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Casella Waste Management Maintenance Facility
Traffic Impact Study

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PROJECT NUMBER: 2260205

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General Glossary of Acronyms

AADT: Annual Average Daily Traffic
AASHTO: American Association of State Highway Transportation Officials
ADA: American with Disabilities Act
ADT: Average Daily Traffic
DHV: Design Hourly Volume
EB / WB / NB / SB: Eastbound, Westbound, Northbound, Southbound
FC: Functional Classification
FHWA: Federal Highway Administration
HCM: Highway Capacity Manual
HDM: Highway Design Manual
HSM: Highway Safety Manual
ISD: Intersection Sight Distance
ITE: Institute of Transportation Engineers
LOS: Level of Service (A–F grading of intersection performance)
MPH: Miles per Hour
MUTCD: Manual on Uniform Traffic Control Devices (Including the NYS Supplement to the MUTCD)
NCHRP: National Cooperative Highway Research Program
NYSDOT: New York State Department of Transportation
PHF: Peak Hour Factor
PSI: Potential for Safety Improvement
SEQRA: State Environmental Quality Review Act
SF: Square Foot/Feet
SPF: Safety Performance Function
SSD: Stopping Sight Distance
TIS: Traffic Impact Study
TRB: Transportation Research Board
TWLT: Two-Way Left-Turn Lane
V/C: Volume-to-Capacity Ratio
VPD: Vehicles per Day

Chapter 1 Executive Summary

1.1. Project Description

The proposed Casella Waste Management Maintenance Facility will support approximately 48 employees split between drivers, mechanics, and office staff. There will be a fleet of 35 drivers. Visitor traffic may occur but is anticipated to be minimal. Drivers are expected to operate on two shifts, with the first starting at approximately 3:00-4:00 AM and the second starting at approximately 10:00 PM.

The facility functions as a hauling division where front- and side-loader collection vehicles stage overnight on-site. Haulers depart in the morning for residential and commercial waste collection routes throughout the region, transporting material directly to regional transfer stations (e.g., Gansevoort, Halfmoon) rather than returning to the site mid-route. On-site operations include vehicle maintenance for the hauling fleet and administrative office functions.

1.2. Scope of Study

LaBella Associates (LaBella) conducted this study based on a scope of work based on project characteristics, anticipated traffic impacts, and engineering guidelines.

- The study area consists of US-9 (Saratoga Road) and the intersections of US-9/I-87 NB ramp, US-9/I-87 SB ramp, US-9/Dukes Way and US-9/South Road/Old West Road.
- The study periods consist of the weekday morning (7:00 to 9:00 AM) and weekday evening (4:00 to 6:00 PM) peak periods.
- Intersection capacity and operational analysis—Level of Service (LOS), delay, queuing—during the Existing, No-Build, and Build Conditions.
- Evaluation of sight distance requirements and left turn warrant assessments at the proposed driveway.

1.3. Findings

Based on the analyses documented in this Traffic Impact Study (TIS), the existing transportation network along US-9 can accommodate the proposed Casella Waste Management Maintenance Facility. Consistent with the State Environmental Quality Review Act (SEQRA), the project is not anticipated to result in any significant adverse traffic impacts.

Analysis of the study intersections under Existing (2025), No-Build (2030), and Build (2030) conditions demonstrate that all movements will operate within general acceptable thresholds during the peak study periods.

Chapter 2 Introduction

2.1. Project Purpose and Methodology

This report assesses traffic impacts from the proposed Casella Waste Management Maintenance Facility in the Town of Moreau, NY. The analysis evaluates intersection operations and effects on the adjacent street network, with mitigation measures identified where capacity concerns arise. The impact assessment methodology establishes existing baseline conditions, incorporates background traffic growth, and quantifies operational changes attributable to the project. Supporting documentation is appended.

This Traffic Impact Report provides the Town of Moreau and reviewing agencies with detailed analysis supporting the State Environmental Quality Review Act's (SEQRA) "hard look" requirement for potential traffic impacts. The study follows protocols established by the New York State Department of Transportation (NYSDOT), the Institute of Transportation Engineers (ITE), and applicable local standards.

2.2. Project Location and Study Area

The project site at 1132 US-9 is bounded by RASP Inc. and Dukes Way to the north, agricultural and forested land on the south and east, and US-9 to the west. Surrounding land uses are predominantly residential, agricultural, and light industrial.

LaBella defined a study area based on project characteristics and anticipated traffic impacts. The project location is shown below and with the nearby study roadways.

Project Location



Chapter 3 Existing Conditions

3.1. Study Roadways

The study area roadway network is characterized by four roadways that provide local and collector-level access within the community. Annual Average Daily Traffic (AADT) volumes represent the most recent data provided by NYSDOT or extrapolated by LaBella from turning movement counts conducted at study intersections in 2025. All AADT values are expressed in vehicles per day (vpd).

Functional classification (FC), assigned by NYSDOT and the Federal Highway Administration (FHWA), categorizes roadways based on their primary movement and access functions. Roadway characteristics including posted speed, number of lanes, lane width, shoulder width, bicycle facilities, and sidewalk presence are based on field observations conducted in November 2025 and agency records.

Bicycle facility types are classified by infrastructure provision and geometric adequacy per American Association of State Highway Officials (AASHTO) and Manual on Uniform Traffic Control Devices (MUTCD) standards. Shared Lane designations indicate no dedicated facility (cyclists operate in mixed traffic or on shoulders <4 feet wide). Paved Shoulder designations reflect ≥4-foot shoulders suitable for cycling. Bike Lane designations indicate MUTCD-compliant striped facilities providing dedicated bicycle right-of-way.

US-9 (Saratoga Road) operates as a Minor Arterial (FC 16) until the intersection with Old Saratoga Road, where from then on, it operates as a Principal Arterial (FC 14). US-9 is under NYSDOT jurisdiction with a posted speed of 55 mph. The roadway features a two-lane cross-section with 12-foot lane widths and 7- to 9-foot paved shoulders. Bicycle accommodation is provided via paved shoulders suitable for cycling as well as dedicated bike lanes between the I-87 NB and SB ramps. There is no sidewalk infrastructure. NYSDOT reports an AADT of 7511 vpd based on 2023 data.

Old West Road operates as a Minor Collector (FC 19) under Town jurisdiction with a posted speed of 45 mph. The roadway features a two-lane cross-section with 12-foot lane widths and 2-foot paved shoulders. Bicycle accommodation is limited to shared lane operation (mixed traffic). Sidewalk infrastructure is not present. LaBella extrapolated an AADT of 950 vpd from 2025 turning movement counts.

South Road operates as a Minor Collector (FC 19) under Town jurisdiction with a posted speed of 35 mph. The roadway features a two-lane cross-section with 12-foot lane widths and no paved shoulders. Bicycle accommodation is limited to shared lane operation (mixed traffic). Sidewalk infrastructure is not present. LaBella extrapolated an AADT of 450 vpd from 2025 turning movement counts.

3.2. Study Intersections

Study intersections were selected based on proximity to site access points and anticipated traffic distribution patterns. The following provides a summary of the existing study intersections, intersection configurations, traffic control, and multimodal accommodations. Intersection characteristics are based on field inventory conducted in November 2025.

US-9/I-87 NB Ramp

- Intersection Type: Three-leg unsignalized
- Traffic Control: Stop-controlled (I-87 NB Ramp approach)
- Geometry: One-lane approach on E leg, two-lane approach on N and S legs
- Turn Lanes: Right-turn lane on northbound approach, left-turn lane on southbound approach
- Sidewalks: No
- Marked Crosswalks: Along E leg
- Pedestrian Signals: No
- Transit Stops: None within 500'
- Lighting: No
- Special Features: Bike lane along northbound approach

US-9/I-87 SB Ramp

- Intersection Type: Three-leg signalized
- Traffic Control: Traffic signal
- Geometry: Two-lane approaches all legs
- Turn Lanes: Left-turn lane on northbound approach, right-turn lane on southbound approach, left-turn lane and right-turn lane on westbound approach
- Sidewalks: No
- Marked Crosswalks: Along W and S legs
- Pedestrian Signals: Yes, along west and south leg
- Transit Stops: None within 500'
- Lighting: No
- Special Features: Bike lane along southbound approach

US-9/Dukes Way

- Intersection Type: Three-leg unsignalized
- Traffic Control: Stop-controlled (Dukes Way approach)
- Geometry: One-lane approaches all legs
- Turn Lanes: No
- Sidewalks: No
- Marked Crosswalks: No
- Pedestrian Signals: No
- Transit Stops: None within 500'
- Lighting: No

US-9/South Road/Old West Road

- Intersection Type: Four-leg unsignalized
- Traffic Control: Stop-controlled (South Road and Old West Road approaches)
- Geometry: One-lane approaches all legs
- Turn Lanes: No
- Sidewalks: No
- Marked Crosswalks: No
- Pedestrian Signals: No
- Transit Stops: None within 500'
- Lighting: No

3.3. Traffic Volumes

The analysis evaluated the weekday AM (7:00 to 9:00 AM) and PM (4:00 to 6:00 PM) peaks, when the combination of site-generated and existing traffic is projected to produce peak demand conditions given corridor function and surrounding land use context.

LaBella conducted turning movement counts on Tuesday, November 18, 2025, to establish peak hour traffic volumes. Data collection occurred on a typical weekday during the school year under normal weather conditions. Peak hour traffic periods were generally identified as 7:00 to 8:00 AM and 4:00 to 5:00 PM.

Traffic volumes were reviewed for accuracy, seasonality, and relative balance within the study area. Seasonal patterns affect traffic volumes, with lower counts typically observed in winter months and higher volumes during summer. NYSDOT Seasonal Adjustment Factors convert Average Daily Traffic (ADT) from short-count data to Annual Average Daily Traffic (AADT), representing average daily traffic across the entire year. NYSDOT and the Federal Highway Administration (FHWA) *Traffic Monitoring Guide* categorize seasonal adjustment factors into three groups based on the degree to which road segments are affected by seasonal variation:

- **Factor Group 30 (Commuter-Dominated):** Urbanized traffic patterns with minimal seasonal effect and coefficient of variation less than 10%
- **Factor Group 40 (Non-Commuter Dominated):** Suburban traffic patterns with moderate seasonal effect and coefficient of variation between 10% and 25%
- **Factor Group 60 (Recreational):** Recreational traffic patterns with extreme seasonal effect and coefficient of variation exceeding 25%

LaBella reviewed the latest NYSDOT Seasonal Adjustment Factors. The study roadways are Factor Group 30, classified as Commuter-Dominated. The work week seasonal adjustment factor for November is 1.013, indicating traffic counts collected during this month are near average yearly traffic levels. No seasonal adjustment was required.

Figures 1 & 2 illustrates the Existing Condition during the study's peak hours. Volume variations between intersections reflect temporal fluctuations, activity at driveways located between study intersections, and traffic disruptions from NYSDOT roadwork.

3.4. Planned Roadway Improvements

LaBella reviewed planned roadway improvements within the study area. No projects were identified.

3.5. Sight Distance Assessment

LaBella conducted a sight distance assessment at the proposed access along US-9 to evaluate compliance with AASHTO and NYSDOT criteria. The analysis evaluated both stopping sight distance (SSD) and intersection sight distance (ISD) to ensure adequate driver visibility and safe vehicle operations.

Methodology

Field measurements were performed on November 18, 2025, under fair weather conditions using industry-standard measurement protocols. Driver eye height was assumed at 3.5 feet and object

height at 2.0 feet above the roadway surface, consistent with AASHTO recommendations. For intersection sight distances, the departure sight triangle was measured using a 15-foot minimum offset from the edge of the traveled way to the driver's eye position.

Stopping Sight Distance

Available stopping sight distance was measured and compared to AASHTO minimum recommended values based on design speed (posted speed plus 5 mph), AASHTO assumes a driver reaction time of 2.5 seconds and deceleration rate of 11.2 ft/s².

Intersection Sight Distance

Intersection sight distance was evaluated for vehicles departing the minor road approach for Case B maneuvers (stop control on the minor road) per NYSDOT HDM Appendix 5C. For left-turn and right-turn maneuvers from the minor road, available sight distances were measured and compared to required sight distances based on the major road design speed.

Table 1 – Sight Distance Assessment

Location	Design Speed	Required SSD	Available SSD	Required ISD – Left Turn	Available ISD – Left	Required ISD – Right Turn	Available ISD – Right
Proposed Access	60	570	>570 from left >570 from right	665	>665	575	>575

The analysis confirms that adequate sight distance is provided for safe gap acceptance and vehicle entry maneuvers which meets the minimum AASHTO and NYSDOT criteria.

Chapter 4 No-Build Conditions

The project is anticipated to be completed and occupied within five years depending on project approvals as construction is anticipated to commence in late 2026 or early 2027.

No-Build traffic volumes represent traffic conditions during the proposed build year without development of the project. Standard traffic impact study methodology requires that approved and under-construction projects within the study area be incorporated into the traffic analysis. Contemplated but unapproved projects are excluded from the traffic impact study.

LaBella consulted with Town of Moreau personnel to identify additional development projects that could contribute to increased traffic within the study area. No approved projects in the immediate vicinity were identified.

Historical NYSDOT traffic volume data indicates overall decline from 45,587 (2015) to 42,362 (2024), yielding a compound annual growth rate of -0.82% per year. However, this trend is heavily influenced by the 2020 pandemic, which depressed volumes by approximately 31%. Excluding 2020, pre-pandemic data (2015–2019) showed stable conditions with near-zero growth (-0.005% annually). Post-pandemic recovery (2021–2024) demonstrates modest growth of +0.53% annually, though volumes remain approximately 7% below 2015 levels.

To account for normal traffic growth in the No-Build condition, including potential unforeseen developments in the study area, a conservative growth rate of 1.5% per year was applied to existing traffic volumes for a five-year duration. **Figures 3 and 4** depict the No-Build Condition.

Chapter 5 Proposed Build Conditions

5.1. Project Description

The proposed Casella Waste Management maintenance facility will support approximately 51 employees and 57 residential/commercial haulers operating Monday through Saturday between 7:00 AM and 5:00 PM. Visitor traffic is negligible. The facility functions as a hauling division where front- and side-loader collection vehicles stage overnight on-site. Haulers depart in the morning for residential and commercial waste collection routes throughout the region, transporting material directly to regional transfer stations (e.g., Gansevoort, Halfmoon) rather than returning to the site mid-route. On-site operations include vehicle maintenance for the hauling fleet and administrative office functions.

5.2. Trip Generation

Site-generated traffic volumes are a function of development land use type and intensity. Trip generation quantifies vehicle trips entering and exiting a site based on specific land uses or building types. The ITE *Trip Generation Manual* (12th Edition) serves as the industry-standard reference for this analysis. ITE recommends the following prioritized approach for determining project trip generation:

- **Primary source:** Apply standard ITE trip generation rates
- **Project-specific data:** Utilize consultant- or developer-collected data for site-specific applications
- **Local comparable rates:** When available data is limited, identify locally-derived rates from comparable land uses
- **Empirical demand studies:** If local data for similar developments is unavailable and resources permit, conduct site-specific demand studies at locations with characteristics analogous to the proposed development

After reviewing ITE's *Trip Generation Manual*, no land use code was identified that closely resembled this project. Trip generation for the project is based upon proposed site operations provided by the Applicant. The Applicant described the site as consisting of 51 employees, 43 trucks, and 14 support fleet vehicles with negligible anticipated visitor traffic. Site operations are expected to begin as early 3:00 AM-4:00 AM and as late as 10:00 PM, however they are staggered throughout the day and are mainly off-peak. On-site office personnel are expected to begin at 7:00 AM and leave at 5:00 PM. Based on the information provided, trip generation for the site was created for the AM and PM peak hours. **Table 2** shows the trip generation results.

Table 2 – Trip Generation Results

Land Use	AM Peak Hour			PM Peak Hour		
Description / Land Use Code / Size	Enter	Exit	Total	Enter	Exit	Total
Proposed Maintenance and Service Facility – Truck Trips	0	2	2	2	0	2
Proposed Maintenance and Service Facility – Passenger Vehicle Trips	15	0	15	0	15	15
Total	15	2	17	2	15	17

5.3. Trip Distribution and Trip Assignment

The cumulative effect of site generated traffic on the transportation network is dependent on the origins and destinations of that traffic and the location of the access drives serving the site. The proposed arrival and departure distribution of traffic generated by the proposed project is considered a function of several parameters, including:

- Locations of nearby transfer stations.
- Population centers using Longitudinal Employer-Household Dynamics (LEHD) data.
- Proximity and access to areawide major roadways (e.g., I-87).
- Site access location for trucks along US-9 Road.
- Site access location for passenger vehicles along Dukes Way
- Navigational aids (e.g., Google Maps, Apple Maps, Waze, etc.).

Figure 5 and **Figure 6** shows the anticipated trip distribution percentages for the truck trips and passenger vehicle trips, respectively. **Figure 7** illustrates the total peak hour trip assignments based on the anticipated trip distribution.

5.4. Future Traffic Volumes

Future projected traffic volumes were developed by combining the No-Build Condition (**Figures 3 and 4**) and the new site trips (**Figure 7**) to yield the traffic volumes under the Build Condition. **Figures 8 and 9** illustrate the Build Condition during the study's peak hours.

Chapter 6 Intersection Operations

6.1. Level of Service Definition and Framework

Level of service (LOS) is a performance measure that quantifies how well a transportation facility operates from a traveler's perspective. The Highway Capacity Manual (HCM) defines LOS as a quantitative stratification of performance measures representing quality of service. Six levels of service are defined for analysis purposes, assigned letter designations A through F. LOS A represents conditions with minimal to no delay, while LOS F represents conditions with long delays.

The volume-to-capacity (V/C) ratio compares traffic demand (volume) to available roadway capacity during peak periods. V/C ratios provide a straightforward measure of capacity utilization and are stratified into six LOS categories.

Table 3 presents LOS criteria for signalized and unsignalized intersections with associated average delay per vehicle in seconds, as well as the associated V/C ratio categories.

Table 3 – Level of Service Criteria

LOS	Signalized Control	Unsignalized Control	V/C Ratio
A	≤10	≤10	< 0.60
B	10–20	10–15	0.60–0.70
C	20–35	15–25	0.70–0.80
D	35–55	25–35	0.80–0.90
E	55–80	35–50	0.90–1.00
F	>80	>50	> 1.00

The distinction between signalized and unsignalized delay thresholds reflects differences in operational design and driver expectations. Signalized intersections are engineered for higher volumes with predictable, cyclical control, while unsignalized intersections introduce greater variability—minor street movements may routinely operate at LOS E or F during peak periods with moderate to high mainline volumes. These baseline conditions are important in determining the significance of project-generated impacts, as delay tolerance and predictability differ between the two intersection types.

6.2. Evaluation Techniques

Intersection capacity analysis follows Transportation Research Board (TRB) *Highway Capacity Manual (HCM) (7th Edition)* procedures, implemented through *Synchro 12* software to determine LOS at study area intersections. Where warranted, *SimTraffic* microsimulation supplements the analysis by tracking individual vehicles second-by-second to quantify delay distributions. Because *SimTraffic* applies stochastic car-following parameters that vary by random seed, results are averaged across five or more simulation runs to ensure statistical stability.

6.3. General Traffic Impact Significance Thresholds

SEQRA requires lead agencies to classify transportation impacts as either "none/small impact" or "moderate to large impact." In accordance with SEQRA methodologies and common transportation

engineering practice (NYSDOT, ITE), permitting agencies apply guidelines to determine whether a project may result in measurable changes in vehicular operations—including noticeable LOS degradation, increased delays, or increased V/C ratios—potentially requiring mitigation to offset project-related impacts.

LOS C or better is desirable under most conditions. However, the following thresholds represent generally acceptable operation during peak periods, provided v/c ratios remain below 1.0:

- **Urban centers, corridors, and city limits:** LOS D or better (NYSDOT urban guideline; LOS E acceptable at unsignalized intersections)
- **Rural and rural/urban transition areas:** LOS C or better (NYSDOT rural guideline)
- **Signalized intersections:** LOS D is acceptable in urban conditions
- **Unsignalized intersections:** LOS E is acceptable during peak periods

6.4. Capacity Analysis Results

The analysis evaluated Existing and No-Build operating conditions during peak study periods to establish a baseline for comparison with projected future conditions. **Table 4 and Table 5** presents capacity results for Existing, No-Build, and Build conditions, during the AM and PM peak hours, respectively. Interpretive discussions about the results are summarized thereafter.

Table 4 – Level of Service Results: AM Peak Hour

Intersection	Lane Group	2025 Existing	2030 No-Build	2030 Build	Δ No-Build vs. Build
US-9/I-87 NB Ramp (U)					
I-87 NB Ramp – WB	L	F / 79.4	F / 107.4	F / 118.2	+10.8
US-9 – SB	L	A / 9.9	B / 10.3	B / 10.3	+0.0
US-9/I-87 SB Ramp (S)					
I-87 SB Ramp – EB	L	C / 21.3	C / 22.4	C / 22.4	+0.0
	R	C / 20.5	C / 21.6	C / 21.6	+0.0
US-9 – NB	L	A / 5.4	A / 5.4	A / 5.5	+0.1
	T	A / 4.6	A / 4.8	A / 4.8	+0.0
US-9 – SB	T	A / 7.7	A / 7.9	A / 7.9	+0.0
	R	A / 7.9	A / 8.7	A / 8.7	+0.0
Overall:		A / 9.0	A / 9.5	A / 9.6	+0.1
US-9/Dukes Way (U)					
Dukes Way – WB	LR	B / 11.2	B / 11.5	B / 11.5	+0.0
US-9 – SB	LT	A / 8.2	A / 8.3	A / 8.4	+0.1
US-9/Proposed Driveway (U)					
Proposed Driveway – WB	LR	--	--	B / 13.3	--
US-9 – SB	LT			A / 0.0	
US-9/South Road/Old West Road (U)					
South Road – EB	LTR	C / 15.2	C / 16.1	C / 15.1	-1.0
Old West Road – WB	LTR	C / 15.0	C / 16.0	C / 16.0	+0.0
US-9 – NB	LTR	A / 8.7	A / 8.8	A / 8.8	+0.0
US-9 – SB	LTR	A / 8.6	A / 8.7	A / 8.7	+0.0

Table 5 – Level of Service Results: PM Peak Hour

Intersection	Lane Group	2025 Existing	2030 No-Build	2030 Build	Δ No-Build vs. Build
US-g/I-87 NB Ramp (U)					
I-87 NB Ramp – WB	L	E / 40.0	E / 48.7	E / 49.2	+0.5
US-g – SB	L	A / 9.9	B / 10.3	B / 10.3	+0.0
US-g/I-87 SB Ramp (S)					
I-87 SB Ramp – EB	L	B / 15.6	B / 15.6	B / 15.6	+0.0
	R	B / 16.2	B / 16.2	B / 16.1	-0.1
US-g – NB	L	A / 7.6	A / 7.9	A / 7.9	+0.0
	T	A / 6.8	A / 7.4	A / 7.4	+0.0
US-g – SB	T	B / 10.7	B / 11.2	B / 11.3	+0.1
	R	A / 5.8	A / 5.9	A / 6.0	+0.1
Overall:		A / 9.7	A / 10.0	B / 10.0	+0.0
US-g/Dukes Way (U)					
Dukes Way – WB	LR	B / 13.2	B / 13.9	B / 14.5	+0.6
US-g – SB	LT	A / 8.2	A / 8.3	A / 8.3	+0.0
US-g/Proposed Driveway (U)					
Proposed Driveway – WB	LR	--	--	A / 0.0	--
US-g – SB	LT	--	--	A / 8.3	--
US-g/South Road/Old West Road (U)					
South Road - EB	LTR	C / 15.3	C / 16.1	C / 16.2	+0.1
Old West Road – WB	LTR	C / 18.3	C / 20.2	C / 20.5	+0.3
US-g – NB	LTR	A / 8.5	A / 8.6	A / 8.7	+0.1
US-g – SB	LTR	A / 8.5	A / 8.6	A / 8.6	+0.0

Note: L, T, R = Left-turn, Through, and/or Right-turn movements
X / X.X = LOS / Average delay in seconds per vehicle

US-g / I-87 NB Ramp

The NB off-ramp movement operates at LOS E during the AM peak hour and LOS F during the PM peak hour under Existing conditions. However, there are eight (8) vehicle movements on that approach, equating to approximately one left-turn every 7.5 minutes during the peak hour.

Under No-Build conditions, there are nine vehicles turning left onto US-g (one vehicle every 6.6 minutes). Meanwhile, 12 or fewer vehicles are projected to turn left onto US-g under Build conditions (one vehicle every 5.0 minutes). The actual increase in traffic volumes for this movement is three (3) vehicles during the AM peak hour and 0 vehicles during PM peak hour. The project constitutes approximately 0.4% of total intersection volumes during both the AM and PM peak. Despite the delays, no mitigation measures are recommended.

US-g / I-87 SB Ramp

All movements operate at an acceptable LOS C or better under Existing conditions during both peak hours. No changes in LOS are projected under No-Build and Build conditions during the peak hours. The existing intersection can adequately accommodate the increased traffic volumes, and no mitigation measures are recommended.

US-9 / Duke's Way

All movements operate at an acceptable LOS B or better under Existing conditions during both peak hours. No changes in LOS are projected under No-Build and Build conditions during the peak hours. The existing intersection can adequately accommodate the increased traffic volumes, and no mitigation measures are recommended.

US-9 / Proposed Access

All movements operate at an acceptable LOS B or better under Build conditions during both peak hours.

US-9 / S Road / Old West Road

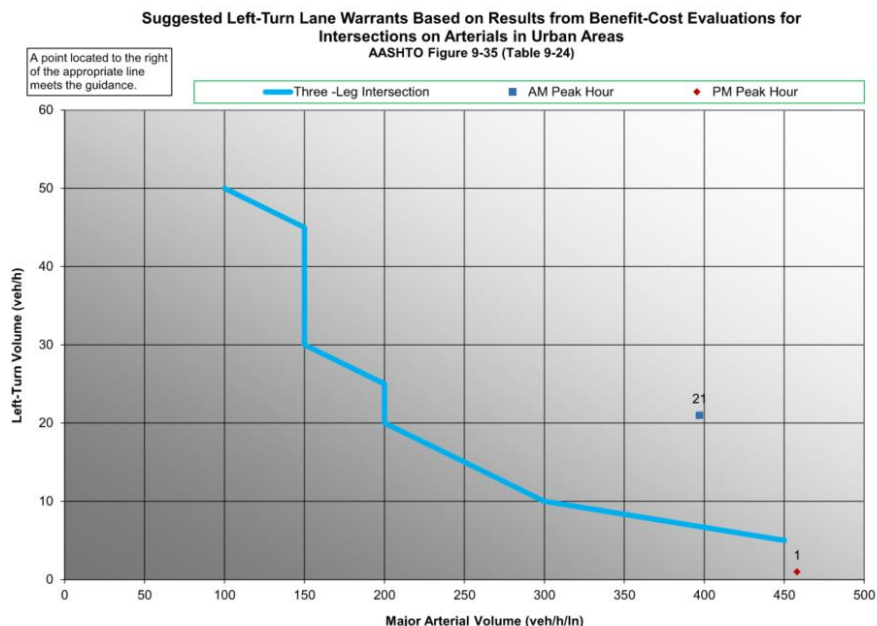
All movements operate at an acceptable LOS C or better under Existing conditions during both peak hours. No changes in LOS are projected under No-Build and Build conditions during the peak hours. The existing intersection can adequately accommodate the increased traffic volumes, and no mitigation measures are recommended.

6.5. Turn Lane Warrant Assessment

Left turn lane warrants were evaluated using nationally recognized turn lane warrant criteria based on AASHTO design standards and NCHRP research for the intersection of US-9 and Dukes Way due to increased traffic. The decision to construct left turn lanes should consider:

- **Traffic Volume Thresholds**
 - Peak hour left turn volumes and opposing traffic volumes
 - Advancing traffic volumes that may be delayed by left turning vehicles
 - Heavy vehicle percentages affecting storage length and operational capacity
- **Safety Analysis**
 - Crash history showing rear-end crashes involving queued left turners or left turn crashes with opposing traffic
 - Crash potential based on anticipated operating speeds and posted speed limit
- **Geometric and Operational Factors**
 - Sight distance on the mainline affecting gap acceptance and vehicle detection
 - Posted speed limit influencing deceleration length requirements
- **Project Constraints**
 - Construction costs and economic feasibility
 - Right-of-way impacts including property acquisition needs

Left-Turn Warrant Results



Under 2030 Build conditions, projected southbound left turn volumes satisfy AASHTO and NCHRP warrant thresholds during the AM peak hour, indicating volumetric criteria supporting an exclusive left turn lane.

While AASHTO and NCHRP warrant analyses rely on applicable traffic volumes, additional considerations, including corridor continuity, operational performance, and sight distance adequacy should inform whether mainline left turn lanes are warranted.

Along US-9 in the project vicinity, aside from the I-87 ramps, exclusive left turn lanes are not provided at unsignalized intersections or driveways. The unsignalized intersection of Old West Road and S Road to the south with comparable southbound left turn volumes operates without a turn lane, consistent with corridor design standards. Operational analysis indicates the southbound left turn movement will operate at LOS A during both peak hours with negligible queuing (95th percentile <1 vehicle), resulting in no impedance to opposing northbound through traffic.

Available stopping sight distance exceeds the recommended stopping sight distance based on the design speed of US-9, providing adequate perception-reaction distance for drivers encountering vehicles waiting to turn left into the proposed access.

No crashes involving left-turning factors were reported during the most recent three-year period.

While volumetric warrants are satisfied, corridor design consistency, minimal operational impact, and adequate sight distance do not justify an exclusive left-turn lane. A southbound left-turn lane is therefore not recommended.

Chapter 7 Conclusions and Recommendations

Based on the analyses documented in this TIS, the existing transportation network along US-9 can accommodate the proposed Casella Waste Management Maintenance Facility. Consistent with SEQRA, the project is not anticipated to result in any significant adverse impacts. Analysis of the study intersections under Existing (2025), No-Build (2030), and Build (2030) conditions demonstrate that all movements will operate within general acceptable thresholds during the peak study periods. Key findings include:

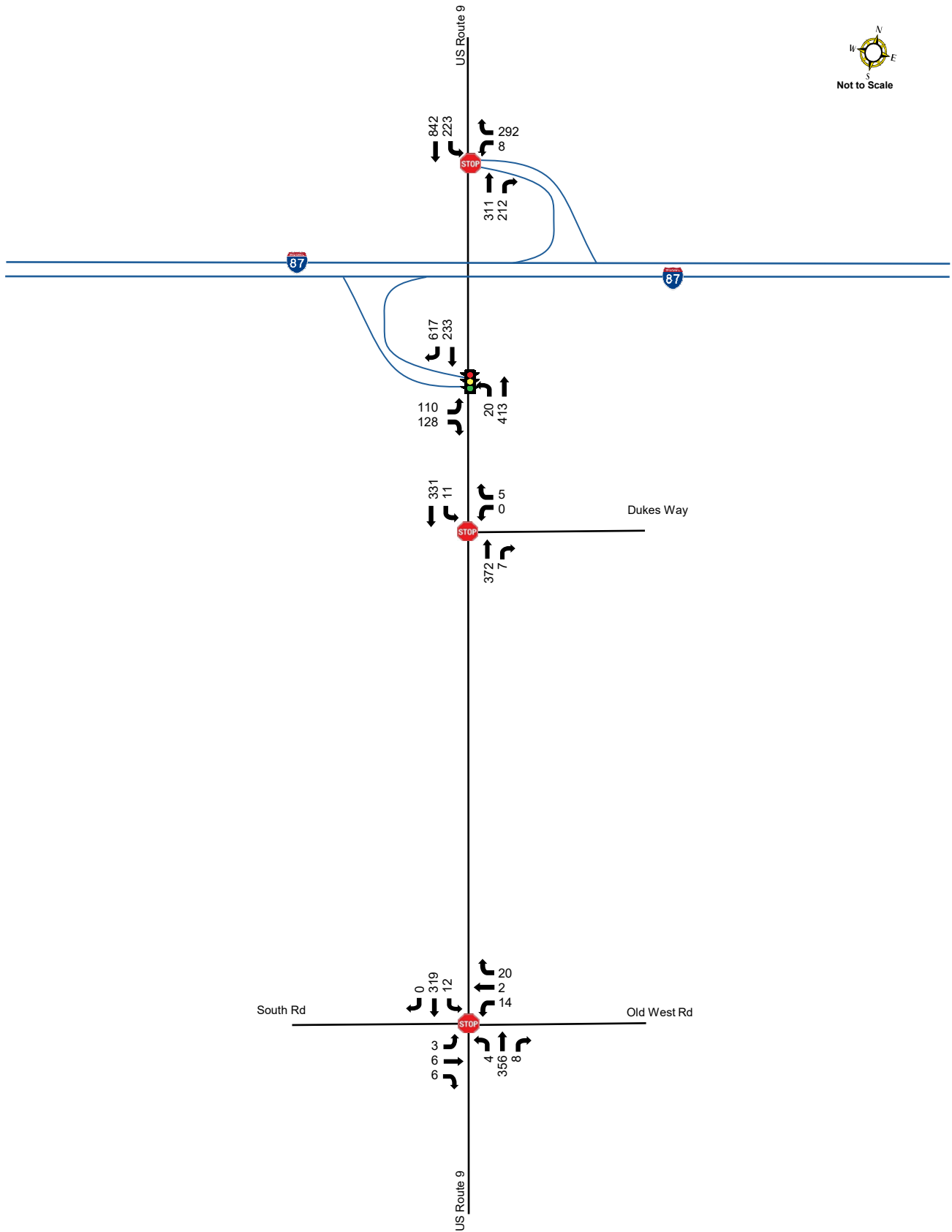
- Overall, LOS remains acceptable, as the majority of intersection movements operate at LOS C or better for major movements under all conditions; minor approaches at unsignalized intersections experience typical delays for rural arterials.
- A five-year build-out horizon was applied with a 1.5% annual growth rate, extending beyond the applicant's anticipated two-year construction timeline, to conservatively account for project approvals and permitting processes.
- Approximately 15 entering and two (2) exiting trips are anticipated during the AM peak hour with two (2) entering and 15 exiting trips during the PM peak hour.
- Available SSD and ISD exceed AASHTO and NYSDOT criteria for a design speed of 60 mph at the proposed driveway.
- No geometric improvements are required at the study intersections to accommodate Build traffic.
- Implement operational practices (dispatch-hauler staging, on-site circulation) to minimize driveway conflicts and efficiently distribute truck movements.

Chapter 8 References

- A Policy on Geometric Design of Highways and Streets, 7th ed. American Association of State Highway and Transportation Officials, Washington, D.C., 2018.
- Crash Location & Engineering Analysis Repository (CLEAR). New York State Department of Transportation, Albany, N.Y., 2025.
- Highway Capacity Manual, 7th ed. Transportation Research Board, National Research Council, Washington, D.C., 2022.
- Highway Design Manual. New York State Department of Transportation, Albany, N.Y., 2025.
- Highway Functional Classification Concepts, Criteria, and Procedures. Publication FHWA-PL-13-026. Federal Highway Administration, U.S. Department of Transportation, Washington, D.C., 2023.
- Intersection Channelization Design Guide. NCHRP Report 279. Transportation Research Board, National Research Council, Washington, D.C., 1985.
- Manual on Uniform Traffic Control Devices, 11th ed. Federal Highway Administration, U.S. Department of Transportation, Washington, D.C., 2023.
- Synchro 12 Software. Cubic ITS, San Diego, CA., 2025.
- Traffic Data Viewer. New York State Department of Transportation, Albany, N.Y., 2025.
- Traffic Monitoring Guide. Publication FHWA-PL-17-003. Federal Highway Administration, U.S. Department of Transportation, Washington, D.C., 2022.
- Trip Generation Manual, 12th ed. Institute of Transportation Engineers, Washington, D.C., 2025.

APPENDIX A

FIGURES



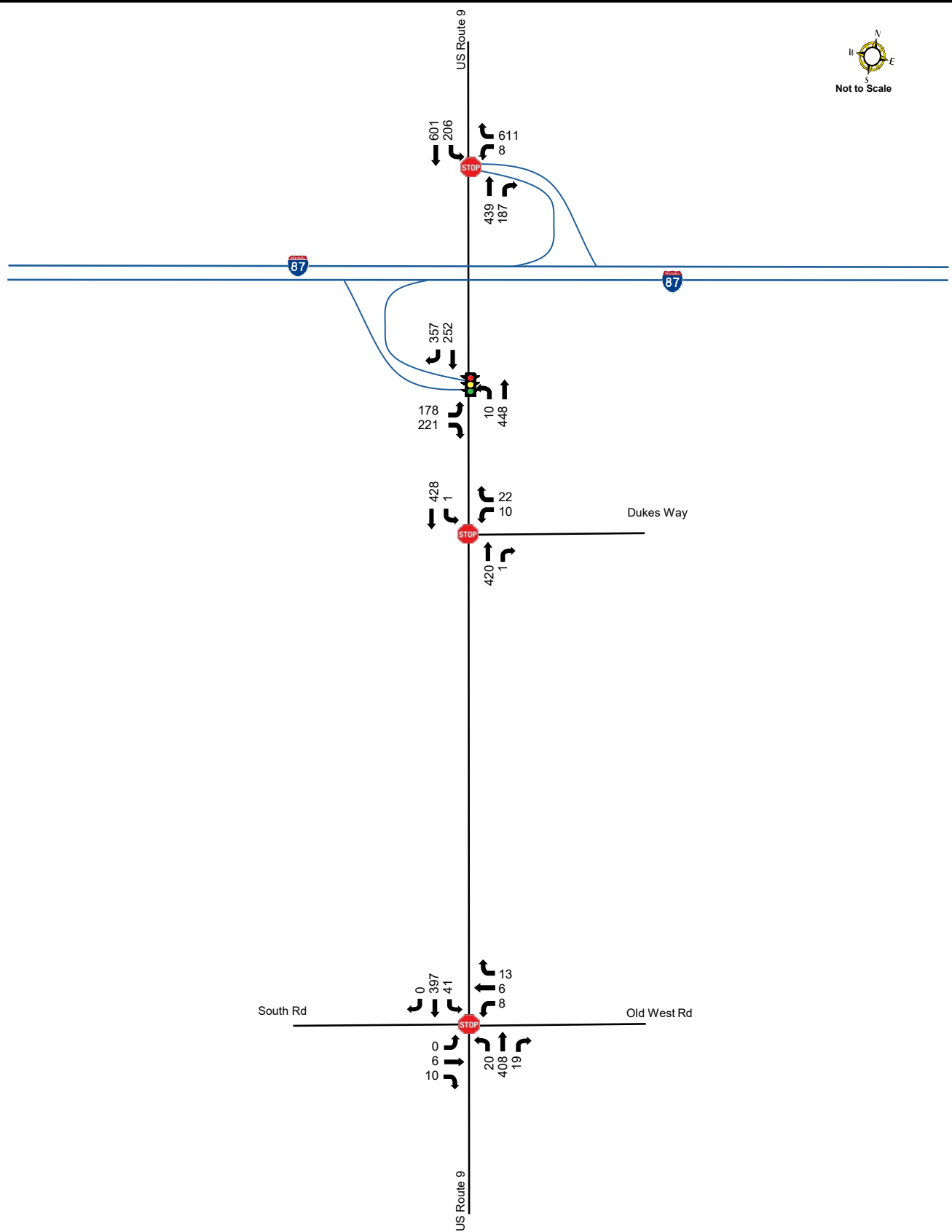
**2025 Existing AM Peak Hour
Traffic Volumes**

FIGURE - 1

September 2026

**Casella Maintenance
Facility
TIA**

Hamlet of Gansevoort
Saratoga County
New York



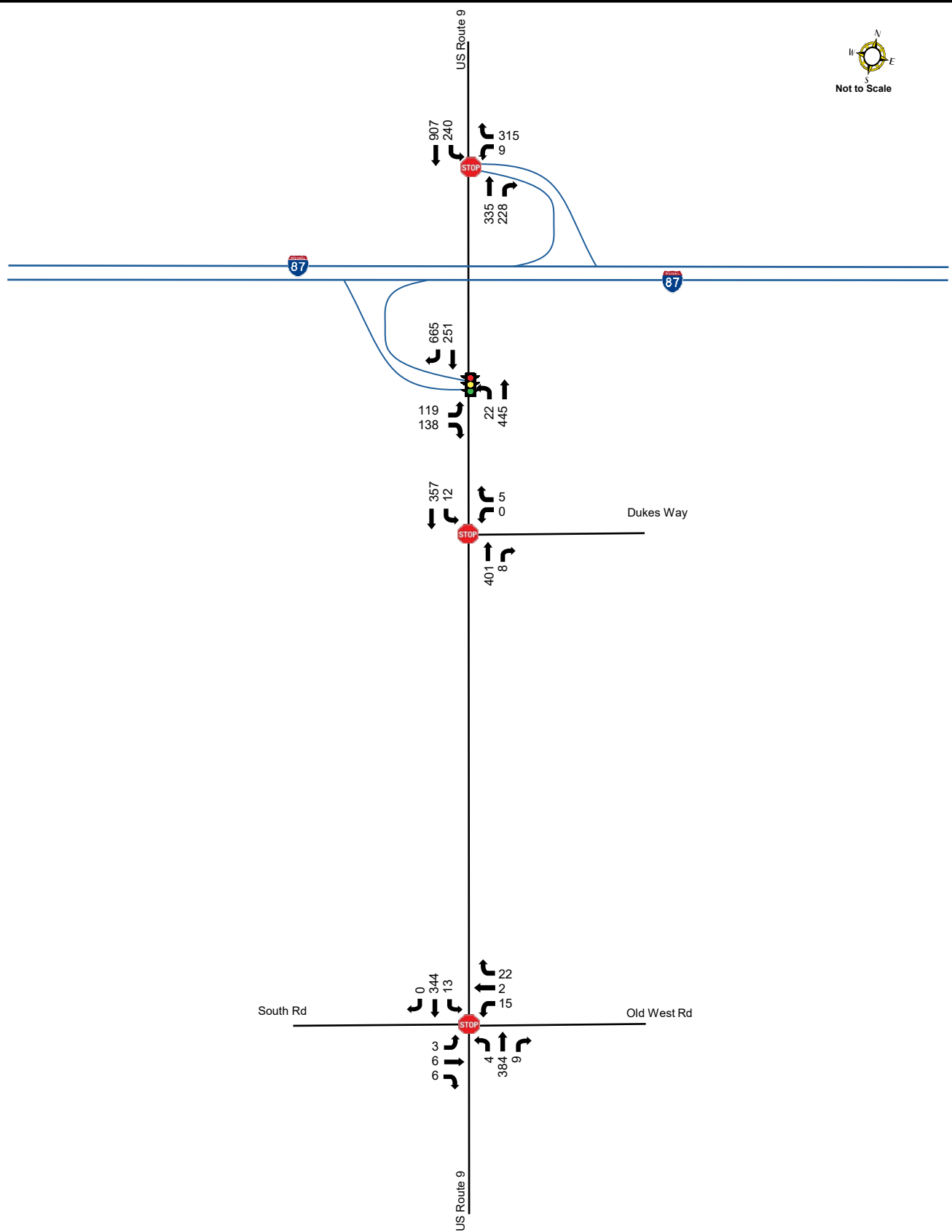
**2025 Existing PM Peak Hour
Traffic Volumes**

**Casella Maintenance
Facility
TIA**

Hamlet of Gansevoort
Saratoga County
New York

FIGURE - 2

September 2026



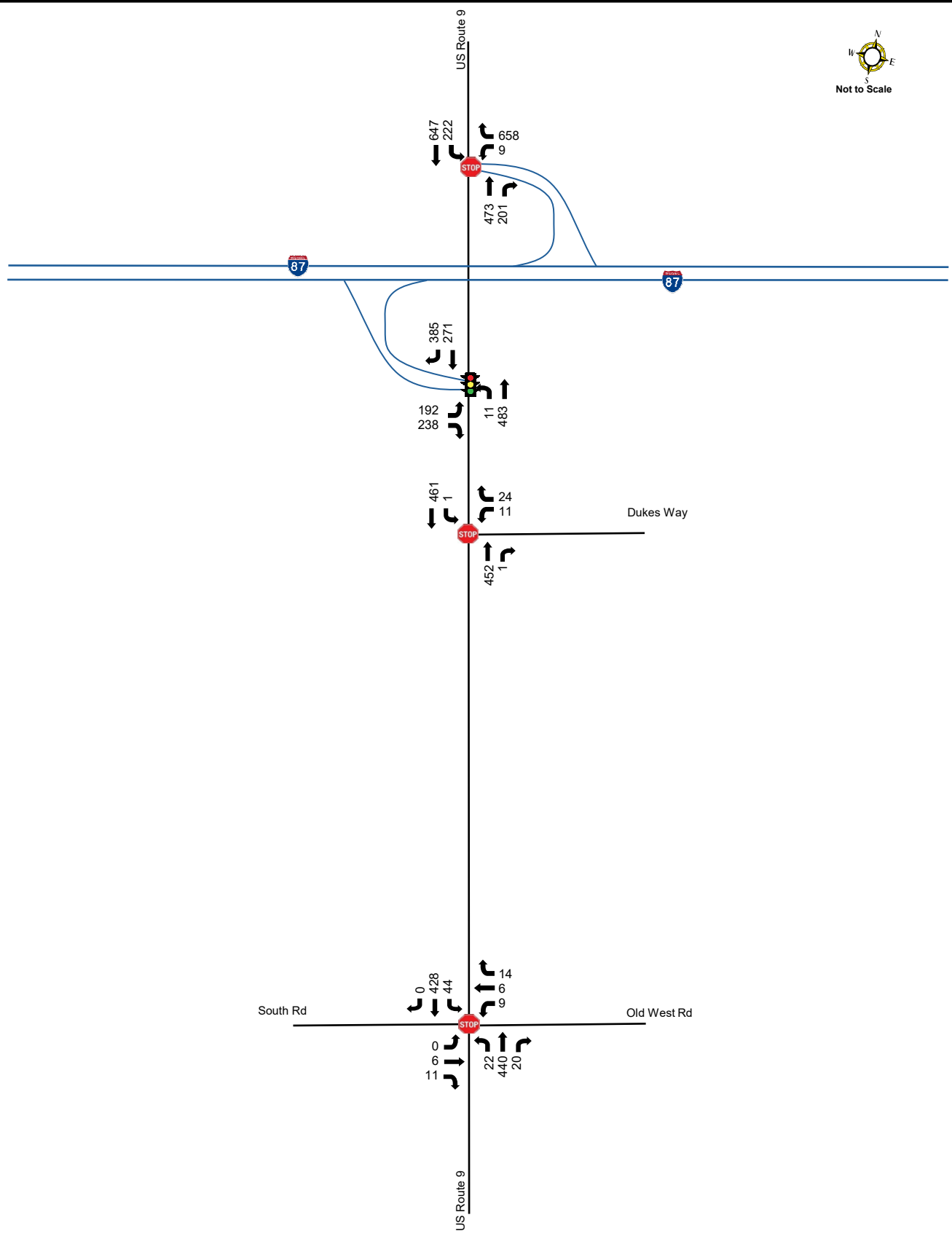
2030 No Build AM Peak Hour
Traffic Volumes

FIGURE - 3

September 2026

Casella Maintenance
Facility
TIA

Hamlet of Gansevoort
Saratoga County
New York

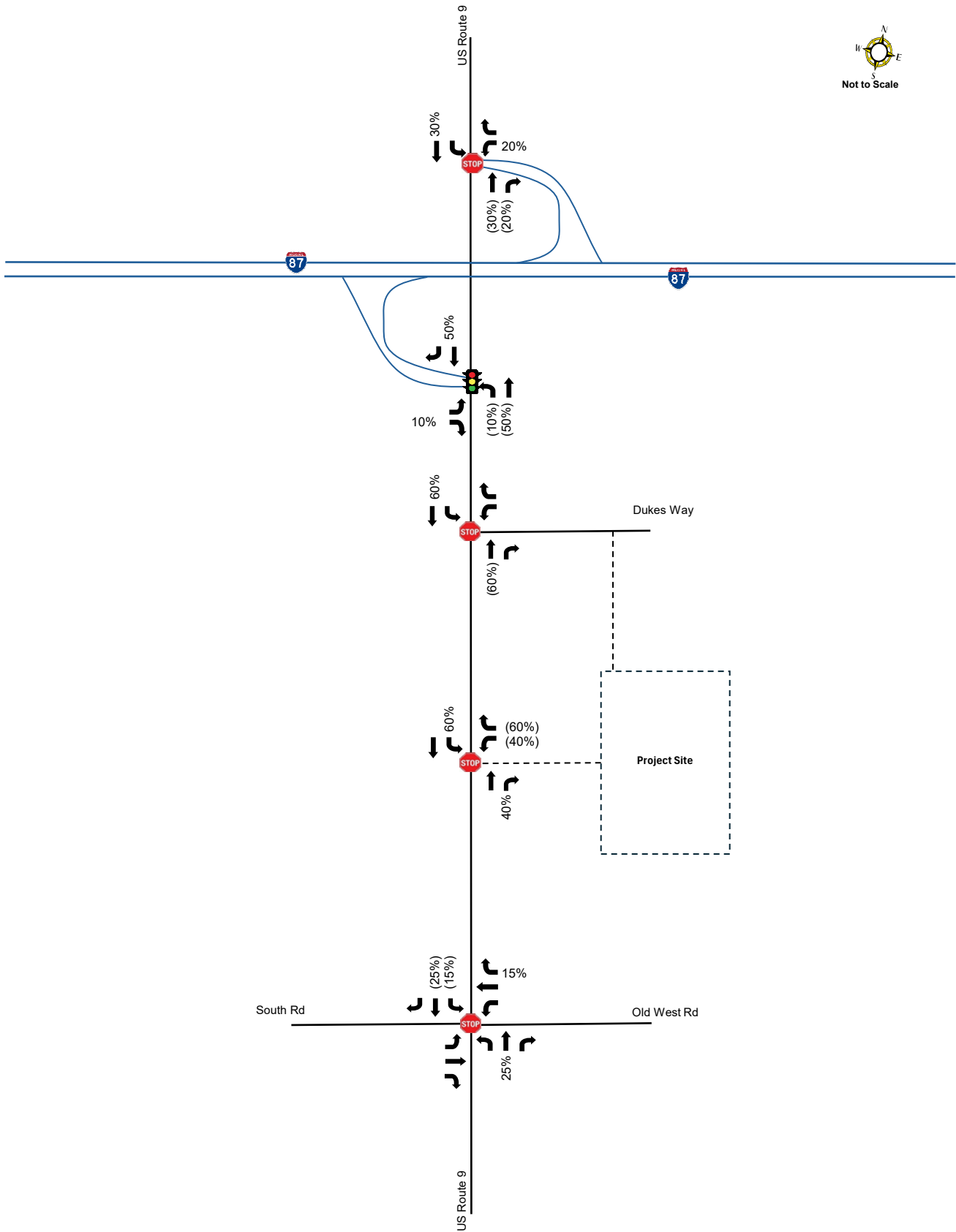


2030 No Build PM Peak Hour
Traffic Volumes

FIGURE - 4
September 2026

Casella Maintenance
Facility
TIA

Hamlet of Gansevoort
Saratoga County
New York



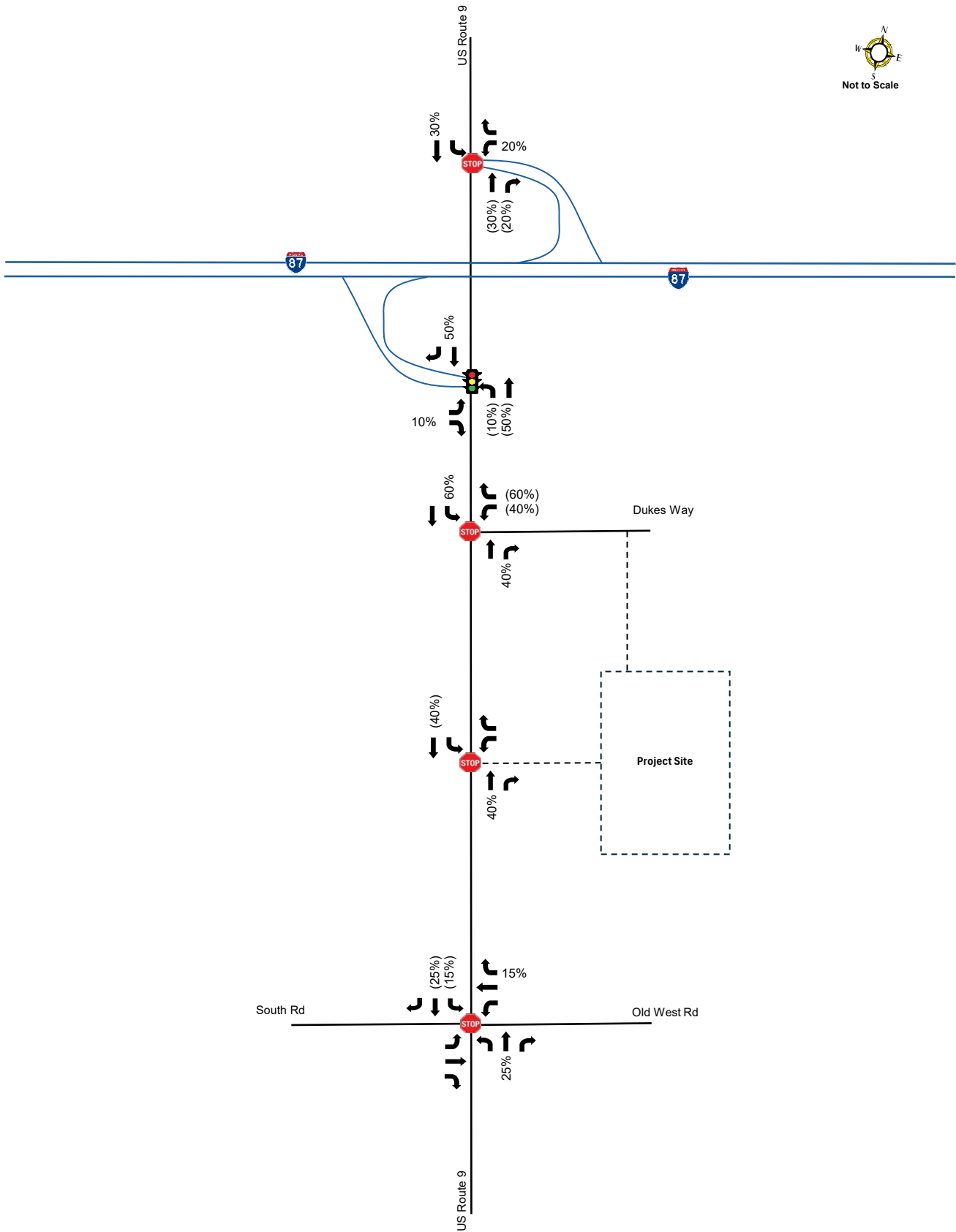
Site Generated Truck Trip Distribution

FIGURE - 5

September 2026

**Casella Maintenance
Facility
TIA**

Hamlet of Gansevoort
Saratoga County
New York



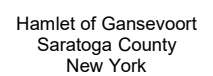
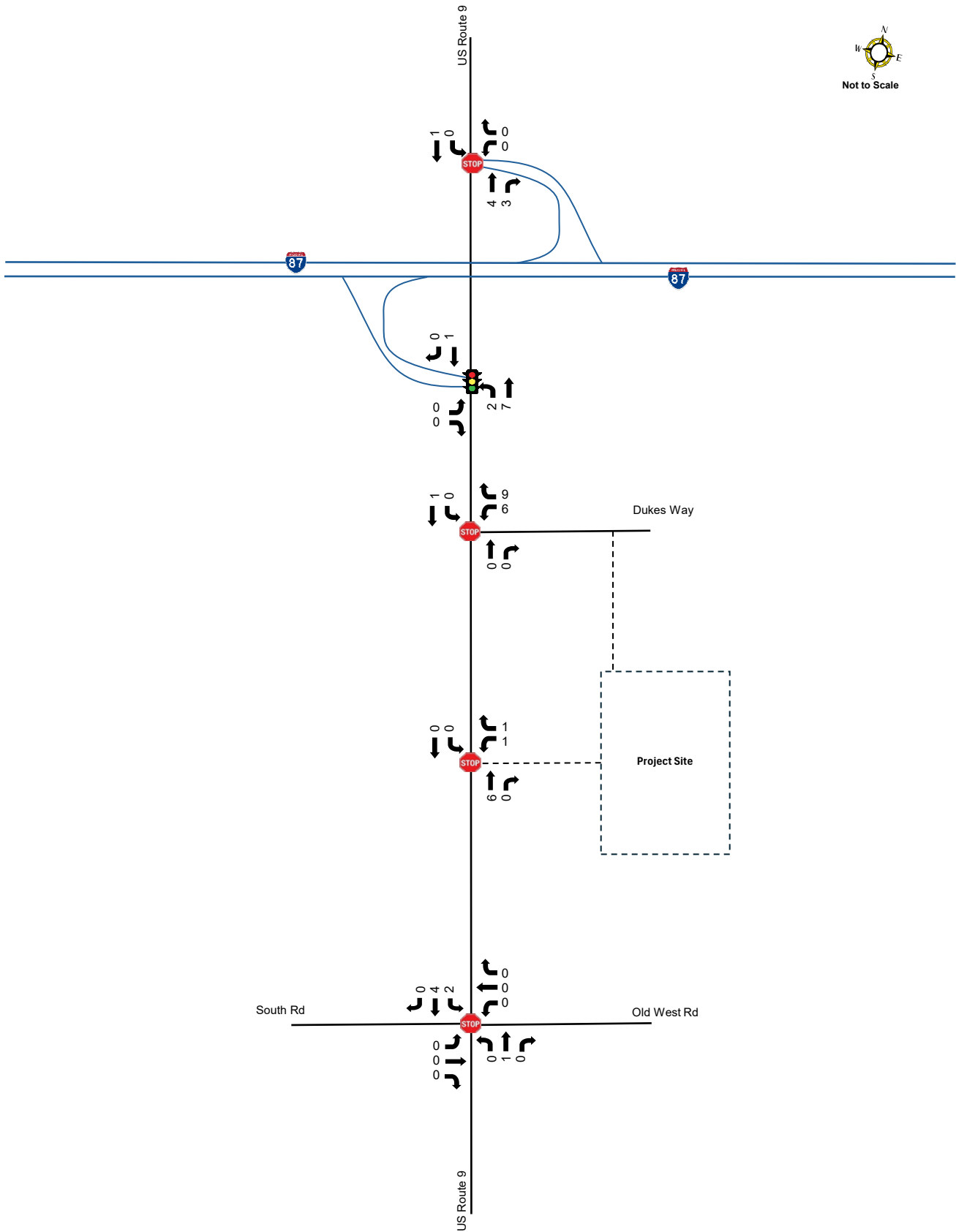
Site Generated Vehicle Trip Distribution

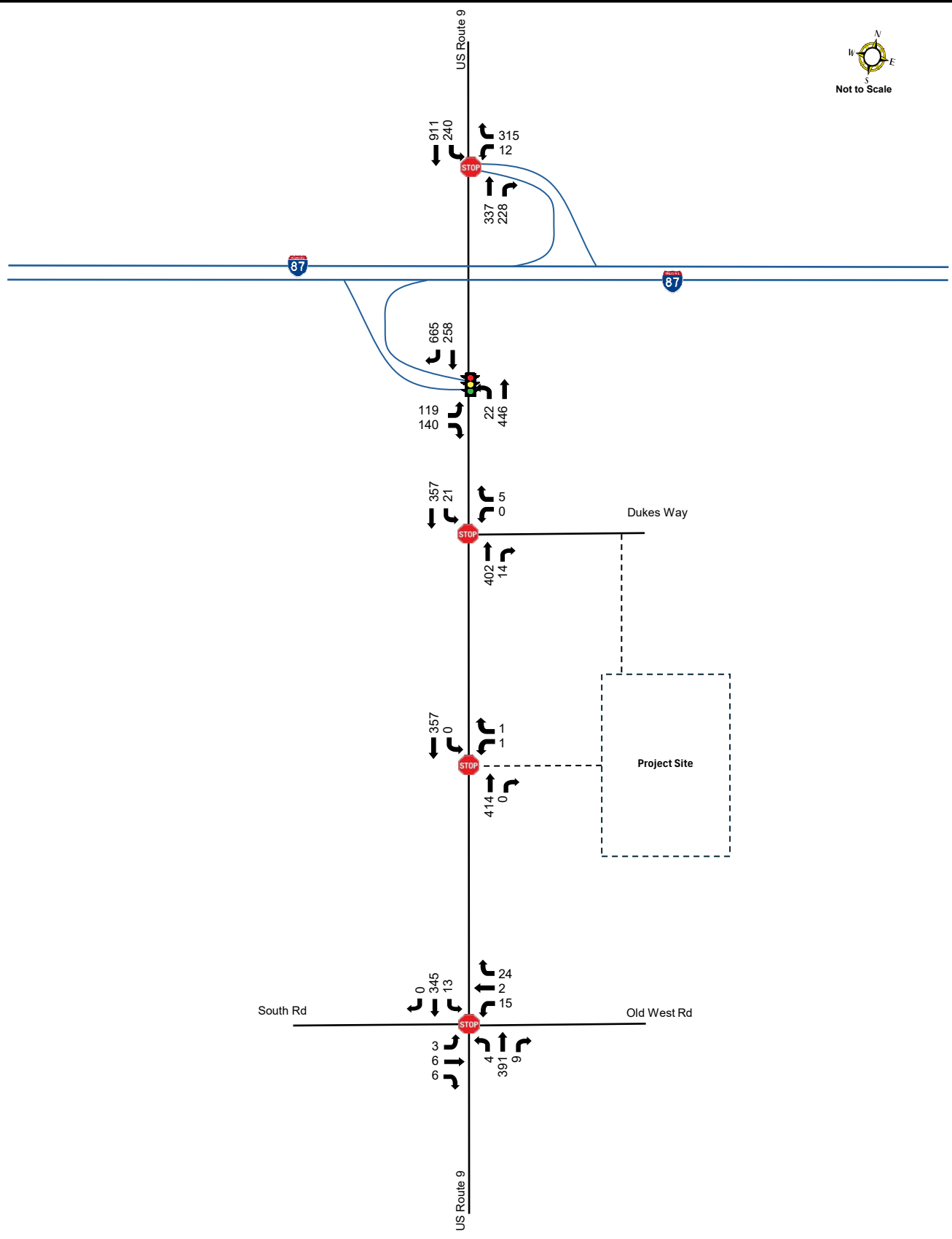
FIGURE - 6

September 2026

**Casella Maintenance
Facility
TIA**

Hamlet of Gansevoort
Saratoga County
New York



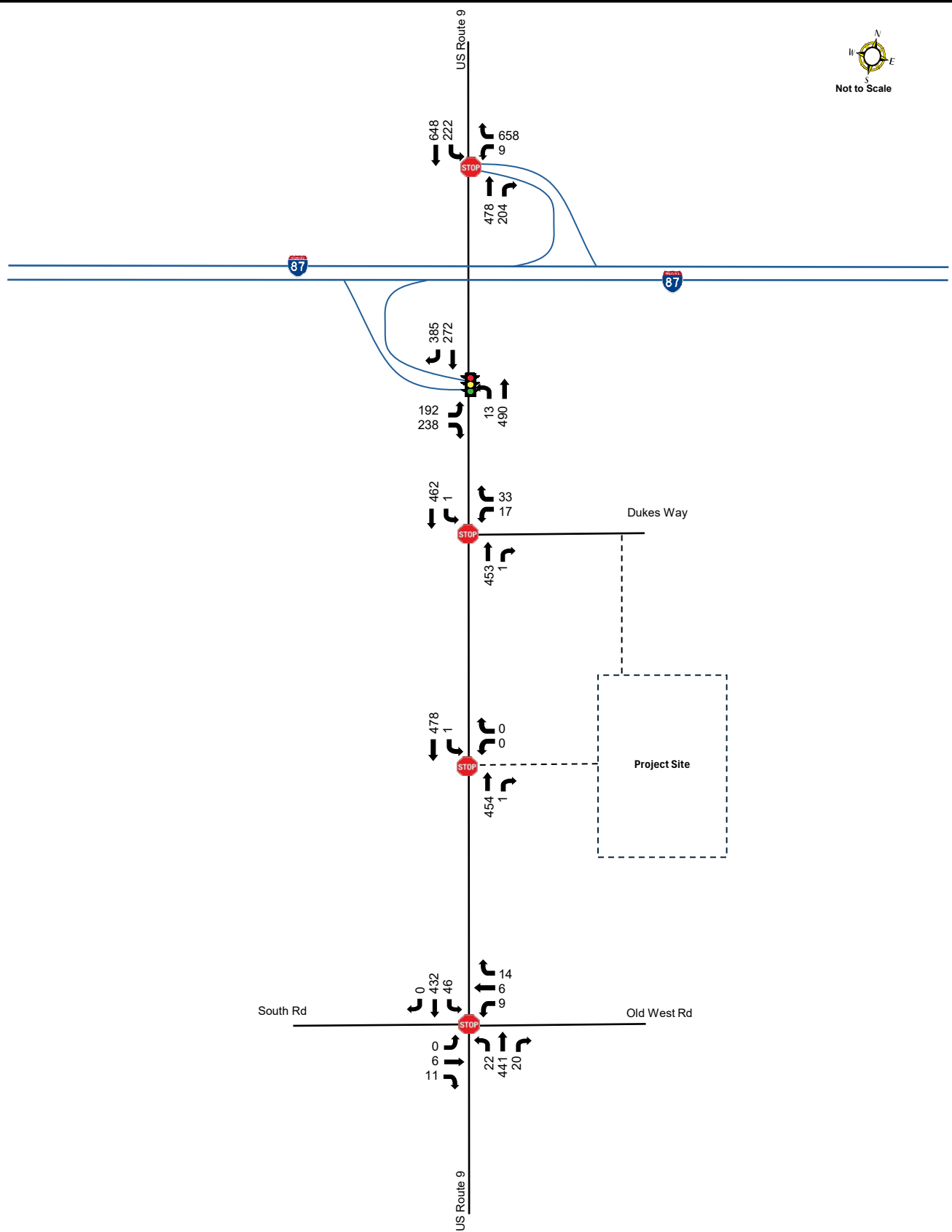


**2030 Build AM Peak Hour
Traffic Volumes**

FIGURE - 8 **September 2026**

**Casella Maintenance
Facility
TIA**

Hamlet of Gansevoort
Saratoga County
New York



2030 Build PM Peak Hour
Traffic Volumes

FIGURE - 9 **September 2026**

**Casella Maintenance
Facility
TIA**

Hamlet of Gansevoort
Saratoga County
New York

APPENDIX B

COLLECTED TRAFFIC DATA

Location: I-87/Adirondack Northway NB Ramps & US 9/Saratoga Rd
City: Gansevoort

Day: Tuesday
Date: 11/18/2025

Groups Printed - Cars, PU, Vans - Heavy Trucks

[illegible]

BREAK

4:00 PM	2	0	145	0	0	147	0	0	0	0	0	0	111	52	0	0	163	56	143	0	0	0	199	509	
4:15 PM	0	0	174	1	0	175	0	0	0	0	0	0	0	95	55	0	0	150	47	148	0	0	0	195	520
4:30 PM	2	0	146	0	0	148	0	0	0	0	0	0	0	108	42	0	0	150	61	150	0	0	0	211	509
4:45 PM	3	0	146	0	0	149	0	0	0	0	0	0	0	125	38	0	0	163	42	160	0	0	0	202	514
Total	7	0	611	1	0	619	0	0	0	0	0	0	0	439	187	0	0	626	206	601	0	0	0	807	2052
5:00 PM	4	0	150	0	0	154	0	0	0	0	0	0	0	95	37	0	0	132	49	159	0	0	0	208	494
5:15 PM	4	0	135	0	0	139	0	0	0	0	0	0	0	111	40	0	0	151	58	121	0	0	0	179	469
5:30 PM	2	0	138	0	0	140	0	0	0	0	0	0	0	79	31	0	0	110	33	98	0	0	0	131	381
5:45 PM	0	0	121	0	0	121	0	0	0	0	0	0	0	65	23	0	0	88	36	77	0	0	0	113	322
Total	10	0	544	0	0	554	0	0	0	0	0	0	0	350	131	0	0	481	176	455	0	0	0	631	1666
Grand Total	26	0	1720	1	0	1747	0	0	0	0	0	0	0	1335	664	0	0	1999	802	2581	0	0	0	3383	7129
Apprch %	1.5	0.0	98.5	0.1	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	66.8	33.2	0.0	0.0		23.7	76.3	0.0	0.0	0.0		
Total %	0.4	0.0	24.1	0.0	0.0	24.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	18.7	9.3	0.0	0.0	28.0	11.2	36.2	0.0	0.0	0.0	47.5	
Cars, PU, Vans	22	0	1576	1		1599	0	0	0	0	0	0	0	1287	649	0		1936	772	2419	0	0		3191	6726
% Cars, PU, Vans	84.6	0.0	91.6	100.0		91.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	96.4	97.7	0.0		96.8	96.3	93.7	0.0	0.0		94.3	94.3
Heavy trucks	4	0	144	0		148	0	0	0	0	0	0	0	48	15	0		63	30	162	0	0		192	403
%Heavy trucks	15.4	0.0	8.4	0.0		8.5	0.0	0.0	0.0	0.0	0.0	0.0	0.0	3.6	2.3	0.0		3.2	3.7	6.3	0.0	0.0		5.7	5.7

Location: I-87/Adirondack Northway NB Ramps & US 9/Saratoga
City: Gansevoort

PEAK HOURS

Day: Tuesday
Date: 11/18/2025

AM

[illegible]

PM

	-87/Adirondack Northway NB Ramps Northbound						-87/Adirondack Northway NB Ramps Southbound						US 9/Saratoga Rd Eastbound					US 9/Saratoga Rd Westbound						
Start Time	Left	Thru	Rgt	Uturn	App. Total		Left	Thru	Rgt	Uturn	App. Total		Left	Thru	Rgt	Uturn	App. Total		Left	Thru	Rgt	Uturn	App. Total	Int. Total
Peak Hour Analysis from 04:00 PM - 06:00 PM																								
Peak Hour for Entire Intersection Begins at 12:00 AM																								
12:00 AM	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0
12:15 AM	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0
12:30 AM	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0
12:45 AM	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0
Total Volume	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0	0
% App. Total	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
PHF	0.884						0.960						0.956						0.987					
Cars, PU, Vans	0	0	-29	0	-29		0	0	0	0	0		0	-13	-1	0	-14		-6	-45	0	0	-51	-94
% Cars, PU, Vans	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	-94
Heavy trucks	0	0	29	0	29		0	0	0	0	0		0	13	1	0	14		6	45	0	0	51	94
% Heavy trucks	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0

Project ID: 25-380091-002

Location: I-87/Adirondack Northway SB Ramps & US 9/Saratoga Rd

City: Gansevoort

Day: Tuesday

Date: 11/18/2025

Groups Printed - Cars, PU, Vans - Heavy Trucks

	I-87/Adirondack Northway SB Ramps Northbound						I-87/Adirondack Northway SB Ramps Southbound						US 9/Saratoga Rd Eastbound						US 9/Saratoga Rd Westbound								
Start Time	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Int. Total		
7:00 AM	0	0	0	0	0	0	18	0	26	0	0	44	3	89	0	0	0	92	0	50	150	0	0	200	336		
7:15 AM	0	0	0	0	0	0	30	0	39	0	0	69	5	105	0	0	0	110	0	71	163	0	0	234	413		
7:30 AM	0	0	0	0	0	0	23	0	30	0	0	53	4	135	0	0	0	139	0	62	155	0	0	217	409		
7:45 AM	0	0	0	0	0	0	38	0	33	0	0	71	8	80	0	0	0	88	0	49	147	0	0	196	355		
Total	0	0	0	0	0	0	109	0	128	0	0	237	20	409	0	0	0	429	0	232	615	0	0	847	1513		
8:00 AM	0	0	0	0	0	0	27	0	29	0	0	56	3	71	0	0	0	74	0	57	126	0	0	183	313		
8:15 AM	0	0	0	0	0	0	18	0	20	0	0	38	6	60	0	0	0	66	0	53	136	0	0	189	293		
8:30 AM	0	0	0	0	0	0	25	0	20	0	0	45	5	64	0	0	0	69	0	42	127	0	0	169	283		
8:45 AM	0	0	0	0	0	0	28	0	26	0	0	54	5	78	0	0	0	83	0	52	94	0	0	146	283		
Total	0	0	0	0	0	0	98	0	95	0	0	193	19	273	0	0	0	292	0	204	483	0	0	687	1172		
BREAK																											
4:00 PM	0	0	0	0	0	0	55	0	56	0	0	111	3	109	0	0	0	112	0	49	93	0	0	142	365		
4:15 PM	0	0	0	0	0	0	36	0	49	0	0	85	1	115	0	0	0	116	0	73	74	0	0	147	348		
4:30 PM	0	0	0	0	0	0	37	0	55	0	0	92	5	107	0	0	0	112	0	52	98	0	0	150	354		
4:45 PM	0	0	0	0	0	0	50	0	61	0	0	111	1	115	0	0	0	116	0	75	87	0	0	162	389		
Total	0	0	0	0	0	0	178	0	221	0	0	399	10	446	0	0	0	456	0	249	352	0	0	601	1456		
5:00 PM	0	0	0	0	0	0	41	0	59	0	0	100	6	94	0	0	0	100	0	65	99	0	0	164	364		
5:15 PM	0	0	0	0	0	0	40	0	46	0	0	86	3	113	0	0	0	116	0	43	84	0	0	127	329		
5:30 PM	0	0	0	0	0	0	31	0	39	0	0	70	1	79	0	0	0	80	0	33	72	0	0	105	255		
5:45 PM	0	0	0	0	0	0	27	0	23	0	0	50	2	58	0	0	0	60	0	29	48	0	0	77	187		
Total	0	0	0	0	0	0	139	0	167	0	0	306	12	344	0	0	0	356	0	170	303	0	0	473	1135		
Grand Total	0	0	0	0	0	0	524	0	611	0	0	1135	61	1472	0	0	0	1533	0	855	1753	0	0	2608	5276		
Apprch %	0.0	0.0	0.0	0.0	0.0	0.0	46.2	0.0	53.8	0.0	0.0	46.2	4.0	96.0	0.0	0.0	0.0	46.2	0.0	32.8	67.2	0.0	0.0	46.2	52.76		
Total %	0.0	0.0	0.0	0.0	0.0	0.0	9.9	0.0	11.6	0.0	0.0	21.5	1.2	27.9	0.0	0.0	0.0	29.1	0.0	16.2	33.2	0.0	0.0	49.4	52.76		
Cars, PU, Vans	0	0	0	0	0	0	509	0	594	0	0	1103	58	1424	0	0	0	1482	0	813	1629	0	0	2442	5027		
% Cars, PU, Vans	0.0	0.0	0.0	0.0	0.0	0.0	97.1	0.0	97.2	0.0	0.0	97.2	95.1	96.7	0.0	0.0	0.0	96.7	0.0	95.1	92.9	0.0	0.0	93.6	95.3		
Heavy trucks	0	0	0	0	0	0	15	0	17	0	0	32	3	48	0	0	0	51	0	42	124	0	0	166	249		
%Heavy trucks	0.0	0.0	0.0	0.0	0.0	0.0	2.9	0.0	2.8	0.0	0.0	2.8	4.9	3.3	0.0	0.0	0.0	3.3	0.0	4.9	7.1	0.0	0.0	6.4	4.7		

Project ID: 25-380091-002

Location: I-87/Adirondack Northway SB Ramps & US 9/Sara

City: Gansevoort

PEAK HOURS

Day: Tuesday

Date: 11/18/2025

AM

	#87/Adirondack Northway SB Ramp Northbound					#87/Adirondack Northway SB Ramp Southbound					US 9/Saratoga Rd Eastbound					US 9/Saratoga Rd Westbound					
Start Time	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Int. Total
Peak Hour Analysis from 07:00 AM - 09:00 AM																					
Peak Hour for Entire Intersection Begins at 12:00 AM																					
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
12:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0
% App. Total	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	
PHF						0.835					0.772					0.905					0.916
Cars, PU, Vans	0	0	0	0	0	-4	0	-4	0	-8	-1	-23	0	0	-24	0	-19	-31	0	-50	-82
% Cars, PU, Vans	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Heavy trucks	0	0	0	0	0	4	0	4	0	8	1	23	0	0	24	0	19	31	0	50	82
%Heavy trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0

PM

	I-87/Adirondack Northway SB Ramp Northbound					I-87/Adirondack Northway SB Ramp Southbound					US 9/Saratoga Rd Eastbound					US 9/Saratoga Rd Westbound													
Start Time	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Int. Total								
Peak Hour Analysis from 04:00 PM - 06:00 PM																													
Peak Hour for Entire Intersection Begins at 12:00 AM																													
12:00 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
12:15 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
12:30 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
12:45 AM	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
Total Volume	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0								
% App. Total	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0	0.0	0.0	0.0	0.0	0									
PHF											0.899											0.983						0.927	0.936
Cars, PU, Vans	0	0	0	0	0	-6	0	-5	0	-11	0	-8	0	0	-8	0	-5	-40	0	-45	-64								
% Cars, PU, Vans	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0								
Heavy trucks	0	0	0	0	0	6	0	5	0	11	0	8	0	0	8	0	5	40	0	45	64								
%Heavy trucks	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0								

Location: US 9/Saratoga Rd & S Rd/Old West Rd
City: Gansevoort

Groups Printed - Cars, PU, Vans - Heavy Trucks

4:00 PM	7	100	4	0	0	1111	12	88	0	0	0	100	0	4	4	0	0	8	2	0	6	0	0	8	227
4:15 PM	2	111	4	0	0	117	12	104	0	0	0	116	0	1	2	0	0	3	2	4	2	0	0	8	244
4:30 PM	4	166	3	0	0	103	8	87	0	0	0	95	0	0	3	0	0	3	3	2	4	0	0	9	210
4:45 PM	7	101	8	0	0	116	7	100	0	0	0	107	0	1	1	0	0	2	1	0	1	0	0	9	227
Total	20	408	19	0	0	447	39	379	0	0	0	418	0	6	10	0	0	16	8	6	13	0	0	27	908
5:00 PM	3	76	3	0	0	82	9	106	0	0	0	115	0	0	2	0	0	2	1	0	4	0	0	5	204
5:15 PM	8	108	7	0	0	123	6	75	0	0	0	81	0	0	0	0	0	0	3	0	2	0	0	5	209
5:30 PM	1	77	3	0	0	81	3	59	0	0	0	62	0	1	2	0	0	3	0	1	1	0	0	2	148
5:45 PM	5	44	4	0	0	53	1	43	0	0	0	44	0	0	1	0	0	1	2	0	1	0	0	3	101
Total	17	305	17	0	0	339	19	283	0	0	0	302	0	1	5	0	0	6	6	1	8	0	0	15	662
Grand Total	46	1310	51	0	0	1407	89	1233	3	0	0	1325	4	14	38	0	0	56	43	11	58	0	0	112	2900
Approch %	3.3	93.1	3.6	0.0	0.0		6.7	93.1	0.2	0.0	0.0		7.1	25.0	67.9	0.0	0.0		38.4	9.8	51.8	0.0	0.0		
Total %	1.6	45.2	1.8	0.0	0.0	48.5	3.1	42.5	0.1	0.0	0.0	45.7	0.1	0.5	1.3	0.0	0.0	1.9	1.5	0.4	2.0	0.0	0.0	3.9	
Cars, PU, Vans	38	1267	47	0		1352	77	1189	1	0		1267	3	12	35	0		50	39	10	50	0		99	2768
% Cars, PU, Vans	82.6	96.7	92.2	0.0		96.1	86.5	96.4	33.3	0.0		95.6	75.0	85.7	92.1	0.0		89.3	90.7	90.9	86.2	0.0		88.4	95.4
Heavy trucks	8	43	4	0		55	12	44	2	0		58	1	2	3	0		6	4	1	8	0		13	132
%Heavy trucks	17.4	3.3	7.8	0.0		3.9	13.5	3.6	66.7	0.0		4.4	25.0	14.3	7.9	0.0		10.7	9.3	9.1	13.8	0.0		11.6	4.6

Location: US 9/Saratoga Rd & S Rd/Old West Rd
City: Gansevoort

Day: Tuesday
Date: 11/18/2025

	US 9/Saratoga Rd Northbound						US 9/Saratoga Rd Southbound						S Rd/Old West Rd Eastbound						S Rd/Old West Rd Westbound						
Start Time	Left	Thru	Rgt	Uturn	App. Total		Left	Thru	Rgt	Uturn	App. Total		Left	Thru	Rgt	Uturn	App. Total		Left	Thru	Rgt	Uturn	App. Total	Int. Total	
Peak Hour Analysis from 07:00 AM - 09:00 AM																									
Peak Hour for Entire Intersection Begins at 12:00 AM																									
12:00 AM	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0
12:15 AM	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0
12:30 AM	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0
12:45 AM	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0
Total Volume	0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0	0	0	0	0		0
% App. Total	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
PHF	0.860						0.899						0.625						0.692					0.872	
Cars, PU, Vans	-2	-21	-2	0	-25		-3	-20	0	0	-23		0	-1	0	0	-1		0	0	-4	0	0		-4
% Cars, PU, Vans	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0
Heavy trucks	2	21	2	0	25		3	20	0	0	23		0	1	0	0	1		0	0	4	0	0		4
%Heavy trucks	0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0	0.0	0.0	0.0	0.0		0.0

[illegible]

Day: Tuesday
Date: 11/18/2025

	US 9/Saratoga Rd Northbound						US 9/Saratoga Rd Southbound						Dukes Way Eastbound						Dukes Way Westbound							
Start Time	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Left	Thru	Rgt	Uturn	Peds	App. Total	Int. Total	
7:00 AM	0	72	0	0	0	72	1	78	0	0	0	79	0	0	0	0	0	0	0	0	0	4	0	0	4	155
7:15 AM	0	103	1	0	0	104	6	88	0	0	0	94	0	0	0	0	0	0	0	0	0	1	0	0	1	199
7:30 AM	0	112	1	0	0	113	1	92	0	0	0	93	0	0	0	0	0	0	0	0	0	0	0	0	0	206
7:45 AM	0	77	5	0	0	82	3	73	0	0	0	76	0	0	0	0	0	0	0	0	0	0	0	0	0	158
Total	0	364	7	0	0	371	11	331	0	0	0	342	0	0	0	0	0	0	0	0	0	5	0	0	5	718
8:00 AM	0	63	2	0	0	65	2	67	0	0	0	69	0	0	0	0	0	0	0	0	0	0	0	0	0	134
8:15 AM	0	63	0	0	0	63	2	76	0	0	0	78	0	0	0	0	0	0	0	1	0	0	0	0	1	142
8:30 AM	0	54	1	0	0	55	0	60	0	0	0	60	0	0	0	0	0	0	0	0	0	0	0	0	0	115
8:45 AM	0	77	1	0	0	78	3	71	0	0	0	74	0	0	0	0	0	0	0	0	0	0	0	0	0	152
Total	0	257	4	0	0	261	7	274	0	0	0	281	0	0	0	0	0	0	0	1	0	0	0	0	1	543

Project ID: 25-380091-004
Location: US 9/Saratoga Rd & Dukes Way
City: Gansevoort

Day: Tuesday
Date: 11/18/2025

	US 9/Saratoga Rd Northbound						US 9/Saratoga Rd Southbound						Dukes Way Eastbound						Dukes Way Westbound					
Start Time	Left	Thru	Rgt	Uturn	App. Total		Left	Thru	Rgt	Uturn	App. Total		Left	Thru	Rgt	Uturn	App. Total		Left	Thru	Rgt	Uturn	App. Total	Int. Total

Peak Hour for Entire Intersection Begins at 12:00 AM

[illegible]

	US 9/Saratoga Rd Northbound					US 9/Saratoga Rd Southbound					Dukes Way Eastbound					Dukes Way Westbound					
Start Time	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Left	Thru	Rgt	Uturn	App. Total	Int. Total

Peak Hour for Entire Intersection Begins at 12:00 AM

[illegible]

APPENDIX C

MISCELLANEOUS CALCULATIONS

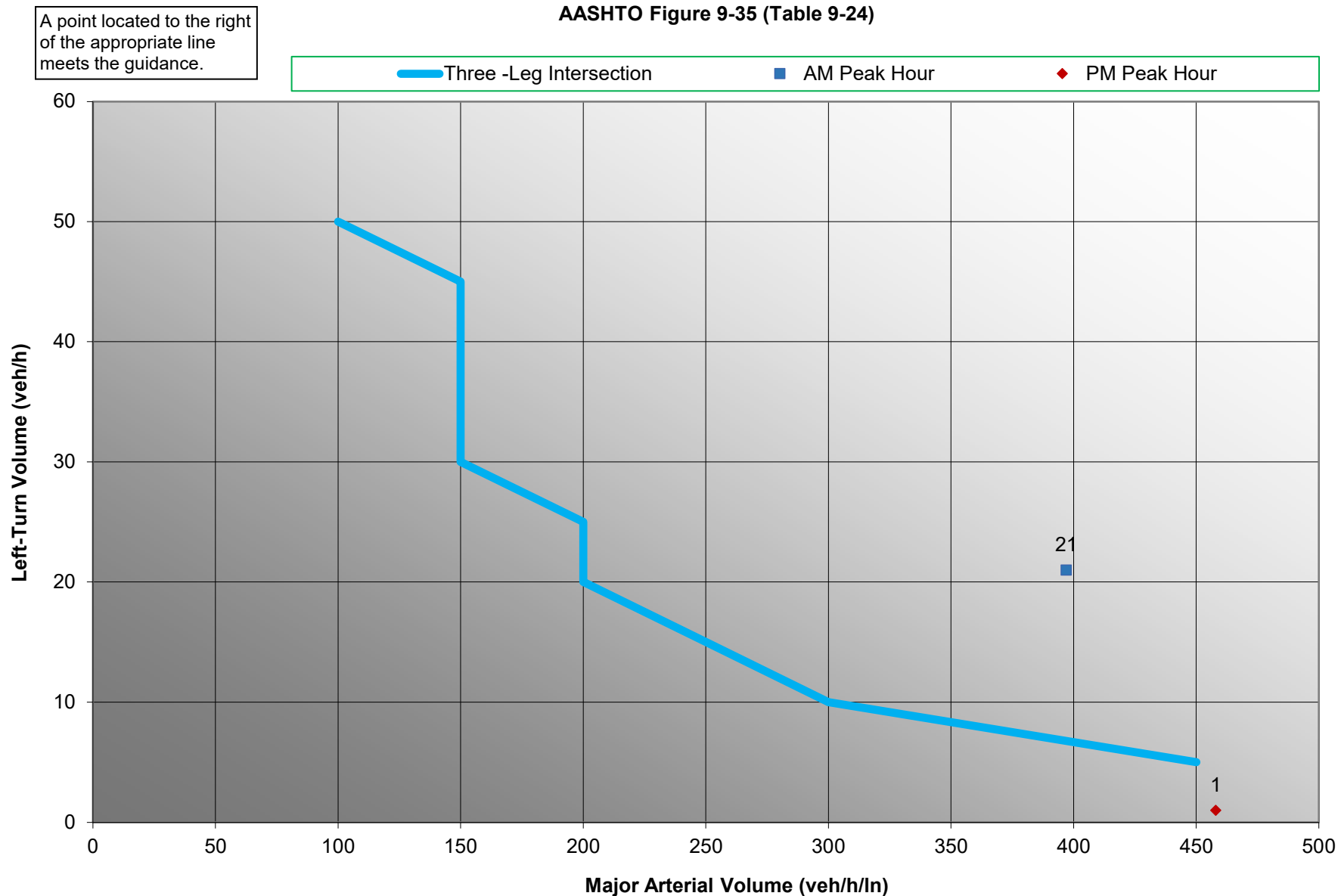
2260205; Casella Maintenance Facility
Volume Development
Date: 11/18/2025

Intersection		HV	HV	PEDS	RAW TMC Data	Balance Adjustments	Balanced Volumes	Growth	Other Developments			No-Build	Primary Trips - trucks						Total	Primary Trips - priv veh						Pass-By			Total Trip Generation	Build
								1.5% 2030					Trip Distribution		Trip Assignment			Trip Distribution		Trip Assignment		Total	Trip Distribution		Trip Assignment					
								2025	Enter	Exit	For Fig Inputs		Enter	Exit	Enter	Exit	Enter	Exit		For Fig Inputs	Enter		Exit							
								108%	2030					0	2		15	0												
1 - US Route 9/I-87 NB Ramp (7:00AM-8:00AM)		PHF	0.91									2030																2030		
I-87 NB Ramp, WB	L	38%	3	0	8		8	9			0	9	20%		20%	0	0	0	20%		20%	3	0	3			0	3	12	
	R	17%	51		292		292	315			0	315				0	0	0				0	0	0			0	0	315	
US Route 9, NB	T	5%	14	0	311		311	335			0	335		30%	(30%)	0	1	1		30%	(30%)	0	0	0			0	1	337	
	R	6%	12		212		212	228			0	228		20%	(20%)	0	0	0		20%	(20%)	0	0	0			0	0	228	
US Route 9, SB	L	5%	12	0	223		223	240			0	240				0	0	0				0	0	0			0	0	240	
	T	6%	47		842		842	907			0	907	30%		30%	0	0	0	30%		30%	5	0	4			0	4	911	
2 - US Route 9/I-87 SB Ramp (7:00AM-8:00AM)		PHF	0.92																											
I-87 SB Ramp, EB	L	4%	4	0	109	1	110	119			0	119				0	0	0				0	0	0			0	0	119	
	R	3%	4		128		128	138			0	138	10%		10%	0	0	0	10%		10%	2	0	2			0	2	140	
US Route 9, NB	L	5%	1	0	20		20	22			0	22		10%	(10%)	0	0	0		10%	(10%)	0	0	0			0	0	22	
	T	6%	23		409	4	413	445			0	445		50%	(50%)	0	1	1		50%	(50%)	0	0	0			0	1	446	
US Route 9, SB	T	8%	19	0	232	1	233	251			0	251	50%		50%	0	0	0	50%		50%	8	0	7			0	7	258	
	R	5%	31		615	2	617	665			0	665				0	0	0				0	0	0			0	0	665	
3 - US Route 9/Dukes Way (7:00AM-8:00AM)		PHF	0.87																											
Dukes Way, WB	L	#DIV/0!	0	0	0		0	0			0	0				0	0	0		40%	(40%)	0	0	0			0	0	0	
	R	20%	1		5		5	5			0	5				0	0	0		60%	(60%)	0	0	0			0	0	5	
US Route 9, NB	T	7%	25	0	364	8	372	401			0	401		60%	(60%)	0	1	1				0	0	0			0	1	402	
	R	0%	0		7		7	8			0	8				0	0	0	40%		40%	6	0	6			0	6	14	
US Route 9, SB	L	0%	0	0	11		11	12			0	12				0	0	0	60%		60%	9	0	9			0	9	21	
	T	7%	23		331		331	357			0	357	60%		60%	0	0	0				0	0	0			0	0	357	
4 - US Route 9/Proposed Driveway (Peak Hour)		PHF	0.92																											
Proposed Driveway, WB	L	#DIV/0!					0	0			0	0		40%	(40%)	0	1	1				0	0	0			0	0	1	
	R	#DIV/0!					0	0			0	0		60%	(60%)	0	1	1				0	0	0			0	1	1	
US Route 9, NB	T	7%	25		364	8	372	401			0	401				0	0	0	40%		40%	6	0	6			0	6	414	
	R	#DIV/0!					0	0			0	0	40%		40%	0	0	0				0	0	0			0	0	0	
US Route 9, SB	L	#DIV/0!					0	0			0	0	60%		60%	0	0	0				0	0	0			0	0	0	
	T	7%	23		331		331	357			0	357				0	0	0		40%	(40%)	0	0	0			0	0	357	
5 - US Route 9/South Road/Old West Road (7:00AM-8:00AM)		PHF	0.87																											
South Rd, EB	L	0%	0	0	3		3	3			0	3				0	0	0				0	0	0			0	0	3	
	T	17%	1		6		6	6			0	6				0	0	0				0	0	0			0	0	6	
Old West Rd, WB	R	0%	0	0	6		6	6			0	6				0	0	0				0	0	0			0	0	6	
	L	0%	0		14		14	15			0	15				0	0	0				0	0	0			0	0	15	
	T	0%	0	0	2		2	2			0	2				0	0	0				0	0	0			0	0	2	
	R	20%	4		20		20	22			0	22	15%		15%	0	0	0	15%		15%	2	0	2			0	2	24	
US Route 9, NB	L	50%	2	0	4		4	4			0	4				0	0	0				0	0	0			0	0	4	
	T	6%	21		356		356	384			0	384	25%		25%	0	0	0	25%		25%	4	0	4			0	4	391	
	R	25%	2	0	8		8	9			0	9				0	0	0				0	0	0			0	0	9	
	L	25%	3		12		12	13			0	13		15%	(15%)	0	0	0		15%	(15%)	0	0	0			0	0	13	
US Route 9, SB	T	6%	20	0	319		319	344			0	344		25%	(25%)	0	1	1		25%	(25%)	0	0	0			0	1	345	
	R	#DIV/0!	0		0		0	0			0	0				0	0	0				0	0	0			0	0	0	

2260205; Casella Maintenance Facility
Volume Development
Date: 11/18/2025

Intersection		HV	HV	PEDS	RAW TMC Data	Balance Adjustments	Balanced Volumes	Growth	Other Developments			No-Build	Primary Trips - trucks					Total	Primary Trips - priv veh					Pass-By			Total Trip Generation	Build	
								1.5%					Trip Distribution		Trip Assignment		Trip Distribution		Trip Assignment		Total	Distribution	For Fig Inputs	Assignment					
								2030	Enter	Exit	For Fig Inputs		Enter 2	Exit 0	Enter	Exit	For Fig Inputs		Enter	Exit									
								2025	108%	2030	2		0	0	0	0	0		0	0					0	0			0
1 - US Route 9/I-87 NB Ramp (4:00PM-5:00PM)		PHF	0.99																										
I-87 NB Ramp, WB	L	0%	0	0	8		8	9			0	9	20%		20%	0	0	0	20%		20%	0	0	0			0	9	
	R	5%	29		611		611	658			0	658				0	0	0				0	0	0			0	658	
	T	3%	13		439		439	473			0	473		30%	(30%)	0	0	0		30%	(30%)	0	5	4			0	4	478
US Route 9, NB	R	1%	1	0	187		187	201			0	201		20%	(20%)	0	0	0		20%	(20%)	0	3	3			0	3	204
	L	3%	6		206		206	222			0	222				0	0	0				0	0	0			0	0	222
	T	7%	45		601		601	647			0	647	30%		30%	1	0	1	30%		30%	0	0	0			0	1	648
2 - US Route 9/I-87 SB Ramp (4:00PM-5:00PM)		PHF	0.94																										
I-87 SB Ramp, EB	L	3%	6	0	178		178	192			0	192				0	0	0				0	0	0			0	0	192
	R	2%	5		221		221	238			0	238	10%		10%	0	0	0	10%		10%	0	0	0			0	0	238
	L	0%	0		10		10	11			0	11		10%	(10%)	0	0	0		10%	(10%)	0	2	2			0	2	13
US Route 9, SB	T	2%	8	0	446		448	483			0	483		50%	(50%)	0	0	0		50%	(50%)	0	8	7			0	7	490
	T	16%	40		249	3	252	271			0	271	50%		50%	1	0	1	50%		50%	0	0	0			0	1	272
	R	1%	5		352	5	357	385			0	385				0	0	0				0	0	0			0	0	385
3 - US Route 9/Dukes Way (4:15PM-5:15PM)		PHF	0.95																										
Dukes Way, WB	L	0%	0	0	10		10	11			0	11				0	0	0		40%	(40%)	0	6	6			0	6	17
	R	0%	0		22		22	24			0	24				0	0	0		60%	(60%)	0	9	9			0	9	33
	T	1%	5		393	27	420	452			0	452		60%	(60%)	0	0	0				0	0	0			0	0	453
US Route 9, NB	R	0%	0	0	1		1	1			0	1				0	0	0	40%		40%	0	0	0			0	0	1
	L	0%	0		1		1	1			0	1				0	0	0	60%		60%	0	0	0			0	0	1
	T	2%	9		428		428	461			0	461	60%		60%	1	0	1				0	0	0			0	1	462
4 - US Route 9/Proposed Driveway (Peak Hour)		PHF	0.92																										
Proposed Driveway, WB	L	#DIV/0!					0	0			0	0		40%	(40%)	0	0	0				0	0	0			0	0	0
	R	#DIV/0!					0	0			0	0		60%	(60%)	0	0	0				0	0	0			0	0	0
	T	1%	5		393	27	420	452			0	452				0	0	0	40%		40%	0	0	0			0	0	454
US Route 9, NB	R	#DIV/0!					0	0			0	0	40%		40%	1	0	1				0	0	0			0	1	1
	L	#DIV/0!					0	0			0	0	60%		60%	1	0	1				0	0	0			0	1	1
	T	2%	9		428		428	461			0	461				0	0	0		40%	(40%)	0	6	6			0	6	478
5 - US Route 9/South Road/Old West Road (7:00AM-8:00AM)		PHF	0.93																										
South Rd, EB	L	#DIV/0!	0	0	0		0	0			0	0				0	0	0				0	0	0			0	0	0
	T	0%	0		6		6	6			0	6				0	0	0				0	0	0			0	0	6
	R	10%	1		10		10	11			0	11				0	0	0				0	0	0			0	0	11
Old West Rd, WB	L	0%	0	0	8		8	9			0	9				0	0	0				0	0	0			0	0	9
	T	0%	0		6		6	6			0	6				0	0	0				0	0	0			0	0	6
	R	8%	1		13		13	14			0	14	15%		15%	0	0	0	15%		15%	0	0	0			0	0	14
US Route 9, NB	L	20%	4	0	20		20	22			0	22				0	0	0				0	0	0			0	0	22
	T	1%	5		408		408	440			0	440	25%		25%	1	0	1	25%		25%	0	0	0			0	1	441
	R	0%	0		19		19	20			0	20				0	0	0				0	0	0			0	0	20
US Route 9, SB	L	5%	2	0	39	2	41	44			0	44		15%	(15%)	0	0	0		15%	(15%)	0	2	2			0	2	46
	T	2%	8		379	18	397	428			0	428		25%	(25%)	0	0	0		25%	(25%)	0	4	4			0	4	432
	R	#DIV/0!	0		0		0	0			0	0				0	0	0				0	0	0			0	0	0

Suggested Left-Turn Lane Warrants Based on Results from Benefit-Cost Evaluations for Intersections on Arterials in Urban Areas **AASHTO Figure 9-35 (Table 9-24)**



Source: *A Policy on Geometric Design of Highways and Streets, 2011, Table 9-23*

B:\GLOBAL\Projects\Casella Waste Systems\2260205 - US 9 Maint. Facility Traffic Impact Study\05_Design\Transpo\LTL Warrant\20251211-AASHTO LTL Guidance (2018)

APPENDIX D

INTERSECTION OPERATIONS: EXISTING CONDITIONS

Intersection						
Int Delay, s/veh	3.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↱		↱	↱	↱	↱
Traffic Vol, veh/h	8	292	311	212	223	842
Future Vol, veh/h	8	292	311	212	223	842
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	0	-	-	300	170	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	38	17	5	6	5	6
Mvmt Flow	9	321	342	233	245	925
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1757	342	0	0	575	0
Stage 1	342	-	-	-	-	-
Stage 2	1415	-	-	-	-	-
Critical Hdwy	6.78	6.37	-	-	4.15	-
Critical Hdwy Stg 1	5.78	-	-	-	-	-
Critical Hdwy Stg 2	5.78	-	-	-	-	-
Follow-up Hdwy	3.842	3.453	-	-	2.245	-
Pot Cap-1 Maneuver	76	668	-	-	984	-
Stage 1	646	-	-	-	-	-
Stage 2	187	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	57	668	-	-	984	-
Mov Cap-2 Maneuver	57	-	-	-	-	-
Stage 1	646	-	-	-	-	-
Stage 2	141	-	-	-	-	-
Approach	WB	NB		SB		
HCM Ctrl Dly, s/v	15	0		2.07		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	686	984	-	
HCM Lane V/C Ratio	-	-	0.48	0.249	-	
HCM Ctrl Dly (s/v)	-	-	15	9.9	-	
HCM Lane LOS	-	-	C	A	-	
HCM 95th %tile Q(veh)	-	-	2.6	1	-	

HCM 7th Signalized Intersection Summary
2: US Route 9 & I-87 SB Ramp

2260205; Casella Maintenance Facility
2025 Existing AM

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	110	128	20	413	233	617
Future Volume (veh/h)	110	128	20	413	233	617
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.04	1.04	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1914	1930	1826	1811	1781	1826
Adj Flow Rate, veh/h	120	139	22	449	253	671
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	3	5	6	8	5
Cap, veh/h	223	243	430	1153	873	948
Arrive On Green	0.12	0.12	0.03	0.64	0.49	0.49
Sat Flow, veh/h	1823	1635	1739	1811	1781	1547
Grp Volume(v), veh/h	120	139	22	449	253	671
Grp Sat Flow(s),veh/h/ln	1823	1635	1739	1811	1781	1547
Q Serve(g_s), s	3.1	3.9	0.3	6.0	4.2	14.8
Cycle Q Clear(g_c), s	3.1	3.9	0.3	6.0	4.2	14.8
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	223	243	430	1153	873	948
V/C Ratio(X)	0.54	0.57	0.05	0.39	0.29	0.71
Avail Cap(c_a), veh/h	512	503	698	1781	1216	1245
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	20.5	19.7	5.4	4.4	7.6	6.6
Incr Delay (d2), s/veh	0.7	0.8	0.0	0.2	0.2	1.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.2	0.1	0.0	0.7	0.9	3.9
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	21.3	20.5	5.4	4.6	7.7	7.9
LnGrp LOS	C	C	A	A	A	A
Approach Vol, veh/h	259			471	924	
Approach Delay, s/veh	20.9			4.6	7.8	
Approach LOS	C			A	A	
Timer - Assigned Phs	2			4	5	6
Phs Duration (G+Y+Rc), s	37.7			12.1	7.3	30.4
Change Period (Y+Rc), s	6.0			6.0	6.0	6.0
Max Green Setting (Gmax), s	49.0			14.0	9.0	34.0
Max Q Clear Time (g_c+l1), s	8.0			5.9	2.3	16.8
Green Ext Time (p_c), s	4.1			0.3	0.0	7.6
Intersection Summary						
HCM 7th Control Delay, s/veh			9.0			
HCM 7th LOS			A			
Notes						
User approved pedestrian interval to be less than phase max green.						

Intersection						
Int Delay, s/veh	0.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	5	372	7	11	331
Future Vol, veh/h	0	5	372	7	11	331
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	20	7	0	0	7
Mvmt Flow	0	6	428	8	13	380
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	837	432	0	0	436	0
Stage 1	432	-	-	-	-	-
Stage 2	406	-	-	-	-	-
Critical Hdwy	6.4	6.4	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.48	-	-	2.2	-
Pot Cap-1 Maneuver	339	587	-	-	1135	-
Stage 1	659	-	-	-	-	-
Stage 2	677	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	335	587	-	-	1135	-
Mov Cap-2 Maneuver	335	-	-	-	-	-
Stage 1	659	-	-	-	-	-
Stage 2	668	-	-	-	-	-
Approach	WB	NB		SB		
HCM Ctrl Dly, s/v	11.19	0		0.26		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	-	587	58	-	
HCM Lane V/C Ratio	-	-	0.01	0.011	-	
HCM Ctrl Dly (s/v)	-	-	11.2	8.2	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	0	0	-	

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	3	6	6	14	2	20	4	356	8	12	319	0
Future Vol, veh/h	3	6	6	14	2	20	4	356	8	12	319	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	0	17	0	0	0	20	50	6	25	25	6	0
Mvmt Flow	3	7	7	16	2	23	5	409	9	14	367	0
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	814	822	367	821	817	414	367	0	0	418	0	0
Stage 1	394	394	-	423	423	-	-	-	-	-	-	-
Stage 2	420	428	-	398	394	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.67	6.2	7.1	6.5	6.4	4.6	-	-	4.35	-	-
Critical Hdwy Stg 1	6.1	5.67	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.67	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.153	3.3	3.5	4	3.48	2.65	-	-	2.425	-	-
Pot Cap-1 Maneuver	299	293	683	296	313	601	970	-	-	1028	-	-
Stage 1	635	580	-	613	591	-	-	-	-	-	-	-
Stage 2	615	560	-	632	609	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	279	286	683	279	306	601	970	-	-	1028	-	-
Mov Cap-2 Maneuver	279	286	-	279	306	-	-	-	-	-	-	-
Stage 1	624	570	-	609	587	-	-	-	-	-	-	-
Stage 2	586	557	-	608	598	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Ctrl Dly, s/v	15.2		15.02		0.09		0.31					
HCM LOS	C		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1WBLn1	SBL	SBT	SBR					
Capacity (veh/h)	19	-	-	370	400	65	-	-				
HCM Lane V/C Ratio	0.005	-	-	0.047	0.103	0.013	-	-				
HCM Ctrl Dly (s/v)	8.7	0	-	15.2	15	8.6	0	-				
HCM Lane LOS	A	A	-	C	C	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0.3	0	-	-				

Intersection						
Int Delay, s/veh	20.9					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	8	611	439	187	206	601
Future Vol, veh/h	8	611	439	187	206	601
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	0	-	-	300	170	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	0	5	3	1	3	7
Mvmt Flow	8	617	443	189	208	607

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1467	443	0	0	632	0
Stage 1	443	-	-	-	-	-
Stage 2	1023	-	-	-	-	-
Critical Hdwy	6.4	6.25	-	-	4.13	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.345	-	-	2.227	-
Pot Cap-1 Maneuver	142	~ 608	-	-	946	-
Stage 1	651	-	-	-	-	-
Stage 2	350	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	111	~ 608	-	-	946	-
Mov Cap-2 Maneuver	111	-	-	-	-	-
Stage 1	651	-	-	-	-	-
Stage 2	273	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	65.98	0	2.52
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	616	946
HCM Lane V/C Ratio	-	-	1.015	0.22
HCM Ctrl Dly (s/v)	-	-	66	9.9
HCM Lane LOS	-	-	F	A
HCM 95th %tile Q(veh)	-	-	15.9	0.8

Notes	
~: Volume exceeds capacity	\$. Delay exceeds 300s
+: Computation Not Defined	*: All major volume in platoon

HCM 7th Signalized Intersection Summary
2: US Route 9 & I-87 SB Ramp

2260205; Casella Maintenance Facility
2025 Existing PM

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	178	221	10	448	252	357
Future Volume (veh/h)	178	221	10	448	252	357
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.04	1.04	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1930	1945	1900	1870	1663	1885
Adj Flow Rate, veh/h	189	235	11	477	268	380
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	2	0	2	16	1
Cap, veh/h	353	340	388	971	600	883
Arrive On Green	0.19	0.19	0.01	0.52	0.36	0.36
Sat Flow, veh/h	1838	1648	1810	1870	1663	1598
Grp Volume(v), veh/h	189	235	11	477	268	380
Grp Sat Flow(s),veh/h/ln	1838	1648	1810	1870	1663	1598
Q Serve(g_s), s	3.9	5.5	0.1	6.8	5.1	5.8
Cycle Q Clear(g_c), s	3.9	5.5	0.1	6.8	5.1	5.8
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	353	340	388	971	600	883
V/C Ratio(X)	0.54	0.69	0.03	0.49	0.45	0.43
Avail Cap(c_a), veh/h	619	579	754	2204	1360	1613
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.1	15.3	7.6	6.4	10.1	5.5
Incr Delay (d2), s/veh	0.5	0.9	0.0	0.4	0.5	0.3
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	5.0	0.0	1.1	1.2	1.8
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	15.6	16.2	7.6	6.8	10.7	5.8
LnGrp LOS	B	B	A	A	B	A
Approach Vol, veh/h	424			488	648	
Approach Delay, s/veh	15.9			6.8	7.8	
Approach LOS	B			A	A	
Timer - Assigned Phs	2			4	5	6
Phs Duration (G+Y+Rc), s	27.6			14.0	6.6	21.0
Change Period (Y+Rc), s	6.0			6.0	6.0	6.0
Max Green Setting (Gmax), s	49.0			14.0	9.0	34.0
Max Q Clear Time (g_c+l1), s	8.8			7.5	2.1	7.8
Green Ext Time (p_c), s	4.4			0.6	0.0	5.7
Intersection Summary						
HCM 7th Control Delay, s/veh			9.7			
HCM 7th LOS			A			
Notes						
User approved pedestrian interval to be less than phase max green.						

Intersection						
Int Delay, s/veh	0.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	10	22	420	1	1	428
Future Vol, veh/h	10	22	420	1	1	428
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	1	0	0	2
Mvmt Flow	11	23	442	1	1	451
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	895	443	0	0	443	0
Stage 1	443	-	-	-	-	-
Stage 2	453	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	314	619	-	-	1128	-
Stage 1	652	-	-	-	-	-
Stage 2	645	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	313	619	-	-	1128	-
Mov Cap-2 Maneuver	313	-	-	-	-	-
Stage 1	652	-	-	-	-	-
Stage 2	644	-	-	-	-	-
Approach	WB	NB		SB		
HCM Ctrl Dly, s/v	13.17	0		0.02		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	474	4	-	
HCM Lane V/C Ratio	-	-	0.071	0.001	-	
HCM Ctrl Dly (s/v)	-	-	13.2	8.2	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	0.2	0	-	

Intersection												
Int Delay, s/veh	1.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	6	10	8	6	13	20	408	19	41	397	0
Future Vol, veh/h	0	6	10	8	6	13	20	408	19	41	397	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	10	0	0	8	20	1	0	5	2	0
Mvmt Flow	0	6	11	9	6	14	22	439	20	44	427	0
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1000	1017	427	1010	1007	449	427	0	0	459	0	0
Stage 1	515	515	-	492	492	-	-	-	-	-	-	-
Stage 2	485	502	-	518	515	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.3	7.1	6.5	6.28	4.3	-	-	4.15	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.39	3.5	4	3.372	2.38	-	-	2.245	-	-
Pot Cap-1 Maneuver	224	239	611	220	243	598	1043	-	-	1086	-	-
Stage 1	546	538	-	562	551	-	-	-	-	-	-	-
Stage 2	567	545	-	544	538	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	196	220	611	194	223	598	1043	-	-	1086	-	-
Mov Cap-2 Maneuver	196	220	-	194	223	-	-	-	-	-	-	-
Stage 1	517	509	-	547	536	-	-	-	-	-	-	-
Stage 2	532	530	-	500	509	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Ctrl Dly, s/v	15.29		18.26		0.38		0.79					
HCM LOS	C		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	80	-	-	367	300	168	-	-				
HCM Lane V/C Ratio	0.021	-	-	0.047	0.097	0.041	-	-				
HCM Ctrl Dly (s/v)	8.5	0	-	15.3	18.3	8.5	0	-				
HCM Lane LOS	A	A	-	C	C	A	A	-				
HCM 95th %tile Q(veh)	0.1	-	-	0.1	0.3	0.1	-	-				

APPENDIX E

INTERSECTION OPERATIONS: NO-BUILD CONDITIONS

Intersection						
Int Delay, s/veh	3.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	9	315	335	228	240	907
Future Vol, veh/h	9	315	335	228	240	907
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	0	-	-	300	170	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	38	17	5	6	5	6
Mvmt Flow	10	346	368	251	264	997
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1892	368	0	0	619	0
Stage 1	368	-	-	-	-	-
Stage 2	1524	-	-	-	-	-
Critical Hdwy	6.78	6.37	-	-	4.15	-
Critical Hdwy Stg 1	5.78	-	-	-	-	-
Critical Hdwy Stg 2	5.78	-	-	-	-	-
Follow-up Hdwy	3.842	3.453	-	-	2.245	-
Pot Cap-1 Maneuver	62	645	-	-	947	-
Stage 1	627	-	-	-	-	-
Stage 2	164	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	45	645	-	-	947	-
Mov Cap-2 Maneuver	45	-	-	-	-	-
Stage 1	627	-	-	-	-	-
Stage 2	118	-	-	-	-	-
Approach	WB	NB		SB		
HCM Ctrl Dly, s/v	16.53	0		2.15		
HCM LOS	C					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	664	947	-	
HCM Lane V/C Ratio	-	-	0.537	0.278	-	
HCM Ctrl Dly (s/v)	-	-	16.5	10.3	-	
HCM Lane LOS	-	-	C	B	-	
HCM 95th %tile Q(veh)	-	-	3.2	1.1	-	

HCM 7th Signalized Intersection Summary 2: US Route 9 & I-87 SB Ramp

2260205; Casella Maintenance Facility
2030 No Build AM

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	119	138	22	445	251	665
Future Volume (veh/h)	119	138	22	445	251	665
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.04	1.04	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1914	1930	1826	1811	1781	1826
Adj Flow Rate, veh/h	129	150	24	484	273	723
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	3	5	6	8	5
Cap, veh/h	233	255	414	1169	898	978
Arrive On Green	0.13	0.13	0.03	0.65	0.50	0.50
Sat Flow, veh/h	1823	1635	1739	1811	1781	1547
Grp Volume(v), veh/h	129	150	24	484	273	723
Grp Sat Flow(s),veh/h/ln	1823	1635	1739	1811	1781	1547
Q Serve(g_s), s	3.5	4.5	0.3	6.8	4.7	17.1
Cycle Q Clear(g_c), s	3.5	4.5	0.3	6.8	4.7	17.1
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	233	255	414	1169	898	978
V/C Ratio(X)	0.55	0.59	0.06	0.41	0.30	0.74
Avail Cap(c_a), veh/h	482	478	661	1677	1144	1191
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.7	20.8	5.4	4.5	7.7	6.7
Incr Delay (d2), s/veh	0.8	0.8	0.0	0.2	0.2	2.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	0.1	0.1	0.9	1.1	5.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	22.4	21.6	5.4	4.8	7.9	8.7
LnGrp LOS	C	C	A	A	A	A
Approach Vol, veh/h	279			508	996	
Approach Delay, s/veh	22.0			4.8	8.5	
Approach LOS	C			A	A	
Timer - Assigned Phs	2			4	5	6
Phs Duration (G+Y+Rc), s	40.2			12.8	7.5	32.7
Change Period (Y+Rc), s	6.0			6.0	6.0	6.0
Max Green Setting (Gmax), s	49.0			14.0	9.0	34.0
Max Q Clear Time (g_c+I1), s	8.8			6.5	2.3	19.1
Green Ext Time (p_c), s	4.5			0.4	0.0	7.6
Intersection Summary						
HCM 7th Control Delay, s/veh			9.5			
HCM 7th LOS			A			
Notes						
User approved pedestrian interval to be less than phase max green.						

Intersection						
Int Delay, s/veh	0.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	5	401	8	12	357
Future Vol, veh/h	0	5	401	8	12	357
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	20	7	0	0	7
Mvmt Flow	0	6	461	9	14	410
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	903	466	0	0	470	0
Stage 1	466	-	-	-	-	-
Stage 2	438	-	-	-	-	-
Critical Hdwy	6.4	6.4	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.48	-	-	2.2	-
Pot Cap-1 Maneuver	310	562	-	-	1102	-
Stage 1	636	-	-	-	-	-
Stage 2	655	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	305	562	-	-	1102	-
Mov Cap-2 Maneuver	305	-	-	-	-	-
Stage 1	636	-	-	-	-	-
Stage 2	644	-	-	-	-	-
Approach	WB	NB		SB		
HCM Ctrl Dly, s/v	11.48	0		0.27		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	562	59	-	
HCM Lane V/C Ratio	-	-	0.01	0.013	-	
HCM Ctrl Dly (s/v)	-	-	11.5	8.3	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	0	0	-	

Intersection												
Int Delay, s/veh	1.3											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	3	6	6	15	2	22	4	384	9	13	344	0
Future Vol, veh/h	3	6	6	15	2	22	4	384	9	13	344	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	0	17	0	0	0	20	50	6	25	25	6	0
Mvmt Flow	3	7	7	17	2	25	5	441	10	15	395	0
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	877	886	395	884	881	447	395	0	0	452	0	0
Stage 1	425	425	-	456	456	-	-	-	-	-	-	-
Stage 2	452	461	-	429	425	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.67	6.2	7.1	6.5	6.4	4.6	-	-	4.35	-	-
Critical Hdwy Stg 1	6.1	5.67	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.67	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.153	3.3	3.5	4	3.48	2.65	-	-	2.425	-	-
Pot Cap-1 Maneuver	271	268	658	268	288	576	945	-	-	998	-	-
Stage 1	611	561	-	588	572	-	-	-	-	-	-	-
Stage 2	591	541	-	608	590	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	251	261	658	252	280	576	945	-	-	998	-	-
Mov Cap-2 Maneuver	251	261	-	252	280	-	-	-	-	-	-	-
Stage 1	599	551	-	584	568	-	-	-	-	-	-	-
Stage 2	559	537	-	583	578	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Ctrl Dly, s/v	16.14		16.01		0.09		0.32					
HCM LOS	C		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	18	-	-	340	372	66	-	-				
HCM Lane V/C Ratio	0.005	-	-	0.051	0.121	0.015	-	-				
HCM Ctrl Dly (s/v)	8.8	0	-	16.1	16	8.7	0	-				
HCM Lane LOS	A	A	-	C	C	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.2	0.4	0	-	-				

Intersection						
Int Delay, s/veh	33.6					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↱		↱	↱	↱	↱
Traffic Vol, veh/h	9	658	473	201	222	647
Future Vol, veh/h	9	658	473	201	222	647
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	Yield	-	None	-	None
Storage Length	0	-	-	300	170	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	0	5	3	1	3	7
Mvmt Flow	9	665	478	203	224	654

Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	1580	478	0	0	681	0
Stage 1	478	-	-	-	-	-
Stage 2	1102	-	-	-	-	-
Critical Hdwy	6.4	6.25	-	-	4.13	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.345	-	-	2.227	-
Pot Cap-1 Maneuver	121	~ 581	-	-	907	-
Stage 1	628	-	-	-	-	-
Stage 2	321	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	91	~ 581	-	-	907	-
Mov Cap-2 Maneuver	91	-	-	-	-	-
Stage 1	628	-	-	-	-	-
Stage 2	242	-	-	-	-	-

Approach	WB	NB	SB
HCM Ctrl Dly, s/v	107.95	0	2.62
HCM LOS	F		

Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT
Capacity (veh/h)	-	-	589	907
HCM Lane V/C Ratio	-	-	1.143	0.247
HCM Ctrl Dly (s/v)	-	-	107.9	10.3
HCM Lane LOS	-	-	F	B
HCM 95th %tile Q(veh)	-	-	22	1

Notes	
~: Volume exceeds capacity	\$. Delay exceeds 300s
+: Computation Not Defined	*: All major volume in platoon

HCM 7th Signalized Intersection Summary
2: US Route 9 & I-87 SB Ramp

2260205; Casella Maintenance Facility
2030 No Build PM

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	192	238	11	483	271	385
Future Volume (veh/h)	192	238	11	483	271	385
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.04	1.04	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1930	1945	1900	1870	1663	1885
Adj Flow Rate, veh/h	204	253	12	514	288	410
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	2	0	2	16	1
Cap, veh/h	372	359	366	960	591	891
Arrive On Green	0.20	0.20	0.02	0.51	0.36	0.36
Sat Flow, veh/h	1838	1648	1810	1870	1663	1598
Grp Volume(v), veh/h	204	253	12	514	288	410
Grp Sat Flow(s),veh/h/ln	1838	1648	1810	1870	1663	1598
Q Serve(g_s), s	4.2	6.0	0.2	7.8	5.7	6.4
Cycle Q Clear(g_c), s	4.2	6.0	0.2	7.8	5.7	6.4
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	372	359	366	960	591	891
V/C Ratio(X)	0.55	0.70	0.03	0.54	0.49	0.46
Avail Cap(c_a), veh/h	610	573	724	2172	1340	1611
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.1	15.2	7.9	6.9	10.6	5.5
Incr Delay (d2), s/veh	0.5	1.0	0.0	0.5	0.6	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	5.4	0.0	1.3	1.3	2.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	15.6	16.2	7.9	7.4	11.2	5.9
LnGrp LOS	B	B	A	A	B	A
Approach Vol, veh/h	457			526	698	
Approach Delay, s/veh	15.9			7.4	8.1	
Approach LOS	B			A	A	
Timer - Assigned Phs	2			4	5	6
Phs Duration (G+Y+Rc), s	27.7			14.5	6.7	21.0
Change Period (Y+Rc), s	6.0			6.0	6.0	6.0
Max Green Setting (Gmax), s	49.0			14.0	9.0	34.0
Max Q Clear Time (g_c+l1), s	9.8			8.0	2.2	8.4
Green Ext Time (p_c), s	4.8			0.6	0.0	6.2
Intersection Summary						
HCM 7th Control Delay, s/veh			10.0			
HCM 7th LOS			A			
Notes						
User approved pedestrian interval to be less than phase max green.						

Intersection						
Int Delay, s/veh	0.5					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	11	24	452	1	1	461
Future Vol, veh/h	11	24	452	1	1	461
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	1	0	0	2
Mvmt Flow	12	25	476	1	1	485
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	964	476	0	0	477	0
Stage 1	476	-	-	-	-	-
Stage 2	487	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	286	593	-	-	1096	-
Stage 1	629	-	-	-	-	-
Stage 2	622	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	285	593	-	-	1096	-
Mov Cap-2 Maneuver	285	-	-	-	-	-
Stage 1	629	-	-	-	-	-
Stage 2	621	-	-	-	-	-
Approach	WB	NB		SB		
HCM Ctrl Dly, s/v	13.87	0		0.02		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	-	443	4	-	
HCM Lane V/C Ratio	-	-	0.083	0.001	-	
HCM Ctrl Dly (s/v)	-	-	13.9	8.3	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	0.3	0	-	

Intersection												
Int Delay, s/veh	1.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	6	11	9	6	14	22	440	20	44	428	0
Future Vol, veh/h	0	6	11	9	6	14	22	440	20	44	428	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	10	0	0	8	20	1	0	5	2	0
Mvmt Flow	0	6	12	10	6	15	24	473	22	47	460	0
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1078	1097	460	1089	1086	484	460	0	0	495	0	0
Stage 1	555	555	-	531	531	-	-	-	-	-	-	-
Stage 2	524	542	-	558	555	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.3	7.1	6.5	6.28	4.3	-	-	4.15	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.39	3.5	4	3.372	2.38	-	-	2.245	-	-
Pot Cap-1 Maneuver	198	215	585	195	218	571	1012	-	-	1054	-	-
Stage 1	520	517	-	535	529	-	-	-	-	-	-	-
Stage 2	540	523	-	518	517	-	-	-	-	-	-	-
Platoon blocked, %								-	-	-	-	-
Mov Cap-1 Maneuver	170	195	585	168	198	571	1012	-	-	1054	-	-
Mov Cap-2 Maneuver	170	195	-	168	198	-	-	-	-	-	-	-
Stage 1	488	485	-	518	512	-	-	-	-	-	-	-
Stage 2	503	507	-	470	485	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Ctrl Dly, s/v	16.07		20.21		0.39		0.8					
HCM LOS	C		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	81	-	-	343	268	168	-	-				
HCM Lane V/C Ratio	0.023	-	-	0.053	0.116	0.045	-	-				
HCM Ctrl Dly (s/v)	8.6	0	-	16.1	20.2	8.6	0	-				
HCM Lane LOS	A	A	-	C	C	A	A	-				
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.4	0.1	-	-				

APPENDIX F

INTERSECTION OPERATIONS: BUILD CONDITIONS

Intersection						
Int Delay, s/veh	2.2					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↱		↱	↱	↱	↱
Traffic Vol, veh/h	12	0	337	228	240	911
Future Vol, veh/h	12	0	337	228	240	911
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	300	170	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	91	91	91	91	91	91
Heavy Vehicles, %	38	17	5	6	5	6
Mvmt Flow	13	0	370	251	264	1001
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1899	-	0	0	621	0
Stage 1	370	-	-	-	-	-
Stage 2	1529	-	-	-	-	-
Critical Hdwy	6.78	-	-	-	4.15	-
Critical Hdwy Stg 1	5.78	-	-	-	-	-
Critical Hdwy Stg 2	5.78	-	-	-	-	-
Follow-up Hdwy	3.842	-	-	-	2.245	-
Pot Cap-1 Maneuver	61	0	-	-	945	-
Stage 1	626	0	-	-	-	-
Stage 2	163	0	-	-	-	-
Platoon blocked, %		-	-	-	-	-
Mov Cap-1 Maneuver	44	-	-	-	945	-
Mov Cap-2 Maneuver	44	-	-	-	-	-
Stage 1	451	-	-	-	-	-
Stage 2	163	-	-	-	-	-
Approach	WB	NB		SB		
HCM Ctrl Dly, s/v	118.2	0		2.14		
HCM LOS	F					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	44	945	-	
HCM Lane V/C Ratio	-	-	0.299	0.279	-	
HCM Ctrl Dly (s/v)	-	-	118.2	10.3	-	
HCM Lane LOS	-	-	F	B	-	
HCM 95th %tile Q(veh)	-	-	1	1.1	-	

HCM 7th Signalized Intersection Summary 2: US Route 9 & I-87 SB Ramp

2260205; Casella Maintenance Facility
2030 Build AM

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	119	140	22	446	258	665
Future Volume (veh/h)	119	140	22	446	258	665
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.04	1.04	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1914	1930	1826	1811	1781	1826
Adj Flow Rate, veh/h	129	152	24	485	280	723
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Percent Heavy Veh, %	4	3	5	6	8	5
Cap, veh/h	235	256	410	1168	898	979
Arrive On Green	0.13	0.13	0.03	0.65	0.50	0.50
Sat Flow, veh/h	1823	1635	1739	1811	1781	1547
Grp Volume(v), veh/h	129	152	24	485	280	723
Grp Sat Flow(s),veh/h/ln	1823	1635	1739	1811	1781	1547
Q Serve(g_s), s	3.5	4.6	0.3	6.9	4.9	17.1
Cycle Q Clear(g_c), s	3.5	4.6	0.3	6.9	4.9	17.1
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	235	256	410	1168	898	979
V/C Ratio(X)	0.55	0.59	0.06	0.42	0.31	0.74
Avail Cap(c_a), veh/h	481	477	656	1673	1142	1191
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	21.7	20.8	5.5	4.6	7.7	6.7
Incr Delay (d2), s/veh	0.7	0.8	0.0	0.2	0.2	2.0
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.4	4.2	0.1	0.9	1.1	5.0
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	22.4	21.6	5.5	4.8	7.9	8.7
LnGrp LOS	C	C	A	A	A	A
Approach Vol, veh/h	281			509	1003	
Approach Delay, s/veh	22.0			4.8	8.5	
Approach LOS	C			A	A	
Timer - Assigned Phs	2			4	5	6
Phs Duration (G+Y+Rc), s	40.2			12.8	7.5	32.7
Change Period (Y+Rc), s	6.0			6.0	6.0	6.0
Max Green Setting (Gmax), s	49.0			14.0	9.0	34.0
Max Q Clear Time (g_c+l1), s	8.9			6.6	2.3	19.1
Green Ext Time (p_c), s	4.5			0.4	0.0	7.6
Intersection Summary						
HCM 7th Control Delay, s/veh			9.6			
HCM 7th LOS			A			
Notes						
User approved pedestrian interval to be less than phase max green.						

Intersection						
Int Delay, s/veh	0.3					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	5	402	14	21	357
Future Vol, veh/h	0	5	402	14	21	357
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	87	87	87	87	87	87
Heavy Vehicles, %	0	20	7	0	0	7
Mvmt Flow	0	6	462	16	24	410
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	929	470	0	0	478	0
Stage 1	470	-	-	-	-	-
Stage 2	459	-	-	-	-	-
Critical Hdwy	6.4	6.4	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.48	-	-	2.2	-
Pot Cap-1 Maneuver	300	558	-	-	1095	-
Stage 1	633	-	-	-	-	-
Stage 2	641	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	291	558	-	-	1095	-
Mov Cap-2 Maneuver	291	-	-	-	-	-
Stage 1	615	-	-	-	-	-
Stage 2	641	-	-	-	-	-
Approach	WB	NB		SB		
HCM Ctrl Dly, s/v	11.52	0		0.46		
HCM LOS	B					
Minor Lane/Major Mvmt		NBT	NBRWBLn1	SBL	SBT	
Capacity (veh/h)		-	-	558	100	-
HCM Lane V/C Ratio		-	-	0.01	0.022	-
HCM Ctrl Dly (s/v)		-	-	11.5	8.4	0
HCM Lane LOS		-	-	B	A	A
HCM 95th %tile Q(veh)		-	-	0	0.1	-

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	1	1	415	0	0	357
Future Vol, veh/h	1	1	415	0	0	357
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	7	0	0	7
Mvmt Flow	1	1	451	0	0	388
Major/Minor	Minor1	Major1	Major2			
Conflicting Flow All	839	451	0	0	451	0
Stage 1	451	-	-	-	-	-
Stage 2	388	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	338	612	-	-	1120	-
Stage 1	646	-	-	-	-	-
Stage 2	690	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	338	612	-	-	1120	-
Mov Cap-2 Maneuver	338	-	-	-	-	-
Stage 1	646	-	-	-	-	-
Stage 2	690	-	-	-	-	-
Approach	WB	NB	SB			
HCM Ctrl Dly, s/v	13.3	0	0			
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	436	1120	-	
HCM Lane V/C Ratio	-	-	0.005	-	-	
HCM Ctrl Dly (s/v)	-	-	13.3	0	-	
HCM Lane LOS	-	-	B	A	-	
HCM 95th %tile Q(veh)	-	-	0	0	-	

Intersection												
Int Delay, s/veh	1.2											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		↕			↕			↕			↕	
Traffic Vol, veh/h	0	6	6	15	2	24	4	391	9	13	345	0
Future Vol, veh/h	0	6	6	15	2	24	4	391	9	13	345	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	87	87	87	87	87	87	87	87	87	87	87	87
Heavy Vehicles, %	0	17	0	0	0	20	50	6	25	25	6	0
Mvmt Flow	0	7	7	17	2	28	5	449	10	15	397	0
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	886	895	397	894	890	455	397	0	0	460	0	0
Stage 1	426	426	-	464	464	-	-	-	-	-	-	-
Stage 2	460	469	-	430	426	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.67	6.2	7.1	6.5	6.4	4.6	-	-	4.35	-	-
Critical Hdwy Stg 1	6.1	5.67	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.67	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4.153	3.3	3.5	4	3.48	2.65	-	-	2.425	-	-
Pot Cap-1 Maneuver	267	265	657	264	284	570	944	-	-	990	-	-
Stage 1	610	561	-	582	567	-	-	-	-	-	-	-
Stage 2	585	536	-	607	589	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	246	258	657	248	277	570	944	-	-	990	-	-
Mov Cap-2 Maneuver	246	258	-	248	277	-	-	-	-	-	-	-
Stage 1	598	550	-	579	563	-	-	-	-	-	-	-
Stage 2	551	533	-	582	578	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Ctrl Dly, s/v	15.1		16.03		0.09		0.32					
HCM LOS	C		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	18	-	-	370	373	65	-	-				
HCM Lane V/C Ratio	0.005	-	-	0.037	0.126	0.015	-	-				
HCM Ctrl Dly (s/v)	8.8	0	-	15.1	16	8.7	0	-				
HCM Lane LOS	A	A	-	C	C	A	A	-				
HCM 95th %tile Q(veh)	0	-	-	0.1	0.4	0	-	-				

Intersection						
Int Delay, s/veh	1.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations	↱		↱	↱	↱	↱
Traffic Vol, veh/h	9	0	478	204	222	648
Future Vol, veh/h	9	0	478	204	222	648
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	300	170	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	99	99	99	99	99	99
Heavy Vehicles, %	0	5	3	1	3	7
Mvmt Flow	9	0	483	206	224	655
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1586	-	0	0	689	0
Stage 1	483	-	-	-	-	-
Stage 2	1103	-	-	-	-	-
Critical Hdwy	6.4	-	-	-	4.13	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	-	-	-	2.227	-
Pot Cap-1 Maneuver	120	0	-	-	901	-
Stage 1	625	0	-	-	-	-
Stage 2	321	0	-	-	-	-
Platoon blocked, %		-	-	-	-	-
Mov Cap-1 Maneuver	90	-	-	-	901	-
Mov Cap-2 Maneuver	90	-	-	-	-	-
Stage 1	469	-	-	-	-	-
Stage 2	321	-	-	-	-	-
Approach	WB	NB		SB		
HCM Ctrl Dly, s/v	49.24	0		2.63		
HCM LOS	E					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	90		901	-	
HCM Lane V/C Ratio	-	0.101		0.249	-	
HCM Ctrl Dly (s/v)	-	49.2		10.3	-	
HCM Lane LOS	-	E		B	-	
HCM 95th %tile Q(veh)	-	0.3		1	-	

HCM 7th Signalized Intersection Summary 2: US Route 9 & I-87 SB Ramp

2260205; Casella Maintenance Facility
2030 Build PM

						
Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (veh/h)	192	238	13	490	272	385
Future Volume (veh/h)	192	238	13	490	272	385
Initial Q (Qb), veh	0	0	0	0	0	0
Lane Width Adj.	1.04	1.04	1.00	1.00	1.00	1.00
Ped-Bike Adj(A_pbT)	1.00	1.00	1.00			1.00
Parking Bus, Adj	1.00	1.00	1.00	1.00	1.00	1.00
Work Zone On Approach	No			No	No	
Adj Sat Flow, veh/h/ln	1930	1945	1900	1870	1663	1885
Adj Flow Rate, veh/h	204	253	14	521	289	410
Peak Hour Factor	0.94	0.94	0.94	0.94	0.94	0.94
Percent Heavy Veh, %	3	2	0	2	16	1
Cap, veh/h	371	362	369	962	590	889
Arrive On Green	0.20	0.20	0.02	0.51	0.35	0.35
Sat Flow, veh/h	1838	1648	1810	1870	1663	1598
Grp Volume(v), veh/h	204	253	14	521	289	410
Grp Sat Flow(s),veh/h/ln	1838	1648	1810	1870	1663	1598
Q Serve(g_s), s	4.2	6.0	0.2	7.9	5.7	6.5
Cycle Q Clear(g_c), s	4.2	6.0	0.2	7.9	5.7	6.5
Prop In Lane	1.00	1.00	1.00			1.00
Lane Grp Cap(c), veh/h	371	362	369	962	590	889
V/C Ratio(X)	0.55	0.70	0.04	0.54	0.49	0.46
Avail Cap(c_a), veh/h	608	575	721	2167	1337	1607
HCM Platoon Ratio	1.00	1.00	1.00	1.00	1.00	1.00
Upstream Filter(I)	1.00	1.00	1.00	1.00	1.00	1.00
Uniform Delay (d), s/veh	15.2	15.2	7.9	6.9	10.7	5.6
Incr Delay (d2), s/veh	0.5	0.9	0.0	0.5	0.6	0.4
Initial Q Delay(d3), s/veh	0.0	0.0	0.0	0.0	0.0	0.0
%ile BackOfQ(50%),veh/ln	1.5	5.4	0.0	1.4	1.4	2.1
Unsig. Movement Delay, s/veh						
LnGrp Delay(d), s/veh	15.6	16.1	7.9	7.4	11.3	6.0
LnGrp LOS	B	B	A	A	B	A
Approach Vol, veh/h	457			535	699	
Approach Delay, s/veh	15.9			7.4	8.2	
Approach LOS	B			A	A	
Timer - Assigned Phs		2		4	5	6
Phs Duration (G+Y+Rc), s		27.8		14.5	6.8	21.0
Change Period (Y+Rc), s		6.0		6.0	6.0	6.0
Max Green Setting (Gmax), s		49.0		14.0	9.0	34.0
Max Q Clear Time (g_c+l1), s		9.9		8.0	2.2	8.5
Green Ext Time (p_c), s		4.9		0.6	0.0	6.2
Intersection Summary						
HCM 7th Control Delay, s/veh			10.0			
HCM 7th LOS			B			
Notes						
User approved pedestrian interval to be less than phase max green.						

Intersection						
Int Delay, s/veh	0.8					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	17	33	453	1	1	462
Future Vol, veh/h	17	33	453	1	1	462
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	95	95	95	95	95	95
Heavy Vehicles, %	0	0	1	0	0	2
Mvmt Flow	18	35	477	1	1	486
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	966	477	0	0	478	0
Stage 1	477	-	-	-	-	-
Stage 2	488	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	285	592	-	-	1095	-
Stage 1	628	-	-	-	-	-
Stage 2	621	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	284	592	-	-	1095	-
Mov Cap-2 Maneuver	284	-	-	-	-	-
Stage 1	627	-	-	-	-	-
Stage 2	621	-	-	-	-	-
Approach	WB	NB		SB		
HCM Ctrl Dly, s/v	14.46	0		0.02		
HCM LOS	B					
Minor Lane/Major Mvmt	NBT	NBRWBLn1	SBL	SBT		
Capacity (veh/h)	-	-	433	4	-	
HCM Lane V/C Ratio	-	-	0.122	0.001	-	
HCM Ctrl Dly (s/v)	-	-	14.5	8.3	0	
HCM Lane LOS	-	-	B	A	A	
HCM 95th %tile Q(veh)	-	-	0.4	0	-	

Intersection						
Int Delay, s/veh	0					
Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	0	0	454	1	1	478
Future Vol, veh/h	0	0	454	1	1	478
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	-	-	-	-
Veh in Median Storage, #	0	-	0	-	-	0
Grade, %	0	-	0	-	-	0
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	0	0	1	0	0	2
Mvmt Flow	0	0	493	1	1	520
Major/Minor	Minor1	Major1		Major2		
Conflicting Flow All	1016	494	0	0	495	0
Stage 1	494	-	-	-	-	-
Stage 2	522	-	-	-	-	-
Critical Hdwy	6.4	6.2	-	-	4.1	-
Critical Hdwy Stg 1	5.4	-	-	-	-	-
Critical Hdwy Stg 2	5.4	-	-	-	-	-
Follow-up Hdwy	3.5	3.3	-	-	2.2	-
Pot Cap-1 Maneuver	266	579	-	-	1080	-
Stage 1	617	-	-	-	-	-
Stage 2	600	-	-	-	-	-
Platoon blocked, %			-	-		-
Mov Cap-1 Maneuver	266	579	-	-	1080	-
Mov Cap-2 Maneuver	266	-	-	-	-	-
Stage 1	616	-	-	-	-	-
Stage 2	600	-	-	-	-	-
Approach	WB	NB		SB		
HCM Ctrl Dly, s/v	0	0		0.02		
HCM LOS	A					
Minor Lane/Major Mvmt	NBT	NBRWBLn1		SBL	SBT	
Capacity (veh/h)	-	-	-	4	-	
HCM Lane V/C Ratio	-	-	-	0.001	-	
HCM Ctrl Dly (s/v)	-	-	0	8.3	0	
HCM Lane LOS	-	-	A	A	A	
HCM 95th %tile Q(veh)	-	-	-	0	-	

Intersection												
Int Delay, s/veh	1.4											
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	0	6	11	9	6	14	22	441	20	46	432	0
Future Vol, veh/h	0	6	11	9	6	14	22	441	20	46	432	0
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Stop	Stop	Stop	Stop	Stop	Stop	Free	Free	Free	Free	Free	Free
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	-	-	-	-	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	93	93	93	93	93	93	93	93	93
Heavy Vehicles, %	0	0	10	0	0	8	20	1	0	5	2	0
Mvmt Flow	0	6	12	10	6	15	24	474	22	49	465	0
Major/Minor	Minor2		Minor1		Major1		Major2					
Conflicting Flow All	1088	1106	465	1099	1096	485	465	0	0	496	0	0
Stage 1	563	563	-	532	532	-	-	-	-	-	-	-
Stage 2	525	543	-	567	563	-	-	-	-	-	-	-
Critical Hdwy	7.1	6.5	6.3	7.1	6.5	6.28	4.3	-	-	4.15	-	-
Critical Hdwy Stg 1	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Critical Hdwy Stg 2	6.1	5.5	-	6.1	5.5	-	-	-	-	-	-	-
Follow-up Hdwy	3.5	4	3.39	3.5	4	3.372	2.38	-	-	2.245	-	-
Pot Cap-1 Maneuver	195	212	582	192	215	570	1009	-	-	1053	-	-
Stage 1	514	512	-	535	529	-	-	-	-	-	-	-
Stage 2	540	523	-	512	512	-	-	-	-	-	-	-
Platoon blocked, %								-	-		-	-
Mov Cap-1 Maneuver	167	192	582	165	195	570	1009	-	-	1053	-	-
Mov Cap-2 Maneuver	167	192	-	165	195	-	-	-	-	-	-	-
Stage 1	482	480	-	517	512	-	-	-	-	-	-	-
Stage 2	502	506	-	464	480	-	-	-	-	-	-	-
Approach	EB		WB		NB		SB					
HCM Ctrl Dly, s/v	16.22		20.46		0.39		0.83					
HCM LOS	C		C									
Minor Lane/Major Mvmt	NBL	NBT	NBR	EBLn1	WBLn1	SBL	SBT	SBR				
Capacity (veh/h)	81	-	-	339	264	173	-	-				
HCM Lane V/C Ratio	0.023	-	-	0.054	0.118	0.047	-	-				
HCM Ctrl Dly (s/v)	8.7	0	-	16.2	20.5	8.6	0	-				
HCM Lane LOS	A	A	-	C	C	A	A	-				
HCM 95th %tile Q(veh)	0.1	-	-	0.2	0.4	0.1	-	-				