

# January 2018

## Monthly Operations Report



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# INTRODUCTION

Pursuant to Schedule 6, Section 1.8.2(a) of the Concession Agreement, Plenary Roads Denver (“PRD”) is required to submit a monthly report covering all essential statistics related to the Managed Lanes. The following data covers the month of January 2018. Operationally, January was a positive month. Several routine maintenance tasks were completed, there were minimal incidents to maintained elements, and traffic volumes were consistent with expectations.

## 1.0 VOLUMES AND LANE USAGE

Over the last several months as more commuters use the transponders for either ExpressToll™ (AVI) or HOV travel, License Plate (LPT) transactions have consistently decreased as a percentage of total traffic volume. The total monthly gantry traffic volume for January 2018 in the I-25 Central and US 36 Managed Lanes was 273,230 and 1,114,723, respectively.

The table below provides the monthly summary for each Managed Lanes roadway, along with a detailed breakdown of weekday volumes. For reference, the AM Peak Period is considered to be weekdays from 6:45 am – 8:45 am. The PM Peak Period is considered to be, weekdays, from 4:15pm – 5:45pm. It should be noted, that the I-25 Managed Lane traffic reflects traffic counts from a single gantry and US 36 Managed Lane counts reflect fourteen gantries, seven gantries in each direction. Therefore, US 36 data will indicate far greater traffic counts that are not comparative to those of I-25.

The following charts depict the distribution of traffic by type (Figure 1) and the daily traffic counts (Figure 2) and for the month.

Traffic Summary (US 36)						
	AVI	LPT	HOV	Non-Rev & Hybrid	Total	Hybrid
Total Monthly Traffic	662,603	241,745	166,304	44,071	1,114,723	5,678
Maximum Weekday Traffic	34,540	12,267	7,377	2,037	54,582	304
Average Weekday Traffic	28,382	9,962	5,754	1,880	45,978	236
Average Hourly AM Peak Traffic	4,348	1,320	699	244	6,611	N/A
Average Hourly PM Peak Traffic	4,967	1,623	857	239	7,686	N/A

Traffic Summary (I-25C)						
	AVI	LPT	HOV	Non-Rev & Hybrid	Total	Hybrid
Total Monthly Traffic	130,687	82,912	45,615	14,016	273,230	1,607
Maximum Weekday Traffic	6,682	4,231	1,947	644	13,264	86
Average Weekday Traffic	5,648	3,528	1,787	601	10,963	70
Average Hourly AM Peak Traffic	857	541	274	85	1,672	N/A
Average Hourly PM Peak Traffic	759	462	245	82	1,466	N/A

Table 1 – Monthly Traffic Summaries

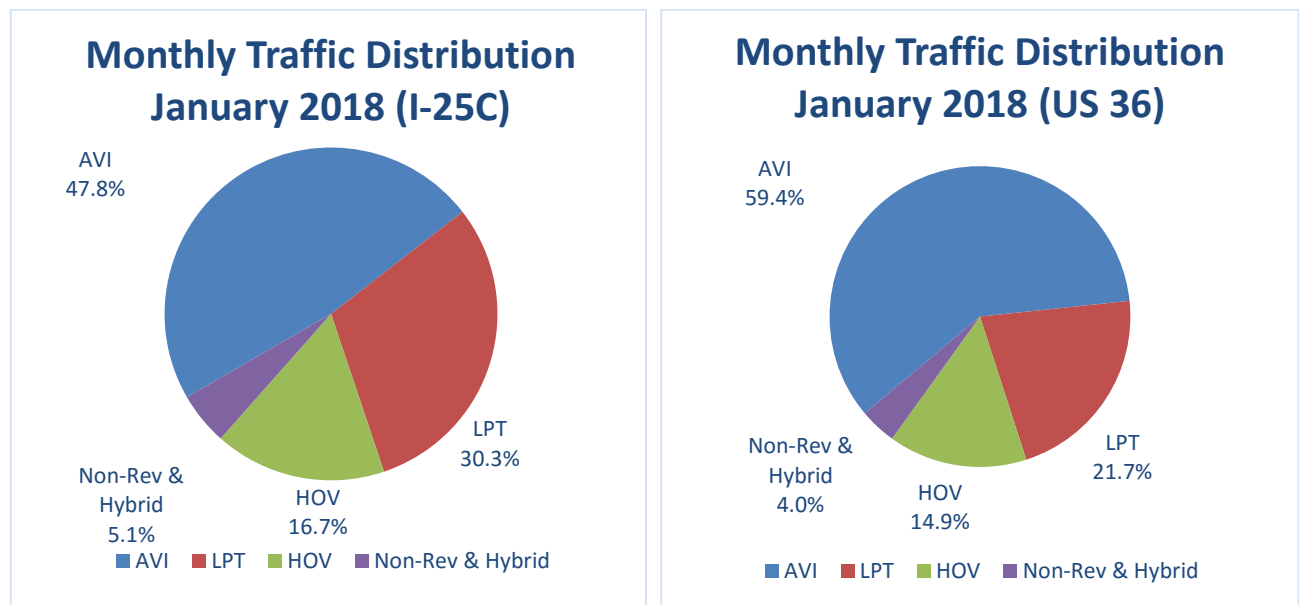
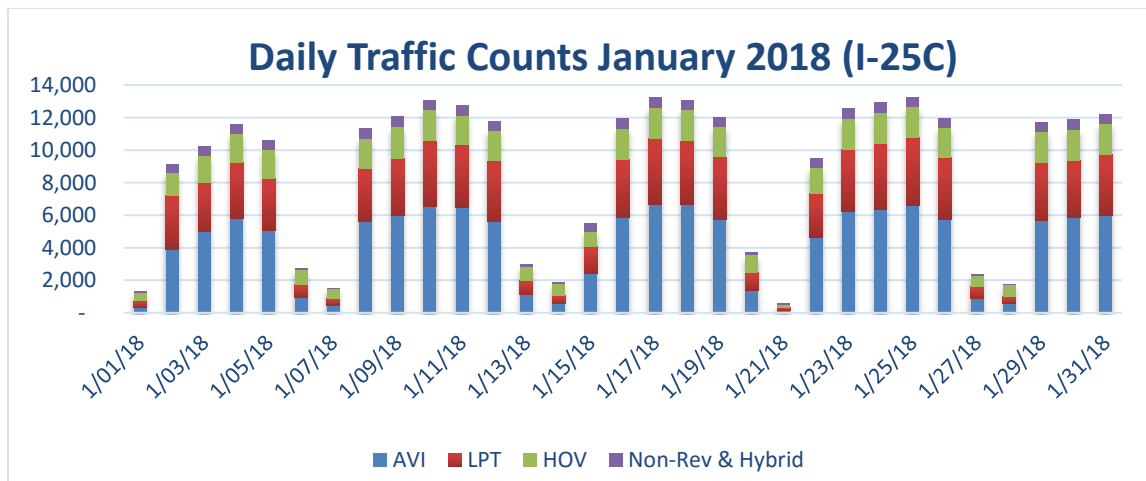


Figure 1 – Monthly Traffic Distribution



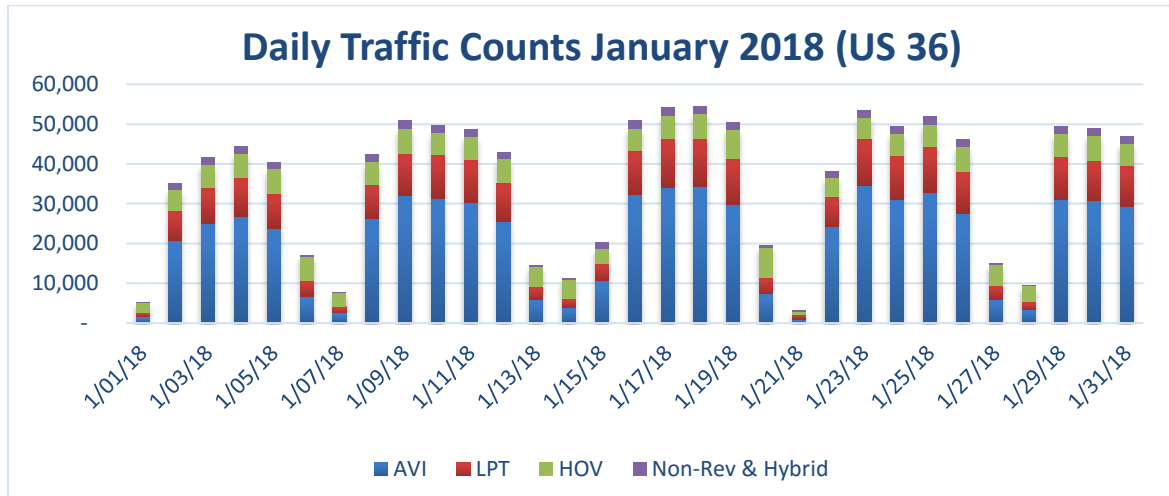


Figure 2 – Daily Traffic Counts

## 2.0 REVENUES

During the month of January 2018, PRD collected \$754,064 and \$659,420 from users of the I-25 Central and US36 Managed Lanes, respectively. For purposes of this report, revenues are recognized at the time of collection, which is typically sometime after they have been incurred for those customers who are billed based on their license plate. For example, if a single-occupant vehicle uses the lanes in October but pays in January, the associated revenue is attributed to January.

## 3.0 OPERATIONAL INCIDENTS, ISSUES, AND CLOSURES

The project had numerous routine debris removals, lighting incidents, guardrail incidents, sign incidents, and graffiti control during the month. The routine lighting, guardrail, roadway markings and sign incidents are all planned for repair within the allowable response period and several previously identified lighting incidents were repaired. All incidents were responded to and rectified within the allowable timeframes.

Date	Start	Stop	Duration
July 7, 2017	16:45	17:00	0:15
August 2, 2017	07:34	08:22	0:48
August 3, 2017	16:23	17:05	0:42
August 4, 2017	07:23	07:45	0:22
August 9, 2017	08:45	09:43	0:58
August 11, 2017	07:12	07:45	0:33
August 30, 2017	18:00	19:00	1:00

September 6, 2017	16:13	17:04	0:51
September 8, 2017	08:25	09:15	0:50
September 11, 2017	11:00	12:23	1:23
September 15, 2017	18:19	19:24	1:05
September 29, 2017	15:44	16:40	0:56
October 4, 2017	07:34	08:06	0:32
October 12, 2017	15:19	15:42	0:22
October 20, 2017	14:15	15:06	0:51
October 23, 2017	18:03	18:46	0:43
November 23, 2017	14:47	15:44	0:57
November 29, 2017	16:10	16:37	0:27
December 8, 2017	17:08	18:31	1:23
December 12, 2017	17:33	17:55	0:22
December 14, 2017	08:52	10:15	1:23
December 19, 2017	17:49	19:19	1:30
January 5, 2018	17:23	17:49	0:23
January 17, 2018	10:00	11:12	1:12
January 18, 2018	17:23	18:32	1:09
January 24, 2018	07:26	08:21	0:55
January 29, 2018	11:35	13:33	1:58
January 29, 2018	16:50	17:36	0:46
<b>Total</b>			<b>24 hours 36 minutes</b>
<b>Remaining Closure Hours Available (Ref: CA 29.7)</b>			<b>0 hours 0 minutes</b>

Table 2 – Managed Lanes Closures to Date

The table below provides a listing of ETCS items recorded this month, consistent with Appendix 6-2 of Schedule 6.

Element ID	Cat	Element	Performance Item	PRD Notified	Contractual Cure Period	Cure Achieved
None						

Table 3 – ETCS Issues per CA Schedule 6 Appendix 6-2

The table below provides a status of all Noncompliance categories in accordance with paragraph 1.2 of Schedule 10.

Non-compliance Location	Nature	Cause	Cure Date	Uncured Non-compliance Point	Unexpired Non-compliance Point	365 Day Expiration Date	1095 Day Expiration Date
Promenade West Toll Point	Incorrect toll schedule	Incorrect Toll Schedule was applied during a software update on 3/7/16	3/16/16 (Period II) Customer Accounts Corrected	0	3	3/16/17	3/16/19

Table 4 – Status of Noncompliance Categories

#### 4.0 MEAN TIME BETWEEN FAILURE (MTBF) AND MEAN TIME TO REPAIR (MTTR)

Mean Time Between Failure (MTBF) and Mean Time To Repair (MTTR) data is provided in the table below. Only Maintained Elements that were repaired during the reporting period and had a failure type breakdown are listed in the table. We consider a breakdown to be a failure when the element cannot be used for its intended purpose until repaired.

Maintained Element	Mean Time Between Failure (MTBF) (Hours)	Mean Time To Repair (MTTR) (Hours)
None	N/A	N/A

Table 5 – Mean Time Between Failure & Mean Time To Repair

#### 5.0 HYBRID UTILIZATION

Total Hybrid Trips	
I-25 Central	1,607
US 36	5,678

Table 6 – Hybrid Utilization

Fuel-efficient “Hybrid” vehicles are permitted to access the Express Lanes free of charge, regardless of occupant numbers, provided that they have obtained a permit from CDOT, obtained a Hybrid transponder from E-470, and display an E-470 Hybrid decal on the vehicle’s windshield.

OPERATIONS AND  
MAINTENANCE  
MONTHLY REPORT  
JANUARY 2018

US 36 and I-25 Express  
Lanes Project

Prepared for:

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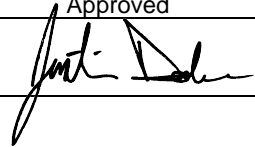
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## OPERATIONS AND MAINTENANCE – MONTHLY REPORT

JANUARY 2018

### *US 36 and I-25 Express Lanes Project*

Revision	Date	Approved
Rev. 0	02/08/2018	

This report titled *Operations and Maintenance Monthly Report, January 2018* has been prepared by Broadspectrum for the exclusive use of Plenary Roads Denver, LLC (PRD). No other party is an intended beneficiary of this report or the information, opinions, and conclusions contained herein. Any use by any party other than PRD of any of the information, opinions, or conclusions is the sole responsibility of said party. The use of this report shall be at the sole risk of the user regardless of any fault or negligence of PRD or Broadspectrum.

The information and analyses contained herein have been completed to a level of detail commensurate with the objectives of the assignment and in light of the information made available to Broadspectrum at the time of preparation. This report and its supporting documentation have been reviewed and/or checked for conformance with industry-accepted norms. To the best of the information and belief of Broadspectrum, the information presented in this report is accurate to within the limitations specified herein.

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The O&M Monthly Report contains all relevant information for the month of January 2018. BROADSPECTRUM continues ongoing and preventive maintenance activities for the I-25 and US36 Managed Lanes Project.

## BROADSPECTRUM's Commitment to Safety

BROADSPECTRUM conducted weekly toolbox talk meetings during the month. The purpose of the tool box talks is to cover important safety items that relate to the project such as near misses, "better ways" as to how safety is conducted for the Project, and discussion on safety procedures for maintenance activities. In addition to the toolbox talks, BROADSPECTRUM conducts a weekly progress meeting. This is a forum for feedback from staff on Operations, Incident Response, and Maintenance activities.

Toolbox Talks this month included:

- Driver Agreement
- Heart Health
- Winter Driving
- Driving on Ice
- Lug Nut Inspection

## A. Summary of the Planned Maintenance Activities for the Upcoming Month – February 2018

BROADSPECTRUM has identified the upcoming planned maintenance activities as described in Table 1.7.1.3 of The Maintenance Management Plan. These activities include preventative and routine maintenance in order to successfully operate and maintain the Project. A listing of the planned maintenance activities for the month of February 2018 is included below.

Fig. A-1 Planned Maintenance Activities for February 2018

X – Indicates the day the task is planned.

Performance Standard Identification Number (Table 6.1)	Work Activity-Description	Frequency	Feb-18																											
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28
			T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W
ML-1	MAINTENANCE PATROL	Daily	X	X			X	X	X	X	X			X	X	X	X	X			X	X	X	X	X			X	X	X
ML-1	FLEXIBLE PAVEMENT OBSERVATION / REPAIR	F-52							X								X						X							
ML-1	RIGID PAVEMENT OBSERVATION / REPAIR	F-52					X								X						X							X		
ML-4	DELINEATORS & MARKERS OBSERVE / CLEAN / REPAIR	F-12													X															
ML-2	DRAINAGE (INLET) OBSERVE/ CLEAN / REPAIR	F-12														X						X								
ML-2	DRAINAGE (PIPE/CULVERT) OBSERVE / CLEAN / RPR	F-12						X																						
ML-6	SIGN CLEANING	F-1																			X									
ML-6	SIGN OBSERVATION / REPAIR	F-52					X							X							X									
ML-8	STREET LIGHTING OBSERVATION / REPAIR	F-52		X						X								X							X					
ML-8	ELECTRICAL SUPPLY INSPECTION / REPAIR	F-12												X																
ML-8	ACCESS PANEL OBSERVATION / REPAIR	F-12														X														
ML-10	HERBICIDE & WEED CONTROL MAINTENANCE	F-52					X							X							X							X		
ML-12	GRAFFITI OBSERVATION / REMOVAL	F-52						X							X							X							X	
ML-14	MECHANICAL ROAD SWEEPING	F-12																			X	X	X	X						
ML-14	LITTER OBSERVATION / REMOVAL	Daily	X	X			X	X	X	X	X			X	X	X	X	X			X	X	X	X	X			X	X	X
	REVERSIBLE LANE OPERATIONS	Daily	X	X			X	X	X	X	X			X	X	X	X	X			X	X	X	X	X			X	X	X

Frequency of Activity:

Daily – Daily Activity

F-4 – Quarterly Activity

F-52 – Weekly Activity

F-2 – Semi-Annual Activity



F-12 – Monthly Activity

F-1 – Annual Activity

## B. Summary of Performed and Completed Maintenance Activities

Fig. B-1 Performed and Complete Maintenance Activities for January 2018,

X Indicates the day of the month that the task was completed.

Performance Standard Identification Number (Table 6.1)	Work Activity-Description	Frequency	Jan-18																															
			1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	
			M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	T	F	S	S	M	T	W	
ML-1	MAINTENANCE PATROL	Daily		X	X	X	X				X	X	X	X	X			X	X	X	X	X			X	X	X	X	X			X	X	X
ML-2	DRAINAGE (PIPE/CULVERT) OBSERVE / CLEAN / RPR	F-12				X							X							X							X							
ML-5.1	GUARDRAIL, SAFETY BARRIER					X					X																							
ML 5.2	IMPACT ATTENUATORS																									X								
ML-6	SIGN CLEANING	F-1							X															X										
ML-6	SIGN OBSERVATION / REPAIR	F-52			X						X								X							X							X	
ML-8	STREET LIGHTING OBSERVATION /REPAIR	F-52			X																													
ML-12	GRAFFITI OBSERVATION / REMOVAL	F-52							X							X								X							X			
ML-14	MECHANICAL ROAD SWEEPING	F-12														X	X	X																
ML-14	LITTER OBSERVATION / REMOVAL	Daily		X	X	X	X			X	X	X	X	X			X	X	X	X	X			X	X	X	X	X			X	X	X	
	REVERSIBLE LANE OPERATIONS	Daily		X	X	X	X			X	X	X	X	X			X	X	X	X	X			X	X	X	X	X			X	X	X	
	GATE MAINTENANCE & REPAIR								X							X							X								X			

Fig. B-2 Work Accomplished This Month

Activity	Actual Work
152 Asphalt Pavement Surface Rpr (YD2)	2.0
216 Fence Maint (LF)	1,235
218 Debris in Roadway (HR)	5
218 Litter Barrel Trash Cleanup (YD3)	23
220 Sweeping (Mech) (MI)	108
222 Sweeping - Hand (HR)	23
301 Misc Sign Maint (EA)	29
303 Sign Cleaning (EA)	200
304 Del Post Maint (EA)	607
307 Directional Gate Maint (EA)	5
312 Roadway Lighting (EA)	12
314 Reversible Lane Ops (HR)	322
316 Attenuator Maint (EA)	1
329 Courtesy Assistance (HR)	409.5
402 Snow Plowing & Materials (MI)	440
540 Graffiti Removal (SF)	400
601 Incident Management (HR)	10.5

### C. Summary of Planned Maintenance that was Not Completed for the Month

Broadspectrum completed all scheduled maintenance activities for the period of January, 2018. Frequencies and/or actual date of the month of some activities may have been adjusted based on actual conditions.

### D. Summary of the Maintenance Activities and Results Performed for the Month Beyond Planned Maintenance

A summary of unplanned maintenance activities provided below:

Snow and Ice Control:

Precipitation Event Start		Equipment Deployed		Precipitation Event End		Service Level "A" Achieved in ML		Service Level "B" Achieved in GP	
1/15/2018	05:35	1/15/2018	05:15	1/15/2018	22:37	1/15/2018	09:10	1/15/2018	09:10
1/20/2018	22:10	1/20/2018	21:25	1/22/2018	02:15	1/21/2018	16:05	1/21/2018	16:05

Courtesy Patrol: None

Hazardous Materials Incidents: None

## E. Operating Contractor's Incident Response Logs Related to Maintenance Activities

This section provides a summary of Broadspectrum's performance related to the Performance and Measurement Criteria listed in Appendix 6-1.1 of the Operating Contract.

The table below provides a listing of items recorded this month:

Element Category	Description	Location	BRS Notified	Response to Defects		
				Category 1		Category 2
				Hazard Mitigation	Permanent Remedy	Permanent Repair
GP 5.2	Attenuator (Impact Damage)	US36 MP 54.64 EB	9/18/2017 23:50:00	N/A	N/A	Reqd: 6 Months Respd: -- Actual: In Progress
GP5.1	Guardrail (Impact Damage)	US36 MP 39.55 EB	11/20/2017 22:00:00	N/A	N/A	Reqd: 6 Months Respd: -- Actual: In Progress
ML 8.1	Lighting (West Bulb Out)	040-U36-LHT-0240, MP 56.78	11/30/2017 10:00:00	N/A	N/A	Reqd: 6 Months Respd: 1/31/2018 13:00 Actual: 2.07 Months
ML 8.1	Lighting (All Bulbs Out)	040-I25-LHT-0050, MP 214.73	11/30/2017 10:00:00	N/A	N/A	Reqd: 6 Months Respd: 1/30/2018 13:00 Actual: 2.03 Months
ML 8.1	Lighting (North Bulb Out)	040-U36-LHT-0220, MP 56.66	11/30/2017 10:00:00	N/A	N/A	Reqd: 6 Months Respd: 1/30/2018 13:00 Actual: 2.03 Months
ML 8.1	Lighting (North & South Bulb Out)	040-U36-LHT-0130, MP 56.11	11/30/2017 10:00:00	N/A	N/A	Reqd: 6 Months Respd: 1/30/2018 13:00 Actual: 2.03 Months
ML 8.1	Lighting (North Bulb Out)	040-I25-LHT-0030, MP 214.62	11/30/2017 10:00:00	N/A	N/A	Reqd: 6 Months Respd: 1/30/2018 13:00 Actual: 2.03 Months
ML 8.1	Lighting (North Bulb Out)	040-U36-LHT-0010, MP 55.41	11/30/2017 10:00:00	N/A	N/A	Reqd: 6 Months Respd: 1/30/2018 13:00 Actual: 2.03 Months
ML 8.1	Lighting (West Bulb Out)	040-U36-LHT-0250, MP 56.84	11/30/2017 10:00:00	N/A	N/A	Reqd: 6 Months Respd: 1/30/2018 13:00 Actual: 2.03 Months
ML 8.1	Lighting (North Bulb Out)	040-I25-LHT-0100, MP 215.02	11/30/2017 10:00:00	N/A	N/A	Reqd: 6 Months Respd: 1/30/2018 13:00 Actual: 2.03 Months
ML 8.1	Lighting (North Bulb Out)	040-U36-LHT-0200, MP 56.53	11/30/2017 10:00:00	N/A	N/A	Reqd: 6 Months Respd: 1/31/2018 13:00 Actual: 2.07 Months
ML5.1	Barrier (Impact Damage)	US36 MP 41.20 WB	12/5/2017 15:10:00	N/A	N/A	Reqd: 6 Months Respd: 1/26/2018 03:00 Actual: 1.71 Months
ML5.1	Guardrail (Impact Damage)	US36 MP 47.20 EB	12/20/2017 11:05:00	N/A	N/A	Reqd: 6 Months Respd: -- Actual: In Progress
GP 8.1	Lighting (Impact Damage)	040-U36-LHT-026, MP 39.30	12/31/2017 12:45:00	N/A	N/A	Reqd: 6 Months Respd: -- Actual: In Progress
ML5.1	Guardrail (Impact Damage)	US36 MP 57.12	1/1/2018 20:34:00	N/A	N/A	Reqd: 6 Months Respd: -- Actual: In Progress
GP6.1	Sign (Reset Sign)	US36 MP 52.40 WB	1/1/2018 20:34:00	N/A	N/A	Reqd: 6 Months Respd: 1/3/2018 16:30 Actual: 0.06 Months
GP1.1	Debris (Cleared Dead Animal from Lanes)	US36 MP 39.60 WB	1/2/2018 13:30:00	Reqd: 1 Hour Respd: 1/2/2018 14:26 Actual: 0.93 Hours	N/A	N/A
ML5.2	Attenuator (Impact Damage)	US36 MP 57.00 WB	1/2/2018 19:00:00	N/A	N/A	Reqd: 6 Months Respd: 1/2/2018 19:40 Actual: 0.00 Months
ML 8.1	Lighting (West Bulb Out)	040-U36-LHT-0050, MP 56.84	1/3/2018 23:32:00	N/A	N/A	Reqd: 6 Months Respd: 1/30/2018 13:00 Actual: 0.88 Months
ML 8.1	Lighting (North Bulb Out)	040-I25-LHT-0030, MP 214.62	1/3/2018 23:27:00	N/A	N/A	Reqd: 6 Months Respd: 1/30/2018 13:00 Actual: 0.88 Months

Element Category	Description	Location	BRS Notified	Response to Defects		
				Category 1		Category 2
				Hazard Mitigation	Permanent Remedy	Permanent Repair
GP1.1	Debris (Cleared Dead Animal from Lanes)	US36 MP 55.12 WB	1/3/2018 12:15:00	Reqd: 1 Hour Respd: 1/3/2018 13:10 Actual: 0.91 Hours	N/A	N/A
GP1.1	Debris (Cleared Metal from Lanes)	US36 MP 45.50 WB	1/9/2018 07:57:00	Reqd: 1 Hour Respd: 1/9/2018 08:24 Actual: 0.44 Hours	N/A	N/A
GP1.1	Debris (Cleared Ladder from Lanes)	US36 MP 53.10 WB	1/11/2018 15:18:00	Reqd: 1 Hour Respd: 1/11/2018 15:43 Actual: 0.41 Hours	N/A	N/A
GP1.1	Debris (Cleared Metal from Lanes)	US36 MP 42.00 WB	1/11/2018 15:32:00	Reqd: 1 Hour Respd: 1/11/2018 15:47 Actual: 0.24 Hours	N/A	N/A
ML1.1	Debris (Debris Reported, Nothing Found)	US36 MP 216.75	1/16/2018 15:12:00	Reqd: 1 Hour Respd: 1/16/2018 15:39 Actual: 0.45 Hours	N/A	N/A
GP1.1	Debris (Cleared Ladder from Lanes)	US36 MP 213.80 WB	1/16/2018 18:42:00	Reqd: 1 Hour Respd: 1/16/2018 19:11 Actual: 0.48 Hours	N/A	N/A
GP5.1	Guardrail (Impact Damage)	US36 MP 55.04 EB	1/16/2018 23:32:00	N/A	N/A	Reqd: 6 Months Respd: -- Actual: In Progress
GP1.1	Debris (Cleared Plywood and Metal from Lanes)	US36 MP 54.60 EB	1/18/2018 12:11:00	Reqd: 1 Hour Respd: 1/18/2018 12:59 Actual: 0.79 Hours	N/A	N/A
ML 8.1	Lighting (North Bulb Out)	040-U36-LHT-0060, MP 55.70	1/24/2018 22:27:00	N/A	N/A	Reqd: 6 Months Respd: 1/30/2018 13:00 Actual: 0.18 Months
ML13.1	Incident Response (Set up Traffic Control, Cleared Debris)	US36 MP 215.50	1/27/2018 18:00:00	Reqd: 24 Hours Respd: 1/27/2018 18:07 Actual: 0.11 Hours	N/A	N/A
GP-13.1	Incident Response (Set up Traffic Control, Cleared Debris)	US36 MP 41.40	1/29/2018 11:44:00	Reqd: 24 Hours Respd: 1/29/2018 12:02 Actual: 0.29 Hours	N/A	N/A

All items were completed within the required response time. Items that are *In Progress* are still within the allowed response time.

## F. Detailed Results of All Inspections, Assessments, and Testing Activities

During this reporting period there were no special inspections, assessments, or testing results outside normal operating condition.

## G. Monthly Toll System Performance Reports

Toll system operated within proposed parameters per BROADSPECTRUM's observations.

## H. Preventative Maintenance Plan and Progress

Preventative Maintenance work is contingent on Initial Works Package implementation.

## I, J. Mean Time between Failure (MTBF), Mean Time To Repair (MTTR)

No Maintained Elements experienced a failure type breakdown this month. BROADSPECTRUM considers a breakdown to be a failure when the element cannot be used for its intended purpose until repaired.