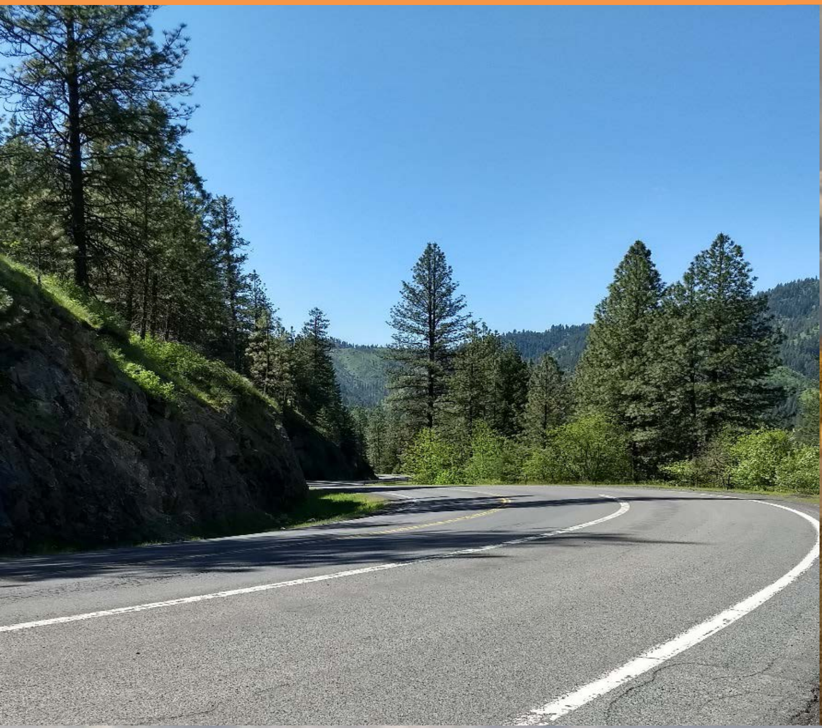
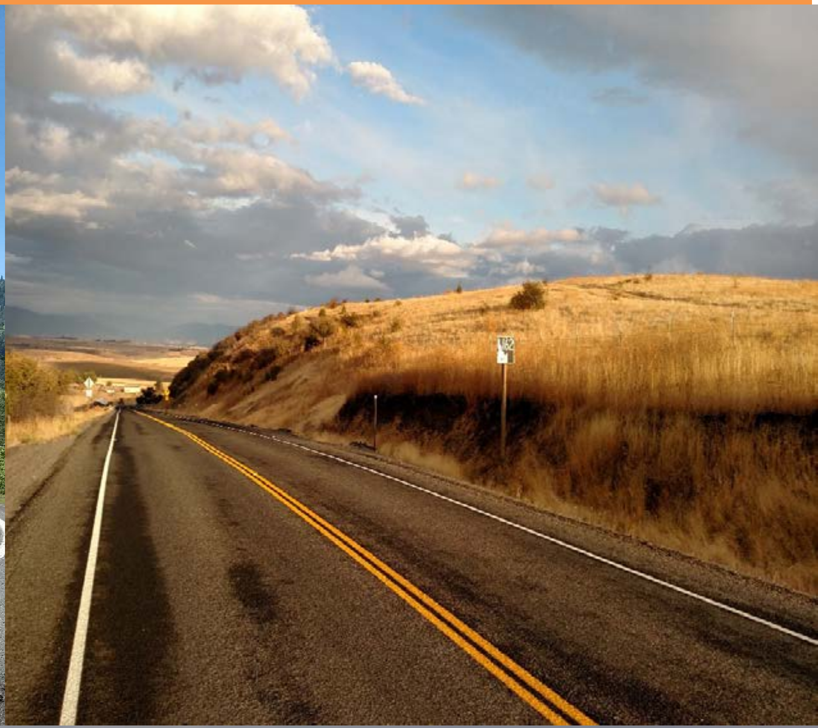
Transportation Asset Management Plan





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2018

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Glossary

Asset management: Asset management means a strategic and systematic process of operating, maintaining, and improving physical assets, with a focus on both engineering and economic analysis based upon quality information, to identify a structured sequence of maintenance, preservation, repair, rehabilitation, and replacement actions that will achieve and sustain a desired state of good repair over the life cycle of the assets at minimum practicable cost.

Asset Management Plan*:* A document that describes how a State DOT will carry out asset management. This includes how the State DOT will make risk-based decisions from a long-term assessment of the National Highway System (NHS), and other public roads included in the plan at the option of the State DOT, as it relates to managing its physical assets and laying out a set of investment strategies to address the condition and system performance gaps. This document describes how the highway network system will be managed to achieve State DOT targets for asset condition and system performance effectiveness while managing the risks, in a financially responsible manner, at a minimum practicable cost over the life cycle of its assets.

BrM: AASHTO's Bridge Management Software, formerly known as PONTIS.

Bridge decks: Decks are the horizontal portion of the bridge, usually made of concrete; the deck is atop the superstructure and includes the traffic-carrying surface.

Bridge superstructure: The portion of the bridge the supports the deck and connects the substructure elements.

Bridge substructure: The portions of the bridge including piers and abutments that transfer the load to the foundations.

Cracking: As measured by the Federal definition, cracking refers to the percentage of the pavement area that exhibits visible cracking.

Faulting: A difference in elevation across a joint or crack usually associated with concrete pavement.

Federal-aid highways: A network of approximately 1 million miles of roads and highways out of about 4.1 million miles of public roads nationwide. Several categories of Federal Highway funds are eligible to be spent on the Federal-aid network. Most Federal-aid funds are not eligible off the Federal-aid system except for some bridge, safety, and transportation alternatives funds.

Federal Highway Administration: The division of the U.S. Department of Transportation that oversees Federal highway programs.

Financial plan: As defined by FHWA, a financial plan means a long-term plan spanning 10 years or longer, presenting a State DOT's estimates of projected available financial resources and predicted expenditures in major asset categories that can be used to achieve State DOT targets for asset condition during the plan period, and highlighting how resources are expected to be allocated based on asset strategies, needs, shortfalls, and agency policies.

Investment strategies: Investment strategy means a set of strategies that result from evaluating various levels of funding to achieve State DOT targets for asset condition and system performance effectiveness at a minimum practicable cost while managing risks.

ITD Board: A board that oversees the operations of the Idaho Transportation Department. The Idaho Transportation Board establishes state transportation policy and guides the planning, development and management of the transportation network.

IRI: The International Roughness Index (IRI) means a statistic used to estimate the amount of roughness in a measured longitudinal profile. It measures inches of roughness, or "bounce" per mile of road.

Local highways: Streets and roads owned by the cities and counties, as opposed to ITD.

Interstate Highway System: A national network of 48,500 miles of freeways signed as Interstate Highways.

Measures: As defined by FHWA are an expression based on a metric that is used to establish targets and to assess progress toward achieving the established targets.

National Highway System: Is a network of 222,000 miles that include the Interstates as well as other major arterials.

Risk: The positive or negative effect of uncertainty on objectives.

Risk Management: The systematic process of managing risk.

Rutting: Rutting means longitudinal surface depressions in the pavement derived from measurements of a profile transverse to the path of travel on a highway lane.

State of Good Repair (Bridges): As defined by ITD this means a bridge structure that is rated "Satisfactory" or better according to the NBI condition rating scale for the deck, superstructure and substructure elements. In regards to ITD's Performance Measures, a "State of Good Repair" is equivalent to ITD's "Good" Condition.

State of Good Repair (Pavements): As defined by ITD this means a roadway that is rated either fair of good according to the federal TPM criteria.

Target: As defined by FHWA means a quantifiable level of performance or condition, expressed as a value for the measure, to be achieved within a time period required by the Federal Highway Administration (FHWA).

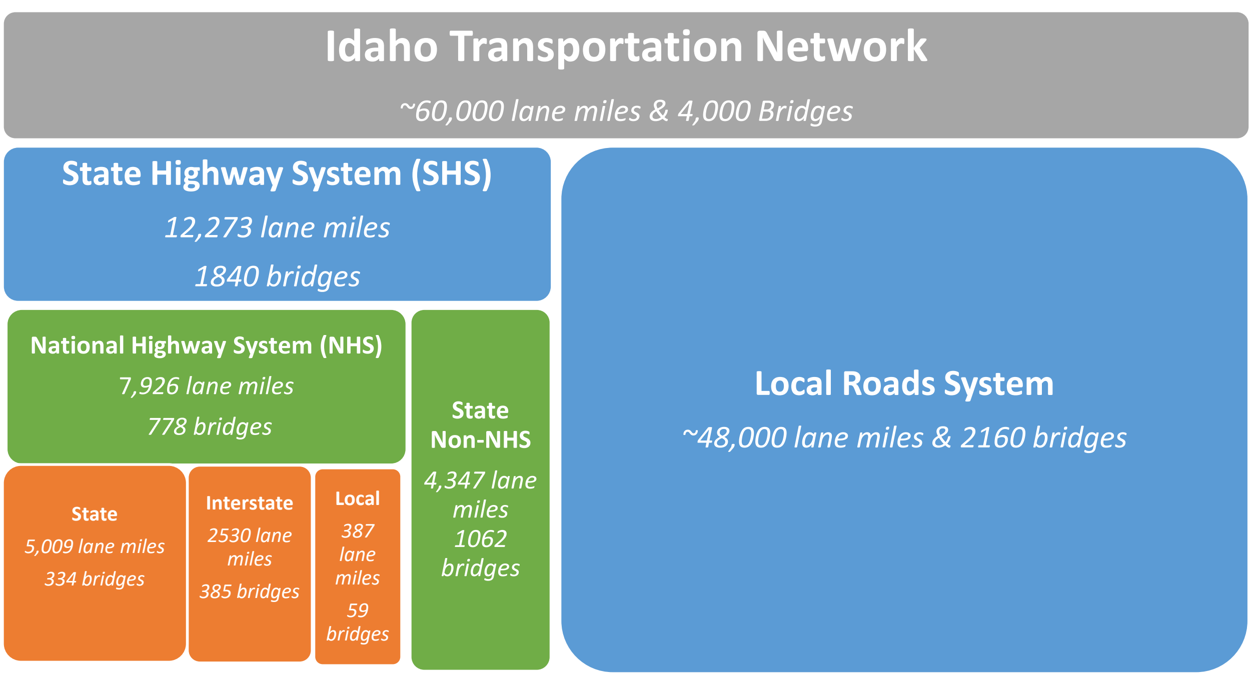
Executive Summary

Background

This is the federally required Transportation Asset Management Plan (TAMP) for the Idaho Transportation Department (ITD). It fulfills three objectives:

1. First, it satisfies detailed Federal requirements that each state must develop a TAMP that conforms to the contents of this document.
2. Secondly, it informs FHWA of how effectively ITD manages the bridges and pavements that comprise the National Highway System (NHS), which includes the Interstate. ITD manages many other assets that are not included in this plan because they are not required to be in the FHWA asset management plan.
3. Thirdly, this plan describes the current and forecasted condition of the NHS major roadway assets and presents processes the Department will utilize to manage them over the next decade.

The Idaho Transportation Department (ITD) is committed to the effective management of the state's highways to protect the public's safety and its massive investment in this important infrastructure. As part of this commitment, ITD has demonstrated a focus on the effective utilization of technology and asset management practices for over 40-years. The TAMP is focused on all NHS assets within Idaho. With respect to the NHS, ITD has stewardship over 96% this network with local agencies managing the balance of the NHS. ITD annually collects performance data for the entirety of the NHS exclusive of ownership and is committed to communicating the performance of the local agencies. ITD is developing dashboard and GIS tools to streamline accessibility to local agencies. That said, the local portion of the NHS network is de minimis considering the overall performance of the system. ITD requests that the local portion of the NHS be designated a sub-asset class and as such be excluded from inclusion in the life cycle planning processes described herein.



ITD processes and procedures have always, and will remain, equally applied across the entirety of the State Highway System (SHS). That is to say, ITD does not solely consider facility classification; rather, ITD looks through the lens of overall benefit to the visitors and residents of Idaho. This focus has placed ITD in the enviable position that the SHS roads and bridges are nearing or exceeding both Federal & ITD targets and goals. The NHS is a subset of 174,000 of the most important roads nationally. In Idaho, over 7,900 lane miles are on the NHS including the Interstates and major routes such as I-84, I-90, US 95, US 30, US 20, US 12, SH 55 and others. Congress emphasizes the condition of the NHS because of its freight and travel importance. Federal requirements require each state and territory to develop a Transportation Asset Management Plan (TAMP), ITD understands that the TAMP is the mechanism by which a state communicates their processes for monitoring, communicating, planning, financing and management of the assets they oversee. This plan focuses mainly on the NHS but ITD emphasizes its need to adequately maintain and manage all ITD jurisdictional roads to the best benefit of the citizens of Idaho. ITD understands the significance and importance of the NHS to the national transportation system. Confirmation and commitment to this view are demonstrated by well-established processes for project selection, which prioritize NHS assets for treatment and maintenance.

The State's roadway network is one of Idaho's most valuable assets and is integral to the public's safety, mobility and economic opportunity. Idaho's transportation system includes a statewide network of more than 60,000 lane miles of roads and 4,000 bridges. Of these, ITD manages over 12,273 lane miles of highways and more than 1840 bridges. ITD manages just 9.7 percent of all roadway miles in Idaho; however, the state system carries 55 percent of Idaho's total vehicle miles of travel (VMT). Although a small percentage of total lane miles within the State of Idaho, 1.2 percent, the Interstate highways alone carry 25 percent of miles traveled in Idaho. Within the SHS that ITD manages, the interstate accounts for 45 percent of the VMT. These assets are aging but as they do, they become even more important. From 1996 to 2018, vehicle miles travelled on the state highway system grew more than 38 percent. The Interstate system experienced a 55 percent increase in travel over the same period while the state system, excluding the interstates, experienced a 27 percent increase. This growth reflects the increasing mobility of Idaho's population and the growing importance of freight movement to our economy.

The TAMP is one of four plans that ITD must produce under relatively recent Federal laws. The other plans address highway safety, congestion, and freight movement. The TAMP is limited to the conditions of bridges and pavements on the NHS. The TAMP describes in eight sections how ITD addresses the Federal asset management requirements, and more importantly, how it manages the citizens' of Idaho's critical highway network. FHWA regulations also require that the plan include descriptions of how seven processes were used to develop the plan. As a result, the plan includes not only conclusions and recommendations, but a description of the processes used to reach them.

The seven required processes are to:

1. Complete a performance gap analysis and to identify strategies to close gaps,
2. Implement life cycle planning,
3. Manage risks with a risk management plan,
4. Develop a financial plan covering at least a 10-year period,
5. Develop investment strategies,
6. Obtaining necessary data from NHS owners other than the State DOT,
7. Ensure the TAMP is developed with the best available data and that the State DOT uses bridge and pavement management systems meeting the requirements.

TAMP Section Summaries

The TAMP is organized to address specific Federal requirements. Each plan must include eight sections that describe the agency's asset management objectives, targets, and how it invests to achieve them. The organization and content of this plan are structured to satisfy the Federal requirements and to expedite Federal review. Failure to develop a certifiable plan can bring substantial Federal penalties and restrictions on how ITD can use Federal highway funds. The following sections provide a brief summary of the content of each section.

Beginning in June of 2019, FHWA annually will review ITD processes for conformity with this TAMP.

Chapter 1 Objectives

Chapter 1 describes the specific objectives that ITD seeks to achieve. Its objectives are described in Chapter 1 and include:

1. Continually reduce fatalities
2. Provide a mobility-focused transportation system that drives economic opportunity
3. Maintain the pavement in good or fair condition
4. Maintain the bridges in good or fair condition

These objectives are focused on managing ITD's NHS bridge and pavement assets, as this is the focus of this plan. ITD has other objectives relating to customer service, safety, and financial efficiencies that are outside the scope of this plan.

Chapter 2 Asset Measures and Targets

This chapter describes the number, size, and condition of ITD's pavement and bridge assets. The major roads and bridges in Idaho are in very good condition. Idaho's conditions for bridges and pavements on the NHS are far better than minimum Federal condition levels. ITD expects to continue to sustain good NHS conditions for at least the next decade.

Idaho's transportation system includes a statewide network (including the Local System) of more than 60,000 lane miles of roads and 4,000 bridges. Of these, ITD manages 12,273 lane miles of highways and more than 1,800 bridges. There are 778 State system bridges on the NHS (with an area of 7,826,332 sq. ft.). It is interesting to note that there are 59 local bridges (with an area of 448,340 sq. ft.) on the NHS. Currently only one of these bridges on the Local System is in poor condition with an area of 2884 sq. ft.

Chapter 3 Summary Description of Assets

This chapter describes ITD's asset management performance measures and targets. As required, the measures and targets are consistent with the department's objectives and help assess the condition and performance of ITD's highways. The performance measures and the target include the following.

Performance Measure		Target
Pavement	Interstate Percent Good	50%
	Interstate Percent Poor	4%
	Non-Interstate NHS Percent Good	50%
	Non-Interstate NHS Percent Poor	8%
Bridge	NHS Bridge Percent Good	19%
	NHS Bridge Percent Poor	3%

These measures and their targets are selected to provide benchmarks by which ITD can balance its investments. It intends to keep the percentage of poor bridges and pavements to manageable levels without setting targets that are unreasonably high and expensive to maintain.

Chapter 4 Gap Analysis Process

This chapter describes ITD's lack of performance gaps. In fact, ITD far surpasses the minimum Federal standards set nationally for NHS bridges and Interstate pavements. FHWA defines a performance gap as the difference between a desired condition level, or target, and the actual condition. By the Federal definition, ITD has only a very small gap between its current asset conditions and its targets for asset conditions. That gap is that while ITD set a target of keeping 50% of the Non-Interstate NHS pavements in good condition and presently 46.53% are good. The Federal maximum allowable amount of poor bridges on the NHS is 10 percent while in Idaho the amount of poor NHS bridge area is only 2.58%. (The percentage is calculated by bridge area, not by the number of bridges.)

For Interstate Highways, FHWA set a minimum condition level of no more than 5% of the lane miles to be in poor condition. In Idaho, only 1.21% of the Interstate lane miles are poor and only 2.15% of the NHS lane miles are poor. These percentages are based on recent FHWA measures of good, fair, and poor. They differ from the measure ITD and other states have used in the past.

In addition, this chapter discusses self-identified gaps in asset management processes. In order ot strengthen future asset management plans ITD is taking steps to enhance several asset management processes these include:

- ITD will enhance its pavement management model;
- ITD will continue developing the BrM Bridge Management System;
- Assess the long-term consequences of the Non-Commerce Route treatments;
- Assess the Long-Term Needs of ITD's Large Structures.

Chapter 5 Life Cycle Planning Process

This chapter describes ITD's lifecycle planning which is a process to manage an asset class over its whole life while minimizing costs and preserving or improving its condition. This chapter describes how ITD uses a mix of preservation, maintenance, rehabilitation, and timely replacement of assets to sustain them over their entire life for lower cost. Bridges and pavements perform better and cost less when timely repairs are made when assets are beginning to deteriorate. ITD describes how it attempts to lower the life-cycle cost of its assets through sophisticated pavement modeling that suggests what types of treatments are needed for each pavement. For bridges, ITD examines the details of inspection reports to match treatments to each structure's need.

Due to their small number in the entire population of bridges and roadway lane miles on the NHS, local NHS roads and bridges are not included in any of the financial or forecasting aspects of this TAMP. Additionally ITD formally request that the NHS local system be classified as a sub-asset class and excluded from life cycle cost planning.

Chapter 6 Risk Management Process

This section identifies risks considered in the plan and ITD's responses to those risks. FHWA defines risk as the positive or negative effects of uncertainty or variability upon agency objectives. Any plan that seeks for 10 years to meet condition targets for thousands of assets faces many uncertainties and risks. This chapter discusses many of the key risks facing the achievement of this plan's objectives, such as uncertain Federal funding, changing Federal rules, and a growing state population that increases demand for capacity-expanding projects. This chapter identifies the risks that could influence the asset management objectives and summarizes how ITD plans to manage those risks.

Specific risk categories reviewed included:

- Risks to maintaining assets in a state of good repair;
- Risks specific to maintaining pavements in a state of good repair;
- Risks to sustaining adequate investments for a state of good repair;
- Risks specific to maintaining structures in a state of good repair;
- Risks to having skilled staff sustain assets;
- Data and information risks;
- External and environmental threats.

The highest rates risks identified are:

- ITD may not be able to sustain assets in a state of good repair if:
    - If federal funding decreases;
    - If program selection priorities do not emphasize sustaining asset conditions;
    - If changing Federal Rules consume more ITD resources;
    - If the donor/donee state financial balance is changed.
- ITD may not get the pavement quality needed if ITD and contractor community do not adapt performance-based specifications.
- Bridge Deterioration if ITD does not maintain an adequate number of bridge maintenance crews with proper skills.
- ITD may need to divert all bridge funds to a few large structures if ITD does not develop a program to address large structures needing rehabilitation/replacement in the next decade.
- Conflicting information caused by not having a single source of truth aligned with linear referencing system.

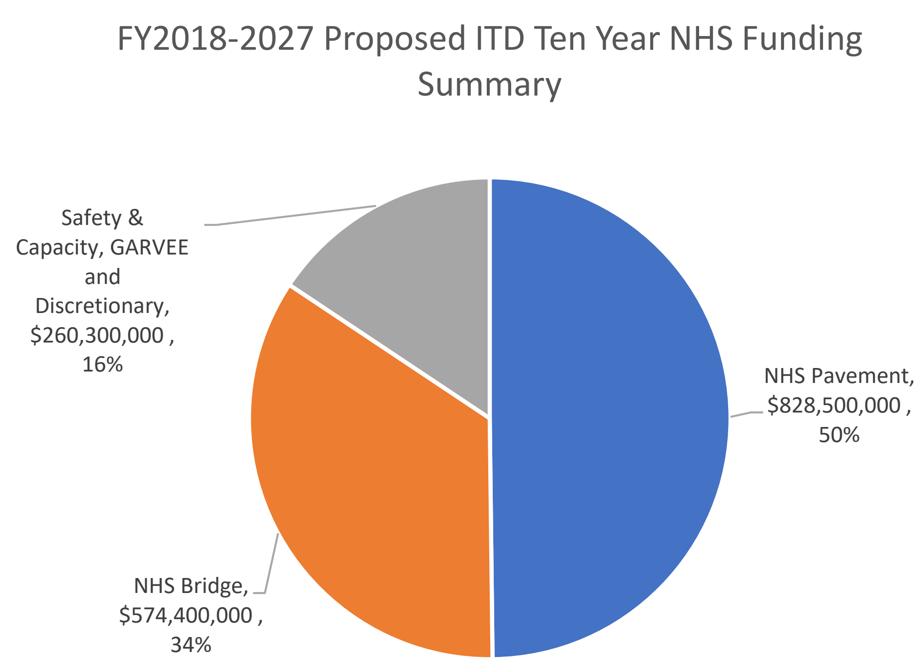
One opportunity identified, as part of the risk assessment was that if the PMS was improved then ITD would have an opportunity to improved and enhance modeling and forecasting of pavement performance.

Chapter 7 Financial Planning Process

This chapter describes the required 10-year financial plan to support the asset management strategies. For many years, ITD has produced the Idaho Transportation Investment Program (ITIP) that was a five-year list of revenues and projects. Recently, Idaho extended ITIP to seven years to improve the long-term planning for projects. This chapter discusses the ITIP and illustrates how it fulfills the Federal requirements for an asset management financial plan. FHWA requires a realistic financial plan that can pay for the bridge and pavement investments included in the asset management plan. ITD extended the ITIP by 3-years assuming a flat projection (i.e. no growth in funding for either State or Federal funds), to serve as the federally required 10-year asset management financial plan.

Chapter 8 Investment Strategies

This chapter describes ITD's investment strategies to achieve the plan's objectives, measures, and targets based upon analysis of various alternatives. ITD has balanced its expenditures across a mix of preservation and rehabilitation projects to achieve its targets while maintaining acceptable conditions on the entire State Highway System. Out of a total of $7.2 billion expected to be available between 2018 and 2027 (see Table 7-3: Forecasted Local Revenue sources Plus Summary of All Sources on page 7-11), about $1.55 billion will be spent on basic pavement and bridge programs off the NHS. Additionally, about $1.6 billion will be spent on bridges ($574.4 M), pavements($828.5 M), and Discretionary ($260.3 M) on the NHS. The remaining revenue goes to operations, maintenance, debt, salaries, local programs, safety and other needs.



FHWA will review this initial plan to determine if ITD is using processes that meet the Federal regulations. By June 30, 2019, ITD must submit an update Transportation Asset Management Plan (TAMP) that includes all the investment strategies to achieve the plan's objectives. Each subsequent year, FHWA will review ITD's expenditures and determine if they are consistent with the investments outlined in the June 2019 asset management plan. In other words, this first plan is to document processes. The second plan uses those processes to set asset management objectives, measures, targets, and select investment strategies.

Chapter 1 Objectives

Idaho's transportation infrastructure is a deeply imbedded component of life in Idaho. Due to the large distances between population centers, the state's citizens use Idaho's transportation system to get to work, school, friends and recreation. They also rely on that system to bring goods to their stores, services to their doorstep, and to make sure the state's goods and services are delivered to the customers of the nation and the world. From the food they eat, to the letters they read, to the movies they drive to, Idahoans are empowered by transportation in complex and substantial ways.

Idaho's leaders and transportation officials understand the essential role transportation plays as a cornerstone for the state's economic and social health. The transportation department's mandate is to provide the people of Idaho with a transportation system that includes various means of travel. Idaho's transportation system is the backbone of the state's economy. Safe and efficient roads and bridges promote the expansion of Idaho's economy. The cost of doing business is affected by how well goods and people move across town, across the country and around the world. Thus, Idaho's economic performance is tied to the quality of our transportation system.

Goals

ITD developed the 2011 ITD Strategic Plan. This plan formally documents the department's mission, goals and objectives. The following are the organizational goals from the strategic plan that are also adopted as asset management goals:

1. Commits to having the safest transportation system possible
2. Provide a mobility focused transportation system that drives economic opportunity
1. Become the best organization by continually developing employees and implementing innovative business practices

Objectives

ITD' s asset management goals are supported by the following objectives from the 2011 ITD Strategic Plan and which are adopted as the asset management plan goals:

1. Continually reduce fatalities
2. Provide a mobility focused transportation system that drives economic opportunity
3. Maintain the Pavement in Good or Fair Condition
4. Maintain the Bridges in "Good" Condition or in a "State of Good Repair"

ITD Mission & Vision

MISSION:

Your Safety. Your Mobility. Your Economic Opportunity

KEY VISION ELEMENTS:

- ITD strives continually to get better with the goal of being the best transportation department in the country.
- ITD is transparent, accountable, and delivers on its promises.
- ITD seeks to be more effective and to save costs through increased efficiencies.
- ITD provides extraordinary customer service.
- ITD uses partnerships effectively.
- ITD values teamwork and uses it as a tool to improve.
- ITD places a high value on its employees and their development

These objectives are congruent not only with ITD's mission statement but with are consistent with the purpose of asset management which is to achieve and sustain the desired state of good repair over the life cycle of the assets at a minimum practicable cost. Federal regulation says that the state's objectives should support the national transportation goals. By incorporating these objectives into the TAMP, the Idaho Transportation Department is contributing toward achievement of the National transportation goals enacted by Congress, which are:

1. **Safety -** To achieve a significant reduction in traffic fatalities and serious injuries on all public roads.
2. **Infrastructure condition -** To maintain the highway infrastructure asset system in a state of good repair.
3. **Congestion reduction -** To achieve a significant reduction in congestion on the National Highway System.
4. **System reliability -** To improve the efficiency of the surface transportation system.
5. **Freight movement and economic vitality -** To improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development.
6. **Environmental sustainability -** To enhance the performance of the transportation system while protecting and enhancing the natural environment.
7. **Reduced project delivery delays -** To reduce project costs, promote jobs and the economy, and expedite the movement of people and goods by accelerating project completion.

Chapter 2 Asset Measures and Targets

Performance measures and targets are integral to ITD's successful implementation of asset management. Measures and targets drive commitment to and focus on accountability for assets. In the Federal vocabulary used for this asset management plan, measures and targets are different. FHWA defines measures as an expression based on a metric that is used to establish targets and to assess progress toward achieving the established target. In other words, the measure is "what we are measuring" such as pavement smoothness or traffic crash rates. The target is the numeric level of desired performance for each measure. An example of a measure is pavement smoothness as measured by the International Roughness Index or IRI. The target could be that no more than 5% of the lane miles be poor for the measure of roughness.

Federal Performance Measures

In 2012, Congress passed the Moving Ahead for Progress in the 21st Century Act, known as MAP-21. That act moved the Federal Highway program towards a performance-based focus. Included in the act were requirements to establish performance measures and to set performance targets. In addition, the act requires states to develop 10-year asset management plans for how they will sustain pavements and bridges in a state of good repair.

FHWA sets some performance measures and it has set two minimum condition levels. One minimum level is that no more than 5% of Interstate Highway pavement lane miles can be in poor condition. Furthermore, no more than 10% of NHS bridge deck area can be in poor condition for three consecutive years. The federal asset management rule requires states to either adopt those minimum condition levels as targets or set targets that are more aggressive. Additionally, states must set another target for NHS pavement conditions. States have the option of setting additional targets for other assets if they chose.

The Federally required performance measures are:

1. Pavements.

- Percentage of Interstate pavements in Good condition
- Percentage of Interstate pavements in Poor condition
- Percentage of pavements on the non-Interstate NHS in Good condition
- Percentage of pavements on non-Interstate NHS in Poor condition.

2. Bridges

- Percentage of NHS bridges in Good condition
- Percentage of NHS bridges in Poor condition

ITD has chosen to utilize these measures as its asset management plan measures as well. ITD will utilize these measures because:

- They meet the minimum Federal requirements.
- They provide reasonable insight into overall conditions.

- They are based on the same data ITD must report to FHWA annually as part of another required reporting process for the Highway Performance Management System (HPMS.)

Measures and Performance Targets - Pavements

For this asset management plan, ITD sets the following pavement targets:

Target for Interstate pavements:

For Interstate Highway System pavement, the target is that no more than 4% of lane miles to be in poor condition, with poor defined as per the Federal measure of two or more distresses in the poor category. This gives ITD significant cushion to have Interstate conditions deteriorate and still be within the Federal target. For the percentage of good pavements, ITD adopts an Interstate Highway target of 50%.

Target for NHS pavements:

For NHS pavement, the target is that no more than 8% of NHS lane miles will be in poor condition as per the Federal measures of two or more distresses in the poor category and that 50% be in good condition.

Statewide Pavement Performance Target

For all other routes, ITD retains its existing pavement target that no more than 20% of lane miles are in poor condition. ITD will not use as the measure for these Non-NHS pavements the same criteria of Good, Fair, and Poor that it reports for the Federal measures (See Table 2-4). ITD believes that its own long-standing measures provide more insight into the distresses on each pavement, which allows more refined and timely identification of the proper pavement treatment. The non-NHS assets are not officially included in this asset management plan. In order to provide context for the other assets the agency manages, federal regulation allows them mentioning them.

For pavements, FHWA has separate methods for assessing the conditions of asphalt and concrete pavements. For asphalt pavements, it requires measurement by:

- IRI, which is the International Roughness Index, or a measure of how smooth the pavement is. A sophisticated data-collection vehicle determines the amount of “bounce” or roughness per mile.
- Cracking, or the percentage of cracks on each mile of pavement.
- Rutting, or the amount of depression in the wheel path.

For concrete pavements, the metrics differ somewhat because concrete pavements don’t rut but they do “fault”, which means that the individual slabs rise or fall creating a “bump” between slabs. For concrete pavements, the measures are:

- IRI
- Cracking
- Faulting

Table 2-1 includes the measures and thresholds FHWA uses to determine if pavements are good, fair, or poor. If states have more than 5% of their Interstate pavements in poor condition, they must increase investments in Interstate pavements until they reach the 5% level.

Table 2-1: Federal Measures for Asphalt and Concrete Pavements

Asphalt Pavements	
International Roughness Index (IRI)	
<95	Good
96-170	Fair
>171	Poor
% Cracking Asphalt	
<5%	Good
6%-20%	Fair
>20%	Poor
Rutting Asphalt	
<0.2 inches	Good
0.21 - 0.4 inches	Fair
>0.4 inches	Poor

Concrete Pavements	
International Roughness Index (IRI)	
<95	Good
96-170	Fair
>171	Poor
% Cracking Concrete	
<5%	Good
6%-15%	Fair
>15%	Poor
Faulting Concrete	
<0.1 inches	Good
0.11 – 0.15 inches	Fair
>0.15 inches	Poor

The 2017 ITD HPMS pavement data, Table 2-2, indicate that ITD's pavement conditions are much better than the required minimum Federal condition level.

Table 2-2: Idaho Interstate and NHS Pavement Conditions, 2017 HPMS Report

	Good%	Fair%	Poor%
Interstate	52.67	46.83	0.50
Non-Interstate NHS	46.53	53.10	0.36

As seen in Table 2-2, the amount of poor Interstate pavement conditions could triple and Idaho would remain beneath the federal minimum condition level of no more than 5% poor. The percentage of "Good" NHS pavement is slightly below the ITD target value of 50% has chosen. Chapter 4 presents further discussion of this performance gap and mitigation strategies. The federal metrics, measures and performance criteria are the basis of these performance measures.

Although ITD has identified the NHS-Local jurisdiction as a sub-asset class and requested that it be excluded from lifecycle planning, ITD acknowledges the importance of collecting data, monitoring the performance, and communicating to the jurisdictional agencies. ITD has and will continue to collect pavement data for this sub-class of assets. Table 2-3, below, is provided to demonstrate this commitment. Based on 2016 biennial HPMS data this table shows both the performance of the Local NHS as well as showing the contribution to the overall SHS NHS performance. Given in Chapter 3 Summary Description of Assets are examples of how ITD communicates system performance data.

Table 2-3: 2016 HPMS Local NHS Pavement Performance

NHS-Local	Good%	Fair%	Poor%	Not Collected
% NHS-Local	21.38%	71.51%	0.80%	6.31%
Contribution NHS Overall Performance	1.58%	5.31%	0.06%	0.46%

It warrants emphasis that ITD uses the same measures for asphalt and concrete pavements as set forth by federal regulation: ITD will continue to utilize these metrics to report, assess and predict NHS performance. Additionally, ITD has well established process for pavement data collection that, for the near future, supports collection of pavement performance data to this end. That said ITD utilizes accepted internal metrics, measures and reporting criteria for system performance monitoring, and lifecycle planning. These measures are compared to the federal criteria and are shown in Table 2-4

With respect to pavement condition reporting Idaho's determination of good, fair or poor is different from the federal measure. The federal measure is new and based upon criteria of roughness, rutting, faulting, and percent cracking. The basis for determining roughness and rutting condition are the same between ITD and the federal measures. For example for pavement cracking, ITD measures the same pavement distresses but compiles them into a different index, the Overall Condition Index or OCI. ITD emphasizes that this measure is consistent with ITD internal reporting purposes only: supplanting the federal crack measure is not the intent. The most fundamental difference lies not with the measures, but rather with the way measures are utilized to assign the performance condition. As shown in Table 2-4, the difference between ITD performance criteria to federal criteria is that the lowest measure (roughness, OCI, rutting) determines the pavement section overall performance. This is analogous to the so-called, three leg stool model. Which means that the stool will lean in the direction of the lowest of the three legs. Federal performance is much more liberal in that it requires two of the three criteria. More specifically, the federal performance criteria require all three measures must be good to be classified as good condition; poor condition requires two measures to be poor. Everything else is fair condition.

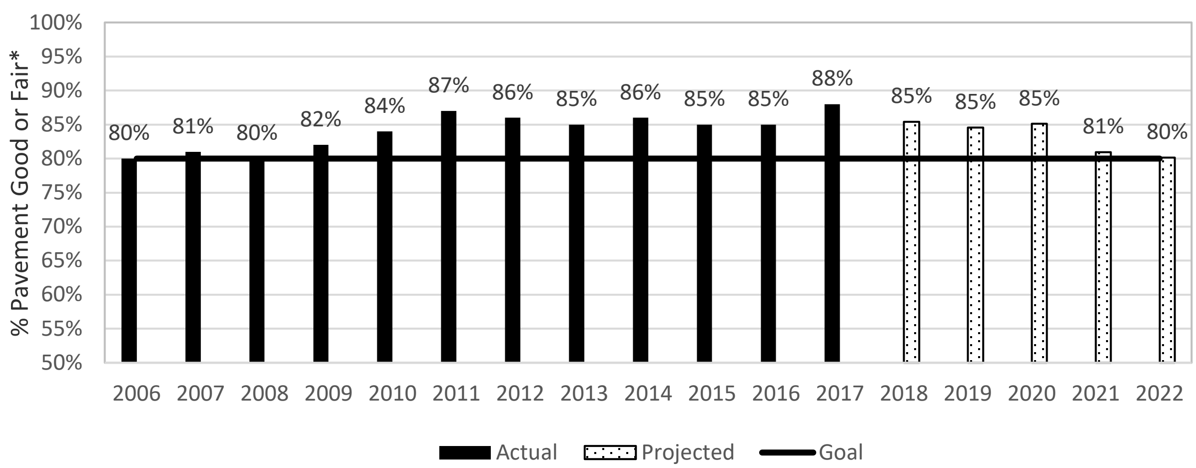
Table 2-4: Pavement Measures and Condition Crosswalk Table

FHWA	ITD
Performance Measures:	
International Roughness Index (IRI)	International Roughness Index (IRI)
% Cracking (Asphalt or Concrete)	Overall Condition Index (OCI)*
Rutting (Asphalt Only)	Rutting (Asphalt Only)
Faulting Concrete (Concrete Only)	
Performance Criteria:	
All performance measures "Good" = "Good"	Lowest of performance measures determines pavement performance.
Two Performance measures "Poor" = "Poor"	
All other combinations = "Fair"	
*The Overall Condition Index is a composite index (0-100) based on structural and non-structural pavement distresses determined by the manifestation of various crack types. Good = OCI >80; Fair: 80<OCI<=60; Poor OCI<60. A complete discussion on the computation and use of OCI is contained in the most current version of the "Pavement Management System Engineering Configuration Document "maintained by ITD Asset Management.	

This difference between how ITD measures pavements and the new Federal measure is common among almost all states. States developed their individual means to measure pavement conditions independently years before FHWA developed its standard, nationwide measures. Because the federal pavement condition measures are new, ITD's pavement model does not forecast future conditions using the Federal criteria. Therefore, the pavement condition data shown in Figure 2-1: State Highway System (SHS) Pavement Long Term Trend and Forecast are based on the aforementioned ITD performance criteria. For the June 2019 asset management plan update, ITD will use its pavement model to assess statewide pavement conditions using the Federal criteria as well as ITD's long-standing criteria. Preliminary indications are that ITD will continue to meet the Federal Interstate and NHS pavement condition targets through the 10- years of the asset management plan. ITD understands that a 10-year performance forecast is required however, as Figure 2-1 shows only a 5-year forecast is given. Based on observed past forecasts, ITD does not have faith in the efficacy of the forecast beyond the 5-year horizon. ITD acknowledges not forecasting to federal criteria and not forecasting out to a 10-year horizon as a performance gaps and discusses the approach to close these gaps in Chapter 4.

As seen in Figure 2-1, 85% of the entire State Highway System (SHS) is in good or fair condition. Because ITD maintains Interstates and Commerce routes to higher levels than all routes statewide, it appears likely that ITD will continue meeting the Federal target. In addition, ITD uses a stricter standard for "poor" pavement then does FHWA. However, for the 2019 asset management plan, pavement modeling will confirm the assumption that ITD will continue meeting the targets as specified by the federal reporting criteria. The long-term Idaho trend is for pavements to be generally stable with funding from the past 15-years keeping pavement conditions within a narrow range of between 85% and 80% in good or fair condition for the entire network

Figure 2-1: State Highway System (SHS) Pavement Long Term Trend and Forecast (ITD Criteria)



ITD reviewed past performance of the interstate and non-NHS assets, according to the federal criteria, to establish the pavement performance targets. For all criteria reviewed, there exists a difference between the FHWA value and the ITD value. This is the manifestation of the difference in approach to performance criteria given in Table 2-4: Pavement Measures and Condition Crosswalk Table. Figure 2-2 through Figure 2-5 show this data.

Figure 2-2: Percentage Good Interstate Pavement Performance Crosswalk

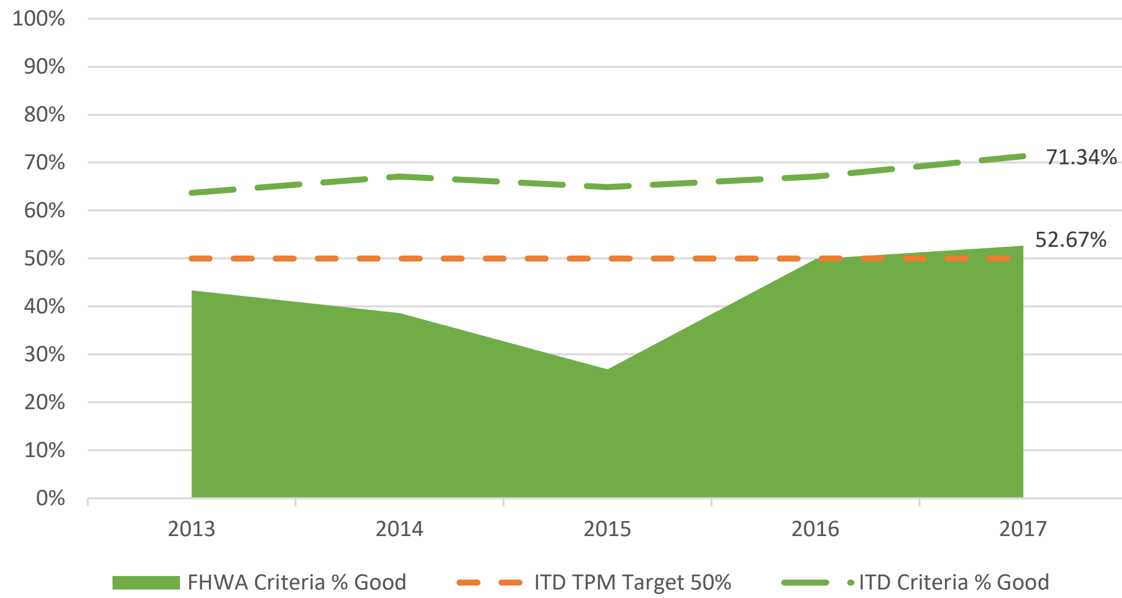


Figure 2-3: Percentage Poor Interstate Pavement Performance Crosswalk

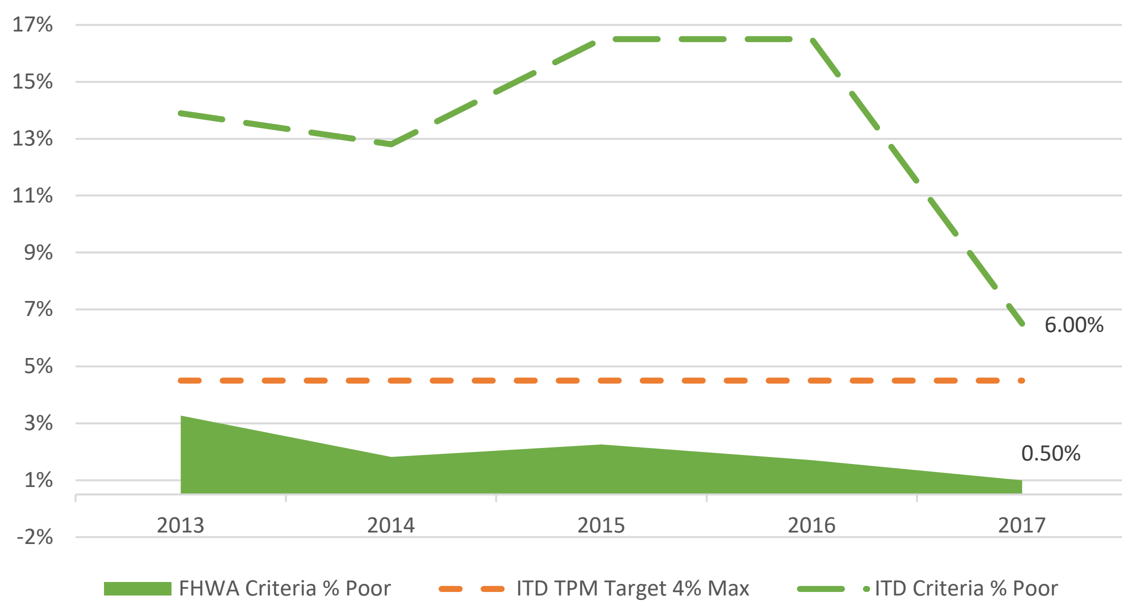


Figure 2-4: Percentage Good Non-Interstate NHS Pavement Performance Crosswalk

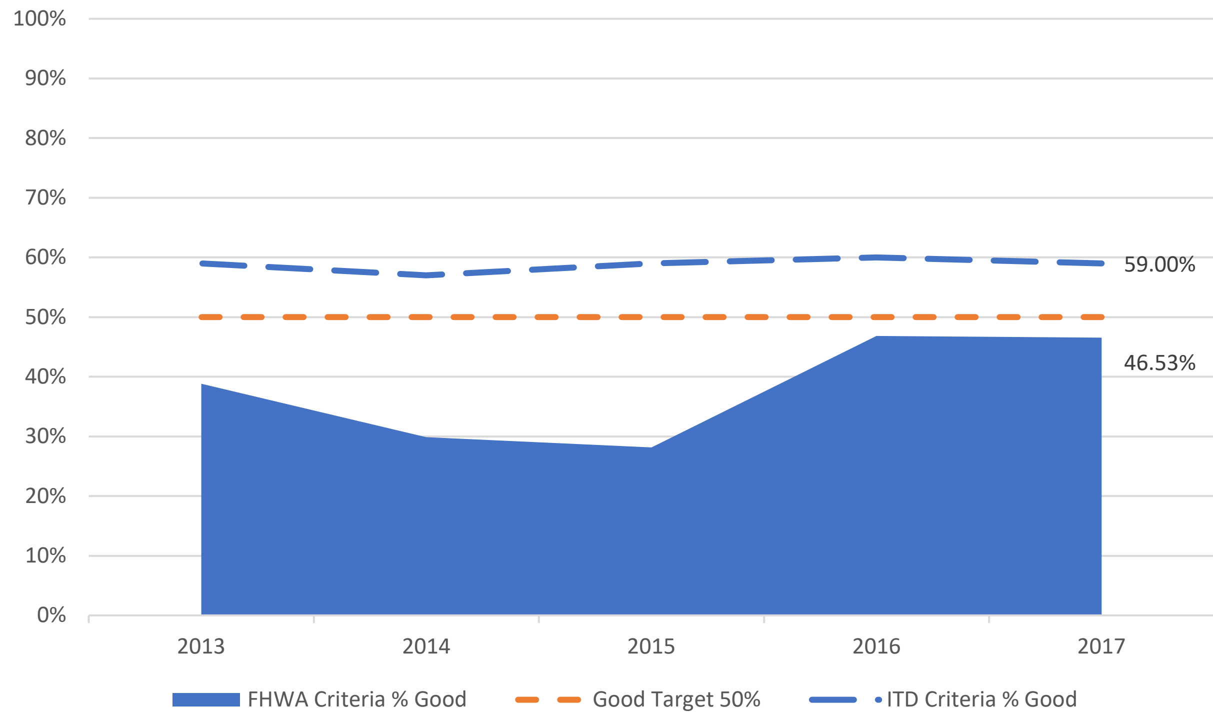
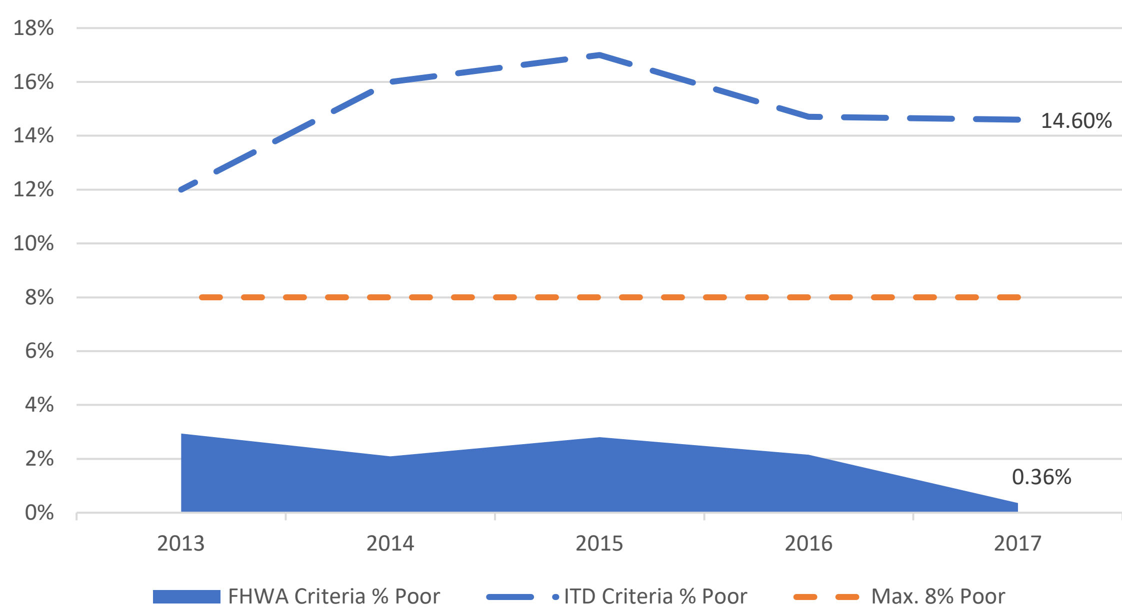


Figure 2-5: Percentage Poor Non-Interstate NHS Pavement Performance Crosswalk



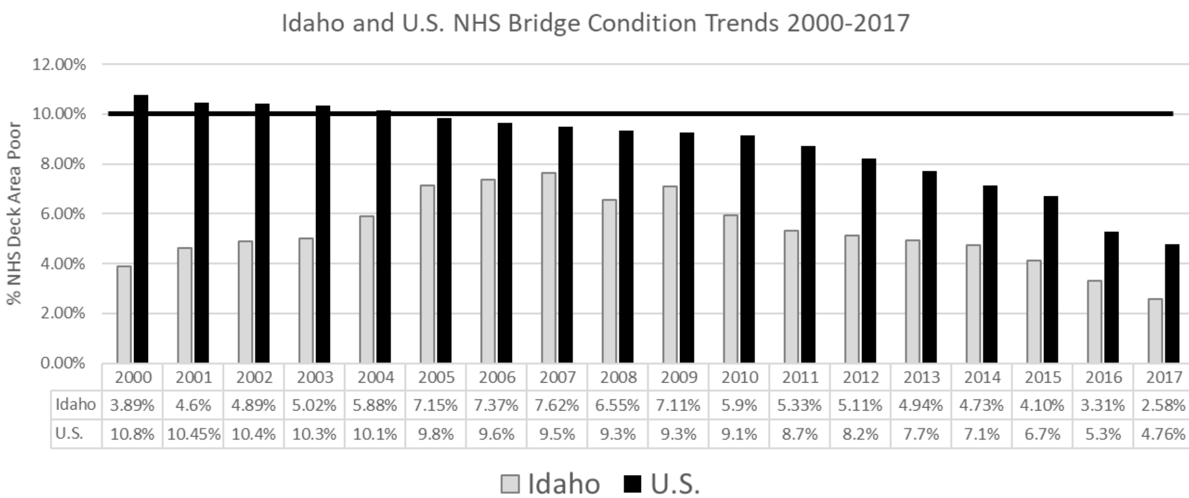
Measures and Performance Targets - Bridges

Idaho has set targets consistent with its traditional bridge condition performance measure to achieve a State of Good Repair or "Good" bridge condition, see ITD Traditional Performance Condition Measure, page 2-10. Specifically, for bridges on the NHS, ITD has set for this asset management plan the following targets:

- NHS bridges in Good condition – In two-years achieve 19% in Good condition
- NHS bridges in Poor condition - In two-years achieve no more than 3% in Poor Condition

Figure 2-6 shows the trends of NHS poor bridge condition in Idaho compared to the national average. Although the U.S. average is 4.76% of the NHS bridge deck area in Poor condition, only 2.58% is Poor in Idaho. The black line illustrates the Federal minimum condition level of no more than 10% allowed to be Poor.

Figure 2-6: ITD NHS Bridge Condition Compared to U.S. NHS Bridge Conditions



For the Federally required asset management plan and for related Federal performance reporting, FHWA set the following metrics for determining if bridges are in good, fair, or poor condition. Evaluated are three primary bridge components:

- Decks, which are the major horizontal component, generally made of concrete, that sit atop beams or girders and provide the driving surface
- The superstructure which is comprised of the beams and girders that hold the deck
- The substructure, which is comprised of the piers, abutments, and foundations that hold the superstructure.

The lowest condition of any of the three components, according to the federal standard, determines bridge condition as good, fair, or poor. Each component and the entire bridge are rated on a 0-9 scale. A new bridge or new component in excellent condition is rated 9 and a failed bridge or component is rated 0. If one component is poor, and the other components are rated Fair, the bridge is considered poor because its lowest component is rated poor. Table 2-5 shows how FHWA categorizes the condition of bridges for performance reporting and for the asset management plan while Table 2-6 presents a crosswalk between the FHWA and ITD performance measures.

Table 2-5: FHWA Thresholds for Categorizing Bridges

Rating	Category
7-9	Good
5-6	Fair
0-4	Poor

ITD Traditional Performance Condition Measure

It is important to note that ITD has adopted different performance measures with respect to the state system of structures. Namely, ITD only distinguishes between “Not Good” and “Good” whereas FHWA uses three striations, “Poor”, “Fair” and “Good”. ITD has taken this approach, as it is simpler and is particularly helpful when talking with the public and our Legislature. As illustrated in Table 2-6 ITD reports structures as “Not Good” when the rating is below 6. All other ratings are reported as “Good” or in a State of Good Repair as defined in the Glossary.

Table 2-6: Comparison between ITD and NHS Performance Measures

<table>
<tr><th>Rating</th><th>Condition</th><th>State Performance Measure</th><th>FHWA Performance Measure</th></tr>
<tr><td>0</td><td>Failed</td><td rowspan="6">“Not Good”
(Not in a “State of Good Repair”)</td><td rowspan="5">Poor</td></tr>
<tr><td>1</td><td>Imminent Failure</td></tr>
<tr><td>2</td><td>Critical</td></tr>
<tr><td>3</td><td>Serious</td></tr>
<tr><td>4</td><td>Poor</td></tr>
<tr><td>5</td><td>Fair</td><td rowspan="2">Fair</td></tr>
<tr><td>6</td><td>Satisfactory</td><td rowspan="4">“Good”
(State of Good Repair)</td></tr>
<tr><td>7</td><td>Good</td><td rowspan="3">Good</td></tr>
<tr><td>8</td><td>Very Good</td></tr>
<tr><td>9</td><td>Excellent</td></tr>
</table>

Table 2-7: Summary of NHS Bridges (FHWA Criteria)

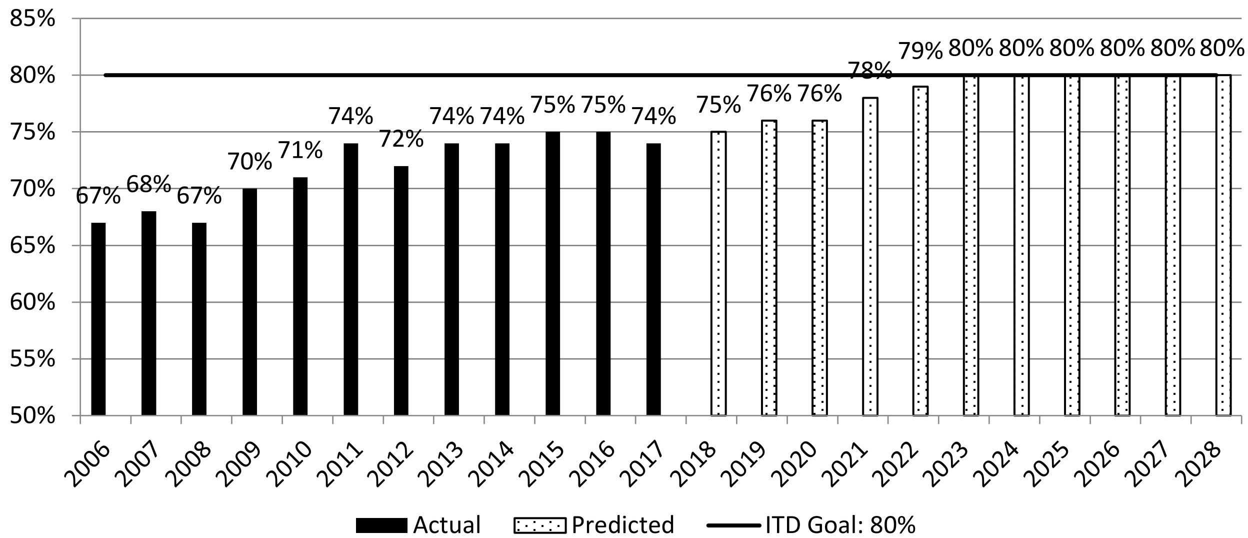
Bridge Asset Class	FHWA Criteria		
	Good	*Fair*	*Poor*
State NHS Bridges	140 bridges with 1,432,430 sq. ft. deck area 18.3 % by deck area	620 bridges with 6,205,412 sq. ft. deck area 79.3 % by deck area	18 bridges with 188,490 sq. ft. deck area 2.4 % by deck area
Local NHS Bridges	23 bridges with 134,576 sq. ft. deck area 1.7 % by deck area	35 bridges with 310,880 sq. ft. deck area 4.0 % by deck area	1 bridges with 2,884 sq. ft. 0.04 % by deck area
Total NHS System	**163** **1,567,006 sq. ft.** **19 % by deck area**	**653** **6,516,292 sq. ft.** **79% by deck area**	**19** **191,374 sq. ft.** **2 % by deck area**

Table 2-8: Summary of NHS Bridges (ITD Criteria)

Bridge Asset Class	ITD Criteria
	"State of Good Repair"
State NHS Bridges	603 bridges with 5,648,361 sq. ft. deck area
Local NHS Bridges	N/A
*Non NHS Bridges**	463 bridges with 3,749,243 sq. ft. deck area
Total State Highway System (in a State of "Good" Repair)	**1066 bridges with** **9,397,604 sq. ft. deck area** **75% by deck area** *(see Figure 2-7, below)*

**Includes NHS bridges with spans between 10' to 20'. Including the Non-NHS there are 1840 bridges on the State System with 12,647,065 square foot of area.*

Figure 2-7: ITD Bridge Condition Model Long Term Trend and Forecast (ITD Criteria)



Conclusion

ITD uses the FHWA performance measures as its measures for the asset management plan and for the required FHWA performance reporting. The 2019 asset management plan will further validate the assumptions that ITD will continue to meet its condition targets and surpass the minimum FHWA condition levels for Interstate pavements and NHS bridges. The investment strategies ITD discusses later in this plan also will be adequate to ensure sustained condition targets.

Table 2-9: ITD Asset Management Plan Measures and Targets

Performance Measure	Measure	Target
Pavement	Interstate NHS Percent Good	50%
	Interstate NHS Percent Poor	4%
	Non-Interstate NHS Percent Good	50%
	Non-Interstate NHS Percent Poor	8%
Bridge	NHS Bridge Percent Good	19%
	NHS Bridge Percent Poor	3%

Chapter 3 Summary Description of Assets

Background

ITD manages a diverse highway network that serves the rapidly growing Boise area, mountainous tourist areas such as Coeur d'Alene, near-desert climates, and sprawling regions stretching from northern Utah to the Canadian border.

ITD's transportation inventory reflects the geology, geography, and economy of the state. Idaho is a relatively large, lightly populated state with a growing population. It is the nation's 14th largest in terms of area with 83,569 square miles.[i] Its 2016 estimated population of 1.68 million is the nation's 13th smallest. Idaho's population grew by 115,558 between 2010 and 2016, the 10th fastest growing state in the nation.[ii] However, the growth is concentrated with 83% of it occurring in three counties, Ada, Canyon, and Kootenai. Ada and Canyon counties include the metropolitan Boise area while Kootenai County includes Coeur d'Alene. Twenty counties lost population between 2010 and 2016, while another 16 grew by less than 1,000 people over five years.[iii]

Figure 3-1: The I. B. Perrine Bridge, US 93, over the Snake River Canyon, Twin Falls, Idaho

A snapshot of the state's population and economy shows a lightly populated state with a diverse economy. Boise is by far the state's largest city with 218,281 people, more than twice the size of the next largest which are Meridian and Nampa with both around 90,000 people. Idaho's unemployment rate is low with a February 2018 unemployment rate of 2.9%. However, it has the 15th lowest annual household income of $47,583 per year.[iv] A list of Idaho's 35 largest private employers is dominated by hospitals and retailers but also includes Micron manufacturing, Battelle Energy Alliance, Bechtel Marine Propulsion, and several manufacturers employing more than 1,000 people.[v] Tourism also is a large sector in Idaho employing an estimated 2,800 people and contributing about $500 million in direct payroll.[vi]

Commodities are a significant portion of the Idaho economy and create demand for heavy trucks. Forestry and timbering contributed to Idaho's economy about $2.6 billion in 2014 in direct sales.[vii] The mining and oil industries employ about 3,200 workers with a payroll of about $278 million in 2012.[viii] In addition, agriculture is a major employer with an average annual labor force of nearly 52,000 people.[ix] The commodity-driven industries of agriculture, mining, oil, and timbering contribute to demand for heavier loads. ITD has a process for approving 129,000-pound loads on certain routes and sections so that trucks can carry more than the normal 80,000-pound limit.

The ITD manages a State Highway System (SHS) of approximately 5,000 centerline miles, or over 12,000 lane miles, plus more than 1,800 bridges. The entire Idaho Transportation Network is more than 60,000 miles with local governments owns the large majority. ITD's routes carry 54% of the state vehicle miles of travel (VMT) with 45% of the state's VMT being on the Interstate Highway System network. Within Idaho there are more than 4,000 bridges, of these 1,840 bridges are managed by ITD. There are 778 State system bridges on the NHS (with an area of 7,826,332 sq. ft.). There are 59 local bridges (with an area of 448,340 sq. ft.) on the NHS. Currently only one of these bridges on the Local System is in poor condition with an area of 2,884 sq. ft.

Figure 3-2: US 93 in Idaho, one of the many rural roads so important in the state.

ITD Asset Classes

An integral part to ITD being effective in life cycle planning, and by association, asset management, is segregating our assets in to different classes. This enables ITD to tailor and prioritize the life cycle cost processes based on performance indicators defined for each asset class.

ITD recognizes the following asset classes within the Idaho Transportation Network:

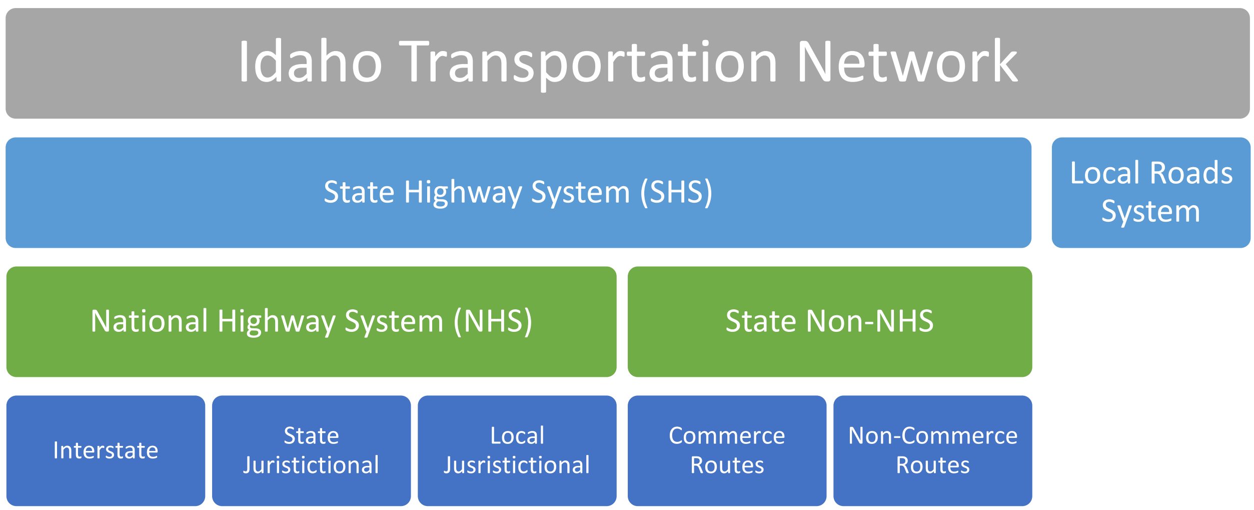
- State Highway System (SHS)
- Local (non-SHS) roads
- National Highway System (NHS)
- State Highways
- NHS Bridges
- NHS Local Bridges
- Non-NHS Bridges

Sub-Asset Classes recognized are:

- Interstate
- State Jurisdictional NHS
- Local Jurisdictional NHS
- Commerce Routes
- Non-Commerce Routes.
- Rigid Pavements
- Flexible Pavements

Figure 3-3 presents graphical representation of this taxonomy.

Figure 3-3: Idaho Transportation Network Asset Classes



The Figure 3-4 summarizes the distribution of lane miles based on the asset classes recognized by ITD. As shown in Figure 3-4 the majority of the State Highway System, 65% is comprised of National Highway System (NHS) facilities. Non-Interstate roadways comprise two-thirds of the Idaho NHS system. With respect to bridges, Figure 3-5 shows the distribution of total deck area and highlights that nearly 70% of the total deck area is located on the NHS, with just 4% of that belonging to local jurisdictions. Provided in Appendix A is A complete listing of the assets by asset class.

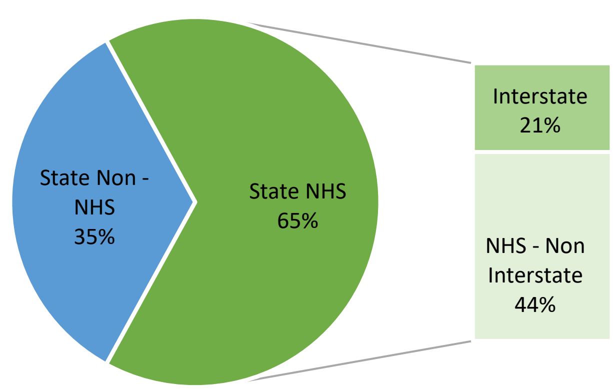


Figure 3-4: SHS Lane Miles Distribution

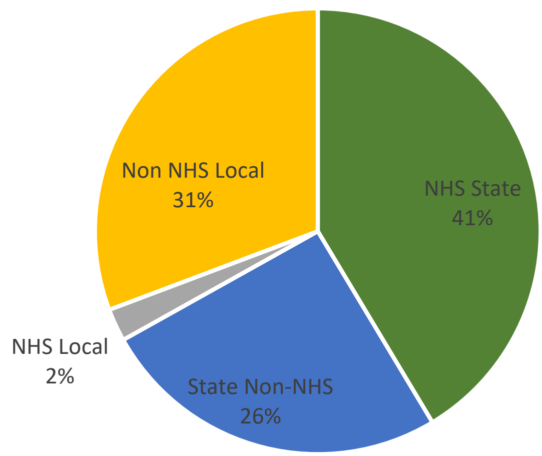


Figure 3-5: Distribution of Total Deck Area in Idaho

ITD also recognizes sub-asset classes with in the SHS, commerce and non-commerce routes. Beginning in 2015, ITD divided the highway network into Commerce and Non-Commerce Routes for prioritization. Commerce Routes have more than 300 commercial trucks per day, while routes with fewer trucks are non-commerce routes, (See Figure 3-6). This stratification closely aligns with the ITD portion of the NHS and allows ITD to prioritize its resources where there is the most commerce, the greatest axle loadings, and generally the economic activity.

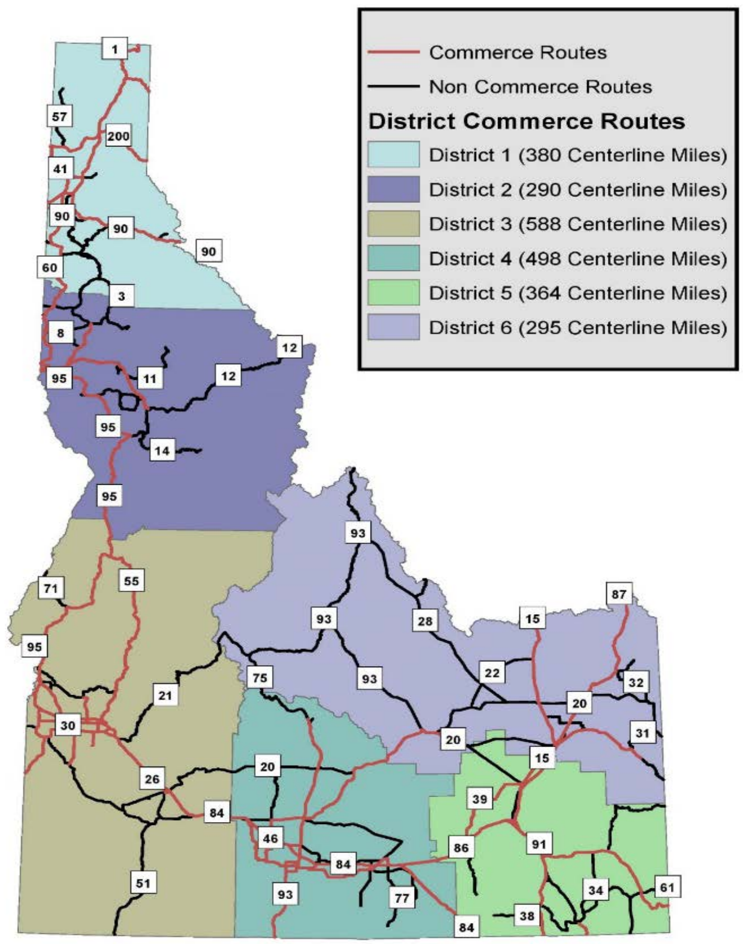


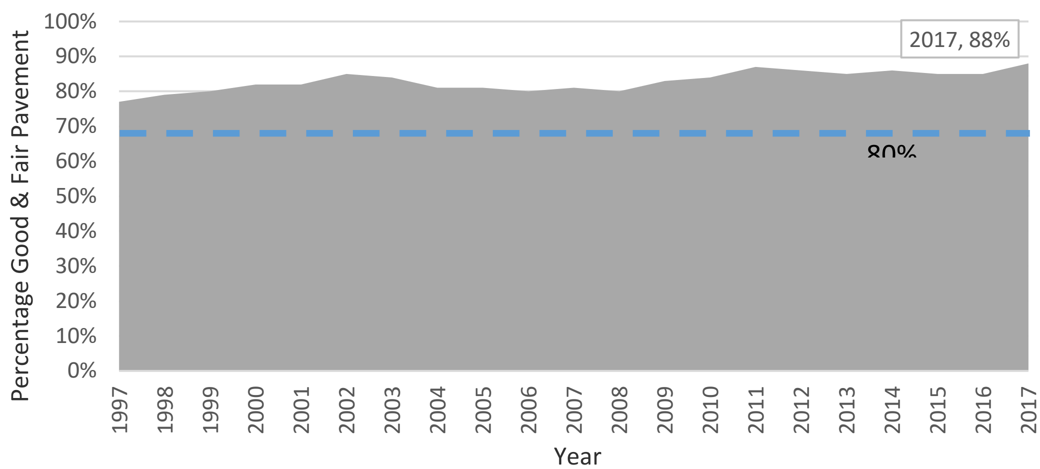
Figure 3-6: Map of Idaho Commerce Routes

Pavements

Condition and Trends

Since 1998, ITD has published an annual pavement condition trends report. It also produces a web-based performance dashboard that summarizes performance and targets for pavements, bridges, safety, and other performance areas. These reports make the ITD condition trends transparent. As seen in Figure 3-2, pavement conditions generally have improved, and statewide conditions remain above the ITD target of 80 percent of pavements in "Good" or "Fair" condition. As discussed in Chapter 2, this chart is based on the ITD defined performance criteria.

Figure 3-7: Idaho SHS Pavement Condition Trends (ITD Criteria).

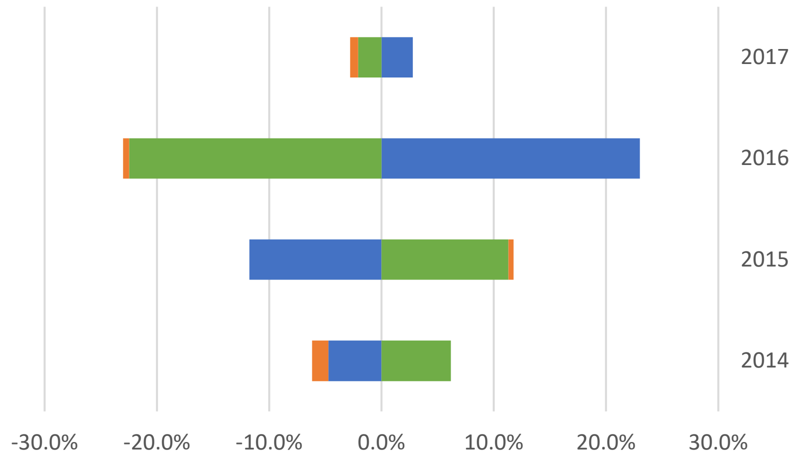


For ITD's highest functional class, the Interstate Highway System, ITD's conditions are very good. According to the pavement data ITD reported to the Highway Performance Management System, 52.67% of the 2,530 Interstate lane miles are in good condition, 46.83% are fair and only 0.50% are poor. For the National Highway System (non-Interstate) as of 2017, out of 5,396 lane miles, 46.53% are good, 53.10% are fair, and 0.36% is poor.

Another aspect of pavement condition performance that is important to review is how the statewide pavement conditions are changing year over year. For instance, it would be very telling to see large changes between good and fair pavement in a given year, which is indicative that large portions of the network are deteriorating at the same time. ITD asset management has an established process to monitor year over year changes in performance.

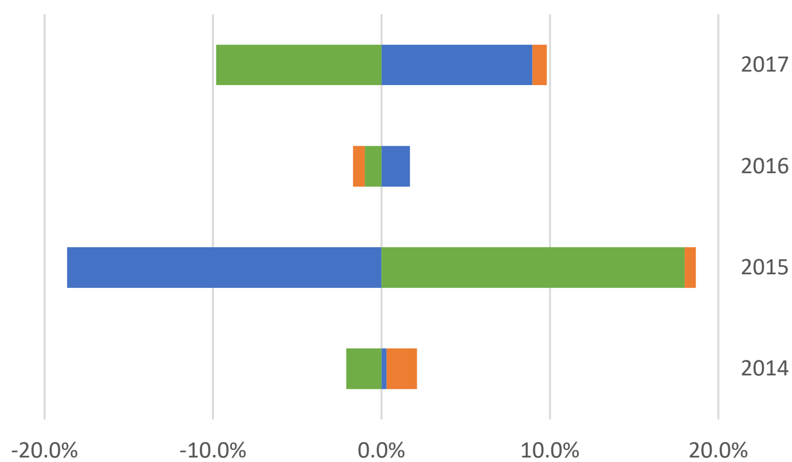
Figure 3-8 is in the format of a Tornado Diagram. This chart shows percentage decreases by category on the left side of the mid-point of the chart (0%) and increases to the right. This chart is a zero sum, which means that accompanying any decrease is an equivalent increase. The different bars represent the year of data reported on. For example, the first bar represents the year 2017. In this year, there was a 0.7% decrease in poor and 2.1% decrease in fair, which is balanced by an equivalent 2.8% increase in good condition pavements (the blue bar). By comparison, 2016 showed a 23% increase in good pavements which came from a decrease in poor (-0.6%) and fair (-22.5%) pavements. Figure 3-9 is tornado diagram for the NHS non-interstate pavements.

Figure 3-8: Interstate Pavement Performance percentage Change Year over Year (FHWA Criteria)



	2014	2015	2016	2017
Good Percent	-4.7%	-11.8%	23.0%	2.8%
Fair Percent	6.2%	11.3%	-22.5%	-2.1%
Poor Percent	-1.5%	0.4%	-0.6%	-0.7%

Figure 3-9: NHS Non-Interstate Pavement Performance % Change Year over Year (FHWA Criteria)



	2014	2015	2016	2017
Good Percent	0.3%	-18.7%	1.7%	9.0%
Fair Percent	-2.1%	18.0%	-1.0%	-9.8%
Poor Percent	1.8%	0.7%	-0.7%	0.9%

In order to obtain a holistic view of statewide pavement performance, results are further reported out by ITD District. The intent is not to highlight or compare one District to another, rather it is to ensure that there is uniformity across the State and that budget distributions reflect not only the overall need of the State but align with the needs of each District, as shown in Figure 3-10. ITD has also incorporated the use of geographic information system (GIS) to provide District specific maps showing pavement performance (See Figure 3-11.)

Figure 3-10: Overview of State Highway System Pavement Performance by District (ITD Criteria)

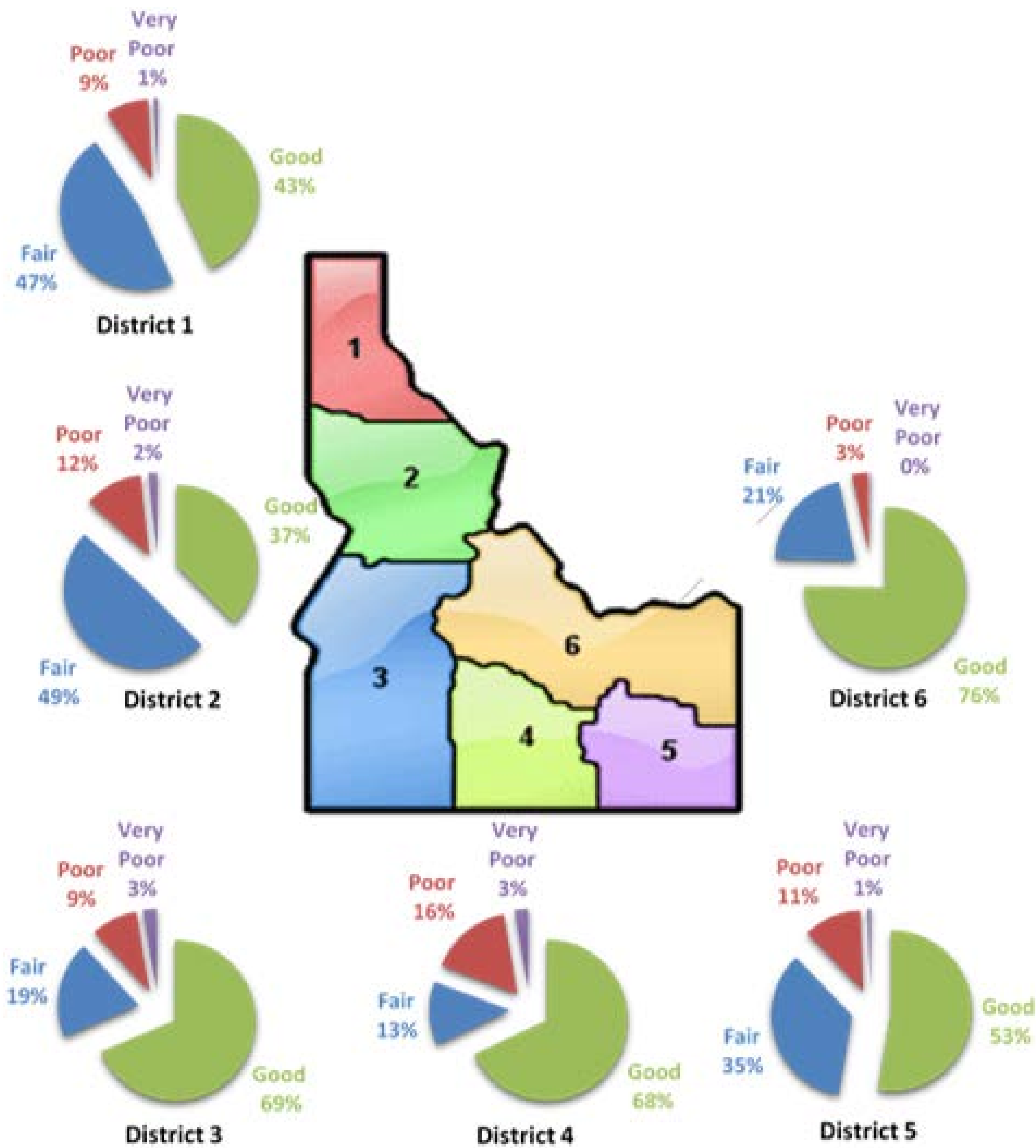
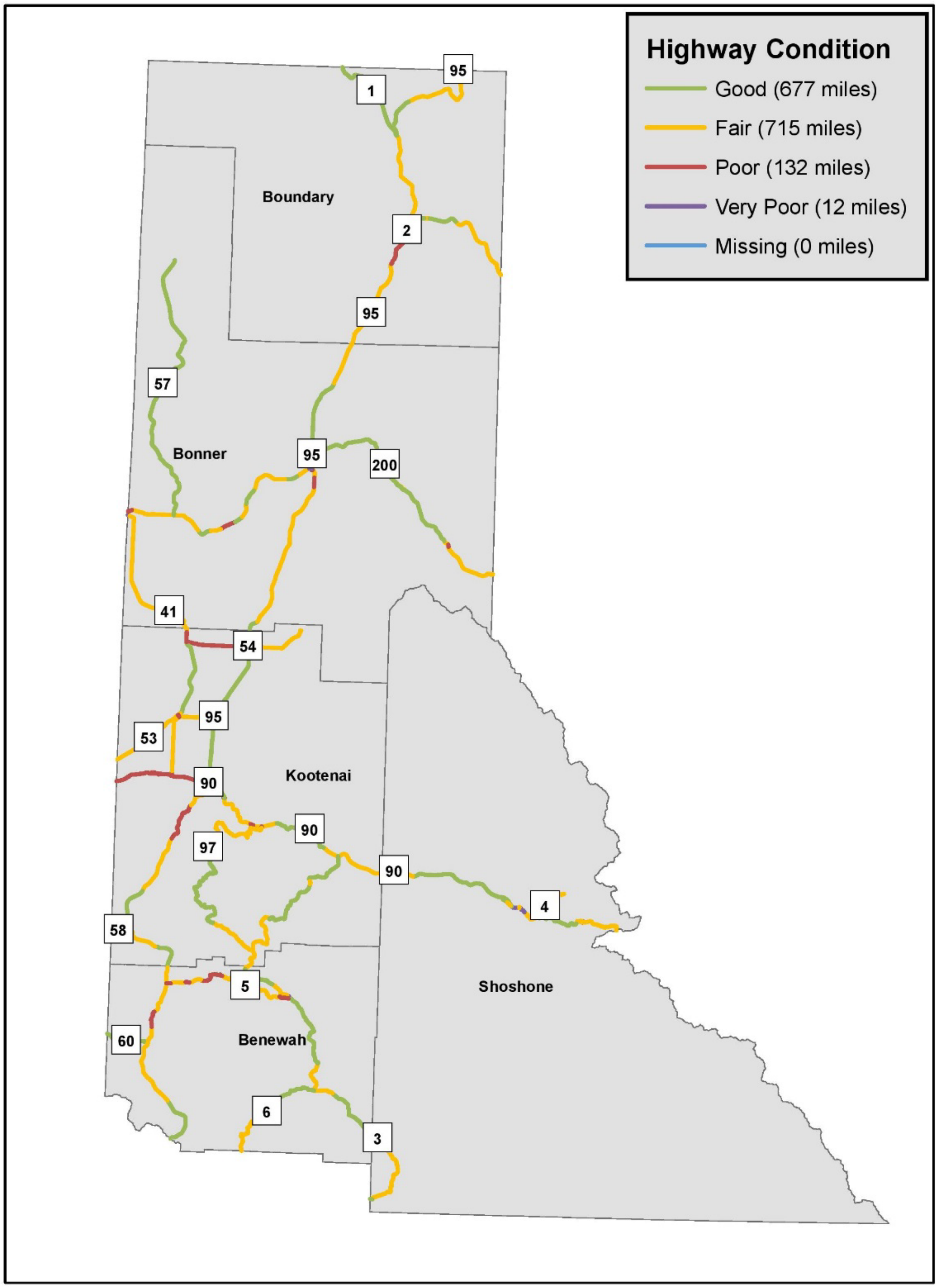


Figure 3-11: Example of GIS Map to Report Pavement Conditions (ITD Criteria)



Measurement and Management Process

ITD uses a more stringent standard for measuring its pavements and the result has been conditions that far exceed the National minimum standard set by FHWA. This section describes the history, process, measures, and results of ITD's pavement management process.

Over the years, ITD has updated the pavement management and pavement-selection processes. In 1978, it acquired a mainframe pavement management system (PMS) and by 1986, it was using the system to perform simplistic economic analysis and optimization. In 2007, it shifted to the Highway Economic Requirements System State model (HER-ST). In 2009, it purchased a commercial pavement and maintenance management system (MMS). The PMS includes inventories, calibrated deterioration curves, decision trees, performance models, and an optimization analysis engine.

ITD uses the current system at a network level to indicate how much should be invested in pavements to achieve the department's target, and how the funds should be split between preservation and rehabilitation or replacement. The system is not used at the project level. The network analysis is broken down by district, and the analysis used to allocate funds to the districts.

Once districts receive their pavement allocations, they identify projects based partially on the PMS information. Often, district engineers pick projects based upon local conditions, pavement condition reports, their own judgment, and local political input. ITD has pavement-design manuals, which help material engineers design treatments to maximize the pavement's lifecycle performance. The analyses have led to many pavement rehabilitation projects on the higher-volume Interstates to achieve a good life-cycle result. In addition, the districts have a preservation budget to work with which they also can use to improve the life-cycle performance of pavements.

The district-identified pavement projects are directly uploaded into the pavement management system and ITD runs the projects in the PMS analysis engine. The analysis uses the deterioration curves and programmed projects to calculate how the program will benefit the pavement network.

The extent of ITD's pavement data collection and analysis allow staff to analyze pavement conditions from many perspectives to assess overall performance. Not only is ITD concerned about pavement smoothness but it also analyzes rutting which, when excessive, can contribute to crashes because of water laying in the wheel path depressions. Also, cracking can be analyzed to determine what types of treatments a pavement requires, or how long a pavement will perform. ITD produces substantial pavement distress data to its districts for them to analyze their pavement conditions and needed treatments. Examples of this data, based on the FHWA measures, are shown in Figure 3-13 through Figure 3-14. These figures show the percentage of good, fair, poor as well as three year average and standard deviation (STD) of the data.

Historically, the pavement management system used thresholds in the cracking index and roughness index to determine whether or not a pavement is Good, Fair, "Poor" or "Very Poor" These thresholds were triggered by two tiers of thresholds, based on the functional class of a roadway:

- Tier 1: Interstates and arterials
- Tier 2: Collectors

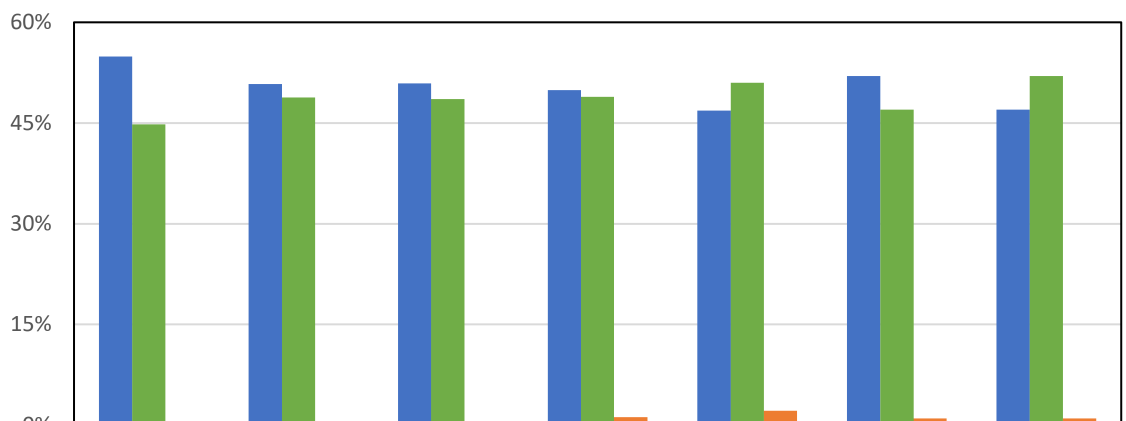
Districts would use the "Poor" or "Very Poor" threshold notification to realize that a roadway was ready for a structural project. Through 2009, what was called the Classic Methodology employed only two measurements to determine performance rating: the cracking index and roughness index. In 2010, an improved Profiler van technology and the new PMS system led to the addition of a third measurement to determine pavement performance, rutting depth. Rutting depth was first applied in 2010 as a method to rate pavements. Utilizing three criteria to determine performance is often referred to as “the 3-legged stool” model. The analogy is that if one leg of a 3-legged stool is broken, then the stool will not stand. Likewise, if any one of the three criteria that determines pavement performance is “Poor” or “Very Poor” met then the roadway is classified as “Poor” or “Very Poor” irrespective of the other two indices.

ITD vs. Federal Pavement Measurement

The ITD standard of considering a pavement to be rated as “Poor” if one criteria is poor is more stringent than the Federal standard. FHWA regulation considers a pavement to be poor only if it is poor in two of the three criteria. Although ITD uses its own tried and true criteria for measuring its pavements and qualifying pavement performance and conditions, when ITD measures its pavements by the Federal standards it shows very little poor pavement. Figure 3-9 shows that when measured by the Federal criteria, only one-half of one percent of the 2017 State Highway System was in what FHWA could classify as poor condition. By the Federal measure, 50.9% was good in 2017 and 48.6% was fair.

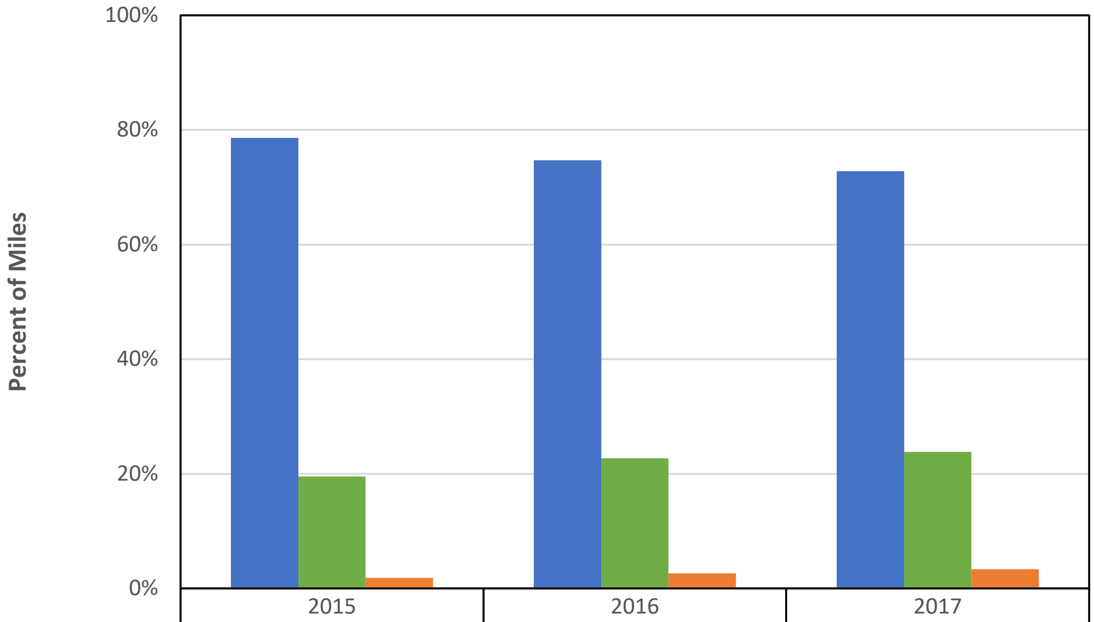
Although ITD reports the pavement data to FHWA to satisfy the Federal regulations, ITD also utilizes this information to monitor the different aspects of pavemnent performance. Examples of these charts are provided on the following pages. ITD will continue using its performance criteria for reporting pavement performance to its Board, the public, and to its Districts. ITD believes that its criteria better supports pavement-selection decisions.

Figure 3-12: National Highway System Pavement Conditions Calculated by the FHWA Standards



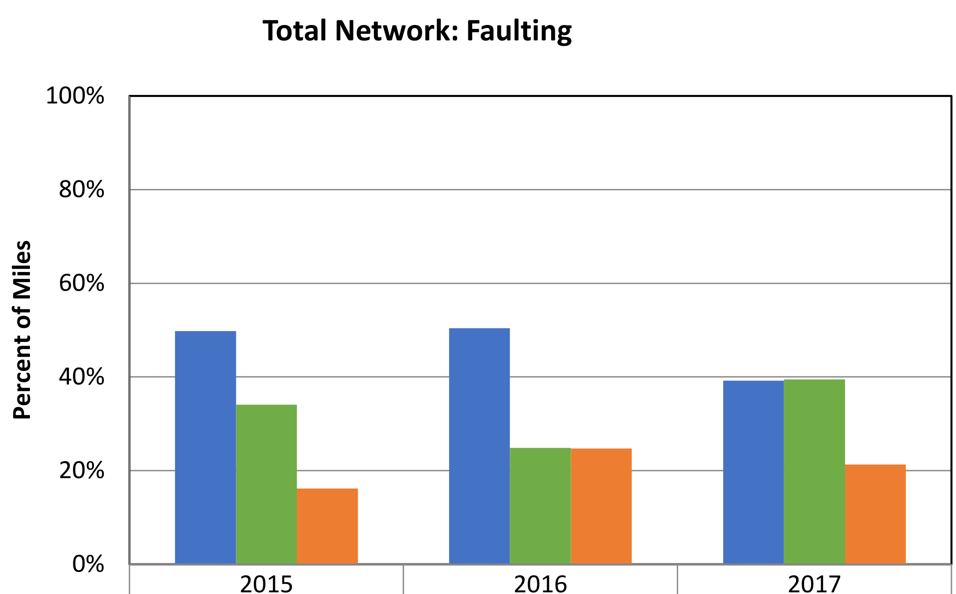
	2015 SHS	2016 SHS	2017 SHS	2016 HPMS: Interstate	2016 HPMS: Non-Interstate	Projected 2017 HPMS - Interstate	Projected 2017 HPMS - Non-Interstate
% Good	54.9%	50.8%	50.9%	49.9%	46.8%	52.0%	47.0%
% Fair	44.8%	48.8%	48.6%	48.9%	51.0%	47.0%	52.0%
% Poor	0.3%	0.4%	0.5%	1.2%	2.2%	1.0%	1.0%

Figure 3-13: Rutting conditions on the National Highway System



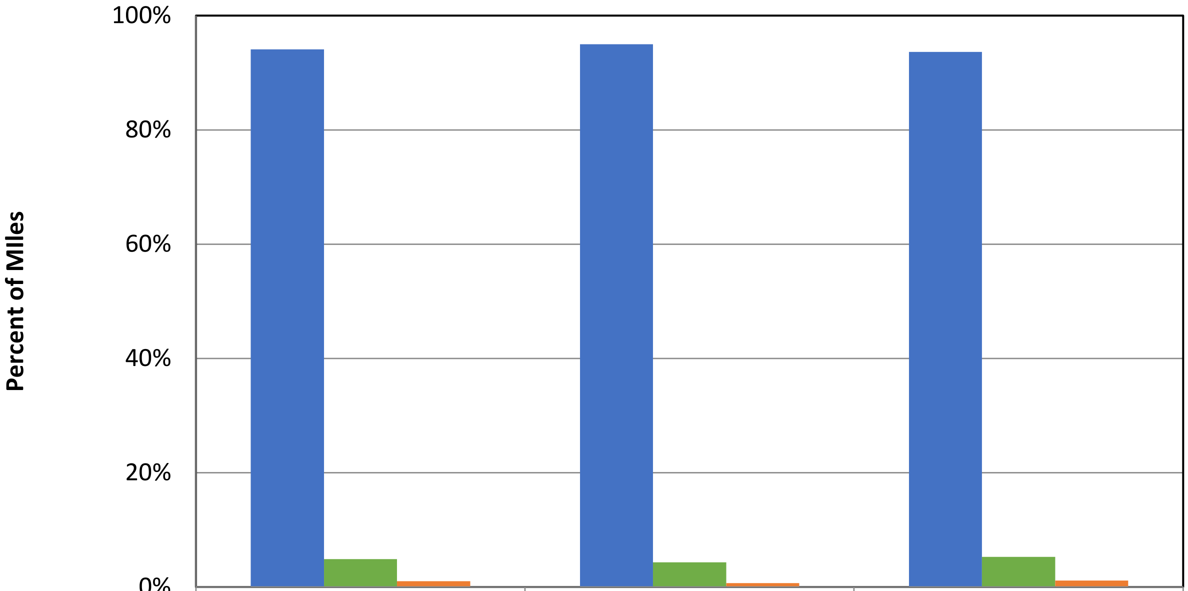
	2015	2016	2017
Percent Good	78.63%	74.71%	72.83%
Percent Fair	19.53%	22.70%	23.82%
Percent Poor	1.84%	2.60%	3.35%

Figure 3-14: Faulting Conditions on the National Highway System



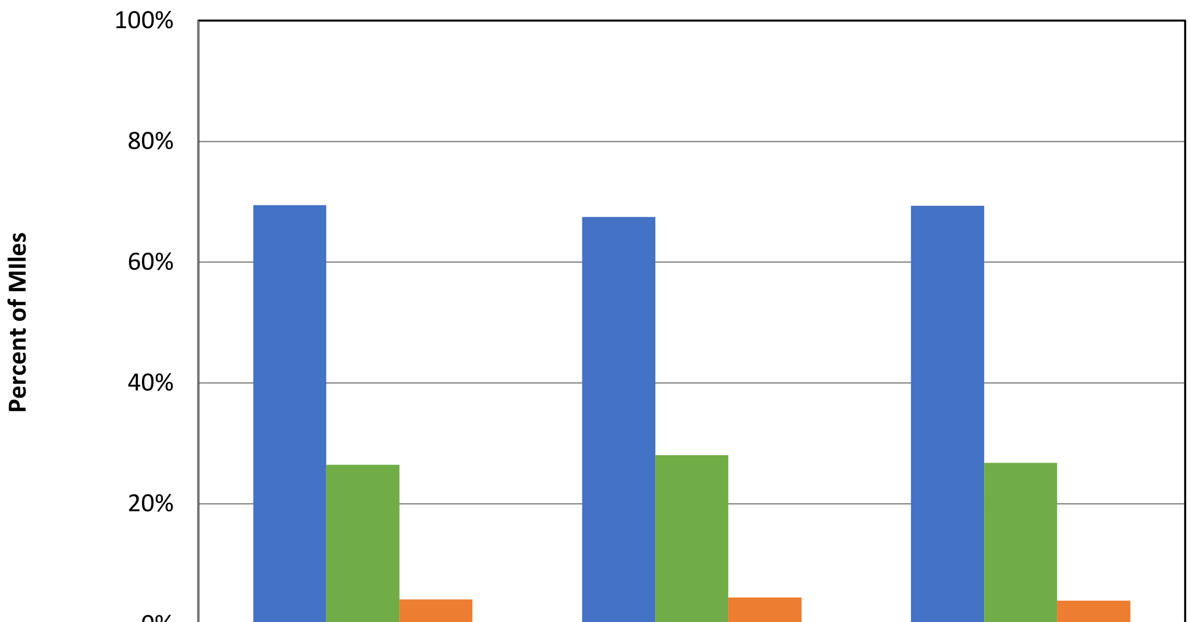
	2015	2016	2017
Percent Good	49.80%	50.43%	39.23%
Percent Fair	34.06%	24.82%	39.49%
Percent Poor	16.14%	24.74%	21.28%

Figure 3-15: National Highway System Cracking Percentage



	2015	2016	2017
Percent Good	94.08%	94.97%	93.63%
Percent Fair	4.90%	4.35%	5.27%
Percent Poor	1.01%	0.68%	1.10%

Figure 3-16: National Highway System IRI Conditions



	2015	2016	2017
Percent Good	69.41%	67.49%	69.32%
Percent Fair	26.42%	28.05%	26.74%
Percent Poor	4.17%	4.46%	3.94%

Bridge

Conditions and Trends

ITD's bridge conditions have steadily improved since 2007. At this time, 7.62% of the deck area of the NHS was poor. By 2017, ITD reduced the area of poor NHS bridges to 2.58%. That compares to a 2017 national average of 4.76%.

The improving bridge conditions reflect a concerted multi-year effort by ITD. Bridge expenditures rose from about $18 million in past years to more than $80 million in the current investment plan.

To measure uniformly across the country FHWA bridge regulations mandate bridge condition measurements according to the National Bridge Inventory (NBI) standards. The NBI requires recording about 100 elements for each bridge and inspecting each at least once every two years.

Considering the 2016 NBI data, validated by ITD Bridge, the majority of Idaho's bridges are in fair-to-good condition. Table 3-1 shows the NHS bridges as of 2016, excluding culverts, as reported by FHWA's National Bridge Inventory data. Any component rated four or less is considered poor. As can be seen, only five bridges out of 837 (as of 2017) on the NHS have decks rated poor. Only 10 bridges have poor superstructure, and only nine have poor substructures.

Table 3-1: ITD NHS Bridges by Condition, Area of the Decks, Superstructures, and Substructures

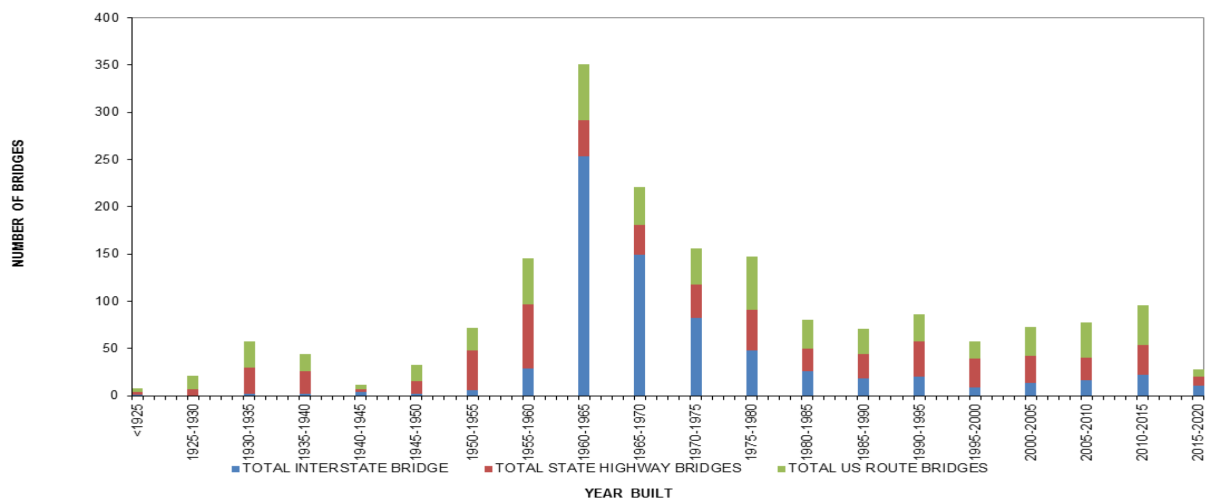
Condition	Decks			Superstructure			Substructure		
	Count	Area	% Area	Count	Area	% Area	Count	Area	% Area
<=4	5	46,472	0.6%	10	59,812	0.7%	9	111,252	1.3%
5	45	463,901	5.6%	82	1,146,095	13.9%	106	1,268,282	15.4%
6	485	5,301,872	64.1%	345	3,253,501	39.3%	418	3,781,539	45.9%
7	215	1,915,992	23.2%	208	1,786,268	21.6%	159	1,642,257	19.9%
8	38	314,941	3.8%	140	1,729,479	20.9%	95	1,166,670	14.1%
9	16	167,882	2.0%	19	235,905	2.9%	17	213,865	2.6%
Culverts	33	63,612	0.8%	33	63,612	0.8%	33	63,612	0.8%
Total	**837**	**8,274,672**	**100.0%**	**837**	**8,274,672**	**100.0%**	**837**	**8,247,477**	**100.0%**

With 9 being a bridge or bridge component in perfect condition, the average Idaho bridge deck on the NHS has a rating of 6.4, the average superstructure 6.6, and the average substructure 6.3. When measured only by deck condition, 33.6% of the Idaho NHS decks are in Good condition, 65.7% Fair, and seven-tenths of one percent Poor.

FHWA only records bridges and culverts over 20 feet long. ITD also inspects about 500 "short span" bridges that are 10' to 20' in length as well both on and off the NHS. Not counting the shorter structures that ITD manages, FHWA records a total of over 500 Non-NHS bridges in Idaho that are managed by ITD. Other bridges are the responsibilities of cities, counties, state parks, or Federal agencies such as the Bureau of Land Management.

Although ITD's bridges are in relatively good to fair condition today, the long-term trends indicate that substantial preservation, rehabilitation, and replacement are required for the foreseeable future. The average Idaho NHS Bridge was built in 1976 giving that inventory an average age of 42 years. Bridges of that age require substantially more maintenance and rehabilitation than do newer bridges.

Figure 3-17: State Highway System Bridges by Year Built



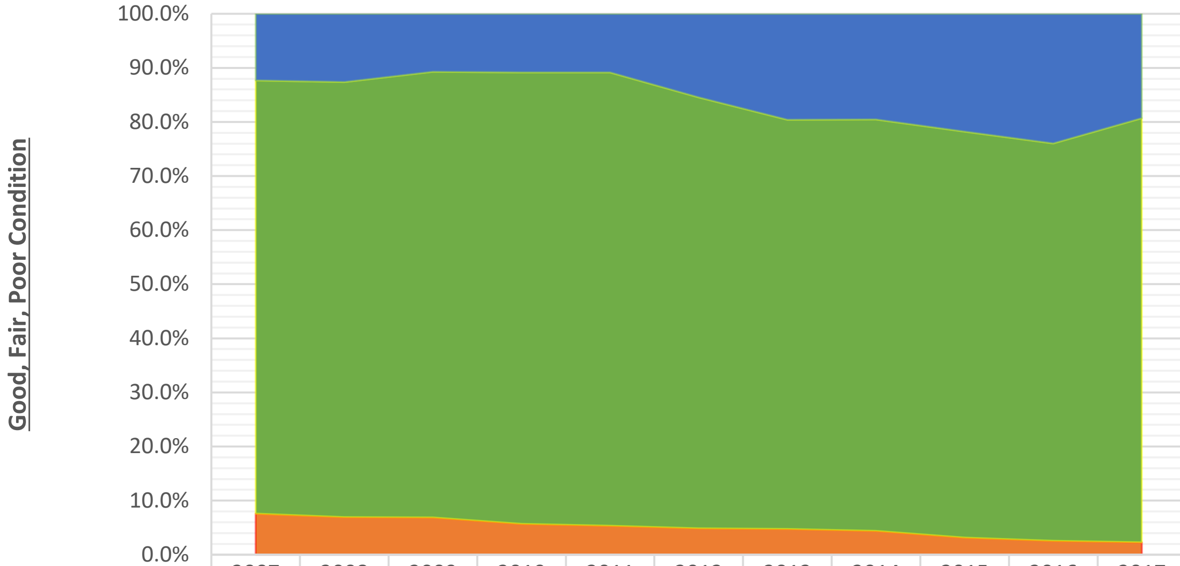
In addition, the older inventory is disproportionately large because so many large structures were built during the 1960s and 1970s during the Interstate-construction era. The average NHS Bridge in Idaho has 10,312 square feet of deck area whereas nearly 25% of the entire NHS bridge inventory is comprised of 59 bridges of more than 32,291 square feet in size. These bridges are only 6.5% of the total number of NHS bridges but comprise 25.4% of the inventory by area. Those bridges are on average 31 years old, which means they will probably need increasing investment over the next 10 and 20 years to keep them in good condition. Sixteen of those largest bridges of more than 32,291 square meters are already more than 45 years old.

Table 3-2: Bridge Asset Summary

Bridge Asset Class	Count	Deck Area
NHS Bridges	778	7,826,332 sq. ft.
Non-NHS State Bridges*	1062	4,372,393 sq. ft.*
Total State Highway System (SHS) Bridges	**1840**	**12,647,065 sq. ft.**
Local Bridges on NHS	59	448,340 sq. ft.
**Includes bridges with spans between 10' to 20' on the NHS and Non-NHS*		

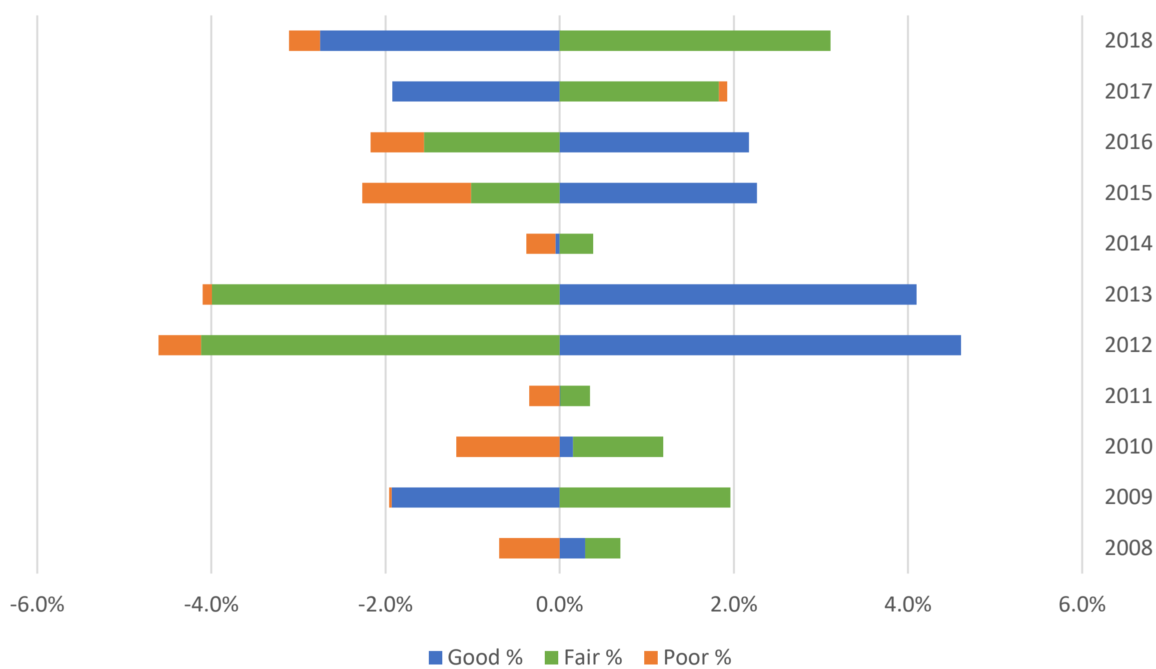
Figure 3-18 below shows the historic performance of the ITD NHS bridges based on the aforementioned criteria. Figure 3-19 is a tornado diagram, as explained on page 3-5, shows how ITD monitors changes in bridge performance year over year.

Figure 3-18: Historic NHS Bridge Performance 2007-2018 (FHWA Criteria)



	2007	2008	2009	2010	2011	2012	2013	2014	2015	2016	2017
Good	12.3%	12.64%	10.71%	10.86%	10.87%	15.48%	19.58%	19.53%	21.79%	23.97%	19.29%
Fair	80.0%	80.5%	82.4%	83.4%	83.8%	79.7%	75.7%	76.1%	75.0%	73.5%	78.4%
Poor	7.6%	6.9%	6.9%	5.7%	5.3%	4.9%	4.7%	4.4%	3.2%	2.5%	2.3%
Bridge Count	738	742	743	747	751	756	888	891	887	893	837

Figure 3-19: NHS Bridge Performance Percentage Change Year over Year (FHWA Criteria)



Measurement and Management Process

ITD describes its bridge and culvert management process as data-assisted and expert-mediated. Project selection and prioritization begin with bridge condition data analyzed by experts in the headquarters and districts.

Bridge Management System

ITD uses the BrM bridge management system produced by the American Association of State Highway and Transportation Officials (AASHTO). ITD uses the system to store inventory data, condition data, and inspectors' recommendations. ITD uses deterioration modeling in BrM to complement engineer's judgment, not replace it. ITD has increasingly utilized the life cycle cost accounting and benefit cost ratio features of BrM to improve its multi-objective optimization project selection process.

Bridge Management and Needs Assessment Process

Identified primarily from biannually bridge inspections and evaluations are bridge deterioration and needs. The Bridge Asset Management Group within the Headquarters Bridge Section performs bridge inspection and evaluation. All bridge information is contained in our AASHTOWare BrM bridge management system. Bridge projects are proposed for ITD's ITIP to address these needs. This data feeds ITD's bridge deterioration model as well as deterioration models within BrM. The basis of accelerating or delaying projects is engineers' knowledge of local needs and statewide priorities. Data on structure, condition, age, and service and many other factors are used to create a pool of candidate projects that are then synthesized by headquarters and district staff to develop a final bridge program, which includes replacement, restoration and maintenance.

Bridge performance measures drive ITD bridge funding. ITD created a bridge deterioration model and bridge condition performance measure about 8 years ago as an effort that was part of the *Governor's Task Force on Modernizing Transportation Funding in Idaho*.

ITD Bridge Deterioration Model

Based on historical bridge deterioration rates gathered from Idaho NBI condition data over the last 25 years ITD's bridge deterioration model is similar to any basic asset management model. The ITD bridge deterioration model is based on the entirety of the state bridge system not individual bridges. The amount of square footage area of bridge that becomes deficient every year (approximately 90,000 square foot assuming a severe deterioration) drives the model. Historically deterioration varies by yearly weather conditions, salt usage, and our ageing bridge population. It is important to note that the bridge programs that ITD uses to address bridge deficiencies are project oriented and include all project costs. For example, Interstate System Interchange projects that include bridges can be and are programed in the Bridge Restoration Program at times, funding to address bridge deficiencies may be far less than one-half the total project cost.

Given yearly funding levels for the bridge preservation and restoration programs an area of bridges is improved from deficient to "Good "condition or to a "State of Good Repair". To account for bridge deterioration modeling inaccuracies the model assumes a benign, moderate and severe deterioration. Bridge replacement project candidates are chosen and evaluated in order to build the ITIP for a given amount of funding in order to move to ITD's performance measure of 80% of the square footage area of our bridges to be in a "State or Good Repair" or "Good" Condition. Prioritizing bridge candidates for the Bridge Preservation and Bridge Restoration Programs involves using a multi-objective optimization process. The optimization process considers bridge condition, age, design load capacity, life cycle cost accounting, bridge preservation vs. replacement cost, ADT, route designation, scour and seismic vulnerability, and many other factors. Refer to ITD Life Cycle Planning Approach – Bridge in Chapter 5 for an explanation of multi-objective optimization process.

While ITD's Bridge Condition Performance measure is primarily driven by bridge condition, other functional aspects of bridges are taken into account through the multi-objective optimization process. When bridges are replaced in the Bridge Restoration program, they are modernized to appropriate design standards and take into account other modes of traffic such as accommodation for pedestrian, bicyclist and light rail as appropriate.

Bridge Preservation vs. Bridge Restoration

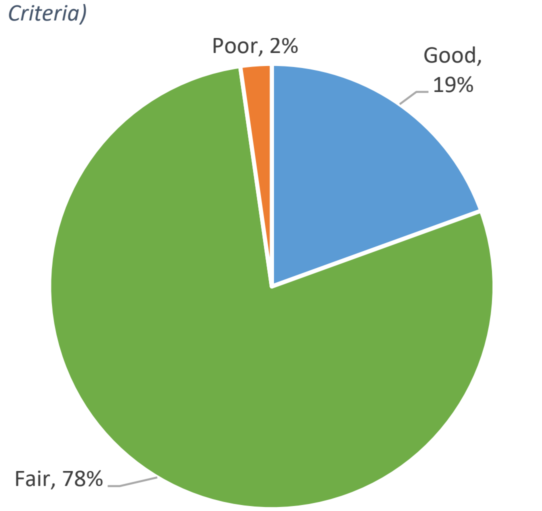
ITD directs approximately 20% of its bridge funding to preservation and 80% to restoration. It is believed investing in bridge preservation or keeping our "Good" bridges in "Good" condition flattens the bridge deterioration model over time and makes our investment in bridges sustainable with given funding. Investing a larger percentage of bridge funds in preservation may be possible in the future, but as we strive to reach our bridge performance goal with given funding, the 20% level of bridge preservation funding is appropriate. Bridge Preservation Program projects vary from deck sealing and joint replacement to protective deck overlays and specific superstructure and substructure repairs.

Four times a year, preservation needs identified through bridge inspections are shared with the districts, who address minor preservation needs. These can include activities such as minor repairs or drain cleaning. Bridges and culverts below a condition state 5 generally are programmed for restoration. Projects traditionally were programed for the fifth year of the program, which is updated annually. Recently, ITD adopted a 7-year program.

ITD vs. Federal Bridge Measurement

ITD's internal Bridge Condition Performance measure is to achieve 80% of the square footage of its bridges on the State system to be in a "State of Good Repair". It is also described as having 80% of the State system bridges in "Good" Condition (as defined by ITD). See the definition of ITD "Good" Bridges or "State of Good Repair" in the Glossary. Also, see discussion on page 2-9 and Table 2-6 on page 2-10 . The ability to achieve the desired bridge condition performance measure is funding dependent, as well as time dependent for project development. Figure 3-20: Current NHS Bridge Performance (FHWA Criteria)Figure 3-20 show the current performance of the NHS Bridges. While ITD utilizes an internal metric as the basis internal performance reporting and project planning, ITD acknowledges and will comply with using the FHWA

Figure 3-20: Current NHS Bridge Performance (FHWA Criteria)



measurement criteria for performance reporting to the FHWA.

While ITD's Bridge Condition Performance measure is primarily driven by bridge condition, other functional aspects of bridges are taken into account through the multi-objective optimization process (see page 5-31), and when bridges are replaced in the Bridge Restoration program they are modernized to appropriate design standards and take into account other modes of traffic such as accommodation for pedestrian, bicyclist and light rail as appropriate.

Obtaining Data from Local NHS Owners

A FHWA requirement is that States develop processes for obtaining data on locally owned NHS pavements and bridges. ITD collects pavement condition annually on the entire NHS. ITD also inspects all the bridges on the NHS. Therefore, ITD will have no problem continuing to acquire condition and performance data on the entire NHS network. ITD has developed many web-based tools to facilitate communication of condition information to the various jurisdictions owning NHS assets.

Communicating the performance data is equally important to collection and analysis. In order to facilitate compiling, synthesizing and communication of performance data ITD has made significant investments to incorporate geographical information systems (GIS) within the asset management framework. An examples of are presented on the following pages.

Figure 3-21: 2017 HPMS Pavement conditions Based on 2016 data

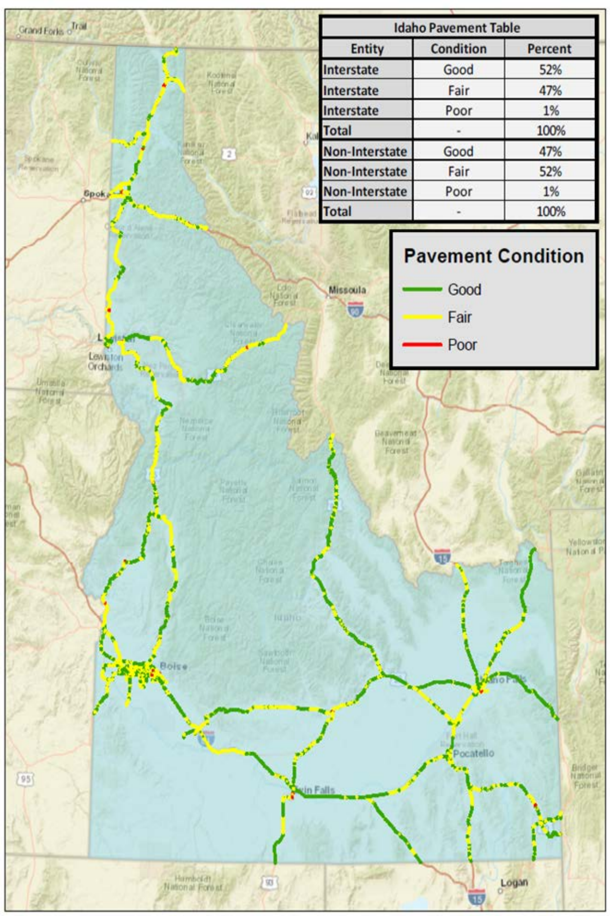
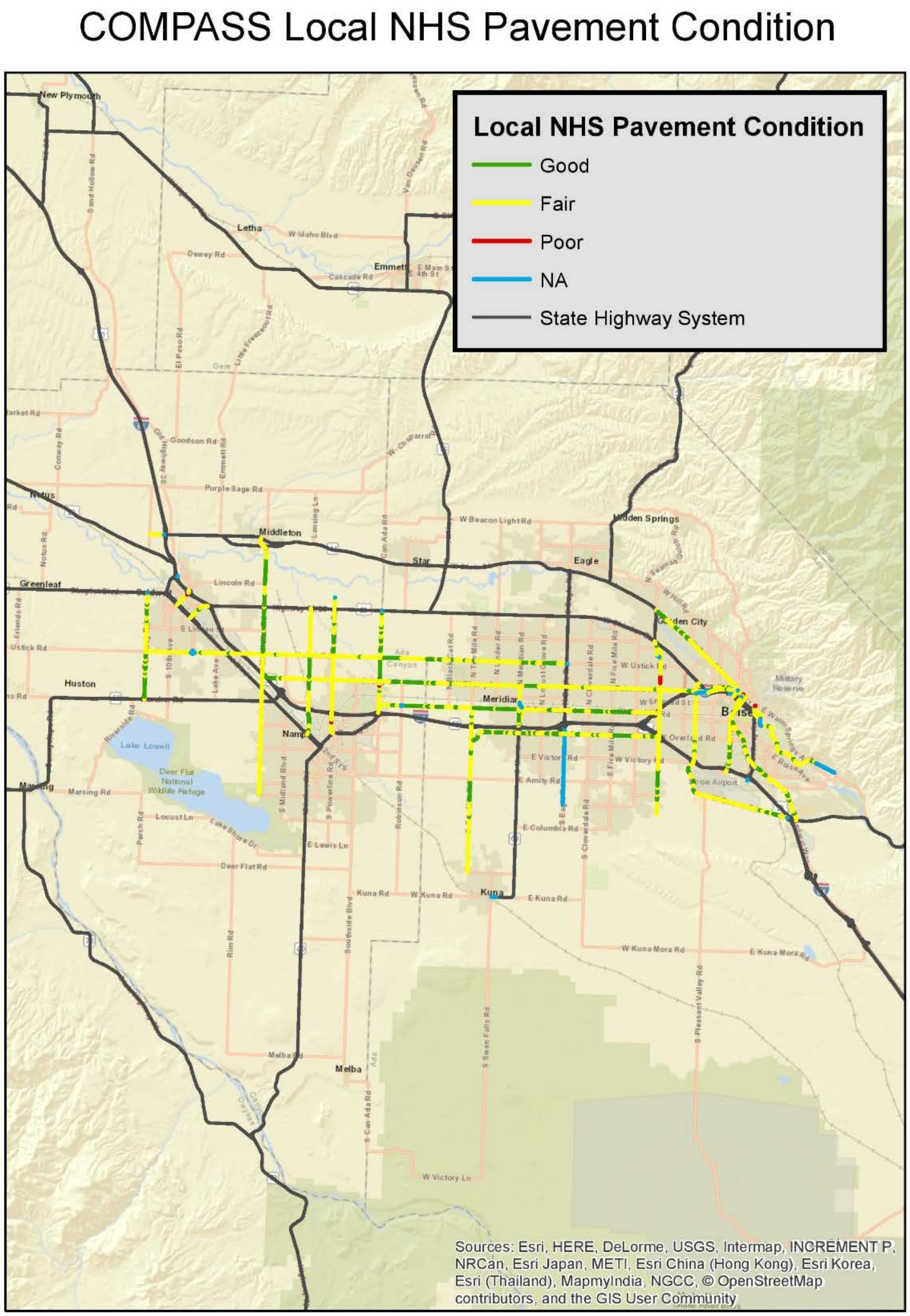


Figure 3-22: Local NHS Performance Reporting



Chapter 4 Gap Analysis Process

FHWA regulations require the asset management plan to include a performance gap analysis which FHWA defines as the gaps between the current asset conditions and the targets for asset conditions. In addition, gaps could be issues in which asset conditions prevent the transportation system from operating effectively because of poor conditions.

By the Federal definition, ITD has only a very small gap between its current asset conditions and its targets for asset conditions. That gap is that while ITD set a target of keeping 50% of the Non-Interstate NHS pavements in good condition and presently 46.53% are good.

ITD's bridge conditions surpass its targets of having at least 19% good and no more than 3% poor. ITD NHS bridges and Interstate pavements easily surpass the Federal minimum condition levels.

For its 2019 asset management plan, ITD will use its management systems to forecast the condition of State Highway System pavements and bridges. That analysis will further clarify if ITD's initial assumptions are correct, which are that it will sustain its condition targets for the 10 years of the asset management plan. ITD also will continue its focus on Interstate and NHS pavements to achieve the 50% good target level, while not exceeding its threshold for poor conditions.

Gap Requirements

The asset management rule in Sec. 515.7 (a) says, "A State DOT shall establish a process for conducting performance gap analysis to identify deficiencies hindering progress toward improving or preserving the NHS and achieving and sustaining the desired state of good repair. The asset management rule describes a performance gap as:

Performance gap means the gaps between the current asset condition and State DOT targets for asset condition, and the gaps in system performance effectiveness that are best addressed by improving the physical assets.

FHWA's guidance to its divisions that will be certifying TAMPs tells them to look for the following required elements.

The TAMP must describe a methodology, with regard to the *physical condition* of the assets, for:

- Identifying gaps affecting the State DOT targets for the condition of NHS pavements and bridges as established pursuant to 23 U.S.C. 150(d).
- Identifying deficiencies hindering progress toward achieving and sustaining the desired state of good repair (as defined by the State DOT).
- Developing alternative strategies that will close or address the identified gaps.

The TAMP must describe a methodology for analyzing gaps in the *performance* of the NHS that affect NHS bridges and pavements regardless of their physical condition that will:

- Identify deficiencies in the effectiveness of the NHS in providing safe and efficient movement of people and goods. (23 CFR 515.7(a)(2)
- Identify strategies to close or address the identified gaps. (23 CFR 515.7(a)(3))

Steps in the Gap Analysis Process

The ITD asset management gap analysis process will consist of the following steps.

Annually in preparation for the update of its Idaho Transportation Investment Program and for its demonstration of its asset management plan implementation, ITD will review its updated pavement and bridge condition data. ITD staff will compare the results of the annual condition data and the updated 10-year forecasts of bridge and pavement conditions and they will identify gaps between actual and forecasted conditions and the targets. They will review the actual and forecasted condition and compare them to the six condition targets identified in Chapter 2, which are:

Table 4-1 ITD's Performance Measures and Targets for Pavements and NHS Bridges

TPM Performance Measure	Metric	Target
Pavement	Interstate NHS Percent Good	50%
	Interstate NHS Percent Poor	4%
	Non-Interstate NHS Percent Good	50%
	Non-Interstate NHS Percent Poor	8%
Bridge	NHS Bridge Percent Good	19%
	NHS Bridge Percent Poor	3%

Gaps will be identified in terms of units for appropriate comparison such as:

- Number of lane miles of pavement that do not meet target;
- Number of structures not meeting targets;
- Square feet of bridge area not meeting targets;
- Summaries and categorization such as a break down by functional class, NHS versus Non-NHS and so forth for the description of any gaps;
- Estimates of the approximate level of effort needed to close the gap such as amount of investment need, or lanes miles that need treatment.

ITD asset management staff will identify processes that hinder progress toward achieving and sustaining the desired state of good repair. The state of good repair will be measured by the degree to which the targets are achieved. The types of possible process improvements that will be sought if the targets are not being met could include:

- Difficulty in delivering needed projects and maintenance activities because of issues related to funding, permitting, contractor availability, storms, or other climatic or seismic events;
- Accelerated deterioration caused by increased traffic loadings, failure of materials or earlier treatments to provide the longevity that was expected;
- Inaccuracies in forecasts from bridge or pavement models, or:
- Other factors such as a re-direction of priorities from the Legislature.

Alternative strategies will be investigated through consultation with bridge and pavement subject matter experts, materials and construction staff, district personnel, and agency leadership. As appropriate, alternative strategies will be reviewed that could include:

- Increased investments or tradeoffs from other programs if needed;
- Review of possible different materials or treatment types, if needed;
- Re-calibration or improvement in deterioration curves and other elements of bridge and pavement forecasts;
- Updates of unit costs to more accurately reflect evolving prices;
- Stepped up maintenance efforts if they can contribute to the target achieve, or:
- Adoption of additional policies appropriate to addressing the gaps.

Among the gaps that will be reviewed will be those that could affect the performance of the NHS. The performance of the NHS will be viewed through three primary lenses:

- Does any condition gap impede achievement of any ITD highway safety goal, objective, or target?
- Does any condition gap impede the efficient movement of freight on the NHS, and/or;
- Does any condition gap impede the efficient movement of people, such as contributing to inordinate congestion or travel delays?

The methodology for identifying these gaps will rely on consultation with the ITD staff who develops the Highway Safety Improvement plan, those who issue truck size and weight permits, and the MPO and ITD travel demand modelers who assess travel time across the highway network, particularly in urban areas.

The consultation also will occur through the normal Three C planning process (continuing, cooperative, comprehensive) that occurs with the MPOs. The recent planning rule, Sec. 450.314(h), requires that States, MPOs, and operators of public transportation jointly agree upon and develop specific written provisions for cooperatively developing and sharing information related to transportation performance data, the selection of performance targets, the reporting of performance targets, the reporting of performance to be used in tracking progress toward attainment of critical outcomes for the region of the MPO, and the collection of data for the State asset management plan for the NHS. As part of this joint, collaborative process, ITD will seek from the regional planners and operators of transit agencies any identified gaps that impede achievement of the safe, efficient movement of goods or people on the NHS.

For identified gaps, ITD will use its planning and asset management process to develop alternative strategies to present to the ITD Board. The tools and processes it will use could include, as appropriate and relevant:

- Iterations of bridge and pavement investment strategy scenarios using the bridge and pavement models;
- Scenarios of increase investments, or tradeoffs between asset classes, to close gaps;
- Review of alternative maintenance strategies if any of the gaps could be alleviated through maintenance activities;
- The adjustment of targets;
- Consideration of different materials or treatments if, for example, a lack of pavement frictions is determined to contribute to highway crashes, or;
- Increased bridge investments if posted structures are restricting freight movement on NHS connectors or other key routes.

As alternative strategies are developed, they will be summarized and presented to the ITD board along with their implications relating to funding, tradeoffs with other asset classes, and/or their impact on system performance. At the direction of the Board, the approved strategies will be implemented to address the performance of the NHS as influenced by asset conditions.

Additional Process Improvements

ITD also is taking steps to enhance several asset management processes that will strengthen future asset management plans. These include:

ITD will enhance its pavement management model. ITD has been using the Agile Assets model for several years. It is in process of having additional consultant subject matter experts review the model and help ITD improve deterioration curves, treatment triggers, and condition forecasts. This effort is part of the continuous improvement process that ITD applies to all of its asset management efforts. These system improvements are estimated to be completed and implemented mid-2019.

Specific enhancements sought are:

- Revision to performance models based on statistical analysis of actual performance. The output of this to improve the accuracy of ITD forecasts out to the required 10-year horizon.
- ITD will develop and incorporate a process to model and forecast the FHWA specified performance measures.
- ITD TAMS Database will be modified to more easily track and report out State DOT targets for each asset class or asset sub-group into the LCCP analysis.
- Modification and standardization of TAMS modules to enable a 10-year financial analysis and needs based on the performance forecast based on FHWA performance criteria.

ITD will continue developing the BrM Bridge Management System. ITD has been using the relatively new AASHTO bridge management system known, as BrM. BrM has been available for data collection and storage for several years but its modeling functions are still relatively new. ITD is in process of refining the modeling capability of BrM to complement the multi-objective optimization processes that ITD has been using. ITD will continue to review its capabilities with BrM to enhance its bridge modeling processes.

Assess the long-term consequences of the Non-Commerce Route treatments. ITD has divided all routes into Commerce and Non-Commerce routes. Non-Commerce routes handle less than 300 trucks per day. Because of higher priorities in other programs, ITD has limited for several years the treatments on Non-Commerce routes to preservation-type treatments and is not funding structural repairs to Non-Commerce pavements. Although Non-Commerce pavement conditions improved from 2015 to 2016, many district staff expressed concern that the strategy is not sustainable. They fear that only applying chip seals or thin surface treatments will lead to pavement structure deterioration that will be costly in the long term to correct. ITD will assess the long-term effects and determine the degree to which the Non-Commerce routes can be sustained with the current policy.

Assess the Long-Term Needs of ITD's Large Structures. ITD's ten largest structures have an average age of 41 years old. Within the next 20 years, several of them are likely to need major rehabilitation, which will create inordinately high costs for the bridge program. Three of them have substructures that are rated five, which is Fair, and one has a deck and another a superstructure rated five. ITD introduced six projects for FY19 that will produce a Bridge Asset Management Plan for six of ITD's large structures that are considered quite expensive if they were to be replaced. The majority of these bridges are on the NHS. The bridge asset management plans will create of plan of bridge preservation activities to extend the bridges service life to 100 years and also include estimates of costs to do so as well as replacement cost estimates.

Chapter 5 Life Cycle Planning Process

Life Cycle Planning Requirements

The federal asset management regulation says that each state must have a process for managing the life cycle of the assets included in the asset management plan.

FHWA provides several definitions relevant to how it wants states to approach life cycle planning. It defines:

Life-cycle cost means the cost of managing an asset class or asset sub-group for its whole life, from initial construction to its replacement.

Life cycle planning means a process to estimate the cost of managing an asset class, or asset sub-group over its whole life with consideration for minimizing cost while preserving or improving the condition.

For the pavements and bridges included in the asset management plan, FHWA wants the state to document how it is managing them to reduce the total life cycle cost through the timely and appropriate application of preservation, maintenance, rehabilitation, and reconstruction at the appropriate times in the assets' life cycle.

Life Cycle Planning Requirements

The asset management rule says in Sec. 515.7 (b)

"A State DOT shall establish a process for conducting life-cycle planning for an asset class or asset subgroup at the network level (network to be defined by the State DOT). As a State DOT develops its life-cycle planning process, the State DOT should include future changes in demand; information on current and future environmental conditions including extreme weather events, climate change, and seismic activity; and other factors that could impact whole of life costs of assets. The State DOT may propose excluding one or more asset sub-groups from its lifecycle planning if the State DOT can demonstrate to FHWA the exclusion of the asset sub-group would have no material adverse effect on the development of sound investment strategies due to the limited number of assets in the asset sub-group, the low level of cost associated with managing the assets in that asset sub-group, or other justifiable reasons. A life-cycle planning process shall, at a minimum, include the following:

(1) The State DOT targets for asset condition for each asset class or asset sub-group;

(2) Identification of deterioration models for each asset class or asset subgroup, provided that identification of deterioration models for assets other than NHS pavements and bridges is optional;

(3) Potential work types across the whole life of each asset class or asset sub-group with their relative unit cost; and

(4) A strategy for managing each asset class or asset sub-group by minimizing its life-cycle costs, while achieving the State DOT targets for asset condition for NHS pavements and bridges under 23 U.S.C. 150(d).

Data and Management System Requirements

Additionally, FHWA regulations require that states use their bridge and pavement management systems to analyze the condition of NHS pavements and bridges and to develop and implement the asset management plan. It set in regulation six major requirements for what the management systems must do. Furthermore, FHWA regulations require that states document that they use the "best available data" when developing their asset management plans.

This section explains ITD's:

- Defines Exclusions to Life Cycle Planning Process
- Approach to Life Cycle Planning Process
- Its use of it management systems to develop and implement its life cycle analysis and asset management plan, and
- Its use of the best available data to develop its asset management plan.

ITD has established processes for data collection, monitoring, and reporting for system performance across each asset class. With respect to pavement Life Cycle Planning, the ITD PMS utilizes a slightly different classification schema, which is based on the given taxonomy shown in Figure 3-3: Idaho Transportation Network Asset Classes on page 3-3. Specifically, ITD defines four network facility types, interstate, statewide, regional, and district. As discussed further in this chapter, IDT utilizes these classifications to priorities treatments to the higher functional classified routes. That is not to say, lower class routes are excluded from consideration, merely, performance criteria is more stringent for the higher type facilities.

Exclusions to Life Cycle Planning Process

With respect to the NHS roadways, ITD has stewardship over 97% this network with local agencies managing the balance of the NHS. ITD has jurisdiction of over 95% NHS bridges (by deck area). Figure 5-1 and Figure 5-2 show graphically the distribution of sub –class assets proportionally to each other. Note that in Figure 5-2 the NHS-State and NHS-Local square footage area is based on structures greater than 20-feet, the SHS-Non –NHS includes structures between 10 and 20 feet as well. This difference is because ITD defines a SHS-Non –NHS structure as greater than 10-feet. ITD is requesting, because of the de minimus nature, when compared to the entirety of the network, these local jurisdictional facilities contribute, that they be classified as an asset sub-class. As such, ITD requests that this sub-class of assets be excluded from our Lifecycle Cost Analysis processes.

Figure 5-1: Distribution of Roadway Assets

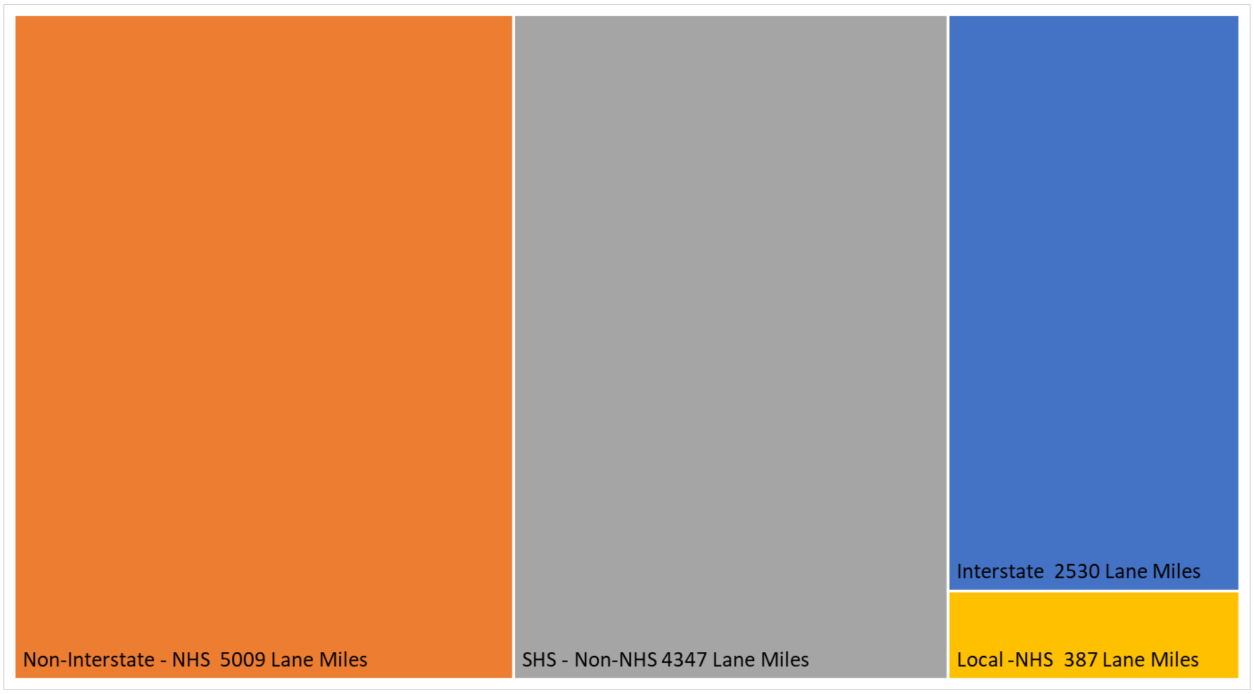
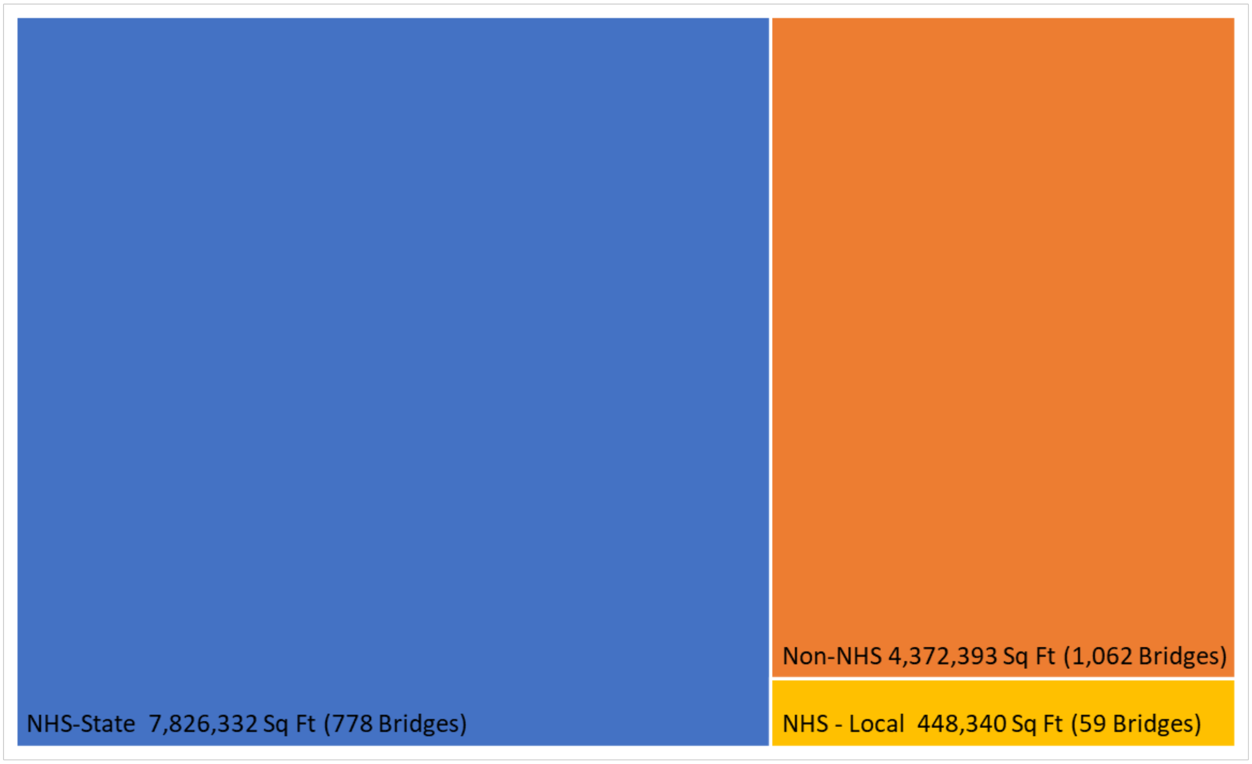


Figure 5-2: Distribution of Bridge Assets



Overview of Life Cycle Planning

The concept of Life Cycle Planning (LCP) requires a focus on all costs associated over the expected life cycle of an asset and provides a systematic approach to ensure the most appropriate choices are made to maximize the value of an asset. This varies from Life Cycle Cost Analysis (LCCA), in that LCCA focuses on determining the most economical treatment option selected to develop, preserve and maintain an asset. In short, LCP is a long-term view, which considers the entire time span the asset is in service, where LCCA is a short-term view that considers alternatives for maintaining an asset. That is to say, LCP considers multiple LCCA for maintaining a state of good repair over the life of the asset.

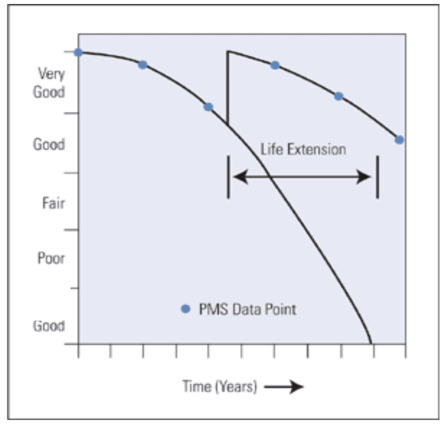
Organizationally supported, Life Cycle Cost Analysis has been in practice for many years at ITD. For instance, construction decisions that only consider immediate costs of a project, and fail to consider long-term preservation and operations cost, do not provide the best value for an asset. Following that rationale, consider the following example: most of the small fixed bridges are built using concrete and not timber, even though the initial cost of a timber bridge would be a fraction of a concrete bridge cost. Consider for instance, that timber bridges have limited load capabilities, can wear out quickly, and require almost continuous maintenance. Compared to the life span of a concrete bridge, the timber bridge would probably be rebuild several times. LCP appropriately factors in all the down time, user detour and delay costs, material cost, labor cost, replacement cost, life expectancy, etc. to help determine that the concrete bridge is a superior long-term decision. The LCP concept supports sound agency decisions.

Typically, an asset is well maintained when it is maintained at a level that minimizes long term costs and is still kept in good condition. Over the life of an asset, well timed preservation activities can cut life cycle costs by as much as half when compared to a policy where no preservation is performed. In relative terms, you want to repaint your house at the most appropriate time, but not too soon, to allow you to maximize the value of your previous paint job, but not result in exposure of wood to long-term damage. Preservation treatments in this context will include repaint, repair and repaint, replace and repaint with each having a higher long-term cost. If you do nothing and let the roof cave in, you will have to reconstruct completely. While these simple examples illustrate the concept, in reality, the decisions are not always that simple, and they need to be applied to many asset choices.

LCP Deterioration Curves

To ensure making appropriate choices, LCP endeavors to find the optimal level of preservation to minimize long-term costs. Ideally, preservation expenditures should neither be applied too frequently nor delayed too long. Figure 5-3 shows how relatively inexpensive treatments, early in the life of an asset, maintain the asset in nearly excellent condition while effectively extending the life of the initial investment significantly. Conversely, the “do nothing” approach does not allow the asset to reach its expected life cycle effectively and has the consequence of very rapid deterioration later in the asset’s life. This graph provides a simplified depiction of the life-extending benefit of a preventive maintenance treatment. The vertical axis indicates the condition of the pavement, from poor to fair to good to very good. The hori-

Figure 5-3: Schematic LCP Deterioration Curve



zontal axis indicates time in years. The graph shows two downward curves, a typical pavement deterioration curve that goes downward from very good to poor as the years pass and, above it, a shorter, flatter life extension curve. Both curves begin within the "very good" condition segment of the axis; however, the life extension curve begins in a later time period. Each curve has three data points at intervals indicating that the pavement's condition has been measured using a pavement management system. The deterioration curve is interrupted at a point within the "good" period of the axis by a life-extension arrow showing that a preventive maintenance treatment has been applied to a pavement in good condition. A second line extends upward from the point of treatment to the life extension curve's starting point (within the "very good" area), showing that the preventive maintenance has restored the pavement's condition to "very good." The life extension curve slopes downward from this starting point, as the pavement returns to the "good" condition it was in before the treatment. The length of the life extension curve represents the extended service life gained through the preventive maintenance treatment. The six data points on the two curves indicate that periodic measurements of pavement condition before and after the preventive maintenance makes it possible to determine the extended service life of a treatment.

When faced with budget limitations, LCP requires the difficult decision that some of the assets that are nearing the rapid deterioration phase, and thus requiring major rehabilitation and large expenditures, be sacrificed and allowed to reach their end of life (and very poor condition) in order to more appropriately spend the available dollars to get the maximum cost benefit for the entire asset pool. The tools in ITD's Pavement Management System (PMS) and Bridge Management System (BMS) provide the capability of evaluating this trade-off.

Treatment Definitions

All physical assets deteriorate with age and use. As assets deteriorate, applying appropriate treatments can slow or repair that deterioration. In general, treatments are categorized by their impact and cost:

- **Corrective maintenance treatments** generally involve repairs to specific elements or aspects of an asset. These treatments are used for assets that are in fair to good condition, but in need of specific repairs. Examples of corrective repairs include concrete repairs on bridges and bump grinding. These types of treatments are not part of ITDs LCCP approach.
- **Preservation and Resurfacing treatments** typically arrest deterioration without significantly improving condition or provide a modest improvement in condition. These treatments are only applicable to assets that are still in relatively good condition. Examples of preservation maintenance treatments include crack sealing, thin pavement overlays, and chip sealing.
- **Restoration treatments** are similar to preservation treatments. Restoration treatments seek to arrest deterioration and correct minor surface defects such as rutting.
- **Rehabilitation** is required for assets, which still have a potential for significant remaining service but have a substantial number of components in need of repair, or major components in need of

substantial repair. Examples of rehabilitation treatments include bridge deck replacement and thicker pavement milling and inlay.

- **Replacement/reconstruction** is required when an asset has reached the end of its service life and can no longer be extended though repair or rehabilitation. This is a complete rebuilding project and resets the asset's service life.

Pavements

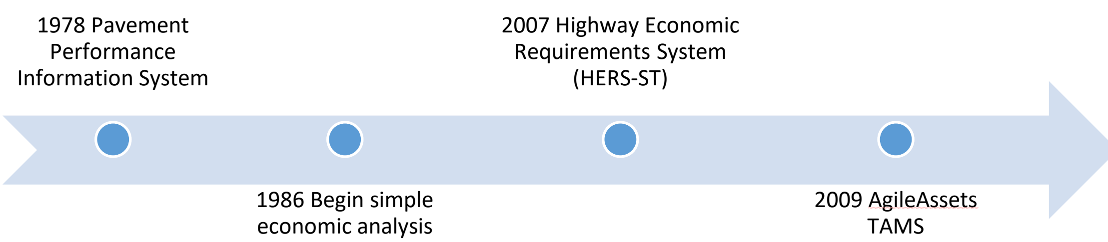
ITD's pavement management system conforms to the requirements set out in the federal asset management rule. The description in this section explains that:

- ITD uses its pavement management system for life cycle planning
- The data used for the life cycle analysis is the best data available
- ITD will use the pavement management to develop and implement its asset management plan.

Background

The Idaho Transportation Department has over a 40-year history of collecting and reporting pavement performance data as well as implementing pavement management systems (PMS) with the ever-present desire of obtaining the greatest longevity for the minimal cost and ensuring good stewardship of the roadway system with which we are entrusted. As shown in Figure 5-4, ITD began utilizing computer programs to track pavement performance in the late 1970's. Although rudimentary by today's technology standards, ITD demonstrated a desire to utilize emerging technology more holistically to manage pavements. By the mid-80's this PMS was able to perform very simple economic trade off analysis between competing pavement needs. This experience in economic forecasting and assessment has continued to this day for determining economic benefits between competing projects. In 2007, ITD decided to replace the existing PMS with the Highway Economic System (HERS-ST) PMS. Utilization of HERS-ST proved difficult and analysis parameters did not reflect effectively the Idaho climate or organizational decision process. In 2009, ITD decided to phase out HERS-ST with our current PMS, AgileAssets Pavement Analyst software. This long history and commitment to effective pavement management is directly attributable to Idaho roads being in an excellent state of good repair.

Figure 5-4: ITD Pavement Management Historical Timeline



In 2009, ITD purchased an asset management software package from Agile Assets called TAMS. This new software has a pavement management system (PMS) and a maintenance management system (MMS) to work in tandem as part of the Department's long-term vision for asset management. Fully integrated by 2011, AgileAssets Pavement Analyst System became the official ITD PMS. This software contains a robust database that houses several kinds of data, such as bridge condition surveys, maintenance activities, pavement condition ratings, traffic data, friction data and several others.

At the time of the software procurement, ITD identified the value of engineering input during setup of this PMS. ITD hired Kercher Engineering (KEI) to develop the framework and configure the software for ITD with input provided by an expert panel of ITD staff members. The expert panel consisted of members of the Central Office pavement management, materials, and IT departments, as well as District Office staff from around the state. The outcome of this initial implementation phase was a fully functional pavement management system that included the most up-to-date and best knowledge available. ITD brought back in 2011, KEI for a Phase II implementation of performance model refinement. This process included the review of past historical condition data to determine if the original expert panel developed models should be revised. The outcome of the Phase II work was adjustments to the models based on the data analysis.

In 2014, Phase III of the engineering support for PMS was given notice to proceed. This phase of the work included the refinement of the configuration and included development of condition-data-collection processes to better define condition indices. This phase also included many adjustments to the overall decision making and performance modeling framework. In addition, a field review of pavement conditions was carried out to provide additional insight into the deterioration trends of the state's pavements. Finally, performance measures and overall business rule changes were made that required reconfiguration in PMS.

ITD continues become more efficient in data management. Part of this evolution is changing the way in which we reference and refer to the location of roadway locations. The current PMS referencing basis uses segment codes and mileposts. This system has evolved and been utilized for many decades, however it's utility is nearing an end rapidly as Geographic Information Systems (GIS) based on mapping coordinates (Latitude / Longitude) become more widely utilized. Founded on GIS principles and based on geospatial coordinates newer PMS systems, even that provided by the current vendor, require the use of a linear reference system (LRS). ESRI Roads and Highways is the GIS platform ITD has chosen to implement as our LRS. ITD has undertaken a project to identify, assess and implement a newer version of Asset Management Software compatible with ESRI Roads and Highways.

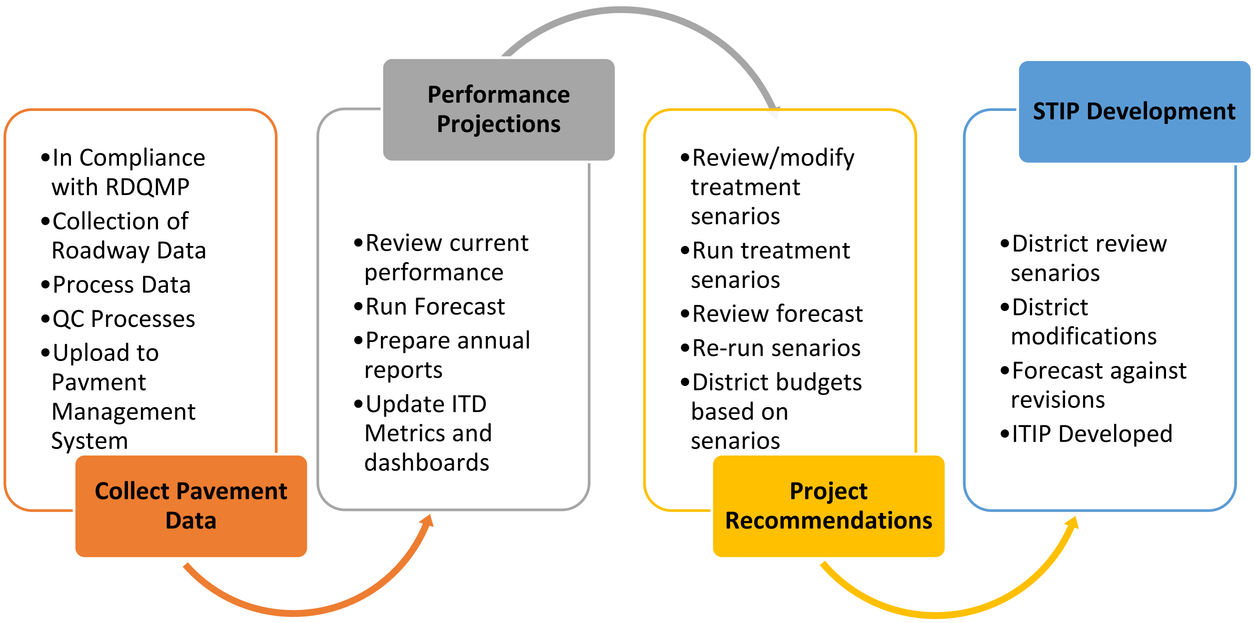
The PMS has allowed ITD to refine the way it invests in and maintains pavement by:

- Implementing new pavement performance curves calibrated by ITD engineers;
- Implementing decision trees that mimic ITD District engineering choices;
- Creating performance models that accurately track and display pavement projects;
- Employing an analysis engine that uses integer optimization to maximize benefit.

These components directly address and satisfy FHWA's requirements for the functionality of pavement management systems.

With all users of the PMS having instant access to all available data, the system gives the District pavement designers and engineers an extensive toolbox at their disposal. It also gives Headquarters Asset Management engineers an equitable method to distribute funding throughout the state based on predicted and modeled need. The system suggests optimized pavement project choices based on budget constraints, which the engineers balance against needs and their expert knowledge of the system. Figure 5-5, is a high level overview of how roadway performance data is aquired, utilized, and reviewed in concert with the development the State Transportation Investment Program (STIP). The PMS is aligned with, supports and facilitates each step of the pavement lifecycle data flow. Central to the is process is a review of the existing system performance and forecasting future performance based on the project decision made today.

Figure 5-5: Pavement Lifecycle Process



Data Collection

Idaho collects pavement data annually using a Pathways Profiler Van, Dynatest Pavement Friction Tester (PFT), and a Dynatest Falling Weight Deflectometer. The asset management engineer performs an annual inspection with a district representative. The Profiler van drives the same highways, collecting thousands of miles of video images, rutting data, and roughness data.

The Path Runner Profiler Van

Since 1995, Idaho has used PathRunner Profiler van technology to gather the majority of the roadway data. In 2017, ITD purchased a new road profiler van, greatly enhancing the data quality and quantity that we are able to obtain and process. The profiler van drives every mile of the SHS and digitally records its condition. From that data, the Pavement Analysis section extracts pavement performance data, which includes cracking, roughness, faulting and rutting depth.

Figure 5-6: ITD's Profiler Van

ITD retains 5-years of video for reference. Additionally the video images from the forward facing cameras as well as the pavement surface are available to anyone using a windows based computer online at: http://pathweb.pathwayservices.com/idaho/

Pavement Friction Testing (PFT)

Figure 5-7: ITD's Pavement Friction Tester (PFT)

The Department collects friction data (a number typically between 20 - 100, with the higher numbers representing a higher friction value) by towing a trailer that measures the force on a wheel that is locked but not rotating (i.e., skidding). This test is conducted in accordance with ASTM E 274. The friction represents the friction experienced by tires traveling on the pavement surface while wet. The pavement engineers can use this number to calculate whether a pavement needs a sealcoat or other remedy to improve surface friction. Data collection occurs every other year on state routes and annually on the interstate system. The Friction Testing Truck is calibrated to 40-mph. During collection, it is not always possible to maintain this speed due to safety concerns (i.e. speed differential on interstate) or roadway geometrics in mountainous terrain. As such, values measured outside of 40-mph may report friction values higher or lower than actually are present. To mitigate this, ITD in partnership with the University of Idaho, began a research project in 2017 to develop a correlation between the calibrated collection speed and actual speed of collection. As of this writing, data has been collected through out every district on a wide variety of pavement types. Based on this data, a correlation protocol is being developed. In addition to further controlled testing and validation of the protocol, during the 2018-19 collection cycle recorded data will be adjusted with this protocol. The implication of this is that ITD will be able to more fully use all data collected.

Falling Weight Deflectometer (FWD)

Figure 5-8: ITD's Falling Weight Deflectometer (FWD)

The FWD is a non-destructive testing device used to complete structural testing for pavement rehabilitation projects, research, and pavement structure failure detection. The FWD is a device capable of applying dynamic loads to the pavement surface, similar in magnitude and duration to that of a single heavy moving wheel load. The response of the pavement system is measured in terms of vertical deformation, or deflection, over a given area using seismometers. ITD collects this data on sections of state highways that are eligible for paving projects, and uses the results to design the new pavement.

The FWD consists of a trailer mounted non-destructive pavement testing unit towed behind an F-250 pickup. Data collected from this equipment is used to evaluate the strength of both flexible (AC) and rigid (PCC) pavements. The evaluation includes base and subbase materials, checking load transfers across PCC joints, and detecting voids under the pavement. The Department has initiated a pilot program to explore the use of Ground Penetrating Radar (GPR) to visualize the pavement sub-surface structure. The intent is to provide the pavement engineer better data from a continuous scan of a section rather than just the 1/10th or ½-mile data from the FWD and borings. This will enable them to better estimate and plan for variations in sub-surface conditions when programming roadway improvements. ITD also began collecting network level GPR scans of all commerce routes in the state. This effort was completed summer of 2017.

Performance Projections

ITD has demonstrated alacrity in collecting and processing data as well as converting data into information useable to assess current and future system performance. The following sections detail the performance criteria utilized within the ITD PMS based on the data ITD annually collects.

FHWA Performance Criteria

As detailed in Table 2-1: Federal Measures for Asphalt and Concrete Pavements and Table 2-4: Pavement Measures and Condition Crosswalk Table ITD collects data supporting FHWA performance reporting criteria.

Overall Condition Index (OCI)

The standard, which ITD uses for assessing pavement conditions, is the Overall Condition Index (OCI). It is a general health indicator of the network measured on a 0 to 100 scale, where 100 is perfect condition. The Overall Condition Index is the performance metric that replaced the Cracking Index previously used by ITD. Compared to the process for obtaining Cracking Index, the Overall Condition Index is a more defensible, quantifiable measurement that can be used to give an accurate account of the current and future condition of the network based on the various funding scenarios that will be analyzed in PMS. The following breakdowns are used at a minimum:

- Network OCI (Weighted Average)
- OCI by District
- OCI by roadway functional classification

Condition Categories

In addition to reporting the trend of Condition Indices for various funding scenarios, it can be very useful in reporting the condition index in terms of categorical value ranges. This provides non-technical consumers of the data a quick snapshot of the breakdown of network condition without needing to understand the details of the scores directly. Typically, the data is provided in terms of percent lane miles of the network in each condition category as shown below. There are many useful metrics that can be reported similarly, and the data could be broken down by other attributes such as by district and/or classification such as:

% Lane Miles

a. Good (OCI >= 80)
b. Fair (OCI <80 <= 60)
c. Poor (OCI < 60)

Backlog of Funding Needs

This is a metric ITD uses of the unmet monetary needs to bring the network to good condition. In each year of the analysis, there will be roads that will not be funded due to the limited budgets available. The cost to fix these roads in each year can be summed up to provide a metric for the money needed that was not available. This can be a very useful performance measure to track how well the agency is doing to minimize the increase in backlog or the money needed to lower or eliminate it. Legislators tend to find this type of metric easy to understand given that it is quantifying network condition in terms of dollars. By monetizing pavement deterioration, it provides a metric that allows ITD to illustrate the change in condition in terms of money. For example, if the funding level is increased by $50 million over the next ten years, it will eliminate $150 million in pavement deterioration (backlog); we have found elected officials are more likely to react to change in “dollars” than change in a condition index. In other words, if they do not spend the $50 million, they will have $150 million of pavement deterioration that will have to be fixed at some point.

Performance Measures for Life Cycle Planning

In addition to the OCI and backlog of funding needs, ITD also will produce analysis in its life cycle process and for its asset management implementation of the new federal pavement performance measures, those being:

- IRI
- Rutting
- Cracking, and
- Faulting.

The scenarios considered by the PMS will forecast the network conditions by these new Federal performance measures, which also are incorporated into this asset management plan, see Chapter 4, page 4-4.

Project Recommendations

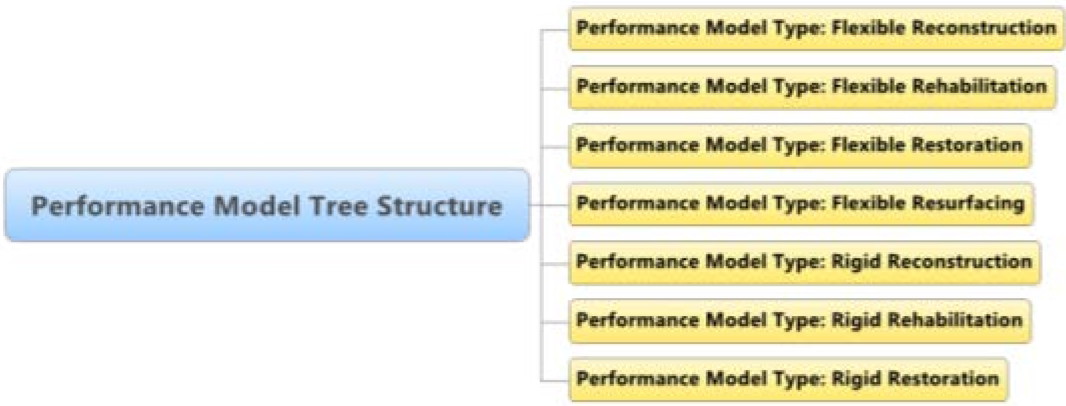
Performance Model Development

The Performance Models in the PMS are used to predict pavement performance into the future in an Optimization Analysis. As a component to the development of Performance Models, KEI and ITD completed field condition data reviews. In addition, the data gathered in the field was then brought into the office for processing by plotting the pavement ages versus the Distress Indices in an attempt to develop performance trends.

Pavement Performance Model Tree Structure

The Performance Model Tree Structure uses a tree node structure to group similarly performing roads into model groups based on defined sets of attributes. The Performance Model Tree Structure takes each Performance Model Type Category, defined by the Pavement Type and Repair Category, and assigns the correct Performance Model to each node.

Figure 5-9: Performance Model Tree



Treatment Repair Category

Pavement performance is closely linked with the treatments that are placed on the pavement through its life cycle. The models developed are specific to Idaho based on the process described above. The Performance Categories that are used for performance modeling are listed below.

- Reconstruction
- Rehabilitation
- Restoration
- Resurfacing
- Preservation

In addition, Preservation treatments deteriorate under specific rules. The life expectancy of these treatments was provided by ITD staff as typical representations of field performance of these treatments. The Figure 5-10 identifies the key model points for the various Repair Categories. The final Piecewise Linear Models are shared across the Structural Distress, Non-Structural Distress, and OCI Indices for the Repair Categories.

Figure 5-10: Flexible Pavement Performance Models – All Indices

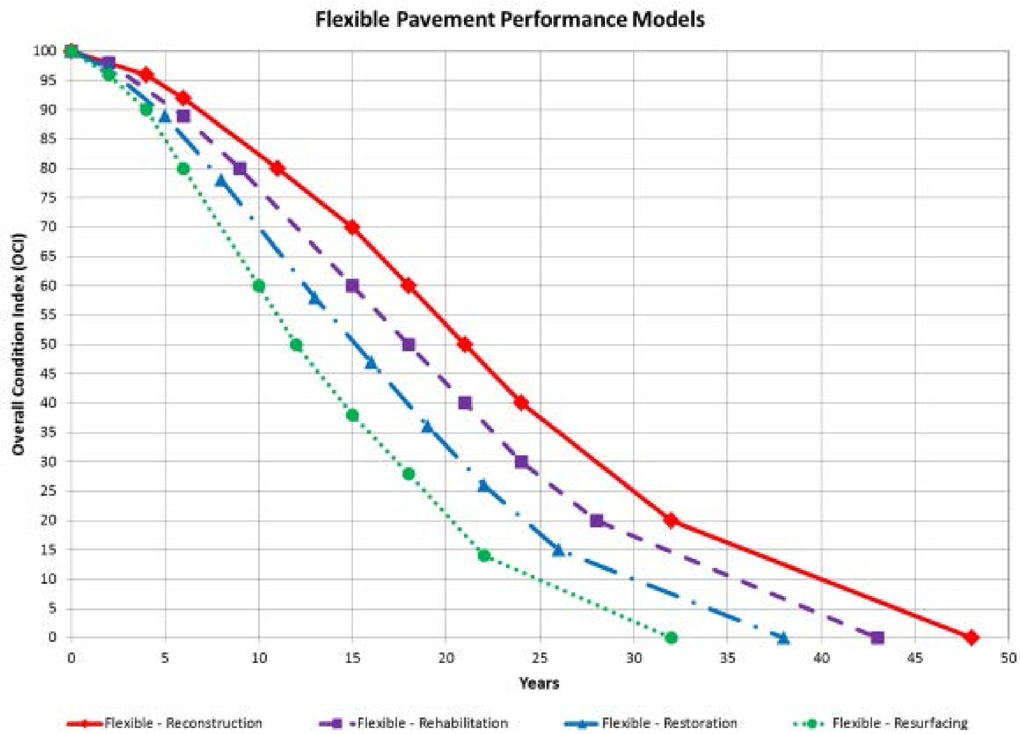


Table 5-1: Expected Performance of Asphalt Pavement Treatments

Year	Resurfacing	Year	Restoration	Year	Rehab.	Year	Reconst.
0	100	0	100	0	100	0	100
2	96	2	97	2	98	4	96
4	90	5	89	6	89	6	92
6	80	8	78	9	80	11	80
10	60	13	58	15	60	15	70
12	50	16	47	18	50	18	60
15	38	19	36	21	40	21	50
18	28	22	26	24	30	24	40
22	14	26	15	28	20	32	20
32	0	38	0	43	0	48	0

Field review did not yield reasonable results for Rigid Pavement Performance Models due to most of the test sections being newly constructed; the models will be the same for OCI, Joint, and Slab Indices until ITD can carry out a more thorough data analysis plan. The Performance Models by Repair Category will remain as they are currently defined in PMS for the engineering configuration of rigid pavements.

Figure 5-11: Rigid Pavement Performance Model – All Indices

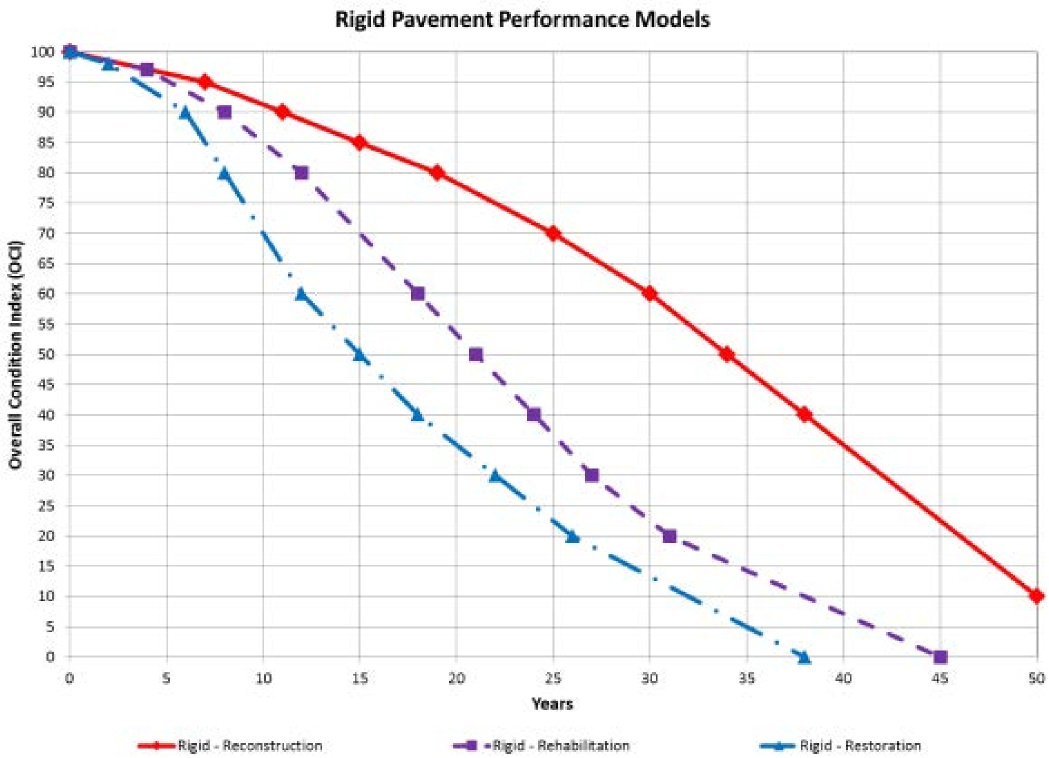


Table 5-2: Concrete Performance Models by Repair Categories

Year	Restoration	Year	Rehabilitation	Year	Reconstruction
0	100	0	100	0	100
2	98	4	97	7	95
6	90	8	90	11	90
8	80	12	80	15	85
12	60	18	60	19	80
15	50	21	50	25	70
18	40	24	40	30	60
22	30	27	30	34	50
26	20	31	20	38	40
38	0	45	0	50	10

Pavement Treatment Unit Costs

ITD understands that the pavement treatment unit cost determination is critical to the accuracy with which the PMS can forecasts cost. Table 5-3 reports the current unit cost incorporated into the PMS. Costs are defined based on the treatment types forecasted (preservation, reconstruction, rehabilitation, resurfacing) and type of pavement (rigid or flexible).

Table 5-3: ITD Treatment Unit Costs

Treatment	Average SY Cost	Estimated Cost Per Lane Mile
Preservation - Flexible	$4.00	$28,160.00
Preservation - Rigid	$10.00	$70,400.00
Reconstruction - Flexible	$75.00	$528,000.00
Reconstruction - Rigid	$110.00	$774,400.00
Rehabilitation - Flexible	$33.00	$232,320.00
Rehabilitation - Rigid	$46.00	$323,840.00
Restoration - Flexible	$20.00	$140,800.00
Restoration - Rigid	$18.00	$126,720.00
Resurfacing - Flexible	$12.00	$84,480.00

Unit costs are derived using a combination of analogous and parametric estimating techniques. To develop analogous estimates current project construction costs and quantities are reviewed by the asset management section. The estimates derived from project reviews are then validated using a parametric procedure which is defined in the ITD design manual. Recently, ITD has stood up a Construction Cost Management section. Future unit costs will be derived utilizing the expertise within this section.

Pavement Management System (PMS) Configuration

One of the most important aspects of ITD's PMS is the comprehensive analysis of the various pavement condition indexes, and their use as triggers, identifying timely preservation or rehabilitation treatments that enhance and maximize potential life cycle cost benefits. The PMS software is used to analyze this data to determine a recommended treatment for each segment of roadway based on unlimited funds, essentially defining the base need. Recommended treatments have a fixed life, because the pavement continues to deteriorate, so the next step is to generate recommended treatments for a given time period based on a defined budget. When there is a need to select a treatment contrary to the PMS recommendation, the District must justify and document the request. For example, if a minor preservation treatment is recommended, and oil/gas water fracking trucks have traveled over that pavement, the recommended preservation treatment might no longer be a valid selection and must be adjusted.

In order to ensure that the treatments recommended are in line with the Department's objectives and goals, the PMS was calibrated and configured. In 2015 ITD developed a PMS Configuration Document that details the means and methods that were used to configure the PMS. Table 5-4 provides an overview of the pavement management system variables that were included as part of the configuration process.

Table 5-4: Treatment Hierarchy by Distresses

	Flexible Pavement		Rigid Pavement	
Pavement Types:	Flexible Pavement		Rigid Pavement	
Distress Indices:	Overall Condition Index		Overall Condition Index	
	Structural Distress Index	Non-Structural Distress Index	Slab Index	Joint Index
Distress Types:	Fatigue Cracking Edge Cracking Patch Deterioration	Transverse Cracking Block Cracking Raveling	Slab Cracking Map Cracking	Joint Seal Damage Joint Spalling Faulting
Treatments:	Do Nothing or No Maintenance Required		Do Nothing or No Maintenance Required	
	Preservation: Surface Coats, Patches		Preservation: Grooving, Grinding and Sealing	
	Resurfacing: Plant Mix Treatments (<0.15’)		Resurfacing is not applicable to rigid pavements	
	Restoration: Plant Mix Treatments (>= 0.15’)		Restoration: Grind, Joint Seal, Slab Replacement	
	Rehabilitation: Recycling or Reclamation with Plant Mix Overlay		Rehabilitation: Crack, Seat, and Overlay	
	Reconstruction: Remove and Replace		Reconstruction: Remove and Replace	

The following sections provide detailed discussion for configuration values that are being used.

Pavement Condition Data

In addition to pavement type, the following distresses are collected and stored in the PMS. In addition, International Roughness Index (IRI) is captured by ITD and stored in inches/mile per FHWA *Highway Performance Monitoring System* (*HPMS) Field Manual*, 2010 or latest revision.

Table 5-5: Pavement Condition Distresses

Flexible	Rigid
Fatigue Cracking	Slab Cracking
Edge Cracking	Joint Seal Damage
Transverse Cracking	Joint Spalling
Raveling	Faulting
Block Cracking	Map cracking
Patch Deterioration	Studded tire ware
Rutting	

For all pavement types, the rules for defining the distresses, severity and extent ranges are determined by ITD for field data collection. For each survey section, distress and extent measurements are collected for three levels of severity: Low, Medium, and High. The extent range is continuous from zero to 100%.

The definitions of Distress Severity shown below are defined per the Federal Highway Administration Publication No. FHWA-RD-03-031 *Distress Identification Manual for the Long-Term Pavement Performance Program*, June 2003, or latest revision. ITD distress data collection processing takes advantage of the automated data collection capabilities of the Pathways van currently owned and operated by ITD. With the more detailed data collection approach, the calculation of Individual Distress Indices allows the PMS to be configured to calculate the most accurate OCI. The reader is referred to the ITD PMS Configuration Document for detailed explanation of how existing conditions are measured and OCI is computed. The OCI is used to define the general health of the pavement section by combining the distress indices into a calculated value. It is also used for defining Benefit in the Optimization Analysis. The OCI is a calculated score that has been configured and is a significant divergence from the historic method for assigning Cracking Index subjectively to a pavement. It represents a much more defensible overall estimate of pavement health. For OCI, all distresses are combined in the calculation for each pavement type.

Treatments and Repair Categories

Treatments are the specific names defining the material and work that was applied at a location. These are typically found in Construction History and Master Work Plan data. However, Repair Categories are generally defined to represent Treatments of similar attributes for Optimization Analysis output. There is a relationship that exists in the PMS between Treatments, Work Codes, Pavement Type, and Performance Model Type. Performance Model Type is the performance class variable that identifies which models will be assigned when a treatment is applied.

Table 5-6: Repair Categories

Repair Category	Description
Do Nothing	No Maintenance Required
Preservation	Surface Coats, Patches Grooving, Grinding and Sealing
Resurfacing	Plant Mix Treatments (<0.15’)
Restoration	Plant Mix Treatments (>= 0.15’) Grind, Joint Seal, Slab Replacement
Rehabilitation	Recycling or Reclamation with Plant Mix Overlay, Crack, Seat, and Overlay
Reconstruction	Remove and Replace

Condition Index Improvement Rules

When a Treatment is selected in the Optimization Analysis, the deteriorating condition indices stored in the Network Master per management section is improved by a user specified amount. The PMS has been configured with the following condition indices and improvements when a Repair Category is selected.

Table 5-7: Flexible Pavement Improvement Rules

Condition Indices	Preservation	Resurfacing	Restoration	Rehab.	Recon.
Structural Distress Index	Add 5	Add 30	Add 50	Add 80	Reset to 100
Non-Structural Distress Index	Add 20	Add 50	Add 70	Reset to 100	Reset to 100
OCI	Add 15	Add 40	Add 60	Add 80	Reset to 100

Table 5-8: Rigid Pavement Improvement Rules

Condition Indices	Preservation	Restoration	Rehabilitation	Reconstruction
Slab Distress Index	Add 15	Add 30	Add 50	Reset to 100
Joint Distress Index	Add 20	Add 30	Add 50	Reset to 100
OCI	Add 20	Add 30	Add 50	Reset to 100

Supplemental Improvement Rules

Supplemental Improvement Rules are attribute values that do not deteriorate with time during the analysis but do reset based on the treatment that was selected. The PMS has been configured with the following improvements when a Repair Category is selected.

Table 5-9: Flexible Pavement Supplemental Improvement Rules

Improvement Variable	Preservation	Resurfacing	Restoration	Rehabilitation	Reconstruction
Performance Model Type	N/A	Set to Value	Set to Value	Set to Value	Set to Value
Pavement Age	N/A	Set to 0	Set to 0	Set to 0	Set to 0
IRI Average – in/mile	N/A	Set to 0	Set to 0	Set to 0	Set to 0
Rutting Medium - %	N/A	Set to 0	Set to 0	Set to 0	Set to 0
Rutting High - %	N/A	Set to 0	Set to 0	Set to 0	Set to 0

Table 5-10: Rigid Pavement Supplemental Improvement Rules

Improvement Variable	Preservation	Restoration	Rehabilitation	Reconstruction
Performance Model Type	N/A	Set to Value	Set to Value	Set to Value
Pavement Age	N/A	Set to 0	Set to 0	Set to 0
Map Cracking - %	N/A	Set to 0	Set to 0	Set to 0
Pavement Type Change	N/A	N/A	Change to Flex-ible	N/A
IRI Average - inch/mile	N/A	Set to 0	Set to 0	Set to 0
Studded Tire Wear Medium - %	N/A	Set to 0	Set to 0	Set to 0
Studded Tire Wear High - %	N/A	Set to 0	Set to 0	Set to 0
Faulting Medium - %	Set to 0	Set to 0	Set to 0	Set to 0
Faulting High - %	Set to 0	Set to 0	Set to 0	Set to 0

Treatment Priority and Exclusion Years/Priority

Each Treatment is assigned a Treatment Priority value. The priority value allows the system to choose a dominant Treatment when the analysis arrives at more than one possible Treatment solution. The analysis arrives at more than one Treatment solution when more than one Decision Tree is configured in the system for the management section's attributes.

Exclusion Years have been configured in the PMS window to require the analysis to wait a specified number of years before an equal or higher Exclusion Priority Treatment can be applied. Exclusion Priority Scores were taken as being equal to the Treatment Priority Scores because there was not a justification for making them different.

Table 5-11: Treatment Priority and Exclusion Year Priority

Repair Category	Treatment Priority	Exclusion Year Priority
Do Nothing	100	100
Preservation	300	300
Resurfacing	400	400
Restoration	500	500
Rehabilitation	600	600
Reconstruction	700	700

Exclusion years have been incorporated according to the following rules unless noted otherwise. Based on these rules and an initial modeling of deterioration model relationships, the following exclusion years have been configured.

Table 5-12: Flexible Pavement Treatment Exclusion Years

Repair Category	Exclusion Year
Do Nothing	N/A
Preservation	7
Resurfacing	10
Restoration	12
Rehabilitation	15
Reconstruction	20

Table 5-13: Rigid Pavement Treatment Exclusion Years.

Repair Category	Exclusion Year
Do Nothing	N/A
Preservation	10
Restoration	12
Rehabilitation	15
Reconstruction	30

Decision Tree Configuration

To ensure repeatability and consistency in the evaluation and selection process, Decision Trees have been developed and are used in the PMS to capture the decision-making rules necessary for the Optimization Analysis. There are two levels of trees, Upper and Lower. The Upper Level Trees streamline the configuration process by allowing similar node structures to be defined and reused for all Lower Level Trees. The Lower Level Trees consist of the detailed decision nodes structures necessary to trigger Treatments in the Optimization Analysis.

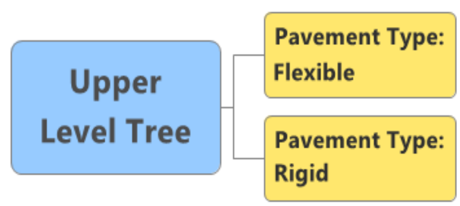


Figure 5-12: Upper Level Decision Tree Categories

Based on the Decision Tree Categories, multiple lower level trees were assigned to each pavement type. The lower level decision trees have been categorized based on Structural Distress Index, Non-structural Distress Index, Slab Distress Index, Joint Distress Index, IRI, and Rutting, shown in the following figures.

Figure 5-14: Flexible Structural Distress Index Decision Tree

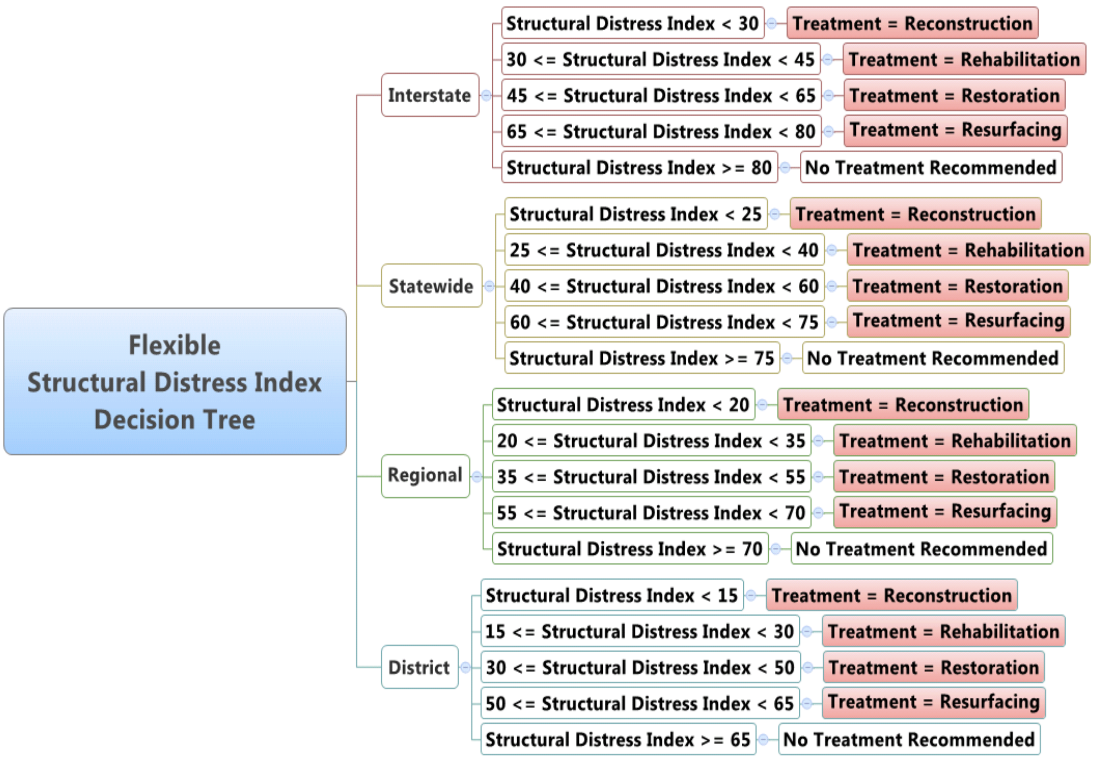


Figure 5-13: Flexible Non-Structural Distress Index Decision Tree

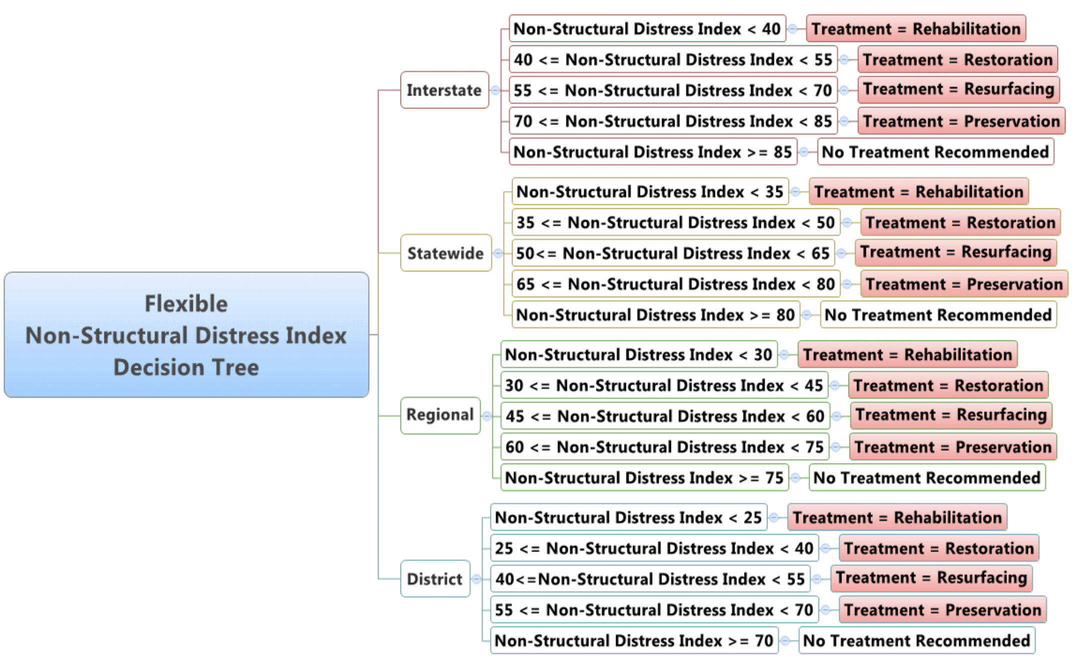


Figure 5-16: Aged-based Decision Tree.

Figure 5-17: Rigid Pavement IRI Decision Tree.

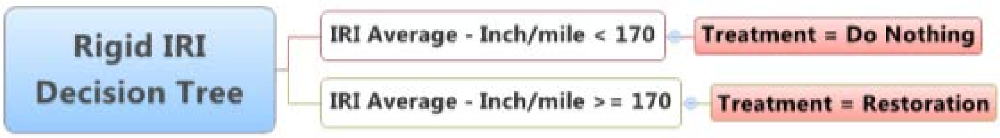


Figure 5-15: Rigid slab decision tree.

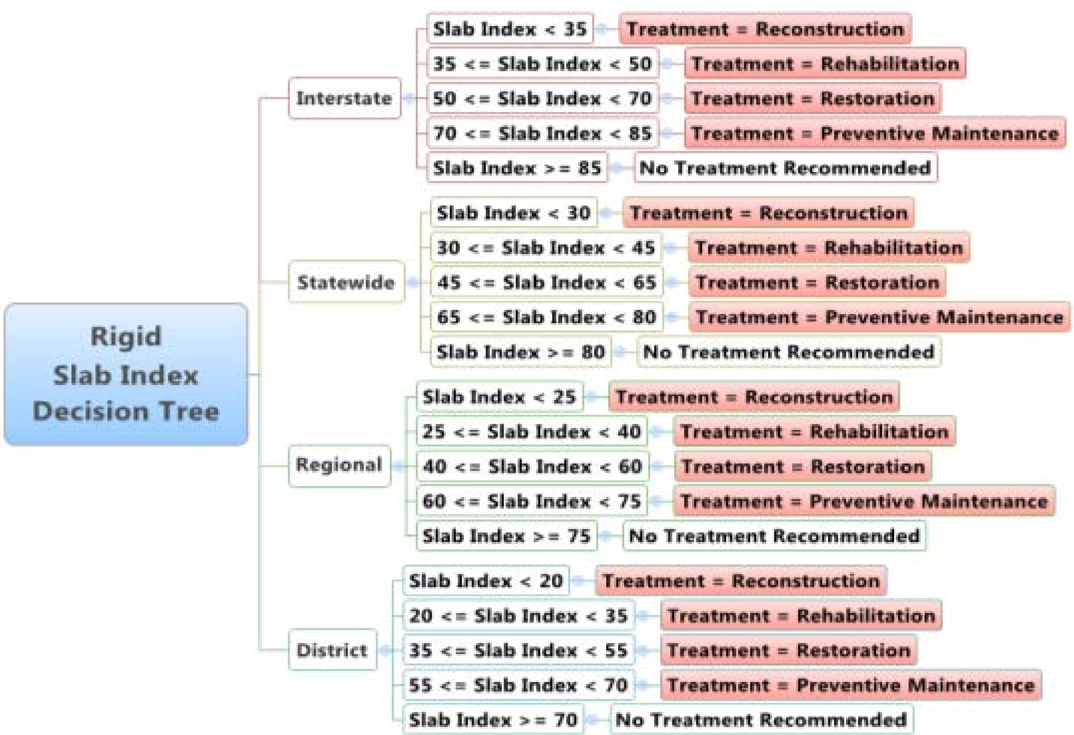


Figure 5-18: Flexible pavement rutting decision tree.

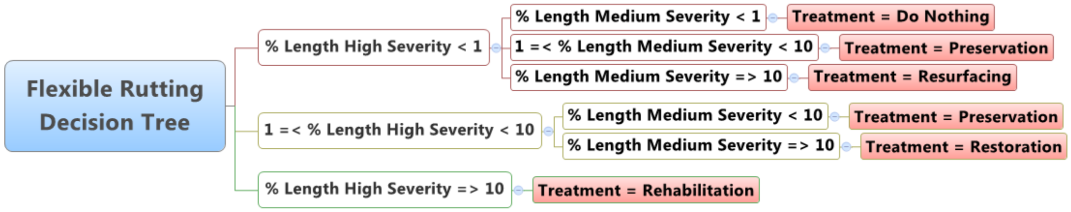


Figure 5-19: The rigid pavement faulting decision tree.

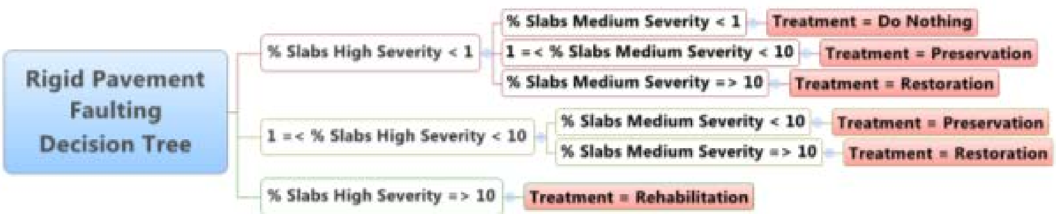


Figure 5-20: Rigid Joint Index Decision Tree.

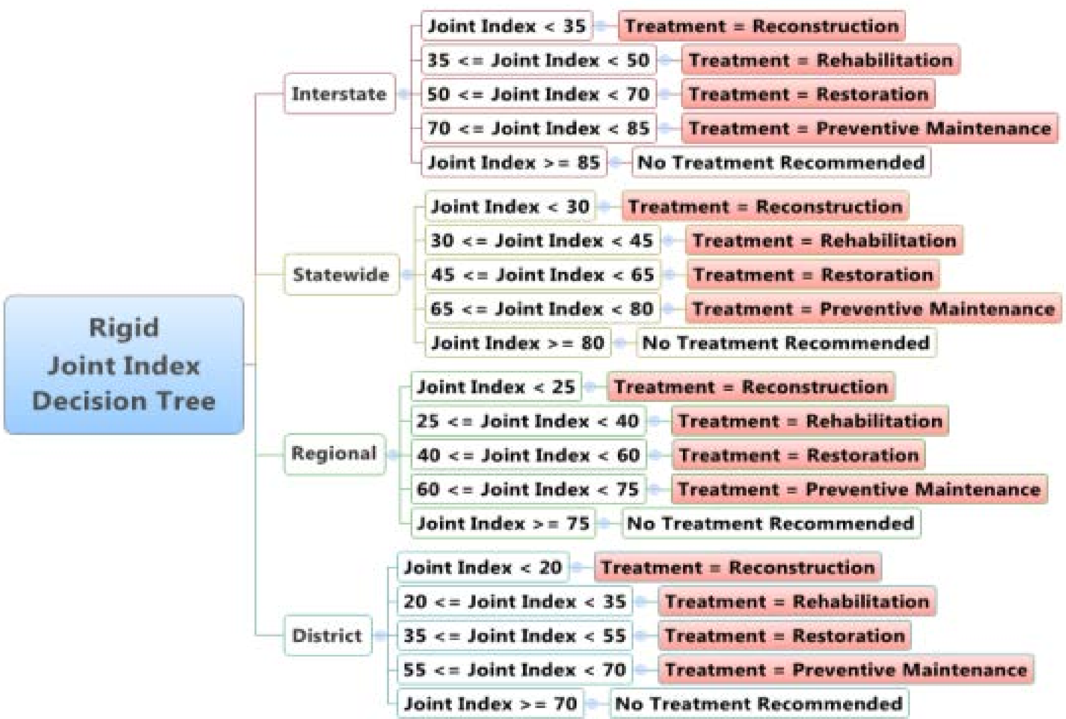


Figure 5-21: Rigid Pavement Studded Tire Decision Tree.

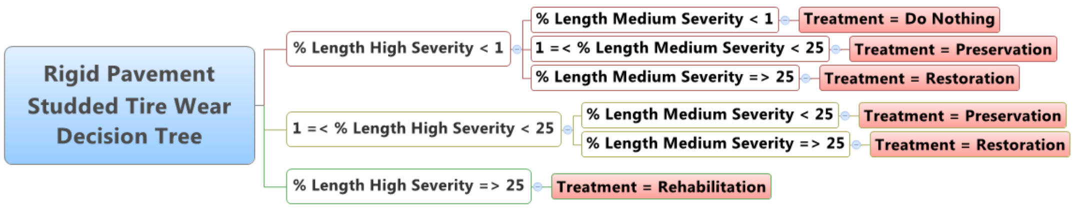
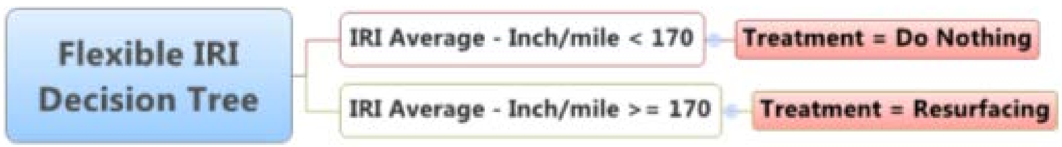


Figure 5-22: Flexible IRI Decision Tree.



STIP Development

ITD's pavement management system in integral to the agency's pavement planning and programming. The model is used to estimate investment levels and investment types for each district both at the network and at the project level. Districts are given funding allocations and treatment allocations based on the model's recommendations. They balance those recommendations with engineering judgment of local conditions. Districts then develop a project-level set of projects for their district programs. Those projects are then modeled to ensure that the actual projects selected will allow ITD to achieve its pavement condition targets.

Bridges

Background

ITD's practice for managing bridges and culverts is data-assisted and expert-mediated. The practice is data- driven because project selection and prioritization begin with bridge management system (BMS) data on structure conditions and work needs. It is expert-mediated because ITD staff in both central and district offices advance or delay specific work candidates based on knowledge of local needs together with global assessments of contributions to statewide mobility.

In short, data on structure condition, age and service are examined to identify work candidates and to select appropriate actions. Projects indicated by data are reviewed jointly by ITD staff in the central office and in district offices to arrive at work programs. Utilizing our bridge management system, BrM, we also optimize our project selection utilizing and prioritizing potential projects that have the highest benefit/cost ratios. ITD has funding dedicated to bridge preservation and to bridge restoration. These dedicated funds are part of ITD's focus on performance of bridges and networks. Preservation and restoration, together, have allowed ITD to shift away from a worst first approach to work programming. ITD's management of structures responds to, and is guided by, performance measures. ITD's goal is to have 80% of State-owned bridges in "Good" condition. To this end, ITD has emphasized a preservation based life cycle management strategy versus a restoration based one.

Eventually, each bridge deteriorates to an advanced stage where replacement becomes necessary. Naturally, the owner of a facility wants to postpone this cost as much as possible. If costs can be postponed, then the money saved can be put to uses that are more important. Although it is attractive to delay costs as much as possible and take advantage of the discount rate, there are limits. When maintenance is delayed or deferred, the condition of each asset gets worse and eventually affects the serviceability or even the safety of the infrastructure. In addition, certain kinds of preventive maintenance actions are highly cost- effective, but only if performed at the optimal time. For example, painting a steel bridge at the right time is highly effective in prolonging its life. If painting is delayed, at some point, too much of the steel is eaten away by rust, painting is no longer effective, and a much more expensive rehabilitation or replacement action is required.

In 2009 as part of a study of transportation funding, ITD analyzed the outcomes in structure conditions that would result from funding directed to structure preservation and restoration. In the analysis, structure conditions were related to structure age. Costs for preservation and restoration projects were expressed in terms of bridge deck area. Various budget levels were investigated. Greater or lesser budgets delivered preservation and restoration at greater or lesser aggregate quantity of bridge deck. In the analysis, costs for projects were costs to preserve or restore conditions, plus costs to remedy poor structural conditions and functional obsolescence. The analysis showed that funding directed to a mix of preservation and restoration projects would lead to better conditions among structures. One result of the study is ITD's current strategy for management of in-service bridges and culverts. ITD's strategy directs approximately 20% of funding to bridge preservation and 80% of funding to bridge restoration.

ITD is improving the conditions of its bridges and culverts by funding programs for preservation and restoration, by using inventory and condition data to identify work candidates, and by engaging the inputs of bridge inspectors and ITD district personnel to assemble effective work programs.

Bridge Life Cycle Strategy

ITD's goal with bridge preservation and restoration and a life cycle planning approach is to maximize our initial and subsequent investments for our bridges in order for the bridge to reach its expected design life at the least cost. See Table 5-14 for lifecycle planning objectives and strategies employed by ITD. Typically, after initial construction of a bridge and its subsequent opening to the public, cyclic maintenance is programmed for the bridge in order to maintain it in "Good" condition. Protective deck overlays, joint replacements, painting are examples of cyclic maintenance. Sometimes as the bridge ages, more extensive bridge rehabilitation or repairs are necessary.

Table 5-14: Bridge Preservation Lifecycle Planning Objectives and Strategies

Objectives	Strategies
Maximize Bridge Budget-Bundle candidate bridges and repair treatments into one contract	Group like preservation treatments for multiple bridges for economy of scale
Extend the Service Life of our Bridges, Keep Good Condition Bridges in Good Condition	Move away from bare deck strategy, Provide Deck Protective Systems, Program cyclic maintenance and bridge preservation projects
Life Cycle Cost Analysis	Optimize repair strategies and materials using life cycle cost analysis.
High Priority Repair Projects	Program and designate high priority projects for unique repairs
Evaluate Painting or Protective Coating Needs on a cyclic basis	Forecast potential needs in advance for inclusion into projects

Environmental Conditions & Risk Considerations

ITD considers current and future environmental conditions in its deterioration modeling with the inclusion of environmental factors (service environments) for the bridge elements. ITD considers risk and prioritizes actions based on life cycle cost analysis and best change in risk utility within BrM. As an example of how a life-cycle planning process is utilized on a network level as utilized in bridge preservation is in the selection of bridge preservation treatments and materials.

Bridge Preservation Benefit/Cost Ratio

ITD'S Bridge Management Program, AASTHOware BrM, can demonstrate the value of bridge preservation activities despite the notion that in most cases a bridge deck preservation action initially will not show a positive benefit/cost ratio, as there most likely will be no change in condition of the bridge deck. Further, over time and with our deterioration modeling a positive benefit/cost ratio can be shown as the bridge deck condition deteriorates without the benefit of the bridge preservation treatment. A positive benefit/cost ratio can be determined showing the cost of the bridge preservation treatment versus the change in condition from the delayed bridge preservation action.

Cyclic Bridge Preservation

As another example of ITD's life cycle planning approach is how we determine the right action (investment) at the right time. Typically, when a new bridge is constructed a protective bridge deck overlay will be installed within approximately two or three years after it is opened to traffic. The selection of the type of protective overlay is dependent on route, ADT and cost. For lower ADT routes, many times a protective overlay applied on a cyclic schedule can prove to have a high cost benefit ratio. On the other hand, for high ADT routes like the Interstates a longer lasting protective overlay proves to be more cost effective considering high traffic control costs and safety concerns.

Further, life cycle cost analysis takes place with the selection of other bridge preservation activities (such as joint or bearings and other protective coatings) versus initial cost and the estimated life of the activity and how soon the next cyclic application or bridge preservation activity takes place. That is, even if the bridge preservation action has a higher initial cost than other treatments it may last substantially longer and be cheaper on a life cycle cost analysis basis.

These and other strategies can document that ITD is moving toward managing for the lowest lifecycle cost, although financial constraints limit its ability to capitalize on all preservation opportunities. In addition, over half of ITD's 1840 bridges have exceeded their 50-year design life.

Bridge Preservation

Project selection for the Bridge Preservation Program centers on keeping our bridges that are in "Good" condition in "Good" Condition. Project selection is not necessarily condition based, but with more of a focus on cyclic maintenance and bridge preservation. Candidate selection conforms more on project location, and similarity of preservation treatments, applying the right treatment at the right time for better cost effectiveness. Another way to look at bridge preservation at ITD is that with the yearly 20% investment of Bridge Program dollars into preservation approximately 1,000,000 sq. ft. of bridge area in "Good" Condition is maintained in "Good Condition".

Cyclic Maintenance and Bridge Preservation projects involve activities performed roughly at predetermined levels aimed at preserving existing bridge elements or component conditions. It is expected that implementing these activities will delay deterioration. We strive to implement deck protective systems within 1 to 3 years after original construction is complete. Depending on the condition and type of treatment it can be expected to reapply the treatment on a 10 to 30 year cycle. See Table 5-16 for an illustration of a preservation life cycle planning approach. While the ITD preservation strategy requires more activities to be undertaken though out the life cycle of the structure, the cost associated are lower. This is illustrated in Figure 5-23: Comparison of Restoration vs Preservation Cumulative Lifecycle Costs shown on page 5-28. It can be seen that the cumulative net present value of the preservation strategy saves $161 per square foot of deck over the life of the structure as compared to the rehabilitation strategy.

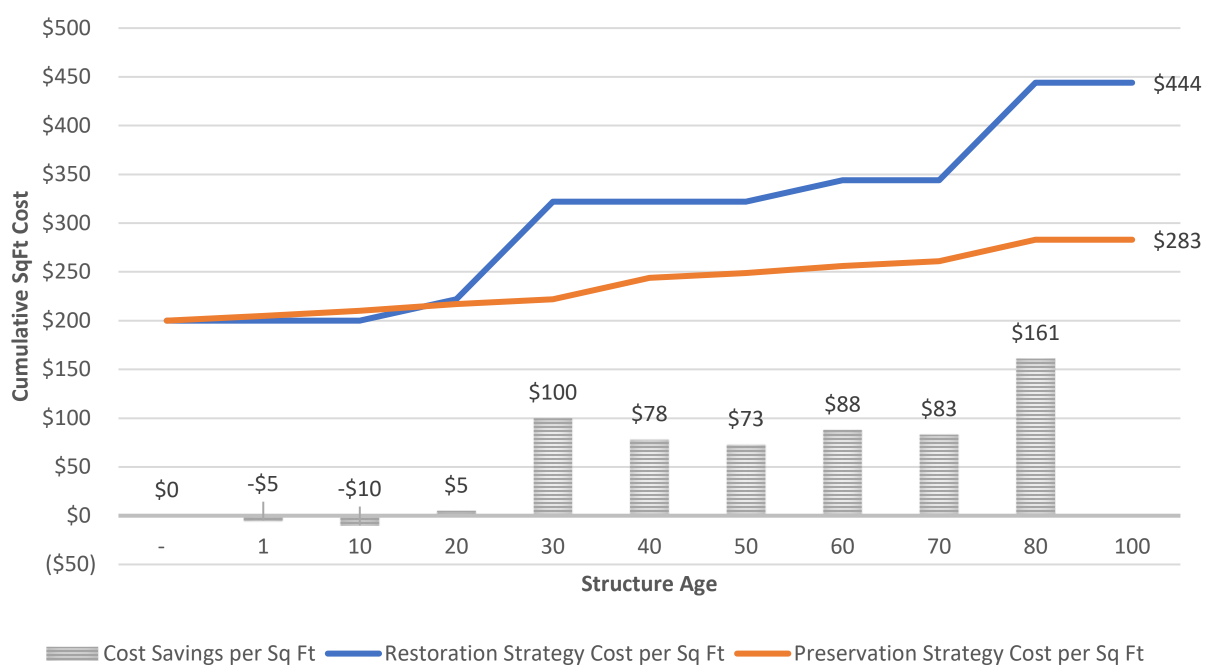
Table 5-15: Rehabilitation Strategy Life Cycle Planning Costs

Rehabilitation Strategy		
Year	Activity	Cost (ft^2)
0	New Construction	$200
20	Deck Rehabilitation	$20
	Joint Replacement	$2
40	Deck Replacement	$100
60	Deck Rehabilitation (Hydro & Silica Fume Overlay)	$20
	Joint Replacement	$2
80	Deck Replacement	$100
100	Replace Bridge	
	Net Present Value	**$444**

Table 5-16: Preservation Strategy Life Cycle Planning Costs

Preservation Strategy		
Year	Activity	Cost(ft^2)
0	New Construction	$200
1	Thin Overlay	$5
10	Thin Overlay	$5
20	Thin Overlay	$5
	Joint Replacement	$2
30	Thin Overlay	$5
40	Deck Rehabilitation (Hydro & Silica Fume Overlay)	$20
	Joint Replacement	$2
50	Thin Overlay	$5
60	Thin Overlay	$5
	Joint Replacement	$2
70	Thin Overlay	$5
80	Deck Rehabilitation	$20
	Joint Replacement	$2
100	Replace Bridge	
	Net Present Value	**$283**

Figure 5-23: Comparison of Restoration vs Preservation Cumulative Lifecycle Costs



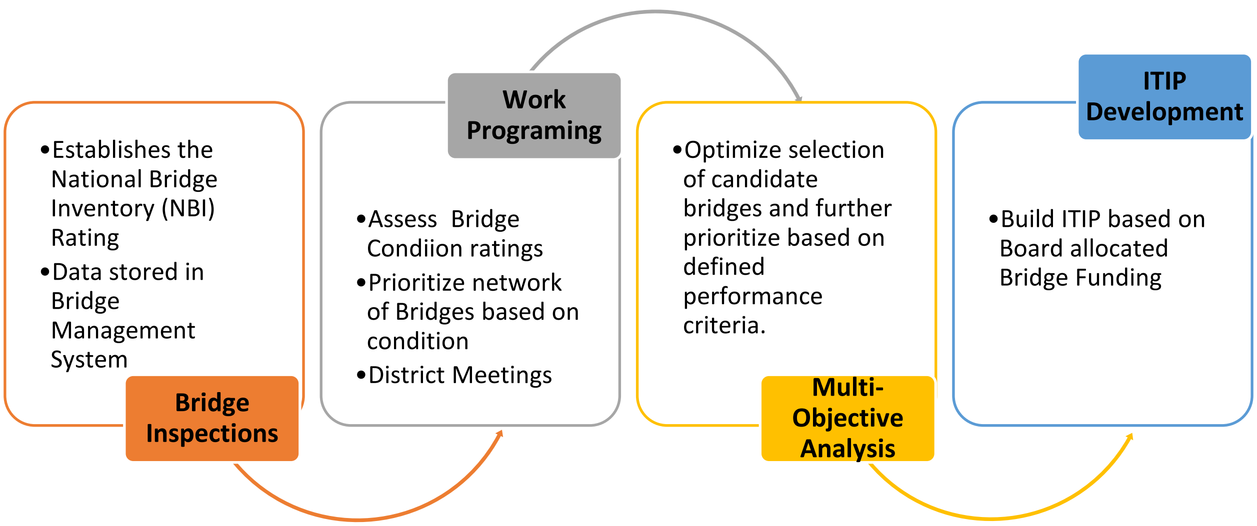
ITD's bridge management process conforms to the requirements set out in the Federal asset management rule.

This section explains that:

- ITD uses its bridge management process for life cycle planning;
- The data used for the life cycle analysis is the best data available;
- ITD will use the bridge management process to develop and implement its asset management plan.

Shown in Figure 5-24, is a high level schematic overview of how bridge performance data is acquired, utilized, and reviewed in concert with the development the Idaho Transportation Investment Program (ITIP). The ITD Bridge Process is aligned, supports, and facilitates the aforementioned requirements. A review of the existing system performance and forecasting future performance based on the project decision made today, are the drivers of this process.

Figure 5-24: Bridge Lifecycle Data Flow



Bridge Inspection

ITD bridges inspectors perform bridge inspection on a biennial basis for all structures within the State, which includes the NHS. The inspection results are utilized by the inspectors to develop a work candidate list or a needs list. The results from these inspections are uploaded into the bridge management system.

Work Programming – Bridge Restoration

Bridges and culverts are programmed for preservation or for restoration based on their condition, age, and other factors. Guidelines are flexible. In general, structures having an NBI general condition rating at

Figure 5-25: ITD Under Bridge Inspection Truck (UBIT)

five or lower are restored. Structures in good condition are preserved. Structure age is important. Generally, younger structures are preserved, while older structures are restored.

ITD's central Bridge Planning and Design Unit develop programs for structure preservation and restoration. The Unit collects lists of structures, their conditions and their needs from the BMS. The Unit examines structural integrity, scour-critical status, structure age, NBI general condition ratings and element-level condition reports (See Table 5-17, page 5-31). Knowledgeable input is sought and used. Bridge inspectors are asked to identify their top work candidates. As projects emerge, the Unit considers route, average daily traffic, and location to form balanced statewide programs.

Project selections are reviewed and refined in face-to-face meetings with staff in each of ITD's six districts. District staffs have a great influence in decisions on projects. The final, consensus list of projects goes forward to ITD's State Transportation Improvement Program (STIP). Bridges and culverts in poor condition are programmed for replacement under ITD's bridge restoration program. Functional improvements are made when structures are replaced or rehabilitated; that is, functional defects are addressed when structures are programmed for work due to poor condition rating.

Projects for structures are added every year as the seventh year of a continuing ITIP with a 7-year planning horizon. The ITIP delivers projects for preservation and restoration of pavements and structures, as well as projects for highway expansion and safety. Projects are added to the ITIP after approval by the Idaho Transportation Board.

Bridges and culverts owned by local agencies are prioritized for restoration or replacement according to their NBI sufficiency ratings. The Local Highway Technical Assistance Council (LHTAC) gets sufficiency ratings for structures from ITD, and coordinates with local bridge owners to develop work programs. Once prioritized, projects are programmed to the extent of available funding.

Multi-Objective Optimization Process

The multi-objective optimization process involves selecting and prioritizing candidates that maximizes the number of criteria matches, but also takes into account project budget size for the available funding. The criterion is in no particular order and is not weighted one over another.

Table 5-17: Multi-Objective Variables

Bridge Parameter	Consideration
Bridge Age	Consider replacement if greater than 50 years old
Overload Permit Capacity and Annual Trip Routing	Consider replacing bridges on routes that restrict commercial truck traffic
Bridge Condition	Consider replacement of bridges with NBI ratings of 5 or less
Scour Critical Rating	Consider replacing bridges with that are scour critical
Weight Posted Bridges	Consider replacing bridges with legal weight postings
Seismic Vulnerability	Consider replacement of bridges in high seismic areas or retrofit need
Overhead Clearance	Consider replacement if overhead clearance is less than 16’
Bridge Width	Consider replacement if width is functionally obsolete
Review Element Condition States	Consider replacement if large percentages are in Condition State 3
Design Vehicle	Consider replacement if design vehicle less than HS-20
Route and ADT	Consider higher replacement priority for bridges on the Interstates and high ADT routes
Life Cycle Cost Analysis	Consider replacement where rehabilitation costs exceed 50% of new bridge cost
Benefit/Cost Ratio	Consider replacement based on higher B/C ratio from BrM
Project Budget	Consider project budget size for best fit for Bridge funding
Bridge Performance Measure	Consider projects that move bridge condition measure upward

Chapter 6 Risk Management Process

ITD has adopted an on-going process to identify, assess, and manage its major risks, including those that could affect its asset management objectives, strategies, and achievement of its targets.

ITD adopted for this asset management risk analysis the Federal definition of risk which is the positive or negative effects of uncertainty upon agency objectives.

Any plan as long-term and ambitious as an asset management plan faces many uncertainties. The plan requires the forecasting of revenues, the prediction of pavement and bridge performance, assumptions about traffic growth and climate, and assumptions that economic and political priorities will remain stable. Major changes in revenues, political priorities, or agency policies could prevent any of the objectives or targets in this plan from being met.

This risk chapter acknowledges many risks that could affect the plan and describes how ITD plans to manage those risks.

Risk Analysis Requirements

In Sec. 515.7 (c) of the final rule, FHWA says "A State DOT shall establish a process for developing a risk management plan. This process shall, at a minimum, produce the following information:

(1) Identification of risks that can affect condition of NHS pavements and bridges and the performance of the NHS, including risks associated with current and future environmental conditions, such as extreme weather events, climate change, seismic activity, and risks related to recurring damage and costs as identified through the evaluation of facilities repeated damaged by emergency events carried out under part 667 of this title. Examples of other risk categories include financial risks such as budget uncertainty; operational risks such as asset failure; and strategic risks such as environmental compliance.

(2) An assessment of the identified risks in terms of the likelihood of their occurrence and their impact and consequence if they do occur;

(3) An evaluation and prioritization of the identified risks;

(4) A mitigation plan for addressing the top priority risks;

(5) An approach for monitoring the top priority risks; and

(6) A summary of the evaluations of facilities repeatedly damaged by emergency events carried out under part 667 of this title that discusses, at a minimum, the results relating to the State's NHS pavements and bridges.

Identify Objectives and Risks

In Chapter 1, ITD identified its asset management objectives and targets. The objectives are to:

- Continually reduce fatalities
- Provide a mobility focused transportation system that drives economic opportunity.
- Maintain the Pavement in Good or Fair Condition
- Maintain the Bridges in Good or Fair Condition

The targets are to:

- Allow no more than 4% of Interstate pavements to be in poor condition
- Keep 50% of Interstate pavements in good condition
- Allow no more than 8% of Non-Interstate NHS pavements to be in poor condition
- Keep 50% of Non-Interstate NHS pavements in good condition
- Allow no more than 3% of NHS bridges to be in poor condition
- Keep at least 19% of NHS bridges in good condition

ITD already had adopted an enterprise risk management process. Senior executives met with all districts and divisions to identify risks that could affect the department's major strategic objectives. Subsequent to the ERM assessment, a separate meeting was held to specifically identify risks to the asset management objectives, assess the risks, and identify mitigation strategies. The asset management risks and the mitigation to them will be managed to reduce their negative impacts and enhance their positive ones.

Identification and Assessment of Risks

The risk management process focused upon the issues, events, or trends that could affect achievement of the asset management objectives. Senior agency leaders reviewed the agency's objectives and then systematically considered different categories of risks that could impede those objectives. Risks were recorded as "if/then" statements such as, "If Federal funding decreases, then ITD may not be able to sustain its assets in a state of good repair." Forty-one risk statements were captured as final risks after several others were discarded as redundant or irrelevant to asset management.

Each potential risk was recorded by the leadership and then assessed with the risk matrix seen in Figure 6-1. The risk exercise participants were led through an assessment of each risk by its likelihood and impact resulting in an overall risk rating. The risk matrix included standard definitions for the level of likelihood and impact. When the likelihood and impact were both considered, the risk rating could be identified. As seen in Figure 6-1, the risk rating is a function of likelihood times impact and ranges from insignificant to very significant.

Major Risks

In the risk registers seen below, the most significant risks are highlighted in red. Among the most serious risks were issues such as uncertain Federal funding, changing Federal priorities, future changes in Idaho priorities that could diminish a focus upon managing assets, population growth that creates additional demand for congestion-relief projects. The major risks illustrate the uncertainty surrounding key plan assumptions. The plan assumes that revenues will remain predictable, that construction prices will not increase excessively, and that public policy will continue to prioritize the management of assets. Changes in those conditions could impede the achievement of the plan's objectives and lead to failure to sustain the condition targets.

Monitoring Approach

ITD's senior leadership will monitor these risks and keep abreast of changes to the risk ratings. ITD's existing process includes senior executives monitoring the risks and reporting changes to them. The senior staff can then take steps to address the risks if they arise.

Figure 6-1: Risk Matrix Used for the Asset Management Risk Assessment

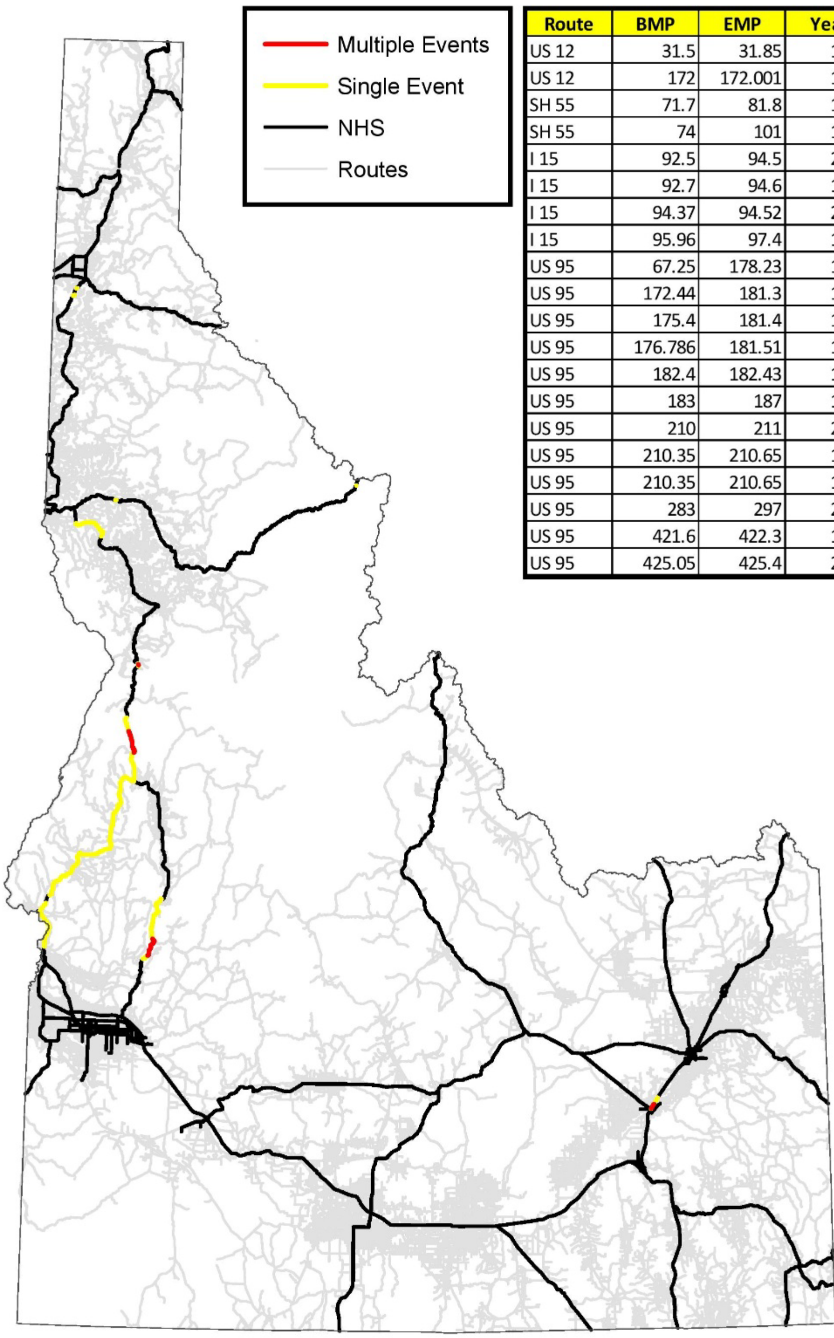
Risk Matrix with Impact and Likelihood Definitions		Likelihood				
		Rare	Unlikely	Possible	Likely	Very Likely
	For Recurring Events	Less than once in 5 years	Once in 5 years	Once in 3 years	Once per year	More than once per year
	For Single Events Probability over 5 years	< 10% (Less than 1 in 10)	10% to 25% (Avg. of about 1 in 6)	25% to 40% (Avg. of about 1 in 3)	40% to 60% (Avg. of about 1 in 2)	> 60% (Avg. of about 4 in 5)
Impact: Very Significant	Multiple deaths & injuries, substantial public and private cost, and/or Governor or Legislature "takes over" ITD (e.g., change in Director, disabling legislation).	Medium	Medium	**High**	Very High	Very High
Impact: Major	Multiple injuries, or a single death, substantial public or private cost and/or foils agency objectives.	Low	Medium	**High**	**High**	Very High
Impact: Moderate	Injury, property damage, increased agency cost and/or impedes agency objectives.	Low	Medium	Medium	**High**	**High**
Impact: Minor	Moderate agency cost and impact to agency objectives.	Low	Low	Low	Medium	Medium
Impact: Insignificant	Impact low and manageable with normal agency practices.	Low	Low	Low	Low	Medium

Part 667 Assets

23 U.S.C Part 667 carries out a provision of the Fixing America's Surface Transportation Act (FAST Act.). That section requires states to identify and evaluate roadway assets subject to repeated damage during emergencies. FHWA requires the asset management plan to acknowledge these assets and discuss them in the risk management plan, if such assets exist in the state. FHWA promulgated in the final asset management rule a narrow approach to this section. States need to identify NHS assets that have been substantially damaged two or more times during officially declared emergencies since Jan. 1, 1997. The plan does not require the States to identify repair or mitigation strategies for these assets. Instead, they are to be considered in the normal programming process, as the State's discretion.

Figure 6-2 identifies locations where emergency events occurred. When projects are considered at the location of multiple emergency events, the project-development process will include evaluation of whether remediation or other repairs are needed to prevent future emergency events. By November 23, 2018, ITD will complete the analysis for Sec. 667 and incorporate the results into the June 2019 TAMP. Few multiple emergency events between 1997 and 2017 were identified. Most were associated with rock slides.

Figure 6-2: Map of Multiple Emergency Events between 1997 and 2017



Route	BMP	EMP	Year
US 12	31.5	31.85	1997
US 12	172	172.001	1997
SH 55	71.7	81.8	1998
SH 55	74	101	1997
I 15	92.5	94.5	2001
I 15	92.7	94.6	1998
I 15	94.37	94.52	2001
I 15	95.96	97.4	1997
US 95	67.25	178.23	1997
US 95	172.44	181.3	1997
US 95	175.4	181.4	1997
US 95	176.786	181.51	1999
US 95	182.4	182.43	1997
US 95	183	187	1997
US 95	210	211	2008
US 95	210.35	210.65	1999
US 95	210.35	210.65	1998
US 95	283	297	2000
US 95	421.6	422.3	1997
US 95	425.05	425.4	2001

Risk Registers

The risk registers developed for this asset management plan begin on the following page. They summarize the risks that were identified and assessed. Risk responses are included for each. These risk registers will be incorporated and updated as part of ITD's ongoing enterprise risk management program.

Figure 6-3: Risks to Maintaining Assets in a State of Good Repair

RISK #	Objective	Maintain Assets in a State of Good Repair				
	Risk Event	Risk Effect	Likelihood	Impact	Rating	Response
R1	If MPO project selection does not emphasis asset management…	…then more emphasis could be given to new-capacity projects at the expense of maintaining asset conditions.	Possible	Moderate	Medium	ITD will continue to emphasize to MPOs and other stakeholders the importance of maintaining good asset conditions.
R2	If Federal funding decreases..	…then ITD may not be able to sustain its assets in a state of good repair.	Very Likely	Major	Very High	ITD will monitor Congressional actions on Federal-aid apppropriations and remain in contact with the Congressional delegation to emphasize the importance of Federal-aid to the ITD program.
R3	If program selection priorities do not emphasize sustaining asset conditions…	..then ITD may not be able to invest appropriately to sustain a state of good repair.	Likely	Moderate	High	ITD will urge legislators to continue giving high priority to ITD recommendations for bridge and pavement investments to ensure that programs to preserve asset conditions remain a top prioritiy.
R4	If changing Federal Rules consume more ITD resources….	…ITD may not be able to sustain adequate investments to maintain a state of good repair.	Likely	Moderate	High	ITD will monitor Federal rule making and encourage Federal agencies and Congress to not adopt new burdensome rules that could increase the cost of delivering projects or maintenance activities.
R5	If population growth and land uses increase creating high demand for congestion-relief projects…	..then ITD may not be able to invest enough to sustain a state of good repair.	Likely	Moderate	High	ITD will remain active in the metropolitan and statewide planning processes to monitor population and traffic growth and advise the Board if the demand for new capacity projects exceeds current amounts budgeted for them.
R6	If ITD priorities change and de-emphasize maintaining asset conditions….	…then the department's investments in bridges and pavements could decrease and it will not sustain a state of good repair.	Low	Major	Low	ITD leadership remains committed to asset management.
R7	If ITD leadership changes direction the support for maintain assets could diminish…	…then we may not sustain a state of good repair.	Low	Major	Low	ITD leadership remains committed to asset management.
R8	If land Use predictions are not accurate…	…then will not accurately predict travel demand and the need for congestion-relief projects.	Likely	Moderate	High	Planning staff will continue using best available data and modeling to forecast travel demand.

Figure 6-4: Risks Specific to Maintaining Pavements in a State of Good Repair

	Objective	Maintain Pavements in a State of Good Repair				
R9	**Risk Event**	**Risk Effect**	**Likelihood**	**Impact**	**Rating**	**Response**
R10	If the quality of recycled asphalt and other materials is not maintained to a high standard …..	…then we will not sustain our pavements in a state of good repair.	Possible	Minor	Low	ITD will remain diligent about materials testing and acceptance to ensure high-quality pavements.
R11	If we over-rely on surface treatments …	… then we could have inaccurately high pavement-condition readings and lead to a false sense of confidence in the longevity or our pavements.	Possible	Minor	Low	ITD will remain committed to a well-balanced treatment program that applies the appropriate treatment based upon pavement conditions and funding availability.
R12	If the pavement management system is improved…	…then we could have a significant opportunity to enhance our modeling of pavement conditions.	Likely	Moderate/ Major	High	ITD will push ahead with acquiring a new pavement management system or improving the current one. A high-functioning pavement management system provides a significant opportunity to better manage pavements.
R13	If we do not have adequate contractor availability…	…then we will face higher prices and inability to deliver projects where and when we need them.	Likely	Minor	Medium	ITD will monitor the number of contracts and bids, and advise the Board and agency leadership if a lack of competition could influence bid prices and leader to higher-than-expected prices.
R14	If ITD and the contractor community does not adapt to performance-based specifications.…	… then we will not get the pavement quality that we need.	Likely	Moderate	High	ITD will continue training staff and engaging with contractors to successfully implement performance specifications.

Figure 6-5: Risks to Sustaining Adequate Investments for a State of Good Repair

	Objective	Sustain Adequate Funding for a State of Good Repair				
	Risk Event	**Risk Effect**	**Likelihood**	**Impact**	**Rating**	**Response**
R15	If the donor/donee state financial balance is changed...	...then it could result in ITD receiving less Federal revenue.	Possible	Very Signficant	High	ITD will continue coordinating with Idaho's Congressional delegation to preserve Idaho's donee state status.
R16	If there is Congressional uncertainty over the state of the Highway Trust Fund...	...then it could result in ITD receiving less Federal revenue.	Possible	Moderate	Medium	ITD will monitor Congressional actions on Federal-aid apppropriations and remain in contact with the Congressional delegation to emphasize the importance of Federal-aid to the ITD program.
R17	If there continues to be changing vehicle mix and reduced fuel consumption...	...then State and Federal revenues could continue to decline.	Likely	Minor	Medium	ITD will monitor tax receipts and advise the Board if trends will result in revenues that fall below expectations.
R18	If construction inflation increases signficantly....	...then our purchasing power will fall and we will not be able to sustain a state of good repair.	Rare	Moderate	Low	ITD will monitor bid prices for price increases that exceed those that are expected.
R19	If labor costs increase or ITD experiences a shortage of skilled workers..	...then our costs will increase or we will not be able to achieve the performance we need.	Possible	Moderate	Medium	ITD will monitor bid prices for price increases that exceed those that are expected.

Figure 6-6: Risks Specific to Maintaining Structures in a State of Good Repair

	Objective	Maintain Structures in a State of Good Repair				
	Risk Event	**Risk Effect**	**Likelihood**	**Impact**	**Rating**	**Response**
R20	If we experience increasingly harsh winters and sustained salt use…	…then our bridges will sustain increased deterioration.	Possible	Moderate	Medium	ITD will contiue its bridge preservation efforts to reduce the impact of winter chemicals.
R21	If we receive conistent funding at current levels…	…then we will not be able to repair or replace the wave of aging bridges that are coming.	Likely	Moderate	High	ITD will continue its bridge preservation and rehabilitatio efforts to maintain aging bridges and slow their deterioration rate. ITD also will monitor the bridge inventory closely and advise the Board of long-term investments needs to address our aging inventory.
R22	If the traffic volumes and truck weights continue to increase…	…then our bridges will sustain increased deterioration.	Possible	Major	High	ITD will monitor truck weights and advise the Board if excessive truck weights become a factor on bridge condition.
R23	If contractor workmanship is not adequate…	…then we will not get the quality of construction that we need to sustain our bridges.	Possible	Moderate	Medium	ITD will maintain its diligence on contractor performance and material quality.
R24	If we don't develop task order contracts for cyclic maintenance contracts…	..then it will be difficult to respond quickly to timely maintenance needs.	Possible	Minor	Low	ITD will explore the expansion of task order contracts to provide cyclic maintenance.
R25	If we don't develop a program to address our large structures that will need rehabilitation or replacement in the next decade…	…then our conditions will decline or we will have to divert all bridge funds to only a few structures for several years.	Very Likely	Major	Very High	ITD will develop a multi-decade plan for when its high-cost large structures need to be rehabilitated or replaced and will attempt to fund a program to address them.
R26	If we don't maintain an adequate number of bridge maintenance crews with proper skills…	…then we will not be able to complete needed maintenance and our conditions will deteriorate.	Likely	Moderate	High	ITD will continue to staff and fund its bridge maintenance crews to keep pace with maintenance needs.
R27	If we do not raise some of bridges with low vertical clearance…	..then bridge strikes will continue.	Likely	Minor	Medium	As projects address bridges, ITD will ensure that adequate vertical clearances are addressed.
R28	If we do not seismically retrofit our older structures…	…they will be vulnerable to seismic events.	Possible	Moderate	Medium	ITD will continue its seismic retrofit program to gradually address this need.

Figure 6-7: Risks to Having Skilled Staff to Sustain Assets

	Objective	Ensure ITD Has the Skilled Staff to Adequately Maintain Our Assets.				
	Risk Event	**Risk Effect**	**Likelihood**	**Impact**	**Rating**	**Response**
R29	If maintenance crews continue to be utilized for construction inspection…	…then we may not have enough crews for routine bridge and pavement maintenance.	Possible	Minor	Low	ITD will monitor mainteance needs and ensure that adequate hours are provided for maintenance functions.
R30	If we continue to have many speciality functions that are filled by only one person..	…then we may have continued inefficiencies and delays when those staff leave or are not available.	Likely	Minor	Medium	ITD will try to use cross training where possible to address this issue.
R31	If our staff does not develop the ability to use the new pavement management system….	…then we will not take full advantage of its capabilities.	Likely	Minor	Medium	As ITD improves its existing pavement management system or develops a new one, it will also provide training so staff can benefit from the full functionality of the system.
R32	If we do not institute a knowledge transfer and succession planning effort…	…then we will lose institutional knowledge as our experienced staff retires.	Likely	Minor	Medium	ITD will try to use cross training where possible to address this issue.

Figure 6-8: Data and Information Risks to Sustaining Assets in a State of Good Repair

	Objective	To Provide the Data and Information ITD Needs to Sustain Its Bridge and Pavement Conditions.				
	Risk Event	**Risk Effect**	**Likelihood**	**Impact**	**Rating**	**Response**
R33	If information technology services and data systems are not kept current with ITD needs…	…asset management decision making will be impeded leading to less-than-optimal decisions and investments.	Likely	Major	**High**	ITD will continue its comprehensive efforts to review the IT strategy, ensure executive support, improve GIS and locational functionality, implement data governance, manage information as an asset, and conduct an IT gap assesment.
R34	If we don't customize new software carefully and with well-defined customer requirements..	…we could drive up the cost and lower the performance of any new application.	Likely	Moderate	High	ITD will carefully document customer requirements if new software is acquired and will ensure that cost, complexity, and functionality are balanced if the software is customized.
R35	If we don't develop a "single source of truth" for multiple data needs…	…then we will continue to get different answers from different data sets and frustrate users and stakeholders.	Very Likely	Moderate	High	ITD will continue its efforts to standardize its databases and ensure that to the extent possible data is recorded once and used accurately across many information platforms.
R36	If we don't capture the costs, locations, and effects of routine maintenance…	…then we will not have accurate information about asset performance, costs, or condition.	Very Likely	Minor	Medium	ITD will contiue efforts to accurately capture the costs and extent of maintenance activites to better understand asset performance.
R37	If we don't make data readily accessible…	… we will continue to frustrate our users and stakeholders.	Likely	Minor	Medium	ITD will continue its efforts to provide accurate, easy-to-access data for decision making.
R38	If legacy data that we still use is eliminated in an update process…	..then we will lack some data that remains important.	Likely	Insignificant	Low	As ITD updates its asset management and other systejms it will document the use of legacy data and ensure it remains accessible for those who need it.
R39	If Federal data-collection requirements are different than ours…	…then we will experience inefficiencies in data collection, storage, and access.	Very Likely	Minor	Medium	ITD will monitor Federal requirements and urge FHWA to not adopt onerous new reporting requirements.

Figure 6-9: Risks from External Threats That Could Affect Asset Conditions

	Objective	**Protect Our Assets and Citizens from External Threats.**				
	Risk Event	**Risk Effect**	**Likelihood**	**Impact**	**Rating**	**Response**
R40	If we continue to experience periodic flooding…	…then we will have to respond to localized road closures and damage.	Likely	Minor	Medium	ITD will maintain its ability to respond to periodic flooding and reopen roads as quickly as possible.
R41	If we don't manage redundant routes that needed for emergencies…	…we may not have adequate capacity if major routes are closed by emergencies.	Unlikely	Moderate	Medium	ITD will remain cogizant of which routes provide redundant access during emergencies and keep them in a state of good repair.

Chapter 7 Financial Planning Process

The Idaho Transportation Department (ITD) has a robust financial planning process to ensure that the state's bridges and highways are properly maintained. This document describes the process ITD employs to identify available revenue sources and to program funds for maintaining the state's transportation infrastructure assets. The process begins at the highest level with the identification of State, Federal, and Local resources available for the national highway system. The next step is to account for the expenditures necessary for department operations. The funding available for the Highway Funding Plan (HFP) is calculated by subtracting the department operating costs from the total available revenue.

The HFP includes all funds available for the maintenance, operations and construction of the bridges and highways under ITD's jurisdiction. There are many funding needs in the HFP in addition to the infrastructure in the asset management plan. Examples of these funding needs include those programmed for Transportation Alternatives, Recreational Trails, Railroad Crossings, and many local programs. These funds are subtracted from total available in the HFP to calculate the amount of funding available for the Transportation Asset Management Plan (TAMP). This section details the steps ITD employs to identify the funding for the TAMP.

Financial Plan Requirements

FHWA is quite specific about financial plans. It defines them as a long-term plan spanning 10 years or longer, presenting a State DOT's estimates of projected available financial resources and predicted expenditures in major asset categories that can be used to achieve State DOT targets for asset condition during the plan period, and highlighting how resources are expected to be allocated based on asset strategies, needs, shortfalls, and agency policies.

The financial plan leads to investment strategies. Those are defined as a set of strategies that result from evaluating various levels of funding to achieve State DOT targets for asset condition and system performance effectiveness at a minimum practicable cost while managing risks.

FHWA in Sec. 515.7 (6) (d) says the state shall establish a financial plan development process that identifies annual costs over a minimum of 10 years. The plan shall produce:

(1) The estimated cost of expected future work to implement investment strategies contained in the asset management plan, by State fiscal year and work type;

(2) The estimated funding levels that are expected to be reasonably available, by fiscal year, to address the costs of future work types. State DOTs may estimate the amount of available future funding using historical values where the future funding amount is uncertain;

(3) Identification of anticipated funding sources; and

(4) An estimate of the value of the agency's NHS pavement and bridge assets and the needed investment on an annual basis to maintain the value of these assets.

ITD Funding Sources

ITD's revenues come from many sources each of which are described below.

State Highway User Revenue

Approximately half of the revenue generated for the maintenance and operation of the infrastructure in ITD's jurisdiction is from state sources. This section includes a description of these sources.

Beginning Cash Balance

Known or projected operational cost savings and receipts above forecast can yield uncommitted cash balances at the end of each year. These cash balances are available in addition to forecasted revenue to support operational and program costs in subsequent year(s).

Highway Distribution Account (HDA)

The Highway Distribution Account includes state highway user revenue collected from motor fuels tax (gasoline and special fuels), motor vehicle registrations, and miscellaneous fees and permits. The SHA receives 57% of this revenue; the remaining amount is distributed to local highway jurisdictions and the Idaho State Police.

Ethanol Exemption

Seven percent of the motor fuel revenue is distributed to the State Highway account because of the elimination of the tax exemption for ethanol.

New User Revenue

During the 2015 Legislative session, the tax rate for motor fuels and registration fees for motor vehicles were raised. This additional revenue is reported independent of other revenue sources. Sixty percent of this revenue is directed to the SHA, the remainder is distributed to local highway jurisdictions.

State Highway Account Miscellaneous Revenue

Certain registration, permit, and title fees identified in Idaho Code as well as miscellaneous receipts for sale of equipment, services, and supplies are also distributed to the SHA.

Estimates of state funds available for the HFP take into account projected revenues, the reservation of state matching funds for federal aid, and other operational needs not shown in the STIP.

The amount of state highway funding can be impacted by legislation passed in any given year. 2017 was an active year for the Idaho Legislature. The highlights include passage of House Bill 20 and removing the additional $75 fee for hybrid vehicles unless the vehicle is identified as a "plug-in" hybrid. House Bill 20 reduced annual transportation revenue to ITD by approximately $600,000.

Senate Bill 1043 allows agricultural vehicles to be moved without having to obtain an overlegal permit. This bill reduced annual transportation revenue by $54,000.

The estimated state funding for FY18 through FY24 available for highway capital construction ranges from $127.8 million to $182.6 million annually. This includes new highway user revenue and other funding generated by bills passed during the 2017 legislative session.

GARVEE Bond Proceeds

GARVEE (Grant Anticipation Revenue Vehicle) bonds are revenue bonds that do not pledge the full faith and credit of the state. Idaho Code allows no more than thirty percent of ITD's federal apportionment to be used for GARVEE debt service. The department uses federal highway revenue to repay the bonds. Prior to FY17, the Idaho Legislature authorized the department to secure financing of $857 million of infrastructure improvements in the GARVEE program. Projects funded by those pre-FY17 authorizations were closed out during FY16.

The 2017 Idaho Legislature authorized the issuance of up to $300 million in GARVEE bonds. These bonds will be used to fund highway projects

The estimated debt service on $300 million in additional bonds is approximately $24.0 million annually. In combination with the $56.7 million in existing debt service, the total annual debt service, including $300 million of additional bonds, would be approximately $80.7 million ($74.5 million federal funds and $6.2 million state matching funds).

Cigarette Tax Revenue for Debt Service

The 2015 Legislature passed legislation directing Cigarette Tax revenue to pay approximately $4.7 million per year of the GARVEE debt service.

Strategic Initiative Program Fund (SIPF)

The 2015 Legislature directed ITD to establish and maintain a Strategic Initiatives Program and Fund. The purpose is to fund projects proposed by the department's six districts. The projects must compete for selection based on an analysis of their return on investment in prescribed categories.

In 2017, the Legislature passed Senate Bill 1206, which extended General Fund Surplus transfers by two years, directing them to the Strategic Initiatives Program fund and authorized a distribution of the fund with 60% to ITD and 40% to local highway jurisdictions administered by the Local Highway Technical Assistance Council (LHTAC).

The 2017 Legislature also passed House Bill 334, which added a category to the Strategic Initiatives Program Fund, relating to child pedestrian safety on the state and local systems.

The amount to be distributed after the end of FY17 is $27.7 million ($16.6 million to ITD and $11.1 million for local projects).

Transportation Expansion and Congestion Mitigation (TECM)

The 2017 Legislature also established the Transportation Expansion and Congestion Mitigation (TECM) Program and fund. The purpose of TECM is to fund projects that are chosen by the Idaho Transportation Board based on a project's ability to improve traffic flow and mitigate traffic times and congestion. The TECM fund receives revenue from one percent of sales tax after local revenue sharing, and all remaining moneys following the distribution of the cigarette tax revenue.

The forecasted TECM funding levels for FY18 through FY24 range from $17.1 million to $21.1 million annually.

Federal

As is the case with other state transportation departments, ITD relies heavily on federal funding to maintain its transportation infrastructure. These federal sources include:

- Excise taxes on gasoline and special fuels used to propel motor vehicles on public highways.
- Weight-based taxes on heavy vehicles registered for interstate commerce
- Tax on the value of heavy commercial vehicle sales
- Weight-based excise tax on tires exceeding 40 pounds

This revenue is directed to Idaho through Federal transportation acts, federal project-specific discretionary awards, or prior congressional earmark awards.

The current federal transportation authorization is the Fixing America's Surface Transportation

Act (FAST). It establishes funding over federal fiscal years 2016 through 2020. The MAP-21 transportation program structure continues under the FAST Act with one substantial change (the inclusion of a new Freight program) and a few minor changes.

Funding estimates for the federal highway program are $302.2 million in FY18, $309.0 million in FY19, and $316.4 million in FY20 through FY24. These estimates are listed in year-of-expenditure dollars. ITD assumes that obligation authority will be equal to 100% of estimated apportionments. Funding forecasts do not include year-end redistribution of obligational authority not used by other states.

Local

The FHWA and the Idaho Transportation Board reserve certain federal funds for use by local public agencies. Local public agencies must pay the match on these federal funds most often at Idaho's sliding scale rate of 7.34% of the project cost. Local public agencies may also contribute funds in excess of the required match on federal projects or choose to contribute to state-funded projects. These are termed Local Participating funds. Finally, there may be some costs on a local project which the FHWA cannot or will not reimburse based upon a certain rules or regulation. These funds do not participate in the established match arrangement so are termed Local Non-Participating costs.

Idaho Transportation Department Expenditures

Before ITD can dedicate funds to the Highway Funding Plan, it must dedicate a portion of the available funds to department operations.

Operations costs support programs outside those funded by the Highway Funding Plan, including: Administration, Capital Facilities, Aeronautics, Motor Vehicles, and Highway Operations. This section describes the department's operating costs.

Department Operations

"Coming off the top" are expenditures for basic operations required to run the department, maintain roads, and provide people and equipment to manage the highway network.

Personnel

Costs for personnel who support Operations programs, including; full-time staff, temporary employees, overtime, shift-pay, and per diem for boards and commissions. These costs include employee salaries, employer benefit costs, and health insurance. Projections for annual increases in costs for salaries, benefits, and health insurance are reflected in the plan.

Operating Expenditures

Daily operating and seasonal costs are necessary to support delivery of Operations programs. Operating Expenditures cover a broad range of costs, including: supplies, repair and maintenance, utilities, communications, fuel, road maintenance materials (asphalt, plant-mix), winter operations materials (salt, brine, and sand), insurance, etc. Operating expenditures reflect projected inflation and volume increases expected during the plan period.

Equipment

Acquisition cost of new and replacement equipment necessary for delivery of services in Operations programs. These costs include; road equipment, computers and network equipment; specific use, laboratory, and shop equipment.

Capital Facilities

Costs needed for maintaining, designing, and building department facilities.

Trustee and Benefits

Funds passed-through to entities authorized to carry out specialized program activities eligible for funding under provisions of the granting agency. This financial analysis does not carry any Trustee and Benefits resources used by the department's Operations programs.

Other Costs and Timing Adjustments Across Plan Years

Includes resources used for Operations not classified in the previous categories and addresses timing differences across plan years necessary to reconcile to available funding carried in each year of the current Highway Funding Plan.

Funding Available for Highway Program

The Program Targets spreadsheet begins with funding targets from the Highway Funding Plan. Specifically, it requires federal funds with match after takedown for indirect costs by year. It also requires state funds by appropriation by year. Idaho has a reduced sliding scale match rate for interstate work of 92.27% and for non-interstate work of 92.66%. The annual match rate for NHPP funds was obtained from the composite rate on programmed 2018 – 2024 projects

Funds available to the State Highway System are placed into Performance Programs, which address rehabilitation and restoration of assets. Specifically, the TAMP is funded through the Pavement Rehabilitation, Pavement Restoration, Bridge Rehabilitation, and Bridge Restoration Programs. Our capacity projects sometimes have a reconstruction component to existing lanes which are also funds available to the TAMP.

Since we recently began our FY 2019 – 2025 Program Update, the annual targets for these programs were used in the TAMP. Each Spring, the Transportation Board reviews pavement and bridge condition to determine funding targets for Pavements vs. Bridges vs. Safety & Capacity. The targets for the final two years of the TAMP flatlines the previous $80 million for Safety & Capacity, $80 million for bridges, and the remaining funds for pavement. Actual Safety & Capacity projects were used to estimate its contribution toward the TAMP.

Similarly, the projects programmed in FY 2018 – 2024 were used to estimate how much of these funds are used on the National Highway System (including interstate) as opposed to state highways. Annual ratios of NHS project costs vs. the whole were prepared and multiplied against the above targets to determine funding available to the TAMP on the National Highway System.

Funds not used for State Highway System State of Good Repair

The HFP includes many programs that are not intended to address the “state of good repair” on the state highway system. These programs are described in this section.

Highway / MPO Planning

The purpose of the Metropolitan Planning Program is to fund planning for Idaho’s five metropolitan planning organizations in order to establish a cooperative, continuous, and comprehensive framework for making transportation investment decisions and to carry out transportation planning activities throughout the State.

Transportation Alternatives

The purpose of the Transportation Alternatives Program (TAP) is to provide funding for programs and projects defined as transportation alternatives, including on and off-road pedestrian and bicycle facilities, infrastructure projects for improving non-driver access to public transportation and enhanced mobility, community improvement activities, and environmental mitigation; recreational trail program projects; safe routes to school projects; and projects for the planning, design, or construction of boulevards and other roadways largely in the right-of-way of former Interstate System routes or other divided highways.

Recreational Trails

Apportionments are transferred to the Department of Parks and Recreation for their administration of the Recreational trails program projects.

Surface Transportation - Local Programs

The purpose of the STP-Local Urban Program is to ensure that local federal-aid routes within urban areas (population 5,000 to 200,000) are in good condition and unrestricted. Projects within this program should preserve and improve the conditions of the local federal-aid route as well as encourage and promote the safe and efficient management, operation, and development of the transportation systems to serve the mobility needs of people and foster economic growth and development.

Local/Off system Bridge

The purpose of the Bridge Off-System Program ensures that local bridges off of the federal aid system are in good condition and unrestricted.

Railroad Crossing

The purpose of the Rail-Highway Crossing Program is to enhance safety at Idaho's public railroad-highway crossings, provide/encourage rail safety education, and fulfill federal rail reporting requirements.

Local Safety

The purpose of the Local Highway Safety Improvement Program (LHSIP) is to work towards the elimination of fatal and serious injury crashes on the local roadway system in Idaho. The Local Highway Technical Assistance Council (LHTAC), through an application process, selects highway safety improvement projects for submission into the Program in each ITD District. The selected projects are reviewed, verified and justified for compliance with funding regulations prior to inclusion into the Local Highway Safety Improvement Program (HSIP) portion of the Idaho Transportation Investment Program (ITIP).

Local Participating

Local public agencies may contribute funds in excess of the required match on federal projects or choose to contribute to state-funded projects. These are termed Local Participating funds.

Local Non-Participating

There may be some costs on a local project which the FHWA cannot or will not reimburse based upon a certain rules or regulation. These funds do not participate in the established match arrangement so are termed Local Non-Participating funds.

Local Match

Local funds required as the match for Federal funds on a local project.

GARVEE (Expansion)

The 2017 Idaho Legislature authorized the issuance of up to $300 million in GARVEE bonds. These bonds will be used to fund highway projects

GARVEE Bond Debt Service *

The estimated debt service on $300 million in additional bonds is approximately $24.0 million annually. In combination with the $56.7 million in existing debt service, the total annual debt service, including $300 million of additional bonds, would be approximately $80.7 million ($74.5 million federal funds and $6.2 million state matching funds).

SIPF – Local

In 2017, the Legislature extended General Fund Surplus transfers by two years, directing them to the Strategic Initiatives Program fund and authorized a distribution of the fund with 60% to ITD and 40% to local highway jurisdictions administered by the Local Highway Technical Assistance Council (LHTAC).

SIPF - Child Pedestrian Safety

The 2017 Legislature also added a category to the Strategic Initiatives Program Fund relating to child pedestrian safety on the state and local systems.

Funding Available for Transportation Asset Management

The funds remaining after addressing the department's operating needs and funding the programs not used for state highway system state of good repair are available for maintenance of the infrastructure included in the TAMP. This section describes the programs dedicated to these assets.

Pavement Preservation (Commerce)

The purpose of the Pavement Preservation Program is to employ a planned strategy of cost effective treatments to the surface of a structurally sound roadway that preserves the system, retards future deterioration, and maintains or improves the functional condition of the commerce route system without substantially increasing structural capacity.

Pavement Preservation (Non-Commerce)

The purpose of the Pavement Preservation Program is to employ a planned strategy of cost effective treatments that preserves the non-commerce system and retards future deterioration.

Pavement Restoration

The purpose of the Restoration Program is to fund pavement projects that are more extensive than pavement preventative maintenance. These structural enhancements are used to extend the service life of an existing pavement and/or improve its load carrying capacity or completely rebuild a pavement structure. Restoration of other assets and traffic operation projects are also placed in this program.

Bridge Preservation

The purpose of the Bridge Preservation Program is to ensure that Idaho's state highway system bridge asset is in good repair and unrestricted.

Bridge Restoration

The purpose of the Bridge Restoration Program is to ensure that Idaho's state highway system bridge asset is in good repair and unrestricted.

Safety & Capacity

The purpose of the Safety and Capacity (S&C) Program is to ensure that ITD's state highway system is reliable and unrestricted, provides a means to invest in economic opportunities, and applies Idaho's Highway Safety Improvement Program (HSIP) to advance the objectives and goals of ITD's Strategic Plan. The Safety and Capacity program determines project prioritization to using funds from designated funding sources.

The following tables show the expected revenues and expected expenditures. They form the "sources and uses" component of the asset management financial plan. The first four tables show expected revenues, or the sources. The last three show the expenditures, or the uses.

Table 7-1 summarizes the expected state revenues and their sources for ITD from 2018-2027. As can be seen, the Highway Distribution Account, which contains state motor fuel taxes and fees, provides the largest source of ITD's state revenue. In addition, as can be seen, some state funds are dedicated for specific programs, such as Transportation Expansion and Congestion Mitigation, and are not available for asset management purposes. These funds shown in Table 7-2 are those, which are allocated to ITD. Other state funds are distributed directly to local governments for transportation purposes.

All figures represent millions of dollars.

Table 7-1: Forecasted State Revenue Sources

FY 2018 - 2027 Proposed ITD Ten Year Transportation Plan
ITD Funding & Use Summary ($ in Millions, rounded)

date: 03-30-18

Highway - State	FY2018	FY2019	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	10 Yr Total
Anticipated State Funding											
Beginning Cash Balance	14.1	11.8	--	--	--	--	--	--	--	--	25.93
Highway Distribution Account (HDA)[1]	205.1	206.8	208.9	206.5	208.5	209.2	211.3	213.4	215.5	217.7	2,102.74
Ethanol Exemption[1]	17.7	17.7	18.0	17.6	17.7	17.8	18.0	18.2	18.3	18.5	179.50
New User Revenue[1]	64.4	64.9	67.0	67.4	67.8	68.7	69.4	70.1	70.8	71.5	682.1
State Highway Account Miscellaneous Revenue[2]	43.4	36.7	43.4	43.1	42.7	42.7	42.7	42.7	42.7	42.7	423.0
GARVEE Bond Proceeds * Authorized in 2017[3]	--	125.0	100.0	75.0	--	--	--	--	--	--	300.0
Transportation Expansion and Congestion Mitigation (TECM)[4]	21.1	16.9	16.8	17.6	18.4	19.2	19.9	19.9	19.9	19.9	189.8
Strategic Initiative Program Fund (SIPF)[5]	16.6	--	--	--	--	--	--	--	--	--	16.6
Cigarette Tax Revenue for Debt Service[6]	4.7	4.7	4.7	4.7	4.7	4.7	3.6	3.3	3.1	2.9	41.1
Total State Highway Funding Sources	$387.1	$484.6	$458.7	$431.9	$359.8	$362.3	$364.9	$367.6	$370.4	$373.3	$3,960.7

Table 7-2 illustrates the Federal revenues and their sources expected for 2018-2027. As with the State funds, not all Federal revenues are available for asset management purposes. As can be seen, much of the Surface Transportation Block Grant (STBG) funds are intended for urban areas, or for rural programs. Also, some are set aside for specific purposes such as Transportation Alternatives that fund projects such as bike paths. CMAQ funds are congestion mitigation/air quality funds that only can be used for congestion relief or transit projects.

Table 7-2: Forecasted Federal Revenue Sources

FY 2018 - 2027 Proposed ITD Ten Year Transportation Plan
ITD Funding & Use Summary ($ in Millions, rounded)

date: 03-30-18

Highway - Federal	FY2018	FY2019	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	10 Year Total
Anticipated Federal Highway Funding											
National Freight Program	8.5	9.6	10.7	10.7	10.7	10.7	10.7	10.7	10.7	10.7	103.5
National Highway Performance (NHPP)	168.5	171.9	175.5	175.5	175.5	175.5	175.5	175.5	175.5	175.5	1,744.4
STBG - State	33.5	33.4	33.4	33.4	33.4	33.4	33.4	33.4	33.4	33.4	334.2
Flexible/Restoration/Misc/Ext Alloc Prog	.8	.9	.9	.9	.9	.9	.9	.9	.9	.9	8.8
STBG Urban < 200k	18.6	19.3	20.1	20.1	20.1	20.1	20.1	20.1	20.1	20.1	198.5
STBG Urbanized > 200k (TMA)	9.4	9.7	10.1	10.1	10.1	10.1	10.1	10.1	10.1	10.1	100.3
STBG Rural	14.1	14.6	15.2	15.2	15.2	15.2	15.2	15.2	15.2	15.2	150.7
STBG Bridge Off System	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	3.8	37.9
TAP - Urbanized > 200K	.4	.4	.4	.4	.4	.4	.4	.4	.4	.4	4.4
TAP - Urban under 200K	.9	.9	.9	.9	.9	.9	.9	.9	.9	.9	8.8
TAP - Rural under 5K	.7	.7	.7	.7	.7	.7	.7	.7	.7	.7	6.7
Transportation Alternatives - Flex	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	19.9
Highway Safety Improvement Prog	16.8	17.1	17.4	17.4	17.4	17.4	17.4	17.4	17.4	17.4	173.2
Rail-Highway Crossings	1.9	1.9	2.0	2.0	2.0	2.0	2.0	2.0	2.0	2.0	19.6
CMAQ	13.0	13.3	13.5	13.5	13.5	13.5	13.5	13.5	13.5	13.5	134.6
Metro Planning	1.7	1.7	1.8	1.8	1.8	1.8	1.8	1.8	1.8	1.8	17.4
SPR	6.0	6.1	6.3	6.3	6.3	6.3	6.3	6.3	6.3	6.3	62.2
Recreational Trails	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	17.1
Discretionary (including High Priority)	6.5	15.2	6.8	--	--	--	--	--	--	--	28.5
Total Federal Highway Funding Sources	$308.7	$324.2	$323.1	$316.4	$316.4	$316.4	$316.4	$316.4	$316.4	$316.4	$3,170.7

Figure 7-3 includes the expected local funds for the 10-years of the plan. Local funds are provided as match to the Federal-aid funds used by local governments. These funds are seldom applied to ITD asset management projects. Usually, local match is provided only when a local government accesses Federal-aid funds for a local bridge, pavement, or capacity project off the state highway system.

At the bottom, Table 7-3 summarizes all of the expected revenues from State, Federal, and local sources. As can be seen at the far-right bottom row, a total of $7.2146 billion is expected to be available from all sources for the years 2018-2027.

Table 7-3: Forecasted Local Revenue sources Plus Summary of All Sources

FY 2018 - 2027 Proposed ITD Ten Year Transportation Plan
ITD Funding & Use Summary ($ in Millions, rounded)

Highway -Local	FY2018	FY2019	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	10 Yr Total
Anticipated Local Highway Funding											
Local Participating	1.0	3.8	1.5	4.7	16.4	1.8	4.1	4.1	4.1	4.1	**45.6**
Local Non-Participating	.2	--	--	--	--	--	--	--	--	--	**0.2**
Local Match	3.6	4.0	3.9	3.7	3.7	3.6	3.6	3.7	3.7	3.7	**37.3**
Total Local Funding Sources	**$4.9**	**$7.7**	**$5.4**	**$8.3**	**$20.1**	**$5.4**	**$7.7**	**$7.9**	**$7.9**	**$7.9**	**$83.2**
Total Funding Sources	**$700.7**	**$816.5**	**$787.3**	**$756.6**	**$696.3**	**$684.1**	**$689.0**	**$691.9**	**$694.7**	**$697.5**	**$7,214.6**

NOTES - Funding Sources

1. FY18 - FY23 values based on Aug. 1, 2017 Forecast. FY24 - FY27 based on a +1% growth rate
2. FY18 - FY23 values based on Aug. 1, 2017 Forecast. FY24 - FY27 held constant at FY23 value
3. 300 million in new GARVEE bonds to fund projects selected by the Idaho Transportation Board
4. The 2017 Legislature also established the Transportation Expansion and Congestion Mitigation (TECM) Program and fund to improve traffic flow and mitigate traffic times and congestion. The TECM fund receives revenue from one percent of sales tax after local revenue sharing, and all remaining moneys following the distribution of the cigarette tax
5. Senate Bill 1206 extended General Fund Surplus transfers by two years, directing them to the Strategic Initiatives Program Fund. Sixty percent of these funds will be distributed to ITD and 40 percent will be distributed to local projects administered by the Local Highway Technical Assistance Council (LHTAC). Value carried in this plan reflects ITD's sixty
6. FY18 - FY23 Based on DFM Forecast (12-29-17). FY24 - FY27 based on a -7% growth rate.

The following tables show expenditures. Table 7-4 shows operational costs that are expected to be incurred between 2018 and 2017. These funds "come off the top" before revenues are made available for asset management purposes. These represent the essential expenditures needed for basic functions such as paying salaries, operating snow plows, maintaining garages and rest areas, paying for highway lighting, and other core functions. Total operational costs equal an estimated $2.3187 billion for the 10 years.

Table 7-4: Department Operations Expenditures and Remaining Available Revenues

FY 2018 - 2027 Proposed ITD Ten Year Transportation Plan
ITD Funding & Use Summary ($ in Millions, rounded)

date: 03-30-18

Total Funding Sources	$700.7	$816.5	$787.3	$756.6	$696.3	$684.1	$689.0	$691.9	$694.7	$697.5	$ 7,214.6

Department Operations	FY2018	FY2019	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	10 Year Total
Personnel [1]	82.3	87.7	94.3	96.8	99.6	104.7	109.0	113.5	118.4	123.7	1,030.0
Operating Expenditures	90.8	93.4	97.5	98.5	99.5	97.4	98.4	99.4	100.4	101.4	976.5
Equipment	26.9	24.5	27.8	27.8	27.8	27.8	27.8	27.8	27.8	27.8	273.8
Capital Facilities	7.2	3.6	3.3	3.3	3.3	3.3	3.3	3.3	3.3	3.3	37.1
Trustee and Benefits	--	--	--	--	--	--	--	--	--	--	-
Other Costs and Timing Adjustments Across Plan Years [2]	0.0	0.0	5.7	0.2	0.7	-0.1	-0.9	-1.7	-1.2	-1.5	1.3
Total Department Operations	$207.2	$209.2	$228.6	$226.6	$230.9	$233.1	$237.6	$242.2	$248.7	$254.7	$2,318.7

NOTES - Department Operations

1. Personnel costs for Operations programs, only. Personnel costs related to infrastructure assets are carried in Funding Available for Program. Adjusted for anticipated cost
2. Costs not classified in other Operations categories and adjustments across plan years to reconcile available funding carried in each year of the current Highway Funding Plan.

When the $2.3187 billion in operating costs are subtracted from the $7.2146 billion in expected revenue, then $4.8958 remain for the highway program. Of the $4.8958 million, $4.433 is available for basic highway purposes. To that is added about $463 million in funds for specific purposes. That includes $41.1 million in local funds to match projects and $300 million in the GARVEE bonds the legislature directs to capacity projects. In addition, $121.5 is provided for preliminary engineering, which generally is project design, and construction engineering, which involves oversight and inspection of projects during construction.

Table 7-5: Funding Available after Operation Costs are Deducted

Total Funding after Department Operations	$493.5	$607.4	$558.6	$530.0	$465.4	$451.0	$451.4	$449.7	$446.0	$442.9	$ 4,895.8
Funding Available for Program	**FY2018**	**FY2019**	**FY2020**	**FY2021**	**FY2022**	**FY2023**	**FY2024**	**FY2025**	**FY2026**	**FY2027**	**10 Year Total**
Highway Funding Plan (Adjusted with Match)	478.8	463.9	445.2	438.9	437.8	437.9	436.2	434.6	431.2	428.4	4,433.0
Programmed Local Participating in excess of annual HFP estimate	(.2)	3.4	1.1	4.3	16.0	1.4	3.8	3.8	3.8	3.8	41.1
Programmed Local Non-Participating	.2	--	--	--	--	--	--	--	--	--	0.2
GARVEE 2017 Authorization	--	125.0	100.0	75.0	--	--	--	--	--	--	300.0
PE & CE for State Funded Program (STF0)	14.7	15.0	12.3	11.8	11.6	11.6	11.5	11.3	11.0	10.7	121.5
Total Funding Available for Program	$493.5	$607.4	$558.6	$530.0	$465.4	$451.0	$451.4	$449.7	$446.0	$442.9	$4,895.8

Table 7-6 shows the estimated expenditures for the highway programs that do not directly relate to the management of pavements and bridges. They are noted as funds not used for maintaining a state of good repair. These funds are for very important, high-profile programs that are much in demand by the public and their communities. These programs include funds for metropolitan planning which support the state's metropolitan planning organizations. Also funded are transportation alternatives such as bike paths and recreational trails. Surface Transportation – Local Funds are passed through to MPOs so that local governments can pay for needed projects using Federal-aid funds. Highway safety and railroad crossing protection programs also are funded. Among these expenditures are the $742.1 million over 10 years to pay for outstanding federally backed bonds. These are the GARVEE bonds that were borrowed and will be repaid with Federal-aid funds allocated to Idaho. As can be seen in the bottom-right, after these funds are allocated $3.2154 remains.

Table 7-6: Funds Allocated for Purposes Other Than Asset Management

Funds not used for state of good repair	FY2018	FY2019	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	10 Year Total
Highway / MPO Planning	8.5	8.8	9.0	9.0	9.0	9.0	9.0	9.0	9.0	9.0	89.0
Transportation Alternatives	4.4	4.4	4.3	4.3	4.3	4.3	4.3	4.3	4.3	4.3	43.3
Recreational Trails	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	1.7	17.1
Surface Transportation - Local Programs	32.5	33.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	34.5	342.0
Local/Offsys Bridge	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	9.5	95.3
Railroad Crossing	2.1	2.1	2.2	2.2	2.2	2.2	2.2	2.2	2.2	2.2	21.7
Local Safety	3.9	3.9	9.0	8.9	8.9	8.9	8.9	8.9	8.9	8.9	79.3
Local Participating	1.0	3.8	1.5	4.7	16.4	1.8	4.1	4.1	4.1	4.1	45.6
Local Non-Participating	.2	--	--	--	--	--	--	--	--	--	0.2
Local Match	3.6	4.0	3.9	3.7	3.7	3.6	3.6	3.7	3.7	3.7	37.3
GARVEE (Expansion)	16.3	82.1	40.3	4.0	--	--	--	--	--	--	142.7
GARVEE Bond Debt Service *	56.5	57.7	66.7	74.7	80.8	80.8	80.8	80.9	80.9	82.3	742.1
Discretionary (Expansion)	5.6	9.5	8.5	--	--	--	--	--	--	--	23.5
SIPF - Child Pedestrian Safety	1.2	--	--	--	--	--	--	--	--	--	1.2
Other	--	--	--	--	--	--	--	--	--	--	-
Total Funds not used for State Highway System state of good repair	$147.2	$220.9	$191.1	$157.2	$171.0	$156.3	$158.7	$158.9	$158.9	$160.3	$1,680.4

Total Funding Available for Transportation Asset Mgmt	$346.3	$386.5	$367.6	$372.8	$294.4	$294.7	$292.7	$290.8	$287.1	$282.5	$3,215.4

Table 7-7 shows how the remaining $3.2154 billion is expected to be allocated for asset management and safety and capacity programs. As noted earlier in this report, ITD divides its highways into Commerce and Non-Commerce routes for prioritization. Generally, Commerce routes carry more than 300 trucks per day and represent the routes most important to the movement of people and goods in Idaho. The Commerce routes are maintained to a higher standard, although ITD keeps the Non-Commerce routes in adequate condition to fulfill their important function of providing access to all areas of the state. In addition, FHWA requires ITD to report on the conditions and expenditures on the National Highway System. The NHS represents the interstates and major routes across the country. There is considerable overlap between the Commerce routes and the NHS.

As see in Figure 7-7, an estimated $1.5513 billion is expected to be spent on basic pavement and bridge programs on the Non-NHS system between 2018 and 2027. That represents about 48% of the funds available after other programs are paid for as shown in the earlier tables. The remaining 52%, or $1.6641 billion is allocated for National Highway System bridges, pavements, and safety and capacity projects.

Table 7-7: Funds Available for Asset Management, Safety and Capacity Projects. ($Millions)

FY 2018 - 2027 Proposed ITD Ten Year Transportation Plan
ITD Funding & Use Summary ($ in Millions, rounded)

date: 03-30-18

Total Funding Available for Transportation Asset Management	$346.3	$386.5	$367.6	$372.8	$294.4	$294.7	$292.7	$290.8	$287.1	$282.5	$ 3,215.4
Funding Available for Non-National Highway System, non-state of good repair	$119.4	$71.6	$136.4	$229.8	$163.9	$161.0	$160.7	$170.6	$169.7	$168.4	$ 1,551.3

Funding Available for NHS Bridge and Pavement	FY2018	FY2019	FY2020	FY2021	FY2022	FY2023	FY2024	FY2025	FY2026	FY2027	10 Year Total
Pavement Preservation(Commerce)	20.3	11.7	15.2	17.3	14.4	15.8	15.5	14.8	14.3	13.5	152.8
Pavement Preservation(Non-Commerce)	--	2.7	--	--	--	--	--	--	--	--	2.7
Pavement Restoration	102.1	88.8	93.3	60.8	54.6	62.3	61.1	52.7	50.4	47.9	673.9
Bridge Preservation	--	2.3	--	--	--	--	--	--	--	--	2.3
Bridge Restoration	71.3	47.6	70.6	52.0	61.5	55.5	55.5	52.7	52.7	52.7	572.1
Safety & Capacity	33.3	49.7	5.5	5.0	--	--	--	--	--	--	93.5
GARVEE 2017 Legislative Authorization	--	102.8	46.7	7.9	--	--	--	--	--	--	157.3
Discretionary (including High Priority)	--	9.5	--	--	--	--	--	--	--	--	9.5
Funding Available for NHS Bridge and Pavement	$226.9	$314.9	$231.2	$143.0	$130.5	$133.6	$132.1	$120.2	$117.4	$114.2	$1,664.1

Table 7-8 provides a high-level summary of all the preceding tables. Out of $7.215 billion, 32% goes to operations, $23% to non-asset management programs such as highway safety or local programs, 22% goes to maintaining the lower-volume routes off of the National Highway System, 4% is estimated to go for new capacity or safety programs, and 19% is expected to be available to maintain the bridges, pavements and related assets on the National Highway System.

Table 7-8: Summary of Revenue and Expenditures

Total Revenue and Allocations		% of Total
Total Revenue	$7,215	
Operations, Personnel, Equipment	-$2,319	32%
Safety, Local, and Other Non-Asset Management Purposes	-$1,680	23%
Non-NHS Asset Management Purposes	-$1,551	22%
Safety & Capacity Purposes	-$260	4%
Funds Remaining for NHS Asset Management	$1,404	19%

Asset Valuation

Asset valuation is the assignment of monetary value to physical assets based upon their condition, cost to construct, age, obsolescence and other factors. The rationale for reporting asset valuation is to ensure that investments are adequate to ensure that the public's investment in its highway network is maintained. Highway networks generally represent a state's largest capital investment. Investing adequately in them can ensure that future generations inherit a well-maintain asset, and not a major liability that is in a state of disrepair and requires substantial investment to maintain.

ITD estimated the value of its assets for this asset management plan using the concept of Depreciated Replacement Cost. This is an accounting concept adopted in Australia and Great Britain. It seeks to estimate the value of highway assets "as is." That is, what would it cost to replace them "in kind" to their current conditions?

This depreciation method differs from the historic cost method often used to estimate asset values. Historic cost usually applies a fixed amount of deterioration to an asset based entirely on its age. For example, if a bridge is built for $1 million and is expected to provide a useful life of 50 years, its value is depreciated by 2% annually. At the end of 50 years, the bridge will have a "book value" of $0. Even if the bridge has been rehabilitated and is in good condition, it still will be carried on the books at a value of $0. By this logic, the Golden Gate Bridge and Brooklyn Bridge have no monetary value simply because of their age.

The historic cost method provides little value for asset management. If an asset is valued at, $0 there is little incentive to invest further in its maintenance. However, as a practical matter, an aged bridge or pavement could have significant utility and warrant substantial maintenance and investment to prolong its useful life.

Bridge Asset Valuation

To calculate the depreciated replacement cost of ITD bridges, the analysis first estimates what it would cost to replace all of the ITD bridges. This provides an "as new" or "replacement cost" estimate of the ITD bridge assets. Using Federal Highway data on bridge size, age, condition, and cost per square foot to replace, the following values are estimated.

Figure 7-1: Estimated Depreciated Replacement Cost for ITD NHS Bridges.

Depreciated Replacement Cost Exercise for Structures							
System	Total Sq.Ft.	Cost Per Sq.Ft.*	Cost to Replace All	Average Condition	As New Condition	Discounted by Condition	Depreciated Replacement Cost
Interstate	3,560,569	$132	$469,995,108	6.4	9	71%	$333,696,527
NHS	4,714,103	$182	$857,966,746	6.4	9	71%	$609,156,390
Total	7,826,332		$ 1,327,961,854				$942,852,917

**FHWA Table HM-48*

The logic of the analysis follows.

I. FHWA bridge data indicate that ITD owns 7.8 million square feet of NHS bridges and 4.3 million square feet of Non-NHS structures.
II. The cost to replace NHS bridges based on 2016 ITD data submitted to FHWA is $132 per square foot and $182 per square foot for Non-NHS structures.
III. Multiplying the square foot area by the cost to replace generates a total Replacement Cost of $1.818 billion to replace all of Idaho's bridges.
IV. Bridges are rated from 0-9 with 9 representing an "as new" structure.
V. The average condition of all ITD bridges is 6.4 out of the 0-9 scale.
VI. Dividing 6.4 by 9 equals 71%. In other words, ITD's bridges are in 71% of "as new" condition.
VII. Depreciating the Replacement Cost by the 71%, which represents their current condition, generates a Depreciated Replacement Value of $942,852,917.

ITD plans to invest about $80 million annually in bridge capital projects that include preservation, rehabilitation, and replacement. Additionally, each of the six ITD districts conducts in-house bridge maintenance, and some contract maintenance. The capital investment of $80 million represents 6.2% of the Depreciated Replacement Cost invested in the bridge inventory annually. ITD estimates this level of investment will be adequate to sustain current bridge investments for the next decade. It bases this estimate on past trends, which indicate that this level has been adequate to sustain conditions. In addition, when projected over 10 years, $800 million will be invested in bridges, which represents 61% of the Depreciated Replacement Cost. Considering the relatively long-life of structures and slow annual deterioration, this investment appears adequate to sustain asset values for the next decade.

However, beyond 10 years more of the department's large structure will surpass their 40th year. A "wave" or "bubble" of higher bridge investment needs will occur over the next 20 years. These structures are likely to have a higher per square foot cost than the typical Idaho structure. ITD will begin planning for a long-term strategy to ensure that bridge conditions and asset values can be preserved in the decade following this asset management plan.

Additionally, the per square foot cost show in Figure 7-1 does not include some "soft" costs of design, maintenance of traffic, or right of way. Some states estimate that an additional 25% is needed in addition to the base square foot costs. Therefore, estimate investment levels should consider these "soft cost" needs.

NHS Pavement Asset Valuation

A similar logic was used to calculate a depreciated asset valuation for NHS pavements. This calculation is very conservative and does not include costs for right-of-way, lighting, safety elements or other costs such as design or inspection. It uses only a cost-per-lane mile estimate for pavement and multiplies it by lane miles.

Table 7-9: Depreciated Replacement Costs for ITD NHS Pavements

Depreciated Replacement Cost Exercise for NHS Pavements					
System	Lane Miles	Cost to Replace Per Lane Mile	Pavement Replacement Cost	% Not Poor	Depreciated Replacement Cost
Interstate	2530	$1,200,000	$3,036000,000	99.50%	$3,020,820,000
NHS	5,009	$625,000	$3,130,625,000	99.64%	$3,119,354,750
Total	**7,608**		**$6,166,625,000**		**$6,140,174,750**

FHWA data indicate that Idaho has 2,530 lanes miles of Interstates and 5,009 lane miles of non-Interstate NHS for 7,608 lane miles. ITD has generated a planning level estimate combining unit costs for urban and rural Interstate highways of $1,200,000 per lane mile for pavement replacement. For NHS routes used a planning level cost of $625,000. As can be seen when the unit costs for pavement replacement are multiplied by the lane miles it generates a replacement cost of $6,166,625,000 for the replacement cost of NHS pavements. Current conditions indicate that about 99.5% of Interstate pavements meet FHWA target and 99.64% of NHS pavements meet FHWA target. Using those values to discount conditions, an estimated depreciated replacement cost of $6,140,174,750 is calculated.

ITD estimates that its current investments will be adequate to sustain these asset values. This assumption is based upon the pavement modeling that indicates current investments will result in the department continuing to meet its pavement condition goals. For the next asset management plan in June of 2019, ITD will use its pavement model to refine further the investment analysis.

Chapter 8 Investment Strategies

ITD deploys a systematic process to develop and annually update its investment strategies.

ITD publishes the Idaho Transportation Investment Program (ITIP), which is like a STIP. It until recently included a five-year estimate of revenues by revenue source and a detailed list of annual expenditures by program category. It also included a detailed projects list and a narrative explaining changes in program priorities based upon factors such as changing highway crash rates or changing asset conditions. In April of 2017, the ITD board extended the ITIP to a seven-year program.

The ITIP in many ways resembles the asset management financial plan that FHWA requires except that it addresses seven years and not 10. The common elements for both include:

- A multi-year estimate of revenues by revenue source;
- A year-by-year allocation of funds by program;
- A description of the board's rationale for changing allocations caused by changing asset conditions or crash rates;
- Although risks and gaps are not described in those terms, the ITD narrative explains how ITD and its board allocate funds to meet the transportation needs of the state. They describe the funding sources, the restrictions on each source, and how they attempt to allocate the available resources to optimize the state's transportation performance. Table 8-1 includes the month-by-month processes that lead to approval of the ITIP and the agency's STIP.

Investment Strategy Requirements

FHWA requires the asset management plan to include investment strategies, which it defines as a set of strategies that result from evaluating various levels of funding to achieve State DOT targets for asset condition and system performance effectiveness at a minimum practicable cost while managing risks.

Regulations also say that states must have an investment strategy process that describes how investment strategies are influenced by:

(1) Performance gap analysis

(2) Life-cycle planning for asset classes or asset sub-groups

(3) Risk management analysis; and

(4) Anticipated available funding and estimated cost of expected future work types associated with various candidate strategies based on the financial plan.

An asset management plan shall discuss how the plan's investment strategies collectively would make or support progress toward:

(1) Achieving and sustaining a desired state of good repair over the life cycle of the assets

(2) Improving or preserving the condition of the assets and the performance of the NHS relating to physical assets

(3) Achieving the State DOT targets for asset condition and performance of the NHS, and

(4) Achieving the national goals for safety, relief of congestion, movement of freight and preservation or asset conditions.

Table 8-1: The ITIP Development Cycle

ITIP Development Calendar	
January	ITD publishes estimates of available funding, program descriptions, program targets, and a call for projects to MPOs, the LHTAC, and ITD's six districts. Districts are provided in advance with ITD's pavement-condition data and pavement management system analysis of their district conditions and recommended treatments and investment levels. Districts also continually collaborate with the headquarters bridge staff to assess bridge conditions and identify needed bridge treatments.
March/May	The Idaho Transportation Board reviews condition targets, progress from the past year, reviews the agency's performance dashboard and receives project requests. It then develops a draft ITIP.
June	The transportation board reviews the draft ITIP and approves releasing it for public review and comment.
July	The draft ITIP is provided for public review and comment.
August	ITD staff develops a draft final ITIP incorporating the public comments.
September	ITD submits its recommended ITIP to the board.
November	The board approves submitting the State Transportation Improvement Program (STIP) to FHWA for approval, and the STIP incorporates the first four years of the ITIP.
December	FHWA and the Federal Transit Administration approve the STIP.
Ongoing	The ITD obtains input from citizens, elected officials, tribal governments, state and Federal agencies, MPOs, the LHTAC, and other interested parties.

ITD's investment strategy process satisfies the Federal requirements, although the ITIP process predates the Federal requirements by many years. This section will examine each Federal requirement and how it is addressed.

Performance Gap Analysis

ITD staff and the Idaho Transportation Board review gaps in performance annually as part of the process for developing the ITIP, which includes the investment strategies. IDT regularly updates it performance dashboard and the transportation board reviews the results. The performance reports include reviews of trends such as bridge and pavement conditions and crash rates.

The review also includes consideration of sub-network changes such as changes in conditions on the Commerce Routes versus the Non-Commerce Routes, and changes in the six districts. The adoption of the Commerce and Non-Commerce division in 2015 was driven by ITD's need to prioritize its scarce resources on the most highly travelled routes and make an investment tradeoff to avoid a gap in Commerce Route conditions. The Commerce Routes are those that have more than 300 trucks per day and move the most people and freight. By prioritizing them, ITD was making a risk-based decision to prevent a gap in system conditions from developing on the major routes. At the time the Commerce/Non-Commerce prioritization was made, the change was not driven by a response to the MAP-21 requirements to sustain conditions on the NHS. However, because the Commerce Routes include the NHS, the effect was to prioritize the NHS for investment.

One investment strategy is to prioritize the Commerce Routes and maintain them with more robust treatments while applying only thin treatments and conducting maintenance activities on the lower-volume Non-Commerce routes. For the commerce routes, 85% overall are in good or fair condition which is above the target of 80%. For non-commerce routes, 84.2 percent are good or fair, which is just below target. ITD further stratifies its pavement investments by how it measures pavement performance. Pavements are ranked by three criteria, cracking, International Roughness Index (IRI), and rutting. The three distresses are measured and all pavements scored on a composite scale of 0 to 5. ITD requires a higher condition on Interstates and arterials to be rated as “good”. Lower conditions on collectors can still be considered “good.”

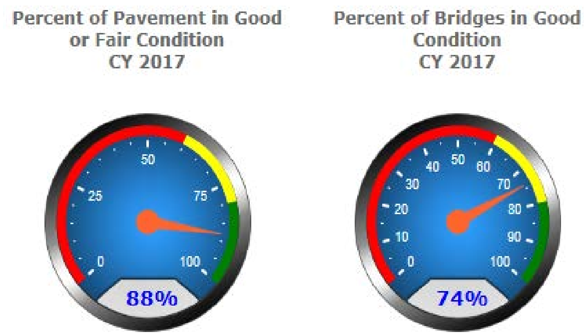


Figure 8-1: Screenshot of the Bridge and Pavement Condition Measures on the ITD Performance Dashboard

As reported in the Chapter 2, ITD’s National Highway System and Interstate Highway System conditions are much better than the Federal minimums. Table 8-2 summarizes the conditions compared to the federally allowable minimum levels. While the Federal maximum amount of poor Interstate pavement allowed is 5%, ITD has only 1.21% poor, and only 2.15% of the NHS is poor. Only 2.58% of NHS bridge deck area is poor compared to the allowable maximum of 10%.

The result of ITD’s investment strategy to prioritize treatments on the Commerce Routes has been to ensure that higher volumes routes such as those on the Interstates and NHS are maintained in a state of good repair and in much better condition than Federal minimums. This strategy has prevented any gap in Interstate conditions from occurring and will be instrumental in closing the small gap, which exist on the NHS.

Life-Cycle Planning Influence

ITD’s allocation of funds to bridge and pavements are also influenced by life-cycle planning analysis. Chapter 5 described in detail ITD’s pavement management model. The model is run annually with updated pavement condition data. Model runs produce recommended statewide and district-by-district pavement programs based upon a mix of treatments to extend the life of pavements. The amounts needed to sustain pavements are the basis for the ITD staff’s recommended pavement program funding levels that are presented to the Transportation Board.

Once funds are allocated to the districts, the districts develop their pavement programs. They base their program upon both the pavement model recommendations as well as their field observations and the need to coordinate the timing of projects with other projects on their local networks. The pavement management staff re-run the pavement model based upon the districts' projects to ensure that the program selected by the districts will meet the department's pavement targets.

Bridges are selected based upon the engineering analysis of the headquarters and the districts who jointly develop a projects list. The bridge program includes a balanced mix of bridge replacement, rehabilitation, preservation, and maintenance based upon lifecycle principles. ITD extends the life of its structures as far as economically feasible through this mix of treatments.

Life-cycle considerations are also seen in the program allocations. Specific line items are included in the ITIP to fund both pavement and bridge pavement preservation as well as bridge and pavement restoration. These funding splits provide the districts revenues specifically dedicated to preservation, which they can use to extend the life of pavements and bridges. Additionally, district maintenance crews perform regular bridge and pavement maintenance, which also extends the life of the assets.

Risk Analysis

ITD strategies are also driven by the need to reduce threats to asset conditions and the performance of the highway system. The highest ranked risks in the risk register are reflected in the investments and strategies undertaken by the department. For example, one of the highest ranked risks is that if programming decisions are dictated by the Legislature and do not reflect asset management priorities than the department may not be able to sustain adequate asset investment levels. To respond to this risk, ITD identified the need to urge legislators to continuing giving high priority to ITD's recommended investment levels for bridges and pavements.

Another highly ranked risk-mitigation strategy is to continue investing in bridge maintenance crews to ensure adequate maintenance of structures. An opportunity is the potential benefits if the department further improves its pavement management system, which it intends to do.

Several of the risks to asset conditions that were identified were ranked as low because the department is committed to asset management. For example, the risk of ITD de-emphasizing asset management was rated as low because of the widespread commitment to asset management in the department.

One long-term risk that was identified and which will be addressed is the need to develop a long-term plan for managing the department's largest structures. Although these structures generally are in good condition now, they are aging and will require significant investment over the next two decades. To respond to the risk of declining conditions among the largest structures, ITD will develop a multi-decade plan for rehabilitating or replacing its largest structures.

The previously mentioned Commerce/Non-Commerce route bifurcation also is a risk-response strategy. It was adopted specifically to reduce the risk of declining asset conditions on the highest-volume routes. It also represents a higher risk tolerance for lower conditions on the lower volume Non-Commerce routes.

Investment Strategies to Meet Bridge and Pavement Targets

The following investment strategies are noted because they result from evaluating various levels of funding to achieve State DOT targets for asset condition and system performance effectiveness at a minimum practicable cost while managing risks.

Pavement Investments

ITD retains as an investment strategy the prioritization of routes for pavement investment that are on the Commerce system and have average annual daily truck traffic in excess of 300-trucks per day. This risk-based strategy reflects the tradeoff ITD must make to balance its limited resources while also ensuring that conditions are maintained on the routes most important for freight movement, congestion relief, safety, and the preservation of the state's most expensive highway assets. Associated with this investment strategy is a pavement allocation of $829.4 million for the NHS between 2018 and 2027. This includes $155.5 million for pavement preservation on the NHS and $673.9 million for pavement restoration. These amounts are based upon ITD's projections of investment levels necessary to sustain its NHS and Interstate Highway System pavement condition targets based on life-cycle cost strategies. As discussed in Chapter 4 ITD has a process gap in that ITD does not have faith in the performance forecast beyond 5-year horizon. The foregoing investment levels are founded in firm belief in near-term 5-year horizon of the performance forecast, ITD assumed a similar system performance for the long-term 6 to 10-year horizon. Justification for this was based upon organizational knowledge of historical system performance. ITD emphasizes and acknowledges understanding that this approach is not congruent with the intent of the TAMP and that ITD will, by June 2019, have a fully compliant investment strategy developed based on revised performance curves and forecasting algorithms currently being developed.

For Non-NHS routes, ITD estimates it will allocate a total of $1.5513 billion between 2018 and 2027 for both pavement and bridge projects. The pavement program assumes that districts will apply only light treatments to the Non-Commerce Route pavements to conserve resources to sustain the Commerce routes.

Bridge Investments

ITD directs approximately 20% of its bridge funding to preservation and 80% to restoration. ITD bridge investments are driven by its bridge condition performance measure. With a consistent funding stream of $80,000,000 to the bridge programs, ITD's models indicate that a bridge condition of 80% of our bridges will be in a "State of Good Repair" around the year of 2023. In subsequent years the bridge deterioration models indicates that bridge condition will be sustainable at that level of funding. See Figure 2.4. Specifically we believe that with this level of investment in all the State System bridges, that bridges on the NHS with attain condition goals set out for them in the Poor and Good categories.

[i] U.S. Census State Area Measurements and Internal Point Coordinates, 2016
[ii] U.S. Census Table 1 Annual Estimates of Population for the United States, Regions, States, and Puerto Rico: April 1, 2010, to July 1, 2016
[iii] Idaho Department of Labor, Idaho 2015 Census Tables, County Estimates, May 19, 2016
[iv] U.S. Census American Fact Finder Median Household Income 2011-2015 Estimates
[v] Idaho Department of Labor, Top Private Businesses in Idaho
[vi] Hyer, J., Idaho Tourism Industry, 2013, for the Idaho Department of Labor,
[vii] The College of Natural Resources at the University of Idaho and the Bureau of Business and Economic Research at the University of Montana, Idaho's Forest Products Industry Current Conditions and 2015 Forecast, January 2015.
[viii] Petersen, S., Economic Impacts of Idaho Mining Association Member Firms, 2007-2012, Dec. 2016
[ix] Idaho Department of Labor, Total estimated agricultural employment by area and year, as of December 2016

Appendix A Summary of Pavement Assets

Interstate Miles		
Route Number	**Centerline Miles**	**Lane Miles**
I-15	195.74	782.95
I-84	275.57	1180.38
I-86	62.82	250.78
I-90	73.64	294.58
I-184	3.57	21.42
Total	611.34	2530.11

Non-Interstate Miles		
Route Number	Centerline Miles	Lane Miles
Local Road	183.10	387.35
SH - 128	2.35	4.70
SH - 167	0.12	0.24
SH - 19	10.83	32.92
SH - 21	3.57	8.47
SH - 33	5.07	15.87
SH - 39	3.85	9.05
SH - 41	39.05	80.26
SH - 44	23.06	60.39
SH - 45	18.28	43.85
SH - 51	3.55	11.18
SH - 53	14.04	28.08
SH - 55	134.20	318.76
SH - 60	0.01	0.02
SH - 61	0.76	1.53
SH - 67	8.95	35.80
SH - 69	8.02	32.09
SH - 8	1.79	6.79
US - 12	167.97	354.18
US - 2	46.20	101.23
US - 20	311.12	781.51
US - 26	101.64	241.36
US - 30	89.47	268.22
US - 89	43.42	92.99
US - 91	11.83	37.02
US - 93	340.94	726.92
US - 95	525.79	1,328.30
Total	2,099.00	5,009.07

Local NHS Miles		
Urban Area and Street Name	**Center-line Miles**	**Lane Miles**
Boise City - 13TH ST	0.34	0.67
Boise City - 15TH ST	0.03	0.1
Boise City - 9TH ST	0.96	1.92
Boise City - AIRPORT WAY	0.03	0.07
Boise City - AMERICANA BLVD	0.01	0.02
Boise City - AMITY RD	0.02	0.04
Boise City - BANNOCK ST	0.43	0.87
Boise City - BROADWAY AVE	0.28	0.55
Boise City - CAPITOL BLVD	1.18	3.34
Boise City - CHERRY LN	4.02	8.04
Boise City - CHINDEN BLVD	0.13	0
Boise City - CITY ST	0.23	0.46
Boise City - COLE RD	6.94	13.88
Boise City - FAIRVIEW AVE	9.49	22.69
Boise City - FEDERAL WAY	5.33	12.11
Boise City - FRANKLIN RD	10.01	20.01
Boise City - GLENWOOD	0.1	0.19
Boise City - GLENWOOD ST	0.51	1.03
Boise City - GOWEN RD	4.13	8.25
Boise City - GROVE ST	0.05	0.2
Boise City - Local Road	3.92	6.25
Boise City - MAIN ST	1.57	4.08
Boise City - MERIDIAN RD	1.76	4.02
Boise City - MERIDIAN ST	0.04	0.08
Boise City - MOUNTAIN VIEW DR	0.2	0.41
Boise City - ORCHARD ST	4.83	9.66
Boise City - OVERLAND RD	8.21	17.44
Boise City - PARK BLVD	0.34	1.3
Boise City - PARKCENTER BLVD	3.68	10.66
Boise City - STATE ST	4.73	12.15
Boise City - TEN MILE RD	2.5	4.99
Boise City - USTICK RD	6.01	12.03
Boise City - VISTA AVE	2.25	4.49
Boise City - WARM SPRINGS AVE	1.19	2.99
Coeur d'Alene - PRAIRIE AVE	4.68	0
Idaho Falls - 26	0.41	0.83
Idaho Falls - 33	0.79	1.58
Idaho Falls - 5 E	0.1	0.2
Idaho Falls - ANDERSON	0.84	1.67
Idaho Falls - HOLMES AVE	3.2	8.78
Idaho Falls - LINCOLN RD	1.5	3.53
Idaho Falls - Local Road	0.24	0.12
Idaho Falls - OLD BUTTE RD	1.62	3.24
Idaho Falls - SCIENCE CENTER DR	0.65	1.29
Idaho Falls - SUNNYSIDE RD	5.62	17.88
Nampa - 10TH ST	0.81	2.73
Nampa - 21ST AVE	0.79	2.5
Nampa - CENTENNIAL WAY	0.01	0.02
Nampa - CHERRY LN	6.47	12.95
Nampa - FARMWAY RD	2.8	5.59
Nampa - FRANKLIN BLVD	1.26	2.51
Nampa - FRANKLIN RD	4.33	8.66
Nampa - GARRITY BLVD	1.32	2.64
Nampa - KIMBALL AVE	0.06	0.12
Nampa - Local Road	1.96	5.15
Nampa - MIDDLETON RD	11.04	22.08
Nampa - NORTHSIDE BLVD	2.24	4.47
Nampa - SH 44 EXT EXT	0.62	1.24
Nampa - USTICK RD	6.59	14.7
Pocatello - BENTON ST	0.07	0.14
Pocatello - CENTER ST	2.12	4.47
Pocatello - CHUBBUCK RD	0.09	0.19
Pocatello - CLARK ST	1.46	2.93
Pocatello - LEWIS ST	0.1	0.14
Pocatello - Local Road	0.02	0
Pocatello - POCATELLO AVE	0.07	0.14
Pocatello - UNION PACIFIC AVE	0.07	0.14
Rural - 400	0.12	0.23
Rural - 41 MAIN	0.07	0
Rural - BRIDGE ST	0.11	0.23
Rural - MULLAN AVE	0.48	0.96
Rural - SILVER VALLEY RD	1.33	2.66

Rural - TERROR GULCH RD	0.08	0.15
Rural - YELLOWSTONE AVE	0.66	1.32
Rural - YELLOWSTONE HWY	1.52	3.04
Rural - 26	0.09	0.18
Rural - 400	0.01	0.02
Rural - 65 S	2.45	4.28
Rural - 91 MAIN	0.08	0.16
Rural - AVALON ST	0	0
Rural - BLASER RD	0.08	0.15
Rural - CAN ADA RD	1.91	3.83
Rural - CHERRY LN	0.64	1.28
Rural - FARMWAY RD	1.73	3.47
Rural - FRANKLIN RD	2.33	4.66
Rural - GARRITY BLVD	1.1	2.19
Rural - Local Road	0.47	0.93
Rural - NORTHSIDE BLVD	2.01	4.02
Rural - PRAIRIE AVE	0.08	0.16
Rural - REXBURG CONNECTOR	0.16	0.64
Rural - SALEM RD	1.32	5.27
Rural - SILVER VALLEY RD	1.28	2.55
Rural - TEN MILE RD	2.91	5.82
Rural - TERROR GULCH RD	0.03	0.06
Rural - UNIVERSITY BLVD	0.31	0.65
Rural - UNIVERSITY DR	0.55	1.1
Rural - USTICK RD	5.22	10.43
Rural - YELLOWSTONE AVE	0.13	0.26
Small Urban - 2 MAIN	0.23	0.46
Small Urban - 2ND ST	1.47	2.69
Small Urban - 4TH & 2ND ROUNDABOUT	0.08	0.16
Small Urban - 4TH ST	0.15	0
Small Urban - AVALON ST	0.19	0.38
Small Urban - CONNECTOR	0	0.01
Small Urban - Local Road	0.01	0.02
Small Urban - SALEM RD	0.31	1.25
Small Urban - TEN MILE RD	1.58	3.16
Small Urban - UNIVERSITY BLVD	0.11	0.23
Small Urban - UNIVERSITY DR	0.35	0.7
Total	183.1	387.35

Appendix B Summary of NHS Bridge Assets

Local NHS Bridges

BRKEY	ROUTE	MILE-POST	FEATURES	COUNTY	LENGTH	SQFT
12100	STP 6710;YORK RD	001.281	SNAKE RIVER	Bonneville	812.007874	26552
12760	STP 7343;FAIRVIEW	047.500	BOISE RIVER	Ada	382.0013123	14478
12765	STP 7343;FAIRVIEW	047.501	BOISE RIVER	Ada	377.9986877	14440
12770	STP 7343;MAIN ST	077.741	BOISE RIVER SLOUGH	Ada	26.00065617	4155
12775	STP 7343;MAIN ST	047.301	BOISE RIVER	Ada	283.9993438	16614
14730	NORTHSIDE BLVD	018.366	UPRR;NAMPA RR.OVERPASS	Canyon	430.1181102	31992
14735	NORTHSIDE BLVD	018.789	INDIAN CREEK	Canyon	23.95013123	1930
19715	STP8213; MIDDLETON	002.482	CALDWELL HIGHLINE CANAL	Canyon	23.99934383	1574
19721	STC 3750;MIDDLETON	005.617	FIFTEEN MILE CREEK	Canyon	92.00131234	4885
19726	STC 3750;MIDDLETON	005.784	BOISE RIVER	Canyon	432.9986877	22992
19735	SMA 8523;CHERRY LN	005.274	PHYLLIS CANAL	Canyon	34.12073491	1632
19740	SMA 7343;CHERRY LN	007.797	TEN MILE CREEK	Ada	22.99868766	929
19761	SMA 9183;TEN MILE	109.603	RIDENBAUGH CANAL	Ada	33.99934383	2958
19763	STP 9183;TEN MILE	109.826	TASA DRIVE	Ada	100	10920
19768	STP 9183;TEN MILE	110.061	FUTURE NORTH CROSSING	Ada	100	11120
19836	SMA 7563;OVERLAND	003.033	RIDENBAUGH CANAL	Ada	31.00065617	2372
19838	STP 7563;OVERLAND	008.202	RIDENBAUGH CANAL	Ada	23.99934383	2004
21235	STP7046;LINCOLN RD	001.975	IDAHO CANAL	Bonneville	75.1312336	6338
21240	STP 7220;STATE ST	023.810	FARMERS UNION CANAL	Ada	48.99934383	4420
21250	STP 7073;COLE RD	001.187	RIDENBAUGH CANAL;COLE GS	Ada	32.15223097	3834
21436	SMA7316;HOLMES AVE	002.340	IDAHO CANAL	Bonneville	52.24081365	7171
21440	SMA7316;HOLMES AVE	003.163	IDAHO CANAL	Bonneville	49.01574803	2940
21445	NHS 7553;CAPITOL	049.352	BOISE RIVER	Ada	302.9986877	19150
21451	SMA7553;FEDERAL WY	050.292	RIDENBAUGH CANAL	Ada	47.99868766	2554
21526	STP 7403;FRANKLIN	001.158	RIDENBAUGH CANAL	Ada	33.99934383	2655
21595	NHS 7433;VISTA AVE	000.283	NEW YORK CANAL	Ada	81.03674541	6205
21600	NHS 7433;VISTA AVE	009.650	RIDENBAUGH CANAL	Ada	37.07349081	2942
21621	STP 7446;SUNNYSIDE	000.555	BUTTE ARM CANAL	Bonneville	27.99868766	2822
21626	STP 7446;SUNNYSIDE	001.836	IDAHO CANAL	Bonneville	35	3318
21631	STP 7446;SUNNYSIDE	003.549	SAND CREEK	Bonneville	43.99934383	4770
21655	NHS 7183;9TH ST	001.008	BOISE RIVER	Ada	311.0006562	19997
21670	SMA7553;FEDERAL WY	002.533	NEW YORK CANAL	Ada	146.0006562	11359
21725	NHM 7683;GOWEN RD	005.291	UPRR;GOWEN ROAD BR.	Ada	151.9028871	4894
21740	STP7713;FARMWAY RD	000.252	PHYLLIS CANAL	Canyon	25.91863517	1347
21760	STP 7773;10TH AVE	049.770	CITY ST;UPRR;CALDWELL OP	Canyon	959.9737533	61056
21765	STP 7773;10TH AVE	050.006	INDIAN CREEK	Canyon	36.08923885	2884
21776	STP7933;FRANKLIN R	000.740	NOTUS CANAL	Canyon	21.00065617	1533
21806	STP 7933;21ST AVE	000.321	INDIAN CREEK	Canyon	51.00065617	4106
21815	STP 7983;USTICK RD	003.249	NOTUS CANAL	Canyon	81.03674541	2325
21865	STP8393;FRANKLIN B	000.194	PHYLLIS CANAL	Canyon	29.85564304	1977
21870	STP8393;FRANKLIN B	000.522	PHYLLIS CANAL	Canyon	29.85564304	1977
21875	STP8393;FRANKLIN B	000.766	PHYLLIS CANAL	Canyon	29.85564304	1977
21890	SMA 7563;OVERLAND	000.039	TEN MILE CREEK	Ada	26.00065617	2262
25995	SMA 7403;FRANKLIN	004.378	TEN MILE CREEK	Ada	45	4536
25998	STC 3856; FRANKLIN	007.224	FIVE MILE CREEK	Ada	22.00131234	2244
26060	STP 8973;ORCHARD	003.296	SETTLERS CANAL 35/36 ST.	Ada	204.0682415	14382
26071	SMA 7073; S. COLE	013.518	NEW YORK CANAL	Ada	106.0006562	8533
26091	SMA 8963;EAGLE RD	035.393	RIDENBAUGH CANAL	Ada	37.99868766	3344

26096	SMA 7143;USTICK RD	104.903	FIVE MILE CREEK	Ada	22.99868766	2013
26865	SMA8133;HWY 44 EXT	000.423	NOTUS CANAL	Canyon	23.95013123	768
26945	SMA8513;ID CNTR RD	100.689	PHYLLIS CANAL	Canyon	27.00131234	2722
26965	SMA 8213;MIDDLE-TON	004.135	ELIJA DRAIN	Canyon	60.039	2412
27300	SMA 3757;NORTHSIDE	003.864	HIGH LINE CANAL	Canyon	25.91863517	692
27320	SMA 3757;NORTHSIDE	003.873	FIFTEEN MILE CREEK	Canyon	51.83727034	1383
27510	STC 3799;USTICK RD	100.045	PHYLLIS CANAL	Canyon	45.93175853	1375
31145	STP8031;OLD BUTTE	000.937	LATERAL CANAL	Bonneville	22.00131234	664
33985	STP7243;E PARK CTR	004.324	LOGGERS CREEK	Ada	36.00065617	2124
33990	STP7243;E PARK CTR	004.344	BOISE RIVER	Ada	458.9993438	34884
33995	STP7243;E PARK CTR	004.613	WALLING DITCH	Ada	103.9993438	7904

State NHS

BRKEY	ROUTE	MILE-POST	FEATURES	COUNTY	LENGTH	SQFT
10000	US 2	000.125	PEND OREILLE R;OLDTOWN B	Bonner	1237.001	83869
10010	US 2	006.828	PRIEST RIVER	Bonner	352.001	13094
10015	US 2	018.237	JOHNSON CREEK	Bonner	143.999	5328
10027	US 2	025.534	BNSF RR (DOVER BRIDGE)	Bonner	1218.999	93497
10030	US 2	069.980	UPRR;MOYIE SPRINGS OP	Boundary	145	4959
10035	US 2	070.054	MOYIE R.GORGE;MOYIE BR.	Boundary	1223	41582
10360	US 12	000.000	US 12;SNAKE RIVER	Nez Perce	1424	68494
10375	US 12	001.940	CLEARWATER RIVER;BNRR	Nez Perce	1352.001312	83824
10385	US 12	013.897	APRROACH RD;CATHOLIC CR.	Nez Perce	131.89	5650
10390	US 12	014.960	CLWATER R.;NPRR;ARROW BR	Nez Perce	1248.031	54662
10396	US 12	019.187	COTTONWOOD CREEK	Nez Perce	91.00065617	4186
10405	US 12	034.907	BIG CANYON CREEK	Nez Perce	120	5496
10426	US 12	066.746	CLEARWATER R.(KAMIAH BR)	Lewis	672.0013123	32189
10458	US 12	104.995	GLADE CREEK	Idaho	44	1584
10460	US 12	106.633	DEADMAN CREEK	Idaho	84.97375328	2746
10466	US 12	109.946	BIMERICK CREEK	Idaho	48	1632
10470	US 12	120.098	FISH CREEK	Idaho	107.0013123	3274
10500	US 12	144.745	POST OFFICE CREEK	Idaho	75	2400
10505	US 12	153.808	WAWAALAMNIME CREEK	Idaho	80	2400
10510	US 12	159.394	IMNAMATNOON CREEK	Idaho	94	2867
10515	US 12	169.681	CROOKED FK.CLEARWATER R.	Idaho	290.026	9280
10590	I 86 WBL	000.000	I 84 WB-EB;SALT LAKE IC	Cassia	229	7901
10600	I 86 EBL	000.010	I 84 WB-EB;SALT LAKE IC	Cassia	229	7901
10615	I 86 EBL	006.430	FARM RD;MACHINE PASS GS	Cassia	26.00065617	1248
10620	I 86 WBL	006.440	FARM RD;MACHINE PASS GS	Cassia	23.99934383	1152
10635	I 86 EBL	013.777	COUNTY RD;OLD US 30N GS	Cassia	107.9396325	4320
10640	I 86 WBL	013.778	COUNTY RD;OLD US 30N GS	Cassia	107.9396325	4320
10645	I 86 EBL	014.320	RAFT RIVER	Cassia	51.83727034	2080
10650	I 86 WBL	014.330	RAFT RIVER	Cassia	51.83727034	2215
10655	I 86 EBL	014.797	YALE ROAD;RAFT RIVER IC	Cassia	107.9396325	4320
10660	I 86 WBL	014.798	YALE ROAD;RAFT RIVER IC	Cassia	107.9396325	4320
10665	I 86 WBL & EBL	018.840	CALLS ROAD GS	Power	23.99934383	4944
10675	I 86 & RAMPS	020.789	LANES GULCH	Power	26.903	4428
10680	I 86 EBL	022.440	FALL CREEK	Power	102.0341207	4457
10685	I 86 WBL	022.450	FALL CREEK	Power	102.0341207	4457
10695	I 86 EBL	025.340	DAIRY CANYON;FRONTAGE RD	Power	118.11	5157
10700	I 86 WBL	025.350	DAIRY CANYON;FRONTAGE RD	Power	118.11	5157
10705	I 86 EBL	026.490	ROCK CR;MASSACRE ROCK BR	Power	178.15	7921
10710	I 86 WBL	026.491	ROCK CR;MASSACRE ROCK BR	Power	168.963	6895
10735	I 86 WBL & EBL	031.983	CANNELL LN;MACHINE PASS	Power	23.99934383	4464
10750	I 86 EBL	033.988	WARM CREEK ROAD GS	Power	129.9212598	5668
10755	I 86 WBL	033.989	WARM CREEK ROAD GS	Power	129.9212598	5668
10765	I 86 EBL	038.581	SUNBEAM ROAD GS	Power	107.9396325	4320
10770	I 86 WBL	038.582	SUNBEAM ROAD GS	Power	107.9396325	4320
10775	I 86 EBL	039.283	PRIVATE RD.;MACHINE PASS	Power	23.99934383	1200
10780	I 86 WBL	039.284	PRIVATE RD.;MACHINE PASS	Power	23.99934383	1200
10790	I 86 EBL	041.323	KOPP ROAD GS	Power	23.99934383	1205
10795	I 86 WBL	041.324	KOPP ROAD GS	Power	23.99934383	1205
10800	I 86 EBL	042.498	LEYSHON ROAD GS	Power	23.99934383	1205
10805	I 86 WBL	042.499	LEYSHON ROAD GS	Power	23.99934383	1205
10810	I 86 EBL	044.316	CO.RD.;SEAGULL BAY IC	Power	111.8766404	4480
10815	I 86 WBL	044.317	CO.RD.;SEAGULL BAY IC	Power	111.8766404	4480

10820	I 86 EBL	044.610	UPRR;IGO OVERPASS	Power	255.906	8883
10825	I 86 WBL	044.611	UPRR;IGO OVERPASS	Power	255.906	8883
10835	I 86 EBL	051.992	BANNOCK CREEK	Power	82.00131234	3583
10840	I 86 WBL	052.000	BANNOCK CREEK	Power	82.00131234	3583
10850	I 86 EBL	055.127	UPRR;POCATELLO AIRPORT	Power	170.9317585	6891
10855	I 86 WBL	055.128	UPRR;POCATELLO AIRPORT	Power	170.9317585	6891
10870	I 86 EBL	058.498	PORTNEUF RIVER	Power	96.12860892	3869
10875	I 86 WBL	058.499	PORTNEUF RIVER	Power	96.12860892	3869
10885	I 86 EBL	060.761	SMA 7031;HAWTHORNE RD.GS	Bannock	123.031	4957
10890	I 86 WBL	060.762	SMA 7031;HAWTHORNE RD.GS	Bannock	123.0314961	4957
10900	I 86 EBL	061.639	UPRR;CHUBBUCK OVERPASS	Bannock	169.948	9044
10905	I 86 WBL	061.640	UPRR;CHUBBUCK OVERPASS	Bannock	169.948	6800
10911	I 86 EBL	062.032	HILINE ROAD GS	Bannock	111.001	6882
10916	I 86 WBL	062.033	HILINE ROAD GS	Bannock	111.001	6882
10955	I 15 NBL	002.534	STC 1702;WOODRUFF RD.IC	Oneida	136.155	5930
10965	I 15 SBL	002.535	STC 1702;WOODRUFF RD.IC	Oneida	136.155	5930
10970	I 15 NBL	006.113	SAMARIA ROAD GS	Oneida	112.861	4927
10975	I 15 SBL	006.114	SAMARIA ROAD GS	Oneida	112.861	4927
10980	I 15 NBL & SBL	008.582	FOUR MILE CREEK RD GS	Oneida	20	4680
10990	I 15 NBL	011.321	TWO MILE RD.GS	Oneida	122.047	5319
10995	I 15 SBL	011.322	TWO MILE RD.GS	Oneida	122.047	5319
11000	I 15 NBL	012.833	SH 38;MALAD CITY IC	Oneida	130.906	5712
11005	I 15 SBL	012.834	SH 38;MALAD CITY IC	Oneida	130.9055118	5712
11025	I 15 NBL	021.485	COLTON LANE RD.IC	Oneida	126.9685039	5537
11030	I 15 SBL	021.483	COLTON LANE RD.IC	Oneida	126.9685039	5537
11035	I 15 NBL	023.326	BISSELL LANE RD.GS	Oneida	125.984252	5494
11040	I 15 SBL	023.325	BISSELL LANE RD.GS	Oneida	125.984252	5494
11050	I 15 NBL	026.919	MARSH VALLEY ROAD	Bannock	126.9685039	5537
11055	I 15 SBL	026.92	MARSH VALLEY ROAD	Bannock	126.969	5537
11060	I 15 NBL	029.528	WOODLAND RD.GS	Bannock	139.108	6060
11065	I 15 SBL	029.529	WOODLAND RD.GS	Bannock	139.108	6060
11070	I 15 NBL & SBL	030.265	MARSH CREEK	Bannock	43.963	5007
11075	I 15 NBL	030.869	SH 40;DOWNEY IC	Bannock	162.073	7063
11080	I 15 SBL	030.870	SH 40;DOWNEY IC	Bannock	162.073	7063
11100	I 15 NBL	040.425	STC 1755;ARIMO RD.IC	Bannock	133.8582677	5226
11105	I 15 SBL	040.426	STC 1755;ARIMO RD.IC	Bannock	133.8582677	5226
11120	I 15 NBL	045.798	ROBIN RD GS	Bannock	134.843	5319
11125	I 15 SBL	045.799	ROBIN RD GS	Bannock	134.8425197	5319
11135	I 15 NBL	055.644	PORTNEUF RIVER	Bannock	150.9186352	6040
11140	I 15 SBL	055.646	PORTNEUF RIVER	Bannock	150.9186352	6040
11145	I 15 NBL	055.949	STC 1758;UPRR;INKOM OP	Bannock	389.1076115	13498
11150	I 15 SBL	055.950	STC 1758;UPRR;INKOM OP	Bannock	398.9501312	13845
11155	I 15 NBL	056.665	I 15B;S.INKOM IC	Bannock	113.8451444	4560
11160	I 15 SBL	056.666	I 15B;S.INKOM IC	Bannock	113.8451444	4560
11165	I 15 NBL	057.055	RAPID CREEK;INKOM	Bannock	150.9186352	6040
11170	I 15 SBL	057.056	RAPID CREEK;INKOM	Bannock	150.9186352	6040
11175	I 15 NBL	057.185	MAIN STREET GS	Bannock	124.015748	4960
11180	I 15 SBL	057.186	MAIN STREET GS	Bannock	124.015748	4960
11185	I 15 NBL	057.684	I 15B;W.INKOM IC	Bannock	113.8451444	4560
11190	I 15 SBL	057.685	I 15B;W.INKOM IC	Bannock	113.8451444	4560
11195	I 15 NBL	061.704	BLACKROCK RD.GS	Bannock	27.99868766	1285
11200	I 15 SBL	061.705	BLACKROCK RD.GS	Bannock	27.99868766	1285
11205	I 15 NBL	062.950	STC 1762;PORTNEUF RD IC	Bannock	165.0262467	6600
11210	I 15 SBL	062.951	STC 1762;PORTNEUF RD IC	Bannock	165.0262467	6600
11225	I 15 NBL	066.774	I 15B;S.POCATELLO IC	Bannock	280.84	9301
11230	I 15 SBL	066.775	I 15B;S.POCATELLO IC	Bannock	280.84	9301

11235	I 15 NBL	067.667	BARTON RD.GS	Bannock	109.908	4334
11240	I 15 SBL	067.668	BARTON RD.GS	Bannock	109.908	4334
11245	I 15 NBL	068.799	SMA 7461;E. TERRY ST	Bannock	151.903	5989
11250	I 15 SBL	068.800	SMA 7461;E. TERRY ST	Bannock	151.903	5989
11256	I 15 NBL	069.366	STP 7341; CENTER ST. IC.	Bannock	137.9986877	8556
11261	I 15 SBL	069.367	STP 7341; CENTER ST. IC.	Bannock	137.9986877	8556
11271	I 15 NBL	070.977	I 15B;POCATELLO CREEK IC	Bannock	147.9986877	9028
11276	I 15 SBL	070.978	I 15B;POCATELLO CREEK IC	Bannock	147.9986877	9028
11280	I 15 SBL	072.036	I 86 WB RAMP	Bannock	215.8792651	8640
11285	I 15 SBL	072.183	I 86 EB RAMP	Bannock	229.0026247	9160
11305	I 15 NBL	076.227	PRIVATE RD.;MACHINE PASS	Bannock	23.99934383	1152
11310	I 15 SBL	076.226	PRIVATE RD.;MACHINE PASS	Bannock	23.99934383	1152
11315	I 15 NBL	077.597	PRIVATE RD.;MACHINE PASS	Bannock	23.99934383	1152
11320	I 15 SBL	077.598	PRIVATE RD.;MACHINE PASS	Bannock	23.99934383	1152
11335	I 15 NBL	079.227	FORT HALL MAIN CANAL	Bannock	111.8766404	4502
11340	I 15 SBL	079.228	FORT HALL MAIN CANAL	Bannock	111.8766404	4480
11415	I 15 NBL	087.066	GIBSON CANAL	Bingham	20.997	1012
11420	I 15 SBL	087.067	GIBSON CANAL	Bingham	20.997	985
11440	I 15 SBL	088.763	I15B;UPRR;S.BLACKFOOT IC	Bingham	392.06	13602
11445	I 15 NBL	088.764	I15B;UPRR;S.BLACKFOOT IC	Bingham	392.06	13602
11450	I 15 NBL	090.341	BLACKFOOT RIVER	Bingham	154.855643	6200
11455	I 15 SBL	090.342	BLACKFOOT RIVER	Bingham	154.855643	6200
11465	I 15 NBL	092.259	W.BRIDGE ST.GS;UPRR OP	Bingham	298.8845144	11960
11470	I 15 SBL	092.260	W.BRIDGE ST.GS;UPRR OP	Bingham	257.874	10320
11475	I 15 NBL	092.515	US 26;WEST BLACKFOOT IC	Bingham	157.152231	6280
11480	I 15 SBL	092.516	US 26;WEST BLACKFOOT IC	Bingham	157.152231	6280
11486	I 15 NBL	094.349	SNAKE RIVER;BLACKFOOT BR	Bingham	831.0006562	46785
11491	I 15 SBL	094.350	SNAKE RIVER;BLACKFOOT BR	Bingham	831.003937	35982
11495	I 15 NBL	094.565	DANSKIN CANAL	Bingham	89.89501312	3618
11500	I 15 SBL	094.566	DANSKIN CANAL	Bingham	89.89501312	3618
11510	I 15 NBL	095.010	RIVERSIDE CANAL	Bingham	32.00131234	1536
11515	I 15 SBL	095.011	RIVERSIDE CANAL	Bingham	32.00131234	1536
11520	I 15 NBL	095.779	RIVERSIDE CANAL	Bingham	25	1198
11525	I 15 SBL	095.780	RIVERSIDE CANAL	Bingham	25	1198
11535	I 15 NBL	097.323	RIVERSIDE CANAL	Bingham	37.07349081	1480
11540	I 15 SBL	097.324	RIVERSIDE CANAL	Bingham	37.07349081	1480
11550	I 15 NBL	098.275	ABERDEEN SPRINGFIELD CNL	Bingham	120.079	4848
11555	I 15 SBL	098.276	ABERDEEN SPRINGFIELD CNL	Bingham	120.079	4848
11560	I 15 NBL	098.313	PEOPLES CANAL	Bingham	80.052	3232
11565	I 15 SBL	098.314	PEOPLES CANAL	Bingham	80.052	3232
11580	I 15 NBL	099.405	LAVA SIDE CANAL	Bingham	21.001	1012
11585	I 15 SBL	099.406	LAVA SIDE CANAL	Bingham	21.001	1012
11615	I 15 NBL	108.394	GREAT WESTERN CANAL	Bingham	22.96587927	1109
11620	I 15 SBL	108.395	GREAT WESTERN CANAL	Bingham	22.96587927	1109
11690	I 15 SBL	115.817	SIDEHILL CANAL	Bonneville	32.00131234	1533
11695	I 15 NBL	115.818	SIDEHILL CANAL	Bonneville	32.00131234	1533
11705	I 15 NBL	116.500	PORTER CANAL	Bonneville	26.00065617	1245
11710	I 15 SBL	116.501	PORTER CANAL	Bonneville	26.00065617	1245
11720	I 15 NBL	118.532	I 15B;BROADWAY ST.IC	Bonneville	174.869	7000
11725	I 15 SBL	118.533	I 15B;BROADWAY ST.IC	Bonneville	174.869	8365
11740	I 15 SBL	122.554	GREAT WESTERN CANAL	Bonneville	80.052	3200
11745	I 15 NBL	122.555	GREAT WESTERN CANAL	Bonneville	80.052	3200
11800	I 15 NBL	127.528	STC 6731;BASSETT RD.IC	Bonneville	107.94	4320
11805	I 15 SBL	127.529	STC 6731;BASSETT RD.IC	Bonneville	107.94	4320
11810	I 15 NBL	129.962	BUTTE MARKET LAKE CANAL	Jefferson	41.995	1709
11815	I 15 SBL	129.963	BUTTE MARKET LAKE CANAL	Jefferson	41.995	1709
11830	I 15 NBL	134.311	MARKET LAKE CANAL	Jefferson	51.83727034	2116

11835	I 15 SBL	134.312	MARKET LAKE CANAL	Jefferson	51.83727034	2335
11885	I 15 NBL	154.181	CAMAS CREEK	Jefferson	32.152	1472
11890	I 15 SBL	154.182	CAMAS CREEK	Jefferson	30	1308
11895	I 15 SBL	154.488	BEAVER CREEK	Jefferson	39.042	1704
11900	I 15 NBL	154.489	BEAVER CREEK	Jefferson	39.042	1790
11915	I 15	159.180	BEAVER CREEK	Clark	22.00131234	4446
11920	I 15 NBL & SBL	163.436	BEAVER CREEK;S.DUBOIS BR	Clark	27.99868766	5659
11930	I 15 NBL	170.692	BEAVER CREEK	Clark	62.99212598	2898
11931	I 15 SBL	170.693	BEAVER CREEK	Clark	65.94488189	2884
11940	I 15	178.623	FRONTAGE ROAD	Clark	27.99868766	4987
11945	I 15 NBL	180.410	SPENCER ROAD IC	Clark	113.8451444	4640
11950	I 15 SBL	180.411	SPENCER ROAD IC	Clark	113.8451444	4640
11960	I 15	183.359	BEAVER CREEK	Clark	34	6868
11965	I 15 NBL	184.414	CO.RD.;STODDARD CREEK IC	Clark	106.9553806	4366
11970	I 15 SBL	184.415	CO.RD.;STODDARD CREEK IC	Clark	106.9553806	4366
11975	I 15	187.129	FRONTAGE ROAD GS	Clark	27.99868766	6121
11985	I 15 NBL	189.866	HUMPHREY ROAD IC	Clark	113.845	5985
11986	I 15 SBL	189.867	HUMPHREY ROAD IC	Clark	85.958	3758
12015	US 30	359.645	PORTNEUF RIVER;MCCAM-MON	Bannock	207.021	15732
12020	US 30	359.597	UPRR;N.MCCAMMON OP	Bannock	186.024	14136
12026	I 15B;MERRILL ROAD	004.235	I 15;N. MCCAMMON IC	Bannock	272.0013123	17408
12090	I 15B ;US 91	002.473	BLACKFOOT RIVER	Bingham	105.971	5183
12096	STP 6710;YORK RD	001.079	I 15 SB-NB;N. SHELLEY IC	Bonneville	245.079	13034
12105	I 15B ;BROADWAY ST	006.589	SNAKE RIVER;BROADWAY ST.	Bonneville	287.073	30594
12110	I 15B ;BROADWAY ST	006.752	PORTER CANAL	Bonneville	23.999	2496
12175	SH 19	009.700	GOLDEN GATE CANAL	Canyon	30	3300
12180	I 84B;CENTENNIAL W	000.208	UPRR;INDIAN CR;CALDWELL	Canyon	285.105	23855
12185	I 84B	000.861	I 84;NW CALDWELL IC	Canyon	227.0341207	19000
12190	I 84B	020.230	OLD INDIAN CREEK CHANNEL	Canyon	39.04199475	3124
12195	I 84B	020.320	OLD INDIAN CREEK CHANNEL	Canyon	61.02362205	5984
12215	US 20	021.954	FARMERS COOP CANAL	Canyon	144.0288714	6048
12220	US 20	022.062	I 84 EB-WB;PARMA IC	Canyon	211.9422572	6614
12226	US 20; FRANKLIN RD	024.886	I 84;FRANKLIN RD IC	Canyon	336	34776
12240	US 20	027.467	MASON DRAIN DITCH	Canyon	25	1345
12245	US 20	029.069	TEN MILE CREEK	Canyon	25	1345
12250	US 20	029.495	HIGH LINE CANAL	Canyon	22.00131234	1184
12255	US 20	033.117	PHYLLIS CANAL	Ada	42.97900262	4304
12263	US 20 WBL & EBL	047.570	BOISE RIVER	Ada	597.1128609	73431
12264	US 20 WBL & EBL	047.820	SMA 9083;27TH STREET	Ada	87	9648
12271	US 20; I 84B	049.924	BOISE RIVER;BROADWAY BR	Ada	472	51118
12275	US 20 ;I 84B	051.950	RIDENBAUGH CANAL	Ada	45	5490
12285	US 20	052.539	UPRR;NEW YORK CANAL	Ada	301.8372703	25277
12291	US 20	052.719	I 84 EB-WB;BROADWAY IC	Ada	167	33400
12295	US 20	302.758	OAKLAND WASTE DITCH	Bonneville	21.9816273	1650
12310	US 20	307.555	I 15 NB-SB;JOHNS HOLE IC	Bonneville	195.866	13426
12315	US 20	307.650	EASTERN IDAHO RAILROAD	Bonneville	145.0131234	9657
12320	US 20 WBL & EBL	307.690	SMA 7076;LINDSAY BLVD.IC	Bonneville	117.1259843	7792
12330	US 20	307.817	PORTER CANAL	Bonneville	35	4687
12335	US 20 EBL & WBL	307.894	SNAKE R.;JOHN'S HOLE BR.	Bonneville	179.134	16396
12340	US 20	308.120	SMA 7096;RIVERSIDE DR.IC	Bonneville	160.1049869	12704
12345	US 20 EBL	308.677	S7046;RR;SCIENCE CTR IC	Bonneville	253.9370079	11100
12350	US 20 WBL	308.678	S7046;RR;SCIENCE CTR IC	Bonneville	253.937	11074
12355	US 20 EBL	309.853	US 20B;LEWISVILLE RD IC	Bonneville	187.008	8172
12360	US 20 WBL	309.860	US 20B;LEWISVILLE RD IC	Bonneville	187.008	8172
12365	US 20 EBL & RAMP	310.172	IDAHO CANAL	Bonneville	82.02099738	4813
12370	US 20 WBL	310.173	IDAHO CANAL	Bonneville	81.03674541	3532

12373	US 20 EBL	311.338	STC 6708; ST LEON RD IC	Bonneville	111.0006562	4806
12374	US 20 WBL	311.339	STC 6708; ST LEON RD IC	Bonneville	111.0006562	4806
12375	US 20	311.750	WILLOW CREEK	Bonneville	22.00131234	4825
12380	US 20	312.479	ANDERSON CANAL	Bonneville	23.99934383	2568
12383	US 20 EBL	313.462	STC 6706; HITT RD IC	Bonneville	116.001	5023
12384	US 20 WBL	313.463	STC 6706; HITT RD IC	Bonneville	116.001	5023
12385	US 20 WBL	313.959	RIRIE OUTLET CHANNEL	Bonneville	57.999	2529
12390	US 20 EBL	313.960	RIRIE OUTLET CHANNEL	Bonneville	57.999	2529
12395	US 20	314.200	SAGE CANAL	Bonneville	21.00065617	2247
12400	US 20 EBL	315.226	SH 43;W BELT BRIDGE IC	Bonneville	233.924	10226
12405	US 20 WBL	315.227	SH 43;W BELT BRIDGE IC	Bonneville	234.9081365	10293
12413	US 20 EBL	317.899	COUNTY LINE ROAD IC	Bonneville	126.0006562	5456
12414	US 20 WBL	317.893	COUNTY LINE ROAD IC	Bonneville	126.0006562	5456
12420	US 20	320.060	GARFIELD UCON CANAL	Jefferson	21.00065617	3148
12435	US 20	320.851	BURGESS CANAL	Jefferson	91.864	8243
12440	US 20 EB-WB	321.320	SH 48;RIGBY GS	Jefferson	146.982	13186
12455	US 20 EBL & WBL	322.837	PARKS LEWISVILLE CANAL	Jefferson	31.00065617	4638
12465	US 20 EBL	323.565	SNAKE RIVER DRY BED CNL	Jefferson	71.85	3146
12470	US 20 WBL	323.575	SNAKE RIVER DRY BED CNL	Jefferson	71.85	3146
12480	US 20 EBL	325.019	MENAN CANAL	Jefferson	43.96325459	1918
12485	US 20 WBL	325.020	MENAN CANAL	Jefferson	43.96325459	1918
12487	US 20 EBL	325.572	MENAN-LORENZO RD IC	Jefferson	102.0013123	4488
12489	US 20 WBL	325.574	MENAN-LORENZO RD IC	Jefferson	102.0013123	4488
12495	US 20 EBL	326.200	SNAKE RIVER;LORENZO BR.	Jefferson	639.108	28499
12500	US 20 WBL	326.201	SNAKE RIVER;LORENZO BR.	Jefferson	642.06	28633
12515	US 20 EBL	328.067	TEXAS SLOUGH	Madison	63.97637795	2797
12520	US 20 WBL	328.068	TEXAS SLOUGH	Madison	63.97637795	2797
12530	US 20 EBL	331.923	STP 7726;S.REXBURG IC	Madison	157.152	6861
12535	US 20 WBL	331.924	STP 7726;S.REXBURG IC	Madison	157.152	6861
12550	US 20 EBL	333.420	SH 33;REXBURG IC	Madison	157.152	6861
12555	US 20 WBL	333.421	SH 33;REXBURG IC	Madison	157.152	6861
12560	US 20 WBL	334.349	S.FK.TETON RIVER	Madison	179	7822
12565	US 20 EBL	334.350	S.FK.TETON RIVER	Madison	179	7822
12585	US 20 WBL	339.405	N.FK.TETON RIVER	Madison	101.05	4404
12590	US 20 EBL	339.406	N.FK.TETON RIVER	Madison	101.05	4404
12600	US 20 EBL & WBL	344.245	SALEM UNION CANAL	Fremont	27.99868766	3186
12605	US 20	344.503	2290 E	Fremont	23.99934383	2729
12615	US 20 EBL & WBL	347.022	SALEM UNION CANAL	Fremont	37.99868766	2774
12620	US 20 EBL & WBL	347.038	TWIN GROVES CANAL	Fremont	28.99934383	4434
12625	US 20 EBL & WBL	347.349	FARMERS FRIEND CANAL	Fremont	33.999	5195
12630	US 20 WBL & EBL	347.838	N.BR.FALL RIVER CANAL	Fremont	22.00131234	3544
12645	US 20 WBL & EBL	350.701	S.FK.FALL RIVER CANAL	Fremont	76.115	8702
12650	US 20 WBL	352.066	FALL RIVER CANAL	Fremont	32.15223097	1398
12654	US 20 EBL	352.067	FALL RIVER CANAL	Fremont	33.13648294	1429
12665	US 20	354.049	FALL RIVER	Fremont	113.845	4788
12671	US 20	363.370	HENRY'S FK. SNAKE RIVER	Fremont	457.999	34808
12676	US 20	379.144	HENRY'S FK. SNAKE RIVER	Fremont	255	10532
12680	US 20	387.030	BUFFALO RIVER;PONDS BR.	Fremont	180.118	10800
12685	US 20	392.764	HENRY'S FK. SNAKE RIVER	Fremont	180.118	10800
12690	US 20	398.756	HENRY'S LAKE OUTLET	Fremont	60.03937008	2754
12773	US 20 EBL	048.280	AMERICANA BLVD;15TH ST.	Ada	540.0262467	30294
12774	US 20 WBL	048.380	AMERICANA BLVD;15TH ST.	Ada	540.0262467	30294
13150	US 93	167.538	MILNER GOODING CANAL	Lincoln	76.11548556	3002
13155	US 93	177.638	LITTLE WOOD RIVER	Lincoln	54	2160
13160	US 93	182.816	JIMMY BYRNES SLOUGH	Lincoln	34.33070866	1156
13165	US 93	198.270	SILVER CREEK	Blaine	46.916	1880
13170	US 93	199.280	LITTLE WOOD RIVER	Blaine	70.86614173	2840

13175	US 93	200.060	LITTLE WOOD RIVER	Blaine	64.96062992	2600
13180	US 93	200.900	LITTLE WOOD RIVER	Blaine	41.01049869	1640
13185	US 93	204.382	LITTLE WOOD RIVER	Blaine	40.02624672	2400
13190	US 93	204.553	LITTLE WOOD RIVER	Blaine	50	3000
13195	US 93	246.879	BIG LOST RIVER	Butte	53.15	1929
13200	US 20	265.043	BIG LOST RIVER	Butte	61.024	2422
13202	US 20	270.840	INL CENTRAL CONNECTOR	Butte	27.99868766	1369
13205	US 26	300.715	PEOPLES CANAL	Bingham	40	1300
13210	US 26	301.406	ABERDEEN CANAL	Bingham	62.99212598	2060
13215	US 26	303.384	DANSKIN CANAL	Bingham	58.07086614	1897
13220	US 26	305.337	TREGO CANAL	Bingham	38.99934383	4056
13225	US 26 EBL & WBL	305.804	SNAKE RIVER;W.BLACKFOOT	Bingham	467	35959
13255	US 26	335.364	IDAHO CANAL	Bonneville	53.1496063	4611
13261	US 26	341.995	RIRIE OUTLET;WILLOW CRK	Bonneville	35	3920
13266	US 26	346.199	ANDERSON CANAL	Bonneville	40	3280
13270	US 26	347.742	ANDERSON CANAL	Bonneville	59.05511811	4531
13275	US 26	348.105	EAGLE ROCK CANAL	Bonneville	45.93175853	1964
13285	US 26	373.604	S.FK.SNAKE R;SWAN VAL.BR	Bonneville	783.1364829	36488
13291	US 26	376.535	RAINY CREEK	Bonneville	62.992	2627
13295	US 26	384.265	PALISADES CREEK	Bonneville	22.96587927	1143
13500	I 84B	059.168	INDIAN CREEK	Canyon	25.91863517	1979
13690	US 30 ;W. POKY IC	330.851	I 86;WEST POCATELLO IC	Power	283.136	19612
13696	US 30	331.849	PORTNEUF RIVER	Bannock	85	7208
13702	US 30	364.200	PORTNEUF RIVER	Bannock	346	28372
13704	US 30	364.589	PORTNEUF RIVER	Bannock	198	16236
13706	US 30	365.246	UPRR & CANAL; TOPAZ OP	Bannock	612.999	50266
13711	US 30	369.047	PORTNEUF RIVER	Bannock	181.0006562	14842
13715	US 30	371.782	PORTNEUF RIVER	Bannock	254.921	13643
13720	US 30	372.434	DEER CROSSING	Bannock	76.001	4104
13725	US 30	373.123	DEER CROSSING	Bannock	76.115	4081
13730	US 30	375.588	DEER CROSSING	Bannock	76.115	4986
13740	US 30	406.711	UPRR; SODA SPRINGS OP	Caribou	113.8451444	5198
13746	US 30	423.128	GEORGETOWN CREEK	Bear Lake	20	1200
13750	US 30	454.312	THOMAS FORK CREEK	Bear Lake	58.071	2094
13795	US 30 EBL SPUR	000.000	SNAKE R;FRUITLAND BRIDGE	Payette	887	68565
13805	I 84B	057.677	PHYLLIS CANAL	Canyon	25.91863517	2431
13811	US 95 SPUR	000.000	SNAKE RIVER; WEISER BR	Washing-ton	876.0006562	40559
13890	SH 33	335.138	REXBURG CANAL	Madison	22.99868766	2277
13895	SH 33	335.390	S.FK.TETON RIVER	Madison	144.029	13234
13900	SH 33	337.473	TETON ISLAND CANAL	Madison	22.99868766	782
14241	SH 41	000.137	BURLINGTON NORTHERN RR	Kootenai	205	15068
14260	SH 44	000.039	I 84 EB-WB;MIDDLETON IC	Canyon	231.9553806	7610
14265	SH 44	003.502	WILLOW CREEK	Canyon	24	1200
14275	SH 44	005.739	CANYON CREEK	Canyon	24	1368
14280	SH 44	014.987	MIDDLETON CANAL	Ada	36.00065617	3060
14294	SH 44 ;GLENWOOD RD	000.813	BOISE RIVER;GLENWOOD BR	Ada	341	28849
14297	SH 44	016.864	DRY CREEK	Ada	80	6880
14300	SH 45	010.401	SNAKE R.(WALTERS FERRY)	Owyhee	685.0393701	27195
14305	SH 45	018.011	MORA CANAL	Canyon	49.8687664	1520
14310	SH 45	022.306	NEW YORK CANAL	Canyon	62.00787402	2269
14665	SH 53	014.073	UNION PACIFIC RAILROAD	Kootenai	134.8425197	3780
14670	SH 55	002.607	SNAKE RIVER(MARSING BR)	Owyhee	773.9501312	29412
14681	SH 55	006.102	LOW LINE CANAL	Canyon	25	3740
14685	SH 55	007.039	HIGH LINE CANAL	Canyon	33.99934383	1768
14690	SH 55	008.082	LOW LINE CANAL	Canyon	74.14698163	3885
14705	SH 55	012.539	DEER FLAT CANAL	Canyon	23	2185

14710	SH 55	013.070	PHYLLIS CANAL	Canyon	22.00131234	1140
14715	SH 55	014.056	WILSON DRAIN	Canyon	47.90026247	2486
14720	SH 55	015.436	ELIJAH DRAIN	Canyon	54.13385827	2797
14722	SH 55	016.369	UPRR	Canyon	96.001	8630
14724	SH 55	016.465	INDIAN CREEK	Canyon	257.999	21749
14729	SH 55	016.588	I 84;KARCHER IC	Canyon	201.001	16382
14754	SH 55	045.763	FARMERS UNION CANAL	Ada	28.871	4463
14756	SH 55	048.292	DRY CREEK	Ada	62.99212598	5468
14760	SH 55	063.641	PAYETTE RIVER	Boise	363.8451444	11830
14766	SH 55	064.199	POWER CANAL	Boise	100.0656168	7400
14770	SH 55	065.895	UPRR;HORSESHOE BEND OP	Boise	198.163	7920
14775	SH 55	065.996	PAYETTE RIVER	Boise	375.984252	15040
14790	SH 55	078.762	S.FK.PAYETTE RIVER	Boise	273.9501312	10439
14800	SH 55	081.740	N.FK.PAYETTE RIVER	Boise	287.0734908	11480
14805	SH 55	099.809	UPRR;N.FK.PAYETTE RIVER	Valley	411.0892388	11631
14810	SH 55	100.346	ROUND VALLEY CREEK	Valley	37.07349081	1443
14815	SH 55	107.224	CLEAR CREEK	Valley	33.99934383	1272
14820	SH 55	111.088	BIG CREEK	Valley	53.1496063	1966
14826	SH 55	113.809	N. FK. PAYETTE RIVER	Valley	391.0006562	24047
14831	SH 55	115.887	N. FK. PAYETTE RIVER	Valley	250	13375
14841	SH 55	128.706	GOLD FORK RIVER	Valley	153	7313
14851	SH 55	130.988	BOULDER CREEK	Valley	57.08661417	2434
14865	SH 55	135.345	LAKE FORK CREEK	Valley	95.14435696	4332
14871	SH 55	138.235	LAKE FORK CREEK CANAL	Valley	32.15223097	896
14881	SH 55	145.001	N.FK.PAYETTE R;LARDO	Valley	157.0013123	8478
14975	US 20	141.100	NO NAME CREEK	Camas	22	836
14985	US 20	141.840	HOT CREEK	Camas	22	836
14990	US 20	142.110	ARNOLD CREEK	Camas	22	836
14995	US 20	143.768	CHIMNEY CR.;SHEEP CR.	Camas	28	1064
15005	US 20	145.357	CORRAL CREEK	Camas	33.13648294	1386
15015	US 20	147.407	THREE MILE CREEK	Camas	31	1302
15045	US 20	152.034	W.FK.SOLDIER CREEK	Camas	23.99934383	732
15050	US 20	152.378	SOLDIER CREEK	Camas	23.99934383	732
15055	US 20	153.285	E.FK.SOLDIER CREEK	Camas	23.99934383	732
15060	US 20	154.056	JOHNSON CREEK	Camas	23.99934383	732
15065	US 20	155.596	KNOWLTON CREEK	Camas	30	915
15071	US 20	176.038	BIG WOOD RIVER	Blaine	274	12001
15090	US 20	183.947	GROVE CREEK	Blaine	32	1056
15095	US 20	184.468	LOVING CREEK	Blaine	24	1008
15100	US 20	187.147	SILVER CREEK	Blaine	103.0183727	4120
15105	US 20	191.356	SILVER CREEK	Blaine	63	2501
15109	US 20	195.106	DRY CREEK	Blaine	56.1023622	1904
15120	SH 69	002.264	TEED LATERAL CANAL	Ada	20	2580
15125	SH 69	003.225	KUNA CANAL	Ada	21.00065617	2919
15130	SH 69	004.574	MASON CRK;FEEDER CANAL	Ada	27.00131234	3429
15135	SH 69	006.270	RAWSON CANAL	Ada	22.99868766	2024
15140	SH 69	008.070	RIDENBAUGH CANAL	Ada	30	3540
15150	SH 69	009.239	TEN MILE CREEK	Ada	21.001	3438
15156	SH 69	067.937	I 84;SH 69 MERIDIAN IC	Ada	197	50984
15175	SH 55	041.775	BOISE RIVER;S.CHANNEL	Ada	123.031	10578
15180	SH 55	042.537	BOISE RIVER;N.CHANNEL	Ada	243.11	20898
15315	I 84 EBL	000.000	SNAKE RIVER;ONTARIO BR	Payette	953	33069
15320	I 84 WBL	000.001	SNAKE RIVER;ONTARIO BR	Payette	953.5	33199
15325	I 84 EBL	002.121	WHITLEY ROAD GS	Payette	23.99934383	1150
15335	I 84 WBL	002.120	WHITLEY ROAD GS	Payette	23.99934383	1150
15385	I 84 EBL	014.685	SE 9TH AVENUE GS	Payette	24	1150
15390	I 84 WBL	014.687	SE 9TH AVENUE GS	Payette	24	1150

15415	I 84 EBL	016.958	'D' LINE CANAL	Payette	27.99868766	1341
15420	I 84 WBL	016.948	'D' LINE CANAL	Payette	28	1344
15430	I 84 WBL	017.777	SAND HOLLOW CREEK	Canyon	22.99868766	1102
15435	I 84 EBL	017.761	SAND HOLLOW CREEK	Canyon	22.99868766	1102
15450	I 84 EBL	022.746	PURPLE SAGE GS	Canyon	107.9396325	4320
15455	I 84 WBL	022.745	PURPLE SAGE GS	Canyon	107.9396325	4320
15465	I 84 EBL	025.076	NOTUS CANAL	Canyon	22.99868766	989
15480	I 84	026.349	FARMERS SEBREE CANAL	Canyon	48.88451444	5145
15490	I 84 ;US 20-26	026.661	BOISE RIVER;CALDWELL BR.	Canyon	295.9317585	26551
15505	I 84 ;US 20-26	027.588	STP 7773;10TH AVE IC	Canyon	249.015748	28436
15535	I 84 EBL	029.782	SMA 7923;LINDEN ROAD GS	Canyon	125	4925
15540	I 84 WBL	029.792	SMA 7923;LINDEN ROAD GS	Canyon	125	4925
15545	I 84 WBL	031.047	NOTUS CANAL	Canyon	28.99934383	1102
15550	I 84 EBL	031.083	NOTUS CANAL	Canyon	28.99934383	1102
15570	I 84 WBL	034.973	NORTHSIDE BLVD IC	Canyon	149.934	6030
15575	I 84 EBL	034.975	NORTHSIDE BLVD IC	Canyon	150	5910
15580	I 84 WBL	035.236	UPRR;EAST LATERAL CANAL	Canyon	211.9422572	8459
15585	I 84 EBL	035.244	UPRR;EAST LATERAL CANAL	Canyon	211.942	9243
15596	I 84 EBL	036.211	PHYLLIS CANAL	Canyon	85	6545
15601	I 84 WBL	036.236	PHYLLIS CANAL	Canyon	68.99934383	5313
15606	I 84 EBL	036.465	UPRR	Canyon	113.9993438	8801
15611	I 84 WBL	036.463	UPRR	Canyon	113.9993438	7433
15621	I 84 WBL & EBL	037.959	I 84B;GARRITY BLVD IC	Canyon	131.001	17030
15650	I 84	043.791	TEN MILE CREEK	Ada	23	5543
15680	I 84 EBL & WBL	046.768	RIDENBAUGH CANAL	Ada	30	4338
15730	I 84 EBL	052.275	NEW YORK CANAL	Ada	107.999	12701
15735	I 84 WBL	052.277	NEW YORK CANAL	Ada	107.999	11470
15751	I 84 EBL	054.849	UPRR; GOWEN SPUR	Ada	118	8638
15756	I 84 WBL	054.862	UPRR; GOWEN SPUR	Ada	116	7563
15760	I 84 EBL	056.695	UPRR	Ada	146.0006562	11505
15765	I 84 WBL	056.688	UPRR	Ada	146.0006562	9928
15769	SH 21	003.130	BOISE RIVER	Ada	1495.079	62342
15771	I 84	057.011	SH 21;GOWEN RD IC	Ada	175	20475
15780	I 84 WBL	063.541	KUNA RD;BLACKS CREEK IC	Ada	112.8608924	4520
15785	I 84 EBL	063.539	KUNA RD;BLACKS CREEK IC	Ada	111.8766404	4480
15805	I 84 EBL	070.271	INDIAN CREEK	Ada	26.00065617	1092
15810	I 84 WBL	070.269	INDIAN CREEK	Ada	26.00065617	1144
15825	I 84 EBL	080.993	SQUAW CREEK	Elmore	42.001	1764
15830	I 84 WBL	080.991	SQUAW CREEK	Elmore	42.001	1848
15840	I 84 EBL	089.760	CANYON CREEK	Elmore	36.00065617	1476
15845	I 84 WBL	089.761	CANYON CREEK	Elmore	36.00065617	1476
15865	I 84 WBL	095.201	US 20;N.MOUNTAIN HOME IC	Elmore	92.84776903	3813
15870	I 84 EBL	095.211	US 20;N.MOUNTAIN HOME IC	Elmore	92.84776903	3813
15915	I 84 EBL	113.812	COLD SPRINGS RD.& CR.IC	Elmore	191.9291339	8448
15920	I 84 WBL	113.817	COLD SPRINGS RD.& CR.IC	Elmore	191.9291339	8371
15925	I 84 EBL	117.239	ALKALI CR;ALKALI CR GS	Elmore	187.007874	8153
15930	I 84 WBL	117.238	ALKALI CR;ALKALI CR GS	Elmore	187.007874	8153
15940	I 84 WBL	120.243	I 84B;BANNOCK IC	Elmore	131.8897638	5755
15945	I 84 EBL	120.244	I 84B;BANNOCK IC	Elmore	131.8897638	5755
15950	I 84 EBL	120.462	CANYON CR;GLENNS FERRY	Elmore	73.99934383	3226
15955	I 84 WBL	120.461	CANYON CR;GLENNS FERRY	Elmore	73.99934383	3226
15965	I 84 EBL	121.616	RD;RR;SNAKE R;W.SNAKE BR	Elmore	1122.047	48919
15970	I 84 WBL	121.618	RD;RR;SNAKE R;W.SNAKE BR	Elmore	1094.160105	47698
15980	I 84 EBL	128.012	SNAKE R;E.SNAKE RIVER BR	Elmore	998.0314961	43513
15985	I 84 WBL	128.003	SNAKE R;E.SNAKE RIVER BR	Elmore	998.0314961	43513
16015	I 84 EBL	140.061	UPRR;E.BLISS RAILROAD OP	Gooding	245.0787402	13818
16020	I 84 WBL	140.075	UPRR;E.BLISS RAILROAD OP	Gooding	245.0787402	13818

16035	I 84 EBL	145.995	FRONTAGE RD;GS NO.3	Gooding	136.1548556	5943
16040	I 84 WBL	146.009	FRONTAGE RD;GS NO.3	Gooding	131.8897638	5755
16045	I 84 EBL	146.058	MALAD R.GORGE;N.TUTTLE	Gooding	198.1627297	8653
16050	I 84 WBL	146.073	MALAD R.GORGE;N.TUTTLE	Gooding	228.0183727	9964
16065	I 84	151.594	250 NORTH RD.GS	Gooding	25	4090
16080	I 84	154.836	'W-26' CANAL	Gooding	23.99934383	6624
16135	I 84 EBL	164.683	'J' COULEE CANAL	Jerome	45.93175853	1840
16140	I 84 WBL	164.695	'J' COULEE CANAL	Jerome	32.00131234	1280
16155	I 84	166.000	'N' CANAL	Jerome	37.00131234	5694
16170	I 84 EBL	170.036	400 SOUTH RD GS 2	Jerome	134	5360
16175	I 84 WBL	170.046	400 SOUTH RD GS 2	Jerome	134	5360
16181	I 84 EBL	172.988	US 93;W. TWIN FALLS IC	Jerome	161.0006562	9982
16186	I 84 WBL	172.987	US 93;W.TWIN FALLS IC	Jerome	161.0006562	11721
16190	I 84 EBL	176.626	WINDY GLENN RD GS	Jerome	23.99934383	1104
16195	I 84 WBL	176.625	WINDY GLENN RD GS	Jerome	26.00065617	1196
16210	I 84 EBL	184.167	BODENHEIMER ROAD GS	Jerome	113.8451444	4492
16215	I 84 WBL	184.168	BODENHEIMER ROAD GS	Jerome	113.8451444	4492
16235	I 84 EBL	188.259	STC2767;VALLEY ROAD IC	Jerome	113.8451444	4480
16240	I 84 WBL	188.257	STC2767;VALLEY ROAD IC	Jerome	113.8451444	4480
16245	I 84	188.715	'C' CANAL	Jerome	24	4980
16255	I 84 EBL	189.454	STC2744;MURTAUGH RD GS	Jerome	117.126	4598
16260	I 84 WBL	189.455	STC2744;MURTAUGH RD GS	Jerome	117.126	4598
16265	I 84 WBL	192.847	'C' CANAL	Jerome	30	1185
16270	I 84 EBL	192.843	'C' CANAL	Jerome	35.10498688	1379
16280	I 84 WBL	194.081	MAIN NORTHSIDE CANAL	Jerome	202.0997375	7939
16285	I 84 EBL	194.071	MAIN NORTHSIDE CANAL	Jerome	202.0997375	7939
16290	I 84 EBL	195.513	MILNER GOODING CANAL	Jerome	109.9081365	4477
16295	I 84 WBL	195.523	MILNER GOODING CANAL	Jerome	81.03674541	3297
16300	I 84 EBL	197.564	CRESTVIEW RD.GS	Jerome	113.8451444	4640
16305	I 84 WBL	197.565	CRESTVIEW RD.GS	Jerome	113.8451444	4640
16310	I 84 EBL	200.487	SH 25;KASOTA RD.IC	Jerome	113.8451444	4560
16315	I 84 WBL	200.486	SH 25;KASOTA RD.IC	Jerome	113.8451444	4560
16320	I 84 EBL	202.626	SHODDE ROAD GS	Minidoka	113.8451444	4606
16325	I 84 WBL	202.627	SHODDE ROAD GS	Minidoka	113.8451444	4606
16335	I 84 EBL	207.679	'B-4' CANAL	Minidoka	149.9343832	6060
16340	I 84 WBL	207.678	'B-4' CANAL	Minidoka	149.9343832	6060
16360	I 84 EBL	210.484	I 84B; HEYBURN IC	Minidoka	678.1496063	24747
16365	I 84 WBL	210.501	I 84B; HEYBURN IC	Minidoka	678.1496063	24747
16380	I 84 EBL	214.418	'A' CANAL	Minidoka	234.9081365	8155
16385	I 84 WBL	214.433	'A' CANAL	Minidoka	234.9081365	8155
16391	I 84 EBL	215.894	SNAKE RIVER	Minidoka	1004	45983
16396	I 84 WBL	215.893	SNAKE RIVER	Minidoka	1004	45682
16405	I 84 EBL	217.326	SOUTHSIDE CANAL	Cassia	211	7343
16410	I 84 WBL	217.327	SOUTHSIDE CANAL	Cassia	211	7343
16415	I 84 EBL	220.257	CO.RD.;NEWCOMB GS	Cassia	107.9396325	4320
16420	I 84 WBL	220.258	CO.RD.;NEWCOMB GS	Cassia	107.9396325	4320
16435	I 84	224.660	CO.RD.;HORSE BUTTE GS	Cassia	23.99934383	4080
16450	I 84 EBL	234.720	RAFT RIVER	Cassia	50.85301837	2229
16455	I 84 WBL	234.721	RAFT RIVER	Cassia	51.83727034	2122
16470	I 84	247.887	CO.RD.;GS NO.1	Cassia	24	4150
16475	I 84	250.304	CO.RD.;GS NO.2	Cassia	26.00065617	4495
16480	I 84	250.578	MEADOW CREEK	Cassia	23	6603
16500	I 84 EBL	257.941	CO.RD.;GS NO.3	Cassia	24	1274
16505	I 84 WBL	257.942	CO.RD.;GS NO.3	Cassia	24	1536
16510	I 84 EBL	260.619	CO.RD.;GS NO.4	Cassia	24	1630
16515	I 84 WBL	260.620	CO.RD.;GS NO.4	Cassia	24	1394
16520	I 84 EBL	262.494	JUNIPER ROAD IC	Oneida	120.0787402	4884

16525	I 84 WBL	262.495	JUNIPER ROAD IC	Oneida	120.0787402	4884
16530	I 84 WBL	266.094	JUNIPER ROAD GS 5	Oneida	33.99934383	2142
16535	I 84 EBL	266.110	JUNIPER ROAD GS 5	Oneida	33.99934383	2006
16540	I 84 WBL	266.862	DRAIN	Oneida	27.99868766	1232
16545	I 84 EBL	266.887	DRAIN	Oneida	30.83989501	1364
16560	I 84 EBL	270.640	COUNTY ROAD GS 6	Oneida	27.99868766	1652
16565	I 84 WBL	270.650	COUNTY ROAD GS 6	Oneida	27.99868766	1708
16670	US 89	008.387	ST CHARLES CR.;S.BRANCH	Bear Lake	29.856	1095
16676	US 89	008.762	ST CHARLES CREEK	Bear Lake	87.00131234	5237
16685	US 89	019.837	OVID CREEK	Bear Lake	32.001	957
16691	US 89	020.402	OVID CREEK	Bear Lake	71.00065617	3124
16695	US 89	022.605	BEAR LAKE CANAL	Bear Lake	163.0577428	7449
16700	US 89	023.335	BEAR RIVER	Bear Lake	128.9370079	5895
16705	US 89	025.135	UPRR;12TH ST.;MONTPELIER	Bear Lake	720.144	26136
16708	US 89	030.992	MONTPELIER CK;LOWER NRWS	Bear Lake	32.00131234	2163
16709	US 89	031.175	MONTPELIER CK;UPPER NRWS	Bear Lake	68.99934383	2719
16711	US 89	033.313	MONTPELIER CREEK	Bear Lake	21.001	1529
16726	US 89	041.020	THOMAS FORK CREEK EAST	Bear Lake	52.99868766	2120
16731	US 89	043.190	THOMAS FORK CREEK	Bear Lake	78.084	3097
16735	I 90 WBL	000.000	SPOKANE RIVER	Kootenai	465	20367
16740	I 90 EBL	000.001	SPOKANE RIVER	Kootenai	465	25947
16745	I 90 EBL	002.067	S 8505;PLEASANT VIEW IC	Kootenai	161.0892388	7020
16750	I 90 WBL	002.068	S 8505;PLEASANT VIEW IC	Kootenai	161.0892388	7036
16760	I 90 EB-WB;RMP CD	004.460	BNRR;POST FALLS OP	Kootenai	210	35805
16765	I 90 EBL	004.619	I 90B;POST FALLS IC	Kootenai	171.0006562	7456
16770	I 90 WBL	004.620	I 90B;POST FALLS IC	Kootenai	171.0006562	7473
16785	I 90 EBL	007.116	SH 41;SH 41 IC	Kootenai	130	5304
16790	I 90 WBL	007.117	SH 41;SH 41 IC	Kootenai	130	6032
16795	I 90 WBL	009.214	HUETTER ROAD GS	Kootenai	113.8451444	4651
16800	I 90 EBL	009.215	HUETTER ROAD GS	Kootenai	129.9212598	5304
16805	I 90 EBL	010.325	ATLAS ROAD GS	Kootenai	96.12860892	3917
16810	I 90 WBL	010.326	ATLAS ROAD GS	Kootenai	96.12860892	3917
16815	I 90 EBL	010.921	PEDESTRIAN/BIKE PATH	Kootenai	130	5304
16820	I 90 WBL	010.922	PEDESTRIAN/BIKE PATH	Kootenai	130	5304
16855	I 90 EBL	013.551	SMA 7335;FIFTEENTH ST.IC	Kootenai	103.9993438	4160
16860	I 90 WBL	013.552	SMA 7335;FIFTEENTH ST.IC	Kootenai	103.9993438	4160
16865	I 90 EBL	013.975	STC 7325;ELM AVE.GS	Kootenai	141.0761155	5640
16870	I 90 WBL	013.976	STC 7325;ELM AVE.GS	Kootenai	141.0761155	5640
16875	I 90 EBL	014.323	STC 7405;PENN.AVE.GS	Kootenai	136.001	5440
16880	I 90 WBL	014.324	STC 7405;PENN.AVE.GS	Kootenai	136.001	5440
16885	I 90 EBL	014.775	SMA 7445;SHERMAN AVE.IC	Kootenai	53.99934383	2160
16890	I 90 WBL	014.776	SMA 7445;SHERMAN AVE.IC	Kootenai	53.99934383	2160
16894	I 90	015.278	POTLATCH HILL RD. GS	Kootenai	237.8608924	19921
16896	I 90	017.650	BENNETT BAY;SUNNYSIDE RD	Kootenai	1729.986877	144974
16897	I 90	018.531	TIMOTHY LN;EVERGREEN GS	Kootenai	210.9580052	17661
16901	I 90	019.919	BLUE CREEK BAY WEST GS	Kootenai	133.9993438	11229
16910	I 90 WBL	020.281	CD'A LAKE;BLUE CREEK BAY	Kootenai	1310	53710
16920	I 90 EBL	023.373	WOLF LODGE CREEK	Kootenai	89.9	3600
16925	I 90 WBL	023.374	WOLF LODGE CREEK	Kootenai	90	3600
16930	I 90 EBL & WBL	024.550	CEDAR CREEK	Kootenai	25	2000
16950	I 90 EBL & WBL	025.530	CEDAR CREEK	Kootenai	21	1680
16955	I 90 EBL & WBL	025.600	CEDAR CREEK	Kootenai	21	1680
17000	I 90 EBL & WBL	031.930	FOURTH OF JULY CREEK	Kootenai	22.00131234	3949
17030	I 90 EBL	039.872	COEUR D'ALENE RIVER	Kootenai	509	17662
17035	I 90 WBL	039.873	COEUR D'ALENE RIVER	Kootenai	509	17662
17040	I 90 EBL	040.073	LATOUR CREEK ROAD IC	Kootenai	242.9002625	8456

17045	I 90 WBL	040.074	LATOUR CREEK ROAD IC	Kootenai	243	8456
17070	I 90 EBL	045.224	S 5750;PINE CR;PINEHURST	Shoshone	396	13266
17075	I 90 WBL	045.225	S 5750;PINE CR;PINEHURST	Shoshone	406	13601
17081	I 90 WBL	045.494	PINEHURST ROAD GS	Shoshone	291	15132
17086	I 90 EBL	045.495	PINEHURST ROAD GS	Shoshone	303.9997559	17024
17100	I 90 EBL	049.437	S.FK.COEUR D'ALENE RIVER	Shoshone	151.903	6080
17105	I 90 WBL	049.438	S.FK.COEUR D'ALENE RIVER	Shoshone	152	6080
17120	I 90 EBL	050.308	HILL STREET IC	Shoshone	145.0492126	5800
17125	I 90 WBL	050.309	HILL STREET IC	Shoshone	145.4986877	5800
17130	I 90 EBL	050.544	DIVISION ST. IC	Shoshone	145.4986877	5800
17135	I 90 WBL	050.545	DIVISION ST. IC	Shoshone	145.4986877	5800
17140	I 90 EBL	051.956	ELIZABETH PARK ROAD GS	Shoshone	100	4030
17145	I 90 WBL	051.957	ELIZABETH PARK ROAD GS	Shoshone	100	4030
17160	I 90 EBL	054.175	STC 5756;BIG CREEK RD IC	Shoshone	100	4030
17165	I 90 WBL	054.176	STC 5756;BIG CREEK RD IC	Shoshone	100	4030
17170	I 90 EBL	055.216	S.FK.COEUR D'ALENE RIVER	Shoshone	191	7697
17175	I 90 WBL	055.217	S.FK.COEUR D'ALENE RIVER	Shoshone	193	7797
17180	I 90 EBL	055.749	STC 5766;JOHNSON ST.GS	Shoshone	100	4030
17185	I 90 WBL	055.750	STC 5766;JOHNSON ST.GS	Shoshone	100	4030
17195	I 90 EBL	057.025	I 90B;THIRD ST.IC	Shoshone	102.999	4151
17200	I 90 WBL	057.026	I 90B;THIRD ST.IC	Shoshone	102.999	4151
17210	I 90 EBL	059.022	S.FK.COEUR D'ALENE RIVER	Shoshone	188.9993438	8259
17215	I 90 WBL	059.023	S.FK.COEUR D'ALENE RIVER	Shoshone	183.9993438	8041
17220	I 90	059.541	STC 5766;SILVERTON IC	Shoshone	146.9816273	12010
17225	I 90 EBL	059.880	S.FK.CD'A R;FR.RD.	Shoshone	568.8976378	25491
17230	I 90 WBL	059.881	S.FK.CD'A R;FR.RD.	Shoshone	472.113	19258
17235	I 90	060.802	S.FK.COEUR D'ALENE RIVER	Shoshone	153	19431
17240	I 90 EBL & WBL	060.971	CROSSROAD BD;W.WALLACE I	Shoshone	180.1181102	15066
17247	I 90	061.236	I 90B;CANYON CR	Shoshone	4478	374809
17252	I 90RAMP WB ON	000.070	BIKE/PED UNDERPASS	Shoshone	371	10240
17255	I 90 SPUR	062.150	CANYON CREEK	Shoshone	37.00131234	1776
17260	I 90 EBL & WBL	063.020	S.FK.COEUR D'ALENE RIVER	Shoshone	63.99934383	4736
17265	I 90 EBL & WBL	064.263	GOLCONDA ACCESS ROAD IC	Shoshone	100.0656168	7000
17270	I 90 EBL & WBL	064.774	S.FK.COEUR D'ALENE RIVER	Shoshone	64	4480
17280	I 90 EBL & WBL	066.227	S.FK.COEUR D'ALENE RIVER	Shoshone	61	4270
17290	I 90 EBL & WBL	068.088	I 90 EB OFF;W.MULLAN IC	Shoshone	134.8425197	11030
17300	I 90 EBL & WBL	068.443	COPPER STREET GS	Shoshone	79.06824147	6454
17315	I 90 EBL & WBL	070.870	RR ROADBED/NO TRACKS	Shoshone	255.9055118	20915
17490	US 91 ;QUINN RD.	079.161	UPRR;QUINN ROAD OP	Bannock	105.971	7685
17566	US 93	025.019	LATERAL NO. 1	Twin Falls	63.99934383	4864
17570	US 93	037.494	HIGH LINE CANAL	Twin Falls	78	2847
17576	US 93	039.577	LOW LINE CANAL	Twin Falls	106	6286
17580	US 93	050.039	SNAKE RIVER; PERRINE BR.	Twin Falls	1500	117600
17595	US 93	056.507	'L' CANAL	Jerome	37.00131234	1347
17600	US 93	061.714	'M' CANAL	Jerome	47.90026247	2002
17605	US 93	061.952	'U' CANAL	Jerome	162.0734908	6755
17610	US 93	062.682	'R' CANAL	Jerome	56.1023622	2335
17840	US 93	246.736	GARDEN CREEK	Custer	21	945
17846	US 93	251.389	CHALLIS CREEK	Custer	36.08923885	1300
17866	US 93	256.792	SALMON RIVER (WATTS BR.)	Custer	357.999	14785
17870	US 93	263.837	PAHSIMEROI RIVER	Custer	112.861	3480
17885	US 93	305.242	SALMON RIVER;SALMON BR.	Lemhi	437.992	19491
17890	US 93	309.030	SALMON RIVER;CARMEN BR.	Lemhi	283.136	11320
17900	US 93	310.256	CARMEN CREEK	Lemhi	23.99934383	1222
17905	US 93	315.561	TOWER CREEK	Lemhi	23.99934383	936
17925	US 93	326.271	N.FK.SALMON RIVER	Lemhi	56.102	2111
17930	US 93	327.255	N.FK.SALMON RIVER	Lemhi	59.055	1900

17935	US 93	333.728	SHEEP CREEK	Lemhi	22.00131234	1696
17950	US 93	083.950	ARCO CANAL	Butte	26.001	1305
17955	US 93	085.433	SPRING CREEK	Butte	32.152	1155
17965	US 93	089.112	BIG LOST RIVER	Butte	63.976	2310
17995	US 93	098.706	BIG LOST RIVER	Custer	64.961	2600
18010	US 93	156.558	WARM SPRING CREEK	Custer	23	775
18031	US 93	160.026	SALMON RIVER;CHALLIS BR.	Custer	306.102	12852
18040	US 95	026.773	'B' LINE CANAL	Owyhee	23.99934383	816
18045	US 95	030.373	JUMP CREEK	Owyhee	47.90026247	1906
18050	US 95	034.667	SNAKE RIVER;HOMEDALE BR.	Owyhee	687.007874	28373
18055	US 95	038.650	GOLDEN GATE CANAL	Canyon	22	1760
18060	US 95	042.713	RIVERSIDE CANAL	Canyon	55.11811024	1986
18065	US 95	043.837	BOISE RIVER	Canyon	424.8687664	13898
18071	US 95	045.052	SAND HOLLOW CREEK	Canyon	124	5208
18076	US 95	045.205	US20;UPRR;US 20-95 IC	Canyon	282	11844
18081	US 95	049.792	FARMERS COOP CANAL	Canyon	20.99737533	2260
18095	US 95	060.819	I 84 EB-WB;US 95 IC	Payette	315.945	18549
18110	US 95	066.184	PAYETTE RIVER	Payette	483.9238845	40656
18121	US 95	081.014	ROBERTSON SLOUGH	Washing-ton	46	1564
18126	US 95	081.516	WEISER RIVER	Washing-ton	347	19189
18133	US 95	082.204	MONROE CREEK	Washing-ton	42.97900262	2425
18134	US 95	082.648	GALLOWAY CANAL	Washing-ton	26.001	2304
18141	US 95	088.325	MONROE CREEK	Washing-ton	64.961	2581
18146	US 95	093.557	MANNS CREEK	Washing-ton	96.001	3965
18150	US 95	103.591	SAGE CREEK	Washing-ton	35.10498688	1264
18155	US 95	104.123	DRY CREEK	Washing-ton	69.88188976	2527
18161	US 95	106.518	KEITHLY CREEK	Washing-ton	104.003	4129
18165	US 95	112.550	PINE CREEK(CAMBRIDGE BR)	Washing-ton	37.07349081	1336
18170	US 95	112.850	SPRING CREEK	Washing-ton	23.99934383	1056
18175	US 95	113.597	RUSH CREEK	Washing-ton	32.00131234	1174
18180	US 95	113.776	WEISER RIVER	Washing-ton	160.1049869	5248
18200	US 95	129.700	M.FK.WEISER RIVER	Adams	160.1049869	6368
18206	US 95	132.692	COTTONWOOD CREEK	Adams	57	2120
18216	US 95	133.304	LESTER CREEK	Adams	24	1051
18230	US 95	145.799	WEISER RIVER	Adams	275.9186352	8556
18236	US 95	154.079	WEISER RIVER;TAMARACK BR	Adams	62	2747
18241	US 95	157.456	MUD CREEK	Adams	65	2880
18245	US 95	160.233	LITTLE SALMON RIVER	Adams	53.1496063	1675
18250	US 95	161.593	W.FK.GOOSE CREEK	Adams	44.94750656	1787
18255	US 95	162.651	E.FK.GOOSE CREEK	Adams	64.96062992	2581
18260	US 95	171.914	LITTLE SALMON RIVER	Idaho	167.9790026	6670
18265	US 95	174.111	LITTLE SALMON RIVER	Adams	77.09973753	2195
18271	US 95	176.554	LITTLE SALMON RIVER	Idaho	201	8804
18276	US 95	178.295	BOULDER CREEK	Adams	115	4830
18281	US 95	180.003	FALL CREEK	Adams	40	1640
18285	US 95	182.370	LITTLE SALMON RIVER	Adams	219.9998779	7172
18295	US 95	185.402	LITTLE SALMON RIVER	Idaho	202.0013123	6585
18300	US 95	186.056	LITTLE SALMON RIVER	Idaho	202.001	6585

18310	US 95	189.978	LITTLE SALMON RIVER	Idaho	167.0013123	5444
18316	US 95	191.148	RAPID RIVER	Idaho	123.9993438	6349
18326	US 95	196.716	RACE CREEK	Idaho	102	4080
18331	US 95	197.328	SALMON RIVER;GOFF BRIDGE	Idaho	495.0787402	26978
18340	US 95	208.473	JOHN DAY CREEK	Idaho	32	1152
18345	US 95	214.270	SLATE CREEK	Idaho	130	4784
18350	US 95	215.975	SALMON R.;MCKINZIE BR.	Idaho	703	25941
18355	US 95	216.301	SALMON R.;AWARD BR.	Idaho	782	28856
18360	US 95	219.064	SKOOKUMCHUCK CREEK	Idaho	70	2590
18365	US 95	223.661	WHITEBIRD CREEK	Idaho	811.0006562	32764
18369	US 95	254.300	COTTONWOOD CREEK	Idaho	28	1764
18386	US 95	267.437	LAWYERS CANYON CREEK	Idaho	919	41998
18402	US 95	270.499	DRAIN	Lewis	24	816
18411	US 95	286.129	LAPWAI CREEK	Nez Perce	117	5850
18416	US 95	287.258	LAPWAI CREEK	Nez Perce	117	5850
18421	US 95	287.606	LAPWAI CREEK	Nez Perce	117	5850
18426	US 95	287.801	LAPWAI CREEK	Nez Perce	117	5850
18431	US 95	288.132	LAPWAI CREEK	Nez Perce	117	5850
18436	US 95	288.480	LAPWAI CREEK	Nez Perce	117	5850
18441	US 95	289.214	LAPWAI CREEK	Nez Perce	117	5850
18446	US 95	293.685	MISSION CREEK	Nez Perce	67.99868766	2856
18451	US 95	297.225	SWEETWATER CREEK	Nez Perce	57.999	2778
18455	US 95	301.027	LAPWAI CREEK	Nez Perce	74	3108
18460	US 95	302.461	LAPWAI CREEK	Nez Perce	74	3108
18465	US 95	304.118	NPRR;CLEARWATER RIVER	Nez Perce	1230	40590
18470	US 95	304.551	US 12;US 12-95 IC	Nez Perce	217.848	9657
18475	US 95	307.898	HATWAI CREEK	Nez Perce	25	2400
18480	US 95	319.061	US 95 RAMP;WASHINGTON IC	Nez Perce	252.9986877	20139
18486	US 95 SBL	329.482	COW CREEK	Nez Perce	73.99934383	3056
18487	US 95 NBL	329.481	COW CREEK	Nez Perce	73.99934383	3056
18491	US 95	330.416	CALF CREEK	Latah	26.001	1326
18511	US 95	343.990	S.FK. PALOUSE RIVER	Latah	63.999	5261
18518	US 95	344.786	PARADISE CREEK	Latah	27.001	2481
18520	US 95	352.862	FOUR MILE CREEK	Latah	27	918
18531	US 95	360.276	PALOUSE RIVER	Latah	137	6206
18535	US 95	360.460	W.I.& M. RAILROAD	Latah	84	3024
18545	US 95	361.537	DEEP CREEK	Latah	51.00065617	1469
18570	US 95	380.090	SHEEP CREEK	Benewah	70	3199
18575	US 95	381.084	HANGMAN CREEK	Benewah	90	4113
18600	US 95	393.352	RR ROADBED/NO TRACKS	Benewah	185.0393701	10138
18646	US 95 NBL	416.874	BELLGROVE CREEK	Kootenai	67.999	2808
18647	US 95 SBL	416.885	BELLGROVE CREEK	Kootenai	67.99868766	2808
18652	US 95	420.730	S. FK. MICA CREEK	Kootenai	262.0013123	21143
18665	US 95	421.324	MICA CREEK	Kootenai	64	4467
18670	US 95	426.491	COUGAR CREEK	Kootenai	68.99934383	3988
18675	US 95	428.986	BLACKWELL SLOUGH	Kootenai	122.0472441	5234
18680	US 95	429.403	SPOKANE R;PED/BIKE PATH	Kootenai	1017.998688	37462
18685	US 95	429.619	I 90B;NW BLVD;US 95 IC	Kootenai	85	4828
18690	US 95	430.591	I 90 E-WB;LINCOLN WAY IC	Kootenai	192.201	13594
18701	US 95	458.533	COCOLALLA CREEK	Bonner	30	4860
18705	US 95	461.300	COCOLALLA CREEK	Bonner	21.9816273	1067
18711	US 95	465.017	BNRR;WESTMOND BRIDGE	Bonner	130	10244
18715	US 95	471.729	PEND OREILLE R;SANDPOINT	Bonner	5898.999344	248938
18725	US 2	475.665	SAND CREEK	Bonner	211.942	13080
18735	US 95	484.654	BNRR;COLBURN OVERPASS	Bonner	337	15839
18740	US 95	485.548	PACK RIVER;N COLBURN BR.	Bonner	151.9998779	7144
18750	US 95	496.921	DEEP CR;BNRR;UPRR;NAPLES	Boundary	729.9868766	23871

18755	US 95	497.343	TRAIL CREEK	Boundary	22.99868766	1311
18765	US 95	507.257	BNRR;ARIZONA ST.	Boundary	381.8897638	27810
18770	US 95	507.565	KOOTENAI R.&RR;BON FERRY	Boundary	1379.92126	96462
18772	US 95	522.405	WILDLIFE UNDERPASS	Boundary	23	2972
18773	US 95	522.883	WILDLIFE UNDERPASS	Boundary	23	2972
18774	US 95	523.682	WILDLIFE UNDERPASS	Boundary	28	4771
18791	US 95	532.315	ROUND PRAIRIE CREEK	Boundary	53	2332
18794	US 95	537.474	UPRR;S. EASTPORT OP	Boundary	122	5039
18796	US 95	537.686	MOYIE R;LOWER EASTPORT	Boundary	282.001	11647
18801	US 95	538.473	MOYIE R; UPPER EASTPORT	Boundary	250	16125
18946	I 184 EBL	000.190	I 84 WBL	Ada	155	46857
18956	I 184B EBL & WBL	001.054	S7403;UPRR;FRANKLIN IC	Ada	427.001	58926
18966	I 184B EBL & WBL	001.310	S7073;CANAL;COLE RD	Ada	236.001	26904
18995	I 84B	003.427	SETTLERS CANAL	Ada	44.99996948	9360
18996	I 184 EBL CONNECTR	003.560	US 20-26;BOISE RV SLOUGH	Ada	622.0472441	34521
18997	I 184 WBL CONNECTR	003.561	US 20-26;BOISE RV SLOUGH	Ada	715	39683
19710	SMA 8213;MIDDLE-TON	000.658	I 84;MIDDLETON RD.GS	Canyon	344.16	11283
19766	STP 9183;TEN MILE	109.941	I 84; TEN MILE IC	Ada	188.9993438	29805
20980	STP 7786;SALEM RD	001.520	US 20;SALEM RD IC	Madison	268.045	14552
21321	STP8973;ORCHARD ST	000.133	I 84 EB-WB;ORCHARD ST IC	Ada	205	26138
21325	STP7343;ORCHARD ST	003.089	I 184B;ORCHARD ST GS	Ada	143.045	11025
21452	STP 7343;MAIN ST.	077.646	US 20-26 CHINDEN BLVD	Ada	166.995	9185
21591	NHS 7433;VISTA AVE	000.012	I 84 EB-WB;VISTA IC	Ada	182	35927
21614	I 15B;SUNNYSIDE RD	103.850	I 15;SUNNYSIDE RD IC	Bonneville	327.001	31130
21616	I 15B;SUNNYSIDE RD	104.246	SIDEHILL CANAL	Bonneville	63.99934383	6592
21618	I 15B;SUNNYSIDE RD	104.807	SNAKE RIVER	Bonneville	737.0013123	73184
21661	OVERLAND/COLE ROAD	005.926	I 84;COLE/OVERLAND IC	Ada	216.0006562	101974
21675	SMA7553;FEDERAL WY	052.078	US 20 26;FEDERAL WAY IC	Ada	338.9107612	24679
21820	STP 7983;USTICK RD	003.285	I 84 EB-WB;USTICK RD GS	Canyon	354.9868766	10118
21882	STP8393;FRANKLIN B	000.853	I 84;FRANKLIN BLVD IC	Canyon	224.9998779	24863
26280	SH 55;EAGLE ROAD	036.319	I 84 EB-WB;EAGLE RD IC	Ada	268	24013
33145	US 95	281.820	LAPWAI CREEK	Lewis	22	792
33150	US 95	282.610	LAPWAI CREEK	Lewis	37.99868766	1482
33155	US 95	282.750	LAPWAI CREEK	Lewis	23.99934383	914
33160	US 95	283.135	E.FK. LAPWAI CREEK	Lewis	50.9	1938
33165	US 95	285.789	ROCK CREEK	Nez Perce	30.83989501	1150
33340	US 93	341.350	N. FORK SALMON RIVER	Lemhi	22.96587927	741
33345	US 93	341.400	N. FORK SALMON RIVER	Lemhi	23.95013123	773
33350	US 93	342.292	N. FORK SALMON RIVER	Lemhi	23.95013123	773
33500	US 95 NBL	407.287	N.FK. ROCK CREEK	Kootenai	346.0006562	18373
33505	US 95 SBL	407.286	N.FK. ROCK CREEK	Kootenai	346.0006562	18373
33510	US 95 NBL	409.370	UPRR;BITTER ROAD	Kootenai	219.9998779	9130
33515	US 95 SBL	409.379	UPRR;BITTER ROAD	Kootenai	219.9998779	9130
33540	US 95 NBL	415.497	FIGHTING CREEK	Kootenai	63.99934383	2643
33545	US 95 SBL	415.498	FIGHTING CREEK	Kootenai	63.99934383	3398
33550	US 95 NBL	411.604	LAKE CREEK;NESS ROAD	Kootenai	772	32038
33555	US 95 SBL	411.605	LAKE CREEK;NESS ROAD	Kootenai	781	32412
33565	US 95	443.983	WILDLIFE CROSSING	Kootenai	25	3130
33725	US 95	475.265	US 95;SH 200 IC	Bonner	317.9986877	18730
33760	US 95 NBL	449.052	US 95/SH 54 IC	Kootenai	192	8448
33765	US 95 SBL	449.050	US 95/SH 54 IC	Kootenai	192	8448
34540	I 15 NBL	066.175	SMA 5697;SOUTH VALLEY RD	Bannock	184	8464
34545	I 15 SBL	066.176	SMA 5697;SOUTH VALLEY RD	Bannock	184	8464
34690	US 20 EBL	328.582	THORTON IC	Madison	98	4361
34695	US 20 WBL	328.583	THORTON IC	Madison	98	4361