	304,278	27,128,400	0.3 day *Ws*T ; T=1040/210 ; Equipment -74
8	Miscellaneous expenses	(labor cost)*23%	set	1.00			-	29,936,133	
	Total						**1,267,135**	**195,665,613**	
	Per one place						1,267,135	195,665,613	

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PROCESS COST - 309

Timbering on the bracket

Per: 1 air m^3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Frame		each	0.61	590	-	360	-	8.2*90 days
2	Brace		set	1.11	144	-	160	-	2.0*90 days
3	Jack base		each	1.22	324	-	395	-	(Material -159)*0.3
4	Round pipe	ϕ 48.6	m	1.11	37	-	41	-	0.51*90 days
5	Clamp		each	1.11	48	-	53	-	(Material -160)*0.3
6	Timber	0.150x0.150	each	0.0125		529,840	-	6,623	(Material -132)*0.4
7	Supplemental materials	(sum of above) *5%	set	1			50	331	
8	Foreman		person	0.10	-	183,300	-	18,330	0.04*2.5
9	Carpenter		person	0.10	-	111,700	-	11,170	0.04*2.5
10	Skilled labor		person	0.33	-	170,100	-	56,133	0.13*2.5
11	Common labor		person	0.33	-	80,600	-	26,598	0.13*2.5
12	Barge with crane	40 ton	day	0.03	35,520	342,000	1,066	10,260	0.03 day ; Equipment -70
13	Tug boat	steel 200ps	hr	0.15	2,490	222,000	374	33,300	0.03 day *T; T=1040/210; Equipment -74
	Total						**2,499**	**162,745**	
	Per: 1 air m^3						2,499	162,745	

PROCESS COST - 310

Timbering of deck slab (overhanging)

Per: 10 air m^3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	0.50	-	183,300	-	91,650	0.2*2.5
2	Carpenter		person	0.70	-	111,700	-	78,190	0.28*2.5
3	Skilled labor		person	1.53	-	170,100	-	259,403	0.61*2.5
4	Common labor		person	1.55	-	80,600	-	124,930	0.62*2.5
5	Barge with crane	40 ton	day	0.14	35,520	342,000	4,973	47,880	0.14 day ; Equipment -70
6	Tug boat	steel 200ps	hr	0.69	2,490	222,000	1,726	153,920	0.14 day *T;T=1040/210; Equipment -74
7	Miscellaneous expenses	(labor cost)*4%	set	1			-	22,167	
	Total						**6,699**	**778,139**	
Per: 1 air m^3.day							670	77,814	

PROCESS COST - 310 (2)

Timbering of deck slab (overhanging)

Per: 100 air m^3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Frame		each	120	634	-	76,080	-	8.8*90 days
2	Brace		set	113	144	-	16,272	-	2.0*90 days
3	Jack base		each	96	324	-	31,104	-	(Material -159)*0.3
4	Round pipe	ϕ 48.6	m	151	37	-	5,587	-	0.51*90 days
5	Clamp		each	192	48	-	9,216	-	(Material -160)*0.3
6	Timber	0.150x0.150	each	0.1875		529,840	-	99,345	(Material -132)*0.4
7	Supplemental materials	(sum of above) *5%	set	1			6,913	4,967	
8	Foreman		person	2.50	-	183,300	-	458,250	1*2.5
9	Carpenter		person	2.50	-	111,700	-	279,250	1*2.5
10	Skilled labor		person	12.50	-	170,100	-	2,126,250	5*2.5
11	Common labor		person	12.50	-	80,600	-	1,007,500	5*2.5
12	Barge with crane	40 ton	day	1.00	35,520	342,000	35,520	342,000	1 day ; Equipment -70
13	Tug boat	steel 200ps	hr	4.95	2,490	222,000	12,326	1,098,900	1day *T; T=1040/210; Equipment -74
14	Miscellaneous expenses	(labor cost)*4%	set	1			-	154,850	
	Total						**193,017**	**5,571,312**	
Per: 1 air m^3							1,930	55,713	

PROCESS COST - 311

Inner timbering of pier head

Per: 10 air m^3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	0.25	-	183,300	-	45,825	0.1*2.5
2	Carpenter		person	0.25	-	111,700	-	27,925	0.1*2.5
3	Skilled labor		person	1.25	-	170,100	-	212,625	0.5*2.5
4	Common labor		person	1.25	-	80,600	-	100,750	0.5*2.5
5	Depreciable value of timbering		set	1	6,440	-	6,440	-	
6	Barge with crane	40 ton	day	0.10	35,520	342,000	3,552	34,200	0.1 day ; Equipment -70
7	Tug boat	steel 200ps	hr	0.05	2,490	222,000	125	11,100	0.1 day *T;T=1040/210; Equipment -74
8	Miscellaneous expenses	(labor cost)*4%	set	1			-	15,485	
	Total						**10,117**	**447,910**	
Per: 1 air m^3							1,012	44,791	

PROCESS COST - 312

Frame square sets work (simple box bridge)

Per: one place

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	H shaped steel	300x300x10x15	ton	15.62	1,364	-	21,306	-	31*55 days;
2	Channel steel	150x75x6.5x10	ton	1.86	1,672	-	3,110	-	38*55 days;
3	L shaped steel	100x100x10	ton	4.07	9,288	-	37,802	-	(Material -147)*0.3
4	Jack (head)	P-H	each	10	4,795	-	47,950	-	(Material -150)*0.3
5	Supplemental materials	(sum of above) *5%	set	1			5,508	-	
6	Foreman		person	7.6	-	183,300	-	1,393,080	4.368*0.7*2.5
7	Rigger		person	30.6	-	153,200	-	4,687,920	4.368*2.8*2.5
8	Common labor		person	30.6	-	80,600	-	2,466,360	4.368*2.8*2.5
9	Truck crane	Hydraulic 45 t	hr	9.57	7,320	68,000	70,052	650,760	0.1day *Ws*T; T=4.44 Equipment -16
10	Miscellaneous expenses	(labor cost)*4%	set	1			-	341,894	
							110,168		
	Total						**295,896**	**9,540.014**	
Per: one place							295,896	9,540.014	

PROCESS COST - 313

Pedestal work for prefabricated

Per: one place

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	H shaped steel	350x350x12x19	ton	12.15	1,452	-	17,642	-	33*55 days
2	H shaped steel	300x300x10x15	ton	21.2	1,364	-	28,917	-	31*55 days
3	Channel steel	250x90x9x13	ton	0.97	1,408	-	1,366	-	37*55 days
4	PC steel bar	ϕ 26	kg	110	149	-	16,390	-	(Material -163)*0.9
5	Sheath	ϕ 32	m	2.1	106	-	223	-	Material -164
6	Supplemental materials	(sum of above) *5%	set	1			3,227	-	
7	Foreman		person	43.0	-	183,300	-	7,888,774	0.5*Ws*2.5
8	Rigger		person	301.26	-	153,200	-	46,153,415	3.5*Ws*2.5
9	Common labor		person	25.8	-	80,600	-	2,081,294	0.3*Ws*2.5
10	Truck crane	Hydraulic 45 t	hr	15.29	7,320	68,000	111,900	1,039,511	0.1day *Ws*T; T=4.44 Equipment -16
11	Miscellaneous expenses	(labor cost)*4%	set	1			-	2,244,939	
	Total						**179,664**	**59,407,932**	
Per: one place							179,664	59,407,932	

PROCESS COST - 315

Timbering for bottom of side span

Per: 100 air m^3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Frame		each	70.0	387	-	27,090	-	8.8*55 days
2	Brace		each	132	88	-	11,616	-	2.0*55 days
3	Jack base	stroke 460mm	each	46.7	324	-	15,131	-	(Material -159)*0.3
4	Round pipe	ϕ 48.6	m	131.4	22	-	2,891	-	0.51*55 days
5	Clamp		each	186.7	48	-	8,962	-	(Material -160)*0.3
6	Supplemental materials	(sum of above) *5%	set	1			3,284	-	
7	Foreman		person	2.78	-	183,300	-	509,574	1.11*2.5
8	Rigger		person	10.90	-	153,200	-	1,669,880	4.36*2.5
9	Common labor		person	8.70	-	80,600	-	701,220	3.48*2.5
10	Truck crane	Hydraulic 45 t	hr	1.38	7,320	68,000	10,102	93,840	0.31day*T; T=4.44 Equipment -16
11	Miscellaneous expenses	(labor cost)*4%	set	1			-	115,227	
	Total						**79,075**	**3,089,741**	
Per: 1 air m^3							791	30,897	

PROCESS COST - 315 (2)

Timbering for bottom of side span (3.6 t / m2 ; L= 10m ; H = 13.6m)

Per: 100 air m^3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Frame		each	110.0	387	-	42,570	-	8.8*55 days
2	Brace		each	207	88	-	18,216	-	2.0*55 days
3	Jack base	stroke 250mm	each	20.0	225	-	4,500	-	(Material -123)*0.3
4	Jack base		each	20.0	270	-	5,400	-	(Material -119)*0.3
5	Round pipe	ϕ 48.6	m	90	22	-	1,980	-	0.51*55 days
6	Conection pin		each	124.0	36	-	4,464	-	(Material -125)*0.3
7	Clamp		each	140.0	48	-	6,720	-	(Material -160)*0.3
8	Supplemental materials	(sum of above) *5%	set	1			4,193	-	
9	Foreman		person	2.35	-	183,300	-	430,755	0.94*2.5
10	Rigger		person	9.35	-	153,200	-	1,432,420	3.74*2.5
11	Common labor		person	7.43	-	80,600	-	598,858	2.94*2.5
12	Miscellaneous expenses	(labor cost)*4%	set	1			-	98,481	
13	Truck crane	Hydraulic 20~22 ton	hr	1.24	3,520	55,000	4,365	68,200	0.28day*T; T=4.44 Equipment -17
	Total						**92,407**	**2,628,714**	
Per: 1 air m^3							924	26,287	

PROCESS COST - 316

Timbering of deck slab (overhanging) of side span (1.6 t/m2 ; L = 10m ; H = 2.5m)

Per: 100 air m^3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Frame		each	50.0	387	-	19,350	-	8.8*55 days
2	Brace		each	94.2	88	-	8,290	-	2.0*55 days
3	Jack base	stroke 250mm	each	33.4	225	-	7,515	-	(Material -123)*0.3
4	Jack base		each	33.4	270	-	9,018	-	(Material -119)*0.3
5	Conection pin		each	66.7	36	-	2,401	-	(Material -125)*0.3
6	Round pipe	ϕ 48.6	m	115.7	22	-	2,545	-	0.51*55 days
7	Clamp		each	133.4	48	-	6,403	-	(Material -160)*0.3
8	Supplemental materials	(sum of above) *5%	set	1			2,776	-	
9	Foreman		person	1.98	-	183,300	-	362,018	0.79*2.5
10	Rigger		person	7.75	-	153,200	-	1,187,300	3.10*2.5
11	Common labor		person	6.15	-	80,600	-	495,690	2.46*2.5
12	Truck crane	Hydraulic 45 t	hr	1.11	7,320	68,000	8,125	75,480	0.25day*T; T=4.44 Equipment -16
13	Miscellaneous expenses	(labor cost)*4%	set	1			-	81,800	
	Total						**66,424**	**2,202,288**	
Per: 1 air m^3							664	22,023	

PROCESS COST -317

Suspended scaffolding for center closing

Per: one place

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign	Local	Foreign	Local	
					(J.YEN)	(VN. D)	(J.YEN)	(VN. D)	
2	Round pipe	ϕ 48.6	m	7.6	14	-	106	-	0.51*35 days
3	Stanchion	h=1000mm	Each	20	67	-	1,340	-	2.4*35 days
4	Scaffold board	240 * 4000	Each	73	218	-	15,914	-	7.8*35 days
5	Timber	150 *150	m3	0.8	-	529,840	-	423,872	(Material- 132)*0.4
6	PC steel bar	ϕ 32	kg	170	50	-	8,500	-	(Material- 157)*0.3
7	Anchor plate		set	14	1,066	-	14,924	-	(Material- 47)
8	Supplemental materials	(sum of above) *5%	set	1			2,039	21,194	
9	Foreman		person	1.25	-	183,300	-	229,125	0.5*2.5
10	Rigger		person	2.88	-	153,200	-	441,216	(0.115*5*2)*2.5
11	Common labor		person	5.00	-	80,600	-	403,000	2.0*2.5
12	Truck with crane	hanging load 2 ton	hr	1.73	670	41,000	1,159	70,930	0.4 day*T;T=4.33; Equipment -101
13	Miscellaneous expenses	(labor cost)*4%	set	1			-	42,934	
	Total						**43,983**	**1,632,270**	
	Per : 1 place						43,983	1,632,270	

PROCESS COST -318

Suspended timbering for center closing

Per: one place

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	H shaped steel	300x300x10x15;L=5.5m	ton	5.12	868	-	4,444	-	31*35 days
2	Channel steel	200x90x9x13;L=19m	ton	2.3	1,036	-	2,383	-	37*35 days
3	PC steel bar	ϕ 32;L=1.0~3.8m	kg	96	149	-	14,304	-	(Material -157)*0.9
4	Sheath	ϕ 32	m	4.2	106	-	445	-	Material -164
5	Frame		Each	25.2	230	-	5,796	-	8.2*35 days
6	Brace		Set	47.4	56	-	2,654	-	2.0*35 days
7	Jack base		Each	16.8	324	-	5,443	-	(Material- 159)*0.3
8	Round pipe	ϕ 48.6	m	47.3	14	-	662	-	0.51*35 days
9	Clamp		Each	67.2	47	-	3,158	-	(Material- 160)*0.3
10	Supplemental materials	(sum of above) *5%	set	1			1,965	-	
11	Foreman		person	9.4	-	183,300	-	1,723,020	0.5*Ws*2.5
12	Rigger		person	47	-	153,200	-	7,200,400	2.5*Ws*2.5
13	Common labor		person	37.6	-	80,600	-	3,030,560	2.0*Ws*2.5
14	Truck with crane	hanging load 2 ton	hr	6.51	670	41,000	4,362	266,910	0.2 day*Ws*T;T=4.33; Equipment -101
15	Miscellaneous expenses	(labor cost)*4%	set	1			-	478,159	
	Total						**45,617**	**12,699,049**	
Per: one place							45,617	12,699,049	
Per: 1 air m3=Total/47							971	270,193	

PROCESS COST -319

Inner timbering for center closing

Per: 100 air m^3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Frame		each	20.0	246	-	4,920	-	8.8*35 days
2	Brace		each	56	56	-	3,136	-	2.0*35 days
3	Jack base	stroke 250mm	each	20.0	225	-	4,500	-	(Material -123)*0.3
4	Jack base		each	20.0	270	-	5,400	-	(Material -119)*0.3
5	Conection pin		each	40.0	36	-	1,440	-	(Material -125)*0.3
6	Round pipe	ϕ 48.6	m	100	14	-	1,400	-	0.51*35 days
7	Clamp		each	180.0	48	-	8,640	-	(Material -160)*0.3
8	Supplemental materials	(sum of above) *5%	set	1			1,472	-	
9	Foreman		person	1.63	-	183,300	-	297,863	0.65*2.5
10	Rigger		person	6.20	-	153,200	-	949,840	2.48*2.5
11	Common labor		person	4.88	-	80,600	-	392,925	1.95*2.5
12	Miscellaneous expenses	(labor cost)*4%	set	1			-	65,625	
13	Truck with crane	hanging load 2 ton	hr	0.87	670	41,000	583	35,670	0.2 day*T;T=4.33; Equipment -101
	Total						**31,491**	**1,741,923**	
Per: 1 air m^3							315	17,419	

PROCESS COST - 320

Vertical prestressing steel bar setting work (32, SBPR 930/1180)

Per: 1 ton

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	PC steel bar	ϕ32 , SBPR 930/1180	ton	1.00	213,000	-	213,000	-	Material - 169
2	Supplemental material	(sum of above)* 2%					4,260	-	
3	Foreman		person	4.25	-	183,300	-	779,025	1.7*2.5
4	Skilled labor		person	34.00	-	170,100	-	5,783,400	13.6*2.5
5	Common labor		person	18.75	-	80,600	-	1,511,250	7.5 *2.5
6	Miscellaneous expenses	(labor cost)* 6%	ton	1.00			-	484,421	
7	Barge with crane	25 ton	day	0.10	21,900	302,000	2,190	30,200	0.1 day; Equipment -91
8	Tug boat	steel 100ps	hr	0.50	1,310	120,000	655	60,000	0.1 day*T ; T=1040/210 ; Equipment -75
	Total						**220,105**	**8,648,296**	
	Per 1 ton						220,105	8,648,296	

PROCESS COST - 321

Vertical prestressing steel bar anchorage work (32, SBPR 930/1180)

Per: 10 place

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Anchorage	tension side	each	10	5,500	-	55,000	-	Material - 166
2	Anchorage	fix side	each	10	4,630	-	46,300	-	Material - 167
3	Coupler		each	10	1,740	-	17,400	-	Material - 168
4	Skilled labor		person	3	-	170,100	-	425,250	
5	Miscellaneous expenses	(labor cost)* 16%		1			-	21,263	
	Total						**118,700**	**446,513**	
	Per 1 place						11,870	44,651	

PROCESS COST - 322

Vertical prestressing steel bar tensioning work (32, SBPR 930/1180)

Per: 10 place

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	2	-	183,300	-	366,600	0.8*2.5
2	Skilled labor		person	12	-	170,100	-	1,956,150	4.6*2.5
3	Common labor		person	5	-	80,600	-	403,000	2.0*2.5
4	Miscellaneous expenses	(labor cost)* 4%	set	1			-	109,030	
	Total						-	**2,834,780**	
	Per 1 place						-	283,478	

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PROCESS COST - 322 (2)

Vertical prestressing steel bar tension releasing work (f 32, SBPR 930/1180)

Per: 10 place

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	1	-	183,300	-	256,620	0.7*0.8*2.5
2	Skilled labor		person	8	-	170,100	-	1,369,305	0.7*4.6*2.5
3	Common labor		person	4	-	80,600	-	282,100	0.7*2.0*2.5
4	Miscellaneous expenses	(labor cost)* 4%	set	1			-	76,321	
	Total						-	**1,984,346**	
	Per 1 place						-	198,435	

PROCESS COST - 323

Miscellaneous work for vertical prestressing steel work
Per: 1 place

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Form work		m2	7	-	86,805	-	638,885	Process cost - 38
2	Reinforcement steel	ϕ12	ton	1	24,720	2,096,273	23,682	2,008,230	Process cost - 60
3	Concrete	class A1	m3	1	376	515,917	504	691,329	Process cost - 149
4	Concrete placing		m3	1	-	79,812	-	106,948	Process cost - 34
5	Miscellaneous expenses	(sum of above)* 4%	set	1			967	137,816	
	Total						**25,153**	**3,583,207**	
	Per 1 place						25,153	3,583,207	

PROCESS COST - 323 (2)

Depreciable value of tools for ϕ32 SBPR 930 / 1180

Per: 1 set

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Tension jack and pump	95 ton	day	2	1,520	-	3,040	-	Equipment -123
2	Grout pump	15~30 l/min	day	2	820	-	1,640	-	Equipment -64
3	Grout mixer	100literx1	day	2	420	-	840	-	Equipment -66
4	Other tools		day	2	100	-	200	-	
	Total						**5,720**	-	
	Per 1 set						5,720	-	

PROCESS COST -324(1)

Inner form fabrication setting and removal work for pier head

Per: 10 m^2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	2.0	-	183,300	-	366,600	0.8*2.5
2	Carpenter		person	12.0	-	111,700	-	1,340,400	4.8*2.5
3	Common labor		person	7.25	-	80,600	-	584,350	2.9*2.5
4	Barge with crane	40 ton	day	0.05	35,520	342,000	1,776	17,100	0.05 day; Equipment -70
5	Tug boat	steel 200ps	hr	0.25	2,490	222,000	623	55,500	0.05day *T; T=4.95;Equipment -74
6	Miscellaneous expenses	(labor cost)*12%	set	1			-	274,962	
	Total						**2,399**	**2,638,912**	
Per : 1.0 m2							240	263,891	

PROCESS COST - 324(2)

Inner form fabrication for pier head

Per: 10 m^2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Plywood	900 * 1800*12	Each	7.0	-	40,720	-	285,040	(Material- 130)*0.8
2	Timber		m^3	0.4	-	927,220	-	370,888	(Material- 132)*0.7
3	Supplemental materials	(sum of above) *15%	set	1			-	98,389	
4	Foreman		person	0.25	-	183,300	-	45,825	0.1*2.5
5	Carpenter		person	4.5	-	111,700	-	502,650	1.8*2.5
6	Common labor		person	3.0	-	80,600	-	241,800	1.2*2.5
7	Miscellaneous expenses	(labor cost)*4%	set	1			-	31,611	
8	Barge with crane	40 ton	day	0.05	35,520	342,000	1,776	17,100	0.05 day; Equipment -70
9	Tug boat	steel 200ps	hr	0.25	2,490	222,000	623	55,500	0.05day *T; T=4.95;Equipment -74
	Total						**2,399**	**1,648,803**	
	Per : 1.0 m2= { Total * 1/2 +Total*0.1*(2-1)}*1/10						144	98,928	

PROCESS COST -325

Inner form setting and removal work for pier head

Per: 10 m^2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	1.0	-	183,300	-	183,300	0.4*2.5
2	Carpenter		person	7.5	-	111,700	-	837,750	3.0*2.5
3	Common labor		person	4.5	-	80,600	-	362,700	1.8*2.5
4	Miscellaneous expenses	(labor cost)*4%	set	1			-	55,350	
	Total						-	**1,439,100**	
Per : 1.0 m2							-	143,910	

PROCESS COST - 326(1)

Outer form fabrication setting and removal work for pier head

Per: 10 m^2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	1.25	-	183,300	-	229,125	0.5*2.5
2	Carpenter		person	9.25	-	111,700	-	1.033,225	3.7*2.5
3	Common labor		person	6.0	-	80,600	-	483,600	2.4*2.5
5	Miscellaneous expenses	(labor cost)*18%	set	1			-	314,271	
6	Barge with crane	40 ton	day	0.05	35,520	342,000	1,776	17,100	0.05 day; Equipment -70
7	Tug boat	steel 200ps	hr	0.25	2,490	222,000	623	55,500	0.05day *T; T=4.95;Equipment -74
	Total						**2,399**	**2,132,821**	
Per : 1.0 m2							240	213,282	

PROCESS COST -326(2)

Outer form fabrication for pier head

Per: 10 m^2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Plywood	900 * 1800*12	Each	7.0	-	40,720	-	285,040	(Material- 130)*0.8
2	Timber		m^3	0.4	-	927,220	-	370,888	(Material- 132)*0.7
3	Supplemental materials	(sum of above) *15%	set	1			-	98,389	
4	Foreman		person	0.25	-	183,300	-	45,825	0.1*2.5
5	Carpenter		person	4.5	-	111,700	-	502,650	1.8*2.5
6	Common labor		person	3.0	-	80,600	-	241,800	1.2*2.5
7	Miscellaneous expenses	(labor cost)*4%	set	1			-	31,611	
8	Barge with crane	40 ton	day	0.05	35,520	342,000	1,776	17,100	0.05 day; Equipment -70
9	Tug boat	steel 200ps	hr	0.25	2,490	222,000	623	55,500	0.05day *T; T=4.95;Equipment -74
	Total						**2,399**	**1,648,803**	
	Per : 1.0 m2 = (Total * 1/2 *1/10)						120	82,440	

PROCESS COST - 327

Outer form setting and removal work for pier head

Per: 10 m^2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	1.0	-	183,300	-	183,300	0.4*2.5
2	Carpenter		person	7.5	-	111,700	-	837,750	3.0*2.5
3	Common labor		person	4.5	-	80,600	-	362,700	1.8*2.5
4	Miscellaneous expenses	(labor cost)*4%	set	1			-	55,350	
	Total						-	**1,439,100**	
Per : 1.0 m2							-	143,910	

PROCESS COST - 328(1)

Bottom form fabrication setting and removal work for pier head

Per: 10 m^2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	1.25	-	183,300	-	229,125	0.5*2.5
2	Carpenter		person	7.25	-	111,700	-	809,825	3.7*2.5
3	Common labor		person	6.00	-	80,600	-	483,600	2.4*2.5
5	Miscellaneous expenses	(labor cost)*18%	set	1			-	274,059	
6	Barge with crane	40 ton	day	0.05	35,520	342,000	1,776	17,100	0.05 day; Equipment -70
7	Tug boat	steel 200ps	hr	0.25	2,490	222,000	623	55,500	0.05day *T; T=4.95;Equipment -74
	Total						**2,399**	**1,869,209**	
Per : 1.0 m2							240	186,921	

CB-296

PROCESS COST - 328(2)

Bottom form fabrication for pier head

Per: 10 m^2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Plywood	900 * 1800*12	Each	7.0	-	40,720	-	285,040	(Material- 130)*0.8
2	Timber		m^3	0.4	-	927,220	-	370,888	(Material- 132)*0.7
3	Supplemental materials	(sum of above) *15%	set	1			-	98,389	
4	Foreman		person	0.25	-	183,300	-	45,825	0.1*2.5
5	Carpenter		person	3.0	-	111,700	-	335,100	1.2*2.5
6	Common labor		person	3.0	-	80,600	-	241,800	1.2*2.5
7	Miscellaneous expenses	(labor cost)*4%	set	1			-	24,909	
8	Barge with crane	40 ton	day	0.05	35,520	342,000	1,776	17,100	0.05 day; Equipment -70
9	Tug boat	steel 200ps	hr	0.25	2,490	222,000	623	55,500	0.05day *T; T=4.95;Equipment -74
	Total						**2,399**	**1,474,551**	
Per : 1.0 m2 = (Total * 1/2 *1/10)							120	73,728	

CB-297

PROCESS COST -329

Bottom form setting and removal work for pier head

Per: 10 m^2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	0.25	-	183,300	-	45,825	0.1*2.5
2	Carpenter		person	3.25	-	111,700	-	363,025	1.3*2.5
3	Common labor		person	2.0	-	80,600	-	161,200	0.8*2.5
4	Miscellaneous expenses	(labor cost)*4%	set	1			-	22,802	
	Total						-	**592,852**	
Per : 1.0 m2							-	59,285	

CB-298

PROCESS COST -330

Killed mold work for pier head

Per: 10 m^2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Plywood	900 * 1800*12	Each	7.0	-	50,900	-	356,300	Material- 130
2	Timber		m^3	0.47	-	1,324,600	-	622,562	Material- 132
3	H shaped steel	200x200x8x12	ton	0.62	27,360	-	16,963	-	Material- 165
4	Supplemental materials	(sum of above) *5%	set	1			848	48,943	
5	Foreman		person	0.50	-	183,300	-	91,650	0.2*2.5
6	Carpenter		person	4.50	-	111,700	-	502,650	1.8*2.5
7	Common labor		person	3.75	-	80,600	-	302,250	1.5*2.5
8	Rigger		person	1.50	-	153,200	-	229,800	0.6*2.5
9	Miscellaneous expenses	(labor cost)*4%	set	1			-	45,054	
	Total						**17,811**	**2,199,209**	
Per : 1.0 m2							1,781	219,921	

CB-299

PROCESS COST - 331

Outer timbering (2.0 t / m2) of cantilever

Per: 100 air m^3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Frame		each	50.0	81	-	4,050	-	8.8*11.5 days
2	Brace		each	94.2	18	-	1,696	-	2.0*11.5 days
3	Jack base	stroke 250mm	each	20.0	225	-	4,500	-	(Material -123)*0.3
4	Jack base		each	20.0	270	-	5,400	-	(Material -119)*0.3
5	Conection pin		each	80.8	36	-	2,909	-	(Material -125)*0.3
6	Round pipe	Φ 48.6	m	70.6	5	-	353	-	0.51*11.5 days
7	Clamp		each	80.0	47	-	3,760	-	(Material -160)*0.3
8	Supplemental materials	(sum of above) *5%	set	1	-	-	1,133	-	
9	Foreman		person	1.98	-	183,300	-	362,018	0.79*2.5
10	Rigger		person	7.75	-	153,200	-	1,187,300	3.10*2.5
11	Common labor		person	6.15	-	80,600	-	495,690	2.46*2.5
12	Miscellaneous expenses	(labor cost)*4%	set	1	-			81,800	
	Total						**23,801**	**2,126,808**	
Per: 1 air m^3							238	21,268	

PROCESS COST - 332

Inner timbering (2.0 t / m2) of side span

Per: 100 air m^3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Frame		each	50.0	387	-	19,350	-	8.8*55 days
2	Brace		each	94.2	88	-	8,290	-	2.0*55 days
3	Jack base	stroke 250mm	each	33.4	225	-	7,515	-	(Material -123)*0.3
4	Jack base		each	33.4	270	-	9,018	-	(Material -119)*0.3
5	Conection pin		each	66.7	36	-	2,401	-	(Material -125)*0.3
6	Round pipe	Φ 48.6	m	115.7	22	-	2,545	-	0.51*55 days
7	Clamp		each	133.4	47	-	6,270	-	(Material -160)*0.3
8	Supplemental materials	(sum of above) *5%	set	1	-	-	2,769	-	
9	Foreman		person	1.98	-	183,300	-	362,018	0.79*2.5
10	Rigger		person	7.75	-	153,200	-	1,187,300	3.10*2.5
11	Common labor		person	6.15	-	80,600	-	495,690	2.46*2.5
12	Miscellaneous expenses	(labor cost)*4%	set	1	-			81,800	
13	Truck crane	Hydraulic20~22 t	hr	1.11	3,520	55,000	3,907	61,050	0.25day*T; T=4.44 Equipment -17
	Total						**58,158**	**2,126,808**	
Per: 1 air m^3							582	21,268	

CB-301

PROCESS COST - 333

Scaffolding work for box girder (L=60m x 3)

Per: 100 multiplied m^2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	2.50	-	183,300	-	458,250	1.0*2.5
2	Rigger		person	7.50	-	153,200	-	1,149,000	3.0*2.5
3	Common labor		person	7.50	-	80,600	-	604,500	3.0*2.5
4	Truck crane	15 ~ 16 ton	hr	3.1	3,080	55,000	9,548	170,500	0.7day*T; T=4.44 Equipment -18
5	Miscellaneous expenses	(Labor cost)*18%	set	1	-			398,115	
	Total						**9,548**	**2,780,365**	
Per: 1 m^2							95	27,804	

CB-302

PROCESS COST - 334

Concrete work for approach slab

Per: 10 m^3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Form work		m2	28.59	-	86,805	-	2,481,755	Process cost - 38
2	Concrete	class E1	m3	10.00	634	396,674	6,340	3,966,740	Process cost - 154
3	Concrete placing		m3	10.00	-	79,812	-	798,120	Process cost - 34
4	Asphaltic joint filler		m2	0.42	738	-	310	-	Material - 118
5	Steel pipe	Φ 27.2 x 310	m	1.69	54	-	91	-	Material - 25
6	Steel anchor	D 19x500	kg	6.72	-	3,800	-	25,536	Material - 29
7	Spiral steel	Φ 10 x1260	kg	3.83	-	3,840	-	14,707	Material - 7
8	Skilled labor		person	0.50	-	170,100	-	85,050	0.2*2.5
	Total						**6,741**	**7,371,908**	
Per: 1 m^3							674	737,191	

PROCESS COST - 335 (1)

Parapet and railing (PC I Girder,abutment)

Per: 10 m

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Concrete	class C1	m3	2.17	634	456,842	1,376	991,347	Process cost - 151
2	Form work		m2	11.95	-	86,805	-	1,037,320	Process cost - 38
3	Reinforcement work	D13	ton	0.2835	23,690	1,795,763	6,716	509,099	Process cost - 61
4	Handrail	h=0.63 , span 2.0	m	10.00	43,155	-	431,550	-	Material - 14
5	Skilled labor		person	0.50	-	170,100	-	85,050	0.2*2.5
	Total						**439,643**	**2,622,816**	
Per: 1 m							43,964	262,282	

PROCESS COST - 335 (2)

Parapet and railing (Box girder)

Per: 10 m

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Concrete	class C1	m3	2.67	634	456,842	1,693	1,219,768	Process cost - 151
2	Form work		m2	16.83	-	86,805	-	1,460,928	Process cost - 38
3	Reinforcement work	D13	ton	0.3014	23,690	1,795,763	7,140	541,243	Process cost - 61
4	Handrail	h=0.63 , span 2.0	m	10.00	43,155	-	431,550	-	Material - 14
5	Skilled labor		person	0.50	-	170,100	-	85,050	0.2*2.5
	Total						**440,383**	**3,306,989**	
Per: 1 m							44,038	330,699	

PROCESS COST -336 (1)

Outer form fabrication setting and removal work for side span

Per: 10 m^2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	1.25	-	183,300	-	229,125	0.5*2.5
2	Carpenter		person	9.25	-	111,700	-	1.033,225	3.7*2.5
3	Common labor		person	6.0	-	80,600	-	483,600	2.4*2.5
4	Miscellaneous expenses	(Sum of above)*18%	set	1	-			314,271	
5	Truck crane	25 ton	hr	0.89	4,250	60,000	3,783	53,400	0.2day *T; T=4.44; Equipment -100
	Total						**3,783**	**2,113,621**	
Per : 1.0 m2							378	211,362	

CB-306

PROCESS COST - 336(2)

Outer form fabrication for side span,center closing

Per: 10 m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Plywood panel	900*1800*12	each	7.00	-	40,720	-	285,040	Material 130*0.8
2	Timber		m3	0.40	-	927,220	-	370,888	Material 132*0.7
3	Supplemental materials	(sum of above) *15%	set	1	-	-	-	98,389	
4	Foreman		person	0.25	-	183,300	-	45,825	0.1*2.5
5	Carpenter		person	3.75	-	111,700	-	418,875	1.5*2.5
6	Common labor		person	2.50	-	80,600	-	201,500	1.0*2.5
7	Miscellaneous expenses	(labor cost)*4%	set	1.0	-			26,648	
	Total						-	**1,447,165**	
Per : 1.0 m2={total*(1/2)*(1/10)							-	72,358	

CB-307

PROCESS COST -337

Inner form setting and removal work for side span ,box girder

Per: 10 m^2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	0.75	-	183,300	-	137,475	0.3*2.5
2	Carpenter		person	6.25	-	111,700	-	698,125	2.5*2.5
3	Common labor		person	3.8	-	80,600	-	302,250	2.0*2.5
4	Miscellaneous expenses	(labor cost)*4%	set	1	-			45,514	
5	Truck crane	15~ 16Ton	hr	0.89	3,080	55,000	2,741	48,950	0.2day *T; T=4.44; Equipment -18
	Total						**2,741**	**1,232,314**	
Per : 1.0 m2							274	123,231	

PROCESS COST -337 (2)

Outer form setting and removal for center closing

Per: 10 m^2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	0.75	-	183,300	-	137,475	0.3*2.5
2	Carpenter		person	6.25	-	111,700	-	698,125	2.5*2.5
3	Common labor		person	3.8	-	80,600	-	302,250	1.5*2.5
4	Miscellaneous expenses	(labor cost)*4%	set	1	-			45,514	
	Total						**0**	**1,183,364**	
Per : 1.0 m2							-	118,336	

CB-309

PROCESS COST -338 (1)

Inner form Fabrication, setting and removal for side span

Per: 10 m^2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	2.00	-	183,300	-	366,600	0.3*2.5
2	Carpenter		person	12.00	-	111,700	-	1,340,400	2.5*2.5
3	Common labor		person	7.25	-	80,600	-	584,350	1.5*2.5
4	Miscellaneous expenses	(labor cost)*12%	set	1.0	-			274,962	
5	Truck crane	25 Ton	hr	1.33	4,250	60,000	5,653	79,800	0.3day *T; T=4.44; Equipment -100
	Total						**5,653**	**2,646,112**	
Per : 1.0 m2							565	264,611	

PROCESS COST -338 (2)

Inner form Fabrication for side span

Per: 10 m^2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Plywood panel	900*1800*12	each	7.00	-	40,720	-	285,040	Material 130*0.8
2	Timber		m3	0.33	-	927,220	-	305,983	Material 132*0.7
3	Supplemental materials	(sum of above) *15%	set	1	-	-	-	88,653	
4	Foreman		person	0.25	-	183,300	-	45,825	0.1*2.5
5	Carpenter		person	3.75	-	111,700	-	418,875	1.5*2.5
6	Common labor		person	2.50	-	80,600	-	201,500	1.0*2.5
7	Miscellaneous expenses	(labor cost)*4%	set	1.0	-			79,944	
	Total						-	**1,425,820**	
	Per : 1.0 m2={total*(1/2)+total*0.1*(2-1)}*(1/10)						-	75,229	

PROCESS COST -339

Inner form setting and removal work for side span

Per: 10 m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	0.75	-	183,300	-	137,475	0.3*2.5
2	Carpenter		person	6.25	-	111,700	-	698,125	2.5*2.5
3	Common labor		person	5	-	80,600	-	403,000	2.0*2.5
4	Miscellaneous expenses	(labor cost)*4%	set	1	-		-	49,544	
5	Truck crane	15-16 Ton	hr	1.33	3,080	55,000	4,096	73,150	0.3day *T; T=4.44; Equipment -18
	Total						**4,096**	**1,361,294**	
	Per : 1.0 m2						410	136,129	

PROCESS COST -339(2)

Inner form setting and removal work for center closing

Per: 10 m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	0.75	-	183,300	-	137,475	0.3*2.5
2	Carpenter		person	6.25	-	111,700	-	698,125	2.5*2.5
3	Common labor		person	5	-	80,600	-	403,000	2.0*2.5
4	Miscellaneous expenses	(labor cost)*4%	set	1	-		-	49,544	
	Total						-	**1,288,144**	
	Per : 1.0 m2						-	128,814	

PROCESS COST - 340(1)

Bottom form fabrication , setting and removal work for side span

Per: 10 m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	1.25	-	183,300	-	229,125	0.5*2.5
2	Carpenter		person	9.25	-	111,700	-	1,033,225	3.7*2.5
3	Common labor		person	6.00	-	80,600	-	483,600	2.4*2.5
4	Miscellaneous expenses	(labor cost)*18 %	set	1.00	-		-	314,271	
5	Truck crane	40 ~ 45 Ton	hr	0.89	7,320	68,000	6,515	60,520	0.2day *T; T=4.44; Equipment -16
	Total						**6,515**	**2,120,741**	
	Per : 1.0 m2						651	212,074	

PROCESS COST - 340(2)

Bottom form fabrication for side span and box girder

Per: 10 m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign	Local	Foreign	Local	
					(J.YEN)	(VN. D)	(J.YEN)	(VN. D)	
1	Plywood	900 * 1800*12	each	7.00	-	40,720	-	285,040	(Material- 130)*0.8
2	Timber		m3	0.39	-	927,220	-	361,616	(Material- 132)*0.7
3	Supplemental materials	(sum of above) *15%	set	1.00	-	-	-	96,998	
4	Foreman		person	0.25	-	183,300	-	45,825	0.1*2.5
5	Carpenter		person	2.50	-	111,700	-	279,250	1.0*2.5
6	Common labor		person	2.50	-	80,600	-	201,500	1.0*2.5
7	Miscellaneous expenses	(labor cost)*4%	set	1.00	-	-	-	21,063	
	Total						-	**1,291,292**	
	Per : 1.0 m2						-	129,129	

PROCESS COST -341

Bottom form setting and removal work for side span,box girder

Per: 10 m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign	Local	Foreign	Local	
					(J.YEN)	(VN. D)	(J.YEN)	(VN. D)	
1	Foreman		person	0.25	-	183,300	-	45,825	0.1*2.5
2	Carpenter		person	2.75	-	111,700	-	307,175	1.1*2.5
3	Common labor		person	1.75	-	80,600	-	141,050	0.7*2.5
4	Miscellaneous expenses	(labor cost)*4 %	set	1.00	-		-	19,762	
8	Truck crane	15 ~ 16 Ton	hr	0.89	3,080	55,000	2,741	48,950	0.2day *T; T=4.44; Equipment -18
	Total						**2,741**	**562,762**	
	Per : 1.0 m2						274	56,276	

PROCESS COST -341 (2)

Bottom form setting and removal work for center closing

Per: 10 m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	0.25	-	183,300	-	45,825	0.1*2.5
2	Carpenter		person	2.75	-	111,700	-	307,175	1.1*2.5
3	Common labor		person	1.75	-	80,600	-	141,050	0.7*2.5
4	Miscellaneous expenses	(labor cost)*4 %	set	1.00	-		-	19,762	
								-	
	Total						-	**513,812**	
	Per : 1.0 m2						-	51,381	

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PROCESS COST -342(1)

Edge form , setting and removal work

Per: 10 m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	2.00	-	183,300	-	366,600	0.8*2.5
2	Carpenter		person	15.75	-	111,700	-	1,759,275	6.3*2.5
3	Common labor		person	6.50	-	80,600	-	523,900	2.6*2.5
5	Miscellaneous expenses	(labor cost)*17%	set	1.00	-		-	450,462	
	Total						-	**3,100,237**	
	Per : 1.0 m2						-	310,024	

PROCESS COST -342(2)

Edge form work

Per: 10 m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Timber		m3	0.45	-	1,324,600	-	596,070	Material- 132
2	Square timeber		m3	0.40	-	927,200	-	370,880	(Material- 132)*0.7
3	Supplemental materials	(sum of above) *10%	set	1.00	-	-	-	96,695	
4	Foreman		person	1.50	-	183,300	-	274,950	0.6*2.5
5	Carpenter		person	15.00	-	111,700	-	1,675,500	6.0*2.5
6	Common labor		person	6.00	-	80,600	-	483,600	2.4*2.5
7	Miscellaneous expenses	(labor cost)*4%	set	1.00	-		-	97,362	
	Total						-	**3,595,057**	
	Per : 1.0 m2						-	359,506	

PROCESS COST - 343 (1)

Pressure pipe setting and removal for pier head

Per: 10 m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Common labor		person	0.46	-	80,600	-	37,076	{0.49*(L-40)/B}*2.5
2	Miscellaneous expenses		set	1.00	-	-	-	924	
	Total						-	**38,000**	
	Per: 1 m3						-	3,800	

Production rate : 0.49*(L-40)/B

L : in case of L > 40m only ; L = 100m

B : as listed below ; B = 160m3

	Concrete placing volume (V m3)			
	less than 50	50<V<100	100<V<300	300<V<600
B	40	70	160	370

PROCESS COST - 343 (2)

Pressure pipe setting and removal for center closing

Per: 10 m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Common labor		person	3.45	-	80,600	-	278,070	{0.49*(L-40)/B}*2.5
2	Miscellaneous expenses		set	1.00	-	-	-	930	
	Total						-	**279,000**	
	Per: 1 m3						-	27,900	

Production rate : 0.49*(L-40)/B

L : in case of L > 40m only ; L = 153m

B : as listed below ; B = 40m3

	Concrete placing volume (V m3)			
	less than 50	50<V<100	100<V<300	300<V<600
B	40	70	160	370

PROCESS COST - 343 (3)

Pressure pipe setting and removal for cantilever erection area

Per: 10 m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Common labor		person	2.68	-	80,600	-	216,008	{0.49*(L-40)/B}*2.5
2	Miscellaneous expenses		set	1.00	-	-	-	992	
	Total						-	**217,000**	
	Per: 1 m3						-	21,700	

Production rate : 0.49*(L-40)/B

L : in case of L > 40m only ; L = 127 m (average)

B : as listed below ; B = 40 m3 (average)

	Concrete placing volume (V m3)			
	less than 50	50<V<100	100<V<300	300<V<600
B	40	70	160	370

PROCESS COST - 343 (4)

Pressure pipe setting and removal for pier concrete

Per: 10 m3 (B=160m3)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Common labor		person	0.27	-	80,600	-	21,762	{0.49*(L-40)/B}*2.5
2	Miscellaneous expenses		set	1.00	-	-	-	238	
	Total						-	**22,000**	
	Per: 1 m3						-	2,200	

Production rate : 0.49*(L-40)/B

L : in case of L > 40m only ; L = 75 m (average)

B : as listed below ; B = 160 m3 (average)

	Concrete placing volume (V m3)			
	< 50 m3	50<V<100	100<V<300	300<V<600
B	40	70	160	370

PROCESS COST - 343 (5)

Pressure pipe setting and removal for footing concrete

Per: 10 m3 (B=370 m3)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Common labor		person	0.12	-	80,600	-	9,672	{0.49*(L-40)/B}*2.5
2	Miscellaneous expenses		set	1.00	-	-	-	328	
	Total						-	10,000	
	Per: 1 m3						-	1,000	

Production rate : 0.49*(L-40)/B

L : in case of L > 40m only ;

B : as listed below ;

L = 75 m (average)

B = 370 m3 (average)

	Concrete placing volume (V m3)			
	< 50 m3	50<V<100	100<V<300	300<V<600
B	40	70	160	370

PROCESS COST - 344

Front side of pier head scaffolding work

Per: 1 m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Front side of pier head scaffolding		m2	1.00	-	125,012	-	125,012	Refer to M, girder hight ;6.5m
	Total						-	**125,012**	
	Per: 1 m2						-	125,012	

M = {(S * X) / T + N * y } * A

M: Cost for side of pier head scaffolding work

S : Factor for depreciable value of temporary materials

X ; Total months in demand for pier head work

T : Time used as facilities per one project

N: Factor for production rate

y: Wage rate of skilled labor per day

A : Quantity of front side pier head

X : 90 day / 30 = 3

T = 1

y : 188,864 * 2.5

Giredr hight of pire head	S	N
Less than 6m	620	0
More than 6m	750	1

PROCESS COST - 345 (1)

Front side of pier head scaffolding work

Per: 1 m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Front side of pier head scaffolding		1.m	1.00	-	427,500	-	427,500	Refer to M
	Total						-	**427,500**	
	Per: 1 m2						-	427,500	

M = {(S * X) / T + N * y } * A

M: Cost for side of pier head scaffolding work

S : Factor for depreciable value of temporary materials

X ; Total months in demand for pier head work

T : Time used as facilities per one project

N: Factor for production rate

y: Wage rate of skilled labor per day

A : Quantity of front side pier head scaffolding

X : 90 day / 30 = 3

T = 1

y : 170,100 * 2.5 = 425,250

M : (750 * 3) / 1 + 1 * 425,250 = 427,500

S	N
750	1

PROCESS COST - 345 (2)

Bridge side scaffolding

Per: 1 linear meter

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Bridge side length for scaffolding		1.m	1.00	-	73,823	-	73,823	Refer to M
	Total						-	**73,823**	
	Per: 1 linear meter						-	73,823	

M = {(S * X) / T + N * y } * A

M: Cost for bridge side scaffolding work

S : Factor for depreciable value of temporary materials

X ; Total months in demand for side span and center closing

T : Time used as facilities per one project

N: Factor for production rate

y: Wage rate of skilled labor per day

A : Quantity of bridge side length covered by scaffolding

X : 90 day / 30 = 3

T = 1

y : 170,100 * 2.5 = 425,250

M : (510 * 3) / 1 + 0.17 * 425,250 = 73,823 / l.m

A : 60 m

S	N
510	0.17

Bridge surface guardrail work

Per: 1 linear meter

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Bridge surface guardrail		1.m	1.00	-	23,759	-	23,759	Refer to M
	Total						-	**23,759**	
	Per: 1 linear meter						-	23,759	

M = {(S * X) / T + N * y } * A

M: Cost for bridge surface guardrail work

S : Factor for depreciable value of temporary materials

X ; Total months in demand for pier head and cantilever erection work

T : Time used as facilities per one project

N: Factor for production rate

y: Wage rate of skilled labor per day

A : Quantity of bridge side length installed with guardrail

X : 278 day / 30 = 9

T = 1

y : 170,100 * 2.5 = 425,250

M : (265 * 3) / 1 + 00.54 * 425,250 = 23,759 / 1.m

A : 430 m

S	N
265	0.054

PROCESS COST - 347 (1)

Dead head cost of concrete pump (pipe setting type 90~100m3/hr)

Per: one day

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Equipment operator		person	0.32	-	124,600	-	39,872	0.16*2
2	Fuel		liter	23.80	-	3,273	-	77,897	11.9*2
3	Lubricant oil		set	1.00	-	-	-	3,895	5 % of fuel cost
4	Owning cost of Equipment	pipe setting type 90~100 m3 / hr	hr	2.00	4,930	-	9,860	-	
5	Adjustment		set	1.00			-	36	
	Total						**9,860**	**121,700**	
	Per: one day						9,860	121,700	

PROCESS COST - 347 (2)

Dead head cost of concrete pump (boom type 90~110m3/hr)

Per: one day (2 hrs)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Equipment operator		person	0.32	-	124,600	-	39,872.00	0.16*2
2	Fuel		liter	34.00	-	3,273	-	111,282	17*2
3	Lubricant oil		set	1.00	-	-	-	5,564	5 % of fuel cost
4	Owning cost of Equipment	boom type 90~110 m3 / hr	hr	2.00	5,330	-	10,660	-	
5	Adjustment		set	1.00			-	82	
	Total						**10,660**	**156,800**	
	Per: one day						10,660	156,800	

PROCESS COST - 347 (3)

Dead head cost of concrete pump (boom type 55 ~60 m3/hr)

Per: one day (2 hr)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Equipment operator		person	0.32	-	124,600	-	39,872.00	0.16*2
2	Fuel		liter	21.40	-	3,273	-	70,042	10.7*2
3	Lubricant oil		set	1.00	-	-	-	3,502	5 % of fuel cost
4	Owning cost of Equipment	boom type 50~60 m3 / hr	hr	2.00	3,820		7,640	-	
5	Adjustment		set	1.00			-	84	
	Total						**7,640**	**113,500**	
	Per: one day						7,640	113,500	

PROCESS COST - 348

Concrete work for pier head

Per: 10 m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Concrete	Class A1	m3	10.40	634	530,187	6,594	5,513,945	k=÷0.04 ; Process cost - 149
2	Foreman		person	0.50	-	183,300	-	91,650	0.2*2.5
3	Skilled labor		person	5.75	-	170,100	-	978,075	2.3*2.5
4	Common labor		person	3.50	-	80,600	-	282,100	1.4*2.5
5	Concrete pump operation	pipe setting type 90~100 m3 / hr	hr	0.86	4,930	61,000	4,240	52,460	0.43*2;Equipment - 99
6	Dead head cost of concrete pump	pipe setting type 90~100 m3 / hr	day	0.12	9,860	121,700	1,183	14,604	0.06*2; Process cost - 347 (1)
7	Pressure pipe setting and removal		m3	10.00	-	3,800	-	38,000	Process cost - 343 (1)
8	Miscellaneous expenses	(labor cost)*7%	set	1.00	-	-	-	94,628	
	Total						**12,017**	**7,065.462**	
	Per: 1 m3						1,202	706.546	

PROCESS COST - 349

Concrete work for side span

Per: 10 m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Concrete	Class A1	m3	10.40	634	530,187	6,594	5,513,945	k=+0.04 ; Process cost - 149
2	Foreman		person	0.50	-	183,300	-	91,650	0.2*2.5
3	Skilled labor		person	5.75	-	170,100	-	978,075	2.3*2.5
4	Common labor		person	3.50	-	80,600	-	282,100	1.4*2.5
5	Concrete pump operation	setting type 90~100 m	hr	0.92	4,930	61,000	4,536	56,120	Equipment - 99
6	Dead head cost of concrete p	setting type 90~100 m	day	0.25	9,860	121,700	2,465	30,425	Process cost - 347 (1)
7	Miscellaneous expenses	(labor cost)*7%	set	1.00	-	-	-	94,628	
	Total						**13,594**	**7,046,943**	
	Per: 1 m3						1,359	704,694	

PROCESS COST - 350

Concrete work for center closing

Per: 10 m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Concrete	Class A1	m3	10.40	634	530,187	6,594	5,513,945	k=+0.04 ; Process cost - 149
2	Foreman		person	0.50	-	183,300	-	91,650	0.2*2.5
3	Skilled labor		person	5.75	-	170,100	-	978,075	2.3*2.5
4	Common labor		person	3.50	-	80,600	-	282,100	1.4*2.5
5	Concrete pump operation	pipe setting type 90~100 m3 / hr	hr	1.84	4,930	61,000	9,071	112,240	0.92*2; Equipment - 99
6	Dead head cost of concrete pump	pipe setting type 90~100 m3 / hr	day	0.50	9,860	128,000	4,930	64,000	0.25*2; Process cost - 347 (1)
7	Pressure pipe setting and removal		m3	10.00	-	27,900	-	279,000	Process cost - 343 (2)
8	Miscellaneous expenses	(labor cost)*7%	set	1.00	-	-	-	94,628	
	Total						**20,595**	**7,415,638**	
	Per: 1 m3						2,059	741,564	

PROCESS COST - 351

Concrete work for cantilever erection area

Per: 10 m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Concrete	Class A1	m3	10.40	634	530,187	6,594	5,513,945	k=+0.04 ; Process cost - 149
2	Foreman		person	0.50	-	183,300	-	91,650	0.2*2.5
3	Skilled labor		person	5.75	-	170,100	-	978,075	2.3*2.5
4	Common labor		person	3.50	-	80,600	-	282,100	1.4*2.5
5	Concrete pump operation	pipe setting type 90~100 m3 / hr	hr	1.84	4,930	61,000	9,071	112,240	0.92*2;Equipment - 99
6	Dead head cost of concrete pump	pipe setting type 90~100 m3 / hr	day	0.50	9,860	128,000	4,930	64,000	0.25*2; Process cost - 347 (1)
7	Pressure pipe setting and removal		m3	10.00	-	21,700	-	217,000	Process cost - 343 (3)
8	Miscellaneous expenses	(labor cost)*7%	set	1.00	-	-	-	94,628	
	Total						**20,595**	**7,353,638**	
	Per: 1 m3						2,059	735,364	

PROCESS COST - 352

Timbering base for box girder

Per: 10 m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Crusher run	2~40mm	m3	3.00	-	44,500	-	133,500	(Material - 111)*0.5
2	Sand	yellow sand	m3	0.20	-	50,000	-	10,000	Material - 100
3	Road roller		hr	0.01	1,206	48,000	12	480	Equipment - 40
4	Sheet pile	type II	ton	0.60	4,493	-	2,696	-	54*130 days
5	Foreman		person	0.13	-	183,300	-	23,829	0.05*2.5
6	Rigger		person	0.50	-	153,200	-	76,600	0.20*2.5
7	Common labor		person	1.00	-	80,600	-	80,600	0.40*2.5
8	Miscellaneous expenses	(labor cost)*4%	set	1.00	-	-	-	7,241	
	Total						**2,708**	**332,250**	
	Per: 1 m2						271	33,225	

Distribution of timbering base cost

	Ratio	Foreign (J. YEN)	Local (VN.D)
Concrete (5,070 m3)	0.86	387 / m3	35,426 / m3
Reinforcement steel (611.3 t)	0.10	387 / t	35,354 / t
PC cable (12T15.2) (177.2 t)	0.03	389 / t	35,523 / t
PC cable (7T12.7) (62.4 t)	0.01	405 / t	36,988 / t

PROCESS COST - 352 (2)

Setting and removal of timbering for box girder (L=60m)

Per: 100 air m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Depreciable value of timbering		set	1.00	107,200	-	107,200	-	
2	Foreman		person	1.25	-	183,300	-	229,125	0.5*2.5
3	Rigger		person	5.00	-	153,200	-	766,000	2.0*2.5
4	Common labor		person	5.00	-	80,600	-	403,000	2.0*2.5
5	Miscellaneous expenses	(labor cost)*4%	set	1.00	-	-	-	55,925.00	
6	Truck crane	15 ~16 ton	hr	1.38	3,080	55,000	4,250	75,900	0.31*T;T=4.44; Equipment -18
	Total						**111,450**	**1,529,950**	
	Per: 1air m3						1,115	15,300	

Distribution of setting and removal cost of timbering

	Ratio	Foreign (J. YEN)	Local (VN.D)
Concrete (5,070 m3)	0.86	14,656 /m3	185,887 / m3
Reinforcement steel (611.3 t)	0.10	14,627 / t	185,509 / t
PC cable (12T15.2) (177.2 t)	0.03	14,697 / t	186,398 / t
PC cable (7T12.7) (62.4 t)	0.01	15,303 / t	194,085 / t

PROCESS COST - 353

Outer form fabrication work for box girder

Per: 10 m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Plywood panel	900x1,800x12mm	each	7.00	-	40,720	-	285,040	(Material - 130)*0.8
2	Timber		m3	0.40	-	927,220	-	370,888	(Material - 132)*0.7
3	Supplemental materials	(sum of above) *15%	set	1.00	-	-	-	98,389	
4	Foreman		person	0.25	-	183,300	-	45,825	0.1*2.5
5	Carpenter		person	3.75	-	111,700	-	418,875	1.5*2.5
6	Common labor		person	2.50	-	80,600	-	201,500	1.0*2.5
7	Miscellaneous expenses	(labor cost)*4%	set	1.00	-	-	-	26,648	
	Total						-	**1,447,165**	
	Per: 1 m2=(totalx1/3)x1/10						-	48,239	

PROCESS COST - 354

Outer form setting and removal work for box girder

Per: 10 m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	0.75	-	183,300	-	137,475	0.3*2.5
2	Carpenter		person	6.25	-	111,700	-	698,125	2.5*2.5
3	Common labor		person	3.75	-	80,600	-	302,250	1.5*2.5
4	Miscellaneous expenses	(labor cost)*4%	set	1.00	-	-	-	45,514	
5	Truck crane	15-16 ton	hr	0.89	3,080	55,000	2,741	48,950	0.2day*T ; T=4.44 Equipment -18
	Total						**2,741**	**1,232,314**	
	Per: 1 m2						274	123,231	

PROCESS COST - 355

Timbering of deck slab (overhanging) for box girder

Per: 100 air m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Frame		each	36.00	1,338	-	48,168	-	8.8*190 days
2	Brace		each	68.00	304	-	20,672	-	2.0*190 days
3	Round pipe	ϕ 48.6	m	106.00	78	-	8,268	-	0.51*190 days
4	Clamp		each	63.00	24	-	1,512	-	(Material- 160)*0.3*0.5
5	Jack base		each	69.00	162	-	11,178	-	(Material- 159)*0.3*0.5
6	Timber		m3	1.80	-	463,610	-	834,498	(Material- 132)*0.35
7	Supplemental materials	(sum of above) *5%	set	1.00	-	-	4,490	41,725	
8	Foreman		person	1.25	-	183,300	-	229,125	0.5*2.5
9	Rigger		person	5.00	-	153,200	-	766,000	2.0*2.5
10	Common labor		person	5.00	-	80,600	-	403,000	2.0*2.5
11	Carpenter		person	0.75	-	111,700	-	83,775	0.3*2.5
12	Truck crane	15-16 ton	hr	1.11	3,080	55,000	3,419	61,050	0.25day*T ; T=4.44 Equipment -18
13	Miscellaneous expenses	(labor cost)*4%	set	1.00	-		-	59,276	
	Total						**97,707**	**2,478,449**	
	Per: 1 air m3						977	24,784	

PROCESS COST - 356

Inner timbering of box girder

Per: 100 air m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Frame		each	23.00	1,338	-	30,774	-	8.8*190 days
2	Brace		each	42.00	304	-	12,768	-	2.0*190 days
3	Round pipe	F 48.6	m	78.00	78	-	6,084	-	0.51*190 days
4	Clamp		each	46.00	24	-	1,104	-	(Material- 160)*0.3*0.5
5	Jack base		each	94.00	162	-	15,228	-	(Material- 159)*0.3*0.5
6	Timber		m3	2.40	-	463,610	-	1,112,664	(Material- 132)*0.35
7	Supplemental materials	(sum of above) *5%	set	1.00	-	-	3,298	55,633	
8	Foreman		person	1.25	-	183,300	-	229,125	0.5*2.25
9	Rigger		person	5.25	-	153,200	-	804,300	2.1*2.5
10	Common labor		person	5.25	-	80,600	-	423,150	2.1*2.5
11	Carpenter		person	0.75	-	111,700	-	83,775	0.3*2.5
12	Truck crane	15-16 ton	hr	1.11	3,080	55,000	3,419	61,050	0.25day*T; T=4.44 Equipment -18
13	Miscellaneous expenses	(labor cost)*4%	set	1.00	-		-	61,614	
	Total						**72,675**	**2,831,311**	
	Per: 1 air m3						727	28,313	

PROCESS COST - 357

Tower crane foundation work

Per: 1set

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Form work		m2	150.50		86,805	-	13,064,153	Process cost - 38
2	Scaffolding		m2	200.00	282	43,132	56,400	8,626,400	Process cost - 307 (1)
3	Suspended timbering		m2	18.00	140	229,710	2,520	4,134,780	Process cost - 307 (2)
4	Reinforcement steel		ton	4.67	23,690	1,795,763	110,727	8,393,396	Process cost - 61
5	Concrete	class D1	m3	184.50	634	415,865	116,973	76,727,093	Process cost - 153
6	Concrete pump operation	pipe setting type ; 90 ~ 100 m3 /hr	m3	184.50	212	2,623	39,114	483,944	(Equipment - 99)*0.043
7	Dead head cost of concrete pump	pipe setting type ; 90 ~ 100 m3 /hr	day	0.28	9,860	121,700	2,761	34,076	0.14*2 ; Process cost - 347 (1)
8	Pressure pipe setting and removal		m3	184.50	-	2,200	-	405,900	Process cost - 343 (4)
9	Miscellaneous expenses	(Sum of above)*1%	set	1.00	-		3,285	1,118,697	
10	Demolition of concrete structure		m3	184.50	2,447	141,902	451,472	26,180,919	Process cost - 175
	Total						**783,251**	**139,169,357**	
	Per: 1 set						783,251	139,169,357	

PROCESS COST - 358

Setting and removal work of tower crane

Per: 1set

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	31.88	-	183,300	-	5,843,604	1*D*2.5
2	Skilled labor		person	191.25	-	170,100	-	32,531,625	6*D*2.5
3	Common labor		person	31.88	-	80,600	-	2,569,528	1*D*2.5
4	Barge with crane	40 ton	day	10.00	35,520	342,000	355,200	3,420,000	10 days ; Equipment -70
5	Tug boat	steel 200ps	hr	49.50	2,490	222,000	123,255	10,989,000	10 days *T ; T=4.95; Equipment -74
	Total						**478,455**	**55,353,757**	
	Per: 1 set						478,455	55,353,757	

D : Days in demand for setting removal= 0.25 W+0.125H; D=12.75 days

W : Weight of tower crane

H : Height of tower

PROCESS COST - 359

Inner form fabrication work for box girder

Per: 10 m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Plywood panel	900x1,800x12mm	each	7.00	-	40,720	-	285,040	(Material - 130)*0.8
2	Timber		m3	0.33	-	927,220	-	305,983	(Material - 132)*0.7
3	Supplemental materials	(sum of above) *15%	set	1.00	-	-	-	88,653	
4	Foreman		person	0.25	-	183,300	-	45,825	0.1*2.5
5	Carpenter		person	3.75	-	111,700	-	418,875	1.5*2.5
6	Common labor		person	2.50	-	80,600	-	201,500	1.0*2.5
7	Miscellaneous expenses	(labor cost)*4%	set	1.00	-	-	-	26,648	
	Total						-	**1,372,524**	
	Per: 1 m2={totalx1/2+totalx0.1x(2-1)}x1/10						-	82,351	

PROCESS COST - 360

Inner form setting and removal work for box girder

Per: 10 m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	0.75	-	183,300	-	137,475	0.3*2.5
2	Carpenter		person	6.25	-	111,700	-	698,125	2.5*2.5
3	Common labor		person	3.75	-	80,600	-	302,250	1.5*2.5
4	Miscellaneous expenses	(labor cost)*4%	set	1.00	-	-	-	45,514	
5	Truck crane	15-16 ton	hr	0.89	3,080	55,000	2,741	48,950	0.2day*T ; T=4.44 Equipment -18
							-		
	Total						**2,741**	**1,232,314**	
	Per: 1 m2						274	123,231	

PROCESS COST - 361 (1)

Steel sheet piling work (type IV,L=19m)

Per: 10 sheets

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Depreciable value of steel sheet pile		ton	14.46	9,620	-	139,105	-	10x19x0.0761=14.46; 148x65 days
2	Foreman		person	1.98	-	183,300	-	362,934	(10/N)*1*2.5
3	Rigger		person	3.97	-	153,200	-	608,204	(10/N)*2*2.5
4	Common labor		person	1.98	-	80,600	-	159,588	(10/N)*1*2.5
5	Vibrohammer	60KW	hr	3.61	7,920	60,000	28,591	216,600	(10/N)xT ; T=4.55; Equipment - 27
6	Generator	200KVA	day	0.79	7,920	464,000	6,257	366,560	10/N ; Equipment - 48
7	Barge with crane	40 Ton	day	0.79	35,520	342,000	28,061	270,180	10/N ; Equipment - 70
8	Tug boat	200ps	hr	3.85	2,490	222,000	9,587	854,700	(10/N)xT ; T=4.85; Equipment - 74
9	Miscellaneous expenses	(labor cost)*4%	set	1.00	-	-	-	45,229	
	Total						**211,601**	**2,883,995**	
	Per: 1 sheet						21,160	288,400	

N=n*E*F , F=1.0+(f1+f2)

N: Number of steel sheet piling per a day; 12.6

n: Standard number of steel sheet type IV piling per a day ; 19

E: Efficiency of piling work on the barge ; 0.7

F: Fractror related with working condition ; 0.95

f1=0.05 ; f2=0

L : length of steel sheet pile ; 19m

Soil condition	
N-value	Depth
N<5	13m
N=15	1m

PROCESS COST - 361 (2)

Removal of steel sheet piling

Per: 10 sheets

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Repair cost of steel sheet pile type IV		ton	14.46	5,150	-	74,469	-	(Material -170)*0.07
2	Foreman		person	1.19	-	183,300	-	218,127	(10/N)*1*2.5
3	Rigger		person	2.38	-	153,200	-	364,616	(10/N)*2*2.5
4	Common labor		person	1.19	-	80,600	-	95,914	(10/N)*1*2.5
5	Vibrohammer	60KW	hr	2.17	7,920	60,000	17,186	130,200	(10/N)xT ; T=4.55; Equipment - 27
6	Generator	200KVA	day	0.48	7,920	464,000	3,802	222,720	10/N ; Equipment - 48
7	Barge with crane	40 Ton	day	0.48	35,520	342,000	17,050	164,160	10/N ; Equipment - 70
8	Tug boat	200ps	hr	2.31	2,490	222,000	5,752	512,820	(10/N)xT ; T=4.85; Equipment - 74
9	Miscellaneous expenses	(labor cost)*4%	set	1.00	-	-	-	27,146	
	Total						**118,259**	**1,735,703**	
	Per: 1 sheet						11,826	173,570	

N=n*E

N: Number of steel sheet piling per a day; 21

n: Standard number of steel sheet type IV piling per a day ; 30

E: Efficiency of extracting steel sheet pile ; 0.7

PROCESS COST - 362 (1)

Setting and removal of brace and wale

Per: 10 ton

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	6.50	-	183,300	-	1,191,450	(1.6+1.0)*1*2.5
2	Rigger		person	13.00	-	153,200	-	1,991,600	(1.6+1.0)*2*2.5
3	Welder		person	6.50	-	111,700	-	726,050	(1.6+1.0)*1*2.5
4	Common labor		person	13.00	-	80,600	-	1,047,800	(1.6+1.0)*2*2.5
5	Miscellaneous expenses	(labor cost)*4%	set	1.00	-	-	-	198,276	
6	Barge with crane	40 Ton	day	2.00	35,520	342,000	71,040	684,000	1.0day+1.0 day; Equipment - 70
7	Tug boat	200ps	hr	9.70	2,490	222,000	24,153	2,153,400	2*(1.0 dayxT) ; T=4.85;Equipment-74
8	Welding machine	250 A	day	1.40	1,390	31,000	1,946	43,400	1.0 day +0.4 Equipment - 55
	Total						**97,139**	**8,035,976**	
	Per: 1 ton						9,714	803,598	

PROCESS COST - 362 (2)

Depreciable value and expenses of wale and brace

Per: 1set

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Depreciable value of H steel	400x400x13x21	ton	48.50	2,240	-	108,640	-	16.168tx3=48.50 32x70 days = 2240
2	Depreciable value of H steel	350x350x12x19	ton	56.43	2,310	-	130,353	-	28.215 tx2 = 56.43 33 x 70 days = 2310
3	H steel (Brace)	350x350x12x19	ton	28.22	36,000	-	1,015,920	-	third stage brace
4	H steel (Angle brace)	350x350x12x19	ton	32.08	36,000	-	1,154,880	-	10.692 t x3=32.08 Material - 155
5	H steel (post)	300x300x10x15	ton	18.60	34,200	-	636,120	-	10.692 t x3=32.08 Material - 156
6	Subtraction of scrap of H ste	350x350x12x19	ton	32.08	18,000	-	(577,440)	-	36.000x0.5=18.000 (Material - 155) x 0.500
7	Subtraction of scrap of H ste	300x300x10x15	ton	9.30	10,260	-	(95,418)	-	(Material - 156) x 0.30
8	Repair cost of H steel	44x400x13x21	ton	48.50	2,633	-	127,701	-	(Material -117)*0.075
9	Repair cost of H steel	350x350x12x19	ton	56.43	2,700	-	152,361	-	(Material -155)*0.075
	Total						**2,653,117**	-	
	Per: 1 set						2,653,117	-	

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PROCESS COST - 363

Scaffolding work for pier

Per: 100 multiplied m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	3.75	-	183,300	-	687,375	1.5*2.5
2	Rigger		person	5.75	-	153,200	-	880,900	2.3*2.5
3	Common labor		person	7.75	-	80,600	-	624,650	3.1*2.5
4	Barge with crane	40 Ton	day	0.80	35,520	342,000	28,416	273,600	Equipment - 70
5	Tug boat	200ps	hr	3.88	2,490	222,000	9,661	861,360	0.8xT ; T=4.85; Equipment - 74
6	Miscellaneous expenses	(sum of above)*10%	set	1.00	-	-	3,808	332,789	
	Total						**41,885**	**3,660,674**	
	Per: 1 m2						419	36,607	

PROCESS COST - 364

Tower crane cost

Per: one set

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Depreciable value of Tower crane		day	240.00	18,780	90.000	4,507,200	21,600,000	240 days ; Equipment - 96
2	Foundation for Tower crane		set	1.00	735,174	136,510,400	735,174	136,510,400	Process cost - 357
3	Setting and removal of Tower crane		set	1.00	478,455	55,353,757	478,455	55,353,757	Process cost - 358
4	Generator	20KVA	day	192.00	1,980	50,000	380,160	9,600,000	240x0.8=192 ; Equipment - 106
5	Mechanican		person	120.00	-	111,700	-	13,404,000	6*2.5*8 months
6	Electrician		person	40.00	-	111,700	-	4,468,000	2*2.5*8 months
7	Miscellaneous expenses	(Labor cost)*10%	set	1.00			-	1,787,200	
	Total						**6,100,989**	**242,723,357**	
	Per: one set						6,100,989	242,723,357	
	Per: two sets						12,201,979	485,446,715	

D: Days in demand ; 240 days

D=Ds+Dc+Dt

DS: Days in demand for setting and removal ; 13 days

Ds=D=0.25W+0.125H ;

W : Weight of tower crane ; 32 t

H : Height of tower crane ; 40m

Dt: Transportation days ; 4 days

Dc: Days in demand for pier head and cantilever erection work ; 223 days

Distribution of tower crane cost (2 sets)				
Cantilever erection bridge	Quantities	Ratio	Foreign(J.YEN)	Local (VN.D)
Concrete work	3595 m3	0.846	4,849	129891
Reinforcement steel work	462.611 t	0.109	4,855	130052
PC Cable work (12T12.7)	147.762 t	0.035	4,881	130741
PC Cable work (7T12.7)	41.381 t	0.010	4,980	133385

PROCESS COST - 364 (2)

Tower crane cost

Per: one set

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Tower crane foundation work		set	1.00	735,174	136,510,400	735,174	136,510,400	Process cost - 357
2	Setting and removal of Tower crane		set	1.00	478,455	55,353,757	478,455	55,353,757	Process cost - 358
3	Tower crane	(Operating time)	day	188.00	18,780	90,000	3,530,640	16,920,000	Equipment - 96
4	Tower crane	(Preparation time)	day	51.00	18,780	90,000	957,780	4,590,000	Equipment - 96
5	Generator	100KVA	day	188.00	4,100	230,000	770,800	43,240,000	Equipment - 50
6	Mechanical		person	120.00	-	111,700	-	13,404,000	8*6*2.5
7	Electrician		person	40.00	-	111,700	-	4,468,000	8*2*2.5
8	Miscellaneous expenses	(Labor cost)*10%	set	1.00			-	1,787,200	
	Total						**6,472,849**	**276,273,357**	
	Per: one set						6,472,849	276,273,357	
	Per: two sets						12,945,699	552,546,715	

Distribution of tower crane cost (2 sets)

Cantilever erection bridge	Quantities	Ratio	Foreign(J.YEN	Local (VN.D)
Concrete work	3595 m3	0.8460	5,141	145,675
Reinforcement steel work	462.611 t	0.1090	5,147	145,855
PC Cable work (12T12.7)	147.762 t	0.0350	5,174	146,628
PC Cable work (7T12.7)	41.381 t	0.0100	5,279	149,593

PROCESS COST - 365

Track way work for erection girder

Per: 10m

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign	Local	Foreign	Local	
					(J.YEN)	(VN. D)	(J.YEN)	(VN. D)	
1	Foreman		person	0.50	-	183,300	-	91,650	0.2*2.5
2	Skilled labor		person	2.25	-	170,100	-	382,725	0.9*2.5
3	Common labor		person	2.25	-	80,600	-	181,350	0.9*2.5
4	Miscellaneous expenses	(sum of above)*1.0%	set	1.00	-	-	-	6,557	
	Total						-	**662,282**	
	Per: 1 m						-	66,228	

PROCESS COST - 366

Equipment depreciable value for erection work by erection girder

Per: one set

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Erection girder	30<L<35	day	168	28,200	-	4,737,600	-	D = 168 ;Equipment - 85
2	Girder suspension equipment	30 ton type	day	336	22,100	-	7,425,600	-	2 * D; Equipment - 86
3	Girde side loading equipmer	30 ton type	day	168	15,700	-	2,637,600	-	D=168,Equipment - 87
4	Girder drawing out equipmer	30ton type	day	168	15,900	-	2,671,200	-	D=168,Equipment - 88
5	Tool for erection		day	168	5,570	-	935,760	-	D=168,Equipment - 89
6	Track way facility	30 kg/m rail etc...	day	403	2,090	-	842,270	-	L*D*(1/100)
7	Miscellaneous expenses	(sum of above)*1%	set	1	-	-	192,500	-	
	Total						**19,442,530**	-	
	Per: one set						19,442,530	-	

D : Days in demand [14.5+4*(number of span-1)+total weight of girder * 1/56]*1.6*2
=[14.5+4*3+1440*1/56]*1.6*2=167.1 → 168

L : Track length in demand Ls+(Ls+1)*2+5+(number of span) *Ls=238 →240

Total weght of girder ;1440
Number of span;4
Ls ; legth of one girder;33

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PROCESS COST - 367

Main girder erection with erection girder

Per : 1 ton

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	2.50	-	183,300	-	458,250	1* 2.5
2	Skilled labor		person	15.00	-	170,100	-	2,551,500	6*2.5
3	Common laboe		person	10.00	-	80,600	-	806,000	4*2.5
4	Miscellaneous expenses	(labor cost) * 4%	set	1.00			-	152,630	
	Total						-	**3,968,380**	
	Per 1 ton = Total /60 ton/ day						-	66,140	

PROCESS COST - 368

Truck crane cost for assembling and disassembling of erection girder facility

Per: one set

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Truck crane	hydraulic 40-45 ton	hr	31.08	7,320	68,000	227,506	2,113,440	7 days * T; T = 4.44; Equiment - 16
2	Truck	4-4.5 ton	hr	14.48	850	51,000	12,308	738,480	1* 2 * 2 * T; T = 3.62; Equipment - 35
3	Skilled labor		person	4.00	-	170,100	-	680,400	2 times * 0.8 * 2.5
4	Miscellaneous expenses	(labor cost) * 7%	set	1.00			-	47,628	
	Total						**239,814**	**3,579,948**	
	Per: one set						239,814	3,579,948	

PROCESS COST - 369

Assembling and dissasembling of ercetion girder facility

Per one set

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign	Local	Foreign	Local	
					(J.YEN)	(VN. D)	(J.YEN)	(VN. D)	
1	Foreman		person	30.00	-	183,300	-	5,499,000	12 days * 1 * 2.5
2	Skilled labor		person	165.00	-	170,100	-	28,066,500	12 days * 5.5 * 2.5
3	Common labor		person	105.00	-	80,600	-	8,463,000	12 days * 3.5* 2.5
4	Miscellaneous expenses	(labor cost) * 4%	set	1.00	-		-	1,681,140	
5	Truck crane cost		hr	31.08	7,320	68,000	227,506	2,113,440	7 day*T;T=4.44; Equipment - 16
	Total						**227,506**	**45,823,080**	
	Per :one set						227,506	45,823,080	

PROCESS COST - 370

Movement of erection girder frame

Per : 1 time (4 days)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign	Local	Foreign	Local	
					(J.YEN)	(VN. D)	(J.YEN)	(VN. D)	
2	Foreman		person	2.00	-	183,300	-	366,600	4 days * 0.2* 2.5
3	Skilled labor		person	16.00	-	170,100	-	2,721,600	4 days *1.6 * 2.5
1	Common labor		person	10.00	-	80,600	-	806,000	4 days * 1.0 * 2.5
4	Miscellaneous expenses	(labor cost) * 4%	set	1.00			-	155,768	
	Total						-	**4,049,968**	
	Per: 1 time						-	4,049,968	

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PROCESS COST - 371

Anchor work for erection girder work

Per one place

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Regular sleeper	2.1*0.14*0.2m	m3	2.47	-	1,272,727	-	3,143,636	Material -133
2	Wire rope	Φ 16	m	210.00	-	20,000	-	4,200,000	Material - 32
3	Supplemental materials	(sum of above) *1%	set	1.00	-	-	-	73,436	
3	Foreman		person	7.00	-	183,300	-	1,283,100	14*0.2*2.5
4	Skilled labor		person	14.00	-	170,100	-	2,381,400	14*0.4*2.5
5	Common labor		person	32.20	-	80,600	-	2,595,320	14*0.9*2.5
6	Miscellaneous expenses	(labor cost) * 4%	set	1.00			-	250,393	
							-		
	Total						-	**13,927,285**	
							-		
	Per: one place=total/14						-	994,806	

No of span	Erection girder anchor	Draw out anchor	total
1	6	2	8
2	8	2	10
3	10	2	12
4	12	2	14

PROCESS COST - 372

Transportation of erection girder facility

Per :1 set

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Truck	11 ton	hr	63.00	2,210	67,000	139,230	4,221,000	9 trucks * 2 * 3.5 hr ; Equipment - 34
2	Truck crane	hydraulic 15-16 ton.	hr	31.50	3,080	55,000	97,020	1,732,500	9 trucks * 3.5 ; Equipment - 18
3	Skilled labor		person	7.88	-	170,100	-	1,340,388	9 trucks * 2 * 3.5 * 1/8
4	Miscellaneous expenses	(labor cost) * 4%	set	1.00			-	53,616	
							-		
	Total						**236,250**	**7,347,504**	
	Per :1 set						236,250	7,347,504	

PROCESS COST - 373(1)

Perevention work against overturning of main girder

Per :1 girder

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
*	(During transpostation)								
1	Timber		m3	0.20	-	1,324,600	-	264,920	Material - 132
2	Supplemental materials	(sum of above) *5%	set	1.00	-	-	-	13,246	
3	Skilled labor		person	0.50	-	170,100	-	85,050	0.2*2.5
	Subtotal						-	363,216	
	Per 1 girder=subtotal*1/5						-	72,643	a)
*	(During setting girder)						-		
5	Skilled labor		person	0.13	-	170,100	-	22,113	0.05*2.5
6	Miscellaneous expenses	(labor cost) * 4%	set	1.00			-	885	
	Subtotal						-	22,998	
	Per 1 girder						-	22,998	b)
	Per :1 girder = a)+b)						-	95,641	

PROCESS COST - 373 (2)

Transient placing of PC I girder

Per :1 girder

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Timber		m3	0.35	-	1,324,600	-	463,610	Material -132
2	Supplemental materials	(sum of above) *10%	set	1.00	-	-	-	46,361	
3	Foreman		person	1.25	-	183,300	-	229,125	0.5*2.5
4	Skilled labor		person	7.75	-	170,100	-	1,318,275	3.2*2.5
5	Common labor		person	4.75	-	80,600	-	382,850	1.9*2.5
6	Miscellaneous expenses	(labor cost) * 4%	set	1.00	-		-	77,210	
7	Prevention work		girder	1.00	-	95,641	-	95,641	Process cost - 373(1)
	Total						-	**2,613,072**	
	Per: 1 girder						-	2,613,072	

PROCESS COST - 374 (1)

Equipment depreciable value of fabrication work (PC I girder)

Per one set (PC I girder; L = 33m)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Tensioning jack	195 ton	set.day	294.00	2,300	-	676,200	-	(A+D) * 2 set =294 Equipment - 54
2	Gantry crane	3.0 ton	set.day	140.00	2,850	-	399,000	-	(A+B) = 140 ; Equipment -118
3	Track way facility	30 kg / m	100m.day	260.00	2,090	-	543,400	-	L=186 m ; (L/100)*(A+B) = 260
4	Other instruments		day	137.00	24,600	-	3,370,200	-	A = 168; Equipment - 90
5	Miscellaneous expenses	(sum of above)*1.5%	set	1.00		-	74,832	-	
	Total						**5,063,632**	-	
	Per: one set						5,063,632	-	

A = [N/S + (S-1)/S] * 14 days = [36/4 + (4 -1)/4] *14 = 136.5 → 137

A: Days in demand

N: Number of fabrication girder ; 36

S: Number of fabrication stand ; 4

B: Gantry crane and track facility removal days ; 3

D: Tensioning jack transportation days; 10

L : Length of track

L = {(33+1) * 2 + 5 + 10 * 2 }* 2 tracks = 186 m

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PROCESS COST - 374 (2)

Equipment depreciable value of fabrication work (PC I girder)

Per :one set (PC I girder; L = 33m)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Tensioning jack	195n	set.day	264.00	2,300	-	607,200	-	(A+D) * 2 set = 264; Equipment - 54
2	Gantry crane	3.0 ton	set.day	125.00	2,850	-	356,250	-	(A+B) = 125 ; Equipment -118
3	Track way facility	30 kg / m	100m.day	233.00	2,090	-	486,970	-	L = 186 m; (L/100)*(A+B) = 233
4	Other instruments		day	122.00	24,600	-	3,001,200	-	A = 122; Equipment - 90
5	Miscellaneous expenses	(sum of above)*1.5%	set	1.00			66,774	-	
								-	
	Total						**4,518,394**	-	
								-	
	Per: one set						4,518,394	-	

A = [N/S + (S-1)/S] * 14 days = [24/3 + (3-1)/3] *14 = 121.3 → 122

A: Days in demand

N: Number of fabrication girder ; 24

S: Number of fabrication stand ; 3

B: Gantry crane and track facility removal days ; 3

D: Tensioning jack transportation days; 10

L : Length of track

L = {(33+1) * 2 + 5 + 10 * 2 }* 2 tracks = 186 m

PROCESS COST - 375

Track way work for gantry crane

Per 2 tracks * 100m

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	5.00	-	183,300	-	916,500	2 * 2.5
2	Skilled labor		person	20.00	-	170,100	-	3,402,000	8 * 2.5
3	Common labor		person	40.00	-	80,600	-	3,224,000	16 * 2.5
4	Miscellaneous expenses	(labor cost) * 4%					-	301,700	
							-		
	Total						-	**7,844,200**	
	Per :2 tracks * 1m						-	78,442	

PROCESS COST - 376

Setting and removal of gantry crane

Per : 1 set

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Truck crane	15-16 ton	hr	13.30	3,080	55,000	40,964	731,500	3 days*T;T=4.44, Equipment-18
2	Skilled labor		person	6.25	-	170,100	-	1,063,125	2.5*2.5
3	Common labor		person	10.25	-	80,600	-	826,150	4.1*2.5
4	Elictrican		person	5.00	-	111,700	-	558,500	2.0*2.5
5	Miscellaneous expenses	(labor cost) * 4%					-	127,171.00	
	Total						**40,964**	**3,306,446**	
	Per :1 set						40,964	3,306,446	

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PROCESS COST - 377

Breaking work with Large - sized breaker (1300 kg)

Per: 1hr

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Equipment operator		person	0.20	-	124,600	-	24,920	Back hoe 0.6m3
2	Fuel		liter	19.50	-	3,273	-	63,824	Back hoe 0.6m3
3	Lubricant oil		set	1.00	-	-	-	3,191	5%
4	Owning cost	Back hoe	hr	1.00	2,560	-	2,560	-	
	of Equipment	Large side breaker	day	0.18	10,860	-	1,955	-	1/t=0.18 ; t=880/160=5.5; Equipment - 105
5	Adjustment		set	1.00			5	65	
	Total						**4,520**	**92,000**	

PROCESS COST - 377 (2)

Breaking work with Large - sized breaker (600~800 kg)

Per: 1hr

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Equipment operator		person	0.20	-	124,600	-	24,920	Back hoe 0.6m3
2	Fuel		liter	19.50	-	3,273	-	63,824	Back hoe 0.6m3
3	Lubricant oil		set	1.00	-	-	-	3,191	5%
4	Owning cost	Back hoe	hr	1.00	2,560	-	2,560	-	1930*1.1+9370/4.0=4466
	of Equipment	Large side breaker	day	0.18	6,660	-	1,199	-	1/t=0.18 ; t=880/160=5.5; Equipment - 8
5	Adjustment		set	1.00			1	65	
	Total						**3,760**	**92,000**	

PROCESS COST - 378

Concrete placing (with gantry crane)

Per: 10m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	0.75	-	183,300	-	137,475	0.3*2.5
2	Skilled labor		person	5.75	-	170,100	-	978,075	2.3*2.5
3	Common labor		person	4.25	-	80,600	-	342,550	1.7*2.5
4	Miscellaneous expenses	(labor cost) * 4%					-	58,324	
	Total						-	**1,516,424**	
	Per 1 m3						-	151,642	

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PROCESS COST - 379

Temporary access road for transportation and erection

Per: 6 girder

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Floor plate	t=20mm	m2.day	76.80	710	-	54,528	-	1.6 days*24m2*2 cranes W = 157 kg / m2
2	Miscellaneous expenses	(sum of above)*1%	set	1.00			545	-	
	Total						**55,073**	-	
	Per :1 girder						9,179	-	

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PROCESS COST - 380

Truck crane (120t) assembling and disassembling

Per : 1 crane

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Mechanics		person	2.50	-	111,700	-	279,250	1.0*2.5
2	Skilled labor		person	4.50	-	170,100	-	765,450	1.8*2.5
3	Rigger		person	3.50	-	153,200	-	536,200	1.4*2.5
4	Common labor		person	1.50	-	80,600	-	120,900	0.6*2.5
5	Miscellaneous expenses	(labor cost) * 4%	set	1.00			-	68,072	
6	Truck crane	20-22 ton	hr	8.88	3,520	55,000	31,258	488,400	2 times*T;T=4.44; Equipment-17
7	Trailer	32 ton	hr	7.30	3,420	87,000	24,966	635,100	T*2 times;T=3.65 ; Equipment - 36
8	Trailer	28 ton	hr	7.30	3,190	87,000	23,287	635,100	T*2 times;T=3.65 ; Equipment - 37
	Total						**79,511**	**3,528,472**	
	Per : 1 crane						79,511	3,528,472	

PROCESS COST - 381(1)

Erection and setting of main girder (truck crane)

Per : 6girder

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	1.25	-	183,300	-	229,125	1*2.5
2	Skilled labor		person	10.00	-	170,100	-	1,701,000	8*2.5
4	Common labor		person	6.25	-	80,600	-	503,750	5*2.5
5	Miscellaneous expenses	(labor cost) * 4%	set	1.00			-	97,355	
6	Truck crane	hydraulic 120 ton	hr	8.88	24,600	99,000	218,448	879,120	2crane*T;T=4.44 ; Eequipment - 15
	Total						**218,448**	**3.410,350**	
	Per : 1girder = Total*60/225						58,253	909,427	

Wt : Setting weight of girder with 120 ton truck cranes ; 225 ton/day

Wg : Weight of one girder ; 60 ton

PROCESS COST - 381(2)

Main girder erection (truck crane)

Per : 6 girder

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	2.50	-	183,300	-	458,250	1*2.5
2	Skilled labor		person	20.00	-	170,100	-	3,402,000	8*2.5
4	Common labor		person	12.50	-	80,600	-	1,007,500	5*2.5
5	Miscellaneous expenses	(labor cost) * 4%	set	1.00			-	194,710	
6	Truck crane	120 ton	hr	8.88	24,600	99,000	218,448	879,120	1.0 day*2crane*T;T=4.44 ; Eequipment - 15
	Total						**218,448**	**5,941,580**	
	Per : 1 girder=total*60/360						36,448	990,263	

Wt : Setting weight of girder with 120 ton truck cranes ; 360 ton/day

Wg : Weight of one girder ; 60 ton

PROCESS COST - 382

Transportation of main gider

Per : 1 girder

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	2.50	-	183,300	-	458,250	1*2.5
2	Skilled labor		person	20.00	-	170,100	-	3,402,000	8*2.5
4	Common labor		person	12.50	-	80,600	-	1,007,500	5*2.5
5	Miscellaneous expenses	(labor cost) * 4%	set	1.00			-	194,710	
	Total						-	**5,062,460**	
	Per : 1 girder=total*60/225						-	1,349,989	

Wt : Setting weight of girder with 120 ton truck cranes ; 225 ton/day

Wg : Weight of one girder ; 60 ton

PROCESS COST - 383 (1)

Production cost of steel form (PC I Girder)
Per 10m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Steel plate	3.2mm ~ 9.0mm	kg	699.30	37	-	25,874	-	Material - 1
2	Shaped steel	FB 4.5x6 ~ 9x10	kg	112.80	45	-	5,076	-	Material - 3
3	"	L50x50x6 ~ 75x75x9	kg	103.30	-	4,200	-	433,860	Material - 4
4	"	RB f 9 ~ 19mm	kg	3.80	-	3,890	-	14,782	Material - 6
5	Steel pipe	SGP 25A ~ 50A	kg	26.00	108	-	2,808	-	Material - 10
	Sub total			946.40	-	-	33,758	448,642	
6	Subtraction of scrap		kg	52.80	19	809	(1,003)	(42,715)	(946.4-871.0)x0.7
	Balance total		kg		-	-	**32,755**	**405927**	
7	Direct labor cost		person	11.36	-	80,600	-	915,616	12 person/ton * 0.9464
8	Sub material	(material)*20%	set	1.00	-	-	6,551	81,185	
9	Painting cost		m2	22.00	-	2,900	-	63,800	
10	Secondary labor cost	(direct labor cost)*125%	set	1.00	-	-	-	1,144,520	
11	Miscellaneous expenses	(sum of above)*12.5%	set	1.00	-	-	4,913	326,381	
	Total						**44,219**	**2,937,429**	

PROCESS COST - 383 (2)

Install forms and strip form (Steel form)

Per: 10m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign	Local	Foreign	Local	
					(J.YEN)	(VN. D)	(J.YEN)	(VN. D)	
1	Foreman		person	0.50	-	183,300	-	91,650	0.2*2.5
2	Shuttering carpenter		person	1.50	-	111,700	-	167,550	0.6*2.5
3	Common labor		person	1.00	-	80,600	-	80,600	0.4*2.5
6	Miscellaneous expenses	(sum of above)*5%	set	1.00	-	-	-	16,990	
	Total						-	**356,790**	
	Per: 1 m2						-	35,679	

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PROCESS COST - 384 (1)

Production cost and depreciable value of steel form (PC I Girder)

Per: 10m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Production cost and depreciable value		set	1.00	44,219	2,937,429	44,219	2,937,429	Process cost - 383 (1)
2	Cost of transportation		kg	871.00	-	300	-	261,300	
3	Supplemental expenses	(sum of above) *1%	set	1.00	-	-	-	31,987	
							-		
	Total						**44,219**	**3,230,716**	
	Per: 1 m2 = (Total cost /36)*4*1/10						491	87,455	A
	Per: 1 m2 = (Total cost /36)*4*1/10*1/100						5	359	B

Depreciable value of form per 1.0 m2 = (Total cost / frequency of use) * set number of forms * 1 / 10

= (total cost / 36) * 4 *1 / 10

= (total cost / 36) * 4 *1 / 10*1/100

PROCESS COST - 384 (2)

PC I Girder form work (steel form)

Per: 1 m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Production cost and depreciable value		m2	1.00	491	87,455	491	87,455	A of Process cost - 384 (1)
2	Install forms and strip form		m2	1.00	-	35,679	-	35,679	Process cost - 383 (2)
	Total						**491**	**123,134**	
	Per: 1 m2						491	123,134	

PROCESS COST - 384 (3)

PC I Girder form work (steel form) (Numbers of girder : 24 ; form 3 set)

Per: 1 m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Production cost and depreciable value		m2	1.00	5	359	5	359	B of Process cost - 384 (1)
2	Install forms and strip form		m2	1.00	-	35,679	-	35,679	Process cost - 383 (2)
	Total						**5**	**36,038**	
	Per: 1 m2						5	36,038	

PROCESS COST - 384 (6)

Reinforcement steel work (PC I Girder)

Per: 1 ton

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Reinforcement steel bar	ϕ 13~ϕ 19	ton	1.05	23,000	-	24,150	-	1+K ; K=+0.05; Material - 29
2	Foreman		person	0.75	-	183,300	-	137,475	0.3*2.5
3	Steel worker		person	5.00	-	111,700	-	558,500	2.0*2.5
4	Common labor		person	3.50	-	80,600	-	282,100	1.4*2.5
5	Miscellaneous expenses	(labor cost)*4%	set	1.00	-	-	-	39,123	
	Total						**24,150**	**1,017,198**	
	Per: 1 ton						24,150	1,017,198	

PROCESS COST - 385

Bottom plate subcontract fabrication cost

Per: 10 m (with of girder bottom B=0.65 m)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Steel plate	6-16mm	kg	659.23	37	-	24,392	-	B/0.5*507.1 ; Material-1
2	Shaped steel	FB6*65	kg	98.67	45	-	4,440	-	B/0.5*75.9; Material-3
3	"	L50x50x6 ~ 65*65*6	kg	300.04	-	4,200	-	1,260,168	B/0.5*230.8 ; Material-4
4	"	RB ϕ 15mm	kg	3.51	-	3,840	-	13,478	B/0.5*2.7 ; Material-7
	Sub total				-	-	28,832	1,273,646	
6	Subtraction of scrap		kg	55.33	8	804	(443)	(44,484)	B/0.5*(816.5-755.7)*0.7
	Balance total				-	-	28,389	1,229,163	
7	Direct labor cost		person	10.61	-	80,600	-	1,022,219	10 person/ton*B/0.5*0.8165
8	Sub material	(material)*20%	set	1.00	-	-	5,678	245,833	
9	Painting cost		m2	18.20	-	2,900	-	52,780	B/0.5*14.0
10	Secondary labor cost	(direct labor cost)*125%	set	1.00	-	-	-	1,277,774	
11	Miscellaneous expenses	(sum of above)*12.5%	set	1.00	-	-	4,258	478,471	
	Total						**38,325**	**4,306,238**	
	Per 1 m						3,833	430,624	

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PROCESS COST - 386

Main girder fabrication stand (steel form)

Per: 10 m (with of girder bottom B=0.65 m)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Bottom plate	6-16mm	m	10.00	3,833	430,624	38,325	4,306,238	process cost - 385
2	Timber		m3	0.99	-	1,324,600	-	1,308,705	B/0.5*0.7 ; Material - 132
3	Cobble stone		m3	2.60	-	63,000	-	163,800	B/0.5*2.0 ; Material - 109
4	Supplemental expenses	(sum of above) *5%	set	1.00			1,916	288,937	
	Sub total						40,241	6,067,680	
5	Foreman		person	0.25	-	183,300	-	45,825	0.1*2.5
6	Shuttering capenter		person	1.00	-	111,700	-	111,700	0.4*2.5
7	Welder		person	2.50	-	111,700	-	279,250	1.0*2.5
8	Common labor		person	10.00	-	80,600	-	806,000	4.0*2.5
	Sub total						-	1,242,775	
	Total						**40,241**	**7,310,455**	
	Per: 1 Fabrication stand=total*(girder length+1.0)/10						136,821	24,855,549	

Girder length = 33.0 m

PROCESS COST - 387

rehabilitation of fabrication stand

Per: 1m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Carpenter		person	0.25	-	111,700	-	27,925	0.1*2.5
2	Miscellaneous expenses	(sum of above) * 4%	set	1.00			-	1,117	
	Total						-	**29,042**	
	Per: 1 Fabrication stand=total*{0.65*(33+1)}						-	641,828	

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PROCESS COST - 388

Steel rib material fabrication cost by subcontract for cantilever form

Per: 1ton

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Steel square pipe	100x100x3.2	kg	515.00	49	-	25,235	-	Material - 11
2	Light gauge shaped steel	150x50x20x3.2	kg	236.00	51	-	12,036	-	Material - 22
3	Angle steel	50x50x6	kg	40.00	31	-	1,240	-	Material - 36
4	Steel plate	50~90x4.5	kg	191.00	45	-	8,595	-	Material - 37
5	Carbon steel pile	25 A	kg	4.00	54	-	216	-	Material - 25
6	Carbon steel pile	30A	kg	13.00	54	-	702	-	Material - 26
7	Carbon steel pile	32A	kg	1.00	54	-	54	-	Material - 27
8	Common labor		person	20.00	-	80,600	-	1,612,000	8.0*2.5
9	Secondary labor cost	(labor cost) * 135%	set	1.00	-		-	2,176,200	
10	Miscellaneous expenses	(sum of above) *15%	set	1.00			7,212	568,230	
	Total						**55,290**	**4,356,430**	
	Per : 1 ton						55,290	4,356,430	

PROCESS COST - 389

Steel rib material fabrication cost for cantilever form

Per: 1ton

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Fabrication cost		ton	1.00	55,290	4,356,430	55,290	4,356,430	Process cost - 388
2	Transportation		ton	1.00	1,080	22,990	1,080	22,990	Truck 11 ton; Truck with crane
3	Miscellaneous expenses	(sum of above) * 1%	set	1.00	564	43,794	564	43,794	
4	Subtraction of scrap		ton	1.00	5,529		(5,529)	-	10 % of steel material cost
	Total						**51,404**	**4,423,214**	
	Per : 1 ton						51,404	4,423,214	

PROCESS COST - 390

Outer form fabrication (metal form) for cantilever

Per: 10 m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Fabrication cost		ton	0.38	51,404	4,423,214	19,534	1,680,821	Process cost - 389
2	Depreciable value of metal form		day	172.50	157	-	27,083	-	
3	Supplemental materials	(sum of above) * 2%	set	1.00			932	33,616	
4	Foreman		person	0.50	-	183,300	-	91,650	0.2*2.5
5	Carpenter		person	2.25	-	111,700	-	251,325	0.9*2.5
6	Common labor		person	0.35	-	80,600	-	28,210	1.4*2.5
7	Miscellaneous expenses	(labor cost) * 4%	set	1.00			-	14,847	
	Total						**47,548**	**2,100,470**	
	Per : one set = Total*S A * 1/10 ; S A = 109 m2						518,279	22,895,125	

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PROCESS COST - 391

Outer form setting and removal work for cantilever

Per: 10 m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	0.75	-	183,300	-	137,475	0.3*2.5
2	Carpenter		person	6.25	-	111,700	-	698,125	2.5*2.5
3	Common labor		person	2.75	-	80,600	-	221,650	1.1*2.5
4	Miscellaneous expenses	(labor cost) * 1%	set	1.00				10,573	
	Total						-	**1,067,823**	
	per : 1 m2						-	106,782	

PROCESS COST - 392 (1)

Inner form fabrication setting and removal work for cantilever

Per: 10 m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	1.25	-	183,300	-	229,125	0.5*2.5
2	Carpenter		person	8.25	-	111,700	-	921,525	3.3*2.5
3	Common labor		person	6.00	-	80,600	-	483,600	2.4*2.5
4	Miscellaneous expenses	(labor cost) * 10%	set	1.00				163,425	
	Total						-	1,797,675	
	per : 1 m2						-	179,768	

PROCESS COST - 392 (2)

Inner form fabrication for cantilever

Per: 10 m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Plywood panel	900x1800x12	each	7.00	-	40,720	-	285,040	(Material - 130)*0.8
2	Timber		m3	0.33	-	927,220	-	305,983	(Material - 132)*0.7
3	Supplemental materials	(sum of above) * 15%	set	1.00				88,653	
4	Foreman		person	0.25	-	183,300	-	45,825	0.1*2.5
5	Carpenter		person	3.75	-	111,700	-	418,875	1.5*2.5
6	Common labor		person	2.50	-	80,600	-	201,500	1.0*2.5
7	Miscellaneous expenses	(labor cost) * 4%	set	1.00				66,620	
	Total						-	**1.412,496**	
	Per : 1 m2 ={ Total*1/3+Total*0.1*(3-1)} * 1/10						-	75,333	

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PROCESS COST - 393

Inner form setting and removal work for cantilever

Per: 10 m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	0.75	-	183,300	-	137,475	0.3*2.5
2	Carpenter		person	6.25	-	111,700	-	698,125	2.5*2.5
3	Common labor		person	5.00	-	80,600	-	403,000	2.0*2.5
4	Miscellaneous expenses	(labor cost) * 4%	set	1.00				123,860	
	Total						-	**1,362,460**	
	per : 1 m2						-	136,246	

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PROCESS COST - 394

Scaffolding for setting and removal of branket

Per: 100 multiplied m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Frame		each	36.00	70	-	2,520	-	8.8*10days
2	Brace		each	66.00	16	-	1,056	-	2.0*10 days
3	Steel flat frame	1829x500	each	66.00	63	-	4,158	-	7.9*10 days
4	Round pipe	ϕ 48.6	m	200.00	4	-	800	-	0.51*10
5	Jack base		each	24.00	324	-	7,776	-	(Material -159)*0.3
6	Clamp		each	80.00	47	-	3,760	-	(Material -160)*0.3
7	Stanchion		each	14.00	19	-	266	-	2.4*10
8	Supplemental materials	(sum of above) * 15%	set	1.00			3,050	-	
9	Foreman		person	4.50	-	183,300	-	824,850	1.8*2.5
10	Rigger		person	17.25	-	153,200	-	2,642,700	6.9*2.5
11	Common labor		person	22.00	-	80,600	-	1,773,200	8.8*2.5
12	Miscellaneous expenses	labor cost *4%	set	1.00	-	-	-	209,630	
13	Barge with crane	25 Ton	day	0.28	21,900	302,000	6,132	84,560	1/T ; T=690/190 ; Equipment - 91
14	Tug boat	100ps	hr	1.39	1,310	120,000	1,821	166,800	0.28xT ; T=1040/210; Equipment - 75
	Total						**31,339**	**5,701,740**	
	Per: 1 multiplied m2						313	57,017	

PROCESS COST - 395

Inner timbering for cantilever

Per: 100 air m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign	Local	Foreign	Local	
					(J.YEN)	(VN. D)	(J.YEN)	(VN. D)	
1	Frame		each	23.00	81	-	1,863	-	8.8*11.5 days
2	Brace		each	42.00	18	-	756	-	2.0*11.5 days
3	Jack base		each	94.00	324	-	30,456	-	(Material -159)*0.3
4	Round pipe	Φ 48.6	m	78.00	5	-	390	-	0.51*11.5
5	Clamp		each	46.00	47	-	2,162	-	(Material -160)*0.3
6	Timber		m3	2.40	-	1,324,600	-	3,179,040	Material -132
7	Supplemental materials	(sum of above) * 5%	set	1.00			1,781	158,952	
8	Foreman		person	2.50	-	183,300	-	458,250	1*2.5
9	Rigger		person	10.50	-	153,200	-	1,608,600	4.2*2.5
10	Common labor		person	10.50	-	80,600	-	846,300	4.2*2.5
11	Carpenter		person	1.75	-	111,700	-	195,475	0.7*2.5
12	Miscellaneous expenses	labor cost *4%	set	1.00	-	-	-	124,345	
	Total						**37,408**	**6,570,962**	
	Per: 1 air m3						374	65,710	

PROCESS COST - 397

Curing of concrete work for cantilever

Per: 100 m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Curing compound		kg	10.00	450	-	4,500	-	Material - 171
2	Cover sheet		each	6.00	-	1,500	-	9,000	(Material -211)*0.05
3	Curing mat		m2	110.00	41	-	4,510	-	(Material -173)*0.10
4	Water hose	Φ 19mm	m	45.00	-	200	-	9,000	(Material -174)*0.05
5	Supplemental materials	(sum of above) * 3%	set	1.00			270	540	
6	Common labor		person	7.50	-	80,600	-	604,500	3.0*2.5
	Total						**9,280**	**623.040**	
	Per: 1 m2						93	6,230	

PROCESS COST - 398

Curing of concrete work for pier head and side span

Per: 100 m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Curing compound		kg	10.00	450	-	4,500	-	Material - 171
2	Cover sheet		each	6.00	-	1,500	-	9,000	(Material -211)*0.05
3	Curing mat		m2	110.00	41	-	4,510	-	(Material -173)*0.10
4	Water hose	ϕ 19mm	m	45.00	-	200	-	9,000	(Material -174)*0.05
5	Supplemental materials	(sum of above) * 3%	set	1.00			270	540	
6	Common labor		person	3.75	-	80,600	-	302,250	1.5*2.5
	Total						**9,280**	**320,790**	
	Per: 1 m2						93	3,208	

PROCESS COST - 398 (2)

Curing of concrete for substructure concrete and others

Per: 10m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Common labor		person	0.35	-	80,600	-	28,210	1.5*2.5
2	Miscellaneous expenses	labor cost *41%	set	1.00	-	-	-	11,566	
	Total						-	39,776	
	Per: 1 m3						-	3,978	

PROCESS COST - 399

Main girder construction joint roughening work

Per: 1.0 m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Skilled labor		person	0.88	-	170,100	-	148,838	0.35*2.5
	Total						-	148,838	
	Per: 1 m2						-	148,838	

PROCESS COST - 400

Longitudinal pre-stressing steel setting work (SWPR 7B;12T12.7) (Cantilever erection bridge)
Per: 1ton

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	PC cable	12 T 12.7	ton	1.06	230,000	-	243,800	-	1+K ; K=+0.06 ; Material - 203
2	Sheath	ϕ 65	m	108	308	-	33,264	-	1+K ; K=+0.08 , Material - 161
3	Reinforcing bar	D 16	kg	84	23	-	1,932	-	Material - 29
4	Supplemental materials	(sum of above)*1%	set	1	-		-	-	
5	Foreman		person	11	-	183,300	-	2,016,300	4.4*2.5
6	Skilled labor		person	58.25	-	170,100	-	9,908,325	23.3*2.5
7	Common labor		person	43.25	-	80,600	-	3,485,950	17.3*2.5
8	Miscellaneous expenses	(labor cost) * 4%	set	1			-	616,423	
9	Tower crane cost		ton	1	5,174	146,628	5,174	146,628	Process cost - 364 (2)
	Total						**284,170**	**16,173,626**	
	per : 1 kg						284	16,174	

PROCESS COST - 401

Perpendicular pre-stressing setting work (SWPR 7B;7,T12.7) (Cantilever erection bridge)

Per: 1ton

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	PC cable	7 , T 12.7	ton	1.06	230,000	-	243,800	-	1+K ; K=+0.06 ; Material - 203
2	Sheath	ϕ 55	m	200	266	-	53,200	-	1+K ; K=+0.08 ; Material - 53
3	Foreman		person	11.5	-	183,300	-	2,107.950	4.6*2.5
4	Skilled labor		person	53.75	-	170,100	-	9,142.875	21.5*2.5
5	Common labor		person	44.5	-	80,600	-	3,586.700	17.8*2.5
6	Miscellaneous expenses	(labor cost) * 8%	set	1				1,187.002	
	Total						**297,000**	**16,024.527**	
	per : 1 ton						297.000	16,024.527	

PROCESS COST - 402

Longitudinal pre-stressing steel anchorage work (Cantilever erection bridge)
Per: 10places

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Anchorage	fix side	set	10	19,980	-	199,800	-	Material - 204
2	Skilled labor		person	7.5	-	170,100	-	1,275,750	3*2.5
3	Miscellaneous expenses	(labor cost)*12%	set	1			-	153,090	
	Total						**199,800**	**1,428,840**	
	per : 1 place						19,980	142,884	

PROCESS COST - 403 (1)

Longitudinal pre-stressing steel tensioning work (Cantilever erection bridge)

Per: 10places (one side tensioning)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Anchorage	Tensioning side	set	10	16,650	-	166,500	-	Material - 206
2	Foreman		person	3.75	-	183,300	-	687,375	1.5*2.5
3	Skilled labor		person	16.5	-	170,100	-	2,806,650	6.6*2.5
4	Common labor		person	7.5	-	80,600	-	604,500	3.0*2.5
5	Miscellaneous expenses	(labor cost) * 6%	set	1			-	245,912	
	Total						**166,500**	**4,344,437**	
	per : 1 place						16,650	434,444	

PROCESS COST - 403 (2)

Longitudinal pre-stressing steel tensioning work (Cantilever erection bridge)

Per: 10places (both side tensioning)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Anchorage	Tensioning side 225 ton	set	20	16,650	-	333,000	-	Material - 206
2	Foreman		person	2.75	-	183,300	-	504,075	1.1*2.5
3	Skilled labor		person	16.5	-	170,100	-	2,806,650	6.6*2.5
4	Common labor		person	8.25	-	80,600	-	664,950	3.3*2.5
5	Miscellaneous expenses	(labor cost) * 6%	set	1			-	238,541	
	Total						**333,000**	**4,214,216**	
	per : 1 cable = total / 10						33,300	421,422	

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PROCESS COST - 404

Perpendicular pre-stressing steel anchorage work

Per: 10places

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Anchorage	130 ton ,for 7, T 12.7	set	10	12,537	-	125,370	-	Material - 205
2	Skilled labor		person	5.25	-	170,100	-	893,025	2.1*2.5
3	Miscellaneous expenses	(labor cost) * 26%	set	1			-	232,187	
	Total						**125,370**	**1,125,212**	
	per : 1 place						12,537	112,521	

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PROCESS COST - 405

Perpendicular pre-stressing steel tensioning work
Per: 10places

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Anchorage	130 ton , for 7,T 12.7	set	10	9,072	-	90,720	-	Material - 207
2	Foreman		person	2.75	-	183,300	-	504,075	1.1*2.5
3	Skilled labor		person	12.5	-	170,100	-	2,126,250	5.0*2.5
4	Common labor		person	5.25	-	80,600	-	423,150	2.1*2.5
5	Miscellaneous expenses	(labor cost) * 9%	set	1			-	274,813	
	Total						**90,720**	**3,328,288**	
	per : 1 place						9,072	332,829	

PROCESS COST - 406(1)

Depreciable value of equipment and tools for erection (rigid frame bridge and side span)

Per: 1set

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Wagen	3x17m	set.day	794	31,740	-	25,201,560	-	D*1;Equipment - 58
2	Wagen reforming cost		set	4	3,464,000	-	13,856,000	-	43,300,000 x 0.08
3	Depreciable value of erection tools		day	132	8,000	-	1,056,000	-	(18+1*15) x 4
4	Depreciable value of fabrication tools for main girder		day	602	2,750	-	1,655,500	-	T*2
	Total						**41,769,060**	-	
	per : 1 set						41,769,060	-	

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D :Days in demand for wagens; a*P + d*n +b*m + n*k + F = 794 days

a : factor depend on main girder ; (53)
P : Number of pier (2) ;
d : Execution days of one block (11.5)
n : total numbers of cantilever erection block (58)
b: Factor of re-use of wagen (14)
m : Re-use numbers of one project (0)
k : Factor pull back of wagen (0.18)
F : Transportation days (10)

T :Days in demand for Fabrication of main girder ; **e + (D-F)/g + h + i = 301 days**

e : Pier head concrete work days (15)
g ; Numbers of wagen (4)
h : side span execution days (55)
i : center closing execution days (35)

PROCESS COST - 406 (2)

Depreciable value of equipment and tools for tensioning (rigid frame bridge)

Per: 1set

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Tension jack and pump	225 ton	set.day	1204	3,060	-	3,684,240	-	T*4 ; Equipment - 121
2	Tension jack and pump	130 ton	set.day	602	1,920	-	1,155,840	-	T*2 ; Equipment - 122
3	Grout mixer	200 liter x 1	set.day	602	600	-	361,200	-	T*2 ; Equipment - 68
4	Grout pump	15~30 liter/min	set.day	602	820	-	493,640	-	T*2 ; Equipment - 64
5	Winch	1.0 tx40 m/min	set.day	602	1,000	-	602,000	-	T*2 ; Equipment - 67
6	Miscellaneous tools		set day	602	1,650	-	993,300	-	T*2
	Total						**7,290,220**	-	
	per : 1 set						7,290,220	-	

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T :Days in demand for Fabrication of main girder e + (D-F)/g + h + i = 301 days

e : Pier head concrete work days (15) g ; Numbers of wagen (4)

h : Side span execution days (55) i : Center closing execution days (35)

Distribution of depreciable value

Description	Tension jack & pump	Grout mixer and pump etc.		Total
	(J.Yen)	Ratio	Distributed value (J.Yen)	(J.Yen)
PC cable (12 T 12.7)	6,140,400	0.78	3,188,312	9,328,712
PC cable (7 T 12.7)	1,926,400	0.22	899,268	2,825,668

PROCESS COST - 407

Concrete work for box girder (L = 60m)

Per: 10 m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Concrete	class A2	m3	10.2	634	530,187	6,467	5,407,907	1+K ; K=+0.02 ; Process cost - 149
2	Concrete pump	boom type 90 ~ 110 m3/hr	hr	0.15	5,330	78,000	800	11,700	Equipment - 60
3	Foreman		person	2.25	-	183,300	-	412,425	0.9*2.5
4	Rigger		person	3.00	-	153,200	-	459,600	1.2*2.5
5	Skilled labor		person	3.50	-	170,100	-	595,350	1.4*2.5
6	Common labor		person	12.50	-	80,600	-	1,007,500	5.0*2.5
7	Miscellaneous expenses	(Sum of above)*1%	set	1			73	78,945	
8	Dead head cost of concrete pump	boom type 90~110m3/hr	day	0.03	10,660	157,000	320	4,710	Process cost - 347 (2)
	Total						**7,659**	**7,978,137**	
	per : 1 m3						766	797,814	

PROCESS COST - 408

Longitudinal pre-stressing steel setting work (SWPR 7B;12T15.2) (box girder,L = 60m)
Per: 100 m (sheath length)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	PC cable	SWPR 7B;12T15.2	kg	1374	242	-	332,508	-	1+K ; K=+0.04 ; Material -208
2	Sheath	ϕ 70mm	m	104	332	-	34,528	-	1+K ; K=+0.04 ; Material - 38
3	reinforcement steel	D16	kg	45	25	-	1,125	-	Material - 29
4	Supplemental materials	(sum of above) *1%	set	1			3,682	-	
5	Foreman		person	5.75	-	183,300	-	1,053,975	2.3*2.5
6	Skilled labor		person	27	-	170,100	-	4,592,700	10.8*2.5
7	Common labor		person	19.5	-	80,600	-	1,571,700	7.8*2.5
8	Miscellaneous expenses	(Labor cost) * 4%	set	1			-	288,735	
	Total						**371,843**	7,507,110	
	Per: 1 m (sheath length)						3,718	75,071	
	Per: 1kg (PC cable) = Total / 1321 kg						281	5,683	

PROCESS COST - 409

Longitudinal pre-stressing steel tensioning work (box girder,L = 60m)

Per: 10 cables (one side tensioning)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Anchorage	320 ton,Fixed for 12,T15.2	set	10	28,350	-	283,500	-	Material - 209
2	Anchorage	Tensioning for 12,T15.2	set	10	24,300	-	243,000	-	Material - 210
3	Foreman		person	2	-	183,300	-	366,600	0.8*2.5
4	Skilled labor		person	12	-	170,100	-	2,041,200	4.8*2.5
5	Carpenter		person	5	-	111,700	-	558,500	2.0*2.5
6	Common labor		person	6.75	-	80,600	-	544,050	2.7*2.5
7	Coupler		each	2.83	59,670	-	168,866	-	Material - 52
8	Miscellaneous expenses	(Sum of above)*7%	set	1			48,676	245,725	
	Total						**744,042**	**3,756,075**	
	Per: 1 cable						74,404	375,607	

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PROCESS COST - 410

Longitudinal pre-stressing steel tensioning work (box girder,L = 60m)
Per: 10 cables (both side tensioning)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Anchorage	320 ton , Tensioning for 12,T15.2	set	20	24,300	-	486,000	-	Material - 210
2	Foreman		person	5	-	183,300	-	916,500	2.0*2.5
3	Skilled labor		person	31.25	-	170,100	-	5,315,625	12.5*2.5
4	Carpenter		person	9	-	111,700	-	1,005,300	3.6*2.5
5	Common labor		person	18.75	-	80,600	-	1,511,250	7.5*2.5
6	Miscellaneous expenses	(Sum of above)*8%	set	1			38,880	699,894	
	Total						**524,880**	**9,448,569**	
	Per: 1 cable						52,488	944,857	

PROCESS COST - 411

Perpendicular pre-stressing steel setting work (SWPR 7B ; 7T12.7) (box girder,L = 60m)
Per: 100 m (sheath length)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	PC cable	7 T12.7	kg	563.7	230	-	129,651	-	1+K ; K=+0.04 ; Material - 203
2	Sheath	ϕ 55 mm	m	104	266		27,664	-	1+K ; K=+0.04 ;Material - 53
3	Foreman		person	2.5	-	183,300	-	458,250	1.0*2.5
4	Skilled labor		person	11	-	170,100	-	1,871,100	4.4*2.5
5	Common labor		person	7.75	-	80,600	-	624,650	3.1*2.5
6	Miscellaneous expenses	(Sum of above)*6%	set	1			9,439	177,240	
	Total						**166,754**	**3,131,240**	
	Per: 1 m (sheath length)						1,668	31,312	
	Per: 1 kg = Total / 542 kg						308	5,777	

PROCESS COST - 412

Perpendicular pre-stressing steel tensioning work (box girder,L = 60m)

Per: 10 cables (one side tensioning)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Anchorage	130 ton, Fixed for 7,T12.7	set	10	12,537	-	125,370	-	Material - 205
2	Anchorage	Tensioning for 7,T12.7	set	10	9,072	-	90,720	-	Material - 207
3	Foreman		person	2.75	-	183,300	-	504,075	1.1*2.5
4	Skilled labor		person	17	-	170,100	-	2,891,700	6.8*2.5
5	Carpenter		person	6.5	-	111,700	-	726,050	2.6*2.5
6	Common labor		person	9.25	-	80,600	-	745,550	3.7*2.5
7	Miscellaneous expenses	(Sum of above)*6%	set	1			12,965	292,043	
	Total						**229,055**	**5,159,418**	
	Per: 1 cable						22,906	515,942	

PROCESS COST - 413 (1)

Depreciable value of tension jack and pump during transportation (box girder)
Per: 1set

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Tension jack and pump	320 ton	day	10	4,640		46,400	-	Equipment - 46
2	Miscellaneous expenses	(Sum of above)*1%	set	1			464	-	
	Total						**46,864**	-	
	Per: 1 set						46,864	-	

PROCESS COST - 413 (2)

Depreciable value of tension jack and pump during transportation (box girder)
Per: 1set

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Tension jack and pump	130 ton	day	10	1,920	-	19,200	-	Equipment -122
2	Miscellaneous expenses	(Sum of above)*1%	set	1			192	-	
	Total						19,392	-	
	Per: 1 set						19,392	-	

PROCESS COST - 414

Reinforcement steel work for box girder

Per: 1ton

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Reinforcement steel bar	ϕ13 ~ϕ 25	ton	1.04	23,000	-	23,920	-	1+K ; K=0.04; Material - 29
2	Foreman		person	1.25	-	183,300	-	229,125	0.5*2.5
3	Steel worker		person	11.25	-	111,700	-	1,256,625	4.5*2.5
4	Common labor		person	6.5	-	80,600	-	523,900	2.6*2.5
5	Miscellaneous expenses	(labor cost) * 8%	set	1			1,914	160,772	
	Total						**25,834**	**2,170,422**	
	Per: 1 ton						25,834	2,170,422	

PROCESS COST - 415

Reinforcement steel work for cantilever erection bridge

Per: 1ton

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Reinforcement steel bar	ϕ13 ~ϕ 25	ton	1.06	23,000	-	24,380	-	1+K ; K=0.06 ; Material - 29
2	Foreman		person	1.5	-	183,300	-	274,950	0.6*2.5
3	Steel worker		person	11	-	111,700	-	1,228,700	4.0*2.5
4	Common labor		person	5.25	-	80,600	-	423,150	2.1*2.5
5	Miscellaneous expenses	(labor cost) * 2%	set	1			-	38,536	
	Total						**24,380**	**1,965,336**	
	Per: 1 ton						24,380	1,965,336	

PROCESS COST - 416

Longitudinal pre-stressing steel setting work (PC I Girder)
Per: 100 m (sheath length)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	PC cable	SWPR 7A ; 12,T12.4	kg	918.5	225	-	206,663	-	1+K;K=0.05 ; Material - 152
2	Sheath	ϕ 65 mm	m	104	308	-	32,032	-	1+K ; K=+0.04 ; Material - 161
3	Foreman		person	3.5	-	183,300	-	641,550	1.4 * 2.5
4	Skilled labor		person	14	-	170,100	-	2,381,400	5.6*2.5
5	Common labor		person	13	-	80,600	-	1,047,800	5.2*2.5
6	Miscellaneous expenses	(labor cost)*10%	set	1			-	407,075	
	Total						**238.695**	**4,477,825**	
	Per: 1 m (sheath length)						2,387	44,778	
	Per: 1 kg = Total / 874.8kg						273	5,119	

PROCESS COST - 417

Concrete work for fabrication of PC I Girder

Per: 10m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Concrete	class A	m3	10.2	634	530,187	6,470	5,407,909	1+K ; K=+0.02 ; Process cost - 149
2	Concrete placing	With gantry crane	m3	10	-	151,642	-	1,516,420	Process cost - 378
3	Insert	fine ceramics insert	each	34	423		14,382	-	Material - 40
4	Common labor	for curing	person	9.5	-	80,600	-	765,700	3.8*2.5
5	Miscellaneous expenses	(labor cost) * 10%	set	1			-	76,570	
	Total						**20,852**	7,766,599	
	Per: 1 m3						2,085	776,660	

PROCESS COST - 418

Longitudinal pre-stressing steel tensioning work (PC I Girder)

Per: 10 cables

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Anchorage	195 ton	each	20	16,650	-	333,000	-	Material - 162
2	Foreman		person	3.75	-	183,300	-	687,375	1.5*2.5
3	Skilled labor		person	13	-	170,100	-	2,211,300	5.2*2.5
4	Common labor		person	11.25	-	80,600	-	906,750	4.5*2.5
5	Miscellaneous expenses	(labor cost) * 11%	set	1			-	418,597	
	Total						**333,000**	**4,224,022**	
	Per: 1 cable						33,300	422,402	

PROCESS COST - 419

Reinforcement steel work for side span
Per: 1ton

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Reinforcement steel bar	D13 ~ D25	ton	1.04	23,000	-	23,920	-	1+K ; K=+0.04 ; Material - 29
2	Foreman		person	1.25	-	183,300	-	229,125	0.5*2.5
3	Skilled labor		person	12.5	-	170,100	-	2,126,250	5.0*2.5
4	Common labor		person	6.25	-	80,600	-	503,750	2.5*2.5
5	Miscellaneous expenses	(labor cost) * 8%	set	1			-	228,730	
	Total						**23,920**	**3,087,855**	
	Per: 1 ton						23,920	3,087,855	

PROCESS COST - 421

From work of cross beam
Per: 10 m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	1.25	-	183,300	-	229,125	0.5*2.5
2	Skilled labor		person	6.5	-	170,100	-	1,105,650	2.6*2.5
3	Common labor		person	4.5	-	80,600	-	362,700	1.8*2.5
4	Miscellaneous expenses	(labor cost)*11%	set	1			-	186,722	
	Total						-	**1,884,197**	
							-		
	Per: 1 m2						-	188,420	

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PROCESS COST - 422

Concrete of cross beam

Per: 10 m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Concrete	Class C-1	m3	10.4	634	456,842	6,594	4,751,157	1+K;K=+0.04; Process cost - 151
2	Concrete plump	boom type 55~60 m3/hr	hr	1.5	6,370	59,000	9,555	88,500	Equipment - 22
3	Dead head cost of concrete pump	boom type 55~60 m3/hr	day	0.25	12,740	113,500	3,185	28,375	Process-cost - 347 (3)
4	Foreman		person	0.75	-	183,300	-	137,475	0.3*2.5
5	Skilled labor		person	3.75	-	170,100	-	637,875	1.5*2.5
6	Common labor		person	9.75	-	80,600	-	785,850	3.9*2.5
7	Miscellaneous expenses	(labor cost) * 11%	set	1			-	171,732	
	Total						**19,334**	**6,600,964**	
	Per: 1 m3						1,933	660,096	

PROCESS COST - 423

Suspended scaffolding under PC I girder

Per: one span (L=33m)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Suspended scaffolding cost		set	1		11,662,213	-	11,662,213	C
	Total						**-**	**11,662,213**	
	Per: 16 span						-	186,595,408	

C : Suspended scaffolding cost : **(SX+Ny) *A = 11,662,213**

S : Factor for depreciable value of scaffolding(1.5<=H 370)

X : Months in demand for suspended scaffolding (2 months)

N : Factor for production rate (1.5 < = H →0.12)

y : Wage rate of skilled labor (188,864/day)

A : area of bridge surface (15.1*33=498.3 m2)

Distribution of above cost	**Ratio**		**Unit cost (VN.D)**
Concrete work for cross beam	(689m3)	0.225	60,934 / m3
Concrete work for deck slab	(1,866m3)	0.608	60,799 / m3
Reinforcement steel work	(505 ton)	0.164	60,597 / t
PC cable work	(8.0ton)	0.003	69,973 / t

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PROCESS COST - 424

Grout material for PC I girder

Per: 1 m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Cement		kg	1304	-	876	-	1,142,304	Material - 71
2	Add-mixture		kg	3.35	-	50,000	-	167,500	Material - 73
	Total						-	**1,309,804**	
	Per: 1 m3						-	1,309,804	

PROCESS COST - 425

Perpendicular pre-stressing steel setting work (PC I Girder ; L=33m)
Per: 100m (cable length)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	PC cable	1 S 21.8	kg	263	266	-	69,958	-	1+K ; K=+0.06 ; Material - 116
2	Sheath	ϕ 38 mm	m	106	153	-	16,218	-	1+K ; K=+0.06 ; Material - 54
3	Supplemental materials	(sum of above)*1%	set	1			861.76	-	
4	Foreman		person	2	-	183,300	-	366,600	0.8*2.5
5	Skilled labor		person	8.25	-	170,100	-	1,403,325	3.3*2.5
6	Common labor		person	5	-	80,600	-	403,000	2.0*2.5
7	Miscellaneous expenses	(labor cost) * 0.9%	set	1			-	19,556	
	Total						**87,038**	**2,192,481**	
	Per: 1 m(Cable length)						870	21,925	
	Per: 1 kg=Total / 248 kg						351	8,841	

Note : Sheath (ϕ 38 mm) length 402.5 m in case of PC cable (1 S 21.8) : 1 ton

PROCESS COST - 426

Perpendicular pre-stressing steel tensioning work (PC I Girder ; L=33m)
Per: 10 cable

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Anchorage	Fixed side; 60 ton	each	10	3,807	-	38,070	-	Material - 105
2	Anchorage	Tensioning side; 60 ton	each	10	3,411	-	34,110	-	Material - 103
3	Foreman		person	1	-	183,300	-	183,300	0.4*2.5
4	Skilled labor		person	3.25	-	170,100	-	552,825	1.3*2.5
5	Common labor		person	2	-	80,600	-	161,200	0.8*2.5
6	Miscellaneous expenses	(labor cost) * 4%	set	1			-	28,561	
	Total						**72,180**	**925,886**	
	Per: 1 Cable						7,218	92,589	

PROCESS COST - 427 (1)

Depreciable value of Perpendicular pre-stressing work (PC I Girder ; L=33m)

Per: 6 spans

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Tension jack and pump	70 ton	day	15	1,360	-	20,400	-	Equipment - 10
2	Grout pump	15 ~ 30 l/min	day	16	820	-	13,120	-	Equipment - 64
3	Grout mixer	100 lx1	day	16	420	-	6,720	-	Equipment - 66
4	Other equipment and tools		day	16	100		1,600	-	
5	Miscellaneous expenses	(Sum of above)*3%	set	1			1,255	-	
	Total						**43,095**	-	
	Per: 1 span						7,183	-	

H : Days in demand for tension jack and pump

H = (n / N) * K * 1.5 + G = (16 / 30)* 6 *1.5 + 10 = 14.8 → 15

K : Numbers of span (6)

G : Days of transportation of jack and pump (10 days)

n : Numbers of tensioning cable per one span (96 / 6 = 16)

N : Production rate of perpendicular pre-stressing steel per one day (30)

PROCESS COST - 427 (2)

Depreciable value of Perpendicular pre-stressing work (PC I Girder ; L=33m)

Per: 4 spans

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Tension jack and pump	70 ton	day	12	1,360	-	16,320	-	Equipment - 10
2	Grout pump	15 ~ 30 l/min	day	13	820	-	10,660	-	Equipment - 64
3	Grout mixer	100 lx1	day	13	420	-	5,460	-	Equipment - 66
4	Other equipment and tools		day	13	100		1,300	-	
5	Miscellaneous expenses	(Sum of above)*3%	set	1			1,012	-	
	Total						**34,752**	-	
	Per: 1 span						8,688	-	

H : Days in demand for tension jack and pump

H = (n / N) * K * 1.5 + G = (6 / 30 *4*1.5+10 = 11.2) → 12

K : Numbers of span (4)

G : Days of transportation of jack and pump (10 days)

n : Numbers of tensioning cable per one span (24 / 4 = 6)

N : Production rate of perpendicular pre-stressing steel per one day (130)

PROCESS COST - 428

Reinforcement steel work for cross beam (PC I Girder)

Per: 1 ton

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Reinforcement steel bar	D13 ~ D 25	ton	1.06	23,000	-	24,380	-	1+K ; K=+0.06 ;Material - 29
2	Foreman		person	1.5	-	183,300	-	274,950	0.6*2.5
3	Skilled labor		person	8.75	-	170,100	-	1,488,375	3.5*2.5
4	Common labor		person	4.5	-	80,600	-	362,700	1.8*2.5
5	Miscellaneous expenses	(labor cost) * 4%	set	1			-	85,041	
	Total						**24,380**	**2,211,066**	
	Per: 1 ton						24,380	2,211,066	
	Per: 1 kg						24	2,211	

PROCESS COST - 428(2)

Reinforcement steel work for deck slab (PC I Girder)

Per: 1 ton

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Reinforcement steel bar	D13 ~ D 25	ton	1.03	23,000	-	23,690	-	1+K ; K=+0.03 ; Material 29
2	Foreman		person	1.25	-	183,300	-	229,125	0.5*2.5
3	Skilled labor		person	7.5	-	170,100	-	1,275,750	3.0*2.5
4	Common labor		person	6.25	-	80,600	-	503,750	2.5*2.5
5	Miscellaneous expenses	(labor cost) * 4%	set	1			-	80,345	
	Total						**23,690**	**2,088,970**	
	Per: 1 ton						23,690	2,088,970	
	Per: 1 kg						24	2,089	

PROCESS COST - 429 (1)

Diaphragm concrete work PC I Girder (L=66m x 2)

Per: 10m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Form work of cross beam		m2	38.9	-	188,420	-	7,329,538	Process cost - 421
2	Concrete of cross beam	class C1	m3	10	1,933	660,096	19,330	6,600,960	Process cost - 422
3	Suspended scaffolding under PC I Girder		m3	10	-	60,934	-	609,340	Process cost - 423
	Total						**19,330**	**14,539,838**	
	Per: 1.0 m3						1,933	1,453,984	

PROCESS COST - 429 (2)

Diaphragm concrete work PC I Girder (L=99m x 2)
Per: 10m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Form work of cross beam		m2	38.9	-	188,420	-	7,329,538	Process cost - 421
2	Concrete of cross beam	class C1	m3	10	1,933	660,096	19,330	6,600,960	Process cost - 422
3	Suspended scaffolding under PC I Girder		m3	10	-	60,934	-	609,340	Process cost - 423
	Total						**19,330**	**14,539,838**	
	Per: 1.0 m3						1,933	1,453,984	

PROCESS COST - 430(1)

Setting work of rubber bearing (less than 60 kg / each)

Per: 10 plates

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	2.25	-	183,300	-	412,425	0.9*2.5
2	Skilled labor		person	3.75	-	170,100	-	637,875	1.5*2.5
3	Common labor		person	8.25	-	80,600	-	664,950	3.3*.2.5
4	Miscellaneous expenses	(Labor cost)*4%	set	1			-	68,610	
	Total						-	**1,783,860**	
	Per: 1 plate						-	178,386	

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PROCESS COST - 430(2)

Setting work of rubber bearing (60~100 kg / each)

Per: 10 plates

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	4.5	-	183,300	-	824,850	1.8*2.5
2	Skilled labor		person	7.5	-	170,100	-	1,275,750	3.0*2.5
3	Common labor		person	16.25	-	80,600	-	1,309,750	6.5*2.5
4	Miscellaneous expenses	(Labor cost)*4%	set	1			-	136,414	
5	Truck crane	4.8 ~4.9 ton	hr	6.22	1,250	46,000	7,775	286,120	1.4 /T ; T = 4.44 ; Equipment - 20
	Total						**7,775**	**3,832,884**	
	Per: 1 plate						778	383,288	

PROCESS COST - 430(3)

Setting work of rubber bearing (100~500 kg / each)

Per: 10 plates

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	5	-	183,300	-	916,500	2.0*2.5
2	Skilled labor		person	15	-	170,100	-	2,551,500	6.0*2.5
3	Carpenter		person	15	-	111,700	-	1,675,500	6.0*2.5
4	Common labor		person	10	-	80,600	-	806,000	4.0*2.5
5	Miscellaneous expenses	(Labor cost)*4%	set	1			-	237,980	
6	Truck crane	4.8 ~4.9 ton	hr	13.32	1,250	46,000	16,650	612,720	3.0 /T ; T = 4.44 ; Equipment - 20
	Total						**16,650**	**6,800,200**	
	Per: 1 plate						1,665	680,020	

PROCESS COST - 430(4)

Setting work of rubber bearing (more than 500 kg / each)

Per: 1 plate

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	2.5	-	183,300	-	458,250	1*2.5
2	Skilled labor		person	7.5	-	170,100	-	1,275,750	3*2.5
3	Carpenter		person	5.0	-	111,700	-	558,500	2*2.5
4	Common labor		person	7.5	-	80,600	-	604,500	3*2.5
5	Miscellaneous expenses	(Labor cost)*4%	set	1			-	115,880	
6	Truck crane	15 ~16 ton	hr	2.22	3,080	55,000	6,838	122,100	0.5 /T ; T = 4.44 ; Equipment - 18
	Total						**6,838**	**3,134,980**	
	Per: 1 plate						6,838	3,134,980	

PROCESS COST - 431(1)

Setting work of rubber bearing (Box girder)
Per: 3 plate-Fix(1110*1260*122)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Rubber bearing	Fix(1110*12600*122)	each	3	1,286,730	-	3,860,190	-	Material - 182
2	Anchor bolt	Fix (ϕ100*2200)	each	8	7,941	-	63,528	-	
3	Anchor cap	Fix. (114.3A*1100)	each	8	684	-	5,472	-	
4	Spiral steel bar	ϕ 9 mm	kg	19.96	-	3,890	-	77,644	Material - 6
5	Tar joint filler		m3	0.078	784,890	-	61,221	-	Material - 88
6	Non shrinkge mortar		m3	0.368	-	19,000,087	-	6,992,032	Process-cost - 71
7	Setting work	Wegtth = 465 kg	place	3	1,665	680,020	4,995	2,040,060	Process-cost - 430(3)
	Total						**3,995,406**	**9,109,736**	
	Per: 1 plate						1,331,802	3,036,579	

PROCESS COST - 431(2)

Setting work of rubber bearing (Cantiliver)
Per: 3 plate-Mov. (860*1010*143)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Rubber bearing	Mov. (860*1010*143)	each	3	1,796,040	-	5,388,120	-	Material- 224
2	Anchor bolt	Mov. (ϕ46*1100)	each	8	658	-	5,264	-	
3	Anchor cap	Mov1. (165.2 A*600)	each	8	677	-	5,416	-	
4	Spiral steel bar	ϕ 9 mm	kg	23.95	-	3,890	-	93,166	Material - 6
5	Tar joint filler		m3	0.084	784,890	-	65,931	-	Material - 88
6	Non shrinkge mortar		m3	0.053	-	19,000,087	-	1,007,005	Process-cost - 71
7	Setting work	Wegtth = 1108 kg	place	3	6,838	3,134,980	20,514	9,404,940	Process-cost - 430(4)
	Total						**5,485,245**	**10,505,110**	
	Per: 1 plate						1,828,415	3,501,703	

PROCESS COST - 431(3)

Setting work of rubber bearing (Box girder)
Per: 3 plate-Mov 2. (610*810*110)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Rubber bearing	Mov (610*810*110)	each	3	788,580	-	2,365,740	-	6,300*0.27=123,201 ; Material -1
2	Anchor bolt	Mov. (ϕ46*1100)	each	8	658	-	5,264	-	
3	Anchor cap	Mov1. (165.2 A*600)	each	8	677	-	5,416	-	
4	Spiral steel bar	ϕ 9 mm	kg	23.95	-	3,890	-	93,166	Material - 6
5	Tar joint filler		m3	0.084	784,890	-	65,931	-	Material - 88
6	Non shrinkge mortar		m3	0.053	-	19,000,087	-	1,007,005	Process-cost - 71
7	Setting work	Wegtth = 527 kg	place	3	6,838	3,134,980	20,514	9,404,940	Process-cost - 430(4)
	Total						**2,462,865**	**10,505,110**	
	Per: 1 plate						820,955	3,501,703	

PROCESS COST - 432(1)

Setting work of rubber bearing (PC I girder-L=99m;L=66m)
Per: 12 plate-Fix(510*310*56)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Rubber bearing	Fix(510*310*56)	each	12	55,800	-	669,600	-	Material -180
2	Anchor bolt	Fix (ϕ32*750)	each	20	250	-	5,000	-	Material - 41
3	Anchor cap	ϕ 42.7*400	each	20	46	-	920	-	
4	Spiral steel bar	ϕ 9 mm	kg	10	-	3,890	-	38,900	Material - 6
5	Tar joint filler		m3	0.024	784,890	-	18,837	-	Material - 88
6	Non shrinkge mortar		m3	0.136	-	19,000,087	-	2,584,012	Process-cost - 71
7	Setting work	Wegtth = 21 kg	place	12	-	178,386	-	2,140,632	Process-cost - 430(1)
	Total						**694,357**	**4,763,544**	
	Per: 1 plate						57,863	396,962	

PROCESS COST - 432(2)

Setting work of rubber bearing (PC I girder-L=99m)

Per: 12 plate-Mov.(500*330*63)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Rubber bearing	Mov.2.(500*330*63)	each	12	221,760	-	2,661,120	-	Material - 178
2	Anchor bolt	Mov.(ϕ 25*600)	each	20	182	-	3,640	-	
3	Anchor cap	Mov. (60.5A*350)	each	20	79	-	1,582	-	
4	Spiral steel bar	ϕ 9 mm	kg	10	-	3,890	-	38,900	Material - 6
5	Tar joint filler		m3	0.033	784,890	-	25,901	-	Material - 88
6	Non shrinkge mortar		m3	0.122	-	19,000,087	-	2,318,011	Process-cost - 71
7	Setting work	Wegtth = 107 kg	place	12	1,665	680,020	19,980	8,160,240	Process-cost - 430(3)
	Total						**2,712,223**	**10,517,151**	
	Per: 1 plate						226,019	876,429	

PROCESS COST - 432(3)

Setting work of rubber bearing (PC I girder-L=99m;L=66m)
Per: 6 plate-Mov.(500*300*59)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Rubber bearing	Mov.2. (500*300*59)	each	6	209,520	-	1,257,120	-	Material -177
2	Anchor bolt	Mov.(ϕ 25*600)	each	10	182	-	1,820	-	
3	Anchor cap	Mov. (60.5A*350)	each	5	79	-	395	-	
3	Anchor cap	Mov. (89.1A*350)	each	5	119	-	595	-	
4	Spiral steel bar	ϕ 9 mm	kg	5	-	3,890	-	19,450	Material - 6
5	Tar joint filler		m3	0.023	784,890	-	18,052	-	Material - 88
6	Non shrinkge mortar		m3	0.061	-	19,000,087	-	1,159,005	Process-cost - 71
7	Setting work	Wegtth = 100kg	place	6	778	383,288	4,668	2,299,728	Process-cost - 430(2)
	Total						**1,282,650**	**3,478,183**	
	Per: 1 plate						213,775	579,697	

PROCESS COST - 433 (1)

Fabrication of joint steel plate for connecting pontoons

Per: 10 plate

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Skilled labor		person	1.2	-	170,100	-	204,120	0.48*2.5
2	Common labor		person	3	-	80,600	-	241,800	1.2*2.5
3	Plate steel (WxLxH)	270*350*10	kg	81.62	37		3,020	-	7.42kg*10+loss10% ;Material-1
4	Plate shears	15.0 KW	day	0.03	-	164,322	-	4,930	
5	Drilling machine	4.5 KW	day	0.42	-	72,334	-	30,380	
	Total						**3,020**	**481,230**	
	Per: one plate=total/10*1/5						302	48,123	

PROCESS COST - 433 (2)

Setting and removal pontoons

Per: 1 set

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Joint steel plate	270x350x10mm	each	128	302	48,123	38,656	6,159,744	Process cost - 433 (1)
2	Bolt	M27x80mm	each	1536	-	12,000	-	18,432,000	(Material - 85)*10/15
3	Anchor	Cast- iron	each	8	-	1,250,000	-	10,000,000	(Material - 83)*0.5
4	Rope	ϕ 45	m	240	882	-	211,680	-	Material - 84
5	Foreman		person	11.25	-	183,300	-	2,062,125	4.5*2.5
6	Skilled labor		person	20	-	170,100	-	3,402,000	8.0*2.5
7	Common labor		person	82.5	-	80,600	-	6,649,500	33.0*2.5
8	Miscellaneous expenses	(Sum of above)*2%	set	1			5,007	934,107	
9	Barge with crane	25 ton ; 200 ton	day	1.05	21,900	302,000	22,995	317,100	(0.05 day+0.05x50%)*14 each;Equipment - 91
10	Tug boat	100 ps	hr	1.02	1,310	120,000	1,336	122,400	(0.01day+0.01x50%)* 14 each*T; T=4.95; Equipment - 75
11	Welding machine	250 A	day	1.05	1,390	31,000	1,460	32,550	(0.05day+0.05*50%)* 14each:Equipment - 55
	Total						**281,133**	**48,111,526**	
	Per: one set						281,133	48,111,526	

PROCESS COST - 434

Supporting facility for pressure pipes in river

Per: one set

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Assembling and disassembling the supporting facility	7.2x3.6x1.8 m ; pontoon L = 75 m ; W = 3.6 m	set	1	281,133	48,111,526	281,133	48,111,526	Process cost - 433 (2)
2	Depreciable value of Equipment		day	300	-	1,400,000	-	420,000,000	100,000*14 each
	Total						**281,133**	**468,111,526**	
	Per: one set						**281,133**	**468,111,526**	
	Per: 2 set						**562,266**	**936,223,052**	
	Concrete placing per 1 m3						69	114,818	

Note : (Total amount of 2 sets)/Total concrete volume of P16,17 and cantilever erection bridge except side span (8154 m3)

PROCESS COST - 435

Expansion joint work, type A
Per each (Length = 14m)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Reinforcement work	ϕ 16	ton	0.17	23,000	-	3,864	-	Material - 29
2	Supplemental material	(sum of above) * 1.5%	set	1	-	-	58	-	
3	Asphalt pavement		m3	0.80	530	487,938	423	389,375	Process cost - 166
4	Epoxy resin mortar		kg	420.00	2,574	-	1,081,080	-	Material - 55
5	Expansion joint	d = 30 mm	m	14.00	30,780	-	430,920	-	Material - 48
6	Concrete	class C1	m3	1.33	634	456,842	843	607,600	Process cost - 151
7	Foreman		person	1.25	-	183,300	-	229,125	0.5*2.5
8	Skilled labor		person	5.00	-	170,100	-	850,500	2.0*2.5
9	Welder		person	1.25	-	111,700	-	139,625	0.5*2.5
10	Common labor		person	5.00	-	80,600	-	403,000	2.0*2.5
	Total						**1,517,188**	**2,619,224**	
	Per 1.0 m						108,371	187,087	

Expansion joint work, type B
Per each (Length = 14m)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Reinforcement work	ϕ 16	ton	0.17	23,000	-	3,864	-	Material - 29
2	Supplemental material	(sum of above) * 1.5%	set	1.00	-	-	58	-	
3	Asphalt pavement		m3	0.80	530	487,938	423	389,375	Process cost - 166
4	Epoxy resin mortar		kg	420.00	2,574		1,081,080	-	Material - 55
5	Expansion joint	d = 50 mm	m	14.00	90,000		1,260,000	-	Material - 49
6	Concrete	class C1	m3	1.33	634	456,842	843	607,600	Process cost - 151
7	Foreman		person	1.25	-	183,300	-	229,125	0.5*2.5
8	Skilled labor		person	5.00	-	170,100	-	850,500	2.0*2.5
9	Welder		person	1.25	-	111,700	-	139,625	0.5*2.5
10	Common labor		person	5.00	-	80,600	-	403,000	2.0*2.5
	Total						**2,346,268**	**2,619,224**	
	Per 1.0 m						167,591	187,087	

PROCESS COST - 437

Expansion joint work, type C
Per each (Length = 14m)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Reinforcement work	ϕ 16	ton	0.62	23,000	-	14,267	-	Material - 29
2	Supplemental material	(sum of above)*1.5%	set	1.00	-	-	214	-	
3	Tar joint filler		kg	20.00	513	-	10,260	-	Material - 88
4	Expansion joint	d = 110 mm	m	14.00	317,700	-	4,447,800	-	Material - 50
5	Concrete	class C1	m3	2.08	634	456,842	1,319	950,231	Process cost -151
6	Foreman		person	1.25	-	183,300	-	229,125	0.5*2.5
7	Skilled labor		person	6.25	-	170,100	-	1,063,125	2.5*2.5
8	Welder		person	2.50	-	111,700	-	279,250	1.0*2.5
9	Common labor		person	6.25	-	80,600	-	503,750	2.5*2.5
	Total						**4,473,860**	**3,025,481**	
	Per 1.0 m						319,561	216,106	

PROCESS COST - 438

Expansion joint work, type D
Per each (Length = 14m)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Reinforcement work	ϕ 16	ton	0.62	23,000	-	14,267	-	Material - 29
2	Supplemental material	(sum of above) * 1.5%	set	1.00	-	-	214	-	
3	Tar joint filler		kg	25.70	513	-	13,184	-	Material - 88
4	Expansion joint	d = 150 mm	m	14.00	317,700	-	4,447,800	-	Material - 51
5	Concrete	class C1	m3	2.08	634	456,842	1,319	950,231	Process cost - 151
6	Foreman		person	1.25	-	183,300	-	229,125	0.5*2.5
7	Skilled labor		person	6.25	-	170,100	-	1,063,125	2.5*2.5
8	Welder		person	2.50	-	111,700	-	279,250	1.0*2.5
9	Common labor		person	6.25	-	80,600	-	503,750	2.5*2.5
	Total						**4,476,784**	**3,025,481**	
	Per 1.0 m						319,770	216,106	

PROCESS COST - 439

Main girder construction joint roughening work
Per 1.0m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
7	Skilled labor		person	0.88	-	170,100	-	148,838	0.35*2.5
	Total						-	**148,838**	
	Per 1.0 m2						-	148,838	

PROCESS COST - 440

Bottom form fabrication for box girder

Per: 10 m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Plywood panel	900x1800x12	each	7	-	29,455	-	206,184	(Material -130)*1.62*0.5
2	Timber		m3	0.39	-	662,300	-	258,297	(Material -132)*0.5
3	Supplemental materials	(sum of above) *15%	set	1			-	69,672	
4	Foreman		person	0.25	-	183,300	-	45,825	0.1*2.5
5	Carpenter		person	2.5	-	111,700	-	279,250	1.0*2.5
6	Common labor		person	2.5	-	80,600	-	201,500	1.0*2.5
7	Miscellaneous expenses	(labor cost) * 4%	set	1			-	21,063	
	Total						-	**1,081,791**	
	Per: 1 m2						-	108,179	

PROCESS COST - 441

Outer form fabrication for box girder

Per: 10 m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Plywood panel	900x1800x12	each	7	-	29,455	-	206,184	(Material -130)*1.62*0.5
2	Timber		m3	0.4	-	662,300	-	264,920	(Material -132)*0.5
3	Supplemental materials	(sum of above) *15%	set	1					
4	Foreman		person	0.25	-	183,300	-	45,825	0.1*2.5
5	Carpenter		person	3.75	-	111,700	-	418,875	1.0*2.5
6	Common labor		person	2.5	-	80,600	-	201,500	1.0*2.5
7	Miscellaneous expenses	(labor cost) * 4%	set	1			-	26,648	
	Total						-	**1,163,952**	
	Per: 1 m2 = total / (3 times*10)						-	38,798	

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PROCESS COST - 442

Inner form fabrication for box girder
Per: 10 m2

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Plywood panel	900x1800x12	each	7	-	29,455	-	206,184	(Material -130)*1.62*0.5
2	Timber		m3	0.33	-	662,300	-	218,559	(Material -132)*0.5
3	Supplemental materials	(sum of above) *15%	set	1			-	63,711	
4	Foreman		person	0.25	-	183,300	-	45,825	0.1*2.5
5	Carpenter		person	3.75	-	111,700	-	418,875	1.0*2.5
6	Common labor		person	2.5	-	80,600	-	201,500	1.0*2.5
7	Miscellaneous expenses	(labor cost) * 4%	set	1			-	26,648	
	Total						-	**1,181,302**	
	Per: 1 m2= total/(3*10)+(total/10)*0.1*(3 times-1)						-	63,003	

PROCESS COST - 443 (1)

Setting and removal of temporary ladder (height 10 m) at the bridge pier

Per: 1 place

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Setting and removal work		set	1	-	2,922,976	-	2,922,976	Refer to C
2	Miscellaneous expenses	(Sum of above)*4%	set	1	-	-	-	116,919	
	Total						-	**3,039,895**	
	Per: 1 place						-	3,039,895	

C : (2.69*T+0.361*y+0.258*y) *H

T : Duration of ladder setting at the bridge pier (11 months)

y: Wage rate of skilled labor (188,864 * 2.5 = 472,160 / day)

H : Height of temporary ladder

PROCESS COST - 443 (2)

Setting and removal of temporary ladder (height 12 m) at the bridge pier

Per: 1 place

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Setting and removal work		set	1	-	3,507,572	-	3,507,572	Refer to C
2	Miscellaneous expenses	(Sum of above)*4%	set	1	-	-	-	140,303	
	Total						**-**	**3,647,875**	
	Per: 1 place						-	3,647,875	
	Per: 2 places						-	7,295,750	

C : (2.69*T+0.361*y+0.258*y) *H

T : Duration of ladder setting at the bridge pier (11 months)

y: Wage rate of skilled labor (188,864 * 2.5 = 472,160 / day)

H : Height of temporary ladder

PROCESS COST - 443 (3)

Setting and removal of temporary ladder (height 15 m) at the bridge pier

Per: 1 place

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Setting and removal work		set	1	-	4,384,464	-	4,384,464	Refer to C
2	Miscellaneous expenses	(Sum of above)*4%	set	1	-	-	-	175,379	
	Total						-	**4,559,843**	
	Per: 1 plate						-	4,559,843	
	Per: 4 places						-	18,239,370	

C : (2.69*T+0.361*y+0.258*y) *H

T : Duration of ladder setting at the bridge pier (11 months)

y: Wage rate of skilled labor (188,864 * 2.5 = 472,160 / day)

H : Height of temporary ladder

PROCESS COST - 444

Reinforcement steel work for deck slab

Per: 1 ton

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Reinforcement steel work	D13-28mm	ton	1.00	23,690	1,795,763	23,690	1,795,763	Process cost - 61
2	Suspended scaffolding under PC I Girder		ton	1.00	-	60,597	-	60,597	Process cost - 423
							23,690	**1,856,360**	
	Total								
	Per: 1 kg						24	1,856	

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PROCESS COST - 445

Timbering work for box culvert
Per: 100 air m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Frame		each	35	352	-	12,320	-	8.8*40 days
2	Brace		each	65.9	80	-	5,272	-	2.0*40 days
3	Jack base	stroke 250mm	each	24	281	-	6,744	-	(Material -123)*0.3
4	Jack base		each	24	338	-	8,112	-	(Material -119)*0.3
5	Round pipe	ϕ 48.6	m	92.6	20	-	1,852	-	0.51*40 days
6	Clamp		each	93.1	59	-	5,493	-	(Material -160)*0.3
7	Supplemental materials	(sum of above) *5%	set	1	-	-	1,990	-	
8	Foreman		person	1.63	-	183,300	-	298,779	0.65*2.5
9	Rigger		person	6.2	-	153,200	-	949,840	2.48*2.5
10	Common labor		person	4.88	-	80,600	-	393,328	1.95*2.5
11	Miscellaneous expenses	(labor cost)*4%	set	1	-		-	65,678	
	Total						**41,783**	**1,707,625**	
	Per: 1 air m3						418	17,076	

PROCESS COST - 445 (2)

Timbering work for box culvert
Per: 100 air m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	5.25	-	183,300	-	962,325	2.1*2.5
2	Rigger		person	9.25	-	153,200	-	1,417,100	3.7*2.5
3	Common labor		person	13.25	-	80,600	-	1,067,950	5.3*2.5
4	Miscellaneous expenses	(labor cost)*11%	set	1	-		-	379,211	
	Total						-	**3,826,586**	
	Per: 1 air m3						-	38,266	

PROCESS COST - 446

Concrete work for box culvert (Class E2)
Per: 10 m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Form work		m2	28.1	-	86,805	-	2,439,221	Process cost -38
2	Concrete	Class E2	m3	10	634	396,674	6,340	3,966,740	Process cost -154
3	Concrete placing		m3	10	764	49,304	7,640	493,040	Process cost -28
4	Timberring work		air.m3	13	418	17,076	5,434	221,988	Process cost -445
	Total						**19,414**	**7,120,989**	
	Per: 1place						1,941	712,099	

PROCESS COST - 446(2)

Concrete work for box culvert (Class E2)

Per: 10 m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Form work		m2	28.1	-	86,805	-	2,439,221	Process cost -38
2	Concrete	Class E2	m3	10	634	396,674	6,340	3,966,740	Process cost -154
3	Concrete placing		m3	10	764	49,304	7,640	493,040	Process cost -28
4	Timber-ring work		air.m3	13	-	38,266	-	497,458	Process cost -445(2)
	Total						**13,980**	**7,396,459**	
	Per: 1m3						1,398	739,646	

PROCESS COST - 448

Concrete work for name plate
Per: 10 m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Form work		m2	17.6	-	83,681	-	1,472,786	Process cost -232
2	Steel mesh	ϕ 10 mm	kg	113	-	3,890	-	439,570	Material - 6
3	Anchor bolt	M 16x160	set	40	230	-	9,200	-	Material -58
4	Concrete	class D-1	m3	1.42	634	415,865	900	590,528	Process cost- 153
5	Foreman		person	1.8	-	183,300	-	329,940	0.72*2.5
6	Skilled labor		person	2.1	-	170,100	-	357,210	0.84*2.5
7	Common labor		person	7.65	-	80,600	-	616,590	3.06*2.5
8	Miscellaneous expenses	(Labor cost) * 4%	set	1			-	52,150	
	Total						**10,100**	**3.858,774**	
	Per: 1place						1,010	385,877	

PROCESS COST - 449

Name plate setting work
Per: 10 places

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Name plate		each	10		1,945,000	-	19,450,000	Material - 56
2	Foreman		person	1.25	-	183,300	-	229,125	0.5*2.5
3	Skilled labor		person	1.285	-	170,100	-	218,579	0.5*2.5
4	Common labor		person	5	-	80,600	-	403,000	2.0*2.5
5	Miscellaneous expenses	(Labor cost) * 4%	set	1			-	34,028	
	Total						-	**20,334,732**	
	Per: 1place						-	2,033,473	

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PROCESS COST - 450

Boring including undisturbed sampling and standard penetration test

Per: 10 m

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Bentonite		kg	35.62	-	800	-	28,496	Material - 176
2	Coretube		each	0.1	14,970	-	1,497	-	Material - 129
3	Metal crown		each	0.1	4,700	-	470	-	Material - 128
4	Rod		each	0.14	16,000	-	2,240	-	Material - 127
5	casing	L=1.5m	each	0.03	10,300	-	309	-	Material - 126
6	Supplemental materials	(sum of above)*6%	set	1	-		271	1,710	
7	Diesel oil		liter	11	-	3,273	-	36,003	Material - 134
8	Lubricant oil	(Diesel oil cost)*5%	set	1	-	-	-	1,800	
9	Boring machine	ϕ 86	day	1.99	3,040	-	6,050	-	Equipment - 28
10	Boring pump	30 liter / min	day	1.99	1,570	-	3,124	-	Equipment - 26
11	Diesel engine	5.2 PS	day	1.99	310	-	617	-	Equipment - 24
12	Engineer A		hr	15.92	-	37,057	-	589,947	1.99day*8 hrs
13	Engineer B		hr	15.92	-	31,000	-	493,520	1.99day*8 hrs
14	Engineer C		hr	15.92	-	22,500	-	358,200	1.99day*8 hrs
15	Common labor		person	5	-	80,600	-	403,000	2*1*2.5
16	Miscellaneous expenses	(labor cost) * 8 %	set	1	-	-	-	147,573	
17	Standard penetration test		time	5	1,020	-	5,100	-	
	Total						**19,678**	**2,060,250**	
	Per: 1 m						1,968	206,025	

PROCESS COST - 451 (1)

Testing at bridge area
Per: one borehole

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Physical test on disturbed cohesive soil samples				-	-	-	-	test of 1 time per one borehole
	- Depreciable value of Equipment and tools for testing		set	1	6,436	-	6,436	-	
	- Labor cost		set	1	-	345,600	-	345,600	
2	Physical test on undisturbed soil samples					-	-	-	tests of 2 times per one borehole
	- Depreciable value of Equipment		set	2	18,578	-	37,156	-	
	- Labor cost		set	2	-	685,109	-	1,370,218	
3	Reporting	(labor cost) * 8%	set	1	-		-	137,265	
								-	
	Total						**43,592**	**1,853,083**	
	Per: one borehole						43,592	1,853,083	
	Per: 1 m = Total/30						1,453	61,769	

PROCESS COST - 451 (2)

Testing at embankment area
Per: one borehole

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Physical test on disturbed cohesive soil samples				-	-	-	-	tests of 3 times per one borehole
	- Depreciable value of Equipment and tools for testing		set	3	6,436	-	19,308	-	
	- Labor cost		set	3	-	345,600	-	1,036,800	
2	Physical test on undisturbed soil samples					-	-	-	tests of 5 times per one borehole
	- Depreciable value of Equipment		set	5	18,578	-	92,890	-	
	- Labor cost		set	5	-	685,109	-	3,425,545	
3	Reporting	(labor cost) * 8%	set	1	-		-	356,988	
	Total						**112,198**	**4,819,333**	
	Per: one borehole						112,198	4,819,333	
	Per: 1 m = Total/30						3,740	160,644	

PROCESS COST - 453 (1)

Deck slab concrete work (PC I Girder , L=66m)
Per: 10 m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Form work		m2	6.50	-	86,805	-	564,233	Process cost -38
2	Concrete	class C - 1	m3	10	634	456,842	6,340	4,568,420	Process cost- 151
3	Foreman		person	0.175	-	183,300	-	32,078	0.07*2.5
4	Skilled labor		person	0.700	-	170,100	-	119,070	0.28*2.5
5	Common labor		person	0.775	-	80,600	-	62,465	0.31*2.5
6	Concrete pump	boom type 90 ~ 110 m3/hr	hr	0.63	5,330	78,000	3,358	49,140	Equipment - 60
7	Dead head cost of concrete pump	boom type 90 ~ 110 m3/hr	day	0.06	10,660	157,000	640	9,420	Process cost -347(2)
8	Miscellaneous expenses	(sum of above)*1%	set	1			103	54,048	
9	Curing of concrete		m3	10.0	-	3,978	-	39,780	Process cost-398 (2)
10	Suspended scaffolding under PC I Girder		m3	10.0	-	60,799	-	607,990	Process cost - 423
	Total						**10,441**	**6,106,643**	
	Per: 1 m3						1,044	610,664	

PROCESS COST - 453(2)

Deck slab concrete work (PC I Girder , L=99m)

Per: 10 m3

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local	
1	Form work		m2	5.7	-	86,805	-	494,789	Process cost - 38
2	Concrete	class C - 1	m3	10	634	456,842	6,340	4,568,420	Process cost - 151
3	Foreman		person	0.175	-	183,300	-	32,078	0.07*2.5
4	Skilled labor		person	0.70	-	170,100	-	119,070	0.28*2.5
5	Common labor		person	0.775	-	80,600	-	62,465	0.31*2.5
6	Concrete pump	boom type , 90 ~ 110 m3/hr	hr	0.63	5,330	78,000	3,358	49,140	Equipment - 60
7	Dead head cost of concrete pump	boom type, 90 ~ 110 m3/hr	day	0.06	10,660	157,000	640	9,420	Process cost -347(2)
8	Miscellaneous expenses	(sum of above) * 1%	set	1			103	53,354	
9	Curing of concrete		m3	10.0	-	3,978	-	39,780	Process cost-398 (2)
10	Suspended scaffolding under PC I Girder		m3	10.0	-	60,799	-	607,990	Process cost - 423
	Total						**10,441**	**6,036,505**	
	Per: 1 m3						1,044	603,650	

PROCESS COST - 454

Fabrication of Pre-cast panel for PC I girder
Per: 100 panels

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Metal form	300x1500	each	500	160	-	80,000	-	16*10 days
2	Metal form	200x1500	each	100	230	-	23,000	-	23*10 days
3	Timber		m3	2.4		662,300	-	1,589,520	(Material - 132)*0.5
4	Supplemental materials	(sum of above)*1%	set	1	-		1,030	15,895	
5	Reinforcement steel work	less than ϕ13mm	ton	1.776	24,720	2,096,273	43,903	3,722,981	Process cost - 60
6	Concrete	class C - 2	m3	14.96	634	456,842	9,485	6,834,356	Process cost - 151
7	Concrete placing		m3	14.96	-	79,812	-	1,193,988	Process cost - 34
8	Foreman		person	6	-	183,300	-	1,099,800	2.4*2.5
9	Carpenter		person	25	-	111,700	-	2,792,500	10.0*2.5
10	Common labor		person	25	-	80,600	-	2,015,000	10.0*2.5
11	Miscellaneous expenses	(labor cost) * 4%	set	1			-	236,292	
	Total						**157,417**	**19,500,332**	
	Per: 1 panel						1,574	195,003	
	Per: 1m2=Total*(1/187.1)						841	104,224	

PROCESS COST - 455

Transportation of Pre-cast panel

Per: one truck

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Truck	10 ton	hr	1	2,210	67,000	2,210	67,000	Equipment - 34
2	Truck crane	20 ~22 ton	hr	0.22	3,520	55,000	774	12,100	1/T ; T = 4.44 ; Equipment - 17
	Total						**2,984**	**79,100**	
	Per: one truck = 27 each						2,984	79,100	
	Per: 1m2 = Total / (27*0.995*1.88)						59	1,566	

PROCESS COST - 456

Unloading pre-cast concrete panel

Per: 100 each

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	1.25	-	183,300	-	229,125	0.5*2.5
2	Skilled labor		person	2.5	-	170,100	-	425,250	1.0*2.5
3	Common labor		person	2.5	-	80,600	-	201,500	1.0*2.5
4	Truck crane	20 ~22 ton	hr	0.36	3,520	55,000	1,267	19,800	35.9/100, Equipment -17
	Total						**1,267**	**875,675**	
	Per: 1 each						13	8,757	
	Per: 1 m2 = Total / (0.995*1.88*100)						7	4,681	

Setting of pre-cast concrete panel
Per: 10 each

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Foreman		person	0.5	-	183,300	-	91,650	0.2*2.5
2	Skilled labor		person	1.5	-	170,100	-	255,150	0.6*2.5
3	Common labor		person	1.5	-	80,600	-	120,900	0.6*2.5
4	Truck crane	20 ~22 ton	hr	0.888	3,520	55,000	3,126	48,840	(10/50)*T ; T = 4.44 Equipment - 17
	Total						**3,126**	**516,540**	
	Per: 1 each						313	51,654	
	Per: 1 m2 = Total / (0.995*1.88*10)						167	27,614	

PROCESS COST - 458

Joint work for pre-cast concrete panel

Per: 100 m (both side)

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN. D)	Foreign (J.YEN)	Local (VN. D)	
1	Joint filler asphalt joint filler	t=10mm	m2	16	738		11,808	-	Material - 118.
2	Common labor		person	5	-	80,600	-	403,000	2*2.5
3	Miscellaneous expenses	(Sum of above) * 2 %	set	1	-	-	236	8,060	
	Total						**12,044**	**411,060**	
	Per: 1 m (both side)						120	4,111	
	Per: 1 m2 = Total / (100m*1.88m)						64	2,186	

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PROCESS COST - 459

Footing concrete work (Abutment and piers)

Per 1 set

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN.D)	Foreign (J.YEN)	Local (VN.D)	
1	Form work	Straight	m^2	1,806	-	86,805	-	156,769,830	Process cost - 38
2	Concrete	Class D1	m^3	5,593	634	396,674	3,545,962	2,218,597,682	Process cost - 154
3	Concrete placing		m^3	5,593	296	25,953	1,655,528	145,155,129	Process cost - 30
4	Curing concrete		m^3	5,593	-	3,978	-	22,248,954	Process cost - 398(2)
Total							**5,201,490**	**2,542,771,595**	
Per :1m^3 (concrete)							930	454,635	

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PROCESS COST - 460

Footing concrete work

Per 1 set

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN.D)	Foreign (J.YEN)	Local (VN.D)	
1	Form work	Straight	m^2	539	-	86,805	-	46,787,895	Process cost - 38
2	Concrete	Class D1	m^3	3,009	634	396,674	1,907,706	1,193,592,066	Process cost - 154
3	Concrete placing		m^3	3,009	225	135,449	677,025	407,566,041	Process cost - 32
4	Curing concrete		m^3	3,009	-	3,978	-	11,969,802	Process cost - 398(2)
Total							**2,584,731**	**1,659,915,804**	
Per :1m^3 (concrete)							859	551,650	

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PROCESS COST - 461

Wall concrete work (Abutment, height > 4m)

Per 1 set

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN.D)	Foreign (J.YEN)	Local (VN.D)	
1	Form work	Straight	m^2	795	219	82,626	174,105	65,687,670	Process cost - 39
2	Concrete	Class D1	m^3	343	634	396,674	217,462	136,059,182	Process cost - 154
3	Concrete placing		m^3	343	296	25,953	101,528	8,901,879	Process cost - 30
4	Curing concrete		m^3	343	-	3,978	-	1,364,454	Process cost - 398(2)
5	Scafolding		multilied m^2	1,030	113	36,635	116,390	37,734,050	Process cost - 36
6	Timbering		air m^3	36.3	232	68,073	8,422	2,471,050	Process cost - 37
Total							**617,907**	**252,218,285**	
Per :1m^3 (concrete)							1,801	735,330	

PROCESS COST - 462

Wall concrete work (Piers, height < 4m)

Per 1 set

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN.D)	Foreign (J.YEN)	Local (VN.D)	
1	Form work	Straight	m^2	391	-	86,805	-	33,940,755	Process cost - 38
2	Form work	Cylindrical	m^2	125	-	125,307	-	15,663,375	Process cost - 41
3	Concrete	Class D1	m^3	371	634	396,674	235,214	147,166,054	Process cost - 154
4	Concrete placing		m^3	371	764	49,304	283,444	18,291,784	Process cost - 28
5	Scafolding		multili-ed m^2	1,600	-	39,990	-	63,984,000	Process cost - 35
6	Curing concrete		m^3	371	-	3,978	-	1,475,838	Process cost - 398(2)
Total							**518,658**	**280,521,806**	
Per :1m^3 (concrete)							1,398	756,123	

PROCESS COST - 463

Wall concrete work (Piers, height > 4m)

Per 1 set

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN.D)	Foreign (J.YEN)	Local (VN.D)	
1	Form work	Straight	m^2	1,319	219	82,626	288,861	108,983,694	Process cost - 39
2	Form work	Cylindrical	m^2	597	150	132,365	89,550	79,021,905	Process cost - 42
3	Concrete	Class D1	m^3	1,674	634	396,674	1,061,316	664,032,276	Process cost - 154
4	Concrete placing		m^3	1,674	296	25,953	495,504	43,445,322	Process cost - 30
5	Scafolding		multili-ed m^2	4,727	113	36,635	534,151	173,173,645	Process cost - 36
6	Curing concrete		m^3	1,674	-	3,978	-	6,659,172	Process cost - 398(2)
Total							**2,469,382**	**1,075,316,014**	
Per :1m^3 (concrete)							1,475	642,363	

Wall concrete (class D1) work

Per 1 set

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN.D)	Foreign (J.YEN)	Local (VN.D)	
1	Form work	Straight	m^2	444	267	86,097	118,548	38,227,068	Process cost - 40
2	Form work	Cylindrical	m^2	257	267	137,055	68,619	35,223,135	Process cost - 43
3	Concrete	Class D1	m^3	1,003	634	415,865	635,902	417,112,595	Process cost - 153
4	Concrete placing		m^3	1,003	457	139,806	458,371	140,225,418	Process cost - 33
5	Scafolding		multilied m^2	949	113	36,635	107,237	34,766,615	Process cost - 36
6	Curing concrete		m^3	1,003	-	3,978	-	3,989,934	Process cost - 398(2)
Total							**1,388,677**	**669,544,765**	
Per :1m^3 (concrete)							1,385	667,542	

PROCESS COST - 465

Wall concrete (class B1) work

Per 1 set

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN.D)	Foreign (J.YEN)	Local (VN.D)	
1	Form work	Straight	m^2	190.4	267	86,097	50,837	16,392,869	Process cost - 40
2	Form work	Cylindrical	m^2	110.3	267	137,055	29,450	15,117,167	Process cost - 43
3	Concrete	Class D1	m^3	429.0	634	415,865	271,986	178,406,085	Process cost - 153
4	Concrete placing		m^3	429.0	457	139,806	196,053	59,976,774	Process cost - 33
5	Scafolding		multilied m^2	407.0	113	36,635	45,991	14,910,445	Process cost - 36
6	Curing concrete		m^3	429.0	-	3,978	-	1,706,562	Process cost - 398(2)
Total							**594,317**	**286,509,901**	
Per :1m^3 (concrete)							1,385	667,855	

PROCESS COST - 466

Beam concrete work

Per 1 set

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN.D)	Foreign (J.YEN)	Local (VN.D)	
1	Form work	Straight	m^2	545.0	-	86,805	-	47,308,725	Process cost - 38
2	Concrete	Class D1	m^3	385.4	634	415,865	244,344	160,274,371	Process cost - 153
3	Concrete placing		m^3	385.4	764	49,304	294,446	19,001,762	Process cost - 28
4	Curing concrete		m^3	385.4	-	3,978	-	1,533,121	Process cost - 398(2)
5	Timbering		air m^3	342.0	232	68,073	79,344	23,280,966	Process cost - 37
Total							**618,133**	**251,398,945**	
Per :1m^3 (concrete)							1,604	652,307	

CB-480

PROCESS COST - 467

Beam concrete work

Per 1 set

No.	Description	Standard	Unit	Quantities	Unit Price		Amount		Remarks
					Foreign (J.YEN)	Local (VN.D)	Foreign (J.YEN)	Local (VN.D)	
1	Form work	Straight	m^2	1,142	219	82,626	250,098	94,358,892	Process cost - 39
2	Concrete	Class D1	m^3	925	634	396,674	586,450	366,923,450	Process cost - 154
3	Concrete placing		m^3	925	517	37,784	478,225	34,950,200	Process cost - 29
4	Curing concrete		m^3	925	-	3,978	-	3,679,650	Process cost - 398(2)
5	Timbering		air m^3	963	232	68,073	223,416	65,554,299	Process cost - 37
Total							**1,538,189**	**565,466,491**	
Per :1m^3 (concrete)							1,663	611,315	

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