Steel Elements
Steel Elements
## STEEL ELEMENTS

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
<th>Units</th>
</tr>
</thead>
</table>
| STPR      | Steel – Truss – Principal  
This element defines the principals of steel trusses only excluding the protective coating. | m² of exposed surface area           |
| STTC      | Steel – Truss – Top Chord  
This element defines the top chords of steel trusses only excluding the protective coating. | m² of exposed surface area           |
| STBC      | Steel – Truss – Bottom Chord  
This element defines the bottom chords of steel trusses only excluding the protective coating. | m² of exposed surface area           |
| STDG      | Steel – Truss – Diagonals  
This element defines the diagonals of steel trusses only excluding the protective coating. | m² of exposed surface area           |
| STVT      | Steel – Truss – Verticals  
This element defines the verticals of steel trusses only excluding the protective coating. | m² of exposed surface area           |
| STGP      | Steel – Truss – Connection Gusset Plates  
This element defines the connection gusset plates of steel trusses only excluding the protective coating. | m² of exposed surface area           |
| STTB      | Steel – Truss – Top Bracings  
This element defines the top bracings of steel trusses only excluding the protective coating. | m² of exposed surface area           |
| STBB      | Steel – Truss – Bottom Bracings  
This element defines the bottom bracings of steel trusses only excluding the protective coating. | m² of exposed surface area           |
| STCG      | Steel – Truss – Cross Girder  
This element defines the cross girders of steel trusses only excluding the protective coating. | m² of exposed surface area           |
| STST      | Steel – Truss – Stringers  
This element defines the stringers of steel trusses only excluding the protective coating. | m² of exposed surface area           |
| SLST      | Steel – Truss – Lift Span Support Structure  
This element defines the lift span support structure of steel trusses only excluding the protective coating. | m² of exposed surface area           |
| SBGI      | Steel - Rolled Beam/Fabricated I Girder/Trough Girder/Box Girder, including Stringers and Cross Girders (Load bearing)  
This element defines all steel (or wrought iron) rolled beams/I girders/trough girders/box girders including stringers and cross girders that are load bearing excluding the protective coating. | m² of exposed surface area           |
| SDBR      | Steel - Diaphragm/Bracing/Secondary member  
This element defines only steel diaphragms/braces/secondary members excluding the protective coating. | m² of exposed surface area           |
| SPIR      | Steel - Pier (excluding any piles and secondary members)  
This element defines steel piers, excluding any piles and secondary members excluding the protective coating. | m² of exposed surface area           |
| SPIL      | Steel - Pile (including steel cased concrete pile or caisson)  
This element defines only those parts of steel piles and that can be inspected, including underwater inspection if appropriate excluding the protective coating. | m² of exposed surface area           |
| SASG      | Steel Abutment Sheeting / Gravel Board  
This element defines only the abutment sheeting/Gravel Boards made of steel. The vertical steel supports are treated as steel piles. | m² of exposed surface area           |
STEEL ELEMENTS

For each of the condition states, report the estimated area in square metres.

Condition state descriptions

<table>
<thead>
<tr>
<th>Condition State</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>There is no evidence of section loss or damage or cracking.</td>
</tr>
</tbody>
</table>
| 2               | Surface rust or minor pitting has formed or is forming. There is no measurable loss of section.  
                  | There may be minor deformations that do not affect the integrity of the element.  
                  | There are no cracks in the steel or welds. All bolts and rivets are in sound condition. |
| 3               | Heavy pitting may be present. Some measurable section loss is present locally, but not critical to structural integrity and/or serviceability of the element.  
                  | There may be some loose or missing bolts or rivets. Defects have been assessed as not sufficient to impact on the ultimate strength and/or serviceability of the element. |
| 4               | Section loss is sufficient to warrant analysis to ascertain the impact on the ultimate strength and/or serviceability of either the element or the bridge.  
                  | There may be cracks and/or deformations in the steel or welds. There may be numerous failed or missing bolts or rivets. Defects may impact on the ultimate strength and/or serviceability of the element. |

Key Areas to inspect for any cracking, section loss and other deterioration signs:

1. Edges of members  
2. Connections  
3. Splice Plates  
4. End plates of girders  
5. Bottom chords of trusses

Rating Guidance Notes:

Defects are defined as notches, gauges or discontinuities.  
Deformations are defined as buckled plate, bent members or sections  
Section loss is defined as loss of original metal.
Steel Elements
Trusses, Girders, Piers & Piles
STPR, STTC, STBC, STDG, STVT, STGP, STTB, STBB, STCG, STST, STSL, SBGI, SDBR, SPIR, SPIL

Condition State 1
There is no evidence of section loss or damage or cracking.

Minor coating deterioration but no steel deterioration.

Girders in new or near new condition.
Steel Elements | STPR, STTC, STBC, STDG, STVT, STGP, STTB, STBB, STCG, STST, STSL, SBGI, SDBR, SPIR, SPIL
---|---
Trusses, Girders, Piers & Piles

**Condition State 1**
There is no evidence of section loss or damage or cracking.

Element in new or near new condition.

Element in new or near new condition.
Steel Elements  
Trusses, Girders, Piers & Piles

STPR, STTC, STBC, STDG, STVT, STGP, STTB, STBB, STCG, STST, STSL, SBGI, SDBR, SPIR, SPIL

**Condition State 1**
There is no evidence of section loss or damage or cracking.

Element in new or near new condition.

Element in new or near new condition.
Steel Elements  STPR, STTC, STBC, STDG, STVT, STGP, STTB, STBB, STCG, STST, STSL, SBGI, SDBR, SPIR, SPIL
Trusses, Girders, Piers & Piles

**Condition State 1**
There is no evidence of section loss or damage or cracking.

Element in new or near new condition.

Element in new or near new condition.
**Steel Elements**  
STPR, STTC, STBC, STDG, STVT, STGP, STTB, STBB, STCG, STST, STSL, SBGI, SDBR, SPIR, SPI

**Trusses, Girders, Piers & Piles**  
Condition State 2

Surface rust or minor pitting has formed or is forming. There is no measurable loss of section. There may be minor deformations that do not affect the integrity of the element. There are no cracks in the steel or welds. All bolts and rivets are in sound condition.

- Crevice corrosion at splice plate on underside of girder. Some minor mechanical impact damage also evident.

- Surface rusting on web of girder.
Steel Elements  STPR, STTC, STBC, STDG, STVT, STGP, STTB, STBB, STCG, STST, STSL, SBGI, SDBR, SPIR, SPIL
Trusses, Girders, Piers & Piles

Condition State 2
Surface rust or minor pitting has formed or is forming. There is no measurable loss of section. There may be minor deformations that do not affect the integrity of the element. There are no cracks in the steel or welds. All bolts and rivets are in sound condition.

Uniform surface rusting on pile.

Extensive surface rusting.
Steel Elements  
Trusses, Girders, Piers & Piles  
STPR, STTC, STBC, STDG, STVT, STGP, STTB, STBB, STCG, STST, STSL, SBGI, SDBR, SPIR, SPIL

Condition State 2
Surface rust or minor pitting has formed or is forming. There is no measurable loss of section. There may be minor deformations that do not affect the integrity of the element. There are no cracks in the steel or welds. All bolts and rivets are in sound condition.

Light surface rusting on sheeting and supports.

Uniform surface rust on principal. Rusting heavier on the edges and near rivets.
Steel Elements
Trusses, Girders, Piers & Piles
STPR, STTC, STBC, STDG, STVT, STGP, STTB,
STBB, STCG, STST, STSL, SBGI, SDBR, SPIR, SPIL
Condition State 2
Surface rust or minor pitting has formed or is forming. There is no measurable loss of section. There may be minor deformations that do not affect the integrity of the element. There are no cracks in the steel or welds. All bolts and rivets are in sound condition.

Uniform surface rust on diagonal.

Uniform surface rust on vertical.
### Steel Elements

**Trusses, Girders, Piers & Piles**

| Steel Elements | STPR, STTC, STBC, STDG, STVT, STGP, STTB, STBB, STCG, STST, STSL, SBGI, SDBR, SPIR, SPIL |

### Condition State 2

Surface rust or minor pitting has formed or is forming. There is no measurable loss of section. There may be minor deformations that do not affect the integrity of the element. There are no cracks in the steel or welds. All bolts and rivets are in sound condition.

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Surface rust on bottom chord.

Surface rusting on rivets.
Steel Elements: STPR, STTC, STBC, STDG, STVT, STGP, STTB, STBB, STCG, STST, STSL, SBGI, SDBR, SPIR, SPIL

Trusses, Girders, Piers & Piles

Condition State 3
Heavy pitting may be present. Some measurable section loss is present locally, but not critical to structural integrity and/or serviceability of the element. There may be some loose or missing bolts or rivets. Defects have been assessed as not sufficient to impact on the ultimate strength and/or serviceability of the element.

Extensive corrosion at flange edges.

Heavy pitting on steel pier.
Steel Elements  
Trusses, Girders, Piers & Piles  
STPR, STTC, STBC, STDG, STVT, STGP, STTB, STBB, STCG, STST, STSL, SBGI, SDBR, SPIR, SPIL

**Condition State 3**
Heavy pitting may be present. Some measurable section loss is present locally, but not critical to structural integrity and/or serviceability of the element. There may be some loose or missing bolts or rivets. Defects have been assessed as not sufficient to impact on the ultimate strength and/or serviceability of the element.

Corrosion and section loss at gusset plate welded connections.

Heavy pitting on piles localised to the splash line.
**Condition State 3**

Heavy pitting may be present. Some measurable section loss is present locally, but not critical to structural integrity and/or serviceability of the element. There may be some loose or missing bolts or rivets. Defects have been assessed as not sufficient to impact on the ultimate strength and/or serviceability of the element.

Repaired heavy pitting on cross girder – measurable section loss still evident. However if a condition assessment of the element from a previous Level 3 inspection is available, that Level 3 inspection rating shall be used as the basis for rating the element with due considerations for any subsequent deterioration.
Steel Elements
Trusses, Girders, Piers & Piles

Steel Elements
STPR, STTC, STBC, STDG, STVT, STGP, STTB, STBB, STCG, STST, STSL, SBGI, SDBR, SPIR, SPIL

Condition State 4
Section loss is sufficient to warrant analysis to ascertain the impact on the ultimate strength and/or serviceability of either the element or the bridge. There may be cracks and/or deformations in the steel or welds. There may be numerous failed or missing bolts or rivets. Defects may impact on the ultimate strength and/or serviceability of the element.

Fatigue crack in stringer.

Fatigue crack in stringer.
Steel Elements  
Trusses, Girders, Piers & Piles  
STPR, STTC, STBC, STDG, STVT, STGP, STTB, STBB, STCG, STST, STSL, SBGI, SDBR, SPIR, SPIL

**Condition State 4**
Section loss is sufficient to warrant analysis to ascertain the impact on the ultimate strength and/or serviceability of either the element or the bridge. There may be cracks and/or deformations in the steel or welds. There may be numerous failed or missing bolts or rivets. Defects may impact on the ultimate strength and/or serviceability of the element.

Typical corrosion of the bottom chord on the upstream side of the bridge

Heavy pitting inside cross girder – measurable section loss.

Failed rivets at connection with cross girder.
**Steel Elements**

- STPR, STTC, STBC, STDG, STVT, STGP, STTB,
- STBB, STCG, STST, STSL, SBGI, SDBR, SPIR, SPIL

**Trusses, Girders, Piers & Piles**

**Condition State 4**

Section loss is sufficient to warrant analysis to ascertain the impact on the ultimate strength and/or serviceability of either the element or the bridge. There may be cracks and/or deformations in the steel or welds. There may be numerous failed or missing bolts or rivets. Defects may impact on the ultimate strength and/or serviceability of the element.

Crack in weld at connection with cross girder.

Significant section loss in diaphragm of pier.
Steel – Cables / Hangers / Tension Ties
Steel - Cables/Hangers/Tension Ties (Not Embedded In Concrete)

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCBT</td>
<td>Steel - Cables/Hangers/Tension Ties (Not Embedded In Concrete)</td>
<td>Each</td>
</tr>
<tr>
<td></td>
<td>This element defines only those steel cables, hangers and other tension ties</td>
<td></td>
</tr>
<tr>
<td></td>
<td>(cables or rods) excluding steel bracings and steel tension members in</td>
<td></td>
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<tr>
<td></td>
<td>trusses, and external post tensioning systems including those for</td>
<td></td>
</tr>
<tr>
<td></td>
<td>correction of deformations. This element includes the anchorages and</td>
<td></td>
</tr>
<tr>
<td></td>
<td>other supports associated with the cables/ties and any cable</td>
<td></td>
</tr>
<tr>
<td></td>
<td>damping systems. These tension members may be galvanised, painted, coated</td>
<td></td>
</tr>
<tr>
<td></td>
<td>or wrapped in grease with a protective outer wrapper, but are not</td>
<td></td>
</tr>
<tr>
<td></td>
<td>embedded in concrete. The protective coating systems are not included in</td>
<td></td>
</tr>
<tr>
<td></td>
<td>this element.</td>
<td></td>
</tr>
</tbody>
</table>

For each of condition states, report the number of units affected.

Condition state descriptions

<table>
<thead>
<tr>
<th>Condition State</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>There is no evidence of corrosion. There are no signs of distress at</td>
</tr>
<tr>
<td></td>
<td>anchors, sockets or saddles.</td>
</tr>
<tr>
<td>2</td>
<td>Surface or spot rust has formed or is forming. There are no signs of</td>
</tr>
<tr>
<td></td>
<td>distress at anchors or sockets but the saddles may be rusty and in need of</td>
</tr>
<tr>
<td></td>
<td>lubrication.</td>
</tr>
<tr>
<td>3</td>
<td>Minor corrosion. Surface pitting may be present but the extent is minor and</td>
</tr>
<tr>
<td></td>
<td>does not yet affect the strength or serviceability of either the element or</td>
</tr>
<tr>
<td></td>
<td>the bridge. The cables may have slackened off slightly or the hangers are</td>
</tr>
<tr>
<td></td>
<td>slipping on the cable. Cables may be beginning to abrade but there are no</td>
</tr>
<tr>
<td></td>
<td>wire breakages. Anchors may have minor cracking, sockets may be a little</td>
</tr>
<tr>
<td></td>
<td>loose or saddles may have fine cracks in the metal.</td>
</tr>
<tr>
<td>4</td>
<td>Pitting or general corrosion is advanced. Section loss is sufficient to</td>
</tr>
<tr>
<td></td>
<td>warrant analysis to ascertain the impact on the ultimate strength and/ or</td>
</tr>
<tr>
<td></td>
<td>serviceability of either the element or the bridge. Cables may be abraded</td>
</tr>
<tr>
<td></td>
<td>with broken wire(s). Units may have slackened noticeably or differentially</td>
</tr>
<tr>
<td></td>
<td>and/or are not fully effective. Anchorages may have cracked or have moved</td>
</tr>
<tr>
<td></td>
<td>or slipped. Sockets may have loosened or saddles are badly damaged.</td>
</tr>
</tbody>
</table>

Key Areas to inspect:

1. Where cables change direction and at anchorages
2. At saddles, bulldog clamps, swages...
3. Where water can infiltrate or pond

Rating Guidance Notes:
Any measurable section loss warrants an analysis.
There is a higher tolerance for defects in any cable dampening system.
Steel - Cables/Hangers/Tension Ties  

**Condition State 1**  
There is no evidence of corrosion. There are no signs of distress at anchors, sockets or saddles.

Cables in good condition.

External pre-stressing system at the bottom of a timber truss in good condition.
Steel - Cables/Hangers/Tension Ties

**Condition State 2**
Surface or spot rust has formed or is forming. There are no signs of distress at anchors or sockets but the saddles may be rusty and in need of lubrication.

Surface rust on lift span wire cable and connection.

Minor surface corrosion on cable anchorage block in a pedestrian bridge.
Steel - Cables/Hangers/Tension Ties

**Condition State 3** - Minor corrosion. Surface pitting may be present but the extent is minor and does not yet affect the strength or serviceability of either the element or the bridge. The cables may have slackened off slightly or the hangers are slipping on the cable. Cables may be beginning to abrade but there are no wire breakages. Anchors may have minor cracking, sockets may be a little loose or saddles may have fine cracks in the metal.
Condition State 4 - Pitting or general corrosion is advanced. Section loss is sufficient to warrant analysis to ascertain the impact on the ultimate strength and/or serviceability of either the element or the bridge. Cables may be abraded with broken wire(s). Units may have slackened noticeably or differentially and/or are not fully effective. Anchorages may have cracked or have moved or slipped. Sockets may have loosened or saddles are badly damaged.

Crack on steel tie.

Lift span wire rope cables with broken wires near the anchor sockets.
Steel - Cables/Hangers/Tension Ties

**Condition State 4** - Pitting or general corrosion is advanced. Section loss is sufficient to warrant analysis to ascertain the impact on the ultimate strength and/or serviceability of either the element or the bridge. Cables may be abraded with broken wire(s). Units may have slackened noticeably or differentially and/or are not fully effective. Anchorages may have cracked or have moved or slipped. Sockets may have loosened or saddles are badly damaged.

Lift span cable with broken wires.
Steel – Deck Elements
# Steel – Deck Elements

## SOGD, SBPD, SCOD

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>SOGD</strong></td>
<td><strong>Steel - Open Grid Deck</strong>&lt;br&gt;This element defines only those bridge decks that are constructed of steel grids and are open and unfilled excluding the protective coating.</td>
<td>m$^2$ of exposed surface area</td>
</tr>
<tr>
<td><strong>SBPD</strong></td>
<td><strong>Steel - Buckle Plate Deck</strong>&lt;br&gt;This element defines only those bridge decks that are constructed of steel buckle plates and support a layer of reinforced concrete or gravel, excluding the protective coating.</td>
<td>m$^2$ of exposed surface area</td>
</tr>
<tr>
<td><strong>SCOD</strong></td>
<td><strong>Steel - Corrugated/Orthotropic/Etc. Deck</strong>&lt;br&gt;This element defines only those bridge decks that are constructed of corrugated metal filled with Portland cement concrete or asphaltic concrete or an orthotropic steel deck. The orthotropic deck may be covered with asphaltic concrete. The protective coating is not included in this element.</td>
<td>m$^2$ of exposed surface area</td>
</tr>
</tbody>
</table>

For each of the condition states, report the estimated area in square metres.

### Condition state descriptions

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<thead>
<tr>
<th>Condition State</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>There is no corrosion. The connectors (welds, rivets, etc) are sound. The surfacing on the deck (if any) has no repaired areas and there are no potholes.</td>
</tr>
<tr>
<td>2</td>
<td>Surface rust or minor pitting has formed. There is no loss of section. The connectors may be starting to show signs of distress - cracked welds or broken rivets. Potholes may exist in the surfacing at scattered locations and there may be cracking in the infill pavement (if any). There may be minor deformations that do not affect the integrity of the element.</td>
</tr>
<tr>
<td>3</td>
<td>Corrosion is moderate. Surface pitting may be present but any section loss is minor. Numerous connectors are failing at scattered locations. There may be minor cracks and/or deformations in the steel or welds which have been assessed as not sufficient to impact on the ultimate strength and/or serviceability of the element. Potholes may expose the metal decking. There may be significant cracking in the infill pavement (if any).</td>
</tr>
<tr>
<td>4</td>
<td>Corrosion is advanced. Numerous connectors have failed. Section loss, connectivity loss, cracks, deformations or holes in the steel or welds may impact on the ultimate strength and/or serviceability of the element. The infill pavement (if any) has failed.</td>
</tr>
</tbody>
</table>

**Key Areas to inspect** for any cracking, corrosion and other deterioration signs:

1. Deck surface for cracking, potholes
2. Soffit of deck for leakage, cracking, corrosion
3. Connections to stringers

**Rating Guidance Notes:**
Steel – Deck Elements

**Condition State 1**

There is no corrosion. The connectors (welds, rivets, etc) are sound. The surfacing on the deck (if any) has no repaired areas and there are no potholes.

Buckle plate deck in good condition.

Buckle plates are still in good condition although the paint has failed.
Steel – Deck Elements

Condition State 2
Surface rust or minor pitting has formed. There is no loss of section. The connectors may be starting to show signs of distress - cracked welds or broken rivets. Potholes may exist in the surfacing at scattered locations and there may be cracking in the infill pavement (if any). There may be minor deformations that do not affect the integrity of the element.

Buckle plate deck with minor leakage and corrosion at the edges.
Steel – Deck Elements

**Condition State 3** - Corrosion is moderate. Surface pitting may be present but any section loss is minor. Numerous connectors are failing at scattered locations. There may be minor cracks and/or deformations in the steel or welds which have been assessed as not sufficient to impact on the ultimate strength and/or serviceability of the element. Potholes may expose the metal decking. There may be significant cracking in the infill pavement (if any).

Failed connectors and localised failure of decking.

Moderate corrosion at all deck connections.
Steel – Deck Elements

**Condition State 4 -**
Corrosion is advanced. Numerous connectors have failed. Section loss, connectivity loss, cracks, deformations or holes in the steel or welds may impact on the ultimate strength and/or serviceability of the element. The infill pavement (if any) has failed.

Severe corrosion of buckle plate with complete section loss over large areas.
Steel – Culvert
Steel – Culvert

<table>
<thead>
<tr>
<th>Element</th>
<th>Description</th>
<th>Units</th>
</tr>
</thead>
<tbody>
<tr>
<td>SCUL</td>
<td>Steel – Culvert</td>
<td>( m^2 ) of exposed surface area</td>
</tr>
</tbody>
</table>

This element defines all steel culverts, including arches, round or elliptical pipes etc that have an opening measured along the road centrel ine of six metres or more, measured between spring lines of arches, or extreme ends of openings for multiple pipes.

For each of the condition states, report the estimated area in square metres.

### Condition state descriptions

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<thead>
<tr>
<th>Condition State</th>
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</thead>
<tbody>
<tr>
<td>1</td>
<td>The element shows little or no deterioration. Some discolouration or surface corrosion with no pitting may exist. Very little or no scour or erosion is evident.</td>
</tr>
<tr>
<td>2</td>
<td>There may be minor to moderate corrosion and pitting, especially at the barrel invert. The connectors may be starting to show signs of distress. Little or no distortion exists. Minor scouring may be evident.</td>
</tr>
<tr>
<td>3</td>
<td>Significant corrosion, deep pitting or some holes in the invert may exist. Numerous connectors are failing at scattered locations. Significant scour or erosion not affecting structural integrity. Minor to moderate distortion and deflection may exist. There is little or no roadway settlement.</td>
</tr>
<tr>
<td>4</td>
<td>Major corrosion, extreme pitting or holes in the barrel may exist. Major distortion, deflection, or settlement may be evident. There may be severe scour affecting the structural capacity. Minor to major roadway settlement may be evident. Section loss, connectivity loss, cracks and/or deformations may impact on the ultimate strength and/or serviceability of the element.</td>
</tr>
</tbody>
</table>

### Key Areas to inspect

1. Roadway for settlement
2. Roof for distortion/out of shape.
3. Inlet and outlet of culvert for scour
4. Near barrel invert for corrosion

### Rating Guidance Notes:
Steel – Culvert

Condition State 1
The element shows little or no deterioration. Some discolouration or surface corrosion with no pitting may exist. Very little or no scour or erosion is evident.

Surface discolouration near the base but culvert is still in good condition.
Steel – Culvert

Condition State 2
There may be minor to moderate corrosion and pitting, especially at the barrel invert. The connectors may be starting to show signs of distress. Little or no distortion exists. Minor scouring may be evident.

Loss of galvanised protective coating but there is no significant corrosion.
### Steel – Culvert

<table>
<thead>
<tr>
<th>Condition State 3</th>
</tr>
</thead>
<tbody>
<tr>
<td>Significant corrosion, deep pitting or some holes in the invert may exist. Numerous connectors are failing at scattered locations. Significant scour or erosion not affecting structural integrity. Minor to moderate distortion and deflection may exist. There is little or no roadway settlement.</td>
</tr>
</tbody>
</table>

![Significant corrosion with missing bolts.](image-url)
Steel – Culvert

Condition State 4
Major corrosion, extreme pitting or holes in the barrel may exist. Major distortion, deflection, or settlement may be evident. There may be severe scour affecting the structural capacity. Minor to major roadway settlement may be evident. Section loss, connectivity loss, cracks and/or deformations may impact on the ultimate strength and/or serviceability of the element.

Major corrosion with some distortion.