* Bridges in "weathering steel" shall be evaluated with the following classification:

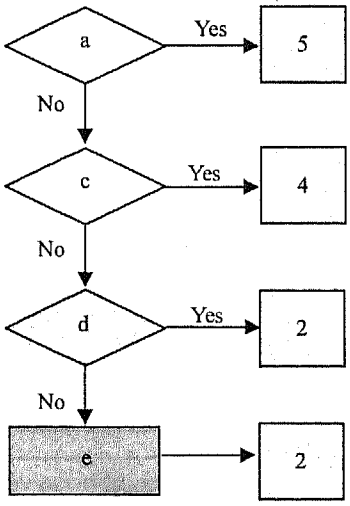
(c) Judgment of CC

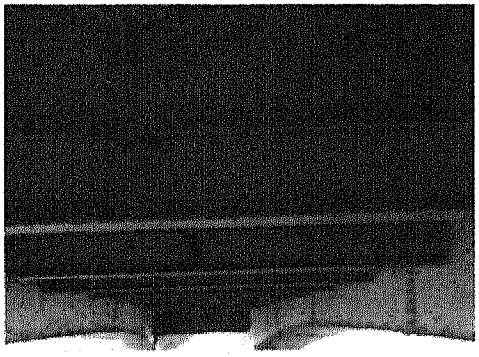
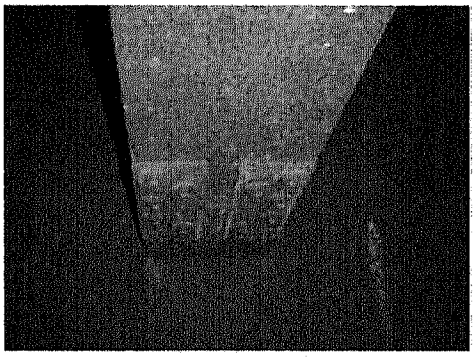
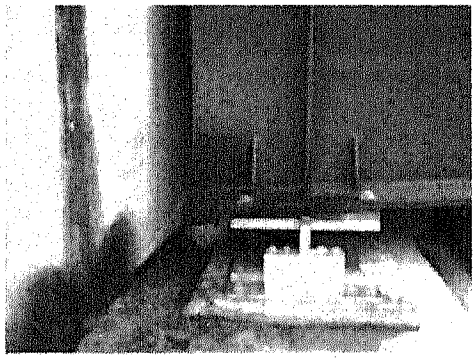
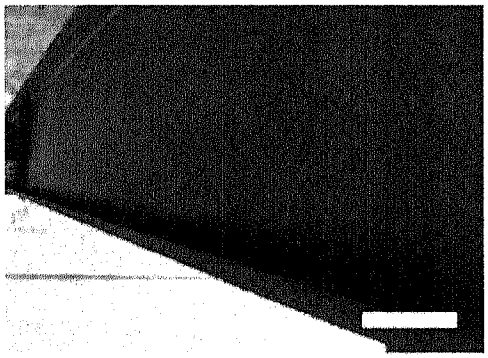
Damage classification	Countermeasure classification

Bridges in "weathering steel" shall be evaluated with the following classification:

Evaluation criteria		Classification
Condition of rust	Extent of rust	
Uniform rust*	-	a
Scaly rust	-	c
Laminated separation, reduction in thickness	Local	d
	Global	e

* Fine rust developed on the surface of weathering steel in the appropriate environment. It includes the general irregular rust constructed after several years (Slightly irregular and disappearing with time) .



Damage level a -> [CC 5]	**Damage level c -> [CC 4]**
	
Globally uniform rust	Scaly rust
Damage level d -> [CC 2]	**Damage level e -> [CC 2]**
	
Locally remarkable rust	Globally laminated separation

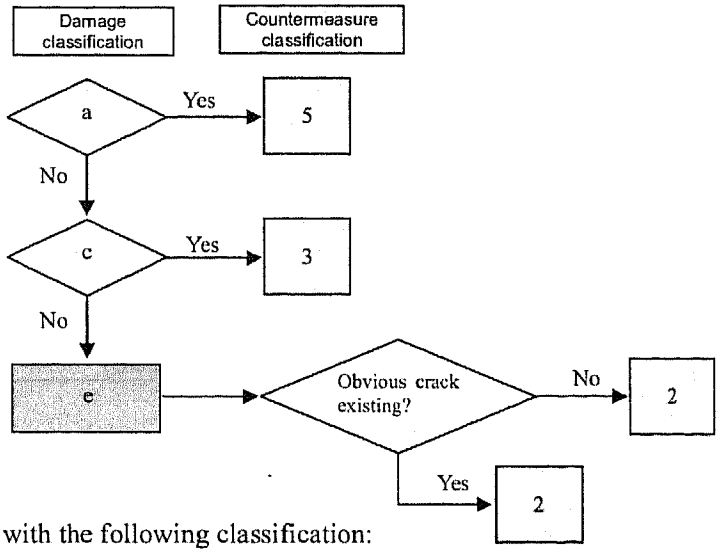
2) Cracking in steel

(a) Inspection area

The existence of cracks in all the members within visually perceptible area shall be inspected approaching close to the girder end area.

As the development of cracks at the welding zone in vicinity of supports, Gerber supports etc. can lead to dangerous condition of bridges, this should be kept in mind.

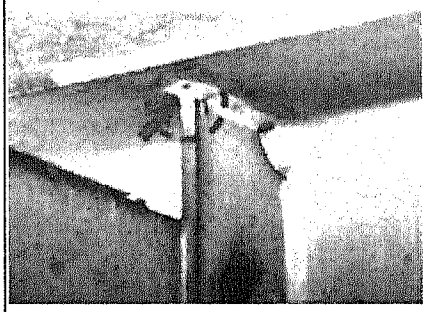
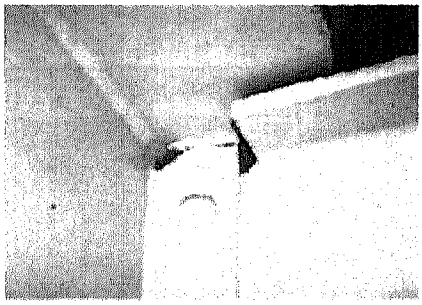
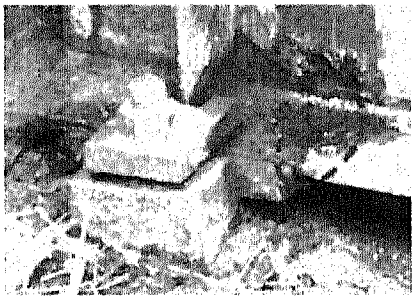
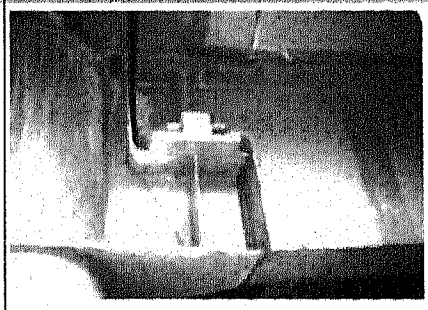
(c) Judgment of CC



(b) Classification of damages

The inspected results shall be evaluated with the following classification:

Evaluation criteria	Classification
No damage	a
Paint cracks in the sudden sectional change or welding connection / Cracks not in a line shape, or a few line cracks with short length	c
Paint cracks potentially to be cracking in steel / Line cracks	e

Damage level c -> [CC 3]	**Damage level c -> [CC 3]**	**Damage level e -> [CC 2]**
		
Extremely short crack	Crack likely to be paint crack	Paint crack undoubtedly to be cracking on the vertical stiffener
Damage level e -> [CC 2]	**Damage level e -> [CC 2]**	**Damage level e -> [CC 2]**
		
Obvious linear crack in the vicinity of the bearing	Crack at the girder end	Crack at the Gerber support

3) Missing bolts

(a) Inspection area

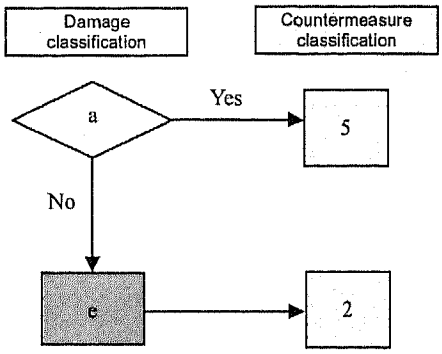
The existence of missing bolts for all the members within visually perceptible area shall be inspected.

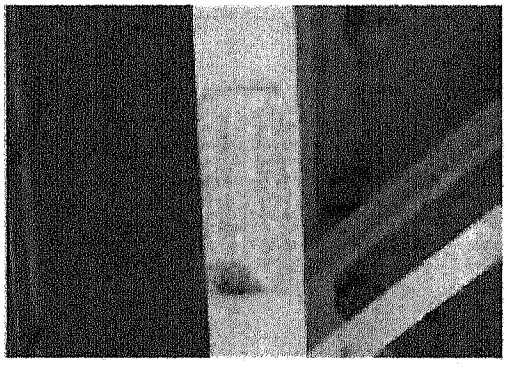
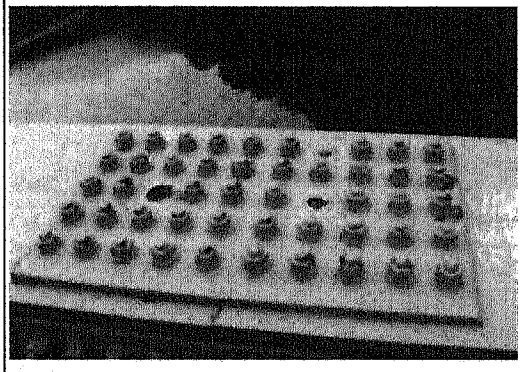
(b) Classification of damages

The inspected results shall be evaluated with the following classification:

Evaluation criteria	Classification
No damage	a
Missing bolts (regardless of number of bolts)	e

(c) Judgment of CC



Damage level e -> [CC 2]	Damage level e -> [CC 2]
	
Missing bolts	Fracture and missing of bolts

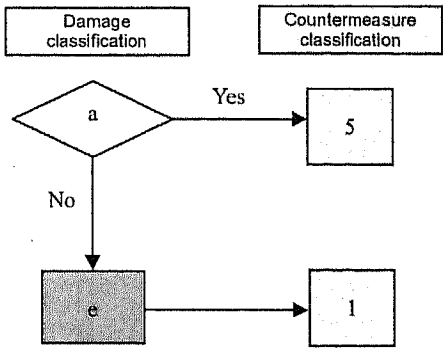
4) Fracture

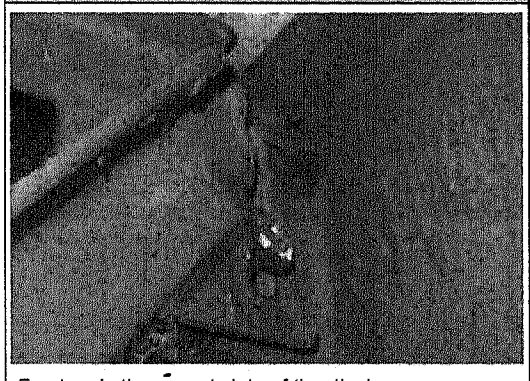
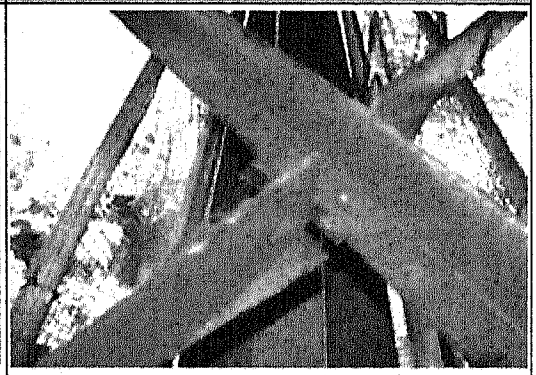
(a) Inspection area
The existence of fracture for all the members within visually perceptible area shall be inspected.

(b) Classification of damages
The inspected results shall be evaluated with the following classification:

Evaluation criteria	Classification
No damage	a
Fracture (evaluated as cracking if the member still continuous)	e

(c) Judgment of CC



Damage level e -> [CC 1]	Damage level e -> [CC 1]
	
Fracture in the gusset plate of the diaphragm	Fracture in the gusset plate of the lateral bracing

5) Deformation & loss

(a) Inspection area

The existence of deformation and loss for all the members shall be inspected.

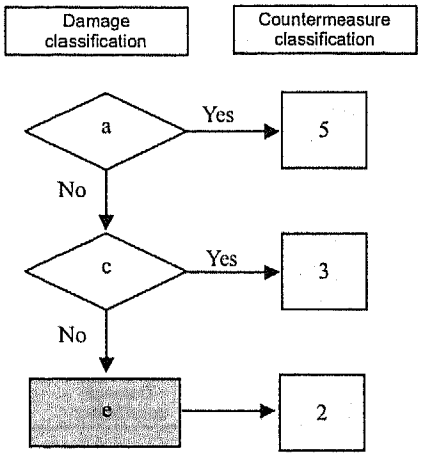
The main members shall be inspected with attention in such a situation as the bridge is considered to be dangerous due to the deformation.

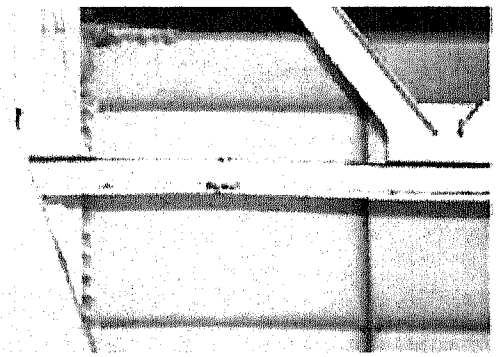
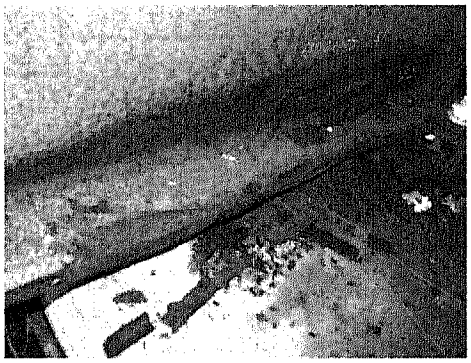
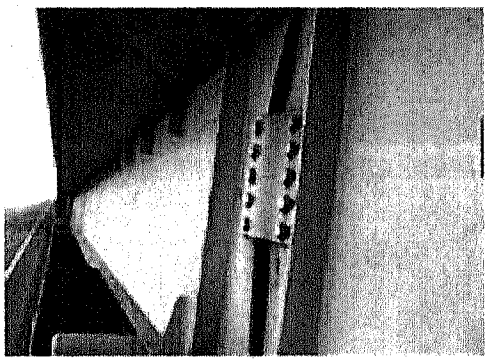
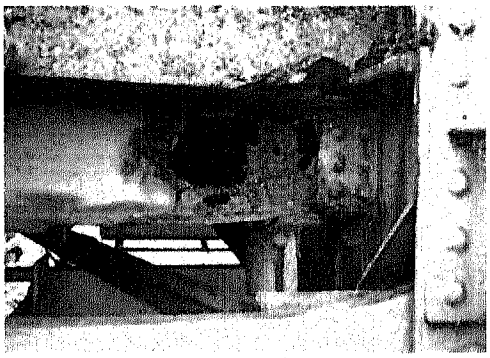
(b) Classification of damages

The inspected results shall be evaluated with the following classification:

Evaluation criteria	Classification
No damage	a
Local deformation of the members / Loss of a small portion of the members	c
Remarkable local deformation of the members / Remarkable loss of a portion of the members	e

(c) Judgment of CC



Damage level c -> [CC 3]	Damage level c -> [CC 3]
	
Local deformation in the diaphgram	Loss of a portion of the members
Damage level e -> [CC 2]	**Damage level e -> [CC 2]**
	
Remarkable local deformation of the members	Remarkable loss of a portion of the members

6) Cracking, water leakage and free lime

(a) Inspection area

The conditions of the main members of girder and substructure shall be inspected visually approaching as close as possible.

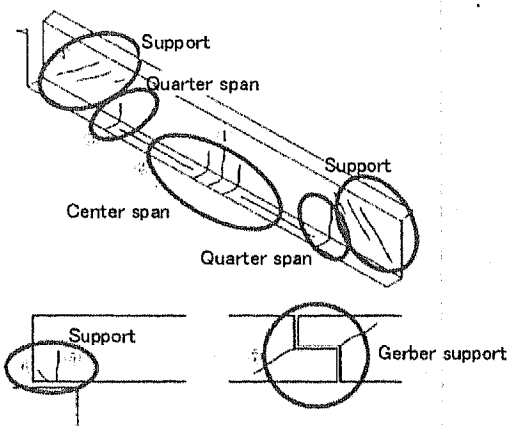
"Cracks remarkably influential cracks upon structures", given in the following tables shall be evaluated separately from the other cracks.

Remarkably influential cracks (Girder)

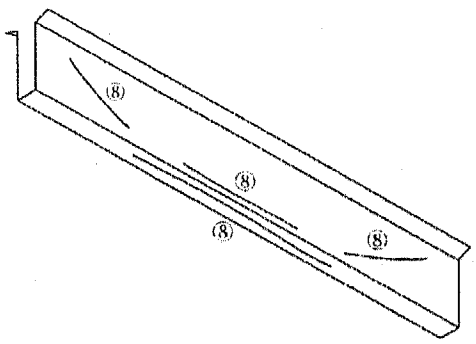
No.	Location	Crack pattern
1	Center span	Cracks in the transverse direction on the bottom surface and vertical cracks on the side surface of the girder at the center span
2		Cracks in the longitudinal direction on the bottom surface of the girder
3	Quarter span	Cracks in the transverse direction on the bottom surface and vertical cracks on the side surface of the girder at the center span
4	Support	Diagonal cracks on the side surface in the vicinity of the support
5		Cracks on the bottom surface and vertical cracks on the side surface of the girder directly above bearings
6		Diagonal cracks on the side surface of the girder directly above bearings
7	Gerber support	Cracks at Gerber supports
8	Whole PC girder	Cracks along PC sheath and PC tendon

[common to PC/RC]

PC: Prestressed concrete
RC: Reinforced concrete



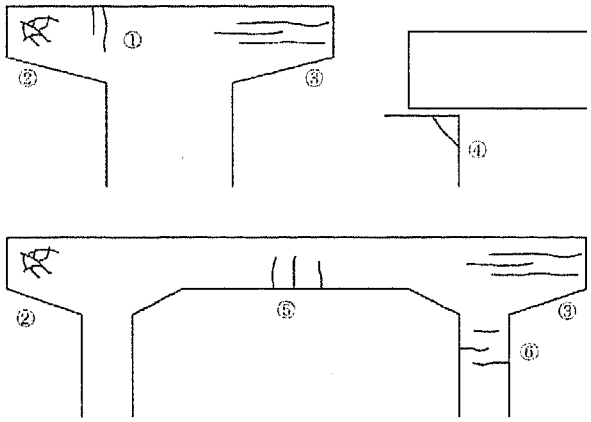
[PC girder]



Remarkably influential cracks (Pier)

No.	Location	Crack pattern
1	T-shaped pier	Cracks at the top of the cantilever
2	Common	A number of cracks in the wide range
3		Several large cracks in the longitudinal direction
4	Beneath bearings	Cracks beneath the bearing area
5	Framed pier	Cracks on the lower chord at the beam center
6		Cracks all around the pier

[Pier]



(b) Classification of damages

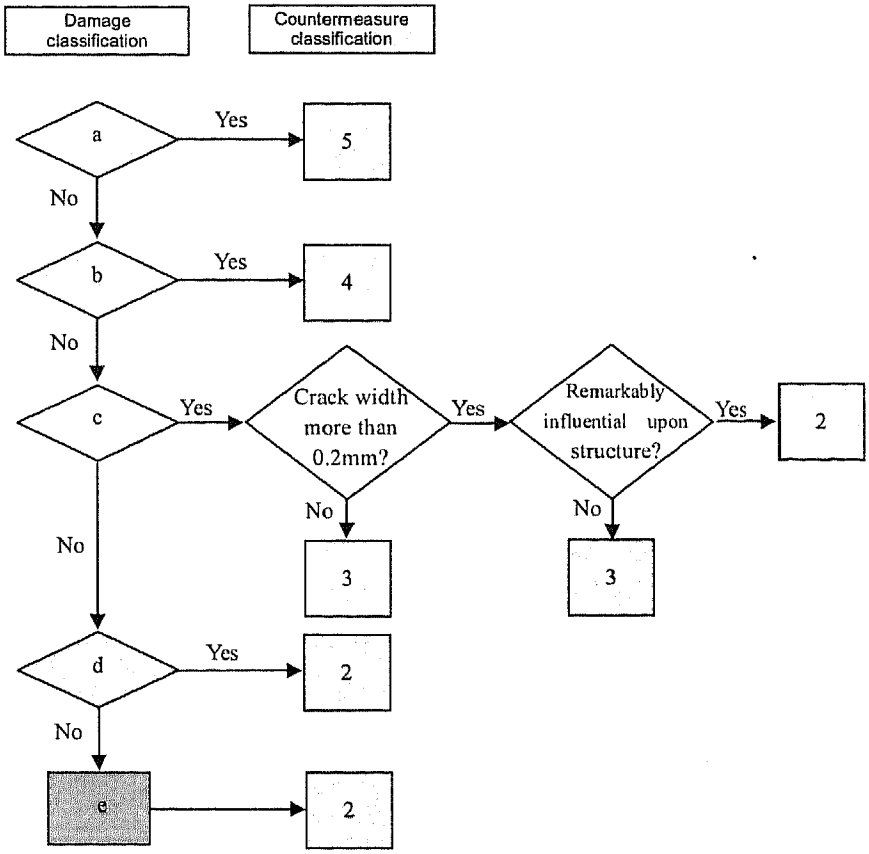
The inspected results shall be evaluated with the following classification:

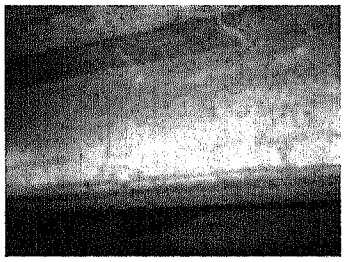
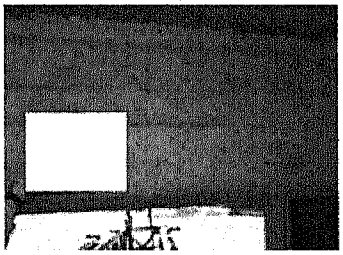
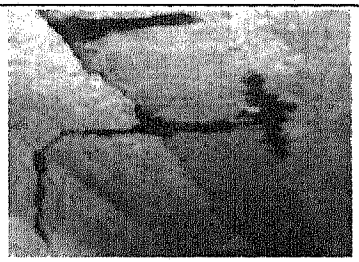
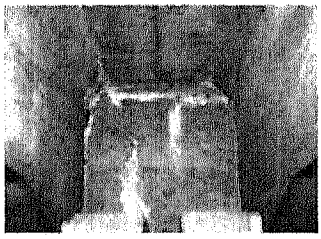
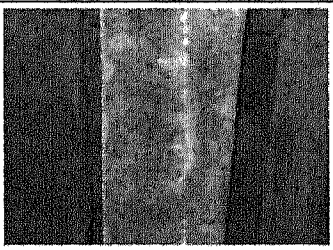
Evaluation criteria				Classification
Existence of crack	Location of crack	Crack width*	Water leakage, free lime	
N	-	-	-	a
Y	Cracks shown in (a) "Remarkably influential cracks"	< 0.2mm (small)	Independent of existence	c
		≥ 0.2mm (large)	Crack only	c
			Water leakage only	d
			Slight free lime	d
			Remarkable free lime, rust stain	e
	Cracks other than above (Small influence)	< 0.2mm (small)	Independent of existence	b
		≥ 0.2mm (large)	Crack only	b
			Water leakage only	c
			Slight free lime	c
			Remarkable free lime, rust stain	d

* In case crack width can not be measured due to inaccessibility etc. the easily perceptible cracks from a distant view shall be considered as "large crack width" in the evaluation.

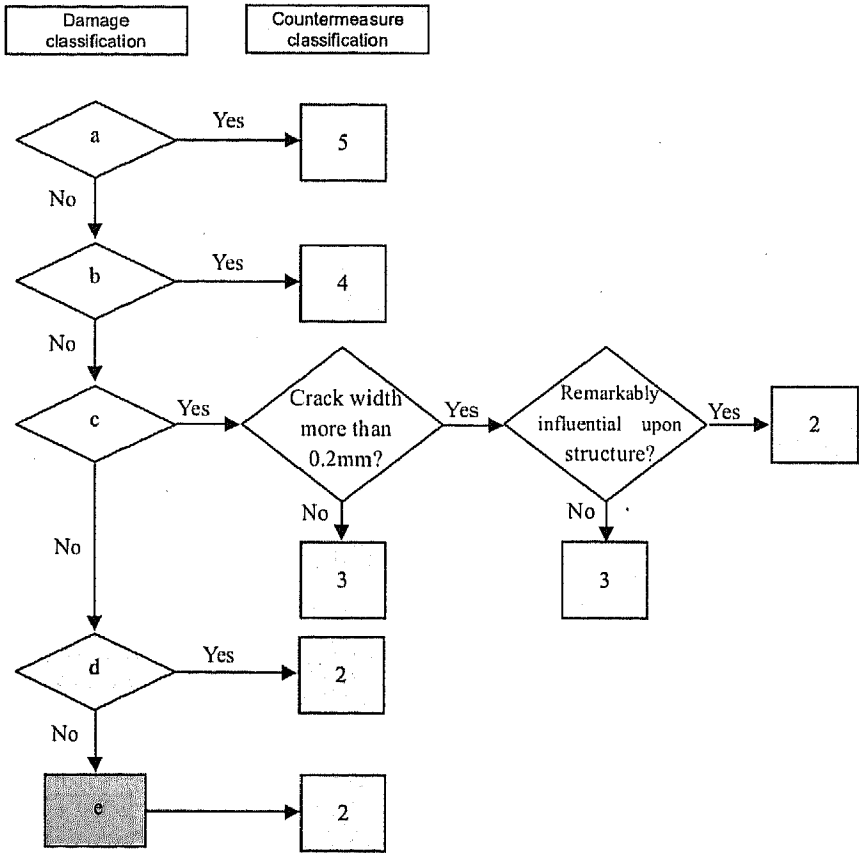
(c) Judgment of CC

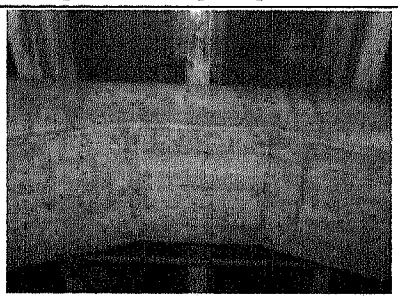
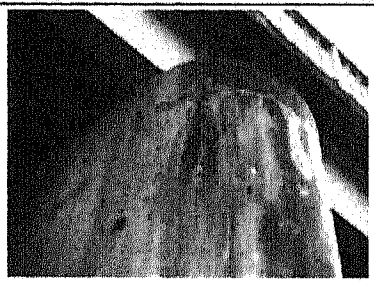
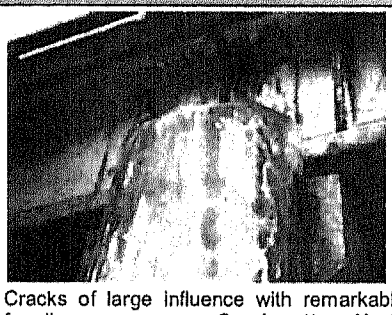
i) Super structure



Damage level b -> [CC 4]	Damage level c -> [CC 4]	Damage level c -> [CC 4]
 Cracks of small influence (marked with chalk)	 Cracks of large influence (marked with chalk) **Crack pattern No.1**	 Cracks of small influence with water leakage
Damage level d -> [CC 2]	**Damage level d -> [CC 2]**	**Damage level e -> [CC 2]**
 Cracks of small influence with water leak age and free lime	 Cracks of large influence with slight water leakage and free lime **Crack pattern No.2**	 Cracks of large influence with rust stain **Crack pattern No.8**

ii) Substructure



Damage level b -> [CC 4]	Damage level c -> [CC 2]	Damage level c -> [CC 3]
		
Cracks of small influence (marked with chalk)	Cracks of large influence (marked with chalk) **Crack pattern No.5**	Cracks of small influence with water leakage
Damage level d -> [CC 2]	**Damage level d -> [CC 2]]**	**Damage level e -> [CC 2]**
		
Cracks of large influence with water leakage and free lime **Crack pattern No.3**	Cracks of small influence with rust strain	Cracks of large influence with remarkable free lime **Crack pattern No.6**

7) Rebar exposure

(a) Inspection area

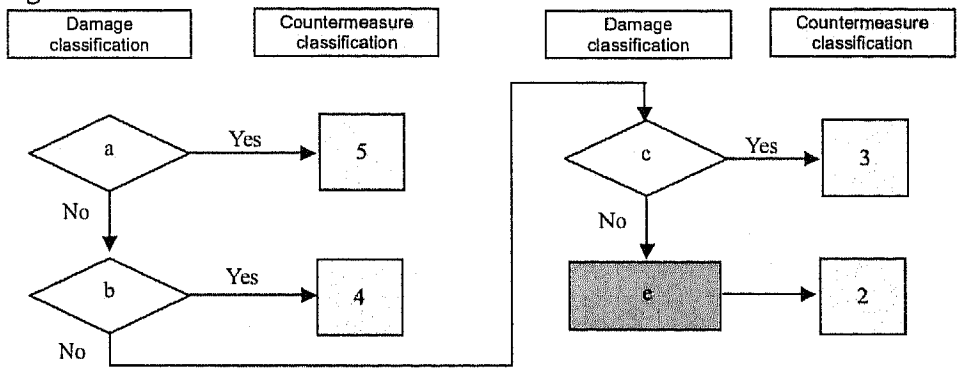
The existence of rebar exposure for all the members within visually perceptible area shall be inspected.

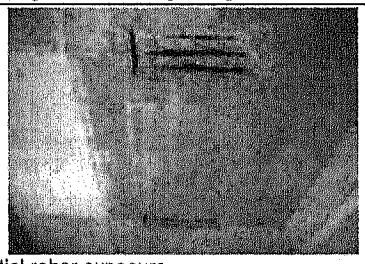
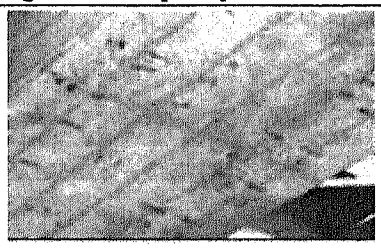
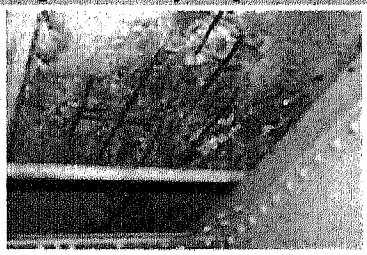
(b) Classification of damages

The inspected results shall be evaluated with the following classification:

Evaluation criteria			Classification
Existence of rebar exposure	Extent of corrosion	Condition of corrosion	
N	-	-	a
Y	Partial	Surface only	b
		Reduction of rebar section, remarkable expansion of rebar	c
	Global	Surface only	c
		Reduction of rebar section, remarkable expansion of rebar	e

(c) Judgment of CC



Damage level b -> [CC 4]	Damage level c -> [CC 3]
	
Partial rebar exposure	Superficial rebar exposure in the wide range
Damage level e -> [CC 2]	**Damage level e -> [CC 2]**
	
Rebar corrosion in the wide range	Rebar corrosion in the wide range

8) Pop-outs

(a) Inspection area

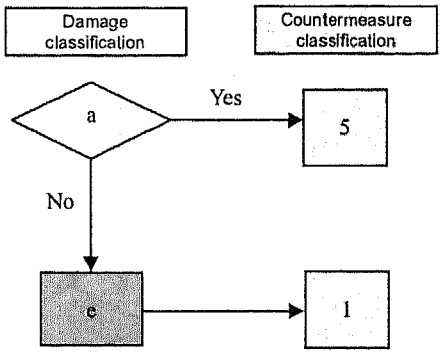
The existence of pop-outs for all the decks within visually perceptible area shall be inspected.

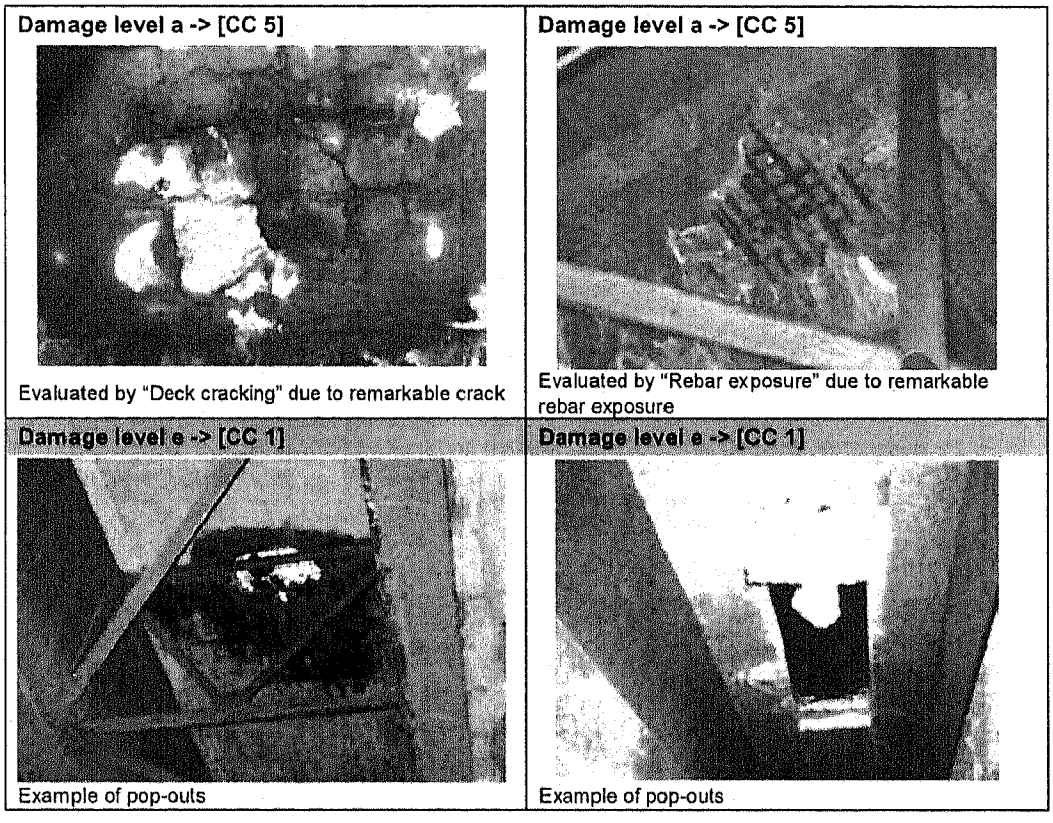
(b) Classification of damages

The inspected results shall be evaluated with the following classification:

Evaluation criteria	Classification
No damage	a
Pop-outs of concrete fragment	e

(c) Judgment of CC





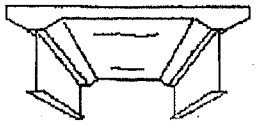
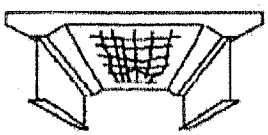
9) Deck cracking

(a) Inspection area

The crack condition in the deck within visually perceptible area shall be inspected approaching close to the girder end area. It is preferable to inspect approximately 2 panels from the girder end. In case there is no partitioning member in the deck such as diaphragms, the inspection area may be considered as the area of 10m from the support.

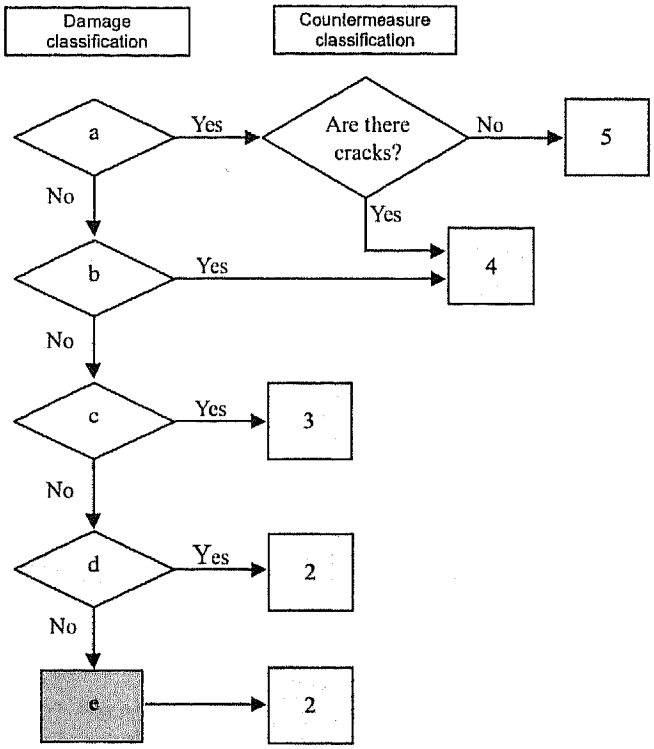
(b) Classification of damages

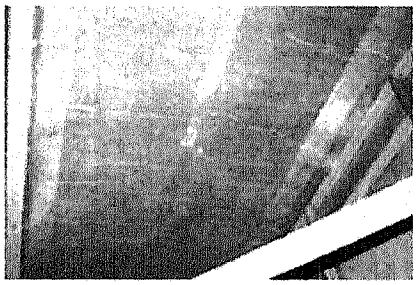
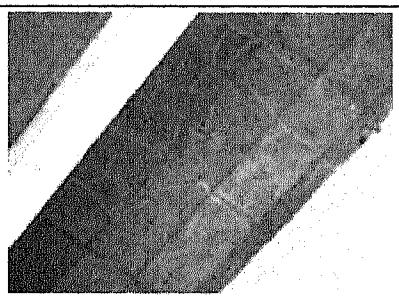
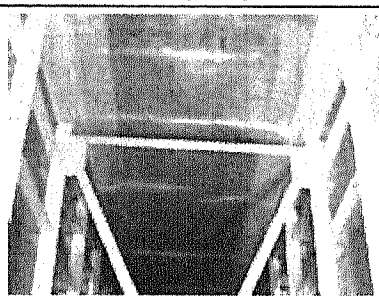
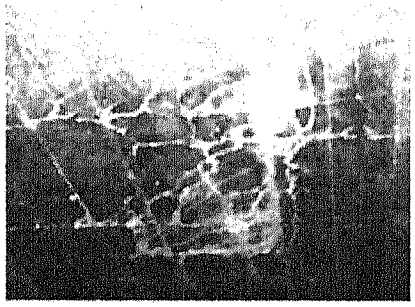
The inspected results shall be evaluated with the following classification:

Evaluation criteria	Conceptual figure	Classification
- No crack or fine cracks with the width w < 0.2mm and an interval of approx. 1.0m (considerably apart) - No stain of water leakage and free lime		a
- Fine cracks mainly in one direction with the width w < 0.2mm and an interval of approx. 0.5m (relative apart) - No stain of water leakage and free lime		b
- Lattice cracks with the width of approx. 0.2mm - No stain of water leakage and free lime or - Cracks in one direction with the width of approx. 0.2mm - Stain of water leakage and free lime		c
- Lattice cracks with the width of approx. 0.2mm - Stain of water leakage and free lime or - Remarkable cracks with the width ≥ 0.2mm and partially chipped - No stain of water leakage and free lime		d
- Continuously chipped - Stain of water leakage and free lime		e

* Crack width or interval does not necessarily require measurement. The easily perceptible cracks from a distant view shall be considered as "crack width ≥ 0.2mm"

(c) Judgment of CC



Damage level b -> [CC 4]	Damage level c -> [CC 3]	Damage level c [CC 3]
		
Mainly cracks in one direction (marked with chalk)	Cracks in two directions (marked with chalk)	Cracks in one direction with free lime
Damage level d -> [CC 2]	**Damage level d -> [CC 2]**	**Damage level e -> [CC 2]**
		
Cracks in two directions with free lime	Dense cracks in two directions partially chipped (marked with chalk)	Continuously chipped with free lime