

COLORADO DEPARTMENT OF TRANSPORTATION

FY2014 STRATEGIC PLAN

FY2014 FINAL DRAFT

November 1, 2012

Introduction, Statutory Authority and Department Summary

The Colorado Department of Transportation (CDOT), also referred to in this document as “Department”, presents its strategic plan for Fiscal Year 2014. The statutory authority for CDOT resides within Title 43, Part 1, Colorado Revised Statutes (2012). Article 1 vests the Colorado Transportation Commission with authority over planning, development, and adoption of the annual budget. This plan, based largely upon the Department’s anticipated revenue streams for the next fiscal year and beyond, incorporates measures for evaluating performance-based goals that are integrated into CDOT’s budgeting and planning processes. The plan is intended to best serve the people of Colorado through effective administration and delivery of transportation-related programs and services.

CDOT is responsible for a 9,146 mile highway system, including 3,447 bridges. Each year, this system handles more than 27.4 billion vehicle miles of travel. Although the Interstate system accounts for only about 10 percent (914 miles) of the total mileage on the state system, 40 percent of all travel within Colorado takes place on the Interstate highways.

The various divisions and offices within CDOT perform a wide array of functions to ensure that Colorado’s transportation system meets the needs of its users. The Division of Engineering, Design and Construction designs highway projects and awards contracts to private companies submitting the lowest bids to construct the projects, while the Division of Highway Maintenance and Operations takes care of the highway system, plowing snow and repairing pavement. The Division of Transportation Development manages the statewide transportation planning process and ensures the Department fulfills its environmental obligations. The Division of Aeronautics, funded by an aviation fuel tax, supports aviation interests statewide, including awarding and administering grants to help improve local airports. The Division of Transit and Rail, created in recent state legislation, provides assistance to numerous transit systems in the state. The Office of Transportation Safety helps local law enforcement agencies with special funds to apprehend drunk drivers and increase the use of safety belts. In FY2013, CDOT will create a Division of Operations under the Executive Director emphasizing the importance of optimizing use of the existing state highway system.

To help guide or influence program budgeting and project funding, the Transportation Commission budgets within investment categories. These four investment categories – safety, system quality, mobility, and program delivery – will transform into more functional categories under upcoming Transportation Commission policy. They are likely to follow national goal areas of new federal authorization. These national performance areas – safety, infrastructure condition, congestion reduction, system reliability, freight movement and economic vitality, environmental sustainability, and program delivery – serve to provide the framework and direction for Colorado’s transportation system and to broadly allocate the resources available to the Department. These categories will better reflect the focus on national transportation goals adopted in the federal government’s transportation authorization bill.

Mission Statement and Vision Narrative

To guide the strategic planning and budgeting processes, the Transportation Commission and Department have adopted mission and vision statements, core values, and operating principles. **Components of the strategic plan**, as required by Section 2-7-202(13)(a) (C.R.S. 2012) commencing with the State budget process for fiscal year 2012-13, **are highlighted in bold**.

The **vision** of the department is to enhance the quality of life and the environment of the citizens of Colorado by creating an integrated transportation system that focuses on safely moving people and goods and by offering convenient linkages among modal choices. It accomplishes this by relying on its core values of safety, people, respect, integrity, customer service, and excellence.

CDOT's **mission** is to provide the best multi-modal transportation system for Colorado that most effectively and safely moves people, goods and information. This mission is manifested in part through operating principles within Transportation Commission Policy Directive 13: customer focus, leadership, partnership, integrated regional and statewide priorities, financial responsibilities, balanced quality of life, environment, accessible connectivity and modal choices, and social responsibility.

From these organizational priorities, the Department establishes mid- to long-term performance goals and objectives. Policy Directive 14 aspires to achieve certain performance levels for the statewide transportation system, such as maintaining 60 percent of the state highway system's pavement in good or fair condition. But Policy Directive 14 also recognizes that funding often limits CDOT's ability to reach the desired level of performance, and thus sets achievable, short-term objectives that are at the time determined to be achievable (e.g. maintain or improve the system-wide pavement condition forecast of 40 percent for 2016). Those realistic objectives are often lower than the desired goals, but help guide annual budget and ongoing program funding decisions.

Policy Directives 13 and 14 were last substantially updated several years ago in preparation of development of the 2035 Long Range Plan. The fiscally constrained objectives and unconstrained goals or visions of Policy Directive 14 parallel the outlook of the 2035 Plan, which represents annual revenue projections and resource allocations through fiscal year 2035. The Long Range Plan is a federally mandated transportation plan with two significant variations – a fiscally constrained projection and an unconstrained vision. But uncertainty and volatility of revenues from year to year greatly complicates the projection of performance over such an extended time horizon. A federally required mid-range plan, the Statewide Transportation Improvement Program (STIP), is revised every *four* years and incorporates projects that the State can reasonably expect to complete with available funding over the next *six*-year period. Through a planning process shared by CDOT and its local partners, projects move forward through the STIP, working toward objectives within the Long Range Plan. The Colorado Transportation Commission has just begun to revisit Policy Directives 13 and 14, working from newly passed federal authorization and in preparation for the 2040 Long Range Plan.

Key Program Areas, Goals, Objectives and Performance Measures

CDOT's FY2014 Strategic Plan is organized to address the key program areas, goals, objectives and performance measures established by Policy Directive 14 and the newly enacted federal transportation legislation, Moving Ahead for Progress in the 21st Century Act (MAP-21), which will be included in the 2040 Long Range Plan.

Policy Directive 14

CDOT's key program area *goals* as defined in Policy Directive 14 are broad, aspirational, department-wide and long term. Five of the goals (all but bridge deck area condition) identify specific desired performance levels that cannot be met with currently anticipated resources:

- Achieve 60 percent good/fair pavement condition system-wide
- Achieve 95 percent good/fair bridge deck area condition system-wide
- Achieve a B maintenance level of service grade for system quality measures
- Maintain an average of no greater than 22 minutes of delay per traveler in congested corridors
- Achieve an A maintenance level of service grade for snow and ice control

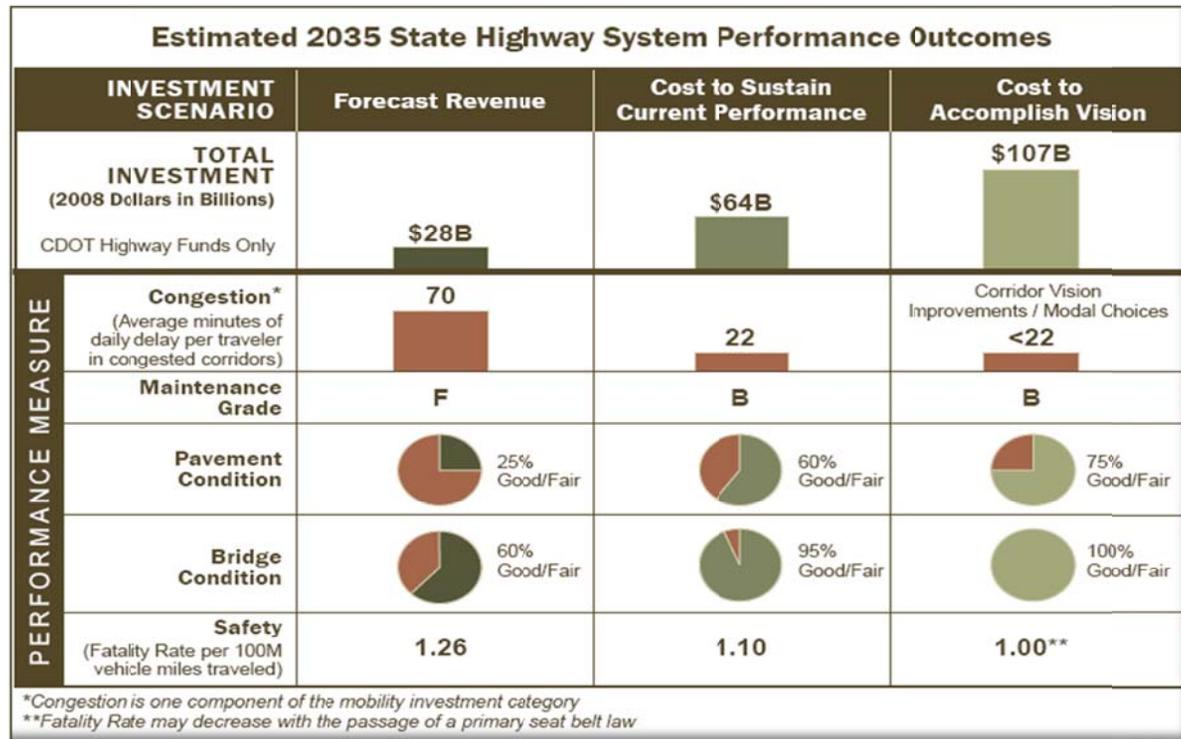
The key program area *objectives* are specific, measurable, achievable (at adoption), results-oriented, and time-bound. The objectives focus department efforts and actions on performance that is achievable with available resources. The difference between the performance goals and objectives, depicted in **Figure 1** below from the 2035 Long Range Plan, illustrates the gap between the desired level of performance and the reasonably achievable performance based upon anticipated resources as adopted by the Transportation Commission during the 2008-2035 resource allocation.

The *performance measures* associated with the investment category objectives are quantifiable and relevant, understandable, comparable (can determine context; track over time), reliable (verifiable and free of bias) and cost-effective. These performance measures link funding decisions made through the budgeting process and allow CDOT to evaluate performance after the year has ended. It is important to again note that the Department's long-term goals and objectives are established by the Transportation Commission through Policy Directive 14. The goals in this directive are revisited periodically in conjunction with cycles of long-range planning, and long-term goals and objectives often vary from the annual performance-based goals or benchmarks established during budget development. Where benchmarks are not reset annually, Policy Directive 14 objectives are stated and/or interpolated in this report.

In addition to this annual strategic plan, CDOT publishes an Annual Performance Report that details the achievements of the State's transportation system over the prior fiscal year and notes whether annual targets were met. Pursuant to House Bill 10-1119 and beginning in 2012, the Office of State Planning and Budget (OSPB) shall publish each December 1 an annual performance report that will include the

Department of Transportation. For current and past CDOT Annual Performance Reports, please refer to the CDOT library at <http://www.coloradodot.info/library/AnnualReports>.

Figure 1 – Select 2035 Long Range Plan Forecasted Revenues against Performance



Many of these goals and objectives reflect CDOT’s desire to become more accountable and transparent to its public. The metrics associated with these tactical strategies are mostly input or output measures, benchmarking the relative success of several initiatives. Metrics depicted throughout this strategic plan, however, are outcome-oriented, reflecting the impact and benefits to Colorado’s traveling public. One should note that the CDOT budget narrative last year transformed to a much more public-friendly format, presenting dollars budgeted for CDOT administration, staff, and activities, as well as dollars available to the private sector. Budget categories – Maintain, Maximize, Expand, Deliver, Pass-Through Funds and Multi-Modal Grants, and Contingency and Debt Service – were established working with the FASTER-

created Efficiency & Accountability Committee. These action-oriented budget categories now better reflect CDOT's activities as understood by the public, and are referenced throughout this strategic plan.

MAP-21

On July 6, 2012, President Barack Obama signed a \$106 billion federal transportation bill – Moving Ahead for Progress in the 21st Century Act. This bill stipulates that state DOTs implement the national performance measurement and management program following federal rulemaking, scheduled to conclude in April 2014.

Five sections of MAP-21 contain the core provisions related to establishing and using national performance measures. Section 1203 sets the overall framework for measures and targets. Section 1106 deals specifically with the National Highway Performance Program and establishes asset management plans as a key element of performance-based investment decision making for the National Highway System (NHS). Section 1202 addresses use of performance measures and targets within statewide long range transportation plans and transportation improvement programs. Section 1112 addresses use of performance measures and targets in state highway safety planning. Section 1113 addresses performance requirements for the Congestion Mitigation and Air Quality (CMAQ) improvement program.

Major milestones for state implementation include:

- July 6, 2012 – MAP-21 signed into law
- October 1, 2012 – MAP-21 enactment (coincides with the federal fiscal year)
- October 1, 2013 – Federal requirements for Strategic Highway Safety Plan
- April 1, 2014 – Final rulemaking performance measures
- April 1, 2014 – Final rulemaking on Transportation Asset Management Plans
- April 1, 2015 – State performance targets established
- October 1, 2015 – Metropolitan Planning Organization performance targets established
- October 1, 2015 – First state Transportation Asset Management Plans due
- On or about October 1, 2015 – Consequences for lack of progress in meeting certain minimum National Highway Performance Program condition levels
- October 1, 2016 – First biennial performance reports due

MAP-21 clearly outlines national performance areas (see Appendix A). In order to submit a timely strategic plan, staff has assimilated national performance areas with existing, pre-MAP-21 Transportation Commission policy directives. Goals and objectives within Policy Directive 14 are therefore grouped into the MAP-21's national performance areas:

- I. Safety – Services, programs and projects that achieve a significant reduction in traffic fatalities, serious injuries and property damage for system users and providers
- II. Infrastructure Condition – Activities, programs and projects that maintain the highway infrastructure asset system in a state of good repair
- III. Mobility – comprised of three separate national performance areas:
 - a. Congestion Reduction – Programs, services and projects that achieve significant congestion reduction on the National Highway System
 - b. System Reliability – Programs, services and projects that improve the efficiency of the surface transportation system
 - c. Freight Movement and Economic Vitality – Programs, services and projects that improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development
- IV. Environmental Sustainability - Programs, services and projects that enhance the performance of the transportation system while also protecting the natural environment
- V. Program Delivery – Functions that accelerate project completion by eliminating delays in the project development and delivery process, including reducing regulatory burdens

I. SAFETY

(Primarily funded through several *Maintain* budget funding programs)

Services, programs and projects that achieve a significant reduction in traffic fatalities and serious injuries

This investment category includes two areas of focus. The first focus area includes those programs used to influence driver behavior. The second area focuses on highway improvements to increase the safety of transportation workers and the public.

Long-Range Goals (Long-range goals are aspirational, and derived from Transportation Commission Policy Directive 14):

- To create, promote and maintain a safe and secure transportation system and work environment
- Increase absolute investment in safety and accelerate completion of strategic projects
- Achieve a 1.00 fatality rate per 100 million vehicle miles traveled

National performance areas will eventually also require the following measurements, for which CDOT currently has no performance goals:

- Number of fatalities
- Serious injuries per vehicle mile traveled
- Number of serious injuries

Objective: Maintain federal goals for highway vehicle safety.

Performance Measure	Outcome	FY 2010-11 Actual*	FY 2011-12 Actual†	FY 2012-13 Approp.	FY 2013-14 Request	FY 2017-18 Forecast
Fatalities per 100 Million Vehicle Miles Traveled (VMT)	Benchmark / Performance Goal	1.00	1.00	1.00	1.00	1.00
	Actual	.96	0.96	Avail. Oct 2013	Avail. Oct 2014	Avail. Oct 2018
Total Number of Traffic Fatalities	Actual	450	447	Avail. Oct 2013	Avail. Oct 2014	Avail. Oct 2018
Serious Injuries per 100 Million Vehicle Miles Traveled	Actual	25.3	25.4	Avail. Oct 2013	Avail. Oct 2014	Avail. Oct 2018
Total Number of Serious Injuries	Actual	11,851	11,849	Avail. Oct 2013	Avail. Oct 2014	Avail. Oct 2018

*Calendar Year 2010

†Calendar Year 2011

Strategy: Providing a safe and secure transportation system to the traveling public is among CDOT's highest priorities. The mission of CDOT's Office of Transportation Safety and Traffic Engineering Branch is to reduce the incidence and severity of motor vehicle crashes and the associated human and economic loss. This mission is accomplished through the incorporation of roadway safety engineering principles in all state highway construction and enhancement projects and the administration of grant programs directed at driver behavior, law enforcement and local community safety projects.

Evaluation of Success in Meeting Benchmarks — Explanation of Prior Year Outcomes: Between 2009 and 2011, the number of fatalities decreased by 3.9 percent, from 465 to 447. This is a marked improvement over the recent high of 743 traffic fatalities in Colorado in 2002. CDOT worked quickly to capitalize on the introduction of FASTER Safety funds. Examples of FY 2011 FASTER Safety projects include concrete repair and traffic signal replacement along University and Wadsworth Boulevards in the Denver area, extended acceleration and deceleration lanes on Interstate-70 in Clifton, and realignment to improve visibility and smooth turns at the intersection of State Highway 13 and Railroad Avenue in Rifle. Active FASTER Safety and other projects will soon be displayed at YourCDOTDollar.com.

Education has been a major factor in saving lives, but there have also been great advances in engineering that have made our roadways safer. Everything from the installation of rumble strips and cable medians to targeted safety improvements on roadways identified as high accident locations have prevented crashes or significantly increased the chances of surviving if one occurs.

The passage of traffic safety legislation has also played a role in reducing fatalities. For example, Colorado's Graduated Driver Licensing (GDL) laws, which set limits and requirements on new teen drivers, are credited with helping reduce by half the number of young people age 15 to 20 killed in crashes each year.

Safety experts are exploring ways that current laws can be strengthened to save additional lives, including expanding GDL laws and passing a primary seat belt law in Colorado. Currently, adult drivers can be ticketed for violating the seat belt law only if they are stopped for another traffic violation first.

In addition to fatalities, the Department tracks a number of other accident data and establishes objectives related to many types of accidents. For additional information related to accident prevention and reporting, please refer to the Department's Annual Performance Report, available at <http://www.coloradodot.info/library/AnnualReports>.

Objective: Maintain striping level of service at the Transportation Commission goal for Traffic Services level of service.

Performance Measure	Outcome	FY 2010-11 Actual	FY 2011-12 Actual	FY 2012-13 Approp.	FY 2013-14 Request	FY 2017-18 Forecast
Annual statewide striping level of service	Benchmark / Performance Goal	C-	C-	C-	C-	C-
	Actual*	C+ to D	C+ to D-	Avail. Oct 2013	Avail. Oct 2014	Avail. Oct 2018

*Represents the range of scores throughout state geographic sections measured

Strategy: Providing a safe and secure transportation system to the traveling public is among CDOT’s highest priorities. Of CDOT’s nine Maintenance Program Areas (MPAs), the Traffic Services MPA is the one most responsible for providing a safe transportation network to Colorado’s travelers, which includes the maintenance of roadway striping conditions. In January 2012 the Joint Budget Committee requested that striping level of service be added to CDOT’s Strategic Plan. The Transportation Commission has not established a goal explicit to striping, but one may interpret its goal of providing a B level of service on the overall maintenance program to the striping activity within the Traffic Services MPA. (Other activities under Traffic Services include signs, guardrail, and traffic signals.) Traffic Services has never been budgeted to deliver a B level of service. Recent CDOT budgets have funded Traffic Services to a C- level.

Evaluation of Success in Meeting Benchmarks — Explanation of Prior Year Outcomes: The actual performance of CDOT’s striping activity has fallen short of the interpreted B level of service goal, but has mostly achieved annual targets established through annual budget setting. The Transportation Commission has funded Traffic Services to a C- level, to improve safety during critical winter months by adding funding to the Snow & Ice program. The actual striping performance has varied throughout CDOT’s fifteen geographic sections and thus a range is provided for the actual performance in the table above.

Improving retro-reflectivity of striping is an evolving practice within the transportation industry. CDOT and other state DOTs continuously monitor best technologies and practices. Weather conditions, snow plow blades, and other factors related to striping activity make maintenance of striping conditions unusually challenging in Colorado.

II. INFRASTRUCTURE CONDITION

(Funded mostly through *Maintain* budget funding programs)

Activities, programs and projects that maintain the highway infrastructure asset system in a state of good repair

Infrastructure condition includes all programs that maintain the functionality and aesthetics of the existing transportation infrastructure at Transportation Commission defined service levels. This investment category primarily includes the Department’s maintenance activities on the highway system, right-of-way, and bridge program. In addition to highway maintenance, the investment category includes maintenance activities for airports and the preservation of railroad rights-of-way for transportation uses.

Long-Range Goals:

- Cost effectively maintain the quality and serviceability of the physical transportation infrastructure
- Increase absolute investment in system quality and accelerate completion of strategic projects
- Achieve 60 percent good/fair pavement condition system-wide
- Achieve 95 percent good/fair bridge deck area condition system-wide
- Achieve a B maintenance level of service grade for system quality measures

SMART legislation requiring performance measures for an agency’s entire budget also has prompted the department to add the following performance measure:

- Pavement condition of Colorado’s grant-funded airports

Objective: Maintain or improve upon the system-wide pavement condition forecast for 2018 of roughly 35 percent good or fair condition.

Performance Measure	Outcome	FY 2010-11 Actual	FY 2011-12 Actual	FY 2012-13 Approp.	FY 2013-14 Request	FY 2017-18 Forecast
Percent of pavement in good/fair condition	Benchmark	44.0%	45.0%	44.4%*	43.3%*	35.1%*
	Actual	48.0%	47.3%	Avail. Oct. 2013	Avail. Oct 2014	Avail. Oct 2018

* May change during FY14 budgeting process in October 2012.

Strategy: When adequate funding is available, the Transportation Commission endeavors to dedicate sufficient resources to prevent accelerated deterioration of the state highway system. The goal of CDOT's Pavement Management Program is to provide the Department with tools that optimize the use of public dollars and assist in project selection for the purposes of maintaining and improving overall system quality. These tools include: Statewide Surface Condition Reports (to include good/fair/poor maps); future surface condition projections; project recommendations; and regional budget allocation recommendations.

Evaluation of Success in Meeting Benchmarks — Explanation of Prior Year Outcomes: CDOT's surface treatment program is generally able to achieve the target established by the Transportation Commission at the beginning of each year. The annual target continues to be established each year at a level lower than the prior year's actual level, which is indicative of the continued system deterioration caused by insufficient investment in surface treatment. Pavement maintenance is generally provided from discretionary CDOT funds. Just less than one half of CDOT's funds are restricted (e.g. FASTER-Bridge funds are dedicated for bridges by state legislation, federally earmarked funds are dedicated for certain significant improvement projects, etc.). This leaves the Transportation Commission with just over \$500 million of resources to allocate as it deems appropriate among a number of program areas that perform important functions for the transportation system. Pavement has historically received about \$150 million of the discretionary funds, an amount which is insufficient to maintain current quality and drivability of the state highway system. Without increased discretionary funding, this performance can only continue to deteriorate.

The primary measure of pavement quality is the percent of pavement statewide that is in good or fair condition. The Department evaluates the condition of highway pavement based on how many years remain before reconstruction is necessary. A *good* condition rating means there is a remaining service life of 11 or more years; a *fair* rating indicates a remaining service life of six to 10 years; and a *poor* evaluation represents a remaining service life of less than six years. A 45 percent good or fair condition objective was established for FY2012 based on budgeted funding. CDOT was able to surpass the objective and achieve a good or fair condition on 47 percent of its highways due to mid-year influxes of funding applied to the pavement program. CDOT is currently analyzing new methodologies for treating the state's paved highways. It is considering a least cost approach for very low volume roads that would minimize costs while maintaining a threshold of safe, drivable condition.

A host of transportation information including most recent pavement conditions is now available online on OTIS, CDOT's web-based Online Transportation Information System (<http://dtdapps.coloradodot.info/otis>).

Objective: Maintain or improve upon the system-wide major vehicular bridge deck area condition forecast for 2018.

Performance Measure	Outcome	FY 2010-11 Actual	FY 2011-12 Actual	FY 2012-13 Approp.	FY 2013-14 Request	FY 2017-18 Forecast
Percent of major vehicular bridge deck area in good/fair condition	Benchmark	94.8%	95.0%	~95.0%	~95.0%*	~94.0%*
	Actual	94.5%	96.3%	Avail. Oct. 2013	Avail. Oct. 2014	Avail. Oct. 2018

* May change during FY14 budgeting process in October 2012.

Strategy: As with pavement, the Transportation Commission annually resets its target for each year’s bridge performance level based on allocated funding. Policy Directive 14 had established a long-range objective of maintaining 83 percent good or fair condition by 2016. But since adoption of Policy Directive 14, funding for bridges including the passage of FASTER has enabled the commission to establish annual objectives that demonstrate a slower deterioration than was forecasted with Policy Directive 14.

Evaluation of Success in Meeting Benchmarks — Explanation of Prior Year Outcomes: Due to the creation of the Colorado Bridge Enterprise (CBE), the percent of bridge deck area in good or fair condition improved from Fiscal Year 2011 to 2012. With the CBE’s support, the department was able to avoid further degradation of bridge deck area as it was able to repair or replace poor bridges as quickly as fair bridges fell into the poor category. In the two years since the passage of FASTER, the Department and the CBE have developed an aggressive program to identify, design, and repair or replace most of the current inventory of poor bridges. \$15 million of the federal portion of the CDOT Bridge Program is annually allocated to the CBE bonding program. The remaining CDOT Bridge Program funds are spent on six program activities. The first is major bridge rehabilitation. Because the CBE is concentrated on replacing poor bridges, this activity focuses on major rehabilitation of bridges where this is the preferred alternative for bridges not transferred to the CBE. Other activities executed by the CDOT Bridge Program include: planned preventative maintenance; essential repairs; structure inspection and management; and scour plan of action updates. Each of these is a cost-saving activity, as a one percent increase in the amount of poor bridge deck area results in a \$327 million liability for the State.

CDOT reports major vehicular bridge condition by the percent of bridge deck area statewide in good or fair condition. The National Bridge Inventory standards established by the Federal Highway Administration had been used to inventory and classify the condition of the major vehicular bridges. The classification is based on a sufficiency rating of 0-100 and a status of not deficient, functionally obsolete, or structurally deficient. Major vehicular bridges in poor condition have a sufficiency rating of less than 50 and status of structurally deficient or functionally obsolete. Bridges in poor condition do not meet all safety and geometry standards and require reactive maintenance to ensure their safe service. For the purpose of determining bridge-funding needs, it is assumed that bridges in poor condition have exceeded their economically viable service life and require replacement or major rehabilitation. Major vehicular bridges in fair condition have a sufficiency rating from 50 to 80 and a status of structurally deficient or functionally obsolete. Bridges in fair condition marginally satisfy safety and

geometry standards and require either preventative maintenance or rehabilitation. Major vehicular bridges in good condition are all remaining major bridges that do not meet the criteria for poor or fair. Bridges in good condition generally meet all safety and geometry standards and typically only require preventative maintenance.

A bridge is structurally deficient if it does not meet minimum standards for condition or capacity. A structurally deficient bridge often has one or more members in poor condition due to deterioration or other damage. Having only a small portion of a bridge in poor condition can result in the entire bridge being classified as structurally deficient. Structurally deficient bridges require monitoring, maintenance, or repair to ensure their safe use and continued service. A bridge is functionally obsolete if it does not meet current minimum geometric requirements. Bridges classified as functionally obsolete often have inadequate roadway shoulders, insufficient number of lanes to handle current traffic volumes, overhead clearances less than minimums, or inadequate widths for roadways or streams passing underneath. Functionally obsolete bridges may need signage (e.g. vertical clearance signs), reduced speeds, or traffic control devices (e.g. additional guardrails) to ensure safety.

Objective: Meet or exceed the adopted annual maintenance level of service grade.

Performance Measure	Outcome	FY 2010-11 Actual	FY 2011-12 Actual	FY 2012-13 Approp.	FY 2013-14 Request	FY 2017-18 Forecast
Annual statewide maintenance level of service grade	Benchmark	C+	C	C	C*	Avail. Oct. 2016
	Actual	B-	B-	Avail. Oct. 2013	Avail. Oct. 2014	Avail. Oct 2018

*May change during FY14 budgeting process in October 2012.

Strategy: CDOT uses an extensive maintenance level of service (MLOS) budgeting system to allocate funds and evaluate all maintenance activities performed throughout the state for a given fiscal year. The main objective of MLOS is to establish an overall target level of service while staying within allocated budget dollars. Levels of service communicate targets for accomplishment inside and outside the agency. When planned levels of service are compared to actual service levels accomplished, a basis of accountability is established. Relationships between levels of service and cost enable CDOT to evaluate the impacts of different funding levels, analyze tradeoffs in resource allocation, and monitor planned versus actual accomplishments against expenditures. The achieved LOS is determined through extensive surveys of approximately 700 randomly selected highway segments throughout the state. There are several surveys conducted throughout the fiscal year that evaluate CDOT's infrastructure and how well it was maintained.

Evaluation of Success in Meeting Benchmarks — Explanation of Prior Year Outcomes: This year's statewide maintenance level of service grade of B- exceeded the annual objective of C. The Maintenance and Operations Branch attributes this to a milder winter in the Eastern half of the state, which allowed them to exceed target levels of service for *non-snow* related maintenance activities. The statewide overall

maintenance objective and actual grades over an eight-year period range from a C to a B+. The steady grades reflect a carefully administered maintenance management system. The decrease to a C benchmark in FY 2012 is largely the result of budgeted dollars not keeping up with the rising costs of fuel and materials, inflation and increasing needs for bridge maintenance activities.

The nine Maintenance Program Areas (MPAs), which together with expenditures make up the MLOS grade, are: Planning, Scheduling and Training; Roadway Surface; Roadside Facilities; Roadside Appearance; Traffic Services; Structure Maintenance; Snow and Ice Control; Rest Areas, Buildings and Grounds; and Tunnel Operations. A detailed explanation of the levels of service for each of the MPAs can be found in Appendix B.

Objective: Maintain the pavement condition of Colorado’s grant-funded airports.

Performance Measure	Outcome	FY 2010-11 Actual	FY 2011-12 Actual	FY 2012-13 Approp	FY 2013-14 Forecast	FY 2017-18 Forecast
Average statewide primary airport pavement (PCI) rating	Benchmark	75	75	75	75	75
	Actual	82.0	78.6	Avail. Oct. 2013	Avail. Oct. 2014	Avail. Oct 2018

Strategy: The Division of Aeronautics seeks to maximize its historic investments by identifying primary runway, taxiway, and apron pavements that could benefit from maintenance to improve their pavement condition index (PCI) rating. These ratings are used by the Division of Aeronautics and the FAA Airports District Office to determine priority distribution of state and federal pavement maintenance funds. The standard PCI procedure is a consistent, objective, and repeatable tool used by the aviation industry to visually assess pavement condition. In general terms, pavements above a PCI of 65 that are not exhibiting significant load-related distress will benefit from preventive maintenance actions, such as crack sealing and surface treatments. Pavements with a PCI of 40 to 65 may require major rehabilitation, such as an overlay. Often, when the PCI is less than 40, reconstruction is the only viable alternative due to the substantial damage to the pavement structure.

Evaluation of Success in Meeting Benchmarks — Explanation of Prior Year Outcomes: The Division of Aeronautics’ goal is to maintain Colorado’s primary airport pavements at an average PCI score of 75 or above. It has successfully met these stated, industry-standard goals, showing Colorado’s grant-funded airports maintaining an average score of 78.6 in FY2012. In 2011 the Division helped leverage \$89 million in grants for airports throughout Colorado from the FAA’s Airport Improvement Program (AIP). Seventy million dollars went to Colorado’s Commercial Service Airports with the remaining \$19 million going to the General Aviation facilities. These funds are used for such projects as pavement improvements and maintenance, planning, land acquisition, terminal improvements, and airfield safety.

III. MOBILITY

Including MAP-21 national performance areas of:

Congestion Reduction

System Reliability

Freight Movement and Economic Vitality

(Funded through many *Maximize* and *Expand* budget funding programs)

- **Congestion Reduction: Programs, services and projects that significantly reduce congestion on the National Highway System;**
- **System Reliability: Functions that improve the efficiency of the surface transportation system;**
- **Freight Movement and Economic Vitality: Functions that improve the national freight network, strengthen the ability of rural communities to access national and international trade markets, and support regional economic development.**

The activities within this investment category address issues that impact movement. Quality of movement, accessibility to transportation, reliability of the system, connectivity of one system to another system, and environmental stewardship are all aspects of the mobility category. The programs used to address mobility include the highway performance program, alternate modes, facility management, travel demand management, and road closures program.

Long-Range Goals:

- Maintain or improve the operational capacity of the transportation system
- Increase integration of the transportation system modal choices
- Increase absolute investment in mobility and accelerate completion of strategic projects
- Maintain an average of no greater than 22 minutes of delay per traveler in congested corridors
- Achieve an A maintenance level of service grade for Snow and Ice Control

SMART legislation requiring performance measures for an agency's entire budget also has prompted the department to add the following performance measure:

- Total statewide transit ridership

Objective: Reduce the growth rate in minutes of delay per traveler in congested corridors by 1.5 percent below the forecast for 2018 of 18.8 minutes of delay.

Performance Measure	Outcome	FY 2010-11 Actual*	FY 2011-12 Actual†	FY 2012-13 Approp.	FY 2013-14 Request	FY 2017-18 Forecast
Travel time delay in congested corridors (minutes of delay per person)	Benchmark	18.4	18.4	14.7	15.5	18.8
	Actual	17.3	13.8	Avail. May 2013	Avail. May 2014	Avail. May 2018

* Calendar Year 2010

† Calendar Year 2011

Strategy: The Department’s primary measure of mobility is minutes of delay per traveler in congested state highway segments. Travel time delay is the difference between the travel time on highways at the free flow speed and the time it takes to travel during congestion. A highway segment is considered congested when the peak traffic is 85 percent or greater than the traffic volume the highway is designed to handle. Since the last increase in fuel tax, population growth and growth in vehicle miles traveled, particularly among the trucking industry, has accelerated much more rapidly than revenues. The Department recognizes it cannot materially reduce congestion. Rather, it seeks to improve system mobility by slowing the rate of its increase. Gradually over the past several decades the strategy for accomplishing this has shifted away from adding highway lane capacity to providing system information that enables travelers to make better-informed decisions about modal choices.

Evaluation of Success in Meeting Benchmarks — Explanation of Prior Year Outcomes: Though the total amount of vehicle miles traveled (VMT) on Colorado roadways increased 0.5 percent from 2010, the average minutes of delay *per traveler* decreased significantly from 17.3 minutes during 2010 to 13.8 minutes during 2011. Several factors contributed to this reduced delay, including a slowed economy and higher gas prices, both of which can affect the number of people using the highways and the number of commuters using alternative transportation, such as mass transit, carpools and bicycle. The most significant explanation for the reduction in time delay, however, is based on how Travel Time Delay is calculated. In 2010, national transportation standards were updated from the year 2000 version to reflect more accurate estimates of the carrying capacity of highway segments. The result is a higher calculated carrying capacity of highways across the state and, therefore, fewer congested segments and less overall time delays captured.

CDOT’s estimates for travel time delay have been revised downward since the 2035 Long Range Plan was issued in 2008. At that time, travel time delay in 2010 was estimated to be an average of 28.3 minutes per traveler. However, when the estimated delay in 2012 was calculated based on 2011 actual data, the new time estimate was 14.7 minutes. This affects estimates for future years as well.

Objective: Maintain the snow & ice maintenance level of service grade at the adopted annual grade.

Performance Measure	Outcome	FY 2010-11 Actual	FY 2011-12 Actual	FY 2012-13 Approp.	FY 2013-14 Request	FY 2017-18 Forecast
Snow & ice maintenance levels of service (MLOS) grade	Benchmark	B	B	B	Avail. Oct. 2013	Avail. Oct. 2017
	Actual	B	B	Avail. Oct. 2013	Avail. Oct. 2014	Avail. Oct. 2018

Strategy: Each year an analysis is performed based on a five-year average of materials, plow miles, and total dollars spent in maintenance activity 402 (Snow Removal and Traction Application). The objectives of these analyses are as follows:

- To assess the variation in costs and accomplishments among the five years, as a way of gauging differences in weather that affect the demand for winter maintenance
- To test the effect of average annual daily traffic (AADT) on winter maintenance policy, work accomplishment, and costs
- To analyze historical trends in winter maintenance work accomplishments and costs with the purpose of determining a “standard winter” for budgeting

Evaluation of Success in Meeting Benchmarks — Explanation of Prior Year Outcomes: CDOT has been able to maintain reasonably consistent snow & ice removal performance in recent years, thanks in part to Transportation Commission decisions to provide contingency funding in severe winters.

In 2008, amid rising costs per plow mile, maintenance policy was revised, so that highway segments with an annual average daily traffic count of less than 1,000 vehicles are not plowed between the hours of 7:00 PM and 5:00 AM (exceptions may be made for school bus or hospital/emergency routes or segments with high accident rates).

Objective: Support increased transit ridership throughout Colorado.

Performance Measure	Outcome	FY 2010-11 Actual*	FY 2011-12 Actual†	FY 2012-13 Approp.	FY 2013-14 Request	FY 2017-18 Forecast
Statewide total unlinked passenger trips (millions)	Actual	115.3	Avail. Oct. 2013	Avail. Oct. 2014	Avail. Oct. 2015	Avail. Oct. 2019

* Calendar Year 2010

† Calendar Year 2011

Strategy: The Division of Transit and Rail is responsible for the planning, development, operation, and integration of transit and rail into the statewide transportation system. In addition, it administers federal and state grant funds in coordination with other transit and rail providers to support the planning, promotion, and implementation of transit and rail services statewide.

Evaluation of Success in Meeting Benchmarks — Explanation of Prior Year Outcomes:

A spike in transit ridership in 2008 can largely be attributed to gas prices being over \$4 a gallon for much of the summer. Subsequent ridership decline in '09 and '10 is somewhat due to gas prices getting back to 'normal' levels. However, much of the decline over this period is due to an overall downturn in the economy and an associated trend of less work-related travel and a reduction in the overall number of people commuting to work. Please note that transit ridership is summarized and reported nationally two years in arrears.

IV. ENVIRONMENTAL SUSTAINABILITY

(Funded through *Deliver* and *Pass-Through Funds/Multi-Modal Grants* budget funding programs)

Functions that enhance the performance of the transportation system while also protecting the natural environment

The Transportation Commission's Policy Directive 13 recognizes environmental stewardship as a key planning principle, though no goal is stated by the commission. Our work with the Colorado Department of Public Health and Environment (CDPHE) and the Environmental Protection Agency has prompted CDOT to establish the following goal:

- Have no environmental compliance violations

National performance areas will eventually require:

- On-Road mobile sources emissions, which CDOT does not currently measure

Objective: Incur no environmental compliance violations.

Performance Measure	Outcome	FY 2010-11 Actual	FY 2011-12 Actual	FY 2012-13 Approp.	FY 2013-14 Request	FY 2017-18 Forecast
Number of environmental compliance violations	Benchmark	0	0	0	0	0
	Actual	0	0	Avail Oct. 2013	Avail Oct. 2014	Avail. Oct. 2018

Strategy: Achieving a perfect record on this measure is critical and entails mostly proactive mitigation of project area water discharge so that water quality is not impacted by a project.

Evaluation of Success in Meeting Benchmarks — Explanation of Prior Year Outcomes: CDOT did not receive any notices of compliance violations in FY 2012.

CDOT obtains permits from the CDPHE to discharge stormwater from roadway projects. The permit states that only stormwater (and a few other allowable discharges, like landscape irrigation overflow) can be discharged from CDOT’s right-of-way into state waters. Pollutants, such as dirt, fertilizers, pesticides, oil and grease, and antifreeze must be prevented as much as practicable from entering state waters by the diligent use of best management practices. CDOT also has a Municipal Separate Storm Sewer System Permit (MS4). This is a permit that requires several different programs be in place to ensure the amount of pollutants entering the storm drain system is reduced. Those programs include:

- Construction sites program
- New development and redevelopment program
- Illicit discharges program
- Industrial facilities program
- Public education and involvement program
- Pollution prevention and good housekeeping program
- Wet weather monitoring program

CDOT is increasing its control measures to include accountability at additional levels in order to proactively secure a site against significant storm events and to respond more quickly to findings with prompt action steps.

V. PROJECT DELIVERY

(Funded through *Deliver* budget funding program)

Functions that accelerate project completion by eliminating delays in the project development and delivery process, including reducing regulatory burdens.

An excellent organization delivers its projects and services with quality and efficiency. To do this, the organization must effectively manage its financial and human resources, act sensitively toward the environment and develop a network of suppliers that competitively meet the needs of the organization.

Long-Range Goals:

- Deliver high quality programs, projects and services in an effective and efficient manner
- Deliver all programs and projects on time and within budget
- Accelerate completion of the remaining strategic projects
- Increase investment in strategic projects

National performance areas may eventually also require a measure such as:

- Percent of program delivered by end of state fiscal year

Objective: Advertise projects within 30 days of the target advertisement date established on July 1st of the fiscal year.

Performance Measure	Outcome	FY 2010-11 Actual	FY 2011-12 Actual	FY 2012-13 Approp.	FY 2013-14 Request	FY 2017-18 Forecast
Percent of CDOT projects advertised within 30 days of the ad dates established on 7/1 of fiscal year	Benchmark	80%	80%	80%	80%	80%
	Actual	47.2%	50.0%	Avail Oct. 2013	Avail Oct. 2014	Avail. Oct. 2018

Strategy: Delivering projects on time is one measure of the Department’s ability to effectively manage resources. Projects occur in two phases: design and construction. CDOT designs the majority of its projects in-house and then solicits bids for the construction phase from contractors. At the beginning of the fiscal year, the department estimates projected completion dates or advertised dates for known projects to be designed in the coming year. When all design work has been completed and proper clearances are in place, a project is ready to be advertised for construction bids. One measure of department efficiency is the percent of projects that meet their planned advertisement dates (“ad dates”) that were established at the beginning of the fiscal year.

Evaluation of Success in Meeting Benchmarks — Explanation of Prior Year Outcomes: Of the 122 projects assigned ad dates in FY2012 as of August 1, 2011, 61 were advertised within 30 days of the original ad date. This reflects rescheduling that occurs throughout the year as some projects' ad dates are accelerated, others are postponed and some projects are combined with others to capitalize on opportunities to be more efficient. By the close of FY2012, projects scheduled for ad in that fiscal year had grown from 106 to 144, demonstrating how projects may be added during the year with influxes of funding, savings from completed projects, or heightened priorities.

This measure only captures Design-Bid-Build projects, where CDOT designs a project in-house and then puts the project out to bid for a private firm to construct it. More innovative types of projects include Construction Management/General Contractor (CM/GC) projects, which involve more collaboration between the designers and contractors, and Design-Build contracts, where one firm handles both the design of a project and the construction phase. Project estimates show that these innovative approaches to projects can be more efficient than the traditional Design-Bid-Build model, and CDOT anticipates it will use them increasingly in the future.

Objective: Meet or exceed the Department's annual Disadvantaged Business Enterprise (DBE) goals.

Performance Measure	Outcome	FY 2010-11 Actual	FY 2011-12 Actual	FY 2012-13 Approp.	FY 2013-14 Request	FY 2017-18 Forecast
Percent Disadvantaged Business Enterprise (DBE) participation	Benchmark*	13.3%	13.3%	10.3%	Avail. Aug. 2013	Avail. Aug. 2017
	Actual*	16.3%	14.2%	Avail. Nov. 2013	Avail. Nov. 2014	Avail. Nov. 2018

* Based on Federal Fiscal Year ending September 30

Strategy: In setting the overall annual goal for the Department, the United States Department of Transportation (USDOT) requires that the goal setting process begin with a base figure for the relative availability of DBEs. The overall goal must be based on demonstrable evidence of the availability of ready, willing, and able DBEs relative to all businesses ready, willing, and able to participate on USDOT-assisted contracts. CDOT sets an annual objective level of DBE participation in construction projects as a percentage of its total Federal Aid Highway Program dollars. CDOT works to meet this goal through a number of activities, such as ensuring that bid notices and requests for proposals are available to DBEs in a timely manner, identifying contracts and procurements so that DBEs are included in solicitations, monitoring results, and planning and participating in DBE training seminars.

Evaluation of Success in Meeting Benchmarks — Explanation of Prior Year Outcomes: Through federal fiscal year 2012, DBEs received 14.2 percent of construction contract dollars awarded. This amount exceeds the annual target of 13.3 percent.

Appendix A: MAP-21 National Performance Areas

MAP-21 Program Area	National Performance Measure Area	Comments
HSIP	1. Serious Injuries per VMT 2. Fatalities per VMT 3. Number of Serious Injuries 4. Number of Fatalities	<ul style="list-style-type: none"> • NCHRP 20-24(37)G identified “Five Year Moving Average of the State Number of Fatalities” as ready for national deployment, and “Five Year Moving Average of the State Number of Serious Injuries” as a candidate national measure requiring further development. • NHTSA currently requires states to annually report 14 performance measures (established in collaboration with GHSA) - these cover three of the four MAP-21 measurement areas (Serious Injuries per VMT not included) • Fatality measure can be based on FARS data; work required to define consistent national serious injuries measure • Measures are for all public roads
NHPP	5. Bridge Condition on the NHS	<ul style="list-style-type: none"> • NCHRP 20-24(37)G identified “deck area of structurally deficient NHS bridges” as ready for deployment • Minimum NHS condition level is based on SD bridges but national performance measure can be different

MAP-21 Program Area	National Performance Measure Area	Comments
NHPP (cont'd)	6. Pavement Condition of the Interstate System 7. Pavement Condition of the NHS	<ul style="list-style-type: none"> NCHRP 20-24(37)G identified “ the percent of lane-miles on the NHS classified as “good”, “fair”, and “poor”, as determined by thresholds for the International Roughness Index (IRI)” as ready for national deployment. It identified “structural adequacy on NHS as a candidate national measure requiring further development. IRI is the most consistent national measure available; additional work on network-level IRI standards may be needed.
	8. Performance of the Interstate System 9. Performance of the NHS excluding the Interstate System	<ul style="list-style-type: none"> MAP-21 does not define “performance” but one interpretation is that the intent is to include measures of operational performance to complement the other condition based measurement areas A range of operational performance measures can be considered – NCHRP 20-24(37)G identified “travel time-based metrics, congestion cost, and reliability on the Interstate system” as candidate operational performance measures that require further development for national deployment. Coverage of the entire NHS may be problematic using existing data-modeling or sampling approaches may be needed.

MAP-21 Program Area	National Performance Measure Area	Comments
CMAQ	10. Traffic Congestion 11. On-Road Mobile Source Emissions	<ul style="list-style-type: none"> • Clarification needed on whether these apply to users of CMAQ funds with no non-attainment or maintenance areas • Using area-wide measures of emissions and associated outputs from travel demand models produced for air quality conformity analysis would build on existing process in place • Need for collaboration with MPOs given their central role in this area
Freight	12. Freight Movement on the Interstate System	<ul style="list-style-type: none"> • NCHRP 20-24(37)G identified “Speed/travel time on freight corridors” and “Reliability on freight corridors” as ready for national deployment. These measures could be adjusted to reflect Interstate-only travel. • Current FHWA Freight Analysis Framework provides foundation data

Appendix B

Levels of Service Definitions for the Maintenance Program Areas

Roadway Surface

A The structure, smoothness, and durability of the pavement surface are excellent. The surface is free of potholes and exhibits little or no cracking. Past repairs (e.g., patches, sealed cracks) are in excellent condition. There is little or no drop-off from the pavement or shoulder edge. Surface materials properties have not degraded.

B The pavement is in overall good structural condition, offers a satisfactory ride, and exhibits sound materials quality. Occurrences of distress such as cracking, potholes, rutting, and materials problems are infrequent and minor. Past repairs are in good condition, with limited need for rework. Edge drop-offs are infrequent.

C Pavement shows moderate problems with structural deterioration (e.g., cracking, potholes, past repairs), ride quality (excessive rutting, roughness, edge drop-off), or materials degradation (oxidation of asphalt surface, flushing / bleeding, or loss of material through raveling).

D Pavement deterioration is significant, with up to half of the pavement area exhibiting one or more types of serious distress: structural deterioration (e.g., large areas or numbers of cracks, potholes), ride quality (e.g., deep ruts, surface roughness, edge drop-off), and materials degradation. Surface condition may affect speed and vehicle handling.

F Pavement is deteriorated over more than half its area. The integrity of the surface and the ride quality it offers are degraded by extensive damage (cracking, potholes), deformation (rutting, roughness), degradation of the asphalt concrete (raveling, flushing / bleeding, or oxidation), or edge drop-off. Speed and vehicle handling likely affected.

Roadside Facilities

A Condition of drainage inlets, structures, and ditches, right-of-way fences, roadside slopes, and noise walls is excellent, with no damage or defacement. Drainage inlets and ditches are free of debris. Very few or no effects of slope failures or washouts have affected the road in the past year. There is no litter or debris on travel way or shoulder.

B Roadside facilities show only minor deterioration. Blockages of drainage inlets and ditches are infrequent. Maintenance of fencing or of sound walls is needed in only a few locations. There are scattered pieces of litter or occasional roadway / shoulder debris. A small number of slope failures / washouts affect the road annually.

C Roadside facilities show moderate deterioration. Several drainage structures are blocked with silt or debris. Fencing or sound walls require maintenance at a number of locations. Slope failures / washouts affect road availability. Limited patches of litter or sand or debris on the travel way or shoulder occur.

D A significant level of deterioration has occurred in roadside facilities, including blocked or silted drainage features, damaged right-of-way fencing, damaged or defaced sound walls, and a high annual frequency of slope failures and washouts. There are several patches of unsightly litter or sand / debris on the travel way / shoulder.

F More than half of roadside facilities require maintenance. The condition and intended functions of these facilities are impeded by extensive blockages of drainage inlets and roadside ditches, damaged fencing, damaged or defaced sound walls, or frequent slope failures / washouts. A lot of sand, debris, and litter cover the road and roadside.

Roadside Appearance

A Road appearance is excellent, characterized by well-tended landscaping and vegetation, grass mowing at intended locations and schedules, and absence of noxious weeds.

B Road appearance is superior, with only infrequent or minor instances of unkempt or infested landscaping and other vegetation, grass requiring mowing, or scattered occurrences of noxious weeds.

C Appearance overall is good, but with one or more of the following problems: grass requiring mowing; selected areas of landscaping or vegetation requiring trimming or treatment; and locations where noxious weeds are present.

D A significant number of items detract from road appearance, including high grass requiring mowing, a number of landscaped or vegetated areas requiring trimming or treatment, and noxious weeds affecting up to half of road length.

F Road appearance is extensively degraded by situations such as excessively high grass requiring mowing, landscaping and vegetation requiring trimming or treatment, and noxious weeds affecting most of the road length.

Structure Maintenance

A Maintenance items of bridges are in excellent condition. Decks, deck features, and weep holes are clean. Deck, curbs, expansion joints, and railings are in good condition with all defects repaired. Bearings are clean and serviced. Paint coating on bridge steel is intact. Bridge structure, approaches, and slopes do not require maintenance.

B Maintenance items of bridges are in superior condition. Decks, deck features, and weep holes are mostly clean, with little debris or need for washing. Minor or infrequent defects occur in deck surface, railings, expansion joints, structure, approaches, or slopes. A small percentage of bearings and of painted steel require maintenance.

C Maintenance items of bridges are in good condition, but some features require work: e.g., cleaning or washing of decks, curbs, and weep holes; patching of deck surface; and repair, servicing, or painting of expansion devices, railings, bearings, structural members, approaches, or slopes.

D A significant number of bridge features require maintenance. Decks, deck features, and weep holes must be cleaned or washed. Decks, curbs, expansion joints, or railings may impede use and require repair. Bearings must be cleaned and serviced. Bridge steel requires painting. Bridge structure, approaches, and slopes need repair.

F An extensive number of bridge features require maintenance of potentially major distress. Decks, curbs, expansion joints, or railings require repair and may pose a safety hazard. Bearings must be cleaned and serviced. Bridge steel requires painting to allay structural deterioration. Bridge structure, approaches, and slopes need repair.

Snow & Ice Control

A Plowing and chemicals or abrasives applications proactively maintain very high levels of mobility throughout storms (refer to accompanying tables). Snow drifts and localized ice patches are treated quickly to avoid closures and hazards. Proactive avalanche control minimizes traffic interruptions and avoids unanticipated road closures.

B Plowing and abrasives or chemicals applications maintain high levels of mobility as much as possible (refer to accompanying tables). Snow drifts and localized ice patches may be treated during storm with abrasives or chemicals. Proactive avalanche control minimizes traffic interruptions and avoids unanticipated road closures.

C Plowing and abrasives or chemicals applications maintain good levels of mobility on high-standard roads (refer to accompanying tables). Snow drifts and localized ice patches are treated as soon as possible at end of storm. Avalanche control focuses on high-priority locations and situations.

D Plowing and abrasives or chemicals applications are performed on limited basis and some traffic delays are anticipated on all roads (refer to accompanying tables). Snow drifts and localized ice patches are treated after mainline roads are cleared. Limited avalanche control is performed. Chain station operation may be scaled back.

F Plowing and abrasives or chemicals applications are performed on very limited basis, impairing mobility on all roads (refer to accompanying tables). Snow drifts and localized ice patches may not be treated for some time. No preventive avalanche control is performed. Chain station operations are scaled back or suspended.

Major Tunnels

A Condition of the tunnel structure is excellent. Operation of electrical, electronic, and mechanical systems is highly reliable. Inspections and repairs are performed on schedule. Response to incidents is immediate and effective, and frequent, attentive care of the facilities (e.g., washing, clearing of ice and debris) maintains safe and efficient passage.

B Condition of the tunnel structure is very good. Operation of electrical, electronic, and mechanical systems is reliable. Inspections and repairs are performed on schedule. Response to incidents is virtually immediate, and care of the facilities (e.g., washing, clearing of ice and debris) maintains a high degree of safe, efficient passage.

C Condition of the tunnel structure is good. Operation of electrical, electronic, and mechanical systems is reliable overall, with few nonfunctioning items. Inspections and repairs are performed regularly. Response to incidents is immediate most of the time. Care of the facilities is good overall, although conditions may degrade temporarily.

D Condition of the tunnel structure is fair. Operation of electrical, electronic, and mechanical systems is somewhat degraded, and response time exceeds desirable limit. Inspections, calibrations, and repairs are behind schedule. Response to incidents is immediate much of the time, but delays may occur. Care of the facilities is overdue.

F Condition of the tunnel structure is poor. Operation of electrical, electronic, and mechanical systems is degraded, with response time exceeding desirable limit, and multiple concurrent failures in systems. Inspections, calibrations, and repairs are infrequent. Response to incidents is irregular. Care of the facilities is lacking.