Transportation Commission of Colorado
Transportation Asset Management Committee
Meeting Agenda
Thursday, June 19, 2014
4201 East Arkansas Avenue

William Johnson, Branch Manager
Transportation Performance Branch

Les Gruen, Chair
District 9, Colorado Springs

Kathy Connell
District 6, Steamboat Springs

Heather Barry
District 4, Westminster

Sidny Zink
District 8, Durango

Steven Hofmeister
District 11, Haxtun

Scott McDaniel
Acting Chief Engineer

Debra Perkins-Smith, Director
Division of Transportation Development

All commissioners are invited to attend this Committee meeting.

1. **Report Out from Commissioner Gruen – 5 minutes**

- **Approval of February, 2014 Minutes p4**

2. **Moving to a Geohazard Management Plan, Ty Ortiz – 10 minutes.. p6**
3. **Project Status Report, William Johnson – 10 minutes..... p18**

- **Status Report by Asset Category..... p19**
- **Next month – PD 14 refinement**

4. **Asset Management Updates, William Johnson, 5 minutes**

- **FY17 & FY18 Delphi Workshop in September..... p25**
- **CDOT TAM Workshop p26**
- **Asset Management Brochure..... p26**
- **10th National Conference on Transportation Asset Management.... p26**

<u>THE AGENDA MAY BE ALTERED AT THE CHAIR'S DISCRETION</u>

COLORADO
Department of Transportation
Division of Transportation Development

Transportation Performance Branch
4201 E. Arkansas Ave. Shumate Bldg
Denver, CO 80222-3400

TO: Transportation Commission

FROM: Debra Perkins-Smith, Division of Transportation Development
William Johnson, Transportation Performance Branch, DTD

DATE: June 6, 2014

RE: Transportation Asset Management Committee

Purpose

This memorandum summarizes the discussion planned for the June meeting of the Colorado Transportation Commission Asset Management Committee.

There are four attachments in support of this meeting:

1. A PowerPoint Presentation covering the meeting topics, which include:
    a. Moving to a Geohazard Management Plan
    b. Asset Management Project Status Report
    c. Asset Management Updates including the Delphi Workshop planned for August for FY17 & FY18, the CDOT TAM Workshop in June, and the TAM Brochure, and an update on the 10th National Asset Management Conference.
2. A memorandum discussing the Geohazard Management Plan
3. The minutes from the February TC AM Meeting.
4. TAM Taxonomy Summary

Action Requested

- Approval of the February Minutes.
- Approval of FY15 Geohazard Management Plan.

Background

In September 2012 the Colorado Transportation Commission formed the Asset Management Committee to facilitate a more detailed discussion on asset management with a smaller group. The initial priorities of the group were to seek alternative surface treatment analysis, improve fleet equipment management and develop a budget tradeoff tool. Commissioners emphasized that asset management must be incorporated into the FY14 budget discussion.

Details

Geohazards Plan:

CDOT Geotechnical staff are using a Risk Based Corridor approach to achieve more efficient risk reduction, and are focusing on a more encompassing approach rather than rockfall only. The geotechnical staff propose calling the program the Geohazard Program, rather than the Rockfall Program.

Project Status Report:

The Project Management Office has provided an analysis of the FY14 finanical performance for each asset for the Commissioners to review.

Asset Management Updates:

Staff is planning to have a Delphi Workshop in August for FY17 and FY18 Asset Management Budget setting. Staff is having an offsite TAM Workshop on June 10 & 11 for approximately 300 employees to communicate the importance of Asset Management at CDOT. Staff is putting together a TAM Brochure. William and other staff members attended the 10th National Asset Management Conference in May and will provide a report out to the Committee.

Next Steps

The Transportation Commission Asset Management Committee will meet again in July, 2014 to discuss Policy Directive 14 and Asset Management Performance Metrics.

ASSET MANAGEMENT COMMITTEE
DRAFT MINUTES

Date: February 19, 2014
Committee Members Attending: Commissioners Gruen, Barry, Connell, Hofmeister and Zink.
Others Attending: Commissioners Aden, Gifford, Gilliland, Peterson, Reiff, Thiebaut; Debra Perkins-Smith, Scott Richrath, William Johnson, Bill Schiebel, Joshua Laipply, David Wieder, Ty Ortiz, Marcella Broussard, Saeed Sobhi, David Eller, Kerrie Neet, Myron Hora, Tom Wrona, Anthony Devito, Darius Pakbaz

Minutes:

- Minutes for January meeting were approved.
- William Johnson and the Asset Managers presented the requests and results from the Staff led FY16 Delphi Workshop held on January 30. The following comments were noted:

Road Equipment

- If a vehicle is over 120% useful life, what is the process for replacement? The Committee should review these recommendations

  Goal is average useful life of the fleet is 70%:

  - **Replacement Rule 1:** The vehicle is currently over 120% UL and is requiring more than 30% of its replacement cost to maintain each year.
  - **Replacement Rule 2:** If a vehicle is currently between 60 and 120% UL and it is requiring more than 40% of its replacement cost to maintain.
  - **Replacement Rule 3:** If a vehicle is between 0-60% UL and is requiring more than 20% of its replacement cost to maintain each year.
  - **Replacement Rule 4:** If a vehicle is currently over 120% UL and under 30% replacement cost to maintain then it should be replaced.
- There is concern about the cuts that this asset has versus what the other assets got in funding. Road Equipment is underfunded and is this funding level enough to make meaningful progress? Probably Not; however, the current funding level is in-line with CDOT's vendors ability to deliver equipment.
- Commissioners liked the new data presented on road equipment.
- Commissioners noted that these are just recommendations and the commission can adjust.

Property Management

- Commissioners noted that this asset took the same cut as some of the other smaller assets. Which areas are likely to be cut with the Delphi budget recommendation? Most likely Building Projects would be cut, maintenance would not.

Culverts and Tunnels

- Hanging Lake Tunnels East Bound Entrance; there is very rough pavement that can cause car damage. Dave Eller will evaluate.

Traffic Signals

- Are there any other technological advantages of upgrading traffic signals? Connected Vehicle technologies that are coming out will integrate with new traffic signals.

Overall Comments

- Underserved assets (such as ITS and signals) are critical to traffic flow, managing congestion and the overall operation of the system. Better attention of these 2nd class assets are needed, because it can be extremely disruptive when they fail.
- Were Walls and Signals in another asset category before this year? NO.
- In another analysis of this process, Surface Treatment and MLOS received a larger percentage of funds than last year, as measured as a percent of the total funding.
- All Commissioners should review the funding recommendations and then make budgetary decisions during FY 16 budget allocation planning.
    - Commissioners need to make decisions that prioritize safety and minimize disruption risks.
- Question to the RTDs: In the past, have these 2nd Class asset recommendations been paid for from RPP? Yes, RPP has paid for some of these in the past. RPP could be a solution to some of the risks due to lower funding.
    - RPP funds need approval from TPR's. FSA money usually performed the same function as well.
- Commissioners with concerns should address these quickly with the limited time available before a final decision is reached.
- Even though there are many long term scenarios, Commissioners need to be aware that the planning process is in effect and the Commission can revisit these recommendations every year to make adjustments.

- RB AMP update:
    - Program distribution chart will be updated following discussion on Thursday, Feb. 20.
    - Cliff notes version is being developed.
    - The Commissioners request that a final version be sent to the them when the document is complete.

COLORADO
Department of Transportation
Division of Engineering Support

Geotechnical
4670 Holly Street Unit A
Denver, CO 80216

MEMORANDUM

TO: SCOTT MCDANIEL, CHIEF ENGINEER
SCOTT RICHRATH, CHIEF FINANCIAL OFFICER

FROM: BILL SCHIEBEL, MATERIALS AND GEOTECHNICAL BRANCH MANAGER

DATE: MAY 30, 2014

SUBJECT: FY15 Geohazard Program Spending Plan

The FY15 Rockfall Program budget is $9.1M consisting of $5.1M of baseline funding and $4.0M of RAMP funding. These funds were approved by the Transportation Commission for FY15 in November, 2013. Concurrence is requested for the following spending plan. The plan is in line with the working draft of the Geohazards Management Plan (GMP), which incorporates asset management practices to allocate and manage program resources. The GMP outlines two primary components of geohazard management.

- Corridor Risk Reduction,
- Emergency Response and Geohazard Management

Corridor Risk Reduction

The GMP recommends mitigation of corridors rather than individual sites and uses risk based asset management principles to prioritize the corridors. The idea is that greater statewide risk reduction will be achieved using this approach. The anticipated locations earmarked FY15 funding are listed in Table 1. It should be understood that the site list may change in response to conditions associated with working outside of CDOT right-of-way. Significant changes to the site list will be within the spirit and intent of the Asset Management Investment System and will be presented as they arise.

Table 1: Corridor and Risk Reduction

Type of work	Location
Construction	R1 Clear Creek Canyon Corridor (US6, SH119)
Construction	R2 Raton Pass Corridor (I-70)
Construction	R2 Ute Canyon Corridor (US24)
Construction	R3 DeBeque Canyon
Construction	R3 Glenwood Canyon
Const1 / Design	Geohazard Management System Development
Design	Clearances and Design (Statewide)
Operations	Internal operating costs
TOTAL Allocation = $6.8M	

Emergency Response and Geohazard Management

The intent of moving toward a Geohazard Program is to acknowledge the need for assistance during emergency events beyond rockfall. Assistance and evaluation are also needed for geohazards such as rockslides, debris flow, landslides, sink holes and embankment failures. Recent incidents of sinkholes and debris flows highlight the need to transition toward a more encompassing geohazard management system. To address this need, the spending plan allocates resources to investigate and mitigate other geohazards in addition to rockfall that exceed the emergency response capacities of Region Engineering and Maintenance. The FY15 funding for emergency response is based on FY14 emergency response work and needs anticipated by geohazard personnel.

Additional needs for managing geohazards include updating existing mitigation devices throughout their useful life cycle. In some cases, existing mitigation methods may need to be updated if performance falls below target levels.

Table 2: Emergency Response Allocation

Type of work	Location
Construction	Statewide Rock Scaling
Instrumentation	Statewide Geohazard Event Logging and Slope Monitoring
Oversight/Design/ Construction	Statewide Emergency Investigation and Mitigation
Oversight/Design/ Construction	Other Emergency response as required
Operations	Internal operating costs
Inspection	Statewide device inspection and database development
Construction	Statewide device updates
Operations	Internal operating costs
TOTAL $2.3	

Funding listed in tables 1 and 2 is approximate. Exact funding needs will not be known until mitigation designs are complete and estimated or until an event occurs resulting in emergency response efforts or mitigation updates.

For efficiency and in accordance with Policy Directive 703, formal requests will be made if budget changes to either of the management categories exceed 10%. For more information please contact me or Ty Ortiz.

Management Categories:

- Corridor Risk Reduction $6.8M
- Emergency Response and Geohazard Management $2.3M

Total $9.1M

cc:	Maria Sobota,	Office of Financial Management and Budget
	CK Su,	Soils and Rockfall Program Manager
	Bob Group,	Geohazards Program
	Ty Ortiz,	Geotechnical Program Manager
	Shane Gendron/Scott Young,	HQ Business Office Manager

DOT Structure and TAM Implementation

Internal and external organizational structure

Do you have a commission which oversees or approves all or part of the capital investment program?	
Transportation Commission	No Commission
Arizona California Colorado Florida Iowa Michigan Montana Nevada North Carolina Pennsylvania South Dakota	Alaska Connecticut Louisiana Minnesota New York North Dakota Ohio

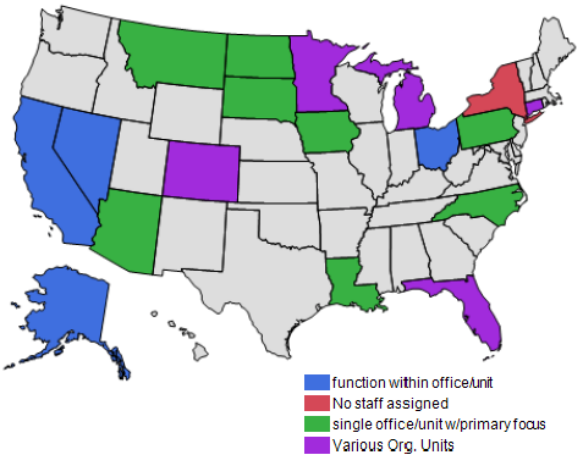
State	What percentage of your NHS (as defined under MAP-21) is owned/operated by: State DOT	Toll Authorities	Local Governments
Alaska	100		
Arizona	70		30
California	55	1	44
Colorado	90	1	9
Connecticut	97		3
Florida	95		5
Iowa	99		1
Louisiana	94	0	6
Michigan	75		25
Minnesota	97	0	3
Montana	100		
Nevada	95		5
New York	72	14	14
North Carolina	100	0	0
North Dakota	95	0	5
Ohio	90	1	9
Pennsylvania	88	9	2
South Dakota	99	0	1

Does your state have an asset management coordinating council? All states said "no" except for: LA, MI, OH, PA and SD.

Does your state have shared responsibility for the NHS network with local (city, town, county) governments? All states said they mostly manage separately except for: AK, MI, MT and NC.

How does your state work with Metropolitan Planning Organizations (MPOs)? All states said they share resources but operate independently except for: AK, CT, MI, ND and OH.

How does your agency staff asset management efforts?



What is the role of your agency executive leadership in asset management implementation?
All states said their executives are actively engaged in asset management implementation and are providing leadership in our implementation efforts except for: AK, MO, NC, ND and PA.

What is the internal TAM governance structure in your state? All states said they have a steering committee that sets TAM policy and/or direction except for: AZ, IA, MI, NC and PA.

How does your DOT headquarters (HQ) work with regions/districts on asset management efforts? All states said they distribute investment decision-making between headquarters and the regions/districts except for: AZ, CA, CT and NV.

Funding Sources

Does your agency receive specific (dedicated) funding for any of the following areas?																		
	AK	AZ	CA	CO	CT	FL	IA	LA	MI	MN	MT	NV	NY	NC	ND	OH	PA	SD
Capital improvements / Capacity	N	Y		Y	Y	Y	Y	Y		Y	N	N	N	Y	Y	Y	Y	N
System renewal / Modernization	N			N	Y	Y	Y			Y	Y	N	N	N	Y	Y	N	N
System preservation	N			Y	Y	Y	Y	Y		Y	Y	N	N	Y	N	Y	Y	Y
Operations / Maintenance	Y	Y		N	Y	Y	Y			Y	Y	N	Y	Y	Y	Y	Y	Y

Performance Expectations

Does your agency have well established performance measures related to asset condition or system performance? All states said yes except for: AK and IA.

Reason for establishing performance measures																		
	AK	AZ	CA	CO	CT	FL	IA	LA	MI	MN	MT	NV	NY	NC	ND	OH	PA	SD
Mandated by an outside body (Statewide)	X			X			X	X		X		X		X				
In response to a crisis									X								X	
As part of the agency's MMS	X		X	X				X	X	X	X			X				X
Developed by different asset managers		X	X	X							X	X		X	X		X	X
Other					X	X			X	X			X	X		X		

Do your agency's performance measures include targets for asset management?																		
	AK	AZ	CA	CO	CT	FL	IA	LA	MI	MN	MT	NV	NY	NC	ND	OH	PA	SD
Pavements	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y
Bridges	Y	N	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	Y	N	Y	Y	Y
Culverts	N	N	Y	Y	N	N	N	N	N	Y	N	N	N	Y	N	Y	N	Y
Retaining walls	N	N		N	N	N	N	N	N	N	N	N	N	Y	N	N	N	N
Tunnels	N	N		Y	N	N	N	N	N	Y	N	N	N	N	N	N	N	N
Signs	N	N		Y	N	N	N	N	Y	N	N	N	N	Y	Y	N	N	N
Pavement markings	N	N		Y	N	N	N	N	N	N	N	N	N	Y	N	N	N	N
Traffic operations	N	N	Y	Y	N	N	N	N	N	Y	N	N	N	Y	N	Y	N	N
Safety (crashes)	Y	N	Y	Y	Y	Y	N	Y	Y	Y	Y	Y	N	Y	Y	Y	Y	Y

Data Infrastructure

Does your agency have an Enterprise Resource Management (ERP) system? All states do except: AK, AZ, CA, FL, IA, NV, OH and SD.

Does any agency other than FHWA set policies and standards for asset management data? All responded no except: CA, MN, MO and PA.

Does your agency have an enterprise asset management system? All states said no except for: CO, LA, NC and SD.

Does your agency have an enterprise asset management system (E) or a separate centralized management systems (X)																		
	AK	AZ	CA	CO	CT	FL	IA	LA	MI	MN	MT	NV	NY	NC	ND	OH	PA	SD
Pavements		X	X	E/X	X	X	X	E/X	X	X	X	X	X	E	E/X	E/X	X	E
Bridges	X	X	X	E/X	X	X	X	E/X	X	X	X	X	X	E	E/X	E/X	X	E
Tunnels or ERS				E		X							X				X	X
Culverts			X	E	X	X			E	X			X	E		E	X	X
Signs/Markings				E		X			E					E			X	X
Maintenance/Operations	X	X		E	X	X			E		X	X	X	E		X	X	X
ITS		X	X	E		X			X								X	X
Fleet	X	X	X	E	X	X			X		X	X	X	X	X		X	X
Facilities		X	X	E		X			E/X			X			X			X

These states are **procuring** an asset management system: AK, MI and NY.

These states are **building** an asset management system: CA, IA, MN, MO, NV and ND.

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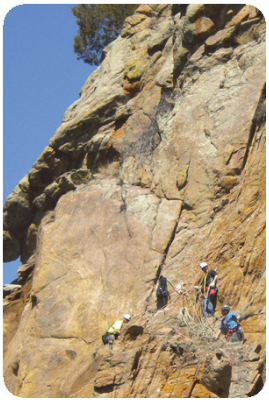

Transportation Asset Management Committee
June 2014

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Agenda

- Moving to a Geohazard Management Plan
- Project Status Report
- Asset Management Updates

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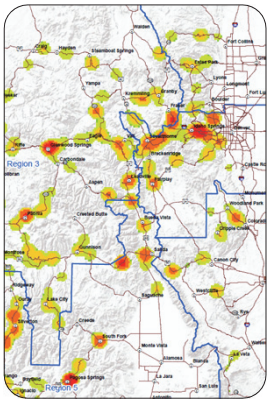
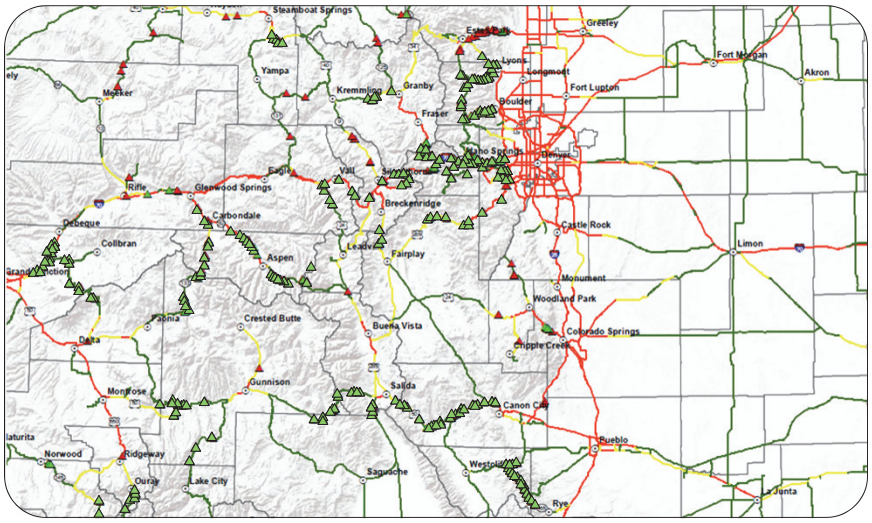


Geohazard Management – June 2014

Mitigation by Corridor



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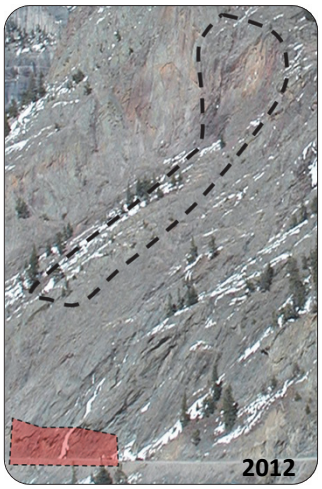
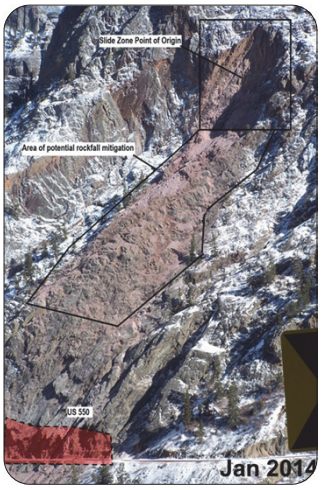
Not all sites fit into a corridor approach. *Sites that pose a significant threat to risk will be addressed individually.*

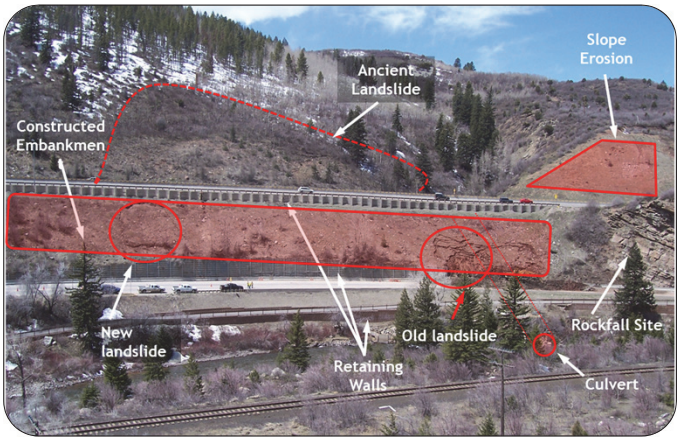
Geohazard Management





Incidents not captured by Rockfall Management only

Geohazard Inventory



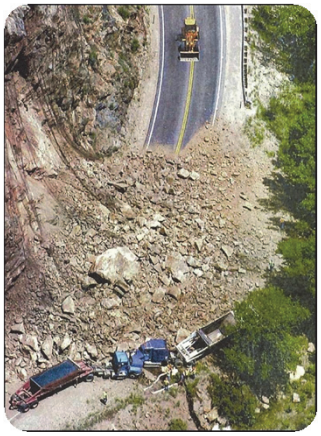
Multiple hazards and assets per location

Geohazard Management Plan

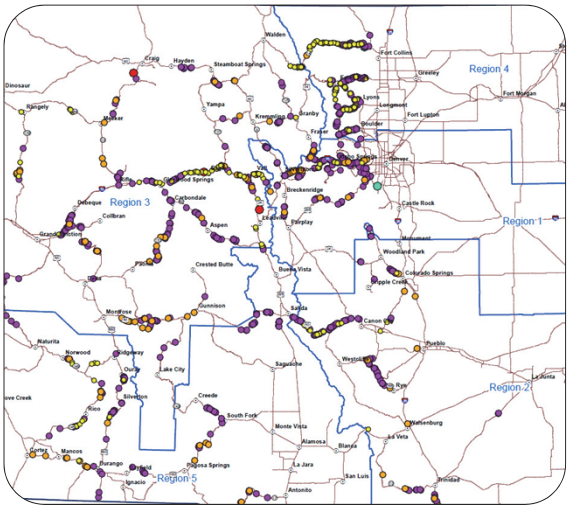
Emphasizes mitigating a slope fully rather than focusing on an individual component.

Geohazards that affect us:

- Debris Flow
- Embankment Distress
- Landslides
- Rockfall
- Rockslides
- Sink Holes



Geohazard Map



EXPLANATION

Type of Hazard and Number of Features

- Debris Flow (239)
- Landslide (123)
- Rock Slide (41)
- Rockfall (866)
- Embankment Distress (3)
- Subgrade Distress (1)
- Sinkhole (3)
- Highway
- CDOT Region Boundaries

Risk Based Performance

Likelihood x Consequence

Likelihood Measures

The likelihood a car will be affected by the failure of the hazard:

- Condition of the hazard
- Length of the hazard
- Traffic volume
- Mitigation Reduction *(existing mitigation effectiveness)*

Consequence Measures

I-70 gets rocked to a halt

3 slides deposit 1,500 tons of rock on the road west of Idaho Springs

HOURS OF DELAYS

CDOT crews hope to have the debris cleared and the cliffs above westbound I-70 stabilized today.

By Michelle Wallar and Jim Kirkbey
Denver Post Staff Writers

West of Idaho Springs — Demolition crews blasted boulders on Interstate 70 on Sunday to help clear away rock that fell overnight, closing the westbound lanes and backing up traffic for 9 miles.

One boulder was estimated at 200 tons and measured 30 feet by 20 feet by 10 feet, and another was about 100 tons and the size of a Chevrolet Blazer.

A trio of rock slides Saturday night and Sunday morning dropped 1,500 tons of the Rocky Mountains on the road just west of Idaho Springs.

The westbound lanes remain closed between the west side of Idaho Springs and the tiny town of Dumont, with traffic moving on the service road, although officials hope to open the lanes sometime today.

All day Sunday traffic limped around the slide.

Jim King and his wife, Joan, were trying to get home to Grand Junction from Dakota Ridge campground in Golden. They had been in the stop-and-go traffic for four hours Sunday afternoon and were still a mile away from being diverted onto the frontage road at mile marker 239.

"Thank God we have a trailer with a bathroom," Jim King said.

Dee McAdow, traveling with

> See SLIDE on 11A

Matthew Staver | Special to The Denver Post

Interstate 70 motorists stretch their legs and wait Sunday as boulders are blasted to clear debris from a series of rock slides.

The threat failure of the hazard poses to Safety, Mobility and Maintenance:

- Safety – number of accidents
- Mobility – hours of delay and detour length
- Maintenance – cost to repair/mitigate/remove

Spending Plan

Spending Categories

Corridor Risk Reduction

Type of work	Location
Construction	R1 Clear Creek Canyon Corridor (US6, SH119)
Construction	R2 Raton Pass Corridor (I-70)
Construction	R2 Ute Canyon Corridor (US24)
Construction	R3 DeBeque Canyon
Construction	R3 Glenwood Canyon
Const1 / Design	Geohazard Management System Development
Design	Clearances and Design (Statewide)
Operations	Internal operating costs
TOTAL Allocation = $6.8M	

ER and Geohazard Management

Type of work	Location
Construction	Statewide Rock Scaling
Instrumentation	Statewide Geohazard Event Logging and Slope Monitoring
Oversight/Design/ Construction	Statewide Emergency Investigation and Mitigation
Oversight/Design/ Construction	Other Emergency response as required
Operations	Internal operating costs
Inspection	Statewide device inspection and database development
Construction	Statewide device updates
Operations	Internal operating costs
TOTAL $2.3	

Category spending changes over 10% will be presented for approval

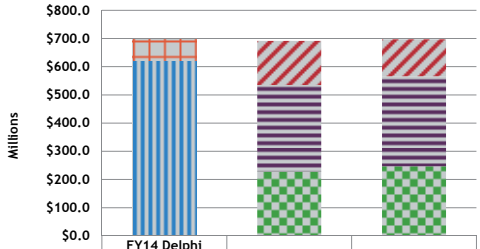
COLORADO Department of Transportation

Agenda

- Moving to a Geohazard Management Plan
- Project Status Report
- Asset Management Updates

Status of 2014 Asset Management

2014 Asset Management Financial Status

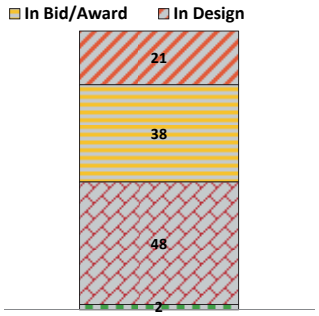


	FY14 Delphi Approved Budget (RAMP & Baseline) Less BE and Bridge Fixed Costs	As of April 28, 2014	As of May 27, 2014
Unencumbered (Millions)		$156.3 (23%)	$131.0 (19%)
Encumbered (Millions)		$306.6 (44%)	$319.1 (46%)
Expenditure (Millions)		$228.4 (33%)	$247.0 (35%)
Other CDOT Funds (Millions)	$74.1		
FY14 Delphi Approved Budget (RAMP & Baseline) Less BE and Bridge Fixed Costs	$622.9		

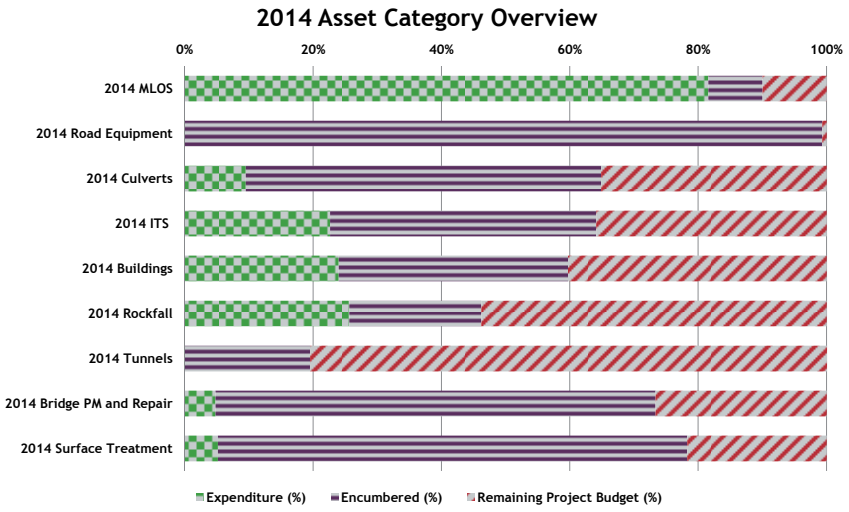
81% of Projects have been Advertised (88 Projects)

7% of Advertised projects have had bids rejected (8 Total)

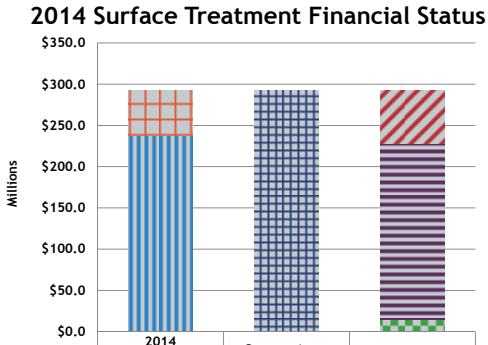
Asset Management Projects (109 Total)



Status of 2014 Asset Management



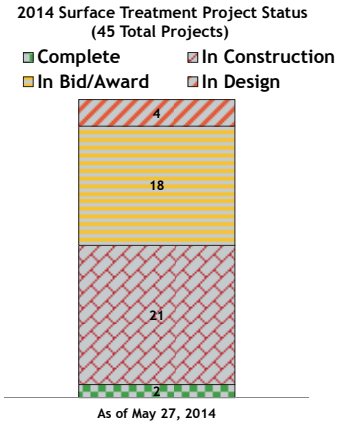
Status of 2014 Surface Treatment



	2014 Commission Allocation (Millions)	Current Asset Budget (Millions)	As of May 27, 2014
Other CDOT Funds (Millions)	$53.9		
Unencumbered (Millions)			$63.4 (22%)
Encumbered (Millions)			$213.5 (73%)
Expenditure (Millions)			$15.0 (5%)
Current Asset Budget (Millions)		$291.9	
2014 Commission Allocation (Millions)	$238.0		

91% of Projects have been Advertised (41 Projects)

11% of Advertised projects have had bids rejected (5 Projects)



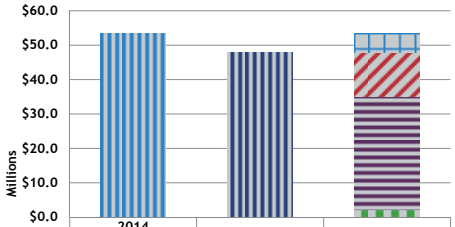
Status of 2014 Bridge Preventative Maintenance & Repair

43 Projects totaling 218 bridges

81% of Projects have been Advertised (35 Projects)

5% of Advertised projects have had bids rejected (2 Projects)

2014 Bridge Financial Update

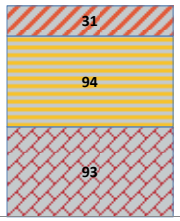


	2014 Commission Allocation	Current Asset Budget	As of May 27 2014	
Unbudgeted (Millions)			$5.5	(10%)
Unencumbered (Millions)			$12.8	(29%)
Encumbered (Millions)			$32.9	(62%)
Expenditure as of May 27, 2014 (Millions)			$2.3	(4%)
Current Asset Budget (Millions)		$48.0		
2014 Commission Allocation (Millions)	$53.6			

Percentages are based on 2014 Commission Allocation Amount

2014 Bridge Project Status (218 Total Bridges)

In Construction
In Bid/Award
In Design



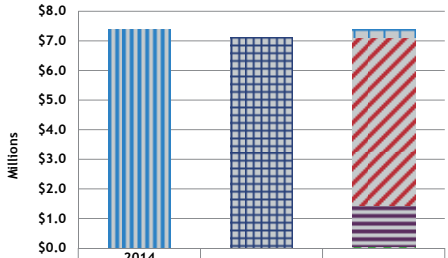
As of May 27, 2014

Status of 2014 Tunnels

33% of Projects have been Advertised (1Project)

0% of Advertised projects have had bids rejected

2014 Tunnels Financial Status

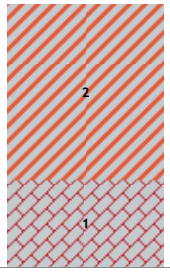


	2014 Commission Allocation (Millions)	Current Asset Budget (Millions)	As of May 27, 2014	
Unbudgeted (Millions)			$0.3	(4%)
Unencumbered (Millions)			$5.7	(76%)
Encumbered (Millions)			$1.4	(19%)
Expenditure as of May 27, 2014 (Millions)			$0.1	(<1%)
Current Asset Budget (Millions)		$7.100		
2014 Commission Allocation (Millions)	$7.4			

Percentages are based on 2014 Commission Allocation Amount

2014 Tunnels Project Status (3 Total Projects)

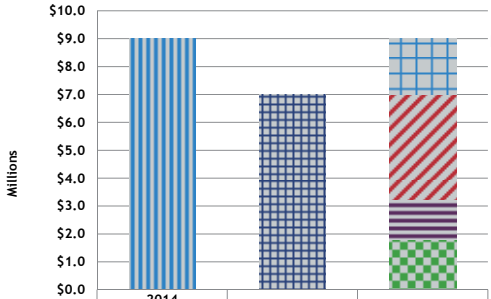
In Construction
In Design



As of May 27, 2014

Status of 2014 Rockfall

2014 Rockfall Financial Status



	2014 Commission Allocation (Millions)	Current Asset Budget (Millions)	As of May 27, 2014
Unbudgeted (Millions)			$1.989 (22%)
Unencumbered (Millions)			$3.8 (42%)
Encumbered (Millions)			$1.4 (16%)
Expenditure as of May 27, 2014 (Millions)			$1.8 (20%)
Current Asset Budget (Millions)		$7.0	
2014 Commission Allocation (Millions)	$9.0		

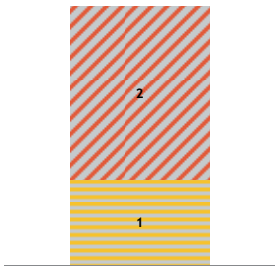
Percentages are based on 2014 Commission Allocation Amount

33% of Projects have been Advertised (1 Project)

100% of Advertised projects have had bids rejected (1 Project)

2014 Rockfall Project Status (3 Total Projects)

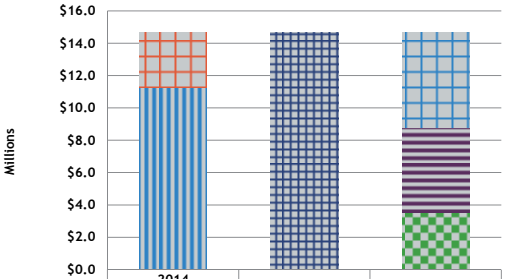
In Bid/Award In Design



As of May 27, 2014

Status of 2014 Buildings

2014 Buildings Financial Status



	2014 Commission Allocation (Millions)	Current Asset Budget (Millions)	As of May 27, 2014
Other CDOT Funds (Millions)	$3.4		
Unencumbered (Millions)			$5.9 (40%)
Encumbered (Millions)			$5.3 (36%)
Expenditure as of May 27, 2014 (Millions)			$3.5 (4%)
Current Asset Budget (Millions)		$14.7	
2014 Commission Allocation (Millions)	$11.3		

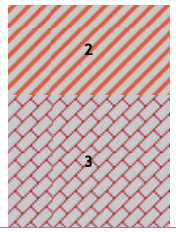
Percentages are based on Current Asset Budget Amount

60% of Projects have been Advertised (3 Projects)

0% of Advertised projects have had bids rejected

2014 Buildings Project Status (5 Total Projects)

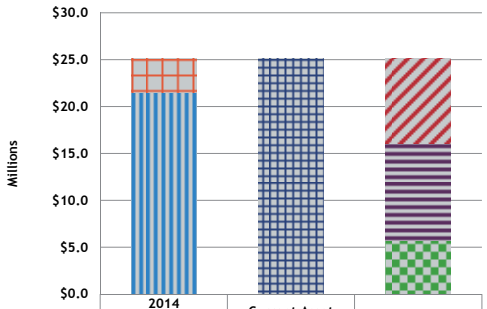
In Construction In Design



As of May 27, 2014

Status of 2014 ITS

2014 ITS Financial Status



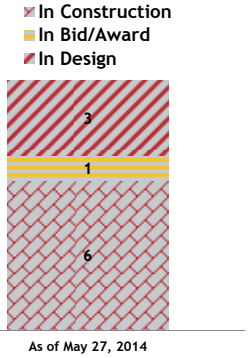
	2014 Commission Allocation (Millions)	Current Asset Budget (Millions)	As of May 27, 2014
Other CDOT Funds (Millions)	$3.6		
Unencumbered (Millions)			$9.0 (36%)
Encumbered (Millions)			$10.4 (41%)
Expenditure as of May 27, 2014 (Millions)			$5.7 (23%)
Current Asset Budget (Millions)		$25.1	
2014 Commission Allocation (Millions)	$21.5		

Percentages are based on Current Asset Budget Amount

70% of Projects have been Advertised (7 projects total)

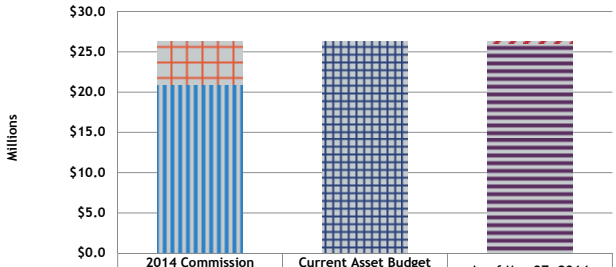
0% of Advertised projects have had bids rejected

2014 ITS Project Status (10 Total Projects)



Status of 2014 Road Equipment

2014 Road Equipment Financial Status

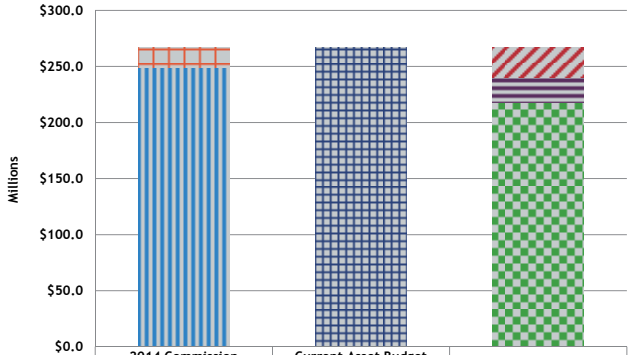


	2014 Commission Allocation (Millions)	Current Asset Budget (Millions)	As of May 27, 2014
Other CDOT Funds (Millions)	$5.3		
Unencumbered (Millions)			$0.2 (1%)
Encumbered (Millions)			$26.0 (99%)
Expenditure as of May 27, 2014 (Millions)			$0.0 (0%)
Current Asset Budget (Millions)		$26.2	
2014 Commission Allocation (Millions)	$20.9		

Percentages are based on Current Asset Budget Amount

Status of 2014 MLOS

2014 MLOS Financial Status

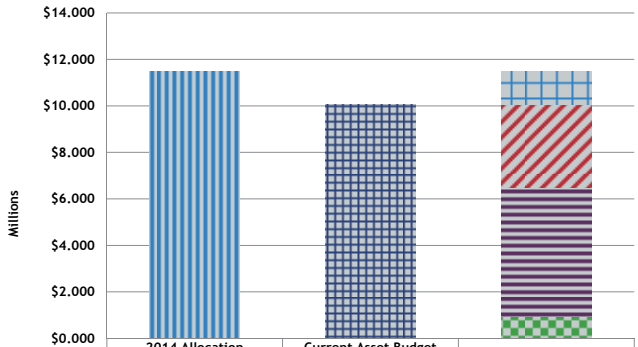


	2014 Commission Allocation (Millions)	Current Asset Budget (Millions)	As of May 27, 2014
Other CDOT Funds (Millions)	$17.9		
Unencumbered (Millions)			$26.7 (10%)
Encumbered (Millions)			$22.6 (8%)
Expenditure as of May 27, 2014 (Millions)			$217.7 (82%)
Current Asset Budget (Millions)		$266.9	
2014 Commission Allocation (Millions)	$249.0		

Percentages are based on Current Asset Budget Amount

Status of 2014 Culverts

2014 Culvert Financial Status

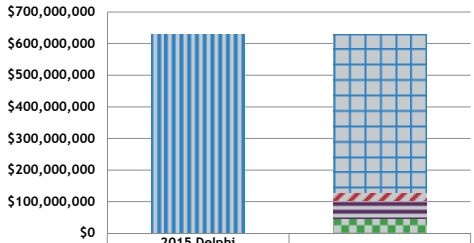


	2014 Allocation (Millions)	Current Asset Budget (Millions)	As of May 27, 2014
Unbudgeted (Millions)			$1.450 (13%)
Unencumbered (Millions)			$3.531 (8%)
Encumbered (Millions)			$5.565 (48%)
Expenditure as of May 27, 2014 (Millions)			$0.954 (8%)
Current Asset Budget (Millions)		$10.050	
2014 Allocation (Millions)	$11.500		

Percentages are based on FY14 Commission Allocation Amount.
Note: Culverts are chosen from a candidate list throughout the year and are not identified as individual projects on a pre-approved list. These projects are not included in the overall project count.

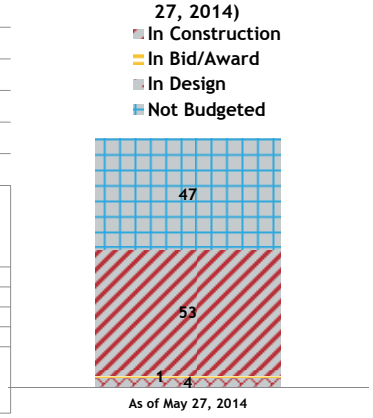
Status of 2015 Asset Management

2015 Asset Management Financial Status



	2015 Delphi Approved Budget (RAMP & Baseline) Less BE and Bridge Fixed Costs	As of May 27, 2014
Unbudgeted		$499,800,000 (79%)
Unencumbered		$26,300,000 (4%)
Encumbered		$56,200,000 (8%)
Expenditure		$47,800,000 (9%)
2015 Delphi Approved Budget (RAMP & Baseline) Less BE and Bridge Fixed Costs	$630,200,000	

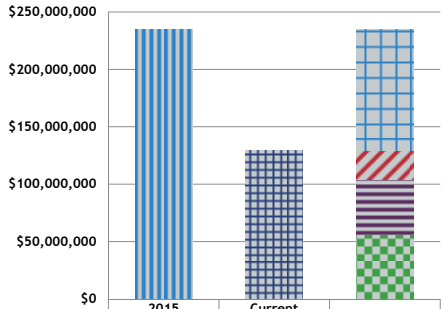
2015 Asset Management Project Status (105 Projects Identified as of May 27, 2014)



Percentages show are out of 2015 Delphi Approved Budget (Less BE and Bridge Fixed Costs)

Status of 2015 Surface Treatment

2015 Surface Treatment Asset Status



	2015 Commission Allocation	Current Asset Budget	As of May 27, 2014
Unbudgeted			$105,300,000 (45%)
Unencumbered			$25,800,000 (11%)
Encumbered			$47,800,000 (20%)
Expenditure as of May 27, 2014			$56,200,000 (24%)
Current Asset Budget		$129,900,000	
2015 Commission Allocation	$235,200,000		

2015 Surface Treatment Project Status (38 Total Projects)

COLORADO Department of Transportation

Agenda

- Moving to a Geohazard Management Plan
- Project Status Report
- ⇨ Asset Management Updates

FY17 & FY18 Delphi Workshop

- CDOT Workshop for FY17 and FY18 Asset Management budgets to be held in August, 2014
- Representatives from Planning, Finance, Regions, Engineering will attend (same reps as FY16 Workshop)
- Asset managers are preparing now; some data will be the same as FY16 workshop due to the data cycle
- Senior Mgmt will set baseline budget amount and TransBond amount assumptions in the next month, in line with Program Distribution

30

CDOT TAM Workshop and TAM Brochure

TAM Workshop

- June 10 & 11 Offsite
- Expected attendance: 300+ staff from across Colorado

TAM Brochure

- In Progress

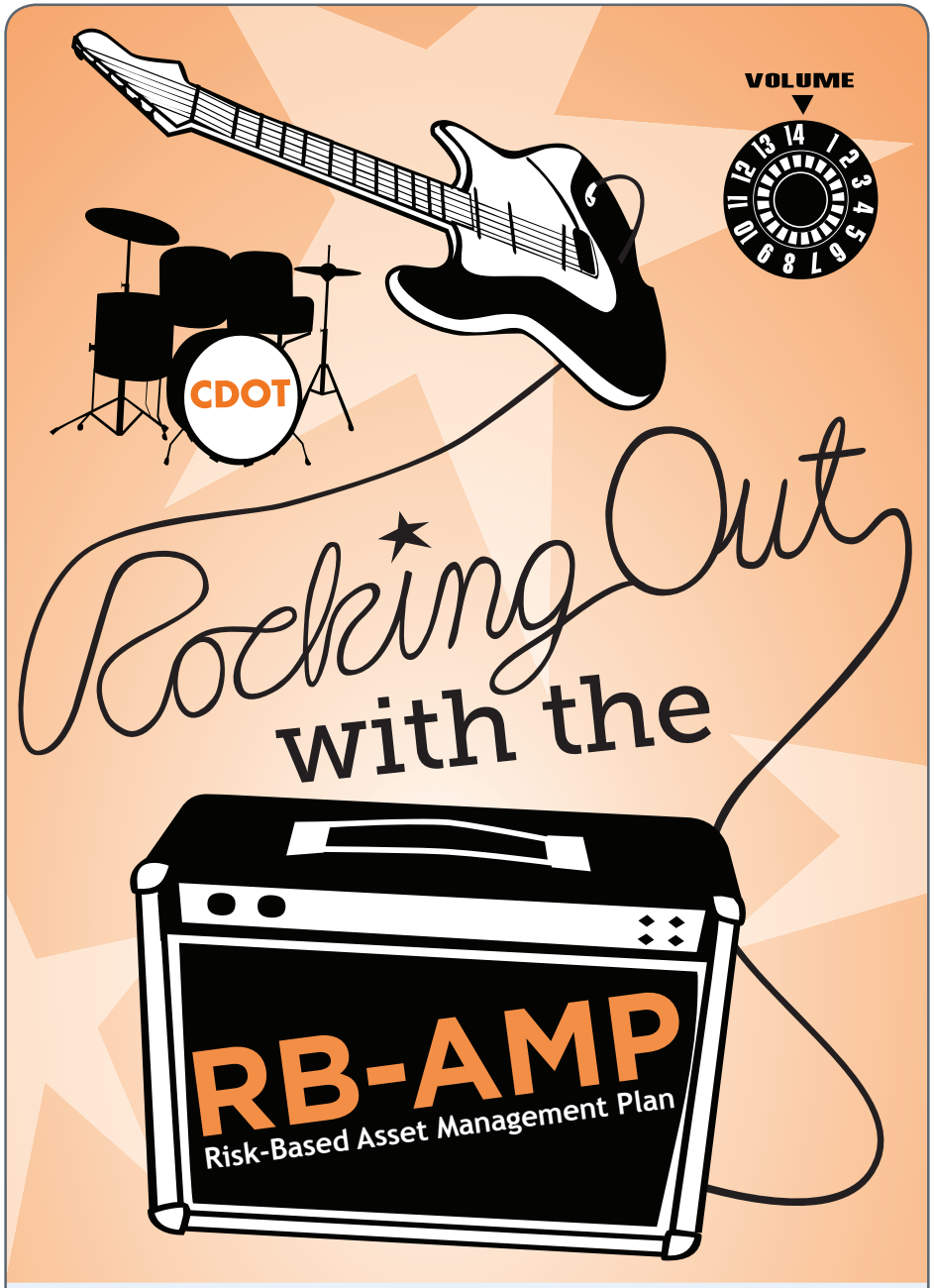
31

10th National Conference on Transportation Asset Management

Conference Update

- Held every 2 years
- Scott R on Planning Committee
- 5 staff presented
- Change Management at CDOT: Interest from DOTs
- Takeaways:
  - TAM Taxonomy Summary
  - NCHRP 08-91: Cross-Asset Resource Allocation

32



COLORADO
Department of Transportation

Risk-Based Asset Management Plan
Info Guide | June 2014

What Is Asset Management ?

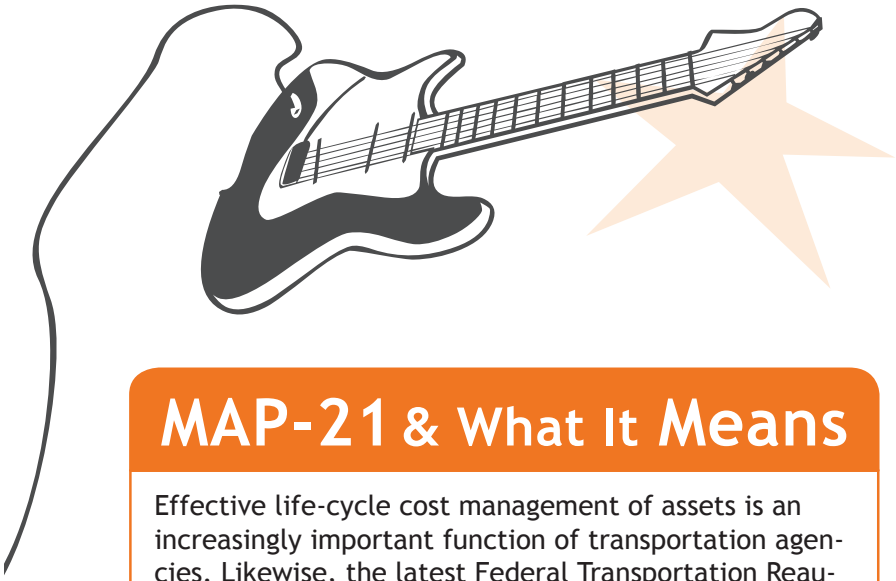
A risk-based approach to create a safe and usable statewide transportation system maintained at the lowest life-cycle cost.

Why Transportation Asset Management ?

Increased demand and diminished funding means that previous approaches to maintaining the transportation system are no longer sufficient. At the same time, citizens are demanding greater accountability in the use of public funds. In response, CDOT is developing more efficient strategies to make funding decisions based on the performance of assets. These strategies will direct funding to the Department's most critical projects. Transportation Asset Management (TAM) represents a new way of doing business at CDOT and will ensure that the Department reaps the greatest possible return on its investments.

What CDOT Is Doing

- Recently completed and published the CDOT Risk-Based Asset Management Plan **(RB-AMP)**, which is the foundation of the future state of TAM at CDOT.
- Developing more efficient strategies to make funding decisions based on the performance of assets.
- Developing and documenting the program distribution, project selection and project tracking process.
- Refining and developing new asset management models.
- Addressing identified gaps between the current state and future state of Transportation Asset Management in the Department as part of the **RB-AMP** implementation phase.



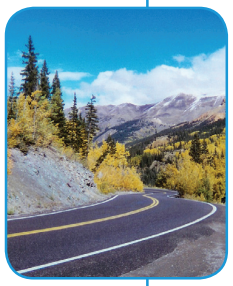
MAP-21 & What It Means

Effective life-cycle cost management of assets is an increasingly important function of transportation agencies. Likewise, the latest Federal Transportation Reauthorization, the *Moving Ahead for Progress in the 21st Century Act* (MAP-21), is further institutionalizing asset management by requiring that all state departments of transportation (DOTs) develop a **RB-AMP** for the National Highway System (NHS).

FLEET

TUNNELS

What Assets Are Included in the RB-AMP



PAVEMENT

- CDOT is responsible for a 9,106 centerline-mile highway system.
- The main measure of pavement condition is "Drivability Life."
- CDOT's performance target is to maintain 80% high/moderate Drivability Life for Interstates and the NHS.

BRIDGES

- CDOT owns and maintains 3,438 bridges.
- CDOT's performance target is to maintain the percent of NHS and state bridge total deck area that is not structurally deficient at or above 90%.
- There are three investment strategies identified in the **RB-AMP** to consider with asset management activities for bridge.

MAINTENANCE

- Maintenance owns and maintains a large number of assets through the nine Maintenance Program Areas (MPAs).
- Condition of maintenance activities is expressed through letter grades for MLOS.
- CDOT's performance target is to maintain a Maintenance Levels of Service (MLOS) grade of B for overall maintenance of the state highway system, and a B in snow and ice control.
- The Maintenance Operations and Traffic Operations (MOTO) Task Force is determining how life-cycle management practices should be applied to various underserved assets.

MORE

BUILDINGS

More Assets That Are Included in the RB-AMP ...

BUILDINGS

- CDOT owns 1,174 buildings, and 34 new sand sheds will be built from 2013—2017.
- CDOT is employing new evaluation methods that include criteria such as physical condition, employee satisfaction and efficiency. Buildings are graded (A—F) as a result of multiple factors that are weighted, totaled and averaged.
- The performance target is to maintain 90% of buildings at a C grade or better.

INTELLIGENT TRANSPORTATION SYSTEMS

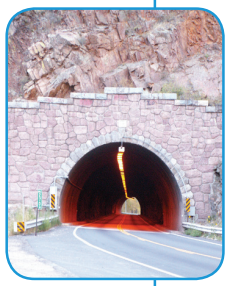
- CDOT has 2,024 Intelligent Transportation System (ITS) devices throughout the state.
- CDOT uses "useful life" as its performance target for ITS equipment. Current condition is at 104% useful life for all devices.
- CDOT is committed to tracking ITS devices with the ITS Management Database in SAP.
- There are three strategies identified in the RB-AMP used to manage ITS equipment.

ROADWAY EQUIPMENT

- CDOT manages a fleet of 3,299 vehicles, which are used for road construction, maintenance and general purposes.
- CDOT assesses the condition of road equipment in terms of age and usage. CDOT is also modifying current assessments to incorporate the costs of maintenance and repair of vehicles in evaluating condition.
- Average age of roadway equipment is 13 years.
- Preventative maintenance is a primary strategy for fleet management.

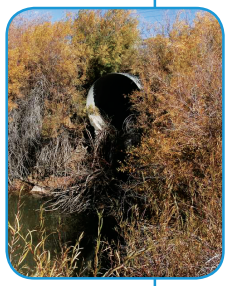
MORE

More Assets That Are Included in the RB-AMP ...



TUNNELS

- CDOT maintains 21 tunnels with a total length of 6.9 miles.
- CDOT's performance target focuses on the life-cycle analysis on the four manned tunnels throughout the state and currently, tunnels as a whole are in "good" condition.
- CDOT's focus is on replacing critical systems on a regular cycle in manned tunnels.



CULVERTS

- There are currently 6,668 minor structures on the state highway system.
- CDOT's performance target for culverts is moving from a "Good, Fair, Poor" rating to a "Structurally Deficient" and "Not Structurally Deficient" system.
- CDOT employs preventative maintenance as the primary strategy for culverts and is transitioning to a full asset management plan.

ROCKFALL MITIGATION SITES

- Currently CDOT manages 760 rockfall mitigation sites.
- CDOT's performance target for rockfall sites is being developed and will include a new risk-based approach as well as the currently used Vehicle Exposure Score (based on AADT, likelihood of occurence and effective rating of existing mitigation).
- Regular preventative maintenance is required to reduce life-cycle cost.

The Future of TAM

TAM is about change. Tasks performed by a staff working committee significantly changed existing asset management models and additional models are being developed. Improved project-selection processes have been recommended and life-cycle treatments are being implemented to ensure that CDOT focuses on its most critical projects. TAM principles are moving from mere concepts to being implemented as better ways of doing business.

Implementation !

Much work remains. TAM is a continual improvement process and CDOT is refining an implementation plan to address gaps identified in the **RB-AMP**. Below are the next steps for improving the Transportation Asset Management program at CDOT. These steps are based on an analysis of gaps between the current state of asset management in the Department and the state envisioned for the future.

DEVELOP AND DOCUMENT BUDGET DISTRIBUTION, PROJECT SELECTION AND PROJECT TRACKING PROCESS

→ Each asset manager will deliver a standalone document describing the processes for assessing asset condition and for selecting projects and equipment. The document also will provide a summary of funds for the asset, a current project and equipment list, and the forecasted project and equipment needs contained in the asset manager's three- to five-year plan. The document will be continuously updated.

MORE

Implementation !

INTEGRATE RISK ANALYSIS INTO PLANNING AND PROGRAMMING PROCESSES

→ CDOT will develop mitigation strategies for the prioritized list of risks identified in the **RB-AMP** and quantify the costs and benefits of those strategies.

DEVELOP STRATEGIES TO MANAGE PROJECT AND PROGRAM DELIVERY RISKS

→ CDOT has performed extensive research to identify significant process improvements that will ensure projects are delivered on time and as intended. This research will help the Department avoid overprogramming or underprogramming projects, thereby helping to reduce costs.

ESTABLISH RISK FRAMEWORK

→ The Transportation Asset Management program's overall investment analysis should weigh risk-based investments and performance outcomes. A methodology for doing this has been proposed.

BUDGET TRADE-OFFS

→ CDOT's management systems can produce performance curves for each asset category showing performance achieved with different funding levels. The ability to analyze the trade-offs between different categories also is important. Such analyses allow CDOT to see where value is added or where cost savings from trade-offs occur. This allows the Department to evaluate how overall value is maximized.

MORE

Implementation

IMPROVE PROJECT SCOPING AND OPTIMIZATION

→ The project scoping process must be improved to ensure there is a direct link between intended investments and actual spending. CDOT has introduced and will continue to improve tools that assist in project scoping and optimization.

INCORPORATE LIFE-CYCLE ANALYSIS

→ While many assets at CDOT incorporate life-cycle information into their analyses, there are areas for improvement. For example, the pavement and pavement maintenance groups are currently evaluating how surface treatment projects and maintenance activities can be managed more cohesively for each corridor. Many other areas have been identified for future improvements.

CLARIFY THE ROLE OF TARGET SETTING

→ It is essential to have the tools and processes that enable decision makers to make investment trade-offs, set targets across programs with confidence, and then communicate the results. For CDOT, this involves analyzing return on investment (ROI), budget trade-offs, and performance goals for the asset categories.

IMPLEMENT STRATEGIC MANAGEMENT FRAMEWORK

→ CDOT is implementing the Plan, Do, Check, Act (PDCA) framework in its approach to managing TAM. Several improvements will be implemented over the next few years that will enhance the effectiveness of this framework significantly.

MORE

Implementation

COMMUNICATE BENEFITS OF TAM

→ While CDOT has employed an asset management strategy for years, the shift from using funding formulas to providing funds to regions based on statewide need is new and requires significant change in how CDOT does business. The benefits to the citizens of Colorado are clear. Higher levels of funding can be directed to areas of the state where the highway system needs it most.

Let's Get Rocking

The mission of the Colorado Department of Transportation is to provide the best multi-modal transportation system for Colorado that most effectively and safely moves people, goods and information. Through the **RB-AMP** and under the direction of the Transportation Commission, CDOT will implement TAM principles that ensure the most effective use of limited funds to maintain assets in support of CDOT's mission.

COLORADO
Department of Transportation

Download the plan at:
http://coloradotransportationmatters.com/wp-content/uploads/2013/04/CDOT_RBAMP.pdf

For more information, please contact:
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will.johnson@state.co.us