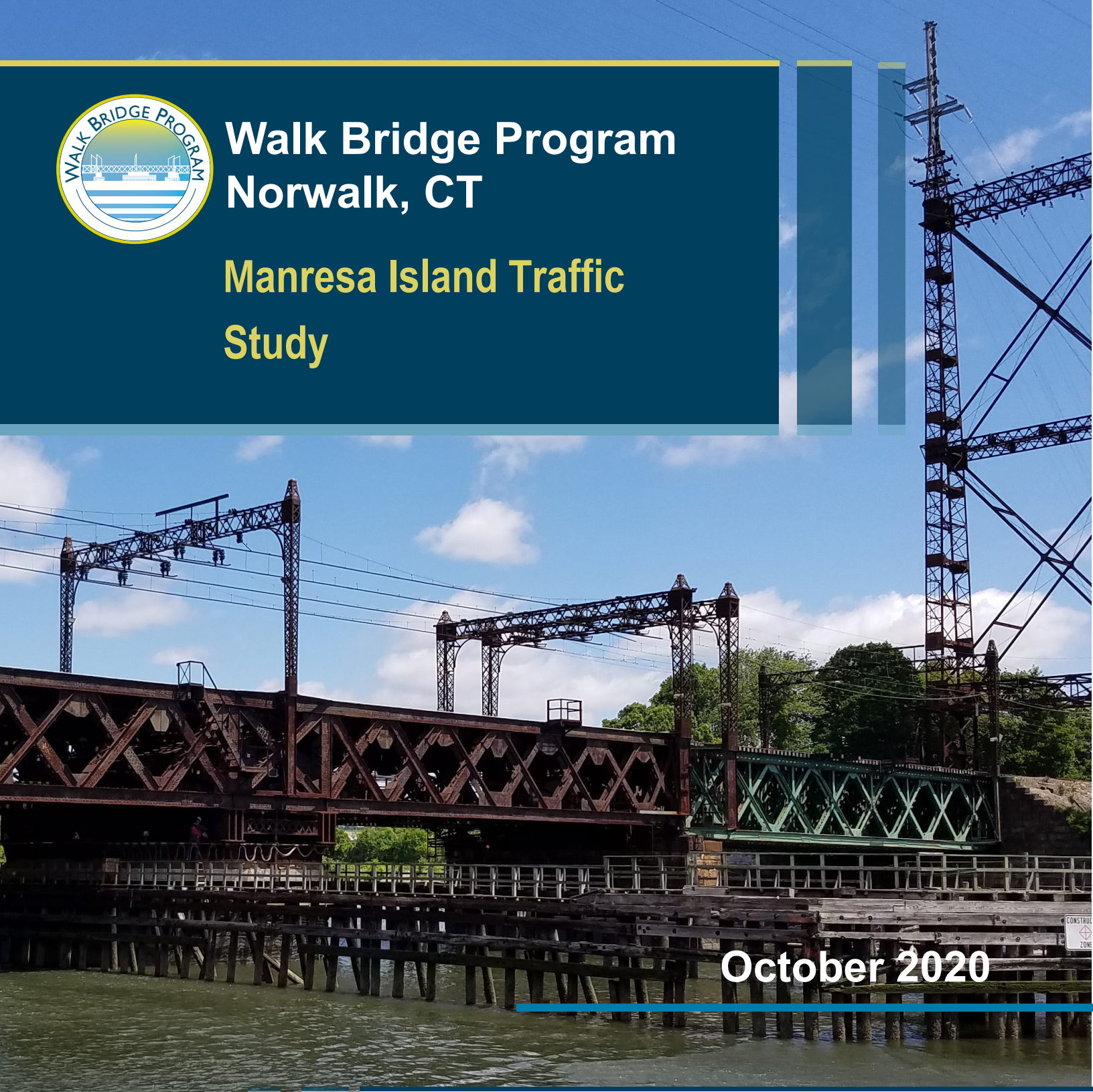
Walk Bridge Program
Norwalk, CT

Manresa Island Traffic Study



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1 Introduction

1.1 Project Background

The Walk Bridge Program seeks to replace the existing deteriorated four-track railroad bridge that crosses the Norwalk River, connecting South and East Norwalk. It is part of Metro-North Railroad's (MNR) New Haven Line and a critical link in connecting Boston, New York, and Washington D.C. The Walk Bridge carries approximately 125,000 riders each year. The project also includes simple span bridge replacements at Ann Street, Fort Point Street, Osborne Avenue, and East Avenue.

The Connecticut Department of Transportation (CTDOT) is planning to relocate the construction of the vertical replacement bridge lift span from the vacant properties at 68, 70 and 90 Water Street to Manresa Island, Norwalk, Connecticut. Manresa Island is located at southern tip of Norwalk, near the Harbor View neighborhood. The island is the site of a former power plant which was severely damaged by Hurricane Sandy in 2012, leading to its permanent closure in 2013 and has been vacant ever since. Figure 2 shows the project location.

Relocating the construction to Manresa Island would be beneficial given that it already has the infrastructure in place, as opposed to the vacant lots in South Norwalk which would require the state to dredge parts of the harbor and build a bulkhead at the location. CTDOT would use the southern part of Manresa Island for construction, storage of construction materials, safety boat vessels, construction boats and barges. The vacant Water Street lots #7, #8, and #9 would still be used for some stages of the construction process.

The project will be using the Manresa Island site for 60 months with substantial work occurring during an approximate 4 year period for construction of the vertical lift spans, with a six-day per week schedule that would normally run from 8 a.m. to 4 p.m. The traffic going to Manresa Island would originate from I-95 and would consist of trucks making three (3) roundtrips on average per day as well as the number of contractor employees destined to Manresa Island. There are two proposed truck haul routes depending on the truck height. For trucks under 13'-9", the proposed truck haul route bringing the materials to Manresa Island would follow (from I-95) West Avenue, Martin Luther King Drive, Monroe Street, South Main Street, Woodward Avenue, and Longshore Avenue, as shown on Figure 2 and described as Truck Route A. For trucks over 13'-9", the proposed truck haul route would follow (from I-95) West Avenue, Martin Luther King Jr. Drive, Route 136 (Wilson Avenue), Route 136 (Meadows Street), Woodward Avenue, and Longshore Avenue, as shown on Figure 3 and described as Truck Route B.

This traffic study summarizes existing intersection operational conditions along the truck haul routes and the anticipated construction related traffic impacts associated with the relocation of the vertical lift bridge construction site to Manresa Island. Findings presented within this document are current as of the date of this report.

The traffic study was performed using various sources of traffic data. The latest available traffic data, obtained from the City of Norwalk and the CTDOT, from 2017 was used for each study area intersection for analysis purposes. Traffic modeling software (Synchro 10) was utilized to evaluate the operations at the impacted intersections.

WSP was tasked with:

- Traffic data collection and summarization
- Traffic analysis for the truck haul route for year 2024
- Traffic analysis for the truck haul route with additional trucks and contractor employees for year 2024
- Crash data analysis

The Traffic Engineering Technical Memorandum (TETM) is a separate, living document, prepared by WSP, and a supplement to the Transportation Management Plan. The TETM summarizes existing operational conditions and anticipated construction related traffic impacts associated with the construction of the Walk Bridge, including Metro-North Railroad (MNR) bridge replacements at Ann Street, Fort Point Street, Osborne Avenue and East Avenue. This traffic study is a supplement to the TETM.

This traffic study is a supplement to the Transportation Management Plan and is a dynamic, living document that will be monitored, adjusted and updated as warranted based on field observations, operational information (planned roadway closures), and lessons learned to achieve safe and effective transportation operations.

Figure 1: Project Location

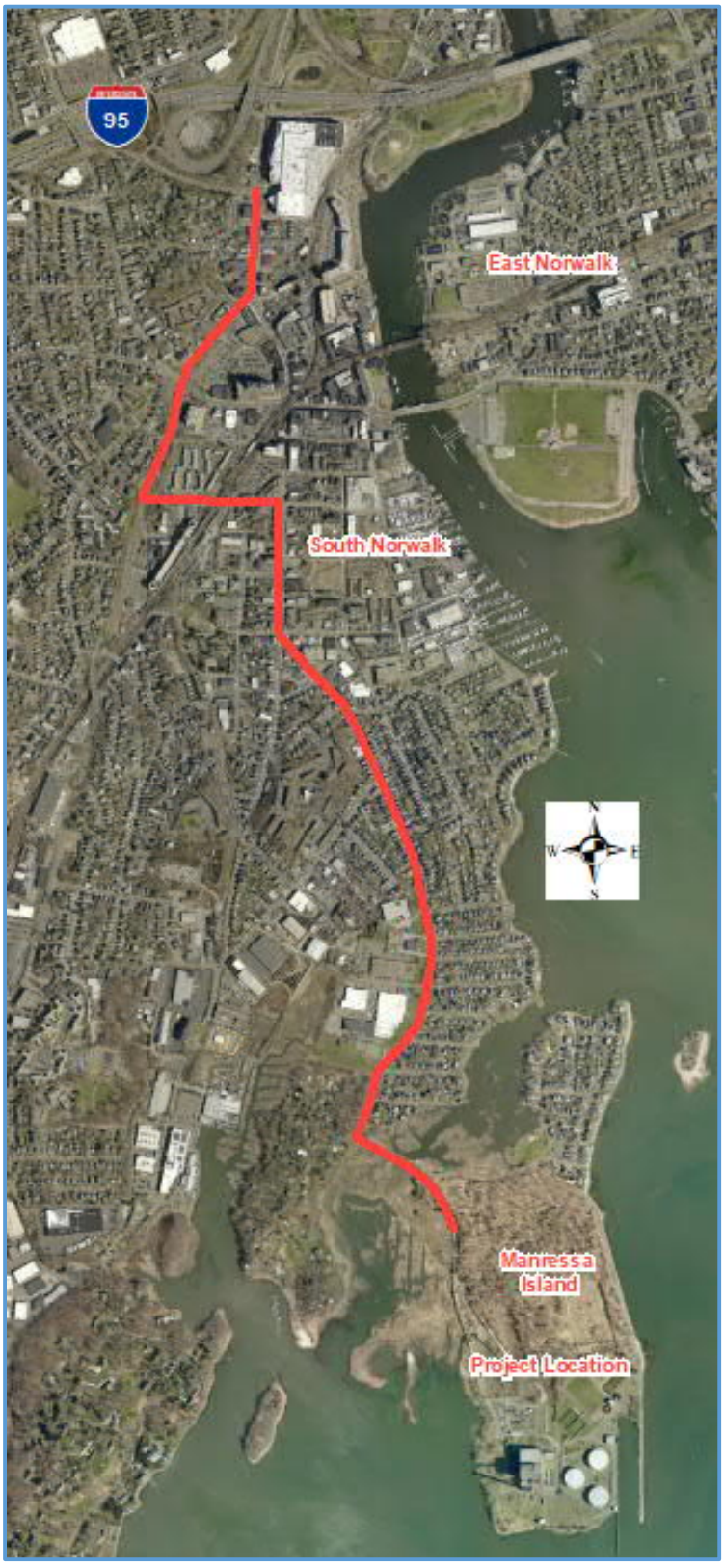


Figure 2: Truck Route A – Truck Height Under 13'-9"

Figure 3: Truck Route B – Truck Height Over 13'-9"

2 Roadway Information

2.1 Project Study Area Limits

WSP has carefully reviewed and field verified the proposed truck haul routes going to and from Manresa Island, and discussed the proposed routes with CTDOT and the City for identifying impacts at key intersections within the study area as follows:

1. Martin Luther King Jr. Drive & Monroe Street
2. South Main Street & Monroe Street
3. South Main Street & Henry Street
4. South Main Street & Woodward Avenue/Concord Place
5. Woodward Avenue & Grove Street
6. Route 136-south leg (Woodward Avenue) & Route 136 (Burritt Avenue)
7. Route 136-north leg (Woodward Avenue) & Route 136 (Meadows Street)

These intersections are in primarily residential areas as shown on

Figure *4*.

Figure 4: Critical Intersections

2.2 Existing Roadway and Intersection Geometry

WSP conducted field inventory of the affected intersections in the study area. The intersection geometry, traffic controls, land use, parking regulations, and pedestrian accommodations were evaluated.

2.2.1 MARTIN LUTHER KING JR. DRIVE & MONROE STREET

Martin Luther King Jr. Drive & Monroe Street is a signalized T-intersection with video detection on all approaches.

Martin Luther King Jr. Drive is classified as a Minor Arterial (per City of Norwalk DPW) and has a speed limit of 35 mph. The northbound approach has one through lane and one shared through-right lane. The southbound approach has two through lanes, and one dedicated left turn lane with a storage of approximately 180 feet.

Monroe Street, the eastern leg of the intersection, consists of one left turn lane and one right turn lane. It provides a bike lane between the turning lanes for the westbound direction and a bike lane on the shoulder side for the eastbound direction. Monroe is classified as a Major Collector with a speed limit of 30 mph.

The intersection provides sidewalks on the east side of Martin Luther King Jr. Drive and on both sides of Monroe Street. A signalized pedestrian crosswalk is provided across Monroe Street.

The South Norwalk Train Station drop-off/pick-up driveway is located approximately 200 feet east of the intersection, while the parking garage exit driveway is located approximately 400 feet east of the intersection.

The Monroe Street railroad underpass, located approximately 525 feet east of the intersection, provides a 13'-9" vertical clearance which is adequate for trucks traveling on Truck Route A.

Figure 5 shows an aerial image of the intersection.

FIGURE 5: MARTIN LUTHER KING JR. DR & MONROE ST AERIAL IMAGE

2.2.2 SOUTH MAIN STREET & MONROE STREET/HANFORD PLACE

South Main Street & Monroe Street/Hanford Place is a four-way signalized intersection with video detection on all approaches.

South Main Street is classified as a Minor Arterial and has a speed limit of 30 mph north of the intersection and a speed limit of 25 mph south of the intersection. The northbound approach has one shared left-through-right lane.

The southbound approach has one shared left-through lane, and one dedicated right turn lane with a storage of approximately 95 feet. North of the intersection, parking is allowed on the eastside of South Main Street at approximately 75 feet from the intersection. South of the intersection, parking is allowed on both sides of South Main Street at approximately 30 feet from the intersection.

Monroe Street, the western leg of the intersection, consists of one dedicated left turn lane and one shared through-right turn lane. It provides a bike lane for both the eastbound and westbound direction. It is classified as a Major Collector with a speed limit of 30 mph.

Hanford Place, the eastern leg of the intersection, consists of one shared left-through-right lane. It is classified as a Minor Arterial with a speed limit of 30 mph.

The intersection provides sidewalks on every side of the intersection as well as crosswalks on all approaches. Pedestrian signals are provided across every approach to the intersection.

There are two (2) mid-block crosswalks along Monroe Street between Martin Luther King Jr. Drive and South Main Street. One is located approximately 260 feet west of the South Main Street & Monroe Street/Hanford Place intersection and the other one is approximately 650 feet west of the intersection. Both midblock crosswalks provide rapid rectangular flashing beacons to increase motorist awareness of pedestrians in the crosswalks. The additional crosswalks serve pedestrian traffic to and from the South Norwalk Train Station

Figure 6 shows an aerial image of the intersection.

Figure 6: South Main Street & Monroe St Aerial Image

2.2.3 SOUTH MAIN STREET & HENRY STREET

South Main Street & Henry Street is a signalized T-intersection with no detection.

South Main Street is classified as a Minor Arterial and has a speed limit of 25 mph. The northbound approach has one shared left-through lane. The southbound approach has one shared through-right lane. Parking is not allowed on

either side of South Main Street north of the intersection between Henry Street and Raymond Street. South of the intersection, parking is allowed on both sides of South Main Street.

Henry Street is a westbound one-way road and consists of a 24-foot wide lane with parking allowed on both sides, except during school hours. It is classified as a Minor Arterial and has a speed limit of 25 mph.

The intersection provides sidewalks on all sides of the intersection and provides signalized crosswalks across Henry Street and across the southbound approach of South Main Street.

Although not part of the intersection, Raymond Street is located approximately 100 feet north of the intersection. Raymond Street is an eastbound one-way road.

Figure 7 shows an aerial image of the intersection.

Figure 7: South Main Street & Henry Street Aerial Image

2.2.4 SOUTH MAIN STREET & WOODWARD AVENUE/CONCORD STREET

South Main Street & Woodward Avenue/Concord Place is a five-legged signalized intersection with video detection on all approaches.

South Main Street is classified as a Minor Arterial and has a speed limit of 25 mph. The northbound approach has one shared left-through lane. The southbound approach has one shared through-right lane. North of the intersection, parking is allowed on both sides of South Main Street, however, for the southbound direction is it only allowed at approximately 65 feet from the stop bar. South of the intersection, parking is allowed only on the west side of South Main Street.

Concord Place, the western leg of the intersection, consists of one shared through-right lane and one dedicated left turn lane with a storage of approximately 50 feet. The eastern leg of the intersection consists of one shared left-through-right lane. West of the intersection, parking is allowed only on the north side of Concord Place. East of the intersection, parking is not allowed. It is classified as a Minor Arterial with a speed limit of 25 mph.

Woodward Avenue consists of a shared left-through-right lane. It is classified as a Minor Arterial with a speed limit of 25 mph. Parking is only allowed on the east side of the road.

The intersection provides sidewalks on all sides of the intersection and provides signalized crosswalks across all approaches.

Figure 8 shows an aerial image of the intersection.

Figure 8: South Main St & Woodward Ave/Concord St Aerial Image

2.2.5 WOODWARD AVENUE & GROVE STREET

Woodward Avenue & Grove Street is a one-way, stop-controlled T-intersection.

Woodward Avenue is classified as a Minor Arterial with a has speed limit of 25 mph. The northbound approach has one shared left-through lane and the southbound has one shared through-right lane. Woodward Avenue is free flow. Parking is allowed on the east side of Woodward Avenue.

Grove Street is stop controlled and consists of one shared left-right lane. It is classified as a Minor Arterial with a speed limit of 25 mph. Parking is allowed on the south side of the road.

The intersection provides sidewalks on all directions and there is an unmarked crosswalk on Grove Street.

Route 136 (Burritt Avenue) is located approximately 50 feet south of the intersection.

Figure 9 shows an aerial image of the intersection.

Figure 9: Woodward Ave & Grove St Aerial Image

2.2.6 WOODWARD AVENUE & ROUTE 136 (BURRITT AVENUE)

Woodward Avenue & Burritt Avenue is a one-way, stop-controlled T-intersection.

Woodward Avenue is classified as a Minor Arterial and has speed limit of 25 mph. The northbound approach (Route 136) has one shared through-right lane and the southbound has one shared left-through lane. Woodward Avenue is free flow. Parking is allowed on the west side of Woodward Avenue.

Route 136 (Burritt Avenue) is stop controlled and consists of one shared left-right lane. It is classified as a Minor Arterial with a speed limit of 25 mph. Parking is not allowed on this road.

The intersection provides sidewalks on all directions and there is an unmarked crosswalk on Route 136 (Burritt Avenue).

Figure 10 shows an aerial image of the intersection.

Figure 10: Woodward Ave & Route 136 (Burritt Ave) Aerial Image

2.2.7 WOODWARD AVENUE & ROUTE 136 (MEADOWS STREET)

Woodward Avenue & Route 136 (Meadows Street) is an all-way stop-controlled T-intersection.

Woodward Avenue is classified as a Minor Arterial with a speed limit of 25 mph. The northbound approach has one shared left-through lane and the southbound has one shared through-right lane. Parking is allowed on the west side of Woodward Avenue.

Route 136 (Meadows Street) consists of one shared left-right lane. It is classified as a Minor Arterial with a speed limit of 30 mph. Parking is allowed only on the north side of the road. Trucks coming from Route 136 (Meadows Street) making the right turn onto southbound Woodward Avenue will have difficulty given the acute angle of the intersection and the small radius. This intersection is on Truck Route B for oversized trucks.

The intersection provides sidewalks for all directions and there is a crosswalk across Route 136 (Meadows Street).

Figure 11 shows an aerial image of the intersection.

Figure 11: Woodward Ave & Route 136 (Meadows St) Aerial Image

2.3 Land Use

Land use provides an important role in defining the character of a community and directly impacts how well a transportation corridor functions. Land use decisions directly impact the transportation system generating vehicle trips that would lead to traffic congestion and roadway capacity improvements. The current land use around the study area is shown on Figure 12. The Woodward Avenue area is mainly residential passing through Industrial and Restricted Industrial zones. There is an active industrial area on Route 136 (Meadow Street). These industrial zones currently bring truck volume to the area. The blue line shown on Figure 12 is the location of Woodward Avenue.

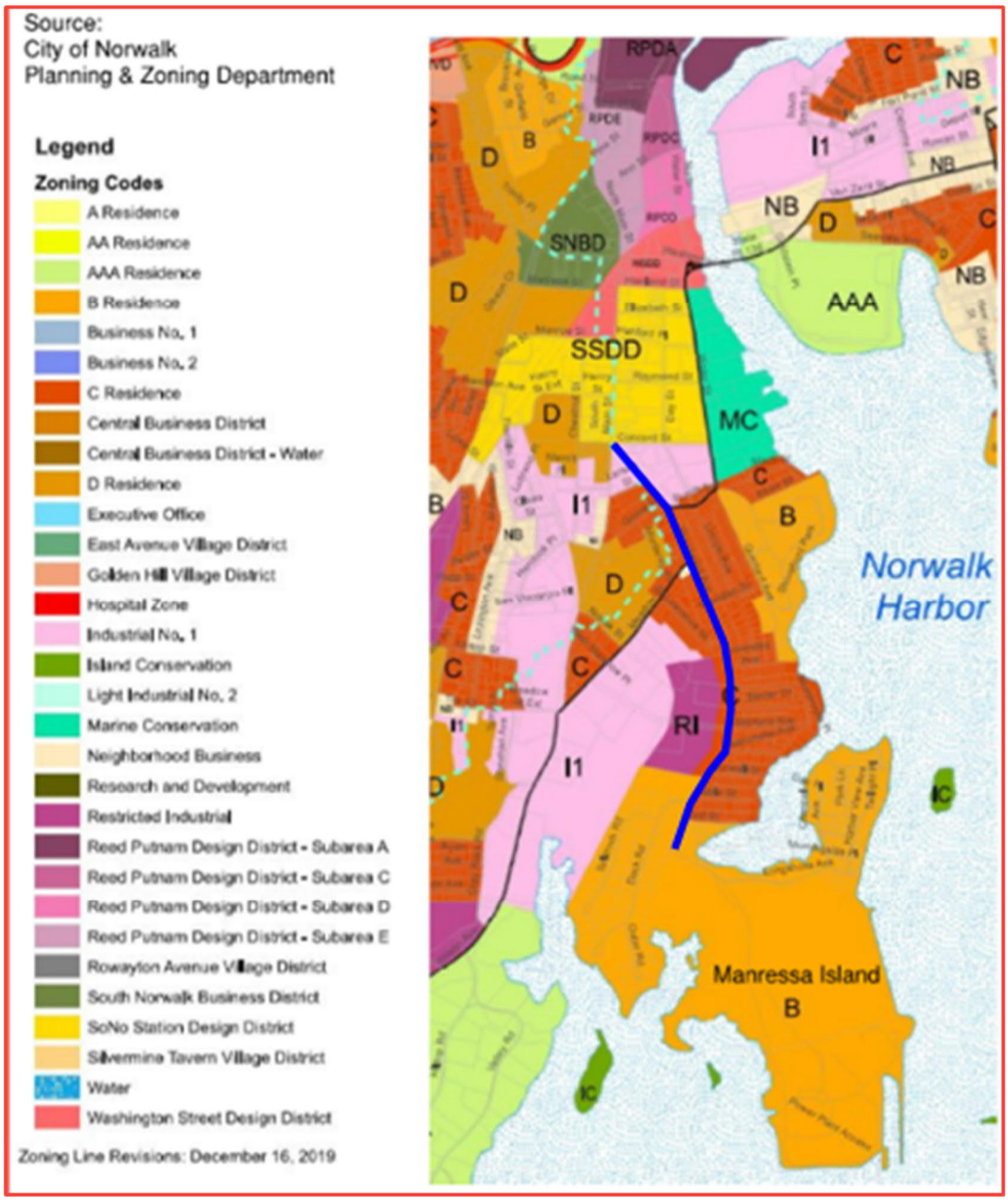


Figure 12: Land Use

2.4 Multimodal Use

Multimodal transportation combines the use of multiple modes of transportation including bus, bicycles, and pedestrians.

2.4.1 PEDESTRIAN

Currently, there are pedestrian accommodations and crosswalks at these key intersections in the study area:

- Martin Luther King Jr. Drive & Monroe Street
- South Main Street & Monroe Street/Hanford Place

- South Main Street & Henry Street
- South Main Street & Concord Street/Woodward Avenue
- Woodward Avenue & Grove Street
- Woodward Avenue & Route 136 (Burritt Avenue)
- Woodward Avenue & Route 136(Meadows Street)

ADA (Americans With Disability Act) wheelchair ramps with tactile warning strips are available at each intersection, except for Woodward Avenue & Grove Street intersection.

Pedestrian signalization and phasing are incorporated in the signal timing at these intersections:

- Martin Luther King Jr. Drive & Monroe Street
- South Main Street & Monroe Street/Hanford Place
- South Main Street & Henry Street
- South Main Street & Concord Street/Woodward Avenue

Sidewalks are provided at every intersection. Currently, Woodward Avenue has a mix of sidewalk facilities, concrete and bituminous concrete with varying quality. There are areas where sidewalk is only on one side of the road. It should be noted that recently the City's Public Works Committee approved an approximate $275,000 contract that will improve curbs and sidewalk primarily along Woodward Avenue. Construction has begun on this contract.

2.4.2 BIKE

In terms of bicycles, bike lanes are provided along Monroe Street, for both the eastbound and westbound direction. The City's Bike Plan proposes a future bike lane on Martin Luther King Jr. Drive. The City also proposes shared lane markings ("sharrows") on South Main Street and Woodward Avenue. Figure 13 shows the existing and proposed bicycle facilities in the study area.

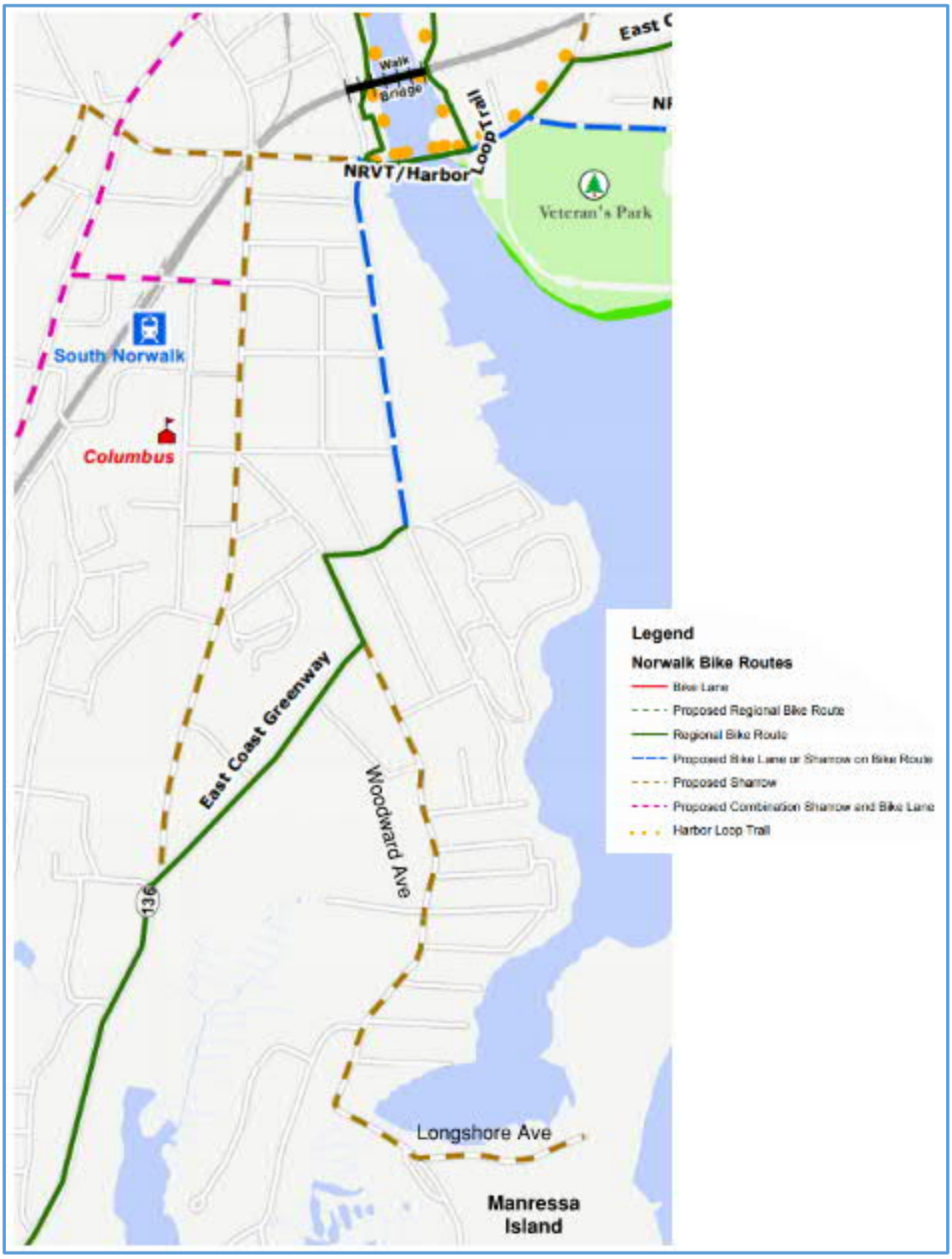


Figure 13: Bicycle Facilities

2.4.3 COMMUTER RAIL

The South Norwalk Train Station and its parking garage are located within the study area. The parking garage exit intersects with Monroe Street approximately 400 feet east of Martin Luther King Jr. Drive & Monroe Street

intersection. The garage has a capacity of 709 vehicles and on a typical weekday in 2018 was at 80% capacity. The South Norwalk Train Station carries approximately 125,000 riders each year.

2.4.4 TRANSIT

The Norwalk Transit District has the following bus routes and shuttles services within the study area:

- WHEELS Route 9 (Monroe Street, Hanford Place, South Main Street, Woodward Avenue)
- WHEELS Route 10 (Monroe Street, South Main Street)
- WHEELS Route 11 (Monroe Street, South Main Street)
- Connecticut Avenue Shuttle (South Main Street)
- Connecticut Avenue Shuttle Sunday (South Main Street)
- Main Avenue Shuttle [Route 136 (Burritt Avenue), Woodward Avenue]
- Main Avenue Shuttle Sunday [Route 136 (Burritt Avenue), Woodward Avenue]

Buses running on these routes operate on weekdays from 5:55 a.m. to 8:15 p.m. and on Saturdays from 5:55 a.m. to 7:35 p.m. There is no Sunday service for the regular bus routes. Connecticut Avenue Shuttle and the Main Avenue Shuttle operate weekday evenings, Saturday evenings and all day on Sunday. The bus schedules are shown in Table 2.1.

Figure 14 shows the bus routes within the study area.

	Destinations	Days of Operation	Schedule	Frequency
WHEELS Route 9	• WHEELS Hub • Norwalk Hospital • Cedar Street • Monroe Street • Burritt Avenue & Woodward Avenue	Monday - Friday	5:55 a.m. – 7:15 p.m.	20 minutes
		Saturday	5:55 a.m. – 6:55 p.m.	40 minutes
WHEELS Route 10	• WHEELS Hub • South Norwalk Metro-North • Roodner Court • Washington Street & Main Street • YMCA	Monday - Friday	5:51 a.m. – 7:35 p.m.	20 minutes
		Saturday	6:31 a.m. – 6:55 p.m.	40 minutes
WHEELS Route 11	• WHEELS Hub • South Norwalk Metro-North • Scribner Avenue & Connecticut Avenue • Norwalk Community College	Monday - Friday	5:40 a.m. – 8:15 p.m.	40 minutes
		Saturday	6:17 a.m. – 7:35 p.m.	40 minutes
Connecticut Avenue Shuttle	• WHEELS Hub • Maple & Van Buren • Darinor Shopping Plaza • Norwalk Community College • Connecticut Avenue & Stuart • Mathew's Park • South Norwalk Metro–North • Roodner Court • Wilson Avenue	Weekdays Evening	7:20 p.m. to 10:32 p.m.	60 minutes
		Saturday Evening	6:37 p.m. to 9:32 p.m.	60 minutes
		Sunday	8:40 a.m. to 7:25 p.m.	80 minutes
Main Avenue Shuttle	• WHEELS Hub • Stop & Shop • Merritt 7 • Wal-Mart • Washington Street & Main Street • Burritt Avenue & Water Street • Dock	Weekdays Evening	7:20 p.m. to 10:32 p.m.	60 minutes
		Saturday Evening	6:32 p.m. to 9:32 p.m.	60 minutes
		Sunday	8:40 a.m. to 7:16 p.m.	80 minutes

Table 2.1: Norwalk Transit District Bus Schedules

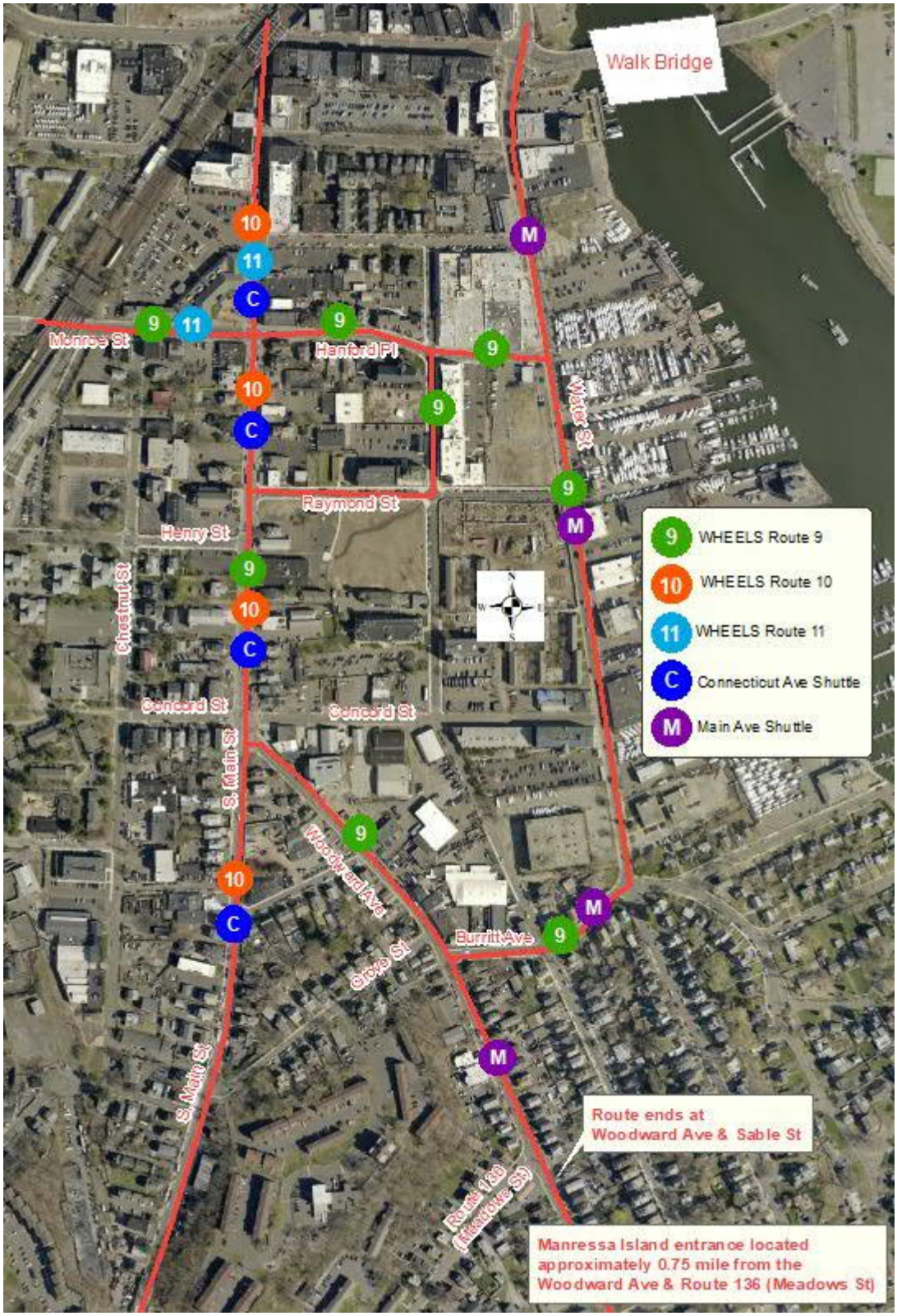


Figure 14: Norwalk Transit District Bus Routes

3 Analysis Methodology

3.1 Traffic Operational Analysis Methodology

The traffic operations for each intersection were analyzed based on the methodologies outlined in the Highway Capacity Manual (HCM).

The level of service (LOS) is a calculation of control delay for an intersection. It is a qualitative measure of the effect of several factors including roadway geometry, speed, travel delay, freedom to maneuver, and safety. LOS is defined by an index from A through F, with A being the best and F being the worst. The HCM lists the following definitions for each grade:

- A = Free Flow
- B = Reasonably free flow
- C = Stable flow
- D = Approaching unstable flow
- E = Unstable flow
- F = Forced flow, volume is greater than capacity

Four (4) of the intersections are signalized, while three (3) of the intersections are stop-controlled (one being all-way). The LOS for a signalized intersection is defined in terms of a weighted average control delay for the entire intersection. The LOS for all-way stop-controlled (AWSC) intersections is expressed in terms of the average delay of all movements, much like that of a signalized intersection. The LOS for the two-way stop-controlled (TWSC) is defined in terms of the average control delay for each minor-street movement (or shared movement) as well as major-street left-turns. This approach is because major street through vehicles are assumed to experience zero delay, a weighted average of all movements results in very low overall average delay, and this calculated low delay could mask deficiencies of minor movements (Source: HCM 2010).

Capacity is a measurement of the ability of an intersection design to accommodate all movements within the intersection. Delay is the measure of the user quality of service.

The LOS assignments for signalized intersections as compared to delay values are shown in Table 3.1.

Level of Service	Average Delay (seconds)
A	≤ 10
B	> 10 and ≤ 20
C	> 20 and ≤ 35
D	> 35 and ≤ 55
E	> 55 and ≤ 80
F	> 80

Table 3.1: Signalized Intersection Level of Service Criteria

The LOS assignments for both TWSC and AWSC intersections as compared to delay values are shown in Table 3.2.

Level of Service	Average Delay (seconds)
A	≤ 10
B	> 10 and ≤ 15
C	> 15 and ≤ 25
D	> 25 and ≤ 35
E	> 35 and ≤ 50
F	> 50

Table 3.2: TWSC & AWSC Intersection Level of Service Criteria

Trafficware's Synchro 10/SimTraffic software was used to perform the traffic analysis. Synchro/SimTraffic implements the methods outlined in the Highway Capacity Manual (HCM) and provides delay/vehicle and queue length results.

Below are some pertinent assumptions that were used for the capacity analyses. Other inputs not described below were kept at their default values:

- Lane widths and storage bay lengths are based on pavement markings per traffic signal plans and verified on field conditions
- Grades were assumed to be level
- Right turn on red (RTOR) was assumed based on traffic signal plans and verified based on field conditions
- Signal timings were taken from signal timing plans obtained from CTDOT and the City of Norwalk
- Peak hour factors and heavy vehicles percentages were derived from traffic count data
- Pedestrian and bicycle calls per hour were assumed based on pedestrian activity at each intersection and field observations of pedestrian push button usage

In addition to level of service analyses, queue lengths were reviewed to determine adequacy of the vehicle storage at each intersection. The 95th percentile queue length was used in determining the queuing of traffic at study area intersection approaches. The 95th percentile queue is not typical of what an average driver would experience but represents the queue length where there is only a 5 percent probability of the queue length being exceeded during a peak hour.

3.2 Safety Analysis Methodology

Crash analyses were performed for all study area intersections. Crash data was downloaded from the University of Connecticut's (UConn) Crash Data Repository. UConn publishes crash data from CTDOT, which complies with the newly adopted standard in Connecticut, the MMUCC or the "Model Minimum Uniform Crash Criteria" Standard. For the purposes of this traffic study, the MMUCC data was obtained and analyzed for the latest available three-year period.

4 Traffic Operational Analysis

4.1 Traffic Data Collection

WSP coordinated with CTDOT and the City of Norwalk to obtain the latest available traffic data (pre-COVID-19 conditions), which included traffic count data, and traffic signal plans.

The following sources of data were used to develop base year traffic volumes for both the Martin Luther King Jr. Drive & Monroe Street intersection and the South Main Street & Monroe Street intersection:

Traffic Engineering Technical Memo (TETM)

The following sources of data were used to obtain the turning movement counts for both the South Main Street & Henry Street intersection and the South Main Street & Woodward Avenue/Concord Street intersection.

Traffic Signal Timing Plans

The following sources of data were used to develop base year traffic volumes for the rest of the intersections:

CTDOT ArcGIS Traffic Monitoring Station Viewer (2017)

Table 4.1 summarizes the sources and year of the collected traffic data.

Intersection	Source	Year
Martin Luther King Jr Dr. & Monroe Street	TETM	2017
South Main Street & Monroe Street/Hanford Place	TETM	2017
South Main Street & Henry Street	Traffic Signal Timing Plans	2012
South Main Street & Woodward Ave/Concord St	Traffic Signal Timing Plans	2012
Woodward Avenue & Grove Street	CTDOT ArcGIS Traffic Monitoring Station Viewer	2017
Woodward Avenue & Route 136 (Burritt Avenue)	CTDOT ArcGIS Traffic Monitoring Station Viewer	2017
Woodward Avenue & Route 136 (Meadows Street)	CTDOT ArcGIS Traffic Monitoring Station Viewer	2017

Table 4.1: Traffic Data Sources

Raw traffic data is provided in Appendix J. Bicycle and pedestrian data was also collected in addition to vehicular traffic data at certain locations.

4.2 Traffic Volumes

4.2.1 TRAFFIC VOLUMES

The peak hour periods, typical of commuter, commercial and retail developments, in the Walk Bridge study area are:

AM Peak 7:00 – 9:00; Midday Peak 11:00 – 1:00; PM Peak 4:00 – 6:00; SAT Midday 11:00 – 1:00

However, the traffic generated by Manresa Island is expected to occur within the AM Peak and PM Peak period when contractors are expected to come in (AM) and come out (PM). Therefore, the AM peak and PM Peak periods were analyzed in this study. Truck deliveries will occur throughout the day. For this study, they were assumed to come and go during the AM and Pm Peak periods as described below in Section 4.2.2.

The turning movement counts (TMC) for these three intersections were not available:

- Woodward Avenue & Grove Street
- Woodward Avenue & Route 136 (Burritt Avenue)
- Route 136 (Woodward Avenue) & Route 136 (Meadows Street)

The most recent Average Daily Traffic (ADT) for Woodward Avenue, Burritt Avenue, and Route 136 (Meadows Street) were used to develop the TMC. From the ADT for each of these roads, the turning movement volumes were proportionally calculated based on the ADT from each of the approaches at a given intersection. Once the TMC were calculated for each of the intersections, the volumes were balanced between the South Main Street & Woodward Avenue/Concord Street intersection and the Woodward Avenue & Grove Street intersection. This way, the traffic entering and exiting the Woodward Avenue & Grove Street intersection matches the volume entering and exiting the South Main Street & Woodward Avenue/Concord Street intersection taken from the available TMC at this intersection.

Given that the construction is expected to last 60 months, a growth factor was applied for each of the TMC to grow the volume to 2024 conditions. The growth factor was calculated from the available historical ADT counts in the area. Table 4.2 shows the calculated growth factor.

Location	2011 ADT	2017 ADT	Growth Rate
Martin Luther King Jr. Drive	13,000	13,700	0.88%
Monroe Street	5,800	7,000	3.18%
South Main Street	8,900	9,300	0.74%
Woodward Avenue (north of Grove Street)	5,000	4,200	-2.86%
Route 136 (Woodward Avenue, south of Burritt Avenue)	8,000	9,800	3.44%
Route 136 (Burritt Avenue)	5,400	6,600	3.40%
Route 136 (Meadows Street)	6,100	6,100	0.00%
Average Growth Rate			1.25%

Table 4.2: Average Growth Factor

The 2024 traffic volumes for each intersection are shown in Appendix A.

4.2.2 MANRESA ISLAND TRIP GENERATION

The trips generated by Manresa Island will consist of:

1. Trucks trips carrying materials and equipment, and
2. Vehicle trips

The expected trips generated by Manresa Island are presented in the following subsections.

TRUCK TRIPS

There are two scenarios regarding truck trips, a short-term and long-term. The short-term scenario involves the installation of the stone storage pad and will last two weeks at the beginning of the construction and two weeks at the end of the construction. The long-term scenario involves the construction activities and is expected to last 48 months.

Short-Term

For the installation of the stone storage pad, a total of 125-140 dump truck trips are expected at the beginning of the job over a two-week period to lay the stone. Then over a two-week period, there will be 125-140 dump truck trips at the end of the job to remove the stone. This translates to a maximum of 14 truck roundtrips per day (14 trucks in and 14 trucks out). These dump trucks will be using the Truck Route A (under 13'-9"). During the 8-hour work period, this translated to approximately 2 truck trips per hour.

Long-Term

During construction activities, the expected truck trips to Manresa Island will be composed of 480 tractor trailer loads and 480 straight delivery trucks for a total of 960 truck trips over 48 months. Deliveries will be during the day. Night and weekend deliveries will be very rare. The approximate load counts are:

Lift span, 180

Lift tower, 190

Crane mats, pipe piling, sheet piling, 280

Mechanical/operating equipment, 60

Erection/yard materials, 120

Rebar, 60

Precast structural components, 70

The 960 truck trips over 48 months translate to about 5 truck roundtrips per week (5 trucks in and 5 trucks out). However, it is estimated that there will be a maximum of 3 truck roundtrips in any single day (3 trucks in and 3 trucks out). Out of these 3 truck roundtrips, it is assumed that 2 will be using Truck Route A (under 13'-9") and 1 will be using Truck Route B (over 13'-9"). For the purpose of the traffic analysis, it will be assumed that the trips will be done during the peak hours.

VEHICLE TRIPS

Vehicle trips will consist of employees destined to Manresa Island. During construction activities, it is estimated a total of 20 personal vehicles per day (20 vehicles in and 20 vehicles out). These are composed of:

Span erection crew, 12-14 personnel

Yard crew, 4-6 personnel

CTDOT crew, 2 personnel

TRIP GENERATION SUMMARY

Although the short-term activities will have more truck trips per week than the long-term activities, it is expected that the vehicle trips will not be as high. However, for analysis purposes, the long-term activities will be analyzed using the 3 trucks trips during the peak hours, which will be one truck higher than the short-term activities which

carries an average of 2 truck trips per hour. Therefore, the long-term activities are analyzed as the worst-case scenario.

For traffic analysis purposes, the trips going in are assumed to be in the AM Peak, while the trips going out are assumed to be in the PM Peak. Table 4.3 summarized the Manresa Island trip generation.

	AM Peak		PM Peak	
	In	Out	In	Out
Truck Trips	3	0	0	3
Vehicle Trips	20	0	0	20

Table 4.3: Manresa Island Daily Trip Generation

4.2.3 MANRESA ISLAND TRIP DISTRIBUTION

The trips generated by Manresa Island construction activities will be distributed based on the truck sizes, and the origin and destination of the Manresa Island personnel.

TRUCK TRIPS

The truck trips will be distributed according to their sizes and will use these two routes:

- Truck Route A – for trucks under 13'-9" height (Figure 2 and Appendix B)
- Truck Route B – for trucks over 13'-9" height (Figure 3 and Appendix C)

Out of the 3 truck trips, 2 trucks will use Truck Route A, and 1 truck will use Truck Route B.

Appendix D shows the additional truck volume at the each of the critical intersections.

VEHICLE TRIPS

There is a total of 20 vehicle trips per day generated by Manresa Island construction activities. It is assumed that 10 vehicle trips will be coming from northbound I-95, while the other 10 vehicle trips will be coming from southbound I-95.

For vehicles traveling northbound I-95, the shortest route would be I-95 Exit 14, Fairfield Avenue, Washington Street, South Main Street, Woodward Avenue, and Longshore Avenue as shown in Figure 15 and Appendix E.

For vehicles traveling southbound I-95, the I-95 Exit 16, East Avenue, Van Zant Street, Route 136 (Washington Street), Route 136 (Water Street), Route 136 (Burritt Avenue), Route 136 (Woodward Avenue), and Longshore Avenue as shown in Figure 16 and Appendix F.

Appendix G shows the additional vehicle volume at each of the critical intersections based on the trip distribution.

Figure 15: Vehicle Route – Northbound I-95 Vehicles

Figure 16: Vehicle Route – Southbound I-95 Vehicles

4.2.4 MANRESA ISLAND TRAFFIC VOLUMES

The additional Manresa Island traffic volumes for each of the critical intersections were added to the existing traffic volumes for both the AM peak and the PM peak. The resulted traffic volumes are shown in Appendix H.

4.3 Traffic Modeling & Analysis

Synchro 10 models were developed for the weekday AM peak hour, and PM peak hour. In addition to traffic volumes, other traffic data such as peak hour factors, heavy vehicle percentages and existing signal timings were compiled and inputted into the models. The Synchro network volumes were balanced as necessary to achieve a more realistic model. Site visits were performed to support the development of the traffic model. Google Earth satellite data was also utilized to gather additional site-specific information.

The results of the traffic operations for each of the critical intersections are shown in the following tables. The tables compare the existing conditions without the Manresa Island traffic and the existing conditions with the Manresa Island traffic. The operational results are also shown in Appendix I. The Synchro outputs are shown in Appendix K.

Table 4.4: Synchro Analysis Results – Martin Luther King Jr. Drive & Monroe St

Table 4.5: Synchro Analysis Results – South Main Street & Monroe St/Hanford Pl

Table 4.6: Synchro Analysis Results – South Main Street & Henry St

Table 4.7: Synchro Analysis Results – South Main Street & Woodward Ave/Concord St

Table 4.8: Synchro Analysis Results – Woodward Avenue & Grove St

Table 4.9: Synchro Analysis Results – Woodward Avenue & Route 136 (Burritt Ave

Table 4.10: Synchro Analysis Results – Woodward Avenue & Route 136 (Meadows Street)

Table 4.11 shows the overall intersection delays and LOS for each critical intersection.

Movement		2024 Conditions						2024 Conditions + Manresa Island Traffic					
Approach	Lane Group	Weekday AM Peak			Weekday PM Peak			Weekday AM Peak			Weekday PM Peak		
		Delay[1]	LOS	95th Queue[2]	Delay[1]	LOS	95th Queue[2]	Delay[1]	LOS	95th Queue[2]	Delay[1]	LOS	95th Queue[2]
Northbound MLK Jr. Dr	TR	15.2	B	195	14.6	B	220	15.2	B	195	14.6	B	221
Southbound MLK Jr. Dr.	L	7.9	A	95	6.3	A	91	7.9	A	96	6.3	A	91
	T	7.8	A	225	4.5	A	98	7.8	A	225	4.5	A	98
Westbound Monroe St	L	47.3	D	116	48.1	D	91	47.4	D	116	48.3	D	89
	R	25.7	C	112	25.9	C	128	25.7	C	113	26.6	C	128

1 Delay is reported in seconds per vehicle.

2 95th Queue Delay is reported in feet.

Table 4.4: Synchro Analysis Results – Martin Luther King Jr. Drive & Monroe Street

Movement		2024 Conditions						2024 Conditions + Manresa Island Traffic					
Approach	Lane Group	Weekday AM Peak			Weekday PM Peak			Weekday AM Peak			Weekday PM Peak		
		Delay[1]	LOS	95th Queue[2]	Delay[1]	LOS	95th Queue[2]	Delay[1]	LOS	95th Queue[2]	Delay[1]	LOS	95th Queue[2]
Northbound S. Main St	LTR	27.8	C	353	27.4	C	257	27.6	C	352	26.4	C	260
Southbound S. Main St	LT	19.2	B	145	19.9	B	184	19.3	B	168	19.0	B	184
	R	3.7	A	< 25	4.1	A	< 25	3.7	A	< 25	4.0	A	< 25
Eastbound Monroe St	L	17.9	B	63	18.8	B	68	18.0	B	64	19.6	B	68
	TR	15.2	B	81	18.4	B	142	15.4	B	82	19.3	B	142
Westbound Hanford Pl	LTR	24.3	C	167	22.8	C	96	24.4	C	167	23.6	C	96

1 Delay is reported in seconds per vehicle.

2 95th Queue Delay is reported in feet.

Table 4.5: Synchro Analysis Results – South Main Street & Monroe St/Hanford Place

Movement		2024 Conditions						2024 Conditions + Manresa Island Traffic					
Approach	Lane Group	Weekday AM Peak			Weekday PM Peak			Weekday AM Peak			Weekday PM Peak		
		Delay[1]	LOS	95th Queue[2]	Delay[1]	LOS	95th Queue[2]	Delay[1]	LOS	95th Queue[2]	Delay[1]	LOS	95th Queue[2]
Northbound S. Main St	LT	0.6	A	< 25	1.1	A	< 25	0.6	A	< 25	1.1	A	< 25
Southbound S. Main St	TR	0.3	A	< 25	0.3	A	< 25	0.3	A	< 25	0.3	A	< 25

1 Delay is reported in seconds per vehicle.

2 95th Queue Delay is reported in feet.

Table 4.6: Synchro Analysis Results – South Main Street & Henry Street

Movement		2024 Conditions						2024 Conditions + Manresa Island Traffic					
Approach	Lane Group	Weekday AM Peak			Weekday PM Peak			Weekday AM Peak			Weekday PM Peak		
		Delay[1]	LOS	95th Queue[2]	Delay[1]	LOS	95th Queue[2]	Delay[1]	LOS	95th Queue[2]	Delay[1]	LOS	95th Queue[2]
Northbound S. Main St	LTR	13.7	B	184	11.9	B	125	13.7	B	184	12.3	B	128
Southbound S. Main St	LTR	24.7	C	317	11.0	B	138	26.0	C	339	11.5	B	138
Eastbound Concord St	L	40.2	D	58	41.8	D	38	40.2	D	58	41.8	D	38
	TR	34.1	C	59	39.8	D	65	34.1	C	59	39.8	D	65
Westbound Concord St	LTR	2.1	A	<25	7.8	A	26	2.1	A	< 25	7.8	A	< 25
Northwest-bound Woodward Ave	LTR	27.2	C	144	27.9	C	152	27.2	C	144	28.7	C	161

1 Delay is reported in seconds per vehicle.

2 95th Queue Delay is reported in feet.

Table 4.7: Synchro Analysis Results – South Main Street & Woodward Ave/Concord Street

Movement		2024 Conditions						2024 Conditions + Manresa Island Traffic					
Approach	Lane Group	Weekday AM Peak			Weekday PM Peak			Weekday AM Peak			Weekday PM Peak		
		Delay[1]	LOS	95th Queue[2]	Delay[1]	LOS	95th Queue[2]	Delay[1]	LOS	95th Queue[2]	Delay[1]	LOS	95th Queue[2]
Northbound Woodward Ave	LTR	1.4	A	< 25	1.2	A	< 25	1.4	A	< 25	1.2	A	< 25
Southbound Woodward Ave	LTR	0.0	A	< 25	0.0	A	< 25	0.0	A	< 25	0.0	A	< 25
Eastbound Grove St	LTR	10.4	B	< 25	10.8	B	< 25	10.5	B	< 25	10.9	B	< 25

1 Delay is reported in seconds per vehicle.

2 95th Queue Delay is reported in feet.

Table 4.8: Synchro Analysis Results – Woodward Avenue & Grove Street (One-Way Stop Controlled)

Movement		2024 Conditions						2024 Conditions + Manresa Island Traffic					
Approach	Lane Group	Weekday AM Peak			Weekday PM Peak			Weekday AM Peak			Weekday PM Peak		
		Delay[1]	LOS	95th Queue[2]	Delay[1]	LOS	95th Queue[2]	Delay[1]	LOS	95th Queue[2]	Delay[1]	LOS	95th Queue[2]
Northbound Woodward Ave	LTR	0.0	A	< 25	0.0	A	< 25	0.0	A	< 25	0.0	A	< 25
Southbound Woodward Ave	LTR	5.3	A	< 25	4.6	A	< 25	5.1	A	< 25	4.7	A	< 25
Westbound Burritt Ave	LTR	124.0	F	444	100.5	F	370	142.4	F	486	111.1	F	389

1 Delay is reported in seconds per vehicle.

2 95th Queue Delay is reported in feet.

Table 4.9: Synchro Analysis Results – Woodward Avenue & Route 136 (Burritt Avenue)

(One-Way Stop Controlled)

Movement		2024 Conditions						2024 Conditions + Manresa Island Traffic					
Approach	Lane Group	Weekday AM Peak			Weekday PM Peak			Weekday AM Peak			Weekday PM Peak		
		Delay[1]	LOS	95th Queue[2]	Delay[1]	LOS	95th Queue[2]	Delay[1]	LOS	95th Queue[2]	Delay[1]	LOS	95th Queue[2]
Northbound Woodward Ave	LTR	15.1	C	70	14.2	B	60	15.3	C	70	15.2	C	70
Southbound Woodward Ave	LTR	22.5	C	145	18.3	C	125	20.1	C	140	18.8	C	128
Eastbound Route 136 (Meadows St)	LTR	18.2	C	120	20.7	C	130	23.2	C	150	21.3	C	135

1 Delay is reported in seconds per vehicle.

2 95th Queue Delay is reported in feet.

Table 4.10: Synchro Analysis Results – Woodward Avenue & Route 136 (Meadows Street)

(All-Way Stop Controlled)

Intersection	2024 Conditions				2024 Conditions + Manresa Island Traffic			
	Weekday AM Peak		Weekday PM Peak		Weekday AM Peak		Weekday PM Peak	
	Delay[1]	LOS	Delay[1]	LOS	Delay[1]	LOS	Delay[1]	LOS
MLK Jr. Dr & Monroe St	15.5	B	14.2	B	15.5	B	14.3	B
S. Main St & Monroe St	21.5	C	21.7	C	21.5	C	21.5	C
S. Main St & Henry St	0.4	A	0.8	A	0.4	A	0.8	A
S. Main St & Woodward Ave/Concord St	22.2	C	17.7	B	22.6	C	18.4	B
Woodward Ave & Grove St	1.8	A	1.7	A	1.7	A	1.6	A
Woodward Ave & Burritt Ave	47.4	E	36.7	E	54.6	F	39.7	E
Woodward Ave & Route 136 (Meadows St)	19.0	C	18.2	C	20.0	C	18.8	C

Table 4.11: Synchro Analysis Results – Overall Intersection Operations

Except for one location, the overall operational conditions for each intersection are acceptable for both the 2024 conditions and the 2024 conditions with the additional Manresa Island traffic. The intersection with the longest delays is Woodward Avenue & Route 136 (Burritt Avenue) with a LOS F during the AM Peak with the additional Manresa Island traffic. The Route 136 (Burritt Avenue) westbound approach at this intersection currently fails with a LOS F as shown in Table 4.9.

The Route 136 (Burritt Avenue) westbound approach is stop-controlled and carry between 350 to 400 vehicles per hour in the peak hours, while Woodward Avenue is free flow. It is expected that there will be an additional 10 vehicles in the AM peak for the employees heading to Manresa Island. These additional vehicles translate to an increase of 14% in delay and a 10% increase in the 95th queue length. Although there is an increase in delay and queue length, the increases are not significant. Therefore, it is expected that the additional Manresa Island traffic will not significantly affect the existing intersection operations.

5 Safety Analysis

5.1 Crash Summaries

A crash analysis was performed for six (6) intersection within the study area. Crash data was collected for the most recent three-year period (January 1, 2016-December 31, 2018) from the UConn's Crash Data Repository using the MMUCC dataset. Data from 2019 was initially evaluated but the crashes seemed to be significantly lower than the other years, therefore, 2019 was not considered in the analysis. For the purpose of the crash analysis, both the Woodward Avenue & Grove Street intersection and the Woodward Avenue & Route 136 (Burritt Avenue) intersection were considered as one intersection due to their proximity.

Table 5.1 summarizes the crash data for each study area intersections for the most recent three-year period. In addition to the amount of crashes, summaries by collision type, crash severity are shown in Table 5.2. Roadway pavement condition, and roadway lighting condition are also provided in Table 5.3.

Year	Martin Luther King Jr. Dr & Monroe St	South Main St & Monroe St	South Main St & Henry St	South Main St & Woodward Ave/ Concord St	Woodward Ave & Grove St /Route 136 (Burritt Ave)	Woodward Ave & Route 136 (Meadows St)
Crashes by Intersection						
2016	9	5	2	3	10	3
2017	6	7	7	9	5	3
2018	6	10	4	10	12	8
Total	21	22	13	22	27	14

Table 5.1: Crashes by Intersection - 3-Year Period

Type & Severity	Martin Luther King Jr. Dr & Monroe St	South Main St & Monroe St	South Main St & Henry St	South Main St & Woodward Ave/ Concord St	Woodward Ave & Grove St/Route 136 (Burritt Ave)	Woodward Ave & Route 136 (Meadows St)	Total
Collision Type							
Angle	5	4	2	2	4	1	18
Front to Front	0	0	0	1	2	0	3
Front to Rear	10	10	6	10	5	3	44
Not Applicable	1	1	2	3	2	1	10
Other	2	2	1	2	4	1	12
Unknown	1	1	2	1	1	2	8
Rear to Side	1	0	0	1	1	2	5
Rear to Rear	0	0	0	0	1	1	2
Sideswipe, Opposite Direction	0	1	0	1	0	0	2
Sideswipe, Same Direction	1	3	0	1	7	3	15
Crash Severity							
Property Damage Only (PDO)	16	20	11	14	24	11	96
Possible Injury	1	2	1	4	3	2	13
Suspected Minor Injury	4	0	1	4	0	1	10
Fatality	0	0	0	0	0	0	0

Table 5.2: Crashes by Collision Type & Severity

Type & Severity	Martin Luther King Jr. Dr & Monroe St	South Main St & Monroe St	South Main St & Henry St	South Main St & Woodward Ave/ Concord St	Woodward Ave & Grove St/Route 136 (Burritt Ave)	Woodward Ave & Route 136 (Meadows St)	Total
Road Surface Condition							
Dry	16	20	10	16	17	13	92
Wet	4	2	2	6	5	1	20
Snow	0	0	0	0	1	0	1
Slush	0	0	0	0	0	0	0
Ice / Frost	0	0	0	0	3	0	3
Mud, Dirt, Gravel	0	0	0	0	0	0	0
Other	0	0	0	0	0	0	0
Unknown	1	0	1	0	1	0	3
Light Condition							
Daylight	19	17	12	17	16	8	89
Dawn	0	0	0	0	0	0	0
Dusk	0	0	0	0	0	0	0
Dark-Lighted	2	5	1	4	9	6	27
Other	0	0	0	1	0	0	1
Unknown	0	0	0	0	2	0	2

Table 5.3: Crashes by Road Surface & Light Condition

5.2 Crash Trends & Patterns

A total of 119 crashes occurred within the study area over the three-year analysis period. Approximately eighty-one (81%) percent of crashes were minor and involved property damage only. Rear end crashes represent thirty-six (36%)

percent of all crashes in the area followed by angle crashes. Most crashes occurred under clear weather conditions, during daylight conditions, and on dry roadway surfaces.

Every intersection, except for Martin Luther King Jr Drive & Monroe Street, is experiencing an upward trend in crashes as shown Figure 17.

Figure 17: Crash Trends

The construction of the vertical lift span at Manresa Island is expected to last four (4) years, with a six-day week schedule that would normally run from 8 a.m. to 4 p.m. Although thirty-eight (38%) percent of the crashes occurred during the winter months (December-March), the crashes are evenly distributed throughout the year with a slight increase in those winter months. Many of the crashes occurred in the weekday between Monday and Wednesday, accounting for fifty-eight (58%) percent of the total crashes in the study area. A little over half of the crashes (51%) occurred within the 8 a.m. to 4 p.m. timeframe.

The most crash prone intersection is the Woodward & Grove Street/Route 136 (Burritt Avenue) location with an average of 9 crashes per year. Most of the crashes occurred during the daylight (76%) and involved property damage only (81%). The winter months also accounted for most of the crashes for this intersection with fifty-eight (58%) percent. For this intersection, most of the crashes also occurred in the weekday between Monday and Wednesday, accounting for fifty-eight (58%) percent of the crashes recorded at the intersection. However, for this intersection, the

crashes occurring within the 8 a.m. to 4 p.m. timeframe totaled 15 crashes or forty-five (45%) percent of the total crashes recorded at the intersection.

5.3 Crash Rates

Crash rates describe the number of crashes that occur at a given location during a specified time period divided by a measure of exposure for the same period. For intersections, the measure of exposure is the total number of vehicles entering the intersection for a year, which in this case, it would be the AADT. The intersection crash rates, expressed as Million Entering Vehicles (MEV) is as follow:

$$Crash\ Rate = \frac{1{,}000{,}000 \times C}{365 \times N \times V}$$

Where,

C = Total number of intersection crashes in the study period.

N = Number of years of data.

V = Traffic volumes entering the intersection daily.

The crash rates for each of the intersections are shown in Table 5.4.

Crash Rate	Martin Luther King Jr. Dr & Monroe St	South Main St & Monroe St	South Main St & Henry St	South Main St & Woodward Ave/ Concord St	Woodward Ave & Grove St/Route 136 (Burritt Ave)	Woodward Ave & Route 136 (Meadows St)
AADT	17,200	15,500	9,300	13,500	13,500	10,000
By Total Crashes	1.12	1.30	1.28	1.49	1.83	1.28
By Fatality	0.0	0.0	0.0	0.0	0.0	0.0
By Injury	0.27	0.12	0.20	0.54	0.20	0.27
By Property Damage Only(PDO)	0.85	1.18	1.08	0.95	1.62	1.00

Table 5.4: Crash Rates

6 Conclusions & Recommendations

WSP has completed the traffic operations and safety analysis for the proposed use of Manresa Island for the construction of the vertical lift and has reached the following conclusions and recommendations:

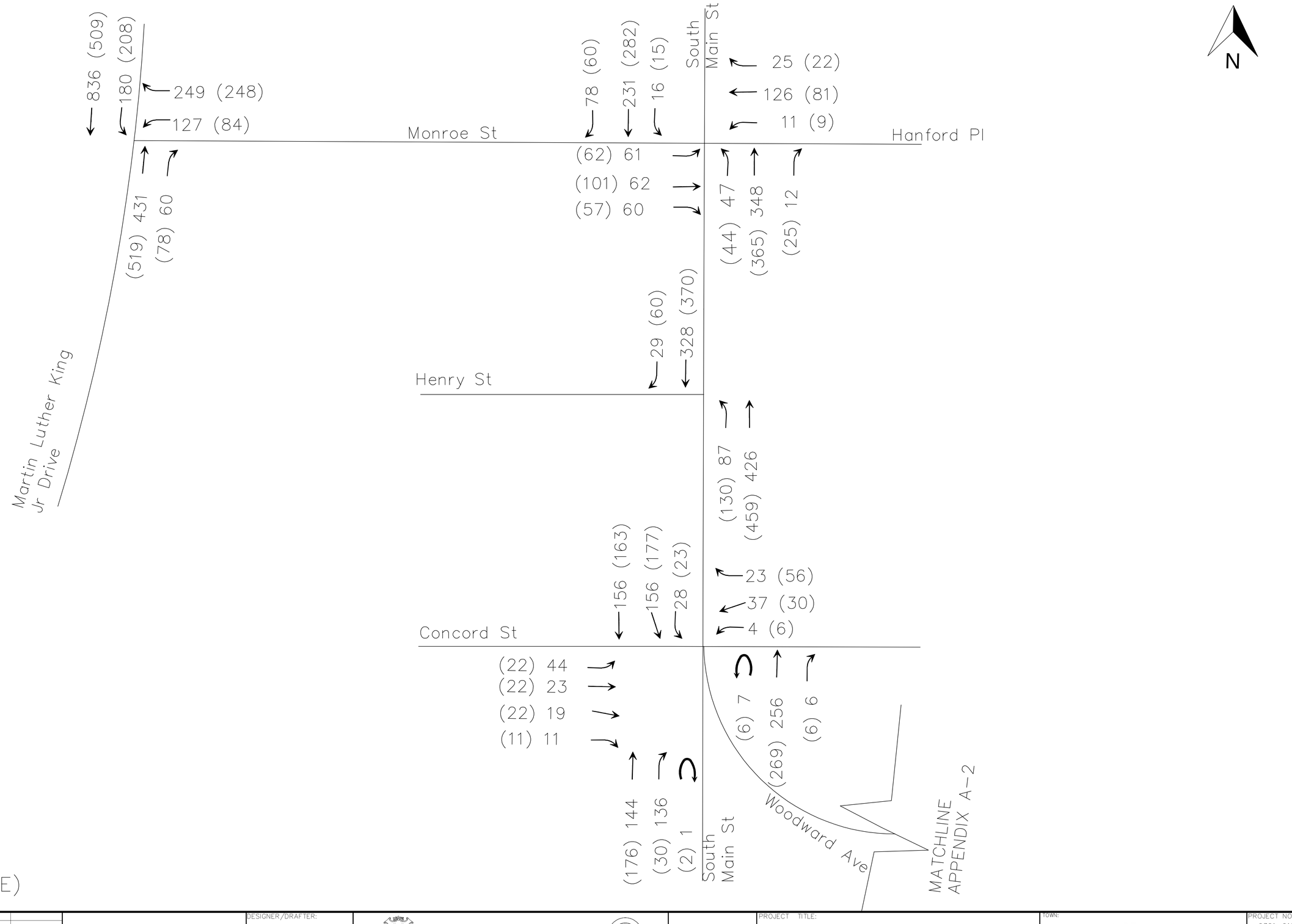
- The expected increase in trucks and vehicles destined for Manresa Island is shown to have only minor impacts in terms of traffic operations. As discussed in the study, Woodward Avenue & Grove Street/Route 136 (Burritt Avenue) is the most critical intersection. The Route 136 (Burritt Avenue) westbound approach

currently experiences high delays and the additional 20 vehicles (employees) would slightly increase these delays. This intersection also experiences a high volume of crashes with an average of 9 crashes per year. It is recommended to add pavement markings for the crosswalks on Grove Street and Burritt Avenue and trim vegetation that interferes with the sight line from Burritt Street.

- Trucks coming from Route 136 (Meadows Street) and making the right turn into southbound Woodward Avenue will have difficulties due to the acute angle of the intersection. This road is part of Truck Route B for oversized trucks. However, the oversized trucks are expected to be infrequent and it is recommended that flaggers be in place to assist with navigation through the intersection.
- There are no expected impacts to transit. Three (3) bus routes currently operate in the study area, during the expected work hours in Manresa Island, with a frequency of 20-40 minutes.
- The Monroe Street railroad underpass vertical clearance is adequate for tucks traveling on Truck Route A.
- There is currently a large industrial area on Route 136 (Meadows Street) and on Woodward Avenue (south of Route 136), that brings truck volume to the area.

APPENDIX

A 2024 TRAFFIC VOLUMES



LEGEND

– AM VOLUME

(##) – (PM VOLUME)

REV.	DATE	REVISION DESCRIPTION	SHEET NO.

DESIGNER/DRAFTER:

CHECKED BY:

NOT TO SCALE
SCALE AS NOTED

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

FILENAME: PLOTTED DATE:

PROJECT TITLE:
BRIDGE NO. 03691R REPLACEMENT
METRO-NORTH RAILROAD MP42.14
OVER EAST AVENUE

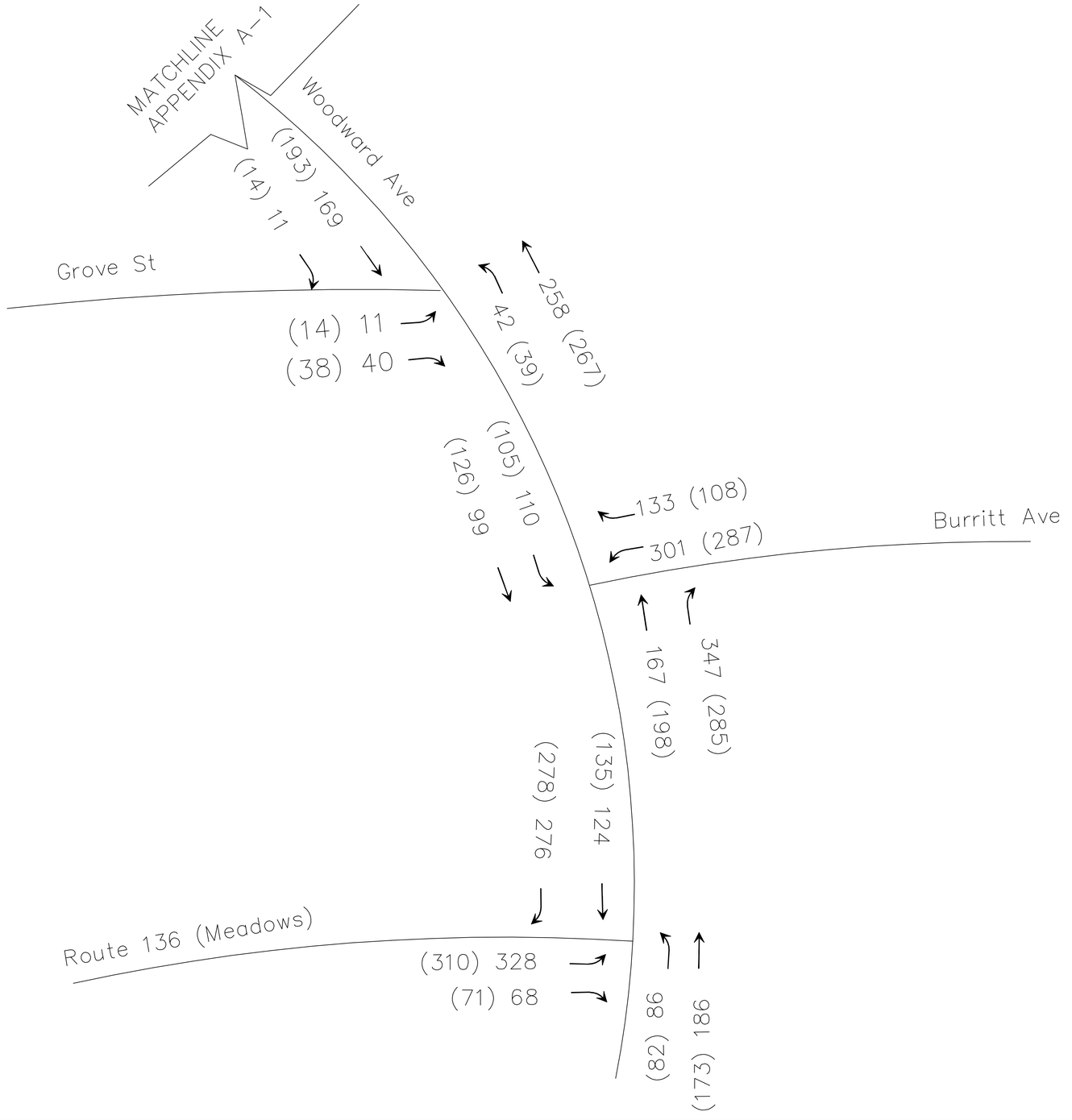
TOWN: NORWALK

DRAWING TITLE:
APPENDIX A-1
2024 TRAFFIC VOLUMES

PROJECT NO. 0301-0176

DRAWING NO.

SHEET NO.



LEGEND

– AM VOLUME

(##) – (PM VOLUME)

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DESIGNER/DRAFTER:

CHECKED BY:

NOT TO SCALE
SCALE AS NOTED

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

FILENAME: PLOTTED DATE:

PROJECT TITLE:
BRIDGE NO. 03691R REPLACEMENT
METRO-NORTH RAILROAD MP42.14
OVER EAST AVENUE

TOWN: NORWALK

DRAWING TITLE:
APPENDIX A-2
2024 TRAFFIC VOLUMES

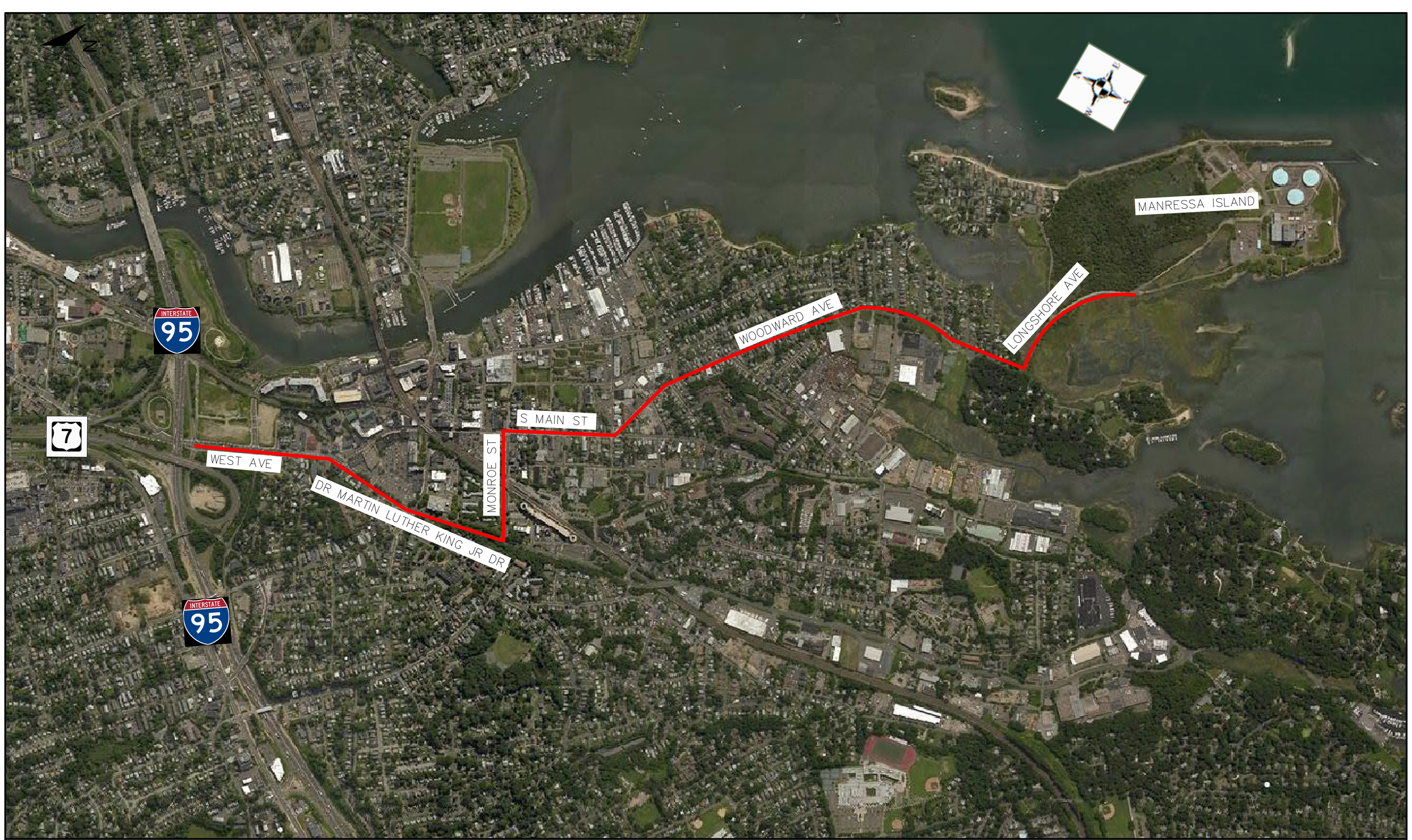
PROJECT NO. 0301-0176

DRAWING NO.

SHEET NO.

APPENDIX

B MANRESA ISLAND TRUCK ROUTE A- UNDER 13'-9"



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DESIGNER/DRAFTER:

CHECKED BY:

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SCALE AS NOTED

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

FILENAME: PLOTTED DATE:

PROJECT TITLE:
BRIDGE NO. 03691R REPLACEMENT
METRO-NORTH RAILROAD MP42.14
OVER EAST AVENUE

TOWN: NORWALK

DRAWING TITLE:
APPENDIX B
MANRESA ISLAND ROUTE A – UNDER 13'9"

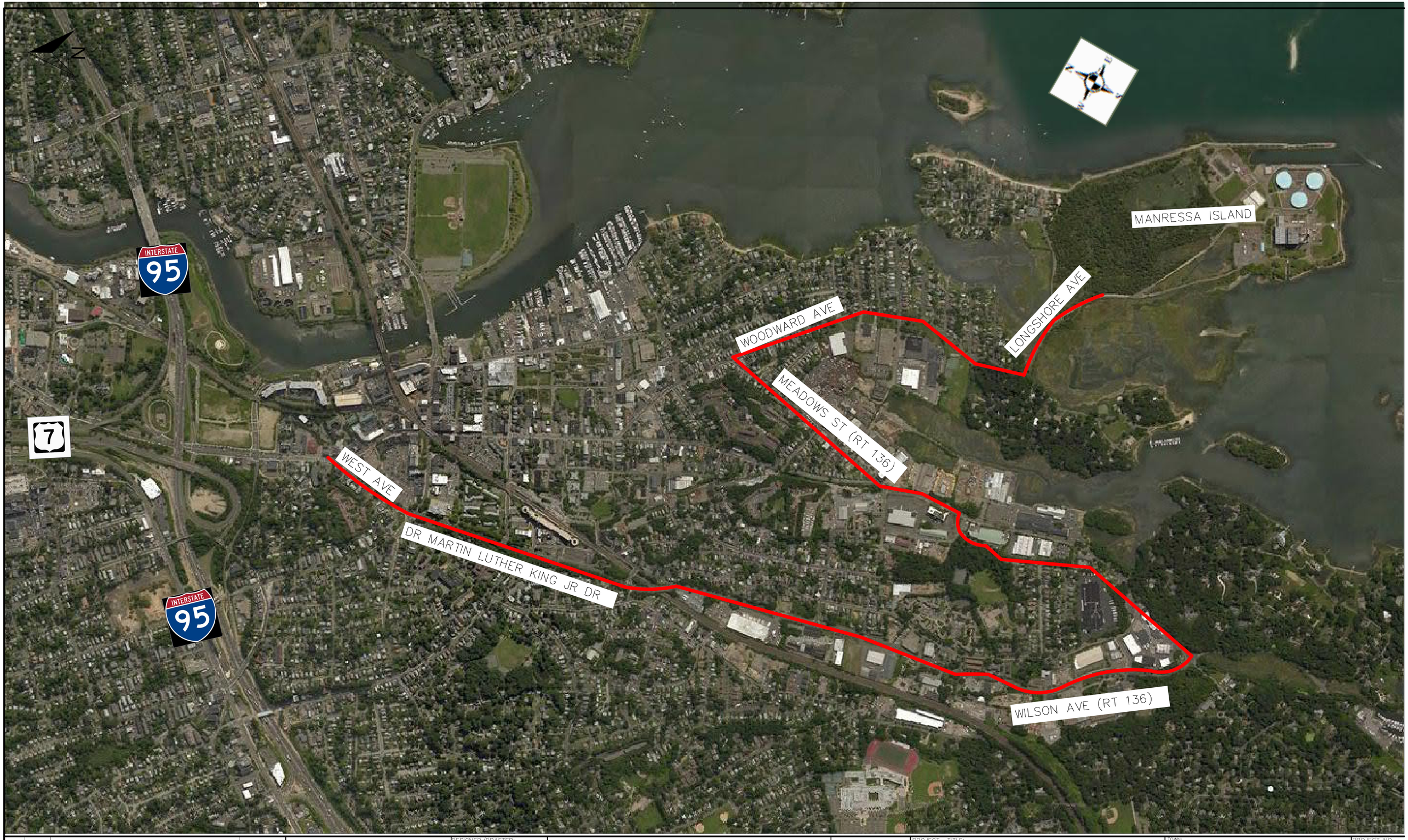
PROJECT NO. 0301-0176

DRAWING NO.

SHEET NO.

APPENDIX

C MANRESA ISLAND TRUCK ROUTE B- OVER 13’-9”



REV.	DATE	REVISION DESCRIPTION	SHEET NO.

DESIGNER/DRAFTER:

CHECKED BY:

NOT TO SCALE
SCALE AS NOTED

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

FILENAME: PLOTTED DATE:

PROJECT TITLE:
BRIDGE NO. 03691R REPLACEMENT
METRO-NORTH RAILROAD MP42.14
OVER EAST AVENUE

TOWN: NORWALK

DRAWING TITLE:
APPENDIX C
MANRESA ISLAND ROUTE B - OVER 13'9"

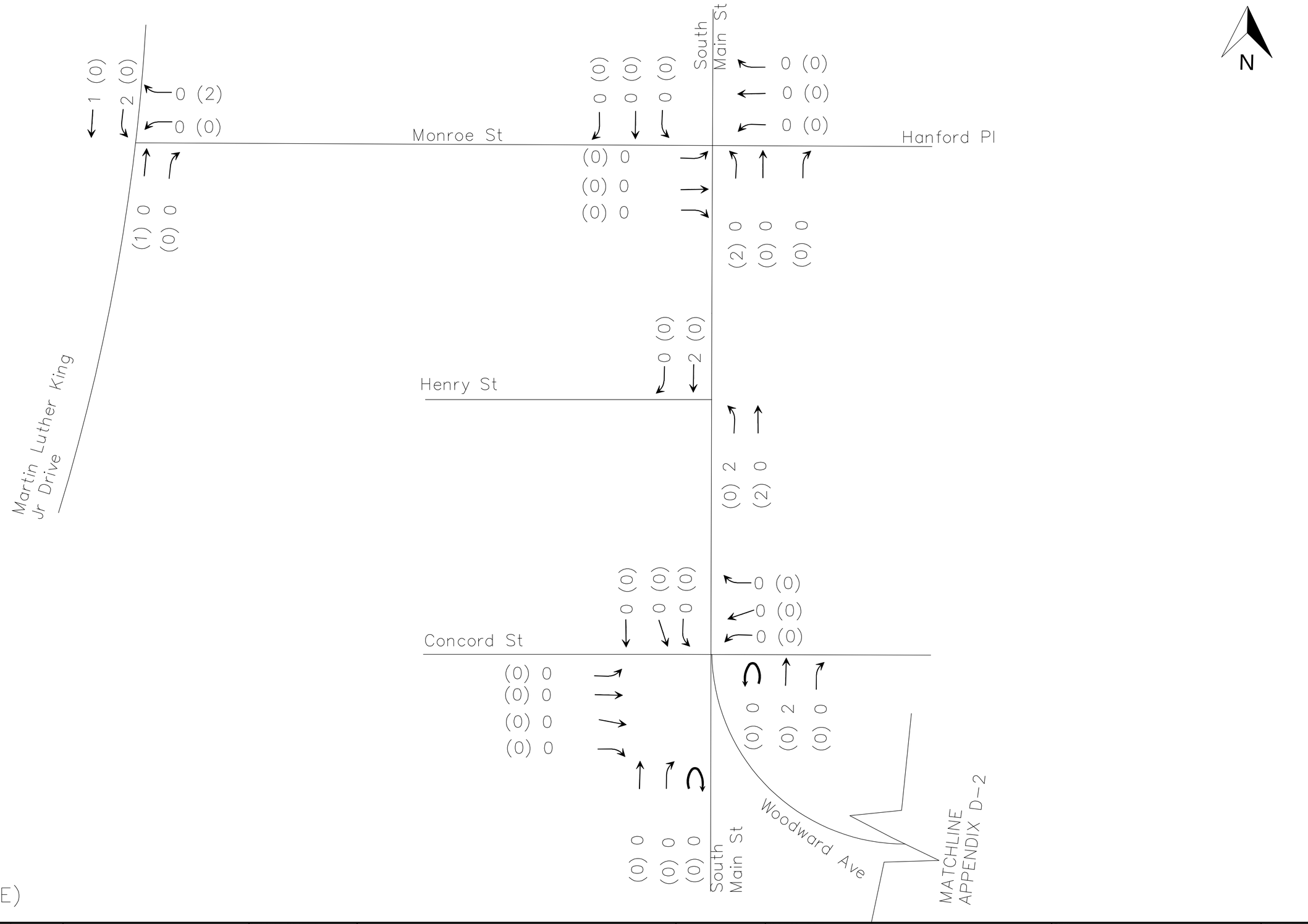
PROJECT NO. 0301-0176

DRAWING NO.

SHEET NO.

APPENDIX

D MANRESA ISLAND TRUCK VOLUME



LEGEND

– AM VOLUME

(##) – (PM VOLUME)

REV.	DATE	REVISION DESCRIPTION	SHEET NO.

DESIGNER/DRAFTER:

CHECKED BY:

NOT TO SCALE
SCALE AS NOTED

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

FILENAME: PLOTTED DATE:

PROJECT TITLE:
BRIDGE NO. 03691R REPLACEMENT
METRO-NORTH RAILROAD MP42.14
OVER EAST AVENUE

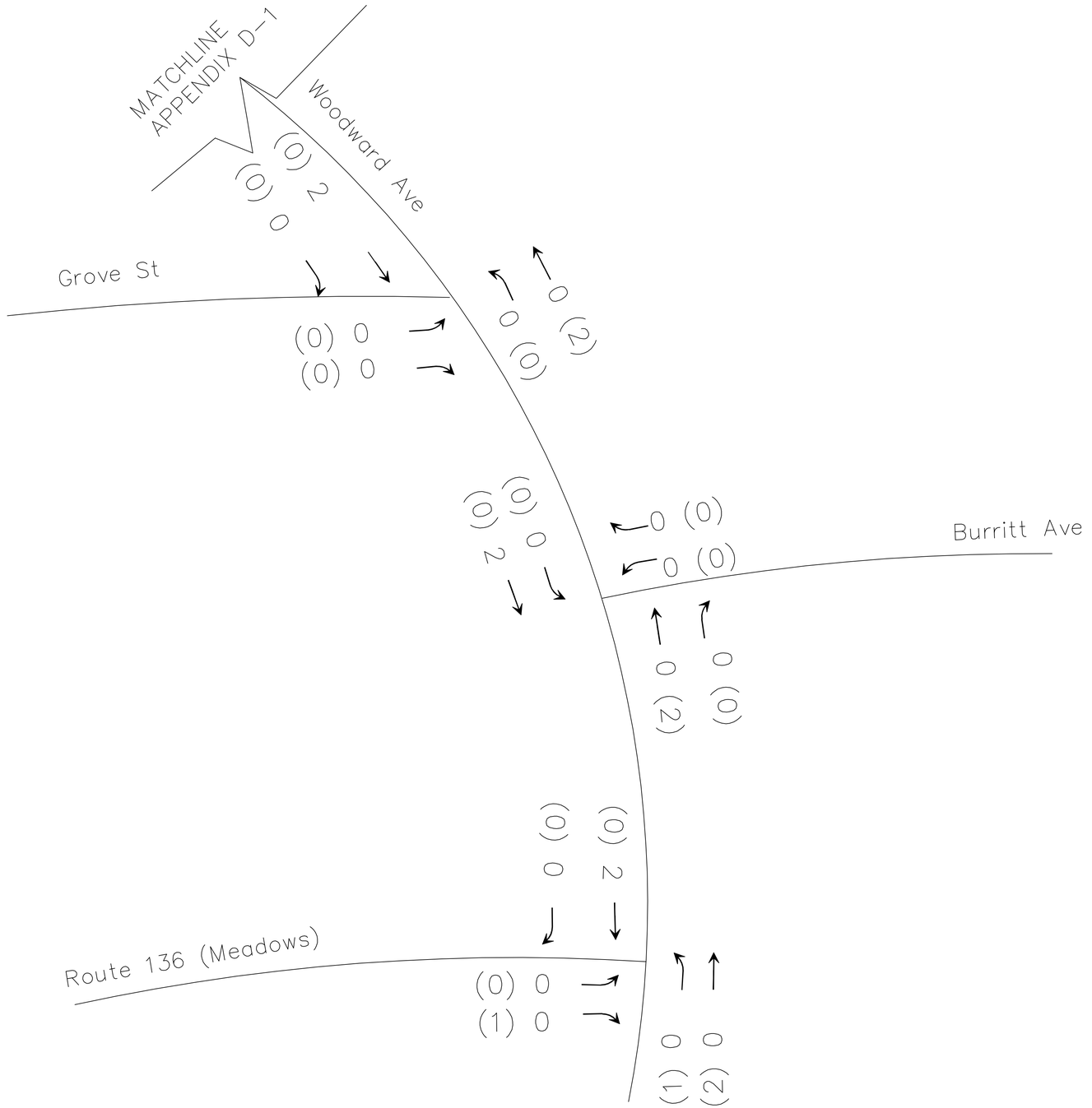
TOWN: NORWALK

DRAWING TITLE:
APPENDIX D-1
MANRESA ISLAND TRUCK VOLUMES

PROJECT NO. 0301-0176

DRAWING NO.

SHEET NO.



LEGEND

– AM VOLUME

(##) – (PM VOLUME)

REV.	DATE	REVISION DESCRIPTION	SHEET NO.

DESIGNER/DRAFTER:

CHECKED BY:

NOT TO SCALE
SCALE AS NOTED

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

FILENAME: PLOTTED DATE:

PROJECT TITLE:
BRIDGE NO. 03691R REPLACEMENT
METRO-NORTH RAILROAD MP42.14
OVER EAST AVENUE

TOWN: NORWALK

DRAWING TITLE:
APPENDIX D-2
MANRESA ISLAND TRUCK VOLUMES

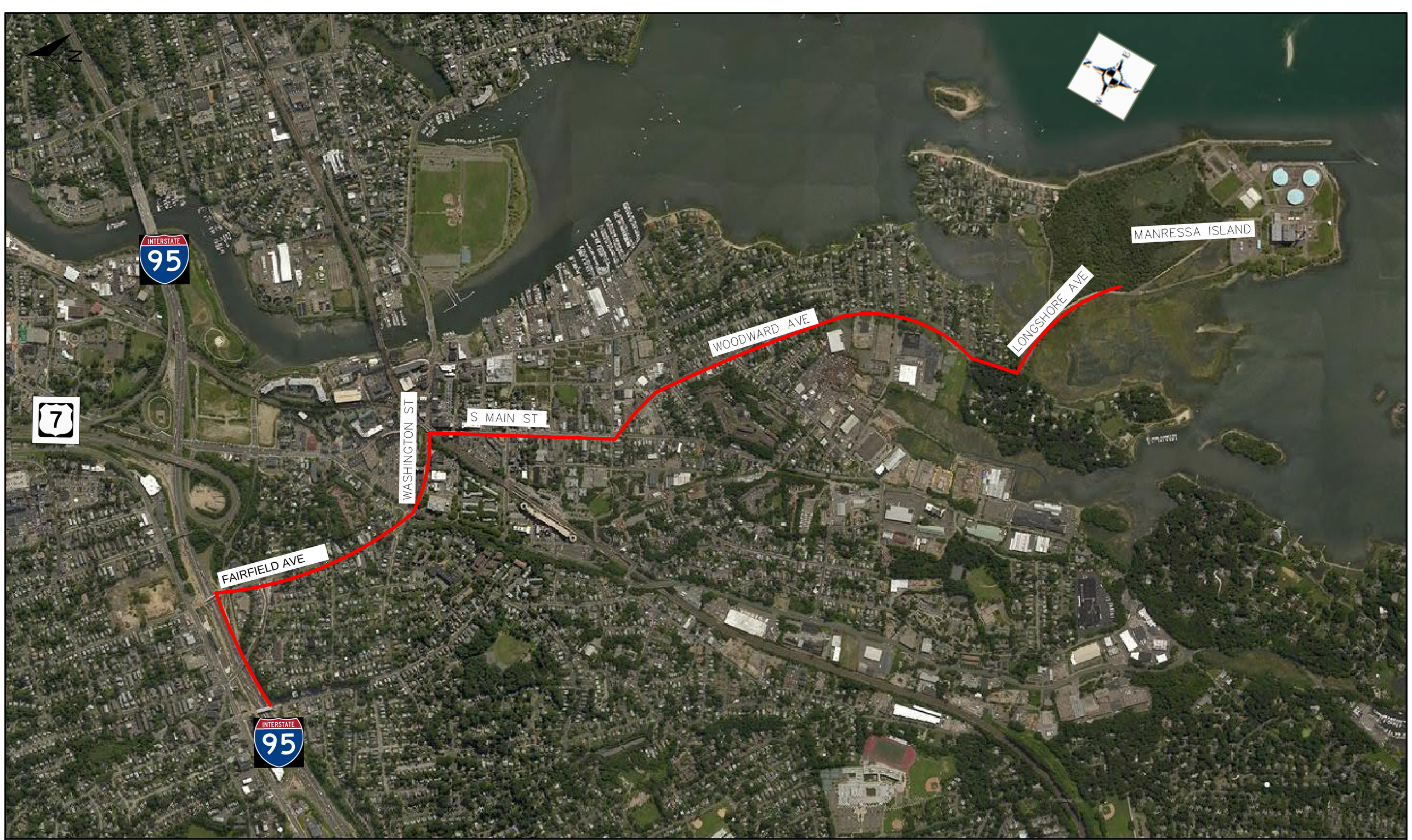
PROJECT NO. 0301-0176

DRAWING NO.

SHEET NO.

APPENDIX

E MANRESA ISLAND VEHICULAR ROUTE A- FROM NB I-95



REV.	DATE	REVISION DESCRIPTION	SHEET NO.

DESIGNER/DRAFTER:

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DEPARTMENT OF TRANSPORTATION

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PROJECT TITLE:
BRIDGE NO. 03691R REPLACEMENT
METRO-NORTH RAILROAD MP42.14
OVER EAST AVENUE

TOWN:
NORWALK

DRAWING TITLE:
APPENDIX E
MANRESA ISLAND VEHICULAR ROUTE A - FROM NB I-95

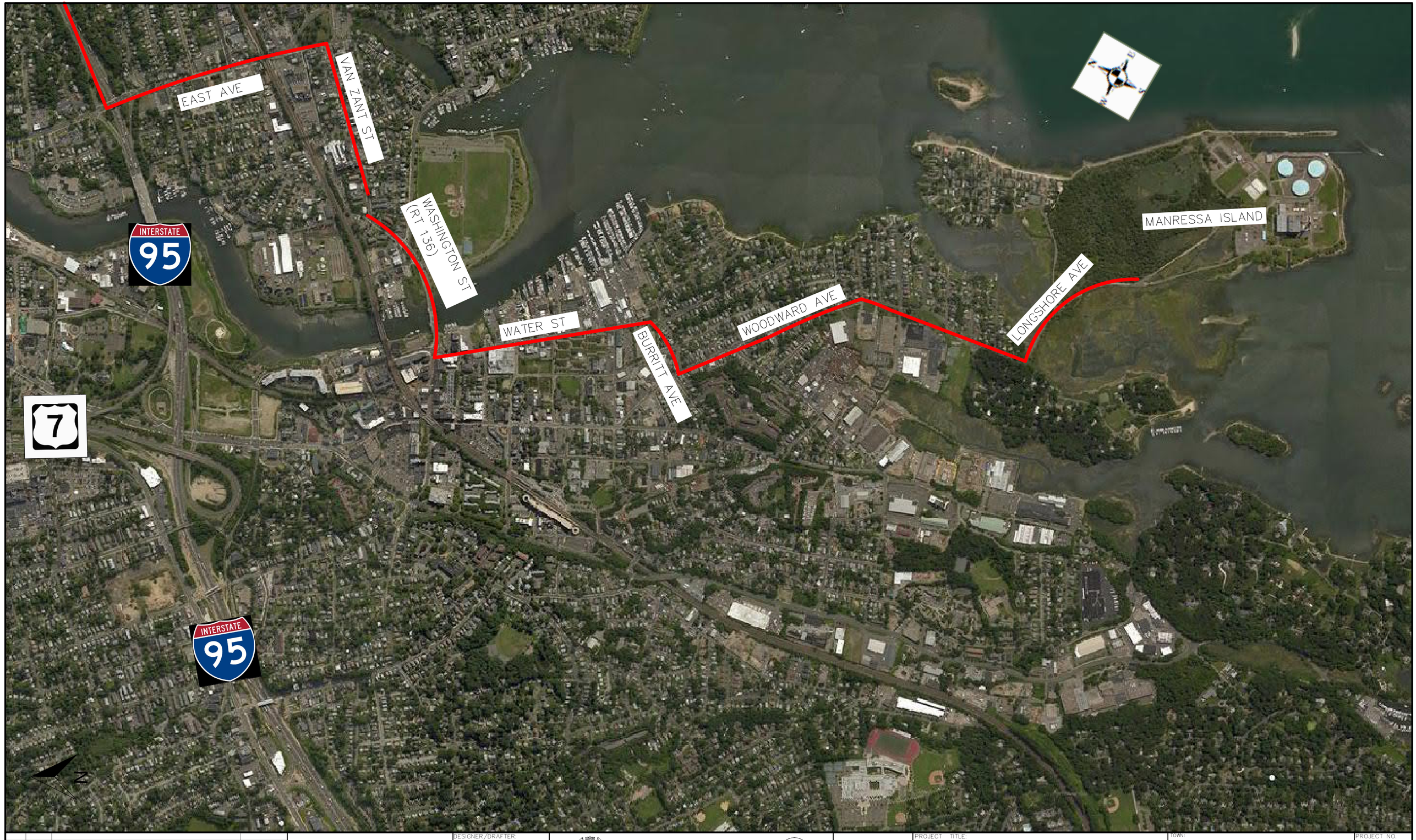
PROJECT NO.
0301-0176

DRAWING NO.

SHEET NO.

APPENDIX

F MANRESA ISLAND VEHICULAR ROUTE B- FROM SB I-95



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STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

FILENAME: PLOTTED DATE:

PROJECT TITLE:
BRIDGE NO. 03691R REPLACEMENT
METRO-NORTH RAILROAD MP42.14
OVER EAST AVENUE

TOWN: NORWALK

DRAWING TITLE:
APPENDIX F
MANRESA ISLAND VEHICULAR ROUTE B – FROM SB I-95

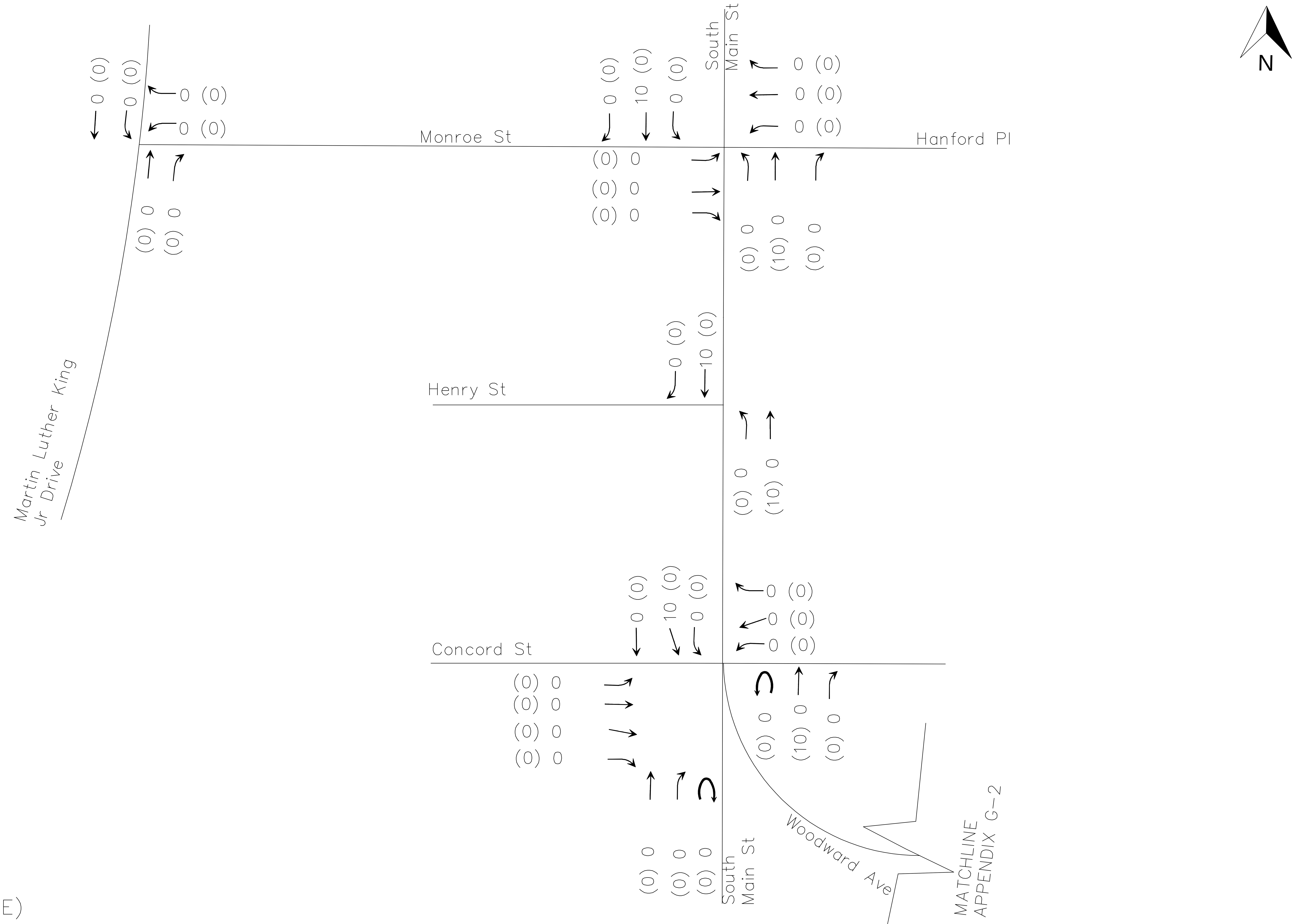
PROJECT NO. 0301-0176

DRAWING NO.

SHEET NO.

APPENDIX

G MANRESA ISLAND VEHICULAR VOLUME



LEGEND

- AM VOLUME

(##) - (PM VOLUME)

REV.	DATE	REVISION DESCRIPTION	SHEET NO.

DESIGNER/DRAFTER:

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NOT TO SCALE
SCALE AS NOTED

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

FILENAME: PLOTTED DATE:

PROJECT TITLE:
BRIDGE NO. 03691R REPLACEMENT
METRO-NORTH RAILROAD MP42.14
OVER EAST AVENUE

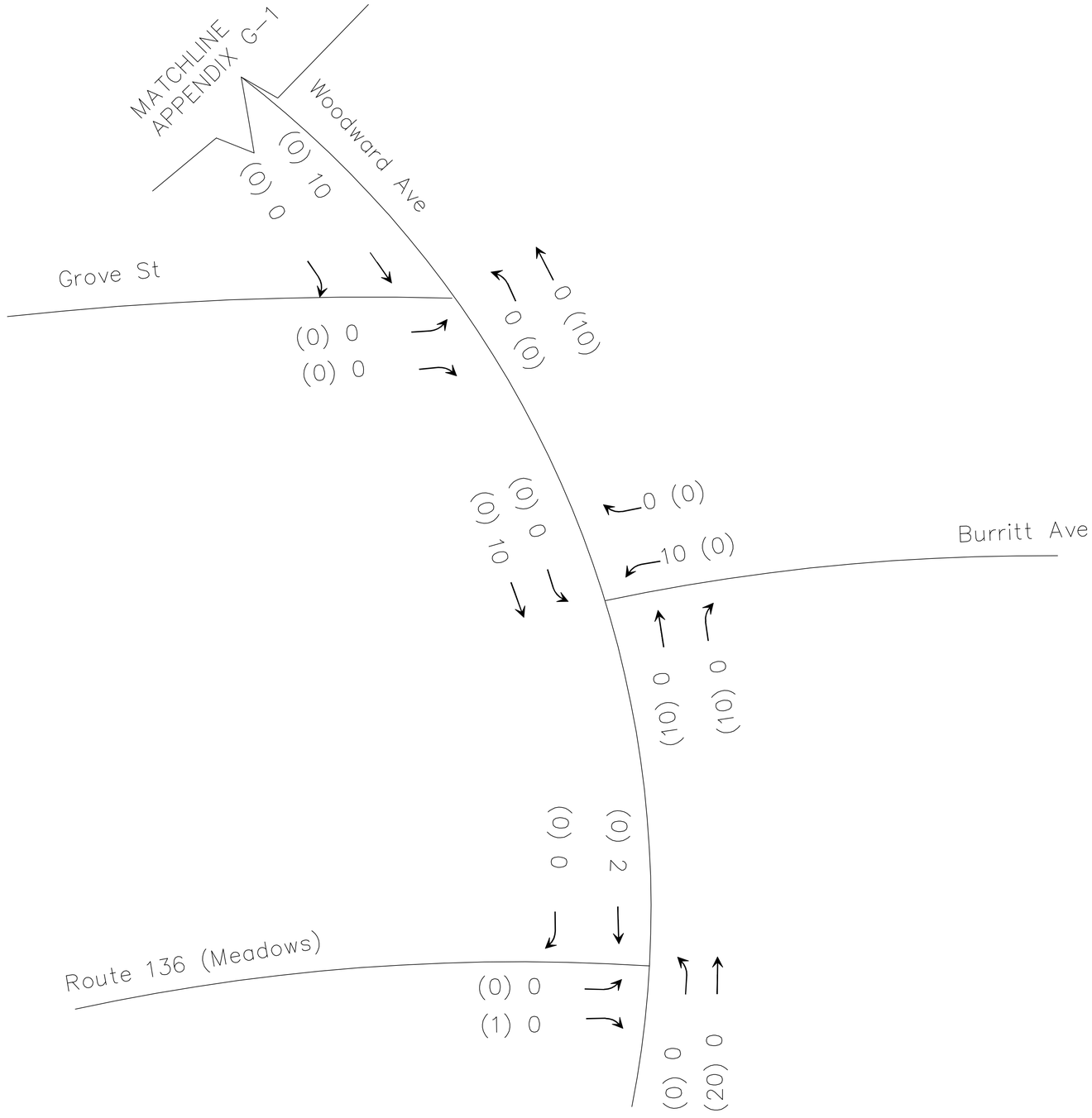
TOWN:
NORWALK

DRAWING TITLE:
APPENDIX G-1
MANRESA ISLAND VEHICULAR VOLUMES

PROJECT NO.
0301-0176

DRAWING NO.

SHEET NO.



LEGEND

– AM VOLUME

(##) – (PM VOLUME)

REV.	DATE	REVISION DESCRIPTION	SHEET NO.

DESIGNER/DRAFTER:

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NOT TO SCALE
SCALE AS NOTED

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

FILENAME: PLOTTED DATE:

PROJECT TITLE:
BRIDGE NO. 03691R REPLACEMENT
METRO-NORTH RAILROAD MP42.14
OVER EAST AVENUE

TOWN: NORWALK

DRAWING TITLE:
APPENDIX G-2
MANRESA ISLAND VEHICULAR VOLUMES

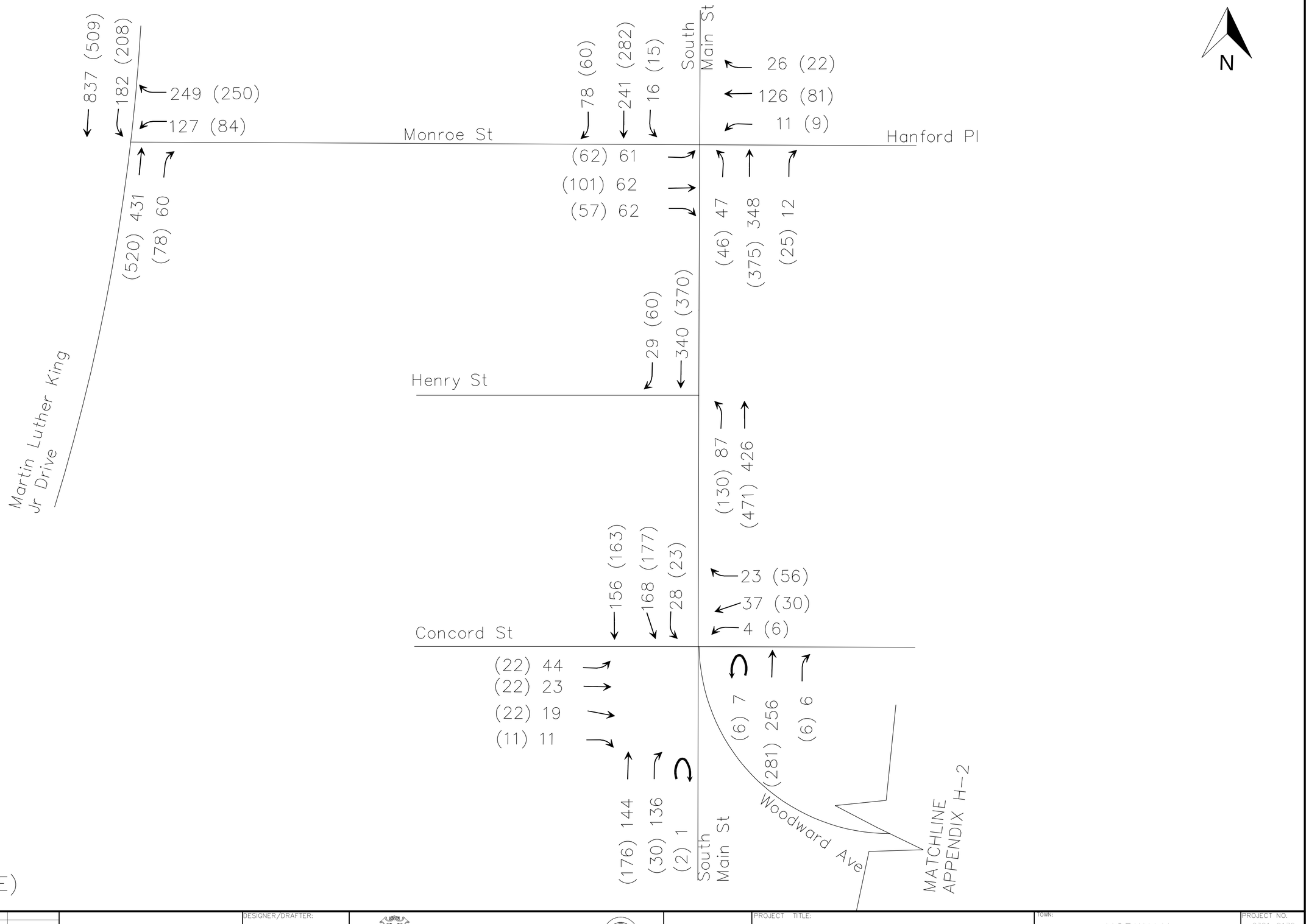
PROJECT NO. 0301-0176

DRAWING NO.

SHEET NO.

APPENDIX

H FUTURE 2024 + MANRESA ISLAND TRAFFIC VOLUMES



LEGEND

– AM VOLUME

(##) – (PM VOLUME)

REV.	DATE	REVISION DESCRIPTION	SHEET NO.

DESIGNER/DRAFTER:

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NOT TO SCALE
SCALE AS NOTED

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

FILENAME: PLOTTED DATE:

PROJECT TITLE:
BRIDGE NO. 03691R REPLACEMENT
METRO-NORTH RAILROAD MP42.14
OVER EAST AVENUE

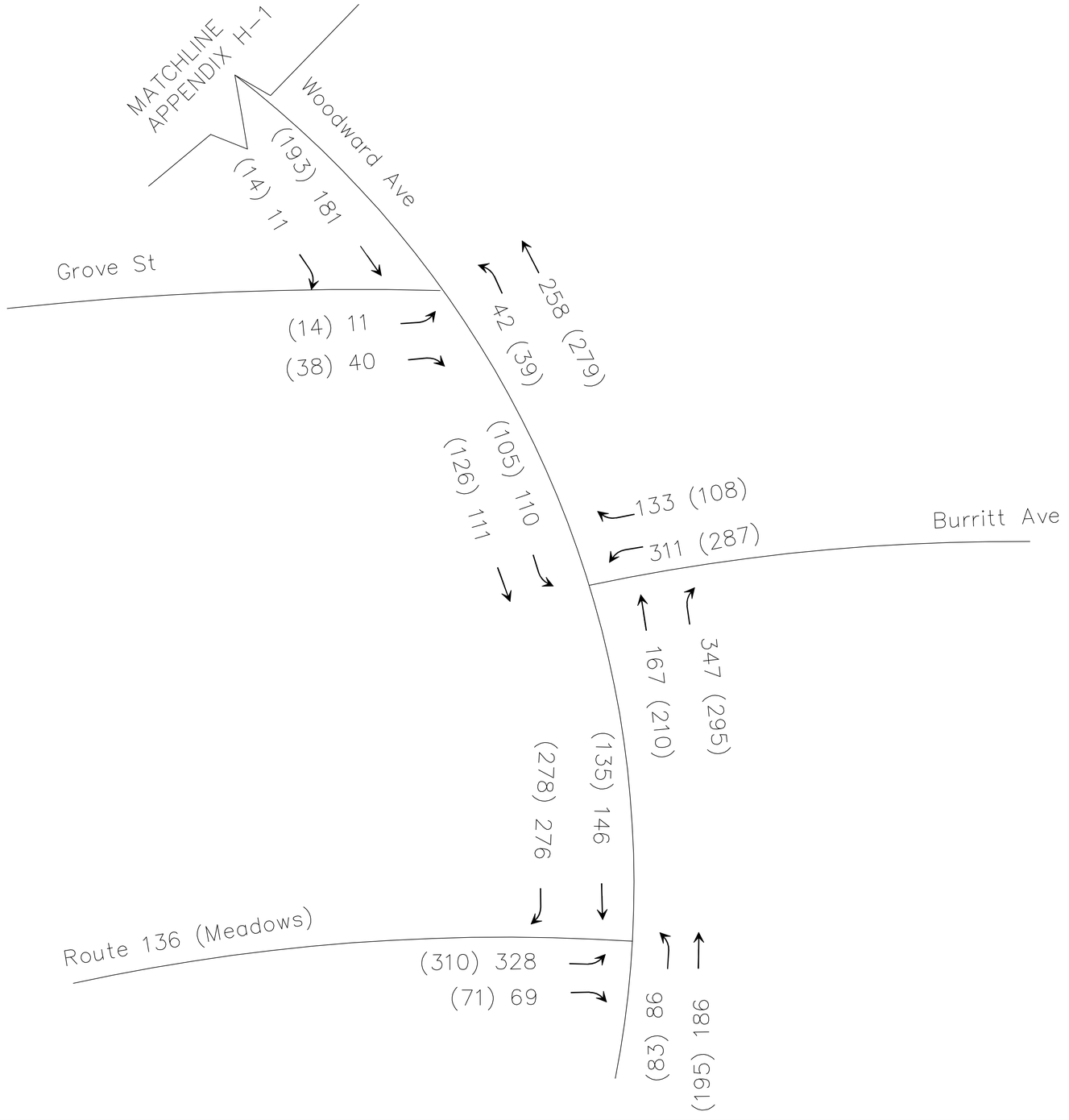
TOWN: NORWALK

DRAWING TITLE:
APPENDIX H-1
FUTURE 2024 + MANRESA ISLAND TRAFFIC VOLUMES

PROJECT NO. 0301-0176

DRAWING NO.

SHEET NO.



LEGEND

– AM VOLUME

(##) – (PM VOLUME)

REV.	DATE	REVISION DESCRIPTION	SHEET NO.

DESIGNER/DRAFTER:

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STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

FILENAME: PLOTTED DATE:

PROJECT TITLE:
BRIDGE NO. 03691R REPLACEMENT
METRO-NORTH RAILROAD MP42.14
OVER EAST AVENUE

TOWN: NORWALK

DRAWING TITLE:
APPENDIX H-2
FUTURE 2024 + MANRESA ISLAND TRAFFIC VOLUMES

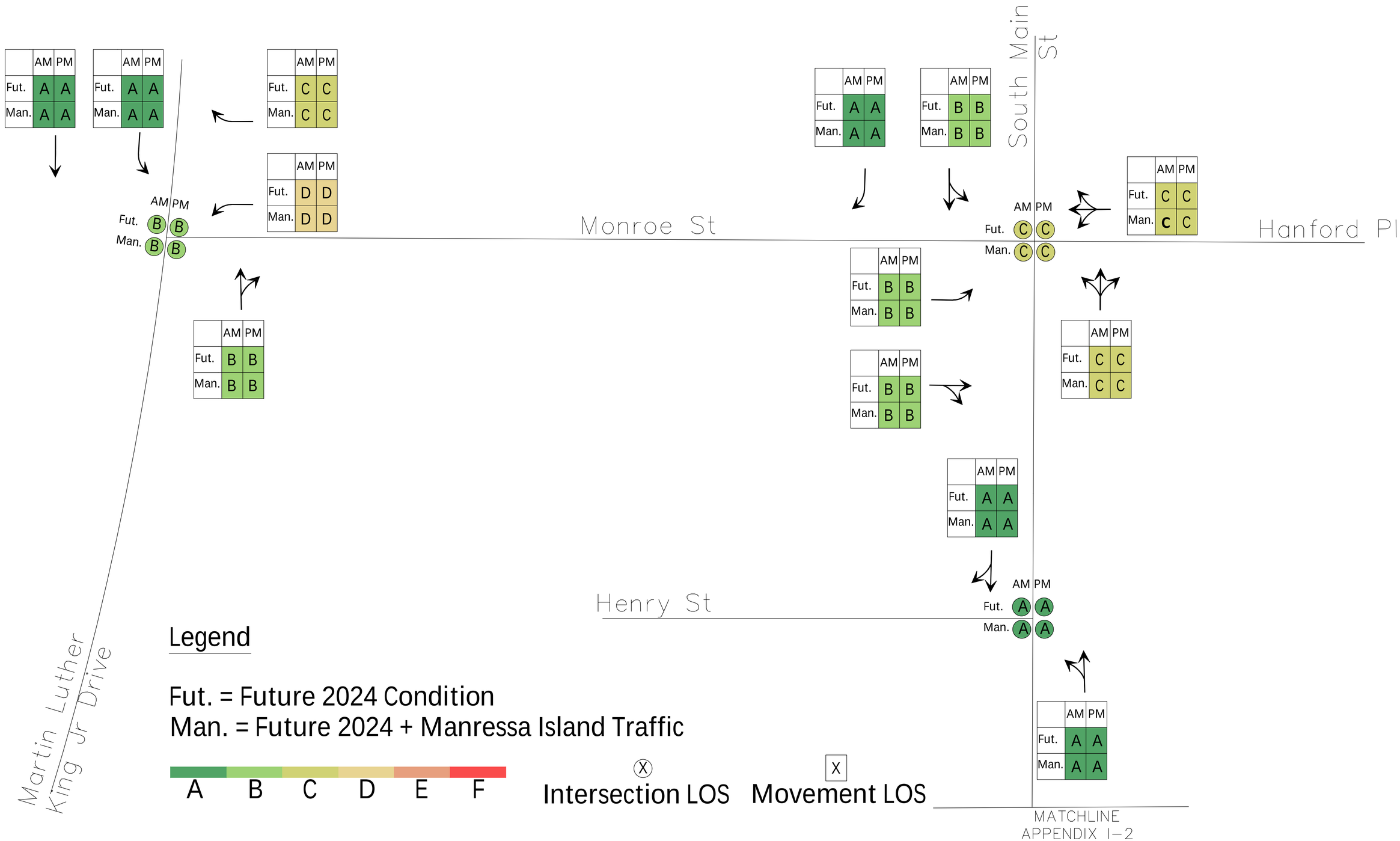
PROJECT NO. 0301-0176

DRAWING NO.

SHEET NO.

APPENDIX

I OPERATIONAL RESULTS



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DEPARTMENT OF TRANSPORTATION

FILENAME:
PLOTTED DATE:

PROJECT TITLE:
BRIDGE NO. 03691R REPLACEMENT
METRO–NORTH RAILROAD MP42.14
OVER EAST AVENUE

TOWN: NORWALK

DRAWING TITLE:
APPENDIX I–1
OPERATIONAL RESULTS

PROJECT NO. 0301–0176
DRAWING NO.
SHEET NO.

MATCHLINE
APPENDIX I–1

Concord St

	AM	PM
Fut.	C	B
Man.	C	B

	AM	PM
Fut.	A	A
Man.	A	A

AM PM
Fut. C B
Man. C B

	AM	PM
Fut.	C	C
Man.	C	C

	AM	PM
Fut.	D	D
Man.	D	D

	AM	PM
Fut.	C	D
Man.	C	D

	AM	PM
Fut.	B	B
Man.	B	B

	AM	PM
Fut.	A	A
Man.	A	A

AM PM
Fut. A A
Man. A A

	AM	PM
Fut.	B	B
Man.	B	B

	AM	PM
Fut.	A	A
Man.	A	A

South Main St

Grove St

Woodward Ave

MATCHLINE
APPENDIX I–3

Legend

Fut. = Future 2024 Condition
Man. = Future 2024 + Manressa Island Traffic

A B C D E F

(X) Intersection LOS [X] Movement LOS

REV.	DATE	REVISION DESCRIPTION	SHEET NO.

DESIGNER/DRAFTER:
CHECKED BY:
NOT TO SCALE
SCALE AS NOTED

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION

FILENAME:
PLOTTED DATE:

PROJECT TITLE:
BRIDGE NO. 03691R REPLACEMENT
METRO–NORTH RAILROAD MP42.14
OVER EAST AVENUE

TOWN: NORWALK

DRAWING TITLE:
APPENDIX I–2
OPERATIONAL RESULTS

PROJECT NO. 0301–0176
DRAWING NO.
SHEET NO.

MATCHLINE APPENDIX I-2

Burritt Ave

Route 136 (Meadows)

Woodward Ave

	AM	PM
Fut.	A	A
Man.	A	A

	AM	PM
Fut.	F	F
Man.	F	F

	AM	PM
Fut.	A	A
Man.	A	A

	AM	PM
Fut.	C	C
Man.	C	C

	AM	PM
Fut.	C	C
Man.	C	C

	AM	PM
Fut.	C	B
Man.	C	C

	AM	PM
Fut.	E	E
Man.	F	E

	AM	PM
Fut.	C	C
Man.	C	C

A B C D E F

(X) Intersection LOS

[X] Movement LOS

Legend

Fut. = Future 2024 Condition
Man. = Future 2024 + Manressa Island Traffic

REV.	DATE	REVISION DESCRIPTION	SHEET NO.

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OVER EAST AVENUE

TOWN: NORWALK

DRAWING TITLE:
APPENDIX I-3
OPERATIONAL RESULTS

PROJECT NO. 0301-0176
DRAWING NO.
SHEET NO.

APPENDIX

J TRAFFIC COUNTS

MOVEMENT DIAGRAM								
NONE		2	P P			6		

NTOR		PHASE 1			PHASE 2			PHASE 3			PHASE 4			PHASE 5			PHASE 6			PHASE 7			PHASE 8		
	FLASH	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL
2	Y				G	Y	R	R	R	R							R	R	R						
6	Y				R	R	R	R	R	R							G	Y	R						
P	OFF				←	DW	→	WØ	← DW	→							←	DW	→						
						←YIELD												←YIELD							
MIN					10	3.0	1.0	7 | 8	4	0							10	3.0	1.0						
MAX					90	5.0	3.0	10 | 10	4	0							90	5.0	3.0						

INTERVALS	PHASE 1	PHASE 2	PHASE 3	PHASE 4	PHASE 5	PHASE 6	PHASE 7	PHASE 8
MIN GRN		15				15		
WALK			7					
PED CLR			8					
VEH EXT			COUNTDOWN PEDESTRIAN SIGNAL					
MAX 1		50				50		
MAX 2		60				60		
YELLOW		3.2	4			3.2		
RED		1.9	0			1.9		
ADD INIT								
MAX INIT								
TBR								
TTR								
MIN GAP								
MODE	OFF	MAX RECALL	NON-LOCK	OFF	OFF	MAX RECALL	OFF	OFF
INT START		THIS PHASE				THIS PHASE		

DETECTORS

IDENT	SIZE (WXL)	TURNS	MODE

PROGRAM / **COORDINATION TYPE– CENTRAL SYSTEM**

FUNCTION	TIME	DAYS	CYCLE	OFFSET SEC	OFFSET %	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8	PERMIS PERIOD Ø	SEC
FLASH	FUTURE														
PATTERN 1	0600–0900	M–F	90	53	59		78 / 87	12 / 13			78 / 87				
PATTERN 2	ALL OTHER TIMES	DAILY	80	48	60		68 / 85	12 / 15			68 / 85				
PATTERN 3	0900–1500	M–F	80	48	60		68 / 85	12 / 15			68 / 85				
PATTERN 4	1500–1900	M–F	90	50	56		78 / 85	12 / 13			78 / 85				
PATTERN 5	1000–1600	SA–SU	80	43	54		68 / 78	12 / 15			68 / 78				
MAX 1	ALL OTHER TIMES														
MAX 2	FUTURE														
FREE	FUTURE														

SYSTEM LOC
MASTER
CITY HALL
INT# 49
INT# 50
INT# 51
INT# 52
INT# 53
INT# 54

TECHNICAL NOTES

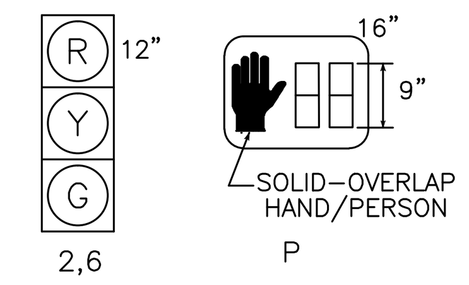
1. STANDARD OVERLAP SKIP FEATURES APPLY
2. MANUAL AND INTERVAL ADVANCE PHASE TO BE DISCONNECTED DURING PHASE 3 PEDESTRIAN CLEARANCE INTERVAL.
3. COUNTDOWN DISPLAYS SHALL NOT BE USED DURING THE WALK INTERVAL NOR DURING THE YELLOW CHANGE INTERVAL OF A CONCURRENT VEHICULAR PHASE.
4. FLOATING FORCE–OFFS SHALL BE IN EFFECT.
5. TIMING SHOWN REFLECT FREE OPERATION. ACTUAL PHASE SPLITS TO BE DETERMINED BY THE COORDINATION PROGRAM.
6. PHASE SPLITS SHOWN REPRESENT PRELIMINARY COORDINATION DATA.

LEGEND: R RED, Y YELLOW, G GREEN; ◀R RED ARROW, ◀Y YELLOW ARROW, ◀— GREEN ARROW; WØ WALK/ PED. CLR, D.W. DON'T WALK, FL. FLASHING

ENERGY BY– CITY | METER # –
MAINT LEVEL | SERVICE POLE– SNEW# A–33

METERED SERVICE

SIGNAL FACES



ALL INDICATIONS TO HAVE L.E.D. LAMPS.

PEDESTRIAN SIGNAL FACE TO HAVE COUNTDOWN TIMER.

CITY SIGNAL

INTERSECTION # 53

OFFICE RECORD

STC # SM #

SIGNAL REVISED

SIGNAL REVISED UNDER PROJECT 102–337. NEW TRAFFIC SIGNAL EQUIPMENT INSTALLED AND CONNECTED TO COMPUTERIZED CENTRAL SYSTEM.

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUR. OF ENGINEERING & HWY OPERATIONS
DIVISION OF TRAFFIC ENGINEERING

TRAFFIC CONTROL SIGNAL

CITY OF NORWALK
SOUTH MAIN STREET AT
HENRY STREET

REV #	TRAFFIC	DATE	ELECTRICAL	DATE
ENGINEER				
DRAFTER				
CHECKED BY				
SUBMITTED BY				
APPROVED BY				
DATE				

Vanasse Hangen Brustlin, Inc.
Transportation & Land Development & Environmental Services
54 Tuttle Place, Middletown, Connecticut 06457–1847
Tel: 860 632–1500 & Fax: 860 632–7879

CONSTRUCTION NOTES

ALL TRAFFIC SIGNAL EQUIPMENT SHALL BE NEW, EXCEPT AS NOTED.

CONTRACTOR SHALL STAKE ALL R.O.W. PRIOR TO EXCAVATION. ALL WORK, INCLUDING ALL FOUNDATIONS SHALL BE WITHIN THE R.O.W EXCEPT AS NOTED.

INSTALL RACK BASED NEMA TS2 TYPE 1–4 PHASE CONTROLLER IN A CABINET ATTACHED TO THE MAST ARM ⟨P⟩ AS SPECIFIED IN THE BID DOCUMENTS.

CONTRACTOR SHALL INSTALL AN AUXILLARY EQUIPMENT CABINET (AEC) ATTACHED TO THE MAST ARM P AS SPECIFIED IN THE BID DOCUMENTS.

CONTROLLER BACK TO ALWAYS FACE THE INTERSECTION, SERVICE METERS TO BE INSTALLED ON THE SIDE OF THE CABINET.

CONTRACTOR SHALL REMOVE ALL ABANDONED TRAFFIC SIGNAL EQUIPMENT INCLUDING BUT NOT LIMITED TO FOUNDATIONS, HANDHOLES, CONDUIT RISERS & CABLE, AND STEEL POLES.

ALL HANDHOLES ARE TYPE II UNLESS OTHERWISE SPECIFIED. CONTRACTOR SHALL INSTALL HANDHOLES APPROXIMATELY 1 FOOT BEHIND CURB OR EDGE OF ROADWAY UNLESS OTHERWISE SPECIFIED.

CONTRACTOR SHALL TELEPHONE "CALL BEFORE YOU DIG" AT 1–800–922–4455 48 HOURS PRIOR TO ANY EXCAVATION. CONTRACTOR SHALL CONTACT UTILITY REPRESENTATIVES AND CITY AGENCIES FOUR WEEKS PRIOR TO EXCAVATION.

REPRESENTATIVE	UTILITY	TELEPHONE
FRANCO CHIEFFALO	FIRST DISTRICT WATER DEPT.	(203) 847–7387
GEORGE LEARY	THIRD TAXING DISTRICT DEPT.	(203) 838–7445
DAN HERMAN	AT&T/SBC	(866) 365–3256
BILL HUGHES	AT&T (LOCAL)	(203) 846–9063
GEORGE REBENTISCH	CABLEVISION	(203) 750–5600
JIM CALABRESE	CL&P	(203) 854–3664
RON TARINI	AT&T (LONG LINES)	(203) 269–2567
WALTER MASHECK	SOUTH NORWALK ELECTRICITY AND WATER (ELECTRICITY DEPARTMENT)	(203) 866–3366
SCOTT WHITTIER	SOUTH NORWALK ELECTRICITY AND WATER (WATER DEPARTMENT)	(203) 866–4446
DAN FITZSIMMONS	YANKEE GAS	(203) 854–6459
CONNIE BLAIR	NORWALK DEPT. OF PUBLIC WORKS CALL CENTER	(203) 854–3200

THE CONTRACTOR SHALL CONTACT MR. FRED ESHRAGHI, CITY OF NORWALK TRAFFIC ENGINEER, AT (203) 854–7791 PRIOR TO ANY EXCAVATION AND DELIVERY OF ALL SALVAGE MATERIAL.

THE CONTRACTOR SHALL OBTAIN ALL NECESSARY STATE AND CITY PERMITS, INCLUDING BUT NOT LIMITED TO: SIDEWALK, CURB, AND ROAD OPENING.

CONTRACTOR SHALL REPLACE ALL PAVEMENT MARKINGS 200 FEET ALONG ALL APPROACHES AS SHOWN ON THE PLANS. NEW STOP BARS, CROSSWALKS AND LEGENDS SHALL BE INSTALLED AS SHOWN ON THE PLANS. THE NEW PAVEMENT MARKINGS TO MATCH THE EXISTING PAVEMENT MARKINGS. ALL CONFLICTING PAVEMENT MARKINGS TO BE REMOVED.

INSTALL PAVEMENT MARKINGS IN ACCORDANCE WITH MISCELLANEOUS DETAIL SHEET # 62 "SPECIAL DETAILS AND TYPICAL PAVEMENT MARKINGS FOR TWO–WAY HIGHWAYS."

TRAFFIC SIGNAL APPURTENANCES (CONTROLLERS, MAST ARM, SPAN POLES, PEDESTALS AND HAND HOLES) WHEN IN OR ADJACENT TO SIDEWALKS SHALL BE FIELD LOCATED BY THE CONTRACTOR TO PROVIDE A FREE PATH OF NOT LESS THAN 3 FEET. ANY PROPOSED REVISIONS TO THE LOCATIONS OF THE APPURTENANCES SHOWN ON THE PLAN MUST BE SUBMITTED FOR REVIEW AND APPROVAL BY THE CITY OF NORWALK TRAFFIC ENGINEER PRIOR TO INSTALLATION.

TRAFFIC SIGNAL APPURTENANCES (CONTROLLERS, MAST ARM, AND PEDESTALS) WHEN IN OR ADJACENT TO SIDEWALKS SHALL BE FIELD LOCATED BY THE CONTRACTOR TO PROVIDE A FREE PATH OF NOT LESS THAN 3 FEET.

ALL SIGNS DAMAGED DURING CONSTRUCTION SHALL BE REPLACED IN KIND BY THE CONTRACTOR AT HIS EXPENSE.

CONTRACTOR WILL BE REQUIRED TO TRIM TREE BRANCHES AT EACH APPROACH TO OBTAIN CLEAR SIGHTLINE TO THE SIGNAL HEADS. TREE BRANCHES SHALL BE TRIMMED BACK TO THE CURB LINE FOR A MINIMUM OF 300' FEET BACK FROM THE STOP BAR. THIS WORK SHALL BE PAID FOR UNDER ITEM NO. 0952001A "SELECTIVE CLEARING AND THINNING".

CONTRACTOR SHALL REMOVE ALL EXISTING SIGNS THAT CONFLICT WITH THE PROPOSED SIGNS. AS DIRECTED BY THE ENGINEER. THIS WORK SHALL BE PAID FOR UNDER ITEM NO. 1206023A "REMOVAL AND RELOCATION OF EXISTING SIGNS".

INSTALL SIGNS AND METAL SIGN POSTS IN ACCORDANCE WITH MISCELLANEOUS DETAIL SHEET # 55 "TYPICAL SIGNS, SUPPORTS AND SIGN PLACEMENT DETAILS" AND SHEET # 56 "TYPICAL METAL SIGN POSTS AND SIGN MOUNTING DETAILS."

CONTRACTOR SHALL TRIM ALL NECESSARY BUSHES, SHRUBS, TREES, ETC. OBSTRUCTING ANY TRAFFIC SIGNAL EQUIPMENT OR VISIBILITY OF SIGNAL HEADS.

CONTRACTOR SHALL REMOVE ALL EXISTING SIGNS THAT CONFLICT WITH THE PROPOSED SIGNS.

CONTRACTOR SHALL REPLACE IN KIND ALL DISTURBED AREAS (CURBING, SIDEWALK, LANDSCAPE ETC.) ASSOCIATED WITH THE CONSTRUCTION OF SIGNAL EQUIPMENT. THE LIMIT OF WORK ASSOCIATED WITH THE CONSTRUCTION OF SIGNAL EQUIPMENT SHALL BE A MINIMUM OF TEN (10) FEET UNLESS OTHERWISE SPECIFIED.

ALL DISTURBED LANDSCAPE AREAS SHALL BE TREATED WITH TOP SOIL AND SEEDING PAID FOR UNDER ITEM NO. 944001 "FURNISHING AND PLACING TOPSOIL" AND ITEM NO. 950005 "TURF ESTABLISHMENT".

A VERTICAL CLEARANCE OF 16 TO 18 FEET OVER ROADWAY PAVEMENT IS REQUIRED FOR TRAFFIC SIGNALS.

CONTRACTOR TO PROVIDE FOUR SETS OF CABINET WIRING DIAGRAMS IN THE CABINET.

CONTRACTOR SHALL INSTALL 1.5" RISER ON SERVICE POLE INDICATED ON PLAN FOR ELECTRICAL SERVICE.

CONTRACTOR SHALL REPLACE THE ENTIRE SECTION OF SIDEWALK DAMAGED DUE TO INSTALLATION OF CONDUIT, HANDHOLE, OR FOUNDATION. THE SIDEWALK SHALL BE RESTORED WITHIN 48 HOURS OF DISTURBANCE.

⟨X⟩ CONTRACTOR SHALL INSTALL FIBER OPTIC SPLICE ENCLOSURE IN THE HANDHOLE FOR THE INSTALLATION OF FIBER OPTIC DROP CABLE.

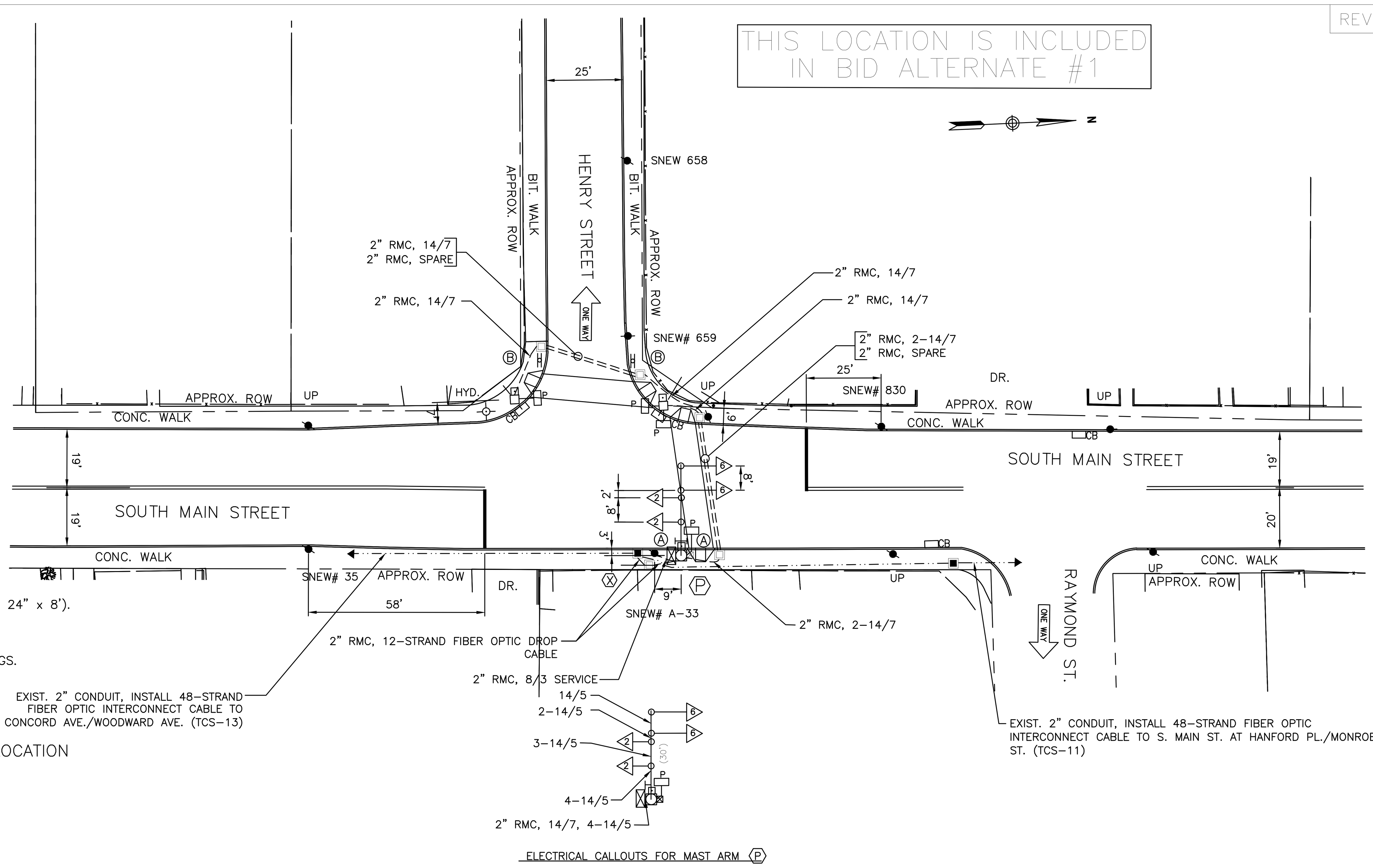
SIGN LEGEND

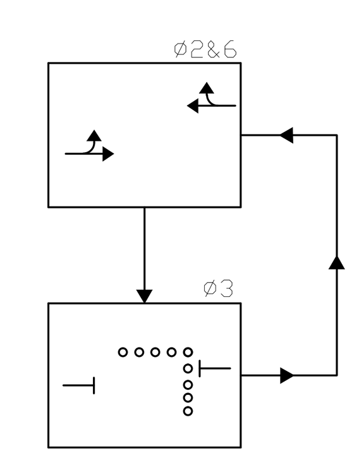
Ⓐ INSTALL HENRY ST – OVERHEAD MOUNT

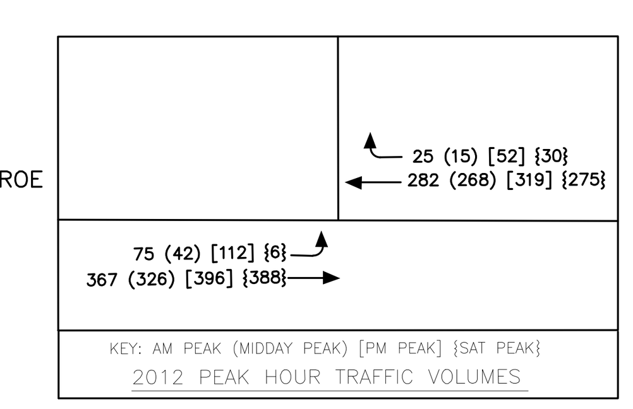
Ⓑ INSTALL 31–1177Z (ONE WAY →)
31–1188Z (ONE WAY ←)

NOTE:
ALL SIGNS TO BE MAINTAINED BY THE CITY OF NORWALK

REV. | INTERSECTION # 53







PAVEMENT MARKING NOTES:

WHITE CROSSWALKS TO BE BAR TYPE CROSSWALKS (24" x 24" x 8').

WHITE STOP BAR SHALL BE 24" WIDE.

ALL PAVEMENT MARKINGS SHALL BE EPOXY RESIN MARKINGS.

ALL PAVEMENT MARKINGS TO BE MAINTAINED BY THE CITY OF NORWALK.

MAST ARM DESIGN CRITERIA PER SPECIFIC LOCATION

ID	SHAFT HEIGHT	ARM LENGTH	LOAD CASE
⟨P⟩	19'	30'	30–1W

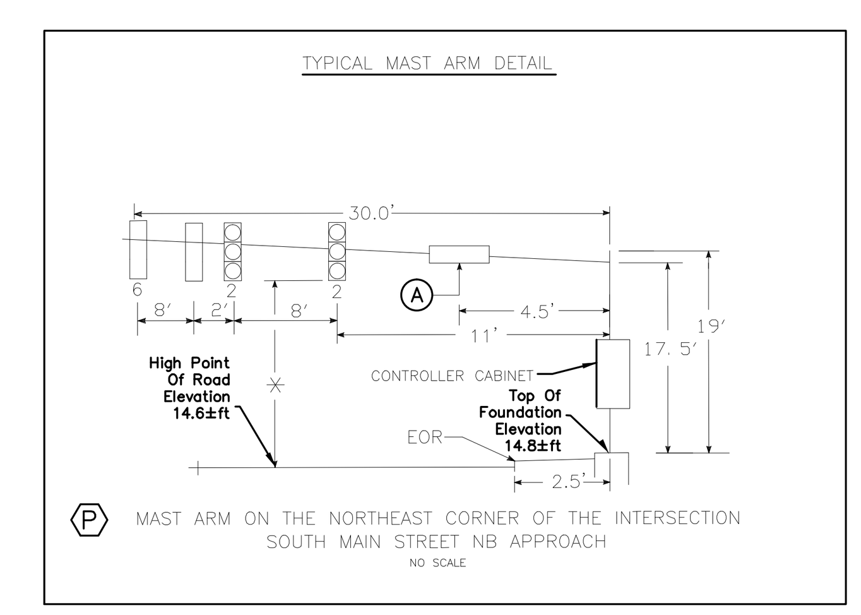
CITY SIGNAL

LEGEND:
- ○ PROPOSED WOOD SPAN POLE
- ● EXISTING WOOD SPAN POLE
- PROPOSED STEEL MAST ARM
- EXISTING STEEL SPAN POLE
- • BOLLARD
- EXISTING PTZ CAMERA
- PROPOSED UTILITY POLE
- EXISTING UTILITY POLE
- PEDESTAL MOUNTING
- PEDESTRIAN PUSH BUTTON & SIGN
- E ELECTRIC VAULT
- TRAFFIC SIGNAL FACE
- PEDESTRIAN SIGNAL HEAD
- AUDIBLE PEDESTRIAN SIGNAL
- LOOP DETECTOR
- PTZ CAMERA CONTROLLER
- DETECTED MOVEMENT
- SD SYSTEM DETECTOR
- OPTICAL DETECTOR
- PROPOSED CONTROLLER
- EXISTING CONTROLLER
- PROPOSED HANDHOLE
- EXISTING HANDHOLE
- PROPOSED R.M.C. (RIGID METAL CONDUIT)
- EXIST. INTERCONNET CONDUIT
- FIBER OPTIC SPLICE ENCLOSURE
- EXISTING R.M.C. (RIGID METAL CONDUIT)
- CABLE CLOSURE
- DET. LEADS IN SAW CUT
- OVERHEAD SIGN
- VIDEO DETECTOR
- STRAIN INSULATOR
- AUXILIARY TERMINATION CABINET
- AUXILIARY EQUIPMENT CABINET
- D APPROXIMATE DETECTOR AIMING ZONE

TRAFFIC CONTROL SIGNAL LAYOUT

CADD FILE NAME: TCS–12_S Main St @ Henry St.dwg | SCALE – 1''=30'
DATE PLOTTED: Apr 01, 2011

CITY OF NORWALK
SOUTH MAIN STREET AT
HENRY STREET



✳ DISTANCE BETWEEN ROAD AND SIGNAL HEAD SHALL BE 16' TO 18'.

CROSS SECTION IS IN LINE WITH MAST ARM.
CONTRACTOR TO VERIFY MAST ARM INFORMATION PRIOR TO ORDERING MAST ARMS, PER SPECIAL PROVISIONS.
ALL MAST ARM MOUNTED TRAFFIC SIGNALS ARE FIXED MOUNTED TO THE ARM BY THE USE OF ADJUSTABLE BRACKETS.
OPTICAL PRE–EMPTION EQUIPMENT AND STREET SIGNS TO BE FIELD LOCATED.
EOR = EDGE OF ROADWAY

REV. | INTERSECTION # 53

NO.	DATE	INIT.	DESCRIPTION

REVISIONS

CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT TITLE: PHASE I – NORWALK TRAFFIC SIGNAL CONTROLLER/SYSTEM UPGRADE

OFFICE OF ENGINEERING

TOWN: NORWALK | PROJECT NO.: 0301–0176
DRAWING TITLE: SOUTH MAIN STREET AT HENRY STREET | DRAWING NO.: TCS–12
SHEET NO.: 34

THIS LOCATION IS INCLUDED IN BID ALTERNATE #1

MOVEMENT DIAGRAM																									
NTOR		PHASE 1			PHASE 2			PHASE 3			PHASE 4			PHASE 5			PHASE 6			PHASE 7			PHASE 8		
FACE #	FLASH	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL	GRN	CL	CL
2	Y				G	Y	R	R	R	R	R	R	R				R	R	R	R	R	R	R	R	R
3	R				R	R	R	R	R	R	R	R	R				R	R	R	←G	Y	R	R	R	R
4	R				R	R	R	R	R	R	G	Y	R				R	R	R	R	R	R	R	R	R
6	Y				R	R	R	R	R	R	R	R	R				G	Y	R	R	R	R	R	R	R
7	R				R	R	R	R	R	R	R	R	R				R	R	R	G	Y	R	R	R	R
8	R				R	R	R	R	R	R	R	R	R				R	R	R	R	R	R	G	Y	R
P	OFF				←	DW	→	WØ	← DW	→	←	DW	→				←	DW	→	←	DW	→	←	DW	→
						←YIELD												←YIELD							
MIN					10	3	1	7 | 9	4	0	6	3	1				10	3	1	6	3	1.5	10	3	1
MAX					50	5	3	10 | 11	4	0	25	5	3				50	5	3	45	4	3.0	50	5	3
INTERVALS: MIN GRN					15				COUNTDOWN PEDESTRIAN SIGNAL		7						15			10			10		
WALK								7																	
PED CLR								9																	
VEH EXT											3									3			3		
MAX 1					30						20						30			30			20		
MAX 2					40						25						40			40			25		
YELLOW						3.2			4			3.3						3.2			3.1			3.3	
RED							2.5			0			3.4						2.5			1.6			3.4
ADD INIT																									
MAX INIT																									
TBR																									
TTR																									
MIN GAP																									
MODE		OFF			MAX RECALL			NON-LOCK			NON-LOCK			OFF			MAX RECALL			NON LOCK			NON-LOCK		
INT START					THIS PHASE												THIS PHASE								

DETECTORS			
IDENT	SIZE (WXL)	DELAY/EXT	MODE
D4	6' x 50'	0	VIDEO DETECTION
D4A	6' x 50'	0	VIDEO DETECTION
D7	12' x 50'	0	VIDEO DETECTION
D8	6' x 50'	0	VIDEO DETECTION
SD1	12' x 6'	0	VIDEO DETECTION
SD2	12' x 6'	0	VIDEO DETECTION
SD3	6' x 6'	0	VIDEO DETECTION
SD4	6' x 6'	0	VIDEO DETECTION
SD5	6' x 6'	0	VIDEO DETECTION
SD6	6' x 6'	0	VIDEO DETECTION
SD7	12' x 6'	0	VIDEO DETECTION
SD8	6' x 6'	0	VIDEO DETECTION

PROGRAM			COORDINATION TYPE- CENTRAL SYSTEM												PERMIS PERIOD	
FUNCTION	TIME	DAYS	CYCLE	OFFSET SEC	OFFSET %	Ø1	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7	Ø8		Ø	SEC
FLASH	FUTURE															
PATTERN 1	0600-0900	M-F	90	45	50		29 / 32	12 / 13	22 / 24		29 / 32	27 / 30	22 / 24			
PATTERN 2	ALL OTHER TIMES	DAILY	80	0	0		23 / 29	12 / 15	22 / 27		23 / 29	23 / 29	22 / 27			
PATTERN 3	0900-1500	M-F	80	0	0		23 / 29	12 / 15	22 / 27		23 / 29	23 / 29	22 / 27			
PATTERN 4	1500-1900	M-F	90	89	99		31 / 35	12 / 13	20 / 22		31 / 35	27 / 30	20 / 22			
PATTERN 5	1000-1600	SA-SU	80	79	99		25 / 31	12 / 15	20 / 25		25 / 31	23 / 29	20 / 25			
MAX 1	ALL OTHER TIMES															
MAX 2	FUTURE															
FREE	FUTURE															

PHASE SPLITS SEC/%

SYSTEM LOC
MASTER
CITY HALL
INT# 49
INT# 50
INT# 51
INT# 52
INT# 53
INT# 54

TECHNICAL NOTES

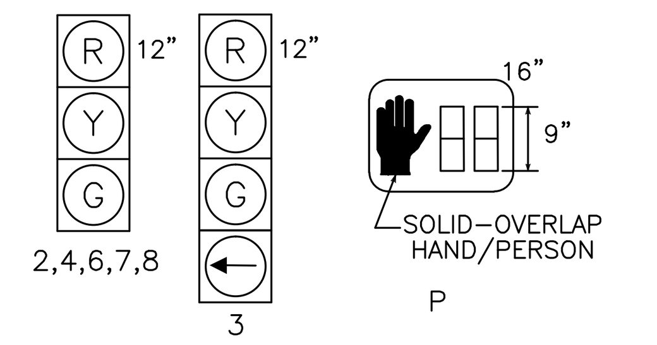
1. STANDARD OVERLAP SKIP FEATURES APPLY.
2. MANUAL AND INTERVAL ADVANCE PHASE TO BE DISCONNECTED DURING PHASE 3 PEDESTRIAN CLEARANCE INTERVAL.
3. COUNTDOWN DISPLAYS SHALL NOT BE USED DURING THE WALK INTERVAL NOR DURING THE YELLOW CHANGE INTERVAL OF A CONCURRENT VEHICULAR PHASE.
4. FLOATING FORCE-OFFS SHALL BE IN EFFECT.
5. TIMING SHOWN REFLECT FREE OPERATION. ACTUAL PHASE SPLITS TO BE DETERMINED BY THE COORDINATION PROGRAM.
6. PHASE SPLITS SHOWN REPRESENT PRELIMINARY COORDINATION DATA.

LEGEND:
R RED
Y YELLOW
G GREEN
◄R RED ARROW
◄Y YELLOW ARROW
◄ GREEN ARROW
WØ WALK/ PED. CLR
D.W. DON'T WALK
FL. FLASHING

ENERGY BY- CITY | METER # -
MAINT LEVEL | SERVICE POLE- SNEW A-44

METERED SERVICE

SIGNAL FACES



ALL INDICATIONS TO HAVE L.E.D. LAMPS.

SIGNAL HEADS 3,4,7,8 TO HAVE 5" LOUVERED BACK PLATES.

SIGNAL HEAD 8 TO HAVE RIGHT CUT-OFF LOUVERS.

SIGNAL HEAD 2 TO HAVE LEFT CUT-OFF LOUVERS.

PEDESTRIAN SIGNAL FACE TO HAVE COUNTDOWN TIMER.

CITY SIGNAL

INTERSECTION # 54

OFFICE RECORD

STC # SM #

SIGNAL REVISED

SIGNAL REVISED UNDER PROJECT 102-337. NEW TRAFFIC SIGNAL EQUIPMENT INSTALLED AND CONNECTED TO COMPUTERIZED CENTRAL

STATE OF CONNECTICUT
DEPARTMENT OF TRANSPORTATION
BUR. OF ENGINEERING & HWY OPERATIONS
DIVISION OF TRAFFIC ENGINEERING

TRAFFIC CONTROL SIGNAL

CITY OF NORWALK
SOUTH MAIN STREET AT
WOODWARD AVENUE/CONCORD AVENUE

REV #	TRAFFIC	DATE	ELECTRICAL	DATE
ENGINEER				
DRAFTER				
CHECKED BY				
SUBMITTED BY				
APPROVED BY				
DATE				

Vanasse Hangen Brustlin, Inc.
Transportation & Land Development & Environmental Services
54 Tuttle Place, Middletown, Connecticut 06457-1847
Tel: 860 632-1500 & Fax: 860 632-7879

CONSTRUCTION NOTES

ALL TRAFFIC SIGNAL EQUIPMENT SHALL BE NEW, EXCEPT AS NOTED.

CONTRACTOR SHALL STAKE ALL R.O.W. PRIOR TO EXCAVATION. ALL WORK, INCLUDING ALL FOUNDATIONS SHALL BE WITHIN THE R.O.W EXCEPT AS NOTED.

INSTALL RACK MOUNT NEMA TS2 TYPE 1 CONTROLLER IN A CABINET AS SPECIFIED IN THE BID DOCUMENTS.

Ⓜ CONTRACTOR SHALL INSTALL NEW CONTROLLER CABINET ON EXISTING FOUNDATION AS SHOWN ON THE PLAN.

CONTROLLER BACK TO ALWAYS FACE THE INTERSECTION, SERVICE METERS TO BE INSTALLED ON THE SIDE OF THE CABINET.

CONTRACTOR SHALL REMOVE ALL ABANDONED TRAFFIC SIGNAL EQUIPMENT INCLUDING BUT NOT LIMITED TO FOUNDATIONS, HANDHOLES, CONDUIT RISERS & CABLE, AND STEEL POLES.

ALL HANDHOLES ARE 30" x 30" UNLESS OTHERWISE SPECIFIED. CONTRACTOR SHALL INSTALL HANDHOLES APPROXIMATELY 1 FOOT BEHIND CURB OR EDGE OF ROADWAY UNLESS OTHERWISE SPECIFIED.

CONTRACTOR SHALL TELEPHONE "CALL BEFORE YOU DIG" AT 1-800-922-4455 48 HOURS PRIOR TO ANY EXCAVATION. CONTRACTOR SHALL CONTACT UTILITY REPRESENTATIVES AND CITY AGENCIES FOUR WEEKS PRIOR TO EXCAVATION.

REPRESENTATIVE	UTILITY	TELEPHONE
FRANCO CHIEFFALO	FIRST DISTRICT WATER DEPT.	(203) 847-7387
GEORGE LEARY	THIRD TAXING DISTRICT DEPT.	(203) 838-7445
JOHN ROBINSON	AT&T/SBC	(203) 238-7407
BILL HUGHES	AT&T (LOCAL)	(203) 846-9063
GEORGE REBENTISCH	CABLEVISION	(203) 750-5600
STEVE KLUBNIK	CL&P	(860) 665-2473
MARK BURKHART	AT&T (LONG LINES)	(203) 266-4372
WALTER MASHECK	SOUTH NORWALK ELECTRICITY AND WATER (ELECTRICITY DEPARTMENT)	(203) 866-3366
SCOTT WHITTIER	SOUTH NORWALK ELECTRICITY AND WATER (WATER DEPARTMENT)	(203) 866-4446
DAN FITZSIMMONS	YANKEE GAS	(203) 854-6450
CONNIE BLAIR	NORWALK DEPT. OF PUBLIC WORKS CALL CENTER	(203) 854-3200

THE CONTRACTOR SHALL CONTACT MR. FRED ESHRAGHI, CITY OF NORWALK TRAFFIC ENGINEER AT (203) 854-7791 PRIOR TO ANY EXCAVATION AND DELIVERY OF ALL SALVAGE MATERIAL.

THE CONTRACTOR SHALL OBTAIN ALL NECESSARY STATE AND CITY PERMITS, INCLUDING BUT NOT LIMITED TO: SIDEWALK, CURB, AND ROAD OPENING.

CONTRACTOR SHALL REPLACE ALL PAVEMENT MARKINGS 200 FEET ALONG ALL APPROACHES AS SHOWN ON THE PLANS. NEW STOP BARS, CROSSWALKS AND LEGENDS SHALL BE INSTALLED AS SHOWN ON THE PLANS. THE NEW PAVEMENT MARKINGS TO MATCH THE EXISTING PAVEMENT MARKINGS. ALL CONFLICTING PAVEMENT MARKINGS TO BE REMOVED.

INSTALL PAVEMENT MARKINGS IN ACCORDANCE WITH MISCELLANEOUS DETAIL SHEET # 62 "SPECIAL DETAILS AND TYPICAL PAVEMENT MARKINGS FOR TWO-WAY HIGHWAYS."

TRAFFIC SIGNAL APPURTENANCES (CONTROLLERS, MAST ARM, SPAN POLES, PEDESTALS AND HAND HOLES) WHEN IN OR ADJACENT TO SIDEWALKS SHALL BE FIELD LOCATED BY THE CONTRACTOR TO PROVIDE A FREE PATH OF NOT LESS THAN 3 FEET. ANY PROPOSED REVISIONS TO THE LOCATIONS OF THE APPURTENANCES SHOWN ON THE PLAN MUST BE SUBMITTED FOR REVIEW AND APPROVAL BY THE CITY OF NORWALK TRAFFIC ENGINEER PRIOR TO INSTALLATION.

ALL SIGNS DAMAGED DURING CONSTRUCTION SHALL BE REPLACED IN KIND BY THE CONTRACTOR AT HIS EXPENSE.

CONTRACTOR WILL BE REQUIRED TO TRIM TREE BRANCHES AT EACH APPROACH TO OBTAIN CLEAR SIGHTLINE TO THE SIGNAL HEADS. TREE BRANCHES SHALL BE TRIMMED BACK TO THE CURB LINE FOR A MINIMUM OF 300' FEET BACK FROM THE STOP BAR. THIS WORK SHALL BE PAID FOR UNDER ITEM NO. 0952001A "SELECTIVE CLEARING AND THINNING".

CONTRACTOR SHALL REMOVE ALL EXISTING SIGNS THAT CONFLICT WITH THE PROPOSED SIGNS. AS DIRECTED BY THE ENGINEER. THIS WORK SHALL BE PAID FOR UNDER ITEM NO. 1206023A "REMOVAL AND RELOCATION OF EXISTING SIGNS".

INSTALL SIGNS AND METAL SIGN POSTS IN ACCORDANCE WITH MISCELLANEOUS DETAIL SHEET # 55 "TYPICAL SIGNS, SUPPORTS AND SIGN PLACEMENT DETAILS" AND SHEET # 56 "TYPICAL METAL SIGN POSTS AND SIGN MOUNTING DETAILS."

VIDEO DETECTION CAMERAS AND DETECTOR ZONE LOCATIONS ARE FOR ILLUSTRATION ONLY. EXACT LOCATIONS AND DETECTOR ZONE SIZES SHALL BE DETERMINED BY THE MANUFACTURER. ALL CABLES ARE TO BE INSTALLED BY THE CONTRACTOR CONTINUOUS BETWEEN EACH VIDEO DETECTION CAMERA TO THE CONTROLLER CABINET.

CONTRACTOR SHALL REPLACE IN KIND ALL DISTURBED AREAS (CURBING, SIDEWALK, LANDSCAPE ETC.) ASSOCIATED WITH THE CONSTRUCTION OF SIGNAL EQUIPMENT. THE LIMIT OF WORK ASSOCIATED WITH THE CONSTRUCTION OF SIGNAL EQUIPMENT SHALL BE A MINIMUM OF TEN (10) FEET UNLESS OTHERWISE SPECIFIED.

ALL DISTURBED LANDSCAPE AREAS SHALL BE TREATED WITH TOP SOIL AND SEEDING PAID FOR UNDER ITEM NO. 944001 "FURNISHING AND PLACING TOPSOIL" AND ITEM NO. 950005 "TURF ESTABLISHMENT".

A VERTICAL CLEARANCE OF 16 TO 18 FEET OVER ROADWAY PAVEMENT IS REQUIRED FOR TRAFFIC SIGNALS.

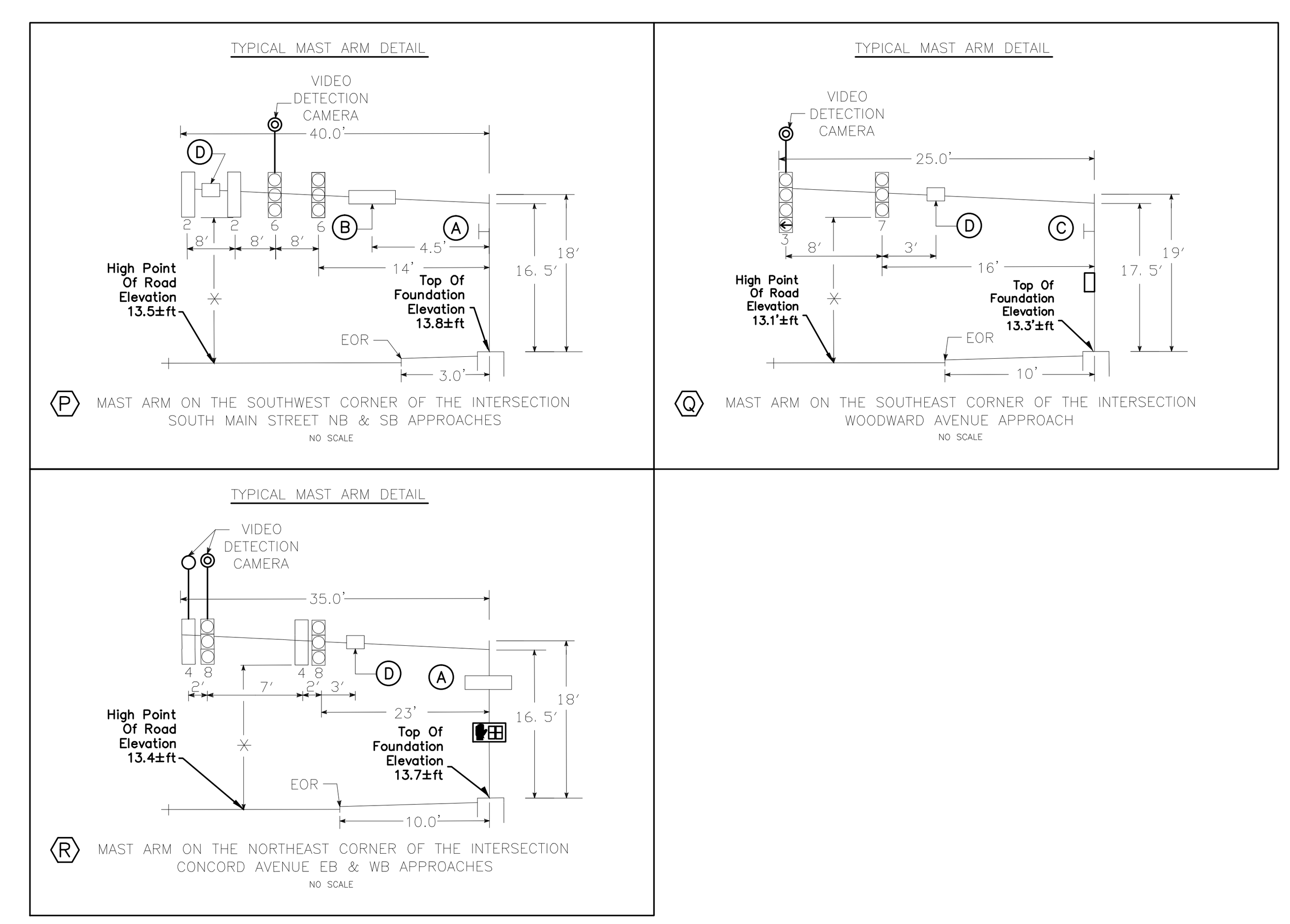
CONTRACTOR TO PROVIDE FOUR SETS OF CABINET WIRING DIAGRAMS IN THE CABINET.

CONTRACTOR SHALL REPLACE THE ENTIRE SECTION OF SIDEWALK DAMAGED DUE TO INSTALLATION OF CONDUIT, HANDHOLE, OR FOUNDATION. THE SIDEWALK SHALL BE RESTORED WITHIN 48 HOURS OF DISTURBANCE.

CONTRACTOR SHALL INSTALL 96" RISER ON MAST ARMS BEHIND THE SIGNAL HEADS FOR INSTALLING VIDEO CAMERA AS SHOWN ON THE PLAN. CONTRACTOR SHALL REFER TO SPECIAL PROVISIONS FOR THE TYPICAL INSTALLATION DETAIL FOR CAMERAS MOUNTED ON EXTENSION BRACKETS AND RISERS.

CONTRACTOR SHALL PROVIDE TEMPORARY SIGNALIZATION AT THIS LOCATION UNDER ITEM# 1118057A (SITE NO.7)

Ⓧ CONTRACTOR SHALL INSTALL FIBER OPTIC SPLICE ENCLOSURE IN THE HANDHOLE FOR THE INSTALLATION OF FIBER OPTIC DROP CABLE.



✳ DISTANCE BETWEEN ROAD AND SIGNAL HEAD SHALL BE 16' TO 18'.

CROSS SECTION IS IN LINE WITH MAST ARM.
CONTRACTOR TO VERIFY MAST ARM INFORMATION PRIOR TO ORDERING MAST ARMS, PER SPECIAL PROVISIONS.
ALL MAST ARM MOUNTED TRAFFIC SIGNALS ARE FIXED MOUNTED TO THE ARM BY THE USE OF ADJUSTABLE BRACKETS.
OPTICAL PRE-EMPTION EQUIPMENT AND STREET SIGNS TO BE FIELD LOCATED.
EOR = EDGE OF ROADWAY

SIGN LEGEND

Ⓐ INSTALL SOUTH MAIN ST - SHAFT MOUNT
Ⓑ INSTALL [↖ WOODWARD AVE / ← CONCORD AVE] - OVERHEAD MOUNT
Ⓒ INSTALL WOODWARD AVE - SHAFT MOUNT
Ⓓ INSTALL 31-0823Z (NO TURN ON RED-OVERHEAD MOUNT)
Ⓔ EXISTING 31-1177Z (ONE WAY →)
31-1188Z (ONE WAY ←)
Ⓕ EXISTING 31-1111Z (DO NOT ENTER)
Ⓖ RELOCATE 31-0117Z (LEFT LANE MUST TURN LEFT)
Ⓗ INSTALL 31-0282Z (↰ ONLY ↱)

NOTE:
ALL SIGNS TO BE MAINTAINED BY THE CITY OF NORWALK

PAVEMENT MARKING NOTES:

WHITE CROSSWALKS TO BE BAR TYPE CROSSWALKS (24" x 24" x 8').

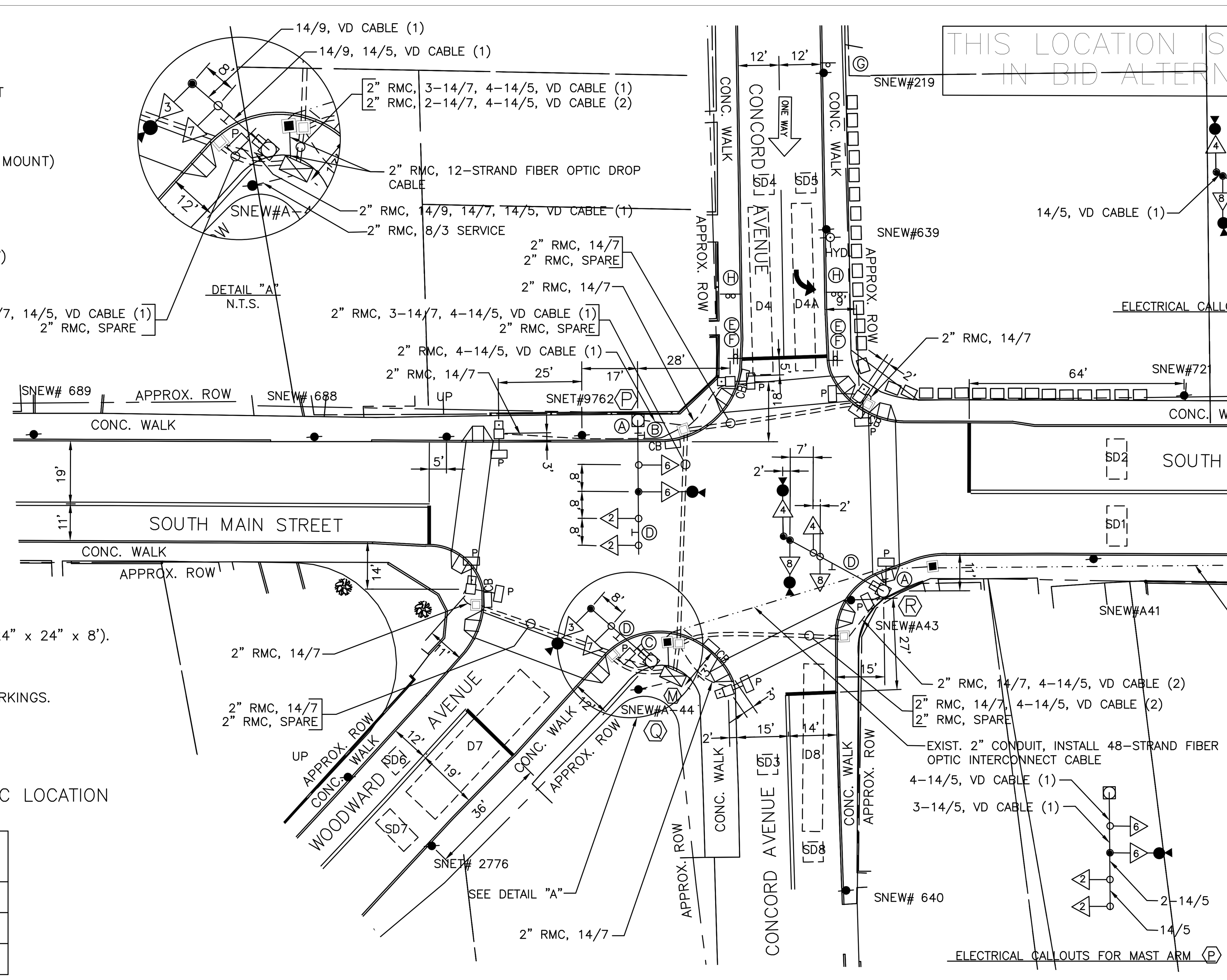
WHITE STOP BAR SHALL BE 24" WIDE.

ALL PAVEMENT MARKINGS SHALL BE EPOXY RESIN MARKINGS.

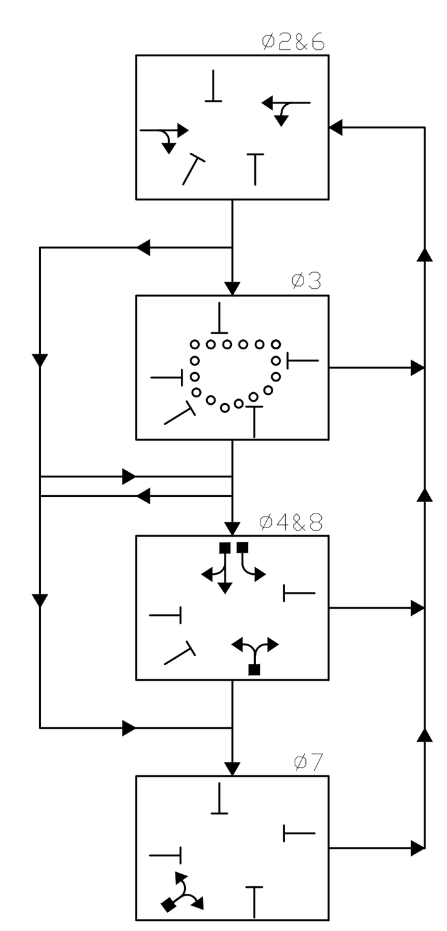
ALL PAVEMENT MARKINGS TO BE MAINTAINED BY THE CITY OF NORWALK.

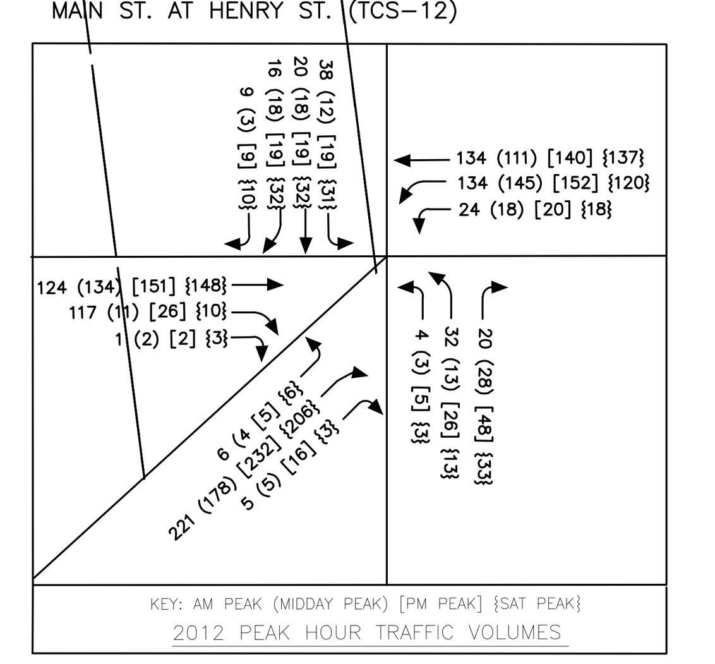
MAST ARM DESIGN CRITERIA PER SPECIFIC LOCATION

ID	SHAFT HEIGHT	ARM LENGTH	LOAD CASE
Ⓟ	18'	40'	40-1W
Ⓠ	19'	25'	25-1W
Ⓡ	18'	35'	35-1W



INTERSECTION # 54





DETECTOR CHART		
DETECTOR	LOCAL	SYSTEM
D4	Ø4 C&E	–
D4A	Ø4 C&E	–
D7	Ø7 C&E	–
D8	Ø8 C&E	–
SD1	–	SD1
SD2	–	SD2
SD3	–	SD3
SD4	–	SD4
SD5	–	SD5
SD6	–	SD6
SD7	–	SD7
SD8	–	SD8

C&E = CALL AND EXTEND

CITY SIGNAL

LEGEND:
○ PROPOSED WOOD SPAN POLE
● EXISTING WOOD SPAN POLE
PROPOSED STEEL MAST ARM
EXISTING STEEL SPAN POLE
• BOLLARD
EXISTING PTZ CAMERA
PROPOSED UTILITY POLE
EXISTING UTILITY POLE
PEDESTAL MOUNTING
PEDESTRIAN PUSH BUTTON & SIGN
ELECTRIC VAULT
TRAFFIC SIGNAL FACE
PEDESTRIAN SIGNAL HEAD
AUDIBLE PEDESTRIAN SIGNAL
LOOP DETECTOR
PTZ CAMERA CONTROLLER
DETECTED MOVEMENT
SD SYSTEM DETECTOR
OPTICAL DETECTOR
PROPOSED CONTROLLER
EXISTING CONTROLLER
PROPOSED HANDHOLE
EXISTING HANDHOLE
PROPOSED R.M.C. (RIGID METAL CONDUIT)
EXIST. INTERCONNECT CONDUIT
FIBER OPTIC SPLICE ENCLOSURE
EXISTING R.M.C. (RIGID METAL CONDUIT)
CABLE CLOSURE
DET. LEADS IN SAW CUT
OVERHEAD SIGN
VIDEO DETECTOR
STRAIN INSULATOR
AUXILIARY TERMINATION CABINET
AUXILIARY EQUIPMENT CABINET
D APPROXIMATE VIDEO DETECTOR AIMING ZONE

TRAFFIC CONTROL SIGNAL LAYOUT
CADD FILE NAME: TCS-13_S Main St @ Woodward Ave & Concord Ave.dwg
SCALE 1"=30'
DATE PLOTTED: Apr 01, 2011

CITY OF NORWALK
SOUTH MAIN STREET AT
WOODWARD AVENUE/CONCORD AVENUE

NO.	DATE	INIT.	DESCRIPTION

REVISIONS

CONNECTICUT
DEPARTMENT OF TRANSPORTATION

PROJECT TITLE: PHASE I - NORWALK TRAFFIC SIGNAL CONTROLLER/SYSTEM UPGRADE

TOWN: NORWALK
DRAWING TITLE: S. MAIN ST. AT WOODWARD AVE/ CONCORD AVE
PROJECT NO.: 0301-0176
DRAWING NO.: TCS-13
SHEET NO.: 35

REV. INTERSECTION # 54

THIS LOCATION IS INCLUDED IN BID ALTERNATE #1

APPENDIX

K SYNCHRO RESULTS

Intersection	
Intersection Delay, s/veh	19
Intersection LOS	C

Movement	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations						
Traffic Vol, veh/h	86	186	124	276	328	68
Future Vol, veh/h	86	186	124	276	328	68
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	93	202	135	300	357	74
Number of Lanes	0	1	1	0	1	0

Approach	NB	SB	NE
Opposing Approach	SB	NB	
Opposing Lanes	1	1	0
Conflicting Approach Left	NE		SB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		NE	NB
Conflicting Lanes Right	0	1	1
HCM Control Delay	15.1	18.2	22.5
HCM LOS	C	C	C

Lane	NELn1	NBLn1	SBLn1
Vol Left, %	83%	32%	0%
Vol Thru, %	0%	68%	31%
Vol Right, %	17%	0%	69%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	396	272	400
LT Vol	328	86	0
Through Vol	0	186	124
RT Vol	68	0	276
Lane Flow Rate	430	296	435
Geometry Grp	1	1	1
Degree of Util (X)	0.712	0.497	0.652
Departure Headway (Hd)	5.953	6.057	5.401
Convergence, Y/N	Yes	Yes	Yes
Cap	603	591	665
Service Time	4.021	4.145	3.482
HCM Lane V/C Ratio	0.713	0.501	0.654
HCM Control Delay	22.5	15.1	18.2
HCM Lane LOS	C	C	C
HCM 95th-tile Q	5.8	2.8	4.8

Intersection	
Intersection Delay, s/veh	18.2
Intersection LOS	C

Movement	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations						
Traffic Vol, veh/h	82	173	135	278	310	71
Future Vol, veh/h	82	173	135	278	310	71
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	89	188	147	302	337	77
Number of Lanes	0	1	1	0	1	0

Approach	NB	SB	NE
Opposing Approach	SB	NB	
Opposing Lanes	1	1	0
Conflicting Approach Left	NE		SB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		NE	NB
Conflicting Lanes Right	0	1	1
HCM Control Delay	14.2	18.3	20.7
HCM LOS	B	C	C

Lane	NELn1	NBLn1	SBLn1
Vol Left, %	81%	32%	0%
Vol Thru, %	0%	68%	33%
Vol Right, %	19%	0%	67%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	381	255	413
LT Vol	310	82	0
Through Vol	0	173	135
RT Vol	71	0	278
Lane Flow Rate	414	277	449
Geometry Grp	1	1	1
Degree of Util (X)	0.68	0.462	0.662
Departure Headway (Hd)	5.909	6.005	5.312
Convergence, Y/N	Yes	Yes	Yes
Cap	609	596	673
Service Time	3.973	4.085	3.383
HCM Lane V/C Ratio	0.68	0.465	0.667
HCM Control Delay	20.7	14.2	18.3
HCM Lane LOS	C	B	C
HCM 95th-tile Q	5.2	2.4	5

Intersection	
Intersection Delay, s/veh	20
Intersection LOS	C

Movement	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations						
Traffic Vol, veh/h	86	186	146	276	328	68
Future Vol, veh/h	86	186	146	276	328	68
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	93	202	159	300	357	74
Number of Lanes	0	1	1	0	1	0

Approach	NB	SB	NE
Opposing Approach	SB	NB	
Opposing Lanes	1	1	0
Conflicting Approach Left	NE		SB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		NE	NB
Conflicting Lanes Right	0	1	1
HCM Control Delay	15.3	20.1	23.2
HCM LOS	C	C	C

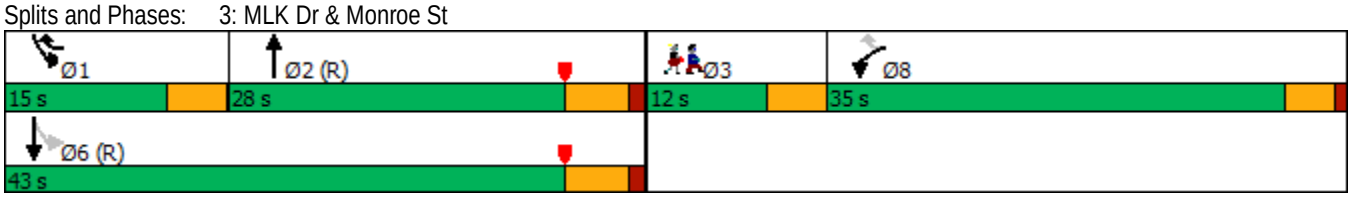
Lane	NELn1	NBLn1	SBLn1
Vol Left, %	83%	32%	0%
Vol Thru, %	0%	68%	35%
Vol Right, %	17%	0%	65%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	396	272	422
LT Vol	328	86	0
Through Vol	0	186	146
RT Vol	68	0	276
Lane Flow Rate	430	296	459
Geometry Grp	1	1	1
Degree of Util (X)	0.72	0.502	0.694
Departure Headway (Hd)	6.023	6.116	5.443
Convergence, Y/N	Yes	Yes	Yes
Cap	598	585	661
Service Time	4.096	4.211	3.527
HCM Lane V/C Ratio	0.719	0.506	0.694
HCM Control Delay	23.2	15.3	20.1
HCM Lane LOS	C	C	C
HCM 95th-tile Q	6	2.8	5.6

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø3
Lane Configurations							
Traffic Volume (vph)	127	249	431	60	180	836	
Future Volume (vph)	127	249	431	60	180	836	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	0	155		0	180		
Storage Lanes	1	1		0	1		
Taper Length (ft)	25				25		
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95	
Frt		0.850	0.977				
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1719	1482	3039	0	1626	3438	
Flt Permitted	0.950				0.380		
Satd. Flow (perm)	1719	1482	3039	0	650	3438	
Right Turn on Red		No		No			
Satd. Flow (RTOR)							
Link Speed (mph)	30		35			35	
Link Distance (ft)	1185		556			566	
Travel Time (s)	26.9		10.8			11.0	
Peak Hour Factor	0.66	0.95	0.92	0.70	0.91	0.90	
Heavy Vehicles (%)	5%	9%	17%	11%	11%	5%	
Adj. Flow (vph)	192	262	468	86	198	929	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	192	262	554	0	198	929	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Right	Left	Left	
Median Width(ft)	24		12			12	
Link Offset(ft)	0		0			0	
Crosswalk Width(ft)	16		16			16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)	15	9		9	15		
Number of Detectors	1	1	2		1	2	
Detector Template	Left	Right	Thru		Left	Thru	
Leading Detector (ft)	20	20	100		20	100	
Trailing Detector (ft)	0	0	0		0	0	
Detector 1 Position(ft)	0	0	0		0	0	
Detector 1 Size(ft)	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)			94			94	
Detector 2 Size(ft)			6			6	
Detector 2 Type			Cl+Ex			Cl+Ex	
Detector 2 Channel							
Detector 2 Extend (s)			0.0			0.0	
Turn Type	Prot	pm+ov	NA		pm+pt	NA	
Protected Phases	8	1	2		1	6	3

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø3
Permitted Phases		8			6		
Detector Phase	8	1	2		1	6	
Switch Phase							
Minimum Initial (s)	7.0	5.0	15.0		5.0	15.0	1.0
Minimum Split (s)	20.0	9.5	20.5		9.5	20.5	7.0
Total Split (s)	35.0	15.0	28.0		15.0	43.0	12.0
Total Split (%)	38.9%	16.7%	31.1%		16.7%	47.8%	13%
Maximum Green (s)	30.7	10.9	22.5		10.9	37.5	8.0
Yellow Time (s)	3.3	4.0	4.3		4.0	4.3	4.0
All-Red Time (s)	1.0	0.1	1.2		0.1	1.2	0.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.3	4.1	5.5		4.1	5.5	
Lead/Lag	Lag	Lead	Lag		Lead		Lead
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	C-Min		None	C-Min	None
Walk Time (s)							7.0
Flash Dont Walk (s)							15.0
Pedestrian Calls (#/hr)							10
Act Effct Green (s)	15.4	29.4	48.6		63.8	62.4	
Actuated g/C Ratio	0.17	0.33	0.54		0.71	0.69	
v/c Ratio	0.65	0.54	0.34		0.35	0.39	
Control Delay	47.3	25.7	15.2		7.9	7.8	
Queue Delay	0.0	0.0	0.0		0.0	0.0	
Total Delay	47.3	25.7	15.2		7.9	7.8	
LOS	D	C	B		A	A	
Approach Delay	34.8		15.2			7.8	
Approach LOS	C		B			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 15.5		Intersection LOS: B	
Intersection Capacity Utilization 42.4%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: MLK Dr & Monroe St



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	62	60	11	126	26	47	348	12	16	231	78
Future Volume (vph)	61	62	60	11	126	26	47	348	12	16	231	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	80		0	0		0	0		0	0		95
Storage Lanes	1		0	0		0	0		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.937			0.973			0.993				0.850
Flt Protected	0.950				0.995			0.994			0.997	
Satd. Flow (prot)	1719	1682	0	0	1782	0	0	1621	0	0	1810	1495
Flt Permitted	0.574				0.964			0.926			0.000	
Satd. Flow (perm)	1039	1682	0	0	1727	0	0	1510	0	0	0	1495
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		35			12			3				95
Link Speed (mph)		30			30			25			30	
Link Distance (ft)		1185			837			620			729	
Travel Time (s)		26.9			19.0			16.9			16.6	
Peak Hour Factor	0.79	0.69	0.93	0.50	0.84	0.60	0.79	0.90	0.46	0.94	0.93	0.82
Heavy Vehicles (%)	5%	5%	7%	10%	2%	4%	30%	14%	9%	0%	5%	8%
Adj. Flow (vph)	77	90	65	22	150	43	59	387	26	17	248	95
Shared Lane Traffic (%)												
Lane Group Flow (vph)	77	155	0	0	215	0	0	472	0	0	265	95
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		35			40			30			20	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100		20	100	20
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Prot	NA	Perm
Protected Phases		2			6			8		7	4	

Lane Group	Ø3
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	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	3

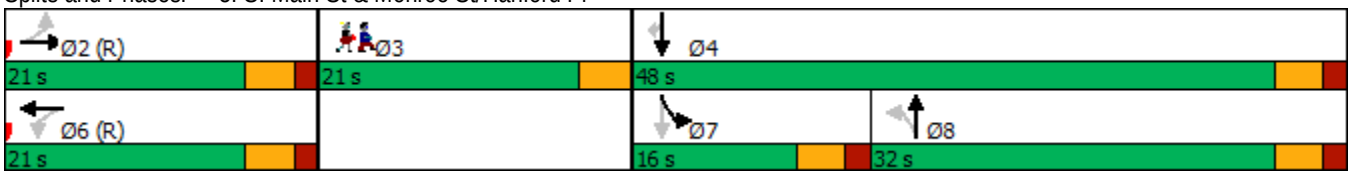
Lanes, Volumes, Timings
5: S. Main St & Monroe St/Hanford Pl

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2			6			8				7	4
Detector Phase	2	2		6	6		8	8		7	4	4
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	20.9	20.9		20.9	20.9		20.9	20.9		20.9	20.9	20.9
Total Split (s)	21.0	21.0		21.0	21.0		32.0	32.0		16.0	48.0	48.0
Total Split (%)	23.3%	23.3%		23.3%	23.3%		35.6%	35.6%		17.8%	53.3%	53.3%
Maximum Green (s)	16.1	16.1		16.1	16.1		27.1	27.1		11.1	43.1	43.1
Yellow Time (s)	3.3	3.3		3.3	3.3		3.2	3.2		3.2	3.2	3.2
All-Red Time (s)	1.6	1.6		1.6	1.6		1.7	1.7		1.7	1.7	1.7
Lost Time Adjust (s)	0.0	0.0			0.0			0.0			0.0	0.0
Total Lost Time (s)	4.9	4.9			4.9			4.9			4.9	4.9
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Recall Mode	C-Min	C-Min		C-Min	C-Min		None	None		None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	34.6	34.6			34.6			37.4			37.4	37.4
Actuated g/C Ratio	0.38	0.38			0.38			0.42			0.42	0.42
v/c Ratio	0.19	0.23			0.32			0.75			0.35	0.14
Control Delay	17.9	15.2			24.3			27.8			19.2	3.7
Queue Delay	0.0	0.0			0.0			0.0			0.0	0.0
Total Delay	17.9	15.2			24.3			27.8			19.2	3.7
LOS	B	B			C			C			B	A
Approach Delay		16.1			24.3			27.8			15.1	
Approach LOS		B			C			C			B	

Intersection Summary

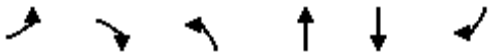
Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 11 (12%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green
Natural Cycle: 95
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.75
Intersection Signal Delay: 21.5 Intersection LOS: C
Intersection Capacity Utilization 72.1% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 5: S. Main St & Monroe St/Hanford Pl

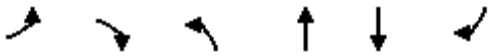


Lane Group	Ø3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	21.0
Total Split (s)	21.0
Total Split (%)	23%
Maximum Green (s)	17.5
Yellow Time (s)	3.5
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	4.0
Flash Dont Walk (s)	13.0
Pedestrian Calls (#/hr)	20
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Intersection Summary



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Lane Configurations							
Traffic Volume (vph)	0	0	87	426	328	29	
Future Volume (vph)	0	0	87	426	328	29	
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					0.989		
Flt Protected				0.992			
Satd. Flow (prot)	0	0	0	1848	1842	0	
Flt Permitted				0.873			
Satd. Flow (perm)	0	0	0	1626	1842	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)					10		
Link Speed (mph)	25			25	25		
Link Distance (ft)	360			541	620		
Travel Time (s)	9.8			14.8	16.9		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	0	0	95	463	357	32	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	0	0	558	389	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(ft)	0			0	0		
Link Offset(ft)	0			0	0		
Crosswalk Width(ft)	16			50	50		
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)	15	9	15			9	
Number of Detectors			1	2	2		
Detector Template			Left	Thru	Thru		
Leading Detector (ft)			20	100	100		
Trailing Detector (ft)			0	0	0		
Detector 1 Position(ft)			0	0	0		
Detector 1 Size(ft)			20	6	6		
Detector 1 Type			Cl+Ex	Cl+Ex	Cl+Ex		
Detector 1 Channel							
Detector 1 Extend (s)			0.0	0.0	0.0		
Detector 1 Queue (s)			0.0	0.0	0.0		
Detector 1 Delay (s)			0.0	0.0	0.0		
Detector 2 Position(ft)				94	94		
Detector 2 Size(ft)				6	6		
Detector 2 Type				Cl+Ex	Cl+Ex		
Detector 2 Channel							
Detector 2 Extend (s)				0.0	0.0		
Turn Type			Perm	NA	NA		
Protected Phases				2	6		3
Permitted Phases			2				
Detector Phase			2	2	6		
Switch Phase							
Minimum Initial (s)			15.0	15.0	15.0		4.0



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Minimum Split (s)			23.1	23.1	23.4		26.0
Total Split (s)			64.0	64.0	64.0		26.0
Total Split (%)			71.1%	71.1%	71.1%		29%
Maximum Green (s)			58.9	58.9	58.9		22.0
Yellow Time (s)			3.2	3.2	3.2		4.0
All-Red Time (s)			1.9	1.9	1.9		0.0
Lost Time Adjust (s)				0.0	0.0		
Total Lost Time (s)				5.1	5.1		
Lead/Lag							
Lead-Lag Optimize?							
Vehicle Extension (s)			3.0	3.0	3.0		3.0
Recall Mode			C-Max	C-Max	C-Max		None
Walk Time (s)							7.0
Flash Dont Walk (s)							15.0
Pedestrian Calls (#/hr)							0
Act Effct Green (s)				90.0	90.0		
Actuated g/C Ratio				1.00	1.00		
v/c Ratio				0.34	0.21		
Control Delay				0.6	0.3		
Queue Delay				0.0	0.0		
Total Delay				0.6	0.3		
LOS				A	A		
Approach Delay				0.6	0.3		
Approach LOS				A	A		

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 53 (59%), Referenced to phase 2:NBTL and 6:SBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.34			
Intersection Signal Delay: 0.4		Intersection LOS: A	
Intersection Capacity Utilization 54.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 8: S. Main St & Henry St

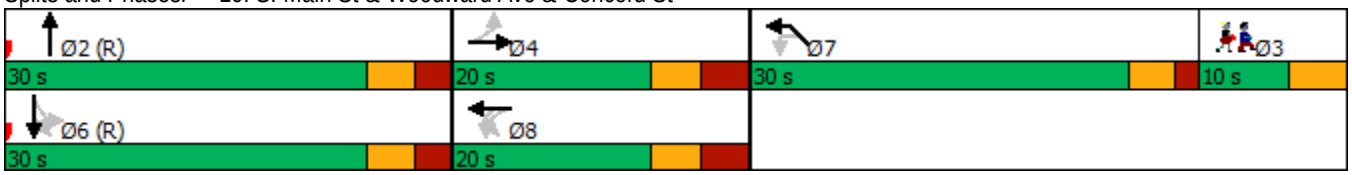
Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBT	NBR	NBR2	SBL2
Lane Configurations												
Traffic Volume (vph)	44	23	19	11	4	37	0	23	144	136	1	28
Future Volume (vph)	44	23	19	11	4	37	0	23	144	136	1	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50		0			0		0		0		
Storage Lanes	1		0			0		0		0		
Taper Length (ft)	25					25						
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.915					0.951		0.934			
Flt Protected	0.950						0.969					
Satd. Flow (prot)	1770	1704	0	0	0	0	1717	0	1740	0	0	0
Flt Permitted	0.858						0.772					
Satd. Flow (perm)	1598	1704	0	0	0	0	1368	0	1740	0	0	0
Right Turn on Red				Yes				Yes			Yes	
Satd. Flow (RTOR)		12					138					
Link Speed (mph)		25					25		25			
Link Distance (ft)		344					721		778			
Travel Time (s)		9.4					19.7		21.2			
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)	48	25	21	12	4	40	0	25	157	148	1	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	48	58	0	0	0	0	69	0	306	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Right	Left	Left	Left	Right	Left	Right	Right	Left
Median Width(ft)		12					12		0			
Link Offset(ft)		0					0		0			
Crosswalk Width(ft)		30					35		60			
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	9	15	15		9		9	9	15
Number of Detectors	1	2			1	1	2		2			1
Detector Template	Left	Thru			Left	Left	Thru		Thru			Left
Leading Detector (ft)	20	100			20	20	100		100			20
Trailing Detector (ft)	0	0			0	0	0		0			0
Detector 1 Position(ft)	0	0			0	0	0		0			0
Detector 1 Size(ft)	20	6			20	20	6		6			20
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex			Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0	0.0		0.0			0.0
Detector 1 Queue (s)	0.0	0.0			0.0	0.0	0.0		0.0			0.0
Detector 1 Delay (s)	0.0	0.0			0.0	0.0	0.0		0.0			0.0
Detector 2 Position(ft)		94					94		94			
Detector 2 Size(ft)		6					6		6			
Detector 2 Type		Cl+Ex					Cl+Ex		Cl+Ex			
Detector 2 Channel												
Detector 2 Extend (s)		0.0					0.0		0.0			
Turn Type	Perm	NA			Perm	Perm	NA		NA			Perm
Protected Phases		4					8		2			
Permitted Phases	4				8	8						6

Lane Group	SBL	SBT	NWL2	NWL	NWR	NWR2	Ø3
Lane Configurations							
Traffic Volume (vph)	156	156	7	0	256	6	
Future Volume (vph)	156	156	7	0	256	6	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	0			0	0		
Storage Lanes	0			1	0		
Taper Length (ft)	25			25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt				0.869			
Flt Protected		0.974		0.999			
Satd. Flow (prot)	0	1814	0	1617	0	0	
Flt Permitted		0.641		0.999			
Satd. Flow (perm)	0	1194	0	1617	0	0	
Right Turn on Red						Yes	
Satd. Flow (RTOR)				162			
Link Speed (mph)		25		25			
Link Distance (ft)		541		844			
Travel Time (s)		14.8		23.0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	170	170	8	0	278	7	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	370	0	293	0	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Left	Left	Left	Right	Right	
Median Width(ft)		0		12			
Link Offset(ft)		0		0			
Crosswalk Width(ft)		50		60			
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)	15		15	15	9	9	
Number of Detectors	1	2	1	1			
Detector Template	Left	Thru	Left	Left			
Leading Detector (ft)	20	100	20	20			
Trailing Detector (ft)	0	0	0	0			
Detector 1 Position(ft)	0	0	0	0			
Detector 1 Size(ft)	20	6	20	20			
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0			
Detector 1 Queue (s)	0.0	0.0	0.0	0.0			
Detector 1 Delay (s)	0.0	0.0	0.0	0.0			
Detector 2 Position(ft)		94					
Detector 2 Size(ft)		6					
Detector 2 Type		Cl+Ex					
Detector 2 Channel							
Detector 2 Extend (s)		0.0					
Turn Type	Perm	NA	Perm	Prot			
Protected Phases		6		7			3
Permitted Phases	6		7	7			

Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBT	NBR	NBR2	SBL2
Detector Phase	4	4			8	8	8		2			6
Switch Phase												
Minimum Initial (s)	7.0	7.0			10.0	10.0	10.0		15.0			15.0
Minimum Split (s)	24.7	24.7			24.7	24.7	24.7		23.7			23.7
Total Split (s)	20.0	20.0			20.0	20.0	20.0		30.0			30.0
Total Split (%)	22.2%	22.2%			22.2%	22.2%	22.2%		33.3%			33.3%
Maximum Green (s)	13.3	13.3			13.3	13.3	13.3		24.3			24.3
Yellow Time (s)	3.3	3.3			3.3	3.3	3.3		3.2			3.2
All-Red Time (s)	3.4	3.4			3.4	3.4	3.4		2.5			2.5
Lost Time Adjust (s)	0.0	0.0					0.0		0.0			
Total Lost Time (s)	6.7	6.7					6.7		5.7			
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0		3.0			3.0
Recall Mode	None	None			None	None	None		C-Min			C-Min
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	9.9	9.9					10.5		51.3			
Actuated g/C Ratio	0.11	0.11					0.12		0.57			
v/c Ratio	0.27	0.29					0.25		0.31			
Control Delay	40.2	34.1					2.1		13.7			
Queue Delay	0.0	0.0					0.0		0.0			
Total Delay	40.2	34.1					2.1		13.7			
LOS	D	C					A		B			
Approach Delay		36.9					2.1		13.7			
Approach LOS		D					A		B			

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 45 (50%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 115			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 22.2		Intersection LOS: C	
Intersection Capacity Utilization 80.3%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 10: S. Main St & Woodward Ave & Concord St

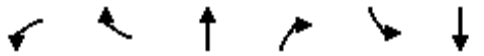


Lane Group	SBL	SBT	NWL2	NWL	NWR	NWR2	Ø3
Detector Phase	6	6	7	7			
Switch Phase							
Minimum Initial (s)	15.0	15.0	10.0	10.0			4.0
Minimum Split (s)	23.7	23.7	22.7	22.7			21.0
Total Split (s)	30.0	30.0	30.0	30.0			10.0
Total Split (%)	33.3%	33.3%	33.3%	33.3%			11%
Maximum Green (s)	24.3	24.3	25.3	25.3			6.0
Yellow Time (s)	3.2	3.2	3.1	3.1			4.0
All-Red Time (s)	2.5	2.5	1.6	1.6			0.0
Lost Time Adjust (s)		0.0		0.0			
Total Lost Time (s)		5.7		4.7			
Lead/Lag			Lead	Lead			Lag
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	3.0	3.0			3.0
Recall Mode	C-Min	C-Min	None	None			None
Walk Time (s)							7.0
Flash Dont Walk (s)							15.0
Pedestrian Calls (#/hr)							0
Act Effct Green (s)		51.3		14.4			
Actuated g/C Ratio		0.57		0.16			
v/c Ratio		0.54		0.74			
Control Delay		24.7		27.2			
Queue Delay		0.0		0.0			
Total Delay		24.7		27.2			
LOS		C		C			
Approach Delay		24.7		27.2			
Approach LOS		C		C			

Intersection Summary

Lane Group	NBL2	NBL	SER	SER2	NEL	NER
Lane Configurations						
Traffic Volume (vph)	42	258	169	11	11	40
Future Volume (vph)	42	258	169	11	11	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			0.865		0.894	
Flt Protected		0.950			0.989	
Satd. Flow (prot)	0	1770	1611	0	1647	0
Flt Permitted		0.950			0.989	
Satd. Flow (perm)	0	1770	1611	0	1647	0
Link Speed (mph)		25	25		25	
Link Distance (ft)		91	844		641	
Travel Time (s)		2.5	23.0		17.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	46	280	184	12	12	43
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	326	196	0	55	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Right	Left	Right
Median Width(ft)		12	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	15	9	9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 26.6%		ICU Level of Service A	
Analysis Period (min) 15			



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	301	133	167	347	110	99
Future Volume (vph)	301	133	167	347	110	99
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	0.959		0.909			
Flt Protected	0.967					0.974
Satd. Flow (prot)	1727	0	1693	0	0	1814
Flt Permitted	0.967					0.974
Satd. Flow (perm)	1727	0	1693	0	0	1814
Link Speed (mph)	25		25			25
Link Distance (ft)	380		640			91
Travel Time (s)	10.4		17.5			2.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	327	145	182	377	120	108
Shared Lane Traffic (%)						
Lane Group Flow (vph)	472	0	559	0	0	228
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 76.2%		ICU Level of Service D	
Analysis Period (min) 15			

Lane Group	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations						
Traffic Volume (vph)	86	186	124	276	328	68
Future Volume (vph)	86	186	124	276	328	68
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			0.907		0.977	
Flt Protected		0.984			0.960	
Satd. Flow (prot)	0	1833	1690	0	1747	0
Flt Permitted		0.984			0.960	
Satd. Flow (perm)	0	1833	1690	0	1747	0
Link Speed (mph)		25	25		30	
Link Distance (ft)		616	640		489	
Travel Time (s)		16.8	17.5		11.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	93	202	135	300	357	74
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	295	435	0	431	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Stop	Stop		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 70.3%		ICU Level of Service C	
Analysis Period (min) 15			

Movement	NBL2	NBL	SER	SER2	NEL	NER
Lane Configurations						
Traffic Volume (veh/h)	39	267	193	14	14	38
Future Volume (Veh/h)	39	267	193	14	14	38
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	42	290	210	15	15	41
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			844			
pX, platoon unblocked						
vC, conflicting volume	225				592	218
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	225				592	218
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				97	95
cM capacity (veh/h)	1344				455	822

Direction, Lane #	NB 1	SE 1	NE 1
Volume Total	332	225	56
Volume Left	42	0	15
Volume Right	0	15	41
cSH	1344	1700	676
Volume to Capacity	0.03	0.13	0.08
Queue Length 95th (ft)	2	0	7
Control Delay (s)	1.2	0.0	10.8
Lane LOS	A		B
Approach Delay (s)	1.2	0.0	10.8
Approach LOS			B

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	27.0%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	287	108	198	285	105	126
Future Volume (Veh/h)	287	108	198	285	105	126
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	312	117	215	310	114	137
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	735	370			525	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	735	370			525	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	9	83			89	
cM capacity (veh/h)	344	676			1042	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	429	525	251
Volume Left	312	0	114
Volume Right	117	310	0
cSH	398	1700	1042
Volume to Capacity	1.08	0.31	0.11
Queue Length 95th (ft)	370	0	9
Control Delay (s)	100.5	0.0	4.6
Lane LOS	F		A
Approach Delay (s)	100.5	0.0	4.6
Approach LOS	F		

Intersection Summary			
Average Delay	36.7		
Intersection Capacity Utilization	72.8%	ICU Level of Service	C
Analysis Period (min)	15		

Movement	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	82	173	135	278	310	71
Future Volume (vph)	82	173	135	278	310	71
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	89	188	147	302	337	77

Direction, Lane #	NB 1	SB 1	NE 1
Volume Total (vph)	277	449	414
Volume Left (vph)	89	0	337
Volume Right (vph)	0	302	77
Hadj (s)	0.10	-0.37	0.09
Departure Headway (s)	6.1	5.4	6.0
Degree Utilization, x	0.47	0.67	0.68
Capacity (veh/h)	550	642	570
Control Delay (s)	14.3	18.6	20.9
Approach Delay (s)	14.3	18.6	20.9
Approach LOS	B	C	C

Intersection Summary			
Delay	18.4		
Level of Service	C		
Intersection Capacity Utilization	69.3%	ICU Level of Service	C
Analysis Period (min)	15		

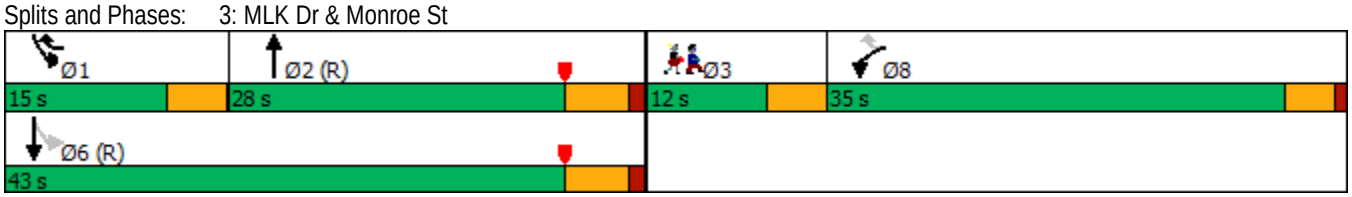
Lanes, Volumes, Timings
3: MLK Dr & Monroe St

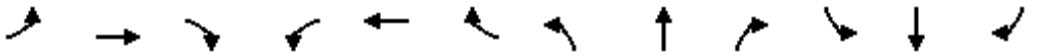
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø3
Lane Configurations							
Traffic Volume (vph)	127	249	431	60	182	837	
Future Volume (vph)	127	249	431	60	182	837	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	0	155		0	180		
Storage Lanes	1	1		0	1		
Taper Length (ft)	25				25		
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95	
Frt		0.850	0.977				
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1719	1482	3039	0	1626	3438	
Flt Permitted	0.950				0.380		
Satd. Flow (perm)	1719	1482	3039	0	650	3438	
Right Turn on Red		No		No			
Satd. Flow (RTOR)							
Link Speed (mph)	30		35			35	
Link Distance (ft)	1185		556			566	
Travel Time (s)	26.9		10.8			11.0	
Peak Hour Factor	0.66	0.95	0.92	0.70	0.91	0.90	
Heavy Vehicles (%)	5%	9%	17%	11%	11%	5%	
Adj. Flow (vph)	192	262	468	86	200	930	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	192	262	554	0	200	930	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Right	Left	Left	
Median Width(ft)	24		12			12	
Link Offset(ft)	0		0			0	
Crosswalk Width(ft)	16		16			16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)	15	9		9	15		
Number of Detectors	1	1	2		1	2	
Detector Template	Left	Right	Thru		Left	Thru	
Leading Detector (ft)	20	20	100		20	100	
Trailing Detector (ft)	0	0	0		0	0	
Detector 1 Position(ft)	0	0	0		0	0	
Detector 1 Size(ft)	20	20	6		20	6	
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Queue (s)	0.0	0.0	0.0		0.0	0.0	
Detector 1 Delay (s)	0.0	0.0	0.0		0.0	0.0	
Detector 2 Position(ft)			94			94	
Detector 2 Size(ft)			6			6	
Detector 2 Type			Cl+Ex			Cl+Ex	
Detector 2 Channel							
Detector 2 Extend (s)			0.0			0.0	
Turn Type	Prot	pm+ov	NA		pm+pt	NA	
Protected Phases	8	1	2		1	6	3

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø3
Permitted Phases		8			6		
Detector Phase	8	1	2		1	6	
Switch Phase							
Minimum Initial (s)	7.0	5.0	15.0		5.0	15.0	1.0
Minimum Split (s)	20.0	9.5	20.5		9.5	20.5	7.0
Total Split (s)	35.0	15.0	28.0		15.0	43.0	12.0
Total Split (%)	38.9%	16.7%	31.1%		16.7%	47.8%	13%
Maximum Green (s)	30.7	10.9	22.5		10.9	37.5	8.0
Yellow Time (s)	3.3	4.0	4.3		4.0	4.3	4.0
All-Red Time (s)	1.0	0.1	1.2		0.1	1.2	0.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.3	4.1	5.5		4.1	5.5	
Lead/Lag	Lag	Lead	Lag		Lead		Lead
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0
Recall Mode	None	None	C-Min		None	C-Min	None
Walk Time (s)							7.0
Flash Dont Walk (s)							15.0
Pedestrian Calls (#/hr)							10
Act Effct Green (s)	15.4	29.4	48.6		63.8	62.4	
Actuated g/C Ratio	0.17	0.33	0.54		0.71	0.69	
v/c Ratio	0.65	0.54	0.34		0.35	0.39	
Control Delay	47.4	25.7	15.2		7.9	7.8	
Queue Delay	0.0	0.0	0.0		0.0	0.0	
Total Delay	47.4	25.7	15.2		7.9	7.8	
LOS	D	C	B		A	A	
Approach Delay	34.8		15.2			7.8	
Approach LOS	C		B			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.65			
Intersection Signal Delay: 15.5		Intersection LOS: B	
Intersection Capacity Utilization 42.5%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: MLK Dr & Monroe St





Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	62	62	11	126	26	47	348	12	16	241	78
Future Volume (vph)	61	62	62	11	126	26	47	348	12	16	241	78
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	80		0	0		0	0		0	0		95
Storage Lanes	1		0	0		0	0		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.936			0.973			0.993				0.850
Flt Protected	0.950				0.995			0.994			0.997	
Satd. Flow (prot)	1719	1680	0	0	1782	0	0	1621	0	0	1809	1495
Flt Permitted	0.573				0.964			0.925			0.000	
Satd. Flow (perm)	1037	1680	0	0	1727	0	0	1508	0	0	0	1495
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		36			12			3				95
Link Speed (mph)		30			30			25			30	
Link Distance (ft)		1185			837			620			729	
Travel Time (s)		26.9			19.0			16.9			16.6	
Peak Hour Factor	0.79	0.69	0.93	0.50	0.84	0.60	0.79	0.90	0.46	0.94	0.93	0.82
Heavy Vehicles (%)	5%	5%	7%	10%	2%	4%	30%	14%	9%	0%	5%	8%
Adj. Flow (vph)	77	90	67	22	150	43	59	387	26	17	259	95
Shared Lane Traffic (%)												
Lane Group Flow (vph)	77	157	0	0	215	0	0	472	0	0	276	95
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		35			40			30			20	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100		20	100	20
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Detector 1 Position(ft)	0	0		0	0		0	0		0	0	0
Detector 1 Size(ft)	20	6		20	6		20	6		20	6	20
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Queue (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 1 Delay (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Prot	NA	Perm
Protected Phases		2			6			8		7	4	

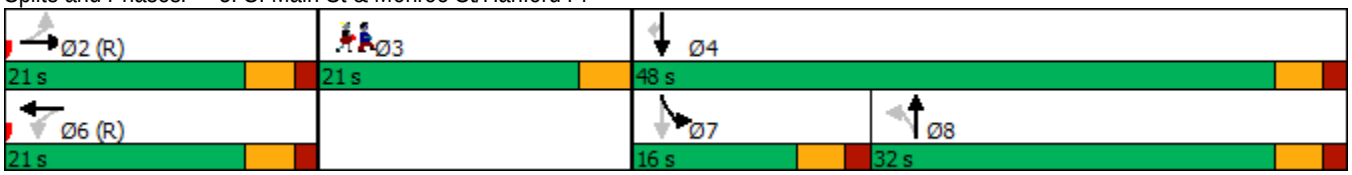
Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Detector 1 Position(ft)	
Detector 1 Size(ft)	
Detector 1 Type	
Detector 1 Channel	
Detector 1 Extend (s)	
Detector 1 Queue (s)	
Detector 1 Delay (s)	
Detector 2 Position(ft)	
Detector 2 Size(ft)	
Detector 2 Type	
Detector 2 Channel	
Detector 2 Extend (s)	
Turn Type	
Protected Phases	3

Lanes, Volumes, Timings
5: S. Main St & Monroe St/Hanford Pl

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Permitted Phases	2			6			8				7	4
Detector Phase	2	2		6	6		8	8		7	4	4
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	20.9	20.9		20.9	20.9		20.9	20.9		20.9	20.9	20.9
Total Split (s)	21.0	21.0		21.0	21.0		32.0	32.0		16.0	48.0	48.0
Total Split (%)	23.3%	23.3%		23.3%	23.3%		35.6%	35.6%		17.8%	53.3%	53.3%
Maximum Green (s)	16.1	16.1		16.1	16.1		27.1	27.1		11.1	43.1	43.1
Yellow Time (s)	3.3	3.3		3.3	3.3		3.2	3.2		3.2	3.2	3.2
All-Red Time (s)	1.6	1.6		1.6	1.6		1.7	1.7		1.7	1.7	1.7
Lost Time Adjust (s)	0.0	0.0			0.0			0.0			0.0	0.0
Total Lost Time (s)	4.9	4.9			4.9			4.9			4.9	4.9
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Recall Mode	C-Min	C-Min		C-Min	C-Min		None	None		None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	34.4	34.4			34.4			37.6			37.6	37.6
Actuated g/C Ratio	0.38	0.38			0.38			0.42			0.42	0.42
v/c Ratio	0.19	0.24			0.32			0.75			0.37	0.14
Control Delay	18.0	15.4			24.4			27.6			19.3	3.7
Queue Delay	0.0	0.0			0.0			0.0			0.0	0.0
Total Delay	18.0	15.4			24.4			27.6			19.3	3.7
LOS	B	B			C			C			B	A
Approach Delay		16.2			24.4			27.6			15.3	
Approach LOS		B			C			C			B	

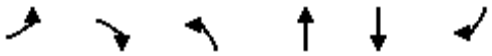
Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 11 (12%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 21.5		Intersection LOS: C	
Intersection Capacity Utilization 72.7%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 5: S. Main St & Monroe St/Hanford Pl

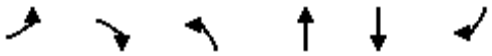


Lane Group	Ø3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	4.0
Minimum Split (s)	21.0
Total Split (s)	21.0
Total Split (%)	23%
Maximum Green (s)	17.5
Yellow Time (s)	3.5
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Recall Mode	None
Walk Time (s)	4.0
Flash Dont Walk (s)	13.0
Pedestrian Calls (#/hr)	20
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Intersection Summary



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Lane Configurations							
Traffic Volume (vph)	0	0	87	426	340	29	
Future Volume (vph)	0	0	87	426	340	29	
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					0.989		
Flt Protected				0.992			
Satd. Flow (prot)	0	0	0	1848	1842	0	
Flt Permitted				0.871			
Satd. Flow (perm)	0	0	0	1622	1842	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)					10		
Link Speed (mph)	25			25	25		
Link Distance (ft)	360			541	620		
Travel Time (s)	9.8			14.8	16.9		
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	0	0	95	463	370	32	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	0	0	558	402	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(ft)	0			0	0		
Link Offset(ft)	0			0	0		
Crosswalk Width(ft)	16			50	50		
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)	15	9	15			9	
Number of Detectors			1	2	2		
Detector Template			Left	Thru	Thru		
Leading Detector (ft)			20	100	100		
Trailing Detector (ft)			0	0	0		
Detector 1 Position(ft)			0	0	0		
Detector 1 Size(ft)			20	6	6		
Detector 1 Type			Cl+Ex	Cl+Ex	Cl+Ex		
Detector 1 Channel							
Detector 1 Extend (s)			0.0	0.0	0.0		
Detector 1 Queue (s)			0.0	0.0	0.0		
Detector 1 Delay (s)			0.0	0.0	0.0		
Detector 2 Position(ft)				94	94		
Detector 2 Size(ft)				6	6		
Detector 2 Type				Cl+Ex	Cl+Ex		
Detector 2 Channel							
Detector 2 Extend (s)				0.0	0.0		
Turn Type			Perm	NA	NA		
Protected Phases				2	6		3
Permitted Phases			2				
Detector Phase			2	2	6		
Switch Phase							
Minimum Initial (s)			15.0	15.0	15.0		4.0



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Minimum Split (s)			23.1	23.1	23.4		26.0
Total Split (s)			64.0	64.0	64.0		26.0
Total Split (%)			71.1%	71.1%	71.1%		29%
Maximum Green (s)			58.9	58.9	58.9		22.0
Yellow Time (s)			3.2	3.2	3.2		4.0
All-Red Time (s)			1.9	1.9	1.9		0.0
Lost Time Adjust (s)				0.0	0.0		
Total Lost Time (s)				5.1	5.1		
Lead/Lag							
Lead-Lag Optimize?							
Vehicle Extension (s)			3.0	3.0	3.0		3.0
Recall Mode			C-Max	C-Max	C-Max		None
Walk Time (s)							7.0
Flash Dont Walk (s)							15.0
Pedestrian Calls (#/hr)							0
Act Effct Green (s)				90.0	90.0		
Actuated g/C Ratio				1.00	1.00		
v/c Ratio				0.34	0.22		
Control Delay				0.6	0.3		
Queue Delay				0.0	0.0		
Total Delay				0.6	0.3		
LOS				A	A		
Approach Delay				0.6	0.3		
Approach LOS				A	A		

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 53 (59%), Referenced to phase 2:NBTL and 6:SBT, Start of Green			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.34			
Intersection Signal Delay: 0.4		Intersection LOS: A	
Intersection Capacity Utilization 55.4%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 8: S. Main St & Henry St

Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBT	NBR	NBR2	SBL2
Lane Configurations												
Traffic Volume (vph)	44	23	19	11	4	37	0	23	144	136	1	28
Future Volume (vph)	44	23	19	11	4	37	0	23	144	136	1	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Storage Length (ft)	50		0			0		0		0		
Storage Lanes	1		0			0		0		0		
Taper Length (ft)	25					25						
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.915					0.951		0.934			
Flt Protected	0.950						0.969					
Satd. Flow (prot)	1770	1704	0	0	0	0	1717	0	1740	0	0	0
Flt Permitted	0.858						0.772					
Satd. Flow (perm)	1598	1704	0	0	0	0	1368	0	1740	0	0	0
Right Turn on Red				Yes				Yes			Yes	
Satd. Flow (RTOR)		12					138					
Link Speed (mph)		25					25		25			
Link Distance (ft)		344					721		778			
Travel Time (s)		9.4					19.7		21.2			
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)	48	25	21	12	4	40	0	25	157	148	1	30
Shared Lane Traffic (%)												
Lane Group Flow (vph)	48	58	0	0	0	0	69	0	306	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Right	Left	Left	Left	Right	Left	Right	Right	Left
Median Width(ft)		12					12		0			
Link Offset(ft)		0					0		0			
Crosswalk Width(ft)		30					35		60			
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	9	15	15		9		9	9	15
Number of Detectors	1	2			1	1	2		2			1
Detector Template	Left	Thru			Left	Left	Thru		Thru			Left
Leading Detector (ft)	20	100			20	20	100		100			20
Trailing Detector (ft)	0	0			0	0	0		0			0
Detector 1 Position(ft)	0	0			0	0	0		0			0
Detector 1 Size(ft)	20	6			20	20	6		6			20
Detector 1 Type	Cl+Ex	Cl+Ex			Cl+Ex	Cl+Ex	Cl+Ex		Cl+Ex			Cl+Ex
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0			0.0	0.0	0.0		0.0			0.0
Detector 1 Queue (s)	0.0	0.0			0.0	0.0	0.0		0.0			0.0
Detector 1 Delay (s)	0.0	0.0			0.0	0.0	0.0		0.0			0.0
Detector 2 Position(ft)		94					94		94			
Detector 2 Size(ft)		6					6		6			
Detector 2 Type		Cl+Ex					Cl+Ex		Cl+Ex			
Detector 2 Channel												
Detector 2 Extend (s)		0.0					0.0		0.0			
Turn Type	Perm	NA			Perm	Perm	NA		NA			Perm
Protected Phases		4					8		2			
Permitted Phases	4				8	8						6

Lane Group	SBL	SBT	NWL2	NWL	NWR	NWR2	Ø3
Lane Configurations							
Traffic Volume (vph)	168	156	7	0	256	6	
Future Volume (vph)	168	156	7	0	256	6	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Storage Length (ft)	0			0	0		
Storage Lanes	0			1	0		
Taper Length (ft)	25			25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Frt				0.869			
Flt Protected		0.973		0.999			
Satd. Flow (prot)	0	1812	0	1617	0	0	
Flt Permitted		0.635		0.999			
Satd. Flow (perm)	0	1183	0	1617	0	0	
Right Turn on Red						Yes	
Satd. Flow (RTOR)				162			
Link Speed (mph)		25		25			
Link Distance (ft)		541		844			
Travel Time (s)		14.8		23.0			
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Adj. Flow (vph)	183	170	8	0	278	7	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	383	0	293	0	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Left	Left	Left	Right	Right	
Median Width(ft)		0		12			
Link Offset(ft)		0		0			
Crosswalk Width(ft)		50		60			
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)	15		15	15	9	9	
Number of Detectors	1	2	1	1			
Detector Template	Left	Thru	Left	Left			
Leading Detector (ft)	20	100	20	20			
Trailing Detector (ft)	0	0	0	0			
Detector 1 Position(ft)	0	0	0	0			
Detector 1 Size(ft)	20	6	20	20			
Detector 1 Type	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex			
Detector 1 Channel							
Detector 1 Extend (s)	0.0	0.0	0.0	0.0			
Detector 1 Queue (s)	0.0	0.0	0.0	0.0			
Detector 1 Delay (s)	0.0	0.0	0.0	0.0			
Detector 2 Position(ft)		94					
Detector 2 Size(ft)		6					
Detector 2 Type		Cl+Ex					
Detector 2 Channel							
Detector 2 Extend (s)		0.0					
Turn Type	Perm	NA	Perm	Prot			
Protected Phases		6		7			3
Permitted Phases	6		7	7			

Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBT	NBR	NBR2	SBL2
Detector Phase	4	4			8	8	8		2			6
Switch Phase												
Minimum Initial (s)	7.0	7.0			10.0	10.0	10.0		15.0			15.0
Minimum Split (s)	24.7	24.7			24.7	24.7	24.7		23.7			23.7
Total Split (s)	20.0	20.0			20.0	20.0	20.0		30.0			30.0
Total Split (%)	22.2%	22.2%			22.2%	22.2%	22.2%		33.3%			33.3%
Maximum Green (s)	13.3	13.3			13.3	13.3	13.3		24.3			24.3
Yellow Time (s)	3.3	3.3			3.3	3.3	3.3		3.2			3.2
All-Red Time (s)	3.4	3.4			3.4	3.4	3.4		2.5			2.5
Lost Time Adjust (s)	0.0	0.0					0.0		0.0			
Total Lost Time (s)	6.7	6.7					6.7		5.7			
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0		3.0			3.0
Recall Mode	None	None			None	None	None		C-Min			C-Min
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	9.9	9.9					10.5		51.3			
Actuated g/C Ratio	0.11	0.11					0.12		0.57			
v/c Ratio	0.27	0.29					0.25		0.31			
Control Delay	40.2	34.1					2.1		13.7			
Queue Delay	0.0	0.0					0.0		0.0			
Total Delay	40.2	34.1					2.1		13.7			
LOS	D	C					A		B			
Approach Delay		36.9					2.1		13.7			
Approach LOS		D					A		B			

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 45 (50%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 115			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.74			
Intersection Signal Delay: 22.6		Intersection LOS: C	
Intersection Capacity Utilization 81.0%		ICU Level of Service D	
Analysis Period (min) 15			

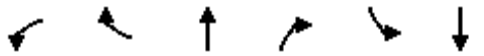
Splits and Phases: 10: S. Main St & Woodward Ave & Concord St

Lane Group	SBL	SBT	NWL2	NWL	NWR	NWR2	Ø3
Detector Phase	6	6	7	7			
Switch Phase							
Minimum Initial (s)	15.0	15.0	10.0	10.0			4.0
Minimum Split (s)	23.7	23.7	22.7	22.7			21.0
Total Split (s)	30.0	30.0	30.0	30.0			10.0
Total Split (%)	33.3%	33.3%	33.3%	33.3%			11%
Maximum Green (s)	24.3	24.3	25.3	25.3			6.0
Yellow Time (s)	3.2	3.2	3.1	3.1			4.0
All-Red Time (s)	2.5	2.5	1.6	1.6			0.0
Lost Time Adjust (s)		0.0		0.0			
Total Lost Time (s)		5.7		4.7			
Lead/Lag			Lead	Lead			Lag
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	3.0	3.0			3.0
Recall Mode	C-Min	C-Min	None	None			None
Walk Time (s)							7.0
Flash Dont Walk (s)							15.0
Pedestrian Calls (#/hr)							0
Act Effct Green (s)		51.3		14.4			
Actuated g/C Ratio		0.57		0.16			
v/c Ratio		0.57		0.74			
Control Delay		26.0		27.2			
Queue Delay		0.0		0.0			
Total Delay		26.0		27.2			
LOS		C		C			
Approach Delay		26.0		27.2			
Approach LOS		C		C			

Intersection Summary

Lane Group	NBL2	NBL	SER	SER2	NEL	NER
Lane Configurations						
Traffic Volume (vph)	42	258	181	11	11	40
Future Volume (vph)	42	258	181	11	11	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			0.865		0.894	
Flt Protected		0.950			0.989	
Satd. Flow (prot)	0	1770	1611	0	1647	0
Flt Permitted		0.950			0.989	
Satd. Flow (perm)	0	1770	1611	0	1647	0
Link Speed (mph)		25	25		25	
Link Distance (ft)		91	844		641	
Travel Time (s)		2.5	23.0		17.5	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	46	280	197	12	12	43
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	326	209	0	55	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Right	Left	Right
Median Width(ft)		12	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	15	9	9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 26.6%		ICU Level of Service A	
Analysis Period (min) 15			



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	311	133	167	347	110	111
Future Volume (vph)	311	133	167	347	110	111
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	0.959		0.909			
Flt Protected	0.966					0.976
Satd. Flow (prot)	1726	0	1693	0	0	1818
Flt Permitted	0.966					0.976
Satd. Flow (perm)	1726	0	1693	0	0	1818
Link Speed (mph)	25		25			25
Link Distance (ft)	380		640			91
Travel Time (s)	10.4		17.5			2.5
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	338	145	182	377	120	121
Shared Lane Traffic (%)						
Lane Group Flow (vph)	483	0	559	0	0	241
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 77.4%		ICU Level of Service D	
Analysis Period (min) 15			

Lane Group	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations						
Traffic Volume (vph)	86	186	146	276	328	68
Future Volume (vph)	86	186	146	276	328	68
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			0.912		0.977	
Flt Protected		0.984			0.960	
Satd. Flow (prot)	0	1833	1699	0	1747	0
Flt Permitted		0.984			0.960	
Satd. Flow (perm)	0	1833	1699	0	1747	0
Link Speed (mph)		25	25		30	
Link Distance (ft)		616	640		489	
Travel Time (s)		16.8	17.5		11.1	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	93	202	159	300	357	74
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	295	459	0	431	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Stop	Stop		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 71.5%		ICU Level of Service C	
Analysis Period (min) 15			

Movement	NBL2	NBL	SER	SER2	NEL	NER
Lane Configurations						
Traffic Volume (veh/h)	42	258	181	11	11	40
Future Volume (Veh/h)	42	258	181	11	11	40
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	46	280	197	12	12	43
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			844			
pX, platoon unblocked						
vC, conflicting volume	209				575	203
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	209				575	203
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				97	95
cM capacity (veh/h)	1362				464	838

Direction, Lane #	NB 1	SE 1	NE 1
Volume Total	326	209	55
Volume Left	46	0	12
Volume Right	0	12	43
cSH	1362	1700	712
Volume to Capacity	0.03	0.12	0.08
Queue Length 95th (ft)	3	0	6
Control Delay (s)	1.4	0.0	10.5
Lane LOS	A		B
Approach Delay (s)	1.4	0.0	10.5
Approach LOS			B

Intersection Summary			
Average Delay	1.7		
Intersection Capacity Utilization	26.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	311	133	167	347	110	111
Future Volume (Veh/h)	311	133	167	347	110	111
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	338	145	182	377	120	121
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	732	370			559	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	732	370			559	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	1	79			88	
cM capacity (veh/h)	343	675			1012	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	483	559	241
Volume Left	338	0	120
Volume Right	145	377	0
cSH	402	1700	1012
Volume to Capacity	1.20	0.33	0.12
Queue Length 95th (ft)	486	0	10
Control Delay (s)	142.4	0.0	5.1
Lane LOS	F		A
Approach Delay (s)	142.4	0.0	5.1
Approach LOS	F		

Intersection Summary			
Average Delay	54.6		
Intersection Capacity Utilization	77.4%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	86	186	146	276	328	68
Future Volume (vph)	86	186	146	276	328	68
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	93	202	159	300	357	74

Direction, Lane #	NB 1	SB 1	NE 1
Volume Total (vph)	295	459	431
Volume Left (vph)	93	0	357
Volume Right (vph)	0	300	74
Hadj (s)	0.10	-0.36	0.10
Departure Headway (s)	6.2	5.5	6.1
Degree Utilization, x	0.51	0.70	0.73
Capacity (veh/h)	541	627	562
Control Delay (s)	15.5	20.6	23.6
Approach Delay (s)	15.5	20.6	23.6
Approach LOS	C	C	C

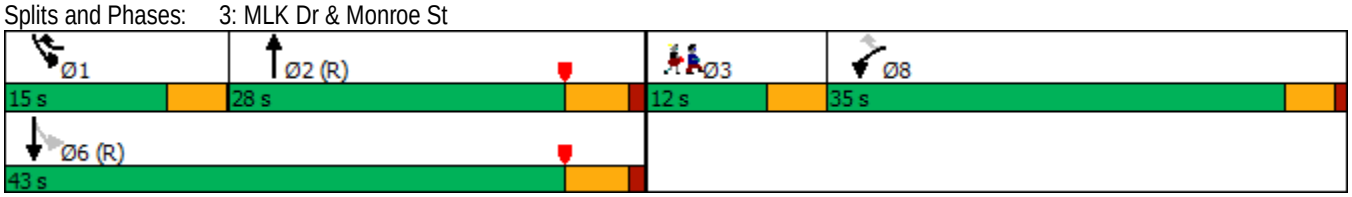
Intersection Summary			
Delay	20.4		
Level of Service	C		
Intersection Capacity Utilization	71.5%	ICU Level of Service	C
Analysis Period (min)	15		

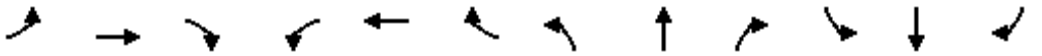
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø3
Lane Configurations							
Traffic Volume (vph)	84	248	519	78	208	509	
Future Volume (vph)	84	248	519	78	208	509	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	12	12	
Grade (%)	0%		0%			0%	
Storage Length (ft)	0	155		0	180		
Storage Lanes	1	1		0	1		
Taper Length (ft)	25				25		
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95	
Ped Bike Factor							
Frt		0.850	0.980				
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1703	1568	3478	0	1626	3406	
Flt Permitted	0.950				0.318		
Satd. Flow (perm)	1703	1568	3478	0	544	3406	
Right Turn on Red		No		No			
Satd. Flow (RTOR)							
Link Speed (mph)	30		35			35	
Link Distance (ft)	1185		556			566	
Travel Time (s)	26.9		10.8			11.0	
Confl. Peds. (#/hr)							
Confl. Bikes (#/hr)							
Peak Hour Factor	0.80	0.90	0.88	0.86	0.85	0.96	
Growth Factor	100%	100%	100%	100%	100%	100%	
Heavy Vehicles (%)	6%	3%	2%	0%	11%	6%	
Bus Blockages (#/hr)	0	0	0	0	0	0	
Parking (#/hr)							
Mid-Block Traffic (%)	0%		0%			0%	
Adj. Flow (vph)	105	276	590	91	245	530	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	105	276	681	0	245	530	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Right	Left	Left	
Median Width(ft)	24		12			12	
Link Offset(ft)	0		0			0	
Crosswalk Width(ft)	16		16			16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)	15	9		9	15		
Number of Detectors	1	1	2		1	2	
Detector Template	Left	Right	Thru		Left	Thru	
Leading Detector (ft)	20	20	100		20	100	
Trailing Detector (ft)	0	0	0		0	0	
Turn Type	Prot	pm+ov	NA		pm+pt	NA	
Protected Phases	8	1	2		1	6	3
Permitted Phases		8			6		
Detector Phase	8	1	2		1	6	
Switch Phase							

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø3
Minimum Initial (s)	7.0	5.0	15.0		5.0	15.0	1.0
Minimum Split (s)	20.0	9.5	20.5		9.5	20.5	7.0
Total Split (s)	35.0	15.0	28.0		15.0	43.0	12.0
Total Split (%)	38.9%	16.7%	31.1%		16.7%	47.8%	13%
Maximum Green (s)	30.7	10.9	22.5		10.9	37.5	8.0
Yellow Time (s)	3.3	4.0	4.3		4.0	4.3	4.0
All-Red Time (s)	1.0	0.1	1.2		0.1	1.2	0.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.3	4.1	5.5		4.1	5.5	
Lead/Lag	Lag	Lead	Lag		Lead		Lead
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0		0.0	0.0	0.0
Recall Mode	None	None	C-Min		None	C-Min	None
Walk Time (s)							7.0
Flash Dont Walk (s)							15.0
Pedestrian Calls (#/hr)							10
Act Effct Green (s)	11.0	28.0	50.0		70.5	70.2	
Actuated g/C Ratio	0.12	0.31	0.56		0.78	0.78	
v/c Ratio	0.50	0.57	0.35		0.40	0.20	
Control Delay	48.1	25.9	14.6		6.3	4.5	
Queue Delay	0.0	0.0	0.0		0.0	0.0	
Total Delay	48.1	25.9	14.6		6.3	4.5	
LOS	D	C	B		A	A	
Approach Delay	32.0		14.6			5.1	
Approach LOS	C		B			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay: 14.2		Intersection LOS: B	
Intersection Capacity Utilization 45.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: MLK Dr & Monroe St





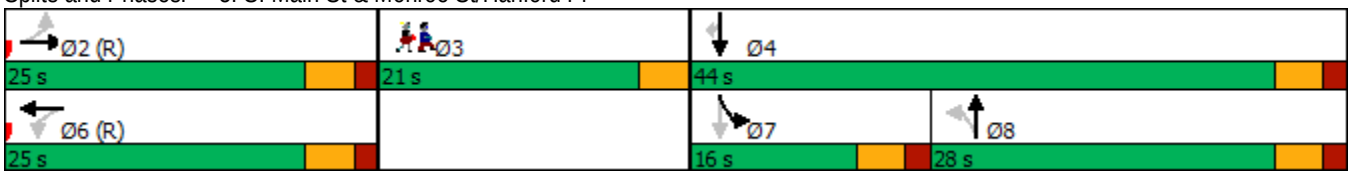
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	101	57	9	81	22	44	365	25	15	282	60
Future Volume (vph)	62	101	57	9	81	22	44	365	25	15	282	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	80		0	0		0	0		0	0		95
Storage Lanes	1		0	0		0	0		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.943			0.976			0.991				0.850
Flt Protected	0.950				0.995			0.994			0.997	
Satd. Flow (prot)	1752	1733	0	0	1780	0	0	1813	0	0	1793	1583
Flt Permitted	0.635				0.966			0.923			0.000	
Satd. Flow (perm)	1171	1733	0	0	1728	0	0	1683	0	0	0	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		31			11			4				86
Link Speed (mph)		30			30			25			30	
Link Distance (ft)		1185			837			620			729	
Travel Time (s)		26.9			19.0			16.9			16.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.81	0.76	0.70	0.60	0.70	0.80	0.73	0.89	0.72	0.88	0.95	0.70
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	0%	9%	0%	5%	0%	0%	4%	0%	0%	6%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	77	133	81	15	116	28	60	410	35	17	297	86
Shared Lane Traffic (%)												
Lane Group Flow (vph)	77	214	0	0	159	0	0	505	0	0	314	86
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		35			40			30			20	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100		20	100	20
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Prot	NA	Perm
Protected Phases		2			6			8		7	4	
Permitted Phases	2			6			8				7	4
Detector Phase	2	2		6	6		8	8		7	4	4
Switch Phase												

Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Ped Bike 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)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Growth Factor	
Heavy Vehicles (%)	
Bus Blockages (#/hr)	
Parking (#/hr)	
Mid-Block Traffic (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	15.0	15.0		15.0	15.0		10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	20.9	20.9		20.9	20.9		20.9	20.9		20.9	20.9	20.9
Total Split (s)	25.0	25.0		25.0	25.0		28.0	28.0		16.0	44.0	44.0
Total Split (%)	27.8%	27.8%		27.8%	27.8%		31.1%	31.1%		17.8%	48.9%	48.9%
Maximum Green (s)	20.1	20.1		20.1	20.1		23.1	23.1		11.1	39.1	39.1
Yellow Time (s)	3.3	3.3		3.3	3.3		3.2	3.2		3.2	3.2	3.2
All-Red Time (s)	1.6	1.6		1.6	1.6		1.7	1.7		1.7	1.7	1.7
Lost Time Adjust (s)	0.0	0.0			0.0			0.0			0.0	0.0
Total Lost Time (s)	4.9	4.9			4.9			4.9			4.9	4.9
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Minimum Gap (s)	0.2	0.2		0.2	0.2		0.2	0.2		0.2	0.2	0.2
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Recall Mode	C-Min	C-Min		C-Min	C-Min		None	None		None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	32.8	32.8			32.8			39.2			39.2	39.2
Actuated g/C Ratio	0.36	0.36			0.36			0.44			0.44	0.44
v/c Ratio	0.18	0.33			0.25			0.69			0.40	0.12
Control Delay	18.8	18.4			22.8			27.4			19.9	4.1
Queue Delay	0.0	0.0			0.0			0.0			0.0	0.0
Total Delay	18.8	18.4			22.8			27.4			19.9	4.1
LOS	B	B			C			C			B	A
Approach Delay		18.5			22.8			27.4			16.5	
Approach LOS		B			C			C			B	

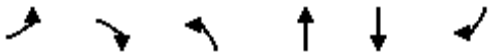
Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 11 (12%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.69			
Intersection Signal Delay: 21.7		Intersection LOS: C	
Intersection Capacity Utilization 64.3%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 5: S. Main St & Monroe St/Hanford Pl

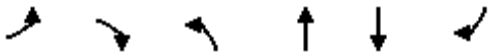


Lane Group	Ø3
Minimum Initial (s)	4.0
Minimum Split (s)	21.0
Total Split (s)	21.0
Total Split (%)	23%
Maximum Green (s)	17.5
Yellow Time (s)	3.5
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Minimum Gap (s)	3.0
Time Before Reduce (s)	0.0
Time To Reduce (s)	0.0
Recall Mode	None
Walk Time (s)	4.0
Flash Dont Walk (s)	13.0
Pedestrian Calls (#/hr)	20
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Intersection Summary



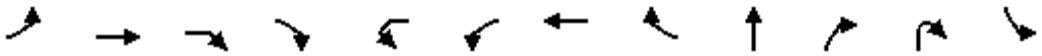
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Lane Configurations							
Traffic Volume (vph)	0	0	130	459	370	60	
Future Volume (vph)	0	0	130	459	370	60	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	12	12	
Grade (%)	0%			0%	0%		
Storage Length (ft)	0	0	0			0	
Storage Lanes	0	0	0			0	
Taper Length (ft)	25		25				
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor							
Frt					0.981		
Flt Protected				0.989			
Satd. Flow (prot)	0	0	0	1842	1827	0	
Flt Permitted				0.807			
Satd. Flow (perm)	0	0	0	1503	1827	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)					19		
Link Speed (mph)	25			25	25		
Link Distance (ft)	360			541	620		
Travel Time (s)	9.8			14.8	16.9		
Confl. Peds. (#/hr)							
Confl. Bikes (#/hr)							
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Growth Factor	100%	100%	100%	100%	100%	100%	
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	
Bus Blockages (#/hr)	0	0	0	0	0	0	
Parking (#/hr)							
Mid-Block Traffic (%)	0%			0%	0%		
Adj. Flow (vph)	0	0	141	499	402	65	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	0	0	640	467	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(ft)	0			0	0		
Link Offset(ft)	0			0	0		
Crosswalk Width(ft)	16			50	50		
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)	15	9	15			9	
Number of Detectors			1	2	2		
Detector Template			Left	Thru	Thru		
Leading Detector (ft)			20	100	100		
Trailing Detector (ft)			0	0	0		
Turn Type			Perm	NA	NA		
Protected Phases				2	6		3
Permitted Phases			2				
Detector Phase			2	2	6		
Switch Phase							



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Minimum Initial (s)			15.0	15.0	15.0		4.0
Minimum Split (s)			23.1	23.1	23.4		26.0
Total Split (s)			64.0	64.0	64.0		26.0
Total Split (%)			71.1%	71.1%	71.1%		29%
Maximum Green (s)			58.9	58.9	58.9		22.0
Yellow Time (s)			3.2	3.2	3.2		4.0
All-Red Time (s)			1.9	1.9	1.9		0.0
Lost Time Adjust (s)				0.0	0.0		
Total Lost Time (s)				5.1	5.1		
Lead/Lag							
Lead-Lag Optimize?							
Vehicle Extension (s)			3.0	3.0	3.0		3.0
Minimum Gap (s)			3.0	3.0	3.0		3.0
Time Before Reduce (s)			0.0	0.0	0.0		0.0
Time To Reduce (s)			0.0	0.0	0.0		0.0
Recall Mode			C-Max	C-Max	C-Max		None
Walk Time (s)							7.0
Flash Dont Walk (s)							15.0
Pedestrian Calls (#/hr)							0
Act Effct Green (s)				90.0	90.0		
Actuated g/C Ratio				1.00	1.00		
v/c Ratio				0.43	0.26		
Control Delay				1.1	0.3		
Queue Delay				0.0	0.0		
Total Delay				1.1	0.3		
LOS				A	A		
Approach Delay				1.1	0.3		
Approach LOS				A	A		

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 50 (56%), Referenced to phase 2:NBTL and 6:SBT, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.43			
Intersection Signal Delay: 0.8		Intersection LOS: A	
Intersection Capacity Utilization 63.0%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 8: S. Main St & Henry St



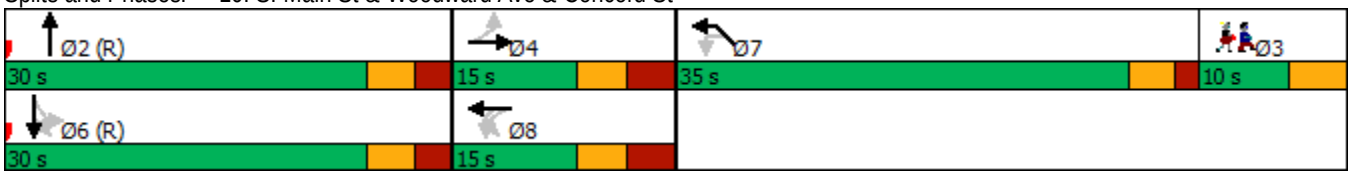
Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBT	NBR	NBR2	SBL2
Lane Configurations												
Traffic Volume (vph)	22	22	22	11	6	30	0	56	176	30	2	23
Future Volume (vph)	22	22	22	11	6	30	0	56	176	30	2	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%					0%		0%			
Storage Length (ft)	50		0			0		0		0		
Storage Lanes	1		0			0		0		0		
Taper Length (ft)	25					25						
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.910					0.918		0.979			
Flt Protected	0.950						0.981					
Satd. Flow (prot)	1770	1695	0	0	0	0	1678	0	1824	0	0	0
Flt Permitted	0.748						0.844					
Satd. Flow (perm)	1393	1695	0	0	0	0	1443	0	1824	0	0	0
Right Turn on Red				Yes				Yes			Yes	
Satd. Flow (RTOR)		11					138					
Link Speed (mph)		25					25		25			
Link Distance (ft)		344					721		778			
Travel Time (s)		9.4					19.7		21.2			
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%					0%		0%			
Adj. Flow (vph)	24	24	24	12	7	33	0	61	191	33	2	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	24	60	0	0	0	0	101	0	226	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Right	Left	Left	Left	Right	Left	Right	Right	Left
Median Width(ft)		12					12		0			
Link Offset(ft)		0					0		0			
Crosswalk Width(ft)		30					35		60			
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	9	15	15		9		9	9	15
Number of Detectors	1	2			1	1	2		2			1
Detector Template	Left	Thru			Left	Left	Thru		Thru			Left
Leading Detector (ft)	20	100			20	20	100		100			20
Trailing Detector (ft)	0	0			0	0	0		0			0
Turn Type	Perm	NA			Perm	Perm	NA		NA			Perm
Protected Phases		4					8		2			
Permitted Phases	4				8	8						6
Detector Phase	4	4			8	8	8		2			6
Switch Phase												

Lane Group	SBL	SBT	NWL2	NWL	NWR	NWR2	Ø3
Lane Configurations							
Traffic Volume (vph)	177	163	6	0	269	6	
Future Volume (vph)	177	163	6	0	269	6	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	12	12	
Grade (%)		0%		0%			
Storage Length (ft)	0			0	0		
Storage Lanes	0			1	0		
Taper Length (ft)	25			25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor							
Frt				0.868			
Flt Protected		0.973		0.999			
Satd. Flow (prot)	0	1812	0	1615	0	0	
Flt Permitted		0.709		0.999			
Satd. Flow (perm)	0	1321	0	1615	0	0	
Right Turn on Red						Yes	
Satd. Flow (RTOR)				162			
Link Speed (mph)		25		25			
Link Distance (ft)		541		844			
Travel Time (s)		14.8		23.0			
Confl. Peds. (#/hr)							
Confl. Bikes (#/hr)							
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Growth Factor	100%	100%	100%	100%	100%	100%	
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	
Bus Blockages (#/hr)	0	0	0	0	0	0	
Parking (#/hr)							
Mid-Block Traffic (%)		0%		0%			
Adj. Flow (vph)	192	177	7	0	292	7	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	394	0	306	0	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Left	Left	Left	Right	Right	
Median Width(ft)		0		12			
Link Offset(ft)		0		0			
Crosswalk Width(ft)		50		60			
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)	15		15	15	9	9	
Number of Detectors	1	2	1	1			
Detector Template	Left	Thru	Left	Left			
Leading Detector (ft)	20	100	20	20			
Trailing Detector (ft)	0	0	0	0			
Turn Type	Perm	NA	Perm	Prot			
Protected Phases		6		7			3
Permitted Phases	6		7	7			
Detector Phase	6	6	7	7			
Switch Phase							

Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBT	NBR	NBR2	SBL2
Minimum Initial (s)	7.0	7.0			10.0	10.0	10.0		15.0			15.0
Minimum Split (s)	24.7	24.7			24.7	24.7	24.7		23.7			23.7
Total Split (s)	15.0	15.0			15.0	15.0	15.0		30.0			30.0
Total Split (%)	16.7%	16.7%			16.7%	16.7%	16.7%		33.3%			33.3%
Maximum Green (s)	8.3	8.3			8.3	8.3	8.3		24.3			24.3
Yellow Time (s)	3.3	3.3			3.3	3.3	3.3		3.2			3.2
All-Red Time (s)	3.4	3.4			3.4	3.4	3.4		2.5			2.5
Lost Time Adjust (s)	0.0	0.0					0.0		0.0			
Total Lost Time (s)	6.7	6.7					6.7		5.7			
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0		3.0			3.0
Minimum Gap (s)	3.0	3.0			3.0	3.0	3.0		3.0			3.0
Time Before Reduce (s)	0.0	0.0			0.0	0.0	0.0		0.0			0.0
Time To Reduce (s)	0.0	0.0			0.0	0.0	0.0		0.0			0.0
Recall Mode	None	None			None	None	None		C-Min			C-Min
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	8.0	8.0					8.3		52.4			
Actuated g/C Ratio	0.09	0.09					0.09		0.58			
v/c Ratio	0.19	0.37					0.39		0.21			
Control Delay	41.8	39.8					7.8		11.9			
Queue Delay	0.0	0.0					0.0		0.0			
Total Delay	41.8	39.8					7.8		11.9			
LOS	D	D					A		B			
Approach Delay		40.4					7.8		11.9			
Approach LOS		D					A		B			

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 89 (99%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.75			
Intersection Signal Delay: 17.7		Intersection LOS: B	
Intersection Capacity Utilization 80.6%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 10: S. Main St & Woodward Ave & Concord St



Lane Group	SBL	SBT	NWL2	NWL	NWR	NWR2	Ø3
Minimum Initial (s)	15.0	15.0	10.0	10.0			4.0
Minimum Split (s)	23.7	23.7	22.7	22.7			21.0
Total Split (s)	30.0	30.0	35.0	35.0			10.0
Total Split (%)	33.3%	33.3%	38.9%	38.9%			11%
Maximum Green (s)	24.3	24.3	30.3	30.3			6.0
Yellow Time (s)	3.2	3.2	3.1	3.1			4.0
All-Red Time (s)	2.5	2.5	1.6	1.6			0.0
Lost Time Adjust (s)		0.0		0.0			
Total Lost Time (s)		5.7		4.7			
Lead/Lag			Lead	Lead			Lag
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	3.0	3.0			3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0			3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0			0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0			0.0
Recall Mode	C-Min	C-Min	None	None			None
Walk Time (s)							7.0
Flash Dont Walk (s)							15.0
Pedestrian Calls (#/hr)							0
Act Effct Green (s)		52.4		15.2			
Actuated g/C Ratio		0.58		0.17			
v/c Ratio		0.51		0.75			
Control Delay		11.0		27.9			
Queue Delay		0.0		0.0			
Total Delay		11.0		27.9			
LOS		B		C			
Approach Delay		11.0		27.9			
Approach LOS		B		C			

Intersection Summary

Lane Group	NBL2	NBL	SER	SER2	NEL	NER
Lane Configurations						
Traffic Volume (vph)	39	267	193	14	14	38
Future Volume (vph)	39	267	193	14	14	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)		0	0		0	0
Storage Lanes		1	1		1	0
Taper Length (ft)		25			25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.865		0.901	
Flt Protected		0.950			0.987	
Satd. Flow (prot)	0	1770	1611	0	1657	0
Flt Permitted		0.950			0.987	
Satd. Flow (perm)	0	1770	1611	0	1657	0
Link Speed (mph)		25	25		25	
Link Distance (ft)		91	844		641	
Travel Time (s)		2.5	23.0		17.5	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	42	290	210	15	15	41
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	332	225	0	56	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Right	Left	Right
Median Width(ft)		12	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	15	9	9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 27.0%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	287	108	198	285	105	126
Future Volume (vph)	287	108	198	285	105	126
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	0	
Storage Lanes	1	0		0	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.963		0.920			
Flt Protected	0.965					0.978
Satd. Flow (prot)	1731	0	1714	0	0	1822
Flt Permitted	0.965					0.978
Satd. Flow (perm)	1731	0	1714	0	0	1822
Link Speed (mph)	25		25			25
Link Distance (ft)	380		640			91
Travel Time (s)	10.4		17.5			2.5
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	312	117	215	310	114	137
Shared Lane Traffic (%)						
Lane Group Flow (vph)	429	0	525	0	0	251
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 72.8%		ICU Level of Service C	
Analysis Period (min) 15			

Lane Group	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations						
Traffic Volume (vph)	82	173	135	278	310	71
Future Volume (vph)	82	173	135	278	310	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.909		0.975	
Flt Protected		0.984			0.961	
Satd. Flow (prot)	0	1833	1693	0	1745	0
Flt Permitted		0.984			0.961	
Satd. Flow (perm)	0	1833	1693	0	1745	0
Link Speed (mph)		25	25		30	
Link Distance (ft)		616	640		489	
Travel Time (s)		16.8	17.5		11.1	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	89	188	147	302	337	77
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	277	449	0	414	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Stop	Stop		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 69.3%		ICU Level of Service C	
Analysis Period (min) 15			

Movement	NBL2	NBL	SER	SER2	NEL	NER
Lane Configurations						
Traffic Volume (veh/h)	42	258	169	11	11	40
Future Volume (Veh/h)	42	258	169	11	11	40
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	46	280	184	12	12	43
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			844			
pX, platoon unblocked						
vC, conflicting volume	196				562	190
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	196				562	190
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				97	95
cM capacity (veh/h)	1377				472	852

Direction, Lane #	NB 1	SE 1	NE 1
Volume Total	326	196	55
Volume Left	46	0	12
Volume Right	0	12	43
cSH	1377	1700	724
Volume to Capacity	0.03	0.12	0.08
Queue Length 95th (ft)	3	0	6
Control Delay (s)	1.4	0.0	10.4
Lane LOS	A		B
Approach Delay (s)	1.4	0.0	10.4
Approach LOS			B

Intersection Summary			
Average Delay	1.8		
Intersection Capacity Utilization	26.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	301	133	167	347	110	99
Future Volume (Veh/h)	301	133	167	347	110	99
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	327	145	182	377	120	108
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	718	370			559	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	718	370			559	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	6	79			88	
cM capacity (veh/h)	349	675			1012	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	472	559	228
Volume Left	327	0	120
Volume Right	145	377	0
cSH	409	1700	1012
Volume to Capacity	1.15	0.33	0.12
Queue Length 95th (ft)	444	0	10
Control Delay (s)	124.0	0.0	5.3
Lane LOS	F		A
Approach Delay (s)	124.0	0.0	5.3
Approach LOS	F		

Intersection Summary			
Average Delay	47.4		
Intersection Capacity Utilization	76.2%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	86	186	124	276	328	68
Future Volume (vph)	86	186	124	276	328	68
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	93	202	135	300	357	74

Direction, Lane #	NB 1	SB 1	NE 1
Volume Total (vph)	295	435	431
Volume Left (vph)	93	0	357
Volume Right (vph)	0	300	74
Hadj (s)	0.10	-0.38	0.10
Departure Headway (s)	6.1	5.5	6.0
Degree Utilization, x	0.50	0.66	0.72
Capacity (veh/h)	547	629	568
Control Delay (s)	15.2	18.5	22.8
Approach Delay (s)	15.2	18.5	22.8
Approach LOS	C	C	C

Intersection Summary			
Delay		19.3	
Level of Service		C	
Intersection Capacity Utilization		70.3%	ICU Level of Service C
Analysis Period (min)		15	

Intersection	
Intersection Delay, s/veh	18.8
Intersection LOS	C

Movement	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations						
Traffic Vol, veh/h	83	195	135	278	310	71
Future Vol, veh/h	83	195	135	278	310	71
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	90	212	147	302	337	77
Number of Lanes	0	1	1	0	1	0

Approach	NB	SB	NE
Opposing Approach	SB	NB	
Opposing Lanes	1	1	0
Conflicting Approach Left	NE		SB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right		NE	NB
Conflicting Lanes Right	0	1	1
HCM Control Delay	15.2	18.8	21.3
HCM LOS	C	C	C

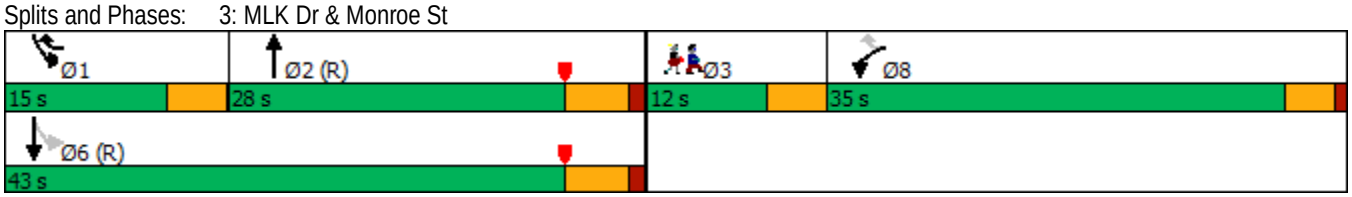
Lane	NELn1	NBLn1	SBLn1
Vol Left, %	81%	30%	0%
Vol Thru, %	0%	70%	33%
Vol Right, %	19%	0%	67%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	381	278	413
LT Vol	310	83	0
Through Vol	0	195	135
RT Vol	71	0	278
Lane Flow Rate	414	302	449
Geometry Grp	1	1	1
Degree of Util (X)	0.688	0.505	0.67
Departure Headway (Hd)	5.981	6.021	5.371
Convergence, Y/N	Yes	Yes	Yes
Cap	600	595	669
Service Time	4.05	4.107	3.449
HCM Lane V/C Ratio	0.69	0.508	0.671
HCM Control Delay	21.3	15.2	18.8
HCM Lane LOS	C	C	C
HCM 95th-tile Q	5.4	2.8	5.1

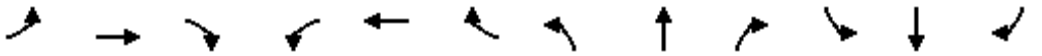
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø3
Lane Configurations							
Traffic Volume (vph)	84	250	520	78	208	509	
Future Volume (vph)	84	250	520	78	208	509	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	12	12	
Grade (%)	0%		0%			0%	
Storage Length (ft)	0	155		0	180		
Storage Lanes	1	1		0	1		
Taper Length (ft)	25				25		
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	0.95	
Ped Bike Factor							
Frt		0.850	0.980				
Flt Protected	0.950				0.950		
Satd. Flow (prot)	1703	1568	3478	0	1626	3406	
Flt Permitted	0.950				0.317		
Satd. Flow (perm)	1703	1568	3478	0	543	3406	
Right Turn on Red		No		No			
Satd. Flow (RTOR)							
Link Speed (mph)	30		35			35	
Link Distance (ft)	1185		556			566	
Travel Time (s)	26.9		10.8			11.0	
Confl. Peds. (#/hr)							
Confl. Bikes (#/hr)							
Peak Hour Factor	0.80	0.90	0.88	0.86	0.85	0.96	
Growth Factor	100%	100%	100%	100%	100%	100%	
Heavy Vehicles (%)	6%	3%	2%	0%	11%	6%	
Bus Blockages (#/hr)	0	0	0	0	0	0	
Parking (#/hr)							
Mid-Block Traffic (%)	0%		0%			0%	
Adj. Flow (vph)	105	278	591	91	245	530	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	105	278	682	0	245	530	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Right	Left	Left	
Median Width(ft)	24		12			12	
Link Offset(ft)	0		0			0	
Crosswalk Width(ft)	16		16			16	
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)	15	9		9	15		
Number of Detectors	1	1	2		1	2	
Detector Template	Left	Right	Thru		Left	Thru	
Leading Detector (ft)	20	20	100		20	100	
Trailing Detector (ft)	0	0	0		0	0	
Turn Type	Prot	pm+ov	NA		pm+pt	NA	
Protected Phases	8	1	2		1	6	3
Permitted Phases		8			6		
Detector Phase	8	1	2		1	6	
Switch Phase							

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø3
Minimum Initial (s)	7.0	5.0	15.0		5.0	15.0	1.0
Minimum Split (s)	20.0	9.5	20.5		9.5	20.5	7.0
Total Split (s)	35.0	15.0	28.0		15.0	43.0	12.0
Total Split (%)	38.9%	16.7%	31.1%		16.7%	47.8%	13%
Maximum Green (s)	30.7	10.9	22.5		10.9	37.5	8.0
Yellow Time (s)	3.3	4.0	4.3		4.0	4.3	4.0
All-Red Time (s)	1.0	0.1	1.2		0.1	1.2	0.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.3	4.1	5.5		4.1	5.5	
Lead/Lag	Lag	Lead	Lag		Lead		Lead
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	3.0		3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0		3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0		0.0	0.0	0.0
Recall Mode	None	None	C-Min		None	C-Min	None
Walk Time (s)							7.0
Flash Dont Walk (s)							15.0
Pedestrian Calls (#/hr)							10
Act Effct Green (s)	11.0	28.1	49.9		70.5	70.2	
Actuated g/C Ratio	0.12	0.31	0.55		0.78	0.78	
v/c Ratio	0.50	0.57	0.35		0.40	0.20	
Control Delay	48.3	26.6	14.6		6.3	4.5	
Queue Delay	0.0	0.0	0.0		0.0	0.0	
Total Delay	48.3	26.6	14.6		6.3	4.5	
LOS	D	C	B		A	A	
Approach Delay	32.6		14.6			5.1	
Approach LOS	C		B			A	

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 0 (0%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow			
Natural Cycle: 60			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.57			
Intersection Signal Delay: 14.3		Intersection LOS: B	
Intersection Capacity Utilization 45.8%		ICU Level of Service A	
Analysis Period (min) 15			

Splits and Phases: 3: MLK Dr & Monroe St





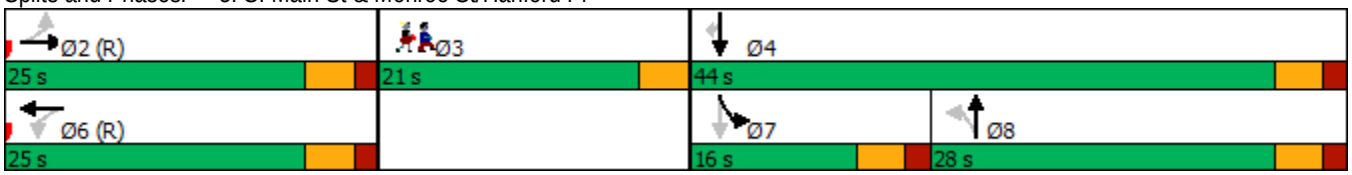
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	101	57	9	81	22	46	375	25	15	282	60
Future Volume (vph)	62	101	57	9	81	22	46	375	25	15	282	60
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	80		0	0		0	0		0	0		95
Storage Lanes	1		0	0		0	0		0	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.943			0.976			0.991				0.850
Flt Protected	0.950				0.995			0.994			0.997	
Satd. Flow (prot)	1752	1733	0	0	1780	0	0	1813	0	0	1793	1583
Flt Permitted	0.629				0.966			0.920			0.000	
Satd. Flow (perm)	1160	1733	0	0	1728	0	0	1678	0	0	0	1583
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		31			11			4				86
Link Speed (mph)		30			30			25			30	
Link Distance (ft)		1185			837			620			729	
Travel Time (s)		26.9			19.0			16.9			16.6	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.81	0.76	0.70	0.60	0.70	0.80	0.73	0.89	0.72	0.88	0.95	0.70
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	3%	0%	9%	0%	5%	0%	0%	4%	0%	0%	6%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Adj. Flow (vph)	77	133	81	15	116	28	63	421	35	17	297	86
Shared Lane Traffic (%)												
Lane Group Flow (vph)	77	214	0	0	159	0	0	519	0	0	314	86
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			0			0	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		35			40			30			20	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2		1	2		1	2	1
Detector Template	Left	Thru		Left	Thru		Left	Thru		Left	Thru	Right
Leading Detector (ft)	20	100		20	100		20	100		20	100	20
Trailing Detector (ft)	0	0		0	0		0	0		0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Prot	NA	Perm
Protected Phases		2			6			8		7	4	
Permitted Phases	2			6			8				7	4
Detector Phase	2	2		6	6		8	8		7	4	4
Switch Phase												

Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Grade (%)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Ped Bike 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)	
Confl. Peds. (#/hr)	
Confl. Bikes (#/hr)	
Peak Hour Factor	
Growth Factor	
Heavy Vehicles (%)	
Bus Blockages (#/hr)	
Parking (#/hr)	
Mid-Block Traffic (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Enter Blocked Intersection	
Lane Alignment	
Median Width(ft)	
Link Offset(ft)	
Crosswalk Width(ft)	
Two way Left Turn Lane	
Headway Factor	
Turning Speed (mph)	
Number of Detectors	
Detector Template	
Leading Detector (ft)	
Trailing Detector (ft)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Minimum Initial (s)	15.0	15.0		15.0	15.0		10.0	10.0		10.0	10.0	10.0
Minimum Split (s)	20.9	20.9		20.9	20.9		20.9	20.9		20.9	20.9	20.9
Total Split (s)	25.0	25.0		25.0	25.0		28.0	28.0		16.0	44.0	44.0
Total Split (%)	27.8%	27.8%		27.8%	27.8%		31.1%	31.1%		17.8%	48.9%	48.9%
Maximum Green (s)	20.1	20.1		20.1	20.1		23.1	23.1		11.1	39.1	39.1
Yellow Time (s)	3.3	3.3		3.3	3.3		3.2	3.2		3.2	3.2	3.2
All-Red Time (s)	1.6	1.6		1.6	1.6		1.7	1.7		1.7	1.7	1.7
Lost Time Adjust (s)	0.0	0.0			0.0			0.0			0.0	0.0
Total Lost Time (s)	4.9	4.9			4.9			4.9			4.9	4.9
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?												
Vehicle Extension (s)	2.0	2.0		2.0	2.0		2.0	2.0		2.0	2.0	2.0
Minimum Gap (s)	0.2	0.2		0.2	0.2		0.2	0.2		0.2	0.2	0.2
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	0.0
Recall Mode	C-Min	C-Min		C-Min	C-Min		None	None		None	None	None
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	31.2	31.2			31.2			40.8			40.8	40.8
Actuated g/C Ratio	0.35	0.35			0.35			0.45			0.45	0.45
v/c Ratio	0.19	0.34			0.26			0.68			0.39	0.11
Control Delay	19.6	19.3			23.6			26.4			19.0	4.0
Queue Delay	0.0	0.0			0.0			0.0			0.0	0.0
Total Delay	19.6	19.3			23.6			26.4			19.0	4.0
LOS	B	B			C			C			B	A
Approach Delay		19.4			23.6			26.4			15.7	
Approach LOS		B			C			C			B	

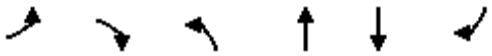
Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 11 (12%), Referenced to phase 2:EBTL and 6:WBTL, Start of Green			
Natural Cycle: 95			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.68			
Intersection Signal Delay: 21.5		Intersection LOS: C	
Intersection Capacity Utilization 65.0%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 5: S. Main St & Monroe St/Hanford Pl

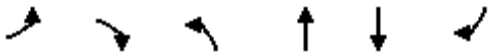


Lane Group	Ø3
Minimum Initial (s)	4.0
Minimum Split (s)	21.0
Total Split (s)	21.0
Total Split (%)	23%
Maximum Green (s)	17.5
Yellow Time (s)	3.5
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Vehicle Extension (s)	3.0
Minimum Gap (s)	3.0
Time Before Reduce (s)	0.0
Time To Reduce (s)	0.0
Recall Mode	None
Walk Time (s)	4.0
Flash Dont Walk (s)	13.0
Pedestrian Calls (#/hr)	20
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Intersection Summary



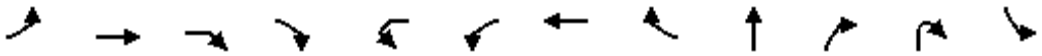
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Lane Configurations							
Traffic Volume (vph)	0	0	130	471	370	60	
Future Volume (vph)	0	0	130	471	370	60	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	12	12	
Grade (%)	0%			0%	0%		
Storage Length (ft)	0	0	0			0	
Storage Lanes	0	0	0			0	
Taper Length (ft)	25		25				
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor							
Frt					0.981		
Flt Protected				0.989			
Satd. Flow (prot)	0	0	0	1842	1827	0	
Flt Permitted				0.810			
Satd. Flow (perm)	0	0	0	1509	1827	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)					19		
Link Speed (mph)	25			25	25		
Link Distance (ft)	360			541	620		
Travel Time (s)	9.8			14.8	16.9		
Confl. Peds. (#/hr)							
Confl. Bikes (#/hr)							
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Growth Factor	100%	100%	100%	100%	100%	100%	
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	
Bus Blockages (#/hr)	0	0	0	0	0	0	
Parking (#/hr)							
Mid-Block Traffic (%)	0%			0%	0%		
Adj. Flow (vph)	0	0	141	512	402	65	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	0	0	653	467	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Right	Left	Left	Left	Right	
Median Width(ft)	0			0	0		
Link Offset(ft)	0			0	0		
Crosswalk Width(ft)	16			50	50		
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)	15	9	15			9	
Number of Detectors			1	2	2		
Detector Template			Left	Thru	Thru		
Leading Detector (ft)			20	100	100		
Trailing Detector (ft)			0	0	0		
Turn Type			Perm	NA	NA		
Protected Phases				2	6		3
Permitted Phases			2				
Detector Phase			2	2	6		
Switch Phase							



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Minimum Initial (s)			15.0	15.0	15.0		4.0
Minimum Split (s)			23.1	23.1	23.4		26.0
Total Split (s)			64.0	64.0	64.0		26.0
Total Split (%)			71.1%	71.1%	71.1%		29%
Maximum Green (s)			58.9	58.9	58.9		22.0
Yellow Time (s)			3.2	3.2	3.2		4.0
All-Red Time (s)			1.9	1.9	1.9		0.0
Lost Time Adjust (s)				0.0	0.0		
Total Lost Time (s)				5.1	5.1		
Lead/Lag							
Lead-Lag Optimize?							
Vehicle Extension (s)			3.0	3.0	3.0		3.0
Minimum Gap (s)			3.0	3.0	3.0		3.0
Time Before Reduce (s)			0.0	0.0	0.0		0.0
Time To Reduce (s)			0.0	0.0	0.0		0.0
Recall Mode			C-Max	C-Max	C-Max		None
Walk Time (s)							7.0
Flash Dont Walk (s)							15.0
Pedestrian Calls (#/hr)							0
Act Effct Green (s)				90.0	90.0		
Actuated g/C Ratio				1.00	1.00		
v/c Ratio				0.43	0.26		
Control Delay				1.1	0.3		
Queue Delay				0.0	0.0		
Total Delay				1.1	0.3		
LOS				A	A		
Approach Delay				1.1	0.3		
Approach LOS				A	A		

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 50 (56%), Referenced to phase 2:NBTL and 6:SBT, Start of Green			
Natural Cycle: 70			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.43			
Intersection Signal Delay: 0.8		Intersection LOS: A	
Intersection Capacity Utilization 63.6%		ICU Level of Service B	
Analysis Period (min) 15			

Splits and Phases: 8: S. Main St & Henry St



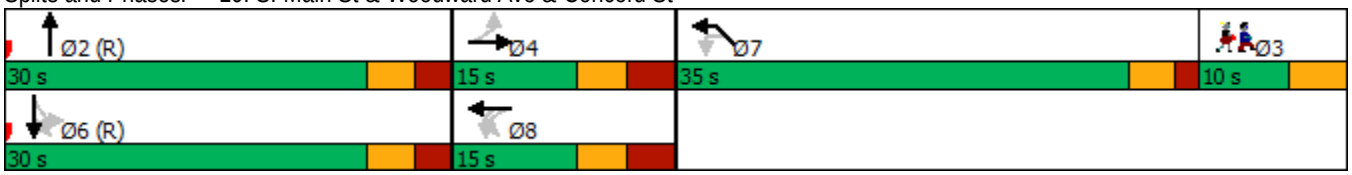
Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBT	NBR	NBR2	SBL2
Lane Configurations												
Traffic Volume (vph)	22	22	22	11	6	30	0	56	176	30	2	23
Future Volume (vph)	22	22	22	11	6	30	0	56	176	30	2	23
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12	12	12	12	12	12	12
Grade (%)		0%					0%		0%			
Storage Length (ft)	50		0			0		0		0		
Storage Lanes	1		0			0		0		0		
Taper Length (ft)	25					25						
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor												
Frt		0.910					0.918		0.979			
Flt Protected	0.950						0.981					
Satd. Flow (prot)	1770	1695	0	0	0	0	1678	0	1824	0	0	0
Flt Permitted	0.748						0.844					
Satd. Flow (perm)	1393	1695	0	0	0	0	1443	0	1824	0	0	0
Right Turn on Red				Yes				Yes			Yes	
Satd. Flow (RTOR)		11					138					
Link Speed (mph)		25					25		25			
Link Distance (ft)		344					721		778			
Travel Time (s)		9.4					19.7		21.2			
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
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
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%					0%		0%			
Adj. Flow (vph)	24	24	24	12	7	33	0	61	191	33	2	25
Shared Lane Traffic (%)												
Lane Group Flow (vph)	24	60	0	0	0	0	101	0	226	0	0	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Right	Left	Left	Left	Right	Left	Right	Right	Left
Median Width(ft)		12					12		0			
Link Offset(ft)		0					0		0			
Crosswalk Width(ft)		30					35		60			
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	9	15	15		9		9	9	15
Number of Detectors	1	2			1	1	2		2			1
Detector Template	Left	Thru			Left	Left	Thru		Thru			Left
Leading Detector (ft)	20	100			20	20	100		100			20
Trailing Detector (ft)	0	0			0	0	0		0			0
Turn Type	Perm	NA			Perm	Perm	NA		NA			Perm
Protected Phases		4					8		2			
Permitted Phases	4				8	8						6
Detector Phase	4	4			8	8	8		2			6
Switch Phase												

Lane Group	SBL	SBT	NWL2	NWL	NWR	NWR2	Ø3
Lane Configurations							
Traffic Volume (vph)	177	163	6	0	281	6	
Future Volume (vph)	177	163	6	0	281	6	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	12	12	12	12	12	12	
Grade (%)		0%		0%			
Storage Length (ft)	0			0	0		
Storage Lanes	0			1	0		
Taper Length (ft)	25			25			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Ped Bike Factor							
Frt				0.868			
Flt Protected		0.973		0.999			
Satd. Flow (prot)	0	1812	0	1615	0	0	
Flt Permitted		0.709		0.999			
Satd. Flow (perm)	0	1321	0	1615	0	0	
Right Turn on Red						Yes	
Satd. Flow (RTOR)				162			
Link Speed (mph)		25		25			
Link Distance (ft)		541		844			
Travel Time (s)		14.8		23.0			
Confl. Peds. (#/hr)							
Confl. Bikes (#/hr)							
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	
Growth Factor	100%	100%	100%	100%	100%	100%	
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%	
Bus Blockages (#/hr)	0	0	0	0	0	0	
Parking (#/hr)							
Mid-Block Traffic (%)		0%		0%			
Adj. Flow (vph)	192	177	7	0	305	7	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	0	394	0	319	0	0	
Enter Blocked Intersection	No	No	No	No	No	No	
Lane Alignment	Left	Left	Left	Left	Right	Right	
Median Width(ft)		0		12			
Link Offset(ft)		0		0			
Crosswalk Width(ft)		50		60			
Two way Left Turn Lane							
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	
Turning Speed (mph)	15		15	15	9	9	
Number of Detectors	1	2	1	1			
Detector Template	Left	Thru	Left	Left			
Leading Detector (ft)	20	100	20	20			
Trailing Detector (ft)	0	0	0	0			
Turn Type	Perm	NA	Perm	Prot			
Protected Phases		6		7			3
Permitted Phases	6		7	7			
Detector Phase	6	6	7	7			
Switch Phase							

Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NBT	NBR	NBR2	SBL2
Minimum Initial (s)	7.0	7.0			10.0	10.0	10.0		15.0			15.0
Minimum Split (s)	24.7	24.7			24.7	24.7	24.7		23.7			23.7
Total Split (s)	15.0	15.0			15.0	15.0	15.0		30.0			30.0
Total Split (%)	16.7%	16.7%			16.7%	16.7%	16.7%		33.3%			33.3%
Maximum Green (s)	8.3	8.3			8.3	8.3	8.3		24.3			24.3
Yellow Time (s)	3.3	3.3			3.3	3.3	3.3		3.2			3.2
All-Red Time (s)	3.4	3.4			3.4	3.4	3.4		2.5			2.5
Lost Time Adjust (s)	0.0	0.0					0.0		0.0			
Total Lost Time (s)	6.7	6.7					6.7		5.7			
Lead/Lag												
Lead-Lag Optimize?												
Vehicle Extension (s)	3.0	3.0			3.0	3.0	3.0		3.0			3.0
Minimum Gap (s)	3.0	3.0			3.0	3.0	3.0		3.0			3.0
Time Before Reduce (s)	0.0	0.0			0.0	0.0	0.0		0.0			0.0
Time To Reduce (s)	0.0	0.0			0.0	0.0	0.0		0.0			0.0
Recall Mode	None	None			None	None	None		C-Min			C-Min
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
Act Effct Green (s)	8.0	8.0					8.3		51.7			
Actuated g/C Ratio	0.09	0.09					0.09		0.57			
v/c Ratio	0.19	0.37					0.39		0.22			
Control Delay	41.8	39.8					7.8		12.3			
Queue Delay	0.0	0.0					0.0		0.0			
Total Delay	41.8	39.8					7.8		12.3			
LOS	D	D					A		B			
Approach Delay		40.4					7.8		12.3			
Approach LOS		D					A		B			

Intersection Summary			
Area Type:	Other		
Cycle Length: 90			
Actuated Cycle Length: 90			
Offset: 89 (99%), Referenced to phase 2:NBT and 6:SBTL, Start of Green			
Natural Cycle: 105			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.76			
Intersection Signal Delay: 18.4		Intersection LOS: B	
Intersection Capacity Utilization 81.3%		ICU Level of Service D	
Analysis Period (min) 15			

Splits and Phases: 10: S. Main St & Woodward Ave & Concord St



Lane Group	SBL	SBT	NWL2	NWL	NWR	NWR2	Ø3
Minimum Initial (s)	15.0	15.0	10.0	10.0			4.0
Minimum Split (s)	23.7	23.7	22.7	22.7			21.0
Total Split (s)	30.0	30.0	35.0	35.0			10.0
Total Split (%)	33.3%	33.3%	38.9%	38.9%			11%
Maximum Green (s)	24.3	24.3	30.3	30.3			6.0
Yellow Time (s)	3.2	3.2	3.1	3.1			4.0
All-Red Time (s)	2.5	2.5	1.6	1.6			0.0
Lost Time Adjust (s)		0.0		0.0			
Total Lost Time (s)		5.7		4.7			
Lead/Lag			Lead	Lead			Lag
Lead-Lag Optimize?							
Vehicle Extension (s)	3.0	3.0	3.0	3.0			3.0
Minimum Gap (s)	3.0	3.0	3.0	3.0			3.0
Time Before Reduce (s)	0.0	0.0	0.0	0.0			0.0
Time To Reduce (s)	0.0	0.0	0.0	0.0			0.0
Recall Mode	C-Min	C-Min	None	None			None
Walk Time (s)							7.0
Flash Dont Walk (s)							15.0
Pedestrian Calls (#/hr)							0
Act Effct Green (s)		51.7		15.9			
Actuated g/C Ratio		0.57		0.18			
v/c Ratio		0.52		0.76			
Control Delay		11.5		28.7			
Queue Delay		0.0		0.0			
Total Delay		11.5		28.7			
LOS		B		C			
Approach Delay		11.5		28.7			
Approach LOS		B		C			

Intersection Summary

Lane Group	NBL2	NBL	SER	SER2	NEL	NER
Lane Configurations						
Traffic Volume (vph)	39	279	193	14	14	38
Future Volume (vph)	39	279	193	14	14	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)		0	0		0	0
Storage Lanes		1	1		1	0
Taper Length (ft)		25			25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.865		0.901	
Flt Protected		0.950			0.987	
Satd. Flow (prot)	0	1770	1611	0	1657	0
Flt Permitted		0.950			0.987	
Satd. Flow (perm)	0	1770	1611	0	1657	0
Link Speed (mph)		25	25		25	
Link Distance (ft)		91	844		641	
Travel Time (s)		2.5	23.0		17.5	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	42	303	210	15	15	41
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	345	225	0	56	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Right	Left	Right
Median Width(ft)		12	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	15	9	9	15	9
Sign Control		Free	Free		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 27.6%		ICU Level of Service A	
Analysis Period (min) 15			

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	287	108	210	295	105	126
Future Volume (vph)	287	108	210	295	105	126
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)	0%		0%			0%
Storage Length (ft)	0	0		0	0	
Storage Lanes	1	0		0	0	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt	0.963		0.921			
Flt Protected	0.965					0.978
Satd. Flow (prot)	1731	0	1716	0	0	1822
Flt Permitted	0.965					0.978
Satd. Flow (perm)	1731	0	1716	0	0	1822
Link Speed (mph)	25		25			25
Link Distance (ft)	380		640			91
Travel Time (s)	10.4		17.5			2.5
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)	0%		0%			0%
Adj. Flow (vph)	312	117	228	321	114	137
Shared Lane Traffic (%)						
Lane Group Flow (vph)	429	0	549	0	0	251
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Right	Left	Right	Left	Left
Median Width(ft)	12		0			0
Link Offset(ft)	0		0			0
Crosswalk Width(ft)	16		16			16
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15	9		9	15	
Sign Control	Stop		Free			Free

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 74.1%		ICU Level of Service D	
Analysis Period (min) 15			

Lane Group	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations						
Traffic Volume (vph)	83	195	135	278	310	71
Future Volume (vph)	83	195	135	278	310	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	12
Grade (%)		0%	0%		0%	
Storage Length (ft)	0			0	0	0
Storage Lanes	0			0	1	0
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Ped Bike Factor						
Frt			0.909		0.975	
Flt Protected		0.985			0.961	
Satd. Flow (prot)	0	1835	1693	0	1745	0
Flt Permitted		0.985			0.961	
Satd. Flow (perm)	0	1835	1693	0	1745	0
Link Speed (mph)		25	25		30	
Link Distance (ft)		616	640		489	
Travel Time (s)		16.8	17.5		11.1	
Confl. Peds. (#/hr)						
Confl. Bikes (#/hr)						
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Growth Factor	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0
Parking (#/hr)						
Mid-Block Traffic (%)		0%	0%		0%	
Adj. Flow (vph)	90	212	147	302	337	77
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	302	449	0	414	0
Enter Blocked Intersection	No	No	No	No	No	No
Lane Alignment	Left	Left	Left	Right	Left	Right
Median Width(ft)		0	0		12	
Link Offset(ft)		0	0		0	
Crosswalk Width(ft)		16	16		16	
Two way Left Turn Lane						
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15			9	15	9
Sign Control		Stop	Stop		Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 70.5%		ICU Level of Service C	
Analysis Period (min) 15			

Movement	NBL2	NBL	SER	SER2	NEL	NER
Lane Configurations						
Traffic Volume (veh/h)	39	279	193	14	14	38
Future Volume (Veh/h)	39	279	193	14	14	38
Sign Control		Free	Free		Stop	
Grade		0%	0%		0%	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	42	303	210	15	15	41
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type		None	None			
Median storage veh)						
Upstream signal (ft)			844			
pX, platoon unblocked						
vC, conflicting volume	225				604	218
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	225				604	218
tC, single (s)	4.1				6.4	6.2
tC, 2 stage (s)						
tF (s)	2.2				3.5	3.3
p0 queue free %	97				97	95
cM capacity (veh/h)	1344				447	822

Direction, Lane #	NB 1	SE 1	NE 1
Volume Total	345	225	56
Volume Left	42	0	15
Volume Right	0	15	41
cSH	1344	1700	671
Volume to Capacity	0.03	0.13	0.08
Queue Length 95th (ft)	2	0	7
Control Delay (s)	1.2	0.0	10.9
Lane LOS	A		B
Approach Delay (s)	1.2	0.0	10.9
Approach LOS			B

Intersection Summary			
Average Delay	1.6		
Intersection Capacity Utilization	27.6%	ICU Level of Service	A
Analysis Period (min)	15		

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (veh/h)	287	108	210	295	105	126
Future Volume (Veh/h)	287	108	210	295	105	126
Sign Control	Stop		Free			Free
Grade	0%		0%			0%
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	312	117	228	321	114	137
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						
Median type			None			None
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume	754	388			549	
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol	754	388			549	
tC, single (s)	6.4	6.2			4.1	
tC, 2 stage (s)						
tF (s)	3.5	3.3			2.2	
p0 queue free %	7	82			89	
cM capacity (veh/h)	335	660			1021	

Direction, Lane #	WB 1	NB 1	SB 1
Volume Total	429	549	251
Volume Left	312	0	114
Volume Right	117	321	0
cSH	387	1700	1021
Volume to Capacity	1.11	0.32	0.11
Queue Length 95th (ft)	389	0	9
Control Delay (s)	111.1	0.0	4.7
Lane LOS	F		A
Approach Delay (s)	111.1	0.0	4.7
Approach LOS	F		

Intersection Summary			
Average Delay	39.7		
Intersection Capacity Utilization	74.1%	ICU Level of Service	D
Analysis Period (min)	15		

Movement	NBL	NBT	SBT	SBR	NEL	NER
Lane Configurations						
Sign Control		Stop	Stop		Stop	
Traffic Volume (vph)	83	195	135	278	310	71
Future Volume (vph)	83	195	135	278	310	71
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Hourly flow rate (vph)	90	212	147	302	337	77

Direction, Lane #	NB 1	SB 1	NE 1
Volume Total (vph)	302	449	414
Volume Left (vph)	90	0	337
Volume Right (vph)	0	302	77
Hadj (s)	0.09	-0.37	0.09
Departure Headway (s)	6.1	5.4	6.0
Degree Utilization, x	0.51	0.68	0.69
Capacity (veh/h)	551	635	563
Control Delay (s)	15.3	19.2	21.5
Approach Delay (s)	15.3	19.2	21.5
Approach LOS	C	C	C

Intersection Summary			
Delay	19.0		
Level of Service	C		
Intersection Capacity Utilization	70.5%	ICU Level of Service	C
Analysis Period (min)	15		

Intersection	
Intersection Delay, s/veh	30.7
Intersection LOS	D

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	311	133	167	347	110	111
Future Vol, veh/h	311	133	167	347	110	111
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	338	145	182	377	120	121
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	32.7	35.8	15
HCM LOS	D	E	B

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	70%	50%
Vol Thru, %	32%	0%	50%
Vol Right, %	68%	30%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	514	444	221
LT Vol	0	311	110
Through Vol	167	0	111
RT Vol	347	133	0
Lane Flow Rate	559	483	240
Geometry Grp	1	1	1
Degree of Util (X)	0.876	0.832	0.444
Departure Headway (Hd)	5.643	6.206	6.66
Convergence, Y/N	Yes	Yes	Yes
Cap	642	589	540
Service Time	3.689	4.206	4.719
HCM Lane V/C Ratio	0.871	0.82	0.444
HCM Control Delay	35.8	32.7	15
HCM Lane LOS	E	D	B
HCM 95th-tile Q	10.3	8.7	2.3

Intersection	
Intersection Delay, s/veh	24.2
Intersection LOS	C

Movement	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Vol, veh/h	287	108	210	295	105	126
Future Vol, veh/h	287	108	210	295	105	126
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	312	117	228	321	114	137
Number of Lanes	1	0	1	0	0	1

Approach	WB	NB	SB
Opposing Approach		SB	NB
Opposing Lanes	0	1	1
Conflicting Approach Left	NB		WB
Conflicting Lanes Left	1	0	1
Conflicting Approach Right	SB	WB	
Conflicting Lanes Right	1	1	0
HCM Control Delay	23.5	29.2	14.4
HCM LOS	C	D	B

Lane	NBLn1	WBLn1	SBLn1
Vol Left, %	0%	73%	45%
Vol Thru, %	42%	0%	55%
Vol Right, %	58%	27%	0%
Sign Control	Stop	Stop	Stop
Traffic Vol by Lane	505	395	231
LT Vol	0	287	105
Through Vol	210	0	126
RT Vol	295	108	0
Lane Flow Rate	549	429	251
Geometry Grp	1	1	1
Degree of Util (X)	0.826	0.723	0.446
Departure Headway (Hd)	5.42	6.06	6.396
Convergence, Y/N	Yes	Yes	Yes
Cap	659	593	567
Service Time	3.512	4.148	4.396
HCM Lane V/C Ratio	0.833	0.723	0.443
HCM Control Delay	29.2	23.5	14.4
HCM Lane LOS	D	C	B
HCM 95th-tile Q	8.8	6	2.3