

5.5 The Ratings Assistance Table

The table on the following pages provides assistance to Local Authority Engineers tasked with assigning condition ratings to bridge components, however, it is not intended as a substitute for technical education, training or experience



BRIDGE ASSET MANAGEMENT SYSTEM GUIDELINES

COMPONENT	RATING (cCR)				
	1	2	3	4	5
	Coarse Damage and Repair equivalence				
	Insignificant Damage (VL)	Some Damage (L) <i>Repair when convenient</i>	Significant Damage (M) <i>Repair needed very soon</i>	Critical Damage (H) <i>Repair needed immediately. Consider Load restriction/propping</i>	Ultimate Damage (U) <i>Bridge closure/lane restriction needed</i>
Bridge Surface	No damage.	Minor surface issues, drainage issues, broken expansion joints.	Rutting, potholes, slight cracking, crazing, loss of skid resistance.	Large potholes, deep ruts, ravelling, depressions, severe loss of skid resistance. Structural deck/arch exposed.	Surface unsafe, structural deck/arch exposed with component breakdown, holes through superstructure. Road should be closed.
Footpath Verges rubbing strips Medians	No damage.	Small potholes, ruts, hairline cracks, porous verges, vegetation growth.	Potholes, cracking of surfacing, shrub growth, services exposed.	Large potholes, major depressions, paving bricks displaced or lifting and broken paving slabs, shrub and tree growth lifting elements.	Large pothole, hole through superstructure, footpath should be closed.
Parapets and Safety Rails	Minor loss of mortar in masonry. Some painting of railing required.	Minor stone issues, loss of mortar. Light vegetation growth. Painting of metal railing required.	Loose stones, loose mortar, slight leaning, tilting, bulging or impact damage. Bolts corroded, isolated vertical rail missing, safety barriers slightly damaged, visibility reduced due the vegetation growth.	Parts of masonry parapet missing, part of parapet collapsing. Heavy vegetation or shrub/tree growth - roots displacing walls. Missing railing, badly damaged safety rails, substantially reduced iron or steel cross-section through rusting.	Missing railing or parapet, danger of accident.

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Embankment and Retetments	Minor stone loss, light vegetation.	Some stone loss, vegetation growth at joints, significant mortar loss. Slight scour to base or at drainage outlets.	Embankment material starting to break down, isolated base displacements, shrubs growing, Scour evident. Minor flanking erosion. Masonry walling isolated stone loss.	Localised failure of slope and construction, masonry collapsing, Tree growth deforming structure, Major erosion at base or flanking. clear settlement/movement self-arching and breaches, rock armour moving away from base, base rotation, severe scour Road pavement failing.	Undermining of approach road, partial collapse of structure, road pavement collapsing.
Wingwalls and Retaining walls	Very minor bulging, leaning, cracking.	Minor: bulging, cracking, mortar loss, vegetation. Slight spalling of concrete. Slight rotting in crib walls.	Cracking, bulging, leaning, tilting, mortar loss, some stone loss. Shrubs and roots slightly moving stones. Spalling of concrete, exposure of reinforcement. Isolated timber member's failure, infill escaping.	Significant: leaning, bulging, cracking, impact damage (some parts broken off), sliding, heaving, undermining. Isolated stone work areas collapsing or falling off bulges and leaning walls. Isolated areas of crib walling, reinforced earth failing.	Extreme bulging, leaning, tilting, cracking, sliding. Partial collapse of any type of wall.

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Abutments (also see riverbed)	No cracks, loss of mortar. No concrete issues.	Minor cracking, loss of mortar, Small cracks in concrete, exposure of reinforcement.	Cracking, loss of mortar, isolated stones, displaced or missing stones. Very minor cracks in masonry. Exposed steel reinforcement, significant spalling and staining.	Large cracks, possibly separated into sections, substantial mortar loss, missing stonework, piping water, isolated stone areas failing, deformation and bulging, wash out of core. Corroded steel reinforcement, spalling, structural cracking.	Large Cracks separating sections, collapsed portions, missing concrete and totally corroded steel reinforcement.
Piers (also see riverbed)	No cracks, loss of mortar. No concrete issues.	Minor Cracking, loss of mortar, small exposed steel reinforcement slight cracking.	Cracking, significant loss of mortar, abrasion, missing isolated stones, movement, exposed steel reinforcement, significant spalling.	Large cracks, washed out joints, stone slippage, voids evident and water flowing through pier. Exposed partially corroded steel reinforcement, missing or failed areas of stone.	Large cracks causing separation of element, collapsed portions, self-spanning sections, missing concrete and totally corroded steel reinforcement exposed, deformation of section.
Spandrels	No cracks bulges, mortar loss.	Minor cracking, tilting, bulging, water egress, minor vegetation.	Cracking, bulging, leaning, sliding, mortar loss, substantial vegetation/shrub growth.	Extensive cracking, stone loss, rotation, substantial bulging, tilting, leaning with stones falling, sliding. Shrub and tree growth moving masonry.	Portions collapsing, extreme leaning bulging, compression failure, separation and articulation.

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Arch Barrels and External Voussoirs	No cracks, no loss of mortar, no distortion, no sagging.	Minor Cracking, loss of mortar. Small amount of exposed steel reinforcement (concrete arch).	Arch distortion, cracking (longitudinal, transverse, diagonal), loss of mortar, evident, slight slippage. Porous concrete, exposed reinforcement, staining.	Large cracks, multiple cracks, deformed arch including flattening and bulging, open joints little to no mortar present), stones displaced, slipping and or missing from intrados and or springings Large exposed areas of steel reinforcement (concrete) structural cracking.	Extreme cracking, and structure breaking into sections, sections of arch missing, heavily deformed/flattened arch, open transverse cracking. Heavily corroded main steel reinforcement (concrete arch) severe cracking.
Beams/ Girders	Very minor cracks in concrete. Paint rusting on steel girders and beams.	Minor cracks in concrete soffit and beam webs or reinforcement visible, metal beams showing rust and paint heavily flaking.	Cracks in concrete, minor concrete spalling, staining, some rebar exposed. Leaching. Extensive areas of beams without paint (protective coating), rusting steel work.	Concrete heavily spalling, structural main reinforcement rusting, evidence of structural distress at supports or midspan. Structural steel members losing cross-section due to extent of rust, distortion of members, rivets or welds breaking down.	Deflection of beams discernible, steel reinforcement heavily rusted and reduced in cross-section. Substantial structural cracking. Steel beams extensive corrosion and reducing load carrying capacity. Flanges and webs only partially existing.

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Slab/Deck	None or very minor cracks, no spalling in concrete. No rust.	Minor crack and slight evidence of concrete surface breakdown or carbonisation of concrete soffit walls. Paint missing on steel trough units Minor light rusting of steel or iron.	Cracks in concrete, porous concrete, minor concrete spalling some rebar exposed. Extensive areas of soffit without paint (protective coating), rusting steel work.	Concrete heavily spalling, structural main reinforcement rusting, evidence of structural distress, Structural steel work corroding through significant thickness of member, rivets or welds breaking down Composite decks: materials separating, some components ineffective.	Deflection of slab discernible, fracture in concrete, sagging, steel reinforcement heavily rusted and reduced in cross-section, substantial areas of spalling. Steel soffits suffering from extensive corrosion and reducing load carrying capacity. Failure of some components in composite decks.
Riverbed	No Erosion or scour evident.	Minor bed or bank erosion, minor scour evident. River bed below structure base. Bed protection showing minor issues.	Evidence of minor undermining of abutments, piers, cutwaters or training Bed protection showing isolated areas of failure: pitching stones missing, concrete portions missing.	Serious erosion and scour. Bed protection failed over a substantial area. Abutments, piers, cutwater etc. undermined and scour holes at piers visible, foundations exposed Masonry blocks missing and water seeping through the structure between spans.	Major erosion & scour. Substantial bed erosion, foundations exposed or partially missing. Piers deforming, tilting, suspended, partially missing Abutments only partially founded, structure redistributing load, cantilevering, failure imminent.

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Bearings and Expansion Joint	No damage or insignificant. Clear any blocked associated drainage systems, if necessary.	Minor cracks in rubber. Steel components starting to rust. Water ponding evident on bearing shelf-etc. Surface cracks in joint in road.	Loose, cracked rubber pads. Steel components rusting. Surfacing starting to break up at expansion joints.	Rubber bearing pads delaminating or starting to break down. Steel bearings heavily rusted into steel components and bearing plinths. Damaged expansion joint, twisting, lifting, jammed, carriageway has large pot holes at joint, foot path broken up.	Bearing components excessively reduced in cross-section due to rust, bending, buckling of elements, nuts shearing. Road surface depressed or disintegrating: unsafe. Road should be closed.
Other Elements and Special features. Other elements may occasionally be present-the user can input descriptions of the component and its condition in the appropriate column. E.g. channel blockages.					
OVERALL BRIDGE CONDITION RATING (CR)	1	2	3	4	5

Table 5.3 – The Ratings Assistance Table