JAPAN INTERNATIONAL COOPERATION AGENCY (JICA)

MINISTRY OF PUBLIC WORKS
THE REPUBLIC OF CHILE

THE REHABILITATION AND CONSERVATION PROGRAM ON THE BRIDGES IN THE REPUBLIC OF CHILE (PHASE 2)

FINAL REPORT

APPENDIX I

(VOLUME 3/8)

JULY 1998

PACIFIC CONSULTANTS INTERNATIONAL

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Appendix I (Volume 3/8)

APPENDIX I-1

BRIDGE INSPECTION FORM AND GUIDELINE TO USE

Contents

A : Bridge Inspection Form

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NAME OF BRIDGE	DOLLINCO	BRIDGE NO.	9-01	DATE OF INSPECTION	96/11/05	INSPECTORS	T. UENO/J. KOYAMA

ADMINISTRATIVE DATA

LOAD LIMIT	8	TON
YEAR OF CONSTRUCTION		
NAME OF DESIGNER		
REGION	DE LA ARAUCANIA	
PROVINCE		
ROAD NO.	S-225	
ROAD SECTION	LAUTARO-MUCO-CRICE S-221	
LINK NO.	35	
LOCATION	5.10	KM
APPROACH ROAD	WIDTH 3.80	M
	SURFACE GRAVEL	

GEOGRAPHY

EARTHQUAKE	
TOPOGRAPHY	HILL

REFER TO STRUCTURAL DETAILS

SUPERSTRUCTURE

SUBSTRUCTURE, FOUNDATION AND ACCESSORIES

RIVER CONDITON

RIVER NAME	DOLLINCO	
RIVER WIDTH		M
VELOCITY OF FLOW	0.1	M/SEC
MEANDERING	YES	
EROSION OF BANK	NO	
OBSTACLES IN RIVER	WOOD	
DRIFTWOOD	YES	
CONDITION OF RIVER BED	CLAY	
PRESENT WATER LEVEL	4.10 m FROM DECK SLAB	
HIGHEST WATER LEVEL	1.20 m FROM DECK SLAB	

Structural Details

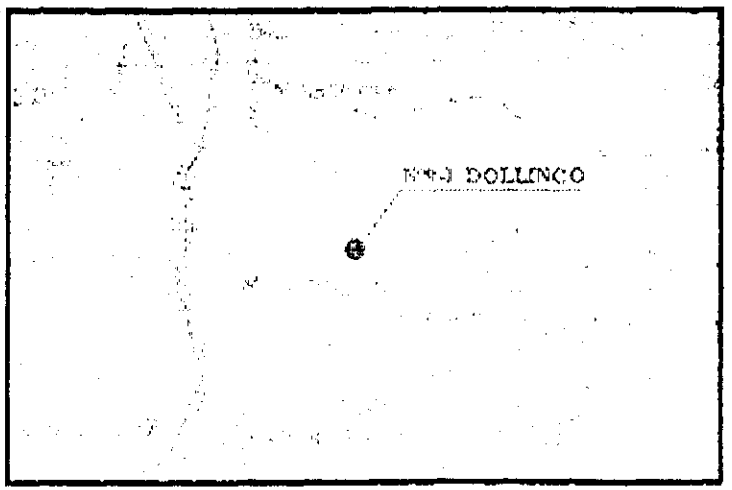
Photographs

Damage/Degree (Supperstructure)

Damage/Degree (Substructure)

Damage/Degree (Accessories)

BRIDGE LOCATION MAP



CONTROL

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BACK TO MENUE

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Sheet No. 1 Administrative Data, Geography, River Condition and Bridge Location

NAME OF BRIDGE	DOLLINCO	BRIDGE NO.	9-01	DATE OF INSPECTION	96/11/05	INSPECTORS	T. UENO/J. KOYAMA

SUPERSTRUCTURE

GENERAL		
TYPE	MAIN BEAM	3 Span Simple Timber Beam
	DECK SLAB	Timber
	PAVEMENT	Timber
	LANES NUMBER	1

DETAILS		
ITEM	DIMENSION	UNIT
BRIDGE LENGTH	24.8	M
SPAN LENGTH	8.3+8.0+8.5	M
MAXIMUM SPAN LENGTH	8.5	M
TOTAL WIDTH	4	M
CURB TO CURB WIDTH	3.6	M
NUMBER OF MAIN BEAMS	6	NO
HEIGHT OF MAISN BEAMS	0.35	M
SPACING OF MAIN BEAM	0.50	M

General Information | Photograph | Damage/Deg.(Sup.) | Damage/Deg.(Sub.) | Damage/Deg.(Acc.)

SUBSTRUCTURE

LOCATION		TYPE	HEIGHT(M)
A1 ABUTMENT		Concrete Wall	
PIER	P1, P2	Concrete Wall	4.50
A2 ABUTMENT		Concrete Wall	

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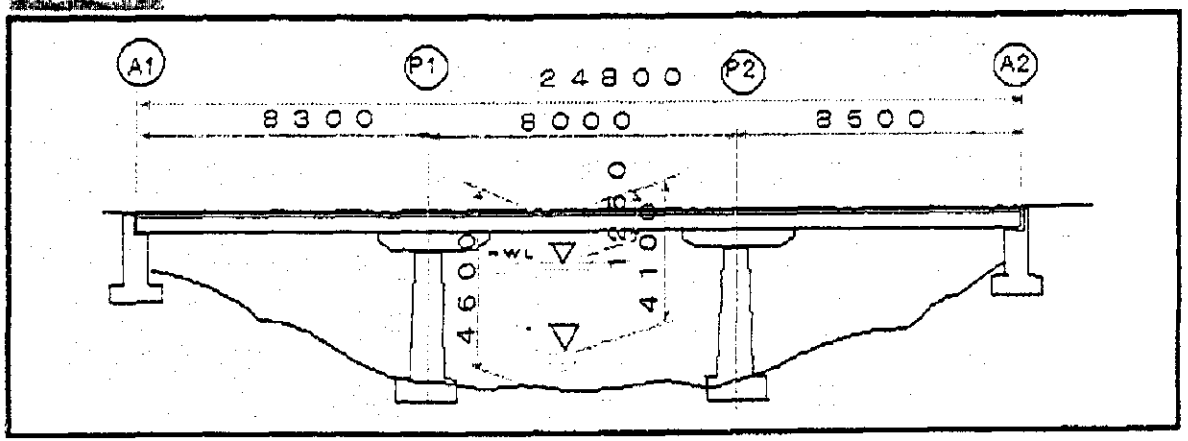
FOUNDATION

		TYPE
A1 ABUTMENT		Concrete Spread
PIER	P1, P2	Concrete Spread
A2 ABUTMENT		Concrete Spread

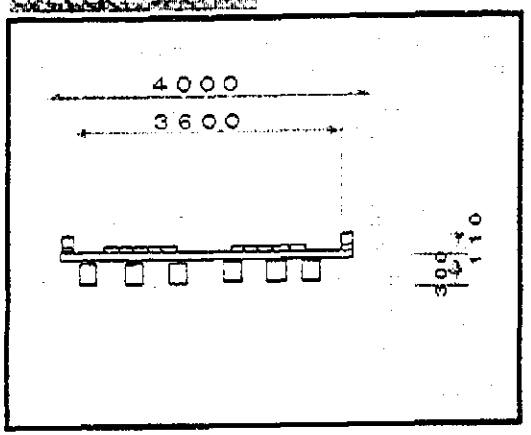
ACCESSORIES

		TYPE
BEARING	ABUTMENTS	None
	PIERS	None
EXPANSION JOINT		None
HAND RAIL		None
CURB		Timber

PROFILE



CROSS SECTION



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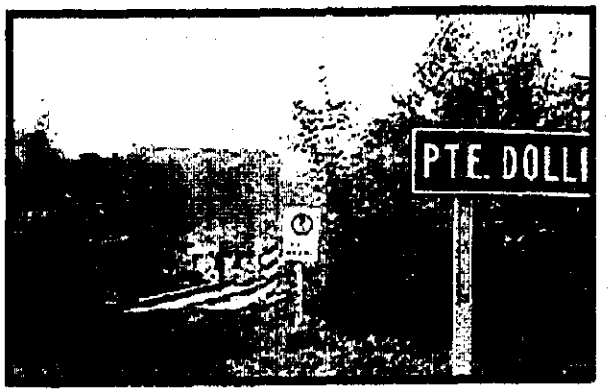
Sheet No. 2 Superstructure, Substructure, Foundation, Accessories and Profile/Cross Section

NAME OF BRIDGE	DOLLINCO	BRIDGE NO.	9-01	DATE OF INSPECTION	INSPECTORS
				96/11/05	T. UENO/J. KOYAMA

SIDE VIEW

FRONT VIEW



DAMAGE 1

DAMAGE 2

COMENT

General Information

Structural Details

Damage/Degree (Superstructure)

Damage/Degree (Substructure)

Damage/Degree (Accessories)

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BRIDGE NAME

DOLLINCO

BRIDGE NO 9-1

1 REPAIR METHOD AND QUANTITY

2 CODE TABLE

General Information | Structural Details

Photograph | Damage/Degree (Substructure)

Condition Rating (Accessories)

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CONDITION RAITING — SUPERSTRUCTURE

SPAN	SPAN LENGTH	DECK WIDTH	ELEMENT		MATEIRAL	STRUCTURAL TYPE	DAMAGE/DEGREE	CONDITION RAITING
A1-P1	8.30	4.00	PRIMARY	MAIN BEAM	Timber	Simple Beam	CO/2	2
				DIAPHRAGM	NA			
			SECONDARY	DECK SLAB	Timber		BR/2	
				FOOTPATH	NA			
				CURB	Timber		CO/2	
				RAILING	NA			
				PAVEMENT	Timber		BR/2	
P1-P2	8.00	4.00	PRIMARY	MAIN BEAM	Timber	Simple Beam	CO/2	2
				DIAPHRAGM	NA			
			SECONDARY	DECK SLAB	Timber		BR/2	
				FOOTPATH	NA			
				CURB	Timber		CO/2	
				RAILING	NA			
				PAVEMENT	Timber		BR/2	
P2-A2	8.50	4.00	PRIMARY	MAIN BEAM	Timber	Simple Beam	CO/2	2
				DIAPHRAGM	NA			
			SECONDARY	DECK SLAB	Timber		BR/2	
				FOOTPATH	NA			
				CURB	Timber		CO/2	
				RAILING	NA			
				PAVEMENT	Timber		BR/2	
			PRIMARY	MAIN BEAM				
				DIAPHRAGM				
			SECONDARY	DECK SLAB				
				FOOTPATH				
				CURB				
				RAILING				
				PAVEMENT				

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Sheet No. 4 Condition Rating (Superstructure)

BRIDGE NAME: DOLLINCO BRIDGE NO: 9-1 PRINT

SPAN	ELEMENT		PROPOSED REPAIR METHOD AND QUANTITY					
			TYPE	VOLUME	TYPE	VOLUME	TYPE	VOLUME
A1-P1	PRIMARY	MAIN BEAM	PR	25 m				
		DIAPHRAGM						
	SECONDARY	DECK SLAB	PR	10 m2				
		FOOTPATH						
		CURB	PR	2 m				
		RAILING						
		PAVEMENT	PR	3 m2				
P1-P2	PRIMARY	MAIN BEAM	PR	27 m				
		DIAPHRAGM						
	SECONDARY	DECK SLAB	PR	10 m2				
		FOOTPATH						
		CURB	PR	2 m				
		RAILING						
		PAVEMENT	PR	3 m2				
P2-A2	PRIMARY	MAIN BEAM	PR	26 m				
		DIAPHRAGM						
	SECONDARY	DECK SLAB	PR	10m2				
		FOOTPATH						
		CURB	PR	2 m				
		RAILING						
		PAVEMENT	PR	3 m				
	PRIMARY	MAIN BEAM						
		DIAPHRAGM						
	SECONDARY	DECK SLAB						
		FOOTPATH						
		CURB						
		RAILING						
		PAVEMENT						

Sheet No. 5 Repair Method and Quantity (Superstructure)

BRIDGE NAME

DOLLINCO

BRIDGE NO. 9-1

1 REPAIR METHOD AND QUANTITY

2 CODE TABLE

General Information | Structural Deatils | Photograph | Damage/Degree (Superstructure) | Damage/Degre e (Accessories)

CONTROL

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CONDITION RAITING — SUBSTRUCTURE

NO.	MATERIAL STRUCTURE	HEIGHT (M)	ELEMENT	DAMAGE/DEGREE	CONDITION RAITING
A1	Concrete Wall		STEM WALL		5
	Concrete Wall		WING WALL		
	Concrete Spread		FOUNDATION		
P1	Concrete Wall		CAPBEAM		5
	Concrete Wall	4.50	BODY/COLUMUN		
	Concrete Spread		FOUNDATION		
P2	Concrete Wall		CAPBEAM		5
	Concrete Wall	4.50	BODY/COLUMUN		
	Concrete Spread		FOUNDATION		
			CAPBEAM		
			BODY/COLUMUN		
			FOUNDATION		
A2	Concrete Wall		STEM WALL		5
	Concrete Wall		WING WALL		
	Concrete Spread		FOUNDATION		

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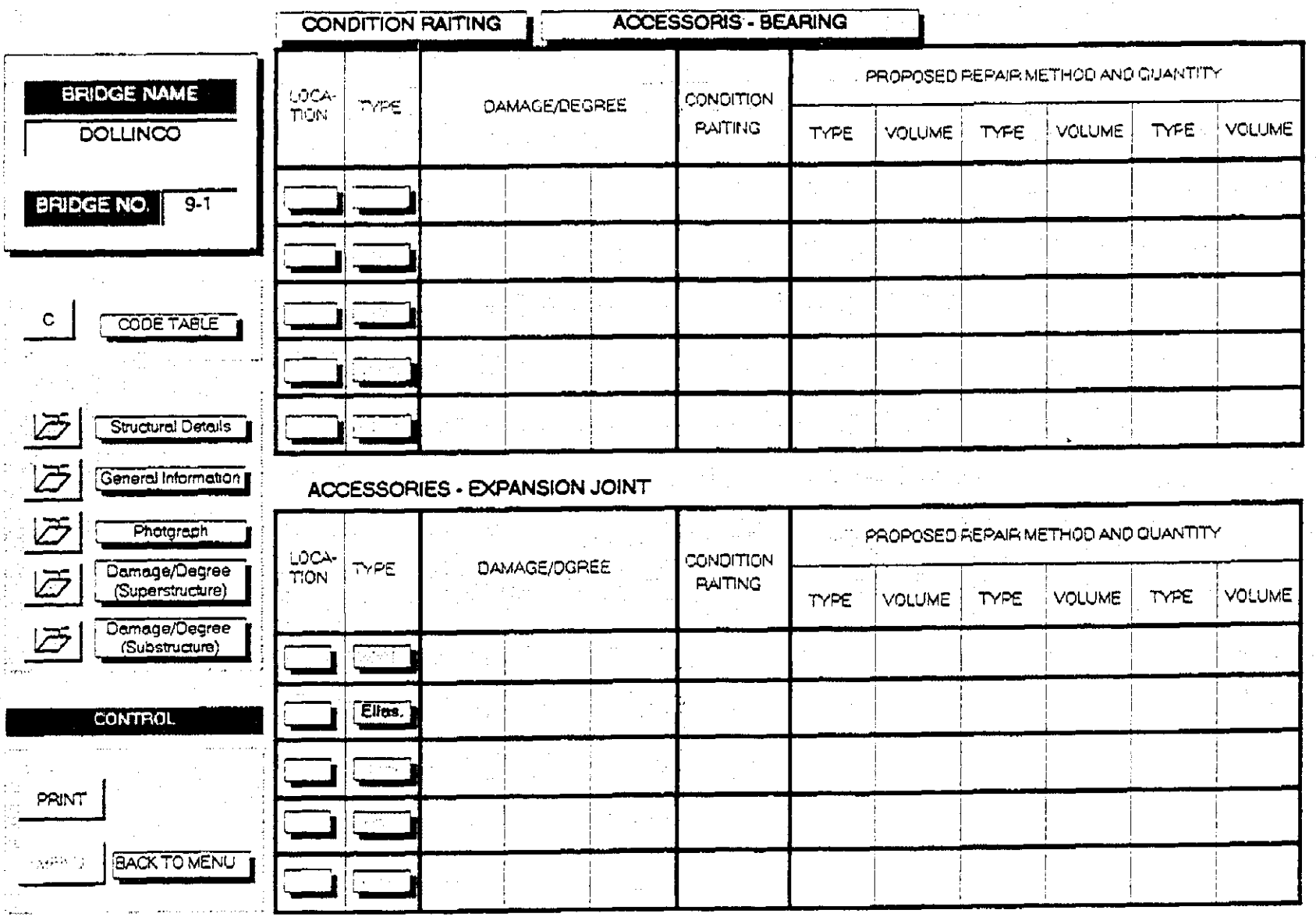
Sheet No. 6 Condition Rating (Substructure)

BRIDGE NAME	DOLLINCO	BRIDGE NO	9-1	PRINT

NO.	MATERIAL/STRUCTURE	ELEMENT	PROPOSED REPAIR METHOD AND QUANTITY					
			TYPE	VOLUME	TYPE	VOLUME	TYPE	VOLUME
		STEM WALL						
		WING WALL						
		FOUNDATION						
		CAP. BEAM						
		BODY/COLUMUN						
		FOUNDATION						
		CAP. BEAM						
		BODY/COLUMUN						
		FOUNDATION						
		CAP. BEAM						
		BODY/COLUMUN						
		FOUNDATION						
		STEM WALL						
		WING WALL						
		FOUNDATION						

Sheet No. 7 Repair Method and Quantity (Substructure)



8-(1-1)

Sheet No. 8 Condition Rating and Repair Method/Quantity (Accessories)

CODE TABLE OF DAMAGE/ DEGREE AND PROPOSED REPAIR METHOD

DAMAGE TYPE	BR	Breakage/Fallout
	CO	Corrosion/Decay/Deterioration
	CR	Crack
	DH	Deformation of Member
	ER	Erosion of Bank around Abutment
	FI	Fire
	IN	Inclination of Substructure
	NF	Not Functioning (Bearing and Expansion Joint)
	SC	Scoring
	SE	Settlement
	SL	Sliding
	SP	Spalling/Scaling
	WE	Surface Wearing

DEGREE/RATING

1 :Dangerous
2 :Potentially Hazardous
3 :Not Functioning as Originally Designed
4 :Functioning as Originally Designe
5 :Good, New or Like-New

REPAIR TYPE	BP	Bank Protection of Abutment
	CD	Correction of Member Deformation
	IC	Injection of Crack
	OV	Overlay of Pavement
	PC	Paint/Coating for Surface Protection
	PS	Patching for Scaling and Spalling
	PR	Partial Replacement
	RA	Reinforcement with Additional Beams/Columns
	RC	Reinforcement with Steel Cover Plate
	RJ	Reinforcement by Jacketing or Encasement
	RL	Restoration of Cross-Section Loss
	RP	Reinforcement by Post-tensioning
	RR	Reinforcement with Riprup against Scoring
	RW	Re-welding
	SP	Splicing
	TR	Total Replacement or Reconstruction
OTHERS	NA	Not Applicable
	UK	Unkonown

Sheet No. 9 Code Table of Damage/Degree and Repair Method

B : Guideline to Use Bridge Inspection Form

(Sheet No. 1)

ADMINISTRATIVE DATA

1) LOAD LIMIT — If there is a traffic sign of load limit, write the limit. If there is not, MOP engineer judges the load limit and write it. (Ex. 8 TON)

2) YEAR OF CONSTRUCTION — Write the year when the bridge was constructed. If the bridge was reconstructed, write the latest year of reconstruction. (Ex. 1977)

3) NAME OF DESIGNER — Write the name of the designing organization which designed the bridge, it may be MOP, a consultant or contractor. (Ex. ABC CONSULTANT)

4) REGION — Write the number of the region where the bridge exists. (Ex. IX REGION)

5) PROVINCE — Write the name of the province where the bridge exists. (Ex. CAUTIN)

6) ROAD NO. — Write the number of the road to which the bridge belongs. (Ex. S-225)

7) ROAD SECTION — Write the road section to which the bridge belongs. (Ex. PURULON-LA LEONERA)

8) LINK NO.* — Write the link number where the bridge is. The number is defined by a traffic engineer. (Ex. 35)

9) LOCATION — Write the distance where the bridge exists in kilometer from the origin of the road. (Ex. 5.10 KM)

10) APPROACH ROAD
- WIDTH: Write the width of the approach road in meter. (Ex. 3.80 M)
- SURFACE: Write the surface condition of the approach road. (Ex. GRAVEL, ASPHALT etc.)

GEOGRAPHY

1) EARTHQUAKE — Ask local residents whether the bridge site has experienced earthquake and the bridge had damage because of the earthquake. (Ex. YES or NO)

2) TOPOGRAPHY — Observe the topographic condition surrounding the bridge site, and choose one of the three below. (Ex. STEEP, HILL or FLAT)

RIVER CONDITION

1) RIVER NAME	Write the name of the river which the bridge crosses. (Ex. BIO-BIO)
2) RIVER WIDTH	Write the width of the river in meter at the point where the bridge crosses it. (Ex. 11.80 M)
3) VELOCITY OF FLOW	Observe the velocity of the river flow visually, and write it in meter per second. (Ex. 0.5 M/SEC)
4) MEANDERING	Observe whether the river meanders or not, and answer by YES or NO. (Ex. YES or NO)
5) EROSION OF BANK	Observe whether the river bank around the bridge has been eroded by the river flow and answer by YES or NO. (Ex. YES or NO)
6) OBSTACLES IN RIVER	Observe whether there are obstacles to the smooth river current, and write NO if there is no obstacle; if there is, write the type of the obstacle. (Ex. NO, or WOOD, ROCK)
7) DRIFT WOOD	Ask local residents whether woods drift when water is high and flows rapidly. (Ex. YES or NO)
8) CONDITION OF RIVER BED	Observe the riverbed in the vicinity of the bridge, and write the type of river bed soil. (Ex. ROCK, COBBLE, GRAVEL, SAND or CLAY)
9) PRESENT WATER LEVEL	Measure the water level, and write the distance between the top of the deck slab of the bridge and the water surface level in meter. (Ex. 4.1 m FROM DECK SLAB)
10) HIGHEST WATER LEVEL	Ask local residents the highest water level which the river experienced in the past at the point of the bridge, and write the distance between the top of the deck slab of the bridge and the highest water level in meter. In case that the highest water level is higher than the deck slab, then the distance shall be negative. (Ex. 1.20 m or -1.0 m FROM DECK SLAB)

SUPERSTRUCTURE

GENERAL

TYPE

1) MAIN BEAM	Write the structural type of the main beams. First, number of the spans and next, simple or continuous and then the material of the beams, finally the kind of the beams like beam, truss or arch. If there is more than one type in a bridge, write the other type in the second line. (Ex. 2 Span Simple Timber Beam, or 3 Span Continuous Steel Truss)
2) DECK SLAB	Write the material of the deck slab. (Ex. Timber, Concrete or Steel)
3) PAVEMENT	Write the material of the pavement. (Ex. Timber, Asphalt or Concrete)
4) LANES NUMBER	Write the number of lanes in numerals. (Ex. 2)

DETAILS

1) BRIDGE LENGTH	Write the distance between the faces of back-walls of the both abutments in meter. (Ex. 24.8)
2) SPAN LENGTH	Write each span length in meter. If the bridge is a simple beam, the span length is same as that of "BRIDGE LENGTH" above. If the bridge has more than two spans, span length of side span is the distance between a face of abutment back-wall and a center of pier, and span length of intermediate span is the distance between the two adjacent piers. (Ex. 8.3+8.0+8.5)
3) MAXIMUM SPAN LENGTH	Write the longest span length of the spans composing the bridge in meter. (Ex. 8.5)
4) TOTAL WIDTH	Write the distance in meter between outsides of both railings, or curbs in case of no railing. (Ex. 4.00)
5) CURB-TO-CURB WIDTH	Write the distance in meter between insides of both curbs. (Ex. 3.60)
6) NUMBER OF MAIN BEAMS	Write the number of main beams in a numeral. (Ex. 6)
7) HEIGHT OF MAIN BEAMS	Write the height of main beams in meter. (Ex. 0.35)

8) SPACING OF MAIN BEAMS — Center to center spacing of main beams in meter.
(Ex. 0.5)

SUBSTRUCTURE

1) TYPE — Write the material first and the structural type.
(Ex. Concrete Wall)

2) HEIGHT — Write the height of substructures in meter. The height means the distance between the top of the bridge seat and the ground level.
(Ex. 4.5)

FOUNDATION

1) TYPE — Write the material first and then the structural type.
(Ex. Concrete Spread, or Steel Pile)

ACCESSORIES

1) BEARING — Write the type of bearings. If there is no bearing, then write "None".
(Ex. Elastomeric, Steel Plate, Cylindrical, Spherical, or None)

2) EXPANSION JOINT — Write the type of expansion joints. If there is no expansion joint, then write "None".
(Ex. Elastomeric, Finger or None)

3) HAND RAIL — Write the material of railing. If there is no railing, then write "None".
(Ex. Timber, Concrete , Steel or None)

4) CURB — Write the material of curb.
(Ex. Timber, Concrete or Steel)

PROFILE — Draw a sketch of a profile of the whole bridge.

CROSS SECTION — Draw a sketch of a typical cross section of the bridge.

(Sheet No. 3)

PHOTOGRAPHS

1) SIDE VIEW — Attach a color photo of a side view of the bridge.

2) FRONT VIEW — Attach a color photo of a front view of the bridge.

3) DAMAGE — Attach one or two color photos of damages, if any.

4) COMMENT — Write a short comment on the damage photo including location and type of the damage.

CONDITION RATING

SUPERSTRUCTURE

1) SPAN

Write substructure names which stand on both sides of the objective span. Abutments are named "A" with a suffix number like "A1" and piers "P" with a suffix number like "P1". The numbering principle of the suffix is that viewing the bridge from the river upstream, the left abutment is numbered "1" and the right one is "2". Piers are given numbers from left to right, "1", "2", "3" and so on. In case of three spans, substructures are named from the left, "A1", "P1", "P2" and "A2".(Ex. A1-P1, P1-P2, P2-A2)

2) SPAN LENGTH

Write the same span length which was written in SUPERSTRUCTURE , DETAILS, 2) SPAN LENGTH. (Ex. 8.3)

3) DECK WIDTH

Write the same width which was written in SUPERSTRUCTURE , DETAILS, 4) TOTAL WIDTH (Ex. 4.00)

4) MATERIAL

Write material. In case of an element dose not exist, write NA which means "not applicable".
(Ex. Timber, Steel, Concrete, Asphalt, Stone, NA)

5) STRUCTURE TYPE

For "MAIN BEAM", select one of the structures shown below in the Example, and write it.
(Ex. Simple Beam, Continuous Beam, Simple Truss, Continuous Truss, Arch, Suspension Bridge)
For "DIAPHRAGM", select one of the structures shown below in the Example, and write it.
(Ex. Solid, Truss)
For secondary members including deck slab, footpath, curb, railing and pavement, it is not necessary to write anything here.

6) DAMAGE / DEGREE

Select one to three damages from "DAMAGE TYPE" of the "Code Table" given in Sheet No. 9, and write the abbreviations corresponding to the damages.
Regarding degree, select one of the five(5) ranks referring to "DEGREE/RATING" of the "Code Table". It is advised to refer to Section 2.2.2 (1) of this Main Report.
Each damage shall be followed by degree inserting "/" between each damage and degree. When the type of a damage is "Breakage/Fallout" and the degree of the damage is judged to be "2" by an inspector of MOP, then the

abbreviation of the damage is "BR" according to the Code Table, so that "BR/2" shall be written.
(Ex. BR/2, CO/3)

7) CONDITION RATING — The worst degree of primary members represents the condition rating of the span.
(Ex. '1', '2', '3', '4', or '5')

(Sheet No. 5)

8) PROPOSED REPAIR METHOD AND QUANTITY — "TYPE" means a type of proposed repair method, and its abbreviation is listed in the "Code Table" of Sheet No. 9. Select one to three repair methods which correspond to each damage defined at the part of "DAMAGE/DEGREE" before, and write the corresponding abbreviation.
(Ex. BP, CD, IC)
"VOLUME" means a quantity to be repaired or replaced. Measurement unit may be meter, square meter, cubic meter or piece.
(Ex. 25 m, 10 m^2, 25 m^3, 3 pcs)

(Sheet No. 6)

SUBSTRUCTURE

1) NO. — Write substructure names defined at Sheet No. 4, SUPERSTRUCTURE, 1) SPAN.
(Ex. A1, P1)

2) MATERIAL/STRUCTURE — Write material and structure of STEM WALL, WING WALL and FOUNDATION for an abutment, and CAP BEAM, BODY/COLUMN and FOUNDATION for a pier in the same way as explained in Sheet No. 2, SUBSTRUCTURE, 1) TYPE.
(Ex. Concrete Wall, Concrete Spread)

3) DAMAGE / DEGREE — Write exactly in the same manner as those at Sheet No. 4, SUPERSTRUCTURE, 6) DEGREE/DAMAGE.

4) CONDITION RATING — The worst degree of those among STEM WALL, WING WALL and FOUNDATION represents the abutment's condition rating. In case of pier, the worst degree of those of CAP BEAM, BODY/COLUMN and FOUNDATION represents the pier's condition rating.
(Ex. '1', '2', '3', '4', or '5')

(Sheet No. 7)

5) PROPOSED REPAIR METHOD AND QUANTITY	Exactly same as those at Sheet No. 5, SUPERSTRUCTURE, 8) PROPOSED REPAIR METHOD AND QUANTITY.

(Sheet No. 8)

ACCESSORIES-BEARING

1) LOCATION	Write a substructure name like A1 or P2, where the bearing is located.
2) TYPE	Write a type of the bearing as explained at Sheet No. 2, ACCESSORIES, but the name of the type may be shortened, if necessary, because of a lack of space to fill in. (Ex. Elastomeric, Steel Plate, Cylindrical, or None)
3) DAMAGE/DEGREE 4) CONDITION RATING, 5) PROPOSED REPAIR METHOD AND QUANTITY	Write exactly in the same way as at Sheet No. 4 and 5.

ACCESSORIES-EXPANSION JOINT

1) LOCATION	Write in the same way as of BEARING.
2) TYPE	Write a type of the expansion joint in the manner as explained at Sheet No. 2, ACCESSORIES.
3) DAMAGE/DEGREE 4) CONDITION RATING, 5) PROPOSED REPAIR METHOD AND QUANTITY	Write exactly in the same way as at Sheet No. 4 and 5.

C : Guideline to Rate Bridge Condition

(1) How to rate each bridge element

- Condition rating is practiced by detailed visual inspection of each element of the structure from close range (not just looking for a mere overview using binoculars from distance).
- Superstructures shall be observed span by span, substructures one by one and accessories(bearing, expansion joint also one by one.
- The principle of condition rating was stated in Section 2.2.2 (1) of the Main Report.
- Some samples of rating criteria are given in detail below.

Rating	Condition
	(Wearing Surface)
5	A surface being in good condition with no spalls, delamination, or cracks.
4	Beginning of a spalling problem. No more than two or three isolated, moderate spalls or delaminations being present.
3	A more serious spalling problem, although large area of the span being still unaffected.
2	The condition where the area affected in any lane approaches half the total area of the lane.
	(Concrete Deck Slab)
5	'Like new' condition
4	Having narrow cracks and some efflorescence, but no sign of leakage nor alligator-type cracking.
3	Extensively deteriorated. Deck being cracked throughout and showing signs of efflorescence. Considerable leakage being obviously coming through the deck.
2	Seriously deteriorated as evidenced by loss of concrete cover, cracking, leakage, and spalling.
	(Concrete Beam)
5	Free from deterioration.
4	Having minor deterioration with some dampness and narrow cracks.
3	Serious deterioration having occurred. The concrete showing the signs of considerable efflorescence, random cracking, and dampness.
2	Reinforcing bars being completely exposed and having serious section loss. The remaining concrete being not sound and showing signs of extensive cracking and dampness.
	(Steel Beam)
5	No section loss nor cracking, functioning as originally designed.
4	Localized deterioration having occurred. About 5 % metal loss in an isolated area but the remaining portion of the girder having no section-loss.
3	Having a serious deterioration problem. The flanges and web having deteriorated to varying degrees, but some of them being extremely deteriorated especially due to corrosion.

2 Badly damaged at numerous locations and potentially hazardous.

(Timber Beam)

5 New condition

4 Slightly deteriorated. Having narrow cracks or material decay only outside.

3 Extensively and seriously deteriorated. Due to decay of the material, all beams growing spongy, week and highly absorbent.

2 Having no practical capacity of supporting load because of breakage or split penetrating almost whole section.

(Piers, Abutments and Foundations)

5 Performing at full-design capacity and having no evidence of material decay.

4 Exhibiting isolated areas of minor types of material decay, but still not to the degree where there is any significant effect on the member's ability to perform at full original design capacity.

3 Showing an evidence of serious deterioration, for example the concrete having exposed the main re-bars causing them to rust and to have a critical loss of section, or considerable cracking.

2 Loosing practically all capacity to sustain any loadings, and there being an apparent danger of collapse under any future use of the structure, for example all main re-bars being exposed and then having no re-bar bond to the concrete.

An apparent movement of foundation shall be rated '2'.

(Expansion Joint)

5 New condition.

4 Good condition with some signs of minor deterioration.

3 The condition where leakage causes serious deterioration.

2 Parts of the joint with deck being loose, or joints being broken so that traffic must swerve to avoid a hazard.

(Bearing)

5 Functioning in new condition and being in the proper position for the ambient temperature.

4 The condition where the bearing is in the proper position and operable.

3 Not functioning as designed, but there is no immediate danger of failure.

2 Being almost disintegrated from rusting and inoperative, or not functioning at all. Such a situation is dangerous and should be corrected promptly.

(2) How to rate a whole bridge

– Given below is a manner and order in which the object bridge is rated as a whole, following determining the degree of each element in the inspection form (See Inspection Form).

1) First of all, superstructure of each span is rated. The way of rating each span is;

- The worse degree of main beams and diaphragms are adopted as a representing degree of a primary member.
- The degree of each span shall be written in corresponding box of the condition rating in

the condition rating (Superstructure) Sheet.

2) Then each substructure is rated as described below (See the part of Condition Rating-Substructure):

- The worst degree of "STEM WALL", "WING WALL" and "FOUNDATION" for abutment, and the worst degree of "CAP BEAM", "BODY COLUMN" and "FOUNDATION" for pier represent the degree of each substructure.
- Write the degree of each substructure in the corresponding box of the condition rating in the Sheet.

– The degree of the condition rating of the object bridge as a whole is determined in such a manner that the worst degree of each span and each substructure is the representing degree of the object bridge.

(3) Determination of Rehabilitation Method and Volume

– Kinds of rehabilitation are categorized as shown below. An inspector shall decide the most appropriate rehabilitation method for the deficiency in the element of the bridge through his experience taking into account not only the kind of deficiency, but the volume and location, order of repair work and the availability of materials. And then their abbreviations are to be noted.

- Bank Protection (Abutment)
- Correction of Deformation (Steel)
- Injection to Cracks (Concrete, Timber)
- Overlay (Asphalt, Concrete pavement)
- Paint / Coating for Surface Protection (Concrete, Steel, Timber)
- Patching for Scaling and Spalling (Concrete)
- Partial Replacement with New Member or New materials (Asphalt, Concrete, Gabion, Steel, Stone, Masonry, Timber)
- Reinforcement with Additional Beam or Column (Concrete, Gabion, Steel, Stone Masonry, Timber)
- Reinforcement with Cover Plate (Steel, Timber)
- Reinforcement by Jacketing or Encasement (Concrete, Gabion, Stone Masonry, Timber)
- Restoration of Cross-section Losses (Concrete)
- Reinforcement by Post-tensioning (Concrete, Steel, Timber)
- Reinforcement with Riprup against Scouring (Abutment, Pier)
- Re-welding (Steel)
- Splicing (Steel, Timber)
- Total Replacement with New Member or Materials (Asphalt, Concrete, Gabion, Steel, Stone, Masonry, Timber)

– Approximate volume of the deficiency to be rehabilitated may be calculated from the result of direct measurement or eye-measurement.

APPENDIX I-2

LIST OF INSPECTED BRIDGES

Contents

Table (1) In Region VIII

BRIDGE NO.	BRIDGE NAME	ROAD NO.	BRIDGE LENGTH(m)	SUPERSTRUCTURE TYPE 1	SUPERSTRUCTURE TYPE 2	LOAD LIMIT(t)	CURB TO CURB WIDTH(m)	TOTAL BRIDGE RAITING
8-01	CAILLIN N-1	P-516	7.7	Simple Timber Beam		10		
8-02	CAILLIN N-2	P-56-R	10.0	Simple Timber Beam		10		
8-03	CONHUECO	P-56-R	11.3	Simple Timber Beam		10		
8-04	CAYUCUPIL N-4	P-56-R	17.8	Simple Timber Beam		8		
8-05	CAYUCUPIL N-5							
8-06	CAYUCUPIL N-6	P-56-R						
8-07	CAYUCUPIL N-1	P-57-R	17.5	2 Span Simple Timber Beam		10		
8-08	CAYUCUPIL N-2	P-57-R						
8-09	CAYUCUPIL N-3	P-57-R	11.8	Simple Timber Beam		10		
8-10	BUTAMALAL	P-57-R	15.5	Simple Timber Beam		5		
8-11	REPUTO	P-602	8.2	Simple Timber Beam		10		
8-12	HUILQUEHUE	P-680						
8-13	PULLEHUE	P-660	12.4	Simple Timber Beam				
8-14	ELICURA N-1	P-670	11.3	Simple Timber Beam		12		
8-15	SAN ERNESTO N-1	P-670	8.8	Simple Timber Beam		3		
8-16	SAN ERNESTO N-2	P-670	14.9	Simple Timber Beam		3		
8-17	BUCHOCO	P-700	9.8	Simple Timber Beam		10		
8-18	TRAMI-TRAMI	P-700						

BRIDGE NO.	BRIDGE NAME	ROAD NO.	BRIDGE LENGTH(m)	SUPERSTRUCTURE TYPE 1	SUPERSTRUCTURE TYPE 2	LOAD LIMIT(t)	CURB TO CURB WIDTH(m)	TOTAL BRIDGE RATING
8-19	PICHIHUILLINCO	P-711	10.5	Simple Timber Beam		5		
8-20	HUILLINCO N-1	P-711	23.0	3 Span Simple Timber Beam		10		
8-21	TRICAUCO N-1	P-712						
8-22	TRICAUCO N-2	P-712	21.8	2 Span Simple Timber Beam		10		
8-23	TRICAUCO N-3	P-712	6.8	Simple Timber Beam		5		
8-24	HUILLINCO N-2	P-714	3.3	Simple Timber Beam		5		
8-25	HUILLINCO N-3	P-714	6.7	Simple Timber Beam		5		
8-26	MAHUILQUE	P-715						
8-27	CHACRAS BUENAS N-1	P-717						
8-28	CHACRAS BUENAS N-2	P-717	11.3	2 Span Simple Timber Beam				
8-29	LOS MELLIZOS N-2	P-718	12.3	Simple Timber Beam		10		
8-30	EL PERAL	P-66	17.0	Simple Timber Beam		10		
8-31	MANZANAL N-1	P-80-R	5.0	Simple Timber Beam		10		
8-32	MANZANAL N-2	P-80-R	12.5	2 Span Simple Timber Beam		10		
8-33	LA GUARDIA	P-90-R	15.5	2 Span Simple Timber Beam		10		
8-34	CHARRUCURA N-1	P-90-R	5.0	Simple Timber Beam		10		
8-35	CHARRUCURA N-2	P-90-R						
8-36	PAILLACO	P-90-R	6.8	Simple Timber Beam		10		
8-37	EL AGRIO	Q-95	7.4	2 Span Simple Timber Beam		10		
8-38	EL CHERCAN	Q-95	4.0	Simple Timber Beam		5		

BRIDGE NO.	BRIDGE NAME	ROAD NO.	BRIDGE LENGTH(m)	SUPERSTRUCTURE TYPE 1	SUPERSTRUCTURE TYPE 2	LOAD LIMIT(t)	CURB TO CURB WIDTH(m)	TOTAL BRIDGE RATING
8-39	PEAASBLANCAS	Q-95	22.1	2 Span Simple Timber Beam				
8-40	MICHUQUEN	Q-860	30.2	4 Span Simple Timber Beam		10		
8-41	TRIQUILEMU	Q-80	22.6	3 Span Simple Timber Beam		10		
8-42	CHUMULCO	Q-80	9.7	Simple Timber Beam		10		
8-43	MALVEN	Q-80	7.5	Simple Timber Beam				
8-44	SALTO DEL REHUEN	Q-95	6.4	Simple Timber Beam		5		
8-45	QUILLEHUA	Q-95	59.7	5 Span Simple Timber Beam		10		
8-46	RENAICO	Q-95						

Table (2) In Region IX

BRIDGE NO.	BRIDGE NAME	ROAD NO.	BRIDGE LENGTH(m)	SUPERSTRUCTURE TYPE 1	SUPERSTRUCTURE TYPE 2	LOAD LIMIT(t)	CURB TO CURB WIDTH(m)	TOTAL BRIDGE RATING
9-27	EL CRISTO	S-841	26,0	Simple Timber Beam		6	3,50	1
9-91	COLLIN	R-203	21,8	5 Span Simple Timber Beam			3,76	1
9-79	LA ISLA	R-456	36,7	4 Span Simple Timber Beam		1	3,50	1
9-63	MALLECO	[illegible]-551	32,2	3 Span Simple Timber Beam		4	3,70	1
9-87	TRAHUILCO	R-925	39,7	2 Span Cont. Timber Beam	4 Span Cont. Steel I Beam	12	3,80	1
9-99	POCULON	R-666	31,0	4 Span Simple Timber Beam		0	1,85	1
9-61	CATALINA N°1	R-400	20,5	4 Span Simple Timber Beam		8	4,00	2
9-62	PELEHUITO	R-400	17,8	2 Span Simple Timber Beam		8	2,80	2
9-74	TOLPAN	R-130	93,4	2 Span Simple Steel I Beam	2 Span Cont. Steel I Beam	10	3,20	2
9-66	QUINQUEN	R-360	36,1	3 Span Cont. Timber Beam		6	3,80	2
9-58	REHUE	R-400	30,1	3 Span Simple Timber Beam		8	3,80	2
9-69	MIRAFLORES	R-260	44,4	5 Span Simple Timber Beam		10	3,60	2
9-70	LA OBRA	R-260	10,4	2 Span Cont. Timber Beam		5	3,40	2
9-71	CALLIN	R-35	13,6	2 Span Simple Timber Beam		12	4,00	2
9-72	MININCO	R-35	16,3	2 Span Simple Timber Beam		10	4,30	2
9-24	SALVA TU ALMA	S-553	40,7	3 Span Simple Steel I Beam		15	3,77	2
9-37	CHUCAUCO	S-464	17,5	Simple Timber Beam	Simple Rail Beam	8	3,97	2

BRIDGE NO.	BRIDGE NAME	ROAD NO.	BRIDGE LENGTH(m)	SUPERSTRUCTURE TYPE 1	SUPERSTRUCTURE TYPE 2	LOAD LIMIT(t)	CURB TO CURB WIDTH(m)	TOTAL BRIDGE RATING
9-64	NIBLINTO	R-551	33,5	3 Span Simple Timber Beam		8	3,80	2
9-50	HUADABA	R-240	19,9	2 Span Simple Timber Beam		10	3,60	2
9-40	SAN JUAN	S-114	31,6	4 Span Simple Timber Beam		10	4,00	2
9-35	NEGRO	S-464	20,7	3 Span Simple Steel H Beam		8	3,85	2
9-43	ALLIPEN	S-618	9,1	Simple Timber Beam		10	3,60	2
9-44	QUINQUE	S-668	24,8	3 Span Simple Timber Beam		8	4,12	2
9-34	ALLIPEN	S/R	58,0	5 Span Simple Timber Beam		4	3,82	2
9-47	LAS TOSCAS	R-49	10,8	2 Span Simple Timber Beam		6	3,85	2
9-60	CATALINA N°2	R-400	28,9	3 Span Simple Timber Beam		8	3,75	2
9-49	ÑIRECO	R-791	8,2	Simple Steel I Beam		10	3,70	2
9-59	NAPAÑIR	R-400	11,9	2 Span Cont. Timber Beam		8	3,10	2
9-33	ICALMA	R-955	17,9	2 Span Simple Timber Beam		10	3,70	2
9-29	LA BASTILLA	S-485	74,1	Steel Suspension Beam		6	3,97	2
9-54	CHACRE	R-240	20,1	2 Span Simple Timber Beam		10	3,70	2
9-1	DOLLINCO	S-225	24,8	3 Span Simple Timber Beam		8	3,60	2
9-110	PLANCHADO 8	S-90	13,2	2 Span Simple Timber Beam		12	4,00	2
9-21	PEDREGOSO	S-69	38,0	2 Span Simple Steel Box Beam		12	3,85	2
9-48	ÑANCUREO	R-791	14,0	Simple Timber Beam		6	3,00	2
9-13	HUAMAQUI	S-188	19,1	2 Span Simple Timber Beam		8	4,00	2
9-55	VILUCO	R-240	10,0	2 Span Simple Timber Beam		10	3,90	2

BRIDGE NO.	BRIDGE NAME	ROAD NO.	BRIDGE LENGTH(m)	SUPERSTRUCTURE TYPE 1	SUPERSTRUCTURE TYPE 2	LOAD LIMIT(t)	CURB TO CURB WIDTH(m)	TOTAL BRIDGE RAITING
9-95	REÑICO	R-440	20,7	3 Span Simple Timber Beam		8	3,40	2
9-17	POLUL 1	S-605	22,8	3 Span Simple Timber Beam		10	3,90	2
9-15	CHARLEO	S-605	20,4	3 Span Simple Timber Beam		8	3,90	2
9-98	LEALTAD	R-230	63,7	7 Span Simple Timber Beam		10	3,50	2
9-93	PELLOMENCO	R-140	14,1	2 Span Simple Timber Beam		10	4,20	2
9-14	PUMALAL	S-215	32,2	2 Span Simple Timber Beam		2	4,20	2
9-94	LOLEN	R-89	67,0	Timber Suspension Beam		4	2,60	2
9-12	HUECHUCON	S-188	31,1	5 Span Simple Timber Beam			4,10	2
9-105	PLANCHADO 3	S-90	8,0	Simple Timber Beam		12	2,65	2
9-7	EL TIGRE	S-335	19,5	2 Span Simple Timber Beam		8	3,75	2
9-5	PEDREGOSO	S-335	16,5	2 Span Simple Timber Beam			3,20	2
9-3	QUINTRILPE	S-221	10,0	Simple Timber Beam		8	2,90	2
9-2	MUCO BAJO	S-225	34,5	3 Span Simple Timber Beam		6	3,70	2
9-100	LAS MINAS	R-80P	12,5	2 Span Cont. Timber Beam		10	3,70	2
9-19	DONGIL	S-669	44,1	5 Span Simple Timber Beam		12	4,00	2
9-90	EL TRUENO	S-155	43,8	4 Span Simple Timber Beam			3,55	2
9-89	COLORADO	R-925	21,5	2 Span Simple Timber Beam		3	3,75	2
9-20	RINCO	S-669	12,2	2 Span Cont. Steel. I Beam		12	3,85	2
9-88	CAUTIN	R-925	39,4	2 Span Simple Steel I Beam		12	3,85	2
9-86	MALLECO	R-152	92,0	10 Span Simple Timber Beam		8	3,60	2

BRIDGE NO.	BRIDGE NAME	ROAD NO.	BRIDGE LENGTH(m)	SUPERSTRUCTURE TYPE 1	SUPERSTRUCTURE TYPE 2	LOAD LIMIT(t)	CURB TO CURB WIDTH(m)	TOTAL BRIDGE RAITING
9-85	HUILLINCO	R-955	16,7	2 Span Simple Timber Beam		10	4,10	2
9-18	PUYEHUE	S-669	32,1	3 Span Simple Timber Beam		10	4,00	2
9-92	LAS ANIMAS	R-140	24,7	3 Span Simple Timber Beam		15	4,20	2
9-78	HUIÑILHUE	R-730	34,2	4 Span Simple Timber Beam			4,20	2
9-80	DUMO	R-560	32,9	3 Span Simple Timber Beam		12	3,97	2
9-81	AMANTIBLE	R-755	18,2	3 Span Simple Timber Beam		12	3,50	2
9-82	CORCOLUDO	R-755	13,8	2 Span Simple Timber Beam		8	3,70	2
9-36	PELALES	S-464	15,8	2 Span Simple Steel H Beam		8	3,92	3
9-9	EL SALTO	S-335	11,7	Simple Timber Beam		6	3,50	3
9-28	CARHUELLO	S-841	21,9	2 Span Simple Timber Beam		8	3,91	3
9-26	CRUCES	S-803	20,0	2 Span Simple Timber Beam		8	5,70	3
9-32	MEDINA	S-539	170,0	6 Span Simple Steel I Beam		8	3,97	3
9-22	LONG LONG	S-69	15,1	2 Span Simple Timber Beam		10	3,95	3
9-25	COLLICO	S-803	9,6	Simple Timber Beam		4	4,04	3
9-77	RUCANUCO	R-955	22,8	2 Span Simple Timber Beam		4	3,60	3
9-109	PLANCHADO 7	S-90	14,8	2 Span Simple Timber Beam		12	3,50	3
9-108	PLANCHADO 6	S-90	8,9	Simple Timber beam		12	3,95	3
9-107	PLANCHADO 5	S-90	10,0	Simple Timber Beam		12	2,70	3
9-106	PLANCHADO 4	S-90	11,3	Simple Timber Beam		12	2,84	3
9-104	PLANCHADO 2	S-90	9,6	Simple Timber Beam		12	4,00	3

BRIDGE NO.	BRIDGE NAME	ROAD NO.	BRIDGE LENGTH(m)	SUPERSTRUCTURE TYPE 1	SUPERSTRUCTURE TYPE 2	LOAD LIMIT(t)	CURB TO CURB WIDTH(m)	TOTAL BRIDGE RATING
9-103	PLANCHADO 1	S-90	7,2	Simple Timber Beam		12	4,00	3
9-97	PUNTA NEGRA 2	R-963	28,8	3 Span Simple Timber Beam		18	3,55	3
9-83	SANTA RITA	R-755	11,7	Simple Timber Beam		8	3,80	3
9-75	LOS SOLDADOS	R-955	10,0	Simple Timber Beam		8	3,35	3
9-68	EL MANZANO	R-150P	15,4	Simple Timber Beam		10	4,00	3
9-67	VEGAS BLANCAS	R-150P	8,0	Simple Timber Beam		10	3,40	3
9-42	PUYEHUE	S-618	8,4	Simple Timber Beam		10	4,00	3
9-56	RANQUILEO	R-444	15,3	2 Span Simple Timber Beam		10	3,60	3
9-39	BOROA	S-464	15,9	2 Span Simple Timber Beam		12	3,75	3
9-41	LONCOYAMO	S-114	18,0	2 Span Simple Timber Beam		12	3,84	3
9-53	ÑATO	R-240	28,4	3 Span Simple Timber Beam		12	3,80	3
9-84	DILLO	R761	10,0	Simple Timber Beam		8	4,60	3
9-51	AGUA SANTA	R-240	15,5	2 Span Simple Timber Beam		12	3,80	3
9-46	MAHUIDANCHE	S-686	36,4	4 Span Simple Timber Beam		10	4,00	3
9-10	LAN 1	S-031	21,8	3 Span Simple Timber Beam		10	3,60	4
9-8	CHOME 2	S-335	10,0	Simple Timber Beam		12	3,20	4
9-11	LAN 2	S-031	8,8	Simple Timber Beam		8	3,95	4
9-4	LLAMUCO	S-335	22,0	Simple Steel H Beam		12	4,0	4
9-38	FIN FIN	S-464	10,0	2 Span Cont. Timber Beam		8	4,00	4
9-76	MIRAFLORES	R-955	19,7	2 Span Simple Timber Beam		6	3,90	4

BRIDGE NO.	BRIDGE NAME	ROAD NO.	BRIDGE LENGTH(m)	SUPERSTRUCTURE TYPE 1	SUPERSTRUCTURE TYPE 2	LOAD LIMIT(t)	CURB TO CURB WIDTH(m)	TOTAL BRIDGE RATING
9-6	CALBUCO	S-335	13,0	2 Span Simple Timber Beam		8	3,55	4
9-101	MALLA	S-39	10,0	Simple Timber Beam		12	4,00	5
9-102	PUELLO	S-39	14,5	2 Span Simple Timber Beam		6	3,50	5
9-65	HUILLINLEBU	R-825	12,0	Simple Timber Beam		8	3,50	5
9-31	HUICAHUE	S-389	33,0	4 Span Simple Timber Beam		10	3,70	5
9-16	LAS LUMAS	S-605	13,1	2 Span Simple Timber Beam		6	3,90	5
9-96	PUNTA NEGRA 1	R-963	28,6	3 Span Simple Timber Beam		18	3,50	5
9-57	HULLINLEBU	R-823	10,4	Simple Timber Beam		12	4,20	5
9-30	CODULTO	S-389	10,8	Simple Timber Beam		8	4,00	5
9-23	QUEBRADA HONDA	S-65	18,0	Simple Steel I Beam		12	3,52	5
9-73	ÑANCO	R-35	14,4	2 Span Simple Timber Beam		10	4,20	5
9-52	PINGUIDAHUE	R-240	11,0	Simple Timber Beam		12	3,40	5

Table (3) In Region X

BRIDGE NO.	BRIDGE NAME	ROAD NO.	BRIDGE LENGTH(m)	SUPERSTRUCTURE TYPE 1	SUPERSTRUCTURE TYPE 2	LOAD LIMIT(t)	CURB TO CURB WIDTH(m)	TOTAL BRIDGE RAITING
10-01	SAN JOSE N°1	R/URB	115.4	6 Span Cont. Concrete Beam		5		
10-02	SAN JOSE N°2	R/URB	30.3	3 Span Cont. Concrete Beam		5		
10-03	LLOLLELHUE	R/URB						
10-04	RUCAPICHIO N°3	S/ROL	20.5	2 Span Simple Timber Beam		1		
10-05	QUILLEN	T-120	33.4	4 Span Simple Timber Beam		6		
10-06	MANUEL RODRIGUEZ	T-120	51.4	6 Span Simple Timber Beam		10		
10-07	PUROLON	T-175	37.0	2 Span Simple Steel I Beam		18		
10-08	EL AROMO	T-282	10.0	2 Span Cont. Tember Beam		8		
10-09	QUILGUEN	T-282	17.4	2 Span Simple Timber Beam		2		
10-10	CHAN CHAN	T-29	40.1	4 Span Simple Timber Beam		10		
10-11	S/N	T-29	21.6	3 Span Simple Timber Beam		10		
10-12	S/N	T-29	9.5	Simple Timber Beam		8		
10-13	ALTURA PAZA	T-29	25.0	3 Span Simple Timber Beam		12		
10-14	PAZA N°2	T-29	10.5	Simple Timber Beam		12		
10-15	PAZA N°1	T-29	12.0	2 Span Cont. Timber Beam		10		
10-16	QUILMIO	T-29	100.1	10 Span Simple Timber Beam		12		
10-17	QUILMIO N°2	T-29	11.3	Simple Timber Beam		10		
10-18	QUILMIO N°3	T-29	10.0	Simple Timber Beam		10		
10-19		T-327	9.2	Simple Steel I Beam		8		

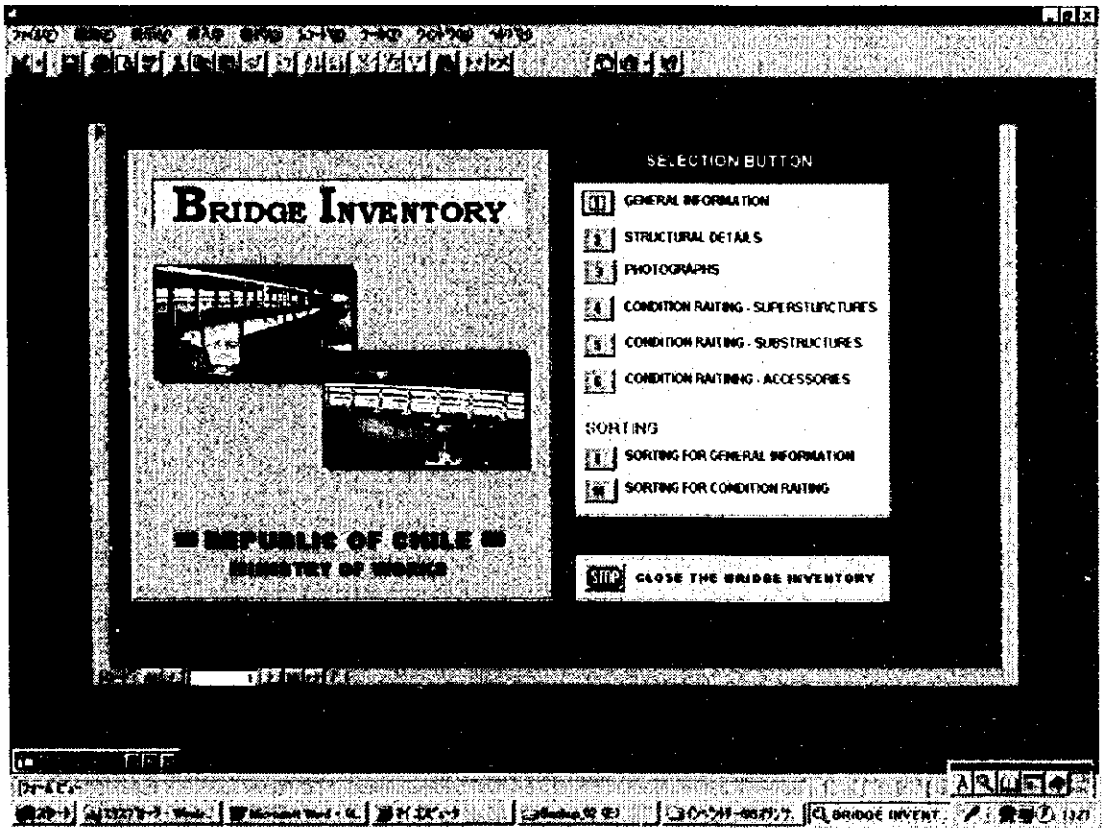
BRIDGE NO.	BRIDGE NAME	ROAD NO.	BRIDGE LENGTH(m)	SUPERSTRUCTURE TYPE 1	SUPERSTRUCTURE TYPE 2	LOAD LIMIT(t)	CURB TO CURB WIDTH(m)	TOTAL BRIDGE RATING
10-20	PUTREGLE	T-345	24.3	3 Span Simple Timber Beam		10		
10-21	MALIHUTO	T-345	20.5	3 Span Simple Timber Beam		10		
10-22	CUICULELFU	T-35	30.2	3 Span Simple Steel H Beam		5		
10-23	CHINCUIN	T-35	10.0	Simple Timber Beam		8		
10-24	COVADONGA	T-361	36.6	4 Span Simple Timber Beam		6		
10-25	QUINCHILCA	T-39	140.8	7 Span Cont. Concrete Beam		5		
10-26	RIÑIHUE	T-45	18.0	2 Span Simple Timber Beam		10		
10-27	OROSCO	T-45	24.5	4 Span Simple Timber Beam		6		
10-28	QUISEUCO	T-45	32.0	Simple Steel I Beam		18		
10-29	MAE	T-45	15.7	2 Span Simple Timber Beam		8		
10-30	RUCANAHUEL	T-45	27.2	Simple Steel I Beam		1		
10-31	FUTA	T-450	70.48	4 Span Simple Steel I Beam		18		
10-32	LAS MINAS	T-450	11.6	2 Span Simple Timber Beam		8		
10-33	NAGUILAN	T-450	160.0	8 Span Simple Steel I Beam		18		
10-34	CATRILELFU	T-450	29.8	3 Span Simple Timber Beam		4		
10-35	SAN PEDRO	T-450	21.9	3 Span Simple Timber Beam		8		
10-36	SAN JUAN N°2	T-450	23.8	3 Span Simple Timber Beam		4		
10-37	PELLAIFA	T-201	45.2	5 Span Simple Timber Beam		12		
10-38	LLANCAHUE	T-201	50.0	Simple Timber Beam	2 Span Simple Steel I Beam	18		
10-39	AÑIQUE N°1	T-201	15.0	Timber Rigid Beam		12		
10-40	AÑIQUE N°2	T-201	16.0	2 Span Simple Timber Beam		18		

BRIDGE NO.	BRIDGE NAME	ROAD NO.	BRIDGE LENGTH(m)	SUPERSTRUCTURE TYPE 1	SUPERSTRUCTURE TYPE 2	LOAD LIMIT(t)	CURB TO CURB WIDTH(m)	TOTAL BRIDGE RATING
10-41	MALIHUE	T-201	12.5	2 Span Simple Timber Beam		18		
10-42	MANIO	T-201	21.3	2 Span Simple Timber Beam		12		
10-43	PEYEHUEICO N°1	T-201	10.0	Simple Timber Beam		12		
10-44	REYEHUEICO N°2	T-201	27.7	3 Span Simple Timber Beam		12		
10-45	BLANCO	T-201	35.3	Timber Rigid Beam		12		
10-46	HUANEHUE	T-203	56.0	7 Span Simple Timber Beam		18		
10-47	PUÑIR	T-203	36.1	4 Span Simple Timber Beam		18		
10-48	LLANQUIHUE	T-203	30.3	3 Span Simple Timber Beam	Simple Steel I Beam	18		
10-49		T-203	26.0	3 Span Simple Timber Beam				
10-50	LINGUE	T-210				10		

APPENDIX I-3

BRIDGE INVENTORY PROGRAM

MENU (Initial Display)



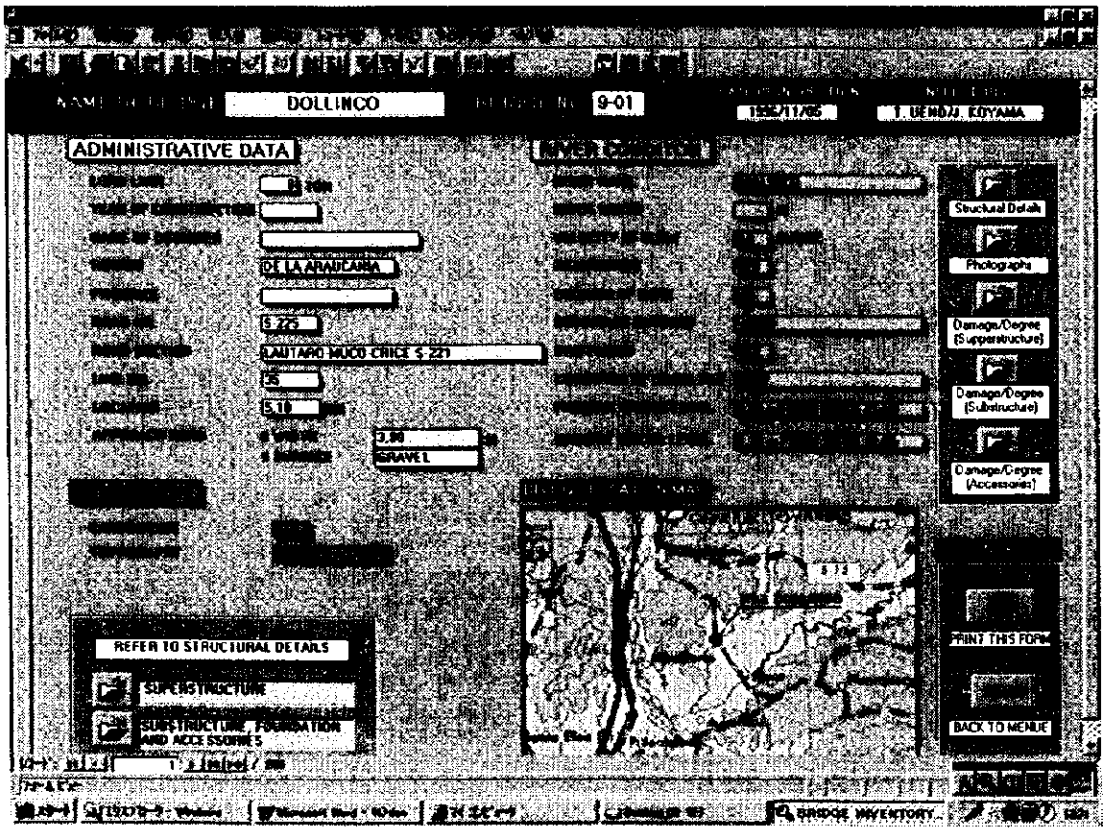
The Program starts by clicking the "short-cut Access" icon on the Windows 95 desk-top screen to show the initial display. Then, user can select button to go to any form. To finish the Program, click "STOP" icon.

To [A] Inventory System	1. General Information
	2. Structural Details
	3. Photographs
To [B] Condition Rating System	4. Condition Rating - Superstructure
	5. Condition Rating - Substructure
	6. Condition Rating – Accessories
To [C] Sorting System	I. Sorting for General Information
	II. Sorting for Condition Rating

The guideline for data is explained in Appendix I-1.

[A] Inventory System

1. General Information



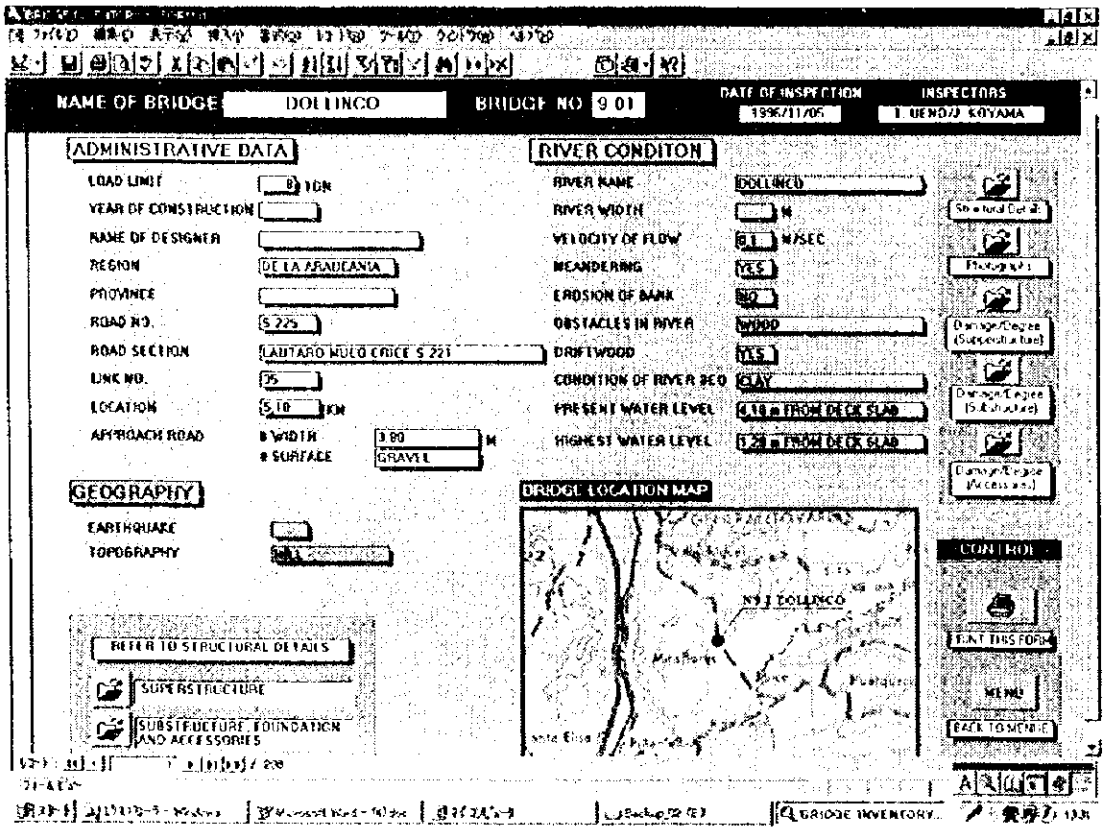
This form gives administrative, geographical and river condition data regarding to the bridge together with location map.

The form contains the following data:

- Administrative Data
  Load Limit, Year of construction, Name of Designer, Region, Road No., Road Section, Link No., Location and Approach Road (Width and Surface Condition)
- Geography
  Earthquake, Topography
- River Condition
  River Name, River Width, Velocity of Flow, Meandering, Erosion of Bank, Obstacles in River, Driftwood, condition of River Bed, Present Water Level and Highest Water Level

[A] Inventory System

1. General Information



This form gives administrative, geographical and river condition data regarding to the bridge together with location map.

The form contains the following data:

1) Administrative Data

   Load Limit, Year of construction, Name of Designer, Region, Road No., Road Section, Link No., Location and Approach Road (Width and Surface Condition)

2) Geography

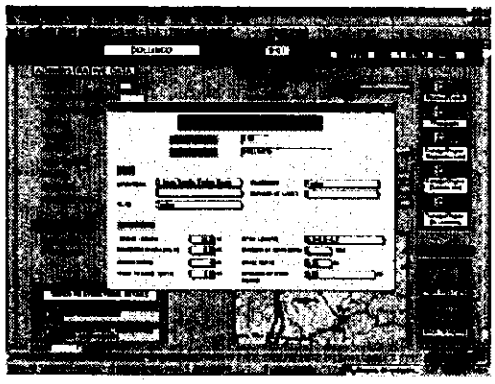
   Earthquake, Topography

3) River Condition

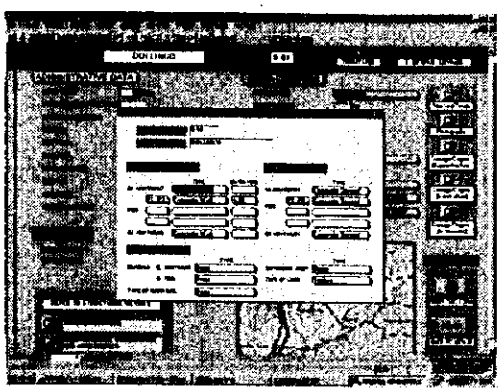
   River Name, River Width, Velocity of Flow, Meandering, Erosion of Bank, Obstacles in River, Driftwood, condition of River Bed, Present Water Level and Highest Water Level

Pop-up Form

During operating this form, to refer to structural details, by clicking the structural detail button, the following pop-up forms come out. However, user can not input nor modify data on these pop-up forms.

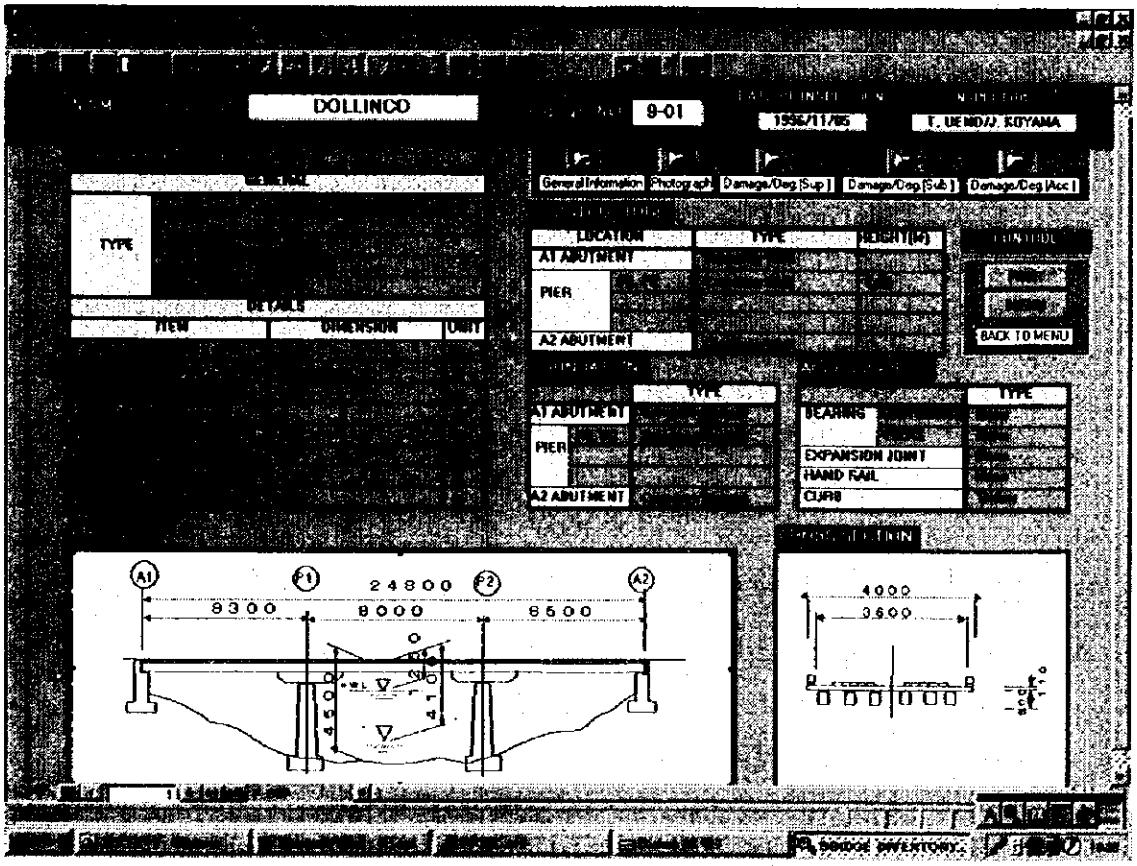


Pop-up Form for Superstructure



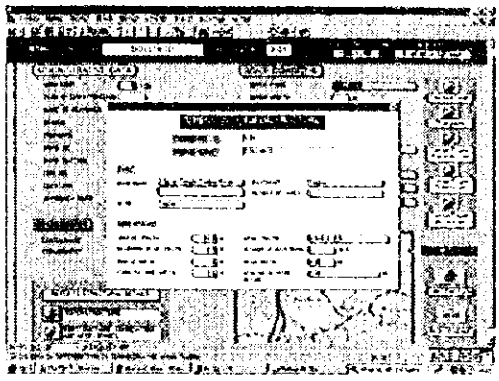
Pop-up Form for Substructure

2. Structural Details

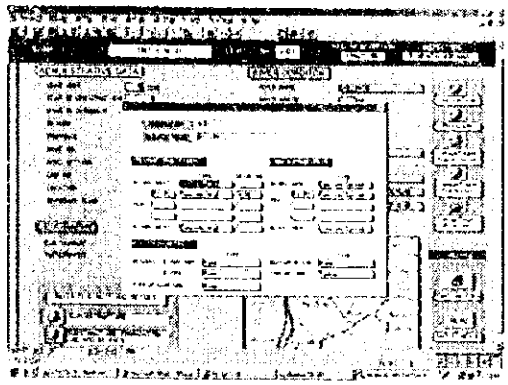


Pop-up Form

During operating this form, to refer to structural details, by clicking the structural detail button, the following pop-up forms come out. However, user can not input nor modify data on these pop-up forms.

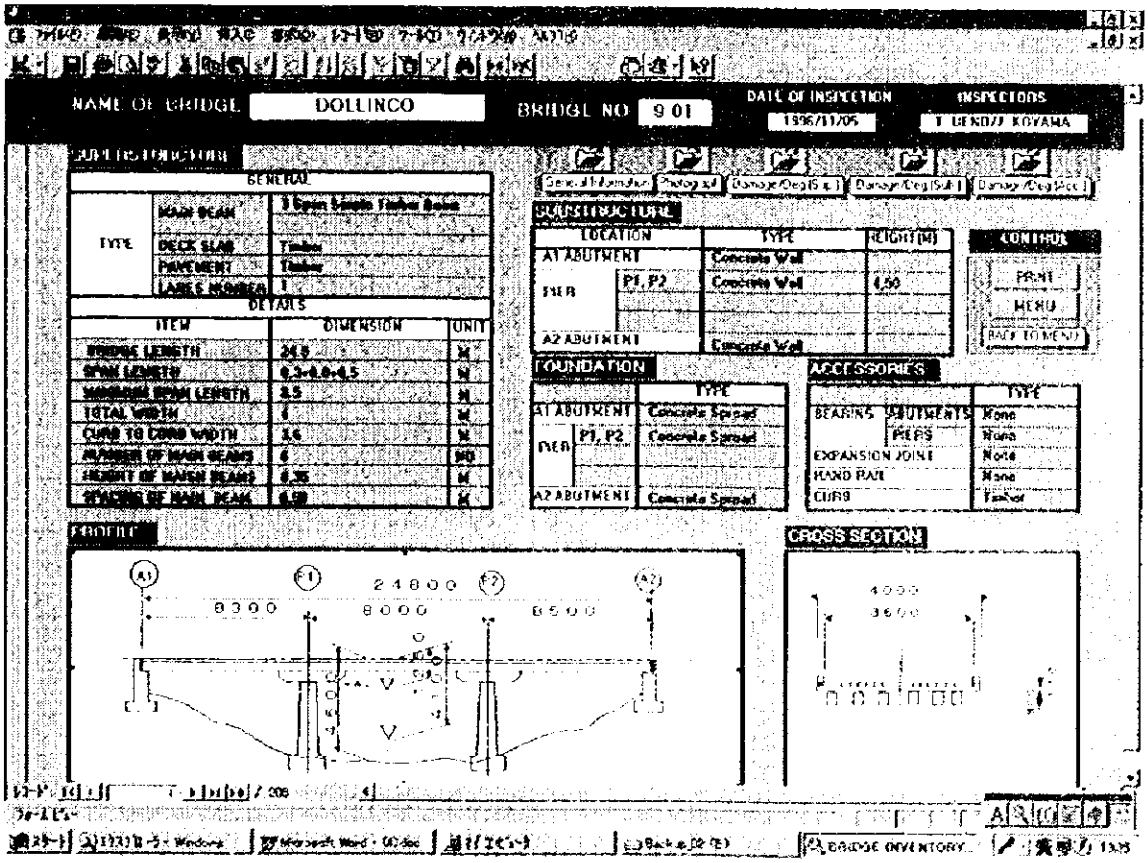


Pop-up Form for Superstructure



Pop-up Form for Substructure

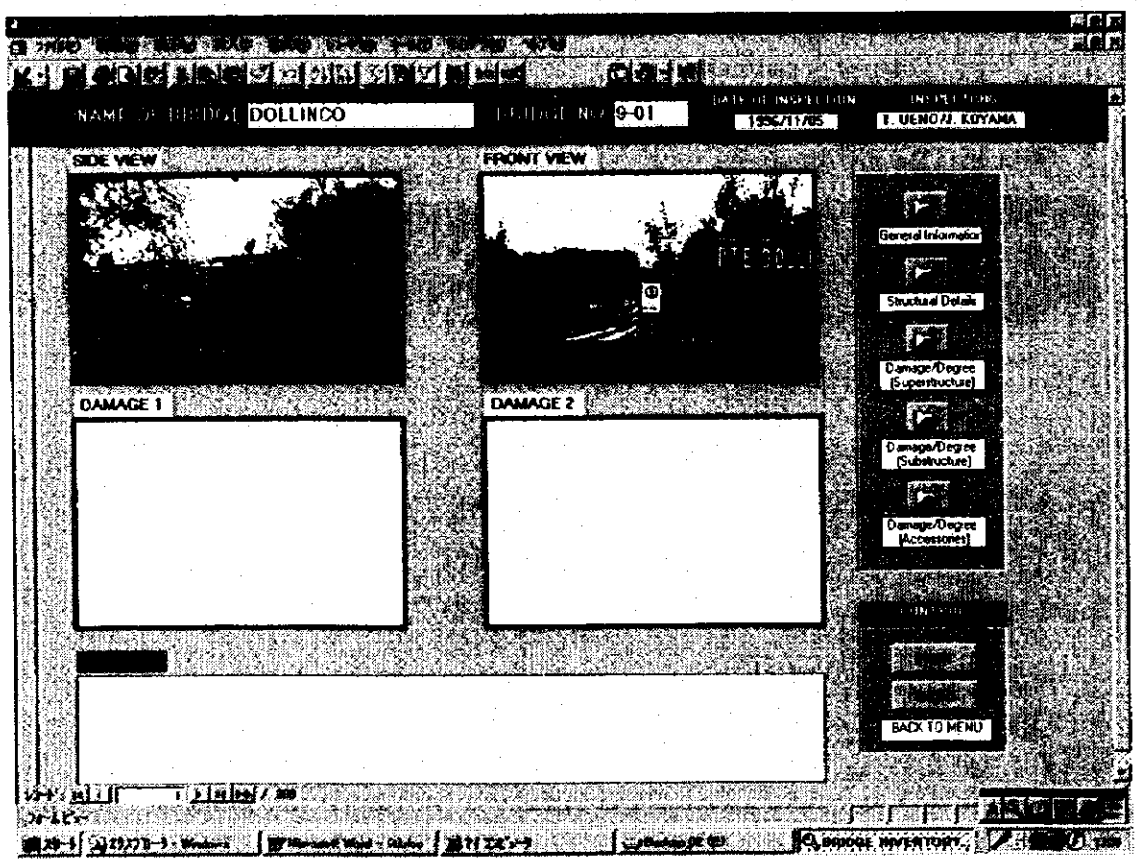
2. Structural Details



This form inputs the following structural data:

- General and Details of Superstructure :
  Main Beam, Deck Slab, Pavement, Number of Lane
  Bridge Length, span Length, Maximum span Length,
  Total Width, Curb to Curb Length, Number of Main beam,
  Main Beam Depth, Spacing of Main Beam
- General and Details of Substructure :
  Location, Type and Height
- Foundation : Type
- Accessories : Bearing, Expansion Joint, Hand Railing, Curb

3. Photographs



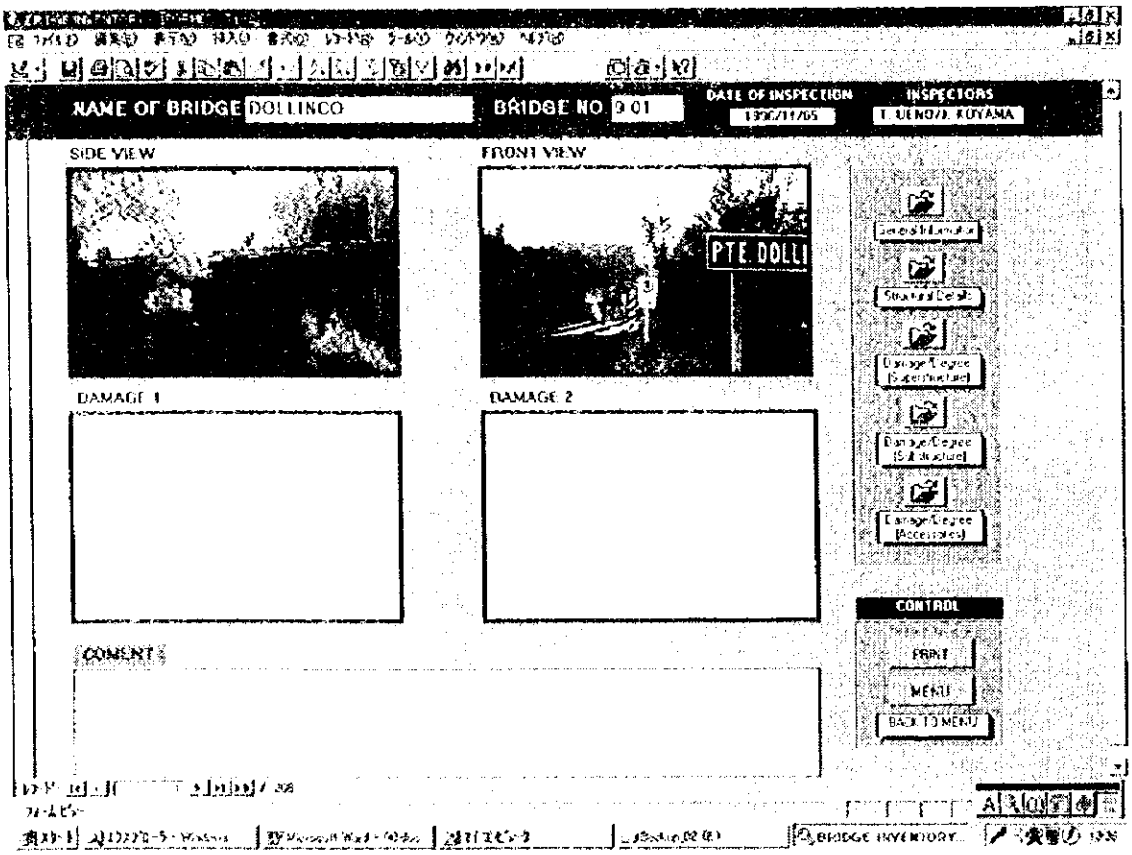
This form contains photographs of side view, front view, and damages of the bridge.

Any problem or damage condition of the bridge is to be noted on the comment space.

This form inputs the following structural data:

- [] General and Details of Superstructure :
  Main Beam, Deck Slab, Pavement, Number of Lane
  Bridge Length, span Length, Maximum span Length,
  Total Width, Curb to Curb Length, Number of Main beam,
  Main Beam Depth, Spacing of Main Beam
- [] General and Details of Substructure :
  Location, Type and Height
- [] Foundation : Type
- [] Accessories : Bearing, Expansion Joint, Hand Railing, Curb

3. Photographs

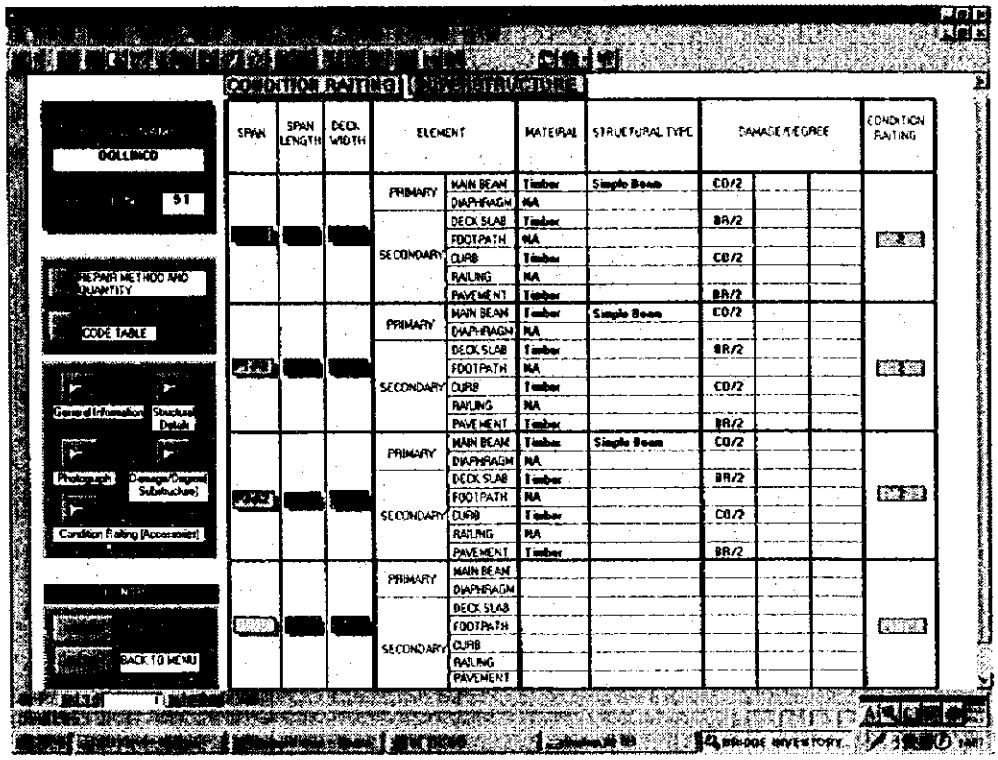


This form contains photographs of side view, front view, and damages of the bridge.

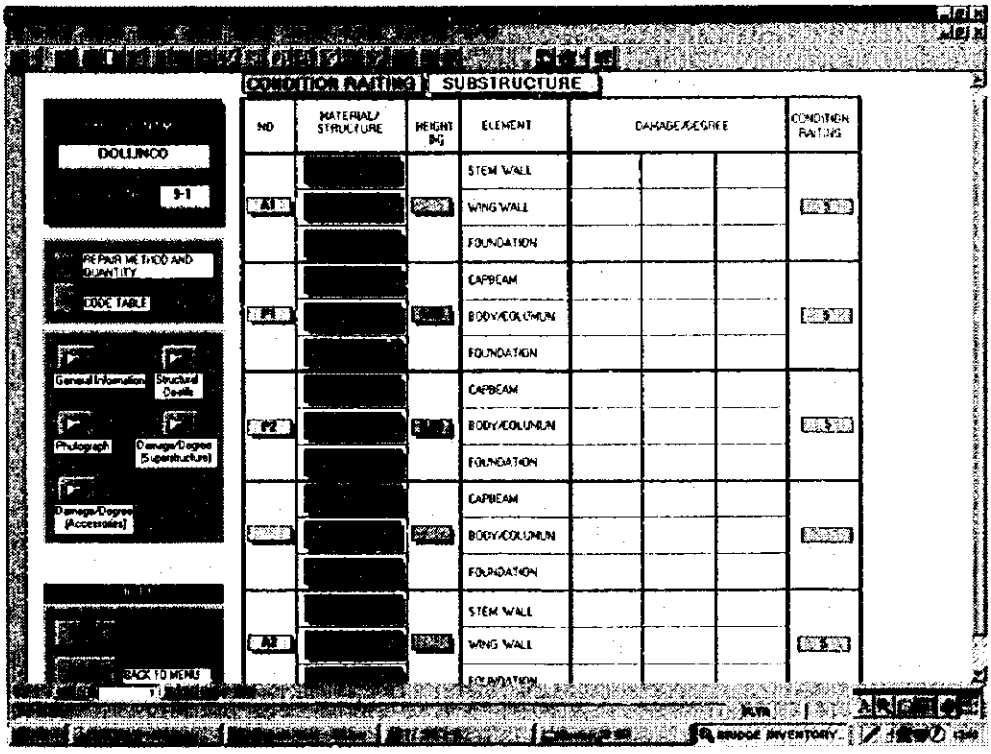
Any problem or damage condition of the bridge is to be noted on the comment space.

[B] Condition Rating System

4. Superstructure

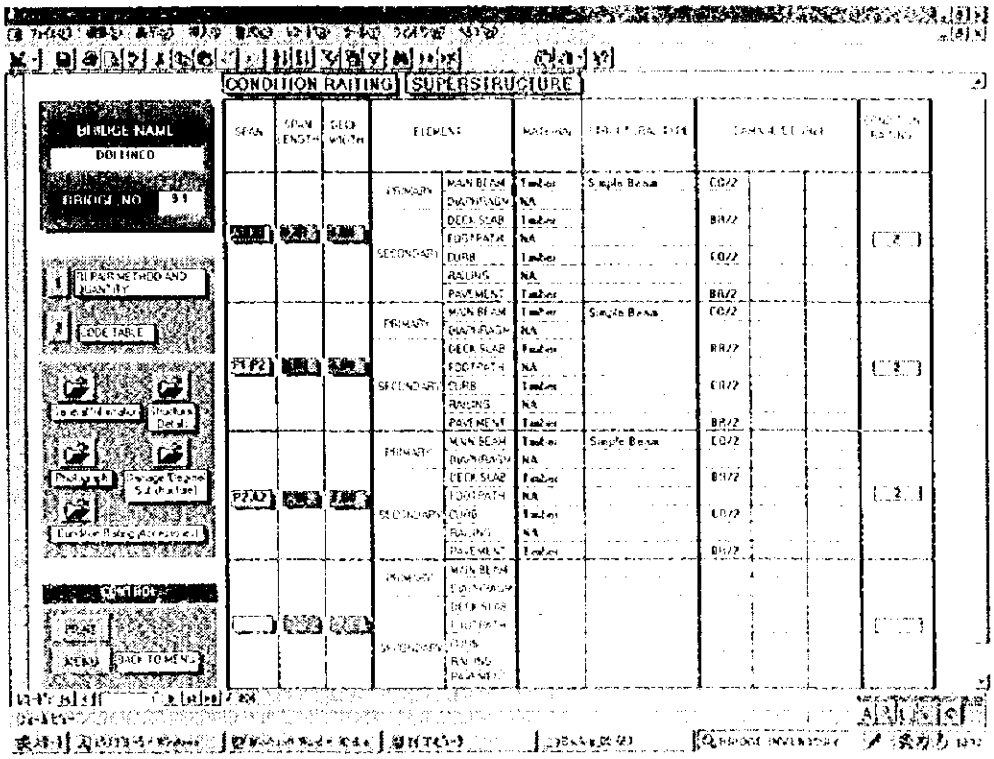


5. Substructure

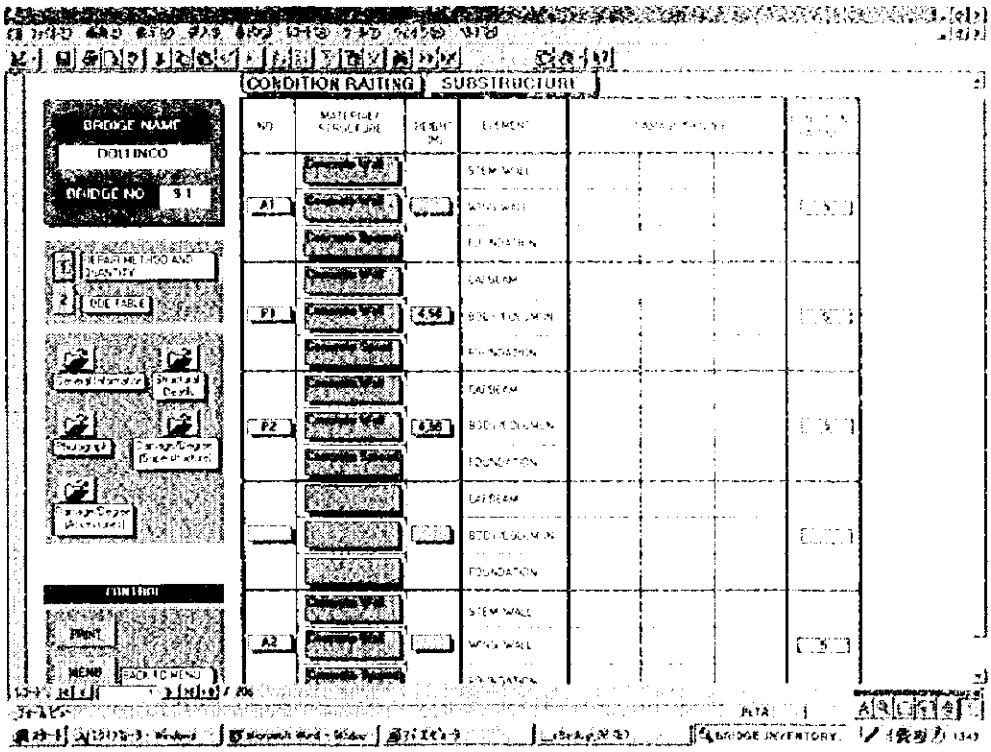


[B] Condition Rating System

4. Superstructure

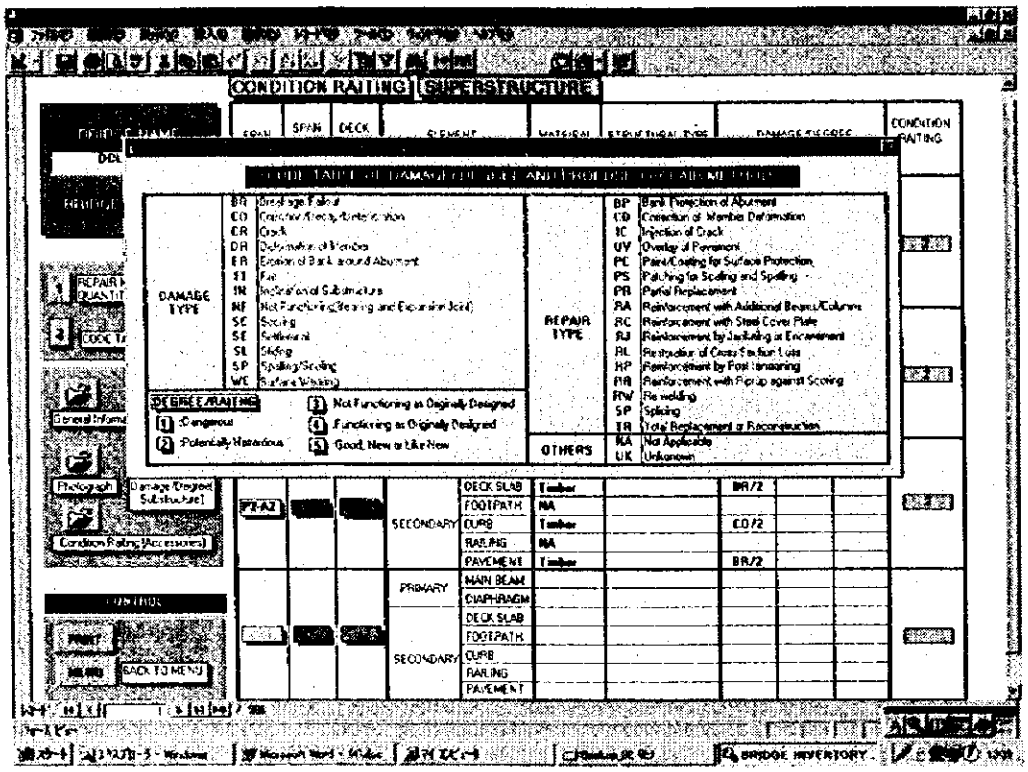


5. Substructure



These forms input kinds and degrees of damages inspected referring to the code table:

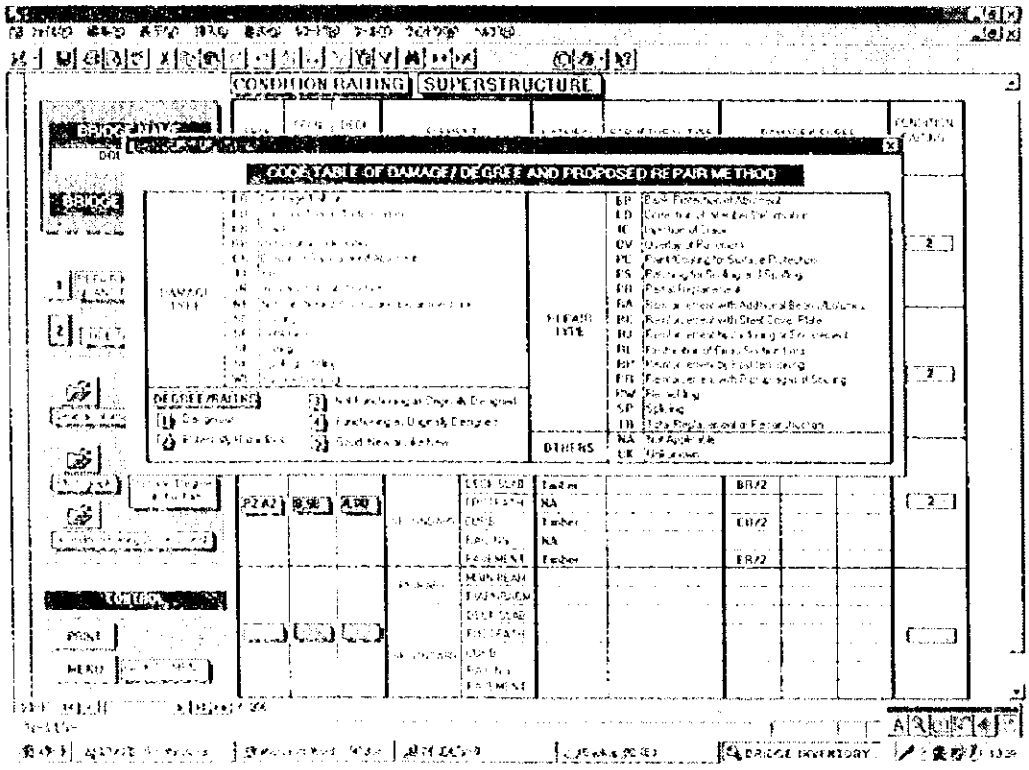
To refer to the code table, click the "Code Table" button.



Pop-up Form for Code Table

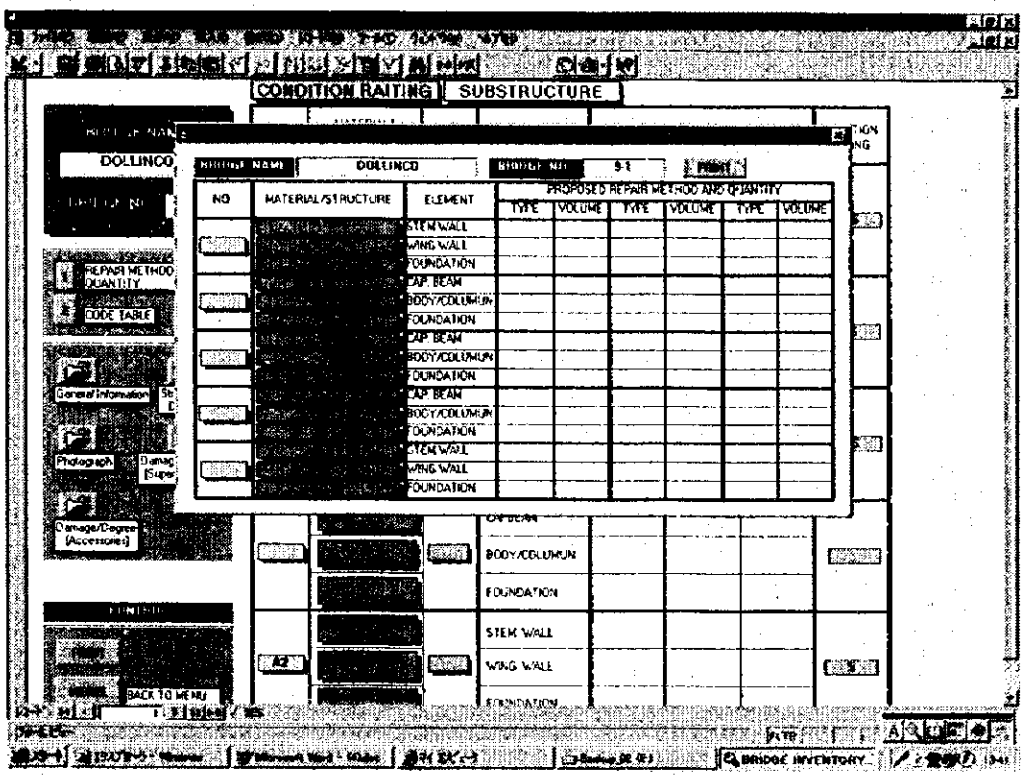
These forms input kinds and degrees of damages inspected referring to the code table:

To refer to the code table, click the "Code Table" button.



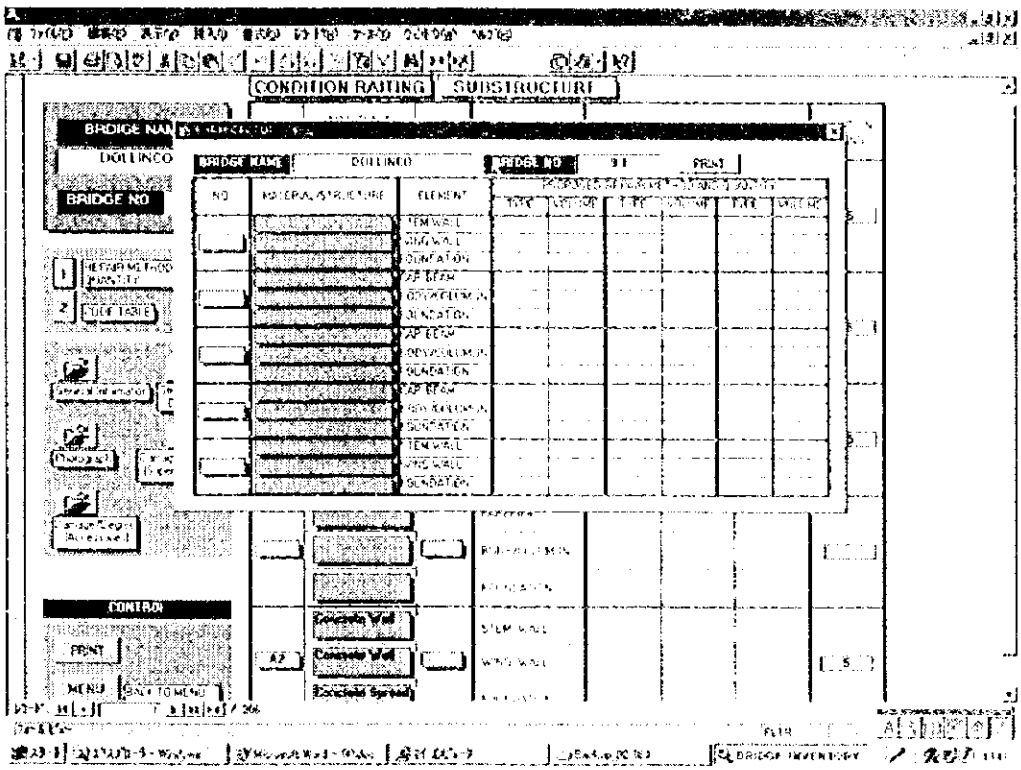
Pop-up Form for Code Table

To input repair method and quantity, click the "Repair Method and Quantity" button. Repair method is input by repair code given in the code table.



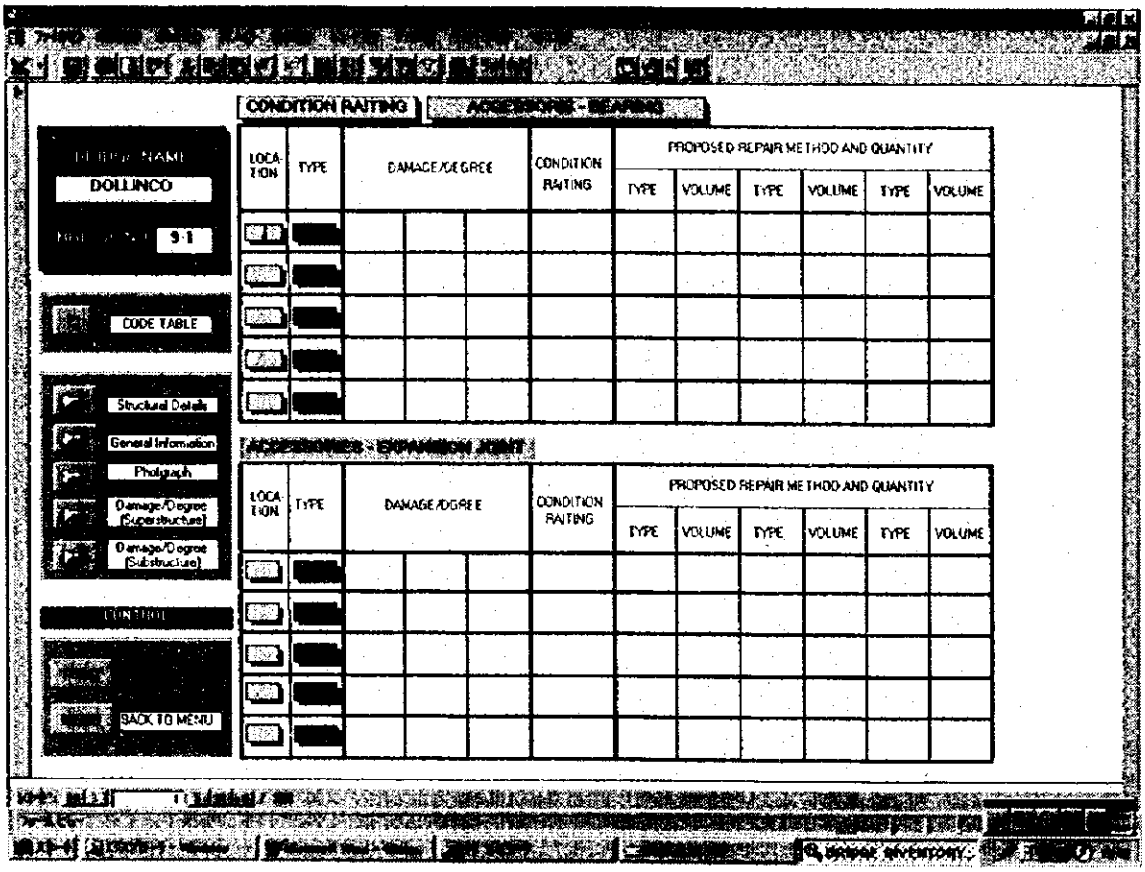
Pop-up Forms for Repair Method and Quantity

To input repair method and quantity, click the "Repair Method and Quantity" button. Repair method is input by repair code given in the code table.



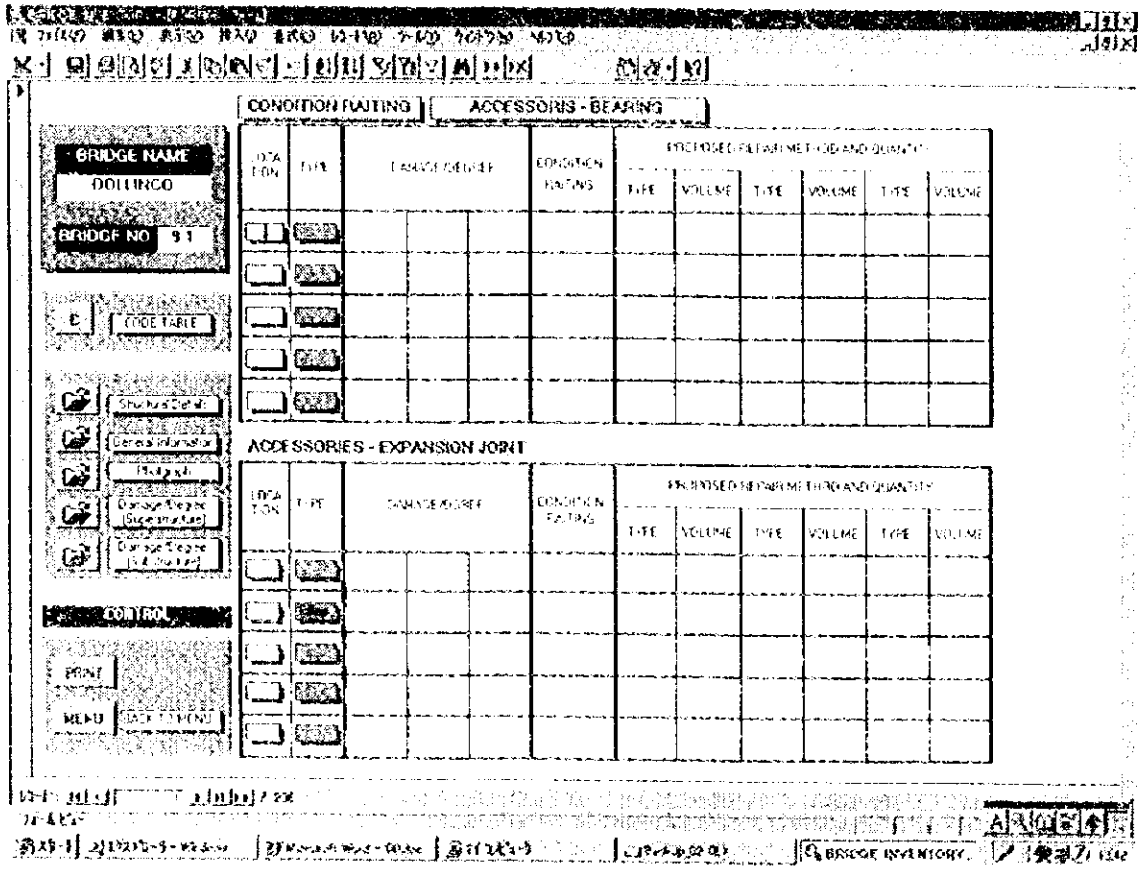
Pop-up Forms for Repair Method and Quantity

6. Accessories



This form includes both of damage code/degree and repair code/quantity for bearing and expansion joint.

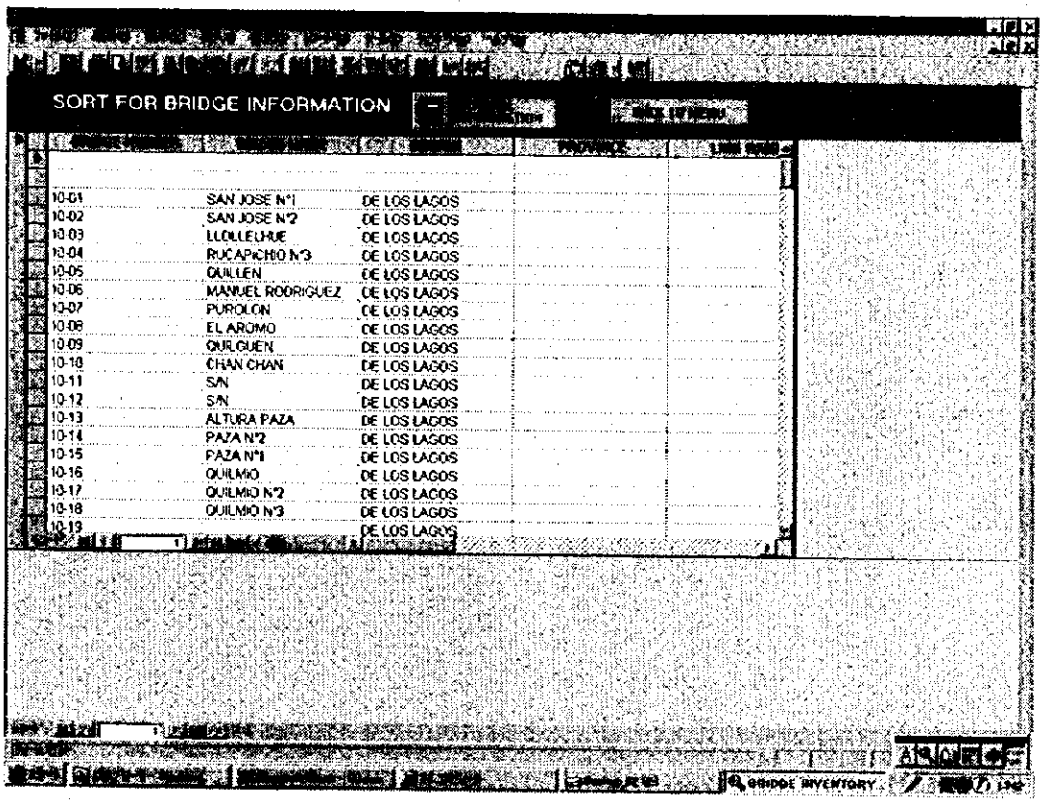
6. Accessories



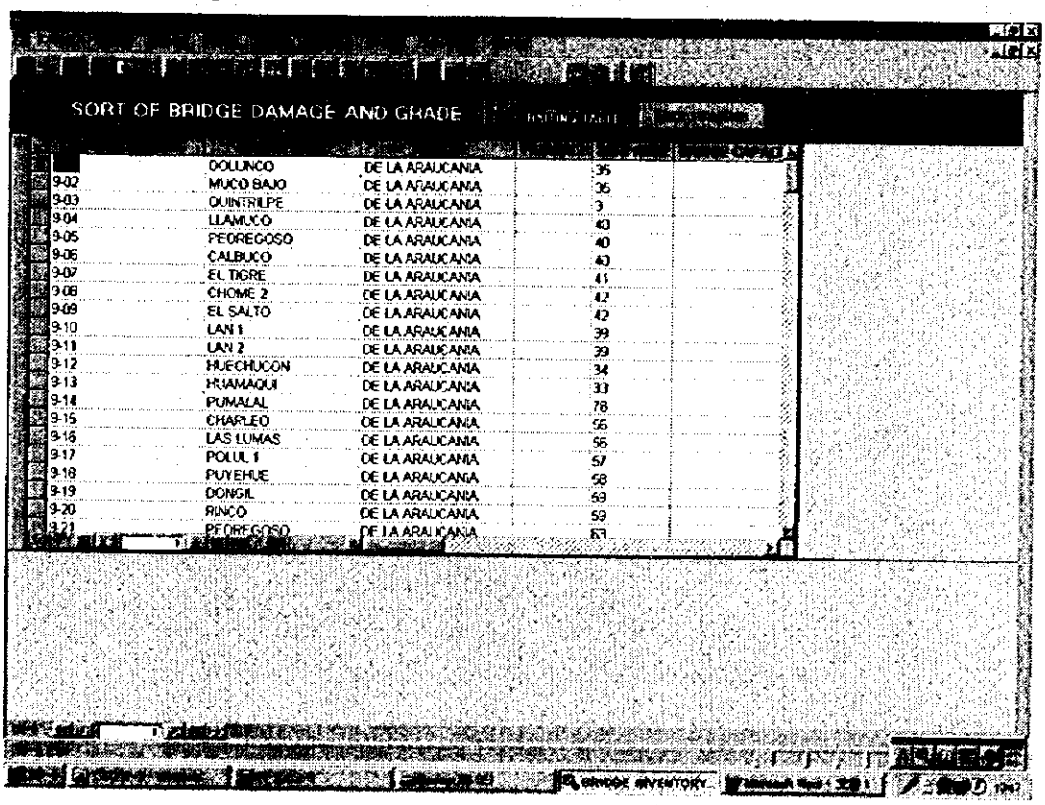
This form includes both of damage code/degree and repair code/quantity for bearing and expansion joint.

[C] Sorting System

I. Sorting for Bridge Information

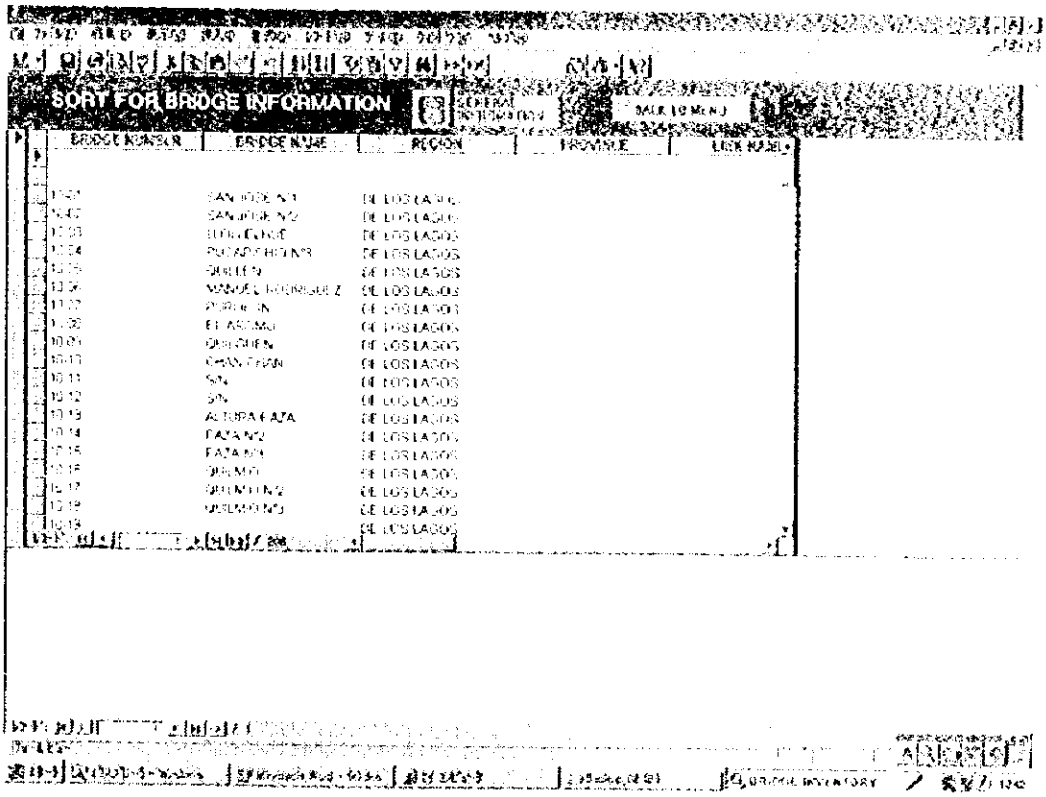


II. Sorting for Rating Condition

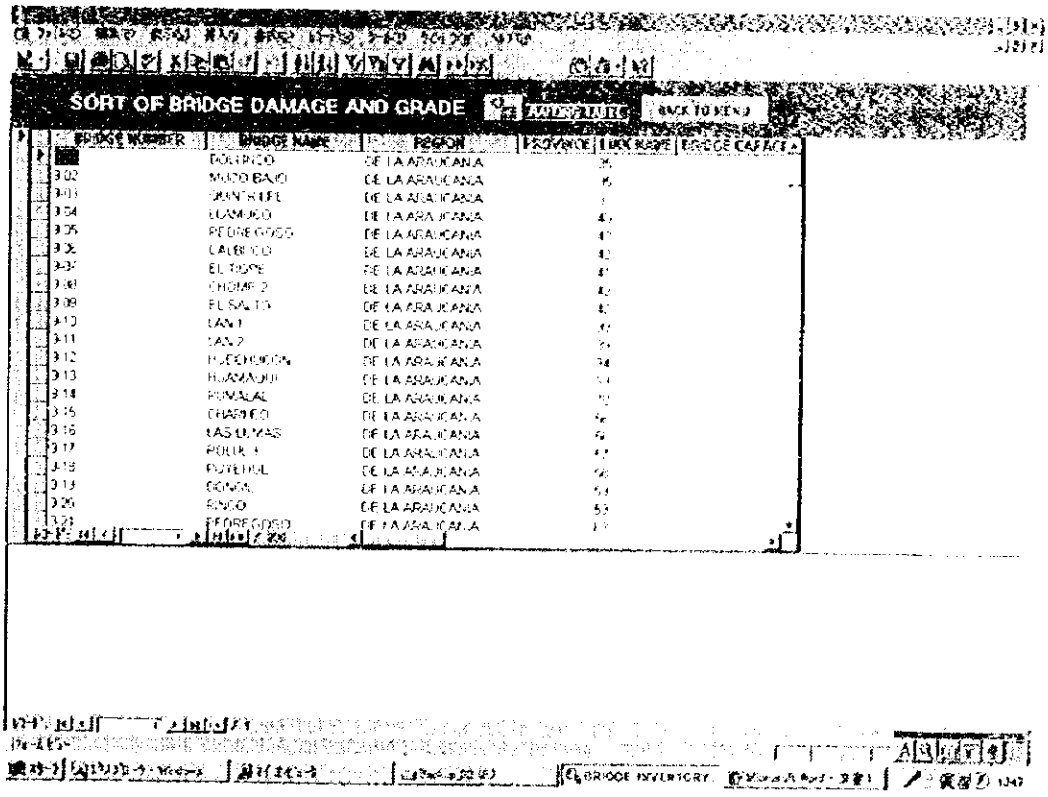


[C] Sorting System

I. Sorting for Bridge Information



II. Sorting for Rating Condition



For bridge information sorting, the following combinations are prepared.

- Bridge Type + Bridge Length + Span Length
- Bridge Type + Bridge Length +Load Limit
- Bridge Type + Region
- Bridge Type + Bridge Width
- Bridge Type + Road No.

This form has "General Information" button, by clicking it, which leads to report style summaries and can be printed.

For condition rating sorting, by clicking "Rating Table" icon, rating tables are given and which can be printed.