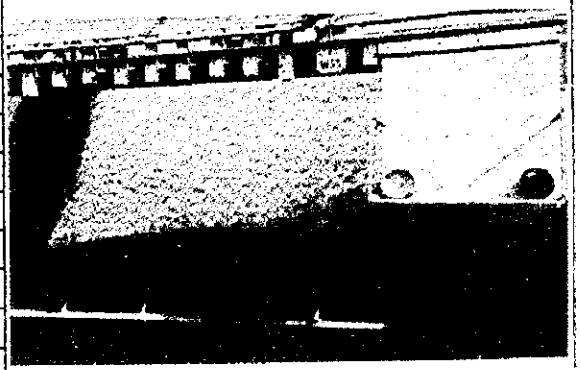
Survey Results of Gate Structure

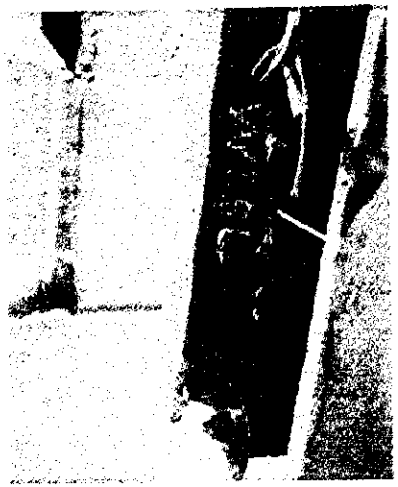
Gate No. W55 (Main Weir Gate)

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 15 mm Bend 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 M Ab. Right Heavy Ab.	
	Others	No Function	
Roller Train	Missing	Left 1 Right 1	
	Diameter-Roller	Average – mm	
	Distortion	Left – Right –	
Seal	Left	2.5 m Broken	
	Bottom	Lost	
	Right	4 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: – 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	—
	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	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.

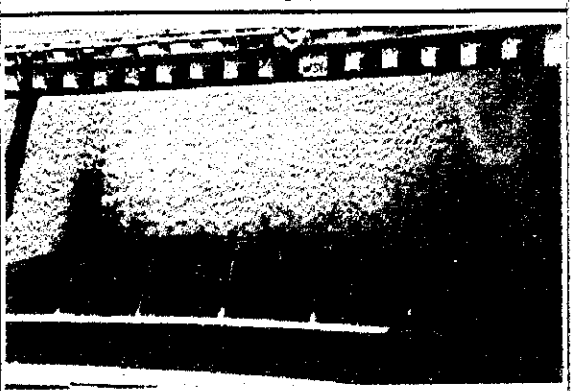
Survey Results of Gate Structure

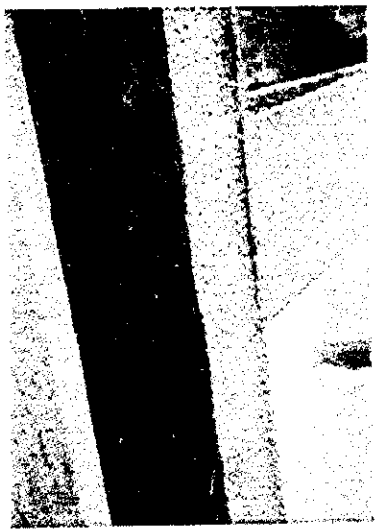
Gate No. W56 (Main Weir Gate)

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 2 Right –	
	Diameter-Roller	Average – mm	
	Distortion	Left – Right –	
Seal	Left	4.0 m Broken	
	Bottom	Lost	
	Right	4.0 m Broken	
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 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	% – 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: – 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.

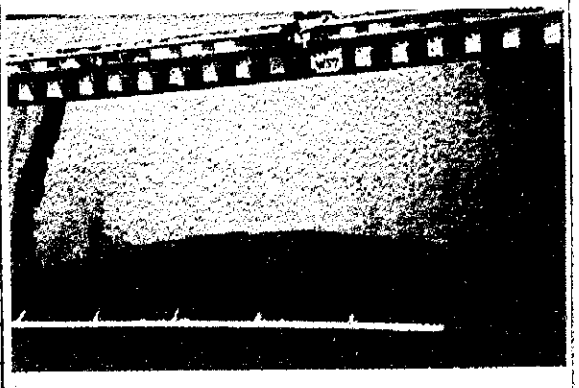
Survey Results of Gate Structure

Gate No. W57 **(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 1.5 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	3.0 m Broken	
	Bottom	Lost	
	Right	4.0 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: 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: Miss Alignment	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	RS
Hoisting Torque	Wet Condition	37 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.

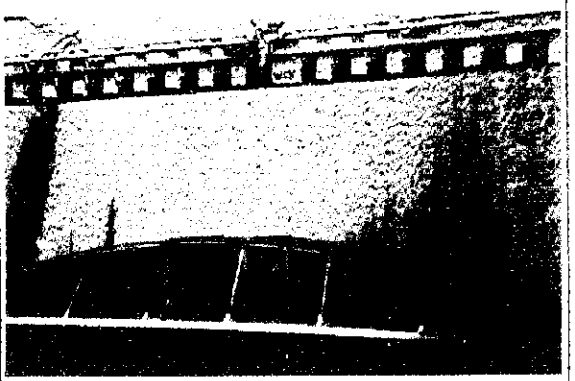
Survey Results of Gate Structure

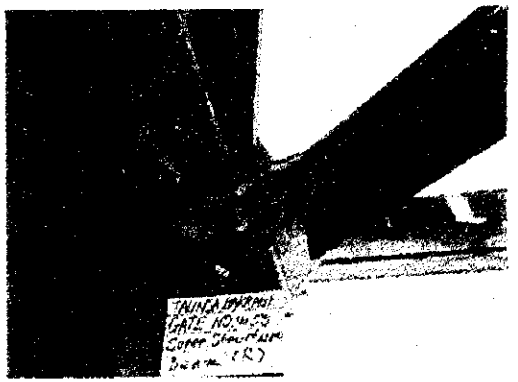
Gate No. W58 (Main Weir Gate)

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 – Right –	
	Diameter-Roller	Average – mm	
	Distortion	Left – Right –	
Seal	Left	4.0 m Broken	
	Bottom	Lost	
	Right	4.0 m Broken	
Inclination		Top Level Difference 40 mm	↓
Leakage		(L) M S	C
Sill			
Side Seal	Abrasion-Max	Left: – mm, Right: – mm	RS
Roller Truck	Abrasion-Max	Left: 12 mm, Right: 13 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	Broken	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	28 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.

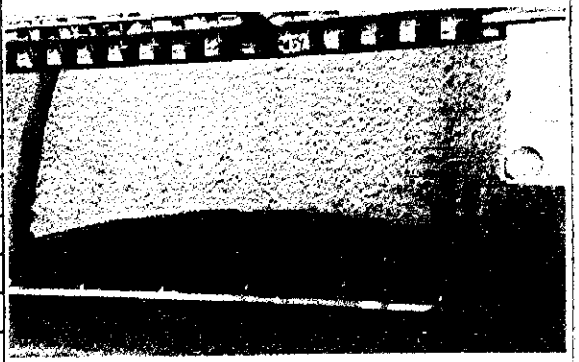
Survey Results of Gate Structure

Gate No. W59 (Main Weir Gate)

Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top10.0 Mid10.0 Low9.8 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 Bend 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	3 m Broken	
	Bottom	Lost	
	Right	3 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: 13 mm, Right: 13 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	28 kg-m	G
	Dry Condition	5.1 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.

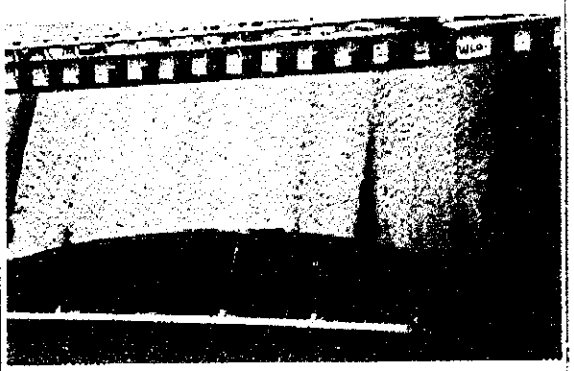
Survey Results of Gate Structure

Gate No. W60 (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 Small 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 Broken	
	Others	No Function	
Roller Train	Missing	Left – Right –	
	Diameter-Roller	Average – mm	
	Distortion	Left – Right –	
Seal	Left	5 m Broken	
	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: 10 mm, Right: 13 mm	RL
Roller Guard	Missing	Left 1 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: –	↑
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: 90% Backlash: 4.6 mm 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	44.4 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.

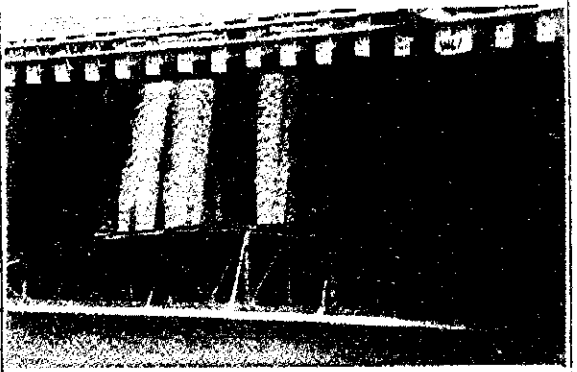
Survey Results of Gate Structure

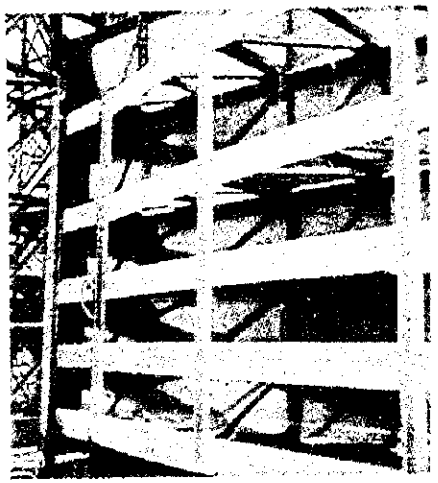
Gate No. W61 **(Main Weir Gate)**

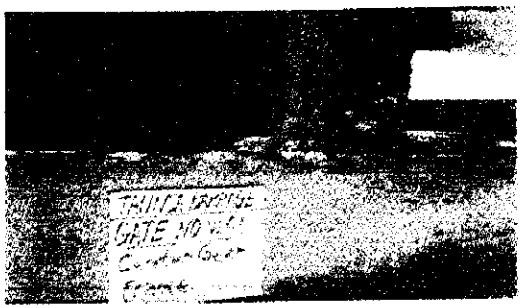
Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top – Mid – Low – Btm – (9.5mm)	—
	Corrosion	U/S-Bottom L M (S)	G
	Damage-Rivet	Corner-L 1 Corner-R 1	G
Truss	Thickness-Avg	Bottom Flange –, Bottom Web – (19.1mm)	—
	Distortion		—
End Girder	Thickness-Avg	L-Bottom –, R-Bottom – (11.1mm)	C
	Remodeling	Left No Right No	↑
	Distortion	Left – Right 2 m 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 – Right –	
	Diameter-Roller	Average – mm	
	Distortion	Left – Right –	
Seal	Left	0.5 m Broken	
	Bottom	Good	
	Right	Good	
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: 12 mm, Right: 10 mm	RL
Roller Guard	Missing	Left 0 Right 0	N
	Defect	Left 2 Right 2	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	37 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.

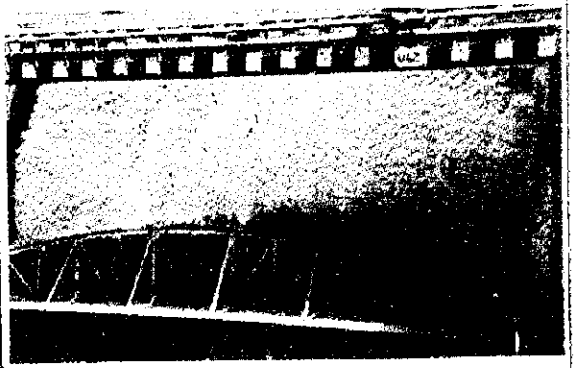
Survey Results of Gate Structure

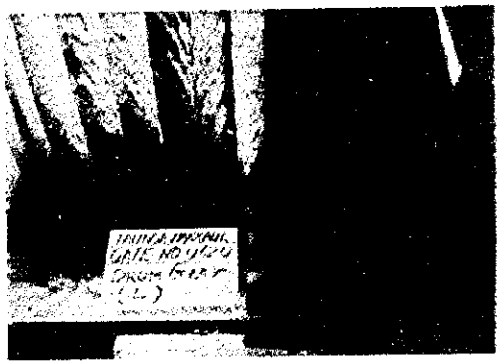
Gate No. U62U (Upper Undersluice Gate)

Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top – Mid – Low – Btm9.7 (9.5mm)	N
	Corrosion	U/S-Bottom L M (S)	↑
	Damage-Rivet	Corner-L – Corner-R –	
Truss	Thickness-Avg	Bottom Flange 18.1, Bottom Web 19.0 (19.1mm)	
	Distortion		
End Girder	Thickness-Avg	L-Bottom 12.4, R-Bottom 12.6 (12.7mm)	
	Remodeling	Left No Right No	
	Distortion	Left – Right –	
Bottom	Thickness-Avg	Flange 11.4 mm (16.3), Web 9.4 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	3 m Broken	
	Bottom	Good	
	Right	2 m Broken	
Inclination		Top Level Difference 100 mm	↓
Leakage		L M (S)	N
Sill			
Side Seal	Abrasion-Max	Left: – mm, Right: – mm	RS
Roller Truck	Abrasion-Max	Left: – mm, Right: – mm	N
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	Broken	N
	Roller Train-R	y: Distortion: – Corrosion: – Oil: –	N
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: 90% Backlash: 4.1 mm 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	– kg-m	—
	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.

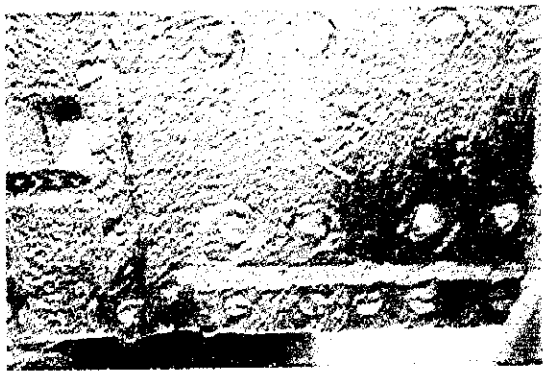
Survey Results of Gate Structure

Gate No. U62L (Lower Undersluice Gate)

Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top – Mid – Low – Btm 8.1 (9.5mm)	N
	Corrosion	U/S-Bottom (L) M S	↑
	Damage-Rivet	Corner-L 14.5 mm Corner-R 12 mm	
Truss	Thickness-Avg	Bottom Flange 21.4, Bottom Web 20.7 (22.2mm)	
	Distortion		
End Girder	Thickness-Avg	L-Bottom 10.1, R-Bottom 10.4 (12.7mm)	
	Remodeling	Left Re Right Re	
	Distortion	Left – Right Bend	
Bottom Girder	Thickness-Avg	Flange14.3 mm (16.0), Web 7.6 mm (9.7)	
	Corrosion	L (M) S	
Rocker Assembly	Remodeling	Left Re Right Re	
	Distortion	Left – Right –	
	Others	Original Type	
Roller Train	Missing	Left 1 Right –	
	Diameter-Roller	Average – mm	
	Distortion	Left – Right –	
Seal	Left	Lost	
	Bottom	Lost	
	Right	Lost	
Inclination		Top Level Difference 20 mm	↓
Leakage		(L) M S	N
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	—

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: –	N
	Roller Train-R	Broken	N
Drum	Left	Damage: – Function: Touching Frame	RS
	Right	Damage: – Function: Over Lapping	↑
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	RS
Hoisting Torque	Wet Condition	– kg·m	—
	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.

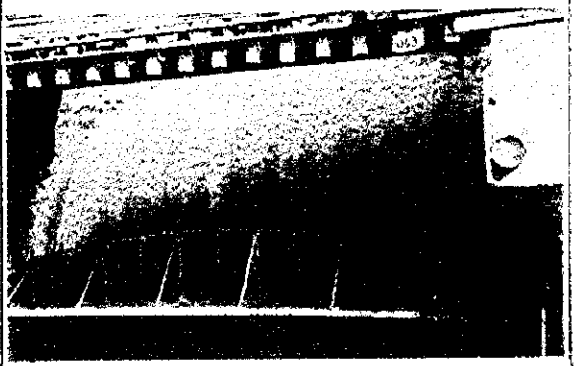
Survey Results of Gate Structure

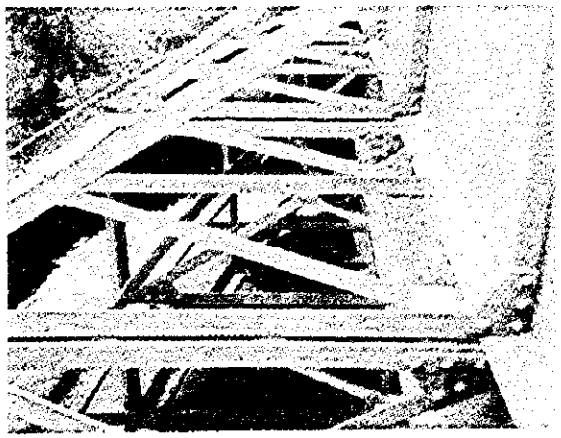
Gate No. U63U (Upper Undersluice Gate)

Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top – Mid – Low – Btm9.9 (9.5mm)	N
	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)	
	Distortion		
End Girder	Thickness-Avg	L-Bottom 12.9, R-Bottom 13.1 (12.7mm)	
	Remodeling	Left No Right No	
	Distortion	Left – Right –	
Bottom Girder	Thickness-Avg	Flange 11.6 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	2 m Broken	
	Bottom	Good	
	Right	3 m Broken	
Inclination		Top Level Difference 14 mm	↓
Leakage		(L) M S	N
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 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	N
	Roller Train-R	y: Distortion: – Corrosion: – Oil: –	N
Drum	Left	Damage: – Function: –	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: – 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	– kg·m	—
	Dry Condition	4.7 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.

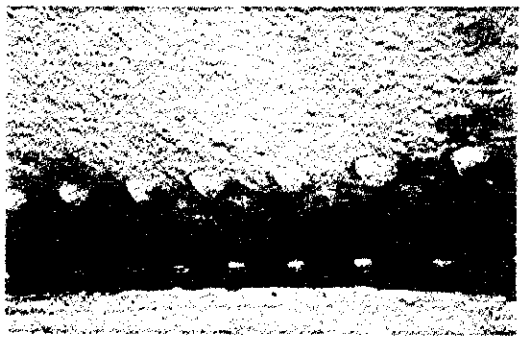
Survey Results of Gate Structure

Gate No. U63L (Lower Undersluice Gate)

Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top – Mid – Low – Btm 8.4 (9.5mm)	N
	Corrosion	U/S-Bottom (L) M S	
	Damage-Rivet	Corner-L 13 mm Corner-R 11 mm	
Truss	Thickness-Avg	Bottom Flange 21.8, Bottom Web 20.9 (22.2mm)	
	Distortion		
End Girder	Thickness-Avg	L-Bottom 11.0, R-Bottom 10.5 (12.7mm)	
	Remodeling	Left Re Right Re	
	Distortion	Left Small Bend Right –	
Bottom Girder	Thickness-Avg	Flange 14.4 mm (16.0), Web 7.0 mm (9.7)	
	Corrosion	L (M) S	
Rocker Assembly	Remodeling	Left Re Right Re	
	Distortion	Left – Right –	
	Others	–	
Roller Train	Missing	Left – Right –	
	Diameter-Roller	Average – mm	
	Distortion	Left – Right –	
Seal	Left	Lost	
	Bottom	Lost	
	Right	Lost	
Inclination		Top Level Difference 30 mm	
Leakage		(L) M S	N
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: –	N
	Roller Train-R	y: Distortion: – Corrosion: – Oil: –	N
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: – 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	– kg-m	—
	Dry Condition	19.5 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.

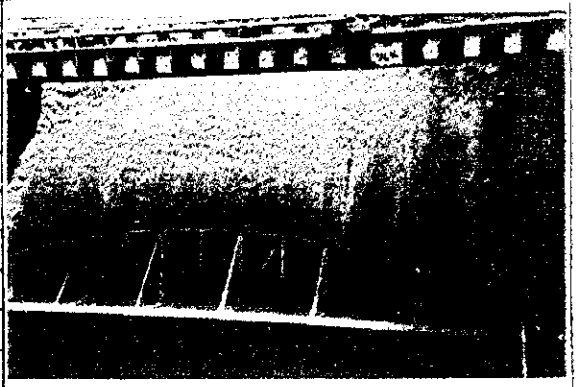
Survey Results of Gate Structure

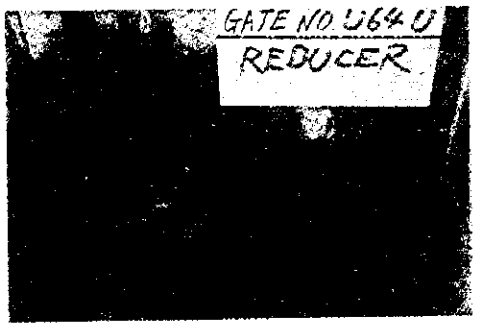
Gate No. U64U (Upper Undersluice Gate)

Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top – Mid – Low – Btm10.1 (9.5mm)	N
	Corrosion	U/S-Bottom L M (S)	↑
	Damage-Rivet	Corner-L – Corner-R –	
Truss	Thickness-Avg	Bottom Flange 18.7, Bottom Web 18.5 (19.1mm)	
	Distortion		
End Girder	Thickness-Avg	L-Bottom 12.7, R-Bottom 12.8 (12.7mm)	
	Remodeling	Left No Right No	
	Distortion	Left – Right –	
Bottom Girder	Thickness-Avg	Flange 11.7 mm (16.3), Web 9.4 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	1 m Broken	
	Bottom	Good	
	Right	2 m Broken	↓
Inclination		Top Level Difference 20 mm	
Leakage		(L) M S	N
Sill			
Side Seal	Abrasion-Max	Left: – mm, Right: – mm	RS
Roller Truck	Abrasion-Max	Left: 10 mm, Right: 11 mm	N
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: –	N
	Roller Train-R	y: Distortion: – Corrosion: – Oil: –	N
Drum	Left	Damage: – Function: –	RS
	Right	Damage: – Function: –	↑
Bearing	Drum	Damage: – Oil: –	↓
	Counter Shaft	Damage: – Oil: –	RS
	Reduction Gear	Damage: Broken Oil: –	C
Gear	Drum Gear-L	Damage: – Fitting: 80% Backlash: – Oil: –	RS
	Drum Pinion-L	Damage: Miss Alignment	↑
	Drum Gear-R	Damage: – Fitting: – Backlash: – Oil: –	
	Drum Pinion-R	Damage: Miss Alignment	
	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	– kg·m	—
	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. U64L (Lower Undersluice Gate)

Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top – Mid – Low – Rim 9.1 (9.5mm)	N
	Corrosion	U/S-Bottom (L) M S	
	Damage-Rivet	Corner-L 12 mm Corner-R 3 mm	
Truss	Thickness-Avg	Bottom Flange 21.4 , Bottom Web 20.2 (22.2mm)	
	Distortion		
End Girder	Thickness-Avg	L-Bottom 10.5 , R-Bottom 9.8 (12.7mm)	
	Remodeling	Left Re Right Re	
	Distortion	Left Broken Right Bend	
Bottom Girder	Thickness-Avg	Flange 14.7 mm (16.0), Web 7.4 mm (9.7)	
	Corrosion	L (M) S	
Rocker Assembly	Remodeling	Left Re Right Re	
	Distortion	Left – Right –	
	Others	–	
Roller Train	Missing	Left – Right –	
	Diameter-Roller	Average – mm	
	Distortion	Left – Right –	
Seal	Left	Lost	
	Bottom	Lost	
	Right	Lost	
Inclination		Top Level Difference 30 mm	
Leakage		(L) M S	N
Sill			
Side Seal	Abrasion-Max	Left: – mm, Right: – mm	RS
Roller Truck	Abrasion-Max	Left: 13 mm, Right: 12 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	%: Distortion: – Corrosion: – Oil: –	G
	Main-Right	%: Distortion: – Corrosion: – Oil: –	G
	Roller Train-L	Broken	N
	Roller Train-R	%: Distortion: – Corrosion: – Oil: –	N
Drum	Left	Damage: – Function: Touching Frame	RS
	Right	Damage: – Function: Touching Frame	
Bearing	Drum	Damage: – Oil: –	
	Counter Shaft	Damage: – Oil: –	RS
	Reduction Gear	Damage: – Oil: –	C
Gear	Drum Gear-L	Damage: – Fitting: 90% 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	– kg-m	–
	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.

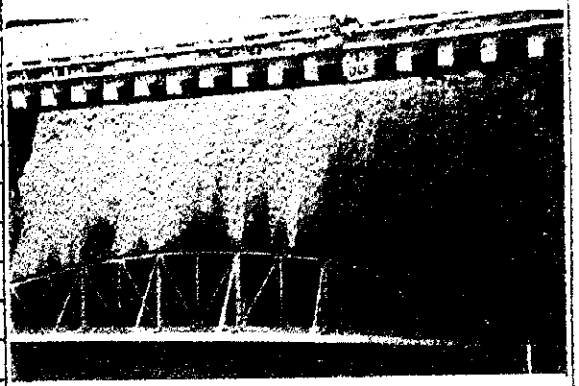
Survey Results of Gate Structure

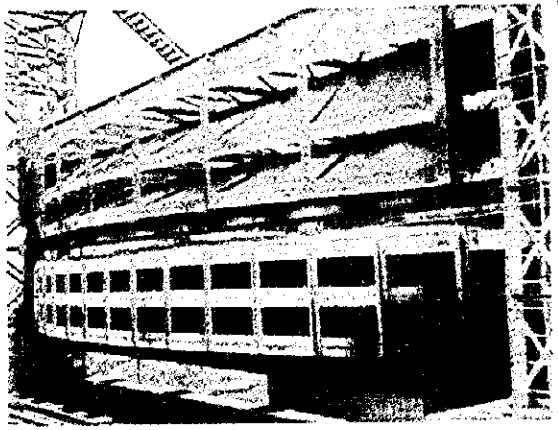
Gate No. U65U (Upper Undersluice Gate)

Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top10.0 Mid10.0 Low9.3 Btm9.7 (9.5mm)	N
	Corrosion	U/S-Bottom L M (S)	
	Damage-Rivet	Corner-L – Corner-R –	
Truss	Thickness-Avg	Bottom Flange 18.7, Bottom Web 18.2 (19.1mm)	
	Distortion		
End Girder	Thickness-Avg	L-Bottom 12.7, R-Bottom 12.7 (12.7mm)	
	Remodeling	Left No Right No	
	Distortion	Left – Right –	
Bottom Girder	Thickness-Avg	Flange 12.1 mm (16.3), Web 9.5 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	4 m Broken	
	Bottom	Good	
	Right	2.5 m Broken	
Inclination		Top Level Difference 130 mm	
Leakage		(L) M S	N
Sill			
Side Seal	Abrasion-Max	Left: – mm, Right: – mm	RS
Roller Truck	Abrasion-Max	Left: 8 mm, Right: 4 mm	N
Roller Guard	Missing	Left 0 Right 0	N
	Defect	Left 0 Right 0	N
Sill Beam / Concrete	Abrasion	L M S	
	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: –	N
	Roller Train-R	y: Distortion: – Corrosion: – Oil: –	N
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	– kg-m	–
	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.

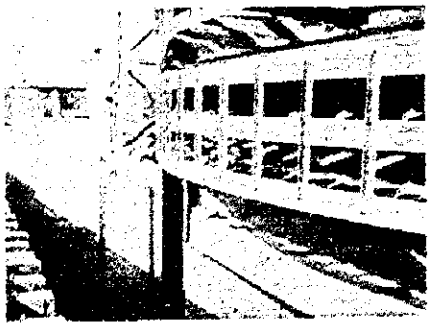
Survey Results of Gate Structure

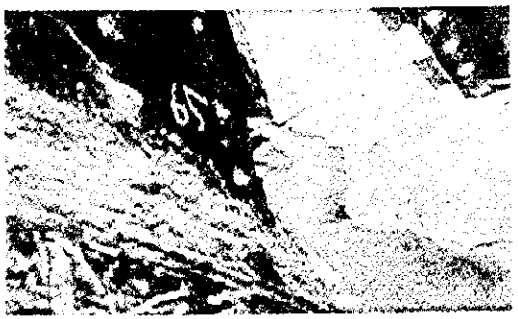
Gate No. U65L (Lower Undersluice Gate)

Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top9.6 Mid9.7 Low9.3 Btm8.4 (9.5mm)	N
	Corrosion	U/S-Bottom (L) M S	↑
	Damage-Rivet	Corner-L 9 mm Corner-R 3 mm	
Truss	Thickness-Avg	Bottom Flange 21.3, Bottom Web 20.6 (22.2mm)	
	Distortion		
End Girder	Thickness-Avg	L-Bottom 10.8, R-Bottom 11.0 (12.7mm)	
	Remodeling	Left Re Right Re	
	Distortion	Left Bend Right Bend	
Bottom Girder	Thickness-Avg	Flange 14.3 mm (16.0), Web 7.8 mm (9.7)	
	Corrosion	L (M) S	
Rocker Assembly	Remodeling	Left Re Right Re	
	Distortion	Left Lost Right Good	
	Others	-	
Roller Train	Missing	Left 1 Right 0	
	Diameter-Roller	Average - mm	
	Distortion	Left - Right -	
Seal	Left	Lost	
	Bottom	Lost	
	Right	Lost	
Inclination		Top Level Difference 20 mm	↓
Leakage		(L) M S	N
Sill			
Side Seal	Abrasion-Max	Left: - mm, Right: - mm	RS
Roller Truck	Abrasion-Max	Left: 12 mm, Right: 11 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: -	N
	Roller Train-R	y: Distortion: - Corrosion: - Oil: -	N
Drum	Left	Damage: - Function: Over Lapping	RS
	Right	Damage: - Function: Touching Frame	↑
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	G
Hoisting Torque	Wet Condition	- kg-m	—
	Dry Condition	0.8 kg-m	G
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.

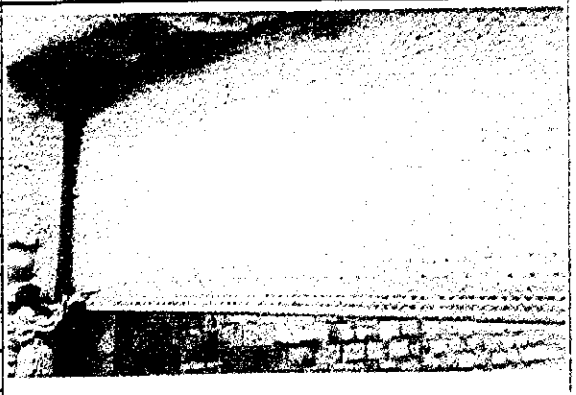
Survey Results of Gate Structure

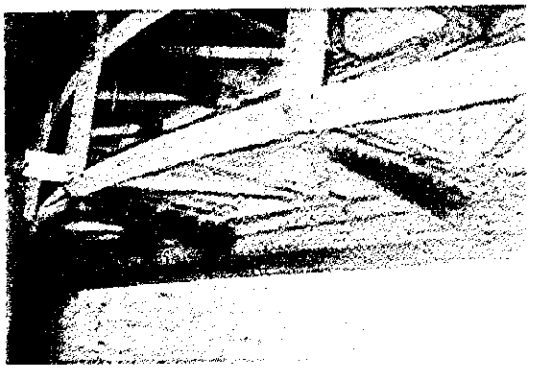
Gate No. D1 (D.G. Khan Canal Regulator Gate)

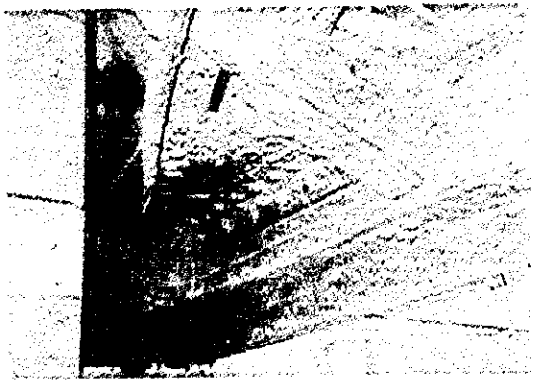
Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top9.8 Mid9.9 Low10.0 Btm9.4 (9.5mm)	G
	Corrosion	U/S-Bottom L M S	—
	Damage-Rivet	Corner-L – Corner-R –	—
Truss	Thickness-Avg	Bottom Flange 6.3 , Bottom Web 7.6 (9.5mm)	G
	Distortion	15 mm (T-4, Center)	↑
End Girder	Thickness-Avg	L-Bottom 7.2 , R-Bottom 7.0 (9.5mm)	
	Remodeling	Left No Right No	
	Distortion	Left – Right –	
Bottom Girder	Thickness-Avg	Flange 13.9 mm (16.3), Web 8.6 mm (9.4)	
	Corrosion	L (M) S	
Rocker Assembly	Remodeling	Left No Right No	
	Distortion	Left – Right –	
	Others	–	
Roller Train	Missing	Left – Right –	
	Diameter-Roller	Average – mm	
	Distortion	Left – Right –	
Seal	Left	–	
	Bottom	– Top –	
	Right	–	↓
Inclination		Top Level Difference 3.0 mm	G
Leakage		L M S	—
Sill			
Side Seal	Abrasion-Max	Left: – mm, Right: – mm	G
Roller Truck	Abrasion-Max	Left: 4 mm, Right: 2 mm	↑
Roller Guard	Missing	Left 0 Right 0	
	Defect	Left 0 Right 0	
Sill Beam	Abrasion	L M (S)	
Concrete	Damage-Left	L M (S)	
	Damage-Right	L M (S)	↓
	Damage-Bottom	L M (S)	G

Survey Item		Survey Result	Judge
Hoisting Device			
Wire Rope	Main-Left	y: – Distortion: – Corrosion: – Oil: –	G
	Main-Right	y: – Distortion: – Corrosion: – Oil: –	↑
	Roller Train-L	y: – Distortion: – Corrosion: – Oil: –	↓
	Roller Train-R	y: – Distortion: – Corrosion: – Oil: –	G
Drum	Left	Damage: – Function: –	RS
	Right	Damage: – Function: –	↑
Bearing	Drum	Damage: – Oil: –	
	Counter Shaft	Damage: – Oil: –	
	Reduction Gear	Damage: – Oil: –	
Gear	Drum Gear-L	Damage: – Fitting: – Backlash: – Oil: –	
	Drum Pinion-L	Damage: –	
	Drum Gear-R	Damage: – Fitting: – Backlash: – Oil: –	↓
	Drum Pinion-R	Damage: –	RS
	Gear-Middle	Damage: – Fitting: – Backlash: – Oil: –	—
	Pinion-Middle	Damage: –	—
Basement	Drum-L	Damage: – Corrosion: L M (S)	RS
	Drum-R	Damage: – Corrosion: L M (S)	↑
	Drive Device	Damage: – Corrosion: L (M) S	
Drive Chain		Damage: – Looseness: – Oil: –	↓
Chain Sprocket		Damage: – Corrosion: L (M) S	RS
Reduction Gear		Damage: – Corrosion: L M S	—
Cover	Drum-L	Damage: – Corrosion: L M (S)	RS
	Drum-R	Damage: – Corrosion: L M (S)	↑
	Gear-Middle	Damage: – Corrosion: L M (S)	↓
Counter Shaft		Damage: – Corrosion: L M (S)	RS
Counter Weight		Damage: – Corrosion: L M S	G
Hoisting Torque	Wet Condition	7 kg-m	G
	Dry Condition	0 kg-m	G
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.

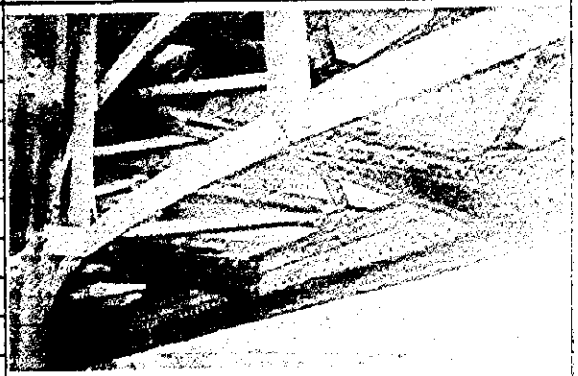
Survey Results of Gate Structure

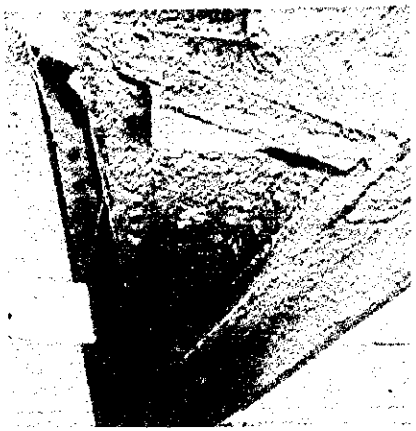
Gate No. D2 (D.G. Khan Canal Regulator Gate)

Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top9.9 Mid9.8 Low9.8 Btm9.8 (9.5mm)	G
	Corrosion	U/S-Bottom L M S	—
	Damage-Rivet	Corner-L – Corner-R –	—
Truss	Thickness-Avg	Bottom Flange 5.8, Bottom Web 6.7 (9.5mm)	G
	Distortion	15 mm (T-4, Center)	
End Girder	Thickness-Avg	L-Bottom 8.6, R-Bottom 9.1 (9.5mm)	
	Remodeling	Left No Right No	
	Distortion	Left – Right –	
Bottom Girder	Thickness-Avg	Flange 13.7 mm (16.3), Web 7.5 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	– Top –	
	Right	–	
Inclination		Top Level Difference 25 mm	G
Leakage		L M S	—
Sill			
Side Seal	Abrasion-Max	Left: – mm, Right: – mm	G
Roller Truck	Abrasion-Max	Left: 5 mm, Right: 5 mm	
Roller Guard	Missing	Left 0 Right 0	
	Defect	Left 0 Right 0	
Sill Beam	Abrasion	L M (S)	
Concrete	Damage-Left	L M (S)	
	Damage-Right	L M (S)	
	Damage-Bottom	L M (S)	G

Survey Item		Survey Result	Judge
Hoisting Device			
Wire Rope	Main-Left	y: – Distortion: – Corrosion: – Oil: –	G
	Main-Right	y: – Distortion: – Corrosion: – Oil: –	
	Roller Train-L	y: – Distortion: – Corrosion: – Oil: –	
	Roller Train-R	y: – Distortion: – Corrosion: – Oil: –	G
Drum	Left	Damage: – Function: –	RS
	Right	Damage: – Function: –	
Bearing	Drum	Damage: – Oil: –	
	Counter Shaft	Damage: – Oil: –	
	Reduction Gear	Damage: – Oil: –	
Gear	Drum Gear-L	Damage: – Fitting: – Backlash: – Oil: –	
	Drum Pinion-L	Damage: –	
	Drum Gear-R	Damage: – Fitting: 96% Backlash: 2.2 mm Oil: –	
	Drum Pinion-R	Damage: –	RS
	Gear-Middle	Damage: – Fitting: – Backlash: – Oil: –	—
	Pinion-Middle	Damage: –	—
Basement	Drum-L	Damage: – Corrosion: L M (S)	RS
	Drum-R	Damage: – Corrosion: L M (S)	
	Drive Device	Damage: – Corrosion: L (M) S	
Drive Chain		Damage: – Looseness: L Oil: –	
Chain Sprocket		Damage: – Corrosion: L (M) S	RS
Reduction Gear		Damage: – Corrosion: L M S	—
Cover	Drum-L	Damage: – Corrosion: L M (S)	RS
	Drum-R	Damage: – Corrosion: L M (S)	
	Gear-Middle	Damage: – Corrosion: L M (S)	
Counter Shaft		Damage: – Corrosion: L M (S)	RS
Counter Weight		Damage: – Corrosion: L M S	G
Hoisting Torque	Wet Condition	7.4 kg-m	G
	Dry Condition	0 kg-m	G
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.

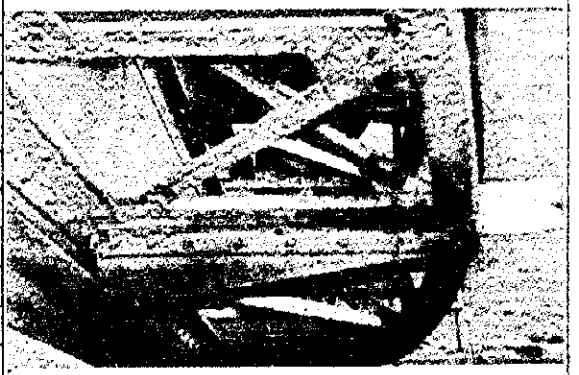
Survey Results of Gate Structure

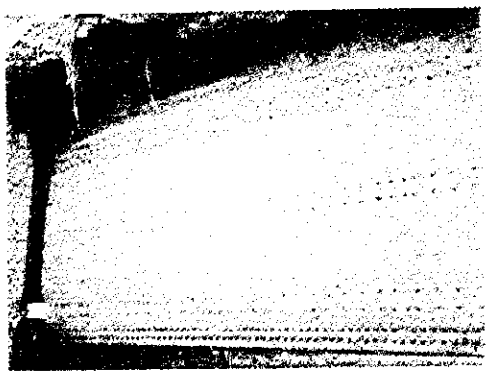
Gate No. D3 (D.G. Khan Canal Regulator Gate)

Survey Item			Survey Result	Judge
Gate Leaf				
	Skin Plate	Thickness-Avg	Top10.0 Mid9.9 Low9.8 Btm9.8 (9.5mm)	G
		Corrosion	U/S-Bottom L M S	—
		Damage-Rivet	Corner-L — Corner-R —	—
	Truss	Thickness-Avg	Bottom Flange 7.2, Bottom Web 7.8 (9.5mm)	G
		Distortion	15 mm (T-4, Center, 2 Points)	
	End Girder	Thickness-Avg	L-Bottom 8.4, R-Bottom 8.5 (9.5mm)	
		Remodeling	Left No Right No	
		Distortion	Left — Right —	
	Bottom Girder	Thickness-Avg	Flange 13.9 mm (16.3), Web 7.9 mm (9.4)	
		Corrosion	L (M) S	
	Rocker Assembly	Remodeling	Left No Right No	
		Distortion	Left — Right —	
		Others	No Function	
	Roller Train	Missing	Left — Right —	
		Diameter-Roller	Average — mm	
		Distortion	Left — Right —	
	Seal	Left	—	
		Bottom	— Top —	
		Right	—	
	Inclination		Top Level Difference 60 mm	G
Leakage			L M S	—
Sill				
	Side Seal	Abrasion-Max	Left: — mm, Right: — mm	G
	Roller Truck	Abrasion-Max	Left: 4 mm, Right: 5 mm	
	Roller Guard	Missing	Left 0 Right 0	
		Defect	Left 0 Right 0	
	Sill Beam	Abrasion	L M (S)	
	Concrete	Damage-Left	L M (S)	
		Damage-Right	L M (S)	
		Damage-Bottom	L M (S)	G

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	Broken	C
	Drum	Left	Damage: — Function: —	RS
		Right	Damage: — Function: —	
	Bearing	Drum	Damage: — Oil: —	
		Counter Shaft	Damage: — Oil: —	
		Reduction Gear	Damage: — Oil: —	
	Gear	Drum Gear-L	Damage: — Fitting: — Backlash: — Oil: —	
		Drum Pinion-L	Damage: —	
		Drum Gear-R	Damage: — Fitting: — Backlash: — Oil: —	
		Drum Pinion-R	Damage: —	RS
		Gear-Middle	Damage: — Fitting: — Backlash: — Oil: —	—
		Pinion-Middle	Damage: —	—
	Basement	Drum-L	Damage: — Corrosion: L M (S)	RS
		Drum-R	Damage: — Corrosion: L M (S)	
		Drive Device	Damage: — Corrosion: L (M) S	
	Drive Chain		Damage: — Looseness: L Oil: —	
	Chain Sprocket		Damage: — Corrosion: L (M) S	RS
	Reduction Gear		Damage: — Corrosion: L M S	—
	Cover	Drum-L	Damage: — Corrosion: L M (S)	RS
		Drum-R	Damage: — Corrosion: L M (S)	
		Gear-Middle	Damage: — Corrosion: L M (S)	
	Counter Shaft		Damage: — Corrosion: L M (S)	RS
	Counter Weight		Damage: — Corrosion: L M S	RS
	Hoisting Torque	Wet Condition	9.3 kg-m	G
		Dry Condition	1.2 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.

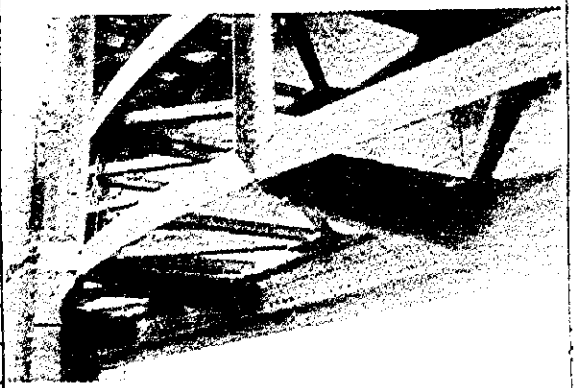
Survey Results of Gate Structure

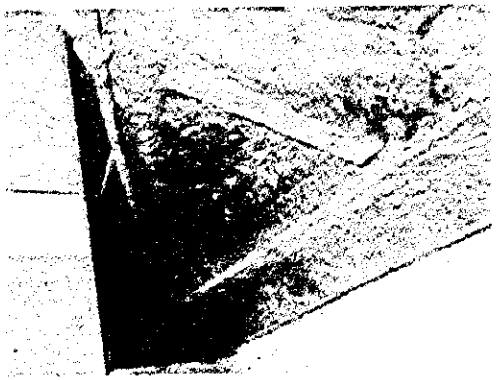
Gate No. D4 (D.G. Khan Canal Regulator Gate)

Survey Item			Survey Result	Judge
Gate Leaf				
	Skin Plate	Thickness-Avg	Top9.9 Mid9.7 Low9.9 Btm9.7 (9.5mm)	G
		Corrosion	U/S-Bottom L (M) S	—
		Damage-Rivet	Corner-L – Corner-R –	—
	Truss	Thickness-Avg	Bottom Flange 6.9, Bottom Web 7.5 (9.5mm)	G
		Distortion	10 mm (T-1, Center, T-3, Center, 2 Points)	↑
	End Girder	Thickness-Avg	L-Bottom 7.9, R-Bottom 8.2 (9.5mm)	
		Remodeling	Left No Right No	
		Distortion	Left – Right –	
	Bottom Girder	Thickness-Avg	Flange 13.7 mm (16.3), Web 8.0 mm (9.4)	
		Corrosion	L (M) S	
	Rocker Assembly	Remodeling	Left No Right No	
		Distortion	Left – Right –	
		Others	No Function	
	Roller Train	Missing	Left – Right –	
		Diameter-Roller	Average – mm	
		Distortion	Left – Right –	
	Seal	Left	–	
		Bottom	– Top –	
		Right	–	↓
	Inclination		Top Level Difference 35 mm	G
Leakage			L M S	—
Sill				
	Side Seal	Abrasion-Max	Left: – mm, Right: – mm	G
	Roller Truck	Abrasion-Max	Left: 4 mm, Right: 5 mm	↑
	Roller Guard	Missing	Left 0 Right 0	
		Defect	Left 0 Right 0	
	Sill Beam	Abrasion	L M (S)	
	Concrete	Damage-Left	L M (S)	
		Damage-Right	L M (S)	↓
		Damage-Bottom	L M (S)	G

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	Broken	C
	Drum	Left	Damage: – Function: –	RS
		Right	Damage: – Function: –	↑
	Bearing	Drum	Damage: – Oil: –	
		Counter Shaft	Damage: – Oil: –	
		Reduction Gear	Damage: – Oil: –	
	Gear	Drum Gear-L	Damage: – Fitting: – Backlash: – Oil: –	
		Drum Pinion-L	Damage: –	
		Drum Gear-R	Damage: – Fitting: – Backlash: – Oil: –	↓
		Drum Pinion-R	Damage: –	RS
		Gear-Middle	Damage: – Fitting: – Backlash: – Oil: –	—
		Pinion-Middle	Damage: –	—
	Basement	Drum-L	Damage: – Corrosion: L M (S)	RS
		Drum-R	Damage: – Corrosion: L M (S)	↑
		Drive Device	Damage: – Corrosion: L (M) S	
	Drive Chain		Damage: – Looseness: L Oil: –	↓
	Chain Sprocket		Damage: – Corrosion: L (M) S	RS
	Reduction Gear		Damage: – Corrosion: L M S	—
	Cover	Drum-L	Damage: – Corrosion: L M (S)	RS
		Drum-R	Damage: – Corrosion: L M (S)	↑
		Gear-Middle	Damage: – Corrosion: L M (S)	↓
	Counter Shaft		Damage: – Corrosion: L M (S)	RS
	Counter Weight		Damage: – Corrosion: L M S	RS
	Hoisting Torque	Wet Condition	7.4 kg-m	G
		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.

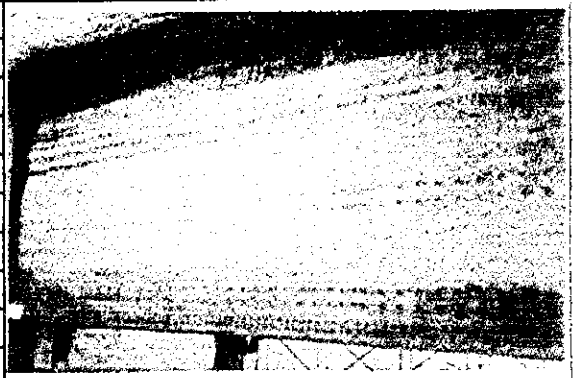
Survey Results of Gate Structure

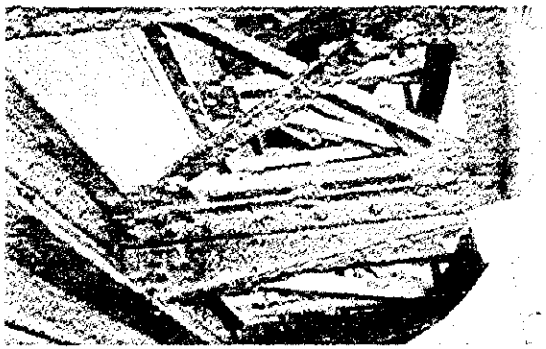
Gate No. D5 (D.G. Khan Canal Regulator Gate)

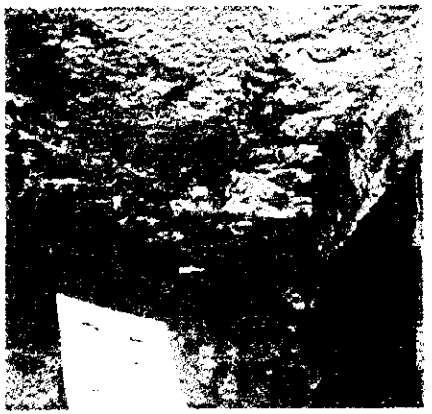
Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top9.8 Mid10.0 Low9.8 Bim9.8 (9.5mm)	G
	Corrosion	U/S-Bottom L M S	—
	Damage-Rivet	Corner-L – Corner-R –	—
Truss	Thickness-Avg	Bottom Flange 6.5, Bottom Web 8.3 (9.5mm)	G
	Distortion	10 mm (T-3, Center, 3 Points)	↑
End Girder	Thickness-Avg	L-Bottom 6.7, R-Bottom 6.0 (9.5mm)	
	Remodeling	Left No Right No	
	Distortion	Left – Right –	
Bottom Girder	Thickness-Avg	Flange 14.4 mm (16.3), Web 8.0 mm (9.4)	
	Corrosion	L (M) S	
Rocker Assembly	Remodeling	Left No Right No	
	Distortion	Left – Right –	
	Others	No Function	
Roller Train	Missing	Left – Right –	
	Diameter-Roller	Average – mm	
	Distortion	Left – Right –	
Seal	Left	–	
	Bottom	– Top Left,Side, Deform	
	Right	–	↓
Inclination		Top Level Difference 90 mm	G
Leakage		L M S	—
Sill			
Side Seal	Abrasion-Max	Left: – mm, Right: – mm	G
Roller Truck	Abrasion-Max	Left: 4 mm, Right: 5 mm	↑
Roller Guard	Missing	Left 0 Right 0	
	Defect	Left 0 Right 0	
Sill Beam · Concrete	Abrasion	L M (S)	
	Damage-Left	L M (S)	
	Damage-Right	L M (S)	↓
	Damage-Bottom	L M (S)	G

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	Broken	C
Drum	Left	Damage: – Function: –	RS
	Right	Damage: – Function: –	↑
Bearing	Drum	Damage: – Oil: –	
	Counter Shaft	Damage: – Oil: –	
	Reduction Gear	Damage: – Oil: –	
Gear	Drum Gear-L	Damage: – Fitting: – Backlash: – Oil: –	
	Drum Pinion-L	Damage: –	
	Drum Gear-R	Damage: – Fitting: – Backlash: – Oil: –	↓
	Drum Pinion-R	Damage: –	RS
	Gear-Middle	Damage: – Fitting: – Backlash: – Oil: –	—
	Pinion-Middle	Damage: –	—
Basement	Drum-L	Damage: – Corrosion: L M (S)	RS
	Drum-R	Damage: – Corrosion: L M (S)	↑
	Drive Device	Damage: – Corrosion: L (M) S	
Drive Chain		Damage: – Looseness: – Oil: –	↓
Chain Sprocket		Damage: – Corrosion: L (M) S	RS
Reduction Gear		Damage: – Corrosion: L M S	—
Cover	Drum-L	Damage: – Corrosion: L M (S)	RS
	Drum-R	Damage: – Corrosion: L M (S)	↑
	Gear-Middle	Damage: – Corrosion: L M (S)	↓
Counter Shaft		Damage: – Corrosion: L M (S)	RS
Counter Weight		Damage: – Corrosion: L M S	G
Hoisting Torque	Wet Condition	7.6 kg-m	G
	Dry Condition	0 kg-m	G
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.

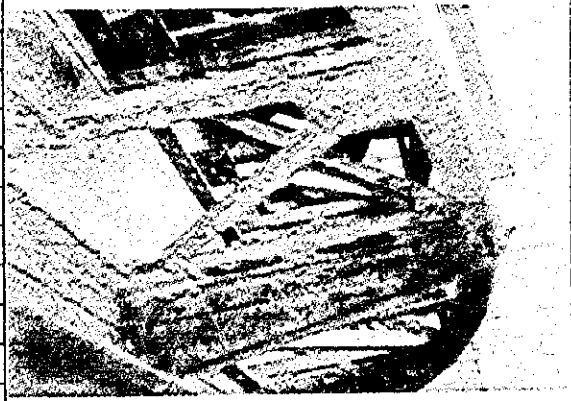
Survey Results of Gate Structure

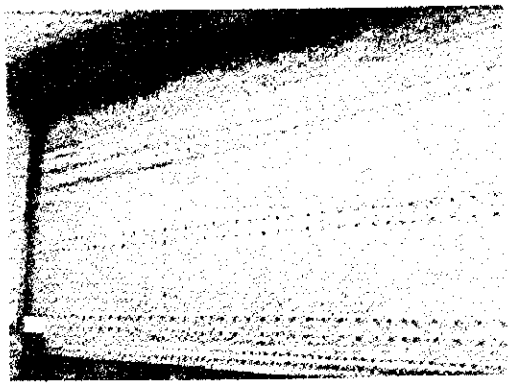
Gate No. D6 (D.G. Khan Canal Regulator Gate)

Survey Item			Survey Result	Judge
Gate Leaf				
	Skin Plate	Thickness-Avg	Top10.1 Mid9.0 Low9.9 Btm9.6 (9.5mm)	G
		Corrosion	U/S-Bottom L M S	—
		Damage-Rivet	Corner-L – Corner-R –	—
	Truss	Thickness-Avg	Bottom Flange 5.5, Bottom Web 7.3 (9.5mm)	G
		Distortion	10 mm (T-3, Center, 3 Points)	↑
	End Girder	Thickness-Avg	L-Bottom 7.8, R-Bottom 8.7 (9.5mm)	
		Remodeling	Left No Right No	
		Distortion	Left – Right –	
	Bottom Girder	Thickness-Avg	Flange 13.5 mm (16.3), Web 7.9 mm (9.4)	
		Corrosion	L (M) S	
	Rocker Assembly	Remodeling	Left No Right No	
		Distortion	Left – Right –	
		Others	No Function	
	Roller Train	Missing	Left – Right –	
		Diameter-Roller	Average – mm	
		Distortion	Left – Right –	
	Seal	Left	–	
		Bottom	– Top –	
		Right	–	↓
	Inclination		Top Level Difference 110 mm	G
Leakage			L M S	—
Sill				
	Side Seal	Abrasion-Max	Left: – mm, Right: – mm	G
	Roller Truck	Abrasion-Max	Left: 5 mm, Right: 4 mm	↑
	Roller Guard	Missing	Left 0 Right 0	
		Defect	Left 0 Right 0	
	Sill Beam	Abrasion	L M (S)	
	Concrete	Damage-Left	L M (S)	
		Damage-Right	L M (S)	↓
		Damage-Bottom	L M (S)	G

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: –	G
		Roller Train-R	Broken	C
	Drum	Left	Damage: – Function: –	RS
		Right	Damage: – Function: –	↑
	Bearing	Drum	Damage: – Oil: –	
		Counter Shaft	Damage: – Oil: –	
		Reduction Gear	Damage: – Oil: –	
	Gear	Drum Gear-L	Damage: – Fitting: – Backlash: – Oil: –	
		Drum Pinion-L	Damage: –	↓
		Drum Gear-R	Damage: – Fitting: – Backlash: – Oil: –	
		Drum Pinion-R	Damage: –	RS
		Gear-Middle	Damage: – Fitting: – Backlash: – Oil: –	—
		Pinion-Middle	Damage: –	—
	Basement	Drum-L	Damage: – Corrosion: L M (S)	RS
		Drum-R	Damage: – Corrosion: L M (S)	↑
		Drive Device	Damage: – Corrosion: L (M) S	
Drive Chain			Damage: – Looseness: L Oil: –	↓
Chain Sprocket			Damage: – Corrosion: L (M) S	RS
Reduction Gear			Damage: – Corrosion: L M S	—
	Cover	Drum-L	Damage: – Corrosion: L M (S)	RS
		Drum-R	Damage: – Corrosion: L M (S)	↑
		Gear-Middle	Damage: – Corrosion: L M (S)	↓
Counter Shaft			Damage: – Corrosion: L M (S)	RS
Counter Weight			Damage: – Corrosion: L M S	G
	Hoisting Torque	Wet Condition	9.3 kg-m	G
		Dry Condition	0 kg-m	G
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.

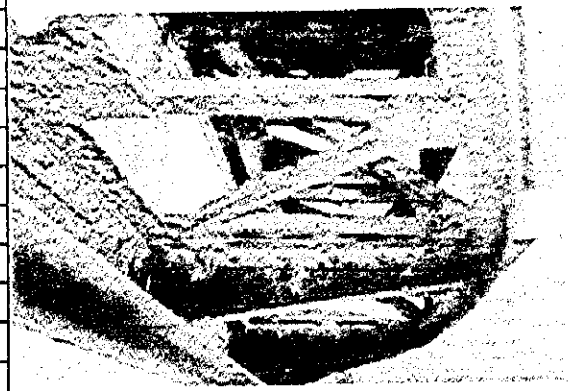
Survey Results of Gate Structure

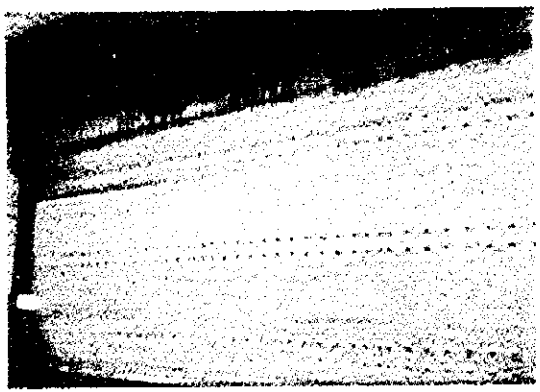
Gate No. D7 (D.G. Khan Canal Regulator Gate)

Survey Item			Survey Result	Judge
Gate Leaf				
	Skin Plate	Thickness-Avg	Top9.9 Mid9.8 Low9.9 Btm9.7 (9.5mm)	G
		Corrosion	U/S-Bottom L M S	—
		Damage-Rivet	Corner-L — Corner-R —	—
	Truss	Thickness-Avg	Bottom Flange 7.3, Bottom Web 8.0 (9.5mm)	G
		Distortion	10 mm (T-3, Center, 2 Points)	↑
	End Girder	Thickness-Avg	L-Bottom 7.3 , R-Bottom 6.6 (9.5mm)	
		Remodeling	Left No Right No	
		Distortion	Left — Right —	
	Bottom Girder	Thickness-Avg	Flange 13.3 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	— Top Lost	
		Right	—	↓
	Inclination		Top Level Difference 105 mm	G
Leakage			L M S	—
Sill				
	Side Seal	Abrasion-Max	Left: — mm, Right: — mm	G
	Roller Truck	Abrasion-Max	Left: 5 mm, Right: 5 mm	↑
	Roller Guard	Missing	Left 0 Right 0	
		Defect	Left 0 Right 0	
	Sill Beam	Abrasion	L M (S)	
	Concrete	Damage-Left	L M (S)	
		Damage-Right	L M (S)	↓
		Damage-Bottom	L M (S)	G

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: —	G
		Roller Train-R	Broken	C
	Drum	Left	Damage: — Function: —	RS
		Right	Damage: — Function: —	↑
	Bearing	Drum	Damage: — Oil: —	
		Counter Shaft	Damage: — Oil: —	
		Reduction Gear	Damage: — Oil: —	
	Gear	Drum Gear-L	Damage: — Fitting: — Backlash: — Oil: —	
		Drum Pinion-L	Damage: —	↓
		Drum Gear-R	Damage: — Fitting: — Backlash: — Oil: —	↓
		Drum Pinion-R	Damage: —	RS
		Gear-Middle	Damage: — Fitting: — Backlash: — Oil: —	—
		Pinion-Middle	Damage: —	—
	Basement	Drum-L	Damage: — Corrosion: L M (S)	RS
		Drum-R	Damage: — Corrosion: L M (S)	↑
		Drive Device	Damage: — Corrosion: L (M) S	
Drive Chain			Damage: — Looseness: — Oil: —	↓
Chain Sprocket			Damage: — Corrosion: L (M) S	RS
Reduction Gear			Damage: — Corrosion: L M S	—
	Cover	Drum-L	Damage: — Corrosion: L M (S)	RS
		Drum-R	Damage: — Corrosion: L M (S)	↑
		Gear-Middle	Damage: — Corrosion: L M (S)	↓
Counter Shaft			Damage: — Corrosion: L M (S)	RS
Counter Weight			Damage: — Corrosion: L M S	G
Hoisting Torque	Wet Condition		7.6 kg-m	G
	Dry Condition		0 kg-m	G
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.

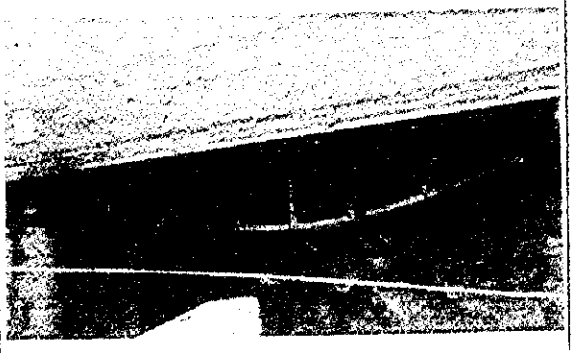
Survey Results of Gate Structure

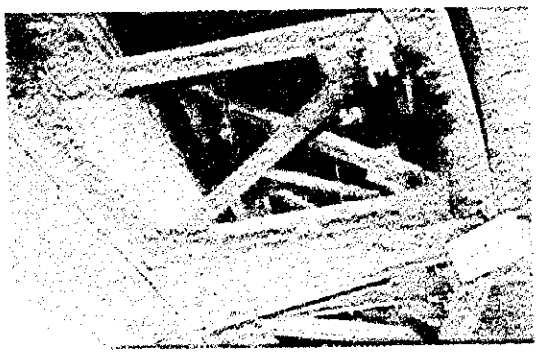
Gate No. M1 (Muzaffargarh Canal Regulator Gate)

Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top10.2 Mid10.1 Low10.1 Btm9.6 (9.5mm)	G
	Corrosion	U/S-Bottom L M S	—
	Damage-Rivet	Corner-L – Corner-R –	—
Truss	Thickness-Avg	Bottom Flange 8.2, Bottom Web8.6 (9.5mm)	G
	Distortion		
End Girder	Thickness-Avg	L-Bottom 8.0 , R-Bottom 7.8 (9.5mm)	
	Remodeling	Left No Right No	
	Distortion	Left – Right –	
Bottom Girder	Thickness-Avg	Flange 13.3 mm (16.3), Web 8.1 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	– Top Right Side Deform	
	Right	–	
Inclination		Top Level Difference 5 mm	G
Leakage		L M S	—
Sill			
Side Seal	Abrasion-Max	Left: – mm, Right: – mm	G
Roller Truck	Abrasion-Max	Left: 5 mm, Right: 6 mm	
Roller Guard	Missing	Left 0 Right 0	
	Defect	Left 0 Right 0	
Sill Beam	Abrasion	L M (S)	
Concrete	Damage-Left	L M (S)	
	Damage-Right	L M (S)	
	Damage-Bottom	L M (S)	G

Survey Item		Survey Result	Judge
Hoisting Device			
Wire Rope	Main-Left	y: – Distortion: – Corrosion: – Oil: –	G
	Main-Right	y: – Distortion: – Corrosion: – Oil: –	
	Roller Train-L	y: – Distortion: – Corrosion: – Oil: –	
	Roller Train-R	y: – Distortion: – Corrosion: – Oil: –	G
Drum	Left	Damage: – Function: –	RS
	Right	Damage: – Function: –	RS
Bearing	Drum	Damage: Loose Oil: –	C
	Counter Shaft	Damage: – Oil: –	RS
	Reduction Gear	Damage: – Oil: –	
Gear	Drum Gear-L	Damage: – Fitting: – Backlash: – Oil: –	
	Drum Pinion-L	Damage: –	
	Drum Gear-R	Damage: – Fitting: – Backlash: – Oil: –	
	Drum Pinion-R	Damage: –	RS
	Gear-Middle	Damage: – Fitting: – Backlash: – Oil: –	—
	Pinion-Middle	Damage: –	—
Basement	Drum-L	Damage: – Corrosion: L M (S)	RS
	Drum-R	Damage: – Corrosion: L M (S)	
	Drive Device	Damage: – Corrosion: L (M) S	
Drive Chain		Damage: – Looseness: L Oil: –	
Chain Sprocket		Damage: – Corrosion: L (M) S	RS
Reduction Gear		Damage: – Corrosion: L M S	—
Cover	Drum-L	Damage: – Corrosion: L M (S)	RS
	Drum-R	Damage: – Corrosion: L M (S)	
	Gear-Middle	Damage: – Corrosion: L M (S)	
Counter Shaft		Damage: – Corrosion: L M (S)	
Counter Weight		Damage: – Corrosion: L M S	RS
Hoisting Torque	Wet Condition	6 kg-m	G
	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.

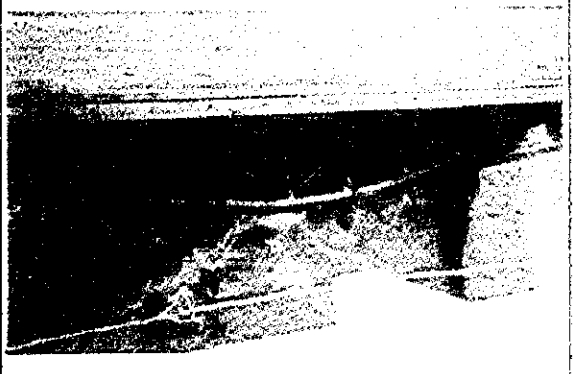
Survey Results of Gate Structure

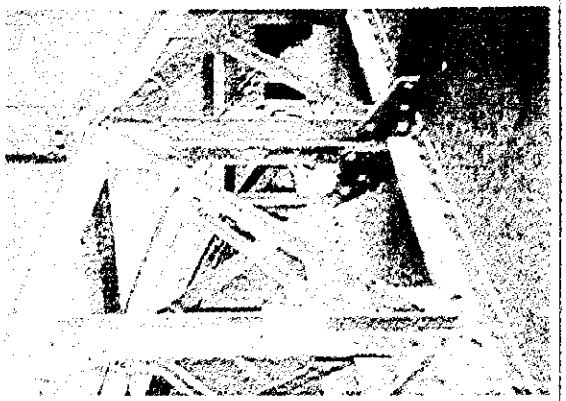
Gate No. M2 (Muzaffargarh Canal Regulator Gate)

Survey Item			Survey Result	Judge
Gate Leaf				
	Skin Plate	Thickness-Avg	Top10.0 Mid10.1 Low10.0 Btm9.8 (9.5mm)	G
		Corrosion	U/S-Bottom L M S	—
		Damage-Rivet	Corner-L – Corner-R –	—
	Truss	Thickness-Avg	Bottom Flange 8.7, Bottom Web 8.8 (9.5mm)	G
		Distortion		↑
	End Girder	Thickness-Avg	L-Bottom 7.7 , R-Bottom 7.9 (9.5mm)	
		Remodeling	Left No Right No	
		Distortion	Left – Right –	
	Bottom	Thickness-Avg	Flange 13.7 mm (16.3), Web 8.5 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	– Top Left Side Deform	
		Right	–	↓
	Inclination		Top Level Difference 30 mm	G
Leakage			L M S	—
Sill				
	Side Seal	Abrasion-Max	Left: – mm, Right: – mm	G
	Roller Truck	Abrasion-Max	Left: 5 mm, Right: 6 mm	↑
	Roller Guard	Missing	Left 0 Right 0	
		Defect	Left 0 Right 0	
	Sill Beam	Abrasion	L M (S)	
	Concrete	Damage-Left	L M (S)	
		Damage-Right	L M (S)	↓
		Damage-Bottom	L M (S)	G

Survey Item			Survey Result	Judge
Hoisting Device				
	Wire Rope	Main-Left	y: – Distortion: – Corrosion: – Oil: –	G
		Main-Right	y: – Distortion: – Corrosion: – Oil: –	↑
		Roller Train-L	y: – Distortion: – Corrosion: – Oil: –	↓
		Roller Train-R	y: – Distortion: – Corrosion: – Oil: –	G
	Drum	Left	Damage: – Function: –	RS
		Right	Damage: – Function: –	↑
	Bearing	Drum	Damage: – Oil: –	
		Counter Shaft	Damage: – Oil: –	
		Reduction Gear	Damage: – Oil: –	
	Gear	Drum Gear-L	Damage: – Fitting: – Backlash: – Oil: –	
		Drum Pinion-L	Damage: –	
		Drum Gear-R	Damage: – Fitting: – Backlash: – Oil: –	↓
		Drum Pinion-R	Damage: –	RS
		Gear-Middle	Damage: – Fitting: – Backlash: – Oil: –	—
		Pinion-Middle	Damage: –	—
	Basement	Drum-L	Damage: – Corrosion: L M (S)	RS
		Drum-R	Damage: – Corrosion: L M (S)	↑
		Drive Device	Damage: – Corrosion: L (M) S	
	Drive Chain		Damage: – Looseness: – Oil: –	↓
	Chain Sprocket		Damage: – Corrosion: L (M) S	RS
	Reduction Gear		Damage: – Corrosion: L M S	—
	Cover	Drum-L	Damage: – Corrosion: L M (S)	RS
		Drum-R	Damage: – Corrosion: L M (S)	↑
		Gear-Middle	Damage: – Corrosion: L M (S)	↓
	Counter Shaft		Damage: – Corrosion: L M (S)	RS
	Counter Weight		Damage: – Corrosion: L M S	G
	Hoisting Torque	Wet Condition	11.4 kg-m	G
		Dry Condition	0 kg-m	G
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.

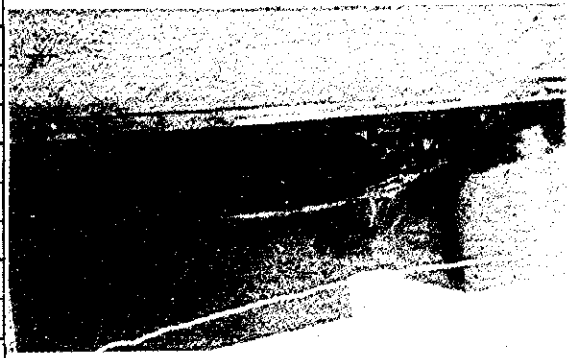
Survey Results of Gate Structure

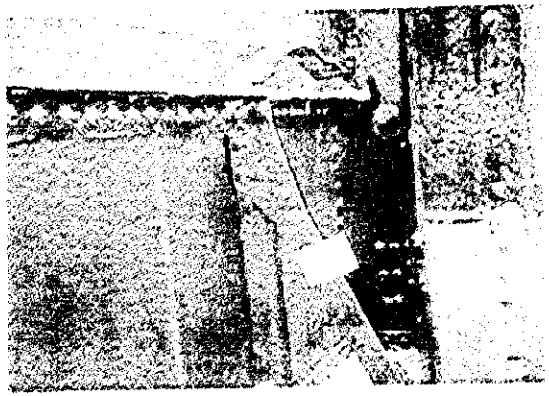
Gate No. M3 (Muzaffargarh Canal Regulator Gate)

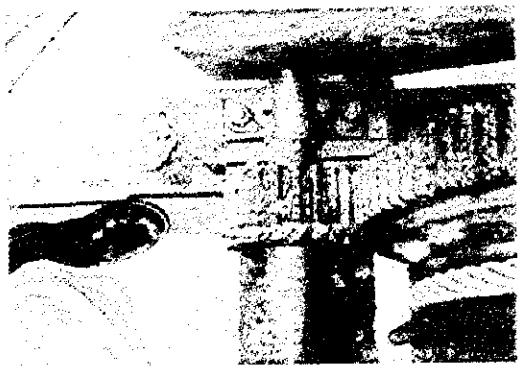
Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top10.0 Mid10.0 Low10.0 Btm9.6 (9.5mm)	G
	Corrosion	U/S-Bottom L M S	—
	Damage-Rivet	Corner-L – Corner-R –	—
Truss	Thickness-Avg	Bottom Flange 8.7, Bottom Web 8.6 (9.5mm)	G
	Distortion		↑
End Girder	Thickness-Avg	L-Bottom 8.3 , R-Bottom 8.0 (9.5mm)	
	Remodeling	Left No Right No	
	Distortion	Left – Right –	
Bottom Girder	Thickness-Avg	Flange 13.5 mm (16.3), Web 7.7 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	– Top Deform	
	Right	–	↓
Inclination		Top Level Difference 0 mm	G
Leakage		L M S	—
Sill			
Side Seal	Abrasion-Max	Left: – mm, Right: – mm	G
Roller Truck	Abrasion-Max	Left: 3 mm, Right: 5 mm	↑
Roller Guard	Missing	Left 0 Right 0	
	Defect	Left 0 Right 0	
Sill Beam	Abrasion	L M (S)	
Concrete	Damage-Left	L M (S)	
	Damage-Right	L M (S)	↓
	Damage-Bottom	L M (S)	G

Survey Item		Survey Result	Judge
Hoisting Device			
Wire Rope	Main-Left	y: – Distortion: – Corrosion: – Oil: –	G
	Main-Right	y: – Distortion: – Corrosion: – Oil: –	↑
	Roller Train-L	y: – Distortion: – Corrosion: – Oil: –	↓
	Roller Train-R	y: – Distortion: – Corrosion: – Oil: –	G
Drum	Left	Damage: – Function: –	RS
	Right	Damage: – Function: –	RS
Bearing	Drum	Damage: Broken Oil: –	C
	Counter Shaft	Damage: – Oil: –	RS
	Reduction Gear	Damage: – Oil: –	↑
Gear	Drum Gear-L	Damage: – Fitting: 100% Backlash:2.8 mm Oil: –	
	Drum Pinion-L	Damage: –	
	Drum Gear-R	Damage: – Fitting: – Backlash: – Oil: –	↓
	Drum Pinion-R	Damage: –	RS
	Gear-Middle	Damage: – Fitting: – Backlash: – Oil: –	—
	Pinion-Middle	Damage: –	—
Basement	Drum-L	Damage: – Corrosion: L M (S)	RS
	Drum-R	Damage: – Corrosion: L M (S)	↑
	Drive Device	Damage: – Corrosion: L (M) S	
Drive Chain		Damage: – Looseness: L Oil: –	↓
Chain Sprocket		Damage: – Corrosion: L (M) S	RS
Reduction Gear		Damage: – Corrosion: L M S	—
Cover	Drum-L	Damage: – Corrosion: L M (S)	RS
	Drum-R	Damage: – Corrosion: L M (S)	↑
	Gear-Middle	Damage: – Corrosion: L M (S)	↓
Counter Shaft		Damage: – Corrosion: L M (S)	RS
Counter Weight		Damage: – Corrosion: L M S	G
Hoisting Torque	Wet Condition	11.1 kg-m	G
	Dry Condition	0 kg-m	G
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.

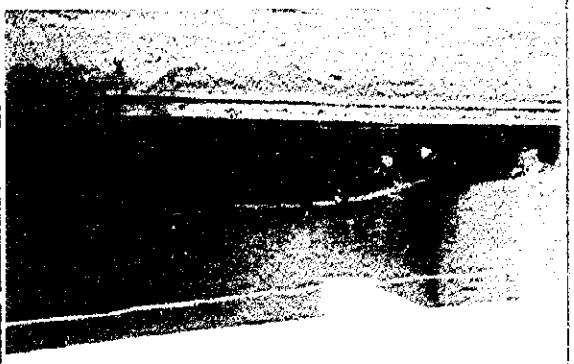
Survey Results of Gate Structure

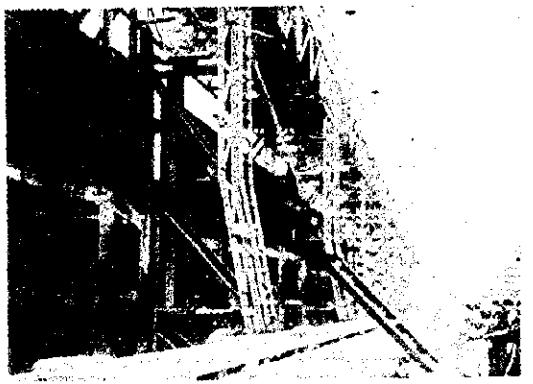
Gate No. M4 (Muzaffargarh Canal Regulator Gate)

Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top10.0 Mid10.0 Low10.0 Btm9.7 (9.5mm)	G
	Corrosion	U/S-Bottom L M S	—
	Damage-Rivet	Corner-L – Corner-R –	—
Truss	Thickness-Avg	Bottom Flange 8.1, Bottom Web 8.5 (9.5mm)	G
	Distortion		↑
End Girder	Thickness-Avg	L-Bottom 7.5 , R-Bottom 7.0 (9.5mm)	
	Remodeling	Left No Right No	
	Distortion	Left – Right –	
Bottom Girder	Thickness-Avg	Flange 13.6 mm (16.3), Web 7.7 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	– Top –	
	Right	–	↓
Inclination		Top Level Difference 25 mm	G
Leakage		L M S	—
Sill			
Side Seal	Abrasion-Max	Left: – mm, Right: – mm	G
Roller Truck	Abrasion-Max	Left: 5 mm, Right: 3 mm	↑
Roller Guard	Missing	Left 0 Right 0	
	Defect	Left 0 Right 0	
Sill Beam	Abrasion	L M (S)	
Concrete	Damage-Left	L M (S)	
	Damage-Right	L M (S)	↓
	Damage-Bottom	L M (S)	G

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: –	G
Drum	Left	Damage: – Function: –	RS
	Right	Damage: – Function: –	↑
Bearing	Drum	Damage: – Oil: –	
	Counter Shaft	Damage: – Oil: –	
	Reduction Gear	Damage: – Oil: –	
Gear	Drum Gear-L	Damage: – Fitting: – Backlash: – Oil: –	
	Drum Pinion-L	Damage: –	
	Drum Gear-R	Damage: – Fitting: – Backlash: – Oil: –	↓
	Drum Pinion-R	Damage: –	RS
	Gear-Middle	Damage: – Fitting: – Backlash: – Oil: –	—
	Pinion-Middle	Damage: –	—
Basement	Drum-L	Damage: – Corrosion: L M S	RS
	Drum-R	Damage: – Corrosion: L M S	↑
	Drive Device	Damage: – Corrosion: L M S	
Drive Chain		Damage: – Looseness: L Oil: –	↓
Chain Sprocket		Damage: – Corrosion: L M S	RS
Reduction Gear		Damage: – Corrosion: L M S	—
Cover	Drum-L	Damage: – Corrosion: L M (S)	RS
	Drum-R	Damage: – Corrosion: L M (S)	↑
	Gear-Middle	Damage: – Corrosion: L M (S)	
Counter Shaft		Damage: – Corrosion: L M (S)	↓
Counter Weight		Damage: – Corrosion: L M S	RS
Hoisting Torque	Wet Condition	9.3 kg-m	G
	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.

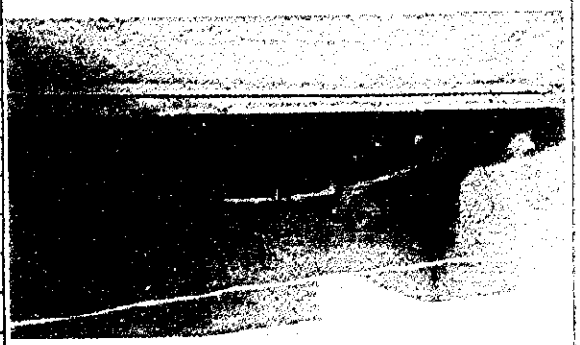
Survey Results of Gate Structure

Gate No. M5 (Muzaffargarh Canal Regulator Gate)

Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top10.0 Mid10.0 Low10.0 Btm9.8 (9.5mm)	G
	Corrosion	U/S-Bottom L M S	—
	Damage-Rivet	Corner-L – Corner-R –	—
Truss	Thickness-Avg	Bottom Flange 8.2, Bottom Web8.0 (9.5mm)	G
	Distortion	10 mm (T-3, Center, 2 Points)	↑
End Girder	Thickness-Avg	L-Bottom 9.0 , R-Bottom 8.3 (9.5mm)	
	Remodeling	Left No Right No	
	Distortion	Left – Right –	
Bottom Girder	Thickness-Avg	Flange 13.6 mm (16.3), Web 7.5 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	– Top –	
	Right	–	↓
Inclination		Top Level Difference 35 mm	G
Leakage		L M S	—
Sill			
Side Seal	Abrasion-Max	Left: – mm, Right: – mm	G
Roller Truck	Abrasion-Max	Left: 5 mm, Right: 4 mm	↑
Roller Guard	Missing	Left 0 Right 0	
	Defect	Left 0 Right 0	
Sill Beam	Abrasion	L M (S)	
Concrete	Damage-Left	L M (S)	
	Damage-Right	L M (S)	↓
	Damage-Bottom	L M (S)	G

Survey Item		Survey Result	Judge
Hoisting Device			
Wire Rope	Main-Left	y: – Distortion: – Corrosion: – Oil: –	G
	Main-Right	y: – Distortion: – Corrosion: – Oil: –	↑
	Roller Train-L	y: – Distortion: – Corrosion: – Oil: –	↓
	Roller Train-R	y: – Distortion: – Corrosion: – Oil: –	G
Drum	Left	Damage: – Function: –	RS
	Right	Damage: – Function: –	↑
Bearing	Drum	Damage: – Oil: –	
	Counter Shaft	Damage: – Oil: –	
	Reduction Gear	Damage: – Oil: –	
Gear	Drum Gear-L	Damage: – Fitting: – Backlash: – Oil: –	
	Drum Pinion-L	Damage: –	
	Drum Gear-R	Damage: – Fitting: – Backlash: – Oil: –	↓
	Drum Pinion-R	Damage: –	RS
	Gear-Middle	Damage: – Fitting: – Backlash: – Oil: –	—
	Pinion-Middle	Damage: –	—
Basement	Drum-L	Damage: – Corrosion: L M (S)	RS
	Drum-R	Damage: – Corrosion: L M (S)	↑
	Drive Device	Damage: – Corrosion: L (M) S	
Drive Chain		Damage: – Looseness: – Oil: –	↓
Chain Sprocket		Damage: – Corrosion: L (M) S	RS
Reduction Gear		Damage: – Corrosion: L M S	—
Cover	Drum-L	Damage: – Corrosion: L M (S)	RS
	Drum-R	Damage: – Corrosion: L M (S)	↑
	Gear-Middle	Damage: – Corrosion: L M (S)	
Counter Shaft		Damage: – Corrosion: L M (S)	↓
Counter Weight		Damage: – Corrosion: L M S	RS
Hoisting Torque	Wet Condition	5.6 kg-m	G
	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.

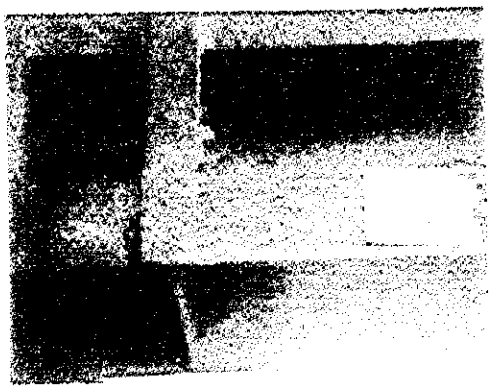
Survey Results of Gate Structure

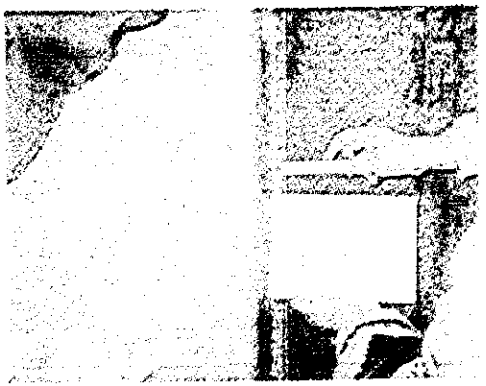
Gate No. T1 (T.P. Link Canal Regulator Gate)

Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top9.3 Mid9.3 Low8.7 Btm7.3 (mm)	N
	Corrosion	U/S-Bottom L (M) S	
Truss	Thickness-Avg	Bottom Flange 9.1, Bottom Web 6.5 (mm)	
	Distortion		
End Girder	Thickness-Avg	L-Bottom 17.6, R-Bottom 18.7 (mm)	
	Remodeling	Left No Right No	
	Distortion	Left No Right No	N
Main Roller	Diameter-Roller	Average – mm	N
	Distortion	Left – Right –	
Seal	Left	–	
	Bottom	– Top –	
	Right	–	
Inclination		Top Level Difference 15 mm	
Leakage		L (M) S	N
Sill			
Side Seal	Abrasion-Max	Left: – mm, Right: – mm	RS
Roller Truck	Abrasion-Max	Left: 4 mm, Right: 4 mm	G
Sill Beam	Abrasion	L M (S)	G
Concrete	Damage-Left	L M (S)	
	Damage-Right	L M (S)	
	Damage-Bottom	L M (S)	G

Survey Item		Survey Result	Judge
Hoisting Device			
Wire Rope	Main-Left	y: φ21.2 Distortion: – Corrosion: – Oil: –	G
	Main-Right	y: – Distortion: – Corrosion: – Oil: –	
	Counter-Left	φ22.0	
	Counter-Right		
Drum	Left	Damage: – Function: –	
	Right	Damage: – Function: –	
Bearing	Drum	Damage: – Oil: –	
	Counter Shaft	Damage: – Oil: –	
	Reduction Gear	Damage: – Oil: –	
Gear	Reduction Gear	Damage: – Fitting: – Backlash: – Oil: –	G
Basement	Drum-L	Damage: – Corrosion: L M (S)	RS
	Drum-R	Damage: – Corrosion: L M (S)	RS
	Drive Device	Damage: – Corrosion: L M (S)	RS
Reduction Gear		Damage: – Corrosion: L M S	–
Cover	Drum-L	Damage: – Corrosion: L M (S)	RS
	Drum-R	Damage: – Corrosion: L M (S)	
	Reduction Gear	Damage: – Corrosion: L M (S)	
Counter Shaft		Damage: – Corrosion: L M (S)	
Counter Weight		Damage: – Corrosion: L M S	RS
Hoisting Torque	Wet Condition	10 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.

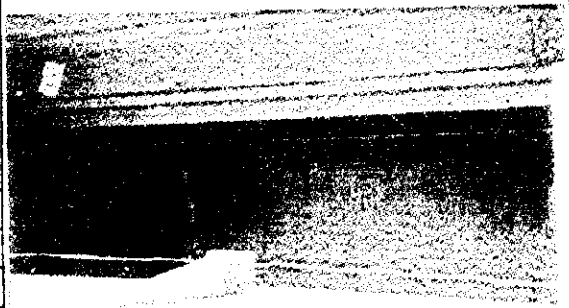
Survey Results of Gate Structure

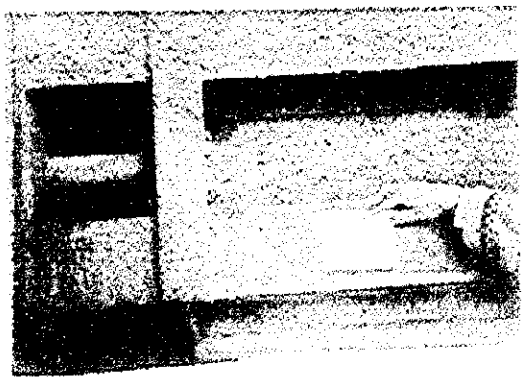
Gate No. T2 (T.P. Link Canal Regulator Gate)

Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	*Top9.3 Mid9.2 Low8.6 Btm7.6 (mm)*	N
	Corrosion	*U/S–Bottom L M S*	
Truss	Thickness-Avg	*Bottom Flange 7.8, Bottom Web 6.0 (mm)*	
	Distortion		
End Girder	Thickness-Avg	*L–Bottom 17.3, R–Bottom 17.5 (mm)*	
	Remodeling	*Left No Right No*	
	Distortion	*Left No Right No*	N
Main Roller	Diameter-Roller	*Average – mm*	N
	Distortion	*Left – Right –*	
Seal	Left	–	
	Bottom	– Top –	
	Right	–	
Inclination		*Top Level Difference 20 mm*	
Leakage		*L (M) S*	N
Sill			
Side Seal	Abrasion-Max	*Left: – mm, Right: – mm*	RS
Roller Truck	Abrasion-Max	*Left: 3 mm, Right: 4 mm*	G
Sill Beam	Abrasion	*L M S*	G
Concrete	Damage-Left	*L M S*	
	Damage-Right	*L M S*	
	Damage-Bottom	*L M S*	G

Survey Item		Survey Result	Judge
Hoisting Device			
Wire Rope	Main-Left	*y: – Distortion: – Corrosion: – Oil: –*	G
	Main-Right	*y: – Distortion: – Corrosion: – Oil: –*	
Drum	Left	*Damage: – Function: –*	
	Right	*Damage: – Function: –*	
Bearing	Drum	*Damage: – Oil: –*	
	Counter Shaft	*Damage: – Oil: –*	
	Reduction Gear	*Damage: – Oil: –*	
Gear	Reduction Gear	*Damage: – Fitting: – Backlash: – Oil: –*	G
Basement	Drum-L	*Damage: – Corrosion: L M (S)*	RS
	Drum-R	*Damage: – Corrosion: L M (S)*	RS
	Drive Device	*Damage: – Corrosion: L M (S)*	RS
Reduction Gear		*Damage: – Corrosion: L M S*	—
Cover	Drum-L	*Damage: – Corrosion: L M (S)*	RS
	Drum-R	*Damage: – Corrosion: L M (S)*	
	Reduction Gear	*Damage: – Corrosion: L M (S)*	
Counter Shaft		*Damage: – Corrosion: L M (S)*	
Counter Weight		*Damage: – Corrosion: L M S*	RS
Hoisting Torque	Wet Condition	*14 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.

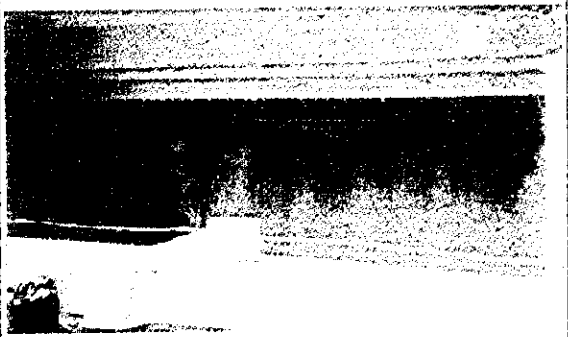
Survey Results of Gate Structure

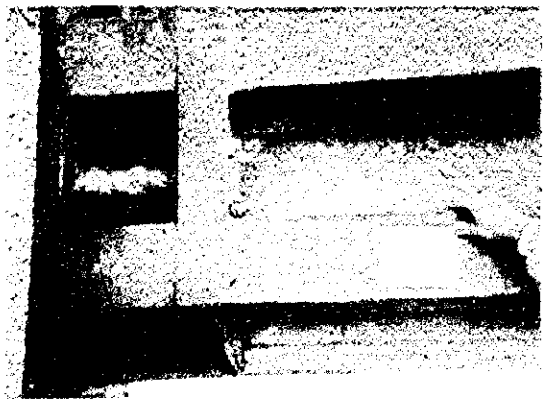
Gate No. T3 (T.P. Link Canal Regulator Gate)

Survey Item			Survey Result	Judge
Gate Leaf				
	Skin Plate	Thickness-Avg	Top9.3 Mid9.2 Low8.5 Btm7.9 (mm)	N
		Corrosion	U/S-Bottom L M S	
	Truss	Thickness-Avg	Bottom Flange 7.8, Bottom Web 6.7 (mm)	
		Distortion		
	End Girder	Thickness-Avg	L-Bottom 17.0, R-Bottom 17.3 (mm)	
		Remodeling	Left No Right No	
		Distortion	Left No Right No	N
	Main Roller	Diameter-Roller	Average – mm	N
		Distortion	Left – Right –	
	Seal	Left	–	
		Bottom	– Top –	
		Right	–	
	Inclination		Top Level Difference 0 mm	
Leakage			L (M) S	N
Sill				
	Side Seal	Abrasion-Max	Left: – mm, Right: – mm	RS
	Roller Truck	Abrasion-Max	Left: 4 mm, Right: 3 mm	G
	Sill Beam	Abrasion	L M (S)	G
	Concrete	Damage-Left	L M (S)	
		Damage-Right	L M (S)	
		Damage-Bottom	L M (S)	G

Survey Item			Survey Result	Judge
Hoisting Device				
	Wire Rope	Main-Left	y: – Distortion: – Corrosion: – Oil: –	G
		Main-Right	y: – Distortion: – Corrosion: – Oil: –	
	Drum	Left	Damage: – Function: –	
		Right	Damage: – Function: –	
	Bearing	Drum	Damage: – Oil: –	
		Counter Shaft	Damage: – Oil: –	
		Reduction Gear	Damage: – Oil: –	
	Gear	Reduction Gear	Damage: – Fitting: – Backlash: – Oil: –	G
	Basement	Drum-L	Damage: – Corrosion: L M (S)	RS
		Drum-R	Damage: – Corrosion: L M (S)	RS
		Drive Device	Damage: – Corrosion: L M (S)	RS
	Reduction Gear		Damage: – Corrosion: L M S	—
	Cover	Drum-L	Damage: – Corrosion: L M (S)	RS
		Drum-R	Damage: – Corrosion: L M (S)	
		Reduction Gear	Damage: – Corrosion: L M (S)	
	Counter Shaft		Damage: – Corrosion: L M (S)	
	Counter Weight		Damage: – Corrosion: L M S	RS
	Hoisting Torque	Wet Condition	20 kg-m	G
		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.

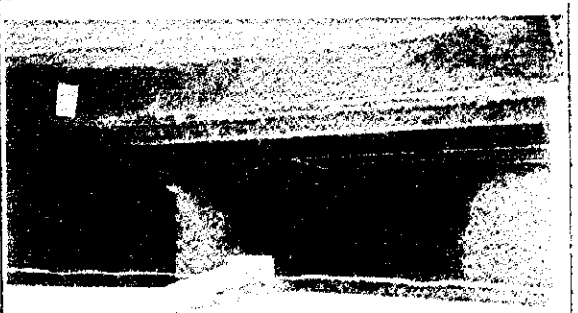
Survey Results of Gate Structure

Gate No. T4 (T.P. Link Canal Regulator Gate)

Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top9.4 Mid9.1 Low8.5 Btm7.1 (mm)	N
	Corrosion	U/S-Bottom L (M) S	↑
Truss	Thickness-Avg	Bottom Flange 8.0, Bottom Web 6.1 (mm)	
	Distortion		
End Girder	Thickness-Avg	L-Bottom 17.2, R-Bottom 16.1 (mm)	
	Remodeling	Left No Right No	↓
	Distortion	Left No Right No	N
Main Roller	Diameter-Roller	Average – mm	N
	Distortion	Left – Right –	↑
Seal	Left	–	
	Bottom	– Top –	
	Right	–	
Inclination		Top Level Difference 30 mm	↓
Leakage		(L) M S	N
Sill			
Side Seal	Abrasion-Max	Left: – mm, Right: – mm	RS
Roller Truck	Abrasion-Max	Left: 4 mm, Right: 4 mm	G
Sill Beam	Abrasion	L M (S)	G
Concrete	Damage-Left	L M (S)	↑
	Damage-Right	L M (S)	↓
	Damage-Bottom	L M (S)	G

Survey Item		Survey Result	Judge
Hoisting Device			
Wire Rope	Main-Left	y: – Distortion: – Corrosion: – Oil: –	G
	Main-Right	y: – Distortion: – Corrosion: – Oil: –	↑
Drum	Left	Damage: – Function: –	
	Right	Damage: – Function: –	
Bearing	Drum	Damage: – Oil: –	
	Counter Shaft	Damage: – Oil: –	
	Reduction Gear	Damage: – Oil: –	↓
Gear	Reduction Gear	Damage: – Fitting: – Backlash: – Oil: –	G
Basement	Drum-L	Damage: – Corrosion: L M (S)	RS
	Drum-R	Damage: – Corrosion: L M (S)	RS
	Drive Device	Damage: – Corrosion: L M (S)	RS
Reduction Gear		Damage: – Corrosion: L M S	–
Cover	Drum-L	Damage: – Corrosion: L M (S)	RS
	Drum-R	Damage: – Corrosion: L M (S)	↑
	Reduction Gear	Damage: – Corrosion: L M (S)	
Counter Shaft		Damage: – Corrosion: L M (S)	↓
Counter Weight		Damage: – Corrosion: L M S	RS
Hoisting Torque	Wet Condition	12 kg·m	G
	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.

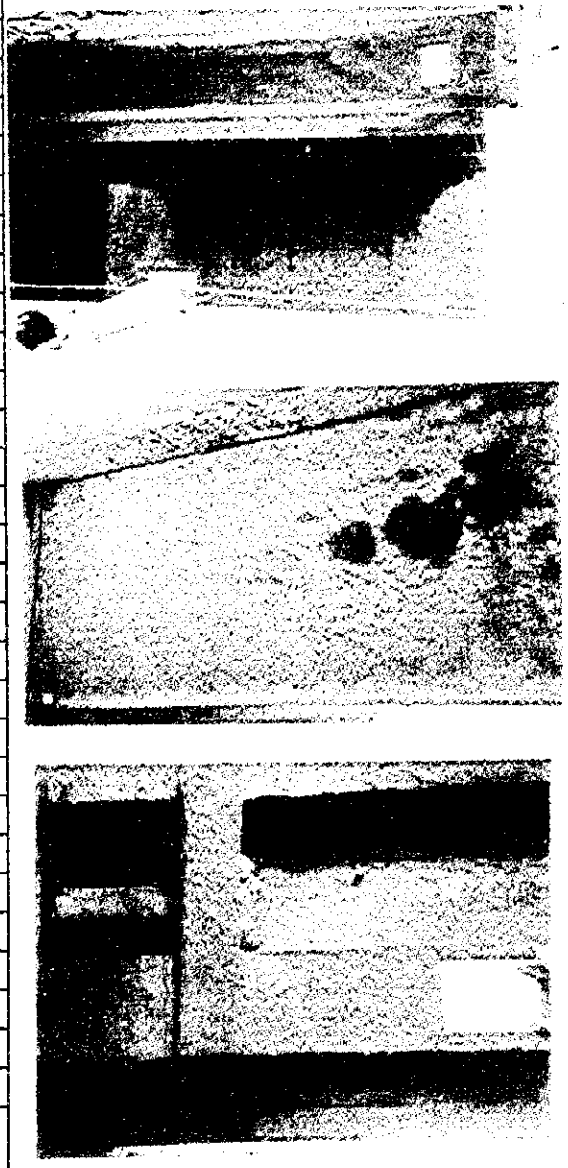
Survey Results of Gate Structure

Gate No. T5 (T.P. Link Canal Regulator Gate)

Survey Item			Survey Result	Judge
Gate Leaf				
	Skin Plate	Thickness-Avg	Top9.3 Mid9.2 Low8.5 Bim7.6 (mm)	N
		Corrosion	U/S-Bottom L (M) S	↑
	Truss	Thickness-Avg	Bottom Flange 9.1, Bottom Web 6.2 (mm)	
		Distortion		
	End Girder	Thickness-Avg	L-Bottom 18.5, R-Bottom 18.7 (mm)	
		Remodeling	Left No Right No	↓
		Distortion	Left No Right No	N
	Main Roller	Diameter-Roller	Average – mm	N
		Distortion	Left – Right –	↑
	Seal	Left	–	
		Bottom	– Top –	
		Right	–	
	Inclination		Top Level Difference 45 mm	↓
Leakage			(L) M S	N
Sill				
	Side Seal	Abrasion-Max	Left: – mm, Right: – mm	RS
	Roller Truck	Abrasion-Max	Left: 4 mm, Right: 4 mm	C
	Sill Beam	Abrasion	L M (S)	G
	Concrete	Damage-Left	L M (S)	↑
		Damage-Right	L M (S)	↓
		Damage-Bottom	L M (S)	G

Survey Item			Survey Result	Judge
Hoisting Device				
	Wire Rope	Main-Left	y: – Distortion: – Corrosion: – Oil: –	G
		Main-Right	y: – Distortion: – Corrosion: – Oil: –	↑
	Drum	Left	Damage: – Function: –	
		Right	Damage: – Function: –	
	Bearing	Drum	Damage: – Oil: –	
		Counter Shaft	Damage: – Oil: –	
		Reduction Gear	Damage: – Oil: –	↓
	Gear	Reduction Gear	Damage: – Fitting: – Backlash: – Oil: –	G
	Basement	Drum-L	Damage: – Corrosion: L M (S)	RS
		Drum-R	Damage: – Corrosion: L M (S)	RS
		Drive Device	Damage: – Corrosion: L M (S)	RS
	Reduction Gear		Damage: – Corrosion: L M S	—
	Cover	Drum-L	Damage: – Corrosion: L M (S)	RS
		Drum-R	Damage: – Corrosion: L M (S)	↑
		Reduction Gear	Damage: – Corrosion: L M (S)	↓
	Counter Shaft		Damage: – Corrosion: L M (S)	RS
	Counter Weight		Damage: – Corrosion: L M S	C
	Hoisting Torque	Wet Condition	10 kg·m	G
		Dry Condition	0 kg·m	G
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.

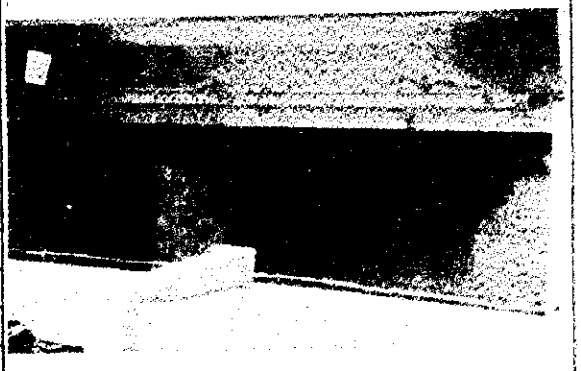
Survey Results of Gate Structure

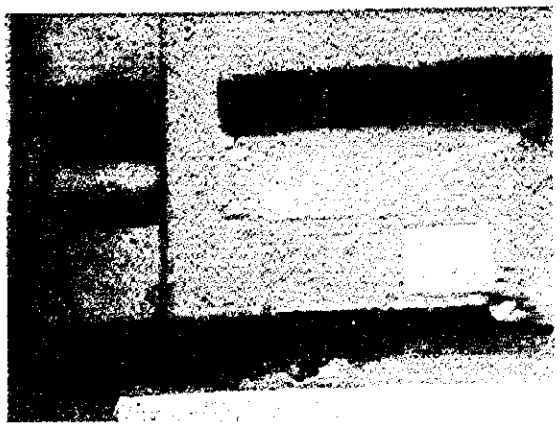
Gate No. T6 (T.P. Link Canal Regulator Gate)

Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top9.2 Mid9.1 Low8.6 Btm8.2 (mm)	N
	Corrosion	U/S-Bottom L M (S)	
Truss	Thickness-Avg	Bottom Flange 9.5, Bottom Web 6.7 (mm)	
	Distortion		
End Girder	Thickness-Avg	L-Bottom 18.0, R-Bottom 17.5 (mm)	
	Remodeling	Left No Right No	
	Distortion	Left No Right No	N
Main Roller	Diameter-Roller	Average – mm	N
	Distortion	Left – Right –	
Seal	Left	–	
	Bottom	– Top –	
	Right	–	
Inclination		Top Level Difference 30 mm	
Leakage		(L) M S	N
Sill			
Side Seal	Abrasion-Max	Left: – mm, Right: – mm	RS
Roller Truck	Abrasion-Max	Left: 3 mm, Right: 3 mm	G
Sill Beam	Abrasion	L M (S)	G
Concrete	Damage-Left	L M (S)	
	Damage-Right	L M (S)	
	Damage-Bottom	L M (S)	G

Survey Item		Survey Result	Judge
Hoisting Device			
Wire Rope	Main-Left	y: – Distortion: – Corrosion: – Oil: –	G
	Main-Right	y: – Distortion: – Corrosion: – Oil: –	
Drum	Left	Damage: – Function: –	
	Right	Damage: – Function: –	
Bearing	Drum	Damage: – Oil: –	
	Counter Shaft	Damage: – Oil: –	
	Reduction Gear	Damage: – Oil: –	
Gear	Reduction Gear	Damage: – Fitting: – Backlash: – Oil: –	G
Basement	Drum-L	Damage: – Corrosion: L M (S)	RS
	Drum-R	Damage: – Corrosion: L M (S)	RS
	Drive Device	Damage: – Corrosion: L M (S)	RS
Reduction Gear		Damage: – Corrosion: L M S	—
Cover	Drum-L	Damage: – Corrosion: L M (S)	RS
	Drum-R	Damage: – Corrosion: L M (S)	
	Reduction Gear	Damage: – Corrosion: L M (S)	
Counter Shaft		Damage: – Corrosion: L M (S)	
Counter Weight		Damage: – Corrosion: L M S	RS
Hoisting Torque	Wet Condition	16 kg·m	G
	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.

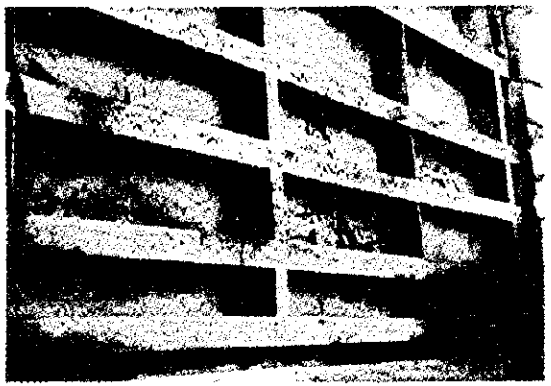
Survey Results of Gate Structure

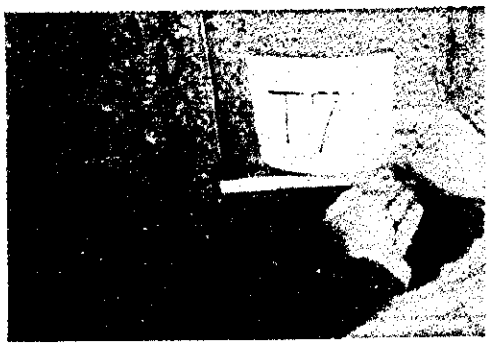
Gate No. T7 (T.P. Link Canal Regulator Gate)

Survey Item		Survey Result	Judge
Gate Leaf			
Skin Plate	Thickness-Avg	Top9.3 Mid9.1 Low8.6 Btm8.4 (mm)	N
	Corrosion	U/S-Bottom L M (S)	
Truss	Thickness-Avg	Bottom Flange 9.6, Bottom Web 6.4 (mm)	
	Distortion		
End Girder	Thickness-Avg	L-Bottom 17.1 , R-Bottom 16.4 (mm)	
	Remodeling	Left No Right No	
	Distortion	Left No Right No	N
Main Roller	Diameter-Roller	Average – mm	N
	Distortion	Left – Right –	
Seal	Left	–	
	Bottom	– Top Deform	
	Right	–	
Inclination		Top Level Difference 750 mm	
Leakage		L (M) S	N
Sill			
Side Seal	Abrasion-Max	Left: – mm, Right: – mm	RS
Roller Truck	Abrasion-Max	Left: 3 mm, Right: 3 mm	G
Sill Beam	Abrasion	L M (S)	G
Concrete	Damage-Left	L M (S)	
	Damage-Right	L M (S)	
	Damage-Bottom	L M (S)	G

Survey Item		Survey Result	Judge
Hoisting Device			
Wire Rope	Main-Left	y: – Distortion: – Corrosion: – Oil: –	G
	Main-Right	y: – Distortion: – Corrosion: – Oil: –	
Drum	Left	Damage: – Function: –	
	Right	Damage: – Function: –	
Bearing	Drum	Damage: – Oil: –	
	Counter Shaft	Damage: – Oil: –	
	Reduction Gear	Damage: – Oil: –	
Gear	Reduction Gear	Damage: – Fitting: – Backlash: – Oil: –	G
Basement	Drum-L	Damage: – Corrosion: L M (S)	RS
	Drum-R	Damage: – Corrosion: L M (S)	RS
	Drive Device	Damage: – Corrosion: L M (S)	RS
Reduction Gear		Damage: – Corrosion: L M S	—
Cover	Drum-L	Damage: – Corrosion: L M (S)	RS
	Drum-R	Damage: – Corrosion: L M (S)	
	Reduction Gear	Damage: – Corrosion: L M (S)	
Counter Shaft		Damage: – Corrosion: L M (S)	
Counter Weight		Damage: – Corrosion: L M S	RS
Hoisting Torque	Wet Condition	10 kg·m	G
	Dry Condition	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.