6-4. Soundness of the Bridges

1. Bridge Soundness Sheet

Table-A Bridge Soundness Sheet (Sheet No.)

Bridge No.7

NAME OF BRIDGE : Prek Chik	CLASS OF ROAD	CROSSING: NAME OF (RIVER) OR ROAD	DATE OF INSPECTION : Jan. 31.2000	INSPECTION BY	Y. Takai
Design Information: Yes (No)		Construction By: USA	Date of Construction : 1962-68	Maintenance by	MPWT
Type of Bridge: STA. 11+380	Superstructure: Simple RC-T Girder		Design Loading	Load limitation	(No) Yes
	Substructure: Abutment: Steel Pipe Pile Bent Type		Design Standard	BS (AASHTO) RUSSIA OTHERS( )	
	Pier		Skew of Bridge	(Square) Skew Curve (deg.R=)	
Length of Bridge: 12 m	Span: 1*12.0 m		Condition of Crossing	Road: Width m Clearance m Skew deg.	
Width of Bridge: Overall 11.02 m	Carriage 9.1 m	Pede. 2*0.65 m		(River): Width of River / Depth / Free Board / Design Quantity	
				13.0 m / 7.3 m / 0.7 m	m3/sec
Affixed Articles: Kind / Number					
Traffic Volume: (year)	Ratio of Heavy Vehicle (year)		Others		
Final Record of Repair: (Pavement) / Deck Slab / Main Beam / Painting			(Expansion Joint)	Bearing / Drainage / Railing / Curb / Affixed Articles	

Others : The revetments have already been repaired by the steel sheet piles.

	Component	Conditions Of Damage	Rating
Surface	Pavement (Type : AS)	(Good), Wave , Rut , Crack , Pothole , Others : Crack in the approach road	2
	Curb (Type : RC)	(Good), Scale , Crack , Spall , Rebar-exposed , Others	1
	Railing (Type : RC)	(Good), Scale , Crack , Spall , Rebar-exposed , Others	1
Super-Str	Deck slab (Type : RC)	(Good), Honeycombs , Crack , Deformation , Rebar-exposed , Other	1
	Main Beam (Type : RC)	(Good), Honeycombs , Crack , Deformation , Rebar-exposed , Other	1
	Cross Beam (Type : RC)	(Good), Crack , Deformation , Rebar-exposed , Others	1
	Painting	Condition	
Accessory	Exp.Joint (Type : AS)	(Good), Abnormal Sound , Deformation , Gap , Broken , Others	2
	Shoe (Type)	Good , Abnormal Sound , Deformation , Gap , Broken , Others (None)	
	Drainage (Type : Steel)	(Good), Clogged Leakage, Broken , Others	1

	Component	Conditions of Damage	Rating
Sub-Str.	Abutment (PP side) (Type : Steel Pile)	(Good), Crack , Spall , Deformation , Rebar-exposed , Broken , Settlement , Scouring , Others : The pile diameter is 41.7 cm. The lower parts of piles are corroded.	2
	Abutment (KC side) (Type : Steel Pile)	(Good), Crack , Spall , Deformation , Rebar-exposed , Broken , Settlement , Scouring , Others : The pile diameter is 41.7 cm. The lower parts of piles are corroded.	2
	Pier (Type)	Good , Crack , Spall , Deformation , Rebar-exposed , Broken , Settlement , Scouring , Others	
	Pier (Type)	Good , Crack , Spall , Deformation , Rebar-exposed , Broken , Settlement , Scouring , Others	

Others : The lower parts of steel sheet pile revetments are pushed out. It occurred many cracks to the transverse direction in the pavement on the top of backfill. — 4

Comment

OVERALL EVALUATION RATING

1. No damage detected on the basis of the inspection results.
2. Damage has been detected and a follow-up survey is required.
3. (There is significant damage and a detailed survey needs to be carried out to establish whether repair work is to be carried out or not.
4. There is significant damage and urgent repair is required or the bridge has to be closed to traffic or restriction on vehicle weight to be imposed. (or to be re-constructed new bridge)

Final rating	
Super Structure	1
Sub Structure	3

<Plan / Profile>

1) The superstructure is sound although the concrete is a few deteriorated.
2) The type pf abutment is steel pipe pile bent and the corrosion is in progress on the lower part of steel pipe piles.
3) The abutment beams and revetment steel sheet piles are jointed. It will damage the abutment in case the steel sheet piles move due to embankment sliding.
4) The embankment sliding can be seen to the longitudinal direction. It caused many cracks on the pavement.
5) The steel sheet piles are temporary structure, and the investigation shall be conducted on them in detail.

<Remarks>

PP : Phnom Penh , KC : Kampong Cham
( ) : corresponding item
AS : Asphalt
RC : Reinforced Concrete

Table-A Bridge Soundness Sheet (Sheet No.)

Bridge No.10

NAME OF BRIDGE : Prek Ta Som	CLASS OF ROAD	CROSSING: NAME OF (RIVER) OR ROAD			DATE OF INSPECTION : Jan. 31.2000		INSPECTION BY Y. Takai				
Design Information	Yes (No)	Construction By USA			Date of Construction :		Maintenance by MPWT				
Type of Bridge	Superstructure Simple RC-T Girder			Design Loading			Load limitation (No) Yes				
STA. 15+460	Substructure	Abutment Steel Pipe Pile Bent Type		Design Standard	BS (AASHTO) RUSSIA OTHERS( )						
		Pier		Skew of Bridge	(Square) Skew Curve (deg.R=)						
Length of Bridge	12 m	Span 1*12.0 m		Condition of Crossing	Road	Width m	Clearance m	Skew deg.			
Width of Bridge	Overall 11.00 m	Carriage 9.1 m	Pede. 2*0.65 m		(River)	Width of River	Depth	Free Board	Design Quantity		
Affixed Articles	Kind	Number				10.8 m	4.0 m	0.6 m	m3/sec		
Traffic Volume	(year)	Ratio of Heavy V'icle (year)		Others							
Final Record of Repair	(Pavement)	Deck Slab	Main Beam	Painting	(Expansion Joint)	Bearing	Drainage	Railing	Curb	Affixed Articles	
	Others : The cracks on the revetments due to settlement have already been repaired by mortar.										

	Component	Conditions Of Damage	Rating
Surface	Pavement (Type : AS)	(Good), Wave , Rut , Crack , Pothole , Others :	1
	Curb (Type : RC)	(Good), Scale , Crack , Spall , Rebar-exposed , Others	1
	Railing (Type : RC)	(Good), Scale , Crack , Spall , Rebar-exposed , Others	1
Super-Str	Deck slab (Type : RC)	(Good), Honeycombs , Crack , Deformation , Rebar-exposed , Other	1
	Main Beam (Type : RC)	(Good), Honeycombs , Crack , Deformation , Rebar-exposed , Other	1
	Cross Beam (Type : RC)	(Good), Crack , Deformation , Rebar-exposed , Others	1
	Painting	Condition	
Accessory	Exp.Joint (Type : AS)	Good , Abnormal Sound , Deformation , (Gap) , Broken , Others	2
	Shoe (Type)	Good , Abnormal Sound , Deformation , Gap , Broken , Others (None)	
	Drainage (Type : Steel)	(Good), Clogged Leakage, Broken , Others	1

	Component	Conditions of Damage	Rating
Sub-Str.	Abutment (PP side) (Type : Steel Pile)	(Good), Crack , Spall , Deformation , Rebar-exposed , Broken , Settlement , Scouring , Others :	1
	Abutment (KC side) (Type : Steel Pile)	(Good), Crack , Spall , Deformation , Rebar-exposed , Broken , Settlement , Scouring , Others :	1
	Pier (Type)	Good , Crack , Spall , Deformation , Rebar-exposed , Broken , Settlement , Scouring , Others	
	Pier (Type)	Good , Crack , Spall , Deformation , Rebar-exposed , Broken , Settlement , Scouring , Others	
Others : The revetments are settled on both side, and it causes some crack on the revetments.			2
Comment			

OVERALL EVALUATION RATING

(1.) No damage detected on the basis of the inspection results.
2. Damage has been detected and a follow-up survey is required.
3. There is significant damage and a detailed survey needs to be carried out to establish whether repair work is to be carried out or not.
4. There is significant damage and urgent repair is required or the bridge has to be closed to traffic or restriction on vehicle weight to be imposed. (or to be re-constructed new bridge)

Final rating	
Super Structure	1
Sub Structure	1

<Plan / Profile>

1) The superstructure and substructures are sound although the concrete is a few deteriorated.
2) The revetments around the abutments are settled. It causes some cracks on it. The regular inspection is required.

<Remarks>

PP : Phnom Penh , KC : Kampong Cham
( ) : corresponding item
AS : Asphalt
RC : Reinforced Concrete

Table-A Bridge Soundness Sheet (Sheet No.)

Bridge No.11

NAME OF BRIDGE : Prek Ta Pich	CLASS OF ROAD	CROSSING: NAME OF (RIVER) OR ROAD	DATE OF INSPECTION : Jan. 31.2000	INSPECTION BY Y. Takai	
Design Information Yes (No)		Construction By USA	Date of Construction : 1968-68	Maintenance by MPWT	
Type of Bridge	Superstructure Simple RC-T Girder	Design Loading		Load limitation (No) Yes	
STA. 16+520	Substructure Abutment Steel Pipe Pile Bent Type	Design Standard	BS (AASHTO) RUSSIA OTHERS( )		
	Pier	Skew of Bridge	(Square) Skew Curve (deg.R=)		
Length of Bridge	12 m Span 1*12.0 m	Condition of Crossing	Road Width m Clearance m Skew deg.		
Width of Bridge	Overall 11.00 m Carriage 9.0 m Pede. 2*0.70 m		(River) Width of River / Depth / Free Board / Design Quantity		
Affixed Articles	Kind Number		11.0 m 4.7 m 0.5 m m3/sec		
Traffic Volume	(year) Ratio of Heavy Vehicle (year)	Others			
Final Record of Repair	(Pavement) Deck Slab Main Beam Painting	(Expansion Joint)	Bearing Drainage Railing Curb Affixed Articles		
	Others : The cracks on the revetments due to settlement have already been repaired by mortar.				

	Component	Conditions Of Damage	Rating
Surface	Pavement (Type : AS)	(Good), Wave , Rut , Crack , Pothole , Others :	1
	Curb (Type : RC)	(Good), Scale , Crack , Spall , Rebar-exposed , Others	1
	Railing (Type : RC)	(Good), Scale , Crack , Spall , Rebar-exposed , Others	1
Super-Str	Deck slab (Type : RC)	(Good), Honeycombs , Crack , Deformation , Rebar-exposed , Other	1
	Main Beam (Type : RC)	(Good), Honeycombs , Crack , Deformation , Rebar-exposed , Other	1
	Cross Beam (Type : RC)	(Good), Crack , Deformation , Rebar-exposed , Others	1
	Painting	Condition	
Accessory	Exp.Joint (Type : AS)	(Good), Abnormal Sound , Deformation , Gap , Broken , Others	1
	Shoe (Type)	Good , Abnormal Sound , Deformation , Gap , Broken , Others (None)	
	Drainage (Type : Steel)	(Good), Clogged Leakage, Broken , Others	1

	Component	Conditions of Damage	Rating
Sub-Str.	Abutment (PP side) (Type : Steel Pile)	(Good) , Crack , Spall , Deformation , Rebar-exposed , Broken , Settlement , Scouring , Others :	1
	Abutment (KC side) (Type : Steel Pile)	(Good) , Crack , Spall , Deformation , Rebar-exposed , Broken , Settlement , Scouring , Others :	1
	Pier (Type)	Good , Crack , Spall , Deformation , Rebar-exposed , Broken , Settlement , Scouring , Others	
	Pier (Type)	Good , Crack , Spall , Deformation , Rebar-exposed , Broken , Settlement , Scouring , Others	
Others : The revetments are settled on PP side. It caused some cracks on the revetments (They have already been repaired.)			2
Comment			

OVERALL EVALUATION RATING

(1.) No damage detected on the basis of the inspection results.
2. Damage has been detected and a follow-up survey is required.
3. There is significant damage and a detailed survey needs to be carried out to establish whether repair work is to be carried out or not.
4. There is significant damage and urgent repair is required or the bridge has to be closed to traffic or restriction on vehicle weight to be imposed. (or to be re-constructed new bridge)

Final rating	
Super Structure	1
Sub Structure	1

<Plan / Profile>

1) The superstructure and substructures is sound although the concrete is a few deteriorated.
2) The revetments around the abutments are settled. The cracks caused by the settlement have already repaired. The regular inspection is required.

<Remarks>
PP : Phnom Penh , KC : Kampong Cham
( ) : corresponding item
AS : Asphalt
RC : Reinforced Concrete

Table-A Bridge Soundness Sheet (Sheet No.)

Bridge No.12

NAME OF BRIDGE : Prek Tabenn	CLASS OF ROAD	CROSSING: NAME OF (RIVER) OR ROAD		DATE OF INSPECTION : Jan. 29.2000	INSPECTION BY Y. Takai
Design Information	Yes (No)	Construction By USA		Date of Construction : 1962-68	Maintenance by MPWT
Type of Bridge	Superstructure Simple RC-T Girder		Design Loading		Load limitation (No) Yes
STA. 17+470	Substructure Abutment Steel Pipe Pile Bent Type		Design Standard	BS (AASHTO) RUSSIA OTHERS( )	
	Pier Steel Pipe Pile Bent Type		Skew of Bridge	(Square) Skew Curve (deg.R=)	
Length of Bridge	24 m	Span 2*12.0 m	Condition of Crossing	Road Width m Clearance m Skew deg.	
Width of Bridge	Overall 11.04 m	Carriage 9.1 m Pede. 2*0.67 m		(River) Width of River / Depth / Free Board / Design Quantity	
Affixed Articles	Kind	Number		23.0 m 5.2 m 0.2 m	m3/sec
Traffic Volume	(year)	Ratio of Heavy Vehicle (year)	Others		
Final Record of Repair	(Pavement) Deck Slab Main Beam Painting		(Expansion Joint)	Bearing Drainage Railing Curb Affixed Articles	
	Others :				

	Component	Conditions Of Damage	Rating
Surface	Pavement (Type : AS)	(Good), Wave , Rut , Crack , Pothole , Others : Crack in the approach road	1
	Curb (Type : RC)	(Good), Scale , Crack , Spall , Rebar-exposed , Others	1
	Railing (Type : RC)	(Good), Scale , Crack , Spall , Rebar-exposed , Others	1
Super-Str	Deck slab (Type : RC)	Good , Honeycombs , (Crack) , Deformation , Rebar-exposed , Other	3
	Main Beam (Type : RC)	Good , Honeycombs , (Crack) , Deformation , Rebar-exposed , Other	2
	Cross Beam (Type : RC)	(Good), Crack , Deformation , Rebar-exposed , Others	1
	Painting	Condition	
Accessory	Exp.Joint (Type : AS)	Good , Abnormal Sound , Deformation , (Gap) , (Broken) , Others	3
	Shoe (Type)	Good , Abnormal Sound , Deformation , Gap , Broken , Others (None)	
	Drainage (Type : Steel)	(Good), Clogged Leakage, Broken , Others	1

	Component	Conditions of Damage	Rating
Sub-Str.	Abutment (PP side) (Type : Steel Pile)	(Good), Crack , Spall , Deformation , Rebar-exposed , Broken , Settlement , Scouring , Others :	1
	Abutment (KC side) (Type : Steel Pile)	(Good), Crack , Spall , Deformation , Rebar-exposed , Broken , Settlement , Scouring , Others :	1
	Pier (Type : Steel Pile)	Good , Crack , Spall , Deformation , Rebar-exposed , (Broken) , Settlement , Scouring , Others : The pile diameter is 40.7 cm. The corrosion is in progress.	2
	Pier (Type)	Good , Crack , Spall , Deformation , Rebar-exposed , Broken , Settlement , Scouring , Others	
Others :			1
Comment			

OVERALL EVALUATION RATING

1. No damage detected on the basis of the inspection results.
2. (Damage has been detected and a follow-up survey is required.)
3. There is significant damage and a detailed survey needs to be carried out to establish whether repair work is to be carried out or not.
4. There is significant damage and urgent repair is required or the bridge has to be closed to traffic or restriction on vehicle weight to be imposed. (or to be re-constructed new bridge)

Final rating	
Super Structure	2
Sub Structure	2

<Plan / Profile>

1) The expansion joints should be repaired.
2) There are some cracks on the deck slab and girder ends.
3) The tracking observation and repair investigation are required.

<Remarks>

PP : Phnom Penh , KC : Kampong Cham
( ) : corresponding item
AS : Asphalt
RC : Reinforced Concrete

Table-A Bridge Soundness Sheet (Sheet No.)

Bridge No.13

NAME OF BRIDGE : Prek Thmei	CLASS OF ROAD	CROSSING: NAME OF (RIVER) OR ROAD		DATE OF INSPECTION : Jan. 29.2000	INSPECTION BY Y. Takai
Design Information	Yes (No)	Construction By USA		Date of Construction : 1962-68	Maintenance by MPWT
Type of Bridge	Superstructure Simple RC-T Girder		Design Loading		Load limitation (No) Yes
STA. 18+560	Substructure Abutment Steel Pipe Pile Bent Type		Design Standard	BS (AASHTO) RUSSIA OTHERS( )	
	Pier Steel Pipe Pile Bent Type		Skew of Bridge	(Square) Skew Curve (deg.R=)	
Length of Bridge	24 m	Span 2*12.0 m	Condition of Crossing	Road Width m Clearance m Skew deg.	
Width of Bridge	Overall 11.00 m	Carriage 9.1 m	Pede. 2*0.65 m	(River) Width of River Depth Free Board Design Quantity	
Affixed Articles	Kind	Number		22.5 m 6.0 m 1.2 m	m3/sec
Traffic Volume	(year)	Ratio of Heavy V ; icle (year)	Others		
Final Record of Repair	(Pavement) (Deck Slab) Main Beam Painting		(Expansion Joint)	Bearing Drainage Railing Curb Affixed Articles	
	Others : The revetments have already been repaired.				

	Component	Conditions Of Damage	Rating
Surface	Pavement (Type : AS)	(Good), Wave , Rut , Crack , Pothole , Others : Crack in the approach road	1
	Curb (Type : RC)	(Good), Scale , Crack , Spall , Rebar-exposed , Others	1
	Railing (Type : RC)	(Good), Scale , Crack , Spall , Rebar-exposed , Others	1
Super-Str	Deck slab (Type : RC)	Good , Honeycombs , (Crack) , Deformation , Rebar-exposed , Other	2
	Main Beam (Type : RC)	Good , Honeycombs , (Crack) , Deformation , Rebar-exposed , Other	2
	Cross Beam (Type : RC)	(Good), Crack , Deformation , Rebar-exposed , Others	1
	Painting	Condition	
Accessory	Exp.Joint (Type : AS)	Good , Abnormal Sound , Deformation , (Gap) , Broken , Others	1
	Shoe (Type)	Good , Abnormal Sound , Deformation , Gap , Broken , Others , (None)	
	Drainage (Type : Steel)	(Good), Clogged Leakage, Broken , Others	1

	Component	Conditions of Damage	Rating
Sub-Str.	Abutment (PP side) (Type : Steel Pile)	(Good), Crack , Spall , Deformation , Rebar-exposed , Broken , Settlement , Scouring , Others :	1
	Abutment (KC side) (Type : Steel Pile)	(Good), Crack , Spall , Deformation , Rebar-exposed , Broken , Settlement , Scouring , Others :	1
	Pier (Type : Steel Pile)	Good , Crack , Spall , Deformation , Rebar-exposed , (Broken) , Settlement , Scouring , Others : The pile diameter is 41.4 cm. The corrosion is in progress.	1
	Pier (Type)	Good , Crack , Spall , Deformation , Rebar-exposed , Broken , Settlement , Scouring , Others	
Others : The revetments are settled on KC side. It caused some cracks on the revetments			3
Comment			

OVERALL EVALUATION RATING

1. No damage detected on the basis of the inspection results.
2. (Damage has been detected and a follow-up survey is required.)
3. There is significant damage and a detailed survey needs to be carried out to establish whether repair work is to be carried out or not.
4. There is significant damage and urgent repair is required or the bridge has to be closed to traffic or restriction on vehicle weight to be imposed. (or to be re-constructed new bridge)

Final rating	
Super Structure	1
Sub Structure	1

<Plan / Profile>

1) The superstructures and substructures are sound although the concrete is a few deteriorated.
2) The corrosion on the steel pipe piles is in progress.
3) The revetments are settled, and it causes some cracks on it. The repair is required.
4) The regular inspection is required.

<Remarks>

PP : Phnom Penh , KC : Kampong Cham
( ) : corresponding item
AS : Asphalt
RC : Reinforced Concrete

Table-A Bridge Soundness Sheet (Sheet No.)

Bridge No.17

NAME OF BRIDGE : Prek Hok Leng	CLASS OF ROAD	CROSSING: NAME OF (RIVER) OR ROAD			DATE OF INSPECTION : Jan. 29.2000	INSPECTION BY Y. Takai					
Design Information	Yes (No)	Construction By USA			Date of Construction : 1962-68	Maintenance by MPWT					
Type of Bridge	Superstructure Simple RC-T Girder			Design Loading		Load limitation (No) Yes					
STA. 31+790	Substructure	Abutment Steel Pipe Pile Bent Type		Design Standard	BS (AASHTO) RUSSIA OTHERS( )						
		Pier Steel Pipe Pile Bent Type		Skew of Bridge	(Square) Skew Curve (deg.R=)						
Length of Bridge	36.0 m	Span 3*12.0 m		Condition of Crossing	Road	Width m Clearance m Skew deg.					
Width of Bridge	Overall 11.05 m	Carriage 9.07 m	Pede. 2*0.69 m		(River)	Width of River	Depth	Free Board	Design Quantity		
						35.0 m	6.5 m	0.9 m	m3/sec		
Affixed Articles	Kind	Number									
Traffic Volume	(year)	Ratio of Heavy Vehicle (year)		Others							
Final Record of Repair	(Pavement)	Deck Slab	Main Beam	Painting	(Expansion Joint)	Bearing	Drainage	Railing	Curb	Affixed Articles	
	Others :										

	Component	Conditions Of Damage	Rating
Surface	Pavement (Type : AS)	(Good), Wave , Rut , Crack , Pothole , Others : Crack in the approach road	2
	Curb (Type : RC)	(Good), Scale , Crack , Spall , Rebar-exposed , Others	1
	Railing (Type : RC)	(Good), Scale , Crack , Spall , Rebar-exposed , Others	1
Super-Str	Deck slab (Type : RC)	(Good), Honeycombs , Crack , Deformation , Rebar-exposed , Other	1
	Main Beam (Type : RC)	(Good), Honeycombs , Crack , Deformation , Rebar-exposed , Other	1
	Cross Beam (Type : RC)	(Good), Crack , Deformation , Rebar-exposed , Others	1
	Painting	Condition	
Accessory	Exp.Joint (Type : AS)	Good , Abnormal Sound , Deformation , (Gap) (Broken) , Others	3
	Shoe (Type)	Good , Abnormal Sound , Deformation , Gap , Broken , Others (None)	
	Drainage (Type : Steel)	(Good), Clogged Leakage, Broken , Others	1

	Component	Conditions of Damage	Rating
Sub-Str.	Abutment (PP side) (Type : Steel Pile)	(Good), Crack , Spall , Deformation , Rebar-exposed , Broken , Settlement , Scouring , Others :	1
	Abutment (KC side) (Type : Steel Pile)	Good , Crack , Spall , Deformation , Rebar-exposed , Broken , Settlement , (Scouring) , Others :	2
	Pier (Type : Steel Pile)	Good , Crack , Spall , Deformation , Rebar-exposed , (Broken) , Settlement , Scouring , Others : The lower parts of steel piles are widely corroded.	2
	Pier (Type)	Good , Crack , Spall , Deformation , Rebar-exposed , Broken , Settlement , Scouring , Others	
Others : The revetments are settled on KC side, and it caused many cracks. Some cracks on the revetments on KC side can be seen.			2
Comment			

OVERALL EVALUATION RATING

1. No damage detected on the basis of the inspection results.
2. (Damage has been detected and a follow-up survey is required.)
3. There is significant damage and a detailed survey needs to be carried out to establish whether repair work is to be carried out or not.
4. There is significant damage and urgent repair is required or the bridge has to be closed to traffic or restriction on vehicle weight to be imposed. (or to be re-constructed new bridge)

Final rating	
Super Structure	1
Sub Structure	2

<Plan / Profile>

1) The superstructure is a few deteriorated.
2) The abutments themselves are sound. The revetments are settled due to scouring and many cracks can be seen on it. The early repairment is required.
3) The lower parts of steel pipe piles on the piers are corroded.

<Remarks>

PP : Phnom Penh , KC : Kampong Cham
( ) : corresponding item
AS : Asphalt
RC : Reinforced Concrete

Table-A Bridge Soundness Sheet (Sheet No.)

Bridge No.18

NAME OF BRIDGE : Prek Ta Oun	CLASS OF ROAD	CROSSING: NAME OF (RIVER) OR ROAD		DATE OF INSPECTION : Jan. 29.2000	INSPECTION BY Y. Takai
Design Information	Yes (No)	Construction By USA		Date of Construction : 1962-68	Maintenance by MPWT
Type of Bridge	Superstructure Simple RC-T Girder		Design Loading		Load limitation (No) Yes
STA. 31+940	Substructure	Abutment Steel Pipe Pile Bent Type	Design Standard	BS (AASHTO) RUSSIA OTHERS( )	
		Pier Steel Pipe Pile Bent Type	Skew of Bridge	(Square) Skew Curve (deg.R=)	
Length of Bridge	36.0 m	Span 3*12.0 m	Condition of Crossing	Road	Width m Clearance m Skew deg.
Width of Bridge	Overall 11.00 m	Carriage 9.10 m	Pede. 2*0.65 m	(River)	Width of River 35.0 m Depth 5.0 m Free Board 0.2 m Design Quantity m3/sec
Affixed Articles	Kind	Number			
Traffic Volume	(year)	Ratio of Heavy Vehicle (year)		Others	
Final Record of Repair	(Pavement) Deck Slab	Main Beam	Painting	(Expansion Joint)	Bearing Drainage Railing Curb Affixed Articles
	Others : The cracks on the revetments have already been repaired by mortar.				

	Component	Conditions Of Damage	Rating
Surface	Pavement (Type : AS)	(Good), Wave , Rut , Crack , Pothole , Others : Crack in the approach road	1
	Curb (Type : RC)	(Good), Scale , Crack , Spall , Rebar-exposed , Others	1
	Railing (Type : RC)	(Good), Scale , Crack , Spall , Rebar-exposed , Others	1
Super-Str	Deck slab (Type : RC)	(Good), Honeycombs , Crack , Deformation , Rebar-exposed , Other	1
	Main Beam (Type : RC)	(Good), Honeycombs , Crack , Deformation , Rebar-exposed , Other	1
	Cross Beam (Type : RC)	(Good), Crack , Deformation , Rebar-exposed , Others	1
	Painting	Condition	
Accessory	Exp.Joint (Type : AS)	Good , Abnormal Sound , Deformation , Gap , (Broken) , Others	2
	Shoe (Type)	Good , Abnormal Sound , Deformation , Gap , Broken , Others (None)	
	Drainage (Type : Steel)	(Good), Clogged Leakage, Broken , Others	1

	Component	Conditions of Damage	Rating
Sub-Str.	Abutment (PP side) (Type : Steel Pile)	(Good), Crack , Spall , Deformation , Rebar-exposed , Broken , Settlement , Scouring , Others :	1
	Abutment (KC side) (Type : Steel Pile)	(Good), Crack , Spall , Deformation , Rebar-exposed , Broken , Settlement , Scouring , Others :	1
	Pier (Type : Steel Pile)	(Good), Crack , Spall , Deformation , Rebar-exposed , Broken , Settlement , Scouring , Others : The corrosion on the steel piles are in progress. The pile diameter is 27.7 cm.	2
	Pier (Type)	Good , Crack , Spall , Deformation , Rebar-exposed , Broken , Settlement , Scouring , Others	
Others :			1
Comment			

OVERALL EVALUATION RATING

(1.) No damage detected on the basis of the inspection results.
2. Damage has been detected and a follow-up survey is required.
3. There is significant damage and a detailed survey needs to be carried out to establish whether repair work is to be carried out or not.
4. There is significant damage and urgent repair is required or the bridge has to be closed to traffic or restriction on vehicle weight to be imposed. (or to be re-constructed new bridge)

Final rating	
Super Structure	1
Sub Structure	1

<Plan / Profile>

1) The superstructures and substructures are sound.
2) The revetments are settled. The regular inspection is required.

<Remarks>

PP : Phnom Penh , KC : Kampong Cham
◯ : corresponding item
AS : Asphalt
RC : Reinforced Concrete

Table-A Bridge Soundness Sheet (Sheet No.)

Bridge No.22

NAME OF BRIDGE : Prek Kra Poes	CLASS OF ROAD	CROSSING: NAME OF (RIVER) OR ROAD			DATE OF INSPECTION : Jan. 28.2000		INSPECTION BY Y. Takai		
Design Information	Yes	(No)	Construction By USA		Date of Construction : 1962-68		Maintenance by MPWT		
Type of Bridge	Superstructure Simple RC-T Girder			Design Loading			Load limitation (No)	Yes	
STA. 36+880	Substructure	Abutment Steel Pipe Pile Bent Type		Design Standard	BS (AASHTO)	RUSSIA	OTHERS( )		
		Pier Steel Pipe Pile Bent Type		Skew of Bridge	(Square)	Skew	Curve (deg.R=)		
Length of Bridge	120.0 m	Span 10*12.0 m		Condition of Crossing	Road	Width m	Clearance m	Skew deg.	
Width of Bridge	Overall 11.00 m	Carriage 9.10 m	Pede. 2*0.65 m		(River)	Width of River	Depth	Free Board	Design Quantity
Affixed Articles	Kind	Number				120.0 m	7.5 m	0.3 m	m3/sec
Traffic Volume	(year)	Ratio of Heavy V ; icle (year)		Others					
Final Record of Repair	(Pavement)	Deck Slab	Main Beam	Painting	(Expansion Joint)	Bearing	Drainage	Railing	Curb	Affixed Articles
	Others : Three (3) span superstructures have been replaced. The 7th Pier from PP (P7) has been replaced.								

	Component	Conditions Of Damage	Rating
Surface	Pavement (Type : AS)	(Good), Wave , Rut , Crack , Pothole , Others : Crack in the approach road	1
	Curb (Type : RC)	(Good), Scale , Crack , Spall , Rebar-exposed , Others	1
	Railing (Type : RC)	(Good), Scale , Crack , Spall , Rebar-exposed , Others	1
Super-Str	Deck slab (Type : RC)	(Good), Honeycombs , Crack , Deformation , Rebar-exposed , Other	1
	Main Beam (Type : RC)	(Good), Honeycombs , Crack , Deformation , Rebar-exposed , Other	1
	Cross Beam (Type : RC)	(Good), Crack , Deformation , Rebar-exposed , Others	1
	Painting	Condition	
Accessory	Exp.Joint (Type : AS)	Good , Abnormal Sound , Deformation , Gap (Broken) , Others	2
	Shoe (Type)	Good , Abnormal Sound , Deformation , Gap , Broken , Others (None)	
	Drainage (Type : Steel)	(Good), Clogged Leakage, Broken , Others	1

	Component	Conditions of Damage	Rating
Sub-Str.	Abutment (PP side) (Type : Steel Pile)	(Good), Crack , Spall , Deformation , Rebar-exposed , Broken , Settlement , Scouring , Others :	1
	Abutment (KC side) (Type : Steel Pile)	(Good), Crack , Spall , Deformation , Rebar-exposed , Broken , Settlement , Scouring , Others :	1
	Pier (Type : Steel Pile)	Good , Crack , Spall , Deformation , Rebar-exposed , Broken , Settlement , (Scouring) , Others : The steel piles are widely corroded.	3
	Pier (Type)	Good , Crack , Spall , Deformation , Rebar-exposed , Broken , Settlement , Scouring , Others	
Others : The revetments on both sides are settled. It causes vertical cracks on them. The cracks have been repaired by mortar.			4
Comment			

OVERALL EVALUATION RATING

1. No damage detected on the basis of the inspection results.
2. Damage has been detected and a follow-up survey is required.
3. (There is significant damage and a detailed survey needs to be carried out to establish whether repair work is to be carried out or not.
4. There is significant damage and urgent repair is required or the bridge has to be closed to traffic or restriction on vehicle weight to be imposed. (or to be re-constructed new bridge)

Final rating	
Super Structure	1
Sub Structure	3

<Plan / Profile>

1) The superstructures are sound.
2) The steel pipe piles are heavily corroded.
3) The revetments are settled, and it causes some big cracks on them due to pile bent style abutment in high embankment.
4) The investigation of repair is required.

<Remarks>

PP : Phnom Penh , KC : Kampong Cham
◯ : corresponding item
AS : Asphalt
RC : Reinforced Concrete

Table-A Bridge Soundness Sheet (Sheet No.)

Bridge No.23

NAME OF BRIDGE : Prek Ampong Prasa	CLASS OF ROAD	CROSSING: NAME OF (RIVER) OR ROAD	DATE OF INSPECTION : Jan. 28.2000	INSPECTION BY	Y. Takai
Design Information: Yes (No)		Construction By: USA	Date of Construction : 1962-68	Maintenance by	MPWT
Type of Bridge: STA. 37+600	Superstructure: Simple RC-T Girder		Design Loading	Load limitation	(No) Yes
	Substructure: Abutment : Reversed T Type (steel pipe pile)		Design Standard	BS (AASHTO) RUSSIA OTHERS( )	
	Pier : Wall Type (steel pipe pile)		Skew of Bridge	(Square) Skew	Curve (deg.R=)
Length of Bridge: 60.0 m	Span: 3*20.0 m		Condition of Crossing	Road	Width m Clearance m Skew deg.
Width of Bridge	Overall: 11.45 m	Carriage: 9.05 m Pede.: 2*0.90 m		(River)	Width of River / Depth / Free Board / Design Quantity
Affixed Articles	Kind / Number				59.0 m / 12.5 m / 1.5 m / m3/sec
Traffic Volume	(year)	Ratio of Heavy Vehicle (year)	Others		
Final Record of Repair	(Pavement)	Deck Slab / Main Beam / Painting	Expansion Joint	Bearing / Drainage / Railing / Curb / Affixed Articles	
	Others : The revetments on both sides have been repaired.				

	Component	Conditions Of Damage	Rating
Surface	Pavement (Type : AS)	(Good), Wave , Rut , Crack , Pothole , Others : Crack in the approach road	1
	Curb (Type : RC)	(Good), Scale , Crack , Spall , Rebar-exposed , Others	1
	Railing (Type : RC)	(Good), Scale , Crack , Spall , Rebar-exposed , Others	1
Super-Str	Deck slab (Type : RC)	(Good), Honeycombs , Crack , Deformation , Rebar-exposed , Other	1
	Main Beam (Type : RC)	(Good), Honeycombs , Crack , Deformation , Rebar-exposed , Other	1
	Cross Beam (Type : RC)	(Good), Crack , Deformation , Rebar-exposed , Others	1
	Painting	Condition	
Accessory	Exp.Joint (Type : AS)	Good , Abnormal Sound , Deformation , Gap , (Broken) , Others	1
	Shoe (Type)	Good , Abnormal Sound , Deformation , Gap , Broken , Others (None)	
	Drainage (Type : Steel)	(Good), Clogged Leakage, Broken , Others	1

	Component	Conditions of Damage	Rating
Sub-Str.	Abutment (PP side) (Type : Reversed T)	(Good), Crack , Spall , Deformation , Rebar-exposed , Broken , Settlement , Scouring , Others :	1
	Abutment (KC side) (Type : Reversed T)	(Good), Crack , Spall , Deformation , Rebar-exposed , Broken , Settlement , Scouring , Others :	1
	Pier (Type : Wall Type)	(Good) Crack , Spall , Deformation , Rebar-exposed , Broken , Settlement , Scouring , Others : The steel piles are widely corroded.	3
	Pier (Type)	Good , Crack , Spall , Deformation , Rebar-exposed , Broken , Settlement , Scouring , Others	
Others : The revetments on both sides are settled. It causes vertical cracks on them. The cracks have been repaired by mortar.			1
Comment			

OVERALL EVALUATION RATING

1. (No damage detected on the basis of the inspection results.)
2. Damage has been detected and a follow-up survey is required.
3. There is significant damage and a detailed survey needs to be carried out to establish whether repair work is to be carried out or not.
4. There is significant damage and urgent repair is required or the bridge has to be closed to traffic or restriction on vehicle weight to be imposed. (or to be re-constructed new bridge)

Final rating	
Super Structure	1
Sub Structure	1

<Plan / Profile>

1) The superstructure and substructures are sound.
2) The revetments have been repaired and reinforced.

<Remarks>

PP : Phnom Penh , KC : Kampong Cham
( ) : corresponding item
AS : Asphalt
RC : Reinforced Concrete

Table-A Bridge Soundness Sheet (Sheet No.)

Bridge No.24

NAME OF BRIDGE : Prek Ampong Prah 1	CLASS OF ROAD	CROSSING: NAME OF (RIVER) OR ROAD			DATE OF INSPECTION : Jan. 27.2000		INSPECTION BY Y. Takai			
Design Information	Yes (No)	Construction By USA			Date of Construction : 1962-68		Maintenance by MPWT			
Type of Bridge	Superstructure Simple RC-T Girder			Design Loading			Load limitation (No) Yes			
STA. 39+890	Substructure Abutment Steel Pipe Pile Bent Type			Design Standard	BS (AASHTO) RUSSIA OTHERS( )					
	Pier Steel Pipe Pile Bent Type			Skew of Bridge	(Square) Skew Curve (deg.R=)					
Length of Bridge	84.0 m	Span 7*12.0 m		Condition of Crossing	Road	Width m	Clearance m	Skew deg.		
Width of Bridge	Overall 11.00 m	Carriage 9.00 m	Pede. 2*0.67 m		(River)	Width of River 82.6 m	Depth 11.0 m	Free Board 0.5 m	Design Quantity m3/sec	
Affixed Articles	Kind	Number								
Traffic Volume	(year)	Ratio of Heavy Vehicle (year)		Others						
Final Record of Repair	(Pavement)	(Deck Slab)	(Main Beam)	Painting	(Expansion Joint)	(Bearing)	(Drainage)	(Railing)	(Curb)	Affixed Articles
	Others : The first span girder, abutments and revetments on KC side have been replaced.									

	Component	Conditions Of Damage	Rating
Surface	Pavement (Type : AS)	(Good), Wave , Rut , Crack , Pothole , Others : Crack in the approach road	1
	Curb (Type : RC)	(Good), Scale , Crack , Spall , Rebar-exposed , Others	1
	Railing (Type : RC)	(Good), Scale , Crack , Spall , Rebar-exposed , Others	1
Super-Str	Deck slab (Type : RC)	(Good), Honeycombs , Crack , Deformation , Rebar-exposed , Other	1
	Main Beam (Type : RC)	(Good), Honeycombs , Crack , Deformation , Rebar-exposed , Other	1
	Cross Beam (Type : RC)	(Good), Crack , Deformation , Rebar-exposed , Others	1
	Painting	Condition	
Accessory	Exp.Joint (Type : AS)	Good , Abnormal Sound , Deformation , Gap , (Broken) , Others	2
	Shoe (Type)	Good , Abnormal Sound , Deformation , Gap , Broken , Others , (None)	
	Drainage (Type : Steel)	(Good), Clogged Leakage, Broken , Others	1

	Component	Conditions of Damage	Rating
Sub-Str.	Abutment (PP side) (Type : Steel Pile)	(Good), Crack , Spall , Deformation , Rebar-exposed , Broken , Settlement , Scouring , Others :	1
	Abutment (KC side) (Type : Steel Pile)	(Good), Crack , Spall , Deformation , Rebar-exposed , Broken , Settlement , Scouring , Others :	1
	Pier (Type : Beam)	Good , (Crack) , Spall , Deformation , Rebar-exposed , Broken , Settlement , Scouring , Others :	3
	Pier (Type : Steel Pile)	Good , Crack , Spall , Deformation , Rebar-exposed , Broken , Settlement , Scouring , Others : The lower parts of steel pipe piles are heavilly corroded. ϕ= 33.7 cm.	4
Others : The revetment on PP side is settled. It causes horizontal cracks on it. The revetment on KC side is settled and the gap has been repaired.			3
Comment			

OVERALL EVALUATION RATING

1. No damage detected on the basis of the inspection results.
2. Damage has been detected and a follow-up survey is required.
3. There is significant damage and a detailed survey needs to be carried out to establish whether repair work is to be carried out or not.
4. (There is significant damage and urgent repair is required or the bridge has to be closed to traffic or restriction on vehicle weight to be imposed. (or to be re-constructed new bridge)

Final rating	
Super Structure	1
Sub Structure	4

<Plan / Profile>

1) The superstructures are sound.
2) The lower parts of steel pipe piles are heavily corroded (1 to 3mm). Some piles have been damaged by woods or stones.
3) Some intermediate beams of piles are deteriorated and are going to fall down. Others are damaged and runoffed, and it causes buckling and structural unstability on the steel pipe piles. Some piles are not set in the center of piers.
4) The pipe bent type abutment in high embankment causes settlement and land sliding to the longitudinal direction. (The pavement has been repaired)
5) Overall substructures and foundations are damaged and deteriorated. This bridge is unstable, and should be reinforced or replaced soon.

<Remarks>
PP : Phnom Penh , KC : Kampong Cham
( ) : corresponding item
AS : Asphalt
RC : Reinforced Concrete

Table-A Bridge Soundness Sheet (Sheet No.)

Bridge No.25

NAME OF BRIDGE : Prek Ampong Prah 2	CLASS OF ROAD	CROSSING: NAME OF (RIVER) OR ROAD			DATE OF INSPECTION : Jan. 26.2000		INSPECTION BY Y. Takai				
Design Information	Yes (No)	Construction By USA			Date of Construction : 1962-68		Maintenance by MPWT				
Type of Bridge	Superstructure Simple RC-T Girder			Design Loading			Load limitation (No) Yes				
STA. 40+520	Substructure	Abutment Steel Pipe Pile Bent Type		Design Standard	BS (AASHTO) RUSSIA OTHERS( )						
		Pier		Skew of Bridge	(Square) Skew Curve (deg.R=)						
Length of Bridge	12.0 m	Span 1*12.0 m		Condition of Crossing	Road	Width m	Clearance m	Skew deg.			
Width of Bridge	Overall 11.00 m	Carriage 9.00 m	Pede. 2*0.65 m		(River)	Width of River	Depth	Free Board	Design Quantity		
Affixed Articles	Kind	Number				10.5 m	5.3 m	0.0 m	m3/sec		
Traffic Volume	(year)	Ratio of Heavy V'icle (year)		Others							
Final Record of Repair	(Pavement) (Deck Slab)	Main Beam	Painting	(Expansion Joint)	Bearing	Drainage	Railing	Curb	Affixed Articles		
	Others : The embankment and pavement on the approach road have been repaired. The gabions have been placed in the area of 30m from the bridge to the upstream on the riverbed.										

	Component	Conditions Of Damage	Rating
Surface	Pavement (Type : AS)	Good , (Wave) , Rut , Crack , Pothole , Others : Crack in the approach road	2
	Curb (Type : RC)	(Good) , Scale , Crack , Spall , Rebar-exposed , Others	1
	Railing (Type : RC)	(Good) , Scale , Crack , Spall , Rebar-exposed , Others	1
Super-Str	Deck slab (Type : RC)	(Good) , Honeycombs , Crack , Deformation , Rebar-exposed , Other : The 4.0 m^2 in the center of span has been repaired.	2
	Main Beam (Type : RC)	(Good) , Honeycombs , Crack , Deformation , Rebar-exposed , Other	1
	Cross Beam (Type : RC)	(Good) , Crack , Deformation , Rebar-exposed , Others	1
	Painting	Condition	
Accessory	Exp.Joint (Type : AS)	Good , (Abnormal Sound) , Deformation , Gap , (Broken) , Others	3
	Shoe (Type)	Good , Abnormal Sound , Deformation , Gap , Broken , Others , (None)	
	Drainage (Type : Steel)	(Good) , Clogged Leakage, Broken , Others	1

	Component	Conditions of Damage	Rating
Sub-Str.	Abutment (PP side) (Type : Steel Pile)	(Good) , Crack , Spall , Deformation , Rebar-exposed , Broken , Settlement , Scouring , Others :	1
	Abutment (KC side) (Type : Steel Pile)	(Good) , Crack , Spall , Deformation , Rebar-exposed , Broken , Settlement , Scouring , Others :	1
	Pier (Type :)	Good , Crack , Spall , Deformation , Rebar-exposed , Broken , Settlement , Scouring , Others :	
	Pier (Type :)	Good , Crack , Spall , Deformation , Rebar-exposed , Broken , Settlement , Scouring , Others :	
Others : The revetments around the abutments are settled, it causes some cracks on them. These cracks have been repaired by mortar.			3
Comment			

OVERALL EVALUATION RATING

1. No damage detected on the basis of the inspection results.
2. Damage has been detected and a follow-up survey is required.
3. (There is significant damage and a detailed survey needs to be carried out to establish whether repair work is to be carried out or not.
4. There is significant damage and urgent repair is required or the bridge has to be closed to traffic or restriction on vehicle weight to be imposed. (or to be re-constructed new bridge)

Final rating	
Super Structure	2
Sub Structure	2

<Plan / Profile>

1) The superstructure and substructures are sound although they are a few deteriorated.
2) The expansion joints are damaged, and it caused abnormal sound by the vehicles.
3) The revetments around the abutments are scoured and settled. It causes some cracks but they have been repaired by mortar.
4) The gabions are placed on the riverbed.

<Remarks>

PP : Phnom Penh , KC : Kampong Cham
( ) : corresponding item
AS : Asphalt
RC : Reinforced Concrete

Table-A Bridge Soundness Sheet (Sheet No.)

Bridge No.26

NAME OF BRIDGE : Prek Ampong Prah 3	CLASS OF ROAD	CROSSING: NAME OF (RIVER) OR ROAD			DATE OF INSPECTION : Jan. 26.2000		INSPECTION BY Y. Takai				
Design Information	Yes	(No)	Construction By USA		Date of Construction : 1962-68		Maintenance by MPWT				
Type of Bridge	Superstructure	Simple RC-T Girder		Design Loading			Load limitation	(No)	Yes		
STA. 41+210	Substructure	Abutment	Steel Pipe Pile Bent Type	Design Standard	BS (AASHTO) RUSSIA OTHERS( )						
		Pier	Steel Pipe Pile Bent Type	Skew of Bridge	(Square) Skew Curve (deg.R=)						
Length of Bridge	36.0 m	Span	3*12.0 m	Condition of Crossing	Road	Width m	Clearance m	Skew deg.			
Width of Bridge	Overall 11.00 m	Carriage 9.00 m	Pede. 2*0.65 m		(River)	Width of River	Depth	Free Board	Design Quantity		
Affixed Articles	Kind	Number				56.0 m	11.4 m	0.0 m	m3/sec		
Traffic Volume	(year)	Ratio of Heavy V ; icle (year)		Others							
Final Record of Repair	Pavement	Deck Slab	Main Beam	Painting	Expansion Joint	Bearing	Drainage	Railing	Curb	Affixed Articles	
	Others : The revetments around the abutments have been reinforced by the steel sheet piles in 1994. The supoerstructures and substructures were damaged and runoffed in 1996.										

	Component	Conditions Of Damage	Rating
Surface	Pavement (Type)	Good , Wave , Rut , Crack , Pothole , Others : Crack in the approach road	
	Curb (Type)	Good , Scale , Crack , Spall , Rebar-exposed , Others	
	Railing (Type)	Good , Scale , Crack , Spall , Rebar-exposed , Others	
Super-Str	Deck slab (Type	Good , Honeycombs , Crack , Deformation , Rebar-exposed , Other : The 4.0 m^2 in the center of span has been repaired.	
	Main Beam (Type)	Good , Honeycombs , Crack , Deformation , Rebar-exposed , Other	
	Cross Beam (Type)	Good , Crack , Deformation , Rebar-exposed , Others	
	Painting	Condition	
Accessory	Exp.Joint (Type)	Good , Abnormal Sound , Deformation , Gap , Broken , Others	
	Shoe (Type)	Good , Abnormal Sound , Deformation , Gap , Broken , Others None	
	Drainage (Type)	Good , Clogged Leakage, Broken , Others	

	Component	Conditions of Damage	Rating
Sub-Str.	Abutment (PP side) (Type :)	Good , Crack , Spall , Deformation , Rebar-exposed , Broken , Settlement , Scouring , Others :	
	Abutment (KC side) (Type :)	Good , Crack , Spall , Deformation , Rebar-exposed , Broken , Settlement , Scouring , Others :	
	Pier (Type :)	Good , Crack , Spall , Deformation , Rebar-exposed , Broken , Settlement , Scouring , Others :	
	Pier (Type :)	Good , Crack , Spall , Deformation , Rebar-exposed , Broken , Settlement , Scouring , Others :	
Others :			
Comment			

OVERALL EVALUATION RATING

1. No damage detected on the basis of the inspection results.
2. Damage has been detected and a follow-up survey is required.
3. There is significant damage and a detailed survey needs to be carried out to establish whether repair work is to be carried out or not.
4. (4.) There is significant damage and urgent repair is required or the bridge has to be closed to traffic or restriction on vehicle weight to be imposed. (or to be re-constructed new bridge)

Final rating	
Super Structure	
Sub Structure	

<Plan / Profile>

1) The riverbed was scoured and the embankments on the backside of abutments were runoffed due to the flood damage in 1991.
2) The revetments were reinforced by the steel sheet piles as emergency repair in 1994.
3) The riverbed was heavily scoured and the embankments on the backside of abutments were runoffed again due to the big flood in 1996.
4) The piers are settled down 30cm together with the superstructure. It causes impossibility of vehicle pass. The superstructures have been removed and some structures remain in the site.

<Remarks>

PP : Phnom Penh , KC : Kampong Cham
◯ : corresponding item
AS : Asphalt
RC : Reinforced Concrete

2. Ration of Overall Evaluation for each Bridge

Table-A' Rating Method of Overall Evaluation for the Bridge (Sheet No.)

Evaluation Item			Rating Point (E.P.)	Bridge (E.P.)	Weight Factor(W/F)	Point (E.P.)*(W/F)
Durability	Degree of superstructure damage and defect		good to bad 1 2 3 4		0.4	
	Degree of substructure damage and defect		good to bad 1 2 3 4		0.6	
Load Capacity	Low traffic volume (heavy vehicle with axle load less than 8 ton)		1		0.2	
	High traffic volume (heavy vehicle with axle load greater than 8 ton)		3		0.2	
Function	Constructed record	Constructed after 1980 (use less than 20 years)	1		0.1	
		Constructed before 1980 (use more than 20 years)	3		0.1	
	Effective width and Flood flow	Sufficient width for traffic capacity and flood flow	1		0.2	
		Insufficient width for traffic capacity and flood flow	3		0.2	
Overall evaluation for bridge (Range of point)		D: Sound	1.5~2.5		Min. 1.5	D
		C: Fairly sound	2.5~3.5			C
		B: Unsound / Lack of safety	3.5~4.25			B
		A: Danger	4.25~5.5		Max. 5.5	A

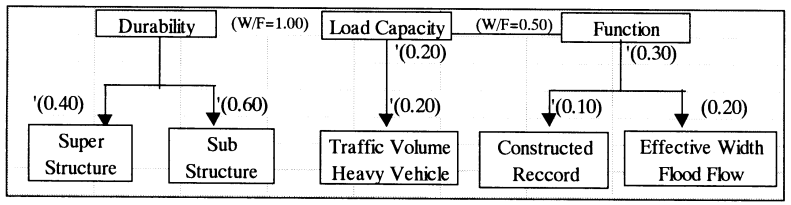


Figure Weight Factors (W/F) for Evaluation Items

Table 2.3.37 Rating Method of Bridge Conditions

Bridge Conditions	Rating	Evaluation
Survey results showed no damages and defects. And, bridge has functional stability.	1	D
Damage has been detected and a follow-up survey is required. And, bridge has functional stability at present.	2	C
There are significant damages / defectes. Therefore, a detailed survey is needed and the necessity of repair work including function of bridge should be considered.	3	B
There are significant damages / defectes, and no function. Therefore, urgent repair is required. The bridgehas to beclosed for traffic or restriction on vehicle weight to be imposed. (or re-construction of bridge)	4	A

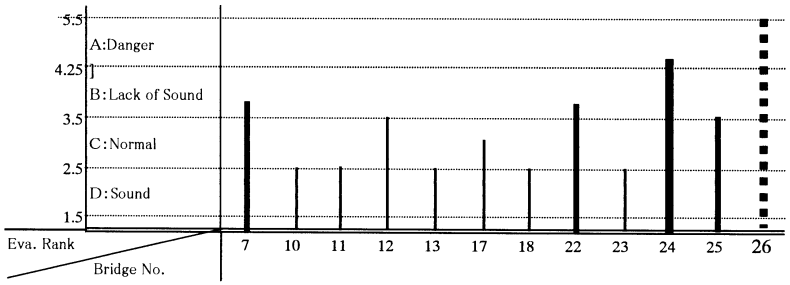


Fig. Overall Evaluation Graph of Soundness for Requested Bridges

Table. Overall Evaluation Point of Bridge Soundness Survey

Eva. Item		Bridge No. 7	10	11	12	13	17	18	22	23	24	25	26
Durability	Super Str.Damage	0.4	0.4	0.4	0.8	0.4	0.4	0.4	0.4	0.4	0.4	0.8	
	Sub Str.Damage	1.8	0.6	0.6	1.2	0.6	1.2	0.6	1.8	0.6	2.4	1.2	
Loading	Heavy Traffic	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	
Function	Constructed Year	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	0.3	
	Width,Flood	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	0.6	
Rate Result	D:1.5~2.5		2.5	2.5		2.5		2.5					
	C:2.5~3.5				3.5		3.1			2.5			
	B:3.5~4.25	3.7							3.7			3.5	
	A:4.25~5.5										4.3		5.5
Overall Evaluation		B	D	D	C	D	C	D	B	D	A	B	A

Table-A Rating of Overall Evaluation for the Bridge (Bridge No. 7)

Evaluation Item			Rating Point (E.P.)	Bridge (E.P.)	Weight Factor(W/F)	Point (E.P.)*(W/F)
Durability	Degree of superstructure damage and defect		good to bad 1 2 3 4	1	0.4	0.4
	Degree of substructure damage and defect		good to bad 1 2 3 4	3	0.6	1.8
Load Capacity	Low traffic volume (heavy vehicle with axle load less than 7 ton)		1		0.2	
	High traffic volume (heavy vehicle with axle load greater than 7 ton)		3	3	0.2	0.6
Function	Constructed record	Constructed after 1980 (use less than 20 years)	1		0.1	
		Constructed before 1980 (use more than 20 years)	3	3	0.1	0.3
	Effective width of bridge	Sufficient width for traffic capacity	1		0.2	
		Insufficient width for traffic capacity	3	3	0.2	0.6
Overall evaluation for bridge (Range of point)		D: Sound	1.5~2.5		Min. 1.5	D
		C: Fairly sound	2.5~3.5			C
		B: Unsound / Lack of safety	3.5~4.25	B		B : 3.7
		A: Danger	4.25~5.5		Max. 5.5	A

Table-A Rating of Overall Evaluation for the Bridge (Bridge No. 10)

Evaluation Item			Rating Point (E.P.)	Bridge (E.P.)	Weight Factor(W/F)	Point (E.P.)*(W/F)
Durability	Degree of superstructure damage and defect		good to bad 1 2 3 4	1	0.4	0.4
	Degree of substructure damage and defect		good to bad 1 2 3 4	1	0.6	0.6
Load Capacity	Low traffic volume (heavy vehicle with axle load less than 7 ton)		1		0.2	
	High traffic volume (heavy vehicle with axle load greater than 7 ton)		3	3	0.2	0.6
Function	Constructed record	Constructed after 1980 (use less than 20 years)	1		0.1	
		Constructed before 1980 (use more than 20 years)	3	3	0.1	0.3
	Effective width of bridge	Sufficient width for traffic capacity	1		0.2	
		Insufficient width for traffic capacity	3	3	0.2	0.6
Overall evaluation for bridge (Range of point)		D: Sound	1.5~2.5	D	Min. 1.5	D : 2.5
		C: Fairly sound	2.5~3.5			C
		B: Unsound / Lack of safety	3.5~4.25			B
		A: Danger	4.25~5.5		Max. 5.5	A

Table-A Rating of Overall Evaluation for the Bridge (Bridge No. 11)

Evaluation Item			Rating Point (E.P.)	Bridge (E.P.)	Weight Factor(W/F)	Point (E.P.)*(W/F)
Durability	Degree of superstructure damage and defect		good to bad 1 2 3 4	1	0.4	0.4
	Degree of substructure damage and defect		good to bad 1 2 3 4	1	0.6	0.6
Load Capacity	Low traffic volume (heavy vehicle with axle load less than 7 ton)		1		0.2	
	High traffic volume (heavy vehicle with axle load greater than 7 ton)		3	3	0.2	0.6
Function	Constructed record	Constructed after 1980 (use less than 20 years)	1		0.1	
		Constructed before 1980 (use more than 20 years)	3	3	0.1	0.3
	Effective width of bridge	Sufficient width for traffic capacity	1		0.2	
		Insufficient width for traffic capacity	3	3	0.2	0.6
Overall evaluation for bridge (Range of point)		D: Sound	1.5~2.5	D	Min. 1.5	D : 2.5
		C: Fairly sound	2.5~3.5			C
		B: Unsound / Lack of safety	3.5~4.25			B
		A: Danger	4.25~5.5		Max. 5.5	A

Table-A Rating of Overall Evaluation for the Bridge (Bridge No. 12)

Evaluation Item			Rating Point (E.P.)	Bridge (E.P.)	Weight Factor(W/F)	Point (E.P.)*(W/F)
Durability	Degree of superstructure damage and defect		good to bad 1 2 3 4	2	0.4	0.8
	Degree of substructure damage and defect		good to bad 1 2 3 4	2	0.6	1.2
Load Capacity	Low traffic volume (heavy vehicle with axle load less than 7 ton)		1		0.2	
	High traffic volume (heavy vehicle with axle load greater than 7 ton)		3	3	0.2	0.6
Function	Constructed record	Constructed after 1980 (use less than 20 years)	1		0.1	
		Constructed before 1980 (use more than 20 years)	3	3	0.1	0.3
	Effective width of bridge	Sufficient width for traffic capacity	1		0.2	
		Insufficient width for traffic capacity	3	3	0.2	0.6
Overall evaluation for bridge (Range of point)		D: Sound	1.5~2.5	C	Min. 1.5	D
		C: Fairly sound	2.5~3.5			C : 3.5
		B: Unsound / Lack of safety	3.5~4.25			B
		A: Danger	4.25~5.5		Max. 5.5	A

Table-A Rating of Overall Evaluation for the Bridge (Bridge No. 13)

Evaluation Item			Rating Point (E.P.)	Bridge (E.P.)	Weight Factor(W/F)	Point (E.P.)*(W/F)
Durability	Degree of superstructure damage and defect		good to bad 1 2 3 4	1	0.4	0.4
	Degree of substructure damage and defect		good to bad 1 2 3 4	1	0.6	0.6
Load Capacity	Low traffic volume (heavy vehicle with axle load less than 7 ton)		1		0.2	
	High traffic volume (heavy vehicle with axle load greater than 7 ton)		3	3	0.2	0.6
Function	Constructed record	Constructed after 1980 (use less than 20 years)	1		0.1	
		Constructed before 1980 (use more than 20 years)	3	3	0.1	0.3
	Effective width of bridge	Sufficient width for traffic capacity	1		0.2	
		Insufficient width for traffic capacity	3	3	0.2	0.6
Overall evaluation for bridge (Range of point)		D: Sound	1.5~2.5	D	Min. 1.5	D : 2.5
		C: Fairly sound	2.5~3.5			C
		B: Unsound / Lack of safety	3.5~4.25			B
		A: Danger	4.25~5.5		Max. 5.5	A

Table-A Rating of Overall Evaluation for the Bridge (Bridge No. 18)

Evaluation Item			Rating Point (E.P.)	Bridge (E.P.)	Weight Factor(W/F)	Point (E.P.)*(W/F)
Durability	Degree of superstructure damage and defect		good to bad 1 2 3 4	1	0.4	0.4
	Degree of substructure damage and defect		good to bad 1 2 3 4	1	0.6	0.6
Load Capacity	Low traffic volume (heavy vehicle with axle load less than 7 ton)		1		0.2	
	High traffic volume (heavy vehicle with axle load greater than 7 ton)		3	3	0.2	0.6
Function	Constructed record	Constructed after 1980 (use less than 20 years)	1		0.1	
		Constructed before 1980 (use more than 20 years)	3	3	0.1	0.3
	Effective width of bridge	Sufficient width for traffic capacity	1		0.2	
		Insufficient width for traffic capacity	3	3	0.2	0.6
Overall evaluation for bridge (Range of point)		D: Sound	1.5~2.5	D	Min. 1.5	D : 2.5
		C: Fairly sound	2.5~3.5			C
		B: Unsound / Lack of safety	3.5~4.25			B
		A: Danger	4.25~5.5		Max. 5.5	A

Table-A Rating of Overall Evaluation for the Bridge (Bridge No. 17)

Evaluation Item			Rating Point (E.P.)	Bridge (E.P.)	Weight Factor(W/F)	Point (E.P.)*(W/F)
Durability	Degree of superstructure damage and defect		good to bad 1 2 3 4	1	0.4	0.4
	Degree of substructure damage and defect		good to bad 1 2 3 4	2	0.6	1.2
Load Capacity	Low traffic volume (heavy vehicle with axle load less than 7 ton)		1		0.2	
	High traffic volume (heavy vehicle with axle load greater than 7 ton)		3	3	0.2	0.6
Function	Constructed record	Constructed after 1980 (use less than 20 years)	1		0.1	
		Constructed before 1980 (use more than 20 years)	3	3	0.1	0.3
	Effective width of bridge	Sufficient width for traffic capacity	1		0.2	
		Insufficient width for traffic capacity	3	3	0.2	0.6
Overall evaluation for bridge (Range of point)		D: Sound	1.5~2.5	C	Min. 1.5	D
		C: Fairly sound	2.5~3.5			C : 3.1
		B: Unsound / Lack of safety	3.5~4.25			B
		A: Danger	4.25~5.5		Max. 5.5	A

Table-A Rating of Overall Evaluation for the Bridge (Bridge No. 22)

Evaluation Item			Rating Point (E.P.)	Bridge (E.P.)	Weight Factor(W/F)	Point (E.P.)*(W/F)
Durability	Degree of superstructure damage and defect		good to bad 1 2 3 4	1	0.4	0.4
	Degree of substructure damage and defect		good to bad 1 2 3 4	3	0.6	1.8
Load Capacity	Low traffic volume (heavy vehicle with axle load less than 7 ton)		1		0.2	
	High traffic volume (heavy vehicle with axle load greater than 7 ton)		3	3	0.2	0.6
Function	Constructed record	Constructed after 1980 (use less than 20 years)	1		0.1	
		Constructed before 1980 (use more than 20 years)	3	3	0.1	0.3
	Effective width of bridge	Sufficient width for traffic capacity	1		0.2	
		Insufficient width for traffic capacity	3	3	0.2	0.6
Overall evaluation for bridge (Range of point)		D: Sound	1.5~2.5	B	Min. 1.5	D
		C: Fairly sound	2.5~3.5			C
		B: Unsound / Lack of safety	3.5~4.25			B : 3.7
		A: Danger	4.25~5.5		Max. 5.5	A

Table-A Rating of Overall Evaluation for the Bridge (Bridge No. 23)

Evaluation Item			Rating Point (E.P.)	Bridge (E.P.)	Weight Factor(W/F)	Point (E.P.)*(W/F)
Durability	Degree of superstructure damage and defect		good to bad 1 2 3 4	1	0.4	0.4
	Degree of substructure damage and defect		good to bad 1 2 3 4	1	0.6	0.6
Load Capacity	Low traffic volume (heavy vehicle with axle load less than 7 ton)		1		0.2	
	High traffic volume (heavy vehicle with axle load greater than 7 ton)		3	3	0.2	0.6
Function	Constructed record	Constructed after 1980 (use less than 20 years)	1		0.1	
		Constructed before 1980 (use more than 20 years)	3	3	0.1	0.3
	Effective width of bridge	Sufficient width for traffic capacity	1		0.2	
		Insufficient width for traffic capacity	3	3	0.2	0.6
Overall evaluation for bridge (Range of point)		D: Sound	1.5~2.5	D	Min. 1.5	D : 2.5
		C: Fairly sound	2.5~3.5			C
		B: Unsound / Lack of safety	3.5~4.25			B
		A: Danger	4.25~5.5		Max. 5.5	A

Table-A Rating of Overall Evaluation for the Bridge (Bridge No. 24)

Evaluation Item			Rating Point (E.P.)	Bridge (E.P.)	Weight Factor(W/F)	Point (E.P.)*(W/F)
Durability	Degree of superstructure damage and defect		good to bad 1 2 3 4	1	0.4	0.4
	Degree of substructure damage and defect		good to bad 1 2 3 4	4	0.6	2.4
Load Capacity	Low traffic volume (heavy vehicle with axle load less than 7 ton)		1		0.2	
	High traffic volume (heavy vehicle with axle load greater than 7 ton)		3	3	0.2	0.6
Function	Constructed record	Constructed after 1980 (use less than 20 years)	1		0.1	
		Constructed before 1980 (use more than 20 years)	3	3	0.1	0.3
	Effective width of bridge	Sufficient width for traffic capacity	1		0.2	
		Insufficient width for traffic capacity	3	3	0.2	0.6
Overall evaluation for bridge (Range of point)		D: Sound	1.5~2.5		Min. 1.5	D
		C: Fairly sound	2.5~3.5			C
		B: Unsound / Lack of safety	3.5~4.25			B
		A: Danger	4.25~5.5	A	Max. 5.5	A : 4.3

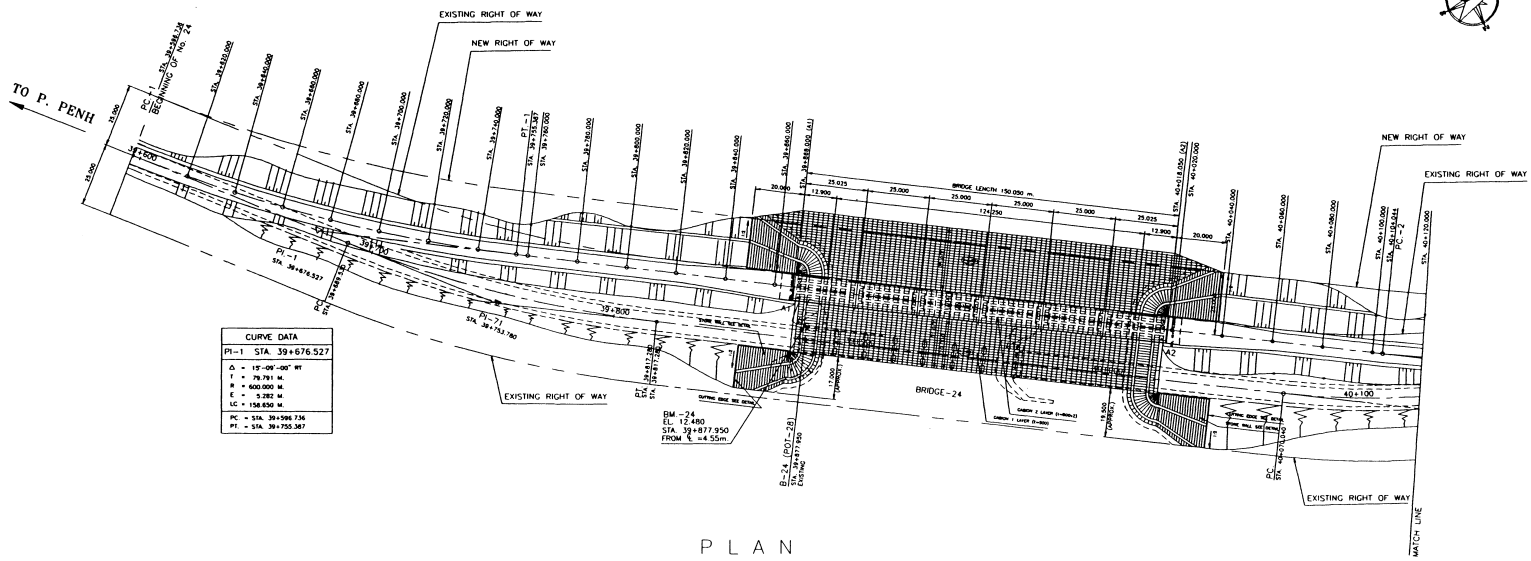
Table-A Rating of Overall Evaluation for the Bridge (Bridge No. 25)

Evaluation Item			Rating Point (E.P.)	Bridge (E.P.)	Weight Factor(W/F)	Point (E.P.)*(W/F)
Durability	Degree of superstructure damage and defect		good to bad 1 2 3 4	2	0.4	0.8
	Degree of substructure damage and defect		good to bad 1 2 3 4	2	0.6	1.2
Load Capacity	Low traffic volume (heavy vehicle with axle load less than 7 ton)		1		0.2	
	High traffic volume (heavy vehicle with axle load greater than 7 ton)		3	3	0.2	0.6
Function	Constructed record	Constructed after 1980 (use less than 20 years)	1		0.1	
		Constructed before 1980 (use more than 20 years)	3	3	0.1	0.3
	Effective width of bridge	Sufficient width for traffic capacity	1		0.2	
		Insufficient width for traffic capacity	3	3	0.2	0.6
Overall evaluation for bridge (Range of point)		D: Sound	1.5~2.5		Min. 1.5	D
		C: Fairly sound	2.5~3.5			C
		B: Unsound / Lack of safety	3.5~4.25	B		B : 3.5
		A: Danger	4.25~5.5		Max. 5.5	A

Table-A Rating of Overall Evaluation for the Bridge (Bridge No. 26)

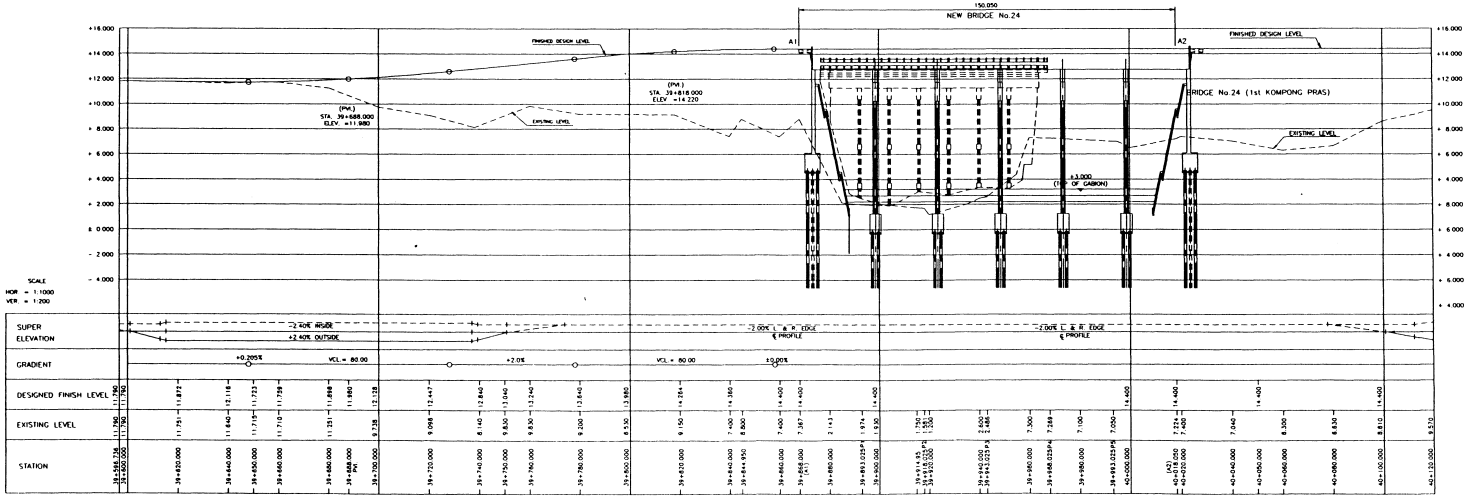
Evaluation Item			Rating Point (E.P.)	Bridge (E.P.)	Weight Factor(W/F)	Point (E.P.)*(W/F)
Durability	Degree of superstructure damage and defect		good to bad 1 2 3 4		0.4	
	Degree of substructure damage and defect		good to bad 1 2 3 4		0.6	
Load Capacity	Low traffic volume (heavy vehicle with axle load less than 7 ton)		1		0.2	
	High traffic volume (heavy vehicle with axle load greater than 7 ton)		3		0.2	
Function	Constructed record	Constructed after 1980 (use less than 20 years)	1		0.1	
		Constructed before 1980 (use more than 20 years)	3		0.1	
	Effective width of bridge	Sufficient width for traffic capacity	1		0.2	
		Insufficient width for traffic capacity	3		0.2	
Overall evaluation for bridge (Range of point)		D: Sound	1.5~2.5		Min. 1.5	D
		C: Fairly sound	2.5~3.5			C
		B: Unsound / Lack of safety	3.5~4.25			B
		A: Danger	4.25~5.5	A	Max. 5.5	A : 5.5

6-5. Drawings of Basic Design



PLAN

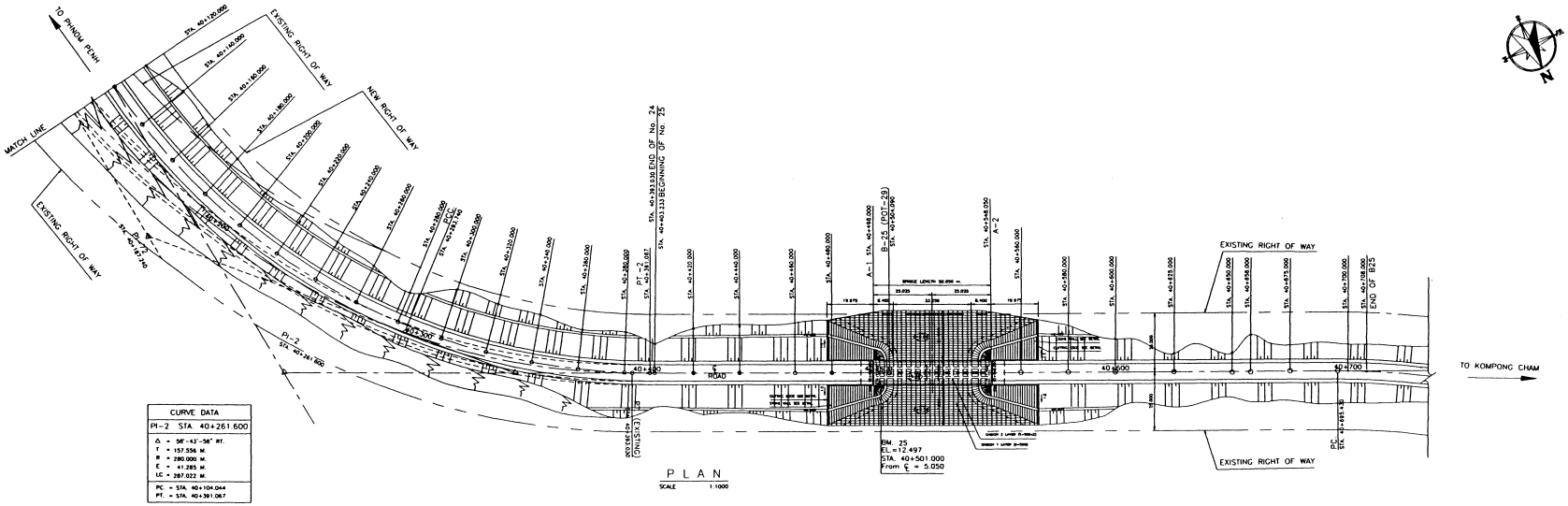
SCALE 1:1000

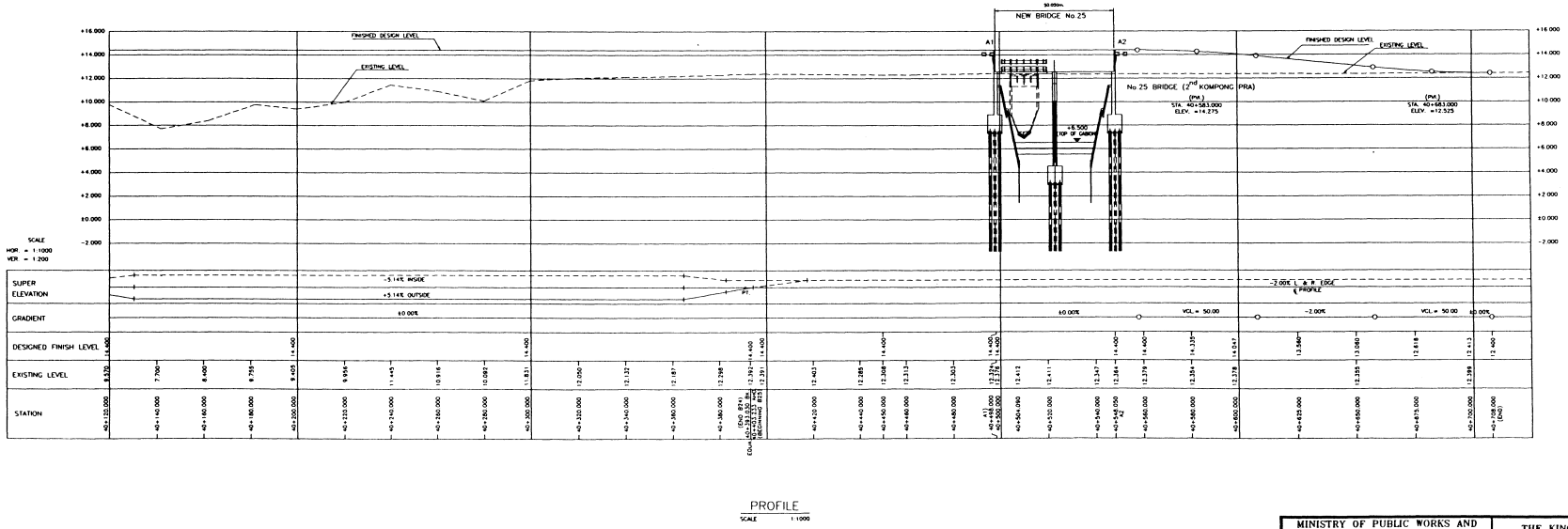


PROFILE

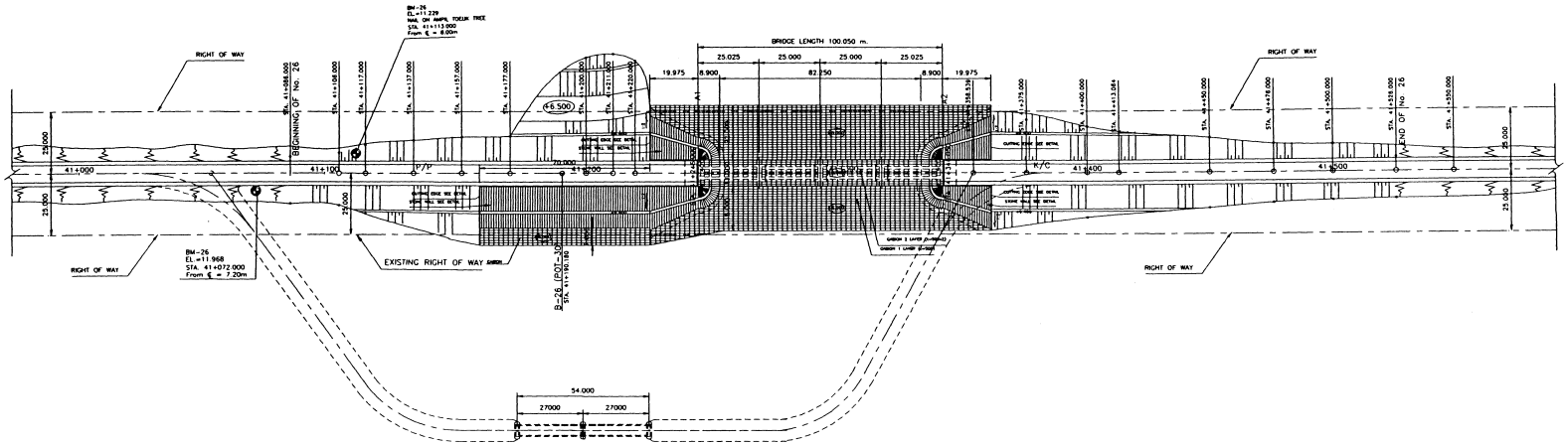
SCALE 1:1000

MINISTRY OF PUBLIC WORKS AND TRANSPORT			THE KINGDOM OF CAMBODIA	
PROJECT	Improvement of Bridges on National Highway Route 6A			
CONSULTANT	PACIFIC CONSULTANTS INTERNATIONAL			
DRAWING TITLE	General View of Project Road (1)			
SCALE	A1=1:1000	A3=1:2000	DRAWING NO.	1/20



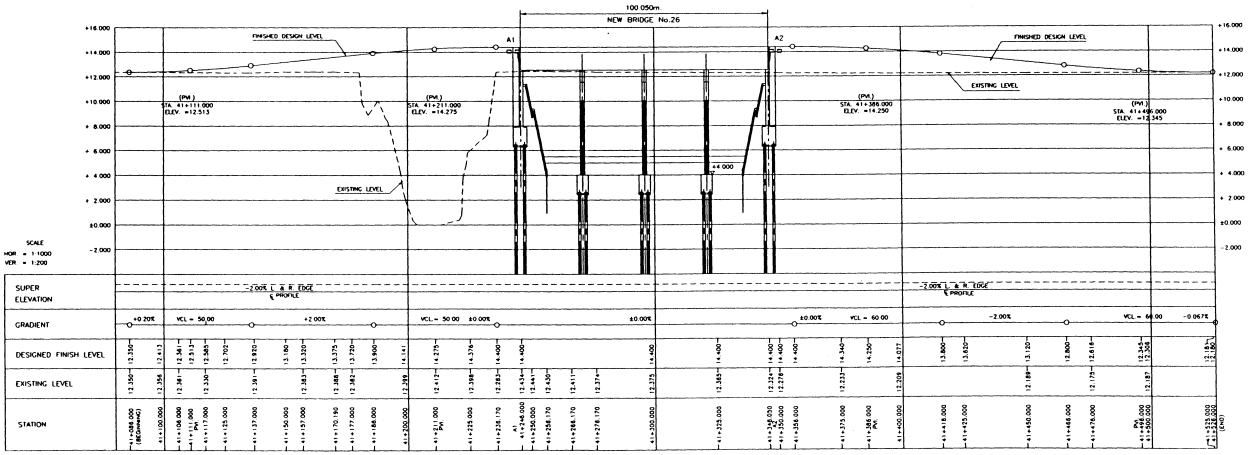


MINISTRY OF PUBLIC WORKS AND TRANSPORT			THE KINGDOM OF CAMBODIA	
PROJECT	Improvement of Bridges on National Highway Route 6A			
CONSULTANT	PACIFIC CONSULTANTS INTERNATIONAL			
DRAWING TITLE	General View of Project Road (2)			
SCALE	A1=1:1000	A3=1:2000	DRAWING NO.	2/20



PLAN

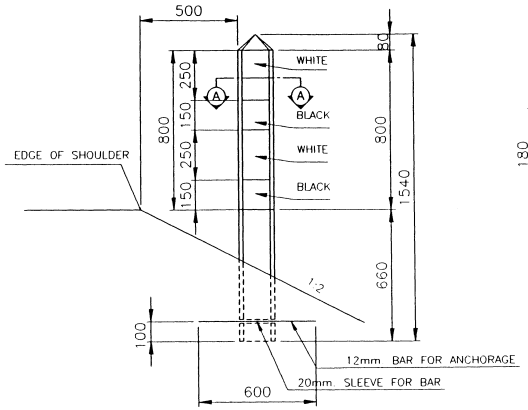
SCALE 1:1000



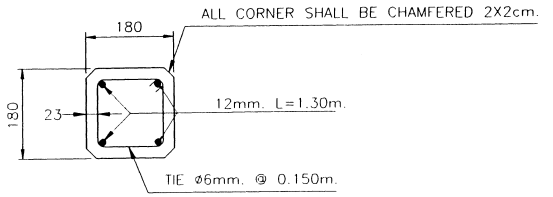
PROFILE

SCALE 1:1000

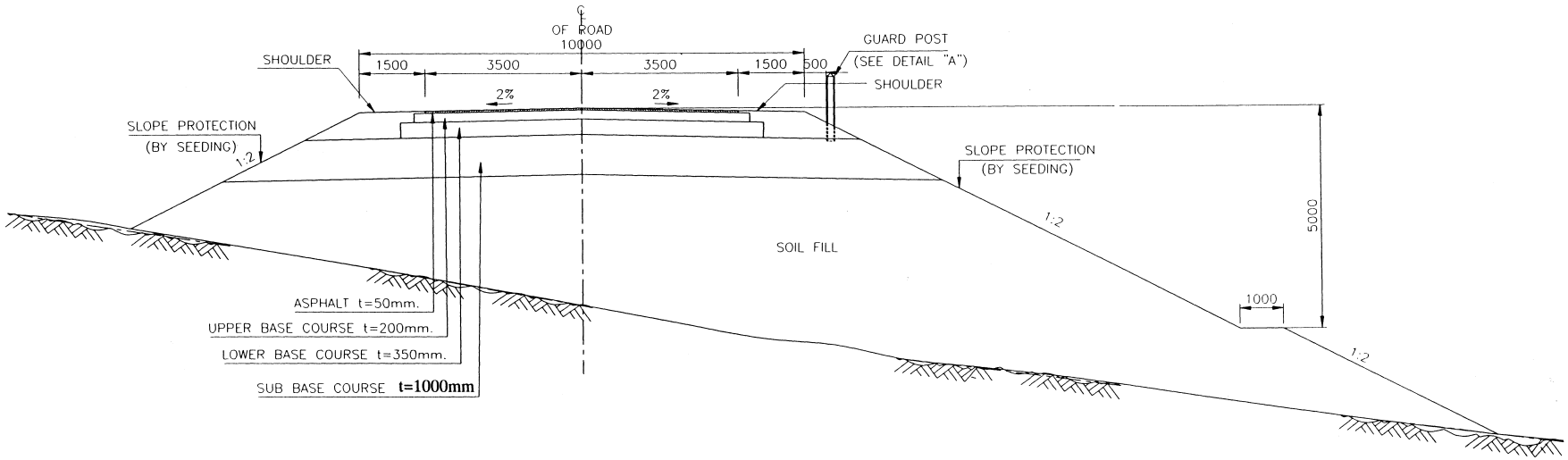
MINISTRY OF PUBLIC WORKS AND TRANSPORT		THE KINGDOM OF CAMBODIA	
PROJECT	Improvement of Bridges on National Highway Route 6A		
CONSULTANT	PACIFIC CONSULTANTS INTERNATIONAL		
DRAWING TITLE	General View of Project Road (3)		
SCALE	1 : 1000	DRAWING NO.	3/20



DETAIL "A"
SCALE 1:25

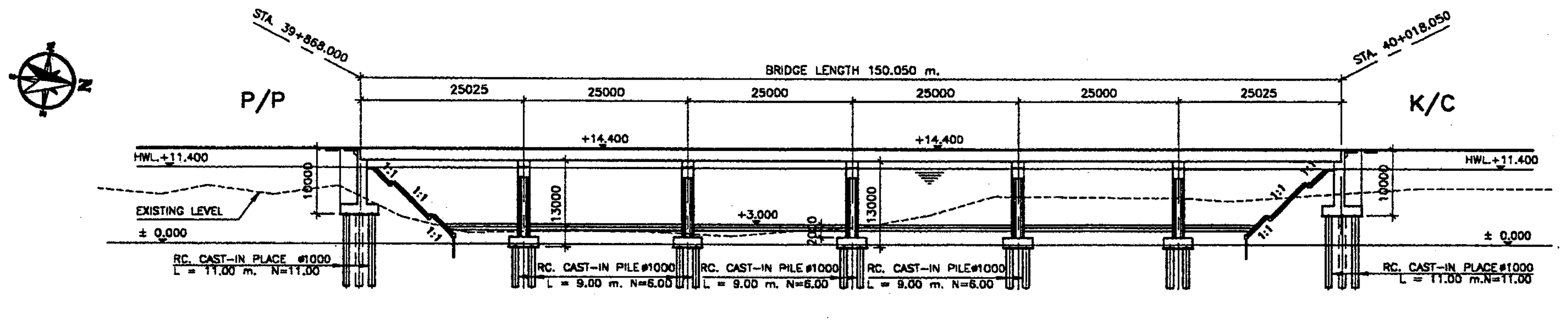


A – A
SCALE 1:10



STANDARD CROSS SECTION OF APPROACH ROAD
SCALE 1:100

MINISTRY OF PUBLIC WORKS AND TRANSPORT		THE KINGDOM OF CAMBODIA	
PROJECT	Improvement of Bridges on National Highway Route 6A		
CONSULTANT	PACIFIC CONSULTANTS INTERNATIONAL		
DRAWING TITLE	Standard Cross Section of Approach Road		
SCALE	1:100	DRAWING NO.	4/20



LONGITUDINAL SECTION

SCALE 1:1000

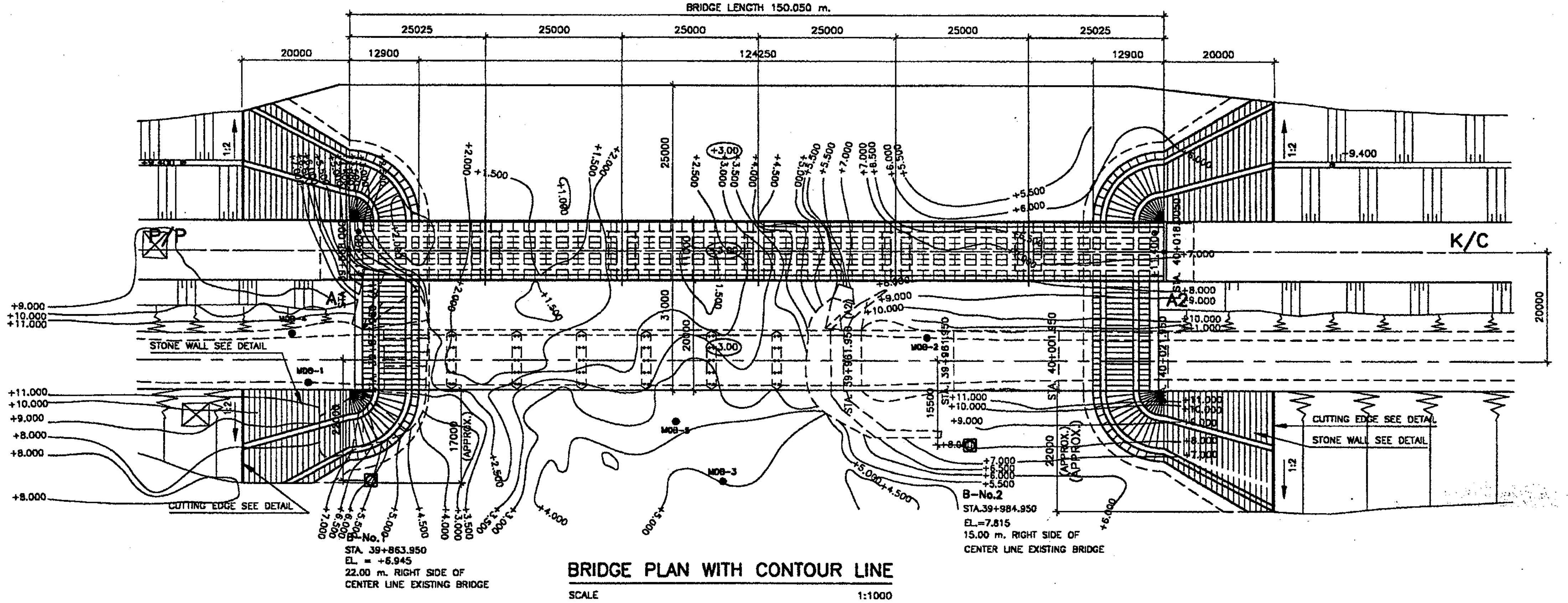
SUPER ELEVATION: -2.00% L. & R. EDGE, ℄ PROFILE

GRADIENT: VCL.= 80.00, ±0.00%

STATION	DESIGNED FINISH LEVEL	EXISTING LEVEL
39+818.000 PVI.	14.200	9.150
39+825.000	14.264	
39+837.950	14.350	7.400
39+844.950		8.800
39+850.000	14.392	
39+854.950	14.399	7.400
39+858.000	14.400	
39+864.950		8.800
39+868.000 (A1)	14.400	7.367
39+874.950		4.100
39+884.950		2.143
39+893.025 P1		1.974
39+894.950		1.950
39+900.000	14.400	
39+904.950		1.930
39+914.95		1.750
39+918.025 P2		1.581
39+924.950		1.200
39+934.950		2.010
39+943.025 P3		2.486
39+944.950		2.600
39+950.000	14.400	
39+954.950		4.400
39+964.950		7.300
39+968.025 P4		7.269
39+974.950		7.200
39+984.950		7.100
39+993.025 P5		7.050
39+994.950		7.010
40+000.000	14.400	
40+001.950		6.500
40+018.050 (A2)	14.400	7.224
40+021.950		7.400
40+041.950		7.040
40+050.000	14.400	
40+061.950		6.300
40+081.950		6.630

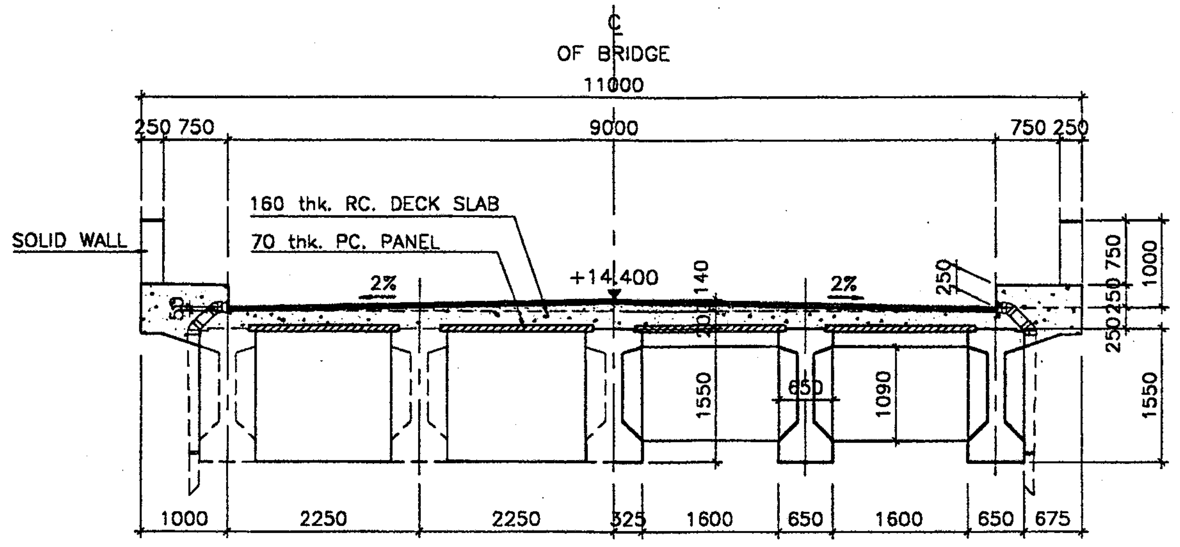
PROFILE

SCALE 1:1000



BRIDGE PLAN WITH CONTOUR LINE

SCALE 1:1000



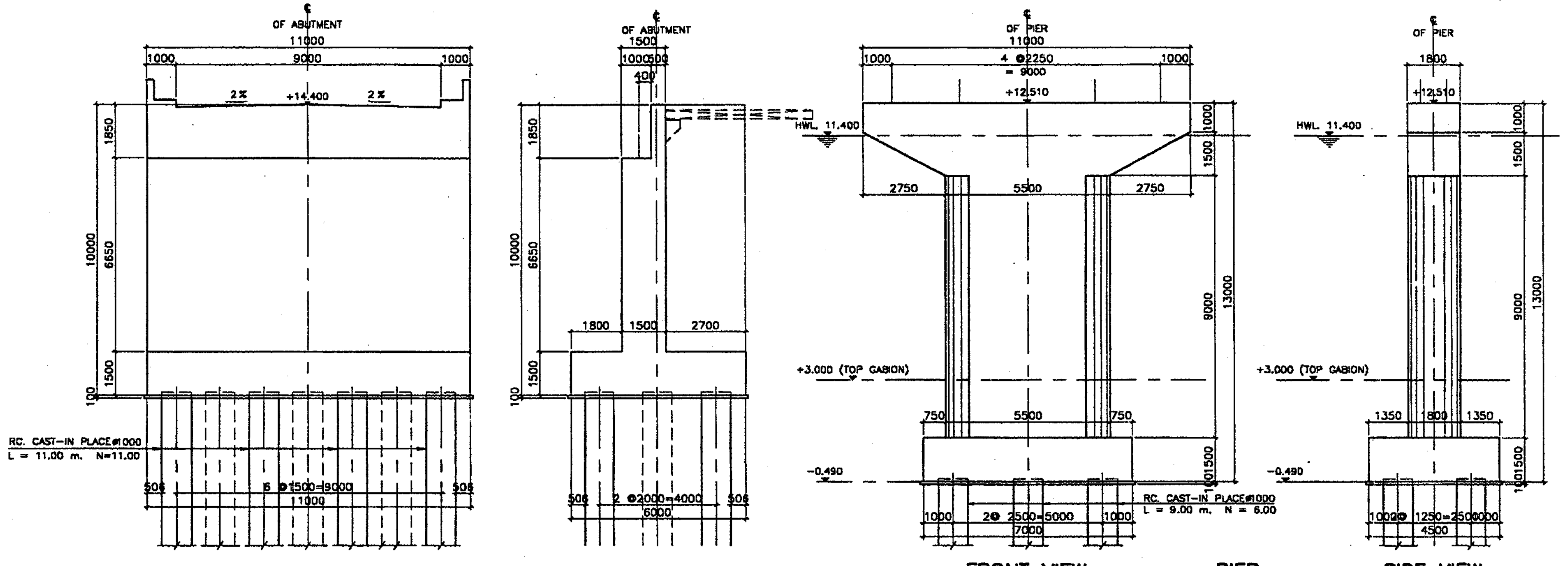
CROSS SECTION OF PC-I GIRDER

SCALE 1 : 100

DESIGN CRETERIA

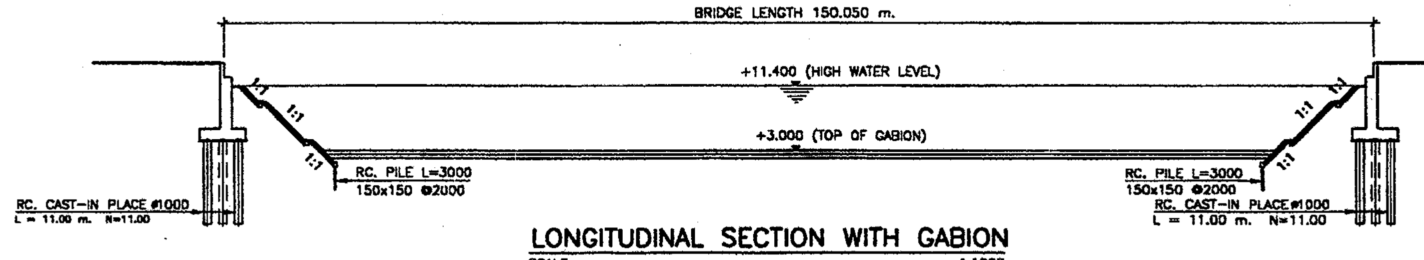
GENERAL CONDITION		
Design Speed		V=60 km/h
Bridge length (Span Length)		150.05 m. (6 @25 m.)
Total Width		11.00 m.
Longitudinal Gradient		Level
Cross-fall of Carriage way		2%
Superstructure Type		PC-I Shape Girder
Substructure Type	Abutment	RC. Reversed T-Shape
	Pier	RC. Wall (Cantilever-beam)
Foundation Type		

MATERIAL STRENGTH		
Supper structure Type	Girder	б ck=350 kgf/cm2
	Cross Beam	б ck=240 kgf/cm2
	PC panel	б ck=500 kgf/cm2
	Slab	б ck=240 kgf/cm2
Surface	Asphalt Pavement	Thicness=50 mm.
	Curb, Hand wall	б ck=210 kgf/cm2
Substructure		б ck=210 kgf/cm2
RC. Pile (Cast-in-place)		б ck=300 kgf/cm2
Prestressing Steel	Main Beam	T-12.7 mm. (б py-160 kgf/mm2)
	Cross Beam	T-19.3 mm. (б py-160 kgf/mm2)
Reinforcing Steel		SD295.SD345 (py-30 kgf/mm2)



FRONT VIEW SCALE 1:200 — ABUTMENT A1 & A2 — SIDE VIEW SCALE 1:200

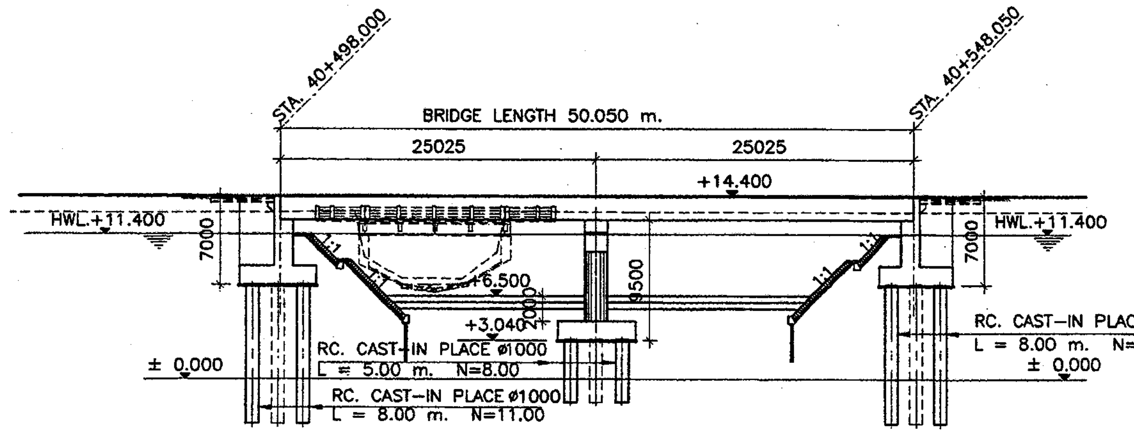
FRONT VIEW SCALE 1:200 — PIER — SIDE VIEW SCALE 1:200



LONGITUDINAL SECTION WITH GABION

SCALE 1:1000

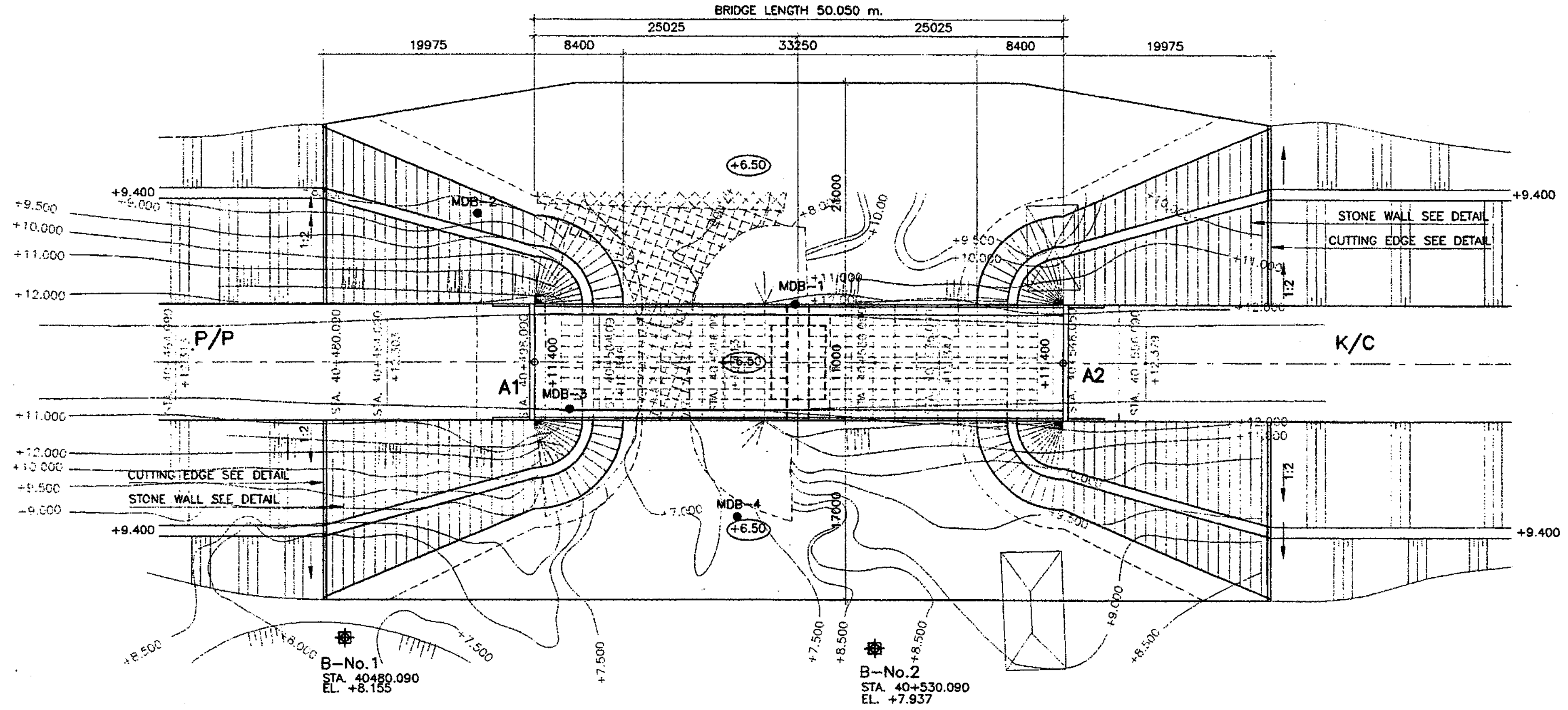
MINISTRY OF PUBLIC WORKS AND TRANSPORT		THE KINGDOM OF CAMBODIA	
PROJECT	Improvement of Bridges on National Highway Route 6A		
CONSULTANT	PACIFIC CONSULTANTS INTERNATIONAL		
DRAWING TITLE	GENERAL VIEW OF BRIDGE No. 24		
SCALE	AS SHOWN	DRAWING NO.	5/20



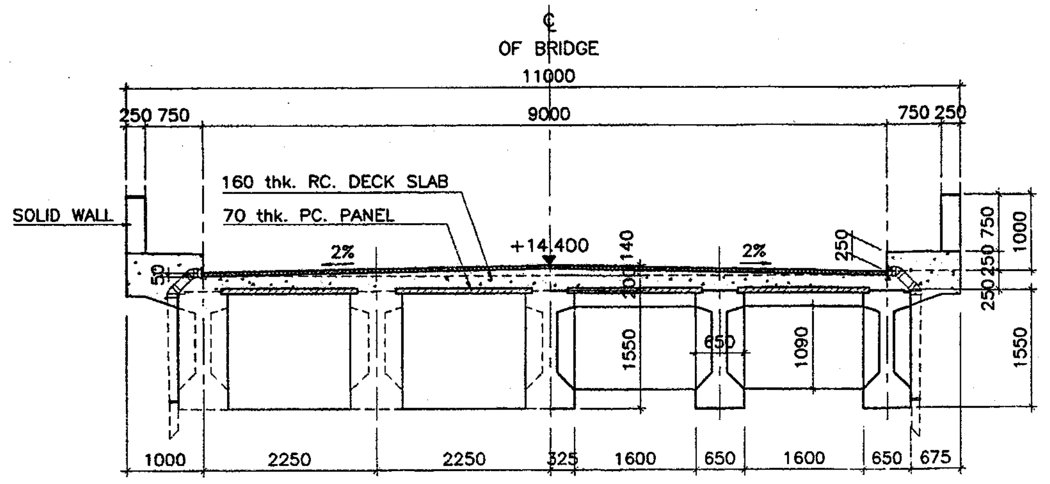
LONGITUDINAL SECTION
SCALE 1:600

SUPER ELEVATION																								
GRADIENT	±0.00%																					VCL.= 50.00		
DESIGNED FINISH LEVEL	14.400							14.400	14.400						14.400	14.400		14.400		14.342		14.275		14.047
EXISTING LEVEL	12.308	12.308	12.313		12.298	12.305		12.324		12.412	12.411		12.367	12.347	12.364		12.378		12.363					12.378
STATION	40+450.000	40+454.090	40+464.090	40+474.090	40+475.000	40+485.090	40+495.090	40+498.000(A1)	40+500.000	40+504.090	40+516.090	40+525.000	40+526.090	40+536.090	40+548.050 A2	40+550.000	40+556.090	40+558.000	40+566.090	40+575.000	40+576.090	40+583.000 PVI.	40+596.090	40+600.000

PROFILE
SCALE 1:600



BRIDGE PLAN WITH CONTOUR LINE
SCALE 1:600

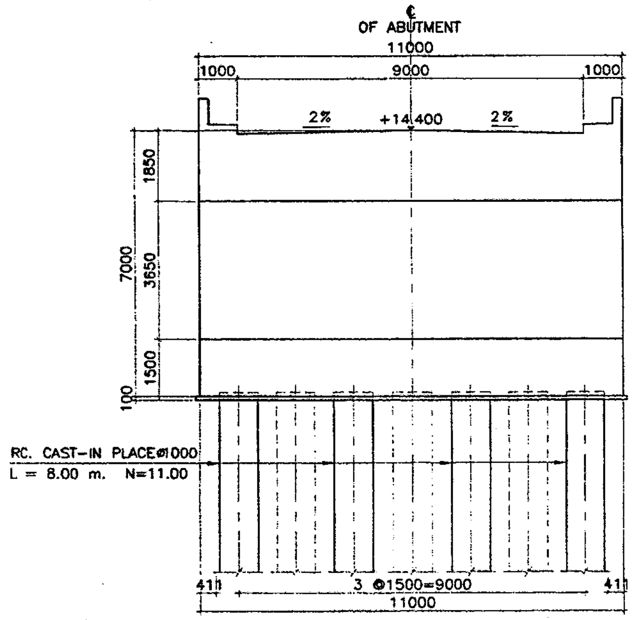


CROSS SECTION OF PC-I GIRDER
SCALE 1 : 100

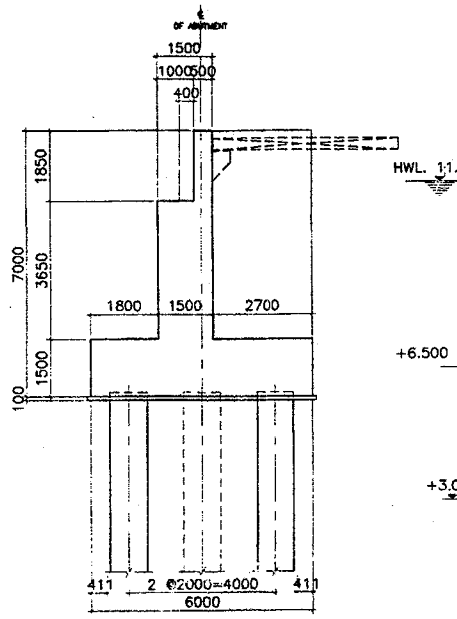
DESIGN CRETERIA

GENERAL CONDITION		
Design Speed		V=60 km/h
Bridge length (Span Length)		150.05 m. (6 @25 m.)
Total Width		11.00 m.
Longitudinal Gradient		Level
Cross-fall of Carriage way		2%
Superstructure Type		PC-I Shape Girder
Substructure Type	Abutment	RC. Reversed T-Shape
	Pier	RC. Wall (Cantilever-beam)
Foundation Type		

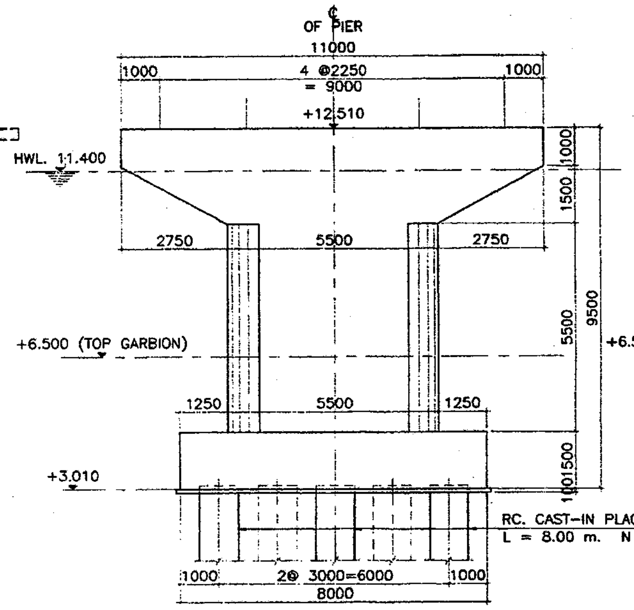
MATERIAL STRENGTH		
Supper structure Type	Girder	σ ck=350 kgf/cm2
	Cross Beam	σ ck=240 kgf/cm2
	PC panel	σ ck=500 kgf/cm2
	Slab	σ ck=240 kgf/cm2
Surface	Asphalt Pavement	Thicness=50 mm.
	Curb, Hand wall	σ ck=210 kgf/cm2
Substructure		σ ck=210 kgf/cm2
RC. Pile (Cast-in-place)		σ ck=300 kgf/cm2
Prestressing Steel	Main Beam	T-12.7 mm. (σ py-160 kgf/mm2)
	Cross Beam	T-19.3 mm. (σ py-160 kgf/mm2)
Reinforcing Steel		SD295.SD345 (py-30 kgf/mm2)



FRONT VIEW
SCALE 1:200

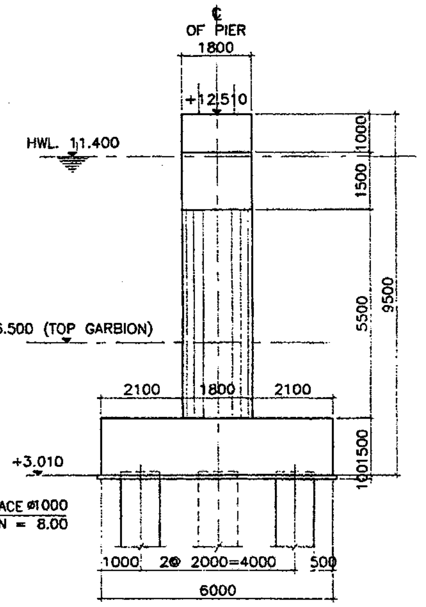


ABUTMENT A1 & A2 SADE VIEW
SCALE 1:200

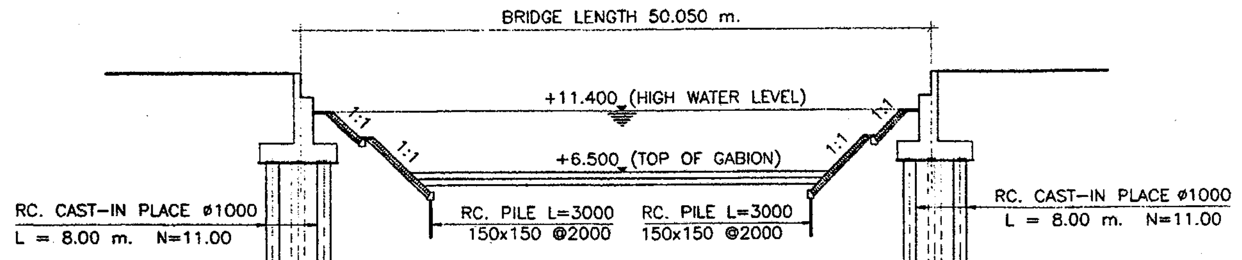


FRONT VIEW
SCALE 1:200

PIER

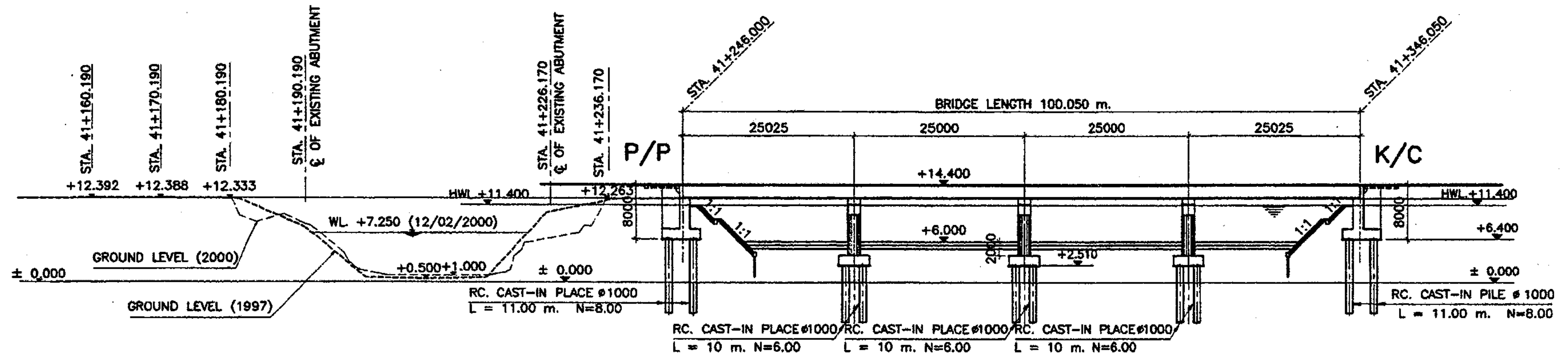


SIDE VIEW
SCALE 1:200

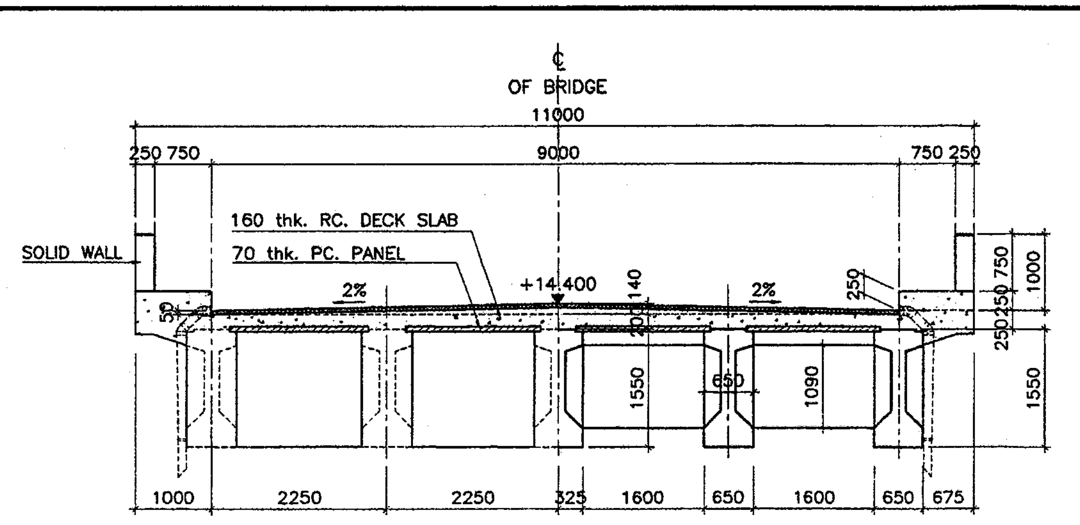


LONGITUDINAL SECTION
SCALE 1:1000

MINISTRY OF PUBLIC WORKS AND TRANSPORT		THE KINGDOM OF CAMBODIA	
PROJECT	Improvement of Bridges on National Highway Route 6A		
CONSULTANT	PACIFIC CONSULTANTS INTERNATIONAL		
DRAWING TITLE	GENERAL VIEW OF BRIDGE No. 25		
SCALE	AS SHOWN	DRAWING NO.	6/20



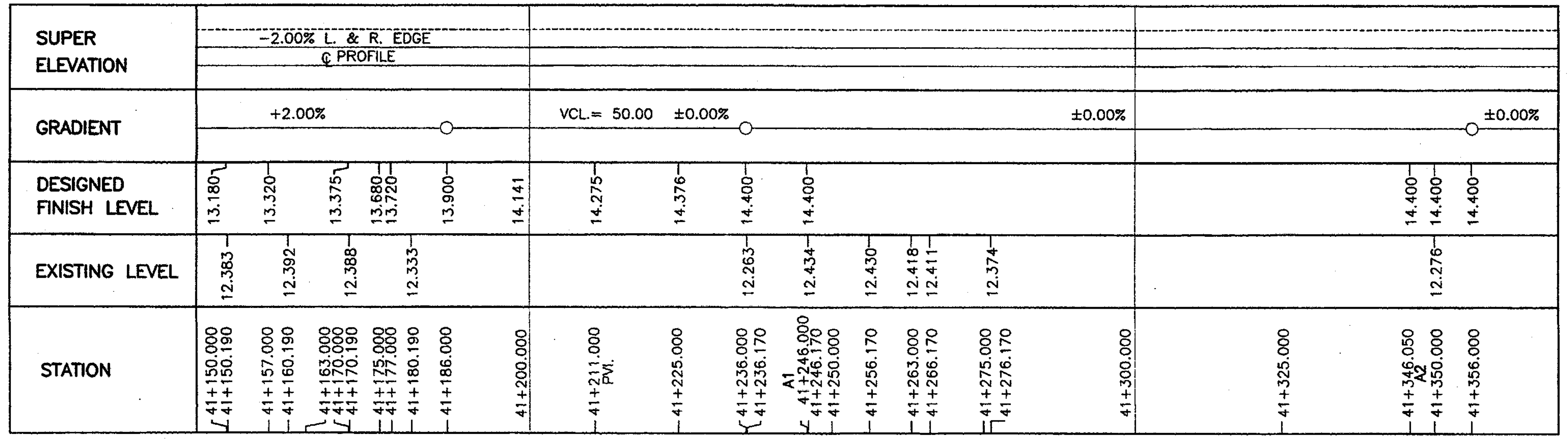
LONGITUDINAL SECTION
SCALE 1:1000



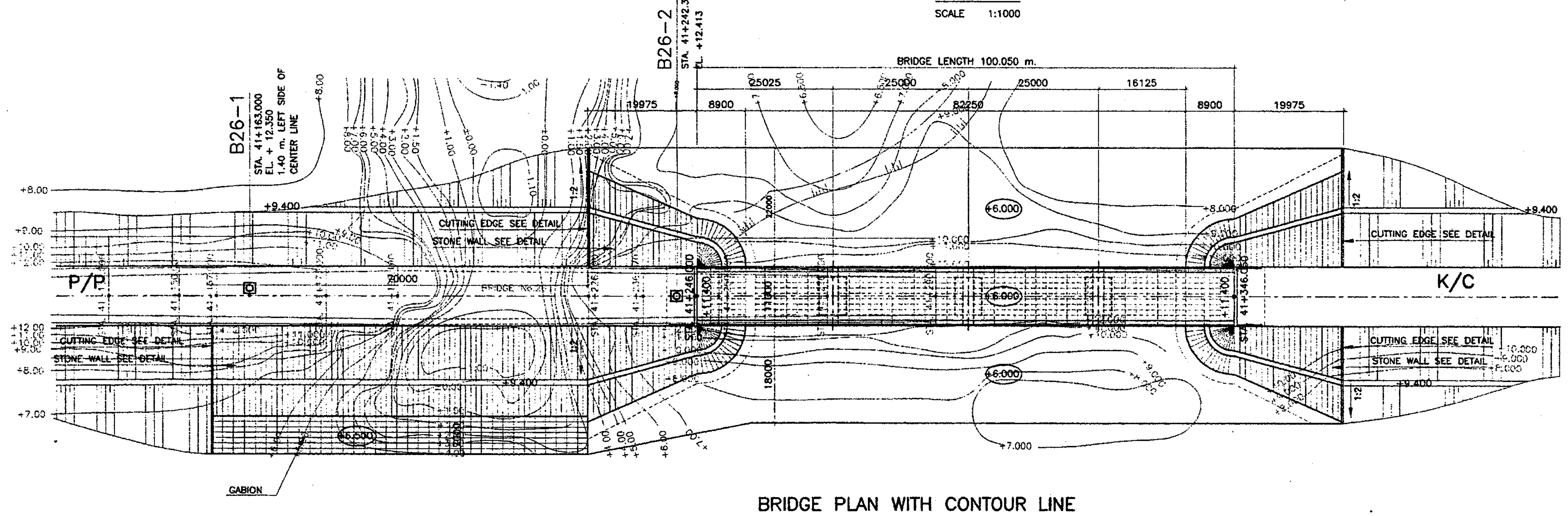
CROSS SECTION OF PC-I GIRDER
SCALE 1 : 100

DESIGN CRETERIA

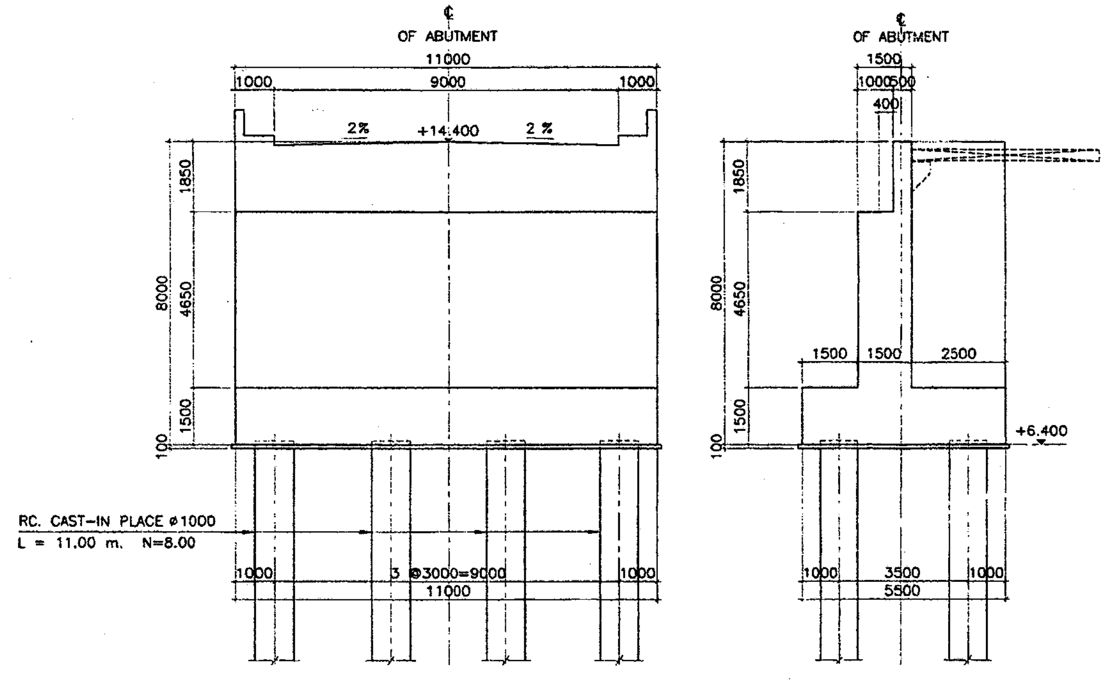
GENERAL CONDITION		
Design Speed		V=60 km/h
Bridge length (Span Length)		150.05 m. (6 @25 m.)
Total Width		11.00 m.
Longitudinal Gradient		Level
Cross-fall of Carriage way		2%
Superstructure Type		PC-I Shope Girder
Substructure Type	Abutment	RC. Reversed T-Shape
	Pier	RC. Wall (Cantilever-beam)
Foundation Type		
MATERIAL STRENGTH		
Supper structure Type	Girder	6 ck=350 kgf/cm2
	Cross Beam	6 ck=240 kgf/cm2
	PC panel	6 ck=500 kgf/cm2
	Slab	6 ck=240 kgf/cm2
Surface	Asphalt Pavement	Thicness=50 mm.
	Curb, Hand wall	6 ck=210 kgf/cm2
Substructure		6 ck=210 kgf/cm2
RC. Pile (Cast-in-place)		6 ck=300 kgf/cm2
Prestressing Steel	Main Beam	T-12.7 mm. (6 py-160 kgf/mm2)
	Cross Beam	T-19.3 mm. (6 py-160 kgf/mm2)
Reinforcing Steel		SD295.SD345 (py-30 kgf/mm2)



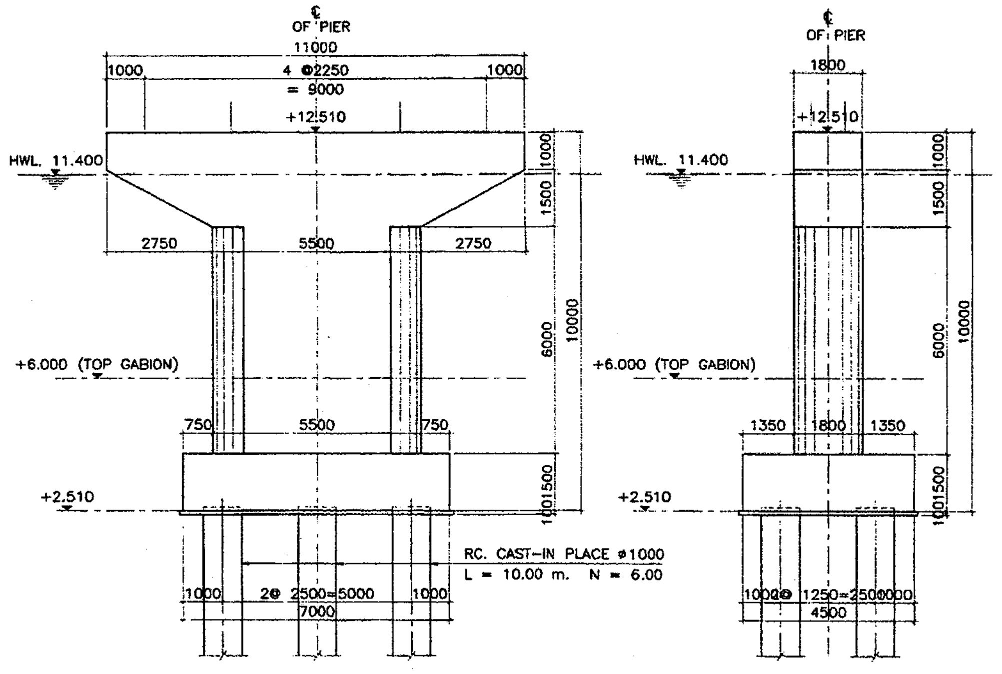
PROFILE
SCALE 1:1000



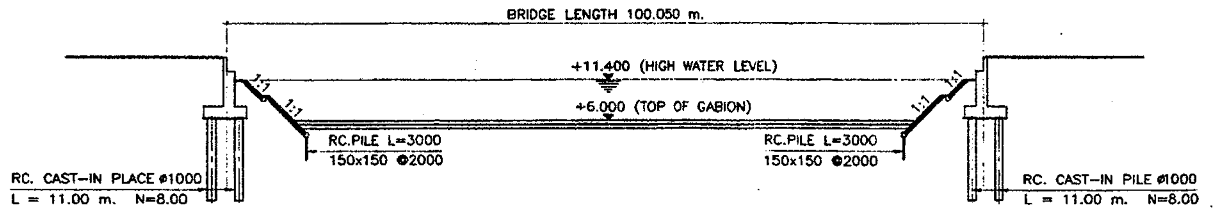
BRIDGE PLAN WITH CONTOUR LINE
SCALE 1:1000



FRONT VIEW SCALE 1:200 ABUTMENT A1 & A2 SIDE VIEW SCALE 1:200

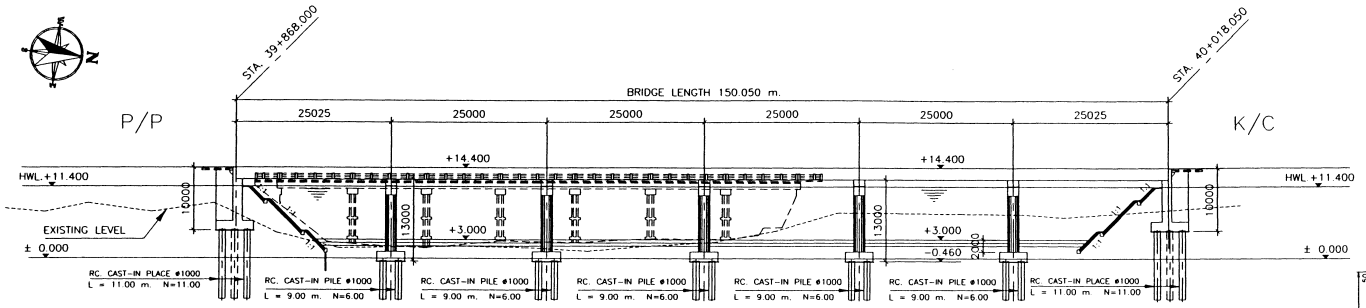


FRONT VIEW PIER SIDE VIEW



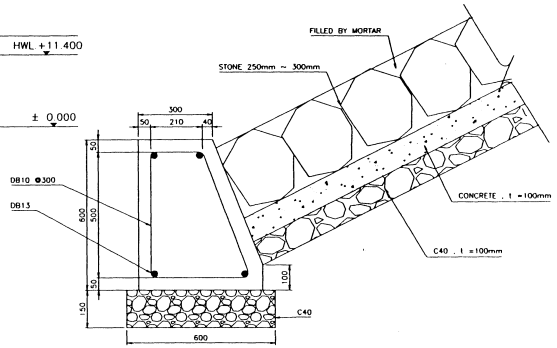
LONGITUDINAL SECTION
SCALE 1:1000

MINISTRY OF PUBLIC WORKS AND TRANSPORT		THE KINGDOM OF CAMBODIA	
PROJECT	Improvement of Bridges on National Highway Route 6A		
CONSULTANT	PACIFIC CONSULTANTS INTERNATIONAL		
DRAWING TITLE	GENERAL VIEW OF BRIDGE No. 26		
SCALE	AS SHOWN	DRAWING NO.	7/20



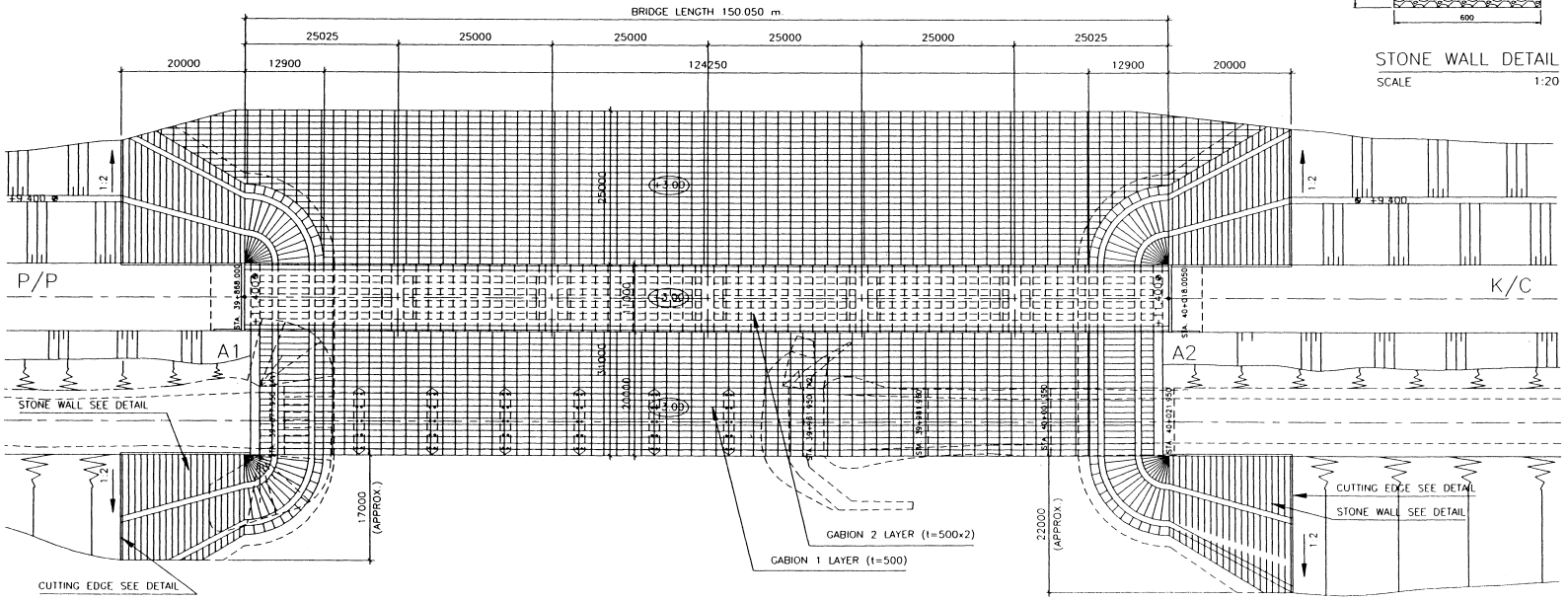
LONGITUDINAL SECTION WITH GABION

SCALE 1:800



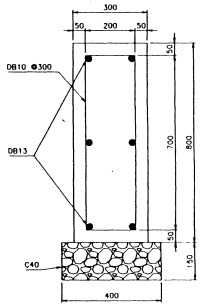
STONE WALL DETAIL

SCALE 1:20



PLAN OF GABION AND STONE WALL

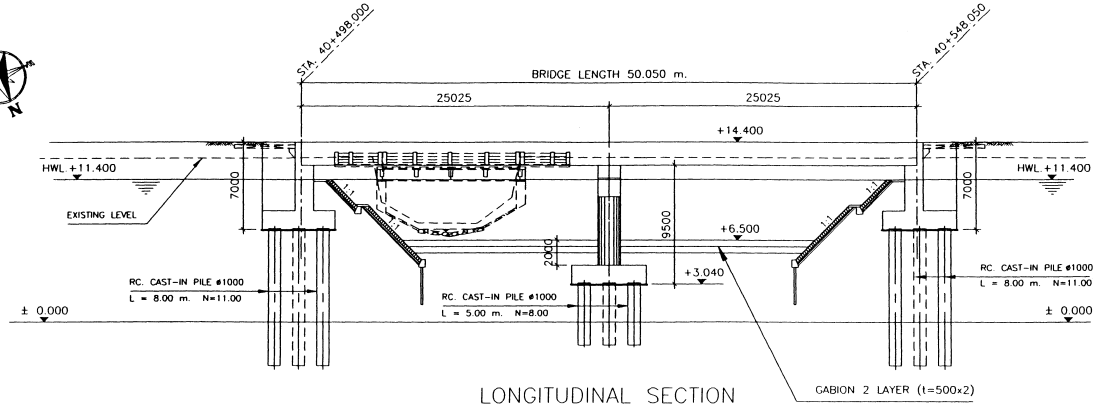
SCALE 1:800



CUTTING EDGE DETAIL

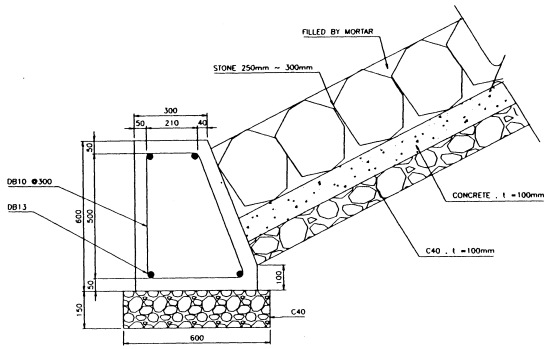
SCALE 1:20

MINISTRY OF PUBLIC WORKS AND TRANSPORT		THE KINGDOM OF CAMBODIA	
PROJECT	Improvement of Bridges on National Highway Route 6A		
CONSULTANT	PACIFIC CONSULTANTS INTERNATIONAL		
DRAWING TITLE	General View of Protection (Wet Masonry and Gabion) of Bridge No.24		
SCALE	1 : 800	DRAWING NO.	8/20



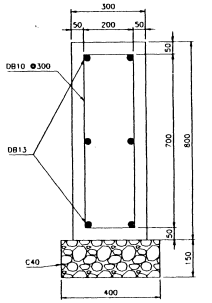
LONGITUDINAL SECTION

SCALE 1:400



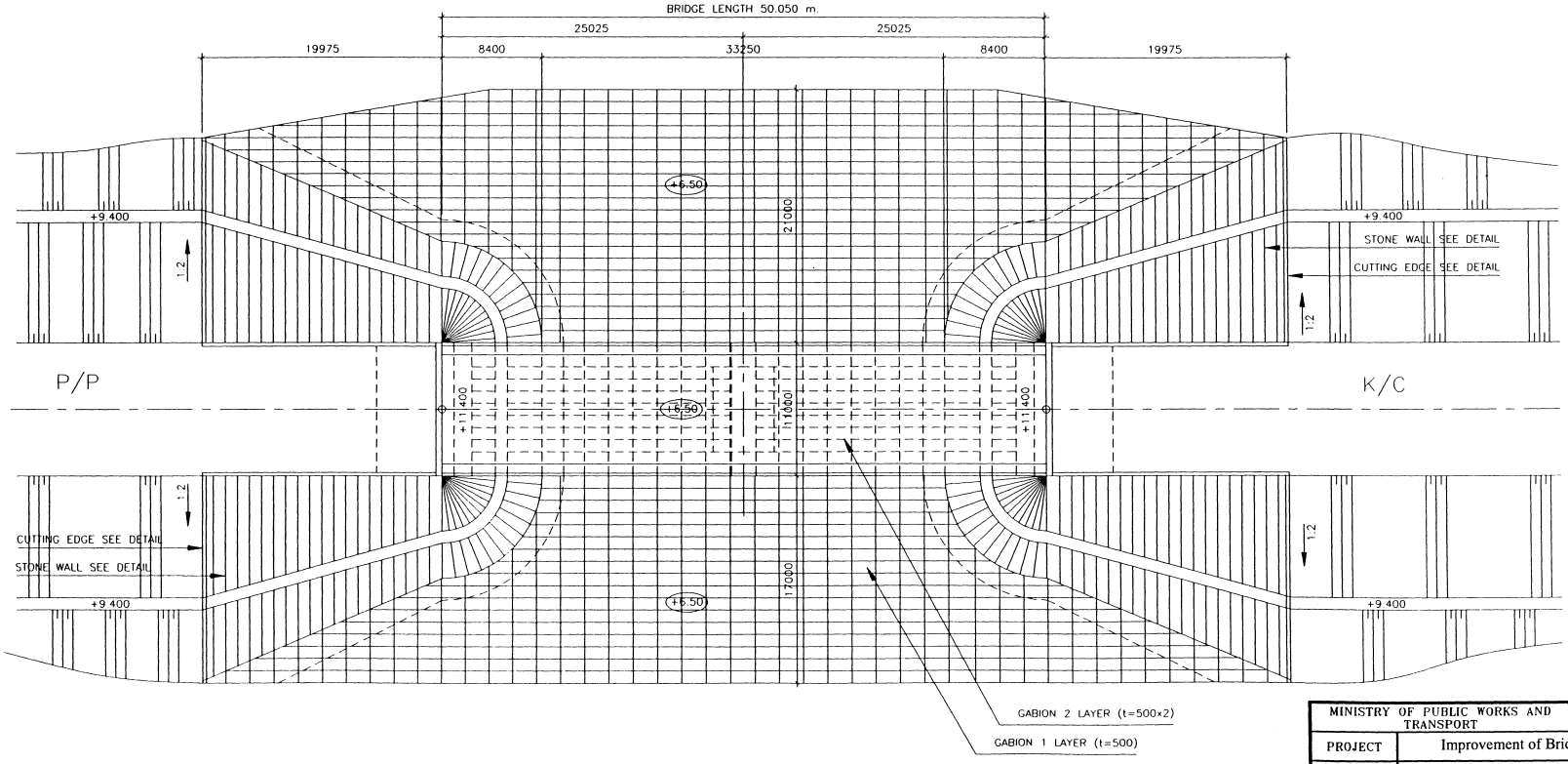
STONE WALL DETAIL

SCALE 1:20



CUTTING EDGE DETAIL

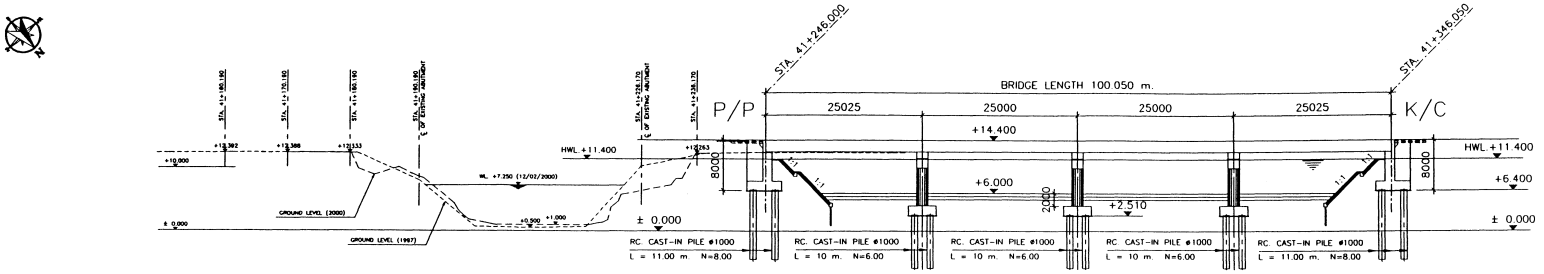
SCALE 1:20



PLAN OF GABION AND STONE WALL

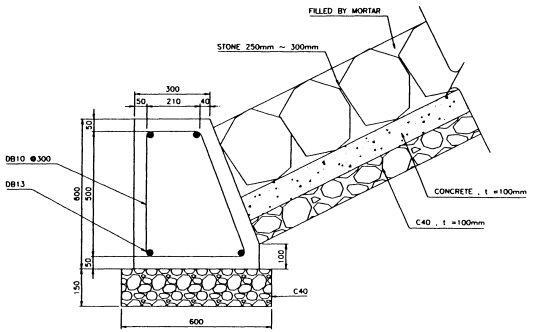
SCALE 1:400

MINISTRY OF PUBLIC WORKS AND TRANSPORT		THE KINGDOM OF CAMBODIA	
PROJECT	Improvement of Bridges on National Highway Route 6A		
CONSULTANT	PACIFIC CONSULTANTS INTERNATIONAL		
DRAWING TITLE	General View of Protection (Wet Masonry and Gabion) of Bridge No.25		
SCALE	1 : 400	DRAWING NO.	9/20



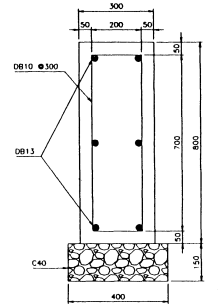
LONGITUDINAL SECTION

SCALE 1:800



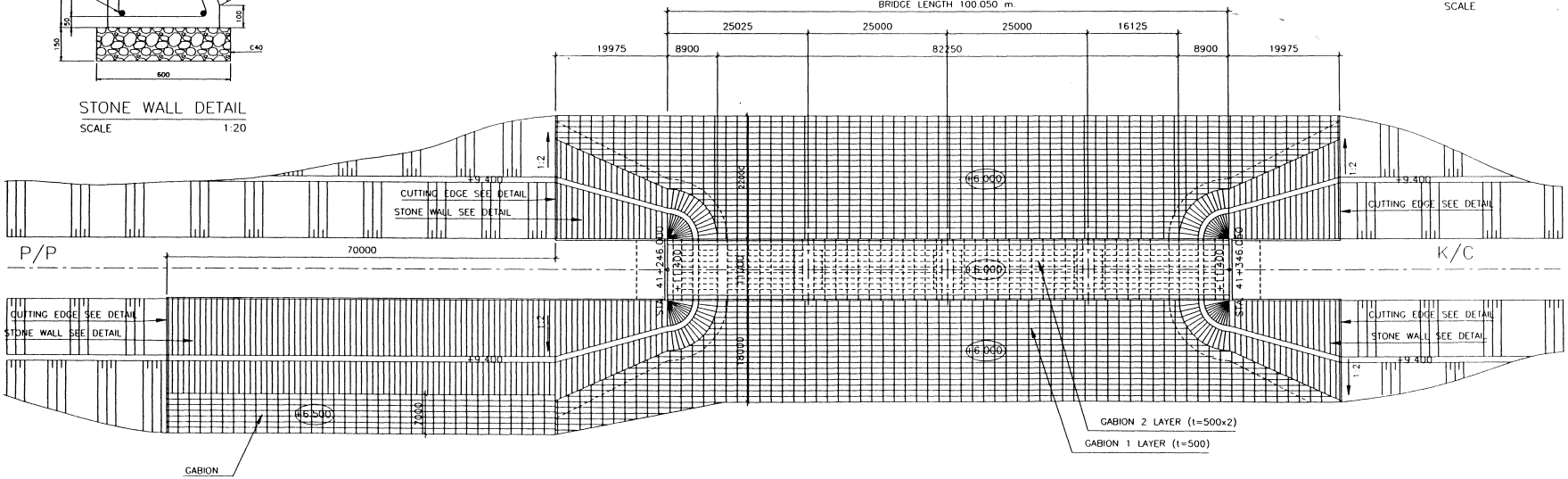
STONE WALL DETAIL

SCALE 1:20



CUTTING EDGE DETAIL

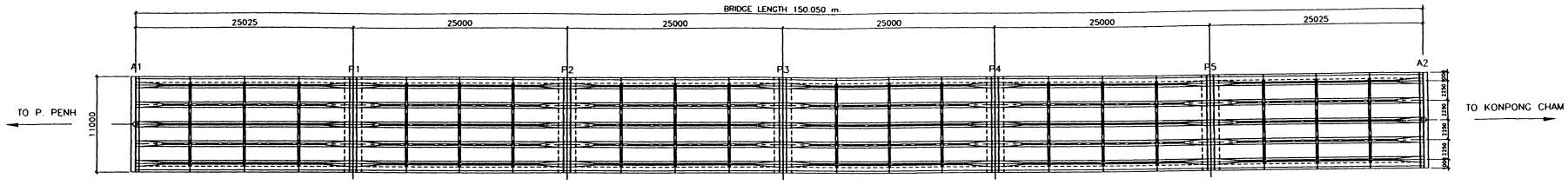
SCALE 1:20



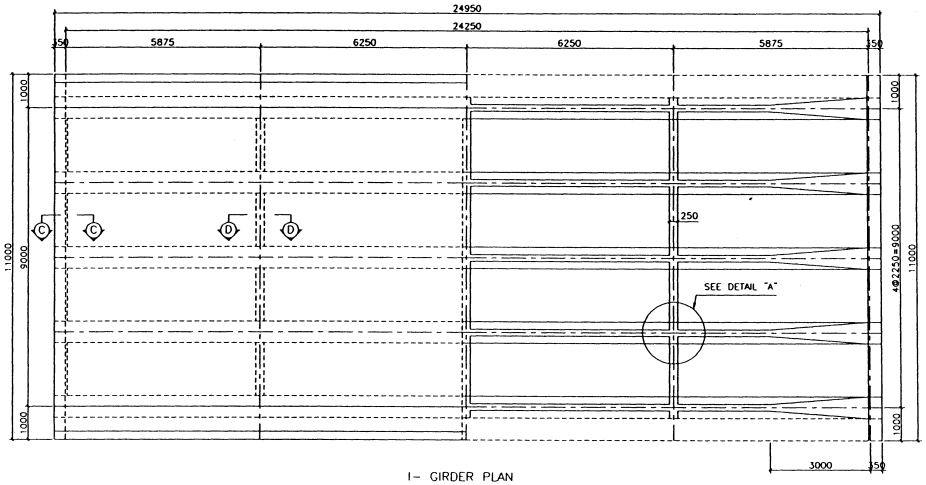
PLAN OF GABION AND STONE WALL

SCALE 1:800

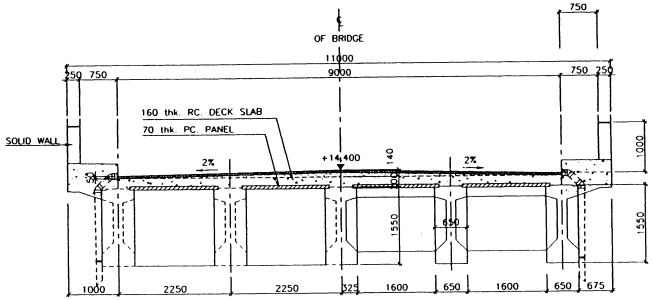
MINISTRY OF PUBLIC WORKS AND TRANSPORT		THE KINGDOM OF CAMBODIA	
PROJECT	Improvement of Bridges on National Highway Route 6A		
CONSULTANT	PACIFIC CONSULTANTS INTERNATIONAL		
DRAWING TITLE	General View of Protection (Wet Masonry and Gabion) of Bridge No.26		
SCALE	1 : 800	DRAWING NO.	10/20



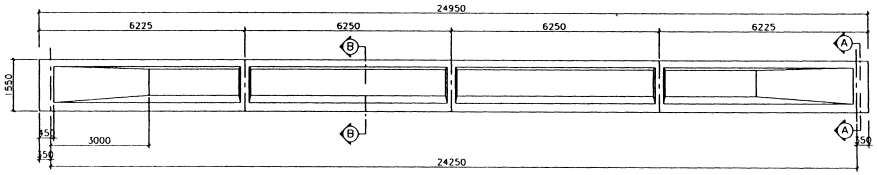
BRIDGE PLAN
SCALE 1:250



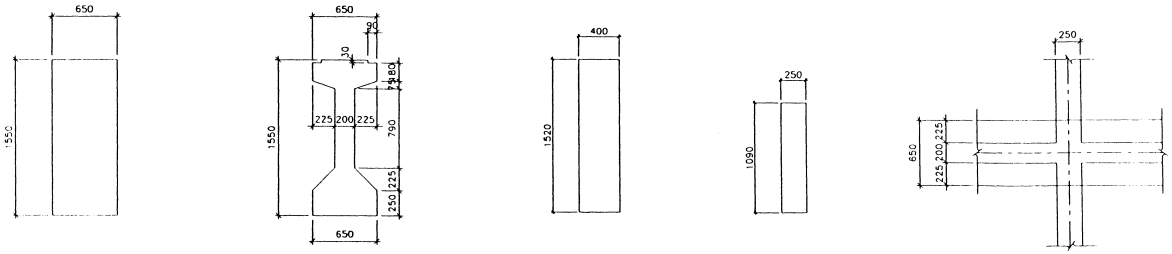
I- GIRDER PLAN
SCALE 1:75



SECTION
SCALE 1:100



I-GIRDER SIDE VIEW
SCALE 1:75



A - A
SCALE 1:50

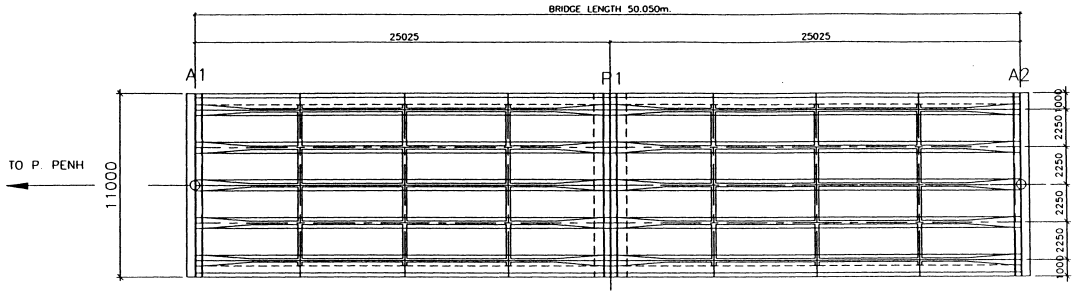
B - B
SCALE 1:50

C - C
SCALE 1:50
END DIAPHRAME BEAM

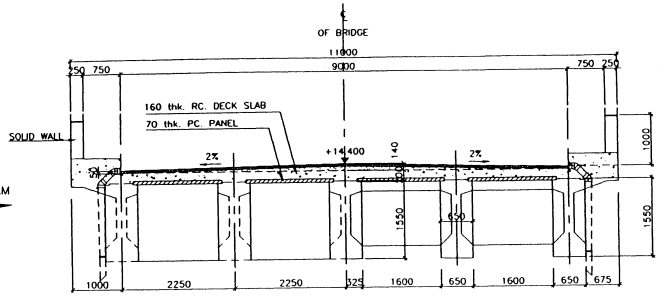
D - D
SCALE 1:50
CROSS BEAM

DETAIL "A"
SCALE 1:50

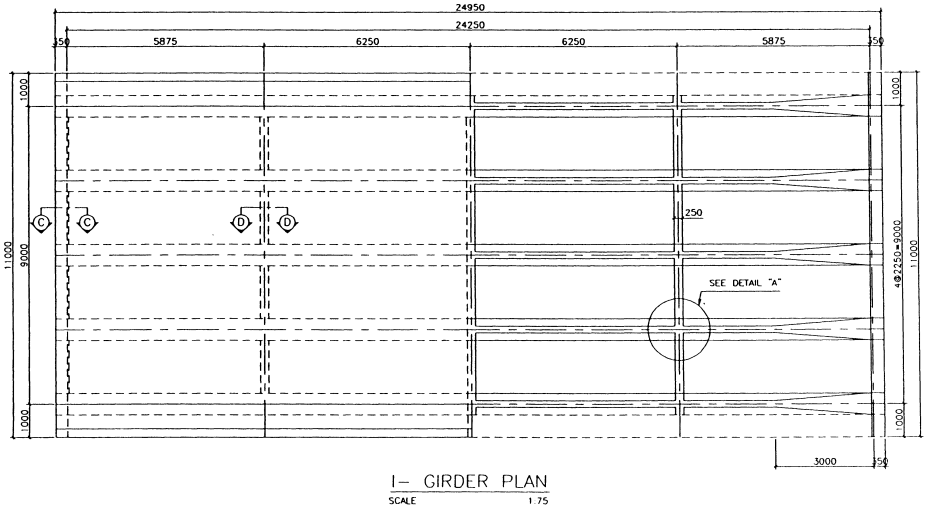
MINISTRY OF PUBLIC WORKS AND TRANSPORT			THE KINGDOM OF CAMBODIA	
PROJECT	Improvement of Bridges on National Highway Route 6A			
CONSULTANT	PACIFIC CONSULTANTS INTERNATIONAL			
DRAWING TITLE	General View of PC-I Girder for Bridge No.24			
SCALE	A1=1:250	A3=1:500	DRAWING NO.	11/20



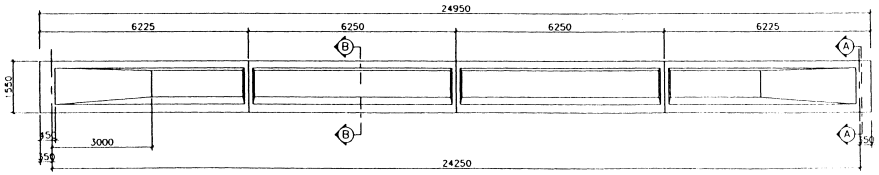
BRIDGE PLAN
SCALE 1:150



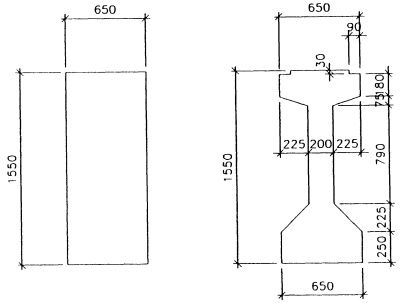
SECTION
SCALE 1:50



I- GIRDER PLAN
SCALE 1:75



I-GIRDER SIDE VIEW
SCALE 1:75



A - A
SCALE 1:20

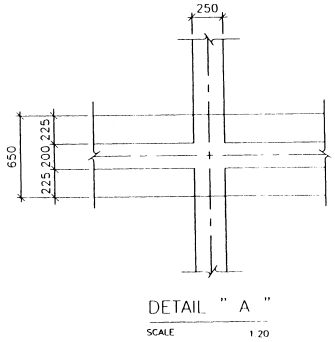
B - B
SCALE 1:20

C - C
SCALE 1:20

D - D
SCALE 1:20

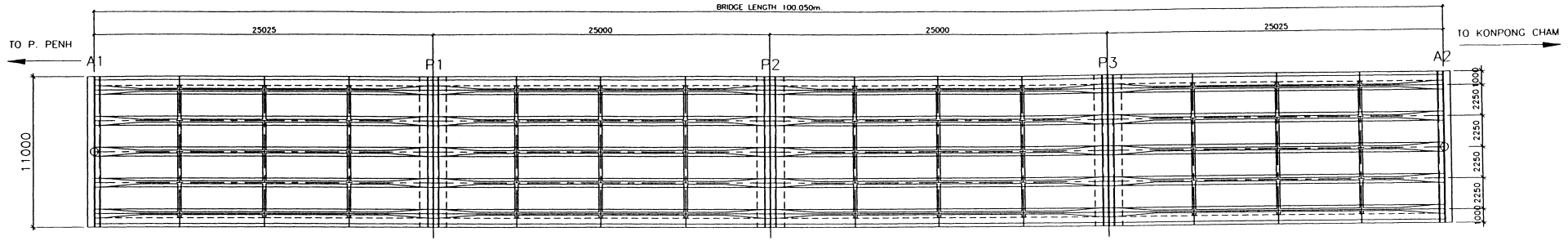
END DIAPHRAME BEAM

CROSS BEAM

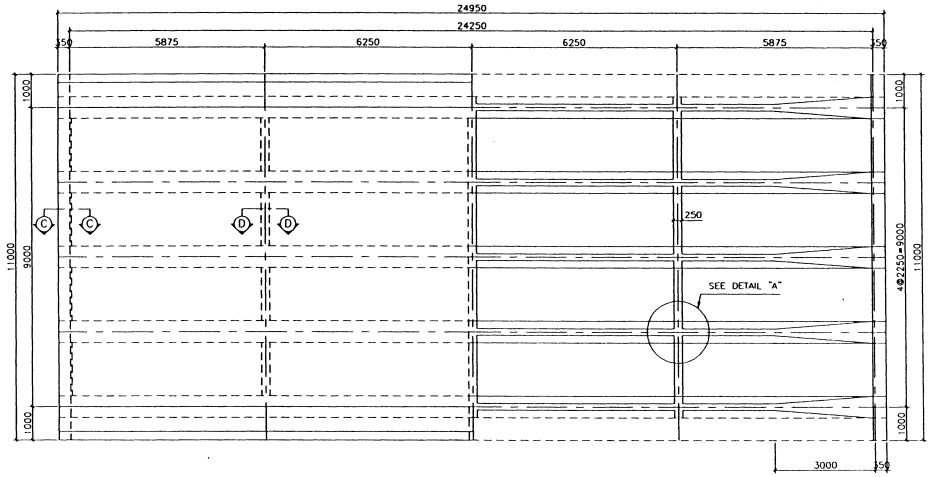


DETAIL " A "
SCALE 1:20

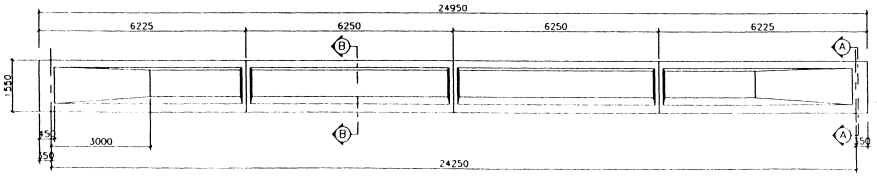
MINISTRY OF PUBLIC WORKS AND TRANSPORT			THE KINGDOM OF CAMBODIA	
PROJECT	Improvement of Bridges on National Highway Route 6A			
CONSULTANT	PACIFIC CONSULTANTS INTERNATIONAL			
DRAWING TITLE	General View of PC-I Girder for Bridge No.25			
SCALE	A1=1:150	A3=1:300	DRAWING NO.	12/20



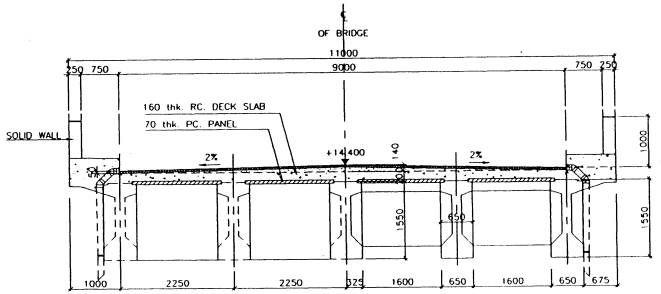
BRIDGE PLAN
SCALE 1:150



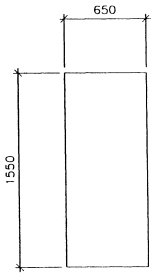
I- GIRDER PLAN
SCALE 1:75



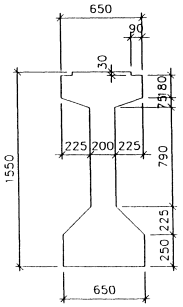
I-GIRDER SIDE VIEW
SCALE 1:75



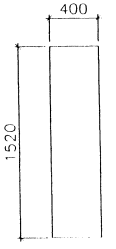
SECTION
SCALE 1:50



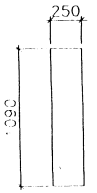
A – A
SCALE 1:20



B – B
SCALE 1:20



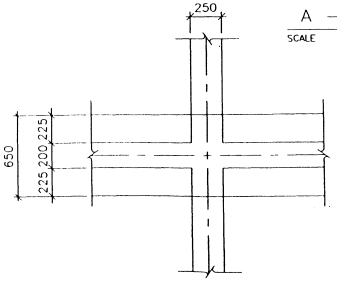
C – C
SCALE 1:20



D – D
SCALE 1:20

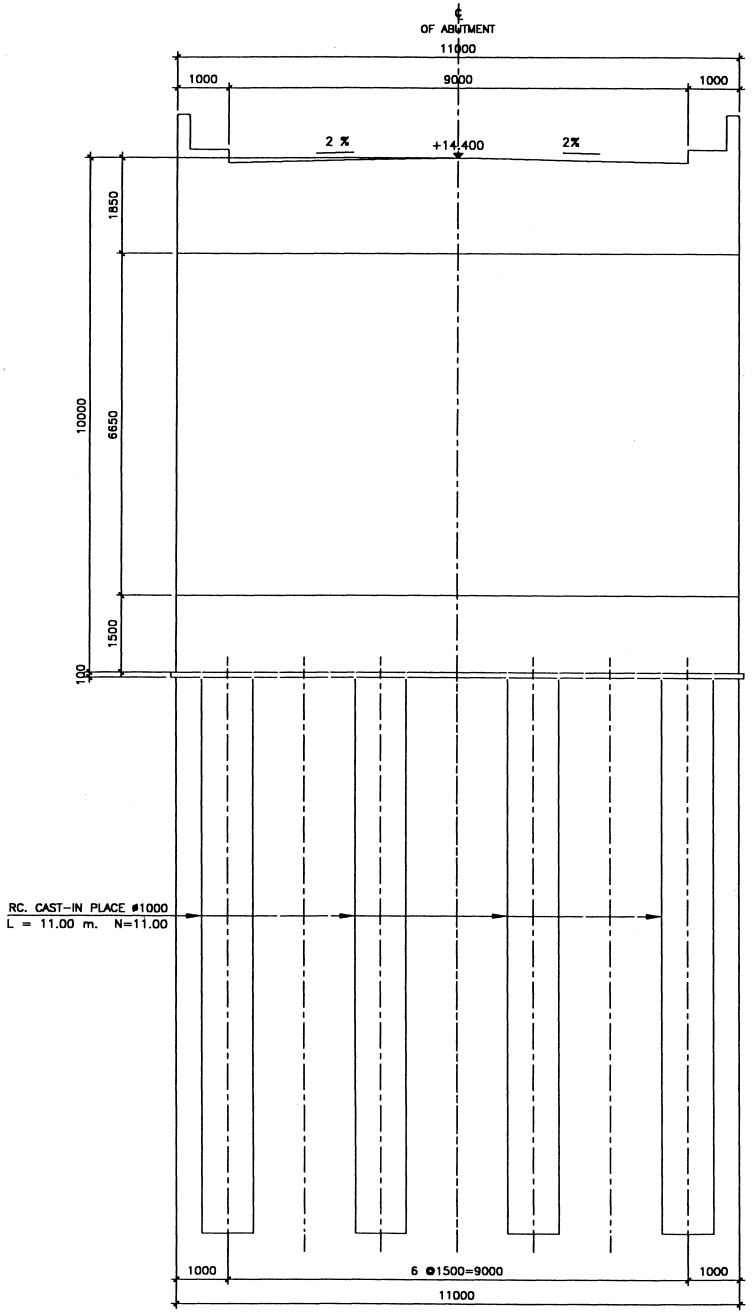
END DIAPHRAM BEAM

CROSS BEAM



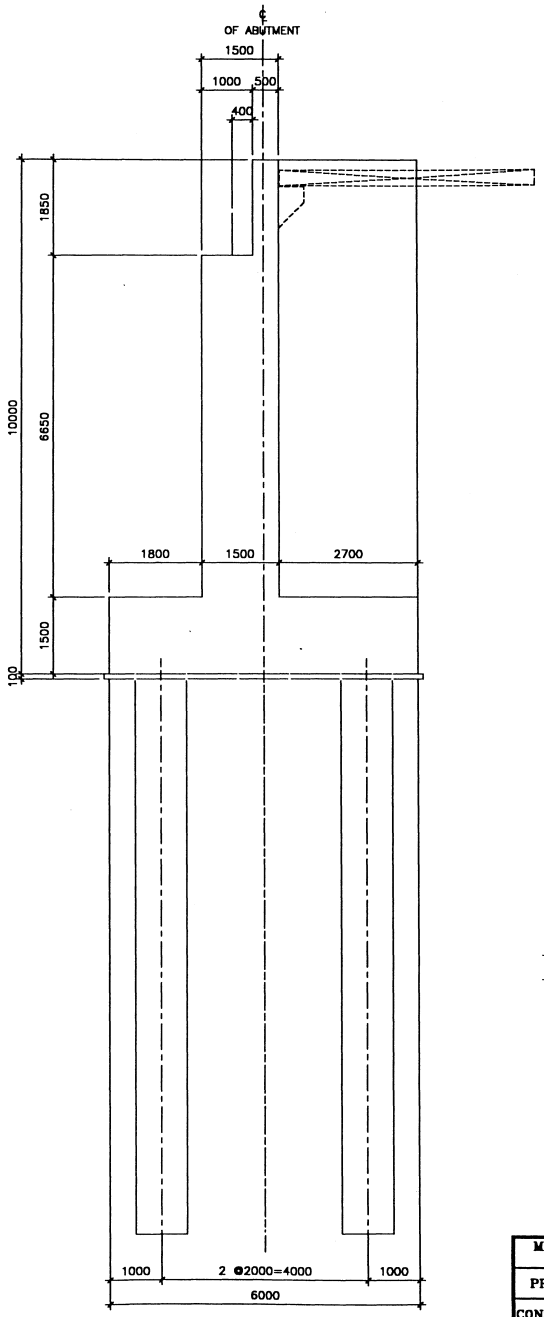
DETAIL " A "
SCALE 1:20

MINISTRY OF PUBLIC WORKS AND TRANSPORT			THE KINGDOM OF CAMBODIA	
PROJECT	Improvement of Bridges on National Highway Route 6A			
CONSULTANT	PACIFIC CONSULTANTS INTERNATIONAL			
DRAWING TITLE	General View of PC-I Girder for Bridge No.26			
SCALE	A1=1:150	A3=1:300	DRAWING NO.	13/20



FRONT VIEW

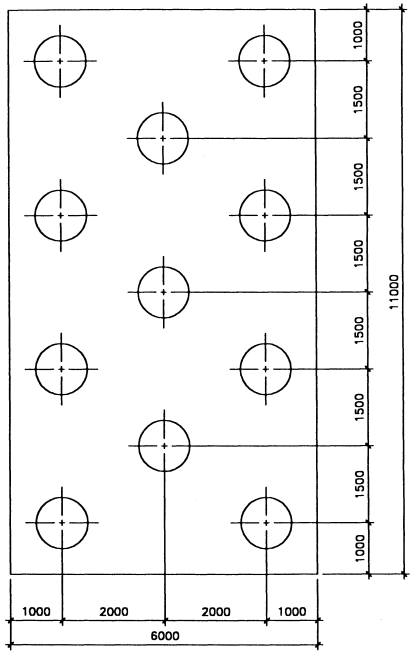
SCALE 1:100



SIDE VIEW

SCALE 1:100

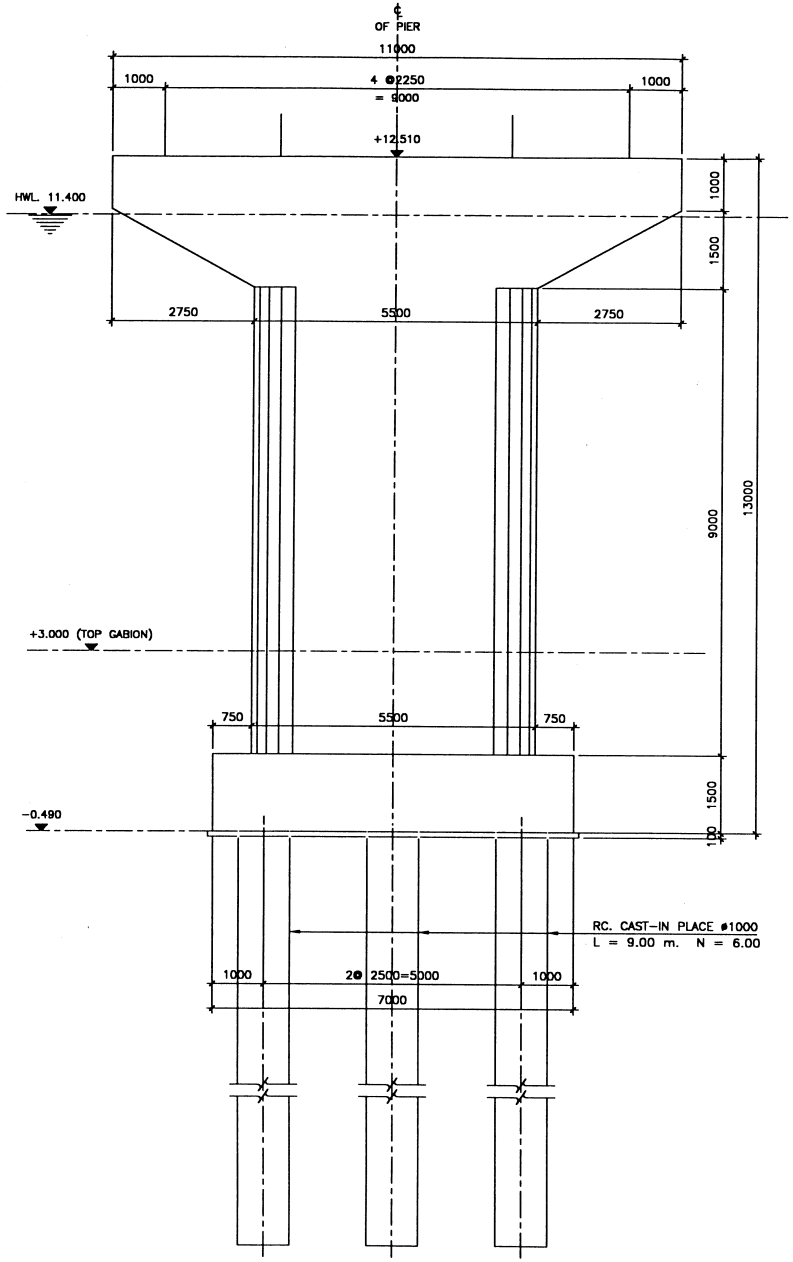
ABUTMENT A1 & A2



BORING PILE PLAN

SCALE 1:100

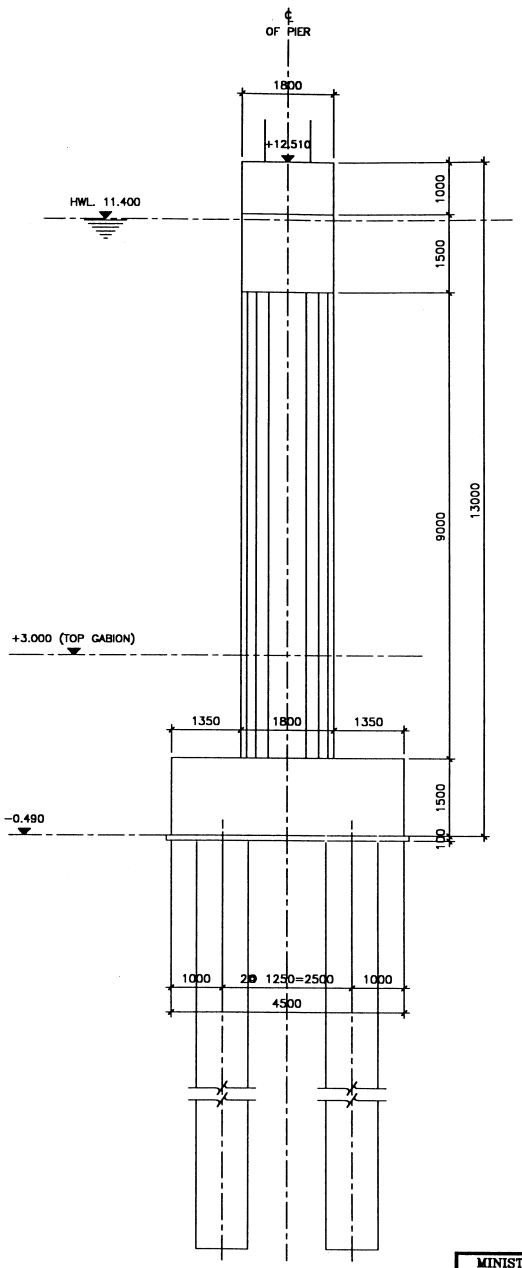
MINISTRY OF PUBLIC WORKS AND TRANSPORT		THE KINGDOM OF CAMBODIA	
PROJECT	Improvement of Bridges on National Highway Route 6A		
CONSULTANT	PACIFIC CONSULTANTS INTERNATIONAL		
DRAWING TITLE	General View of Abutment for Bridge No.24		
SCALE	1 : 100	DRAWING NO.	14/20



FRONT VIEW

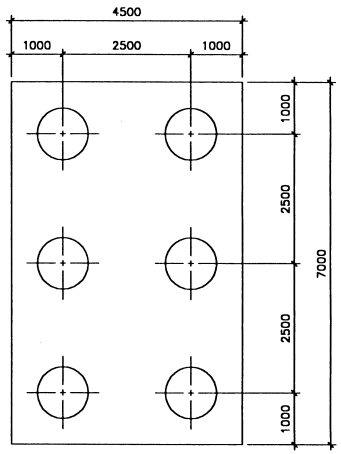
SCALE 1:100

PIER



SIDE VIEW

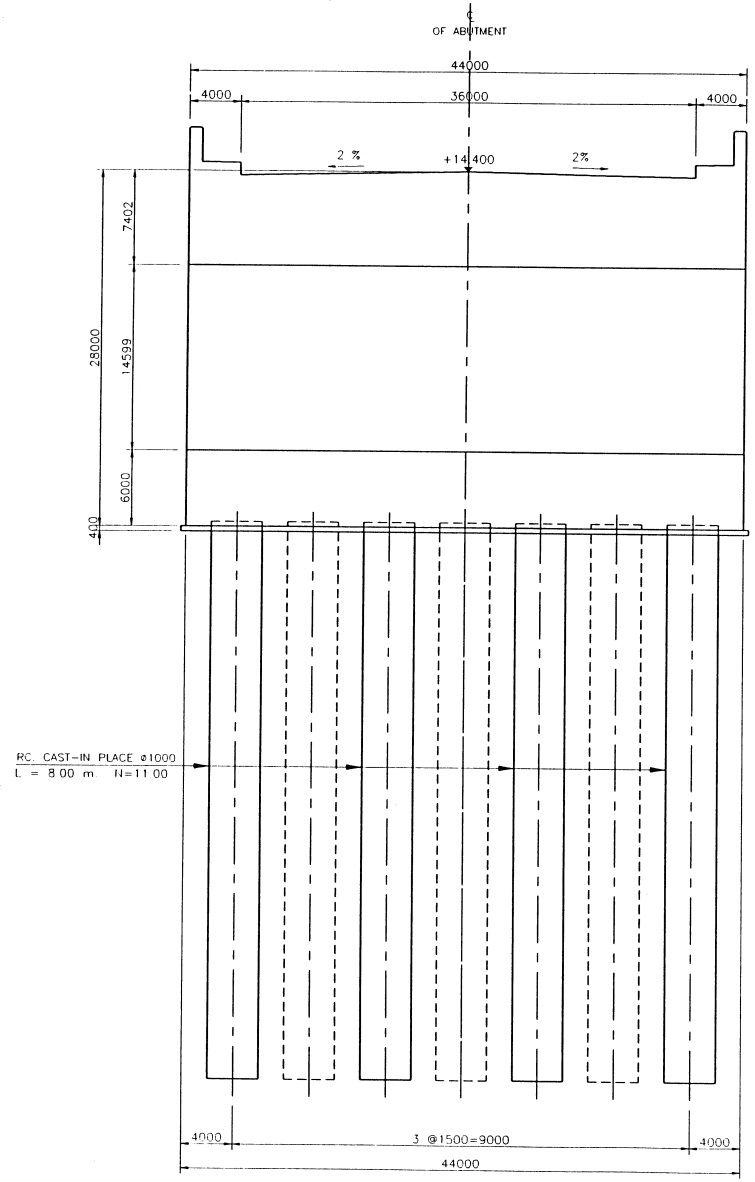
SCALE 1:100



BORING PILE PLAN

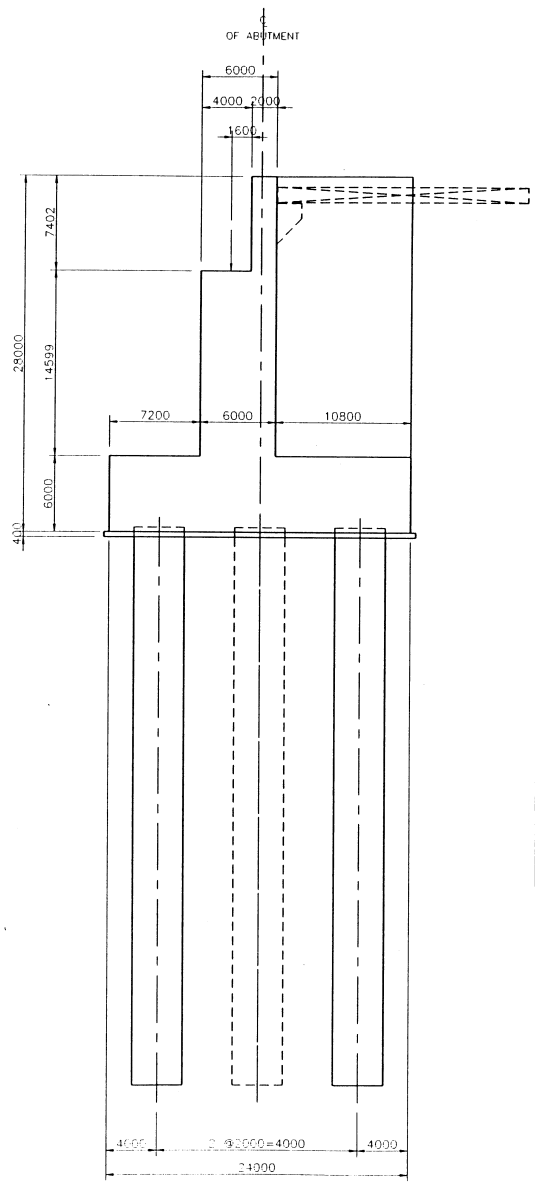
SCALE 1:100

MINISTRY OF PUBLIC WORKS AND TRANSPORT		THE KINGDOM OF CAMBODIA	
PROJECT	Improvement of Bridges on National Highway Route 6A		
CONSULTANT	PACIFIC CONSULTANTS INTERNATIONAL		
DRAWING TITLE	General View of Pier for Bridge No.24		
SCALE	1 : 100	DRAWING NO.	15/20



FRONT VIEW

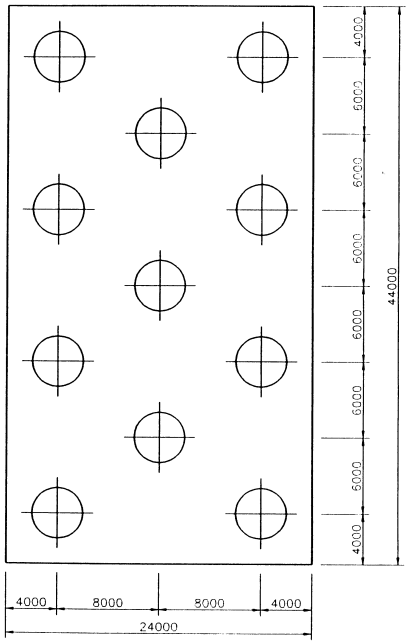
SCALE 1:400



ABUTMENT A1 & A2

SADE VIEW

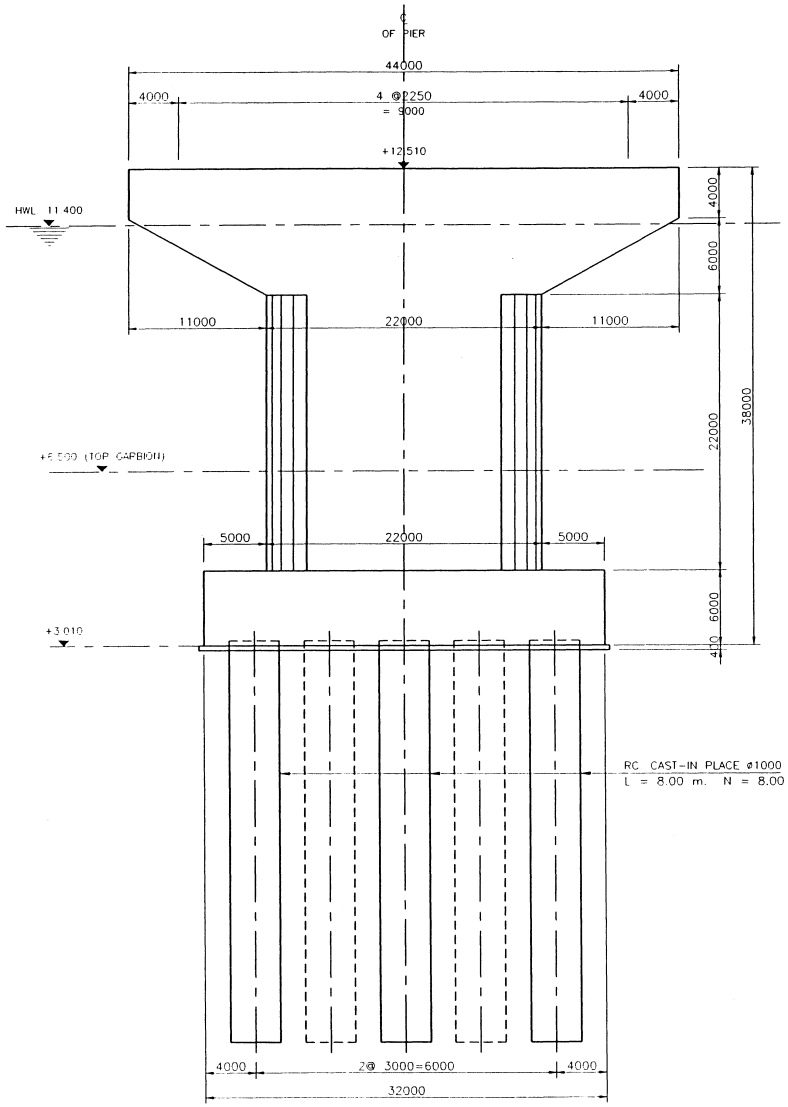
SCALE 1:400



BORING PILE PLAN

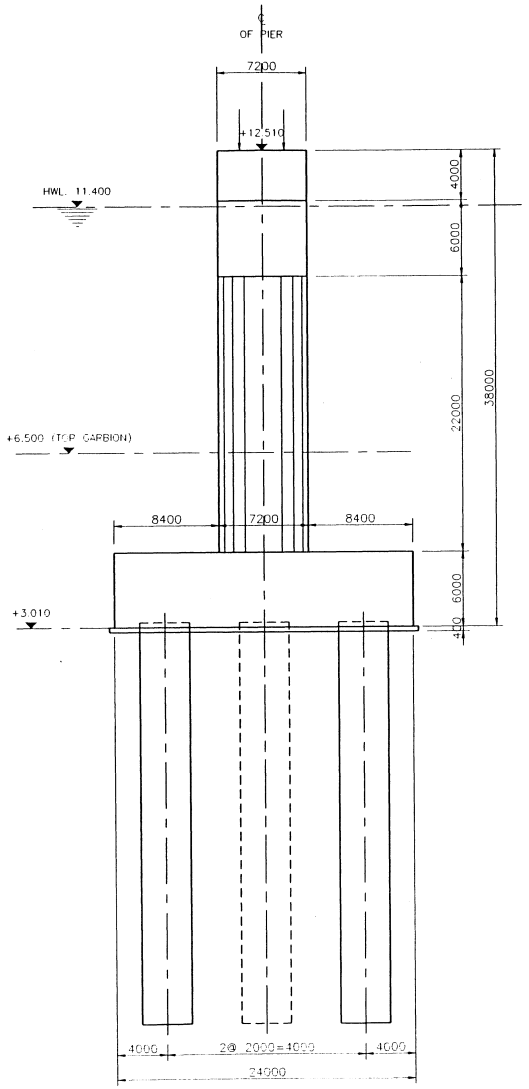
SCALE 1:400

MINISTRY OF PUBLIC WORKS AND TRANSPORT		THE KINGDOM OF CAMBODIA	
PROJECT	Improvement of Bridges on National Highway Route 6A		
CONSULTANT	PACIFIC CONSULTANTS INTERNATIONAL		
DRAWING TITLE	General View of Abutment for Bridge No.25		
SCALE	1 : 400	DRAWING NO.	16/20



FRONT VIEW

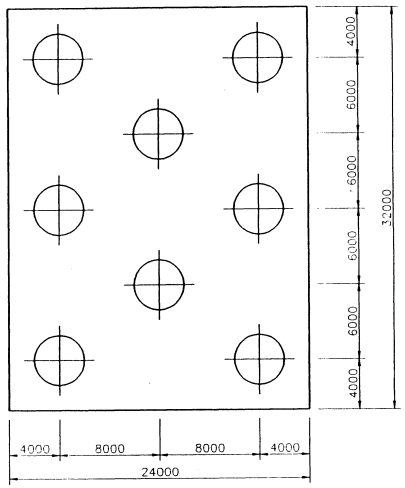
SCALE 1:400



SIDE VIEW

SCALE 1:400

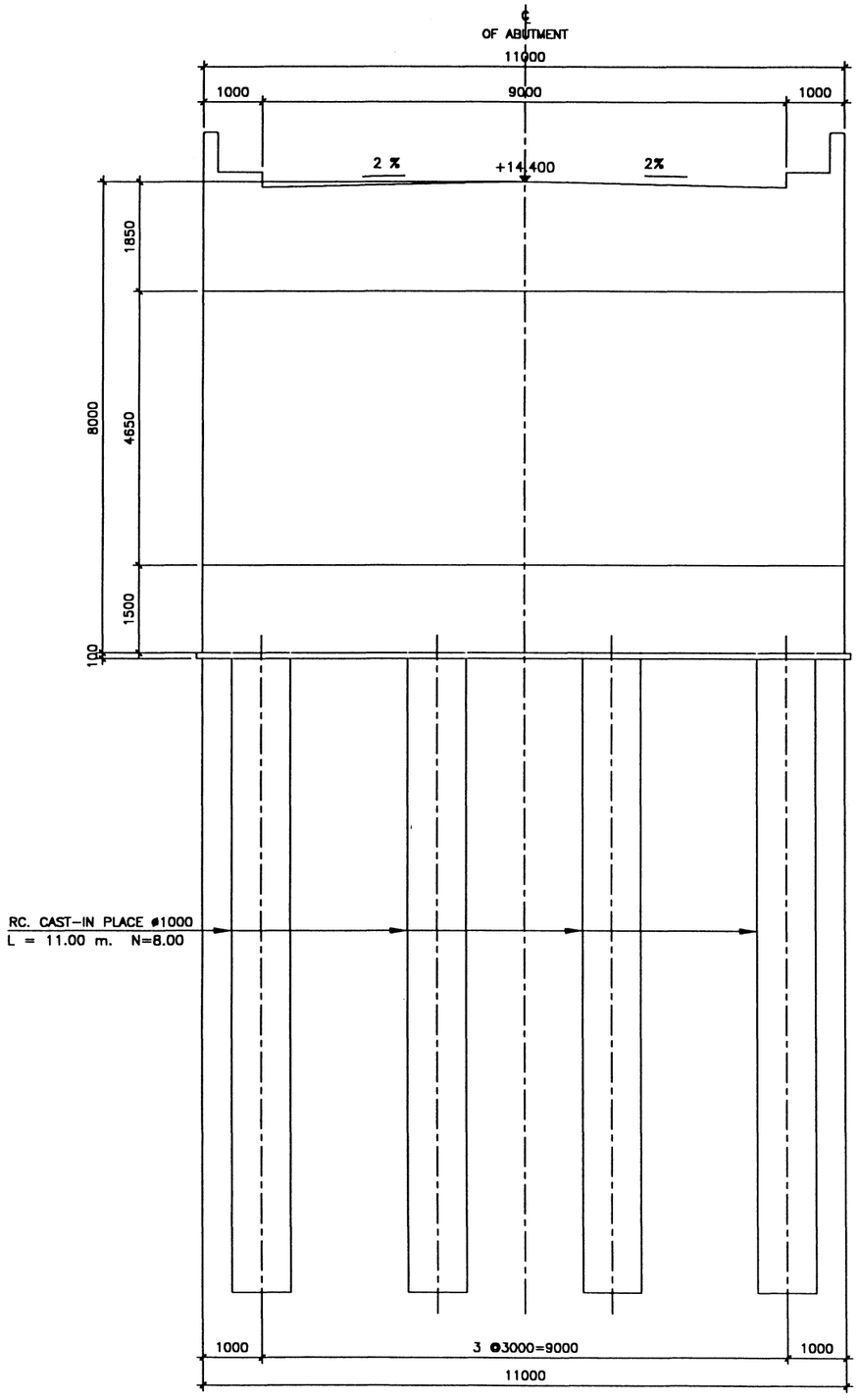
PIER



BORING PILE PLAN

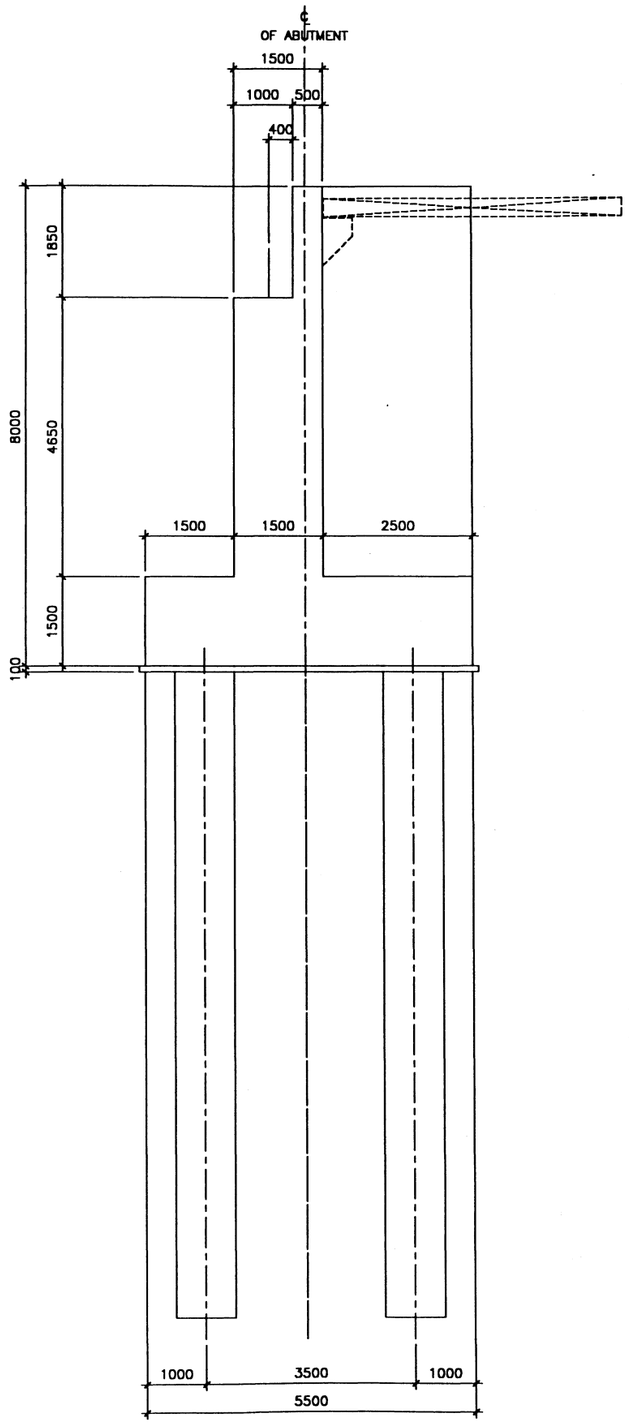
SCALE 1:400

MINISTRY OF PUBLIC WORKS AND TRANSPORT		THE KINGDOM OF CAMBODIA	
PROJECT	Improvement of Bridges on National Highway Route 6A		
CONSULTANT	PACIFIC CONSULTANTS INTERNATIONAL		
DRAWING TITLE	General View of Pier for Bridge No.25		
SCALE	1 : 400	DRAWING NO.	17/20



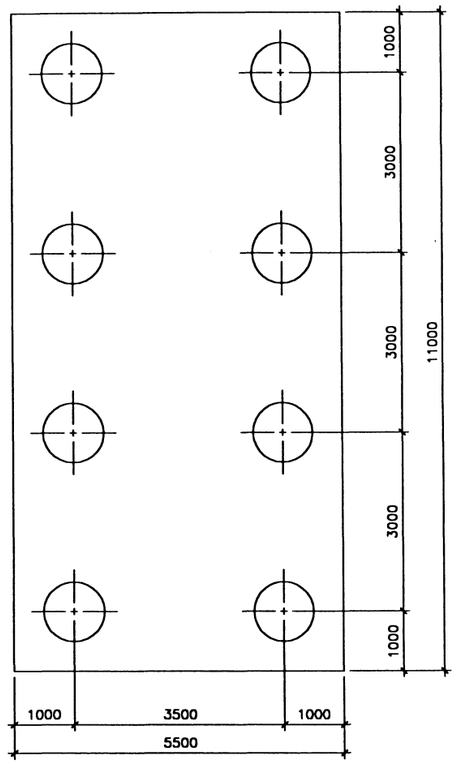
FRONT VIEW

SCALE 1:100



SIDE VIEW

SCALE 1:100

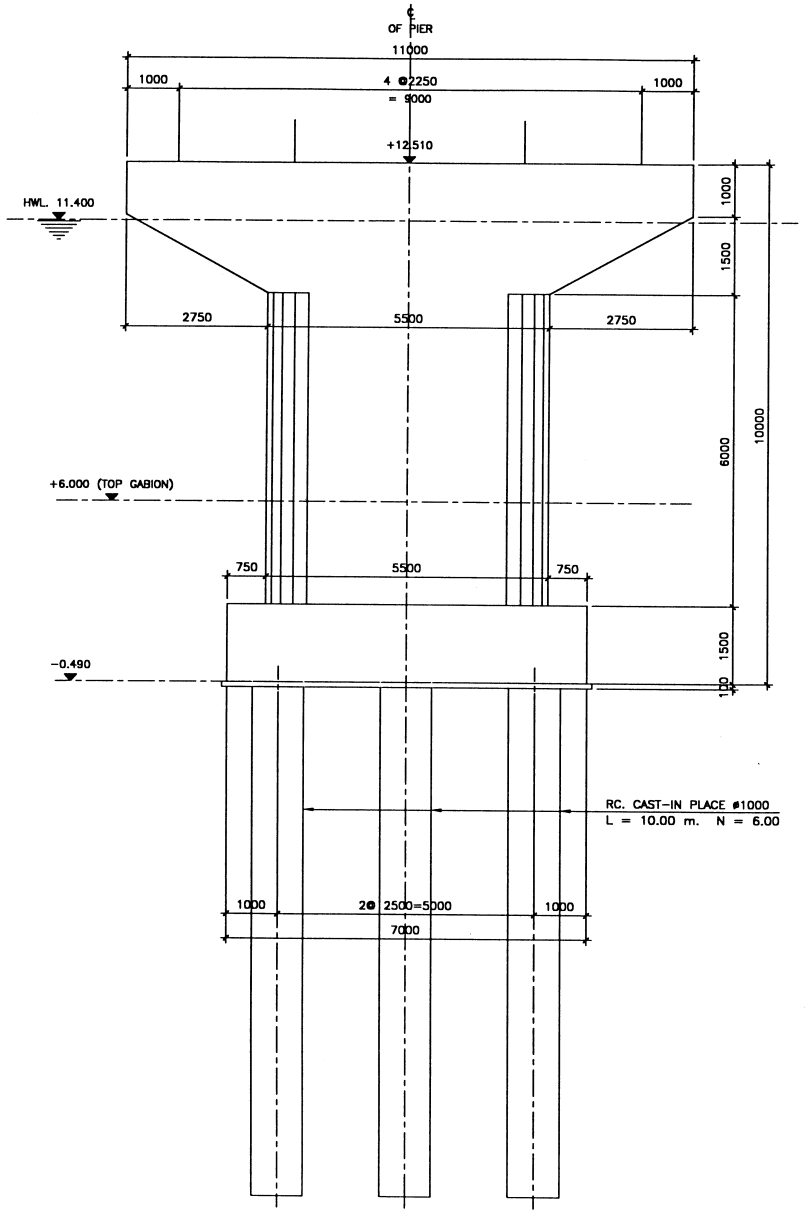


BORING PILE PLAN

SCALE 1:100

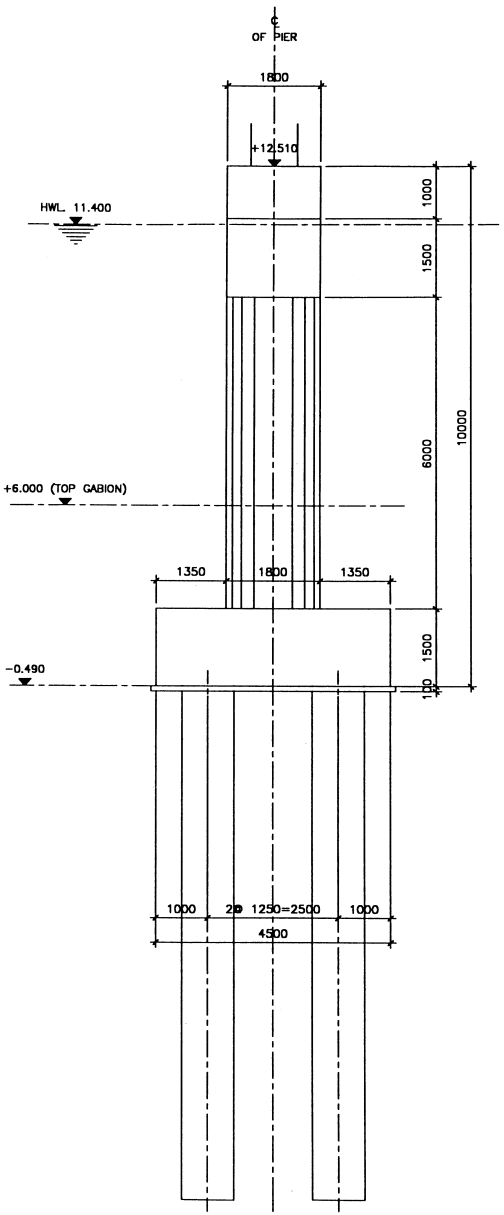
ABUTMENT A1 & A2

MINISTRY OF PUBLIC WORKS AND TRANSPORT		THE KINGDOM OF CAMBODIA	
PROJECT	Improvement of Bridges on National Highway Route 6A,		
CONSULTANT	PACIFIC CONSULTANTS INTERNATIONAL		
DRAWING TITLE	General View of Abutment for Bridge No.26		
SCALE	1 : 100	DRAWING NO.	18/20



FRONT VIEW

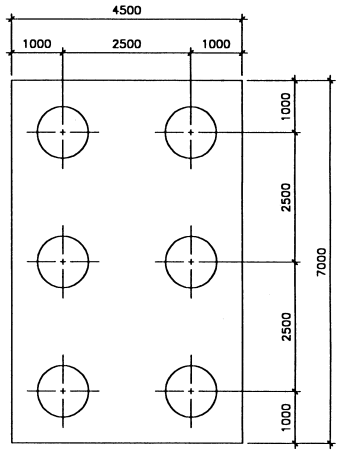
SCALE 1:100



SIDE VIEW

SCALE 1:100

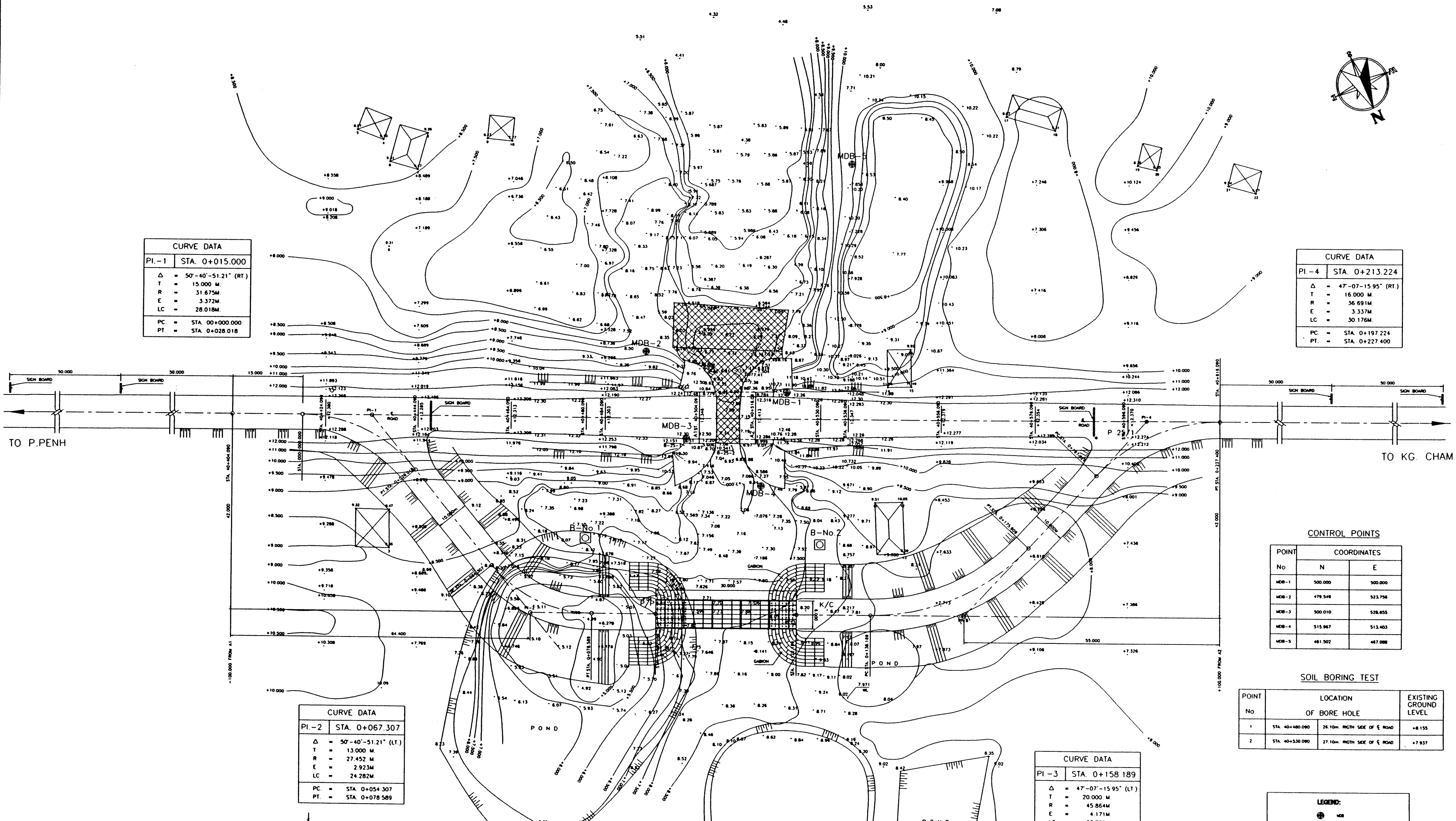
PIER



BORING PILE PLAN

SCALE 1:100

MINISTRY OF PUBLIC WORKS AND TRANSPORT		THE KINGDOM OF CAMBODIA	
PROJECT	Improvement of Bridges on National Highway Route 6A		
CONSULTANT	PACIFIC CONSULTANTS INTERNATIONAL		
DRAWING TITLE	General View of Pier for Bridge No.26		
SCALE	1 : 100	DRAWING NO.	19/20



CURVE DATA	
PI.-1	STA. 0+015.000
Δ = 50°-40'-51.21" (RT.)	
T = 15.000 M.	
R = 31.675M.	
E = 3.372M.	
LC = 28.018M.	
PC. = STA. 00+000.000	
PT. = STA. 0+028.018	

CURVE DATA	
PI.-2	STA. 0+067.307
Δ = 50°-40'-51.21" (LT.)	
T = 13.000 M.	
R = 27.452 M.	
E = 2.923M.	
LC = 24.282M.	
PC. = STA. 0+054.307	
PT. = STA. 0+078.589	

CURVE DATA	
PI.-3	STA. 0+158.189
Δ = 47°-07'-15.95" (LT.)	
T = 20.000 M.	
R = 45.864M	
E = 4.171M.	
LC = 37.720M.	
PC. = STA. 0+138.189	
PT. = STA. 0+175.909	

CURVE DATA	
PI.-4	STA. 0+213.224
Δ = 47°-07-15.95" (RT.)	
T = 16.000 M.	
R = 36.691M.	
E = 3.337M.	
LC = 30.176M.	
PC. = STA. 0+197.224	
PT. = STA. 0+227.400	

CONTROL POINTS

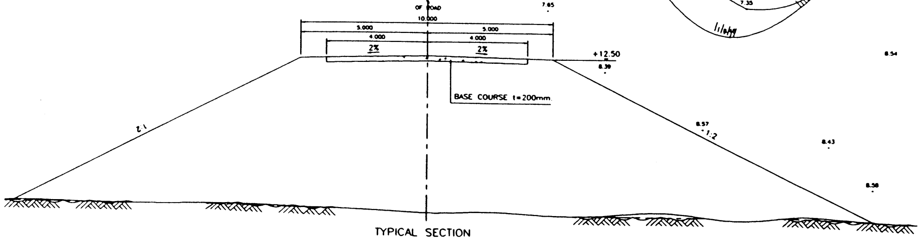
POINT No.	COORDINATES N	E
MDB-1	500.000	500.000
MDB-2	479.549	523.756
MDB-3	500.010	528.655
MDB-4	515.967	513.403
MDB-5	461.502	467.088

SOIL BORING TEST

POINT No.	LOCATION OF BORE HOLE		EXISTING GROUND LEVEL
1	STA. 40+480.090	26.10m. RIGTH SIDE OF ℄ ROAD	+8.155
2	STA. 40+530.090	27.10m. RIGTH SIDE OF ℄ ROAD	+7.937

LEGEND:

- MDB
- SURVEY POINT
- CONTOUR LINE OF GROUND LEVEL
- GABION
- HOUSE
- BORE HOLE POINT



TYPICAL SECTION
OF DETOUR ROAD
SCALE 1:100

MINISTRY OF PUBLIC WORKS AND TRANSPORT	THE KINGDOM OF CAMBODIA		
PROJECT	Improvement of Bridges on National Highway Route 6A		
CONSULTANT	PACIFIC CONSULTANTS INTERNATIONAL		
DRAWING TITLE	Detour Road and Temporary Bridge for Bridge No.25		
SCALE	A1=1:400 A3=1:800	DRAWING NO.	20/20

6-6. Data Collection

List of Data Collection

Area	South-east Asia	Name of the Project	Basic Design Study on the Project for Improvement of Bridges on National Road 6A	Basic Design Study		Collected By	
Country	The Kingdom of Cambodia			Period of the Survey	2000/01/16 - 2000/02/24 2000/05/14 - 2000/05/24	Chief Consultant	Mr.Yoshiaki Kaneko

No.	Document Name		Size	Pages	Original / Copy	Nos.	Published By						
1	Road Net Work Scale=1/1,000,000 & 1/2,000,000		A1 A3	1 1	Original	3 3	Ministry of Public Works and Transport (MPWT)						
2	Boundary Map Scale=1/100,000		A1	4	Original	3	MPWT						
3	Road Design Standard Part-1,2,3		A4	227	Copy	1	JICA Expert						
4	Bridge Design Standard		A4	25	Copy	1	JICA Expert						
5	As-built Drawing for Route 6A		A1	86 69	Copy	2	MPWT						
6	Preliminary Study & Evaluation/Photo		A4	One set	Original	1	JICA Tokyo						
7	Development Objectives strategies & Programs		A4	21	Original	1	JICA Tokyo						
8	Bridge Data Information, National Road 1, 2, 3, 4, 5, 6, 7, 11		A4	One set	Original	1	JICA Tokyo						
9	Public Investment Programme, 1998-2000		A4	One set	Original	1	JICA Tokyo						

No.	Document Name		Size	Pages	Original / Copy	Nos.	Published By						
10	Cambodia Road Net Work Phnom Penh Oct.1998		A4	37	Original	1	JICA Tokyo						
11	Basic Design Report for Route No.6 &7		A4	One set	Copy	1	MPWT						
12	Detailed Design Drawings for Route No.6 & 7		A3	One set	Copy	1	MPWT						
13	Detailed Design Report for Mekong Bridge on Route No.7 (Design Condition)		A4	One set	Copy	1	MPWT						
14	Priority of National Road Restoration (Road Map of Grant Aid)		A3	1	Original	3	MPWT						
15	Basi Design Study for Route 6A Draft Final Report		A4	One set	Copy	1	MPWT						
16	Proposal for Mekong River		A4	One set	Copy	1	MPWT						
17	Construction Method for Route 6 and 7		A4	Two set	Copy	2	MPWT						
18	Monthly Bullentin of Statistics		A4	One set	Copy	1	MPWT						
19	The present and Future Sihanoukville Port Authority		A4	One set	Copy	1	JICA Expert						
20	Price List from 01-01-1998 Building and Public Works Laboratory		A4	One set	Copy	1	MPWT						
21	Bridge No.26 of National Road Route 6A		A4	One set	Original	1	JICA Tokyo						

No.	Document Name		Size	Pages	Original / Copy	Nos.	Published By						
22	Costoms Tariff 2000		A4	One set	Original	1	Ministry of Economy and Finance						
23	Labor Code 1999		A4	One set	Original	1	National Assembly						
24	Aerial Photo 1992		A4	19	Original	1	MPWT						
25	Topographic Map 1965, 1/50,000		A1	1	Original	1	MPWT						
26	Geology Map Phnom penh 1/500,000		A1	1	Original	1	MPWT						
27	Cambodia Reconnaissance survey Digital Data		A4	One set	Copy	1	MPWT						
28	Law on Environmental Protection and Natural Resource Management		A4	One Set	Copy	1	Ministry of Environment						
29	Sub-Degree on Environmental Impact Assessment Progress		A4	One Set	Copy	1	Ministry of Environment						
30	First Socioeconomic Development Plan 1996-2000		A4	One Set	Copy	1	Ministry of Planning						
31	Initial Environmental Examination and Social Impact Report		A4	One Set	Copy	1	SMEC, ADB						
32	Economic Evaluation and Review of TRS		A4	One Set	Copy	1	SMEC, ADB						

No.	Document Name		Size	Pages	Original / Copy	Nos.	Published By						
33	National Programme to Rehabilitate and Develop Feb.1994		A4	One Set	Copy	1	The Royal Government of Cambodia						
34	Topo map s = 1:100,000			6	Original	1	Ministry of Public Works and Transport, Public Works Reserch Center						
35	Daily and Monthly water level at Chruoy Changva, Kampong Cham, Prek Kdam, Bassac		A4	One Set	Copy	1	Ministry of Water Resources and Meteorology						
36	Monthly discharge at Chruoy Changva, Kampong Cham, Prek Kdam		A4	One Set	Copy	1	Ministry of Water Resources and Meteorology						
37	Daily water level at Chruoy Changva, Kampong Cham, Prek Kdam, Bassac		A4	One Set	Copy	1	Ministry of Water Resources and Meteorology						
38	Daily discharge at Chruoy Changva, Kampong Cham, Prek Kdam		A4	One Set	Copy	1	Ministry of Water Resources and Meteorology						
39	Basic River at Phnom Penh (Station Description)		A4	One Set	Copy	1	Ministry of Water Resources and Meteorology						
40	Water Level and H-Q curve at Speam Tras Year 1999 National Road No.6, 6A & No.24Br.		A4	5	Copy	1	Ministry of Water Resources and Meteorology						
41	Hydraulic Atras Mekong River in Cambodia Volume 1, Mekong River from Cambodia / Viet Nam Border to Phnom Penh		A2 Long	One Set	Copy	1	Ministry of Public Works and Transport, Department of Waterways						
42	Hydraulic Atras Mekong River in Cambodia Volume 2, Mekong River from Phnom Penh to Cambodia / Laos Border		A3 Long	One Set	Original	1	Ministry of Public Works and Transport, Department of Waterways						
43	Hydraulic Atras Mekong River in Cambodia Volume 3, Tonle Sap River from Phnom Penh to Tonle Sap Lake		A4 Long	One Set	Original	1	Ministry of Public Works and Transport, Department of Waterways						
44	Meteorological Data of Temperature, Relative Humidity, Wind Direction & Velocity, Rainfall at Phnom Penh, Kampong Cham, Pusat		A4	One Set	Copy	1	Ministry of Water Resources and Meteorology						