ROUTE 67 SPOT IMPROVEMENTS

Final (100%) Design Report

Prepared for:

Naugatuck Valley Council of Governments

June 2023

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Prepared for:
Naugatuck Valley Council of Governments
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This document has been prepared by SLR International Corporation (SLR). The material and data in this report were prepared under the supervision and direction of the undersigned.

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ACRONYMS

ADA	Americans with Disabilities Act
ADT	Average Daily Traffic
CTDEEP	State of Connecticut Department of Energy and Environmental Protection
CTDOT	State of Connecticut Department of Transportation
FEMA	Federal Emergency Management Agency
FIRM	Flood Insurance Rate Maps
FMGC	Flood Management General Certification
ICM	Interagency Coordination Meeting
LOS	Level of Service
mph	Miles per hour
NDDB	Natural Diversity Data Base
NVCOG	Naugatuck Valley Council of Governments
OEP	Office of Environmental Planning
OSTA	Office of the State Traffic Administration
P.A.G.	Point of Application of Grade
RCP	Reinforced Concrete Pipe
ROW	right-of-way
SLR	SLR International Corporation
SHPO	State Historic Preservation Office
Sta	Station
TPCBC	Temporary Precast Concrete Barrier Curb
VHB	Vanasse, Hangen, Brustlin, Inc.
WPCA	Water Pollution Control Authority

1 PROJECT OVERVIEW

In 1991, a study by Vanasse, Hangen, Brustlin, Inc. (VHB) assessed traffic conditions along the Route 67 corridor through Southbury, Oxford, and Seymour, Connecticut. In 2011, the Naugatuck Valley Council of Governments (NVCOG) retained SLR International Corporation (SLR, formerly Milone & MacBroom, Inc.) to expand upon the 1991 report and to conduct operational analyses to further assess the impacts and validate or refine the earlier recommendations made by VHB. SLR's scope was limited to the segment of Route 67 in Seymour from Klarides Village, a retail development, to the River Street/Franklin Street intersection. The results and feedback from that study, which was completed and presented to the public in 2016, formed the recommendations and preferred spot improvements that are outlined in this design report and the supporting design drawings.

Important: Change in project phasing

Based on an expanded scope of utility relocations associated with Bridge No. 01585 widening in Route 313 (River Street), the work previously described as a single project, 124-165, in the Semi-Final Design Report will now be constructed as two projects. The initial project is now referred to as project 124-172 and includes all work on Route 67 (Bank Street), except Retaining Wall 103, Bridge No. 001585 widening, and roadway work on Route 313 (River Street), which are to be conducted as a separate breakout project in close coordination with the work on Route 67. For the purposes of this report, the breakout project, including the River Street bridge and Retaining Wall 103 and roadway work on River Street, will be referred to as the River Street Bridge project and will remain project 124-165. This report will however serve to represent the combined work of both projects.

2 EXISTING CONDITIONS

2.1 CORRIDOR CHARACTERISTICS

Bank Street (Route 67) is a two-way urban minor arterial with an average daily traffic (ADT) volume ranging between 18,700 and 21,800 vehicles per day within the project limits, which begins at the westerly end of Klarides Village to the west and extending for roughly one third of a mile, ending at the intersection of Route 67, Franklin Street, and River Street (Route 313). Route 67 generally runs in an east/west direction through the western part of town and provides connections to the town center area (via the Naugatuck River bridge) and to Oxford and points west. CT Route 8, which is elevated above the downtown area, provides regional access throughout the Naugatuck Valley region of Connecticut.

Within the project limits, Route 67 generally has a single travel lane in each direction with auxiliary turn lanes at various intersections, with the exception of dual travel lanes east of the Bank Street/River Street/Franklin Street intersection. While discontinuous at some locations, sidewalks are present along most of the project roadways. The posted speed limit along Route 67 is 30 miles per hour (mph). The land uses through this corridor include retail, office, residential, and light industrial, with most of the study area within the C-2 General Commercial Zoning District. At the eastern end of the project area, the zoning begins to transition to the CBD-1 Downtown Central Commercial District. A small area of residential zoning (R-18) abuts Route 67 at the Beecher Street/Church Street intersection. In addition, the C-2 and CBD-1 districts define the limits of the Enterprise Corridor Zone, which provides significant state and local tax incentives for new and existing businesses.

The intersections of Route 67 at the entrance to the Klarides Village shopping plaza, Old Drive (West), at the entrance to Walgreens, and at River Street (Route 313)/Franklin Street are signalized. Unsignalized stop sign control exists for the approaching streets at the intersections of Route 67 at Swan Avenue, Johnson Avenue, Church Street/Beecher Street, Old Drive (East), and Martha Street.

River Street (Route 313) is a two-way urban minor arterial with an ADT of 5,500 vehicles within the project limits. This roadway has a two-lane cross section (one lane in each direction) with varying shoulder widths. There is sidewalk along the eastern side of the roadway from the Route 67 intersection to the end of the southeastern wingwall of the River Street bridge (Bridge No. 01585). No formal sidewalk is present on the westerly side of the roadway until approximately 525 feet south of the intersection. From the River Street bridge to the start of the concrete sidewalk, there is a bituminous concrete apron that previously provided access to the former Housatonic Wire Company site. The posted speed limit on the roadway is 35 mph.

2.2 PARKING

Within the project limits, two on-street parking spaces are currently provided on the north side of Route 67 (near Franklin Street) in front of the businesses at 80 and 82-84 Bank Street. On the south side of Route 67, a wide shoulder supports "10-minute" on-street parking in front of the properties at 111-113, 115, and 117-119 Bank Street, which are immediately adjacent to the Little River and currently have no onsite parking. The remaining parking areas along the corridor are provided within off-street parking facilities.

2.3 REGULATORY AREAS

As shown on Figure 1 in Appendix A, the Route 67 project corridor is located immediately west of the Naugatuck River. The Little River is conveyed under Route 67 at two locations within the project limits. The river flows in a northeasterly direction through Bridge No. 01060 located 150 feet west of the Beecher Street/Church Street intersection. The river follows along the southerly edge of Old Drive before again crossing Route 67 through Bridge No. 01061, which is located just 500 feet east of Bridge No. 01060. From west to east, the river then flows parallel to the southern side of Route 67 and eventually crosses River Street (CT Route 313) via Bridge No. 01585 to its confluence with the Naugatuck River. As a tributary of the Naugatuck River, the Little River was studied in detail by the Federal Emergency Management Agency (FEMA), and specific floodplain elevations and floodway boundaries were established as shown on the most current FEMA Digital Flood Insurance Rate Maps (FIRMs) for Seymour (Appendix F).

In addition to the FEMA regulatory boundaries, field identification and delineation of Connecticut inland wetlands and federal wetlands within the project limits were performed. The wetland and ordinary high-water limits closely follow the floodplain boundaries and steep banks associated with the rivers. Activities within wetland and watercourse resources can trigger regulatory permits and the permits for these improvement projects are defined in this report under Section 7 Environmental Permits.

2.4 HISTORIC AND ARCHAEOLOGICAL SIGNIFICANCE

Within the project limits, there is one property, 100 Bank Street, that is listed on the National Register of Historic Places (1983). The Department initiated contact with the State Historic Preservation Office (SHPO) during the Preliminary Engineering phase. In 2009, SHPO provided the Connecticut Department of Transportation (CTDOT) a written finding of "no effect on historic, architectural, or archaeological resources listed on or eligible for the National Register of Historic Places." Since the original SHPO outreach, several buildings along the south side of Route 67 have been demolished in connection with private redevelopment opportunities. The design and construction of the improvements outlined within this report may need to be conducted in accordance with Section 106 under the National Historic Preservation Act.

In support of roadway widening and construction of sidewalks, a ±135-foot segment of the existing stone wall along the frontage of 100 Bank Street will be reconstructed. There will be no impact to the building itself; however, there will be limited impacts to the parking lot supported by the retaining wall. CTDOT's Office of Environmental Planning (OEP) Culture Resources and Environmental Documents Unit reviewed the preliminary and semi-final design submissions. As discussed with the Department, and in response to the OEP's review comments, SLR's Final design incorporates cast-in-place concrete construction for the new retaining wall, utilizing stone from the original wall as a façade. The use of the natural stone will serve to mitigate visual impacts to the wall and property caused by construction.

2.5 DRAINAGE AND UTILITY INFRASTRUCTURE

2.5.1 OVERHEAD UTILITIES

Electric, telephone, and cable utilities are generally furnished via overhead service connections. On Bank Street, the poles are located primarily along the northerly side of the roadway, with several poles on the southerly side to provide service connections. On River Street, the poles are located along the westerly side of the roadway. All the poles within the project limits are owned by Eversource, with the exception of a Frontier-owned pole on River Street south of the bridge. The poles support electric, cable, and telephone.

2.5.2 UNDERGROUND UTILITIES

Underground utilities within the project limits consist of the following:

- Duct banks of 4-inch communications conduits owned by Frontier along Bank Street; concrete-encased ducts typically with 12 to 16 conduits in rows of four, approximately 24” total width and up to 22” in height.
- 8-inch gas main owned by Eversource Energy (formerly Yankee Gas) along Bank Street throughout the length of the project.
- 2-inch gas main owned by Eversource Energy along River Street and mounted to the fascia of Bridge No. 01585.
- 18- to 24-inch sewer main owned by the town and managed by Veolia runs along Bank Street for the majority of the project length. The sewer routes around the bridges on Bank Street by following Old Drive. A 24-inch sewer main is also located on River Street and is presently supported along the westerly fascia of the River Street bridge over Little River (Bridge No. 01585). On the bridge, the sewer is ductile iron pipe with mechanical joints.
- 6-, 8-, and 12-inch-diameter water mains owned by Aquarion Water run along the length of Bank Street, and an 8-inch-diameter water main is also located on River Street, also supported within Bridge No. 01585.

A summary of utilities present is shown in the table below. A description and evaluation of the existing drainage system is discussed in detail in Section 5.

Table 1 Utilities

Utility	Owner
Electric	Eversource Energy – Electric Distribution
Gas	Eversource Energy – Gas Distribution
Telephone	Crown Castle Frontier Communications of Connecticut
Cable	Comcast of Connecticut
Water	Aquarion Water Company
Sewer	Town of Seymour Water Pollution Control Authority (WPCA)
Traffic	CTDOT (Traffic Signals)

3 ROADWAY GEOMETRICS AND DESIGN

3.1 BANK STREET (ROUTE 67)

For the majority of the project along Route 67, the work will consist of a mill and overlay with full-depth reconstruction at the gutter lines to allow for the installation of new granite curb and reconstruction of the sidewalk along the southerly side of the roadway. The existing, often narrow, bituminous concrete sidewalk is separated by a grass strip for the majority of Route 67. This will be replaced with a new 7-foot-wide concrete sidewalk flush with the back of curb, eliminating the grass strip and reducing long-term maintenance needs in the corridor. The proposed improvements at each of the intersections within the project limits are described in further detail in the following sections.

3.1.1 BANK STREET AT KLARIDES VILLAGE DRIVEWAY (UNSIGNALIZED)

This intersection is located at the easterly end of Klarides Village, between the McDonald's restaurant and TD Bank. The existing plaza driveway has a single exit lane, which is signed to prohibit left turns onto Route 67. Route 67 provides for a single lane in each direction at this location.

The proposed design enforces the no-left-turn movement by adding an island within the driveway area to physically restrict and prohibit left turns. Currently, the left turn is prohibited only by a sign posted opposite the driveway. The “No Left Turn” signage will be located on the new island for better visibility. Drivers intending to turn left or head west along Route 67 will be required to utilize the existing signalized driveway 350 feet to the west.

Route 67 will be improved to provide a short left-turn lane for westbound vehicles to enter the unsignalized driveway without obstructing the westbound through movement. This design is expected to have minimal to no impacts on rights-of-way and utilities.

3.1.2 ROUTE 67 AT JOHNSON AVENUE

Johnson Avenue is a low-volume, two-way local residential road between Old Drive West and Swan Avenue. The two-lane traffic pattern ends approximately 50 feet north of Route 67, and Johnson Avenue transitions to a one-lane configuration with southbound-only traffic. The intersection where Johnson Avenue meets Route 67, directly opposite the Klarides Shopping Center driveway, is sharply skewed to Route 67 with a left-turn prohibition.

Under the Preliminary Engineering study phase, the town and NVCOG originally considered eliminating the one-way connection by constructing a turnaround at the southern end of the two-way segment. However, given the topographic constraints, costs, and property impacts associated with constructing a vehicle turnaround, it was determined that the benefit did not outweigh the cost. As a result, Johnson Avenue will not be altered as a part of this project. A **design exception** request was submitted, and ultimately granted, for the substandard intersection sight distance that is restricted by both the acute

intersection skew (approximately 15 degrees) and the large retaining wall supporting Johnson Avenue located within the Route 67 clear zone.

3.1.3 ROUTE 67 AT CHURCH STREET/BEECHER STREET

Church Street approaches Route 67 from the southeast and carries two-way traffic while Beecher Street departs toward the southwest (away from Route 67) as a one-way street. Route 67 provides a single eastbound lane in this location. Westbound traffic on Route 67 has one through lane and an exclusive left-turn lane for motorists entering Church and Beecher Streets. The side streets operate under stop sign control, and there are no controls on Route 67.

The geometry of the intersecting streets creates a crossing distance of approximately 60 feet. Currently, the intersection is a safety concern with little vehicle priority established. With such a wide entrance, those traveling westbound along Route 67 and turning onto Beecher Street must contend with those traveling eastbound on Route 67 turning right onto Church Street. Additionally, in front of the Russian American Club, there is an existing island that separates the on-street parking area for the club and the more formal intersection of the streets. During the final stages of the Preliminary Engineering study phase and Public Involvement program, it was determined that the existing island was under private ownership. While the area encompassing the island was subsequently obtained by the state and incorporated into the right-of-way (ROW), there was public opposition to removal of the island given its importance to the Russian American Club.

Several reconfigurations of Church and Beecher Streets, including different T-intersections with each street, were considered during Preliminary Design; however, upon further review of the constraints, impacts, and benefits of each configuration, the proposed design incorporates a simplified radius improvement to the east corner and the construction of a flush and stamped island to better direct and channelize the turning movements of vehicles entering and exiting the intersection. Together with improved sidewalks and crosswalk markings, the proposed design can be expected to provide an improvement to traffic operations and pedestrian safety at a much lower cost and will not require the acquisition of private property.

3.1.4 BANK STREET/ROUTE 67 BETWEEN OLD DRIVE AND THE NAUGATUCK RIVER BRIDGE

Between Old Drive (East) and the Naugatuck River, there are roadway intersections at Martha Street (unsignalized) and Franklin Street/River Street (signalized). There is also a signalized driveway servicing Walgreens and Wendy's just east of the Old Drive intersection. From Old Drive to the Naugatuck River, Route 67 has sidewalks along both the northerly and southerly sides of the roadway.

Across the Naugatuck River bridge, Bank Street has a four-lane configuration with two lanes in each direction. For westbound traffic, the two travel lanes merge down to one at the crosswalk in front of 100 Bank Street. The travelway widens again to accommodate one through and one turn lane at the Walgreens driveway. Bank Street has one lane in the eastbound direction, with a left-turn lane at Old Drive/Walgreens. Approaching the Franklin Street/River Street intersection, two lanes are provided accommodating both turning and through movements.

As noted previously, on-street parking is present along the southerly side of Bank Street in the vicinity of 111 to 119 Bank Street and at the northwestern corner of the Franklin Street/River Street intersection. The crash history data indicates numerous crashes attributed to parking maneuvers at the intersection.

A series of operational and safety improvements is proposed for the various intersections within this section of the Route 67 corridor such as traffic and pedestrian signalization upgrades, additional turn lanes, curb extensions to reduce pedestrian crossing times, and improved signage.

3.1.4.1 Route 67 Widening

The proposed design includes the widening along the north side of Route 67 between Old Drive (East) and the Franklin Street/River Street intersection, with some widening on the south side of Route 67 at the corner of River Street. This widening will accommodate two lanes of traffic westbound from the Franklin Street/River Street intersection through to Walgreens/Old Drive, eliminating the existing merge in front of 100 Bank Street. The project proposes the use of 11-foot lanes with a minimum of 2-foot shoulders.

The existing stone wall at 100 Bank Street will be impacted by the widening of the roadway as well as the modification of the curb radius on the eastern side of Martha Street to improve turning movements and intersection sight distance. The wall east of the existing stairway is to remain, with the portion of the wall west of the stairway extending to Martha Street needing to be replaced. The wall will be shifted further north as it approaches Martha Street and will impact the existing parking lot supported above. In order to preserve the aesthetic of the existing wall along the frontage of this property listed on the National Register of Historic Places, and in light of the fact that a portion of the wall is to remain, the reconstructed wall will consist of reinforced concrete, utilizing the stone salvaged from the existing wall as a veneer and incorporating the existing cap stones into the new wall. A timber beam rail will be installed between the wall and the modified edge of the parking lot. Four parking spaces will be removed to accommodate this work.

By favoring the north side of Bank Street with the roadway widening, the need for full or partial property acquisitions of the properties and businesses on the south side of the roadway as well as significant environmental remediation costs associated with the existing dry-cleaning business can be eliminated. The existing limited “10-minute” on-street parking along the businesses and residences on the south side of Bank Street can also be maintained.

3.1.4.2 Bank Street/Route 67, Old Drive, and Walgreens Intersections

The westbound right-turn lane at the Walgreens drive will be extended through the driveway intersection and westerly to the intersection of Old Drive East to accommodate the traffic volumes at this location and enhance pedestrian mobility through the corridor. Improvements at the Walgreens drive propose to shift the existing Route 67 crosswalk from the western side to the eastern side of the intersection. The shift increases the distance between the existing crosswalk and the end of the Bridge No. 01061 parapet and improves the sight distance and visibility associated with this existing pedestrian crossing.

A new wall will be required along the frontage of the Walgreens property to accommodate the extension of the right-turn lane, which will cut into the existing steep embankment that supports the Walgreens

parking lot above. To minimize disturbance to the heavily vegetated slope and avoid major impacts to the existing aerial utilities, a soil nail wall with a cast-in-place face will be installed (refer to the Wall Type Study under separate cover). An architectural formliner will be used to mimic the stone veneer on the 100 Bank Street wall to provide for a continuity in terms of aesthetics for this roadway segment.

3.1.4.3 Bank Street/Route 67, Franklin Street, and River Street (Route 313) Intersection

Proposed improvements to the Franklin Street/River Street intersection include the removal of the two on-street parking spaces at the northwest quadrant to improve the safety of the intersection. The curb line will be shifted south to be in alignment with the roadway shoulder. This will result in a reduced curb-to-curb width, thereby reducing the pedestrian crossing distance for Route 67.

At the intersection, the curb radius for the River Street northbound right-turn lane movement is being reduced substantially. The existing radius exceeds 150 feet, which is more than adequate for trucks making right turns onto Route 67. The reduced radius will serve to encourage lower speeds for vehicles making this turn, shorten the distance for pedestrian crossings, and provide additional landscape area and potential for connections to the town's Naugatuck River recreational resources.

3.2 RIVER STREET (ROUTE 313)

Under the proposed design, the sidewalk will be extended from Route 67 down along the westerly side of River Street to the existing sidewalk at the southerly limits of the project. To accommodate the addition of the sidewalk, the River Street bridge (Bridge No. 01585) will be widened. As previously discussed in this report, the proposed work associated with the bridge widening will be implemented under the breakout River Street Bridge project.

It is understood that the former Housatonic Wire Company site is being considered for redevelopment. Ongoing coordination with the town and NVCOG will be necessary to determine if any anticipated development of the property may impact the proposed sidewalk expansion on River Street.

4 TRAFFIC AND SAFETY

The traffic and safety evaluation of the subject project intersections was conducted as part of the design. The objective of this evaluation was to assess existing and potential future traffic operations and safety issues as well as identify any improvements that would be required.

4.1 CRASH HISTORY

Crash data for Route 67 was obtained from the University of Connecticut's Connecticut Crash Data Repository from January 1, 2016, through December 31, 2018. Table 2 summarizes the crash data within the corridor based on the CTDOT records.

Table 2 Route 67 Crash Summary

LOCATION	CRASH SEVERITY					TYPE OF COLLISION					
	SERIOUS INJURY	SUSPECTED MINOR INJURY	POSSIBLE INJURY	PROPERTY DAMAGE ONLY	**TOTAL**	ANGLE	OTHER	REAR-END	SIDESWIPE, OPPOSITE DIRECTION	SIDESWIPE, SAME DIRECTION	**TOTAL**
Bank Street (S.R. 67) at Old Drive (West)	0	1	1	3	**5**	3	1	1	0	0	**5**
Bank Street (S.R. 67) at Church Street/Beecher Street	0	0	0	1	**1**	0	0	0	1	0	**1**
Bank Street (S.R. 67) at Old Drive (East)	0	1	0	1	**2**	0	0	2	0	0	**2**
Bank Street (S.R. 67) at Walgreens Driveway	0	0	1	3	**4**	0	0	4	0	0	**4**
Bank Street (S.R. 67) at Franklin Street/River Street	0	1	2	9	**12**	2	0	5	0	5	**12**
Bank Street (S.R. 67) at Wakeley Street	0	1	0	4	**5**	2	0	0	3	0	**5**
TOTAL	**0**	**4**	**4**	**21**	**29**	**7**	**1**	**12**	**4**	**5**	**29**

Source: University of Connecticut's Connecticut Crash Data Repository from January 1, 2016, to December 31, 2018

In all, a total of 29 crashes occurred on Route 67 during the evaluated 3-year period. Out of 29 crashes, 21 resulted in property damage only while the remaining 8 resulted in possible or minor injury. There were no reported fatalities.

The highest number of crash type was rear-end collisions with 12 out of the 29 total crashes. The high occurrence of rear-end crashes is quite typical on signalized urban/suburban arterial corridors such as Route 67.

4.2 EXISTING TRAFFIC VOLUMES

Available CTDOT ADT monitoring data on the Route 67 project corridor was reviewed. Table 3 summarizes this ADT data over recent years. CTDOT data showed a 9 percent increase in traffic within the project limits from 2009 to 2012 followed by a 15 percent decrease in volumes from 2012 to 2015 and a 6 percent decrease from 2015 to 2021.

Table 3 CTDOT Average Daily Traffic History

Year	Average Daily Traffic
2021	17,700 vehicles
2015	18,800 vehicles
2012	22,200 vehicles
2009	20,400 vehicles

Manual turning movements traffic counts were also conducted at the following intersections on Thursday, December 6, 2018, from 7:00 a.m. to 9:00 a.m. and from 4:00 p.m. to 6:00 p.m. to capture peak commuter travel periods:

- Bank Street (Route 67) at Old Drive (West)
- Bank Street (Route 67) at Church Street and Beecher Street
- Bank Street (Route 67) at Old Drive (East)
- Bank Street (Route 67) at Walgreens driveway
- Bank Street (Route 67) at Route 313 (River Road)/Franklin Street

The Route 67/River Road, Route 67/Walgreens driveway, and Route 67/Old Drive (West) intersections are signalized while the remaining two intersections are unsignalized.

During the course of the project, it was determined that the intersections of Bank Street at Klarides Drive and Bank Street at West Street be included in our analysis of the Route 67 project corridor; therefore, traffic counts were conducted at the two intersections on December 14, 2021, from 7:00 a.m. to 9:00 a.m. and from 4:00 p.m. to 6:00 p.m.

The weekday morning peak hour occurred from 7:30 a.m. to 8:30 a.m. while the weekday afternoon peak hour occurred from 5:00 p.m. to 6:00 p.m. The existing weekday morning and weekday afternoon peak-hour volumes at the project intersections are provided in Appendix C of this report.

4.3 FUTURE TRAFFIC VOLUMES

A 12-year planning horizon was utilized for future year analysis. Future (2030) background morning and afternoon peak-hour volumes were provided by the CTDOT Bureau of Policy and Planning. The 2030 volumes included ambient traffic growth of 0.8 percent suggested by CTDOT's Bureau of Policy and Planning. The future 2030 projected traffic volumes are provided in Appendix C of this report.

4.4 CAPACITY ANALYSIS

The adequacy of the project area roadways to accommodate the projected traffic demands was evaluated by means of *Synchro* software, which uses methodologies of the *Highway Capacity Manual* to determine Level of Service (LOS). LOS is defined as a qualitative measure of the inconvenience to motorists in terms of delay expressed as a letter grade A through F. LOS A indicates little or no vehicle delay, and LOS F indicates an intersection movement over capacity with long delays expected. The LOS criteria for signalized and unsignalized intersections are shown in Tables 4 and 5, respectively.

Table 4 LOS Criteria for Signalized Intersections

LOS	Average Stopped Delay Per Vehicle (Seconds)
A	≤ 10
B	>10 and ≤20
C	>20 and ≤35
D	>35 and ≤55
E	>55 and ≤80
F	> 80

Table 5 LOS Criteria for Unsignalized Intersections

LOS	Average Stopped Delay Per Vehicle (Seconds)
A	≤ 10
B	>10 and ≤15
C	>15 and ≤25
D	>25 and ≤35
E	>35 and ≤50
F	> 50

LOS analysis was performed for the weekday morning and afternoon peak period under existing and future (2030) background conditions. The future (2030) background conditions are reflective of future traffic conditions without any roadway/signalization improvements within the project limits. Table 6 summarizes the results of the LOS analysis under existing and future (2030) background conditions for the

morning and afternoon peak hours. The *Synchro* analysis worksheets are provided in Appendix C of this report.

Table 6 Capacity Analysis Summary – No Build

INTERSECTION	WEEKDAY MORNING PEAK HOUR		WEEKDAY AFTERNOON PEAK HOUR	
	2018 EXISTING	2030 NO BUILD	2018 EXISTING	2030 NO BUILD
Route 67 (Bank Street) at Old Drive (West) – Signalized				
Eastbound Left	A	A	A	A
Eastbound Through	A	A	A	A
Westbound Through/Right	A	A	A	A
Southbound Left/Right	C	C	D	D
Overall LOS	**A**	**A**	**A**	**A**
Route 67 (Bank Street) at Walgreens Driveway – Signalized				
Eastbound Left	A	A	A	A
Eastbound Through	A	A	A	A
Westbound Through	A	A	B	B
Westbound Right	A	A	A	A
Southbound Left	C	C	D	D
Southbound Right	--	--	B	B
Overall LOS	**A**	**A**	**B**	**B**
Route 67 (Bank Street) at Route 313 (River Street) – Signalized				
Eastbound Left/Through/Right	A	A	A	A
Westbound Left/Through/Right	B	B	B	B
Northbound Left	D	D	E	E
Northbound Through/Right	C	D	E	E
Southbound Left	D	D	D	D
Southbound Through	D	D	E	E
Southbound Right	A	A	B	B
Overall LOS	**B**	**B**	**C**	**C**
Route 67 (Bank Street) at Beecher Street and Church Street – Unsignalized				
Northbound Left/Through/Right	C	C	D	E
Westbound Left	A	A	A	B
Route 67 (Bank Street/Oxford Road) at West Street – Signalized				
Eastbound Through	B	C	B	C
Eastbound Right	A	A	A	A
Westbound Left/Through	A	A	B	B

INTERSECTION	WEEKDAY MORNING PEAK HOUR		WEEKDAY AFTERNOON PEAK HOUR	
	2018 EXISTING	2030 NO BUILD	2018 EXISTING	2030 NO BUILD
Northbound Left/Right	D	D	F	F
Overall LOS	**B**	**B**	**C**	**C**
Route 67 (Bank Street) at Klarides Village – Signalized				
Eastbound Left/Right	A	A	B	B
Westbound Left	A	A	A	A
Westbound Through	A	A	A	A
Northbound Left	D	D	E	E
Northbound Right	C	B	B	B
Overall LOS	**A**	**A**	**B**	**B**

As illustrated in Table 6, a number of movements at the intersections of Route 67 at River Street, Route 67 at Beecher Street/Church Street, Route 67 at West Street, and Route 67 at Klarides Village Drive are expected to operate at LOS E or F during the future 2030 p.m. peak hours.

4.5 TRAFFIC SIGNAL AND GEOMETRIC IMPROVEMENTS

The Route 67 improvement project will involve a number of roadway and signalization improvements and are as follows:

Route 67 at Route 313 (River Street)

- Widen Route 67 to provide adequate storage on northbound and southbound dedicated turn lanes and 2-foot minimum shoulders.
- Widen the north side of Route 67 to extend the two westbound departure lanes past Martha Street to the Walgreens intersection.
- Reconstruct the stone masonry retaining wall at 100 Bank Street.
- Construct a new retaining wall between Martha Street and the Walgreens driveway.
- New traffic and pedestrian signal equipment.
- New sidewalks, pedestrian, and bicycle accommodations.

Route 67 at Walgreens Driveway

- Widen Route 67 to provide a westbound dedicated right and extended right-turn lane in addition to the single through lane.
- Upgrade the traffic signal to accommodate geometric changes at the intersection.
- Implement revised signal timings.

Route 67 at Old Drive West

- Upgrade the existing traffic signal with new pedestrian equipment.
- Revise phasing to include concurrent pedestrian phase.

Table 7 summarizes the results of the LOS analysis under future 2030 peak-hour conditions with the proposed signalization and roadway improvements in place.

Table 7 Capacity Analysis Summary – Route 67 Improvements

INTERSECTION	WEEKDAY MORNING PEAK HOUR		WEEKDAY AFTERNOON PEAK HOUR	
	2030 NO-BUILD	2030 IMPROVEMENTS	2030 NO-BUILD	2030 IMPROVEMENTS
Route 67 (Bank Street) at Old Drive (West)				
Eastbound Left	A	A	A	A
Eastbound Through	A	A	A	A
Westbound Through/Right	A	A	A	B
Southbound Left/Right	C	C	D	D
Overall LOS	**A**	**A**	**A**	**A**
Route 67 (Bank Street) at Walgreens Driveway				
Eastbound Left	A	A	A	A
Eastbound Through	A	A	A	A
Westbound Through	A	A	B	B
Westbound Right	A	A	A	A
Southbound Left	C	C	D	D
Southbound Right	--	--	B	B
Overall LOS	**A**	**A**	**B**	**B**
Route 67 (Bank Street) at Route 313 (River Street)				
Eastbound Left/Through/Right	A	A	A	B
Westbound Left/Through/Right	B	B	B	B
Northbound Left	D	C	E	D

INTERSECTION	WEEKDAY MORNING PEAK HOUR		WEEKDAY AFTERNOON PEAK HOUR	
	2030 NO-BUILD	2030 IMPROVEMENTS	2030 NO-BUILD	2030 IMPROVEMENTS
Northbound Through/Right	D	C	E	D
Southbound Left	D	C	D	C
Southbound Through	D	C	E	D
Southbound Right	A	A	B	A
Overall LOS	**B**	**B**	**C**	**C**
Route 67 (Bank Street) at Beecher Street and Church Street – Unsignalized				
Northbound Left/Through/Right	C	C	E	E
Westbound Left	A	A	B	B
Route 67 (Bank Street/Oxford Road) at West Street – Signalized				
Eastbound Through	C	C	C	D
Eastbound Right	A	A	A	A
Westbound Left/Through	A	A	B	C
Northbound Left/Right	D	D	F	D
Overall LOS	**B**	**B**	**C**	**C**
Route 67 (Bank Street) at Klarides Village – Signalized				
Eastbound Left/Right	A	A	B	B
Westbound Left	A	A	A	A
Westbound Through	A	A	A	A
Northbound Left	D	D	E	D
Northbound Right	B	B	B	B
Overall LOS	**A**	**A**	**B**	**A**

As illustrated in Table 7, the project intersections are expected to operate at acceptable LOS under future (2030) peak-hour conditions with the proposed signalization and roadway improvements in place.

4.6 BICYCLE AND PEDESTRIAN CONSIDERATIONS

The scope of this project entails a series of spot improvements resulting from a previous corridor study commissioned by the NVCOG. The improvements are intended to affect traffic operational and safety improvements at key intersections. The preliminary engineering study went on to inventory existing sidewalks and evaluate pedestrian connectivity, including considerations along the loop from Bank Street at Franklin Street, easterly under the Route 8 Expressway, to the downtown area via Wakely Street and DeForest Street, and returning north via Broad Street to River Street. While the study made a number of high-level recommendations beyond the physical limits of the Spot Improvement project, sidewalk work performed under the project will be limited to those improvements that can be accomplished within the confines of the project limits.

The project includes minor widening for establishing enhanced lane continuity and improved operational efficiencies with modified lane arrangements at the various intersections within the project limits. In several instances, the roadway is being narrowed to achieve some traffic calming. In those areas, more space will be devoted to sidewalks with added separation from the roadway.

At present, sidewalks generally exist along the south side of Bank Street from Klarides Plaza to the intersection of River Street. Along the westerly half of the project, from Johnson Avenue to Old Drive (East), there are no sidewalks on the north side of the roadway. The topography along the north side of the roadway generally rises sharply to the north. The numerous retaining walls and steep slopes make it difficult to construct sidewalks. In addition, there are two bridges that carry Bank Street over Little River, and while provisions have been made for sidewalks on the south side of those two bridges, there are no provisions for sidewalks on the north side. For the easterly half of the project, from Old Drive (East) to River Street, there are sidewalks along the north side of Bank Street. In this vicinity, sidewalks connect residential neighborhoods above Martha Street to Walgreens, Stop & Shop, and commercial activity at the intersection of Franklin Street. On River Street, albeit the sidewalks are largely in disrepair, there are asphalt and concrete sidewalks along the westerly side of the road on approach to Broad Street and the downtown. As such, there is no sidewalk on the west side of the River Street bridge over Little River.

The project proposes the following enhancements for safe pedestrian mobility:

- Replace all asphalt and concrete sidewalks along the Bank Street corridor between Klarides Plaza and River Street/Route 313, infilling any gaps in the existing sidewalk system.
- Incorporate upgraded pedestrian crossing devices and concurrent pedestrian phasing at all signalized intersections within the project limits, including Old Drive, Walgreens, and River Street.
- Widen sidewalks to a minimum of 5 feet throughout.
- Replace all existing pedestrian ramps with Americans with Disabilities Act (ADA)-compliant ramps.
- Relocate utility poles and hydrants to provide minimum width for accessibility.
- Upgrade existing painted crosswalks; install new and/or relocate crosswalks at key locations.
- Widen the River Street bridge over Little River to accommodate a new 5-foot sidewalk.

The existing corridor makes little provision for bicycles. While Route 67 is a designated bicycle route, there are no dedicated bike lanes, and bike lanes are not proposed as part of this project. While the scope of the project is limited to spot improvements, given the physical constraints (steep slopes, wall, narrow bridges, etc.) there is limited opportunity to widen for bike lanes. With the minor widening and turn-lane modifications to be constructed, the project will provide for better continuity in terms of shoulder width and through movements. The project will include the following:

- Provide for continuous shoulder widths where possible.
- Type A grates for bicycles per CTDOT standard details.

5 DRAINAGE

5.1 EXISTING STORM DRAINAGE DATA

Coordination with the Town of Seymour Department of Public Works staff, the acting Town Engineer, and the CTDOT District Drainage Engineer was carried out to determine the occurrence and severity of known storm drainage issues within the project area. It was indicated that there are no known public complaints or other known issues with storm drainage facilities.

Existing drainage facilities are shown on the plans based on a combination of field survey and compilation from available record drawings dating back to 1939. Use of record drawings was required as recent work in the corridor includes bituminous concrete overlay of Route 67 and portions of Route 313. Based on field observations, most of the storm drainage manholes have been paved over, concealing these structures from view and rendering them inaccessible. Because the currently available information (survey and record drawings) contains conflicting data relative to elevations and pipes sizes, efforts were made through CTDOT's project manager to coordinate with CTDOT maintenance forces to locate and expose surface evidence of these manholes and to obtain elevation and pipe size data. This work was completed on April 6, 2023, and resulting revisions to the drainage design have been incorporated into the plans.

5.2 EXISTING STORM DRAINAGE SYSTEMS

The existing land uses within and adjacent to the project limit can be classified as commercial and retail, with some residential near the intersection of Martha Street. Available topography indicates generally moderate slopes along and immediately adjacent to Route 67 within the project area and the intersections, with moderate to steep slopes beyond the ROW.

There are five existing drainage systems within the area of proposed improvements. These systems are identified by their proximity to roads and major driveways that intersect Route 67 and are noted as the Swan Avenue System, Church Street System, Walgreens Entrance System, Route 313 North System, and Route 313 South System.

The Swan Avenue System discharges through an 18-inch reinforced concrete pipe (RCP) to the west bank of Little River, just south of the southwesterly wingwall of Bridge No. 01060. This system extends from the outlet west along Route 67 to approximately 150 feet beyond the western limit of work. It collects runoff from Swan Avenue, Johnson Avenue, and Route 67 west of Bridge No. 01060. The outfall is surrounded by rock riprap and was observed to be functional. While there is no formal outfall protection the surrounding rock riprap is stable, and no erosion was observed. The outlet is located within the CTDOT ROW.

The Church Street System discharges to Little River through an 18-inch RCP through the northeasterly wingwall of Bridge No. 01060. The system extends from approximately Station (Sta.) 18+50 to approximately Sta. 19+50 and collects runoff from the Church Street/Beecher Street/Route 67 intersection as well as a portion of Route 67 west of the intersection. The outfall was observed to be

functional. There is no formal outlet protection, but it does discharge onto a short, stable slope lined with standard riprap. No erosion was observed at this location. This outlet is also located within the state ROW.

The Walgreens Entrance System discharges to Little River through a 15-inch RCP downstream of the remnants of a dam. This pipe outlet is located approximately 57 feet right of Route 67 at Sta. 25+80. The system extends from approximately Sta. 25+00 to approximately Sta. 26+00 and collects runoff from the Walgreens drive and a portion of Route 67 extending from a high point at approximately Route 67 Sta. 21+50 to Sta. 26+00. The outlet pipe was observed to discharge, without an end section, onto a bedrock slope. Eroded material observed in the vicinity of the pipe outlet appears to be the result of deposition caused by flow from Little River rather than eroded material from above the rock slope. The outlet pipe is within a 10-foot-wide drainage ROW in favor of the State of Connecticut. Plans available for the Walgreens site and the recently constructed Wendy's restaurant site, which are adjacent to and north of Route 67, indicate that runoff from the site is captured and directed to the west and discharged to the Little River.

The Route 67/Route 313 System discharges via a 24-inch RCP to the westerly bank of the Naugatuck River approximately 75 feet downstream of the Route 67 bridge over the Naugatuck River. The system extends northwesterly from this outlet, across the Route 67/Route 313/Franklin Street intersection to a manhole in the vicinity of the northerly curb line of Route 67, and then continues westerly to the Route 67/Martha Street intersection. The total length of the trunk portion of this system is approximately 425 feet. This system collects runoff from portions of Martha Street, Farrel Street, and School Street north of Route 67 and Route 67 (including portions of the intersection of Route 67 and Route 313) as well as portions of commercial properties on the northerly side of Route 67 (known as 98 and 100 Bank Street). The noted 24-inch discharge pipe outlets through a concrete endwall. Field observations noted that the endwall is in the hydraulic shadow of the Route 67 bridge, is located on a riprapped slope of the Naugatuck River, and in an area that is overgrown with brush and numerous mature trees. The endwall is severely spawled, but the pipe end was observed to be in good condition. No excessive erosion was observed between the endwall and the river. This endwall and outlet pipe are located within the State ROW.

Photographs showing conditions at the outlets are provided in the Drainage Design Report.

5.3 PROPOSED DRAINAGE

All proposed drainage improvements shown on the design plans are required to support the new curb line layout along Route 67 and Route 313, including the intersection of these roads and the side roads. This report addresses the improvements required for the four systems associated with Route 67. Drainage improvements associated with Route 313 will be addressed in a future addendum to this report.

5.3.1 SWAN AVENUE SYSTEM

No changes to the Route 67 roadway or curb lines are proposed within the limits of this drainage system. Proposed storm drainage improvements consist of replacing catch basin tops to conform to the proposed curb type. Computations completed for this system were limited to analysis of the gutter flow along the southerly curb line of Route 67 to determine the discharge bypassing the inlets and contributing to the Church Street System.

5.3.2 CHURCH STREET SYSTEM

Improvements proposed for the Church Street System consist of relocating catch basins to support the new edge of pavement along the Route 67/Church Street/Beecher Street intersection. New Type 'C' catch basins, with required piping, are proposed for the improved curb returns from Route 67 to Beecher Street, Route 67 to Church Street, and between Beecher and Church Streets. A new Type 'C' Double Grate Type II catch basin, along with required piping, is proposed on the curb return from Beecher to Church Streets. Type "C" double grate Type I catch basins were also added, one on the easterly curb line of Beecher Street and one on the westerly curb line of Church Street, to control the width of flow in the gutter on the curb return from Beecher Street to Church Street. These catch basins will be piped to the Type "C" double grate Type II catch basin noted above. In addition, a new Type 'C-L' catch basin will be installed on the north edge of pavement on Route 67 (Sta. 18+69) to catch snowmelt at a low point along this uncurbed section of the roadway. Existing drainage piping, except as required to accommodate the new Type 'C-L' catch basin on the left side of Route 67, will be left intact. The new Type 'C-L' catch basin is specified to have a 4-foot-deep sump to aid in water quality control.

Analysis of this system included gutter flow computations from high points on Beecher Street and Church Street, including one town-owned inlet on Beecher Street and six town-owned inlets on Church Street, gutter flow analysis along the south gutter of Route 67 (including bypass from the Swan Street System), low point analyses at the three new catch basins in the Route 67/Beecher Street/Church Street intersection, and pipe flow analysis (with hydraulic grade line analysis) of the new and existing pipes in this system.

5.3.3 WALGREENS ENTRANCE SYSTEM

Improvements to Route 67 in the area served by this drainage system include widening Route 67 by 5 feet along the north side between its intersection with Old Drive and the Walgreens/Wendy's entrance driveway and modifying the locations of ADA sidewalk ramps. Proposed improvements to the drainage system include the addition of two new Type 'C' catch basins, one on the north side of Route 67 Sta. 24+25 and one on the new curb return on the east side of the entrance (required to accommodate relocation of the sidewalk ramp). Connection among these new basins consists of the addition of a manhole and 12" and 15" RCP. In addition, the existing catch basin on the east side of the Walgreens entrance will be removed. The catch basin on the right side of Route 67 Sta. 25+98 (the last basin prior to discharge of the collected runoff) will be replaced with a Type 'C' catch basin with a 4-foot-deep sump to aid in water quality control.

Analysis of this system includes gutter flow computations along Route 67 from the high point at approximately Sta. 21+50 to the catch basins at Route 67 Sta. 26+44 left and Sta. 25+96 right and includes bypass flow from catch basins on the Walgreens entrance drive and pipe flow analysis (with hydraulic grade line analysis) of the new and existing pipes in this system.

5.3.4 ROUTE 67/ROUTE 313 SYSTEM

Improvements to Route 67 in the area served by this drainage system includes the following:

- Widening Route 67 along the north side by as much as 7 feet between the Walgreens Entrance System and Martha Street
- Improving the curb returns and adding pedestrian sidewalk ramps at the Route 67/Martha Street intersection
- Relocating the curb line on the north side of Route 67 between the improved curb return on Martha Street and the end of the curb return at the northwest corner of Route 67 and Franklin Street, resulting in a decrease in roadway area between approximately Route 67 Sta. 30+25 and Franklin Street
- Widening the southerly side of Route 67 from approximately Sta. 28+75 eastward to the Route 67/Route 313 intersection by as much as 6 feet
- Decreasing the radius of the curb return on the southeast corner of the Route 67/Route 313/Franklin Street intersection, resulting in a decrease in the roadway area in that quadrant

The proposed drainage improvements for the Route 67/Route 313 System comprise the following:

- Removal of two catch basins and a manhole at the Route 67/Martha Street intersection
- Introduction of two new catch basins at that intersection, including a Type 'C' double grate Type I structure in the easterly gutter of Martha Street, all with associated piping
- Conversion of an existing catch basin on the existing curb line to a manhole (Sta. 31+66, 44 feet left), addition of a round Type 'C' catch basin (with a 4-foot-deep sump) on the new curb line (constructed on the existing 24"RCP trunkline, Sta. 31+74, 24 feet left)
- Removal of an existing catch basin on the southwest curb line of the Route 67/Route 313/Franklin Street intersection and addition of a new Type 'C" catch basin with a 4-foot-deep sump (Sta. 31+55, 35 feet right) to accommodate a new pedestrian sidewalk ramp
- Removal of an existing catch basin (Sta. 33+10, left) and addition of a Type 'C' double grate Type I catch basins (with a 4-foot-deep sump) on the southeast curb line of the Route 67/Route 313/Franklin Street intersection to control the magnitude of bypass flow to the south along Route 313

Analysis of this system includes gutter flow computations along Route 67 from the easterly end of the Walgreens Entrance System to the westerly side of the Route 67/Route 313/Franklin Street intersection, including the gutters and inlet structures along Martha Street, and School and Farrel Streets (which bypass to Martha Street), gutter flow computations along the southerly gutter of Route 67 east of the Route 67/Route 313/Franklin Street intersection from the high point in Route 67 on the bridge over the Naugatuck River, and pipe flow analysis (with hydraulic grade line analysis) of the new and existing pipes in this system. These analyses also include runoff contribution from the complex at 100 Bank Street, which is collected and piped to the State-owned drainage system.

The Final Drainage Design Checklist is included in Appendix D.

5.4 DRAINAGE DESIGN CRITERIA

5.4.1 GENERAL

This project is classified as a spot improvement project. While the project does include sections that add (minor widening) and subtract (adjustment to curb lines to better control vehicular and pedestrian movement) roadway pavement, the majority of the project along Route 67 consists of a mill and overlay with full-depth reconstruction at the gutter lines to allow for the installation of new curb and reconstruction of the sidewalk along the southerly side of the roadway.

Modification to the existing drainage facilities due to changes in roadway widths or other improvements are generally designed in accordance with the requirements and guidelines contained in the CTDOT *Drainage Manual* as follows:

- Design Storm Event – Gutter and pipe capacities are designed to accommodate a 10-year frequency storm event.
- Longitudinal Gutter Grades – No adjustments will be made to the existing roadway profile. Gutter grades will match existing.
- Pavement Cross Slopes – No adjustments will be made to the existing roadway cross slopes. Cross slopes will match existing.
- Width of Gutter Flow – Route 67 is classified as a state arterial roadway with average daily traffic greater than 3,000 vehicles and a speed limit less than 45 mph. Allowable spread of flow is limited to no more than the width of the shoulder plus half the width of the travel lane.
- Drainage Pipe – Drainage pipe is designed to flow "just full" according to the capacity computed by the Manning's equation. Minimum new pipe diameter is 12 inches. The hydraulic grade line in the system is limited to no less than 1 foot below the structure grate or cover elevation.

5.5 COMPUTATIONAL METHODS

5.5.1 GENERAL

The hydrologic and hydraulic computations supporting the proposed drainage improvements on Route 67 were developed in accordance with the methods and guidelines contained in the CTDOT *Drainage Manual*.

The detailed analysis supporting the improvements are included in the project Drainage Design Report.

5.6 STORMWATER MANAGEMENT

The linear nature of this project, generally limited ROW width, the spot improvement category of the project (with the intent to retain as much of the existing drainage system as is reasonable), and the high degree of development within the ROW preclude the development of primary stormwater treatment practices.

The project specifies catch basins with 4-foot-deep sumps at the most downstream inlet on the three drainage systems that are proposed to be modified. This includes the following:

- At Route 67 Sta. 18+69 left on the Church Street System (seven inlets in system, including one with a 4-feet-deep sump)
- At Route 67 Sta. 25+96 right on the Walgreens Entrance System (five inlets in system, including one with a 4-feet-deep sump)
- At Route 67 Stas. 31+55 right, 31+72 left, 32+46 right, and 33+11 right on the Route 67/Route 313 System (eleven inlets in system, including three with 4-feet-deep sumps)

5.7 DRAINAGE RIGHTS-OF-WAY IMPACTS

The proposed improvements to the drainage systems along Route 67 will be contained within the existing State ROW.

6 UTILITY IMPACTS

A number of utility meetings have been conducted in the course of this project to identify utility impacts. Based on the design plans and utility coordination efforts, a number of utilities will be impacted by the proposed construction, which will require utility relocations as well as redesign around impacted utilities. There will also be a need for relocations. A Utility Conflict Matrix has been developed and is presented in Appendix E. A test pit program was outlined by SLR, reviewed by CTDOT and the utility companies, and finalized accordingly. The test pit program was administered by CTDOT, and on May 25, 2023, the Department furnished its test pit data to SLR. Test pits and utilities encountered were located by District Surveys. Based on SLR's review of the utility test pit data, determinations have been made with regard to the need for utility relocations. See updated utility test pit matrix included in Appendix E.

Anticipated impacts are summarized as follows.

6.1 UTILITY POLES

A number of utility poles have been identified for relocation in support of the proposed construction activities. Several of those poles have been deemed to conflict with plans for proposed widening. In other locations where new or replacement sidewalks are to be constructed, pole relocations are necessary to establish a clear width of 48 inches for accessibility purposes. There are locations where the roadway will actually be narrowed under the proposed conditions; however, the utility companies have elected not to relocate those poles to the new curb line. The design assumes poles to generally be relocated 18 inches clear from the face of curb.

The original utility conflict matrix included in the Appendix summarizes the utility pole impacts as initially determined by the design team. While the design team has identified those poles physically impacted by the work, the utility companies are required to determine any need for additional relocations due to alignment considerations.

Subsequent to field and office utility meetings, SLR and the Department continue to coordinate with utility companies to finalize plans and estimates for pole relocations. The last field utility meeting was conducted on November 22, 2022. An additional conference call was conducted on May 30, 2023, to discuss pole relocations with Eversource. A number of poles will be relocated to accommodate the proposed roadway widening and where necessary to meet accessibility guidelines where poles are located adjacent to or within sidewalks. Pole relocations along Bank Street are necessary in conjunction with work carried out under State Project No. 124-172, and relocations along River Street are necessary in connection with State Project No. 124-165. The following provides a summary of pole relocations based on SLR's understanding of the impacts.

Pole ID	Location	Relocate	Relocation Notes*
State Proj. No. 124-172 – Bank Street			
24895	Sta. 24+65L/West radius Walgreens drive	Yes	Relocate pole back from edge of road to allow 48" min. in front of pole for accessibility.
6420	Sta. 26+04L/In front of Walgreens - east of driveway	No	Relocation not required for construction of proposed design.
2701	Sta. 27+11L/In front of Walgreens	Yes	Relocate pole toward new edge of road to 18" from face of curb.
2699	Sta. 28+65L/West radius of Martha Street	Yes	Relocate pole westerly "in-line" with ex. pole.
2698	Sta. 29+93L/East of Martha Street	Yes	Relocate pole behind new curb - THIS POLE CANNOT BE MOVED UNTIL WALL IS REPLACED - WILL NOT MEET ADA IF POLE MOVED IN ADVANCE.
2399	Sta. 31+13L/100 Bank Street vicinity	No	Relocation not required for construction of proposed design.
State Proj. No. 124-165 – River Street			
5989	Sta. 42+55L River Street at Bank Street	No	Relocation not required for construction of proposed design.
9598	New pole south of Pole 3989	No	Relocation not required for construction of proposed design.
F3141	Sta. 41+57L River Street just north of bridge	Yes	Relocate pole to North for bridge wingwall construction.
60494	Sta. 39+85L River Street just south of bridge	Yes	Relocate pole back behind new sidewalk (requires guy).
*Relocations based on November 22, 2022, field utility meeting determinations and May 30, 2023, conference call.			

Note: It is important to note that Pole 2698, located in front of 100 Bank Street, cannot be relocated until Retaining Wall 102 has been constructed. If the pole is relocated prior to relocation of the existing wall, accessibility requirements cannot be met at this location. This was communicated to Eversource on our May 30, 2023, conference call and may require a subsequent mobilization/relocation phase by the utility companies.

6.2 UNDERGROUND UTILITIES

6.2.1 COMMUNICATIONS

Frontier maintains a communications duct bank that spans the entire Bank Street corridor. The duct bank does not follow River Street. The concrete-encased duct bank configuration varies; however, it is generally a 12 or 16 conduit configuration with stacked rows of four 4-inch conduit. From utility mapping, the duct bank is believed to be generally 24” in width and varies in height from 16” to 22”. Where the duct bank spans bridges over Little Brook, the conduits are splayed into two wider rows.

The duct bank generally follows the southerly edge of Bank Street. There is minor widening with granite stone curbing proposed throughout. There are five large utility vaults within the project corridor,

measuring 10 feet long by 5 feet wide and 7 feet to 10 feet deep. While the existing concrete curbing appears to cross over these vaults, test pits were advanced to confirm the depth to top of vault and duct bank in order to confirm the ability to install granite stone curbing. There are a limited number of new and replacement catch basins proposed. At a minimum, test pits in the locations of catch basins proposed along the south edge of road will be necessary to verify the location of the duct bank.

Based on utility test pit data furnished by CTDOT, no conflicts are anticipated in connection with curb replacements; however, the storm drainage design has been revised accordingly to avoid relocation of utility duct banks. In two instances, it appears from the test pit data that the utility duct bank was routed behind existing catch basins presumably to avoid conflict with drainage at the time of installation. No relocation of communications duct banks is anticipated.

6.2.2 GAS

Eversource maintains an 8-inch intermediate pressure gas line within Bank Street throughout the project limits. Similar to the Frontier duct bank, the gas main follows Old Road to avoid the Little River bridge crossings on Bank Street. At least 11 valve boxes have been identified to be reset. Additional resets will be necessary as mapping efforts are finalized. While Eversource has furnished mapping indicating gas service locations, not all valve boxes have been identified in the field. The designer will continue to work with Eversource to locate and identify valve boxes for adjustment.

At 100 Bank Street, it is understood that the existing gas service is located under or within the existing stone retaining wall that supports the parking lot above. Given a portion of this wall is to be reconstructed and relocated under this project, it is assumed that gas service will have to be relocated/replaced to a point. Further coordination with Eversource will be conducted.

Test pits were advanced to confirm horizontal location of the gas main where new catch basins are being proposed.

In connection with State Project No. 124-165, the existing 2-inch gas line in River Street follows the westerly edge of road. At the Little River bridge crossing, the 2-inch steel gas line is mounted to the exterior of the existing parapet on the western side of Bridge No. 01585. The gas line will need to be temporarily relocated during construction to accommodate demolition, reconstruction, and widening of the existing parapet, exterior beams, and bridge deck. While the current plan is to then have the gas main relocated onto the widened superstructure, the design team will explore with Eversource the potential for a single relocation alternative.

6.2.3 SANITARY SEWER

The town and its vendor, Veolia, maintains an 18-inch sanitary sewer interceptor line spanning the entire Bank Street corridor. Like the other utilities, the sewer follows Old Drive to avoid the bridge crossings at Little River. It is understood that the interceptor was installed in the early 1990s, replacing an existing sanitary collection system. Construction as-built drawings indicate cross connections to the abandoned sewer system to intercept customer laterals. Further research and a meeting with the town will be required to better map the laterals given the quality of existing mapping provided.

A number of sanitary sewer manholes have been identified for resetting prior to final paving.

A 24-inch sewer extends up Franklin Street, and the existing sanitary sewer also follows River Street where it is attached to the bridge over Little River. On the bridge, the sewer hangs beneath the westerly or upstream fascia and is a ductile iron pipe with mechanical joints. The semi-final design submission assumed the existing 24-inch sewer main supported under the upstream overhang of Bridge No. 01585 would remain in place during construction; however, upon further review of constructability and environmental considerations, this structure will now be relocated. The sewer relocation in connection with the bridge work will be undertaken under the breakout River Street bridge project, State Project No. 124-165.

6.2.4 WATER

Aquarion maintains a 12-inch potable water system generally all along Bank Street. There are isolated short segments of smaller-diameter mains. From the westerly project limit to Old Drive (West), a 6-inch main parallels the 12-inch main. 8-inch mains service Old Drive (East), Beecher Street, Martha Street, Franklin street, and River Street.

There are numerous water valves within the roadway and behind the curb, and at least 24 curb boxes will have to be adjusted to the final elevation of pavement or sidewalk. Three hydrants will have to be relocated as part of the project. The first is located at the corner of Church Street where the radius will be broadened to accommodate the design vehicle. The second is located at the corner of Martha Street where widening and sidewalk construction will occur. The final hydrant relocation is just east of 100 Bank Street on the north side of Bank Street. The existing hydrant restricts accessibility on the existing sidewalk. Also, because the roadway is being narrowed at this location, the hydrant will be relocated to enhance emergency access. The state's contractor will be responsible for relocating hydrants and adjusting curb boxes, although Aquarion will furnish the curb boxes. While this determination has been made, coordination with Aquarion is ongoing.

The 8-inch water main in River Street extends from Bank Street to the Little River bridge crossing and terminates some 200 feet south of the bridge. The water main is supported beneath the Little River bridge, located between the western fascia girder and the first interior girder. The water main will need to be temporarily supported during construction. While the upstream or westerly end of the bridge will be reconstructed, the existing water main is supported by cast-in-place concrete diaphragms that will need to be removed to widen the bridge. Aquarion has requested that this water main be replaced. Coordination with Aquarion is ongoing, and the design team may pursue an option for temporarily removing the water main from the bridge during construction as there do not appear to be any customers south of the bridge. Any water maim work agreed to on River Street will be performed under the River Street bridge project, State Project No. 124-165

6.2.5 UTILITY TEST PIT PROGRAM SUMMARY

In May 2023, the Department advanced a utility test pit program based on potential conflicts identified by SLR with input from both CTDOT and the utility companies. A copy of the recommended test pit

program is contained in Appendix E. Test pits were excavated for the purpose of locating buried water, communications, and gas facilities. A number of 24 test pits were excavated, with the Department's survey team locating the utilities encountered. The Department was successful in locating the subject utility at each location. At several locations, additional utilities, services, and appurtenances were encountered and documented. A utility Test Pit Field Data matrix and phot logs were furnished for SLR's information.

Potential utility conflicts identified included depth of utility in relation to proposed curbs and storm drains, depth of utility in relation to excavation for roadway widening, and horizontal location of utility in relation to proposed storm drainage installations. Any known conflicts with storm drainage have been resolved by redesign. No relocation of water mains or communications duct banks are envisioned. The 12-inch steel gas main in the vicinity of Walgreens was determined to be within or near the depth of excavation for establishing the roadway subgrade. The following summary notes recommended relocation of gas in this area.

The following provides an overview of the test pits excavated, with notes describing the utility conflict assessment at each location. The complete test pit data, including coordinates and elevations, is shown on the roadway plans.

GAS (EVERSOURCE)					
Test Pit #	BASELINE		UTILITY DESCRIPTION	RELOCATION ANTICIPATED	NOTES
	STATION	OFFSET			
G-1	18+69	18.5' L	8" Steel Gas	Yes	8" Gas and service within approx. one foot of proposed CB
G-2	19+17	38.5' R	8" Steel Gas	No	Proximity to proposed excavation for drainage ok
			1/2" Service Line	No	
			24" RCP	n/a	
G-3	23+98	35.0' L	8" Steel Gas	No	Depth to proposed subgrade ok
G-4	24+25	29.8' L	8" Steel Gas	No	Depth to proposed subgrade ok; Prop. RCP lateral in conflict eliminated
G-5	27+46	18.2' L	8" Steel Gas	Yes	8" Gas shallow/within limits of proposed subbase
G-6	28+63	17.8' L	8" Steel Gas	Yes	8" Gas shallow/within limits of proposed subbase
G-7	29+33	20.5' L	8" Steel Gas	Yes	8" Gas shallow/within limits of proposed subbase
G-8	31+07	3.4' L	2" Plastic Gas	No	Prop. RCP lateral in conflict eliminated
			Water Gate	No	Prop. RCP lateral in conflict eliminated
			6" Steel Water	No	Prop. RCP lateral in conflict eliminated
G-9	32+30	40.3' L	Gas Gate	No	Prop. Curb against gate valve
			8" Steel Gas	No	
G-10	32+82	29.2' L	8" Steel Gas	No	No conflict with proposed curb

TELECOMMUNICATIONS (FRONTIER)					
Test Pit #	BASELINE		UTILITY DESCRIPTION	RELOCATION ANTICIPATED	NOTES
	STATION	OFFSET			
T-1	16+65	13.3' R	Duct 6 over 2	No	No conflict with proposed curb
			2" Steel Traffic Loop	No	Conduit over top of ex. 2" gas - cannot relocate conduit - call for hand dig
			2" Steel Traffic Loop	No	Conduit over top of ex. 2" gas - cannot relocate conduit - call for hand dig
			2" Steel Traffic Loop	No	Conduit over top of ex. 2" gas - cannot relocate conduit - call for hand dig
			2" Gas	No	Call for hand dig
T-2	22+43	12.9' R	Duct 6 over 2	No	No conflict with proposed curb
T-3	24+32	10.5' R	Duct 6 over 2	No	No conflict with proposed curb; Prop. RCP lateral in conflict eliminated
T-4	25+92	13.8' R	Duct 6 over 2	No	No conflict with proposed curb; No conflict with CB replacement
			12" Steel Water	No	Water main location in conflict with best avaialble mapping - Confirm with Aquarion
T-5	28+77	16.4' R	Duct 6 over 2	No	No conflict with proposed CB
T-6	31+38	22.8' L	Duct 4 over 2	No	Prop. RCP in conflict eliminated
			24" RCP	n/a	
T-7	32+24	35.6' L	Conc Duct	No	No conflict with proposed curb
			8" Steel Gas	No	No conflict with proposed curb
			Wood Duct	No	Noted as abandoned
T-8	33+16	24.6' R	Duct 4 over 2	No	CB in conflict redesigned
T-9	33+42	24.4' R	Duct	No	No conflict with proposed curb

WATER (AQUARION)					
Test Pit #	BASELINE		UTILITY DESCRIPTION	RELOCATION ANTICIPATED	NOTES
	STATION	OFFSET			
W-1	15+63	20.2' L	12" Steel Water	No	No conflict with proposed drainage
			15" RCP	n/a	
			8" Clay	No	
W-2	24+25	2.4' R	8" Steel Water	No	Prop. RCP in conflict eliminated
W-3	31+07	3.4' L	Water Gate	No	Prop. RCP in conflict eliminated
			6" Steel Water	No	Prop. RCP in conflict eliminated
			2" Plastic Gas	No	Prop. RCP in conflict eliminated
W-4	31+73	62.2' R	8" Steel Water	n/a	Revisit for Proj. No. 124-165
W-5	41+48	15.5' L	8" Steel Water	n/a	Revisit for Proj. No. 124-165
			2" Plastic Gas	n/a	
			24" Iron Sanitary	n/a	

Continuing coordination will be required as final utility estimates and relocation plans are prepared by the utility companies. In addition, follow-up with Aquarion remains ongoing in an effort to resolve a possible discrepancy encountered between mapped and actual water main location east of Bridge No. 01061.

7 ENVIRONMENTAL PERMITS

The project involves activities within and/or along sensitive federal- and state-regulated natural resource areas. These resources include the Little River, Naugatuck River, and their associated FEMA-designated floodways and 100-year flood zones. According to CTDEEP Natural Diversity Data Base (NDDB) maps (December 2022), no polygon areas of concern fall within the project limits. The project was presented at the CTDOT Interagency Coordination Meeting (ICM) in August 19, 2021. The following permits were identified at that meeting.

Spot Improvements Project

The improvements located along Church Street will include encroachments within the interpolated 100-year floodplain of the Little River. These activities include minor widening of Church Street curb lines, catch basin replacement, and milling and overlay. These activities will result in a net cut within the 100-year floodplain. For these activities within the floodplain, a CTDOT Flood Management General Certification (FMGC) will be triggered. The project qualifies under FMGC Category 2 for Minor Activities "Roadway Repair, Repaving, Maintenance & Underground Utilities." No other permits are required for the Spot Improvement project.

River Street Bridge Project

The proposed improvements include minor widening of the upstream side of Bridge No. 01585 on River Street (Route 313) to accommodate the continuation of a 5-foot-wide concrete sidewalk from Bank Street and along the western side of River Street. The widening, as presented in our design plans, mirrors widening performed previously under an Office of the State Traffic Administration (OSTA) Major Traffic Generator offsite roadway improvement.

The widening maintains the low chord of the bridge and will involve some minor activity within the FEMA floodway and floodplain. Temporary impacts below ordinary high water are also expected to support the sewer main on the River Street bridge during demolition of the existing bridge parapet and overhang.

The following permits were identified for the work that would be associated with Bridge No. 01585 during the ICM and subsequent discussions within CTDOT Hydraulics and Drainage:

- USACE Self Verification Notification Form (GP 2 or GP 19)
- CTDEEP Water Resources Construction Activities Permit
- CTDEEP Flood Management General Certification
- CTDEEP Fisheries Consultation Form

Since these permits are associated with the Bridge No. 01585 widening, they will be pursued separately under the breakout River Street Bridge project State Project No. 124-165.

8 SEDIMENT AND EROSION CONTROL

Sediment and erosion controls will be installed and maintained during construction to prevent disturbed soils, imported materials, or construction debris from encroaching upon the permitted and approved limits of wetlands and watercourses. Hay bale and/or silt fence protection will be required at all existing and proposed drainage structure inlets and along the toe of all fill slopes and stockpiles. All water resulting from construction dewatering activities will be pumped to a temporary sediment basin prior to discharge to the drainage system. The contractor will be required to maintain a supply of spill control materials and products on site at all times for the duration of the work. The contractor will not be allowed to store materials that are harmful to the environment within protected areas (i.e., wetlands, floodplains, buffer areas). Fueling of equipment will not be allowed in protected areas. All methods and procedures applied will be in accordance with the Connecticut Council on Soil and Water Conservation *2002 Connecticut Guidelines for Soil Erosion and Sediment Control* as well as the *2004 Connecticut Stormwater Quality Manual*.

9 SUBSURFACE EXPLORATION AND GEOTECHNICAL INVESTIGATIONS

Eight drilled borings and seven excavated test pits were advanced for the purposes of determining subsurface conditions for design of roadway, structures, and traffic control signal foundations. Laboratory sampling was conducted. Design and construction guidance is provided for roadway and sidewalk base along with recommendations for retaining walls, including soil nail, cast-in-place, and embankment wall construction.

Refer to Geotechnical Engineering Report prepared by SLR dated June 21, 2019 (latest revision June 15, 2023), for more information (provided under separate cover).

10 STRUCTURES

10.1 RETAINING WALLS

10.1.1 RETAINING WALL 101 – WALGREENS SOIL NAIL WALL

The Walgreens at 144 Bank Street is located at the top of a steep embankment that is largely stabilized by a combination of landscaping and native vegetation. In order to widen Route 67 along the northern side of the roadway to provide two lanes westbound from Martha Street to Old Drive, a wall system is required to retain the steep slope.

The wall is proposed to be 183 feet long and be approximately 11 feet tall at its highest point. A series of test pits were performed on the slope to determine subsurface conditions. Traditional borings were not feasible given the topography and the presence of overhead utilities. The test pits indicated bedrock present between 4 and 5 feet below the toe of the slope.

A soil nail wall has been proposed in this location. The wall will be finished with a simulated stone masonry formliner in a pattern resembling the existing stone walls at 100 Bank Street to provide for continuity in aesthetics through the corridor. Other alternatives considered included a modular block wall and a cast-in-place concrete cantilever wall. Both alternatives would also require a temporary soil nail wall or some other temporary support of the embankment during construction, so the preferred alternative incorporates the cost and effort for soil nails into the permanent structure. For a more detailed analysis of the alternatives considered at this location, please refer to the Retaining Wall Type Study submitted under separate cover.

10.1.2 RETAINING WALL 102 – 100 BANK STREET WALL

Two stone masonry walls support the parking lot in front of 100 Bank Street, with a granite stone staircase between the two walls providing pedestrian access from street level to the parking lot. The wall on the western side of the staircase needs to be reconstructed to accommodate the widening of Route 67 and adjustments to the curb radius and improvements for intersection sight distances at the Martha Street intersection.

Given that the building at 100 Bank Street is listed on the National Register of Historic Places, it is important that the aesthetic of the existing walls be maintained. To accomplish this, a new 145-foot-long reinforced concrete wall will be constructed, and a stone veneer will be applied. The stone for the veneer shall be consistent in color, size, and shape with the existing stone wall to remain and shall be constructed in a similar pattern. Where feasible, the stone salvaged from the existing wall will be reused in the veneer. The existing capstones and granite steps will be removed and reset upon completion of the new wall. Reconstruction of the existing masonry wall was also considered.

10.1.3 RETAINING WALL 103 – RIVER STREET EMBANKMENT WALL (UNDER SEPARATE BREAKOUT PROJECT)

Approximately 300 to 350 feet south of Bridge No. 01585, River Street over Little River, a 57-foot-long retaining wall will be required for installation of a new sidewalk along the west side of River Street. The roadside rises at a 2:1 slope, and the low embankment wall will be necessary to retain the cut slope required to install the sidewalk. A low cast-in-place concrete embankment wall exists just to the south, supporting the cut slope above the existing roadway. The proposed embankment wall will consist of precast concrete modular blocks due to the low height of the wall and to minimize impacts to the existing embankments.

10.2 BRIDGES

10.2.1 BRIDGE NO. 01060

Bridge No. 01060, which carries Route 67 over Little River, is located between Old Drive (West) and the Church Street/Beecher Street intersection. The bridge consists of a steel girder and reinforced concrete deck superstructure supported by concrete abutments. Two barriers are present on the bridge – the original steel bridge rail and a Thrie-beam railing.

During the Preliminary Design phase, SLR evaluated alternatives for improving the aesthetic of the bridge by repainting or replacing the existing steel bridge rail. Following the submission, CTDOT indicated that the railing had been subsequently repainted, and no additional work was required at this bridge.

The Route 67 corridor was milled and repaved in 2021. The previously visible asphaltic plug expansion joints have been paved over. The total depth of pavement over the bridge is unknown, and no pavement thickness is shown on the existing bridge plans. Photographs from the 2021 paving project do not appear to have gone down to bare deck; therefore, it is assumed that when the 2-inch milling proposed under this project is performed the bridge deck will not be exposed, and no deck repairs or replacement of the membrane (if present) will be required. New asphaltic plug expansion joints will be installed.

10.2.2 BRIDGE NO. 01061

Bridge No. 01061, which also carries Route 67 over Little River, is located approximately 500 feet east of Bridge No. 01060. This bridge consists of a steel through girder and floor beam superstructure on reinforced concrete abutments. The bridge was originally constructed in 1949 and rehabilitated in 1980. At some point following the 1980 rehabilitation, the existing steel railing along the pedestrian walkway on the southern side of the bridge was replaced with an aluminum guiderail. The exterior of the through girder facing the sidewalk was also repainted. The remaining paint on the top and roadside faces of the through girders exhibits widespread cracking and peeling. Under this project, the top and roadside faces of the girders will be sandblasted and repainted in place. No modifications to the existing Thrie-beam guiderail are proposed.

In 1980, under State Project No. 124-125, Bridge No. 01061 was rehabilitated, and 2-inch strip seal joints were installed. These joints were subsequently paved over. Under this project, only a mill and overlay is

proposed; therefore, the strip seal joints will remain paved over. To accommodate movement of the bridge and mitigate any pavement cracking that may occur over the joints, asphaltic plug expansion joints will be installed over the strip seal joint locations.

10.2.3 BRIDGE NO. 01585 (UNDER SEPARATE BREAKOUT PROJECT)

In order to accommodate the sidewalk expansion along the western side of River Street, Bridge No. 01585 will be widened. Originally constructed in 1936, the bridge was widened in 2000 to provide a sidewalk along the eastern side of the roadway. The existing fascia beam was removed, and two new beams were constructed. The wingwalls were partially reconstructed to match the location of the new parapet.

As indicated, work on Bridge No. 01585 will be implemented under a breakout project. Under the breakout project, the out-to-out bridge width will be increased from approximately 44-feet 10-inches to 48-feet 6-inches. The bridge will accommodate two 11-foot lanes northbound and one 11-foot lane southbound with 2-foot shoulders. A 5-foot sidewalk with 15-inch-thick vertical concrete parapet with aluminum handrail will be constructed on the western side of the bridge. In order to accommodate this widening, the existing fascia beam will be removed, and two new precast concrete beams will be installed. The bridge seat will be partially reconstructed and widened to accommodate the new beams. The northwestern wingwall will be partially reconstructed to align with the new location of the parapet. Due to the existing geometry of the abutments, a short section of sidewalk will need to be cantilevered over the top of the existing wingwall. The top of the wingwall will be raised to provide a full-height parapet with handrail. New approach guiderail will be installed on each approach.

During Preliminary Design, a meeting was held with Seymour WPCA staff, and further discussion was had with the WPCA engineering consultant James Galligan, PE (Nafis & Young, Inc.), to further understand the limitations associated with the existing 24-inch sewer main mounted to the bridge. The sewer main is one of WPCA's main interceptors, which conveys sewer flows from Oxford and Seymour to the WPCA plant near the Seymour/Ansonia town line. The semi-final design submission assumed the sewer main would remain in place during construction; however, based on further discussions with Nafis & Young, NVCOG, and CTDOT following the semi-final design submission, this sewer main is now proposed to be relocated and will be implemented as part of the breakout River Street Bridge project.

During the Preliminary Design phase, NVCOG expressed interest in creating a more uniform appearance given that there are currently two parapet styles on the bridge – a vertical concrete parapet with a two-rail aluminum handrail constructed during the initial widening and a Texas-style concrete parapet from the original construction. The existing parapet on the eastern side of the bridge is 27 inches high with a 23-inch-high aluminum railing for a total system height of 50 inches. Since the original widening project, crash testing standards have changed. The proposed system for the widening on the western side of the bridge will consist of a 36-inch-high vertical concrete parapet with an 11-inch-high single aluminum handrail for a total system height of 47 inches. The aluminum handrail will have the same finish and rail shape as the two-rail system on the eastern side of the bridge. While the two parapet and rail systems will not be identical, they will be visually similar.

Western fascia upstream

Eastern fascia (downstream)

Western fascia (upstream)

11 CONSTRUCTABILITY & MAINTENANCE AND PROTECTION OF TRAFFIC

11.1 CONSTRUCTION SEQUENCE

The project will be constructed under two separate projects, with the work on Route 67 (Bank Street) being advanced ahead of the work on Route 313 (River Street). Construction stages for both projects are summarized as follows:

11.1.1 ROUTE 67 (BANK STREET) IMPROVEMENTS

STAGE 1 – RETAINING WALLS 101 AND 102

Stage 1A*:

- Retaining Wall 101
  Embankment Wall (Soil Nail Wall)
  Bank Street Sta. ±26+50L to Sta. Sta. ±28+79L

Stage 1B*:

- Retaining Wall 102
  Cast-in-Place Concrete Cantilever Wall with Stone Veneer
  Bank Street Sta. ±29+28L to Sta. ±30+30L

*Stages 1A and 1B may be concurrent/utilize same traffic pattern.

Once Stage 1 retaining walls are completed, the contractor may proceed with adjacent sidewalk and curbing work detailed under Stage 2C.

STAGE 2 – ROADWAY CONSTRUCTION AND BRIDGE NO. 01061 PAINTING

Stage 2A – Roadway:

- Roadway widening/narrowing, storm drainage, guiderail installations, and driveway modifications, generally proceeding from east to west
- Granite stone curbing installation
- Concrete sidewalk construction – Implement sidewalk detour plans
- Coordinate relocation of utility poles with roadway widening

Stage 2B – Bridge Painting:

- Paint steel girders concurrent with sidewalk reconstruction while pedestrian traffic is detoured via Old Drive.

Note: Bridge painting shall not be performed while bridge sidewalk is in use.

STAGE 3 – TRAFFIC CONTROL SIGNAL MODIFICATIONS

- Modify existing signals and equipment to accommodate revised lane arrangements, pedestrian crossings, and equipment modernization.

STAGE 4 – MILL AND OVERLAY

- Mill and overlay roadway after completion of all construction activities
- Shim crown based on revised P.A.G. where required

11.1.2 ROUTE 313 (RIVER STREET) IMPROVEMENTS (BREAKOUT PROJECT)

STAGE 1 – RETAINING WALL 103

Stage 1

- Retaining Wall 103
  Embankment Wall (Modular Block Wall)
  River Street Sta. ±36+97L to Sta. ±37+67L

STAGE 2 – BRIDGE NO. 01585 WIDENING

Stage 2A:

- Utility relocations – Water, sanitary sewer, and gas on bridge*
- Demolition of existing upstream cantilever, including end beam, slab, and parapet and including relocation of existing gas main and temporary support of sanitary sewer

Stage 2B:

- Superstructure widening, including new upstream beam, cast-in-place deck, and parapet

*Stage 2A Utility relocation work may proceed concurrent with Stage 1 Retaining Wall.

STAGE 3 – ROADWAY CONSTRUCTION

- Roadway widening, storm drainage, guiderail installations, and driveway modifications, generally proceeding from north to south
- Granite stone curbing installation
- Concrete sidewalk construction (no sidewalk detour required)

STAGE 4 – MILL AND OVERLAY

- Mill and overlay roadway after completion of all construction activities
- Shim crown based on revised P.A.G. where required

11.2 MAINTENANCE AND PROTECTION OF TRAFFIC

Means and methods for temporary traffic control during construction will vary based upon the range of construction operations. The sequence described herein contemplates building retaining walls and widening the River Street bridge early in the project, so the contractor will be able to take advantage of the physical space gained as the roadway improvements proceed. While it is envisioned that CTDOT's typical Construction Traffic Control Plans will be implemented for the more routine linear roadway work, specific Maintenance and Protection of Traffic Plans have been developed for the structures work. As typical, the applicable Construction Traffic Control Plans will have to be modified to suit (i.e., placement of advance warning signage, etc.). Temporary traffic control plans for structures work will generally involve shoulder closures and lane shifts accommodating a minimum of one travel lane in each direction. For the bridge widening, short-duration alternating one-way traffic operations are envisioned; however, that would be expected to be permitted only as a daily operation.

Old Drive (East) is a one-way street as it departs Bank Street. The design permits closure of Old Drive (East) as necessary for work at that location, with traffic accessing Old Drive (West) at the traffic control signal immediately west of that location.

For construction of Retaining Wall 101 and Retaining Wall 102 at the corners of Martha Street, it is envisioned that Martha Street would be closed at Bank Street. Martha Street has a narrow paved width of ±19 feet, and given retaining wall construction will occur at both street corner radii, it would be difficult to maintain ingress/egress to Martha Street as the walls are constructed. Martha Street is a two-way street serving a limited-scale residential neighborhood, and temporary closure will require detour signage diverting traffic to the Old Drive (West intersection) via George Street, Shelton Street, Pershing Avenue, and Rimmon Street.

While plans for Maintenance and Protection of Traffic will address vehicular traffic, safe pedestrian mobility during construction shall also be addressed. As there is no sidewalk along the north side of Bank Street west of Old Drive (East), the project does present some challenges in regard to providing alternative pedestrian routes during construction. To that end, where there are no existing sidewalks on the north side, the south side sidewalk reconstruction work shall be expedited to the extent practical. Prior to removal and replacement of sidewalks along the south side of the roadway, sidewalk detour plans shall be implemented as shown on the Maintenance and Protection of Traffic Plans. For sidewalk work and bridge girder painting between the two Old Drive intersections, pedestrians shall be detoured via the existing Old Drive sidewalk system. Where sidewalks do exist on both sides of Bank Street, the contractor shall not be permitted to impact both sidewalks concurrently, but rather shall direct pedestrians to one side of the street while the opposing sidewalks are reconstructed.

11.2.1 RETAINING WALLS

Construction of Retaining Wall 101 and Retaining Wall 102 on Route 67 (Bank Street)

- Merge Route 67 westbound through traffic (on bridge approach) to a single lane east of Route 313, maintaining a single lane through the intersection for Stages 1A and 1B.
- Stages 1A and 1B to be constructed concurrently.
- Maintain single westbound through lane from Route 313 to the Walgreens drive.
- Maintain traffic control signal operations at Walgreens drive.
- Implement sidewalk closure along the north side of the road from Walgreens drive to Route 313; divert pedestrians to south side of Route 67.
- Implement project Detour Plan and close Martha Street at Route 67/sign Martha Street accordingly at George Street (Detour Checklist included in Appendix).
- Advance warning signage on Route 67 westbound approach to be parapet mounted above pedestrian height.

Temporary traffic control for work on Route 67 to generally conform to the requirements of CTDOT Construction Traffic Control Plan 10 “Work in Right Lane – 4 Lane Undivided Highway” as modified by the project Maintenance & Protection Plans.

Construction of Retaining Wall 103 Route 313 (River Street)

- Implement alternating one-way traffic operation daily; restore normal traffic operations at the end of each workday.
- This work may be performed concurrently with utility relocations at the Route 313 bridge over Little River.

Temporary traffic control for work on Route 313 to generally conform to the requirements of CTDOT Construction Traffic Control Plan 13 “Work in Travel Lane and Shoulder – Two Lane Highway – Alternating One-Way Traffic Operations” as modified by the project Maintenance & Protection Plans.

11.2.2 BRIDGE NO. 01585 WIDENING

For bridge widening:

Relocate utilities implementing lane and shoulder closures as required.

Demolish existing bridge superstructure and modify substructure:

- Maintain one lane of traffic in each direction.
- Protect work zone with temporary precast concrete barrier curb (TPCBC); pinned.
- Maintain traffic control signal operations at Bank Street/River Street.
- Extend TPCBC to edge of roadway at required taper rates or install sand barrel array(s).

- Install temporary pavement markings as shown on plans/mask or remove existing pavement markings in conflict.
- Contractor may adjust TPCBC terminal units to allow for construction access only with full-time flagger.

Construct superstructure widening (new beam[s], deck, and parapet):

During off-peak hours, the contractor will be permitted to implement one-way alternating traffic operations. The duration of one-way alternating traffic shall be minimized.

- Protect work zone with TPCBC; pinned.
- Maintain traffic control signal operations at Route 67/Route 313.
- Install sand barrel arrays unless TPCBC extends to edge of roadway at required taper rate.

Temporary traffic control for work on River Street to generally conform to the requirements of CTDOT Construction Traffic Control Plan 13 "Work in Travel Lane and Shoulder – Two Lane Highway – Alternating One-Way Traffic Operations" as modified by the project Maintenance & Protection Plans.

Alternatively, while the superstructure work is performed, one travel lane could remain open for River Street northbound traffic only while River Street southbound traffic can be detoured to Wakely Street thus eliminating the need for flaggers. The feasibility of this temporary traffic control option would be further discussed with the Department.

11.2.3 ROADWAY CONSTRUCTION AND BRIDGE NO. 01061 PAINTING

Construction of roadway widening/narrowing, storm drainage modifications, guiderail, installation of curbing and sidewalks, and driveway modifications as well as painting of the steel girder on Bridge No. 01061.

- Contractor to implement CTDOT Construction Traffic Control Plans 10 through 17, as required, for work on:
    - Undivided and/or two-lane highways
    - Work in middle of roadway at intersection
    - Alternating one-way traffic operations
- Provisions shall be made for uninterrupted access to businesses during construction; contractor shall coordinate with property owners and tenants for driveway impacts.
- Provisions shall be made for safe pedestrian mobility in connection with sidewalk impacts.
    - Relocate pedestrians to opposite side of roadway as sidewalks are replaced.
    - Minimize the length of sidewalk taken out of service.
    - Implement pedestrian detour plans when there is no sidewalk on the opposite side of the roadway in accordance with Maintenance and Protection of Traffic plans.

Generally, sidewalks exist on both sides of Route 67 between Old Drive (East) and Route 313. New sidewalks shall be constructed on the north side of Bank Street following construction for retaining walls.

Pedestrians shall be directed to cross to the south side while sidewalks are being constructed along the north side. The reverse operation shall be implemented as sidewalks are constructed on the south side.

Given there are no sidewalks on the north side of Route 67 between Johnson Avenue and Old Drive East, there is limited opportunity to accommodate pedestrians while the south side sidewalks are being reconstructed. A combination of longitudinal concrete barriers along the north side for pedestrians shifts as well as pedestrian detouring via Old Drive is proposed..

11.2.4 TRAFFIC CONTROL SIGNAL MODIFICATIONS

Construct traffic control signal work at:

- Old Drive
- Walgreens drive
- Bank Street/River Street

Install/Replace Signage

Contractor to implement CTDOT Construction Traffic Control Plans 10 through 17, as required.

11.2.5 STAGE 5 – MILL AND OVERLAY

- Mill and overlay
- Shim to adjust P.A.G. where directed
- Final pavement markings

Contractor to implement CTDOT Construction Traffic Control Plans 10 through 17, as required.

12 RIGHTS-OF-WAY IMPACTS

The proposed construction is expected to result in permanent impacts to four parcels.

Right-of-Way Map – Serial No. 1

At the westerly project limit, the property impacted is located at the northeast corner of the Swan Avenue/Bank Street intersection, owned by N/F Swan Avenue Associates, LLC. A permanent defined sight line easement is being (or has been) acquired for maintenance purposes. SLR furnished CTDOT a signed mylar for this acquisition in April 2022. The subject parcel already has a Right to Slope in favor of CTDOT, and it is anticipated that construction impacts will not encroach beyond that easement.

Right-of-Way Map – Serial No. 2

At the intersection of Beecher Street and Church Street at Bank Street, this parcel is an irregularly shaped island previously owned by N/F Housatonic Wire Co. The entire island will be (or has been) acquired in connection with roadway geometric improvements at the intersection. SLR furnished CTDOT a signed mylar for this acquisition in April 2022.

Right-of-Way Map – Serial No. 3

A partial take is required at 100 Bank Street, owned by N/F 100 Bank Street Condominium, to accommodate the relocation of an existing stone wall necessitated by the roadway widening and enhanced curb radius and line of sight at the intersection of Bank Street and Martha Street. The proposed ROW will follow the proposed face of the reconstructed wall, with the wall itself being located on private property. A construction easement is also needed for the reconstruction of the wall, the removal of four parking spaces, and reconfiguration of the parking lot curb line. A timber guiderail system will be installed between the parking lot and top of wall. SLR furnished CTDOT a signed mylar for this easement in February 2023 .

Right-of-Way Map – Serial No. 4

Easements are necessary on property located at the southwest corner of Bank Street and River Street, owned by N/F The Doris M. Tkacz Living Trust. A defined sight line easement along the northern edge of the property on Bank Street is required, and a guiderail easement is necessary along the easterly property line fronting on River Street. The sight line easement will address an existing issue with fencing that obscures sight lines while the proposed guiderail and anchorage will serve to protect the River Street bridge parapet. The latest draft map was prepared by SLR in March 2022, and this ROW action is pending.

During the development of the semi-final submission, it was discovered that the northwestern wingwall of the River Street bridge (Bridge No. 01585) extends further north than previously shown on the plans. Approximately 34.5 feet of the wingwall is visible; however, existing plans indicate the wall is 43 feet long. It appears that the site at the southwest corner of the Route 67/River Street intersection has been raised, and the end of the wingwall is now buried up to 5 feet. Under existing conditions, the grade behind the wingwall slopes steeply down from the edge of the shoulder to the back of the wall. The grades will need

to be raised to accommodate the new sidewalk. As a result, the wingwall will also need to be raised and partially reconstructed. The wingwall is located just within the existing ROW, with the northernmost corner of the wall located roughly 1 foot from the approximate street line. In order to provide construction access to expose the buried portion of the wall and reconstruct the parapet, a construction easement not previously identified will be required. Based on conversations with CTDOT, it is SLR's understanding that the ROW process with the property owner is quite advanced; therefore, an "A" map would have to be prepared for any new revisions. An "A" map will be prepared as part of the 124-165 River Street bridge breakout project..

A schedule of owners for the project is presented in Appendix G.

13 ENGINEER'S OPINION OF CONSTRUCTION COSTS

A construction cost estimate for the Route 67 (Bank Street) project has been developed to accompany this Final design submission. The engineer's opinion of construction costs for this project is approximately $6,467,280. This amount includes 10 percent for contingencies and 20 percent for incidentals to construction. The estimated cost does not include ROW/easement acquisitions but does include an allowance for utility relocations. An itemized construction cost opinion is included in Appendix H. The updated cost estimate also incorporates updated unit pricing from CTDOT's *TrnsPort Estimator* program.

A separate construction cost estimate will be prepared for the separate Route 313 (River Street) project, which will include Retaining Wall 103, roadway widening, Bridge No. 01585 widening, and utility relocations associated with the bridge work.

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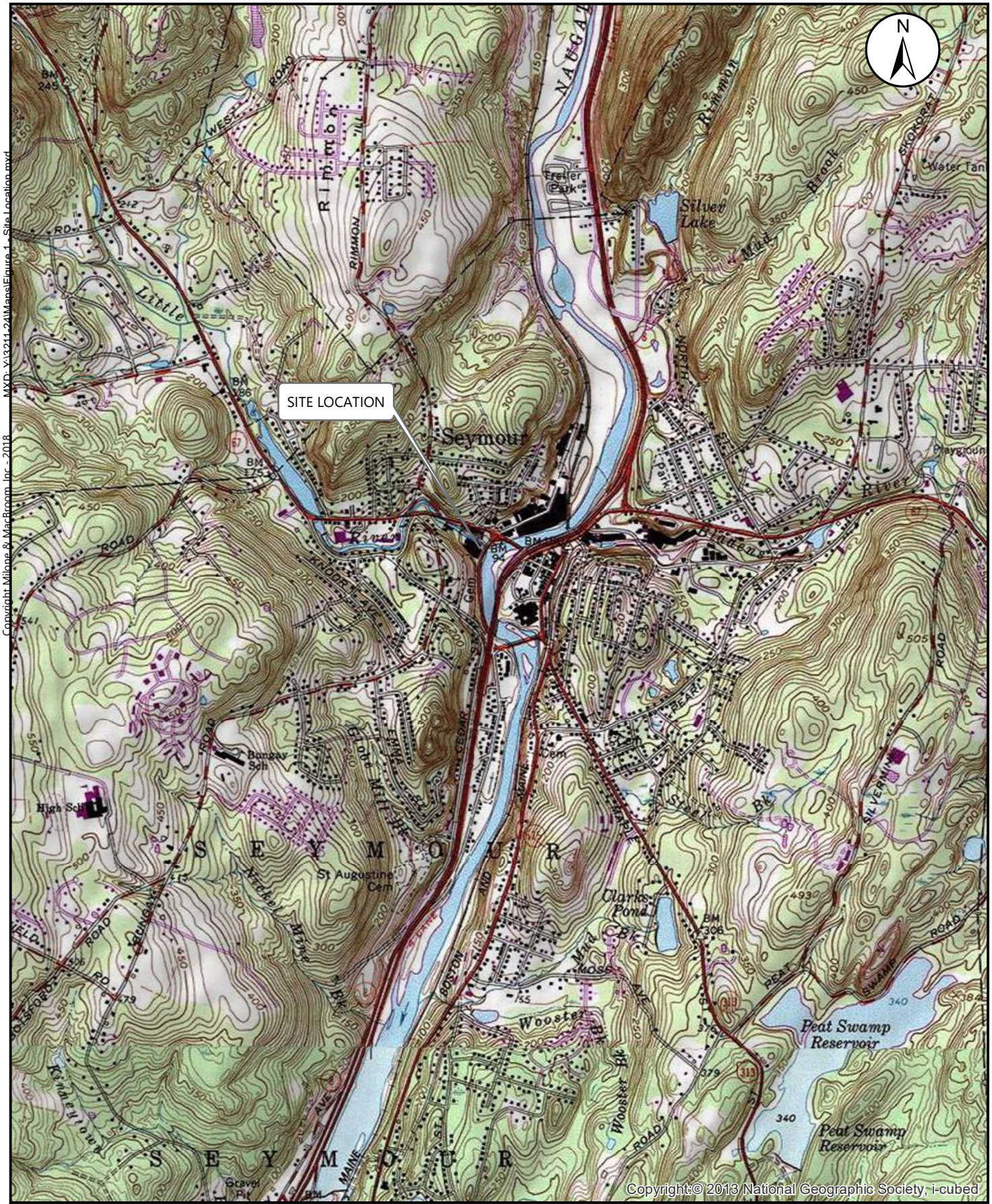
APPENDIX A

PROJECT LOCATION MAP

Final (100%) Design Report

Naugatuck Valley Council of Governments
49 Leavenworth Street, 3rd Floor
Waterbury, Connecticut 06702

June 2023



SLR
99 Realty Dr
Cheshire, CT 06410
230-271-1773

SITE LOCATION

LITTLE RIVER & NAUGATUCK RIVER
NAUGATUCK VALLEY COUNCIL OF GOVERNMENTS
ROUTE 313 & ROUTE 67
SEYMOUR, CONNECTICUT

DESIGNED	DRAWN	CHECKED
KFK	KFK	MJS

SOURCE:
2013, NATIONAL GEOGRAPHIC SOCIETY

DATE: 08/31/2022
SCALE: 1 " = 2,000 '
PROJ. NO.: 3211-24
DRAWING NAME:

FIG. 1

APPENDIX B

ROADWAY DESIGN CRITERIA TABLE

Final (100%) Design Report

Naugatuck Valley Council of Governments
49 Leavenworth Street, 3rd Floor
Waterbury, Connecticut 06702

June 2023

DESIGN CRITERIA
Project 124-172 - Route 67 Spot Improvements - Seymour, CT

Project Route: Bank Street (Route 67)
Functional Classification: Urban Minor Arterial
Project Type: 3R - Spot Improvements
Type of Area: Built-Up

Design Element		*	Required Design Values	Manual Section	Proposed Design Values
Design Forecast Year			Current - 10 years	Section 2-4.02	Current - 10 years
Design Speed		x	35 mph - 45 mph	Section 2-4.01	35 mph
Access Control			Control by Regulation	Section 6-4.0	Control by Regulation
Level of Service			B-D	Section 6-3.0	B-D
On-Street Parking			Sometimes	Section 10-1.04	Sometimes
Travel Lane Width		x	10 ft. - 12 ft.	Figure 2-3G	11 ft.
Shoulder Width (Non-NHS)	Right	x	2 ft. - 8 ft.	Figure 2-3G	2ft. - 5ft.
Cross Slope	Travel Lane	x	1.5% - 2.0% for lanes adjacent to crown; 2% for lanes away from crown	Figure 2-3G	Match existing
	Shoulder (W<4')	x	Same as Adjacent Travel Lane	Figure 2-3G	Match existing
	Shoulder (W≥4')	x	4.0% - 6.0%	Figure 2-3G	N/A
Turn Lanes	Lane Width	x	1' less than Travel Lane Width - Same as Travel Lane width	Figure 2-3G	11 ft.
	Shoulder Width	x	1 ft. - 4 ft.	Figure 2-3G	2 ft.
Parking Lane Width			8 ft. - 11 ft.	Figure 2-3G	8 ft
Sidewalk Width			5 ft. Minimum	Figure 2-3G	5 ft. Minimum
Bicycle Lane	Width		5 ft.	Figure 2-3G	N/A
	Cross Slope		2%	Figure 2-3G	N/A

* Controlling Design Criteria

DESIGN CRITERIA
124-172- Route 67 Spot Improvements - Seymour, CT

Design Element		*	Design Values	Source	Proposed Design Values
Bridge Width/Cross Slope		x	AADT > 4000 Traveled Way Width Plus 4'	Figure 2-7B, meet Roadway Cross Slope - Sidewalk width 5'-6'	Match existing Bridge Width and add 5' wide sidewalk on southbound side of bridge
Right-of-Way Width			Project-By-Project-Basis	Section 10-5.0	Varies
Fill/Cut Slopes			Criteria in Figure 5I, Page 5(18)	Figure 2-3G	Varies; 4:1 Maximum
Intersection Sight Distance		x	ISD (P vehicle) = 390 ft. / SU vehicle =490 ft.	Figure 11-2C	Min. 45' (Johnson Ave) Design Exception Req'd
Roadside Clear Zone		x	10 fet.	Section 2-9.01	Min. 3' (Wall at Johnson Avenue)
Stopping Sight Distance		x	250 ft.	Figure 2-3G	250 ft. +
Minimum Radius (e = 4 %)		x	345 ft.	Figure 2-3G	N/A
Superelevation Rate	e max.		4.0%	Figure 2-3G	N/A
	Rate	x	4.0%	Figure 8-3C	N/A
Horizontal Sight Distance			250 ft.	Section 8-2.04	250 ft. +
Maximum Grade		x	11.0%	Figure 2-3G	Match Existing
Minimum Grade			0.50%	Figure 2-3G	Match Existing
Vertical Curvature K-Value	Crest		29	Section 2-6.02	Match Existing
	Sag		49	Figure 2-3G	Match Existing

* Controlling Design Criteria

Prepared By: SLR

DESIGN CRITERIA
Project 124-172 - Route 67 Spot Improvements - Seymour, CT

Project Route: River Street (Route 313)
Functional Classification: Urban Minor Arterial
Project Type: 3R - Spot Improvements
Type of Area: Built-Up

Design Element		*	Required Design Values	Manual Section	Proposed Design Values
Design Forecast Year			Current - 10 years	Section 2-4.02	Current - 10 years
Design Speed		x	35 mph - 45 mph	Section 2-4.01	35 mph
Access Control			Control by Regulation	Section 6-4.0	Control by Regulation
Level of Service			B-D	Section 6-3.0	B-D
On-Street Parking			Sometimes	Section 10-1.04	Sometimes
Travel Lane Width		x	10 ft. - 12 ft.	Figure 2-3G	11 ft.
Shoulder Width (Non-NHS)	Right	x	2 ft. - 8 ft.	Figure 2-3G	2 ft.
Cross Slope	Travel Lane	x	1.5% - 2.0% for lanes adjacent to crown; 2% for lanes away from crown	Figure 2-3G	Match existing
	Shoulder (W<4')	x	Same as Adjacent Travel Lane	Figure 2-3G	Match existing
	Shoulder (W≥4')	x	4.0% - 6.0%	Figure 2-3G	N/A
Turn Lanes	Lane Width	x	1' less than Travel Lane Width - Same as Travel Lane width	Figure 2-3G	11 ft.
	Shoulder Width	x	1 ft. - 4 ft.	Figure 2-3G	2 ft.
Parking Lane Width			8 ft. - 11 ft.	Figure 2-3G	N/A
Sidewalk Width			5 ft. Minimum	Figure 2-3G	5 ft. Minimum
Bicycle Lane	Width		5 ft.	Figure 2-3G	N/A
	Cross Slope		2%	Figure 2-3G	N/A

* Controlling Design Criteria

DESIGN CRITERIA
124-172 - Route 67 Spot Improvements - Seymour, CT

Design Element		*	Design Values	Source	Proposed Design Values
Bridge Width/Cross Slope		x	AADT > 4000 Traveled Way Width Plus 4' = 37 ft.	Figure 2-7B, meet Roadway Cross Slope - Sidewalk width 5'-6'	40'+ Match existing travel lane width and add 5' wide sidewalk on southbound side of bridge
Right-of-Way Width			Project-By-Project-Basis	Section 10-5.0	Varies
Fill/Cut Slopes			Criteria in Figure 5I, Page 5(18)	Figure 2-3G	Varies; 4:1 Maximum
Intersection Sight Distance		x	ISD (P vehicle) = 390 ft. / SU vehicle =490 ft.	Figure 11-2C	390 ft
Roadside Clear Zone		x	10 ft.	Section 2-9.01	10 ft.
Stopping Sight Distance		x	250 ft.	Figure 2-3G	250 ft. +
Minimum Radius (e = 4 %)		x	345 ft.	Figure 2-3G	N/A
Superelevation Rate	e max.		4.0%	Figure 2-3G	N/A
	Rate	x	4.0%	Figure 8-3C	N/A
Horizontal Sight Distance			250 ft.	Section 8-2.04	250 ft. +
Maximum Grade		x	11.0%	Figure 2-3G	Match Existing
Minimum Grade			0.50%	Figure 2-3G	Match Existing
Vertical Curvature K-Value	Crest		29	Section 2-6.02	Match Existing
	Sag		49	Figure 2-3G	Match Existing

* Controlling Design Criteria

Prepared By: SLR

APPENDIX C

TRAFFIC INFORMATION

Final (100%) Design Report

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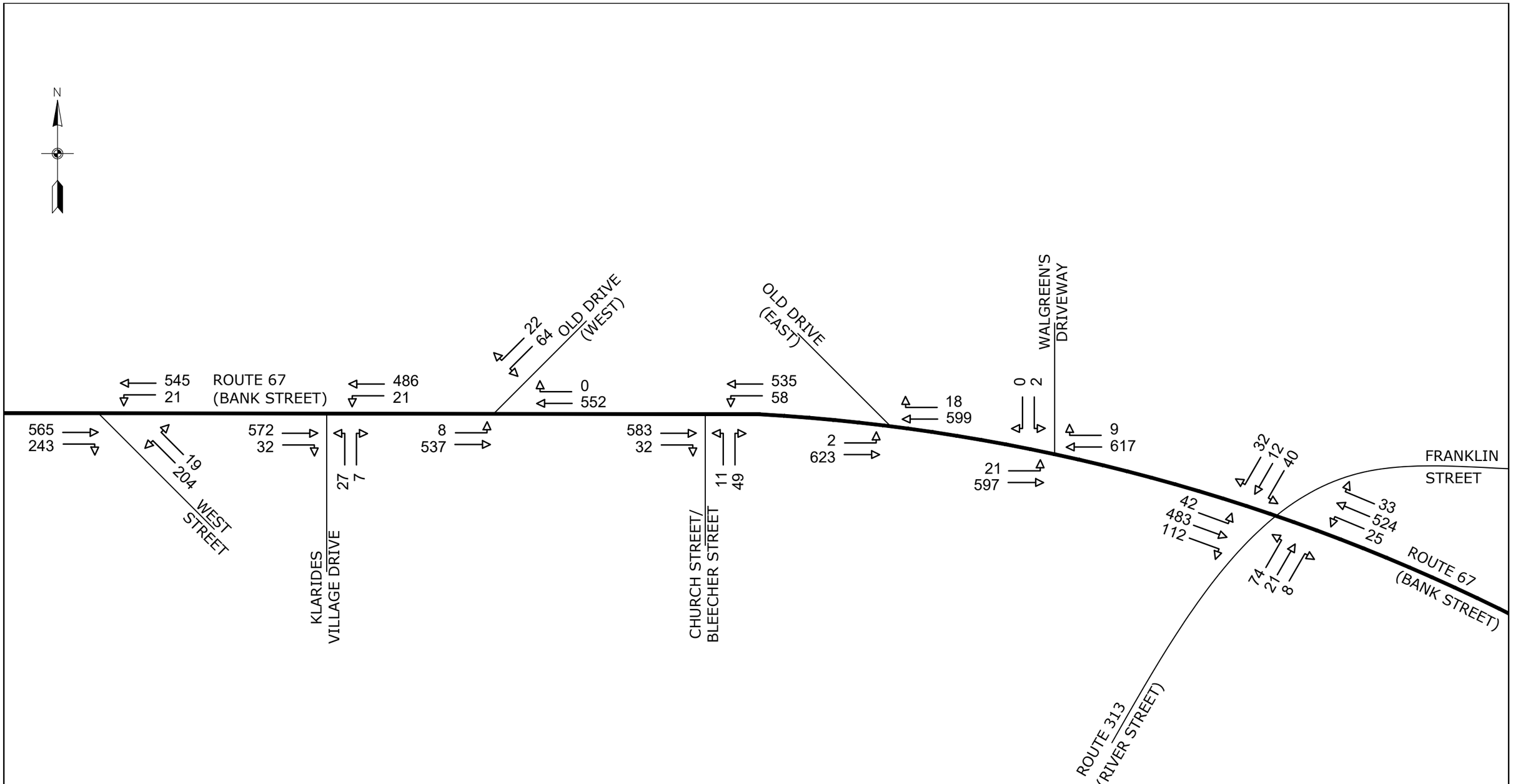
49 Leavenworth Street, 3rd Floor
Waterbury, Connecticut 06702

June 2023



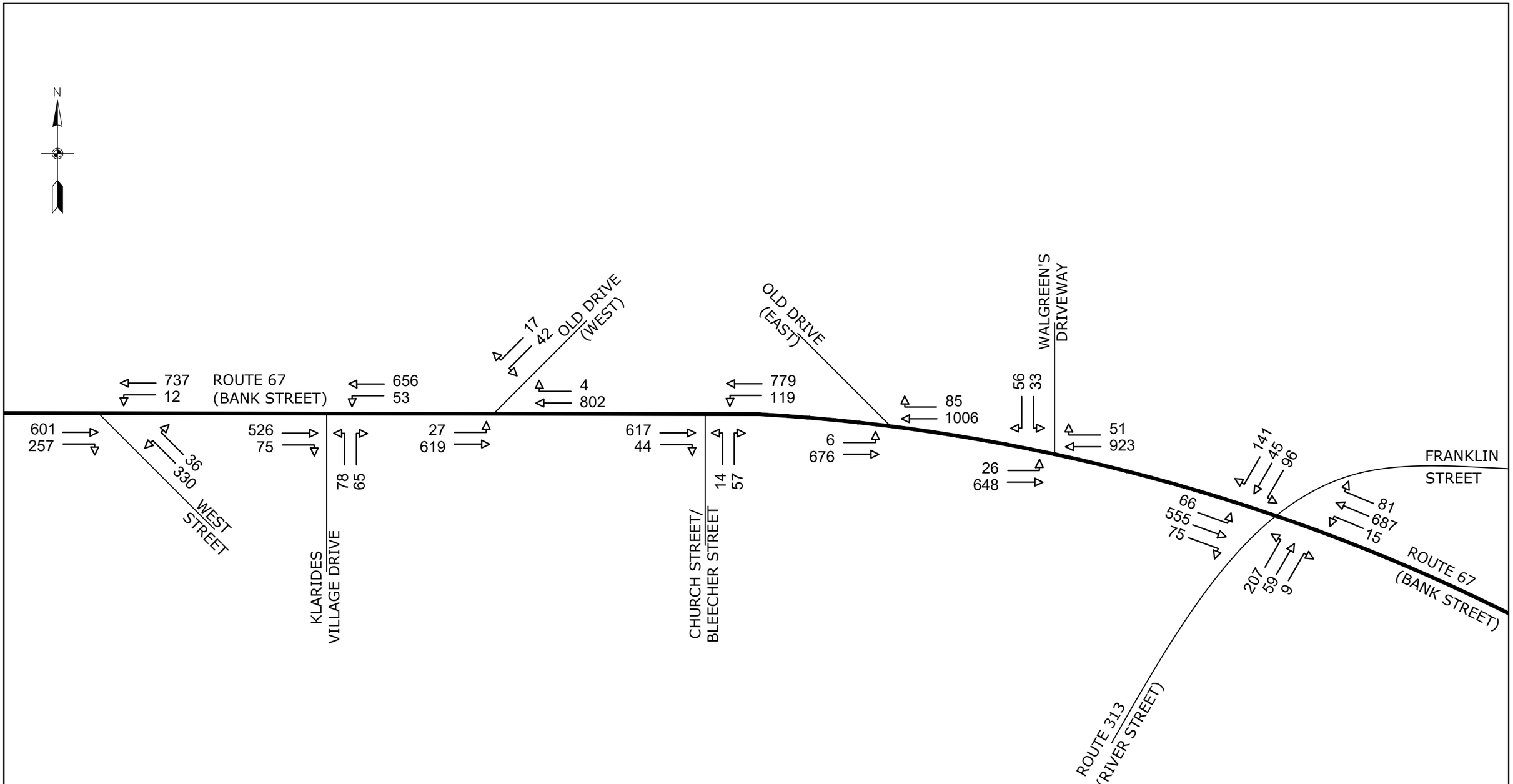
2018 EXISTING TRAFFIC VOLUMES

WEEKDAY MORNING PEAK HOUR

Route 67 Spot Improvements State Project No. 124-172
Seymour, Connecticut

SLR

FIGURE 02



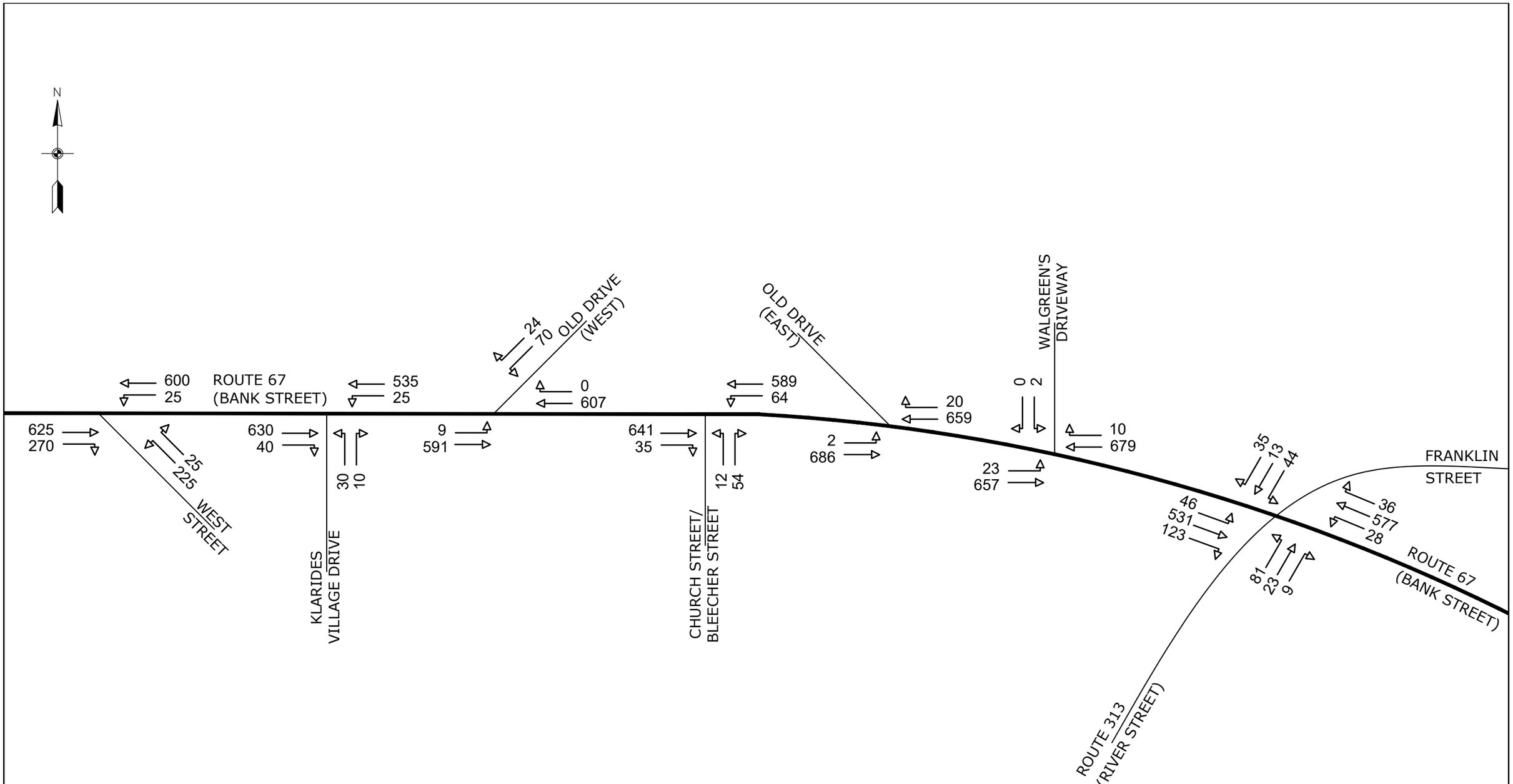
2018 EXISTING TRAFFIC VOLUMES

WEEKDAY AFTERNOON PEAK HOUR

Route 67 Spot Improvements State Project No. 124-172
Seymour, Connecticut

SLR

FIGURE 03



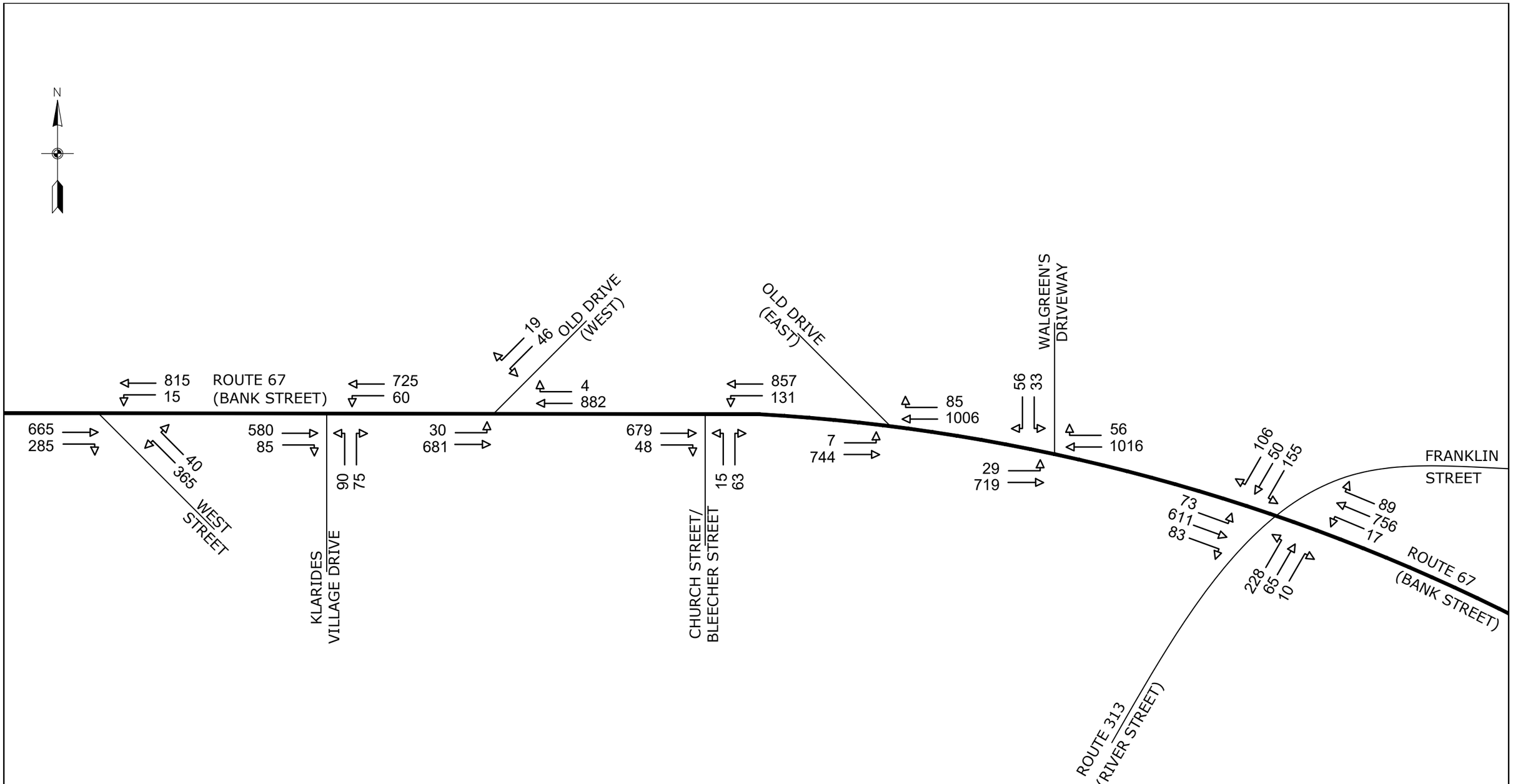
2030 FUTURE TRAFFIC VOLUMES

WEEKDAY MORNING PEAK HOUR

Route 67 Spot Improvements State Project No. 124-172
Seymour, Connecticut

SLR

FIGURE 04



2030 FUTURE TRAFFIC VOLUMES

WEEKDAY AFTERNOON PEAK HOUR

Route 67 Spot Improvements State Project No. 124-172
Seymour, Connecticut

SLR

FIGURE 05

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	565	243	21	545	204	19
Future Volume (vph)	565	243	21	545	204	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.988	
Flt Protected				0.998	0.956	
Satd. Flow (prot)	1863	1583	0	1859	1759	0
Flt Permitted				0.978	0.956	
Satd. Flow (perm)	1863	1583	0	1822	1759	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		264			6	
Link Speed (mph)	30			30	30	
Link Distance (ft)	328			864	646	
Travel Time (s)	7.5			19.6	14.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	614	264	23	592	222	21
Shared Lane Traffic (%)						
Lane Group Flow (vph)	614	264	0	615	243	0
Turn Type	NA	Perm	D.P+P	NA	Prot	
Protected Phases	2		1	1 2	4	
Permitted Phases		2	2			
Detector Phase	2	2	1	1	4	
Switch Phase						
Minimum Initial (s)	18.0	18.0	3.0		7.0	
Minimum Split (s)	24.2	24.2	11.0		24.0	
Total Split (s)	45.0	45.0	11.0		24.0	
Total Split (%)	56.3%	56.3%	13.8%		30.0%	
Yellow Time (s)	4.0	4.0	3.0		3.0	
All-Red Time (s)	2.2	2.2	1.0		1.0	
Lost Time Adjust (s)	0.0	0.0			0.0	
Total Lost Time (s)	6.2	6.2			4.0	
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	Min		None	
Act Effct Green (s)	40.9	40.9		53.1	14.9	
Actuated g/C Ratio	0.51	0.51		0.66	0.19	
v/c Ratio	0.65	0.28		0.51	0.73	
Control Delay	19.0	2.5		7.2	42.5	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	19.0	2.5		7.2	42.5	
LOS	B	A		A	D	
Approach Delay	14.0			7.2	42.5	
Approach LOS	B			A	D	
Stops (vph)	409	20		392	199	
Fuel Used(gal)	6	1		7	4	
CO Emissions (g/hr)	412	60		476	291	
NOx Emissions (g/hr)	80	12		93	57	
VOC Emissions (g/hr)	95	14		110	68	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Dilemma Vehicles (#)	0	0		0	0	
Queue Length 50th (ft)	224	0		105	112	
Queue Length 95th (ft)	342	36		162	175	
Internal Link Dist (ft)	248			784	566	
Turn Bay Length (ft)						
Base Capacity (vph)	951	937		1214	444	
Starvation Cap Reductn	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.65	0.28		0.51	0.55	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 43.3 (54%), Referenced to phase 2:EBWB and 6:, Start of Yellow			
Natural Cycle: 65			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 15.6		Intersection LOS: B	
Intersection Capacity Utilization 64.8%		ICU Level of Service C	
Analysis Period (min) 15			

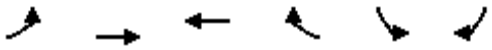
Splits and Phases: 1: West Street & Bank Street/Route 67

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	572	32	21	486	27	7
Future Volume (vph)	572	32	21	486	27	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	100		0	0
Storage Lanes		0	1		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.993					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1850	0	1770	1863	1770	1583
Flt Permitted			0.376		0.950	
Satd. Flow (perm)	1850	0	700	1863	1770	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	7					8
Link Speed (mph)	30			30	30	
Link Distance (ft)	864			387	297	
Travel Time (s)	19.6			8.8	6.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	622	35	23	528	29	8
Shared Lane Traffic (%)						
Lane Group Flow (vph)	657	0	23	528	29	8
Turn Type	NA		D.P+P	NA	Prot	Prot
Protected Phases	2		1	1 2	4	4
Permitted Phases			2			
Detector Phase			1		4	4
Switch Phase						
Minimum Initial (s)	15.0		6.0		6.0	6.0
Minimum Split (s)	21.3		10.0		12.0	12.0
Total Split (s)	57.0		11.0		12.0	12.0
Total Split (%)	71.3%		13.8%		15.0%	15.0%
Yellow Time (s)	4.0		3.0		3.0	3.0
All-Red Time (s)	2.3		1.0		1.0	1.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0
Total Lost Time (s)	6.3		4.0		4.0	4.0
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	C-Max		None		None	None
Act Effct Green (s)	65.7		67.9	71.1	6.5	6.5
Actuated g/C Ratio	0.82		0.85	0.89	0.08	0.08
v/c Ratio	0.43		0.03	0.32	0.20	0.06
Control Delay	5.8		1.0	1.2	37.4	20.3
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	5.8		1.0	1.2	37.4	20.3
LOS	A		A	A	D	C
Approach Delay	5.8			1.1	33.7	
Approach LOS	A			A	C	
Stops (vph)	287		2	29	28	5
Fuel Used(gal)	6		0	2	0	0

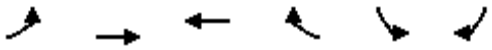
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
CO Emissions (g/hr)	445		5	122	30	5
NOx Emissions (g/hr)	87		1	24	6	1
VOC Emissions (g/hr)	103		1	28	7	1
Dilemma Vehicles (#)	0		0	0	0	0
Queue Length 50th (ft)	4		1	13	14	0
Queue Length 95th (ft)	450		m2	30	38	13
Internal Link Dist (ft)	784			307	217	
Turn Bay Length (ft)			100			
Base Capacity (vph)	1520		691	1655	177	165
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.43		0.03	0.32	0.16	0.05

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 7 (9%), Referenced to phase 2:EBWB, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.43			
Intersection Signal Delay: 4.6		Intersection LOS: A	
Intersection Capacity Utilization 45.6%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 2: Klarides & Route 67



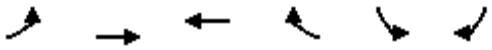
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	8	537	552	0	64	22
Future Volume (vph)	8	537	552	0	64	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	125			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.966	
Flt Protected	0.950				0.964	
Satd. Flow (prot)	1770	1863	1863	0	1735	0
Flt Permitted	0.383				0.964	
Satd. Flow (perm)	713	1863	1863	0	1735	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)					24	
Link Speed (mph)		30	30		25	
Link Distance (ft)		254	217		307	
Travel Time (s)		5.8	4.9		8.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	9	584	600	0	70	24
Shared Lane Traffic (%)						
Lane Group Flow (vph)	9	584	600	0	94	0
Turn Type	D.P+P	NA	NA		Prot	
Protected Phases	1	1 2	2		4	
Permitted Phases	2					
Detector Phase	1	1 2	2		4	
Switch Phase						
Minimum Initial (s)	3.0		15.0		7.0	
Minimum Split (s)	7.0		21.1		30.0	
Total Split (s)	9.0		35.0		36.0	
Total Split (%)	11.3%		43.8%		45.0%	
Yellow Time (s)	3.0		4.0		3.0	
All-Red Time (s)	1.0		2.1		1.0	
Lost Time Adjust (s)	0.0		0.0		0.0	
Total Lost Time (s)	4.0		6.1		4.0	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None		C-Min		None	
Act Effct Green (s)	61.8	66.6	55.1		8.4	
Actuated g/C Ratio	0.77	0.83	0.69		0.10	
v/c Ratio	0.01	0.38	0.47		0.47	
Control Delay	2.2	3.2	6.7		33.1	
Queue Delay	0.0	0.0	0.0		0.0	
Total Delay	2.2	3.2	6.7		33.1	
LOS	A	A	A		C	
Approach Delay		3.2	6.7		33.1	
Approach LOS		A	A		C	
Stops (vph)	3	131	161		60	
Fuel Used(gal)	0	2	3		1	



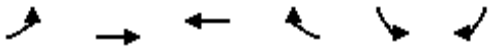
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
CO Emissions (g/hr)	3	149	180		72	
NOx Emissions (g/hr)	0	29	35		14	
VOC Emissions (g/hr)	1	35	42		17	
Dilemma Vehicles (#)	0	0	0		0	
Queue Length 50th (ft)	1	56	110		34	
Queue Length 95th (ft)	4	122	129		75	
Internal Link Dist (ft)		174	137		227	
Turn Bay Length (ft)	125					
Base Capacity (vph)	620	1540	1282		708	
Starvation Cap Reductn	0	0	0		0	
Spillback Cap Reductn	0	0	0		0	
Storage Cap Reductn	0	0	0		0	
Reduced v/c Ratio	0.01	0.38	0.47		0.13	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 1 (1%), Referenced to phase 2:EBWB, Start of Yellow			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.47			
Intersection Signal Delay: 7.0		Intersection LOS: A	
Intersection Capacity Utilization 43.3%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Route 67 & Old Drive



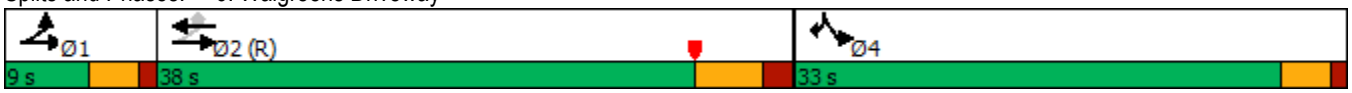
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	21	597	617	9	2	0
Future Volume (vph)	21	597	617	9	2	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			140	0	0
Storage Lanes	1			1	1	1
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1863	1863	1583	1770	1863
Flt Permitted	0.367				0.950	
Satd. Flow (perm)	684	1863	1863	1583	1770	1863
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				7		
Link Speed (mph)		30	30		30	
Link Distance (ft)		164	478		159	
Travel Time (s)		3.7	10.9		3.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	23	649	671	10	2	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	23	649	671	10	2	0
Turn Type	D.P+P	NA	NA	Perm	Prot	Prot
Protected Phases	1	1 2	2		4	4
Permitted Phases	2			2		
Detector Phase	1	1 2	2	2	4	4
Switch Phase						
Minimum Initial (s)	3.0		15.0	15.0	7.0	7.0
Minimum Split (s)	7.0		21.0	21.0	27.0	27.0
Total Split (s)	9.0		38.0	38.0	33.0	33.0
Total Split (%)	11.3%		47.5%	47.5%	41.3%	41.3%
Yellow Time (s)	3.0		4.0	4.0	3.0	3.0
All-Red Time (s)	1.0		1.9	1.9	1.1	1.1
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0		5.9	5.9	4.1	4.1
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None		C-Min	C-Min	None	None
Act Effct Green (s)	69.8	77.0	62.9	62.9	7.0	
Actuated g/C Ratio	0.87	0.96	0.79	0.79	0.09	
v/c Ratio	0.03	0.36	0.46	0.01	0.01	
Control Delay	0.9	1.1	4.8	2.2	33.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	0.9	1.1	4.8	2.2	33.5	
LOS	A	A	A	A	C	
Approach Delay		1.1	4.7		33.5	
Approach LOS		A	A		C	
Stops (vph)	2	30	195	2	3	
Fuel Used(gal)	0	1	5	0	0	

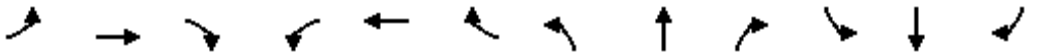


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
CO Emissions (g/hr)	3	74	349	4	2	
NOx Emissions (g/hr)	1	14	68	1	0	
VOC Emissions (g/hr)	1	17	81	1	1	
Dilemma Vehicles (#)	0	0	0	0	0	
Queue Length 50th (ft)	1	0	65	0	1	
Queue Length 95th (ft)	m4	73	223	5	8	
Internal Link Dist (ft)		84	398		79	
Turn Bay Length (ft)				140		
Base Capacity (vph)	664	1793	1464	1245	639	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.03	0.36	0.46	0.01	0.00	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 6 (8%), Referenced to phase 2:EBWB, Start of Yellow			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.46			
Intersection Signal Delay: 2.9		Intersection LOS: A	
Intersection Capacity Utilization 46.6%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 6: Walgreens Driveway





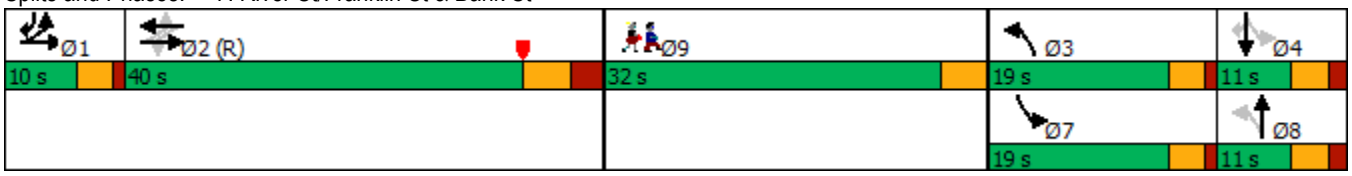
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	42	483	112	25	524	33	74	21	8	40	12	32
Future Volume (vph)	42	483	112	25	524	33	74	21	8	40	12	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		0	250		250
Storage Lanes	0		0	0		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.974			0.991			0.958				0.850
Flt Protected		0.997			0.998		0.950			0.950		
Satd. Flow (prot)	0	3437	0	0	3500	0	1770	1785	0	1770	1863	1583
Flt Permitted		0.873			0.900		0.625					
Satd. Flow (perm)	0	3009	0	0	3157	0	1164	1785	0	1863	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		26			6			9				115
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		213			492			629			916	
Travel Time (s)		4.8			11.2			14.3			20.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	46	525	122	27	570	36	80	23	9	43	13	35
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	693	0	0	633	0	80	32	0	43	13	35
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	1	1 2			2		3	8		7	4	1
Permitted Phases	1 2			2			8			4		4
Detector Phase	1	1 2		2	2		3	8		7	4	1
Switch Phase												
Minimum Initial (s)	6.0			15.0	15.0		6.0	6.0		6.0	5.1	6.0
Minimum Split (s)	10.0			21.8	21.8		10.0	11.0		10.0	11.0	10.0
Total Split (s)	10.0			40.0	40.0		19.0	11.0		19.0	11.0	10.0
Total Split (%)	8.9%			35.7%	35.7%		17.0%	9.8%		17.0%	9.8%	8.9%
Yellow Time (s)	3.0			4.0	4.0		3.0	3.3		3.0	3.3	3.0
All-Red Time (s)	1.0			2.8	2.8		1.0	1.6		1.0	1.6	1.0
Lost Time Adjust (s)					0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)					6.8		4.0	4.9		4.0	4.9	4.0
Lead/Lag	Lead			Lag	Lag		Lead	Lag		Lead	Lag	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	Max			C-Max	C-Max		None	None		None	None	Max
Act Effct Green (s)		80.6			71.8		15.0	7.2		10.0	5.5	10.4
Actuated g/C Ratio		0.72			0.64		0.13	0.06		0.09	0.05	0.09
v/c Ratio		0.32			0.31		0.37	0.26		0.27	0.14	0.14
Control Delay		8.9			13.8		45.9	43.8		45.5	54.3	1.2
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	0.0
Total Delay		8.9			13.8		45.9	43.8		45.5	54.3	1.2
LOS		A			B		D	D		D	D	A
Approach Delay		8.9			13.8			45.3			29.7	
Approach LOS		A			B			D			C	
Stops (vph)		219			272		64	22		35	12	0
Fuel Used(gal)		6			5		1	1		1	0	0

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	31.0
Total Split (s)	32.0
Total Split (%)	29%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Stops (vph)	
Fuel Used(gal)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
CO Emissions (g/hr)		405			375		98	36		59	20	17
NOx Emissions (g/hr)		79			73		19	7		12	4	3
VOC Emissions (g/hr)		94			87		23	8		14	5	4
Dilemma Vehicles (#)		0			0		0	0		0	0	0
Queue Length 50th (ft)		61			94		51	16		30	9	0
Queue Length 95th (ft)		220			256		92	47		57	30	0
Internal Link Dist (ft)		133			412			549			836	
Turn Bay Length (ft)										250		250
Base Capacity (vph)		2196			2026		278	124		281	101	250
Starvation Cap Reductn		0			0		0	0		0	0	0
Spillback Cap Reductn		0			0		0	0		0	0	0
Storage Cap Reductn		0			0		0	0		0	0	0
Reduced v/c Ratio		0.32			0.31		0.29	0.26		0.15	0.13	0.14

Intersection Summary			
Area Type:	Other		
Cycle Length: 112			
Actuated Cycle Length: 112			
Offset: 0 (0%), Referenced to phase 2:EBWB, Start of Yellow			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.37			
Intersection Signal Delay: 14.8		Intersection LOS: B	
Intersection Capacity Utilization 58.3%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 7: River St/Franklin St & Bank St



Lane Group	Ø9
CO Emissions (g/hr)	
NOx Emissions (g/hr)	
VOC Emissions (g/hr)	
Dilemma Vehicles (#)	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	583	32	58	535	11	49
Future Vol, veh/h	583	32	58	535	11	49
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	634	35	63	582	12	53

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	669	0	1360	652
Stage 1	-	-	-	-	652	-
Stage 2	-	-	-	-	708	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	921	-	164	468
Stage 1	-	-	-	-	518	-
Stage 2	-	-	-	-	488	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	921	-	153	468
Mov Cap-2 Maneuver	-	-	-	-	153	-
Stage 1	-	-	-	-	483	-
Stage 2	-	-	-	-	488	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	18.1
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	340	-	-	921	-
HCM Lane V/C Ratio	0.192	-	-	0.068	-
HCM Control Delay (s)	18.1	-	-	9.2	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.7	-	-	0.2	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	601	257	12	737	330	36
Future Volume (vph)	601	257	12	737	330	36
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.987	
Flt Protected				0.999	0.957	
Satd. Flow (prot)	1863	1583	0	1861	1759	0
Flt Permitted				0.991	0.957	
Satd. Flow (perm)	1863	1583	0	1846	1759	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		279			6	
Link Speed (mph)	30			30	30	
Link Distance (ft)	432			800	271	
Travel Time (s)	9.8			18.2	6.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	653	279	13	801	359	39
Shared Lane Traffic (%)						
Lane Group Flow (vph)	653	279	0	814	398	0
Turn Type	NA	Perm	D.P+P	NA	Prot	
Protected Phases	2		1	1 2	4	
Permitted Phases		2	2			
Detector Phase	2	2	1	1	4	
Switch Phase						
Minimum Initial (s)	18.0	18.0	3.0		7.0	
Minimum Split (s)	24.2	24.2	11.0		24.0	
Total Split (s)	55.0	55.0	11.0		24.0	
Total Split (%)	61.1%	61.1%	12.2%		26.7%	
Yellow Time (s)	4.0	4.0	3.0		3.0	
All-Red Time (s)	2.2	2.2	1.0		1.0	
Lost Time Adjust (s)	0.0	0.0			0.0	
Total Lost Time (s)	6.2	6.2			4.0	
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	Min		None	
Act Effct Green (s)	48.8	48.8		58.0	20.0	
Actuated g/C Ratio	0.54	0.54		0.64	0.22	
v/c Ratio	0.65	0.28		0.68	1.01	
Control Delay	18.3	2.1		10.9	83.7	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	18.3	2.1		10.9	83.7	
LOS	B	A		B	F	
Approach Delay	13.4			10.9	83.7	
Approach LOS	B			B	F	
Stops (vph)	410	18		639	307	
Fuel Used(gal)	7	1		10	9	
CO Emissions (g/hr)	456	75		689	608	
NOx Emissions (g/hr)	89	15		134	118	
VOC Emissions (g/hr)	106	17		160	141	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Dilemma Vehicles (#)	0	0		0	0	
Queue Length 50th (ft)	246	0		158	~227	
Queue Length 95th (ft)	364	34		332	#416	
Internal Link Dist (ft)	352			720	191	
Turn Bay Length (ft)						
Base Capacity (vph)	1010	986		1190	395	
Starvation Cap Reductn	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.65	0.28		0.68	1.01	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 43.3 (48%), Referenced to phase 2:EBWB and 6:, Start of Yellow			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.01			
Intersection Signal Delay: 25.5		Intersection LOS: C	
Intersection Capacity Utilization 75.5%		ICU Level of Service D	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

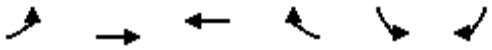
Splits and Phases: 1: West Street & Bank Street/Route 67

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	526	75	53	656	78	65
Future Volume (vph)	526	75	53	656	78	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	100		0	0
Storage Lanes		0	1		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.983					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1831	0	1770	1863	1770	1583
Flt Permitted			0.364		0.950	
Satd. Flow (perm)	1831	0	678	1863	1770	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	18					71
Link Speed (mph)	30			30	30	
Link Distance (ft)	800			387	242	
Travel Time (s)	18.2			8.8	5.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	572	82	58	713	85	71
Shared Lane Traffic (%)						
Lane Group Flow (vph)	654	0	58	713	85	71
Turn Type	NA		D.P+P	NA	Prot	Prot
Protected Phases	2		1	1 2	4	4
Permitted Phases			2			
Detector Phase			1		4	4
Switch Phase						
Minimum Initial (s)	15.0		6.0		6.0	6.0
Minimum Split (s)	21.3		10.0		12.0	12.0
Total Split (s)	67.0		11.0		12.0	12.0
Total Split (%)	74.4%		12.2%		13.3%	13.3%
Yellow Time (s)	4.0		3.0		3.0	3.0
All-Red Time (s)	2.3		1.0		1.0	1.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0
Total Lost Time (s)	6.3		4.0		4.0	4.0
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	C-Max		None		None	None
Act Effct Green (s)	67.5		73.4	77.4	7.4	7.4
Actuated g/C Ratio	0.75		0.82	0.86	0.08	0.08
v/c Ratio	0.47		0.09	0.45	0.58	0.36
Control Delay	16.9		1.2	1.6	56.1	15.6
Queue Delay	0.0		0.0	0.1	0.0	0.0
Total Delay	16.9		1.2	1.6	56.1	15.6
LOS	B		A	A	E	B
Approach Delay	16.9			1.6	37.7	
Approach LOS	B			A	D	
Stops (vph)	484		5	42	74	16
Fuel Used(gal)	8		0	2	1	0

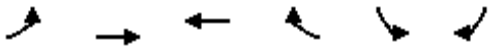
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
CO Emissions (g/hr)	594		14	169	101	29
NOx Emissions (g/hr)	116		3	33	20	6
VOC Emissions (g/hr)	138		3	39	23	7
Dilemma Vehicles (#)	0		0	0	0	0
Queue Length 50th (ft)	370		2	29	47	0
Queue Length 95th (ft)	m480		m4	48	#101	40
Internal Link Dist (ft)	720			307	162	
Turn Bay Length (ft)			100			
Base Capacity (vph)	1378		643	1601	157	205
Starvation Cap Reductn	0		0	128	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.47		0.09	0.48	0.54	0.35

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 7 (8%), Referenced to phase 2:EBWB, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.58			
Intersection Signal Delay: 11.5		Intersection LOS: B	
Intersection Capacity Utilization 54.2%		ICU Level of Service A	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 2: Klarides & Route 67



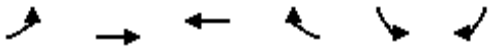
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	27	619	802	4	42	17
Future Volume (vph)	27	619	802	4	42	17
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	125			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.999		0.962	
Flt Protected	0.950				0.965	
Satd. Flow (prot)	1770	1863	1861	0	1729	0
Flt Permitted	0.240				0.965	
Satd. Flow (perm)	447	1863	1861	0	1729	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)					18	
Link Speed (mph)		30	30		25	
Link Distance (ft)		254	217		307	
Travel Time (s)		5.8	4.9		8.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	29	673	872	4	46	18
Shared Lane Traffic (%)						
Lane Group Flow (vph)	29	673	876	0	64	0
Turn Type	D.P+P	NA	NA		Prot	
Protected Phases	1	1 2	2		4	
Permitted Phases	2					
Detector Phase	1	1 2	2		4	
Switch Phase						
Minimum Initial (s)	3.0		15.0		7.0	
Minimum Split (s)	7.0		22.0		27.0	
Total Split (s)	10.0		53.0		27.0	
Total Split (%)	11.1%		58.9%		30.0%	
Yellow Time (s)	3.0		4.0		3.0	
All-Red Time (s)	1.0		2.1		1.0	
Lost Time Adjust (s)	0.0		0.0		0.0	
Total Lost Time (s)	4.0		6.1		4.0	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None		C-Min		None	
Act Effct Green (s)	72.4	77.2	64.8		7.8	
Actuated g/C Ratio	0.80	0.86	0.72		0.09	
v/c Ratio	0.07	0.42	0.65		0.39	
Control Delay	2.0	3.0	9.0		36.6	
Queue Delay	0.0	0.3	0.0		0.0	
Total Delay	2.0	3.3	9.0		36.6	
LOS	A	A	A		D	
Approach Delay		3.2	9.0		36.6	
Approach LOS		A	A		D	
Stops (vph)	6	132	282		41	
Fuel Used(gal)	0	2	4		1	



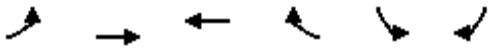
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
CO Emissions (g/hr)	7	163	308		53	
NOx Emissions (g/hr)	1	32	60		10	
VOC Emissions (g/hr)	2	38	71		12	
Dilemma Vehicles (#)	0	0	0		0	
Queue Length 50th (ft)	2	66	169		25	
Queue Length 95th (ft)	7	129	289		63	
Internal Link Dist (ft)		174	137		227	
Turn Bay Length (ft)	125					
Base Capacity (vph)	449	1591	1339		455	
Starvation Cap Reductn	0	393	0		0	
Spillback Cap Reductn	0	0	0		0	
Storage Cap Reductn	0	0	0		0	
Reduced v/c Ratio	0.06	0.56	0.65		0.14	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:EBWB, Start of Yellow			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 7.6		Intersection LOS: A	
Intersection Capacity Utilization 56.7%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 3: Route 67 & Old Drive



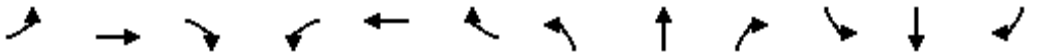
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	26	648	923	51	33	56
Future Volume (vph)	26	648	923	51	33	56
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			140	0	0
Storage Lanes	1			1	1	1
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1863	1863	1583	1770	1583
Flt Permitted	0.184				0.950	
Satd. Flow (perm)	343	1863	1863	1583	1770	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				29		61
Link Speed (mph)		30	30		30	
Link Distance (ft)		164	478		159	
Travel Time (s)		3.7	10.9		3.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	28	704	1003	55	36	61
Shared Lane Traffic (%)						
Lane Group Flow (vph)	28	704	1003	55	36	61
Turn Type	D.P+P	NA	NA	Perm	Prot	Prot
Protected Phases	1	1 2	2		4	4
Permitted Phases	2			2		
Detector Phase	1	1 2	2	2	4	4
Switch Phase						
Minimum Initial (s)	3.0		15.0	15.0	7.0	7.0
Minimum Split (s)	9.0		21.0	21.0	24.0	24.0
Total Split (s)	9.0		51.0	51.0	30.0	30.0
Total Split (%)	10.0%		56.7%	56.7%	33.3%	33.3%
Yellow Time (s)	3.0		4.0	4.0	3.0	3.0
All-Red Time (s)	1.0		1.9	1.9	1.1	1.1
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0		5.9	5.9	4.1	4.1
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None		C-Min	C-Min	None	None
Act Effct Green (s)	72.9	77.7	66.0	66.0	7.2	7.2
Actuated g/C Ratio	0.81	0.86	0.73	0.73	0.08	0.08
v/c Ratio	0.08	0.44	0.73	0.05	0.25	0.33
Control Delay	1.6	2.1	12.0	2.5	43.4	16.1
Queue Delay	0.0	0.0	0.9	0.0	0.0	0.0
Total Delay	1.6	2.1	13.0	2.5	43.4	16.1
LOS	A	A	B	A	D	B
Approach Delay		2.1	12.4		26.2	
Approach LOS		A	B		C	
Stops (vph)	4	78	539	8	33	16
Fuel Used(gal)	0	2	10	0	1	0



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
CO Emissions (g/hr)	4	107	714	24	36	24
NOx Emissions (g/hr)	1	21	139	5	7	5
VOC Emissions (g/hr)	1	25	165	6	8	6
Dilemma Vehicles (#)	0	0	0	0	0	0
Queue Length 50th (ft)	2	51	303	4	20	0
Queue Length 95th (ft)	m5	70	497	14	49	37
Internal Link Dist (ft)		84	398		79	
Turn Bay Length (ft)				140		
Base Capacity (vph)	356	1608	1365	1168	509	498
Starvation Cap Reductn	0	0	148	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.08	0.44	0.82	0.05	0.07	0.12

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 8 (9%), Referenced to phase 2:EBWB, Start of Yellow			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.73			
Intersection Signal Delay: 9.1		Intersection LOS: A	
Intersection Capacity Utilization 62.7%		ICU Level of Service B	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 6: Walgreens Driveway



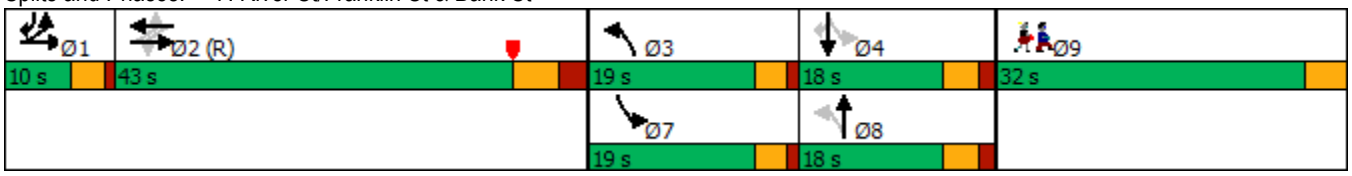
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	66	555	75	15	687	81	207	59	9	96	45	141
Future Volume (vph)	66	555	75	15	687	81	207	59	9	96	45	141
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		0	250		250
Storage Lanes	0		0	0		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.984			0.984			0.980				0.850
Flt Protected		0.995			0.999		0.950			0.950		
Satd. Flow (prot)	0	3465	0	0	3479	0	1770	1825	0	1770	1863	1583
Flt Permitted		0.777			0.932		0.515			0.709		
Satd. Flow (perm)	0	2706	0	0	3246	0	959	1825	0	1321	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12			10			5				153
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		213			492			629			916	
Travel Time (s)		4.8			11.2			14.3			20.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	72	603	82	16	747	88	225	64	10	104	49	153
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	757	0	0	851	0	225	74	0	104	49	153
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	1	1 2			2		3	8		7	4	1
Permitted Phases	1 2			2			8			4		4
Detector Phase	1	1 2		2	2		3	8		7	4	1
Switch Phase												
Minimum Initial (s)	6.0			15.0	15.0		6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	10.0			22.0	22.0		10.0	11.0		10.0	11.0	10.0
Total Split (s)	10.0			43.0	43.0		19.0	18.0		19.0	18.0	10.0
Total Split (%)	8.2%			35.2%	35.2%		15.6%	14.8%		15.6%	14.8%	8.2%
Yellow Time (s)	3.0			4.0	4.0		3.0	3.3		3.0	3.3	3.0
All-Red Time (s)	1.0			2.8	2.8		1.0	1.6		1.0	1.6	1.0
Lost Time Adjust (s)					0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)					6.8		4.0	4.9		4.0	4.9	4.0
Lead/Lag	Lead			Lag	Lag		Lead	Lag		Lead	Lag	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	Max			C-Max	C-Max		None	None		None	None	Max
Act Effct Green (s)		84.4			75.6		24.7	11.2		19.5	8.3	17.0
Actuated g/C Ratio		0.69			0.62		0.20	0.09		0.16	0.07	0.14
v/c Ratio		0.40			0.42		0.78	0.43		0.41	0.39	0.43
Control Delay		8.1			13.4		61.2	56.2		43.8	62.4	10.6
Queue Delay		0.0			0.5		0.0	0.0		0.0	0.0	0.0
Total Delay		8.1			14.0		61.2	56.2		43.8	62.4	10.6
LOS		A			B		E	E		D	E	B
Approach Delay		8.1			14.0			60.0			30.2	
Approach LOS		A			B			E			C	
Stops (vph)		258			390		189	59		80	41	19
Fuel Used(gal)		6			7		5	1		2	1	1

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	32.0
Total Split (s)	32.0
Total Split (%)	26%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Stops (vph)	
Fuel Used(gal)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
CO Emissions (g/hr)		442			510		324	100		139	78	99
NOx Emissions (g/hr)		86			99		63	20		27	15	19
VOC Emissions (g/hr)		102			118		75	23		32	18	23
Dilemma Vehicles (#)		0			0		0	0		0	0	0
Queue Length 50th (ft)		102			175		158	52		68	38	0
Queue Length 95th (ft)		152			247		229	101		113	77	58
Internal Link Dist (ft)		133			412			549			836	
Turn Bay Length (ft)										250		250
Base Capacity (vph)		1913			2015		296	200		301	200	352
Starvation Cap Reductn		0			698		0	0		0	0	0
Spillback Cap Reductn		0			0		0	0		0	0	0
Storage Cap Reductn		0			0		0	0		0	0	0
Reduced v/c Ratio		0.40			0.65		0.76	0.37		0.35	0.24	0.43

Intersection Summary			
Area Type:	Other		
Cycle Length: 122			
Actuated Cycle Length: 122			
Offset: 0 (0%), Referenced to phase 2:EBWB, Start of Yellow			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.78			
Intersection Signal Delay: 20.4		Intersection LOS: C	
Intersection Capacity Utilization 72.9%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 7: River St/Franklin St & Bank St



Lane Group	Ø9
CO Emissions (g/hr)	
NOx Emissions (g/hr)	
VOC Emissions (g/hr)	
Dilemma Vehicles (#)	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Intersection	
Int Delay, s/veh	2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	617	44	119	779	14	57
Future Vol, veh/h	617	44	119	779	14	57
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	671	48	129	847	15	62

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	719	0	1800	695
Stage 1	-	-	-	-	695	-
Stage 2	-	-	-	-	1105	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	882	-	88	442
Stage 1	-	-	-	-	495	-
Stage 2	-	-	-	-	317	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	882	-	75	442
Mov Cap-2 Maneuver	-	-	-	-	75	-
Stage 1	-	-	-	-	423	-
Stage 2	-	-	-	-	317	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.3	29.1
HCM LOS			D

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	225	-	-	882	-
HCM Lane V/C Ratio	0.343	-	-	0.147	-
HCM Control Delay (s)	29.1	-	-	9.8	-
HCM Lane LOS	D	-	-	A	-
HCM 95th %tile Q(veh)	1.5	-	-	0.5	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	625	270	25	600	225	25
Future Volume (vph)	625	270	25	600	225	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.987	
Flt Protected				0.998	0.957	
Satd. Flow (prot)	1863	1583	0	1859	1759	0
Flt Permitted				0.972	0.957	
Satd. Flow (perm)	1863	1583	0	1811	1759	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		293			7	
Link Speed (mph)	30			30	30	
Link Distance (ft)	328			864	646	
Travel Time (s)	7.5			19.6	14.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	679	293	27	652	245	27
Shared Lane Traffic (%)						
Lane Group Flow (vph)	679	293	0	679	272	0
Turn Type	NA	Perm	D.P+P	NA	Prot	
Protected Phases	2		1	1 2	4	
Permitted Phases		2	2			
Detector Phase	2	2	1	1	4	
Switch Phase						
Minimum Initial (s)	18.0	18.0	3.0		7.0	
Minimum Split (s)	24.2	24.2	11.0		24.0	
Total Split (s)	45.0	45.0	11.0		24.0	
Total Split (%)	56.3%	56.3%	13.8%		30.0%	
Yellow Time (s)	4.0	4.0	3.0		3.0	
All-Red Time (s)	2.2	2.2	1.0		1.0	
Lost Time Adjust (s)	0.0	0.0			0.0	
Total Lost Time (s)	6.2	6.2			4.0	
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	Min		None	
Act Effct Green (s)	40.1	40.1		52.2	15.8	
Actuated g/C Ratio	0.50	0.50		0.65	0.20	
v/c Ratio	0.73	0.31		0.57	0.77	
Control Delay	21.8	2.5		8.9	44.0	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	21.8	2.5		8.9	44.0	
LOS	C	A		A	D	
Approach Delay	16.0			8.9	44.0	
Approach LOS	B			A	D	
Stops (vph)	486	21		538	223	
Fuel Used(gal)	7	1		8	5	
CO Emissions (g/hr)	494	66		582	331	
NOx Emissions (g/hr)	96	13		113	64	
VOC Emissions (g/hr)	114	15		135	77	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Dilemma Vehicles (#)	0	0		0	0	
Queue Length 50th (ft)	262	0		108	125	
Queue Length 95th (ft)	399	38		219	196	
Internal Link Dist (ft)	248			784	566	
Turn Bay Length (ft)						
Base Capacity (vph)	934	940		1187	445	
Starvation Cap Reductn	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.73	0.31		0.57	0.61	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 43.3 (54%), Referenced to phase 2:EBWB and 6:, Start of Yellow			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 17.5		Intersection LOS: B	
Intersection Capacity Utilization 72.5%		ICU Level of Service C	
Analysis Period (min) 15			

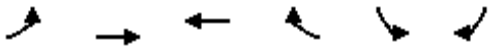
Splits and Phases: 1: West Street & Bank Street/Route 67

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	630	40	25	535	30	10
Future Volume (vph)	630	40	25	535	30	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	100		0	0
Storage Lanes		0	1		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.992					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1848	0	1770	1863	1770	1583
Flt Permitted			0.337		0.950	
Satd. Flow (perm)	1848	0	628	1863	1770	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	8					11
Link Speed (mph)	30			30	30	
Link Distance (ft)	864			387	297	
Travel Time (s)	19.6			8.8	6.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	685	43	27	582	33	11
Shared Lane Traffic (%)						
Lane Group Flow (vph)	728	0	27	582	33	11
Turn Type	NA		D.P+P	NA	Prot	Prot
Protected Phases	2		1	1 2	4	4
Permitted Phases			2			
Detector Phase			1		4	4
Switch Phase						
Minimum Initial (s)	15.0		6.0		6.0	6.0
Minimum Split (s)	21.3		10.0		12.0	12.0
Total Split (s)	57.0		11.0		12.0	12.0
Total Split (%)	71.3%		13.8%		15.0%	15.0%
Yellow Time (s)	4.0		3.0		3.0	3.0
All-Red Time (s)	2.3		1.0		1.0	1.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0
Total Lost Time (s)	6.3		4.0		4.0	4.0
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	C-Max		None		None	None
Act Effct Green (s)	65.7		67.8	71.0	6.6	6.6
Actuated g/C Ratio	0.82		0.85	0.89	0.08	0.08
v/c Ratio	0.48		0.04	0.35	0.23	0.08
Control Delay	6.0		1.3	1.5	37.9	19.5
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	6.0		1.3	1.5	37.9	19.5
LOS	A		A	A	D	B
Approach Delay	6.0			1.5	33.3	
Approach LOS	A			A	C	
Stops (vph)	319		3	40	30	6
Fuel Used(gal)	7		0	2	0	0

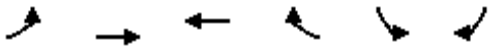
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
CO Emissions (g/hr)	496		7	140	33	7
NOx Emissions (g/hr)	97		1	27	6	1
VOC Emissions (g/hr)	115		2	32	8	2
Dilemma Vehicles (#)	0		0	0	0	0
Queue Length 50th (ft)	5		1	25	16	0
Queue Length 95th (ft)	490		m3	54	41	15
Internal Link Dist (ft)	784			307	217	
Turn Bay Length (ft)			100			
Base Capacity (vph)	1518		635	1654	177	168
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.48		0.04	0.35	0.19	0.07

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 7 (9%), Referenced to phase 2:EBWB, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.48			
Intersection Signal Delay: 4.9		Intersection LOS: A	
Intersection Capacity Utilization 49.2%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 2: Klarides & Route 67



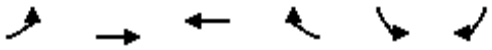
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	9	591	607	0	70	24
Future Volume (vph)	9	591	607	0	70	24
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	125			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.966	
Flt Protected	0.950				0.964	
Satd. Flow (prot)	1770	1863	1863	0	1735	0
Flt Permitted	0.345				0.964	
Satd. Flow (perm)	643	1863	1863	0	1735	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)					26	
Link Speed (mph)		30	30		25	
Link Distance (ft)		254	217		307	
Travel Time (s)		5.8	4.9		8.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	10	642	660	0	76	26
Shared Lane Traffic (%)						
Lane Group Flow (vph)	10	642	660	0	102	0
Turn Type	D.P+P	NA	NA		Prot	
Protected Phases	1	1 2	2		4	
Permitted Phases	2					
Detector Phase	1	1 2	2		4	
Switch Phase						
Minimum Initial (s)	3.0		15.0		7.0	
Minimum Split (s)	7.0		21.1		30.0	
Total Split (s)	9.0		35.0		36.0	
Total Split (%)	11.3%		43.8%		45.0%	
Yellow Time (s)	3.0		4.0		3.0	
All-Red Time (s)	1.0		2.1		1.0	
Lost Time Adjust (s)	0.0		0.0		0.0	
Total Lost Time (s)	4.0		6.1		4.0	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None		C-Min		None	
Act Effct Green (s)	61.6	66.4	54.8		8.6	
Actuated g/C Ratio	0.77	0.83	0.68		0.11	
v/c Ratio	0.02	0.42	0.52		0.49	
Control Delay	2.3	3.6	7.0		33.3	
Queue Delay	0.0	0.0	0.0		0.0	
Total Delay	2.3	3.6	7.0		33.3	
LOS	A	A	A		C	
Approach Delay		3.5	7.0		33.3	
Approach LOS		A	A		C	
Stops (vph)	3	153	169		65	
Fuel Used(gal)	0	2	3		1	



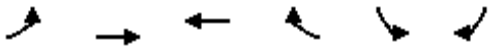
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
CO Emissions (g/hr)	3	171	197		79	
NOx Emissions (g/hr)	1	33	38		15	
VOC Emissions (g/hr)	1	40	46		18	
Dilemma Vehicles (#)	0	0	0		0	
Queue Length 50th (ft)	1	66	108		37	
Queue Length 95th (ft)	4	144	140		80	
Internal Link Dist (ft)		174	137		227	
Turn Bay Length (ft)	125					
Base Capacity (vph)	568	1534	1276		709	
Starvation Cap Reductn	0	0	0		0	
Spillback Cap Reductn	0	0	0		0	
Storage Cap Reductn	0	0	0		0	
Reduced v/c Ratio	0.02	0.42	0.52		0.14	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 1 (1%), Referenced to phase 2:EBWB, Start of Yellow			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.52			
Intersection Signal Delay: 7.3		Intersection LOS: A	
Intersection Capacity Utilization 46.2%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Route 67 & Old Drive



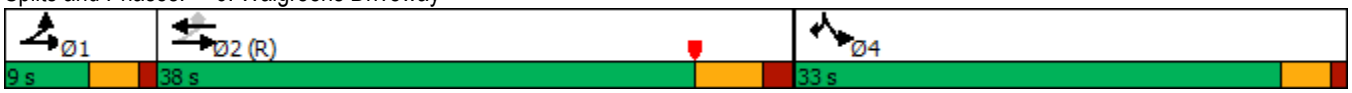
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	23	657	679	10	2	0
Future Volume (vph)	23	657	679	10	2	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			140	0	0
Storage Lanes	1			1	1	1
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850		
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1863	1863	1583	1770	1863
Flt Permitted	0.332				0.950	
Satd. Flow (perm)	618	1863	1863	1583	1770	1863
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				7		
Link Speed (mph)		30	30		30	
Link Distance (ft)		164	478		159	
Travel Time (s)		3.7	10.9		3.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	25	714	738	11	2	0
Shared Lane Traffic (%)						
Lane Group Flow (vph)	25	714	738	11	2	0
Turn Type	D.P+P	NA	NA	Perm	Prot	Prot
Protected Phases	1	1 2	2		4	4
Permitted Phases	2			2		
Detector Phase	1	1 2	2	2	4	4
Switch Phase						
Minimum Initial (s)	3.0		15.0	15.0	7.0	7.0
Minimum Split (s)	7.0		21.0	21.0	27.0	27.0
Total Split (s)	9.0		38.0	38.0	33.0	33.0
Total Split (%)	11.3%		47.5%	47.5%	41.3%	41.3%
Yellow Time (s)	3.0		4.0	4.0	3.0	3.0
All-Red Time (s)	1.0		1.9	1.9	1.1	1.1
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0		5.9	5.9	4.1	4.1
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None		C-Min	C-Min	None	None
Act Effct Green (s)	69.8	77.0	62.9	62.9	7.0	
Actuated g/C Ratio	0.87	0.96	0.79	0.79	0.09	
v/c Ratio	0.04	0.40	0.50	0.01	0.01	
Control Delay	0.9	1.2	5.2	2.3	33.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	0.9	1.2	5.2	2.3	33.5	
LOS	A	A	A	A	C	
Approach Delay		1.2	5.2		33.5	
Approach LOS		A	A		C	
Stops (vph)	2	35	230	2	3	
Fuel Used(gal)	0	1	6	0	0	

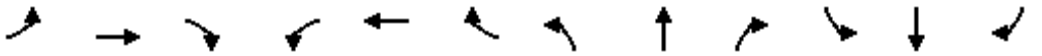


Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
CO Emissions (g/hr)	3	83	395	5	2	
NOx Emissions (g/hr)	1	16	77	1	0	
VOC Emissions (g/hr)	1	19	92	1	1	
Dilemma Vehicles (#)	0	0	0	0	0	
Queue Length 50th (ft)	1	0	76	0	1	
Queue Length 95th (ft)	m4	79	260	5	8	
Internal Link Dist (ft)		84	398		79	
Turn Bay Length (ft)				140		
Base Capacity (vph)	611	1793	1464	1245	639	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	
Reduced v/c Ratio	0.04	0.40	0.50	0.01	0.00	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 6 (8%), Referenced to phase 2:EBWB, Start of Yellow			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.50			
Intersection Signal Delay: 3.2		Intersection LOS: A	
Intersection Capacity Utilization 49.9%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 6: Walgreens Driveway





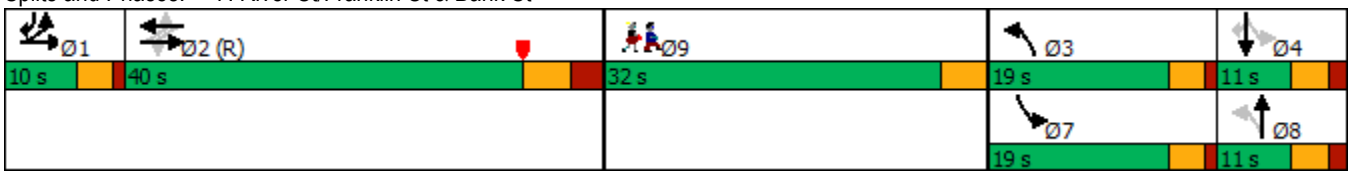
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	531	123	28	577	36	81	23	9	44	13	35
Future Volume (vph)	46	531	123	28	577	36	81	23	9	44	13	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		0	250		250
Storage Lanes	0		0	0		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.974			0.992			0.957				0.850
Flt Protected		0.997			0.998		0.950			0.950		
Satd. Flow (prot)	0	3437	0	0	3504	0	1770	1783	0	1770	1863	1583
Flt Permitted		0.862			0.890		0.678					
Satd. Flow (perm)	0	2971	0	0	3125	0	1263	1783	0	1863	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		26			5			10				115
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		213			492			629			916	
Travel Time (s)		4.8			11.2			14.3			20.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	50	577	134	30	627	39	88	25	10	48	14	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	761	0	0	696	0	88	35	0	48	14	38
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	1	1 2			2		3	8		7	4	1
Permitted Phases	1 2			2			8			4		4
Detector Phase	1	1 2		2	2		3	8		7	4	1
Switch Phase												
Minimum Initial (s)	6.0			15.0	15.0		6.0	6.0		6.0	5.1	6.0
Minimum Split (s)	10.0			21.8	21.8		10.0	11.0		10.0	11.0	10.0
Total Split (s)	10.0			40.0	40.0		19.0	11.0		19.0	11.0	10.0
Total Split (%)	8.9%			35.7%	35.7%		17.0%	9.8%		17.0%	9.8%	8.9%
Yellow Time (s)	3.0			4.0	4.0		3.0	3.3		3.0	3.3	3.0
All-Red Time (s)	1.0			2.8	2.8		1.0	1.6		1.0	1.6	1.0
Lost Time Adjust (s)					0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)					6.8		4.0	4.9		4.0	4.9	4.0
Lead/Lag	Lead			Lag	Lag		Lead	Lag		Lead	Lag	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	Max			C-Max	C-Max		None	None		None	None	Max
Act Effct Green (s)		80.2			71.4		15.5	7.3		10.7	5.5	10.4
Actuated g/C Ratio		0.72			0.64		0.14	0.07		0.10	0.05	0.09
v/c Ratio		0.35			0.35		0.39	0.28		0.28	0.15	0.15
Control Delay		9.5			14.5		45.9	43.9		45.2	54.6	1.3
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	0.0
Total Delay		9.5			14.5		45.9	43.9		45.2	54.6	1.3
LOS		A			B		D	D		D	D	A
Approach Delay		9.5			14.5			45.3			29.8	
Approach LOS		A			B			D			C	
Stops (vph)		258			313		69	25		39	16	0
Fuel Used(gal)		7			6		2	1		1	0	0

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	31.0
Total Split (s)	32.0
Total Split (%)	29%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Stops (vph)	
Fuel Used(gal)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
CO Emissions (g/hr)		458			425		107	41		65	23	18
NOx Emissions (g/hr)		89			83		21	8		13	4	4
VOC Emissions (g/hr)		106			98		25	9		15	5	4
Dilemma Vehicles (#)		0			0		0	0		0	0	0
Queue Length 50th (ft)		70			107		56	18		34	10	0
Queue Length 95th (ft)		248			291		99	50		61	31	0
Internal Link Dist (ft)		133			412			549			836	
Turn Bay Length (ft)										250		250
Base Capacity (vph)		2160			1995		284	126		283	101	250
Starvation Cap Reductn		0			0		0	0		0	0	0
Spillback Cap Reductn		0			0		0	0		0	0	0
Storage Cap Reductn		0			0		0	0		0	0	0
Reduced v/c Ratio		0.35			0.35		0.31	0.28		0.17	0.14	0.15

Intersection Summary			
Area Type:	Other		
Cycle Length: 112			
Actuated Cycle Length: 112			
Offset: 0 (0%), Referenced to phase 2:EBWB, Start of Yellow			
Natural Cycle: 85			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.39			
Intersection Signal Delay: 15.4		Intersection LOS: B	
Intersection Capacity Utilization 62.1%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 7: River St/Franklin St & Bank St



Lane Group	Ø9
CO Emissions (g/hr)	
NOx Emissions (g/hr)	
VOC Emissions (g/hr)	
Dilemma Vehicles (#)	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	641	35	64	589	12	54
Future Vol, veh/h	641	35	64	589	12	54
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	697	38	70	640	13	59

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	735	0	1496	716
Stage 1	-	-	-	-	716	-
Stage 2	-	-	-	-	780	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	870	-	135	430
Stage 1	-	-	-	-	484	-
Stage 2	-	-	-	-	452	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	870	-	124	430
Mov Cap-2 Maneuver	-	-	-	-	124	-
Stage 1	-	-	-	-	445	-
Stage 2	-	-	-	-	452	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	20.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	297	-	-	870	-
HCM Lane V/C Ratio	0.242	-	-	0.08	-
HCM Control Delay (s)	20.9	-	-	9.5	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.9	-	-	0.3	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	665	285	15	815	365	40
Future Volume (vph)	665	285	15	815	365	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.987	
Flt Protected				0.999	0.957	
Satd. Flow (prot)	1863	1583	0	1861	1759	0
Flt Permitted				0.988	0.957	
Satd. Flow (perm)	1863	1583	0	1840	1759	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		310			6	
Link Speed (mph)	30			30	30	
Link Distance (ft)	432			800	271	
Travel Time (s)	9.8			18.2	6.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	723	310	16	886	397	43
Shared Lane Traffic (%)						
Lane Group Flow (vph)	723	310	0	902	440	0
Turn Type	NA	Perm	D.P+P	NA	Prot	
Protected Phases	2		1	1 2	4	
Permitted Phases		2	2			
Detector Phase	2	2	1	1	4	
Switch Phase						
Minimum Initial (s)	18.0	18.0	3.0		7.0	
Minimum Split (s)	24.2	24.2	11.0		24.0	
Total Split (s)	55.0	55.0	11.0		24.0	
Total Split (%)	61.1%	61.1%	12.2%		26.7%	
Yellow Time (s)	4.0	4.0	3.0		3.0	
All-Red Time (s)	2.2	2.2	1.0		1.0	
Lost Time Adjust (s)	0.0	0.0			0.0	
Total Lost Time (s)	6.2	6.2			4.0	
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	Min		None	
Act Effct Green (s)	48.8	48.8		58.0	20.0	
Actuated g/C Ratio	0.54	0.54		0.64	0.22	
v/c Ratio	0.72	0.31		0.76	1.11	
Control Delay	20.4	2.2		12.8	114.2	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	20.4	2.2		12.8	114.2	
LOS	C	A		B	F	
Approach Delay	15.0			12.8	114.2	
Approach LOS	B			B	F	
Stops (vph)	486	18		823	330	
Fuel Used(gal)	8	1		12	12	
CO Emissions (g/hr)	538	83		831	846	
NOx Emissions (g/hr)	105	16		162	165	
VOC Emissions (g/hr)	125	19		193	196	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Dilemma Vehicles (#)	0	0		0	0	
Queue Length 50th (ft)	289	0		187	~288	
Queue Length 95th (ft)	429	36		367	#474	
Internal Link Dist (ft)	352			720	191	
Turn Bay Length (ft)						
Base Capacity (vph)	1010	1000		1187	395	
Starvation Cap Reductn	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.72	0.31		0.76	1.11	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 43.3 (48%), Referenced to phase 2:EBWB and 6:, Start of Yellow			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 1.11			
Intersection Signal Delay: 32.5		Intersection LOS: C	
Intersection Capacity Utilization 84.2%		ICU Level of Service E	
Analysis Period (min) 15			

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

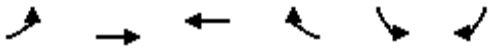
Splits and Phases: 1: West Street & Bank Street/Route 67

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	580	85	60	725	90	75
Future Volume (vph)	580	85	60	725	90	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	100		0	0
Storage Lanes		0	1		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.983					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1831	0	1770	1863	1770	1583
Flt Permitted			0.319		0.950	
Satd. Flow (perm)	1831	0	594	1863	1770	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	18					82
Link Speed (mph)	30			30	30	
Link Distance (ft)	800			387	242	
Travel Time (s)	18.2			8.8	5.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	630	92	65	788	98	82
Shared Lane Traffic (%)						
Lane Group Flow (vph)	722	0	65	788	98	82
Turn Type	NA		D.P+P	NA	Prot	Prot
Protected Phases	2		1	1 2	4	4
Permitted Phases			2			
Detector Phase			1		4	4
Switch Phase						
Minimum Initial (s)	15.0		6.0		6.0	6.0
Minimum Split (s)	21.3		10.0		12.0	12.0
Total Split (s)	67.0		11.0		12.0	12.0
Total Split (%)	74.4%		12.2%		13.3%	13.3%
Yellow Time (s)	4.0		3.0		3.0	3.0
All-Red Time (s)	2.3		1.0		1.0	1.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0
Total Lost Time (s)	6.3		4.0		4.0	4.0
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	C-Max		None		None	None
Act Effct Green (s)	64.1		71.2	74.4	7.6	7.6
Actuated g/C Ratio	0.71		0.79	0.83	0.08	0.08
v/c Ratio	0.55		0.12	0.51	0.66	0.39
Control Delay	18.6		1.5	2.1	61.4	15.3
Queue Delay	0.0		0.0	0.1	0.0	0.0
Total Delay	18.6		1.5	2.2	61.4	15.3
LOS	B		A	A	E	B
Approach Delay	18.6			2.1	40.4	
Approach LOS	B			A	D	
Stops (vph)	604		6	72	82	17
Fuel Used(gal)	10		0	3	2	0

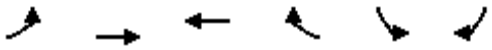
Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
CO Emissions (g/hr)	699		16	202	122	33
NOx Emissions (g/hr)	136		3	39	24	6
VOC Emissions (g/hr)	162		4	47	28	8
Dilemma Vehicles (#)	0		0	0	0	0
Queue Length 50th (ft)	424		4	54	55	0
Queue Length 95th (ft)	m526		m5	53	#122	42
Internal Link Dist (ft)	720			307	162	
Turn Bay Length (ft)			100			
Base Capacity (vph)	1308		567	1539	157	215
Starvation Cap Reductn	0		0	126	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.55		0.11	0.56	0.62	0.38

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 7 (8%), Referenced to phase 2:EBWB, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.66			
Intersection Signal Delay: 12.8		Intersection LOS: B	
Intersection Capacity Utilization 57.6%		ICU Level of Service B	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 2: Klarides & Route 67



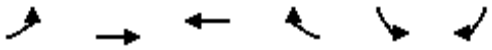
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	30	681	882	4	46	19
Future Volume (vph)	30	681	882	4	46	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	125			0	0	0
Storage Lanes	1			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt			0.999		0.960	
Flt Protected	0.950				0.966	
Satd. Flow (prot)	1770	1863	1861	0	1727	0
Flt Permitted	0.200				0.966	
Satd. Flow (perm)	373	1863	1861	0	1727	0
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)					21	
Link Speed (mph)		30	30		25	
Link Distance (ft)		254	217		307	
Travel Time (s)		5.8	4.9		8.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	33	740	959	4	50	21
Shared Lane Traffic (%)						
Lane Group Flow (vph)	33	740	963	0	71	0
Turn Type	D.P+P	NA	NA		Prot	
Protected Phases	1	1 2	2		4	
Permitted Phases	2					
Detector Phase	1	1 2	2		4	
Switch Phase						
Minimum Initial (s)	3.0		15.0		7.0	
Minimum Split (s)	7.0		22.0		29.0	
Total Split (s)	9.0		52.0		29.0	
Total Split (%)	10.0%		57.8%		32.2%	
Yellow Time (s)	3.0		4.0		3.0	
All-Red Time (s)	1.0		2.1		1.0	
Lost Time Adjust (s)	0.0		0.0		0.0	
Total Lost Time (s)	4.0		6.1		4.0	
Lead/Lag	Lead		Lag			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	None		C-Min		None	
Act Effct Green (s)	72.3	77.1	65.4		7.9	
Actuated g/C Ratio	0.80	0.86	0.73		0.09	
v/c Ratio	0.09	0.46	0.71		0.42	
Control Delay	2.5	3.4	9.4		36.5	
Queue Delay	0.0	0.0	0.0		0.0	
Total Delay	2.5	3.4	9.4		36.5	
LOS	A	A	A		D	
Approach Delay		3.4	9.4		36.5	
Approach LOS		A	A		D	
Stops (vph)	6	141	308		45	
Fuel Used(gal)	0	3	5		1	



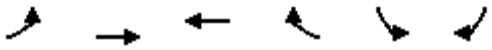
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
CO Emissions (g/hr)	8	181	342		58	
NOx Emissions (g/hr)	1	35	67		11	
VOC Emissions (g/hr)	2	42	79		13	
Dilemma Vehicles (#)	0	0	0		0	
Queue Length 50th (ft)	2	77	175		28	
Queue Length 95th (ft)	m8	158	309		67	
Internal Link Dist (ft)		174	137		227	
Turn Bay Length (ft)	125					
Base Capacity (vph)	378	1583	1352		494	
Starvation Cap Reductn	0	68	0		0	
Spillback Cap Reductn	0	0	0		0	
Storage Cap Reductn	0	0	0		0	
Reduced v/c Ratio	0.09	0.49	0.71		0.14	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 1 (1%), Referenced to phase 2:EBWB, Start of Yellow			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 7.9		Intersection LOS: A	
Intersection Capacity Utilization 60.9%		ICU Level of Service B	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 3: Route 67 & Old Drive



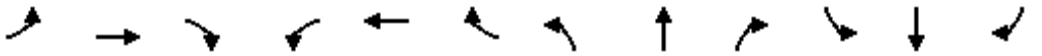
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
Lane Configurations						
Traffic Volume (vph)	29	719	1016	56	33	57
Future Volume (vph)	29	719	1016	56	33	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0			140	0	0
Storage Lanes	1			1	1	1
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt				0.850		0.850
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1863	1863	1583	1770	1583
Flt Permitted	0.133				0.950	
Satd. Flow (perm)	248	1863	1863	1583	1770	1583
Right Turn on Red				Yes		Yes
Satd. Flow (RTOR)				29		62
Link Speed (mph)		30	30		30	
Link Distance (ft)		164	478		159	
Travel Time (s)		3.7	10.9		3.6	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	32	782	1104	61	36	62
Shared Lane Traffic (%)						
Lane Group Flow (vph)	32	782	1104	61	36	62
Turn Type	D.P+P	NA	NA	Perm	Prot	Prot
Protected Phases	1	1 2	2		4	4
Permitted Phases	2			2		
Detector Phase	1	1 2	2	2	4	4
Switch Phase						
Minimum Initial (s)	3.0		15.0	15.0	7.0	7.0
Minimum Split (s)	9.0		21.0	21.0	27.0	27.0
Total Split (s)	9.0		51.0	51.0	30.0	30.0
Total Split (%)	10.0%		56.7%	56.7%	33.3%	33.3%
Yellow Time (s)	3.0		4.0	4.0	3.0	3.0
All-Red Time (s)	1.0		1.9	1.9	1.1	1.1
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0		5.9	5.9	4.1	4.1
Lead/Lag	Lead		Lag	Lag		
Lead-Lag Optimize?	Yes		Yes	Yes		
Recall Mode	None		C-Min	C-Min	None	None
Act Effct Green (s)	72.9	77.7	66.0	66.0	7.2	7.2
Actuated g/C Ratio	0.81	0.86	0.73	0.73	0.08	0.08
v/c Ratio	0.11	0.49	0.81	0.05	0.25	0.34
Control Delay	2.7	3.2	15.3	2.6	43.4	16.1
Queue Delay	0.0	0.0	1.8	0.0	0.0	0.0
Total Delay	2.7	3.2	17.0	2.6	43.4	16.1
LOS	A	A	B	A	D	B
Approach Delay		3.2	16.3		26.1	
Approach LOS		A	B		C	
Stops (vph)	5	126	646	9	33	16
Fuel Used(gal)	0	2	12	0	1	0



Lane Group	EBL	EBT	WBT	WBR	SBL	SBR
CO Emissions (g/hr)	6	146	853	27	36	24
NOx Emissions (g/hr)	1	28	166	5	7	5
VOC Emissions (g/hr)	1	34	198	6	8	6
Dilemma Vehicles (#)	0	0	0	0	0	0
Queue Length 50th (ft)	2	62	378	5	20	0
Queue Length 95th (ft)	m9	160	#652	16	49	37
Internal Link Dist (ft)		84	398		79	
Turn Bay Length (ft)				140		
Base Capacity (vph)	285	1608	1365	1168	509	499
Starvation Cap Reductn	0	0	129	0	0	0
Spillback Cap Reductn	0	0	0	0	0	0
Storage Cap Reductn	0	0	0	0	0	0
Reduced v/c Ratio	0.11	0.49	0.89	0.05	0.07	0.12

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 8 (9%), Referenced to phase 2:EBWB, Start of Yellow			
Natural Cycle: 100			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 11.6		Intersection LOS: B	
Intersection Capacity Utilization 67.6%		ICU Level of Service C	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 6: Walgreens Driveway



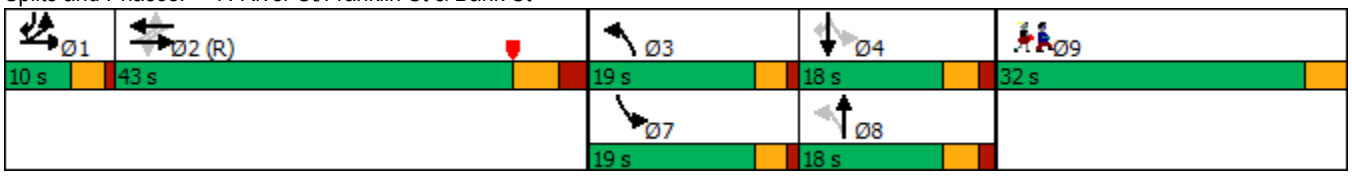
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	611	83	17	756	89	228	65	10	155	50	106
Future Volume (vph)	73	611	83	17	756	89	228	65	10	155	50	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	0		0	0		0	0		0	250		250
Storage Lanes	0		0	0		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.984			0.984			0.980				0.850
Flt Protected		0.995			0.999		0.950			0.950		
Satd. Flow (prot)	0	3465	0	0	3479	0	1770	1825	0	1770	1863	1583
Flt Permitted		0.744			0.927		0.664			0.704		
Satd. Flow (perm)	0	2591	0	0	3228	0	1237	1825	0	1311	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		12			10			5				115
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		213			492			629			916	
Travel Time (s)		4.8			11.2			14.3			20.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	79	664	90	18	822	97	248	71	11	168	54	115
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	833	0	0	937	0	248	82	0	168	54	115
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	1	1 2			2		3	8		7	4	1
Permitted Phases	1 2			2			8			4		4
Detector Phase	1	1 2		2	2		3	8		7	4	1
Switch Phase												
Minimum Initial (s)	6.0			15.0	15.0		6.0	6.0		6.0	6.0	6.0
Minimum Split (s)	10.0			22.0	22.0		10.0	11.0		10.0	11.0	10.0
Total Split (s)	10.0			43.0	43.0		19.0	18.0		19.0	18.0	10.0
Total Split (%)	8.2%			35.2%	35.2%		15.6%	14.8%		15.6%	14.8%	8.2%
Yellow Time (s)	3.0			4.0	4.0		3.0	3.3		3.0	3.3	3.0
All-Red Time (s)	1.0			2.8	2.8		1.0	1.6		1.0	1.6	1.0
Lost Time Adjust (s)					0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)					6.8		4.0	4.9		4.0	4.9	4.0
Lead/Lag	Lead			Lag	Lag		Lead	Lag		Lead	Lag	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	Max			C-Max	C-Max		None	None		None	None	Max
Act Effct Green (s)		83.2			74.4		24.3	9.9		22.8	9.2	17.9
Actuated g/C Ratio		0.68			0.61		0.20	0.08		0.19	0.08	0.15
v/c Ratio		0.46			0.47		0.80	0.54		0.56	0.39	0.35
Control Delay		9.3			14.8		62.0	62.8		47.4	60.5	10.5
Queue Delay		0.0			0.7		0.0	0.0		0.0	0.0	0.0
Total Delay		9.3			15.5		62.0	62.8		47.4	60.5	10.5
LOS		A			B		E	E		D	E	B
Approach Delay		9.3			15.5			62.2			36.9	
Approach LOS		A			B			E			D	
Stops (vph)		290			459		215	65		131	46	17
Fuel Used(gal)		7			8		5	2		3	1	1

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	32.0
Total Split (s)	32.0
Total Split (%)	26%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Stops (vph)	
Fuel Used(gal)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
CO Emissions (g/hr)		502			590		362	118		232	86	75
NOx Emissions (g/hr)		98			115		71	23		45	17	15
VOC Emissions (g/hr)		116			137		84	27		54	20	17
Dilemma Vehicles (#)		0			0		0	0		0	0	0
Queue Length 50th (ft)		122			208		175	59		112	41	0
Queue Length 95th (ft)		173			284		251	110		173	82	50
Internal Link Dist (ft)		133			412			549			836	
Turn Bay Length (ft)										250		250
Base Capacity (vph)		1814			1973		313	200		311	200	330
Starvation Cap Reductn		0			642		0	0		0	0	0
Spillback Cap Reductn		0			0		0	0		0	0	0
Storage Cap Reductn		0			0		0	0		0	0	0
Reduced v/c Ratio		0.46			0.70		0.79	0.41		0.54	0.27	0.35

Intersection Summary			
Area Type:	Other		
Cycle Length: 122			
Actuated Cycle Length: 122			
Offset: 0 (0%), Referenced to phase 2:EBWB, Start of Yellow			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.80			
Intersection Signal Delay: 22.7		Intersection LOS: C	
Intersection Capacity Utilization 78.3%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 7: River St/Franklin St & Bank St



Lane Group	Ø9
CO Emissions (g/hr)	
NOx Emissions (g/hr)	
VOC Emissions (g/hr)	
Dilemma Vehicles (#)	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Intersection	
Int Delay, s/veh	2.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	679	48	131	857	15	63
Future Vol, veh/h	679	48	131	857	15	63
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	738	52	142	932	16	68

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	790	0	1980	764
Stage 1	-	-	-	-	764	-
Stage 2	-	-	-	-	1216	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	830	-	68	404
Stage 1	-	-	-	-	460	-
Stage 2	-	-	-	-	280	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	830	-	56	404
Mov Cap-2 Maneuver	-	-	-	-	56	-
Stage 1	-	-	-	-	381	-
Stage 2	-	-	-	-	280	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.4	40.3
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	184	-	-	830	-
HCM Lane V/C Ratio	0.461	-	-	0.172	-
HCM Control Delay (s)	40.3	-	-	10.2	-
HCM Lane LOS	E	-	-	B	-
HCM 95th %tile Q(veh)	2.2	-	-	0.6	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	625	270	25	600	225	25
Future Volume (vph)	625	270	25	600	225	25
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.987	
Flt Protected				0.998	0.957	
Satd. Flow (prot)	1863	1583	0	1859	1759	0
Flt Permitted				0.974	0.957	
Satd. Flow (perm)	1863	1583	0	1814	1759	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		293			7	
Link Speed (mph)	30			30	30	
Link Distance (ft)	328			864	646	
Travel Time (s)	7.5			19.6	14.7	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	679	293	27	652	245	27
Shared Lane Traffic (%)						
Lane Group Flow (vph)	679	293	0	679	272	0
Turn Type	NA	Perm	D.P+P	NA	Prot	
Protected Phases	2		1	1 2	4	
Permitted Phases		2	2			
Detector Phase	2	2	1	1	4	
Switch Phase						
Minimum Initial (s)	18.0	18.0	3.0		7.0	
Minimum Split (s)	24.2	24.2	11.0		24.0	
Total Split (s)	42.0	42.0	14.0		24.0	
Total Split (%)	52.5%	52.5%	17.5%		30.0%	
Yellow Time (s)	4.0	4.0	3.0		3.0	
All-Red Time (s)	2.2	2.2	1.0		1.0	
Lost Time Adjust (s)	0.0	0.0			0.0	
Total Lost Time (s)	6.2	6.2			4.0	
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	Min		None	
Act Effct Green (s)	37.9	37.9		52.2	15.8	
Actuated g/C Ratio	0.47	0.47		0.65	0.20	
v/c Ratio	0.77	0.32		0.57	0.77	
Control Delay	26.0	2.9		8.6	44.0	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	26.0	2.9		8.6	44.0	
LOS	C	A		A	D	
Approach Delay	19.0			8.6	44.0	
Approach LOS	B			A	D	
Stops (vph)	496	24		495	223	
Fuel Used(gal)	8	1		8	5	
CO Emissions (g/hr)	534	69		562	331	
NOx Emissions (g/hr)	104	13		109	64	
VOC Emissions (g/hr)	124	16		130	77	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Dilemma Vehicles (#)	0	0		0	0	
Queue Length 50th (ft)	284	0		108	125	
Queue Length 95th (ft)	#479	41		198	196	
Internal Link Dist (ft)	248			784	566	
Turn Bay Length (ft)						
Base Capacity (vph)	881	903		1189	445	
Starvation Cap Reductn	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.77	0.32		0.57	0.61	

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 43.3 (54%), Referenced to phase 2:EBWB and 6:, Start of Yellow			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.77			
Intersection Signal Delay: 18.9		Intersection LOS: B	
Intersection Capacity Utilization 72.5%		ICU Level of Service C	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

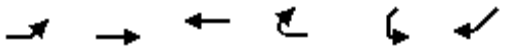
Splits and Phases: 1: West Street & Bank Street/Route 67

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	630	40	25	535	30	10
Future Volume (vph)	630	40	25	535	30	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	100		0	0
Storage Lanes		0	1		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.992					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1848	0	1770	1863	1770	1583
Flt Permitted			0.337		0.950	
Satd. Flow (perm)	1848	0	628	1863	1770	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	7					11
Link Speed (mph)	30			30	30	
Link Distance (ft)	864			387	297	
Travel Time (s)	19.6			8.8	6.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	685	43	27	582	33	11
Shared Lane Traffic (%)						
Lane Group Flow (vph)	728	0	27	582	33	11
Turn Type	NA		D.P+P	NA	Prot	Prot
Protected Phases	2		1	1 2	4	4
Permitted Phases			2			
Detector Phase			1		4	4
Switch Phase						
Minimum Initial (s)	15.0		6.0		6.0	6.0
Minimum Split (s)	21.3		10.0		12.0	12.0
Total Split (s)	52.0		16.0		12.0	12.0
Total Split (%)	65.0%		20.0%		15.0%	15.0%
Yellow Time (s)	4.0		3.0		3.0	3.0
All-Red Time (s)	2.3		1.0		1.0	1.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0
Total Lost Time (s)	6.3		4.0		4.0	4.0
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	C-Max		None		None	None
Act Effct Green (s)	65.7		67.8	71.0	6.6	6.6
Actuated g/C Ratio	0.82		0.85	0.89	0.08	0.08
v/c Ratio	0.48		0.04	0.35	0.23	0.08
Control Delay	5.1		1.3	1.5	37.9	19.5
Queue Delay	0.0		0.0	0.0	0.0	0.0
Total Delay	5.1		1.3	1.5	37.9	19.5
LOS	A		A	A	D	B
Approach Delay	5.1			1.5	33.3	
Approach LOS	A			A	C	
Stops (vph)	311		3	40	30	6
Fuel Used(gal)	7		0	2	0	0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
CO Emissions (g/hr)	484		7	140	33	7
NOx Emissions (g/hr)	94		1	27	6	1
VOC Emissions (g/hr)	112		2	32	8	2
Dilemma Vehicles (#)	0		0	0	0	0
Queue Length 50th (ft)	6		1	25	16	0
Queue Length 95th (ft)	490		m3	54	41	15
Internal Link Dist (ft)	784			307	217	
Turn Bay Length (ft)			100			
Base Capacity (vph)	1518		716	1654	177	168
Starvation Cap Reductn	0		0	0	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.48		0.04	0.35	0.19	0.07

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 7 (9%), Referenced to phase 2:EBWB, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.48			
Intersection Signal Delay: 4.4		Intersection LOS: A	
Intersection Capacity Utilization 49.2%		ICU Level of Service A	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 2: Klarides & Route 67

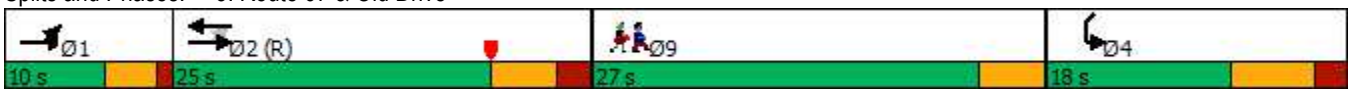


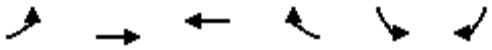
Lane Group	EBL	EBT	WBT	WBR	SWL	SWR	Ø9
Lane Configurations							
Traffic Volume (vph)	9	591	607	0	70	24	
Future Volume (vph)	9	591	607	0	70	24	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	125			0	0	0	
Storage Lanes	1			0	1	0	
Taper Length (ft)	25				25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt					0.966		
Flt Protected	0.950				0.964		
Satd. Flow (prot)	1770	1863	1863	0	1735	0	
Flt Permitted	0.319				0.964		
Satd. Flow (perm)	594	1863	1863	0	1735	0	
Right Turn on Red				Yes		Yes	
Satd. Flow (RTOR)					18		
Link Speed (mph)		35	35		25		
Link Distance (ft)		254	217		307		
Travel Time (s)		4.9	4.2		8.4		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	10	642	660	0	76	26	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	10	642	660	0	102	0	
Turn Type	D.P+P	NA	NA		Prot		
Protected Phases	1	1 2	2		4		9
Permitted Phases	2						
Detector Phase	1	1 2	2		4		
Switch Phase							
Minimum Initial (s)	5.0		15.0		7.0		1.0
Minimum Split (s)	9.0		22.0		16.0		27.0
Total Split (s)	10.0		25.0		18.0		27.0
Total Split (%)	12.5%		31.3%		22.5%		34%
Yellow Time (s)	3.0		4.0		5.0		4.0
All-Red Time (s)	1.0		2.1		2.0		0.0
Lost Time Adjust (s)	0.0		0.0		0.0		
Total Lost Time (s)	4.0		6.1		7.0		
Lead/Lag	Lead		Lag				
Lead-Lag Optimize?	Yes		Yes				
Recall Mode	None		C-Min		None		None
Act Effct Green (s)	59.3	64.1	51.2		8.5		
Actuated g/C Ratio	0.74	0.80	0.64		0.11		
v/c Ratio	0.02	0.43	0.55		0.51		
Control Delay	3.0	4.6	9.4		36.7		
Queue Delay	0.0	0.0	0.0		0.0		
Total Delay	3.0	4.6	9.4		36.7		
LOS	A	A	A		D		
Approach Delay		4.6	9.4		36.7		
Approach LOS		A	A		D		
Stops (vph)	3	182	217		73		
Fuel Used(gal)	0	3	4		1		

Lane Group	EBL	EBT	WBT	WBR	SWL	SWR	Ø9
CO Emissions (g/hr)	3	210	262		86		
NOx Emissions (g/hr)	1	41	51		17		
VOC Emissions (g/hr)	1	49	61		20		
Dilemma Vehicles (#)	0	32	47		0		
Queue Length 50th (ft)	1	89	90		41		
Queue Length 95th (ft)	5	167	138		85		
Internal Link Dist (ft)		174	137		227		
Turn Bay Length (ft)	125						
Base Capacity (vph)	528	1492	1191		254		
Starvation Cap Reductn	0	0	0		0		
Spillback Cap Reductn	0	0	0		0		
Storage Cap Reductn	0	0	0		0		
Reduced v/c Ratio	0.02	0.43	0.55		0.40		

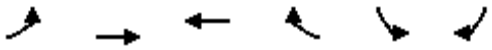
Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 6 (8%), Referenced to phase 2:EBWB, Start of Yellow			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.55			
Intersection Signal Delay: 9.1		Intersection LOS: A	
Intersection Capacity Utilization 48.7%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: Route 67 & Old Drive





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø9
Lane Configurations							
Traffic Volume (vph)	23	657	679	10	2	0	
Future Volume (vph)	23	657	679	10	2	0	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt				0.850			
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1770	1863	1863	1583	1770	1863	
Flt Permitted	0.326				0.950		
Satd. Flow (perm)	607	1863	1863	1583	1770	1863	
Right Turn on Red				Yes		Yes	
Satd. Flow (RTOR)				11			
Link Speed (mph)		35	35		35		
Link Distance (ft)		164	692		159		
Travel Time (s)		3.2	13.5		3.1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	25	714	738	11	2	0	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	25	714	738	11	2	0	
Turn Type	D.P+P	NA	NA	Perm	Prot	Prot	
Protected Phases	1	1 2	2		4	4	9
Permitted Phases	2			2			
Detector Phase	1	1 2	2	2	4	4	
Switch Phase							
Minimum Initial (s)	3.0		15.0	15.0	7.0	7.0	1.0
Minimum Split (s)	7.0		21.0	21.0	12.0	12.0	19.0
Total Split (s)	10.0		30.0	30.0	21.0	21.0	19.0
Total Split (%)	12.5%		37.5%	37.5%	26.3%	26.3%	24%
Yellow Time (s)	3.0		4.0	4.0	3.0	3.0	4.0
All-Red Time (s)	1.0		1.9	1.9	1.1	1.1	0.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0		5.9	5.9	4.1	4.1	
Lead/Lag	Lead		Lag	Lag			
Lead-Lag Optimize?	Yes		Yes	Yes			
Recall Mode	None		C-Min	C-Min	None	None	None
Act Effct Green (s)	69.8	77.0	61.9	61.9	7.0		
Actuated g/C Ratio	0.87	0.96	0.77	0.77	0.09		
v/c Ratio	0.04	0.40	0.51	0.01	0.01		
Control Delay	0.9	1.2	9.8	3.7	33.5		
Queue Delay	0.0	0.0	0.0	0.0	0.0		
Total Delay	0.9	1.2	9.8	3.7	33.5		
LOS	A	A	A	A	C		
Approach Delay		1.2	9.7		33.5		
Approach LOS		A	A		C		
Stops (vph)	2	37	302	2	3		
Fuel Used(gal)	0	1	7	0	0		
CO Emissions (g/hr)	3	85	490	5	3		
NOx Emissions (g/hr)	1	17	95	1	1		
VOC Emissions (g/hr)	1	20	114	1	1		

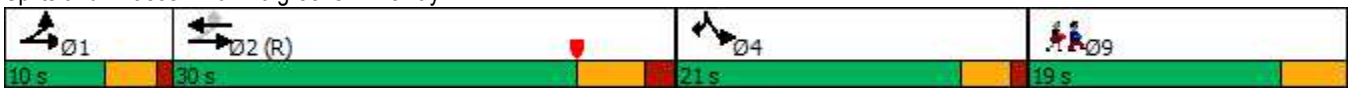


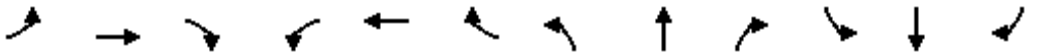
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø9
Dilemma Vehicles (#)	0	10	66	0	0		
Queue Length 50th (ft)	1	0	64	0	1		
Queue Length 95th (ft)	m4	95	355	m1	8		
Internal Link Dist (ft)		84	612		79		
Turn Bay Length (ft)							
Base Capacity (vph)	616	1793	1440	1226	373		
Starvation Cap Reductn	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0		
Reduced v/c Ratio	0.04	0.40	0.51	0.01	0.01		

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 6 (8%), Referenced to phase 2:EBWB, Start of Yellow			
Natural Cycle: 80			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.51			
Intersection Signal Delay: 5.5		Intersection LOS: A	
Intersection Capacity Utilization 49.9%		ICU Level of Service A	
Analysis Period (min) 15			

m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Walgreens Driveway





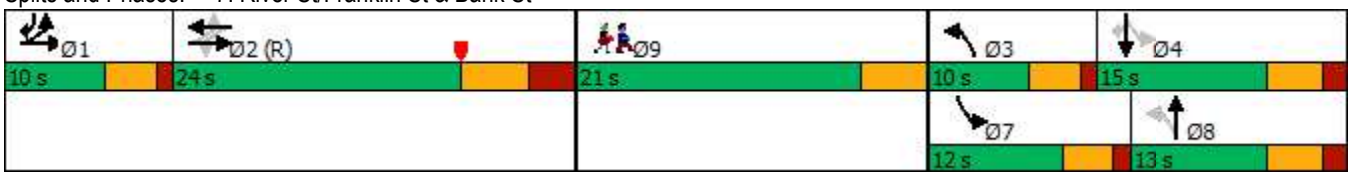
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	46	531	123	28	577	36	81	23	9	44	13	35
Future Volume (vph)	46	531	123	28	577	36	81	23	9	44	13	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	120		120	0		0	0		0	250		250
Storage Lanes	0		1	0		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.974			0.992			0.957				0.850
Flt Protected		0.997			0.998		0.950			0.950		
Satd. Flow (prot)	0	3437	0	0	3504	0	1770	1783	0	1770	1863	1583
Flt Permitted		0.878			0.893		0.667					
Satd. Flow (perm)	0	3027	0	0	3135	0	1242	1783	0	1863	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		33			7			10				161
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		692			492			629			916	
Travel Time (s)		13.5			9.6			12.3			17.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	50	577	134	30	627	39	88	25	10	48	14	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	761	0	0	696	0	88	35	0	48	14	38
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	1	1 2			2		3	8		7	4	1
Permitted Phases	1 2			2			8			4		4
Detector Phase	1	1 2		2	2		3	8		7	4	1
Switch Phase												
Minimum Initial (s)	6.0			7.0	7.0		6.0	5.0		6.0	5.0	6.0
Minimum Split (s)	10.0			15.0	15.0		10.0	10.0		10.0	10.0	10.0
Total Split (s)	10.0			24.0	24.0		10.0	13.0		12.0	15.0	10.0
Total Split (%)	12.5%			30.0%	30.0%		12.5%	16.3%		15.0%	18.8%	12.5%
Yellow Time (s)	3.0			4.0	4.0		3.0	3.3		3.0	3.3	3.0
All-Red Time (s)	1.0			2.8	2.8		1.0	1.6		1.0	1.6	1.0
Lost Time Adjust (s)					0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)					6.8		4.0	4.9		4.0	4.9	4.0
Lead/Lag	Lead			Lag	Lag		Lead	Lag		Lead	Lag	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	Max			C-Max	C-Max		None	None		None	None	Max
Act Effct Green (s)		52.3			43.5		12.7	6.1		9.0	6.1	9.0
Actuated g/C Ratio		0.65			0.54		0.16	0.08		0.11	0.08	0.11
v/c Ratio		0.38			0.41		0.33	0.24		0.24	0.10	0.12
Control Delay		7.1			16.6		29.6	31.0		32.3	34.5	0.7
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	0.0
Total Delay		7.1			16.6		29.6	31.0		32.3	34.5	0.7
LOS		A			B		C	C		C	C	A
Approach Delay		7.1			16.6			30.0			20.6	
Approach LOS		A			B			C			C	
Stops (vph)		238			351		66	26		39	15	0
Fuel Used(gal)		6			7		1	1		1	0	0

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	20.0
Total Split (s)	21.0
Total Split (%)	26%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Stops (vph)	
Fuel Used(gal)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
CO Emissions (g/hr)		441			495		95	38		61	20	17
NOx Emissions (g/hr)		86			96		18	7		12	4	3
VOC Emissions (g/hr)		102			115		22	9		14	5	4
Dilemma Vehicles (#)		73			38		0	2		0	1	0
Queue Length 50th (ft)		58			103		37	12		23	7	0
Queue Length 95th (ft)		144			#282		71	38		44	23	0
Internal Link Dist (ft)		612			412			549			836	
Turn Bay Length (ft)										250		250
Base Capacity (vph)		2021			1708		268	189		228	235	320
Starvation Cap Reductn		0			0		0	0		0	0	0
Spillback Cap Reductn		0			0		0	0		0	0	0
Storage Cap Reductn		0			0		0	0		0	0	0
Reduced v/c Ratio		0.38			0.41		0.33	0.19		0.21	0.06	0.12

Intersection Summary			
Area Type:	Other		
Cycle Length: 80			
Actuated Cycle Length: 80			
Offset: 0 (0%), Referenced to phase 2:EBWB, Start of Yellow, Master Intersection			
Natural Cycle: 75			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.41			
Intersection Signal Delay: 13.5		Intersection LOS: B	
Intersection Capacity Utilization 62.1%		ICU Level of Service B	
Analysis Period (min) 15			
# 95th percentile volume exceeds capacity, queue may be longer.			
Queue shown is maximum after two cycles.			

Splits and Phases: 7: River St/Franklin St & Bank St



Lane Group	Ø9
CO Emissions (g/hr)	
NOx Emissions (g/hr)	
VOC Emissions (g/hr)	
Dilemma Vehicles (#)	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Intersection	
Int Delay, s/veh	1.4

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	641	35	64	589	12	54
Future Vol, veh/h	641	35	64	589	12	54
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	697	38	70	640	13	59

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	735	0	1496	716
Stage 1	-	-	-	-	716	-
Stage 2	-	-	-	-	780	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	870	-	135	430
Stage 1	-	-	-	-	484	-
Stage 2	-	-	-	-	452	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	870	-	124	430
Mov Cap-2 Maneuver	-	-	-	-	124	-
Stage 1	-	-	-	-	445	-
Stage 2	-	-	-	-	452	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	20.9
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	297	-	-	870	-
HCM Lane V/C Ratio	0.242	-	-	0.08	-
HCM Control Delay (s)	20.9	-	-	9.5	-
HCM Lane LOS	C	-	-	A	-
HCM 95th %tile Q(veh)	0.9	-	-	0.3	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	665	285	15	815	365	40
Future Volume (vph)	665	285	15	815	365	40
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.850			0.987	
Flt Protected				0.999	0.957	
Satd. Flow (prot)	1863	1583	0	1861	1759	0
Flt Permitted				0.938	0.957	
Satd. Flow (perm)	1863	1583	0	1747	1759	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)		310			6	
Link Speed (mph)	30			30	30	
Link Distance (ft)	432			800	271	
Travel Time (s)	9.8			18.2	6.2	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	723	310	16	886	397	43
Shared Lane Traffic (%)						
Lane Group Flow (vph)	723	310	0	902	440	0
Turn Type	NA	Perm	D.P+P	NA	Prot	
Protected Phases	2		1	1 2	4	
Permitted Phases		2	2			
Detector Phase	2	2	1	1	4	
Switch Phase						
Minimum Initial (s)	18.0	18.0	3.0		7.0	
Minimum Split (s)	24.2	24.2	11.0		24.0	
Total Split (s)	43.0	43.0	16.0		31.0	
Total Split (%)	47.8%	47.8%	17.8%		34.4%	
Yellow Time (s)	4.0	4.0	3.0		3.0	
All-Red Time (s)	2.2	2.2	1.0		1.0	
Lost Time Adjust (s)	0.0	0.0			0.0	
Total Lost Time (s)	6.2	6.2			4.0	
Lead/Lag	Lag	Lag	Lead			
Lead-Lag Optimize?	Yes	Yes	Yes			
Recall Mode	C-Max	C-Max	Min		None	
Act Effct Green (s)	36.8	36.8		53.2	24.8	
Actuated g/C Ratio	0.41	0.41		0.59	0.28	
v/c Ratio	0.95	0.37		0.86	0.90	
Control Delay	49.8	3.5		23.4	53.9	
Queue Delay	0.0	0.0		0.0	0.0	
Total Delay	49.8	3.5		23.4	53.9	
LOS	D	A		C	D	
Approach Delay	35.9			23.4	53.9	
Approach LOS	D			C	D	
Stops (vph)	563	25		915	359	
Fuel Used(gal)	12	1		14	7	
CO Emissions (g/hr)	846	91		992	509	
NOx Emissions (g/hr)	165	18		193	99	
VOC Emissions (g/hr)	196	21		230	118	

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Dilemma Vehicles (#)	0	0		0	0	
Queue Length 50th (ft)	387	0		356	229	
Queue Length 95th (ft)	#624	48		#739	#389	
Internal Link Dist (ft)	352			720	191	
Turn Bay Length (ft)						
Base Capacity (vph)	761	830		1050	531	
Starvation Cap Reductn	0	0		0	0	
Spillback Cap Reductn	0	0		0	0	
Storage Cap Reductn	0	0		0	0	
Reduced v/c Ratio	0.95	0.37		0.86	0.83	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 43.3 (48%), Referenced to phase 2:EBWB and 6:, Start of Yellow			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.95			
Intersection Signal Delay: 34.5		Intersection LOS: C	
Intersection Capacity Utilization 84.2%		ICU Level of Service E	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

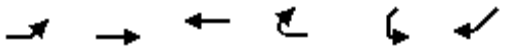
Splits and Phases: 1: West Street & Bank Street/Route 67

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	580	85	60	725	90	75
Future Volume (vph)	580	85	60	725	90	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Storage Length (ft)		0	100		0	0
Storage Lanes		0	1		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.983					0.850
Flt Protected			0.950		0.950	
Satd. Flow (prot)	1831	0	1770	1863	1770	1583
Flt Permitted			0.320		0.950	
Satd. Flow (perm)	1831	0	596	1863	1770	1583
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	12					82
Link Speed (mph)	30			30	30	
Link Distance (ft)	800			387	242	
Travel Time (s)	18.2			8.8	5.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	630	92	65	788	98	82
Shared Lane Traffic (%)						
Lane Group Flow (vph)	722	0	65	788	98	82
Turn Type	NA		D.P+P	NA	Prot	Prot
Protected Phases	2		1	1 2	4	4
Permitted Phases			2			
Detector Phase			1		4	4
Switch Phase						
Minimum Initial (s)	15.0		6.0		6.0	6.0
Minimum Split (s)	21.3		10.0		12.0	12.0
Total Split (s)	54.0		22.0		14.0	14.0
Total Split (%)	60.0%		24.4%		15.6%	15.6%
Yellow Time (s)	4.0		3.0		3.0	3.0
All-Red Time (s)	2.3		1.0		1.0	1.0
Lost Time Adjust (s)	0.0		0.0		0.0	0.0
Total Lost Time (s)	6.3		4.0		4.0	4.0
Lead/Lag	Lag		Lead			
Lead-Lag Optimize?	Yes		Yes			
Recall Mode	C-Max		None		None	None
Act Effct Green (s)	66.4		72.2	76.2	8.6	8.6
Actuated g/C Ratio	0.74		0.80	0.85	0.10	0.10
v/c Ratio	0.53		0.12	0.50	0.58	0.36
Control Delay	10.9		1.6	2.0	52.7	13.8
Queue Delay	0.0		0.0	0.1	0.0	0.0
Total Delay	10.9		1.6	2.1	52.7	13.8
LOS	B		A	A	D	B
Approach Delay	10.9			2.1	35.0	
Approach LOS	B			A	C	
Stops (vph)	542		6	60	84	16
Fuel Used(gal)	9		0	3	2	0

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
CO Emissions (g/hr)	602		16	197	112	31
NOx Emissions (g/hr)	117		3	38	22	6
VOC Emissions (g/hr)	139		4	46	26	7
Dilemma Vehicles (#)	0		0	0	0	0
Queue Length 50th (ft)	425		4	54	54	0
Queue Length 95th (ft)	m452		m5	57	104	41
Internal Link Dist (ft)	720			307	162	
Turn Bay Length (ft)			100			
Base Capacity (vph)	1353		734	1577	196	248
Starvation Cap Reductn	0		0	120	0	0
Spillback Cap Reductn	0		0	0	0	0
Storage Cap Reductn	0		0	0	0	0
Reduced v/c Ratio	0.53		0.09	0.54	0.50	0.33

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 7 (8%), Referenced to phase 2:EBWB, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.58			
Intersection Signal Delay: 9.1		Intersection LOS: A	
Intersection Capacity Utilization 57.6%		ICU Level of Service B	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 2: Klarides & Route 67

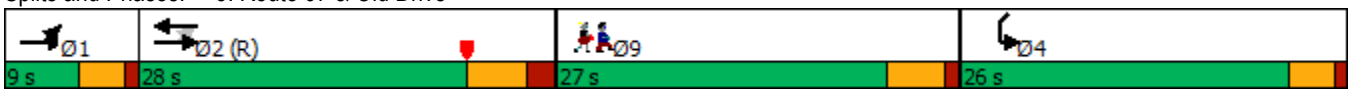


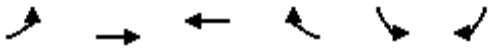
Lane Group	EBL	EBT	WBT	WBR	SWL	SWR	Ø9
Lane Configurations							
Traffic Volume (vph)	30	681	882	4	46	19	
Future Volume (vph)	30	681	882	4	46	19	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	125			0	0	0	
Storage Lanes	1			0	1	0	
Taper Length (ft)	25				25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt			0.999		0.960		
Flt Protected	0.950				0.966		
Satd. Flow (prot)	1770	1863	1861	0	1727	0	
Flt Permitted	0.199				0.966		
Satd. Flow (perm)	371	1863	1861	0	1727	0	
Right Turn on Red				Yes		Yes	
Satd. Flow (RTOR)					21		
Link Speed (mph)		30	30		30		
Link Distance (ft)		254	217		307		
Travel Time (s)		5.8	4.9		7.0		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	33	740	959	4	50	21	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	33	740	963	0	71	0	
Turn Type	D.P+P	NA	NA		Prot		
Protected Phases	1	1 2	2		4		9
Permitted Phases	2						
Detector Phase	1	1 2	2		4		
Switch Phase							
Minimum Initial (s)	3.0		15.0		7.0		1.0
Minimum Split (s)	7.0		22.0		22.0		27.0
Total Split (s)	9.0		28.0		26.0		27.0
Total Split (%)	10.0%		31.1%		28.9%		30%
Yellow Time (s)	3.0		4.0		3.0		4.0
All-Red Time (s)	1.0		2.1		1.0		1.0
Lost Time Adjust (s)	0.0		0.0		0.0		
Total Lost Time (s)	4.0		6.1		4.0		
Lead/Lag	Lead		Lag				
Lead-Lag Optimize?	Yes		Yes				
Recall Mode	None		C-Min		None		None
Act Effct Green (s)	72.3	77.1	65.2		7.9		
Actuated g/C Ratio	0.80	0.86	0.72		0.09		
v/c Ratio	0.09	0.46	0.71		0.42		
Control Delay	2.5	3.3	11.1		36.6		
Queue Delay	0.0	0.0	0.0		0.0		
Total Delay	2.5	3.3	11.1		36.6		
LOS	A	A	B		D		
Approach Delay		3.3	11.1		36.6		
Approach LOS		A	B		D		
Stops (vph)	6	140	350		45		
Fuel Used(gal)	0	3	5		1		

Lane Group	EBL	EBT	WBT	WBR	SWL	SWR	Ø9
CO Emissions (g/hr)	8	181	380		62		
NOx Emissions (g/hr)	1	35	74		12		
VOC Emissions (g/hr)	2	42	88		14		
Dilemma Vehicles (#)	0	0	0		0		
Queue Length 50th (ft)	2	77	264		28		
Queue Length 95th (ft)	m8	158	287		67		
Internal Link Dist (ft)		174	137		227		
Turn Bay Length (ft)	125						
Base Capacity (vph)	375	1596	1349		438		
Starvation Cap Reductn	0	0	0		0		
Spillback Cap Reductn	0	0	0		0		
Storage Cap Reductn	0	0	0		0		
Reduced v/c Ratio	0.09	0.46	0.71		0.16		

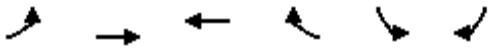
Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 1 (1%), Referenced to phase 2:EBWB, Start of Yellow			
Natural Cycle: 130			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.71			
Intersection Signal Delay: 8.8		Intersection LOS: A	
Intersection Capacity Utilization 60.9%		ICU Level of Service B	
Analysis Period (min) 15			
m Volume for 95th percentile queue is metered by upstream signal.			

Splits and Phases: 3: Route 67 & Old Drive





Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø9
Lane Configurations							
Traffic Volume (vph)	29	719	1016	56	33	57	
Future Volume (vph)	29	719	1016	56	33	57	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt				0.850		0.850	
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1770	1863	1863	1583	1770	1583	
Flt Permitted	0.133				0.950		
Satd. Flow (perm)	248	1863	1863	1583	1770	1583	
Right Turn on Red				Yes		Yes	
Satd. Flow (RTOR)				36		62	
Link Speed (mph)		35	35		35		
Link Distance (ft)		164	692		159		
Travel Time (s)		3.2	13.5		3.1		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	32	782	1104	61	36	62	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	32	782	1104	61	36	62	
Turn Type	D.P+P	NA	NA	Perm	Prot	Prot	
Protected Phases	1	1 2	2		4	4	9
Permitted Phases	2			2			
Detector Phase	1	1 2	2	2	4	4	
Switch Phase							
Minimum Initial (s)	3.0		15.0	15.0	7.0	7.0	1.0
Minimum Split (s)	9.0		21.0	21.0	27.0	27.0	19.0
Total Split (s)	9.0		35.0	35.0	27.0	27.0	19.0
Total Split (%)	10.0%		38.9%	38.9%	30.0%	30.0%	21%
Yellow Time (s)	3.0		4.0	4.0	3.0	3.0	4.0
All-Red Time (s)	1.0		1.9	1.9	1.1	1.1	1.0
Lost Time Adjust (s)	0.0		0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0		5.9	5.9	4.1	4.1	
Lead/Lag	Lead		Lag	Lag			
Lead-Lag Optimize?	Yes		Yes	Yes			
Recall Mode	None		C-Min	C-Min	None	None	None
Act Effct Green (s)	72.9	77.7	66.0	66.0	7.2	7.2	
Actuated g/C Ratio	0.81	0.86	0.73	0.73	0.08	0.08	
v/c Ratio	0.11	0.49	0.81	0.05	0.25	0.34	
Control Delay	2.8	3.4	15.0	1.2	43.4	16.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	2.8	3.4	15.0	1.2	43.4	16.1	
LOS	A	A	B	A	D	B	
Approach Delay		3.4	14.2		26.1		
Approach LOS		A	B		C		
Stops (vph)	6	142	618	6	33	16	
Fuel Used(gal)	0	2	13	0	1	0	
CO Emissions (g/hr)	7	169	896	24	40	26	
NOx Emissions (g/hr)	1	33	174	5	8	5	
VOC Emissions (g/hr)	2	39	208	5	9	6	

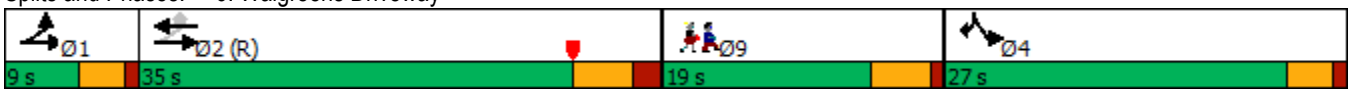


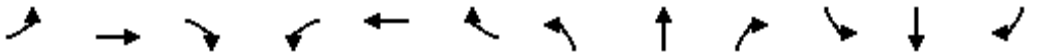
Lane Group	EBL	EBT	WBT	WBR	SBL	SBR	Ø9
Dilemma Vehicles (#)	0	51	44	0	0	0	
Queue Length 50th (ft)	2	69	213	2	20	0	
Queue Length 95th (ft)	m9	176	#394	m3	49	37	
Internal Link Dist (ft)		84	612		79		
Turn Bay Length (ft)							
Base Capacity (vph)	285	1608	1365	1170	450	449	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.11	0.49	0.81	0.05	0.08	0.14	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 6 (7%), Referenced to phase 2:EBWB, Start of Yellow			
Natural Cycle: 150			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.81			
Intersection Signal Delay: 10.5		Intersection LOS: B	
Intersection Capacity Utilization 67.6%		ICU Level of Service C	
Analysis Period (min) 15			

95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 6: Walgreens Driveway





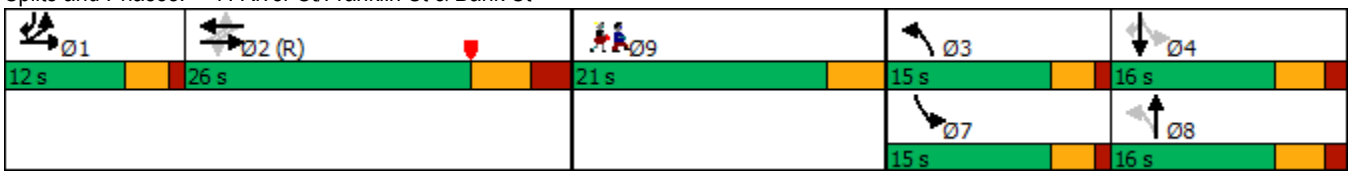
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	73	611	83	17	756	89	228	65	10	155	50	106
Future Volume (vph)	73	611	83	17	756	89	228	65	10	155	50	106
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	120		120	0		0	0		0	250		250
Storage Lanes	0		1	0		0	1		0	1		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.984			0.984			0.980				0.850
Flt Protected		0.995			0.999		0.950			0.950		
Satd. Flow (prot)	0	3465	0	0	3479	0	1770	1825	0	1770	1863	1583
Flt Permitted		0.766			0.929		0.702			0.704		
Satd. Flow (perm)	0	2668	0	0	3235	0	1308	1825	0	1311	1863	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		16			12			7				143
Link Speed (mph)		35			35			35			35	
Link Distance (ft)		692			492			629			916	
Travel Time (s)		13.5			9.6			12.3			17.8	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	79	664	90	18	822	97	248	71	11	168	54	115
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	833	0	0	937	0	248	82	0	168	54	115
Turn Type	pm+pt	NA		Perm	NA		pm+pt	NA		pm+pt	NA	pm+ov
Protected Phases	1	1 2			2		3	8		7	4	1
Permitted Phases	1 2			2			8			4		4
Detector Phase	1	1 2		2	2		3	8		7	4	1
Switch Phase												
Minimum Initial (s)	6.0			15.0	15.0		6.0	5.1		6.0	6.0	6.0
Minimum Split (s)	10.0			22.0	22.0		10.0	10.0		10.0	11.0	10.0
Total Split (s)	12.0			26.0	26.0		15.0	16.0		15.0	16.0	12.0
Total Split (%)	13.3%			28.9%	28.9%		16.7%	17.8%		16.7%	17.8%	13.3%
Yellow Time (s)	3.0			4.0	4.0		3.0	3.3		3.0	3.3	3.0
All-Red Time (s)	1.0			2.8	2.8		1.0	1.6		1.0	1.6	1.0
Lost Time Adjust (s)					0.0		0.0	0.0		0.0	0.0	0.0
Total Lost Time (s)					6.8		4.0	4.9		4.0	4.9	4.0
Lead/Lag	Lead			Lag	Lag		Lead	Lag		Lead	Lag	Lead
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes		Yes	Yes	Yes
Recall Mode	Max			C-Max	C-Max		None	None		None	None	Max
Act Effct Green (s)		56.1			45.3		18.9	8.3		18.4	8.2	18.9
Actuated g/C Ratio		0.62			0.50		0.21	0.09		0.20	0.09	0.21
v/c Ratio		0.48			0.57		0.75	0.47		0.52	0.32	0.26
Control Delay		13.0			18.2		44.2	43.7		33.3	42.5	4.3
Queue Delay		0.0			0.0		0.0	0.0		0.0	0.0	0.0
Total Delay		13.0			18.2		44.2	43.7		33.3	42.5	4.3
LOS		B			B		D	D		C	D	A
Approach Delay		13.0			18.2			44.1			24.9	
Approach LOS		B			B			D			C	
Stops (vph)		550			584		208	62		127	45	9
Fuel Used(gal)		10			11		5	1		3	1	1

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	1.0
Minimum Split (s)	21.0
Total Split (s)	21.0
Total Split (%)	23%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Stops (vph)	
Fuel Used(gal)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
CO Emissions (g/hr)		698			744		325	103		212	77	60
NOx Emissions (g/hr)		136			145		63	20		41	15	12
VOC Emissions (g/hr)		162			173		75	24		49	18	14
Dilemma Vehicles (#)		123			48		0	4		0	3	0
Queue Length 50th (ft)		120			194		120	41		77	29	0
Queue Length 95th (ft)		143			274		186	83		128	63	27
Internal Link Dist (ft)		612			412			549			836	
Turn Bay Length (ft)										250		250
Base Capacity (vph)		1740			1635		332	231		328	229	445
Starvation Cap Reductn		0			0		0	0		0	0	0
Spillback Cap Reductn		0			0		0	0		0	0	0
Storage Cap Reductn		0			0		0	0		0	0	0
Reduced v/c Ratio		0.48			0.57		0.75	0.35		0.51	0.24	0.26

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:EBWB, Start of Yellow			
Natural Cycle: 90			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 20.8		Intersection LOS: C	
Intersection Capacity Utilization 78.3%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 7: River St/Franklin St & Bank St



Lane Group	Ø9
CO Emissions (g/hr)	
NOx Emissions (g/hr)	
VOC Emissions (g/hr)	
Dilemma Vehicles (#)	
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Intersection	
Int Delay, s/veh	2.5

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	679	48	131	857	15	63
Future Vol, veh/h	679	48	131	857	15	63
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	150	-	0	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	92	92	92	92	92	92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	738	52	142	932	16	68

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	790	0	1980	764
Stage 1	-	-	-	-	764	-
Stage 2	-	-	-	-	1216	-
Critical Hdwy	-	-	4.12	-	6.42	6.22
Critical Hdwy Stg 1	-	-	-	-	5.42	-
Critical Hdwy Stg 2	-	-	-	-	5.42	-
Follow-up Hdwy	-	-	2.218	-	3.518	3.318
Pot Cap-1 Maneuver	-	-	830	-	68	404
Stage 1	-	-	-	-	460	-
Stage 2	-	-	-	-	280	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	830	-	56	404
Mov Cap-2 Maneuver	-	-	-	-	56	-
Stage 1	-	-	-	-	381	-
Stage 2	-	-	-	-	280	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1.4	40.3
HCM LOS			E

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBL	WBT
Capacity (veh/h)	184	-	-	830	-
HCM Lane V/C Ratio	0.461	-	-	0.172	-
HCM Control Delay (s)	40.3	-	-	10.2	-
HCM Lane LOS	E	-	-	B	-
HCM 95th %tile Q(veh)	2.2	-	-	0.6	-

PROJ. NO. 124-172/ROUTE 67 SPOT IMPROVEMENTS: PRIME DESIGNER TRAFFIC DETOUR CHECK LIST

PRELIMINARY DETOUR DESIGN BY TRAFFIC

Verify the following and check the appropriate boxes as needed:

☒ Detour route will have the capacity to accommodate the additional traffic.

Martha Street serves an isolated residential neighborhood and has another outlet to Old Drive, via Pershing Drive – a short detour.

☒ Determine if there are any other projects that may be in construction along the detour route.
☐ Notice to Contractor - Other Projects is included in contract documents.

No other projects have been identified at this time. Designer to meet with Town to discuss planned projects.

☒ Roadway geometry is adequate to accommodate the detoured traffic:
☒ Roadway width
☒ Vertical grades

Gradient along alternative routes is less than that of Martha Street.

☒ Horizontal curvature

Horizontal curve at George Street and Shelton Street is limited, however Shelton Street is wide, and given low-volume residential traffic, an occasional large vehicle may encumber both lanes.

☒ Turning radii at the intersections
☒ Vertical clearances with bridges and/or utilities along the detour route

No bridge underpasses along the route.

☒ Weight restrictions on any bridges along the detour route are not impacted by detoured traffic\

No bridges along detour route.

☒ Condition of the pavement on the detour route is adequate
☒ Any necessary work to upgrade the detour roadways is included in the contract to be completed prior to implementation of the detour.

Pavement in good condition; appears some roads recently paved.

☒ Signing, pavement marking and guide rail on the detour route are adequate
☒ Any necessary work to upgrade the detour roadways is included in the contract to be completed prior to implementation of the detour.

No upgrades envisioned.

☒ Existing signal timing along the detour route is adequate to accommodate the additional traffic
☒ Traffic signal timing changes to be implemented during detour are included in contract documents

Old Drive (West) signal at Bank Street is located at terminus of Detour.

☒ Pedestrian accommodations during detour are adequate
☒ Signed pedestrian detour is included
☐ Temporary pedestrian ramps included in the contract

Detour route has an existing sidewalk network in good condition. No impacts to pedestrians envisioned along detour route. Within the Bank Street/Martha Street intersection work zone,

pedestrians will be directed to the south side of Bank Street for safe east-west passage during construction.

☒ Detour information is included in Prosecution and Progress and Maintenance and Protection of Traffic special provisions.

☒ Detour route containing highway-rail grade crossing(s) or traffic control signals with railroad pre-emption has been reviewed by Traffic Rail section.

No railroad in vicinity of project.

DETOUR REVIEW AND TOWN COORDINATION

Verify the following and check the appropriate boxes as needed:

☐ Detour has been presented to the Town either during a public meeting or through communication with the Town officials and the following has been verified:
- ☐ Proposed detour will not significantly impact Town's emergency services
- ☐ Proposed detour will not significantly impact Town's transit or school bus routes
- ☐ Proposed mitigations are adequate
- ☐ Town officials and public do not oppose the proposed detour

☐ Letter to the Town has been sent by the prime designer for detours of State traffic onto Town roads

Meeting with Town has not yet been scheduled. Meeting to be conducted following CTDOT's consideration of 90% Design Maintenance & Protection of Traffic scheme.

DETOUR PLANS REQUIREMENTS

Ensure that the following is included in the detour plans. Please refer to the Detour Plan Samples for reference.

☒ Include sign summary table with sign numbers, quantities, dimensions and a detail for each sign to be used for detour. The sign summary table shall also provide information on total number and square footage of signs used for this detour and the item number to be used to pay for the signs.

☐ Changeable Message Signs (CMS) or construction signs (80-9058, 80-9083, or 80-9079) must be placed at the closure locations two weeks in advance of the closure to notify motorists of dates/times of the closure.

☒ Type III barricades with high intensity barricade warning lights and Stop and Road Closed signs surmounted on the barricades are required at all closure locations. Construction Barricades Detectable shall be used to direct pedestrians along temporary pedestrian paths and/or to block access to sidewalks.

☒ Provide a blow up of closure locations showing placement of the proposed signs and barricaded in relation to the adjacent streets and private driveways.

☒ Provide Construction Ahead signs.

☒ Use Detour and Road/Bridge Closed signs with street name subplate.

☒ Install End Detour signs at the end of detour routes right before the intersections with the roadways containing closure location.

☒ Include pedestrian detour signs, business closed signs, etc., as needed.

APPENDIX D

FINAL DESIGN DRAINAGE CHECKLIST

Final (100%) Design Report

Naugatuck Valley Council of Governments
49 Leavenworth Street, 3rd Floor
Waterbury, Connecticut 06702

June 2023

Project No. 0124-0172

Roadway Route 67 (Bank Streeet

Town Seymour

Date June 16, 2023

Designed By Gary R. Nash, P.E.

Signature of Engineer Gary R Nash

Final Design Checklist (Plans 85% to 90% Complete)
Allow a 4-5 week review time.

The Final Design Submission should include the following:

a. Disposition of Semi-Final Design comments with written responses justifying comments not incorporated.
☒ Included ☐ Not Included ☐ Not Applicable

b. Final Drainage Report and Final Plans.
☒ Included ☐ Not Included ☐ Not Applicable

c. Final scour report.
☐ Included ☐ Not Included ☒ Not Applicable

d. Final floodway analysis report.
☐ Included ☐ Not Included ☒ Not Applicable

e. Final SCEL report.
☐ Included ☐ Not Included ☒ Not Applicable

f. Final hydraulic design report.
☐ Included ☐ Not Included ☒ Not Applicable

Provide justification for items **Not Included**. Justification should correspond to the designated letter.

_____

_____

_____

_____

_____

_____

_____

_____

_____

APPENDIX E

UTILITY CORRESPONDENCE AND UTILITY CONFLICT MATRIX

Final (100%) Design Report

Naugatuck Valley Council of Governments
49 Leavenworth Street, 3rd Floor
Waterbury, Connecticut 06702

June 2023

rev 5/20/2013

Utility Conflict Matrix

Project Description : Route 67 Spot Improvements
Project No : 124-172
Town : Seymour
Route : CT 67 & 313

Prepared By: Anthony Ciriello
Plan Set: 60%
Date of Plans: 8/1/2022
Sheet Number: 1 of 1

Conflict No.	Utility Company	Drawing No.	Utility Type	Size / Material	Conflict Description	Route	Stationing	Offset	Test Pit	Resolution Status
1	Frontier	PLN-01	Communications	24"Wx16"H	Duct bank parallels curb/sidewalk/drive installation (Note ex. curbs and sidewalks)	67	11+23R to 22+65R	10'-17'R	Y	Pending Analysis
2	Frontier	PLN-01	Communications	10x5 Vault	Duct bank parallels curb/sidewalk/drive installation (Note ex. curbs and sidewalks)	67	12+24R	14'R	Y	Pending Analysis
3	Frontier	PLN--02	Communications	24"Wx16"H	Duct bank possible conflict with curb depth	67	16+59R	14'R	Y	Pending Analysis
4	Frontier	PLN-02	Communications	10x5 Vault	10'x5' Utility vault may be in conflict with proposed curb	67	18+42R	14'R	Y	Pending Analysis
5	Frontier	PLN--03	Communications	24"Wx16"H	Duct bank possible conflict with curb depth	67	22+45R	14'R	Y	Pending Analysis
6	Frontier	PLN-03	Communications	24"Wx16"H	Duct bank possible horizontal conflict with proposed catch basin	67	24+25R	14'R	Y	Pending Analysis
7	Frontier	PLN-03	Communications	24"Wx16"H	10'x5' Utility vault may be in conflict with proposed curb	67	24+87R	14'R	Y	Pending Analysis
8	Frontier	PLN-04	Communications	24"Wx16"H	Duct bank possible horizontal conflict with proposed catch basin (replacing existing)	67	25+97R	17'R	Y	Pending Analysis
9	Frontier	PLN-04	Communications	24"Wx16"H	Duct bank possible horizontal conflict with proposed catch basin (replacing existing)	67	28+83R	17'R	Y	Pending Analysis
10	Frontier	PLN-05	Communications	24"Wx16"H	Duct bank possible horizontal conflict with curb depth	67	32+24L	36'L	Y	Pending Analysis
11	Frontier	PLN-05	Communications	24"Wx16"H	Duct bank possible horizontal conflict with proposed catch basin	67	33+05R	25'R	Y	Pending Analysis
12	Eversource Elec.	PLN-03	Electric	CLP Pole 24895	Pole relocation: conflict with new sidewalk ADA compliance	67	24+66L	39'L	N	Conflict - To Relocate Utility
13	Eversource Elec.	PLN-04	Electric	CLP Pole 2701	Pole relocation: conflict with new sidewalk ADA compliance	67	27+10L	33'L	N	Conflict - To Relocate Utility
14	Eversource Elec.	PLN-04	Electric	CLP Pole 2699	Pole relocation: conflict with new sidewalk ADA compliance	67	28+63L	31'L	N	Conflict - To Relocate Utility
15	Eversource Elec.	PLN-04	Electric	CLP Pole 2698	Pole relocation: conflict with widening; relocate to new curb line	67	29+93L	22'L	N	Conflict - To Relocate Utility
16	Eversource Elec.	PLN-05	Electric	CLP Pole 2399	Pole relocation: conflict with roadway narrowing; relocate to new curb line	67	31+10L	37'L	N	Conflict - To Relocate Utility
17	Eversource Elec.	PLN-05	Electric	CLP Pole ____	Pole relocation: conflict with roadway narrowing; relocate to new curb line	67	32+23L	45'L	N	Conflict - To Relocate Utility
18	Eversource Elec.	PLN-05	Electric	CLP Pole 4	Pole relocation: conflict with roadway narrowing; relocate to new curb line	313	43+58R	66'R	N	Conflict - To Relocate Utility
19	Frontier	PLN-06	Communications	FR Pole ___	Pole relocation: conflict with new sidewalk ADA compliance	313	39+78L	17'L	N	Conflict - To Relocate Utility
20	Aquarion	PLN-01	Water	WV	4+ Valve Boxes in pavement/sidewalk - to reset	67	11+23 - 15+00		N	Conflict - To Relocate Utility

rev. 5/20/2013

Utility Conflict Matrix

Project Description : Route 67 Spot Improvements
Project No : 124-172
Town : Seymour
Route : CT 67 & 313

Prepared By: Anthony Ciriello
Plan Set: 60%
Date of Plans: 8/1/2022
Sheet Number: 2 of 2

Conflict No.	Utility Company	Drawing No.	Utility Type	Size / Material	Conflict Description	Route	Stationing	Offset	Test Pit	Resolution Status
21	Aquarion	PLN-02	Water	WV	10+ Valve Boxes in pavement/sidewalk - to reset	67	15+00 - 20+50		N	Conflict - To Relocate Utility
22	Aquarion	PLN-03	Water	WV	3+ Valve Boxes in pavement/sidewalk - to reset	67	20+50 - 26+00		N	Conflict - To Relocate Utility
23	Aquarion	PLN-04	Water	WV	2+ Valve Boxes in pavement/sidewalk - to reset	67	26+00 - 30+00		N	Conflict - To Relocate Utility
24	Aquarion	PLN-05	Water	WV	5+ Valve Boxes in pavement/sidewalk - to reset	67	30+00 - 34+33		N	Conflict - To Relocate Utility
25	Aquarion	PLN-02	Water	Hydrant	Hydrant in conflict with widening	67	19+54R	26'R	N	Conflict - To Relocate Utility
26	Aquarion	PLN-04	Water	Hydrant	Hydrant in conflict with widening	67	28+47L	27'L	N	Conflict - To Relocate Utility
27	Aquarion	PLN-05	Water	Hydrant	Hydrant in conflict with widening	67	30+15L	40'L	N	Conflict - To Relocate Utility
28	Aquarion	PLN-06	Water	8" DIP	Temporarily support water durign bridge demo/widening	313	40+50L - 41+10L	16'L	N	Conflict - To Adjust Design
29	Eversource Gas	PLN-01	Gas	GV	1+ Valve Boxes in pavement/sidewalk - to reset	67	11+23 - 15+00		N	Conflict - To Relocate Utility
30	Eversource Gas	PLN-02	Gas	GV	2+ Valve Boxes in pavement/sidewalk - to reset	67	15+00 - 20+50		N	Conflict - To Relocate Utility
31	Eversource Gas	PLN-03	Gas	GV	2+ Valve Boxes in pavement/sidewalk - to reset	67	20+50 - 26+00		N	Conflict - To Relocate Utility
32	Eversource Gas	PLN-04	Gas	GV	2+ Valve Boxes in pavement/sidewalk - to reset	67	26+00 - 30+00		N	Conflict - To Relocate Utility
33	Eversource Gas	PLN-05	Gas	GV	4+ Valve Boxes in pavement/sidewalk - to reset	67	30+00 - 34+33		N	Conflict - To Relocate Utility
34	Eversource Gas	PLN-02	Gas	Pipe	Possible conflict with proppsed CB installation	67	18+70L	18'L	Y	Pending Analysis
35	Eversource Gas	PLN-03	Gas	Pipe	Possible conflict with proposed CB installation	67	24+25L	35'L	Y	Pending Analysis
36	Eversource Gas	PLN-04	Gas	Service	Conflict with demo ex. wall/construct new wall	67	29+87L	30'L	N	Conflict - To Relocate Utility
37	Seymour/Veolia	PLN-03	Sanitary Sewer	18" Pipe	Possible conflict with proposed storm drain crossing (MH paved over)	67	24+25L	5'L	N	Conflict Resolved
38	Seymour/Veolia	PLN-05	Sanitary Sewer	18" Pipe	Possible conflict with proposed storm drain crossing (MH paved over)	67	31+02R	4'R	N	Conflict Resolved
39	Seymour/Veolia	PLN-06	Sanitary Sewer	18" DIP/MJ	Temporarily support sewer durign bridge demo/widening	313	40+50L - 41+10L	14'L	N	Conflict - To Adjust Design
40	Seymour/Veolia	PLN-01-06	Sanitary Sewer	San MH's	14 Sanitary MH Resets prior to final paving	67/313	Throughout		N	Conflict - To Relocate Utility

TEST PIT LOCATIONS

Project No.: 124-172
Project Title: Spot Improvements on Bank Street (Route 67) And River Street (Route 313
Town: Seymour
Route: 67 (Bank Street) and 313 (River Street)

UTILITY TYPE: **UTILITY COMPANY:**

ELECTRIC					
Test Pit #	BASELINE		NORTHING	EASTING	UTILITY CUSTODIAN
	STATION	OFFSET			

GAS					
Test Pit #	BASELINE		NORTHING	EASTING	UTILITY CUSTODIAN
	STATION	OFFSET			
G-1	18+69	18.5' L	705840.25	909225.39	Eversource
G-2	19+17	38.5' R	705787.90	909278.73	Eversource
G-3	23+98	35.0' L	705802.33	909757.61	Eversource
G-4	24+25	29.8' L	705790.86	909782.2	Eversource
G-5	27+46	18.2' L	705701.08	910091.36	Eversource
G-6	28+63	17.8' L	705670.40	910203.91	Eversource
G-7	29+33	20.5' L	705652.94	910272.68	Eversource
G-8	31+07	3.4' L	705574.16	910430.07	Eversource
G-9	32+30	40.3' L	705551.00	910558.04	Eversource
G-10	32+82	29.2' L	705514.99	910598.51	Eversource

TELECOMMUNICATIONS					
Test Pit #	BASELINE		NORTHING	EASTING	UTILITY CUSTODIAN
	STATION	OFFSET			
T-1	16+65	13.3' R	705790.00	909025.39	Frontier
T-2	22+43	12.9' R	705795.20	909595.85	Frontier
T-3	24+32	10.5' R	705749.98	909779.76	Frontier
T-4	25+92	13.8' R	705708.55	909933.50	Frontier
T-5	28+77	16.4' R	705633.55	910208.82	Frontier
T-6	31+38	22.8' L	705578.67	910466.34	Frontier
T-7	32+24	35.6' L	705549.91	910550.23	Frontier
T-8	33+16	24.6' R	705451.53	910600.95	Frontier
T-9	33+42	24.4' R	705438.78	910623.42	Frontier

SANITARY SEWER					
Test Pit #	BASELINE		NORTHING	EASTING	UTILITY CUSTODIAN
	STATION	OFFSET			

WATER					
Test Pit #	BASELINE		NORTHING	EASTING	UTILITY CUSTODIAN
	STATION	OFFSET			
W-1	15+63	20.2' L	705813.99	908920.42	Aquarion

NAUGATUCK VALLEY COUNCIL OF GOVERNMENTS
UTILITY MEETING
ROUTE 67 IMPROVEMENTS
SEYMOUR, CONNECTICUT
CTDOT #124-165
SLR #141.13211.00024
Notes from Meeting held on: February 9, 2023
Location: SLR Offices at 99 Realty Drive, Cheshire, Connecticut

ATTENDEES	REPRESENTING
Charles Grillo	Connecticut Department of Transportation
Roger Beaudoin	Connecticut Department of Transportation, Utilities
Rob Lancia	Eversource Electric
Roger Naldi	Frontier (virtual participation)
Alex Parisi	Luchs/Aquarion Water
Kwesi Brown	SLR International Corporation
Anthony Ciriello	SLR International Corporation

A utility meeting was conducted on February 9, 2023, to discuss potential impacts to underground utilities and the need for test pits. The following is a summary of the points raised and dialogue that ensued:

1. Representatives from Eversource Gas and the Water Pollution Control Authority (WPCA) were not in attendance. Follow-up will be necessary.

2. SLR International Corporation (SLR) provided a general overview of impacts to underground utilities throughout the project corridor.

3. Connecticut Department of Transportation's (CTDOT) on-call contractor will perform utility test pits. SLR will prepare a utility test pit plan for review and input by the utilities and CTDOT.

4. Private-owned utility relocations will be 50 percent reimbursable.

5. The following potential conflicts with Frontier underground duct banks were discussed:
    a. A concrete-encased communications duct bank follows the southerly edge of roadway for the length of the project. Three 5' by 10' concrete vaults are located within the shoulder/sidewalk area, and one vault is located in the Bank Street/Franklin Street/River Street intersection. 5' by 10' represents the vault inside dimensions according to Frontier.
    b. The location of duct bank and vaults may be in conflict with proposed curbing and storm drainpipes. Horizontal location and depth to facilities will need to be determined.
    c. Manhole covers may have to be adjusted slightly based on final sidewalk and pavement elevations.
    d. Frontier will open manhole covers on each vault and measure down to determine depth of vault and height of chimney/riser. Frontier anticipated going out in the field in about a week or so.

e. Frontier indicated that if the duct bank requires relocation for installation of catch basins it should be able to expose and offset the conduit several feet.
f. If necessary, Frontier could trace out the conduit runs for mapping horizontal locations.

6. The following potential conflicts with Eversource Electric were discussed.
   a. Separate field and office meetings were held with the overhead utility representatives in 2022. Any identified potential impacts to underground electric facilities directly relate to pole relocations. Mr. Lancia will be added to future communications.
   b. CTDOT suggested Eversource consider impacts to any newly installed equipment.
   c. Roger Beaudoin asked if Eversource has any new mapping for the corridor. Mr. Lancia will check.

7. The following potential conflicts with Aquarion Water were discussed:
   a. Drainage structure tops are to be replaced and will not impact water mains.
   b. Three hydrants to be relocated by the contractor. Aquarion previously furnished hydrant details. Any special provisions should be provided as well. Aquarion is to furnish layout information for existing hydrant and valve arrangements and will work with SLR to develop sketches for each relocation.
      i. Hydrant at Church Street
      ii. Hydrant at Martha Street (lower the existing. hydrant)
      iii. Hydrant at Franklin Street (avoid gas main with relocation)
   c. A number of valve boxes will have to be reset by the contractor. Aquarion is to provide more information on provision of new valve boxes, as necessary.
   d. Several test pits will be required to locate the existing water main where proposed storm drainpipes will cross.
   e. Water main crosses the Little River bridge on River Street, suspended between two upstream girders. The water line terminates just south of the bridge. ~~Frontier~~ Aquarion is to clarify whether any customers are served south of the bridge in order to determine whether the water line can be shut down while the bridge is under construction.
   f. Aquarion requested the water line on River Street be replaced in connection with the project. The main has been in service for around 100 years. Replacing the water main across the bridge would avoid the need for temporary support. It was unclear whether this would be reimbursable. Luchs is to clarify whether it is Aquarion's intent to replace the main if not reimbursed by CTDOT. CTDOT is to consider and respond.
   g. Luchs will assist Aquarion with utility estimates, including any Depreciation Reserve Credit.
   h. Luchs is to confirm whether Aquarion would be present during CTDOT's test pit excavations. Note: Any utility company who wishes to be present during the digging of test pits will need to coordinate with CTDOT District 4 Surveys. Interested utilities may notify Charles Grillo and he will forward thier contact info to District 4 Surveys.

8. The following potential conflicts with the sanitary sewer were discussed:
   a. CTDOT requested SLR revisit mapping of existing sewers based on 1990s sewer project as-builts. The changes in sewer alignment were reviewed together. Despite changes in

the sewer alignment, given the depth of the sewer, no impacts are anticipated with drainage crossings.

b. The existing 24-inch ductile iron sewer main located under the upstream bay of the River Street bridge will have to be supported during partial bridge demolition. Given the work and risk involved, SLR proposed a concept for advance relocation of the sanitary sewer to a downstream bay. The scheme has been shared with and deemed acceptable to the WPCA, pending further design detail. The concept requires demolition of bridge concrete diaphragms and replacement with steel diaphragms doubling as pipe hangers.
c. CTDOT is to consider the sewer relocation scheme. SLR is prepared to share the details with CTDOT's Bridge Design Unit; details were shared at the meeting.

9. The following potential conflicts to Eversource Gas were discussed.
    a. The gas company was not present.
    b. Test pits will be required for purposes of locating gas mains for design of storm drain crossings, catch basin installations, and roadway widening and curb installations.
    c. Replacement of gas service through the wall at 100 Bank Street will have to be staged/coordinated by the contractor in connection with the retaining wall replacement.
    d. A 2-inch gas service is located on the outside of the River Street bridge upstream end. The gas company will have to clarify whether the service can be temporarily suspended while the bridge is under construction. Gas is serviced to a single customer south of the bridge.
    e. Clarification as to which party will reset the valve boxes throughout.

Next Steps

1. SLR is to schedule follow-up meetings with Eversource Gas and WPCA.
2. SLR is to arrange for and participate in a field meeting with Frontier to open vaults.
3. Aquarion is to provide specifications for water items and information on service beyond the River Street bridge.
4. SLR is to revisit sanitary sewer as-built mapping.
5. SLR is to prepare draft test pit layout plan for CTDOT and utility review.
6. CTDOT is to consider water and sewer relocations and follow-up with SLR; SLR is to forward concepts electronically.

The above represents the author's interpretation and recollection of the dialogue that took place. Should any item be found to be omitted or misstated, kindly notify SLR for resolution.

Prepared and submitted by: _____
Anthony Ciriello Jr., SLR

Approved by: Digitally signed by Charles Grillo Date: 2023.02.16 13:41:06-05'00' _____, CTDOT

NAUGATUCK VALLEY COUNCIL OF GOVERNMENTS
UTILITY MEETING
ROUTE 67 IMPROVEMENTS
SEYMOUR, CONNECTICUT
CTDOT #124-165
SLR #141.13211.00024
Notes from Meeting held on: October 24, 2022
Location: SLR Offices at 99 Realty Drive, Cheshire, Connecticut

ATTENDEES	REPRESENTING
Charles Grillo	Connecticut Department of Transportation
Roger Beaudoin	Connecticut Department of Transportation, Utilities
Jaskaran Singh	Eversource Electric
Matthew Reilly	Frontier Overhead
Frank Cassin	Comcast
Shelley Plude	SLR International Corporation
Anthony Ciriello	SLR International Corporation

A utility meeting was conducted on October 24, 2022. The following is a summary of the points raised and dialogue that ensued:

1. SLR International Corporation (SLR) provided a general overview of the project corridor and proposed improvements.

2. A 2023 construction start is anticipated.

3. Utility relocations will be reimbursed to 50 percent.

4. A summary of known utilities was provided, and impacts were presented for discussion.

5. Poles on Bank Street/Route 67 are generally labeled “CL&P,” however, are jointly owned by Eversource and Frontier.

6. The Frontier duct bank generally parallels the Bank Street southerly curb line for the length of the project. Test pits will be excavated by the Connecticut Department of Transportation (CTDOT) to locate concrete duct bank in an effort to resolve potential conflicts with proposed curbing and storm drain installations. M. Reilly will forward semi-final plans to Frontier underground contact.

7. Test pits should be excavated to expose depth to duct bank as well as overall width and depth of concrete structure.

8. Frontier manholes provide access to 10’ by 5’ underground vaults. Frontier will open manholes to measure risers for approximation of structure depths.

9. A number of pole relocations will be necessary based on proposed changes to the curb lines. In most cases, poles will move slightly to achieve 18-inch offset from face of curb or to achieve accessibility requirements along sidewalks.

10. Frontier Pole, number unknown, located approximately 100 feet south of the Little River bridge on River Street/Route 313 will likely need to be guyed if moved more than a couple feet. There is limited opportunity for stub pole on the opposite side of the street. State-owned right-of-way is wide; design team is to review alternatives.

11. Pole No. 2399 and Pole No. 2400 just west of Franklin Street (in the vicinity of Subway) may not have to be relocated for purposes of the project; however, those poles will be approximately 14 feet and 6 feet behind the new curb line, respectively. Both poles support roadway luminaires. The design team is to consider the need for relocations based on illumination needs.

12. Pole No. 28484 is located on an embankment within the island between Church Street and Beecher Street. The embankment will be lowered, permanently, and the pole depth will have to be considered.

13. Pole relocation plans are to be shared with Comcast as the layout evolves. It was also noted that Crown Castle also has overhead utilities present.

14. Gas service is provided all along Bank Street. A 2-inch service is attached to the upstream end of the River Street bridge over Little River. At present, the service appears to be exposed within the adjacent property and temporarily out of service. Eversource Gas will be consulted for temporary/permanent relocation needs. CTDOT suggested gas mapping be reviewed to confirm locations/limits at the Old Drive (West bridge) and within the Bank Street/River Street intersection. SLR is to review.

15. The local Water Pollution Control Authority (WPCA) maintains a 24-inch ductile iron sewer on the upstream side of the bridge, mounted to the underside of the deck overhang. Early direction from the WPCA was to support the pipe in place during construction. SLR suggested potential relocation of the sewer prior to demolition of the bridge parapet and fascia beam. Advance relocation would eliminate the need for temporary support, provide adequate space for demolition activities, and significantly reduce risks to the utility during construction.

16. Water service is provided throughout the project limits. Three hydrants are considered to require relocation or resetting – to be confirmed with Aquarion Water.

17. The water main is located within the River Street bridge over Little River and supported by the concrete diaphragms between beams. It is unclear whether any customers are served on River Street at present. SLR is to meet with Aquarion Water to discuss whether the line in River Street could be shut down during construction.

Next Steps

1. A joint field meeting will be held with Eversource and Frontier to discuss pole impacts. Prior to the meeting, SLR will paint or mark approximate proposed curb line at each pole impacted.

2. Aquarion Water was unable to participate in the meeting. SLR will follow up.

3. Eversource Gas was unable to participate in the meeting. SLR will follow up.

4. Representatives from the WPCA were prepared to meet in the field but did not receive follow-up communications indicating that the meeting location had changed. SLR will coordinate a separate meeting to follow-up with the WPCA.

5. SLR is to consult with CTDOT on final test pit program.

The above represents the author's interpretation and recollection of the dialogue that took place. Should any item be found to be omitted or misstated, kindly notify SLR for resolution.

Prepared and submitted by: Anthony Ciriello Jr., SLR

13211.00024.n322.rpt.dotx

TEST PIT LOCATIONS

W-2	24+25	2.4' R	705759.46	909775.04	Aquarion
W-3	31+07	3.4' L	705574.16	910430.07	Aquarion
W-4	31+73	62.2' R	705486.93	910460.15	Aquarion
W-5	41+48	15.5' L	705384.42	910398.45	Aquarion

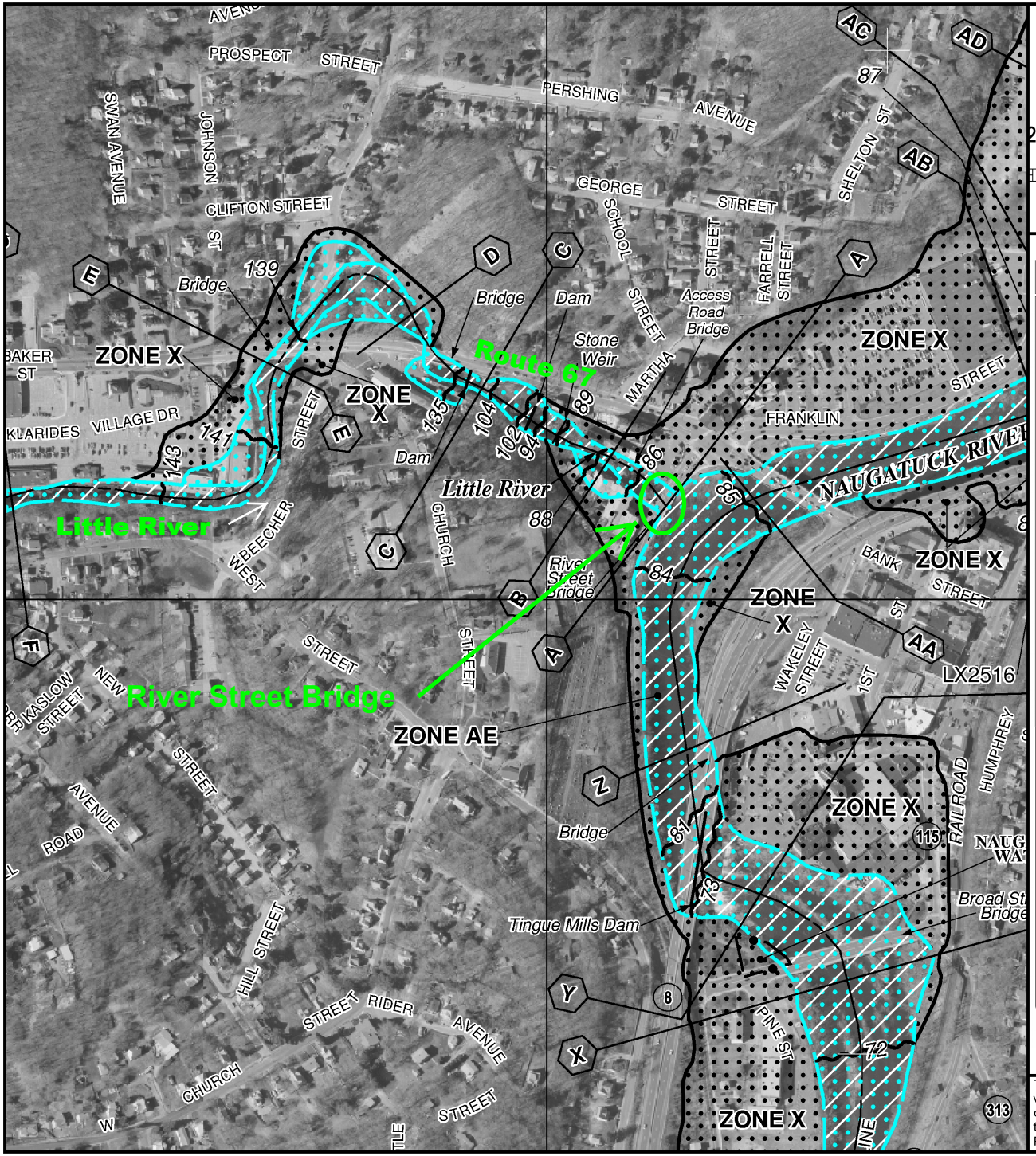
APPENDIX F

ENVIRONMENTAL INFORMATION

Final (100%) Design Report

Naugatuck Valley Council of Governments
49 Leavenworth Street, 3rd Floor
Waterbury, Connecticut 06702

June 2023



MAP SCALE 1" = 500'

250 0 500 1000 FEET

METER

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0264H

FIRM

FLOOD INSURANCE RATE MAP

NEW HAVEN COUNTY, CONNECTICUT

(ALL JURISDICTIONS)

PANEL 264 OF 635

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

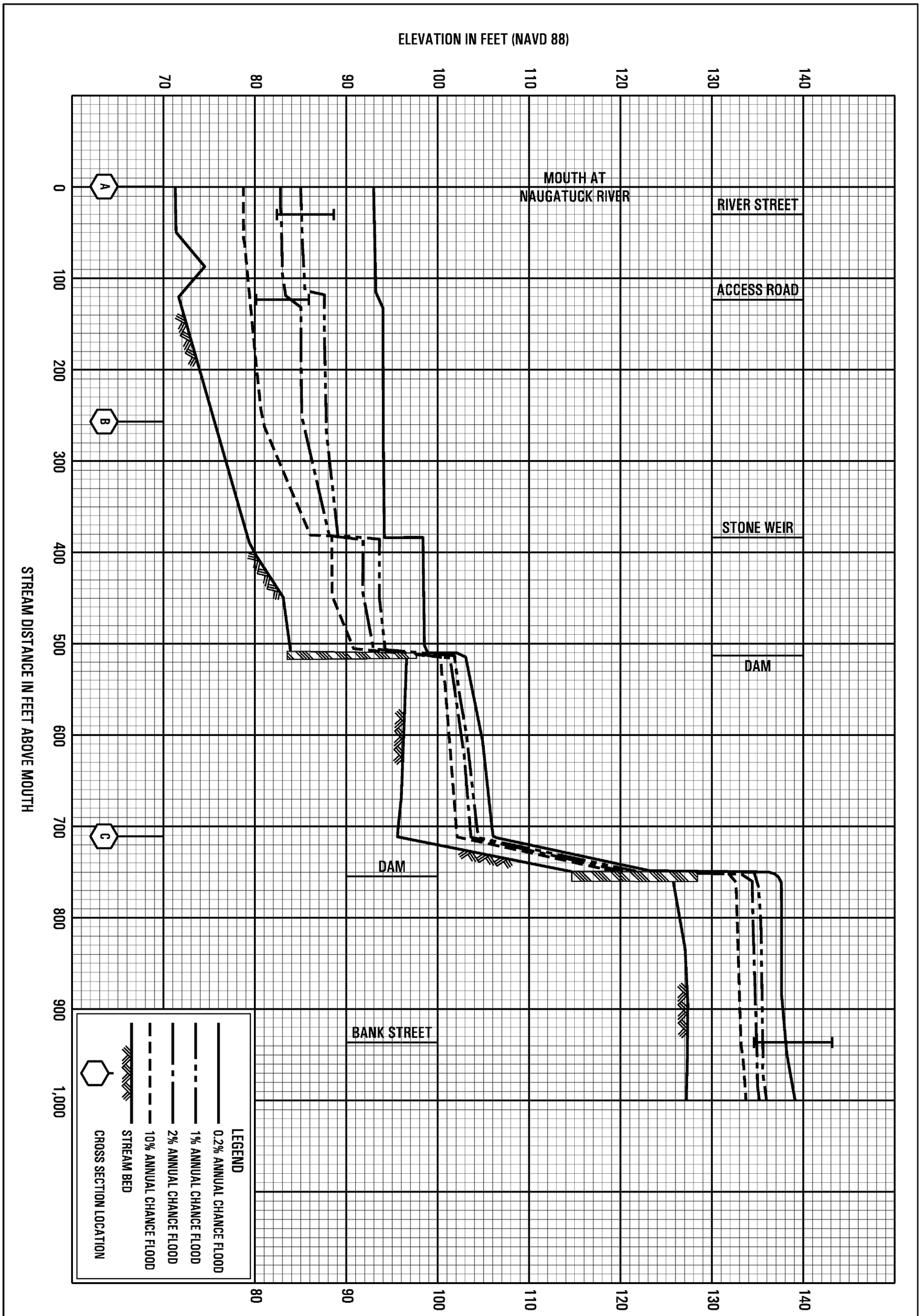
COMMUNITY	NUMBER	PANEL	SUFFIX
BEACON FALLS, TOWN OF	090072	0264	H
OXFORD, TOWN OF	090150	0264	H
SEYMOUR, TOWN OF	090088	0264	H

Notice to User: The **Map Number** shown below should be used when placing map orders; the **Community Number** shown above should be used on insurance applications for the subject community.

MAP NUMBER
09009C0264H

EFFECTIVE DATE
DECEMBER 17, 2010

Federal Emergency Management Agency



FEDERAL EMERGENCY MANAGEMENT AGENCY

NEW HAVEN COUNTY, CT

(ALL JURISDICTIONS)

FLOOD PROFILES

LITTLE RIVER

APPENDIX G

RIGHT-OF-WAY SCHEDULE OF OWNERS

Final (100%) Design Report

Naugatuck Valley Council of Governments
49 Leavenworth Street, 3rd Floor
Waterbury, Connecticut 06702

June 2023

SCHEDULE OF PROPERTY OWNERS

Route 67
Seymour, CT

STATE PROJECT NO.: 0124-0172
FAP NO.: 1124(006)

Serial No.	Owner Property Address	Location BL Stations	Taking Area		Easement Area		Excess Area	Building Part.	Type of Search	Type of Take	A,B,C,D	Remarks
			Sq.Ft	Acres	Sq.Ft / L.F.	Acres						
1	N/F NAMO, LLC	12+00 TO 12+25 LT							F		D	Right to Construct Driveway
2	N/F SWAN AVENUE ASSOCIATES LLC	13+40 TO 13+82 LT			88.0	0.002			F		D	Defined Sightline Easement (SE)
3	N/F TD BANK NORTH NA	50+50 TO 51+50 LT KLARIDES DRIVE							F		D	Right to Grade, Right to Construct Driveway
4	N/F MCDONALDS CORPORATION	15+50 TO 15+60 RT							F		D	Right to Grade, Right to Construct Sidewalk
5	N/F RABI I LLC	15+90 TO 16+15 RT							F		D	Right to Grade, Right to Construct Sidewalk
6	N/F THE JAMES SWAN COMPANY	61+70 TO 62+00 LT CHURCH ST.	944	0.022					F		D	Partial Acquisition
7	N/F MJ BANK LLC	21+25 TO 21+75 RT							F		D	Right to Grade, Right to Construct Driveway
8	N/F FATIMA SILVA	27+20 TO 27+40 RT							F		D	Right to Construct Sidewalk
9	N/F PETER LARSEN ET AL	27+40 TO 27+75 RT							F		D	Right to Construct Sidewalk
10	N/F RICHARD SOBOTKA	27+75 TO 28+25 RT							F		D	Right to Construct Sidewalk
11	N/F 100 BANK STREET CONDOMINIUM	29+20 LT TO 30+80 LT	567	0.013	3,034	0.070			F		D	Partial Acquisition, Easement to Construct and Maintain Retaining Wall (Wall), Right to Grade
12	N/F DORIS M. TKACZ	30+50 RT TO RIVER ST			SE = 320 Slope = 322 G.Rail = 50 L.F.	0.007 0.007 N/A			F		D	Defined Sightline Easement (SE). Easement to Slope for the Support of the Highway (Slope), Right to Grade, Easement to Install Guiderail

This is the approved "Schedule of Property Owners" being used for title search.

A = Individual Area
B = Business
C = Residential (House)
D = Strictly Land
*** = Temporary Easement**

Prepared By: SLR International Corp.

Date: 16-Jun-23

Approved By:

Date:

APPENDIX H

ENGINEER'S OPINION OF CONSTRUCTION COSTS

Final (100%) Design Report

Naugatuck Valley Council of Governments
49 Leavenworth Street, 3rd Floor
Waterbury, Connecticut 06702

June 2023

ENGINEER'S OPINION OF CONSTRUCTION COSTS
SPOT IMPROVEMENTS AT BANK STREET (ROUTE 67) AND RIVER STREET (ROUTE 313)
SEYMOUR, CONNECTICUT
PROJECT NO. 0124-0172
FAP NO. 1124(006)
JUNE 16, 2023

ITEM NO.	ITEM/DESCRIPTION	UNIT	QTY	UNIT COST	AMOUNT IN FIGURES
0020905A	Lead Compliance for Abrasive Blast Cleaning and Miscellaneous Tasks	LS	1	$ 30,000.00	$ 30,000.00
0107090A	CTDOT Boundary Marker (Survey Monument)	Ea.	1	$ 2,000.00	$ 2,000.00
0201001A	Clearing and Grubbing	LS	1	$ 84,000.00	$ 84,000.00
0202000	Earth Excavation	CY	355	$ 47.36	$ 16,812.80
0202100	Rock Excavation	CY	50	$ 92.05	$ 4,602.50
0202501	Cut Concrete Pavement	LF	3,075	$ 5.30	$ 16,297.50
0202502	Removal of Concrete Pavement	SY	50	$ 42.44	$ 2,122.00
0202529	Cut Bituminous Concrete Pavement	LF	4,400	$ 2.84	$ 12,496.00
0203000	Structure Excavation - Earth (Complete)	CY	390	$ 49.75	$ 19,402.50
0209001	Formation of Subgrade	SY	2,600	$ 4.75	$ 12,350.00
0210821A	Water Pollution Control	Est.	1	$ 10,000.00	$ 10,000.00
0212000	Subbase	CY	710	$ 54.16	$ 38,453.60
0213100	Granular Fill	CY	30	$ 84.38	$ 2,531.40
0216000	Pervious Structure Backfill	CY	230	$ 77.59	$ 17,845.70
0219001	Sedimentation Control System	LF	900	$ 6.78	$ 6,102.00
0219011A	Sedimentation Control System at Catch Basin	EA	30	$ 173.92	$ 5,217.60
0286001.10	Rock in Drainage Trench Excavation	CY	30	$ 155.94	$ 4,678.20
0406002A	Temporary Pavement	SY	350	$ 45.41	$ 15,893.50
0406159	PMA S0.5	Ton	2,305	$ 145.39	$ 335,123.95
0406160	PMA S1.0	Ton	825	$ 166.14	$ 137,065.50

ITEM NO.	ITEM/DESCRIPTION	UNIT	QTY	UNIT COST	AMOUNT IN FIGURES
0406194A	Joint and Crack Sealing of Bituminous Concrete Pavement	LF	368	$ 14.94	$ 5,497.92
0406236	Material for Tack Coat	Gal	1,465	$ 10.45	$ 15,309.25
0406600	Material Transfer Vehicle	Ton	2,305	$ 7.55	$ 17,402.75
0406999A	Asphalt Adjustment Cost	Est.	1	$ 5,000.00	$ 5,000.00
0409001	Fine Milling of Bituminous Concrete (0" to 4")	SY	14,100	$ 6.09	$ 85,869.00
0409005	Removal of Existing Wearing Surface	SY	92	$ 109.71	$ 10,093.32
0520036A	Asphaltic Plug Expansion Joint System	CF	245	$ 417.53	$ 102,294.85
0586001.10	Type 'C' Catch Basin - 0' - 10' Deep	EA	6	$ 4,752.24	$ 28,513.44
0586002.10	Type 'C' Catch Basin (4' Sump) - 0' - 10' Deep	EA	2	$ 4,343.00	$ 8,686.00
0586003.10	Type 'C' Catch Basin Double Grate - Type I - 0'-10' Deep	EA	2	$ 7,200.38	$ 14,400.76
0586004.10	Type 'C' Catch Basin Double Grate - Type I - 0'-10' Deep (4' Sump)	EA	1	$ 9,580.89	$ 9,580.89
0586005.10	Type 'C' Catch Basin Double Grate - Type II - 0'-10' Deep	EA	1	$ 7,408.01	$ 7,408.01
0586026.20	Special Round Type 'C' Catch Basin (4' Sump) - 0' -20' Deep	EA	1	$ 8,611.69	$ 8,611.69
0586041.10	Type 'C-L' Catch Basin (4' Sump) - 0' - 10' Deep	EA	1	$ 4,707.24	$ 4,707.24
0586500.10	Manhole - 0' - 10' Deep	EA	2	$ 4,821.11	$ 9,642.22
0586601	Reset Type 'C' Catch Basin	EA	9	$ 1,106.36	$ 9,957.24
0586603	Reset Type 'C' Catch Basin Double Grate Type 1	EA	1	$ 1,373.00	$ 1,373.00
0586620	Reset Type 'C'-L Catch Basin	EA	2	$ 1,008.41	$ 2,016.82
0586651	Reset Manhole (Storm)	EA	8	$ 788.18	$ 6,305.44
0586703	Convert Catch Basin to Manhole	EA	1	$ 2,152.49	$ 2,152.49
0586750	Type 'C' Catch Basin Top	EA	9	$ 900.60	$ 8,105.40
0586790.10	Remove Drainage Structure - 0' - 10' Deep	EA	8	$ 1,050.64	$ 8,405.12
0601020A	Stamped Concrete	SF	270	$ 46.91	$ 12,665.70

ITEM NO.	ITEM/DESCRIPTION	UNIT	QTY	UNIT COST	AMOUNT IN FIGURES
0601062	Footing Concrete	CY	53	$ 790.47	$ 41,894.91
0601064	Abutment and Wall Concrete	CY	60	$ 1,306.36	$ 78,381.60
0601091A	Simulated Stone Masonry	SY	200	$ 38.47	$ 7,694.00
0601502	1/2" Preformed Expansion Joint Filler for Bridges	SF	22	$ 13.78	$ 303.16
0601744.62	Class PCC04462	CY	50	$ 1,596.10	$ 79,805.00
0602030	Deformed Steel Bars - Galvanized	LB	13,200	$ 3.27	$ 43,164.00
0603222A	Disposal of Lead Debris from Abrasive Blast Cleaning	TON	1	$ 1,576.70	$ 1,576.70
0603563A	Class 1 Containment and Collection of Surface Preparation Debris (Site No. 1)	LS	1	$ 65,000.00	$ 65,000.00
0603923A	Abrasive Blast Cleaning and Field Painting of Structure	LS	1	$ 75,000.00	$ 75,000.00
0605003A	Masonry Facing	SF	70	$ 350.00	$ 24,500.00
0606906A	Rebuild Masonry Wall	LF	170	$ 65.00	$ 11,050.00
0686000.12	12" R.C. Pipe - 0' - 10' Deep	LF	270	$ 92.22	$ 24,899.40
0686000.15	15" R.C. Pipe - 0' - 10' Deep	LF	115	$ 92.14	$ 10,596.10
0686000.18	18" R.C. Pipe - 0' - 10' Deep	LF	10	$ 119.84	$ 1,198.40
0686000.24	24" R.C. Pipe - 0' - 10' Deep	LF	10	$ 190.84	$ 1,908.40
0686950.10	Remove Existing Pipe - 0' - 10' Deep	LF	65	$ 37.81	$ 2,457.65
0708001	Dampproofing	SY	125	$ 20.79	$ 2,598.75
0712009A	Soil Nail Wall	LS	1	$ 400,000.00	$ 400,000.00
0751821	6" Structure Underdrain	LF	135	$ 33.50	$ 4,522.50
0751831	6" Outlet for Underdrain	LF	140	$ 30.78	$ 4,309.20
0811001	Concrete Curbing	LF	500	$ 48.35	$ 24,175.00
0813021A	6" Granite Stone Curbing	LF	2,500	$ 66.73	$ 166,825.00
0813031A	6" Granite Curved Stone Curbing	LF	350	$ 88.35	$ 30,922.50

ITEM NO.	ITEM/DESCRIPTION	UNIT	QTY	UNIT COST	AMOUNT IN FIGURES
0909501A	Timber Beam Rail	LF	110	$ 85.70	$ 9,427.00
0910023	R-B Terminal Section	EA	2	$ 2,500.44	$ 5,000.88
0910031	Thrie Beam Attachment	EA	1	$ 5,720.85	$ 5,720.85
0910300	Metal Beam Rail (R-B MASH)	LF	330	$ 34.26	$ 11,305.80
0911923	R-B End Anchorage-Type 1	EA	2	$ 1,827.57	$ 3,655.14
0912501	Reset Metal Beam Rail (Bridge)	LF	220	$ 40.00	$ 8,800.00
0912503	Remove Metal Beam Rail	LF	470	$ 6.60	$ 3,102.00
0913000	Remove Chain Link Fence	LF	590	$ 7.51	$ 4,430.90
0913021	6' Chain Link Fence	LF	580	$ 40.48	$ 23,478.40
0921001	Concrete Sidewalk	SF	15,600	$ 13.20	$ 205,920.00
0921002	Concrete Sidewalk - 8" Thick	SF	210	$ 22.00	$ 4,620.00
0921005	Concrete Sidewalk Ramp	SF	2,000	$ 28.77	$ 57,540.00
0921048	Detectable Warning Surface	SF	240	$ 43.36	$ 10,406.40
0922001	Bituminous Concrete Sidewalk	SY	120	$ 80.50	$ 9,660.00
0922500	Bituminous Concrete Driveway (Commercial)	SY	840	$ 67.34	$ 56,565.60
0925201	Pavement for Railing	SY	100	$ 45.41	$ 4,541.00
0939001	Sweeping for Dust Control	Hr.	48	$ 32.23	$ 1,547.04
0942001	Calcium Chloride for Dust Control	TON	1.25	$ 645.29	$ 806.61
0943001	Water for Dust Control	M.GA	175	$ 4.74	$ 829.50
0944000	Furnishing and Placing Topsoil	SY	1,150	$ 12.19	$ 14,018.50
0949000	Wood Chip Mulch	SY	90	$ 14.31	$ 1,287.90
0949009	Aster Novae-Angliae, New England Aster 1 Qt. Cont.	EA	14	$ 15.84	$ 221.76
0949267	Solidago Junecea (Early Goldenrod) 1 Gallon Container	EA	8	$ 23.92	$ 191.36

ITEM NO.	ITEM/DESCRIPTION	UNIT	QTY	UNIT COST	AMOUNT IN FIGURES
0949303	Andropogon Scoparium Little Bluestem 1 Gallon Container	EA	29	$ 27.28	$ 791.12
0949505	Viburnum Acerifolium Mapleleaf Viburnum 12"-15" HT. B.B.	EA	10	$ 58.00	$ 580.00
0949712	Amelanchier Canadensis Shadblow Servicebery 8'-10' Ht. B.B.	EA	4	$ 222.00	$ 888.00
0949840	Acer Rubrum Columnare Columnar Red Maple 2 1/2"-3" Cal. B.B.	EA	1	$ 623.00	$ 623.00
0949847	Acer Saccharum Sugar Maple 2 1/2"-3" Cal. B.B.	EA	1	$ 641.93	$ 641.93
0949918	Vaccinium Angustifolium, Low Bush Blueberry, 12"-15" Ht. B.B.	EA	21	$ 58.00	$ 1,218.00
0950019A	Turf Establishment - Lawn	SY	1,150	$ 3.32	$ 3,818.00
0950040A	Conservation Seeding for Slopes	SY	125	$ 2.33	$ 291.25
0952001A	Selective Clearing and Thinning	LS	1	$ 5,000.00	$ 5,000.00
0969064A	Construction Field Office, Large	MO	12	$ 5,980.05	$ 71,760.60
0971001A	Maintenance and Protection of Traffic	LS	1	$ 251,900.00	$ 251,900.00
0970006	Trafficperson (Municipal Police Officer)	Est.	1	$ 163,200.00	$ 163,200.00
0970007	Trafficperson (Uniformed Flagger)	HR	1,920	$ 65.00	$ 124,800.00
0974001A	Removal of Existing Masonry	CY	200	$ 191.89	$ 38,378.00
0975004	Mobilization and Project Closeout	LS	1	$ 314,900.00	$ 314,900.00
0976002	Barricade Warning Lights - High Intensity	DAY	90	$ 1.90	$ 171.00
0977001	Traffic Cone	EA	100	$ 24.18	$ 2,418.00
0978002	Traffic Drum	EA.	100	$ 71.33	$ 7,133.00
0979003	Construction Barricade Type III	EA.	35	$ 123.13	$ 4,309.55
0979004A	Construction Barricade Detectable	EA.	55	$ 227.28	$ 12,500.40
0980020	Construction Surveying	LS	1	$ 126,000.00	$ 126,000.00
0992090A	Bench	EA	2	$ 2,500.00	$ 5,000.00

ITEM NO.	ITEM/DESCRIPTION	UNIT	QTY	UNIT COST	AMOUNT IN FIGURES
1001001	Trenching and Backfilling	LF	1,100	$ 39.37	$43,307.00
1002202A	Traffic Control Foundation - Mast Arm	Ea.	5	$ 15,971.93	$79,859.65
1002203	Traffic Control Foundation - Pedestal - Type I	Ea.	11	$ 868.10	$9,549.10
1002208	Traffic Control Foundation - Controller - Type IV	Ea.	2	$ 1,750.36	$3,500.72
1002291A	Modification of Traffic Control Foundation	Ea.	1	$ 2,068.34	$2,068.34
1008015	2" Rigid Metal Conduit - Surface	LF	40	$ 35.99	$1,439.60
1008115	2" Rigid Metal Conduit in Trench	LF	720	$ 21.20	$15,264.00
1008215	2" Rigid Metal Conduit Under Roadway	LF	1000	$ 23.17	$23,170.00
1008217	3" Rigid Metal Conduit Under Roadway	LF	100	$ 42.51	$4,251.00
1008908A	Clean Existing Conduit	LF	580	$ 6.77	$3,926.60
1010001	Concrete Handhole	Ea.	7	$ 960.75	$6,725.25
1010021	Concrete Handhole - Type 2	Ea.	7	$ 723.01	$5,061.07
1010052	Cast Iron Handhole Cover	Ea.	1	$ 716.89	$716.89
1010054	Cast Iron Handhole Cover - Type 2	Ea.	3	$ 692.21	$2,076.63
1010060A	Clean Existing Concrete Handhole	Ea.	4	$ 365.77	$1,463.08
1015034A	Grounding and Bonding	LS	1	$ 11,600.71	$11,600.71
1017019A	Wireless Radio Assembly	Ea.	3	$ 14,172.50	$42,517.50
1102002	8' Aluminum Pedestal	Ea.	10	$ 906.88	$9,068.80
1102010	12' Aluminum Pedestal	Ea.	1	$ 1,007.98	$7,298.30
1104026A	25' Steel Mast Arm Assembly	Ea.	1	$ 20,187.03	$20,187.03
1104028A	30' Steel Mast Arm Assembly	Ea.	1	$ 23,633.57	$23,633.57
1104031A	35' Steel Mast Arm Assembly	Ea.	2	$ 25,882.10	$51,764.20
1104033A	40' Steel Mast Arm Assembly	Ea.	1	$ 28,447.55	$28,447.55

ITEM NO.	ITEM/DESCRIPTION	UNIT	QTY	UNIT COST	AMOUNT IN FIGURES
1105304	1 Way, 4 Section Pedestal Mounted Traffic Signal	Ea.	1	$ 1,620.00	$1,620.00
1105415A	1 Way, 3 Section Traffic Signal Polycarbonate	Ea.	7	$ 1,475.13	$10,325.91
1105416A	1 Way, 4 Section Traffic Signal Polycarbonate	Ea.	1	$ 1,620.00	$1,620.00
1105417A	1 Way, 5 Section Traffic Signal Polycarbonate	Ea.	4	$ 1,850.00	$7,400.00
1106001A	1 Way Pedestrian Signal Pole Mounted	Ea.	3	$ 1,013.88	$3,041.64
1106003A	1 Way Pedestrian Signal Pedestal Mounted	Ea.	9	$ 958.53	$8,626.77
1106004A	2 Way Pedestrian Signal Pedestal Mounted	Ea.	2	$ 1,620.25	$3,240.50
1107011A	Accessible Pedestrian Signal and Detector (Type A)	Ea.	16	$ 1,163.89	$18,622.24
1108117A	Full Actuated Controller With Actuated Pedestrian Phase (16 Phase)	Ea.	2	$ 27,323.50	$54,647.00
1108163A	Modify Existing Controller	Ea.	1	$ 3,080.61	$3,080.61
1108208A	Install State Furnished Cellular Modem	Ea.	3	$ 1,000.00	$3,000.00
1111201A	Temporary Detection (Site No. 1)	L.S.	1	$ 3,000.00	$3,000.00
1111202A	Temporary Detection (Site No. 2)	L.S.	1	$ 3,000.00	$3,000.00
1111203A	Temporary Detection (Site No. 3)	L.S.	1	$ 3,000.00	$3,000.00
1112205A	Radar Detector	Ea.	6	$ 21,068.82	$126,412.92
1112286A	360 Degree Camera Assembly	Ea.	3	$ 7,711.08	$23,133.24
1112287A	360 Degree Video Detection Processor	Ea.	3	$ 24,542.52	$73,627.56
1112410A	Detector (Type A)	Ea.	1	$ 1,544.06	$1,544.06
1113004	2 Conductor, No. 8 AWG Type SE Style TW	LF	130	$ 4.46	$579.80
1113102	5 Conductor, No. 14 Cable	LF	9500	$ 2.79	$26,505.00
1113103	7 Conductor, No. 14 Cable	LF	1990	$ 3.33	$6,626.70
1113104	9 Conductor, No. 14 Cable	LF	870	$ 3.58	$3,114.60
1113550A	Detector Cable (Optical)	LF	430	$ 2.87	$1,234.10

ITEM NO.	ITEM/DESCRIPTION	UNIT	QTY	UNIT COST	AMOUNT IN FIGURES
1113725A	23 AWG 4 Twisted Pair Category 6 Cable	LF	420	$ 3.54	$1,486.80
1118012A	Removal and/or Relocation of Traffic Signal Equipment	L.S.	1	$ 6,500.00	$6,500.00
1118051A	Temporary Signalization (Site No. 1)	L.S.	1	$ 5,000.00	$5,000.00
1118052A	Temporary Signalization (Site No. 2)	L.S.	1	$ 5,000.00	$5,000.00
1118053A	Temporary Signalization (Site No. 3)	L.S.	1	$ 5,000.00	$5,000.00
1118301A	Relocate Pre-Emption (Site No. 1)	Ea.	1	$ 1,875.71	$1,875.71
1118302A	Relocate Pre-Emption (Site No. 2)	Ea.	1	$ 1,998.31	$1,998.31
1206023A	Removal and Relocation of Existing Signs	LS	1	$ 1,000.00	$ 1,000.00
1208931A	Sign Face-Sheet Aluminum (Type IX Retroreflective Sheeting)	SF	140	$ 79.30	$ 11,102.00
1208937A	Sign Face-Sheet Aluminum (Type XI Retroreflective Sheeting)	SF	230	$ 66.47	$ 15,288.10
1209114	Hot-Applied Painted Pavement Markings 4" Yellow	LF	5450	$ 0.40	$ 2,180.00
1209124	Hot-Applied Painted Pavement Markings 4" White	LF	6900	$ 0.39	$ 2,691.00
1209129	Hot-Applied Painted Pavement Markings 12" White	LF	300	$ 1.49	$ 447.00
1209521	Preformed Black Line Mask Pavement Marking Tape (6")	LF	24700	$ 2.45	$ 60,515.00
1210101	4" White Epoxy Resin Pavement Markings	LF	6900	$ 0.68	$ 4,692.00
1210102	4" Yellow Epoxy Resin Pavement Markings	LF	5450	$ 0.70	$ 3,815.00
1210105	Epoxy Resin Pavement Markings, Symbols and Legends	SF	2600	$ 5.20	$ 13,520.00
1211001	Removal of Pavement Markings	SF	4500	$ 1.81	$ 8,145.00
1220027A	Construction Signs	SF	590	$ 19.42	$ 11,457.80
1302053A	Reset Water Gate	EA	24	$ 331.95	$ 7,966.80
1303201A	Relocate Hydrant (Complete)	EA	3	$ 8,571.43	$ 25,714.29
1403501A	Reset Manhole (Sanitary Sewer)	EA	11	$ 1,029.33	$ 11,322.63
1507000A	Protection and Support of Existing Utilities	LS	1	$ 5,000.00	$ 5,000.00
1700001A	Service Connections (Estimated Cost)	Est.	1	$ 5,000.00	$ 5,000.00

ITEM NO.	ITEM/DESCRIPTION	UNIT	QTY	UNIT COST	AMOUNT IN FIGURES
1803300	Impact Attentuation System (Tangential)	Ea	1	$ 4,989.34	$ 4,989.34
	Utility Relocations (Allowance)	LS	1	$ 130,000.00	$ 130,000.00

CONTRACT ITEMS SUBTOTAL = $ 4,974,780.08

CONTINGENCIES (±10%) = $497,500.00

INCIDENTALS TO CONSTRUCTION (±20%) = $995,000.00

CONSTRUCTION TOTAL $ 6,467,280.08