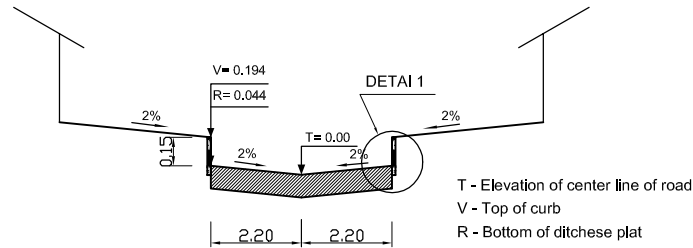
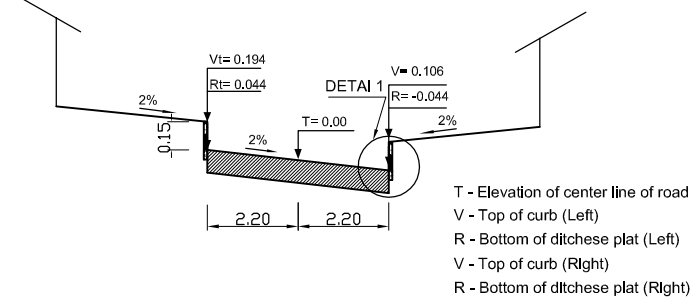


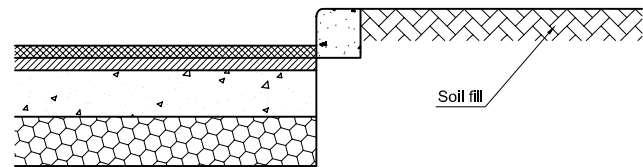
TYPICAL CROSS SECTION OF ROAD:



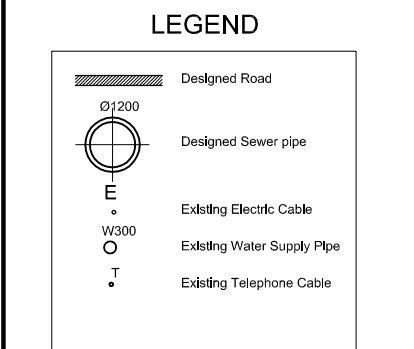
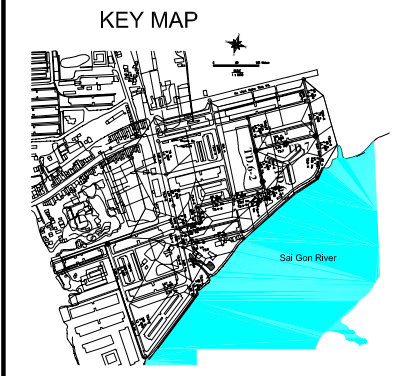
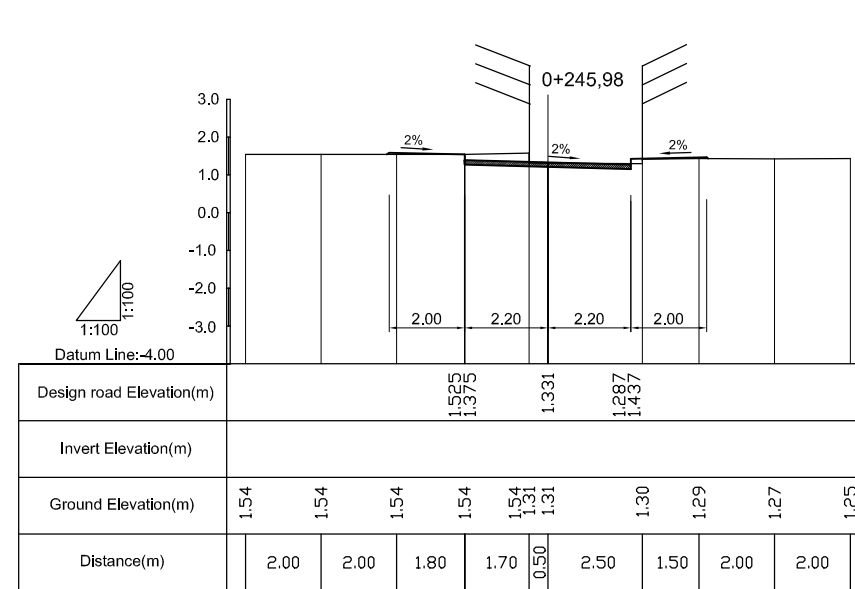
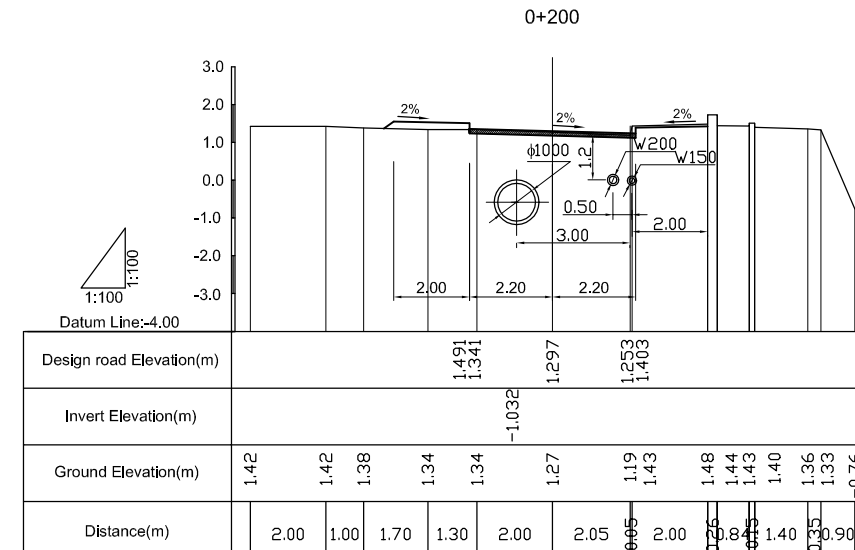
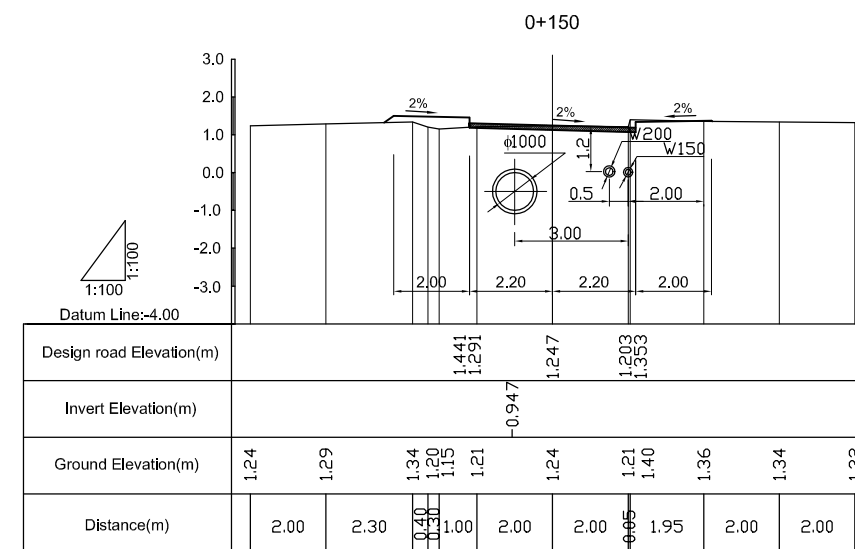
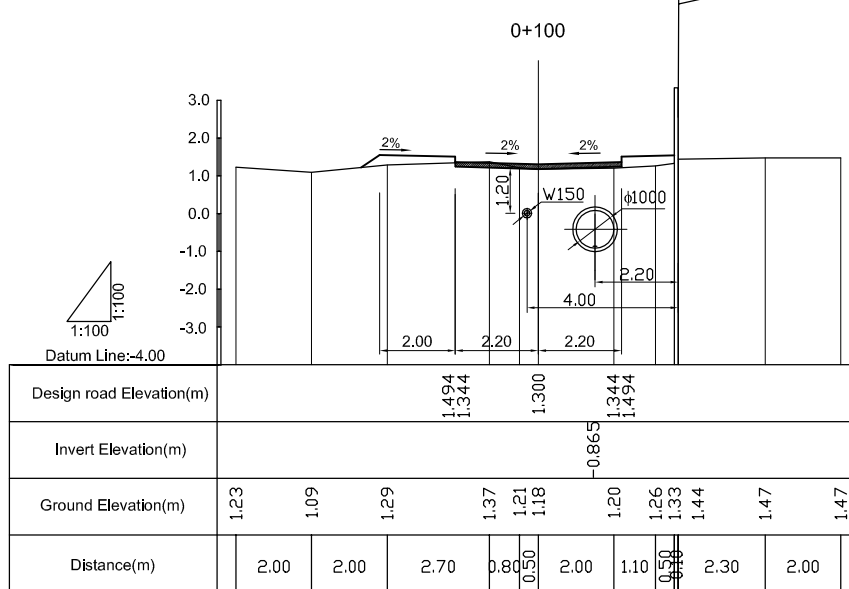
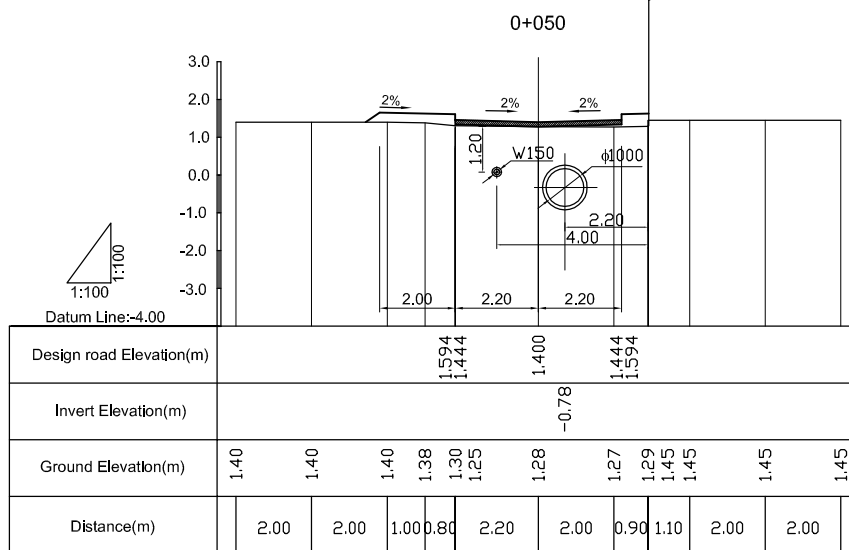
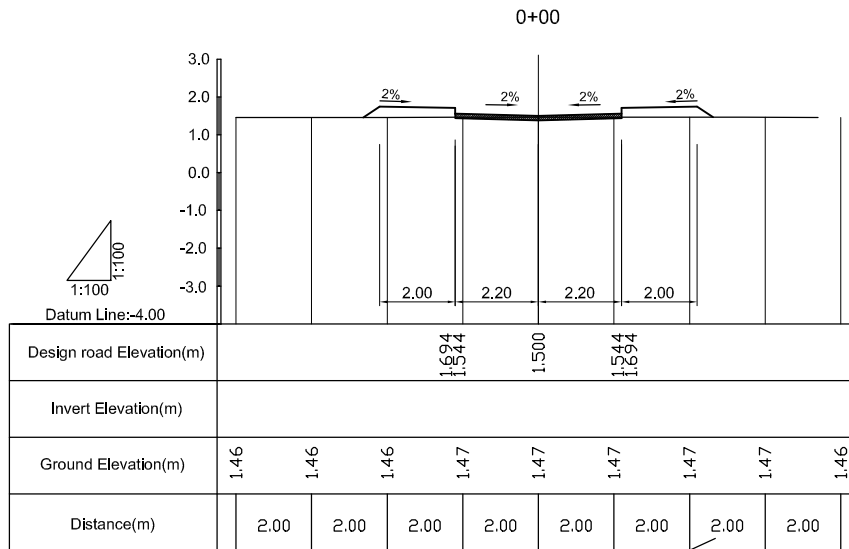
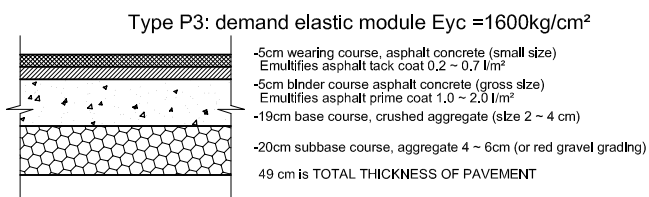
TYPICAL CROSS SECTION OF ROAD:



DETAIL 1:



TYPICAL ROAD SURFACE:



NO.	DATE	DESCRIPTIONS	BY	APRO.

REVISIONS

PROJECT MANAGEMENT UNIT FOR
HO CHI MINH CITY
WATER ENVIRONMENT IMPROVEMENT

THE DETAILED DESIGN STUDY ON HO CHI MINH CITY
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IN THE SOCIALIST REPUBLIC OF VIET NAM

PACKAGE B
PUMP DRAINAGE IMPROVEMENT
THANH DA AREA

CROSS SECTION
OF SEWER AND ROAD (4)
(TD.7, TD.6-2, TD.6-3)

SCALE : AS SHOW

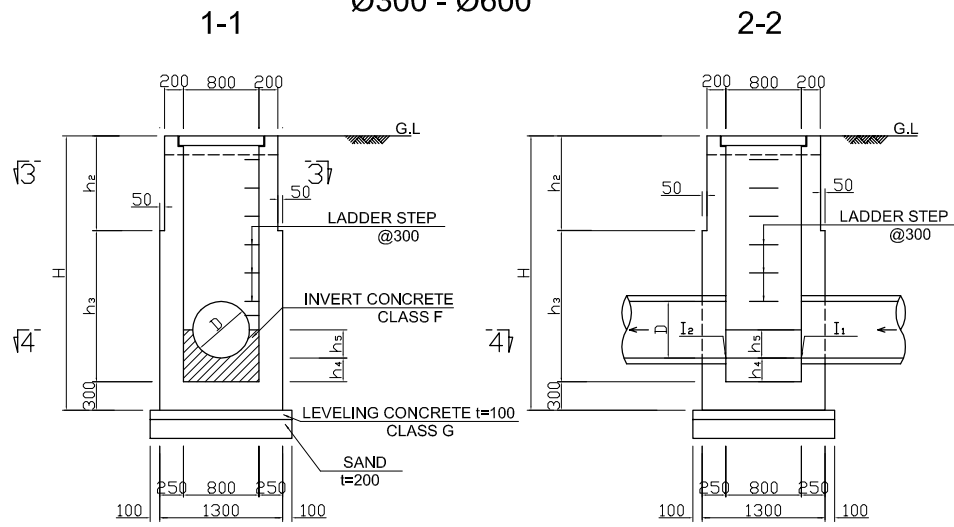
JICA JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

PACIFIC CONSULTANTS INTERNATIONAL

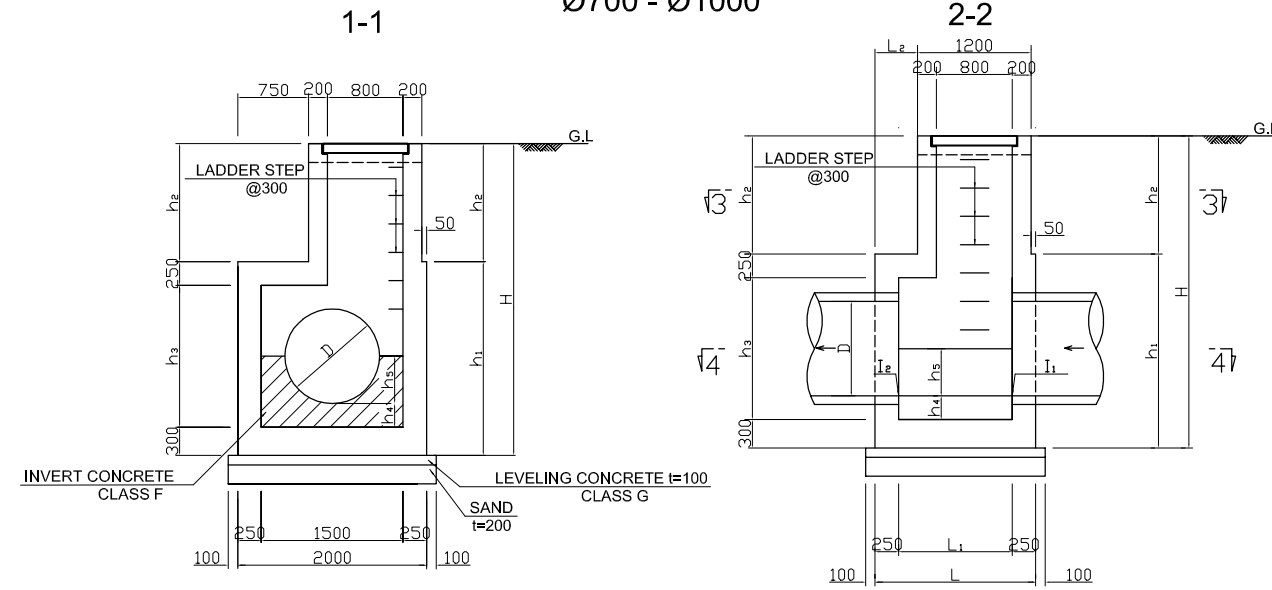
DESIGNED CHECKED

DATE : DWG. No. PB - PDI - TD - 209

TYPE 1 S = 1:40
Ø300 - Ø600

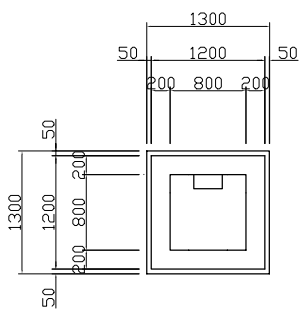


TYPE 2 S = 1:40
Ø700 - Ø1000

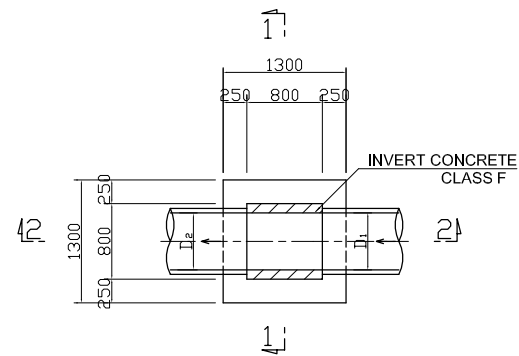


When $H \leq 2850$, $h_2 = 300$
When $H \geq 2850$, $h_2 = 2000$

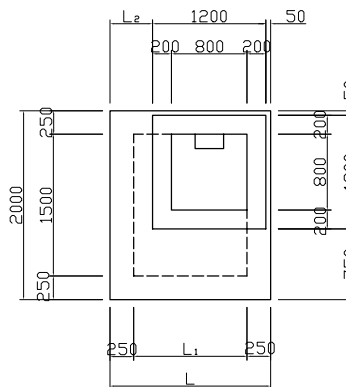
3-3



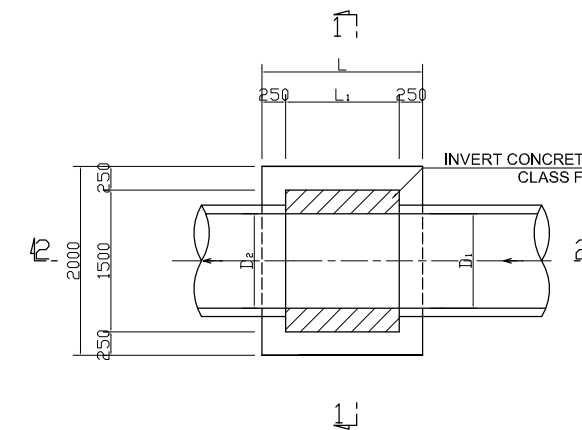
4-4



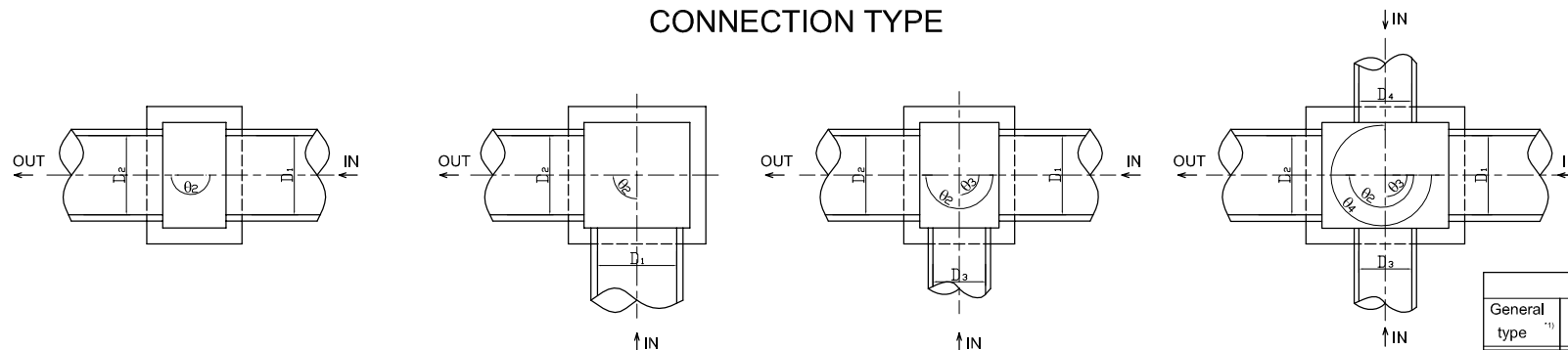
3-3



4-4



CONNECTION TYPE



TYPE A

TYPE B

TYPE C

TYPE D

TYPE OF MANHOLE

General type ⁽¹⁾	Type of Manhole		Diameter (mm)		Dimension (m)			Number of Manhole
	Connection type	Connection pipe ⁽²⁾	Main pipe (D ₁ , D ₂)	Connecting pipe (D ₁ , D ₂)	L	L ₁	L ₂	
1	A, B, C	-	Ø300-Ø600	Ø300-Ø600	-	-	-	0
	A	-	Ø700-Ø1000	-	1,700	1,200	450	12
B	-	-		2,000	1,500	750	0	
C	1	2		Ø300-Ø600	1,700	1,200	450	5
				Ø700-Ø1000	2,000	1,500	750	4
D	1	2	Ø300-Ø600	2,500	2,000	1,250	0	
			Ø700-Ø1000	2,900	2,400	1,650	1	

This table is applied at a depth of up to 2.5m for Type 1 and 5.0m for Type 2

Note:

*1) General type of Manhole type is categorized in diameter of Main pipe, D₁ and D₂.

*2) Connection pipe of Manhole type is categorized in a diameter of connection pipe.

NO.	DATE	DESCRIPTIONS	BY	APPRO.

REVISIONS

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HO CHI MINH CITY
WATER ENVIRONMENT IMPROVEMENT

THE DETAILED DESIGN ON HO CHI MINH CITY
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PACKAGE B
PUMP DRAINAGE IMPROVEMENT
THANH DA AREA
TYPICAL PLAN AND SECTION
OF MANHOLE (1)

SCALE : 1/40

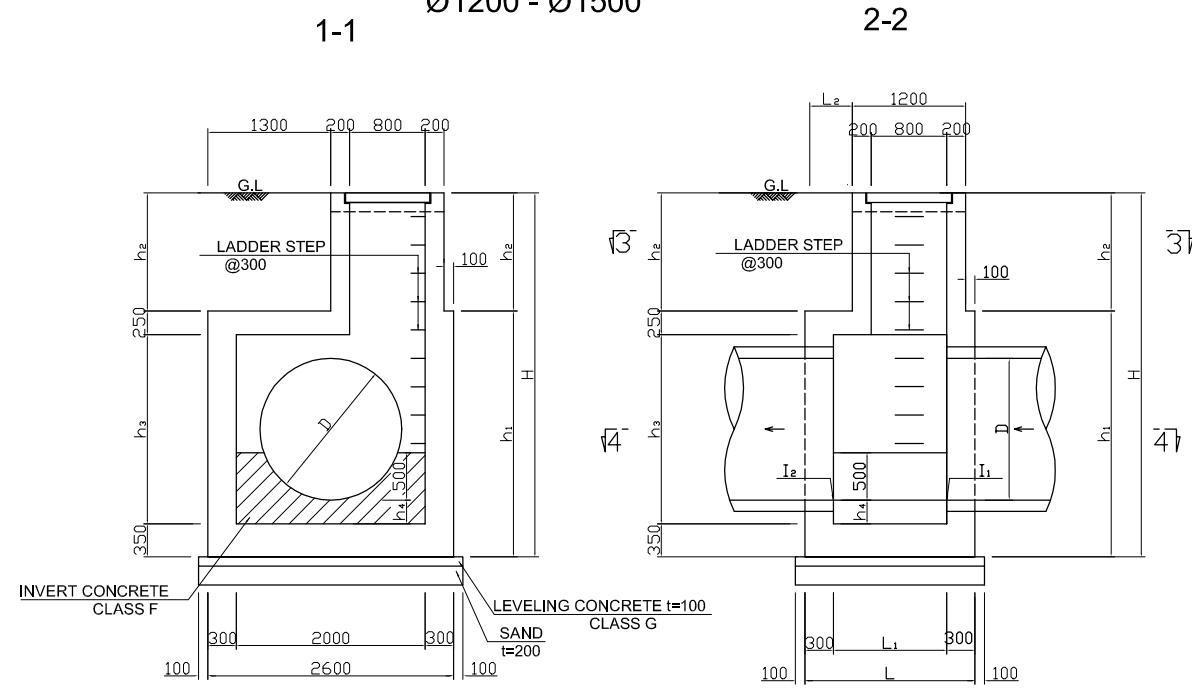
JICA JAPAN INTERNATIONAL COOPERATION
AGENCY (JICA)

PACIFIC CONSULTANTS INTERNATIONAL

DESIGNED CHECKED

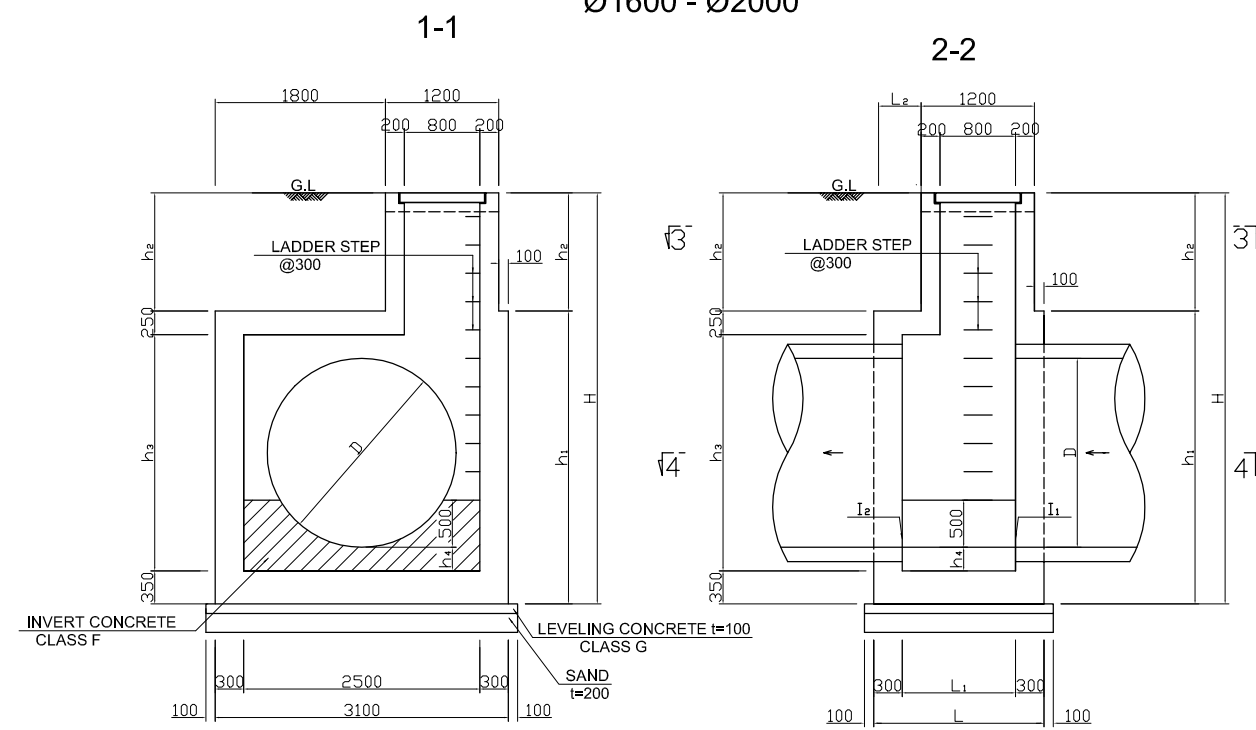
DATE : DWG. No. PB - PDI -TD - 210

TYPE 3 S= 1:40
Ø1200 - Ø1500



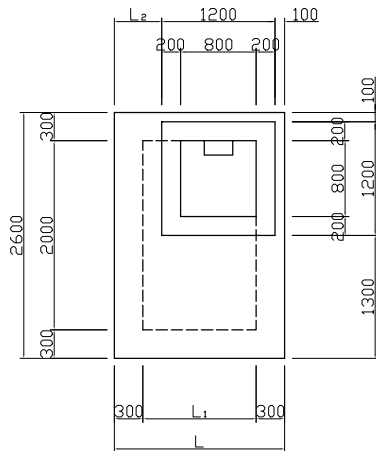
When $H \leq 2900$, $h_2 = 300$
When $H \geq 2900$, $h_2 = 2000$

TYPE 4 S= 1:40
Ø1600 - Ø2000

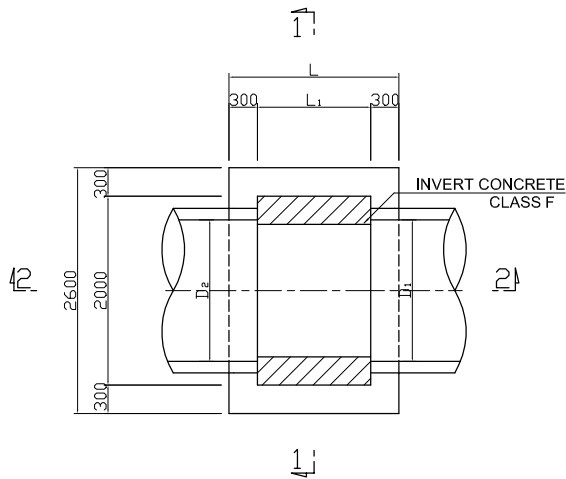


When $H \leq 3400$, $h_2 = 300$
When $H \geq 3400$, $h_2 = 2500$

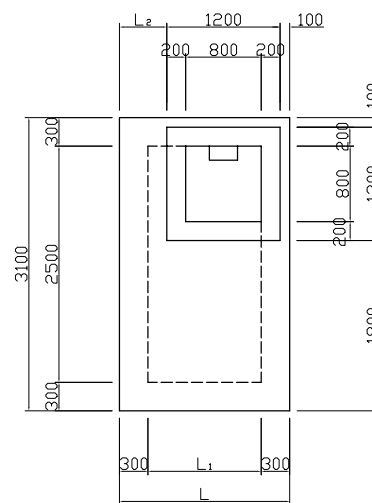
3-3



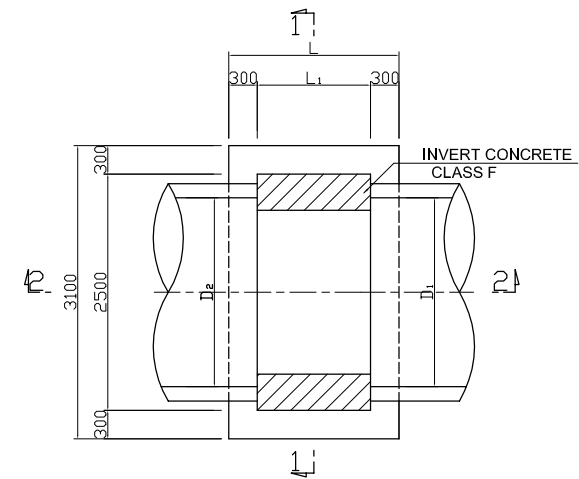
4-4



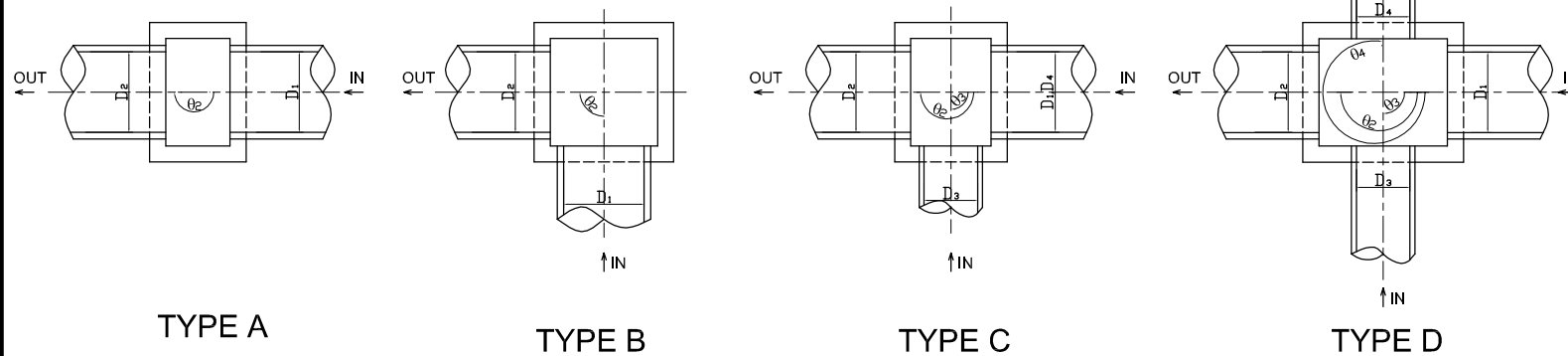
3-3



4-4



CONNECTION TYPE



TYPE OF MANHOLE

General type ^{*)}	Type of Manhole		Diameter (mm)		Dimension (m)			Number of Manhole
	Connection type	Connection pipe ^{*)}	Main pipe (D ₁ , D ₂)	Connecting pipe (D ₃ , D ₄)	L	L ₁	L ₂	
3	A	-	Ø1200-Ø1500	-	1,800	1,200	500	3
	B	-		-	2,600	2,000	1,300	0
	C	1		Ø300-Ø600	1,800	1,200	500	1
		2		Ø700-Ø1000	2,100	1,500	800	4
	D	1		Ø1200-Ø1500	2,600	2,000	1,300	0
		2		Ø300-Ø600	2,600	2,000	1,300	0
4	A	-	Ø1600-Ø2000	-	1,800	1,200	500	0
	B	-		-	3,100	2,500	1,800	0
	C	1		Ø300-Ø600	1,800	1,200	500	0
		2		Ø700-Ø1000	2,100	1,500	800	0
	3	1		Ø1200-Ø1500	2,600	2,000	1,300	0
		2		Ø1600-Ø2000	3,100	2,500	1,800	0
	D	1		Ø300-Ø600	2,600	2,000	1,300	0
		2		Ø700-Ø1000	3,000	2,400	1,700	0
		3		Ø1200-Ø1500	3,600	3,000	2,300	0
		4		Ø1600-Ø2000	4,100	3,500	2,800	0

This table is applied at a depth of up to 5.0m
Note:

- *1) General type of Manhole type is categorized in diameter of Main pipe, D₁ and D₂.
- *2) Connection pipe of Manhole type is categorized in a diameter of connection pipe.

NO.	DATE	DESCRIPTIONS	BY	APPRO.

REVISIONS

PROJECT MANAGEMENT UNIT FOR
HO CHI MINH CITY
WATER ENVIRONMENT IMPROVEMENT

THE DETAILED DESIGN ON HO CHI MINH CITY
WATER ENVIRONMENT IMPROVEMENT PROJECT
IN THE SOCIALIST REPUBLIC OF VIET NAM

PACKAGE B
PUMP DRAINAGE IMPROVEMENT
THANH DA AREA
TYPICAL PLAN AND SECTION
OF MANHOLE (2)

SCALE : 1/40

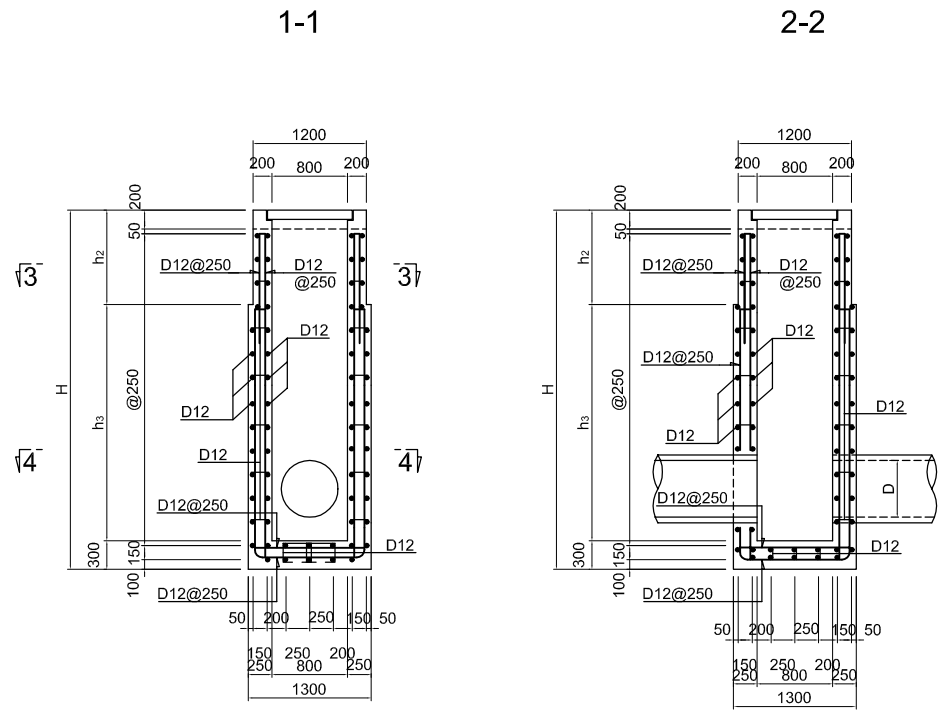
JICA JAPAN INTERNATIONAL COOPERATION
AGENCY (JICA)

PACIFIC CONSULTANTS INTERNATIONAL

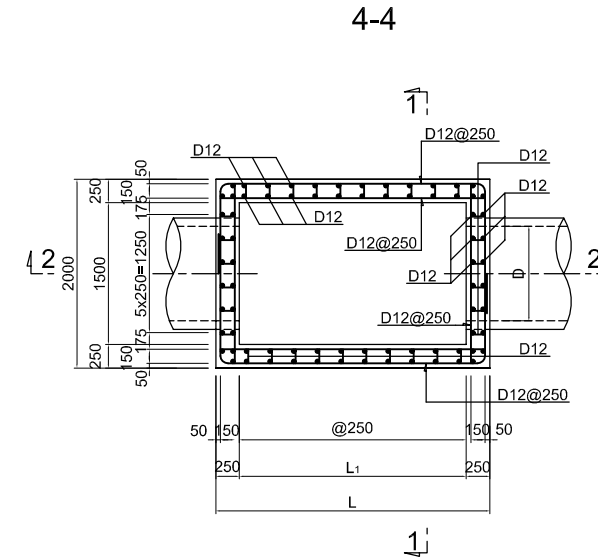
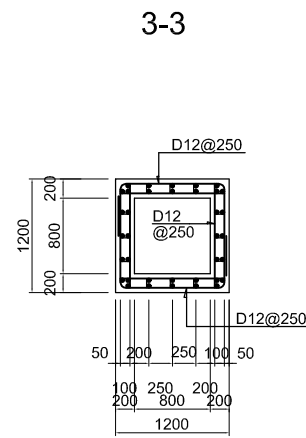
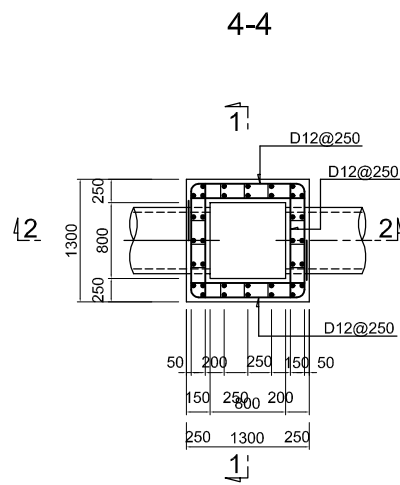
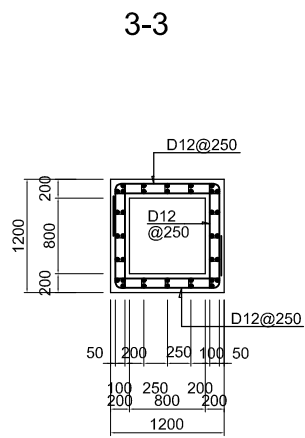
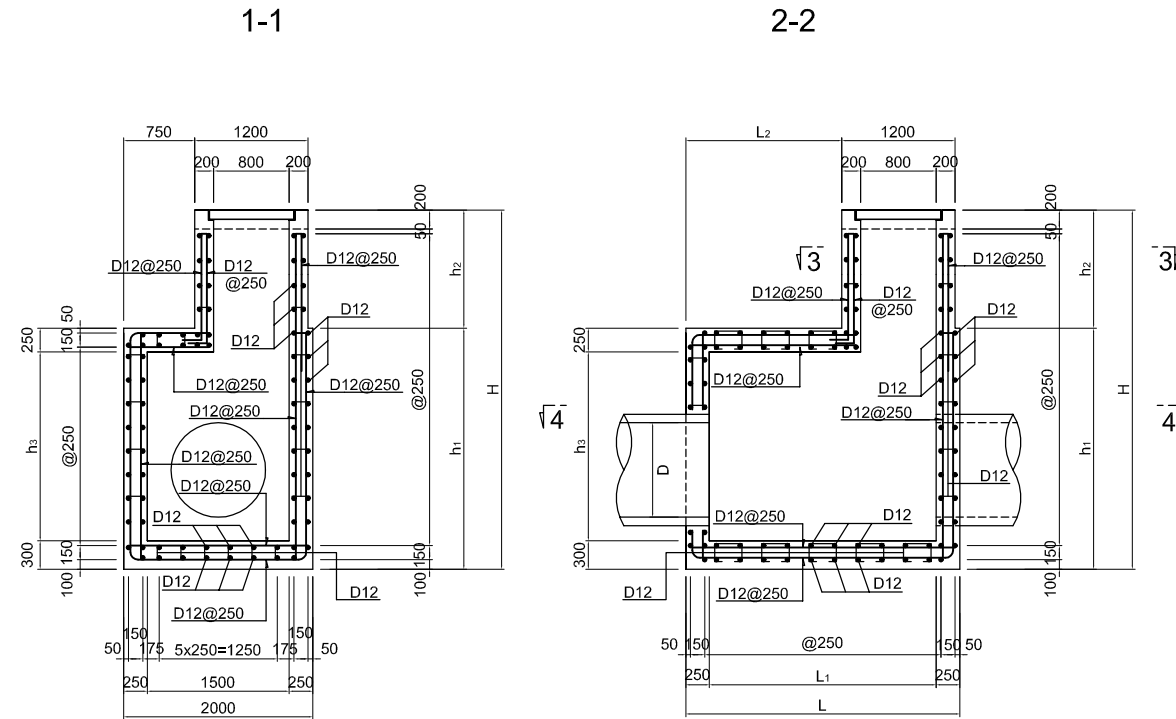
DESIGNED CHECKED

DATE : DWG. No. PB - PDI - TD - 211

TYPE 1



TYPE 2



NO.	DATE	DESCRIPTIONS	BY	APRO.

REVISIONS

PROJECT MANAGEMENT UNIT FOR
HO CHI MINH CITY
WATER ENVIRONMENT IMPROVEMENT

THE DETAILED DESIGN ON HO CHI MINH CITY
WATER ENVIRONMENT IMPROVEMENT PROJECT
IN THE SOCIALIST REPUBLIC OF VIET NAM

PACKAGE B
PUMP DRAINAGE IMPROVEMENT
THANH DA AREA
TYPICAL BAR ARRANGEMENT
OF MANHOLE (1)

SCALE : 1/40

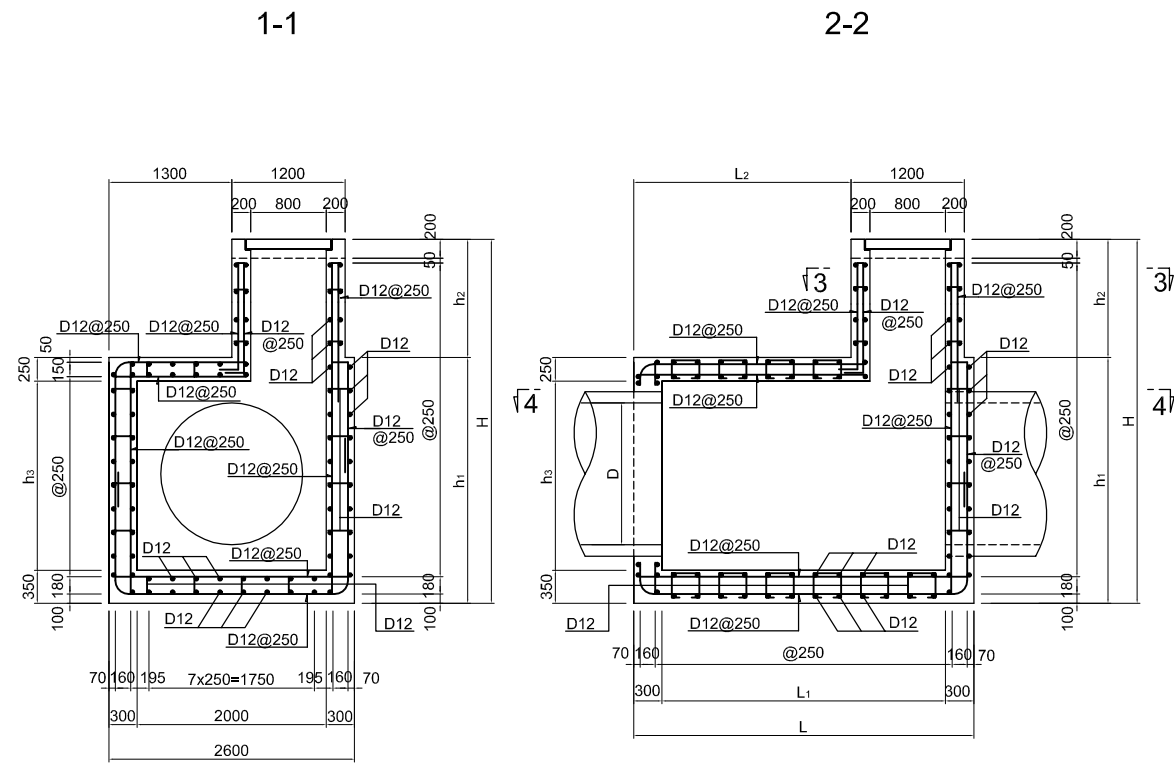
JICA JAPAN INTERNATIONAL COOPERATION
AGENCY (JICA)

PACIFIC CONSULTANTS INTERNATIONAL

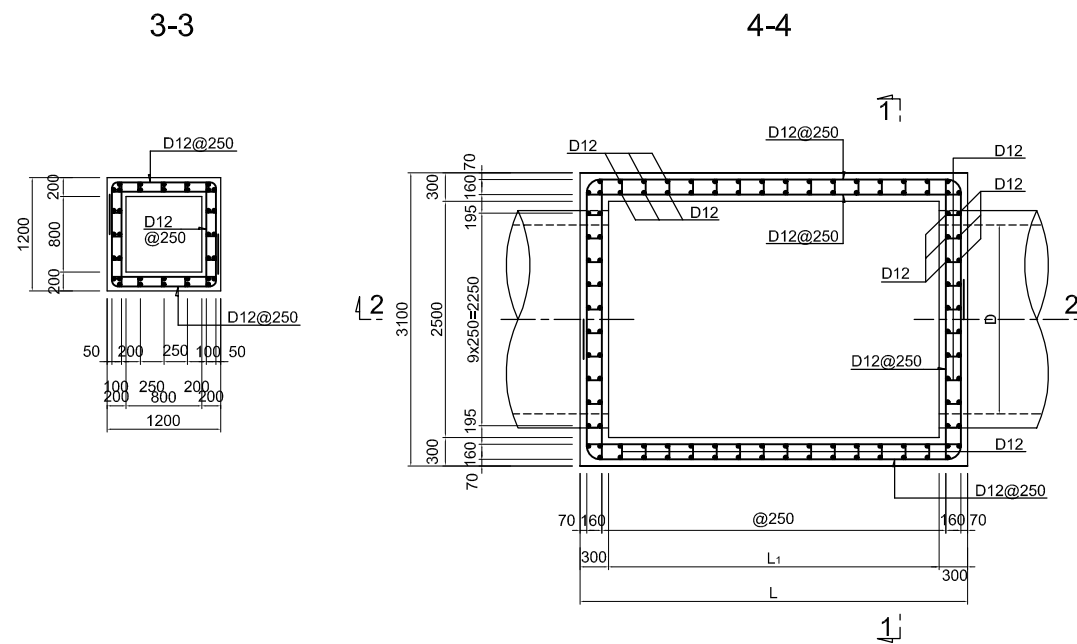
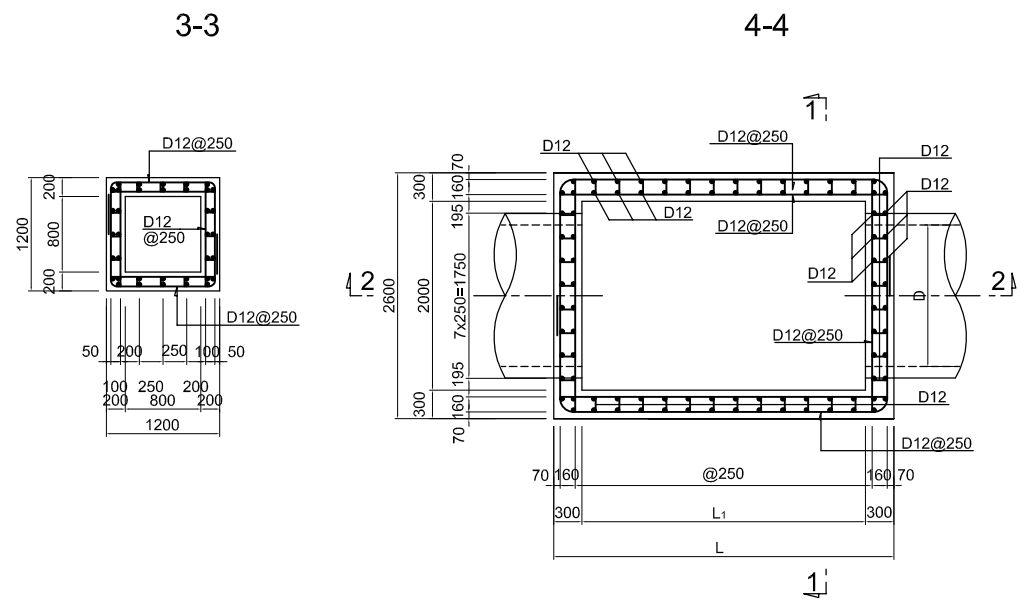
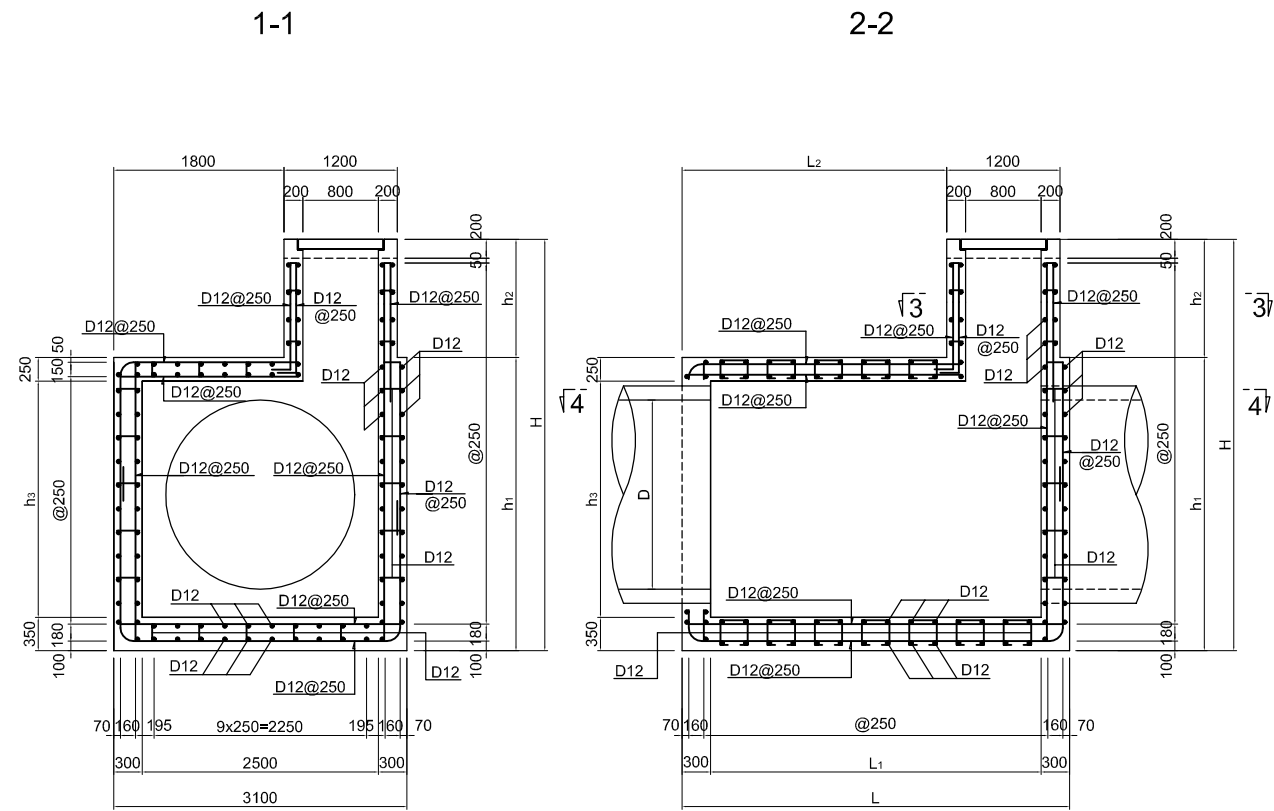
DESIGNED CHECKED



DATE : DWG. No. PB - PDI - TD - 212

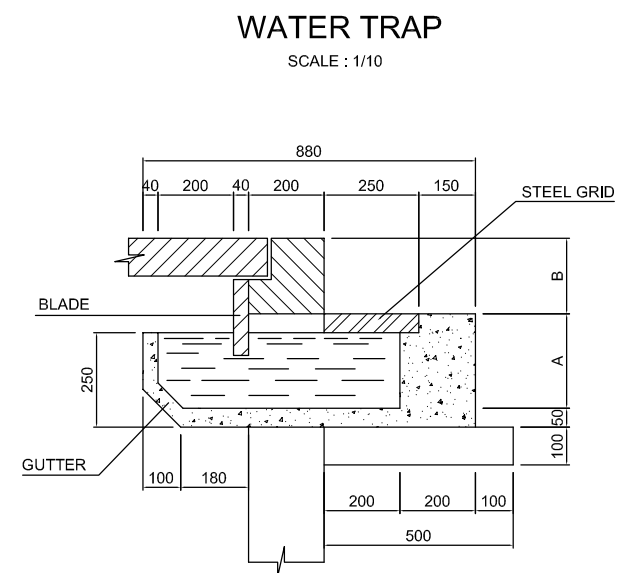
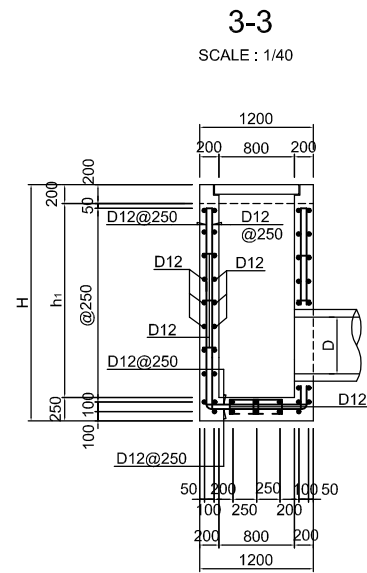
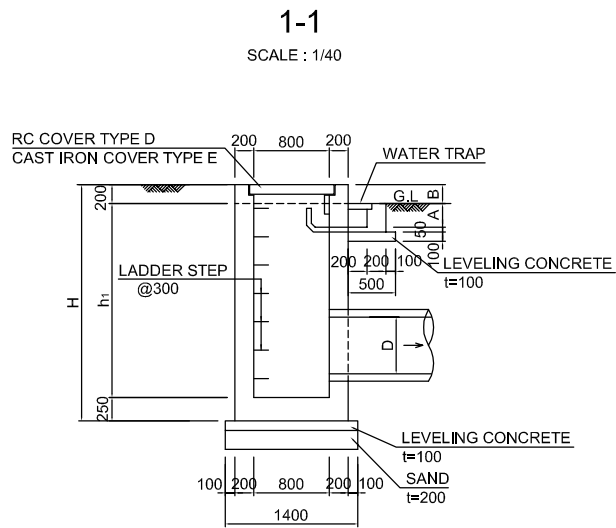
TYPE 3



TYPE 4

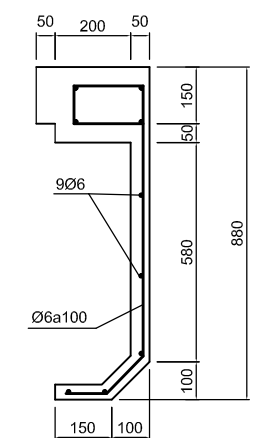
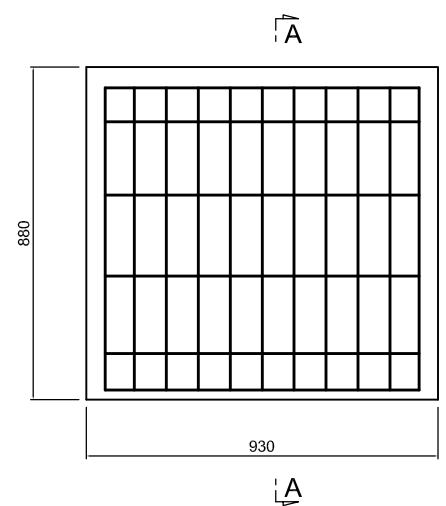


NO.	DATE	DESCRIPTIONS	BY	APRO.
REVISIONS				
PROJECT MANAGEMENT UNIT FOR HO CHI MINH CITY WATER ENVIRONMENT IMPROVEMENT				
THE DETAILED DESIGN ON HO CHI MINH CITY WATER ENVIRONMENT IMPROVEMENT PROJECT IN THE SOCIALIST REPUBLIC OF VIET NAM				
PACKAGE B PUMP DRAINAGE IMPROVEMENT THANH DA AREA				
TYPICAL BAR ARRANGEMENT OF MANHOLE (2)				
SCALE : 1/40				
 JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)				
 PACIFIC CONSULTANTS INTERNATIONAL				
DESIGNED		CHECKED		
DATE :		DWG. No. PB - PDI - TD- 213		



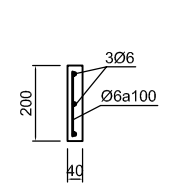
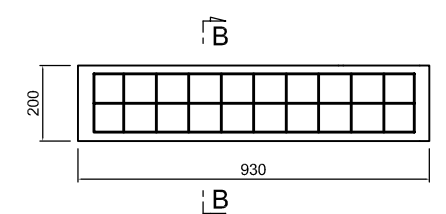
GUTTER
SCALE : 1/10

A-A
SCALE : 1/10



BLADE
SCALE : 1/10

B-B
SCALE : 1/10

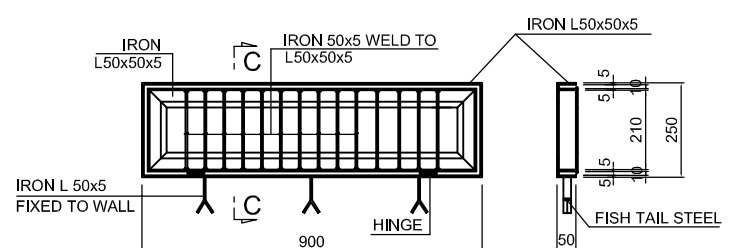


VOLUME TABLE

	GUTTER	BLADE
CONC. M200 (m³)	0.079	0.007
STEEL ROD Ø6 (Kg)	5.128	0.946

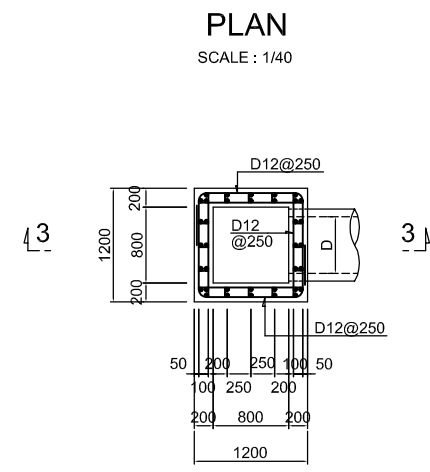
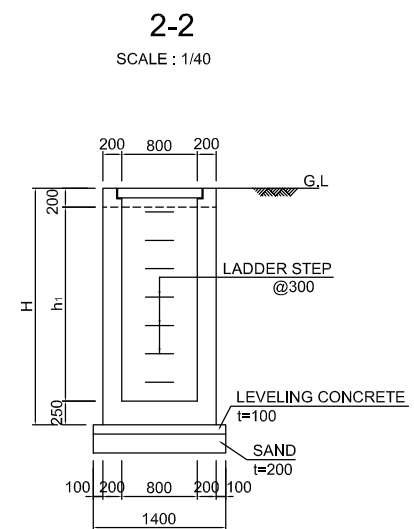
STEEL GRID
SCALE : 1/10

C-C
SCALE : 1/10

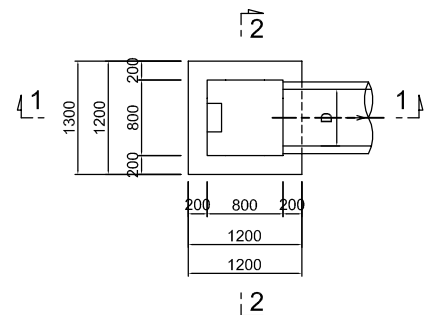


QUANTITY

- IRON V. 150x50x5	= 7.34 kg
- IRON 50x5	= 5.77 kg
WEIGHT: 23.11kg	



PLAN
SCALE : 1/40



INLET TYPE

	A	B
I1	250	200
I2	400	0

NO.	DATE	DESCRIPTIONS	BY	APRO.

REVISIONS

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WATER ENVIRONMENT IMPROVEMENT

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PACKAGE B
PUMP DRAINAGE IMPROVEMENT
THANH DA AREA

**TYPICAL PLAN, SECTION AND
BAR ARRANGEMENT OF INLET PIT**

SCALE : AS SHOWN

JICA JAPAN INTERNATIONAL COOPERATION
AGENCY (JICA)

PACIFIC CONSULTANTS INTERNATIONAL

DESIGNED CHECKED

DATE : DWG. No. PB - PDI - TD - 214

MANHOLE COVER

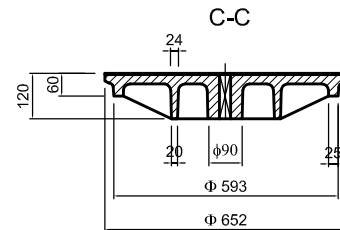
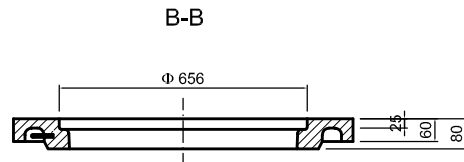
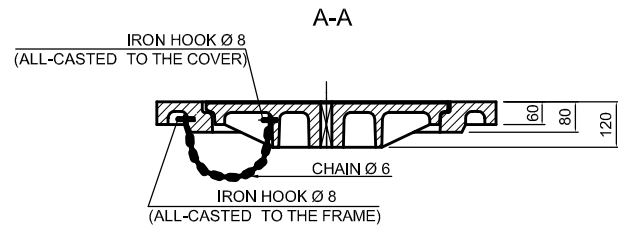
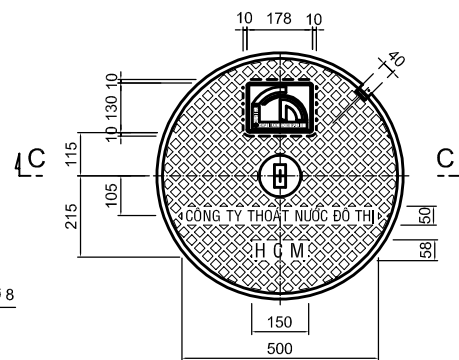
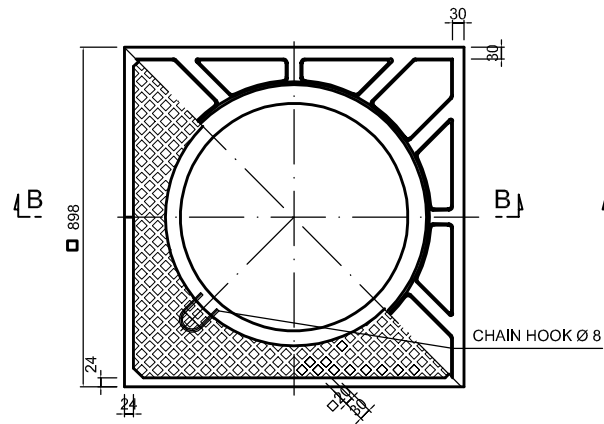
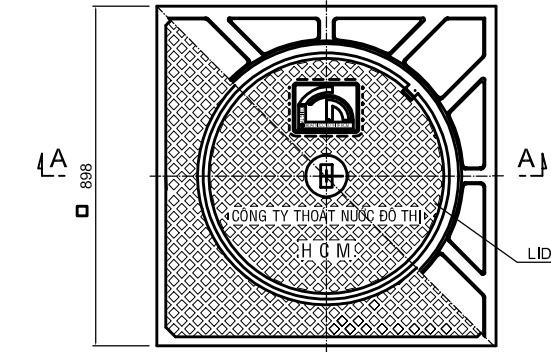
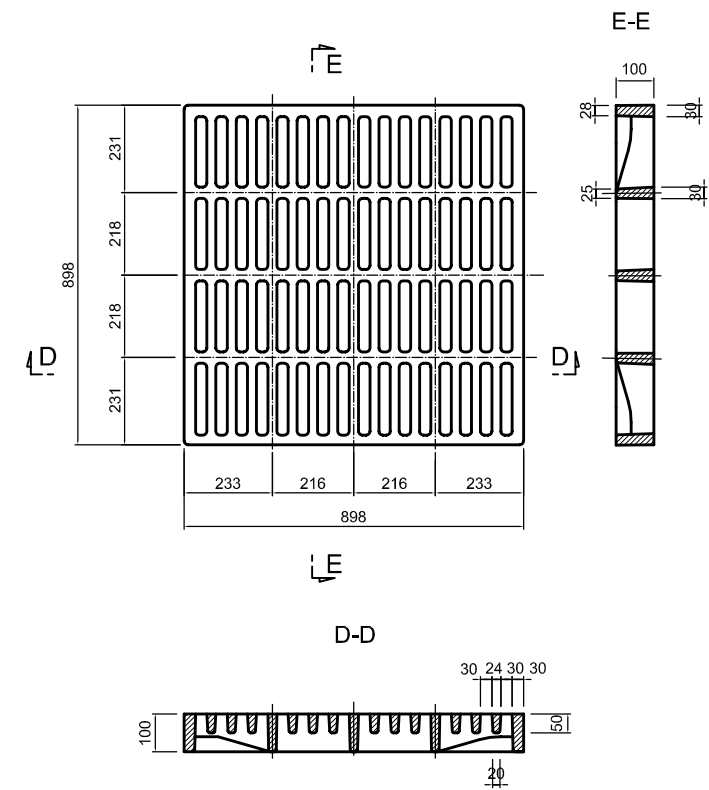
TYPE A

TYPE C

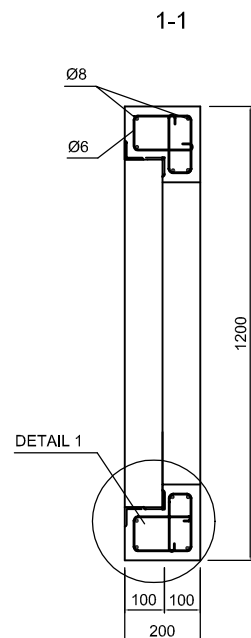
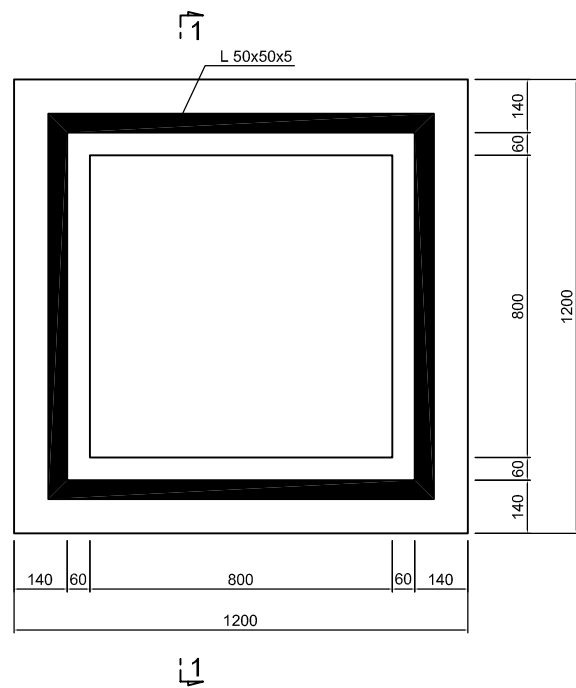
GENERAL

INNER FRAME

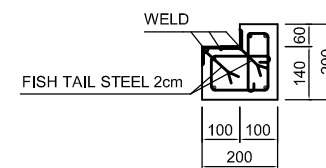
LID



MANHOLE FRAME



DETAIL 1



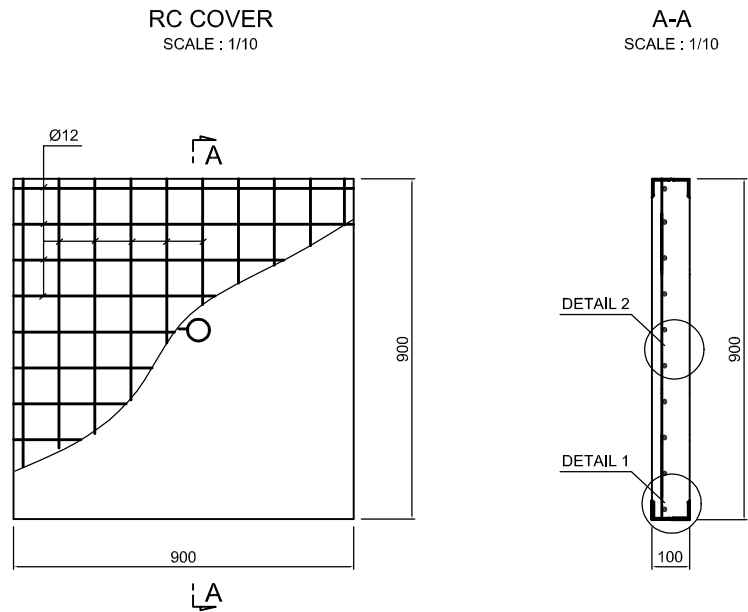
VOLUME OF REINFORCED CONCRETE FRAME

CONCRETE (M3)	STEEL ROD (KG)		STEEL L (MD)
	D=6	D=8	
0,136	4,72	10,11	7,76

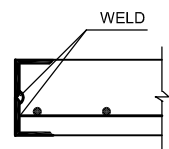
NO.	DATE	DESCRIPTIONS	BY	APRO.
REVISIONS				
PROJECT MANAGEMENT UNIT FOR HO CHI MINH CITY WATER ENVIRONMENT IMPROVEMENT				
THE DETAILED DESIGN STUDY ON HO CHI MINH CITY WATER ENVIRONMENT IMPROVEMENT PROJECT IN THE SOCIALIST REPUBLIC OF VIET NAM				
PACKAGE B PUMP DRAINAGE IMPROVEMENT THANH DA AREA				
TYPICAL DETAILS OF MANHOLE COVER (TYPE A AND C)				
SCALE : 1/10				
JICA		JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)		
PACIFIC CONSULTANTS INTERNATIONAL				
DESIGNED		CHECKED		
DATE :		DWG. No. PB - PDI - TD - 215		

MANHOLE COVER

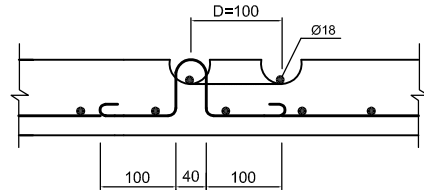
TYPE D



DETAIL 1
SCALE : 1/5



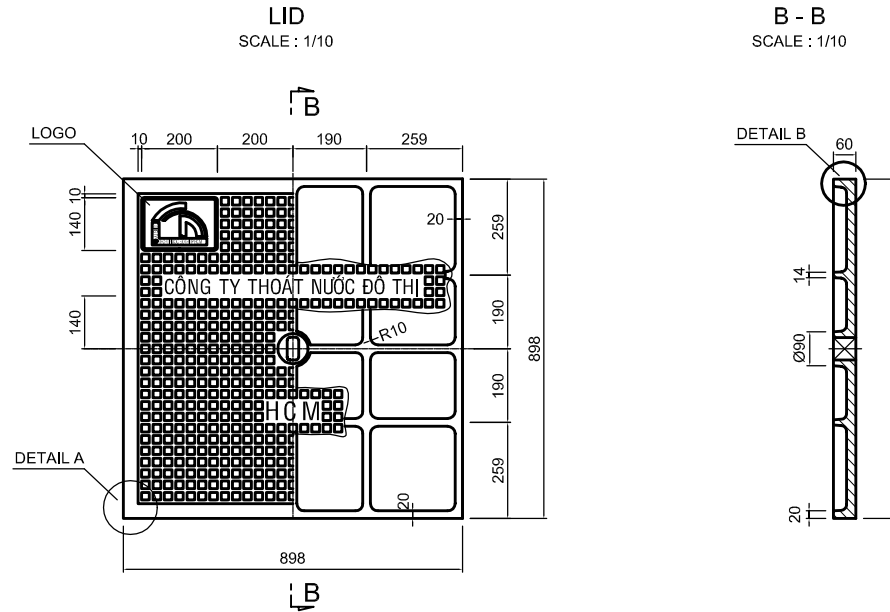
DETAIL 2
SCALE : 1/5



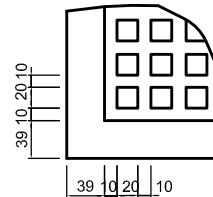
VOLUME OF REINFORCED CONCRETE COVER

STEEL ROD					STOCK-SWIVEL			VOLUME		
Ø (mm)	QUANTITY BAR N	L (cm)	NxL (m)	VOLUME (kg)	NUMBER SWIVEL	D=10 (kg)	D=18 (kg)	CONCRETE (m³)	STEEL L (md)	FISH TAIL 2cm (md)
12	20	101	20.2	17.776	1	0.352	0.474	0.081	7.2	1.6

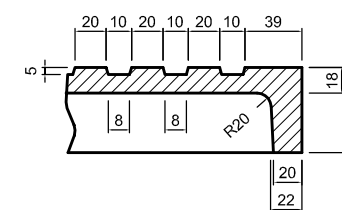
TYPE E



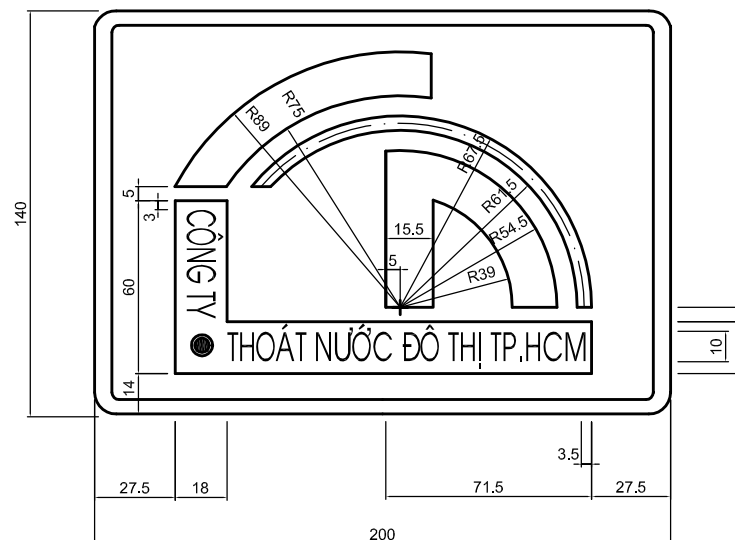
DETAIL A
SCALE : 1/5



DETAIL B
SCALE : 1/5



LOGO
SCALE : 1/5



NO.	DATE	DESCRIPTIONS	BY	APRO.
REVISIONS				
PROJECT MANAGEMENT UNIT FOR HO CHI MINH CITY WATER ENVIRONMENT IMPROVEMENT				
THE DETAILED DESIGN STUDY ON HO CHI MINH CITY WATER ENVIRONMENT IMPROVEMENT PROJECT IN THE SOCIALIST REPUBLIC OF VIET NAM				
PACKAGE B PUMP DRAINAGE IMPROVEMENT THANH DA AREA				
TYPICAL DETAILS OF MANHOLE COVER (TYPE D AND E)				
SCALE : AS SHOWN				
JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)				
PACIFIC CONSULTANTS INTERNATIONAL				
DESIGNED			CHECKED	
DATE :		DWG. No.PB-PDI-TD-216		

List of Manhole

Route	Manhole No.	Type of Manhole	Type of Manhole Cover	Main Sewer						Connection Pipe						GL (m)	Dimension (mm)					
				IN			OUT			Invert I ₃ (m)	Dia D ₃ (mm)	Degree Ø ₃	Invert I ₄ (m)	Dia D ₄ (mm)	Degree Ø ₄		H	h ₁	h ₂	h ₃	h ₄	h ₅
				Invert I ₁ (m)	Dia D ₁ (mm)	Degree Ø ₁	Invert I ₂ (m)	Dia D ₂ (mm)	Degree Ø ₂													
TD5	M1	2-A	C				-0.340	800	180							1,330	2,200	1,900	300	1,350	230	400
	M2	2-C-1	C	-0.371	800	0	-0.371	800	180	-0.171	600	90				1,410	2,300	2,000	300	1,450	219	400
	M3	2-C-1	C	-0.400	800	0	-0.400	800	180	-0.200	600	90				1,480	2,400	2,100	300	1,550	220	400
	M4	2-A	C	-0.427	800	0	-0.427	800	180							1,470	2,400	2,100	300	1,550	203	400
	M5	2-C-1	C	-0.456	800	0	-0.456	800	180	-0.256	600	90				1,460	2,500	2,200	300	1,650	284	400
	M6	2-A	C	-0.478	800	0	-0.478	800	180							1,430	2,400	2,100	300	1,550	192	400
	M7	2-C-2	C	-0.500	800	0	-0.600	1000	90	-0.600	1000	270				1,410	2,600	2,300	300	1,750	290	500
TD2	M1	2-C-2	C				-0.388	800	180	-0.110	800	90	-0.110	800	270	1,520	2,400	2,100	300	1,550	192	400
	M2	2-A	C	-0.440	800	0	-0.440	800	180							1,526	2,500	2,200	300	1,650	234	400
	M3	2-A	C	-0.490	800	0	-0.490	800	180							1,516	2,500	2,200	300	1,650	194	400
	M4	2-A	C	-0.541	800	0	-0.541	800	180							1,474	2,600	2,300	300	1,750	285	400
	M5	2-A	C	-0.600	800	0	-0.600	800	180							1,460	2,600	2,300	300	1,750	240	400
	M6	2-C-2	C	-0.650	800	0	-0.650	800	270	-0.650	1000	90				1,460	2,700	2,400	300	1,850	290	400
TD 4-1	M1	3-C-2	C				-1.000	1200	180	-0.600	1000	90	-0.600	1000	270	1,400	3,000	2,600	400	2,000	250	500
	M2	3-A	C	-1.028	1200	0	-1.028	1200	180							1,370	3,000	2,600	400	2,000	252	500
TD 4-2	M3	3-A	C	-1.056	1200	0	-1.056	1200	120							1,340	3,000	2,600	400	2,000	254	500
TD 4-3	M4	3-A	C	-1.100	1200	0	-1.100	1200	240							1,370	3,100	2,600	500	2,000	280	500
TD 4-5	M5	3-C-2	A	-1.140	1200	0	-1.140	1200	180	-0.150	800	90				1,410	3,200	2,600	600	2,000	300	500
	M6	3-C-2	C	-1.175	1200	0	-1.175	1200	180	-0.150	800	90				1,450	3,200	2,600	600	2,000	225	500
TD 4-6	M7	3-C-1	A	-1.211	1200	0	-1.211	1200	180	-0.150	400	90				1,320	3,200	2,600	600	2,000	319	500
	M8	3-C-2	C	-1.250	1200	0	-1.250	1200	270	-0.900	1000	135				1,290	3,200	2,600	600	2,000	310	500
TD7	M1	2-C-2	C				-0.700	1000	180	-0.400	1000	90	-0.400	1000	270	1,460	2,700	2,400	300	1,850	240	500
	M2	2-A	C	-0.756	1000	0	-0.756	1000	180							1,330	2,600	2,300	300	1,750	214	500
	M3	2-A	C	-0.812	1000	0	-0.812	1000	180							1,240	2,600	2,300	300	1,750	248	500
	M4	2-A	C	-0.868	1000	0	-0.868	1000	180							1,180	2,600	2,300	300	1,750	252	500
TD 6-2	M5	2-D-2	C	-0.923	1000	0	-0.923	1000	135	-0.700	1000	90	-0.700	1000	270	1,220	2,700	2,400	300	1,850	257	500
	M6	2-A	C	-0.933	1000	0	-0.933	1000	135							1,230	2,700	2,400	300	1,850	237	500
	M7	2-C-1	A	-0.986	1000	0	-0.986	1000	180				-0.750	400	270	1,250	2,800	2,500	300	1,950	264	500
TD 6-3	M8	2-C-1	A	-1.042	1000	0	-1.042	1000	180				-0.750	400	270	1,270	2,900	2,550	350	2,000	288	500
	M9	2-A	A	-1.100	1000	0	-1.100	1000	180	-0.800	1000	90				1,310	3,000	2,550	450	2,000	290	500

List of Inlet Pit

Area	Sewer Line	Dia D (mm)	Type of Inlet	Type of Cover	Inlet No.	GL (m)	Invert Level I (m)	H (m)	h ₁ (m)
TD	TD4	400	1	E	I7	1,320	0,046	2,154	1,674
TD	TD4	800	1	E	I5	1,410	-0,090	2,380	1,900
TD	TD4	1000	1	E	I8	1,290	-0,760	2,930	2,450
TD	TD5	600	2	D	I2	1,410	-0,099	2,159	1,679
TD	TD5	600	2	D	I3	1,480	-0,128	2,258	1,778
TD	TD5	600	2	D	I5	1,460	-0,184	2,294	1,814
TD	TD6	400	1	E	I7	1,250	-0,668	2,798	2,318
TD	TD6	400	1	E	I8	1,270	-0,668	2,818	2,338
Total									

NO.	DATE	DESCRIPTIONS	BY	APPRO.
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REVISIONS

PROJECT MANAGEMENT UNIT FOR
HO CHI MINH CITY
WATER ENVIRONMENT IMPROVEMENT

THE DETAILED DESIGN ON HO CHI MINH CITY
WATER ENVIRONMENT IMPROVEMENT PROJECT
IN THE SOCIALIST REPUBLIC OF VIET NAM

PACKAGE B
PUMP DRAINAGE IMPROVEMENT
THANH DA AREA
DIMENSION OF MANHOLE
AND INLET PIT IN THANH DA AREA

SCALE : 1:60

 JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

 PACIFIC CONSULTANTS INTERNATIONAL

DESIGNED _____ CHECKED _____

DATE : _____ DWG. No. PB-PDI-TD-217