

## Pavement Management

One of the primary obligations of the Highway District is to maintain the roads, bridges, culverts, and related components of the local road system. There are 320.1 miles of roadway in the District's current road network. This network consists of 316.6 paved miles and 3.5 graveled miles. The District conducts a visual evaluation of all paved roadways on a two-year cycle for eight distress types. These include potholes/patching, rutting, corrugations, and five types of cracking: longitudinal, transverse, fatigue (alligator), block, and edge. The results from these road evaluations allow for the creation of a Pavement Condition Index (PCI). A PCI value of 0 is failing with no remaining pavement life and a PCI value of 100 is excellent with 20 years of remaining pavement life.

The District targets a network wide average PCI value of 85 (See Pavement Condition Map). Pavement deteriorates more rapidly over time, with deterioration becoming more rapid after 10 – 11 years (PCI of 85 to 90) if no maintenance is performed. Maintaining a PCI value of 85-90 saves tax payer money as it requires less expensive maintenance(preventative maintenance), in comparison to a PCI value of 25-40 which requires more expensive maintenance (road reconstruction).

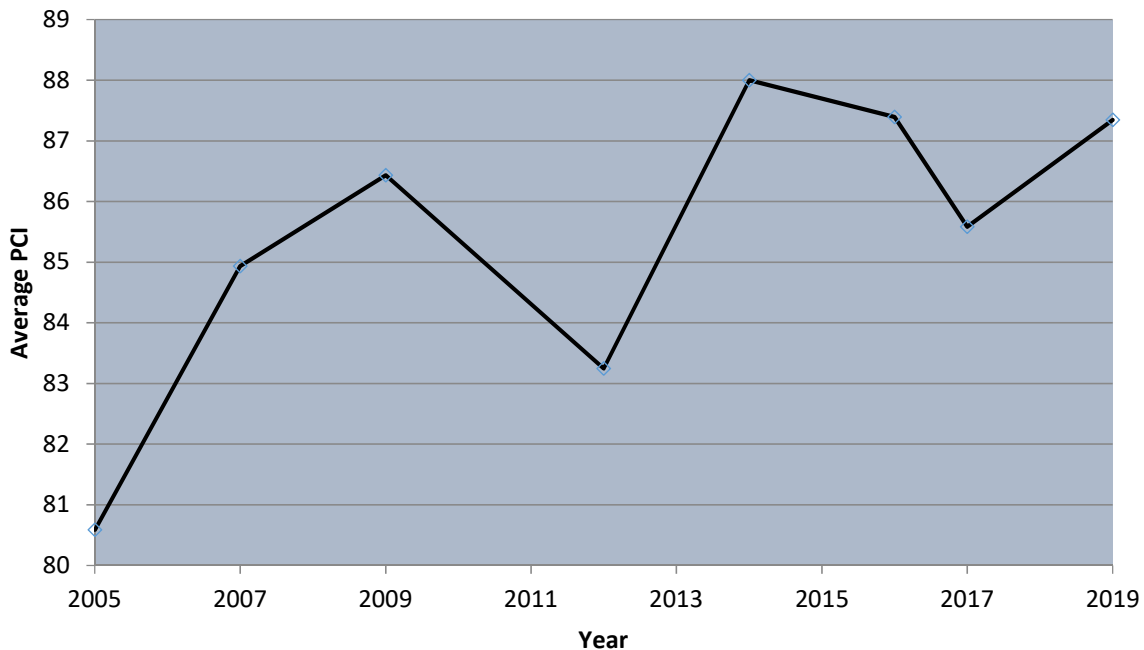
The District uses chip sealing as its primary method of preventative maintenance, which not only seals the pavement for extended life, but also provides surface texture to increase safety in inclement weather. An average 7-year cycle of chip seals is typically used on main roads and an 8-year cycle for subdivision streets. (See 2021-2027 Chip Seal Map) The most common distress type found in the 2019 pavement evaluation was transverse cracking (cracking the width of the road and typically perpendicular to travel direction), which is generally related to the asphalt's inability to stretch during thermal expansion and contraction. This type of cracking often leads to other types of failures (i.e. fatigue cracking, potholes) as water penetrates the cracks and weakens the gravel base below the asphalt pavement. These cracks typically reflect through with a simple overlay that adds another layer of pavement, so methods to prevent this are necessary. The District uses recycled asphalt base stabilization (RABS) as the primary means of rehabilitating transverse cracking.

The District has maintained an average PCI value near 85 over the last 13 years. This has been accomplished with the pavement treatments shown in Table 1. This history, along with current pavement condition, were used to develop a 7-year pavement management program. (See 2021-2026 Pavement Rehabilitation Map) This program emphasizes more RABS projects and less overlays to mitigate the prevalent transverse cracking problem.

**Table 1 CHD4 Pavement Projects History**

<b>Project Type</b>	<b>2007</b>	<b>2008</b>	<b>2009</b>	<b>2010</b>	<b>2011</b>	<b>2012</b>	<b>2013</b>	<b>2014</b>	<b>2015</b>	<b>2016</b>	<b>Annual Average</b>
Chip Seals	41.5	28.3	34.9	35.2	28.5	38.0	27.6	58.6	43.0	37.0	37.3
Overlay	2.1	3.9	7.1	9.0	12.0	7.8	2.5	3.3	0.0	2.4	5.0
RABS	0.0	0.0	0.0	0.0	0.0	2.4	4.1	3.2	2.3	2.5	1.5
Rebuilds	6.0	4.7	1.3	2.5	2.0	1.1	3.1	2.4	2.4	2.9	2.8

## Canyon Highway District No. 4 2005 - 2019 System Average PCI



### Bridges

There are 109 bridges maintained by the District as part of the roadway system. These bridges vary from 8' to 433' in length, with 51 being 20' or more in length. (See CHD4 Bridge Map) The expected life of a bridge is estimated at 70 years, based on District data. It can be expected that on average, 1.5 bridges will need to be replaced annually due to deterioration. All bridges are inspected every 1 to 4 years, depending on their condition. 41 bridges are included on the National Bridge Inventory System (NBIS) and inspected through the Idaho Transportation Department, while the remaining bridge inspections are administered by the District. These inspections include: structure condition, channel protection, deck geometry, bridge rails, signage, maintenance needs, and numerous other criteria. Bridge improvements are based on the structural condition with ratings of poor (4) or lower indicating replacement is needed, while fair (5) indicates the need to rehabilitate or plan for replacement. Other structural factors are also considered, with bridges rated poor or fair being deemed structurally deficient or recommended for replacement. Application of waterproof membranes in conjunction with road projects is used to extend the life of bridges by preventing moisture intrusion. In addition to structural concerns, bridge width and railing is also evaluated compared to recommended widths based on current traffic volumes to determine if bridge widening is needed. (See CHD4 Bridge Table).

Bridge maintenance or replacement is based on structural condition and width and are coordinated with road projects to develop a 7-year bridge program. (See CHD4 2020-2027 Bridge Program).

## **Culverts & Drainage**

The District's inventory of all culverts, including those at driveways, exceeds 4100. Of these, 139 have diameters or spans greater than 42 inches, including several over 10 feet (120 inches). (See CHD4 Large Culverts Map) Similar to bridges, culverts larger than 30" (225 total) are inspected every 1 to 4 years depending on condition.

Culvert condition is based on width, hydraulic capacity, and structural condition. The structural condition of the culvert is generally the driving factor for replacement

Similar to bridges, culvert replacements generally occur with road projects. Culverts rated fair (5) or lower are reviewed prior to road work for replacement. Culverts are scheduled for replacement with the lowest condition rating scheduled first, except for culvert replacements done in conjunction with pavement rehabilitation. (See CHD4 2020-2024 Culvert Program)