CMP

CMP	Structural Deterioration (Corrosion)	Closed Bottom Invert Deterioration	Open Bottom Invert Deterioration	Section Deformation	Joints/ Seams	Condition
10	New condition. Galvanizing intact. No corrosion.	New condition; galvanizing intact; no corrosion.	New condition	Reference CMP Shape Deformation Table	Reference CMP Joints / Seams Table	Excellent
9	Discoloration of surface. Galvanizing partially gone. No layers of rust.	Discoloration of surface. Galvanizing partially gone along invert. No layers of rust.	Good with no invert erosion			Very Good
8	Discoloration of surface. Galvanizing gone along invert but no layers of rust. Minor section loss at ends of pipe not located beneath roadway.	Discoloration of surface. Galvanizing gone along invert but no layers of rust. Minor section loss at ends of pipe not located beneath roadway.	Good with only minor invert erosion			Good
7	Galvanizing gone with layers of rust. Moderate section loss at ends of pipe not located beneath roadway. Moderate section loss: Less than 6 in^2/ft^2.	Galvanizing gone along invert with layers of rust. Moderate section loss at ends of pipe not located beneath roadway. Moderate section loss: Less than 4% of invert area.	Minor erosion near footings			Satisfactory
6	Heavy rust and scale throughout. Heavy section loss with perforations not located under the roadway. Heavy section loss: Up to 15 in^2/ft^2.	Heavy rust and scale throughout. Heavy section loss with perforations in invert not located under the roadway. Heavy section loss: Up to 10% of invert area.	Moderate erosion along footing; protective measures may be required			Fair
5	Extensive heavy rust and scaling throughout. Perforations throughout with an area less than 30 in^2/ft^2. Overall thin metal, which allows for an easy puncture with chipping hammer.	Extensive heavy rust and scaling throughout. Perforations throughout invert with an area less than 20% of invert area. Overall thin metal, which allows for an easy puncture with chipping hammer.	Erosion along footing with slight undermining, protection required			Poor
4	Extensive heavy rust and scaling throughout. Perforations throughout with an area less than 36 in^2/ft^2.	Extensive heavy rust and scaling throughout. Perforations throughout invert with an area less than 25% of invert area.	Severe undermining with slight differential settlement causing minor cracking or spalling in footing and minor distress in walls			Serious
3	Perforations throughout with an area greater than 36 in^2/ft^2 .	Perforations throughout invert with an area greater than 25% of invert area.	Severe undermining with significant differential settlement causing severe cracks in footing and distress in walls			Critical
2	Pipe partially collapsed.	Pipe partially collapsed.	Structure partially collapsed or collapse is imminent.			Imminent Failure
1	Total failure of pipe.	Total failure of pipe.	Total failure of structure.			Failed

CMP	Blockage	Scour	Condition
10	No blockage. Designed condition.	No evidence of scour at either inlet or outlet of culvert.	Excellent
9	Minor amounts of sediment build-up with no appreciable loss of opening.	Minor scour holes developing at inlet or outlet. Scour protection placed.	Very Good
8	Culvert waterway blockage is less than 5% of the cross sectional area of the opening. Bank and channel have minor amounts of drift.	Minor scour holes developing at inlet or outlet. Top of footings is exposed. Probing indicates soft material in scour hole.	Good
7	Culvert waterway blockage is less than 10% of the cross sectional area of the opening. Sediment buildup causing flow through 1 of 2 pipes. Silt and Gravel buildup restricts half of the channel. Tree or bush growing in the channel. Fence placed at inlet or outlet. Rock dams in culvert.	Minor scour holes, 1 foot or less deep, developing at inlet or outlet. Footings along the side are exposed less than 6 inches. Damage to scour counter measures. Probing indicates soft material in scour hole.	Satisfactory
6	Culvert waterway blockage is less than 30% of the cross sectional area of the opening. Tree or bush growing in channel. Fence placed at inlet or outlet. Rock dams in culvert.	Minor scour holes, 2 feet or less deep, developing at inlet or outlet. Footings along the side are exposed less than 12 inches. Damage to scour counter measures. Probing indicates soft material in scour hole.	Fair
5	Culvert waterway blockage is less than 40% of the cross sectional area of the opening. Occasional overtopping of roadway. Large deposits of debris are in the waterway.	Significant scour holes, 3 feet or less deep, developing at inlet or outlet. Does not appear to be undermining cutoff walls or headwalls. Bottom of footing is exposed. Major stream erosion behind headwall that threatens to undermine culvert.	Poor
4	Culvert waterway blockage is less than 80% of the cross sectional area of the opening. Overtopping of roadway with significant traffic delays.	Major scour holes, 3 feet or deeper, at inlet or outlet undermining cutoff walls or headwalls. Footing is undermined.	Serious
3	Culvert waterway blockage is 80% or greater of the cross sectional area of the opening. Frequent overtopping of roadway with significant traffic delays.	Streambed degradation causing severe settlement.	Critical
2	Culvert waterway completely blocked and causing water to pool. Road closed because of channel failure.	Culvert closed because of channel failure.	Imminent Failure
1	Total failure of pipe.	Total failure of culvert because of channel failure.	Failed

CONCRETE PIPE

Concrete Pipe	Structural Deterioration/Closed Bottom Invert Deterioration	Open Bottom Invert Deterioration	Section Deformation	Joints/Seams	Condition
10	New Condition. Superficial and isolated damage from construction.	New condition	Not Applicable: Rigid material pipes are not rated for deformation	Straight line between sections.	Excellent
9	Hairline cracking without rust staining or delamination(s). Surface in good condition.	Good with no invert erosion		No settlement or misalignment. Tight with no defects apparent.	Very Good
8	Hairline cracking: Less than 1/16th inch wide parallel to traffic without rust staining. Light scaling: Less than 1/8th inch deep with less than 10% of exposed area. Delaminated or Spalled area: Less than 1% of surface area. Note: cast-in-place box culverts may have a single large crack less than 3/16th inch on each surface parallel traffic direction.	Good with only minor invert erosion		Minor misalignment at joints. Minor settlement. Distress to pipe material adjacent to joint.	Good
7	Hairline and map cracking: Cracks less than 1/8th inch parallel to traffic with minor efflorescence or minor amounts of leakage. Scaling: Less than 1/4th inch deep or 20% of exposed area. Spalled areas with exposed reinforcing: Less than 5%. Total delaminated and spalled areas less than 5% of surface area.	Minor erosion near footings		Misalignment of joints but no infiltration. Settlement. Dislocated end section. Extensive areas of shallow deterioration. Minor cracking.	Satisfactory
6	Map cracking with hairline cracks less than 1/8th inch parallel to traffic or less than 1/16th inch transverse to traffic with efflorescence, or rust stains, or leakage or all. Scaling 3/16th inch deep on less than 30% of surface area. Spalled areas with exposed reinforcing on less than 10% of surface area. Total delaminated and spalled areas less than 15% of surface area.	Moderate erosion along footing; protective measures may be required		Joint open and allowing backfill to infiltrate. Significant cracking, spalling, or buckling of pipe material. Joint offset less than 3 inches. End sections dislocated and about to drop off from main portion of the structure. Infiltration staining apparent.	Fair
5	Transverse cracks open greater than 1/8th inch with efflorescence and rust staining. Spalling at numerous locations. Extensive surface scaling on invert greater than 1/2 inch. Extensive cracking with cracks open more than 1/8th inch with efflorescence. Spalling has caused exposure of heavily corroded reinforcing steel on bottom or top of slab. Extensive surface scaling on invert greater than 3/4th inch or approximately 50% of culvert invert.	Erosion along footing with slight undermining, protection required		Differential movement and separation of joints. Significant infiltration or exfiltration at joints. Joint offset less than 4 inches. Voids seen in fill through offset joints. End sections dropped off at inlet.	Poor
4	Extensive cracking with spalling, delaminations, and slight differential movement. Scaling has exposed all surfaces of the reinforcing steel in bottom and top slab or invert with approximately 50% loss of wall thickness at invert. Concrete very soft.	Severe undermining with slight differential settlement causing minor cracking or spalling in footing and minor distress in walls		Significant openings. Dislocated joints at several locations exposing fill material with joint offsets greater than 4 inches. Infiltration or exfiltration causing misalignment of pipe and settlement or depressions in roadway. Large voids seen in fill through offset joints.	Serious
3	Full depth holes. Extensive cracking greater than 1/2 inch. Spalled areas with exposed reinforcing greater than 25%. Over 50% of the surface area is delaminated, spalled, or punky. Reinforcing steel bars have extensive section loss and bar perimeter is completely exposed.	Severe undermining with significant differential settlement causing severe cracks in footing and distress in walls		Culvert not functioning due to alignment problems throughout. Large voids seen in fill through offset joints.	Critical
2	Culvert partially collapsed or collapse is imminent.	Structure partially collapsed or collapse is imminent.		Pipe partially collapsed or collapse is imminent.	Imminent Failure
1	The culvert is collapsed.	Total failure of structure.		Total failure of pipe.	Failed

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CONCRETE PIPE

Concrete Pipe	Blockage	Scour	Condition
10	No blockage. Designed condition.	No evidence of scour at either inlet or outlet of culvert.	Excellent
9	Minor amounts of sediment build-up with no appreciable loss of opening.	Minor scour holes developing at inlet or outlet. Scour protection placed.	Very Good
8	Culvert waterway blockage is less than 5% of the cross sectional area of the opening. Bank and channel have minor amounts of drift.	Minor scour holes developing at inlet or outlet. Top of footings is exposed. Probing indicates soft material in scour hole.	Good
7	Culvert waterway blockage is less than 10% of the cross sectional area of the opening. Sediment buildup causing flow through 1 of 2 pipes. Silt and Gravel buildup restricts half of the channel. Tree or bush growing in the channel. Fence placed at inlet or outlet. Rock dams in culvert.	Minor scour holes, 1 foot or less deep, developing at inlet or outlet. Footings along the side are exposed less than 6 inches. Damage to scour counter measures. Probing indicates soft material in scour hole.	Satisfactory
6	Culvert waterway blockage is less than 30% of the cross sectional area of the opening. Tree or bush growing in channel. Fence placed at inlet or outlet. Rock dams in culvert.	Minor scour holes, 2 feet or less deep, developing at inlet or outlet. Footings along the side are exposed less than 12 inches. Damage to scour counter measures. Probing indicates soft material in scour hole.	Fair
5	Culvert waterway blockage is less than 40% of the cross sectional area of the opening. Occasional overtopping of roadway. Large deposits of debris are in the waterway.	Significant scour holes, 3 feet or less deep, developing at inlet or outlet. Does not appear to be undermining cutoff walls or headwalls. Bottom of footing is exposed. Major stream erosion behind headwall that threatens to undermine culvert.	Poor
4	Culvert waterway blockage is less than 80% of the cross sectional area of the opening. Overtopping of roadway with significant traffic delays.	Major scour holes, 3 feet or deeper, at inlet or outlet undermining cutoff walls or headwalls. Footing is undermined.	Serious
3	Culvert waterway blockage is 80% or greater of the cross sectional area of the opening. Frequent overtopping of roadway with significant traffic delays.	Streambed degradation causing severe settlement.	Critical
2	Culvert waterway completely blocked and causing water to pool. Road closed because of channel failure.	Culvert closed because of channel failure.	Imminent Failure
1	Total failure of pipe.	Total failure of culvert because of channel failure.	Failed

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PLASTIC PIPE

Plastic Pipe	Structural Deterioration	Invert Deterioration*	Section Deformation	Joints/Seams	Condition
10	New Condition.	New Condition.	Smooth wall. Span dimension up to 2% greater than design.	Straight line between sections.	Excellent
9	Isolated rip or tear less than or equal to 6 inches caused by floating debris or construction. Minor discoloration at isolated locations.	Minor discoloration at isolated locations.	Smooth wall. Span dimension up to 5% greater than design.	No settlement or misalignment. Tight with no defects apparent.	Very Good
8	Split less than or equal to 6 inches but not open more than 1/4th inch at two or three locations. Damage due to cuts, gouges, or distortion at end sections from construction or maintenance.	Perforations caused by abrasion located within 5 feet of outlet and not located under roadway.	Relatively smooth wall. Span dimension up to 7.5% greater than design.	Minor misalignment at joints. Minor settlement. Distress to pipe material adjacent to joint.	Good
7	Split less than 6 inches with width not to exceed ½ inch at two or three locations. Damage due to cuts, gouges, burnt edges, or distortion at end sections from construction or maintenance.	Perforations caused by abrasion located within 5 feet of inlet and outlet and not located under roadway.	Minor dimpling appearing at an isolated small area: Less than 1/16th of circumference area and 1 foot in length. Dimpling less than 1/4 inch deep. Span dimension up to 10% greater than design.	Misalignment of joints but no infiltration. Settlement. Dislocated end section. Extensive areas of shallow deterioration. Minor cracking.	Satisfactory
6	Split less than 6 inches with width exceeding ½ inch at two or three locations. Damage due to cuts, gouges, or distortion to end sections from construction or maintenance.	Substantial perforations caused by abrasion located within 5 feet of inlet and outlet and not located under roadway.	Minor dimpling appearing over $^{1}/_{16}$ to ⅛ of circumference area and 2 feet in length. Dimples between ¼ and ½ inch deep. Pipe deflection less than 12.5% from original shape.	Joint open and allowing backfill to infiltrate. Significant cracking or buckling of pipe material. Joint offset less than 3 inches. End sections dislocated and about to drop off from main portion of the structure. Infiltration staining apparent.	Fair
5	Split less than 6 inches with width exceeding ½ inch at several locations. Splits causing loses of backfill material.	Perforations caused by abrasion located throughout pipe.	Wall Crushing or hinging occurring with lengths less than 3 feet. Pipe deflection less than 15% from original shape.	Differential movement and separation of joints. Significant infiltration or exfiltration at joints. Joint offset less than 4 inches. Voids seen in fill through offset joints. End sections dropped off at inlet.	Poor
4	Split less than 6 inches with width exceeding 1 inch at several locations. Splits causing loss of backfill material.	Section loses caused by abrasion located throughout pipe.	Wall Crushing or hinging occurring with lengths greater than 3 feet. Moderate degree of dimpling appearing. Dimples more than ½ inch deep. Wall tearing or cracking in the buckled region. Pipe deflection less than 20% from original shape.	Significant openings. Dislocated joints at several locations exposing fill material with joint offsets greater than 4 inches. Infiltration or exfiltration causing misalignment of pipe and settlement or depressions in roadway. Large voids seen in fill through offset joints.	Serious
3	Split larger than 6 inches with width exceeding 1 inch at several locations. Splits causing loss of backfill material.	Section loss caused by abrasion located throughout pipe with at least a 2 foot in length by ½ foot in width invert section eroded away.	Wall Crushing or hinging occurring over the majority of the length of pipe under the roadway. Moderate degree of dimpling appearing. Dimples more than ½ inch deep. Wall tearing or cracking in the buckled region. Pipe deflection greater than 20% from original shape. Severe dimpling accompanied with wall splits.	Culvert not functioning due to alignment problems throughout. Large voids seen in fill through offset joints.	Critical
2	Pipe partially collapsed or collapse is imminent.	Pipe partially collapsed or collapse is imminent.	Pipe partially collapsed or collapse is imminent.	Pipe partially collapsed or collapse is imminent.	Imminent Failure
1	Total failure of pipe.	Total failure of pipe.	Total failure of pipe.	Total failure of pipe.	Failed

* For open bottom structures, rate footing condition. If concrete invert present, rate invert based upon Concrete Structural Deterioration.

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PLASTIC PIPE

Plastic Pipe	Blockage	Scour	Condition
10	No blockage. Designed condition.	No evidence of scour at either inlet or outlet of culvert.	Excellent
9	Minor amounts of sediment build-up with no appreciable loss of opening.	Minor scour holes developing at inlet or outlet. Scour protection placed.	Very Good
8	Culvert waterway blockage is less than 5% of the cross sectional area of the opening. Bank and channel have minor amounts of drift.	Minor scour holes developing at inlet or outlet. Top of footings is exposed. Probing indicates soft material in scour hole.	Good
7	Culvert waterway blockage is less than 10% of the cross sectional area of the opening. Sediment buildup causing flow through 1 of 2 pipes. Silt and Gravel buildup restricts half of the channel. Tree or bush growing in the channel. Fence placed at inlet or outlet. Rock dams in culvert.	Minor scour holes, 1 foot or less deep, developing at inlet or outlet. Footings along the side are exposed less than 6 inches. Damage to scour counter measures. Probing indicates soft material in scour hole.	Satisfactory
6	Culvert waterway blockage is less than 30% of the cross sectional area of the opening. Tree or bush growing in channel. Fence placed at inlet or outlet. Rock dams in culvert.	Minor scour holes, 2 feet or less deep, developing at inlet or outlet. Footings along the side are exposed less than 12 inches. Damage to scour counter measures. Probing indicates soft material in scour hole.	Fair
5	Culvert waterway blockage is less than 40% of the cross sectional area of the opening. Occasional overtopping of roadway. Large deposits of debris are in the waterway.	Significant scour holes, 3 feet or less deep, developing at inlet or outlet. Does not appear to be undermining cutoff walls or headwalls. Bottom of footing is exposed. Major stream erosion behind headwall that threatens to undermine culvert.	Poor
4	Culvert waterway blockage is less than 80% of the cross sectional area of the opening. Overtopping of roadway with significant traffic delays.	Major scour holes, 3 feet or deeper, at inlet or outlet undermining cutoff walls or headwalls. Footing is undermined.	Serious
3	Culvert waterway blockage is 80% or greater of the cross sectional area of the opening. Frequent overtopping of roadway with significant traffic delays.	Streambed degradation causing severe settlement.	Critical
2	Culvert waterway completely blocked and causing water to pool. Road closed because of channel failure.	Culvert closed because of channel failure.	Imminent Failure
1	Total failure of pipe.	Total failure of culvert because of channel failure.	Failed

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MASONRY

Masonry	Structural Deterioration	Invert Deterioration*	Section Deformation	Joints/Seams	Condition
10	New Condition	New condition	Not Applicable: Rigid material pipes are not rated for deformation	Straight line between sections.	Excellent
9	No cracking. No missing or dislocated masonry. Surface in great condition.	Good with no invert erosion		No settlement or misalignment. Tight with no defects apparent.	Very Good
8	Surface deterioration at isolated locations.	Good with only minor invert erosion		Minor misalignment at joints. Minor settlement. Distress to pipe material adjacent to joint. Shallow mortar deterioration at isolated locations.	Good
7	Minor cracking in masonry units	Minor erosion near footings		Misalignment of joints but no infiltration. Settlement. Dislocated end section. Extensive areas of shallow deterioration. Missing mortar at isolated locations. Minor cracking.	Satisfactory
6	Minor cracking. Slight dislocation of masonry units. Large areas of surface scaling. Split or cracked stones.	Moderate erosion along footing; protective measures may be required		Joint open and allowing backfill to infiltrate. Significant cracking, spalling, or buckling of pipe material. Joint offset less than 3 inches. End sections dislocated and about to drop off from main portion of the structure. Mortar generally deteriorated. Loose or missing mortar at isolated locations. Infiltration staining apparent.	Fair
5	Extensive cracking. Significant dislocation of masonry units. Large areas of surface scaling. Split or cracked stones.	Erosion along footing with slight undermining, protection required		Differential movement and separation of joints. Significant infiltration or exfiltration at joints. Joint offset less than 4 inches. Voids seen in fill through offset joints. End sections dropped off at inlet. Mortar severely deteriorated. Significant loss of mortar. Significant infiltration or exfiltration between masonry units.	Poor
4	Severe cracking with spalling. Delamination(s). Slight differential movement. Individual lower masonry units of structure missing or crushed.	Severe undermining with slight differential settlement causing minor cracking or spalling in footing and minor distress in walls		Significant openings. Dislocated joints at several locations exposing fill material with joint offsets greater than 4 inches. Infiltration or exfiltration causing misalignment of pipe and settlement or depressions in roadway. Large voids seen in fill through offset joints. Extensive areas of missing mortar for masonry structures.	Serious
3	Cracking very severe with significant spalling, delamination, and differential movement. Individual masonry units in lower part of structure missing or crushed. Individual masonry units in top of culvert missing or crushed.	Severe undermining with significant differential settlement causing severe cracks in footing and distress in walls		Culvert not functioning due to alignment problems throughout. Large voids seen in fill through offset joints.	Critical
2	Structure partially collapsed or collapse is imminent.	Structure partially collapsed or collapse is imminent.		Pipe partially collapsed or collapse is imminent.	Imminent Failure
1	Total failure of structure.	Total failure of structure.		Total failure of pipe.	Failed

* For open bottom structures, rate footing condition. If concrete invert present, rate invert based upon Concrete Structural Deterioration.

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MASONRY

Masonry	Blockage	Scour	Condition
10	No blockage. Designed condition.	No evidence of scour at either inlet or outlet of culvert.	Excellent
9	Minor amounts of sediment build-up with no appreciable loss of opening.	Minor scour holes developing at inlet or outlet. Scour protection placed.	Very Good
8	Culvert waterway blockage is less than 5% of the cross sectional area of the opening. Bank and channel have minor amounts of drift.	Minor scour holes developing at inlet or outlet. Top of footings is exposed. Probing indicates soft material in scour hole.	Good
7	Culvert waterway blockage is less than 10% of the cross sectional area of the opening. Sediment buildup causing flow through 1 of 2 pipes. Silt and Gravel buildup restricts half of the channel. Tree or bush growing in the channel. Fence placed at inlet or outlet. Rock dams in culvert.	Minor scour holes, 1 foot or less deep, developing at inlet or outlet. Footings along the side are exposed less than 6 inches. Damage to scour counter measures. Probing indicates soft material in scour hole.	Satisfactory
6	Culvert waterway blockage is less than 30% of the cross sectional area of the opening. Tree or bush growing in channel. Fence placed at inlet or outlet. Rock dams in culvert.	Minor scour holes, 2 feet or less deep, developing at inlet or outlet. Footings along the side are exposed less than 12 inches. Damage to scour counter measures. Probing indicates soft material in scour hole.	Fair
5	Culvert waterway blockage is less than 40% of the cross sectional area of the opening. Occasional overtopping of roadway. Large deposits of debris are in the waterway.	Significant scour holes, 3 feet or less deep, developing at inlet or outlet. Does not appear to be undermining cutoff walls or headwalls. Bottom of footing is exposed. Major stream erosion behind headwall that threatens to undermine culvert.	Poor
4	Culvert waterway blockage is less than 80% of the cross sectional area of the opening. Overtopping of roadway with significant traffic delays.	Major scour holes, 3 feet or deeper, at inlet or outlet undermining cutoff walls or headwalls. Footing is undermined.	Serious
3	Culvert waterway blockage is 80% or greater of the cross sectional area of the opening. Frequent overtopping of roadway with significant traffic delays.	Streambed degradation causing severe settlement.	Critical
2	Culvert waterway completely blocked and causing water to pool. Road closed because of channel failure.	Culvert closed because of channel failure.	Imminent Failure
1	Total failure of pipe.	Total failure of culvert because of channel failure.	Failed

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SLAB & ABUTMENT

Slab/ Superstructure & Abutment	Structural Deterioration	Invert Deterioration*	Concrete Abutment	Masonry Abutment	Condition
10	No signs of distress. No discoloration.	New condition	No signs of distress. No discoloration.	No signs of distress. Minor spalling of stone surface.	Excellent
9	Minor scaling less than ⅛ inch deep over 5% of deck surface. Hairline cracking without rust staining or delamination. No dampness. No leakage. No spalling. Isolated damage from construction.	Good with no invert erosion	Minor scaling less than ⅛ inch deep over 5% of concrete surface. Hairline cracking. No rust staining, delamination(s), dampness, leakage, or spalling. Minor construction damage.	Minor spalling of stone surface. Scaling of stone surface less than ½ inch.	Very Good
8	Hairline cracking with no single crack greater then 1/16 inch parallel to the direction of traffic. Light scaling less than ⅛ inch deep on less than 10% of exposed area. Delaminated or spalled area less than 1% of surface area but not including the first 12 inches of the outside slab edges. Isolated damage from construction or vehicle impact. Slab may have a single large crack less than 3/16 inch on bottom surface parallel to the direction of traffic.	Good with only minor invert erosion	Hairline cracking. No single crack greater than 1/16 inch. No rust staining. Light scaling less than ⅛ inch deep on less than 10% of exposed area. Delaminated and spalled area less than 1% of surface area.	Diagonal or vertical shear crack in isolated stones. Fracture of stone surface less than 2 inches.	Good
7	Transverse cracks evident on bottom side: Spaced 10'-20' with or without water leaking through cracks. Some spalling may be present on 1% - 10% of total deck area. Spalled areas with exposed reinforcing on less than 5% of slab area. Hairline map cracking combined with molted areas. Cracks less than ⅛ inch parallel to traffic with minor efflorescence or minor amounts of leakage. Scaling, less than ¼ inch deep, on less than 20% of slab area. Additional delaminated and spalled areas on less than 10% of surface area: Exclude the first 12 inches of the outside slab edges.	Minor erosion near footings	Hairline map cracking combined with molted areas. Horizontal and diagonal cracks less than ⅛ inch with minor efflorescence or minor amounts of leakage. Scaling less than ¼ inch deep on less than 20% of slab area. Spalled areas with exposed reinforcing on less than 5% of slab area. Delaminated and spalled area less than 10% of surface area. Minor differential settlement.	Diagonal or vertical shear cracks through several courses of stone with some minor displacement. Spalls along edge of seat area.	Satisfactory
6	Map cracking. Cracks less than ⅛ inch parallel to traffic and cracks less than 1/16 inch transverse to traffic with efflorescence or rust stain, leakage and molted areas. Scaling, less than 3/16th inch deep, on less than 30% of exposed area. Spalled areas with exposed reinforcing less than 10%. Total delaminated and spalled areas less than 20% of surface area excluding the first 12 inches of the outside slab edges.	Moderate erosion along footing; protective measures may be required	Map cracking. Horizontal cracks less than ⅛ inch. Diagonal cracks less than 1/16 inch with efflorescence or rust stain or leakage, or molted areas or all. Scaling less than 3/16 inch deep on less than 30% of exposed area. Spalled areas with less than 10% showing exposed reinforcing. Total delaminated and spalled areas on less than 20% of surface area. Moderate differential or rotational settlement.	Diagonal or vertical shear cracks through several courses of stone with displacement. Displacement may be bulge or leaning stones. Total displacement is less than ¼ of stone depth.	Fair
5	Steel plates covering full depth holes. Map cracking with dark damp areas and effloresces over at least 30% of deck bottom. Several transverse cracks open more than ⅛ inch with efflorescence and rust staining. Spalling at numerous locations. Extensive surface scaling greater than ½ inch deep. Reinforcing steel bars have extensive section loss: 4 or more adjacent bars with more than 10% of original diameter lost. Total delaminated and spalled areas greater than 25% of surface area excluding the first 12 inches of the outside slab edges.	Erosion along footing with slight undermining, protection required	Map cracking with dark or damp areas, efflorescence, and unsound concrete over 30% of abutment face. Several horizontal and diagonal cracks open more than ⅛ inch with efflorescence and rust staining. Spalling at numerous locations. Extensive surface scaling greater than ½ inch deep. Total delaminated and spalled areas on less than 25% of surface area. Reinforcing steel bars have extensive section losses greater than 10% of original diameter for more than 4 adjacent bars. Severe differential or rotational settlement.	Settlement causing diagonal or vertical shear cracks through several courses of stone with displacement. Total displacement is less than ⅓ of stone depth. Large fractures or erosion of stone surfaces less than 5 inches on adjacent stones. Spalls on beam seats cause reduced bearing area.	Poor
4	Refer to the above rating except reinforcing steel bars have extensive section loss: Greater than 20% of original diameter for more than 5 adjacent bars.	Severe undermining with slight differential settlement causing minor cracking or spalling in footing and minor distress in walls	Map cracking with dark or damp areas and effloresces over at least 40% of abutment face. Several transverse cracks open more than ¼ inch with efflorescence and rust staining. Spalling at numerous locations. Extensive surface scaling greater than ½ inch. Total delaminated and spalled areas over more than 25% of surface area. Reinforcing steel bars have extensive section losses greater than 20% of original diameter for more than 5 adjacent bars. Severe differential or rotational settlement.	Large unsound areas. Several stones are displaced or missing. Misalignment of mortar joints. Large fractures or erosion of stone surfaces greater than 5 inches. Spalls on beam seats causing reduced bearing area.	Serious
3	Full depth holes. Total delaminated, spalled, map cracking, and punky concrete areas are greater than 50% of surface area. Reinforcing steel bars have extensive section loss: Greater than 30% of original diameter for more than 10 adjacent bars. Additional dark and damp areas over at least 50% of deck.	Severe undermining with significant differential settlement causing severe cracks in footing and distress in walls	Cracking and white efflorescence. Total delaminated, spalled, map cracking, and unsound concrete areas on over 50% of surface area. Reinforcing steel bars have extensive section losses greater than 30% of original diameter for more than 10 adjacent bars. Extreme differential or rotational settlement.	Numerous missing or displaced stones. Displacements greater than 1/3 of stone depth. Partially collapsed wingwall.	Critical
2	Structure partially collapsed or collapse is imminent.		Structure partially collapsed or collapse is imminent.	Pipe partially collapsed or collapse is imminent.	Imminent Failure
1	Total failure of structure.		Total failure of structure.	Total failure of pipe.	Failed

* For open bottom structures, rate footing condition. If concrete invert present, rate invert based upon Concrete Structural Deterioration.

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SLAB & ABUTMENT

Slab/ Superstructure & Abutment	Blockage	Scour	Condition
10	No blockage. Designed condition.	No evidence of scour at either inlet or outlet of culvert.	Excellent
9	Minor amounts of sediment build-up with no appreciable loss of opening.	Minor scour holes developing at inlet or outlet. Scour protection placed.	Very Good
8	Culvert waterway blockage is less than 5% of the cross sectional area of the opening. Bank and channel have minor amounts of drift.	Minor scour holes developing at inlet or outlet. Top of footings is exposed. Probing indicates soft material in scour hole.	Good
7	Culvert waterway blockage is less than 10% of the cross sectional area of the opening. Sediment buildup causing flow through 1 of 2 pipes. Silt and Gravel buildup restricts half of the channel. Tree or bush growing in the channel. Fence placed at inlet or outlet. Rock dams in culvert.	Minor scour holes, 1 foot or less deep, developing at inlet or outlet. Footings along the side are exposed less than 6 inches. Damage to scour counter measures. Probing indicates soft material in scour hole.	Satisfactory
6	Culvert waterway blockage is less than 30% of the cross sectional area of the opening. Tree or bush growing in channel. Fence placed at inlet or outlet. Rock dams in culvert.	Minor scour holes, 2 feet or less deep, developing at inlet or outlet. Footings along the side are exposed less than 12 inches. Damage to scour counter measures. Probing indicates soft material in scour hole.	Fair
5	Culvert waterway blockage is less than 40% of the cross sectional area of the opening. Occasional overtopping of roadway. Large deposits of debris are in the waterway.	Significant scour holes, 3 feet or less deep, developing at inlet or outlet. Does not appear to be undermining cutoff walls or headwalls. Bottom of footing is exposed. Major stream erosion behind headwall that threatens to undermine culvert.	Poor
4	Culvert waterway blockage is less than 80% of the cross sectional area of the opening. Overtopping of roadway with significant traffic delays.	Major scour holes, 3 feet or deeper, at inlet or outlet undermining cutoff walls or headwalls. Footing is undermined.	Serious
3	Culvert waterway blockage is 80% or greater of the cross sectional area of the opening. Frequent overtopping of roadway with significant traffic delays.	Streambed degradation causing severe settlement.	Critical
2	Culvert waterway completely blocked and causing water to pool. Road closed because of channel failure.	Culvert closed because of channel failure.	Imminent Failure
1	Total failure of pipe.	Total failure of culvert because of channel failure.	Failed

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CMP SECTION DEFORMATION

CMP Section Deformation	Round/Vertical/ Elongated Pipes	Pipe Arch	Plate Arch	Box	Low Profile Long Span*	High Profile Long Span*	Pear*	Horizontal Ellipse*	Condition
10	New Condition	New Condition	New Condition	New Condition	New Condition	New Condition	New Condition	New Condition	Excellent
9	Good, smooth curvature in barrel. Horizontal diameter (span) dimension within 10% of original design.	Good with smooth curvature in barrel. Horizontal span dimension less than 3% greater than original design.	Good, smooth symmetrical curvature. Rise: within +/- 3 percent of original design.	Good appearance, smooth symmetrical curvature. Top arc mid-ordinate: within 11 percent of original design. Horizontal span: within 5 percent of original design. Sides: straight leg very slightly deflected inward or outward and curvature smooth	Good appearance, smooth symmetrical curvature. Top arc mid-ordinate: within 11 percent of original design. Horizontal span: within 5 percent of original design.	Good appearance, smooth symmetrical curvature. Top arc mid-ordinate: within 11 percent of original design. Horizontal span: within 5 percent of original design.	Good appearance, smooth symmetrical curvature. Top arc mid-ordinate: within 11 percent of original design. Horizontal span: within 5 percent of original design. Side plates: smooth curvature	Good appearance, smooth symmetrical curvature. Top arc mid-ordinate: within 11 percent of original design. Horizontal span: within 5 percent of original design. Bottom arc: smooth curvature, mid-ordinate within 50 percent of original design.	Very Good
8	Generally good, top half of pipe smooth but minor flattening of bottom. Horizontal diameter (span) dimension within 10% of original design.	Generally good, smooth curvature in top half, flattened but still curved. Horizontal span within 3 to 5 percent greater than design.	Generally good with smooth curvature, symmetrical; slight flattening of top or sides in one section. Rise within 3 to 4 percent of original design.	Generally good; curvature is smooth and symmetrical. Top arc mid-ordinate: within 11 percent to 15 percent of original design. Sides: straight leg slightly deflected inward or moderately deflected outward, curvature smooth.	Generally good; curvature is smooth and symmetrical. Top arc mid-ordinate: within 11 percent to 15 percent of original design. Horizontal span: within 5 percent of original design.	Generally good; curvature is smooth and symmetrical. Top arc mid-ordinate: within 11 percent to 15 percent of original design. Horizontal span: within 5 percent of original design.	Generally good; curvature is smooth and symmetrical. Top arc mid-ordinate: within 11 percent to 15 percent of original design. Horizontal span: within 5 percent of original design. Side plates: side flattened, mid-ordinate less than 50 percent of original design.	Generally good; curvature is smooth and symmetrical. Top arc mid-ordinate: within 11 percent to 15 percent of original design. Horizontal span: within 5 percent of original design. Bottom arc: bottom flattened, mid-ordinate less than 50 percent of original design.	Good
7	Fair, top half has smooth curvature but bottom half has flattened significantly. Horizontal diameter (span) dimension within 10% of original design.	Fair, smooth curvature in top half, bottom flat. Horizontal span 5 percent greater than original design.	Fair, smooth curvature but non-symmetrical; slight flattening of top and sides throughout. Rise: within 4 to 5 percent of original design.	Smooth curvature, shape is non-symmetrical. Top arc mid-ordinate: within 15 percent of original design. Horizontal span: more than +/- 5 percent of design. Sides: straight leg moderately deflected inward or extremely deflected outward, curvature smooth.	Smooth curvature, shape is non-symmetrical. Top arc mid-ordinate: within 15 percent of original design. Horizontal span: more than +/- 5 percent of design.	Smooth curvature, shape is non-symmetrical. Top arc mid-ordinate: within 15 percent of original design. Horizontal span: more than +/- 5 percent of design.	Smooth curvature, shape is non-symmetrical. Top arc mid-ordinate: within 15 percent of original design. Horizontal span: more than +/- 5 percent of design. Side plates: side flattened, mid-ordinate less than 35 percent of original design.	Smooth curvature, shape is non-symmetrical. Top arc mid-ordinate: within 15 percent of original design. Horizontal span: more than +/- 5 percent of design. Bottom arc: bottom flattened and irregular, mid-ordinate less than 50 percent of original design.	Satisfactory
6	Generally fair, significant distortion at isolated locations in top half and extreme flattening of the invert. Horizontal diameter (span) dimension 10% to 15% greater than original design.	Generally fair, significant distortion in top in one location; bottom has slight reverse curvature in one location. Horizontal span: within 5 to 7 percent greater than original design.	Generally fair, significant distortion and deflection in one section; sides beginning to flatten; non-symmetrical. Rise: within 5 to 7 percent of original design.	Generally fair; significant distortion and deflection in one section; half top of arcs beginning to flatten; mid-ordinate of half top arc 30 percent less than original design. Top arc mid-ordinate: within 15 to 20 percent of original design. Horizontal span: more than +/- 5 percent of original design. Sides: straight leg bowed inward significantly or extremely bowed outward for distance of less than 1/4 span length	Generally fair; significant distortion and deflection is one section; half top of arcs beginning to flatten; mid-ordinate of half top arc 30 percent less than original design. Top arc mid-ordinate: within 15 to 20 percent of original design. Horizontal span: more than +/- 5 percent of original design.	Generally fair; significant distortion and deflection is one section; half top of arcs beginning to flatten; mid-ordinate of half top arc 30 percent less than original design. Top arc mid-ordinate: within 15 to 20 percent of original design. Horizontal span: more than +/- 5 percent of original design.	Generally fair; significant distortion and deflection is one section; half top of arcs beginning to flatten; mid-ordinate of half top arc 30 percent less than original design. Top arc mid-ordinate: within 15 to 20 percent of original design. Horizontal span: more than +/- 5 percent of original design. Side plates: side flattened, mid-ordinate less than 25 percent of original design.	Generally fair; significant distortion and deflection is one section; half top of arcs beginning to flatten; mid-ordinate of half top arc 30 percent less than original design. Top arc mid-ordinate: within 15 to 20 percent of original design. Horizontal span: more than +/- 5 percent of original design. Bottom arc: bottom virtually flat over center half of arc	Fair
5	Marginal significant distortion throughout length of pipe, lower third may be kinked. Horizontal diameter (span) dimension 10% to 15% greater than original design.	Marginal, significant distortion all along top of arch, bottom has reverse curve. Horizontal span: more than 7 percent greater than original design	Marginal, significant distortion and deflection throughout; sides flattened with radius 100 percent greater than design. Rise: within 7 to 8 percent of original design	Marginal, significant distortion and deflection throughout; mid-ordinate of half top arc less than 50 percent of original design. Top arc mid-ordinate: within 20 to 30 percent of design. Horizontal span: more than +/- 5 percent of design. Sides: straight leg bowed inward significantly or extremely bowed outward for distance between 1/4 and 1/2 span length, curvature irregular	Marginal, significant distortion and deflection throughout; mid-ordinate of half top arc less than 50 percent of original design. Top arc mid-ordinate: within 15 to 20 percent of design. Horizontal span: more than +/- 5 percent of design.	Marginal, significant distortion and deflection throughout; mid-ordinate of half top arc less than 50 percent of original design. Top arc mid-ordinate: within 15 to 20 percent of design. Horizontal span: more than +/- 5 percent of design.	Marginal, significant distortion and deflection throughout; mid-ordinate of half top arc less than 50 percent of original design. Top arc mid-ordinate: within 15 to 20 percent of design. Horizontal span: more than +/- 5 percent of design. Side plates: side flattened, mid-ordinate less than 20 percent of original design.	Marginal, significant distortion and deflection throughout; mid-ordinate of half top arc less than 50 percent of original design. Top arc mid-ordinate: within 15 to 20 percent of design. Horizontal span: more than +/- 5 percent of design. Bottom arc: bottom virtually flat over center half of arc and deflected down at corners.	Poor
4	Poor with extreme deflection at isolated locations, flattening of the crown, crown radius 20 to 30 feet. Horizontal diameter (span) dimension in excess of 15% greater than original design.	Poor, extreme deflection in top arch in one section; bottom has reverse curvature throughout. Horizontal span: more than 7 percent greater than original design.	Poor, extreme distortion and deflection in one section; sides virtually flattened; extremely non-symmetrical. Rise: within 8 to 10 percent of original design.	Poor, extreme distortion and deflection in one section and ordinate of half top arc 50 to 70 percent less than design. Top arc mid-ordinate: 30 to 40 percent less than original design. Horizontal span: more than +/- 6 percent of original design. Sides: straight leg extremely bowed inward for distance less than 1/2 span length of leg bowed outward severely causing bulges in metal.	Poor, extreme distortion and deflection in one section and ordinate of half top arc 50 to 70 percent less than design. Top arc mid-ordinate: 20 to 30 percent less than original design. Horizontal span: more than +/- 6 percent of original design.	Poor, extreme distortion and deflection in one section and ordinate of half top arc 50 to 70 percent less than design. Top arc mid-ordinate: 20 to 30 percent less than original design. Horizontal span: more than +/- 6 percent of original design.	Poor, extreme distortion and deflection in one section and ordinate of half top arc 50 to 70 percent less than design. Top arc mid-ordinate: 20 to 30 percent less than original design. Horizontal span: more than +/- 6 percent of original design. Side plates: side flattened, mid-ordinate less than 12 percent of design.	Poor, extreme distortion and deflection in one section and ordinate of half top arc 50 to 70 percent less than design. Top arc mid-ordinate: 20 to 30 percent less than original design. Horizontal span: more than +/- 6 percent of original design. Bottom arc: bottom reverse curved in center.	Serious
3	Critical, extreme distortion and deflection throughout pipe, flattening of the crown, crown radius over 30 feet. Horizontal diameter (span) dimension more than 20% greater than original design.	Critical, extreme deflection along top of pipe. Horizontal span: more than 7 percent greater than original design.	Critical, extreme deflection, throughout; sides flattened; extremely non-symmetrical. Rise: greater than 10 percent of original design	Critical, extreme distortion and end deflection throughout; mid-ordinate of half top arc more than 70 percent less than design. Top arc mid-ordinate: more than 40 percent of original design. Horizontal span: more than +/- 8 percent of design. Sides: straight leg extremely bowed inward for a distance of 1/2 to 1 span length, or leg bowed outward severely causing bulges or kinking in metal.	Critical, extreme distortion and end deflection throughout; mid-ordinate of half top arc more than 70 percent less than design. Top arc mid-ordinate: more than 30 percent of original design. Horizontal span: more than +/- 8 percent of design.	Critical, extreme distortion and end deflection throughout; mid-ordinate of half top arc more than 70 percent less than design. Top arc mid-ordinate: more than 30 percent of original design. Horizontal span: more than +/- 8 percent of design.	Critical, extreme distortion and end deflection throughout; mid-ordinate of half top arc more than 70 percent less than design. Top arc mid-ordinate: more than 30 percent of original design. Horizontal span: more than +/- 8 percent of design. Side plates: side flattened, mid-ordinate less than 10 percent of design.	Critical, extreme distortion and deflection throughout; mid-ordinate of half top arc more than 70 percent less than design. Top arc mid-ordinate: more than 30 percent of original design. Horizontal span: more than +/- 8 percent of design. Bottom arc: bottom reversed curved in center and bulged out at sides.	Critical
2	Partially collapsed with crown in reverse curvature	Structure partially collapsed	Severe due to partial collapse; local reverse curve of crown and sides	Severe due to partial collapse; top arc curvature flat or reverse curved.	Severe due to partial collapse; top arc curvature flat or reverse curved.	Severe due to partial collapse; top arc curvature flat or reverse curved.	Severe due to partial collapse; top arc curvature flat or reverse curved. Side plates: side flat or reversed curved	Severe due to partial collapse; top arc curvature flat or reverse curved.	Imminent Failure
1	Structure collapsed	Structure collapsed	Completely collapsed	Completely collapsed	Completely collapsed	Completely collapsed	Completely collapsed	Completely collapsed	Failed

* These geometries are uncommon for spans under 20 feet..

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CMP JOINTS & SEAMS

CMP Joints & Seams	Pipe Joints or Seams	Multi-plate Joints or Seams	Condition
10	Straight line between sections.	Minor amounts of efflorescence or staining	Excellent
9	No settlement or misalignment. Tight with no defects apparent.	Light surface rust on bolts due to loss of galvanizing. Efflorescence staining.	Very Good
8	Minor misalignment at joints. Minor settlement. Distress to pipe material adjacent to joint.	Metal has cracking on each side of a bolt hole: Less than 3 in a seam section. Minor seam openings that are less than ⅛ inch. Potential for backfill infiltration. More than 2 missing bolts in a row. Rust scale around bolts.	Good
7	Misalignment of joints but no infiltration. Settlement. Dislocated end section. Extensive areas of shallow deterioration.	Evidence of backfill infiltration through seams.	Satisfactory
6	Joint open and allowing backfill to infiltrate. Significant cracking or buckling of pipe material. Joint offset less than 3 inches. End sections dislocated and about to drop off from main portion of the structure. Infiltration staining apparent.	Moderate cracking at bolt holes along a seam in one section. Backfill being lost through seam causing slight deflection. Less than 6 missing bolts in a row or 20% along the total seam.	Fair
5	Differential movement and separation of joints. Significant infiltration or exfiltration at joints. Joint offset less than 4 inches. Voids seen in fill through offset joints. End sections dropped off at inlet.	Major cracking of seam near crown. Infiltration of backfill causing major deflection. Partial cocked and cusped seams. 10% section loss to bolt heads along seams.	Poor
4	Significant openings. Dislocated joints at several locations exposing fill material with joint offsets greater than 4 inches. Infiltration or exfiltration causing misalignment of pipe and settlement or depressions in roadway. Large voids seen in fill through offset joints.	Longitudinal cocked and cusped seams. Metal has 3 inch crack on each side of the bolt hole run for the entire length of the culvert. Missing or tipping bolts.	Serious
3	Culvert not functioning due to alignment problems throughout. Large voids seen in fill through offset joints.	Seam cracked from bolt to bolt. Significant amounts of backfill infiltration.	Critical
2	Pipe partially collapsed or collapse is imminent.	Pipe partially collapsed or collapse is imminent.	Imminent Failure
1	Total failure of pipe.	Total failure of pipe.	Failed

* For open bottom structures, rate footing condition. If concrete invert present, rate invert based upon Concrete Structural Deterioration.

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TIMBER

Timber	Structural Deterioration	Invert Deterioration*	Section Deformation	Joints/Seams	Condition
10	New condition	New condition	Not Applicable: Not rated for deformation	Straight line between sections.	Excellent
9	No evidence decay or abrasion/wear. Connections are in place and functioning as intended.	Good with no invert erosion		No settlement or misalignment. Tight with no defects apparent.	Very Good
8	Little to no evidence of decay. Minor abrasion/wearing. Connections are in place and functioning as intended. No issues with structural members. Checks/cracks penetrate <5% of the member thickness. Member does not have splits or shakes.	Good with only minor invert erosion		Minor misalignment at joints. Minor settlement. Distress to pipe material adjacent to joint.	Good
7	Some evidence of decay, moderate abrasion/wearing, negligible section loss in structural members. Affects less than 10% of member section. Loose fasteners but the connection is in place and functioning as intended. Checks/Cracks penetrate 5-50% of the member thickness and not in tension zone.	Minor erosion near footings		Misalignment of joints but no infiltration. Settlement. Dislocated end section. Extensive areas of shallow deterioration.	Satisfactory
6	Some evidence of decay, moderate abrasion/wearing, negligible section loss in structural members. Affects less than 10% of member section. Loose fasteners or pack rust without distortion is present but the connection is in place and functioning as intended. Checks/Cracks penetrate 5-50% of the member thickness and not in tension zone. Member has splits/shakes with length less than member depth.	Moderate erosion along footing; protective measures may be required		Joint open and allowing backfill to infiltrate. Significant deterioration or buckling of pipe material. Joint offset less than 3 inches. End sections dislocated and about to drop off from main portion of the structure. Infiltration staining apparent.	Fair
5	Decay and section loss affects 10% or more of the member but does not warrant structural review. Loose fasteners or pack rust without distortion is present but the connection is in place and functioning as intended. Checks/cracks penetrate >50% of member thickness or >5% in tension zone. Member has splits/shakes with length greater than member depth.	Erosion along footing with slight undermining, protection required		Differential movement and separation of joints. Significant infiltration or exfiltration at joints. Joint offset less than 4 inches. Voids seen in fill through offset joints. End sections dropped off at inlet.	Poor
4	Decay and section loss affects 10% or more of the member but does not warrant structural review. Missing bolts, rivets, broken welds, fasteners, or pack rust with distortion but does not warrant structural review. Checks/cracks penetrate >50% of member thickness or >5% in tension zone. Member has splits/shakes with length greater than member depth and have not been arrested.	Severe undermining with slight differential settlement causing minor cracking or spalling in footing and minor distress in walls		Significant openings. Dislocated joints at several locations exposing fill material with joint offsets greater than 4 inches. Infiltration or exfiltration causing misalignment of pipe and settlement or depressions in roadway. Large voids seen in fill through offset joints.	Serious
3	The condition warrants a structural review to determine the effect on strength, or serviceability of the element OR a structural review has been completed and the defects impact strength or serviceability.	Severe undermining with significant differential settlement causing severe cracks in footing and distress in walls		Culvert not functioning due to alignment problems throughout. Large voids seen in fill through offset joints.	Critical
2	Structure partially collapsed or collapse is imminent.	Structure partially collapsed or collapse is imminent.		Pipe partially collapsed or collapse is imminent.	Imminent Failure
1	Total failure of structure.	Total failure of structure.		Total failure of pipe.	Failed

* For open bottom structures, rate footing condition. If concrete invert present, rate invert based upon Concrete Structural Deterioration.

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TIMBER

Timber	Blockage	Scour	Condition
10	No blockage. Designed condition.	No evidence of scour at either inlet or outlet of culvert.	Excellent
9	Minor amounts of sediment build-up with no appreciable loss of opening.	Minor scour holes developing at inlet or outlet. Scour protection placed.	Very Good
8	Culvert waterway blockage is less than 5% of the cross sectional area of the opening. Bank and channel have minor amounts of drift.	Minor scour holes developing at inlet or outlet. Top of footings is exposed. Probing indicates soft material in scour hole.	Good
7	Culvert waterway blockage is less than 10% of the cross sectional area of the opening. Sediment buildup causing flow through 1 of 2 pipes. Silt and Gravel buildup restricts half of the channel. Tree or bush growing in the channel. Fence placed at inlet or outlet. Rock dams in culvert.	Minor scour holes, 1 foot or less deep, developing at inlet or outlet. Footings along the side are exposed less than 6 inches. Damage to scour counter measures. Probing indicates soft material in scour hole.	Satisfactory
6	Culvert waterway blockage is less than 30% of the cross sectional area of the opening. Tree or bush growing in channel. Fence placed at inlet or outlet. Rock dams in culvert.	Minor scour holes, 2 feet or less deep, developing at inlet or outlet. Footings along the side are exposed less than 12 inches. Damage to scour counter measures. Probing indicates soft material in scour hole.	Fair
5	Culvert waterway blockage is less than 40% of the cross sectional area of the opening. Occasional overtopping of roadway. Large deposits of debris are in the waterway.	Significant scour holes, 3 feet or less deep, developing at inlet or outlet. Does not appear to be undermining cutoff walls or headwalls. Bottom of footing is exposed. Major stream erosion behind headwall that threatens to undermine culvert.	Poor
4	Culvert waterway blockage is less than 80% of the cross sectional area of the opening. Overtopping of roadway with significant traffic delays.	Major scour holes, 3 feet or deeper, at inlet or outlet undermining cutoff walls or headwalls. Footing is undermined.	Serious
3	Culvert waterway blockage is 80% or greater of the cross sectional area of the opening. Frequent overtopping of roadway with significant traffic delays.	Streambed degradation causing severe settlement.	Critical
2	Culvert waterway completely blocked and causing water to pool. Road closed because of channel failure.	Culvert closed because of channel failure.	Imminent Failure
1	Total failure of pipe.	Total failure of culvert because of channel failure.	Failed