

## Monroe Expressway

## **Operations Statistics Report**

**2024 Fourth Quarter** October - December

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## Introduction

### Purpose

The North Carolina Turnpike Authority (NCTA) presents the operations statistics for the Monroe Expressway during the fourth quarter (October - December) of 2024. The report includes data related to traffic volumes, roadway operations, and maintenance. The statistics will allow for future analysis to identify quarterly and annual trends over time, providing a quantifiable method to track performance.

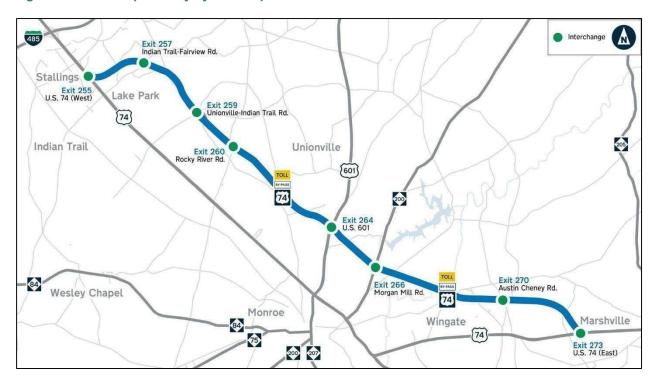
### Project

The Monroe Expressway is a 20-mile toll road that extends from US 74 near I-485 in Mecklenburg County to US 74 between the towns of Wingate and Marshville in Union County. The four-lane, controlled-access toll facility relieves congestion on US 74, which serves as an important commercial corridor for residents and businesses in Union and Mecklenburg counties as it gives retail, commercial and employment centers in the area direct access to and from the route.

The Monroe Expressway utilizes an all-electronic, non-stop tolling system that does not require drivers to stop at toll plazas and pay cash tolls. Instead, free-flow toll zones are employed where vehicles are detected while traveling at highway speeds. Payments are accepted through an Electronic Toll Collection (ETC) program called NC Quick Pass<sup>®</sup> or a video billing program called Bill by Mail.

NCTA toll zones are located along the Monroe Expressway are located on the mainline between all interchanges. An illustration of the Monroe Expressway can be seen in *Figure 1*.

Fourth Quarter, October - December 2024



### Figure 1: Monroe Expressway System Map

# Traffic Statistics

## **Traffic Statistics**

Traffic data is collected and stored using roadside inductive loops installed throughout the Monroe Expressway. The data provides an overview of the roadway's current utilization. The data can also be analyzed to identify trends that could more accurately predict future utilization.

It should be noted that the Monroe Expressway opened in November 2018. Traffic volumes increase significantly as the customers become more familiar with the facility.

### Average Weekday Traffic (AWT)

Traffic volume data is collected at all ramps and mainline segments between interchanges. The location of interchanges along the Monroe Expressway can be seen in *Figure 1*. Typically, there is a large difference between peak and off-peak volumes, as well as between weekday and weekend volumes. This gap becomes significantly larger for a tolled facility because it tends to have a much higher percentage of traffic on weekdays during peak hours than non-toll facilities, as there is less of a benefit for toll users during off-peak hours. For this reason, Average Weekday Traffic (AWT) is reported instead of Average Daily Traffic (ADT). AWT is a measure of the average daily traffic collected on a typical Monday through Friday over a designated time period.

*Figures 2 to 9* contain visual representations of AWT along the facility which are representative of NCTA's loop detector data. It should be noted that if a loop detector fails to provide reliable data (meeting the established threshold) for at least five days in a month then "NO DATA" is reported for that loop detector.

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**Toll US 74 Exp at US 74 West Interchange** 2024 Average Weekday Traffic

AWT Average Weekday Traffic AAWT Annual Average Weekday Traffic NO DATA No traffic data available



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	ebruary	24,800	Auge P	March	1,630		March	855
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	April	26,850	10	May	880		May	885
8es.	May	27,780	10	June	850	S	June	750
	June	28,005	Pin-	July	925		July	740
	July	28,260	1.1	August	950		August	855
	August	28,565		September	960	10000	September	880
Se	ptember	27,445		October	970		October	885
	October	28,365		November	910		November	905
No	ovember	28,275		December	900	ak hetti		
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	March	1,070	March	1,090		March	25,720
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Eairview	May	1,140	May	1,160	1 . K	May	29,025
Trail-T	June	1,060	June	1,110	100	June	29,385
Indian Trail-Fairview Rd.	July	1,095	July	1,140	Street,	July	29,235
	August	1,205	August	1,220	14132	August	30,305
1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1	September	1,150	September	1,225		September	27,990
	October	1,170	October	1,235	3 11	October	29,565
	November	1,110	November	1,270	Sec.	November	28,720
	December	1,070	December	1,260	11 14	December	26,735
	AAWT	1,090	AAWT	1,160	166	AAWT	27,591

**Toll US 74 Exp at IT-Fairview Interchange** 2024 Average Weekday Traffic Figure 3

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**Toll US 74 Exp at Unionville-IT Interchange** 2024 Average Weekday Traffic

AWT Average Weekday Traffic

AAWT Annual Average Weekday Traffic

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**Toll US 74 Exp at Rocky River Interchange** 2024 Average Weekday Traffic

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January   1,940     February   2,255     March   2,120     April   2,330     May   2,415     June   2,305     July   2,350     August   2,490     September   2,485     October   2,560     November   2,515     December   2,540	January February March April May June July August September October November December AAWT	460 530 545 570 590 580 635 605 620 615 545		January February March April May June July August September October November December	16,135   18,525   19,580   20,530   2,100   21,700   21,540   21,340   20,535   21,185   21,105   19,645		February March April May June July August September October November December AAWT	615 1,260 325 660 650 640 690 685 700 685 680 645 <b>673</b>	
January   1,940     February   2,255     March   2,120     April   2,330     May   2,415     June   2,305     July   2,350     August   2,490     September   2,485     October   2,560     November   2,515     December   2,540	January February March April May June July August September October November December AAWT	460 530 545 570 590 580 635 605 620 615 545		January February March April May June July August September October November December	16,135   18,525   19,580   20,530   2,100   21,700   21,540   21,340   20,535   21,185   21,105   19,645		February March April May June July August September October November December AAWT	615 1,260 325 660 650 640 690 685 700 685 680 645 <b>673</b>	
January   1,940     February   2,255     March   2,120     April   2,330     May   2,415     June   2,305     July   2,350     August   2,490     September   2,485     October   2,560     November   2,515     December   2,540	January February March April May June July August September October November December AAWT	460 530 545 570 590 580 635 605 620 615 545		January February March April May June July August September October November December	16,135   18,525   19,580   20,530   2,100   21,700   21,540   21,340   20,535   21,185   21,105   19,645		February March April May June July August September October November December AAWT	615 1,260 325 660 650 640 690 685 700 685 680 645 <b>673</b>	

**Toll US 74 Exp at US-601 Interchange** 2024 Average Weekday Traffic

AWT Average Weekday Traffic AAWT Annual Average Weekday Traffic NO DATA No traffic data available

1		
	Month	AWT
ł	January	15,940
	February	18,340
	March	18,820
	April	20,250
1	May	20,605
l	June	21,450
c	July	21,270
ļ	August	21,080
ł	September	20,305
	October	21,020
	November	20,840
	December	19,395
	ΔΔ₩Τ	10 043

1	14	
Month	AWT	
January	2,100	
February	2,375	
March	2,265	1
April	2,505	-
Мау	2,540	
June	2,535	-
July	2,480	
August	2,580	
September	2,565	
October	2,680	
November	2,605	
December	2,585	1
AAWT	2,485	
6- 19	1	i.
	1	45
	9	
	-	See.

and the	
Month	AWT
January	290
February	340
March	545
April	345
May	340
June	335
July	310
August	360
September	355
October	365
November	365
December	350
AAWT	358



10 contra	11		100	1		A.		
	Month	AWT		Month	AWT	8	Month	AWT
	January	2,210		January	285		January	12,415
	February	2,495		February	335		February	14,355
1 The second life	March	2,345	1	March	870	1	March	15,250
The last the state of the state	April	2,610		April	355	1.32.57	April	16,100
E CY APPL	May	2,630		May	360		May	16,535
	June	2,625		June	355		June	17,220
	July	2,605		July	320	and the state	July	17,085
2 All	August	2,750	10000	August	350		August	16,710
	September	2,705	1	September	350	-	September	15,980
	October	2,845	1000	October	380	500	October	16,505
	November	2,845	No. William	November	380	1	November	16,400
200	December	2,770	and the second	December	355		December	15,000
	AAWT	2,620	12 .	AAWT	391		AAWT	15,796

**Toll US 74 Exp at NC-200 Interchange** 2024 Average Weekday Traffic Figure 7

TOLL

AWT Average Weekday Traffic AAWT Annual Average Weekday Traffic NO DATA No traffic data available



NODAT				Autoria	5 10 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1				M	lap Not to Scale	
	2					Month	AWT	Ballenrat	A MARTIN AND	ocuic	
			and the second	Size -	5	January	85				
			Month	AWT	F	ebruary	110	In Association - Co			
	and?		January	1,170		March	105	211 78			
			February	1,630	2 22	April	110				
M di	AWT		March	1,420	800	May	105				
Month	AWT 12,415		April	1,645	100	June	110		No.		
January February	12,415		May	1,535	a familie	July	100		12		
March	14,820	100	June	1,445		August	100		1200		
April	16,100		July	1,355		otember	105		Action		5
May	16,560	all to	August	1,590	the second s	October	105	1.		- Si - C	
June	17,245	- Bill	September	1,760	100 C	vember	105	200 10			
July	17,100	the state of the	October	1,770	De	cember	110				
August	16,740	AND AND AND	November	1,795	NS24	AAWT	104				
September	15,980		December	1,660		/					
October	16,520	1	AAWT	1,565				and the second	SP 10		
November	16,385			and a	0		1		PU-ASIE		
December	15,015	and a			1	Hallham	1 250	ALL DE LA PROVINCE	C. C		
AAWT	15,769	A PARTY		4	Sta 1	2 AM	AL M		Service New		
	100	3-24-55	,	7 (Gi	Nº.			74	Month	AWE	
- Craw	E ne si		ALC: N			100		N Real	<b>Month</b> January	<b>AWT</b> 9,935	
Le Ro		Month	AWT	1. 16	1. 196	112	£_)		February	11,380	
C C	AL SAL	January	1,225	19th		- ale			March	12,350	
	and the second	February	1,540	CALLS AND	1	and the second	14.4	A Com	April	13,080	-
1 1 2	and an	March	1,790		1	- de			May	13,760	
10 M 10 M		April	1,565	Mar		242		Austin Chan	June	14,460	
ALC: NO		May	1,430	January	th AWT 85	1.28			July	14,645	
£	- Bertha	June	1,360	February				\ <mark>\</mark> S	August	13,775	
1.1		July	1,300	March					September	12,730	
Protection Ball	ALC: N	August	1,535	April				Iney Rd.	October	13,230	
		September	1,675	May		17			November	13,080	1
			1 605	June	100	246			December	12,115	12
		October	1,695	June							
	and I	November	1,700	July		mak	Constant of		AAWT	12,878	
at a	and a				95	Start.			AAWT	12,878	-
	1	November	1,700	July	95 95	aut the		-	AAWT	12,878	-
		November December	1,700 1,535	July August	95 95 95 95	and a			AAWT	12,878	
		November December	1,700 1,535	July August September	95 95 95 95 95	a source	1		AAWT	12,878	and a state
		November December	1,700 1,535	July August September October	95 95 95 95 95 95 95	State of the second	4		AAWT	12,878	
		November December	1,700 1,535	July August September October November	95 95 95 95 95 95 95 100	and the second s	4		AAWT	12,878	the second

Toll US 74 Exp at Austin Chaney Interchange 2024 Average Weekday Traffic

AWT Average Weekday Traffic AAWT Annual Average Weekday Traffic NO DATA No traffic data available

TOLL

74



and the second	
Month	AWT
January	10,050
February	11,380
March	12,125
April	13,845
May	15,045
June	15,300
July	15,275
August	15,035
September	7,815
October	13,945
November	13,780
December	12,115
AAWT	12,976
1000000	1



### **Toll US 74 Exp at US 74 East Interchange** 2024 Average Weekday Traffic

# Roadway Safety Statistics

## **Roadway Statistics**

Traffic crashes are often related to deficiencies in the safety and capacity characteristics of a transportation facility. To identify these deficiencies early and reduce the likelihood of crashes on the Monroe Expressway, NCTA monitors safety conditions on the facility through quarterly crash analyses. These analyses involve the use of the Traffic Engineering Accident Analysis System (TEAAS) to collect monthly crash data along the facility, which is separated into four (4) segments:

- Toll US 74, from Exit 255 (US 74) to Exit 259 (Unionville-Indian Trail Road)
- Toll US 74, from Exit 259 (Unionville-Indian Trail Road) to Exit 264 (US 601)
- Toll US 74, from Exit 264 (US 601) to Exit 266 (NC 200)
- Toll US 74, from Exit 266 (NC 200) to Exit 273 (US 74)

The data collected includes total crashes and the number of fatal and injury crashes reported along each segment. This data is analyzed over a rolling three-year period to determine the Total Crash Rate of each of the four segments selected, as well as for the entire facility. The Monroe Expressway opened to traffic in November 2018. Comparison to the statewide critical crash rate was performed for every quarter.

Total Crash Rates are a function of the length of roadway, average daily traffic, and number of reported crashes along a route during a specific time frame. These rates are expressed in crashes per 100 million vehicle miles traveled (MVMT). In the crash analysis conducted during the fourth quarter, the Total Crash Rates of the four segments selected and the entire facility were calculated based on the roadway segment length, the average annual daily traffic (AADT) and the number of crashes recorded from December 1, 2021 through November 30, 2024 for each segment. The AADT used for this quarter analysis was collected from the Vehicle Detection System loops from 2021. The Statewide Crash Rate (124.65 crashes per 100 MVMT) used for comparison purposes in this analysis was collected from the 2017-2021 NCDOT Statewide Total Crash Rates for urban interstate facilities, as the Monroe Expressway operates more like an interstate than a state route.

Critical Crash Rates are crash rates that have been statistically adjusted with a 95% level of confidence to remove the elements of chance and randomness. They are used as a reference to determine if the Total Crash Rate at a given location is significantly higher than a predetermined average rate for locations with similar characteristics. Monroe Expressway continues to report a Total Crash Rate significantly lower than both the Statewide Crash Rate and Critical Crash Rate.

Table 1 provides a summary of the crash data collected.

Fourth Quarter, October - December 2024

Segment	Length	AADT	Total Crashes	Vehicle Exposure (MVMT)	Total Crash Rate	Statewide Crash Rate	Critical Crash Rate
Toll US 74 US 74 to Unionville- Indian Trail Rd	5.62	18,500	75	113.91	65.84	124.65	142.30
Toll US 74 Unionville-Indian Trail Rd to US 601	5.33	17,000	82	99.12	82.72	124.65	143.60
Toll US 74 US 601 to Austin Chaney Rd	5.74	13,300	71	83.54	84.99	124.65	145.34
Toll US 74 Austin Chaney Rd to US 74	3.00	11,000	30	36.17	82.94	124.65	156.57
Monroe Expressway	19.69	15,400	258	332.74	77.54	124.65	134.87

### Table 1: Safety Statistics, December 1, 2021 – November 30, 2024

Roadway Operations Statistics

## **Roadway Operations Statistics**

Highly trained NCTA operators monitor and manage traffic operations and coordinate incident response and maintenance/construction work along the Monroe Expressway. These operators work at the Metrolina Regional Transportation Management Center (MRTMC) located in Charlotte. They are responsible for monitoring the facility from 5AM to 9PM. During non-working hours, monitoring is turned over to the Statewide Transportation Operations Center in Raleigh (STOC) and is monitored for 24 hours a day, 7 days a week, 365 days a year using closed-circuit television (CCTV) cameras, vehicle detectors (VDS), and toll zone security cameras. Additionally, STOC monitors roadside toll technology and toll facilities.

Operators can communicate travel conditions and emergencies to customers via 10 full-color Dynamic Message Signs (DMS), NCDOT's 511 system, and NCDOT's Traveler Information Management System (TIMS) website. Operators can also quickly dispatch toll technology technicians to address equipment failures via the Transportal maintenance ticket system. Additionally, in the event of incidents on the facility, operators can use interoperable 800MHz radio frequency dispatch from local 911 and statewide Highway Patrol communications to dispatch Incident Management Assistance Patrol (IMAP).

The NCTA Toll Safety Patrol Program consists of dedicated State Highway Patrol (SHP) and IMAP services provided on the Monroe Expressway. This program provides two SHP officers and two IMAP responders to the facility between the hours of 5 AM and 9 PM, Monday through Friday. During this time, the assigned SHP officers and IMAP drivers are responsible for patrolling the facility and responding to incidents reported by operators.

This section presents operations statistics reported by SHP and IMAP during the fourth quarter of 2024. It includes driver violations and warnings issued by SHP and total IMAP assistance recorded, as well as average monthly IMAP response and clearance time.

*Table 2* and *Table 3* present SHP operation statistics during 2024. "Chargeable Activities" are SHP activities involving fines. It should be noted that the "Other Violations" category includes chargeable activities such as load and equipment violations, driver's license violations, vehicle registration violations, and littering.

Fourth Quarter, October - December 2024

Chargeable Activities	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Speed Violations	41	45	49	41	30	40	48	35	32	0	29	18	408
Alcohol Violations	0	0	0	0	0	0	0	0	0	0	0	1	1
Seat Belt Violations	6	6	3	3	1	2	8	6	1	0	6	1	43
Child Restraint Violations	0	0	0	0	0	1	0	2	1	0	0	0	4
Reckless Driving	14	12	12	12	9	12	13	16	10	0	11	5	126
Drug Violations	0	0	0	0	0	0	0	0	0	0	0	0	0
Obstructed Plates	0	0	0	0	0	0	0	0	0	0	0	0	0
Other Violations	58	65	55	8	6	14	10	5	4	0	8	6	239
Total Charges	119	128	119	64	46	69	79	64	48	0	54	31	821

### Table 2: 2024 SHP Chargeable Activities, YTD

### Table 3: 2024 SHP Non-Chargeable Activities, YTD

Non- Chargeable Activities	Jan	Feb	Mar	Apr	Мау	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Warnings	8	15	14	6	15	28	20	16	4	0	10	19	155
Crashes Investigated	4	1	2	3	4	3	0	1	4	0	5	0	27
Calls for Service	26	24	22	26	22	25	28	22	16	0	16	16	243
Total	28	40	38	35	41	56	48	39	24	0	31	35	415

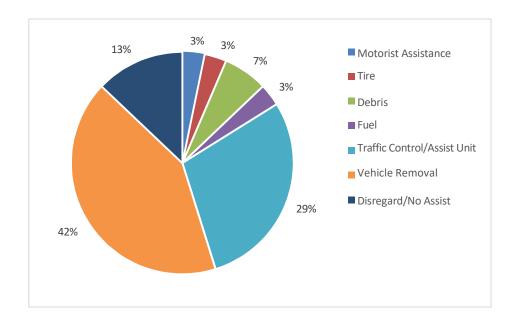
The IMAP assists with stranded motorists and incident clearance, thereby maintaining the flow of traffic along the roadway. *Table 4* and *Figure 10* present the monthly breakdown of IMAP services, by type, for the Monroe Expressway during 2024. The "other" category includes extinguish fire service, first aid service, and other rare miscellaneous services.

Fourth Quarter,	October	- December	2024
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Assist Type	Jan	Feb	Mar	Apr	May	Jun	Jul	Aug	Sep	Oct	Nov	Dec	Total
Motorist Assistance	1	0	0	0	1	2	2	3	0	1	0	0	10
Tire	1	1	1	2	0	1	2	2	1	5	2	1	19
Debris	2	2	2	4	5	3	4	5	2	9	0	1	39
Fuel	1	0	0	2	3	2	1	0	1	3	1	1	15
Check on Welfare	0	0	0	0	0	0	0	0	0	0	0	0	0
Traffic Control / Assist Unit	9	5	16	11	17	15	14	10	8	21	7	10	143
Vehicle Removal	13	7	8	7	9	13	8	5	2	4	7	3	86
Disregard / No Assist	4	3	1	7	10	4	5	4	4	0	0	4	46
Other	0	0	2	0	0	0	0	0	0	0	0	0	2
Total Charges	31	18	30	33	45	40	36	29	18	43	17	20	360

#### Table 4: 2024 IMAP Services, YTD

### Figure 10: 2024 IMAP Services by Type, YTD



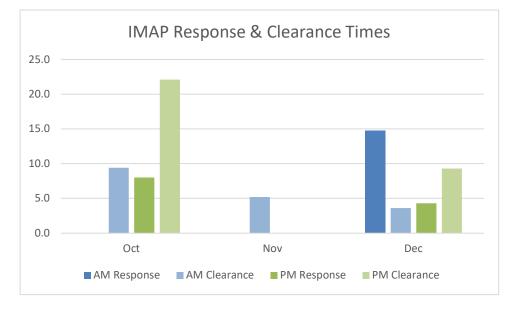
The response and clearance times for all IMAP assists are logged by IMAP and provided to the NCTA. Response time is the time from which a responder receives a call to the time they arrive on the scene. Clearance time is the time it takes the responder to clear the incident and return the roadway to normal operation. The IMAP staff's A.M. shift occurs from 6 AM to 1 PM, while the P.M. shift occurs from 1 PM to 9 PM. Shift response times may differ due to the number of drivers on duty and their coverage areas.

*Table 5* and *Figure 11* present the average IMAP assistance response and clearance times, in minutes, for the Monroe Expressway.

Response Type	Jan	Feb	Mar	Apr	Мау	Jun	Jul	Aug	Sep	Oct	Nov	Dec	2024 Average
A.M. Shift Response	12.0	16.0	10.5	34.0	13.0	0.0	14.0	16.7	0.0	0.0	0.0	14.8	10.9
A.M. Shift Clearance	3.2	3.1	8.5	14.1	10.0	3.4	7.9	10.1	14.5	9.4	5.2	3.6	7.7
P.M. Shift Response	11.0	9.0	15.0	17.0	24.3	2.5	12.0	1.7	8.5	8.0	0.0	4.3	9.4
P.M. Shift Clearance	25.6	8.8	3.4	11.0	5.3	5.3	7.2	9.1	2.0	22.1	0.0	9.3	9.1

### Table 5: 2024 Average IMAP Response and Clearance Times (Minutes), YTD

### Figure 11: Average IMAP Response and Clearance Times (Minutes), Fourth Quarter, by Month



## Roadway Maintenance Statistics

## **Roadway Maintenance Statistics**

This section outlines the NCTA Maintenance Rating Program (MRP), which is a maintenance evaluation program for roadway features and toll facilities. MRP is a comprehensive planning, measuring, and managing process that provides a means for communicating to managers, stakeholders, and key customers the impacts of policy and budget decisions on program service delivery.

Using outcome-based performance measures and the service level scale (0 through 100), the inspection results are rated against established threshold criteria. The program analysis is accomplished using sampling procedures that capture the level of service being provided for individual asset features. Over time, these ratings will be charted to identify work needs and subsequent necessary actions. The evaluations are based on the establishment of threshold conditions that quantify the maximum defect allowed to exist for a characteristic before it is considered unacceptable. The NCTA performance standards, threshold criteria, and Maintenance Rating Program were developed through a collaborative effort by NCTA managers, NCDOT maintenance staff, and consultants.

Using field survey information, a maintenance matrix can be developed to show the ties between maintenance activities and the characteristics of various roadway features. The purpose of this evaluation is to provide information that will be used to schedule and prioritize routine maintenance activities and provide uniform maintenance conditions that meet established objectives.

### **Assessment Schedule**

As part of the NCTA MRP, a "baseline" assessment is scheduled for each newly opened roadway section soon after opening to toll collection. The baseline assessments include a complete inventory data collection and assessment on 100% of the roadway assets.

After the baseline assessment is completed, future assessments for that segment switch over to a statistical sampling assessment. Inspections are performed during the months of February, May, August, and November to account for dynamic seasonal changes to assets. These inspections are accomplished using statistically valid, random sampling procedures that capture the level of service for individual assets with a 95% confidence level in sampling.

### **Assessment Results**

*Table 6* presents the 2024 quarterly and annual MRP Assessment rating. It is important to note that the Quarterly Ratings are only representative of the samples inspected during each quarter. Therefore, they are not a statistically valid representation of the assets' conditions; only the annual rating will provide a 95% confidence level in statistical sampling.

### Table 6: MRP Assessment Results

Element	Q1 2024 Rating	Q2 2024 Rating	Q3 2024 Rating	Q4 2024 Rating	Rolling Rating
Road Surface	98.5	98.8	100.0	95.7	98.2
Unpaved Shoulders and Ditches	96.5	100.0	98.7	99.3	98.7
Drainage	97.8	95.3	95.6	95.8	96.1
Roadside	96.5	98.2	98.4	95.3	97.1
Traffic Control Devices	95.5	95.7	96.8	96.8	96.2
Overall MRP Performance Rating	96.9	97.4	97.9	96.4	97.2