

# July 2017

## 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 July 2017. Operationally, July 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 July 2017 in the I-25 Central and US 36 Managed Lanes was 256,302 and 1,148,653, 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 4:30pm – 6:00pm. 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
<b>Total Monthly Traffic</b>	628,698	300,760	182,730	36,465	1,148,653	5,397
<b>Maximum Weekday Traffic</b>	34,493	16,319	7,542	1,920	58,856	324
<b>Average Weekday Traffic</b>	28,617	12,950	6,400	1,695	49,662	245
<b>Average Hourly AM Peak Traffic</b>	4,163	1,545	620	214	6,542	N/A
<b>Average Hourly PM Peak Traffic</b>	4,699	2,073	835	218	7,825	N/A

Traffic Summary (I-25C)						
	AVI	LPT	HOV	Non-Rev & Hybrid	Total	Hybrid
Total Monthly Traffic	134,393	67,293	42,731	11,885	256,302	1,759
Maximum Weekday Traffic	7,373	3,452	1,920	611	13,099	106
Average Weekday Traffic	6,180	2,888	1,729	556	10,797	83
Average Hourly AM Peak Traffic	870	373	225	79	1,468	N/A
Average Hourly PM Peak Traffic	771	343	223	77	1,337	N/A

Table 1 – Monthly Traffic Summaries

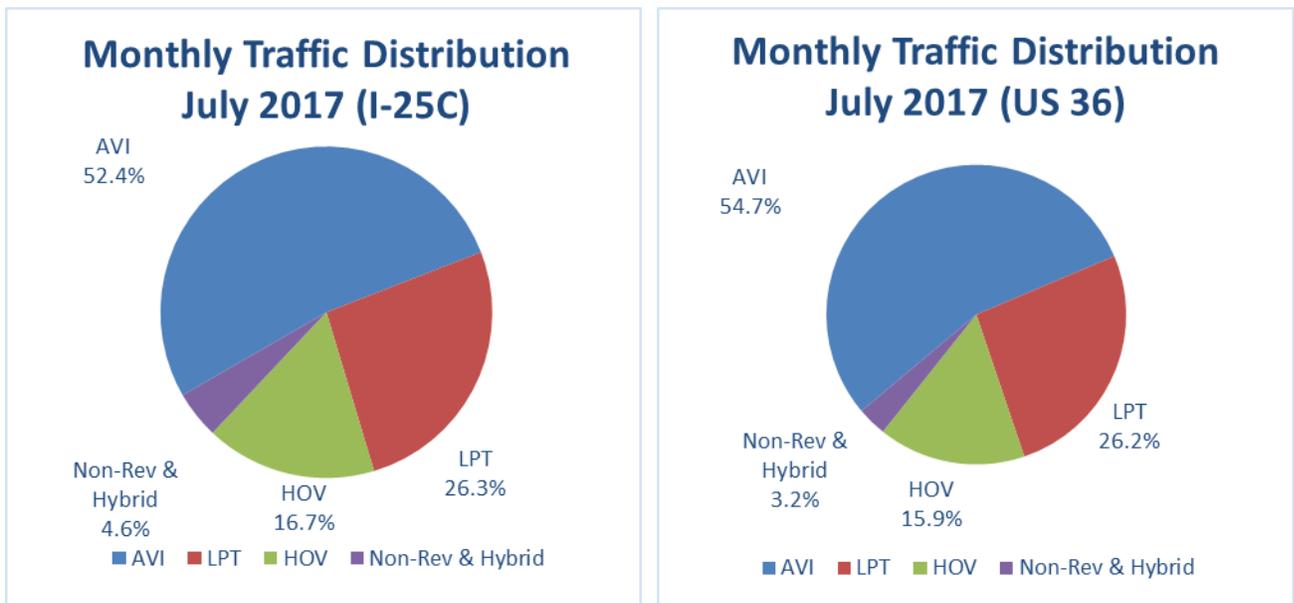
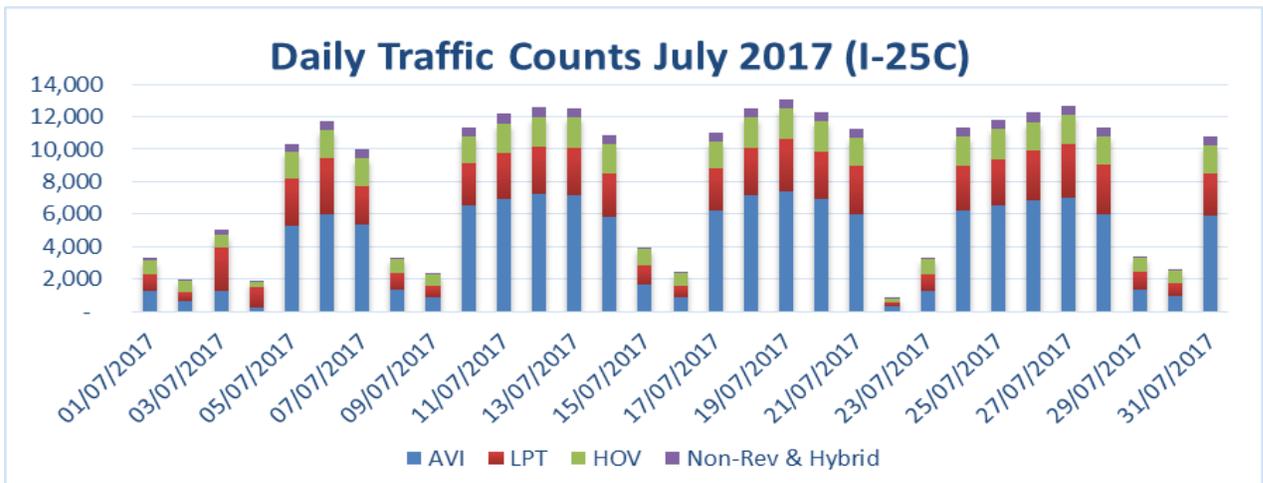


Figure 1 – Monthly Traffic Distribution



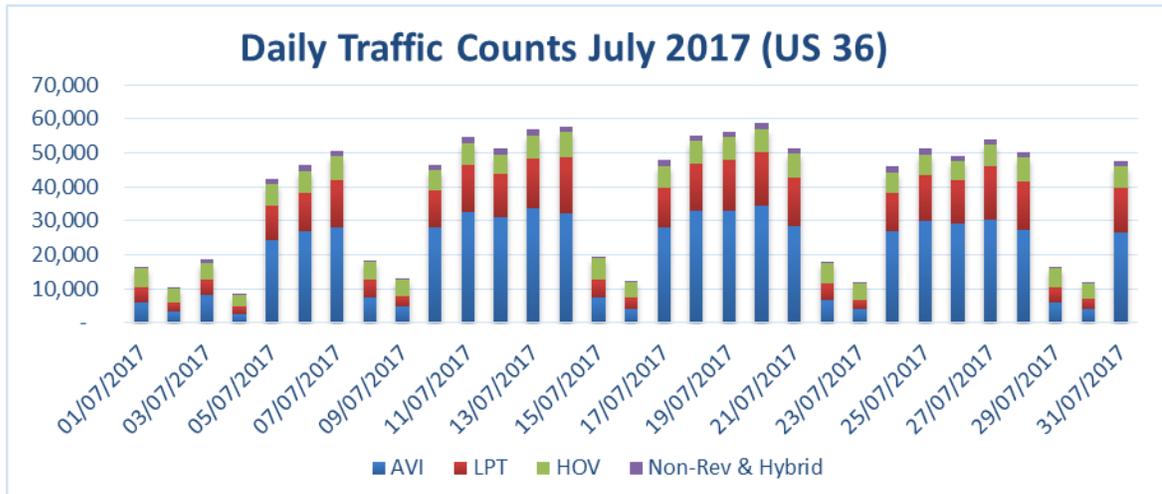


Figure 2 – Daily Traffic Counts

## 2.0 REVENUES

During the month of July 2017, PRD collected \$569,792 and \$468,135 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
Total			0:15
Remaining Closure Hours Available (Ref: CA 29.7)			11.75

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 Category	Reference	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	1,759
US 36	5,397

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  
JULY 2017

US 36 and I-25 Express  
Lanes Project

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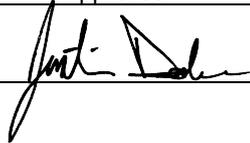


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OPERATIONS AND MAINTENANCE – MONTHLY REPORT  
JULY 2017  
*US 36 and I-25 Express Lanes Project*

Revision	Date	Approved
Rev. 0	08/08/2017	

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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 July 2017. Broadspectrum continues ongoing and preventive maintenance activities for the I-25 and US36 Express 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:

- Concrete Saw Safety
- Fatigue
- Variable Message Board Use
- Arc Flash
- Driving and Fatigue

## A. Summary of the Planned Maintenance Activities for the Upcoming Month – August 2017

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 August 2017 is included below.

Fig. A-1 Planned Maintenance Activities for August 2017

X – Indicates the day the task is planned.

Performance Standard Identification Number (Table 6.1)	Work Activity-Description	Frequency	Aug-17																														
			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
			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	T
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	X
ML-1	FLEXIBLE PAVEMENT OBSERVATION / REPAIR	F-52	X																														
ML-1	RIGID PAVEMENT OBSERVATION / REPAIR	F-52	X																														
ML-10	CRACK SEALING	F-1							X	X	X	X	X																				
ML-4	DELINEATORS & MARKERS OBSERVE / CLEAN / REPAIR	F-12		X						X							X						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							X						X		
ML-8	STREET LIGHTING OBSERVATION /REPAIR	F-52			X							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							X						X							X		
ML-12	GRAFFITI OBSERVATION / REMOVAL	F-52	X						X								X						X							X			
ML-14	MECHANICAL ROAD SWEEPING	F-12															X	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	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	

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 July 2017,

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

Performance Standard Identification Number (Table 6.1)	Work Activity-Description	Frequency	Jul-17																														
			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
			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	T	F	S	S	M
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								X								X					
ML-1	RIGID PAVEMENT OBSERVATION / REPAIR	F-52			X		X	X			X		X								X		X					X					
ML-4	DELINEATORS & MARKERS OBSERVE / CLEAN / REPAIR	F-12					X				X									X					X							X	
ML-2	DRAINAGE (INLET) OBSERVE / CLEAN / REPAIR	F-12						X	X																		X	X				X	
ML-6	SIGN OBSERVATION / REPAIR	F-52							X			X		X								X						X	X				
ML-8	STREET LIGHTING OBSERVATION / REPAIR	F-52					X					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	X	X	X			X	X	X	X				X	X	X	X	X	X		X	
ML-12	GRAFFITI OBSERVATION / REMOVAL	F-52			X				X									X							X	X							
ML-14	MECHANICAL ROAD SWEEPING	F-12																X	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	

Fig. B-2 Work Accomplished This Month

Activity	Actual Work
152 Flexible Pavement Surface Rpr (YD2)	17
162 Shouldering Surface Rpr (MI)	2
202 Clean Drains (EA)	10
210 Slope Repair (CY)	1
215 Roadkill Cleanup (EA)	2
218 Debris in Roadway (HR)	6
218 Litter Barrel Trash Cleanup (YD3)	23
220 Sweeping (Mech) (MI)	108
222 Sweeping - Hand (HR)	19
253 Veg Mowing/Machine (ACR)	13
254 Veg Cntrl Hnd/Chem (HR)	70
301 Misc Sign Maint (EA)	4
304 Del Post Maint (EA)	159
306 Metal Guardraill Maint (LF)	90
307 Direction Gate Maint (EA)	3
311 Lighting Repairs & Maint (EA)	11
314 Reversible Lane Ops (HR)	336
316 Attenuator Maint (EA)	1
329 Courtesy Assistance (HR)	330
540 Graffiti Removal (SF)	50

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

Broadspectrum completed all scheduled maintenance activities for the period of July, 2017. 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: None

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
ML 8.1	Lighting (North Bulb Out)	040-I25-LHT-0100, MP 215.0	4/5/2017 22:00:00	N/A	N/A	Reqd: 6 Months Respnd: -- Actual: In Progress
ML 8.1	Lighting (All Bulbs Out)	040-I25-LHT-0050, MP 214.7	4/5/2017 22:00:00	N/A	N/A	Reqd: 6 Months Respnd: -- Actual: In Progress
ML 8.1	Lighting (West Bulb Out)	040-U36-LHT-0250, MP 56.8	4/5/2017 22:00:00	N/A	N/A	Reqd: 6 Months Respnd: -- Actual: In Progress
GP 5.1	Guardrail (Collision Damage)	US36 MP 44.48 EB	4/20/2017 21:00:00	N/A	N/A	Reqd: 6 Months Respnd: 7/27/2017 03:00 Actual: 3.24 Months
GP 9.2	Fence (Collision Damage)	US36 MP 49.60 EB	5/8/2017 07:00:00	N/A	N/A	Reqd: 6 Months Respnd: -- Actual: In Progress
GP 5.2	Attenuator (Collision Damage)	US36 MP 39.46 WB	5/10/2017 12:00:00	N/A	N/A	Reqd: 6 Months Respnd: -- Actual: In Progress
GP 4.1	Pavement Striping (Paint Worn Pavement Markings)	US36 MP 39.0-57.1	5/17/2017 11:00:00	N/A	N/A	Reqd: 6 Months Respnd: -- Actual: In Progress
GP 4.1	Pavement Striping (Paint Worn Pavement Markings)	I-25 MP212.1-217.2	5/17/2017 11:00:00	N/A	N/A	Reqd: 6 Months Respnd: -- Actual: In Progress
ML 8.1	Lighting (West Bulb Out)	040-U36-LHT-0240, MP 56.81	6/5/2017 12:00:00	N/A	N/A	Reqd: 6 Months Respnd: -- Actual: In Progress
ML 8.1	Lighting (North Bulb Out)	040-U36-LHT-0010, MP 55.40	6/5/2017 12:00:00	N/A	N/A	Reqd: 6 Months Respnd: -- Actual: In Progress
ML 8.1	Lighting (All Bulbs Out)	040-I25-LHT-0080, MP 214.9	6/5/2017 12:00:00	N/A	N/A	Reqd: 6 Months Respnd: -- Actual: In Progress
GP 1.1	Debris (Cleared Glass from lanes)	US36 MP 48.43 EB	7/1/2017 14:37:00	Reqd: 1 Hours Respnd: 7/1/2017 14:50 Actual: 0.21 Hours	N/A	N/A
GP 1.1	Debris (Reported Debris, Nothing Found)	US36 MP 39.50 EB	7/3/2017 08:22:00	Reqd: 1 Hours Respnd: 7/3/2017 08:40 Actual: 0.29 Hours	N/A	N/A
GP 1.1	Debris (Cleared Raccoon Carcass from lanes)	US36 MP 43.30 WB	7/3/2017 11:59:00	Reqd: 1 Hours Respnd: 7/3/2017 12:30 Actual: 0.51 Hours	N/A	N/A
GP 1.1	Debris (Cleared Wood from lanes)	US36 MP 52.30 EB	7/7/2017 08:51:00	Reqd: 1 Hours Respnd: 7/7/2017 09:10 Actual: 0.31 Hours	N/A	N/A
GP 12.1	Graffiti (Removed Graffiti from Barrier)	US36 MP 55.90 EB	7/7/2017 13:00:00	N/A	Reqd: 10 Days Respnd: 7/7/2017 14:00 Actual: 0.04 Days	N/A
GP 1.1	Debris (Reported Debris, Nothing Found)	US36 MP 43.25 EB	7/7/2017 08:01:00	Reqd: 1 Hours Respnd: 7/7/2017 08:15 Actual: 0.23 Hours	N/A	N/A

Element Category	Description	Location	BRS Notified	Response to Defects		
				Category 1		Category 2
				Hazard Mitigation	Permanent Remedy	Permanent Repair
GP 1.1	Debris (Cleared Road Cone from lanes)	US36 MP 44.50 EB	7/12/2017 18:56:00	Reqd: 1 Hours Respd: 7/12/2017 19:35 Actual: 0.64 Hours	N/A	N/A
GP 1.1	Debris (Cleared Misc Debris from lanes)	US36 MP 52.30 EB	7/12/2017 08:03:00	Reqd: 1 Hours Respd: 7/12/2017 08:15 Actual: 0.19 Hours	N/A	N/A
GP 1.1	Debris (Cleared Raccoon Carcass from lanes)	US36 MP 41.50 WB	7/14/2017 06:50:00	Reqd: 1 Hours Respd: 7/14/2017 07:30 Actual: 0.66 Hours	N/A	N/A
GP 1.1	Debris (Reported Debris, Nothing Found)	US36 MP 50.50 EB	7/14/2017 05:20:00	Reqd: 1 Hours Respd: 7/14/2017 05:30 Actual: 0.16 Hours	N/A	N/A
GP 5.1	Guardrail (Collision Damage)	US36 MP 47.55 EB	7/14/2017 14:48:00	N/A	N/A	Reqd: 6 Months Respd: 7/27/2017 03:00 Actual: 0.41 Months
GP 1.1	Debris (Cleared Mattress from lanes)	US36 MP 48.30 EB	7/17/2017 08:50:00	Reqd: 1 Hours Respd: 7/17/2017 09:00 Actual: 0.16 Hours	N/A	N/A
GP 12.1	Graffiti (Removed Graffiti from Median Barrier)	US36 MP 53.30 WB	7/21/2017 09:00:00	N/A	Reqd: 10 Days Respd: 7/24/2017 12:00 Actual: 3.12 Days	N/A
GP 1.1	Debris (Cleared Roll Paper from lanes)	US36 MP 57.15 EB	7/28/2017 12:08:00	Reqd: 1 Hours Respd: 7/28/2017 12:30 Actual: 0.36 Hours	N/A	N/A
GP 1.1	Debris (Cleared Bike from lanes)	US36 MP 40.40 EB	7/28/2017 14:04:00	Reqd: 1 Hours Respd: 7/28/2017 14:30 Actual: 0.43 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.