NIPPON KOEI CO.,LTD.

QUANTITY CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province	**Project Code**	JC1N004/2N001
Work Section Title	RPE culvert 457 mm	**Pay Item No. (BOQ)**	2H-0101
Quantity Item	Excavation and Disposal	**Unit**	m^3

Calculation Procedure Applied

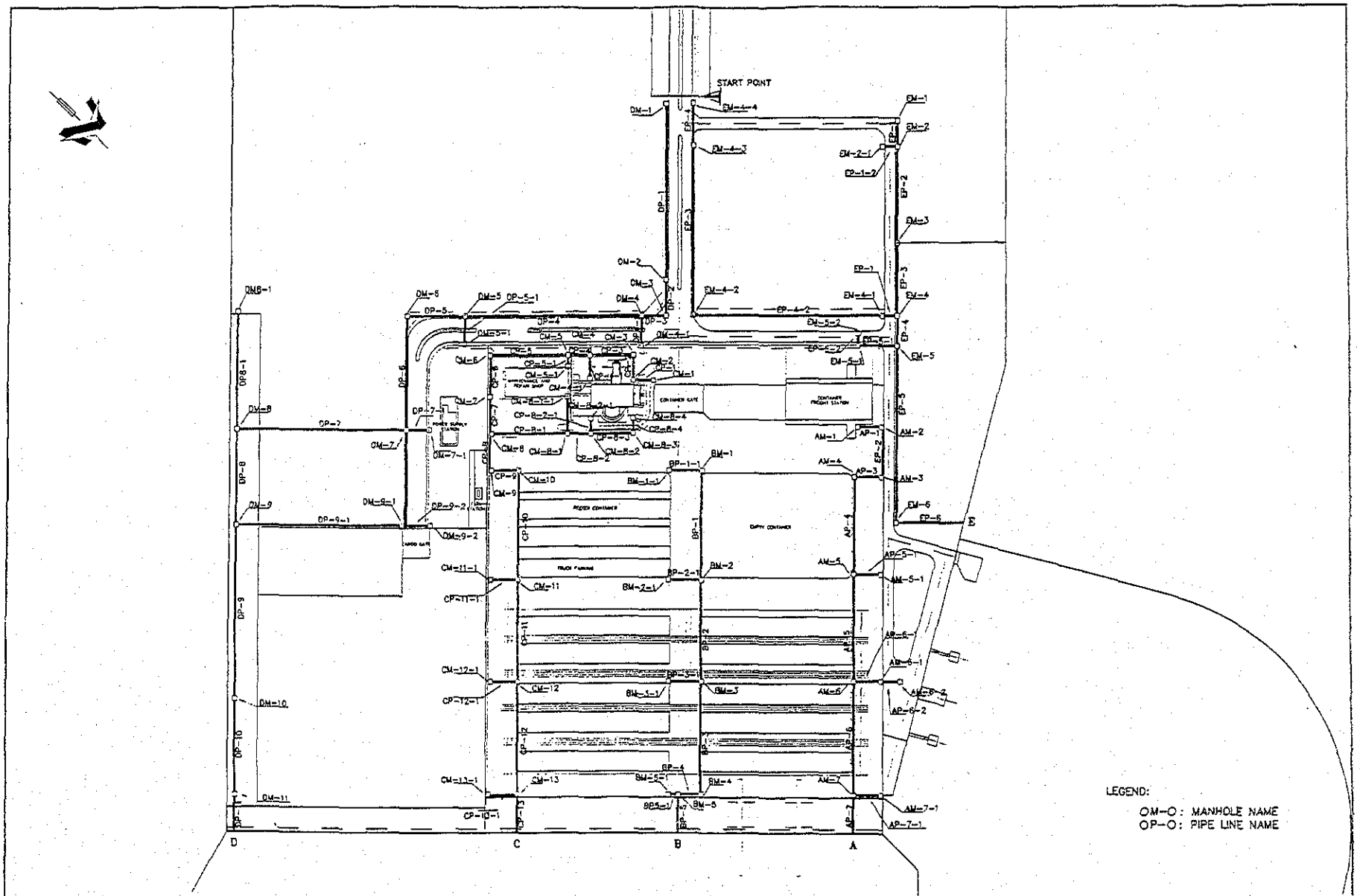
1. Average level of inlet level and outlet level
2. Average Level minus base thickness
3. Average ground level
4. Calculation of effective height
5. Calculation of Area
6. Calculation of Volume : Area time engin

References. Calculation Base and Revisions

DW-SD-00-001

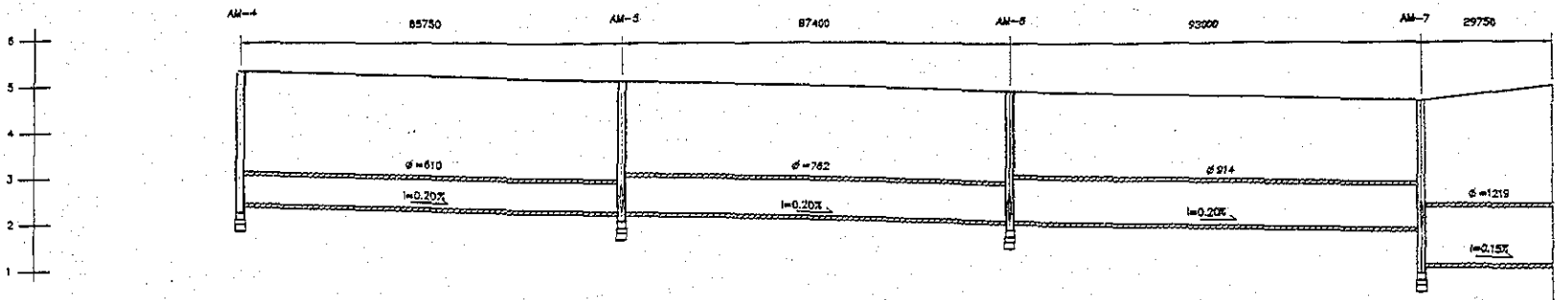
DW-SD-01-001 ~ 008

Rev	Prepared		No. of Pages	Checked		Reviewed		Superseded by Calc No.
	by	Date		by	Date	by	Date	
0	Khola Grace Ka			Mr. Inuma		Mr. Ando		
1								
2								
3								



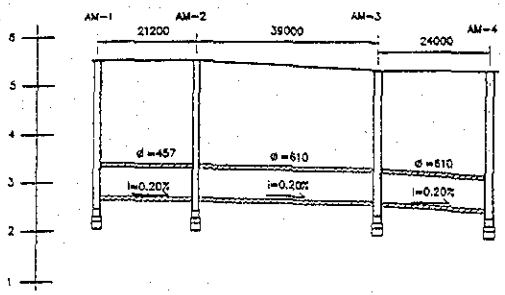
JICA JAPAN INTERNATIONAL COOPERATION AGENCY (JICA) / CEPA COMISION EJECUTIVA PORTUARIA AUTONOMA (CEPA)	DETAILED DESIGN ON PORT REACTIVATION PROJECT IN LA UNION PROVINCE OF THE REPUBLIC OF EL SALVADOR	NIPPON KOEI CO., LTD.	SECTION : STORM DRAINAGE SUB-SECTION : GENERAL TITLE : LAYOUT OF PIPE CULVERT & MANHOLE
DESIGNED BY :	CHECKED BY :	APPROVED BY :	DATE : JULY/2002 SCALE : 1 : 3,000 DRAWING NO : DW-SD-00-101

ROUTE "A"



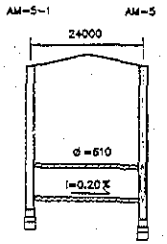
DATUM LINE 0.00m.

MANHOLE No.	AM-4	AM-5	AM-6	AM-7
GLAND LEVEL	5.332	5.132	4.926	4.711
INVERT LEVEL OF INLET PIPE	2.484	2.313	2.137	1.932
INVERT LEVEL OF OUTLET PIPE	2.460	2.309	2.134	1.784
INVERT LEVEL OF MANHOLE	2.260	2.109	1.934	0.994
WIDTH OF MANHOLE	1.5	1.5	1.5	1.5



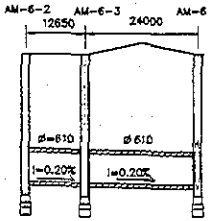
DATUM LINE 0.00m.

MANHOLE No.	AM-1	AM-2	AM-3	AM-4
GLAND LEVEL	5.332	5.332	5.332	5.332
INVERT LEVEL OF INLET PIPE	-	-	2.313	2.484
INVERT LEVEL OF OUTLET PIPE	-	2.606	2.606	2.460
INVERT LEVEL OF MANHOLE	-	2.406	2.406	2.260
WIDTH OF MANHOLE	1.5	1.5	1.5	1.5



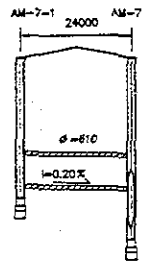
DATUM LINE 0.00m.

MANHOLE No.	AM-5-1	AM-5
GLAND LEVEL	5.132	5.132
INVERT LEVEL OF INLET PIPE	-	2.313
INVERT LEVEL OF OUTLET PIPE	2.309	2.309
INVERT LEVEL OF MANHOLE	2.109	2.109
WIDTH OF MANHOLE	1.5	1.5



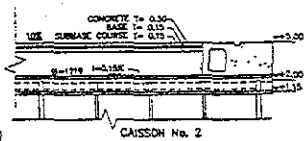
DATUM LINE 0.00m.

MANHOLE No.	AM-6-2	AM-6-3	AM-6
GLAND LEVEL	4.926	4.926	4.926
INVERT LEVEL OF INLET PIPE	-	2.183	2.137
INVERT LEVEL OF OUTLET PIPE	2.208	2.183	2.134
INVERT LEVEL OF MANHOLE	2.008	1.983	1.934
WIDTH OF MANHOLE	1.5	1.5	1.5



DATUM LINE 0.00m.

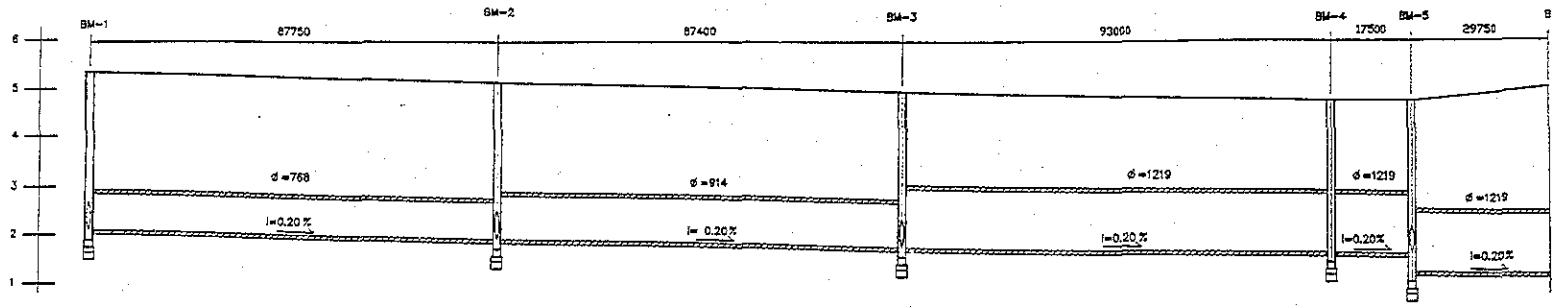
MANHOLE No.	AM-7-1	AM-7
GLAND LEVEL	4.711	4.711
INVERT LEVEL OF INLET PIPE	-	1.932
INVERT LEVEL OF OUTLET PIPE	1.932	1.784
INVERT LEVEL OF MANHOLE	1.732	0.994
WIDTH OF MANHOLE	1.5	1.5



ESC. 1:400

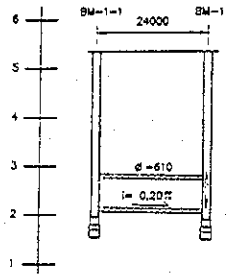
	JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)	DETAILED DESIGN ON PORT REACTIVATION PROJECT IN LA UNION PROVINCE OF THE REPUBLIC OF EL SALVADOR	SECTION : STORM DRAINAGE	DATE : JULY/2002
	COMISION EJECUTIVA PORTUARIA AUTONOMA (CEPA)	NIPPON KOEI CO., LTD.	SUB-SECTION : PROFILE AND DRAINAGE	SCALE : H =1 : 1000 V =1 : 100
		DESIGNED BY : CHECKED BY : APPROVED BY :	TITLE : LONGITUDINAL PROFILE OF PIPE ROUTE A	DRAWING NO. DW-SD-01-201

ROUTE "B"



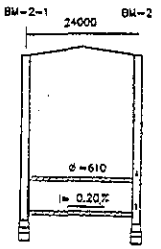
DATUM LINE 0.00m.

MANHOLE No.	BM-1	BM-2	BM-3	BM-4	BM-5	1
GLAND LEVEL	5.332	5.132	4.928	4.711	4.711	5
INVERT LEVEL OF INLET PIPE	2.085	1.914	1.739	1.599	1.564	1.136
INVERT LEVEL OF OUTLET PIPE	1.901	1.731	1.555	1.595	1.193	1
INVERT LEVEL OF MANHOLE	1.681	1.71	1.535	1.395	0.993	1
WIDTH OF MANHOLE	1.5	1.5	1.5	1.5	1.5	1



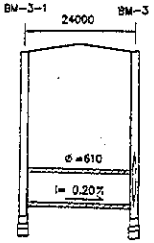
DATUM LINE 0.00m.

MANHOLE No.	BM-1-1	BM-1
GLAND LEVEL	5.332	5.332
INVERT LEVEL OF INLET PIPE	2.085	1.914
INVERT LEVEL OF OUTLET PIPE	1.901	1.731
INVERT LEVEL OF MANHOLE	1.681	1.71
WIDTH OF MANHOLE	1.5	1.5



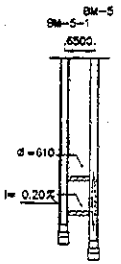
DATUM LINE 0.00m.

MANHOLE No.	BM-2-1	BM-2
GLAND LEVEL	5.132	5.132
INVERT LEVEL OF INLET PIPE		1.914
INVERT LEVEL OF OUTLET PIPE	1.926	1.731
INVERT LEVEL OF MANHOLE	1.71	1.71
WIDTH OF MANHOLE	1.5	1.5



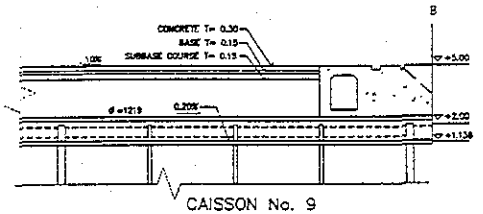
DATUM LINE 0.00m.

MANHOLE No.	BM-3-1	BM-3
GLAND LEVEL	4.928	4.928
INVERT LEVEL OF INLET PIPE		1.739
INVERT LEVEL OF OUTLET PIPE	1.760	1.734
INVERT LEVEL OF MANHOLE	1.535	1.535
WIDTH OF MANHOLE	1.5	1.5



DATUM LINE 0.00m.

MANHOLE No.	BM-5-1	BM-5
GLAND LEVEL	4.711	4.711
INVERT LEVEL OF INLET PIPE	—	1.564
INVERT LEVEL OF OUTLET PIPE	1.373	1.193
INVERT LEVEL OF MANHOLE	1.395	0.993
WIDTH OF MANHOLE	1.5	1.5



CAISSON No. 9

ESC. 1:250

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

COMISION EJECUTIVA PORTUARIA AUTONOMA (CEPA)

DETAILED DESIGN ON PORT REACTIVATION PROJECT IN LA UNION PROVINCE OF THE REPUBLIC OF EL SALVADOR

NIPPON KOEI CO., LTD.

DESIGNED BY :

DRAWN BY :

CHECKED BY :

SECTION : STORM DRAINAGE

SUB-SECTION : PROFILE AND DRAINAGE

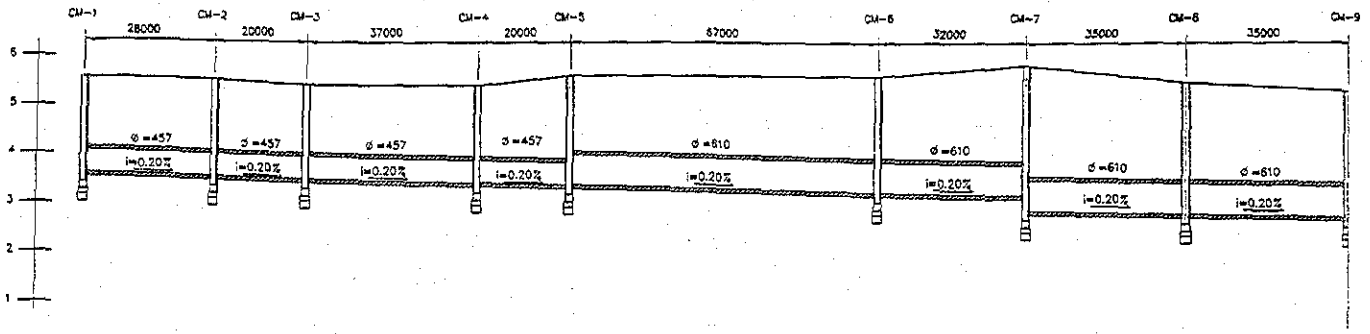
TITLE : LONGITUDINAL PROFILE OF PIPE ROUTE B

DATE : JULY/2002

SCALE : H =1 : 1000
V =1 : 100

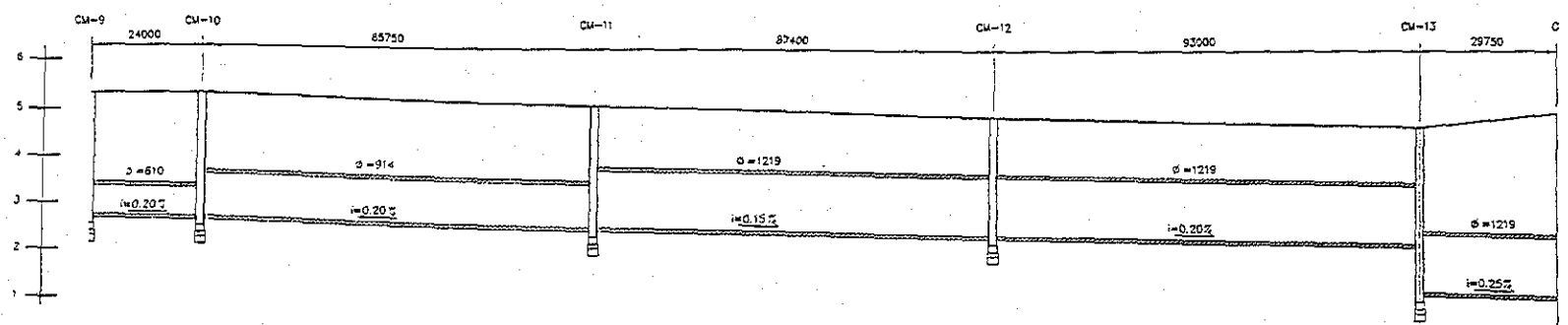
DRAWING NO. DW-SD-01-032

ROUTE "C"



DATUM LINE 0.00m

MANHOLE No.	CM-1	CM-2	CM-3	CM-4	CM-5	CM-6	CM-7	CM-8	CM-9
GLAND LEVEL	5.567	5.537	5.437	5.437	5.637	5.637	5.637	5.567	5.337
INVERT LEVEL OF INLET PIPE	—	5.313	5.505	5.431	5.591	5.291	5.193	4.974	4.761
INVERT LEVEL OF OUTLET PIPE	5.599	5.343	5.505	5.431	5.391	5.291	5.193	4.974	4.761
INVERT LEVEL OF MANHOLE	5.599	5.343	5.305	5.229	5.189	5.055	4.991	4.824	4.555
WIDTH OF MANHOLE	1.2	1.2	1.2	1.2	1.2	1.2	1.2	1.5	1.5



DATUM LINE 0.00m

MANHOLE No.					
GLAND LEVEL					
INVERT LEVEL OF INLET PIPE					
INVERT LEVEL OF OUTLET PIPE					
INVERT LEVEL OF MANHOLE					
WIDTH OF MANHOLE					

JICA JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

CEPA COMISION EJECUTIVA PORTUARIA AUTONOMA (CEPA)

DETAILED DESIGN ON PORT REACTIVATION PROJECT IN LA UNION PROVINCE OF THE REPUBLIC OF EL SALVADOR

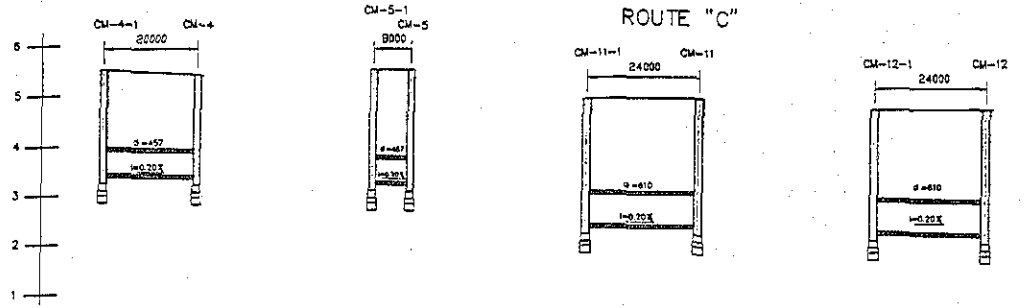
NIPPON KOEI CO., LTD.

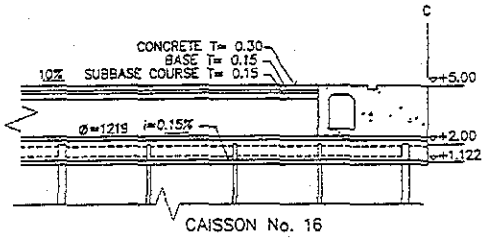
DESIGNED BY :
CHECKED BY :
APPROVED BY :

SECTION : STORM DRAINAGE
SUB-SECTION : PROFILE AND DRAINAGE
TITLE : LONGITUDINAL PROFILE OF PIPE ROUTE C (1/2)

DATE : JULY/2002
SCALE : H =1 : 1000, V =1 : 100
DRAWING NO : DW-SD-01-003

ROUTE "C"





CAISSON No. 16

ESC. 1:250

DATUM LINE 0.00m.

MANHOLE No.	CM-4-1	CM-4
GLAND LEVEL	5.537	5.437
INVERT LEVEL OF INLET PIPE	—	3.451
INVERT LEVEL OF OUTLET PIPE	3.469	3.419
INVERT LEVEL OF MANHOLE	3.269	3.229
WIDTH OF MANHOLE	1.2	1.2

DATUM LINE 0.00m.

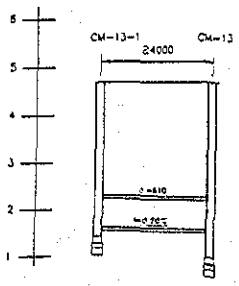
MANHOLE No.	CM-5-1	CM-5
GLAND LEVEL	5.637	5.637
INVERT LEVEL OF INLET PIPE	—	3.591
INVERT LEVEL OF OUTLET PIPE	3.489	3.389
INVERT LEVEL OF MANHOLE	3.205	3.189
WIDTH OF MANHOLE	1.2	1.2

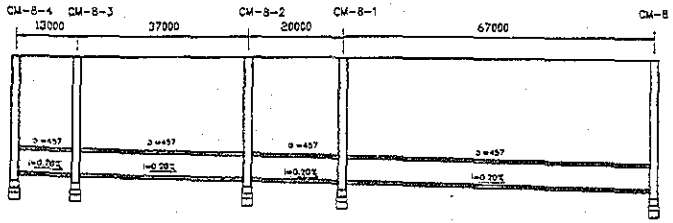
DATUM LINE 0.00m.

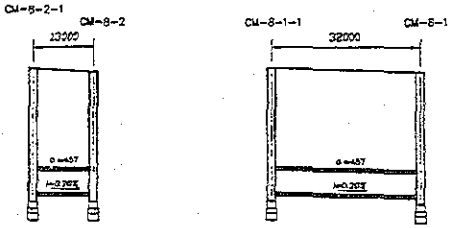
MANHOLE No.	CM-11-1	CM-11
GLAND LEVEL	5.132	5.132
INVERT LEVEL OF INLET PIPE	—	2.535
INVERT LEVEL OF OUTLET PIPE	2.539	2.531
INVERT LEVEL OF MANHOLE	2.379	2.331
WIDTH OF MANHOLE	1.5	1.5

DATUM LINE 0.00m.

MANHOLE No.	CM-12-1	CM-12
GLAND LEVEL	4.928	4.928
INVERT LEVEL OF INLET PIPE	—	2.403
INVERT LEVEL OF OUTLET PIPE	2.447	2.359
INVERT LEVEL OF MANHOLE	2.247	2.199
WIDTH OF MANHOLE	1.5	1.5







DATUM LINE 0.00m.

MANHOLE No.	LM-13-1	CM-13
GLAND LEVEL	7.211	7.111
INVERT LEVEL OF INLET PIPE	—	5.291
INVERT LEVEL OF OUTLET PIPE	5.161	5.191
INVERT LEVEL OF MANHOLE	4.961	4.911
WIDTH OF MANHOLE	1.5	1.5

DATUM LINE 0.00m.

MANHOLE No.	CM-8-4	CM-8-3	CM-8-2	CM-8-1	CM-8
GLAND LEVEL	9.307	9.307	9.307	9.307	9.307
INVERT LEVEL OF INLET PIPE	—	7.107	7.107	7.107	7.024
INVERT LEVEL OF OUTLET PIPE	7.095	7.095	7.095	7.095	7.092
INVERT LEVEL OF MANHOLE	6.895	6.907	6.795	6.795	6.792
WIDTH OF MANHOLE	1.2	1.2	1.2	1.2	1.2

DATUM LINE 0.00m.

MANHOLE No.	CM-8-2-1	CM-8-1
GLAND LEVEL	9.602	9.507
INVERT LEVEL OF INLET PIPE	—	7.007
INVERT LEVEL OF OUTLET PIPE	7.027	6.995
INVERT LEVEL OF MANHOLE	6.827	6.795
WIDTH OF MANHOLE	1.2	1.2

DATUM LINE 0.00m.

MANHOLE No.	CM-8-1-1	CM-8-1
GLAND LEVEL	9.592	9.507
INVERT LEVEL OF INLET PIPE	—	7.053
INVERT LEVEL OF OUTLET PIPE	7.019	6.955
INVERT LEVEL OF MANHOLE	6.819	6.755
WIDTH OF MANHOLE	1.2	1.2

JICA JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

CEPA COMISION EJECUTIVA PORTUARIA AUTONOMA (CEPA)

DETAILED DESIGN ON PORT REACTIVATION PROJECT IN LA UNION PROVINCE OF THE REPUBLIC OF EL SALVADOR

NIPPON KOEI CO., LTD.

DESIGNED BY :

CHECKED BY :

APPROVED BY :

SECTION : STORM DRAINAGE

SUB-SECTION : PROFILE AND DRAINAGE

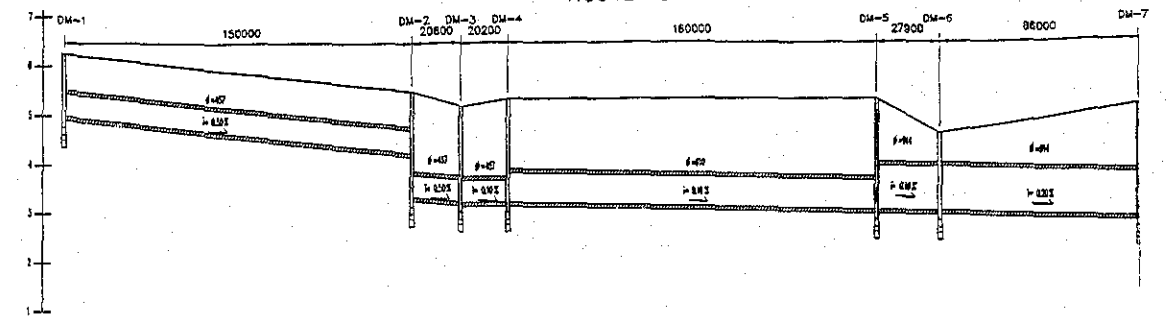
TITLE : LONGITUDINAL PROFILE OF PIPE ROUTE C (2/2)

DATE : JULY/2002

SCALE : H =1 : 1000 V =1 : 100

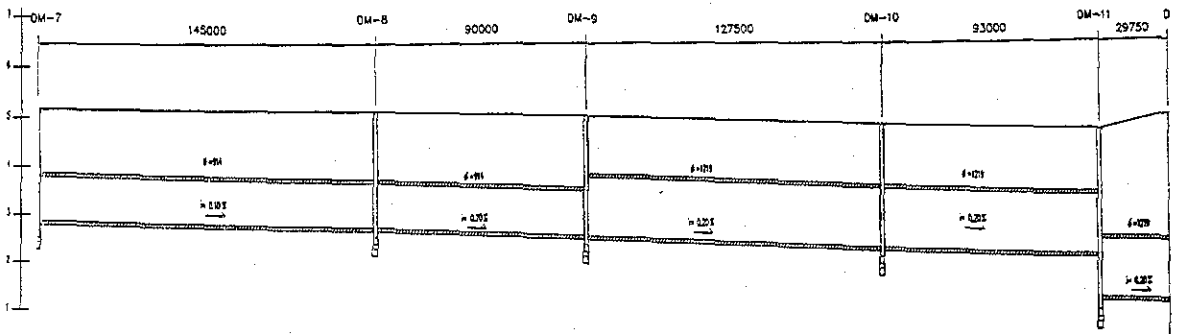
DRAWING NO. SW-SD-01-024

ROUTE "D"



DATUM LINE 0.00m.

MANHOLE No.	DM-1	DM-2	DM-3	DM-4	DM-5	DM-6	DM-7
GLAND LEVEL	6.25	5.5	5.2	5.34	5.34	4.625	5.17
INVERT LEVEL OF INLET PIPE							
INVERT LEVEL OF OUTLET PIPE							
INVERT LEVEL OF MANHOLE							
WIDTH OF MANHOLE	1.2	1.2	1.2	1.2	1.2	1.5	1.5



DATUM LINE 0.00m.

MANHOLE No.					
GLAND LEVEL					
INVERT LEVEL OF INLET PIPE					
INVERT LEVEL OF OUTLET PIPE					
INVERT LEVEL OF MANHOLE					
WIDTH OF MANHOLE					

JICA JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

Cepa COMISION EJECUTIVA PORTUARIA AUTONOMA CEPA

DETAILED DESIGN ON PORT REACTIVATION PROJECT IN LA UNION PROVINCE OF THE REPUBLIC OF EL SALVADOR

NIPPON KOEI CO., LTD.

DRAWN BY :

CHECKED BY :

APPROVED BY :

SECTION : STORM DRAINAGE

SUB-SECTION : PROFILE AND DRAINAGE

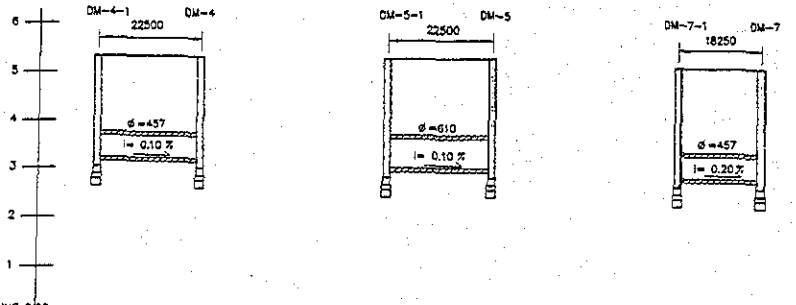
TITLE : LONGITUDINAL PROFILE OF PIPE ROUTE D (1/2)

DATE : JULY/2002

SCALE : H =1 : 2000 V =1 : 100

DRAWING NO. SW-SD-01~02

ROUTE "D"



DATUM LINE 0.00m.

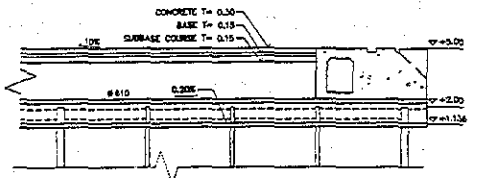
MANHOLE No.	DM-4-1	DM-4
GLAND LEVEL	5.34	5.34
INVERT LEVEL OF INLET PIPE	-	3.226
INVERT LEVEL OF OUTLET PIPE	3.741	3.225
INVERT LEVEL OF MANHOLE	3.075	3.075
WIDTH OF MANHOLE	1.2	1.2

DATUM LINE 0.00m.

MANHOLE No.	DM-5-1	DM-5
GLAND LEVEL	5.34	5.34
INVERT LEVEL OF INLET PIPE	-	3.066
INVERT LEVEL OF OUTLET PIPE	3.087	3.065
INVERT LEVEL OF MANHOLE	2.887	2.865
WIDTH OF MANHOLE	1.2	1.2

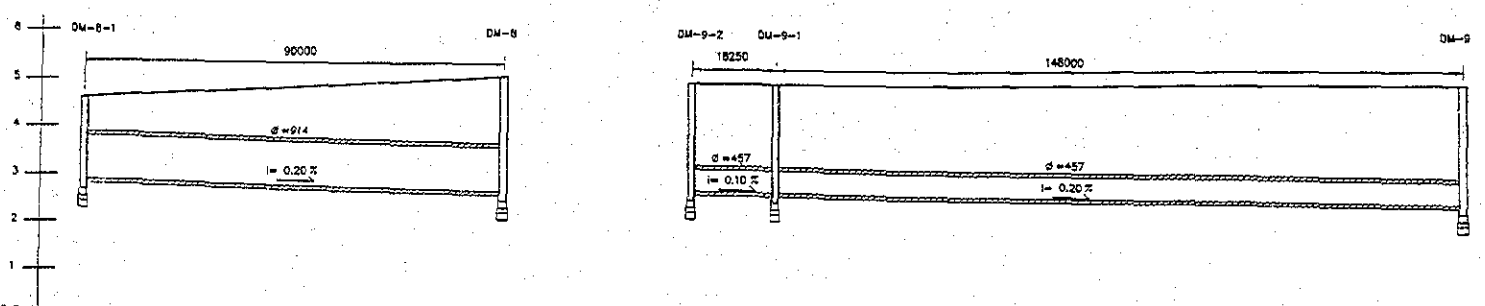
DATUM LINE 0.00m.

MANHOLE No.	DM-7-1	DM-7
GLAND LEVEL	5.17	5.17
INVERT LEVEL OF INLET PIPE	-	2.865
INVERT LEVEL OF OUTLET PIPE	2.683	2.865
INVERT LEVEL OF MANHOLE	2.683	2.665
WIDTH OF MANHOLE	1.2	1.5



CAISSON No. 28

ESC. 1:250



DATUM LINE 0.00m.

MANHOLE No.	DM-8-1	DM-8
GLAND LEVEL	4.627	4.319
INVERT LEVEL OF INLET PIPE	-	2.719
INVERT LEVEL OF OUTLET PIPE	2.519	2.519
INVERT LEVEL OF MANHOLE	2.519	2.519
WIDTH OF MANHOLE	1.2	1.2

DATUM LINE 0.00m.

MANHOLE No.	DM-9-2	DM-9-1	DM-9
GLAND LEVEL	5.01	5.01	5.019
INVERT LEVEL OF INLET PIPE	-	2.740	2.583
INVERT LEVEL OF OUTLET PIPE	2.564	2.740	2.539
INVERT LEVEL OF MANHOLE	2.564	2.540	2.339
WIDTH OF MANHOLE	1.2	1.2	1.5

JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

COMISION EJECUTIVA PORTUARIA AUTONOMA (CEPA)

DETAILED DESIGN ON PORT REACTIVATION PROJECT IN LA UNION PROVINCE OF THE REPUBLIC OF EL SALVADOR

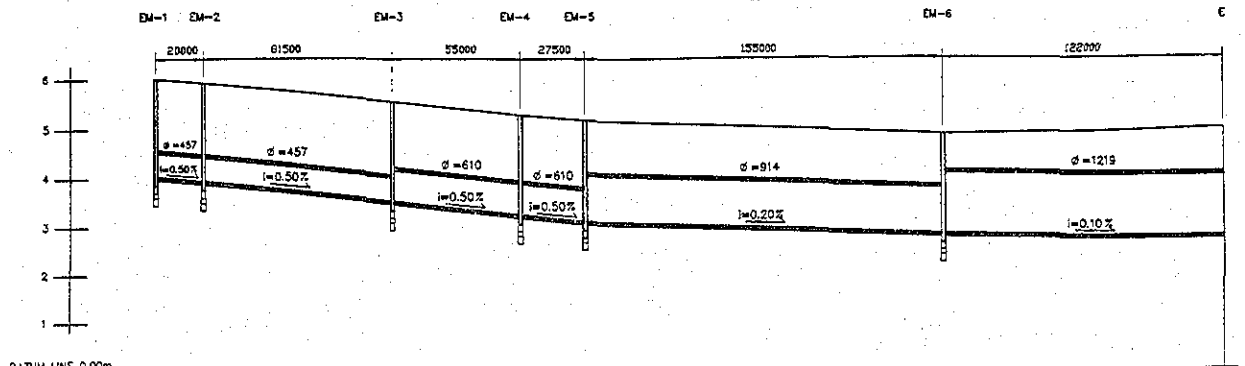
NIPPON KOEI CO., LTD.

DESIGNED BY :
CHECKED BY :
APPROVED BY :

SECTION : STORM DRAINAGE
SUB-SECTION : PROFILE AND DRAINAGE
TITLE : LONGITUDINAL PROFILE OF PIPE ROUTE D (2/2)

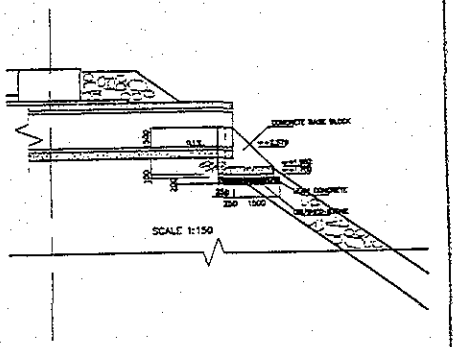
DATE : JULY/2002
SCALE : H =1 : 1000
V =1 : 100
DRAWING NO. DM-92-11-105

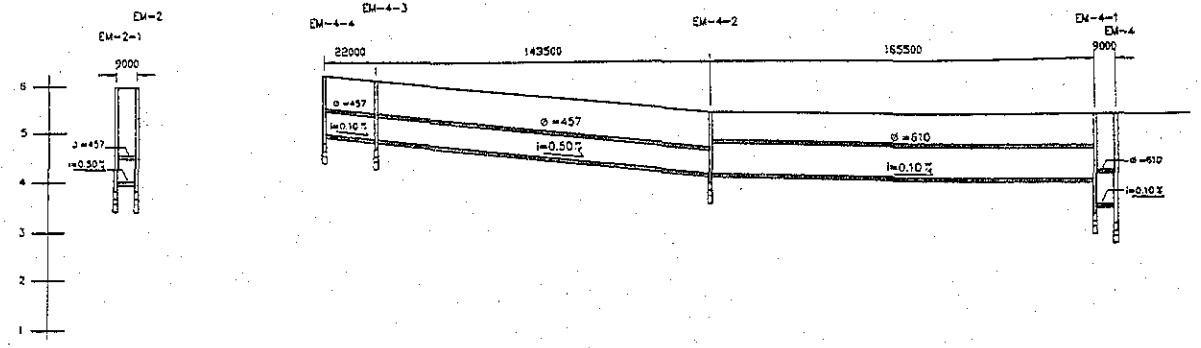
ROUTE "E"



DATUM LINE 0.00m

MANHOLE No.	EM-1	EM-2	EM-3	EM-4	EM-5	EM-6	E
GLAND LEVEL	6.06	5.93	5.53	5.33	5.22	4.89	5
INVERT LEVEL OF INLET PIPE	—	4.003	3.590	3.521	3.164	2.872	2.812
INVERT LEVEL OF OUTLET PIPE	4.097	3.993	3.59	3.314	3.179	2.869	
INVERT LEVEL OF MANHOLE	3.897	3.793	3.39	3.114	2.979	2.669	
WIDTH OF MANHOLE	1.2	1.2	1.2	1.5	1.5	1.5	





DATUM LINE 0.00m

MANHOLE No.	EM-2-1	EM-2
GLAND LEVEL	5.97	5.93
INVERT LEVEL OF INLET PIPE		4.003
INVERT LEVEL OF OUTLET PIPE	4.097	3.993
INVERT LEVEL OF MANHOLE	3.897	3.793
WIDTH OF MANHOLE	1.2	1.2

DATUM LINE 0.00m.

MANHOLE No.	EM-4-4	EM-4-3	EM-4-2	EM-4-1	EM-4
GLAND LEVEL	5.23	5.14	5.43	5.33	5.33
INVERT LEVEL OF INLET PIPE	—	4.093	4.176	4.009	3.499
INVERT LEVEL OF OUTLET PIPE	4.197	4.093	4.172	3.509	3.314
INVERT LEVEL OF MANHOLE	3.997	3.893	3.972	3.309	3.114
WIDTH OF MANHOLE	1.2	1.2	1.2	1.2	1.5

DATUM LINE 0.00m.

MANHOLE No.	EM-5-2	EM-5-1	EM-5
GLAND LEVEL	5.22	5.22	5.22
INVERT LEVEL OF INLET PIPE	—	3.305	3.164
INVERT LEVEL OF OUTLET PIPE	3.201	3.201	3.179
INVERT LEVEL OF MANHOLE	3.011	3.001	2.979
WIDTH OF MANHOLE	1.2	1.2	1.5

JICA JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

CEPA COMISION EJECUTIVA PORTUARIA AUTONOMA (CEPA)

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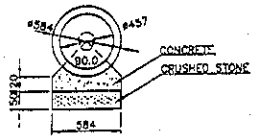
NIPPON KOEI CO., LTD.

DESIGNED BY :
CHECKED BY :
APPROVED BY :

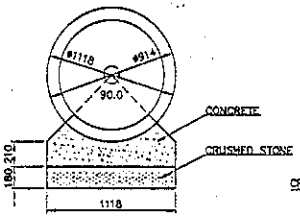
SECTION : STORM DRAINAGE
SUB-SECTION : PROFILE AND DRAINAGE
TITLE : LONGITUDINAL PROFILE OF PIPE ROUTE E

DATE : JULY/2002
SCALE : H =1 : 2000
V =1 : 100
DRAWING NO. Dw-02-01-127

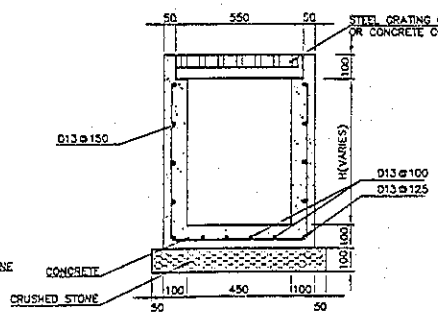
SECTION OF CULVERT (ø457)
SCALE 1:40

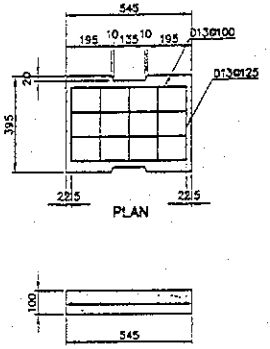


SECTION OF CULVERT (ø914)
SCALE 1:40



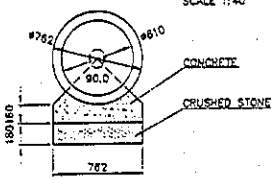
SECTION OF TRENCH WITH COVER (450)
SCALE 1:20



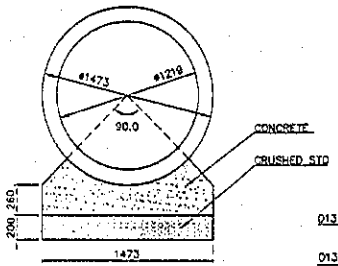


DETAILS OF CONCRETE COVER (450)
SCALE 1:20

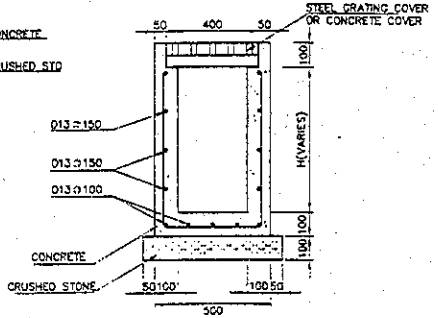
SECTION OF CULVERT (ø610)
SCALE 1:40

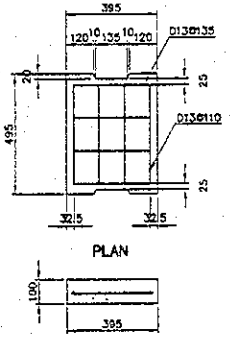


SECTION OF CULVERT (ø1219)
SCALE 1:40



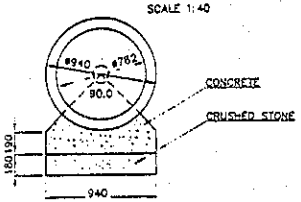
SECTION OF TRENCH WITH COVER (300)
SCALE 1:20





DETAILS OF CONCRETE COVER (300)
SCALE 1:20

SECTION OF CULVERT (ø762)
SCALE 1:40



LEGEND:
1. CEMENT CONCRETE CLASS: S6 IN 200
2. ALL DIMENSIONS ARE IN MILLIMETERS, UNLESS OTHERWISE INDICATED.

INFORMATION OF TRENCHS

NAME OF TRENCH	LENGTH (M)	TYPE OF COVER	SLOPE OF ROAD OR YARD (%)	SLOPE OF TRENCH (%)	SIZE OF TRENC H (MM)	HEIGHT OF TRENCH (MM) MINIMUM	MAXIMUM
AU-1	92.0	CONCRETE	0.20	0.20	300	300	300
AU-2	35.7	NONE	0.20	0.20	300	300	300
AU-3	89.8	NONE	0.20	0.20	300	300	300
AU-4	83.8	NONE	0.20	0.20	300	300	300
AU-4-1	94.9	CONCRETE	0.20	0.20	300	300	300
AU-5	93.8	NONE	0.20	0.20	300	300	300
AU-5-1	44.9	CONCRETE	0.10	0.10	300	300	300
AU-6	65.2	GRATING	0.00	0.10	450	450	515
AU-7	65.2	GRATING	0.00	0.10	450	450	515
AU-8	65.2	GRATING	0.00	0.10	450	450	515
AU-9	23.7	CONCRETE	0.00	0.10	300	300	324
AU-9-1	65.2	CONCRETE	0.00	0.15	300	300	398
BU-1	63.8	GRATING	0.00	0.10	450	450	514
BU-2	65.2	GRATING	0.00	0.10	450	450	515
BU-3	65.2	GRATING	0.00	0.10	450	450	515
BU-4	64.3	GRATING	0.00	0.10	450	450	514
BU-5	64.3	GRATING	0.00	0.20	300	300	429
BU-6	64.3	GRATING	0.00	0.10	450	450	514
BU-7	19.6	CONCRETE	0.00	0.10	300	300	320
BU-7-1	65.2	CONCRETE	0.00	0.10	450	450	515
BU-8	64.3	CONCRETE	0.00	0.10	300	300	364
BU-9	8.6	CONCRETE	0.00	0.10	300	300	309
CU-1	66.7	CONCRETE	0.00	0.10	300	300	367
CU-2	32.0	CONCRETE	0.00	0.10	300	300	332
CU-3	32.0	CONCRETE	0.00	0.10	300	300	332
CU-4	30.4	CONCRETE	0.50	0.50	300	300	300
CU-5	89.8	CONCRETE	0.20	0.20	300	300	300
CU-6	84.2	NONE	0.23	0.23	300	300	323
CU-7	93.0	NONE	0.20	0.20	300	300	300
CU-7-1	108.7	CONCRETE	0.00	0.10	450	450	560
CU-8	64.3	GRATING	0.20	0.20	300	300	300
CU-9	64.3	GRATING	0.20	0.20	300	300	300
CU-10	64.3	GRATING	0.20	0.20	300	300	300
CU-11	25.0	CONCRETE	0.00	0.10	300	300	325
CU-11-1	64.3	CONCRETE	0.00	0.10	450	450	514
CU-11-2	108.0	CONCRETE	0.00	0.10	450	450	558
DU-1	145.0	CONCRETE	0.50	0.50	300	300	300
DU-2	46.0	CONCRETE	0.25	0.25	300	300	300
DU-3	151.2	CONCRETE	0.00	0.10	300	300	451
DU-4	151.2	CONCRETE	0.00	0.10	450	450	601
DU-5	129.4	CONCRETE	0.20	0.20	300	300	300
DU-5-1	93.9	CONCRETE	0.20	0.20	300	300	300
DU-6	79.5	CONCRETE	0.20	0.20	300	300	300
DU-6-1	79.5	CONCRETE	0.20	0.20	300	300	300
DU-7	362.2	NONE	0.00	0.10	450	450	812
DU-8	98.0	NONE	0.50	0.50	300	300	300
DU-9	79.4	NONE	0.10	0.10	300	300	300
DU-9-1	144.7	CONCRETE	0.00	0.10	300	300	445
DU-10	128.2	NONE	0.17	0.17	300	300	300
DU-10-1	141.7	CONCRETE	0.00	0.10	300	300	442
DU-10-2	48.5	CONCRETE	0.00	0.10	300	300	350
DU-11	93.0	NONE	0.15	0.15	300	300	300
DU-11-1	108.0	CONCRETE	0.00	0.10	450	450	558
DU-11-2	108.0	CONCRETE	0.00	0.10	450	450	558
EU-1	188.4	CONCRETE	0.00	0.20	300	300	673
EU-2	21.6	CONCRETE	0.47	0.47	300	300	300
EU-3	78.9	CONCRETE	0.47	0.47	300	300	300
EU-4	90.4	CONCRETE	0.47	0.47	300	300	300
EU-5	24.1	CONCRETE	0.47	0.47	300	300	300
EU-6	176.9	CONCRETE	0.00	0.10	300	300	477
EU-7	139.3	CONCRETE	0.47	0.47	300	300	300
EU-8	139.3	CONCRETE	0.50	0.50	300	300	300
EU-9	153.5	CONCRETE	0.00	0.15	300	300	533
EU-9-1	123.1	CONCRETE	0.00	0.10	300	300	423
EU-9-2	28.9	CONCRETE	0.00	0.10	300	300	329
EU-10	162.2	NONE	0.00	0.10	300	300	462
EU-11	148.0	CONCRETE	0.20	0.20	300	300	300
EU-12	57.2	CONCRETE	0.00	0.25	450	450	593

JICA JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

CEPA COMISION EJECUTIVA PORTUARIA AUTONOMA (CEPA)

DETAILED DESIGN ON PORT REACTIVATION PROJECT IN LA UNION PROVENCE OF THE REPUBLIC OF EL SALVADOR

NIPPON KOEI CO., LTD.

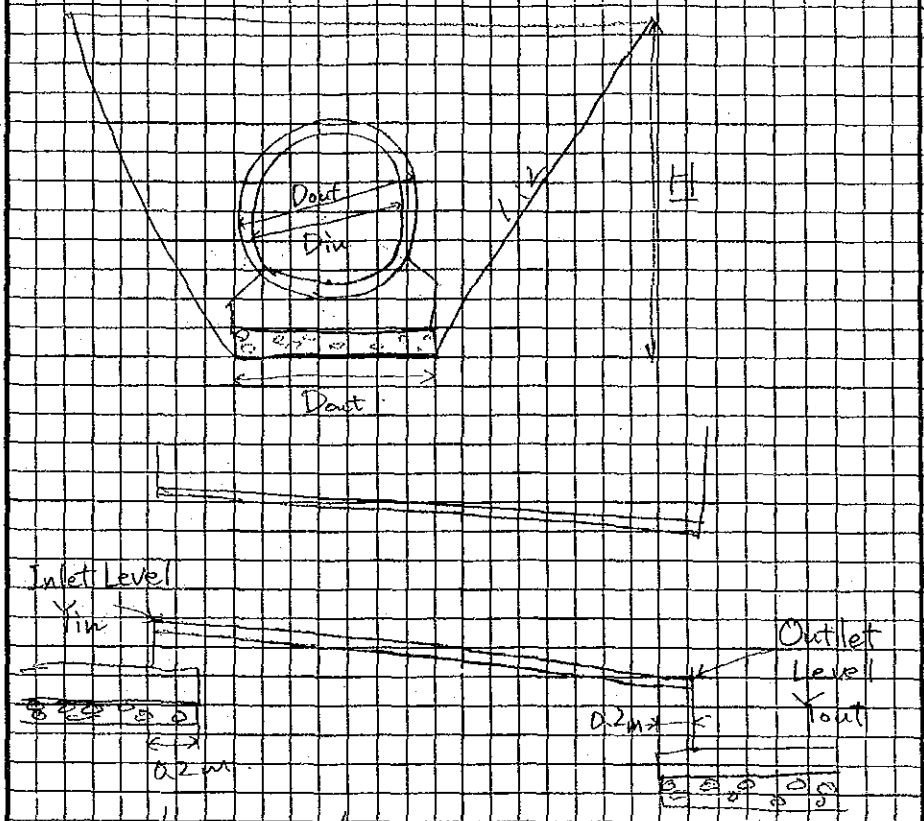
DESIGNED BY :
CHECKED BY :
APPROVED BY :

SECTION : STORM DRAINAGE
SUB-SECTION : GENERAL
TITLE : TYPICAL SECTION OF PIPE CULVERT AND TRENCHS

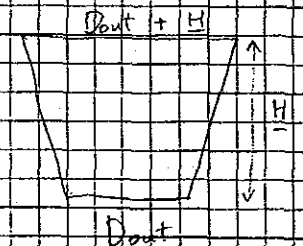
DATE : JULY/2002
SCALE : INDICATED
DRAWING NO. DW-SD-01-009

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	Pipe culvert 457 mm	Calc. Index No.	
Subject	Excavation and Disposal	Page No.	Rev.

References/ Notes



$$L_{ac} = L - 0.2 \times 2$$



$$A = (2\,D_{out} + H) \times H \div 2$$

$$V = A \times L_{ac}$$

	Prepared by	Checked by
	/ /200	/ /200

Pipe Culvert集計

		D_{in} (m)	D_{out} (m)	t (m)	G (m)	Y_{in} (m)	Y_{out} (m)	H (m)	L (m)	Lac (m)	Vex (m3)	Vcs (m3)	Vlc (m3)	Vbf (m3)	Cmpct (m2)
1	CP-1	0.457	0.584	0.064	5.55	3.599	3.545	2.312	17	16.6	67	1.46	1.47	60	48.1
2	CP-2	0.457	0.584	0.064	5.487	3.543	3.505	2.297	20	19.6	78	1.72	1.74	70	56.5
3	CP-3	0.457	0.584	0.064	5.437	3.503	3.431	2.304	35	34.6	139	3.04	3.06	124	100
4	CP-4	0.457	0.584	0.064	5.537	3.429	3.391	2.461	20	19.6	88	1.72	1.74	80	59.7
5	CP-4-1	0.457	0.584	0.064	5.487	3.469	3.431	2.371	20	19.6	83	1.72	1.74	75	58
6	CP-5	0.457	0.584	0.064	5.637	3.389	3.257	2.648	70	69.6	352	6.1	6.16	321	225
7	CP-5-1	0.457	0.584	0.064	5.637	3.405	3.391	2.573	8	7.6	37	0.67	0.68	34	24
8	CP-7	0.457	0.584	0.064	5.682	2.891	2.824	3.158	35	34.6	237	3.04	3.06	222	129.5
9	CP-8-1	0.457	0.584	0.064	5.507	2.955	2.824	2.951	68	67.6	411	5.93	5.98	381	239
10	CP-8-1-1	0.457	0.584	0.064	5.55	3.019	2.957	2.896	30	29.6	175	2.6	2.62	162	103.1
11	CP-8-2	0.457	0.584	0.064	5.507	2.995	2.957	2.865	20	19.6	114	1.72	1.74	106	67.7
12	CP-8-2-1	0.457	0.584	0.064	5.555	3.021	2.997	2.88	10	9.6	56	0.85	0.85	52	33.3
13	CP-8-3	0.457	0.584	0.064	5.507	3.069	2.997	2.808	35	34.6	194	3.04	3.06	179	117.4
14	CP-8-4	0.457	0.584	0.064	5.507	3.095	3.071	2.758	10	9.6	52	0.85	0.85	48	32.1
15	DP-1	0.457	0.584	0.064	5.875	4.997	4.253	1.584	129.19	128.79	281	11.29	11.39	224	279.3
16	DP-2	0.457	0.584	0.064	5.35	3.347	3.249	2.386	20.82	20.42	87	1.79	1.81	78	60.7
17	DP-3	0.457	0.584	0.064	5.27	3.245	3.226	2.368	24.13	23.73	100	2.08	2.1	90	70.1
18	DP-4-1	0.457	0.584	0.064	5.34	3.247	3.226	2.437	21.75	21.35	94	1.88	1.89	85	64.5
19	DP-7-1	0.457	0.584	0.064	5.17	2.883	2.868	2.628	18.25	17.85	90	1.57	1.58	82	57.4
20	DP-9-1	0.457	0.584	0.064	5.015	2.746	2.543	2.704	150	149.6	784	13.11	13.23	718	491.9
21	DP-9-2	0.457	0.584	0.064	5.01	2.764	2.748	2.588	18.25	17.85	87	1.57	1.58	79	56.7
22	EP-1	0.457	0.584	0.064	6.015	4.097	4.003	2.299	20	19.6	79	1.72	1.74	71	56.6
23	EP-2	0.457	0.584	0.064	5.78	3.997	3.596	2.317	81.47	81.07	328	7.11	7.17	292	235.2
24	EP-2-1	0.457	0.584	0.064	5.97	4.008	4.003	2.298	9.1	8.7	35	0.77	0.77	32	25.1
25	EP-4-3	0.457	0.584	0.064	5.785	4.887	4.176	1.587	142.69	142.29	312	12.47	12.58	249	309
26	EP-4-4	0.457	0.584	0.064	6.195	4.997	4.893	1.584	22	21.6	48	1.9	1.91	39	46.9
27	EP-5-2	0.457	0.584	0.064	5.22	3.211	3.205	2.346	9.1	8.7	36	0.77	0.77	33	25.5
	Total								1,070		4450	92.5	93.3	3990	3080
1	AP-1	0.61	0.762	0.076	5.522	2.644	2.61	3.311	20	19.6	157	2.69	3.01	143	79.9
2	AP-2	0.61	0.762	0.076	5.427	2.606	2.532	3.274	40	39.6	312	5.44	6.07	283	159.9
3	AP-3	0.61	0.762	0.076	5.332	2.528	2.484	3.242	26	25.6	198	3.52	3.92	179	102.6
4	AP-4	0.61	0.762	0.076	5.232	2.48	2.313	3.251	85.78	85.38	663	11.72	13.08	600	342.7
5	AP-5-1	0.61	0.762	0.076	5.132	2.358	2.309	3.214	26	25.6	195	3.52	3.92	176	101.8
6	AP-6-1	0.61	0.762	0.076	4.928	2.182	2.138	3.184	26	25.6	192	3.52	3.92	173	101.1
7	AP-6-2	0.61	0.762	0.076	4.928	2.207	2.186	3.147	12.65	12.25	91	1.69	1.88	82	47.9
8	AP-7-1	0.61	0.762	0.076	4.711	1.997	1.952	3.152	26	25.6	189	3.52	3.92	170	100.2
9	BP-1-1	0.61	0.762	0.076	5.332	2.129	2.085	3.641	26	25.6	241	3.52	3.92	222	112.8
10	BP-2-1	0.61	0.762	0.076	5.132	1.958	1.914	3.612	26	25.6	238	3.52	3.92	219	112
11	BP-3-1	0.61	0.762	0.076	4.928	1.782	1.738	3.584	26	25.6	235	3.52	3.92	216	111.3
12	CP-11-1	0.61	0.762	0.076	5.132	2.579	2.535	2.991	26	25.6	173	3.52	3.92	154	96.1
13	CP-12-1	0.61	0.762	0.076	4.928	2.447	2.403	2.919	26	25.6	167	3.52	3.92	148	94.3
14	CP-13-1	0.61	0.762	0.076	4.711	1.64	1.596	3.509	26	25.6	227	3.52	3.92	208	109.4
15	CP-6	0.61	0.762	0.076	5.747	3.255	3.193	2.939	30	29.6	195	4.06	4.54	173	109.6
16	CP-8	0.61	0.762	0.076	5.42	2.82	2.754	3.049	35	34.6	242	4.75	5.3	216	131.9
17	CP-9	0.61	0.762	0.076	5.332	2.75	2.706	3.02	26	25.6	176	3.52	3.92	157	96.9
18	DP-4	0.61	0.762	0.076	5.34	3.225	3.066	2.61	160	159.6	862	21.9	24.44	743	538.2
19	DP-5-1	0.61	0.762	0.076	5.34	3.087	3.066	2.679	21.75	21.35	121	2.93	3.27	105	73.5
20	EP-3	0.61	0.762	0.076	5.46	3.59	3.321	2.42	55.01	54.61	261	7.5	8.37	221	173.8
21	EP-4	0.61	0.762	0.076	5.275	3.314	3.184	2.442	27.3	26.9	131	3.69	4.12	111	86.2
22	EP-4-1	0.61	0.762	0.076	5.33	3.506	3.499	2.243	9.1	8.7	37	1.2	1.34	31	26.2
23	EP-4-2	0.61	0.762	0.076	5.38	4.172	4.008	1.706	5.43	5.03	14	0.69	0.78	11	12.5
24	EP-5-1	0.61	0.762	0.076	5.22	3.201	3.184	2.443	15.3	14.9	73	2.05	2.29	62	47.8
	Total								810		5390	110	122	4810	2970
1	AP-5	0.762	0.94	0.089	5.03	2.309	2.138	3.265	87.49	87.09	732	14.74	19.7	637	366.3
2	BP-1	0.762	0.94	0.089	5.232	2.081	1.914	3.693	85.78	85.38	879	14.45	19.31	786	395.6
	Total								174		1620	29.2	39.1	1430	762
1	AP-6	0.914	1.118	0.102	4.82	2.134	1.952	3.269	93.6	93.2	839	18.76	28.14	701	408.9
2	BP-2	0.914	1.118	0.102	5.03	1.91	1.739	3.697	87.49	87.09	956	17.53	26.3	827	419.4
3	CP-10	0.914	1.118	0.102	5.232	2.702	2.535	3.105	85.78	85.38	708	17.19	25.78	581	360.6
4	DP-5	0.914	1.118	0.102	4.983	3.065	3.039	2.423	37.88	37.48	212	7.55	11.32	156	132.8
5	DP-6	0.914	1.118	0.102	4.898	3.036	2.868	2.438	85.88	85.48	488	17.21	25.81	361	304
6	DP-7	0.914	1.118	0.102	5.145	2.865	2.722	2.843	150	149.6	1081	30.11	45.17	859	592.6
7	DP-8	0.914	1.118	0.102	5.069	2.719	2.543	2.93	90	89.6	679	18.04	27.06	546	362.8
8	DP-8-1	0.914	1.118	0.102	4.872	2.9	2.722	2.553	90	89.6	548	18.04	27.06	415	329
9	EP-5	0.914	1.118	0.102	5.055	3.179	2.872	2.521	145	144.6	868	29.1	43.66	653	526.2
	Total								866		6380	174	261	5100	3440
1	BP-3	1.219	1.473	0.127	4.82	1.735	1.599	3.74	93.6	93.2	1166	27.46	46.55	933	485.9
2	BP-4	1.219	1.473	0.127	4.711	1.595	1.564	3.718	20	19.6	243	5.78	9.79	194	101.8
3	BP-5-1	1.219	1.473	0.127	4.711	1.573	1.564	3.729	6	5.6	70	1.65	2.8	56	29.2
4	CP-11	1.219	1.473	0.127	5.03	2.531	2.403	3.15	87.49	87.09	837	25.66	43.5	619	402.7
5	CP-12	1.219	1.473	0.127	4.82	2.399	2.217	3.099	93.6	93.2	873	27.46	46.55	640	426.2
6	DP-10	1.219	1.473	0.127	4.778	2.284	2.101	3.172	90.6	90.2	876	26.58	45.05	650	419
7	DP-9	1.219	1.473	0.127	4.932	2.539	2.288	3.105	130.5	130.1	1223	38.33	64.98	898	595.6
8	EP-6	1.219	1.473	0.127	4.89	2.869	2.812	2.636	58	57.6	424	16.97	28.77	280	236.7
	Total								580		5720	170	288	4270	2700

NIPPON KOEI CO.,LTD.

QUANTITY CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province	**Project Code**	JC1N004/2N001
Work Section Title	Pipe culvert 457mm	**Pay Item No. (BOQ)**	24-01a2
Quantity Item	Crushed stone for foundation	**Unit**	m3

Calculation Procedure Applied

Volume of crushed stone was computed by multiplying section area by length. Regarding actual length, mariole base was taken into consideration.

References. Calculation Base and Revisions

See the last item of excavation and disposal (24-01a1).

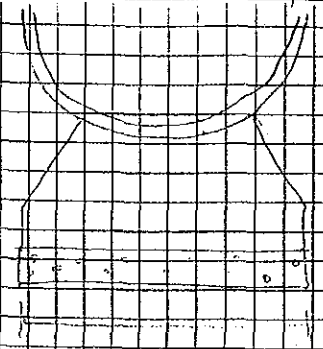
Rev	Prepared by	Prepared Date	No. of Pages	Checked by	Checked Date	Reviewed by	Reviewed Date	Superseded by Calc No.
0	Kala Grace L.			Mr. Inuma		Mr. Ando		
1								
2								
3								

FN : Calculation_Cover_Sheet_020504_seg cover

NIPPON KOEI CO.,LTD.

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	Pipe culvert 457 mm	Calc. Index No.	
Subject	Crushed stone for foundation	Page No.	Rev.

References/ Notes



$V = 0.15 \times 0.584 \times L_{ac}$

	Prepared by	Checked by
	/ /200	/ /200

FN: Calculation_Sheet

Pipe Culvert集計

		D_{in} (m)	D_{out} (m)	t (m)	G (m)	Y_{in} (m)	Y_{out} (m)	H (m)	L (m)	Lac (m)	Vex (m3)	Vcs (m3)	Vlc (m3)	Vbf (m3)	Cmpct (m2)
1	CP-1	0.457	0.584	0.064	5.55	3.599	3.545	2.312	17	16.6	67	1.46	1.47	60	48.1
2	CP-2	0.457	0.584	0.064	5.487	3.543	3.505	2.297	20	19.6	78	1.72	1.74	70	56.5
3	CP-3	0.457	0.584	0.064	5.437	3.503	3.431	2.304	35	34.6	139	3.04	3.06	124	100
4	CP-4	0.457	0.584	0.064	5.537	3.429	3.391	2.461	20	19.6	88	1.72	1.74	80	59.7
5	CP-4-1	0.457	0.584	0.064	5.487	3.469	3.431	2.371	20	19.6	83	1.72	1.74	75	58
6	CP-5	0.457	0.584	0.064	5.637	3.389	3.257	2.648	70	69.6	352	6.1	6.16	321	225
7	CP-5-1	0.457	0.584	0.064	5.637	3.405	3.391	2.573	8	7.6	37	0.67	0.68	34	24
8	CP-7	0.457	0.584	0.064	5.682	2.891	2.824	3.158	35	34.6	237	3.04	3.06	222	129.5
9	CP-8-1	0.457	0.584	0.064	5.507	2.955	2.824	2.951	68	67.6	411	5.93	5.98	381	239
10	CP-8-1-1	0.457	0.584	0.064	5.55	3.019	2.957	2.896	30	29.6	175	2.6	2.62	162	103.1
11	CP-8-2	0.457	0.584	0.064	5.507	2.995	2.957	2.865	20	19.6	114	1.72	1.74	106	67.7
12	CP-8-2-1	0.457	0.584	0.064	5.555	3.021	2.997	2.88	10	9.6	56	0.85	0.85	52	33.3
13	CP-8-3	0.457	0.584	0.064	5.507	3.069	2.997	2.808	35	34.6	194	3.04	3.06	179	117.4
14	CP-8-4	0.457	0.584	0.064	5.507	3.095	3.071	2.758	10	9.6	52	0.85	0.85	48	32.1
15	DP-1	0.457	0.584	0.064	5.875	4.997	4.253	1.584	129.19	128.79	281	11.29	11.39	224	279.3
16	DP-2	0.457	0.584	0.064	5.35	3.347	3.249	2.386	20.82	20.42	87	1.79	1.81	78	60.7
17	DP-3	0.457	0.584	0.064	5.27	3.245	3.226	2.368	24.13	23.73	100	2.08	2.1	90	70.1
18	DP-4-1	0.457	0.584	0.064	5.34	3.247	3.226	2.437	21.75	21.35	94	1.88	1.89	85	64.5
19	DP-7-1	0.457	0.584	0.064	5.17	2.883	2.868	2.628	18.25	17.85	90	1.57	1.58	82	57.4
20	DP-9-1	0.457	0.584	0.064	5.015	2.746	2.543	2.704	150	149.6	784	13.11	13.23	718	491.9
21	DP-9-2	0.457	0.584	0.064	5.01	2.764	2.748	2.588	18.25	17.85	87	1.57	1.58	79	56.7
22	EP-1	0.457	0.584	0.064	6.015	4.097	4.003	2.299	20	19.6	79	1.72	1.74	71	56.6
23	EP-2	0.457	0.584	0.064	5.78	3.997	3.596	2.317	81.47	81.07	328	7.11	7.17	292	235.2
24	EP-2-1	0.457	0.584	0.064	5.97	4.008	4.003	2.298	9.1	8.7	35	0.77	0.77	32	25.1
25	EP-4-3	0.457	0.584	0.064	5.785	4.887	4.176	1.587	142.69	142.29	312	12.47	12.58	249	309
26	EP-4-4	0.457	0.584	0.064	6.195	4.997	4.893	1.584	22	21.6	48	1.9	1.91	39	46.9
27	EP-5-2	0.457	0.584	0.064	5.22	3.211	3.205	2.346	9.1	8.7	36	0.77	0.77	33	25.5
	Total								1,070		4450	92.5	93.3	3990	3080
1	AP-1	0.61	0.762	0.076	5.522	2.644	2.61	3.311	20	19.6	157	2.69	3.01	143	79.9
2	AP-2	0.61	0.762	0.076	5.427	2.606	2.532	3.274	40	39.6	312	5.44	6.07	283	159.9
3	AP-3	0.61	0.762	0.076	5.332	2.528	2.484	3.242	26	25.6	198	3.52	3.92	179	102.6
4	AP-4	0.61	0.762	0.076	5.232	2.48	2.313	3.251	85.78	85.38	663	11.72	13.08	600	342.7
5	AP-5-1	0.61	0.762	0.076	5.132	2.358	2.309	3.214	26	25.6	195	3.52	3.92	176	101.8
6	AP-6-1	0.61	0.762	0.076	4.928	2.182	2.138	3.184	26	25.6	192	3.52	3.92	173	101.1
7	AP-6-2	0.61	0.762	0.076	4.928	2.207	2.186	3.147	12.65	12.25	91	1.69	1.88	82	47.9
8	AP-7-1	0.61	0.762	0.076	4.711	1.997	1.952	3.152	26	25.6	189	3.52	3.92	170	100.2
9	BP-1-1	0.61	0.762	0.076	5.332	2.129	2.085	3.641	26	25.6	241	3.52	3.92	222	112.8
10	BP-2-1	0.61	0.762	0.076	5.132	1.958	1.914	3.612	26	25.6	238	3.52	3.92	219	112
11	BP-3-1	0.61	0.762	0.076	4.928	1.782	1.738	3.584	26	25.6	235	3.52	3.92	216	111.3
12	CP-11-1	0.61	0.762	0.076	5.132	2.579	2.535	2.991	26	25.6	173	3.52	3.92	154	96.1
13	CP-12-1	0.61	0.762	0.076	4.928	2.447	2.403	2.919	26	25.6	167	3.52	3.92	148	94.3
14	CP-13-1	0.61	0.762	0.076	4.711	1.64	1.596	3.509	26	25.6	227	3.52	3.92	208	109.4
15	CP-6	0.61	0.762	0.076	5.747	3.255	3.193	2.939	30	29.6	195	4.06	4.54	173	109.6
16	CP-8	0.61	0.762	0.076	5.42	2.82	2.754	3.049	35	34.6	242	4.75	5.3	216	131.9
17	CP-9	0.61	0.762	0.076	5.332	2.75	2.706	3.02	26	25.6	176	3.52	3.92	157	96.9
18	DP-4	0.61	0.762	0.076	5.34	3.225	3.066	2.61	160	159.6	862	21.9	24.44	743	538.2
19	DP-5-1	0.61	0.762	0.076	5.34	3.087	3.066	2.679	21.75	21.35	121	2.93	3.27	105	73.5
20	EP-3	0.61	0.762	0.076	5.46	3.59	3.321	2.42	55.01	54.61	261	7.5	8.37	221	173.8
21	EP-4	0.61	0.762	0.076	5.275	3.314	3.184	2.442	27.3	26.9	131	3.69	4.12	111	86.2
22	EP-4-1	0.61	0.762	0.076	5.33	3.506	3.499	2.243	9.1	8.7	37	1.2	1.34	31	26.2
23	EP-4-2	0.61	0.762	0.076	5.38	4.172	4.008	1.706	5.43	5.03	14	0.69	0.78	11	12.5
24	EP-5-1	0.61	0.762	0.076	5.22	3.201	3.184	2.443	15.3	14.9	73	2.05	2.29	62	47.8
	Total								810		5390	110	122	4810	2970
1	AP-5	0.762	0.94	0.089	5.03	2.309	2.138	3.265	87.49	87.09	732	14.74	19.7	637	366.3
2	BP-1	0.762	0.94	0.089	5.232	2.081	1.914	3.693	85.78	85.38	879	14.45	19.31	786	395.6
	Total								174		1620	29.2	39.1	1430	762
1	AP-6	0.914	1.118	0.102	4.82	2.134	1.952	3.269	93.6	93.2	839	18.76	28.14	701	408.9
2	BP-2	0.914	1.118	0.102	5.03	1.91	1.739	3.697	87.49	87.09	956	17.53	26.3	827	419.4
3	CP-10	0.914	1.118	0.102	5.232	2.702	2.535	3.105	85.78	85.38	708	17.19	25.78	581	360.6
4	DP-5	0.914	1.118	0.102	4.983	3.065	3.039	2.423	37.88	37.48	212	7.55	11.32	156	132.8
5	DP-6	0.914	1.118	0.102	4.898	3.036	2.868	2.438	85.88	85.48	488	17.21	25.81	361	304
6	DP-7	0.914	1.118	0.102	5.145	2.865	2.722	2.843	150	149.6	1081	30.11	45.17	859	592.6
7	DP-8	0.914	1.118	0.102	5.069	2.719	2.543	2.93	90	89.6	679	18.04	27.06	546	362.8
8	DP-8-1	0.914	1.118	0.102	4.872	2.9	2.722	2.553	90	89.6	548	18.04	27.06	415	329
9	EP-5	0.914	1.118	0.102	5.055	3.179	2.872	2.521	145	144.6	868	29.1	43.66	653	526.2
	Total								866		6380	174	261	5100	3440
1	BP-3	1.219	1.473	0.127	4.82	1.735	1.599	3.74	93.6	93.2	1166	27.46	46.55	933	485.9
2	BP-4	1.219	1.473	0.127	4.711	1.595	1.564	3.718	20	19.6	243	5.78	9.79	194	101.8
3	BP-5-1	1.219	1.473	0.127	4.711	1.573	1.564	3.729	6	5.6	70	1.65	2.8	56	29.2
4	CP-11	1.219	1.473	0.127	5.03	2.531	2.403	3.15	87.49	87.09	837	25.66	43.5	619	402.7
5	CP-12	1.219	1.473	0.127	4.82	2.399	2.217	3.099	93.6	93.2	873	27.46	46.55	640	426.2
6	DP-10	1.219	1.473	0.127	4.778	2.284	2.101	3.172	90.6	90.2	876	26.58	45.05	650	419
7	DP-9	1.219	1.473	0.127	4.932	2.539	2.288	3.105	130.5	130.1	1223	38.33	64.98	898	595.6
8	EP-6	1.219	1.473	0.127	4.89	2.869	2.812	2.636	58	57.6	424	16.97	28.77	280	236.7
	Total								580		5720	170	288	4270	2700

NIPPON KOEI CO.,LTD.

QUANTITY CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province	Project Code	JC1N004/2N001
Work Section Title	P.Po culvert 457mm	Pay Item No. (BOQ)	2 H-0103
Quantity Item	Lean concrete	Unit	m³

Calculation Procedure Applied

Volume of lean concrete was computed by multiplying section area by actual length, manhole base was taken into consideration.

References, Calculation Base and Revisions

See the item of excavation and disposal.

Rev	Prepared by	Prepared Date	No. of Pages	Checked by	Checked Date	Reviewed by	Reviewed Date	Superseded by Calc No.
0	Kola Gorio			Mr. Inuma		Mr. Ando		
1								
2								
3								

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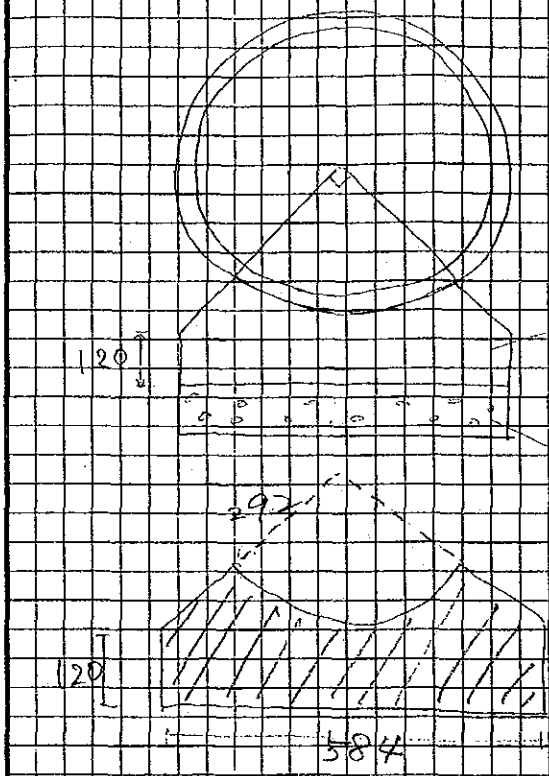
NIPPON KOEI CO.,LTD.

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	Pipe culvert 457mm	Calc. Index No.	
Subject	Lean concrete	Page No.	Rev.

References/ Notes



$$A = 0.12 \times 0.584 + 0.584 \times 0.292 \div 2 - (0.292)^2 \times \pi$$

$$V = A \times L_{ac}$$

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	/ /200		/ /200

FN: Calculation_Sheet

Pipe Culvert集計

		D_{in} (m)	D_{out} (m)	t (m)	G (m)	Y_{in} (m)	Y_{out} (m)	H (m)	L (m)	Lac (m)	Vex (m3)	Vcs (m3)	Vlc (m3)	Vbf (m3)	Cmpct (m2)
1	CP-1	0.457	0.584	0.064	5.55	3.599	3.545	2.312	17	16.6	67	1.46	1.47	60	48.1
2	CP-2	0.457	0.584	0.064	5.487	3.543	3.505	2.297	20	19.6	78	1.72	1.74	70	56.5
3	CP-3	0.457	0.584	0.064	5.437	3.503	3.431	2.304	35	34.6	139	3.04	3.06	124	100
4	CP-4	0.457	0.584	0.064	5.537	3.429	3.391	2.461	20	19.6	88	1.72	1.74	80	59.7
5	CP-4-1	0.457	0.584	0.064	5.487	3.469	3.431	2.371	20	19.6	83	1.72	1.74	75	58
6	CP-5	0.457	0.584	0.064	5.637	3.389	3.257	2.648	70	69.6	352	6.1	6.16	321	225
7	CP-5-1	0.457	0.584	0.064	5.637	3.405	3.391	2.573	8	7.6	37	0.67	0.68	34	24
8	CP-7	0.457	0.584	0.064	5.682	2.891	2.824	3.158	35	34.6	237	3.04	3.06	222	129.5
9	CP-8-1	0.457	0.584	0.064	5.507	2.955	2.824	2.951	68	67.6	411	5.93	5.98	381	239
10	CP-8-1-1	0.457	0.584	0.064	5.55	3.019	2.957	2.896	30	29.6	175	2.6	2.62	162	103.1
11	CP-8-2	0.457	0.584	0.064	5.507	2.995	2.957	2.865	20	19.6	114	1.72	1.74	106	67.7
12	CP-8-2-1	0.457	0.584	0.064	5.555	3.021	2.997	2.88	10	9.6	56	0.85	0.85	52	33.3
13	CP-8-3	0.457	0.584	0.064	5.507	3.069	2.997	2.808	35	34.6	194	3.04	3.06	179	117.4
14	CP-8-4	0.457	0.584	0.064	5.507	3.095	3.071	2.758	10	9.6	52	0.85	0.85	48	32.1
15	DP-1	0.457	0.584	0.064	5.875	4.997	4.253	1.584	129.19	128.79	281	11.29	11.39	224	279.3
16	DP-2	0.457	0.584	0.064	5.35	3.347	3.249	2.386	20.82	20.42	87	1.79	1.81	78	60.7
17	DP-3	0.457	0.584	0.064	5.27	3.245	3.226	2.368	24.13	23.73	100	2.08	2.1	90	70.1
18	DP-4-1	0.457	0.584	0.064	5.34	3.247	3.226	2.437	21.75	21.35	94	1.88	1.89	85	64.5
19	DP-7-1	0.457	0.584	0.064	5.17	2.883	2.868	2.628	18.25	17.85	90	1.57	1.58	82	57.4
20	DP-9-1	0.457	0.584	0.064	5.015	2.746	2.543	2.704	150	149.6	784	13.11	13.23	718	491.9
21	DP-9-2	0.457	0.584	0.064	5.01	2.764	2.748	2.588	18.25	17.85	87	1.57	1.58	79	56.7
22	EP-1	0.457	0.584	0.064	6.015	4.097	4.003	2.299	20	19.6	79	1.72	1.74	71	56.6
23	EP-2	0.457	0.584	0.064	5.78	3.997	3.596	2.317	81.47	81.07	328	7.11	7.17	292	235.2
24	EP-2-1	0.457	0.584	0.064	5.97	4.008	4.003	2.298	9.1	8.7	35	0.77	0.77	32	25.1
25	EP-4-3	0.457	0.584	0.064	5.785	4.687	4.176	1.587	142.69	142.29	312	12.47	12.58	249	309
26	EP-4-4	0.457	0.584	0.064	6.195	4.997	4.893	1.584	22	21.6	48	1.9	1.91	39	46.9
27	EP-5-2	0.457	0.584	0.064	5.22	3.211	3.205	2.346	9.1	8.7	36	0.77	0.77	33	25.5
	Total								1,070		4450	92.5	93.3	3990	3080
1	AP-1	0.61	0.762	0.076	5.522	2.644	2.61	3.311	20	19.6	157	2.69	3.01	143	79.9
2	AP-2	0.61	0.762	0.076	5.427	2.606	2.532	3.274	40	39.6	312	5.44	6.07	283	159.9
3	AP-3	0.61	0.762	0.076	5.332	2.528	2.484	3.242	26	25.6	198	3.52	3.92	179	102.6
4	AP-4	0.61	0.762	0.076	5.232	2.48	2.313	3.251	85.78	85.38	663	11.72	13.08	600	342.7
5	AP-5-1	0.61	0.762	0.076	5.132	2.358	2.309	3.214	26	25.6	195	3.52	3.92	176	101.8
6	AP-6-1	0.61	0.762	0.076	4.928	2.182	2.138	3.184	26	25.6	192	3.52	3.92	173	101.1
7	AP-6-2	0.61	0.762	0.076	4.928	2.207	2.186	3.147	12.65	12.25	91	1.69	1.88	82	47.9
8	AP-7-1	0.61	0.762	0.076	4.711	1.997	1.952	3.152	26	25.6	189	3.52	3.92	170	100.2
9	BP-1-1	0.61	0.762	0.076	5.332	2.129	2.085	3.641	26	25.6	241	3.52	3.92	222	112.8
10	BP-2-1	0.61	0.762	0.076	5.132	1.958	1.914	3.612	26	25.6	238	3.52	3.92	219	112
11	BP-3-1	0.61	0.762	0.076	4.928	1.782	1.738	3.584	26	25.6	235	3.52	3.92	216	111.3
12	CP-11-1	0.61	0.762	0.076	5.132	2.579	2.535	2.991	26	25.6	173	3.52	3.92	154	96.1
13	CP-12-1	0.61	0.762	0.076	4.928	2.447	2.403	2.919	26	25.6	167	3.52	3.92	148	94.3
14	CP-13-1	0.61	0.762	0.076	4.711	1.64	1.596	3.509	26	25.6	227	3.52	3.92	208	109.4
15	CP-6	0.61	0.762	0.076	5.747	3.255	3.193	2.939	30	29.6	195	4.06	4.54	173	109.6
16	CP-8	0.61	0.762	0.076	5.42	2.82	2.754	3.049	35	34.6	242	4.75	5.3	216	131.9
17	CP-9	0.61	0.762	0.076	5.332	2.75	2.706	3.02	26	25.6	176	3.52	3.92	157	96.9
18	DP-4	0.61	0.762	0.076	5.34	3.225	3.066	2.61	160	159.6	862	21.9	24.44	743	538.2
19	DP-5-1	0.61	0.762	0.076	5.34	3.087	3.066	2.679	21.75	21.35	121	2.93	3.27	105	73.5
20	EP-3	0.61	0.762	0.076	5.46	3.59	3.321	2.42	55.01	54.61	261	7.5	8.37	221	173.8
21	EP-4	0.61	0.762	0.076	5.275	3.314	3.184	2.442	27.3	26.9	131	3.69	4.12	111	86.2
22	EP-4-1	0.61	0.762	0.076	5.33	3.506	3.499	2.243	9.1	8.7	37	1.2	1.34	31	26.2
23	EP-4-2	0.61	0.762	0.076	5.38	4.172	4.008	1.706	5.43	5.03	14	0.69	0.78	11	12.5
24	EP-5-1	0.61	0.762	0.076	5.22	3.201	3.184	2.443	15.3	14.9	73	2.05	2.29	62	47.8
	Total								810		5390	110	122	4810	2970
1	AP-5	0.762	0.94	0.089	5.03	2.309	2.138	3.265	87.49	87.09	732	14.74	19.7	637	366.3
2	BP-1	0.762	0.94	0.089	5.232	2.081	1.914	3.693	85.78	85.38	879	14.45	19.31	786	395.6
	Total								174		1620	29.2	39.1	1430	762
1	AP-6	0.914	1.118	0.102	4.82	2.134	1.952	3.269	93.6	93.2	839	18.76	28.14	701	408.9
2	BP-2	0.914	1.118	0.102	5.03	1.91	1.739	3.697	87.49	87.09	956	17.53	26.3	827	419.4
3	CP-10	0.914	1.118	0.102	5.232	2.702	2.535	3.105	85.78	85.38	708	17.19	25.78	581	360.6
4	DP-5	0.914	1.118	0.102	4.983	3.065	3.039	2.423	37.88	37.48	212	7.55	11.32	156	132.8
5	DP-6	0.914	1.118	0.102	4.898	3.036	2.868	2.438	85.88	85.48	488	17.21	25.81	361	304
6	DP-7	0.914	1.118	0.102	5.145	2.865	2.722	2.843	150	149.6	1081	30.11	45.17	859	592.6
7	DP-8	0.914	1.118	0.102	5.069	2.719	2.543	2.93	90	89.6	679	18.04	27.06	546	362.8
8	DP-8-1	0.914	1.118	0.102	4.872	2.9	2.722	2.553	90	89.6	548	18.04	27.06	415	329
9	EP-5	0.914	1.118	0.102	5.055	3.179	2.872	2.521	145	144.6	868	29.1	43.66	653	526.2
	Total								866		6380	174	261	5100	3440
1	BP-3	1.219	1.473	0.127	4.82	1.735	1.599	3.74	93.6	93.2	1166	27.46	46.55	933	485.9
2	BP-4	1.219	1.473	0.127	4.711	1.595	1.564	3.718	20	19.6	243	5.78	9.79	194	101.8
3	BP-5-1	1.219	1.473	0.127	4.711	1.573	1.564	3.729	6	5.6	70	1.65	2.8	56	29.2
4	CP-11	1.219	1.473	0.127	5.03	2.531	2.403	3.15	87.49	87.09	837	25.66	43.5	619	402.7
5	CP-12	1.219	1.473	0.127	4.82	2.399	2.217	3.099	93.6	93.2	873	27.46	46.55	640	426.2
6	DP-10	1.219	1.473	0.127	4.778	2.284	2.101	3.172	90.6	90.2	876	26.58	45.05	650	419
7	DP-9	1.219	1.473	0.127	4.932	2.539	2.288	3.105	130.5	130.1	1223	38.33	64.98	898	595.6
8	EP-6	1.219	1.473	0.127	4.89	2.869	2.812	2.636	58	57.6	424	16.97	28.77	280	236.7
	Total								580		5720	170	288	4270	2700

NIPPON KOEI CO.,LTD.

QUANTITY CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province	**Project Code**	JC1N004/2N001
Work Section Title	Pipe culvert 457mm	**Pay Item No. (BOQ)**	2H-0104
Quantity Item	Installation drainage pipe	**Unit**	m

Calculation Procedure Applied

Length of drainage pipe was computed for pipe culvert 457mm.

References, Calculation Base and Revisions

See the item of excavation and disposal.

(2H-0101)

Rev	Prepared by	Prepared Date	No. of Pages	Checked by	Checked Date	Reviewed by	Reviewed Date	Superseded by Calc No.
0	Karla Garcia			Mr. Izuma		Mr. Ando		
1								
2								
3								

FN : Calculation_Cover_Sheet_020504_seg
cover

		D_{in} (m)	D_{out} (m)	t (m)	G (m)	Y_{in} (m)	Y_{out} (m)	H (m)	L (m)	Lac (m)	Vex (m3)	Vcs (m3)	Vlc (m3)	Vbf (m3)	Cmpct (m2)
1	CP-1	0.457	0.584	0.064	5.55	3.599	3.545	2.312	17	16.6	67	1.46	1.47	60	48.1
2	CP-2	0.457	0.584	0.064	5.487	3.543	3.505	2.297	20	19.6	78	1.72	1.74	70	56.5
3	CP-3	0.457	0.584	0.064	5.437	3.503	3.431	2.304	35	34.6	139	3.04	3.06	124	100
4	CP-4	0.457	0.584	0.064	5.537	3.429	3.391	2.461	20	19.6	88	1.72	1.74	80	59.7
5	CP-4-1	0.457	0.584	0.064	5.487	3.469	3.431	2.371	20	19.6	83	1.72	1.74	75	58
6	CP-5	0.457	0.584	0.064	5.637	3.389	3.257	2.648	70	69.6	352	6.1	6.16	321	225
7	CP-5-1	0.457	0.584	0.064	5.637	3.405	3.391	2.573	8	7.6	37	0.67	0.68	34	24
8	CP-7	0.457	0.584	0.064	5.682	2.891	2.824	3.158	35	34.6	237	3.04	3.06	222	129.5
9	CP-8-1	0.457	0.584	0.064	5.507	2.955	2.824	2.951	68	67.6	411	5.93	5.98	381	239
10	CP-8-1-1	0.457	0.584	0.064	5.55	3.019	2.957	2.896	30	29.6	175	2.6	2.62	162	103.1
11	CP-8-2	0.457	0.584	0.064	5.507	2.995	2.957	2.865	20	19.6	114	1.72	1.74	106	67.7
12	CP-8-2-1	0.457	0.584	0.064	5.555	3.021	2.997	2.88	10	9.6	56	0.85	0.85	52	33.3
13	CP-8-3	0.457	0.584	0.064	5.507	3.069	2.997	2.808	35	34.6	194	3.04	3.06	179	117.4
14	CP-8-4	0.457	0.584	0.064	5.507	3.095	3.071	2.758	10	9.6	52	0.85	0.85	48	32.1
15	DP-1	0.457	0.584	0.064	5.875	4.997	4.253	1.584	129.19	128.79	281	11.29	11.39	224	279.3
16	DP-2	0.457	0.584	0.064	5.35	3.347	3.249	2.386	20.82	20.42	87	1.79	1.81	78	60.7
17	DP-3	0.457	0.584	0.064	5.27	3.245	3.226	2.368	24.13	23.73	100	2.08	2.1	90	70.1
18	DP-4-1	0.457	0.584	0.064	5.34	3.247	3.226	2.437	21.75	21.35	94	1.88	1.89	85	64.5
19	DP-7-1	0.457	0.584	0.064	5.17	2.883	2.868	2.628	18.25	17.85	90	1.57	1.58	82	57.4
20	DP-9-1	0.457	0.584	0.064	5.015	2.746	2.543	2.704	150	149.6	784	13.11	13.23	718	491.9
21	DP-9-2	0.457	0.584	0.064	5.01	2.764	2.748	2.588	18.25	17.85	87	1.57	1.58	79	56.7
22	EP-1	0.457	0.584	0.064	6.015	4.097	4.003	2.299	20	19.6	79	1.72	1.74	71	56.6
23	EP-2	0.457	0.584	0.064	5.78	3.997	3.596	2.317	81.47	81.07	328	7.11	7.17	292	235.2
24	EP-2-1	0.457	0.584	0.064	5.97	4.008	4.003	2.298	9.1	8.7	35	0.77	0.77	32	25.1
25	EP-4-3	0.457	0.584	0.064	5.785	4.887	4.176	1.587	142.69	142.29	312	12.47	12.58	249	309
26	EP-4-4	0.457	0.584	0.064	6.195	4.997	4.893	1.584	22	21.6	48	1.9	1.91	39	46.9
27	EP-5-2	0.457	0.584	0.064	5.22	3.211	3.205	2.346	9.1	8.7	36	0.77	0.77	33	25.5
	Total								1,070		4450	92.5	93.3	3990	3080
1	AP-1	0.61	0.762	0.076	5.522	2.644	2.61	3.311	20	19.6	157	2.69	3.01	143	79.9
2	AP-2	0.61	0.762	0.076	5.427	2.606	2.532	3.274	40	39.6	312	5.44	6.07	283	159.9
3	AP-3	0.61	0.762	0.076	5.332	2.528	2.484	3.242	26	25.6	198	3.52	3.92	179	102.6
4	AP-4	0.61	0.762	0.076	5.232	2.48	2.313	3.251	85.78	85.38	663	11.72	13.08	600	342.7
5	AP-5-1	0.61	0.762	0.076	5.132	2.358	2.309	3.214	26	25.6	195	3.52	3.92	176	101.8
6	AP-6-1	0.61	0.762	0.076	4.928	2.182	2.138	3.184	26	25.6	192	3.52	3.92	173	101.1
7	AP-6-2	0.61	0.762	0.076	4.928	2.207	2.186	3.147	12.65	12.25	91	1.69	1.88	82	47.9
8	AP-7-1	0.61	0.762	0.076	4.711	1.997	1.952	3.152	26	25.6	189	3.52	3.92	170	100.2
9	BP-1-1	0.61	0.762	0.076	5.332	2.129	2.085	3.641	26	25.6	241	3.52	3.92	222	112.8
10	BP-2-1	0.61	0.762	0.076	5.132	1.958	1.914	3.612	26	25.6	238	3.52	3.92	219	112
11	BP-3-1	0.61	0.762	0.076	4.928	1.782	1.738	3.584	26	25.6	235	3.52	3.92	216	111.3
12	CP-11-1	0.61	0.762	0.076	5.132	2.579	2.535	2.991	26	25.6	173	3.52	3.92	154	96.1
13	CP-12-1	0.61	0.762	0.076	4.928	2.447	2.403	2.919	26	25.6	167	3.52	3.92	148	94.3
14	CP-13-1	0.61	0.762	0.076	4.711	1.64	1.596	3.509	26	25.6	227	3.52	3.92	208	109.4
15	CP-6	0.61	0.762	0.076	5.747	3.255	3.193	2.939	30	29.6	195	4.06	4.54	173	109.6
16	CP-8	0.61	0.762	0.076	5.42	2.82	2.754	3.049	35	34.6	242	4.75	5.3	216	131.9
17	CP-9	0.61	0.762	0.076	5.332	2.75	2.706	3.02	26	25.6	176	3.52	3.92	157	96.9
18	DP-4	0.61	0.762	0.076	5.34	3.225	3.066	2.61	160	159.6	862	21.9	24.44	743	538.2
19	DP-5-1	0.61	0.762	0.076	5.34	3.087	3.066	2.679	21.75	21.35	121	2.93	3.27	105	73.5
20	EP-3	0.61	0.762	0.076	5.46	3.59	3.321	2.42	55.01	54.61	261	7.5	8.37	221	173.8
21	EP-4	0.61	0.762	0.076	5.275	3.314	3.184	2.442	27.3	26.9	131	3.69	4.12	111	86.2
22	EP-4-1	0.61	0.762	0.076	5.33	3.506	3.499	2.243	9.1	8.7	37	1.2	1.34	31	26.2
23	EP-4-2	0.61	0.762	0.076	5.38	4.172	4.008	1.706	5.43	5.03	14	0.69	0.78	11	12.5
24	EP-5-1	0.61	0.762	0.076	5.22	3.201	3.184	2.443	15.3	14.9	73	2.05	2.29	62	47.8
	Total								810		5390	110	122	4810	2970
1	AP-5	0.762	0.94	0.089	5.03	2.309	2.138	3.265	87.49	87.09	732	14.74	19.7	637	366.3
2	BP-1	0.762	0.94	0.089	5.232	2.081	1.914	3.693	85.78	85.38	879	14.45	19.31	786	395.6
	Total								174		1620	29.2	39.1	1430	762
1	AP-6	0.914	1.118	0.102	4.82	2.134	1.952	3.269	93.6	93.2	839	18.76	28.14	701	408.9
2	BP-2	0.914	1.118	0.102	5.03	1.91	1.739	3.697	87.49	87.09	956	17.53	26.3	827	419.4
3	CP-10	0.914	1.118	0.102	5.232	2.702	2.535	3.105	85.78	85.38	708	17.19	25.78	581	360.6
4	DP-5	0.914	1.118	0.102	4.983	3.065	3.039	2.423	37.88	37.48	212	7.55	11.32	156	132.8
5	DP-6	0.914	1.118	0.102	4.898	3.036	2.868	2.438	85.88	85.48	488	17.21	25.81	361	304
6	DP-7	0.914	1.118	0.102	5.145	2.865	2.722	2.843	150	149.6	1081	30.11	45.17	859	592.6
7	DP-8	0.914	1.118	0.102	5.069	2.719	2.543	2.93	90	89.6	679	18.04	27.06	546	362.8
8	DP-8-1	0.914	1.118	0.102	4.872	2.9	2.722	2.553	90	89.6	548	18.04	27.06	415	329
9	EP-5	0.914	1.118	0.102	5.055	3.179	2.872	2.521	145	144.6	868	29.1	43.66	653	526.2
	Total								866		6380	174	261	5100	3440
1	BP-3	1.219	1.473	0.127	4.82	1.735	1.599	3.74	93.6	93.2	1166	27.46	46.55	933	485.9
2	BP-4	1.219	1.473	0.127	4.711	1.595	1.564	3.718	20	19.6	243	5.78	9.79	194	101.8
3	BP-5-1	1.219	1.473	0.127	4.711	1.573	1.564	3.729	6	5.6	70	1.65	2.8	56	29.2
4	CP-11	1.219	1.473	0.127	5.03	2.531	2.403	3.15	87.49	87.09	837	25.66	43.5	619	402.7
5	CP-12	1.219	1.473	0.127	4.82	2.399	2.217	3.099	93.6	93.2	873	27.46	46.55	640	426.2
6	DP-10	1.219	1.473	0.127	4.778	2.284	2.101	3.172	90.6	90.2	876	26.58	45.05	650	419
7	DP-9	1.219	1.473	0.127	4.932	2.539	2.288	3.105	130.5	130.1	1223	38.33	64.98	898	595.6
8	EP-6	1.219	1.473	0.127	4.89	2.869	2.812	2.636	58	57.6	424	16.97	28.77	280	236.7
	Total								580		5720	170	288	4270	2700

NIPPON KOEI CO.,LTD.

QUANTITY CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province	**Project Code**	JC1N004/2N001
Work Section Title	Pipe culvert 457mm	**Pay Item No. (BOQ)**	二4-010-01
Quantity Item	Backfill sand	**Unit**	m^3

Calculation Procedure Applied

Volume of backfill sand was computed by excavation volume minus pipe culvert volume, lean concrete volume and crushed stone volume.

References, Calculation Base and Revisions

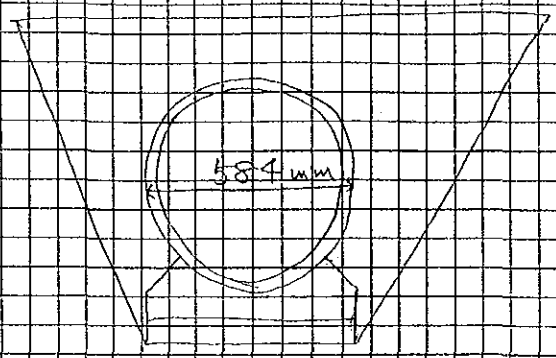
See the item of excavation and disposal.
(二4-010)

Rev	Prepared by	Prepared Date	No. of Pages	Checked by	Checked Date	Reviewed by	Reviewed Date	Superseded by Calc No.
0	Kola Goda			Mr. Inuma		Mr. Ando		
1								
2								
3								

FN : Calculation_Cover_Sheet_020504_seg cover

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	Pipe culvert 457mm	Calc. Index No.	
Subject	Backfill sand	Page No.	Rev.

References/ Notes



Pipe culvert volume

$$V_p = (0.292)^2 \times \pi \times L$$

$$V = V_{Ex} - V_p - V_{lc} - V_{cs}$$

V_{Ex} : Volume of excavation
V_{lc} : Volume of lean concrete
V_{cs} : Volume of crushed stone

		Prepared by		Checked by	
			/ /200		/ /200

		D_{in} (m)	D_{out} (m)	t (m)	G (m)	Y_{in} (m)	Y_{out} (m)	H (m)	L (m)	Lac (m)	Vex (m3)	Vcs (m3)	Vlc (m3)	Vbf (m3)	Cmpct (m2)
1	CP-1	0.457	0.584	0.064	5.55	3.599	3.545	2.312	17	16.6	67	1.46	1.47	60	48.1
2	CP-2	0.457	0.584	0.064	5.487	3.543	3.505	2.297	20	19.6	78	1.72	1.74	70	56.5
3	CP-3	0.457	0.584	0.064	5.437	3.503	3.431	2.304	35	34.6	139	3.04	3.06	124	100
4	CP-4	0.457	0.584	0.064	5.537	3.429	3.391	2.461	20	19.6	88	1.72	1.74	80	59.7
5	CP-4-1	0.457	0.584	0.064	5.487	3.469	3.431	2.371	20	19.6	83	1.72	1.74	75	56
6	CP-5	0.457	0.584	0.064	5.637	3.389	3.257	2.648	70	69.6	352	6.1	6.16	321	225
7	CP-5-1	0.457	0.584	0.064	5.637	3.405	3.391	2.573	8	7.6	37	0.67	0.68	34	24
8	CP-7	0.457	0.584	0.064	5.682	2.891	2.824	3.158	35	34.6	237	3.04	3.06	222	129.5
9	CP-8-1	0.457	0.584	0.064	5.507	2.955	2.824	2.951	68	67.6	411	5.93	5.98	381	239
10	CP-8-1-1	0.457	0.584	0.064	5.55	3.019	2.957	2.896	30	29.6	175	2.6	2.62	162	103.1
11	CP-8-2	0.457	0.584	0.064	5.507	2.995	2.957	2.865	20	19.6	114	1.72	1.74	106	67.7
12	CP-8-2-1	0.457	0.584	0.064	5.555	3.021	2.997	2.88	10	9.6	56	0.85	0.85	52	33.3
13	CP-8-3	0.457	0.584	0.064	5.507	3.069	2.997	2.808	35	34.6	194	3.04	3.06	179	117.4
14	CP-8-4	0.457	0.584	0.064	5.507	3.095	3.071	2.758	10	9.6	52	0.85	0.85	48	32.1
15	DP-1	0.457	0.584	0.064	5.875	4.997	4.253	1.584	129.19	128.79	281	11.29	11.39	224	279.3
16	DP-2	0.457	0.584	0.064	5.35	3.347	3.249	2.386	20.82	20.42	87	1.79	1.81	78	60.7
17	DP-3	0.457	0.584	0.064	5.27	3.245	3.226	2.368	24.13	23.73	100	2.08	2.1	90	70.1
18	DP-4-1	0.457	0.584	0.064	5.34	3.247	3.226	2.437	21.75	21.35	94	1.88	1.89	85	64.5
19	DP-7-1	0.457	0.584	0.064	5.17	2.883	2.868	2.628	18.25	17.85	90	1.57	1.58	82	57.4
20	DP-9-1	0.457	0.584	0.064	5.015	2.746	2.543	2.704	150	149.6	784	13.11	13.23	718	491.9
21	DP-9-2	0.457	0.584	0.064	5.01	2.764	2.748	2.588	18.25	17.85	87	1.57	1.58	79	56.7
22	EP-1	0.457	0.584	0.064	6.015	4.097	4.003	2.299	20	19.6	79	1.72	1.74	71	56.6
23	EP-2	0.457	0.584	0.064	5.78	3.997	3.596	2.317	81.47	81.07	328	7.11	7.17	292	235.2
24	EP-2-1	0.457	0.584	0.064	5.97	4.008	4.003	2.298	9.1	8.7	35	0.77	0.77	32	25.1
25	EP-4-3	0.457	0.584	0.064	5.785	4.887	4.176	1.587	142.69	142.29	312	12.47	12.58	249	309
26	EP-4-4	0.457	0.584	0.064	6.195	4.997	4.893	1.584	22	21.6	48	1.9	1.91	39	46.9
27	EP-5-2	0.457	0.584	0.064	5.22	3.211	3.205	2.346	9.1	8.7	36	0.77	0.77	33	25.5
	Total								1,070		4450	92.5	93.3	3990	3080
1	AP-1	0.61	0.762	0.076	5.522	2.644	2.61	3.311	20	19.6	157	2.69	3.01	143	79.9
2	AP-2	0.61	0.762	0.076	5.427	2.606	2.532	3.274	40	39.6	312	5.44	6.07	283	159.9
3	AP-3	0.61	0.762	0.076	5.332	2.528	2.484	3.242	26	25.6	198	3.52	3.92	179	102.6
4	AP-4	0.61	0.762	0.076	5.232	2.48	2.313	3.251	85.78	85.38	663	11.72	13.08	600	342.7
5	AP-5-1	0.61	0.762	0.076	5.132	2.358	2.309	3.214	26	25.6	195	3.52	3.92	176	101.8
6	AP-6-1	0.61	0.762	0.076	4.928	2.182	2.138	3.184	26	25.6	192	3.52	3.92	173	101.1
7	AP-6-2	0.61	0.762	0.076	4.928	2.207	2.186	3.147	12.65	12.25	91	1.69	1.88	82	47.9
8	AP-7-1	0.61	0.762	0.076	4.711	1.997	1.952	3.152	26	25.6	189	3.52	3.92	170	100.2
9	BP-1-1	0.61	0.762	0.076	5.332	2.129	2.085	3.641	26	25.6	241	3.52	3.92	222	112.8
10	BP-2-1	0.61	0.762	0.076	5.132	1.958	1.914	3.612	26	25.6	238	3.52	3.92	219	112
11	BP-3-1	0.61	0.762	0.076	4.928	1.782	1.738	3.584	26	25.6	235	3.52	3.92	216	111.3
12	CP-11-1	0.61	0.762	0.076	5.132	2.579	2.535	2.991	26	25.6	173	3.52	3.92	154	96.1
13	CP-12-1	0.61	0.762	0.076	4.928	2.447	2.403	2.919	26	25.6	167	3.52	3.92	148	94.3
14	CP-13-1	0.61	0.762	0.076	4.711	1.64	1.596	3.509	26	25.6	227	3.52	3.92	208	109.4
15	CP-6	0.61	0.762	0.076	5.747	3.255	3.193	2.939	30	29.6	195	4.06	4.54	173	109.6
16	CP-8	0.61	0.762	0.076	5.42	2.82	2.754	3.049	35	34.6	242	4.75	5.3	216	131.9
17	CP-9	0.61	0.762	0.076	5.332	2.75	2.706	3.02	26	25.6	176	3.52	3.92	157	96.9
18	DP-4	0.61	0.762	0.076	5.34	3.225	3.066	2.61	160	159.6	862	21.9	24.44	743	538.2
19	DP-5-1	0.61	0.762	0.076	5.34	3.087	3.066	2.679	21.75	21.35	121	2.93	3.27	105	73.5
20	EP-3	0.61	0.762	0.076	5.46	3.59	3.321	2.42	55.01	54.61	261	7.5	8.37	221	173.8
21	EP-4	0.61	0.762	0.076	5.275	3.314	3.184	2.442	27.3	26.9	131	3.69	4.12	111	86.2
22	EP-4-1	0.61	0.762	0.076	5.33	3.506	3.499	2.243	9.1	8.7	37	1.2	1.34	31	26.2
23	EP-4-2	0.61	0.762	0.076	5.38	4.172	4.008	1.706	5.43	5.03	14	0.69	0.78	11	12.5
24	EP-5-1	0.61	0.762	0.076	5.22	3.201	3.184	2.443	15.3	14.9	73	2.05	2.29	62	47.8
	Total								810		5390	110	122	4810	2970
1	AP-5	0.762	0.94	0.089	5.03	2.309	2.138	3.265	87.49	87.09	732	14.74	19.7	637	366.3
2	BP-1	0.762	0.94	0.089	5.232	2.081	1.914	3.693	85.78	85.38	879	14.45	19.31	786	395.6
	Total								174		1620	29.2	39.1	1430	762
1	AP-6	0.914	1.118	0.102	4.82	2.134	1.952	3.269	93.6	93.2	839	18.76	28.14	701	408.9
2	BP-2	0.914	1.118	0.102	5.03	1.91	1.739	3.697	87.49	87.09	956	17.53	26.3	827	419.4
3	CP-10	0.914	1.118	0.102	5.232	2.702	2.535	3.105	85.78	85.38	708	17.19	25.78	581	360.6
4	DP-5	0.914	1.118	0.102	4.983	3.065	3.039	2.423	37.88	37.48	212	7.55	11.32	156	132.8
5	DP-6	0.914	1.118	0.102	4.898	3.036	2.868	2.438	85.88	85.48	488	17.21	25.81	361	304
6	DP-7	0.914	1.118	0.102	5.145	2.865	2.722	2.843	150	149.6	1081	30.11	45.17	859	592.6
7	DP-8	0.914	1.118	0.102	5.069	2.719	2.543	2.93	90	89.6	679	18.04	27.06	546	362.8
8	DP-8-1	0.914	1.118	0.102	4.872	2.9	2.722	2.553	90	89.6	548	18.04	27.06	415	329
9	EP-5	0.914	1.118	0.102	5.055	3.179	2.872	2.521	145	144.6	868	29.1	43.66	653	526.2
	Total								866		6380	174	261	5100	3440
1	BP-3	1.219	1.473	0.127	4.82	1.735	1.599	3.74	93.6	93.2	1166	27.46	46.55	933	485.9
2	BP-4	1.219	1.473	0.127	4.711	1.595	1.564	3.718	20	19.6	243	5.78	9.79	194	101.8
3	BP-5-1	1.219	1.473	0.127	4.711	1.573	1.564	3.729	6	5.6	70	1.65	2.8	56	29.2
4	CP-11	1.219	1.473	0.127	5.03	2.531	2.403	3.15	87.49	87.09	837	25.66	43.5	619	402.7
5	CP-12	1.219	1.473	0.127	4.82	2.399	2.217	3.099	93.6	93.2	873	27.46	46.55	640	426.2
6	DP-10	1.219	1.473	0.127	4.778	2.284	2.101	3.172	90.6	90.2	876	26.58	45.05	650	419
7	DP-9	1.219	1.473	0.127	4.932	2.539	2.288	3.105	130.5	130.1	1223	38.33	64.98	898	595.6
8	EP-6	1.219	1.473	0.127	4.89	2.869	2.812	2.636	58	57.6	424	16.97	28.77	280	236.7
	Total								580		5720	170	288	4270	2700

NIPPON KOEI CO.,LTD.

QUANTITY CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province	**Project Code**	JC1N004/2N001
Work Section Title	Pipe culvert 457mm.	**Pay Item No. (BOQ)**	2H-010502
Quantity Item	Compaction	**Unit**	m^2.

Calculation Procedure Applied

Area of compaction was computed by multiplying compaction length by actual length.

References, Calculation Base and Revisions

See the item of excavation and disposal (2H-0101).

Rev	Prepared		No. of Pages	Checked		Reviewed		Superseded by Calc No.
	by	Date		by	Date	by	Date	
0	Karla Gonzales			Mr. Inuma		Mr. Ando		
1								
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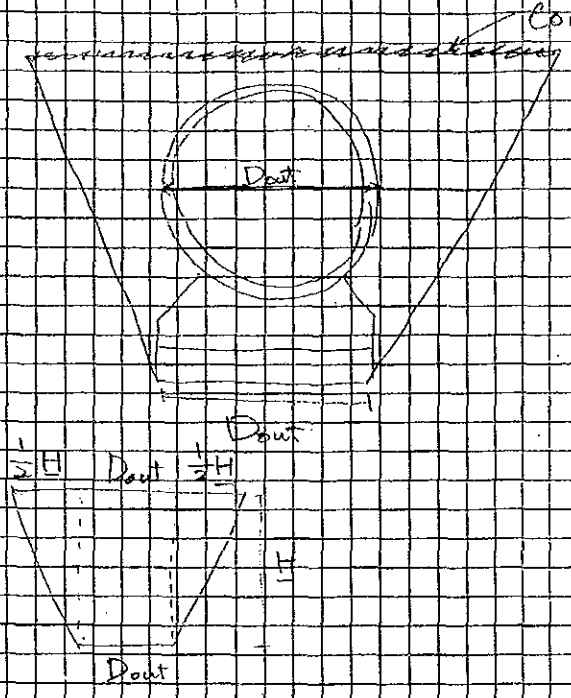
3								

FN : Calculation_Cover_Sheet_020504_seg cover

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	Pipe culvert 457mm	Calc. Index No.	
Subject	Compaction	Page No.	Rev.

References/ Notes



Compaction length

$$L = \frac{1}{2}H + Dout + \frac{1}{2}H$$

$$= H + Dout$$

Compaction area

$$A = (H + Dout) \times Lac$$

		Prepared by		Checked by	
			/ /200		/ /200

Pipe Culvert集計

		D_{in} (m)	D_{out} (m)	t (m)	G (m)	Y_{in} (m)	Y_{out} (m)	H (m)	L (m)	Lac (m)	Vex (m3)	Vcs (m3)	Vlc (m3)	Vbf (m3)	Cmpct (m2)
1	CP-1	0.457	0.584	0.064	5.55	3.599	3.545	2.312	17	16.6	67	1.46	1.47	60	48.1
2	CP-2	0.457	0.584	0.064	5.487	3.543	3.505	2.297	20	19.6	78	1.72	1.74	70	56.5
3	CP-3	0.457	0.584	0.064	5.437	3.503	3.431	2.304	35	34.6	139	3.04	3.06	124	100
4	CP-4	0.457	0.584	0.064	5.537	3.429	3.391	2.461	20	19.6	88	1.72	1.74	80	59.7
5	CP-4-1	0.457	0.584	0.064	5.487	3.469	3.431	2.371	20	19.6	83	1.72	1.74	75	58
6	CP-5	0.457	0.584	0.064	5.637	3.389	3.257	2.648	70	69.6	352	6.1	6.16	321	225
7	CP-5-1	0.457	0.584	0.064	5.637	3.405	3.391	2.573	8	7.6	37	0.67	0.68	34	24
8	CP-7	0.457	0.584	0.064	5.682	2.891	2.824	3.158	35	34.6	237	3.04	3.06	222	129.5
9	CP-8-1	0.457	0.584	0.064	5.507	2.955	2.824	2.951	68	67.6	411	5.93	5.98	381	239
10	CP-8-1-1	0.457	0.584	0.064	5.55	3.019	2.957	2.896	30	29.6	175	2.6	2.62	162	103.1
11	CP-8-2	0.457	0.584	0.064	5.507	2.995	2.957	2.865	20	19.6	114	1.72	1.74	106	67.7
12	CP-8-2-1	0.457	0.584	0.064	5.555	3.021	2.997	2.88	10	9.6	56	0.85	0.85	52	33.3
13	CP-8-3	0.457	0.584	0.064	5.507	3.069	2.997	2.808	35	34.6	194	3.04	3.06	179	117.4
14	CP-8-4	0.457	0.584	0.064	5.507	3.095	3.071	2.758	10	9.6	52	0.85	0.85	48	32.1
15	DP-1	0.457	0.584	0.064	5.875	4.997	4.253	1.584	129.19	128.79	281	11.29	11.39	224	279.3
16	DP-2	0.457	0.584	0.064	5.35	3.347	3.249	2.386	20.82	20.42	87	1.79	1.81	78	60.7
17	DP-3	0.457	0.584	0.064	5.27	3.245	3.226	2.368	24.13	23.73	100	2.08	2.1	90	70.1
18	DP-4-1	0.457	0.584	0.064	5.34	3.247	3.226	2.437	21.75	21.35	94	1.88	1.89	85	64.5
19	DP-7-1	0.457	0.584	0.064	5.17	2.883	2.868	2.628	18.25	17.85	90	1.57	1.58	82	57.4
20	DP-9-1	0.457	0.584	0.064	5.015	2.746	2.543	2.704	150	149.6	784	13.11	13.23	718	491.9
21	DP-9-2	0.457	0.584	0.064	5.01	2.764	2.748	2.588	18.25	17.85	87	1.57	1.58	79	56.7
22	EP-1	0.457	0.584	0.064	6.015	4.097	4.003	2.299	20	19.6	79	1.72	1.74	71	56.6
23	EP-2	0.457	0.584	0.064	5.78	3.997	3.596	2.317	81.47	81.07	328	7.11	7.17	292	235.2
24	EP-2-1	0.457	0.584	0.064	5.97	4.008	4.003	2.298	9.1	8.7	35	0.77	0.77	32	25.1
25	EP-4-3	0.457	0.584	0.064	5.785	4.887	4.176	1.587	142.69	142.29	312	12.47	12.58	249	309
26	EP-4-4	0.457	0.584	0.064	6.195	4.997	4.893	1.584	22	21.6	48	1.9	1.91	39	46.9
27	EP-5-2	0.457	0.584	0.064	5.22	3.211	3.205	2.348	9.1	8.7	36	0.77	0.77	33	25.5
	Total								1,070		4450	92.5	93.3	3990	3080
1	AP-1	0.61	0.762	0.076	5.522	2.644	2.61	3.311	20	19.6	157	2.69	3.01	143	79.9
2	AP-2	0.61	0.762	0.076	5.427	2.606	2.532	3.274	40	39.6	312	5.44	6.07	283	159.9
3	AP-3	0.61	0.762	0.076	5.332	2.528	2.484	3.242	26	25.6	198	3.52	3.92	179	102.6
4	AP-4	0.61	0.762	0.076	5.232	2.48	2.313	3.251	85.78	85.38	663	11.72	13.08	600	342.7
5	AP-5-1	0.61	0.762	0.076	5.132	2.358	2.309	3.214	26	25.6	195	3.52	3.92	176	101.8
6	AP-6-1	0.61	0.762	0.076	4.928	2.182	2.138	3.184	26	25.6	192	3.52	3.92	173	101.1
7	AP-6-2	0.61	0.762	0.076	4.928	2.207	2.186	3.147	12.65	12.25	91	1.69	1.88	82	47.9
8	AP-7-1	0.61	0.762	0.076	4.711	1.997	1.952	3.152	26	25.6	189	3.52	3.92	170	100.2
9	BP-1-1	0.61	0.762	0.076	5.332	2.129	2.085	3.641	26	25.6	241	3.52	3.92	222	112.8
10	BP-2-1	0.61	0.762	0.076	5.132	1.958	1.914	3.612	26	25.6	238	3.52	3.92	219	112
11	BP-3-1	0.61	0.762	0.076	4.928	1.782	1.738	3.584	26	25.6	235	3.52	3.92	216	111.3
12	CP-11-1	0.61	0.762	0.076	5.132	2.579	2.535	2.991	26	25.6	173	3.52	3.92	154	96.1
13	CP-12-1	0.61	0.762	0.076	4.928	2.447	2.403	2.919	26	25.6	167	3.52	3.92	148	94.3
14	CP-13-1	0.61	0.762	0.076	4.711	1.64	1.596	3.509	26	25.6	227	3.52	3.92	208	109.4
15	CP-6	0.61	0.762	0.076	5.747	3.255	3.193	2.939	30	29.6	195	4.06	4.54	173	109.6
16	CP-8	0.61	0.762	0.076	5.42	2.82	2.754	3.049	35	34.6	242	4.75	5.3	216	131.9
17	CP-9	0.61	0.762	0.076	5.332	2.75	2.706	3.02	26	25.6	176	3.52	3.92	157	96.9
18	DP-4	0.61	0.762	0.076	5.34	3.225	3.066	2.61	160	159.6	862	21.9	24.44	743	538.2
19	DP-5-1	0.61	0.762	0.076	5.34	3.087	3.066	2.679	21.75	21.35	121	2.93	3.27	105	73.5
20	EP-3	0.61	0.762	0.076	5.46	3.59	3.321	2.42	55.01	54.61	261	7.5	8.37	221	173.8
21	EP-4	0.61	0.762	0.076	5.275	3.314	3.184	2.442	27.3	26.9	131	3.69	4.12	111	86.2
22	EP-4-1	0.61	0.762	0.076	5.33	3.506	3.499	2.243	9.1	8.7	37	1.2	1.34	31	26.2
23	EP-4-2	0.61	0.762	0.076	5.38	4.172	4.008	1.706	5.43	5.03	14	0.69	0.78	11	12.5
24	EP-5-1	0.61	0.762	0.076	5.22	3.201	3.184	2.443	15.3	14.9	73	2.05	2.29	62	47.8
	Total								810		5390	110	122	4810	2970
1	AP-5	0.762	0.94	0.089	5.03	2.309	2.138	3.265	87.49	87.09	732	14.74	19.7	637	366.3
2	BP-1	0.762	0.94	0.089	5.232	2.081	1.914	3.693	85.78	85.38	879	14.45	19.31	786	395.6
	Total								174		1620	29.2	39.1	1430	762
1	AP-6	0.914	1.118	0.102	4.82	2.134	1.952	3.269	93.6	93.2	839	18.76	28.14	701	408.9
2	BP-2	0.914	1.118	0.102	5.03	1.91	1.739	3.697	87.49	87.09	956	17.53	26.3	827	419.4
3	CP-10	0.914	1.118	0.102	5.232	2.702	2.535	3.105	85.78	85.38	708	17.19	25.78	581	360.6
4	DP-5	0.914	1.118	0.102	4.983	3.065	3.039	2.423	37.88	37.48	212	7.55	11.32	156	132.8
5	DP-6	0.914	1.118	0.102	4.898	3.036	2.868	2.438	85.88	85.48	488	17.21	25.81	361	304
6	DP-7	0.914	1.118	0.102	5.145	2.865	2.722	2.843	150	149.6	1081	30.11	45.17	859	592.6
7	DP-8	0.914	1.118	0.102	5.069	2.719	2.543	2.93	90	89.6	679	18.04	27.06	546	362.8
8	DP-8-1	0.914	1.118	0.102	4.872	2.9	2.722	2.553	90	89.6	548	18.04	27.06	415	329
9	EP-5	0.914	1.118	0.102	5.055	3.179	2.872	2.521	145	144.6	868	29.1	43.66	653	526.2
	Total								866		6380	174	261	5100	3440
1	BP-3	1.219	1.473	0.127	4.82	1.735	1.599	3.74	93.6	93.2	1166	27.46	46.55	933	485.9
2	BP-4	1.219	1.473	0.127	4.711	1.595	1.564	3.718	20	19.6	243	5.78	9.79	194	101.8
3	BP-5-1	1.219	1.473	0.127	4.711	1.573	1.564	3.729	6	5.6	70	1.65	2.8	56	29.2
4	CP-11	1.219	1.473	0.127	5.03	2.531	2.403	3.15	87.49	87.09	837	25.66	43.5	619	402.7
5	CP-12	1.219	1.473	0.127	4.82	2.399	2.217	3.099	93.6	93.2	873	27.46	46.55	640	426.2
6	DP-10	1.219	1.473	0.127	4.778	2.284	2.101	3.172	90.6	90.2	876	26.58	45.05	650	419
7	DP-9	1.219	1.473	0.127	4.932	2.539	2.288	3.105	130.5	130.1	1223	38.33	64.98	898	595.6
8	EP-6	1.219	1.473	0.127	4.89	2.869	2.812	2.636	58	57.6	424	16.97	28.77	280	236.7
	Total								580		5720	170	288	4270	2700

NIPPON KOEI CO.,LTD.

QUANTITY CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province	**Project Code**	JC1N004/2N001
Work Section Title	RCP culvert 610 mm	**Pay Item No. (BOQ)**	2H-0201
Quantity Item	Excavation and Disposal	**Unit**	m^3

Calculation Procedure Applied

1. Average level of inlet level and outlet level
2. Average level minus base thickness
3. Average ground level
4. Calculation of effective height.
5. Calculation of Area
6. calculation of volume : Area time length

References. Calculation Base and Revisions

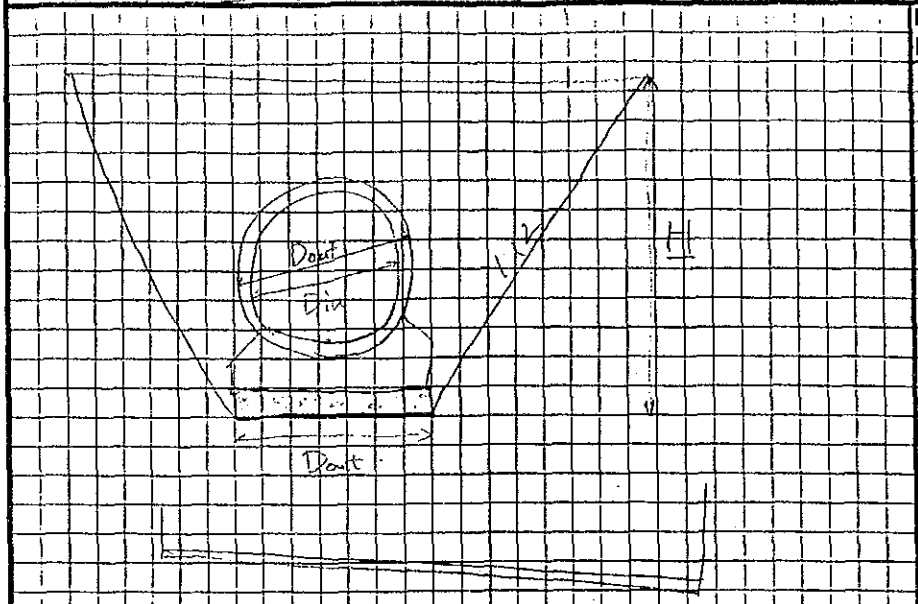
See the item of excavation and disposal of 457mm (2H-0101).

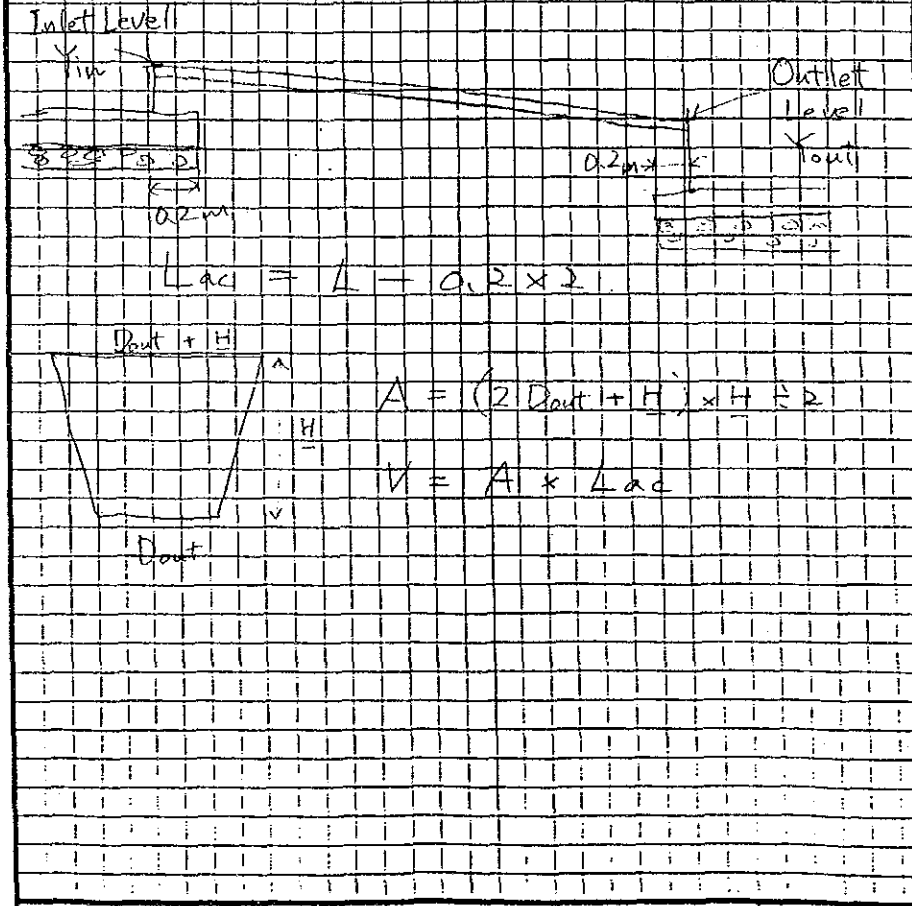
Rev	Prepared		No. of Pages	Checked		Reviewed		Superseded by Calc No.
	by	Date		by	Date	by	Date	
0	Kota Gouda			Mr. Inuma		Mr. Ando		
1								
2								
3								

FN : Calculation_Cover_Sheet_020504_seg cover

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	Pipe culvert 610 mm	Calc. Index No.	
Subject	Excavation and Disposal	Page No.	Rev.

References/ Notes





	Prepared by		Checked by	
		/ /200		/ /200

Pipe Culvert集計

		D_{in} (m)	D_{out} (m)	t (m)	G (m)	Y_{in} (m)	Y_{out} (m)	H (m)	L (m)	Lac (m)	Vex (m3)	Vcs (m3)	Vlc (m3)	Vbf (m3)	Cmpct (m2)
1	CP-1	0.457	0.584	0.064	5.55	3.599	3.545	2.312	17	16.6	67	1.46	1.47	60	48.1
2	CP-2	0.457	0.584	0.064	5.487	3.543	3.505	2.297	20	19.6	78	1.72	1.74	70	56.5
3	CP-3	0.457	0.584	0.064	5.437	3.503	3.431	2.304	35	34.6	139	3.04	3.06	124	100
4	CP-4	0.457	0.584	0.064	5.537	3.429	3.391	2.461	20	19.6	88	1.72	1.74	80	59.7
5	CP-4-1	0.457	0.584	0.064	5.487	3.469	3.431	2.371	20	19.6	83	1.72	1.74	75	58
6	CP-5	0.457	0.584	0.064	5.637	3.389	3.257	2.648	70	69.6	352	6.1	6.16	321	225
7	CP-5-1	0.457	0.584	0.064	5.637	3.405	3.391	2.573	8	7.6	37	0.67	0.68	34	24
8	CP-7	0.457	0.584	0.064	5.682	2.891	2.824	3.158	35	34.6	237	3.04	3.06	222	129.5
9	CP-8-1	0.457	0.584	0.064	5.507	2.955	2.824	2.951	68	67.6	411	5.93	5.98	381	239
10	CP-8-1-1	0.457	0.584	0.064	5.55	3.019	2.957	2.896	30	29.6	175	2.6	2.62	162	103.1
11	CP-8-2	0.457	0.584	0.064	5.507	2.995	2.957	2.865	20	19.6	114	1.72	1.74	106	67.7
12	CP-8-2-1	0.457	0.584	0.064	5.555	3.021	2.997	2.88	10	9.6	56	0.85	0.85	52	33.3
13	CP-8-3	0.457	0.584	0.064	5.507	3.069	2.997	2.808	35	34.6	194	3.04	3.06	179	117.4
14	CP-8-4	0.457	0.584	0.064	5.507	3.095	3.071	2.758	10	9.6	52	0.85	0.85	48	32.1
15	DP-1	0.457	0.584	0.064	5.875	4.997	4.253	1.584	129.19	128.79	281	11.29	11.39	224	279.3
16	DP-2	0.457	0.584	0.064	5.35	3.347	3.249	2.386	20.82	20.42	87	1.79	1.81	78	60.7
17	DP-3	0.457	0.584	0.064	5.27	3.245	3.226	2.368	24.13	23.73	100	2.08	2.1	90	70.1
18	DP-4-1	0.457	0.584	0.064	5.34	3.247	3.226	2.437	21.75	21.35	94	1.88	1.89	85	64.5
19	DP-7-1	0.457	0.584	0.064	5.17	2.883	2.868	2.628	18.25	17.85	90	1.57	1.58	82	57.4
20	DP-9-1	0.457	0.584	0.064	5.015	2.746	2.543	2.704	150	149.6	784	13.11	13.23	718	491.9
21	DP-9-2	0.457	0.584	0.064	5.01	2.764	2.748	2.588	18.25	17.85	87	1.57	1.58	79	56.7
22	EP-1	0.457	0.584	0.064	6.015	4.097	4.003	2.299	20	19.6	79	1.72	1.74	71	56.6
23	EP-2	0.457	0.584	0.064	5.78	3.997	3.596	2.317	81.47	81.07	328	7.11	7.17	292	235.2
24	EP-2-1	0.457	0.584	0.064	5.97	4.008	4.003	2.298	9.1	8.7	35	0.77	0.77	32	25.1
25	EP-4-3	0.457	0.584	0.064	5.785	4.887	4.176	1.587	142.69	142.29	312	12.47	12.58	249	309
26	EP-4-4	0.457	0.584	0.064	6.195	4.997	4.893	1.584	22	21.6	48	1.9	1.91	39	46.9
27	EP-5-2	0.457	0.584	0.064	5.22	3.211	3.205	2.346	9.1	8.7	36	0.77	0.77	33	25.5
	Total								1,070		4450	92.5	93.3	3990	3080
1	AP-1	0.61	0.762	0.076	5.522	2.644	2.61	3.311	20	19.6	157	2.69	3.01	143	79.9
2	AP-2	0.61	0.762	0.076	5.427	2.606	2.532	3.274	40	39.6	312	5.44	6.07	283	159.9
3	AP-3	0.61	0.762	0.076	5.332	2.528	2.484	3.242	26	25.6	198	3.52	3.92	179	102.6
4	AP-4	0.61	0.762	0.076	5.232	2.48	2.313	3.251	85.78	85.38	663	11.72	13.08	600	342.7
5	AP-5-1	0.61	0.762	0.076	5.132	2.358	2.309	3.214	26	25.6	195	3.52	3.92	176	101.8
6	AP-6-1	0.61	0.762	0.076	4.928	2.182	2.138	3.184	26	25.6	192	3.52	3.92	173	101.1
7	AP-6-2	0.61	0.762	0.076	4.928	2.207	2.186	3.147	12.65	12.25	91	1.69	1.88	82	47.9
8	AP-7-1	0.61	0.762	0.076	4.711	1.997	1.952	3.152	26	25.6	189	3.52	3.92	170	100.2
9	BP-1-1	0.61	0.762	0.076	5.332	2.129	2.085	3.641	26	25.6	241	3.52	3.92	222	112.8
10	BP-2-1	0.61	0.762	0.076	5.132	1.958	1.914	3.612	26	25.6	238	3.52	3.92	219	112
11	BP-3-1	0.61	0.762	0.076	4.928	1.782	1.738	3.584	26	25.6	235	3.52	3.92	216	111.3
12	CP-11-1	0.61	0.762	0.076	5.132	2.579	2.535	2.991	26	25.6	173	3.52	3.92	154	96.1
13	CP-12-1	0.61	0.762	0.076	4.928	2.447	2.403	2.919	26	25.6	167	3.52	3.92	148	94.3
14	CP-13-1	0.61	0.762	0.076	4.711	1.64	1.596	3.509	26	25.6	227	3.52	3.92	208	109.4
15	CP-6	0.61	0.762	0.076	5.747	3.255	3.193	2.939	30	29.6	195	4.06	4.54	173	109.6
16	CP-8	0.61	0.762	0.076	5.42	2.82	2.754	3.049	35	34.6	242	4.75	5.3	216	131.9
17	CP-9	0.61	0.762	0.076	5.332	2.75	2.706	3.02	26	25.6	176	3.52	3.92	157	96.9
18	DP-4	0.61	0.762	0.076	5.34	3.225	3.066	2.61	160	159.6	862	21.9	24.44	743	538.2
19	DP-5-1	0.61	0.762	0.076	5.34	3.087	3.066	2.679	21.75	21.35	121	2.93	3.27	105	73.5
20	EP-3	0.61	0.762	0.076	5.46	3.59	3.321	2.42	55.01	54.61	261	7.5	8.37	221	173.8
21	EP-4	0.61	0.762	0.076	5.275	3.314	3.184	2.442	27.3	26.9	131	3.69	4.12	111	86.2
22	EP-4-1	0.61	0.762	0.076	5.33	3.506	3.499	2.243	9.1	8.7	37	1.2	1.34	31	26.2
23	EP-4-2	0.61	0.762	0.076	5.38	4.172	4.008	1.706	5.43	5.03	14	0.69	0.78	11	12.5
24	EP-5-1	0.61	0.762	0.076	5.22	3.201	3.184	2.443	15.3	14.9	73	2.05	2.29	62	47.8
	Total								810		5390	110	122	4810	2970
1	AP-5	0.762	0.94	0.089	5.03	2.309	2.138	3.265	87.49	87.09	732	14.74	19.7	637	366.3
2	BP-1	0.762	0.94	0.089	5.232	2.081	1.914	3.693	85.78	85.38	879	14.45	19.31	786	395.6
	Total								174		1620	29.2	39.1	1430	762
1	AP-6	0.914	1.118	0.102	4.82	2.134	1.952	3.269	93.6	93.2	839	18.76	28.14	701	408.9
2	BP-2	0.914	1.118	0.102	5.03	1.91	1.739	3.697	87.49	87.09	956	17.53	26.3	827	419.4
3	CP-10	0.914	1.118	0.102	5.232	2.702	2.535	3.105	85.78	85.38	708	17.19	25.78	581	360.6
4	DP-5	0.914	1.118	0.102	4.983	3.065	3.039	2.423	37.88	37.48	212	7.55	11.32	156	132.8
5	DP-6	0.914	1.118	0.102	4.898	3.036	2.868	2.438	85.88	85.48	488	17.21	25.81	361	304
6	DP-7	0.914	1.118	0.102	5.145	2.865	2.722	2.843	150	149.6	1081	30.11	45.17	859	592.6
7	DP-8	0.914	1.118	0.102	5.069	2.719	2.543	2.93	90	89.6	679	18.04	27.06	546	362.8
8	DP-8-1	0.914	1.118	0.102	4.872	2.9	2.722	2.553	90	89.6	548	18.04	27.06	415	329
9	EP-5	0.914	1.118	0.102	5.055	3.179	2.872	2.521	145	144.6	868	29.1	43.66	653	526.2
	Total								866		6380	174	261	5100	3440
1	BP-3	1.219	1.473	0.127	4.82	1.735	1.599	3.74	93.6	93.2	1166	27.46	46.55	933	485.9
2	BP-4	1.219	1.473	0.127	4.711	1.595	1.564	3.718	20	19.6	243	5.78	9.79	194	101.8
3	BP-5-1	1.219	1.473	0.127	4.711	1.573	1.564	3.729	6	5.6	70	1.65	2.8	56	29.2
4	CP-11	1.219	1.473	0.127	5.03	2.531	2.403	3.15	87.49	87.09	837	25.66	43.5	619	402.7
5	CP-12	1.219	1.473	0.127	4.82	2.399	2.217	3.099	93.6	93.2	873	27.46	46.55	640	426.2
6	DP-10	1.219	1.473	0.127	4.778	2.284	2.101	3.172	90.6	90.2	876	26.58	45.05	650	419
7	DP-9	1.219	1.473	0.127	4.932	2.539	2.288	3.105	130.5	130.1	1223	38.33	64.98	898	595.6
8	EP-6	1.219	1.473	0.127	4.89	2.869	2.812	2.636	58	57.6	424	16.97	28.77	280	236.7
	Total								580		5720	170	288	4270	2700

NIPPON KOEI CO.,LTD.

QUANTITY CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province	**Project Code**	JC1N004/2N001
Work Section Title	Pipe culvert 510 mm	**Pay Item No. (BOQ)**	2H-0202
Quantity Item	Crushed stone for foundation	**Unit**	m³

Calculation Procedure Applied

Volume of crushed stone was counted by multiplying section area by length. Regarding actual length, manhole base was taken into consideration.

References, Calculation Base and Revisions

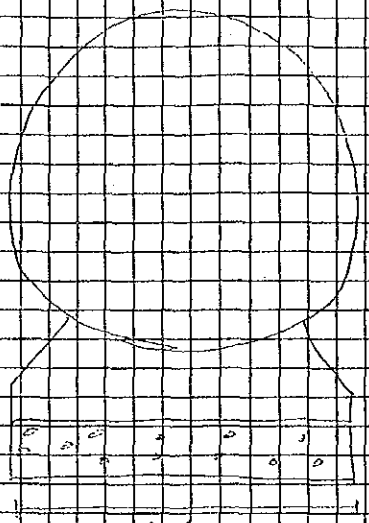
See the item of excavation and disposal of 457 m³. (2H-0101).

Rev	Prepared by	Prepared Date	No. of Pages	Checked by	Checked Date	Reviewed by	Reviewed Date	Superseded by Calc No.
0	Koichi Gonda			Mr. Inuma		Mr. Ando		
1								
2								
3								

FN : Calculation_Cover_Sheet_020504_seg cover

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	Pipe culvert 610 mm.	Calc. Index No.	
Subject	Crushed stone for foundation	Page No.	Rev.

References/ Notes



$V = 0.18 \times 0.762 \times L_{ac}$

Prepared by		Checked by	
	/ /200		/ /200

FN: Calculation_Sheet

Pipe Culvert集計

		D_{in} (m)	D_{out} (m)	t (m)	G (m)	Y_{in} (m)	Y_{out} (m)	H (m)	L (m)	Lac (m)	Vex (m3)	Vcs (m3)	Vlc (m3)	Vbf (m3)	Cmpct (m2)
1	CP-1	0.457	0.584	0.064	5.55	3.599	3.545	2.312	17	16.6	67	1.46	1.47	60	48.1
2	CP-2	0.457	0.584	0.064	5.487	3.543	3.505	2.297	20	19.6	78	1.72	1.74	70	56.5
3	CP-3	0.457	0.584	0.064	5.437	3.503	3.431	2.304	35	34.6	139	3.04	3.06	124	100
4	CP-4	0.457	0.584	0.064	5.537	3.429	3.391	2.461	20	19.6	88	1.72	1.74	80	59.7
5	CP-4-1	0.457	0.584	0.064	5.487	3.469	3.431	2.371	20	19.6	83	1.72	1.74	75	58
6	CP-5	0.457	0.584	0.064	5.637	3.389	3.257	2.648	70	69.6	352	6.1	6.16	321	225
7	CP-5-1	0.457	0.584	0.064	5.637	3.405	3.391	2.573	8	7.6	37	0.67	0.68	34	24
8	CP-7	0.457	0.584	0.064	5.682	2.891	2.824	3.158	35	34.6	237	3.04	3.06	222	129.5
9	CP-8-1	0.457	0.584	0.064	5.507	2.955	2.824	2.951	68	67.6	411	5.93	5.98	381	239
10	CP-8-1-1	0.457	0.584	0.064	5.55	3.019	2.957	2.896	30	29.6	175	2.6	2.62	162	103.1
11	CP-8-2	0.457	0.584	0.064	5.507	2.995	2.957	2.865	20	19.6	114	1.72	1.74	106	67.7
12	CP-8-2-1	0.457	0.584	0.064	5.555	3.021	2.997	2.88	10	9.6	56	0.85	0.85	52	33.3
13	CP-8-3	0.457	0.584	0.064	5.507	3.069	2.997	2.808	35	34.6	194	3.04	3.06	179	117.4
14	CP-8-4	0.457	0.584	0.064	5.507	3.095	3.071	2.758	10	9.6	52	0.85	0.85	48	32.1
15	DP-1	0.457	0.584	0.064	5.875	4.997	4.253	1.584	129.19	128.79	281	11.29	11.39	224	279.3
16	DP-2	0.457	0.584	0.064	5.35	3.347	3.249	2.386	20.82	20.42	87	1.79	1.81	78	60.7
17	DP-3	0.457	0.584	0.064	5.27	3.245	3.226	2.368	24.13	23.73	100	2.08	2.1	90	70.1
18	DP-4-1	0.457	0.584	0.064	5.34	3.247	3.226	2.437	21.75	21.35	94	1.88	1.89	85	64.5
19	DP-7-1	0.457	0.584	0.064	5.17	2.883	2.868	2.628	18.25	17.85	90	1.57	1.58	82	57.4
20	DP-9-1	0.457	0.584	0.064	5.015	2.746	2.543	2.704	150	149.6	784	13.11	13.23	718	491.9
21	DP-9-2	0.457	0.584	0.064	5.01	2.764	2.748	2.588	18.25	17.85	87	1.57	1.58	79	56.7
22	EP-1	0.457	0.584	0.064	6.015	4.097	4.003	2.299	20	19.6	79	1.72	1.74	71	56.6
23	EP-2	0.457	0.584	0.064	5.78	3.997	3.596	2.317	81.47	81.07	328	7.11	7.17	292	235.2
24	EP-2-1	0.457	0.584	0.064	5.97	4.008	4.003	2.298	9.1	8.7	35	0.77	0.77	32	25.1
25	EP-4-3	0.457	0.584	0.064	5.785	4.887	4.176	1.587	142.69	142.29	312	12.47	12.58	249	309
26	EP-4-4	0.457	0.584	0.064	6.195	4.997	4.893	1.584	22	21.6	48	1.9	1.91	39	46.9
27	EP-5-2	0.457	0.584	0.064	5.22	3.211	3.205	2.346	9.1	8.7	36	0.77	0.77	33	25.5
	Total								1,070		4450	92.5	93.3	3990	3080
1	AP-1	0.61	0.762	0.076	5.522	2.644	2.61	3.311	20	19.6	157	2.69	3.01	143	79.9
2	AP-2	0.61	0.762	0.076	5.427	2.606	2.532	3.274	40	39.6	312	5.44	6.07	283	159.9
3	AP-3	0.61	0.762	0.076	5.332	2.528	2.484	3.242	26	25.6	198	3.52	3.92	179	102.6
4	AP-4	0.61	0.762	0.076	5.232	2.48	2.313	3.251	85.78	85.38	663	11.72	13.08	600	342.7
5	AP-5-1	0.61	0.762	0.076	5.132	2.358	2.309	3.214	26	25.6	195	3.52	3.92	176	101.8
6	AP-6-1	0.61	0.762	0.076	4.928	2.182	2.138	3.184	26	25.6	192	3.52	3.92	173	101.1
7	AP-6-2	0.61	0.762	0.076	4.928	2.207	2.186	3.147	12.65	12.25	91	1.69	1.88	82	47.9
8	AP-7-1	0.61	0.762	0.076	4.711	1.997	1.952	3.152	26	25.6	189	3.52	3.92	170	100.2
9	BP-1-1	0.61	0.762	0.076	5.332	2.129	2.085	3.641	26	25.6	241	3.52	3.92	222	112.8
10	BP-2-1	0.61	0.762	0.076	5.132	1.958	1.914	3.612	26	25.6	238	3.52	3.92	219	112
11	BP-3-1	0.61	0.762	0.076	4.928	1.782	1.738	3.584	26	25.6	235	3.52	3.92	216	111.3
12	CP-11-1	0.61	0.762	0.076	5.132	2.579	2.535	2.991	26	25.6	173	3.52	3.92	154	96.1
13	CP-12-1	0.61	0.762	0.076	4.928	2.447	2.403	2.919	26	25.6	167	3.52	3.92	148	94.3
14	CP-13-1	0.61	0.762	0.076	4.711	1.64	1.596	3.509	26	25.6	227	3.52	3.92	208	109.4
15	CP-6	0.61	0.762	0.076	5.747	3.255	3.193	2.939	30	29.6	195	4.06	4.54	173	109.6
16	CP-8	0.61	0.762	0.076	5.42	2.82	2.754	3.049	35	34.6	242	4.75	5.3	216	131.9
17	CP-9	0.61	0.762	0.076	5.332	2.75	2.706	3.02	26	25.6	176	3.52	3.92	157	96.9
18	DP-4	0.61	0.762	0.076	5.34	3.225	3.066	2.61	160	159.6	862	21.9	24.44	743	538.2
19	DP-5-1	0.61	0.762	0.076	5.34	3.087	3.066	2.679	21.75	21.35	121	2.93	3.27	105	73.5
20	EP-3	0.61	0.762	0.076	5.46	3.59	3.321	2.42	55.01	54.61	261	7.5	8.37	221	173.8
21	EP-4	0.61	0.762	0.076	5.275	3.314	3.184	2.442	27.3	26.9	131	3.69	4.12	111	86.2
22	EP-4-1	0.61	0.762	0.076	5.33	3.506	3.499	2.243	9.1	8.7	37	1.2	1.34	31	26.2
23	EP-4-2	0.61	0.762	0.076	5.38	4.172	4.008	1.706	5.43	5.03	14	0.69	0.78	11	12.5
24	EP-5-1	0.61	0.762	0.076	5.22	3.201	3.184	2.443	15.3	14.9	73	2.05	2.29	62	47.8
	Total								810		5390	110	122	4810	2970
1	AP-5	0.762	0.94	0.089	5.03	2.309	2.138	3.265	87.49	87.09	732	14.74	19.7	637	366.3
2	BP-1	0.762	0.94	0.089	5.232	2.081	1.914	3.693	85.78	85.38	879	14.45	19.31	786	395.6
	Total								174		1620	29.2	39.1	1430	762
1	AP-6	0.914	1.118	0.102	4.82	2.134	1.952	3.269	93.6	93.2	839	18.76	28.14	701	408.9
2	BP-2	0.914	1.118	0.102	5.03	1.91	1.739	3.697	87.49	87.09	956	17.53	26.3	827	419.4
3	CP-10	0.914	1.118	0.102	5.232	2.702	2.535	3.105	85.78	85.38	708	17.19	25.78	581	360.6
4	DP-5	0.914	1.118	0.102	4.983	3.065	3.039	2.423	37.88	37.48	212	7.55	11.32	156	132.8
5	DP-6	0.914	1.118	0.102	4.898	3.036	2.868	2.438	85.88	85.48	488	17.21	25.81	361	304
6	DP-7	0.914	1.118	0.102	5.145	2.865	2.722	2.843	150	149.6	1081	30.11	45.17	859	592.6
7	DP-8	0.914	1.118	0.102	5.069	2.719	2.543	2.93	90	89.6	679	18.04	27.06	546	362.8
8	DP-8-1	0.914	1.118	0.102	4.872	2.9	2.722	2.553	90	89.6	548	18.04	27.06	415	329
9	EP-5	0.914	1.118	0.102	5.055	3.179	2.872	2.521	145	144.6	868	29.1	43.66	653	526.2
	Total								866		6380	174	261	5100	3440
1	BP-3	1.219	1.473	0.127	4.82	1.735	1.599	3.74	93.6	93.2	1166	27.46	46.55	933	485.9
2	BP-4	1.219	1.473	0.127	4.711	1.595	1.564	3.718	20	19.6	243	5.78	9.79	194	101.8
3	BP-5-1	1.219	1.473	0.127	4.711	1.573	1.564	3.729	6	5.6	70	1.65	2.8	56	29.2
4	CP-11	1.219	1.473	0.127	5.03	2.531	2.403	3.15	87.49	87.09	837	25.66	43.5	619	402.7
5	CP-12	1.219	1.473	0.127	4.82	2.399	2.217	3.099	93.6	93.2	873	27.46	46.55	640	426.2
6	DP-10	1.219	1.473	0.127	4.778	2.284	2.101	3.172	90.6	90.2	876	26.58	45.05	650	419
7	DP-9	1.219	1.473	0.127	4.932	2.539	2.288	3.105	130.5	130.1	1223	38.33	64.98	898	595.6
8	EP-6	1.219	1.473	0.127	4.89	2.869	2.812	2.636	58	57.6	424	16.97	28.77	280	236.7
	Total								580		5720	170	288	4270	2700

NIPPON KOEI CO.,LTD.

QUANTITY CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province	**Project Code**	JC1N004/2N001
Work Section Title	Pipe culvert 610 mm	**Pay Item No. (BOQ)**	2H-0203
Quantity Item	Lean concrete	**Unit**	m3

Calculation Procedure Applied

Volume of lean concrete was computed by multiplying section area by actual length, manhole base and junction into consideration.

References, Calculation Base and Revisions

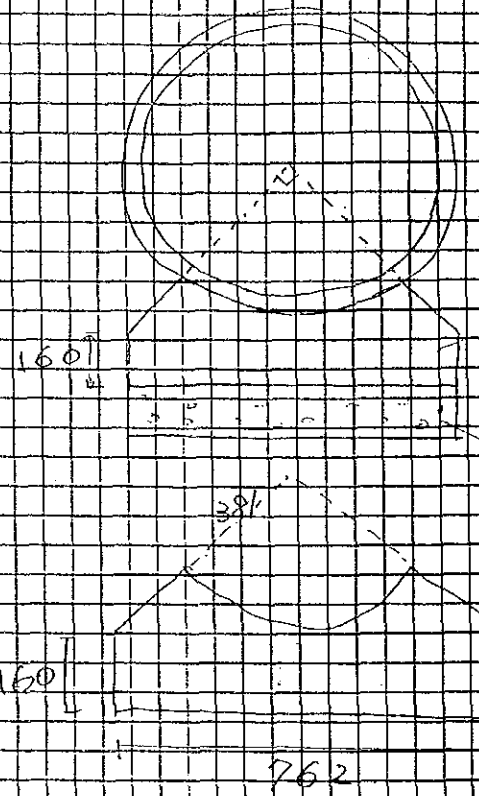
See the item of excavation and disposal of [illegible]

Rev	Prepared		No. of Pages	Checked		Reviewed		Superseded by Calc No.
	by	Date		by	Date	by	Date	
0	Kaila Gonio			Mr. Inuma		Mr. Ando		
1								
2								
3								

FN : Calculation_Cover_Sheet_020504_seg
cover

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	Pipe culvert	Calc. Index No.	
Subject	Lean concrete	Page No.	Rev.

References/ Notes



$$A = 0.16 \times 0.762 + 0.762 \times 0.381 \times \frac{1}{2} - (0.381)^2 \times \pi$$

$$V = A \times L_{ac}$$

Prepared by			Checked by		
		/ /200			/ /200

		D_{in} (m)	D_{out} (m)	t (m)	G (m)	Y_{in} (m)	Y_{out} (m)	H (m)	L (m)	Lac (m)	Vex (m3)	Vcs (m3)	Vfc (m3)	Vbf (m3)	Cmpct (m2)
1	CP-1	0.457	0.584	0.064	5.55	3.599	3.545	2.312	17	16.6	67	1.46	1.47	60	48.1
2	CP-2	0.457	0.584	0.064	5.487	3.543	3.505	2.297	20	19.6	78	1.72	1.74	70	56.5
3	CP-3	0.457	0.584	0.064	5.437	3.503	3.431	2.304	35	34.6	139	3.04	3.06	124	100
4	CP-4	0.457	0.584	0.064	5.537	3.429	3.391	2.461	20	19.6	88	1.72	1.74	80	59.7
5	CP-4-1	0.457	0.584	0.064	5.487	3.469	3.431	2.371	20	19.6	83	1.72	1.74	75	58
6	CP-5	0.457	0.584	0.064	5.637	3.389	3.257	2.648	70	69.6	352	6.1	6.16	321	225
7	CP-5-1	0.457	0.584	0.064	5.637	3.405	3.391	2.573	8	7.6	37	0.67	0.68	34	24
8	CP-7	0.457	0.584	0.064	5.682	2.891	2.824	3.158	35	34.6	237	3.04	3.06	222	129.5
9	CP-8-1	0.457	0.584	0.064	5.507	2.955	2.824	2.951	68	67.6	411	5.93	5.98	381	239
10	CP-8-1-1	0.457	0.584	0.064	5.55	3.019	2.957	2.896	30	29.6	175	2.6	2.62	162	103.1
11	CP-8-2	0.457	0.584	0.064	5.507	2.995	2.957	2.865	20	19.6	114	1.72	1.74	106	67.7
12	CP-8-2-1	0.457	0.584	0.064	5.555	3.021	2.997	2.88	10	9.6	56	0.85	0.85	52	33.3
13	CP-8-3	0.457	0.584	0.064	5.507	3.069	2.997	2.808	35	34.6	194	3.04	3.06	179	117.4
14	CP-8-4	0.457	0.584	0.064	5.507	3.095	3.071	2.758	10	9.6	52	0.85	0.85	48	32.1
15	DP-1	0.457	0.584	0.064	5.875	4.997	4.253	1.584	129.19	128.79	281	11.29	11.39	224	279.3
16	DP-2	0.457	0.584	0.064	5.35	3.347	3.249	2.386	20.82	20.42	87	1.79	1.81	78	60.7
17	DP-3	0.457	0.584	0.064	5.27	3.245	3.226	2.368	24.13	23.73	100	2.08	2.1	90	70.1
18	DP-4-1	0.457	0.584	0.064	5.34	3.247	3.226	2.437	21.75	21.35	94	1.88	1.89	85	64.5
19	DP-7-1	0.457	0.584	0.064	5.17	2.883	2.868	2.628	18.25	17.85	90	1.57	1.58	82	57.4
20	DP-9-1	0.457	0.584	0.064	5.015	2.746	2.543	2.704	150	149.6	784	13.11	13.23	718	491.9
21	DP-9-2	0.457	0.584	0.064	5.01	2.764	2.748	2.588	18.25	17.85	87	1.57	1.58	79	56.7
22	EP-1	0.457	0.584	0.064	6.015	4.097	4.003	2.299	20	19.6	79	1.72	1.74	71	56.6
23	EP-2	0.457	0.584	0.064	5.78	3.997	3.596	2.317	81.47	81.07	328	7.11	7.17	292	235.2
24	EP-2-1	0.457	0.584	0.064	5.97	4.008	4.003	2.298	9.1	8.7	35	0.77	0.77	32	25.1
25	EP-4-3	0.457	0.584	0.064	5.785	4.887	4.176	1.587	142.69	142.29	312	12.47	12.58	249	309
26	EP-4-4	0.457	0.584	0.064	6.195	4.997	4.893	1.584	22	21.6	48	1.9	1.91	39	46.9
27	EP-5-2	0.457	0.584	0.064	5.22	3.211	3.205	2.346	9.1	8.7	36	0.77	0.77	33	25.5
	Total								1,070		4450	92.5	93.3	3990	3080
1	AP-1	0.61	0.762	0.076	5.522	2.644	2.61	3.311	20	19.6	157	2.69	3.01	143	79.9
2	AP-2	0.61	0.762	0.076	5.427	2.606	2.532	3.274	40	39.6	312	5.44	6.07	283	159.9
3	AP-3	0.61	0.762	0.076	5.332	2.528	2.484	3.242	26	25.6	198	3.52	3.92	179	102.6
4	AP-4	0.61	0.762	0.076	5.232	2.48	2.313	3.251	85.78	85.38	663	11.72	13.08	600	342.7
5	AP-5-1	0.61	0.762	0.076	5.132	2.358	2.309	3.214	26	25.6	195	3.52	3.92	176	101.8
6	AP-6-1	0.61	0.762	0.076	4.928	2.182	2.138	3.184	26	25.6	192	3.52	3.92	173	101.1
7	AP-6-2	0.61	0.762	0.076	4.928	2.207	2.186	3.147	12.65	12.25	91	1.69	1.88	82	47.9
8	AP-7-1	0.61	0.762	0.076	4.711	1.997	1.952	3.152	26	25.6	189	3.52	3.92	170	100.2
9	BP-1-1	0.61	0.762	0.076	5.332	2.129	2.085	3.641	26	25.6	241	3.52	3.92	222	112.8
10	BP-2-1	0.61	0.762	0.076	5.132	1.958	1.914	3.612	26	25.6	238	3.52	3.92	219	112
11	BP-3-1	0.61	0.762	0.076	4.928	1.782	1.738	3.584	26	25.6	235	3.52	3.92	216	111.3
12	CP-11-1	0.61	0.762	0.076	5.132	2.579	2.535	2.991	26	25.6	173	3.52	3.92	154	96.1
13	CP-12-1	0.61	0.762	0.076	4.928	2.447	2.403	2.919	26	25.6	167	3.52	3.92	148	94.3
14	CP-13-1	0.61	0.762	0.076	4.711	1.64	1.596	3.509	26	25.6	227	3.52	3.92	208	109.4
15	CP-6	0.61	0.762	0.076	5.747	3.255	3.193	2.939	30	29.6	195	4.06	4.54	173	109.6
16	CP-8	0.61	0.762	0.076	5.42	2.82	2.754	3.049	35	34.6	242	4.75	5.3	216	131.9
17	CP-9	0.61	0.762	0.076	5.332	2.75	2.706	3.02	26	25.6	176	3.52	3.92	157	96.9
18	DP-4	0.61	0.762	0.076	5.34	3.225	3.066	2.61	160	159.6	862	21.9	24.44	743	538.2
19	DP-5-1	0.61	0.762	0.076	5.34	3.087	3.066	2.679	21.75	21.35	121	2.93	3.27	105	73.5
20	EP-3	0.61	0.762	0.076	5.46	3.59	3.321	2.42	55.01	54.61	261	7.5	8.37	221	173.8
21	EP-4	0.61	0.762	0.076	5.275	3.314	3.184	2.442	27.3	26.9	131	3.69	4.12	111	86.2
22	EP-4-1	0.61	0.762	0.076	5.33	3.506	3.499	2.243	9.1	8.7	37	1.2	1.34	31	26.2
23	EP-4-2	0.61	0.762	0.076	5.38	4.172	4.008	1.706	5.43	5.03	14	0.69	0.78	11	12.5
24	EP-5-1	0.61	0.762	0.076	5.22	3.201	3.184	2.443	15.3	14.9	73	2.05	2.29	62	47.8
	Total								810		5390	110	122	4810	2970
1	AP-5	0.762	0.94	0.089	5.03	2.309	2.138	3.265	87.49	87.09	732	14.74	19.7	637	366.3
2	BP-1	0.762	0.94	0.089	5.232	2.081	1.914	3.693	85.78	85.38	879	14.45	19.31	786	395.6
	Total								174		1620	29.2	39.1	1430	762
1	AP-6	0.914	1.118	0.102	4.82	2.134	1.952	3.269	93.6	93.2	839	18.76	28.14	701	408.9
2	BP-2	0.914	1.118	0.102	5.03	1.91	1.739	3.697	87.49	87.09	956	17.53	26.3	827	419.4
3	CP-10	0.914	1.118	0.102	5.232	2.702	2.535	3.105	85.78	85.38	708	17.19	25.78	581	360.6
4	DP-5	0.914	1.118	0.102	4.983	3.065	3.039	2.423	37.88	37.48	212	7.55	11.32	156	132.8
5	DP-6	0.914	1.118	0.102	4.898	3.036	2.868	2.438	85.88	85.48	488	17.21	25.81	361	304
6	DP-7	0.914	1.118	0.102	5.145	2.865	2.722	2.843	150	149.6	1081	30.11	45.17	859	592.6
7	DP-8	0.914	1.118	0.102	5.069	2.719	2.543	2.93	90	89.6	679	18.04	27.06	546	362.8
8	DP-8-1	0.914	1.118	0.102	4.872	2.9	2.722	2.553	90	89.6	548	18.04	27.06	415	329
9	EP-5	0.914	1.118	0.102	5.055	3.179	2.872	2.521	145	144.6	868	29.1	43.66	653	526.2
	Total								866		6360	174	261	5100	3440
1	BP-3	1.219	1.473	0.127	4.82	1.735	1.599	3.74	93.6	93.2	1166	27.46	46.55	933	485.9
2	BP-4	1.219	1.473	0.127	4.711	1.595	1.564	3.718	20	19.6	243	5.78	9.79	194	101.8
3	BP-5-1	1.219	1.473	0.127	4.711	1.573	1.564	3.729	6	5.6	70	1.65	2.8	56	29.2
4	CP-11	1.219	1.473	0.127	5.03	2.531	2.403	3.15	87.49	87.09	837	25.66	43.5	619	402.7
5	CP-12	1.219	1.473	0.127	4.82	2.399	2.217	3.099	93.6	93.2	873	27.46	46.55	640	426.2
6	DP-10	1.219	1.473	0.127	4.778	2.284	2.101	3.172	90.6	90.2	876	26.58	45.05	650	419
7	DP-9	1.219	1.473	0.127	4.932	2.539	2.288	3.105	130.5	130.1	1223	38.33	64.98	898	595.6
8	EP-6	1.219	1.473	0.127	4.89	2.869	2.812	2.636	58	57.6	424	16.97	28.77	280	236.7
	Total								580		5720	170	288	4270	2700

NIPPON KOEI CO.,LTD.

QUANTITY CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province	**Project Code**	JC1N004/2N001
Work Section Title	Pipe culvert 610 mm	**Pay Item No. (BOQ)**	2H - 0204
Quantity Item	Installation dralnage pipe	**Unit**	m

Calculation Procedure Applied

Length of dralnage pipe was computed for pipe culvert 610mm.

References, Calculation Base and Revisions

See the item of excavation and disposal of 457mm.
(24-0101)

Rev	Prepared		No. of Pages	Checked		Reviewed		Superseded by Calc No.
	by	Date		by	Date	by	Date	
0	Kala Gonia			Mr. Tsuma		Mr. Ando		
1								
2								
3								

FN : Calculation_Cover_Sheet_020504_seg
cover

Pipe Culvert集計

		D_{in} (m)	D_{out} (m)	t (m)	G (m)	Y_{in} (m)	Y_{out} (m)	H (m)	L (m)	Lac (m)	Vex (m3)	Vcs (m3)	Vlc (m3)	Vbf (m3)	Cmpct (m2)
1	CP-1	0.457	0.584	0.064	5.55	3.599	3.545	2.312	17	16.6	67	1.46	1.47	60	48.1
2	CP-2	0.457	0.584	0.064	5.487	3.543	3.505	2.297	20	19.6	78	1.72	1.74	70	56.5
3	CP-3	0.457	0.584	0.064	5.437	3.503	3.431	2.304	35	34.6	139	3.04	3.06	124	100
4	CP-4	0.457	0.584	0.064	5.537	3.429	3.391	2.461	20	19.6	88	1.72	1.74	80	59.7
5	CP-4-1	0.457	0.584	0.064	5.487	3.469	3.431	2.371	20	19.6	83	1.72	1.74	75	58
6	CP-5	0.457	0.584	0.064	5.637	3.389	3.257	2.648	70	69.6	352	6.1	6.16	321	225
7	CP-5-1	0.457	0.584	0.064	5.637	3.405	3.391	2.573	8	7.6	37	0.67	0.68	34	24
8	CP-7	0.457	0.584	0.064	5.682	2.891	2.824	3.158	35	34.6	237	3.04	3.06	222	129.5
9	CP-8-1	0.457	0.584	0.064	5.507	2.955	2.824	2.951	68	67.6	411	5.93	5.98	381	239
10	CP-8-1-1	0.457	0.584	0.064	5.55	3.019	2.957	2.896	30	29.6	175	2.6	2.62	162	103.1
11	CP-8-2	0.457	0.584	0.064	5.507	2.995	2.957	2.865	20	19.6	114	1.72	1.74	106	67.7
12	CP-8-2-1	0.457	0.584	0.064	5.555	3.021	2.997	2.88	10	9.6	56	0.85	0.85	52	33.3
13	CP-8-3	0.457	0.584	0.064	5.507	3.069	2.997	2.808	35	34.6	194	3.04	3.06	179	117.4
14	CP-8-4	0.457	0.584	0.064	5.507	3.095	3.071	2.758	10	9.6	52	0.85	0.85	48	32.1
15	DP-1	0.457	0.584	0.064	5.875	4.997	4.253	1.584	129.19	128.79	281	11.29	11.39	224	279.3
16	DP-2	0.457	0.584	0.064	5.35	3.347	3.249	2.386	20.82	20.42	87	1.79	1.81	78	60.7
17	DP-3	0.457	0.584	0.064	5.27	3.245	3.226	2.368	24.13	23.73	100	2.08	2.1	90	70.1
18	DP-4-1	0.457	0.584	0.064	5.34	3.247	3.226	2.437	21.75	21.35	94	1.88	1.89	85	64.5
19	DP-7-1	0.457	0.584	0.064	5.17	2.883	2.868	2.628	18.25	17.85	90	1.57	1.58	82	57.4
20	DP-9-1	0.457	0.584	0.064	5.015	2.746	2.543	2.704	150	149.6	784	13.11	13.23	718	491.9
21	DP-9-2	0.457	0.584	0.064	5.01	2.764	2.748	2.588	18.25	17.85	87	1.57	1.58	79	56.7
22	EP-1	0.457	0.584	0.064	6.015	4.097	4.003	2.299	20	19.6	79	1.72	1.74	71	56.6
23	EP-2	0.457	0.584	0.064	5.78	3.997	3.596	2.317	81.47	81.07	328	7.11	7.17	292	235.2
24	EP-2-1	0.457	0.584	0.064	5.97	4.008	4.003	2.298	9.1	8.7	35	0.77	0.77	32	25.1
25	EP-4-3	0.457	0.584	0.064	5.785	4.887	4.176	1.587	142.69	142.29	312	12.47	12.58	249	309
26	EP-4-4	0.457	0.584	0.064	6.195	4.997	4.893	1.584	22	21.6	48	1.9	1.91	39	46.9
27	EP-5-2	0.457	0.584	0.064	5.22	3.211	3.205	2.346	9.1	8.7	36	0.77	0.77	33	25.5
	Total								1,070		4450	92.5	93.3	3990	3080
1	AP-1	0.61	0.762	0.076	5.522	2.644	2.61	3.311	20	19.6	157	2.69	3.01	143	79.9
2	AP-2	0.61	0.762	0.076	5.427	2.606	2.532	3.274	40	39.6	312	5.44	6.07	283	159.9
3	AP-3	0.61	0.762	0.076	5.332	2.528	2.484	3.242	26	25.6	198	3.52	3.92	179	102.6
4	AP-4	0.61	0.762	0.076	5.232	2.48	2.313	3.251	85.78	85.38	663	11.72	13.08	600	342.7
5	AP-5-1	0.61	0.762	0.076	5.132	2.358	2.309	3.214	26	25.6	195	3.52	3.92	176	101.8
6	AP-6-1	0.61	0.762	0.076	4.928	2.182	2.138	3.184	26	25.6	192	3.52	3.92	173	101.1
7	AP-6-2	0.61	0.762	0.076	4.928	2.207	2.186	3.147	12.65	12.25	91	1.69	1.88	82	47.9
8	AP-7-1	0.61	0.762	0.076	4.711	1.997	1.952	3.152	26	25.6	189	3.52	3.92	170	100.2
9	BP-1-1	0.61	0.762	0.076	5.332	2.129	2.085	3.641	26	25.6	241	3.52	3.92	222	112.8
10	BP-2-1	0.61	0.762	0.076	5.132	1.958	1.914	3.612	26	25.6	238	3.52	3.92	219	112
11	BP-3-1	0.61	0.762	0.076	4.928	1.782	1.738	3.584	26	25.6	235	3.52	3.92	216	111.3
12	CP-11-1	0.61	0.762	0.076	5.132	2.579	2.535	2.991	26	25.6	173	3.52	3.92	154	96.1
13	CP-12-1	0.61	0.762	0.076	4.928	2.447	2.403	2.919	26	25.6	167	3.52	3.92	148	94.3
14	CP-13-1	0.61	0.762	0.076	4.711	1.64	1.596	3.509	26	25.6	227	3.52	3.92	208	109.4
15	CP-6	0.61	0.762	0.076	5.747	3.255	3.193	2.939	30	29.6	195	4.06	4.54	173	109.6
16	CP-8	0.61	0.762	0.076	5.42	2.82	2.754	3.049	35	34.6	242	4.75	5.3	216	131.9
17	CP-9	0.61	0.762	0.076	5.332	2.75	2.706	3.02	26	25.6	176	3.52	3.92	157	96.9
18	DP-4	0.61	0.762	0.076	5.34	3.225	3.066	2.61	160	159.6	862	21.9	24.44	743	538.2
19	DP-5-1	0.61	0.762	0.076	5.34	3.087	3.066	2.679	21.75	21.35	121	2.93	3.27	105	73.5
20	EP-3	0.61	0.762	0.076	5.46	3.59	3.321	2.42	55.01	54.61	261	7.5	8.37	221	173.8
21	EP-4	0.61	0.762	0.076	5.275	3.314	3.184	2.442	27.3	26.9	131	3.69	4.12	111	86.2
22	EP-4-1	0.61	0.762	0.076	5.33	3.506	3.499	2.243	9.1	8.7	37	1.2	1.34	31	26.2
23	EP-4-2	0.61	0.762	0.076	5.38	4.172	4.008	1.706	5.43	5.03	14	0.69	0.78	11	12.5
24	EP-5-1	0.61	0.762	0.076	5.22	3.201	3.184	2.443	15.3	14.9	73	2.05	2.29	62	47.8
	Total								810		5390	110	122	4810	2970
1	AP-5	0.762	0.94	0.089	5.03	2.309	2.138	3.265	87.49	87.09	732	14.74	19.7	637	366.3
2	BP-1	0.762	0.94	0.089	5.232	2.081	1.914	3.693	85.78	85.38	879	14.45	19.31	786	395.6
	Total								174		1620	29.2	39.1	1430	762
1	AP-6	0.914	1.118	0.102	4.82	2.134	1.952	3.269	93.6	93.2	839	18.76	28.14	701	408.9
2	BP-2	0.914	1.118	0.102	5.03	1.91	1.739	3.697	87.49	87.09	956	17.53	26.3	827	419.4
3	CP-10	0.914	1.118	0.102	5.232	2.702	2.535	3.105	85.78	85.38	708	17.19	25.78	581	360.6
4	DP-5	0.914	1.118	0.102	4.983	3.065	3.039	2.423	37.88	37.48	212	7.55	11.32	156	132.8
5	DP-6	0.914	1.118	0.102	4.898	3.036	2.868	2.438	85.88	85.48	488	17.21	25.81	361	304
6	DP-7	0.914	1.118	0.102	5.145	2.865	2.722	2.843	150	149.6	1081	30.11	45.17	859	592.6
7	DP-8	0.914	1.118	0.102	5.069	2.719	2.543	2.93	90	89.6	679	18.04	27.06	546	362.8
8	DP-8-1	0.914	1.118	0.102	4.872	2.9	2.722	2.553	90	89.6	548	18.04	27.06	415	329
9	EP-5	0.914	1.118	0.102	5.055	3.179	2.872	2.521	145	144.6	868	29.1	43.66	653	526.2
	Total								866		6380	174	261	5100	3440
1	BP-3	1.219	1.473	0.127	4.82	1.735	1.599	3.74	93.6	93.2	1166	27.46	46.55	933	485.9
2	BP-4	1.219	1.473	0.127	4.711	1.595	1.564	3.718	20	19.6	243	5.78	9.79	194	101.8
3	BP-5-1	1.219	1.473	0.127	4.711	1.573	1.564	3.729	6	5.6	70	1.65	2.8	56	29.2
4	CP-11	1.219	1.473	0.127	5.03	2.531	2.403	3.15	87.49	87.09	837	25.66	43.5	619	402.7
5	CP-12	1.219	1.473	0.127	4.82	2.399	2.217	3.099	93.6	93.2	873	27.46	46.55	640	426.2
6	DP-10	1.219	1.473	0.127	4.778	2.284	2.101	3.172	90.6	90.2	876	26.58	45.05	650	419
7	DP-9	1.219	1.473	0.127	4.932	2.539	2.288	3.105	130.5	130.1	1223	38.33	64.98	898	595.6
8	EP-6	1.219	1.473	0.127	4.89	2.869	2.812	2.636	58	57.6	424	16.97	28.77	280	236.7
	Total								580		5720	170	288	4270	2700

NIPPON KOEI CO.,LTD.

QUANTITY CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province	Project Code	JC1N004/2N001
Work Section Title	Pipe culvert 510 m/m	Pay Item No. (BOQ)	2H-020501
Quantity Item	Backfill sand	Unit	m³

Calculation Procedure Applied

Volume of backfill sand was calculated by excavation volume minus pipe culvert volume, lean concrete volume and crushed stone volume.

References, Calculation Base and Revisions

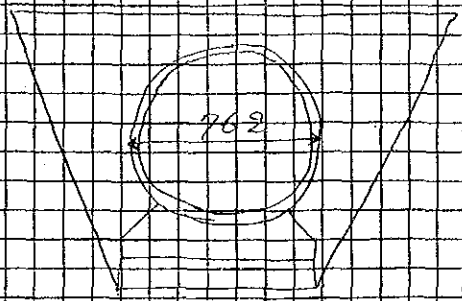
See the item of excavation and disposal of 457 m/m.
(2H-0101).

Rev	Prepared by	Prepared Date	No. of Pages	Checked by	Checked Date	Reviewed by	Reviewed Date	Superseded by Calc No.
0	Paola Garcia			Mr. Inuma		Mr. Ando		
1								
2								
3								

FN : Calculation_Cover_Sheet_020504_seg cover

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	Pipe culvert 610 mm	Calc. Index No.	
Subject	Backfill sand	Page No.	Rev.

References/ Notes



Pipe culvert volume

$$V_p = (0.38/)^2 \times \pi \times L$$

$$V = V_{Ex} - V_p - V_{lc} - V_{cs}$$

V_{ES} : Volume of excavation

V_{lc} : Volume of lean concrete

V_{cs} : Volume of crushed stone

Prepared by		Checked by	
	/ /200		/ /200

Pipe Culvert集計

		D_{in} (m)	D_{out} (m)	t (m)	G (m)	Y_{in} (m)	Y_{out} (m)	H (m)	L (m)	Lac (m)	Vex (m3)	Vcs (m3)	Vlc (m3)	Vbf (m3)	Cmpct (m2)
1	CP-1	0.457	0.584	0.064	5.55	3.599	3.545	2.312	17	16.6	67	1.46	1.47	60	48.1
2	CP-2	0.457	0.584	0.064	5.487	3.543	3.505	2.297	20	19.6	78	1.72	1.74	70	56.5
3	CP-3	0.457	0.584	0.064	5.437	3.503	3.431	2.304	35	34.6	139	3.04	3.06	124	100
4	CP-4	0.457	0.584	0.064	5.537	3.429	3.391	2.461	20	19.6	88	1.72	1.74	80	59.7
5	CP-4-1	0.457	0.584	0.064	5.487	3.469	3.431	2.371	20	19.6	83	1.72	1.74	75	58
6	CP-5	0.457	0.584	0.064	5.637	3.389	3.257	2.648	70	69.6	352	6.1	6.16	321	225
7	CP-5-1	0.457	0.584	0.064	5.637	3.405	3.391	2.573	8	7.6	37	0.67	0.68	34	24
8	CP-7	0.457	0.584	0.064	5.682	2.891	2.824	3.158	35	34.6	237	3.04	3.06	222	129.5
9	CP-8-1	0.457	0.584	0.064	5.507	2.955	2.824	2.951	68	67.6	411	5.93	5.98	381	239
10	CP-8-1-1	0.457	0.584	0.064	5.55	3.019	2.957	2.896	30	29.6	175	2.6	2.62	162	103.1
11	CP-8-2	0.457	0.584	0.064	5.507	2.995	2.957	2.865	20	19.6	114	1.72	1.74	106	67.7
12	CP-8-2-1	0.457	0.584	0.064	5.555	3.021	2.997	2.88	10	9.6	56	0.85	0.85	52	33.3
13	CP-8-3	0.457	0.584	0.064	5.507	3.069	2.997	2.808	35	34.6	194	3.04	3.06	179	117.4
14	CP-8-4	0.457	0.584	0.064	5.507	3.095	3.071	2.758	10	9.6	52	0.85	0.85	48	32.1
15	DP-1	0.457	0.584	0.064	5.875	4.997	4.253	1.584	129.19	128.79	281	11.29	11.39	224	279.3
16	DP-2	0.457	0.584	0.064	5.35	3.347	3.249	2.386	20.82	20.42	87	1.79	1.81	78	60.7
17	DP-3	0.457	0.584	0.064	5.27	3.245	3.226	2.368	24.13	23.73	100	2.08	2.1	90	70.1
18	DP-4-1	0.457	0.584	0.064	5.34	3.247	3.226	2.437	21.75	21.35	94	1.88	1.89	85	64.5
19	DP-7-1	0.457	0.584	0.064	5.17	2.883	2.868	2.628	18.25	17.85	90	1.57	1.58	82	57.4
20	DP-9-1	0.457	0.584	0.064	5.015	2.746	2.543	2.704	150	149.6	784	13.11	13.23	718	491.9
21	DP-9-2	0.457	0.584	0.064	5.01	2.764	2.748	2.588	18.25	17.85	87	1.57	1.58	79	56.7
22	EP-1	0.457	0.584	0.064	6.015	4.097	4.003	2.299	20	19.6	79	1.72	1.74	71	56.6
23	EP-2	0.457	0.584	0.064	5.78	3.997	3.596	2.317	81.47	81.07	328	7.11	7.17	292	235.2
24	EP-2-1	0.457	0.584	0.064	5.97	4.008	4.003	2.298	9.1	8.7	35	0.77	0.77	32	25.1
25	EP-4-3	0.457	0.584	0.064	5.785	4.887	4.176	1.587	142.69	142.29	312	12.47	12.58	249	309
26	EP-4-4	0.457	0.584	0.064	6.195	4.997	4.893	1.584	22	21.6	48	1.9	1.91	39	46.9
27	EP-5-2	0.457	0.584	0.064	5.22	3.211	3.205	2.346	9.1	8.7	36	0.77	0.77	33	25.5
	Total								1,070		4450	92.5	93.3	3990	3080
1	AP-1	0.61	0.762	0.076	5.522	2.644	2.61	3.311	20	19.6	157	2.69	3.01	143	79.9
2	AP-2	0.61	0.762	0.076	5.427	2.606	2.532	3.274	40	39.6	312	5.44	6.07	283	159.9
3	AP-3	0.61	0.762	0.076	5.332	2.528	2.484	3.242	26	25.6	198	3.52	3.92	179	102.6
4	AP-4	0.61	0.762	0.076	5.232	2.48	2.313	3.251	85.78	85.38	663	11.72	13.08	600	342.7
5	AP-5-1	0.61	0.762	0.076	5.132	2.358	2.309	3.214	26	25.6	195	3.52	3.92	176	101.8
6	AP-6-1	0.61	0.762	0.076	4.928	2.182	2.138	3.184	26	25.6	192	3.52	3.92	173	101.1
7	AP-6-2	0.61	0.762	0.076	4.928	2.207	2.186	3.147	12.65	12.25	91	1.69	1.88	82	47.9
8	AP-7-1	0.61	0.762	0.076	4.711	1.997	1.952	3.152	26	25.6	189	3.52	3.92	170	100.2
9	BP-1-1	0.61	0.762	0.076	5.332	2.129	2.085	3.641	26	25.6	241	3.52	3.92	222	112.8
10	BP-2-1	0.61	0.762	0.076	5.132	1.958	1.914	3.612	26	25.6	238	3.52	3.92	219	112
11	BP-3-1	0.61	0.762	0.076	4.928	1.782	1.738	3.584	26	25.6	235	3.52	3.92	216	111.3
12	CP-11-1	0.61	0.762	0.076	5.132	2.579	2.535	2.991	26	25.6	173	3.52	3.92	154	96.1
13	CP-12-1	0.61	0.762	0.076	4.928	2.447	2.403	2.919	26	25.6	167	3.52	3.92	148	94.3
14	CP-13-1	0.61	0.762	0.076	4.711	1.64	1.596	3.509	26	25.6	227	3.52	3.92	208	109.4
15	CP-6	0.61	0.762	0.076	5.747	3.255	3.193	2.939	30	29.6	195	4.06	4.54	173	109.6
16	CP-8	0.61	0.762	0.076	5.42	2.82	2.754	3.049	35	34.6	242	4.75	5.3	216	131.9
17	CP-9	0.61	0.762	0.076	5.332	2.75	2.706	3.02	26	25.6	176	3.52	3.92	157	96.9
18	DP-4	0.61	0.762	0.076	5.34	3.225	3.066	2.61	160	159.6	862	21.9	24.44	743	538.2
19	DP-5-1	0.61	0.762	0.076	5.34	3.087	3.066	2.679	21.75	21.35	121	2.93	3.27	105	73.5
20	EP-3	0.61	0.762	0.076	5.46	3.59	3.321	2.42	55.01	54.61	261	7.5	8.37	221	173.8
21	EP-4	0.61	0.762	0.076	5.275	3.314	3.184	2.442	27.3	26.9	131	3.69	4.12	111	86.2
22	EP-4-1	0.61	0.762	0.076	5.33	3.506	3.499	2.243	9.1	8.7	37	1.2	1.34	31	26.2
23	EP-4-2	0.61	0.762	0.076	5.38	4.172	4.008	1.706	5.43	5.03	14	0.69	0.78	11	12.5
24	EP-5-1	0.61	0.762	0.076	5.22	3.201	3.184	2.443	15.3	14.9	73	2.05	2.29	62	47.8
	Total								810		5390	110	122	4810	2970
1	AP-5	0.762	0.94	0.089	5.03	2.309	2.138	3.265	87.49	87.09	732	14.74	19.7	637	366.3
2	BP-1	0.762	0.94	0.089	5.232	2.081	1.914	3.693	85.78	85.38	879	14.45	19.31	786	395.6
	Total								174		1620	29.2	39.1	1430	762
1	AP-6	0.914	1.118	0.102	4.82	2.134	1.952	3.269	93.6	93.2	839	18.76	28.14	701	408.9
2	BP-2	0.914	1.118	0.102	5.03	1.91	1.739	3.697	87.49	87.09	956	17.53	26.3	827	419.4
3	CP-10	0.914	1.118	0.102	5.232	2.702	2.535	3.105	85.78	85.38	708	17.19	25.78	581	360.6
4	DP-5	0.914	1.118	0.102	4.983	3.065	3.039	2.423	37.88	37.48	212	7.55	11.32	156	132.8
5	DP-6	0.914	1.118	0.102	4.898	3.036	2.868	2.438	85.88	85.48	488	17.21	25.81	361	304
6	DP-7	0.914	1.118	0.102	5.145	2.865	2.722	2.843	150	149.6	1081	30.11	45.17	859	592.6
7	DP-8	0.914	1.118	0.102	5.069	2.719	2.543	2.93	90	89.6	679	18.04	27.06	546	362.8
8	DP-8-1	0.914	1.118	0.102	4.872	2.9	2.722	2.553	90	89.6	548	18.04	27.06	415	329
9	EP-5	0.914	1.118	0.102	5.055	3.179	2.872	2.521	145	144.6	868	29.1	43.66	653	526.2
	Total								866		6380	174	261	5100	3440
1	BP-3	1.219	1.473	0.127	4.82	1.735	1.599	3.74	93.6	93.2	1166	27.46	46.55	933	485.9
2	BP-4	1.219	1.473	0.127	4.711	1.595	1.564	3.718	20	19.6	243	5.78	9.79	194	101.8
3	BP-5-1	1.219	1.473	0.127	4.711	1.573	1.564	3.729	6	5.6	70	1.65	2.8	56	29.2
4	CP-11	1.219	1.473	0.127	5.03	2.531	2.403	3.15	87.49	87.09	837	25.66	43.5	619	402.7
5	CP-12	1.219	1.473	0.127	4.82	2.399	2.217	3.099	93.6	93.2	873	27.46	46.55	640	426.2
6	DP-10	1.219	1.473	0.127	4.778	2.284	2.101	3.172	90.6	90.2	876	26.58	45.05	650	419
7	DP-9	1.219	1.473	0.127	4.932	2.539	2.288	3.105	130.5	130.1	1223	38.33	64.98	898	595.6
8	EP-6	1.219	1.473	0.127	4.89	2.869	2.812	2.636	58	57.6	424	16.97	28.77	280	236.7
	Total								580		5720	170	288	4270	2700

NIPPON KOEI CO.,LTD.

QUANTITY CALCULATION COVER SHEET

Project	Detailed Design on Port Reactivation Project in La Union Province	Project Code	JC1N004/2N001
Work Section Title	Dipe culvert 610 mm	Pay Item No. (BOQ)	2H - 020502
Quantity Item	Compaction	Unit	m^2

Calculation Procedure Applied

Area of compaction was computed by multiplying compaction length by actual length.

References, Calculation Base and Revisions

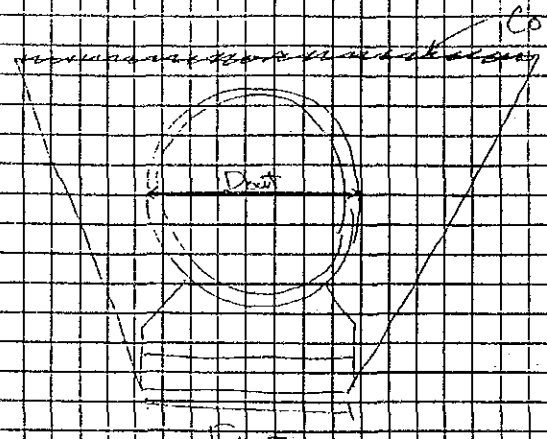
See the item of excavation and backfill ± ±%mm (2H - 0101)

Rev	Prepared by	Prepared Date	No. of Pages	Checked by	Checked Date	Reviewed by	Reviewed Date	Superseded by Calc No.
0	Karla Grace			Mr. Inuma		Mr. Ando		
1								
2								
3								

FN : Calculation_Cover_Sheet_020504_seg
cover

Project	Detailed Design on Port Reactivation Project in La Union	Calc. File No.	
Section	Pipe culvert 610 mm	Calc. Index No.	
Subject	Compaction	Page No.	Rev.

References/ Notes



Compaction length

$$L = \frac{1}{2}H + D_{out} + \frac{1}{2}H$$

$$= H + D_{out}$$

Compaction area

$$A = (H + D_{out}) \times L_{ac}$$

	Prepared by		Checked by	
		/ /200		/ /200

		D_{in} (m)	D_{out} (m)	t (m)	G (m)	Y_{in} (m)	Y_{out} (m)	H (m)	L (m)	Lac (m)	Vex (m3)	Vcs (m3)	Vlc (m3)	Vbf (m3)	Cmpct (m2)
1	CP-1	0.457	0.584	0.064	5.55	3.599	3.545	2.312	17	16.6	67	1.46	1.47	60	48.1
2	CP-2	0.457	0.584	0.064	5.487	3.543	3.505	2.297	20	19.6	78	1.72	1.74	70	56.5
3	CP-3	0.457	0.584	0.064	5.437	3.503	3.431	2.304	35	34.6	139	3.04	3.06	124	100
4	CP-4	0.457	0.584	0.064	5.537	3.429	3.391	2.461	20	19.6	88	1.72	1.74	80	59.7
5	CP-4-1	0.457	0.584	0.064	5.487	3.469	3.431	2.371	20	19.6	83	1.72	1.74	75	58
6	CP-5	0.457	0.584	0.064	5.637	3.389	3.257	2.648	70	69.6	352	6.1	6.16	321	225
7	CP-5-1	0.457	0.584	0.064	5.637	3.405	3.391	2.573	8	7.6	37	0.67	0.68	34	24
8	CP-7	0.457	0.584	0.064	5.682	2.891	2.824	3.158	35	34.6	237	3.04	3.06	222	129.5
9	CP-8-1	0.457	0.584	0.064	5.507	2.955	2.824	2.951	68	67.6	411	5.93	5.98	381	239
10	CP-8-1-1	0.457	0.584	0.064	5.55	3.019	2.957	2.896	30	29.6	175	2.6	2.62	162	103.1
11	CP-8-2	0.457	0.584	0.064	5.507	2.995	2.957	2.865	20	19.6	114	1.72	1.74	106	67.7
12	CP-8-2-1	0.457	0.584	0.064	5.555	3.021	2.997	2.88	10	9.6	56	0.85	0.85	52	33.3
13	CP-8-3	0.457	0.584	0.064	5.507	3.069	2.997	2.808	35	34.6	194	3.04	3.06	179	117.4
14	CP-8-4	0.457	0.584	0.064	5.507	3.095	3.071	2.758	10	9.6	52	0.85	0.85	48	32.1
15	DP-1	0.457	0.584	0.064	5.875	4.997	4.253	1.584	129.19	128.79	281	11.29	11.39	224	279.3
16	DP-2	0.457	0.584	0.064	5.35	3.347	3.249	2.386	20.82	20.42	87	1.79	1.81	78	60.7
17	DP-3	0.457	0.584	0.064	5.27	3.245	3.226	2.368	24.13	23.73	100	2.08	2.1	90	70.1
18	DP-4-1	0.457	0.584	0.064	5.34	3.247	3.226	2.437	21.75	21.35	94	1.88	1.89	85	64.5
19	DP-7-1	0.457	0.584	0.064	5.17	2.883	2.868	2.628	18.25	17.85	90	1.57	1.58	82	57.4
20	DP-9-1	0.457	0.584	0.064	5.015	2.746	2.543	2.704	150	149.6	784	13.11	13.23	718	491.9
21	DP-9-2	0.457	0.584	0.064	5.01	2.764	2.748	2.588	18.25	17.85	87	1.57	1.58	79	56.7
22	EP-1	0.457	0.584	0.064	6.015	4.097	4.003	2.299	20	19.6	79	1.72	1.74	71	56.6
23	EP-2	0.457	0.584	0.064	5.78	3.997	3.596	2.317	81.47	81.07	328	7.11	7.17	292	235.2
24	EP-2-1	0.457	0.584	0.064	5.97	4.008	4.003	2.298	9.1	8.7	35	0.77	0.77	32	25.1
25	EP-4-3	0.457	0.584	0.064	5.785	4.887	4.176	1.587	142.69	142.29	312	12.47	12.58	249	309
26	EP-4-4	0.457	0.584	0.064	6.195	4.997	4.893	1.584	22	21.6	48	1.9	1.91	39	46.9
27	EP-5-2	0.457	0.584	0.064	5.22	3.211	3.205	2.346	9.1	8.7	36	0.77	0.77	33	25.5
	Total								1,070		4450	92.5	93.3	3990	3080
1	AP-1	0.61	0.762	0.076	5.522	2.644	2.61	3.311	20	19.6	157	2.69	3.01	143	79.9
2	AP-2	0.61	0.762	0.076	5.427	2.606	2.532	3.274	40	39.6	312	5.44	6.07	283	159.9
3	AP-3	0.61	0.762	0.076	5.332	2.528	2.484	3.242	26	25.6	198	3.52	3.92	179	102.6
4	AP-4	0.61	0.762	0.076	5.232	2.48	2.313	3.251	85.78	85.38	663	11.72	13.08	600	342.7
5	AP-5-1	0.61	0.762	0.076	5.132	2.358	2.309	3.214	26	25.6	195	3.52	3.92	176	101.8
6	AP-6-1	0.61	0.762	0.076	4.928	2.182	2.138	3.184	26	25.6	192	3.52	3.92	173	101.1
7	AP-6-2	0.61	0.762	0.076	4.928	2.207	2.186	3.147	12.65	12.25	91	1.69	1.88	82	47.9
8	AP-7-1	0.61	0.762	0.076	4.711	1.997	1.952	3.152	26	25.6	189	3.52	3.92	170	100.2
9	BP-1-1	0.61	0.762	0.076	5.332	2.129	2.085	3.641	26	25.6	241	3.52	3.92	222	112.8
10	BP-2-1	0.61	0.762	0.076	5.132	1.958	1.914	3.612	26	25.6	238	3.52	3.92	219	112
11	BP-3-1	0.61	0.762	0.076	4.928	1.782	1.738	3.584	26	25.6	235	3.52	3.92	216	111.3
12	CP-11-1	0.61	0.762	0.076	5.132	2.579	2.535	2.991	26	25.6	173	3.52	3.92	154	96.1
13	CP-12-1	0.61	0.762	0.076	4.928	2.447	2.403	2.919	26	25.6	167	3.52	3.92	148	94.3
14	CP-13-1	0.61	0.762	0.076	4.711	1.64	1.596	3.509	26	25.6	227	3.52	3.92	208	109.4
15	CP-6	0.61	0.762	0.076	5.747	3.255	3.193	2.939	30	29.6	195	4.06	4.54	173	109.6
16	CP-8	0.61	0.762	0.076	5.42	2.82	2.754	3.049	35	34.6	242	4.75	5.3	216	131.9
17	CP-9	0.61	0.762	0.076	5.332	2.75	2.706	3.02	26	25.6	176	3.52	3.92	157	96.9
18	DP-4	0.61	0.762	0.076	5.34	3.225	3.066	2.61	160	159.6	862	21.9	24.44	743	538.2
19	DP-5-1	0.61	0.762	0.076	5.34	3.087	3.066	2.679	21.75	21.35	121	2.93	3.27	105	73.5
20	EP-3	0.61	0.762	0.076	5.46	3.59	3.321	2.42	55.01	54.61	261	7.5	8.37	221	173.8
21	EP-4	0.61	0.762	0.076	5.275	3.314	3.184	2.442	27.3	26.9	131	3.69	4.12	111	86.2
22	EP-4-1	0.61	0.762	0.076	5.33	3.506	3.499	2.243	9.1	8.7	37	1.2	1.34	31	26.2
23	EP-4-2	0.61	0.762	0.076	5.38	4.172	4.008	1.706	5.43	5.03	14	0.69	0.78	11	12.5
24	EP-5-1	0.61	0.762	0.076	5.22	3.201	3.184	2.443	15.3	14.9	73	2.05	2.29	62	47.8
	Total								810		5390	110	122	4810	2970
1	AP-5	0.762	0.94	0.089	5.03	2.309	2.138	3.265	87.49	87.09	732	14.74	19.7	637	366.3
2	BP-1	0.762	0.94	0.089	5.232	2.081	1.914	3.693	85.78	85.38	879	14.45	19.31	786	395.6
	Total								174		1620	29.2	39.1	1430	762
1	AP-6	0.914	1.118	0.102	4.82	2.134	1.952	3.269	93.6	93.2	839	18.76	28.14	701	408.9
2	BP-2	0.914	1.118	0.102	5.03	1.91	1.739	3.697	87.49	87.09	956	17.53	26.3	827	419.4
3	CP-10	0.914	1.118	0.102	5.232	2.702	2.535	3.105	85.78	85.38	708	17.19	25.78	581	360.6
4	DP-5	0.914	1.118	0.102	4.983	3.065	3.039	2.423	37.88	37.48	212	7.55	11.32	156	132.8
5	DP-6	0.914	1.118	0.102	4.898	3.036	2.868	2.438	85.88	85.48	488	17.21	25.81	361	304
6	DP-7	0.914	1.118	0.102	5.145	2.865	2.722	2.843	150	149.6	1081	30.11	45.17	859	592.6
7	DP-8	0.914	1.118	0.102	5.069	2.719	2.543	2.93	90	89.6	679	18.04	27.06	546	362.8
8	DP-8-1	0.914	1.118	0.102	4.872	2.9	2.722	2.553	90	89.6	548	18.04	27.06	415	329
9	EP-5	0.914	1.118	0.102	5.055	3.179	2.872	2.521	145	144.6	868	29.1	43.66	653	526.2
	Total								866		6380	174	261	5100	3440
1	BP-3	1.219	1.473	0.127	4.82	1.735	1.599	3.74	93.6	93.2	1166	27.46	46.55	933	485.9
2	BP-4	1.219	1.473	0.127	4.711	1.595	1.564	3.718	20	19.6	243	5.78	9.79	194	101.8
3	BP-5-1	1.219	1.473	0.127	4.711	1.573	1.564	3.729	6	5.6	70	1.65	2.8	56	29.2
4	CP-11	1.219	1.473	0.127	5.03	2.531	2.403	3.15	87.49	87.09	837	25.66	43.5	619	402.7
5	CP-12	1.219	1.473	0.127	4.82	2.399	2.217	3.099	93.6	93.2	873	27.46	46.55	640	426.2
6	DP-10	1.219	1.473	0.127	4.778	2.284	2.101	3.172	90.6	90.2	876	26.58	45.05	650	419
7	DP-9	1.219	1.473	0.127	4.932	2.539	2.288	3.105	130.5	130.1	1223	38.33	64.98	898	595.6
8	EP-6	1.219	1.473	0.127	4.89	2.869	2.812	2.636	58	57.6	424	16.97	28.77	280	236.7
	Total								580		5720	170	288	4270	2700