

BIA Road Maintenance

Condition Rating of Service Levels Manual



DOI/ Division of Transportation
DEPARTMENT OF ROADS
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BIA

ENVISION THE ROADWAY OF TOMORROW

CONDITION RATING OF SERVICE LEVELS
for
ROADS (PAVED/UNPAVED) & BRIDGES



When assessing the value of any treatment to the pavement, research should measure those factors that relate to customer-driven issues such as safety, comfort, convenience, or life-cycle costs.

This process begins with an inspection of the roadway and all associated safety features:

The overall condition of roads and bridges should include, but is not limited to the inspection of: 1) roadway surface 2) shoulders 3) culverts 4) ditches and drainage 5) roadside appurtenances/guardrail 6) traffic signs 7) pavement markings and 8) traffic patterns

Inspection in these areas offers a method of determining pavement or surface deficiencies and related safety feature conditions, through observing and recording the presence of specific types and severities of defects or distresses. The elements of pavement condition rating are as follows:

A) type of defect B) severity of the defect C) extent to which the road surface is affected by the defect.

Using correct and appropriate performance measures is *key* to the success of pavement preservation. Performance measures must reflect the purpose of the prescribed activity. Treatments, like a fog seal, are intended to delay pavement aging not to enhance a pavement's strength.

Many treatments “cover up” or “mask” real distress. The goal is to make sure our pavement preservation treatments are **treating the cause of the problem(s) not just the symptoms.**

PAVED/UNPAVED - Roadway Maintenance and Operations

Level 1: This is a very high maintenance service level in which the roadway and associated features are in **excellent** condition. All systems are operational and users experience no delays.

At this maintenance service level, very few deficiencies are present and the overall appearance is pleasing. Preventive maintenance is practiced in all maintenance activities resulting in overall low life-cycle costs and pleasing appearance. Routine activities take place on a regular basis, requiring minimal corrective maintenance activities. (as represented in the guide sheets)

Level 2: This is a high maintenance service level in which the roadway and associated features are in **good** condition. All systems are operational. Users may experience occasional delays.

At this maintenance service level, very few deficiencies are present in safety and investment protection activities, but moderate deficiencies exist in all other areas. Preventive maintenance is practiced for safety-related work, is deferred in other areas, resulting in additional routine and corrective maintenance measures. Corrective maintenance of all elements is handled in a timely manner. Life-cycle costs for maintenance activities are generally low. (as represented in guidesheets)

Level 3: This is a medium maintenance service level in which the roadway and associated features are in **fair** condition. Systems may occasionally be inoperable and not available to users. Short-term delays may be experienced when repairs are being made, but would not be excessive.

At this maintenance service level, very few deficiencies are present in safety related activities, but moderate deficiencies exist for investment protection activities and significant aesthetic related deficiencies. Preventive maintenance is deferred for most activities except safety-critical work. More emphasis is placed on routine maintenance activities, and corrective maintenance occurs as necessary. A backlog of deficiencies begins to build up that will have to be dealt with eventually, at a higher cost. Some roadway structural problems begin to appear due to long-term deterioration of the system. There is a noticeable [decrease] in appearance. (as represented in guidesheets)

Level 4: This is a low maintenance service level in which the roadway and associated features are kept in generally **poor** condition. System failures occur regularly because it is impossible to react in a timely manner to all problems. Occasionally delays may be significant.

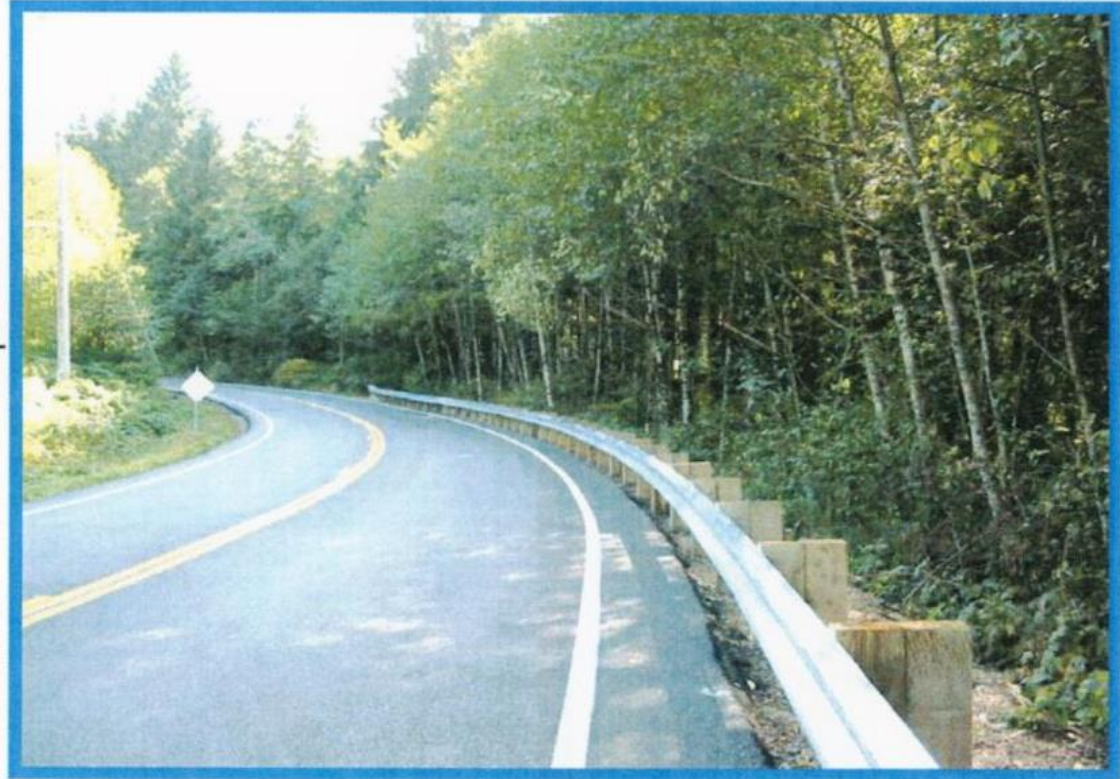
At this maintenance service level, moderate deficiencies are present in safety related activities, and significant deficiencies for all other activities. Little preventive maintenance is accomplished. Maintenance has become very reactionary and places emphasis on

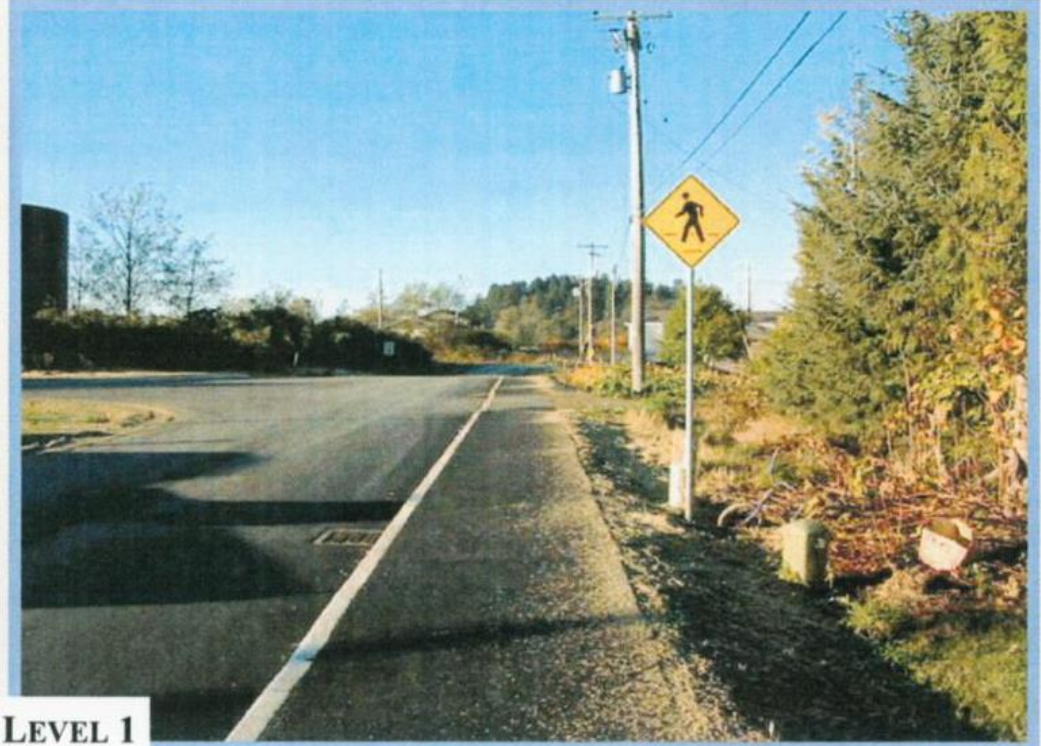
correcting problems as they occur. A significant backlog of deficiencies will begin to build up that will have to be dealt with eventually, at a much higher cost. Safety problems begin to appear that increase risk and liability, and significant roadway structural deficiencies exist that accelerate the long-term deterioration of the system. The overall appearance is very poor. (as represented in the guidesheets)

Level 5: This is a very low maintenance service level in which the roadway and associated features are kept in **very poor to failing** condition. A backlog of system failures would occur because it is impossible to react in a timely manner to all problems. Significant delays occur on a regular basis.

At this maintenance service level, significant deficiencies are present in all maintenance activities. The overall appearance is not aesthetically pleasing. Preventive maintenance is not realistic for any maintenance activity. Maintenance is totally reactive, and places emphasis on correcting problems after they occur. Significant backlogs of maintenance treatments are not enough to correct the deficiencies that exist, necessitating additional high-cost remedial construction preservation projects in the future. Overall maintenance operations are at their highest life-cycle cost. (as represented in guidesheets)

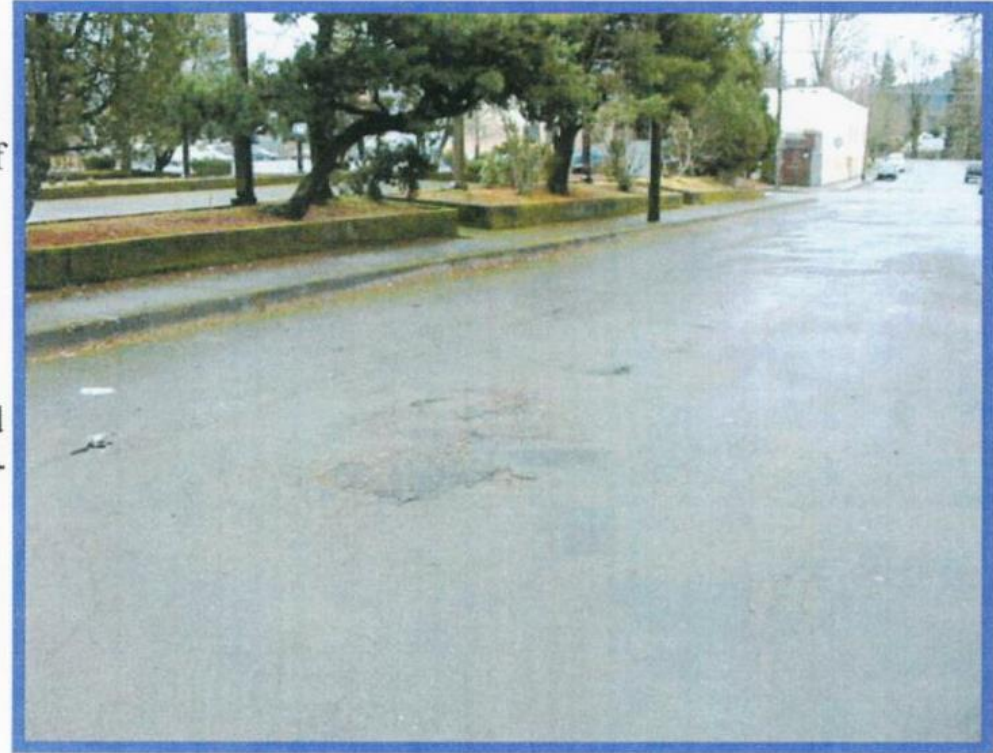
SERVICE LEVEL (1): Pavement has no unrepaired potholes, ruts, or unsealed cracks. Utility patching is minimal and no settlement of the pavement. There is no drop-off at the pavement edge. The shoulder is generally clean and free of debris. No noxious weeds, nuisance vegetation, or vegetation obstructions. All pavement striping, signs, and delineators are highly visible at night. Ditch lines, guardrail, highway signs, and sight lines are completely visible. Ditches and culverts flow freely. Storm drains are free of blockages, and slopes are stable. Guardrail is sound and functional.

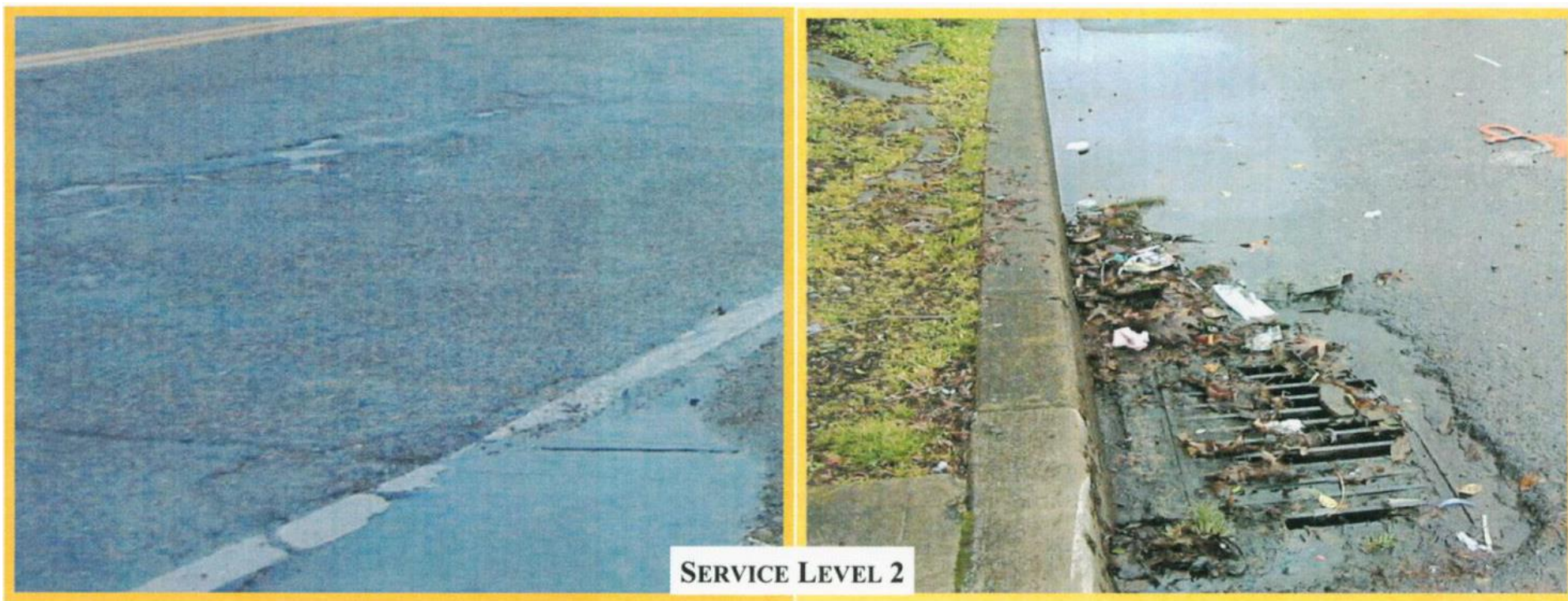




SERVICE LEVEL 1

SERVICE LEVEL (2): Pavement has a minor amount of unrepaired potholes, ruts, or unsealed cracks. Utility patching and minor settlement in pavement may be present. A minimal amount of drop-off and minor erosion at pavement edge is noticeable. The paved shoulder contains a small amount of debris build-up at the edge. Roadside has a minor amount of visible litter, noxious weeds, nuisance vegetation, or vegetation obstructions. Ditch lines guardrail, signs, and sight lines are slightly obscured by encroaching vegetation. Ditches and culverts have moderate silt and debris build-up. Storm drains have minor blockages. Minor pooling of water may occur during normal storm events. A small amount of striping, signs and/or delineators have lost some night reflectivity, are worn or missing. Guardrail has sustained minor visible damage, but is functionally sound.





SERVICE LEVEL 2

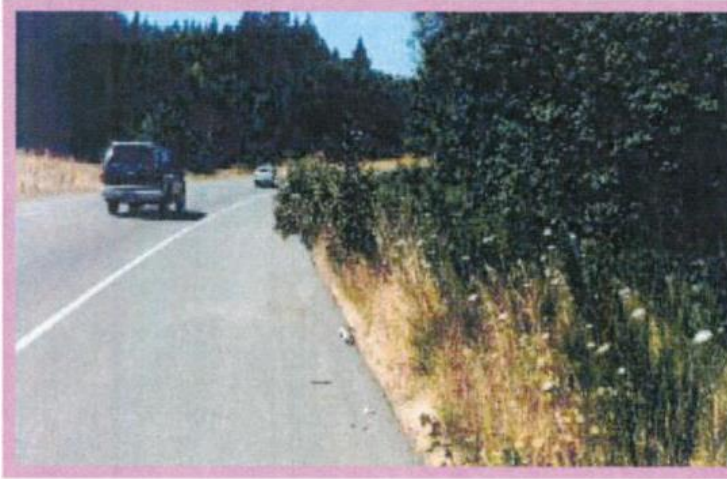
SERVICE LEVEL (3): Pavement has a moderate amount of unrepaired potholes, ruts, or unsealed cracks. A moderate amount of drop-off has developed at the pavement edge with some erosion visible. The paved shoulder contains a noticeable debris build-up that may be unsightly. Roadside has a moderate amount of litter, noxious weeds, nuisance vegetation, or vegetation obstructions. Vegetation is starting to encroach on the pavement edge, moderately obscuring ditch lines, guardrail, signs, and sight lines. Ditches and culverts have moderate silt and debris build-up. Storm drains have moderate blockages and slopes have moderate erosion or slides. Some standing water on shoulder and in ditches during major storm events. A moderate amount of striping, signs and delineators have lost some night reflectivity, are worn or missing. Guardrail is functionally sound, but has sustained moderate visible damage and some structural deterioration.



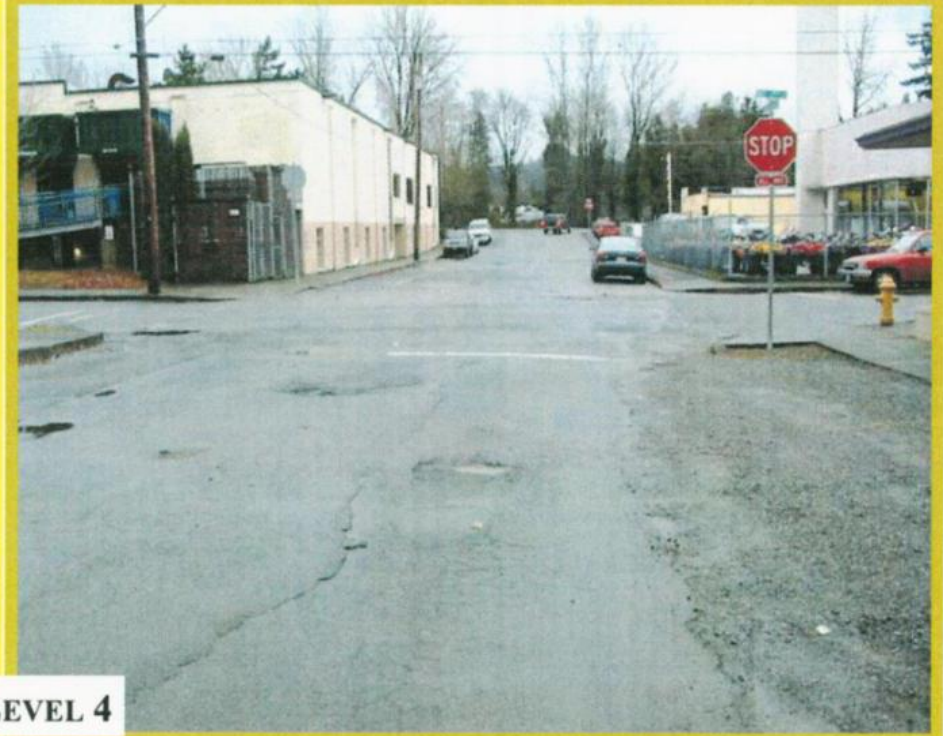
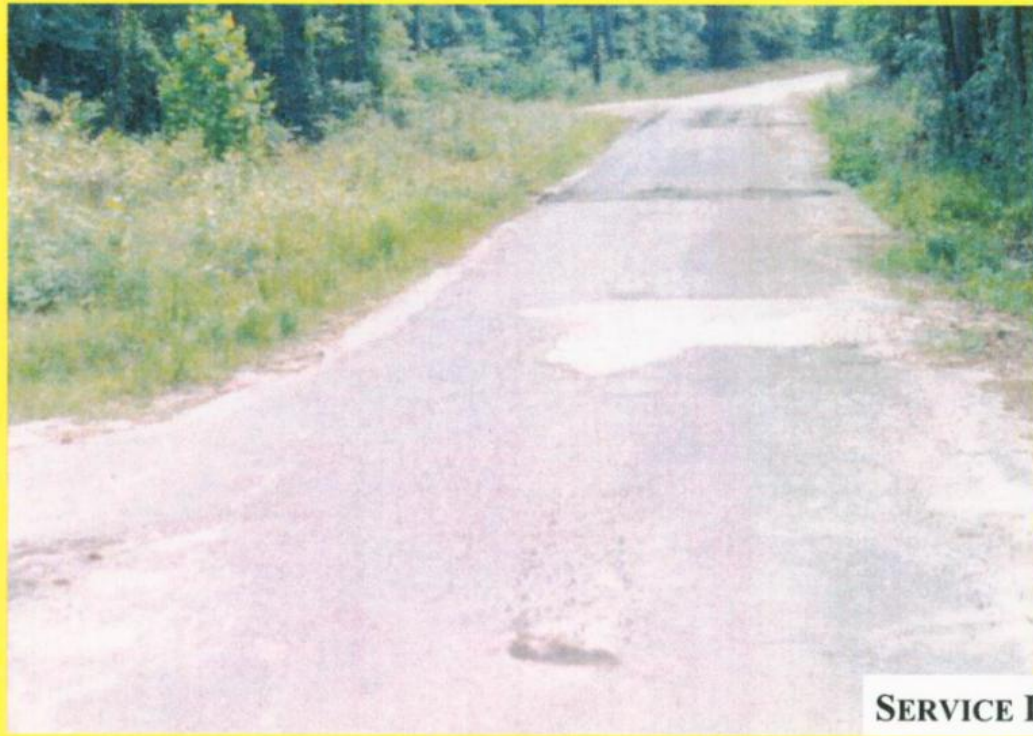


SERVICE LEVEL 3

SERVICE LEVEL (4): Pavement has a significant amount of unrepaired pot-holes, ruts or unsealed cracks. A significant drop-off has developed at the pavement edge with noticeable erosion. The paved shoulder contains significant debris that would restrict bicycle or pedestrian use, and be unsightly. The roadside has a significant amount of visible litter, noxious weeds, nuisance vegetation, or vegetation obstructions. Vegetation is encroaching on the pavement edge, significantly obscuring ditch lines, guardrail, signs and sight lines. Ditches and culverts have significant silt and debris build-up. Significant amount



of striping, signage, and delineators have lost night reflectivity, are worn or missing. Guardrail has sustained significant visible damage and moderate structural deterioration. Storm drains have significant blockages. Erosion or slides may encroach or threaten the roadway. Standing water visible in the travel lane(s) during a normal storm event.



SERVICE LEVEL 4

Rating of Maintenance Activity on BIA owned Roads

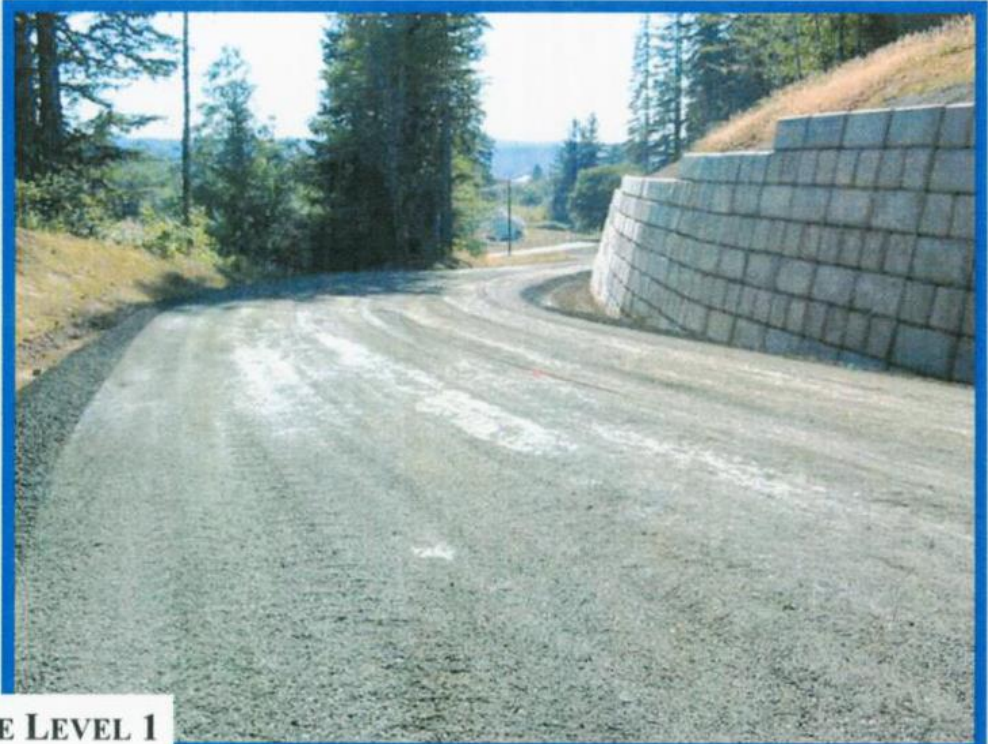
Condition Rating	Striping	Pavement Edge	Pot Holes	Signs	Vegetation	Drainage	Guardrail
1 Excellent	Clearly Visible	No drop off	Level Patches	Highly Reflective	Well Maintained	Free Flowing	Sound Functional
2 Good	90% Reflected on 80%	1" Max	Settled Patches (1" Max, <10% Area)	Less 10% Obscured	Heavy Growth	Less 1/4 Blocked	Minor Dents
3 Fair	75% Reflected on 80%	2" Max	Unfilled (Less 10% Area)	More 10% Obscured	Starting to Encroach	Less 1/3 Blocked	Some Structural Deterioration
4 Poor	50% Reflected on 80%	3" Max	Unfilled (Less 25% Area)	Non Standard Conditions	Significant Encroachment	Less 1/2 Blocked	Old Standard or Major Dents, Some Posts Tilted
5 Failing	<50% Reflected on 80%	Over 3"	Unfilled (More 25% Area)	Missing Signs	Heavy Encroachment	More 1/2 Blocked	Major Damaged Rails or Posts Broken

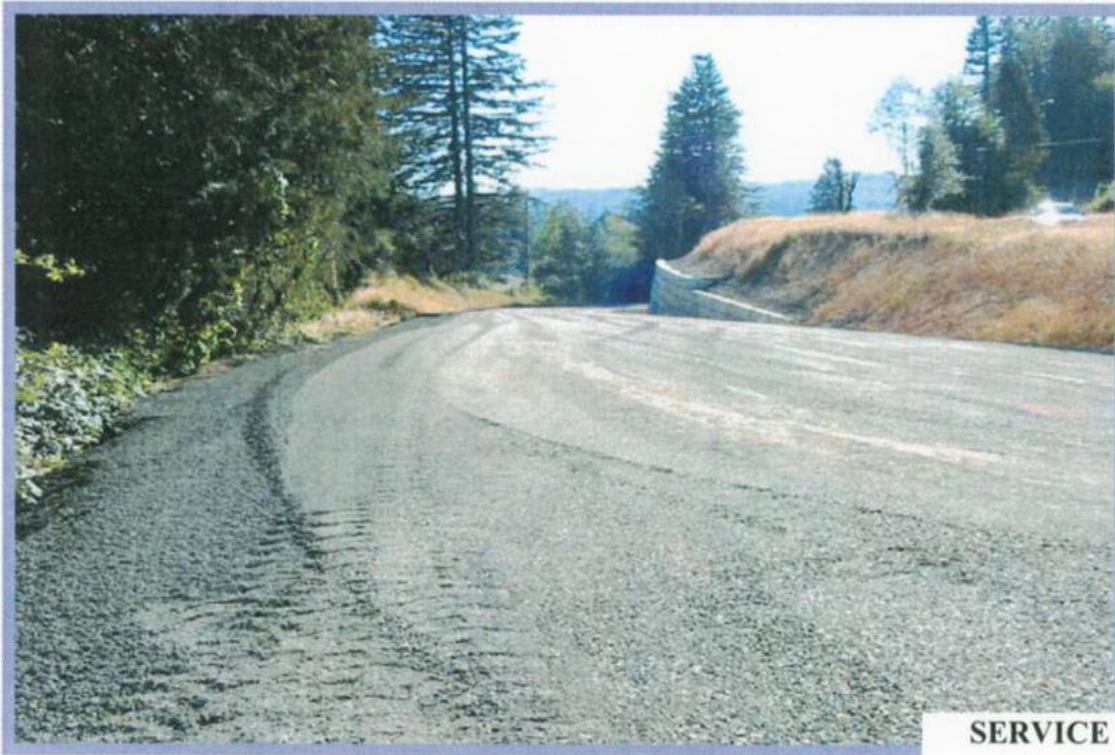
Safety carries a greater weight than preservation of infrastructure (preserve life then preserve property)

UNPAVED

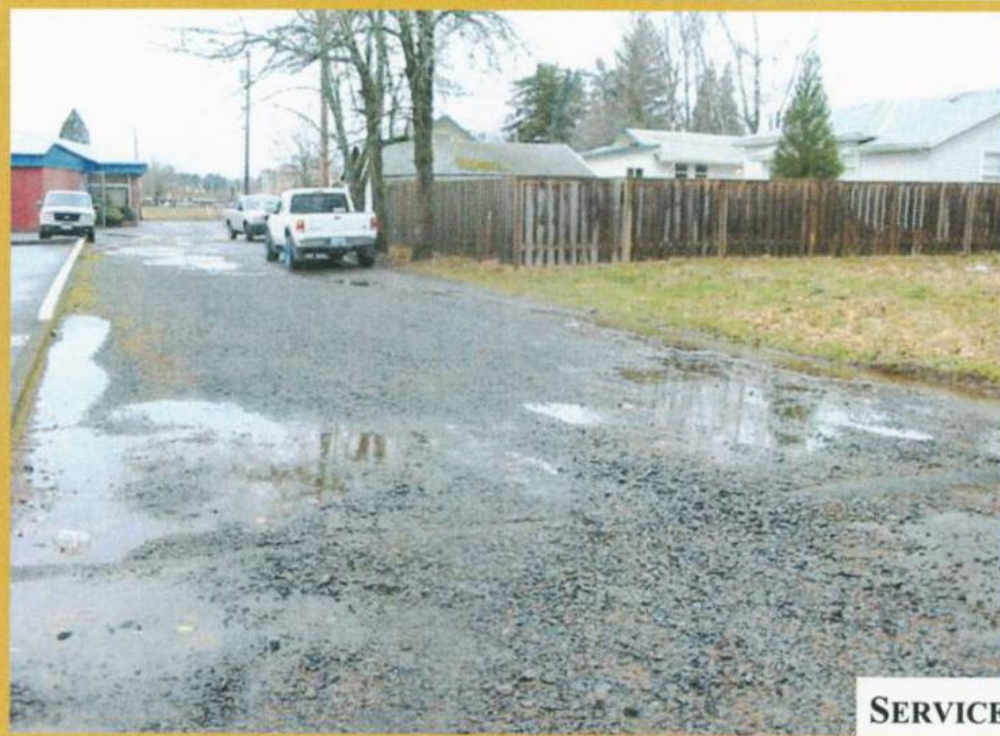


SERVICE LEVEL 1

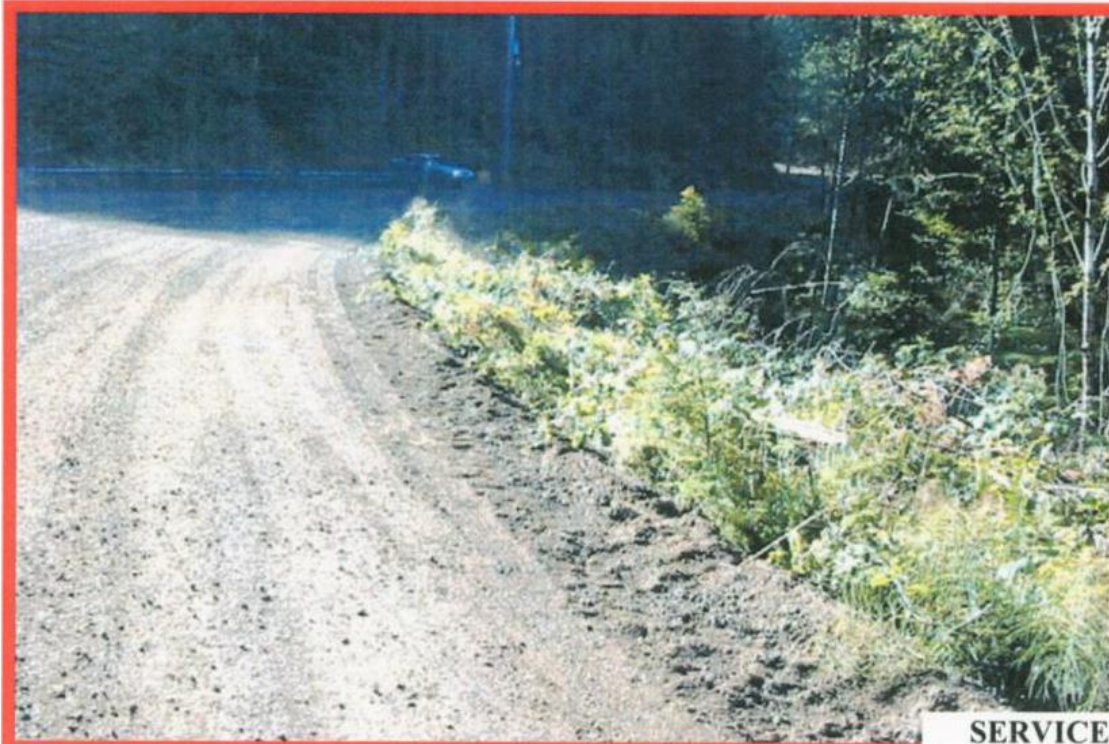




SERVICE LEVEL 1

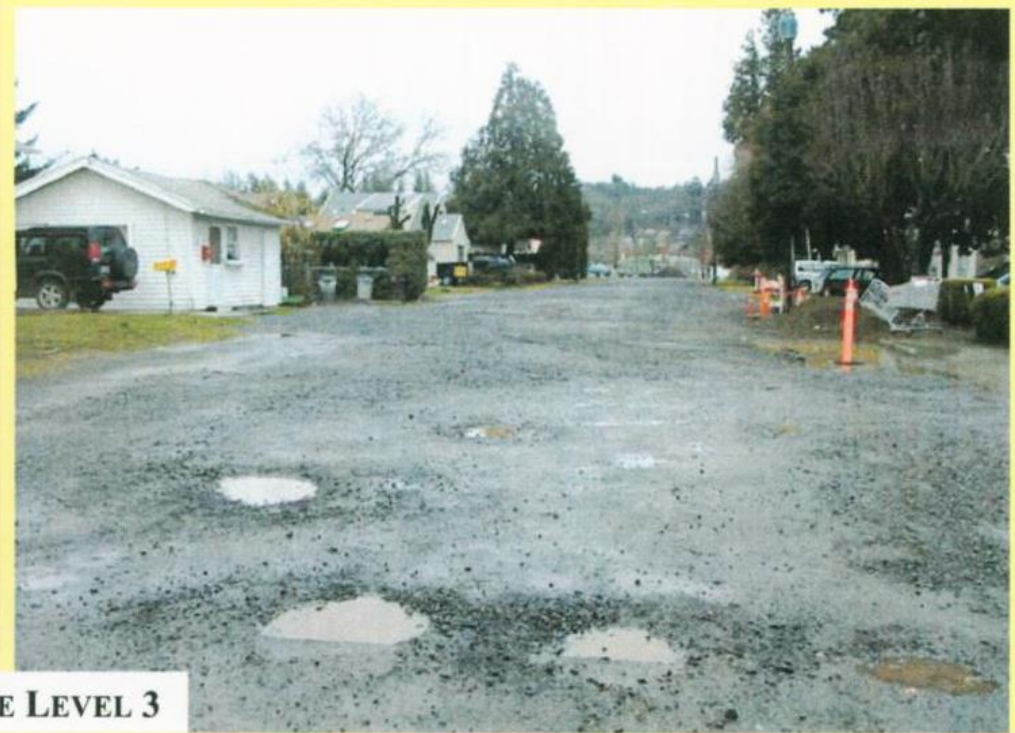
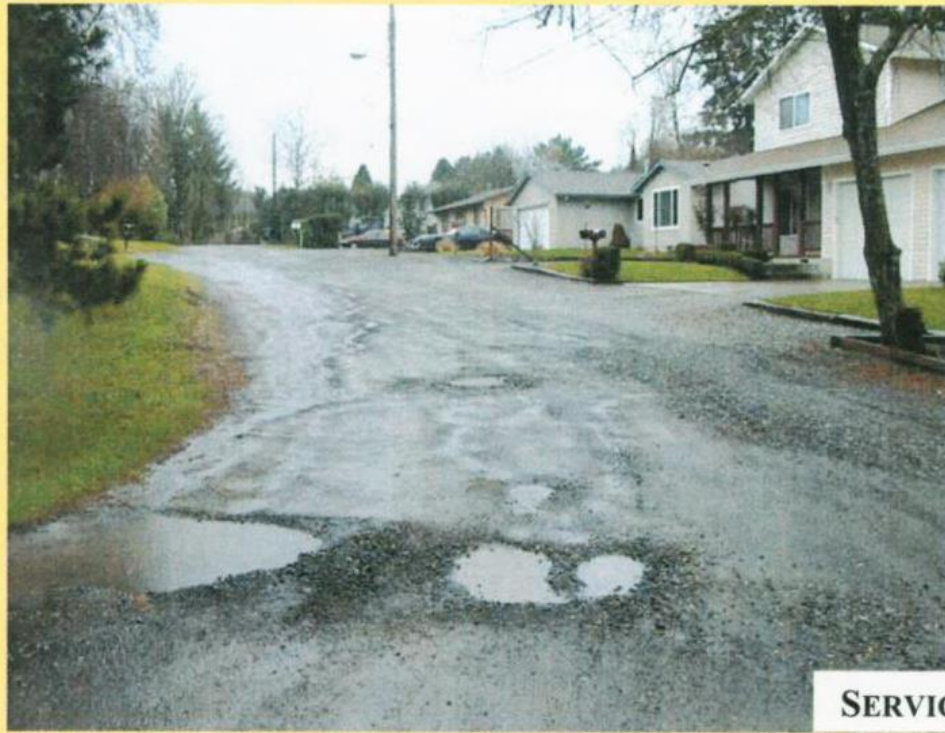


SERVICE LEVEL 2



SERVICE LEVEL 2





SERVICE LEVEL 3

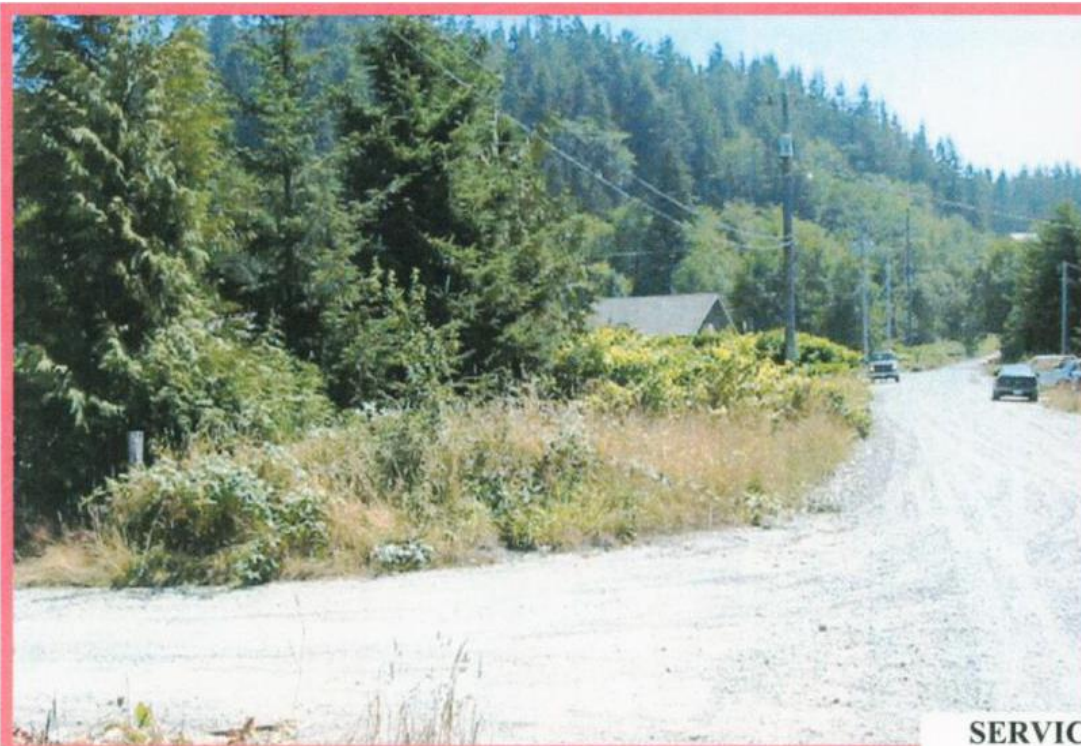


SERVICE LEVEL 3



SERVICE LEVEL 4





SERVICE LEVEL 4



SERVICE LEVEL 5

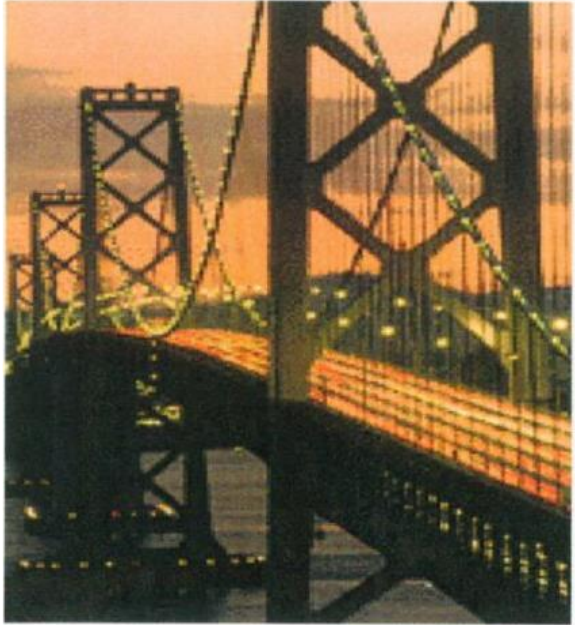


SERVICE LEVEL 5

Rating of Maintenance Activity on BIA owned Roads

Condition Rating	Corrugation \Pot Holes	Signs	Vegetation	Drainage	Guardrail
1 Excellent	Smooth Hard Surface	Highly Reflective	Well Maintained	Free Flowing	Sound Functional
2 Good	Minor Corrugation or Ravelling	Less 10% Obscured	Heavy Growth	Less 1/4 Blocked	Minor Dents
3 Fair	Some Corrugation / Ravelling / Pot Holes	More 10% Obscured	Starting to Encroach	Less 1/3 Blocked	Some Structural Deterioration
4 Poor	Surface Corrugated w\Pot Holes	Non-Standard Conditions	Significant Encroachment	Less 1/2 Blocked	Old Standard or Major Dents, Some Posts Tilted
5 Failing	Major Pot Holes w\Corrugation	Missing Signs	Heavy Encroachment	More 1/2 Blocked	Major Damaged Rails or Posts Broken

Safety carries a greater weight than preservation of infrastructure
(preserve life then preserve property)

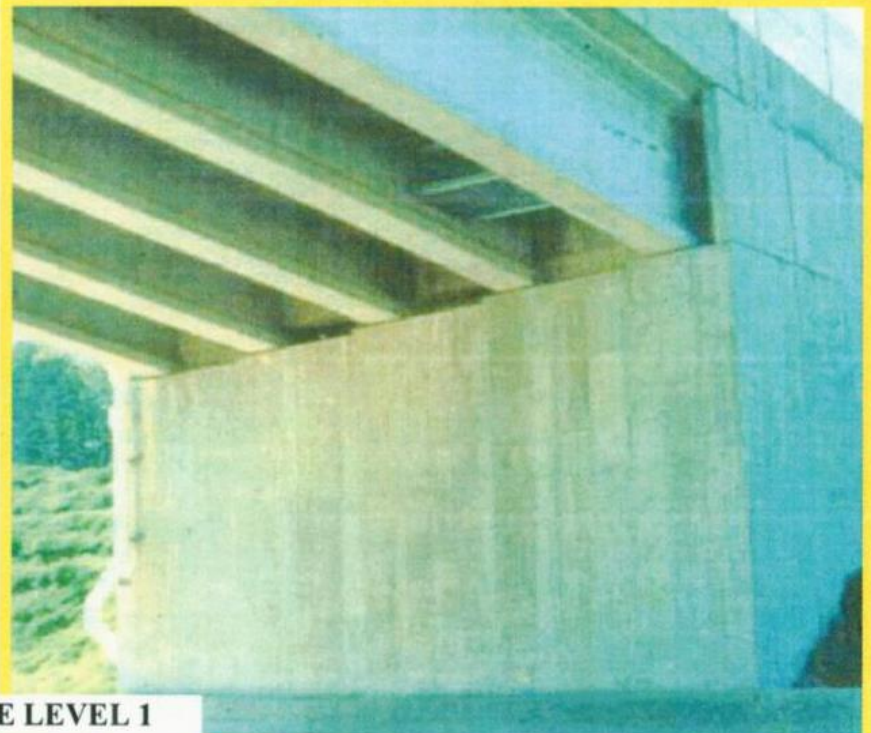


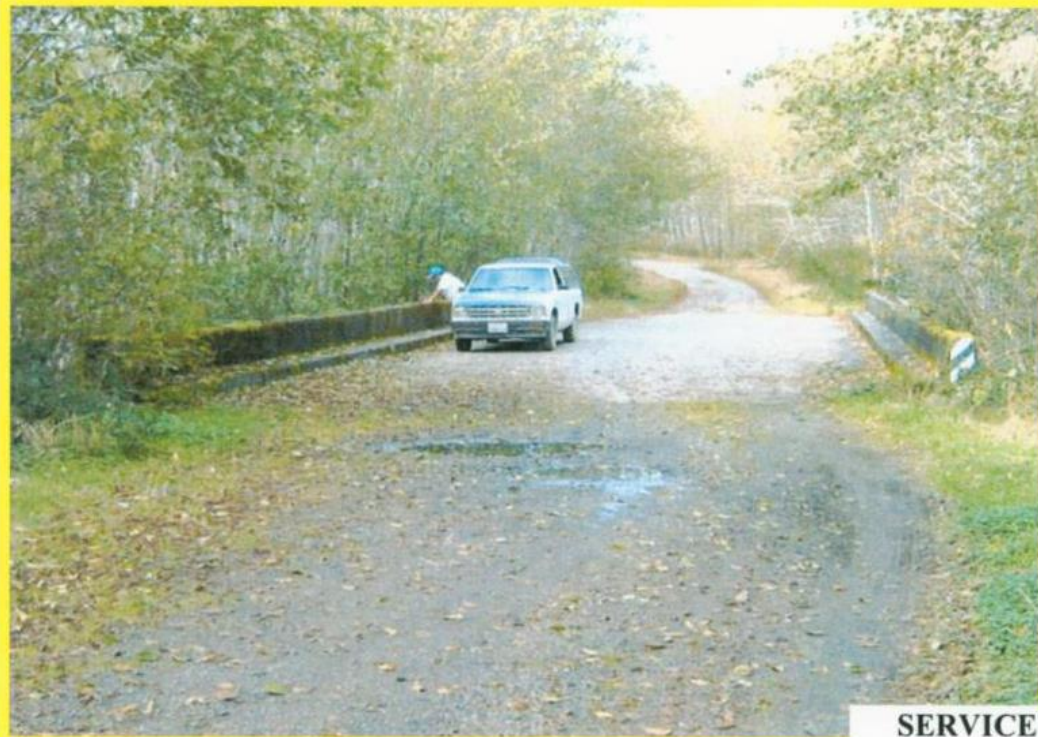
BRIDGES

SERVICE LEVEL	DECKS & SIDEWALKS	GRATES & DRAINS	RAILS, GIRDERS, TRUSSES, PIERS & ABUTMENTS
CONDITION 1	Free of visible sand and debris	Grates and drains free of sand and debris	Free of moss, dirt, debris , graffiti and bird guano
CONDITION 2	10% of surface area covered with sand and debris	5% or less of grates & drains blocked or partially blocked	10% or less of bridge surface contains spots, stains, dirt, debris, graffiti, or bird guano
CONDITION 3	20% of surface area covered with sand or debris	10% or less of grates & drains blocked or partially blocked	30% or less of bridge surfaces contain spots, stains, dirt, debris, graffiti, or bird guano
CONDITION 4	40% of surface area covered with sand or debris	20% or less of grates & drains blocked or partially blocked	50% or less of bridge surfaces contain spots, stains, dirt, debris, graffiti or bird guano
CONDITION 5	>40% of surface area covered with sand or debris	>20% of grates & drains blocked or partially blocked	>50% of bridge surfaces contain spots, stains, dirt, debris, graffiti, or bird guano



SERVICE LEVEL 1





SERVICE LEVEL 2

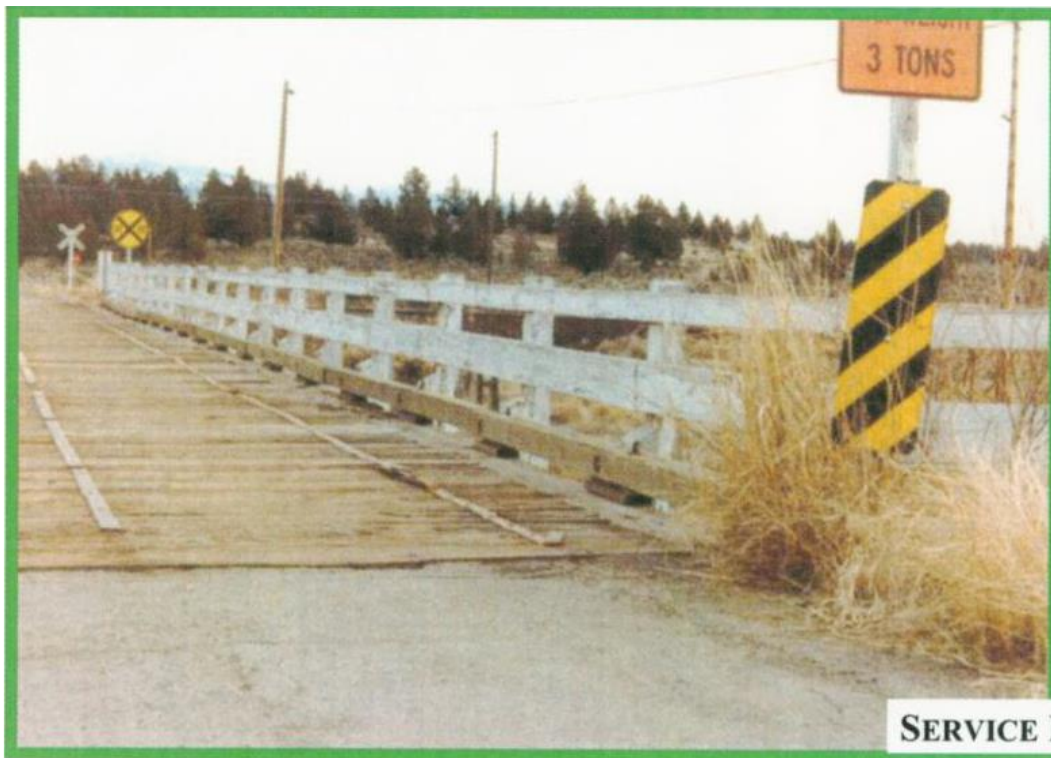


SERVICE LEVEL 3





SERVICE LEVEL 4



SERVICE LEVEL 5



To determine the service level a bridge should be categorized, use the following thresholds as your guideline.

SERVICE LEVEL					
CONDITION TOTAL = DECK & SIDEWALK CONDITION +GRATE & DRAIN CONDITION+RAIL, GIRDER, TRUSS, PIER, & ABUTMENT CONDITION					
Dirty bridge surfaces and sidewalks. Blocked bridge drains. Graffiti, spots, stains, dirt or bird guano	<u>Level 1</u>	<u>Level 2</u>	<u>Level 3</u>	<u>Level 4</u>	<u>Level 5</u>
Total Bridge condition rating number equals	4 or less	7 or less	10 or less	13 or less	> 13