

DESCRIPTION	SYMBOLS
WATER COURSE (with RD mark)	
REGULATOR	
AQUEDUCT	
BRIDGE (BR)	
ARTERIAL BRIDGE (AR)	
DISTRICT ROAD BRIDGE (DR)	
VILLAGE ROAD BRIDGE (VR)	
FOOT BRIDGE (FB)	
RAILWAY BRIDGE (RS)	
OPERATION & MAINTENANCE (O&M) ROAD BRIDGE	
TUNNEL / CULVERT SECTION	
CROSS DRAINAGE CULVERT	
INVERTED SYPHON	
OUTLET LEFT (OLL)	
OUTLET RIGHT (OLR)	
FALL/DROP (DF)	
CROSS REGULATOR	
MEASUREMENT STRUCTURE	
WATERCOURSE CROSSING	
TRANSITION	
STEP LEFT (SPL) STEP RIGHT (SFR)	
ESCAPE	
UNLINED PORTION	
PIPE	
DESIGN STRUCTURE NUMBER	
RAILWAY LINE	
RIGHT OF WAY	
DESIGN CENTER LINE	
EXISTING CENTER LINE	
DESIGN BANK	
EXISTING BANK	
DESIGN F S L	
DESIGN BED LEVEL	
N S L RIGHT	
N S L LEFT	
BED LEVEL	
Building, Village, Mosque, Tomb	
Road: metalled, unmetalled, cart-track	
Electric line, Telephone line	
River with bar, Water Course, Pond	
Tree Jungle	
Groves, Grass	
DISCHARGE (cumec) Q	
OUTLET DISCHARGE (cumec) q	
BED WIDTH b	
ROUGHNESS COEFFICIENT n	
VELOCITY V	
CANAL COMMAND AREA CCA	
BED SLOPE s	
SOLE SLOPE s	
WATER DEPTH y	
FREE BOARD Ffb	
TAL LEFT TL	
TAL RIGHT TR	
TAL FRONT TF	

EXISTING DATA DESIGN TABSECTION PROPERTIES

	Section 1										Section 2									
DESIGNED FULL SUPPLY LEVEL	[Profile Line]										[Profile Line]									
DESIGNED BED LEVEL	[Profile Line]										[Profile Line]									
DISTANCE (m)	0+000	0+100	0+200	0+300	0+400	0+500	0+600	0+700	0+800	0+900	1+000	1+100	1+200	1+300	1+400	1+500	1+600	1+700	1+800	1+900
STATION (m)	0+000	0+100	0+200	0+300	0+400	0+500	0+600	0+700	0+800	0+900	1+000	1+100	1+200	1+300	1+400	1+500	1+600	1+700	1+800	1+900
LATEST FULL SUPPLY LEVEL	[Profile Line]										[Profile Line]									
N S L RIGHT	[Profile Line]										[Profile Line]									
N S L LEFT	[Profile Line]										[Profile Line]									
BED LEVEL	[Profile Line]										[Profile Line]									
RIGHT OF WAY LEFT (ft)	[Profile Line]										[Profile Line]									
RIGHT OF WAY RIGHT (ft)	[Profile Line]										[Profile Line]									
R.D. (ft)	[Profile Line]										[Profile Line]									

ISLAMIC REPUBLIC OF PAKISTAN
GOVERNMENT OF PUNJAB

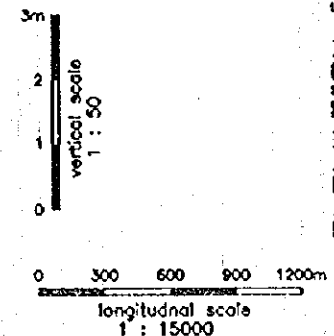
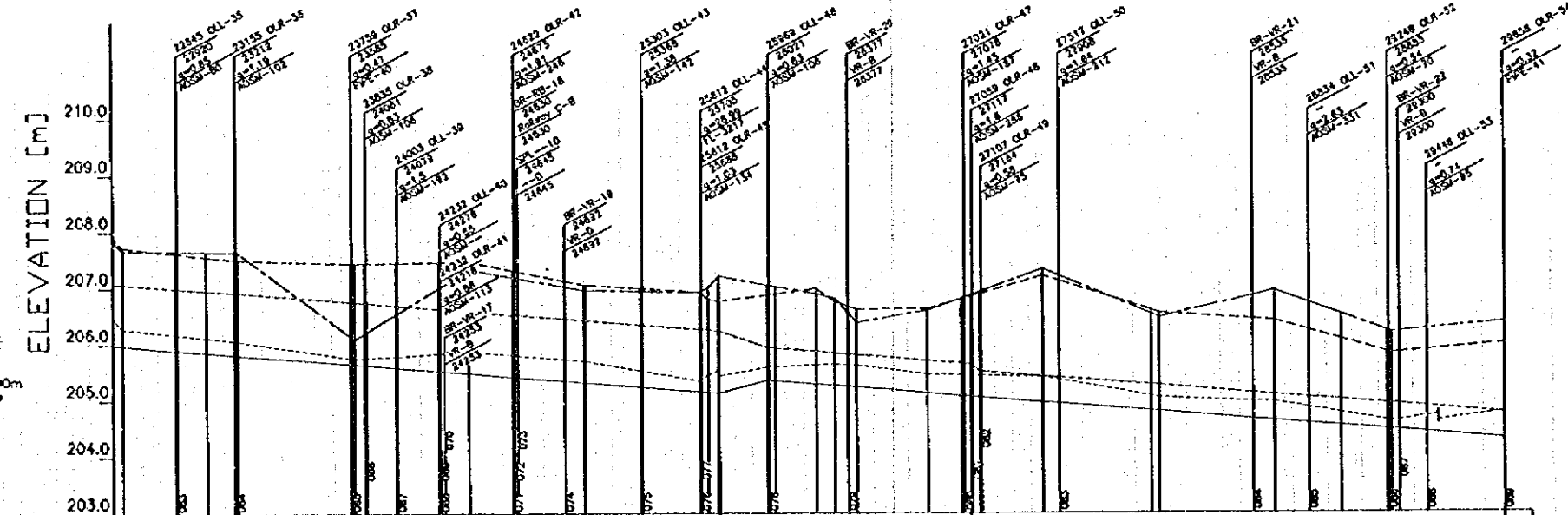
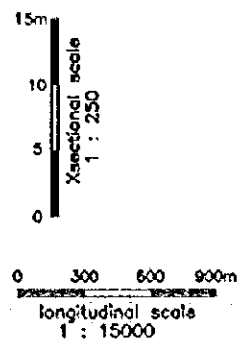
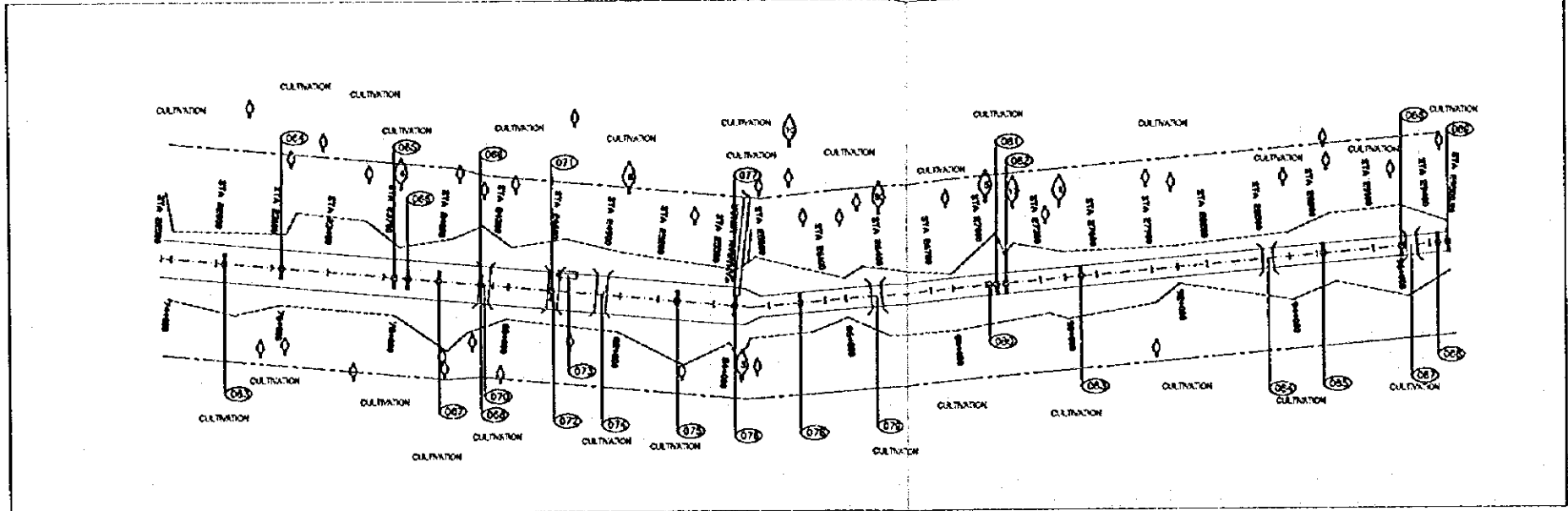
THE LINING OF DISTRIBUTARIES AND MINORS IN PUNJAB

PLAN AND PROFILE OF
CANAL SYSTEM: C B D C
DISTRIBUTARY : THAMAN
MINOR : -

FROM STA 000 (0+000) TO : 7500 (24+600)

JAPAN INTERNATIONAL COOPERATION AGENCY CBDC-1

DESCRIPTION	SYMBOLS
WATER COURSE (with R.D. mark)	
REGULATOR	
MINI-DUST	
BRIDGE	
ARTERIAL BRIDGE (AR)	
DISTRICT ROAD BRIDGE (DR)	
VILLAGE ROAD BRIDGE (VR)	
FOOT BRIDGE (FB)	
RAILWAY BRIDGE (RB)	
OPERATION & MAINTENANCE (O&M)	
ROAD BRIDGE	
TUNNEL / CULVERT SECTION	
CROSS DRAINAGE CULVERT	
INVERTED SIPHON	
OUTLET LEFT (OLL)	
OUTLET RIGHT (OLR)	
FALL/DROP (OF)	
CROSS REGULATOR	
MEASUREMENT STRUCTURE	
WATERCOURSE CROSSING	
TRANSITION	
STEP LEFT (SPL) STEP RIGHT (SPR)	
ESCAPE	
LINED PORTION	
PIPE	
DESIGN STRUCTURE NUMBER	
RAILWAY LINE	
RIGHT OF WAY	
DESIGN CENTER LINE	
EXISTING CENTER LINE	
DESIGN BANK	
EXISTING BANK	
DESIGN F.S.L.	
DESIGN BED LEVEL	
N.S.L. RIGHT	
N.S.L. LEFT	
BED LEVEL	
Building, Village, Mosque, Tomb	
Road: metalled, unmetalled, cart-track	
Electric line, Telephone line	
River with flow, Water Course, Pond	
Tree, Jungle	
Grass, Grass	
DISCHARGE (cumec)	Q
OUTLET DISCHARGE (cumec)	q
BED WIDTH	b
ROUGHNESS COEFFICIENT	n
VELOCITY	V
CANAL COMMAND AREA	CCA
BED SLOPE	s
SIDE SLOPE	z
WATER DEPTH	y
FREE BOARD	Frb
TAL LEFT	TL
TAL RIGHT	TR
TAL FRONT	TF



EXISTING DATA DESIGN SECTION PROPERTIES

	Section 6	Section 6	Section 7	Section 8
Q (m ³ /s)	0.82	0.46	0.31	0.19
n	0.018	0.018	0.018	0.018
s	1/3710	1/3710	1/3710	1/3710
y (m)	1.38	1.40	1.73	1.61
b	1.00	1.50	1.48	1.48
V (m/s)	0.71	0.67	0.48	0.40
z	1.25	1.25	1.25	1.25
Frb (m)	0.30	0.30	0.15	0.15
CCA (ha)	25728	21403	1110	1110
DESIGNED FULL SUPPLY LEVEL				
DESIGNED BED LEVEL				
DISTANCE (m)				
STATION (m)				
LATEST FULL SUPPLY LEVEL				
N.S.L. RIGHT				
N.S.L. LEFT				
BED LEVEL				
RIGHT OF WAY LEFT (ft)				
RIGHT OF WAY RIGHT (ft)				
R.D. (ft)				

NO.	RECD	CHECKED	APPROVED
A			
B			
C			
D			

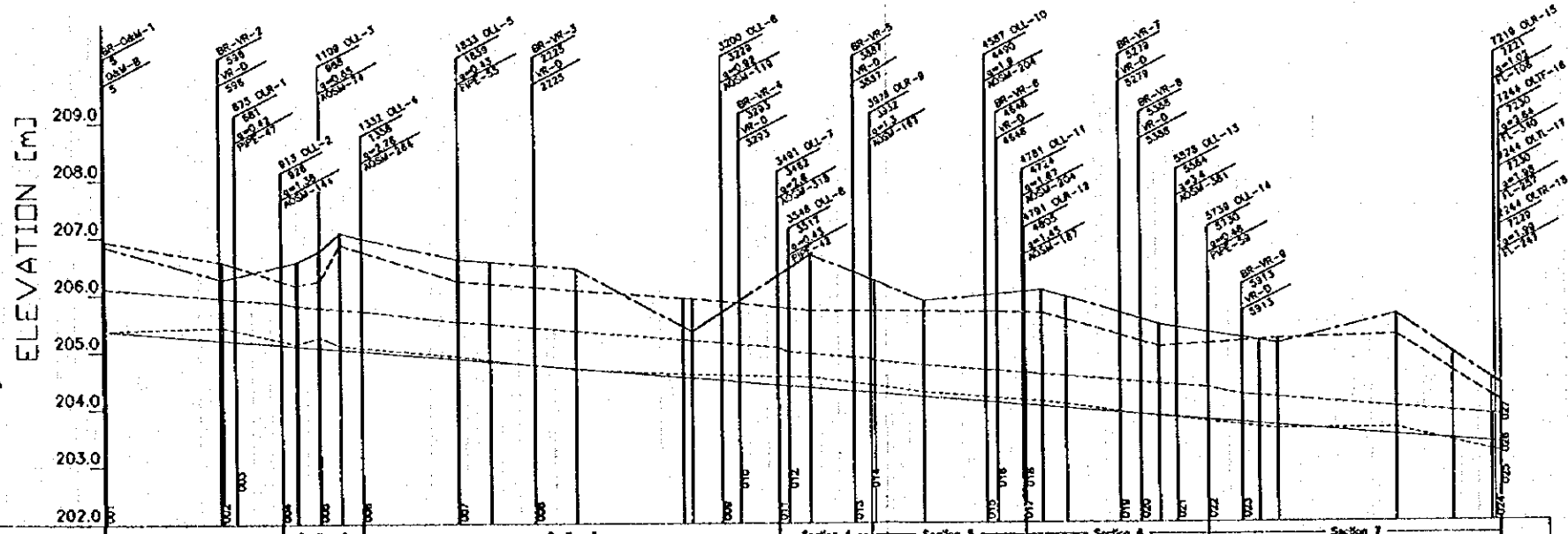
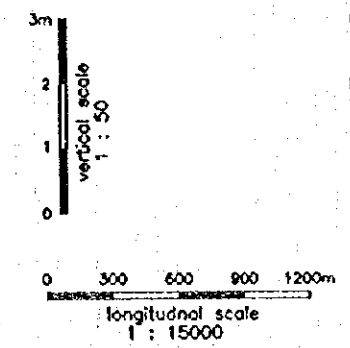
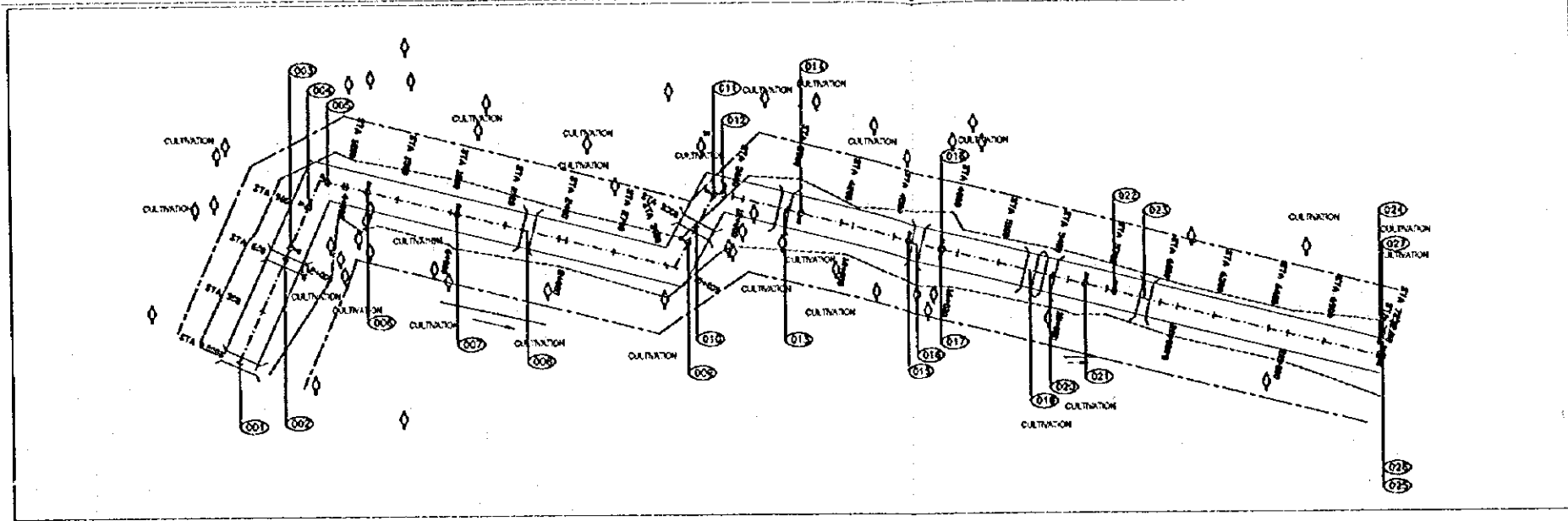
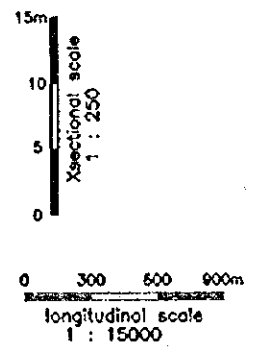
ISLAMIC REPUBLIC OF PAKISTAN
GOVERNMENT OF PUNJAB

THE LINING OF DISTRIBUTARIES AND MINORS IN PUNJAB

PLAN AND PROFILE OF
CANAL SYSTEM: C B D C
DISTRIBUTARY : THAMAN
MINOR : -

FROM STA 22500 (73+800) TO : 29858 (97+934)

JAPAN INTERNATIONAL COOPERATION AGENCY CBDC-4



EXISTING DATA	DESIGN DATA						
	Section 1	Section 2	Section 3	Section 4	Section 5	Section 6	Section 7
DESIGNED FULL SUPPLY LEVEL	205.11	205.11	205.11	205.11	205.11	205.11	205.11
DESIGNED BED LEVEL	205.11	205.11	205.11	205.11	205.11	205.11	205.11
DISTANCE (m)	0	100	200	300	400	500	600
STATION (m)	0+00	0+100	0+200	0+300	0+400	0+500	0+600
LATEST FULL SUPPLY LEVEL	205.11	205.11	205.11	205.11	205.11	205.11	205.11
N S L RIGHT	205.11	205.11	205.11	205.11	205.11	205.11	205.11
N S L LEFT	205.11	205.11	205.11	205.11	205.11	205.11	205.11
BED LEVEL	205.11	205.11	205.11	205.11	205.11	205.11	205.11
RIGHT OF WAY LEFT (ft)	205.11	205.11	205.11	205.11	205.11	205.11	205.11
RIGHT OF WAY RIGHT (ft)	205.11	205.11	205.11	205.11	205.11	205.11	205.11
R.D. (ft)	205.11	205.11	205.11	205.11	205.11	205.11	205.11

DESCRIPTION	SYMBOLS
WATER COURSE (with R.D. mark)	
REGULATOR	
AQUEDUCT	
BRIDGE (BR)	
ARTERIAL BRIDGE (AR)	
DISTRICT ROAD BRIDGE (DR)	
VILLAGE ROAD BRIDGE (VR)	
FOOT BRIDGE (FB)	
RAILWAY BRIDGE (RS)	
OPERATION & MAINTENANCE (O&M) ROAD BRIDGE	
TUNNEL / CULVERT SECTION	
CROSS DRAINAGE CULVERT	
INVERTED SIPHON	
OUTLET LEFT (OLL)	
OUTLET RIGHT (OAR)	
FALL/DROP (DF)	
CROSS REGULATOR	
MEASUREMENT STRUCTURE	
WATERCOURSE CROSSING	
TRANSITION	
STEP LEFT (SPL)	
STEP RIGHT (SPR)	
ESCAPE	
LINED PORTION	
PIPE	
DESIGN STRUCTURE NUMBER	
RAILWAY LINE	
RIGHT OF WAY	
DESIGN CENTER LINE	
EXISTING CENTER LINE	
DESIGN BANK	
EXISTING BANK	
DESIGN F & L	
DESIGN BED LEVEL	
N S L RIGHT	
N S L LEFT	
BED LEVEL	
Building, Village, Mosque, Tomb	
Road: metalled, unmetalled, cart-track	
Electric line, Telephone line	
River with flow, Water Course, Pond	
Tree, Jungle	
Grass, Grass	
DISCHARGE (cumec) Q	
OUTLET DISCHARGE (cumec) q	
BED WIDTH b	
ROUGHNESS COEFFICIENT n	
VELOCITY v	
CANAL COMMAND AREA CCA	
BED SLOPE s	
SIDE SLOPE z	
WATER DEPTH y	
FREE BOARD Fb	
TAIL LEFT TL	
TAIL RIGHT TR	
TAIL FRONT TF	

NO.	REVISED	CHECKED	APPROVED
A			
B			
C			
D			

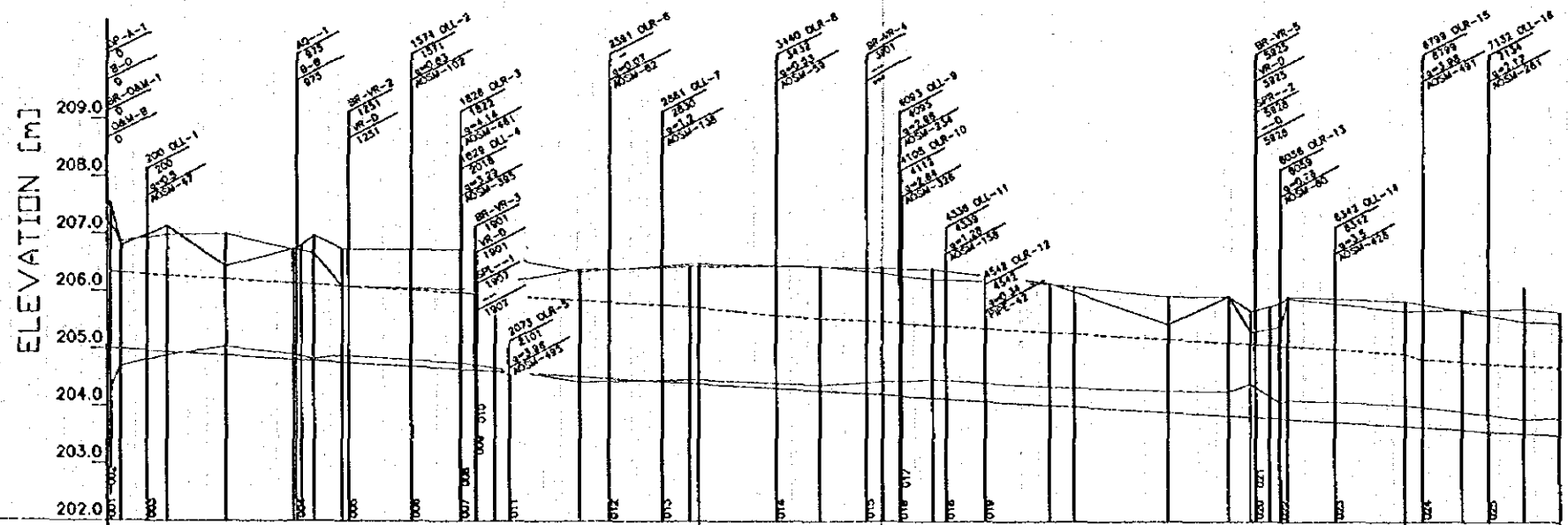
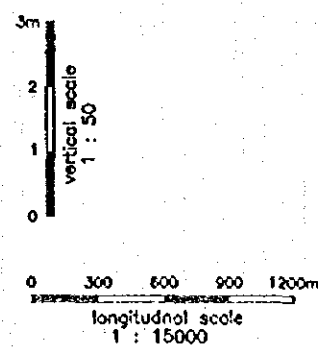
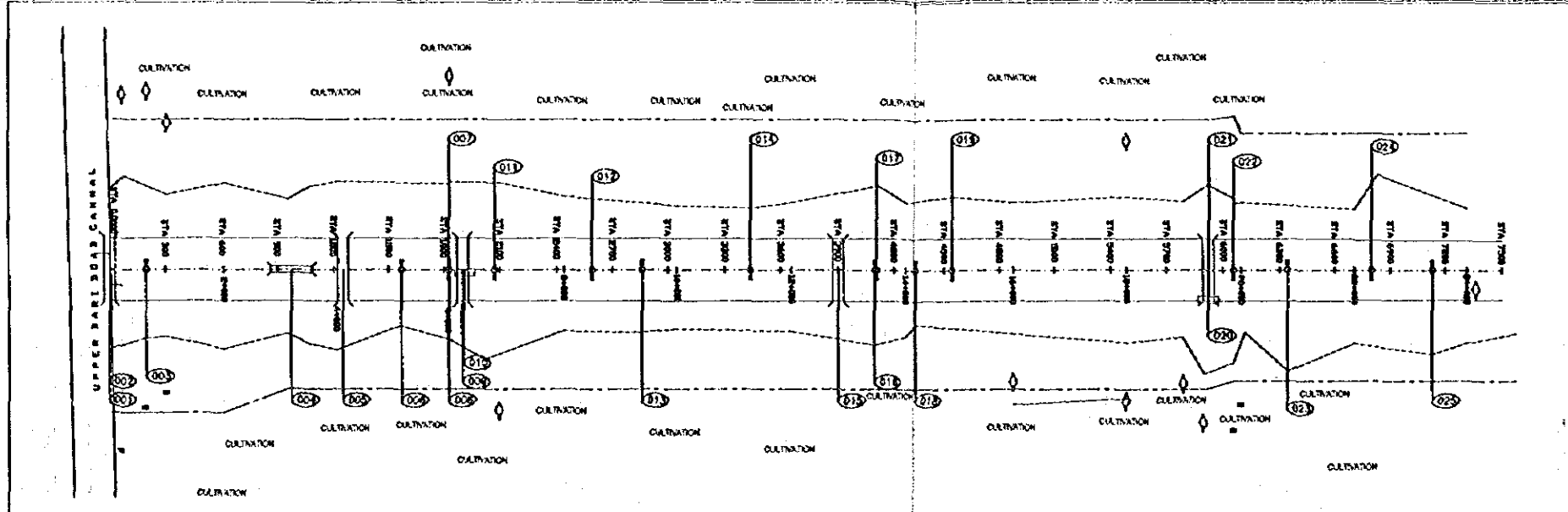
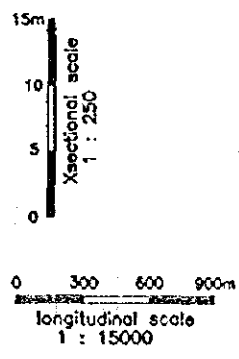
ISLAMIC REPUBLIC OF PAKISTAN
GOVERNMENT OF PUNJAB

THE LINING OF DISTRIBUTARIES AND MINORS IN PUNJAB

PLAN AND PROFILE OF
CANAL SYSTEM: C B D C
DISTRIBUTARY : THAMAN
MINOR : SAHARAN

FROM STA 000 (0+000) TO : 7244 (23+760)

JAPAN INTERNATIONAL COOPERATION AGENCY CBDC-5



EXISTING DATA DESIGN SECTION PROPERTIES

	Section 1	Section 2	Section 3
DESIGNED FULL SUPPLY LEVEL	209.00	209.00	209.00
DESIGNED BED LEVEL	204.00	204.00	204.00
DISTANCE (m)	0000	0000	0000
STATION (m)	0000	0000	0000
LATEST FULL SUPPLY LEVEL	209.00	209.00	209.00
N S L RIGHT	209.00	209.00	209.00
N S L LEFT	209.00	209.00	209.00
BED LEVEL	204.00	204.00	204.00
RIGHT OF WAY LEFT (ft)	209.00	209.00	209.00
RIGHT OF WAY RIGHT (ft)	209.00	209.00	209.00
R.D. (ft)	209.00	209.00	209.00

DESCRIPTION	SYMBOLS
WATER COURSE (with R.D. mark)	
REGULATOR	
AQUEDUCT	
BRIDGE (BR)	
ARTERIAL ROAD BRIDGE (AR)	
DISTRICT ROAD BRIDGE (DR)	
VILLAGE ROAD BRIDGE (VR)	
FOOT BRIDGE (FB)	
RAILWAY BRIDGE (RB)	
OPERATION & MAINTENANCE (O&M)	
ROAD BRIDGE	
TRANSVERSE / CULVERT SECTION	
CROSS DRAINAGE CULVERT	
INVERTED SIPHON	
OUTLET LEFT (OL)	
OUTLET RIGHT (OR)	
FALL/DROP (DP)	
CROSS REGULATOR	
MEASUREMENT STRUCTURE	
WATERCOURSE CROSSING	
TRANSITION	
STEP LEFT (SPL)	
STEP RIGHT (SPR)	
ESCAPE	
LINED PORTION	
PIPE	
DESIGN STRUCTURE NUMBER	
RAILWAY LINE	
RIGHT OF WAY	
DESIGN CENTER LINE	
EXISTING CENTER LINE	
DESIGN BANK	
EXISTING BANK	
DESIGN F S L	
DESIGN BED LEVEL	
N S L RIGHT	
N S L LEFT	
BED LEVEL	
Building, Village, Mosque, Tomb	
Road: metalled, unmetalled, cart-track	
Electric line, Telephone line	
River with ice, Water course, Pond	
Tree, Jungle	
Grove, Grass	
DISCHARGE (cumec)	Q
OUTLET DISCHARGE (cumec)	q
BED WIDTH	b
ROUGHNESS COEFFICIENT	n
VELOCITY	V
CANAL COMMAND AREA	CCA
BED SLOPE	s
SIDE SLOPE	z
WATER DEPTH	y
FREE BOARD	Frb
TAIL LEFT	TL
TAIL RIGHT	TR
TAIL FRONT	TF

NO.	REVISED	DESIGN	APPROVED
DATE	NO./DATE	NO./DATE	NO./DATE
A			
B			
C			
D			

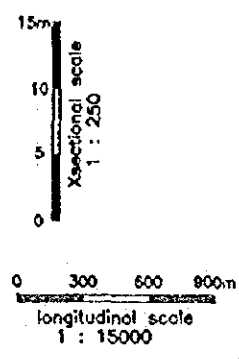
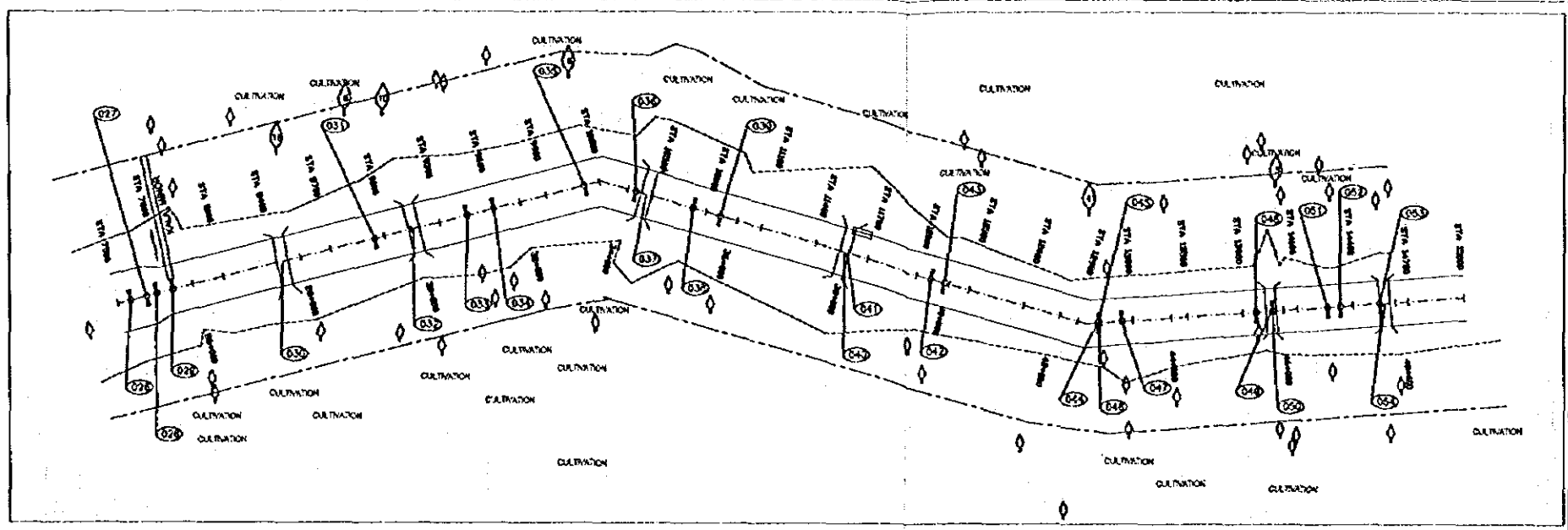
ISLAMIC REPUBLIC OF PAKISTAN
GOVERNMENT OF PUNJAB

THE LINING OF DISTRIBUTARIES AND MINORS IN PUNJAB

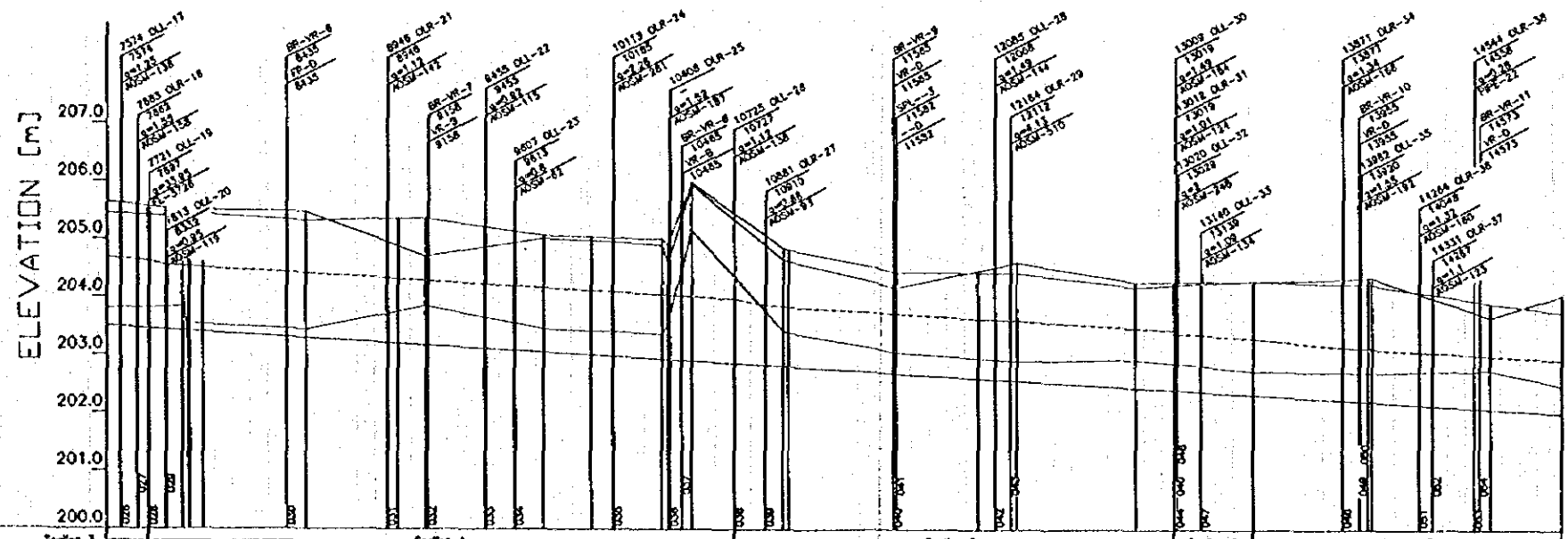
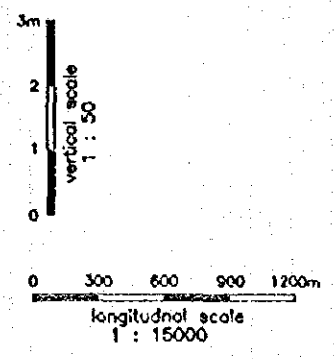
PLAN AND PROFILE OF
CANAL SYSTEM: C B D C
DISTRIBUTARY : CHINA
MINOR : -

FROM STA 000 (0+000) TO : 7500 (24+600)

JAPAN INTERNATIONAL COOPERATION AGENCY CBDC-6



DESCRIPTION	SYMBOLS
WATER COURSE (with R.D. mark)	
REGULATOR	
AQUEDUCT	
BRIDGE	
ARTERIAL BRIDGE (BR)	
DISTRICT ROAD BRIDGE (DR)	
VILLAGE ROAD BRIDGE (VR)	
FOOT BRIDGE (FB)	
RAILWAY BRIDGE (RS)	
OPERATION & MAINTENANCE (O&M) ROAD BRIDGE	
TUNNEL / CULVERT SECTION	
CROSS DRAINAGE CULVERT	
INVERTED SIPHON	
OUTLET LEFT (OL)	
OUTLET RIGHT (OR)	
FALL/DROP (DP)	
CROSS REGULATOR	
MEASUREMENT STRUCTURE	
WATERCOURSE CROSSING	
TRANSITION	
STEP LEFT (SPL)	
STEP RIGHT (SPR)	
ESCAPE	
LINED PORTION	
PIPE	
DESIGN STRUCTURE NUMBER	
RAILWAY LINE	
RIGHT OF WAY	
DESIGN CENTER LINE	
EXISTING CENTER LINE	
DESIGN BANK	
EXISTING BANK	
DESIGN F.S.L.	
DESIGN BED LEVEL	
N.S.L. RIGHT	
N.S.L. LEFT	
BED LEVEL	
Building, Village, Mosque, Tomb	
Road: metalled, unmetalled, cart-track	
Electric line, Telephone line	
River with flow, Water course, Pond	
Tree, Jungle	
Groves, Grass	
DISCHARGE (cumec)	Q
OUTLET DISCHARGE (cumec)	q
BED WIDTH	b
ROUGHNESS COEFFICIENT	n
VELOCITY	V
CANAL COMMAND AREA	CCA
BED SLOPE	s
SIDE SLOPE	z
WATER DEPTH	y
FREE BOARD	Frb
TAL LEFT	TL
TAL RIGHT	TR
TAL FRONT	TF



EXISTING DATA DESIGN SECTION PROPERTIES

	Section 3	Section 4	Section 5	Section 6	Section 7
DESIGNED FULL SUPPLY LEVEL	206.40	206.20	206.50	206.70	206.50
DESIGNED BED LEVEL	203.40	203.20	203.50	203.70	203.50
DISTANCE (m)	7470	8470	9470	10470	11470
STATION (m)	7470	8470	9470	10470	11470
LATEST FULL SUPPLY LEVEL	206.40	206.20	206.50	206.70	206.50
N.S.L. RIGHT	206.40	206.20	206.50	206.70	206.50
N.S.L. LEFT	206.40	206.20	206.50	206.70	206.50
BED LEVEL	203.40	203.20	203.50	203.70	203.50
RIGHT OF WAY LEFT (ft)	7470	8470	9470	10470	11470
RIGHT OF WAY RIGHT (ft)	7470	8470	9470	10470	11470
R.D. (ft)	7470	8470	9470	10470	11470

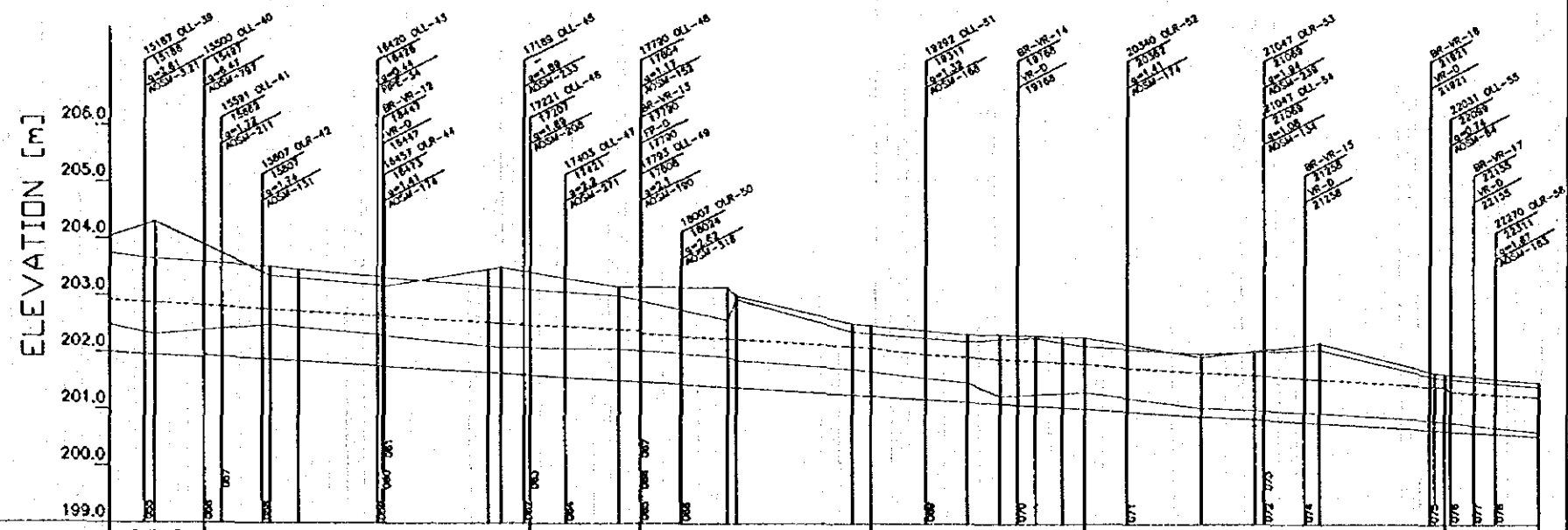
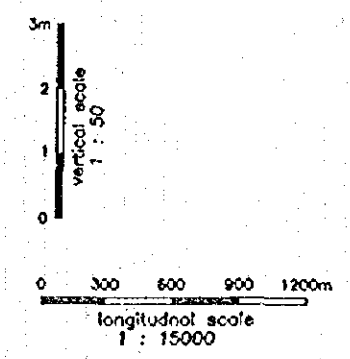
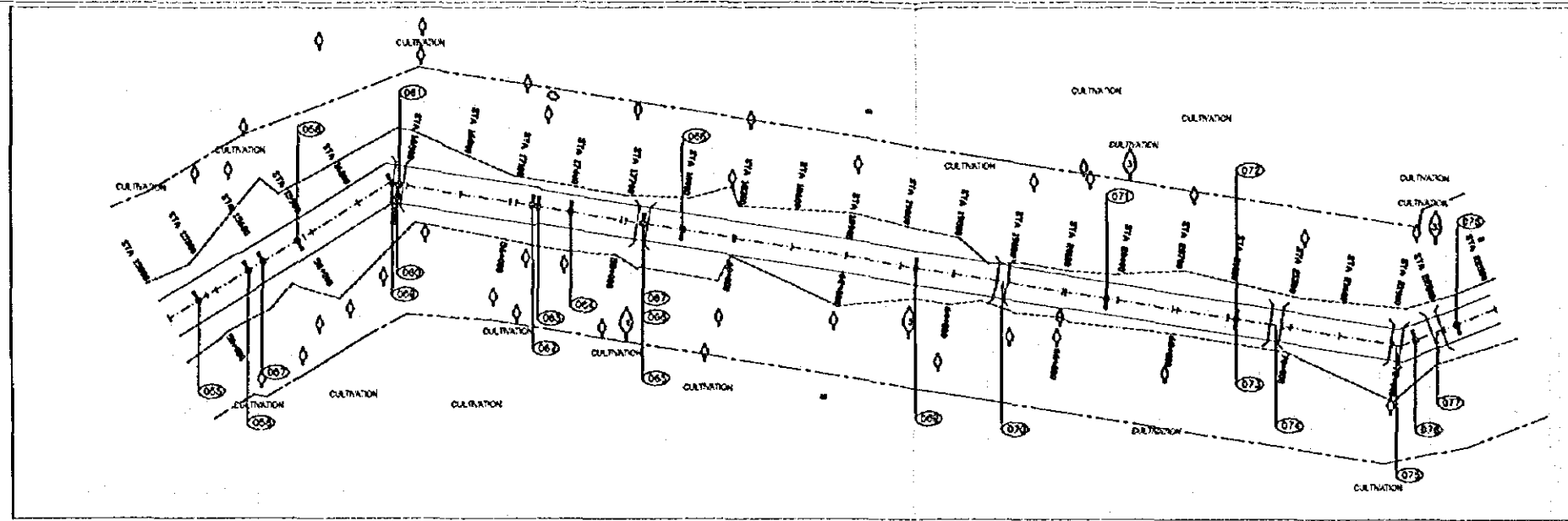
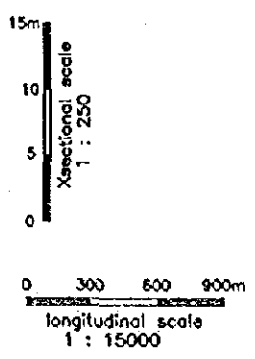
ISLAMIC REPUBLIC OF PAKISTAN
GOVERNMENT OF PUNJAB

THE LINING OF DISTRIBUTARIES AND MINORS IN PUNJAB

PLAN AND PROFILE OF
CANAL SYSTEM: C B D C
DISTRIBUTARY : CHINA
MINOR : -

FROM STA 7500 (24+600) TO : 15000 (49+200)

JAPAN INTERNATIONAL COOPERATION AGENCY CBDC-7



EXISTING DATA DESIGN SECTION PROPERTIES

	Section 7	Section 8	Section 9	Section 10	Section 11	Section 12	Section 13
Q	m ³ /s/3.50	m ³ /s/3.00	m ³ /s/3.80	m ³ /s/3.70	m ³ /s/3.80	m ³ /s/3.50	m ³ /s/3.40
n	0.018	0.018	0.018	0.018	0.018	0.018	0.018
s	1/5000	1/5000	1/5000	1/5000	1/5000	1/5000	1/5000
y (m)	1.22	1.18	1.20	1.15	1.08	1.07	0.84
b	1.60	1.00	0.60	0.60	0.50	0.48	0.48
V (m/s)	0.60	0.54	0.52	0.50	0.48	0.46	0.43
z	1.25	1.25	1.25	1.25	1.25	1.25	1.25
Frb (m)	0.30	0.30	0.30	0.30	0.30	0.30	0.15
CCA (ha)	21485	21485	21485	21485	21485	21485	21485
DESIGNED FULL SUPPLY LEVEL							
DESIGNED BED LEVEL							
DISTANCE (m)							
STATION (m)							
LATEST FULL SUPPLY LEVEL							
N S L RIGHT							
N S L LEFT							
BED LEVEL							
RIGHT OF WAY LEFT (ft)							
RIGHT OF WAY RIGHT (ft)							
R.D. (ft)							

DESCRIPTION	SYMBOLS
WATER COURSE (with R.D. mark)	
REGULATOR	
AQUEDUCT	
BRIDGE (BR)	
ARTERIAL BRIDGE (AR)	
DISTRICT ROAD BRIDGE (DR)	
VILLAGE ROAD BRIDGE (VR)	
FOOT BRIDGE (FB)	
RAILWAY BRIDGE (RB)	
OPERATION & MAINTENANCE (O&M)	
ROAD BRIDGE	
TUNNEL / OLVERT SECTION	
CROSS DRAINAGE OLVERT	
INVERTED SYPHON	
OUTLET LEFT (OL)	
OUTLET RIGHT (OR)	
FALL/DROP (DP)	
CROSS REGULATOR	
MEASUREMENT STRUCTURE	
WATERCOURSE CROSSING	
TRANSITION	
STEP LEFT (SPL) STEP RIGHT (SPR)	
ESCAPE	
LINED PORTION	
PIPE	
DESIGN STRUCTURE NUMBER	
RAILWAY LINE	
RIGHT OF WAY	
DESIGN CENTER LINE	
EXISTING CENTER LINE	
DESIGN BANK	
EXISTING BANK	
DESIGN F S L	
DESIGN BED LEVEL	
N S L RIGHT	
N S L LEFT	
BED LEVEL	
Building, Village, Mosque, Tomb	
Road: metalled, unmetalled, cart-track	
Electric line, Telephone line	
River with flow, Water Course, Pond	
Tree, Jungle	
Graves, Groves	
DISCHARGE (cumec)	Q
OUTLET DISCHARGE (cumec)	q
BED WIDTH	b
ROUGHNESS COEFFICIENT	n
VELOCITY	V
CANAL COMMAND AREA	CCA
BED SLOPE	s
SIDE SLOPE	z
WATER DEPTH	y
FREE BOARD	Frb
TAIL LEFT	TL
TAIL RIGHT	TR
TAIL FRONT	TF

NO. OF	NO. OF	NO. OF	NO. OF
SECTIONS	PILES	PILES	PILES
A			
B			
C			
D			

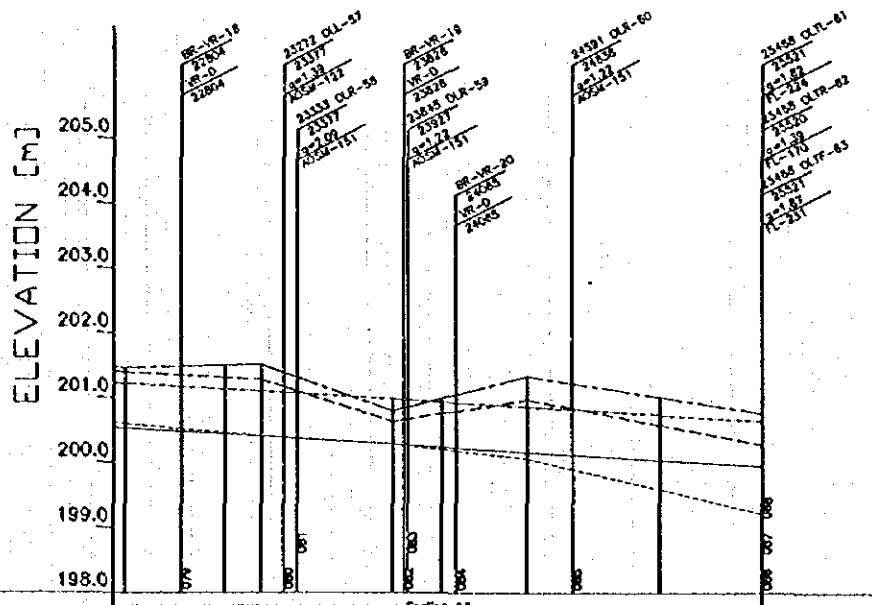
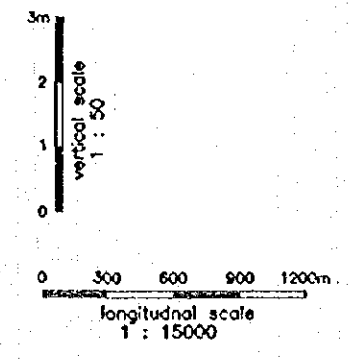
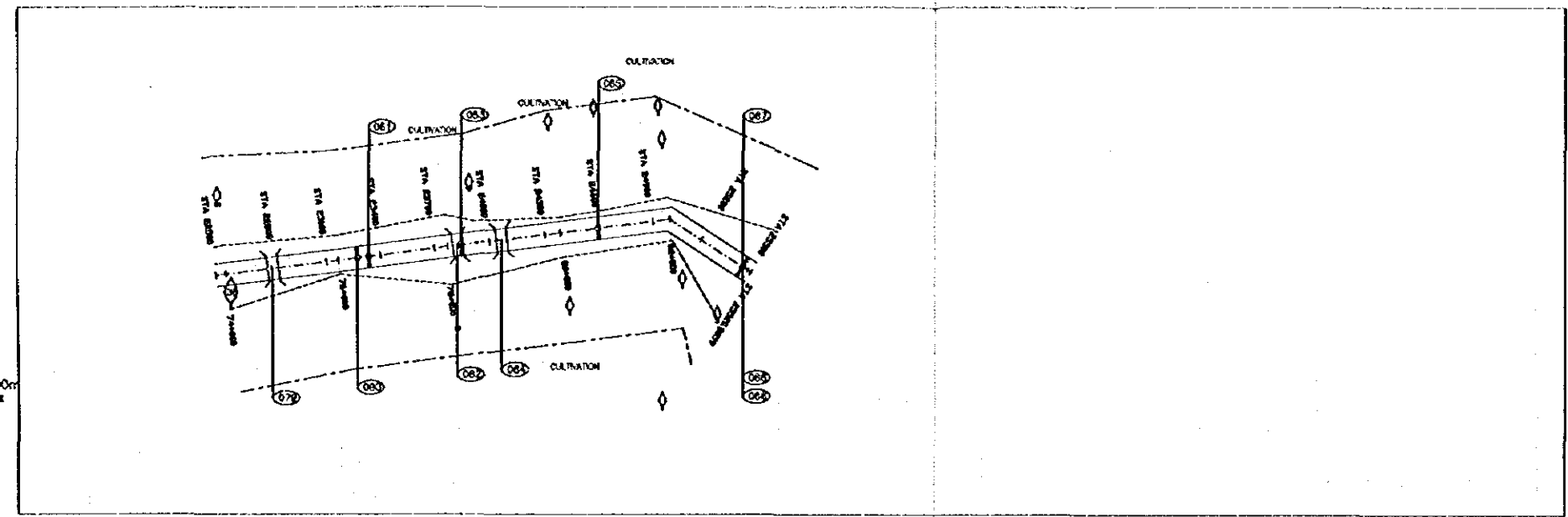
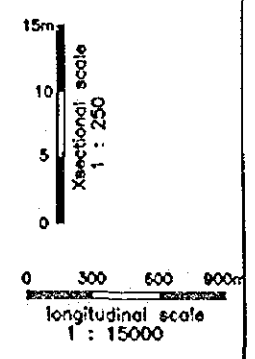
ISLAMIC REPUBLIC OF PAKISTAN
GOVERNMENT OF PUNJAB

THE LINING OF DISTRIBUTARIES AND MINORS IN PUNJAB

PLAN AND PROFILE OF
CANAL SYSTEM: C B D C
DISTRIBUTARY : CHINA
MINOR : -

FROM STA 15000 (49+200) TO : 22500 (73+800)

JAPAN INTERNATIONAL COOPERATION AGENCY CBDC-8



EXISTING DATA	DESIGN DATA	SECTION 13	
		Q (m ³ /s)	CCA (ha)
DESIGNED FULL SUPPLY LEVEL		225.40	2231
DESIGNED BED LEVEL			
DISTANCE (m)			
STATION (m)			
LATEST FULL SUPPLY LEVEL			
N S L RIGHT			
N S L LEFT			
BED LEVEL			
RIGHT OF WAY LEFT (ft)			
RIGHT OF WAY RIGHT (ft)			
R.D. (ft)			

DESCRIPTION	SYMBOLS
WATER COURSE (with R.O. mark)	
REGULATOR	
AQUEDUCT	
BRIDGE (BR)	
ARTERIAL BRIDGE (AR)	
DISTRICT ROAD BRIDGE (DR)	
VILLAGE ROAD BRIDGE (VR)	
FOOT BRIDGE (FB)	
RAILWAY BRIDGE (RB)	
OPERATION & MAINTENANCE (O&M) ROAD BRIDGE	
TUNNEL / CULVERT SECTION	
CROSS DRAINAGE CULVERT	
INVERTED SIPHON	
OUTLET LEFT (OLL)	
OUTLET RIGHT (OLR)	
FALL/DROP (OP)	
CROSS REGULATOR	
MEASUREMENT STRUCTURE	
WATERCOURSE CROSSING	
TRANSITION	
STEP LEFT (SPL) STEP RIGHT (SPR)	
ESCAPE	
LINED PORTION	
PIPE	
DESIGN STRUCTURE NUMBER	
RAILWAY LINE	
RIGHT OF WAY	
DESIGN CENTER LINE	
EXISTING CENTER LINE	
DESIGN BANK	
EXISTING BANK	
DESIGN F.S.L.	
DESIGN BED LEVEL	
N.S.L. RIGHT	
N.S.L. LEFT	
BED LEVEL	
Building, Village, Mosque, Tomb	
Road metalled, unmetalled, cart-track	
Electric line, Telephone line	
River with flow, Water Course	
Tree Jungle	
Grass, Cross	
DISCHARGE (cumec) Q	
OUTLET DISCHARGE (cumec) q	
BED WIDTH b	
ROUGHNESS COEFFICIENT n	
VELOCITY V	
CANAL COMMAND AREA CCA	
BED SLOPE s	
SIDE SLOPE z	
WATER DEPTH y	
FREE BOARD Frb	
TAIL LEFT TL	
TAIL RIGHT TR	
TAIL FRONT TF	

REACH	DESIGNED	EXISTING	APPROVED
A			
B			
C			
D			

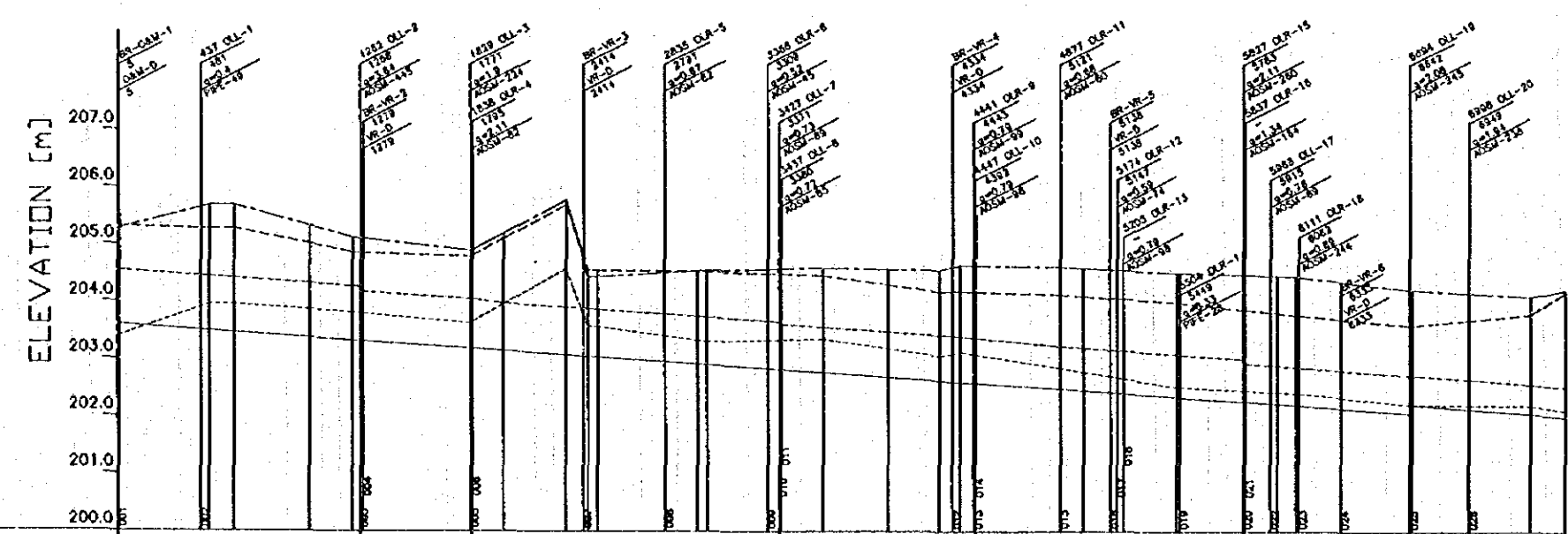
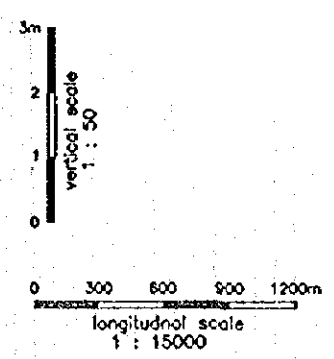
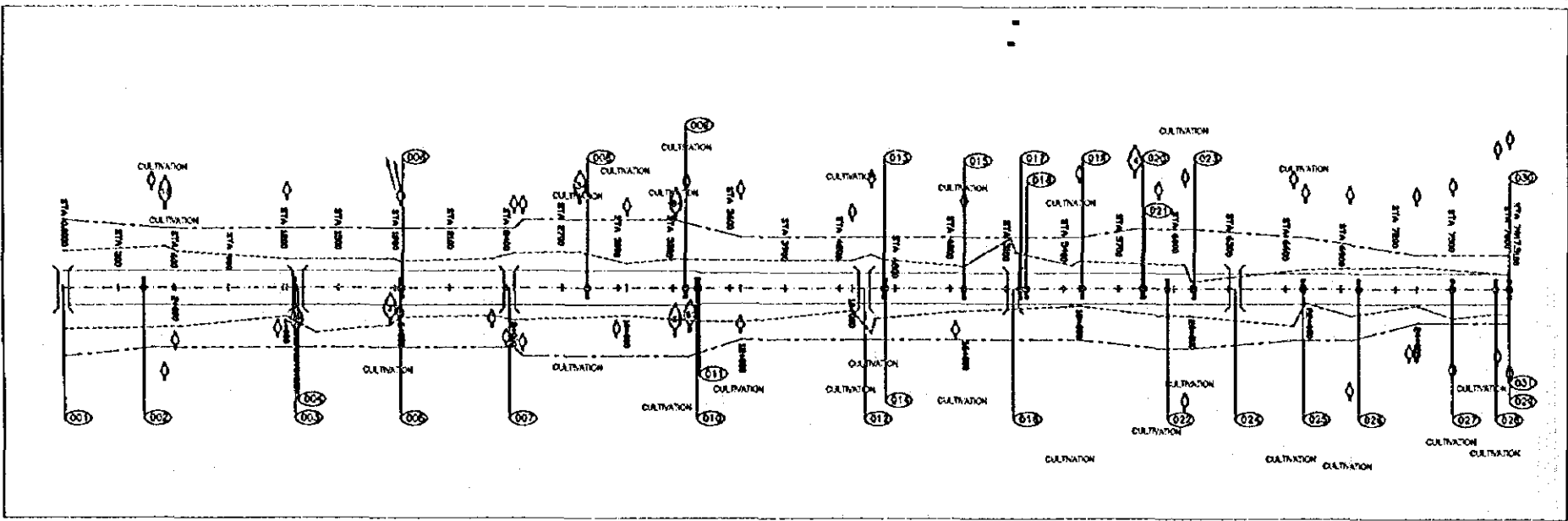
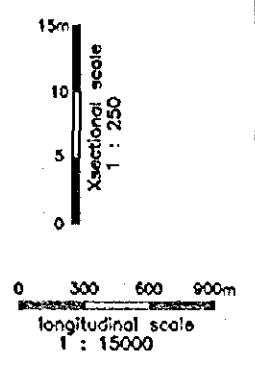
ISLAMIC REPUBLIC OF PAKISTAN
GOVERNMENT OF PUNJAB

THE LINING OF DISTRIBUTARIES AND MINORS IN PUNJAB

PLAN AND PROFILE OF
CANAL SYSTEM: C B D C
DISTRIBUTARY : CHINA
MINOR : --

FROM STA 22500 (73+800) TO : 25468 (83+535)

JAPAN INTERNATIONAL COOPERATION AGENCY CBDC-9



DESCRIPTION	SYMBOLS
WATER COURSE (with R.O. mark)	
REGULATOR	
AQUEDUCT	
BRIDGE	
ARTERIAL BRIDGE (BR)	
DISTRICT ROAD BRIDGE (DR)	
VILLAGE ROAD BRIDGE (VR)	
FOOT BRIDGE (FB)	
RAILWAY BRIDGE (RB)	
OPERATION & MAINTENANCE (O&M)	
ROAD BRIDGE	
TUNNEL / CULVERT SECTION	
CROSS DRAINAGE CULVERT	
INVERTED SIPHON	
OUTLET LEFT (OL)	
OUTLET RIGHT (OR)	
FALL/DROP (FD)	
CROSS REGULATOR	
MEASUREMENT STRUCTURE	
WATERCOURSE CROSSING	
TRANSITION	
STEP LEFT (SPL)	
STEP RIGHT (SPR)	
ESCAPE	
LINED PORTION	
PIPE	
DESIGN STRUCTURE NUMBER	
RAILWAY LINE	
RIGHT OF WAY	
DESIGN CENTER LINE	
EXISTING CENTER LINE	
DESIGN BANK	
EXISTING BANK	
DESIGN F.S.L.	
DESIGN BED LEVEL	
N.S.L. RIGHT	
N.S.L. LEFT	
BED LEVEL	
Building, Village, Mosque, Tomb	
Road: metalled, unmetalled, cart-track	
Electric line, Telephone line	
River with Fox, Water Course, Pond	
Tree, Jungle	
Grass, Grass	
DISCHARGE (cumec)	Q
OUTLET DISCHARGE (cumec)	q
BED WIDTH	b
ROUGHNESS COEFFICIENT	n
VELOCITY	V
CANAL COMMAND AREA	CCA
BED SLOPE	s
SHOE SLOPE	z
WATER DEPTH	y
FREE BOARD	Frb
TAL LEFT	TL
TAL RIGHT	TR
TAL FRONT	TF

EXISTING DATA DESIGN PROPERTIES

	Section 1	Section 2	Section 3	Section 4	Section 5	Section 6	Section 7
D (m/s)	0.78	0.78	0.72	0.65	0.58	0.44	0.24
n	0.018	0.018	0.018	0.018	0.016	0.016	0.016
s	1/4350	1/4350	1/4350	1/4350	1/4350	1/4350	1/3650
y (m)	1.25	1.18	1.13	1.08	1.04	0.98	0.87
b	0.80	0.80	0.80	0.80	0.80	0.80	0.88
V (m/s)	0.57	0.54	0.53	0.52	0.50	0.47	0.42
z	1.25	1.25	1.25	1.25	1.25	1.25	1.25
Frb (m)	0.30	0.30	0.30	0.30	0.30	0.30	0.15
CCA (ha)	3567	3308	2758	2524	2145	1391	702
DESIGNED FULL SUPPLY LEVEL	205.10	205.10	205.10	205.10	205.10	205.10	205.10
DESIGNED BED LEVEL	203.50	203.50	203.50	203.50	203.50	203.50	203.50
DISTANCE (m)	0	1000	2000	3000	4000	5000	6000
STATION (m)	0+000	0+999	1+999	2+999	3+999	4+999	5+999
LATEST FULL SUPPLY LEVEL	205.10	205.10	205.10	205.10	205.10	205.10	205.10
N.S.L. RIGHT	205.10	205.10	205.10	205.10	205.10	205.10	205.10
N.S.L. LEFT	205.10	205.10	205.10	205.10	205.10	205.10	205.10
BED LEVEL	203.50	203.50	203.50	203.50	203.50	203.50	203.50
RIGHT OF WAY LEFT (ft)	100	100	100	100	100	100	100
RIGHT OF WAY RIGHT (ft)	100	100	100	100	100	100	100
R.D. (ft)	100	100	100	100	100	100	100

ISLAMIC REPUBLIC OF PAKISTAN
GOVERNMENT OF PUNJAB

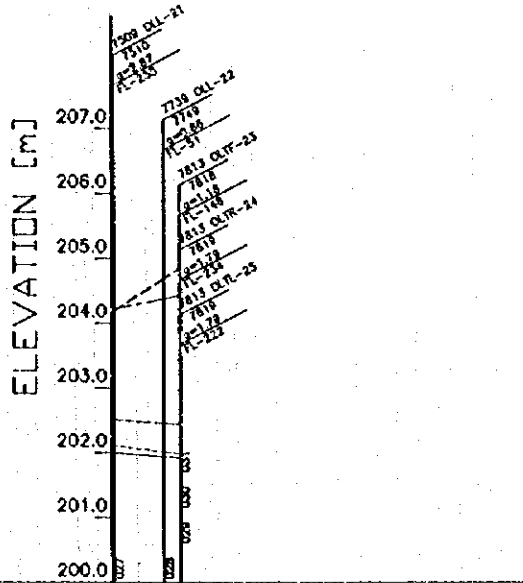
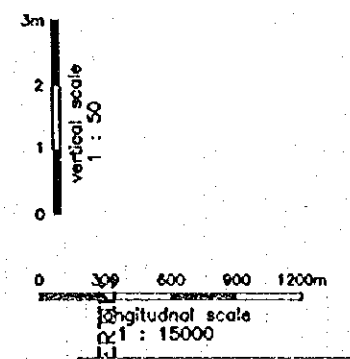
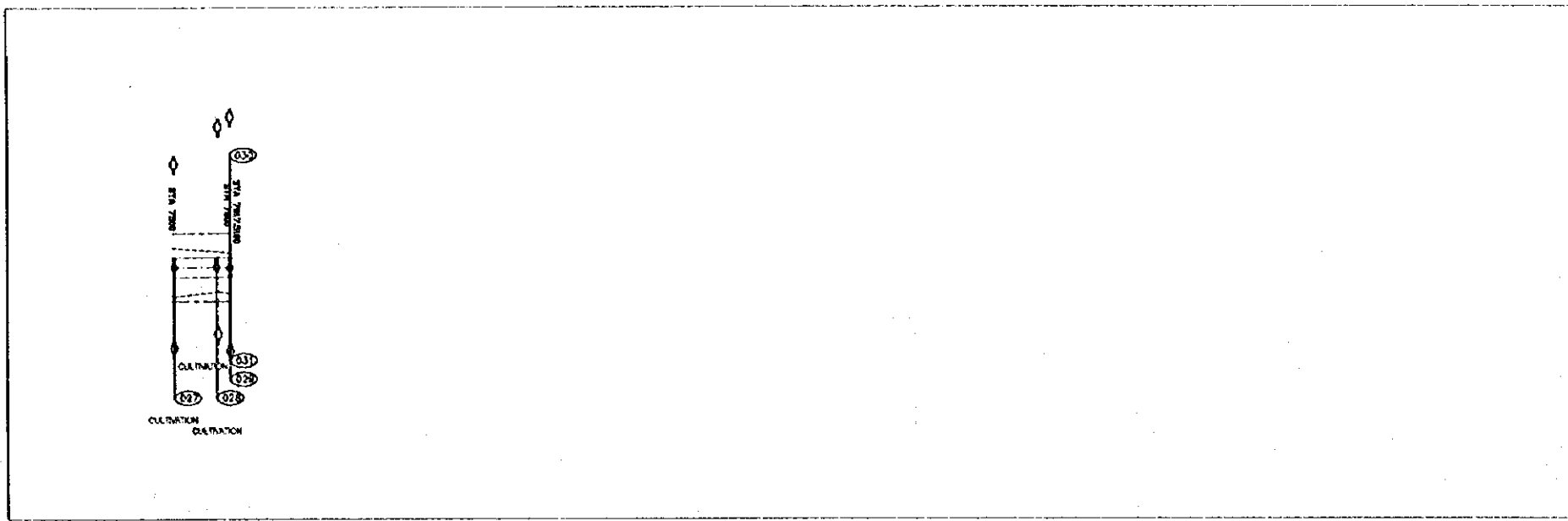
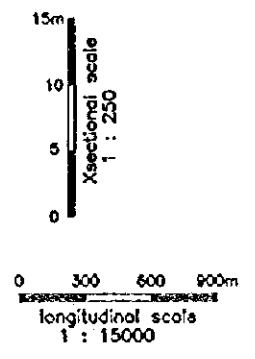
THE LINING OF DISTRIBUTARIES AND MINORS IN PUNJAB

PLAN AND PROFILE OF
CANAL SYSTEM: C B D C
DISTRIBUTARY : CHINA
MINOR : KALE

FROM STA 000 (0+000) TO : 7500 (24+600)

JAPAN INTERNATIONAL COOPERATION AGENCY CBDC-10

DESCRIPTION	SYMBOLS
WATER COURSE (with R.D. mark)	
REGULATOR	
AQUEDUCT	
BRIDGE (BR)	
ARTERIAL BRIDGE (AR)	
DISTRICT ROAD BRIDGE (DR)	
VILLAGE ROAD BRIDGE (VR)	
FOOT BRIDGE (FB)	
RAILWAY BRIDGE (RB)	
OPERATION & MAINTENANCE (O&M) ROAD BRIDGE	
TUNNEL / CULVERT SECTION	
GROSS DRAINAGE CULVERT	
INVERTED SIFON	
OUTLET LEFT (OL)	
OUTLET RIGHT (OR)	
FALL/DROP (DF)	
CROSS REGULATOR	
MEASUREMENT STRUCTURE	
WATERCOURSE CROSSING	
TRANSITION	
STEP LEFT (SL) STEP RIGHT (SR)	
ESCAPE	
LINED PORTION	
PIPE	
DESIGN STRUCTURE NUMBER	
RAILWAY LINE	
RIGHT OF WAY	
DESIGN CENTER LINE	
EXISTING CENTER LINE	
DESIGN BANK	
EXISTING BANK	
DESIGN F.S.L.	
DESIGN BED LEVEL	
N.S.L. RIGHT	
N.S.L. LEFT	
BED LEVEL	
Building, Village, Mosque, Tomb	
Road: metalled; unmetalled; cart-track	
Electric line, Telephone line	
River with flow, Water Course, Pond	
Tree, Jungle	
Graves, Grass	
DISCHARGE (cumec) Q	
OUTLET DISCHARGE (cumec) q	
BED WIDTH b	
ROUGHNESS COEFFICIENT n	
VELOCITY V	
CANAL COMMAND AREA CCA	
BED SLOPE s	
SOE SLOPE z	
WATER DEPTH y	
FREE BOARD Fb	
TAL LEFT TL	
TAL RIGHT TR	
TAL FRONT TF	



DESIGN DATA	SECTION 7		
	DESIGNED FULL SUPPLY LEVEL	204.0	204.0
DESIGNED BED LEVEL	200.0	200.0	
DISTANCE (m)	0	100	
STATION (m)	7500	7600	
EXISTING DATA	LATEST FULL SUPPLY LEVEL	204.0	204.0
	N S L RIGHT	204.0	204.0
	N S L LEFT	204.0	204.0
	BED LEVEL	200.0	200.0
	RIGHT OF WAY LEFT (ft)	204.0	204.0
	RIGHT OF WAY RIGHT (ft)	204.0	204.0
	R.D. (ft)	204.0	204.0

NO./SUR. NO.	NO./SUR. NO.	NO./SUR. NO.	NO./SUR. NO.
A			
B			
C			
D			

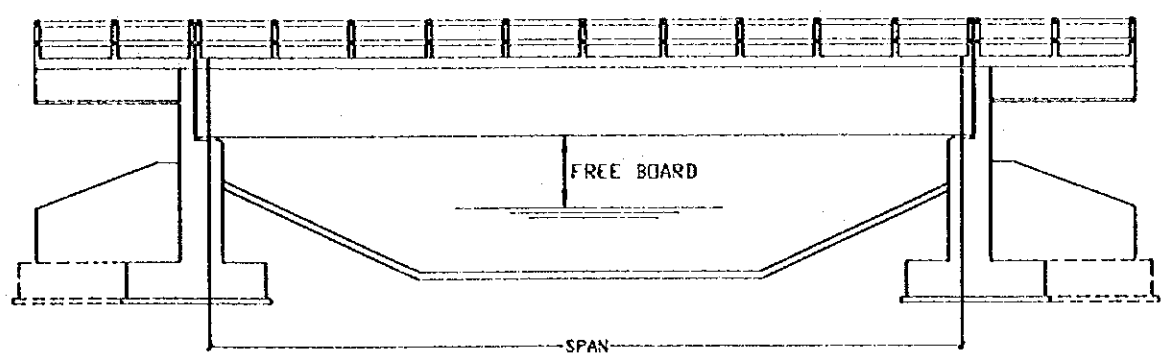
ISLAMIC REPUBLIC OF PAKISTAN
GOVERNMENT OF PUNJAB

THE LINING OF DISTRIBUTARIES AND MINORS IN PUNJAB

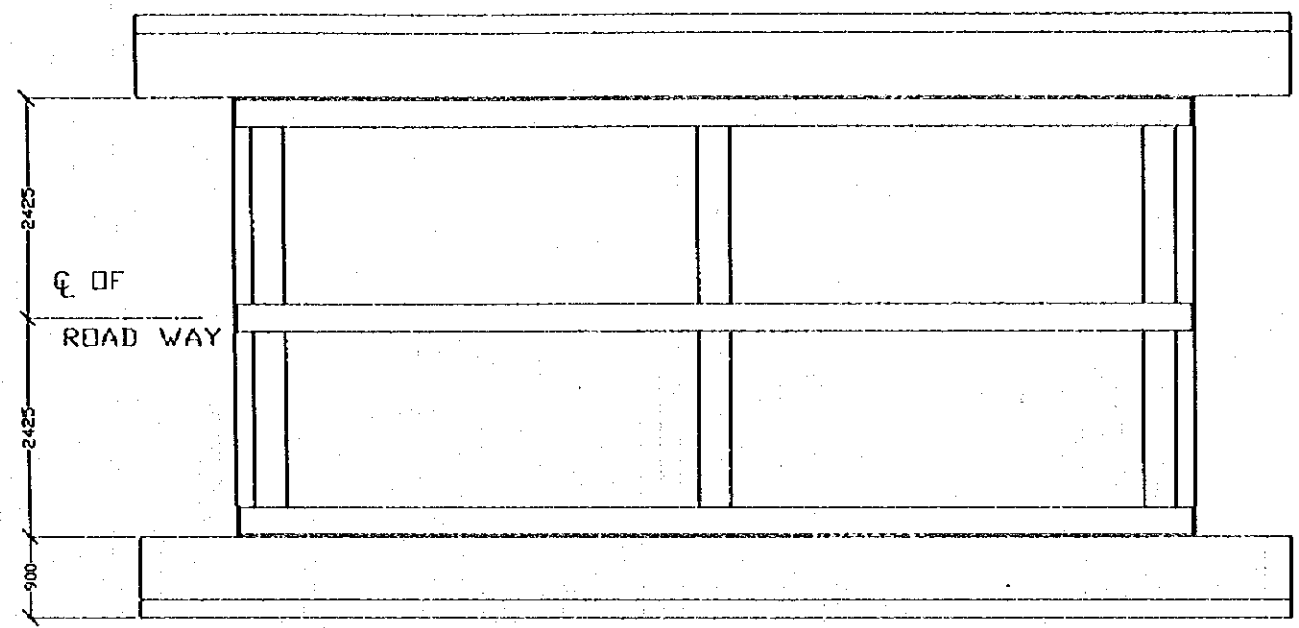
PLAN AND PROFILE OF
CANAL SYSTEM: C B D C
DISTRIBUTARY : CHINA
MINOR : KALE

FROM STA 7500 (24+600) TO : 7815 (25+633)

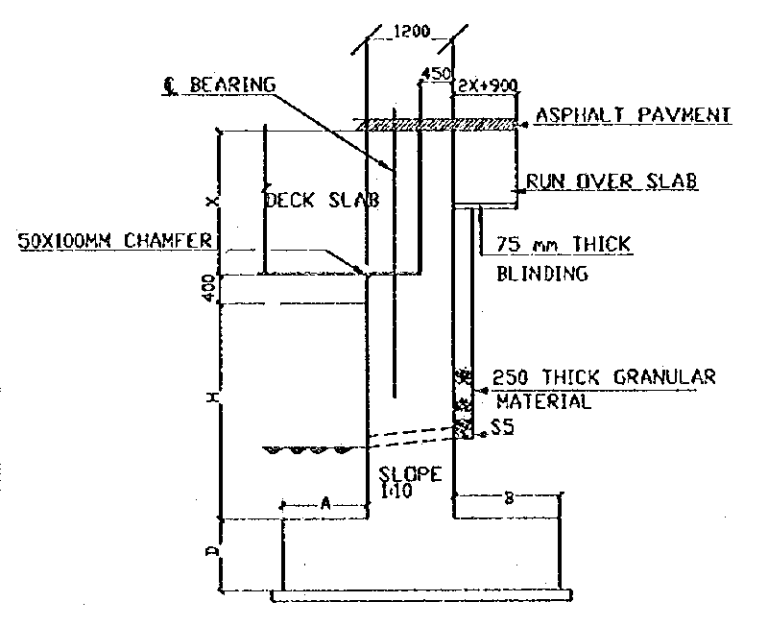
JAPAN INTERNATIONAL COOPERATION AGENCY CBDC-11



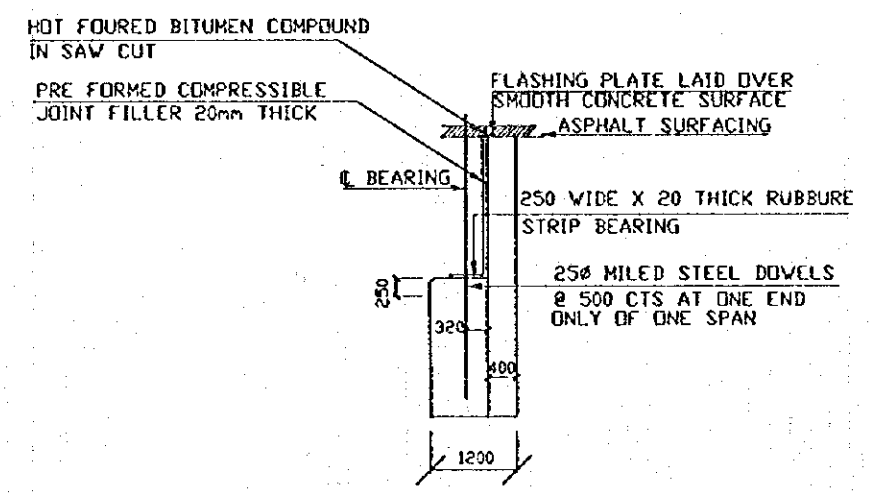
TYPICAL ELEVATION & FOUNDATION DETAIL



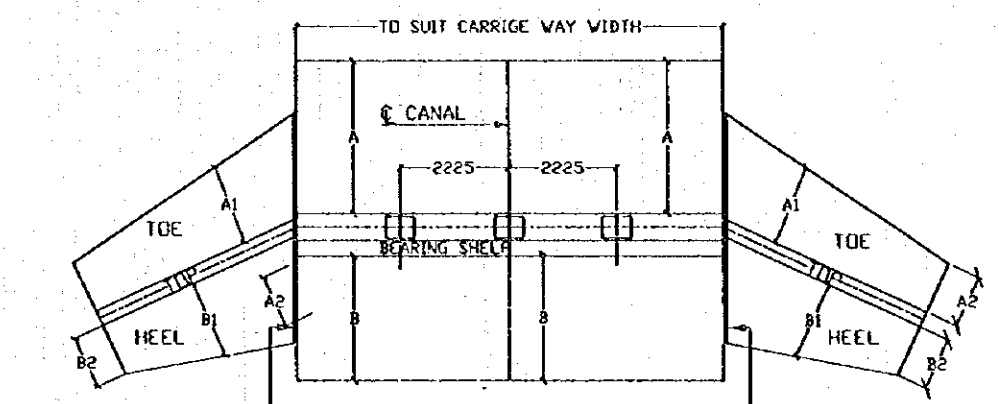
GENERAL PLAN FOR (6.0 M SPAN)



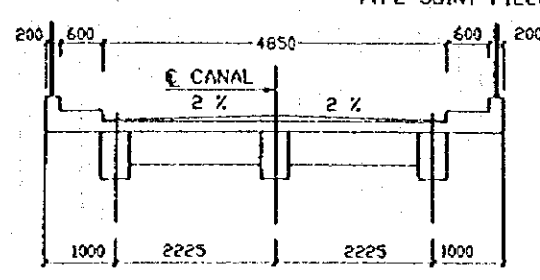
SECTION THROUGH ABUTMENT



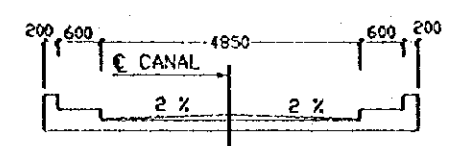
ABUTMENT EXPANSION JOINT AND BEARING SHELF DETAILS



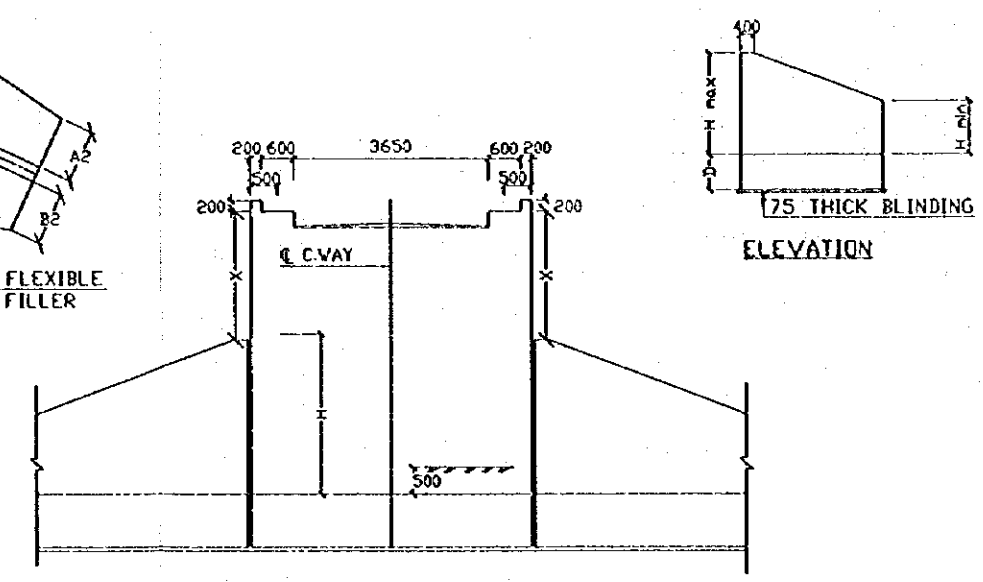
REINFORCED CONCRETE ABUTMENT PLAN



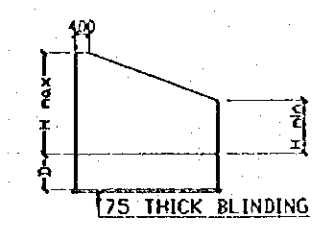
SECTION THROUGH DECK SLAB FOR 10M TO 6M SPAN



SECTION THROUGH DECK SLAB FOR SPAN LESS THEN 6.0 M



FRONT ELEVATION BEARING SHELF AND FOUNDATION

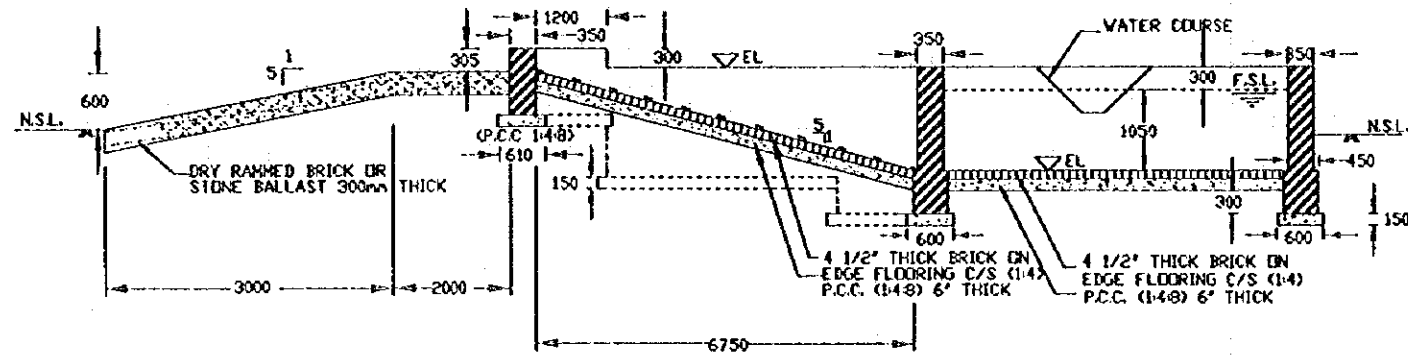


ELEVATION

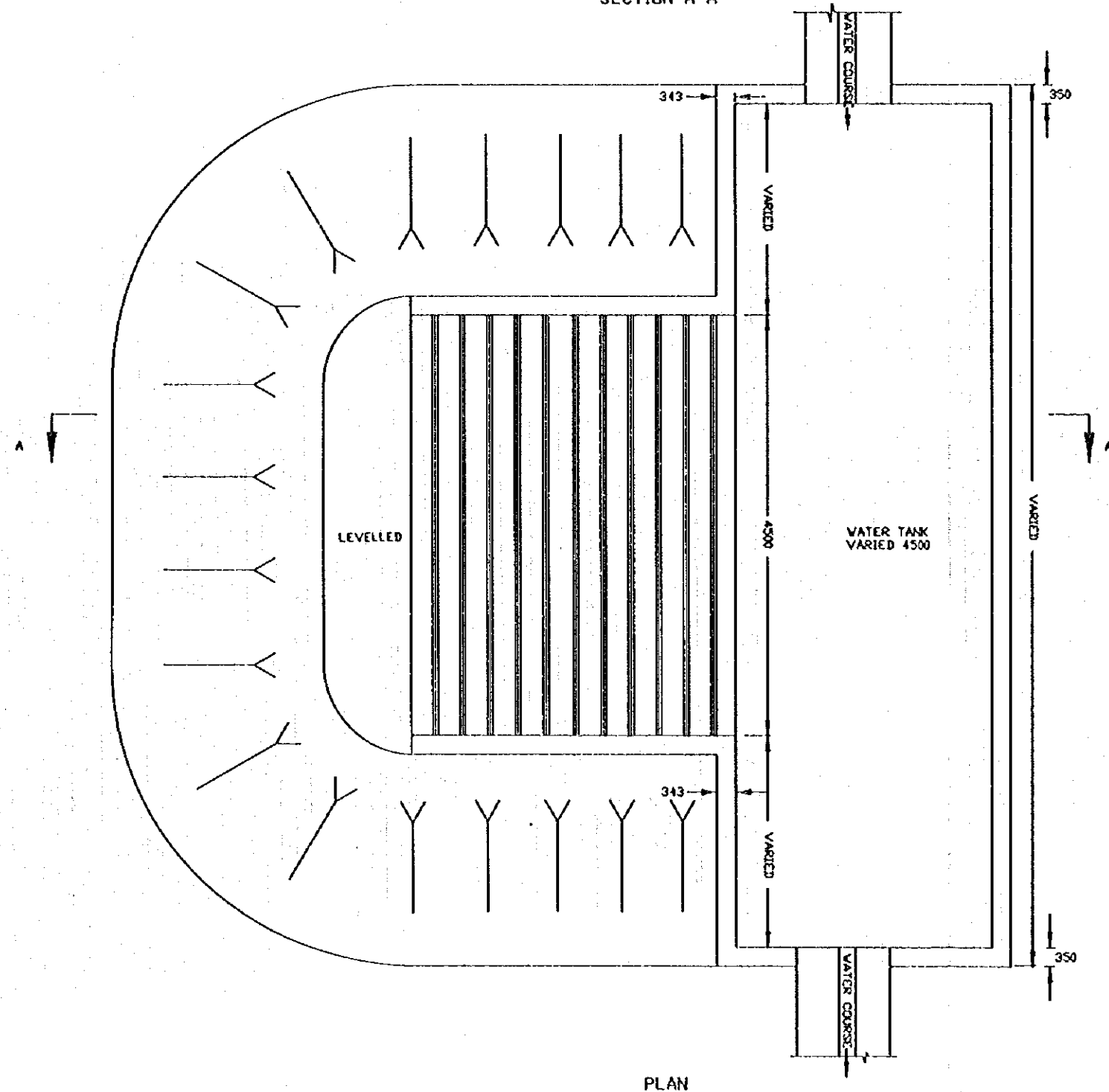
NOTES

- 1 - FOR TABLES OF DIMENSIONS & REINFORCEMENT REFER SHEET No. TB-3
- 2 - FOR ABUTMENT FOUNDATION SIZE SEE TABLE - 1
- 3 - FOR ABUTMENT FOUNDATION REINFORCEMENT SEE TABLE - 2
- 4 - FOR ABUTMENT STEM REINFORCEMENT SEE TABLE - 3
- 5 - FOR RETAINING / WING WALL FOUNDATION SIZES SEE TABLE - 4
- 6 - FOR RETAINING / WING WALL FOUNDATION REINFORCEMENT SEE TABLE - 5
- 7 - FOR RETAINING / WING WALL STEM REINFORCEMENT SEE TABLE - 6
- 8 - FOR DECK SLAB REINFORCEMENT WITH SPAN LESS THEN 6.0M SEE TABLE - 7

REVISION NO.	REVISED DRAWING	CHECKED DRAWING	APPROVED DRAWING
A			
B			
C			
D			

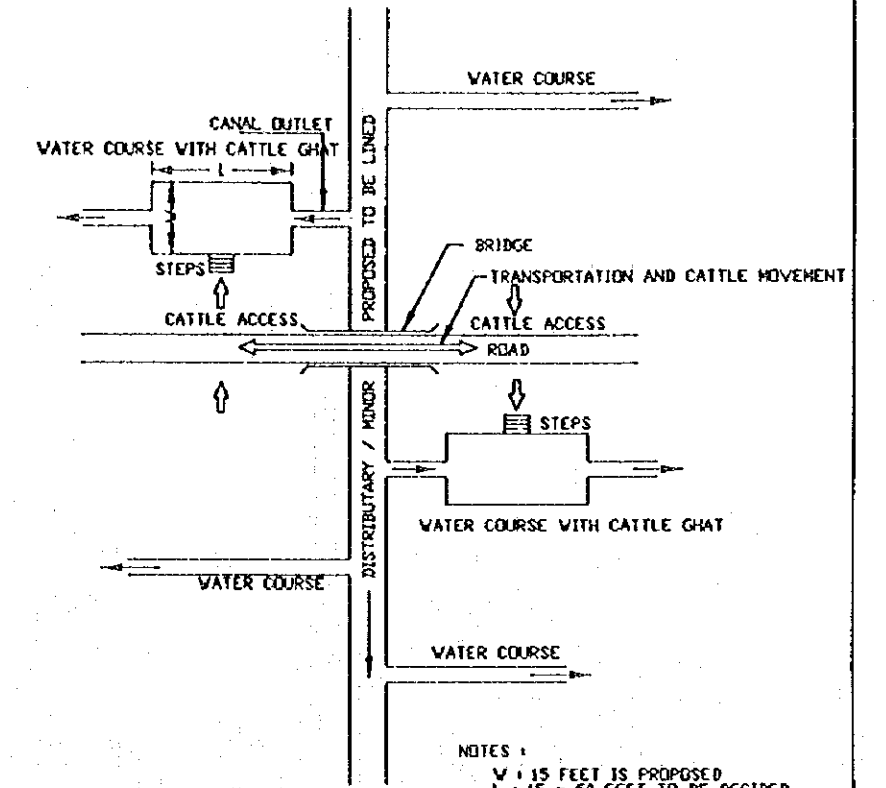


SECTION A-A



PLAN

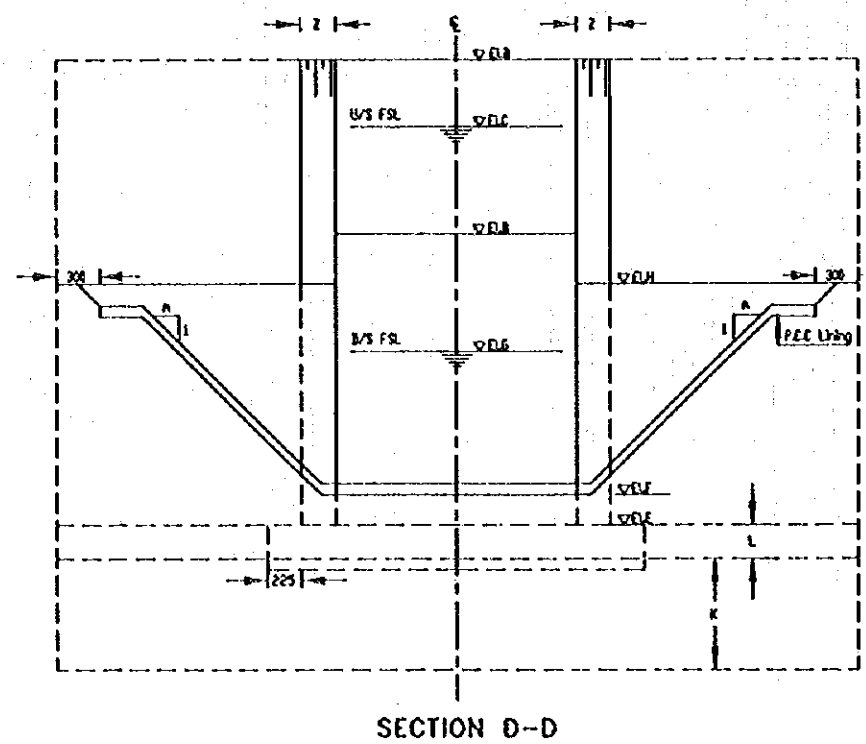
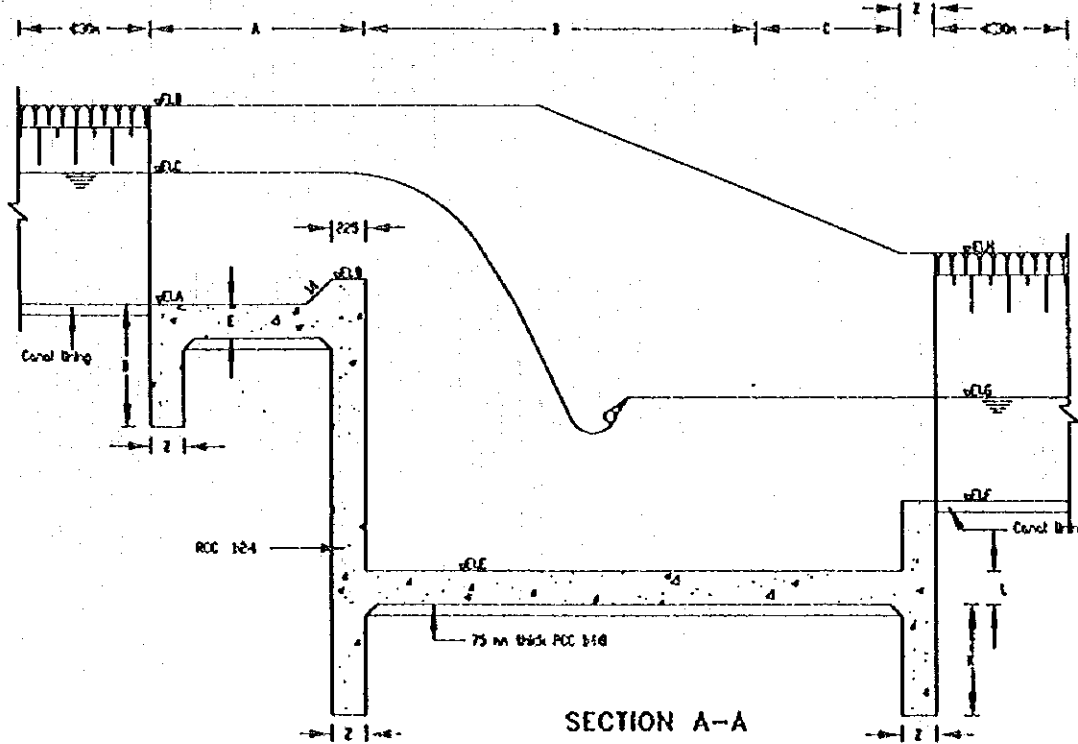
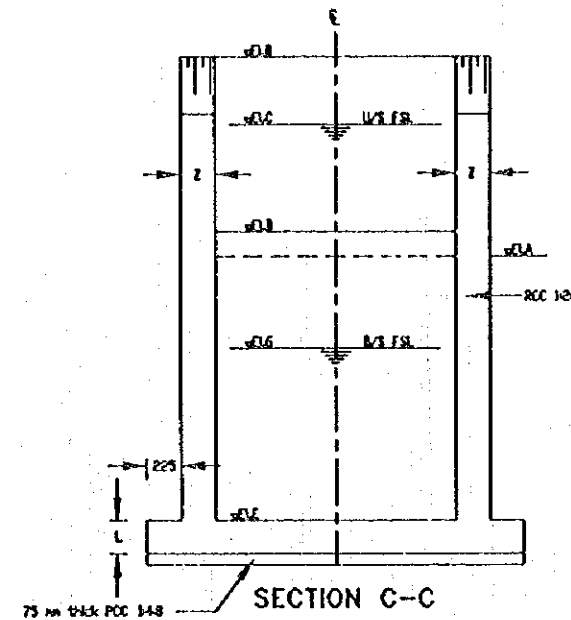
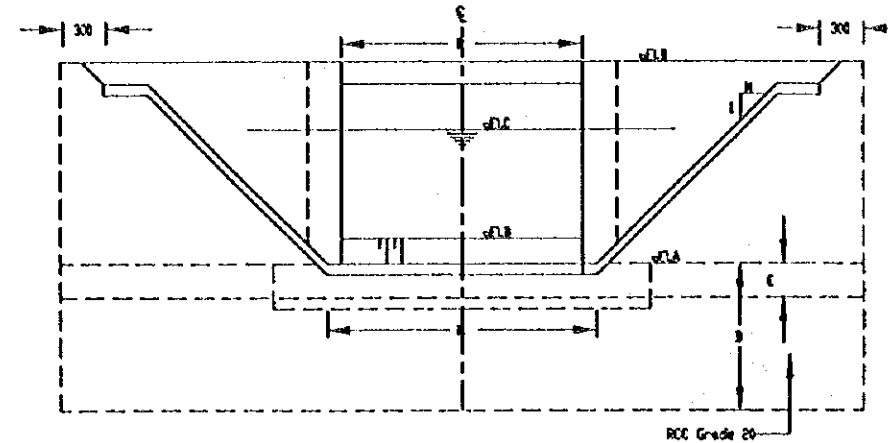
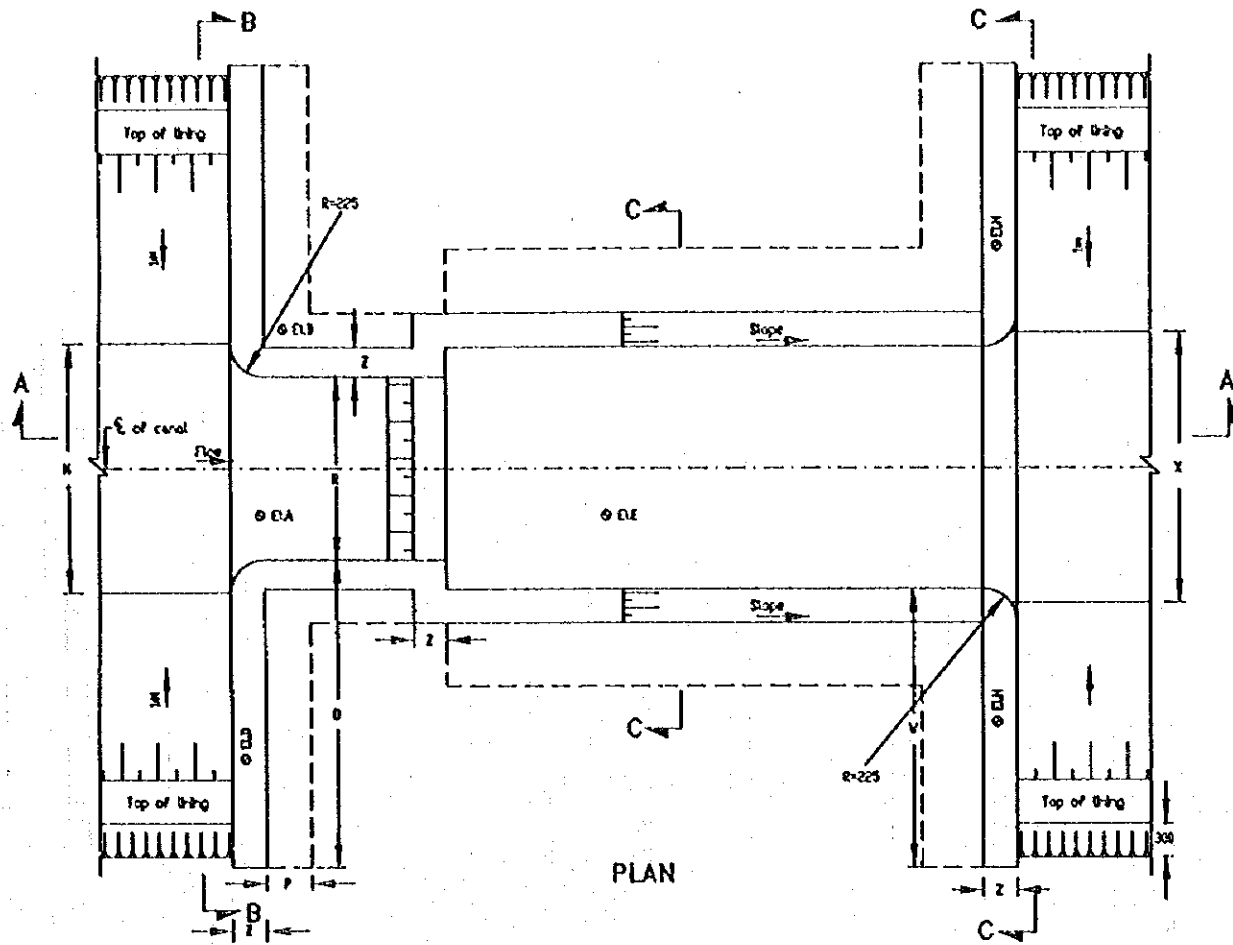
SCHEMATIC LAYOUT OF PROPOSED BUFFALO WALLOW (CATTLE GHAT)



NOTES:
 V : 15 FEET IS PROPOSED
 L : 15 - 50 FEET TO BE DECIDED
 BASED ON ROW OR HABITANTS OPINION
 IF CONSTRUCTED IN THEIR OWN LAND

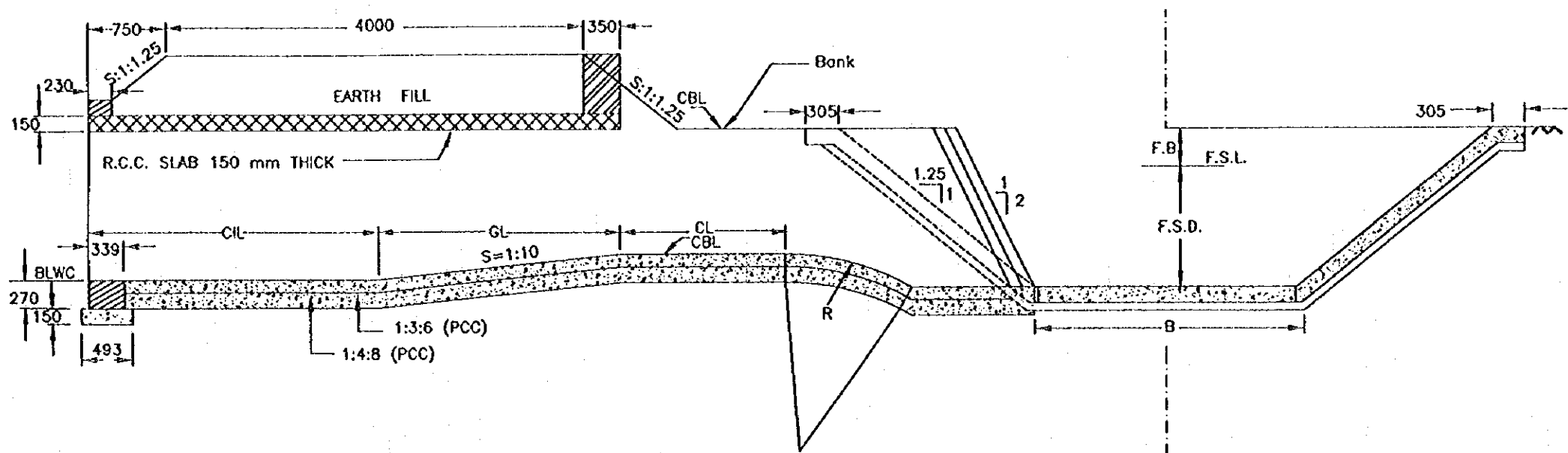
REVISION NO.	REVISION DATE	DESIGNED NAME/DATE	APPROVED NAME/DATE
A			
B			
C			
D			

ISLAMIC REPUBLIC OF PAKISTAN
 GOVERNMENT OF PUNJAB
 THE LINING OF DISTRIBUTARIES AND MINORS IN PUNJAB
 TYPICAL DESIGN DRAWING OF
 BUFFALO WALLOW (CATTLE GHAT)
 JAPAN INTERNATIONAL COOPERATION AGENCY ST-2

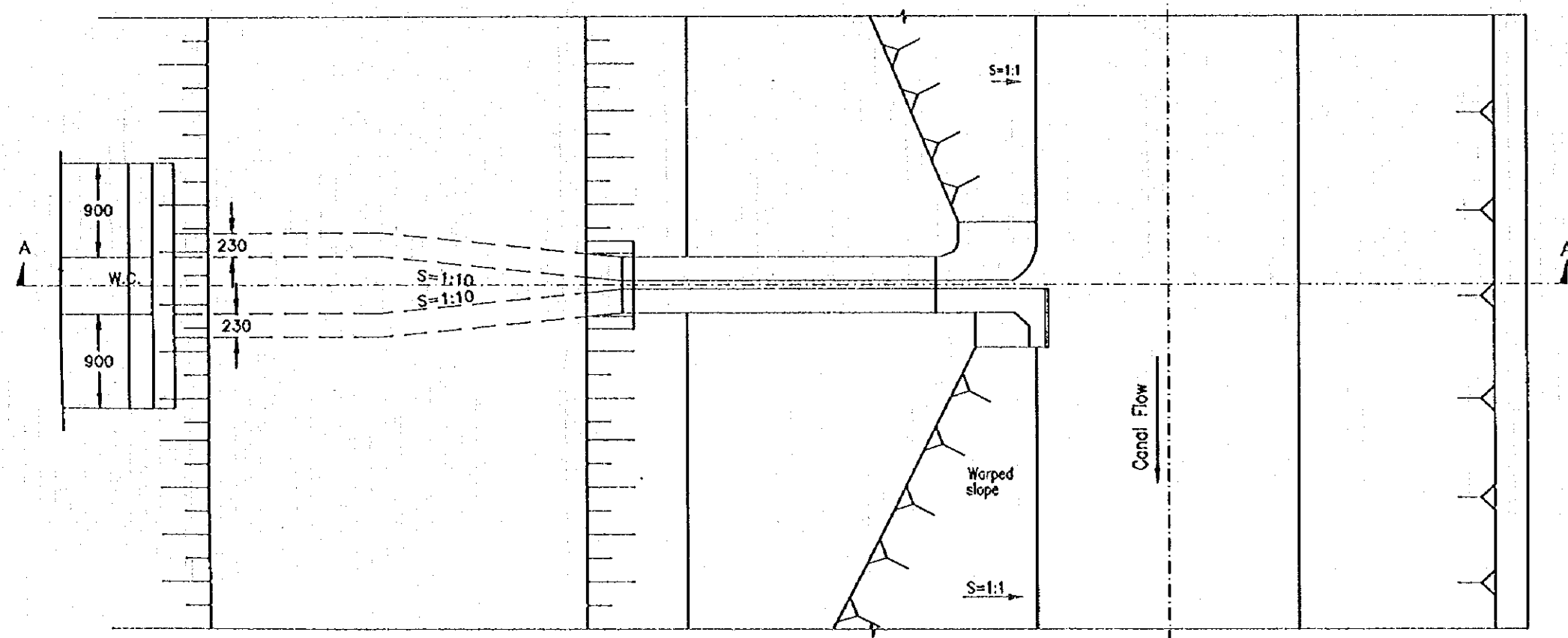
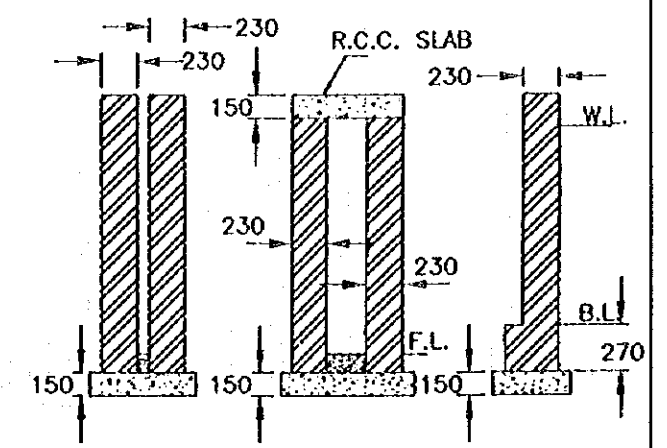


REVISED NO.	REVISED DATE	CHECKED DATE	APPROVED DATE
A			
B			
C			
D			

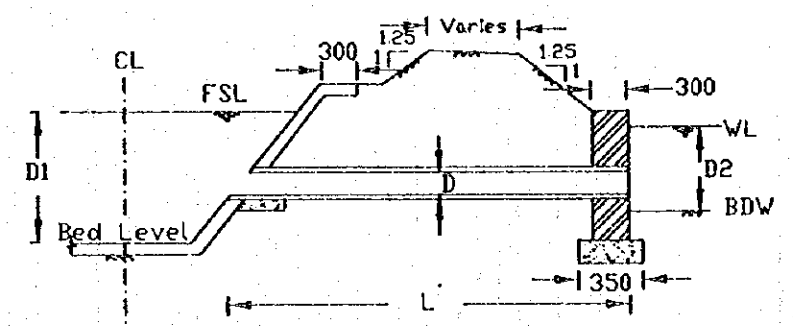
ISLAMIC REPUBLIC OF PAKISTAN
 GOVERNMENT OF PUNJAB
 THE LINING OF DISTRIBUTARIES AND MINORS IN PUNJAB
 TYPICAL DESIGN DRAWING OF
 VERTICAL FALL
 JAPAN INTERNATIONAL COOPERATION AGENCY ST-3



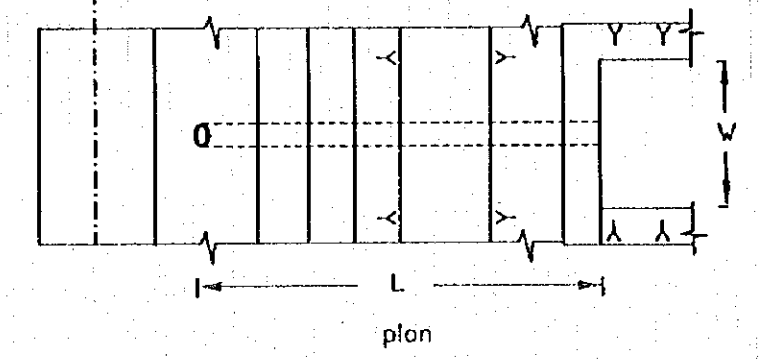
SECTION A-A



PLAN

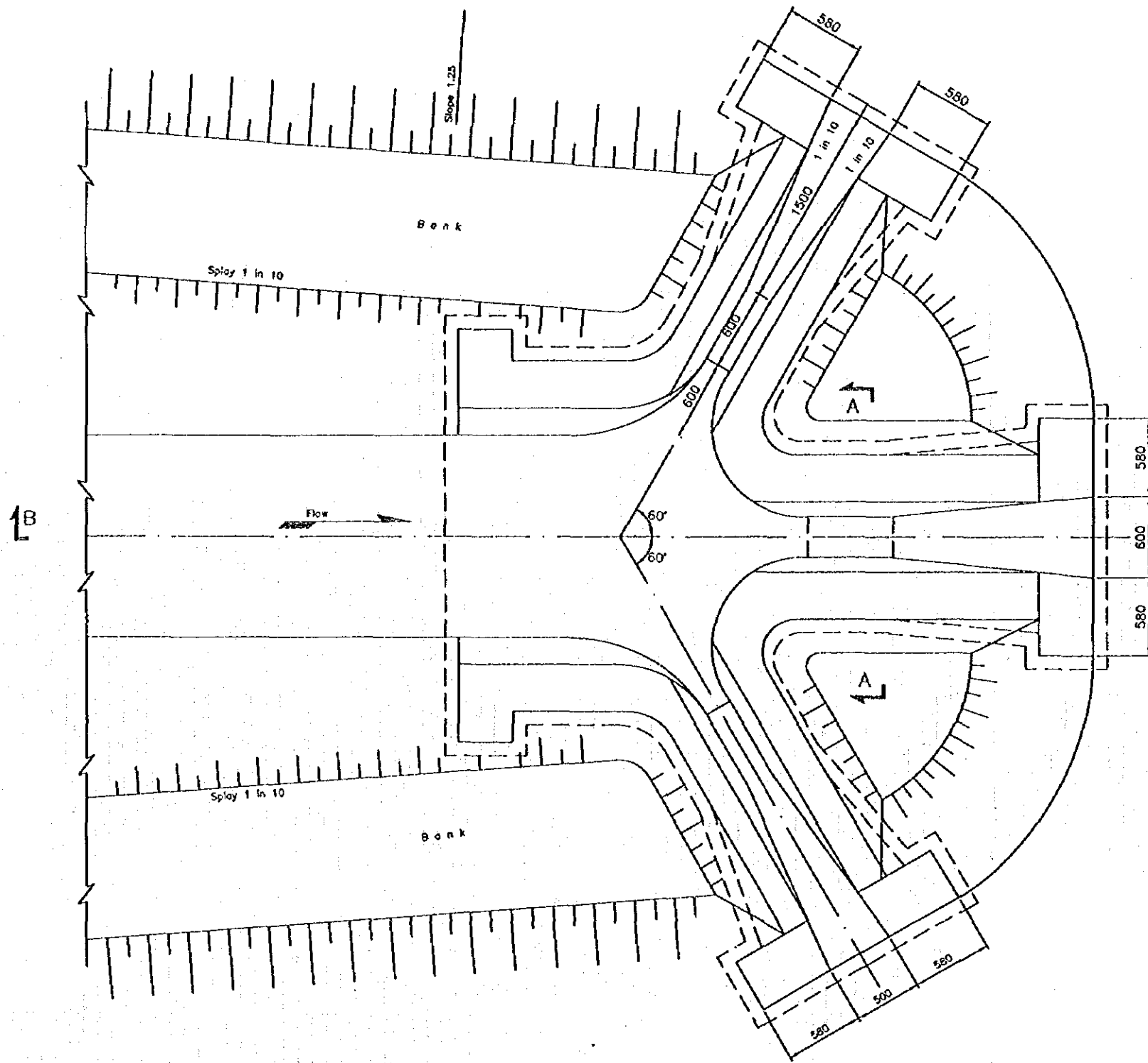


PIPE OUTLET (Section)

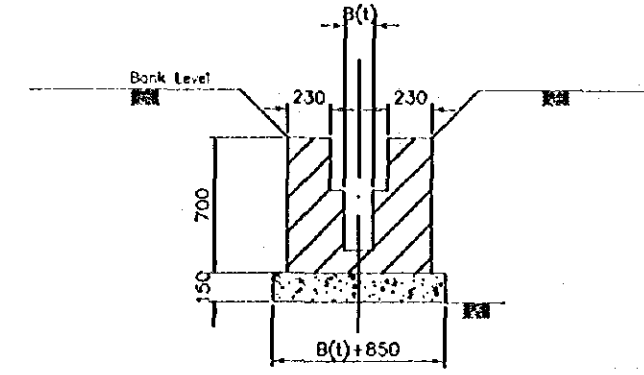


REVISION NO.	REVISED DATE	DESIGNED BY	APPROVED BY
A			
B			
C			
D			

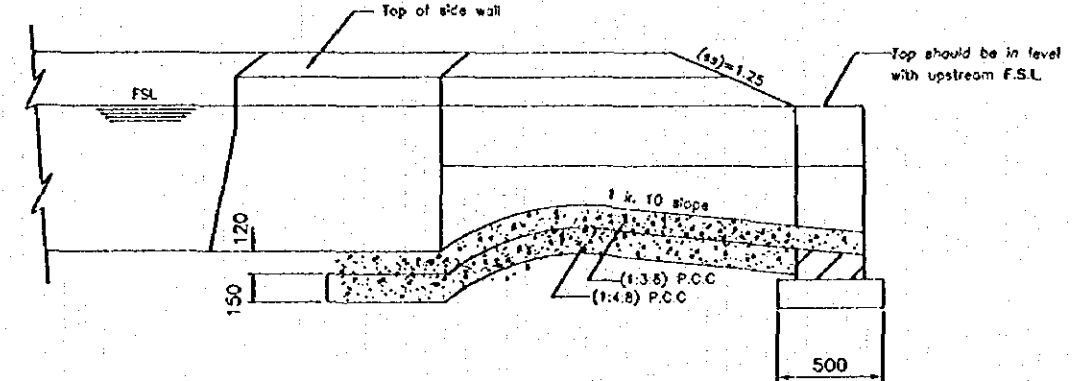
ISLAMIC REPUBLIC OF PAKISTAN
GOVERNMENT OF PUNJAB
THE LINING OF DISTRIBUTARIES AND MINORS IN PUNJAB
TYPICAL DESIGN DRAWING OF
OPEN FLUME OUTLET
&
PIPE OUTLET



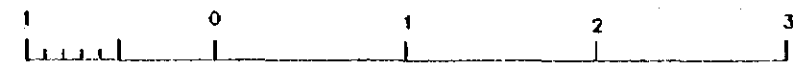
THREE-WAY TAIL CLUSTER



SECTION A - A



SECTION B - B



SCALE 1 : 25

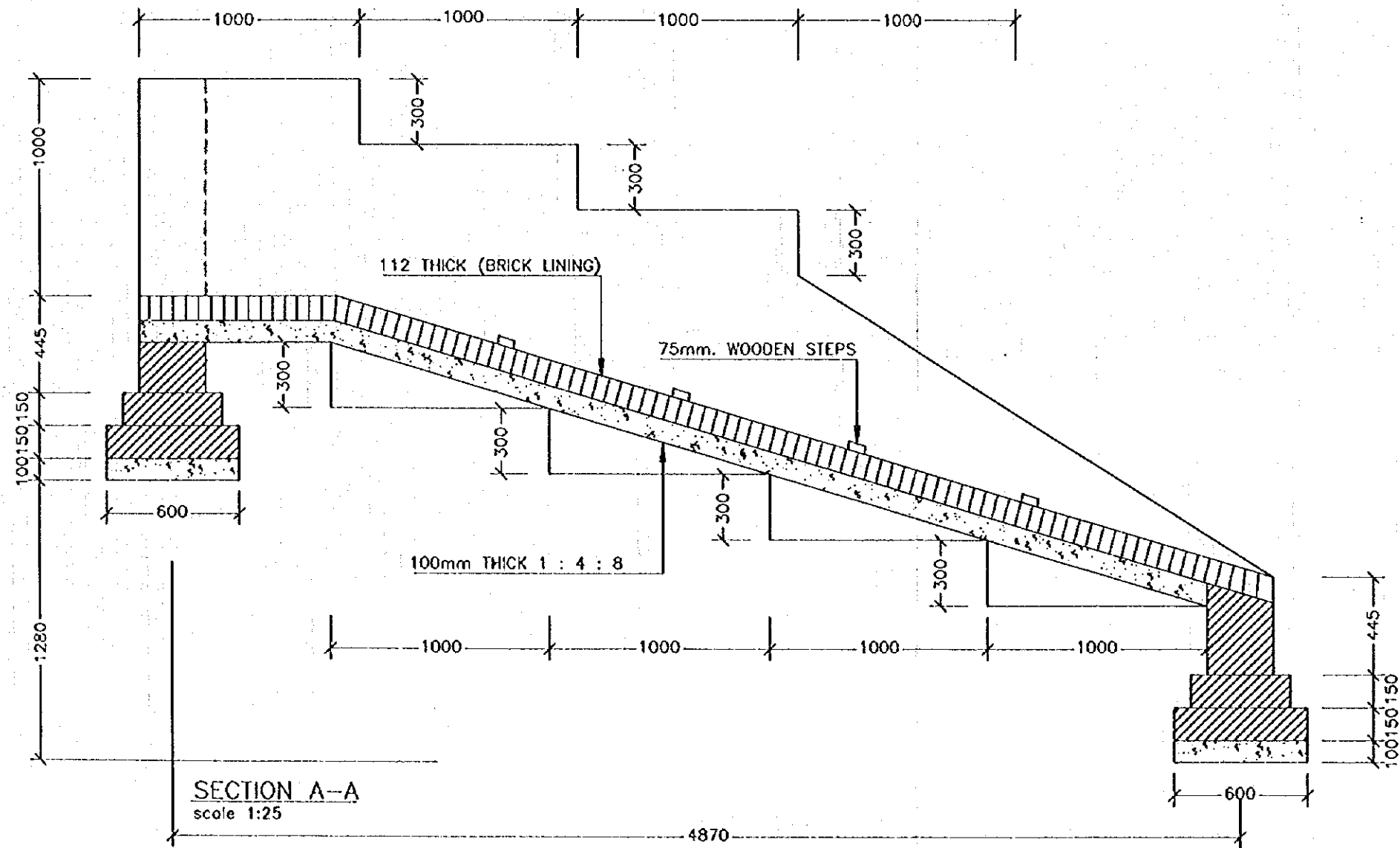
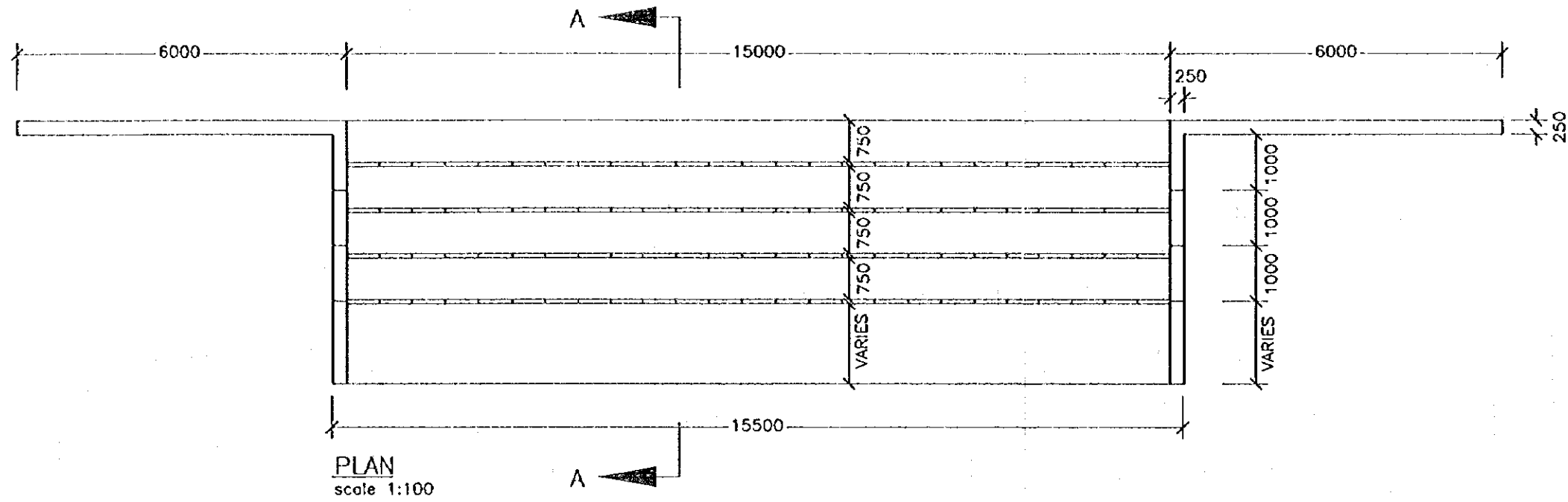
REV.	NO.	DATE	BY	CHKD.
A				
B				
C				
D				

ISLAMIC REPUBLIC OF PAKISTAN
GOVERNMENT OF PUNJAB

THE LINING OF DISTRIBUTARIES AND MINORS IN PUNJAB

TYPICAL DESIGN DRAWING OF
TAIL CLUSTER

JAPAN INTERNATIONAL COOPERATION AGENCY ST-6



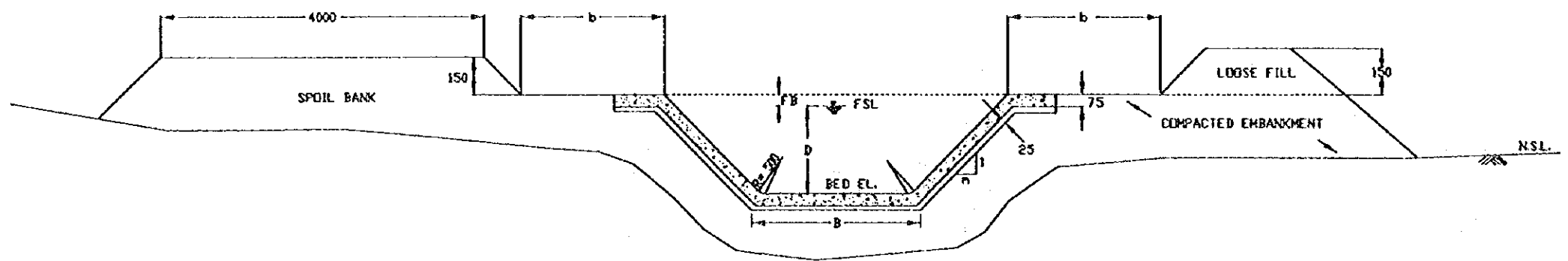
REVISED NO.	REVISION	DATE	BY	CHKD.	DATE	BY	CHKD.
A							
B							
C							
D							

ISLAMIC REPUBLIC OF PAKISTAN
GOVERNMENT OF PUNJAB

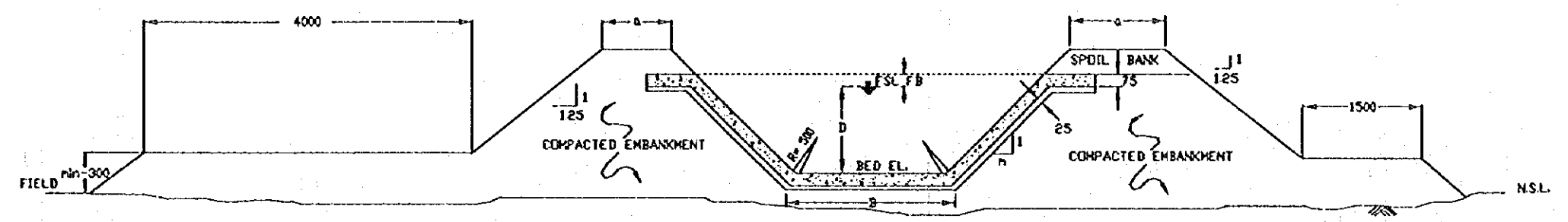
THE LINING OF DISTRIBUTARIES AND MINORS IN PUNJAB

TYPICAL DESIGN DRAWING OF STEPS

TYPICAL COMPLETED CANAL FEATURES



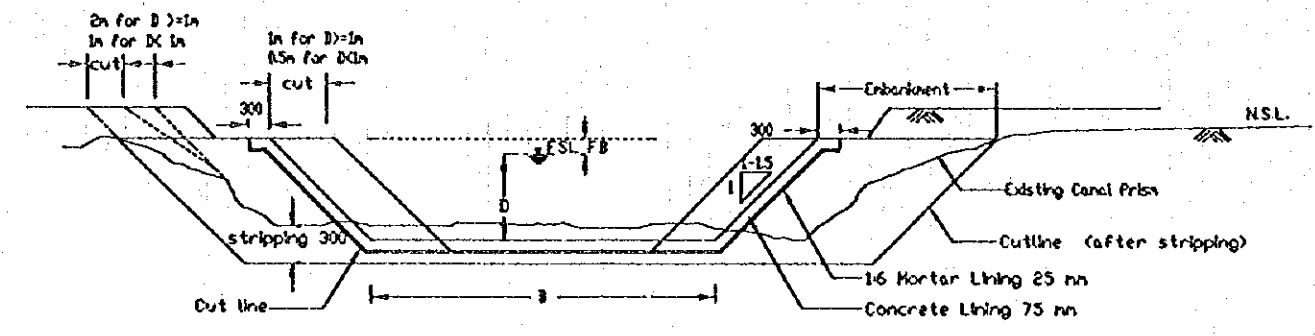
CUT CASE - I (BED EL. LESS THEN N.S.L)



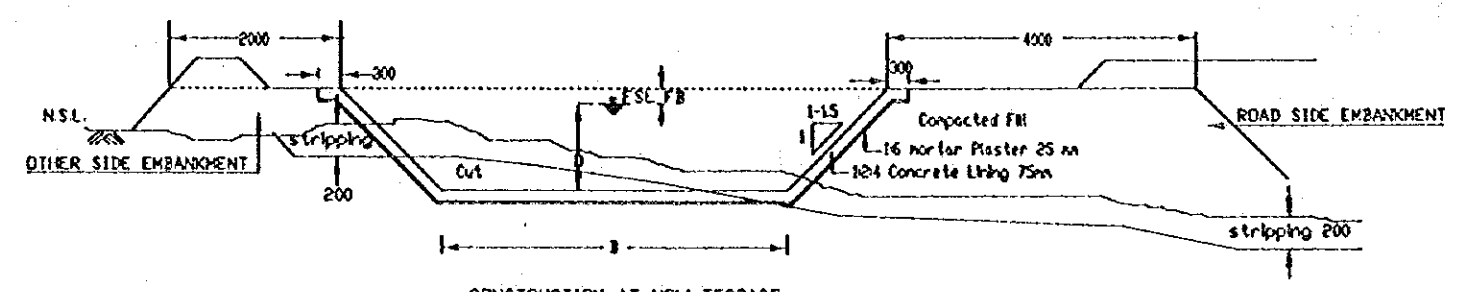
EMBANKMENT CASE - II (BED EL. GREATER THEN N.S.L)

NOTE :
 1 : BANK THICKNESS = a = 1.0m (Q < 50 Cusecs)
 = 1.5m (50 < Q < 150 Cusecs)
 = 2.0m (150 < Q < 300 Cusecs)
 = 2.5m (Q > 300 Cusecs)
 2 : ALL DIMENSIONS IN MM.
 3 : b = 0.5a

TYPICAL CONSTRUCTION DETAILS



CONSTRUCTION AT EXISTING PRISM



CONSTRUCTION AT NEW TERRACE WITHIN RIGHT OF WAY

REVISED DATE	REVISED BY	CHECKED DATE	APPROVED DATE
A			
B			
C			
D			

ISLAMIC REPUBLIC OF PAKISTAN
 GOVERNMENT OF PUNJAB
 THE LINING OF DISTRIBUTARIES AND MINORS IN PUNJAB
 TYPICAL CROSS SECTION
 OF LINED CHANNELS
 JAPAN INTERNATIONAL COOPERATION AGENCY ST-8

JICA