



# A Practical Option for Managing Transit Facility and Infrastructure Assets

# Presentation goals

- Overview of RTD's Asset Management program
- Public facilities
  - Asset breakdown structure
  - Condition assessments
- Maintenance facilities
  - Asset breakdown structure
  - Condition assessments
- Bridges and conveyances
  - 3rd party inspections converted to SGR
- Reporting format performance metrics
  - Dashboards

# RTD Overview

- Regional Transportation District in Denver, or RTD, started operation in 1972
- RTD has a service area of 2,410 square miles in eight counties
- RTD employs about 2,500 people
- RTD has over 140 bus routes, 80 Park-n-Rides, 10,000 stops
- RTD has approximately 1,200 full size buses, 400 cut-a-way buses, 400 support vehicles.
- RTD has 6 light rail lines, 47 miles of track, 49 stations
- RTD has 174 Light rail vehicles, accessibility services, call-n-Rides, seasonal rides and many other programs
- Fastracks is adding approximately 110 miles of track for light and commuter rail, over 40 new Stations and P-n-Rs along with 29 light rail vehicles and 56 commuter rail vehicles



# RTD's Asset Management program

2010

• **Vision**

- Board & SLT Advance created a Strategic Goal for AM

2011

• **Program Direction**

- Proof of Concept, Pilot Program, GM Task Goal

2012

• **Tactical Planning**

- 3 Year Implementation Plan to follow MAP-21 & PAS55

2013

• **Implementation**

- Foundational Policies, Procedures, & Standards

2014

• **Results**

- Completion of Rolling Stock, Rail and Facilities Assets

2015

- Input into Strategic Budget Plan for Project Prioritization
- First Annual Report

# Public facilities

- Asset breakdown structure
  - Location centric
    - Group of assets per location
  - Condition assessments

# ABS by Location

Asset		Task Groups				
Asset	Description	701	702	703	704	705
BRID	Pedestrian Bridge/Tunnel	General	Plumbing/HVAC	landscape	electrical	Bike Lockers
DRS	Driver Relief Station					
ELEV	Elevator/Escalator					
GRDU	Grounds					
LOT	Parking lot/Drive lanes					
PLAT	Rail Platform					
PLAZ	Pedestrian Plaza					
STOR	Storage/Security/Elec. Rm/Ticket kiosk					
STRU	Parking Structure					
####	Bus Stop Number					

Task Codes					
701 General	702 Plumbing/HVAC	703 landscape	704 Electrical	705 Bike Lockers	
-0005 Fabricate/Build	-0005 Fabricate/Build	-0005 Fabricate/Build	-0005 Fabricate/Build	-1001 Locker Number	1
-0010 Paint	-0020 Diagnose	-0015 Concrete/Paving	-0015 Concrete/Paving	-1002 Locker Number	2
-0015 Concrete/Paving	-0085 Piping	-0065 Sweeping	-0020 Diagnose	-1003 Locker Number	3
-0020 Diagnose	-0090 Safety Devices	-0065 Pond Maintenance	-0075 Gates	-1004 Locker Number	4
-0025 Retaining Walls	-0105 Belts	-0130 Valves	-0110 Loop Detectors	-1005 Locker Number	5
-0030 Walls	-0115 Fire Sprinkler	-0145 Controls	-0125 Wiring	-1006 Locker Number	6
-0035 Bike Lockers	-0120 Filters	-0265 Inspection/Service/Test	-0140 Fan	-1007 Locker Number	7
-0040 Glass	-0130 Valves	-0270 Sprinkler Heads	-0145 Controls	-1008 Locker Number	8
-0045 Doors	-0135 Vents	-0275 Valve box	-0150 Alarm System	-1009 Locker Number	9
-0050 Locks	-0140 Fan	-0280 Pumps	-0155 Thermostat	-1010 Locker Number	10
-0055 Sweeping	-0145 Controls	-0295 Back Flow Preventer	-0160 Circuit Breaker/Fuse	-1011 Locker Number	11
-0060 Flooring	-0155 Thermostat	-0335 Graffiti/Vandalism	-0165 Disconnect	-1012 Locker Number	12
-0075 Gates	-0225 Water Heater	-0340 Excavate/Grading	-0170 Breaker panel	-1013 Locker Number	13
-0080 Fencing	-0230 Heater	-0350 Irrigation	-0180 Light Fixture	-1014 Locker Number	14
-0085 Piping	-0260 Float switch	-0355 Hydrant	-0185 Light Ballast	-1015 Locker Number	15
-0095 Handrails	-0265 Inspection/Service/Test		-0190 Lamp	-1016 Locker Number	16
-0100 Bollards	-0270 Sprinkler Heads		-0200 Receptacle	-1017 Locker Number	17
-0195 Bus Shelter	-0275 Valve box		-0205 Conduit	-1018 Locker Number	18
-0210 Crack Fill	-0280 Pumps		-0215 Motor	-1019 Locker Number	19
-0265 Inspection/Service/Test	-0285 Faucet		-0220 UPS	-1020 Locker Number	20
-0300 Bench	-0290 Toilet		-0225 Water Heater	-1021 Locker Number	21
-0305 Trash Receptacle	-0295 Back Flow Preventer		-0230 Heater	-1022 Locker Number	22
-0310 Map Case/Info Board	-0315 Split Unit/AC		-0235 Pole	-1023 Locker Number	23
-0320 Roof	-0340 Excavate/Grading		-0240 Relay	-1024 Locker Number	24
-0325 Stairs	-0350 Irrigation		-0245 Contactor	-1025 Locker Number	25
-0330 Screen	-0355 Hydrant		-0250 Switch Gear	-1026 Locker Number	26
-0335 Graffiti/Vandalism			-0255 Transfer switch	-1027 Locker Number	27
-0340 Excavate/Grading			-0260 Float switch	-1028 Locker Number	28
-0345 Tactile			-0315 Split Unit/AC	-1029 Locker Number	29
			-0340 Excavate/Grading	-1030 Locker Number	30
				-1031 Locker Number	31



# ABS by Location

- Locations
- 10THOS AGE-
- I25BROADWAYS TAT-
- BELLE VIEWS TATIO-
- COLORADO STATION-
- UNIVERSITY DENVE-
- LOUISIAN APEARL-
- LITTLETON MINRAL-
- FEDERAL CENTER-
- Possible Assets
- DRS
- GROU
- LOT
- LANE
- PLAT
- PLAZ
- STOR
- STRU

# Complex Location

- I-25 & Broadway Light Rail Station PNR
- I25BROADWAYS TAT-DRS
- I25BROADWAYS TAT-GROU
- I25BROADWAYS TAT-LOT
- I25BROADWAYS TAT-PLAT
- I25BROADWAYS TAT-PLAZ
- I25BROADWAYS TAT-STOR








# Condition Assessments

PUBLIC FACILITIES INSPECTION FORM								
Location:						Date:		
Assets:	DRS	GROU	LOT	PLAT	PLAZ	STOR	STRU	
<b>SGR-PUB-DRS</b>		<b>Drivers Relief Station</b>						
SGR3020-AESTHETICS	1	2	3	4	5			
SGR3080-FUNCTION	1	2	3	4	5			
<b>SGR-PUB-GROU</b>		<b>Grounds</b>						
SGR3110-LAWN	1	2	3	4	5			
SGR3140-SHRUBS	1	2	3	4	5			
SGR3190-TREES	1	2	3	4	5			
SGR3200-LANDSCAPE MATERIAL	1	2	3	4	5			
<b>SGR-PUB-LOT</b>		<b>Parking Lot</b>						
SGR3160-STRIPING	1	2	3	4	5			
SGR3170-SURFACE	1	2	3	4	5			
<b>SGR-PUB-LANE</b>		<b>Drive Lanes</b>						
SGR3165-STRIPING	1	2	3	4	5			
SGR3175-SURFACE	1	2	3	4	5			
<b>SGR-PUB-PLAT</b>		<b>Rail Platform</b>						
SGR3020-AESTHETICS	1	2	3	4	5			
SGR3150-STAIRS	1	2	3	4	5			
SGR3170-SURFACE	1	2	3	4	5			
SGR3180-TACTILE	1	2	3	4	5			
<b>SGR-PUB-PLAZ</b>		<b>Pedestrian Plaza</b>						
SGR3020-AESTHETICS	1	2	3	4	5			
SGR3150-STAIRS	1	2	3	4	5			
SGR3170-SURFACE	1	2	3	4	5			
<b>SGR-PUB-STOR</b>		<b>Storage/Security &amp; Elec. Room/Ticket Kiosk</b>						
SGR3020-AESTHETICS	1	2	3	4	5			
SGR3080-FUNCTION	1	2	3	4	5			
<b>SGR-PUB-STRU</b>		<b>Parking Structure</b>						
SGR3020-AESTHETICS	1	2	3	4	5			
SGR3150-STAIRS	1	2	3	4	5			
SGR3160-STRIPING	1	2	3	4	5			






- From the ABS we come up with groups or systems to be assessed
- Each facility will have some or all groups
- Score each line which rolls up to the group score then to the location score

# Condition Assessments

## SGR-PUB-LOT (Parking Lot/Drive Lanes)

5		<p>New construction, no visible defects.</p>
4		<p>Minor Improvement needed. Minimal signs of wear, no major problems, minimal signs of deterioration (less than 20%). Primarily cosmetic, up to 20% of striping needs redone.</p>
3		<p>Needs repair Minimal signs of wear, no major problems, minimal signs of deterioration (less than 20%). Primarily cosmetic, up to 20% of striping needs redone. Cracking concrete, asphalt gaps under 1/2 inch wide but still vertically flush. Minimal amount of potholes. Settling with shallow grade changes.</p>
2		<p>Needs replaced or extensive repair Minimal signs of wear, no major problems, minimal signs of deterioration (less than 20%). Primarily cosmetic, up to 20% of striping needs repainted. Parking lot showing significant degradation. Cracks in excess of 1/2 inch wide. <u>Vertical separation of cracks greater than 1/2"</u>. Deep and numerous potholes, significant settling or heaving that may affect the drivability of the lot.</p>
1		<p>Critical defects affecting function, health, or safety. Parking lot has damage and degradation affecting the drivability of the lot from potholes, heaving, settling, cracking, and separation of paved sections.</p>

## SGR-PUB-PLAT (Rail Platform)

5		<p>New construction, no visible defects.</p>
4		<p>Minor Improvement needed. Minimal signs of wear, no major problems, minimal signs of deterioration.</p>
3		<p>Needs repair. Deterioration exists, but functioning as designed. Cracking concrete, asphalt or concrete gaps under 1/2" inch but still vertically flush.</p>
2		<p>Needs replaced or extensive repair. Defects are critical and/or widespread, repairs are necessary in several areas. <u>Cracks in excess of 1/2 inch wide. Vertical separation of cracks greater than 1/4" especially if they present a trip hazard.</u></p>
1		<p>Critical defects affecting function, health, or safety.</p>

# Maintenance Facilities

- Asset breakdown structure
- Building is the asset
  - Use systems level reporting
- No equipment included just systems

# ABS by Location

	D	E	J	K	L	M	N
1	<b>Boulder Asset List</b>		<b>PMs and CKs</b>				
2	<b>Equipment ID</b>	<b>Asset Description</b>					
3	BO-INT-TRANS-A	Transportation Administration 1st Floor					
4	BO-INT-TRANS-B	Transportation Administration 2nd Floor					
5	BO-INT-TRANS-C	Operators Area					
6							
7	BO-INT-MAINT-A	Maintenance Administration 1st Floor					
8	BO-INT-MAINT-M	Mechanics Area					
9	BO-INT-MAINT-R	Running Repair Office(s)					
10	BO-INT-MAINT-S	Maintenance Shop	PM-PBOOTH3	CK-AIRDRY1	CK-AIRDRY6		
11							
12	BO-INT-STORER	Storeroom					
13	BO-INT-GARAGE	Bus Garage					
14	BO-INT-WASH	Bus Wash	PM-VEHWASH	CK-PRESSWA	CK-STAVAC3		
15	BO-INT-FUEL	Interior Fuel Island	CK-FUEL1				
16	BO-EXT-FUEL	Exterior Fuel Island	CK-FUEL1				
17	BO-EXT-BLDG	Exterior Building					
18	BO-EXT-ROOF	Building Roof					
19	BO-EXT-GROUND	Building Grounds					
20	BO-EXT-LOTS	Parking Lots	CK-GATES6				
21	BO-EXT-TANK	Tank Farm	CK-TANK1				
22	BO-INT-FM	Facilities Maintenance Area					
23	BO-INT-IT	Information Technology and Liebert Unit					
24	BO-INT-BLDG-AU	Building Automation					
33	<b>Make-up Air Unit</b>						
34	BO-EXT-MAU-1	Make-up Air Unit 1	PM-HVAC1	PM-HVAC3	PM-HVAC12		
35	BO-EXT-MAU-2	Make-up Air Unit 2	PM-HVAC1	PM-HVAC3	PM-HVAC12		
36	BO-EXT-MAU-3	Make-up Air Unit 3	PM-HVAC1	PM-HVAC3	PM-HVAC12		
37	BO-EXT-MAU-4	Make-up Air Unit 4	PM-HVAC1	PM-HVAC3	PM-HVAC12		
38	BO-EXT-MAU-5	Make-up Air Unit 5	PM-HVAC1	PM-HVAC3	PM-HVAC12		
39	BO-EXT-MAU-6	Make-up Air Unit 6	PM-HVAC1	PM-HVAC3	PM-HVAC12		
40	BO-EXT-MAU-7	Make-up Air Unit 7	PM-HVAC1	PM-HVAC3	PM-HVAC12		
41	BO-EXT-MAU-8	Make-up Air Unit 8	PM-HVAC1	PM-HVAC3	PM-HVAC12		
42	<b>HVAC</b>						
43	BO-EXT-HVAC-9	HVAC 9 Administration	PM-HVAC1	PM-HVAC3	PM-HVAC12		
44	<b>Boilers</b>						
45	BO-INT-BOILER-1	Boiler 1	PM-BOILER12				
46	BO-INT-BOILER-2	Boiler 2	PM-BOILER12				
47	BO-INT-BOILER-3	Boiler 3	PM-BOILER12				
48	<b>Air Compressors</b>						
49	BO-INT-AIRCOMP	Air Compressor 1	CK-AIRCOMP3	CK-AIRCOMP12			
50	BO-INT-AIRCOMP	Air Compressor 2	CK-AIRCOMP3	CK-AIRCOMP12			
51	<b>Satellite</b>						
52	BO-SAT-BTC	Boulder Transfer Center	PM-HVAC1	PM-HVAC3	PM-HVAC12		
53	BO-SAT-LGMT	Longmont Facility	PM-HVAC1	PM-HVAC3	PM-HVAC12		
54	<b>Grouped Assets</b>						
55	BO-INT-PORT-HC	Portable Hoists	CK-PRTHST2A	CK-PRTHST2B			
56	BO-INT-DOORS-1	Overhead Doors	CK-OVHDR3A				
57	BO-INT-PUMPS	Fluid Pumps	CK-PUMPS1A				
58	BO-INT-HOIST-P	Post Hoists	CK-PSTHST1A	CK-PSTHST3A			
59							
60							
61							

- Equipment is grouped into systems






# Condition Assessments






	A	B	C	D	E	F	G	H	I	J	K	L	M	N	O	P	Q
1	DATE:	LOCATION:				INSPECTOR NAMES:											
2		Rating ▼															
3	1. ROOF																
4	MECHANICAL																
5	STRUCTURAL																
6	SURFACES																
7	2. SHELL																
8	MECHANICAL																
9	STRUCTURAL																
10	SURFACES																
11	3. PARKING LOTS																
12	MECHANICAL																
13	STRUCTURAL																
14	SURFACES																
15	4. GROUNDS/LANDSCAPE																
16	MECHANICAL																
17	STRUCTURAL																
18	SURFACES																
19	5. WASH BAY/ FUEL ISLAND																
20	MECHANICAL																
21	STRUCTURAL																
22	SURFACES																
23	6. PARKING GARAGE																
24	MECHANICAL																
25	STRUCTURAL																
26	SURFACES																
27	7. ADMIN. OFFICE/BREAKROOM																
28	MECHANICAL																
29	STRUCTURAL																
30	SURFACES																
31	8. MAINTENANCE SHOP																
32	MECHANICAL																
33	STRUCTURAL																
34	SURFACES																
35	9. STOREROOM/PARTS STORA																
36	MECHANICAL																
37	STRUCTURAL																
38	SURFACES																
39	10. ELEVATOR/STAIRS																
40	MECHANICAL																
41	STRUCTURAL																
42	SURFACES																
43	NOTES:																
44																	
45																	
46																	
47																	

- From the ABS we come up with groups or systems to be assessed
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- Score each line which rolls up to the group score then to the location score



# Condition Assessments

Rating Area: Maintenance Shop Mechanical		
5		New construction, no visible defects.
4		Minor Improvement needed. Minimal signs of wear, no major problems, minimal signs of deterioration. Cosmetic defects, no corrosion.
3		Needs repair. Some deterioration exists, cosmetically "fair", but functioning as designed. Surface rust only.
2		Needs replaced or extensive repair. Defects are critical and/or widespread, repairs are necessary in several areas.
1		Critical defects affecting function, health, or safety. Needs replaced.

Rating Area: Building Grounds Mechanical		
5		New construction, no visible defects.
4		Minor Improvement needed. Minimal signs of wear, no major problems, minimal signs of deterioration. Primarily cosmetic defects having no corrosion but faded paint.
3		Needs repair. Surface rust and peeling paint. Some deterioration exists, cosmetically "fair", but functioning as designed.
2		Needs replaced or extensive repair. Defects are critical and/or widespread. Repairs are necessary in several areas.
1		Critical defects affecting function, health, or safety. Needs replaced.



# Bridges and Conveyances

- 3rd party inspections converted to SGR for both
  - Using inspection scores and grouping them into systems
- Performance of conveyances in development
  - Full service contract for conveyances
  - Calls for service
  - Entrapments larger consideration
  - Inspection items

# Bridge Assessment

## Element Inspection Report

Elm/En	Description	Units	Total Qty	% in 1	CS 1	% in 2	CS 2	% in 3	CS 3	% in 4	CS 4	% in 5	CS 5
12/1	Bare Concrete Deck	(SF)	4,013	0 %	0	100 %	4,013	0 %	0	0 %	0	0 %	0
121/1	P/Stl Thru Truss/Bot	(LF)	634	79 %	500	14 %	90	5 %	34	2 %	10	0 %	0
126/1	P/Stl Thru Truss/Top	(LF)	634	79 %	500	21 %	134	0 %	0	0 %	0	0 %	0
141/1	Paint Stl Arch	(LF)	361	94 %	341	6 %	20	0 %	0	0 %	0	0 %	0
152/1	Paint Stl Floor Beam	(LF)	1,185	100 %	1,181	0 %	4	0 %	0	0 %	0	0 %	0
161/1	Paint Stl Pin/Hanger	(EA)	20	100 %	20	0 %	0	0 %	0	0 %	0	0 %	0
210/1	R/Conc Pier Wall	(LF)	24	100 %	24	0 %	0	0 %	0	0 %	0	0 %	0
234/1	R/Conc Cap	(LF)	56	71 %	40	29 %	16	0 %	0	0 %	0	0 %	0
307/1	Modular Expansion Jt	(LF)	45	100 %	45	0 %	0	0 %	0	0 %	0	0 %	0
310/1	Elastomeric Bearing	(EA)	10	60 %	6	40 %	4	0 %	0	0 %	0	0 %	0
333/1	Other Bridge Railing	(LF)	634	100 %	634	0 %	0	0 %	0	0 %	0	0 %	0
341/1	Substr Conc Coating	(EA)	1	100 %	1	0 %	0	0 %	0	0 %	0	0 %	0
358/1	Deck Cracking SmFlag	(EA)	1	100 %	1	0 %	0	0 %	0	0 %	0	0 %	0
600/1	Genl Remarks	(EA)	1	100 %	1	0 %	0	0 %	0	0 %	0	0 %	0

### Abutments

R/Conc Abutment

Elastomeric Bearing

Elastomeric Bearing (Teflon)

Fixed Bearing

Disk Bearing

Moveable Bearing

Pot bearing

### Arches/Suspension Rods

Paint Steel Arch

Paint Steel Pin/Hanger

Unpainted Steel Arch

### Expansion Joints

Compression Joint Seal

Construction Non-Exp Joint

Open Expansion Joint

Modular Expansion Joint

Pourable Joint Seal

Strip Seal Expansion Joint

### Girders/Beams

Open Girder

P/Stl Thru Truss/Bottom

P/Stl Thru Truss/Top

Paint Steel Floor Beam

Paint Steel Stringer

Paint Steel Open Girder

Unpainted Steel Floor Beam

P/S Conc Open Girder

Superstr Cnc Coating

P/S Conc Box Girder

### Caps

R/Conc Cap

Paint Steel Cap

### Headwalls/Wingwalls

Wingwalls

Bank Condition

Culvert Headwalls

Culvert Wingwalls

Slope Prot/Berms

### Culverts

Channel Cond

Concrete Culvert

ChannProtMatCond

### Pillars/Piers/Columns

R/Conc Pier Wall

Paint Steel Column

Paint Concrete Column

Concrete Pile Cap/Ftg

Substr Conc Coating

R/Conc column

### Deck

Bare Concrete Deck

Bare Conc Dk w/Brs

Coated Metal Curb/SW

Pole Attachment

Conc Curbs/SW

RR Deck

### Railings

Railing (Concrete)

Metal Rail Coated

Other Bridge Railing

# Conveyances Age Based

ASSET AGE (YEARS)	SGR SCORE
0 - 1	5.0
2 - 4	4.5
5 - 10	4.0
11 - 17	3.5
18 - 24	3.0
25 - 30	2.5
31 - 33	2.0
34 - 36	1.5
37 or more	1.0

- Conveyances are scored based on age using a 25 years EUL
- Refurbishment (replacing the controllers) restarts the ELU
- Currently working on performance metrics

# Performance Tracking

- Facilities mostly condition and age
- Reporting format performance metrics
  - Calls for service
  - Cost (not available on Bridges and conveyances)
    - Cost per sq ft
  - Labor hours (not available on Bridges and conveyances)
  - Energy usage

# Dashboards

- Reporting is software agnostic
- RTD AM and SGR uses Oracles Business Intelligence Enterprise Edition (OBIEE 11.5) for reporting & analysis
  - ETLs (Extract, Transform and load process) from multiple software data bases to a central data warehouse

# Facilities Age Based

ORACLE Business Intelligence

SGR Facilities Dashboard

SGR Scores | Parts & Labor | Physical Condition Scores

Overall Score, Age Ind, Bac klog

Overall Score, Age Ind

FAILITY CATEGORY

F\_SGR Scores by Location

**Report 1.2.1 (State of Good Repair Rating for Facilities):** Report shows Overall SGR Score for facilities by Location.

ASSET	Overall Score
BO-BUILDING-SGR	3.9
DS-BUILDING-SGR	3.9
EL-BUILDING-SGR	4.0
EM-BUILDING-SGR	3.4
LO-BUILDING-SGR	3.3
MA-BUILDING-SGR	3.4
PL-BUILDING-SGR	3.0
RC-BUILDING-SGR	4.0

Overall Score

Overall Score

ASSET

**No Results**

The specified criteria didn't result in any data. This is often caused by applying filters and/or selections that are too restrictive or that contain incorrect values. Please check your Analysis Filters and try again. The filters currently being applied are shown below.

CATEGORY is equal to / is in FACILITY  
and ETL\_CONTRL\_FLG is equal to / is in C

[Refresh](#)

2:01 PM  
6/14/2016



# Parking Lot & Drive Lanes

Oracle BI Interactive Dash...

ORACLE Business Intelligence

SGR Public Facilities Dashboard

SGR Scores Labor and Parts Pedestrian Bridges

Asset Type Prompt

\* DESCRIPTION PARKING LOT/DRIVE LANES

PF\_SGR Scores by Asset Type

Report 1.2.1 (State of Good Repair Rating for Public Facilities): Report shows Overall SGR Score for public facilities by Asset Type.

**No Results**

The specified criteria didn't result in any data. This is often caused by applying filters and/or selections that are too restrictive or that contain incorrect values. Please check your Analysis Filters and try again. The filters currently being applied are shown below.

CATEGORY is equal to / is in PUBLIC FACILITY  
and ETL\_CTRL\_FLG is equal to / is in C  
and DESCRIPTION is equal to PARKING LOT/DRIVE LANES

Refresh

Overall Score

ASSET	Overall Score
104REVERE-LOT	4.0
27THBROADWAY-LOT	3.5
30THDOWNING-LOT	3.5
39THTABLEMESA-LOT	3.8
70THBROADWAY-LOT	3.3
8THCOFFMAN-LOT	3.3
AIRPORTBLVD40TH-LOT	3.5
ALAMEDAHAVANA-LOT	3.8
ARAPAHOE-LOT	3.0
ASPENPARK-LOT	3.3
BELLEVIEWSTATIO-LOT	3.8
BERGENPARK-LOT	3.3
C470UNIVERSITY-LOT	3.0
CENTREPOINTSABL-LOT	3.8
CHURCHOFNAZEREN-LOT	3.0
COLORADOSTATION-LOT	3.5
COUNTYLINESTATI-LOT	3.5
DAYTONSTATION-LOT	2.8
DECATURFEDERAL-LOT	4.0
DRYCREEKSTATION-LOT	3.8
ELRANCHO-LOT	3.0
EVANSSTATION-LOT	3.5
EVERGREEN-LOT	3.7

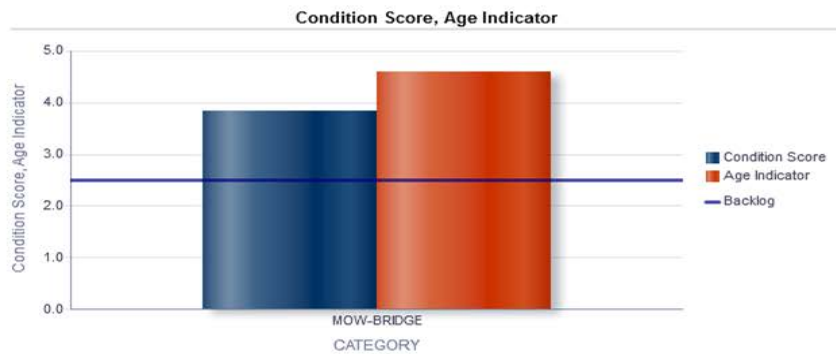
ASSET

104REVERE-LOT ASPENPARK-LOT DECATURFEDERAL-LOT 125BROADWAYSTAT-LOT NEDERLAND-LOT PINERY-LOT US36CHURCHFRANCH-LOT YALESTATION-LOT

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# Bridges

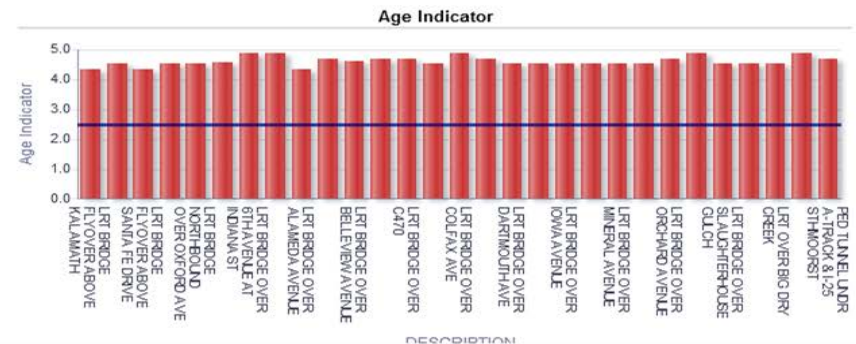
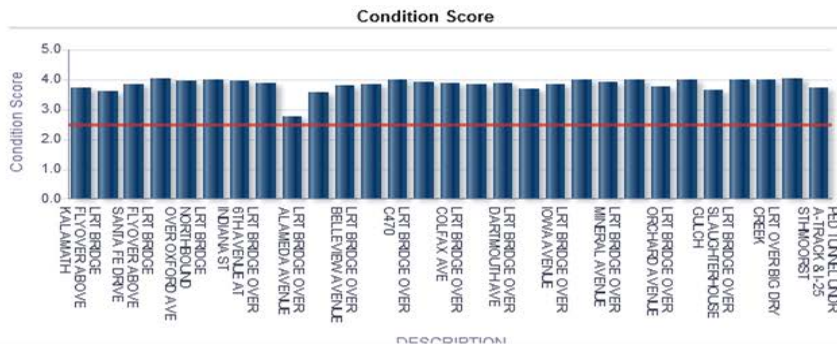
### 1.1.1-Overall Bridge Score



### 1.1.2-Bridge Score by Asset

CATEGORY	ASSET	DESCRIPTION	Condition Score	Age
MOW-BRIDGE	BRG15CP	LRT BRIDGE OVER 15TH STREET	4.0	4.6
MOW-BRIDGE	BRGALCC	LRT BRIDGE OVER ALAMEDA AVENUE	2.7	4.3
MOW-BRIDGE	BRGARAPSE	LRT BRIDGE OVER ARAPAHOE ROAD	3.5	4.7
MOW-BRIDGE	BRGBDCSW	LRT OVER BIG DRY CREEK	4.0	4.5
MOW-BRIDGE	BRGBDWYSE	LRT BRIDGE OVER BROADWAY	3.8	4.7
MOW-BRIDGE	BRGBELSE	LRT BRIDGE OVER BELLEVIEW AVENUE	3.9	4.7
MOW-BRIDGE	BRGBELSW	LRT BRIDGE OVER BELLEVIEW AVENUE	3.6	4.5
MOW-BRIDGE	BRGC470SE	LRT BRIDGE OVER C470	4.0	4.7
MOW-BRIDGE	BRGCCCC	LRT BRIDGE OVER CHERRY CREEK	3.8	4.3
MOW-BRIDGE	BRGCCPR	LRT BRIDGE OVER CHERRY CREEK	3.9	4.7
MOW-BRIDGE	BRGCCWCP	LRT BRIDGE OVER CHERRY CREEK	4.0	4.6
MOW-BRIDGE	BRGCLFXWC	LRT BRIDGE OVER COLFAX AVE	3.9	4.9
MOW-BRIDGE	BRGCMWLC	LRT BRIDGE OVER RAILRD YARD & UMATILLA S	4.0	4.9
MOW-BRIDGE	BRGCNTYLNSE	LRT BRIDGE OVER COUNTYLINE ROAD	3.8	4.7
MOW-BRIDGE	BRGDARSW	LRT BRIDGE OVER DARTMOUTH AVE	3.9	4.5
MOW-BRIDGE	BRGHAMSW	LRT BRIDGE OVER HAMPDEN AVE	3.7	4.5
MOW-BRIDGE	BRGHWY6WC	LRT BRIDGE OVER 6TH AVENUE AT UNION AVE	3.9	4.9
MOW-BRIDGE	BRGINDIWC	LRT BRIDGE OVER 6TH AVENUE AT INDIANA ST	3.9	4.9
MOW-BRIDGE	BRGIOWFOSW	LRT BRIDGE FLYOVER RR SOUTH OF IOWA AVE	4.0	4.5
MOW-BRIDGE	BRGIOWSW	LRT BRIDGE OVER IOWA AVENUE	3.8	4.5
MOW-BRIDGE	BRGKALFOCC	LRT BRIDGE FLYOVER ABOVE KALAMATH	3.7	4.3
MOW-BRIDGE	BRGLEESW	LRT BRIDGE OVER LEE GULCH	4.0	4.5
MOW-BRIDGE	BRGMINCM	LRT BRIDGE OVER MINERAL AVENUE	3.0	4.5

### 1.2.1-Bridge Score by Asset-Graphs



# Summary

- Able to use template and lessons learned from Bus and Rail assessments
- Used location based reporting along with asset level
- More difficult to find valid performance metrics
- Data not as easy to capture

# Thank You

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