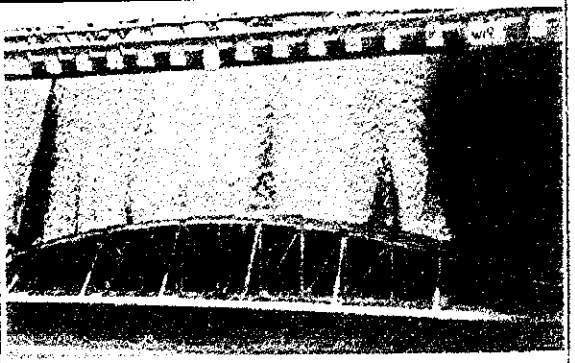
Survey Results of Gate Structure

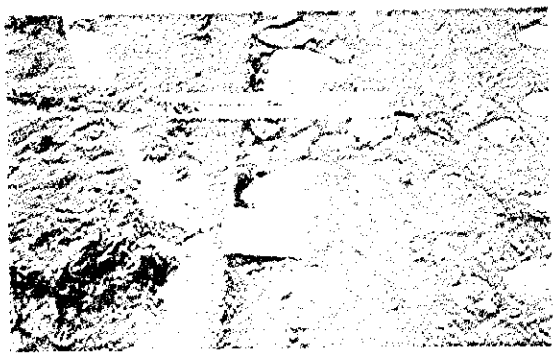
Gate No. W19 (Main Weir Gate)

Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top 10.0 Mid 10.0 Low 9.8 Btm 9.2 (9.5mm)	G
	Corrosion	U/S-Bottom L M S	—
	Damage-Rivet	Corner-L — Corner-R —	—
Truss	Thickness-Avg	Bottom Flange 18.9, Bottom Web 18.3 (19.1mm)	G
	Distortion		—
End Girder	Thickness-Avg	L-Bottom 9.9, R-Bottom 10.4 (11.1mm)	C
	Remodeling	Left No Right No	↑
	Distortion	Left — Right —	
Bottom	Thickness-Avg	Flange 14.6 mm (16.3), Web 9.5 mm (9.4)	
Girder	Corrosion	L (M) S	
Rocker	Remodeling	Left No Right No	
Assembly	Distortion	Left — Right —	
	Others	No Function	
Roller Train	Missing	Left — Right —	
	Diameter-Roller	Average — mm	
	Distortion	Left — Right —	
Seal	Left	—	
	Bottom	—	
	Right	—	
Inclination		Top Level Difference 0 mm	↓
Leakage		L M (S)	C
Sill			
Side Seal	Abrasion-Max	Left: — mm, Right: — mm	RS
Roller Truck	Abrasion-Max	Left: — mm, Right: — mm	RL
Roller Guard	Missing	Left 0 Right 0	N
	Defect	Left 0 Right 0	N
Sill Beam	Abrasion	L M (S)	RS
Concrete	Damage-Left	L (M) S	RS
	Damage-Right	L (M) S	RS
	Damage-Bottom	L (M) S	RS

Survey Item		Survey Result	Judge
Hoisting Device			
Wire Rope	Main-Left	y: — Distortion: — Corrosion: — Oil: —	G
	Main-Right	y: — Distortion: — Corrosion: — Oil: —	G
	Roller Train-L	y: — Distortion: — Corrosion: — Oil: —	C
	Roller Train-R	y: — Distortion: — Corrosion: — Oil: —	C
Drum	Left	Damage: — Function: —	RS
	Right	Damage: — Function: —	↑
Bearing	Drum	Damage: — Oil: —	↓
	Counter Shaft	Damage: — Oil: —	RS
	Reduction Gear	Damage: — Oil: —	C
Gear	Drum Gear-L	Damage: — Fitting: — Backlash: — Oil: —	RS
	Drum Pinion-L	Damage: —	↑
	Drum Gear-R	Damage: — Fitting: — Backlash: — Oil: —	
	Drum Pinion-R	Damage: —	
	Gear-Middle	Damage: — Fitting: — Backlash: — Oil: —	
	Pinion-Middle	Damage: —	
Basement	Drum-L	Damage: — Corrosion: L M (S)	↓
	Drum-R	Damage: — Corrosion: L M (S)	
	Drive Device	Damage: — Corrosion: L (M) S	RS
Drive Chain		Damage: — Looseness: — Oil: —	C
Chain Sprocket		Damage: — Corrosion: L (M) S	↑
Reduction Gear		Damage: — Corrosion: L (M) S	
Cover	Drum-L	Damage: — Corrosion: L M (S)	
	Drum-R	Damage: — Corrosion: L M (S)	↓
	Gear-Middle	Damage: — Corrosion: L (M) S	C
Counter Shaft		Damage: — Corrosion: L M S	G
Counter Weight		Damage: — Corrosion: L M S	RS
Hoisting Torque	Wet Condition	52.5 kg-m	RL
	Dry Condition	3.9 kg-m	RS
Superstructure		Damage: — Corrosion: L M (S)	RS

Photograph





Remarks: Judgement = N: Totally Replace, C: Partly Replace, RL: Large Repair, RM: Medium Repair, RS: Small Repair, G: No Repair, -: No Data.

( ) shows design dimension.

Survey Results of Gate Structure

Gate No. W20 (Main Weir Gate)

Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top – Mid – Low – Btm 8.8 (9.5mm)	G
	Corrosion	U/S-Bottom L M S	—
	Damage-Rivet	Corner-L – Corner-R –	—
Truss	Thickness-Avg	Bottom Flange 18.6, Bottom Web 18.5 (19.1mm)	G
	Distortion		—
End Girder	Thickness-Avg	L-Bottom 9.5, R-Bottom 10.8 (11.1mm)	C
	Remodeling	Left No Right No	↑
	Distortion	Left – Right –	
Bottom Girder	Thickness-Avg	Flange15.0 mm (16.3), Web 9.1 mm (9.4)	
	Corrosion	L (M) S	
Rocker Assembly	Remodeling	Left No Right No	
	Distortion	Left 1 m Broken Right –	
	Others	No Function	
Roller Train	Missing	Left 1 Right –	
	Diameter-Roller	Average – mm	
	Distortion	Left – Right –	
Seal	Left	–	
	Bottom	–	
	Right	–	
Inclination		Top Level Difference 20 mm	↓
Leakage		(L) M S	C
Sill			
Side Seal	Abrasion-Max	Left: – mm, Right: – mm	RS
Roller Truck	Abrasion-Max	Left: – mm, Right: – mm	RL
Roller Guard	Missing	Left 0 Right 1	N
	Defect	Left 1 Right 0	N
Sill Beam	Abrasion	L M S	—
Concrete	Damage-Left	L M (S)	RS
	Damage-Right	L (M) S	RS
	Damage-Bottom	L (M) S	RS

Survey Item		Survey Result	Judge
Hoisting Device			
Wire Rope	Main-Left	y: – Distortion: – Corrosion: – Oil: –	G
	Main-Right	y: – Distortion: – Corrosion: – Oil: –	G
	Roller Train-L	y: – Distortion: – Corrosion: – Oil: –	C
	Roller Train-R	y: – Distortion: – Corrosion: – Oil: –	C
Drum	Left	Damage: – Function: –	RS
	Right	Damage: – Function: –	↑
Bearing	Drum	Damage: – Oil: –	↓
	Counter Shaft	Damage: – Oil: –	RS
	Reduction Gear	Damage: – Oil: –	C
Gear	Drum Gear-L	Damage: – Fitting: – Backlash: – Oil: –	RS
	Drum Pinion-L	Damage: –	↑
	Drum Gear-R	Damage: – Fitting: – Backlash: – Oil: –	
	Drum Pinion-R	Damage: –	
	Gear-Middle	Damage: – Fitting: – Backlash: – Oil: –	
	Pinion-Middle	Damage: –	
Basement	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Drive Device	Damage: – Corrosion: L (M) S	RS
Drive Chain		Damage: – Looseness: L Oil: –	C
Chain Sprocket		Damage: – Corrosion: L (M) S	↑
Reduction Gear		Damage: – Corrosion: L (M) S	
Cover	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Gear-Middle	Damage: – Corrosion: L (M) S	C
Counter Shaft		Damage: – Corrosion: L M S	G
Counter Weight		Damage: – Corrosion: L M S	RS
Hoisting Torque	Wet Condition	61.2 kg-m	RL
	Dry Condition	3.9 kg-m	RS
Superstructure		Damage: – Corrosion: L M (S)	RS

Photograph

Remarks: Judgement = N: Totally Replace, C: Partly Replace, RL: Large Repair, RM: Medium Repair, RS: Small Repair, G: No Repair, -: No Data.

( ) shows design dimension.

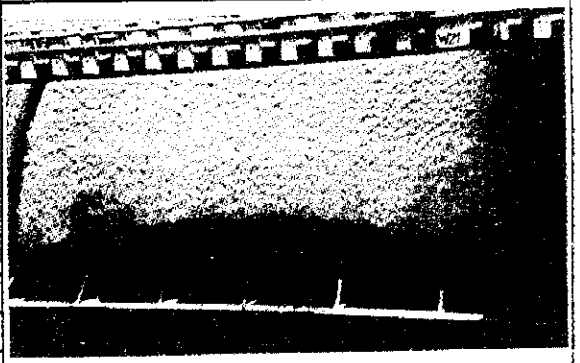
Survey Results of Gate Structure

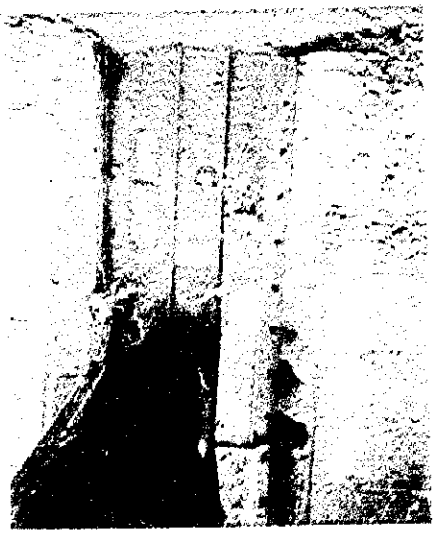
Gate No. W21 (Main Weir Gate)

Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top – Mid – Low – Btm 9.3 (9.5mm)	G
	Corrosion	U/S-Bottom L M S	—
	Damage-Rivet	Corner-L – Corner-R –	—
Truss	Thickness-Avg	Bottom Flange 18.2, Bottom Web 18.3 (19.1mm)	G
	Distortion		—
End Girder	Thickness-Avg	L-Bottom 10.2, R-Bottom 11.3 (11.1mm)	C
	Remodeling	Left No Right No	↑
	Distortion	Left – Right –	
Bottom Girder	Thickness-Avg	Flange 15.0 mm (16.3), Web 10.0 mm (9.4)	
	Corrosion	L M (S)	
Rocker Assembly	Remodeling	Left No Right No	
	Distortion	Left – Right –	
	Others	No Function	
Roller Train	Missing	Left 2 Right 1	
	Diameter-Roller	Average – mm	
	Distortion	Left – Right –	
Seal	Left	–	
	Bottom	–	
	Right	–	
Inclination		Top Level Difference 115 mm	↓
Leakage		(L) M S	C
Sill			
Side Seal	Abrasion-Max	Left: – mm, Right: – mm	RS
Roller Truck	Abrasion-Max	Left: – mm, Right: – mm	RL
Roller Guard	Missing	Left 0 Right 1	N
	Defect	Left 1 Right 1	N
Sill Beam	Abrasion	L (M) S	N
Concrete	Damage-Left	(L) M S	RS
	Damage-Right	(L) M S	RS
	Damage-Bottom	L (M) S	RS

Survey Item		Survey Result	Judge
Hoisting Device			
Wire Rope	Main-Left	y: – Distortion: – Corrosion: – Oil: –	G
	Main-Right	y: – Distortion: – Corrosion: – Oil: –	G
	Roller Train-L	y: – Distortion: – Corrosion: – Oil: –	C
	Roller Train-R	y: – Distortion: – Corrosion: – Oil: –	C
Drum	Left	Damage: – Function: –	RS
	Right	Damage: – Function: –	↑
Bearing	Drum	Damage: – Oil: –	↓
	Counter Shaft	Damage: – Oil: –	RS
	Reduction Gear	Damage: – Oil: –	C
Gear	Drum Gear-L	Damage: – Fitting: – Backlash: – Oil: –	RS
	Drum Pinion-L	Damage: –	↑
	Drum Gear-R	Damage: – Fitting: – Backlash: – Oil: –	
	Drum Pinion-R	Damage: –	
	Gear-Middle	Damage: – Fitting: – Backlash: – Oil: –	
	Pinion-Middle	Damage: –	
Basement	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Drive Device	Damage: – Corrosion: L (M) S	RS
Drive Chain		Damage: – Looseness: – Oil: –	C
Chain Sprocket		Damage: – Corrosion: L (M) S	↑
Reduction Gear		Damage: – Corrosion: L (M) S	
Cover	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Gear-Middle	Damage: – Corrosion: L (M) S	C
Counter Shaft		Damage: – Corrosion: L M S	G
Counter Weight		Damage: – Corrosion: L M S	RS
Hoisting Torque	Wet Condition	28 kg-m	G
	Dry Condition	5.9 kg-m	RS
Superstructure		Damage: – Corrosion: L M (S)	RS

Photograph





Remarks: Judgement = N: Totally Replace, C: Partly Replace, RL: Large Repair, RM: Medium Repair, RS: Small Repair, G: No Repair, -: No Data.

( ) shows design dimension.

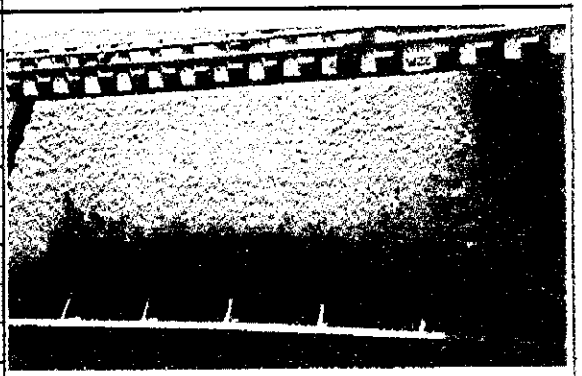
Survey Results of Gate Structure

Gate No. W22 (Main Weir Gate)

Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top – Mid – Low – Btm 8.7 (9.5mm)	G
	Corrosion	U/S-Bottom L M S	—
	Damage-Rivet	Corner-L – Corner-R –	—
Truss	Thickness-Avg	Bottom Flange 18.5, Bottom Web 18.6 (19.1mm)	G
	Distortion		—
End Girder	Thickness-Avg	L-Bottom 10.3, R-Bottom 9.7 (11.1mm)	C
	Remodeling	Left No Right No	↑
	Distortion	Left – Right –	
Bottom Girder	Thickness-Avg	Flange 14.5 mm (16.3), Web 9.2 mm (9.4)	
	Corrosion	L (M) S	
Rocker Assembly	Remodeling	Left No Right No	
	Distortion	Left – Right –	
	Others	No Function	
Roller Train	Missing	Left – Right –	
	Diameter-Roller	Average – mm	
	Distortion	Left – Right –	
Seal	Left	–	
	Bottom	–	
	Right	–	
Inclination		Top Level Difference 90 mm	↓
Leakage		(L) M S	C
Sill			
Side Seal	Abrasion-Max	Left: – mm, Right: – mm	RS
Roller Truck	Abrasion-Max	Left: – mm, Right: – mm	RL
Roller Guard	Missing	Left 0 Right 1	N
	Defect	Left 0 Right 0	N
Sill Beam	Abrasion	L M S	—
Concrete	Damage-Left	L M (S)	RS
	Damage-Right	L (M) S	RS
	Damage-Bottom	L (M) S	RS

Survey Item		Survey Result	Judge
Hoisting Device			
Wire Rope	Main-Left	y: – Distortion: – Corrosion: – Oil: –	G
	Main-Right	y: – Distortion: – Corrosion: – Oil: –	G
	Roller Train-L	y: – Distortion: – Corrosion: – Oil: –	C
	Roller Train-R	y: – Distortion: – Corrosion: – Oil: –	C
Drum	Left	Damage: – Function: –	RS
	Right	Damage: – Function: –	↑
Bearing	Drum	Damage: – Oil: –	↓
	Counter Shaft	Damage: – Oil: –	RS
	Reduction Gear	Damage: – Oil: –	C
Gear	Drum Gear-L	Damage: – Fitting: – Backlash: – Oil: –	RS
	Drum Pinion-L	Damage: –	↑
	Drum Gear-R	Damage: – Fitting: – Backlash: – Oil: –	
	Drum Pinion-R	Damage: –	
	Gear-Middle	Damage: – Fitting: – Backlash: – Oil: –	
	Pinion-Middle	Damage: –	
Basement	Drum-L	Damage: – Corrosion: L M (S)	↓
	Drum-R	Damage: – Corrosion: L M (S)	
	Drive Device	Damage: – Corrosion: L (M) S	RS
Drive Chain		Damage: – Looseness: – Oil: –	C
Chain Sprocket		Damage: – Corrosion: L (M) S	↑
Reduction Gear		Damage: – Corrosion: L (M) S	
Cover	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Gear-Middle	Damage: – Corrosion: L (M) S	C
Counter Shaft		Damage: – Corrosion: L M S	G
Counter Weight		Damage: – Corrosion: L M S	RS
Hoisting Torque	Wet Condition	21.5 kg-m	RL
	Dry Condition	3.1 kg-m	RS
Superstructure		Damage: – Corrosion: L M (S)	RS

Photograph



Remarks: Judgement = N: Totally Replace, C: Partly Replace, RL: Large Repair, RM: Medium Repair, RS: Small Repair, G: No Repair, -: No Data.

( ) shows design dimension.

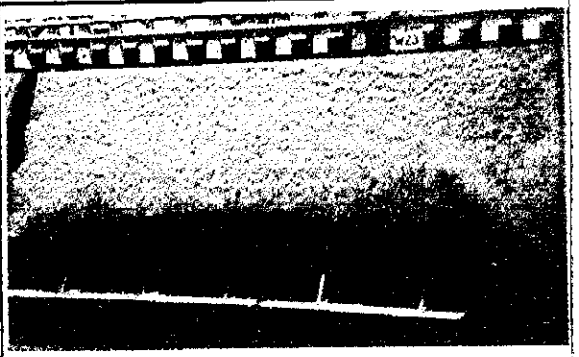
Survey Results of Gate Structure

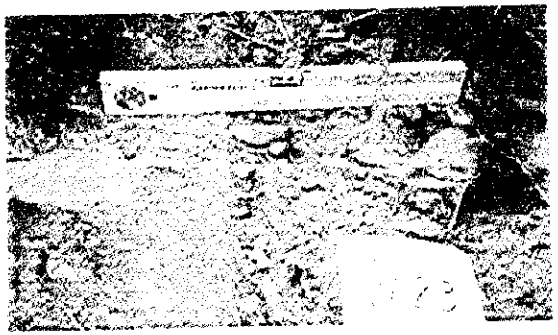
Gate No. W23 (Main Weir Gate)

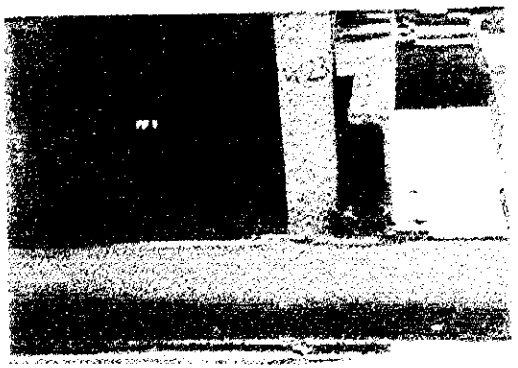
Survey Item			Survey Result	Judge
Gate Leaf				
	Skin Plate	Thickness-Avg	Top – Mid – Low – Btm 9.0 (9.5mm)	G
		Corrosion	U/S–Bottom L M S	–
		Damage-Rivet	Corner-L – Corner-R –	–
	Truss	Thickness-Avg	Bottom Flange 18.7, Bottom Web 18.7 (19.1mm)	G
		Distortion		–
	End Girder	Thickness-Avg	L-Bottom 9.9, R-Bottom 10.3 (11.1mm)	C
		Remodeling	Left No Right No	↑
		Distortion	Left – Right –	
	Bottom Girder	Thickness-Avg	Flange 15.3 mm (16.3), Web 8.6 mm (9.4)	
		Corrosion	L (M) S	
	Rocker Assembly	Remodeling	Left No Right No	
		Distortion	Left – Right –	
		Others	No Function	
	Roller Train	Missing	Left 2 Right 0	
		Diameter-Roller	Average – mm	
		Distortion	Left – Right –	
	Seal	Left	–	
		Bottom	–	
		Right	–	
	Inclination		Top Level Difference 30 mm	↓
Leakage			(L) M S	C
Sill				
	Side Seal	Abrasion-Max	Left: – mm, Right: – mm	RS
	Roller Truck	Abrasion-Max	Left: – mm, Right: – mm	RL
	Roller Guard	Missing	Left 1 Right 0	N
		Defect	Left 0 Right 0	N
	Sill Beam	Abrasion	L M (S)	RS
	Concrete	Damage-Left	(L) M S	RS
		Damage-Right	L (M) S	RS
		Damage-Bottom	L (M) S	RS

Survey Item			Survey Result	Judge
Hoisting Device				
	Wire Rope	Main-Left	y: – Distortion: – Corrosion: – Oil: –	G
		Main-Right	y: – Distortion: – Corrosion: – Oil: –	G
		Roller Train-L	y: – Distortion: – Corrosion: – Oil: –	C
		Roller Train-R	y: – Distortion: – Corrosion: – Oil: –	C
	Drum	Left	Damage: – Function: –	RS
		Right	Damage: – Function: –	↑
	Bearing	Drum	Damage: – Oil: –	↓
		Counter Shaft	Damage: – Oil: –	RS
		Reduction Gear	Damage: – Oil: –	C
	Gear	Drum Gear-L	Damage: – Fitting: – Backlash: – Oil: –	RS
		Drum Pinion-L	Damage: –	↑
		Drum Gear-R	Damage: – Fitting: – Backlash: – Oil: –	
		Drum Pinion-R	Damage: –	
		Gear-Middle	Damage: – Fitting: – Backlash: – Oil: –	
		Pinion-Middle	Damage: –	
	Basement	Drum-L	Damage: – Corrosion: L M (S)	
		Drum-R	Damage: – Corrosion: L M (S)	↓
		Drive Device	Damage: – Corrosion: L (M) S	RS
	Drive Chain		Damage: – Looseness: – Oil: –	C
	Chain Sprocket		Damage: – Corrosion: L (M) S	↑
	Reduction Gear		Damage: – Corrosion: L (M) S	
	Cover	Drum-L	Damage: – Corrosion: L M (S)	
		Drum-R	Damage: – Corrosion: L M (S)	↓
		Gear-Middle	Damage: – Corrosion: L (M) S	C
	Counter Shaft		Damage: – Corrosion: L M S	G
	Counter Weight		Damage: – Corrosion: L M S	RS
	Hoisting Torque	Wet Condition	54.6 kg·m	RL
		Dry Condition	7.4 kg·m	RS
Superstructure			Damage: – Corrosion: L M (S)	RS

Photograph







Remarks: Judgement ∗ N: Totally Replace, C: Partly Replace, RL: Large Repair, RM: Medium Repair, RS: Small Repair, G: No Repair, -: No Data.

( ) shows design dimension.

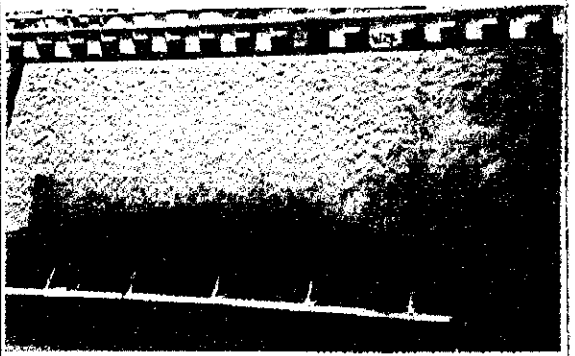
Survey Results of Gate Structure

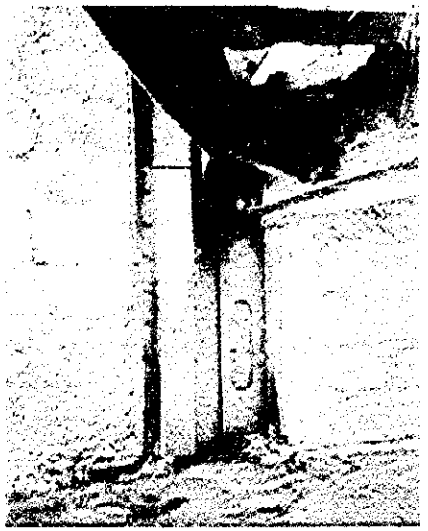
Gate No. W24 (Main Weir Gate)

Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top – Mid – Low – Btm 8.7 (9.5mm)	G
	Corrosion	U/S-Bottom L M S	—
	Damage-Rivet	Corner-L – Corner-R –	—
Truss	Thickness-Avg	Bottom Flange 18.3, Bottom Web 18.5 (19.1mm)	G
	Distortion		—
End Girder	Thickness-Avg	L-Bottom 10.3, R-Bottom 9.8 (11.1mm)	C
	Remodeling	Left No Right No	↑
	Distortion	Left – Right –	
Bottom Girder	Thickness-Avg	Flange 15.7 mm (16.3), Web 8.9 mm (9.4)	
	Corrosion	L (M) S	
Rocker Assembly	Remodeling	Left No Right No	
	Distortion	Left 0.2 m Broken Right 0.2 m Broken	
	Others	No Function	
Roller Train	Missing	Left 0 Right 1	
	Diameter-Roller	Average – mm	
	Distortion	Left – Right –	
Seal	Left	–	
	Bottom	–	
	Right	–	
Inclination		Top Level Difference 35 mm	↓
Leakage		(L) M S	C
Sill			
Side Seal	Abrasion-Max	Left: – mm, Right: – mm	RS
Roller Truck	Abrasion-Max	Left: – mm, Right: – mm	RL
Roller Guard	Missing	Left 0 Right 0	N
	Defect	Left 0 Right 0	N
Sill Beam	Abrasion	L M S	—
Concrete	Damage-Left	L M (S)	RS
	Damage-Right	L M (S)	RS
	Damage-Bottom	L (M) S	RS

Survey Item		Survey Result	Judge
Hoisting Device			
Wire Rope	Main-Left	y: – Distortion: – Corrosion: – Oil: –	G
	Main-Right	y: – Distortion: – Corrosion: – Oil: –	G
	Roller Train-L	y: – Distortion: – Corrosion: – Oil: –	C
	Roller Train-R	y: – Distortion: – Corrosion: – Oil: –	C
Drum	Left	Damage: – Function: –	RS
	Right	Damage: – Function: Miss Alignment	↑
Bearing	Drum	Damage: – Oil: –	↓
	Counter Shaft	Damage: – Oil: –	RS
	Reduction Gear	Damage: – Oil: –	C
Gear	Drum Gear-L	Damage: – Fitting: – Backlash: – Oil: –	RS
	Drum Pinion-L	Damage: –	↑
	Drum Gear-R	Damage: – Fitting: – Backlash: – Oil: –	
	Drum Pinion-R	Damage: –	
	Gear-Middle	Damage: – Fitting: – Backlash: – Oil: –	
	Pinion-Middle	Damage: –	
Basement	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Drive Device	Damage: – Corrosion: L (M) S	RS
Drive Chain		Damage: – Looseness: – Oil: –	C
Chain Sprocket		Damage: – Corrosion: L (M) S	↑
Reduction Gear		Damage: – Corrosion: L (M) S	
Cover	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Gear-Middle	Damage: – Corrosion: L (M) S	C
Counter Shaft		Damage: – Corrosion: L M S	G
Counter Weight		Damage: – Corrosion: L M S	RS
Hoisting Torque	Wet Condition	38.5 kg-m	RL
	Dry Condition	8.6 kg-m	RS
Superstructure		Damage: – Corrosion: L M (S)	RS

Photograph





Remarks: Judgement ● N: Totally Replace, C: Partly Replace, RL: Large Repair, RM: Medium Repair, RS: Small Repair, G: No Repair, -: No Data.

( ) shows design dimension.

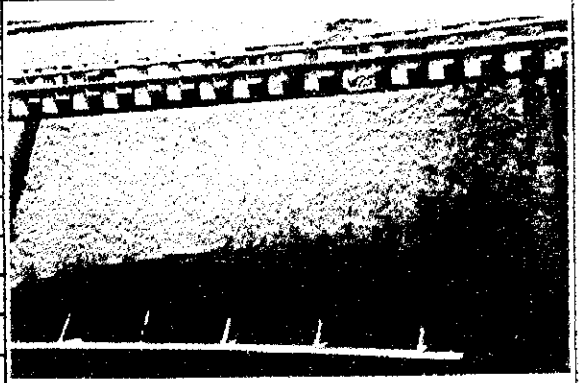
Survey Results of Gate Structure

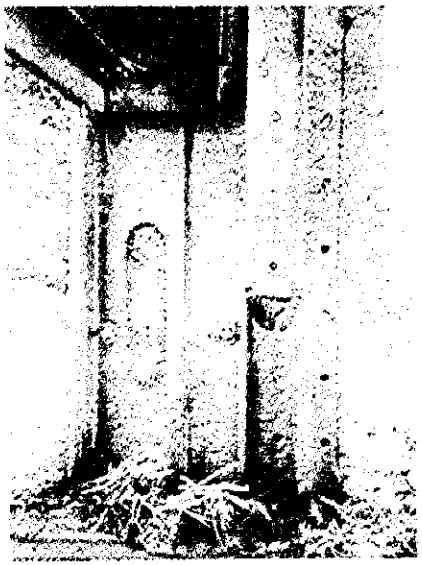
Gate No. W25 (Main Weir Gate)

Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top – Mid – Low – Btm 8.8 (9.5mm)	G
	Corrosion	U/S-Bottom L M S	—
	Damage-Rivet	Corner-L – Corner-R –	—
Truss	Thickness-Avg	Bottom Flange 19.0 , Bottom Web 18.7 (19.1mm)	G
	Distortion		—
End Girder	Thickness-Avg	L-Bottom 9.4 , R-Bottom 9.1 (11.1mm)	C
	Remodeling	Left No Right No	↑
	Distortion	Left – Right –	
Bottom Girder	Thickness-Avg	Flange13.2 mm (16.3), Web 8.7 mm (9.4)	
	Corrosion	(L) M S	
Rocker Assembly	Remodeling	Left No Right No	
	Distortion	Left – Right 0.3 m Broken	
	Others	No Function	
Roller Train	Missing	Left No.3 Broken Right 2	
	Diameter-Roller	Average – mm	
	Distortion	Left – Right –	
Seal	Left	–	
	Bottom	–	
	Right	–	
Inclination		Top Level Difference 80 mm	↓
Leakage		(L) M S	C
Sill			
Side Seal	Abrasion-Max	Left: – mm, Right: – mm	RS
Roller Truck	Abrasion-Max	Left: – mm, Right: – mm	RL
Roller Guard	Missing	Left 1 Right 0	N
	Defect	Left 0 Right 0	N
Sill Beam	Abrasion	L M S	—
Concrete	Damage-Left	L (M) S	RS
	Damage-Right	L (M) S	RS
	Damage-Bottom	L (M) S	RS

Survey Item		Survey Result	Judge
Hoisting Device			
Wire Rope	Main-Left	y: – Distortion: – Corrosion: – Oil: –	G
	Main-Right	y: – Distortion: – Corrosion: – Oil: –	G
	Roller Train-L	y: – Distortion: – Corrosion: – Oil: –	C
	Roller Train-R	y: – Distortion: – Corrosion: – Oil: –	C
Drum	Left	Damage: – Function: Miss Alignment	RS
	Right	Damage: – Function: –	↑
Bearing	Drum	Damage: – Oil: –	↓
	Counter Shaft	Damage: – Oil: –	RS
	Reduction Gear	Damage: – Oil: –	C
Gear	Drum Gear-L	Damage: – Fitting: – Backlash: – Oil: –	RS
	Drum Pinion-L	Damage: –	↑
	Drum Gear-R	Damage: – Fitting: – Backlash: – Oil: –	
	Drum Pinion-R	Damage: –	
	Gear-Middle	Damage: – Fitting: – Backlash: – Oil: –	
	Pinion-Middle	Damage: –	
Basement	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Drive Device	Damage: – Corrosion: L (M) S	RS
Drive Chain		Damage: – Looseness: – Oil: –	C
Chain Sprocket		Damage: – Corrosion: L (M) S	↑
Reduction Gear		Damage: – Corrosion: L (M) S	
Cover	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Gear-Middle	Damage: – Corrosion: L (M) S	C
Counter Shaft		Damage: – Corrosion: L M S	G
Counter Weight		Damage: – Corrosion: L M S	RS
Hoisting Torque	Wet Condition	40 kg·m	RL
	Dry Condition	5.9 kg·m	RS
Superstructure		Damage: – Corrosion: L M (S)	RS

Photograph





Remarks: Judgement = N: Totally Replace, C: Partly Replace, RL: Large Repair, RM: Medium Repair, RS: Small Repair, G: No Repair, -: No Data.

( ) shows design dimension.

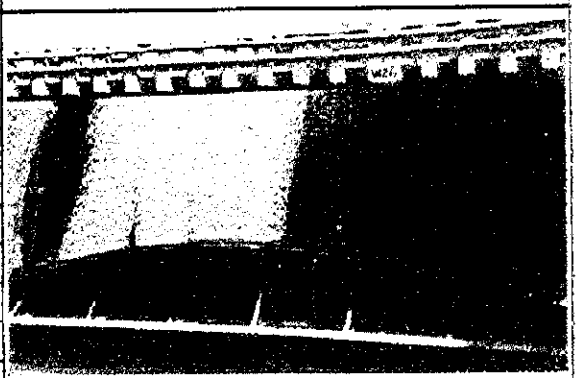
Survey Results of Gate Structure

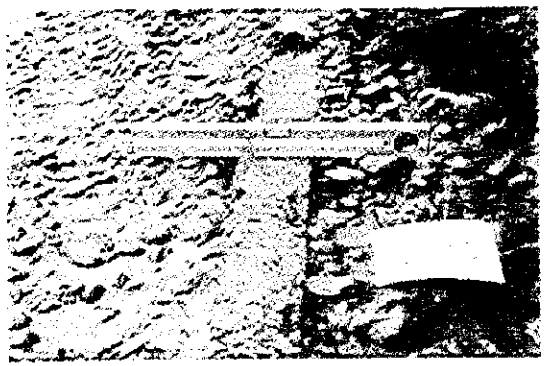
Gate No. W26 (Main Weir Gate)

Survey Item			Survey Result	Judge
Gate Leaf				
	Skin Plate	Thickness-Avg	Top → Mid – Low – Btm 8.7 (9.5mm)	G
		Corrosion	U/S-Bottom L M S	—
		Damage-Rivet	Corner-L – Corner-R –	—
	Truss	Thickness-Avg	Bottom Flange 18.0, Bottom Web 18.2 (19.1mm)	G
		Distortion		—
	End Girder	Thickness-Avg	L-Bottom 9.9, R-Bottom 10.6 (11.1mm)	C
		Remodeling	Left No Right No	↑
		Distortion	Left – Right –	
	Bottom Girder	Thickness-Avg	Flange 13.8 mm (16.3), Web 9.1 mm (9.4)	
		Corrosion	L (M) S	
	Rocker Assembly	Remodeling	Left No Right No	
		Distortion	Left – Right –	
		Others	No Function	
	Roller Train	Missing	Left – Right –	
		Diameter-Roller	Average – mm	
		Distortion	Left → Right –	
	Seal	Left	–	
		Bottom	–	
		Right	–	
	Inclination		Top Level Difference 5 mm	↓
Leakage			L M (S)	C
Sill				
	Side Seal	Abrasion-Max	Left: – mm, Right: – mm	RS
	Roller Truck	Abrasion-Max	Left: – mm, Right: – mm	RL
	Roller Guard	Missing	Left 1 Right 0	N
		Defect	Left 0 Right 0	N
	Sill Beam	Abrasion	L M (S)	RS
	Concrete	Damage-Left	L (M) S	RS
		Damage-Right	L (M) S	RS
		Damage-Bottom	L (M) S	RS

Survey Item			Survey Result	Judge
Hoisting Device				
	Wire Rope	Main-Left	y: – Distortion: – Corrosion: – Oil: –	G
		Main-Right	y: – Distortion: – Corrosion: – Oil: –	G
		Roller Train-L	y: – Distortion: – Corrosion: – Oil: –	C
		Roller Train-R	Broken	C
	Drum	Left	Damage: – Function: –	RS
		Right	Damage: – Function: –	↑
	Bearing	Drum	Damage: – Oil: –	↓
		Counter Shaft	Damage: – Oil: –	RS
		Reduction Gear	Damage: – Oil: –	C
	Gear	Drum Gear-L	Damage: – Fitting: – Backlash: – Oil: –	RS
		Drum Pinion-L	Damage: –	↑
		Drum Gear-R	Damage: – Fitting: – Backlash: – Oil: –	
		Drum Pinion-R	Damage: –	
		Gear-Middle	Damage: – Fitting: – Backlash: – Oil: –	
		Pinion-Middle	Damage: –	
	Basement	Drum-L	Damage: – Corrosion: L M (S)	
		Drum-R	Damage: – Corrosion: L M (S)	↓
		Drive Device	Damage: – Corrosion: L (M) S	RS
	Drive Chain		Damage: – Looseness: L Oil: –	C
	Chain Sprocket		Damage: – Corrosion: L (M) S	↑
	Reduction Gear		Damage: – Corrosion: L (M) S	
	Cover	Drum-L	Damage: – Corrosion: L M (S)	
		Drum-R	Damage: – Corrosion: L M (S)	↓
		Gear-Middle	Damage: – Corrosion: L (M) S	C
	Counter Shaft		Damage: – Corrosion: L M S	G
	Counter Weight		Damage: – Corrosion: L M S	RS
	Hoisting Torque	Wet Condition	36 kg-m	RL
		Dry Condition	3.9 kg-m	RS
Superstructure			Damage: – Corrosion: L M (S)	RS

Photograph





Remarks: Judgement = N: Totally Replace, C: Partly Replace, RL: Large Repair, RM: Medium Repair, RS: Small Repair, G: No Repair, -: No Data.

( ) shows design dimension.

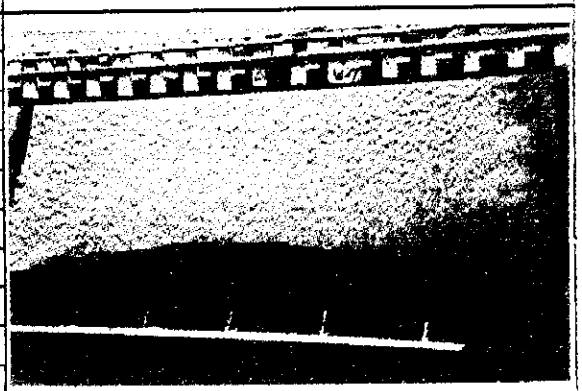
Survey Results of Gate Structure

Gate No. W27 **(Main Weir Gate)**

Survey Item			Survey Result	Judge
Gate Leaf				
	Skin Plate	Thickness-Avg	Top – Mid – Low – Btm 8.6 (9.5mm)	G
		Corrosion	U/S-Bottom L M S	—
		Damage-Rivet	Corner-L – Corner-R –	—
	Truss	Thickness-Avg	Bottom Flange 18.4 , Bottom Web 18.4 (19.1mm)	G
		Distortion		—
	End Girder	Thickness-Avg	L-Bottom 10.4 , R-Bottom 10.3 (11.1mm)	C
		Remodeling	Left No Right No	↑
		Distortion	Left – Right –	
	Bottom Girder	Thickness-Avg	Flange 15.2 mm (16.3), Web 8.4 mm (9.4)	
		Corrosion	L (M) S	
	Rocker Assembly	Remodeling	Left No Right No	
		Distortion	Left – Right –	
		Others	No Function	
	Roller Train	Missing	Left – Right –	
		Diameter-Roller	Average – mm	
		Distortion	Left – Right –	
	Seal	Left	–	
		Bottom	–	
		Right	–	
	Inclination		Top Level Difference 0 mm	↓
Leakage			(L) M S	C
Sill				
	Side Seal	Abrasion-Max	Left: – mm, Right: – mm	RS
	Roller Truck	Abrasion-Max	Left: – mm, Right: – mm	RL
	Roller Guard	Missing	Left 0 Right 0	N
		Defect	Left 0 Right 0	N
	Sill Beam	Abrasion	L M S	—
	Concrete	Damage-Left	L (M) S	RS
		Damage-Right	L M (S)	RS
		Damage-Bottom	L (M) S	RS

Survey Item			Survey Result	Judge
Hoisting Device				
	Wire Rope	Main-Left	y: – Distortion: – Corrosion: – Oil: –	G
		Main-Right	y: – Distortion: – Corrosion: – Oil: –	G
		Roller Train-L	y: – Distortion: – Corrosion: – Oil: –	C
		Roller Train-R	y: – Distortion: – Corrosion: – Oil: –	C
	Drum	Left	Damage: – Function: –	RS
		Right	Damage: – Function: –	↑
	Bearing	Drum	Damage: – Oil: –	↓
		Counter Shaft	Damage: – Oil: –	RS
		Reduction Gear	Damage: – Oil: –	C
	Gear	Drum Gear-L	Damage: – Fitting: – Backlash: – Oil: –	RS
		Drum Pinion-L	Damage: –	↑
		Drum Gear-R	Damage: – Fitting: – Backlash: – Oil: –	
		Drum Pinion-R	Damage: –	
		Gear-Middle	Damage: – Fitting: – Backlash: – Oil: –	
		Pinion-Middle	Damage: –	
	Basement	Drum-L	Damage: – Corrosion: L M (S)	↓
		Drum-R	Damage: – Corrosion: L M (S)	
		Drive Device	Damage: – Corrosion: L (M) S	RS
	Drive Chain		Damage: – Looseness: L Oil: –	C
	Chain Sprocket		Damage: – Corrosion: L (M) S	↑
	Reduction Gear		Damage: – Corrosion: L (M) S	
	Cover	Drum-L	Damage: – Corrosion: L M (S)	
		Drum-R	Damage: – Corrosion: L M (S)	↓
		Gear-Middle	Damage: – Corrosion: L (M) S	C
	Counter Shaft		Damage: – Corrosion: L M S	G
	Counter Weight		Damage: – Corrosion: L M S	RS
	Hoisting Torque	Wet Condition	40 kg-m	RL
		Dry Condition	7.4 kg-m	RS
Superstructure			Damage: – Corrosion: L M (S)	RS

Photograph



Remarks: Judgement = N: Totally Replace, C: Partly Replace, RL: Large Repair, RM: Medium Repair, RS: Small Repair, G: No Repair, -: No Data.

( ) shows design dimension.

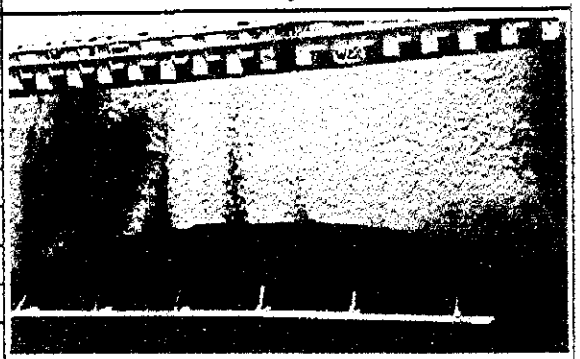
Survey Results of Gate Structure

Gate No. W28 (Main Weir Gate)

Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top – Mid – Low – Btm 9.0 (9.5mm)	G
	Corrosion	U/S-Bottom L M S	—
	Damage-Rivet	Corner-L – Corner-R –	→
Truss	Thickness-Avg	Bottom Flange 18.8, Bottom Web 18.6 (19.1mm)	G
	Distortion		—
End Girder	Thickness-Avg	L-Bottom10.1, R-Bottom10.7 (11.1mm)	C
	Remodeling	Left No Right No	↑
	Distortion	Left – Right –	
Bottom Girder	Thickness-Avg	Flange14.0 mm (16.3), Web7.9 mm (9.4)	
	Corrosion	L (M) S	
Rocker Assembly	Remodeling	Left No Right No	
	Distortion	Left – Right –	
	Others	No Function	
Roller Train	Missing	Left 1 Right 1	
	Diameter-Roller	Average – mm	
	Distortion	Left – Right –	
Seal	Left	–	
	Bottom	–	
	Right	–	
Inclination		Top Level Difference 30 mm	↓
Leakage		(L) M S	C
Sill			
Side Seal	Abrasion-Max	Left: – mm, Right: – mm	RS
Roller Truck	Abrasion-Max	Left: – mm, Right: – mm	N
Roller Guard	Missing	Left 1 Right 0	N
	Defect	Left 0 Right 1	N
Sill Beam	Abrasion	(L) M S	RS
Concrete	Damage-Left	L M (S)	RS
	Damage-Right	L (M) S	RS
	Damage-Bottom	(L) M S	RS

Survey Item		Survey Result	Judge
Hoisting Device			
Wire Rope	Main-Left	y: – Distortion: – Corrosion: – Oil: –	G
	Main-Right	y: – Distortion: – Corrosion: – Oil: –	G
	Roller Train-L	y: – Distortion: – Corrosion: – Oil: –	C
	Roller Train-R	y: – Distortion: – Corrosion: – Oil: –	C
Drum	Left	Damage: – Function: Miss Alignment	RS
	Right	Damage: – Function: –	↑
Bearing	Drum	Damage: – Oil: –	↓
	Counter Shaft	Damage: – Oil: –	RS
	Reduction Gear	Damage: – Oil: –	C
Gear	Drum Gear-L	Damage: – Fitting: – Backlash: – Oil: –	RS
	Drum Pinion-L	Damage: –	↑
	Drum Gear-R	Damage: – Fitting: – Backlash: – Oil: –	
	Drum Pinion-R	Damage: –	
	Gear-Middle	Damage: – Fitting: – Backlash: – Oil: –	
	Pinion-Middle	Damage: –	
Basement	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Drive Device	Damage: – Corrosion: L (M) S	RS
Drive Chain		Damage: – Looseness: – Oil: –	C
Chain Sprocket		Damage: – Corrosion: L (M) S	↑
Reduction Gear		Damage: – Corrosion: L (M) S	
Cover	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Gear-Middle	Damage: – Corrosion: L (M) S	C
Counter Shaft		Damage: – Corrosion: L M S	G
Counter Weight		Damage: – Corrosion: L M S	RS
Hoisting Torque	Wet Condition	40 kg-m	RL
	Dry Condition	5.9 kg-m	RS
Superstructure		Damage: – Corrosion: L M (S)	RS

Photograph



Remarks: Judgement = N: Totally Replace, C: Partly Replace, RL: Large Repair, RM: Medium Repair, RS: Small Repair, G: No Repair, -: No Data.

( ) shows design dimension.

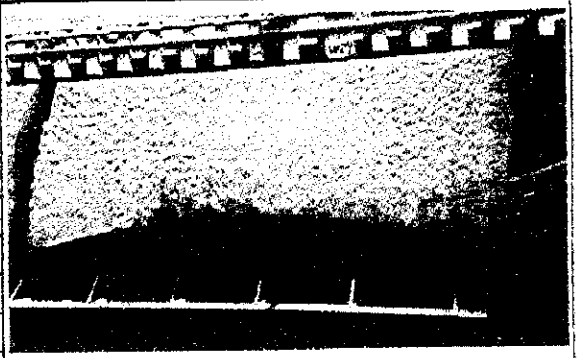
Survey Results of Gate Structure

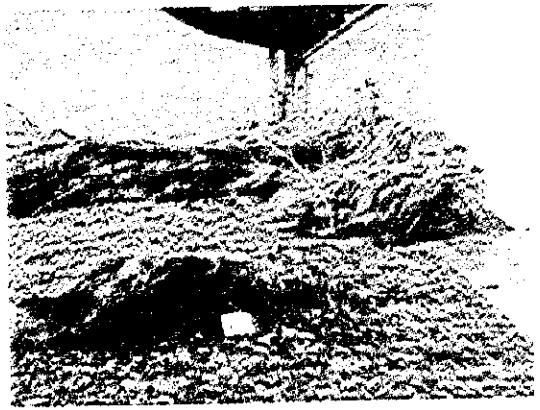
Gate No. W29 (Main Weir Gate)

Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top – Mid – Low – Btm 9.0 (9.5mm)	C
	Corrosion	U/S–Bottom L M S	—
	Damage-Rivet	Corner-L – Corner-R –	—
Truss	Thickness-Avg	Bottom Flange 18.5, Bottom Web 18.5 (19.1mm)	G
	Distortion		—
End Girder	Thickness-Avg	L–Bottom 9.3, R–Bottom 9.3 (11.1mm)	C
	Remodeling	Left No Right No	↑
	Distortion	Left – Right –	
Bottom Girder	Thickness-Avg	Flange 14.6 mm (16.3), Web8.4 mm (9.4)	
	Corrosion	L (M) S	
Rocker Assembly	Remodeling	Left No Right No	
	Distortion	Left Small Right Small	
	Others	No Function	
Roller Train	Missing	Left – Right –	
	Diameter-Roller	Average – mm	
	Distortion	Left – Right –	
Seal	Left	–	
	Bottom	–	
	Right	–	
Inclination		Top Level Difference 220 mm	↓
Leakage		(L) M S	C
Sill			
Side Seal	Abrasion-Max	Left: – mm, Right: – mm	RS
Roller Truck	Abrasion-Max	Left: – mm, Right: – mm	RL
Roller Guard	Missing	Left 1 Right 1	N
	Defect	Left 0 Right 0	N
Sill Beam	Abrasion	L (M) S	N
Concrete	Damage-Left	L (M) S	RS
	Damage-Right	L (M) S	RS
	Damage-Bottom	L M S	RS

Survey Item		Survey Result	Judge
Hoisting Device			
Wire Rope	Main-Left	y: – Distortion: – Corrosion: – Oil: –	G
	Main-Right	y: – Distortion: – Corrosion: – Oil: –	G
	Roller Train-L	y: – Distortion: – Corrosion: – Oil: –	C
	Roller Train-R	y: – Distortion: – Corrosion: – Oil: –	C
Drum	Left	Damage: – Function: –	RS
	Right	Damage: – Function: Miss Alignment	↑
Bearing	Drum	Damage: – Oil: –	↓
	Counter Shaft	Damage: – Oil: –	RS
	Reduction Gear	Damage: – Oil: –	C
Gear	Drum Gear-L	Damage: – Fitting: – Backlash: – Oil: –	RS
	Drum Pinion-L	Damage: –	↑
	Drum Gear-R	Damage: – Fitting: – Backlash: – Oil: –	
	Drum Pinion-R	Damage: –	
	Gear-Middle	Damage: – Fitting: – Backlash: – Oil: –	
	Pinion-Middle	Damage: –	
Basement	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Drive Device	Damage: – Corrosion: L (M) S	RS
Drive Chain		Damage: – Looseness: L Oil: –	C
Chain Sprocket		Damage: – Corrosion: L (M) S	↑
Reduction Gear		Damage: – Corrosion: L (M) S	
Cover	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Gear-Middle	Damage: – Corrosion: L (M) S	C
Counter Shaft		Damage: – Corrosion: L M S	G
Counter Weight		Damage: – Corrosion: L M S	RS
Hoisting Torque	Wet Condition	36 kg-m	RL
	Dry Condition	17.2 kg-m	RS
Superstructure		Damage: – Corrosion: L M (S)	RS

Photograph





Remarks: Judgement = N: Totally Replace, C: Partly Replace, RL: Large Repair, RM: Medium Repair, RS: Small Repair, G: No Repair, -: No Data.

( ) shows design dimension.

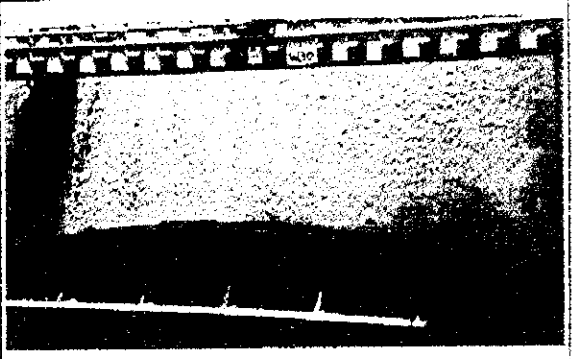
Survey Results of Gate Structure

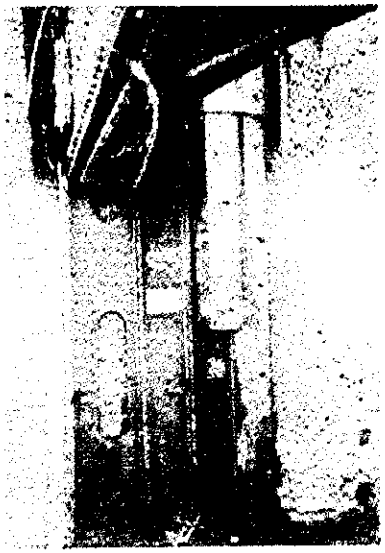
Gate No. W30 (Main Weir Gate)

Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top – Mid – Low – Btm 8.6 (9.5mm)	G
	Corrosion	U/S-Bottom L M S	—
	Damage-Rivet	Corner-L – Corner-R –	—
Truss	Thickness-Avg	Bottom Flange 19.1, Bottom Web 18.7 (19.1mm)	G
	Distortion		—
End Girder	Thickness-Avg	L-Bottom 10.4, R-Bottom 9.6 (11.1mm)	C
	Remodeling	Left No Right No	↑
	Distortion	Left – Right –	
Bottom Girder	Thickness-Avg	Flange 15.3 mm (16.3), Web 9.3 mm (9.4)	
	Corrosion	L (M) S	
Rocker Assembly	Remodeling	Left No Right No	
	Distortion	Left – Right –	
	Others	No Function	
Roller Train	Missing	Left – Right –	
	Diameter-Roller	Average – mm	
	Distortion	Left – Right –	
Seal	Left	–	
	Bottom	–	
	Right	–	
Inclination		Top Level Difference 85 mm	↓
Leakage		(L) M S	C
Sill			
Side Seal	Abrasion-Max	Left: – mm, Right: – mm	RS
Roller Truck	Abrasion-Max	Left: – mm, Right: – mm	RL
Roller Guard	Missing	Left 1 Right 1	N
	Defect	Left 0 Right 0	N
Sill Beam	Abrasion	L M S	—
Concrete	Damage-Left	L (M) S	RS
	Damage-Right	L (M) S	RS
	Damage-Bottom	L (M) S	RS

Survey Item		Survey Result	Judge
Hoisting Device			
Wire Rope	Main-Left	y: – Distortion: – Corrosion: – Oil: –	G
	Main-Right	y: – Distortion: – Corrosion: – Oil: –	G
	Roller Train-L	y: – Distortion: – Corrosion: – Oil: –	C
	Roller Train-R	y: – Distortion: – Corrosion: – Oil: –	C
Drum	Left	Damage: – Function: Miss Alignment	RS
	Right	Damage: – Function: Over Lapping	↑
Bearing	Drum	Damage: – Oil: –	↓
	Counter Shaft	Damage: – Oil: –	RS
	Reduction Gear	Damage: – Oil: –	C
Gear	Drum Gear-L	Damage: – Fitting: – Backlash: – Oil: –	RS
	Drum Pinion-L	Damage: –	↑
	Drum Gear-R	Damage: – Fitting: – Backlash: – Oil: –	
	Drum Pinion-R	Damage: –	
	Gear-Middle	Damage: – Fitting: – Backlash: – Oil: –	
	Pinion-Middle	Damage: –	
Basement	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Drive Device	Damage: – Corrosion: L (M) S	RS
Drive Chain		Damage: – Looseness: L Oil: –	C
Chain Sprocket		Damage: – Corrosion: L (M) S	↑
Reduction Gear		Damage: – Corrosion: L (M) S	
Cover	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Gear-Middle	Damage: – Corrosion: L (M) S	C
Counter Shaft		Damage: – Corrosion: L M S	G
Counter Weight		Damage: – Corrosion: L M S	RS
Hoisting Torque	Wet Condition	48 kg·m	RL
	Dry Condition	5.9 kg·m	RS
Superstructure		Damage: – Corrosion: L M (S)	RS

Photograph





Remarks: Judgement = N: Totally Replace, C: Partly Replace, RL: Large Repair, RM: Medium Repair, RS: Small Repair, G: No Repair, -: No Data.

( ) shows design dimension.

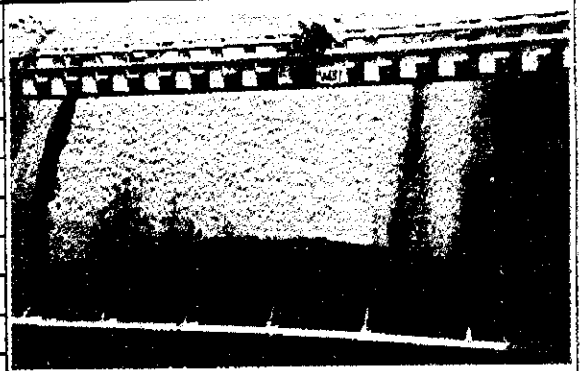
Survey Results of Gate Structure

Gate No. W31 (Main Weir Gate)

Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top – Mid – Low – Btm 8.3 (9.5mm)	G
	Corrosion	U/S-Bottom L M S	—
	Damage-Rivet	Corner-L – Corner-R –	—
Truss	Thickness-Avg	Bottom Flange 18.6, Bottom Web 18.4 (19.1mm)	G
	Distortion		—
End Girder	Thickness-Avg	L-Bottom 10.3, R-Bottom 9.2 (11.1mm)	C
	Remodeling	Left No Right No	↑
	Distortion	Left – Right –	
Bottom Girder	Thickness-Avg	Flange 15.2 mm (16.3), Web 7.4 mm (9.4)	
	Corrosion	L (M) S	
Rocker Assembly	Remodeling	Left No Right No	
	Distortion	Left – Right –	
	Others	No Function	
Roller Train	Missing	Left – Right –	
	Diameter-Roller	Average – mm	
	Distortion	Left – Right –	
Seal	Left	–	
	Bottom	–	
	Right	–	
Inclination		Top Level Difference 120 mm	↓
Leakage		(L) M S	C
Sill			
Side Seal	Abrasion-Max	Left: – mm, Right: – mm	RS
Roller Truck	Abrasion-Max	Left: – mm, Right: – mm	RL
Roller Guard	Missing	Left 0 Right 1	N
	Defect	Left 0 Right 0	N
Sill Beam	Abrasion	L M (S)	RS
Concrete	Damage-Left	L M (S)	RS
	Damage-Right	L (M) S	RS
	Damage-Bottom	L M S	RS

Survey Item		Survey Result	Judge
Hoisting Device			
Wire Rope	Main-Left	y: – Distortion: – Corrosion: – Oil: –	G
	Main-Right	y: – Distortion: – Corrosion: – Oil: –	G
	Roller Train-L	y: – Distortion: – Corrosion: – Oil: –	C
	Roller Train-R	y: – Distortion: – Corrosion: – Oil: –	C
Drum	Left	Damage: – Function: –	RS
	Right	Damage: – Function: –	↑
Bearing	Drum	Damage: – Oil: –	↓
	Counter Shaft	Damage: – Oil: –	RS
	Reduction Gear	Damage: – Oil: –	C
Gear	Drum Gear-L	Damage: – Fitting: – Backlash: – Oil: –	RS
	Drum Pinion-L	Damage: –	↑
	Drum Gear-R	Damage: – Fitting: – Backlash: – Oil: –	
	Drum Pinion-R	Damage: –	
	Gear-Middle	Damage: – Fitting: – Backlash: – Oil: –	
	Pinion-Middle	Damage: –	
Basement	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Drive Device	Damage: – Corrosion: L (M) S	RS
Drive Chain		Damage: – Looseness: L Oil: –	C
Chain Sprocket		Damage: – Corrosion: L (M) S	↑
Reduction Gear		Damage: – Corrosion: L (M) S	
Cover	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Gear-Middle	Damage: – Corrosion: L (M) S	C
Counter Shaft		Damage: – Corrosion: L M S	G
Counter Weight		Damage: – Corrosion: L M S	RS
Hoisting Torque	Wet Condition	24 kg-m	G
	Dry Condition	4.3 kg-m	RS
Superstructure		Damage: – Corrosion: L M (S)	RS

Photograph



Remarks: Judgement = N: Totally Replace, C: Partly Replace, RL: Large Repair, RM: Medium Repair, RS: Small Repair, G: No Repair, -: No Data.

( ) shows design dimension.

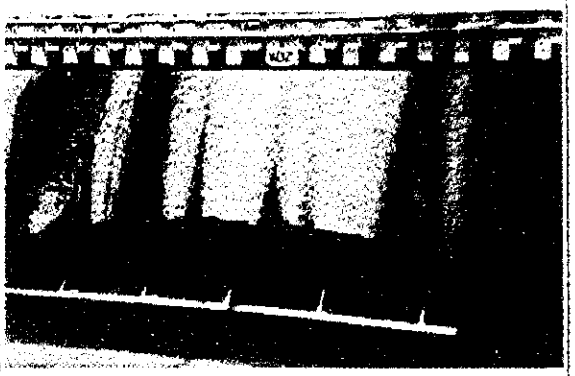
Survey Results of Gate Structure

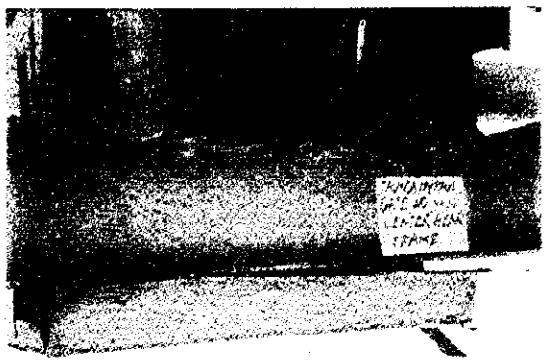
Gate No. W32 (Main Weir Gate)

Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top – Mid – Low – Btm 8.9 (9.5mm)	G
	Corrosion	U/S-Bottom L M S	—
	Damage-Rivet	Corner-L – Corner-R –	—
Truss	Thickness-Avg	Bottom Flange 18.4 , Bottom Web 18.5 (19.1mm)	G
	Distortion		—
End Girder	Thickness-Avg	L-Bottom 9.8 , R-Bottom 10.1 (11.1mm)	C
	Remodeling	Left No Right No	↑
	Distortion	Left – Right –	
Bottom Girder	Thickness-Avg	Flange 14.2 mm (16.0), Web 8.7 mm (9.4)	
	Corrosion	L (M) S	
Rocker Assembly	Remodeling	Left No Right No	
	Distortion	Left – Right –	
	Others	No Function	
Roller Train	Missing	Left – Right –	
	Diameter-Roller	Average – mm	
	Distortion	Left – Right –	
Seal	Left	–	
	Bottom	–	
	Right	–	
Inclination		Top Level Difference 90 mm	↓
Leakage		L M (S)	C
Sill			
Side Seal	Abrasion-Max	Left: – mm, Right: – mm	RS
Roller Truck	Abrasion-Max	Left: – mm, Right: – mm	RL
Roller Guard	Missing	Left 1 Right 1	N
	Defect	Left 0 Right 0	N
Sill Beam	Abrasion	L M S	—
Concrete	Damage-Left	L (M) S	RS
	Damage-Right	L (M) S	RS
	Damage-Bottom	L (M) S	RS

Survey Item		Survey Result	Judge
Hoisting Device			
Wire Rope	Main-Left	y: – Distortion: – Corrosion: – Oil: –	G
	Main-Right	y: – Distortion: – Corrosion: – Oil: –	G
	Roller Train-L	y: – Distortion: – Corrosion: – Oil: –	C
	Roller Train-R	y: – Distortion: – Corrosion: – Oil: –	C
Drum	Left	Damage: – Function: –	RS
	Right	Damage: – Function: –	↑
Gearing	Drum	Damage: – Oil: –	↓
	Counter Shaft	Damage: – Oil: –	RS
	Reduction Gear	Damage: – Oil: –	C
Gear	Drum Gear-L	Damage: – Fitting: – Backlash: – Oil: –	RS
	Drum Pinion-L	Damage: –	↑
	Drum Gear-R	Damage: – Fitting: – Backlash: – Oil: –	
	Drum Pinion-R	Damage: –	
	Gear-Middle	Damage: – Fitting: – Backlash: – Oil: –	
	Pinion-Middle	Damage: –	
Basement	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Drive Device	Damage: – Corrosion: L (M) S	RS
Drive Chain		Damage: – Looseness: – Oil: –	C
Chain Sprocket		Damage: – Corrosion: L (M) S	↑
Reduction Gear		Damage: – Corrosion: L (M) S	
Cover	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Gear-Middle	Damage: – Corrosion: L (M) S	C
Counter Shaft		Damage: – Corrosion: L M S	G
Counter Weight		Damage: – Corrosion: L M S	RS
Hoisting Torque	Wet Condition	44 kg-m	RL
	Dry Condition	7.8 kg-m	RS
Superstructure		Damage: – Corrosion: L M (S)	RS

Photograph





Remarks: Judgement = N: Totally Replace, C: Partly Replace, RL: Large Repair, RM: Medium Repair, RS: Small Repair, G: No Repair, -: No Data.

( ) shows design dimension.

Survey Results of Gate Structure

Gate No. W33 (Main Weir Gate)

Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top – Mid – Low – Btm 8.8 (9.5mm)	G
	Corrosion	U/S-Bottom L M S	—
	Damage-Rivet	Corner-L – Corner-R –	—
Truss	Thickness-Avg	Bottom Flange 18.7, Bottom Web 18.6 (19.1mm)	G
	Distortion		—
End Girder	Thickness-Avg	L-Bottom 10.5, R-Bottom 9.7 (11.1mm)	C
	Remodeling	Left No Right No	↑
	Distortion	Left – Right –	
Bottom Girder	Thickness-Avg	Flange 15.2 mm (16.3), Web 8.6 mm (9.4)	
	Corrosion	L (M) S	
Rocker Assembly	Remodeling	Left No Right No	
	Distortion	Left 0.2 m Bend Right 2	
	Others	No Function	
Roller Train	Missing	Left – Right –	
	Diameter-Roller	Average – mm	
	Distortion	Left Deform Right –	
Seal	Left	–	
	Bottom	–	
	Right	–	
Inclination		Top Level Difference 20 mm	↓
Leakage		(L) M S	C
Sill			
Side Seal	Abrasion-Max	Left: – mm, Right: – mm	RS
Roller Truck	Abrasion-Max	Left: – mm, Right: – mm	RL
Roller Guard	Missing	Left 1 Right 1	N
	Defect	Left 0 Right 0	N
Sill Beam	Abrasion	L M S	—
Concrete	Damage-Left	L (M) S	RS
	Damage-Right	L (M) S	RS
	Damage-Bottom	(L) M S	RS

Survey Item		Survey Result	Judge
Hoisting Device			
Wire Rope	Main-Left	y: – Distortion: – Corrosion: – Oil: –	G
	Main-Right	y: – Distortion: – Corrosion: – Oil: –	G
	Roller Train-L	Broken	C
	Roller Train-R	y: – Distortion: – Corrosion: – Oil: –	C
Drum	Left	Damage: – Function: Miss Alignment	RS
	Right	Damage: – Function: Miss Alignment	↑
Bearing	Drum	Damage: – Oil: –	↓
	Counter Shaft	Damage: – Oil: –	RS
	Reduction Gear	Damage: – Oil: –	C
Gear	Drum Gear-L	Damage: – Fitting: – Backlash: – Oil: –	RS
	Drum Pinion-L	Damage: –	↑
	Drum Gear-R	Damage: – Fitting: – Backlash: – Oil: –	
	Drum Pinion-R	Damage: –	
	Gear-Middle	Damage: – Fitting: – Backlash: – Oil: –	
	Pinion-Middle	Damage: –	
Basement	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Drive Device	Damage: – Corrosion: L (M) S	RS
Drive Chain		Damage: – Looseness: – Oil: –	C
Chain Sprocket		Damage: – Corrosion: L (M) S	↑
Reduction Gear		Damage: – Corrosion: L (M) S	
Cover	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Gear-Middle	Damage: – Corrosion: L (M) S	C
Counter Shaft		Damage: – Corrosion: L M S	G
Counter Weight		Damage: – Corrosion: L M S	RS
Hoisting Torque	Wet Condition	44 kg-m	RL
	Dry Condition	3.5 kg-m	RS
Superstructure		Damage: – Corrosion: L M (S)	RS

Photograph

Remarks: Judgement ● N: Totally Replace, C: Partly Replace, RL: Large Repair, RM: Medium Repair, RS: Small Repair, G: No Repair, -: No Data.

( ) shows design dimension.

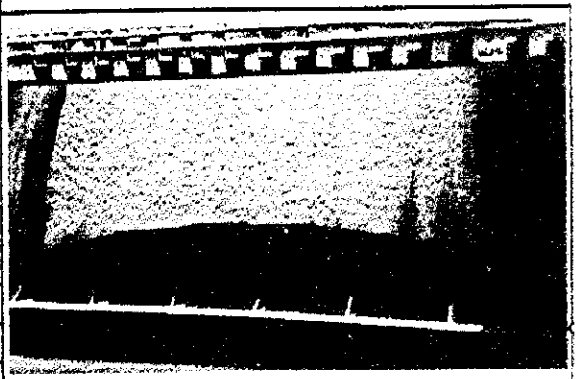
Survey Results of Gate Structure

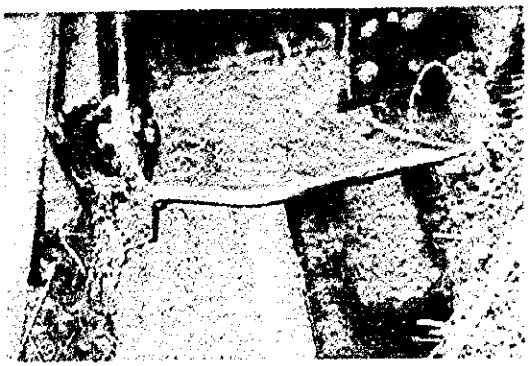
Gate No. W34 (Main Weir Gate)

Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top10.0 Mid9.9 Low9.6 Btm9.4 (9.5mm)	G
	Corrosion	U/S-Bottom L M S	—
	Damage-Rivet	Corner-L – Corner-R –	—
Truss	Thickness-Avg	Bottom Flange 18.7, Bottom Web 18.1 (19.1mm)	G
	Distortion		—
End Girder	Thickness-Avg	L-Bottom 10.8, R-Bottom 11.6 (11.1mm)	C
	Remodeling	Left No Right No	↑
	Distortion	Left – Right Bend	
Bottom Girder	Thickness-Avg	Flange 14.0 mm (16.3), Web 7.4 mm (9.4)	
	Corrosion	L (M) S	
Rocker Assembly	Remodeling	Left No Right No	
	Distortion	Left – Right –	
	Others	No Function	
Roller Train	Missing	Left – Right –	
	Diameter-Roller	Average – mm	
	Distortion	Left – Right –	
Seal	Left	–	
	Bottom	–	
	Right	–	
Inclination		Top Level Difference 5 mm	↓
Leakage		(L) M S	C
Sill			
Side Seal	Abrasion-Max	Left: – mm, Right: – mm	RS
Roller Truck	Abrasion-Max	Left: – mm, Right: – mm	RL
Roller Guard	Missing	Left 0 Right 1	N
	Defect	Left 0 Right 0	N
Sill Beam	Abrasion	L M S	—
Concrete	Damage-Left	L M (S)	RS
	Damage-Right	L (M) S	RS
	Damage-Bottom	L (M) S	RS

Survey Item		Survey Result	Judge
Hoisting Device			
Wire Rope	Main-Left	y: – Distortion: – Corrosion: – Oil: –	G
	Main-Right	y' – Distortion: – Corrosion: – Oil: –	G
	Roller Train-L	Broken	C
	Roller Train-R	y: – Distortion: – Corrosion: – Oil: –	C
Drum	Left	Damage: – Function: –	RS
	Right	Damage: – Function: –	↑
Bearing	Drum	Damage: – Oil: –	↓
	Counter Shaft	Damage: – Oil: –	RS
	Reduction Gear	Damage: – Oil: –	C
Gear	Drum Gear-L	Damage: – Fitting: – Backlash: – Oil: –	RS
	Drum Pinion-L	Damage: –	↑
	Drum Gear-R	Damage: – Fitting: – Backlash: – Oil: –	
	Drum Pinion-R	Damage: –	
	Gear-Middle	Damage: – Fitting: – Backlash: – Oil: –	
	Pinion-Middle	Damage: –	
Basement	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Drive Device	Damage: – Corrosion: L (M) S	RS
Drive Chain		Damage: – Looseness: – Oil: –	C
Chain Sprocket		Damage: – Corrosion: L (M) S	↑
Reduction Gear		Damage: – Corrosion: L (M) S	
Cover	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Gear-Middle	Damage: – Corrosion: L (M) S	C
Counter Shaft		Damage: – Corrosion: L M S	G
Counter Weight		Damage: – Corrosion: L M S	RS
Hoisting Torque	Wet Condition	7.0 kg-m	RL
	Dry Condition	3.9 kg-m	RS
Superstructure		Damage: – Corrosion: L M (S)	RS

Photograph





Remarks: Judgement = N: Totally Replace, C: Partly Replace, RL: Large Repair, RM: Medium Repair, RS: Small Repair, G: No Repair, -: No Data.

( ) shows design dimension.

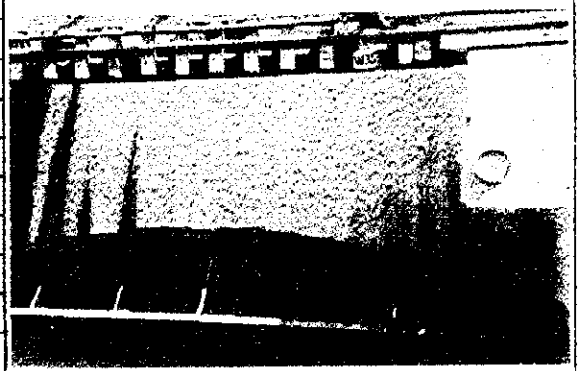
Survey Results of Gate Structure

Gate No. W35 (Main Weir Gate)

Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top – Mid – Low – Btm – (9.5mm)	–
	Corrosion	U/S-Bottom L M S	–
	Damage-Rivet	Corner-L – Corner-R –	–
Truss	Thickness-Avg	Bottom Flange –, Bottom Web – (19.1mm)	–
	Distortion		–
End Girder	Thickness-Avg	L-Bottom 10.4, R-Bottom 10.3 (11.1mm)	C
	Remodeling	Left No Right No	↑
	Distortion	Left – Right –	
Bottom Girder	Thickness-Avg	Flange – mm (16.3), Web – mm (9.4)	
	Corrosion	L M S	
Rocker Assembly	Remodeling	Left No Right No	
	Distortion	Left – Right –	
	Others	No Function	
Roller Train	Missing	Left – Right –	
	Diameter-Roller	Average – mm	
	Distortion	Left – Right –	
Seal	Left	–	
	Bottom	–	
	Right	–	
Inclination		Top Level Difference 25 mm	↓
Leakage		(L) M S	C
Sill			
Side Seal	Abrasion-Max	Left: – mm, Right: – mm	RS
Roller Truck	Abrasion-Max	Left: – mm, Right: – mm	RL
Roller Guard	Missing	Left 0 Right 0	N
	Defect	Left 1 Right 1	N
Sill Beam	Abrasion	L M S	–
Concrete	Damage-Left	L M (S)	RS
	Damage-Right	L (M) S	RS
	Damage-Bottom	L (M) S	RS

Survey Item		Survey Result	Judge
Hoisting Device			
Wire Rope	Main-Left	y: – Distortion: – Corrosion: – Oil: –	G
	Main-Right	y: – Distortion: – Corrosion: – Oil: –	G
	Roller Train-L	y: – Distortion: – Corrosion: – Oil: –	C
	Roller Train-R	y: – Distortion: – Corrosion: – Oil: –	C
Drum	Left	Damage: – Function: –	RS
	Right	Damage: – Function: –	↑
Bearing	Drum	Damage: – Oil: –	↓
	Counter Shaft	Damage: – Oil: –	RS
	Reduction Gear	Damage: – Oil: Brake Broken	C
Gear	Drum Gear-L	Damage: – Fitting: – Backlash: – Oil: –	RS
	Drum Pinion-L	Damage: –	↑
	Drum Gear-R	Damage: – Fitting: – Backlash: – Oil: –	
	Drum Pinion-R	Damage: –	
	Gear-Middle	Damage: – Fitting: – Backlash: – Oil: –	
	Pinion-Middle	Damage: –	
Basement	Drum-L	Damage: – Corrosion: L M (S)	↓
	Drum-R	Damage: – Corrosion: L M (S)	RS
	Drive Device	Damage: – Corrosion: (L) M S	C
Drive Chain		Damage: – Looseness: L Oil: –	↑
Chain Sprocket		Damage: – Corrosion: L (M) S	
Reduction Gear		Damage: – Corrosion: L (M) S	
Cover	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Gear-Middle	Damage: – Corrosion: L (M) S	C
Counter Shaft		Damage: – Corrosion: L M S	G
Counter Weight		Damage: – Corrosion: L M S	RS
Hoisting Torque	Wet Condition	36 kg-m	RL
	Dry Condition	2.0 kg-m	RS
Superstructure		Damage: – Corrosion: L M (S)	RS

Photograph



Remarks: Judgement = N: Totally Replace, C: Partly Replace, RL: Large Repair, RM: Medium Repair, RS: Small Repair, G: No Repair, -: No Data.

( ) shows design dimension.

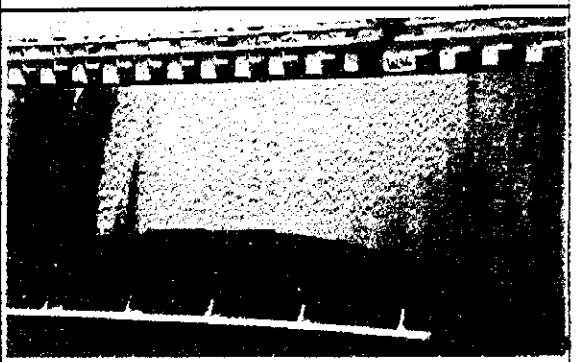
Survey Results of Gate Structure

Gate No. W36 (Main Weir Gate)

Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top – Mid – Low – Btm – (9.5mm)	—
	Corrosion	U/S-Bottom L M S	—
	Damage-Rivet	Corner-L – Corner-R –	—
Truss	Thickness-Avg	Bottom Flange –, Bottom Web – (19.1mm)	—
	Distortion		—
End Girder	Thickness-Avg	L-Bottom –, R-Bottom – (11.1mm)	C
	Remodeling	Left No Right No	↑
	Distortion	Left – Right –	
Bottom Girder	Thickness-Avg	Flange – mm (16.3), Web – mm (9.4)	
	Corrosion	L M S	
Rocker Assembly	Remodeling	Left No Right No	
	Distortion	Left – Right –	
	Others	No Function	
Roller Train	Missing	Left – Right –	
	Diameter-Roller	Average – mm	
	Distortion	Left – Right –	
Seal	Left	–	
	Bottom	–	
	Right	–	
Inclination		Top Level Difference 20 mm	↓
Leakage		(L) M S	C
Sill			
Side Seal	Abrasion-Max	Left: – mm, Right: – mm	RS
Roller Truck	Abrasion-Max	Left: – mm, Right: – mm	RL
Roller Guard	Missing	Left 1 Right 1	N
	Defect	Left 0 Right 0	N
Sill Beam	Abrasion	L (M) S	N
Concrete	Damage-Left	L (M) S	RS
	Damage-Right	L (M) S	RS
	Damage-Bottom	L (M) S	RS

Survey Item		Survey Result	Judge
Hoisting Device			
Wire Rope	Main-Left	γ: – Distortion: – Corrosion: – Oil: –	G
	Main-Right	γ: – Distortion: – Corrosion: – Oil: –	G
	Roller Train-L	γ: – Distortion: – Corrosion: – Oil: –	C
	Roller Train-R	γ: – Distortion: – Corrosion: – Oil: –	C
Drum	Left	Damage: – Function: –	RS
	Right	Damage: – Function: –	↑
Bearing	Drum	Damage: – Oil: –	↓
	Counter Shaft	Damage: – Oil: –	RS
	Reduction Gear	Damage: – Oil: –	C
Gear	Drum Gear-L	Damage: – Fitting: – Backlash: – Oil: –	RS
	Drum Pinion-L	Damage: –	↑
	Drum Gear-R	Damage: – Fitting: – Backlash: – Oil: –	
	Drum Pinion-R	Damage: –	
	Gear-Middle	Damage: – Fitting: – Backlash: – Oil: –	
	Pinion-Middle	Damage: –	
Basement	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Drive Device	Damage: – Corrosion: L (M) S	RS
Drive Chain		Damage: – Looseness: – Oil: –	C
Chain Sprocket		Damage: – Corrosion: L (M) S	↑
Reduction Gear		Damage: – Corrosion: L (M) S	
Cover	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Gear-Middle	Damage: – Corrosion: L (M) S	C
Counter Shaft		Damage: – Corrosion: L M S	G
Counter Weight		Damage: – Corrosion: L M S	RS
Hoisting Torque	Wet Condition	40 kg·m	RL
	Dry Condition	3.9 kg·m	RS
Superstructure		Damage: – Corrosion: L M (S)	RS

Photograph



Remarks: Judgement ■ N: Totally Replace, C: Partly Replace, RL: Large Repair, RM: Medium Repair, RS: Small Repair, G: No Repair, -: No Data.

( ) shows design dimension.

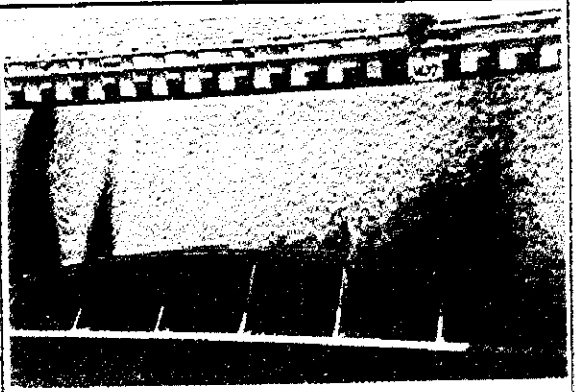
Survey Results of Gate Structure

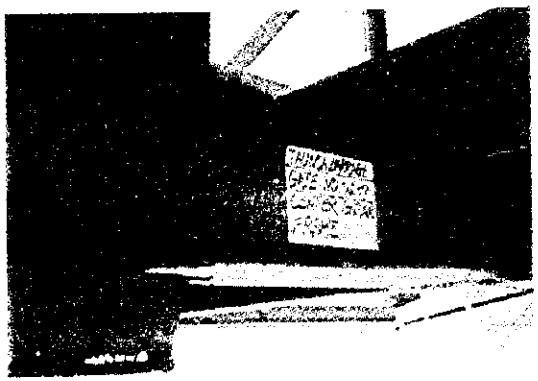
Gate No. W37 (Main Weir Gate)

Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top – Mid – Low – Btm – (9.5mm)	—
	Corrosion	U/S–Bottom L M S	—
	Damage-Rivet	Corner-L – Corner-R –	—
Truss	Thickness-Avg	Bottom Flange –, Bottom Web – (19.1mm)	—
	Distortion		—
End Girder	Thickness-Avg	L–Bottom –, R–Bottom – (11.1mm)	C
	Remodeling	Left No Right No	↑
	Distortion	Left – Right –	
Bottom Girder	Thickness-Avg	Flange – mm (16.3), Web – mm (9.4)	
	Corrosion	L M S	
Rocker Assembly	Remodeling	Left No Right No	
	Distortion	Left – Right –	
	Others	No Function	
Roller Train	Missing	Left – Right –	
	Diameter-Roller	Average – mm	
	Distortion	Left – Right –	
Seal	Left	–	
	Bottom	–	
	Right	–	
Inclination		Top Level Difference 1 6 0 mm	↓
Leakage		(L) M S	C
Sill			
Side Seal	Abrasion-Max	Left: – mm, Right: – mm	RS
Roller Truck	Abrasion-Max	Left: – mm, Right: – mm	RL
Roller Guard	Missing	Left 0 Right 0	N
	Defect	Left 1 Right 1	N
Sill Beam	Abrasion	L M S	—
Concrete	Damage-Left	L (M) S	RS
	Damage-Right	L (M) S	RS
	Damage-Bottom	L M (S)	RS

Survey Item		Survey Result	Judge
Hoisting Device			
Wire Rope	Main-Left	y: – Distortion: – Corrosion: – Oil: –	C
	Main-Right	y: – Distortion: – Corrosion: – Oil: –	C
	Roller Train-L	y: – Distortion: – Corrosion: – Oil: –	C
	Roller Train-R	y: – Distortion: – Corrosion: – Oil: –	C
Drum	Left	Damage: – Function: –	RS
	Right	Damage: – Function: –	↑
Bearing	Drum	Damage: – Oil: –	↓
	Counter Shaft	Damage: – Oil: –	RS
	Reduction Gear	Damage: – Oil: –	C
Gear	Drum Gear-L	Damage: – Fitting: – Backlash: – Oil: –	RS
	Drum Pinion-L	Damage: –	↑
	Drum Gear-R	Damage: – Fitting: – Backlash: – Oil: –	
	Drum Pinion-R	Damage: –	
	Gear-Middle	Damage: – Fitting: – Backlash: – Oil: –	
	Pinion-Middle	Damage: –	
Basement	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Drive Device	Damage: – Corrosion: L (M) S	RS
Drive Chain		Damage: – Looseness: L Oil: –	C
Chain Sprocket		Damage: – Corrosion: L (M) S	↑
Reduction Gear		Damage: – Corrosion: L (M) S	
Cover	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Gear-Middle	Damage: – Corrosion: L (M) S	C
Counter Shaft		Damage: – Corrosion: L M S	G
Counter Weight		Damage: – Corrosion: L M S	RS
Hoisting Torque	Wet Condition	31.5 kg-m	RL
	Dry Condition	2.0 kg-m	RS
Superstructure		Damage: – Corrosion: L M (S)	RS

Photograph





Remarks: Judgement = N: Totally Replace, C: Partly Replace, RL: Large Repair, RM: Medium Repair, RS: Small Repair, G: No Repair, -: No Data.

( ) shows design dimension.

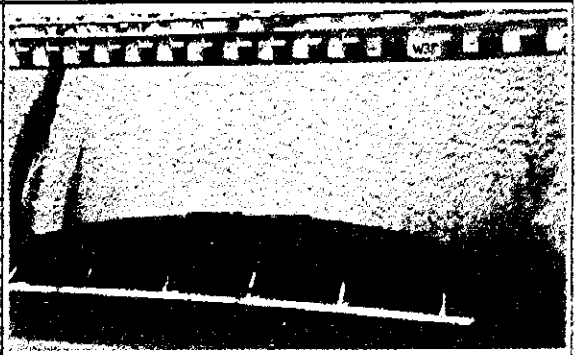
Survey Results of Gate Structure

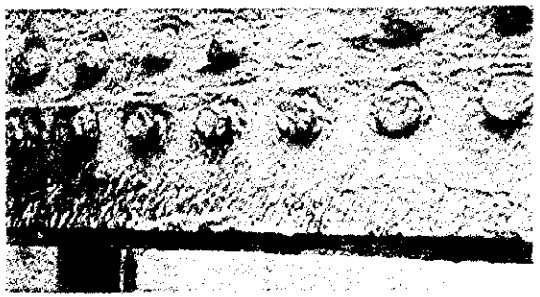
Gate No. W38 (Main Weir Gate)

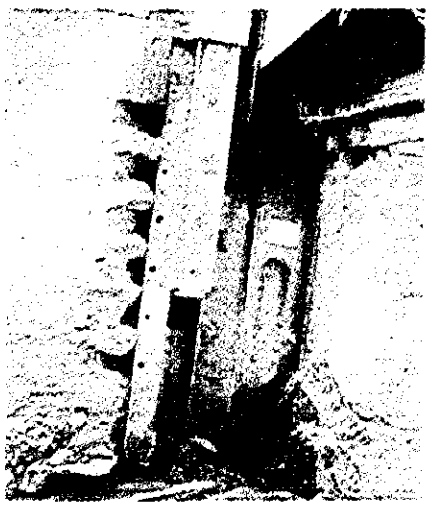
Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top – Mid – Low – Btm – (9.5mm)	—
	Corrosion	U/S-Bottom L M S	—
	Damage-Rivet	Corner-L – Corner-R –	—
Truss	Thickness-Avg	Bottom Flange –, Bottom Web – (19.1mm)	—
	Distortion		—
End Girder	Thickness-Avg	L-Bottom –, R-Bottom – (11.1mm)	C
	Remodeling	Left No Right No	↑
	Distortion	Left – Right –	
Bottom Girder	Thickness-Avg	Flange – mm (16.3), Web – mm (9.4)	
	Corrosion	L M S	
Rocker Assembly	Remodeling	Left No Right No	
	Distortion	Left – Right –	
	Others	No Function	
Roller Train	Missing	Left – Right –	
	Diameter-Roller	Average – mm	
	Distortion	Left – Right –	
Seal	Left	–	
	Bottom	–	
	Right	–	
Inclination		Top Level Difference 10 mm	↓
Leakage		(L) M S	C
Sill			
Side Seal	Abrasion-Max	Left: – mm, Right: – mm	RS
Roller Truck	Abrasion-Max	Left: – mm, Right: – mm	RL
Roller Guard	Missing	Left 0 Right 1	N
	Defect	Left 1 Right 0	N
Sill Beam	Abrasion	L M S	—
Concrete	Damage-Left	L (M) S	RS
	Damage-Right	L M (S)	RS
	Damage-Bottom	L (M) S	RS

Survey Item		Survey Result	Judge
Hoisting Device			
Wire Rope	Main-Left	y: – Distortion: – Corrosion: – Oil: –	G
	Main-Right	y: – Distortion: – Corrosion: – Oil: –	G
	Roller Train-L	y: – Distortion: – Corrosion: – Oil: –	C
	Roller Train-R	y: – Distortion: – Corrosion: – Oil: –	C
Drum	Left	Damage: – Function: –	RS
	Right	Damage: – Function: –	↑
Bearing	Drum	Damage: – Oil: –	↓
	Counter Shaft	Damage: – Oil: –	RS
	Reduction Gear	Damage: – Oil: –	C
Gear	Drum Gear-L	Damage: – Fitting: – Backlash: – Oil: –	RS
	Drum Pinion-L	Damage: –	↑
	Drum Gear-R	Damage: – Fitting: – Backlash: – Oil: –	
	Drum Pinion-R	Damage: –	
	Gear-Middle	Damage: – Fitting: – Backlash: – Oil: –	
	Pinion-Middle	Damage: –	
Basement	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Drive Device	Damage: – Corrosion: L (M) S	RS
Drive Chain		Damage: – Looseness: – Oil: –	C
Chain Sprocket		Damage: – Corrosion: L (M) S	↑
Reduction Gear		Damage: – Corrosion: L (M) S	
Cover	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Gear-Middle	Damage: – Corrosion: L (M) S	C
Counter Shaft		Damage: – Corrosion: L M S	G
Counter Weight		Damage: – Corrosion: L M S	RS
Hoisting Torque	Wet Condition	21 kg·m	G
	Dry Condition	3.9 kg·m	RS
Superstructure		Damage: – Corrosion: L M (S)	RS

Photograph







Remarks: Judgement = N: Totally Replace, C: Partly Replace, RL: Large Repair, RM: Medium Repair, RS: Small Repair, G: No Repair, -: No Data.

( ) shows design dimension.

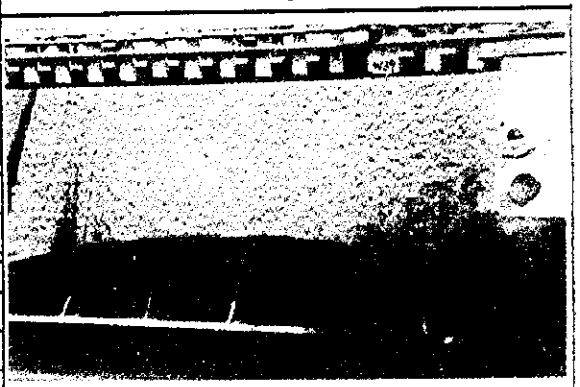
Survey Results of Gate Structure

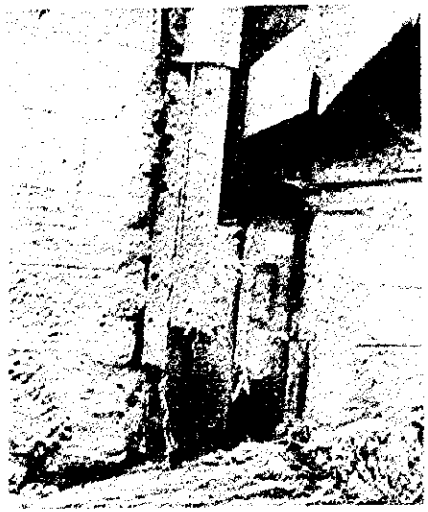
Gate No. W39 (Main Weir Gate)

Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top – Mid – Low – Btm – (9.5mm)	—
	Corrosion	U/S-Bottom L M S	—
	Damage-Rivet	Corner-L – Corner-R –	—
Truss	Thickness-Avg	Bottom Flange –, Bottom Web – (19.1mm)	—
	Distortion		—
End Girder	Thickness-Avg	L-Bottom –, R-Bottom – (11.1mm)	C
	Remodeling	Left No Right No	↑
	Distortion	Left – Right –	
Bottom Girder	Thickness-Avg	Flange – mm (16.3), Web – mm (9.4)	
	Corrosion	L M S	
Rocker Assembly	Remodeling	Left No Right No	
	Distortion	Left – Right –	
	Others	No Function	
Roller Train	Missing	Left – Right –	
	Diameter-Roller	Average – mm	
	Distortion	Left – Right –	
Seat	Left	–	
	Bottom	–	
	Right	–	
Inclination		Top Level Difference 10 mm	↓
Leakage		(L) M S	C
Sill			
Side Seal	Abrasion-Max	Left: – mm, Right: – mm	RS
Roller Truck	Abrasion-Max	Left: – mm, Right: – mm	RL
Roller Guard	Missing	Left 0 Right 1	N
	Defect	Left 0 Right 0	N
Sill Beam	Abrasion	L M S	—
Concrete	Damage-Left	L (M) S	RS
	Damage-Right	L M (S)	RS
	Damage-Bottom	(L) M S	RS

Survey Item		Survey Result	Judge
Hoisting Device			
Wire Rope	Main-Left	y: – Distortion: – Corrosion: – Oil: –	G
	Main-Right	y: – Distortion: – Corrosion: – Oil: –	G
	Roller Train-L	Broken	C
	Roller Train-R	y: – Distortion: – Corrosion: – Oil: –	C
Drum	Left	Damage: – Function: –	RS
	Right	Damage: – Function: Miss Alignment	↑
Bearing	Drum	Damage: – Oil: –	↓
	Counter Shaft	Damage: – Oil: –	RS
	Reduction Gear	Damage: – Oil: –	C
Gear	Drum Gear-L	Damage: – Fitting: – Backlash: – Oil: –	RS
	Drum Pinion-L	Damage: –	↑
	Drum Gear-R	Damage: – Fitting: – Backlash: – Oil: –	
	Drum Pinion-R	Damage: –	
	Gear-Middle	Damage: – Fitting: – Backlash: – Oil: –	
	Pinion-Middle	Damage: –	
Basement	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Drive Device	Damage: – Corrosion: L (M) S	RS
Drive Chain		Damage: – Looseness: L Oil: –	C
Chain Sprocket		Damage: – Corrosion: L (M) S	↑
Reduction Gear		Damage: – Corrosion: L (M) S	
Cover	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Gear-Middle	Damage: – Corrosion: L (M) S	C
Counter Shaft		Damage: – Corrosion: L M S	C
Counter Weight		Damage: – Corrosion: L M S	—
Hoisting Torque	Wet Condition	24 kg·m	G
	Dry Condition	– kg·m	—
Superstructure		Damage: – Corrosion: L M (S)	RS

Photograph





Remarks: Judgement = N: Totally Replace, C: Partly Replace, RL: Large Repair, RM: Medium Repair, RS: Small Repair, G: No Repair, -: No Data.

( ) shows design dimension.

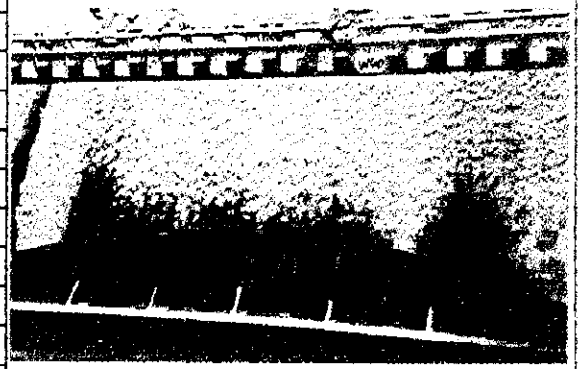
Survey Results of Gate Structure

Gate No. W40 (Main Weir Gate)

Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top – Mid – Low – Btm – (9.5mm)	—
	Corrosion	U/S–Bottom L M S	—
	Damage-Rivet	Corner-L – Corner-R –	—
Truss	Thickness-Avg	Bottom Flange –, Bottom Web – (19.1mm)	—
	Distortion		—
End Girder	Thickness-Avg	L-Bottom –, R-Bottom – (11.1mm)	C
	Remodeling	Left No Right No	↑
	Distortion	Left – Right –	
Bottom	Thickness-Avg	Flange – mm (16.3), Web – mm (9.4)	
Girder	Corrosion	L M S	
Rocker	Remodeling	Left No Right No	
Assembly	Distortion	Left – Right –	
	Others	No Function	
Roller Train	Missing	Left – Right –	
	Diameter-Roller	Average – mm	
	Distortion	Left – Right –	
Seal	Left	–	
	Bottom	–	
	Right	–	
Inclination		Top Level Difference 20 mm	↓
Leakage		(L) M S	C
Sill			
Side Seal	Abrasion-Max	Left: – mm, Right: – mm	RS
Roller Truck	Abrasion-Max	Left: – mm, Right: – mm	RL
Roller Guard	Missing	Left 1 Right 1	N
	Defect	Left 0 Right 0	N
Sill Beam	Abrasion	L M S	—
Concrete	Damage-Left	L M (S)	RS
	Damage-Right	L M (S)	RS
	Damage-Bottom	(L) M S	RS

Survey Item		Survey Result	Judge
Hoisting Device			
Wire Rope	Main-Left	y: – Distortion: – Corrosion: – Oil: –	G
	Main-Right	y: –, Distortion: – Corrosion: – Oil: –	G
	Roller Train-L	y: – Distortion: – Corrosion: – Oil: –	C
	Roller Train-R	y: – Distortion: – Corrosion: – Oil: –	C
Drum	Left	Damage: – Function: –	RS
	Right	Damage: – Function: –	↑
Bearing	Drum	Damage: – Oil: –	↓
	Counter Shaft	Damage: – Oil: –	RS
	Reduction Gear	Damage: – Oil: –	C
Gear	Drum Gear-L	Damage: – Fitting: – Backlash: – Oil: –	RS
	Drum Pinion-L	Damage: –	↑
	Drum Gear-R	Damage: – Fitting: – Backlash: – Oil: –	
	Drum Pinion-R	Damage: –	
	Gear-Middle	Damage: – Fitting: – Backlash: – Oil: –	
	Pinion-Middle	Damage: –	
Basement	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Drive Device	Damage: – Corrosion: L (M) S	RS
Drive Chain		Damage: – Looseness: – Oil: –	C
Chain Sprocket		Damage: – Corrosion: L (M) S	↑
Reduction Gear		Damage: – Corrosion: L (M) S	
Cover	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Gear-Middle	Damage: – Corrosion: L (M) S	C
Counter Shaft		Damage: – Corrosion: L M S	G
Counter Weight		Damage: – Corrosion: L M S	—
Hoisting Torque	Wet Condition	44.4 kg·m	RL
	Dry Condition	– kg·m	—
Superstructure		Damage: – Corrosion: L M (S)	RS

Photograph



Remarks: Judgement = N: Totally Replace, C: Partly Replace, RL: Large Repair, RM: Medium Repair, RS: Small Repair, G: No Repair, -: No Data.

( ) shows design dimension.

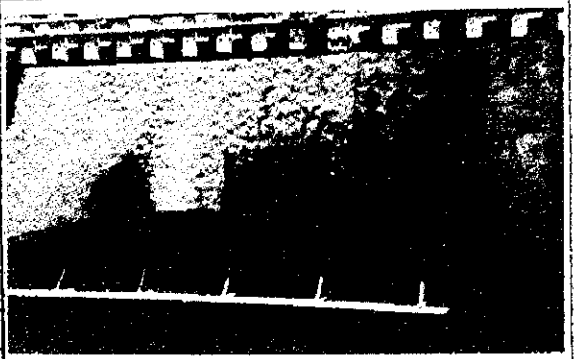
Survey Results of Gate Structure

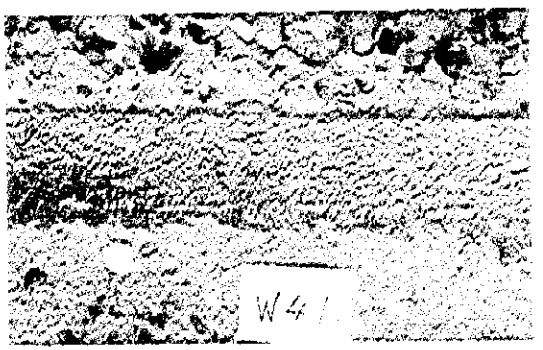
Gate No. W41 (Main Weir Gate)

Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top – Mid – Low – Btm – (9.5mm)	—
	Corrosion	U/S-Bottom L M S	—
	Damage-Rivet	Corner-L – Corner-R –	—
Truss	Thickness-Avg	Bottom Flange –, Bottom Web – (19.1mm)	—
	Distortion		—
End Girder	Thickness-Avg	L-Bottom –, R-Bottom – (11.1mm)	C
	Remodeling	Left No Right No	
	Distortion	Left – Right –	
Bottom Girder	Thickness-Avg	Flange – mm (16.3), Web – mm (9.4)	
	Corrosion	L M S	
Rocker Assembly	Remodeling	Left No Right No	
	Distortion	Left – Right –	
	Others	No Function	
Roller Train	Missing	Left – Right –	
	Diameter-Roller	Average – mm	
	Distortion	Left – Right –	
Seal	Left	–	
	Bottom	–	
	Right	–	
Inclination		Top Level Difference 35 mm	
Leakage		(L) M S	C
Sill			
Side Seal	Abrasion-Max	Left: – mm, Right: – mm	RS
Roller Truck	Abrasion-Max	Left: – mm, Right: – mm	RL
Roller Guard	Missing	Left 0 Right 0	N
	Defect	Left 0 Right 1	N
Sill Beam	Abrasion	L M (S)	RS
Concrete	Damage-Left	L M (S)	RS
	Damage-Right	L (M) S	RS
	Damage-Bottom	(L) M S	RS

Survey Item		Survey Result	Judge
Hoisting Device			
Wire Rope	Main-Left	%: – Distortion: – Corrosion: – Oil: –	G
	Main-Right	%: – Distortion: – Corrosion: – Oil: –	G
	Roller Train-L	%: – Distortion: – Corrosion: – Oil: –	C
	Roller Train-R	%: – Distortion: – Corrosion: – Oil: –	C
Drum	Left	Damage: – Function: –	RS
	Right	Damage: – Function: –	
Bearing	Drum	Damage: – Oil: –	
	Counter Shaft	Damage: – Oil: –	RS
	Reduction Gear	Damage: Loose Oil: –	C
Gear	Drum Gear-L	Damage: – Fitting: – Backlash: – Oil: –	RS
	Drum Pinion-L	Damage: –	
	Drum Gear-R	Damage: – Fitting: – Backlash: – Oil: –	
	Drum Pinion-R	Damage: –	
	Gear-Middle	Damage: – Fitting: – Backlash: – Oil: –	
	Pinion-Middle	Damage: –	
Basement	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	
	Drive Device	Damage: – Corrosion: L (M) S	RS
Drive Chain		Damage: – Looseness: – Oil: –	C
Chain Sprocket		Damage: – Corrosion: L (M) S	
Reduction Gear		Damage: – Corrosion: L (M) S	
Cover	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	
	Gear-Middle	Damage: – Corrosion: L (M) S	C
Counter Shaft		Damage: – Corrosion: L M S	G
Counter Weight		Damage: – Corrosion: L M S	—
Hoisting Torque	Wet Condition	37 kg·m	RL
	Dry Condition	– kg·m	—
Superstructure		Damage: – Corrosion: L M (S)	RS

Photograph





Remarks: Judgement • N: Totally Replace, C: Partly Replace, RL: Large Repair, RM: Medium Repair, RS: Small Repair, G: No Repair, -: No Data.

( ) shows design dimension.

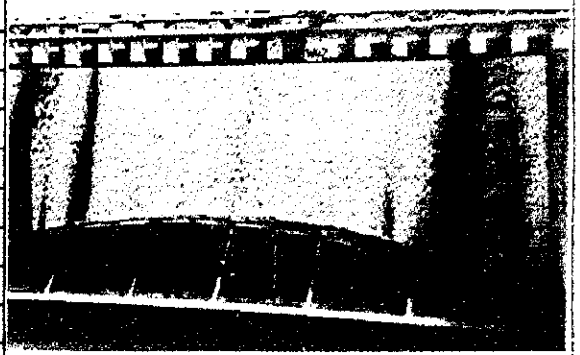
Survey Results of Gate Structure

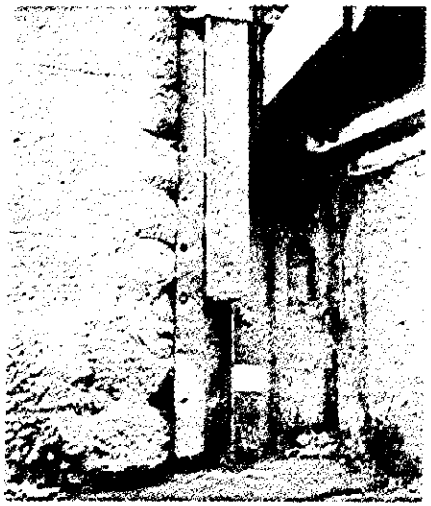
Gate No. W42 (Main Weir Gate)

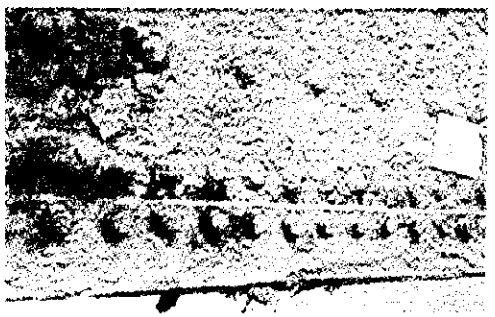
Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top – Mid – Low – Btm – (9.5mm)	—
	Corrosion	U/S-Bottom L M S	—
	Damage-Rivet	Corner-L – Corner-R –	—
Truss	Thickness-Avg	Bottom Flange –, Bottom Web – (19.1mm)	—
	Distortion		—
End Girder	Thickness-Avg	L-Bottom –, R-Bottom – (11.1mm)	C
	Remodeling	Left No Right No	↑
	Distortion	Left – Right –	
Bottom Girder	Thickness-Avg	Flange – mm (16.3), Web – mm (9.4)	
	Corrosion	L M S	
Rocker Assembly	Remodeling	Left No Right No	
	Distortion	Left – Right –	
	Others	No Function	
Roller Train	Missing	Left – Right –	
	Diameter-Roller	Average – mm	
	Distortion	Left – Right –	
Seal	Left	–	
	Bottom	–	
	Right	–	
Inclination		Top Level Difference 10 mm	↓
Leakage		L (M) S	C
Sill			
Side Seal	Abrasion-Max	Left: – mm, Right: – mm	RS
Roller Truck	Abrasion-Max	Left: – mm, Right: – mm	RL
Roller Guard	Missing	Left 1 Right 1	N
	Defect	Left 0 Right 0	N
Sill Beam	Abrasion	L M S	—
Concrete	Damage-Left	L M S	RS
	Damage-Right	L M S	RS
	Damage-Bottom	(L) M S	RS

Survey Item		Survey Result	Judge
Hoisting Device			
Wire Rope	Main-Left	y: – Distortion: – Corrosion: – Oil: –	G
	Main-Right	y: – Distortion: – Corrosion: – Oil: –	G
	Roller Train-L	Broken	C
	Roller Train-R	y: – Distortion: – Corrosion: – Oil: –	C
Drum	Left	Damage: – Function: –	RS
	Right	Damage: – Function: –	↑↓
Bearing	Drum	Damage: – Oil: –	↓
	Counter Shaft	Damage: – Oil: –	RS
	Reduction Gear	Damage: – Oil: –	C
Gear	Drum Gear-L	Damage: – Fitting: – Backlash: – Oil: –	RS
	Drum Pinion-L	Damage: –	↑
	Drum Gear-R	Damage: – Fitting: – Backlash: – Oil: –	
	Drum Pinion-R	Damage: –	
	Gear-Middle	Damage: – Fitting: – Backlash: – Oil: –	
	Pinion-Middle	Damage: –	
Basement	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Drive Device	Damage: – Corrosion: L (M) S	RS
Drive Chain		Damage: – Looseness: – Oil: –	C
Chain Sprocket		Damage: – Corrosion: L (M) S	↑
Reduction Gear		Damage: – Corrosion: L (M) S	
Cover	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Gear-Middle	Damage: – Corrosion: L (M) S	C
Counter Shaft		Damage: – Corrosion: L M S	G
Counter Weight		Damage: – Corrosion: L M S	—
Hoisting Torque	Wet Condition	33.3 kg·m	RL
	Dry Condition	– kg·m	—
Superstructure		Damage: – Corrosion: L M (S)	RS

Photograph







Remarks: Judgement = N: Totally Replace, C: Partly Replace, RL: Large Repair, RM: Medium Repair, RS: Small Repair, G: No Repair, -: No Data.

( ) shows design dimension.

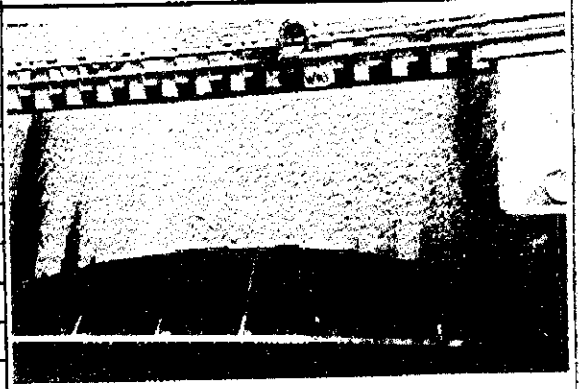
Survey Results of Gate Structure

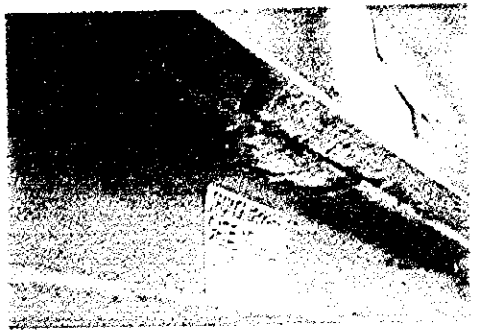
Gate No. W43 (Main Weir Gate)

Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top – Mid – Low – Btm – (9.5mm)	—
	Corrosion	U/S-Bottom L M S	—
	Damage-Rivet	Corner-L – Corner-R –	—
Truss	Thickness-Avg	Bottom Flange –, Bottom Web – (19.1mm)	—
	Distortion		—
End Girder	Thickness-Avg	L-Bottom –, R-Bottom – (11.1mm)	C
	Remodeling	Left No Right No	
	Distortion	Left – Right –	
Bottom Girder	Thickness-Avg	Flange – mm (16.3), Web – mm (9.4)	
	Corrosion	L M S	
Rocker Assembly	Remodeling	Left No Right No	
	Distortion	Left – Right –	
	Others	No Function	
Roller Train	Missing	Left – Right –	
	Diameter-Roller	Average – mm	
	Distortion	Left – Right –	
Seal	Left	–	
	Bottom	–	
	Right	–	
Inclination		Top Level Difference 5 mm	
Leakage		L (M) S	C
Sill			
Side Seal	Abrasion-Max	Left: – mm, Right: – mm	RS
Roller Truck	Abrasion-Max	Left: – mm, Right: – mm	RL
Roller Guard	Missing	Left 0 Right 0	N
	Defect	Left 0 Right 0	N
Sill Beam	Abrasion	L M S	—
Concrete	Damage-Left	L (M) S	RS
	Damage-Right	L (M) S	RS
	Damage-Bottom	L (M) S	RS

Survey Item		Survey Result	Judge
Hoisting Device			
Wire Rope	Main-Left	y: – Distortion: – Corrosion: – Oil: –	G
	Main-Right	y: – Distortion: – Corrosion: – Oil: –	G
	Roller Train-L	y: – Distortion: – Corrosion: – Oil: –	C
	Roller Train-R	y: – Distortion: – Corrosion: – Oil: –	C
Drum	Left	Damage: – Function: –	RS
	Right	Damage: – Function: –	
Bearing	Drum	Damage: – Oil: –	
	Counter Shaft	Damage: – Oil: –	RS
	Reduction Gear	Damage: – Oil: –	C
Gear	Drum Gear-L	Damage: – Fitting: – Backlash: – Oil: –	RS
	Drum Pinion-L	Damage: –	
	Drum Gear-R	Damage: – Fitting: – Backlash: – Oil: –	
	Drum Pinion-R	Damage: –	
	Gear-Middle	Damage: – Fitting: – Backlash: – Oil: –	
	Pinion-Middle	Damage: –	
Basement	Drum-L	Damage: – Corrosion: L (M) S	
	Drum-R	Damage: – Corrosion: L M (S)	
	Drive Device	Damage: – Corrosion: L (M) S	RS
Drive Chain		Damage: – Looseness: L Oil: –	C
Chain Sprocket		Damage: – Corrosion: L (M) S	
Reduction Gear		Damage: – Corrosion: L (M) S	
Cover	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	
	Gear-Middle	Damage: – Corrosion: L (M) S	C
Counter Shaft		Damage: – Corrosion: L M S	G
Counter Weight		Damage: – Corrosion: L M S	—
Hoisting Torque	Wet Condition	38.5 kg-m	RL
	Dry Condition	– kg-m	—
Superstructure		Damage: – Corrosion: L M (S)	RS

Photograph





Remarks: Judgement = N: Totally Replace, C: Partly Replace, RL: Large Repair, RM: Medium Repair, RS: Small Repair, G: No Repair, -: No Data.

( ) shows design dimension.

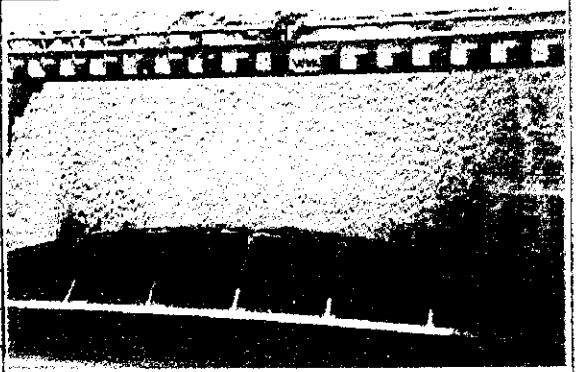
Survey Results of Gate Structure

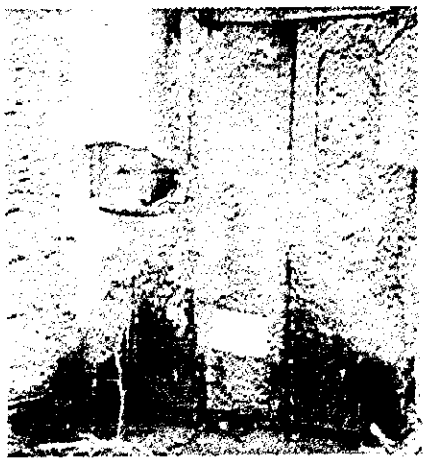
Gate No. W44 (Main Weir Gate)

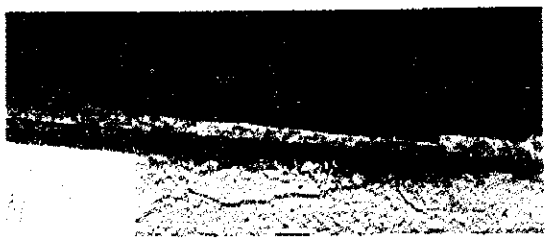
Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top – Mid – Low – Btm – (9.5mm)	—
	Corrosion	U/S-Bottom L M S	—
	Damage-Rivet	Corner-L – Corner-R –	—
Truss	Thickness-Avg	Bottom Flange –, Bottom Web – (19.1mm)	—
	Distortion		—
End Girder	Thickness-Avg	L-Bottom –, R-Bottom – (11.1mm)	C
	Remodeling	Left No Right No	↑
	Distortion	Left – Right –	
Bottom Girder	Thickness-Avg	Flange – mm (16.3), Web – mm (9.4)	
	Corrosion	L M S	
Rocker Assembly	Remodeling	Left No Right No	
	Distortion	Left – Right –	
	Others	No Function	
Roller Train	Missing	Left – Right –	
	Diameter-Roller	Average – mm	
	Distortion	Left – Right –	
Seal	Left	–	
	Bottom	–	
	Right	–	
Inclination		Top Level Difference 5 mm	↓
Leakage		(L) M S	C
Sill			
Side Seal	Abrasion-Max	Left: – mm, Right: – mm	RS
Roller Truck	Abrasion-Max	Left: – mm, Right: – mm	RL
Roller Guard	Missing	Left 0 Right 0	N
	Defect	Left 0 Right 1	N
Sill Beam	Abrasion	L M S	—
Concrete	Damage-Left	L M (S)	RS
	Damage-Right	L M (S)	RS
	Damage-Bottom	L (M) S	RS

Survey Item		Survey Result	Judge
Hoisting Device			
Wire Rope	Main-Left	y: – Distortion: – Corrosion: – Oil: –	G
	Main-Right	y: – Distortion: – Corrosion: – Oil: –	G
	Roller Train-L	y: – Distortion: – Corrosion: – Oil: –	C
	Roller Train-R	y: – Distortion: – Corrosion: – Oil: –	C
Drum	Left	Damage: – Function: –	RS
	Right	Damage: – Function: –	↑
Bearing	Drum	Damage: – Oil: –	↓
	Counter Shaft	Damage: – Oil: –	RS
	Reduction Gear	Damage: – Oil: –	C
Gear	Drum Gear-L	Damage: – Fitting: – Backlash: – Oil: –	RS
	Drum Pinion-L	Damage: –	↑
	Drum Gear-R	Damage: – Fitting: – Backlash: – Oil: –	
	Drum Pinion-R	Damage: –	
	Gear-Middle	Damage: – Fitting: – Backlash: – Oil: –	
	Pinion-Middle	Damage: –	
Basement	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Drive Device	Damage: – Corrosion: L (M) S	RS
Drive Chain		Damage: – Looseness: L Oil: –	C
Chain Sprocket		Damage: – Corrosion: L (M) S	↑
Reduction Gear		Damage: – Corrosion: L (M) S	
Cover	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Gear-Middle	Damage: – Corrosion: L (M) S	C
Counter Shaft		Damage: – Corrosion: L M S	G
Counter Weight		Damage: – Corrosion: L M S	—
Hoisting Torque	Wet Condition	44.4 kg-m	RL
	Dry Condition	– kg-m	—
Superstructure		Damage: – Corrosion: L M (S)	RS

Photograph







Remarks: Judgement = N; Totally Replace, C: Partly Replace, RL: Large Repair, RM: Medium Repair, RS: Small Repair, G: No Repair, -: No Data.

( ) shows design dimension.

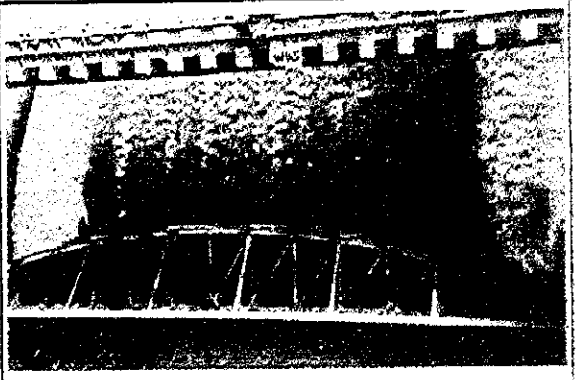
Survey Results of Gate Structure

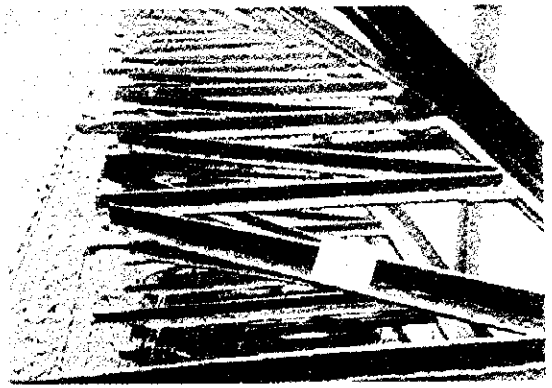
Gate No. W45 (Main Weir Gate)

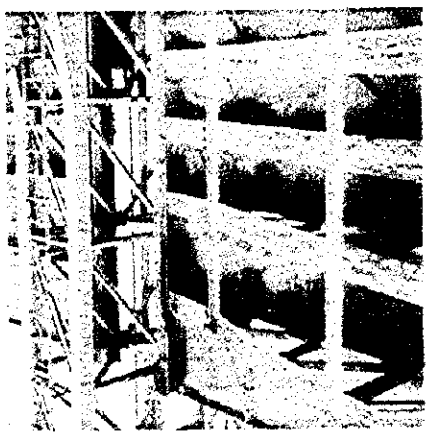
Survey Item			Survey Result	Judge
Gate Leaf				
	Skin Plate	Thickness-Avg	Top – Mid – Low – Btm – (9.5mm)	—
		Corrosion	U/S-Bottom L M S	—
		Damage-Rivet	Corner-L – Corner-R –	—
	Truss	Thickness-Avg	Bottom Flange –, Bottom Web – (19.1mm)	
		Distortion		—
	End Girder	Thickness-Avg	L-Bottom –, R-Bottom – (11.1mm)	C
		Remodeling	Left No Right No	↑
		Distortion	Left – Right –	
	Bottom Girder	Thickness-Avg	Flange – mm (16.3), Web – mm (9.4)	
		Corrosion	L M S	
	Rocker Assembly	Remodeling	Left No Right No	
		Distortion	Left – Right –	
		Others	No Function	
	Roller Train	Missing	Left – Right –	
		Diameter-Roller	Average – mm	
		Distortion	Left – Right –	
	Seal	Left	–	
		Bottom	–	
		Right	–	↓
	Inclination		Top Level Difference 5 mm	
Leakage			(L) M S	C
Sill				
	Side Seal	Abrasion-Max	Left: – mm, Right: – mm	RS
	Roller Truck	Abrasion-Max	Left: – mm, Right: – mm	RL
	Roller Guard	Missing	Left 1 Right 1	N
		Defect	Left 0 Right 0	N
	Sill Beam	Abrasion	L M S	—
	Concrete	Damage-Left	L (M) S	RS
		Damage-Right	L (M) S	RS
		Damage-Bottom	L M (S)	RS

Survey Item			Survey Result	Judge
Hoisting Device				
	Wire Rope	Main-Left	y: – Distortion: – Corrosion: – Oil: –	G
		Main-Right	y: – Distortion: – Corrosion: – Oil: –	G
		Roller Train-L	y: – Distortion: – Corrosion: – Oil: –	C
		Roller Train-R	y: – Distortion: – Corrosion: – Oil: –	C
	Drum	Left	Damage: – Function: –	RS
		Right	Damage: – Function: –	↑
	Bearing	Drum	Damage: – Oil: –	↓
		Counter Shaft	Damage: – Oil: –	RS
		Reduction Gear	Damage: – Oil: –	C
	Gear	Drum Gear-L	Damage: – Fitting: – Backlash: – Oil: –	RS
		Drum Pinion-L	Damage: –	↑
		Drum Gear-R	Damage: – Fitting: – Backlash: – Oil: –	
		Drum Pinion-R	Damage: –	
		Gear-Middle	Damage: – Fitting: – Backlash: – Oil: –	
		Pinion-Middle	Damage: –	
	Basement	Drum-L	Damage: – Corrosion: L M (S)	
		Drum-R	Damage: – Corrosion: L M (S)	↓
		Drive Device	Damage: – Corrosion: L (M) S	RS
	Drive Chain		Damage: – Looseness: L Oil: –	C
	Chain Sprocket		Damage: – Corrosion: L (M) S	↑
	Reduction Gear		Damage: – Corrosion: L (M) S	
	Cover	Drum-L	Damage: – Corrosion: L M (S)	
		Drum-R	Damage: – Corrosion: L M (S)	↓
		Gear-Middle	Damage: – Corrosion: L (M) S	C
	Counter Shaft		Damage: – Corrosion: L M S	G
	Counter Weight		Damage: – Corrosion: L M S	—
	Hoisting Torque	Wet Condition	35 kg-m	RL
		Dry Condition	– kg-m	—
Superstructure			Damage: – Corrosion: L M (S)	RS

Photograph







Remarks: Judgement = N: Totally Replace, C: Partly Replace, RL: Large Repair, RM: Medium Repair, RS: Small Repair, G: No Repair, -: No Data.

( ) shows design dimension.

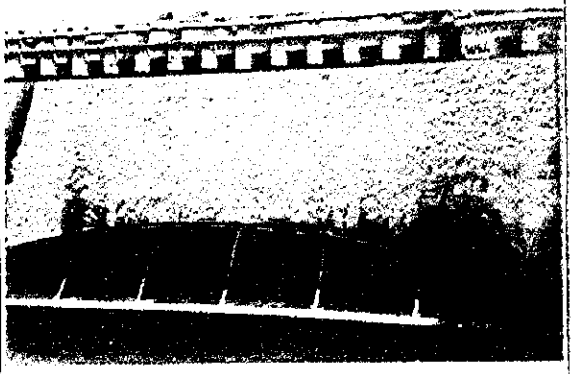
Survey Results of Gate Structure

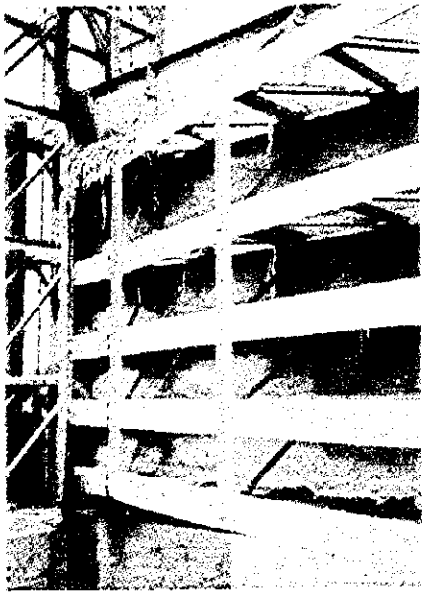
Gate No. W46 (Main Weir Gate)

Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top – Mid – Low – Btm – (9.5mm)	—
	Corrosion	U/S-Bottom L M S	—
	Damage-Rivet	Corner-L – Corner-R –	—
Truss	Thickness-Avg	Bottom Flange –, Bottom Web – (19.1mm)	—
	Distortion		—
End Girder	Thickness-Avg	L-Bottom –, R-Bottom – (11.1mm)	C
	Remodeling	Left No Right No	↑
	Distortion	Left – Right –	
Bottom Girder	Thickness-Avg	Flange – mm (16.3), Web – mm (9.4)	
	Corrosion	L M S	
Rocker Assembly	Remodeling	Left No Right No	
	Distortion	Left – Right –	
	Others	No Function	
Roller Train	Missing	Left – Right –	
	Diameter-Roller	Average – mm	
	Distortion	Left – Right –	
Seal	Left	–	
	Bottom	–	
	Right	–	
Inclination		Top Level Difference 0 mm	↓
Leakage		(L) M S	C
Sill			
Side Seal	Abrasion-Max	Left: – mm, Right: – mm	RS
Roller Truck	Abrasion-Max	Left: – mm, Right: – mm	RL
Roller Guard	Missing	Left 1 Right 1	N
	Defect	Left 0 Right 0	N
Sill Beam	Abrasion	L M S	—
Concrete	Damage-Left	L M S	—
	Damage-Right	L M S	—
	Damage-Bottom	L M (S)	RS

Survey Item		Survey Result	Judge
Hoisting Device			
Wire Rope	Main-Left	y: – Distortion: – Corrosion: – Oil: –	G
	Main-Right	y: – Distortion: – Corrosion: – Oil: –	G
	Roller Train-L	y: – Distortion: – Corrosion: – Oil: –	C
	Roller Train-R	y: – Distortion: – Corrosion: – Oil: –	C
Drum	Left	Damage: – Function: –	RS
	Right	Damage: – Function: –	↑
Bearing	Drum	Damage: – Oil: –	↓
	Counter Shaft	Damage: – Oil: –	RS
	Reduction Gear	Damage: – Oil: –	C
Gear	Drum Gear-L	Damage: – Fitting: – Backlash: – Oil: –	RS
	Drum Pinion-L	Damage: –	↑
	Drum Gear-R	Damage: – Fitting: – Backlash: – Oil: –	
	Drum Pinion-R	Damage: –	
	Gear-Middle	Damage: – Fitting: – Backlash: – Oil: –	
	Pinion-Middle	Damage: –	
Basement	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Drive Device	Damage: – Corrosion: L (M) S	RS
Drive Chain		Damage: – Looseness: – Oil: –	C
Chain Sprocket		Damage: – Corrosion: L (M) S	↑
Reduction Gear		Damage: – Corrosion: L (M) S	
Cover	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Gear-Middle	Damage: – Corrosion: L (M) S	C
Counter Shaft		Damage: – Corrosion: L M S	G
Counter Weight		Damage: – Corrosion: L M S	—
Hoisting Torque	Wet Condition	35 kg·m	RL
	Dry Condition	– kg·m	—
Superstructure		Damage: – Corrosion: L M (S)	RL

Photograph





Remarks: Judgement = N: Totally Replace, C: Partly Replace, RL: Large Repair, RM: Medium Repair, RS: Small Repair, G: No Repair, -: No Data.

( ) shows design dimension.

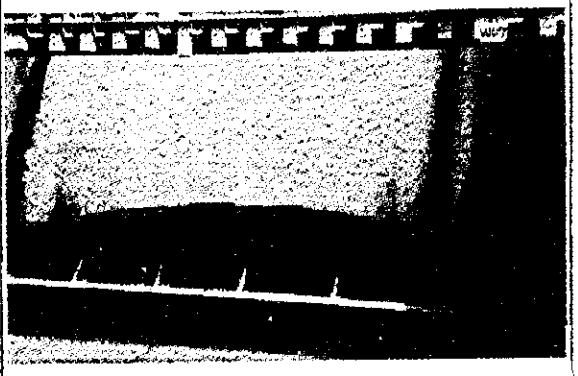
Survey Results of Gate Structure

Gate No. W47 (Main Weir Gate)

Survey Item			Survey Result	Judge
Gate Leaf				
	Skin Plate	Thickness-Avg	Top – Mid – Low – Btm – (9.5mm)	—
		Corrosion	U/S-Bottom L M (S)	G
		Damage-Rivet	Corner-L 1 Corner-R 1	G
	Truss	Thickness-Avg	Bottom Flange –, Bottom Web – (19.1mm)	—
		Distortion		—
	End Girder	Thickness-Avg	L-Bottom –, R-Bottom – (11.1mm)	C
		Remodeling	Left No Right No	↑
		Distortion	Left – Right 5 mm Bend	
	Bottom Girder	Thickness-Avg	Flange – mm (16.3), Web – mm (9.4)	
		Corrosion	L M S	
	Rocker Assembly	Remodeling	Left No Right No	
		Distortion	Left M Ab. Right Heavy Ab.	
		Others	No Function	
	Roller Train	Missing	Left – Right –	
		Diameter-Roller	Average – mm	
		Distortion	Left – Right –	
	Seal	Left	Lost	
		Bottom	Lost	
		Right	Lost	
	Inclination		Top Level Difference 10 mm	↓
Leakage			L (M) S	C
Sill				
	Side Seal	Abrasion-Max	Left: – mm, Right: – mm	RS
	Roller Truck	Abrasion-Max	Left: 15 mm, Right: 10 mm	RL
	Roller Guard	Missing	Left 0 Right 0	N
		Defect	Left 1 Right 0	N
	Sill Beam	Abrasion	L M S	—
	Concrete	Damage-Left	L (M) S	RS
		Damage-Right	(L) M S	RS
		Damage-Bottom	L M S	—

Survey Item			Survey Result	Judge
Hoisting Device				
	Wire Rope	Main-Left	y: – Distortion: – Corrosion: – Oil: –	G
		Main-Right	y: – Distortion: – Corrosion: – Oil: –	G
		Roller Train-L	y: – Distortion: – Corrosion: – Oil: –	C
		Roller Train-R	y: – Distortion: – Corrosion: – Oil: –	C
	Drum	Left	Damage: – Function: –	RS
		Right	Damage: – Function: –	↑
	Bearing	Drum	Damage: – Oil: –	↓
		Counter Shaft	Damage: – Oil: –	RS
		Reduction Gear	Damage: – Oil: –	C
	Gear	Drum Gear-L	Damage: – Fitting: – Backlash: – Oil: –	RS
		Drum Pinion-L	Damage: –	↑
		Drum Gear-R	Damage: – Fitting: – Backlash: – Oil: –	
		Drum Pinion-R	Damage: –	
		Gear-Middle	Damage: – Fitting: – Backlash: – Oil: –	
		Pinion-Middle	Damage: –	
	Basement	Drum-L	Damage: – Corrosion: L M (S)	
		Drum-R	Damage: – Corrosion: L M (S)	↓
		Drive Device	Damage: – Corrosion: L (M) S	RS
	Drive Chain		Damage: – Looseness: – Oil: –	C
	Chain Sprocket		Damage: – Corrosion: L (M) S	↑
	Reduction Gear		Damage: – Corrosion: L (M) S	
	Cover	Drum-L	Damage: – Corrosion: L M (S)	
		Drum-R	Damage: – Corrosion: L M (S)	↓
		Gear-Middle	Damage: – Corrosion: L (M) S	C
	Counter Shaft		Damage: – Corrosion: L M S	G
	Counter Weight		Damage: – Corrosion: L M S	RS
	Hoisting Torque	Wet Condition	51.8 kg-m	RL
		Dry Condition	3.9 kg-m	RS
Superstructure			Damage: – Corrosion: L M (S)	RS

Photograph



Remarks: Judgement = N: Totally Replace, C: Partly Replace, RL: Large Repair, RM: Medium Repair, RS: Small Repair, G: No Repair, -: No Data.

( ) shows design dimension.

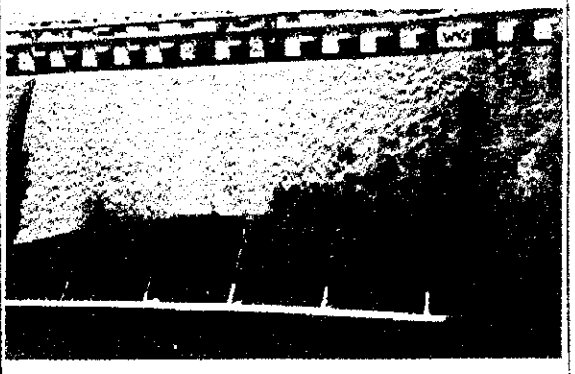
Survey Results of Gate Structure

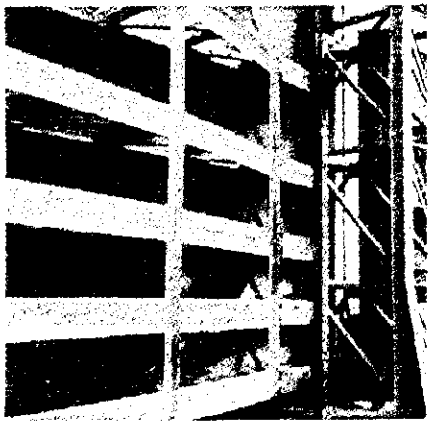
Gate No. W48 (Main Weir Gate)

Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top – Mid – Low – Btm – (9.5mm)	—
	Corrosion	U/S-Bottom L M (S)	G
	Damage-Rivet	Corner-L 2 Corner-R 1	G
Truss	Thickness-Avg	Bottom Flange –, Bottom Web – (19.1mm)	—
	Distortion		—
End Girder	Thickness-Avg	L-Bottom –, R-Bottom – (11.1mm)	C
	Remodeling	Left No Right No	↑
	Distortion	Left – Right –	
Bottom Girder	Thickness-Avg	Flange – mm (16.3), Web – mm (9.4)	
	Corrosion	L M S	
Rocker Assembly	Remodeling	Left No Right No	
	Distortion	Left Heavy Ab. Right Heavy Ab.	
	Others	No Function	
Roller Train	Missing	Left -1 Right –	
	Diameter-Roller	Avorage – mm	
	Distortion	Left – Right –	
Seal	Left	4.5 m Broken	
	Bottom	Lost	
	Right	3.0 m Broken	
Inclination		Top Level Difference 30 mm	↓
Leakage		(L) M S	C
Sill			
Side Seal	Abrasion-Max	Left: – mm, Right: – mm	RS
Roller Truck	Abrasion-Max	Left: 10 mm, Right: 10 mm	RL
Roller Guard	Missing	Left 0 Right 0	N
	Defect	Left 0 Right 0	N
Sill Beam	Abrasion	L M S	—
Concrete	Damage-Left	L M S	—
	Damage-Right	L M S	—
	Damage-Bottom	L M S	—

Survey Item		Survey Result	Judge
Hoisting Device			
Wire Rope	Main-Left	y: – Distortion: – Corrosion: – Oil: –	G
	Main-Right	y: – Distortion: – Corrosion: – Oil: –	G
	Roller Train-L	y: – Distortion: – Corrosion: – Oil: –	C
	Roller Train-R	y: – Distortion: – Corrosion: – Oil: –	C
Drum	Left	Damage: – Function: –	RS
	Right	Damage: – Function: –	↑
Bearing	Drum	Damage: – Oil: –	↓
	Counter Shaft	Damage: – Oil: –	RS
	Reduction Gear	Damage: – Oil: –	C
Gear	Drum Gear-L	Damage: – Fitting: – Backlash: – Oil: –	RS
	Drum Pinion-L	Damage: –	↑
	Drum Gear-R	Damage: – Fitting: – Backlash: – Oil: –	
	Drum Pinion-R	Damage: –	
	Gear-Middle	Damage: – Fitting: – Backlash: – Oil: –	
	Pinion-Middle	Damage: –	
Basement	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Drive Device	Damage: – Corrosion: L (M) S	RS
Drive Chain		Damage: – Looseness: – Oil: –	C
Chain Sprocket		Damage: – Corrosion: L (M) S	↑
Reduction Gear		Damage: – Corrosion: L (M) S	
Cover	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Gear-Middle	Damage: – Corrosion: L (M) S	C
Counter Shaft		Damage: – Corrosion: L M S	G
Counter Weight		Damage: – Corrosion: L M S	RS
Hoisting Torque	Wet Condition	44 kg-m	RL
	Dry Condition	5.9 kg-m	RS
Superstructure		Damage: – Corrosion: L M (S)	RS

Photograph





Remarks: Judgement = N: Totally Replace, C: Partly Replace, RL: Large Repair, RM: Medium Repair, RS: Small Repair, G: No Repair, -: No Data.

( ) shows design dimension.

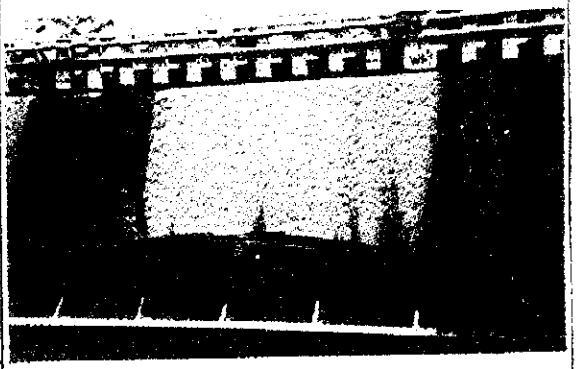
Survey Results of Gate Structure

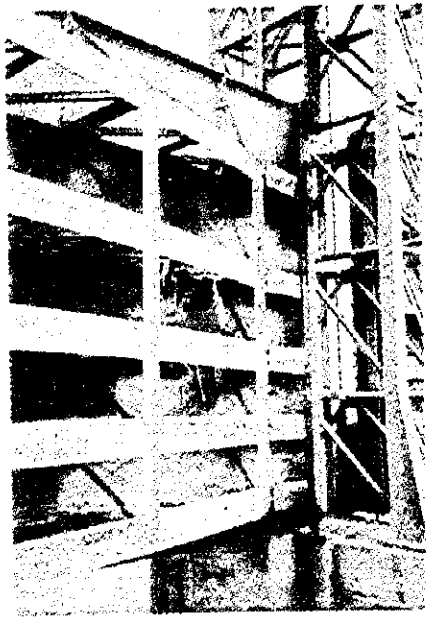
Gate No. W49 (Main Weir Gate)

Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top – Mid – Low – Btm – (9.5mm)	—
	Corrosion	U/S-Bottom L (M) S	G
	Damage-Rivet	Corner-L 1 Corner-R 1	G
Truss	Thickness-Avg	Bottom Flange –, Bottom Web – (19.1mm)	—
	Distortion		—
End Girder	Thickness-Avg	L-Bottom –, R-Bottom – (11.1mm)	C
	Remodeling	Left No Right No	↑
	Distortion	Left – Right –	
Bottom Girder	Thickness-Avg	Flange – mm (16.3), Web – mm (9.4)	
	Corrosion	L M S	
Rocker Assembly	Remodeling	Left No Right No	
	Distortion	Left Heavy Ab. Right Heavy Ab.	
	Others	No Function	
Roller Train	Missing	Left 1 Right 1	
	Diameter-Roller	Average – mm	
	Distortion	Left – Right –	
Seal	Left	4.0 m Broken	
	Bottom	Lost	
	Right	4.0 m Broken	
Inclination		Top Level Difference 20 mm	↓
Leakage		L M (S)	C
Sill			
Side Seal	Abrasion-Max	Left: – mm, Right: – mm	RS
Roller Truck	Abrasion-Max	Left: 16 mm, Right: 14 mm	RL
Roller Guard	Missing	Left 0 Right 0	N
	Defect	Left 0 Right 0	N
Sill Beam	Abrasion	L M S	—
Concrete	Damage-Left	L M S	—
	Damage-Right	L M S	—
	Damage-Bottom	L M S	—

Survey Item		Survey Result	Judge
Hoisting Device			
Wire Rope	Main-Left	y: – Distortion: – Corrosion: – Oil: –	G
	Main-Right	y: – Distortion: – Corrosion: – Oil: –	G
	Roller Train-L	y: – Distortion: – Corrosion: – Oil: –	C
	Roller Train-R	Broken	C
Drum	Left	Damage: – Function: –	RS
	Right	Damage: – Function: –	↑
Bearing	Drum	Damage: – Oil: –	↓
	Counter Shaft	Damage: – Oil: –	RS
	Reduction Gear	Damage: – Oil: –	C
Gear	Drum Gear-L	Damage: – Fitting: – Backlash: – Oil: –	RS
	Drum Pinion-L	Damage: –	↑
	Drum Gear-R	Damage: – Fitting: – Backlash: – Oil: –	
	Drum Pinion-R	Damage: –	
	Gear-Middle	Damage: – Fitting: – Backlash: – Oil: –	
	Pinion-Middle	Damage: –	
Basement	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Drive Device	Damage: – Corrosion: L (M) S	RS
Drive Chain		Damage: – Looseness: – Oil: –	C
Chain Sprocket		Damage: – Corrosion: L (M) S	↑
Reduction Gear		Damage: – Corrosion: L (M) S	
Cover	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Gear-Middle	Damage: – Corrosion: L (M) S	C
Counter Shaft		Damage: – Corrosion: L M S	G
Counter Weight		Damage: – Corrosion: L M S	RS
Hoisting Torque	Wet Condition	29.6 kg-m	G
	Dry Condition	8.6 kg-m	RS
Superstructure		Damage: – Corrosion: L M (S)	RS

Photograph





Remarks: Judgement = N: Totally Replace, C: Partly Replace, RL: Large Repair, RM: Medium Repair, RS: Small Repair, G: No Repair, -: No Data.

( ) shows design dimension.

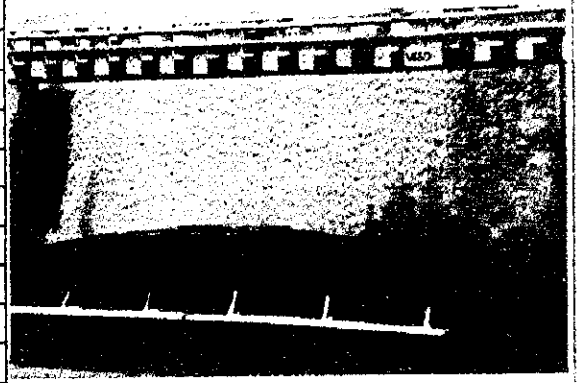
Survey Results of Gate Structure

Gate No. W50 (Main Weir Gate)

Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top – Mid – Low – Btm – (9.5mm)	—
	Corrosion	U/S–Bottom L (M) S	G
	Damage-Rivet	Corner-L 1 Corner-R 1	G
Truss	Thickness-Avg	Bottom Flange –, Bottom Web – (19.1mm)	—
	Distortion		—
End Girder	Thickness-Avg	L-Bottom –, R-Bottom – (11.1mm)	C
	Remodeling	Left No Right No	↑
	Distortion	Left – Right 10 mm Bend	
Bottom Girder	Thickness-Avg	Flange – mm (16.3), Web – mm (9.4)	
	Corrosion	L M S	
Rocker Assembly	Remodeling	Left No Right No	
	Distortion	Left Heavy Ab. Right Heavy Ab.	
	Others	No Function	
Roller Train	Missing	Left 2 Right 0	
	Diameter-Roller	Average – mm	
	Distortion	Left – Right –	
Seal	Left	4.0 m Broken	
	Bottom	Lost	
	Right	Lost	
Inclination		Top Level Difference 50 mm	↓
Leakage		(L) M S	C
Sill			
Side Seal	Abrasion-Max	Left: – mm, Right: – mm	RS
Roller Truck	Abrasion-Max	Left: 14 mm, Right: 15 mm	RL
Roller Guard	Missing	Left 0 Right 0	N
	Defect	Left 0 Right 0	N
Sill Beam	Abrasion	L M S	—
Concrete	Damage-Left	L M S	—
	Damage-Right	L M S	—
	Damage-Bottom	L M S	—

Survey Item		Survey Result	Judge
Hoisting Device			
Wire Rope	Main-Left	y: – Distortion: – Corrosion: – Oil: –	G
	Main-Right	y: – Distortion: – Corrosion: – Oil: –	G
	Roller Train-L	y: – Distortion: – Corrosion: – Oil: –	C
	Roller Train-R	y: – Distortion: – Corrosion: – Oil: –	C
Drum	Left	Damage: – Function: –	RS
	Right	Damage: – Function: –	↑
Bearing	Drum	Damage: – Oil: –	↓
	Counter Shaft	Damage: – Oil: –	RS
	Reduction Gear	Damage: – Oil: –	C
Gear	Drum Gear-L	Damage: – Fitting: – Backlash: – Oil: –	RS
	Drum Pinion-L	Damage: –	↑
	Drum Gear-R	Damage: – Fitting: – Backlash: – Oil: –	
	Drum Pinion-R	Damage: –	
	Gear-Middle	Damage: – Fitting: – Backlash: – Oil: –	
	Pinion-Middle	Damage: –	
Basement	Drum-L	Damage: – Corrosion: L M (S)	↓
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Drive Device	Damage: – Corrosion: L (M) S	RS
Drive Chain		Damage: – Looseness: – Oil: –	C
Chain Sprocket		Damage: – Corrosion: L (M) S	↑
Reduction Gear		Damage: – Corrosion: L (M) S	
Cover	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Gear-Middle	Damage: – Corrosion: L (M) S	C
Counter Shaft		Damage: – Corrosion: L M S	G
Counter Weight		Damage: – Corrosion: L M S	RS
Hoisting Torque	Wet Condition	14.8 kg-m	G
	Dry Condition	2.0 kg-m	S
Superstructure		Damage: – Corrosion: L M (S)	RS

Photograph



Remarks: Judgement = N: Totally Replace, C: Partly Replace, RL: Large Repair, RM: Medium Repair, RS: Small Repair, G: No Repair, -: No Data.

( ) shows design dimension.

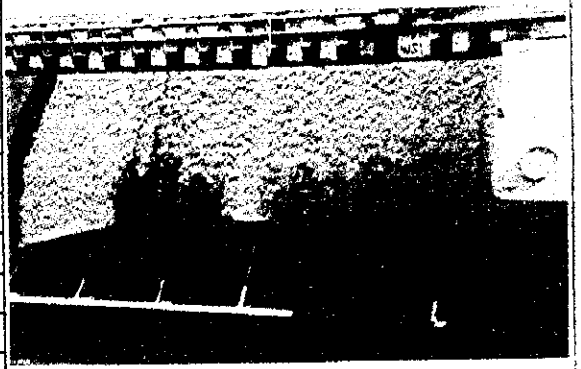
Survey Results of Gate Structure

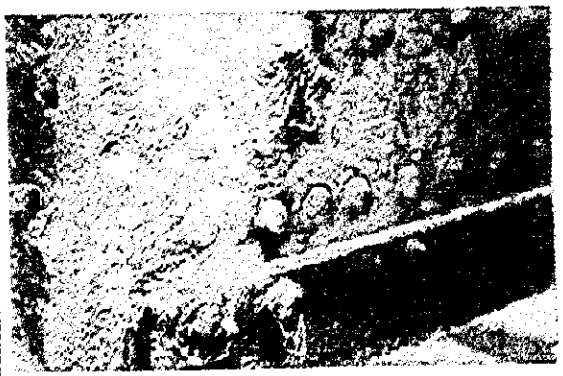
Gate No. W51 (Main Weir Gate)

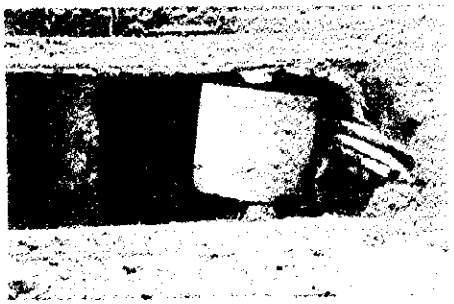
Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top10.0 Mid10.0 Low9.8 Btm – (9.5mm)	G
	Corrosion	U/S-Bottom L M (S)	G
	Damage-Rivet	Corner-L 1 Corner-R 1	G
Truss	Thickness-Avg	Bottom Flange –, Bottom Web – (19.1mm)	–
	Distortion	Vertical Truss (L4 Flange Bend)	RS
End Girder	Thickness-Avg	L-Bottom 10.9, R-Bottom 10.7 (11.1mm)	C
	Remodeling	Left No Right No	↑
	Distortion	Left – Right –	
Bottom Girder	Thickness-Avg	Flange – mm (16.3), Web – mm (9.4)	
	Corrosion	L M S	
Rocker Assembly	Remodeling	Left No Right No	
	Distortion	Left 0.5 m Broken Right Heavy Ab.	
	Others	No Function	
Roller Train	Missing	Left 0 Right 0	
	Diameter-Roller	Average 151.9 mm	
	Distortion	Left Top Bend Right –	
Seal	Left	Lost	
	Bottom	Lost	
	Right	3 m Broken	↓
Inclination		Top Level Difference 70 mm	
Leakage		(L) M S	C
Sill			
Side Seal	Abrasion-Max	Left: – mm, Right: – mm	RS
Roller Truck	Abrasion-Max	Left: 11 mm, Right: 13 mm	RL
Roller Guard	Missing	Left 0 Right 0	N
	Defect	Left 1 Right 0	N
Sill Beam	Abrasion	L M S	–
Concrete	Damage-Left	L M S	–
	Damage-Right	L M S	–
	Damage-Bottom	L M S	–

Survey Item		Survey Result	Judge
Hoisting Device			
Wire Rope	Main-Left	y: – Distortion: – Corrosion: – Oil: –	G
	Main-Right	y: – Distortion: – Corrosion: – Oil: –	G
	Roller Train-L	Broken	C
	Roller Train-R	y: – Distortion: – Corrosion: – Oil: –	C
Drum	Left	Damage: – Function: Miss Alignment	RS
	Right	Damage: – Function: Miss Alignment	↑
Bearing	Drum	Damage: – Oil: –	↓
	Counter Shaft	Damage: – Oil: –	RS
	Reduction Gear	Damage: – Oil: –	C
Gear	Drum Gear-L	Damage: – Fitting: – Backlash: – Oil: –	RS
	Drum Pinion-L	Damage: –	↑
	Drum Gear-R	Damage: – Fitting: – Backlash: – Oil: –	
	Drum Pinion-R	Damage: –	
	Gear-Middle	Damage: – Fitting: – Backlash: – Oil: –	
	Pinion-Middle	Damage: –	
Basement	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Drive Device	Damage: – Corrosion: L (M) S	RS
Drive Chain		Damage: – Looseness: – Oil: –	C
Chain Sprocket		Damage: – Corrosion: L (M) S	↑
Reduction Gear		Damage: – Corrosion: L (M) S	
Cover	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Gear-Middle	Damage: – Corrosion: L (M) S	C
Counter Shaft		Damage: – Corrosion: L M S	G
Counter Weight		Damage: – Corrosion: L M S	RS
Hoisting Torque	Wet Condition	31.5 kg-m	RL
	Dry Condition	3.9 kg-m	RS
Superstructure		Damage: – Corrosion: L M (S)	RS

Photograph







Remarks: Judgement = N: Totally Replace, C: Partly Replace, RL: Large Repair, RM: Medium Repair, RS: Small Repair, G: No Repair, -: No Data.

( ) shows design dimension.

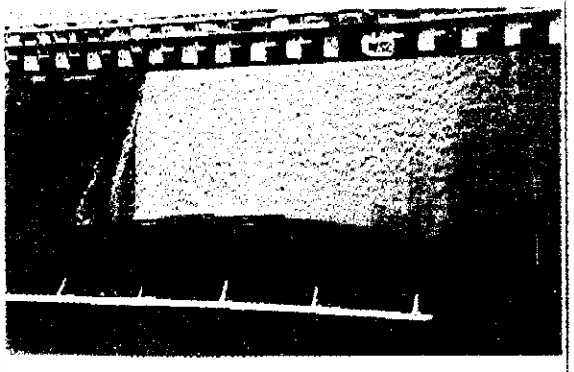
Survey Results of Gate Structure

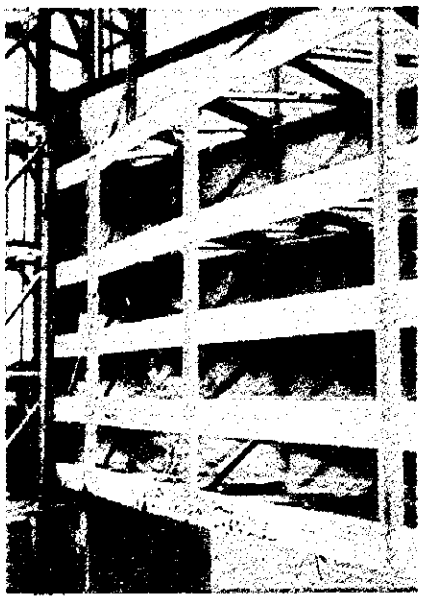
Gate No. W52 (Main Weir Gate)

Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top – Mid – Low – Btm – (9.5mm)	G
	Corrosion	U/S-Bottom L M (S)	G
	Damage-Rivet	Corner-L 1.5 Corner-R 1	G
Truss	Thickness-Avg	Bottom Flange –, Bottom Web – (19.1mm)	—
	Distortion		—
End Girder	Thickness-Avg	L-Bottom –, R-Bottom – (11.1mm)	C
	Remodeling	Left No Right No	↑
	Distortion	Left – Right –	
Bottom Girder	Thickness-Avg	Flange – mm (16.3), Web – mm (9.4)	
	Corrosion	L M S	
Rocker Assembly	Remodeling	Left No Right No	
	Distortion	Left Heavy Ab. Right Heavy Ab.	
	Others	No Function	
Roller Train	Missing	Left – Right –	
	Diameter-Roller	Average – mm	
	Distortion	Left – Right –	
Seal	Left	4.0 m Broken	
	Bottom	Lost	
	Right	3.0 m Broken	
Inclination		Top Level Difference 0 mm	↓
Leakage		L (M) S	C
Sill			
Side Seal	Abrasion-Max	Left: – mm, Right: – mm	RS
Roller Truck	Abrasion-Max	Left: – mm, Right: – mm	RL
Roller Guard	Missing	Left 0, Right 0	N
	Defect	Left 1 Right 0	N
Sill Beam	Abrasion	L M S	—
Concrete	Damage-Left	L M S	—
	Damage-Right	L M S	—
	Damage-Bottom	L M S	—

Survey Item		Survey Result	Judge
Hoisting Device			
Wire Rope	Main-Left	y: – Distortion: – Corrosion: – Oil: –	G
	Main-Right	y: – Distortion: – Corrosion: – Oil: –	G
	Roller Train-L	y: – Distortion: – Corrosion: – Oil: –	C
	Roller Train-R	y: – Distortion: – Corrosion: – Oil: –	C
Drum	Left	Damage: – Function: –	RS
	Right	Damage: – Function: –	↑
Bearing	Drum	Damage: – Oil: –	↓
	Counter Shaft	Damage: – Oil: –	RS
	Reduction Gear	Damage: – Oil: –	C
Gear	Drum Gear-L	Damage: – Fitting: – Backlash: – Oil: –	RS
	Drum Pinion-L	Damage: –	↑
	Drum Gear-R	Damage: – Fitting: – Backlash: – Oil: –	
	Drum Pinion-R	Damage: –	
	Gear-Middle	Damage: – Fitting: – Backlash: – Oil: –	
	Pinion-Middle	Damage: –	
Basement	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Drive Device	Damage: – Corrosion: L (M) S	RS
Drive Chain		Damage: – Looseness: – Oil: –	C
Chain Sprocket		Damage: – Corrosion: L (M) S	↑
Reduction Gear		Damage: – Corrosion: L (M) S	
Cover	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	↓
	Gear-Middle	Damage: – Corrosion: L (M) S	C
Counter Shaft		Damage: – Corrosion: L M S	G
Counter Weight		Damage: – Corrosion: L M S	RS
Hoisting Torque	Wet Condition	43.8 kg-m	RL
	Dry Condition	5.9 kg-m	RS
Superstructure		Damage: – Corrosion: L M (S)	RS

Photograph





Remarks: Judgement = N: Totally Replace, C: Partly Replace, RL: Large Repair, RM: Medium Repair, RS: Small Repair, G: No Repair, -: No Data.

( ) shows design dimension.

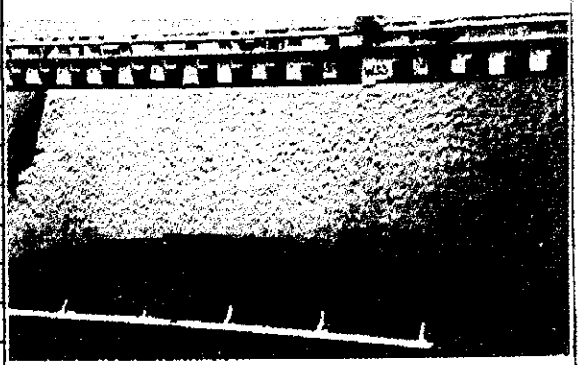
Survey Results of Gate Structure

Gate No. W53 (Main Weir Gate)

Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top – Mid – Low – Btm – (9.5mm)	G
	Corrosion	U/S-Bottom L M (S)	G
	Damage-Rivet	Corner-L 3 Corner-R 1	G
Truss	Thickness-Avg	Bottom Flange –, Bottom Web – (19.1mm)	—
	Distortion	Vertical Truss (L5 Bottom Bend)	RS
End Girder	Thickness-Avg	L-Bottom –, R-Bottom – (11.1mm)	C
	Remodeling	Left No Right No	
	Distortion	Left – Right –	
Bottom Girder	Thickness-Avg	Flange – mm (16.3), Web – mm (9.4)	
	Corrosion	L M S	
Rocker Assembly	Remodeling	Left No Right No	
	Distortion	Left Heavy Ab. Right Heavy Ab.	
	Others	No Function	
Roller Train	Missing	Left 0 Right 1	
	Diameter-Roller	Average 152.0 mm	
	Distortion	Left – Right –	
Seal	Left	3.0 m Broken	
	Bottom	Lost	
	Right	3.0 m Broken	
Inclination		Top Level Difference 0 mm	
Leakage		(L) M S	C
Sill			
Side Seal	Abrasion-Max	Left: – mm, Right: – mm	RS
Roller Truck	Abrasion-Max	Left: – mm, Right: – mm	RL
Roller Guard	Missing	Left 0 Right 1	N
	Defect	Left 0 Right 1	N
Sill Beam	Abrasion	L M S	—
Concrete	Damage-Left	L M S	—
	Damage-Right	L M S	—
	Damage-Bottom	L M S	—

Survey Item		Survey Result	Judge
Hoisting Device			
Wire Rope	Main-Left	y: – Distortion: – Corrosion: – Oil: –	G
	Main-Right	y: – Distortion: – Corrosion: – Oil: –	G
	Roller Train-L	Broken	C
	Roller Train-R	y: – Distortion: – Corrosion: – Oil: –	C
Drum	Left	Damage: – Function: Miss Alignment	RS
	Right	Damage: – Function: Miss Alignment	
Bearing	Drum	Damage: – Oil: –	
	Counter Shaft	Damage: – Oil: –	RS
	Reduction Gear	Damage: – Oil: –	C
Gear	Drum Gear-L	Damage: – Fitting: 100% Backlash: 2.2 mm Oil: –	RS
	Drum Pinion-L	Damage: –	
	Drum Gear-R	Damage: – Fitting: – Backlash: – Oil: –	
	Drum Pinion-R	Damage: –	
	Gear-Middle	Damage: – Fitting: – Backlash: – Oil: –	
	Pinion-Middle	Damage: –	
Basement	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	
	Drive Device	Damage: – Corrosion: L (M) S	RS
Drive Chain		Damage: – Looseness: L Oil: –	C
Chain Sprocket		Damage: – Corrosion: L (M) S	
Reduction Gear		Damage: – Corrosion: L (M) S	
Cover	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	
	Gear-Middle	Damage: – Corrosion: L (M) S	C
Counter Shaft		Damage: – Corrosion: L M S	G
Counter Weight		Damage: – Corrosion: L M S	RS
Hoisting Torque	Wet Condition	44.4 kg·m	RL
	Dry Condition	7.0 kg·m	RS
Superstructure		Damage: – Corrosion: L M (S)	RS

Photograph



Remarks: Judgement = N: Totally Replace, C: Partly Replace, RL: Large Repair, RM: Medium Repair, RS: Small Repair, G: No Repair, -: No Data.

( ) shows design dimension.

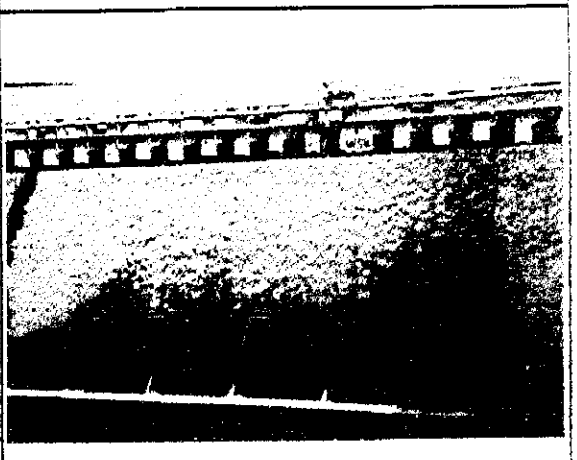
Survey Results of Gate Structure

Gate No. W54 (Main Weir Gate)

Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top – Mid – Low – Btm – (9.5mm)	–
	Corrosion	U/S-Bottom L (M) S	G
	Damage-Rivet	Corner-L 3.5 Corner-R 1	G
Truss	Thickness-Avg	Bottom Flange – , Bottom Web – (19.1mm)	–
	Distortion	Vertical Truss (L-4,5, Bottom Bend)	RS
End Girder	Thickness-Avg	L-Bottom – , R-Bottom – (11.1mm)	C
	Remodeling	Left No Right No	
	Distortion	Left – Right –	
Bottom Girder	Thickness-Avg	Flange – mm (16.3), Web – mm (9.4)	
	Corrosion	L M S	
Rocker Assembly	Remodeling	Left No Right No	
	Distortion	Left Heavy Ab. Right Heavy Ab.	
	Others	No Function	
Roller Train	Missing	Left 2 Right 0	
	Diameter-Roller	Average 152.1 mm	
	Distortion	Left – Right –	
Seal	Left	Lost	
	Bottom	Lost	
	Right	Lost	
Inclination		Top Level Difference 10 mm	
Leakage		(L) M S	C
Sill			
Side Seal	Abrasion-Max	Left: – mm, Right: – mm	RS
Roller Truck	Abrasion-Max	Left: – mm, Right: – mm	RL
Roller Guard	Missing	Left 0 Right 1	N
	Defect	Left 0 Right 0	N
Sill Beam	Abrasion	L M S	–
Concrete	Damage-Left	L M S	–
	Damage-Right	L M S	–
	Damage-Bottom	L M S	–

Survey Item		Survey Result	Judge
Hoisting Device			
Wire Rope	Main-Left	y: – Distortion: – Corrosion: – Oil: –	G
	Main-Right	y: – Distortion: – Corrosion: – Oil: –	G
	Roller Train-L	y: – Distortion: – Corrosion: – Oil: –	C
	Roller Train-R	y: – Distortion: – Corrosion: – Oil: –	C
Drum	Left	Damage: – Function: –	RS
	Right	Damage: – Function: –	
Bearing	Drum	Damage: – Oil: –	
	Counter Shaft	Damage: – Oil: –	RS
	Reduction Gear	Damage: – Oil: –	C
Gear	Drum Gear-L	Damage: – Fitting: – Backlash: – Oil: –	RS
	Drum Pinion-L	Damage: –	
	Drum Gear-R	Damage: – Fitting: – Backlash: – Oil: –	
	Drum Pinion-R	Damage: –	
	Gear-Middle	Damage: – Fitting: – Backlash: – Oil: –	
	Pinion-Middle	Damage: –	
Basement	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	
	Drive Device	Damage: – Corrosion: L (M) S	RS
Drive Chain		Damage: – Looseness: L Oil: –	C
Chain Sprocket		Damage: – Corrosion: L (M) S	
Reduction Gear		Damage: – Corrosion: L (M) S	
Cover	Drum-L	Damage: – Corrosion: L M (S)	
	Drum-R	Damage: – Corrosion: L M (S)	
	Gear-Middle	Damage: – Corrosion: L (M) S	C
Counter Shaft		Damage: – Corrosion: L M S	G
Counter Weight		Damage: – Corrosion: L M S	RS
Hoisting Torque	Wet Condition	44.4 kg·m	RL
	Dry Condition	3.9 kg·m	RS
Superstructure		Damage: – Corrosion: L M (S)	RS

Photograph



Remarks: Judgement ; N: Totally Replace, C: Partly Replace, RL: Large Repair, RM: Medium Repair, RS: Small Repair, G: No Repair, -: No Data.

( ) shows design dimension.