BLACK ROCK TURNPIKE
SAFETY STUDY

BLACK ROCK TURNPIKE SAFETY STUDY

FINAL REPORT

TECHNICAL APPENDIX

APPENDIX A: STAKEHOLDER AND PUBLIC COMMENTS

APPENDIX B: PRELIMINARY CONCEPT PLAN

APPENDIX C: ACCESS MANAGEMENT RECOMMENDATIONS

APPENDIX D: TRAFFIC ANALYSIS

APPENDIX E: PERMITTING MAPS

APPENDIX F: ORDER OF MAGNITUDE COST ESTIMATES

MAY 2019

Innovative Planning
BETTER COMMUNITIES

Tighe&Bond
Engineers | Environmental Specialists

METROCOG
Connecticut Metropolitan Council of Governments

BLACK ROCK TURNPIKE
SAFETY STUDY

BLACK ROCK TURNPIKE SAFETY STUDY

APPENDIX A: STAKEHOLDER AND PUBLIC COMMENTS

MAY 2019

Innovative Planning
BETTER COMMUNITIES

Tighe&Bond
Engineers | Environmental Specialists

METROCOG
Connecticut Metropolitan Council of Governments

Public Comments on Improvement Options

#	Comment:
1	We need a traffic light at the intersection of BRT and Nonopoge Road.
2	Left Turns: prohibit Left turns except at intersections.
3	We need a traffic light at BRT and Nonopoge Road
4	Hello, I support the proposed plans and encourage any change that will make the Black Rock Turnpike safer for pedestrians. We live in walking distance of the stores and would love the addition of crosswalks.
5	Hi, I attended the presentation on Nov. 5th. I thought everyone that presented did a thorough, informative easy to understand presentation. I've lived in Fairfield for 26 years. I work locally and crossover Black Rock Tpke/Stillson road daily. I frequently shop and visit many merchants. I do not agree with installing roundabouts on Black Rock Tpke. I have many concerns: Having crosswalks without traffic signals is unsafe for pedestrians to cross such a high traffic roadway. It will also frustrate drivers as some pedestrians mistakenly believe they have the right away. I also feel that the confusion with the roundabouts will push traffic onto the side roads. I do not believe Roundabouts belong on such a busy roadway. I can't imagine senior and new drivers figuring out this new way. Many will avoid shopping/traveling in this area. They do not fit in our community. Cost of the roundabouts. Who will pay for all of this? There's a roundabout in Riverhead, NY that I believe will be similar to the proposed Black Rock Tpke ones. We found it to be very confusing, and scary when you pull in. Busy roadway, similar to Black Rock tpke. thanks for your time
6	Thank you but you can take me off your email list....I hope to move soon so no more interest in this. No way bike riding will ever happen around there as so dangerous.
7	The left hand turn from Tunxis Hill to South Bound Black Rock turnpike is terrible. Why not put a proper intersection light system there. A round about is a horrible idea due to the volume and size of the vehicles on that road. The circle near Staples is pitiful and has probably lead to millions of dollars in insurance claims. Someone should research the amt of insurance $ spent here each year. I don’t know what kind of engineers you hire, but the new lines are worse than the others, they creat lanes that come from nowhere and end nowhere. It is an extremely dangerous free-for-all.
8	People in Fairfield don't care much about Black Rock, which is Bridgeport.

9	Thank you for your work on this project. The team clearly developed thoughtful recommendations on this challenging major roadway in town. I was not at the latest presentation, but I have reviewed the materials on the website. In the past, I had always believed I'd rather not live near BRT and as a result, have to use that roadway for goods and services. Alas, I do now reside in the Stratfield area of town and find myself navigating BRT regularly. I am in favor in general of several of the proposed recommendations. The areas where medians and better pavement markings are proposed to direct traffic flow and turning opportunities, combined with closing of a number of curb cuts/ driveway openings, I believe would be a vast improvement over existing conditions. I believe the roundabouts are also the right approach. They offer traffic calming measures, improvements for pedestrians, and better traffic flow. The roundabout at Tunxis Hill Cutoff would seem to be a "no-brainer" as it will clean up a rather unusual intersection with traffic approaching from many different directions. The other two proposed roundabout areas, while perhaps more difficult to develop due to private property encroachments, also seem to be big improvements over existing conditions.
9-cont	Was a roundabout considered for the Burroughs intersection? As you are aware, that has been a particularly unsafe intersection, in part due to the grade change, low visibility to the east, and speed of motorists. For pedestrian improvements, more and better crosswalks are a must as indicated in your proposal. I did not see recommendations regarding proposed sidewalk widths and adding new sidewalks where appropriate. Hopefully, more can be considered. Also, while I understand the survey results suggest an unfriendliness towards bicycles, I do believe it is important to make improvements that factor in cyclists. Cyclists, at the moment, simply avoid BRT, and with good reason. A better designed roadway should be safer for cyclists. Also, considerations for cyclists to cross BRT should be factored in. There is a new bike route that crosses BRT at Burroughs and there could be future routes that either cross BRT or use part of BRT on the route (I am currently a member of the Fairfield Bicycle and Pedestrian Committee, although admittedly I am not much of a cyclist myself). Additionally, I did not notice many improvements for transit riders, except for the pull-out near Old Navy. Were other improvements specifically for transit riders considered and determined not necessary? Better placement of bus stops, better shelters perhaps? Lastly, you have probably been made aware of a recently approved Complete Streets Policy in town, but if not, it can be found at https://www.fairfieldct.org/news/?FeedID=2356. This study certainly aligns with the Policy. Thank you for all of your efforts.

10	I support the recommendations of this study as best I understand them. The analysis of the traffic and access problems for Black Rock Turnpike was well defined and logical. The proposed solutions seem to be innovative and reasonable. The solutions will better manage traffic flow on Black Rock Turnpike and will increase safety for drivers and pedestrians. However, the final presentation was not handled well and has left many questions. The primary area of concern is implementation. How this project would best be phased, what the priority elements are, the implications for implementing some but not all the elements of the plan were not presented in sufficient detail. Costs for phasing, how many years would be required for implementation, what traffic would look like during construction and other elements have not been presented to the community. I could not locate the "Realignment Scenarios Report, including conceptual plans for each improvement" that would be a useful resource for public evaluation of the recommendations. There was too much detail about the recommendations in the November 5 public meeting without sufficient time for questions and discussion from the public. At this point, there are many un-and-under answered questions, and there seemed to be unease amongst members of the public who were presented with an intricate plan without the ability to digest and comment on all its elements. Lack of attention to implementation left the clear impression that this is "just another study that will be filed away,"as someone commented after the meeting. This project started out with a real effort to build community support via the survey, the Community Advisory Committee, and the efforts made to include the views of property owners and business operators on Black Rock Turnpike. The energy expended in developing a consensus in favor of the project appears to have dissipated based on the performance of the session presenting the findings to the public.
10 - cont	A condensed version of the findings including a proposed implementation plan should be presented with a longer period for public comment and discussion at the end of the presentation. A presentation should also be made before the RTM with the Board of Finance and other relevant bodies asked to attend. If there is a real desire to implement this plan, a great deal more organized and focused outreach needs to occur. One area of the plan that does not appear to have received much consideration is mass transit. New bus shelters were noted, but should there be additional mass transit considerations? For instance, if people tend to visit more than one store when they go to Black Rock Turnpike, would a trolley that shuttles people to and fro along Black Rock Turnpike be useful? (Perhaps a commuter-like parking lot at the upper end of Black Rock Turnpike that would allow people to park and take a trolley would be useful.) Considering the heavy flow of traffic to and from Black Rock Turnpike in both directions on Stillson Road, would a shuttle from the Post Road to Black Rock Turnpike be useful and act as a low traffic link between the Town's two major commercial centers? In general, the issue of reducing traffic on Black Rock Turnpike does not appear to have been considered in any detail, a fact noted among members of the public after the November 5 meeting. Despite my concerns, the Black Rock Turnpike study reflects a great deal of highly professional and much appreciated work by the consultants and by Town staff.

11	In general, I thought the recommendations were well thought out and desirable. I like all three roundabout ideas, particularly the two at Tunxis Hill and in front of Trader Joe's. Tunxis Hill will be helpful to reduce the speed entering the zone while at Trader Joe's there will be a speed reduction along that stretch of road and a significant reduction in left turns. The one problem area is the intersection in front of CVS and Shop Rite. I just doesn't work for everyone, pedestrians and left turning vehicles out of the parking lots, in particular. I'm not smart enough to suggest a workable alternative and hope you can come up with one.
12	Basically... NO roundabouts. With the Town continually granting developments that will add horrendous traffic, you're beating a dead horse. Parking is becoming non-existent. My recommendation... Police presence and tell the Town to STOP creating traffic.
13	Short term - lower cost - less disruptions Implement proposed pedestrian improvements Use Smart flashing red light to assist ped crossings Use Smart traffic signals. Add vehicle activated trips where advantageous Keep as much two lanes as possible for emergency vehicles. Drivers do not pull over fast enough now and with only one lane and no way to get around could be disasterous Car 3, Engine 2 and Ladder 2 use BRT as main route to Merritt Pkwy Section #1 Leave as is. Works now. Possibly add trips to both lanes northbound BRT Section #2 At Burroughs Rd on BRT add delayed left turn arrow southbound Use trips on both sides of Burroughs At Katona use trip on Katona Change left turn arrow to delayed northbound. Section #3 At SR and CVS Change current left turn arrow to delayed Add left turn arrow to enter SR Section #4 Stillson Leave alon. Works now. Section #5 Add GBT bus pull out. Change GBT RT 10 to use Stillson, Fairfield Woods, BRT
13 - cont	Section #6 Fairfield Woods use delayed left turn arrow northbound, add delayed left turn arrow into Shopping Ctr Brookside use delayed left turn arrow Section #7 Samp Mortar Use trip on Samp Mortar Roundabouts may be used in future years if private businesses change and driveways get reconfigured, but that won't happen in short term. I would be happy to explain any of these comments since I am typing this with only minutes before your deadline for submission. and don't have time to really justify these item as well as other ideas I have. I have live within two blocks of BRT for forty years and have watched it develop. Thanks,

14	Dear Black Rock Turnpike Safety Study Team, So sorry I missed the 11/19 deadline. Even though I am late, please consider these easy-to-implement suggestions: 1. Plant trees in all median dividers (as trees also help to slow traffic and beautify). 2. Install public art and green-scaping to each roundabout (for both beautification and placemaking). Thank you for all of your hard work! Your proposed improvements will make this scary area much safer and more amenable to pedestrians.
15	Comments: * this study did a great job of community engagement, * phased implementation of recommendations seems very logical, * the study notes that the Greater Bridgeport Transit route is primarily used as a “destination,” but the study utterly fails to look at enhanced mass transit assets that might help mitigate Black Rock Turnpike congestion. A wheeled trolley service along Black Rock Turnpike starting and ending at parking lots at both “ends” of Black Rock Turnpike would enhance pedestrian safety since pedestrians could jump on and off at their desired destinations. This trolley service would also reduce vehicle traffic on Black Rock Turnpike. A second trolley that originated and terminated on the Post Road in Fairfield center would bring shoppers to and from Black Rock Turnpike. Some Fairfield residents who live in the southern part of Town hesitate to shop on Black Rock Turnpike due to traffic concerns. A trolley service would likely increase shoppers from the southern part of Fairfield to Black Rock Turnpike. Trolleys could provide transportation for bicycles. Distinctive trolleys would be a marketing asset as they are in many other towns and cities. Trolleys could be funded by a modest ridership fee, commercial sponsors, and federal grants.

Stakeholder Comments on Preliminary Concept Plan

Initial CTDOT comments on Preliminary Concept Plan

- DOT asks if we will have other speed reduction techniques besides roundabout- possibly more landscape medians (south of Burroughs and perhaps at entrance near Samp Mortar)
- Consider HAWK at mid-block crossing
- Consider truck movements to Dunkin, CVS and other plazas
- Consider turn pockets or other treatment to keep traffic moving at Burroughs
- Add left turn out between CVS and Bear & Grill
- Diagram how left turn traffic will work
- Make sure pedestrians are accommodated throughout

Kleban Properties meeting
1189 Post Road, Fairfield, CT
9:00 AM – 11:00 AM

Attending:
Ken Kleban, Evan Kleban, Deborah Koba - Kleban Properties
Matt Fulda, Meghan Sloan – Metro COG
Mark Barnhart, Jim Wendt – Town of Faifield
Parker Sorenson, Mike Morehouse - FHI

- No comments on Tunxis Hill Roundabout
- ShopRite / CVS Area
    - Concern for exiting traffic to Black Rock Southbound
    - Concerns for queueing space for left-turning vehicles
    - Concern for access to bakery property and convenience uses for northbound vehicles on Black rock
    - Concern for access to ShopRite property for semi-trucks from I-95 from the south and need to use driveway near bakery
    - Like the concept for a reorganized parking lot with clearer aisles
    - Would like team to look into connecting ShopRite properties to properties to the north (towards Stillson Rd)
- Old Navy/ Trader Joe's Area
    - Like the concept for a roundabout to serve both these driveways (stated approval three times +)
- FFW / Brookside area
    - Concern for removal of FFW Driveway
- General:
    - Concern for emergency response – note that AMR Ambulance sits at Stillson near gas station
    - Tenants don't like occlusive bus shelters – but may be more amenable to sideless shelter
    - Would like to see more connections between properties in general

Meeting with the First Selectman (Mike Tetreau) and his Chief of Staff

- Concern for ADA & crossings at locations that do not have signal control, especially at the roundabouts. He had concern that vehicles would not yield and have concern for the elderly citizens.
- Question on what traffic days this is modeled for. For example, will it still work during holiday peaks?
- Concern for the permanence of the improvements and need to state what these improvements won't fix and be upfront about this
- Chief of Staff (COS) raised concern for the vacant building on the east side to the north of the corridor – mentioned that traffic and access to driveway will limit uses here
- COS commented that improvements should focus on improvements to quality of Life
- Question on potential to have funding for parking lot connections through the state

Technical Advisory Committee Comments
Thursday, October 26, 2018 at 2:30 PM
Old Town Hall Conference Room – 611 Old Post Road

Attendees:

Name	Organization
Bill Hurley	Engineering Manager, Fairfield
Doug Holcomb	CEO, Greater Bridgeport Transit (GBT)
George Obeng	GIS Technician, MetroCOG
Jim Wendt	Assistant Planning Director, Fairfield
Mark Barnhart	Director, Fairfield Office of Community & Economic Development
Matt Fulda	Acting Director, MetroCOG
Meghan Sloan	Planning Director, MetroCOG
Rob Kalamaras	Fairfield Police
Urb Leimkuhler	Fairfield Senior Advocates & Human Services Committee
Mark Cocoran	Fairfield TPZ Committee
Laura O'Brien	Fairfield Bike / Ped
Parker Sorenson	FHI
Craig Yannes	Tighe & Bond
Mike Morehouse	FHI

- Doug Holcomb of GBT noted his support of the roundabout with a bus pull-out. The project team noted that the roundabout design is intended to be such that a bus does not have to use the truck apron. Doug Holcomb noted that this would lead to improved reliability and shorter turnaround time, while allowing GBT busses to wait for the return trip while not on a residential road
- Bill Hurley mentioned that crosswalks at Samp Mortar are in the process of being completed by the town.
- Doug Holcomb questioned the timeline of implementing the proposed concept. The estimated planning budget is $23M, meaning that it would need to be scheduled in the TIP and funded.

Likely several years out. Doug replied that he is looking to put some bus shelters on the turnpike in the meantime.

- A Committee member raised concern for roundabout operation at Tunxis Hill and the Black Rock Turnpike. The member questioned access from the Black Rock Turnpike northbound entry. The member had concern for delay at this approach
- Committee members raised general concern for the short-term proposal and the thought that speed would not be adequately reduced between Stillson Road and Fairfield Woods Road. Several members noted that they would like to see the roundabout at Old Navy to be a second priority after a roundabout at Tunxis Hill.
- Several committee members expressed disapproval in the lack of pedestrian enhancements at Black Rock and Stillson Road intersection. Mike responded that this can be addressed with showing enhanced crossings and other minor modifications.

Route 58 Corridor Study
Town of Fairfield
Final Draft Report Review – CTDOT

FHI Team responses in yellow

1. Throughout the report Appendix A through D are referred to, but were not provided. If this was meant to refer to the Appendix in the Black Rock Turnpike Corridor Study Final Report Memo, the corresponding Appendices do not match. Please provide the Appendix for review.
    a. These are provided in a separate document

2. A review of the Synchro analyses revealed that several instances where lag left-turn phasing was proposed. The Department prefers lead left-turn phasing.
    a. The lagging left was limited to the Brookside/Fairfield Woods Road intersection as it was in the existing condition due to the proximity of the two closely spaced intersections and the geometric concerns for SB lefts into Fairfield Woods. The lead/lag phasing can be considered during design phase.

3. Recommended Segment 1 (Figure 34): The southbound Route 58 approach at Tahmore Drive will experience nearly 1200 foot queues in the 2040 afternoon peak improved conditions. Is this acceptable to the Town?
    a. The 2040 concept keeps current geometrics, however recommends signal coordination at Tahmore with the rest of the corridor and the increase in cycle length to 110 seconds versus the current 75 seconds. This change allows this intersection to give a higher split percentage compared to the 2040 background condition (proposed = 85% versus current = 73%). This means that the 2040 Concept performs better in the southbound direction than the 2040 background condition. For example, expected delay in SB direction under the proposed concept is 53s compared to the 2040 background of 73 seconds. Also, it is noted that the Synchro model has this southbound leg coded as a single-shared left/thru/right lane. This means that in the LOS calculation, a waiting left-turning vehicle would prevent thru traffic to pass. The current configuration with an 8' shoulder allows vehicles to pass these left-turning vehicles, meaning that actual conditions may operate better than suggested by the Synchro model. For example, the 2017 existing conditions results show a design queue of 769 feet in the southbound direction, however, discussions with the Town suggest that these queues are not realized indicating that by-passing traffic may reduce queueing otherwise expected in this area.

4. Recommended Segment 2 (Figure 35): The southbound Route 58 approach at Samp Mortar Drive will experience nearly 800 foot queues in the 2040 afternoon peak improved conditions. Is this acceptable to the Town?
    a. We compared the 2040 background to the 2040 concept queues. The 2040 concept queues (before signal retiming) in the southbound direction are 742' versus 2040 background of 293'; however, by increasing the cycle length at this signal (from 75 seconds to 110 seconds), and increasing the cycle split given to the southbound movement (from 29% to 55%) we can substantially mitigate queueing. The Synchro model shows that while queues of ~30 vehicles may form, the longer green-time given to the southbound direction over baseline conditions means that vehicles should be able to clear the intersection. Additionally, the recommendation to coordinate the Tahmore signal improves operations at this signal as well. In summary, operations should be substantially improved by the retiming of the signal as described. However, it will be expected that queues will develop during the afternoon peak, yet these are expected to be serviced within one cycle. In general, the operations appear to be satisfactory given the safety benefits expected to be realized with the proposed alignment. Future design phase can override this concept if the Town and State are uncomfortable with the anticipated operations.

5. Recommended Segment 2-3 (Figure 35/36): Is a 300 foot southbound Route 58 left-turn lane at Brookside Lane necessary? Was consideration given to providing a northbound Route 58 left-turn lane where there are more driveways on the west side of Route 58? In addition, it appears that it was analyzed as two southbound through lanes not a through lane and an exclusive left-turn lane. Which is correct?
    a. We will shorten the turn pocket length and provide painted median space – which can potentially be used as a TWLTL and allow for left-turners to the driveways on the "western" side of Route 58.

6. Recommended Segment 3-4 (Figure 36/37): There is approximately 300 feet of storage for two lanes on southbound Route 58 between the proposed roundabout and Stillson Road (Route 135), was this taken into consideration in the Synchro analyses? The queues ($50^{th}/95^{th}$) during the PM and Saturday peaks extend over 300 feet.
    a. CAD shows storage about 500' and should be sufficient for queuing

7. Recommended Segment 5 (Figure 38): For the Route 58 northbound approach at Katona Drive, should two through lanes be maintained instead of a through lane and an exclusive left-turn lane? The report indicated that northbound queues extend beyond the available storage during the Saturday peak. If the proposed configuration is to be maintained, why is a southbound Route 58 phase fixed advance proposed instead of providing a southbound left-turn lane where the mountable island is proposed?

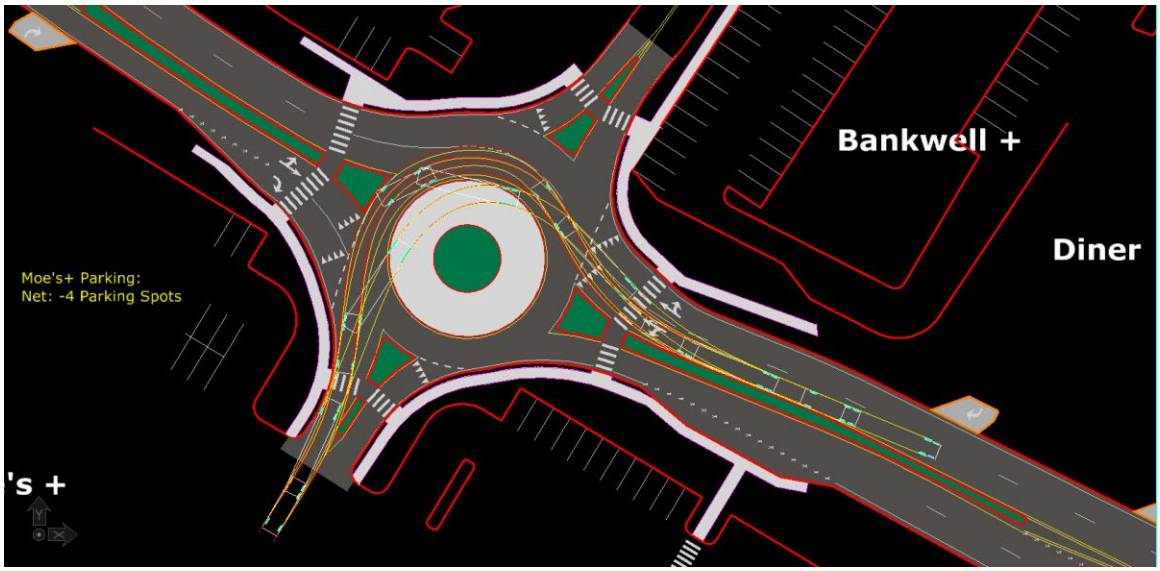
a. Max fixed was an issue within the file that doesn't not impact the results of the analyses. For safety reasons, a single through lane is preferred. High speed traffic with frequent lane changing is an issue and this area experienced several severe crashes, with three fatalities and a number of bicycle and pedestrian crashes.

8. Recommended Segment 5 (Figure 38): The alignment of the Route 58 northbound approach at Burroughs Road may increase the likelihood of same direction sideswipes due to the approach narrowing after the stop bar (22 feet to 19 feet). In addition, the report indicated that Route 58 northbound queues will extend over 500 feet, will this affect the operation of the proposed roundabout. Consideration should be given to maintaining two northbound through lanes.
    a. We will fix the visual of the cat tracks. There is enough storage for the queues extending to the roundabout.

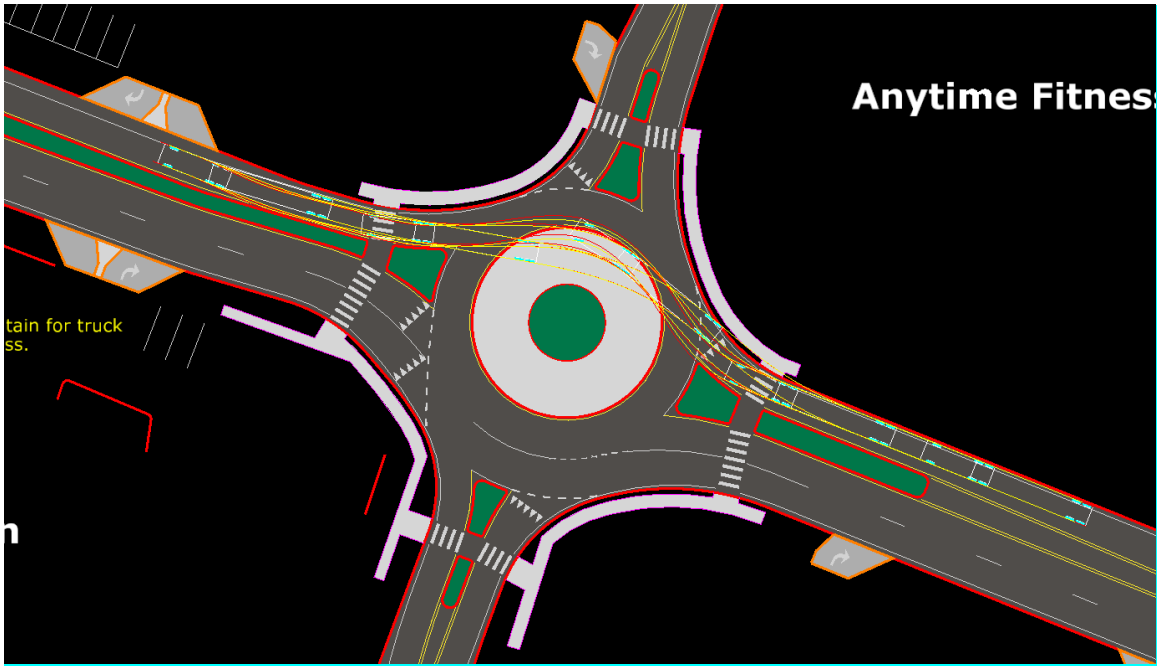
   If the proposed configuration is to be maintained, was a Route 58 southbound left-turn lane at Burroughs Road considered instead of a mountable island?
    b. Left-turn lane not provided due to 1) right turn swept path of trucks from Burroughs to Black Rock North bound and 2) shift required by through traffic (from left lane to right – though mitigated by intersection geometry) causes concern with providing this space for left-turning vehicles.

   Will the business at 1817 Black Rock Turnpike be ok with the proposed mountable island restricting left-turns into their site from Route 58 northbound?
    c. We will emphasize that this median is not to be a raised due to this driveway as well as for accommodating truck right turns from Burroughs to BRT NB

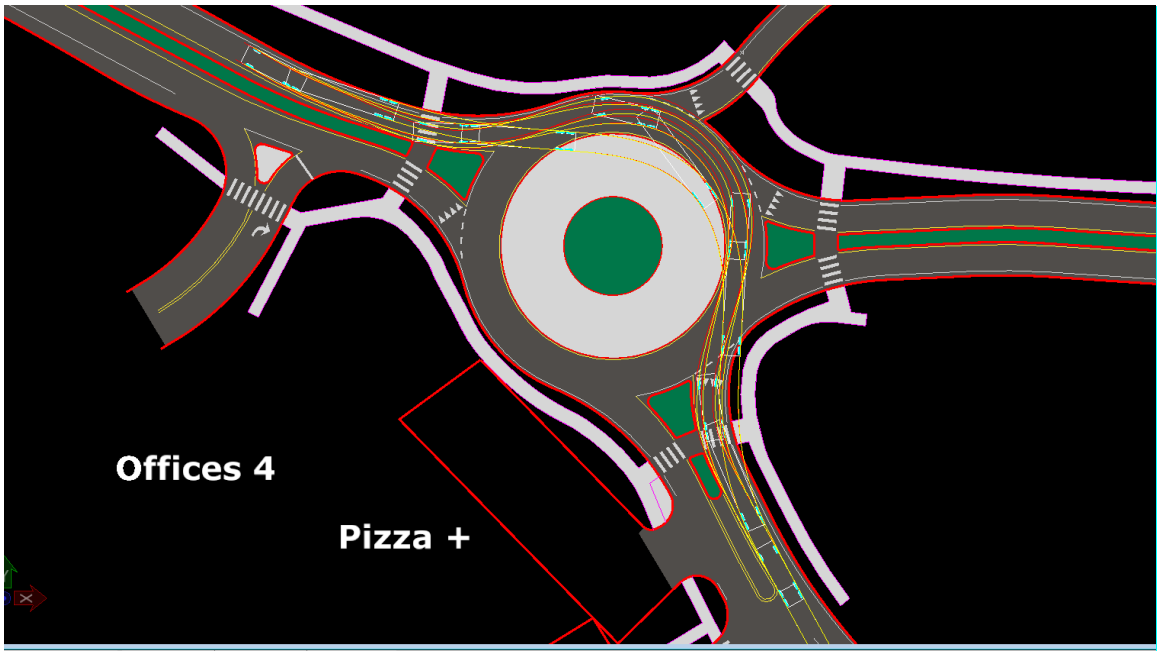
9. Can the proper design vehicle navigate both proposed roundabouts?
    a. We tested the Tunxis roundabout and WB62 and 67's can make the turns. There may need to be some slight modifications and mountable islands, etc once the design is undertaken. For the Old Navy roundabout, the preliminary swept path for a left-turning WB 62 is shown below:



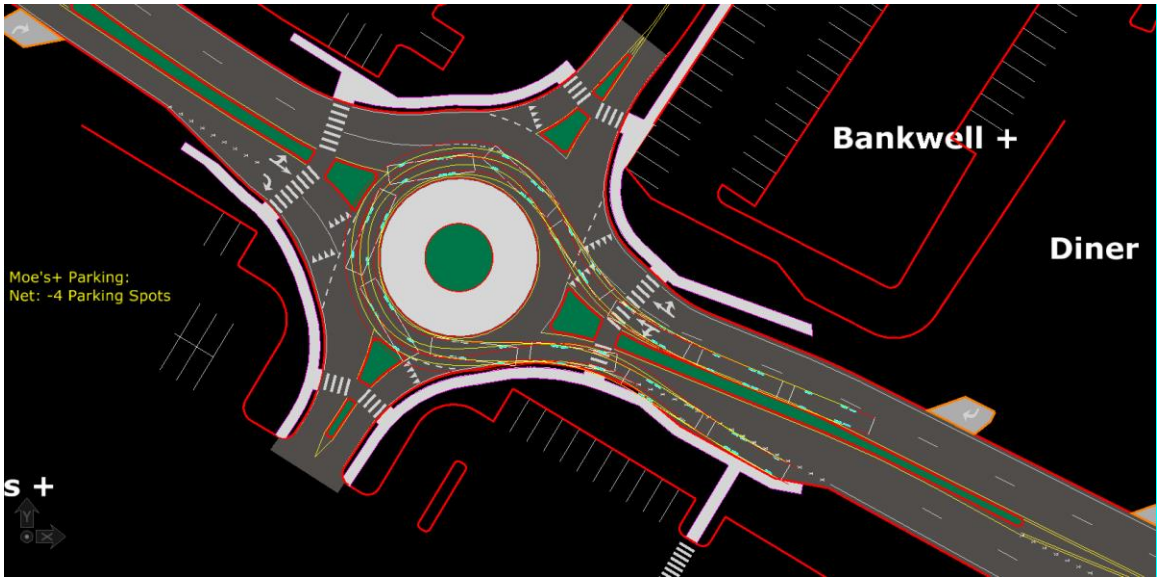
Swept path for through WB 62 for the originally proposed roundabout at Katona which had similar design. Design elements for buffer between sidewalk will likely need to be considered – but were successfully implemented in Glastonbury.



Left-turns for WB 62 at Tunxis Hill cut-off. This roundabout is larger (ISD = 130') which should be more than adequate for trucks.



Finally – the size of the Old Navy Roundabout should be designed to allow for GBT buses to U-turn without mounting the median. This roundabout should be adequately designed for this movement.



Materials design details are key. These roundabouts can be designed for trucks to be mount inside curb (e.g. Glastonbury Roundabout).

10. Near-term recommendations Segment 2 (Figure 41) only shows a single Route 58 southbound through lane approaching Samp Mortar Drive. Two lanes are existing today.

a. This is correct. See answer to question 5. Town to decide on SB approach configuration during final design. Single lane was recommended for safety reasons.

11. Near-term recommendations Segment 3 (Figure 42): According to the MUTCD, a HAWK signal should be installed at least 100 feet from side streets and driveways that are controlled by STOP or YIELD signs. It appears that it is proposed directly adjacent to the Old Navy/Gap driveway which is stop controlled. Would RRFBs be a more appropriate treatment at this location for a short term solution? The cost of a HAWK signal is comparable to that of a traffic signal and may not be the most economical near-term solution.
    a. HAWK signal within 100' from side-street guidelines could change in MUTCD, however a RRFB is also an option. Suggest revisiting this decision during final design.

12. Page 17 Figure 9: Locations of Crashes by Type and page 35 Figure 29: Locations for crash type are too small to interpret. Should be a whole page.
    a. Ok, FHI to change.

13. The report and concept plans should clearly indicate where roadway widening is recommended.
    a. With the exception of the Old Navy roundabout and the widening at Stillson, we've made every attempt to stay within curb to curb limits. There may be some sliver impacts in places, but the conceptual planning level of detail is not sufficient for precise determination of widening impacts. More extensive engineering and design phases will identify potential locations for widening.

14. Label each of the Figures 34 through 39 as Recommended Concept Plan. Label Figures 40 to 45 as Near Term Plan to distinguish between the two scenarios.
    a. Ok, FHI to change.

15. Please note that all comments and markups on the Recommended Concept Plans (Figures 34 through 39) also apply to the plans in the Executive Summary (Figures ES-1 through ES-6).
    a. Noted.

BLACK ROCK TURNPIKE
SAFETY STUDY

BLACK ROCK TURNPIKE SAFETY STUDY

APPENDIX B: PRELIMINARY CONCEPT PLAN

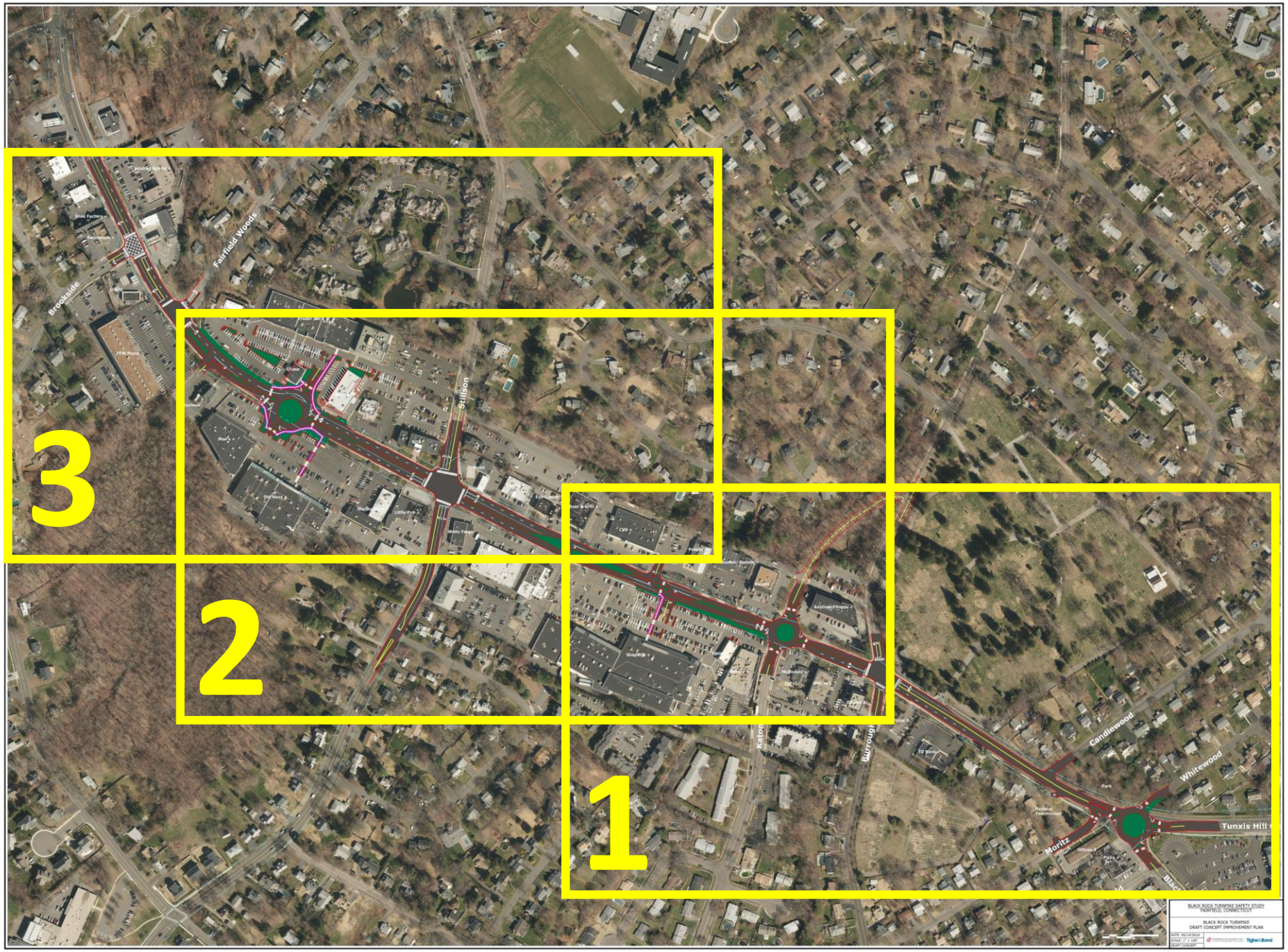
MAY 2019

Innovative Planning
BETTER COMMUNITIES

Tighe&Bond
Engineers | Environmental Specialists

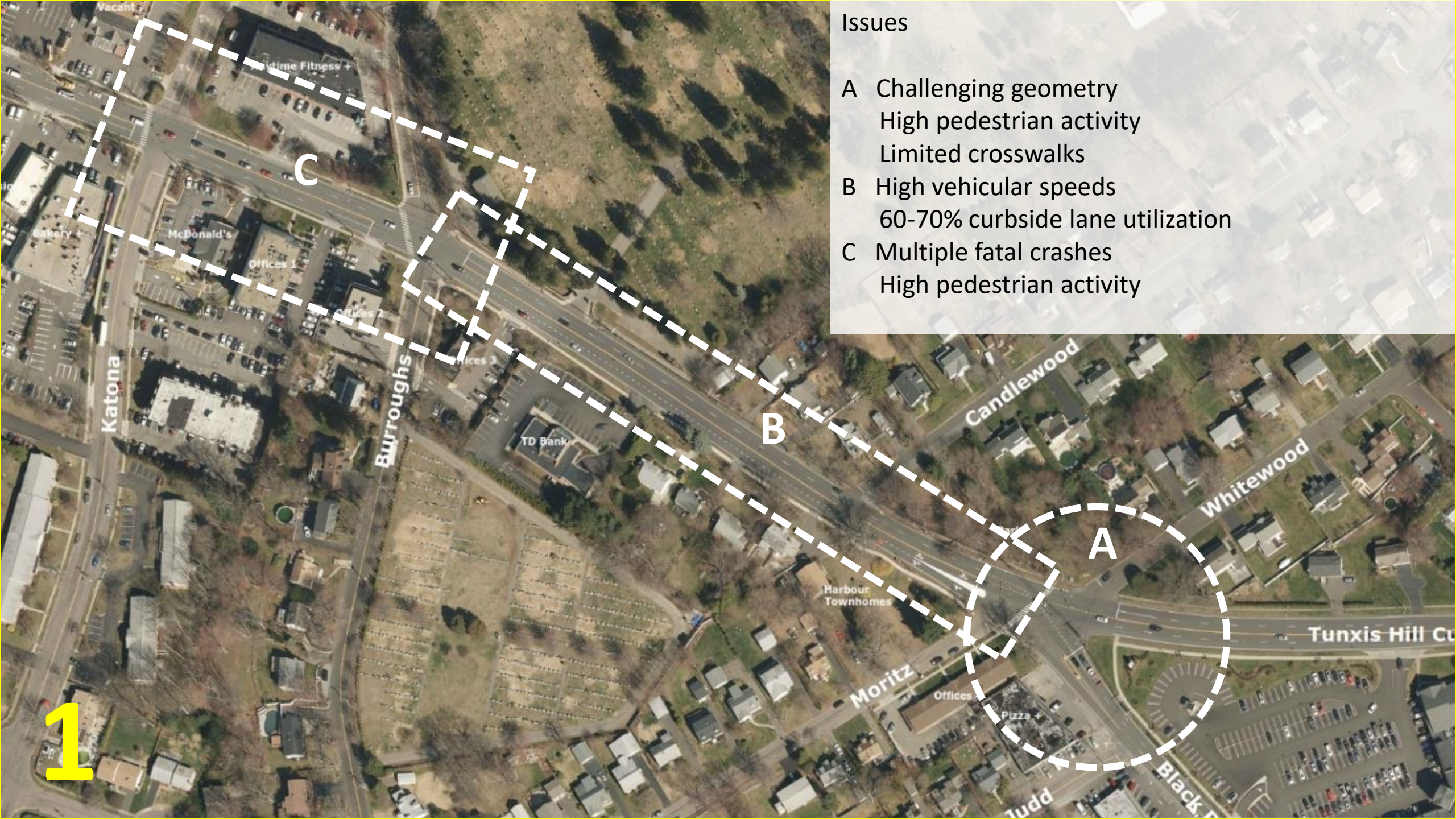
METROCOG
Connecticut Metropolitan Council of Governments

Section Key Map



Section 1

Brookside
Fairfield Woods
Stillson
Katona
Burroughs
Candlewood
Whitewood
Tunxis Hill
Moritz
1
BLACK ROCK TURNPIKE SAFETY STUDY
FAIRFIELD, CONNECTICUT
BLACK ROCK TURNPIKE
DRAFT CONCEPT IMPROVEMENT PLAN
DATE: 05/14/2018
SCALE: 1" = 100'
DRAFT CONCEPT
Tighe&Bond



Issues

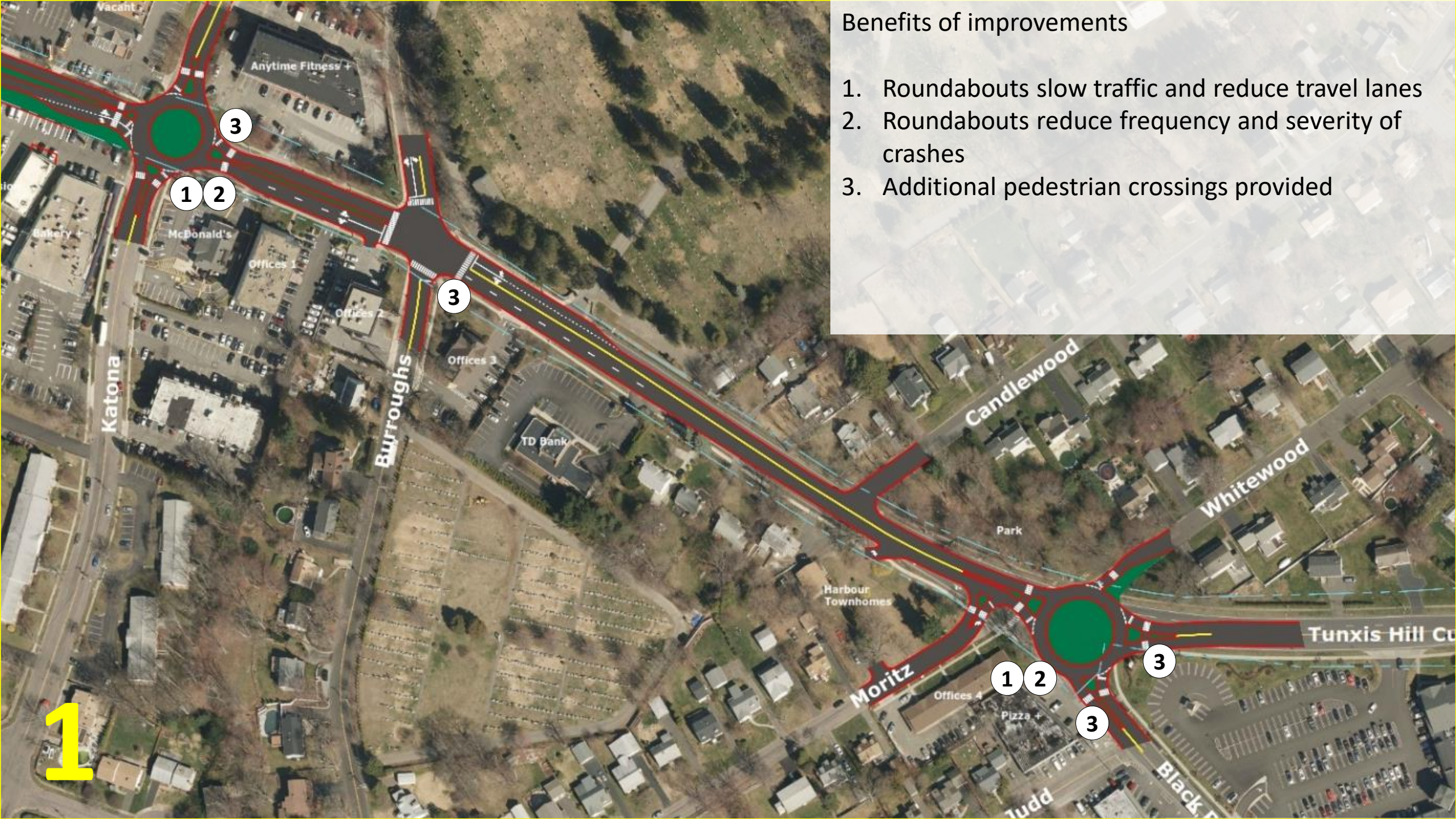
A Challenging geometry
High pedestrian activity
Limited crosswalks

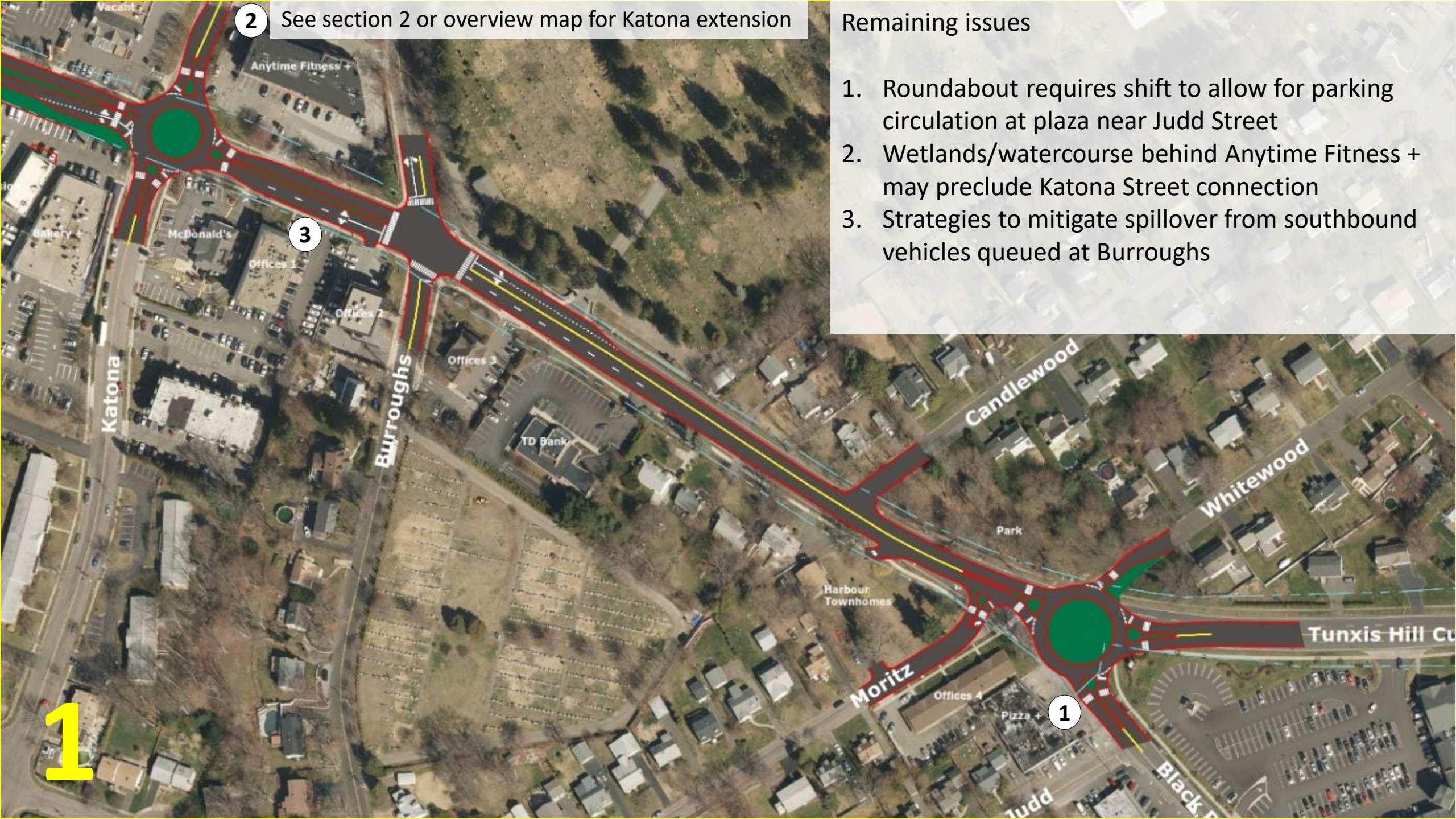
B High vehicular speeds
60-70% curbside lane utilization

C Multiple fatal crashes
High pedestrian activity

Benefits of improvements

1. Roundabouts slow traffic and reduce travel lanes
2. Roundabouts reduce frequency and severity of crashes
3. Additional pedestrian crossings provided

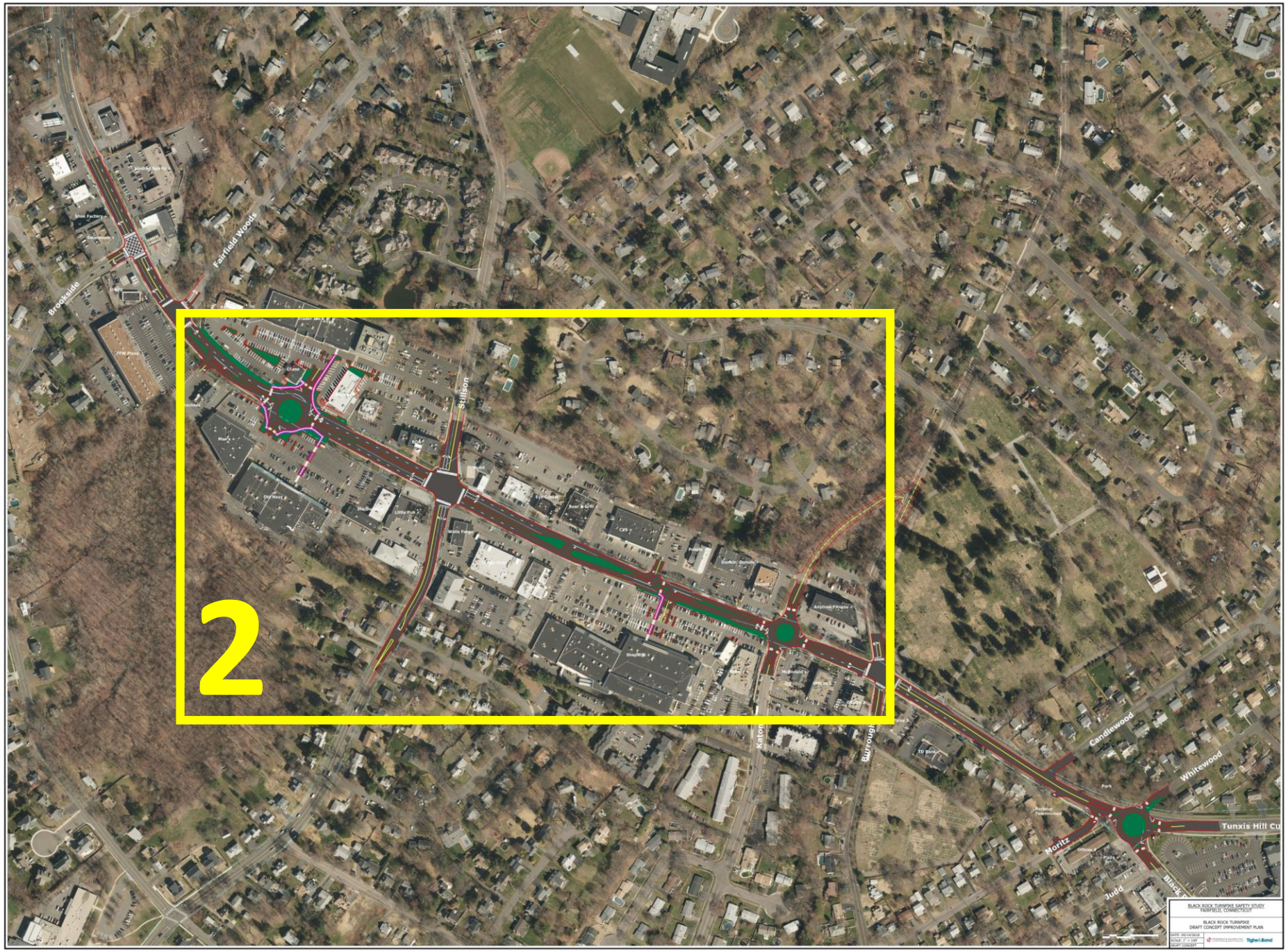




Remaining issues

1. Roundabout requires shift to allow for parking circulation at plaza near Judd Street
2. Wetlands/watercourse behind Anytime Fitness + may preclude Katona Street connection
3. Strategies to mitigate spillover from southbound vehicles queued at Burroughs

Section 2


2
Brookside
Fairfield Woods
Stillson
Katon
Burroughs
Candlewood
Whitewood
Moritz
Judd
Black
Tunxis Hill Cu
BLACK ROCK TURNPIKE SAFETY STUDY
FAIRFIELD, CONNECTICUT
BLACK ROCK TURNPIKE
DRAFT CONCEPT IMPROVEMENT PLAN
Tighe&Bond

Issues

D Substandard sight lines
High pedestrian activity
Shoprite parking lot causes congestion

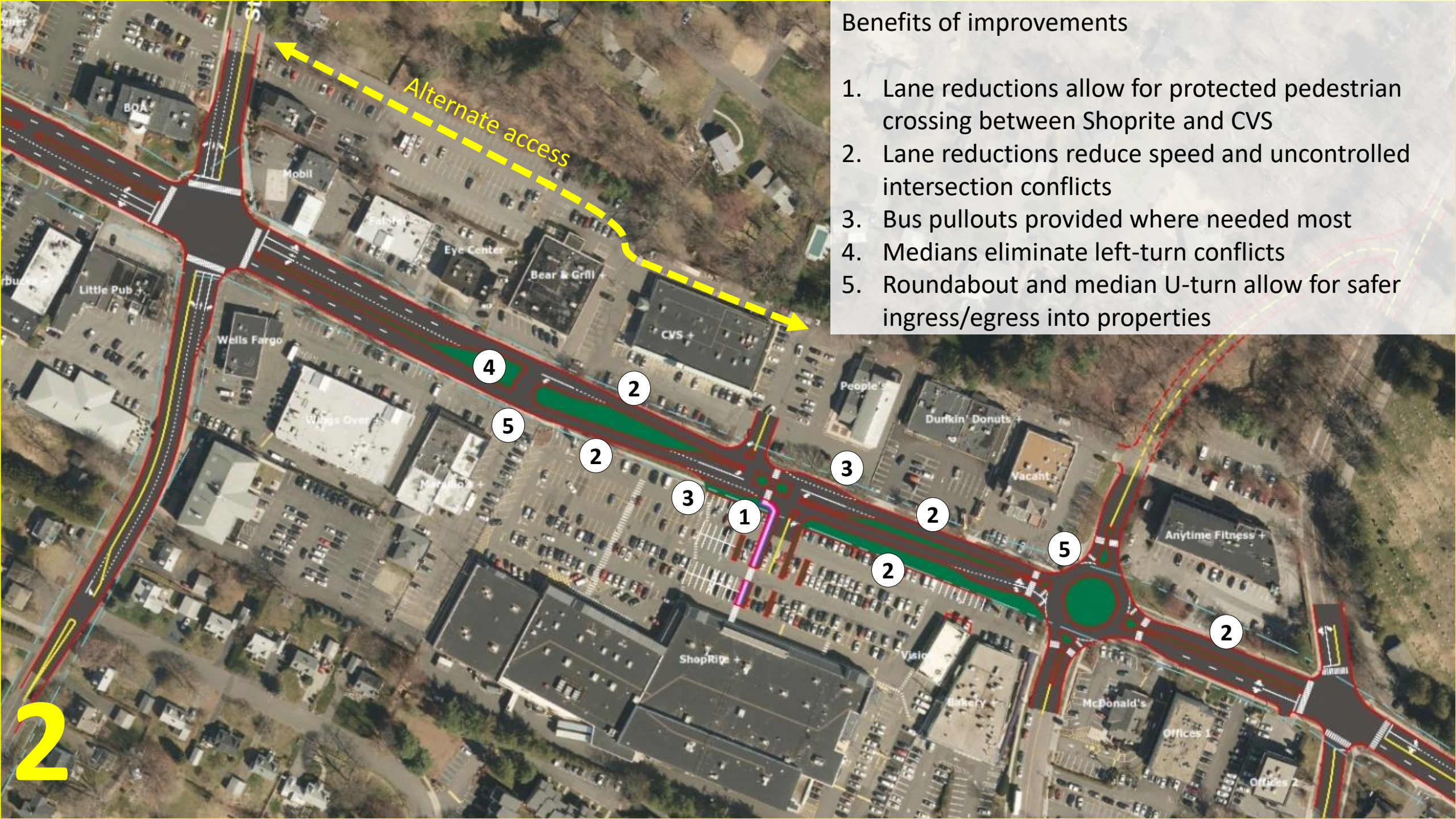
E Numerous curb cuts/turn-related crashes

F Highest crash location in corridor
High pedestrian activity/Long crossing distance

G Excessive vehicular queuing

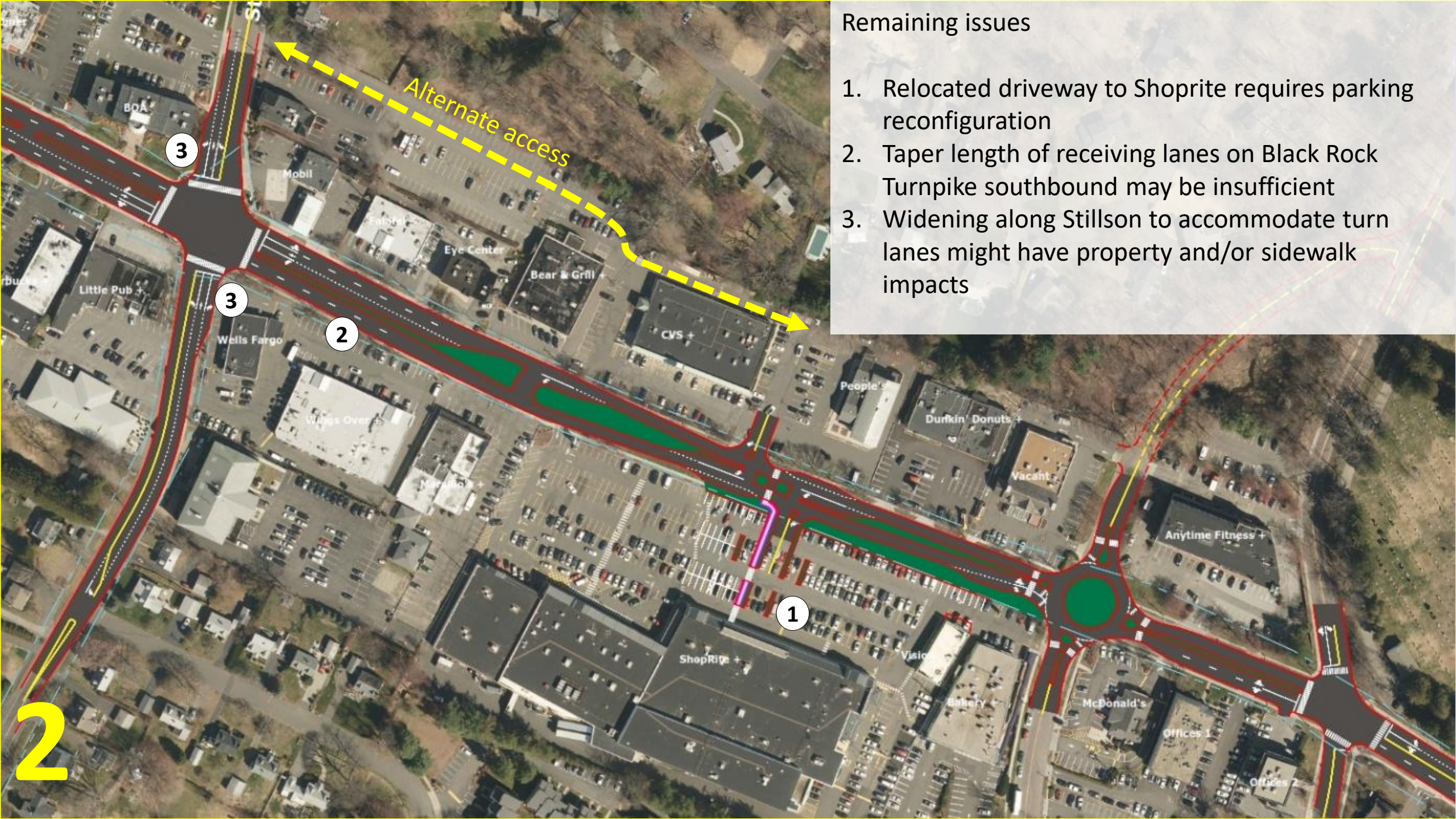
Benefits of improvements

1. Lane reductions allow for protected pedestrian crossing between Shoprite and CVS
2. Lane reductions reduce speed and uncontrolled intersection conflicts
3. Bus pullouts provided where needed most
4. Medians eliminate left-turn conflicts
5. Roundabout and median U-turn allow for safer ingress/egress into properties



Benefits of improvements continued

1. Right turn lane and extended left turn lane on Stillson EB approach reduces queuing
2. Right turn lane on Stillson WB approach reduces queuing



Remaining issues

1. Relocated driveway to Shoprite requires parking reconfiguration
2. Taper length of receiving lanes on Black Rock Turnpike southbound may be insufficient
3. Widening along Stillson to accommodate turn lanes might have property and/or sidewalk impacts

Section 3

3
Brookside
Fairfield Woods
Stillson
Katona
Burroughs
Candlewood
Whitewood
Moritz
Judd
Black
Tunxis Hill Cu
BLACK ROCK TURNPIKE SAFETY STUDY
FAIRFIELD, CONNECTICUT
BLACK ROCK TURNPIKE
DRAFT CONCEPT IMPROVEMENT PLAN
DATE: 05/14/2018
SCALE: 1" = 100'
DRAFT CONCEPT
Tighe&Bond

Issues

H High NB speeds/Numerous curb cuts

I Highest unsignalized crash location (left-turns)
High pedestrian desire line
No midblock crossing available

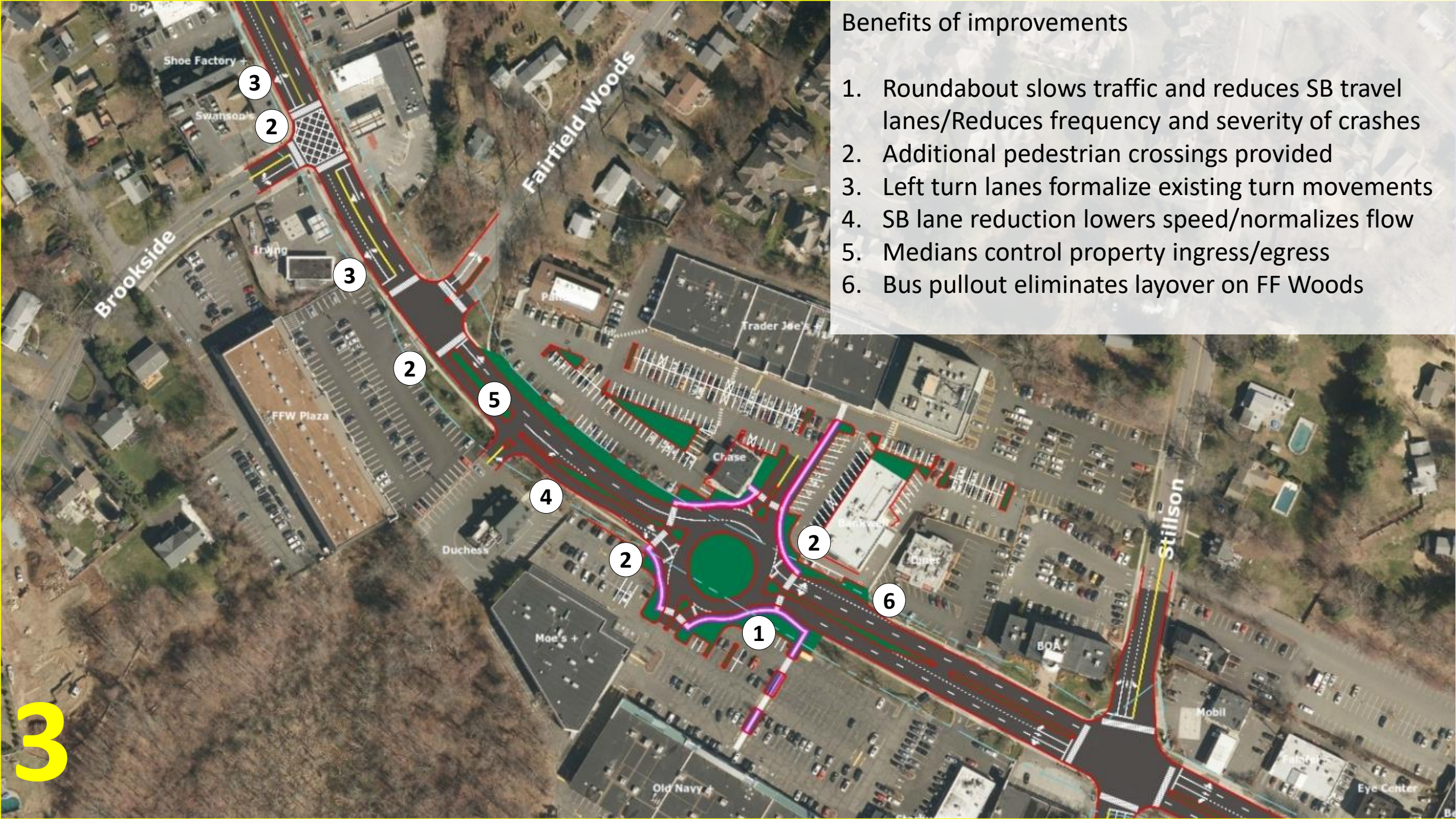
J High SB speeds

K Grade and sight line issues on Fairfield Woods
High crash location

L 70-80% curbside lane utilization

Benefits of improvements

1. Roundabout slows traffic and reduces SB travel lanes/Reduces frequency and severity of crashes
2. Additional pedestrian crossings provided
3. Left turn lanes formalize existing turn movements
4. SB lane reduction lowers speed/normalizes flow
5. Medians control property ingress/egress
6. Bus pullout eliminates layover on FF Woods



3

Remaining issues

1. Roundabout requires property impacts and net parking loss
2. Roundabout requires double lane NB
3. No lane reduction NB due to heavy traffic volume
4. Close spacing between Brookside and FF Woods
5. Relocation/consolidation of FFW Plaza and Duchess necessary for lane reduction and improved operations at FF Woods

3

BLACK ROCK TURNPIKE
SAFETY STUDY

BLACK ROCK TURNPIKE SAFETY STUDY

APPENDIX C: ACCESS MANAGEMENT RECOMMENDATIONS

MAY 2019

Innovative Planning
BETTER COMMUNITIES

Tighe&Bond
Engineers | Environmental Specialists

METROCOG
Connecticut Metropolitan Council of Governments

Access Management

The high number of driveways along Black Rock Turnpike creates significant safety challenges because the road is designed to facilitate vehicular mobility over access. As identified in the existing conditions report, there are approximately 52 commercial curb cuts across the two-mile study corridor, with a particularly high number of driveways located between Stillson Road and Burroughs Road. This is of concern because additional curb cuts increase conflicts between higher speed through traffic and slower speed drivers turning in and out of parking lots.

In addition to the location of a high concentration of curb cuts between Stillson Road and Burroughs Road, people expressed concern over the Old Navy plaza and Trader Joe's driveways between Fairfield Woods Road and Stillson Road. Crash data at this location indicated that this area experiences the greatest number of driveway-related crashes in the corridor.

During the online public survey, many respondents stated that the high number of driveways contributed to a stressful driving environment as turning traffic causes some drivers to abruptly change lanes. Public comments expressed a desire for the project to consider cross property connections wherever feasible.

Access Management is the proactive management of property access points to promote safer and more efficient traffic operations. The approach of this project with regards to access management was to:

1. Establish opportunities for cross-property connections wherever possible,
2. Eliminate redundant access points on single parcels whenever feasible,
3. Restrict access of driveways to right-in or right-out to minimize risky left-turning movements.

The following sections detail the access management recommendations for the corridor. As Black Rock Turnpike continues to be developed over time, this plan can serve as a guide for the Town of Fairfield to use when dealing with property owners and the CT Department of Transportation. While making access modifications can be challenging and take many years, it is one of the more cost effective and beneficial solutions to addressing safety and congestion in the corridor. The following legend may be referred to for subsequent figures.

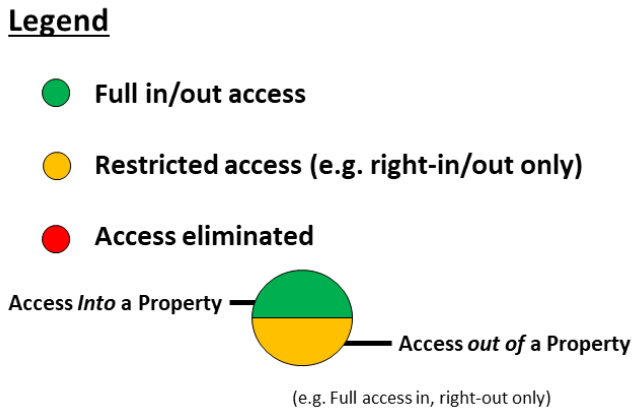


Figure 29: Access management legend

Tunxis Hill Cutoff to Burroughs Road

In this segment, access is controlled by the proposed roundabout at Black Rock Turnpike and Tunxis Hill Cutoff. The proposed roundabout allows for the modification of Moritz Place to be right-in/right-out only and allows for the modification of Whitewood Drive to be one-way only towards Black Rock Turnpike. These modifications simplify operations at this existing 5-leg signalized intersection. Additionally, dedicated turn pockets are provided for southbound traffic to turn left onto Candlewood Road, for northbound traffic to turn left onto Judd Street and for northbound traffic to turn left into the Tunxis Hill Shopping Center. Minor driveway modifications are proposed for 1557 Black Rock Turnpike with the reduction of the driveway width to allow for appropriate space for the roundabout to be installed and enhance the pedestrian environment through this area.

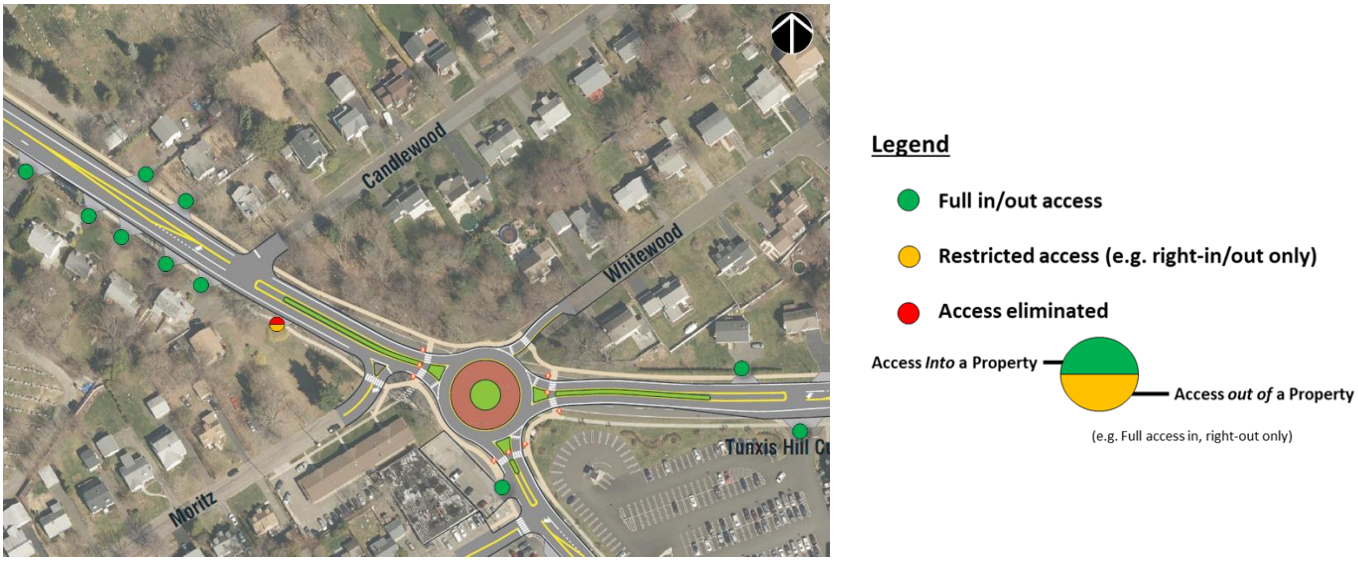


Figure 30: Access management recommendations between Tunxis Hill Cutoff and Burroughs Road

Burroughs Road to Turnpike Shopping Center (ShopRite)

This segment of the corridor is proposed to look very similar to existing conditions, except for the removal of a driveway at 1838 Black Rock Turnpike and the modification of the southern driveway at the Turnpike Shopping Center to be right-in/out only (vs. the current full-access in/right-out only). Access to 1838 Black Rock Turnpike will be maintained from two access points on Burroughs Road and Katona Drive Extension, while left-turn in access to the Turnpike Shopping Center will be directed to the traffic signal just to the north. The southern driveway to the Turnpike Shopping Center is proposed to be reconstructed in such a way to still allow for delivery trucks to make the left-turn here as this entrance is critical for deliveries for tenants in this plaza.

Figure 31: Access management recommendations between Burroughs Road and Turnpike Shopping Center

Turnpike Shopping Center to Stillson Road

This segment was identified an area of concern with regards to the number of driveway curb-cuts and its vicinity to the congested Stillson Road intersection. Significant access management is recommended to improve traffic safety and generally enhance the operations of the corridor. Key to this plan is the utilization of a back-parking lot (located on the same parcel as 2000 Black Rock Turnpike [Bear & Grill]) to enhance cross property connections and allow for left-turning motorists to utilize the signal at Stillson Road for easier access to Black Rock Turnpike southbound. The proposed concept would eliminate seven driveways in the area while implementing access restrictions on an additional four driveways. These access management recommendations could substantially improve safety and congestion in this area.

Figure 32: Access management recommendations between Turnpike Shopping Center and Stillson Road

Stillson Road to Black Rock Shopping Center (Old Navy)

Very minor modifications are proposed to driveway access in this segment. Two driveways are proposed to be eliminated entirely, with the proposed roundabout providing access to these properties at Black Rock Shopping Center and Lake Hills Shopping Center. Elsewhere, minor access restrictions are proposed for several driveways to prohibit left-turning traffic wherever possible. In all cases where left-turning traffic is prohibited, vehicles can exit to the right and circle around the roundabout to complete their journey.

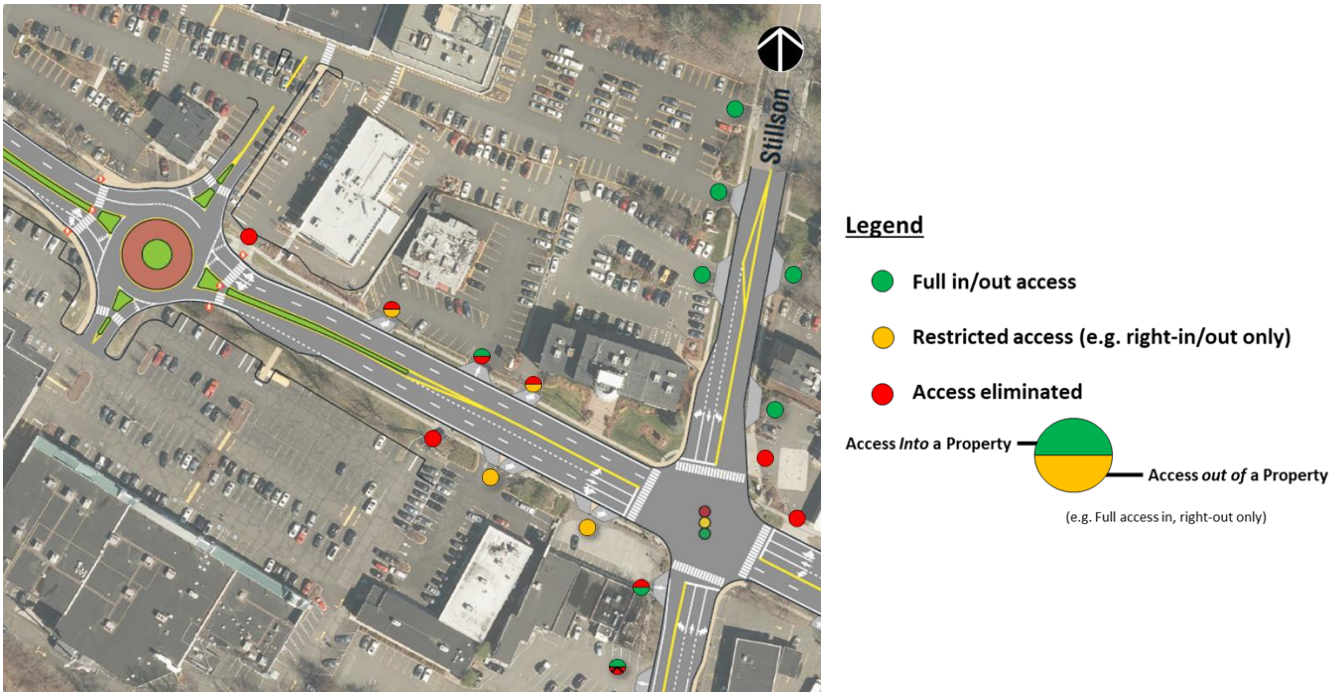


Figure 33: Access management recommendations between Stillson Road and Black Rock Shopping Center (Old Navy)

Black Rock Shopping Center (Old Navy) to Brookside Drive

For the last segment, driveway access proposed between the proposed roundabout at the Black Rock Shopping Center and Brookside Drive is limited. A total of three driveways are proposed to be eliminated – two of which at the Lake Hills Shopping Center with new access to the turnpike through the proposed roundabout. The final driveway proposed to be removed is the northern driveaway to 2405 Black Rock Turnpike, Conway's Auto Repair, due to its proximity to the adjacent signalized intersection. This property, however, is proposed to maintain full access through its driveway on Brookside Drive and Black Rock Turnpike. In addition, the southern driveway to 2315 Black Rock Turnpike (Duchess Restaurant) is proposed to be modified to restricted access in the outbound direction only. Motorists who intend to turn left to proceed on the Black Rock Turnpike north will be able to make this turn via a U-turn in the proposed roundabout at the Black Rock Shopping Center

Figure 34: Access management recommendations between Black Rock Shopping Center (Old Navy) and Brookside Drive

BLACK ROCK TURNPIKE
SAFETY STUDY

BLACK ROCK TURNPIKE SAFETY STUDY

APPENDIX D: TRAFFIC ANALYSIS

MAY 2019

Innovative Planning
BETTER COMMUNITIES

Tighe&Bond
Engineers | Environmental Specialists

METROCOG
Connecticut Metropolitan Council of Governments

Black Rock Turnpike Corridor Study Final Report Memo

TO: Michael Morehouse, P.E. & Parker Sorenson

FROM: Thomas J. Wamser & Craig D. Yannes, P.E., PTOE

DATE: January 9, 2019

The following memorandum summarizes the future and improved conditions assessment that was performed for the Black Rock Turnpike (BRT) Corridor Study (the Study). The first two sections detail the traffic analyses undertaken to review the future traffic conditions of the corridor without any improvements to determine the impact of regional traffic growth followed by a section reviewing the results for the improvement Concepts A and B that have been developed by the study team. The final section provides guidance on Design, Permitting, Construction, and Cost considerations to implement the potential improvements.

Future Conditions Traffic Assessment

The assessment of future conditions conducts an analysis of the Black Rock Turnpike study area under existing geometric and operational conditions utilizing 2040 Background traffic volumes. This process identifies deterioration of operational efficiency from existing conditions due to regional traffic growth and helps identify areas of concern where no improvements are made to the transportation system.

The future conditions analysis includes traffic projections based on the methodology described in the following section to expand the 2017 Existing traffic volumes to the 2040 Background traffic volumes. The Black Rock Turnpike study area intersections were analyzed under two scenarios: a Background and a Background-Optimized condition. The 2040 Background analysis utilizes existing geometry and existing traffic signal settings to facilitate a direct comparison between existing and future conditions. The 2040 Background-Optimized analysis utilizes existing geometry, but modifies intersection signal timings and settings to provide the most efficient operations for future conditions. This optimization analysis determines if future operational needs can be mitigated through low-cost adjustments to signal operations or if additional physical improvement are needed to provide measurable capacity improvements. Although these Background analyses provide a basis for generating roadway improvements to accommodate anticipated traffic growth for the corridor, they do not factor in safety related issues which was a primary factor in developing corridor improvements.

Background Traffic Forecasts

As detailed in Section 4 of the Existing and Future Conditions Technical Memorandum, traffic volume and retail market trends suggest that traffic growth along the Black Rock Corridor will remain generally flat over the 20 year study horizon. However, the Town of Fairfield anticipates some additional housing development near the study corridor and recommended that some limited traffic growth be included in the future forecast to ensure conservative estimates for future traffic volumes. As a result, the study team applied a modest growth rate of 0.25% per year from 2017 to 2040. This growth rate was submitted and approved by CTDOT in January 2018. The 2017 Existing Condition Traffic Volumes and the projected 2040 Background Condition traffic volumes are presented in Figures 1 through 4 and Figures 5 through 8, respectively.

Background Traffic Operations

Utilizing the existing geometry and traffic signal settings established under the 2017 Existing Traffic analyses, traffic operations for the 2040 Background Traffic Volumes were evaluated for the study area intersections using Trafficware's *Synchro plus SimTraffic 10 – Traffic Signal Coordination Software,* based on the *Highway Capacity Manual (HCM) 6th Edition* methodology.

Figures 9 and 10 and Tables 1 and 2 summarize the 2017 Existing Conditions results for reference purposes, while Figure 11 and 12 and Tables 3 and 4 present the 2040 Background Condition results. Figures 9 through 12 present a geographical representation of the overall signalized intersection LOS and unsignalized approach LOS results on a study area map with the LOS color coded by letter. Within Tables 1 and 3, intersections, approaches, and/or movements with significant delays (LOS E) and failing operations (LOS F) have been highlighted in yellow and red, respectively. Within Tables 2 and 4, intersection approach and/or movement average (50th percentile) and/or design queues (95th percentile) are highlighted in red when they exceed the available storage length. Overall traffic operations summary tables allowing comparisons for each peak hour across scenarios are included in Appendix A, while capacity analysis worksheets for the Existing and Background traffic analyses are included in Appendix B.

The background traffic growth slightly exacerbates existing capacity issues detailed in the Existing Conditions Technical Memo. Comparing the existing conditions to the background conditions, the following overall LOS deterioration was identified from the analyses during the specified peak hours:

- Black Rock Turnpike at Tahmore Drive: Decreased from C to D in the afternoon
- Black Rock Turnpike at Stillson Road: Decreased from D to E in the afternoon
- Black Rock Turnpike at Fairfield Woods Road: Decreased from A to B on Saturday
- Black Rock Turnpike at Turnpike Shopping Center: Decreased from B to C on Saturday
- Tunxis Hill Cutoff at Tunxis Hill Road (unsignalized): EBL decreased from C to D on Saturday

Select intersection approaches experienced decreaes in one category of LOS mainly focused at the intersections where the overall LOS expeirenced a decrease. These decreases are a result of the incremental increases in traffic volume, which cause incremental increases in delay and subsequent decreases in LOS where existing conditions were on the threshold of two LOS categories. As with the existing conditions, the most significant congestion is focused on the Black Rock Turnpike at Stillson Road (Route 135) intersection.

Background Optimized Traffic Operations

The 2040 Background Traffic Volumes were also analyzed with an optimized traffic network where the lane geometry remained unchanged, but traffic signal timings were optimized and additional coordination was added along the corridors. The purpose of the 2040 Background-Optimized traffic analysis is to determine how the existing signalization along the corridor would process expected future traffic volumes without any significant physical improvements.

The optimization process included a review of the coordinated system on the corridor, the coordinated system cycle lengths, and signal phase timing splits to balance delays on the intersection approaches to increase the efficiency of traffic operations. It also included modifications to the closed loop signal timing offsets which impact the progression of vehicles through the corridor. The optimization method was similar to the process employed by CTDOT, whom monitors state-maintained closed loop systems and periodically modifies the signal timings based on current volumes, to maintain operational efficiency. The optimization of the traffic signal operation included the following:

- Expansion of the existing closed loop coordination system on Route 58 (Black Rock Turnpike) to include all intersections from Tahmore Drive to Tunxis Hill Cutoff except for the intersection with Stillson Road, which runs free from coordiation similar to the existing conditions

- Optimization of the study area intersection splits within existing minimums

- Optimization of the network cycle length and offsets for the coordinated system

A summary of the expected traffic operations with the signal optimization is provided in Figures 13 and 14 and Tables 5 and 6. Figures 13 and 14 summarize the overall signalized intersection LOS and unsignalized intersection approach LOS on the study area map with the LOS color coded by letter. Within Table 5, intersections, approaches, and/or movements with significant delays (LOS E) and failing operations (LOS F) have been highlighted yellow and red, respectively. Within Table 6, intersection approach and/or movement average (50th percentile) and/or design queues (95th percentile) are highlighted in red when they exceed the available storage length. Overall traffic operations summary tables allowing comparisons for each peak hour across the Existing, Background and Background-Optimized scenarios are included in Appendix A, while capacity analysis worksheets for the Background-Optimized traffic analyses are included in Appendix B.

The traffic signal optimization mitigates most of the delay caused by the additional background traffic growth. The following changes to LOS were identified from the analysis:

- Black Rock Turnpike at Tahmore Drive: Improved from D to C in the afternoon

- Black Rock Turnpike at Samp Mortar Drive: Improved from B to A midday

- Black Rock Turnpike at Fairfield Woods Road: Decreased from A to B midday

- Black Rock Turnpike at Turnpike Shopping Center: Improved from C to B on Saturday

The decrease in LOS at the intersection of Black Rock Turnpike at Fairfield Woods Road arose from a higher prioritization of other coordinated intersections in the optimization process in order to facilitate better operations along the corridor in its entirety. Significant overall intersection delays only persist at the intersection of Route 58 (Black Rock Turnpike) at Route 135 (Stillson Road) which operates at overall LOS E during the afternoon peak hour. However, there are individual movements at intersections along the corridor that operate at failing LOS E and F conditions and/or have queues extending beyond available storage. As a result, these Background Optimized analyses served as a basis for the creation of improvement Concepts A and B, which aim to improve traffic congestion, while also balancing traffic safety to accommodate all users of the corridor.

Improved Conditions Traffic Assessment

This section details the study recommendations for transportation system improvements and enhancements. The recommendations address both existing safety issues and capacity issues resulting from the forecasted travel demand for 2040. Two concepts encompassing the entire corridor, Concept A and Concept B, were developed as alternatives for the improved roadway conditions. Concept A mostly addresses safety concerns with the corridor, but does provide additional capacity where possible. These safety-oriented improvements do result in decreased intersection operations at some locations. Concept B also mainly addresses safety issues, while taking a less aggressive approach than Concept A. As a result, Concept B typically provides better intersection traffic operations for vehicles.

Concept A Traffic Operations

Concept A analyzes the 2040 Background Traffic Volumes on a revised traffic network that reflects the conceptual improvements to the study area intersections and roadways. It incorporates extensive physical changes to the corridor as well as changes to the traffic signal settings. From a traffic capacity standpoint, the major changes are as follows:

- Modification to the lane use on the main line, side street, and driveway approaches to provide a single Black Rock Turnpike through lane where possible to calm traffic flow and increase traffic safety
- Relocation of the signalized commercial driveway approach across from Fairfield Woods Road to be a two-way stop controlled intersection approximately 300 feet to the south of the Fairfield Woods Road intersection
- Construction of a modern roundabout at the Old Navy and Trader Joe's Plaza Driveways intersection
- Removal of the traffic signal at the Turnpike Shopping Center and Fairway Plaza Driveway intersection and restriction to right-out only egress while separating the two driveway intersections to allow the installation of a High Intenstiy Activated Crosswalk for pedestrain crossings between the plazas
- Construction of a modern roundabout at the Katona Drive intersection
- Restriction of northbound left turns from Black Rock Turnpike onto Burroughs Road
- Construction of a modern roundabout at the Tunxis Hill Cutoff Intersection and realignment of Moritz Place to be a two-way stop controlled intersecting Black Rock Turnpike north of the roundabout operation
- Modification of the existing closed loop coordination system on Route 58 (Black Rock Turnpike) to only include the intersections from Tahmore Drive to Fairfield Woods Road
- Optimization of the study area intersection splits within existing minimums
- Optimization of the intersection/network cycle lengths and associated offsets

Due to the scope of the changes detailed above, the 2040 Background Traffic volumes were adjusted with respect to revised traffic patterns expected with the intersection geometry, property access points, and turn restrictions changes along the corridor. These 2040 Concept A traffic volumes are presented in Figures 15 through 18.

A summary of the expected traffic operations under the Concept A conditions is provided in Figures 19 and 20 and Tables 7 and 8. Figures 19 and 20 summarize the overall signalized intersection LOS and unsignalized intersection approach LOS on the study area map with the LOS color coded by letter. Within Table 7, intersections, approaches, and/or movements with significant delays (LOS E) and failing operations (LOS F) have been highlighted yellow and red, respectively. Within Table 8, intersection approach and/or movement average (50th percentile) and/or design queues (95th percentile) are highlighted in red when they exceed the available storage length. Overall traffic operations summary tables allowing comparisons for each peak hour across the analysis scenarios are included in Appendix A, while capacity analysis worksheets for the Concept A traffic analyses are included in Appendix B.

The Concept A improvements address the corridor safety issues and some capacity issues where possible, but operational deficiencies remain at select intersections in lieu of safety benefits. The following operating conditions were identified from the analysis:

- Intersection overall LOS maintained at an acceptable LOS C or better with the exception of the Black Rock Turnpike at Route 135 (Stillson Road), which operates at overall LOS D in all peaks, and the Black Rock Turnpike at Katona Drive roundabout, which operates at overall LOS E, D, and F in the morning, afternoon, and Saturday midday peaks, respectively.

- Movements and approaches operate acceptably at LOS D or better, with the exception of the following movements, which operate at LOS E during the identified peak hour:

    - Samp Mortar Left Turns in the morning and midday

    - Brookside Drive Left Turns in the morning and afternoon

    - Fairfield Woods Road Right Turns in the morning, midday, and afternoon

    - Black Rock Turnpike at Stillson Road - Black Rock Turnpike Northbound and Southbould Left Turns in the afternoon and Saturday midday; Stillson Road Eastbound and Westbound Throughs in the afternoon

  In these cases, the safety improvements and/or the optimization of the traffic signal timing for the project 2040 volumes reduce the operational efficiency for these select approaches in favor of the Black Rock Turnpike main line through movements.

- Design queues for the following select intersection movements extend beyond available storage due to the reduction of a through travel lane on Black Rock Turnpike:

    - Black Rock Turnpike at Fairfield Woods – Black Rock Turnpike Southbound Throughs in the afternoon

    - Blaock Rock Turnpike at Katona Drive Roundabout – Black Rock Turnpike Northbound Approach in the morning, afternoon, and Saturday midday

- In addition to the queues that extend beyond available storage, there are select movements that experience queues that are within available storage, but extend over approximately 500 feet due to the proposed improvements, including:
    - Black Rock Turnpike at Tahmore Drive – Black Rock Turnpike Southbound Approach in the morning, afternoon, and Saturday midday
    - Black Rock Turnpike at Samp Mortar Drive – Black Rock Turnpike Southbound Throughs in the afternoon and Saturday midday
    - Black Rock Turnpike at Burroughs Road – Black Rock Turnpike Northbound Throughs in the morning

Concept B Traffic Operations

Concept B analyzes the 2040 Background Traffic Volumes on a revised traffic network that reflects the conceptual improvements to the study area intersections and roadways. It incorporates extensive physical changes to the corridor as well as changes to the traffic signal settings. From a traffic capacity standpoint, the major changes are as follows:

- Modification to the lane use on the main line, side street, and driveway approaches to provide a single Black Rock Turnpike through lane where possible to calm traffic flow and increase traffic safety
- Construction of a modern roundabout at the Old Navy and Trader Joe's Plaza Driveways
- Construction of a modern roundabout at the Tunxis Hill Cutoff Intersection and realignment of Moritz Place to be a two-way stop controlled intersection
- Provide separate closed loop coordination systems on Route 58 (Black Rock Turnpike) for the intersections from Tahmore Drive to Fairfield Woods Road and from the Turnpike Shopping Center and Fairway Plaza Driveways to Burroughs Road
- Optimization of the study area intersection splits within existing minimums
- Optimization of the intersection/network cycle lengths and associated offsets

Similar to Concept A, the scope of the changes detailed above result in expected revisions to the traffic patterns along the corridor. As such, the 2040 Background Traffic volumes were adjusted and the 2040 Concept B traffic volumes are presented in Figures 21 through 24.

A summary of the expected traffic operations under the Concept B conditions is provided in Figures 25 and 26 and Tables 9 and 10. Figures 25 and 26 summarize the overall signalized intersection LOS and unsignalized intersection approach LOS on the study area map with the LOS color coded by letter. Within Table 9, intersections, approaches, and/or movements with significant delays (LOS E) and failing operations (LOS F) have been highlighted yellow and red, respectively. Within Table 10, intersection approach and/or movement average (50th percentile) and/or design queues (95th percentile) are highlighted in red when they exceed the available storage length. Overall traffic operations summary tables allowing comparisons for each peak hour across scenarios are included in Appendix A, while capacity analysis worksheets for the Concept B traffic analyses are included in Appendix B.

Like Concept A, the Concept B improvements address the corridor safety issues, but make fewer vehicular traffic operational concessions. Improvements target capacity issues where possible, but operational deficiencies remain at select intersections in lieu of safety benefits. The following operating conditions were identified from the analysis:

- Intersection overall LOS maintained at an acceptable LOS C or better with the exception of the Black Rock Turnpike at Route 135 (Stillson Road), which operates at overall LOS D in the morning, afternoon and Saturday midday peaks.

- Movements and approaches operate acceptably at LOS D or better, with the exception of the following movements, which operate at LOS E during the identified peak hour:

    - Brookside Drive Left Turns in the afternoon

    - Fairfield Woods Road Through-Left Movements in the midday, afternoon, and Saturday midday and Fairfield Woods Road Right Turns in the afternoon and Saturday midday

    - Black Rock Turnpike at Stillson Road - Black Rock Turnpike Northbound and Southbould Left Turns in the afternoon and Saturday midday

  Similar to Concept A, in these cases, the safety improvements and/or the optimization of the traffic signal timing for the project 2040 volumes reduce the operational efficiency for these select approaches in favor of the Black Rock Turnpike main line through movements.

- Design queues for the Black Rock Turnpike Northbound Through-Right Movements at Tahmore Drive extend beyond available storage due to the reduction of a through travel lane on Black Rock Turnpike.

- In addition to the queues that extend beyond available storage, there are select movements that experience queues that are within available storage, but extend over approximately 500 feet due to the proposed improvements, including:

    - Black Rock Turnpike at Tahmore Drive – Black Rock Turnpike Southbound Approach in the morning, afternoon, and Saturday midday

    - Black Rock Turnpike at Samp Mortar Drive – Black Rock Turnpike Southbound Throughs in the afternoon and Saturday midday

    - Black Rock Turnpike at Burroughs Road – Black Rock Turnpike Northbound Through-Left in the morning, afternoon, and Saturday midday

FIGURES

Tighe&Bond

Tighe&Bond
Engineers | Environmental Specialists

LEGEND

VOLUMES: AM (PM)

TRAFFIC SIGNAL

STOP SIGN

ROUNDABOUT

SCALE: NTS

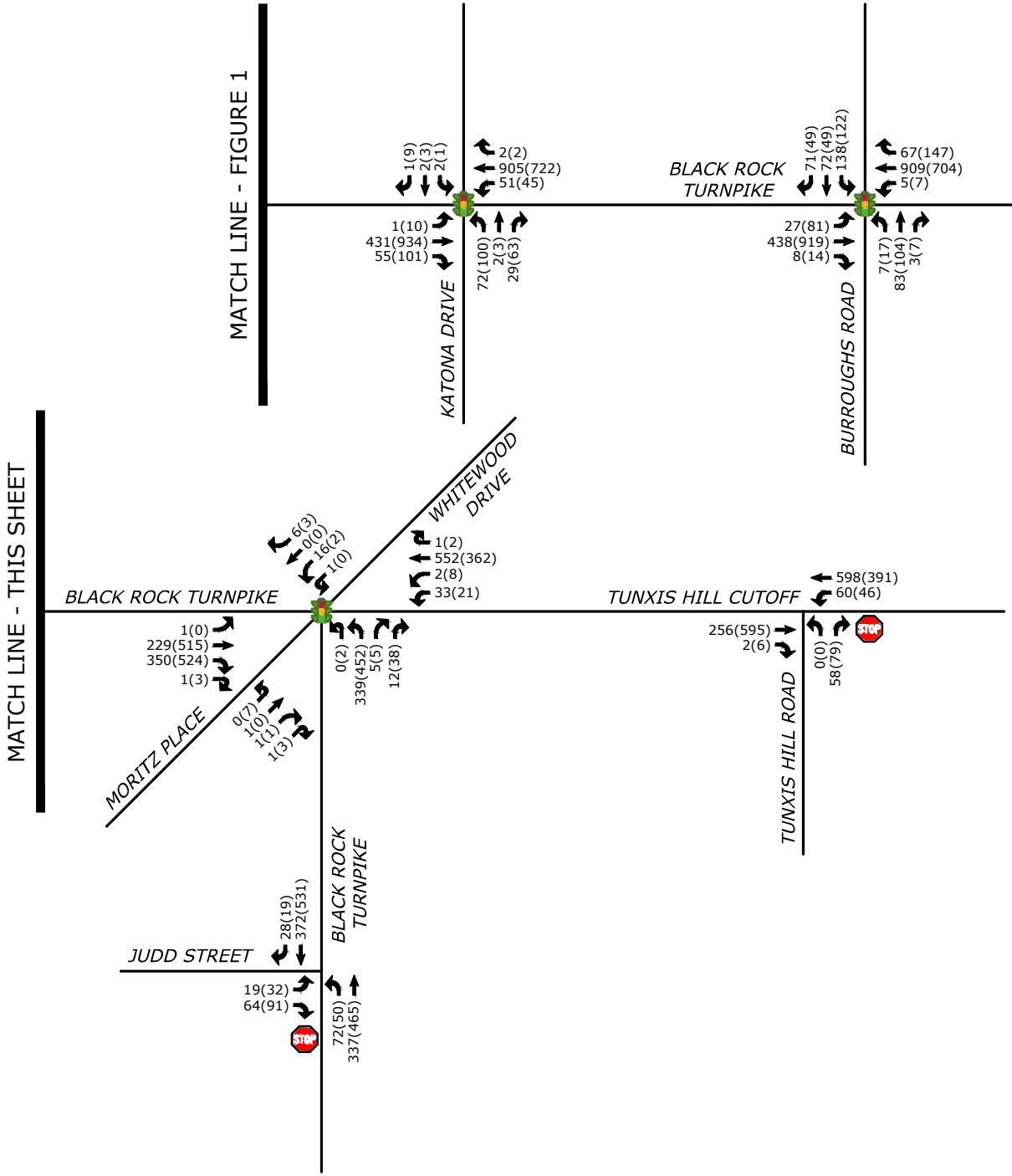
Black Rock Turnpike
Traffic Study
Fairfield,
Connecticut

July 2017

2017 EXISTING TRAFFIC VOLUMES WEEKDAY MORNING & AFTERNOON PEAK HOUR PART 1

FIGURE 1

J:\C\C5003 CT METROCOG\001 Black Rock Tpke Study\Drawings_Figures\AutoCAD\Sheet\C5003-001-TVF-01.dwg



Tighe&Bond
Engineers | Environmental Specialists

LEGEND

VOLUMES: AM (PM)

TRAFFIC SIGNAL

STOP SIGN

ROUNDABOUT

SCALE: NTS

Black Rock Turnpike
Traffic Study
Fairfield,
Connecticut

July 2017

2017 EXISTING TRAFFIC VOLUMES WEEKDAY MORNING & AFTERNOON PEAK HOUR PART 2

FIGURE 2

J:\C\C5003 CT METROCOG\001 Black Rock Tpke Study\Drawings_Figures\AutoCAD\Sheet\C5003-001-TVF-01.dwg

Tighe&Bond
Engineers | Environmental Specialists

LEGEND

VOLUMES: MID (SAT)

TRAFFIC SIGNAL

STOP SIGN

ROUNDABOUT

SCALE: NTS

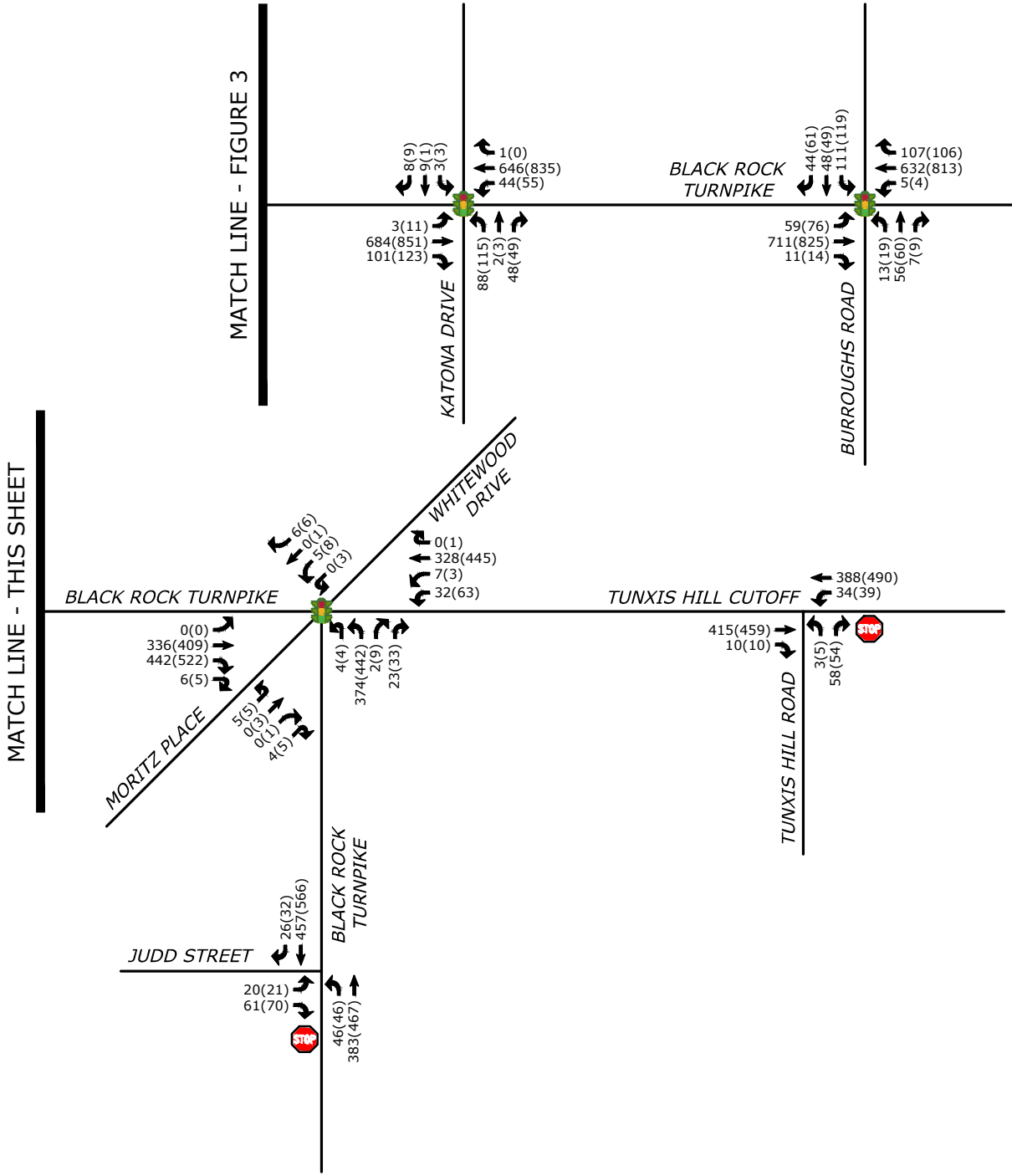
Black Rock Turnpike
Traffic Study
Fairfield,
Connecticut

July 2017

2017 EXISTING TRAFFIC VOLUMES WEEKDAY MIDDAY & SATURDAY PEAK HOUR PART 1

FIGURE 3

J:\C\C5003 CT METROCOG\001 Black Rock Tpke Study\Drawings_Figures\AutoCAD\Sheet\C5003-001-TVF-01.dwg



Tighe&Bond
Engineers | Environmental Specialists

LEGEND

VOLUMES: MID (SAT)

TRAFFIC SIGNAL

STOP SIGN

ROUNDABOUT

SCALE: NTS

Black Rock Turnpike
Traffic Study
Fairfield,
Connecticut

July 2017

2017 EXISTING TRAFFIC VOLUMES WEEKDAY MIDDAY & SATURDAY PEAK HOUR PART 2

FIGURE 4

J:\C\C5003 CT METROCOG\001 Black Rock Tpke Study\Drawings_Figures\AutoCAD\Sheet\C5003-001-TVF-01.dwg

Tighe&Bond
Engineers | Environmental Specialists

LEGEND

VOLUMES: AM (PM)

TRAFFIC SIGNAL

STOP SIGN

ROUNDABOUT

SCALE: NTS

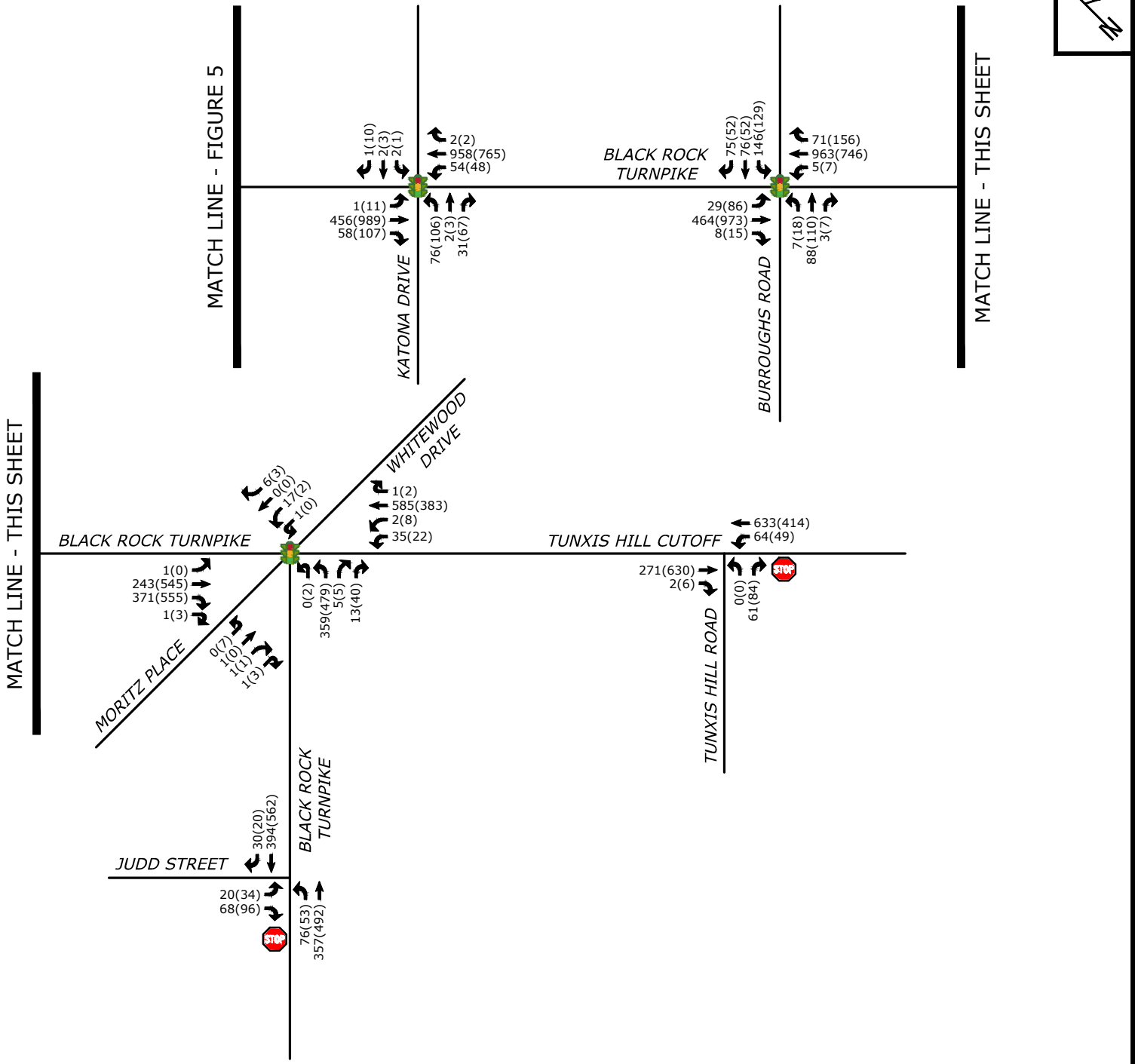
Black Rock Turnpike
Traffic Study
Fairfield,
Connecticut

July 2017

2040 BACKGROUND TRAFFIC VOLUMES WEEKDAY MORNING & AFTERNOON PEAK HOUR PART 1

FIGURE 5

J:\C\C5003 CT METROCOG\001 Black Rock Tpke Study\Drawings_Figures\AutoCAD\Sheet\C5003-001-TVF-01.dwg



Tighe&Bond
Engineers | Environmental Specialists

LEGEND

VOLUMES: AM (PM)

TRAFFIC SIGNAL

STOP SIGN

ROUNDABOUT

SCALE: NTS

Black Rock Turnpike
Traffic Study
Fairfield,
Connecticut

July 2017

2040 BACKGROUND TRAFFIC VOLUMES WEEKDAY MORNING & AFTERNOON PEAK HOUR PART 2

FIGURE 6

J:\C\C5003 CT METROCOG\001 Black Rock Tpke Study\Drawings_Figures\AutoCAD\Sheet\C5003-001-TVF-01.dwg

Tighe&Bond
Engineers | Environmental Specialists

LEGEND

VOLUMES: MID (SAT)

TRAFFIC SIGNAL

STOP SIGN

ROUNDABOUT

SCALE: NTS

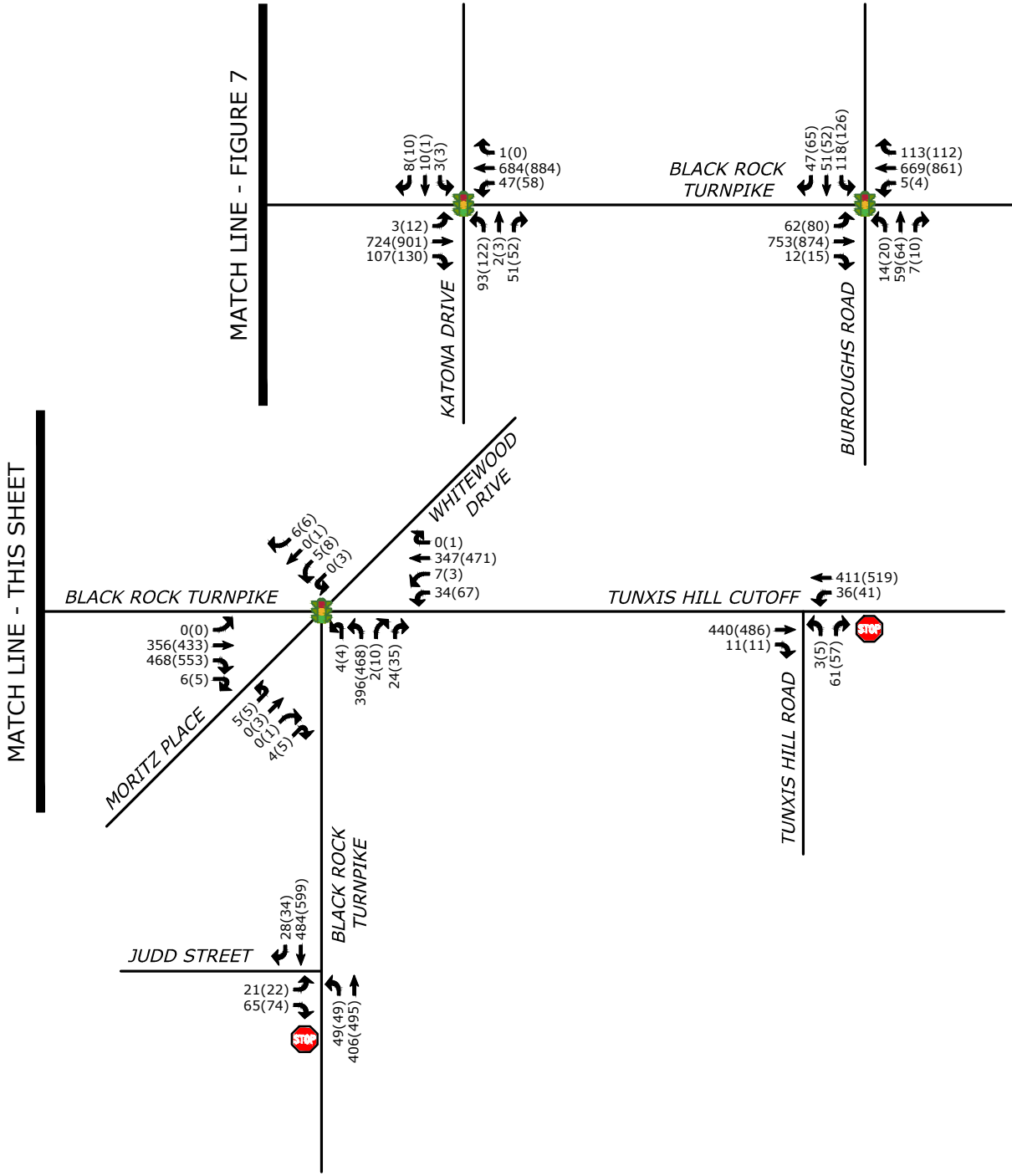
Black Rock Turnpike
Traffic Study
Fairfield,
Connecticut

July 2017

2040 BACKGROUND TRAFFIC VOLUMES WEEKDAY MIDDAY & SATURDAY PEAK HOUR PART 1

FIGURE 7

J:\C\C5003 CT METROCOG\001 Black Rock Tpke Study\Drawings_Figures\AutoCAD\Sheet\C5003-001-TVF-01.dwg



Tighe&Bond
Engineers | Environmental Specialists

LEGEND

VOLUMES: MID (SAT)

TRAFFIC SIGNAL

STOP SIGN

ROUNDABOUT

SCALE: NTS

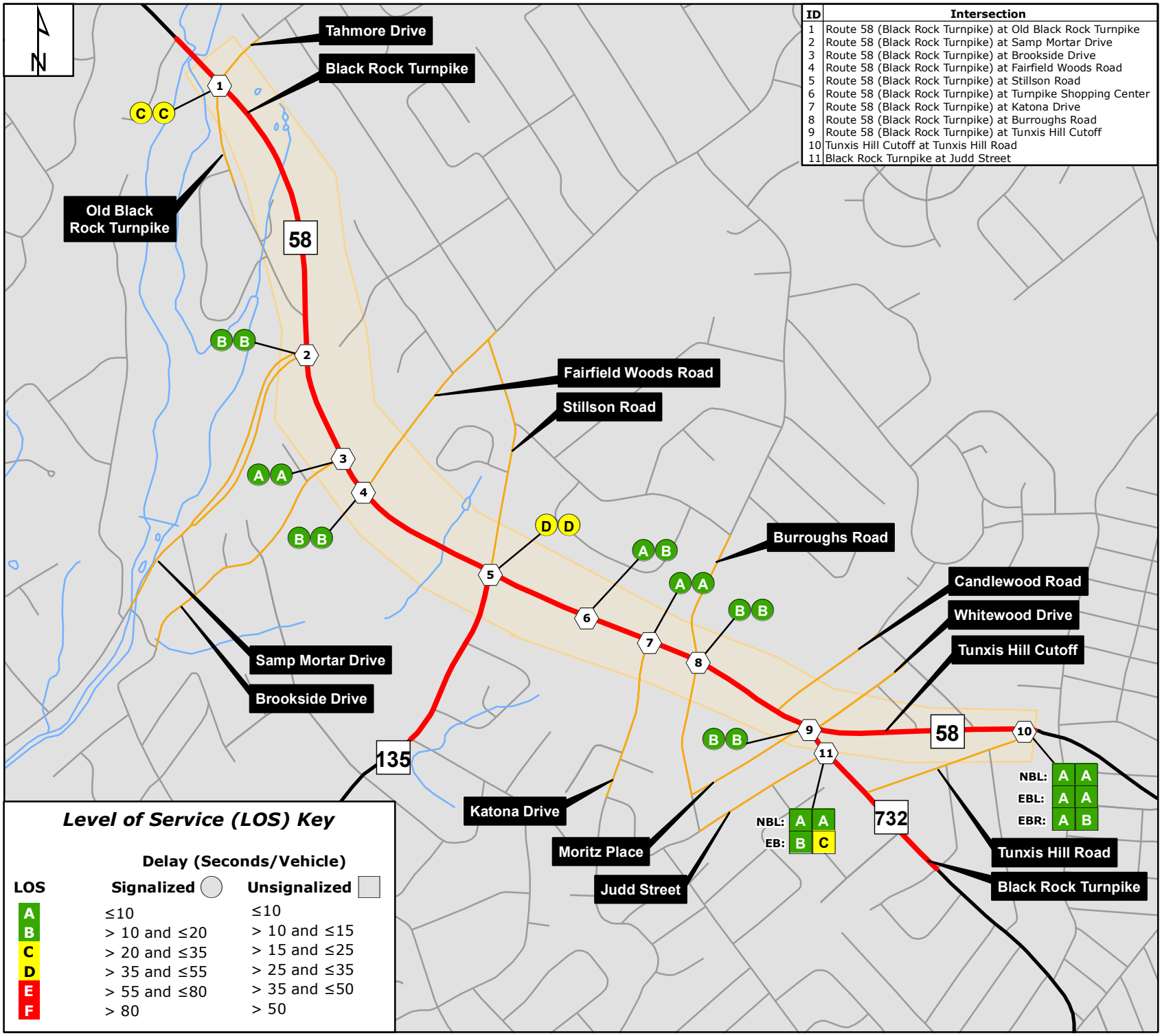
Black Rock Turnpike
Traffic Study
Fairfield,
Connecticut

July 2017

2040 BACKGROUND TRAFFIC VOLUMES WEEKDAY MIDDAY & SATURDAY PEAK HOUR PART 2

FIGURE 8

J:\C\C5003 CT METROCOG\001 Black Rock Tpke Study\Drawings_Figures\AutoCAD\Sheet\C5003-001-TVF-01.dwg



ID	Intersection
1	Route 58 (Black Rock Turnpike) at Old Black Rock Turnpike
2	Route 58 (Black Rock Turnpike) at Samp Mortar Drive
3	Route 58 (Black Rock Turnpike) at Brookside Drive
4	Route 58 (Black Rock Turnpike) at Fairfield Woods Road
5	Route 58 (Black Rock Turnpike) at Stillson Road
6	Route 58 (Black Rock Turnpike) at Turnpike Shopping Center
7	Route 58 (Black Rock Turnpike) at Katona Drive
8	Route 58 (Black Rock Turnpike) at Burroughs Road
9	Route 58 (Black Rock Turnpike) at Tunxis Hill Cutoff
10	Tunxis Hill Cutoff at Tunxis Hill Road
11	Black Rock Turnpike at Judd Street

Level of Service (LOS) Key

LOS	Delay (Seconds/Vehicle) Signalized	Unsignalized
A	≤10	≤10
B	> 10 and ≤20	> 10 and ≤15
C	> 20 and ≤35	> 15 and ≤25
D	> 35 and ≤55	> 25 and ≤35
E	> 55 and ≤80	> 35 and ≤50
F	> 80	> 50

Tighe&Bond
Engineers | Environmental Specialists

LEGEND

- Study Area
- Study Area Local Road
- Study Area State Route
- Local Road
- State Road
- 1 Intersection ID Number
- AM PM Signalized LOS
- AM PM Unsignalized LOS

0 500 1,000
Feet
1 " = 1,000 '

Regional Transportation and Development Study of Route 58 Fairfield, Connecticut

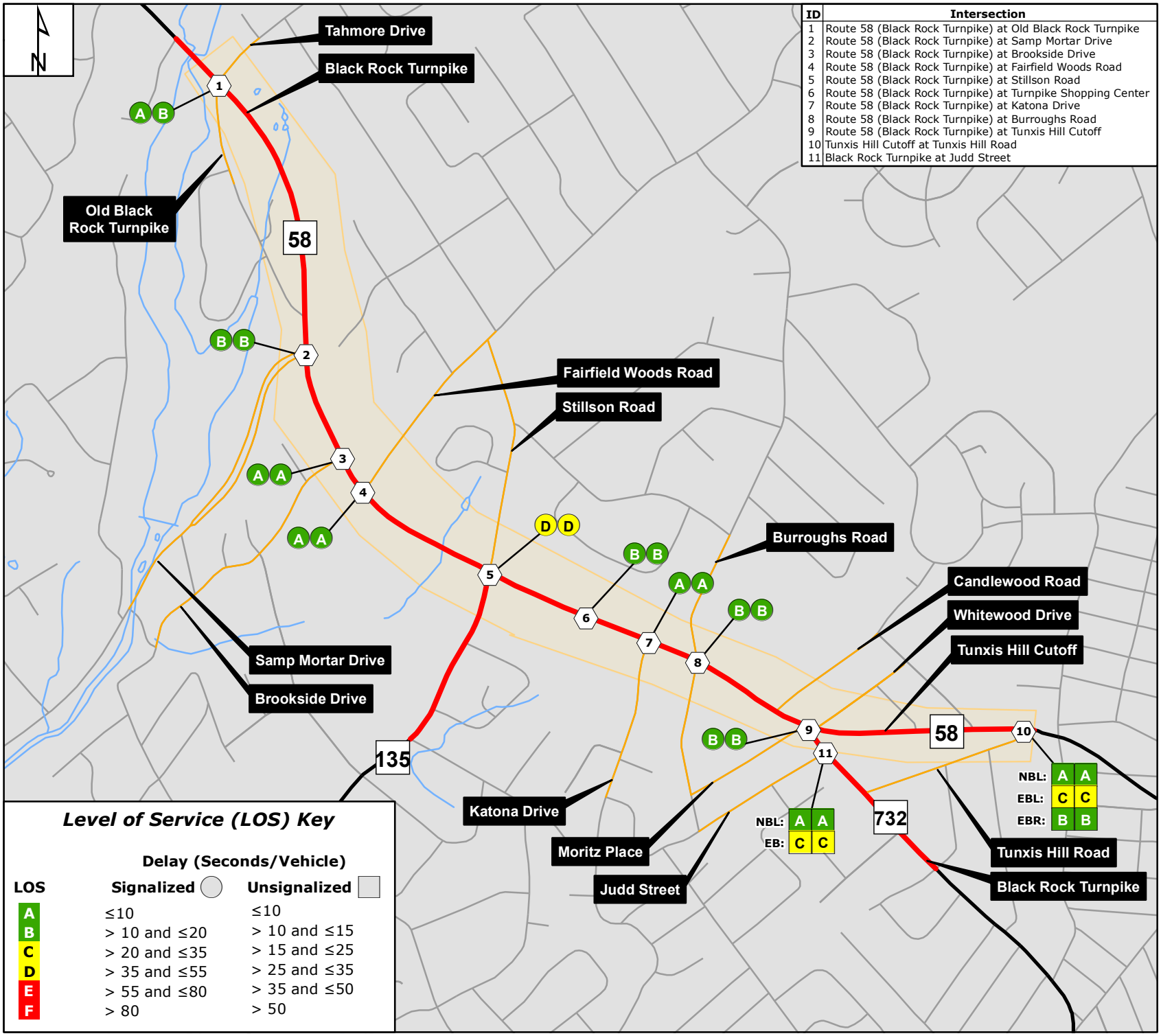
January 2019

2017 WEEKDAY AM & PM EXISTING TRAFFIC OPERATIONS

FIGURE 9

V:\Projects\C\C5003\MXD\LOS_Existing_AM_PM.mxd

C-5003



ID	Intersection
1	Route 58 (Black Rock Turnpike) at Old Black Rock Turnpike
2	Route 58 (Black Rock Turnpike) at Samp Mortar Drive
3	Route 58 (Black Rock Turnpike) at Brookside Drive
4	Route 58 (Black Rock Turnpike) at Fairfield Woods Road
5	Route 58 (Black Rock Turnpike) at Stillson Road
6	Route 58 (Black Rock Turnpike) at Turnpike Shopping Center
7	Route 58 (Black Rock Turnpike) at Katona Drive
8	Route 58 (Black Rock Turnpike) at Burroughs Road
9	Route 58 (Black Rock Turnpike) at Tunxis Hill Cutoff
10	Tunxis Hill Cutoff at Tunxis Hill Road
11	Black Rock Turnpike at Judd Street

Level of Service (LOS) Key

LOS	Delay (Seconds/Vehicle) Signalized	Unsignalized
A	≤10	≤10
B	> 10 and ≤20	> 10 and ≤15
C	> 20 and ≤35	> 15 and ≤25
D	> 35 and ≤55	> 25 and ≤35
E	> 55 and ≤80	> 35 and ≤50
F	> 80	> 50

Tighe&Bond
Engineers | Environmental Specialists

LEGEND

- Study Area
- Study Area Local Road
- Study Area State Route
- Local Road
- State Road
- 1 Intersection ID Number
- MID SAT Signalized LOS
- MID SAT Unsignalized LOS

0 500 1,000
Feet
1 " = 1,000 '

Regional Transportation and Development Study of Route 58 Fairfield, Connecticut

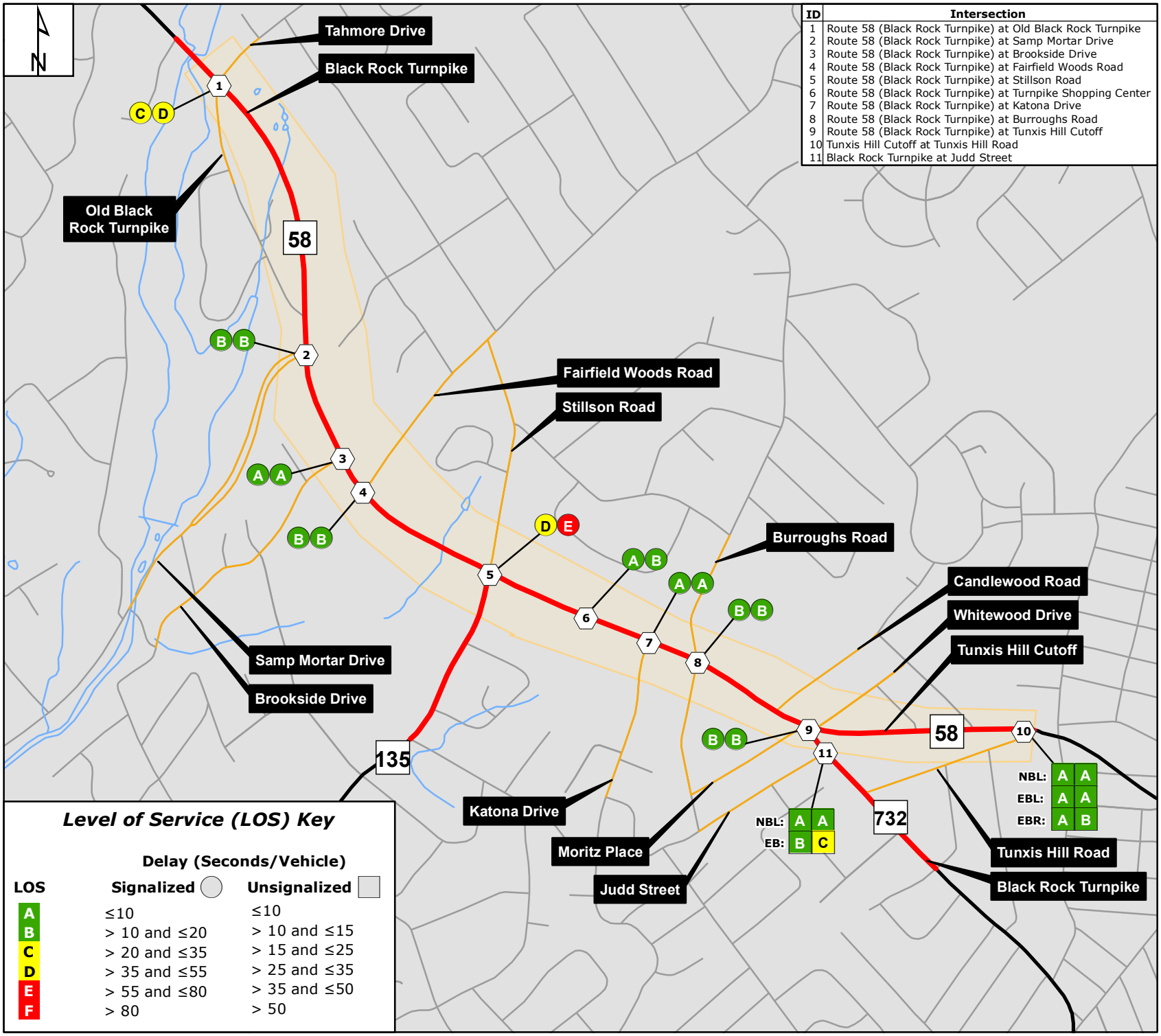
January 2019

2017 WEEKDAY MIDDAY & SATURDAY EXISTING TRAFFIC OPERATIONS

FIGURE 10

V:\Projects\C\C5003\MXD\LOS_Existing_Midday_Saturday.mxd

C-5003



ID	Intersection
1	Route 58 (Black Rock Turnpike) at Old Black Rock Turnpike
2	Route 58 (Black Rock Turnpike) at Samp Mortar Drive
3	Route 58 (Black Rock Turnpike) at Brookside Drive
4	Route 58 (Black Rock Turnpike) at Fairfield Woods Road
5	Route 58 (Black Rock Turnpike) at Stillson Road
6	Route 58 (Black Rock Turnpike) at Turnpike Shopping Center
7	Route 58 (Black Rock Turnpike) at Katona Drive
8	Route 58 (Black Rock Turnpike) at Burroughs Road
9	Route 58 (Black Rock Turnpike) at Tunxis Hill Cutoff
10	Tunxis Hill Cutoff at Tunxis Hill Road
11	Black Rock Turnpike at Judd Street

Level of Service (LOS) Key

LOS	Delay (Seconds/Vehicle) Signalized	Unsignalized
A	≤10	≤10
B	> 10 and ≤20	> 10 and ≤15
C	> 20 and ≤35	> 15 and ≤25
D	> 35 and ≤55	> 25 and ≤35
E	> 55 and ≤80	> 35 and ≤50
F	> 80	> 50

Tighe&Bond
Engineers | Environmental Specialists

LEGEND

- Study Area
- Study Area Local Road
- Study Area State Route
- Local Road
- State Road
- 1 Intersection ID Number
- AM PM Signalized LOS
- AM PM Unsignalized LOS

0 500 1,000
Feet
1 " = 1,000 '

Regional Transportation and Development Study of Route 58 Fairfield, Connecticut

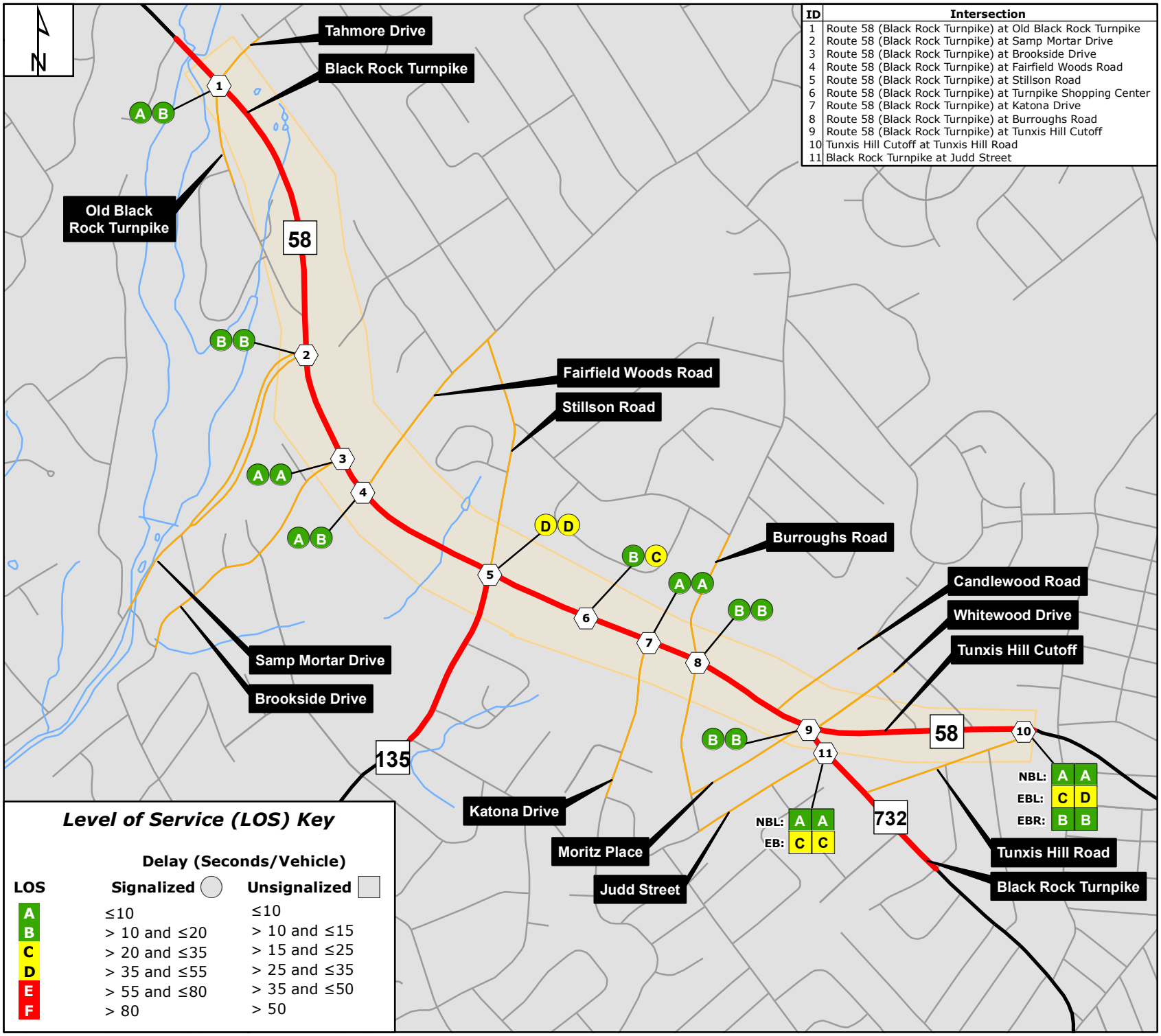
January 2019

2040 WEEKDAY AM & PM BACKGROUND TRAFFIC OPERATIONS

FIGURE 11

V:\Projects\C\C5003\MXD\LOS_Existing_AM_PM_2040.mxd

C-5003



ID	Intersection
1	Route 58 (Black Rock Turnpike) at Old Black Rock Turnpike
2	Route 58 (Black Rock Turnpike) at Samp Mortar Drive
3	Route 58 (Black Rock Turnpike) at Brookside Drive
4	Route 58 (Black Rock Turnpike) at Fairfield Woods Road
5	Route 58 (Black Rock Turnpike) at Stillson Road
6	Route 58 (Black Rock Turnpike) at Turnpike Shopping Center
7	Route 58 (Black Rock Turnpike) at Katona Drive
8	Route 58 (Black Rock Turnpike) at Burroughs Road
9	Route 58 (Black Rock Turnpike) at Tunxis Hill Cutoff
10	Tunxis Hill Cutoff at Tunxis Hill Road
11	Black Rock Turnpike at Judd Street

Tighe&Bond
Engineers | Environmental Specialists

LEGEND

- Study Area
- Study Area Local Road
- Study Area State Route
- Local Road
- State Road
- 1 Intersection ID Number
- MID SAT Signalized LOS
- MID SAT Unsignalized LOS

0 500 1,000
Feet
1 " = 1,000 '

Regional Transportation and Development Study of Route 58 Fairfield, Connecticut

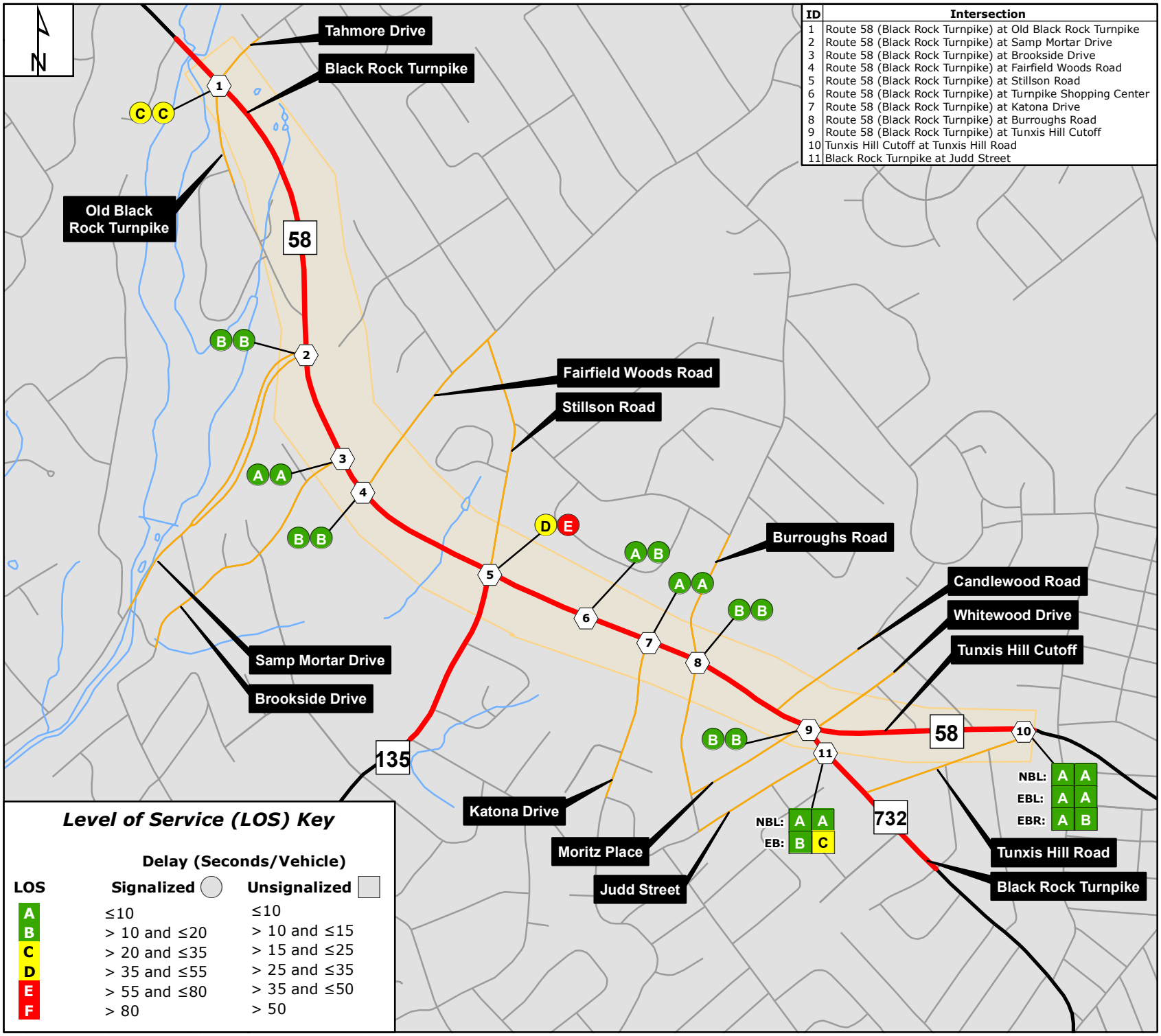
January 2019

2040 WEEKDAY MIDDAY & SATURDAY BACKGROUND TRAFFIC OPERATIONS

FIGURE 12

V:\Projects\C\C5003\MXD\LOS_Existing_Midday_Saturday_2040.mxd

C-5003



ID	Intersection
1	Route 58 (Black Rock Turnpike) at Old Black Rock Turnpike
2	Route 58 (Black Rock Turnpike) at Samp Mortar Drive
3	Route 58 (Black Rock Turnpike) at Brookside Drive
4	Route 58 (Black Rock Turnpike) at Fairfield Woods Road
5	Route 58 (Black Rock Turnpike) at Stillson Road
6	Route 58 (Black Rock Turnpike) at Turnpike Shopping Center
7	Route 58 (Black Rock Turnpike) at Katona Drive
8	Route 58 (Black Rock Turnpike) at Burroughs Road
9	Route 58 (Black Rock Turnpike) at Tunxis Hill Cutoff
10	Tunxis Hill Cutoff at Tunxis Hill Road
11	Black Rock Turnpike at Judd Street

Level of Service (LOS) Key

LOS	Delay (Seconds/Vehicle) Signalized	Unsignalized
A	≤10	≤10
B	> 10 and ≤20	> 10 and ≤15
C	> 20 and ≤35	> 15 and ≤25
D	> 35 and ≤55	> 25 and ≤35
E	> 55 and ≤80	> 35 and ≤50
F	> 80	> 50

Tighe&Bond
Engineers | Environmental Specialists

LEGEND

- Study Area
- Study Area Local Road
- Study Area State Route
- Local Road
- State Road
- 1 Intersection ID Number
- AM PM Signalized LOS
- AM PM Unsignalized LOS

0 500 1,000
Feet
1 " = 1,000 '

Regional Transportation and Development Study of Route 58 Fairfield, Connecticut

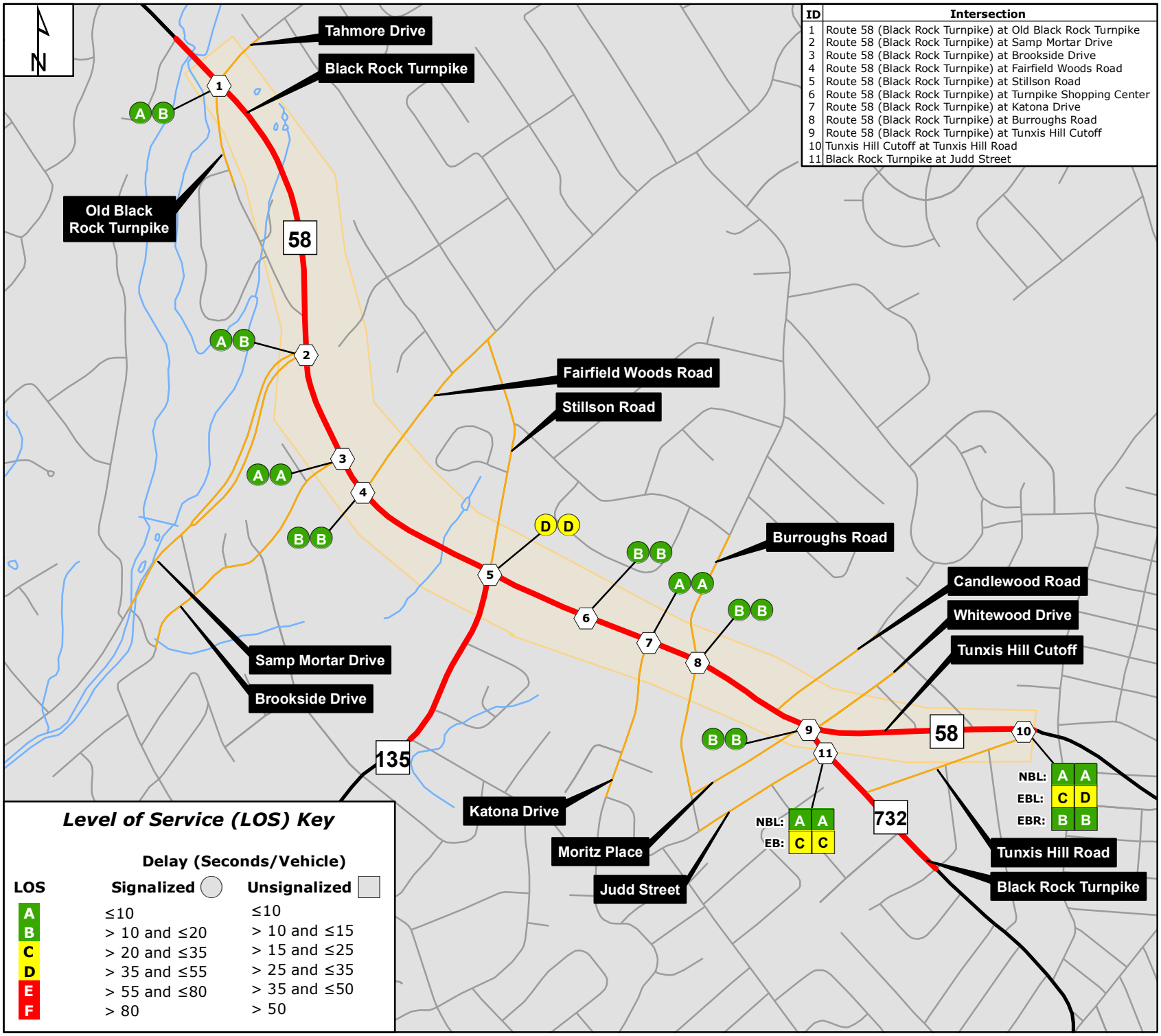
January 2019

2040 WEEKDAY AM & PM BACKGROUND OPTIMIZED TRAFFIC OPERATIONS

FIGURE 13

V:\Projects\C\C5003\MXD\LOS_Existing_AM_PM_2040_BackgroundOptimized.mxd

C-5003



ID	Intersection
1	Route 58 (Black Rock Turnpike) at Old Black Rock Turnpike
2	Route 58 (Black Rock Turnpike) at Samp Mortar Drive
3	Route 58 (Black Rock Turnpike) at Brookside Drive
4	Route 58 (Black Rock Turnpike) at Fairfield Woods Road
5	Route 58 (Black Rock Turnpike) at Stillson Road
6	Route 58 (Black Rock Turnpike) at Turnpike Shopping Center
7	Route 58 (Black Rock Turnpike) at Katona Drive
8	Route 58 (Black Rock Turnpike) at Burroughs Road
9	Route 58 (Black Rock Turnpike) at Tunxis Hill Cutoff
10	Tunxis Hill Cutoff at Tunxis Hill Road
11	Black Rock Turnpike at Judd Street

Level of Service (LOS) Key

LOS	Delay (Seconds/Vehicle) Signalized	Unsignalized
A	≤10	≤10
B	> 10 and ≤20	> 10 and ≤15
C	> 20 and ≤35	> 15 and ≤25
D	> 35 and ≤55	> 25 and ≤35
E	> 55 and ≤80	> 35 and ≤50
F	> 80	> 50

Tighe&Bond
Engineers | Environmental Specialists

LEGEND

- Study Area
- Study Area Local Road
- Study Area State Route
- Local Road
- State Road
- 1 Intersection ID Number
- MID SAT Signalized LOS
- MID SAT Unsignalized LOS

0 500 1,000
Feet
1 " = 1,000 '

Regional Transportation and Development Study of Route 58 Fairfield, Connecticut

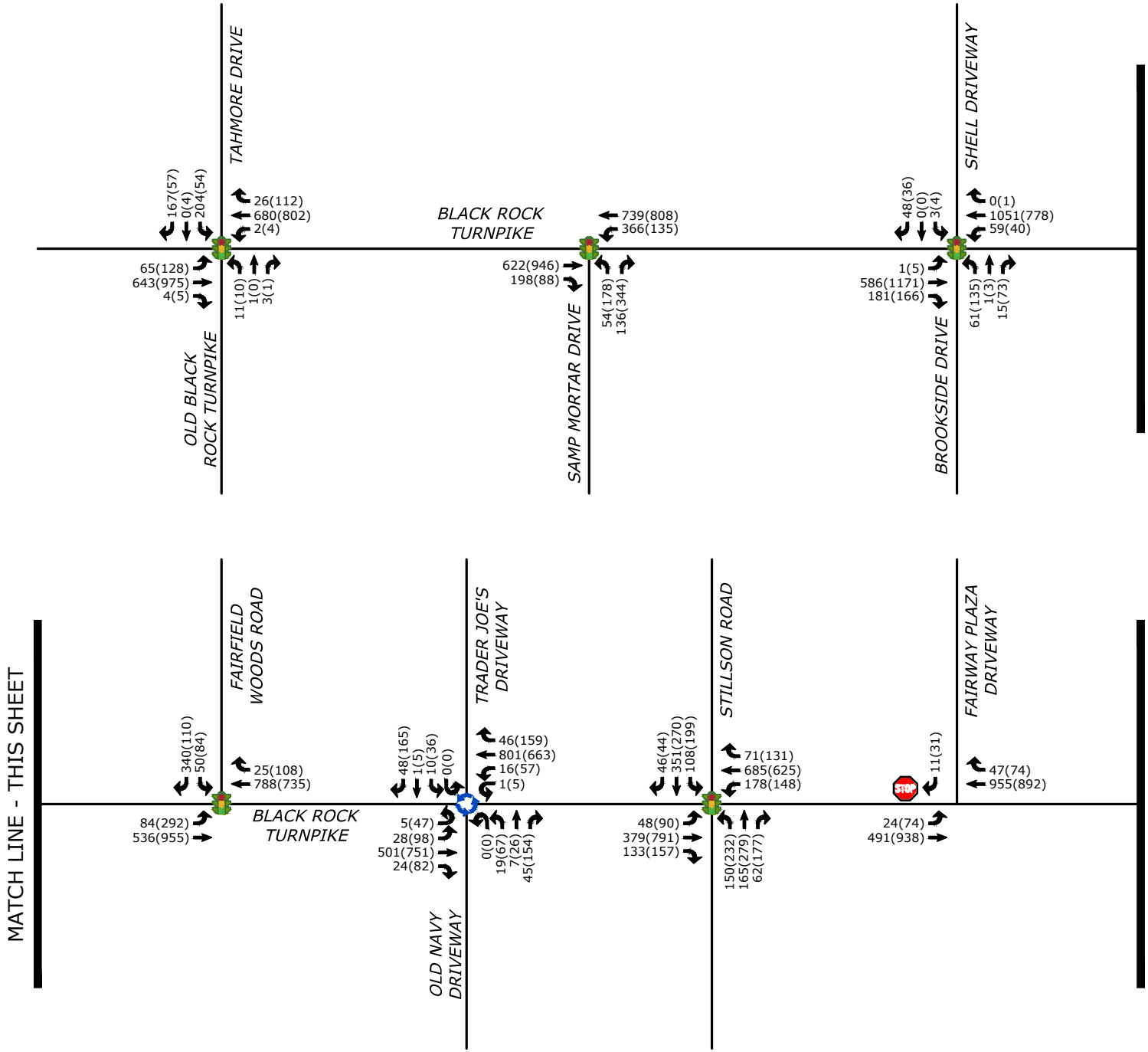
January 2019

2040 WEEKDAY MIDDAY & SATURDAY BACKGROUND OPTIMIZED TRAFFIC OPERATIONS

FIGURE 14

V:\Projects\C\C5003\MXD\LOS_Existing_Midday_Saturday_2040_BackgroundOptimized.mxd

C-5003



Tighe&Bond
Engineers | Environmental Specialists

LEGEND

VOLUMES: AM (PM)

TRAFFIC SIGNAL

STOP SIGN

ROUNDABOUT

SCALE: NTS

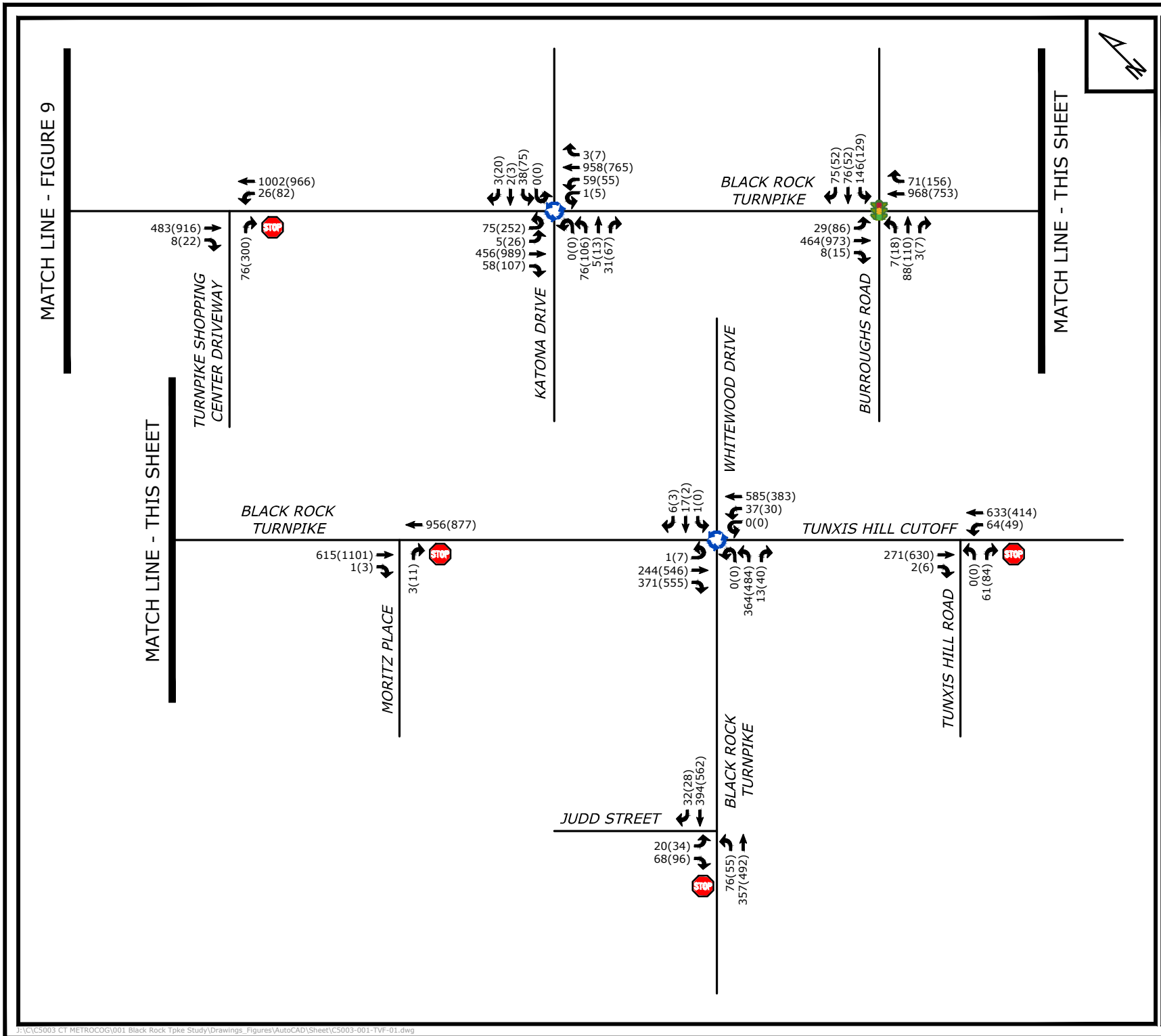
Black Rock Turnpike
Traffic Study
Fairfield,
Connecticut

July 2017

2040 CONCEPT A TRAFFIC VOLUMES WEEKDAY MORNING & AFTERNOON PEAK HOUR PART 1

FIGURE 15

J:\C\C5003 CT METROCOG\001 Black Rock Tpke Study\Drawings_Figures\AutoCAD\Sheet\C5003-001-TVF-01.dwg



Tighe&Bond
Engineers | Environmental Specialists

LEGEND

VOLUMES: AM (PM)

TRAFFIC SIGNAL

STOP SIGN

ROUNDABOUT

SCALE: NTS

Black Rock Turnpike
Traffic Study
Fairfield,
Connecticut

July 2017

2040 CONCEPT A TRAFFIC VOLUMES WEEKDAY MORNING & AFTERNOON PEAK HOUR PART 2

FIGURE 16

J:\C\C5003 CT METROCOG\001 Black Rock Tpke Study\Drawings_Figures\AutoCAD\Sheet\C5003-001-TVF-01.dwg

Tighe&Bond
Engineers | Environmental Specialists

LEGEND

VOLUMES: MID (SAT)

TRAFFIC SIGNAL

STOP SIGN

ROUNDABOUT

SCALE: NTS

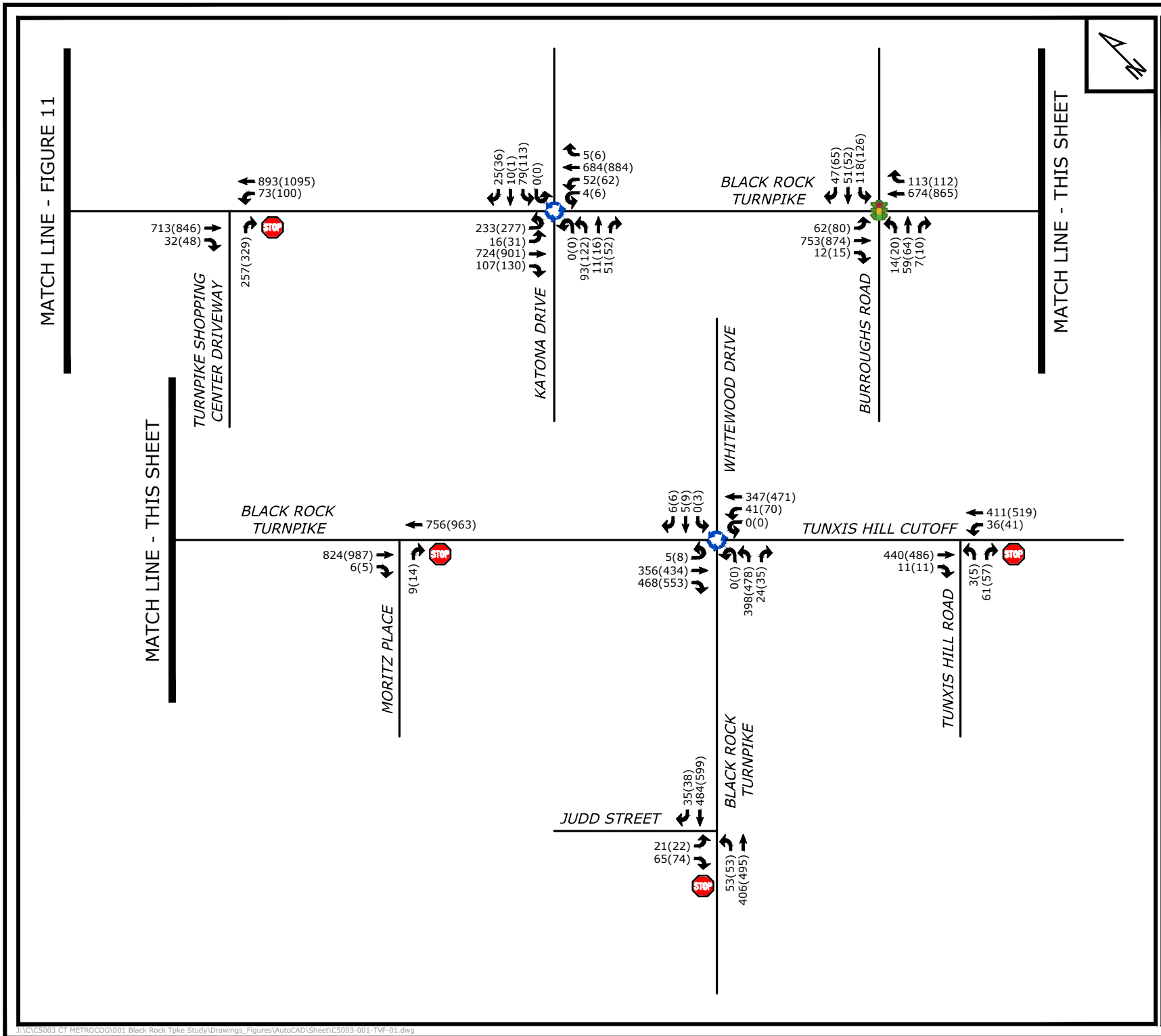
Black Rock Turnpike
Traffic Study
Fairfield,
Connecticut

July 2017

2040 CONCEPT A TRAFFIC VOLUMES WEEKDAY MIDDAY & SATURDAY PEAK HOUR PART 1

FIGURE 17

J:\C\C5003 CT METROCOG\001 Black Rock Tpke Study\Drawings_Figures\AutoCAD\Sheet\C5003-001-TVF-01.dwg



Tighe&Bond
Engineers | Environmental Specialists

LEGEND

VOLUMES: MID (SAT)

TRAFFIC SIGNAL

STOP SIGN

ROUNDABOUT

SCALE: NTS

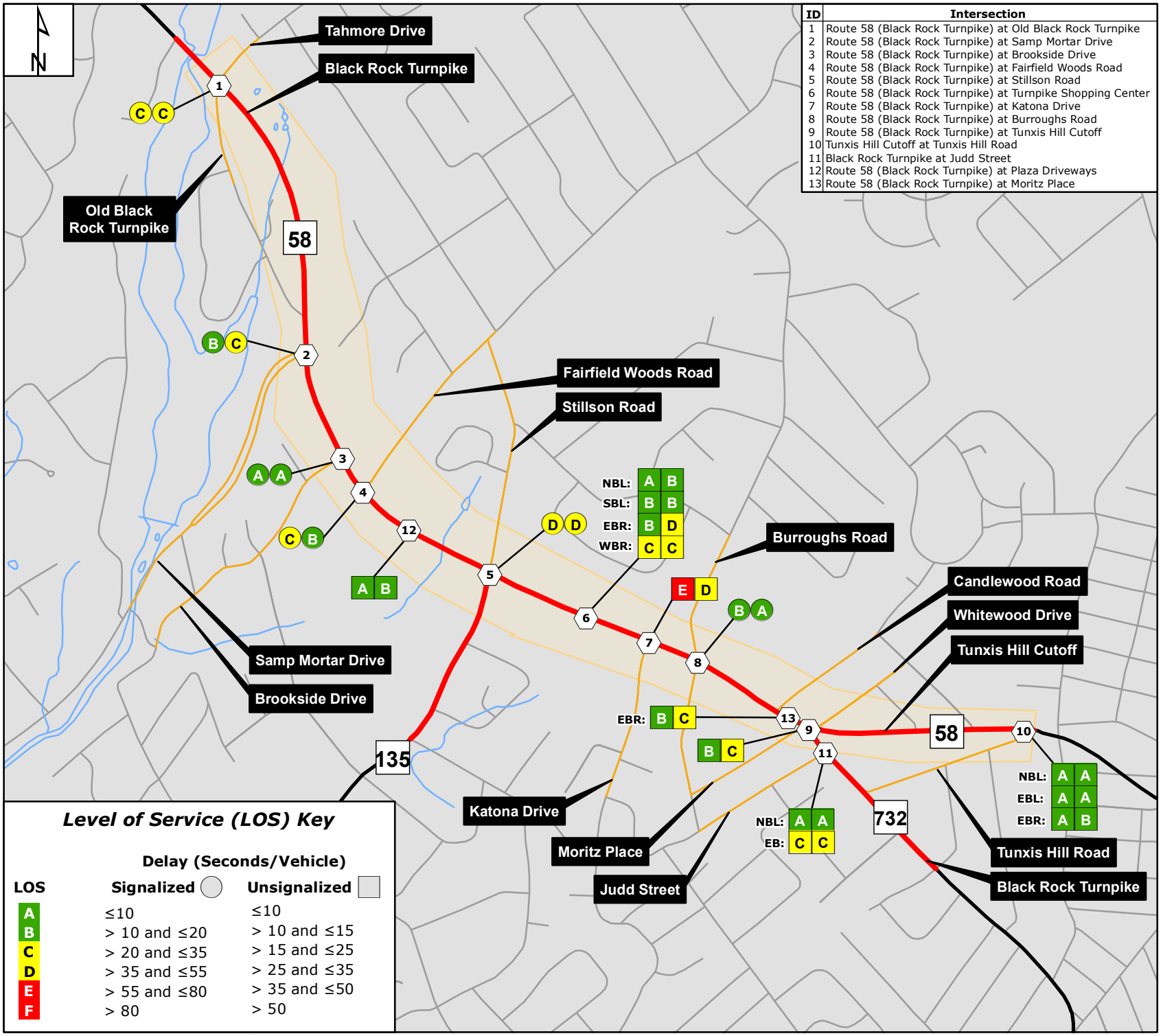
Black Rock Turnpike
Traffic Study
Fairfield,
Connecticut

July 2017

2040 CONCEPT A TRAFFIC VOLUMES WEEKDAY MIDDAY & SATURDAY PEAK HOUR PART 2

FIGURE 18

J:\C\C5003 CT METROCOG\001 Black Rock Tpke Study\Drawings_Figures\AutoCAD\Sheet\C5003-001-TVF-01.dwg



ID	Intersection
1	Route 58 (Black Rock Turnpike) at Old Black Rock Turnpike
2	Route 58 (Black Rock Turnpike) at Samp Mortar Drive
3	Route 58 (Black Rock Turnpike) at Brookside Drive
4	Route 58 (Black Rock Turnpike) at Fairfield Woods Road
5	Route 58 (Black Rock Turnpike) at Stillson Road
6	Route 58 (Black Rock Turnpike) at Turnpike Shopping Center
7	Route 58 (Black Rock Turnpike) at Katona Drive
8	Route 58 (Black Rock Turnpike) at Burroughs Road
9	Route 58 (Black Rock Turnpike) at Tunxis Hill Cutoff
10	Tunxis Hill Cutoff at Tunxis Hill Road
11	Black Rock Turnpike at Judd Street
12	Route 58 (Black Rock Turnpike) at Plaza Driveways
13	Route 58 (Black Rock Turnpike) at Moritz Place

Tighe&Bond
Engineers | Environmental Specialists

LEGEND

- Study Area
- Study Area Local Road
- Study Area State Route
- Local Road
- State Road
- 1 Intersection ID Number
- AM PM Signalized LOS
- AM PM Unsignalized LOS

0 500 1,000
Feet
1 " = 1,000 '

Regional Transportation and Development Study of Route 58 Fairfield, Connecticut

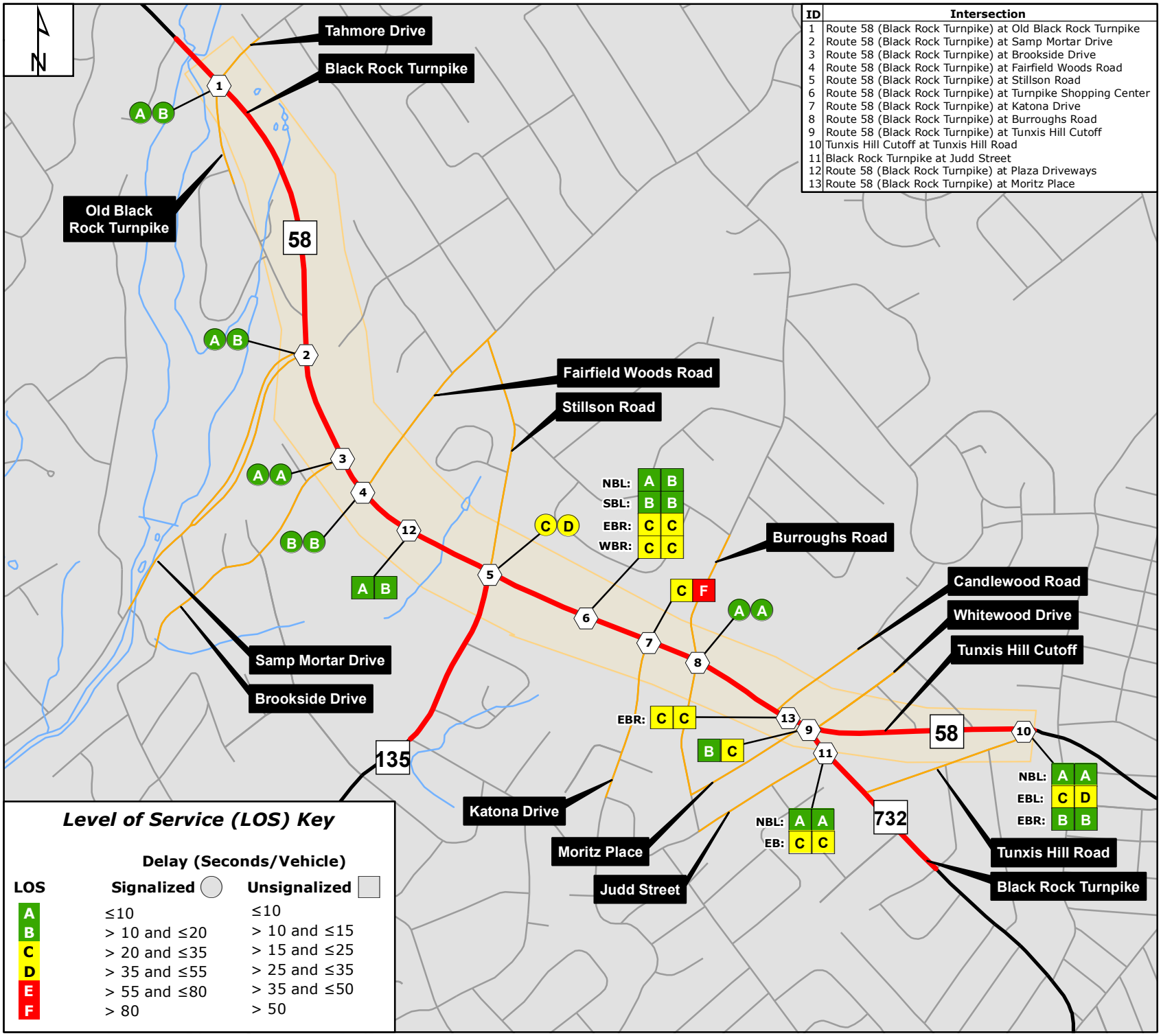
January 2019

2040 WEEKDAY AM & PM CONCEPT A TRAFFIC OPERATIONS

FIGURE 19

V:\Projects\C\C5003\MXD\LOS_Existing_AM_PM_2040_ConceptA.mxd

C-5003



ID	Intersection
1	Route 58 (Black Rock Turnpike) at Old Black Rock Turnpike
2	Route 58 (Black Rock Turnpike) at Samp Mortar Drive
3	Route 58 (Black Rock Turnpike) at Brookside Drive
4	Route 58 (Black Rock Turnpike) at Fairfield Woods Road
5	Route 58 (Black Rock Turnpike) at Stillson Road
6	Route 58 (Black Rock Turnpike) at Turnpike Shopping Center
7	Route 58 (Black Rock Turnpike) at Katona Drive
8	Route 58 (Black Rock Turnpike) at Burroughs Road
9	Route 58 (Black Rock Turnpike) at Tunxis Hill Cutoff
10	Tunxis Hill Cutoff at Tunxis Hill Road
11	Black Rock Turnpike at Judd Street
12	Route 58 (Black Rock Turnpike) at Plaza Driveways
13	Route 58 (Black Rock Turnpike) at Moritz Place

Level of Service (LOS) Key

LOS	Delay (Seconds/Vehicle) Signalized	Unsignalized
A	≤10	≤10
B	> 10 and ≤20	> 10 and ≤15
C	> 20 and ≤35	> 15 and ≤25
D	> 35 and ≤55	> 25 and ≤35
E	> 55 and ≤80	> 35 and ≤50
F	> 80	> 50

Tighe&Bond
Engineers | Environmental Specialists

LEGEND

- Study Area
- Study Area Local Road
- Study Area State Route
- Local Road
- State Road
- 1 Intersection ID Number
- MID SAT Signalized LOS
- MID SAT Unsignalized LOS

0 500 1,000
Feet
1 " = 1,000 '

Regional Transportation and Development Study of Route 58 Fairfield, Connecticut

January 2019

2040 WEEKDAY MIDDAY & SATURDAY CONCEPT A TRAFFIC OPERATIONS

FIGURE 20

V:\Projects\C\C5003\MXD\LOS_Existing_AM_PM_2040_ConceptA_Midday.mxd

C-5003

Tighe&Bond
Engineers | Environmental Specialists

LEGEND

VOLUMES: AM (PM)

TRAFFIC SIGNAL

STOP SIGN

ROUNDABOUT

SCALE: NTS

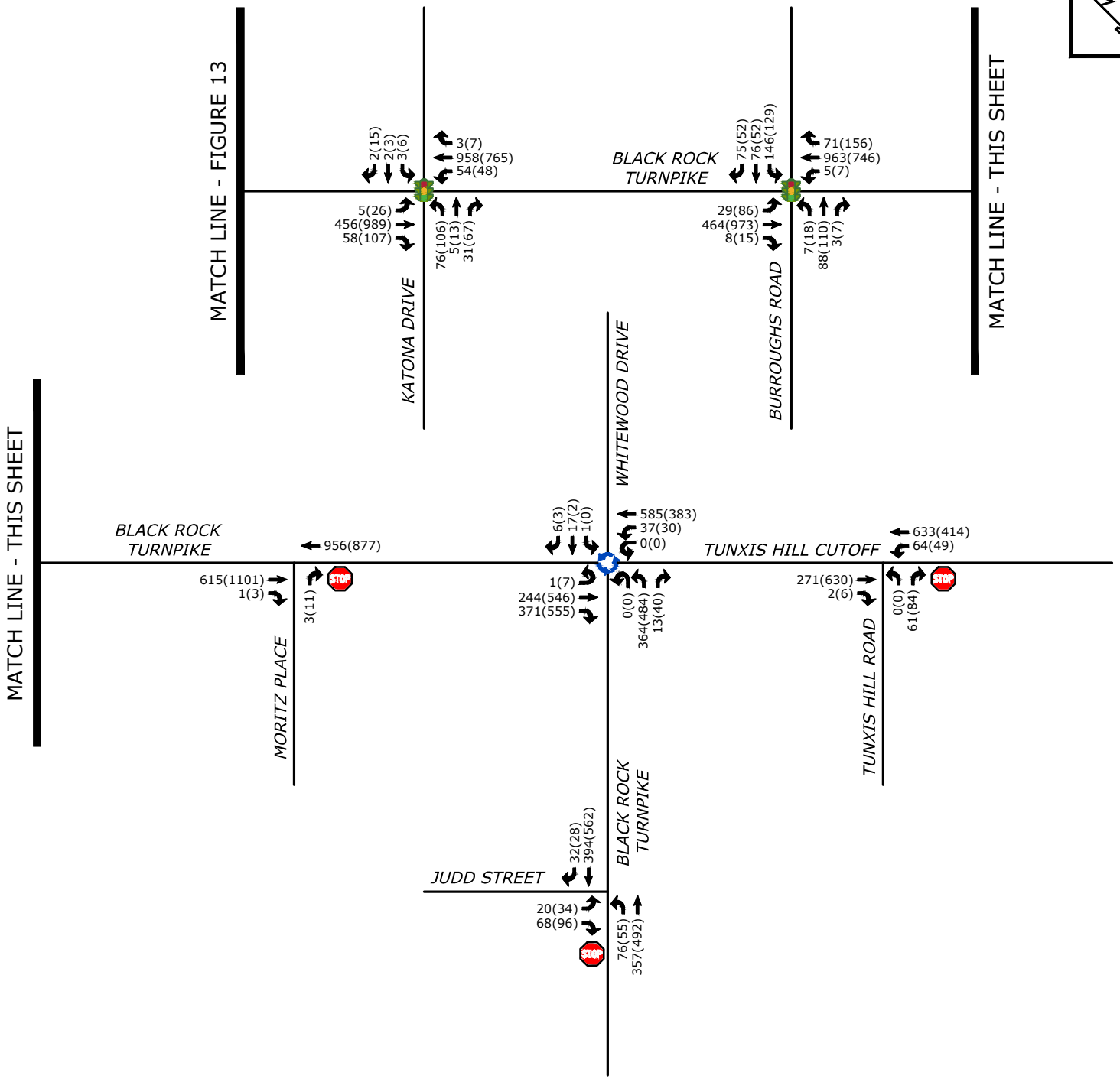
Black Rock Turnpike
Traffic Study
Fairfield,
Connecticut

July 2017

2040 CONCEPT B TRAFFIC VOLUMES WEEKDAY MORNING & AFTERNOON PEAK HOUR PART 1

FIGURE 21

J:\C\C5003 CT METROCOG\001 Black Rock Tpke Study\Drawings_Figures\AutoCAD\Sheet\C5003-001-TVF-01.dwg



Tighe&Bond
Engineers | Environmental Specialists

LEGEND

VOLUMES: AM (PM)

TRAFFIC SIGNAL

STOP SIGN

ROUNDABOUT

SCALE: NTS

Black Rock Turnpike
Traffic Study
Fairfield,
Connecticut

July 2017

2040 CONCEPT B TRAFFIC VOLUMES WEEKDAY MORNING & AFTERNOON PEAK HOUR PART 2

FIGURE 22

J:\C\C5003 CT METROCOG\001 Black Rock Tpke Study\Drawings_Figures\AutoCAD\Sheet\C5003-001-TVF-01.dwg

Tighe&Bond
Engineers | Environmental Specialists

LEGEND

VOLUMES: MID (SAT)

TRAFFIC SIGNAL

STOP SIGN

ROUNDABOUT

SCALE: NTS

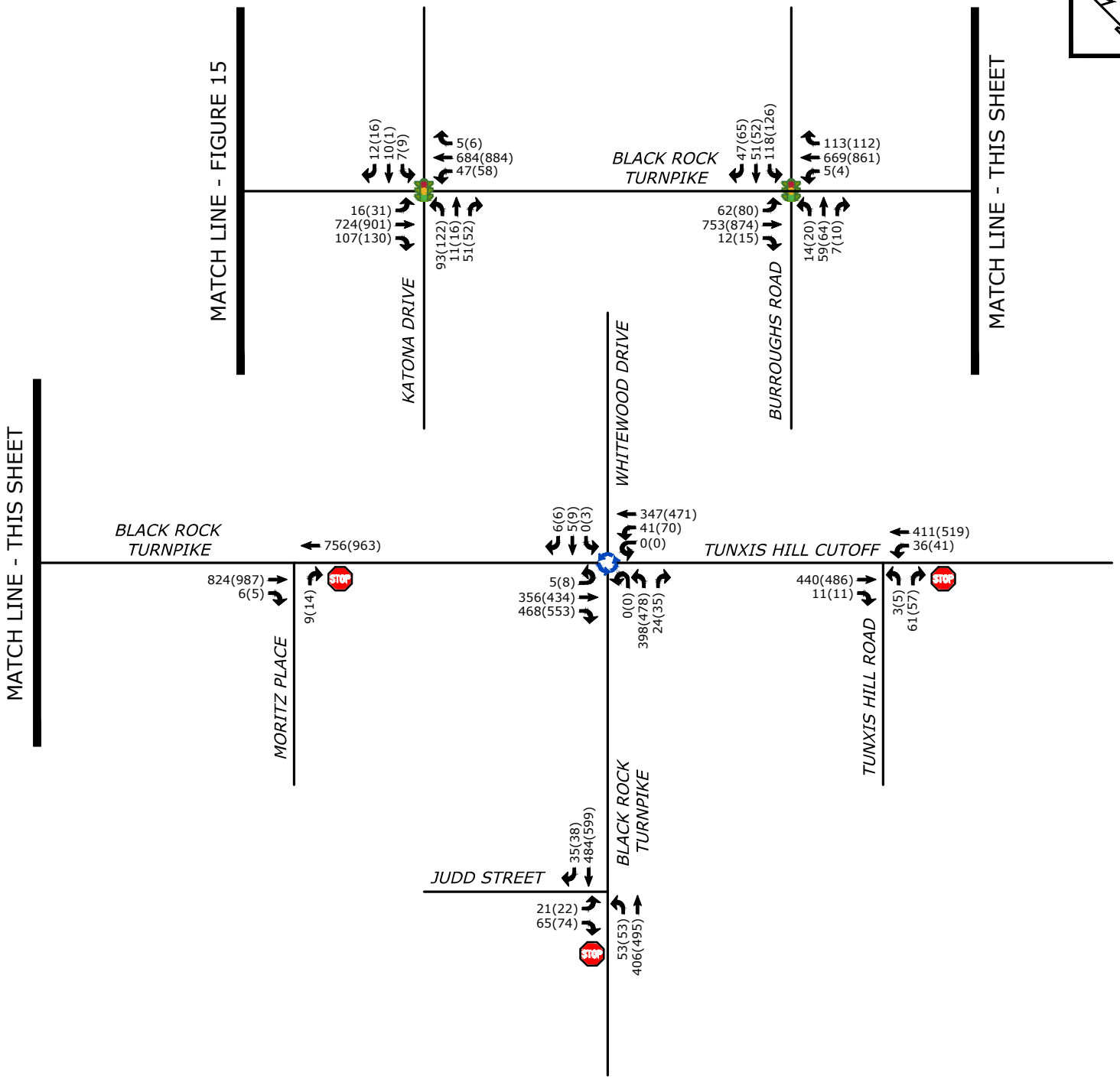
Black Rock Turnpike
Traffic Study
Fairfield,
Connecticut

July 2017

2040 CONCEPT B TRAFFIC VOLUMES WEEKDAY MIDDAY & SATURDAY PEAK HOUR PART 1

FIGURE 23

J:\C\C5003 CT METROCOG\001 Black Rock Tpke Study\Drawings_Figures\AutoCAD\Sheet\C5003-001-TVF-01.dwg



Tighe&Bond
Engineers | Environmental Specialists

LEGEND

VOLUMES: MID (SAT)

TRAFFIC SIGNAL

STOP SIGN

ROUNDABOUT

SCALE: NTS

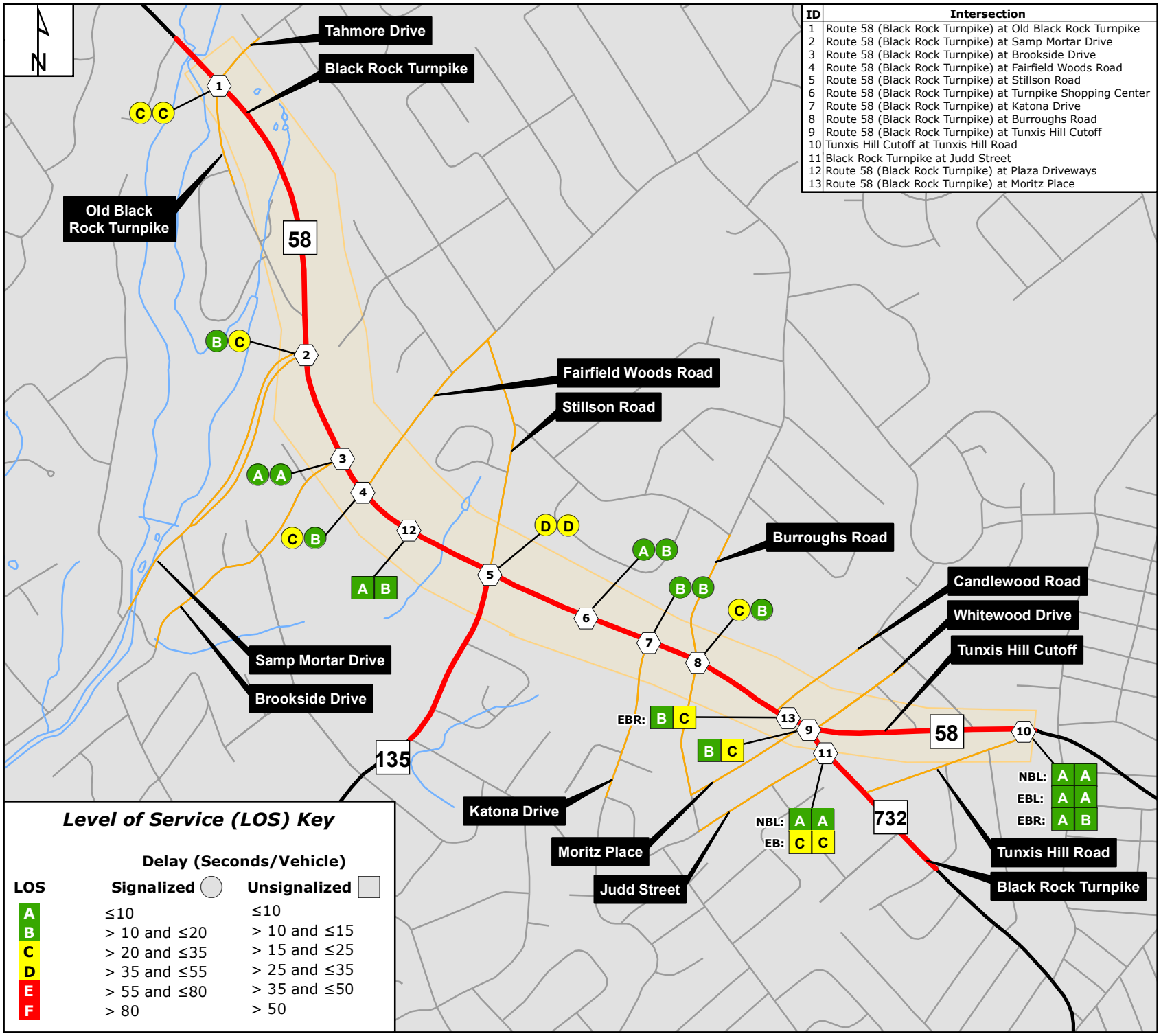
Black Rock Turnpike
Traffic Study
Fairfield,
Connecticut

July 2017

2040 CONCEPT B TRAFFIC VOLUMES WEEKDAY MIDDAY & SATURDAY PEAK HOUR PART 2

FIGURE 24

J:\C\C5003 CT METROCOG\001 Black Rock Tpke Study\Drawings_Figures\AutoCAD\Sheet\C5003-001-TVF-01.dwg



ID	Intersection
1	Route 58 (Black Rock Turnpike) at Old Black Rock Turnpike
2	Route 58 (Black Rock Turnpike) at Samp Mortar Drive
3	Route 58 (Black Rock Turnpike) at Brookside Drive
4	Route 58 (Black Rock Turnpike) at Fairfield Woods Road
5	Route 58 (Black Rock Turnpike) at Stillson Road
6	Route 58 (Black Rock Turnpike) at Turnpike Shopping Center
7	Route 58 (Black Rock Turnpike) at Katona Drive
8	Route 58 (Black Rock Turnpike) at Burroughs Road
9	Route 58 (Black Rock Turnpike) at Tunxis Hill Cutoff
10	Tunxis Hill Cutoff at Tunxis Hill Road
11	Black Rock Turnpike at Judd Street
12	Route 58 (Black Rock Turnpike) at Plaza Driveways
13	Route 58 (Black Rock Turnpike) at Moritz Place

Level of Service (LOS) Key

LOS	Delay (Seconds/Vehicle) Signalized	Unsignalized
A	≤10	≤10
B	> 10 and ≤20	> 10 and ≤15
C	> 20 and ≤35	> 15 and ≤25
D	> 35 and ≤55	> 25 and ≤35
E	> 55 and ≤80	> 35 and ≤50
F	> 80	> 50

Tighe&Bond
Engineers | Environmental Specialists

LEGEND

- Study Area
- Study Area Local Road
- Study Area State Route
- Local Road
- State Road
- 1 Intersection ID Number
- AM PM Signalized LOS
- AM PM Unsignalized LOS

0 500 1,000
Feet
1 " = 1,000 '

Regional Transportation and Development Study of Route 58 Fairfield, Connecticut

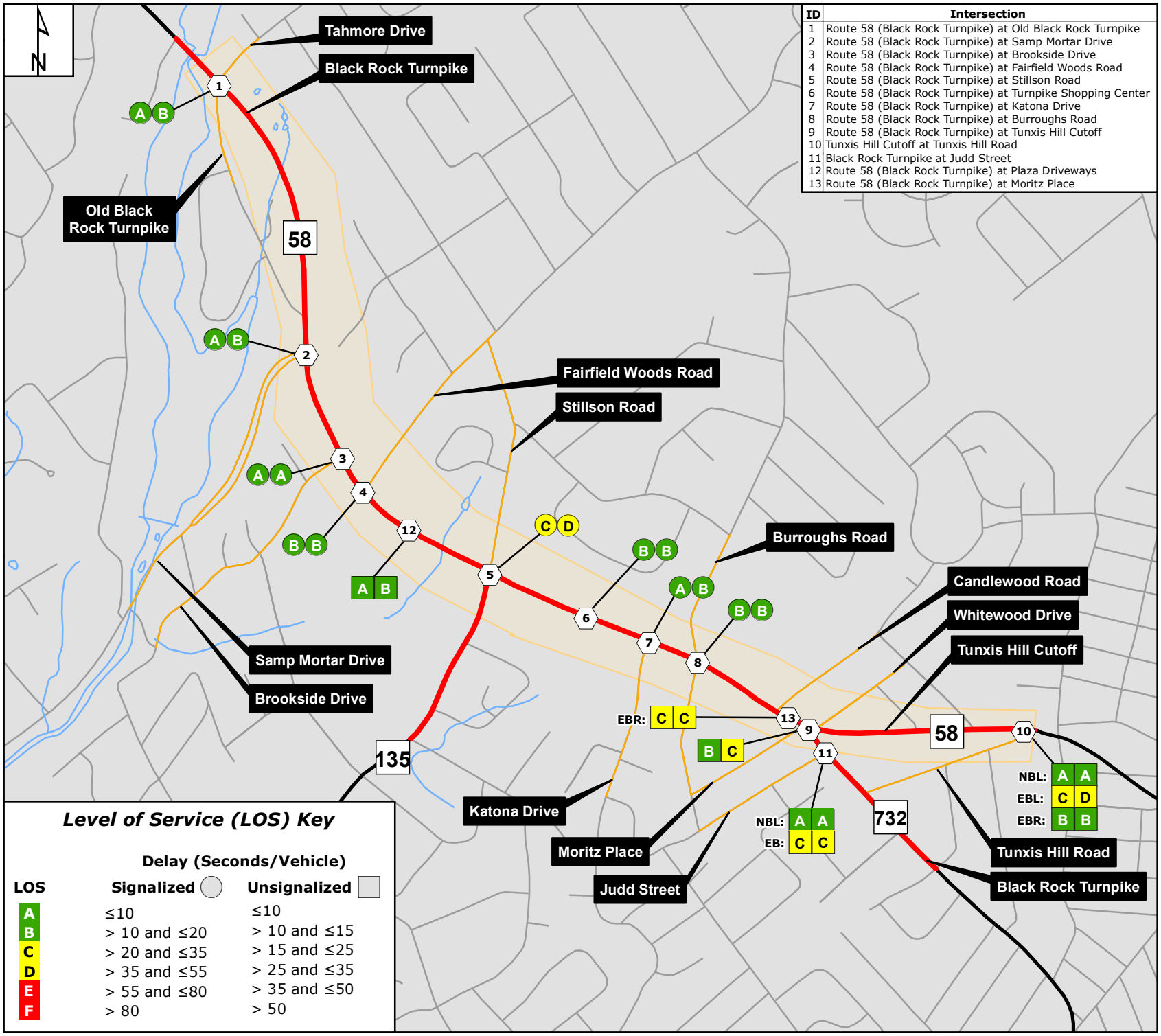
January 2019

2040 WEEKDAY AM & PM CONCEPT B TRAFFIC OPERATIONS

FIGURE 25

V:\Projects\C\C5003\MXD\LOS_Existing_AM_PM_2040_ConceptB.mxd

C-5003



ID	Intersection
1	Route 58 (Black Rock Turnpike) at Old Black Rock Turnpike
2	Route 58 (Black Rock Turnpike) at Samp Mortar Drive
3	Route 58 (Black Rock Turnpike) at Brookside Drive
4	Route 58 (Black Rock Turnpike) at Fairfield Woods Road
5	Route 58 (Black Rock Turnpike) at Stillson Road
6	Route 58 (Black Rock Turnpike) at Turnpike Shopping Center
7	Route 58 (Black Rock Turnpike) at Katona Drive
8	Route 58 (Black Rock Turnpike) at Burroughs Road
9	Route 58 (Black Rock Turnpike) at Tunxis Hill Cutoff
10	Tunxis Hill Cutoff at Tunxis Hill Road
11	Black Rock Turnpike at Judd Street
12	Route 58 (Black Rock Turnpike) at Plaza Driveways
13	Route 58 (Black Rock Turnpike) at Moritz Place

Level of Service (LOS) Key

LOS	Delay (Seconds/Vehicle) Signalized	Unsignalized
A	≤10	≤10
B	> 10 and ≤20	> 10 and ≤15
C	> 20 and ≤35	> 15 and ≤25
D	> 35 and ≤55	> 25 and ≤35
E	> 55 and ≤80	> 35 and ≤50
F	> 80	> 50

Tighe&Bond
Engineers | Environmental Specialists

LEGEND

- Study Area
- Study Area Local Road
- Study Area State Route
- Local Road
- State Road
- 1 Intersection ID Number
- MID SAT Signalized LOS
- MID SAT Unsignalized LOS

0 500 1,000
Feet
1 " = 1,000 '

Regional Transportation and Development Study of Route 58 Fairfield, Connecticut

January 2019

2040 WEEKDAY MIDDAY & SATURDAY CONCEPT B TRAFFIC OPERATIONS

FIGURE 26

V:\Projects\C\C5003\MXD\LOS_Existing_AM_PM_2040_ConceptB_Midday.mxd

C-5003

TABLES

Tighe&Bond

TABLE 1

2017 Existing Conditions - Intersection Operation Summary - Vehicular Levels of Service / Average Delay (sec/veh)

	Lane Use	Weekday Morning Peak Hour LOS	Weekday Morning Peak Hour Avg. Delay (s/veh)	Weekday Midday Peak Hour LOS	Weekday Midday Peak Hour Avg. Delay (s/veh)	Weekday Afternoon Peak Hour LOS	Weekday Afternoon Peak Hour Avg. Delay (s/veh)	Saturday Midday Peak Hour LOS	Saturday Midday Peak Hour Avg. Delay (s/veh)
Traffic Signal - Black Rock Turnpike at Old Black Rock Turnpike & Tahmore Drive									
Overall		**C**	**22.2**	**A**	**8.1**	**C**	**29.3**	**B**	**16.3**
Old Black Rock Turnpike	EB	B	17.1	A	0.1	A	1.0	B	20.0
Tahmore Drive	WB	D	44.5	B	15.0	C	20.2	C	22.1
Black Rock Turnpike	NB	B	13.2	A	6.7	A	7.8	B	10.9
	SB	B	18.5	A	8.6	D	47.4	B	19.9
Traffic Signal - Black Rock Turnpike at Samp Mortar Drive									
Overall		**B**	**16.7**	**B**	**13.1**	**B**	**16.4**	**B**	**14.5**
Samp Mortar Drive	EBL	C	33.9	D	35.9	D	38.8	D	37.7
	EBR	B	11.3	B	10.8	A	9.1	A	9.6
Black Rock Turnpike	NBL	A	9.4	A	6.9	A	9.7	A	7.8
	NBT	B	14.0	B	14.5	B	18.5	B	16.7
	SB	C	22.3	B	11.1	B	14.1	B	11.6
Traffic Signal - Black Rock Turnpike at Brookside Drive									
Overall		**A**	**2.9**	**A**	**3.7**	**A**	**8.0**	**A**	**5.4**
Brookside Drive	EB	C	29.4	C	24.7	C	33.5	C	28.7
Black Rock Turnpike	NB	A	2.5	A	2.9	A	4.4	A	3.6
	SB	A	0.6	A	1.6	A	5.4	A	3.3
Traffic Signal - Black Rock Turnpike at Fairfield Woods Road & Commercial Driveway									
Overall		**B**	**15.7**	**A**	**9.1**	**B**	**11.0**	**A**	**9.6**
Commercial Driveway4	EBLT	B	19.8	C	24.3	C	29.7	C	28.5
	EBR	A	0.0	A	0.5	A	1.0	A	0.7
Fairfield Woods Road	WBLT	C	21.6	C	29.5	D	36.5	D	38.6
	WBR	D	53.7	D	39.5	D	38.5	D	38.9
Black Rock Turnpike	NB	A	8.8	A	5.7	A	5.1	A	5.7
	SB	A	3.2	A	4.1	A	9.8	A	4.3
Traffic Signal - Black Rock Turnpike at Stillson Road									
Overall		**D**	**44.5**	**D**	**37.7**	**D**	**53.9**	**D**	**48.5**
Black Rock Turnpike	SBL	E	60.0	E	61.1	E	68.3	E	69.5
	SBTR	D	37.5	D	38.2	E	56.2	D	51.9
	NBL	F	99.0	E	62.4	E	75.1	E	79.6
	NBTR	D	37.6	C	31.2	D	36.8	D	41.3
Stillson Road	EBL	C	25.7	C	23.9	C	28.4	C	27.9
	EBTR	C	32.3	D	46.1	F	86.1	E	60.5
	WBL	B	18.9	C	24.5	D	38.8	C	29.8
	WBTR	E	61.4	D	43.1	D	53.7	D	53.8
Traffic Signal - Black Rock Turnpike at Turnpike Shopping Center & Fairway Plaza Driveways									
Overall		**A**	**6.6**	**B**	**10.4**	**B**	**12.8**	**B**	**14.3**
Black Rock Turnpike	SB	A	3.0	A	7.7	B	11.3	B	13.2
	NB	A	6.1	A	7.9	B	11.6	B	13.7
Turnpike Shopping Center Driveway	EBLT	D	38.5	C	34.1	C	30.2	C	27.8
	EBR	A	0.4	A	0.9	A	3.7	A	3.9
Fairway Plaza Driveway	WBL	C	32.5	C	25.1	C	22.2	C	23.2
	WBTR	A	0.2	A	0.3	A	0.2	A	0.3
Traffic Signal - Black Rock Turnpike at Katona Drive & Katona Drive Extension									
Overall		**A**	**6.7**	**A**	**7.2**	**A**	**7.5**	**A**	**7.8**
Black Rock Turnpike	SB	A	2.3	A	3.0	A	3.4	A	3.5
	NB	A	6.6	A	6.6	A	7.0	A	8.1
Katona Drive	EBLT	D	42.9	D	45.7	D	48.2	D	47.0
	EBR	A	0.9	A	2.5	A	4.7	A	1.3
Katona Drive Extension	WBL	C	27.0	C	25.7	C	25.0	C	25.0
	WBTR	C	24.7	B	19.4	B	16.3	B	15.1
Traffic Signal - Black Rock Turnpike at Burroughs Road									
Overall		**B**	**14.8**	**B**	**10.3**	**B**	**10.8**	**B**	**10.4**
Black Rock Turnpike	SB	A	5.7	A	5.0	A	5.2	A	5.5
	NB	B	11.6	A	7.3	A	7.6	A	7.9
Burroughs Road	EB	C	20.5	C	22.2	C	26.2	C	23.2
	WB	D	37.7	C	34.8	D	38.5	C	34.3
Traffic Signal - Black Rock Turnpike at Tunxis Hill Cutoff, Moritz Place & Whitewood Drive									
Overall		**B**	**13.2**	**B**	**11.8**	**B**	**14.5**	**B**	**13.9**
Black Rock Turnpike	SBLT	B	15.3	B	17.7	C	21.9	B	18.8
	SBR	A	3.2	A	3.5	A	3.1	A	3.5
Tunxis Hill Cutoff	NB	B	16.8	B	13.9	B	14.1	B	16.7
Black Rock Turnpike	NWB	B	15.3	B	13.8	B	18.4	B	16.9
Moritz Place	NEB	C	25.5	C	24.3	C	29.8	C	28.1
Whitewood Drive	SWB	C	26.0	C	24.5	C	29.7	C	28.4

TABLE 1 (CONTINUED)

2017 Existing Conditions - Intersection Operation Summary - Vehicular Levels of Service / Average Delay (sec/veh)

		Weekday Morning Peak Hour		Weekday Midday Peak Hour		Weekday Afternoon Peak Hour		Saturday Midday Peak Hour	
	Lane Use	LOS	Avg. Delay (s/veh)	LOS	Avg. Delay (s/veh)	LOS	Avg. Delay (s/veh)	LOS	Avg. Delay (s/veh)
Unsignalized TWSC - Tunxis Hill Cutoff at Tunxis Hill Road									
Tunxis Hill Road	EBL	A	0.0	C	20.7	A	0.0	C	24.5
	EBR	A	9.6	B	10.3	B	11.1	B	10.4
Tunxis Hill Cutoff	NBL	A	8.1	A	8.5	A	9.0	A	8.6
Unsignalized TWSC - Black Rock Turnpike at Judd Street									
Black Rock Turnpike	NBL	A	8.5	A	8.8	A	8.8	A	9.0
Judd Street	EB	B	13.8	C	15.2	C	18.6	C	17.6

TABLE 2

2017 Existing Conditions - Intersection Operation Summary - Vehicular 50th / 95th Percentile Queue (In Feet)

			Weekday Morning Peak Hour		Weekday Midday Peak Hour		Weekday Afternoon Peak Hour		Saturday Midday Peak Hour	
	Lane Use	Available Storage	Avg. Queues	Design Queues	Avg. Queues	Design Queues	Avg. Queues	Design Queues	Avg. Queues	Design Queues
Traffic Signal - Black Rock Turnpike at Old Black Rock Turnpike & Tahmore Drive										
Old Black Rock Turnpike	EB	1000	3	17	0	0	0	0	3	14
Tahmore Drive	WB	615	97	314	10	50	20	62	43	86
Black Rock Turnpike	NB	1000	136	219	90	190	143	331	160	337
	SB	1000	156	263	113	249	518	769	218	581
Traffic Signal - Black Rock Turnpike at Samp Mortar Drive										
Samp Mortar Drive	EBL	1000	26	55	41	72	82	134	61	96
	EBR	1000	0	39	0	41	0	64	0	40
Black Rock Turnpike	NBL	100	66	153	30	62	37	68	24	59
	NBT	750	313	466	275	405	323	466	299	464
	SB	1000	147	196	92	159	151	257	120	207
Traffic Signal - Black Rock Turnpike at Brookside Drive										
Brookside Drive	EB	900	33	63	34	75	92	128	55	95
Black Rock Turnpike	NB	170	30	59	26	56	62	80	29	79
	SB	750	8	7	8	8	215	27	11	12
Traffic Signal - Black Rock Turnpike at Fairfield Woods Road & Commercial Driveway										
Commercial Driveway	EBLT	35	2	9	9	22	23	45	24	51
	EBR	35	0	0	0	0	0	0	0	0
Fairfield Woods Road	WBLT	1000	18	44	34	58	43	72	57	88
	WBR	1000	156	299	77	111	58	89	68	101
Black Rock Turnpike	NB	1000	106	141	63	117	61	116	72	136
	SB	170	21	22	14	189	96	390	18	258
Traffic Signal - Black Rock Turnpike at Stillson Road										
Black Rock Turnpike	SBL	200	35	75	55	110	67	120	67	120
	SBTR	1000	167	228	251	346	368	508	336	454
	NBL	175	138	287	86	175	108	213	111	218
	NBTR	680	270	354	210	305	249	330	300	391
Stillson Road	EBL	210	72	108	88	146	115	173	114	174
	EBTR	1000	144	208	198	323	352	608	267	440
	WBL	170	48	78	75	125	93	157	121	178
	WBTR	1000	314	472	150	250	240	335	258	381
Traffic Signal - Black Rock Turnpike at Turnpike Shopping Center & Fairway Plaza Driveways										
Black Rock Turnpike	SB	680	31	50	81	125	119	171	114	166
	NB	405	62	125	54	70	65	83	65	82
Turnpike Shopping Center Driveway	EBLT	25	29	56	72	128	84	135	78	139
	EBR	25	0	0	0	3	0	21	0	30
Fairway Plaza Driveway	WBLT	25	14	36	27	57	21	46	42	72
	WBR	25	0	0	0	0	0	0	0	0
Traffic Signal - Black Rock Turnpike at Katona Drive & Katona Drive Extension										
Black Rock Turnpike	SB	405	8	30	44	58	54	77	60	90
	NB	300	53	61	40	51	43	53	49	61
Katona Drive	EBLT	1000	36	73	48	84	56	93	54	100
	EBR	250	0	0	0	3	0	13	0	3
Katona Drive Extension	WBL	135	1	7	2	8	0	4	1	8
	WBTR	135	1	8	5	18	2	14	0	13
Traffic Signal - Black Rock Turnpike at Burroughs Road										
Black Rock Turnpike	SB	275	26	32	40	53	41	64	38	72
	NB	835	139	232	72	135	90	167	98	178
Burroughs Road	EB	1000	41	63	34	56	56	93	36	66
	WB	1000	141	178	97	136	95	152	96	151
Traffic Signal - Black Rock Turnpike at Tunxis Hill Cutoff, Moritz Place & Whitewood Drive										
Black Rock Turnpike	SBLT	835	41	130	56	199	95	341	74	253
	SBR	835	0	78	0	109	0	120	0	134
Tunxis Hill Cutoff	NB	1000	60	161	30	99	36	114	49	155
Black Rock Turnpike	NWB	1000	26	82	24	86	43	130	37	121
Moritz Place	NEB	935	1	8	2	16	3	20	4	22
Whitewood Drive	SWB	785	5	30	3	18	2	13	5	27

TABLE 2 (CONTINUED)

2017 Existing Conditions - Intersection Operation Summary - Vehicular 95th Percentile Queue (In Feet)

	Lane Use	Available Storage	Weekday Morning Peak Hour Design Queues	Weekday Midday Peak Hour Design Queues	Weekday Afternoon Design Queues	Saturday Midday Peak Hour Design Queues
Unsignalized TWSC - Tunxis Hill Cutoff at Tunxis Hill Road						
Tunxis Hill Road	EBL	1000	0	0	0	3
	EBR	1000	8	8	13	8
Tunxis Hill Cutoff	NBL	200	5	3	5	3
Unsignalized TWSC - Black Rock Turnpike at Judd Street						
Black Rock Turnpike	NBL	25	5	5	5	5
Judd Street	EB	1000	18	20	40	30

TABLE 3

2040 Background Conditions - Intersection Operation Summary - Vehicular Levels of Service / Average Delay (sec/veh)

	Lane Use	Weekday Morning Peak Hour LOS	Weekday Morning Peak Hour Avg. Delay (s/veh)	Weekday Midday Peak Hour LOS	Weekday Midday Peak Hour Avg. Delay (s/veh)	Weekday Afternoon Peak Hour LOS	Weekday Afternoon Peak Hour Avg. Delay (s/veh)	Saturday Midday Peak Hour LOS	Saturday Midday Peak Hour Avg. Delay (s/veh)
Traffic Signal - Black Rock Turnpike at Old Black Rock Turnpike & Tahmore Drive									
Overall		**C**	**26.6**	**A**	**8.7**	**D**	**43.6**	**B**	**18.9**
Old Black Rock Turnpike	EB	B	17.9	A	0.1	A	2.2	B	19.9
Tahmore Drive	WB	E	61.1	B	15.5	C	20.1	C	24.7
Black Rock Turnpike	NB	B	13.4	A	7.1	A	9.1	B	11.7
	SB	B	19.9	A	9.4	E	73.4	C	24.3
Traffic Signal - Black Rock Turnpike at Samp Mortar Drive									
Overall		**B**	**18.3**	**B**	**13.7**	**B**	**17.9**	**B**	**15.2**
Samp Mortar Drive	EBL	C	34.2	D	36.2	D	38.3	D	38.0
	EBR	B	11.3	B	10.8	B	10.1	A	9.5
Black Rock Turnpike	NBL	B	10.5	A	7.3	B	10.6	A	8.3
	NBT	B	14.7	B	15.2	C	20.7	B	17.7
	SB	C	25.3	B	11.9	B	15.5	B	12.4
Traffic Signal - Black Rock Turnpike at Brookside Drive									
Overall		**A**	**3.0**	**A**	**3.8**	**A**	**8.2**	**A**	**5.6**
Brookside Drive	EB	C	29.4	C	25.4	C	34.0	C	29.3
Black Rock Turnpike	NB	A	2.6	A	3.0	A	4.6	A	3.8
	SB	A	0.6	A	1.4	A	5.5	A	3.4
Traffic Signal - Black Rock Turnpike at Fairfield Woods Road & Commercial Driveway									
Overall		**B**	**16.7**	**A**	**9.5**	**B**	**13.1**	**B**	**10.3**
Commercial Driveway4	EBLT	B	19.8	C	23.9	C	29.5	C	28.3
	EBR	A	0.0	A	0.5	A	1.0	A	0.7
Fairfield Woods Road	WBLT	C	21.6	C	29.3	D	36.7	D	39.0
	WBR	E	58.2	D	39.7	D	38.8	D	39.1
Black Rock Turnpike	NB	A	9.3	A	6.1	A	5.6	A	6.2
	SB	A	3.2	A	4.6	B	13.6	A	5.3
Traffic Signal - Black Rock Turnpike at Stillson Road									
Overall		**D**	**49.7**	**D**	**40.4**	**E**	**61.5**	**D**	**53.8**
Black Rock Turnpike	SBL	E	61.3	E	65.5	E	69.6	E	69.6
	SBTR	D	38.6	D	41.3	E	72.6	E	59.1
	NBL	F	117.4	E	68.9	F	83.4	F	85.8
	NBTR	D	39.8	C	34.9	D	39.7	D	44.3
Stillson Road	EBL	C	31.9	C	24.8	C	29.8	C	31.0
	EBTR	C	33.5	D	48.3	F	94.7	E	68.0
	WBL	B	19.3	C	25.5	D	41.4	D	36.0
	WBTR	E	75.1	D	43.2	D	54.4	E	58.7
Traffic Signal - Black Rock Turnpike at Turnpike Shopping Center & Fairway Plaza Driveways									
Overall		**A**	**7.1**	**B**	**11.1**	**B**	**15.8**	**C**	**23.5**
Black Rock Turnpike	SB	A	3.2	A	8.9	B	14.1	C	20.8
	NB	A	6.8	A	8.7	B	16.6	C	30.3
Turnpike Shopping Center Driveway	EBLT	D	38.9	C	32.3	C	28.8	C	24.5
	EBR	A	0.5	A	1.2	A	4.0	A	3.9
Fairway Plaza Driveway	WBL	C	32.4	C	24.2	C	21.4	C	20.7
	WBTR	A	0.2	A	0.3	A	0.2	A	0.2
Traffic Signal - Black Rock Turnpike at Katona Drive & Katona Drive Extension									
Overall		**A**	**6.9**	**A**	**7.4**	**A**	**7.8**	**A**	**8.5**
Black Rock Turnpike	SB	A	2.3	A	3.1	A	3.6	A	4.3
	NB	A	6.8	A	6.8	A	7.1	A	8.5
Katona Drive	EBLT	D	43.3	D	46.8	D	49.6	D	48.2
	EBR	A	0.9	A	3.0	A	5.3	A	1.8
Katona Drive Extension	WBL	C	26.5	C	25.3	C	25.0	C	25.0
	WBTR	C	24.3	B	19.5	B	15.6	B	14.9
Traffic Signal - Black Rock Turnpike at Burroughs Road									
Overall		**B**	**15.7**	**B**	**10.8**	**B**	**11.8**	**B**	**11.4**
Black Rock Turnpike	SB	A	6.2	A	5.4	A	6.6	A	7.1
	NB	B	12.6	A	7.9	A	8.3	A	8.6
	EB	C	20.4	C	22.3	C	25.7	C	23.0
	WB	D	39.1	D	35.5	D	39.5	D	35.1
Traffic Signal - Black Rock Turnpike at Tunxis Hill Cutoff, Moritz Place & Whitewood Drive									
Overall		**B**	**13.8**	**B**	**12.2**	**B**	**15.2**	**B**	**16.2**
Black Rock Turnpike	SBLT	B	15.7	B	18.1	C	23.0	C	21.6
	SBR	A	3.1	A	3.5	A	3.2	A	4.6
Tunxis Hill Cutoff	NB	B	17.4	B	14.2	B	14.7	B	19.7
Black Rock Turnpike	NWB	B	16.2	B	14.7	B	19.6	B	19.6
Moritz Place	NEB	C	27.5	C	25.4	C	30.8	C	31.4
Whitewood Drive	SWB	C	27.6	C	25.6	C	30.5	C	31.5

TABLE 3 (CONTINUED)

2040 Background Conditions - Intersection Operation Summary - Vehicular Levels of Service / Average Delay (sec/veh)

		Weekday Morning Peak Hour		Weekday Midday Peak Hour		Weekday Afternoon Peak Hour		Saturday Midday Peak Hour	
	Lane Use	LOS	Avg. Delay (s/veh)	LOS	Avg. Delay (s/veh)	LOS	Avg. Delay (s/veh)	LOS	Avg. Delay (s/veh)
Unsignalized TWSC - Tunxis Hill Cutoff at Tunxis Hill Road									
Tunxis Hill Road	EBL	A	0.0	C	22.3	A	0.0	D	26.9
	EBR	A	9.7	B	10.4	B	11.4	B	10.6
Tunxis Hill Cutoff	NBL	A	8.2	A	8.7	A	9.2	A	8.8
Unsignalized TWSC - Black Rock Turnpike at Judd Street									
Black Rock Turnpike	NBL	A	8.6	A	8.9	A	9.0	A	9.2
Judd Street	EB	B	14.4	C	16.0	C	20.6	C	19.1

TABLE 4

2040 Background Conditions - Intersection Operation Summary - Vehicular 50th / 95th Percentile Queue (In Feet)

			Weekday Morning Peak Hour		Weekday Midday Peak Hour		Weekday Afternoon Peak Hour		Saturday Midday Peak Hour	
	Lane Use	Available Storage	Avg. Queues	Design Queues	Avg. Queues	Design Queues	Avg. Queues	Design Queues	Avg. Queues	Design Queues
Traffic Signal - Black Rock Turnpike at Old Black Rock Turnpike & Tahmore Drive										
Old Black Rock Turnpike	EB	1000	4	18	0	0	0	2	3	14
Tahmore Drive	WB	615	119	337	12	53	22	64	48	92
Black Rock Turnpike	NB	1000	149	241	99	215	161	387	186	384
	SB	1000	174	299	126	289	579	841	266	643
Traffic Signal - Black Rock Turnpike at Samp Mortar Drive										
Samp Mortar Drive	EBL	1000	28	57	43	75	87	138	64	100
	EBR	1000	0	40	0	41	7	75	0	41
Black Rock Turnpike	NBL	100	71	171	31	66	40	72	27	60
	NBT	750	339	503	300	439	356	575	332	488
	SB	1000	165	218	101	175	169	293	133	230
Traffic Signal - Black Rock Turnpike at Brookside Drive										
Brookside Drive	EB	900	34	65	38	80	99	135	59	99
Black Rock Turnpike	NB	170	34	66	39	63	66	84	53	87
	SB	750	8	7	9	10	237	31	12	14
Traffic Signal - Black Rock Turnpike at Fairfield Woods Road & Commercial Driveway										
Commercial Driveway	EBLT	35	2	9	9	22	25	47	26	53
	EBR	35	0	0	0	0	0	0	0	0
Fairfield Woods Road	WBLT	1000	19	47	35	60	46	75	60	92
	WBR	1000	168	324	82	115	61	93	72	105
Black Rock Turnpike	NB	1000	115	152	71	131	69	132	81	153
	SB	170	22	23	15	211	126	443	20	295
Traffic Signal - Black Rock Turnpike at Stillson Road										
Black Rock Turnpike	SBL	200	38	80	61	117	72	128	72	128
	SBTR	1000	182	243	279	383	410	556	365	501
	NBL	175	159	309	95	195	116	231	118	235
	NBTR	680	297	382	234	335	272	353	327	445
Stillson Road	EBL	210	77	128	99	154	123	184	122	186
	EBTR	1000	156	223	222	382	417	655	289	481
	WBL	170	51	83	83	132	103	174	130	215
	WBTR	1000	348	517	166	264	258	358	277	417
Traffic Signal - Black Rock Turnpike at Turnpike Shopping Center & Fairway Plaza Driveways										
Black Rock Turnpike	SB	680	34	54	92	138	136	191	136	201
	NB	405	66	139	57	73	70	98	70	150
Turnpike Shopping Center Driveway	EBLT	25	31	58	76	135	88	142	79	139
	EBR	25	0	0	0	5	0	24	0	32
Fairway Plaza Driveway	WBLT	25	14	37	28	59	22	47	42	71
	WBR	25	0	0	0	0	0	0	0	0
Traffic Signal - Black Rock Turnpike at Katona Drive & Katona Drive Extension										
Black Rock Turnpike	SB	405	8	32	47	62	57	82	64	125
	NB	300	56	63	43	53	46	56	52	63
Katona Drive	EBLT	1000	38	76	51	88	59	98	57	106
	EBR	250	0	0	0	6	0	16	0	4
Katona Drive Extension	WBL	135	1	7	2	8	0	4	1	8
	WBTR	135	1	8	5	20	2	15	0	13
Traffic Signal - Black Rock Turnpike at Burroughs Road										
Black Rock Turnpike	SB	275	28	34	43	57	44	170	48	77
	NB	835	157	253	81	150	102	187	110	200
Burroughs Road	EB	1000	43	66	36	58	58	96	39	69
	WB	1000	149	191	104	144	101	159	102	159
Traffic Signal - Black Rock Turnpike at Tunxis Hill Cutoff, Moritz Place & Whitewood Drive										
Black Rock Turnpike	SBLT	835	44	144	61	216	106	403	139	279
	SBR	835	0	84	0	118	0	130	73	147
Tunxis Hill Cutoff	NB	1000	64	180	32	107	40	124	92	173
Black Rock Turnpike	NWB	1000	29	91	27	95	52	140	66	130
Moritz Place	NEB	935	1	8	2	16	4	20	6	23
Whitewood Drive	SWB	785	5	32	3	19	2	13	8	28

TABLE 4 (CONTINUED)

2040 Background Conditions - Intersection Operation Summary - Vehicular 95th Percentile Queue (In Feet)

	Lane Use	Available Storage	Weekday Morning Peak Hour Design Queues	Weekday Midday Peak Hour Design Queues	Weekday Afternoon Design Queues	Saturday Midday Peak Hour Design Queues
Unsignalized TWSC - Tunxis Hill Cutoff at Tunxis Hill Road						
	EBL	1000	0	0	0	3
	EBR	1000	8	8	13	8
Tunxis Hill Cutoff	NBL	200	5	3	5	3
Unsignalized TWSC - Black Rock Turnpike at Judd Street						
Black Rock Turnpike	NBL	25	5	5	5	5
Judd Street	EB	1000	23	23	48	35

TABLE 5

2040 Background-Optimized Conditions - Intersection Operation Summary - Vehicular Levels of Service / Average Delay (sec/veh)

	Lane Use	Weekday Morning Peak Hour LOS	Weekday Morning Peak Hour Avg. Delay (s/veh)	Weekday Midday Peak Hour LOS	Weekday Midday Peak Hour Avg. Delay (s/veh)	Weekday Afternoon Peak Hour LOS	Weekday Afternoon Peak Hour Avg. Delay (s/veh)	Saturday Midday Peak Hour LOS	Saturday Midday Peak Hour Avg. Delay (s/veh)
Traffic Signal - Black Rock Turnpike at Old Black Rock Turnpike & Tahmore Drive									
Overall		**C**	**21.2**	**A**	**6.1**	**C**	**29.6**	**B**	**15.2**
Old Black Rock Turnpike	EB	B	15.9	A	0.4	A	4.1	C	29.8
Tahmore Drive	WB	D	46.7	C	26.8	D	35.1	D	50.4
Black Rock Turnpike	NB	A	7.0	A	2.8	A	2.7	A	6.3
	SB	C	20.6	A	6.5	D	50.5	B	15.1
Traffic Signal - Black Rock Turnpike at Samp Mortar Drive									
Overall		**B**	**13.1**	**A**	**8.5**	**B**	**14.7**	**B**	**10.2**
Samp Mortar Drive	EBL	C	31.1	D	39.6	C	32.4	D	44.5
	EBR	B	10.5	B	11.4	B	12.3	B	12.8
Black Rock Turnpike	NBL	A	8.3	A	4.4	B	12.3	A	4.8
	NBT	A	8.5	A	5.5	B	15.1	A	6.4
	SB	B	18.7	A	7.7	B	12.4	A	8.5
Traffic Signal - Black Rock Turnpike at Brookside Drive									
Overall		**A**	**3.3**	**A**	**4.9**	**A**	**8.0**	**A**	**6.0**
Brookside Drive	EB	C	27.8	C	29.4	D	38.4	D	40.0
Black Rock Turnpike	NB	A	3.0	A	3.5	A	4.4	A	3.7
	SB	A	1.0	A	2.8	A	4.4	A	2.6
Traffic Signal - Black Rock Turnpike at Fairfield Woods Road & Commercial Driveway									
Overall		**B**	**14.6**	**B**	**10.0**	**B**	**13.0**	**B**	**11.1**
Commercial Driveway4	EBLT	B	16.2	C	25.9	D	36.6	D	35.8
	EBR	A	0.0	A	0.6	A	1.4	A	0.9
Fairfield Woods Road	WBLT	B	18.0	C	31.8	D	52.6	D	50.1
	WBR	D	43.4	D	43.3	E	59.3	D	50.6
Black Rock Turnpike	NB	B	10.5	A	5.9	A	3.9	A	5.6
	SB	A	3.8	A	4.9	B	10.5	A	4.2
Traffic Signal - Black Rock Turnpike at Stillson Road									
Overall		**D**	**44.0**	**D**	**39.3**	**E**	**55.5**	**D**	**49.7**
Black Rock Turnpike	SBL	F	89.4	E	62.7	E	74.1	F	83.5
	SBTR	D	50.2	D	41.2	D	50.3	D	47.3
	NBL	E	68.8	E	66.1	F	117.2	F	98.6
	NBTR	D	41.2	C	33.8	C	34.8	D	37.0
Stillson Road	EBL	C	27.0	C	24.5	C	34.0	D	39.1
	EBTR	C	30.1	D	45.6	F	84.5	E	66.8
	WBL	B	17.5	C	25.3	E	63.7	D	43.7
	WBTR	D	47.4	D	41.3	D	53.3	D	50.6
Traffic Signal - Black Rock Turnpike at Turnpike Shopping Center & Fairway Plaza Driveways									
Overall		**A**	**4.3**	**B**	**10.2**	**B**	**18.1**	**B**	**15.4**
Black Rock Turnpike	SB	A	3.3	A	8.1	B	15.4	B	14.6
	NB	A	2.2	A	5.4	C	21.6	B	12.1
Turnpike Shopping Center Driveway	EBLT	D	35.4	D	38.2	C	27.5	D	35.3
	EBR	A	0.4	A	1.8	A	3.9	A	7.1
Fairway Plaza Driveway	WBL	C	29.8	C	27.2	C	21.1	C	29.5
	WBTR	A	0.2	A	0.3	A	0.2	A	0.3
Traffic Signal - Black Rock Turnpike at Katona Drive & Katona Drive Extension									
Overall		**A**	**5.6**	**A**	**8.0**	**A**	**6.4**	**A**	**8.8**
Black Rock Turnpike	SB	A	3.3	A	4.0	A	2.4	A	4.4
	NB	A	4.3	A	6.9	A	5.7	A	7.8
Katona Drive	EBLT	D	40.6	D	48.8	D	46.5	E	57.0
	EBR	A	0.8	A	3.5	A	5.0	A	3.5
Katona Drive Extension	WBL	C	25.0	C	26.7	C	24.0	C	30.0
	WBTR	C	23.0	C	20.4	B	14.9	B	17.0
Traffic Signal - Black Rock Turnpike at Burroughs Road									
Overall		**B**	**14.5**	**B**	**11.0**	**B**	**10.8**	**B**	**11.1**
Black Rock Turnpike	SB	A	6.7	A	4.8	A	5.6	A	3.5
	NB	B	10.9	A	7.4	A	6.2	A	7.7
Burroughs Road	EB	B	18.9	C	24.7	C	26.3	C	29.5
	WB	D	36.6	D	40.0	D	42.4	D	48.2
Traffic Signal - Black Rock Turnpike at Tunxis Hill Cutoff, Moritz Place & Whitewood Drive									
Overall		**B**	**12.0**	**B**	**11.4**	**B**	**13.9**	**B**	**15.8**
Black Rock Turnpike	SBLT	A	7.9	A	6.7	B	10.6	A	9.6
	SBR	A	2.7	A	1.7	A	2.8	A	4.4
Tunxis Hill Cutoff	NB	B	12.1	A	10.0	B	11.0	B	13.9
Black Rock Turnpike	NWB	C	22.5	C	26.7	C	29.8	C	33.6
Moritz Place	NEB	C	30.5	D	36.6	D	35.2	D	42.9
Whitewood Drive	SWB	C	33.8	D	37.3	C	34.0	D	45.5

TABLE 5 (CONTINUED)

2040 Background-Optimized Conditions - Intersection Operation Summary - Vehicular Levels of Service / Average Delay (sec/veh)

		Weekday Morning Peak Hour		Weekday Midday Peak Hour		Weekday Afternoon Peak Hour		Saturday Midday Peak Hour	
	Lane Use	LOS	Avg. Delay (s/veh)	LOS	Avg. Delay (s/veh)	LOS	Avg. Delay (s/veh)	LOS	Avg. Delay (s/veh)
Unsignalized TWSC - Tunxis Hill Cutoff at Tunxis Hill Road									
Tunxis Hill Road	EBL	A	0.0	C	22.3	A	0.0	D	26.9
	EBR	A	9.7	B	10.4	B	11.4	B	10.6
Tunxis Hill Cutoff	NBL	A	8.2	A	8.7	A	9.2	A	8.8
Unsignalized TWSC - Black Rock Turnpike at Judd Street									
Black Rock Turnpike	NBL	A	8.6	A	8.9	A	9.0	A	9.2
Judd Street	EB	B	14.4	C	16.0	C	20.6	C	19.1

TABLE 6

2040 Background-Optimized Conditions - Intersection Operation Summary - Vehicular 50th / 95th Percentile Queue (In Feet)

			Weekday Morning Peak Hour		Weekday Midday Peak Hour		Weekday Afternoon Peak Hour		Saturday Midday Peak Hour	
	Lane Use	Available Storage	Avg. Queues	Design Queues	Avg. Queues	Design Queues	Avg. Queues	Design Queues	Avg. Queues	Design Queues
Traffic Signal - Black Rock Turnpike at Old Black Rock Turnpike & Tahmore Drive										
Old Black Rock Turnpike	EB	1000	5	16	0	0	0	4	4	18
Tahmore Drive	WB	615	155	281	28	65	33	101	89	150
Black Rock Turnpike	NB	1000	47	79	14	155	85	82	122	107
	SB	1000	254	483	133	291	691	882	352	573
Traffic Signal - Black Rock Turnpike at Samp Mortar Drive										
Samp Mortar Drive	EBL	1000	26	54	47	80	83	137	78	120
	EBR	1000	0	38	0	43	26	104	11	56
Black Rock Turnpike	NBL	100	10	99	13	28	15	64	13	28
	NBT	750	132	431	85	130	149	305	122	155
	SB	1000	115	188	106	96	136	183	166	157
Traffic Signal - Black Rock Turnpike at Brookside Drive										
Brookside Drive	EB	900	32	62	46	89	100	147	79	124
Black Rock Turnpike	NB	170	84	80	71	74	38	88	65	100
	SB	750	7	5	33	78	68	137	30	88
Traffic Signal - Black Rock Turnpike at Fairfield Woods Road & Commercial Driveway										
Commercial Driveway	EBLT	35	2	8	10	24	26	54	32	64
	EBR	35	0	0	0	0	0	0	0	0
Fairfield Woods Road	WBLT	1000	17	41	38	64	47	96	75	111
	WBR	1000	146	272	88	123	63	125	89	127
Black Rock Turnpike	NB	1000	121	167	73	133	57	82	90	154
	SB	170	17	20	40	153	65	213	28	125
Traffic Signal - Black Rock Turnpike at Stillson Road										
Black Rock Turnpike	SBL	200	40	102	58	114	68	143	69	155
	SBTR	1000	201	261	270	346	361	492	332	450
	NBL	175	146	245	91	188	112	244	113	238
	NBTR	680	301	357	229	298	247	316	294	371
Stillson Road	EBL	210	75	106	94	159	120	191	119	193
	EBTR	1000	151	201	211	358	381	581	272	462
	WBL	170	50	76	78	136	99	227	127	242
	WBTR	1000	322	393	159	256	244	360	255	367
Traffic Signal - Black Rock Turnpike at Turnpike Shopping Center & Fairway Plaza Driveways										
Black Rock Turnpike	SB	680	33	53	92	143	140	190	143	202
	NB	405	18	21	33	41	93	159	42	119
Turnpike Shopping Center Driveway	EBLT	25	29	54	83	143	86	142	104	174
	EBR	25	0	0	0	8	0	24	7	49
Fairway Plaza Driveway	WBLT	25	13	36	31	63	21	47	55	90
	WBR	25	0	0	0	0	0	0	0	0
Traffic Signal - Black Rock Turnpike at Katona Drive & Katona Drive Extension										
Black Rock Turnpike	SB	405	34	51	64	90	30	53	91	120
	NB	300	34	31	48	32	36	33	131	39
Katona Drive	EBLT	1000	35	73	54	91	59	94	70	120
	EBR	250	0	0	0	8	0	15	0	11
Katona Drive Extension	WBL	135	1	7	2	9	0	4	2	8
	WBTR	135	1	8	6	21	2	14	1	14
Traffic Signal - Black Rock Turnpike at Burroughs Road										
Black Rock Turnpike	SB	275	37	45	25	36	48	72	89	133
	NB	835	104	235	50	161	53	155	68	224
Burroughs Road	EB	1000	39	62	40	63	58	100	49	85
	WB	1000	137	180	114	156	102	167	131	201
Traffic Signal - Black Rock Turnpike at Tunxis Hill Cutoff, Moritz Place & Whitewood Drive										
Black Rock Turnpike	SBLT	835	31	134	43	148	95	279	95	266
	SBR	835	0	125	0	70	0	76	17	318
Tunxis Hill Cutoff	NB	1000	67	165	38	106	45	108	104	171
Black Rock Turnpike	NWB	1000	58	77	67	108	92	139	108	154
Moritz Place	NEB	935	1	8	5	18	6	21	9	26
Whitewood Drive	SWB	785	10	33	7	21	3	14	13	32

TABLE 6 (CONTINUED)

2040 Background-Optimized Conditions - Intersection Operation Summary - Vehicular 95th Percentile Queue (In Feet)

	Lane Use	Available Storage	Weekday Morning Peak Hour Design Queues	Weekday Midday Peak Hour Design Queues	Weekday Afternoon Design Queues	Saturday Midday Peak Hour Design Queues
Unsignalized TWSC - Tunxis Hill Cutoff at Tunxis Hill Road						
Tunxis Hill Road	EBL	1000	0	0	0	3
	EBR	1000	8	8	13	8
Tunxis Hill Cutoff	NBL	200	5	3	5	3
Unsignalized TWSC - Black Rock Turnpike at Judd Street						
Black Rock Turnpike	NBL	25	5	5	5	5
Judd Street	EB	1000	23	23	48	35

TABLE 7

2040 Concept A Conditions - Intersection Operation Summary - Vehicular Levels of Service / Average Delay (sec/veh)

	Lane Use	Weekday Morning Peak Hour LOS	Weekday Morning Peak Hour Avg. Delay (s/veh)	Weekday Midday Peak Hour LOS	Weekday Midday Peak Hour Avg. Delay (s/veh)	Weekday Afternoon Peak Hour LOS	Weekday Afternoon Peak Hour Avg. Delay (s/veh)	Saturday Midday Peak Hour LOS	Saturday Midday Peak Hour Avg. Delay (s/veh)
Traffic Signal - Black Rock Turnpike at Old Black Rock Turnpike & Tahmore Drive									
Overall		**C**	**27.7**	**A**	**7.0**	**C**	**34.3**	**B**	**15.9**
Old Black Rock Turnpike	EB	C	22.2	A	4.0	A	9.2	C	26.6
Tahmore Drive	WB	D	54.6	D	41.9	D	52.0	D	43.3
Black Rock Turnpike	NB	B	15.4	A	2.7	A	8.7	A	9.0
	SB	C	24.6	A	6.3	D	52.9	B	16.1
Traffic Signal - Black Rock Turnpike at Samp Mortar Drive									
Overall		**B**	**12.1**	**A**	**9.4**	**C**	**25.8**	**B**	**15.1**
Samp Mortar Drive	EBL	E	62.9	E	55.1	D	40.7	D	39.7
	EBR	B	17.1	B	13.7	C	25.7	A	9.6
Black Rock Turnpike	NBL	B	15.3	A	5.6	C	30.4	B	15.3
	NBT	A	3.5	A	2.6	B	10.0	A	7.5
	SBT	B	15.8	B	10.7	D	38.7	C	20.5
	SBR	A	8.3	A	5.3	A	6.1	A	4.5
Traffic Signal - Black Rock Turnpike at Brookside Drive & Shell Driveway									
Overall		**A**	**4.2**	**A**	**4.2**	**A**	**7.3**	**A**	**4.7**
Brookside Drive	EBL	E	58.8	D	52.0	E	59.4	D	37.9
	EBLTR	D	41.8	B	19.8	C	22.1	A	1.8
Shell Driveway	WB	A	5.9	A	1.6	A	2.7	B	16.4
Black Rock Turnpike	NB	A	2.5	A	2.2	A	2.3	A	2.0
	SB	A	1.5	A	1.5	A	3.9	A	3.9
Traffic Signal - Black Rock Turnpike at Fairfield Woods Road									
Overall		**C**	**22.7**	**B**	**18.1**	**B**	**14.9**	**B**	**12.8**
Fairfield Woods Road	WBL	C	28.6	D	39.5	D	49.5	D	36.8
	WBR	E	57.9	E	58.9	E	62.9	D	46.7
Black Rock Turnpike	NB	C	20.4	A	9.8	B	13.6	B	12.0
	SBL	A	6.1	A	2.3	B	11.2	A	2.0
	SBT	A	5.5	A	1.2	A	6.7	A	5.6
Traffic Signal - Black Rock Turnpike at Stillson Road									
Overall		**D**	**36.7**	**C**	**29.6**	**D**	**42.9**	**D**	**40.7**
Black Rock Turnpike	SBL	D	52.1	D	53.5	E	64.2	E	73.1
	SBTR	D	40.5	C	27.9	D	41.4	D	41.2
	NBL	D	54.1	D	52.3	E	71.2	E	72.6
	NBTR	C	33.3	C	22.9	C	30.0	C	32.5
Stillson Road	EBL	C	33.5	C	26.5	D	44.1	D	39.5
	EBT	C	30.2	D	42.1	E	58.6	D	49.0
	EBR	A	0.5	A	6.5	B	18.5	B	15.6
	WBL	B	17.3	C	25.2	D	36.6	C	32.5
	WBT	D	46.6	D	45.4	E	64.1	D	54.2
	WBR	C	25.5	C	32.5	D	38.9	D	36.9
Traffic Signal - Black Rock Turnpike at Burroughs Road									
Overall		**B**	**20.0**	**A**	**9.6**	**A**	**9.8**	**A**	**9.9**
Black Rock Turnpike	SBL	A	9.6	A	7.2	A	8.3	A	9.2
	SBTR	A	5.0	A	6.5	A	6.1	A	5.3
	NBT	C	23.6	B	10.4	B	10.8	B	11.7
	NBR	A	1.4	A	1.5	A	1.2	A	1.2
Burroughs Road	EB	C	28.2	B	17.2	C	22.3	C	22.4
	WBL	D	49.3	C	25.7	C	26.5	C	26.2
	WBTR	C	22.7	B	11.8	B	13.3	B	13.7

TABLE 7 (CONTINUED)

2040 Concept A Conditions - Intersection Operation Summary - Vehicular Levels of Service / Average Delay (sec/veh)

	Lane Use	Weekday Morning Peak Hour LOS	Weekday Morning Peak Hour Avg. Delay (s/veh)	Weekday Midday Peak Hour LOS	Weekday Midday Peak Hour Avg. Delay (s/veh)	Weekday Afternoon Peak Hour LOS	Weekday Afternoon Peak Hour Avg. Delay (s/veh)	Saturday Midday Peak Hour LOS	Saturday Midday Peak Hour Avg. Delay (s/veh)
Unsignalized TWSC - Tunxis Hill Cutoff at Tunxis Hill Road									
Overall		--	--	--	--	--	--	--	--
Tunxis Hill Road	EBL	A	0.0	C	22.3	A	0.0	D	26.9
	EBR	A	9.7	B	10.4	B	11.4	B	10.6
Tunxis Hill Cutoff	NBL	A	8.2	A	8.7	A	9.2	A	8.8
Unsignalized TWSC - Black Rock Turnpike at Judd Street									
Overall		--	--	--	--	--	--	--	--
Black Rock Turnpike	NBL	A	8.6	A	9.0	A	9.0	A	9.2
Judd Street	EB	C	15.4	C	17.6	C	24.9	C	21.9
Unsignalized TWSC - Black Rock Turnpike at Moritz Place									
Overall		--	--	--	--	--	--	--	--
Moritz Place	EBR	B	14.2	C	16.4	C	20.5	C	19.0
Unsignalized TWSC - Black Rock Turnpike at Turnpike Shopping Center & Fairway Plaza Driveways									
Overall		--	--	--	--	--	--	--	--
Turnpike Shopping Dwy	EBR	B	11.1	C	16.2	D	26.6	C	23.4
Black Rock Turnpike	SBL	B	11.2	B	10.5	B	11.3	B	12.1
	NBL	A	8.9	A	10.0	B	11.1	B	10.7
Fairway Plaza Driveway	WBR	C	19.9	C	16.7	C	19.7	C	22.1
Roundabout - Black Rock Turnpike at Old Navy & Trader Joe's Plaza Driveways									
Overall		**A**	**6.2**	**A**	**8.6**	**B**	**11.6**	**B**	**13.8**
Old Navy Plaza Driveway	EB	A	5.9	B	11.9	C	18.3	D	25.7
Black Rock Turnpike	SBLT	A	6.6	B	10.1	B	14.6	C	16.4
	SBR	A	2.8	A	3.3	A	3.4	A	3.7
	NBLT	A	5.7	A	6.5	A	7.4	A	8.4
	NBTR	A	6.2	A	7.1	A	8.1	A	9.4
Trader Joe's Plaza Dwy	WB	A	6.7	A	8.5	A	10.0	B	12.1
Roundabout - Black Rock Turnpike at Katona Drive & Katona Drive Extension									
Overall		**E**	**39.8**	**C**	**15.6**	**D**	**25.1**	**F**	**57.5**
Katona Drive	EB	A	6.5	B	11.6	C	19.2	C	19.5
Black Rock Turnpike	SBLT	A	5.3	A	7.7	A	9.4	B	10.3
	SBTR	A	5.6	A	8.6	B	11.0	B	12.2
	NB	F	64.6	D	27.6	F	52.2	F	134.3
Katona Drive Extension	WB	B	13.8	B	13.8	B	14.8	D	27.0
Roundabout - Black Rock Turnpike at Tunxis Hill Cutoff & Whitewood Drive									
Overall		**B**	**12.5**	**B**	**12.2**	**C**	**21.2**	**C**	**17.4**
Black Rock Turnpike	EBLR	A	7.9	B	11.2	C	21.6	B	14.4
	SBTR	A	8.7	B	13.3	C	24.2	C	19.1
Tunxis Hill Cutoff	NBLT	C	19.2	B	11.2	B	12.7	C	17.5
Whitewood Drive	WB	A	9.1	A	7.0	A	7.3	A	8.5

TABLE 8

2040 Concept A Conditions - Intersection Operation Summary - Vehicular 50th / 95th Percentile Queue (In Feet)

			Weekday Morning Peak Hour		Weekday Midday Peak Hour		Weekday Afternoon Peak Hour		Saturday Midday Peak Hour	
	Lane Use	Available Storage	Avg. Queues	Design Queues	Avg. Queues	Design Queues	Avg. Queues	Design Queues	Avg. Queues	Design Queues
Traffic Signal - Black Rock Turnpike at Old Black Rock Turnpike & Tahmore Drive										
Old Black Rock Turnpike	EB	1000	8	21	0	2	0	8	4	16
Tahmore Drive	WB	615	299	347	46	89	61	123	74	132
Black Rock Turnpike	NB	1000	419	389	44	20	215	715	221	544
	SB	1000	414	778	152	308	988	1196	324	683
Traffic Signal - Black Rock Turnpike at Samp Mortar Drive										
Samp Mortar Drive	EBL	1000	49	87	64	102	123	187	68	107
	EBR	1000	0	50	0	48	111	218	0	42
Black Rock Turnpike	NBL	50	81	238	16	45	56	110	24	95
	NBT	750	34	180	42	63	96	305	50	205
	SBT	1000	189	421	147	214	691	742	298	671
	SBR	50	39	76	7	18	17	19	4	10
Traffic Signal - Black Rock Turnpike at Brookside Drive & Shell Driveway										
Brookside Drive	EBL	50	38	71	48	89	98	140	46	82
	EBLTR	900	22	53	6	44	25	64	0	0
Shell Driveway	WB	25	0	0	0	0	0	0	3	32
Black Rock Turnpike	NB	180	60	53	72	58	52	2	46	37
	SB	300	11	40	15	51	57	207	63	47
Traffic Signal - Black Rock Turnpike at Fairfield Woods Road										
Fairfield Woods Road	WBL	1000	32	57	51	79	70	103	64	100
	WBR	1000	275	354	120	158	95	133	78	119
Black Rock Turnpike	NB	365	232	334	128	198	143	313	138	232
	SBL	180	8	22	2	9	16	120	4	3
	SBT	180	52	104	1	6	47	777	24	57
Traffic Signal - Black Rock Turnpike at Stillson Road										
Black Rock Turnpike	SBL	200	31	68	44	104	67	122	68	146
	SBTR	500	159	214	187	256	345	434	323	408
	NBL	200	116	202	67	146	108	209	111	216
	NBTR	1000	247	303	156	213	233	300	280	355
Stillson Road	EBL	400	67	98	80	136	133	222	127	215
	EBT	1000	98	142	102	180	215	346	153	238
	EBR	75	0	0	0	38	44	112	29	91
	WBL	170	45	73	71	122	114	170	144	212
	WBT	1000	236	308	100	187	217	341	211	304
	WBR	75	25	49	26	59	31	64	40	78
Traffic Signal - Black Rock Turnpike at Burroughs Road										
Black Rock Turnpike	SBL	65	5	16	8	24	11	34	11	37
	SBTR	275	43	53	61	94	76	113	68	101
	NBT	925	282	609	113	223	155	283	180	336
	NBR	130	0	11	0	14	0	16	0	12
Burroughs Road	EB	1000	47	82	18	53	36	95	27	70
	WBL	125	77	148	29	86	36	99	38	93
	WBTR	1000	50	91	11	47	13	55	15	58

TABLE 8 (CONTINUED)

2040 Concept A Conditions - Intersection Operation Summary - Vehicular 95th Percentile Queue (In Feet)

	Lane Use	Available Storage	Weekday Morning Peak Hour Design Queues	Weekday Midday Peak Hour Design Queues	Weekday Afternoon Design Queues	Saturday Midday Peak Hour Design Queues
Unsignalized TWSC - Tunxis Hill Cutoff at Tunxis Hill Road						
Tunxis Hill Road	EBL	1000	0	0	0	3
	EBR	1000	8	8	13	8
Tunxis Hill Cutoff	NBL	200	5	3	5	3
Unsignalized TWSC - Black Rock Turnpike at Judd Street						
Black Rock Turnpike	NBL	25	5	5	5	5
Judd Street	EB	1000	23	25	60	40
Unsignalized TWSC - Black Rock Turnpike at Moritz Place						
Moritz Place	EBR	935	0	3	5	5
Unsignalized TWSC - Black Rock Turnpike at Turnpike Shopping Center & Fairway Plaza Driveways						
Turnpike Shopping Dwy	EBR	90	13	60	135	120
Black Rock Turnpike	SBL	65	5	10	10	15
	NBL	100	3	8	13	13
Fairway Plaza Driveway	WBR	30	3	10	10	18
Roundabout - Black Rock Turnpike at Old Navy & Trader Joe's Plaza Driveways						
Old Navy Plaza Driveway	EB	65	8	45	78	125
Black Rock Turnpike	SBLT	365	53	108	188	213
	SBR	50	3	5	5	8
	NBLT	500	35	40	48	58
	NBTR	500	43	48	58	73
Trader Joe's Plaza Dwy	WB	125	8	28	38	53
Roundabout - Black Rock Turnpike at Katona Drive & Katona Drive Extension						
Katona Drive	EB	1000	15	33	63	65
Black Rock Turnpike	SBLT	1000	25	60	90	98
	SBTR	1000	30	75	118	130
	NB	265	640	278	453	878
Katona Drive Extension	WB	135	13	30	28	73
Roundabout - Black Rock Turnpike at Tunxis Hill Cutoff & Whitewood Drive						
Black Rock Turnpike	EBLR	1000	48	78	173	115
	SBTR	925	80	165	348	260
Tunxis Hill Cutoff	NBLT	1000	180	73	85	143
Whitewood Drive	WB	785	5	3	0	3

TABLE 9

2040 Concept B Conditions - Intersection Operation Summary - Vehicular Levels of Service / Average Delay (sec/veh)

	Lane Use	Weekday Morning Peak Hour LOS	Weekday Morning Peak Hour Avg. Delay (s/veh)	Weekday Midday Peak Hour LOS	Weekday Midday Peak Hour Avg. Delay (s/veh)	Weekday Afternoon Peak Hour LOS	Weekday Afternoon Peak Hour Avg. Delay (s/veh)	Saturday Midday Peak Hour LOS	Saturday Midday Peak Hour Avg. Delay (s/veh)
Traffic Signal - Black Rock Turnpike at Old Black Rock Turnpike & Tahmore Drive									
Overall		**C**	**25.1**	**A**	**6.9**	**C**	**33.5**	**B**	**16.9**
Old Black Rock Turnpike	EB	C	20.4	A	4.0	A	9.2	C	32.3
Tahmore Drive	WB	D	53.5	D	41.9	D	52.0	D	53.6
Black Rock Turnpike	NB	B	12.2	A	2.7	A	6.7	A	8.7
	SB	C	21.6	A	6.3	D	52.9	B	15.9
Traffic Signal - Black Rock Turnpike at Samp Mortar Drive									
Overall		**B**	**13.9**	**A**	**9.5**	**C**	**25.2**	**B**	**14.8**
Samp Mortar Drive	EBL	D	50.0	D	54.1	D	40.7	D	52.1
	EBR	B	14.8	B	13.5	C	25.7	B	19.4
Black Rock Turnpike	NBL	B	11.9	A	6.3	D	37.6	B	12.0
	NBT	A	1.8	A	3.0	A	7.0	A	3.9
	SBT	C	26.1	B	10.5	D	38.7	B	18.5
	SBR	B	13.7	A	5.2	A	6.1	A	8.6
Traffic Signal - Black Rock Turnpike at Brookside Drive & Shell Driveway									
Overall		**A**	**4.8**	**A**	**4.7**	**A**	**9.6**	**A**	**6.8**
Brookside Drive	EBL	D	46.9	D	52.0	E	59.4	D	53.6
	EBLTR	C	33.6	B	19.9	C	22.1	A	5.6
Shell Driveway	WB	A	3.1	A	1.6	A	2.7	C	21.7
Black Rock Turnpike	NB	A	5.1	A	3.3	A	5.3	A	5.5
	SB	A	0.8	A	1.5	A	6.3	A	3.5
Traffic Signal - Black Rock Turnpike at Fairfield Woods Road & Commercial Driveway									
Overall		**C**	**20.9**	**B**	**14.6**	**B**	**14.2**	**B**	**14.7**
Commercial Driveway	EBLT	C	21.2	C	33.0	D	46.0	D	44.4
	EBR	A	0.0	A	0.6	A	3.8	A	2.4
Fairfield Woods Road	WBLT	C	24.0	E	60.9	E	59.5	E	61.7
	WBR	D	50.1	D	37.4	E	65.7	E	62.6
Black Rock Turnpike	NBL	B	17.5	B	11.5	B	10.7	A	9.6
	NBTR	C	20.1	B	11.4	B	10.2	A	9.9
	SBL	A	5.4	A	5.3	B	10.7	A	3.3
	SBTR	A	5.6	A	5.8	A	5.7	A	4.8
Traffic Signal - Black Rock Turnpike at Stillson Road									
Overall		**D**	**36.7**	**C**	**29.4**	**D**	**41.7**	**D**	**40.6**
Black Rock Turnpike	SBL	D	52.1	D	53.5	E	64.2	E	73.1
	SBTR	D	40.5	C	27.9	D	41.4	D	41.2
	NBL	D	54.1	D	52.3	E	71.2	E	72.6
	NBTR	C	33.3	C	22.9	C	30.0	C	32.5
Stillson Road	EBL	C	33.4	C	26.5	D	48.1	D	39.5
	EBT	C	30.2	D	39.7	D	54.9	D	49.0
	EBR	A	0.5	A	6.3	B	17.9	B	15.6
	WBL	B	17.2	C	25.0	D	35.2	C	31.0
	WBT	D	46.6	D	45.4	D	52.3	D	54.2
	WBR	C	25.5	C	32.5	D	36.2	D	36.9
Traffic Signal - Black Rock Turnpike at Turnpike Shopping Center & Fairway Plaza Driveways									
Overall		**A**	**5.0**	**B**	**11.2**	**B**	**13.5**	**B**	**15.9**
Black Rock Turnpike	SB	A	2.9	A	8.9	B	12.0	B	14.6
	NB	A	2.5	A	9.1	A	9.6	B	13.5
Turnpike Shopping Center Driveway	EBLT	D	48.3	C	32.3	D	38.7	D	35.3
	EBR	A	0.6	A	1.2	A	6.8	A	7.1
Fairway Plaza Driveway	WBLT	D	40.0	C	24.2	C	27.5	C	29.5
	WBR	A	0.3	A	0.3	A	0.3	A	0.3
Traffic Signal - Black Rock Turnpike at Katona Drive & Katona Drive Extension									
Overall		**B**	**10.9**	**A**	**8.1**	**B**	**12.4**	**B**	**13.0**
Black Rock Turnpike	SB	A	2.7	A	3.1	A	4.9	A	4.5
	NBL	A	1.5	A	4.2	B	10.1	A	8.8
	NBTR	B	12.6	A	7.2	B	16.4	B	18.1
Katona Drive	EBL	D	53.7	D	49.8	D	55.0	D	54.9
	EBTR	B	17.1	B	14.5	B	14.0	B	16.0
Katona Drive Extension	WBL	C	34.7	C	28.6	C	31.3	C	32.1
	WBTR	C	27.6	B	19.7	B	16.4	B	15.1
Traffic Signal - Black Rock Turnpike at Burroughs Road									
Overall		**C**	**29.4**	**B**	**12.4**	**B**	**14.3**	**B**	**14.3**
Black Rock Turnpike	SB	A	7.7	A	5.3	A	4.9	A	4.0
	NBLT	D	36.0	B	11.3	B	14.0	B	14.3
	NBR	A	4.0	A	1.6	A	2.1	A	1.6
Burroughs Road	EB	C	25.9	C	24.4	C	31.6	C	31.2
	WB	D	54.2	D	41.6	D	53.8	D	54.9

TABLE 9 (CONTINUED)

2040 Concept B Conditions - Intersection Operation Summary - Vehicular Levels of Service / Average Delay (sec/veh)

	Lane Use	Weekday Morning Peak Hour LOS	Weekday Morning Peak Hour Avg. Delay (s/veh)	Weekday Midday Peak Hour LOS	Weekday Midday Peak Hour Avg. Delay (s/veh)	Weekday Afternoon Peak Hour LOS	Weekday Afternoon Peak Hour Avg. Delay (s/veh)	Saturday Midday Peak Hour LOS	Saturday Midday Peak Hour Avg. Delay (s/veh)
Unsignalized TWSC - Tunxis Hill Cutoff at Tunxis Hill Road									
Overall		--	--	--	--	--	--	--	--
Tunxis Hill Road	EBL	A	0.0	C	22.3	A	0.0	D	26.9
	EBR	A	9.7	B	10.4	B	11.4	B	10.6
Tunxis Hill Cutoff	NBL	A	8.2	A	8.7	A	9.2	A	8.8
Unsignalized TWSC - Black Rock Turnpike at Judd Street									
Overall		--	--	--	--	--	--	--	--
Black Rock Turnpike	NBL	A	8.6	A	9.0	A	9.0	A	9.2
Judd Street	EB	C	15.4	C	17.6	C	24.9	C	21.9
Unsignalized TWSC - Black Rock Turnpike at Moritz Place									
Overall		--	--	--	--	--	--	--	--
Moritz Place	EBR	B	14.2	C	16.4	C	20.5	C	19.0
Roundabout - Black Rock Turnpike at Old Navy & Trader Joe's Plaza Driveways									
Overall		**A**	**6.1**	**A**	**8.3**	**B**	**10.5**	**B**	**12.2**
Old Navy Plaza Driveway	EB	A	5.8	B	11.6	C	16.7	C	22.3
Black Rock Turnpike	SBLT	A	6.6	A	9.8	B	13.1	B	14.2
	SBR	A	2.8	A	3.3	A	3.4	A	3.7
	NBLT	A	5.7	A	6.4	A	6.9	A	7.8
	NBTR	A	6.2	A	6.9	A	7.6	A	8.6
Trader Joe's Plaza Dwy	WB	A	6.6	A	8.3	A	9.4	B	11.2
Roundabout - Black Rock Turnpike at Tunxis Hill Cutoff & Whitewood Drive									
Overall		**B**	**12.5**	**B**	**12.2**	**C**	**21.2**	**C**	**17.4**
Black Rock Turnpike	EBLR	A	7.9	B	11.2	C	21.6	B	14.4
	SBTR	A	8.7	B	13.3	C	24.2	C	19.1
Tunxis Hill Cutoff	NBLT	C	19.2	B	11.2	B	12.7	C	17.5
Whitewood Drive	WB	A	9.1	A	7.0	A	7.3	A	8.5

TABLE 10

2040 Concept B Conditions - Intersection Operation Summary - Vehicular 50th / 95th Percentile Queue (In Feet)

			Weekday Morning Peak Hour		Weekday Midday Peak Hour		Weekday Afternoon Peak Hour		Saturday Midday Peak Hour	
	Lane Use	Available Storage	Avg. Queues	Design Queues	Avg. Queues	Design Queues	Avg. Queues	Design Queues	Avg. Queues	Design Queues
Traffic Signal - Black Rock Turnpike at Old Black Rock Turnpike & Tahmore Drive										
Old Black Rock Turnpike	EB	1000	7	20	0	2	0	8	5	19
Tahmore Drive	WB	615	239	323	46	89	61	123	113	164
Black Rock Turnpike	NB	1000	232	238	49	17	374	356	217	401
	SB	1000	357	560	152	308	988	1196	383	696
Traffic Signal - Black Rock Turnpike at Samp Mortar Drive										
Samp Mortar Drive	EBL	1000	40	74	63	102	123	187	93	137
	EBR	1000	0	46	0	48	111	218	34	87
Black Rock Turnpike	NBL	50	84	86	18	55	63	124	15	84
	NBT	750	2	34	48	71	115	122	56	104
	SBT	1000	212	561	149	208	691	742	238	789
	SBR	50	34	98	7	17	17	19	6	28
Traffic Signal - Black Rock Turnpike at Brookside Drive & Shell Driveway										
Brookside Drive	EBL	50	31	61	48	89	98	140	64	105
	EBLTR	900	17	47	6	44	25	64	0	10
Shell Driveway	WB	25	0	0	0	0	0	0	4	37
Black Rock Turnpike	NB	180	111	130	55	39	107	76	117	97
	SB	300	11	8	15	51	186	112	68	67
Traffic Signal - Black Rock Turnpike at Fairfield Woods Road & Commercial Driveway										
Commercial Driveway	EBLT	35	3	10	13	29	34	70	38	74
	EBR	35	0	0	0	0	0	11	0	6
Fairfield Woods Road	WBLT	1000	26	50	123	160	69	122	89	130
	WBR	1000	224	302	47	73	95	137	106	149
Black Rock Turnpike	NBL	200	3	14	9	29	13	37	9	27
	NBTR	365	208	313	133	217	133	210	142	220
	SBL	180	7	16	6	35	7	108	1	22
	SBTR	180	44	110	45	194	40	153	12	119
Traffic Signal - Black Rock Turnpike at Stillson Road										
Black Rock Turnpike	SBL	200	31	68	44	104	67	122	68	146
	SBTR	500	159	214	187	256	345	434	323	408
	NBL	200	116	202	67	146	108	209	111	216
	NBTR	680	247	303	156	213	233	300	280	355
Stillson Road	EBL	400	67	98	80	136	133	202	127	215
	EBT	1000	98	142	101	173	213	334	153	238
	EBR	75	0	0	0	37	44	111	29	91
	WBL	170	44	71	67	117	107	161	135	200
	WBT	1000	236	308	100	187	209	297	211	304
	WBR	75	25	49	26	59	30	62	40	78
Traffic Signal - Black Rock Turnpike at Turnpike Shopping Center & Fairway Plaza Driveways										
Black Rock Turnpike	SB	680	36	56	92	138	146	207	143	202
	NB	405	30	36	48	108	48	148	67	111
Turnpike Shopping Center Driveway	EBLT	25	38	68	76	135	112	167	104	174
	EBR	25	0	0	0	5	3	37	7	49
Fairway Plaza Driveway	WBLT	25	18	44	28	59	28	55	55	90
	WBR	25	0	0	0	0	0	0	0	0
Traffic Signal - Black Rock Turnpike at Katona Drive & Katona Drive Extension										
Black Rock Turnpike	SB	405	36	46	44	61	86	137	75	121
	NBL	175	3	3	5	7	8	17	9	17
	NBTR	300	56	58	68	88	135	233	157	678
Katona Drive	EBL	75	46	89	50	91	71	109	68	118
	EBTR	1000	3	31	5	35	8	40	8	43
Katona Drive Extension	WBL	135	2	10	4	14	4	14	5	18
	WBTR	135	2	11	5	23	2	18	1	18
Traffic Signal - Black Rock Turnpike at Burroughs Road										
Black Rock Turnpike	SB	275	46	56	47	64	108	154	95	20
	NBLT	925	518	847	170	310	250	475	298	489
	NBR	130	6	24	0	18	4	29	2	18
Burroughs Road	EB	1000	53	83	37	64	72	116	49	91
	WB	1000	188	247	106	158	129	199	131	235

TABLE 10 (CONTINUED)

2040 Concept B Conditions - Intersection Operation Summary - Vehicular 95th Percentile Queue (In Feet)

	Lane Use	Available Storage	Weekday Morning Peak Hour Design Queues	Weekday Midday Peak Hour Design Queues	Weekday Afternoon Design Queues	Saturday Midday Peak Hour Design Queues
Unsignalized TWSC - Tunxis Hill Cutoff at Tunxis Hill Road						
Tunxis Hill Road	EBL	1000	0	0	0	3
	EBR	1000	8	8	13	8
Tunxis Hill Cutoff	NBL	200	5	3	5	3
Unsignalized TWSC - Black Rock Turnpike at Judd Street						
Black Rock Turnpike	NBL	25	5	5	5	5
Judd Street	EB	1000	23	25	60	40
Unsignalized TWSC - Black Rock Turnpike at Moritz Place						
Moritz Place	EBR	935	0	3	5	5
Roundabout - Black Rock Turnpike at Old Navy & Trader Joe's Plaza Driveways						
Old Navy Plaza Driveway	EB	65	8	45	78	125
Black Rock Turnpike	SBLT	365	53	108	188	213
	SBR	50	3	5	5	8
	NBLT	500	35	40	48	58
	NBTR	500	43	48	58	73
Trader Joe's Plaza Dwy	WB	125	8	28	38	53
Roundabout - Black Rock Turnpike at Tunxis Hill Cutoff & Whitewood Drive						
Black Rock Turnpike	EBLR	1000	48	78	173	115
	SBTR	925	80	165	348	260
Tunxis Hill Cutoff	NBLT	1000	180	73	85	143
Whitewood Drive	WB	785	5	3	0	3

APPENDIX A

Overall Traffic Operations Summary Tables

Tighe&Bond

TABLE 1
Intersection Operation Summary - Vehicular Levels of Service / Average Delay (sec/veh)

		Weekday Morning Peak Hour					Weekday Midday Peak Hour					Weekday Afternoon Peak Hour					Saturday Midday Peak Hour				
	Lane Use*	2017 Existing	2040 Background	2040 Optimized	2040 Concept A	2040 Concept B	2017 Existing	2040 Background	2040 Optimized	2040 Concept A	2040 Concept B	2017 Existing	2040 Background	2040 Optimized	2040 Concept A	2040 Concept B	2017 Existing	2040 Background	2040 Optimized	2040 Concept A	2040 Concept B
Traffic Signal - Black Rock Turnpike at Old Black Rock Turnpike & Tahmore Drive																					
Overall		**C / 22.2**	**C / 26.6**	**C / 21.2**	**C / 27.7**	**C / 25.1**	**A / 8.1**	**A / 8.7**	**A / 6.1**	**A / 7.0**	**A / 6.9**	**C / 29.3**	**D / 43.6**	**C / 29.6**	**C / 34.3**	**C / 33.5**	**B / 16.3**	**B / 18.9**	**B / 15.2**	**B / 15.9**	**B / 16.9**
Old Black Rock Turnpike	EB	B / 17.1	B / 17.9	B / 15.9	C / 22.2	C / 20.4	A / 0.1	A / 0.1	A / 0.4	A / 4.0	A / 4.0	A / 1.0	A / 2.2	A / 4.1	A / 9.2	A / 9.2	B / 20.0	B / 19.9	C / 29.8	C / 26.6	C / 32.3
Tahmore Drive	WB	D / 44.5	E / 61.1	D / 46.7	D / 54.6	D / 53.5	B / 15.0	B / 15.5	C / 26.8	D / 41.9	D / 41.9	C / 20.2	C / 20.1	D / 35.1	D / 52.0	D / 52.0	C / 22.1	C / 24.7	D / 50.4	D / 43.3	D / 53.6
Black Rock Turnpike	NB	B / 13.2	B / 13.4	A / 7.0	B / 15.4	B / 12.2	A / 6.7	A / 7.1	A / 2.8	A / 2.7	A / 2.7	A / 7.8	A / 9.1	A / 2.7	A / 8.7	A / 6.7	B / 10.9	B / 11.7	A / 6.3	A / 9.0	A / 8.7
	SB	B / 18.5	B / 19.9	C / 20.6	C / 24.6	C / 21.6	A / 8.6	A / 9.4	A / 6.5	A / 6.3	A / 6.3	D / 47.4	E / 73.4	D / 50.5	D / 52.9	D / 52.9	B / 19.9	C / 24.3	B / 15.1	B / 16.1	B / 15.9
Traffic Signal - Black Rock Turnpike at Samp Mortar Drive																					
Overall		**B / 16.7**	**B / 18.3**	**B / 13.1**	**B / 12.1**	**B / 13.9**	**B / 13.1**	**B / 13.7**	**A / 8.5**	**A / 9.4**	**A / 9.5**	**B / 16.4**	**B / 17.9**	**B / 14.7**	**C / 25.8**	**C / 25.2**	**B / 14.5**	**B / 15.2**	**B / 10.2**	**B / 15.1**	**B / 14.8**
Samp Mortar Drive	EBL	C / 33.9	C / 34.2	C / 31.1	E / 62.9	D / 50.0	D / 35.9	D / 36.2	D / 39.6	E / 55.1	D / 54.1	D / 38.8	D / 38.3	C / 32.4	D / 40.7	D / 40.7	D / 37.7	D / 38.0	D / 44.5	D / 39.7	D / 52.1
	EBR	B / 11.3	B / 11.3	B / 10.5	B / 17.1	B / 14.8	B / 10.8	B / 10.8	B / 11.4	B / 13.7	B / 13.5	A / 9.1	B / 10.1	B / 12.3	C / 25.7	C / 25.7	A / 9.6	A / 9.5	B / 12.8	A / 9.6	B / 19.4
Black Rock Turnpike	NBL	A / 9.4	B / 10.5	A / 8.3	B / 15.3	B / 11.9	A / 6.9	A / 7.3	A / 4.4	A / 5.6	A / 6.3	A / 9.7	B / 10.6	B / 12.3	C / 30.4	D / 37.6	A / 7.8	A / 8.3	A / 4.8	B / 15.3	B / 12.0
	NBT	B / 14.0	B / 14.7	A / 8.5	A / 3.5	A / 1.8	B / 14.5	B / 15.2	A / 5.5	A / 2.6	A / 3.0	B / 18.5	C / 20.7	B / 15.1	B / 10.0	A / 7.0	B / 16.7	B / 17.7	A / 6.4	A / 7.5	A / 3.9
	SBT[1]	C / 22.3	C / 25.3	B / 18.7	B / 15.8	C / 26.1	B / 11.1	B / 11.9	A / 7.7	B / 10.7	B / 10.5	B / 14.1	B / 15.5	B / 12.4	D / 38.7	D / 38.7	B / 11.6	B / 12.4	A / 8.5	C / 20.5	B / 18.5
	SBR	-- / --	-- / --	-- / --	A / 8.3	B / 13.7	-- / --	-- / --	-- / --	A / 5.3	A / 5.2	-- / --	-- / --	-- / --	A / 6.1	A / 6.1	-- / --	-- / --	-- / --	A / 4.5	A / 8.6
Traffic Signal - Black Rock Turnpike at Brookside Drive & Shell Driveway																					
Overall		**A / 2.9**	**A / 3.0**	**A / 3.3**	**A / 4.2**	**A / 4.8**	**A / 3.7**	**A / 3.8**	**A / 4.9**	**A / 4.2**	**A / 4.7**	**A / 8.0**	**A / 8.2**	**A / 8.0**	**A / 7.3**	**A / 9.6**	**A / 5.4**	**A / 5.6**	**A / 6.0**	**A / 4.7**	**A / 6.8**
Brookside Drive	EBL[2]	-- / --	-- / --	-- / --	E / 58.8	D / 46.9	-- / --	-- / --	-- / --	D / 52.0	D / 52.0	-- / --	-- / --	-- / --	E / 59.4	E / 59.4	-- / --	-- / --	-- / --	D / 37.9	D / 53.6
	EBLTR	C / 29.4	C / 29.4	C / 27.8	D / 41.8	C / 33.6	C / 24.7	C / 25.4	C / 29.4	B / 19.8	B / 19.9	C / 33.5	C / 34.0	D / 38.4	C / 22.1	C / 22.1	C / 28.7	C / 29.3	D / 40.0	A / 1.8	A / 5.6
Shell Driveway[3]	WB	-- / --	-- / --	-- / --	A / 5.9	A / 3.1	-- / --	-- / --	-- / --	A / 1.6	A / 1.6	-- / --	-- / --	-- / --	A / 2.7	A / 2.7	-- / --	-- / --	-- / --	B / 16.4	C / 21.7
Black Rock Turnpike	NB	A / 2.5	A / 2.6	A / 3.0	A / 2.5	A / 5.1	A / 2.9	A / 3.0	A / 3.5	A / 2.2	A / 3.3	A / 4.4	A / 4.6	A / 4.4	A / 2.3	A / 5.3	A / 3.6	A / 3.8	A / 3.7	A / 2.0	A / 5.5
	SB	A / 0.6	A / 0.6	A / 1.0	A / 1.5	A / 0.8	A / 1.6	A / 1.4	A / 2.8	A / 1.5	A / 1.5	A / 5.4	A / 5.5	A / 4.4	A / 3.9	A / 6.3	A / 3.3	A / 3.4	A / 2.6	A / 3.9	A / 3.5
Traffic Signal - Black Rock Turnpike at Fairfield Woods Road & Commercial Driveway																					
Overall		**B / 15.7**	**B / 16.7**	**B / 14.6**	**C / 22.7**	**C / 20.9**	**A / 9.1**	**A / 9.5**	**B / 10.0**	**B / 18.1**	**B / 14.6**	**B / 11.0**	**B / 13.1**	**B / 13.0**	**B / 14.9**	**B / 14.2**	**A / 9.6**	**B / 10.3**	**B / 11.1**	**B / 12.8**	**B / 14.7**
Commercial Driveway[4]	EBLT	B / 19.8	B / 19.8	B / 16.2	-- / --	C / 21.2	C / 24.3	C / 23.9	C / 25.9	-- / --	C / 33.0	C / 29.7	C / 29.5	D / 36.6	-- / --	D / 46.0	C / 28.5	C / 28.3	D / 35.8	-- / --	D / 44.4
	EBR	A / 0.0	A / 0.0	A / 0.0	-- / --	A / 0.0	A / 0.5	A / 0.5	A / 0.6	-- / --	A / 0.6	A / 1.0	A / 1.0	A / 1.4	-- / --	A / 3.8	A / 0.7	A / 0.7	A / 0.9	-- / --	A / 2.4
Fairfield Woods Road	WBL[5]	-- / --	-- / --	-- / --	C / 28.6	-- / --	-- / --	-- / --	-- / --	D / 39.5	-- / --	-- / --	-- / --	-- / --	D / 49.5	-- / --	-- / --	-- / --	-- / --	D / 36.8	-- / --
	WBLT[5]	C / 21.6	C / 21.6	B / 18.0	-- / --	C / 24.0	C / 29.5	C / 29.3	C / 31.8	-- / --	E / 60.9	D / 36.5	D / 36.7	D / 52.6	-- / --	E / 59.5	D / 38.6	D / 39.0	D / 50.1	-- / --	E / 61.7
	WBR	D / 53.7	E / 58.2	D / 43.4	E / 57.9	D / 50.1	D / 39.5	D / 39.7	D / 43.3	E / 58.9	D / 37.4	D / 38.5	D / 38.8	E / 59.3	E / 62.9	E / 65.7	D / 38.9	D / 39.1	D / 50.6	D / 46.7	E / 62.6
Black Rock Turnpike	NBL	-- / --	-- / --	-- / --	-- / --	B / 17.5	-- / --	-- / --	-- / --	-- / --	B / 11.5	-- / --	-- / --	-- / --	-- / --	B / 10.7	-- / --	-- / --	-- / --	-- / --	A / 9.6
	NBTR[6]	A / 8.8	A / 9.3	B / 10.5	C / 20.4	C / 20.1	A / 5.7	A / 6.1	A / 5.9	A / 9.8	B / 11.4	A / 5.1	A / 5.6	A / 3.9	B / 13.6	B / 10.2	A / 5.7	A / 6.2	A / 5.6	B / 12.0	A / 9.9
	SBL[7]	-- / --	-- / --	-- / --	A / 6.1	A / 5.4	-- / --	-- / --	-- / --	A / 2.3	A / 5.3	-- / --	-- / --	-- / --	B / 11.2	B / 10.7	-- / --	-- / --	-- / --	A / 2.0	A / 3.3
	SBT[8]	A / 3.2	A / 3.2	A / 3.8	A / 5.5	A / 5.6	A / 4.1	A / 4.6	A / 4.9	A / 1.2	A / 5.8	A / 9.8	B / 13.6	B / 10.5	A / 6.7	A / 5.7	A / 4.3	A / 5.3	A / 4.2	A / 5.6	A / 4.8
Traffic Signal - Black Rock Turnpike at Stillson Road																					
Overall		**D / 44.5**	**D / 49.7**	**D / 44.0**	**D / 36.7**	**D / 36.7**	**D / 37.7**	**D / 40.4**	**D / 39.3**	**C / 29.6**	**C / 29.4**	**D / 53.9**	**E / 61.5**	**E / 55.5**	**D / 42.9**	**D / 41.7**	**D / 48.5**	**D / 53.8**	**D / 49.7**	**D / 40.7**	**D / 40.6**
Black Rock Turnpike	SBL	E / 60.0	E / 61.3	F / 89.4	D / 52.1	D / 52.1	E / 61.1	E / 65.5	E / 62.7	D / 53.5	D / 53.5	E / 68.3	E / 69.6	E / 74.1	E / 64.2	E / 64.2	E / 69.5	E / 69.6	F / 83.5	E / 73.1	E / 73.1
	SBTR	D / 37.5	D / 38.6	D / 50.2	D / 40.5	D / 40.5	D / 38.2	D / 41.3	D / 41.2	C / 27.9	C / 27.9	E / 56.2	E / 72.6	D / 50.3	D / 41.4	D / 41.4	D / 51.9	E / 59.1	D / 47.3	D / 41.2	D / 41.2
	NBL	F / 99.0	F / 117.4	E / 68.8	D / 54.1	D / 54.1	E / 62.4	E / 68.9	E / 66.1	D / 52.3	D / 52.3	E / 75.1	F / 83.4	F / 117.2	E / 71.2	E / 71.2	E / 79.6	F / 85.8	F / 98.6	E / 72.6	E / 72.6
	NBTR	D / 37.6	D / 39.8	D / 41.2	C / 33.3	C / 33.3	C / 31.2	C / 34.9	C / 33.8	C / 22.9	C / 22.9	D / 36.8	D / 39.7	C / 34.8	C / 30.0	C / 30.0	D / 41.3	D / 44.3	D / 37.0	C / 32.5	C / 32.5
Stillson Road	EBL	C / 25.7	C / 31.9	C / 27.0	C / 33.5	C / 33.4	C / 23.9	C / 24.8	C / 24.5	C / 26.5	C / 26.5	C / 28.4	C / 29.8	C / 34.0	D / 44.1	D / 48.1	C / 27.9	C / 31.0	D / 39.1	D / 39.5	D / 39.5
	EBT[9]	C / 32.3	C / 33.5	C / 30.1	C / 30.2	C / 30.2	D / 46.1	D / 48.3	D / 45.6	D / 42.1	D / 39.7	F / 86.1	F / 94.7	F / 84.5	E / 58.6	D / 54.9	E / 60.5	E / 68.0	E / 66.8	D / 49.0	D / 49.0
	EBR	-- / --	-- / --	-- / --	A / 0.5	A / 0.5	-- / --	-- / --	-- / --	A / 6.5	A / 6.3	-- / --	-- / --	-- / --	B / 18.5	B / 17.9	-- / --	-- / --	-- / --	B / 15.6	B / 15.6
	WBL	B / 18.9	B / 19.3	B / 17.5	B / 17.3	B / 17.2	C / 24.5	C / 25.5	C / 25.3	C / 25.2	C / 25.0	D / 38.8	D / 41.4	E / 63.7	D / 36.6	D / 35.2	C / 29.8	D / 36.0	D / 43.7	C / 32.5	C / 31.0
	WBT[10]	E / 61.4	E / 75.1	D / 47.4	D / 46.6	D / 46.6	D / 43.1	D / 43.2	D / 41.3	D / 45.4	D / 45.4	D / 53.7	D / 54.4	D / 53.3	E / 64.1	D / 52.3	D / 53.8	E / 58.7	D / 50.6	D / 54.2	D / 54.2
	WBR	-- / --	-- / --	-- / --	C / 25.5	C / 25.5	-- / --	-- / --	-- / --	C / 32.5	C / 32.5	-- / --	-- / --	-- / --	D / 38.9	D / 36.2	-- / --	-- / --	-- / --	D / 36.9	D / 36.9

*Lane uses shown reflect conditions in Concept A
[1]SBTR in Existing Conditions
[2]EBL only present in Concepts A and B
[3]Shell Driveway unsignalized in Existing Conditions; Signalized and analyzed in Concepts A and B only
[4]Commercial Driveway relocated south to unsignalized location in Concept A and not analyzed
[5]WBLT in Existing Conditions and Concept B; WBL in Concept A due to relocation of commercial driveway
[6]NBLT and NBTR in Existing Conditions
[7]SBLT in Existing Conditions
[8]SBTR in Existing Conditions and Concept B; SBT in Concept A due to relocation of commercial driveway
[9]EBTR in Existing Conditions
[10]WBTR in Existing Conditions

TABLE 1 (CONTINUED)
Intersection Operation Summary - Vehicular Levels of Service / Average Delay (sec/veh)

		Weekday Morning Peak Hour					Weekday Midday Peak Hour					Weekday Afternoon Peak Hour					Saturday Midday Peak Hour				
	Lane Use*	2017 Existing	2040 Background	2040 Optimized	2040 Concept A	2040 Concept B	2017 Existing	2040 Background	2040 Optimized	2040 Concept A	2040 Concept B	2017 Existing	2040 Background	2040 Optimized	2040 Concept A	2040 Concept B	2017 Existing	2040 Background	2040 Optimized	2040 Concept A	2040 Concept B
Traffic Signal - Black Rock Turnpike at Turnpike Shopping Center & Fairway Plaza Driveways[11]																					
Overall		**A / 6.6**	**A / 7.1**	**A / 4.3**	**-- / --**	**A / 5.0**	**B / 10.4**	**B / 11.1**	**B / 10.2**	**-- / --**	**B / 11.2**	**B / 12.8**	**B / 15.8**	**B / 18.1**	**-- / --**	**B / 13.5**	**B / 14.3**	**C / 23.5**	**B / 15.4**	**-- / --**	**B / 15.9**
Black Rock Turnpike	SB	A / 3.0	A / 3.2	A / 3.3	-- / --	A / 2.9	A / 7.7	A / 8.9	A / 8.1	-- / --	A / 8.9	B / 11.3	B / 14.1	B / 15.4	-- / --	B / 12.0	B / 13.2	C / 20.8	B / 14.6	-- / --	B / 14.6
	NB	A / 6.1	A / 6.8	A / 2.2	-- / --	A / 2.5	A / 7.9	A / 8.7	A / 5.4	-- / --	A / 9.1	B / 11.6	B / 16.6	C / 21.6	-- / --	A / 9.6	B / 13.7	C / 30.3	B / 12.1	-- / --	B / 13.5
Turnpike Shopping Center Driveway	EBLT	D / 38.5	D / 38.9	D / 35.4	-- / --	D / 48.3	C / 34.1	C / 32.3	D / 38.2	-- / --	C / 32.3	C / 30.2	C / 28.8	C / 27.5	-- / --	D / 38.7	C / 27.8	C / 24.5	D / 35.3	-- / --	D / 35.3
	EBR	A / 0.4	A / 0.5	A / 0.4	-- / --	A / 0.6	A / 0.9	A / 1.2	A / 1.8	-- / --	A / 1.2	A / 3.7	A / 4.0	A / 3.9	-- / --	A / 6.8	A / 3.9	A / 3.9	A / 7.1	-- / --	A / 7.1
Fairway Plaza Driveway	WBLT	C / 32.5	C / 32.4	C / 29.8	-- / --	D / 40.0	C / 25.1	C / 24.2	C / 27.2	-- / --	C / 24.2	C / 22.2	C / 21.4	C / 21.1	-- / --	C / 27.5	C / 23.2	C / 20.7	C / 29.5	-- / --	C / 29.5
	WBR	A / 0.2	A / 0.2	A / 0.2	-- / --	A / 0.3	A / 0.3	A / 0.3	A / 0.3	-- / --	A / 0.3	A / 0.2	A / 0.2	A / 0.2	-- / --	A / 0.3	A / 0.3	A / 0.2	A / 0.3	-- / --	A / 0.3
Traffic Signal - Black Rock Turnpike at Katona Drive & Katona Drive Extension[12]																					
Overall		**A / 6.7**	**A / 6.9**	**A / 5.6**	**-- / --**	**B / 10.9**	**A / 7.2**	**A / 7.4**	**A / 8.0**	**-- / --**	**A / 8.1**	**A / 7.5**	**A / 7.8**	**A / 6.4**	**-- / --**	**B / 12.4**	**A / 7.8**	**A / 8.5**	**A / 8.8**	**-- / --**	**B / 13.0**
Black Rock Turnpike	SB	A / 2.3	A / 2.3	A / 3.3	-- / --	A / 2.7	A / 3.0	A / 3.1	A / 4.0	-- / --	A / 3.1	A / 3.4	A / 3.6	A / 2.4	-- / --	A / 4.9	A / 3.5	A / 4.3	A / 4.4	-- / --	A / 4.5
	NBL	-- / --	-- / --	-- / --	-- / --	A / 1.5	-- / --	-- / --	-- / --	-- / --	A / 4.2	-- / --	-- / --	-- / --	-- / --	B / 10.1	-- / --	-- / --	-- / --	-- / --	A / 8.8
	NBTR[13]	A / 6.6	A / 6.8	A / 4.3	-- / --	B / 12.6	A / 6.6	A / 6.8	A / 6.9	-- / --	A / 7.2	A / 7.0	A / 7.1	A / 5.7	-- / --	B / 16.4	A / 8.1	A / 8.5	A / 7.8	-- / --	B / 18.1
Katona Drive	EBL	-- / --	-- / --	-- / --	-- / --	D / 53.7	-- / --	-- / --	-- / --	-- / --	D / 49.8	-- / --	-- / --	-- / --	-- / --	D / 55.0	-- / --	-- / --	-- / --	-- / --	D / 54.9
	EBTR[14]	D / 42.9	D / 43.3	D / 40.6	-- / --	B / 17.1	D / 45.7	D / 46.8	D / 48.8	-- / --	B / 14.5	D / 48.2	D / 49.6	D / 46.5	-- / --	B / 14.0	D / 47.0	D / 48.2	E / 57.0	-- / --	B / 16.0
	EBR	A / 0.9	A / 0.9	A / 0.8	-- / --	-- / --	A / 2.5	A / 3.0	A / 3.5	-- / --	-- / --	A / 4.7	A / 5.3	A / 5.0	-- / --	-- / --	A / 1.3	A / 1.8	A / 3.5	-- / --	-- / --
Katona Drive Extension	WBL	C / 27.0	C / 26.5	C / 25.0	-- / --	C / 34.7	C / 25.7	C / 25.3	C / 26.7	-- / --	C / 28.6	C / 25.0	C / 25.0	C / 24.0	-- / --	C / 31.3	C / 25.0	C / 25.0	C / 30.0	-- / --	C / 32.1
	WBTR	C / 24.7	C / 24.3	C / 23.0	-- / --	C / 27.6	B / 19.4	B / 19.5	C / 20.4	-- / --	B / 19.7	B / 16.3	B / 15.6	B / 14.9	-- / --	B / 16.4	B / 15.1	B / 14.9	B / 17.0	-- / --	B / 15.1
Traffic Signal - Black Rock Turnpike at Burroughs Road																					
Overall		**B / 14.8**	**B / 15.7**	**B / 14.5**	**B / 20.0**	**C / 29.4**	**B / 10.3**	**B / 10.8**	**B / 11.0**	**A / 9.6**	**B / 12.4**	**B / 10.8**	**B / 11.8**	**B / 10.8**	**A / 9.8**	**B / 14.3**	**B / 10.4**	**B / 11.4**	**B / 11.1**	**A / 9.9**	**B / 14.3**
Black Rock Turnpike	SBL	-- / --	-- / --	-- / --	A / 9.6	-- / --	-- / --	-- / --	-- / --	A / 7.2	-- / --	-- / --	-- / --	-- / --	A / 8.3	-- / --	-- / --	-- / --	-- / --	A / 9.2	-- / --
	SBTR[15]	A / 5.7	A / 6.2	A / 6.7	A / 5.0	A / 7.7	A / 5.0	A / 5.4	A / 4.8	A / 6.5	A / 5.3	A / 5.2	A / 6.6	A / 5.6	A / 6.1	A / 4.9	A / 5.5	A / 7.1	A / 3.5	A / 5.3	A / 4.0
	NBT[16]	B / 11.6	B / 12.6	B / 10.9	C / 23.6	D / 36.0	A / 7.3	A / 7.9	A / 7.4	B / 10.4	B / 11.3	A / 7.6	A / 8.3	A / 6.2	B / 10.8	B / 14.0	A / 7.9	A / 8.6	A / 7.7	B / 11.7	B / 14.3
	NBR	-- / --	-- / --	-- / --	A / 1.4	A / 4.0	-- / --	-- / --	-- / --	A / 1.5	A / 1.6	-- / --	-- / --	-- / --	A / 1.2	A / 2.1	-- / --	-- / --	-- / --	A / 1.2	A / 1.6
Burroughs Road	EB	C / 20.5	C / 20.4	B / 18.9	C / 28.2	C / 25.9	C / 22.2	C / 22.3	C / 24.7	B / 17.2	C / 24.4	C / 26.2	C / 25.7	C / 26.3	C / 22.3	C / 31.6	C / 23.2	C / 23.0	C / 29.5	C / 22.4	C / 31.2
	WBL	-- / --	-- / --	-- / --	D / 49.3	-- / --	-- / --	-- / --	-- / --	C / 25.7	-- / --	-- / --	-- / --	-- / --	C / 26.5	-- / --	-- / --	-- / --	-- / --	C / 26.2	-- / --
	WBTR[17]	D / 37.7	D / 39.1	D / 36.6	C / 22.7	D / 54.2	C / 34.8	D / 35.5	D / 40.0	B / 11.8	D / 41.6	D / 38.5	D / 39.5	D / 42.4	B / 13.3	D / 53.8	C / 34.3	D / 35.1	D / 48.2	B / 13.7	D / 54.9
Traffic Signal - Black Rock Turnpike at Tunxis Hill Cutoff, Moritz Place & Whitewood Drive[18]																					
Overall		**B / 13.2**	**B / 13.8**	**B / 12.0**	**-- / --**	**-- / --**	**B / 11.8**	**B / 12.2**	**B / 11.4**	**-- / --**	**-- / --**	**B / 14.5**	**B / 15.2**	**B / 13.9**	**-- / --**	**-- / --**	**B / 13.9**	**B / 16.2**	**B / 15.8**	**-- / --**	**-- / --**
Black Rock Turnpike	SBLT	B / 15.3	B / 15.7	A / 7.9	-- / --	-- / --	B / 17.7	B / 18.1	A / 6.7	-- / --	-- / --	C / 21.9	C / 23.0	B / 10.6	-- / --	-- / --	B / 18.8	C / 21.6	A / 9.6	-- / --	-- / --
	SBR	A / 3.2	A / 3.1	A / 2.7	-- / --	-- / --	A / 3.5	A / 3.5	A / 1.7	-- / --	-- / --	A / 3.1	A / 3.2	A / 2.8	-- / --	-- / --	A / 3.5	A / 4.6	A / 4.4	-- / --	-- / --
Tunxis Hill Cutoff	NB	B / 16.8	B / 17.4	B / 12.1	-- / --	-- / --	B / 13.9	B / 14.2	A / 10.0	-- / --	-- / --	B / 14.1	B / 14.7	B / 11.0	-- / --	-- / --	B / 16.7	B / 19.7	B / 13.9	-- / --	-- / --
Black Rock Turnpike	NWB	B / 15.3	B / 16.2	C / 22.5	-- / --	-- / --	B / 13.8	B / 14.7	C / 26.7	-- / --	-- / --	B / 18.4	B / 19.6	C / 29.8	-- / --	-- / --	B / 16.9	B / 19.6	C / 33.6	-- / --	-- / --
Moritz Place	NEB	C / 25.5	C / 27.5	C / 30.5	-- / --	-- / --	C / 24.3	C / 25.4	D / 36.6	-- / --	-- / --	C / 29.8	C / 30.8	D / 35.2	-- / --	-- / --	C / 28.1	C / 31.4	D / 42.9	-- / --	-- / --
Whitewood Drive	SWB	C / 26.0	C / 27.6	C / 33.8	-- / --	-- / --	C / 24.5	C / 25.6	D / 37.3	-- / --	-- / --	C / 29.7	C / 30.5	C / 34.0	-- / --	-- / --	C / 28.4	C / 31.5	D / 45.5	-- / --	-- / --

*Lane uses shown reflect conditions in Concept A
[11]Intersection unsignalized TWSC in Concept A
[12]Intersection is a roundabout in Concept A
[13]NBLT and NBTR in Existing Conditions
[14]EBLT Existing Conditions
[15]SBLT & SBTR in Existing Conditions and Concept B
[16]NBLT and NBTR in Existing Conditions; NBLT in Concept B
[17]WBLTR in Existing Conditions and Concept B
[18]Intersection is a roundabout with unsignalized TWSC on realigned Moritz Place in Concepts A and B

TABLE 1 (CONTINUED)
Intersection Operation Summary - Vehicular Levels of Service / Average Delay (sec/veh)

		Weekday Morning Peak Hour					Weekday Midday Peak Hour					Weekday Afternoon Peak Hour					Saturday Midday Peak Hour				
	Lane Use*	2017 Existing	2040 Background	2040 Optimized	2040 Concept A	2040 Concept B	2017 Existing	2040 Background	2040 Optimized	2040 Concept A	2040 Concept B	2017 Existing	2040 Background	2040 Optimized	2040 Concept A	2040 Concept B	2017 Existing	2040 Background	2040 Optimized	2040 Concept A	2040 Concept B
Unsignalized TWSC - Tunxis Hill Cutoff at Tunxis Hill Road																					
Tunxis Hill Road	EBL	A / 0.0	A / 0.0	A / 0.0	A / 0.0	A / 0.0	C / 20.7	C / 22.3	C / 22.3	C / 22.3	C / 22.3	A / 0.0	A / 0.0	A / 0.0	A / 0.0	A / 0.0	C / 24.5	D / 26.9	D / 26.9	D / 26.9	D / 26.9
	EBR	A / 9.6	A / 9.7	A / 9.7	A / 9.7	A / 9.7	B / 10.3	B / 10.4	B / 10.4	B / 10.4	B / 10.4	B / 11.1	B / 11.4	B / 11.4	B / 11.4	B / 11.4	B / 10.4	B / 10.6	B / 10.6	B / 10.6	B / 10.6
Tunxis Hill Cutoff	NBL	A / 8.1	A / 8.2	A / 8.2	A / 8.2	A / 8.2	A / 8.5	A / 8.7	A / 8.7	A / 8.7	A / 8.7	A / 9.0	A / 9.2	A / 9.2	A / 9.2	A / 9.2	A / 8.6	A / 8.8	A / 8.8	A / 8.8	A / 8.8
Unsignalized TWSC - Black Rock Turnpike at Judd Street																					
Black Rock Turnpike	NBL	A / 8.5	A / 8.6	A / 8.6	A / 8.6	A / 8.6	A / 8.8	A / 8.9	A / 8.9	A / 9.0	A / 9.0	A / 8.8	A / 9.0	A / 9.0	A / 9.0	A / 9.0	A / 9.0	A / 9.2	A / 9.2	A / 9.2	A / 9.2
Judd Street	EB	B / 13.8	B / 14.4	B / 14.4	C / 15.4	C / 15.4	C / 15.2	C / 16.0	C / 16.0	C / 17.6	C / 17.6	C / 18.6	C / 20.6	C / 20.6	C / 24.9	C / 24.9	C / 17.6	C / 19.1	C / 19.1	C / 21.9	C / 21.9
Unsignalized TWSC - Black Rock Turnpike at Moritz Place[19]																					
Moritz Place	EBR	-- / --	-- / --	-- / --	B / 14.2	B / 14.2	-- / --	-- / --	-- / --	C / 16.4	C / 16.4	-- / --	-- / --	-- / --	C / 20.5	C / 20.5	-- / --	-- / --	-- / --	C / 19.0	C / 19.0
Unsignalized TWSC - Black Rock Turnpike at Turnpike Shopping Center & Fairway Plaza Driveways[20]																					
Turnpike Shopping Dwy	EBR	-- / --	-- / --	-- / --	B / 11.1	-- / --	-- / --	-- / --	-- / --	C / 16.2	-- / --	-- / --	-- / --	-- / --	D / 26.6	-- / --	-- / --	-- / --	-- / --	C / 23.4	-- / --
Black Rock Turnpike	SBL	-- / --	-- / --	-- / --	B / 11.2	-- / --	-- / --	-- / --	-- / --	B / 10.5	-- / --	-- / --	-- / --	-- / --	B / 11.3	-- / --	-- / --	-- / --	-- / --	B / 12.1	-- / --
	NBL	-- / --	-- / --	-- / --	A / 8.9	-- / --	-- / --	-- / --	-- / --	A / 10.0	-- / --	-- / --	-- / --	-- / --	B / 11.1	-- / --	-- / --	-- / --	-- / --	B / 10.7	-- / --
Fairway Plaza Driveway	WBR	-- / --	-- / --	-- / --	C / 19.9	-- / --	-- / --	-- / --	-- / --	C / 16.7	-- / --	-- / --	-- / --	-- / --	C / 19.7	-- / --	-- / --	-- / --	-- / --	C / 22.1	-- / --
Roundabout - Black Rock Turnpike at Old Navy & Trader Joe's Plaza Driveways[21]																					
Overall		**-- / --**	**-- / --**	**-- / --**	**A / 6.2**	**A / 6.1**	**-- / --**	**-- / --**	**-- / --**	**A / 8.6**	**A / 8.3**	**-- / --**	**-- / --**	**-- / --**	**B / 11.6**	**B / 10.5**	**-- / --**	**-- / --**	**-- / --**	**B / 13.8**	**B / 12.2**
Old Navy Plaza Driveway	EB	-- / --	-- / --	-- / --	A / 5.9	A / 5.8	-- / --	-- / --	-- / --	B / 11.9	B / 11.6	-- / --	-- / --	-- / --	C / 18.3	C / 16.7	-- / --	-- / --	-- / --	D / 25.7	C / 22.3
Black Rock Turnpike	SBLT	-- / --	-- / --	-- / --	A / 6.6	A / 6.6	-- / --	-- / --	-- / --	B / 10.1	A / 9.8	-- / --	-- / --	-- / --	B / 14.6	B / 13.1	-- / --	-- / --	-- / --	C / 16.4	B / 14.2
	SBR	-- / --	-- / --	-- / --	A / 2.8	A / 2.8	-- / --	-- / --	-- / --	A / 3.3	A / 3.3	-- / --	-- / --	-- / --	A / 3.4	A / 3.4	-- / --	-- / --	-- / --	A / 3.7	A / 3.7
	NBLT	-- / --	-- / --	-- / --	A / 5.7	A / 5.7	-- / --	-- / --	-- / --	A / 6.5	A / 6.4	-- / --	-- / --	-- / --	A / 7.4	A / 6.9	-- / --	-- / --	-- / --	A / 8.4	A / 7.8
	NBTR	-- / --	-- / --	-- / --	A / 6.2	A / 6.2	-- / --	-- / --	-- / --	A / 7.1	A / 6.9	-- / --	-- / --	-- / --	A / 8.1	A / 7.6	-- / --	-- / --	-- / --	A / 9.4	A / 8.6
Trader Joe's Plaza Dwy	WB	-- / --	-- / --	-- / --	A / 6.7	A / 6.6	-- / --	-- / --	-- / --	A / 8.5	A / 8.3	-- / --	-- / --	-- / --	A / 10	A / 9.4	-- / --	-- / --	-- / --	B / 12.1	B / 11.2
Roundabout - Black Rock Turnpike at Katona Drive & Katona Drive Extension[22]																					
Overall		**-- / --**	**-- / --**	**-- / --**	**E / 39.8**	**-- / --**	**-- / --**	**-- / --**	**-- / --**	**C / 15.6**	**-- / --**	**-- / --**	**-- / --**	**-- / --**	**D / 25.1**	**-- / --**	**-- / --**	**-- / --**	**-- / --**	**F / 57.5**	**-- / --**
Katona Drive	EB	-- / --	-- / --	-- / --	A / 6.5	-- / --	-- / --	-- / --	-- / --	B / 11.6	-- / --	-- / --	-- / --	-- / --	C / 19.2	-- / --	-- / --	-- / --	-- / --	C / 19.5	-- / --
Black Rock Turnpike	SBLT	-- / --	-- / --	-- / --	A / 5.3	-- / --	-- / --	-- / --	-- / --	A / 7.7	-- / --	-- / --	-- / --	-- / --	A / 9.4	-- / --	-- / --	-- / --	-- / --	B / 10.3	-- / --
	SBTR	-- / --	-- / --	-- / --	A / 5.6	-- / --	-- / --	-- / --	-- / --	A / 8.6	-- / --	-- / --	-- / --	-- / --	B / 11	-- / --	-- / --	-- / --	-- / --	B / 12.2	-- / --
	NB	-- / --	-- / --	-- / --	F / 64.6	-- / --	-- / --	-- / --	-- / --	D / 27.6	-- / --	-- / --	-- / --	-- / --	F / 52.2	-- / --	-- / --	-- / --	-- / --	F / 134.3	-- / --
Katona Drive Extension	WB	-- / --	-- / --	-- / --	B / 13.8	-- / --	-- / --	-- / --	-- / --	B / 13.8	-- / --	-- / --	-- / --	-- / --	B / 14.8	-- / --	-- / --	-- / --	-- / --	D / 27	-- / --
Roundabout - Black Rock Turnpike at Tunxis Hill Cutoff & Whitewood Drive[23]																					
Overall		**-- / --**	**-- / --**	**-- / --**	**B / 12.5**	**B / 12.5**	**-- / --**	**-- / --**	**-- / --**	**B / 12.2**	**B / 12.2**	**-- / --**	**-- / --**	**-- / --**	**C / 21.2**	**C / 21.2**	**-- / --**	**-- / --**	**-- / --**	**C / 17.4**	**C / 17.4**
Black Rock Turnpike	EBLR	-- / --	-- / --	-- / --	A / 7.9	A / 7.9	-- / --	-- / --	-- / --	B / 11.2	B / 11.2	-- / --	-- / --	-- / --	C / 21.6	C / 21.6	-- / --	-- / --	-- / --	B / 14.4	B / 14.4
	SBTR	-- / --	-- / --	-- / --	A / 8.7	A / 8.7	-- / --	-- / --	-- / --	B / 13.3	B / 13.3	-- / --	-- / --	-- / --	C / 24.2	C / 24.2	-- / --	-- / --	-- / --	C / 19.1	C / 19.1
Tunxis Hill Cutoff	NBLT	-- / --	-- / --	-- / --	C / 19.2	C / 19.2	-- / --	-- / --	-- / --	B / 11.2	B / 11.2	-- / --	-- / --	-- / --	B / 12.7	B / 12.7	-- / --	-- / --	-- / --	C / 17.5	C / 17.5
Whitewood Drive	WB	-- / --	-- / --	-- / --	A / 9.1	A / 9.1	-- / --	-- / --	-- / --	A / 7	A / 7	-- / --	-- / --	-- / --	A / 7.3	A / 7.3	-- / --	-- / --	-- / --	A / 8.5	A / 8.5

*Lane uses shown reflect conditions in Concept A

[19]Intersection signalized with Black Rock Turnpike, Tunxis Hill Cutoff, and Whitewood Drive in Existing Conditions

[20]Intersection signalized in Existing Conditions and Concept B

[21]Intersection unsignalized TWSC in Existing Conditions; Analyzed in Concepts A and B only

[22]Intersection signalized in Existing Conditions and Concept B

[23]Intersection signalized with Moritz Place in Existing Conditions

TABLE 2

Intersection Operation Summary - Vehicular 50th / 95th Percentile Queue (In Feet)

			Weekday Morning Peak Hour					Weekday Midday Peak Hour					Weekday Afternoon Peak Hour					Saturday Midday Peak Hour				
	Lane Use*	Available Storage**	2017 Existing	2040 Background	2040 Optimized	2040 Concept A	2040 Concept B	2017 Existing	2040 Background	2040 Optimized	2040 Concept A	2040 Concept B	2017 Existing	2040 Background	2040 Optimized	2040 Concept A	2040 Concept B	2017 Existing	2040 Background	2040 Optimized	2040 Concept A	2040 Concept B
Traffic Signal - Black Rock Turnpike at Old Black Rock Turnpike & Tahmore Drive																						
Old Black Rock Turnpike	EB	1000	3 / 17	4 / 18	5 / 16	8 / 21	7 / 20	0 / 0	0 / 0	0 / 0	0 / 2	0 / 2	0 / 0	0 / 2	0 / 4	0 / 8	0 / 8	3 / 14	3 / 14	4 / 18	4 / 16	5 / 19
Tahmore Drive	WB	615	97 / 314	119 / 337	155 / 281	299 / 347	239 / 323	10 / 50	12 / 53	28 / 65	46 / 89	46 / 89	20 / 62	22 / 64	33 / 101	61 / 123	61 / 123	43 / 86	48 / 92	89 / 150	74 / 132	113 / 164
Black Rock Turnpike	NB	1000	136 / 219	149 / 241	47 / 79	419 / 389	232 / 238	90 / 190	99 / 215	14 / 155	44 / 20	49 / 17	143 / 331	161 / 387	85 / 82	215 / 715	374 / 356	160 / 337	186 / 384	122 / 107	221 / 544	217 / 401
	SB	1000	156 / 263	174 / 299	254 / 483	414 / 778	357 / 560	113 / 249	126 / 289	133 / 291	152 / 308	152 / 308	518 / 769	579 / 841	691 / 882	988 / 1196	988 / 1196	218 / 581	266 / 643	352 / 573	324 / 683	383 / 696
Traffic Signal - Black Rock Turnpike at Samp Mortar Drive																						
Samp Mortar Drive	EBL	1000	26 / 55	28 / 57	26 / 54	49 / 87	40 / 74	41 / 72	43 / 75	47 / 80	64 / 102	63 / 102	82 / 134	87 / 138	83 / 137	123 / 187	123 / 187	61 / 96	64 / 100	78 / 120	68 / 107	93 / 137
	EBR	1000	0 / 39	0 / 40	0 / 38	0 / 50	0 / 46	0 / 41	0 / 41	0 / 43	0 / 48	0 / 48	0 / 64	7 / 75	26 / 104	111 / 218	111 / 218	0 / 40	0 / 41	11 / 56	0 / 42	34 / 87
Black Rock Turnpike	NBL	50	66 / 153	71 / 171	10 / 99	81 / 238	84 / 86	30 / 62	31 / 66	13 / 28	16 / 45	18 / 55	37 / 68	40 / 72	15 / 64	56 / 110	63 / 124	24 / 59	27 / 60	13 / 28	24 / 95	15 / 84
	NBT	750	313 / 466	339 / 503	132 / 431	34 / 180	2 / 34	275 / 405	300 / 439	85 / 130	42 / 63	48 / 71	323 / 466	356 / 575	149 / 305	96 / 305	115 / 122	299 / 464	332 / 488	122 / 155	50 / 205	56 / 104
	SBT[1]	1000	147 / 196	165 / 218	115 / 188	189 / 421	212 / 561	92 / 159	101 / 175	106 / 96	147 / 214	149 / 208	151 / 257	169 / 293	136 / 183	691 / 742	691 / 742	120 / 207	133 / 230	166 / 157	298 / 671	238 / 789
	SBR	50	-- / --	-- / --	-- / --	39 / 76	34 / 98	-- / --	-- / --	-- / --	7 / 18	7 / 17	-- / --	-- / --	-- / --	17 / 19	17 / 19	-- / --	-- / --	-- / --	4 / 10	6 / 28
Traffic Signal - Black Rock Turnpike at Brookside Drive & Shell Driveway																						
Brookside Drive	EBL[2]	50	-- / --	-- / --	-- / --	38 / 71	31 / 61	-- / --	-- / --	-- / --	48 / 89	48 / 89	-- / --	-- / --	-- / --	98 / 140	98 / 140	-- / --	-- / --	-- / --	46 / 82	64 / 105
	EBLTR	900	33 / 63	34 / 65	32 / 62	22 / 53	17 / 47	34 / 75	38 / 80	46 / 89	6 / 44	6 / 44	92 / 128	99 / 135	100 / 147	25 / 64	25 / 64	55 / 95	59 / 99	79 / 124	0 / 0	0 / 10
Shell Driveway[3]	WB	25	-- / --	-- / --	-- / --	0 / 0	0 / 0	-- / --	-- / --	-- / --	0 / 0	0 / 0	-- / --	-- / --	-- / --	0 / 0	0 / 0	-- / --	-- / --	-- / --	3 / 32	4 / 37
Black Rock Turnpike	NB	180	30 / 59	34 / 66	84 / 80	60 / 53	111 / 130	26 / 56	39 / 63	71 / 74	72 / 58	55 / 39	62 / 80	66 / 84	38 / 88	52 / 2	107 / 76	29 / 79	53 / 87	65 / 100	46 / 37	117 / 97
	SB	300	8 / 7	8 / 7	7 / 5	11 / 40	11 / 8	8 / 8	9 / 10	33 / 78	15 / 51	15 / 51	215 / 27	237 / 31	68 / 137	57 / 207	186 / 112	11 / 12	12 / 14	30 / 88	63 / 47	68 / 67
Traffic Signal - Black Rock Turnpike at Fairfield Woods Road & Commercial Driveway																						
Commercial Driveway[4]	EBLT	35	2 / 9	2 / 9	2 / 8	-- / --	3 / 10	9 / 22	9 / 22	10 / 24	-- / --	13 / 29	23 / 45	25 / 47	26 / 54	-- / --	34 / 70	24 / 51	26 / 53	32 / 64	-- / --	38 / 74
	EBR	35	0 / 0	0 / 0	0 / 0	-- / --	0 / 0	0 / 0	0 / 0	0 / 0	-- / --	0 / 0	0 / 0	0 / 0	0 / 0	-- / --	0 / 11	0 / 0	0 / 0	0 / 0	-- / --	0 / 6
Fairfield Woods Road	WBL[5]	1000	-- / --	-- / --	-- / --	32 / 57	-- / --	-- / --	-- / --	-- / --	51 / 79	-- / --	-- / --	-- / --	-- / --	70 / 103	-- / --	-- / --	-- / --	-- / --	64 / 100	-- / --
	WBLT[5]	1000	18 / 44	19 / 47	17 / 41	-- / --	26 / 50	34 / 58	35 / 60	38 / 64	-- / --	123 / 160	43 / 72	46 / 75	47 / 96	-- / --	69 / 122	57 / 88	60 / 92	75 / 111	-- / --	89 / 130
	WBR	1000	156 / 299	168 / 324	146 / 272	275 / 354	224 / 302	77 / 111	82 / 115	88 / 123	120 / 158	47 / 73	58 / 89	61 / 93	63 / 125	95 / 133	95 / 137	68 / 101	72 / 105	89 / 127	78 / 119	106 / 149
Black Rock Turnpike	NBL	200	-- / --	-- / --	-- / --	-- / --	3 / 14	-- / --	-- / --	-- / --	-- / --	9 / 29	-- / --	-- / --	-- / --	-- / --	13 / 37	-- / --	-- / --	-- / --	-- / --	9 / 27
	NBTR[6]	365	106 / 141	115 / 152	121 / 167	232 / 334	208 / 313	63 / 117	71 / 131	73 / 133	128 / 198	133 / 217	61 / 116	69 / 132	57 / 82	143 / 313	133 / 210	72 / 136	81 / 153	90 / 154	138 / 232	142 / 220
	SBL[7]	180	-- / --	-- / --	-- / --	8 / 22	7 / 16	-- / --	-- / --	-- / --	2 / 9	6 / 35	-- / --	-- / --	-- / --	16 / 120	7 / 108	-- / --	-- / --	-- / --	4 / 3	1 / 22
	SBT[8]	180	21 / 22	22 / 23	17 / 20	52 / 104	44 / 110	14 / 189	15 / 211	40 / 153	1 / 6	45 / 194	96 / 390	126 / 443	65 / 213	47 / 777	40 / 153	18 / 258	20 / 295	28 / 125	24 / 57	12 / 119
Traffic Signal - Black Rock Turnpike at Stillson Road																						
Black Rock Turnpike	SBL	200	35 / 75	38 / 80	40 / 102	31 / 68	31 / 68	55 / 110	61 / 117	58 / 114	44 / 104	44 / 104	67 / 120	72 / 128	68 / 143	67 / 122	67 / 122	67 / 120	72 / 128	69 / 155	68 / 146	68 / 146
	SBTR	500	167 / 228	182 / 243	201 / 261	159 / 214	159 / 214	251 / 346	279 / 383	270 / 346	187 / 256	187 / 256	368 / 508	410 / 556	361 / 492	345 / 434	345 / 434	336 / 454	365 / 501	332 / 450	323 / 408	323 / 408
	NBL	200	138 / 287	159 / 309	146 / 245	116 / 202	116 / 202	86 / 175	95 / 195	91 / 188	67 / 146	67 / 146	108 / 213	116 / 231	112 / 244	108 / 209	108 / 209	111 / 218	118 / 235	113 / 238	111 / 216	111 / 216
	NBTR	1000	270 / 354	297 / 382	301 / 357	247 / 303	247 / 303	210 / 305	234 / 335	229 / 298	156 / 213	156 / 213	249 / 330	272 / 353	247 / 316	233 / 300	233 / 300	300 / 391	327 / 445	294 / 371	280 / 355	280 / 355
Stillson Road	EBL	400	72 / 108	77 / 128	75 / 106	67 / 98	67 / 98	88 / 146	99 / 154	94 / 159	80 / 136	80 / 136	115 / 173	123 / 184	120 / 191	133 / 222	133 / 202	114 / 174	122 / 186	119 / 193	127 / 215	127 / 215
	EBT[9]	1000	144 / 208	156 / 223	151 / 201	98 / 142	98 / 142	198 / 323	222 / 382	211 / 358	102 / 180	101 / 173	352 / 608	417 / 655	381 / 581	215 / 346	213 / 334	267 / 440	289 / 481	272 / 462	153 / 238	153 / 238
	EBR	75	-- / --	-- / --	-- / --	0 / 0	0 / 0	-- / --	-- / --	-- / --	0 / 38	0 / 37	-- / --	-- / --	-- / --	44 / 112	44 / 111	-- / --	-- / --	-- / --	29 / 91	29 / 91
	WBL	170	48 / 78	51 / 83	50 / 76	45 / 73	44 / 71	75 / 125	83 / 132	78 / 136	71 / 122	67 / 117	93 / 157	103 / 174	99 / 227	114 / 170	107 / 161	121 / 178	130 / 215	127 / 242	144 / 212	135 / 200
	WBT[10]	1000	314 / 472	348 / 517	322 / 393	236 / 308	236 / 308	150 / 250	166 / 264	159 / 256	100 / 187	100 / 187	240 / 335	258 / 358	244 / 360	217 / 341	209 / 297	258 / 381	277 / 417	255 / 367	211 / 304	211 / 304
	WBR	75	-- / --	-- / --	-- / --	25 / 49	25 / 49	-- / --	-- / --	-- / --	26 / 59	26 / 59	-- / --	-- / --	-- / --	31 / 64	30 / 62	-- / --	-- / --	-- / --	40 / 78	40 / 78

*Lane uses shown reflect conditions in Concept A

**Measured Available Storages limited to 1000 feet - Storages shown reflect conditions in Concept A

[1]SBTR in Existing Conditions

[2]EBL only present in Concepts A and B

[3]Shell Driveway unsignalized in Existing Conditions; Signalized and analyzed in Concepts A and B only

[4]Commercial Driveway relocated south to unsignalized location in Concept A and not analyzed

[5]WBLT in Existing Conditions and Concept B; WBL in Concept A due to relocation of commercial driveway

[6]NBLT and NBTR in Existing Conditions

[7]SBLT in Existing Conditions

[8]SBTR in Existing Conditions and Concept B; SBT in Concept A due to relocation of commercial driveway

[9]EBTR in Existing Conditions

[10]WBTR in Existing Conditions

TABLE 2 (CONTINUED)

Intersection Operation Summary - Vehicular 50th / 95th Percentile Queue (In Feet)

			Weekday Morning Peak Hour					Weekday Midday Peak Hour					Weekday Afternoon Peak Hour					Saturday Midday Peak Hour				
	Lane Use*	Available Storage**	2017 Existing	2040 Background	2040 Optimized	2040 Concept A	2040 Concept B	2017 Existing	2040 Background	2040 Optimized	2040 Concept A	2040 Concept B	2017 Existing	2040 Background	2040 Optimized	2040 Concept A	2040 Concept B	2017 Existing	2040 Background	2040 Optimized	2040 Concept A	2040 Concept B
Traffic Signal - Black Rock Turnpike at Turnpike Shopping Center & Fairway Plaza Driveways[11]																						
Black Rock Turnpike	SB	680	31 / 50	34 / 54	33 / 53	-- / --	36 / 56	81 / 125	92 / 138	92 / 143	-- / --	92 / 138	119 / 171	136 / 191	140 / 190	-- / --	146 / 207	114 / 166	136 / 201	143 / 202	-- / --	143 / 202
	NB	405	62 / 125	66 / 139	18 / 21	-- / --	30 / 36	54 / 70	57 / 73	33 / 41	-- / --	48 / 108	65 / 83	70 / 98	93 / 159	-- / --	48 / 148	65 / 82	70 / 150	42 / 119	-- / --	67 / 111
Turnpike Shopping Center Driveway	EBLT	25	29 / 56	31 / 58	29 / 54	-- / --	38 / 68	72 / 128	76 / 135	83 / 143	-- / --	76 / 135	84 / 135	88 / 142	86 / 142	-- / --	112 / 167	78 / 139	79 / 139	104 / 174	-- / --	104 / 174
	EBR	25	0 / 0	0 / 0	0 / 0	-- / --	0 / 0	0 / 3	0 / 5	0 / 8	-- / --	0 / 5	0 / 21	0 / 24	0 / 24	-- / --	3 / 37	0 / 30	0 / 32	7 / 49	-- / --	7 / 49
Fairway Plaza Driveway	WBLT	25	14 / 36	14 / 37	13 / 36	-- / --	18 / 44	27 / 57	28 / 59	31 / 63	-- / --	28 / 59	21 / 46	22 / 47	21 / 47	-- / --	28 / 55	42 / 72	42 / 71	55 / 90	-- / --	55 / 90
	WBR	25	0 / 0	0 / 0	0 / 0	-- / --	0 / 0	0 / 0	0 / 0	0 / 0	-- / --	0 / 0	0 / 0	0 / 0	0 / 0	-- / --	0 / 0	0 / 0	0 / 0	0 / 0	-- / --	0 / 0
Traffic Signal - Black Rock Turnpike at Katona Drive & Katona Drive Extension[12]																						
Black Rock Turnpike	SB	405	8 / 30	8 / 32	34 / 51	-- / --	36 / 46	44 / 58	47 / 62	64 / 90	-- / --	44 / 61	54 / 77	57 / 82	30 / 53	-- / --	86 / 137	60 / 90	64 / 125	91 / 120	-- / --	75 / 121
	NBL	175	-- / --	-- / --	-- / --	-- / --	3 / 3	-- / --	-- / --	-- / --	-- / --	5 / 7	-- / --	-- / --	-- / --	-- / --	8 / 17	-- / --	-- / --	-- / --	-- / --	9 / 17
	NBTR[13]	300	53 / 61	56 / 63	34 / 31	-- / --	56 / 58	40 / 51	43 / 53	48 / 32	-- / --	68 / 88	43 / 53	46 / 56	36 / 33	-- / --	135 / 233	49 / 61	52 / 63	131 / 39	-- / --	157 / 678
Katona Drive	EBL	75	-- / --	-- / --	-- / --	-- / --	46 / 89	-- / --	-- / --	-- / --	-- / --	50 / 91	-- / --	-- / --	-- / --	-- / --	71 / 109	-- / --	-- / --	-- / --	-- / --	68 / 118
	EBTR[14]	1000	36 / 73	38 / 76	35 / 73	-- / --	3 / 31	48 / 84	51 / 88	54 / 91	-- / --	5 / 35	56 / 93	59 / 98	59 / 94	-- / --	8 / 40	54 / 100	57 / 106	70 / 120	-- / --	8 / 43
	EBR	250	0 / 0	0 / 0	0 / 0	-- / --	-- / --	0 / 3	0 / 6	0 / 8	-- / --	-- / --	0 / 13	0 / 16	0 / 15	-- / --	-- / --	0 / 3	0 / 4	0 / 11	-- / --	-- / --
Katona Drive Extension	WBL	135	1 / 7	1 / 7	1 / 7	-- / --	2 / 10	2 / 8	2 / 8	2 / 9	-- / --	4 / 14	0 / 4	0 / 4	0 / 4	-- / --	4 / 14	1 / 8	1 / 8	2 / 8	-- / --	5 / 18
	WBTR	135	1 / 8	1 / 8	1 / 8	-- / --	2 / 11	5 / 18	5 / 20	6 / 21	-- / --	5 / 23	2 / 14	2 / 15	2 / 14	-- / --	2 / 18	0 / 13	0 / 13	1 / 14	-- / --	1 / 18
Traffic Signal - Black Rock Turnpike at Burroughs Road																						
Black Rock Turnpike	SBL	65	-- / --	-- / --	-- / --	5 / 16	-- / --	-- / --	-- / --	-- / --	8 / 24	-- / --	-- / --	-- / --	-- / --	11 / 34	-- / --	-- / --	-- / --	-- / --	11 / 37	-- / --
	SBTR[15]	275	26 / 32	28 / 34	37 / 45	43 / 53	46 / 56	40 / 53	43 / 57	25 / 36	61 / 94	47 / 64	41 / 64	44 / 170	48 / 72	76 / 113	108 / 154	38 / 72	48 / 77	89 / 133	68 / 101	95 / 20
	NBT[16]	925	139 / 232	157 / 253	104 / 235	282 / 609	518 / 847	72 / 135	81 / 150	50 / 161	113 / 223	170 / 310	90 / 167	102 / 187	53 / 155	155 / 283	250 / 475	98 / 178	110 / 200	68 / 224	180 / 336	298 / 489
	NBR	130	-- / --	-- / --	-- / --	0 / 11	6 / 24	-- / --	-- / --	-- / --	0 / 14	0 / 18	-- / --	-- / --	-- / --	0 / 16	4 / 29	-- / --	-- / --	-- / --	0 / 12	2 / 18
	EB	1000	41 / 63	43 / 66	39 / 62	47 / 82	53 / 83	34 / 56	36 / 58	40 / 63	18 / 53	37 / 64	56 / 93	58 / 96	58 / 100	36 / 95	72 / 116	36 / 66	39 / 69	49 / 85	27 / 70	49 / 91
Burroughs Road	WBL	125	-- / --	-- / --	-- / --	77 / 148	-- / --	-- / --	-- / --	-- / --	29 / 86	-- / --	-- / --	-- / --	-- / --	36 / 99	-- / --	-- / --	-- / --	-- / --	38 / 93	-- / --
	WBTR[17]	1000	141 / 178	149 / 191	137 / 180	50 / 91	188 / 247	97 / 136	104 / 144	114 / 156	11 / 47	106 / 158	95 / 152	101 / 159	102 / 167	13 / 55	129 / 199	96 / 151	102 / 159	131 / 201	15 / 58	131 / 235
Traffic Signal - Black Rock Turnpike at Tunxis Hill Cutoff, Moritz Place & Whitewood Drive[18]																						
Black Rock Turnpike	SBLT	835	41 / 130	44 / 144	31 / 134	-- / --	-- / --	56 / 199	61 / 216	43 / 148	-- / --	-- / --	95 / 341	106 / 403	95 / 279	-- / --	-- / --	74 / 253	139 / 279	95 / 266	-- / --	-- / --
	SBR	835	0 / 78	0 / 84	0 / 125	-- / --	-- / --	0 / 109	0 / 118	0 / 70	-- / --	-- / --	0 / 120	0 / 130	0 / 76	-- / --	-- / --	0 / 134	73 / 147	17 / 318	-- / --	-- / --
Tunxis Hill Cutoff	NB	1000	60 / 161	64 / 180	67 / 165	-- / --	-- / --	30 / 99	32 / 107	38 / 106	-- / --	-- / --	36 / 114	40 / 124	45 / 108	-- / --	-- / --	49 / 155	92 / 173	104 / 171	-- / --	-- / --
Black Rock Turnpike	NWB	1000	26 / 82	29 / 91	58 / 77	-- / --	-- / --	24 / 86	27 / 95	67 / 108	-- / --	-- / --	43 / 130	52 / 140	92 / 139	-- / --	-- / --	37 / 121	66 / 130	108 / 154	-- / --	-- / --
Moritz Place	NEB	935	1 / 8	1 / 8	1 / 8	-- / --	-- / --	2 / 16	2 / 16	5 / 18	-- / --	-- / --	3 / 20	4 / 20	6 / 21	-- / --	-- / --	4 / 22	6 / 23	9 / 26	-- / --	-- / --
Whitewood Drive	SWB	785	5 / 30	5 / 32	10 / 33	-- / --	-- / --	3 / 18	3 / 19	7 / 21	-- / --	-- / --	2 / 13	2 / 13	3 / 14	-- / --	-- / --	5 / 27	-- / --	-- / --	-- / --	-- / --

*Lane uses shown reflect conditions in Concept A

**Measured Available Storages limited to 1000 feet - Storages shown reflect conditions in Concept A

[11]Intersection unsignalized TWSC in Concept A

[12]Intersection is a roundabout in Concept A

[13]NBLT and NBTR in Existing Conditions

[14]EBLT Existing Conditions

[15]SBLT & SBTR in Existing Conditions and Concept B

[16]NBLT and NBTR in Existing Conditions; NBLT in Concept B

[17]WBLTR in Existing Conditions and Concept B

[18]Intersection is a roundabout with unsignalized TWSC on realigned Moritz Place in Concepts A and B

TABLE 2 (CONTINUED)

Intersection Operation Summary - Vehicular 50th / 95th Percentile Queue (In Feet)

			Weekday Morning Peak Hour					Weekday Midday Peak Hour					Weekday Afternoon Peak Hour					Saturday Midday Peak Hour				
	Lane Use*	Available Storage**	2017 Existing	2040 Background	2040 Optimized	2040 Concept A	2040 Concept B	2017 Existing	2040 Background	2040 Optimized	2040 Concept A	2040 Concept B	2017 Existing	2040 Background	2040 Optimized	2040 Concept A	2040 Concept B	2017 Existing	2040 Background	2040 Optimized	2040 Concept A	2040 Concept B
Unsignalized TWSC - Tunxis Hill Cutoff at Tunxis Hill Road																						
Tunxis Hill Road	EBL	1000	0	0	0	0	0	0	0	0	0	0	0	0	0	0	0	3	3	3	3	3
	EBR	1000	8	8	8	8	8	8	8	8	8	8	13	13	13	13	13	8	8	8	8	8
Tunxis Hill Cutoff	NBL	200	5	5	5	5	5	3	3	3	3	3	5	5	5	5	5	3	3	3	3	3
Unsignalized TWSC - Black Rock Turnpike at Judd Street																						
Black Rock Turnpike	NBL	25	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5	5
Judd Street	EB	1000	18	23	23	23	23	20	23	23	25	25	40	48	48	60	60	30	35	35	40	40
Unsignalized TWSC - Black Rock Turnpike at Moritz Place[19]																						
Moritz Place	EBR	935	--	--	--	0	0	--	--	--	3	3	--	--	--	5	5	--	--	--	5	5
Unsignalized TWSC - Black Rock Turnpike at Turnpike Shopping Center & Fairway Plaza Driveways[20]																						
Turnpike Shopping Dwy	EBR	90	--	--	--	13	--	--	--	--	60	--	--	--	--	135	--	--	--	--	120	--
Black Rock Turnpike	SBL	65	--	--	--	5	--	--	--	--	10	--	--	--	--	10	--	--	--	--	15	--
	NBL	100	--	--	--	3	--	--	--	--	8	--	--	--	--	13	--	--	--	--	13	--
Fairway Plaza Driveway	WBR	30	--	--	--	3	--	--	--	--	10	--	--	--	--	10	--	--	--	--	18	--
Roundabout - Black Rock Turnpike at Old Navy & Trader Joe's Plaza Driveways[21]																						
Old Navy Plaza Driveway	EB	65	--	--	--	8	8	--	--	--	45	45	--	--	--	78	70	--	--	--	125	113
Black Rock Turnpike	SBLT	365	--	--	--	53	53	--	--	--	108	103	--	--	--	188	160	--	--	--	213	178
	SBR	50	--	--	--	3	3	--	--	--	5	5	--	--	--	5	5	--	--	--	8	8
	NBLT	500	--	--	--	35	35	--	--	--	40	40	--	--	--	48	45	--	--	--	58	53
	NBTR	500	--	--	--	43	43	--	--	--	48	48	--	--	--	58	55	--	--	--	73	65
Trader Joe's Plaza Dwy	WB	125	--	--	--	8	8	--	--	--	28	28	--	--	--	38	35	--	--	--	53	50
Roundabout - Black Rock Turnpike at Katona Drive & Katona Drive Extension[22]																						
Katona Drive	EB	1000	--	--	--	15	--	--	--	--	33	--	--	--	--	63	--	--	--	--	65	--
Black Rock Turnpike	SBLT	1000	--	--	--	25	--	--	--	--	60	--	--	--	--	90	--	--	--	--	98	--
	SBTR	1000	--	--	--	30	--	--	--	--	75	--	--	--	--	118	--	--	--	--	130	--
	NB	265	--	--	--	640	--	--	--	--	278	--	--	--	--	453	--	--	--	--	878	--
Katona Drive Extension	WB	135	--	--	--	13	--	--	--	--	30	--	--	--	--	28	--	--	--	--	73	--
Roundabout - Black Rock Turnpike at Tunxis Hill Cutoff & Whitewood Drive[23]																						
Black Rock Turnpike	EBLR	1000	--	--	--	48	48	--	--	--	78	78	--	--	--	173	173	--	--	--	115	115
	SBTR	925	--	--	--	80	80	--	--	--	165	165	--	--	--	348	348	--	--	--	260	260
Tunxis Hill Cutoff	NBLT	1000	--	--	--	180	180	--	--	--	73	73	--	--	--	85	85	--	--	--	143	143
Whitewood Drive	WB	785	--	--	--	5	5	--	--	--	3	3	--	--	--	0	0	--	--	--	3	3

*Lane uses shown reflect conditions in Concept A

**Measured Available Storages limited to 1000 feet - Storages shown reflect conditions in Concept A

[19]Intersection signalized with Black Rock Turnpike, Tunxis Hill Cutoff, and Whitewood Drive in Existing Conditions

[20]Intersection signalized in Existing Conditions and Concept B

[21]Intersection unsignalized TWSC in Existing Conditions; Analyzed in Concepts A and B only

[22]Intersection signalized in Existing Conditions and Concept B

[23]Intersection signalized with Moritz Place in Existing Conditions

APPENDIX B
Capacity Analysis Worksheets

Tighe&Bond

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	1	3	193	0	158	2	642	25	61	607	4
Future Volume (vph)	10	1	3	193	0	158	2	642	25	61	607	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	16	12	12	13	12	12	13	12
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		0.970			0.939			0.995			0.999	
Flt Protected		0.965			0.973						0.995	
Satd. Flow (prot)	0	1957	0	0	1910	0	0	1897	0	0	1895	0
Flt Permitted		0.792			0.819			0.998			0.899	
Satd. Flow (perm)	0	1606	0	0	1608	0	0	1893	0	0	1712	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			55			6			1	
Link Speed (mph)		25			30			35			35	
Link Distance (ft)		378			442			1898			522	
Travel Time (s)		10.3			10.0			37.0			10.2	
Peak Hour Factor	0.80	0.80	0.80	0.84	0.84	0.84	0.94	0.94	0.94	0.91	0.91	0.91
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	13	1	4	230	0	188	2	683	27	67	667	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	18	0	0	418	0	0	712	0	0	738	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	11.7	11.7		11.7	11.7		20.6	20.6		20.6	20.6	
Total Split (s)	17.7	17.7		17.7	17.7		48.6	48.6		48.6	48.6	
Total Split (%)	26.7%	26.7%		26.7%	26.7%		73.3%	73.3%		73.3%	73.3%	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.4	1.4		1.4	1.4		1.6	1.6		1.6	1.6	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.7			4.7			5.6			5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Act Effct Green (s)		13.5			13.5			26.2			26.2	
Actuated g/C Ratio		0.27			0.27			0.52			0.52	
v/c Ratio		0.04			0.89			0.72			0.83	
Control Delay		17.1			44.5			13.2			18.5	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		17.1			44.5			13.2			18.5	
LOS		B			D			B			B	
Approach Delay		17.1			44.5			13.2			18.5	
Approach LOS		B			D			B			B	
Queue Length 50th (ft)		3			97			136			156	
Queue Length 95th (ft)		17			#314			219			263	
Internal Link Dist (ft)		298			362			1818			442	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)		432			470			1630			1473	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.04			0.89			0.44			0.50	

Intersection Summary

Area Type: Other
Cycle Length: 66.3
Actuated Cycle Length: 50.3
Natural Cycle: 55
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.89
Intersection Signal Delay: 22.2 Intersection LOS: C
Intersection Capacity Utilization 105.8% ICU Level of Service G
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive

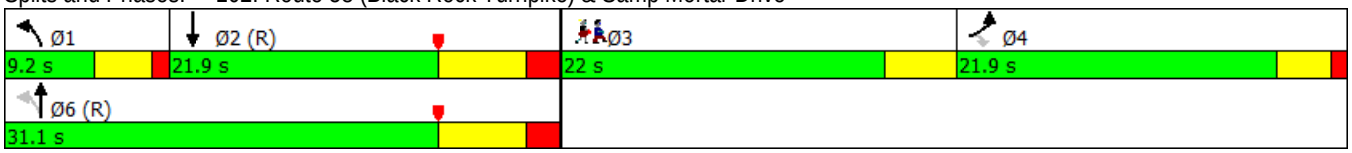
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Lane Configurations							
Traffic Volume (vph)	51	128	346	698	587	187	
Future Volume (vph)	51	128	346	698	587	187	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	10	10	11	11	12	12	
Storage Length (ft)	0	50	100			0	
Storage Lanes	1	1	1			0	
Taper Length (ft)	25		50				
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	
Frt		0.850			0.964		
Flt Protected	0.950		0.950				
Satd. Flow (prot)	1636	1463	1694	1783	3379	0	
Flt Permitted	0.950		0.196				
Satd. Flow (perm)	1636	1463	350	1783	3379	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		154			51		
Link Speed (mph)	25			30	35		
Link Distance (ft)	445			510	341		
Travel Time (s)	12.1			11.6	6.6		
Peak Hour Factor	0.83	0.83	0.91	0.91	0.94	0.94	
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	
Adj. Flow (vph)	61	154	380	767	624	199	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	61	154	380	767	823	0	
Turn Type	Prot	Perm	pm+pt	NA	NA		
Protected Phases	4		1	6	2		3
Permitted Phases		4	6				
Detector Phase	4	4	1	6	2		
Switch Phase							
Minimum Initial (s)	9.0	9.0	5.0	15.0	15.0		7.0
Minimum Split (s)	13.0	13.0	9.2	21.9	21.9		22.0
Total Split (s)	21.9	21.9	9.2	31.1	21.9		22.0
Total Split (%)	29.2%	29.2%	12.3%	41.5%	29.2%		29%
Yellow Time (s)	3.0	3.0	3.2	4.9	4.9		4.0
All-Red Time (s)	1.0	1.0	1.0	2.0	2.0		0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	4.0	4.0	4.2	6.9	6.9		
Lead/Lag	Lag	Lag	Lead		Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes		Yes		Yes
Recall Mode	None	None	None	C-Max	C-Max		None
Act Effct Green (s)	9.3	9.3	57.5	54.8	25.8		
Actuated g/C Ratio	0.12	0.12	0.77	0.73	0.34		
v/c Ratio	0.30	0.49	0.53	0.59	0.69		
Control Delay	33.9	11.3	9.4	14.0	22.3		
Queue Delay	0.0	0.0	0.0	0.0	0.0		
Total Delay	33.9	11.3	9.4	14.0	22.3		
LOS	C	B	A	B	C		
Approach Delay	17.7			12.5	22.3		
Approach LOS	B			B	C		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Queue Length 50th (ft)	26	0	66	313	147		
Queue Length 95th (ft)	55	39	153	466	196		
Internal Link Dist (ft)	365			430	261		
Turn Bay Length (ft)		50	100				
Base Capacity (vph)	390	466	711	1301	1197		
Starvation Cap Reductn	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0		
Reduced v/c Ratio	0.16	0.33	0.53	0.59	0.69		

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 22 (29%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.69
Intersection Signal Delay: 16.7 Intersection LOS: B
Intersection Capacity Utilization 61.5% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	58	14	56	992	553	171
Future Volume (vph)	58	14	56	992	553	171
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	12	12
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Frt	0.973				0.965	
Flt Protected	0.961			0.997		
Satd. Flow (prot)	1955	0	0	3494	3382	0
Flt Permitted	0.961			0.860		
Satd. Flow (perm)	1955	0	0	3014	3382	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	16				66	
Link Speed (mph)	25			30	30	
Link Distance (ft)	347			293	336	
Travel Time (s)	9.5			6.7	7.6	
Peak Hour Factor	0.80	0.80	0.90	0.90	0.88	0.88
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	73	18	62	1102	628	194
Shared Lane Traffic (%)						
Lane Group Flow (vph)	91	0	0	1164	822	0
Turn Type	Prot		pm+pt	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases			2			
Detector Phase	4		5	2	6	
Switch Phase						
Minimum Initial (s)	9.0		3.0	15.0	15.0	
Minimum Split (s)	13.0		8.9	20.4	20.4	
Total Split (s)	25.0		14.0	50.0	36.0	
Total Split (%)	33.3%		18.7%	66.7%	48.0%	
Yellow Time (s)	3.0		4.2	4.2	4.2	
All-Red Time (s)	1.0		1.7	1.2	1.2	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	4.0			5.4	5.4	
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None	C-Max	C-Max	
Act Effct Green (s)	9.3			60.0	60.0	
Actuated g/C Ratio	0.12			0.80	0.80	
v/c Ratio	0.36			0.48	0.30	
Control Delay	29.4			2.4	0.6	
Queue Delay	0.0			0.1	0.0	
Total Delay	29.4			2.5	0.6	
LOS	C			A	A	
Approach Delay	29.4			2.5	0.6	
Approach LOS	C			A	A	
Queue Length 50th (ft)	33			30	8	
Queue Length 95th (ft)	63			m59	7	
Internal Link Dist (ft)	267			213	256	

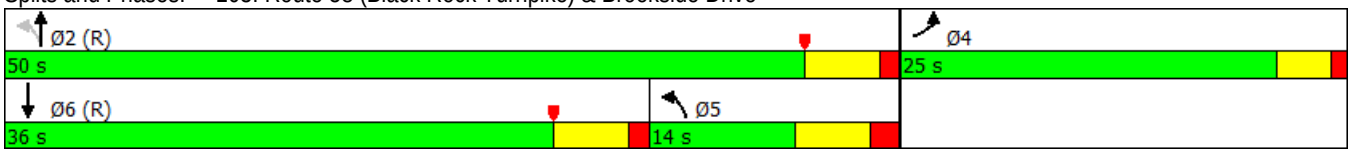
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Turn Bay Length (ft)						
Base Capacity (vph)	558			2409	2717	
Starvation Cap Reductn	0			224	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.16			0.53	0.30	

Intersection Summary

Area Type: Other	
Cycle Length: 75	
Actuated Cycle Length: 75	
Offset: 45 (60%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow	
Natural Cycle: 45	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.48	
Intersection Signal Delay: 2.9	Intersection LOS: A
Intersection Capacity Utilization 69.6%	ICU Level of Service C
Analysis Period (min) 15	

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

Splits and Phases: 103: Route 58 (Black Rock Turnpike) & Brookside Drive



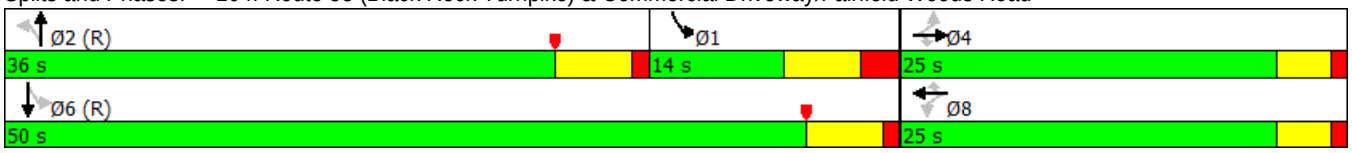
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	0	1	47	0	321	8	739	24	79	503	3
Future Volume (vph)	5	0	1	47	0	321	8	739	24	79	503	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	11	12	11	12	12	11	12
Storage Length (ft)	0		0	0		75	0		0	0		0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt			0.850			0.850		0.995			0.999	
Flt Protected		0.950			0.950			0.999			0.993	
Satd. Flow (prot)	0	1752	1568	0	1752	1516	0	3368	0	0	3361	0
Flt Permitted		0.723			0.754			0.949			0.740	
Satd. Flow (perm)	0	1334	1568	0	1391	1516	0	3199	0	0	2505	0
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			128					5			1	
Link Speed (mph)		30			25			30			30	
Link Distance (ft)		87			499			713			293	
Travel Time (s)		2.0			13.6			16.2			6.7	
Peak Hour Factor	0.80	0.80	0.80	0.90	0.90	0.90	0.88	0.88	0.88	0.92	0.92	0.92
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	6	0	1	52	0	357	9	840	27	86	547	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	6	1	0	52	357	0	876	0	0	636	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	4	4	4	8	8	8	2	2		1	6	
Switch Phase												
Minimum Initial (s)	9.0	9.0	9.0	9.0	9.0	9.0	15.0	15.0		3.0	15.0	
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	20.3	20.3		9.5	20.3	
Total Split (s)	25.0	25.0	25.0	25.0	25.0	25.0	36.0	36.0		14.0	50.0	
Total Split (%)	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	48.0%	48.0%		18.7%	66.7%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.3	4.3		4.3	4.3	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		2.2	1.0	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0		0.0			0.0	
Total Lost Time (s)		4.0	4.0		4.0	4.0		5.3			5.3	
Lead/Lag							Lead	Lead		Lag		
Lead-Lag Optimize?							Yes	Yes		Yes		
Recall Mode	None	None	None	None	None	None	C-Max	C-Max		None	C-Max	
Act Effct Green (s)		19.7	19.7		19.7	19.7		46.0			46.0	
Actuated g/C Ratio		0.26	0.26		0.26	0.26		0.61			0.61	
v/c Ratio		0.02	0.00		0.14	0.90		0.45			0.41	
Control Delay		19.8	0.0		21.6	53.7		8.8			3.0	
Queue Delay		0.0	0.0		0.0	0.0		0.0			0.2	
Total Delay		19.8	0.0		21.6	53.7		8.8			3.2	
LOS		B	A		C	D		A			A	
Approach Delay		17.0			49.6			8.8			3.2	
Approach LOS		B			D			A			A	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		2	0		18	156		106			21	
Queue Length 95th (ft)		9	0		44	#299		141			22	
Internal Link Dist (ft)		7			419			633			213	
Turn Bay Length (ft)						75						
Base Capacity (vph)		373	531		389	424		1963			1536	
Starvation Cap Reductn		0	0		0	0		0			243	
Spillback Cap Reductn		0	0		0	0		0			0	
Storage Cap Reductn		0	0		0	0		0			0	
Reduced v/c Ratio		0.02	0.00		0.13	0.84		0.45			0.49	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 48 (64%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 15.7 Intersection LOS: B
Intersection Capacity Utilization 59.9% ICU Level of Service B
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	45	358	126	168	647	67	142	156	59	99	331	43
Future Volume (vph)	45	358	126	168	647	67	142	156	59	99	331	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	11	12	12	11	11	12	12	12	12
Storage Length (ft)	200		0	175		0	210		0	170		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	85			75			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.961			0.986			0.959			0.983	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1678	3225	0	1678	3423	0	1678	1694	0	1736	1796	0
Flt Permitted	0.950			0.950			0.151			0.567		
Satd. Flow (perm)	1678	3225	0	1678	3423	0	267	1694	0	1036	1796	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		30			7			11				
Link Speed (mph)		30			30			30			25	
Link Distance (ft)		436			368			438			355	
Travel Time (s)		9.9			8.4			10.0			9.7	
Peak Hour Factor	0.88	0.88	0.88	0.86	0.86	0.86	0.80	0.80	0.80	0.81	0.81	0.81
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	51	407	143	195	752	78	178	195	74	122	409	53
Shared Lane Traffic (%)												
Lane Group Flow (vph)	51	550	0	195	830	0	178	269	0	122	462	0
Turn Type	Prot	NA		Prot	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases							4			8		
Detector Phase	5	2		1	6		7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	15.0		5.0	15.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	21.6		9.7	21.6		9.3	16.8		9.3	16.8	
Total Split (s)	17.7	41.6		17.7	41.6		22.3	36.8		22.3	36.8	
Total Split (%)	11.7%	27.5%		11.7%	27.5%		14.7%	24.3%		14.7%	24.3%	
Yellow Time (s)	3.0	4.1		3.0	4.1		3.3	4.4		3.3	4.4	
All-Red Time (s)	1.7	2.5		1.7	2.5		1.0	2.4		1.0	2.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	6.6		4.7	6.6		4.3	6.8		4.3	6.8	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Min		None	Min		None	None		None	None	
Act Effct Green (s)	7.7	27.0		13.1	34.7		50.2	34.9		41.7	30.2	
Actuated g/C Ratio	0.07	0.25		0.12	0.33		0.47	0.33		0.39	0.28	
v/c Ratio	0.42	0.66		0.95	0.74		0.58	0.48		0.26	0.91	
Control Delay	60.0	37.5		99.0	37.6		25.7	32.3		18.9	61.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	60.0	37.5		99.0	37.6		25.7	32.3		18.9	61.4	
LOS	E	D		F	D		C	C		B	E	
Approach Delay		39.5			49.3			29.7			52.5	
Approach LOS		D			D			C			D	

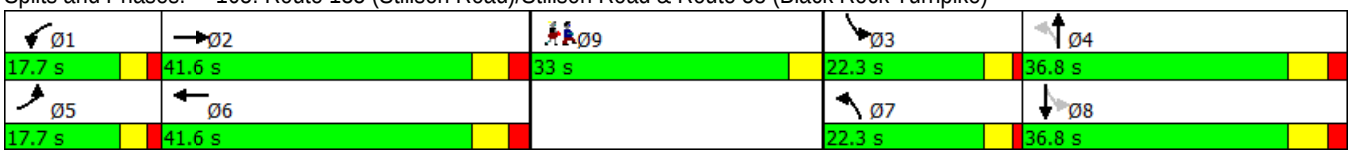
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	33.0
Total Split (s)	33.0
Total Split (%)	22%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	35	167		138	270		72	144		48	314	
Queue Length 95th (ft)	75	228		#287	354		108	208		78	#472	
Internal Link Dist (ft)		356			288			358			275	
Turn Bay Length (ft)	200			175			210			170		
Base Capacity (vph)	206	1089		206	1139		367	562		600	510	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.25	0.51		0.95	0.73		0.49	0.48		0.20	0.91	

Intersection Summary	
Area Type: Other	
Cycle Length: 151.4	
Actuated Cycle Length: 106.4	
Natural Cycle: 145	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.95	
Intersection Signal Delay: 44.5	Intersection LOS: D
Intersection Capacity Utilization 70.7%	ICU Level of Service C
Analysis Period (min) 15	

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

Splits and Phases: 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike)



Lane Group	Ø9
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	23	445	8	24	842	40	48	5	19	27	1	10
Future Volume (vph)	23	445	8	24	842	40	48	5	19	27	1	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	13	13	12	13	13
Storage Length (ft)	0		0	0		0	0		25	0		25
Storage Lanes	0		0	0		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997			0.993				0.850			0.850
Flt Protected		0.998			0.999			0.957			0.954	
Satd. Flow (prot)	0	3339	0	0	3329	0	0	1807	1605	0	1801	1605
Flt Permitted		0.888			0.929			0.723			0.685	
Satd. Flow (perm)	0	2971	0	0	3095	0	0	1365	1605	0	1293	1605
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			6				157			157
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		442			502			142			135	
Travel Time (s)		10.0			11.4			3.9			3.7	
Peak Hour Factor	0.80	0.80	0.80	0.89	0.89	0.89	0.80	0.80	0.80	0.91	0.91	0.91
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	29	556	10	27	946	45	60	6	24	30	1	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	595	0	0	1018	0	0	66	24	0	31	11
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2			4		4	4		4
Detector Phase	1	6		2	2		4	4	4	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	15.0		15.0	15.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	9.0	20.8		20.8	20.8		11.0	11.0	11.0	11.0	11.0	11.0
Total Split (s)	9.0	39.0		30.0	30.0		14.0	14.0	14.0	14.0	14.0	14.0
Total Split (%)	12.0%	52.0%		40.0%	40.0%		18.7%	18.7%	18.7%	18.7%	18.7%	18.7%
Yellow Time (s)	3.0	4.3		4.3	4.3		3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.5		1.5	1.5		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0			0.0			0.0	0.0		0.0	0.0
Total Lost Time (s)		5.8			5.8			4.0	4.0		4.0	4.0
Lead/Lag	Lead			Lag	Lag		Lag	Lag	Lag	Lag	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Min	C-Max		C-Max	C-Max		None	None	None	None	None	None
Act Effct Green (s)		58.7			49.2			8.7	8.7		8.7	8.7
Actuated g/C Ratio		0.78			0.66			0.12	0.12		0.12	0.12
v/c Ratio		0.25			0.50			0.42	0.07		0.21	0.03
Control Delay		3.0			6.1			38.5	0.4		32.5	0.2
Queue Delay		0.0			0.0			0.0	0.0		0.0	0.0
Total Delay		3.0			6.1			38.5	0.4		32.5	0.2
LOS		A			A			D	A		C	A
Approach Delay		3.0			6.1			28.4			24.0	
Approach LOS		A			A			C			C	

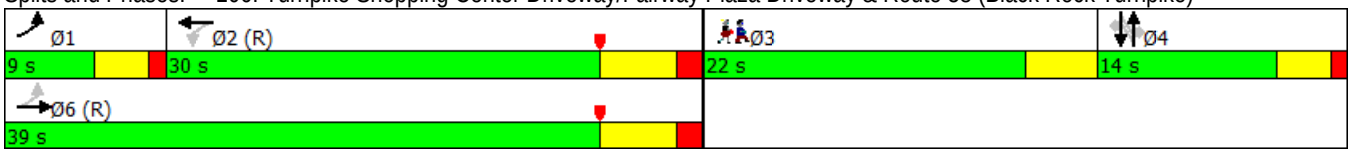
Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	22.0
Total Split (s)	22.0
Total Split (%)	29%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		31			62			29	0		14	0
Queue Length 95th (ft)		50			125			56	0		36	0
Internal Link Dist (ft)		362			422			62			55	
Turn Bay Length (ft)									25			25
Base Capacity (vph)		2344			2033			188	357		178	357
Starvation Cap Reductn		0			0			0	0		0	0
Spillback Cap Reductn		0			0			0	0		0	0
Storage Cap Reductn		0			0			0	0		0	0
Reduced v/c Ratio		0.25			0.50			0.35	0.07		0.17	0.03

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 19 (25%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.50
Intersection Signal Delay: 6.6 Intersection LOS: A
Intersection Capacity Utilization 59.7% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike)



Lane Group	Ø3
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

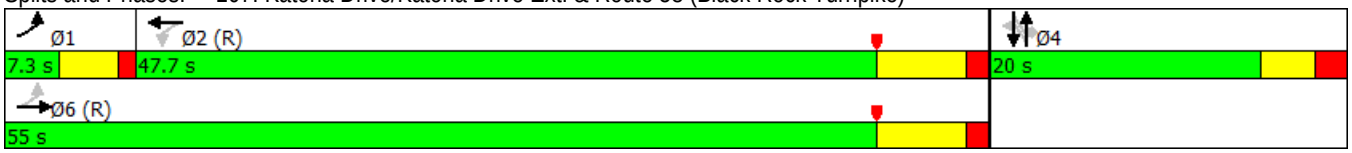
Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	431	55	51	905	2	72	2	29	2	2	1
Future Volume (vph)	1	431	55	51	905	2	72	2	29	2	2	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	10	10	12	12	12
Storage Length (ft)	0		0	0		0	0		250	0		0
Storage Lanes	0		0	0		0	0		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.983							0.850		0.962	
Flt Protected					0.997			0.954		0.950		
Satd. Flow (prot)	0	3298	0	0	3345	0	0	1627	1449	1736	1757	0
Flt Permitted		0.955			0.883			0.729		0.705		
Satd. Flow (perm)	0	3150	0	0	2963	0	0	1243	1449	1288	1757	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		37							111		1	
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		502			407			423			198	
Travel Time (s)		11.4			9.3			11.5			5.4	
Peak Hour Factor	0.80	0.80	0.80	0.92	0.92	0.92	0.92	0.92	0.92	0.80	0.80	0.80
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	1	539	69	55	984	2	78	2	32	3	3	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	609	0	0	1041	0	0	80	32	3	4	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2			4		4	4		
Detector Phase	1	6		2	2		4	4	4	4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0		7.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	7.3	21.3		21.3	21.3		11.9	11.9	11.9	11.9	11.9	
Total Split (s)	7.3	55.0		47.7	47.7		20.0	20.0	20.0	20.0	20.0	
Total Split (%)	9.7%	73.3%		63.6%	63.6%		26.7%	26.7%	26.7%	26.7%	26.7%	
Yellow Time (s)	3.3	5.0		5.0	5.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.0	1.3		1.3	1.3		1.9	1.9	1.9	1.9	1.9	
Lost Time Adjust (s)		0.0			0.0			0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.3			6.3			4.9	4.9	4.9	4.9	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Act Effct Green (s)		57.0			41.4			9.2	9.2	9.2	9.2	
Actuated g/C Ratio		0.76			0.55			0.12	0.12	0.12	0.12	
v/c Ratio		0.25			0.64			0.53	0.12	0.02	0.02	
Control Delay		2.3			6.6			42.9	0.9	27.0	24.7	
Queue Delay		0.0			0.0			0.0	0.0	0.0	0.0	
Total Delay		2.3			6.6			42.9	0.9	27.0	24.7	
LOS		A			A			D	A	C	C	
Approach Delay		2.3			6.6			30.9			25.7	
Approach LOS		A			A			C			C	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		8			53			36	0	1	1	
Queue Length 95th (ft)		30			61			73	0	7	8	
Internal Link Dist (ft)		422			327			343			118	
Turn Bay Length (ft)									250			
Base Capacity (vph)		2421			1635			250	380	259	354	
Starvation Cap Reductn		0			11			0	0	0	0	
Spillback Cap Reductn		0			0			0	0	0	0	
Storage Cap Reductn		0			0			0	0	0	0	
Reduced v/c Ratio		0.25			0.64			0.32	0.08	0.01	0.01	

Intersection Summary	
Area Type:	Other
Cycle Length: 75	
Actuated Cycle Length: 75	
Offset: 21 (28%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.64	
Intersection Signal Delay: 6.7	Intersection LOS: A
Intersection Capacity Utilization 65.6%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike)



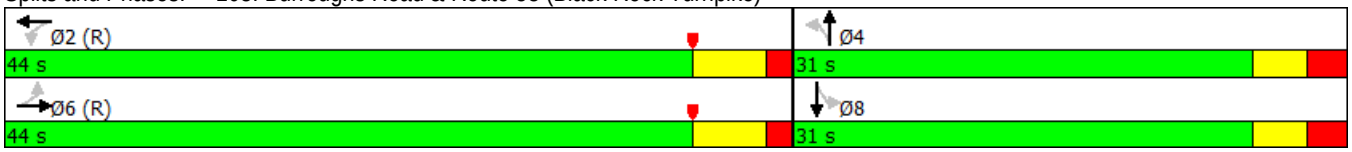
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	438	8	5	909	67	7	83	3	138	72	71
Future Volume (vph)	27	438	8	5	909	67	7	83	3	138	72	71
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	16	12	12	16	12
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997			0.990			0.995			0.966	
Flt Protected		0.997						0.996			0.976	
Satd. Flow (prot)	0	3304	0	0	3290	0	0	2032	0	0	1934	0
Flt Permitted		0.857			0.953			0.969			0.811	
Satd. Flow (perm)	0	2840	0	0	3136	0	0	1977	0	0	1607	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			15			3			25	
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		407			996			466			300	
Travel Time (s)		9.3			22.6			12.7			8.2	
Peak Hour Factor	0.80	0.80	0.80	0.95	0.95	0.95	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	34	548	10	5	957	71	9	104	4	173	90	89
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	592	0	0	1033	0	0	117	0	0	352	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		2	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		9.0	9.0		9.0	9.0	
Minimum Split (s)	20.6	20.6		20.6	20.6		14.4	14.4		14.4	14.4	
Total Split (s)	44.0	44.0		44.0	44.0		31.0	31.0		31.0	31.0	
Total Split (%)	58.7%	58.7%		58.7%	58.7%		41.3%	41.3%		41.3%	41.3%	
Yellow Time (s)	4.1	4.1		4.1	4.1		3.1	3.1		3.1	3.1	
All-Red Time (s)	1.5	1.5		1.5	1.5		2.3	2.3		2.3	2.3	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.6			5.6			5.4			5.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		44.4			44.4			19.6			19.6	
Actuated g/C Ratio		0.59			0.59			0.26			0.26	
v/c Ratio		0.35			0.56			0.23			0.80	
Control Delay		5.7			11.6			20.5			37.7	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		5.7			11.6			20.5			37.7	
LOS		A			B			C			D	
Approach Delay		5.7			11.6			20.5			37.7	
Approach LOS		A			B			C			D	
Queue Length 50th (ft)		26			139			41			141	
Queue Length 95th (ft)		32			232			63			178	
Internal Link Dist (ft)		327			916			386			220	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)		1681			1861			676			564	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.35			0.56			0.17			0.62	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 20 (27%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 45
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 14.8 Intersection LOS: B
Intersection Capacity Utilization 64.2% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 108: Burroughs Road & Route 58 (Black Rock Turnpike)



Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NWL	NWR	NWR2	NET
Lane Configurations												
Traffic Volume (vph)	1	229	350	1	33	2	552	1	339	5	12	1
Future Volume (vph)	1	229	350	1	33	2	552	1	339	5	12	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	11	11	12	10	12	12	12
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.97	0.95	0.95	1.00
Frt			0.850						0.993			0.910
Flt Protected							0.997		0.955			
Satd. Flow (prot)	0	1827	1553	0	0	0	3345	0	3137	0	0	1662
Flt Permitted		0.997					0.909		0.955			
Satd. Flow (perm)	0	1821	1553	0	0	0	3050	0	3137	0	0	1662
Right Turn on Red				Yes				Yes			Yes	
Satd. Flow (RTOR)			57						152			
Link Speed (mph)		30					30		30			25
Link Distance (ft)		996					549		218			653
Travel Time (s)		22.6					12.5		5.0			17.8
Peak Hour Factor	0.80	0.80	0.80	0.80	0.81	0.81	0.81	0.81	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	1	286	438	1	41	2	681	1	424	6	15	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	287	439	0	0	0	725	0	445	0	0	3
Turn Type	Perm	NA	pm+ov		Perm	Perm	NA		Prot			NA
Protected Phases		2	4				2		4			5
Permitted Phases	2		2		2	2						
Detector Phase	2	2	4		2	2	2		4			5
Switch Phase												
Minimum Initial (s)	15.0	15.0	9.0		15.0	15.0	15.0		9.0			5.0
Minimum Split (s)	22.8	22.8	15.4		22.8	22.8	22.8		15.4			12.6
Total Split (s)	35.8	35.8	33.4		35.8	35.8	35.8		33.4			19.6
Total Split (%)	40.3%	40.3%	37.6%		40.3%	40.3%	40.3%		37.6%			22.1%
Yellow Time (s)	4.1	4.1	3.3		4.1	4.1	4.1		3.3			3.3
All-Red Time (s)	3.7	3.7	3.1		3.7	3.7	3.7		3.1			4.3
Lost Time Adjust (s)		0.0	0.0				0.0		0.0			0.0
Total Lost Time (s)		7.8	6.4				7.8		6.4			7.6
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Min	Min	None		Min	Min	Min		None			None
Act Effct Green (s)		18.2	42.2				18.2		10.8			5.8
Actuated g/C Ratio		0.38	0.87				0.38		0.22			0.12
v/c Ratio		0.42	0.32				0.63		0.55			0.02
Control Delay		15.3	3.2				16.8		15.3			25.5
Queue Delay		0.0	0.0				0.0		0.0			0.0
Total Delay		15.3	3.2				16.8		15.3			25.5
LOS		B	A				B		B			C
Approach Delay		8.0					16.8		15.3			25.5
Approach LOS		A					B		B			C
Queue Length 50th (ft)		41	0				60		26			1
Queue Length 95th (ft)		130	78				161		82			8
Internal Link Dist (ft)		916					469		138			573

Lane Group	NER	NER2	SWL2	SWL	SWT	SWR
Lane Configurations						
Traffic Volume (vph)	1	1	1	16	0	6
Future Volume (vph)	1	1	1	16	0	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	15	12	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.966	
Flt Protected					0.964	
Satd. Flow (prot)	0	0	0	0	1701	0
Flt Permitted						
Satd. Flow (perm)	0	0	0	0	1765	0
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)					25	
Link Distance (ft)					695	
Travel Time (s)					19.0	
Peak Hour Factor	0.80	0.80	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	1	1	1	17	0	6
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	24	0
Turn Type				Perm	NA	
Protected Phases					5	
Permitted Phases				5		
Detector Phase				5	5	
Switch Phase						
Minimum Initial (s)				5.0	5.0	
Minimum Split (s)				12.6	12.6	
Total Split (s)				19.6	19.6	
Total Split (%)				22.1%	22.1%	
Yellow Time (s)				3.3	3.3	
All-Red Time (s)				4.3	4.3	
Lost Time Adjust (s)					0.0	
Total Lost Time (s)					7.6	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode				None	None	
Act Effct Green (s)					5.8	
Actuated g/C Ratio					0.12	
v/c Ratio					0.11	
Control Delay					26.0	
Queue Delay					0.0	
Total Delay					26.0	
LOS					C	
Approach Delay					26.0	
Approach LOS					C	
Queue Length 50th (ft)					5	
Queue Length 95th (ft)					30	
Internal Link Dist (ft)					615	

Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NWL	NWR	NWR2	NET
Turn Bay Length (ft)												
Base Capacity (vph)		1122	1493				1879		1926			439
Starvation Cap Reductn		0	0				0		0			0
Spillback Cap Reductn		0	0				0		0			0
Storage Cap Reductn		0	0				0		0			0
Reduced v/c Ratio		0.26	0.29				0.39		0.23			0.01

Intersection Summary

Area Type: Other
Cycle Length: 88.8
Actuated Cycle Length: 48.5
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.63
Intersection Signal Delay: 13.2 Intersection LOS: B
Intersection Capacity Utilization 71.7% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) & Route 58 (Black Rock Turnpike)/Route 58 (Tunxis Hill Cut

Ø2	Ø4	Ø5
35.8 s	33.4 s	19.6 s

Lane Group	NER	NER2	SWL2	SWL	SWT	SWR
Turn Bay Length (ft)						
Base Capacity (vph)					466	
Starvation Cap Reductn					0	
Spillback Cap Reductn					0	
Storage Cap Reductn					0	
Reduced v/c Ratio					0.05	

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	256	2	60	598	0	58
Future Volume (vph)	256	2	60	598	0	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	10	10
Storage Length (ft)		0	0		0	50
Storage Lanes		0	0		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00
Frt	0.999					0.850
Flt Protected				0.995		
Satd. Flow (prot)	3352	0	0	1757	1705	1449
Flt Permitted				0.995		
Satd. Flow (perm)	3352	0	0	1757	1705	1449
Link Speed (mph)	30			30	25	
Link Distance (ft)	1095			214	782	
Travel Time (s)	24.9			4.9	21.3	
Peak Hour Factor	0.80	0.80	0.91	0.91	0.80	0.80
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	320	3	66	657	0	73
Shared Lane Traffic (%)						
Lane Group Flow (vph)	323	0	0	723	0	73
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 48.6%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	256	2	60	598	0	58
Future Vol, veh/h	256	2	60	598	0	58
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	91	91	80	80
Heavy Vehicles, %	4	4	4	4	4	4
Mvmt Flow	320	3	66	657	0	73

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	323	0	1110	161
Stage 1	-	-	-	-	321	-
Stage 2	-	-	-	-	789	-
Critical Hdwy	-	-	4.16	-	6.66	6.96
Critical Hdwy Stg 1	-	-	-	-	5.86	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	-	-	2.238	-	3.538	3.338
Pot Cap-1 Maneuver	-	-	1222	-	214	850
Stage 1	-	-	-	-	704	-
Stage 2	-	-	-	-	442	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1222	-	196	850
Mov Cap-2 Maneuver	-	-	-	-	196	-
Stage 1	-	-	-	-	704	-
Stage 2	-	-	-	-	404	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	9.6
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	850	-	-	1222	-
HCM Lane V/C Ratio	-	0.085	-	-	0.054	-
HCM Control Delay (s)	0	9.6	-	-	8.1	0
HCM Lane LOS	A	A	-	-	A	A
HCM 95th %tile Q(veh)	-	0.3	-	-	0.2	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	19	64	72	337	372	28
Future Volume (vph)	19	64	72	337	372	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	12	12
Storage Length (ft)	0	0	25			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt	0.896				0.991	
Flt Protected	0.989			0.991		
Satd. Flow (prot)	1817	0	0	3407	1793	0
Flt Permitted	0.989			0.991		
Satd. Flow (perm)	1817	0	0	3407	1793	0
Link Speed (mph)	25			30	30	
Link Distance (ft)	586			395	218	
Travel Time (s)	16.0			9.0	5.0	
Peak Hour Factor	0.80	0.80	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	24	80	78	366	404	30
Shared Lane Traffic (%)						
Lane Group Flow (vph)	104	0	0	444	434	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 47.7%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	19	64	72	337	372	28
Future Vol, veh/h	19	64	72	337	372	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	25	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	92	92	92	92
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	24	80	78	366	404	30

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	760	420	435	0	-	0
Stage 1	420	-	-	-	-	-
Stage 2	340	-	-	-	-	-
Critical Hdwy	6.675	6.275	4.175	-	-	-
Critical Hdwy Stg 1	5.475	-	-	-	-	-
Critical Hdwy Stg 2	5.875	-	-	-	-	-
Follow-up Hdwy	3.5475	3.3475	2.2475	-	-	-
Pot Cap-1 Maneuver	352	625	1104	-	-	-
Stage 1	654	-	-	-	-	-
Stage 2	686	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	321	625	1104	-	-	-
Mov Cap-2 Maneuver	321	-	-	-	-	-
Stage 1	654	-	-	-	-	-
Stage 2	625	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	13.8	1.7	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1104	-	514	-	-
HCM Lane V/C Ratio	0.071	-	0.202	-	-
HCM Control Delay (s)	8.5	0.3	13.8	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.7	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	0	1	43	0	44	5	625	59	55	684	5
Future Volume (vph)	6	0	1	43	0	44	5	625	59	55	684	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	16	12	12	13	12	12	13	12
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		0.985			0.932			0.988			0.999	
Flt Protected		0.957			0.976						0.996	
Satd. Flow (prot)	0	1990	0	0	1920	0	0	1902	0	0	1915	0
Flt Permitted		0.844			0.839			0.996			0.915	
Satd. Flow (perm)	0	1755	0	0	1651	0	0	1894	0	0	1759	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		43			52			14			1	
Link Speed (mph)		25			30			35			35	
Link Distance (ft)		378			442			1898			522	
Travel Time (s)		10.3			10.0			37.0			10.2	
Peak Hour Factor	0.80	0.80	0.80	0.84	0.84	0.84	0.95	0.95	0.95	0.94	0.94	0.94
Adj. Flow (vph)	8	0	1	51	0	52	5	658	62	59	728	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	9	0	0	103	0	0	725	0	0	792	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	11.7	11.7		11.7	11.7		20.6	20.6		20.6	20.6	
Total Split (s)	17.7	17.7		17.7	17.7		48.6	48.6		48.6	48.6	
Total Split (%)	26.7%	26.7%		26.7%	26.7%		73.3%	73.3%		73.3%	73.3%	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.4	1.4		1.4	1.4		1.6	1.6		1.6	1.6	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.7			4.7			5.6			5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Act Effct Green (s)		7.8			7.8			33.7			33.7	
Actuated g/C Ratio		0.16			0.16			0.71			0.71	
v/c Ratio		0.03			0.33			0.54			0.64	
Control Delay		0.1			15.0			6.7			8.6	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		0.1			15.0			6.7			8.6	
LOS		A			B			A			A	
Approach Delay		0.1			15.0			6.7			8.6	
Approach LOS		A			B			A			A	
Queue Length 50th (ft)		0			10			90			113	
Queue Length 95th (ft)		0			50			190			249	
Internal Link Dist (ft)		298			362			1818			442	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		528			505			1688			1566	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.02			0.20			0.43			0.51	

Intersection Summary

Area Type: Other
Cycle Length: 66.3
Actuated Cycle Length: 47.6
Natural Cycle: 50
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.64
Intersection Signal Delay: 8.1 Intersection LOS: A
Intersection Capacity Utilization 88.5% ICU Level of Service E
Analysis Period (min) 15

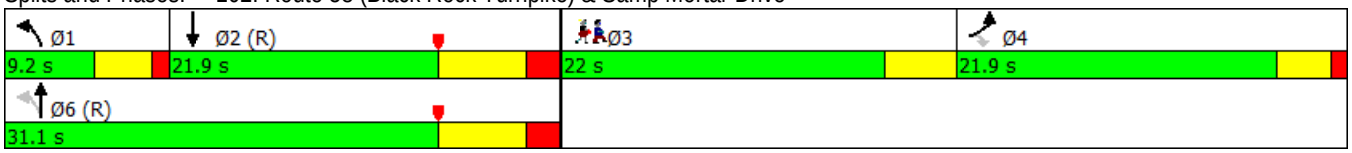
Splits and Phases: 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Lane Configurations							
Traffic Volume (vph)	76	167	163	624	663	68	
Future Volume (vph)	76	167	163	624	663	68	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	10	10	11	11	12	12	
Storage Length (ft)	0	50	100			0	
Storage Lanes	1	1	1			0	
Taper Length (ft)	25		50				
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	
Frt		0.850			0.986		
Flt Protected	0.950		0.950				
Satd. Flow (prot)	1636	1463	1694	1783	3456	0	
Flt Permitted	0.950		0.309				
Satd. Flow (perm)	1636	1463	551	1783	3456	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		204			13		
Link Speed (mph)	25			30	35		
Link Distance (ft)	445			510	341		
Travel Time (s)	12.1			11.6	6.6		
Peak Hour Factor	0.82	0.82	0.86	0.86	0.97	0.97	
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	
Adj. Flow (vph)	93	204	190	726	684	70	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	93	204	190	726	754	0	
Turn Type	Prot	Perm	pm+pt	NA	NA		
Protected Phases	4		1	6	2		3
Permitted Phases		4	6				
Detector Phase	4	4	1	6	2		
Switch Phase							
Minimum Initial (s)	9.0	9.0	5.0	15.0	15.0		7.0
Minimum Split (s)	13.0	13.0	9.2	21.9	21.9		22.0
Total Split (s)	21.9	21.9	9.2	31.1	21.9		22.0
Total Split (%)	29.2%	29.2%	12.3%	41.5%	29.2%		29%
Yellow Time (s)	3.0	3.0	3.2	4.9	4.9		4.0
All-Red Time (s)	1.0	1.0	1.0	2.0	2.0		0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	4.0	4.0	4.2	6.9	6.9		
Lead/Lag	Lag	Lag	Lead		Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes		Yes		Yes
Recall Mode	None	None	None	C-Max	C-Max		None
Act Effct Green (s)	10.0	10.0	56.8	54.1	40.9		
Actuated g/C Ratio	0.13	0.13	0.76	0.72	0.55		
v/c Ratio	0.43	0.55	0.34	0.56	0.40		
Control Delay	35.9	10.8	6.9	14.5	11.1		
Queue Delay	0.0	0.0	0.0	0.0	0.0		
Total Delay	35.9	10.8	6.9	14.5	11.1		
LOS	D	B	A	B	B		
Approach Delay	18.7			12.9	11.1		
Approach LOS	B			B	B		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Queue Length 50th (ft)	41	0	30	275	92		
Queue Length 95th (ft)	72	41	62	405	159		
Internal Link Dist (ft)	365			430	261		
Turn Bay Length (ft)		50	100				
Base Capacity (vph)	390	504	555	1286	1888		
Starvation Cap Reductn	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0		
Reduced v/c Ratio	0.24	0.40	0.34	0.56	0.40		

Intersection Summary	
Area Type: Other	
Cycle Length: 75	
Actuated Cycle Length: 75	
Offset: 22 (29%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.56	
Intersection Signal Delay: 13.1	Intersection LOS: B
Intersection Capacity Utilization 49.6%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive



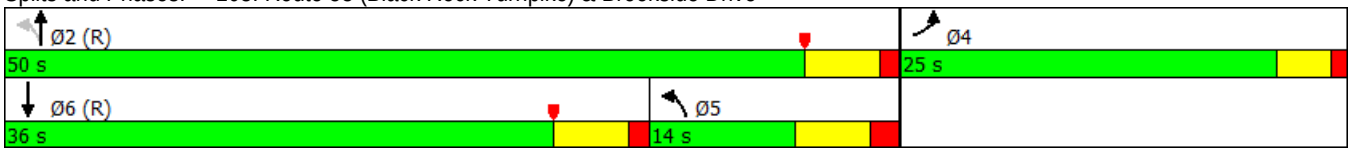
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	64	46	51	724	748	84
Future Volume (vph)	64	46	51	724	748	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	12	12
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Frt	0.944				0.985	
Flt Protected	0.972			0.997		
Satd. Flow (prot)	1918	0	0	3494	3452	0
Flt Permitted	0.972			0.842		
Satd. Flow (perm)	1918	0	0	2951	3452	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	48				19	
Link Speed (mph)	25			30	30	
Link Distance (ft)	347			293	336	
Travel Time (s)	9.5			6.7	7.6	
Peak Hour Factor	0.86	0.86	0.83	0.83	0.98	0.98
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	74	53	61	872	763	86
Shared Lane Traffic (%)						
Lane Group Flow (vph)	127	0	0	933	849	0
Turn Type	Prot		pm+pt	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases			2			
Detector Phase	4		5	2	6	
Switch Phase						
Minimum Initial (s)	9.0		3.0	15.0	15.0	
Minimum Split (s)	13.0		8.9	20.4	20.4	
Total Split (s)	25.0		14.0	50.0	36.0	
Total Split (%)	33.3%		18.7%	66.7%	48.0%	
Yellow Time (s)	3.0		4.2	4.2	4.2	
All-Red Time (s)	1.0		1.7	1.2	1.2	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	4.0			5.4	5.4	
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None	C-Max	C-Max	
Act Effct Green (s)	9.5			59.7	59.7	
Actuated g/C Ratio	0.13			0.80	0.80	
v/c Ratio	0.45			0.40	0.31	
Control Delay	24.7			2.7	1.6	
Queue Delay	0.0			0.1	0.0	
Total Delay	24.7			2.9	1.6	
LOS	C			A	A	
Approach Delay	24.7			2.9	1.6	
Approach LOS	C			A	A	
Queue Length 50th (ft)	34			26	8	
Queue Length 95th (ft)	75			56	8	
Internal Link Dist (ft)	267			213	256	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Turn Bay Length (ft)						
Base Capacity (vph)	571			2350	2753	
Starvation Cap Reductn	0			400	0	
Spillback Cap Reductn	0			0	65	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.22			0.48	0.32	

Intersection Summary

Area Type: Other	
Cycle Length: 75	
Actuated Cycle Length: 75	
Offset: 45 (60%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow	
Natural Cycle: 45	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.45	
Intersection Signal Delay: 3.7	Intersection LOS: A
Intersection Capacity Utilization 64.7%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 103: Route 58 (Black Rock Turnpike) & Brookside Drive



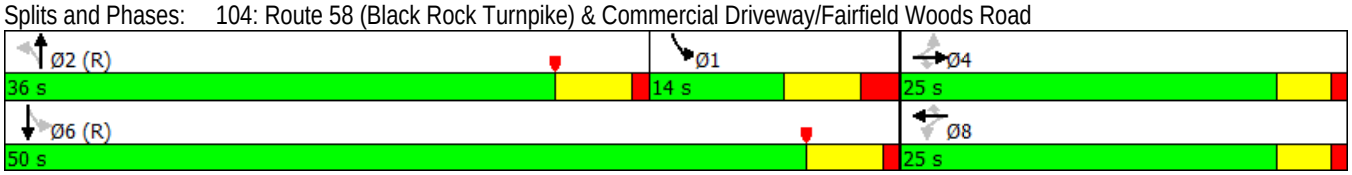
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	14	3	31	61	4	141	29	636	51	83	691	21
Future Volume (vph)	14	3	31	61	4	141	29	636	51	83	691	21
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	11	12	11	12	12	11	12
Storage Length (ft)	0		0	0		75	0		0	0		0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt			0.850			0.850		0.989			0.996	
Flt Protected		0.961			0.955			0.998			0.995	
Satd. Flow (prot)	0	1790	1583	0	1779	1531	0	3377	0	0	3391	0
Flt Permitted		0.805			0.728			0.899			0.783	
Satd. Flow (perm)	0	1500	1583	0	1356	1531	0	3042	0	0	2668	0
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			128					13			6	
Link Speed (mph)		30			25			30			30	
Link Distance (ft)		87			499			713			293	
Travel Time (s)		2.0			13.6			16.2			6.7	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.89	0.89	0.89	0.96	0.96	0.96
Adj. Flow (vph)	18	4	39	76	5	176	33	715	57	86	720	22
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	22	39	0	81	176	0	805	0	0	828	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	4	4	4	8	8	8	2	2		1	6	
Switch Phase												
Minimum Initial (s)	9.0	9.0	9.0	9.0	9.0	9.0	15.0	15.0		3.0	15.0	
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	20.3	20.3		9.5	20.3	
Total Split (s)	25.0	25.0	25.0	25.0	25.0	25.0	36.0	36.0		14.0	50.0	
Total Split (%)	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	48.0%	48.0%		18.7%	66.7%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.3	4.3		4.3	4.3	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		2.2	1.0	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0		0.0			0.0	
Total Lost Time (s)		4.0	4.0		4.0	4.0		5.3			5.3	
Lead/Lag							Lead	Lead		Lag		
Lead-Lag Optimize?							Yes	Yes		Yes		
Recall Mode	None	None	None	None	None	None	C-Max	C-Max		None	C-Max	
Act Effct Green (s)		13.3	13.3		13.3	13.3		52.4			52.4	
Actuated g/C Ratio		0.18	0.18		0.18	0.18		0.70			0.70	
v/c Ratio		0.08	0.10		0.34	0.65		0.38			0.44	
Control Delay		24.3	0.5		29.5	39.5		5.7			4.0	
Queue Delay		0.0	0.0		0.0	0.0		0.0			0.1	
Total Delay		24.3	0.5		29.5	39.5		5.7			4.1	
LOS		C	A		C	D		A			A	
Approach Delay		9.1			36.3			5.7			4.1	
Approach LOS		A			D			A			A	
Queue Length 50th (ft)		9	0		34	77		63			14	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		22	0		58	111		117			189	
Internal Link Dist (ft)		7			419			633			213	
Turn Bay Length (ft)						75						
Base Capacity (vph)		420	535		379	428		2129			1865	
Starvation Cap Reductn		0	0		0	0		0			230	
Spillback Cap Reductn		0	0		0	0		0			0	
Storage Cap Reductn		0	0		0	0		0			0	
Reduced v/c Ratio		0.05	0.07		0.21	0.41		0.38			0.51	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 48 (64%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 50
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.65
Intersection Signal Delay: 9.1 Intersection LOS: A
Intersection Capacity Utilization 64.6% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	75	532	182	119	552	103	195	193	126	168	185	52
Future Volume (vph)	75	532	182	119	552	103	195	193	126	168	185	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	11	12	12	11	11	12	12	12	12
Storage Length (ft)	200		0	175		0	210		0	170		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	85			75			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.962			0.976			0.941			0.967	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1711	3291	0	1711	3454	0	1711	1694	0	1770	1801	0
Flt Permitted	0.950			0.950			0.418			0.358		
Satd. Flow (perm)	1711	3291	0	1711	3454	0	753	1694	0	667	1801	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		29			13			19				
Link Speed (mph)		30			30			30			25	
Link Distance (ft)		436			368			438			355	
Travel Time (s)		9.9			8.4			10.0			9.7	
Peak Hour Factor	0.91	0.91	0.91	0.93	0.93	0.93	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	82	585	200	128	594	111	203	201	131	175	193	54
Shared Lane Traffic (%)												
Lane Group Flow (vph)	82	785	0	128	705	0	203	332	0	175	247	0
Turn Type	Prot	NA		Prot	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases							4			8		
Detector Phase	5	2		1	6		7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	15.0		5.0	15.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	21.6		9.7	21.6		9.3	16.8		9.3	16.8	
Total Split (s)	17.7	41.6		17.7	41.6		22.3	36.8		22.3	36.8	
Total Split (%)	11.7%	27.5%		11.7%	27.5%		14.7%	24.3%		14.7%	24.3%	
Yellow Time (s)	3.0	4.1		3.0	4.1		3.3	4.4		3.3	4.4	
All-Red Time (s)	1.7	2.5		1.7	2.5		1.0	2.4		1.0	2.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	6.6		4.7	6.6		4.3	6.8		4.3	6.8	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Min		None	Min		None	None		None	None	
Act Effct Green (s)	9.4	32.4		12.3	37.8		42.9	27.0		38.5	24.8	
Actuated g/C Ratio	0.09	0.31		0.12	0.36		0.41	0.26		0.36	0.24	
v/c Ratio	0.54	0.76		0.64	0.57		0.48	0.74		0.49	0.58	
Control Delay	61.1	38.2		62.4	31.2		23.9	46.1		24.5	43.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	61.1	38.2		62.4	31.2		23.9	46.1		24.5	43.1	
LOS	E	D		E	C		C	D		C	D	
Approach Delay		40.4			36.0			37.7			35.4	
Approach LOS		D			D			D			D	
Queue Length 50th (ft)	55	251		86	210		88	198		75	150	

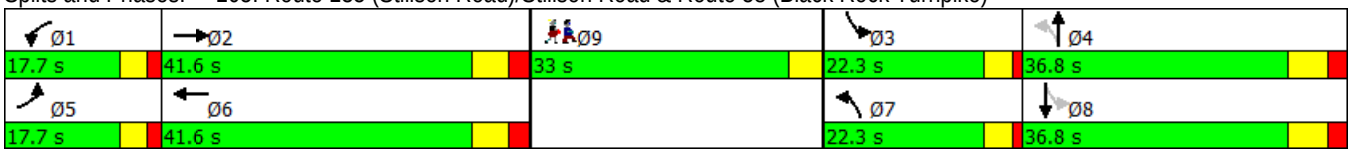
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	33.0
Total Split (s)	33.0
Total Split (%)	22%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	110	346		#175	305		146	323		125	250	
Internal Link Dist (ft)		356			288			358			275	
Turn Bay Length (ft)	200			175			210			170		
Base Capacity (vph)	212	1121		212	1245		484	499		468	517	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.39	0.70		0.60	0.57		0.42	0.67		0.37	0.48	

Intersection Summary

Area Type: Other
Cycle Length: 151.4
Actuated Cycle Length: 105.5
Natural Cycle: 125
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.76
Intersection Signal Delay: 37.7 Intersection LOS: D
Intersection Capacity Utilization 72.9% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike)



Lane Group	Ø9
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

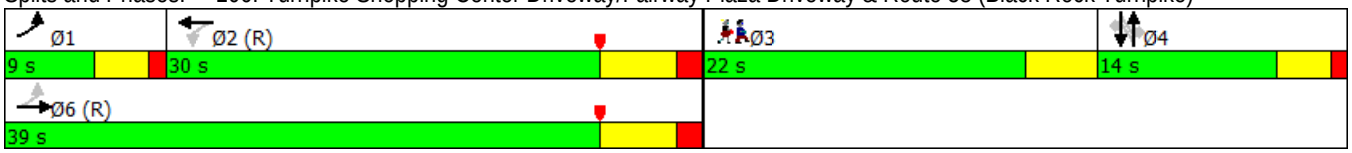
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	639	30	57	579	65	154	11	77	51	12	31
Future Volume (vph)	68	639	30	57	579	65	154	11	77	51	12	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	13	13	12	13	13
Storage Length (ft)	0		0	0		0	0		25	0		25
Storage Lanes	0		0	0		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.994			0.986				0.850			0.850
Flt Protected		0.995			0.996			0.956			0.961	
Satd. Flow (prot)	0	3351	0	0	3327	0	0	1822	1620	0	1832	1620
Flt Permitted		0.821			0.822			0.689			0.705	
Satd. Flow (perm)	0	2765	0	0	2746	0	0	1313	1620	0	1344	1620
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			15				157			157
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		442			502			142			135	
Travel Time (s)		10.0			11.4			3.9			3.7	
Peak Hour Factor	0.91	0.91	0.91	0.97	0.97	0.97	0.95	0.95	0.95	0.88	0.88	0.88
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	75	702	33	59	597	67	162	12	81	58	14	35
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	810	0	0	723	0	0	174	81	0	72	35
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2			4		4	4		4
Detector Phase	1	6		2	2		4	4	4	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	15.0		15.0	15.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	9.0	20.8		20.8	20.8		11.0	11.0	11.0	11.0	11.0	11.0
Total Split (s)	9.0	39.0		30.0	30.0		14.0	14.0	14.0	14.0	14.0	14.0
Total Split (%)	12.0%	52.0%		40.0%	40.0%		18.7%	18.7%	18.7%	18.7%	18.7%	18.7%
Yellow Time (s)	3.0	4.3		4.3	4.3		3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.5		1.5	1.5		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0			0.0			0.0	0.0		0.0	0.0
Total Lost Time (s)		5.8			5.8			4.0	4.0		4.0	4.0
Lead/Lag	Lead			Lag	Lag		Lag	Lag	Lag	Lag	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Min	C-Max		C-Max	C-Max		None	None	None	None	None	None
Act Effct Green (s)		48.2			38.7			17.0	17.0		17.0	17.0
Actuated g/C Ratio		0.64			0.52			0.23	0.23		0.23	0.23
v/c Ratio		0.45			0.51			0.59	0.17		0.24	0.07
Control Delay		7.7			7.9			34.1	0.9		25.1	0.3
Queue Delay		0.0			0.0			0.0	0.0		0.0	0.0
Total Delay		7.7			7.9			34.1	0.9		25.1	0.3
LOS		A			A			C	A		C	A
Approach Delay		7.7			7.9			23.6			17.0	
Approach LOS		A			A			C			B	

Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
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)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	22.0
Total Split (s)	22.0
Total Split (%)	29%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		81			54			72	0		27	0
Queue Length 95th (ft)		125			70			128	3		57	0
Internal Link Dist (ft)		362			422			62			55	
Turn Bay Length (ft)									25			25
Base Capacity (vph)		1807			1423			297	489		304	489
Starvation Cap Reductn		0			0			0	0		0	0
Spillback Cap Reductn		0			0			0	0		0	0
Storage Cap Reductn		0			0			0	0		0	0
Reduced v/c Ratio		0.45			0.51			0.59	0.17		0.24	0.07

Intersection Summary	
Area Type: Other	
Cycle Length: 75	
Actuated Cycle Length: 75	
Offset: 19 (25%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.59	
Intersection Signal Delay: 10.4	Intersection LOS: B
Intersection Capacity Utilization 69.1%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike)



Lane Group	Ø3
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

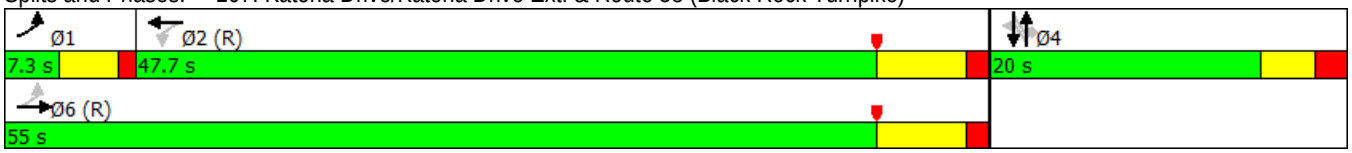
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	684	101	44	646	1	88	2	48	3	9	8
Future Volume (vph)	3	684	101	44	646	1	88	2	48	3	9	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	10	10	12	12	12
Storage Length (ft)	0		0	0		0	0		250	0		0
Storage Lanes	0		0	0		0	0		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.981							0.850		0.929	
Flt Protected					0.997			0.953		0.950		
Satd. Flow (prot)	0	3324	0	0	3378	0	0	1641	1463	1752	1714	0
Flt Permitted		0.955			0.843			0.715		0.688		
Satd. Flow (perm)	0	3174	0	0	2856	0	0	1231	1463	1269	1714	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		44							111		10	
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		502			407			423			198	
Travel Time (s)		11.4			9.3			11.5			5.4	
Peak Hour Factor	0.87	0.87	0.87	0.95	0.95	0.95	0.84	0.84	0.84	0.80	0.80	0.80
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	3	786	116	46	680	1	105	2	57	4	11	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	905	0	0	727	0	0	107	57	4	21	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2			4		4	4		
Detector Phase	1	6		2	2		4	4	4	4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0		7.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	7.3	21.3		21.3	21.3		11.9	11.9	11.9	11.9	11.9	
Total Split (s)	7.3	55.0		47.7	47.7		20.0	20.0	20.0	20.0	20.0	
Total Split (%)	9.7%	73.3%		63.6%	63.6%		26.7%	26.7%	26.7%	26.7%	26.7%	
Yellow Time (s)	3.3	5.0		5.0	5.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.0	1.3		1.3	1.3		1.9	1.9	1.9	1.9	1.9	
Lost Time Adjust (s)		0.0			0.0			0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.3			6.3			4.9	4.9	4.9	4.9	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Act Effct Green (s)		55.7			41.4			10.5	10.5	10.5	10.5	
Actuated g/C Ratio		0.74			0.55			0.14	0.14	0.14	0.14	
v/c Ratio		0.38			0.46			0.63	0.19	0.02	0.08	
Control Delay		3.0			6.6			45.7	2.5	25.7	19.4	
Queue Delay		0.0			0.0			0.0	0.0	0.0	0.0	
Total Delay		3.0			6.6			45.7	2.5	25.7	19.4	
LOS		A			A			D	A	C	B	
Approach Delay		3.0			6.6			30.7			20.4	
Approach LOS		A			A			C			C	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		44			40			48	0	2	5	
Queue Length 95th (ft)		58			51			84	3	8	18	
Internal Link Dist (ft)		422			327			343			118	
Turn Bay Length (ft)									250			
Base Capacity (vph)		2384			1576			247	383	255	353	
Starvation Cap Reductn		0			0			0	0	0	0	
Spillback Cap Reductn		0			0			0	0	0	0	
Storage Cap Reductn		0			0			0	0	0	0	
Reduced v/c Ratio		0.38			0.46			0.43	0.15	0.02	0.06	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 21 (28%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 45
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.63
Intersection Signal Delay: 7.2 Intersection LOS: A
Intersection Capacity Utilization 67.6% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike)



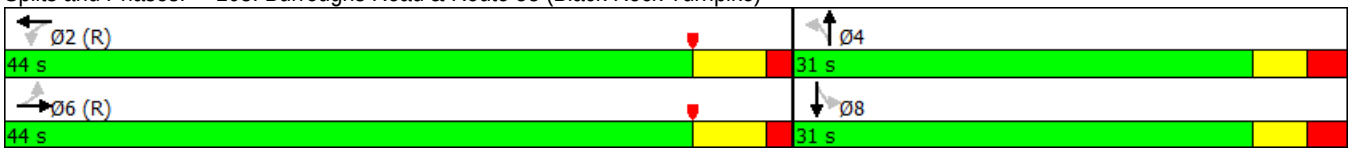
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	59	711	11	5	632	107	13	56	7	111	48	44
Future Volume (vph)	59	711	11	5	632	107	13	56	7	111	48	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	16	12	12	16	12
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.978			0.987			0.971	
Flt Protected		0.996						0.992			0.973	
Satd. Flow (prot)	0	3335	0	0	3282	0	0	2027	0	0	1956	0
Flt Permitted		0.830			0.950			0.932			0.815	
Satd. Flow (perm)	0	2779	0	0	3118	0	0	1905	0	0	1639	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			37			8			20	
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		407			996			466			300	
Travel Time (s)		9.3			22.6			12.7			8.2	
Peak Hour Factor	0.86	0.86	0.86	0.96	0.96	0.96	0.80	0.80	0.80	0.83	0.83	0.83
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	69	827	13	5	658	111	16	70	9	134	58	53
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	909	0	0	774	0	0	95	0	0	245	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		2	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		9.0	9.0		9.0	9.0	
Minimum Split (s)	20.6	20.6		20.6	20.6		14.4	14.4		14.4	14.4	
Total Split (s)	44.0	44.0		44.0	44.0		31.0	31.0		31.0	31.0	
Total Split (%)	58.7%	58.7%		58.7%	58.7%		41.3%	41.3%		41.3%	41.3%	
Yellow Time (s)	4.1	4.1		4.1	4.1		3.1	3.1		3.1	3.1	
All-Red Time (s)	1.5	1.5		1.5	1.5		2.3	2.3		2.3	2.3	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.6			5.6			5.4			5.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		48.5			48.5			15.5			15.5	
Actuated g/C Ratio		0.65			0.65			0.21			0.21	
v/c Ratio		0.51			0.38			0.24			0.69	
Control Delay		4.9			7.3			22.2			34.8	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		5.0			7.3			22.2			34.8	
LOS		A			A			C			C	
Approach Delay		5.0			7.3			22.2			34.8	
Approach LOS		A			A			C			C	
Queue Length 50th (ft)		40			72			34			97	
Queue Length 95th (ft)		53			135			56			136	
Internal Link Dist (ft)		327			916			386			220	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)		1797			2028			655			572	
Starvation Cap Reductn		75			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.53			0.38			0.15			0.43	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 20 (27%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 40
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.69
Intersection Signal Delay: 10.3 Intersection LOS: B
Intersection Capacity Utilization 74.6% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 108: Burroughs Road & Route 58 (Black Rock Turnpike)



Lane Group	EBT	EBR	EBR2	WBL2	WBL	WBT	NWL2	NWL	NWR	NWR2	NEL	NET
Lane Configurations												
Traffic Volume (vph)	336	442	6	32	7	328	4	374	2	23	5	0
Future Volume (vph)	336	442	6	32	7	328	4	374	2	23	5	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	11	11	12	10	12	12	12	12
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.97	0.95	0.95	1.00	1.00
Frt		0.850						0.991				0.939
Flt Protected						0.995		0.955				0.973
Satd. Flow (prot)	1827	1553	0	0	0	3339	0	3131	0	0	0	1669
Flt Permitted						0.862		0.946				
Satd. Flow (perm)	1827	1553	0	0	0	2892	0	3101	0	0	0	1715
Right Turn on Red			Yes							Yes		
Satd. Flow (RTOR)		57						152				
Link Speed (mph)	30					30		30				25
Link Distance (ft)	996					549		218				653
Travel Time (s)	22.6					12.5		5.0				17.8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.95	0.95	0.95	0.95	0.80	0.80
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	373	491	7	36	8	364	4	394	2	24	6	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	373	498	0	0	0	408	0	424	0	0	0	11
Turn Type	NA	pm+ov		Perm	Perm	NA	D.Pm	Prot			Perm	NA
Protected Phases	2	4				2		4				5
Permitted Phases		2		2	2		4				5	
Detector Phase	2	4		2	2	2	4	4			5	5
Switch Phase												
Minimum Initial (s)	15.0	9.0		15.0	15.0	15.0	9.0	9.0			5.0	5.0
Minimum Split (s)	22.8	15.4		22.8	22.8	22.8	15.4	15.4			12.6	12.6
Total Split (s)	35.8	33.4		35.8	35.8	35.8	33.4	33.4			19.6	19.6
Total Split (%)	40.3%	37.6%		40.3%	40.3%	40.3%	37.6%	37.6%			22.1%	22.1%
Yellow Time (s)	4.1	3.3		4.1	4.1	4.1	3.3	3.3			3.3	3.3
All-Red Time (s)	3.7	3.1		3.7	3.7	3.7	3.1	3.1			4.3	4.3
Lost Time Adjust (s)	0.0	0.0				0.0		0.0				0.0
Total Lost Time (s)	7.8	6.4				7.8		6.4				7.6
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Min	None		Min	Min	Min	None	None			None	None
Act Effct Green (s)	16.9	40.2				16.9		10.5				5.4
Actuated g/C Ratio	0.36	0.87				0.36		0.23				0.12
v/c Ratio	0.56	0.37				0.39		0.52				0.06
Control Delay	17.7	3.5				13.9		13.8				24.3
Queue Delay	0.0	0.0				0.0		0.0				0.0
Total Delay	17.7	3.5				13.9		13.8				24.3
LOS	B	A				B		B				C
Approach Delay	9.6					13.9		13.8				24.3
Approach LOS	A					B		B				C
Queue Length 50th (ft)	56	0				30		24				2
Queue Length 95th (ft)	199	109				99		86				16
Internal Link Dist (ft)	916					469		138				573

Lane Group	NER2	SWL	SWT	SWR
Lane Configurations				
Traffic Volume (vph)	4	5	0	6
Future Volume (vph)	4	5	0	6
Ideal Flow (vphpl)	1900	1900	1900	1900
Lane Width (ft)	12	15	12	12
Lane Util. Factor	1.00	1.00	1.00	1.00
Frt			0.923	
Flt Protected			0.979	
Satd. Flow (prot)	0	0	1651	0
Flt Permitted				
Satd. Flow (perm)	0	0	1686	0
Right Turn on Red	No			No
Satd. Flow (RTOR)				
Link Speed (mph)			25	
Link Distance (ft)			695	
Travel Time (s)			19.0	
Peak Hour Factor	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	4%	4%	4%	4%
Adj. Flow (vph)	5	6	0	8
Shared Lane Traffic (%)				
Lane Group Flow (vph)	0	0	14	0
Turn Type		Perm	NA	
Protected Phases			5	
Permitted Phases		5		
Detector Phase		5	5	
Switch Phase				
Minimum Initial (s)		5.0	5.0	
Minimum Split (s)		12.6	12.6	
Total Split (s)		19.6	19.6	
Total Split (%)		22.1%	22.1%	
Yellow Time (s)		3.3	3.3	
All-Red Time (s)		4.3	4.3	
Lost Time Adjust (s)			0.0	
Total Lost Time (s)			7.6	
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode		None	None	
Act Effct Green (s)			5.4	
Actuated g/C Ratio			0.12	
v/c Ratio			0.07	
Control Delay			24.5	
Queue Delay			0.0	
Total Delay			24.5	
LOS			C	
Approach Delay			24.5	
Approach LOS			C	
Queue Length 50th (ft)			3	
Queue Length 95th (ft)			18	
Internal Link Dist (ft)			615	

Lane Group	EBT	EBR	EBR2	WBL2	WBL	WBT	NWL2	NWL	NWR	NWR2	NEL	NET
Turn Bay Length (ft)												
Base Capacity (vph)	1156	1504				1829		1951				464
Starvation Cap Reductn	0	0				0		0				0
Spillback Cap Reductn	0	0				0		0				0
Storage Cap Reductn	0	0				0		0				0
Reduced v/c Ratio	0.32	0.33				0.22		0.22				0.02

Intersection Summary

Area Type: Other
Cycle Length: 88.8
Actuated Cycle Length: 46.4
Natural Cycle: 55
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.56
Intersection Signal Delay: 11.8 Intersection LOS: B
Intersection Capacity Utilization 70.6% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) & Route 58 (Black Rock Turnpike)/Route 58 (Tunxis Hill Cut

Ø2	Ø4	Ø5
35.8 s	33.4 s	19.6 s

Lane Group	NER2	SWL	SWT	SWR
Turn Bay Length (ft)				
Base Capacity (vph)			457	
Starvation Cap Reductn			0	
Spillback Cap Reductn			0	
Storage Cap Reductn			0	
Reduced v/c Ratio			0.03	

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	415	10	34	388	3	58
Future Volume (vph)	415	10	34	388	3	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	10	10
Storage Length (ft)		0	0		0	50
Storage Lanes		0	0		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00
Frt	0.996					0.850
Flt Protected				0.996	0.950	
Satd. Flow (prot)	3374	0	0	1776	1636	1463
Flt Permitted				0.996	0.950	
Satd. Flow (perm)	3374	0	0	1776	1636	1463
Link Speed (mph)	30			30	25	
Link Distance (ft)	1095			214	782	
Travel Time (s)	24.9			4.9	21.3	
Peak Hour Factor	0.85	0.85	0.86	0.86	0.88	0.88
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	488	12	40	451	3	66
Shared Lane Traffic (%)						
Lane Group Flow (vph)	500	0	0	491	3	66
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 47.4%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	415	10	34	388	3	58
Future Vol, veh/h	415	10	34	388	3	58
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	86	86	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	488	12	40	451	3	66

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	500	0	1024	250
Stage 1	-	-	-	-	494	-
Stage 2	-	-	-	-	530	-
Critical Hdwy	-	-	4.145	-	6.645	6.945
Critical Hdwy Stg 1	-	-	-	-	5.845	-
Critical Hdwy Stg 2	-	-	-	-	5.445	-
Follow-up Hdwy	-	-	2.2285	-	3.5285	3.3285
Pot Cap-1 Maneuver	-	-	1056	-	244	748
Stage 1	-	-	-	-	577	-
Stage 2	-	-	-	-	587	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1056	-	232	748
Mov Cap-2 Maneuver	-	-	-	-	232	-
Stage 1	-	-	-	-	577	-
Stage 2	-	-	-	-	557	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	10.8
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	232	748	-	-	1056	-
HCM Lane V/C Ratio	0.015	0.088	-	-	0.037	-
HCM Control Delay (s)	20.7	10.3	-	-	8.5	0
HCM Lane LOS	C	B	-	-	A	A
HCM 95th %tile Q(veh)	0	0.3	-	-	0.1	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	20	61	46	383	457	26
Future Volume (vph)	20	61	46	383	457	26
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	12	12
Storage Length (ft)	0	0	25			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt	0.898				0.993	
Flt Protected	0.988			0.995		
Satd. Flow (prot)	1820	0	0	3421	1797	0
Flt Permitted	0.988			0.995		
Satd. Flow (perm)	1820	0	0	3421	1797	0
Link Speed (mph)	25			30	30	
Link Distance (ft)	586			395	218	
Travel Time (s)	16.0			9.0	5.0	
Peak Hour Factor	0.90	0.90	0.94	0.94	0.87	0.87
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	22	68	49	407	525	30
Shared Lane Traffic (%)						
Lane Group Flow (vph)	90	0	0	456	555	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 52.4%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1.7

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	61	46	383	457	26
Future Vol, veh/h	20	61	46	383	457	26
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	25	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	94	94	87	87
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	22	68	49	407	525	30

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	842	540	555	0	-	0
Stage 1	540	-	-	-	-	-
Stage 2	302	-	-	-	-	-
Critical Hdwy	6.675	6.275	4.175	-	-	-
Critical Hdwy Stg 1	5.475	-	-	-	-	-
Critical Hdwy Stg 2	5.875	-	-	-	-	-
Follow-up Hdwy	3.5475	3.3475	2.2475	-	-	-
Pot Cap-1 Maneuver	313	534	996	-	-	-
Stage 1	576	-	-	-	-	-
Stage 2	717	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	293	534	996	-	-	-
Mov Cap-2 Maneuver	293	-	-	-	-	-
Stage 1	576	-	-	-	-	-
Stage 2	671	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.2	1.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	996	-	444	-	-
HCM Lane V/C Ratio	0.049	-	0.203	-	-
HCM Control Delay (s)	8.8	0.2	15.2	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.2	-	0.8	-	-

Lanes, Volumes, Timings

Timing Plan: Weekday PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	9	0	1	51	4	54	4	757	106	121	921	5
Future Volume (vph)	9	0	1	51	4	54	4	757	106	121	921	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	16	12	12	13	12	12	13	12
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		0.989			0.933			0.984			0.999	
Flt Protected		0.956			0.977						0.994	
Satd. Flow (prot)	0	1996	0	0	1924	0	0	1894	0	0	1911	0
Flt Permitted		0.724			0.844			0.996			0.796	
Satd. Flow (perm)	0	1512	0	0	1662	0	0	1886	0	0	1531	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		43			59			21			1	
Link Speed (mph)		25			30			35			35	
Link Distance (ft)		378			442			1898			522	
Travel Time (s)		10.3			10.0			37.0			10.2	
Peak Hour Factor	0.80	0.80	0.80	0.91	0.91	0.91	0.92	0.92	0.92	0.87	0.87	0.87
Adj. Flow (vph)	11	0	1	56	4	59	4	823	115	139	1059	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	12	0	0	119	0	0	942	0	0	1204	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	11.7	11.7		11.7	11.7		20.6	20.6		20.6	20.6	
Total Split (s)	17.7	17.7		17.7	17.7		48.6	48.6		48.6	48.6	
Total Split (%)	26.7%	26.7%		26.7%	26.7%		73.3%	73.3%		73.3%	73.3%	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.4	1.4		1.4	1.4		1.6	1.6		1.6	1.6	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.7			4.7			5.6			5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Act Effct Green (s)		8.1			8.1			49.5			49.5	
Actuated g/C Ratio		0.13			0.13			0.77			0.77	
v/c Ratio		0.05			0.46			0.65			1.02	
Control Delay		1.0			20.2			7.8			47.4	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		1.0			20.2			7.8			47.4	
LOS		A			C			A			D	
Approach Delay		1.0			20.2			7.8			47.4	
Approach LOS		A			C			A			D	
Queue Length 50th (ft)		0			20			143			~518	
Queue Length 95th (ft)		0			62			331			#769	
Internal Link Dist (ft)		298			362			1818			442	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		340			383			1453			1176	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.04			0.31			0.65			1.02	

Intersection Summary

Area Type: Other
Cycle Length: 66.3
Actuated Cycle Length: 64.4
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.02
Intersection Signal Delay: 29.3 Intersection LOS: C
Intersection Capacity Utilization 121.1% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive

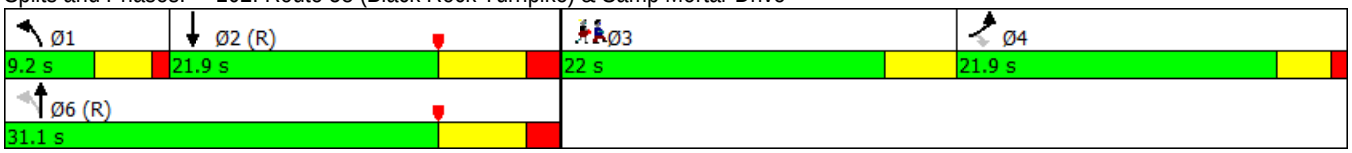
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Lane Configurations							
Traffic Volume (vph)	168	325	127	763	893	83	
Future Volume (vph)	168	325	127	763	893	83	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	10	10	11	11	12	12	
Storage Length (ft)	0	50	100			0	
Storage Lanes	1	1	1			0	
Taper Length (ft)	25		50				
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	
Frt		0.850			0.987		
Flt Protected	0.950		0.950				
Satd. Flow (prot)	1652	1478	1711	1801	3493	0	
Flt Permitted	0.950		0.200				
Satd. Flow (perm)	1652	1478	360	1801	3493	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		361			11		
Link Speed (mph)	25			30	35		
Link Distance (ft)	445			510	341		
Travel Time (s)	12.1			11.6	6.6		
Peak Hour Factor	0.90	0.90	0.88	0.88	0.95	0.95	
Adj. Flow (vph)	187	361	144	867	940	87	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	187	361	144	867	1027	0	
Turn Type	Prot	Perm	pm+pt	NA	NA		
Protected Phases	4		1	6	2		3
Permitted Phases		4	6				
Detector Phase	4	4	1	6	2		
Switch Phase							
Minimum Initial (s)	9.0	9.0	5.0	15.0	15.0		7.0
Minimum Split (s)	13.0	13.0	9.2	21.9	21.9		22.0
Total Split (s)	21.9	21.9	9.2	31.1	21.9		22.0
Total Split (%)	29.2%	29.2%	12.3%	41.5%	29.2%		29%
Yellow Time (s)	3.0	3.0	3.2	4.9	4.9		4.0
All-Red Time (s)	1.0	1.0	1.0	2.0	2.0		0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	4.0	4.0	4.2	6.9	6.9		
Lead/Lag	Lag	Lag	Lead		Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes		Yes		Yes
Recall Mode	None	None	None	C-Max	C-Max		None
Act Effct Green (s)	13.2	13.2	53.6	50.9	39.7		
Actuated g/C Ratio	0.18	0.18	0.71	0.68	0.53		
v/c Ratio	0.65	0.65	0.38	0.71	0.55		
Control Delay	38.8	9.1	9.7	18.5	14.1		
Queue Delay	0.0	0.0	0.0	0.0	0.0		
Total Delay	38.8	9.1	9.7	18.5	14.1		
LOS	D	A	A	B	B		
Approach Delay	19.2			17.2	14.1		
Approach LOS	B			B	B		
Queue Length 50th (ft)	82	0	37	323	151		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Queue Length 95th (ft)	134	64	68	466	257		
Internal Link Dist (ft)	365			430	261		
Turn Bay Length (ft)		50	100				
Base Capacity (vph)	395	628	383	1223	1855		
Starvation Cap Reductn	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0		
Reduced v/c Ratio	0.47	0.57	0.38	0.71	0.55		

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 22 (29%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.71
Intersection Signal Delay: 16.4 — Intersection LOS: B
Intersection Capacity Utilization 58.5% — ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive

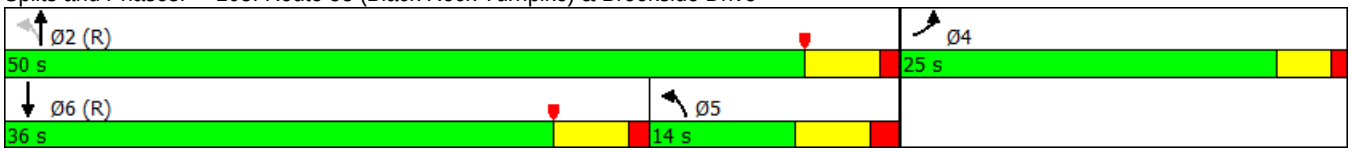


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	127	69	38	735	1106	157
Future Volume (vph)	127	69	38	735	1106	157
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	12	12
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Frt	0.953				0.981	
Flt Protected	0.969			0.998		
Satd. Flow (prot)	1950	0	0	3532	3472	0
Flt Permitted	0.969			0.838		
Satd. Flow (perm)	1950	0	0	2966	3472	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	36				25	
Link Speed (mph)	25			30	30	
Link Distance (ft)	347			293	336	
Travel Time (s)	9.5			6.7	7.6	
Peak Hour Factor	0.80	0.80	0.97	0.97	0.97	0.97
Adj. Flow (vph)	159	86	39	758	1140	162
Shared Lane Traffic (%)						
Lane Group Flow (vph)	245	0	0	797	1302	0
Turn Type	Prot		pm+pt	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases			2			
Detector Phase	4		5	2	6	
Switch Phase						
Minimum Initial (s)	9.0		3.0	15.0	15.0	
Minimum Split (s)	13.0		8.9	20.4	20.4	
Total Split (s)	25.0		14.0	50.0	36.0	
Total Split (%)	33.3%		18.7%	66.7%	48.0%	
Yellow Time (s)	3.0		4.2	4.2	4.2	
All-Red Time (s)	1.0		1.7	1.2	1.2	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	4.0			5.4	5.4	
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None	C-Max	C-Max	
Act Effct Green (s)	12.9			52.7	52.7	
Actuated g/C Ratio	0.17			0.70	0.70	
v/c Ratio	0.67			0.38	0.53	
Control Delay	33.5			4.2	5.4	
Queue Delay	0.0			0.2	0.0	
Total Delay	33.5			4.4	5.4	
LOS	C			A	A	
Approach Delay	33.5			4.4	5.4	
Approach LOS	C			A	A	
Queue Length 50th (ft)	92			62	215	
Queue Length 95th (ft)	128			80	27	
Internal Link Dist (ft)	267			213	256	
Turn Bay Length (ft)						

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Base Capacity (vph)	571			2083	2446	
Starvation Cap Reductn	0			486	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.43			0.50	0.53	

Intersection Summary	
Area Type: Other	
Cycle Length: 75	
Actuated Cycle Length: 75	
Offset: 45 (60%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.67	
Intersection Signal Delay: 8.0	Intersection LOS: A
Intersection Capacity Utilization 67.6%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 103: Route 58 (Black Rock Turnpike) & Brookside Drive



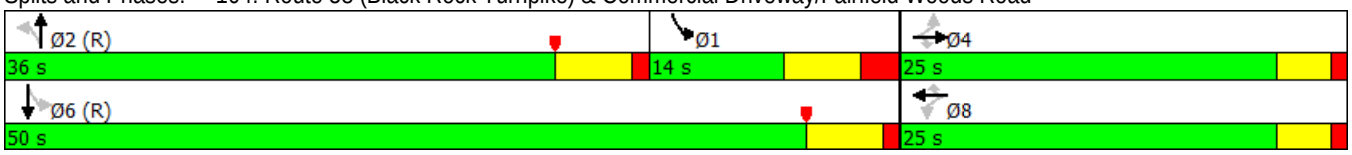
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	27	17	43	65	14	104	44	667	85	276	867	35
Future Volume (vph)	27	17	43	65	14	104	44	667	85	276	867	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	11	12	11	12	12	11	12
Storage Length (ft)	0		0	0		75	0		0	0		0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt			0.850			0.850		0.984			0.996	
Flt Protected		0.970			0.961			0.997			0.988	
Satd. Flow (prot)	0	1807	1583	0	1790	1531	0	3356	0	0	3367	0
Flt Permitted		0.791			0.727			0.828			0.612	
Satd. Flow (perm)	0	1473	1583	0	1354	1531	0	2787	0	0	2085	0
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			128					21			7	
Link Speed (mph)		30			25			30			30	
Link Distance (ft)		87			499			713			293	
Travel Time (s)		2.0			13.6			16.2			6.7	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.93	0.93	0.93	0.98	0.98	0.98
Adj. Flow (vph)	34	21	54	81	18	130	47	717	91	282	885	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	55	54	0	99	130	0	855	0	0	1203	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	4	4	4	8	8	8	2	2		1	6	
Switch Phase												
Minimum Initial (s)	9.0	9.0	9.0	9.0	9.0	9.0	15.0	15.0		3.0	15.0	
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	20.3	20.3		9.5	20.3	
Total Split (s)	25.0	25.0	25.0	25.0	25.0	25.0	36.0	36.0		14.0	50.0	
Total Split (%)	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	48.0%	48.0%		18.7%	66.7%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.3	4.3		4.3	4.3	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		2.2	1.0	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0		0.0			0.0	
Total Lost Time (s)		4.0	4.0		4.0	4.0		5.3			5.3	
Lead/Lag							Lead	Lead		Lag		
Lead-Lag Optimize?							Yes	Yes		Yes		
Recall Mode	None	None	None	None	None	None	C-Max	C-Max		None	C-Max	
Act Effct Green (s)		11.4	11.4		11.4	11.4		54.3			54.3	
Actuated g/C Ratio		0.15	0.15		0.15	0.15		0.72			0.72	
v/c Ratio		0.25	0.15		0.48	0.56		0.42			0.80	
Control Delay		29.7	1.0		36.5	38.5		5.1			9.8	
Queue Delay		0.0	0.0		0.0	0.0		0.0			0.0	
Total Delay		29.7	1.0		36.5	38.5		5.1			9.8	
LOS		C	A		D	D		A			A	
Approach Delay		15.4			37.6			5.1			9.8	
Approach LOS		B			D			A			A	
Queue Length 50th (ft)		23	0		43	58		61			96	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		45	0		72	89		116			#390	
Internal Link Dist (ft)		7			419			633			213	
Turn Bay Length (ft)						75						
Base Capacity (vph)		412	535		379	428		2023			1511	
Starvation Cap Reductn		0	0		0	0		0			0	
Spillback Cap Reductn		0	0		0	0		0			0	
Storage Cap Reductn		0	0		0	0		0			0	
Reduced v/c Ratio		0.13	0.10		0.26	0.30		0.42			0.80	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 48 (64%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 11.0 Intersection LOS: B
Intersection Capacity Utilization 78.7% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	85	747	148	140	590	124	219	263	167	178	255	42
Future Volume (vph)	85	747	148	140	590	124	219	263	167	178	255	42
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	11	12	12	11	11	12	12	12	12
Storage Length (ft)	200		0	175		0	210		0	170		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	85			75			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.975			0.974			0.942			0.979	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1711	3336	0	1711	3447	0	1711	1696	0	1770	1824	0
Flt Permitted	0.950			0.950			0.254			0.142		
Satd. Flow (perm)	1711	3336	0	1711	3447	0	457	1696	0	265	1824	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		14			15			19				
Link Speed (mph)		30			30			30			25	
Link Distance (ft)		436			368			438			355	
Travel Time (s)		9.9			8.4			10.0			9.7	
Peak Hour Factor	0.94	0.94	0.94	0.97	0.97	0.97	0.89	0.89	0.89	0.87	0.87	0.87
Adj. Flow (vph)	90	795	157	144	608	128	246	296	188	205	293	48
Shared Lane Traffic (%)												
Lane Group Flow (vph)	90	952	0	144	736	0	246	484	0	205	341	0
Turn Type	Prot	NA		Prot	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases							4			8		
Detector Phase	5	2		1	6		7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	15.0		5.0	15.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	21.6		9.7	21.6		9.3	16.8		9.3	16.8	
Total Split (s)	17.7	41.6		17.7	41.6		22.3	36.8		22.3	36.8	
Total Split (%)	11.7%	27.5%		11.7%	27.5%		14.7%	24.3%		14.7%	24.3%	
Yellow Time (s)	3.0	4.1		3.0	4.1		3.3	4.4		3.3	4.4	
All-Red Time (s)	1.7	2.5		1.7	2.5		1.0	2.4		1.0	2.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	6.6		4.7	6.6		4.3	6.8		4.3	6.8	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Min		None	Min		None	None		None	None	
Act Effct Green (s)	10.1	35.0		13.0	37.9		51.1	31.7		44.7	28.2	
Actuated g/C Ratio	0.09	0.30		0.11	0.33		0.44	0.27		0.39	0.24	
v/c Ratio	0.60	0.94		0.75	0.65		0.63	1.01		0.73	0.77	
Control Delay	68.3	56.2		75.1	36.8		28.4	86.1		38.8	53.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	68.3	56.2		75.1	36.8		28.4	86.1		38.8	53.7	
LOS	E	E		E	D		C	F		D	D	
Approach Delay		57.2			43.1			66.7			48.1	
Approach LOS		E			D			E			D	
Queue Length 50th (ft)	67	368		108	249		115	352		93	240	

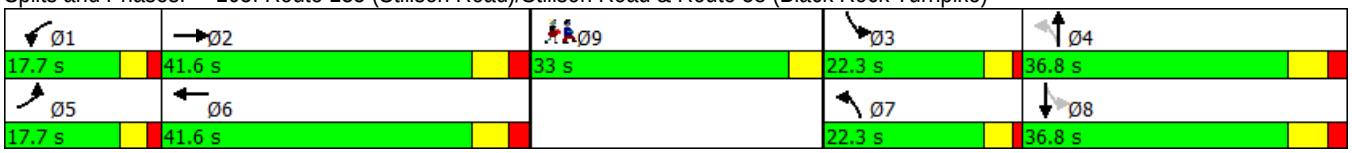
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	33.0
Total Split (s)	33.0
Total Split (%)	22%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	120	#508		#213	330		173	#608		157	335	
Internal Link Dist (ft)		356			288			358			275	
Turn Bay Length (ft)	200			175			210			170		
Base Capacity (vph)	191	1016		191	1135		395	477		344	471	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.47	0.94		0.75	0.65		0.62	1.01		0.60	0.72	

Intersection Summary

Area Type: Other
Cycle Length: 151.4
Actuated Cycle Length: 116.1
Natural Cycle: 145
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.01
Intersection Signal Delay: 53.9 Intersection LOS: D
Intersection Capacity Utilization 85.7% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike)



Lane Group	Ø9
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	70	826	21	73	640	59	163	11	109	45	5	29
Future Volume (vph)	70	826	21	73	640	59	163	11	109	45	5	29
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	13	13	12	13	13
Storage Length (ft)	0		0	0		0	0		25	0		25
Storage Lanes	0		0	0		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997			0.988				0.850			0.850
Flt Protected		0.996			0.995			0.955			0.957	
Satd. Flow (prot)	0	3397	0	0	3363	0	0	1838	1636	0	1842	1636
Flt Permitted		0.777			0.750			0.697			0.691	
Satd. Flow (perm)	0	2650	0	0	2535	0	0	1342	1636	0	1330	1636
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			12				157			157
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		442			502			142			135	
Travel Time (s)		10.0			11.4			3.9			3.7	
Peak Hour Factor	0.93	0.93	0.93	0.90	0.90	0.90	0.84	0.84	0.84	0.85	0.85	0.85
Adj. Flow (vph)	75	888	23	81	711	66	194	13	130	53	6	34
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	986	0	0	858	0	0	207	130	0	59	34
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2			4		4	4		4
Detector Phase	1	6		2	2		4	4	4	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	15.0		15.0	15.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	9.0	20.8		20.8	20.8		11.0	11.0	11.0	11.0	11.0	11.0
Total Split (s)	9.0	39.0		30.0	30.0		14.0	14.0	14.0	14.0	14.0	14.0
Total Split (%)	12.0%	52.0%		40.0%	40.0%		18.7%	18.7%	18.7%	18.7%	18.7%	18.7%
Yellow Time (s)	3.0	4.3		4.3	4.3		3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.5		1.5	1.5		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0			0.0			0.0	0.0		0.0	0.0
Total Lost Time (s)		5.8			5.8			4.0	4.0		4.0	4.0
Lead/Lag	Lead			Lag	Lag		Lag	Lag	Lag	Lag	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Min	C-Max		C-Max	C-Max		None	None	None	None	None	None
Act Effct Green (s)		44.5			35.0			20.7	20.7		20.7	20.7
Actuated g/C Ratio		0.59			0.47			0.28	0.28		0.28	0.28
v/c Ratio		0.61			0.72			0.56	0.23		0.16	0.06
Control Delay		11.3			11.6			30.2	3.7		22.2	0.2
Queue Delay		0.0			0.0			0.0	0.0		0.0	0.0
Total Delay		11.3			11.6			30.2	3.7		22.2	0.2
LOS		B			B			C	A		C	A
Approach Delay		11.3			11.6			19.9			14.1	
Approach LOS		B			B			B			B	
Queue Length 50th (ft)		119			65			84	0		21	0

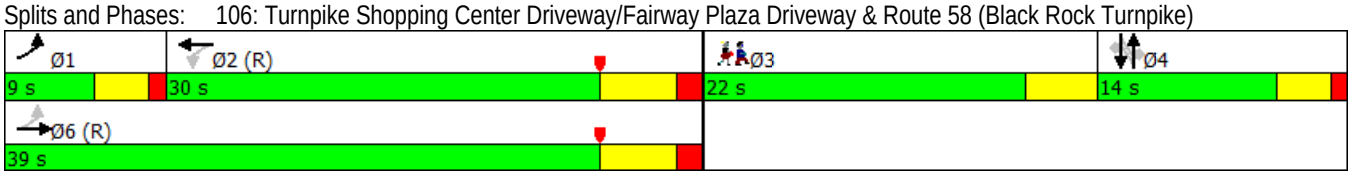
Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	22.0
Total Split (s)	22.0
Total Split (%)	29%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		171			83			135	21		46	0
Internal Link Dist (ft)		362			422			62			55	
Turn Bay Length (ft)									25			25
Base Capacity (vph)		1609			1188			371	566		367	566
Starvation Cap Reductn		0			0			0	0		0	0
Spillback Cap Reductn		0			0			0	0		0	0
Storage Cap Reductn		0			0			0	0		0	0
Reduced v/c Ratio		0.61			0.72			0.56	0.23		0.16	0.06

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 19 (25%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.72
Intersection Signal Delay: 12.8 Intersection LOS: B
Intersection Capacity Utilization 76.5% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike)



Lane Group	Ø3
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

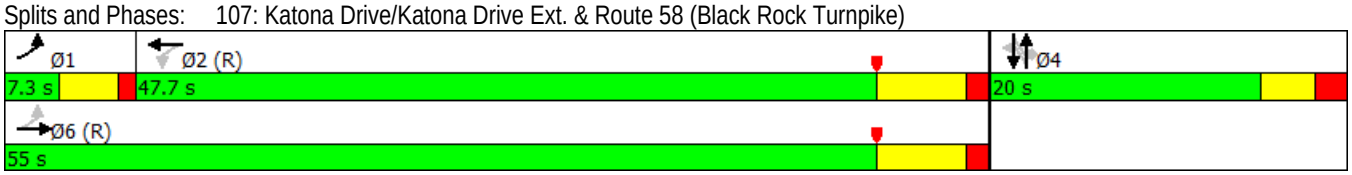
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	934	101	45	722	2	100	3	63	1	3	9
Future Volume (vph)	10	934	101	45	722	2	100	3	63	1	3	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	10	10	12	12	12
Storage Length (ft)	0		0	0		0	0		250	0		0
Storage Lanes	0		0	0		0	0		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.985							0.850		0.890	
Flt Protected					0.997			0.954		0.950		
Satd. Flow (prot)	0	3370	0	0	3411	0	0	1659	1478	1770	1658	0
Flt Permitted		0.950			0.820			0.722		0.675		
Satd. Flow (perm)	0	3201	0	0	2805	0	0	1255	1478	1257	1658	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		31			1				111		11	
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		502			407			423			198	
Travel Time (s)		11.4			9.3			11.5			5.4	
Peak Hour Factor	0.93	0.93	0.93	0.96	0.96	0.96	0.82	0.82	0.82	0.80	0.80	0.80
Adj. Flow (vph)	11	1004	109	47	752	2	122	4	77	1	4	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1124	0	0	801	0	0	126	77	1	15	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2			4		4	4		
Detector Phase	1	6		2	2		4	4	4	4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0		7.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	7.3	21.3		21.3	21.3		11.9	11.9	11.9	11.9	11.9	
Total Split (s)	7.3	55.0		47.7	47.7		20.0	20.0	20.0	20.0	20.0	
Total Split (%)	9.7%	73.3%		63.6%	63.6%		26.7%	26.7%	26.7%	26.7%	26.7%	
Yellow Time (s)	3.3	5.0		5.0	5.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.0	1.3		1.3	1.3		1.9	1.9	1.9	1.9	1.9	
Lost Time Adjust (s)		0.0			0.0			0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.3			6.3			4.9	4.9	4.9	4.9	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Act Effct Green (s)		55.1			41.4			11.1	11.1	11.1	11.1	
Actuated g/C Ratio		0.73			0.55			0.15	0.15	0.15	0.15	
v/c Ratio		0.47			0.52			0.68	0.25	0.01	0.06	
Control Delay		3.4			7.0			48.2	4.7	25.0	16.3	
Queue Delay		0.0			0.0			0.0	0.0	0.0	0.0	
Total Delay		3.4			7.0			48.2	4.7	25.0	16.3	
LOS		A			A			D	A	C	B	
Approach Delay		3.4			7.0			31.7			16.9	
Approach LOS		A			A			C			B	
Queue Length 50th (ft)		54			43			56	0	0	2	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		77			53			93	13	4	14	
Internal Link Dist (ft)		422			327			343			118	
Turn Bay Length (ft)									250			
Base Capacity (vph)		2376			1548			252	386	253	342	
Starvation Cap Reductn		0			0			0	0	0	0	
Spillback Cap Reductn		0			0			0	0	0	0	
Storage Cap Reductn		0			0			0	0	0	0	
Reduced v/c Ratio		0.47			0.52			0.50	0.20	0.00	0.04	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 21 (28%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 50
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.68
Intersection Signal Delay: 7.5 Intersection LOS: A
Intersection Capacity Utilization 75.5% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike)

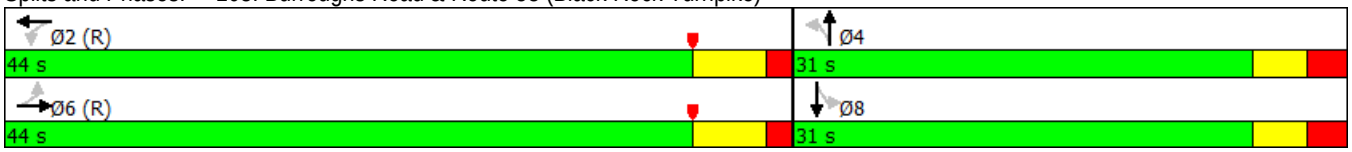


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	81	919	14	7	704	147	17	104	7	122	49	49
Future Volume (vph)	81	919	14	7	704	147	17	104	7	122	49	49
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	16	12	12	16	12
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.974			0.992			0.970	
Flt Protected		0.996						0.993			0.973	
Satd. Flow (prot)	0	3401	0	0	3332	0	0	2080	0	0	1992	0
Flt Permitted		0.787			0.946			0.942			0.745	
Satd. Flow (perm)	0	2687	0	0	3152	0	0	1973	0	0	1526	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			48			4			21	
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		407			996			466			300	
Travel Time (s)		9.3			22.6			12.7			8.2	
Peak Hour Factor	0.99	0.99	0.99	0.92	0.92	0.92	0.90	0.90	0.90	0.93	0.93	0.93
Adj. Flow (vph)	82	928	14	8	765	160	19	116	8	131	53	53
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1024	0	0	933	0	0	143	0	0	237	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		2	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		9.0	9.0		9.0	9.0	
Minimum Split (s)	20.6	20.6		20.6	20.6		14.4	14.4		14.4	14.4	
Total Split (s)	44.0	44.0		44.0	44.0		31.0	31.0		31.0	31.0	
Total Split (%)	58.7%	58.7%		58.7%	58.7%		41.3%	41.3%		41.3%	41.3%	
Yellow Time (s)	4.1	4.1		4.1	4.1		3.1	3.1		3.1	3.1	
All-Red Time (s)	1.5	1.5		1.5	1.5		2.3	2.3		2.3	2.3	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.6			5.6			5.4			5.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		48.9			48.9			15.1			15.1	
Actuated g/C Ratio		0.65			0.65			0.20			0.20	
v/c Ratio		0.58			0.45			0.36			0.73	
Control Delay		5.2			7.6			26.2			38.5	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		5.2			7.6			26.2			38.5	
LOS		A			A			C			D	
Approach Delay		5.2			7.6			26.2			38.5	
Approach LOS		A			A			C			D	
Queue Length 50th (ft)		41			90			56			95	
Queue Length 95th (ft)		64			167			93			152	
Internal Link Dist (ft)		327			916			386			220	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		1754			2073			676			534	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.58			0.45			0.21			0.44	

Intersection Summary	
Area Type: Other	
Cycle Length: 75	
Actuated Cycle Length: 75	
Offset: 20 (27%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow	
Natural Cycle: 45	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 10.8	Intersection LOS: B
Intersection Capacity Utilization 85.4%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 108: Burroughs Road & Route 58 (Black Rock Turnpike)



Lane Group	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NWL2	NWL	NWR	NWR2	NEL
Lane Configurations												
Traffic Volume (vph)	515	524	3	21	8	362	2	2	452	5	38	7
Future Volume (vph)	515	524	3	21	8	362	2	2	452	5	38	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	11	11	12	12	10	12	12	12
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.97	0.95	0.95	1.00
Frt		0.850				0.999			0.987			
Flt Protected						0.996			0.956			
Satd. Flow (prot)	1863	1583	0	0	0	3404	0	0	3182	0	0	0
Flt Permitted						0.823			0.952			
Satd. Flow (perm)	1863	1583	0	0	0	2813	0	0	3169	0	0	0
Right Turn on Red			Yes				Yes				Yes	
Satd. Flow (RTOR)		57							152			
Link Speed (mph)	30					30			30			
Link Distance (ft)	996					549			218			
Travel Time (s)	22.6					12.5			5.0			
Peak Hour Factor	0.97	0.97	0.97	0.86	0.86	0.86	0.86	0.91	0.91	0.91	0.91	0.80
Adj. Flow (vph)	531	540	3	24	9	421	2	2	497	5	42	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	531	543	0	0	0	456	0	0	546	0	0	0
Turn Type	NA	pm+ov		Perm	Perm	NA		D.Pm	Prot			Perm
Protected Phases	2	4				2			4			
Permitted Phases		2		2	2			4				5
Detector Phase	2	4		2	2	2		4	4			5
Switch Phase												
Minimum Initial (s)	15.0	9.0		15.0	15.0	15.0		9.0	9.0			5.0
Minimum Split (s)	22.8	15.4		22.8	22.8	22.8		15.4	15.4			12.6
Total Split (s)	35.8	33.4		35.8	35.8	35.8		33.4	33.4			19.6
Total Split (%)	40.3%	37.6%		40.3%	40.3%	40.3%		37.6%	37.6%			22.1%
Yellow Time (s)	4.1	3.3		4.1	4.1	4.1		3.3	3.3			3.3
All-Red Time (s)	3.7	3.1		3.7	3.7	3.7		3.1	3.1			4.3
Lost Time Adjust (s)	0.0	0.0				0.0			0.0			
Total Lost Time (s)	7.8	6.4				7.8			6.4			
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Min	None		Min	Min	Min		None	None			None
Act Effct Green (s)	21.0	46.8				21.0			12.2			
Actuated g/C Ratio	0.40	0.89				0.40			0.23			
v/c Ratio	0.72	0.38				0.41			0.64			
Control Delay	21.9	3.1				14.1			18.4			
Queue Delay	0.0	0.0				0.0			0.0			
Total Delay	21.9	3.1				14.1			18.4			
LOS	C	A				B			B			
Approach Delay	12.4					14.1			18.4			
Approach LOS	B					B			B			
Queue Length 50th (ft)	95	0				36			43			
Queue Length 95th (ft)	#341	120				114			130			
Internal Link Dist (ft)	916					469			138			
Turn Bay Length (ft)												

Lane Group	NET	NER	NER2	SWL	SWT	SWR
Lane Configurations						
Traffic Volume (vph)	0	1	3	2	0	3
Future Volume (vph)	0	1	3	2	0	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	15	12	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.952				0.923	
Flt Protected	0.969				0.979	
Satd. Flow (prot)	1718	0	0	0	1683	0
Flt Permitted						
Satd. Flow (perm)	1773	0	0	0	1719	0
Right Turn on Red			No			No
Satd. Flow (RTOR)						
Link Speed (mph)	25				25	
Link Distance (ft)	653				695	
Travel Time (s)	17.8				19.0	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	0	1	4	3	0	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	14	0	0	0	7	0
Turn Type	NA			Perm	NA	
Protected Phases	5				5	
Permitted Phases				5		
Detector Phase	5			5	5	
Switch Phase						
Minimum Initial (s)	5.0			5.0	5.0	
Minimum Split (s)	12.6			12.6	12.6	
Total Split (s)	19.6			19.6	19.6	
Total Split (%)	22.1%			22.1%	22.1%	
Yellow Time (s)	3.3			3.3	3.3	
All-Red Time (s)	4.3			4.3	4.3	
Lost Time Adjust (s)	0.0				0.0	
Total Lost Time (s)	7.6				7.6	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None			None	None	
Act Effct Green (s)	5.7				5.7	
Actuated g/C Ratio	0.11				0.11	
v/c Ratio	0.07				0.04	
Control Delay	29.8				29.7	
Queue Delay	0.0				0.0	
Total Delay	29.8				29.7	
LOS	C				C	
Approach Delay	29.8				29.7	
Approach LOS	C				C	
Queue Length 50th (ft)	3				2	
Queue Length 95th (ft)	20				13	
Internal Link Dist (ft)	573				615	
Turn Bay Length (ft)						

Lanes, Volumes, Timings

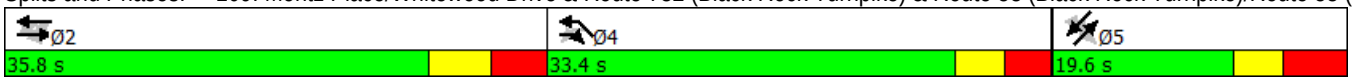
Timing Plan: Weekday PM Peak

Lane Group	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NWL2	NWL	NWR	NWR2	NEL
Base Capacity (vph)	1080	1534				1630			1838			
Starvation Cap Reductn	0	0				0			0			
Spillback Cap Reductn	0	0				0			0			
Storage Cap Reductn	0	0				0			0			
Reduced v/c Ratio	0.49	0.35				0.28			0.30			

Intersection Summary

Area Type: Other
Cycle Length: 88.8
Actuated Cycle Length: 52.6
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.72
Intersection Signal Delay: 14.5 Intersection LOS: B
Intersection Capacity Utilization 68.9% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) & Route 58 (Black Rock Turnpike)/Route 58 (Tunxis Hill Cut



Lane Group	NET	NER	NER2	SWL	SWT	SWR
Base Capacity (vph)	440				427	
Starvation Cap Reductn	0				0	
Spillback Cap Reductn	0				0	
Storage Cap Reductn	0				0	
Reduced v/c Ratio	0.03				0.02	

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	595	6	46	391	0	79
Future Volume (vph)	595	6	46	391	0	79
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	10	10
Storage Length (ft)		0	0		0	50
Storage Lanes		0	0		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00
Frt	0.999					0.850
Flt Protected				0.995		
Satd. Flow (prot)	3418	0	0	1792	1739	1478
Flt Permitted				0.995		
Satd. Flow (perm)	3418	0	0	1792	1739	1478
Link Speed (mph)	30			30	25	
Link Distance (ft)	1095			214	782	
Travel Time (s)	24.9			4.9	21.3	
Peak Hour Factor	0.95	0.95	0.90	0.90	0.83	0.83
Adj. Flow (vph)	626	6	51	434	0	95
Shared Lane Traffic (%)						
Lane Group Flow (vph)	632	0	0	485	0	95
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 46.4%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	1.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	595	6	46	391	0	79
Future Vol, veh/h	595	6	46	391	0	79
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	90	90	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	626	6	51	434	0	95

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	633	0	1166	316
Stage 1	-	-	-	-	629	-
Stage 2	-	-	-	-	537	-
Critical Hdwy	-	-	4.13	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.219	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	948	-	200	681
Stage 1	-	-	-	-	495	-
Stage 2	-	-	-	-	585	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	948	-	186	681
Mov Cap-2 Maneuver	-	-	-	-	186	-
Stage 1	-	-	-	-	495	-
Stage 2	-	-	-	-	543	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.9	11.1
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	681	-	-	948	-
HCM Lane V/C Ratio	-	0.14	-	-	0.054	-
HCM Control Delay (s)	0	11.1	-	-	9	0
HCM Lane LOS	A	B	-	-	A	A
HCM 95th %tile Q(veh)	-	0.5	-	-	0.2	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	32	91	50	465	531	19
Future Volume (vph)	32	91	50	465	531	19
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	12	12
Storage Length (ft)	0	0	25			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt	0.900				0.995	
Flt Protected	0.987			0.995		
Satd. Flow (prot)	1875	0	0	3522	1853	0
Flt Permitted	0.987			0.995		
Satd. Flow (perm)	1875	0	0	3522	1853	0
Link Speed (mph)	25			30	30	
Link Distance (ft)	586			395	218	
Travel Time (s)	16.0			9.0	5.0	
Peak Hour Factor	0.83	0.83	0.91	0.91	0.95	0.95
Adj. Flow (vph)	39	110	55	511	559	20
Shared Lane Traffic (%)						
Lane Group Flow (vph)	149	0	0	566	579	0
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 60.8%	ICU Level of Service B
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	2.6

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	32	91	50	465	531	19
Future Vol, veh/h	32	91	50	465	531	19
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	25	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	91	91	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	39	110	55	511	559	20

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	934	569	579	0	-	0
Stage 1	569	-	-	-	-	-
Stage 2	365	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	279	521	993	-	-	-
Stage 1	565	-	-	-	-	-
Stage 2	674	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	258	521	993	-	-	-
Mov Cap-2 Maneuver	258	-	-	-	-	-
Stage 1	565	-	-	-	-	-
Stage 2	622	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	18.6	1.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	993	-	412	-	-
HCM Lane V/C Ratio	0.055	-	0.36	-	-
HCM Control Delay (s)	8.8	0.3	18.6	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.2	-	1.6	-	-

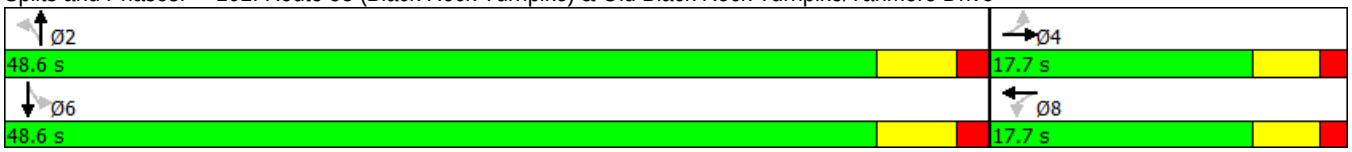
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	1	2	71	1	105	2	774	73	67	845	8
Future Volume (vph)	6	1	2	71	1	105	2	774	73	67	845	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	16	12	12	13	12	12	13	12
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		0.966			0.920			0.988			0.999	
Flt Protected		0.968			0.980						0.996	
Satd. Flow (prot)	0	1974	0	0	1903	0	0	1902	0	0	1915	0
Flt Permitted		0.807			0.863			0.999			0.888	
Satd. Flow (perm)	0	1646	0	0	1676	0	0	1900	0	0	1708	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			98			15			1	
Link Speed (mph)		25			30			35			35	
Link Distance (ft)		378			442			1898			522	
Travel Time (s)		10.3			10.0			37.0			10.2	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	8	1	3	89	1	131	2	823	78	71	899	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	12	0	0	221	0	0	903	0	0	979	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	11.7	11.7		11.7	11.7		20.6	20.6		20.6	20.6	
Total Split (s)	17.7	17.7		17.7	17.7		48.6	48.6		48.6	48.6	
Total Split (%)	26.7%	26.7%		26.7%	26.7%		73.3%	73.3%		73.3%	73.3%	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.4	1.4		1.4	1.4		1.6	1.6		1.6	1.6	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.7			4.7			5.6			5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Act Effct Green (s)		9.5			9.5			38.2			38.2	
Actuated g/C Ratio		0.16			0.16			0.66			0.66	
v/c Ratio		0.04			0.62			0.72			0.87	
Control Delay		20.0			22.1			10.9			19.9	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		20.0			22.1			10.9			19.9	
LOS		B			C			B			B	
Approach Delay		20.0			22.1			10.9			19.9	
Approach LOS		B			C			B			B	
Queue Length 50th (ft)		3			43			160			218	
Queue Length 95th (ft)		14			86			337			#581	
Internal Link Dist (ft)		298			362			1818			442	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		377			457			1435			1287	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.03			0.48			0.63			0.76	

Intersection Summary

Area Type: Other
Cycle Length: 66.3
Actuated Cycle Length: 58.2
Natural Cycle: 55
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.87
Intersection Signal Delay: 16.3 Intersection LOS: B
Intersection Capacity Utilization 116.2% ICU Level of Service H
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive



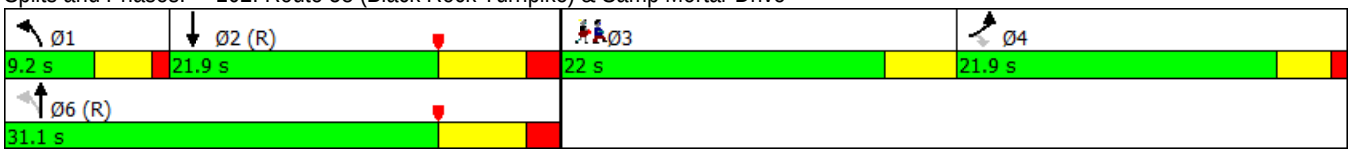
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Lane Configurations							
Traffic Volume (vph)	113	195	136	758	765	73	
Future Volume (vph)	113	195	136	758	765	73	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	10	10	11	11	12	12	
Storage Length (ft)	0	50	100			0	
Storage Lanes	1	1	1			0	
Taper Length (ft)	25		50				
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	
Frt		0.850			0.987		
Flt Protected	0.950		0.950				
Satd. Flow (prot)	1652	1478	1711	1801	3493	0	
Flt Permitted	0.950		0.242				
Satd. Flow (perm)	1652	1478	436	1801	3493	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		238			12		
Link Speed (mph)	25			30	35		
Link Distance (ft)	445			510	341		
Travel Time (s)	12.1			11.6	6.6		
Peak Hour Factor	0.82	0.82	0.98	0.98	0.90	0.90	
Adj. Flow (vph)	138	238	139	773	850	81	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	138	238	139	773	931	0	
Turn Type	Prot	Perm	pm+pt	NA	NA		
Protected Phases	4		1	6	2		3
Permitted Phases		4	6				
Detector Phase	4	4	1	6	2		
Switch Phase							
Minimum Initial (s)	9.0	9.0	5.0	15.0	15.0		7.0
Minimum Split (s)	13.0	13.0	9.2	21.9	21.9		22.0
Total Split (s)	21.9	21.9	9.2	31.1	21.9		22.0
Total Split (%)	29.2%	29.2%	12.3%	41.5%	29.2%		29%
Yellow Time (s)	3.0	3.0	3.2	4.9	4.9		4.0
All-Red Time (s)	1.0	1.0	1.0	2.0	2.0		0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	4.0	4.0	4.2	6.9	6.9		
Lead/Lag	Lag	Lag	Lead		Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes		Yes		Yes
Recall Mode	None	None	None	C-Max	C-Max		None
Act Effct Green (s)	11.3	11.3	55.5	52.8	41.8		
Actuated g/C Ratio	0.15	0.15	0.74	0.70	0.56		
v/c Ratio	0.55	0.56	0.32	0.61	0.48		
Control Delay	37.7	9.6	7.8	16.7	11.6		
Queue Delay	0.0	0.0	0.0	0.0	0.0		
Total Delay	37.7	9.6	7.8	16.7	11.6		
LOS	D	A	A	B	B		
Approach Delay	19.9			15.3	11.6		
Approach LOS	B			B	B		
Queue Length 50th (ft)	61	0	24	299	120		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Queue Length 95th (ft)	96	40	59	464	207		
Internal Link Dist (ft)	365			430	261		
Turn Bay Length (ft)		50	100				
Base Capacity (vph)	394	533	437	1267	1953		
Starvation Cap Reductn	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0		
Reduced v/c Ratio	0.35	0.45	0.32	0.61	0.48		

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 22 (29%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.61
Intersection Signal Delay: 14.5 — Intersection LOS: B
Intersection Capacity Utilization 56.5% — ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive

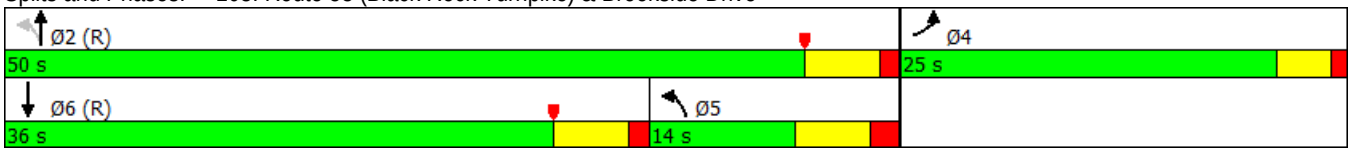


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	84	56	51	850	899	102
Future Volume (vph)	84	56	51	850	899	102
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	12	12
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Frt	0.946				0.985	
Flt Protected	0.971			0.997		
Satd. Flow (prot)	1939	0	0	3529	3486	0
Flt Permitted	0.971			0.838		
Satd. Flow (perm)	1939	0	0	2966	3486	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	44				19	
Link Speed (mph)	25			30	30	
Link Distance (ft)	347			293	336	
Travel Time (s)	9.5			6.7	7.6	
Peak Hour Factor	0.83	0.83	0.98	0.98	0.96	0.96
Adj. Flow (vph)	101	67	52	867	936	106
Shared Lane Traffic (%)						
Lane Group Flow (vph)	168	0	0	919	1042	0
Turn Type	Prot		pm+pt	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases			2			
Detector Phase	4		5	2	6	
Switch Phase						
Minimum Initial (s)	9.0		3.0	15.0	15.0	
Minimum Split (s)	13.0		8.9	20.4	20.4	
Total Split (s)	25.0		14.0	50.0	36.0	
Total Split (%)	33.3%		18.7%	66.7%	48.0%	
Yellow Time (s)	3.0		4.2	4.2	4.2	
All-Red Time (s)	1.0		1.7	1.2	1.2	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	4.0			5.4	5.4	
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None	C-Max	C-Max	
Act Effct Green (s)	10.4			55.2	55.2	
Actuated g/C Ratio	0.14			0.74	0.74	
v/c Ratio	0.55			0.42	0.41	
Control Delay	28.7			3.5	3.3	
Queue Delay	0.0			0.1	0.0	
Total Delay	28.7			3.6	3.3	
LOS	C			A	A	
Approach Delay	28.7			3.6	3.3	
Approach LOS	C			A	A	
Queue Length 50th (ft)	55			29	11	
Queue Length 95th (ft)	95			79	12	
Internal Link Dist (ft)	267			213	256	
Turn Bay Length (ft)						

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Base Capacity (vph)	574			2182	2569	
Starvation Cap Reductn	0			392	0	
Spillback Cap Reductn	1			0	102	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.29			0.51	0.42	

Intersection Summary	
Area Type: Other	
Cycle Length: 75	
Actuated Cycle Length: 75	
Offset: 45 (60%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow	
Natural Cycle: 45	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.55	
Intersection Signal Delay: 5.4	Intersection LOS: A
Intersection Capacity Utilization 73.5%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 103: Route 58 (Black Rock Turnpike) & Brookside Drive



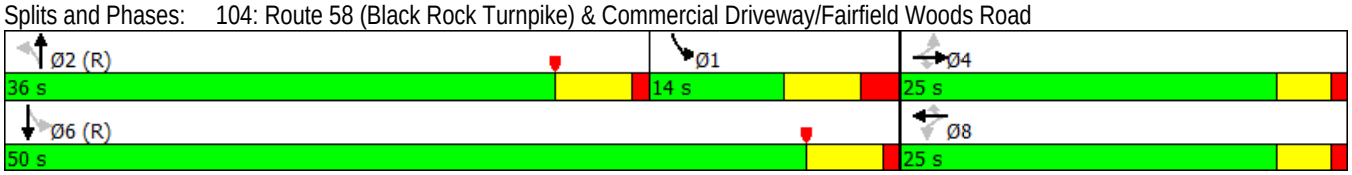
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	34	18	40	83	21	124	34	788	71	102	832	41
Future Volume (vph)	34	18	40	83	21	124	34	788	71	102	832	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	11	12	11	12	12	11	12
Storage Length (ft)	0		0	0		75	0		0	0		0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt			0.850			0.850		0.988			0.994	
Flt Protected		0.968			0.962			0.998			0.995	
Satd. Flow (prot)	0	1803	1583	0	1792	1531	0	3373	0	0	3384	0
Flt Permitted		0.765			0.729			0.886			0.744	
Satd. Flow (perm)	0	1425	1583	0	1358	1531	0	2995	0	0	2530	0
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			128					14			10	
Link Speed (mph)		30			25			30			30	
Link Distance (ft)		87			499			713			293	
Travel Time (s)		2.0			13.6			16.2			6.7	
Peak Hour Factor	0.88	0.88	0.88	0.80	0.80	0.80	0.97	0.97	0.97	0.96	0.96	0.96
Adj. Flow (vph)	39	20	45	104	26	155	35	812	73	106	867	43
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	59	45	0	130	155	0	920	0	0	1016	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	4	4	4	8	8	8	2	2		1	6	
Switch Phase												
Minimum Initial (s)	9.0	9.0	9.0	9.0	9.0	9.0	15.0	15.0		3.0	15.0	
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	20.3	20.3		9.5	20.3	
Total Split (s)	25.0	25.0	25.0	25.0	25.0	25.0	36.0	36.0		14.0	50.0	
Total Split (%)	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	48.0%	48.0%		18.7%	66.7%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.3	4.3		4.3	4.3	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		2.2	1.0	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0		0.0			0.0	
Total Lost Time (s)		4.0	4.0		4.0	4.0		5.3			5.3	
Lead/Lag							Lead	Lead		Lag		
Lead-Lag Optimize?							Yes	Yes		Yes		
Recall Mode	None	None	None	None	None	None	C-Max	C-Max		None	C-Max	
Act Effct Green (s)		12.5	12.5		12.5	12.5		53.2			53.2	
Actuated g/C Ratio		0.17	0.17		0.17	0.17		0.71			0.71	
v/c Ratio		0.25	0.12		0.58	0.61		0.43			0.56	
Control Delay		28.5	0.7		38.6	38.9		5.7			4.3	
Queue Delay		0.0	0.0		0.0	0.0		0.0			0.0	
Total Delay		28.5	0.7		38.6	38.9		5.7			4.3	
LOS		C	A		D	D		A			A	
Approach Delay		16.5			38.8			5.7			4.3	
Approach LOS		B			D			A			A	
Queue Length 50th (ft)		24	0		57	68		72			18	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		51	0		88	101		136			258	
Internal Link Dist (ft)		7			419			633			213	
Turn Bay Length (ft)						75						
Base Capacity (vph)		399	535		380	428		2129			1799	
Starvation Cap Reductn		0	0		0	0		0			4	
Spillback Cap Reductn		0	0		0	0		0			0	
Storage Cap Reductn		0	0		0	0		0			0	
Reduced v/c Ratio		0.15	0.08		0.34	0.36		0.43			0.57	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 48 (64%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 55
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.61
Intersection Signal Delay: 9.6 Intersection LOS: A
Intersection Capacity Utilization 76.8% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	81	641	161	134	620	151	220	198	148	228	260	58
Future Volume (vph)	81	641	161	134	620	151	220	198	148	228	260	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	11	12	12	11	11	12	12	12	12
Storage Length (ft)	200		0	175		0	210		0	170		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	85			75			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.970			0.971			0.936			0.973	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1711	3319	0	1711	3437	0	1711	1685	0	1770	1812	0
Flt Permitted	0.950			0.950			0.275			0.225		
Satd. Flow (perm)	1711	3319	0	1711	3437	0	495	1685	0	419	1812	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		19			18			22				
Link Speed (mph)		30			30			30			25	
Link Distance (ft)		436			368			438			355	
Travel Time (s)		9.9			8.4			10.0			9.7	
Peak Hour Factor	0.90	0.90	0.90	0.91	0.91	0.91	0.90	0.90	0.90	0.88	0.88	0.88
Adj. Flow (vph)	90	712	179	147	681	166	244	220	164	259	295	66
Shared Lane Traffic (%)												
Lane Group Flow (vph)	90	891	0	147	847	0	244	384	0	259	361	0
Turn Type	Prot	NA		Prot	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases							4			8		
Detector Phase	5	2		1	6		7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	15.0		5.0	15.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	21.6		9.7	21.6		9.3	16.8		9.3	16.8	
Total Split (s)	17.7	41.6		17.7	41.6		22.3	36.8		22.3	36.8	
Total Split (%)	11.7%	27.5%		11.7%	27.5%		14.7%	24.3%		14.7%	24.3%	
Yellow Time (s)	3.0	4.1		3.0	4.1		3.3	4.4		3.3	4.4	
All-Red Time (s)	1.7	2.5		1.7	2.5		1.0	2.4		1.0	2.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	6.6		4.7	6.6		4.3	6.8		4.3	6.8	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Min		None	Min		None	None		None	None	
Act Effct Green (s)	10.2	35.0		13.0	37.8		50.1	30.0		50.9	30.4	
Actuated g/C Ratio	0.09	0.30		0.11	0.32		0.42	0.25		0.43	0.26	
v/c Ratio	0.61	0.90		0.79	0.76		0.63	0.87		0.67	0.78	
Control Delay	69.5	51.9		79.6	41.3		27.9	60.5		29.8	53.8	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	69.5	51.9		79.6	41.3		27.9	60.5		29.8	53.8	
LOS	E	D		E	D		C	E		C	D	
Approach Delay		53.5			47.0			47.8			43.8	
Approach LOS		D			D			D			D	
Queue Length 50th (ft)	67	336		111	300		114	267		121	258	

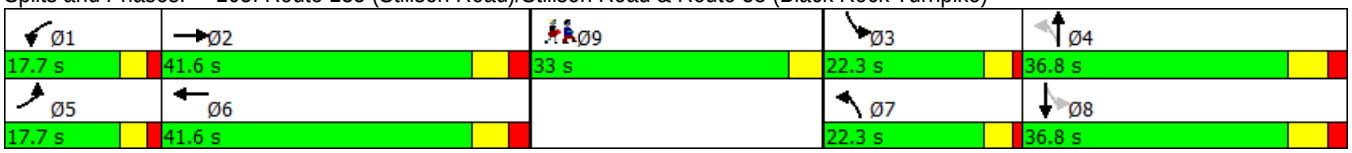
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	33.0
Total Split (s)	33.0
Total Split (%)	22%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	120	#454		#218	391		174	#440		178	#381	
Internal Link Dist (ft)		356			288			358			275	
Turn Bay Length (ft)	200			175			210			170		
Base Capacity (vph)	187	994		187	1109		395	443		385	465	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.48	0.90		0.79	0.76		0.62	0.87		0.67	0.78	

Intersection Summary

Area Type: Other
Cycle Length: 151.4
Actuated Cycle Length: 118.4
Natural Cycle: 145
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 48.5 Intersection LOS: D
Intersection Capacity Utilization 81.0% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike)



Lane Group	Ø9
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Lanes, Volumes, Timings

Timing Plan: Saturday Midday

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	89	751	45	76	713	90	161	22	127	74	19	39
Future Volume (vph)	89	751	45	76	713	90	161	22	127	74	19	39
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	13	13	12	13	13
Storage Length (ft)	0		0	0		0	0		25	0		25
Storage Lanes	0		0	0		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992			0.985				0.850			0.850
Flt Protected		0.995			0.996			0.958			0.962	
Satd. Flow (prot)	0	3377	0	0	3356	0	0	1844	1636	0	1852	1636
Flt Permitted		0.682			0.771			0.673			0.666	
Satd. Flow (perm)	0	2315	0	0	2598	0	0	1295	1636	0	1282	1636
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			17				157			157
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		442			502			142			135	
Travel Time (s)		10.0			11.4			3.9			3.7	
Peak Hour Factor	0.96	0.96	0.96	0.95	0.95	0.95	0.92	0.92	0.92	0.81	0.81	0.81
Adj. Flow (vph)	93	782	47	80	751	95	175	24	138	91	23	48
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	922	0	0	926	0	0	199	138	0	114	48
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2			4		4	4		4
Detector Phase	1	6		2	2		4	4	4	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	15.0		15.0	15.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	9.0	20.8		20.8	20.8		11.0	11.0	11.0	11.0	11.0	11.0
Total Split (s)	9.0	39.0		30.0	30.0		14.0	14.0	14.0	14.0	14.0	14.0
Total Split (%)	12.0%	52.0%		40.0%	40.0%		18.7%	18.7%	18.7%	18.7%	18.7%	18.7%
Yellow Time (s)	3.0	4.3		4.3	4.3		3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.5		1.5	1.5		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0			0.0			0.0	0.0		0.0	0.0
Total Lost Time (s)		5.8			5.8			4.0	4.0		4.0	4.0
Lead/Lag	Lead			Lag	Lag		Lag	Lag	Lag	Lag	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Min	C-Max		C-Max	C-Max		None	None	None	None	None	None
Act Effct Green (s)		42.9			33.4			22.3	22.3		22.3	22.3
Actuated g/C Ratio		0.57			0.45			0.30	0.30		0.30	0.30
v/c Ratio		0.67			0.79			0.52	0.23		0.30	0.08
Control Delay		13.2			13.7			27.8	3.9		23.2	0.3
Queue Delay		0.0			0.0			0.0	0.0		0.0	0.0
Total Delay		13.2			13.7			27.8	3.9		23.2	0.3
LOS		B			B			C	A		C	A
Approach Delay		13.2			13.7			18.1			16.4	
Approach LOS		B			B			B			B	
Queue Length 50th (ft)		114			65			78	0		42	0

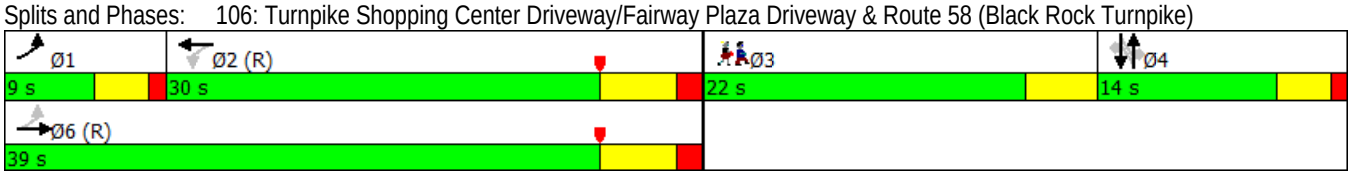
Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	22.0
Total Split (s)	22.0
Total Split (%)	29%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		166			82			139	30		72	0
Internal Link Dist (ft)		362			422			62			55	
Turn Bay Length (ft)									25			25
Base Capacity (vph)		1381			1167			384	596		380	596
Starvation Cap Reductn		0			0			0	0		0	0
Spillback Cap Reductn		0			0			0	0		0	0
Storage Cap Reductn		0			0			0	0		0	0
Reduced v/c Ratio		0.67			0.79			0.52	0.23		0.30	0.08

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 19 (25%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.79
Intersection Signal Delay: 14.3 Intersection LOS: B
Intersection Capacity Utilization 79.3% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike)



Lane Group	Ø3
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

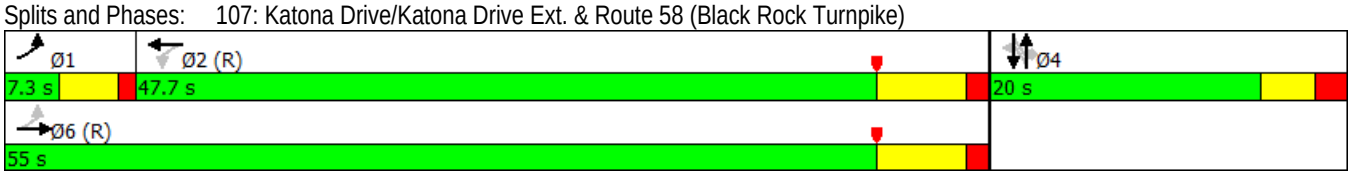
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	851	123	55	835	0	115	3	49	3	1	9
Future Volume (vph)	11	851	123	55	835	0	115	3	49	3	1	9
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	10	10	12	12	12
Storage Length (ft)	0		0	0		0	0		250	0		0
Storage Lanes	0		0	0		0	0		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.981							0.850		0.864	
Flt Protected		0.999			0.997			0.954		0.950		
Satd. Flow (prot)	0	3353	0	0	3411	0	0	1659	1478	1770	1609	0
Flt Permitted		0.947			0.805			0.724		0.680		
Satd. Flow (perm)	0	3178	0	0	2754	0	0	1259	1478	1267	1609	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		43							111		10	
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		502			407			423			198	
Travel Time (s)		11.4			9.3			11.5			5.4	
Peak Hour Factor	0.90	0.90	0.90	0.97	0.97	0.97	0.98	0.98	0.98	0.88	0.88	0.88
Adj. Flow (vph)	12	946	137	57	861	0	117	3	50	3	1	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1095	0	0	918	0	0	120	50	3	11	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2			4		4	4		
Detector Phase	1	6		2	2		4	4	4	4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0		7.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	7.3	21.3		21.3	21.3		11.9	11.9	11.9	11.9	11.9	
Total Split (s)	7.3	55.0		47.7	47.7		20.0	20.0	20.0	20.0	20.0	
Total Split (%)	9.7%	73.3%		63.6%	63.6%		26.7%	26.7%	26.7%	26.7%	26.7%	
Yellow Time (s)	3.3	5.0		5.0	5.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.0	1.3		1.3	1.3		1.9	1.9	1.9	1.9	1.9	
Lost Time Adjust (s)		0.0			0.0			0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.3			6.3			4.9	4.9	4.9	4.9	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Act Effct Green (s)		55.3			41.4			10.9	10.9	10.9	10.9	
Actuated g/C Ratio		0.74			0.55			0.15	0.15	0.15	0.15	
v/c Ratio		0.46			0.60			0.66	0.16	0.02	0.05	
Control Delay		3.5			8.1			47.0	1.3	25.0	15.1	
Queue Delay		0.0			0.0			0.0	0.0	0.0	0.0	
Total Delay		3.5			8.1			47.0	1.3	25.0	15.1	
LOS		A			A			D	A	C	B	
Approach Delay		3.5			8.1			33.6			17.2	
Approach LOS		A			A			C			B	
Queue Length 50th (ft)		60			49			54	0	1	0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		90			61			100	3	8	13	
Internal Link Dist (ft)		422			327			343			118	
Turn Bay Length (ft)									250			
Base Capacity (vph)		2373			1520			253	386	255	331	
Starvation Cap Reductn		0			13			0	0	0	0	
Spillback Cap Reductn		0			0			0	0	0	0	
Storage Cap Reductn		0			0			0	0	0	0	
Reduced v/c Ratio		0.46			0.61			0.47	0.13	0.01	0.03	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 21 (28%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.66
Intersection Signal Delay: 7.8 Intersection LOS: A
Intersection Capacity Utilization 80.2% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike)

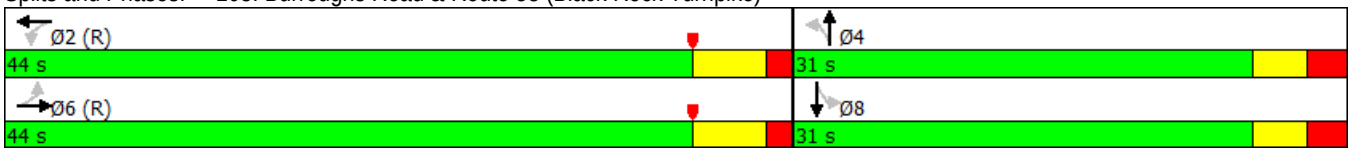


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	76	825	14	4	813	106	19	60	9	119	49	61
Future Volume (vph)	76	825	14	4	813	106	19	60	9	119	49	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	16	12	12	16	12
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.983			0.986			0.964	
Flt Protected		0.996						0.989			0.975	
Satd. Flow (prot)	0	3401	0	0	3363	0	0	2059	0	0	1984	0
Flt Permitted		0.776			0.952			0.898			0.820	
Satd. Flow (perm)	0	2650	0	0	3202	0	0	1869	0	0	1669	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			28			8			27	
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		407			996			466			300	
Travel Time (s)		9.3			22.6			12.7			8.2	
Peak Hour Factor	0.92	0.92	0.92	0.95	0.95	0.95	0.88	0.88	0.88	0.93	0.93	0.93
Adj. Flow (vph)	83	897	15	4	856	112	22	68	10	128	53	66
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	995	0	0	972	0	0	100	0	0	247	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		2	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		9.0	9.0		9.0	9.0	
Minimum Split (s)	20.6	20.6		20.6	20.6		14.4	14.4		14.4	14.4	
Total Split (s)	44.0	44.0		44.0	44.0		31.0	31.0		31.0	31.0	
Total Split (%)	58.7%	58.7%		58.7%	58.7%		41.3%	41.3%		41.3%	41.3%	
Yellow Time (s)	4.1	4.1		4.1	4.1		3.1	3.1		3.1	3.1	
All-Red Time (s)	1.5	1.5		1.5	1.5		2.3	2.3		2.3	2.3	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.6			5.6			5.4			5.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		48.9			48.9			15.1			15.1	
Actuated g/C Ratio		0.65			0.65			0.20			0.20	
v/c Ratio		0.58			0.46			0.26			0.69	
Control Delay		5.5			7.9			23.2			34.3	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		5.5			7.9			23.2			34.3	
LOS		A			A			C			C	
Approach Delay		5.5			7.9			23.2			34.3	
Approach LOS		A			A			C			C	
Queue Length 50th (ft)		38			98			36			96	
Queue Length 95th (ft)		72			178			66			151	
Internal Link Dist (ft)		327			916			386			220	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		1729			2098			643			587	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.58			0.46			0.16			0.42	

Intersection Summary	
Area Type: Other	
Cycle Length: 75	
Actuated Cycle Length: 75	
Offset: 20 (27%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow	
Natural Cycle: 45	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.69	
Intersection Signal Delay: 10.4	Intersection LOS: B
Intersection Capacity Utilization 84.8%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 108: Burroughs Road & Route 58 (Black Rock Turnpike)



Lane Group	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NWL2	NWL	NWR	NWR2	NEL
Lane Configurations												
Traffic Volume (vph)	409	522	5	63	3	445	1	4	442	9	33	5
Future Volume (vph)	409	522	5	63	3	445	1	4	442	9	33	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	11	11	12	12	10	12	12	12
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.97	0.95	0.95	1.00
Frt		0.850							0.987			
Flt Protected						0.994			0.956			
Satd. Flow (prot)	1863	1583	0	0	0	3401	0	0	3182	0	0	0
Flt Permitted						0.748			0.948			
Satd. Flow (perm)	1863	1583	0	0	0	2559	0	0	3156	0	0	0
Right Turn on Red			Yes				Yes				Yes	
Satd. Flow (RTOR)		57							152			
Link Speed (mph)	30					30			30			
Link Distance (ft)	996					549			218			
Travel Time (s)	22.6					12.5			5.0			
Peak Hour Factor	0.94	0.94	0.94	0.92	0.92	0.92	0.92	0.96	0.96	0.96	0.96	0.80
Adj. Flow (vph)	435	555	5	68	3	484	1	4	460	9	34	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	435	560	0	0	0	556	0	0	507	0	0	0
Turn Type	NA	pm+ov		Perm	Perm	NA		D.Pm	Prot			Perm
Protected Phases	2	4				2			4			
Permitted Phases		2		2	2			4				5
Detector Phase	2	4		2	2	2		4	4			5
Switch Phase												
Minimum Initial (s)	15.0	9.0		15.0	15.0	15.0		9.0	9.0			5.0
Minimum Split (s)	22.8	15.4		22.8	22.8	22.8		15.4	15.4			12.6
Total Split (s)	35.8	33.4		35.8	35.8	35.8		33.4	33.4			19.6
Total Split (%)	40.3%	37.6%		40.3%	40.3%	40.3%		37.6%	37.6%			22.1%
Yellow Time (s)	4.1	3.3		4.1	4.1	4.1		3.3	3.3			3.3
All-Red Time (s)	3.7	3.1		3.7	3.7	3.7		3.1	3.1			4.3
Lost Time Adjust (s)	0.0	0.0				0.0			0.0			
Total Lost Time (s)	7.8	6.4				7.8			6.4			
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Min	None		Min	Min	Min		None	None			None
Act Effct Green (s)	19.7	45.0				19.7			12.0			
Actuated g/C Ratio	0.38	0.88				0.38			0.23			
v/c Ratio	0.61	0.40				0.56			0.59			
Control Delay	18.8	3.5				16.7			16.9			
Queue Delay	0.0	0.0				0.0			0.0			
Total Delay	18.8	3.5				16.7			16.9			
LOS	B	A				B			B			
Approach Delay	10.2					16.7			16.9			
Approach LOS	B					B			B			
Queue Length 50th (ft)	74	0				49			37			
Queue Length 95th (ft)	253	134				155			121			
Internal Link Dist (ft)	916					469			138			
Turn Bay Length (ft)												

Lane Group	NET	NER	NER2	SWL2	SWL	SWT	SWR
Lane Configurations							
Traffic Volume (vph)	3	1	5	3	8	1	6
Future Volume (vph)	3	1	5	3	8	1	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	15	12	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.944					0.953	
Flt Protected	0.983					0.970	
Satd. Flow (prot)	1729	0	0	0	0	1722	0
Flt Permitted							
Satd. Flow (perm)	1758	0	0	0	0	1775	0
Right Turn on Red			No				No
Satd. Flow (RTOR)							
Link Speed (mph)	25					25	
Link Distance (ft)	653					695	
Travel Time (s)	17.8					19.0	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	4	1	6	4	10	1	8
Shared Lane Traffic (%)							
Lane Group Flow (vph)	17	0	0	0	0	23	0
Turn Type	NA				Perm	NA	
Protected Phases	5					5	
Permitted Phases					5		
Detector Phase	5				5	5	
Switch Phase							
Minimum Initial (s)	5.0				5.0	5.0	
Minimum Split (s)	12.6				12.6	12.6	
Total Split (s)	19.6				19.6	19.6	
Total Split (%)	22.1%				22.1%	22.1%	
Yellow Time (s)	3.3				3.3	3.3	
All-Red Time (s)	4.3				4.3	4.3	
Lost Time Adjust (s)	0.0					0.0	
Total Lost Time (s)	7.6					7.6	
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None				None	None	
Act Effct Green (s)	5.8					5.8	
Actuated g/C Ratio	0.11					0.11	
v/c Ratio	0.09					0.11	
Control Delay	28.1					28.4	
Queue Delay	0.0					0.0	
Total Delay	28.1					28.4	
LOS	C					C	
Approach Delay	28.1					28.4	
Approach LOS	C					C	
Queue Length 50th (ft)	4					5	
Queue Length 95th (ft)	22					27	
Internal Link Dist (ft)	573					615	
Turn Bay Length (ft)							

Lane Group	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NWL2	NWL	NWR	NWR2	NEL
Base Capacity (vph)	1097	1506				1507			1858			
Starvation Cap Reductn	0	0				0			0			
Spillback Cap Reductn	0	0				0			0			
Storage Cap Reductn	0	0				0			0			
Reduced v/c Ratio	0.40	0.37				0.37			0.27			

Intersection Summary	
Area Type:	Other
Cycle Length: 88.8	
Actuated Cycle Length: 51.2	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.61	
Intersection Signal Delay: 13.9	Intersection LOS: B
Intersection Capacity Utilization 78.6%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) & Route 58 (Black Rock Turnpike)/Route 58 (Tunxis Hill Cut

Ø2	Ø4	Ø5
35.8 s	33.4 s	19.6 s

Lane Group	NET	NER	NER2	SWL2	SWL	SWT	SWR
Base Capacity (vph)	443					447	
Starvation Cap Reductn	0					0	
Spillback Cap Reductn	0					0	
Storage Cap Reductn	0					0	
Reduced v/c Ratio	0.04					0.05	

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	459	10	39	490	5	54
Future Volume (vph)	459	10	39	490	5	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	10	10
Storage Length (ft)		0	0		0	50
Storage Lanes		0	0		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00
Frt	0.997					0.850
Flt Protected				0.996	0.950	
Satd. Flow (prot)	3411	0	0	1793	1652	1478
Flt Permitted				0.996	0.950	
Satd. Flow (perm)	3411	0	0	1793	1652	1478
Link Speed (mph)	30			30	25	
Link Distance (ft)	1095			214	782	
Travel Time (s)	24.9			4.9	21.3	
Peak Hour Factor	0.88	0.88	0.90	0.90	0.80	0.80
Adj. Flow (vph)	522	11	43	544	6	68
Shared Lane Traffic (%)						
Lane Group Flow (vph)	533	0	0	587	6	68
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 54.3%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	459	10	39	490	5	54
Future Vol, veh/h	459	10	39	490	5	54
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	90	90	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	522	11	43	544	6	68

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	533	0	1158	266
Stage 1	-	-	-	-	527	-
Stage 2	-	-	-	-	631	-
Critical Hdwy	-	-	4.13	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.219	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	1033	-	203	733
Stage 1	-	-	-	-	558	-
Stage 2	-	-	-	-	529	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1033	-	191	733
Mov Cap-2 Maneuver	-	-	-	-	191	-
Stage 1	-	-	-	-	558	-
Stage 2	-	-	-	-	497	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	11.6
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	191	733	-	-	1033	-
HCM Lane V/C Ratio	0.033	0.092	-	-	0.042	-
HCM Control Delay (s)	24.5	10.4	-	-	8.6	0
HCM Lane LOS	C	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	0.3	-	-	0.1	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	21	70	46	467	566	32
Future Volume (vph)	21	70	46	467	566	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	12	12
Storage Length (ft)	0	0	25			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt	0.896				0.993	
Flt Protected	0.989			0.996		
Satd. Flow (prot)	1871	0	0	3525	1850	0
Flt Permitted	0.989			0.996		
Satd. Flow (perm)	1871	0	0	3525	1850	0
Link Speed (mph)	25			30	30	
Link Distance (ft)	586			395	218	
Travel Time (s)	16.0			9.0	5.0	
Peak Hour Factor	0.80	0.80	0.98	0.98	0.93	0.93
Adj. Flow (vph)	26	88	47	477	609	34
Shared Lane Traffic (%)						
Lane Group Flow (vph)	114	0	0	524	643	0
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 60.7%	ICU Level of Service B
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	21	70	46	467	566	32
Future Vol, veh/h	21	70	46	467	566	32
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	25	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	98	98	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	26	88	47	477	609	34

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	958	626	643	0	-	0
Stage 1	626	-	-	-	-	-
Stage 2	332	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	270	483	940	-	-	-
Stage 1	532	-	-	-	-	-
Stage 2	700	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	252	483	940	-	-	-
Mov Cap-2 Maneuver	252	-	-	-	-	-
Stage 1	532	-	-	-	-	-
Stage 2	652	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.6	1.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	940	-	399	-	-
HCM Lane V/C Ratio	0.05	-	0.285	-	-
HCM Control Delay (s)	9	0.3	17.6	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.2	-	1.2	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	1	3	204	0	167	2	680	26	65	643	4
Future Volume (vph)	11	1	3	204	0	167	2	680	26	65	643	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	16	12	12	13	12	12	13	12
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		0.972			0.939			0.995			0.999	
Flt Protected		0.964			0.973						0.995	
Satd. Flow (prot)	0	1959	0	0	1910	0	0	1897	0	0	1895	0
Flt Permitted		0.776			0.818			0.998			0.892	
Satd. Flow (perm)	0	1577	0	0	1606	0	0	1893	0	0	1699	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			55			6			1	
Link Speed (mph)		25			30			35			35	
Link Distance (ft)		378			442			1898			522	
Travel Time (s)		10.3			10.0			37.0			10.2	
Peak Hour Factor	0.80	0.80	0.80	0.84	0.84	0.84	0.94	0.94	0.94	0.91	0.91	0.91
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	14	1	4	243	0	199	2	723	28	71	707	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	19	0	0	442	0	0	753	0	0	782	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	11.7	11.7		11.7	11.7		20.6	20.6		20.6	20.6	
Total Split (s)	17.7	17.7		17.7	17.7		48.6	48.6		48.6	48.6	
Total Split (%)	26.7%	26.7%		26.7%	26.7%		73.3%	73.3%		73.3%	73.3%	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.4	1.4		1.4	1.4		1.6	1.6		1.6	1.6	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.7			4.7			5.6			5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Act Effct Green (s)		13.5			13.5			28.2			28.2	
Actuated g/C Ratio		0.26			0.26			0.54			0.54	
v/c Ratio		0.05			0.97			0.74			0.85	
Control Delay		17.9			61.1			13.4			19.9	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		17.9			61.1			13.4			19.9	
LOS		B			E			B			B	
Approach Delay		17.9			61.1			13.4			19.9	
Approach LOS		B			E			B			B	
Queue Length 50th (ft)		4			119			149			174	
Queue Length 95th (ft)		18			#337			241			299	
Internal Link Dist (ft)		298			362			1818			442	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)		409			454			1573			1411	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.05			0.97			0.48			0.55	

Intersection Summary

Area Type: Other
Cycle Length: 66.3
Actuated Cycle Length: 52.3
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.97
Intersection Signal Delay: 26.6 Intersection LOS: C
Intersection Capacity Utilization 110.9% ICU Level of Service H
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

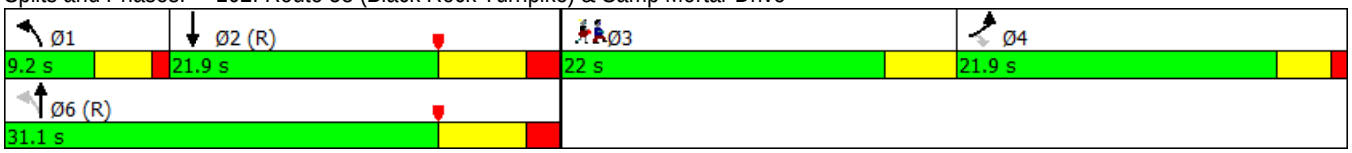
Splits and Phases: 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Lane Configurations							
Traffic Volume (vph)	54	136	366	739	622	198	
Future Volume (vph)	54	136	366	739	622	198	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	10	10	11	11	12	12	
Storage Length (ft)	0	50	100			0	
Storage Lanes	1	1	1			0	
Taper Length (ft)	25		50				
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	
Frt		0.850			0.964		
Flt Protected	0.950		0.950				
Satd. Flow (prot)	1636	1463	1694	1783	3379	0	
Flt Permitted	0.950		0.162				
Satd. Flow (perm)	1636	1463	289	1783	3379	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		164			51		
Link Speed (mph)	25			30	35		
Link Distance (ft)	445			510	341		
Travel Time (s)	12.1			11.6	6.6		
Peak Hour Factor	0.83	0.83	0.91	0.91	0.94	0.94	
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	
Adj. Flow (vph)	65	164	402	812	662	211	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	65	164	402	812	873	0	
Turn Type	Prot	Perm	pm+pt	NA	NA		
Protected Phases	4		1	6	2		3
Permitted Phases		4	6				
Detector Phase	4	4	1	6	2		
Switch Phase							
Minimum Initial (s)	9.0	9.0	5.0	15.0	15.0		7.0
Minimum Split (s)	13.0	13.0	9.2	21.9	21.9		22.0
Total Split (s)	21.9	21.9	9.2	31.1	21.9		22.0
Total Split (%)	29.2%	29.2%	12.3%	41.5%	29.2%		29%
Yellow Time (s)	3.0	3.0	3.2	4.9	4.9		4.0
All-Red Time (s)	1.0	1.0	1.0	2.0	2.0		0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	4.0	4.0	4.2	6.9	6.9		
Lead/Lag	Lag	Lag	Lead		Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes		Yes		Yes
Recall Mode	None	None	None	C-Max	C-Max		None
Act Effct Green (s)	9.4	9.4	57.4	54.7	24.7		
Actuated g/C Ratio	0.13	0.13	0.77	0.73	0.33		
v/c Ratio	0.32	0.50	0.57	0.62	0.76		
Control Delay	34.2	11.3	10.5	14.7	25.3		
Queue Delay	0.0	0.0	0.0	0.0	0.0		
Total Delay	34.2	11.3	10.5	14.7	25.3		
LOS	C	B	B	B	C		
Approach Delay	17.8			13.3	25.3		
Approach LOS	B			B	C		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Queue Length 50th (ft)	28	0	71	339	165		
Queue Length 95th (ft)	57	40	171	503	218		
Internal Link Dist (ft)	365			430	261		
Turn Bay Length (ft)		50	100				
Base Capacity (vph)	390	474	704	1300	1146		
Starvation Cap Reductn	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0		
Reduced v/c Ratio	0.17	0.35	0.57	0.62	0.76		

Intersection Summary	
Area Type: Other	
Cycle Length: 75	
Actuated Cycle Length: 75	
Offset: 22 (29%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.76	
Intersection Signal Delay: 18.3	Intersection LOS: B
Intersection Capacity Utilization 63.9%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive



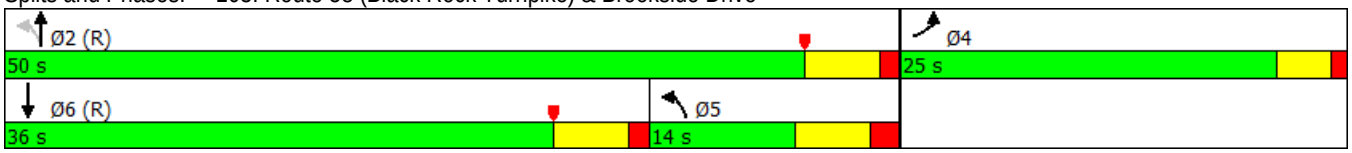
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	61	15	59	1051	586	181
Future Volume (vph)	61	15	59	1051	586	181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	12	12
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Frt	0.973				0.965	
Flt Protected	0.962			0.997		
Satd. Flow (prot)	1957	0	0	3494	3382	0
Flt Permitted	0.962			0.850		
Satd. Flow (perm)	1957	0	0	2979	3382	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	17				66	
Link Speed (mph)	25			30	30	
Link Distance (ft)	347			293	336	
Travel Time (s)	9.5			6.7	7.6	
Peak Hour Factor	0.80	0.80	0.90	0.90	0.88	0.88
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	76	19	66	1168	666	206
Shared Lane Traffic (%)						
Lane Group Flow (vph)	95	0	0	1234	872	0
Turn Type	Prot		pm+pt	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases			2			
Detector Phase	4		5	2	6	
Switch Phase						
Minimum Initial (s)	9.0		3.0	15.0	15.0	
Minimum Split (s)	13.0		8.9	20.4	20.4	
Total Split (s)	25.0		14.0	50.0	36.0	
Total Split (%)	33.3%		18.7%	66.7%	48.0%	
Yellow Time (s)	3.0		4.2	4.2	4.2	
All-Red Time (s)	1.0		1.7	1.2	1.2	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	4.0			5.4	5.4	
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None	C-Max	C-Max	
Act Effct Green (s)	9.4			59.9	59.9	
Actuated g/C Ratio	0.13			0.80	0.80	
v/c Ratio	0.37			0.52	0.32	
Control Delay	29.4			2.6	0.6	
Queue Delay	0.0			0.0	0.0	
Total Delay	29.4			2.6	0.6	
LOS	C			A	A	
Approach Delay	29.4			2.6	0.6	
Approach LOS	C			A	A	
Queue Length 50th (ft)	34			34	8	
Queue Length 95th (ft)	65			m66	7	
Internal Link Dist (ft)	267			213	256	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Turn Bay Length (ft)						
Base Capacity (vph)	560			2380	2715	
Starvation Cap Reductn	0			119	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.17			0.55	0.32	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 45 (60%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow
Natural Cycle: 45
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.52
Intersection Signal Delay: 3.0 Intersection LOS: A
Intersection Capacity Utilization 72.6% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 103: Route 58 (Black Rock Turnpike) & Brookside Drive



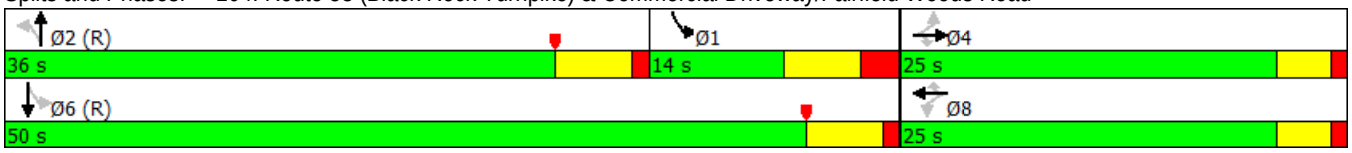
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	0	1	50	0	340	8	783	25	84	533	3
Future Volume (vph)	5	0	1	50	0	340	8	783	25	84	533	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	11	12	11	12	12	11	12
Storage Length (ft)	0		0	0		75	0		0	0		0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt			0.850			0.850		0.995			0.999	
Flt Protected		0.950			0.950						0.993	
Satd. Flow (prot)	0	1752	1568	0	1752	1516	0	3371	0	0	3361	0
Flt Permitted		0.720			0.754			0.949			0.724	
Satd. Flow (perm)	0	1328	1568	0	1391	1516	0	3199	0	0	2450	0
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			128					5			1	
Link Speed (mph)		30			25			30			30	
Link Distance (ft)		87			499			713			293	
Travel Time (s)		2.0			13.6			16.2			6.7	
Peak Hour Factor	0.80	0.80	0.80	0.90	0.90	0.90	0.88	0.88	0.88	0.92	0.92	0.92
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	6	0	1	56	0	378	9	890	28	91	579	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	6	1	0	56	378	0	927	0	0	673	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	4	4	4	8	8	8	2	2		1	6	
Switch Phase												
Minimum Initial (s)	9.0	9.0	9.0	9.0	9.0	9.0	15.0	15.0		3.0	15.0	
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	20.3	20.3		9.5	20.3	
Total Split (s)	25.0	25.0	25.0	25.0	25.0	25.0	36.0	36.0		14.0	50.0	
Total Split (%)	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	48.0%	48.0%		18.7%	66.7%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.3	4.3		4.3	4.3	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		2.2	1.0	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0		0.0			0.0	
Total Lost Time (s)		4.0	4.0		4.0	4.0		5.3			5.3	
Lead/Lag							Lead	Lead		Lag		
Lead-Lag Optimize?							Yes	Yes		Yes		
Recall Mode	None	None	None	None	None	None	C-Max	C-Max		None	C-Max	
Act Effct Green (s)		20.2	20.2		20.2	20.2		45.5			45.5	
Actuated g/C Ratio		0.27	0.27		0.27	0.27		0.61			0.61	
v/c Ratio		0.02	0.00		0.15	0.93		0.48			0.45	
Control Delay		19.8	0.0		21.6	58.2		9.3			3.0	
Queue Delay		0.0	0.0		0.0	0.0		0.0			0.2	
Total Delay		19.8	0.0		21.6	58.2		9.3			3.2	
LOS		B	A		C	E		A			A	
Approach Delay		17.0			53.5			9.3			3.2	
Approach LOS		B			D			A			A	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		2	0		19	168		115			22	
Queue Length 95th (ft)		9	0		47	#324		152			23	
Internal Link Dist (ft)		7			419			633			213	
Turn Bay Length (ft)						75						
Base Capacity (vph)		371	531		389	424		1941			1485	
Starvation Cap Reductn		0	0		0	0		0			193	
Spillback Cap Reductn		0	0		0	0		0			0	
Storage Cap Reductn		0	0		0	0		0			0	
Reduced v/c Ratio		0.02	0.00		0.14	0.89		0.48			0.52	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 48 (64%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 16.7 Intersection LOS: B
Intersection Capacity Utilization 62.3% ICU Level of Service B
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	379	133	178	685	71	150	165	62	105	351	46
Future Volume (vph)	48	379	133	178	685	71	150	165	62	105	351	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	11	12	12	11	11	12	12	12	12
Storage Length (ft)	200		0	175		0	210		0	170		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	85			75			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.961			0.986			0.959			0.983	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1678	3225	0	1678	3423	0	1678	1694	0	1736	1796	0
Flt Permitted	0.950			0.950			0.116			0.545		
Satd. Flow (perm)	1678	3225	0	1678	3423	0	205	1694	0	996	1796	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		30			7			11				
Link Speed (mph)		30			30			30			25	
Link Distance (ft)		436			368			438			355	
Travel Time (s)		9.9			8.4			10.0			9.7	
Peak Hour Factor	0.88	0.88	0.88	0.86	0.86	0.86	0.80	0.80	0.80	0.81	0.81	0.81
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	55	431	151	207	797	83	188	206	78	130	433	57
Shared Lane Traffic (%)												
Lane Group Flow (vph)	55	582	0	207	880	0	188	284	0	130	490	0
Turn Type	Prot	NA		Prot	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases							4			8		
Detector Phase	5	2		1	6		7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	15.0		5.0	15.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	21.6		9.7	21.6		9.3	16.8		9.3	16.8	
Total Split (s)	17.7	41.6		17.7	41.6		22.3	36.8		22.3	36.8	
Total Split (%)	11.7%	27.5%		11.7%	27.5%		14.7%	24.3%		14.7%	24.3%	
Yellow Time (s)	3.0	4.1		3.0	4.1		3.3	4.4		3.3	4.4	
All-Red Time (s)	1.7	2.5		1.7	2.5		1.0	2.4		1.0	2.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	6.6		4.7	6.6		4.3	6.8		4.3	6.8	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Min		None	Min		None	None		None	None	
Act Effct Green (s)	7.9	27.8		13.1	35.2		51.0	35.1		42.0	30.2	
Actuated g/C Ratio	0.07	0.26		0.12	0.33		0.47	0.33		0.39	0.28	
v/c Ratio	0.45	0.68		1.02	0.78		0.65	0.51		0.29	0.98	
Control Delay	61.3	38.6		117.4	39.8		31.9	33.5		19.3	75.1	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	61.3	38.6		117.4	39.8		31.9	33.5		19.3	75.1	
LOS	E	D		F	D		C	C		B	E	
Approach Delay		40.5			54.6			32.9			63.4	
Approach LOS		D			D			C			E	

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
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)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	33.0
Total Split (s)	33.0
Total Split (%)	22%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

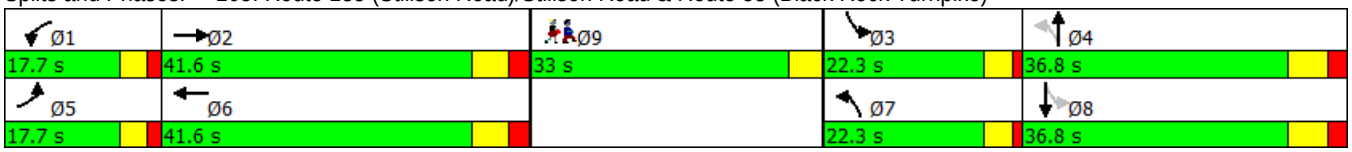
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	38	182		~159	297		77	156		51	~348	
Queue Length 95th (ft)	80	243		#309	382		128	223		83	#517	
Internal Link Dist (ft)		356			288			358			275	
Turn Bay Length (ft)	200			175			210			170		
Base Capacity (vph)	203	1074		203	1123		344	558		583	502	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.27	0.54		1.02	0.78		0.55	0.51		0.22	0.98	

Intersection Summary	
Area Type:	Other
Cycle Length: 151.4	
Actuated Cycle Length: 107.8	
Natural Cycle: 145	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 1.02	
Intersection Signal Delay: 49.7	Intersection LOS: D
Intersection Capacity Utilization 73.6%	ICU Level of Service D
Analysis Period (min) 15	

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike)



Lane Group	Ø9
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	471	8	25	892	42	51	5	20	29	1	11
Future Volume (vph)	24	471	8	25	892	42	51	5	20	29	1	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	13	13	12	13	13
Storage Length (ft)	0		0	0		0	0		25	0		25
Storage Lanes	0		0	0		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.993				0.850			0.850
Flt Protected		0.998			0.999			0.956			0.954	
Satd. Flow (prot)	0	3342	0	0	3329	0	0	1805	1605	0	1801	1605
Flt Permitted		0.883			0.928			0.720			0.681	
Satd. Flow (perm)	0	2957	0	0	3092	0	0	1359	1605	0	1286	1605
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			6				157			157
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		442			502			142			135	
Travel Time (s)		10.0			11.4			3.9			3.7	
Peak Hour Factor	0.80	0.80	0.80	0.89	0.89	0.89	0.80	0.80	0.80	0.91	0.91	0.91
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	30	589	10	28	1002	47	64	6	25	32	1	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	629	0	0	1077	0	0	70	25	0	33	12
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2			4		4	4		4
Detector Phase	1	6		2	2		4	4	4	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	15.0		15.0	15.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	9.0	20.8		20.8	20.8		11.0	11.0	11.0	11.0	11.0	11.0
Total Split (s)	9.0	39.0		30.0	30.0		14.0	14.0	14.0	14.0	14.0	14.0
Total Split (%)	12.0%	52.0%		40.0%	40.0%		18.7%	18.7%	18.7%	18.7%	18.7%	18.7%
Yellow Time (s)	3.0	4.3		4.3	4.3		3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.5		1.5	1.5		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0			0.0			0.0	0.0		0.0	0.0
Total Lost Time (s)		5.8			5.8			4.0	4.0		4.0	4.0
Lead/Lag	Lead			Lag	Lag		Lag	Lag	Lag	Lag	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Min	C-Max		C-Max	C-Max		None	None	None	None	None	None
Act Effct Green (s)		58.6			49.1			8.8	8.8		8.8	8.8
Actuated g/C Ratio		0.78			0.65			0.12	0.12		0.12	0.12
v/c Ratio		0.27			0.53			0.44	0.08		0.22	0.04
Control Delay		3.2			6.8			38.9	0.5		32.4	0.2
Queue Delay		0.0			0.0			0.0	0.0		0.0	0.0
Total Delay		3.2			6.8			38.9	0.5		32.4	0.2
LOS		A			A			D	A		C	A
Approach Delay		3.2			6.8			28.8			23.8	
Approach LOS		A			A			C			C	

Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
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)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	22.0
Total Split (s)	22.0
Total Split (%)	29%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Lanes, Volumes, Timings

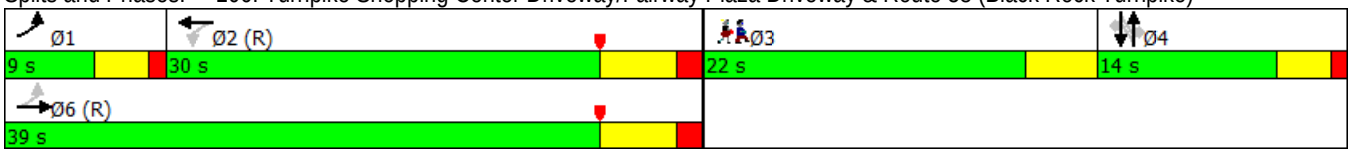
Timing Plan: Weekday AM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		34			66			31	0		14	0
Queue Length 95th (ft)		54			139			58	0		37	0
Internal Link Dist (ft)		362			422			62			55	
Turn Bay Length (ft)									25			25
Base Capacity (vph)		2328			2024			189	358		179	358
Starvation Cap Reductn		0			0			0	0		0	0
Spillback Cap Reductn		0			0			0	0		0	0
Storage Cap Reductn		0			0			0	0		0	0
Reduced v/c Ratio		0.27			0.53			0.37	0.07		0.18	0.03

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 19 (25%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.53
Intersection Signal Delay: 7.1 — Intersection LOS: A
Intersection Capacity Utilization 62.0% — ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike)



Lane Group	Ø3
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

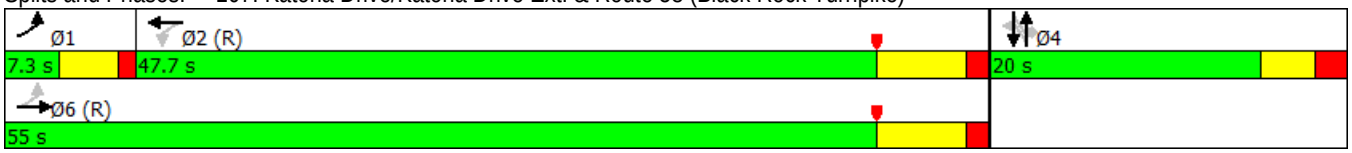
Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	456	58	54	958	2	76	2	31	2	2	1
Future Volume (vph)	1	456	58	54	958	2	76	2	31	2	2	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	10	10	12	12	12
Storage Length (ft)	0		0	0		0	0		250	0		0
Storage Lanes	0		0	0		0	0		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.983							0.850		0.962	
Flt Protected					0.997			0.953		0.950		
Satd. Flow (prot)	0	3298	0	0	3345	0	0	1625	1449	1736	1757	0
Flt Permitted		0.955			0.876			0.729		0.702		
Satd. Flow (perm)	0	3150	0	0	2939	0	0	1243	1449	1282	1757	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		38							111		1	
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		502			407			423			198	
Travel Time (s)		11.4			9.3			11.5			5.4	
Peak Hour Factor	0.80	0.80	0.80	0.92	0.92	0.92	0.92	0.92	0.92	0.80	0.80	0.80
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	1	570	73	59	1041	2	83	2	34	3	3	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	644	0	0	1102	0	0	85	34	3	4	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2			4		4	4		
Detector Phase	1	6		2	2		4	4	4	4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0		7.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	7.3	21.3		21.3	21.3		11.9	11.9	11.9	11.9	11.9	
Total Split (s)	7.3	55.0		47.7	47.7		20.0	20.0	20.0	20.0	20.0	
Total Split (%)	9.7%	73.3%		63.6%	63.6%		26.7%	26.7%	26.7%	26.7%	26.7%	
Yellow Time (s)	3.3	5.0		5.0	5.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.0	1.3		1.3	1.3		1.9	1.9	1.9	1.9	1.9	
Lost Time Adjust (s)		0.0			0.0			0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.3			6.3			4.9	4.9	4.9	4.9	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Act Effct Green (s)		56.8			41.4			9.4	9.4	9.4	9.4	
Actuated g/C Ratio		0.76			0.55			0.13	0.13	0.13	0.13	
v/c Ratio		0.27			0.68			0.54	0.12	0.02	0.02	
Control Delay		2.3			6.8			43.3	0.9	26.5	24.3	
Queue Delay		0.0			0.0			0.0	0.0	0.0	0.0	
Total Delay		2.3			6.8			43.3	0.9	26.5	24.3	
LOS		A			A			D	A	C	C	
Approach Delay		2.3			6.8			31.2			25.3	
Approach LOS		A			A			C			C	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		8			56			38	0	1	1	
Queue Length 95th (ft)		32			63			76	0	7	8	
Internal Link Dist (ft)		422			327			343			118	
Turn Bay Length (ft)									250			
Base Capacity (vph)		2410			1622			250	380	258	354	
Starvation Cap Reductn		0			7			0	0	0	0	
Spillback Cap Reductn		0			0			0	0	0	0	
Storage Cap Reductn		0			0			0	0	0	0	
Reduced v/c Ratio		0.27			0.68			0.34	0.09	0.01	0.01	

Intersection Summary	
Area Type:	Other
Cycle Length: 75	
Actuated Cycle Length: 75	
Offset: 21 (28%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.68	
Intersection Signal Delay: 6.9	Intersection LOS: A
Intersection Capacity Utilization 68.2%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike)



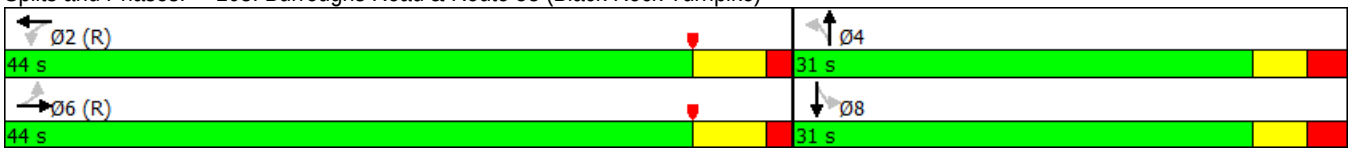
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	464	8	5	963	71	7	88	3	146	76	75
Future Volume (vph)	29	464	8	5	963	71	7	88	3	146	76	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	16	12	12	16	12
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.990			0.996			0.966	
Flt Protected		0.997						0.996			0.976	
Satd. Flow (prot)	0	3307	0	0	3290	0	0	2034	0	0	1934	0
Flt Permitted		0.848			0.953			0.970			0.805	
Satd. Flow (perm)	0	2813	0	0	3136	0	0	1981	0	0	1595	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			15			2			25	
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		407			996			466			300	
Travel Time (s)		9.3			22.6			12.7			8.2	
Peak Hour Factor	0.80	0.80	0.80	0.95	0.95	0.95	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	36	580	10	5	1014	75	9	110	4	183	95	94
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	626	0	0	1094	0	0	123	0	0	372	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		2	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		9.0	9.0		9.0	9.0	
Minimum Split (s)	20.6	20.6		20.6	20.6		14.4	14.4		14.4	14.4	
Total Split (s)	44.0	44.0		44.0	44.0		31.0	31.0		31.0	31.0	
Total Split (%)	58.7%	58.7%		58.7%	58.7%		41.3%	41.3%		41.3%	41.3%	
Yellow Time (s)	4.1	4.1		4.1	4.1		3.1	3.1		3.1	3.1	
All-Red Time (s)	1.5	1.5		1.5	1.5		2.3	2.3		2.3	2.3	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.6			5.6			5.4			5.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		43.7			43.7			20.3			20.3	
Actuated g/C Ratio		0.58			0.58			0.27			0.27	
v/c Ratio		0.38			0.60			0.23			0.83	
Control Delay		6.2			12.6			20.4			39.1	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		6.2			12.6			20.4			39.1	
LOS		A			B			C			D	
Approach Delay		6.2			12.6			20.4			39.1	
Approach LOS		A			B			C			D	
Queue Length 50th (ft)		28			157			43			149	
Queue Length 95th (ft)		34			253			66			191	
Internal Link Dist (ft)		327			916			386			220	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)		1638			1831			677			560	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.38			0.60			0.18			0.66	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 20 (27%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 50
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 15.7 Intersection LOS: B
Intersection Capacity Utilization 67.4% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 108: Burroughs Road & Route 58 (Black Rock Turnpike)



Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NWL	NWR	NWR2	NET
Lane Configurations												
Traffic Volume (vph)	1	243	371	1	35	2	585	1	359	5	13	1
Future Volume (vph)	1	243	371	1	35	2	585	1	359	5	13	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	11	11	12	10	12	12	12
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.97	0.95	0.95	1.00
Frt			0.850						0.993			0.910
Flt Protected							0.997		0.955			
Satd. Flow (prot)	0	1827	1553	0	0	0	3345	0	3137	0	0	1662
Flt Permitted		0.997					0.908		0.955			
Satd. Flow (perm)	0	1821	1553	0	0	0	3047	0	3137	0	0	1662
Right Turn on Red				Yes				Yes			Yes	
Satd. Flow (RTOR)			57						152			
Link Speed (mph)		30					30		30			25
Link Distance (ft)		996					549		218			653
Travel Time (s)		22.6					12.5		5.0			17.8
Peak Hour Factor	0.80	0.80	0.80	0.80	0.81	0.81	0.81	0.81	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	1	304	464	1	43	2	722	1	449	6	16	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	305	465	0	0	0	768	0	471	0	0	3
Turn Type	Perm	NA	pm+ov		Perm	Perm	NA		Prot			NA
Protected Phases		2	4				2		4			5
Permitted Phases	2		2		2	2						
Detector Phase	2	2	4		2	2	2		4			5
Switch Phase												
Minimum Initial (s)	15.0	15.0	9.0		15.0	15.0	15.0		9.0			5.0
Minimum Split (s)	22.8	22.8	15.4		22.8	22.8	22.8		15.4			12.6
Total Split (s)	35.8	35.8	33.4		35.8	35.8	35.8		33.4			19.6
Total Split (%)	40.3%	40.3%	37.6%		40.3%	40.3%	40.3%		37.6%			22.1%
Yellow Time (s)	4.1	4.1	3.3		4.1	4.1	4.1		3.3			3.3
All-Red Time (s)	3.7	3.7	3.1		3.7	3.7	3.7		3.1			4.3
Lost Time Adjust (s)		0.0	0.0				0.0		0.0			0.0
Total Lost Time (s)		7.8	6.4				7.8		6.4			7.6
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Min	Min	None		Min	Min	Min		None			None
Act Effct Green (s)		19.2	44.0				19.2		11.3			5.9
Actuated g/C Ratio		0.38	0.88				0.38		0.23			0.12
v/c Ratio		0.44	0.34				0.66		0.57			0.02
Control Delay		15.7	3.1				17.4		16.2			27.5
Queue Delay		0.0	0.0				0.0		0.0			0.0
Total Delay		15.7	3.1				17.4		16.2			27.5
LOS		B	A				B		B			C
Approach Delay		8.1					17.4		16.2			27.5
Approach LOS		A					B		B			C
Queue Length 50th (ft)		44	0				64		29			1
Queue Length 95th (ft)		144	84				180		91			8
Internal Link Dist (ft)		916					469		138			573

Lane Group	NER	NER2	SWL2	SWL	SWT	SWR
Lane Configurations						
Traffic Volume (vph)	1	1	1	17	0	6
Future Volume (vph)	1	1	1	17	0	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	15	12	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.968	
Flt Protected					0.963	
Satd. Flow (prot)	0	0	0	0	1703	0
Flt Permitted						
Satd. Flow (perm)	0	0	0	0	1768	0
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)					25	
Link Distance (ft)					695	
Travel Time (s)					19.0	
Peak Hour Factor	0.80	0.80	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	1	1	1	18	0	6
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	25	0
Turn Type				Perm	NA	
Protected Phases					5	
Permitted Phases				5		
Detector Phase				5	5	
Switch Phase						
Minimum Initial (s)				5.0	5.0	
Minimum Split (s)				12.6	12.6	
Total Split (s)				19.6	19.6	
Total Split (%)				22.1%	22.1%	
Yellow Time (s)				3.3	3.3	
All-Red Time (s)				4.3	4.3	
Lost Time Adjust (s)					0.0	
Total Lost Time (s)					7.6	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode				None	None	
Act Effct Green (s)					5.9	
Actuated g/C Ratio					0.12	
v/c Ratio					0.12	
Control Delay					27.6	
Queue Delay					0.0	
Total Delay					27.6	
LOS					C	
Approach Delay					27.6	
Approach LOS					C	
Queue Length 50th (ft)					5	
Queue Length 95th (ft)					32	
Internal Link Dist (ft)					615	

Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NWL	NWR	NWR2	NET
Turn Bay Length (ft)												
Base Capacity (vph)		1102	1483				1845		1895			431
Starvation Cap Reductn		0	0				0		0			0
Spillback Cap Reductn		0	0				0		0			0
Storage Cap Reductn		0	0				0		0			0
Reduced v/c Ratio		0.28	0.31				0.42		0.25			0.01

Intersection Summary

Area Type: Other
Cycle Length: 88.8
Actuated Cycle Length: 50.1
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.66
Intersection Signal Delay: 13.8 Intersection LOS: B
Intersection Capacity Utilization 73.6% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) & Route 58 (Black Rock Turnpike)/Route 58 (Tunxis Hill Cut

Ø2	Ø4	Ø5
35.8 s	33.4 s	19.6 s

Lane Group	NER	NER2	SWL2	SWL	SWT	SWR
Turn Bay Length (ft)						
Base Capacity (vph)					459	
Starvation Cap Reductn					0	
Spillback Cap Reductn					0	
Storage Cap Reductn					0	
Reduced v/c Ratio					0.05	

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	271	2	64	633	0	61
Future Volume (vph)	271	2	64	633	0	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	10	10
Storage Length (ft)		0	0		0	50
Storage Lanes		0	0		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00
Frt	0.999					0.850
Flt Protected				0.995		
Satd. Flow (prot)	3352	0	0	1757	1705	1449
Flt Permitted				0.995		
Satd. Flow (perm)	3352	0	0	1757	1705	1449
Link Speed (mph)	30			30	25	
Link Distance (ft)	1095			214	782	
Travel Time (s)	24.9			4.9	21.3	
Peak Hour Factor	0.80	0.80	0.91	0.91	0.80	0.80
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	339	3	70	696	0	76
Shared Lane Traffic (%)						
Lane Group Flow (vph)	342	0	0	766	0	76
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 51.1%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	271	2	64	633	0	61
Future Vol, veh/h	271	2	64	633	0	61
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	91	91	80	80
Heavy Vehicles, %	4	4	4	4	4	4
Mvmt Flow	339	3	70	696	0	76

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	341	0	1176	171
Stage 1	-	-	-	-	340	-
Stage 2	-	-	-	-	836	-
Critical Hdwy	-	-	4.16	-	6.66	6.96
Critical Hdwy Stg 1	-	-	-	-	5.86	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	-	-	2.238	-	3.538	3.338
Pot Cap-1 Maneuver	-	-	1204	-	195	838
Stage 1	-	-	-	-	688	-
Stage 2	-	-	-	-	420	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1204	-	176	838
Mov Cap-2 Maneuver	-	-	-	-	176	-
Stage 1	-	-	-	-	688	-
Stage 2	-	-	-	-	380	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	9.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	838	-	-	1204	-
HCM Lane V/C Ratio	-	0.091	-	-	0.058	-
HCM Control Delay (s)	0	9.7	-	-	8.2	0
HCM Lane LOS	A	A	-	-	A	A
HCM 95th %tile Q(veh)	-	0.3	-	-	0.2	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	20	68	76	357	394	30
Future Volume (vph)	20	68	76	357	394	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	12	12
Storage Length (ft)	0	0	25			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt	0.896				0.990	
Flt Protected	0.989			0.991		
Satd. Flow (prot)	1817	0	0	3407	1791	0
Flt Permitted	0.989			0.991		
Satd. Flow (perm)	1817	0	0	3407	1791	0
Link Speed (mph)	25			30	30	
Link Distance (ft)	586			395	218	
Travel Time (s)	16.0			9.0	5.0	
Peak Hour Factor	0.80	0.80	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	25	85	83	388	428	33
Shared Lane Traffic (%)						
Lane Group Flow (vph)	110	0	0	471	461	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 49.9%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	68	76	357	394	30
Future Vol, veh/h	20	68	76	357	394	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	25	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	92	92	92	92
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	25	85	83	388	428	33

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	804	445	461	0	-	0
Stage 1	445	-	-	-	-	-
Stage 2	359	-	-	-	-	-
Critical Hdwy	6.675	6.275	4.175	-	-	-
Critical Hdwy Stg 1	5.475	-	-	-	-	-
Critical Hdwy Stg 2	5.875	-	-	-	-	-
Follow-up Hdwy	3.5475	3.3475	2.2475	-	-	-
Pot Cap-1 Maneuver	331	605	1080	-	-	-
Stage 1	637	-	-	-	-	-
Stage 2	671	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	299	605	1080	-	-	-
Mov Cap-2 Maneuver	299	-	-	-	-	-
Stage 1	637	-	-	-	-	-
Stage 2	605	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.4	1.8	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1080	-	491	-	-
HCM Lane V/C Ratio	0.076	-	0.224	-	-
HCM Control Delay (s)	8.6	0.3	14.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.9	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	0	1	46	0	47	5	662	62	58	724	5
Future Volume (vph)	6	0	1	46	0	47	5	662	62	58	724	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	16	12	12	13	12	12	13	12
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		0.985			0.932			0.989			0.999	
Flt Protected		0.957			0.976						0.996	
Satd. Flow (prot)	0	1990	0	0	1920	0	0	1904	0	0	1915	0
Flt Permitted		0.833			0.839			0.996			0.909	
Satd. Flow (perm)	0	1732	0	0	1651	0	0	1896	0	0	1748	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		43			56			14			1	
Link Speed (mph)		25			30			35			35	
Link Distance (ft)		378			442			1898			522	
Travel Time (s)		10.3			10.0			37.0			10.2	
Peak Hour Factor	0.80	0.80	0.80	0.84	0.84	0.84	0.95	0.95	0.95	0.94	0.94	0.94
Adj. Flow (vph)	8	0	1	55	0	56	5	697	65	62	770	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	9	0	0	111	0	0	767	0	0	837	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	11.7	11.7		11.7	11.7		20.6	20.6		20.6	20.6	
Total Split (s)	17.7	17.7		17.7	17.7		48.6	48.6		48.6	48.6	
Total Split (%)	26.7%	26.7%		26.7%	26.7%		73.3%	73.3%		73.3%	73.3%	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.4	1.4		1.4	1.4		1.6	1.6		1.6	1.6	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.7			4.7			5.6			5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Act Effct Green (s)		8.0			8.0			34.8			34.8	
Actuated g/C Ratio		0.16			0.16			0.71			0.71	
v/c Ratio		0.03			0.35			0.57			0.67	
Control Delay		0.1			15.5			7.1			9.4	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		0.1			15.5			7.1			9.4	
LOS		A			B			A			A	
Approach Delay		0.1			15.5			7.1			9.4	
Approach LOS		A			B			A			A	
Queue Length 50th (ft)		0			12			99			126	
Queue Length 95th (ft)		0			53			215			289	
Internal Link Dist (ft)		298			362			1818			442	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		510			497			1653			1522	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.02			0.22			0.46			0.55	

Intersection Summary	
Area Type:	Other
Cycle Length: 66.3	
Actuated Cycle Length: 48.8	
Natural Cycle: 55	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.67	
Intersection Signal Delay: 8.7	Intersection LOS: A
Intersection Capacity Utilization 93.0%	ICU Level of Service F
Analysis Period (min) 15	

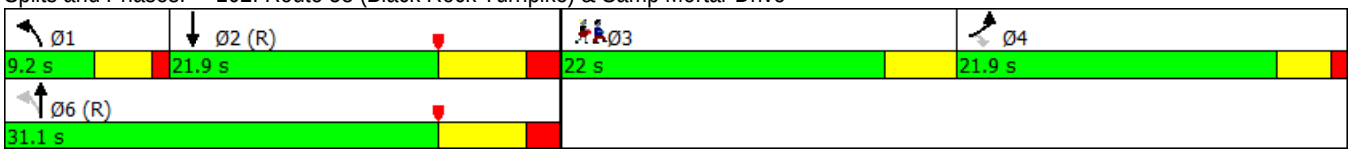
Splits and Phases: 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Lane Configurations							
Traffic Volume (vph)	80	177	173	661	702	72	
Future Volume (vph)	80	177	173	661	702	72	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	10	10	11	11	12	12	
Storage Length (ft)	0	50	100			0	
Storage Lanes	1	1	1			0	
Taper Length (ft)	25		50				
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	
Frt		0.850			0.986		
Flt Protected	0.950		0.950				
Satd. Flow (prot)	1636	1463	1694	1783	3456	0	
Flt Permitted	0.950		0.287				
Satd. Flow (perm)	1636	1463	512	1783	3456	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		216			13		
Link Speed (mph)	25			30	35		
Link Distance (ft)	445			510	341		
Travel Time (s)	12.1			11.6	6.6		
Peak Hour Factor	0.82	0.82	0.86	0.86	0.97	0.97	
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	
Adj. Flow (vph)	98	216	201	769	724	74	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	98	216	201	769	798	0	
Turn Type	Prot	Perm	pm+pt	NA	NA		
Protected Phases	4		1	6	2		3
Permitted Phases		4	6				
Detector Phase	4	4	1	6	2		
Switch Phase							
Minimum Initial (s)	9.0	9.0	5.0	15.0	15.0		7.0
Minimum Split (s)	13.0	13.0	9.2	21.9	21.9		22.0
Total Split (s)	21.9	21.9	9.2	31.1	21.9		22.0
Total Split (%)	29.2%	29.2%	12.3%	41.5%	29.2%		29%
Yellow Time (s)	3.0	3.0	3.2	4.9	4.9		4.0
All-Red Time (s)	1.0	1.0	1.0	2.0	2.0		0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	4.0	4.0	4.2	6.9	6.9		
Lead/Lag	Lag	Lag	Lead		Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes		Yes		Yes
Recall Mode	None	None	None	C-Max	C-Max		None
Act Effct Green (s)	10.1	10.1	56.7	54.0	39.9		
Actuated g/C Ratio	0.13	0.13	0.76	0.72	0.53		
v/c Ratio	0.45	0.56	0.37	0.60	0.43		
Control Delay	36.2	10.8	7.3	15.2	11.9		
Queue Delay	0.0	0.0	0.0	0.0	0.0		
Total Delay	36.2	10.8	7.3	15.2	11.9		
LOS	D	B	A	B	B		
Approach Delay	18.7			13.5	11.9		
Approach LOS	B			B	B		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Queue Length 50th (ft)	43	0	31	300	101		
Queue Length 95th (ft)	75	41	66	439	175		
Internal Link Dist (ft)	365			430	261		
Turn Bay Length (ft)		50	100				
Base Capacity (vph)	390	513	542	1283	1845		
Starvation Cap Reductn	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0		
Reduced v/c Ratio	0.25	0.42	0.37	0.60	0.43		

Intersection Summary	
Area Type: Other	
Cycle Length: 75	
Actuated Cycle Length: 75	
Offset: 22 (29%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.60	
Intersection Signal Delay: 13.7	Intersection LOS: B
Intersection Capacity Utilization 51.4%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive



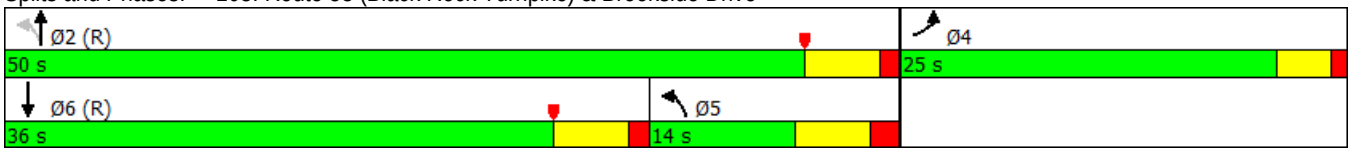
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	68	49	54	767	792	89
Future Volume (vph)	68	49	54	767	792	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	12	12
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Frt	0.943				0.985	
Flt Protected	0.972			0.997		
Satd. Flow (prot)	1916	0	0	3494	3452	0
Flt Permitted	0.972			0.831		
Satd. Flow (perm)	1916	0	0	2913	3452	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	48				19	
Link Speed (mph)	25			30	30	
Link Distance (ft)	347			293	336	
Travel Time (s)	9.5			6.7	7.6	
Peak Hour Factor	0.86	0.86	0.83	0.83	0.98	0.98
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	79	57	65	924	808	91
Shared Lane Traffic (%)						
Lane Group Flow (vph)	136	0	0	989	899	0
Turn Type	Prot		pm+pt	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases			2			
Detector Phase	4		5	2	6	
Switch Phase						
Minimum Initial (s)	9.0		3.0	15.0	15.0	
Minimum Split (s)	13.0		8.9	20.4	20.4	
Total Split (s)	25.0		14.0	50.0	36.0	
Total Split (%)	33.3%		18.7%	66.7%	48.0%	
Yellow Time (s)	3.0		4.2	4.2	4.2	
All-Red Time (s)	1.0		1.7	1.2	1.2	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	4.0			5.4	5.4	
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None	C-Max	C-Max	
Act Effct Green (s)	9.7			59.5	59.5	
Actuated g/C Ratio	0.13			0.79	0.79	
v/c Ratio	0.47			0.43	0.33	
Control Delay	25.4			2.9	1.4	
Queue Delay	0.0			0.1	0.0	
Total Delay	25.4			3.0	1.4	
LOS	C			A	A	
Approach Delay	25.4			3.0	1.4	
Approach LOS	C			A	A	
Queue Length 50th (ft)	38			39	9	
Queue Length 95th (ft)	80			63	10	
Internal Link Dist (ft)	267			213	256	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Turn Bay Length (ft)						
Base Capacity (vph)	571			2312	2744	
Starvation Cap Reductn	0			306	0	
Spillback Cap Reductn	1			0	116	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.24			0.49	0.34	

Intersection Summary

Area Type: Other	
Cycle Length: 75	
Actuated Cycle Length: 75	
Offset: 45 (60%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow	
Natural Cycle: 45	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.47	
Intersection Signal Delay: 3.8	Intersection LOS: A
Intersection Capacity Utilization 67.3%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 103: Route 58 (Black Rock Turnpike) & Brookside Drive



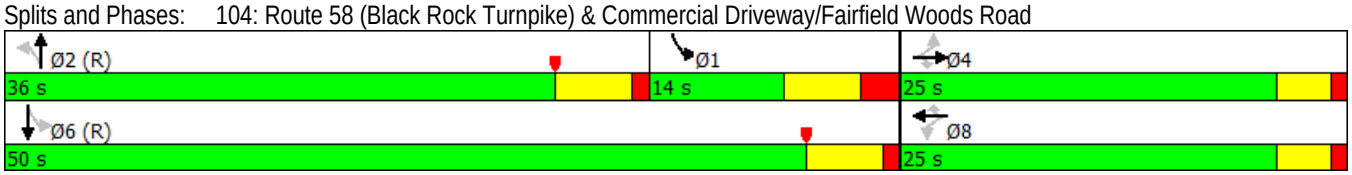
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	3	33	65	4	149	31	674	54	88	732	22
Future Volume (vph)	15	3	33	65	4	149	31	674	54	88	732	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	11	12	11	12	12	11	12
Storage Length (ft)	0		0	0		75	0		0	0		0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt			0.850			0.850		0.989			0.996	
Flt Protected		0.960			0.955			0.998			0.995	
Satd. Flow (prot)	0	1788	1583	0	1779	1531	0	3377	0	0	3391	0
Flt Permitted		0.801			0.725			0.893			0.768	
Satd. Flow (perm)	0	1492	1583	0	1350	1531	0	3022	0	0	2617	0
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			128					13			6	
Link Speed (mph)		30			25			30			30	
Link Distance (ft)		87			499			713			293	
Travel Time (s)		2.0			13.6			16.2			6.7	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.89	0.89	0.89	0.96	0.96	0.96
Adj. Flow (vph)	19	4	41	81	5	186	35	757	61	92	763	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	23	41	0	86	186	0	853	0	0	878	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	4	4	4	8	8	8	2	2		1	6	
Switch Phase												
Minimum Initial (s)	9.0	9.0	9.0	9.0	9.0	9.0	15.0	15.0		3.0	15.0	
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	20.3	20.3		9.5	20.3	
Total Split (s)	25.0	25.0	25.0	25.0	25.0	25.0	36.0	36.0		14.0	50.0	
Total Split (%)	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	48.0%	48.0%		18.7%	66.7%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.3	4.3		4.3	4.3	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		2.2	1.0	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0		0.0			0.0	
Total Lost Time (s)		4.0	4.0		4.0	4.0		5.3			5.3	
Lead/Lag							Lead	Lead		Lag		
Lead-Lag Optimize?							Yes	Yes		Yes		
Recall Mode	None	None	None	None	None	None	C-Max	C-Max		None	C-Max	
Act Effct Green (s)		13.7	13.7		13.7	13.7		52.0			52.0	
Actuated g/C Ratio		0.18	0.18		0.18	0.18		0.69			0.69	
v/c Ratio		0.08	0.10		0.35	0.67		0.41			0.48	
Control Delay		23.9	0.5		29.3	39.7		6.1			4.5	
Queue Delay		0.0	0.0		0.0	0.0		0.0			0.1	
Total Delay		23.9	0.5		29.3	39.7		6.1			4.6	
LOS		C	A		C	D		A			A	
Approach Delay		8.9			36.4			6.1			4.6	
Approach LOS		A			D			A			A	
Queue Length 50th (ft)		9	0		35	82		71			15	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		22	0		60	115		131			211	
Internal Link Dist (ft)		7			419			633			213	
Turn Bay Length (ft)						75						
Base Capacity (vph)		417	535		378	428		2098			1815	
Starvation Cap Reductn		0	0		0	0		0			154	
Spillback Cap Reductn		0	0		0	0		0			0	
Storage Cap Reductn		0	0		0	0		0			0	
Reduced v/c Ratio		0.06	0.08		0.23	0.43		0.41			0.53	

Intersection Summary

Area Type:	Other		
Cycle Length: 75			
Actuated Cycle Length: 75			
Offset: 48 (64%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow			
Natural Cycle: 55			
Control Type: Actuated-Coordinated			
Maximum v/c Ratio: 0.67			
Intersection Signal Delay: 9.5		Intersection LOS: A	
Intersection Capacity Utilization 67.4%		ICU Level of Service C	
Analysis Period (min) 15			

Splits and Phases: 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	563	193	126	585	109	207	204	133	178	196	55
Future Volume (vph)	79	563	193	126	585	109	207	204	133	178	196	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	11	12	12	11	11	12	12	12	12
Storage Length (ft)	200		0	175		0	210		0	170		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	85			75			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.962			0.976			0.941			0.967	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1711	3291	0	1711	3454	0	1711	1694	0	1770	1801	0
Flt Permitted	0.950			0.950			0.419			0.322		
Satd. Flow (perm)	1711	3291	0	1711	3454	0	754	1694	0	600	1801	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		29			13			19				
Link Speed (mph)		30			30			30			25	
Link Distance (ft)		436			368			438			355	
Travel Time (s)		9.9			8.4			10.0			9.7	
Peak Hour Factor	0.91	0.91	0.91	0.93	0.93	0.93	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	87	619	212	135	629	117	216	213	139	185	204	57
Shared Lane Traffic (%)												
Lane Group Flow (vph)	87	831	0	135	746	0	216	352	0	185	261	0
Turn Type	Prot	NA		Prot	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases							4			8		
Detector Phase	5	2		1	6		7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	15.0		5.0	15.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	21.6		9.7	21.6		9.3	16.8		9.3	16.8	
Total Split (s)	17.7	41.6		17.7	41.6		22.3	36.8		22.3	36.8	
Total Split (%)	11.7%	27.5%		11.7%	27.5%		14.7%	24.3%		14.7%	24.3%	
Yellow Time (s)	3.0	4.1		3.0	4.1		3.3	4.4		3.3	4.4	
All-Red Time (s)	1.7	2.5		1.7	2.5		1.0	2.4		1.0	2.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	6.6		4.7	6.6		4.3	6.8		4.3	6.8	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Min		None	Min		None	None		None	None	
Act Effct Green (s)	9.8	35.1		12.7	37.9		46.3	29.9		43.4	28.5	
Actuated g/C Ratio	0.09	0.31		0.11	0.34		0.41	0.27		0.39	0.25	
v/c Ratio	0.58	0.80		0.70	0.64		0.50	0.76		0.51	0.57	
Control Delay	65.5	41.3		68.9	34.9		24.8	48.3		25.5	43.2	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	65.5	41.3		68.9	34.9		24.8	48.3		25.5	43.2	
LOS	E	D		E	C		C	D		C	D	
Approach Delay		43.6			40.1			39.4			35.8	
Approach LOS		D			D			D			D	
Queue Length 50th (ft)	61	279		95	234		99	222		83	166	

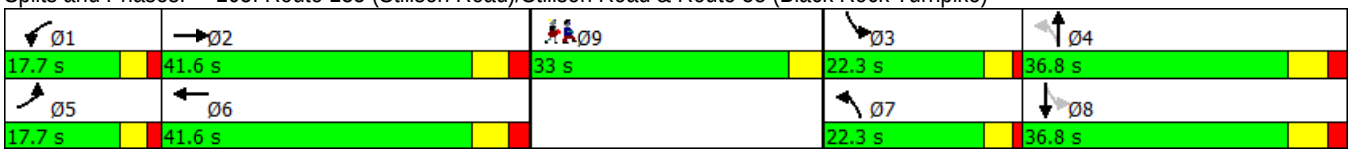
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	33.0
Total Split (s)	33.0
Total Split (%)	22%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	117	383		#195	335		154	#382		132	264	
Internal Link Dist (ft)		356			288			358			275	
Turn Bay Length (ft)	200			175			210			170		
Base Capacity (vph)	197	1045		197	1171		477	466		442	480	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.44	0.80		0.69	0.64		0.45	0.76		0.42	0.54	

Intersection Summary

Area Type: Other
Cycle Length: 151.4
Actuated Cycle Length: 112.5
Natural Cycle: 145
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 40.4 Intersection LOS: D
Intersection Capacity Utilization 76.1% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike)



Lane Group	Ø9
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

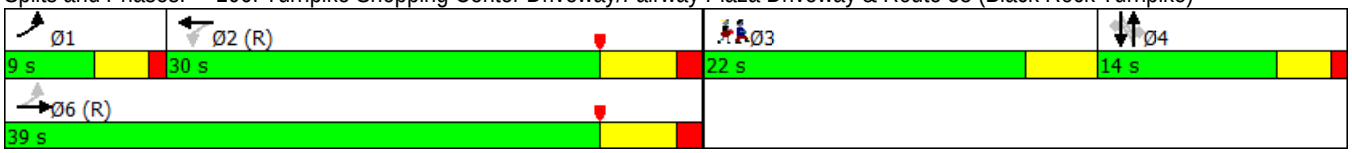
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	677	32	60	613	69	163	12	82	54	13	33
Future Volume (vph)	72	677	32	60	613	69	163	12	82	54	13	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	13	13	12	13	13
Storage Length (ft)	0		0	0		0	0		25	0		25
Storage Lanes	0		0	0		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.994			0.986				0.850			0.850
Flt Protected		0.995			0.996			0.956			0.961	
Satd. Flow (prot)	0	3351	0	0	3327	0	0	1822	1620	0	1832	1620
Flt Permitted		0.795			0.811			0.686			0.703	
Satd. Flow (perm)	0	2677	0	0	2709	0	0	1308	1620	0	1340	1620
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			15				157			157
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		442			502			142			135	
Travel Time (s)		10.0			11.4			3.9			3.7	
Peak Hour Factor	0.91	0.91	0.91	0.97	0.97	0.97	0.95	0.95	0.95	0.88	0.88	0.88
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	79	744	35	62	632	71	172	13	86	61	15	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	858	0	0	765	0	0	185	86	0	76	38
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2			4		4	4		4
Detector Phase	1	6		2	2		4	4	4	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	15.0		15.0	15.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	9.0	20.8		20.8	20.8		11.0	11.0	11.0	11.0	11.0	11.0
Total Split (s)	9.0	39.0		30.0	30.0		14.0	14.0	14.0	14.0	14.0	14.0
Total Split (%)	12.0%	52.0%		40.0%	40.0%		18.7%	18.7%	18.7%	18.7%	18.7%	18.7%
Yellow Time (s)	3.0	4.3		4.3	4.3		3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.5		1.5	1.5		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0			0.0			0.0	0.0		0.0	0.0
Total Lost Time (s)		5.8			5.8			4.0	4.0		4.0	4.0
Lead/Lag	Lead			Lag	Lag		Lag	Lag	Lag	Lag	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Min	C-Max		C-Max	C-Max		None	None	None	None	None	None
Act Effct Green (s)		46.6			37.1			18.6	18.6		18.6	18.6
Actuated g/C Ratio		0.62			0.49			0.25	0.25		0.25	0.25
v/c Ratio		0.51			0.57			0.57	0.17		0.23	0.07
Control Delay		8.9			8.7			32.3	1.2		24.2	0.3
Queue Delay		0.0			0.0			0.0	0.0		0.0	0.0
Total Delay		8.9			8.7			32.3	1.2		24.2	0.3
LOS		A			A			C	A		C	A
Approach Delay		8.9			8.7			22.4			16.2	
Approach LOS		A			A			C			B	

Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
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)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	22.0
Total Split (s)	22.0
Total Split (%)	29%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		92			57			76	0		28	0
Queue Length 95th (ft)		138			73			135	5		59	0
Internal Link Dist (ft)		362			422			62			55	
Turn Bay Length (ft)									25			25
Base Capacity (vph)		1699			1347			324	519		332	519
Starvation Cap Reductn		0			0			0	0		0	0
Spillback Cap Reductn		0			0			0	0		0	0
Storage Cap Reductn		0			0			0	0		0	0
Reduced v/c Ratio		0.51			0.57			0.57	0.17		0.23	0.07

Intersection Summary	
Area Type:	Other
Cycle Length: 75	
Actuated Cycle Length: 75	
Offset: 19 (25%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.57	
Intersection Signal Delay: 11.1	Intersection LOS: B
Intersection Capacity Utilization 72.0%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike)



Lane Group	Ø3
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

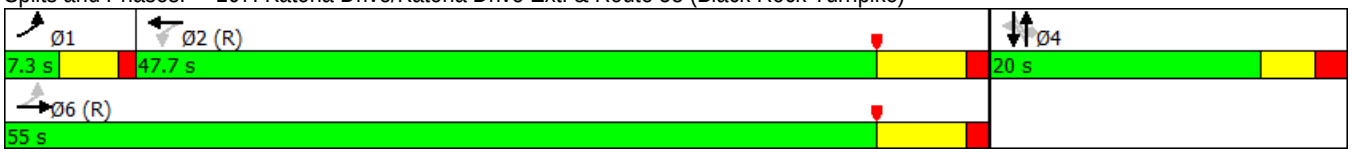
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	724	107	47	684	1	93	2	51	3	10	8
Future Volume (vph)	3	724	107	47	684	1	93	2	51	3	10	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	10	10	12	12	12
Storage Length (ft)	0		0	0		0	0		250	0		0
Storage Lanes	0		0	0		0	0		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.981							0.850		0.935	
Flt Protected					0.997			0.953		0.950		
Satd. Flow (prot)	0	3324	0	0	3378	0	0	1641	1463	1752	1725	0
Flt Permitted		0.955			0.832			0.713		0.684		
Satd. Flow (perm)	0	3174	0	0	2819	0	0	1228	1463	1262	1725	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		44							111		10	
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		502			407			423			198	
Travel Time (s)		11.4			9.3			11.5			5.4	
Peak Hour Factor	0.87	0.87	0.87	0.95	0.95	0.95	0.84	0.84	0.84	0.80	0.80	0.80
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	3	832	123	49	720	1	111	2	61	4	13	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	958	0	0	770	0	0	113	61	4	23	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2			4		4	4		
Detector Phase	1	6		2	2		4	4	4	4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0		7.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	7.3	21.3		21.3	21.3		11.9	11.9	11.9	11.9	11.9	
Total Split (s)	7.3	55.0		47.7	47.7		20.0	20.0	20.0	20.0	20.0	
Total Split (%)	9.7%	73.3%		63.6%	63.6%		26.7%	26.7%	26.7%	26.7%	26.7%	
Yellow Time (s)	3.3	5.0		5.0	5.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.0	1.3		1.3	1.3		1.9	1.9	1.9	1.9	1.9	
Lost Time Adjust (s)		0.0			0.0			0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.3			6.3			4.9	4.9	4.9	4.9	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Act Effct Green (s)		55.5			41.4			10.7	10.7	10.7	10.7	
Actuated g/C Ratio		0.74			0.55			0.14	0.14	0.14	0.14	
v/c Ratio		0.40			0.49			0.65	0.20	0.02	0.09	
Control Delay		3.1			6.8			46.8	3.0	25.3	19.5	
Queue Delay		0.0			0.0			0.0	0.0	0.0	0.0	
Total Delay		3.1			6.8			46.8	3.0	25.3	19.5	
LOS		A			A			D	A	C	B	
Approach Delay		3.1			6.8			31.5			20.4	
Approach LOS		A			A			C			C	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		47			43			51	0	2	5	
Queue Length 95th (ft)		62			53			88	6	8	20	
Internal Link Dist (ft)		422			327			343			118	
Turn Bay Length (ft)									250			
Base Capacity (vph)		2375			1556			247	383	254	355	
Starvation Cap Reductn		0			0			0	0	0	0	
Spillback Cap Reductn		0			0			0	0	0	0	
Storage Cap Reductn		0			0			0	0	0	0	
Reduced v/c Ratio		0.40			0.49			0.46	0.16	0.02	0.06	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 21 (28%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 45
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.65
Intersection Signal Delay: 7.4 Intersection LOS: A
Intersection Capacity Utilization 70.3% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike)



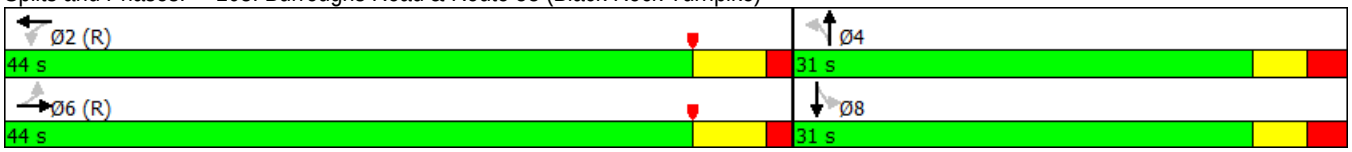
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	753	12	5	669	113	14	59	7	118	51	47
Future Volume (vph)	62	753	12	5	669	113	14	59	7	118	51	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	16	12	12	16	12
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.978			0.988			0.970	
Flt Protected		0.996						0.991			0.973	
Satd. Flow (prot)	0	3335	0	0	3282	0	0	2027	0	0	1954	0
Flt Permitted		0.821			0.950			0.924			0.811	
Satd. Flow (perm)	0	2749	0	0	3118	0	0	1890	0	0	1629	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			37			7			20	
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		407			996			466			300	
Travel Time (s)		9.3			22.6			12.7			8.2	
Peak Hour Factor	0.86	0.86	0.86	0.96	0.96	0.96	0.80	0.80	0.80	0.83	0.83	0.83
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	72	876	14	5	697	118	18	74	9	142	61	57
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	962	0	0	820	0	0	101	0	0	260	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		2	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		9.0	9.0		9.0	9.0	
Minimum Split (s)	20.6	20.6		20.6	20.6		14.4	14.4		14.4	14.4	
Total Split (s)	44.0	44.0		44.0	44.0		31.0	31.0		31.0	31.0	
Total Split (%)	58.7%	58.7%		58.7%	58.7%		41.3%	41.3%		41.3%	41.3%	
Yellow Time (s)	4.1	4.1		4.1	4.1		3.1	3.1		3.1	3.1	
All-Red Time (s)	1.5	1.5		1.5	1.5		2.3	2.3		2.3	2.3	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.6			5.6			5.4			5.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		47.9			47.9			16.1			16.1	
Actuated g/C Ratio		0.64			0.64			0.21			0.21	
v/c Ratio		0.55			0.41			0.25			0.71	
Control Delay		5.4			7.9			22.3			35.5	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		5.4			7.9			22.3			35.5	
LOS		A			A			C			D	
Approach Delay		5.4			7.9			22.3			35.5	
Approach LOS		A			A			C			D	
Queue Length 50th (ft)		43			81			36			104	
Queue Length 95th (ft)		57			150			58			144	
Internal Link Dist (ft)		327			916			386			220	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)		1757			2005			649			569	
Starvation Cap Reductn		42			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.56			0.41			0.16			0.46	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 20 (27%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 45
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.71
Intersection Signal Delay: 10.8 Intersection LOS: B
Intersection Capacity Utilization 77.8% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 108: Burroughs Road & Route 58 (Black Rock Turnpike)



Lane Group	EBT	EBR	EBR2	WBL2	WBL	WBT	NWL2	NWL	NWR	NWR2	NEL	NET
Lane Configurations												
Traffic Volume (vph)	356	468	6	34	7	347	4	396	2	24	5	0
Future Volume (vph)	356	468	6	34	7	347	4	396	2	24	5	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	11	11	12	10	12	12	12	12
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.97	0.95	0.95	1.00	1.00
Frt		0.850						0.991				0.939
Flt Protected						0.995		0.955				0.973
Satd. Flow (prot)	1827	1553	0	0	0	3339	0	3131	0	0	0	1669
Flt Permitted						0.845		0.947				
Satd. Flow (perm)	1827	1553	0	0	0	2835	0	3104	0	0	0	1715
Right Turn on Red			Yes							Yes		
Satd. Flow (RTOR)		57						152				
Link Speed (mph)	30					30		30				25
Link Distance (ft)	996					549		218				653
Travel Time (s)	22.6					12.5		5.0				17.8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.95	0.95	0.95	0.95	0.80	0.80
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	396	520	7	38	8	386	4	417	2	25	6	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	396	527	0	0	0	432	0	448	0	0	0	11
Turn Type	NA	pm+ov		Perm	Perm	NA	D.Pm	Prot			Perm	NA
Protected Phases	2	4				2		4				5
Permitted Phases		2		2	2		4				5	
Detector Phase	2	4		2	2	2	4	4			5	5
Switch Phase												
Minimum Initial (s)	15.0	9.0		15.0	15.0	15.0	9.0	9.0			5.0	5.0
Minimum Split (s)	22.8	15.4		22.8	22.8	22.8	15.4	15.4			12.6	12.6
Total Split (s)	35.8	33.4		35.8	35.8	35.8	33.4	33.4			19.6	19.6
Total Split (%)	40.3%	37.6%		40.3%	40.3%	40.3%	37.6%	37.6%			22.1%	22.1%
Yellow Time (s)	4.1	3.3		4.1	4.1	4.1	3.3	3.3			3.3	3.3
All-Red Time (s)	3.7	3.1		3.7	3.7	3.7	3.1	3.1			4.3	4.3
Lost Time Adjust (s)	0.0	0.0				0.0		0.0				0.0
Total Lost Time (s)	7.8	6.4				7.8		6.4				7.6
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Min	None		Min	Min	Min	None	None			None	None
Act Effct Green (s)	17.6	41.5				17.6		10.8				5.5
Actuated g/C Ratio	0.37	0.87				0.37		0.23				0.12
v/c Ratio	0.59	0.39				0.41		0.54				0.06
Control Delay	18.1	3.5				14.2		14.7				25.4
Queue Delay	0.0	0.0				0.0		0.0				0.0
Total Delay	18.1	3.5				14.2		14.7				25.4
LOS	B	A				B		B				C
Approach Delay	9.8					14.2		14.7				25.4
Approach LOS	A					B		B				C
Queue Length 50th (ft)	61	0				32		27				2
Queue Length 95th (ft)	216	118				107		95				16
Internal Link Dist (ft)	916					469		138				573

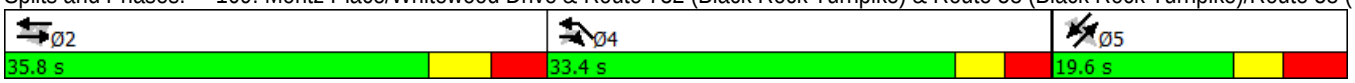
Lane Group	NER2	SWL	SWT	SWR
Lane Configurations				
Traffic Volume (vph)	4	5	0	6
Future Volume (vph)	4	5	0	6
Ideal Flow (vphpl)	1900	1900	1900	1900
Lane Width (ft)	12	15	12	12
Lane Util. Factor	1.00	1.00	1.00	1.00
Frt			0.923	
Flt Protected			0.979	
Satd. Flow (prot)	0	0	1651	0
Flt Permitted				
Satd. Flow (perm)	0	0	1686	0
Right Turn on Red	No			No
Satd. Flow (RTOR)				
Link Speed (mph)			25	
Link Distance (ft)			695	
Travel Time (s)			19.0	
Peak Hour Factor	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	4%	4%	4%	4%
Adj. Flow (vph)	5	6	0	8
Shared Lane Traffic (%)				
Lane Group Flow (vph)	0	0	14	0
Turn Type		Perm	NA	
Protected Phases			5	
Permitted Phases		5		
Detector Phase		5	5	
Switch Phase				
Minimum Initial (s)		5.0	5.0	
Minimum Split (s)		12.6	12.6	
Total Split (s)		19.6	19.6	
Total Split (%)		22.1%	22.1%	
Yellow Time (s)		3.3	3.3	
All-Red Time (s)		4.3	4.3	
Lost Time Adjust (s)			0.0	
Total Lost Time (s)			7.6	
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode		None	None	
Act Effct Green (s)			5.5	
Actuated g/C Ratio			0.12	
v/c Ratio			0.07	
Control Delay			25.6	
Queue Delay			0.0	
Total Delay			25.6	
LOS			C	
Approach Delay			25.6	
Approach LOS			C	
Queue Length 50th (ft)			3	
Queue Length 95th (ft)			19	
Internal Link Dist (ft)			615	

Lane Group	EBT	EBR	EBR2	WBL2	WBL	WBT	NWL2	NWL	NWR	NWR2	NEL	NET
Turn Bay Length (ft)												
Base Capacity (vph)	1138	1497				1766		1925				457
Starvation Cap Reductn	0	0				0		0				0
Spillback Cap Reductn	0	0				0		0				0
Storage Cap Reductn	0	0				0		0				0
Reduced v/c Ratio	0.35	0.35				0.24		0.23				0.02

Intersection Summary

Area Type: Other
Cycle Length: 88.8
Actuated Cycle Length: 47.6
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.59
Intersection Signal Delay: 12.2 Intersection LOS: B
Intersection Capacity Utilization 72.3% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) & Route 58 (Black Rock Turnpike)/Route 58 (Tunxis Hill Cut



Lane Group	NER2	SWL	SWT	SWR
Turn Bay Length (ft)				
Base Capacity (vph)			450	
Starvation Cap Reductn			0	
Spillback Cap Reductn			0	
Storage Cap Reductn			0	
Reduced v/c Ratio			0.03	

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	440	11	36	411	3	61
Future Volume (vph)	440	11	36	411	3	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	10	10
Storage Length (ft)		0	0		0	50
Storage Lanes		0	0		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00
Frt	0.996					0.850
Flt Protected				0.996	0.950	
Satd. Flow (prot)	3374	0	0	1776	1636	1463
Flt Permitted				0.996	0.950	
Satd. Flow (perm)	3374	0	0	1776	1636	1463
Link Speed (mph)	30			30	25	
Link Distance (ft)	1095			214	782	
Travel Time (s)	24.9			4.9	21.3	
Peak Hour Factor	0.85	0.85	0.86	0.86	0.88	0.88
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	518	13	42	478	3	69
Shared Lane Traffic (%)						
Lane Group Flow (vph)	531	0	0	520	3	69
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 49.5%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	440	11	36	411	3	61
Future Vol, veh/h	440	11	36	411	3	61
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	86	86	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	518	13	42	478	3	69

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	531	0	1086	265
Stage 1	-	-	-	-	524	-
Stage 2	-	-	-	-	562	-
Critical Hdwy	-	-	4.145	-	6.645	6.945
Critical Hdwy Stg 1	-	-	-	-	5.845	-
Critical Hdwy Stg 2	-	-	-	-	5.445	-
Follow-up Hdwy	-	-	2.2285	-	3.5285	3.3285
Pot Cap-1 Maneuver	-	-	1028	-	223	731
Stage 1	-	-	-	-	557	-
Stage 2	-	-	-	-	567	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1028	-	211	731
Mov Cap-2 Maneuver	-	-	-	-	211	-
Stage 1	-	-	-	-	557	-
Stage 2	-	-	-	-	535	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	11
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	211	731	-	-	1028	-
HCM Lane V/C Ratio	0.016	0.095	-	-	0.041	-
HCM Control Delay (s)	22.3	10.4	-	-	8.7	0
HCM Lane LOS	C	B	-	-	A	A
HCM 95th %tile Q(veh)	0	0.3	-	-	0.1	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	21	65	49	406	484	28
Future Volume (vph)	21	65	49	406	484	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	12	12
Storage Length (ft)	0	0	25			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt	0.898				0.993	
Flt Protected	0.988			0.995		
Satd. Flow (prot)	1820	0	0	3421	1797	0
Flt Permitted	0.988			0.995		
Satd. Flow (perm)	1820	0	0	3421	1797	0
Link Speed (mph)	25			30	30	
Link Distance (ft)	586			395	218	
Travel Time (s)	16.0			9.0	5.0	
Peak Hour Factor	0.90	0.90	0.94	0.94	0.87	0.87
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	23	72	52	432	556	32
Shared Lane Traffic (%)						
Lane Group Flow (vph)	95	0	0	484	588	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 55.0%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	21	65	49	406	484	28
Future Vol, veh/h	21	65	49	406	484	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	25	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	94	94	87	87
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	23	72	52	432	556	32

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	892	572	589	0	-	0
Stage 1	572	-	-	-	-	-
Stage 2	320	-	-	-	-	-
Critical Hdwy	6.675	6.275	4.175	-	-	-
Critical Hdwy Stg 1	5.475	-	-	-	-	-
Critical Hdwy Stg 2	5.875	-	-	-	-	-
Follow-up Hdwy	3.5475	3.3475	2.2475	-	-	-
Pot Cap-1 Maneuver	292	512	967	-	-	-
Stage 1	556	-	-	-	-	-
Stage 2	702	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	271	512	967	-	-	-
Mov Cap-2 Maneuver	271	-	-	-	-	-
Stage 1	556	-	-	-	-	-
Stage 2	652	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16	1.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	967	-	421	-	-
HCM Lane V/C Ratio	0.054	-	0.227	-	-
HCM Control Delay (s)	8.9	0.3	16	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.2	-	0.9	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	0	1	54	4	57	4	802	112	128	975	5
Future Volume (vph)	10	0	1	54	4	57	4	802	112	128	975	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	16	12	12	13	12	12	13	12
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		0.990			0.932			0.983			0.999	
Flt Protected		0.956			0.977						0.994	
Satd. Flow (prot)	0	1998	0	0	1922	0	0	1892	0	0	1911	0
Flt Permitted		0.695			0.844			0.996			0.788	
Satd. Flow (perm)	0	1453	0	0	1661	0	0	1885	0	0	1515	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		43			63			22			1	
Link Speed (mph)		25			30			35			35	
Link Distance (ft)		378			442			1898			522	
Travel Time (s)		10.3			10.0			37.0			10.2	
Peak Hour Factor	0.80	0.80	0.80	0.91	0.91	0.91	0.92	0.92	0.92	0.87	0.87	0.87
Adj. Flow (vph)	13	0	1	59	4	63	4	872	122	147	1121	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	14	0	0	126	0	0	998	0	0	1274	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	11.7	11.7		11.7	11.7		20.6	20.6		20.6	20.6	
Total Split (s)	17.7	17.7		17.7	17.7		48.6	48.6		48.6	48.6	
Total Split (%)	26.7%	26.7%		26.7%	26.7%		73.3%	73.3%		73.3%	73.3%	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.4	1.4		1.4	1.4		1.6	1.6		1.6	1.6	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.7			4.7			5.6			5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Act Effct Green (s)		8.2			8.2			49.0			49.0	
Actuated g/C Ratio		0.13			0.13			0.77			0.77	
v/c Ratio		0.06			0.47			0.69			1.10	
Control Delay		2.2			20.1			9.1			73.4	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		2.2			20.1			9.1			73.4	
LOS		A			C			A			E	
Approach Delay		2.2			20.1			9.1			73.4	
Approach LOS		A			C			A			E	
Queue Length 50th (ft)		0			22			161			~579	
Queue Length 95th (ft)		2			64			387			#841	
Internal Link Dist (ft)		298			362			1818			442	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		330			388			1448			1159	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.04			0.32			0.69			1.10	

Intersection Summary

Area Type: Other
Cycle Length: 66.3
Actuated Cycle Length: 64
Natural Cycle: 150
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.10
Intersection Signal Delay: 43.6 Intersection LOS: D
Intersection Capacity Utilization 127.4% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive

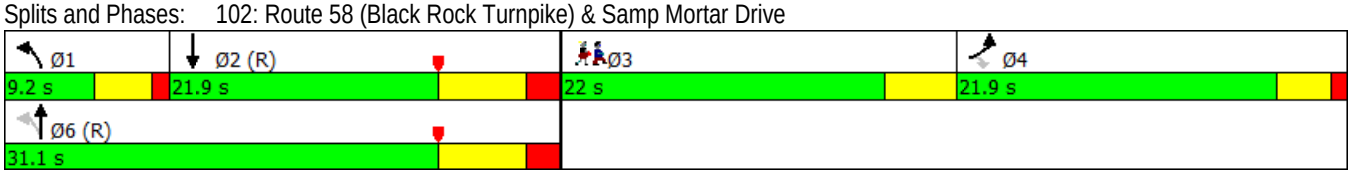
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Lane Configurations							
Traffic Volume (vph)	178	344	135	808	946	88	
Future Volume (vph)	178	344	135	808	946	88	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	10	10	11	11	12	12	
Storage Length (ft)	0	50	100			0	
Storage Lanes	1	1	1			0	
Taper Length (ft)	25		50				
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	
Frt		0.850			0.987		
Flt Protected	0.950		0.950				
Satd. Flow (prot)	1652	1478	1711	1801	3493	0	
Flt Permitted	0.950		0.176				
Satd. Flow (perm)	1652	1478	317	1801	3493	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		365			12		
Link Speed (mph)	25			30	35		
Link Distance (ft)	445			510	341		
Travel Time (s)	12.1			11.6	6.6		
Peak Hour Factor	0.90	0.90	0.88	0.88	0.95	0.95	
Adj. Flow (vph)	198	382	153	918	996	93	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	198	382	153	918	1089	0	
Turn Type	Prot	Perm	pm+pt	NA	NA		
Protected Phases	4		1	6	2		3
Permitted Phases		4	6				
Detector Phase	4	4	1	6	2		
Switch Phase							
Minimum Initial (s)	9.0	9.0	5.0	15.0	15.0		7.0
Minimum Split (s)	13.0	13.0	9.2	21.9	21.9		22.0
Total Split (s)	21.9	21.9	9.2	31.1	21.9		22.0
Total Split (%)	29.2%	29.2%	12.3%	41.5%	29.2%		29%
Yellow Time (s)	3.0	3.0	3.2	4.9	4.9		4.0
All-Red Time (s)	1.0	1.0	1.0	2.0	2.0		0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	4.0	4.0	4.2	6.9	6.9		
Lead/Lag	Lag	Lag	Lead		Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes		Yes		Yes
Recall Mode	None	None	None	C-Max	C-Max		None
Act Effct Green (s)	13.7	13.7	53.1	50.4	38.8		
Actuated g/C Ratio	0.18	0.18	0.71	0.67	0.52		
v/c Ratio	0.66	0.67	0.42	0.76	0.60		
Control Delay	38.3	10.1	10.6	20.7	15.5		
Queue Delay	0.0	0.0	0.0	0.0	0.0		
Total Delay	38.3	10.1	10.6	20.7	15.5		
LOS	D	B	B	C	B		
Approach Delay	19.8			19.2	15.5		
Approach LOS	B			B	B		
Queue Length 50th (ft)	87	7	40	356	169		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Queue Length 95th (ft)	138	75	72	#575	293		
Internal Link Dist (ft)	365			430	261		
Turn Bay Length (ft)		50	100				
Base Capacity (vph)	401	635	361	1209	1813		
Starvation Cap Reductn	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0		
Reduced v/c Ratio	0.49	0.60	0.42	0.76	0.60		

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 22 (29%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.76
Intersection Signal Delay: 17.9 Intersection LOS: B
Intersection Capacity Utilization 61.5% ICU Level of Service B
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive

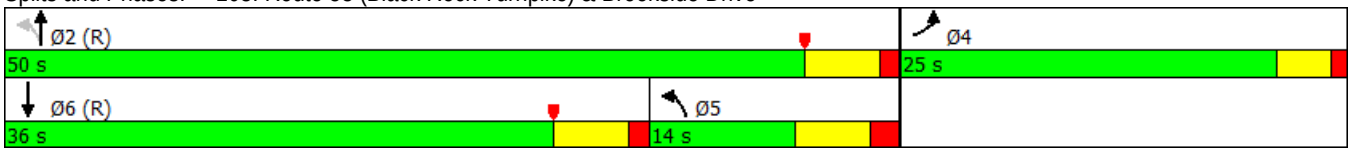


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	135	73	40	778	1171	166
Future Volume (vph)	135	73	40	778	1171	166
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	12	12
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Frt	0.953				0.981	
Flt Protected	0.969			0.998		
Satd. Flow (prot)	1950	0	0	3532	3472	0
Flt Permitted	0.969			0.827		
Satd. Flow (perm)	1950	0	0	2927	3472	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	36				25	
Link Speed (mph)	25			30	30	
Link Distance (ft)	347			293	336	
Travel Time (s)	9.5			6.7	7.6	
Peak Hour Factor	0.80	0.80	0.97	0.97	0.97	0.97
Adj. Flow (vph)	169	91	41	802	1207	171
Shared Lane Traffic (%)						
Lane Group Flow (vph)	260	0	0	843	1378	0
Turn Type	Prot		pm+pt	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases			2			
Detector Phase	4		5	2	6	
Switch Phase						
Minimum Initial (s)	9.0		3.0	15.0	15.0	
Minimum Split (s)	13.0		8.9	20.4	20.4	
Total Split (s)	25.0		14.0	50.0	36.0	
Total Split (%)	33.3%		18.7%	66.7%	48.0%	
Yellow Time (s)	3.0		4.2	4.2	4.2	
All-Red Time (s)	1.0		1.7	1.2	1.2	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	4.0			5.4	5.4	
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None	C-Max	C-Max	
Act Effct Green (s)	13.4			52.2	52.2	
Actuated g/C Ratio	0.18			0.70	0.70	
v/c Ratio	0.69			0.41	0.57	
Control Delay	34.0			4.5	5.5	
Queue Delay	0.0			0.2	0.0	
Total Delay	34.0			4.6	5.5	
LOS	C			A	A	
Approach Delay	34.0			4.6	5.5	
Approach LOS	C			A	A	
Queue Length 50th (ft)	99			66	237	
Queue Length 95th (ft)	135			84	31	
Internal Link Dist (ft)	267			213	256	
Turn Bay Length (ft)						

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Base Capacity (vph)	571			2037	2425	
Starvation Cap Reductn	0			408	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.46			0.52	0.57	

Intersection Summary	
Area Type: Other	
Cycle Length: 75	
Actuated Cycle Length: 75	
Offset: 45 (60%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.69	
Intersection Signal Delay: 8.2	Intersection LOS: A
Intersection Capacity Utilization 70.9%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 103: Route 58 (Black Rock Turnpike) & Brookside Drive



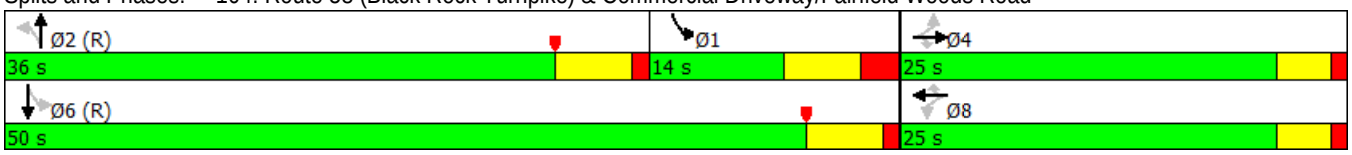
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	18	46	69	15	110	47	706	90	292	918	37
Future Volume (vph)	29	18	46	69	15	110	47	706	90	292	918	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	11	12	11	12	12	11	12
Storage Length (ft)	0		0	0		75	0		0	0		0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt			0.850			0.850		0.984			0.996	
Flt Protected		0.970			0.961			0.997			0.988	
Satd. Flow (prot)	0	1807	1583	0	1790	1531	0	3356	0	0	3367	0
Flt Permitted		0.789			0.724			0.812			0.598	
Satd. Flow (perm)	0	1470	1583	0	1349	1531	0	2734	0	0	2038	0
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			128					21			7	
Link Speed (mph)		30			25			30			30	
Link Distance (ft)		87			499			713			293	
Travel Time (s)		2.0			13.6			16.2			6.7	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.93	0.93	0.93	0.98	0.98	0.98
Adj. Flow (vph)	36	23	58	86	19	138	51	759	97	298	937	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	59	58	0	105	138	0	907	0	0	1273	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	4	4	4	8	8	8	2	2		1	6	
Switch Phase												
Minimum Initial (s)	9.0	9.0	9.0	9.0	9.0	9.0	15.0	15.0		3.0	15.0	
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	20.3	20.3		9.5	20.3	
Total Split (s)	25.0	25.0	25.0	25.0	25.0	25.0	36.0	36.0		14.0	50.0	
Total Split (%)	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	48.0%	48.0%		18.7%	66.7%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.3	4.3		4.3	4.3	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		2.2	1.0	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0		0.0			0.0	
Total Lost Time (s)		4.0	4.0		4.0	4.0		5.3			5.3	
Lead/Lag							Lead	Lead		Lag		
Lead-Lag Optimize?							Yes	Yes		Yes		
Recall Mode	None	None	None	None	None	None	C-Max	C-Max		None	C-Max	
Act Effct Green (s)		11.7	11.7		11.7	11.7		54.0			54.0	
Actuated g/C Ratio		0.16	0.16		0.16	0.16		0.72			0.72	
v/c Ratio		0.26	0.16		0.50	0.58		0.46			0.87	
Control Delay		29.5	1.0		36.7	38.8		5.6			13.6	
Queue Delay		0.0	0.0		0.0	0.0		0.0			0.0	
Total Delay		29.5	1.0		36.7	38.8		5.6			13.6	
LOS		C	A		D	D		A			B	
Approach Delay		15.4			37.9			5.6			13.6	
Approach LOS		B			D			A			B	
Queue Length 50th (ft)		25	0		46	61		69			126	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		47	0		75	93		132			#443	
Internal Link Dist (ft)		7			419			633			213	
Turn Bay Length (ft)						75						
Base Capacity (vph)		411	535		377	428		1974			1469	
Starvation Cap Reductn		0	0		0	0		0			0	
Spillback Cap Reductn		0	0		0	0		0			0	
Storage Cap Reductn		0	0		0	0		0			0	
Reduced v/c Ratio		0.14	0.11		0.28	0.32		0.46			0.87	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 48 (64%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.87
Intersection Signal Delay: 13.1 Intersection LOS: B
Intersection Capacity Utilization 82.2% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	791	157	148	625	131	232	279	177	189	270	44
Future Volume (vph)	90	791	157	148	625	131	232	279	177	189	270	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	11	12	12	11	11	12	12	12	12
Storage Length (ft)	200		0	175		0	210		0	170		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	85			75			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.975			0.974			0.942			0.979	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1711	3336	0	1711	3447	0	1711	1696	0	1770	1824	0
Flt Permitted	0.950			0.950			0.240			0.133		
Satd. Flow (perm)	1711	3336	0	1711	3447	0	432	1696	0	248	1824	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		14			15			19				
Link Speed (mph)		30			30			30			25	
Link Distance (ft)		436			368			438			355	
Travel Time (s)		9.9			8.4			10.0			9.7	
Peak Hour Factor	0.94	0.94	0.94	0.97	0.97	0.97	0.89	0.89	0.89	0.87	0.87	0.87
Adj. Flow (vph)	96	841	167	153	644	135	261	313	199	217	310	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	96	1008	0	153	779	0	261	512	0	217	361	0
Turn Type	Prot	NA		Prot	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases							4			8		
Detector Phase	5	2		1	6		7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	15.0		5.0	15.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	21.6		9.7	21.6		9.3	16.8		9.3	16.8	
Total Split (s)	17.7	41.6		17.7	41.6		22.3	36.8		22.3	36.8	
Total Split (%)	11.7%	27.5%		11.7%	27.5%		14.7%	24.3%		14.7%	24.3%	
Yellow Time (s)	3.0	4.1		3.0	4.1		3.3	4.4		3.3	4.4	
All-Red Time (s)	1.7	2.5		1.7	2.5		1.0	2.4		1.0	2.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	6.6		4.7	6.6		4.3	6.8		4.3	6.8	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Min		None	Min		None	None		None	None	
Act Effct Green (s)	10.6	35.0		13.0	37.4		52.9	33.2		47.3	30.0	
Actuated g/C Ratio	0.09	0.30		0.11	0.32		0.45	0.28		0.40	0.25	
v/c Ratio	0.63	1.01		0.82	0.71		0.67	1.05		0.75	0.78	
Control Delay	69.6	72.6		83.4	39.7		29.8	94.7		41.4	54.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	69.6	72.6		83.4	39.7		29.8	94.7		41.4	54.4	
LOS	E	E		F	D		C	F		D	D	
Approach Delay		72.3			46.9			72.8			49.5	
Approach LOS		E			D			E			D	
Queue Length 50th (ft)	72	~410		116	272		123	~417		103	258	

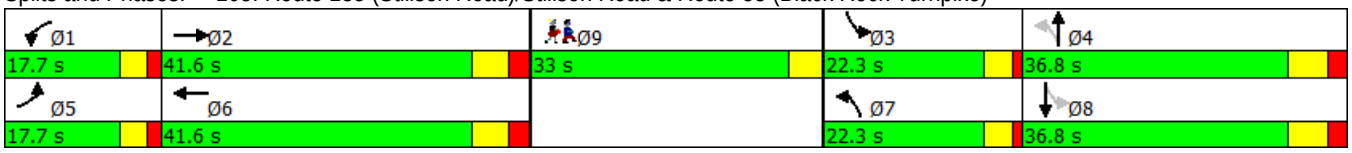
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	33.0
Total Split (s)	33.0
Total Split (%)	22%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	128	#556		#231	353		184	#655		174	#358	
Internal Link Dist (ft)		356			288			358			275	
Turn Bay Length (ft)	200			175			210			170		
Base Capacity (vph)	187	996		187	1098		387	488		337	462	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.51	1.01		0.82	0.71		0.67	1.05		0.64	0.78	

Intersection Summary

Area Type: Other
Cycle Length: 151.4
Actuated Cycle Length: 118.4
Natural Cycle: 145
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.05
Intersection Signal Delay: 61.5 Intersection LOS: E
Intersection Capacity Utilization 89.7% ICU Level of Service E
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike)



Lane Group	Ø9
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	74	875	22	77	678	62	173	12	115	48	5	31
Future Volume (vph)	74	875	22	77	678	62	173	12	115	48	5	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	13	13	12	13	13
Storage Length (ft)	0		0	0		0	0		25	0		25
Storage Lanes	0		0	0		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997			0.989				0.850			0.850
Flt Protected		0.996			0.995			0.955			0.957	
Satd. Flow (prot)	0	3397	0	0	3367	0	0	1838	1636	0	1842	1636
Flt Permitted		0.736			0.731			0.695			0.685	
Satd. Flow (perm)	0	2510	0	0	2473	0	0	1338	1636	0	1319	1636
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			12				157			157
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		442			502			142			135	
Travel Time (s)		10.0			11.4			3.9			3.7	
Peak Hour Factor	0.93	0.93	0.93	0.90	0.90	0.90	0.84	0.84	0.84	0.85	0.85	0.85
Adj. Flow (vph)	80	941	24	86	753	69	206	14	137	56	6	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1045	0	0	908	0	0	220	137	0	62	36
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2			4		4	4		4
Detector Phase	1	6		2	2		4	4	4	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	15.0		15.0	15.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	9.0	20.8		20.8	20.8		11.0	11.0	11.0	11.0	11.0	11.0
Total Split (s)	9.0	39.0		30.0	30.0		14.0	14.0	14.0	14.0	14.0	14.0
Total Split (%)	12.0%	52.0%		40.0%	40.0%		18.7%	18.7%	18.7%	18.7%	18.7%	18.7%
Yellow Time (s)	3.0	4.3		4.3	4.3		3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.5		1.5	1.5		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0			0.0			0.0	0.0		0.0	0.0
Total Lost Time (s)		5.8			5.8			4.0	4.0		4.0	4.0
Lead/Lag	Lead			Lag	Lag		Lag	Lag	Lag	Lag	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Min	C-Max		C-Max	C-Max		None	None	None	None	None	None
Act Effct Green (s)		42.8			33.3			22.4	22.4		22.4	22.4
Actuated g/C Ratio		0.57			0.44			0.30	0.30		0.30	0.30
v/c Ratio		0.71			0.82			0.55	0.23		0.16	0.06
Control Delay		14.1			16.6			28.8	4.0		21.4	0.2
Queue Delay		0.0			0.0			0.0	0.0		0.0	0.0
Total Delay		14.1			16.6			28.8	4.0		21.4	0.2
LOS		B			B			C	A		C	A
Approach Delay		14.1			16.6			19.3			13.6	
Approach LOS		B			B			B			B	
Queue Length 50th (ft)		136			70			88	0		22	0

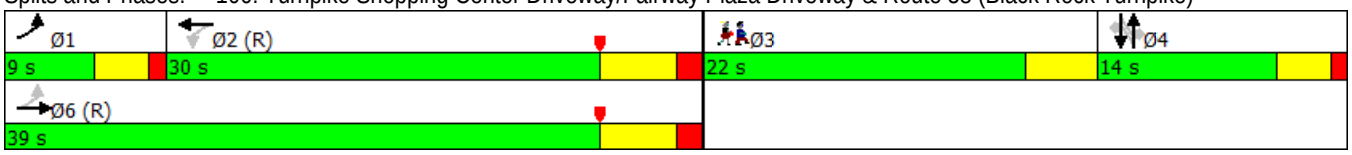
Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	22.0
Total Split (s)	22.0
Total Split (%)	29%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		191			#98			142	24		47	0
Internal Link Dist (ft)		362			422			62			55	
Turn Bay Length (ft)									25			25
Base Capacity (vph)		1477			1104			399	599		394	599
Starvation Cap Reductn		0			0			0	0		0	0
Spillback Cap Reductn		0			0			0	0		0	0
Storage Cap Reductn		0			0			0	0		0	0
Reduced v/c Ratio		0.71			0.82			0.55	0.23		0.16	0.06

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 19 (25%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.82
Intersection Signal Delay: 15.8 Intersection LOS: B
Intersection Capacity Utilization 79.9% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike)



Lane Group	Ø3
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

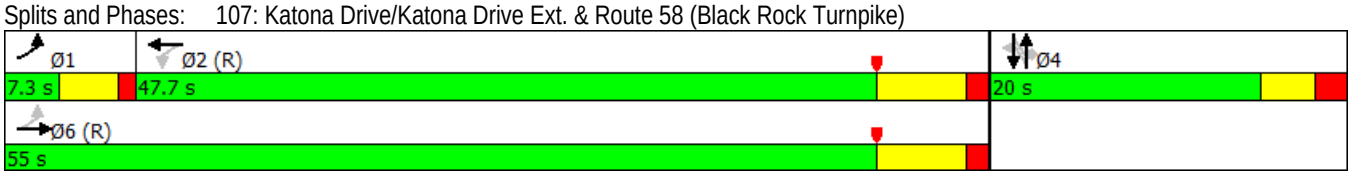
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	989	107	48	765	2	106	3	67	1	3	10
Future Volume (vph)	11	989	107	48	765	2	106	3	67	1	3	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	10	10	12	12	12
Storage Length (ft)	0		0	0		0	0		250	0		0
Storage Lanes	0		0	0		0	0		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.986							0.850		0.885	
Flt Protected		0.999			0.997			0.954		0.950		
Satd. Flow (prot)	0	3370	0	0	3411	0	0	1659	1478	1770	1649	0
Flt Permitted		0.948			0.807			0.720		0.652		
Satd. Flow (perm)	0	3198	0	0	2761	0	0	1252	1478	1215	1649	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		31							111		13	
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		502			407			423			198	
Travel Time (s)		11.4			9.3			11.5			5.4	
Peak Hour Factor	0.93	0.93	0.93	0.96	0.96	0.96	0.82	0.82	0.82	0.80	0.80	0.80
Adj. Flow (vph)	12	1063	115	50	797	2	129	4	82	1	4	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1190	0	0	849	0	0	133	82	1	17	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2			4		4	4		
Detector Phase	1	6		2	2		4	4	4	4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0		7.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	7.3	21.3		21.3	21.3		11.9	11.9	11.9	11.9	11.9	
Total Split (s)	7.3	55.0		47.7	47.7		20.0	20.0	20.0	20.0	20.0	
Total Split (%)	9.7%	73.3%		63.6%	63.6%		26.7%	26.7%	26.7%	26.7%	26.7%	
Yellow Time (s)	3.3	5.0		5.0	5.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.0	1.3		1.3	1.3		1.9	1.9	1.9	1.9	1.9	
Lost Time Adjust (s)		0.0			0.0			0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.3			6.3			4.9	4.9	4.9	4.9	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Act Effct Green (s)		54.8			41.4			11.3	11.3	11.3	11.3	
Actuated g/C Ratio		0.73			0.55			0.15	0.15	0.15	0.15	
v/c Ratio		0.50			0.56			0.70	0.26	0.01	0.07	
Control Delay		3.5			7.1			49.6	5.3	25.0	15.6	
Queue Delay		0.1			0.0			0.0	0.0	0.0	0.0	
Total Delay		3.6			7.1			49.6	5.3	25.0	15.6	
LOS		A			A			D	A	C	B	
Approach Delay		3.6			7.1			32.7			16.2	
Approach LOS		A			A			C			B	
Queue Length 50th (ft)		57			46			59	0	0	2	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		82			56			98	16	4	15	
Internal Link Dist (ft)		422			327			343			118	
Turn Bay Length (ft)									250			
Base Capacity (vph)		2363			1524			252	386	244	342	
Starvation Cap Reductn		184			0			0	0	0	0	
Spillback Cap Reductn		0			0			0	0	0	0	
Storage Cap Reductn		0			0			0	0	0	0	
Reduced v/c Ratio		0.55			0.56			0.53	0.21	0.00	0.05	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 21 (28%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 50
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.70
Intersection Signal Delay: 7.8 Intersection LOS: A
Intersection Capacity Utilization 79.3% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike)



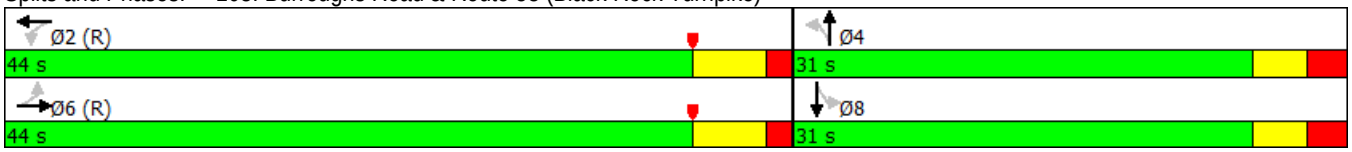
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	86	973	15	7	746	156	18	110	7	129	52	52
Future Volume (vph)	86	973	15	7	746	156	18	110	7	129	52	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	16	12	12	16	12
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.974			0.993			0.970	
Flt Protected		0.996						0.993			0.973	
Satd. Flow (prot)	0	3401	0	0	3332	0	0	2082	0	0	1992	0
Flt Permitted		0.772			0.946			0.940			0.735	
Satd. Flow (perm)	0	2636	0	0	3152	0	0	1971	0	0	1505	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			48			4			21	
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		407			996			466			300	
Travel Time (s)		9.3			22.6			12.7			8.2	
Peak Hour Factor	0.99	0.99	0.99	0.92	0.92	0.92	0.90	0.90	0.90	0.93	0.93	0.93
Adj. Flow (vph)	87	983	15	8	811	170	20	122	8	139	56	56
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1085	0	0	989	0	0	150	0	0	251	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		2	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		9.0	9.0		9.0	9.0	
Minimum Split (s)	20.6	20.6		20.6	20.6		14.4	14.4		14.4	14.4	
Total Split (s)	44.0	44.0		44.0	44.0		31.0	31.0		31.0	31.0	
Total Split (%)	58.7%	58.7%		58.7%	58.7%		41.3%	41.3%		41.3%	41.3%	
Yellow Time (s)	4.1	4.1		4.1	4.1		3.1	3.1		3.1	3.1	
All-Red Time (s)	1.5	1.5		1.5	1.5		2.3	2.3		2.3	2.3	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.6			5.6			5.4			5.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		48.3			48.3			15.7			15.7	
Actuated g/C Ratio		0.64			0.64			0.21			0.21	
v/c Ratio		0.64			0.48			0.36			0.76	
Control Delay		6.6			8.3			25.7			39.5	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		6.6			8.3			25.7			39.5	
LOS		A			A			C			D	
Approach Delay		6.6			8.3			25.7			39.5	
Approach LOS		A			A			C			D	
Queue Length 50th (ft)		44			102			58			101	
Queue Length 95th (ft)		170			187			96			159	
Internal Link Dist (ft)		327			916			386			220	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		1698			2046			675			527	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.64			0.48			0.22			0.48	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 20 (27%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 50
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.76
Intersection Signal Delay: 11.8 Intersection LOS: B
Intersection Capacity Utilization 89.2% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 108: Burroughs Road & Route 58 (Black Rock Turnpike)



Lane Group	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NWL2	NWL	NWR	NWR2	NEL
Lane Configurations												
Traffic Volume (vph)	545	555	3	22	8	383	2	2	479	5	40	7
Future Volume (vph)	545	555	3	22	8	383	2	2	479	5	40	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	11	11	12	12	10	12	12	12
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.97	0.95	0.95	1.00
Frt		0.850				0.999			0.987			
Flt Protected						0.996			0.956			
Satd. Flow (prot)	1863	1583	0	0	0	3404	0	0	3182	0	0	0
Flt Permitted						0.802			0.952			
Satd. Flow (perm)	1863	1583	0	0	0	2741	0	0	3169	0	0	0
Right Turn on Red			Yes				Yes				Yes	
Satd. Flow (RTOR)		57							152			
Link Speed (mph)	30					30			30			
Link Distance (ft)	996					549			218			
Travel Time (s)	22.6					12.5			5.0			
Peak Hour Factor	0.97	0.97	0.97	0.86	0.86	0.86	0.86	0.91	0.91	0.91	0.91	0.80
Adj. Flow (vph)	562	572	3	26	9	445	2	2	526	5	44	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	562	575	0	0	0	482	0	0	577	0	0	0
Turn Type	NA	pm+ov		Perm	Perm	NA		D.Pm	Prot			Perm
Protected Phases	2	4				2			4			
Permitted Phases		2		2	2			4				5
Detector Phase	2	4		2	2	2		4	4			5
Switch Phase												
Minimum Initial (s)	15.0	9.0		15.0	15.0	15.0		9.0	9.0			5.0
Minimum Split (s)	22.8	15.4		22.8	22.8	22.8		15.4	15.4			12.6
Total Split (s)	35.8	33.4		35.8	35.8	35.8		33.4	33.4			19.6
Total Split (%)	40.3%	37.6%		40.3%	40.3%	40.3%		37.6%	37.6%			22.1%
Yellow Time (s)	4.1	3.3		4.1	4.1	4.1		3.3	3.3			3.3
All-Red Time (s)	3.7	3.1		3.7	3.7	3.7		3.1	3.1			4.3
Lost Time Adjust (s)	0.0	0.0				0.0			0.0			
Total Lost Time (s)	7.8	6.4				7.8			6.4			
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Min	None		Min	Min	Min		None	None			None
Act Effct Green (s)	22.6	48.9				22.6			12.8			
Actuated g/C Ratio	0.41	0.89				0.41			0.23			
v/c Ratio	0.73	0.41				0.43			0.67			
Control Delay	23.0	3.2				14.7			19.6			
Queue Delay	0.0	0.0				0.0			0.0			
Total Delay	23.0	3.2				14.7			19.6			
LOS	C	A				B			B			
Approach Delay	13.0					14.7			19.6			
Approach LOS	B					B			B			
Queue Length 50th (ft)	106	0				40			52			
Queue Length 95th (ft)	#403	130				124			140			
Internal Link Dist (ft)	916					469			138			
Turn Bay Length (ft)												

Lane Group	NET	NER	NER2	SWL	SWT	SWR
Lane Configurations						
Traffic Volume (vph)	0	1	3	2	0	3
Future Volume (vph)	0	1	3	2	0	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	15	12	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.952				0.923	
Flt Protected	0.969				0.979	
Satd. Flow (prot)	1718	0	0	0	1683	0
Flt Permitted						
Satd. Flow (perm)	1773	0	0	0	1719	0
Right Turn on Red			No			No
Satd. Flow (RTOR)						
Link Speed (mph)	25				25	
Link Distance (ft)	653				695	
Travel Time (s)	17.8				19.0	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	0	1	4	3	0	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	14	0	0	0	7	0
Turn Type	NA			Perm	NA	
Protected Phases	5				5	
Permitted Phases				5		
Detector Phase	5			5	5	
Switch Phase						
Minimum Initial (s)	5.0			5.0	5.0	
Minimum Split (s)	12.6			12.6	12.6	
Total Split (s)	19.6			19.6	19.6	
Total Split (%)	22.1%			22.1%	22.1%	
Yellow Time (s)	3.3			3.3	3.3	
All-Red Time (s)	4.3			4.3	4.3	
Lost Time Adjust (s)	0.0				0.0	
Total Lost Time (s)	7.6				7.6	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None			None	None	
Act Effct Green (s)	5.6				5.6	
Actuated g/C Ratio	0.10				0.10	
v/c Ratio	0.08				0.04	
Control Delay	30.8				30.5	
Queue Delay	0.0				0.0	
Total Delay	30.8				30.5	
LOS	C				C	
Approach Delay	30.8				30.5	
Approach LOS	C				C	
Queue Length 50th (ft)	4				2	
Queue Length 95th (ft)	20				13	
Internal Link Dist (ft)	573				615	
Turn Bay Length (ft)						

Lane Group	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NWL2	NWL	NWR	NWR2	NEL
Base Capacity (vph)	1028	1494				1513			1758			
Starvation Cap Reductn	0	0				0			0			
Spillback Cap Reductn	0	0				0			0			
Storage Cap Reductn	0	0				0			0			
Reduced v/c Ratio	0.55	0.38				0.32			0.33			

Intersection Summary	
Area Type:	Other
Cycle Length: 88.8	
Actuated Cycle Length: 54.8	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 15.2	Intersection LOS: B
Intersection Capacity Utilization 71.0%	ICU Level of Service C
Analysis Period (min) 15	

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

Splits and Phases: 109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) & Route 58 (Black Rock Turnpike)/Route 58 (Tunxis Hill Cut

Ø2	Ø4	Ø5
35.8 s	33.4 s	19.6 s

Lane Group	NET	NER	NER2	SWL	SWT	SWR
Base Capacity (vph)	419				406	
Starvation Cap Reductn	0				0	
Spillback Cap Reductn	0				0	
Storage Cap Reductn	0				0	
Reduced v/c Ratio	0.03				0.02	

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	630	6	49	414	0	84
Future Volume (vph)	630	6	49	414	0	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	10	10
Storage Length (ft)		0	0		0	50
Storage Lanes		0	0		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00
Frt	0.999					0.850
Flt Protected				0.995		
Satd. Flow (prot)	3418	0	0	1792	1739	1478
Flt Permitted				0.995		
Satd. Flow (perm)	3418	0	0	1792	1739	1478
Link Speed (mph)	30			30	25	
Link Distance (ft)	1095			214	782	
Travel Time (s)	24.9			4.9	21.3	
Peak Hour Factor	0.95	0.95	0.90	0.90	0.83	0.83
Adj. Flow (vph)	663	6	54	460	0	101
Shared Lane Traffic (%)						
Lane Group Flow (vph)	669	0	0	514	0	101
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 48.8%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	630	6	49	414	0	84
Future Vol, veh/h	630	6	49	414	0	84
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	90	90	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	663	6	54	460	0	101

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	669	0	1235	335
Stage 1	-	-	-	-	666	-
Stage 2	-	-	-	-	569	-
Critical Hdwy	-	-	4.13	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.219	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	919	-	181	662
Stage 1	-	-	-	-	473	-
Stage 2	-	-	-	-	565	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	919	-	167	662
Mov Cap-2 Maneuver	-	-	-	-	167	-
Stage 1	-	-	-	-	473	-
Stage 2	-	-	-	-	520	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	11.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	662	-	-	919	-
HCM Lane V/C Ratio	-	0.153	-	-	0.059	-
HCM Control Delay (s)	0	11.4	-	-	9.2	0
HCM Lane LOS	A	B	-	-	A	A
HCM 95th %tile Q(veh)	-	0.5	-	-	0.2	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	34	96	53	492	562	20
Future Volume (vph)	34	96	53	492	562	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	12	12
Storage Length (ft)	0	0	25			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt	0.900				0.995	
Flt Protected	0.987			0.995		
Satd. Flow (prot)	1875	0	0	3522	1853	0
Flt Permitted	0.987			0.995		
Satd. Flow (perm)	1875	0	0	3522	1853	0
Link Speed (mph)	25			30	30	
Link Distance (ft)	586			395	218	
Travel Time (s)	16.0			9.0	5.0	
Peak Hour Factor	0.83	0.83	0.91	0.91	0.95	0.95
Adj. Flow (vph)	41	116	58	541	592	21
Shared Lane Traffic (%)						
Lane Group Flow (vph)	157	0	0	599	613	0
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 63.7%	ICU Level of Service B
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	34	96	53	492	562	20
Future Vol, veh/h	34	96	53	492	562	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	25	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	91	91	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	41	116	58	541	592	21

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	989	602	613	0	-	0
Stage 1	602	-	-	-	-	-
Stage 2	387	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	258	499	964	-	-	-
Stage 1	546	-	-	-	-	-
Stage 2	657	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	236	499	964	-	-	-
Mov Cap-2 Maneuver	236	-	-	-	-	-
Stage 1	546	-	-	-	-	-
Stage 2	600	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20.6	1.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	964	-	386	-	-
HCM Lane V/C Ratio	0.06	-	0.406	-	-
HCM Control Delay (s)	9	0.3	20.6	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.2	-	1.9	-	-

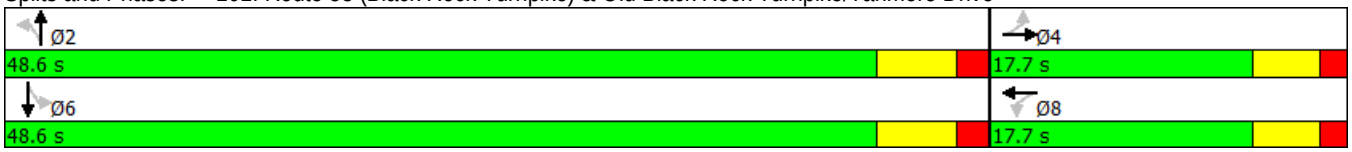
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	1	2	75	1	111	2	820	77	71	895	8
Future Volume (vph)	6	1	2	75	1	111	2	820	77	71	895	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	16	12	12	13	12	12	13	12
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		0.966			0.920			0.988			0.999	
Flt Protected		0.968			0.980						0.996	
Satd. Flow (prot)	0	1974	0	0	1903	0	0	1902	0	0	1915	0
Flt Permitted		0.783			0.864			0.999			0.877	
Satd. Flow (perm)	0	1597	0	0	1678	0	0	1900	0	0	1686	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			99			14			1	
Link Speed (mph)		25			30			35			35	
Link Distance (ft)		378			442			1898			522	
Travel Time (s)		10.3			10.0			37.0			10.2	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	8	1	3	94	1	139	2	872	82	76	952	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	12	0	0	234	0	0	956	0	0	1037	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	11.7	11.7		11.7	11.7		20.6	20.6		20.6	20.6	
Total Split (s)	17.7	17.7		17.7	17.7		48.6	48.6		48.6	48.6	
Total Split (%)	26.7%	26.7%		26.7%	26.7%		73.3%	73.3%		73.3%	73.3%	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.4	1.4		1.4	1.4		1.6	1.6		1.6	1.6	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.7			4.7			5.6			5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Act Effct Green (s)		9.9			9.9			41.9			41.9	
Actuated g/C Ratio		0.16			0.16			0.67			0.67	
v/c Ratio		0.05			0.67			0.74			0.91	
Control Delay		19.9			24.7			11.7			24.3	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		19.9			24.7			11.7			24.3	
LOS		B			C			B			C	
Approach Delay		19.9			24.7			11.7			24.3	
Approach LOS		B			C			B			C	
Queue Length 50th (ft)		3			48			186			266	
Queue Length 95th (ft)		14			92			384			#643	
Internal Link Dist (ft)		298			362			1818			442	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		338			431			1326			1173	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.04			0.54			0.72			0.88	

Intersection Summary

Area Type: Other
Cycle Length: 66.3
Actuated Cycle Length: 62.1
Natural Cycle: 65
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.91
Intersection Signal Delay: 18.9 Intersection LOS: B
Intersection Capacity Utilization 122.8% ICU Level of Service H
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive



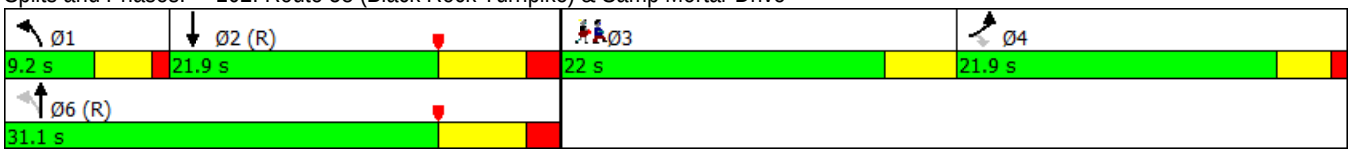
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Lane Configurations							
Traffic Volume (vph)	120	207	144	803	810	77	
Future Volume (vph)	120	207	144	803	810	77	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	10	10	11	11	12	12	
Storage Length (ft)	0	50	100			0	
Storage Lanes	1	1	1			0	
Taper Length (ft)	25		50				
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	
Frt		0.850			0.987		
Flt Protected	0.950		0.950				
Satd. Flow (prot)	1652	1478	1711	1801	3493	0	
Flt Permitted	0.950		0.221				
Satd. Flow (perm)	1652	1478	398	1801	3493	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		252			12		
Link Speed (mph)	25			30	35		
Link Distance (ft)	445			510	341		
Travel Time (s)	12.1			11.6	6.6		
Peak Hour Factor	0.82	0.82	0.98	0.98	0.90	0.90	
Adj. Flow (vph)	146	252	147	819	900	86	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	146	252	147	819	986	0	
Turn Type	Prot	Perm	pm+pt	NA	NA		
Protected Phases	4		1	6	2		3
Permitted Phases		4	6				
Detector Phase	4	4	1	6	2		
Switch Phase							
Minimum Initial (s)	9.0	9.0	5.0	15.0	15.0		7.0
Minimum Split (s)	13.0	13.0	9.2	21.9	21.9		22.0
Total Split (s)	21.9	21.9	9.2	31.1	21.9		22.0
Total Split (%)	29.2%	29.2%	12.3%	41.5%	29.2%		29%
Yellow Time (s)	3.0	3.0	3.2	4.9	4.9		4.0
All-Red Time (s)	1.0	1.0	1.0	2.0	2.0		0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	4.0	4.0	4.2	6.9	6.9		
Lead/Lag	Lag	Lag	Lead		Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes		Yes		Yes
Recall Mode	None	None	None	C-Max	C-Max		None
Act Effct Green (s)	11.6	11.6	55.2	52.5	41.3		
Actuated g/C Ratio	0.15	0.15	0.74	0.70	0.55		
v/c Ratio	0.57	0.57	0.35	0.65	0.51		
Control Delay	38.0	9.5	8.3	17.7	12.4		
Queue Delay	0.0	0.0	0.0	0.0	0.0		
Total Delay	38.0	9.5	8.3	17.7	12.4		
LOS	D	A	A	B	B		
Approach Delay	19.9			16.2	12.4		
Approach LOS	B			B	B		
Queue Length 50th (ft)	64	0	27	332	133		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Queue Length 95th (ft)	100	41	60	488	230		
Internal Link Dist (ft)	365			430	261		
Turn Bay Length (ft)		50	100				
Base Capacity (vph)	394	544	415	1260	1929		
Starvation Cap Reductn	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0		
Reduced v/c Ratio	0.37	0.46	0.35	0.65	0.51		

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 22 (29%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.65
Intersection Signal Delay: 15.2 — Intersection LOS: B
Intersection Capacity Utilization 58.8% — ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive

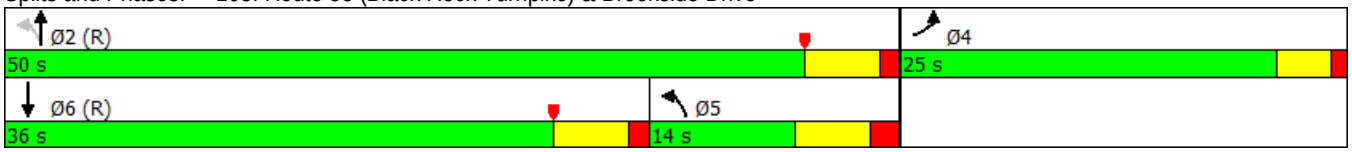


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	89	59	54	900	952	108
Future Volume (vph)	89	59	54	900	952	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	12	12
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Frt	0.946				0.985	
Flt Protected	0.971			0.997		
Satd. Flow (prot)	1939	0	0	3529	3486	0
Flt Permitted	0.971			0.827		
Satd. Flow (perm)	1939	0	0	2927	3486	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	44				20	
Link Speed (mph)	25			30	30	
Link Distance (ft)	347			293	336	
Travel Time (s)	9.5			6.7	7.6	
Peak Hour Factor	0.83	0.83	0.98	0.98	0.96	0.96
Adj. Flow (vph)	107	71	55	918	992	113
Shared Lane Traffic (%)						
Lane Group Flow (vph)	178	0	0	973	1105	0
Turn Type	Prot		pm+pt	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases			2			
Detector Phase	4		5	2	6	
Switch Phase						
Minimum Initial (s)	9.0		3.0	15.0	15.0	
Minimum Split (s)	13.0		8.9	20.4	20.4	
Total Split (s)	25.0		14.0	50.0	36.0	
Total Split (%)	33.3%		18.7%	66.7%	48.0%	
Yellow Time (s)	3.0		4.2	4.2	4.2	
All-Red Time (s)	1.0		1.7	1.2	1.2	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	4.0			5.4	5.4	
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None	C-Max	C-Max	
Act Effct Green (s)	10.7			54.9	54.9	
Actuated g/C Ratio	0.14			0.73	0.73	
v/c Ratio	0.57			0.45	0.43	
Control Delay	29.3			3.7	3.3	
Queue Delay	0.0			0.1	0.0	
Total Delay	29.3			3.8	3.4	
LOS	C			A	A	
Approach Delay	29.3			3.8	3.4	
Approach LOS	C			A	A	
Queue Length 50th (ft)	59			53	12	
Queue Length 95th (ft)	99			87	14	
Internal Link Dist (ft)	267			213	256	
Turn Bay Length (ft)						

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Base Capacity (vph)	574			2140	2555	
Starvation Cap Reductn	0			305	0	
Spillback Cap Reductn	2			0	203	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.31			0.53	0.47	

Intersection Summary	
Area Type: Other	
Cycle Length: 75	
Actuated Cycle Length: 75	
Offset: 45 (60%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow	
Natural Cycle: 50	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.57	
Intersection Signal Delay: 5.6	Intersection LOS: A
Intersection Capacity Utilization 77.1%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 103: Route 58 (Black Rock Turnpike) & Brookside Drive



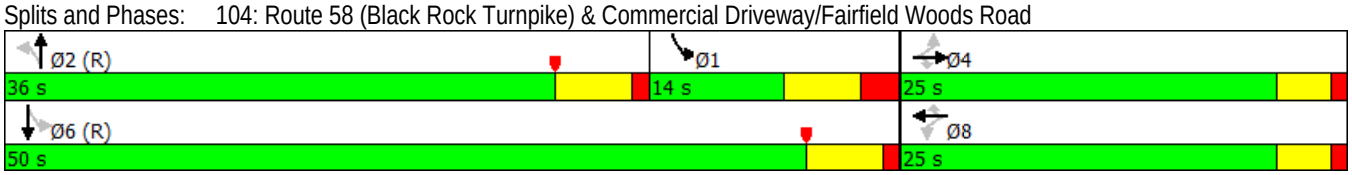
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	19	42	88	22	131	36	835	75	108	881	43
Future Volume (vph)	36	19	42	88	22	131	36	835	75	108	881	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	11	12	11	12	12	11	12
Storage Length (ft)	0		0	0		75	0		0	0		0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt			0.850			0.850		0.988			0.994	
Flt Protected		0.968			0.962			0.998			0.995	
Satd. Flow (prot)	0	1803	1583	0	1792	1531	0	3373	0	0	3384	0
Flt Permitted		0.763			0.727			0.879			0.727	
Satd. Flow (perm)	0	1421	1583	0	1354	1531	0	2971	0	0	2472	0
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			128					14			10	
Link Speed (mph)		30			25			30			30	
Link Distance (ft)		87			499			713			293	
Travel Time (s)		2.0			13.6			16.2			6.7	
Peak Hour Factor	0.88	0.88	0.88	0.80	0.80	0.80	0.97	0.97	0.97	0.96	0.96	0.96
Adj. Flow (vph)	41	22	48	110	28	164	37	861	77	113	918	45
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	63	48	0	138	164	0	975	0	0	1076	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	4	4	4	8	8	8	2	2		1	6	
Switch Phase												
Minimum Initial (s)	9.0	9.0	9.0	9.0	9.0	9.0	15.0	15.0		3.0	15.0	
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	20.3	20.3		9.5	20.3	
Total Split (s)	25.0	25.0	25.0	25.0	25.0	25.0	36.0	36.0		14.0	50.0	
Total Split (%)	33.3%	33.3%	33.3%	33.3%	33.3%	33.3%	48.0%	48.0%		18.7%	66.7%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.3	4.3		4.3	4.3	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		2.2	1.0	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0		0.0			0.0	
Total Lost Time (s)		4.0	4.0		4.0	4.0		5.3			5.3	
Lead/Lag							Lead	Lead		Lag		
Lead-Lag Optimize?							Yes	Yes		Yes		
Recall Mode	None	None	None	None	None	None	C-Max	C-Max		None	C-Max	
Act Effct Green (s)		12.8	12.8		12.8	12.8		52.9			52.9	
Actuated g/C Ratio		0.17	0.17		0.17	0.17		0.71			0.71	
v/c Ratio		0.26	0.13		0.60	0.63		0.46			0.62	
Control Delay		28.3	0.7		39.0	39.1		6.2			5.3	
Queue Delay		0.0	0.0		0.0	0.0		0.0			0.0	
Total Delay		28.3	0.7		39.0	39.1		6.2			5.3	
LOS		C	A		D	D		A			A	
Approach Delay		16.3			39.1			6.2			5.3	
Approach LOS		B			D			A			A	
Queue Length 50th (ft)		26	0		60	72		81			20	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		53	0		92	105		153			295	
Internal Link Dist (ft)		7			419			633			213	
Turn Bay Length (ft)						75						
Base Capacity (vph)		397	535		379	428		2098			1746	
Starvation Cap Reductn		0	0		0	0		0			0	
Spillback Cap Reductn		0	0		0	0		0			0	
Storage Cap Reductn		0	0		0	0		0			0	
Reduced v/c Ratio		0.16	0.09		0.36	0.38		0.46			0.62	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 48 (64%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.63
Intersection Signal Delay: 10.3 Intersection LOS: B
Intersection Capacity Utilization 80.2% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	86	679	171	142	657	160	233	210	157	241	275	61
Future Volume (vph)	86	679	171	142	657	160	233	210	157	241	275	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	11	12	12	11	11	12	12	12	12
Storage Length (ft)	200		0	175		0	210		0	170		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	85			75			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.970			0.971			0.936			0.973	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1711	3319	0	1711	3437	0	1711	1685	0	1770	1812	0
Flt Permitted	0.950			0.950			0.232			0.191		
Satd. Flow (perm)	1711	3319	0	1711	3437	0	418	1685	0	356	1812	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		19			18			22				
Link Speed (mph)		30			30			30			25	
Link Distance (ft)		436			368			438			355	
Travel Time (s)		9.9			8.4			10.0			9.7	
Peak Hour Factor	0.90	0.90	0.90	0.91	0.91	0.91	0.90	0.90	0.90	0.88	0.88	0.88
Adj. Flow (vph)	96	754	190	156	722	176	259	233	174	274	313	69
Shared Lane Traffic (%)												
Lane Group Flow (vph)	96	944	0	156	898	0	259	407	0	274	382	0
Turn Type	Prot	NA		Prot	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases							4			8		
Detector Phase	5	2		1	6		7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	15.0		5.0	15.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	21.6		9.7	21.6		9.3	16.8		9.3	16.8	
Total Split (s)	17.7	41.6		17.7	41.6		22.3	36.8		22.3	36.8	
Total Split (%)	11.7%	27.5%		11.7%	27.5%		14.7%	24.3%		14.7%	24.3%	
Yellow Time (s)	3.0	4.1		3.0	4.1		3.3	4.4		3.3	4.4	
All-Red Time (s)	1.7	2.5		1.7	2.5		1.0	2.4		1.0	2.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	6.6		4.7	6.6		4.3	6.8		4.3	6.8	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Min		None	Min		None	None		None	None	
Act Effct Green (s)	10.6	35.0		13.0	37.4		50.5	30.0		50.5	30.0	
Actuated g/C Ratio	0.09	0.30		0.11	0.32		0.43	0.25		0.43	0.25	
v/c Ratio	0.63	0.95		0.83	0.82		0.69	0.92		0.75	0.83	
Control Delay	69.6	59.1		85.8	44.3		31.0	68.0		36.0	58.7	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	69.6	59.1		85.8	44.3		31.0	68.0		36.0	58.7	
LOS	E	E		F	D		C	E		D	E	
Approach Delay		60.1			50.5			53.6			49.2	
Approach LOS		E			D			D			D	
Queue Length 50th (ft)	72	365		118	327		122	289		130	277	

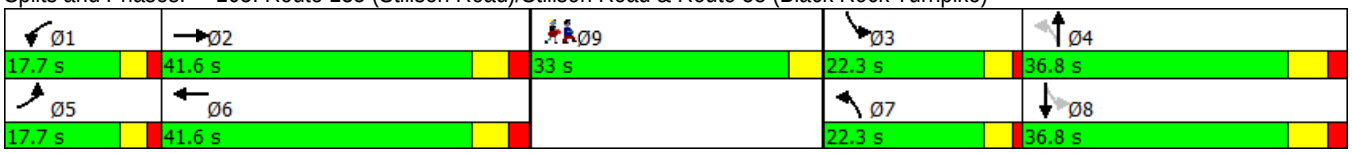
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	33.0
Total Split (s)	33.0
Total Split (%)	22%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	128	#501		#235	#445		186	#481		#215	#417	
Internal Link Dist (ft)		356			288			358			275	
Turn Bay Length (ft)	200			175			210			170		
Base Capacity (vph)	187	994		187	1096		374	443		366	459	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.51	0.95		0.83	0.82		0.69	0.92		0.75	0.83	

Intersection Summary

Area Type: Other
Cycle Length: 151.4
Actuated Cycle Length: 118.4
Natural Cycle: 145
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.95
Intersection Signal Delay: 53.8 Intersection LOS: D
Intersection Capacity Utilization 84.8% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike)



Lane Group	Ø9
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	94	795	48	80	755	95	171	23	135	78	20	41
Future Volume (vph)	94	795	48	80	755	95	171	23	135	78	20	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	13	13	12	13	13
Storage Length (ft)	0		0	0		0	0		25	0		25
Storage Lanes	0		0	0		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992			0.985				0.850			0.850
Flt Protected		0.995			0.996			0.958			0.962	
Satd. Flow (prot)	0	3377	0	0	3356	0	0	1844	1636	0	1852	1636
Flt Permitted		0.628			0.753			0.668			0.677	
Satd. Flow (perm)	0	2131	0	0	2538	0	0	1286	1636	0	1303	1636
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		9			17				157			157
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		442			502			142			135	
Travel Time (s)		10.0			11.4			3.9			3.7	
Peak Hour Factor	0.96	0.96	0.96	0.95	0.95	0.95	0.92	0.92	0.92	0.81	0.81	0.81
Adj. Flow (vph)	98	828	50	84	795	100	186	25	147	96	25	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	976	0	0	979	0	0	211	147	0	121	51
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2			4		4	4		4
Detector Phase	1	6		2	2		4	4	4	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	15.0		15.0	15.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	9.0	20.8		20.8	20.8		11.0	11.0	11.0	11.0	11.0	11.0
Total Split (s)	9.0	39.0		30.0	30.0		14.0	14.0	14.0	14.0	14.0	14.0
Total Split (%)	12.0%	52.0%		40.0%	40.0%		18.7%	18.7%	18.7%	18.7%	18.7%	18.7%
Yellow Time (s)	3.0	4.3		4.3	4.3		3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.5		1.5	1.5		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0			0.0			0.0	0.0		0.0	0.0
Total Lost Time (s)		5.8			5.8			4.0	4.0		4.0	4.0
Lead/Lag	Lead			Lag	Lag		Lag	Lag	Lag	Lag	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Min	C-Max		C-Max	C-Max		None	None	None	None	None	None
Act Effct Green (s)		39.5			30.0			25.7	25.7		25.7	25.7
Actuated g/C Ratio		0.53			0.40			0.34	0.34		0.34	0.34
v/c Ratio		0.82			0.96			0.48	0.22		0.27	0.08
Control Delay		20.8			30.3			24.5	3.9		20.7	0.2
Queue Delay		0.0			0.0			0.0	0.0		0.0	0.0
Total Delay		20.8			30.3			24.5	3.9		20.7	0.2
LOS		C			C			C	A		C	A
Approach Delay		20.8			30.3			16.1			14.6	
Approach LOS		C			C			B			B	
Queue Length 50th (ft)		136			70			79	0		42	0

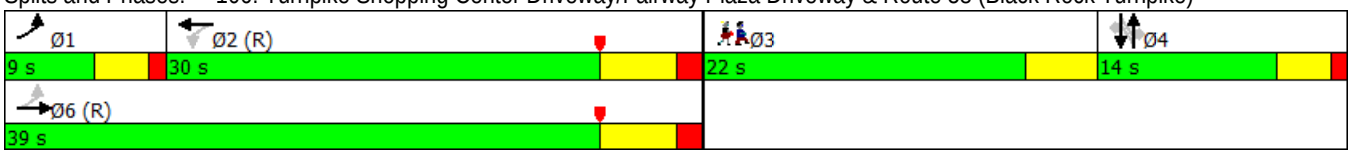
Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	22.0
Total Split (s)	22.0
Total Split (%)	29%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		#201			#150			139	32		71	0
Internal Link Dist (ft)		362			422			62			55	
Turn Bay Length (ft)									25			25
Base Capacity (vph)		1188			1025			440	663		446	663
Starvation Cap Reductn		0			0			0	0		0	0
Spillback Cap Reductn		0			0			0	0		0	0
Storage Cap Reductn		0			0			0	0		0	0
Reduced v/c Ratio		0.82			0.96			0.48	0.22		0.27	0.08

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 19 (25%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.96
Intersection Signal Delay: 23.5 Intersection LOS: C
Intersection Capacity Utilization 82.8% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike)



Lane Group	Ø3
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

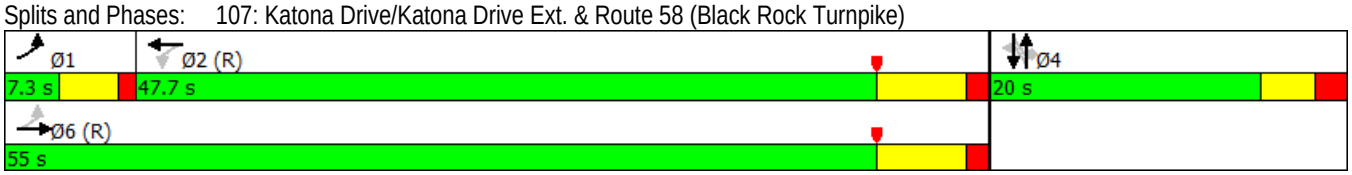
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	901	130	58	884	0	122	3	52	3	1	10
Future Volume (vph)	12	901	130	58	884	0	122	3	52	3	1	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	10	10	12	12	12
Storage Length (ft)	0		0	0		0	0		250	0		0
Storage Lanes	0		0	0		0	0		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.981							0.850		0.862	
Flt Protected		0.999			0.997			0.953		0.950		
Satd. Flow (prot)	0	3353	0	0	3411	0	0	1657	1478	1770	1606	0
Flt Permitted		0.946			0.792			0.723		0.672		
Satd. Flow (perm)	0	3175	0	0	2710	0	0	1257	1478	1252	1606	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		42							111		11	
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		502			407			423			198	
Travel Time (s)		11.4			9.3			11.5			5.4	
Peak Hour Factor	0.90	0.90	0.90	0.97	0.97	0.97	0.98	0.98	0.98	0.88	0.88	0.88
Adj. Flow (vph)	13	1001	144	60	911	0	124	3	53	3	1	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1158	0	0	971	0	0	127	53	3	12	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2			4		4	4		
Detector Phase	1	6		2	2		4	4	4	4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0		7.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	7.3	21.3		21.3	21.3		11.9	11.9	11.9	11.9	11.9	
Total Split (s)	7.3	55.0		47.7	47.7		20.0	20.0	20.0	20.0	20.0	
Total Split (%)	9.7%	73.3%		63.6%	63.6%		26.7%	26.7%	26.7%	26.7%	26.7%	
Yellow Time (s)	3.3	5.0		5.0	5.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.0	1.3		1.3	1.3		1.9	1.9	1.9	1.9	1.9	
Lost Time Adjust (s)		0.0			0.0			0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.3			6.3			4.9	4.9	4.9	4.9	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Act Effct Green (s)		55.1			41.4			11.1	11.1	11.1	11.1	
Actuated g/C Ratio		0.73			0.55			0.15	0.15	0.15	0.15	
v/c Ratio		0.49			0.65			0.68	0.17	0.02	0.05	
Control Delay		4.2			8.5			48.2	1.8	25.0	14.9	
Queue Delay		0.1			0.0			0.0	0.0	0.0	0.0	
Total Delay		4.3			8.5			48.2	1.8	25.0	14.9	
LOS		A			A			D	A	C	B	
Approach Delay		4.3			8.5			34.6			16.9	
Approach LOS		A			A			C			B	
Queue Length 50th (ft)		64			52			57	0	1	0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		125			63			106	4	8	13	
Internal Link Dist (ft)		422			327			343			118	
Turn Bay Length (ft)									250			
Base Capacity (vph)		2359			1495			253	386	252	332	
Starvation Cap Reductn		274			0			0	0	0	0	
Spillback Cap Reductn		0			0			0	0	0	0	
Storage Cap Reductn		0			0			0	0	0	0	
Reduced v/c Ratio		0.56			0.65			0.50	0.14	0.01	0.04	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 21 (28%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 55
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.68
Intersection Signal Delay: 8.5 Intersection LOS: A
Intersection Capacity Utilization 83.7% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike)



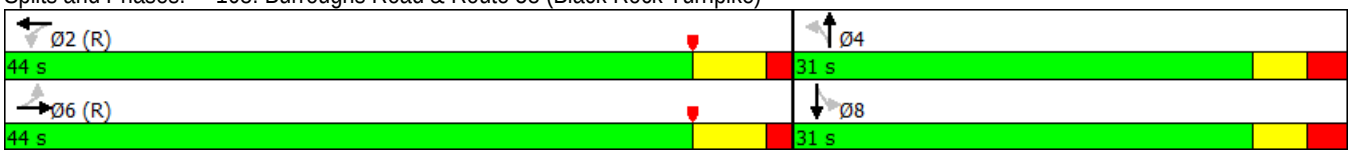
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	874	15	4	861	112	20	64	10	126	52	65
Future Volume (vph)	80	874	15	4	861	112	20	64	10	126	52	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	16	12	12	16	12
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.983			0.986			0.964	
Flt Protected		0.996						0.989			0.975	
Satd. Flow (prot)	0	3401	0	0	3363	0	0	2059	0	0	1984	0
Flt Permitted		0.762			0.952			0.897			0.813	
Satd. Flow (perm)	0	2602	0	0	3202	0	0	1867	0	0	1655	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			27			8			27	
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		407			996			466			300	
Travel Time (s)		9.3			22.6			12.7			8.2	
Peak Hour Factor	0.92	0.92	0.92	0.95	0.95	0.95	0.88	0.88	0.88	0.93	0.93	0.93
Adj. Flow (vph)	87	950	16	4	906	118	23	73	11	135	56	70
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1053	0	0	1028	0	0	107	0	0	261	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		2	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		9.0	9.0		9.0	9.0	
Minimum Split (s)	20.6	20.6		20.6	20.6		14.4	14.4		14.4	14.4	
Total Split (s)	44.0	44.0		44.0	44.0		31.0	31.0		31.0	31.0	
Total Split (%)	58.7%	58.7%		58.7%	58.7%		41.3%	41.3%		41.3%	41.3%	
Yellow Time (s)	4.1	4.1		4.1	4.1		3.1	3.1		3.1	3.1	
All-Red Time (s)	1.5	1.5		1.5	1.5		2.3	2.3		2.3	2.3	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.6			5.6			5.4			5.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		48.4			48.4			15.6			15.6	
Actuated g/C Ratio		0.65			0.65			0.21			0.21	
v/c Ratio		0.63			0.50			0.27			0.72	
Control Delay		7.1			8.6			23.0			35.1	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		7.1			8.6			23.0			35.1	
LOS		A			A			C			D	
Approach Delay		7.1			8.6			23.0			35.1	
Approach LOS		A			A			C			D	
Queue Length 50th (ft)		48			110			39			102	
Queue Length 95th (ft)		77			200			69			159	
Internal Link Dist (ft)		327			916			386			220	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		1680			2075			642			582	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.63			0.50			0.17			0.45	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 20 (27%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 50
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.72
Intersection Signal Delay: 11.4 Intersection LOS: B
Intersection Capacity Utilization 88.6% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 108: Burroughs Road & Route 58 (Black Rock Turnpike)



Lane Group	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NWL2	NWL	NWR	NWR2	NEL
Lane Configurations												
Traffic Volume (vph)	433	553	5	67	3	471	1	4	468	10	35	5
Future Volume (vph)	433	553	5	67	3	471	1	4	468	10	35	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	11	11	12	12	10	12	12	12
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.97	0.95	0.95	1.00
Frt		0.850							0.987			
Flt Protected						0.994			0.956			
Satd. Flow (prot)	1863	1583	0	0	0	3401	0	0	3182	0	0	0
Flt Permitted						0.717			0.948			
Satd. Flow (perm)	1863	1583	0	0	0	2453	0	0	3156	0	0	0
Right Turn on Red			Yes				Yes				Yes	
Satd. Flow (RTOR)		57							152			
Link Speed (mph)	30					30			30			
Link Distance (ft)	996					549			218			
Travel Time (s)	22.6					12.5			5.0			
Peak Hour Factor	0.94	0.94	0.94	0.92	0.92	0.92	0.92	0.96	0.96	0.96	0.96	0.80
Adj. Flow (vph)	461	588	5	73	3	512	1	4	488	10	36	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	461	593	0	0	0	589	0	0	538	0	0	0
Turn Type	NA	pm+ov		Perm	Perm	NA		D.Pm	Prot			Perm
Protected Phases	2	4				2			4			
Permitted Phases		2		2	2			4				5
Detector Phase	2	4		2	2	2		4	4			5
Switch Phase												
Minimum Initial (s)	15.0	9.0		15.0	15.0	15.0		9.0	9.0			5.0
Minimum Split (s)	22.8	15.4		22.8	22.8	22.8		15.4	15.4			12.6
Total Split (s)	35.8	33.4		35.8	35.8	35.8		33.4	33.4			19.6
Total Split (%)	40.3%	37.6%		40.3%	40.3%	40.3%		37.6%	37.6%			22.1%
Yellow Time (s)	4.1	3.3		4.1	4.1	4.1		3.3	3.3			3.3
All-Red Time (s)	3.7	3.1		3.7	3.7	3.7		3.1	3.1			4.3
Lost Time Adjust (s)	0.0	0.0				0.0			0.0			
Total Lost Time (s)	7.8	6.4				7.8			6.4			
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Min	None		Min	Min	Min		None	None			None
Act Effct Green (s)	21.3	46.3				21.3			12.8			
Actuated g/C Ratio	0.38	0.82				0.38			0.23			
v/c Ratio	0.65	0.45				0.63			0.65			
Control Delay	21.6	4.6				19.7			19.6			
Queue Delay	0.0	0.0				0.0			0.0			
Total Delay	21.6	4.6				19.7			19.6			
LOS	C	A				B			B			
Approach Delay	12.0					19.7			19.6			
Approach LOS	B					B			B			
Queue Length 50th (ft)	139	73				92			66			
Queue Length 95th (ft)	279	147				173			130			
Internal Link Dist (ft)	916					469			138			
Turn Bay Length (ft)												

Lane Group	NET	NER	NER2	SWL2	SWL	SWT	SWR
Lane Configurations							
Traffic Volume (vph)	3	1	5	3	8	1	6
Future Volume (vph)	3	1	5	3	8	1	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	15	12	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.944					0.953	
Flt Protected	0.983					0.970	
Satd. Flow (prot)	1729	0	0	0	0	1722	0
Flt Permitted	0.902						
Satd. Flow (perm)	1586	0	0	0	0	1775	0
Right Turn on Red			No				No
Satd. Flow (RTOR)							
Link Speed (mph)	25					25	
Link Distance (ft)	653					695	
Travel Time (s)	17.8					19.0	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	4	1	6	4	10	1	8
Shared Lane Traffic (%)							
Lane Group Flow (vph)	17	0	0	0	0	23	0
Turn Type	NA				Perm	NA	
Protected Phases	5					5	
Permitted Phases					5		
Detector Phase	5				5	5	
Switch Phase							
Minimum Initial (s)	5.0				5.0	5.0	
Minimum Split (s)	12.6				12.6	12.6	
Total Split (s)	19.6				19.6	19.6	
Total Split (%)	22.1%				22.1%	22.1%	
Yellow Time (s)	3.3				3.3	3.3	
All-Red Time (s)	4.3				4.3	4.3	
Lost Time Adjust (s)	0.0					0.0	
Total Lost Time (s)	7.6					7.6	
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None				None	None	
Act Effct Green (s)	5.9					5.9	
Actuated g/C Ratio	0.10					0.10	
v/c Ratio	0.10					0.12	
Control Delay	31.4					31.5	
Queue Delay	0.0					0.0	
Total Delay	31.4					31.5	
LOS	C					C	
Approach Delay	31.4					31.5	
Approach LOS	C					C	
Queue Length 50th (ft)	6					8	
Queue Length 95th (ft)	23					28	
Internal Link Dist (ft)	573					615	
Turn Bay Length (ft)							

Lane Group	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NWL2	NWL	NWR	NWR2	NEL
Base Capacity (vph)	1008	1476				1327			1720			
Starvation Cap Reductn	0	0				0			0			
Spillback Cap Reductn	0	0				0			0			
Storage Cap Reductn	0	0				0			0			
Reduced v/c Ratio	0.46	0.40				0.44			0.31			

Intersection Summary	
Area Type:	Other
Cycle Length: 88.8	
Actuated Cycle Length: 56.3	
Natural Cycle: 60	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.65	
Intersection Signal Delay: 16.2	Intersection LOS: B
Intersection Capacity Utilization 81.6%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) & Route 58 (Black Rock Turnpike)/Route 58 (Tunxis Hill Cut

Ø2	Ø4	Ø5
35.8 s	33.4 s	19.6 s

Lane Group	NET	NER	NER2	SWL2	SWL	SWT	SWR
Base Capacity (vph)	368					411	
Starvation Cap Reductn	0					0	
Spillback Cap Reductn	0					0	
Storage Cap Reductn	0					0	
Reduced v/c Ratio	0.05					0.06	

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	486	11	41	519	5	57
Future Volume (vph)	486	11	41	519	5	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	10	10
Storage Length (ft)		0	0		0	50
Storage Lanes		0	0		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00
Frt	0.997					0.850
Flt Protected				0.996	0.950	
Satd. Flow (prot)	3411	0	0	1793	1652	1478
Flt Permitted				0.996	0.950	
Satd. Flow (perm)	3411	0	0	1793	1652	1478
Link Speed (mph)	30			30	25	
Link Distance (ft)	1095			214	782	
Travel Time (s)	24.9			4.9	21.3	
Peak Hour Factor	0.88	0.88	0.90	0.90	0.80	0.80
Adj. Flow (vph)	552	13	46	577	6	71
Shared Lane Traffic (%)						
Lane Group Flow (vph)	565	0	0	623	6	71
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 56.7%	ICU Level of Service B
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	486	11	41	519	5	57
Future Vol, veh/h	486	11	41	519	5	57
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	90	90	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	552	13	46	577	6	71

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	565	0	1227	282
Stage 1	-	-	-	-	559	-
Stage 2	-	-	-	-	668	-
Critical Hdwy	-	-	4.13	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.219	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	1005	-	183	716
Stage 1	-	-	-	-	537	-
Stage 2	-	-	-	-	509	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1005	-	171	716
Mov Cap-2 Maneuver	-	-	-	-	171	-
Stage 1	-	-	-	-	537	-
Stage 2	-	-	-	-	475	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	11.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	171	716	-	-	1005	-
HCM Lane V/C Ratio	0.037	0.1	-	-	0.045	-
HCM Control Delay (s)	26.9	10.6	-	-	8.8	0
HCM Lane LOS	D	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	0.3	-	-	0.1	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	22	74	49	495	599	34
Future Volume (vph)	22	74	49	495	599	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	12	12
Storage Length (ft)	0	0	25			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt	0.896				0.993	
Flt Protected	0.989			0.996		
Satd. Flow (prot)	1871	0	0	3525	1850	0
Flt Permitted	0.989			0.996		
Satd. Flow (perm)	1871	0	0	3525	1850	0
Link Speed (mph)	25			30	30	
Link Distance (ft)	586			395	218	
Travel Time (s)	16.0			9.0	5.0	
Peak Hour Factor	0.80	0.80	0.98	0.98	0.93	0.93
Adj. Flow (vph)	28	93	50	505	644	37
Shared Lane Traffic (%)						
Lane Group Flow (vph)	121	0	0	555	681	0
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 64.1%	ICU Level of Service C
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	22	74	49	495	599	34
Future Vol, veh/h	22	74	49	495	599	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	25	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	98	98	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	93	50	505	644	37

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1015	662	681	0	-	0
Stage 1	662	-	-	-	-	-
Stage 2	353	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	249	461	910	-	-	-
Stage 1	512	-	-	-	-	-
Stage 2	683	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	230	461	910	-	-	-
Mov Cap-2 Maneuver	230	-	-	-	-	-
Stage 1	512	-	-	-	-	-
Stage 2	631	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19.1	1.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	910	-	375	-	-
HCM Lane V/C Ratio	0.055	-	0.32	-	-
HCM Control Delay (s)	9.2	0.3	19.1	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.2	-	1.4	-	-

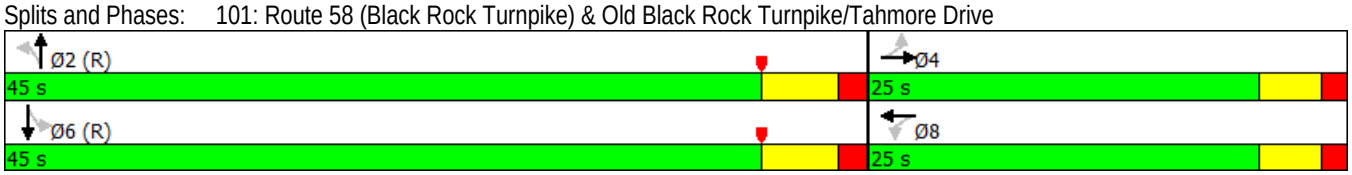
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	1	3	204	0	167	2	680	26	65	643	4
Future Volume (vph)	11	1	3	204	0	167	2	680	26	65	643	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	16	12	12	13	12	12	13	12
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		0.972			0.939			0.995			0.999	
Flt Protected		0.964			0.973						0.995	
Satd. Flow (prot)	0	1959	0	0	1910	0	0	1897	0	0	1895	0
Flt Permitted		0.784			0.818			0.999			0.887	
Satd. Flow (perm)	0	1593	0	0	1606	0	0	1895	0	0	1689	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			59			5			1	
Link Speed (mph)		25			30			35			35	
Link Distance (ft)		378			442			1898			522	
Travel Time (s)		10.3			10.0			37.0			10.2	
Peak Hour Factor	0.80	0.80	0.80	0.84	0.84	0.84	0.94	0.94	0.94	0.91	0.91	0.91
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	14	1	4	243	0	199	2	723	28	71	707	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	19	0	0	442	0	0	753	0	0	782	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	11.7	11.7		11.7	11.7		20.6	20.6		20.6	20.6	
Total Split (s)	25.0	25.0		25.0	25.0		45.0	45.0		45.0	45.0	
Total Split (%)	35.7%	35.7%		35.7%	35.7%		64.3%	64.3%		64.3%	64.3%	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.4	1.4		1.4	1.4		1.6	1.6		1.6	1.6	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.7			4.7			5.6			5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Min	C-Min		C-Min	C-Min	
Act Effct Green (s)		19.3			19.3			40.4			40.4	
Actuated g/C Ratio		0.28			0.28			0.58			0.58	
v/c Ratio		0.04			0.91			0.69			0.80	
Control Delay		15.9			46.7			7.0			20.6	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		15.9			46.7			7.0			20.6	
LOS		B			D			A			C	
Approach Delay		15.9			46.7			7.0			20.6	
Approach LOS		B			D			A			C	
Queue Length 50th (ft)		5			155			47			254	
Queue Length 95th (ft)		16			#281			79			#483	
Internal Link Dist (ft)		298			362			1818			442	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)		466			509			1097			976	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.04			0.87			0.69			0.80	

Intersection Summary

Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 11 (16%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.91
Intersection Signal Delay: 21.2 Intersection LOS: C
Intersection Capacity Utilization 110.9% ICU Level of Service H
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive



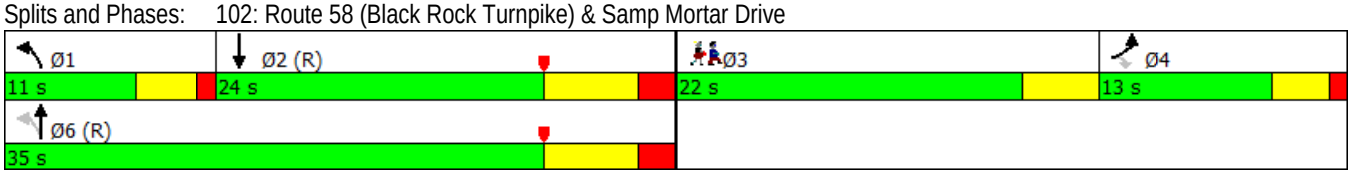
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Lane Configurations							
Traffic Volume (vph)	54	136	366	739	622	198	
Future Volume (vph)	54	136	366	739	622	198	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	10	10	11	11	12	12	
Storage Length (ft)	0	50	100			0	
Storage Lanes	1	1	1			0	
Taper Length (ft)	25		50				
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	
Frt		0.850			0.964		
Flt Protected	0.950		0.950				
Satd. Flow (prot)	1636	1463	1694	1783	3379	0	
Flt Permitted	0.950		0.164				
Satd. Flow (perm)	1636	1463	292	1783	3379	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		164			58		
Link Speed (mph)	25			30	35		
Link Distance (ft)	445			510	341		
Travel Time (s)	12.1			11.6	6.6		
Peak Hour Factor	0.83	0.83	0.91	0.91	0.94	0.94	
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	
Adj. Flow (vph)	65	164	402	812	662	211	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	65	164	402	812	873	0	
Turn Type	Prot	Perm	pm+pt	NA	NA		
Protected Phases	4		1	6	2		3
Permitted Phases		4	6				
Detector Phase	4	4	1	6	2		
Switch Phase							
Minimum Initial (s)	9.0	9.0	5.0	15.0	15.0		7.0
Minimum Split (s)	13.0	13.0	9.2	21.9	21.9		22.0
Total Split (s)	13.0	13.0	11.0	35.0	24.0		22.0
Total Split (%)	18.6%	18.6%	15.7%	50.0%	34.3%		31%
Yellow Time (s)	3.0	3.0	3.2	4.9	4.9		4.0
All-Red Time (s)	1.0	1.0	1.0	2.0	2.0		0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	4.0	4.0	4.2	6.9	6.9		
Lead/Lag	Lag	Lag	Lead		Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes		Yes		Yes
Recall Mode	None	None	None	C-Max	C-Max		None
Act Effct Green (s)	9.3	9.3	52.5	49.8	22.8		
Actuated g/C Ratio	0.13	0.13	0.75	0.71	0.33		
v/c Ratio	0.30	0.49	0.60	0.64	0.77		
Control Delay	31.1	10.5	8.3	8.5	18.7		
Queue Delay	0.0	0.0	0.0	0.0	0.0		
Total Delay	31.1	10.5	8.3	8.5	18.7		
LOS	C	B	A	A	B		
Approach Delay	16.4			8.4	18.7		
Approach LOS	B			A	B		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Queue Length 50th (ft)	26	0	10	132	115		
Queue Length 95th (ft)	54	38	99	431	m188		
Internal Link Dist (ft)	365			430	261		
Turn Bay Length (ft)		50	100				
Base Capacity (vph)	218	337	674	1267	1140		
Starvation Cap Reductn	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0		
Reduced v/c Ratio	0.30	0.49	0.60	0.64	0.77		

Intersection Summary	
Area Type:	Other
Cycle Length: 70	
Actuated Cycle Length: 70	
Offset: 48 (69%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.77	
Intersection Signal Delay: 13.1	Intersection LOS: B
Intersection Capacity Utilization 63.9%	ICU Level of Service B
Analysis Period (min) 15	

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

Splits and Phases: 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive



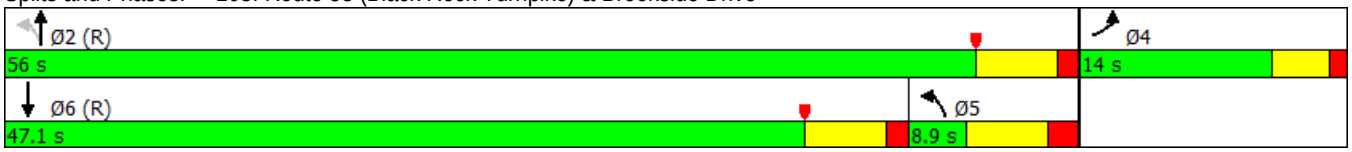
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	61	15	59	1051	586	181
Future Volume (vph)	61	15	59	1051	586	181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	12	12
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Frt	0.973				0.965	
Flt Protected	0.962			0.997		
Satd. Flow (prot)	1957	0	0	3494	3382	0
Flt Permitted	0.962			0.853		
Satd. Flow (perm)	1957	0	0	2990	3382	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	15				104	
Link Speed (mph)	25			30	30	
Link Distance (ft)	347			293	336	
Travel Time (s)	9.5			6.7	7.6	
Peak Hour Factor	0.80	0.80	0.90	0.90	0.88	0.88
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	76	19	66	1168	666	206
Shared Lane Traffic (%)						
Lane Group Flow (vph)	95	0	0	1234	872	0
Turn Type	Prot		pm+pt	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases			2			
Detector Phase	4		5	2	6	
Switch Phase						
Minimum Initial (s)	9.0		3.0	15.0	15.0	
Minimum Split (s)	13.0		8.9	20.4	20.4	
Total Split (s)	14.0		8.9	56.0	47.1	
Total Split (%)	20.0%		12.7%	80.0%	67.3%	
Yellow Time (s)	3.0		4.2	4.2	4.2	
All-Red Time (s)	1.0		1.7	1.2	1.2	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	4.0			5.4	5.4	
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None	C-Max	C-Max	
Act Effct Green (s)	9.2			55.1	55.1	
Actuated g/C Ratio	0.13			0.79	0.79	
v/c Ratio	0.35			0.52	0.33	
Control Delay	27.8			3.0	1.0	
Queue Delay	0.0			0.0	0.0	
Total Delay	27.8			3.0	1.0	
LOS	C			A	A	
Approach Delay	27.8			3.0	1.0	
Approach LOS	C			A	A	
Queue Length 50th (ft)	32			84	7	
Queue Length 95th (ft)	62			80	5	
Internal Link Dist (ft)	267			213	256	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Turn Bay Length (ft)						
Base Capacity (vph)	292			2353	2683	
Starvation Cap Reductn	0			47	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.33			0.54	0.33	

Intersection Summary

Area Type: Other	
Cycle Length: 70	
Actuated Cycle Length: 70	
Offset: 16 (23%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow	
Natural Cycle: 45	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.52	
Intersection Signal Delay: 3.3	Intersection LOS: A
Intersection Capacity Utilization 72.6%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 103: Route 58 (Black Rock Turnpike) & Brookside Drive



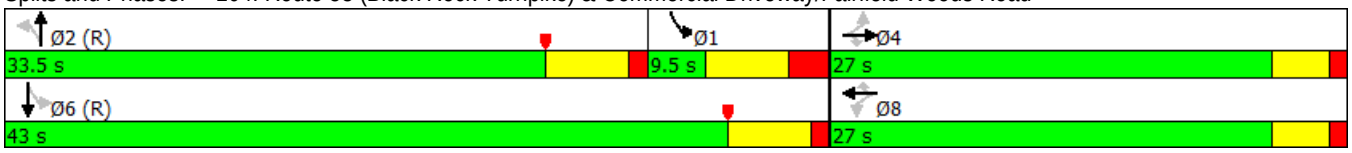
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	0	1	50	0	340	8	783	25	84	533	3
Future Volume (vph)	5	0	1	50	0	340	8	783	25	84	533	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	11	12	11	12	12	11	12
Storage Length (ft)	0		0	0		75	0		0	0		0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt			0.850			0.850		0.995			0.999	
Flt Protected		0.950			0.950						0.993	
Satd. Flow (prot)	0	1752	1568	0	1752	1516	0	3371	0	0	3361	0
Flt Permitted		0.720			0.754			0.949			0.725	
Satd. Flow (perm)	0	1328	1568	0	1391	1516	0	3199	0	0	2454	0
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			137					5			1	
Link Speed (mph)		30			25			30			30	
Link Distance (ft)		87			499			713			293	
Travel Time (s)		2.0			13.6			16.2			6.7	
Peak Hour Factor	0.80	0.80	0.80	0.90	0.90	0.90	0.88	0.88	0.88	0.92	0.92	0.92
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	6	0	1	56	0	378	9	890	28	91	579	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	6	1	0	56	378	0	927	0	0	673	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	4	4	4	8	8	8	2	2		1	6	
Switch Phase												
Minimum Initial (s)	9.0	9.0	9.0	9.0	9.0	9.0	15.0	15.0		3.0	15.0	
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	20.3	20.3		9.5	20.3	
Total Split (s)	27.0	27.0	27.0	27.0	27.0	27.0	33.5	33.5		9.5	43.0	
Total Split (%)	38.6%	38.6%	38.6%	38.6%	38.6%	38.6%	47.9%	47.9%		13.6%	61.4%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.3	4.3		4.3	4.3	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		2.2	1.0	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0		0.0			0.0	
Total Lost Time (s)		4.0	4.0		4.0	4.0		5.3			5.3	
Lead/Lag							Lead	Lead		Lag		
Lead-Lag Optimize?							Yes	Yes		Yes		
Recall Mode	None	None	None	None	None	None	C-Max	C-Max		None	C-Max	
Act Effct Green (s)		20.3	20.3		20.3	20.3		40.4			40.4	
Actuated g/C Ratio		0.29	0.29		0.29	0.29		0.58			0.58	
v/c Ratio		0.02	0.00		0.14	0.86		0.50			0.48	
Control Delay		16.2	0.0		18.0	43.4		10.5			3.6	
Queue Delay		0.0	0.0		0.0	0.0		0.0			0.1	
Total Delay		16.2	0.0		18.0	43.4		10.5			3.8	
LOS		B	A		B	D		B			A	
Approach Delay		13.9			40.1			10.5			3.8	
Approach LOS		B			D			B			A	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		2	0		17	146		121			17	
Queue Length 95th (ft)		8	0		41	#272		167			20	
Internal Link Dist (ft)		7			419			633			213	
Turn Bay Length (ft)						75						
Base Capacity (vph)		436	607		457	498		1847			1416	
Starvation Cap Reductn		0	0		0	0		0			140	
Spillback Cap Reductn		0	0		0	0		0			0	
Storage Cap Reductn		0	0		0	0		0			0	
Reduced v/c Ratio		0.01	0.00		0.12	0.76		0.50			0.53	

Intersection Summary

Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 8 (11%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 14.6 Intersection LOS: B
Intersection Capacity Utilization 62.3% ICU Level of Service B
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	379	133	178	685	71	150	165	62	105	351	46
Future Volume (vph)	48	379	133	178	685	71	150	165	62	105	351	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	11	12	12	11	11	12	12	12	12
Storage Length (ft)	200		0	175		0	210		0	170		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	85			75			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.961			0.986			0.959			0.983	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1678	3225	0	1678	3423	0	1678	1694	0	1736	1796	0
Flt Permitted	0.950			0.950			0.196			0.517		
Satd. Flow (perm)	1678	3225	0	1678	3423	0	346	1694	0	945	1796	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		29			7			13				
Link Speed (mph)		30			30			30			25	
Link Distance (ft)		436			368			438			355	
Travel Time (s)		9.9			8.4			10.0			9.7	
Peak Hour Factor	0.88	0.88	0.88	0.86	0.86	0.86	0.80	0.80	0.80	0.81	0.81	0.81
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	55	431	151	207	797	83	188	206	78	130	433	57
Shared Lane Traffic (%)												
Lane Group Flow (vph)	55	582	0	207	880	0	188	284	0	130	490	0
Turn Type	Prot	NA		Prot	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases							4			8		
Detector Phase	5	2		1	6		7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	15.0		5.0	15.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	21.6		9.7	21.6		9.3	16.8		9.3	16.8	
Total Split (s)	10.2	30.6		22.0	42.4		15.4	45.1		14.3	44.0	
Total Split (%)	7.0%	21.1%		15.2%	29.2%		10.6%	31.1%		9.9%	30.3%	
Yellow Time (s)	3.0	4.1		3.0	4.1		3.3	4.4		3.3	4.4	
All-Red Time (s)	1.7	2.5		1.7	2.5		1.0	2.4		1.0	2.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	6.6		4.7	6.6		4.3	6.8		4.3	6.8	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Min		None	Min		None	None		None	None	
Act Effct Green (s)	5.5	24.0		17.3	35.8		53.1	39.6		48.4	37.2	
Actuated g/C Ratio	0.05	0.21		0.15	0.32		0.47	0.35		0.43	0.33	
v/c Ratio	0.67	0.82		0.80	0.80		0.64	0.47		0.28	0.82	
Control Delay	89.4	50.2		68.8	41.2		27.0	30.1		17.5	47.4	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	89.4	50.2		68.8	41.2		27.0	30.1		17.5	47.4	
LOS	F	D		E	D		C	C		B	D	
Approach Delay		53.6			46.4			28.9			41.1	
Approach LOS		D			D			C			D	

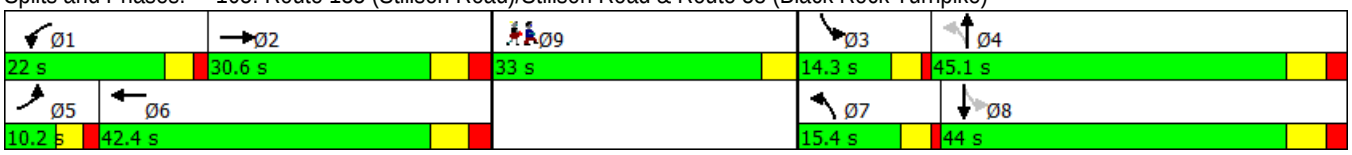
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	33.0
Total Split (s)	33.0
Total Split (%)	23%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	40	201		146	301		75	151		50	322	
Queue Length 95th (ft)	#102	261		#245	357		106	201		76	393	
Internal Link Dist (ft)		356			288			358			275	
Turn Bay Length (ft)	200			175			210			170		
Base Capacity (vph)	82	713		259	1098		296	606		489	596	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.67	0.82		0.80	0.80		0.64	0.47		0.27	0.82	

Intersection Summary

Area Type: Other
Cycle Length: 145
Actuated Cycle Length: 112
Natural Cycle: 145
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.82
Intersection Signal Delay: 44.0 Intersection LOS: D
Intersection Capacity Utilization 73.6% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike)



Lane Group	Ø9
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	471	8	25	892	42	51	5	20	29	1	11
Future Volume (vph)	24	471	8	25	892	42	51	5	20	29	1	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	13	13	12	13	13
Storage Length (ft)	0		0	0		0	0		25	0		25
Storage Lanes	0		0	0		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.993				0.850			0.850
Flt Protected		0.998			0.999			0.956			0.954	
Satd. Flow (prot)	0	3342	0	0	3329	0	0	1805	1605	0	1801	1605
Flt Permitted		0.886			0.928			0.720			0.681	
Satd. Flow (perm)	0	2967	0	0	3092	0	0	1359	1605	0	1286	1605
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			7				168			168
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		442			502			142			135	
Travel Time (s)		10.0			11.4			3.9			3.7	
Peak Hour Factor	0.80	0.80	0.80	0.89	0.89	0.89	0.80	0.80	0.80	0.91	0.91	0.91
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	30	589	10	28	1002	47	64	6	25	32	1	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	629	0	0	1077	0	0	70	25	0	33	12
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2			4		4	4		4
Detector Phase	1	6		2	2		4	4	4	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	15.0		15.0	15.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	9.0	20.8		20.8	20.8		11.0	11.0	11.0	11.0	11.0	11.0
Total Split (s)	9.0	37.0		28.0	28.0		11.0	11.0	11.0	11.0	11.0	11.0
Total Split (%)	12.9%	52.9%		40.0%	40.0%		15.7%	15.7%	15.7%	15.7%	15.7%	15.7%
Yellow Time (s)	3.0	4.3		4.3	4.3		3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.5		1.5	1.5		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0			0.0			0.0	0.0		0.0	0.0
Total Lost Time (s)		5.8			5.8			4.0	4.0		4.0	4.0
Lead/Lag	Lead			Lag	Lag		Lag	Lag	Lag	Lag	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Min	C-Max		C-Max	C-Max		None	None	None	None	None	None
Act Effct Green (s)		53.7			44.2			8.7	8.7		8.7	8.7
Actuated g/C Ratio		0.77			0.63			0.12	0.12		0.12	0.12
v/c Ratio		0.27			0.55			0.42	0.07		0.21	0.03
Control Delay		3.3			2.2			35.4	0.4		29.8	0.2
Queue Delay		0.0			0.0			0.0	0.0		0.0	0.0
Total Delay		3.3			2.2			35.4	0.4		29.8	0.2
LOS		A			A			D	A		C	A
Approach Delay		3.3			2.2			26.2			21.9	
Approach LOS		A			A			C			C	

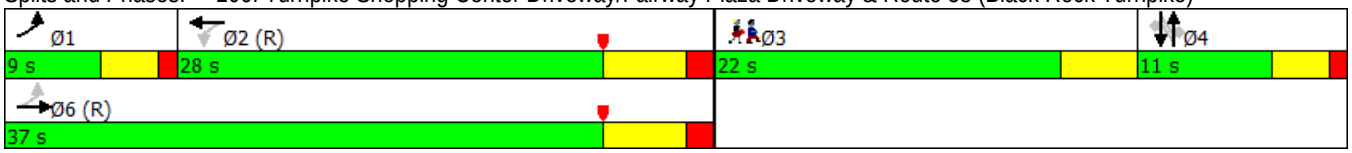
Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	22.0
Total Split (s)	22.0
Total Split (%)	31%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		33			18			29	0		13	0
Queue Length 95th (ft)		53			21			54	0		36	0
Internal Link Dist (ft)		362			422			62			55	
Turn Bay Length (ft)									25			25
Base Capacity (vph)		2297			1955			168	346		159	346
Starvation Cap Reductn		0			0			0	0		0	0
Spillback Cap Reductn		0			0			0	0		0	0
Storage Cap Reductn		0			0			0	0		0	0
Reduced v/c Ratio		0.27			0.55			0.42	0.07		0.21	0.03

Intersection Summary

Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 70
Offset: 15 (21%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.55
Intersection Signal Delay: 4.3 Intersection LOS: A
Intersection Capacity Utilization 62.0% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike)



Lane Group	Ø3
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

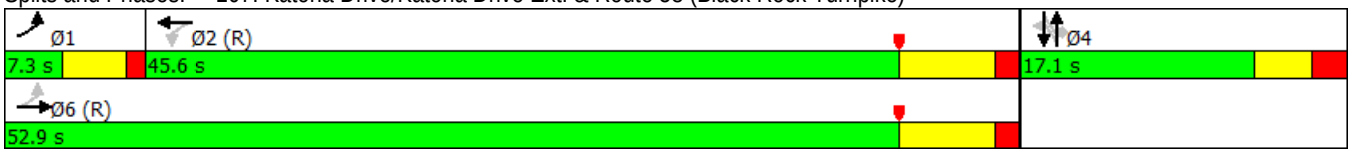
Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	1	456	58	54	958	2	76	2	31	2	2	1
Future Volume (vph)	1	456	58	54	958	2	76	2	31	2	2	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	10	10	12	12	12
Storage Length (ft)	0		0	0		0	0		250	0		0
Storage Lanes	0		0	0		0	0		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.983							0.850		0.962	
Flt Protected					0.997			0.953		0.950		
Satd. Flow (prot)	0	3298	0	0	3345	0	0	1625	1449	1736	1757	0
Flt Permitted		0.955			0.878			0.729		0.702		
Satd. Flow (perm)	0	3150	0	0	2946	0	0	1243	1449	1282	1757	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		42							118		1	
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		502			407			423			198	
Travel Time (s)		11.4			9.3			11.5			5.4	
Peak Hour Factor	0.80	0.80	0.80	0.92	0.92	0.92	0.92	0.92	0.92	0.80	0.80	0.80
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	1	570	73	59	1041	2	83	2	34	3	3	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	644	0	0	1102	0	0	85	34	3	4	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2			4		4	4		
Detector Phase	1	6		2	2		4	4	4	4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0		7.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	7.3	21.3		21.3	21.3		11.9	11.9	11.9	11.9	11.9	
Total Split (s)	7.3	52.9		45.6	45.6		17.1	17.1	17.1	17.1	17.1	
Total Split (%)	10.4%	75.6%		65.1%	65.1%		24.4%	24.4%	24.4%	24.4%	24.4%	
Yellow Time (s)	3.3	5.0		5.0	5.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.0	1.3		1.3	1.3		1.9	1.9	1.9	1.9	1.9	
Lost Time Adjust (s)		0.0			0.0			0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.3			6.3			4.9	4.9	4.9	4.9	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Act Effct Green (s)		52.2			39.3			9.0	9.0	9.0	9.0	
Actuated g/C Ratio		0.75			0.56			0.13	0.13	0.13	0.13	
v/c Ratio		0.27			0.67			0.53	0.12	0.02	0.02	
Control Delay		3.3			4.3			40.6	0.8	25.0	23.0	
Queue Delay		0.0			0.0			0.0	0.0	0.0	0.0	
Total Delay		3.3			4.3			40.6	0.8	25.0	23.0	
LOS		A			A			D	A	C	C	
Approach Delay		3.3			4.3			29.2			23.9	
Approach LOS		A			A			C			C	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		34			34			35	0	1	1	
Queue Length 95th (ft)		51			31			73	0	7	8	
Internal Link Dist (ft)		422			327			343			118	
Turn Bay Length (ft)									250			
Base Capacity (vph)		2373			1653			216	349	223	307	
Starvation Cap Reductn		0			7			0	0	0	0	
Spillback Cap Reductn		0			0			0	0	0	0	
Storage Cap Reductn		0			0			0	0	0	0	
Reduced v/c Ratio		0.27			0.67			0.39	0.10	0.01	0.01	

Intersection Summary	
Area Type: Other	
Cycle Length: 70	
Actuated Cycle Length: 70	
Offset: 4 (6%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.67	
Intersection Signal Delay: 5.6	Intersection LOS: A
Intersection Capacity Utilization 68.2%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike)



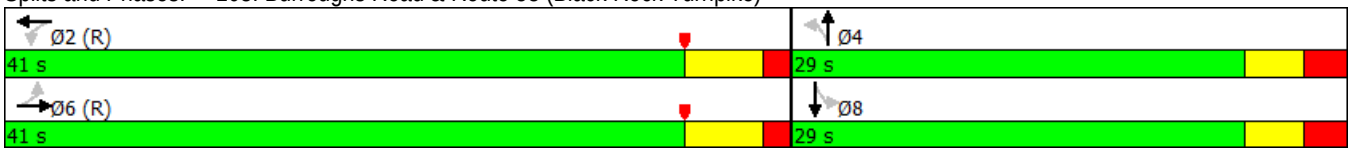
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	464	8	5	963	71	7	88	3	146	76	75
Future Volume (vph)	29	464	8	5	963	71	7	88	3	146	76	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	16	12	12	16	12
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.990			0.996			0.966	
Flt Protected		0.997						0.996			0.976	
Satd. Flow (prot)	0	3307	0	0	3290	0	0	2034	0	0	1934	0
Flt Permitted		0.849			0.953			0.970			0.810	
Satd. Flow (perm)	0	2816	0	0	3136	0	0	1981	0	0	1605	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			16			3			26	
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		407			996			466			300	
Travel Time (s)		9.3			22.6			12.7			8.2	
Peak Hour Factor	0.80	0.80	0.80	0.95	0.95	0.95	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	36	580	10	5	1014	75	9	110	4	183	95	94
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	626	0	0	1094	0	0	123	0	0	372	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		2	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		9.0	9.0		9.0	9.0	
Minimum Split (s)	20.6	20.6		20.6	20.6		14.4	14.4		14.4	14.4	
Total Split (s)	41.0	41.0		41.0	41.0		29.0	29.0		29.0	29.0	
Total Split (%)	58.6%	58.6%		58.6%	58.6%		41.4%	41.4%		41.4%	41.4%	
Yellow Time (s)	4.1	4.1		4.1	4.1		3.1	3.1		3.1	3.1	
All-Red Time (s)	1.5	1.5		1.5	1.5		2.3	2.3		2.3	2.3	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.6			5.6			5.4			5.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		40.0			40.0			19.0			19.0	
Actuated g/C Ratio		0.57			0.57			0.27			0.27	
v/c Ratio		0.39			0.61			0.23			0.82	
Control Delay		6.7			10.9			18.9			36.6	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		6.7			10.9			18.9			36.6	
LOS		A			B			B			D	
Approach Delay		6.7			10.9			18.9			36.6	
Approach LOS		A			B			B			D	
Queue Length 50th (ft)		37			104			39			137	
Queue Length 95th (ft)		45			235			62			180	
Internal Link Dist (ft)		327			916			386			220	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)		1608			1797			669			558	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.39			0.61			0.18			0.67	

Intersection Summary

Area Type:	Other
Cycle Length: 70	
Actuated Cycle Length: 70	
Offset: 68 (97%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow	
Natural Cycle: 50	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.82	
Intersection Signal Delay: 14.5	Intersection LOS: B
Intersection Capacity Utilization 67.4%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 108: Burroughs Road & Route 58 (Black Rock Turnpike)



Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NWL	NWR	NWR2	NET
Lane Configurations												
Traffic Volume (vph)	1	243	371	1	35	2	585	1	359	5	13	1
Future Volume (vph)	1	243	371	1	35	2	585	1	359	5	13	1
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	11	11	12	10	12	12	12
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.97	0.95	0.95	1.00
Frt			0.850						0.993			0.910
Flt Protected							0.997		0.955			
Satd. Flow (prot)	0	1827	1553	0	0	0	3345	0	3137	0	0	1662
Flt Permitted		0.998					0.913		0.955			
Satd. Flow (perm)	0	1823	1553	0	0	0	3064	0	3137	0	0	1662
Right Turn on Red				Yes				Yes			Yes	
Satd. Flow (RTOR)			72						193			
Link Speed (mph)		30					30		30			25
Link Distance (ft)		996					549		218			653
Travel Time (s)		22.6					12.5		5.0			17.8
Peak Hour Factor	0.80	0.80	0.80	0.80	0.81	0.81	0.81	0.81	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	1	304	464	1	43	2	722	1	449	6	16	1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	305	465	0	0	0	768	0	471	0	0	3
Turn Type	Perm	NA	pm+ov		Perm	Perm	NA		Prot			NA
Protected Phases		2	4				2		4			5
Permitted Phases	2		2		2	2						
Detector Phase	2	2	4		2	2	2		4			5
Switch Phase												
Minimum Initial (s)	15.0	15.0	9.0		15.0	15.0	15.0		9.0			5.0
Minimum Split (s)	22.8	22.8	15.4		22.8	22.8	22.8		15.4			12.6
Total Split (s)	37.2	37.2	20.2		37.2	37.2	37.2		20.2			12.6
Total Split (%)	53.1%	53.1%	28.9%		53.1%	53.1%	53.1%		28.9%			18.0%
Yellow Time (s)	4.1	4.1	3.3		4.1	4.1	4.1		3.3			3.3
All-Red Time (s)	3.7	3.7	3.1		3.7	3.7	3.7		3.1			4.3
Lost Time Adjust (s)		0.0	0.0				0.0		0.0			0.0
Total Lost Time (s)		7.8	6.4				7.8		6.4			7.6
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Min	C-Min	None		C-Min	C-Min	C-Min		None			None
Act Effct Green (s)		39.5	62.2				39.5		11.1			5.3
Actuated g/C Ratio		0.56	0.89				0.56		0.16			0.08
v/c Ratio		0.30	0.34				0.44		0.72			0.02
Control Delay		7.9	2.7				12.1		22.5			30.5
Queue Delay		0.0	0.0				0.0		0.0			0.0
Total Delay		7.9	2.7				12.1		22.5			30.5
LOS		A	A				B		C			C
Approach Delay		4.7					12.1		22.5			30.5
Approach LOS		A					B		C			C
Queue Length 50th (ft)		31	0				67		58			1
Queue Length 95th (ft)		134	125				165		77			8
Internal Link Dist (ft)		916					469		138			573

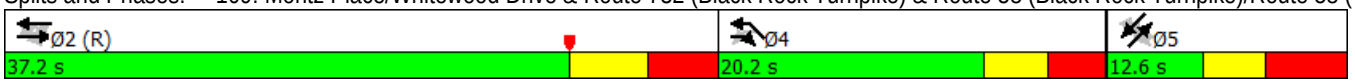
Lane Group	NER	NER2	SWL2	SWL	SWT	SWR
Lane Configurations						
Traffic Volume (vph)	1	1	1	17	0	6
Future Volume (vph)	1	1	1	17	0	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	15	12	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt					0.968	
Flt Protected					0.963	
Satd. Flow (prot)	0	0	0	0	1703	0
Flt Permitted						
Satd. Flow (perm)	0	0	0	0	1768	0
Right Turn on Red		No				No
Satd. Flow (RTOR)						
Link Speed (mph)					25	
Link Distance (ft)					695	
Travel Time (s)					19.0	
Peak Hour Factor	0.80	0.80	0.94	0.94	0.94	0.94
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	1	1	1	18	0	6
Shared Lane Traffic (%)						
Lane Group Flow (vph)	0	0	0	0	25	0
Turn Type			Perm	Perm	NA	
Protected Phases					5	
Permitted Phases			5	5		
Detector Phase			5	5	5	
Switch Phase						
Minimum Initial (s)			5.0	5.0	5.0	
Minimum Split (s)			12.6	12.6	12.6	
Total Split (s)			12.6	12.6	12.6	
Total Split (%)			18.0%	18.0%	18.0%	
Yellow Time (s)			3.3	3.3	3.3	
All-Red Time (s)			4.3	4.3	4.3	
Lost Time Adjust (s)					0.0	
Total Lost Time (s)					7.6	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode			None	None	None	
Act Effct Green (s)					5.3	
Actuated g/C Ratio					0.08	
v/c Ratio					0.19	
Control Delay					33.8	
Queue Delay					0.0	
Total Delay					33.8	
LOS					C	
Approach Delay					33.8	
Approach LOS					C	
Queue Length 50th (ft)					10	
Queue Length 95th (ft)					33	
Internal Link Dist (ft)					615	

Lane Group	EBL	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NWL	NWR	NWR2	NET
Turn Bay Length (ft)												
Base Capacity (vph)		1036	1370				1741		786			125
Starvation Cap Reductn		0	0				0		0			0
Spillback Cap Reductn		0	0				0		0			0
Storage Cap Reductn		0	0				0		0			0
Reduced v/c Ratio		0.29	0.34				0.44		0.60			0.02

Intersection Summary

Area Type:	Other
Cycle Length: 70	
Actuated Cycle Length: 70	
Offset: 24 (34%), Referenced to phase 2:EBWB, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.72	
Intersection Signal Delay: 12.0	Intersection LOS: B
Intersection Capacity Utilization 73.6%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) & Route 58 (Black Rock Turnpike)/Route 58 (Tunxis Hill Cut



Lane Group	NER	NER2	SWL2	SWL	SWT	SWR
Turn Bay Length (ft)						
Base Capacity (vph)					133	
Starvation Cap Reductn					0	
Spillback Cap Reductn					0	
Storage Cap Reductn					0	
Reduced v/c Ratio					0.19	

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	271	2	64	633	0	61
Future Volume (vph)	271	2	64	633	0	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	10	10
Storage Length (ft)		0	0		0	50
Storage Lanes		0	0		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00
Frt	0.999					0.850
Flt Protected				0.995		
Satd. Flow (prot)	3352	0	0	1757	1705	1449
Flt Permitted				0.995		
Satd. Flow (perm)	3352	0	0	1757	1705	1449
Link Speed (mph)	30			30	25	
Link Distance (ft)	1095			214	782	
Travel Time (s)	24.9			4.9	21.3	
Peak Hour Factor	0.80	0.80	0.91	0.91	0.80	0.80
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	339	3	70	696	0	76
Shared Lane Traffic (%)						
Lane Group Flow (vph)	342	0	0	766	0	76
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 51.1%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	271	2	64	633	0	61
Future Vol, veh/h	271	2	64	633	0	61
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	91	91	80	80
Heavy Vehicles, %	4	4	4	4	4	4
Mvmt Flow	339	3	70	696	0	76

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	341	0	1176	171
Stage 1	-	-	-	-	340	-
Stage 2	-	-	-	-	836	-
Critical Hdwy	-	-	4.16	-	6.66	6.96
Critical Hdwy Stg 1	-	-	-	-	5.86	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	-	-	2.238	-	3.538	3.338
Pot Cap-1 Maneuver	-	-	1204	-	195	838
Stage 1	-	-	-	-	688	-
Stage 2	-	-	-	-	420	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1204	-	176	838
Mov Cap-2 Maneuver	-	-	-	-	176	-
Stage 1	-	-	-	-	688	-
Stage 2	-	-	-	-	380	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	9.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	838	-	-	1204	-
HCM Lane V/C Ratio	-	0.091	-	-	0.058	-
HCM Control Delay (s)	0	9.7	-	-	8.2	0
HCM Lane LOS	A	A	-	-	A	A
HCM 95th %tile Q(veh)	-	0.3	-	-	0.2	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	20	68	76	357	394	30
Future Volume (vph)	20	68	76	357	394	30
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	12	12
Storage Length (ft)	0	0	25			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt	0.896				0.990	
Flt Protected	0.989			0.991		
Satd. Flow (prot)	1817	0	0	3407	1791	0
Flt Permitted	0.989			0.991		
Satd. Flow (perm)	1817	0	0	3407	1791	0
Link Speed (mph)	25			30	30	
Link Distance (ft)	586			395	218	
Travel Time (s)	16.0			9.0	5.0	
Peak Hour Factor	0.80	0.80	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	25	85	83	388	428	33
Shared Lane Traffic (%)						
Lane Group Flow (vph)	110	0	0	471	461	0
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 49.9%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	68	76	357	394	30
Future Vol, veh/h	20	68	76	357	394	30
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	25	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	92	92	92	92
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	25	85	83	388	428	33

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	804	445	461	0	-	0
Stage 1	445	-	-	-	-	-
Stage 2	359	-	-	-	-	-
Critical Hdwy	6.675	6.275	4.175	-	-	-
Critical Hdwy Stg 1	5.475	-	-	-	-	-
Critical Hdwy Stg 2	5.875	-	-	-	-	-
Follow-up Hdwy	3.5475	3.3475	2.2475	-	-	-
Pot Cap-1 Maneuver	331	605	1080	-	-	-
Stage 1	637	-	-	-	-	-
Stage 2	671	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	299	605	1080	-	-	-
Mov Cap-2 Maneuver	299	-	-	-	-	-
Stage 1	637	-	-	-	-	-
Stage 2	605	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	14.4	1.8	0
HCM LOS	B		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1080	-	491	-	-
HCM Lane V/C Ratio	0.076	-	0.224	-	-
HCM Control Delay (s)	8.6	0.3	14.4	-	-
HCM Lane LOS	A	A	B	-	-
HCM 95th %tile Q(veh)	0.2	-	0.9	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	0	1	46	0	47	5	662	62	58	724	5
Future Volume (vph)	6	0	1	46	0	47	5	662	62	58	724	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	16	12	12	13	12	12	13	12
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		0.985			0.932			0.989			0.999	
Flt Protected		0.957			0.976						0.996	
Satd. Flow (prot)	0	1990	0	0	1920	0	0	1904	0	0	1915	0
Flt Permitted		0.727			0.839			0.996			0.905	
Satd. Flow (perm)	0	1512	0	0	1651	0	0	1896	0	0	1740	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		35			53			16			1	
Link Speed (mph)		25			30			35			35	
Link Distance (ft)		378			442			1898			522	
Travel Time (s)		10.3			10.0			37.0			10.2	
Peak Hour Factor	0.80	0.80	0.80	0.84	0.84	0.84	0.95	0.95	0.95	0.94	0.94	0.94
Adj. Flow (vph)	8	0	1	55	0	56	5	697	65	62	770	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	9	0	0	111	0	0	767	0	0	837	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	11.7	11.7		11.7	11.7		20.6	20.6		20.6	20.6	
Total Split (s)	15.0	15.0		15.0	15.0		65.0	65.0		65.0	65.0	
Total Split (%)	18.8%	18.8%		18.8%	18.8%		81.3%	81.3%		81.3%	81.3%	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.4	1.4		1.4	1.4		1.6	1.6		1.6	1.6	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.7			4.7			5.6			5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Min	C-Min		C-Min	C-Min	
Act Effct Green (s)		8.5			8.5			64.6			64.6	
Actuated g/C Ratio		0.11			0.11			0.81			0.81	
v/c Ratio		0.05			0.50			0.50			0.60	
Control Delay		0.4			26.8			2.8			6.5	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		0.4			26.8			2.8			6.5	
LOS		A			C			A			A	
Approach Delay		0.4			26.8			2.8			6.5	
Approach LOS		A			C			A			A	
Queue Length 50th (ft)		0			28			14			133	
Queue Length 95th (ft)		0			65			155			291	
Internal Link Dist (ft)		298			362			1818			442	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		231			264			1542			1412	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.04			0.42			0.50			0.59	

Intersection Summary	
Area Type:	Other
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 73 (91%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow	
Natural Cycle: 55	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.60	
Intersection Signal Delay: 6.1	Intersection LOS: A
Intersection Capacity Utilization 93.0%	ICU Level of Service F
Analysis Period (min) 15	

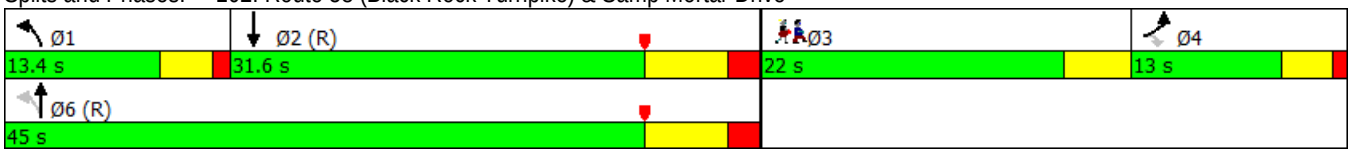
Splits and Phases: 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Lane Configurations							
Traffic Volume (vph)	80	177	173	661	702	72	
Future Volume (vph)	80	177	173	661	702	72	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	10	10	11	11	12	12	
Storage Length (ft)	0	50	100			0	
Storage Lanes	1	1	1			0	
Taper Length (ft)	25		50				
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	
Frt		0.850			0.986		
Flt Protected	0.950		0.950				
Satd. Flow (prot)	1636	1463	1694	1783	3456	0	
Flt Permitted	0.950		0.300				
Satd. Flow (perm)	1636	1463	535	1783	3456	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		216			14		
Link Speed (mph)	25			30	35		
Link Distance (ft)	445			510	341		
Travel Time (s)	12.1			11.6	6.6		
Peak Hour Factor	0.82	0.82	0.86	0.86	0.97	0.97	
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	
Adj. Flow (vph)	98	216	201	769	724	74	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	98	216	201	769	798	0	
Turn Type	Prot	Perm	pm+pt	NA	NA		
Protected Phases	4		1	6	2		3
Permitted Phases		4	6				
Detector Phase	4	4	1	6	2		
Switch Phase							
Minimum Initial (s)	9.0	9.0	5.0	15.0	15.0		7.0
Minimum Split (s)	13.0	13.0	9.2	21.9	21.9		22.0
Total Split (s)	13.0	13.0	13.4	45.0	31.6		22.0
Total Split (%)	16.3%	16.3%	16.8%	56.3%	39.5%		28%
Yellow Time (s)	3.0	3.0	3.2	4.9	4.9		4.0
All-Red Time (s)	1.0	1.0	1.0	2.0	2.0		0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	4.0	4.0	4.2	6.9	6.9		
Lead/Lag	Lag	Lag	Lead		Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes		Yes		Yes
Recall Mode	None	None	None	C-Max	C-Max		None
Act Effct Green (s)	10.3	10.3	61.5	58.8	46.9		
Actuated g/C Ratio	0.13	0.13	0.77	0.74	0.59		
v/c Ratio	0.47	0.58	0.38	0.59	0.39		
Control Delay	39.6	11.4	4.4	5.5	7.7		
Queue Delay	0.0	0.0	0.0	0.0	0.0		
Total Delay	39.6	11.4	4.4	5.5	7.7		
LOS	D	B	A	A	A		
Approach Delay	20.2			5.3	7.7		
Approach LOS	C			A	A		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Queue Length 50th (ft)	47	0	13	85	106		
Queue Length 95th (ft)	80	43	28	130	96		
Internal Link Dist (ft)	365			430	261		
Turn Bay Length (ft)		50	100				
Base Capacity (vph)	209	375	551	1311	2031		
Starvation Cap Reductn	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0		
Reduced v/c Ratio	0.47	0.58	0.36	0.59	0.39		

Intersection Summary	
Area Type: Other	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 4 (5%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.59	
Intersection Signal Delay: 8.5	Intersection LOS: A
Intersection Capacity Utilization 51.4%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive



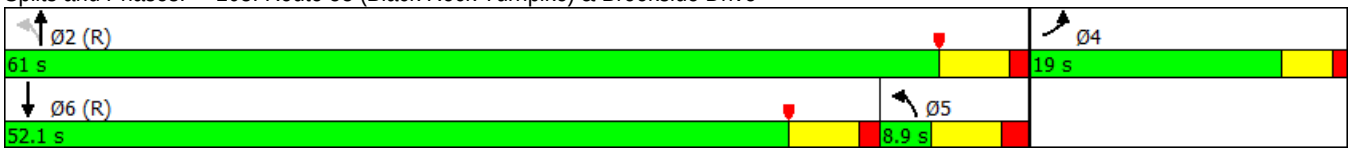
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	68	49	54	767	792	89
Future Volume (vph)	68	49	54	767	792	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	12	12
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Frt	0.943				0.985	
Flt Protected	0.972			0.997		
Satd. Flow (prot)	1916	0	0	3494	3452	0
Flt Permitted	0.972			0.828		
Satd. Flow (perm)	1916	0	0	2902	3452	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	40				26	
Link Speed (mph)	25			30	30	
Link Distance (ft)	347			293	336	
Travel Time (s)	9.5			6.7	7.6	
Peak Hour Factor	0.86	0.86	0.83	0.83	0.98	0.98
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	79	57	65	924	808	91
Shared Lane Traffic (%)						
Lane Group Flow (vph)	136	0	0	989	899	0
Turn Type	Prot		pm+pt	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases			2			
Detector Phase	4		5	2	6	
Switch Phase						
Minimum Initial (s)	9.0		3.0	15.0	15.0	
Minimum Split (s)	13.0		8.9	20.4	20.4	
Total Split (s)	19.0		8.9	61.0	52.1	
Total Split (%)	23.8%		11.1%	76.3%	65.1%	
Yellow Time (s)	3.0		4.2	4.2	4.2	
All-Red Time (s)	1.0		1.7	1.2	1.2	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	4.0			5.4	5.4	
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None	C-Max	C-Max	
Act Effct Green (s)	10.0			60.6	60.6	
Actuated g/C Ratio	0.12			0.76	0.76	
v/c Ratio	0.50			0.45	0.34	
Control Delay	29.4			3.4	2.8	
Queue Delay	0.0			0.1	0.0	
Total Delay	29.4			3.5	2.8	
LOS	C			A	A	
Approach Delay	29.4			3.5	2.8	
Approach LOS	C			A	A	
Queue Length 50th (ft)	46			71	33	
Queue Length 95th (ft)	89			74	78	
Internal Link Dist (ft)	267			213	256	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Turn Bay Length (ft)						
Base Capacity (vph)	391			2199	2623	
Starvation Cap Reductn	0			343	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.35			0.53	0.34	

Intersection Summary

Area Type: Other	
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 3 (4%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow	
Natural Cycle: 45	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.50	
Intersection Signal Delay: 4.9	Intersection LOS: A
Intersection Capacity Utilization 67.3%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 103: Route 58 (Black Rock Turnpike) & Brookside Drive



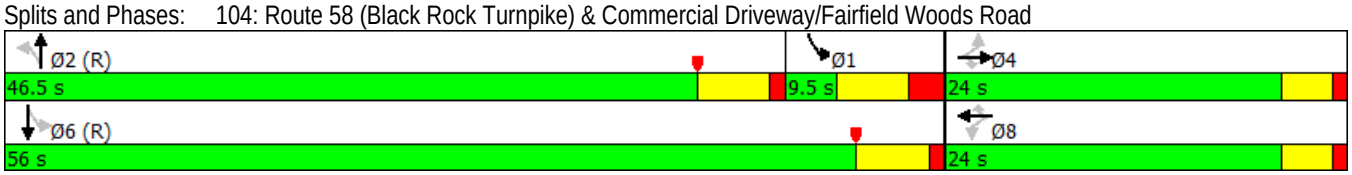
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	3	33	65	4	149	31	674	54	88	732	22
Future Volume (vph)	15	3	33	65	4	149	31	674	54	88	732	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	11	12	11	12	12	11	12
Storage Length (ft)	0		0	0		75	0		0	0		0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt			0.850			0.850		0.989			0.996	
Flt Protected		0.960			0.955			0.998			0.995	
Satd. Flow (prot)	0	1788	1583	0	1779	1531	0	3377	0	0	3391	0
Flt Permitted		0.801			0.723			0.891			0.765	
Satd. Flow (perm)	0	1492	1583	0	1347	1531	0	3015	0	0	2607	0
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			120					15			6	
Link Speed (mph)		30			25			30			30	
Link Distance (ft)		87			499			713			293	
Travel Time (s)		2.0			13.6			16.2			6.7	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.89	0.89	0.89	0.96	0.96	0.96
Adj. Flow (vph)	19	4	41	81	5	186	35	757	61	92	763	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	23	41	0	86	186	0	853	0	0	878	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	4	4	4	8	8	8	2	2		1	6	
Switch Phase												
Minimum Initial (s)	9.0	9.0	9.0	9.0	9.0	9.0	15.0	15.0		3.0	15.0	
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	20.3	20.3		9.5	20.3	
Total Split (s)	24.0	24.0	24.0	24.0	24.0	24.0	46.5	46.5		9.5	56.0	
Total Split (%)	30.0%	30.0%	30.0%	30.0%	30.0%	30.0%	58.1%	58.1%		11.9%	70.0%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.3	4.3		4.3	4.3	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		2.2	1.0	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0		0.0			0.0	
Total Lost Time (s)		4.0	4.0		4.0	4.0		5.3			5.3	
Lead/Lag							Lead	Lead		Lag		
Lead-Lag Optimize?							Yes	Yes		Yes		
Recall Mode	None	None	None	None	None	None	C-Max	C-Max		None	C-Max	
Act Effct Green (s)		14.2	14.2		14.2	14.2		56.5			56.5	
Actuated g/C Ratio		0.18	0.18		0.18	0.18		0.71			0.71	
v/c Ratio		0.09	0.11		0.36	0.69		0.40			0.48	
Control Delay		25.9	0.6		31.8	43.3		5.9			4.8	
Queue Delay		0.0	0.0		0.0	0.0		0.0			0.1	
Total Delay		25.9	0.6		31.8	43.3		5.9			4.9	
LOS		C	A		C	D		A			A	
Approach Delay		9.7			39.7			5.9			4.9	
Approach LOS		A			D			A			A	
Queue Length 50th (ft)		10	0		38	88		73			40	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		24	0		64	123		133			153	
Internal Link Dist (ft)		7			419			633			213	
Turn Bay Length (ft)						75						
Base Capacity (vph)		373	485		336	382		2133			1843	
Starvation Cap Reductn		0	0		0	0		0			181	
Spillback Cap Reductn		0	0		0	0		0			0	
Storage Cap Reductn		0	0		0	0		0			0	
Reduced v/c Ratio		0.06	0.08		0.26	0.49		0.40			0.53	

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 55
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.69
Intersection Signal Delay: 10.0 Intersection LOS: B
Intersection Capacity Utilization 67.4% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	563	193	126	585	109	207	204	133	178	196	55
Future Volume (vph)	79	563	193	126	585	109	207	204	133	178	196	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	11	12	12	11	11	12	12	12	12
Storage Length (ft)	200		0	175		0	210		0	170		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	85			75			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.962			0.976			0.941			0.967	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1711	3291	0	1711	3454	0	1711	1694	0	1770	1801	0
Flt Permitted	0.950			0.950			0.430			0.333		
Satd. Flow (perm)	1711	3291	0	1711	3454	0	774	1694	0	620	1801	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		31			14			20				
Link Speed (mph)		30			30			30			25	
Link Distance (ft)		436			368			438			355	
Travel Time (s)		9.9			8.4			10.0			9.7	
Peak Hour Factor	0.91	0.91	0.91	0.93	0.93	0.93	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	87	619	212	135	629	117	216	213	139	185	204	57
Shared Lane Traffic (%)												
Lane Group Flow (vph)	87	831	0	135	746	0	216	352	0	185	261	0
Turn Type	Prot	NA		Prot	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases							4			8		
Detector Phase	5	2		1	6		7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	15.0		5.0	15.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	21.6		9.7	21.6		9.3	16.8		9.3	16.8	
Total Split (s)	15.8	43.3		17.0	44.5		17.9	36.0		15.7	33.8	
Total Split (%)	10.9%	29.9%		11.7%	30.7%		12.3%	24.8%		10.8%	23.3%	
Yellow Time (s)	3.0	4.1		3.0	4.1		3.3	4.4		3.3	4.4	
All-Red Time (s)	1.7	2.5		1.7	2.5		1.0	2.4		1.0	2.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	6.6		4.7	6.6		4.3	6.8		4.3	6.8	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Min		None	Min		None	None		None	None	
Act Effct Green (s)	9.5	31.9		12.1	34.6		43.9	28.6		41.1	27.2	
Actuated g/C Ratio	0.09	0.30		0.11	0.32		0.41	0.27		0.39	0.26	
v/c Ratio	0.57	0.82		0.70	0.66		0.50	0.75		0.51	0.57	
Control Delay	62.7	41.2		66.1	33.8		24.5	45.6		25.3	41.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	62.7	41.2		66.1	33.8		24.5	45.6		25.3	41.3	
LOS	E	D		E	C		C	D		C	D	
Approach Delay		43.2			38.7			37.5			34.6	
Approach LOS		D			D			D			C	
Queue Length 50th (ft)	58	270		91	229		94	211		78	159	

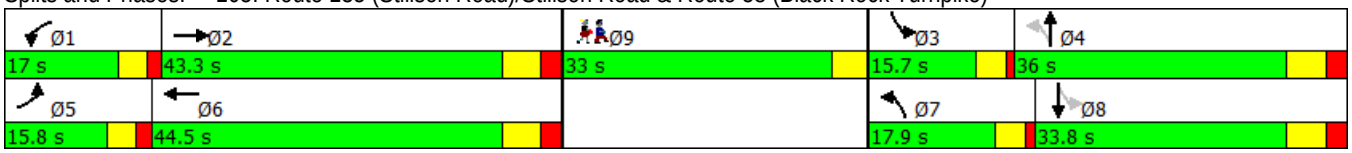
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	33.0
Total Split (s)	33.0
Total Split (%)	23%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	114	346		#188	298		159	#358		136	256	
Internal Link Dist (ft)		356			288			358			275	
Turn Bay Length (ft)	200			175			210			170		
Base Capacity (vph)	178	1157		198	1241		445	480		362	460	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.49	0.72		0.68	0.60		0.49	0.73		0.51	0.57	

Intersection Summary

Area Type: Other
Cycle Length: 145
Actuated Cycle Length: 106.5
Natural Cycle: 145
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.82
Intersection Signal Delay: 39.3 Intersection LOS: D
Intersection Capacity Utilization 76.1% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike)



Lane Group	Ø9
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

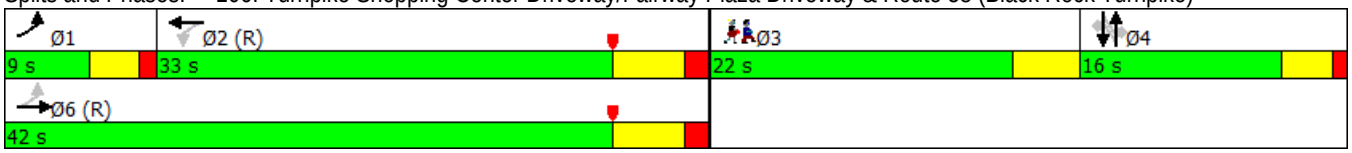
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	677	32	60	613	69	163	12	82	54	13	33
Future Volume (vph)	72	677	32	60	613	69	163	12	82	54	13	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	13	13	12	13	13
Storage Length (ft)	0		0	0		0	0		25	0		25
Storage Lanes	0		0	0		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.994			0.986				0.850			0.850
Flt Protected		0.995			0.996			0.956			0.961	
Satd. Flow (prot)	0	3351	0	0	3327	0	0	1822	1620	0	1832	1620
Flt Permitted		0.802			0.810			0.686			0.664	
Satd. Flow (perm)	0	2701	0	0	2706	0	0	1308	1620	0	1266	1620
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			15				147			147
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		442			502			142			135	
Travel Time (s)		10.0			11.4			3.9			3.7	
Peak Hour Factor	0.91	0.91	0.91	0.97	0.97	0.97	0.95	0.95	0.95	0.88	0.88	0.88
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	79	744	35	62	632	71	172	13	86	61	15	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	858	0	0	765	0	0	185	86	0	76	38
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2			4		4	4		4
Detector Phase	1	6		2	2		4	4	4	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	15.0		15.0	15.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	9.0	20.8		20.8	20.8		11.0	11.0	11.0	11.0	11.0	11.0
Total Split (s)	9.0	42.0		33.0	33.0		16.0	16.0	16.0	16.0	16.0	16.0
Total Split (%)	11.3%	52.5%		41.3%	41.3%		20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
Yellow Time (s)	3.0	4.3		4.3	4.3		3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.5		1.5	1.5		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0			0.0			0.0	0.0		0.0	0.0
Total Lost Time (s)		5.8			5.8			4.0	4.0		4.0	4.0
Lead/Lag	Lead			Lag	Lag		Lag	Lag	Lag	Lag	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Min	C-Max		C-Max	C-Max		None	None	None	None	None	None
Act Effct Green (s)		52.4			42.9			17.8	17.8		17.8	17.8
Actuated g/C Ratio		0.66			0.54			0.22	0.22		0.22	0.22
v/c Ratio		0.48			0.52			0.64	0.18		0.27	0.08
Control Delay		8.1			5.4			38.2	1.8		27.2	0.3
Queue Delay		0.0			0.0			0.0	0.0		0.0	0.0
Total Delay		8.1			5.4			38.2	1.8		27.2	0.3
LOS		A			A			D	A		C	A
Approach Delay		8.1			5.4			26.6			18.3	
Approach LOS		A			A			C			B	

Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
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)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	22.0
Total Split (s)	22.0
Total Split (%)	28%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		92			33			83	0		31	0
Queue Length 95th (ft)		143			41			143	8		63	0
Internal Link Dist (ft)		362			422			62			55	
Turn Bay Length (ft)									25			25
Base Capacity (vph)		1802			1458			290	474		281	474
Starvation Cap Reductn		0			0			0	0		0	0
Spillback Cap Reductn		0			0			0	0		0	0
Storage Cap Reductn		0			0			0	0		0	0
Reduced v/c Ratio		0.48			0.52			0.64	0.18		0.27	0.08

Intersection Summary	
Area Type:	Other
Cycle Length: 80	
Actuated Cycle Length: 80	
Offset: 9 (11%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.64	
Intersection Signal Delay: 10.2	Intersection LOS: B
Intersection Capacity Utilization 72.0%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike)



Lane Group	Ø3
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

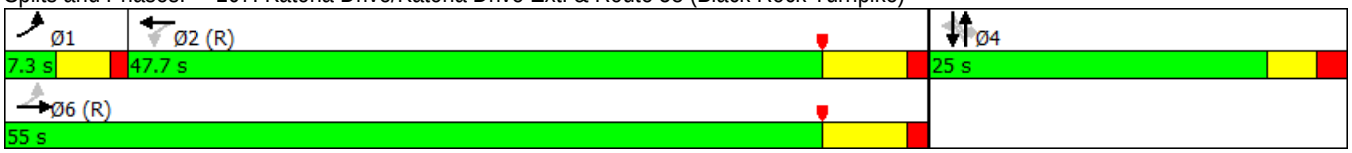
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	3	724	107	47	684	1	93	2	51	3	10	8
Future Volume (vph)	3	724	107	47	684	1	93	2	51	3	10	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	10	10	12	12	12
Storage Length (ft)	0		0	0		0	0		250	0		0
Storage Lanes	0		0	0		0	0		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.981							0.850		0.935	
Flt Protected					0.997			0.953		0.950		
Satd. Flow (prot)	0	3324	0	0	3378	0	0	1641	1463	1752	1725	0
Flt Permitted		0.955			0.828			0.713		0.684		
Satd. Flow (perm)	0	3174	0	0	2805	0	0	1228	1463	1262	1725	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		37							104		10	
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		502			407			423			198	
Travel Time (s)		11.4			9.3			11.5			5.4	
Peak Hour Factor	0.87	0.87	0.87	0.95	0.95	0.95	0.84	0.84	0.84	0.80	0.80	0.80
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	3	832	123	49	720	1	111	2	61	4	13	10
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	958	0	0	770	0	0	113	61	4	23	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2			4		4	4		
Detector Phase	1	6		2	2		4	4	4	4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0		7.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	7.3	21.3		21.3	21.3		11.9	11.9	11.9	11.9	11.9	
Total Split (s)	7.3	55.0		47.7	47.7		25.0	25.0	25.0	25.0	25.0	
Total Split (%)	9.1%	68.8%		59.6%	59.6%		31.3%	31.3%	31.3%	31.3%	31.3%	
Yellow Time (s)	3.3	5.0		5.0	5.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.0	1.3		1.3	1.3		1.9	1.9	1.9	1.9	1.9	
Lost Time Adjust (s)		0.0			0.0			0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.3			6.3			4.9	4.9	4.9	4.9	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Act Effct Green (s)		59.8			41.4			11.4	11.4	11.4	11.4	
Actuated g/C Ratio		0.75			0.52			0.14	0.14	0.14	0.14	
v/c Ratio		0.40			0.53			0.65	0.21	0.02	0.09	
Control Delay		4.0			6.9			48.8	3.5	26.7	20.4	
Queue Delay		0.0			0.0			0.0	0.0	0.0	0.0	
Total Delay		4.0			6.9			48.8	3.5	26.7	20.4	
LOS		A			A			D	A	C	C	
Approach Delay		4.0			6.9			32.9			21.3	
Approach LOS		A			A			C			C	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		64			48			54	0	2	6	
Queue Length 95th (ft)		90			32			91	8	9	21	
Internal Link Dist (ft)		422			327			343			118	
Turn Bay Length (ft)									250			
Base Capacity (vph)		2404			1451			308	445	317	440	
Starvation Cap Reductn		0			0			0	0	0	0	
Spillback Cap Reductn		0			0			0	0	0	0	
Storage Cap Reductn		0			0			0	0	0	0	
Reduced v/c Ratio		0.40			0.53			0.37	0.14	0.01	0.05	

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 45
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.65
Intersection Signal Delay: 8.0 Intersection LOS: A
Intersection Capacity Utilization 70.3% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike)



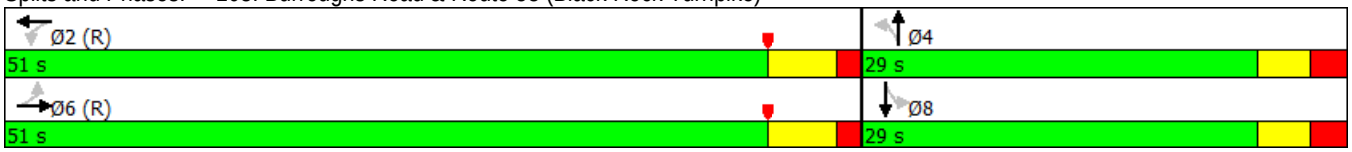
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	753	12	5	669	113	14	59	7	118	51	47
Future Volume (vph)	62	753	12	5	669	113	14	59	7	118	51	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	16	12	12	16	12
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.978			0.988			0.970	
Flt Protected		0.996						0.991			0.973	
Satd. Flow (prot)	0	3335	0	0	3282	0	0	2027	0	0	1954	0
Flt Permitted		0.819			0.950			0.922			0.806	
Satd. Flow (perm)	0	2743	0	0	3118	0	0	1886	0	0	1619	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			39			6			18	
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		407			996			466			300	
Travel Time (s)		9.3			22.6			12.7			8.2	
Peak Hour Factor	0.86	0.86	0.86	0.96	0.96	0.96	0.80	0.80	0.80	0.83	0.83	0.83
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	72	876	14	5	697	118	18	74	9	142	61	57
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	962	0	0	820	0	0	101	0	0	260	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		2	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		9.0	9.0		9.0	9.0	
Minimum Split (s)	20.6	20.6		20.6	20.6		14.4	14.4		14.4	14.4	
Total Split (s)	51.0	51.0		51.0	51.0		29.0	29.0		29.0	29.0	
Total Split (%)	63.8%	63.8%		63.8%	63.8%		36.3%	36.3%		36.3%	36.3%	
Yellow Time (s)	4.1	4.1		4.1	4.1		3.1	3.1		3.1	3.1	
All-Red Time (s)	1.5	1.5		1.5	1.5		2.3	2.3		2.3	2.3	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.6			5.6			5.4			5.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		52.4			52.4			16.6			16.6	
Actuated g/C Ratio		0.66			0.66			0.21			0.21	
v/c Ratio		0.54			0.40			0.26			0.74	
Control Delay		4.7			7.4			24.7			40.0	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		4.8			7.4			24.7			40.0	
LOS		A			A			C			D	
Approach Delay		4.8			7.4			24.7			40.0	
Approach LOS		A			A			C			D	
Queue Length 50th (ft)		25			50			40			114	
Queue Length 95th (ft)		36			161			63			156	
Internal Link Dist (ft)		327			916			386			220	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)		1797			2055			560			490	
Starvation Cap Reductn		59			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.55			0.40			0.18			0.53	

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 5 (6%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 45
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.74
Intersection Signal Delay: 11.0 Intersection LOS: B
Intersection Capacity Utilization 77.8% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 108: Burroughs Road & Route 58 (Black Rock Turnpike)



Lane Group	EBT	EBR	EBR2	WBL2	WBL	WBT	NWL2	NWL	NWR	NWR2	NEL	NET
Lane Configurations												
Traffic Volume (vph)	356	468	6	34	7	347	4	396	2	24	5	0
Future Volume (vph)	356	468	6	34	7	347	4	396	2	24	5	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	11	11	12	10	12	12	12	12
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.97	0.95	0.95	1.00	1.00
Frt		0.850						0.991				0.939
Flt Protected						0.995		0.955				0.973
Satd. Flow (prot)	1827	1553	0	0	0	3339	0	3131	0	0	0	1669
Flt Permitted						0.871		0.947				
Satd. Flow (perm)	1827	1553	0	0	0	2923	0	3104	0	0	0	1715
Right Turn on Red			Yes							Yes		
Satd. Flow (RTOR)		63						169				
Link Speed (mph)	30					30		30				25
Link Distance (ft)	996					549		218				653
Travel Time (s)	22.6					12.5		5.0				17.8
Peak Hour Factor	0.90	0.90	0.90	0.90	0.90	0.90	0.95	0.95	0.95	0.95	0.80	0.80
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	396	520	7	38	8	386	4	417	2	25	6	0
Shared Lane Traffic (%)												
Lane Group Flow (vph)	396	527	0	0	0	432	0	448	0	0	0	11
Turn Type	NA	pm+ov		Perm	Perm	NA	D.Pm	Prot			Perm	NA
Protected Phases	2	4				2		4				5
Permitted Phases		2		2	2		4				5	
Detector Phase	2	4		2	2	2	4	4			5	5
Switch Phase												
Minimum Initial (s)	15.0	9.0		15.0	15.0	15.0	9.0	9.0			5.0	5.0
Minimum Split (s)	22.8	15.4		22.8	22.8	22.8	15.4	15.4			12.6	12.6
Total Split (s)	41.0	26.0		41.0	41.0	41.0	26.0	26.0			13.0	13.0
Total Split (%)	51.3%	32.5%		51.3%	51.3%	51.3%	32.5%	32.5%			16.3%	16.3%
Yellow Time (s)	4.1	3.3		4.1	4.1	4.1	3.3	3.3			3.3	3.3
All-Red Time (s)	3.7	3.1		3.7	3.7	3.7	3.1	3.1			4.3	4.3
Lost Time Adjust (s)	0.0	0.0				0.0		0.0				0.0
Total Lost Time (s)	7.8	6.4				7.8		6.4				7.6
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Min	None		C-Min	C-Min	C-Min	None	None			None	None
Act Effct Green (s)	48.2	72.0				48.2		12.2				5.4
Actuated g/C Ratio	0.60	0.90				0.60		0.15				0.07
v/c Ratio	0.36	0.38				0.25		0.73				0.10
Control Delay	6.7	1.7				10.0		26.7				36.6
Queue Delay	0.0	0.0				0.0		0.0				0.0
Total Delay	6.7	1.7				10.0		26.7				36.6
LOS	A	A				A		C				D
Approach Delay	3.9					10.0		26.7				36.6
Approach LOS	A					A		C				D
Queue Length 50th (ft)	43	0				38		67				5
Queue Length 95th (ft)	148	70				106		108				18
Internal Link Dist (ft)	916					469		138				573

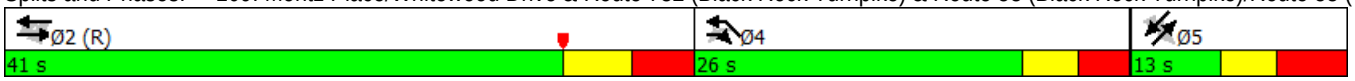
Lane Group	NER2	SWL	SWT	SWR
Lane Configurations				
Traffic Volume (vph)	4	5	0	6
Future Volume (vph)	4	5	0	6
Ideal Flow (vphpl)	1900	1900	1900	1900
Lane Width (ft)	12	15	12	12
Lane Util. Factor	1.00	1.00	1.00	1.00
Frt			0.923	
Flt Protected			0.979	
Satd. Flow (prot)	0	0	1651	0
Flt Permitted				
Satd. Flow (perm)	0	0	1686	0
Right Turn on Red	No			No
Satd. Flow (RTOR)				
Link Speed (mph)			25	
Link Distance (ft)			695	
Travel Time (s)			19.0	
Peak Hour Factor	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	4%	4%	4%	4%
Adj. Flow (vph)	5	6	0	8
Shared Lane Traffic (%)				
Lane Group Flow (vph)	0	0	14	0
Turn Type		Perm	NA	
Protected Phases			5	
Permitted Phases		5		
Detector Phase		5	5	
Switch Phase				
Minimum Initial (s)		5.0	5.0	
Minimum Split (s)		12.6	12.6	
Total Split (s)		13.0	13.0	
Total Split (%)		16.3%	16.3%	
Yellow Time (s)		3.3	3.3	
All-Red Time (s)		4.3	4.3	
Lost Time Adjust (s)			0.0	
Total Lost Time (s)			7.6	
Lead/Lag				
Lead-Lag Optimize?				
Recall Mode		None	None	
Act Effct Green (s)			5.4	
Actuated g/C Ratio			0.07	
v/c Ratio			0.12	
Control Delay			37.3	
Queue Delay			0.0	
Total Delay			37.3	
LOS			D	
Approach Delay			37.3	
Approach LOS			D	
Queue Length 50th (ft)			7	
Queue Length 95th (ft)			21	
Internal Link Dist (ft)			615	

Lane Group	EBT	EBR	EBR2	WBL2	WBL	WBT	NWL2	NWL	NWR	NWR2	NEL	NET
Turn Bay Length (ft)												
Base Capacity (vph)	1100	1436				1759		888				120
Starvation Cap Reductn	0	0				0		0				0
Spillback Cap Reductn	0	0				0		0				0
Storage Cap Reductn	0	0				0		0				0
Reduced v/c Ratio	0.36	0.37				0.25		0.50				0.09

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 32 (40%), Referenced to phase 2:EBWB, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.73
Intersection Signal Delay: 11.4 Intersection LOS: B
Intersection Capacity Utilization 72.3% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) & Route 58 (Black Rock Turnpike)/Route 58 (Tunxis Hill Cut



Lane Group	NER2	SWL	SWT	SWR
Turn Bay Length (ft)				
Base Capacity (vph)			118	
Starvation Cap Reductn			0	
Spillback Cap Reductn			0	
Storage Cap Reductn			0	
Reduced v/c Ratio			0.12	

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	440	11	36	411	3	61
Future Volume (vph)	440	11	36	411	3	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	10	10
Storage Length (ft)		0	0		0	50
Storage Lanes		0	0		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00
Frt	0.996					0.850
Flt Protected				0.996	0.950	
Satd. Flow (prot)	3374	0	0	1776	1636	1463
Flt Permitted				0.996	0.950	
Satd. Flow (perm)	3374	0	0	1776	1636	1463
Link Speed (mph)	30			30	25	
Link Distance (ft)	1095			214	782	
Travel Time (s)	24.9			4.9	21.3	
Peak Hour Factor	0.85	0.85	0.86	0.86	0.88	0.88
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	518	13	42	478	3	69
Shared Lane Traffic (%)						
Lane Group Flow (vph)	531	0	0	520	3	69
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 49.5%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	440	11	36	411	3	61
Future Vol, veh/h	440	11	36	411	3	61
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	86	86	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	518	13	42	478	3	69

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	531	0	1086	265
Stage 1	-	-	-	-	524	-
Stage 2	-	-	-	-	562	-
Critical Hdwy	-	-	4.145	-	6.645	6.945
Critical Hdwy Stg 1	-	-	-	-	5.845	-
Critical Hdwy Stg 2	-	-	-	-	5.445	-
Follow-up Hdwy	-	-	2.2285	-	3.5285	3.3285
Pot Cap-1 Maneuver	-	-	1028	-	223	731
Stage 1	-	-	-	-	557	-
Stage 2	-	-	-	-	567	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1028	-	211	731
Mov Cap-2 Maneuver	-	-	-	-	211	-
Stage 1	-	-	-	-	557	-
Stage 2	-	-	-	-	535	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	11
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	211	731	-	-	1028	-
HCM Lane V/C Ratio	0.016	0.095	-	-	0.041	-
HCM Control Delay (s)	22.3	10.4	-	-	8.7	0
HCM Lane LOS	C	B	-	-	A	A
HCM 95th %tile Q(veh)	0	0.3	-	-	0.1	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	21	65	49	406	484	28
Future Volume (vph)	21	65	49	406	484	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	12	12
Storage Length (ft)	0	0	25			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt	0.898				0.993	
Flt Protected	0.988			0.995		
Satd. Flow (prot)	1820	0	0	3421	1797	0
Flt Permitted	0.988			0.995		
Satd. Flow (perm)	1820	0	0	3421	1797	0
Link Speed (mph)	25			30	30	
Link Distance (ft)	586			395	218	
Travel Time (s)	16.0			9.0	5.0	
Peak Hour Factor	0.90	0.90	0.94	0.94	0.87	0.87
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	23	72	52	432	556	32
Shared Lane Traffic (%)						
Lane Group Flow (vph)	95	0	0	484	588	0
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 55.0%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	21	65	49	406	484	28
Future Vol, veh/h	21	65	49	406	484	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	25	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	94	94	87	87
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	23	72	52	432	556	32

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	892	572	589	0	-	0
Stage 1	572	-	-	-	-	-
Stage 2	320	-	-	-	-	-
Critical Hdwy	6.675	6.275	4.175	-	-	-
Critical Hdwy Stg 1	5.475	-	-	-	-	-
Critical Hdwy Stg 2	5.875	-	-	-	-	-
Follow-up Hdwy	3.5475	3.3475	2.2475	-	-	-
Pot Cap-1 Maneuver	292	512	967	-	-	-
Stage 1	556	-	-	-	-	-
Stage 2	702	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	271	512	967	-	-	-
Mov Cap-2 Maneuver	271	-	-	-	-	-
Stage 1	556	-	-	-	-	-
Stage 2	652	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	16	1.2	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	967	-	421	-	-
HCM Lane V/C Ratio	0.054	-	0.227	-	-
HCM Control Delay (s)	8.9	0.3	16	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.2	-	0.9	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	0	1	54	4	57	4	802	112	128	975	5
Future Volume (vph)	10	0	1	54	4	57	4	802	112	128	975	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	16	12	12	13	12	12	13	12
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		0.990			0.932			0.983			0.999	
Flt Protected		0.956			0.977						0.994	
Satd. Flow (prot)	0	1998	0	0	1922	0	0	1892	0	0	1911	0
Flt Permitted		0.689			0.844			0.996			0.780	
Satd. Flow (perm)	0	1440	0	0	1661	0	0	1885	0	0	1500	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		38			53			29			1	
Link Speed (mph)		25			30			35			35	
Link Distance (ft)		378			442			1898			522	
Travel Time (s)		10.3			10.0			37.0			10.2	
Peak Hour Factor	0.80	0.80	0.80	0.91	0.91	0.91	0.92	0.92	0.92	0.87	0.87	0.87
Adj. Flow (vph)	13	0	1	59	4	63	4	872	122	147	1121	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	14	0	0	126	0	0	998	0	0	1274	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	11.7	11.7		11.7	11.7		20.6	20.6		20.6	20.6	
Total Split (s)	11.7	11.7		11.7	11.7		63.3	63.3		63.3	63.3	
Total Split (%)	15.6%	15.6%		15.6%	15.6%		84.4%	84.4%		84.4%	84.4%	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.4	1.4		1.4	1.4		1.6	1.6		1.6	1.6	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.7			4.7			5.6			5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Min	C-Min		C-Min	C-Min	
Act Effct Green (s)		7.0			7.0			61.2			61.2	
Actuated g/C Ratio		0.09			0.09			0.82			0.82	
v/c Ratio		0.08			0.62			0.65			1.04	
Control Delay		4.1			35.1			2.7			50.5	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		4.1			35.1			2.7			50.5	
LOS		A			D			A			D	
Approach Delay		4.1			35.1			2.7			50.5	
Approach LOS		A			D			A			D	
Queue Length 50th (ft)		0			33			85			~691	
Queue Length 95th (ft)		4			#101			82			#882	
Internal Link Dist (ft)		298			362			1818			442	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		168			203			1542			1223	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.08			0.62			0.65			1.04	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 8 (11%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.04
Intersection Signal Delay: 29.6 Intersection LOS: C
Intersection Capacity Utilization 127.4% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive

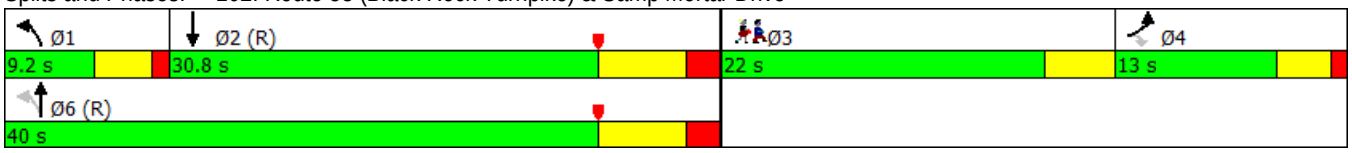
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Lane Configurations							
Traffic Volume (vph)	178	344	135	808	946	88	
Future Volume (vph)	178	344	135	808	946	88	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	10	10	11	11	12	12	
Storage Length (ft)	0	50	100			0	
Storage Lanes	1	1	1			0	
Taper Length (ft)	25		50				
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	
Frt		0.850			0.987		
Flt Protected	0.950		0.950				
Satd. Flow (prot)	1652	1478	1711	1801	3493	0	
Flt Permitted	0.950		0.162				
Satd. Flow (perm)	1652	1478	292	1801	3493	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		316			14		
Link Speed (mph)	25			30	35		
Link Distance (ft)	445			510	341		
Travel Time (s)	12.1			11.6	6.6		
Peak Hour Factor	0.90	0.90	0.88	0.88	0.95	0.95	
Adj. Flow (vph)	198	382	153	918	996	93	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	198	382	153	918	1089	0	
Turn Type	Prot	Perm	pm+pt	NA	NA		
Protected Phases	4		1	6	2		3
Permitted Phases		4	6				
Detector Phase	4	4	1	6	2		
Switch Phase							
Minimum Initial (s)	9.0	9.0	5.0	15.0	15.0		7.0
Minimum Split (s)	13.0	13.0	9.2	21.9	21.9		22.0
Total Split (s)	13.0	13.0	9.2	40.0	30.8		22.0
Total Split (%)	17.3%	17.3%	12.3%	53.3%	41.1%		29%
Yellow Time (s)	3.0	3.0	3.2	4.9	4.9		4.0
All-Red Time (s)	1.0	1.0	1.0	2.0	2.0		0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	4.0	4.0	4.2	6.9	6.9		
Lead/Lag	Lag	Lag	Lead		Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes		Yes		Yes
Recall Mode	None	None	None	C-Max	C-Max		None
Act Effct Green (s)	16.1	16.1	50.7	48.0	36.2		
Actuated g/C Ratio	0.21	0.21	0.68	0.64	0.48		
v/c Ratio	0.56	0.68	0.45	0.80	0.64		
Control Delay	32.4	12.3	12.3	15.1	12.4		
Queue Delay	0.0	0.0	0.0	0.0	0.0		
Total Delay	32.4	12.3	12.3	15.1	12.4		
LOS	C	B	B	B	B		
Approach Delay	19.2			14.7	12.4		
Approach LOS	B			B	B		
Queue Length 50th (ft)	83	26	15	149	136		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Queue Length 95th (ft)	137	104	m64	#305	m183		
Internal Link Dist (ft)	365			430	261		
Turn Bay Length (ft)		50	100				
Base Capacity (vph)	354	565	341	1152	1691		
Starvation Cap Reductn	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0		
Reduced v/c Ratio	0.56	0.68	0.45	0.80	0.64		

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 40 (53%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 14.7 Intersection LOS: B
Intersection Capacity Utilization 61.5% ICU Level of Service B
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive

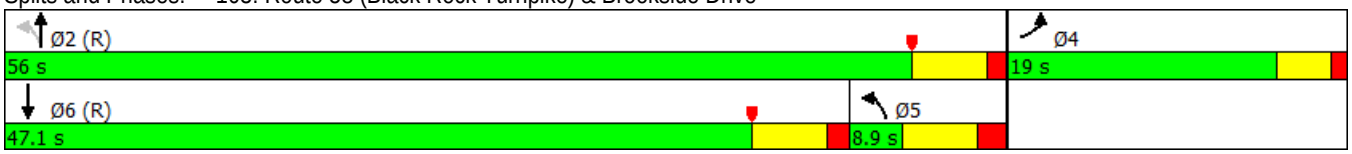


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	135	73	40	778	1171	166
Future Volume (vph)	135	73	40	778	1171	166
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	12	12
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Frt	0.953				0.981	
Flt Protected	0.969			0.998		
Satd. Flow (prot)	1950	0	0	3532	3472	0
Flt Permitted	0.969			0.828		
Satd. Flow (perm)	1950	0	0	2930	3472	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	32				33	
Link Speed (mph)	25			30	30	
Link Distance (ft)	347			293	336	
Travel Time (s)	9.5			6.7	7.6	
Peak Hour Factor	0.80	0.80	0.97	0.97	0.97	0.97
Adj. Flow (vph)	169	91	41	802	1207	171
Shared Lane Traffic (%)						
Lane Group Flow (vph)	260	0	0	843	1378	0
Turn Type	Prot		pm+pt	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases			2			
Detector Phase	4		5	2	6	
Switch Phase						
Minimum Initial (s)	9.0		3.0	15.0	15.0	
Minimum Split (s)	13.0		8.9	20.4	20.4	
Total Split (s)	19.0		8.9	56.0	47.1	
Total Split (%)	25.3%		11.9%	74.7%	62.8%	
Yellow Time (s)	3.0		4.2	4.2	4.2	
All-Red Time (s)	1.0		1.7	1.2	1.2	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	4.0			5.4	5.4	
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None	C-Max	C-Max	
Act Effct Green (s)	12.6			53.0	53.0	
Actuated g/C Ratio	0.17			0.71	0.71	
v/c Ratio	0.73			0.41	0.56	
Control Delay	38.3			4.2	4.3	
Queue Delay	0.0			0.2	0.1	
Total Delay	38.4			4.4	4.4	
LOS	D			A	A	
Approach Delay	38.4			4.4	4.4	
Approach LOS	D			A	A	
Queue Length 50th (ft)	100			38	68	
Queue Length 95th (ft)	147			88	137	
Internal Link Dist (ft)	267			213	256	
Turn Bay Length (ft)						

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Base Capacity (vph)	415			2069	2462	
Starvation Cap Reductn	0			478	0	
Spillback Cap Reductn	1			0	206	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.63			0.53	0.61	

Intersection Summary	
Area Type: Other	
Cycle Length: 75	
Actuated Cycle Length: 75	
Offset: 44 (59%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.73	
Intersection Signal Delay: 8.0	Intersection LOS: A
Intersection Capacity Utilization 70.9%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 103: Route 58 (Black Rock Turnpike) & Brookside Drive



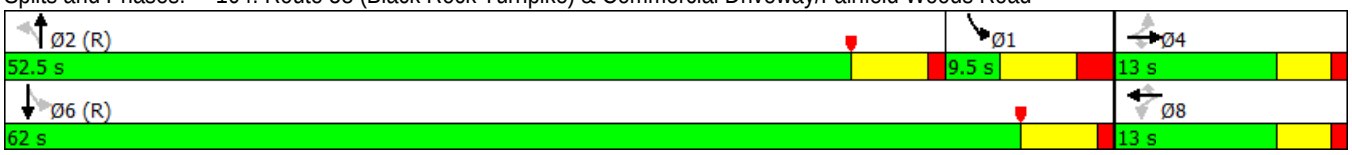
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	18	46	69	15	110	47	706	90	292	918	37
Future Volume (vph)	29	18	46	69	15	110	47	706	90	292	918	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	11	12	11	12	12	11	12
Storage Length (ft)	0		0	0		75	0		0	0		0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt			0.850			0.850		0.984			0.996	
Flt Protected		0.970			0.961			0.997			0.988	
Satd. Flow (prot)	0	1807	1583	0	1790	1531	0	3356	0	0	3367	0
Flt Permitted		0.764			0.724			0.813			0.602	
Satd. Flow (perm)	0	1423	1583	0	1349	1531	0	2737	0	0	2051	0
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			128					33			12	
Link Speed (mph)		30			25			30			30	
Link Distance (ft)		87			499			713			293	
Travel Time (s)		2.0			13.6			16.2			6.7	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.93	0.93	0.93	0.98	0.98	0.98
Adj. Flow (vph)	36	23	58	86	19	138	51	759	97	298	937	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	59	58	0	105	138	0	907	0	0	1273	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	4	4	4	8	8	8	2	2		1	6	
Switch Phase												
Minimum Initial (s)	9.0	9.0	9.0	9.0	9.0	9.0	15.0	15.0		3.0	15.0	
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	20.3	20.3		9.5	20.3	
Total Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	52.5	52.5		9.5	62.0	
Total Split (%)	17.3%	17.3%	17.3%	17.3%	17.3%	17.3%	70.0%	70.0%		12.7%	82.7%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.3	4.3		4.3	4.3	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		2.2	1.0	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0		0.0			0.0	
Total Lost Time (s)		4.0	4.0		4.0	4.0		5.3			5.3	
Lead/Lag							Lead	Lead		Lag		
Lead-Lag Optimize?							Yes	Yes		Yes		
Recall Mode	None	None	None	None	None	None	C-Max	C-Max		None	C-Max	
Act Effct Green (s)		9.0	9.0		9.0	9.0		56.7			56.7	
Actuated g/C Ratio		0.12	0.12		0.12	0.12		0.76			0.76	
v/c Ratio		0.35	0.19		0.65	0.75		0.44			0.82	
Control Delay		36.6	1.4		52.6	59.3		3.9			10.1	
Queue Delay		0.0	0.0		0.0	0.0		0.0			0.4	
Total Delay		36.6	1.4		52.6	59.3		3.9			10.5	
LOS		D	A		D	E		A			B	
Approach Delay		19.1			56.4			3.9			10.5	
Approach LOS		B			E			A			B	
Queue Length 50th (ft)		26	0		47	63		57			65	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		54	0		#96	#125		82			213	
Internal Link Dist (ft)		7			419			633			213	
Turn Bay Length (ft)						75						
Base Capacity (vph)		170	302		161	183		2077			1553	
Starvation Cap Reductn		0	0		0	0		0			51	
Spillback Cap Reductn		0	0		0	0		0			0	
Storage Cap Reductn		0	0		0	0		0			0	
Reduced v/c Ratio		0.35	0.19		0.65	0.75		0.44			0.85	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 52 (69%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.82
Intersection Signal Delay: 13.0 Intersection LOS: B
Intersection Capacity Utilization 82.2% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	791	157	148	625	131	232	279	177	189	270	44
Future Volume (vph)	90	791	157	148	625	131	232	279	177	189	270	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	11	12	12	11	11	12	12	12	12
Storage Length (ft)	200		0	175		0	210		0	170		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	85			75			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.975			0.974			0.942			0.979	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1711	3336	0	1711	3447	0	1711	1696	0	1770	1824	0
Flt Permitted	0.950			0.950			0.233			0.143		
Satd. Flow (perm)	1711	3336	0	1711	3447	0	420	1696	0	266	1824	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		15			16			20				
Link Speed (mph)		30			30			30			25	
Link Distance (ft)		436			368			438			355	
Travel Time (s)		9.9			8.4			10.0			9.7	
Peak Hour Factor	0.94	0.94	0.94	0.97	0.97	0.97	0.89	0.89	0.89	0.87	0.87	0.87
Adj. Flow (vph)	96	841	167	153	644	135	261	313	199	217	310	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	96	1008	0	153	779	0	261	512	0	217	361	0
Turn Type	Prot	NA		Prot	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases							4			8		
Detector Phase	5	2		1	6		7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	15.0		5.0	15.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	21.6		9.7	21.6		9.3	16.8		9.3	16.8	
Total Split (s)	14.2	43.0		15.0	43.8		19.2	39.0		15.0	34.8	
Total Split (%)	9.8%	29.7%		10.3%	30.2%		13.2%	26.9%		10.3%	24.0%	
Yellow Time (s)	3.0	4.1		3.0	4.1		3.3	4.4		3.3	4.4	
All-Red Time (s)	1.7	2.5		1.7	2.5		1.0	2.4		1.0	2.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	6.6		4.7	6.6		4.3	6.8		4.3	6.8	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Min		None	Min		None	None		None	None	
Act Effct Green (s)	9.2	36.4		10.3	37.5		49.6	32.2		41.2	28.0	
Actuated g/C Ratio	0.08	0.32		0.09	0.33		0.44	0.29		0.37	0.25	
v/c Ratio	0.68	0.92		0.97	0.67		0.73	1.02		0.90	0.79	
Control Delay	74.1	50.3		117.2	34.8		34.0	84.5		63.7	53.3	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	74.1	50.3		117.2	34.8		34.0	84.5		63.7	53.3	
LOS	E	D		F	C		C	F		E	D	
Approach Delay		52.3			48.3			67.5			57.2	
Approach LOS		D			D			E			E	
Queue Length 50th (ft)	68	361		112	247		120	~381		99	244	

Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	33.0
Total Split (s)	33.0
Total Split (%)	23%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	#143	#492		#244	316		#191	#581		#227	#360	
Internal Link Dist (ft)		356			288			358			275	
Turn Bay Length (ft)	200			175			210			170		
Base Capacity (vph)	145	1094		157	1163		357	501		241	456	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.66	0.92		0.97	0.67		0.73	1.02		0.90	0.79	

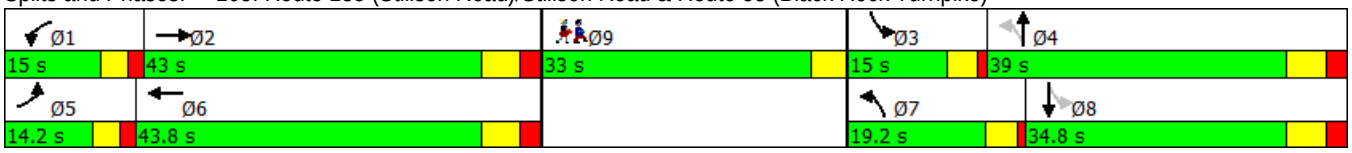
Intersection Summary

Area Type: Other
Cycle Length: 145
Actuated Cycle Length: 112
Natural Cycle: 145
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 1.02
Intersection Signal Delay: 55.5 Intersection LOS: E
Intersection Capacity Utilization 89.7% ICU Level of Service E
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

Splits and Phases: 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike)



Lane Group	Ø9
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	74	875	22	77	678	62	173	12	115	48	5	31
Future Volume (vph)	74	875	22	77	678	62	173	12	115	48	5	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	13	13	12	13	13
Storage Length (ft)	0		0	0		0	0		25	0		25
Storage Lanes	0		0	0		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997			0.989				0.850			0.850
Flt Protected		0.996			0.995			0.955			0.957	
Satd. Flow (prot)	0	3397	0	0	3367	0	0	1838	1636	0	1842	1636
Flt Permitted		0.726			0.729			0.695			0.688	
Satd. Flow (perm)	0	2476	0	0	2467	0	0	1338	1636	0	1324	1636
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			12				157			157
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		442			502			142			135	
Travel Time (s)		10.0			11.4			3.9			3.7	
Peak Hour Factor	0.93	0.93	0.93	0.90	0.90	0.90	0.84	0.84	0.84	0.85	0.85	0.85
Adj. Flow (vph)	80	941	24	86	753	69	206	14	137	56	6	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1045	0	0	908	0	0	220	137	0	62	36
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2			4		4	4		4
Detector Phase	1	6		2	2		4	4	4	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	15.0		15.0	15.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	9.0	20.8		20.8	20.8		11.0	11.0	11.0	11.0	11.0	11.0
Total Split (s)	9.0	40.0		31.0	31.0		13.0	13.0	13.0	13.0	13.0	13.0
Total Split (%)	12.0%	53.3%		41.3%	41.3%		17.3%	17.3%	17.3%	17.3%	17.3%	17.3%
Yellow Time (s)	3.0	4.3		4.3	4.3		3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.5		1.5	1.5		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0			0.0			0.0	0.0		0.0	0.0
Total Lost Time (s)		5.8			5.8			4.0	4.0		4.0	4.0
Lead/Lag	Lead			Lag	Lag		Lag	Lag	Lag	Lag	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Min	C-Max		C-Max	C-Max		None	None	None	None	None	None
Act Effct Green (s)		41.6			32.1			23.6	23.6		23.6	23.6
Actuated g/C Ratio		0.55			0.43			0.31	0.31		0.31	0.31
v/c Ratio		0.74			0.86			0.52	0.22		0.15	0.06
Control Delay		15.4			21.6			27.5	3.9		21.1	0.2
Queue Delay		0.0			0.0			0.0	0.0		0.0	0.0
Total Delay		15.4			21.6			27.5	3.9		21.1	0.2
LOS		B			C			C	A		C	A
Approach Delay		15.4			21.6			18.5			13.4	
Approach LOS		B			C			B			B	
Queue Length 50th (ft)		140			93			86	0		21	0

Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	22.0
Total Split (s)	22.0
Total Split (%)	29%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	

Lanes, Volumes, Timings

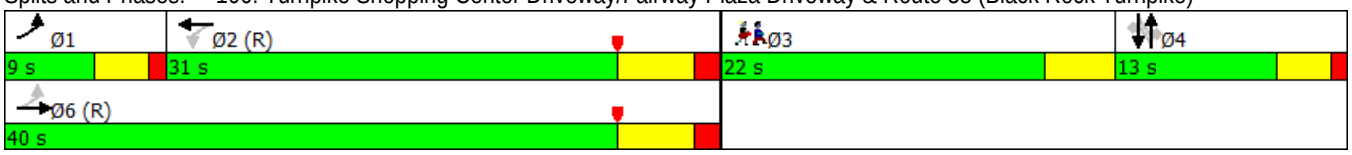
Timing Plan: Weekday PM Peak

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		190			#159			142	24		47	0
Internal Link Dist (ft)		362			422			62			55	
Turn Bay Length (ft)									25			25
Base Capacity (vph)		1419			1061			421	623		417	623
Starvation Cap Reductn		0			0			0	0		0	0
Spillback Cap Reductn		0			0			0	0		0	0
Storage Cap Reductn		0			0			0	0		0	0
Reduced v/c Ratio		0.74			0.86			0.52	0.22		0.15	0.06

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 14 (19%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 18.1 Intersection LOS: B
Intersection Capacity Utilization 79.9% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike)



Lane Group	Ø3
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

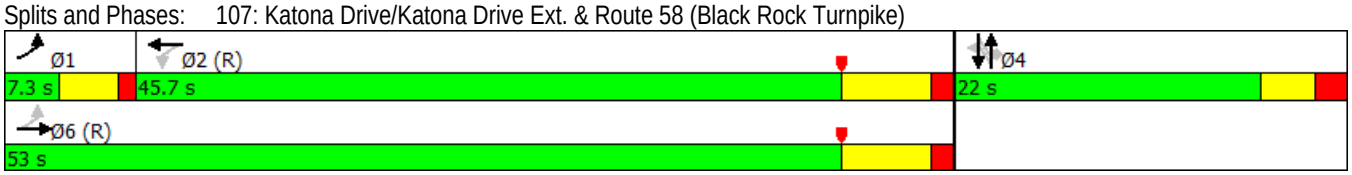
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	989	107	48	765	2	106	3	67	1	3	10
Future Volume (vph)	11	989	107	48	765	2	106	3	67	1	3	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	10	10	12	12	12
Storage Length (ft)	0		0	0		0	0		250	0		0
Storage Lanes	0		0	0		0	0		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.986							0.850		0.885	
Flt Protected		0.999			0.997			0.954		0.950		
Satd. Flow (prot)	0	3370	0	0	3411	0	0	1659	1478	1770	1649	0
Flt Permitted		0.949			0.805			0.720		0.655		
Satd. Flow (perm)	0	3201	0	0	2754	0	0	1252	1478	1220	1649	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		29							111		13	
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		502			407			423			198	
Travel Time (s)		11.4			9.3			11.5			5.4	
Peak Hour Factor	0.93	0.93	0.93	0.96	0.96	0.96	0.82	0.82	0.82	0.80	0.80	0.80
Adj. Flow (vph)	12	1063	115	50	797	2	129	4	82	1	4	13
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1190	0	0	849	0	0	133	82	1	17	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2			4		4	4		
Detector Phase	1	6		2	2		4	4	4	4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0		7.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	7.3	21.3		21.3	21.3		11.9	11.9	11.9	11.9	11.9	
Total Split (s)	7.3	53.0		45.7	45.7		22.0	22.0	22.0	22.0	22.0	
Total Split (%)	9.7%	70.7%		60.9%	60.9%		29.3%	29.3%	29.3%	29.3%	29.3%	
Yellow Time (s)	3.3	5.0		5.0	5.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.0	1.3		1.3	1.3		1.9	1.9	1.9	1.9	1.9	
Lost Time Adjust (s)		0.0			0.0			0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.3			6.3			4.9	4.9	4.9	4.9	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Act Effct Green (s)		54.4			39.4			11.8	11.8	11.8	11.8	
Actuated g/C Ratio		0.73			0.53			0.16	0.16	0.16	0.16	
v/c Ratio		0.51			0.59			0.68	0.25	0.01	0.06	
Control Delay		2.3			5.7			46.5	5.0	24.0	14.9	
Queue Delay		0.1			0.0			0.0	0.0	0.0	0.0	
Total Delay		2.4			5.7			46.5	5.0	24.0	14.9	
LOS		A			A			D	A	C	B	
Approach Delay		2.4			5.7			30.7			15.4	
Approach LOS		A			A			C			B	
Queue Length 50th (ft)		30			36			59	0	0	2	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		53			33			94	15	4	14	
Internal Link Dist (ft)		422			327			343			118	
Turn Bay Length (ft)									250			
Base Capacity (vph)		2350			1446			285	422	278	386	
Starvation Cap Reductn		184			0			0	0	0	0	
Spillback Cap Reductn		0			0			0	0	0	0	
Storage Cap Reductn		0			0			0	0	0	0	
Reduced v/c Ratio		0.55			0.59			0.47	0.19	0.00	0.04	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 24 (32%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 50
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.68
Intersection Signal Delay: 6.4 Intersection LOS: A
Intersection Capacity Utilization 79.3% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike)



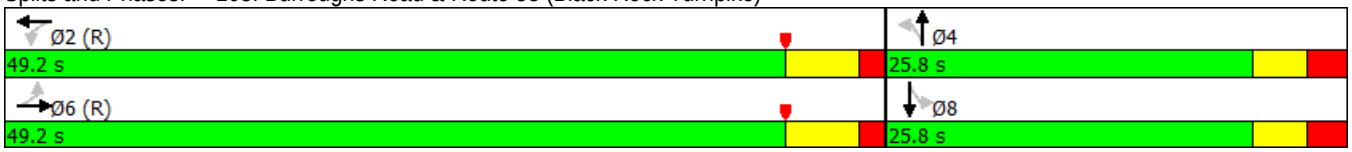
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	86	973	15	7	746	156	18	110	7	129	52	52
Future Volume (vph)	86	973	15	7	746	156	18	110	7	129	52	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	16	12	12	16	12
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.974			0.993			0.970	
Flt Protected		0.996						0.993			0.973	
Satd. Flow (prot)	0	3401	0	0	3332	0	0	2082	0	0	1992	0
Flt Permitted		0.773			0.946			0.939			0.733	
Satd. Flow (perm)	0	2639	0	0	3152	0	0	1968	0	0	1501	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			56			4			19	
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		407			996			466			300	
Travel Time (s)		9.3			22.6			12.7			8.2	
Peak Hour Factor	0.99	0.99	0.99	0.92	0.92	0.92	0.90	0.90	0.90	0.93	0.93	0.93
Adj. Flow (vph)	87	983	15	8	811	170	20	122	8	139	56	56
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1085	0	0	989	0	0	150	0	0	251	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		2	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		9.0	9.0		9.0	9.0	
Minimum Split (s)	20.6	20.6		20.6	20.6		14.4	14.4		14.4	14.4	
Total Split (s)	49.2	49.2		49.2	49.2		25.8	25.8		25.8	25.8	
Total Split (%)	65.6%	65.6%		65.6%	65.6%		34.4%	34.4%		34.4%	34.4%	
Yellow Time (s)	4.1	4.1		4.1	4.1		3.1	3.1		3.1	3.1	
All-Red Time (s)	1.5	1.5		1.5	1.5		2.3	2.3		2.3	2.3	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.6			5.6			5.4			5.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		48.7			48.7			15.3			15.3	
Actuated g/C Ratio		0.65			0.65			0.20			0.20	
v/c Ratio		0.63			0.48			0.37			0.78	
Control Delay		5.6			6.2			26.3			42.4	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		5.6			6.2			26.3			42.4	
LOS		A			A			C			D	
Approach Delay		5.6			6.2			26.3			42.4	
Approach LOS		A			A			C			D	
Queue Length 50th (ft)		48			53			58			102	
Queue Length 95th (ft)		72			155			100			167	
Internal Link Dist (ft)		327			916			386			220	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		1713			2064			538			422	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.63			0.48			0.28			0.59	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 22 (29%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 50
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.78
Intersection Signal Delay: 10.8 Intersection LOS: B
Intersection Capacity Utilization 89.2% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 108: Burroughs Road & Route 58 (Black Rock Turnpike)



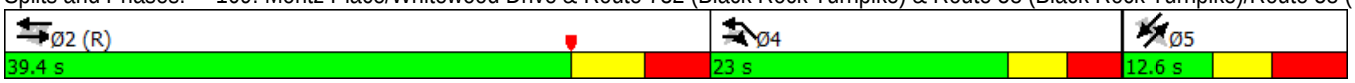
Lane Group	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NWL2	NWL	NWR	NWR2	NEL
Lane Configurations												
Traffic Volume (vph)	545	555	3	22	8	383	2	2	479	5	40	7
Future Volume (vph)	545	555	3	22	8	383	2	2	479	5	40	7
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	11	11	12	12	10	12	12	12
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.97	0.95	0.95	1.00
Frt		0.850				0.999			0.987			
Flt Protected						0.996			0.956			
Satd. Flow (prot)	1863	1583	0	0	0	3404	0	0	3182	0	0	0
Flt Permitted						0.882			0.952			
Satd. Flow (perm)	1863	1583	0	0	0	3015	0	0	3169	0	0	0
Right Turn on Red			Yes				Yes				Yes	
Satd. Flow (RTOR)		67				1			180			
Link Speed (mph)	30					30			30			
Link Distance (ft)	996					549			218			
Travel Time (s)	22.6					12.5			5.0			
Peak Hour Factor	0.97	0.97	0.97	0.86	0.86	0.86	0.86	0.91	0.91	0.91	0.91	0.80
Adj. Flow (vph)	562	572	3	26	9	445	2	2	526	5	44	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	562	575	0	0	0	482	0	0	577	0	0	0
Turn Type	NA	pm+ov		Perm	Perm	NA		D.Pm	Prot			Perm
Protected Phases	2	4				2			4			
Permitted Phases		2		2	2			4				5
Detector Phase	2	4		2	2	2		4	4			5
Switch Phase												
Minimum Initial (s)	15.0	9.0		15.0	15.0	15.0		9.0	9.0			5.0
Minimum Split (s)	22.8	15.4		22.8	22.8	22.8		15.4	15.4			12.6
Total Split (s)	39.4	23.0		39.4	39.4	39.4		23.0	23.0			12.6
Total Split (%)	52.5%	30.7%		52.5%	52.5%	52.5%		30.7%	30.7%			16.8%
Yellow Time (s)	4.1	3.3		4.1	4.1	4.1		3.3	3.3			3.3
All-Red Time (s)	3.7	3.1		3.7	3.7	3.7		3.1	3.1			4.3
Lost Time Adjust (s)	0.0	0.0				0.0			0.0			
Total Lost Time (s)	7.8	6.4				7.8			6.4			
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Min	None		C-Min	C-Min	C-Min		None	None			None
Act Effct Green (s)	42.4	67.3				42.4			13.3			
Actuated g/C Ratio	0.57	0.90				0.57			0.18			
v/c Ratio	0.53	0.40				0.28			0.81			
Control Delay	10.6	2.8				11.0			29.8			
Queue Delay	0.0	0.0				0.0			0.0			
Total Delay	10.6	2.8				11.0			29.8			
LOS	B	A				B			C			
Approach Delay	6.7					11.0			29.8			
Approach LOS	A					B			C			
Queue Length 50th (ft)	95	0				45			92			
Queue Length 95th (ft)	279	76				108			139			
Internal Link Dist (ft)	916					469			138			
Turn Bay Length (ft)												

Lane Group	NET	NER	NER2	SWL	SWT	SWR
Lane Configurations						
Traffic Volume (vph)	0	1	3	2	0	3
Future Volume (vph)	0	1	3	2	0	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	15	12	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.952				0.923	
Flt Protected	0.969				0.979	
Satd. Flow (prot)	1718	0	0	0	1683	0
Flt Permitted						
Satd. Flow (perm)	1773	0	0	0	1719	0
Right Turn on Red			No			No
Satd. Flow (RTOR)						
Link Speed (mph)	25				25	
Link Distance (ft)	653				695	
Travel Time (s)	17.8				19.0	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	0	1	4	3	0	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	14	0	0	0	7	0
Turn Type	NA			Perm	NA	
Protected Phases	5				5	
Permitted Phases				5		
Detector Phase	5			5	5	
Switch Phase						
Minimum Initial (s)	5.0			5.0	5.0	
Minimum Split (s)	12.6			12.6	12.6	
Total Split (s)	12.6			12.6	12.6	
Total Split (%)	16.8%			16.8%	16.8%	
Yellow Time (s)	3.3			3.3	3.3	
All-Red Time (s)	4.3			4.3	4.3	
Lost Time Adjust (s)	0.0				0.0	
Total Lost Time (s)	7.6				7.6	
Lead/Lag						
Lead-Lag Optimize?						
Recall Mode	None			None	None	
Act Effct Green (s)	5.1				5.1	
Actuated g/C Ratio	0.07				0.07	
v/c Ratio	0.12				0.06	
Control Delay	35.2				34.0	
Queue Delay	0.0				0.0	
Total Delay	35.2				34.0	
LOS	D				C	
Approach Delay	35.2				34.0	
Approach LOS	D				C	
Queue Length 50th (ft)	6				3	
Queue Length 95th (ft)	21				14	
Internal Link Dist (ft)	573				615	
Turn Bay Length (ft)						

Lane Group	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NWL2	NWL	NWR	NWR2	NEL
Base Capacity (vph)	1053	1412				1705			841			
Starvation Cap Reductn	0	0				0			0			
Spillback Cap Reductn	0	0				0			0			
Storage Cap Reductn	0	0				0			0			
Reduced v/c Ratio	0.53	0.41				0.28			0.69			

Intersection Summary	
Area Type:	Other
Cycle Length: 75	
Actuated Cycle Length: 75	
Offset: 44 (59%), Referenced to phase 2:EBWB, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.81	
Intersection Signal Delay: 13.9	Intersection LOS: B
Intersection Capacity Utilization 71.0%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) & Route 58 (Black Rock Turnpike)/Route 58 (Tunxis Hill Cut



Lane Group	NET	NER	NER2	SWL	SWT	SWR
Base Capacity (vph)	120				116	
Starvation Cap Reductn	0				0	
Spillback Cap Reductn	0				0	
Storage Cap Reductn	0				0	
Reduced v/c Ratio	0.12				0.06	

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	630	6	49	414	0	84
Future Volume (vph)	630	6	49	414	0	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	10	10
Storage Length (ft)		0	0		0	50
Storage Lanes		0	0		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00
Frt	0.999					0.850
Flt Protected				0.995		
Satd. Flow (prot)	3418	0	0	1792	1739	1478
Flt Permitted				0.995		
Satd. Flow (perm)	3418	0	0	1792	1739	1478
Link Speed (mph)	30			30	25	
Link Distance (ft)	1095			214	782	
Travel Time (s)	24.9			4.9	21.3	
Peak Hour Factor	0.95	0.95	0.90	0.90	0.83	0.83
Adj. Flow (vph)	663	6	54	460	0	101
Shared Lane Traffic (%)						
Lane Group Flow (vph)	669	0	0	514	0	101
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 48.8%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	630	6	49	414	0	84
Future Vol, veh/h	630	6	49	414	0	84
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	90	90	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	663	6	54	460	0	101

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	669	0	1235	335
Stage 1	-	-	-	-	666	-
Stage 2	-	-	-	-	569	-
Critical Hdwy	-	-	4.13	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.219	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	919	-	181	662
Stage 1	-	-	-	-	473	-
Stage 2	-	-	-	-	565	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	919	-	167	662
Mov Cap-2 Maneuver	-	-	-	-	167	-
Stage 1	-	-	-	-	473	-
Stage 2	-	-	-	-	520	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	11.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	662	-	-	919	-
HCM Lane V/C Ratio	-	0.153	-	-	0.059	-
HCM Control Delay (s)	0	11.4	-	-	9.2	0
HCM Lane LOS	A	B	-	-	A	A
HCM 95th %tile Q(veh)	-	0.5	-	-	0.2	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	34	96	53	492	562	20
Future Volume (vph)	34	96	53	492	562	20
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	12	12
Storage Length (ft)	0	0	25			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt	0.900				0.995	
Flt Protected	0.987			0.995		
Satd. Flow (prot)	1875	0	0	3522	1853	0
Flt Permitted	0.987			0.995		
Satd. Flow (perm)	1875	0	0	3522	1853	0
Link Speed (mph)	25			30	30	
Link Distance (ft)	586			395	218	
Travel Time (s)	16.0			9.0	5.0	
Peak Hour Factor	0.83	0.83	0.91	0.91	0.95	0.95
Adj. Flow (vph)	41	116	58	541	592	21
Shared Lane Traffic (%)						
Lane Group Flow (vph)	157	0	0	599	613	0
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 63.7%	ICU Level of Service B
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	2.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	34	96	53	492	562	20
Future Vol, veh/h	34	96	53	492	562	20
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	25	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	91	91	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	41	116	58	541	592	21

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	989	602	613	0	-	0
Stage 1	602	-	-	-	-	-
Stage 2	387	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	258	499	964	-	-	-
Stage 1	546	-	-	-	-	-
Stage 2	657	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	236	499	964	-	-	-
Mov Cap-2 Maneuver	236	-	-	-	-	-
Stage 1	546	-	-	-	-	-
Stage 2	600	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	20.6	1.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	964	-	386	-	-
HCM Lane V/C Ratio	0.06	-	0.406	-	-
HCM Control Delay (s)	9	0.3	20.6	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.2	-	1.9	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	1	2	75	1	111	2	820	77	71	895	8
Future Volume (vph)	6	1	2	75	1	111	2	820	77	71	895	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	16	12	12	13	12	12	13	12
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		0.966			0.920			0.988			0.999	
Flt Protected		0.968			0.980						0.996	
Satd. Flow (prot)	0	1974	0	0	1903	0	0	1902	0	0	1915	0
Flt Permitted		0.719			0.864			0.999			0.872	
Satd. Flow (perm)	0	1466	0	0	1678	0	0	1900	0	0	1677	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			69			14			1	
Link Speed (mph)		25			30			35			35	
Link Distance (ft)		378			442			1898			522	
Travel Time (s)		10.3			10.0			37.0			10.2	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	8	1	3	94	1	139	2	872	82	76	952	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	12	0	0	234	0	0	956	0	0	1037	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	11.7	11.7		11.7	11.7		20.6	20.6		20.6	20.6	
Total Split (s)	18.0	18.0		18.0	18.0		72.0	72.0		72.0	72.0	
Total Split (%)	20.0%	20.0%		20.0%	20.0%		80.0%	80.0%		80.0%	80.0%	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.4	1.4		1.4	1.4		1.6	1.6		1.6	1.6	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.7			4.7			5.6			5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Min	C-Min		C-Min	C-Min	
Act Effct Green (s)		12.0			12.0			67.7			67.7	
Actuated g/C Ratio		0.13			0.13			0.75			0.75	
v/c Ratio		0.06			0.82			0.67			0.82	
Control Delay		29.8			50.4			6.3			15.1	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		29.8			50.4			6.3			15.1	
LOS		C			D			A			B	
Approach Delay		29.8			50.4			6.3			15.1	
Approach LOS		C			D			A			B	
Queue Length 50th (ft)		4			89			122			352	
Queue Length 95th (ft)		18			#150			107			573	
Internal Link Dist (ft)		298			362			1818			442	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		223			310			1436			1265	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.05			0.75			0.67			0.82	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 45 (50%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.82
Intersection Signal Delay: 15.2 Intersection LOS: B
Intersection Capacity Utilization 122.8% ICU Level of Service H
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive

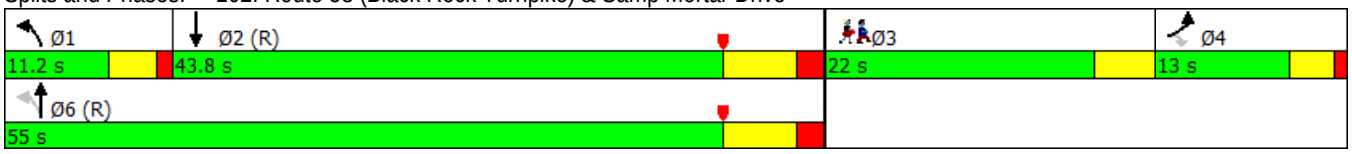
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Lane Configurations							
Traffic Volume (vph)	120	207	144	803	810	77	
Future Volume (vph)	120	207	144	803	810	77	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	10	10	11	11	12	12	
Storage Length (ft)	0	50	100			0	
Storage Lanes	1	1	1			0	
Taper Length (ft)	25		50				
Lane Util. Factor	1.00	1.00	1.00	1.00	0.95	0.95	
Frt		0.850			0.987		
Flt Protected	0.950		0.950				
Satd. Flow (prot)	1652	1478	1711	1801	3493	0	
Flt Permitted	0.950		0.232				
Satd. Flow (perm)	1652	1478	418	1801	3493	0	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		230			13		
Link Speed (mph)	25			30	35		
Link Distance (ft)	445			510	341		
Travel Time (s)	12.1			11.6	6.6		
Peak Hour Factor	0.82	0.82	0.98	0.98	0.90	0.90	
Adj. Flow (vph)	146	252	147	819	900	86	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	146	252	147	819	986	0	
Turn Type	Prot	Perm	pm+pt	NA	NA		
Protected Phases	4		1	6	2		3
Permitted Phases		4	6				
Detector Phase	4	4	1	6	2		
Switch Phase							
Minimum Initial (s)	9.0	9.0	5.0	15.0	15.0		7.0
Minimum Split (s)	13.0	13.0	9.2	21.9	21.9		22.0
Total Split (s)	13.0	13.0	11.2	55.0	43.8		22.0
Total Split (%)	14.4%	14.4%	12.4%	61.1%	48.7%		24%
Yellow Time (s)	3.0	3.0	3.2	4.9	4.9		4.0
All-Red Time (s)	1.0	1.0	1.0	2.0	2.0		0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0		
Total Lost Time (s)	4.0	4.0	4.2	6.9	6.9		
Lead/Lag	Lag	Lag	Lead		Lag		Lead
Lead-Lag Optimize?	Yes	Yes	Yes		Yes		Yes
Recall Mode	None	None	None	C-Max	C-Max		None
Act Effct Green (s)	13.7	13.7	68.1	65.4	54.4		
Actuated g/C Ratio	0.15	0.15	0.76	0.73	0.60		
v/c Ratio	0.58	0.60	0.36	0.63	0.47		
Control Delay	44.5	12.8	4.8	6.4	8.5		
Queue Delay	0.0	0.0	0.0	0.0	0.0		
Total Delay	44.5	12.8	4.8	6.4	8.5		
LOS	D	B	A	A	A		
Approach Delay	24.4			6.1	8.5		
Approach LOS	C			A	A		
Queue Length 50th (ft)	78	11	13	122	166		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Queue Length 95th (ft)	120	56	28	155	157		
Internal Link Dist (ft)	365			430	261		
Turn Bay Length (ft)		50	100				
Base Capacity (vph)	251	419	422	1308	2117		
Starvation Cap Reductn	0	0	0	0	0		
Spillback Cap Reductn	0	0	0	0	0		
Storage Cap Reductn	0	0	0	0	0		
Reduced v/c Ratio	0.58	0.60	0.35	0.63	0.47		

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 88 (98%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.63
Intersection Signal Delay: 10.2 Intersection LOS: B
Intersection Capacity Utilization 58.8% ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive

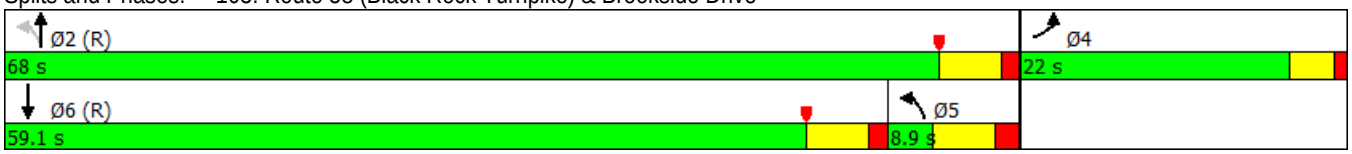


Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	89	59	54	900	952	108
Future Volume (vph)	89	59	54	900	952	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	12	12
Lane Util. Factor	1.00	1.00	0.95	0.95	0.95	0.95
Frt	0.946				0.985	
Flt Protected	0.971			0.997		
Satd. Flow (prot)	1939	0	0	3529	3486	0
Flt Permitted	0.971			0.817		
Satd. Flow (perm)	1939	0	0	2892	3486	0
Right Turn on Red		Yes				Yes
Satd. Flow (RTOR)	33				24	
Link Speed (mph)	25			30	30	
Link Distance (ft)	347			293	336	
Travel Time (s)	9.5			6.7	7.6	
Peak Hour Factor	0.83	0.83	0.98	0.98	0.96	0.96
Adj. Flow (vph)	107	71	55	918	992	113
Shared Lane Traffic (%)						
Lane Group Flow (vph)	178	0	0	973	1105	0
Turn Type	Prot		pm+pt	NA	NA	
Protected Phases	4		5	2	6	
Permitted Phases			2			
Detector Phase	4		5	2	6	
Switch Phase						
Minimum Initial (s)	9.0		3.0	15.0	15.0	
Minimum Split (s)	13.0		8.9	20.4	20.4	
Total Split (s)	22.0		8.9	68.0	59.1	
Total Split (%)	24.4%		9.9%	75.6%	65.7%	
Yellow Time (s)	3.0		4.2	4.2	4.2	
All-Red Time (s)	1.0		1.7	1.2	1.2	
Lost Time Adjust (s)	0.0			0.0	0.0	
Total Lost Time (s)	4.0			5.4	5.4	
Lead/Lag			Lag		Lead	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None		None	C-Max	C-Max	
Act Effct Green (s)	11.7			68.9	68.9	
Actuated g/C Ratio	0.13			0.77	0.77	
v/c Ratio	0.63			0.44	0.41	
Control Delay	40.0			3.6	2.6	
Queue Delay	0.0			0.1	0.0	
Total Delay	40.0			3.7	2.6	
LOS	D			A	A	
Approach Delay	40.0			3.7	2.6	
Approach LOS	D			A	A	
Queue Length 50th (ft)	79			65	30	
Queue Length 95th (ft)	124			100	88	
Internal Link Dist (ft)	267			213	256	
Turn Bay Length (ft)						

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Base Capacity (vph)	414			2212	2672	
Starvation Cap Reductn	0			383	0	
Spillback Cap Reductn	0			0	0	
Storage Cap Reductn	0			0	0	
Reduced v/c Ratio	0.43			0.53	0.41	

Intersection Summary	
Area Type: Other	
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 0 (0%), Referenced to phase 2:NBTL and 6:SBT, Start of Yellow	
Natural Cycle: 50	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.63	
Intersection Signal Delay: 6.0	Intersection LOS: A
Intersection Capacity Utilization 77.1%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 103: Route 58 (Black Rock Turnpike) & Brookside Drive



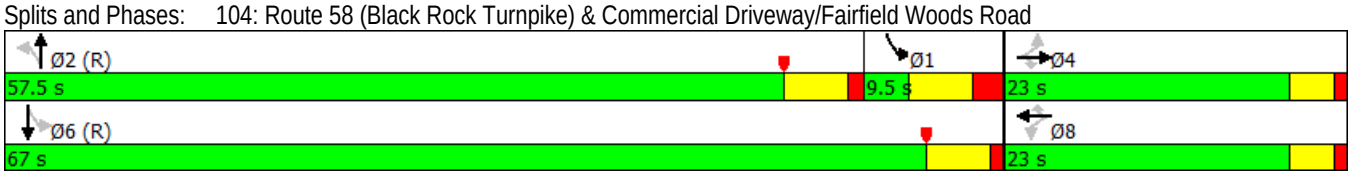
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	19	42	88	22	131	36	835	75	108	881	43
Future Volume (vph)	36	19	42	88	22	131	36	835	75	108	881	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	11	12	11	12	12	11	12
Storage Length (ft)	0		0	0		75	0		0	0		0
Storage Lanes	0		1	0		1	0		0	0		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt			0.850			0.850		0.988			0.994	
Flt Protected		0.968			0.962			0.998			0.995	
Satd. Flow (prot)	0	1803	1583	0	1792	1531	0	3373	0	0	3384	0
Flt Permitted		0.734			0.727			0.874			0.716	
Satd. Flow (perm)	0	1367	1583	0	1354	1531	0	2954	0	0	2435	0
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			107					17			11	
Link Speed (mph)		30			25			30			30	
Link Distance (ft)		87			499			713			293	
Travel Time (s)		2.0			13.6			16.2			6.7	
Peak Hour Factor	0.88	0.88	0.88	0.80	0.80	0.80	0.97	0.97	0.97	0.96	0.96	0.96
Adj. Flow (vph)	41	22	48	110	28	164	37	861	77	113	918	45
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	63	48	0	138	164	0	975	0	0	1076	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	4	4	4	8	8	8	2	2		1	6	
Switch Phase												
Minimum Initial (s)	9.0	9.0	9.0	9.0	9.0	9.0	15.0	15.0		3.0	15.0	
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	20.3	20.3		9.5	20.3	
Total Split (s)	23.0	23.0	23.0	23.0	23.0	23.0	57.5	57.5		9.5	67.0	
Total Split (%)	25.6%	25.6%	25.6%	25.6%	25.6%	25.6%	63.9%	63.9%		10.6%	74.4%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.3	4.3		4.3	4.3	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		2.2	1.0	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0		0.0			0.0	
Total Lost Time (s)		4.0	4.0		4.0	4.0		5.3			5.3	
Lead/Lag							Lead	Lead		Lag		
Lead-Lag Optimize?							Yes	Yes		Yes		
Recall Mode	None	None	None	None	None	None	C-Max	C-Max		None	C-Max	
Act Effct Green (s)		14.0	14.0		14.0	14.0		66.7			66.7	
Actuated g/C Ratio		0.16	0.16		0.16	0.16		0.74			0.74	
v/c Ratio		0.30	0.14		0.66	0.69		0.44			0.60	
Control Delay		35.8	0.9		50.1	50.6		5.6			4.2	
Queue Delay		0.0	0.0		0.0	0.0		0.0			0.0	
Total Delay		35.8	0.9		50.1	50.6		5.6			4.2	
LOS		D	A		D	D		A			A	
Approach Delay		20.7			50.4			5.6			4.2	
Approach LOS		C			D			A			A	
Queue Length 50th (ft)		32	0		75	89		90			28	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		64	0		111	127		154			125	
Internal Link Dist (ft)		7			419			633			213	
Turn Bay Length (ft)						75						
Base Capacity (vph)		288	418		285	323		2194			1807	
Starvation Cap Reductn		0	0		0	0		0			0	
Spillback Cap Reductn		0	0		0	0		0			0	
Storage Cap Reductn		0	0		0	0		0			0	
Reduced v/c Ratio		0.22	0.11		0.48	0.51		0.44			0.60	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 4 (4%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.69
Intersection Signal Delay: 11.1 Intersection LOS: B
Intersection Capacity Utilization 80.2% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	86	679	171	142	657	160	233	210	157	241	275	61
Future Volume (vph)	86	679	171	142	657	160	233	210	157	241	275	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	11	12	12	11	11	12	12	12	12
Storage Length (ft)	200		0	175		0	210		0	170		0
Storage Lanes	1		0	1		0	1		0	1		0
Taper Length (ft)	85			75			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.970			0.971			0.936			0.973	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1711	3319	0	1711	3437	0	1711	1685	0	1770	1812	0
Flt Permitted	0.950			0.950			0.284			0.182		
Satd. Flow (perm)	1711	3319	0	1711	3437	0	511	1685	0	339	1812	0
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		20			20			23				
Link Speed (mph)		30			30			30			25	
Link Distance (ft)		436			368			438			355	
Travel Time (s)		9.9			8.4			10.0			9.7	
Peak Hour Factor	0.90	0.90	0.90	0.91	0.91	0.91	0.90	0.90	0.90	0.88	0.88	0.88
Adj. Flow (vph)	96	754	190	156	722	176	259	233	174	274	313	69
Shared Lane Traffic (%)												
Lane Group Flow (vph)	96	944	0	156	898	0	259	407	0	274	382	0
Turn Type	Prot	NA		Prot	NA		pm+pt	NA		pm+pt	NA	
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases							4			8		
Detector Phase	5	2		1	6		7	4		3	8	
Switch Phase												
Minimum Initial (s)	5.0	15.0		5.0	15.0		5.0	10.0		5.0	10.0	
Minimum Split (s)	9.7	21.6		9.7	21.6		9.3	16.8		9.3	16.8	
Total Split (s)	13.2	42.0		16.0	44.8		17.0	35.0		19.0	37.0	
Total Split (%)	9.1%	29.0%		11.0%	30.9%		11.7%	24.1%		13.1%	25.5%	
Yellow Time (s)	3.0	4.1		3.0	4.1		3.3	4.4		3.3	4.4	
All-Red Time (s)	1.7	2.5		1.7	2.5		1.0	2.4		1.0	2.4	
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)	4.7	6.6		4.7	6.6		4.3	6.8		4.3	6.8	
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag		Lead	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Recall Mode	None	Min		None	Min		None	None		None	None	
Act Effct Green (s)	8.5	35.4		11.3	38.2		43.4	28.2		47.4	30.2	
Actuated g/C Ratio	0.08	0.32		0.10	0.34		0.39	0.25		0.42	0.27	
v/c Ratio	0.74	0.89		0.91	0.76		0.78	0.92		0.83	0.78	
Control Delay	83.5	47.3		98.6	37.0		39.1	66.8		43.7	50.6	
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Delay	83.5	47.3		98.6	37.0		39.1	66.8		43.7	50.6	
LOS	F	D		F	D		D	E		D	D	
Approach Delay		50.6			46.1			56.0			47.7	
Approach LOS		D			D			E			D	
Queue Length 50th (ft)	69	332		113	294		119	272		127	255	

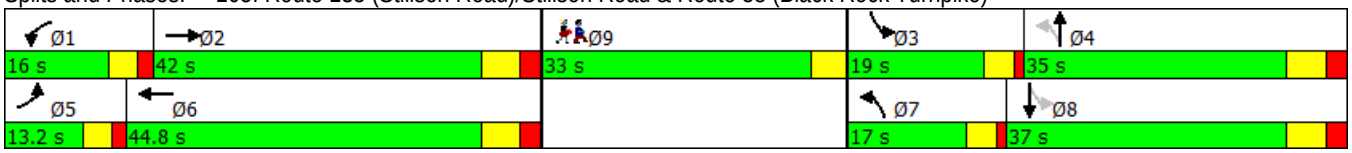
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	33.0
Total Split (s)	33.0
Total Split (%)	23%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	#155	#450		#238	371		#193	#462		#242	#367	
Internal Link Dist (ft)		356			288			358			275	
Turn Bay Length (ft)	200			175			210			170		
Base Capacity (vph)	129	1062		172	1185		334	441		331	488	
Starvation Cap Reductn	0	0		0	0		0	0		0	0	
Spillback Cap Reductn	0	0		0	0		0	0		0	0	
Storage Cap Reductn	0	0		0	0		0	0		0	0	
Reduced v/c Ratio	0.74	0.89		0.91	0.76		0.78	0.92		0.83	0.78	

Intersection Summary

Area Type: Other
Cycle Length: 145
Actuated Cycle Length: 112
Natural Cycle: 145
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.92
Intersection Signal Delay: 49.7 Intersection LOS: D
Intersection Capacity Utilization 84.8% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike)



Lane Group	Ø9
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	94	795	48	80	755	95	171	23	135	78	20	41
Future Volume (vph)	94	795	48	80	755	95	171	23	135	78	20	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	13	13	12	13	13
Storage Length (ft)	0		0	0		0	0		25	0		25
Storage Lanes	0		0	0		0	0		1	0		1
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992			0.985				0.850			0.850
Flt Protected		0.995			0.996			0.958			0.962	
Satd. Flow (prot)	0	3377	0	0	3356	0	0	1844	1636	0	1852	1636
Flt Permitted		0.659			0.752			0.651			0.594	
Satd. Flow (perm)	0	2237	0	0	2534	0	0	1253	1636	0	1143	1636
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			16				131			131
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		442			502			142			135	
Travel Time (s)		10.0			11.4			3.9			3.7	
Peak Hour Factor	0.96	0.96	0.96	0.95	0.95	0.95	0.92	0.92	0.92	0.81	0.81	0.81
Adj. Flow (vph)	98	828	50	84	795	100	186	25	147	96	25	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	976	0	0	979	0	0	211	147	0	121	51
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2			4		4	4		4
Detector Phase	1	6		2	2		4	4	4	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	15.0		15.0	15.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	9.0	20.8		20.8	20.8		11.0	11.0	11.0	11.0	11.0	11.0
Total Split (s)	9.0	49.0		40.0	40.0		19.0	19.0	19.0	19.0	19.0	19.0
Total Split (%)	10.0%	54.4%		44.4%	44.4%		21.1%	21.1%	21.1%	21.1%	21.1%	21.1%
Yellow Time (s)	3.0	4.3		4.3	4.3		3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.5		1.5	1.5		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0			0.0			0.0	0.0		0.0	0.0
Total Lost Time (s)		5.8			5.8			4.0	4.0		4.0	4.0
Lead/Lag	Lead			Lag	Lag		Lag	Lag	Lag	Lag	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Min	C-Max		C-Max	C-Max		None	None	None	None	None	None
Act Effct Green (s)		54.5			45.0			25.7	25.7		25.7	25.7
Actuated g/C Ratio		0.61			0.50			0.29	0.29		0.29	0.29
v/c Ratio		0.70			0.77			0.59	0.26		0.37	0.09
Control Delay		14.6			12.1			35.3	7.1		29.5	0.3
Queue Delay		0.0			0.0			0.0	0.0		0.0	0.0
Total Delay		14.6			12.1			35.3	7.1		29.5	0.3
LOS		B			B			D	A		C	A
Approach Delay		14.6			12.1			23.8			20.8	
Approach LOS		B			B			C			C	
Queue Length 50th (ft)		143			42			104	7		55	0

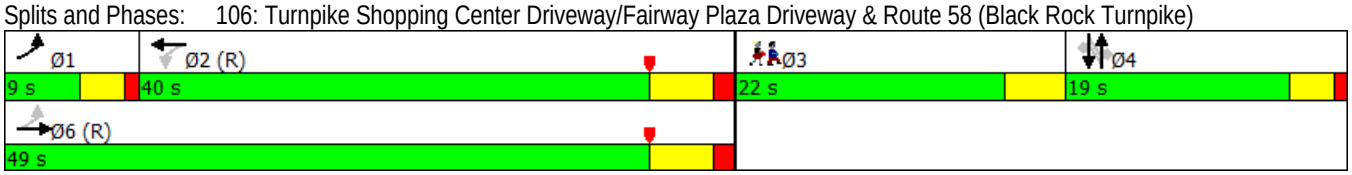
Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	22.0
Total Split (s)	22.0
Total Split (%)	24%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		202			119			174	49		90	0
Internal Link Dist (ft)		362			422			62			55	
Turn Bay Length (ft)									25			25
Base Capacity (vph)		1404			1274			358	561		326	561
Starvation Cap Reductn		0			0			0	0		0	0
Spillback Cap Reductn		0			0			0	0		0	0
Storage Cap Reductn		0			0			0	0		0	0
Reduced v/c Ratio		0.70			0.77			0.59	0.26		0.37	0.09

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 82 (91%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.77
Intersection Signal Delay: 15.4 Intersection LOS: B
Intersection Capacity Utilization 82.8% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike)



Lane Group	Ø3
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

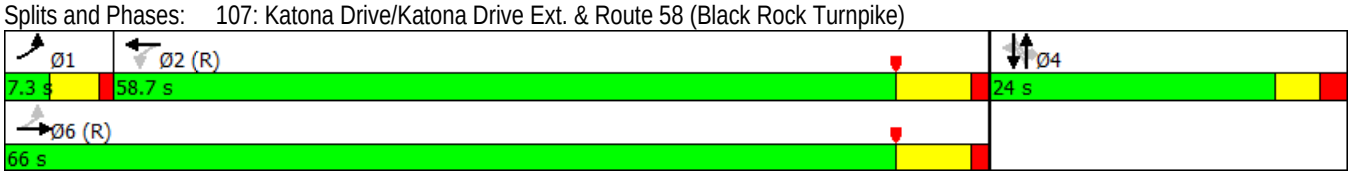
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	12	901	130	58	884	0	122	3	52	3	1	10
Future Volume (vph)	12	901	130	58	884	0	122	3	52	3	1	10
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	10	10	12	12	12
Storage Length (ft)	0		0	0		0	0		250	0		0
Storage Lanes	0		0	0		0	0		1	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.981							0.850		0.862	
Flt Protected		0.999			0.997			0.953		0.950		
Satd. Flow (prot)	0	3353	0	0	3411	0	0	1657	1478	1770	1606	0
Flt Permitted		0.944			0.785			0.723		0.625		
Satd. Flow (perm)	0	3168	0	0	2686	0	0	1257	1478	1164	1606	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		37							92		11	
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		502			407			423			198	
Travel Time (s)		11.4			9.3			11.5			5.4	
Peak Hour Factor	0.90	0.90	0.90	0.97	0.97	0.97	0.98	0.98	0.98	0.88	0.88	0.88
Adj. Flow (vph)	13	1001	144	60	911	0	124	3	53	3	1	11
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1158	0	0	971	0	0	127	53	3	12	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	Perm	NA	
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2			4		4	4		
Detector Phase	1	6		2	2		4	4	4	4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0		7.0	7.0	7.0	7.0	7.0	
Minimum Split (s)	7.3	21.3		21.3	21.3		11.9	11.9	11.9	11.9	11.9	
Total Split (s)	7.3	66.0		58.7	58.7		24.0	24.0	24.0	24.0	24.0	
Total Split (%)	8.1%	73.3%		65.2%	65.2%		26.7%	26.7%	26.7%	26.7%	26.7%	
Yellow Time (s)	3.3	5.0		5.0	5.0		3.0	3.0	3.0	3.0	3.0	
All-Red Time (s)	1.0	1.3		1.3	1.3		1.9	1.9	1.9	1.9	1.9	
Lost Time Adjust (s)		0.0			0.0			0.0	0.0	0.0	0.0	
Total Lost Time (s)		6.3			6.3			4.9	4.9	4.9	4.9	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	Max	C-Max		C-Max	C-Max		None	None	None	None	None	
Act Effct Green (s)		66.0			52.4			12.8	12.8	12.8	12.8	
Actuated g/C Ratio		0.73			0.58			0.14	0.14	0.14	0.14	
v/c Ratio		0.49			0.62			0.71	0.18	0.02	0.05	
Control Delay		4.2			7.8			57.0	3.5	30.0	17.0	
Queue Delay		0.2			0.0			0.0	0.0	0.0	0.0	
Total Delay		4.4			7.8			57.0	3.5	30.0	17.0	
LOS		A			A			E	A	C	B	
Approach Delay		4.4			7.8			41.3			19.6	
Approach LOS		A			A			D			B	
Queue Length 50th (ft)		91			131			70	0	2	1	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		120			39			120	11	8	14	
Internal Link Dist (ft)		422			327			343			118	
Turn Bay Length (ft)									250			
Base Capacity (vph)		2346			1563			266	386	247	349	
Starvation Cap Reductn		368			12			0	0	0	0	
Spillback Cap Reductn		0			0			0	0	0	0	
Storage Cap Reductn		0			0			0	0	0	0	
Reduced v/c Ratio		0.59			0.63			0.48	0.14	0.01	0.03	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 81 (90%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 55
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.71
Intersection Signal Delay: 8.8 Intersection LOS: A
Intersection Capacity Utilization 83.7% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike)

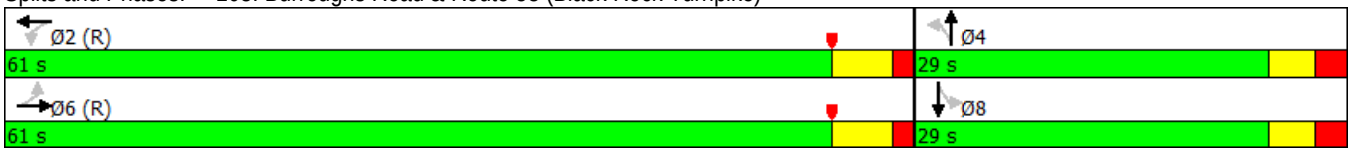


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	874	15	4	861	112	20	64	10	126	52	65
Future Volume (vph)	80	874	15	4	861	112	20	64	10	126	52	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	16	12	12	16	12
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.983			0.986			0.964	
Flt Protected		0.996						0.989			0.975	
Satd. Flow (prot)	0	3401	0	0	3363	0	0	2059	0	0	1984	0
Flt Permitted		0.752			0.952			0.890			0.790	
Satd. Flow (perm)	0	2568	0	0	3202	0	0	1853	0	0	1608	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			29			6			20	
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		407			996			466			300	
Travel Time (s)		9.3			22.6			12.7			8.2	
Peak Hour Factor	0.92	0.92	0.92	0.95	0.95	0.95	0.88	0.88	0.88	0.93	0.93	0.93
Adj. Flow (vph)	87	950	16	4	906	118	23	73	11	135	56	70
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1053	0	0	1028	0	0	107	0	0	261	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2			4			8		
Detector Phase	6	6		2	2		4	4		8	8	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0		9.0	9.0		9.0	9.0	
Minimum Split (s)	20.6	20.6		20.6	20.6		14.4	14.4		14.4	14.4	
Total Split (s)	61.0	61.0		61.0	61.0		29.0	29.0		29.0	29.0	
Total Split (%)	67.8%	67.8%		67.8%	67.8%		32.2%	32.2%		32.2%	32.2%	
Yellow Time (s)	4.1	4.1		4.1	4.1		3.1	3.1		3.1	3.1	
All-Red Time (s)	1.5	1.5		1.5	1.5		2.3	2.3		2.3	2.3	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.6			5.6			5.4			5.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		61.4			61.4			17.6			17.6	
Actuated g/C Ratio		0.68			0.68			0.20			0.20	
v/c Ratio		0.60			0.47			0.29			0.79	
Control Delay		3.5			7.7			29.5			48.2	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		3.5			7.7			29.5			48.2	
LOS		A			A			C			D	
Approach Delay		3.5			7.7			29.5			48.2	
Approach LOS		A			A			C			D	
Queue Length 50th (ft)		89			68			49			131	
Queue Length 95th (ft)		133			224			85			201	
Internal Link Dist (ft)		327			916			386			220	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		1751			2192			490			436	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.60			0.47			0.22			0.60	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow	
Natural Cycle: 50	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.79	
Intersection Signal Delay: 11.1	Intersection LOS: B
Intersection Capacity Utilization 88.6%	ICU Level of Service E
Analysis Period (min) 15	

Splits and Phases: 108: Burroughs Road & Route 58 (Black Rock Turnpike)



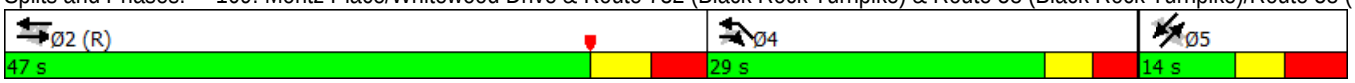
Lane Group	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NWL2	NWL	NWR	NWR2	NEL
Lane Configurations												
Traffic Volume (vph)	433	553	5	67	3	471	1	4	468	10	35	5
Future Volume (vph)	433	553	5	67	3	471	1	4	468	10	35	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	11	11	12	12	10	12	12	12
Lane Util. Factor	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.97	0.95	0.95	1.00
Frt		0.850							0.987			
Flt Protected						0.994			0.956			
Satd. Flow (prot)	1863	1583	0	0	0	3401	0	0	3182	0	0	0
Flt Permitted						0.799			0.949			
Satd. Flow (perm)	1863	1583	0	0	0	2734	0	0	3159	0	0	0
Right Turn on Red			Yes				Yes				Yes	
Satd. Flow (RTOR)		56							150			
Link Speed (mph)	30					30			30			
Link Distance (ft)	996					549			218			
Travel Time (s)	22.6					12.5			5.0			
Peak Hour Factor	0.94	0.94	0.94	0.92	0.92	0.92	0.92	0.96	0.96	0.96	0.96	0.80
Adj. Flow (vph)	461	588	5	73	3	512	1	4	488	10	36	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	461	593	0	0	0	589	0	0	538	0	0	0
Turn Type	NA	pm+ov		Perm	Perm	NA		D.Pm	Prot			Perm
Protected Phases	2	4				2			4			
Permitted Phases		2		2	2			4				5
Detector Phase	2	4		2	2	2		4	4			5
Switch Phase												
Minimum Initial (s)	15.0	9.0		15.0	15.0	15.0		9.0	9.0			5.0
Minimum Split (s)	22.8	15.4		22.8	22.8	22.8		15.4	15.4			12.6
Total Split (s)	47.0	29.0		47.0	47.0	47.0		29.0	29.0			14.0
Total Split (%)	52.2%	32.2%		52.2%	52.2%	52.2%		32.2%	32.2%			15.6%
Yellow Time (s)	4.1	3.3		4.1	4.1	4.1		3.3	3.3			3.3
All-Red Time (s)	3.7	3.1		3.7	3.7	3.7		3.1	3.1			4.3
Lost Time Adjust (s)	0.0	0.0				0.0			0.0			
Total Lost Time (s)	7.8	6.4				7.8			6.4			
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Min	None		C-Min	C-Min	C-Min		None	None			None
Act Effct Green (s)	51.4	77.7				51.4			16.0			
Actuated g/C Ratio	0.57	0.86				0.57			0.18			
v/c Ratio	0.43	0.43				0.38			0.79			
Control Delay	9.6	4.4				13.9			33.6			
Queue Delay	0.0	0.0				0.0			0.0			
Total Delay	9.6	4.4				13.9			33.6			
LOS	A	A				B			C			
Approach Delay	6.7					13.9			33.6			
Approach LOS	A					B			C			
Queue Length 50th (ft)	95	17				104			108			
Queue Length 95th (ft)	266	318				171			154			
Internal Link Dist (ft)	916					469			138			
Turn Bay Length (ft)												

Lane Group	NET	NER	NER2	SWL2	SWL	SWT	SWR
Lane Configurations							
Traffic Volume (vph)	3	1	5	3	8	1	6
Future Volume (vph)	3	1	5	3	8	1	6
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	15	12	12
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.944					0.953	
Flt Protected	0.983					0.970	
Satd. Flow (prot)	1729	0	0	0	0	1722	0
Flt Permitted	0.874					0.825	
Satd. Flow (perm)	1537	0	0	0	0	1465	0
Right Turn on Red			No				No
Satd. Flow (RTOR)							
Link Speed (mph)	25					25	
Link Distance (ft)	653					695	
Travel Time (s)	17.8					19.0	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.80
Adj. Flow (vph)	4	1	6	4	10	1	8
Shared Lane Traffic (%)							
Lane Group Flow (vph)	17	0	0	0	0	23	0
Turn Type	NA			Perm	Perm	NA	
Protected Phases	5					5	
Permitted Phases				5	5		
Detector Phase	5			5	5	5	
Switch Phase							
Minimum Initial (s)	5.0			5.0	5.0	5.0	
Minimum Split (s)	12.6			12.6	12.6	12.6	
Total Split (s)	14.0			14.0	14.0	14.0	
Total Split (%)	15.6%			15.6%	15.6%	15.6%	
Yellow Time (s)	3.3			3.3	3.3	3.3	
All-Red Time (s)	4.3			4.3	4.3	4.3	
Lost Time Adjust (s)	0.0					0.0	
Total Lost Time (s)	7.6					7.6	
Lead/Lag							
Lead-Lag Optimize?							
Recall Mode	None			None	None	None	
Act Effct Green (s)	5.9					5.9	
Actuated g/C Ratio	0.07					0.07	
v/c Ratio	0.17					0.24	
Control Delay	42.9					45.5	
Queue Delay	0.0					0.0	
Total Delay	42.9					45.5	
LOS	D					D	
Approach Delay	42.9					45.5	
Approach LOS	D					D	
Queue Length 50th (ft)	9					13	
Queue Length 95th (ft)	26					32	
Internal Link Dist (ft)	573					615	
Turn Bay Length (ft)							

Lane Group	EBT	EBR	EBR2	WBL2	WBL	WBT	WBR	NWL2	NWL	NWR	NWR2	NEL
Base Capacity (vph)	1063	1413				1560			905			
Starvation Cap Reductn	0	0				0			0			
Spillback Cap Reductn	0	0				0			0			
Storage Cap Reductn	0	0				0			0			
Reduced v/c Ratio	0.43	0.42				0.38			0.59			

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 32 (36%), Referenced to phase 2:EBWB, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.79	
Intersection Signal Delay: 15.8	Intersection LOS: B
Intersection Capacity Utilization 81.6%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 109: Moritz Place/Whitewood Drive & Route 732 (Black Rock Turnpike) & Route 58 (Black Rock Turnpike)/Route 58 (Tunxis Hill Cut



Lane Group	NET	NER	NER2	SWL2	SWL	SWT	SWR
Base Capacity (vph)	114					108	
Starvation Cap Reductn	0					0	
Spillback Cap Reductn	0					0	
Storage Cap Reductn	0					0	
Reduced v/c Ratio	0.15					0.21	

Intersection Summary

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	486	11	41	519	5	57
Future Volume (vph)	486	11	41	519	5	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	10	10
Storage Length (ft)		0	0		0	50
Storage Lanes		0	0		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00
Frt	0.997					0.850
Flt Protected				0.996	0.950	
Satd. Flow (prot)	3411	0	0	1793	1652	1478
Flt Permitted				0.996	0.950	
Satd. Flow (perm)	3411	0	0	1793	1652	1478
Link Speed (mph)	30			30	25	
Link Distance (ft)	1095			214	782	
Travel Time (s)	24.9			4.9	21.3	
Peak Hour Factor	0.88	0.88	0.90	0.90	0.80	0.80
Adj. Flow (vph)	552	13	46	577	6	71
Shared Lane Traffic (%)						
Lane Group Flow (vph)	565	0	0	623	6	71
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 56.7%	ICU Level of Service B
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	486	11	41	519	5	57
Future Vol, veh/h	486	11	41	519	5	57
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	90	90	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	552	13	46	577	6	71

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	565	0	1227	282
Stage 1	-	-	-	-	559	-
Stage 2	-	-	-	-	668	-
Critical Hdwy	-	-	4.13	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.219	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	1005	-	183	716
Stage 1	-	-	-	-	537	-
Stage 2	-	-	-	-	509	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1005	-	171	716
Mov Cap-2 Maneuver	-	-	-	-	171	-
Stage 1	-	-	-	-	537	-
Stage 2	-	-	-	-	475	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	11.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	171	716	-	-	1005	-
HCM Lane V/C Ratio	0.037	0.1	-	-	0.045	-
HCM Control Delay (s)	26.9	10.6	-	-	8.8	0
HCM Lane LOS	D	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	0.3	-	-	0.1	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	22	74	49	495	599	34
Future Volume (vph)	22	74	49	495	599	34
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	12	12
Storage Length (ft)	0	0	25			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		25			
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt	0.896				0.993	
Flt Protected	0.989			0.996		
Satd. Flow (prot)	1871	0	0	3525	1850	0
Flt Permitted	0.989			0.996		
Satd. Flow (perm)	1871	0	0	3525	1850	0
Link Speed (mph)	25			30	30	
Link Distance (ft)	586			395	218	
Travel Time (s)	16.0			9.0	5.0	
Peak Hour Factor	0.80	0.80	0.98	0.98	0.93	0.93
Adj. Flow (vph)	28	93	50	505	644	37
Shared Lane Traffic (%)						
Lane Group Flow (vph)	121	0	0	555	681	0
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 64.1%	ICU Level of Service C
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	2.1

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	22	74	49	495	599	34
Future Vol, veh/h	22	74	49	495	599	34
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	25	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	98	98	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	93	50	505	644	37

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1015	662	681	0	-	0
Stage 1	662	-	-	-	-	-
Stage 2	353	-	-	-	-	-
Critical Hdwy	6.63	6.23	4.13	-	-	-
Critical Hdwy Stg 1	5.43	-	-	-	-	-
Critical Hdwy Stg 2	5.83	-	-	-	-	-
Follow-up Hdwy	3.519	3.319	2.219	-	-	-
Pot Cap-1 Maneuver	249	461	910	-	-	-
Stage 1	512	-	-	-	-	-
Stage 2	683	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	230	461	910	-	-	-
Mov Cap-2 Maneuver	230	-	-	-	-	-
Stage 1	512	-	-	-	-	-
Stage 2	631	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	19.1	1.1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	910	-	375	-	-
HCM Lane V/C Ratio	0.055	-	0.32	-	-
HCM Control Delay (s)	9.2	0.3	19.1	-	-
HCM Lane LOS	A	A	C	-	-
HCM 95th %tile Q(veh)	0.2	-	1.4	-	-

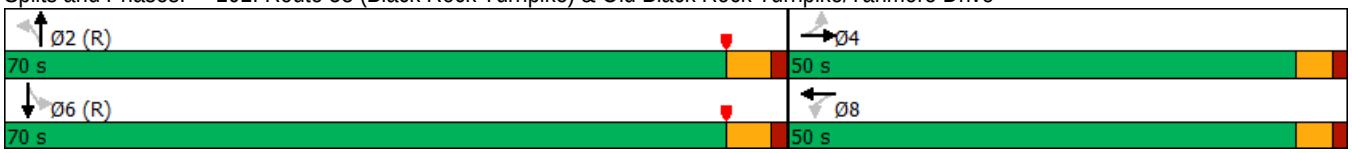
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	1	3	204	0	167	2	680	26	65	643	4
Future Volume (vph)	11	1	3	204	0	167	2	680	26	65	643	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	16	12	12	13	12	12	13	12
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		0.972			0.939			0.995			0.999	
Flt Protected		0.964			0.973						0.995	
Satd. Flow (prot)	0	1959	0	0	1910	0	0	1897	0	0	1895	0
Flt Permitted		0.771			0.818			0.999			0.877	
Satd. Flow (perm)	0	1567	0	0	1606	0	0	1895	0	0	1670	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			39			3				
Link Speed (mph)		25			30			35			35	
Link Distance (ft)		378			442			1898			522	
Travel Time (s)		10.3			10.0			37.0			10.2	
Peak Hour Factor	0.80	0.80	0.80	0.84	0.84	0.84	0.94	0.94	0.94	0.91	0.91	0.91
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	14	1	4	243	0	199	2	723	28	71	707	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	19	0	0	442	0	0	753	0	0	782	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	11.7	11.7		11.7	11.7		20.6	20.6		20.6	20.6	
Total Split (s)	50.0	50.0		50.0	50.0		70.0	70.0		70.0	70.0	
Total Split (%)	41.7%	41.7%		41.7%	41.7%		58.3%	58.3%		58.3%	58.3%	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.4	1.4		1.4	1.4		1.6	1.6		1.6	1.6	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.7			4.7			5.6			5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Min	C-Min		C-Min	C-Min	
Act Effct Green (s)		35.6			35.6			74.1			74.1	
Actuated g/C Ratio		0.30			0.30			0.62			0.62	
v/c Ratio		0.04			0.88			0.64			0.76	
Control Delay		22.2			54.6			15.4			24.6	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		22.2			54.6			15.4			24.6	
LOS		C			D			B			C	
Approach Delay		22.2			54.6			15.4			24.6	
Approach LOS		C			D			B			C	
Queue Length 50th (ft)		8			299			419			414	
Queue Length 95th (ft)		21			347			389			#778	
Internal Link Dist (ft)		298			362			1818			442	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)		594			630			1170			1030	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.03			0.70			0.64			0.76	

Intersection Summary

Area Type: Other
Cycle Length: 120
Actuated Cycle Length: 120
Offset: 91 (76%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.88
Intersection Signal Delay: 27.7 Intersection LOS: C
Intersection Capacity Utilization 110.9% ICU Level of Service H
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive



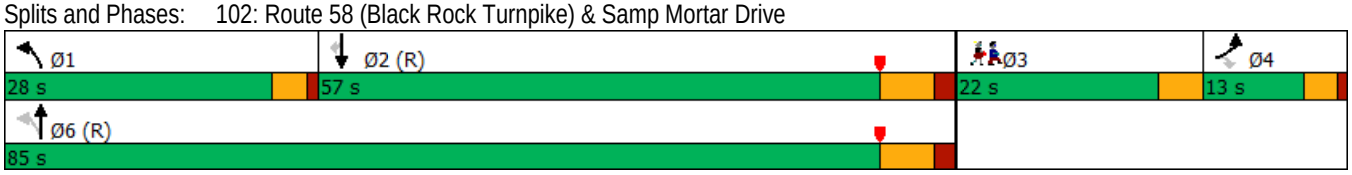
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Lane Configurations							
Traffic Volume (vph)	54	136	366	739	622	198	
Future Volume (vph)	54	136	366	739	622	198	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	10	10	11	11	12	12	
Storage Length (ft)	0	50	100			50	
Storage Lanes	1	1	1			1	
Taper Length (ft)	25		50				
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00	
Frt		0.850				0.850	
Flt Protected	0.950		0.950				
Satd. Flow (prot)	1636	1463	1694	3388	1845	1568	
Flt Permitted	0.950		0.256				
Satd. Flow (perm)	1636	1463	456	3388	1845	1568	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		164				49	
Link Speed (mph)	25			30	35		
Link Distance (ft)	445			510	341		
Travel Time (s)	12.1			11.6	6.6		
Peak Hour Factor	0.83	0.83	0.91	0.91	0.94	0.94	
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	
Adj. Flow (vph)	65	164	402	812	662	211	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	65	164	402	812	662	211	
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm	
Protected Phases	4		1	6	2		3
Permitted Phases		4	6			2	
Detector Phase	4	4	1	6	2	2	
Switch Phase							
Minimum Initial (s)	9.0	9.0	5.0	15.0	15.0	15.0	7.0
Minimum Split (s)	13.0	13.0	9.2	21.9	21.9	21.9	22.0
Total Split (s)	13.0	13.0	28.0	85.0	57.0	57.0	22.0
Total Split (%)	10.8%	10.8%	23.3%	70.8%	47.5%	47.5%	18%
Yellow Time (s)	3.0	3.0	3.2	4.9	4.9	4.9	4.0
All-Red Time (s)	1.0	1.0	1.0	2.0	2.0	2.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	4.0	4.2	6.9	6.9	6.9	
Lead/Lag	Lag	Lag	Lead		Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	C-Min	C-Min	C-Min	None
Act Effct Green (s)	10.3	10.3	101.5	98.8	68.0	68.0	
Actuated g/C Ratio	0.09	0.09	0.85	0.82	0.57	0.57	
v/c Ratio	0.46	0.60	0.61	0.29	0.63	0.23	
Control Delay	62.9	17.1	15.3	3.5	15.8	8.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	62.9	17.1	15.3	3.5	15.8	8.3	
LOS	E	B	B	A	B	A	
Approach Delay	30.1			7.4	13.9		
Approach LOS	C			A	B		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Queue Length 50th (ft)	49	0	81	34	189	39	
Queue Length 95th (ft)	87	50	238	180	421	m76	
Internal Link Dist (ft)	365			430	261		
Turn Bay Length (ft)		50	100			50	
Base Capacity (vph)	140	275	667	2790	1046	910	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.46	0.60	0.60	0.29	0.63	0.23	

Intersection Summary	
Area Type: Other	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow, Master Intersection	
Natural Cycle: 100	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.63	
Intersection Signal Delay: 12.1	Intersection LOS: B
Intersection Capacity Utilization 73.1%	ICU Level of Service D
Analysis Period (min) 15	

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

Splits and Phases: 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive

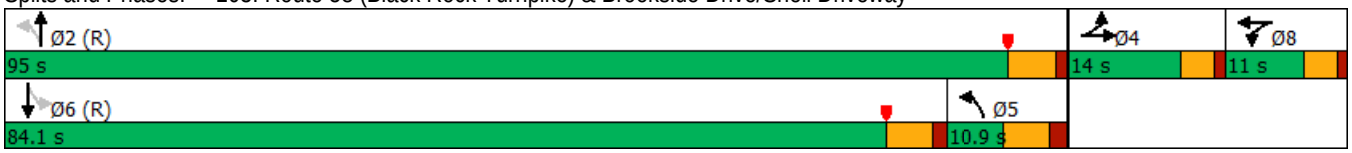


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	1	15	3	0	48	59	1051	0	1	586	181
Future Volume (vph)	61	1	15	3	0	48	59	1051	0	1	586	181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	16	12	12	12	12	12	12	12
Storage Length (ft)	50		0	0		0	0		0	200		0
Storage Lanes	1		0	0		0	0		0	1		0
Taper Length (ft)	50			25			25			50		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.939			0.873						0.965	
Flt Protected	0.950	0.972			0.997			0.997				
Satd. Flow (prot)	1887	1599	0	0	1820	0	0	3494	0	0	3382	0
Flt Permitted	0.950	0.972			0.997			0.829			0.954	
Satd. Flow (perm)	1887	1599	0	0	1820	0	0	2906	0	0	3227	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		19			112						71	
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		347			133			293			336	
Travel Time (s)		9.5			3.6			6.7			7.6	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.90	0.90	0.90	0.88	0.88	0.88
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	76	1	19	4	0	60	66	1168	0	1	666	206
Shared Lane Traffic (%)	35%											
Lane Group Flow (vph)	49	47	0	0	64	0	0	1234	0	0	873	0
Turn Type	Split	NA		Split	NA		pm+pt	NA		Perm	NA	
Protected Phases	4	4		8	8		5	2			6	
Permitted Phases							2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	9.0	9.0		5.0	5.0		5.0	15.0		15.0	15.0	
Minimum Split (s)	13.0	13.0		9.0	9.0		10.9	20.4		20.4	20.4	
Total Split (s)	14.0	14.0		11.0	11.0		10.9	95.0		84.1	84.1	
Total Split (%)	11.7%	11.7%		9.2%	9.2%		9.1%	79.2%		70.1%	70.1%	
Yellow Time (s)	3.0	3.0		3.0	3.0		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.7	1.2		1.2	1.2	
Lost Time Adjust (s)	0.0	0.0			0.0			0.0			0.0	
Total Lost Time (s)	4.0	4.0			4.0			5.4			5.4	
Lead/Lag							Lag			Lead	Lead	
Lead-Lag Optimize?							Yes			Yes	Yes	
Recall Mode	None	None		None	None		None	C-Min		C-Min	C-Min	
Act Effct Green (s)	9.3	9.3			5.7			97.2			97.2	
Actuated g/C Ratio	0.08	0.08			0.05			0.81			0.81	
v/c Ratio	0.34	0.33			0.33			0.52			0.33	
Control Delay	58.8	41.8			5.9			2.4			1.5	
Queue Delay	0.0	0.0			0.0			0.1			0.0	
Total Delay	58.8	41.8			5.9			2.5			1.5	
LOS	E	D			A			A			A	
Approach Delay		50.5			5.9			2.5			1.5	
Approach LOS		D			A			A			A	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	38	22			0			60			11	
Queue Length 95th (ft)	71	53			0			53			40	
Internal Link Dist (ft)		267			53			213			256	
Turn Bay Length (ft)	50											
Base Capacity (vph)	159	152			211			2353			2626	
Starvation Cap Reductn	0	0			0			197			0	
Spillback Cap Reductn	0	0			0			0			11	
Storage Cap Reductn	0	0			0			0			0	
Reduced v/c Ratio	0.31	0.31			0.30			0.57			0.33	

Intersection Summary	
Area Type: Other	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 56 (47%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.52	
Intersection Signal Delay: 4.2	Intersection LOS: A
Intersection Capacity Utilization 73.9%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 103: Route 58 (Black Rock Turnpike) & Brookside Drive/Shell Driveway

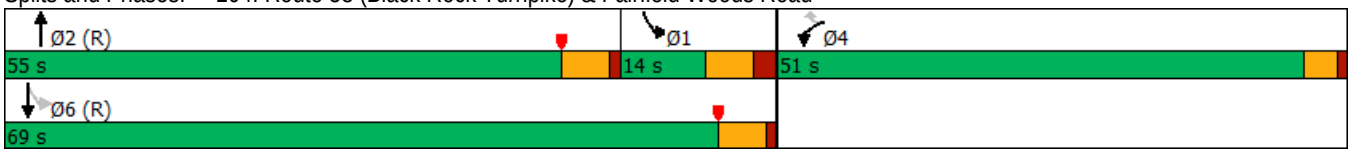


Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	50	340	788	25	84	536
Future Volume (vph)	50	340	788	25	84	536
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	12	12	11
Storage Length (ft)	0	75		0	0	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt		0.850	0.995			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1752	1516	3371	0	1752	1783
Flt Permitted	0.950				0.242	
Satd. Flow (perm)	1752	1516	3371	0	446	1783
Right Turn on Red		No		Yes		
Satd. Flow (RTOR)			3			
Link Speed (mph)	25		30			30
Link Distance (ft)	499		535			293
Travel Time (s)	13.6		12.2			6.7
Peak Hour Factor	0.90	0.90	0.88	0.88	0.92	0.92
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	56	378	895	28	91	583
Shared Lane Traffic (%)						
Lane Group Flow (vph)	56	378	923	0	91	583
Turn Type	Prot	Perm	NA		pm+pt	NA
Protected Phases	4		2		1	6
Permitted Phases		4			6	
Detector Phase	4	4	2		1	6
Switch Phase						
Minimum Initial (s)	9.0	9.0	15.0		5.0	15.0
Minimum Split (s)	13.0	13.0	20.3		11.5	20.3
Total Split (s)	51.0	51.0	55.0		14.0	69.0
Total Split (%)	42.5%	42.5%	45.8%		11.7%	57.5%
Yellow Time (s)	3.0	3.0	4.3		4.3	4.3
All-Red Time (s)	1.0	1.0	1.0		2.2	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	4.0	5.3		6.5	5.3
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	C-Min		None	C-Min
Act Effct Green (s)	35.0	35.0	64.2		74.5	75.7
Actuated g/C Ratio	0.29	0.29	0.54		0.62	0.63
v/c Ratio	0.11	0.86	0.51		0.27	0.52
Control Delay	28.6	57.9	20.4		6.1	5.2
Queue Delay	0.0	0.0	0.0		0.0	0.3
Total Delay	28.6	57.9	20.4		6.1	5.5
LOS	C	E	C		A	A
Approach Delay	54.1		20.4			5.5
Approach LOS	D		C			A

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Queue Length 50th (ft)	32	275	232		8	52
Queue Length 95th (ft)	57	354	334		22	104
Internal Link Dist (ft)	419		455			213
Turn Bay Length (ft)		75				
Base Capacity (vph)	686	593	1804		367	1124
Starvation Cap Reductn	0	0	0		0	135
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.08	0.64	0.51		0.25	0.59

Intersection Summary	
Area Type: Other	
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 24 (20%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.86	
Intersection Signal Delay: 22.7	Intersection LOS: C
Intersection Capacity Utilization 51.4%	ICU Level of Service A
Analysis Period (min) 15	

Splits and Phases: 104: Route 58 (Black Rock Turnpike) & Fairfield Woods Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	379	133	178	685	71	150	165	62	108	351	46
Future Volume (vph)	48	379	133	178	685	71	150	165	62	108	351	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	11	12	12	11	11	12	12	12	12
Storage Length (ft)	200		325	200		0	400		75	170		75
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	85			50			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.961			0.986				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1678	3225	0	1678	3423	0	1678	1766	1553	1736	1827	1553
Flt Permitted	0.950			0.950			0.233			0.579		
Satd. Flow (perm)	1678	3225	0	1678	3423	0	411	1766	1553	1058	1827	1553
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		34			8				186			
Link Speed (mph)		30			30			30			25	
Link Distance (ft)		628			408			637			355	
Travel Time (s)		14.3			9.3			14.5			9.7	
Peak Hour Factor	0.88	0.88	0.88	0.86	0.86	0.86	0.80	0.80	0.80	0.81	0.81	0.81
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	55	431	151	207	797	83	188	206	78	133	433	57
Shared Lane Traffic (%)												
Lane Group Flow (vph)	55	582	0	207	880	0	188	206	78	133	433	57
Turn Type	Prot	NA		Prot	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases							4		4	8		8
Detector Phase	5	2		1	6		7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	15.0		5.0	15.0		5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.7	21.6		9.7	21.6		9.3	16.8	16.8	9.3	16.8	16.8
Total Split (s)	12.0	27.0		20.0	35.0		12.0	32.1	32.1	12.9	33.0	33.0
Total Split (%)	9.6%	21.6%		16.0%	28.0%		9.6%	25.7%	25.7%	10.3%	26.4%	26.4%
Yellow Time (s)	3.0	4.1		3.0	4.1		3.3	4.4	4.4	3.3	4.4	4.4
All-Red Time (s)	1.7	2.5		1.7	2.5		1.0	2.4	2.4	1.0	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	6.6		4.7	6.6		4.3	6.8	6.8	4.3	6.8	6.8
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min		None	Min		None	None	None	None	None	None
Act Effct Green (s)	6.8	20.4		15.3	30.9		36.2	26.0	26.0	36.6	26.2	26.2
Actuated g/C Ratio	0.07	0.22		0.17	0.34		0.39	0.28	0.28	0.40	0.28	0.28
v/c Ratio	0.44	0.79		0.74	0.76		0.70	0.41	0.14	0.28	0.83	0.13
Control Delay	52.1	40.5		54.1	33.3		33.5	30.2	0.5	17.3	46.6	25.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.1	40.5		54.1	33.3		33.5	30.2	0.5	17.3	46.6	25.5
LOS	D	D		D	C		C	C	A	B	D	C
Approach Delay		41.5			37.2			26.6			38.4	
Approach LOS		D			D			C			D	

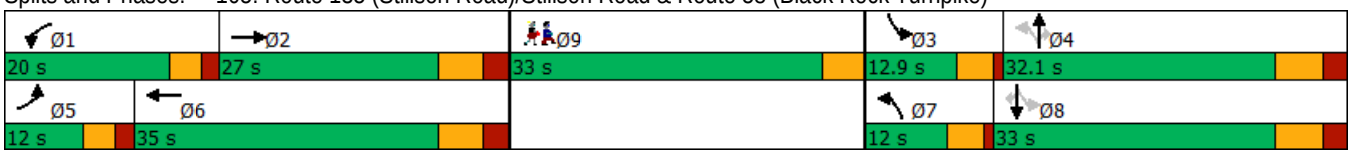
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	33.0
Total Split (s)	33.0
Total Split (%)	26%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	31	159		116	247		67	98	0	45	236	25
Queue Length 95th (ft)	68	214		#202	303		98	142	0	73	#308	49
Internal Link Dist (ft)		548			328			557			275	
Turn Bay Length (ft)	200			200			400		75	170		75
Base Capacity (vph)	133	741		279	1154		267	498	571	492	520	442
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.79		0.74	0.76		0.70	0.41	0.14	0.27	0.83	0.13

Intersection Summary

Area Type: Other
Cycle Length: 125
Actuated Cycle Length: 92
Natural Cycle: 145
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 36.7 Intersection LOS: D
Intersection Capacity Utilization 70.8% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike)



Lane Group	Ø9
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	483	8	26	955	47	0	0	76	0	0	11
Future Volume (vph)	24	483	8	26	955	47	0	0	76	0	0	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	13	13	12	13	13
Storage Length (ft)	65		0	100		0	0		25	0		25
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	50			50			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.993				0.865			0.865
Flt Protected	0.950			0.950								
Satd. Flow (prot)	1736	3349	0	1736	1754	0	0	0	1633	0	0	1633
Flt Permitted	0.950			0.950								
Satd. Flow (perm)	1736	3349	0	1736	1754	0	0	0	1633	0	0	1633
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		401			502			114			133	
Travel Time (s)		9.1			11.4			3.1			3.6	
Peak Hour Factor	0.80	0.80	0.80	0.89	0.89	0.89	0.80	0.80	0.80	0.91	0.91	0.91
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	30	604	10	29	1073	53	0	0	95	0	0	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	30	614	0	29	1126	0	0	0	95	0	0	12
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 63.1%	ICU Level of Service B
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	1

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	24	483	8	26	955	47	0	0	76	0	0	11
Future Vol, veh/h	24	483	8	26	955	47	0	0	76	0	0	11
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	65	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	80	80	80	89	89	89	80	80	80	91	91	91
Heavy Vehicles, %	4	4	4	4	4	4	4	4	4	4	4	4
Mvmt Flow	30	604	10	29	1073	53	0	0	95	0	0	12

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1126	0	0	614	0	0	-	-	307	-	-	1100
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.16	-	-	4.16	-	-	-	-	6.96	-	-	6.26
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.238	-	-	2.238	-	-	-	-	3.338	-	-	3.338
Pot Cap-1 Maneuver	609	-	-	952	-	-	0	0	685	0	0	254
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	609	-	-	952	-	-	-	-	685	-	-	254
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.5	0.2	11.1	19.9
HCM LOS			B	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	685	609	-	-	952	-	-	254
HCM Lane V/C Ratio	0.139	0.049	-	-	0.031	-	-	0.048
HCM Control Delay (s)	11.1	11.2	-	-	8.9	-	-	19.9
HCM Lane LOS	B	B	-	-	A	-	-	C
HCM 95th %tile Q(veh)	0.5	0.2	-	-	0.1	-	-	0.1

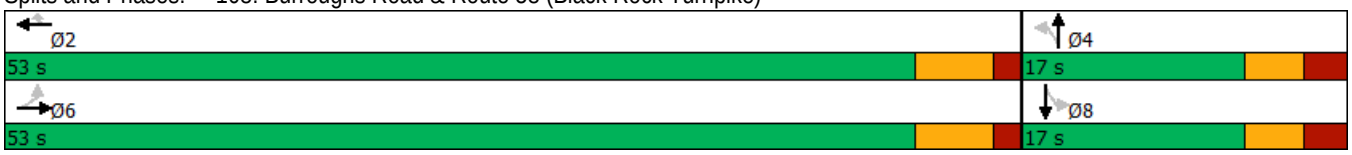
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	464	8	0	968	71	7	88	3	146	76	75
Future Volume (vph)	29	464	8	0	968	71	7	88	3	146	76	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	16	12	12	16	12
Storage Length (ft)	65		0	0		130	0		0	125		0
Storage Lanes	1		0	0		1	0		0	1		0
Taper Length (ft)	50			25			25			50		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997				0.850		0.996			0.925	
Flt Protected	0.950							0.996		0.950		
Satd. Flow (prot)	1719	3314	0	0	1749	1538	0	2034	0	1719	1897	0
Flt Permitted	0.123							0.966		0.753		
Satd. Flow (perm)	223	3314	0	0	1749	1538	0	1973	0	1363	1897	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5				73		2			61	
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		407			390			466			265	
Travel Time (s)		9.3			8.9			12.7			7.2	
Peak Hour Factor	0.80	0.80	0.80	0.95	0.95	0.95	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	36	580	10	0	1019	75	9	110	4	183	95	94
Shared Lane Traffic (%)												
Lane Group Flow (vph)	36	590	0	0	1019	75	0	123	0	183	189	0
Turn Type	Perm	NA			NA	Perm	Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6					2	4			8		
Detector Phase	6	6			2	2	4	4		8	8	
Switch Phase												
Minimum Initial (s)	15.0	15.0			15.0	15.0	9.0	9.0		9.0	9.0	
Minimum Split (s)	20.6	20.6			20.6	20.6	14.4	14.4		14.4	14.4	
Total Split (s)	53.0	53.0			53.0	53.0	17.0	17.0		17.0	17.0	
Total Split (%)	75.7%	75.7%			75.7%	75.7%	24.3%	24.3%		24.3%	24.3%	
Yellow Time (s)	4.1	4.1			4.1	4.1	3.1	3.1		3.1	3.1	
All-Red Time (s)	1.5	1.5			1.5	1.5	2.3	2.3		2.3	2.3	
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)	5.6	5.6			5.6	5.6		5.4		5.4	5.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Min	Min			Min	Min	None	None		None	None	
Act Effct Green (s)	40.0	40.0			40.0	40.0		11.3		11.3	11.3	
Actuated g/C Ratio	0.64	0.64			0.64	0.64		0.18		0.18	0.18	
v/c Ratio	0.25	0.28			0.91	0.07		0.35		0.75	0.48	
Control Delay	9.6	5.0			23.6	1.4		28.2		49.3	22.7	
Queue Delay	0.0	0.0			0.0	0.0		0.0		0.0	0.0	
Total Delay	9.6	5.0			23.6	1.4		28.2		49.3	22.7	
LOS	A	A			C	A		C		D	C	
Approach Delay		5.3			22.1			28.2			35.8	
Approach LOS		A			C			C			D	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	5	43			282	0		47		77	50	
Queue Length 95th (ft)	16	53			#609	11		82		#148	91	
Internal Link Dist (ft)		327			310			386			185	
Turn Bay Length (ft)	65					130				125		
Base Capacity (vph)	171	2544			1342	1197		379		261	412	
Starvation Cap Reductn	0	0			0	0		0		0	0	
Spillback Cap Reductn	0	0			0	0		0		0	0	
Storage Cap Reductn	0	0			0	0		0		0	0	
Reduced v/c Ratio	0.21	0.23			0.76	0.06		0.32		0.70	0.46	

Intersection Summary

Area Type: Other
Cycle Length: 70
Actuated Cycle Length: 62.6
Natural Cycle: 70
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.91
Intersection Signal Delay: 20.0 Intersection LOS: B
Intersection Capacity Utilization 74.9% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 108: Burroughs Road & Route 58 (Black Rock Turnpike)



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	271	2	64	633	0	61
Future Volume (vph)	271	2	64	633	0	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	10	10
Storage Length (ft)		0	0		0	50
Storage Lanes		0	0		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00
Frt	0.999					0.850
Flt Protected				0.995		
Satd. Flow (prot)	3352	0	0	1757	1705	1449
Flt Permitted				0.995		
Satd. Flow (perm)	3352	0	0	1757	1705	1449
Link Speed (mph)	30			30	25	
Link Distance (ft)	1095			214	782	
Travel Time (s)	24.9			4.9	21.3	
Peak Hour Factor	0.80	0.80	0.91	0.91	0.80	0.80
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	339	3	70	696	0	76
Shared Lane Traffic (%)						
Lane Group Flow (vph)	342	0	0	766	0	76
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 51.1%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	271	2	64	633	0	61
Future Vol, veh/h	271	2	64	633	0	61
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	91	91	80	80
Heavy Vehicles, %	4	4	4	4	4	4
Mvmt Flow	339	3	70	696	0	76

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	342	0	1177	171
Stage 1	-	-	-	-	341	-
Stage 2	-	-	-	-	836	-
Critical Hdwy	-	-	4.16	-	6.66	6.96
Critical Hdwy Stg 1	-	-	-	-	5.86	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	-	-	2.238	-	3.538	3.338
Pot Cap-1 Maneuver	-	-	1203	-	195	838
Stage 1	-	-	-	-	687	-
Stage 2	-	-	-	-	420	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1203	-	176	838
Mov Cap-2 Maneuver	-	-	-	-	176	-
Stage 1	-	-	-	-	622	-
Stage 2	-	-	-	-	420	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	9.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	838	-	-	1203	-
HCM Lane V/C Ratio	-	0.091	-	-	0.058	-
HCM Control Delay (s)	0	9.7	-	-	8.2	0
HCM Lane LOS	A	A	-	-	A	A
HCM 95th %tile Q(veh)	-	0.3	-	-	0.2	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	20	68	76	357	394	32
Future Volume (vph)	20	68	76	357	394	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	12	12
Storage Length (ft)	0	0	25			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		50			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.896				0.990	
Flt Protected	0.989		0.950			
Satd. Flow (prot)	1817	0	1719	1810	1791	0
Flt Permitted	0.989		0.950			
Satd. Flow (perm)	1817	0	1719	1810	1791	0
Link Speed (mph)	25			30	30	
Link Distance (ft)	586			395	218	
Travel Time (s)	16.0			9.0	5.0	
Peak Hour Factor	0.80	0.80	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	25	85	83	388	428	35
Shared Lane Traffic (%)						
Lane Group Flow (vph)	110	0	83	388	463	0
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 42.2%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	68	76	357	394	32
Future Vol, veh/h	20	68	76	357	394	32
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	25	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	92	92	92	92
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	25	85	83	388	428	35

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1000	446	463	0	-	0
Stage 1	446	-	-	-	-	-
Stage 2	554	-	-	-	-	-
Critical Hdwy	6.45	6.25	4.15	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.245	-	-	-
Pot Cap-1 Maneuver	266	606	1083	-	-	-
Stage 1	639	-	-	-	-	-
Stage 2	570	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	246	606	1083	-	-	-
Mov Cap-2 Maneuver	246	-	-	-	-	-
Stage 1	590	-	-	-	-	-
Stage 2	570	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.4	1.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1083	-	455	-	-
HCM Lane V/C Ratio	0.076	-	0.242	-	-
HCM Control Delay (s)	8.6	-	15.4	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.2	-	0.9	-	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	615	1	0	956	0	3
Future Volume (vph)	615	1	0	956	0	3
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
Flt Protected						
Satd. Flow (prot)	1827	0	0	1827	0	1580
Flt Permitted						
Satd. Flow (perm)	1827	0	0	1827	0	1580
Link Speed (mph)	30			30	30	
Link Distance (ft)	187			131	186	
Travel Time (s)	4.3			3.0	4.2	
Peak Hour Factor	0.80	0.80	0.95	0.95	0.80	0.80
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	769	1	0	1006	0	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	770	0	0	1006	0	4
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 53.6%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	615	1	0	956	0	3
Future Vol, veh/h	615	1	0	956	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	95	95	80	80
Heavy Vehicles, %	4	4	4	4	4	4
Mvmt Flow	769	1	0	1006	0	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	770
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.24
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.336
Pot Cap-1 Maneuver	-	-	0	-	0	397
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	397
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	14.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	397	-	-	-
HCM Lane V/C Ratio	0.009	-	-	-
HCM Control Delay (s)	14.2	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0	-	-	-

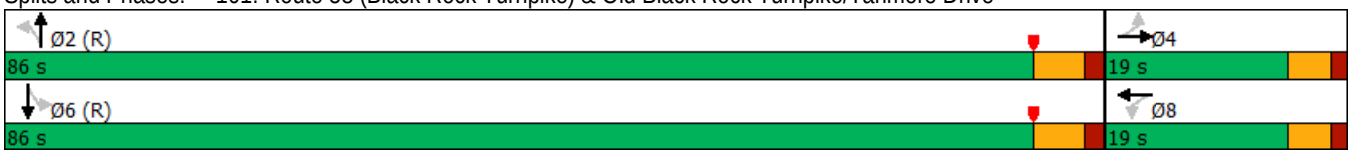
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	0	1	46	0	47	5	662	62	58	724	5
Future Volume (vph)	6	0	1	46	0	47	5	662	62	58	724	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	16	12	12	13	12	12	13	12
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		0.985			0.932			0.989			0.999	
Flt Protected		0.957			0.976						0.996	
Satd. Flow (prot)	0	1990	0	0	1920	0	0	1904	0	0	1915	0
Flt Permitted		0.752			0.839			0.996			0.900	
Satd. Flow (perm)	0	1564	0	0	1651	0	0	1896	0	0	1731	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		27			40			14			1	
Link Speed (mph)		25			30			35			35	
Link Distance (ft)		378			442			1898			522	
Travel Time (s)		10.3			10.0			37.0			10.2	
Peak Hour Factor	0.80	0.80	0.80	0.84	0.84	0.84	0.95	0.95	0.95	0.94	0.94	0.94
Adj. Flow (vph)	8	0	1	55	0	56	5	697	65	62	770	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	9	0	0	111	0	0	767	0	0	837	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	11.7	11.7		11.7	11.7		20.6	20.6		20.6	20.6	
Total Split (s)	19.0	19.0		19.0	19.0		86.0	86.0		86.0	86.0	
Total Split (%)	18.1%	18.1%		18.1%	18.1%		81.9%	81.9%		81.9%	81.9%	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.4	1.4		1.4	1.4		1.6	1.6		1.6	1.6	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.7			4.7			5.6			5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Min	C-Min		C-Min	C-Min	
Act Effct Green (s)		9.7			9.7			85.0			85.0	
Actuated g/C Ratio		0.09			0.09			0.81			0.81	
v/c Ratio		0.05			0.59			0.50			0.60	
Control Delay		4.0			41.9			2.7			6.3	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		4.0			41.9			2.7			6.3	
LOS		A			D			A			A	
Approach Delay		4.0			41.9			2.7			6.3	
Approach LOS		A			D			A			A	
Queue Length 50th (ft)		0			46			44			152	
Queue Length 95th (ft)		2			89			20			308	
Internal Link Dist (ft)		298			362			1818			442	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		236			259			1536			1400	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.04			0.43			0.50			0.60	

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 105
Offset: 17 (16%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 55
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.60
Intersection Signal Delay: 7.0 Intersection LOS: A
Intersection Capacity Utilization 93.0% ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive



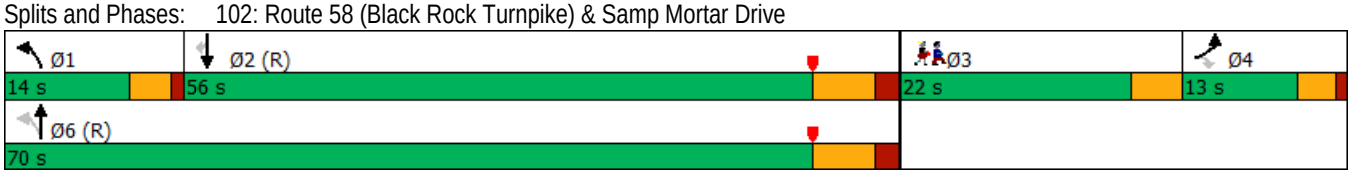
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Lane Configurations							
Traffic Volume (vph)	80	177	173	661	702	72	
Future Volume (vph)	80	177	173	661	702	72	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	10	10	11	11	12	12	
Storage Length (ft)	0	50	100			50	
Storage Lanes	1	1	1			1	
Taper Length (ft)	25		50				
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00	
Frt		0.850				0.850	
Flt Protected	0.950		0.950				
Satd. Flow (prot)	1636	1463	1694	3388	1845	1568	
Flt Permitted	0.950		0.271				
Satd. Flow (perm)	1636	1463	483	3388	1845	1568	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		216				20	
Link Speed (mph)	25			30	35		
Link Distance (ft)	445			510	341		
Travel Time (s)	12.1			11.6	6.6		
Peak Hour Factor	0.82	0.82	0.86	0.86	0.97	0.97	
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	
Adj. Flow (vph)	98	216	201	769	724	74	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	98	216	201	769	724	74	
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm	
Protected Phases	4		1	6	2		3
Permitted Phases		4	6			2	
Detector Phase	4	4	1	6	2	2	
Switch Phase							
Minimum Initial (s)	9.0	9.0	5.0	15.0	15.0	15.0	7.0
Minimum Split (s)	13.0	13.0	9.2	21.9	21.9	21.9	22.0
Total Split (s)	13.0	13.0	14.0	70.0	56.0	56.0	22.0
Total Split (%)	12.4%	12.4%	13.3%	66.7%	53.3%	53.3%	21%
Yellow Time (s)	3.0	3.0	3.2	4.9	4.9	4.9	4.0
All-Red Time (s)	1.0	1.0	1.0	2.0	2.0	2.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	4.0	4.2	6.9	6.9	6.9	
Lead/Lag	Lag	Lag	Lead		Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	C-Min	C-Min	C-Min	None
Act Effct Green (s)	11.6	11.6	85.2	82.5	68.1	68.1	
Actuated g/C Ratio	0.11	0.11	0.81	0.79	0.65	0.65	
v/c Ratio	0.54	0.61	0.39	0.29	0.61	0.07	
Control Delay	55.1	13.7	5.6	2.6	10.7	5.3	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	55.1	13.7	5.6	2.6	10.7	5.3	
LOS	E	B	A	A	B	A	
Approach Delay	26.6			3.2	10.2		
Approach LOS	C			A	B		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Queue Length 50th (ft)	64	0	16	42	147	7	
Queue Length 95th (ft)	102	48	45	63	214	m18	
Internal Link Dist (ft)	365			430	261		
Turn Bay Length (ft)		50	100			50	
Base Capacity (vph)	180	353	520	2662	1196	1024	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.54	0.61	0.39	0.29	0.61	0.07	

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 105
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow, Master Intersection
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.61
Intersection Signal Delay: 9.4 Intersection LOS: A
Intersection Capacity Utilization 66.6% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive

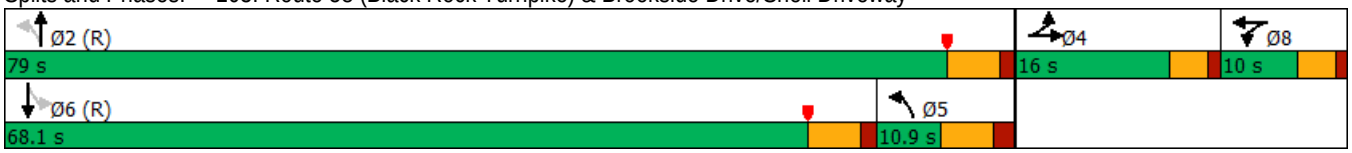


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	1	49	4	0	25	54	767	0	2	792	89
Future Volume (vph)	68	1	49	4	0	25	54	767	0	2	792	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	16	12	12	12	12	12	12	12
Storage Length (ft)	50		0	0		0	0		0	200		0
Storage Lanes	1		0	0		0	0		0	1		0
Taper Length (ft)	50			25			25			50		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.870			0.884						0.985	
Flt Protected	0.950	0.994			0.993			0.997				
Satd. Flow (prot)	1887	1515	0	0	1835	0	0	3494	0	0	3452	0
Flt Permitted	0.950	0.994			0.993			0.813			0.954	
Satd. Flow (perm)	1887	1515	0	0	1835	0	0	2849	0	0	3293	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		57			128						20	
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		347			133			293			336	
Travel Time (s)		9.5			3.6			6.7			7.6	
Peak Hour Factor	0.86	0.86	0.86	0.80	0.80	0.80	0.83	0.83	0.83	0.98	0.98	0.98
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	79	1	57	5	0	31	65	924	0	2	808	91
Shared Lane Traffic (%)	10%											
Lane Group Flow (vph)	71	66	0	0	36	0	0	989	0	0	901	0
Turn Type	Split	NA		Split	NA		pm+pt	NA		Perm	NA	
Protected Phases	4	4		8	8		5	2			6	
Permitted Phases							2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	9.0	9.0		5.0	5.0		5.0	15.0		15.0	15.0	
Minimum Split (s)	13.0	13.0		9.0	9.0		10.9	20.4		20.4	20.4	
Total Split (s)	16.0	16.0		10.0	10.0		10.9	79.0		68.1	68.1	
Total Split (%)	15.2%	15.2%		9.5%	9.5%		10.4%	75.2%		64.9%	64.9%	
Yellow Time (s)	3.0	3.0		3.0	3.0		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.7	1.2		1.2	1.2	
Lost Time Adjust (s)	0.0	0.0			0.0			0.0			0.0	
Total Lost Time (s)	4.0	4.0			4.0			5.4			5.4	
Lead/Lag							Lag			Lead	Lead	
Lead-Lag Optimize?							Yes			Yes	Yes	
Recall Mode	None	None		None	None		None	C-Min		C-Min	C-Min	
Act Effct Green (s)	9.7	9.7			5.6			83.8			83.8	
Actuated g/C Ratio	0.09	0.09			0.05			0.80			0.80	
v/c Ratio	0.41	0.35			0.16			0.44			0.34	
Control Delay	52.0	19.8			1.6			2.2			1.5	
Queue Delay	0.0	0.0			0.0			0.0			0.0	
Total Delay	52.0	19.8			1.6			2.2			1.5	
LOS	D	B			A			A			A	
Approach Delay		36.5			1.6			2.2			1.5	
Approach LOS		D			A			A			A	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	48	6			0			72			15	
Queue Length 95th (ft)	89	44			0			58			51	
Internal Link Dist (ft)		267			53			213			256	
Turn Bay Length (ft)	50											
Base Capacity (vph)	215	223			225			2273			2632	
Starvation Cap Reductn	0	0			0			174			0	
Spillback Cap Reductn	0	0			0			0			0	
Storage Cap Reductn	0	0			0			0			0	
Reduced v/c Ratio	0.33	0.30			0.16			0.47			0.34	

Intersection Summary	
Area Type: Other	
Cycle Length: 105	
Actuated Cycle Length: 105	
Offset: 47 (45%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.44	
Intersection Signal Delay: 4.2	Intersection LOS: A
Intersection Capacity Utilization 70.0%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 103: Route 58 (Black Rock Turnpike) & Brookside Drive/Shell Driveway



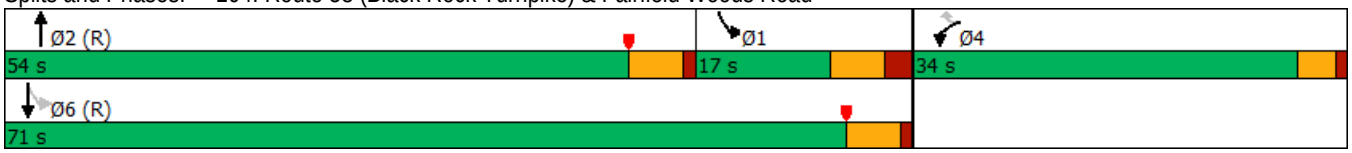
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	69	149	689	57	88	54
Future Volume (vph)	69	149	689	57	88	54
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	12	12	11
Storage Length (ft)	0	75		0	0	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt		0.850	0.989			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1531	3384	0	1770	1801
Flt Permitted	0.950				0.306	
Satd. Flow (perm)	1770	1531	3384	0	570	1801
Right Turn on Red		No		Yes		
Satd. Flow (RTOR)			11			
Link Speed (mph)	25		30			30
Link Distance (ft)	499		535			293
Travel Time (s)	13.6		12.2			6.7
Peak Hour Factor	0.80	0.80	0.89	0.89	0.96	0.96
Adj. Flow (vph)	86	186	774	64	92	56
Shared Lane Traffic (%)						
Lane Group Flow (vph)	86	186	838	0	92	56
Turn Type	Prot	Perm	NA		pm+pt	NA
Protected Phases	4		2		1	6
Permitted Phases		4			6	
Detector Phase	4	4	2		1	6
Switch Phase						
Minimum Initial (s)	9.0	9.0	15.0		5.0	15.0
Minimum Split (s)	13.0	13.0	20.3		11.5	20.3
Total Split (s)	34.0	34.0	54.0		17.0	71.0
Total Split (%)	32.4%	32.4%	51.4%		16.2%	67.6%
Yellow Time (s)	3.0	3.0	4.3		4.3	4.3
All-Red Time (s)	1.0	1.0	1.0		2.2	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	4.0	5.3		6.5	5.3
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	C-Min		None	C-Min
Act Effct Green (s)	17.2	17.2	69.3		78.3	78.5
Actuated g/C Ratio	0.16	0.16	0.66		0.75	0.75
v/c Ratio	0.30	0.74	0.37		0.19	0.04
Control Delay	39.5	58.9	9.8		2.3	1.2
Queue Delay	0.0	0.0	0.0		0.0	0.0
Total Delay	39.5	58.9	9.8		2.3	1.2
LOS	D	E	A		A	A
Approach Delay	52.8		9.8			1.9
Approach LOS	D		A			A
Queue Length 50th (ft)	51	120	128		2	1

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Queue Length 95th (ft)	79	158	198		9	6
Internal Link Dist (ft)	419		455			213
Turn Bay Length (ft)		75				
Base Capacity (vph)	505	437	2237		574	1346
Starvation Cap Reductn	0	0	0		0	0
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.17	0.43	0.37		0.16	0.04

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 105
Offset: 31 (30%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow
Natural Cycle: 50
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.74
Intersection Signal Delay: 18.1 — Intersection LOS: B
Intersection Capacity Utilization 46.4% — ICU Level of Service A
Analysis Period (min) 15

Splits and Phases: 104: Route 58 (Black Rock Turnpike) & Fairfield Woods Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	563	193	126	585	109	207	204	133	187	196	55
Future Volume (vph)	79	563	193	126	585	109	207	204	133	187	196	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	11	12	12	11	11	12	12	12	12
Storage Length (ft)	200		325	200		0	400		75	170		75
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	85			50			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.962			0.976				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1711	3291	0	1711	3454	0	1711	1801	1583	1770	1863	1583
Flt Permitted	0.950			0.950			0.476			0.596		
Satd. Flow (perm)	1711	3291	0	1711	3454	0	857	1801	1583	1110	1863	1583
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		39			18				157			
Link Speed (mph)		30			30			30			25	
Link Distance (ft)		628			408			637			355	
Travel Time (s)		14.3			9.3			14.5			9.7	
Peak Hour Factor	0.91	0.91	0.91	0.93	0.93	0.93	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	87	619	212	135	629	117	216	213	139	195	204	57
Shared Lane Traffic (%)												
Lane Group Flow (vph)	87	831	0	135	746	0	216	213	139	195	204	57
Turn Type	Prot	NA		Prot	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases							4		4	8		8
Detector Phase	5	2		1	6		7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	15.0		5.0	15.0		5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.7	21.6		9.7	21.6		9.3	16.8	16.8	9.3	16.8	16.8
Total Split (s)	11.8	33.8		14.4	36.4		13.7	21.7	21.7	12.1	20.1	20.1
Total Split (%)	10.3%	29.4%		12.5%	31.7%		11.9%	18.9%	18.9%	10.5%	17.5%	17.5%
Yellow Time (s)	3.0	4.1		3.0	4.1		3.3	4.4	4.4	3.3	4.4	4.4
All-Red Time (s)	1.7	2.5		1.7	2.5		1.0	2.4	2.4	1.0	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	6.6		4.7	6.6		4.3	6.8	6.8	4.3	6.8	6.8
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min		None	Min		None	None	None	None	None	None
Act Effct Green (s)	7.1	27.2		9.7	29.8		26.6	14.7	14.7	23.4	13.1	13.1
Actuated g/C Ratio	0.09	0.33		0.12	0.36		0.33	0.18	0.18	0.29	0.16	0.16
v/c Ratio	0.59	0.74		0.67	0.59		0.57	0.66	0.34	0.51	0.68	0.22
Control Delay	53.5	27.9		52.3	22.9		26.5	42.1	6.5	25.2	45.4	32.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.5	27.9		52.3	22.9		26.5	42.1	6.5	25.2	45.4	32.5
LOS	D	C		D	C		C	D	A	C	D	C
Approach Delay		30.3			27.4			27.4			35.2	
Approach LOS		C			C			C			D	
Queue Length 50th (ft)	44	187		67	156		80	102	0	71	100	26

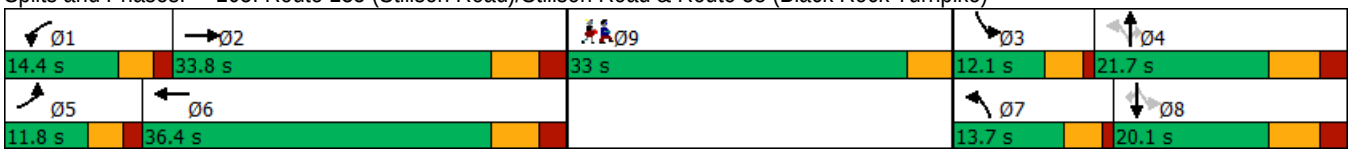
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	33.0
Total Split (s)	33.0
Total Split (%)	29%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	#104	256		#146	213		136	#180	38	122	#187	59
Internal Link Dist (ft)		548			328			557			275	
Turn Bay Length (ft)	200			200			400		75	170		75
Base Capacity (vph)	148	1120		202	1269		376	328	416	381	303	257
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.74		0.67	0.59		0.57	0.65	0.33	0.51	0.67	0.22

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 81.8
Natural Cycle: 115
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.74
Intersection Signal Delay: 29.6 Intersection LOS: C
Intersection Capacity Utilization 69.2% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike)



Lane Group	Ø9
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	713	32	73	812	81	0	0	257	0	0	33
Future Volume (vph)	72	713	32	73	812	81	0	0	257	0	0	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	13	13	12	13	13
Storage Length (ft)	65		0	100		0	0		25	0		25
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	50			50			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.994			0.986				0.865			0.865
Flt Protected	0.950			0.950								
Satd. Flow (prot)	1752	3368	0	1752	1758	0	0	0	1649	0	0	1649
Flt Permitted	0.950			0.950								
Satd. Flow (perm)	1752	3368	0	1752	1758	0	0	0	1649	0	0	1649
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		401			502			114			133	
Travel Time (s)		9.1			11.4			3.1			3.6	
Peak Hour Factor	0.91	0.91	0.91	0.97	0.97	0.97	0.95	0.95	0.95	0.88	0.88	0.88
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	79	784	35	75	837	84	0	0	271	0	0	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	79	819	0	75	921	0	0	0	271	0	0	38
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 58.3%	ICU Level of Service B
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	3

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	72	713	32	73	812	81	0	0	257	0	0	33
Future Vol, veh/h	72	713	32	73	812	81	0	0	257	0	0	33
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	65	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	91	91	91	97	97	97	95	95	95	88	88	88
Heavy Vehicles, %	3	3	3	3	3	3	3	3	3	3	3	3
Mvmt Flow	79	784	35	75	837	84	0	0	271	0	0	38

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	921	0	0	819	0	0	-	-	410	-	-	879
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.145	-	-	4.145	-	-	-	-	6.945	-	-	6.245
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.2285	-	-	2.2285	-	-	-	-	3.3285	-	-	3.3285
Pot Cap-1 Maneuver	734	-	-	802	-	-	0	0	589	0	0	344
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	734	-	-	802	-	-	-	-	589	-	-	344
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.9	0.8	16.2	16.7
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	589	734	-	-	802	-	-	344
HCM Lane V/C Ratio	0.459	0.108	-	-	0.094	-	-	0.109
HCM Control Delay (s)	16.2	10.5	-	-	10	-	-	16.7
HCM Lane LOS	C	B	-	-	A	-	-	C
HCM 95th %tile Q(veh)	2.4	0.4	-	-	0.3	-	-	0.4

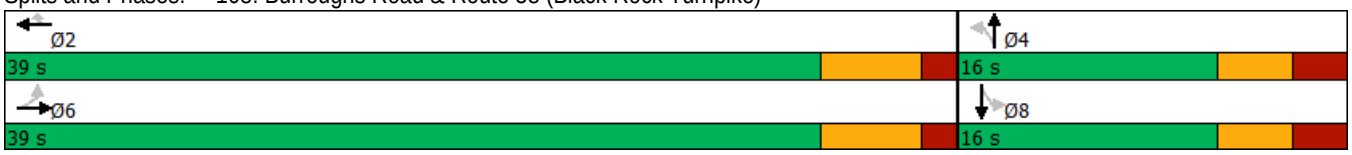
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	753	12	0	674	113	14	59	7	118	51	47
Future Volume (vph)	62	753	12	0	674	113	14	59	7	118	51	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	16	12	12	16	12
Storage Length (ft)	65		0	0		130	0		0	125		0
Storage Lanes	1		0	0		1	0		0	1		0
Taper Length (ft)	50			25			25			50		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998				0.850		0.988			0.928	
Flt Protected	0.950							0.991		0.950		
Satd. Flow (prot)	1736	3349	0	0	1766	1553	0	2027	0	1736	1921	0
Flt Permitted	0.302							0.910		0.692		
Satd. Flow (perm)	552	3349	0	0	1766	1553	0	1862	0	1264	1921	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5				118		8			57	
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		407			390			466			265	
Travel Time (s)		9.3			8.9			12.7			7.2	
Peak Hour Factor	0.86	0.86	0.86	0.96	0.96	0.96	0.80	0.80	0.80	0.83	0.83	0.83
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	72	876	14	0	702	118	18	74	9	142	61	57
Shared Lane Traffic (%)												
Lane Group Flow (vph)	72	890	0	0	702	118	0	101	0	142	118	0
Turn Type	Perm	NA			NA	Perm	Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6					2	4			8		
Detector Phase	6	6			2	2	4	4		8	8	
Switch Phase												
Minimum Initial (s)	15.0	15.0			15.0	15.0	9.0	9.0		9.0	9.0	
Minimum Split (s)	20.6	20.6			20.6	20.6	14.4	14.4		14.4	14.4	
Total Split (s)	39.0	39.0			39.0	39.0	16.0	16.0		16.0	16.0	
Total Split (%)	70.9%	70.9%			70.9%	70.9%	29.1%	29.1%		29.1%	29.1%	
Yellow Time (s)	4.1	4.1			4.1	4.1	3.1	3.1		3.1	3.1	
All-Red Time (s)	1.5	1.5			1.5	1.5	2.3	2.3		2.3	2.3	
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)	5.6	5.6			5.6	5.6		5.4		5.4	5.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Min	Min			Min	Min	None	None		None	None	
Act Effct Green (s)	27.5	27.5			27.5	27.5		9.8		9.8	9.8	
Actuated g/C Ratio	0.63	0.63			0.63	0.63		0.22		0.22	0.22	
v/c Ratio	0.21	0.42			0.63	0.12		0.24		0.50	0.25	
Control Delay	7.2	6.5			10.4	1.5		17.2		25.7	11.8	
Queue Delay	0.0	0.0			0.0	0.0		0.0		0.0	0.0	
Total Delay	7.2	6.5			10.4	1.5		17.2		25.7	11.8	
LOS	A	A			B	A		B		C	B	
Approach Delay		6.5			9.1			17.2			19.4	
Approach LOS		A			A			B			B	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	8	61			113	0		18		29	11	
Queue Length 95th (ft)	24	94			223	14		53		#86	47	
Internal Link Dist (ft)		327			310			386			185	
Turn Bay Length (ft)	65					130				125		
Base Capacity (vph)	435	2640			1391	1249		471		316	523	
Starvation Cap Reductn	0	0			0	0		0		0	0	
Spillback Cap Reductn	0	0			0	0		0		0	0	
Storage Cap Reductn	0	0			0	0		0		0	0	
Reduced v/c Ratio	0.17	0.34			0.50	0.09		0.21		0.45	0.23	

Intersection Summary	
Area Type: Other	
Cycle Length: 55	
Actuated Cycle Length: 43.7	
Natural Cycle: 55	
Control Type: Actuated-Uncoordinated	
Maximum v/c Ratio: 0.63	
Intersection Signal Delay: 9.6	Intersection LOS: A
Intersection Capacity Utilization 73.9%	ICU Level of Service D
Analysis Period (min) 15	

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

Splits and Phases: 108: Burroughs Road & Route 58 (Black Rock Turnpike)



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	440	11	36	411	3	61
Future Volume (vph)	440	11	36	411	3	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	10	10
Storage Length (ft)		0	0		0	50
Storage Lanes		0	0		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00
Frt	0.996					0.850
Flt Protected				0.996	0.950	
Satd. Flow (prot)	3374	0	0	1776	1636	1463
Flt Permitted				0.996	0.950	
Satd. Flow (perm)	3374	0	0	1776	1636	1463
Link Speed (mph)	30			30	25	
Link Distance (ft)	1095			214	782	
Travel Time (s)	24.9			4.9	21.3	
Peak Hour Factor	0.85	0.85	0.86	0.86	0.88	0.88
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	518	13	42	478	3	69
Shared Lane Traffic (%)						
Lane Group Flow (vph)	531	0	0	520	3	69
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 49.5%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	440	11	36	411	3	61
Future Vol, veh/h	440	11	36	411	3	61
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	86	86	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	518	13	42	478	3	69

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	531	0	1087	266
Stage 1	-	-	-	-	525	-
Stage 2	-	-	-	-	562	-
Critical Hdwy	-	-	4.145	-	6.645	6.945
Critical Hdwy Stg 1	-	-	-	-	5.845	-
Critical Hdwy Stg 2	-	-	-	-	5.445	-
Follow-up Hdwy	-	-	2.2285	-	3.5285	3.3285
Pot Cap-1 Maneuver	-	-	1028	-	223	730
Stage 1	-	-	-	-	557	-
Stage 2	-	-	-	-	567	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1028	-	211	730
Mov Cap-2 Maneuver	-	-	-	-	211	-
Stage 1	-	-	-	-	526	-
Stage 2	-	-	-	-	567	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	11
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	211	730	-	-	1028	-
HCM Lane V/C Ratio	0.016	0.095	-	-	0.041	-
HCM Control Delay (s)	22.3	10.4	-	-	8.7	0
HCM Lane LOS	C	B	-	-	A	A
HCM 95th %tile Q(veh)	0	0.3	-	-	0.1	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	21	65	53	406	484	35
Future Volume (vph)	21	65	53	406	484	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	12	12
Storage Length (ft)	0	0	25			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		50			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.898				0.991	
Flt Protected	0.988		0.950			
Satd. Flow (prot)	1820	0	1719	1810	1793	0
Flt Permitted	0.988		0.950			
Satd. Flow (perm)	1820	0	1719	1810	1793	0
Link Speed (mph)	25			30	30	
Link Distance (ft)	586			395	218	
Travel Time (s)	16.0			9.0	5.0	
Peak Hour Factor	0.90	0.90	0.94	0.94	0.87	0.87
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	23	72	56	432	556	40
Shared Lane Traffic (%)						
Lane Group Flow (vph)	95	0	56	432	596	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 46.1%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	21	65	53	406	484	35
Future Vol, veh/h	21	65	53	406	484	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	25	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	94	94	87	87
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	23	72	56	432	556	40

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1120	576	596	0	-	0
Stage 1	576	-	-	-	-	-
Stage 2	544	-	-	-	-	-
Critical Hdwy	6.45	6.25	4.15	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.245	-	-	-
Pot Cap-1 Maneuver	225	511	966	-	-	-
Stage 1	556	-	-	-	-	-
Stage 2	576	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	212	511	966	-	-	-
Mov Cap-2 Maneuver	212	-	-	-	-	-
Stage 1	524	-	-	-	-	-
Stage 2	576	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.6	1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	966	-	380	-	-
HCM Lane V/C Ratio	0.058	-	0.251	-	-
HCM Control Delay (s)	9	-	17.6	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.2	-	1	-	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	824	6	0	756	0	9
Future Volume (vph)	824	6	0	756	0	9
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	0.999					0.865
Flt Protected						
Satd. Flow (prot)	1825	0	0	1827	0	1580
Flt Permitted						
Satd. Flow (perm)	1825	0	0	1827	0	1580
Link Speed (mph)	30			30	30	
Link Distance (ft)	187			131	186	
Travel Time (s)	4.3			3.0	4.2	
Peak Hour Factor	0.90	0.90	0.96	0.96	0.80	0.80
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	916	7	0	788	0	11
Shared Lane Traffic (%)						
Lane Group Flow (vph)	923	0	0	788	0	11
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 53.7%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	824	6	0	756	0	9
Future Vol, veh/h	824	6	0	756	0	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	96	96	80	80
Heavy Vehicles, %	4	4	4	4	4	4
Mvmt Flow	916	7	0	788	0	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	920
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.24
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.336
Pot Cap-1 Maneuver	-	-	0	-	0	326
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	326
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	16.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	326	-	-	-
HCM Lane V/C Ratio	0.035	-	-	-
HCM Control Delay (s)	16.4	-	-	-
HCM Lane LOS	C	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

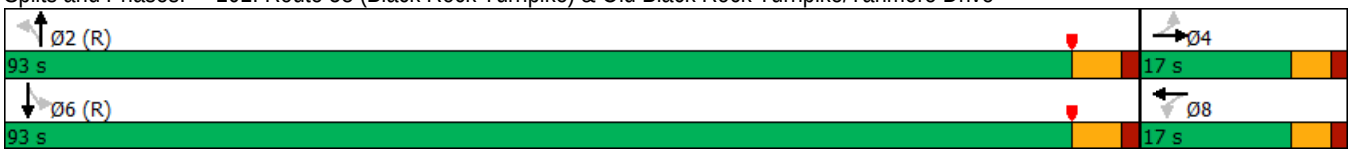
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	0	1	54	4	57	4	802	112	128	975	5
Future Volume (vph)	10	0	1	54	4	57	4	802	112	128	975	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	16	12	12	13	12	12	13	12
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		0.990			0.932			0.983			0.999	
Flt Protected		0.956			0.977						0.994	
Satd. Flow (prot)	0	1998	0	0	1922	0	0	1892	0	0	1911	0
Flt Permitted		0.650			0.844			0.996			0.776	
Satd. Flow (perm)	0	1359	0	0	1661	0	0	1885	0	0	1492	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		26			37			22			1	
Link Speed (mph)		25			30			35			35	
Link Distance (ft)		378			442			1898			522	
Travel Time (s)		10.3			10.0			37.0			10.2	
Peak Hour Factor	0.80	0.80	0.80	0.91	0.91	0.91	0.92	0.92	0.92	0.87	0.87	0.87
Adj. Flow (vph)	13	0	1	59	4	63	4	872	122	147	1121	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	14	0	0	126	0	0	998	0	0	1274	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	11.7	11.7		11.7	11.7		20.6	20.6		20.6	20.6	
Total Split (s)	17.0	17.0		17.0	17.0		93.0	93.0		93.0	93.0	
Total Split (%)	15.5%	15.5%		15.5%	15.5%		84.5%	84.5%		84.5%	84.5%	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.4	1.4		1.4	1.4		1.6	1.6		1.6	1.6	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.7			4.7			5.6			5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Min	C-Min		C-Min	C-Min	
Act Effct Green (s)		10.1			10.1			89.6			89.6	
Actuated g/C Ratio		0.09			0.09			0.81			0.81	
v/c Ratio		0.09			0.68			0.65			1.05	
Control Delay		9.2			52.0			8.7			52.9	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		9.2			52.0			8.7			52.9	
LOS		A			D			A			D	
Approach Delay		9.2			52.0			8.7			52.9	
Approach LOS		A			D			A			D	
Queue Length 50th (ft)		0			61			215			~988	
Queue Length 95th (ft)		8			123			715			#1196	
Internal Link Dist (ft)		298			362			1818			442	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		175			218			1539			1215	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.08			0.58			0.65			1.05	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 67 (61%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.05
Intersection Signal Delay: 34.3 Intersection LOS: C
Intersection Capacity Utilization 127.4% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Lane Configurations							
Traffic Volume (vph)	178	344	135	808	946	88	
Future Volume (vph)	178	344	135	808	946	88	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	10	10	11	11	12	12	
Storage Length (ft)	0	50	100			50	
Storage Lanes	1	1	1			1	
Taper Length (ft)	25		50				
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00	
Frt		0.850				0.850	
Flt Protected	0.950		0.950				
Satd. Flow (prot)	1652	1478	1711	3421	1863	1583	
Flt Permitted	0.950		0.065				
Satd. Flow (perm)	1652	1478	117	3421	1863	1583	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		215				18	
Link Speed (mph)	25			30	35		
Link Distance (ft)	445			510	341		
Travel Time (s)	12.1			11.6	6.6		
Peak Hour Factor	0.90	0.90	0.88	0.88	0.95	0.95	
Adj. Flow (vph)	198	382	153	918	996	93	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	198	382	153	918	996	93	
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm	
Protected Phases	4		1	6	2		3
Permitted Phases		4	6			2	
Detector Phase	4	4	1	6	2	2	
Switch Phase							
Minimum Initial (s)	9.0	9.0	5.0	15.0	15.0	15.0	7.0
Minimum Split (s)	13.0	13.0	9.2	21.9	21.9	21.9	22.0
Total Split (s)	17.0	17.0	10.2	71.0	60.8	60.8	22.0
Total Split (%)	15.5%	15.5%	9.3%	64.5%	55.3%	55.3%	20%
Yellow Time (s)	3.0	3.0	3.2	4.9	4.9	4.9	4.0
All-Red Time (s)	1.0	1.0	1.0	2.0	2.0	2.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	4.0	4.2	6.9	6.9	6.9	
Lead/Lag	Lag	Lag	Lead		Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	C-Min	C-Min	C-Min	None
Act Effct Green (s)	26.4	26.4	75.4	72.7	57.2	57.2	
Actuated g/C Ratio	0.24	0.24	0.69	0.66	0.52	0.52	
v/c Ratio	0.50	0.74	0.63	0.41	1.03	0.11	
Control Delay	40.7	25.7	30.4	10.0	38.7	6.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	40.7	25.7	30.4	10.0	38.7	6.1	
LOS	D	C	C	B	D	A	
Approach Delay	30.8			12.9	35.9		
Approach LOS	C			B	D		
Queue Length 50th (ft)	123	111	56	96	~691	17	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Queue Length 95th (ft)	187	218	110	305	m#742	m19	
Internal Link Dist (ft)	365			430	261		
Turn Bay Length (ft)		50	100			50	
Base Capacity (vph)	396	518	243	2261	968	832	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.50	0.74	0.63	0.41	1.03	0.11	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow, Master Intersection
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.03
Intersection Signal Delay: 25.8 Intersection LOS: C
Intersection Capacity Utilization 80.2% ICU Level of Service D
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Splits and Phases: 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive

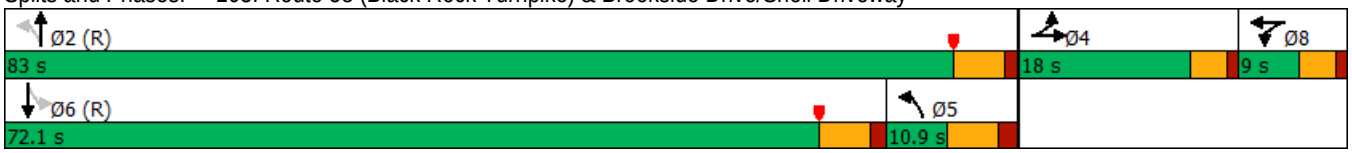
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	135	3	73	4	0	36	40	778	1	5	1171	166
Future Volume (vph)	135	3	73	4	0	36	40	778	1	5	1171	166
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	16	12	12	12	12	12	12	12
Storage Length (ft)	50		0	0		0	0		0	200		0
Storage Lanes	1		0	0		0	0		0	1		0
Taper Length (ft)	50			25			25			50		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.893			0.878						0.981	
Flt Protected	0.950	0.988			0.995			0.998				
Satd. Flow (prot)	1905	1561	0	0	1844	0	0	3532	0	0	3472	0
Flt Permitted	0.950	0.988			0.995			0.805			0.953	
Satd. Flow (perm)	1905	1561	0	0	1844	0	0	2849	0	0	3309	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		91			122						26	
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		347			133			293			336	
Travel Time (s)		9.5			3.6			6.7			7.6	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	169	4	91	5	0	45	41	802	1	5	1207	171
Shared Lane Traffic (%)	19%											
Lane Group Flow (vph)	137	127	0	0	50	0	0	844	0	0	1383	0
Turn Type	Split	NA		Split	NA		pm+pt	NA		Perm	NA	
Protected Phases	4	4		8	8		5	2			6	
Permitted Phases							2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	9.0	9.0		5.0	5.0		5.0	15.0		15.0	15.0	
Minimum Split (s)	13.0	13.0		9.0	9.0		10.9	20.4		20.4	20.4	
Total Split (s)	18.0	18.0		9.0	9.0		10.9	83.0		72.1	72.1	
Total Split (%)	16.4%	16.4%		8.2%	8.2%		9.9%	75.5%		65.5%	65.5%	
Yellow Time (s)	3.0	3.0		3.0	3.0		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.7	1.2		1.2	1.2	
Lost Time Adjust (s)	0.0	0.0			0.0			0.0			0.0	
Total Lost Time (s)	4.0	4.0			4.0			5.4			5.4	
Lead/Lag							Lag			Lead	Lead	
Lead-Lag Optimize?							Yes			Yes	Yes	
Recall Mode	None	None		None	None		None	C-Min		C-Min	C-Min	
Act Effct Green (s)	12.5	12.5			5.6			80.4			80.4	
Actuated g/C Ratio	0.11	0.11			0.05			0.73			0.73	
v/c Ratio	0.63	0.49			0.24			0.41			0.57	
Control Delay	59.4	22.1			2.7			2.2			3.9	
Queue Delay	0.0	0.0			0.0			0.1			0.0	
Total Delay	59.4	22.1			2.7			2.3			3.9	
LOS	E	C			A			A			A	
Approach Delay		41.4			2.7			2.3			3.9	
Approach LOS		D			A			A			A	
Queue Length 50th (ft)	98	25			0			52			57	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	140	64			0			2			m207	
Internal Link Dist (ft)		267			53			213			256	
Turn Bay Length (ft)	50											
Base Capacity (vph)	253	286			209			2104			2425	
Starvation Cap Reductn	0	0			0			367			0	
Spillback Cap Reductn	0	1			0			0			62	
Storage Cap Reductn	0	0			0			0			0	
Reduced v/c Ratio	0.54	0.45			0.24			0.49			0.59	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 64 (58%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.63
Intersection Signal Delay: 7.3 Intersection LOS: A
Intersection Capacity Utilization 71.8% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 103: Route 58 (Black Rock Turnpike) & Brookside Drive/Shell Driveway



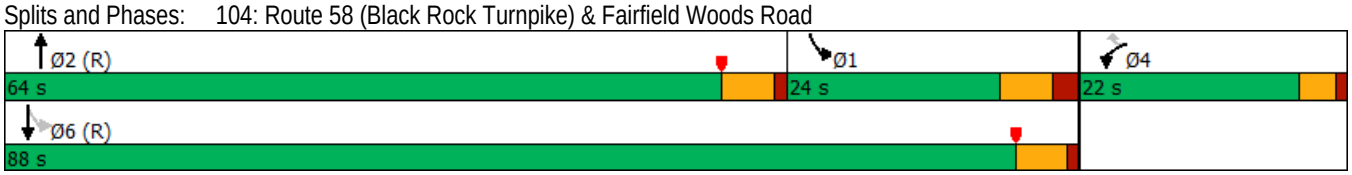
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	84	110	735	108	292	955
Future Volume (vph)	84	110	735	108	292	955
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	12	12	11
Storage Length (ft)	0	75		0	0	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt		0.850	0.981			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1531	3356	0	1770	1801
Flt Permitted	0.950				0.273	
Satd. Flow (perm)	1770	1531	3356	0	509	1801
Right Turn on Red		No		Yes		
Satd. Flow (RTOR)			23			
Link Speed (mph)	25		30			30
Link Distance (ft)	499		535			293
Travel Time (s)	13.6		12.2			6.7
Peak Hour Factor	0.80	0.80	0.93	0.93	0.98	0.98
Adj. Flow (vph)	105	138	790	116	298	974
Shared Lane Traffic (%)						
Lane Group Flow (vph)	105	138	906	0	298	974
Turn Type	Prot	Perm	NA		pm+pt	NA
Protected Phases	4		2		1	6
Permitted Phases		4			6	
Detector Phase	4	4	2		1	6
Switch Phase						
Minimum Initial (s)	9.0	9.0	15.0		5.0	15.0
Minimum Split (s)	13.0	13.0	20.3		11.5	20.3
Total Split (s)	22.0	22.0	64.0		24.0	88.0
Total Split (%)	20.0%	20.0%	58.2%		21.8%	80.0%
Yellow Time (s)	3.0	3.0	4.3		4.3	4.3
All-Red Time (s)	1.0	1.0	1.0		2.2	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	4.0	5.3		6.5	5.3
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	C-Min		None	C-Min
Act Effct Green (s)	14.4	14.4	68.1		85.1	86.3
Actuated g/C Ratio	0.13	0.13	0.62		0.77	0.78
v/c Ratio	0.45	0.69	0.43		0.56	0.69
Control Delay	49.5	62.9	13.6		10.3	6.5
Queue Delay	0.0	0.0	0.0		0.9	0.2
Total Delay	49.5	62.9	13.6		11.2	6.7
LOS	D	E	B		B	A
Approach Delay	57.1		13.6			7.7
Approach LOS	E		B			A
Queue Length 50th (ft)	70	95	143		16	47

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Queue Length 95th (ft)	103	133	313		120	777
Internal Link Dist (ft)	419		455			213
Turn Bay Length (ft)		75				
Base Capacity (vph)	296	256	2151		648	1421
Starvation Cap Reductn	0	0	0		151	65
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.35	0.54	0.42		0.60	0.72

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 58 (53%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.69
Intersection Signal Delay: 14.9 — Intersection LOS: B
Intersection Capacity Utilization 65.5% — ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 104: Route 58 (Black Rock Turnpike) & Fairfield Woods Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	791	157	148	625	131	232	279	177	199	270	44
Future Volume (vph)	90	791	157	148	625	131	232	279	177	199	270	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	11	12	12	11	11	12	12	12	12
Storage Length (ft)	200		325	200		0	400		75	170		75
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	85			50			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.975			0.974				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1711	3336	0	1711	3447	0	1711	1801	1583	1770	1863	1583
Flt Permitted	0.950			0.950			0.244			0.322		
Satd. Flow (perm)	1711	3336	0	1711	3447	0	439	1801	1583	600	1863	1583
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		16			17				125			
Link Speed (mph)		30			30			30			25	
Link Distance (ft)		628			408			637			355	
Travel Time (s)		14.3			9.3			14.5			9.7	
Peak Hour Factor	0.94	0.94	0.94	0.97	0.97	0.97	0.89	0.89	0.89	0.87	0.87	0.87
Adj. Flow (vph)	96	841	167	153	644	135	261	313	199	229	310	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	96	1008	0	153	779	0	261	313	199	229	310	51
Turn Type	Prot	NA		Prot	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases							4		4	8		8
Detector Phase	5	2		1	6		7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	15.0		5.0	15.0		5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.7	21.6		9.7	21.6		9.3	16.8	16.8	9.3	16.8	16.8
Total Split (s)	16.6	46.0		18.0	47.4		19.0	31.0	31.0	17.0	29.0	29.0
Total Split (%)	11.4%	31.7%		12.4%	32.7%		13.1%	21.4%	21.4%	11.7%	20.0%	20.0%
Yellow Time (s)	3.0	4.1		3.0	4.1		3.3	4.4	4.4	3.3	4.4	4.4
All-Red Time (s)	1.7	2.5		1.7	2.5		1.0	2.4	2.4	1.0	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	6.6		4.7	6.6		4.3	6.8	6.8	4.3	6.8	6.8
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min		None	Min		None	None	None	None	None	None
Act Effct Green (s)	10.5	39.4		13.3	42.2		41.4	24.2	24.2	37.4	22.2	22.2
Actuated g/C Ratio	0.09	0.35		0.12	0.38		0.37	0.22	0.22	0.33	0.20	0.20
v/c Ratio	0.60	0.85		0.75	0.60		0.79	0.80	0.45	0.69	0.84	0.16
Control Delay	64.2	41.4		71.2	30.0		44.1	58.6	18.5	36.6	64.1	38.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.2	41.4		71.2	30.0		44.1	58.6	18.5	36.6	64.1	38.9
LOS	E	D		E	C		D	E	B	D	E	D
Approach Delay		43.4			36.8			43.4			51.2	
Approach LOS		D			D			D			D	
Queue Length 50th (ft)	67	345		108	233		133	215	44	114	217	31

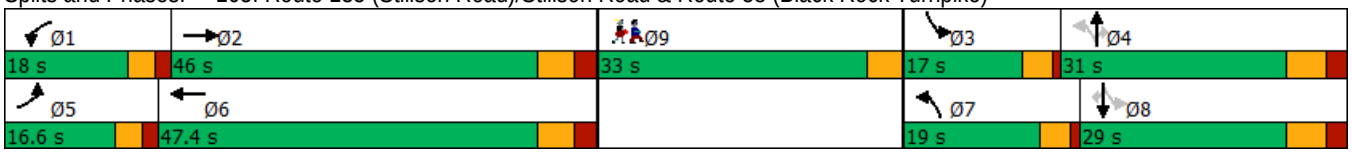
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	33.0
Total Split (s)	33.0
Total Split (%)	23%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	122	434		#209	300		#222	#346	112	170	#341	64
Internal Link Dist (ft)		548			328			557			275	
Turn Bay Length (ft)	200			200			400		75	170		75
Base Capacity (vph)	181	1183		203	1308		329	389	440	333	369	313
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.85		0.75	0.60		0.79	0.80	0.45	0.69	0.84	0.16

Intersection Summary

Area Type: Other
Cycle Length: 145
Actuated Cycle Length: 112
Natural Cycle: 145
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.85
Intersection Signal Delay: 42.9 Intersection LOS: D
Intersection Capacity Utilization 80.8% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike)



Lane Group	Ø9
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	74	916	22	82	892	74	0	0	300	0	0	31
Future Volume (vph)	74	916	22	82	892	74	0	0	300	0	0	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	13	13	12	13	13
Storage Length (ft)	65		0	100		0	0		25	0		25
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	50			50			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.996			0.989				0.865			0.865
Flt Protected	0.950			0.950								
Satd. Flow (prot)	1770	3408	0	1770	1781	0	0	0	1665	0	0	1665
Flt Permitted	0.950			0.950								
Satd. Flow (perm)	1770	3408	0	1770	1781	0	0	0	1665	0	0	1665
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		401			502			114			133	
Travel Time (s)		9.1			11.4			3.1			3.6	
Peak Hour Factor	0.93	0.93	0.93	0.90	0.90	0.90	0.84	0.84	0.84	0.85	0.85	0.85
Adj. Flow (vph)	80	985	24	91	991	82	0	0	357	0	0	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	80	1009	0	91	1073	0	0	0	357	0	0	36
Sign Control		Free			Free			Stop			Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 62.2%	ICU Level of Service B
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	4.6

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	74	916	22	82	892	74	0	0	300	0	0	31
Future Vol, veh/h	74	916	22	82	892	74	0	0	300	0	0	31
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	65	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	93	93	93	90	90	90	84	84	84	85	85	85
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	80	985	24	91	991	82	0	0	357	0	0	36

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1073	0	0	1009	0	0	-	-	505	-	-	1032
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.13	-	-	4.13	-	-	-	-	6.93	-	-	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	-	-	3.319	-	-	3.319
Pot Cap-1 Maneuver	648	-	-	685	-	-	0	0	513	0	0	282
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	648	-	-	685	-	-	-	-	513	-	-	282
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	0.8	0.9	26.6	19.7
HCM LOS			D	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	513	648	-	-	685	-	-	282
HCM Lane V/C Ratio	0.696	0.123	-	-	0.133	-	-	0.129
HCM Control Delay (s)	26.6	11.3	-	-	11.1	-	-	19.7
HCM Lane LOS	D	B	-	-	B	-	-	C
HCM 95th %tile Q(veh)	5.4	0.4	-	-	0.5	-	-	0.4

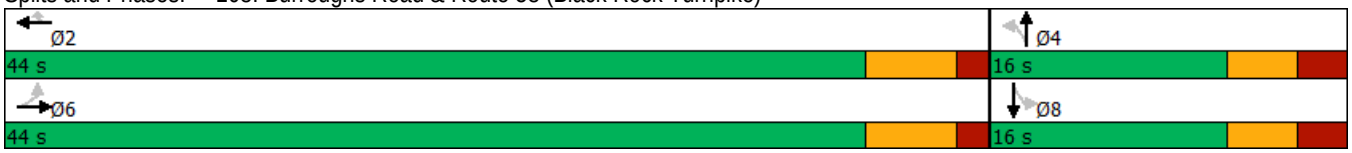
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	86	973	15	0	753	156	18	110	7	129	52	52
Future Volume (vph)	86	973	15	0	753	156	18	110	7	129	52	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	16	12	12	16	12
Storage Length (ft)	65		0	0		130	0		0	125		0
Storage Lanes	1		0	0		1	0		0	1		0
Taper Length (ft)	50			25			25			50		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998				0.850		0.993			0.925	
Flt Protected	0.950							0.993		0.950		
Satd. Flow (prot)	1770	3414	0	0	1801	1583	0	2082	0	1770	1953	0
Flt Permitted	0.243							0.932		0.766		
Satd. Flow (perm)	453	3414	0	0	1801	1583	0	1954	0	1427	1953	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		5				170		4			56	
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		407			390			466			265	
Travel Time (s)		9.3			8.9			12.7			7.2	
Peak Hour Factor	0.99	0.99	0.99	0.92	0.92	0.92	0.90	0.90	0.90	0.93	0.93	0.93
Adj. Flow (vph)	87	983	15	0	818	170	20	122	8	139	56	56
Shared Lane Traffic (%)												
Lane Group Flow (vph)	87	998	0	0	818	170	0	150	0	139	112	0
Turn Type	Perm	NA			NA	Perm	Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6					2	4			8		
Detector Phase	6	6			2	2	4	4		8	8	
Switch Phase												
Minimum Initial (s)	15.0	15.0			15.0	15.0	9.0	9.0		9.0	9.0	
Minimum Split (s)	20.6	20.6			20.6	20.6	14.4	14.4		14.4	14.4	
Total Split (s)	44.0	44.0			44.0	44.0	16.0	16.0		16.0	16.0	
Total Split (%)	73.3%	73.3%			73.3%	73.3%	26.7%	26.7%		26.7%	26.7%	
Yellow Time (s)	4.1	4.1			4.1	4.1	3.1	3.1		3.1	3.1	
All-Red Time (s)	1.5	1.5			1.5	1.5	2.3	2.3		2.3	2.3	
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)	5.6	5.6			5.6	5.6		5.4		5.4	5.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Min	Min			Min	Min	None	None		None	None	
Act Effct Green (s)	32.5	32.5			32.5	32.5		10.1		10.1	10.1	
Actuated g/C Ratio	0.67	0.67			0.67	0.67		0.21		0.21	0.21	
v/c Ratio	0.29	0.44			0.68	0.15		0.37		0.47	0.25	
Control Delay	8.3	6.1			10.8	1.2		22.3		26.5	13.3	
Queue Delay	0.0	0.0			0.0	0.0		0.0		0.0	0.0	
Total Delay	8.3	6.1			10.8	1.2		22.3		26.5	13.3	
LOS	A	A			B	A		C		C	B	
Approach Delay		6.2			9.2			22.3			20.6	
Approach LOS		A			A			C			C	
Queue Length 50th (ft)	11	76			155	0		36		36	13	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	34	113			283	16		95		#99	55	
Internal Link Dist (ft)		327			310			386			185	
Turn Bay Length (ft)	65					130				125		
Base Capacity (vph)	365	2756			1453	1310		446		324	486	
Starvation Cap Reductn	0	0			0	0		0		0	0	
Spillback Cap Reductn	0	0			0	0		0		0	0	
Storage Cap Reductn	0	0			0	0		0		0	0	
Reduced v/c Ratio	0.24	0.36			0.56	0.13		0.34		0.43	0.23	

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 48.6
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.68
Intersection Signal Delay: 9.8 Intersection LOS: A
Intersection Capacity Utilization 79.8% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 108: Burroughs Road & Route 58 (Black Rock Turnpike)



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	630	6	49	414	0	84
Future Volume (vph)	630	6	49	414	0	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	10	10
Storage Length (ft)		0	0		0	50
Storage Lanes		0	0		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00
Frt	0.999					0.850
Flt Protected				0.995		
Satd. Flow (prot)	3418	0	0	1792	1739	1478
Flt Permitted				0.995		
Satd. Flow (perm)	3418	0	0	1792	1739	1478
Link Speed (mph)	30			30	25	
Link Distance (ft)	1095			214	782	
Travel Time (s)	24.9			4.9	21.3	
Peak Hour Factor	0.95	0.95	0.90	0.90	0.83	0.83
Adj. Flow (vph)	663	6	54	460	0	101
Shared Lane Traffic (%)						
Lane Group Flow (vph)	669	0	0	514	0	101
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 48.8%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	630	6	49	414	0	84
Future Vol, veh/h	630	6	49	414	0	84
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	90	90	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	663	6	54	460	0	101

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	669	0	1234	335
Stage 1	-	-	-	-	666	-
Stage 2	-	-	-	-	568	-
Critical Hdwy	-	-	4.13	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.219	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	919	-	181	662
Stage 1	-	-	-	-	473	-
Stage 2	-	-	-	-	566	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	919	-	167	662
Mov Cap-2 Maneuver	-	-	-	-	167	-
Stage 1	-	-	-	-	436	-
Stage 2	-	-	-	-	566	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	11.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	662	-	-	919	-
HCM Lane V/C Ratio	-	0.153	-	-	0.059	-
HCM Control Delay (s)	0	11.4	-	-	9.2	0
HCM Lane LOS	A	B	-	-	A	A
HCM 95th %tile Q(veh)	-	0.5	-	-	0.2	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	34	96	55	492	562	28
Future Volume (vph)	34	96	55	492	562	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	12	12
Storage Length (ft)	0	0	25			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		50			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.900				0.994	
Flt Protected	0.987		0.950			
Satd. Flow (prot)	1875	0	1770	1863	1852	0
Flt Permitted	0.987		0.950			
Satd. Flow (perm)	1875	0	1770	1863	1852	0
Link Speed (mph)	25			30	30	
Link Distance (ft)	586			395	218	
Travel Time (s)	16.0			9.0	5.0	
Peak Hour Factor	0.83	0.83	0.91	0.91	0.95	0.95
Adj. Flow (vph)	41	116	60	541	592	29
Shared Lane Traffic (%)						
Lane Group Flow (vph)	157	0	60	541	621	0
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 52.4%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	34	96	55	492	562	28
Future Vol, veh/h	34	96	55	492	562	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	25	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	91	91	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	41	116	60	541	592	29

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1268	607	621	0	-	0
Stage 1	607	-	-	-	-	-
Stage 2	661	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	186	496	960	-	-	-
Stage 1	544	-	-	-	-	-
Stage 2	514	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	174	496	960	-	-	-
Mov Cap-2 Maneuver	174	-	-	-	-	-
Stage 1	510	-	-	-	-	-
Stage 2	514	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	24.9	0.9	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	960	-	334	-	-
HCM Lane V/C Ratio	0.063	-	0.469	-	-
HCM Control Delay (s)	9	-	24.9	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.2	-	2.4	-	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1101	3	0	877	0	11
Future Volume (vph)	1101	3	0	877	0	11
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
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	0	1611
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	0	1611
Link Speed (mph)	30			30	30	
Link Distance (ft)	187			131	186	
Travel Time (s)	4.3			3.0	4.2	
Peak Hour Factor	0.97	0.97	0.92	0.92	0.80	0.80
Adj. Flow (vph)	1135	3	0	953	0	14
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1138	0	0	953	0	14
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 68.1%	ICU Level of Service C
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1101	3	0	877	0	11
Future Vol, veh/h	1101	3	0	877	0	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	92	92	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1135	3	0	953	0	14

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	1137
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	-	-	0	-	0	246
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	246
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	20.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	246	-	-	-
HCM Lane V/C Ratio	0.056	-	-	-
HCM Control Delay (s)	20.5	-	-	-
HCM Lane LOS	C	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-

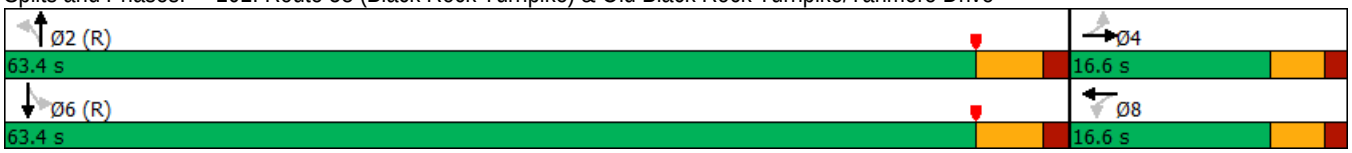
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	1	2	75	1	111	2	820	77	71	895	8
Future Volume (vph)	6	1	2	75	1	111	2	820	77	71	895	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	16	12	12	13	12	12	13	12
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		0.966			0.920			0.988			0.999	
Flt Protected		0.968			0.980						0.996	
Satd. Flow (prot)	0	1974	0	0	1903	0	0	1902	0	0	1915	0
Flt Permitted		0.721			0.864			0.999			0.874	
Satd. Flow (perm)	0	1470	0	0	1678	0	0	1900	0	0	1681	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			77			15			1	
Link Speed (mph)		25			30			35			35	
Link Distance (ft)		378			442			1898			522	
Travel Time (s)		10.3			10.0			37.0			10.2	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	8	1	3	94	1	139	2	872	82	76	952	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	12	0	0	234	0	0	956	0	0	1037	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	11.7	11.7		11.7	11.7		20.6	20.6		20.6	20.6	
Total Split (s)	16.6	16.6		16.6	16.6		63.4	63.4		63.4	63.4	
Total Split (%)	20.8%	20.8%		20.8%	20.8%		79.3%	79.3%		79.3%	79.3%	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.4	1.4		1.4	1.4		1.6	1.6		1.6	1.6	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.7			4.7			5.6			5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Min	C-Min		C-Min	C-Min	
Act Effct Green (s)		10.8			10.8			58.9			58.9	
Actuated g/C Ratio		0.14			0.14			0.74			0.74	
v/c Ratio		0.06			0.80			0.68			0.84	
Control Delay		26.6			43.3			9.0			16.1	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		26.6			43.3			9.0			16.1	
LOS		C			D			A			B	
Approach Delay		26.6			43.3			9.0			16.1	
Approach LOS		C			D			A			B	
Queue Length 50th (ft)		4			74			221			324	
Queue Length 95th (ft)		16			#132			544			#683	
Internal Link Dist (ft)		298			362			1818			442	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		225			319			1407			1241	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.05			0.73			0.68			0.84	

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 43 (54%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 15.9 Intersection LOS: B
Intersection Capacity Utilization 122.8% ICU Level of Service H
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive



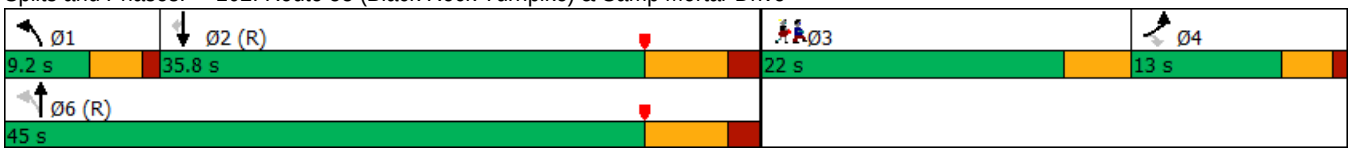
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Lane Configurations							
Traffic Volume (vph)	120	207	144	803	810	77	
Future Volume (vph)	120	207	144	803	810	77	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	10	10	11	11	12	12	
Storage Length (ft)	0	50	100			50	
Storage Lanes	1	1	1			1	
Taper Length (ft)	25		50				
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00	
Frt		0.850				0.850	
Flt Protected	0.950		0.950				
Satd. Flow (prot)	1652	1478	1711	3421	1863	1583	
Flt Permitted	0.950		0.111				
Satd. Flow (perm)	1652	1478	200	3421	1863	1583	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		252				20	
Link Speed (mph)	25			30	35		
Link Distance (ft)	445			510	341		
Travel Time (s)	12.1			11.6	6.6		
Peak Hour Factor	0.82	0.82	0.98	0.98	0.90	0.90	
Adj. Flow (vph)	146	252	147	819	900	86	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	146	252	147	819	900	86	
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm	
Protected Phases	4		1	6	2		3
Permitted Phases		4	6			2	
Detector Phase	4	4	1	6	2	2	
Switch Phase							
Minimum Initial (s)	9.0	9.0	5.0	15.0	15.0	15.0	7.0
Minimum Split (s)	13.0	13.0	9.2	21.9	21.9	21.9	22.0
Total Split (s)	13.0	13.0	9.2	45.0	35.8	35.8	22.0
Total Split (%)	16.3%	16.3%	11.5%	56.3%	44.8%	44.8%	28%
Yellow Time (s)	3.0	3.0	3.2	4.9	4.9	4.9	4.0
All-Red Time (s)	1.0	1.0	1.0	2.0	2.0	2.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	4.0	4.2	6.9	6.9	6.9	
Lead/Lag	Lag	Lag	Lead		Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	C-Min	C-Min	C-Min	None
Act Effct Green (s)	12.5	12.5	59.3	56.6	44.8	44.8	
Actuated g/C Ratio	0.16	0.16	0.74	0.71	0.56	0.56	
v/c Ratio	0.57	0.57	0.50	0.34	0.86	0.10	
Control Delay	39.7	9.6	15.3	7.5	20.5	4.5	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	39.7	9.6	15.3	7.5	20.5	4.5	
LOS	D	A	B	A	C	A	
Approach Delay	20.7			8.7	19.1		
Approach LOS	C			A	B		
Queue Length 50th (ft)	68	0	24	50	298	4	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Queue Length 95th (ft)	107	42	95	205	m#671	m10	
Internal Link Dist (ft)	365			430	261		
Turn Bay Length (ft)		50	100			50	
Base Capacity (vph)	257	442	292	2422	1043	895	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.57	0.57	0.50	0.34	0.86	0.10	

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow, Master Intersection
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 15.1 Intersection LOS: B
Intersection Capacity Utilization 70.7% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive



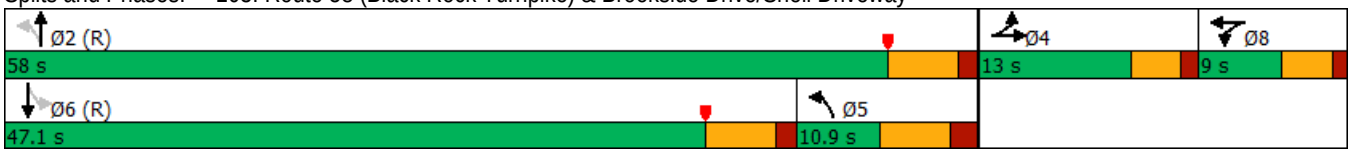
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	89	0	59	3	2	41	54	900	1	7	952	108
Future Volume (vph)	89	0	59	3	2	41	54	900	1	7	952	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	16	12	12	12	12	12	12	12
Storage Length (ft)	50		0	0		0	0		0	200		0
Storage Lanes	1		0	0		0	0		0	1		0
Taper Length (ft)	50			25			25			50		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.875			0.880						0.985	
Flt Protected	0.950	0.992			0.996			0.997				
Satd. Flow (prot)	1905	1536	0	0	1850	0	0	3529	0	0	3486	0
Flt Permitted	0.950	0.992			0.996			0.821			0.949	
Satd. Flow (perm)	1905	1536	0	0	1850	0	0	2906	0	0	3308	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		168			48						23	
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		347			133			293			336	
Travel Time (s)		9.5			3.6			6.7			7.6	
Peak Hour Factor	0.83	0.83	0.83	0.85	0.85	0.85	0.98	0.98	0.98	0.96	0.96	0.96
Adj. Flow (vph)	107	0	71	4	2	48	55	918	1	7	992	113
Shared Lane Traffic (%)	13%											
Lane Group Flow (vph)	93	85	0	0	54	0	0	974	0	0	1112	0
Turn Type	Split	NA		Split	NA		pm+pt	NA		Perm	NA	
Protected Phases	4	4		8	8		5	2			6	
Permitted Phases							2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	9.0	9.0		5.0	5.0		5.0	15.0		15.0	15.0	
Minimum Split (s)	13.0	13.0		9.0	9.0		10.9	20.4		20.4	20.4	
Total Split (s)	13.0	13.0		9.0	9.0		10.9	58.0		47.1	47.1	
Total Split (%)	16.3%	16.3%		11.3%	11.3%		13.6%	72.5%		58.9%	58.9%	
Yellow Time (s)	3.0	3.0		3.0	3.0		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.7	1.2		1.2	1.2	
Lost Time Adjust (s)	0.0	0.0			0.0			0.0			0.0	
Total Lost Time (s)	4.0	4.0			4.0			5.4			5.4	
Lead/Lag							Lag			Lead	Lead	
Lead-Lag Optimize?							Yes			Yes	Yes	
Recall Mode	None	None		None	None		None	C-Min		C-Min	C-Min	
Act Effct Green (s)	9.7	9.7			6.5			58.0			58.0	
Actuated g/C Ratio	0.12	0.12			0.08			0.72			0.72	
v/c Ratio	0.40	0.26			0.28			0.46			0.46	
Control Delay	37.9	1.8			16.4			2.0			3.9	
Queue Delay	0.0	0.0			0.0			0.0			0.0	
Total Delay	37.9	1.8			16.4			2.0			3.9	
LOS	D	A			B			A			A	
Approach Delay		20.7			16.4			2.0			3.9	
Approach LOS		C			B			A			A	
Queue Length 50th (ft)	46	0			3			46			63	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	82	0			32			37			m47	
Internal Link Dist (ft)		267			53			213			256	
Turn Bay Length (ft)	50											
Base Capacity (vph)	230	332			194			2175			2404	
Starvation Cap Reductn	0	0			0			42			0	
Spillback Cap Reductn	0	0			0			0			15	
Storage Cap Reductn	0	0			0			0			0	
Reduced v/c Ratio	0.40	0.26			0.28			0.46			0.47	

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 24 (30%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.46
Intersection Signal Delay: 4.7 Intersection LOS: A
Intersection Capacity Utilization 79.7% ICU Level of Service D
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 103: Route 58 (Black Rock Turnpike) & Brookside Drive/Shell Driveway



Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Lane Configurations						
Traffic Volume (vph)	110	131	871	94	108	924
Future Volume (vph)	110	131	871	94	108	924
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	11	12	12	11
Storage Length (ft)	0	75		0	0	
Storage Lanes	1	1		0	1	
Taper Length (ft)	25				25	
Lane Util. Factor	1.00	1.00	0.95	0.95	1.00	1.00
Frt		0.850	0.985			
Flt Protected	0.950				0.950	
Satd. Flow (prot)	1770	1531	3370	0	1770	1801
Flt Permitted	0.950				0.240	
Satd. Flow (perm)	1770	1531	3370	0	447	1801
Right Turn on Red		No		Yes		
Satd. Flow (RTOR)			22			
Link Speed (mph)	25		30			30
Link Distance (ft)	499		535			293
Travel Time (s)	13.6		12.2			6.7
Peak Hour Factor	0.80	0.80	0.97	0.97	0.96	0.96
Adj. Flow (vph)	138	164	898	97	113	963
Shared Lane Traffic (%)						
Lane Group Flow (vph)	138	164	995	0	113	963
Turn Type	Prot	Perm	NA		pm+pt	NA
Protected Phases	4		2		1	6
Permitted Phases		4			6	
Detector Phase	4	4	2		1	6
Switch Phase						
Minimum Initial (s)	9.0	9.0	15.0		5.0	15.0
Minimum Split (s)	13.0	13.0	20.3		11.5	20.3
Total Split (s)	19.0	19.0	48.4		12.6	61.0
Total Split (%)	23.8%	23.8%	60.5%		15.8%	76.3%
Yellow Time (s)	3.0	3.0	4.3		4.3	4.3
All-Red Time (s)	1.0	1.0	1.0		2.2	1.0
Lost Time Adjust (s)	0.0	0.0	0.0		0.0	0.0
Total Lost Time (s)	4.0	4.0	5.3		6.5	5.3
Lead/Lag			Lead		Lag	
Lead-Lag Optimize?			Yes		Yes	
Recall Mode	None	None	C-Min		None	C-Min
Act Effct Green (s)	12.5	12.5	47.2		58.0	58.2
Actuated g/C Ratio	0.16	0.16	0.59		0.72	0.73
v/c Ratio	0.50	0.69	0.50		0.26	0.74
Control Delay	36.8	46.7	12.0		2.0	5.4
Queue Delay	0.0	0.0	0.0		0.0	0.2
Total Delay	36.8	46.7	12.0		2.0	5.6
LOS	D	D	B		A	A
Approach Delay	42.2		12.0			5.3
Approach LOS	D		B			A
Queue Length 50th (ft)	64	78	138		4	24

Lane Group	WBL	WBR	NBT	NBR	SBL	SBT
Queue Length 95th (ft)	100	119	232		3	57
Internal Link Dist (ft)	419		455			213
Turn Bay Length (ft)		75				
Base Capacity (vph)	332	287	2054		451	1310
Starvation Cap Reductn	0	0	0		0	40
Spillback Cap Reductn	0	0	0		0	0
Storage Cap Reductn	0	0	0		0	0
Reduced v/c Ratio	0.42	0.57	0.48		0.25	0.76

Intersection Summary

Area Type: Other
Cycle Length: 80
Actuated Cycle Length: 80
Offset: 20 (25%), Referenced to phase 2:NBT and 6:SBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.74
Intersection Signal Delay: 12.8 — Intersection LOS: B
Intersection Capacity Utilization 63.9% — ICU Level of Service B
Analysis Period (min) 15

Splits and Phases: 104: Route 58 (Black Rock Turnpike) & Fairfield Woods Road

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	86	679	171	142	657	160	233	210	157	254	275	61
Future Volume (vph)	86	679	171	142	657	160	233	210	157	254	275	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	11	12	12	11	11	12	12	12	12
Storage Length (ft)	200		325	200		0	400		75	170		75
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	85			50			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.970			0.971				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1711	3319	0	1711	3437	0	1711	1801	1583	1770	1863	1583
Flt Permitted	0.950			0.950			0.325			0.411		
Satd. Flow (perm)	1711	3319	0	1711	3437	0	585	1801	1583	766	1863	1583
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		21			21				125			
Link Speed (mph)		30			30			30			25	
Link Distance (ft)		628			408			637			355	
Travel Time (s)		14.3			9.3			14.5			9.7	
Peak Hour Factor	0.90	0.90	0.90	0.91	0.91	0.91	0.90	0.90	0.90	0.88	0.88	0.88
Adj. Flow (vph)	96	754	190	156	722	176	259	233	174	289	313	69
Shared Lane Traffic (%)												
Lane Group Flow (vph)	96	944	0	156	898	0	259	233	174	289	313	69
Turn Type	Prot	NA		Prot	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases							4		4	8		8
Detector Phase	5	2		1	6		7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	15.0		5.0	15.0		5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.7	21.6		9.7	21.6		9.3	16.8	16.8	9.3	16.8	16.8
Total Split (s)	14.0	43.9		17.9	47.8		18.0	30.5	30.5	19.7	32.2	32.2
Total Split (%)	9.7%	30.3%		12.3%	33.0%		12.4%	21.0%	21.0%	13.6%	22.2%	22.2%
Yellow Time (s)	3.0	4.1		3.0	4.1		3.3	4.4	4.4	3.3	4.4	4.4
All-Red Time (s)	1.7	2.5		1.7	2.5		1.0	2.4	2.4	1.0	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	6.6		4.7	6.6		4.3	6.8	6.8	4.3	6.8	6.8
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min		None	Min		None	None	None	None	None	None
Act Effct Green (s)	9.3	37.3		13.2	41.2		38.8	22.6	22.6	42.2	24.3	24.3
Actuated g/C Ratio	0.08	0.34		0.12	0.37		0.35	0.20	0.20	0.38	0.22	0.22
v/c Ratio	0.67	0.84		0.77	0.70		0.75	0.63	0.41	0.67	0.77	0.20
Control Delay	73.1	41.2		72.6	32.5		39.5	49.0	15.6	32.5	54.2	36.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.1	41.2		72.6	32.5		39.5	49.0	15.6	32.5	54.2	36.9
LOS	E	D		E	C		D	D	B	C	D	D
Approach Delay		44.2			38.4			36.6			43.1	
Approach LOS		D			D			D			D	
Queue Length 50th (ft)	68	323		111	280		127	153	29	144	211	40

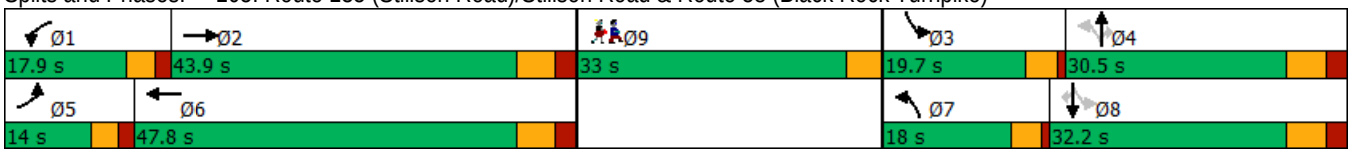
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	33.0
Total Split (s)	33.0
Total Split (%)	23%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	#146	408		#216	355		#215	238	91	212	304	78
Internal Link Dist (ft)		548			328			557			275	
Turn Bay Length (ft)	200			200			400		75	170		75
Base Capacity (vph)	143	1130		203	1290		344	385	436	431	426	362
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.84		0.77	0.70		0.75	0.61	0.40	0.67	0.73	0.19

Intersection Summary

Area Type: Other
Cycle Length: 145
Actuated Cycle Length: 110.9
Natural Cycle: 145
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 40.7 Intersection LOS: D
Intersection Capacity Utilization 78.1% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike)



Lane Group	Ø9
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Lanes, Volumes, Timings

Timing Plan: Saturday Midday

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	94	846	48	100	977	118	0	0	329	0	0	41
Future Volume (vph)	94	846	48	100	977	118	0	0	329	0	0	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	13	13	12	13	13
Storage Length (ft)	65		0	100		0	0		25	0		25
Storage Lanes	1		0	1		0	0		0	0		0
Taper Length (ft)	50			50			25			25		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992			0.984				0.865			0.865
Flt Protected	0.950			0.950								
Satd. Flow (prot)	1770	3394	0	1770	1772	0	0	0	1665	0	0	1665
Flt Permitted	0.950			0.950								
Satd. Flow (perm)	1770	3394	0	1770	1772	0	0	0	1665	0	0	1665
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		401			502			114			133	
Travel Time (s)		9.1			11.4			3.1			3.6	
Peak Hour Factor	0.96	0.96	0.96	0.95	0.95	0.95	0.92	0.92	0.92	0.81	0.81	0.81
Adj. Flow (vph)	98	881	50	105	1028	124	0	0	358	0	0	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	98	931	0	105	1152	0	0	0	358	0	0	51
Sign Control		Free			Free			Stop			Stop	

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

Intersection	
Int Delay, s/veh	4.4

Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Vol, veh/h	94	846	48	100	977	118	0	0	329	0	0	41
Future Vol, veh/h	94	846	48	100	977	118	0	0	329	0	0	41
Conflicting Peds, #/hr	0	0	0	0	0	0	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Free	Free	Stop	Stop	Stop	Stop	Stop	Stop
RT Channelized	-	-	None	-	-	None	-	-	None	-	-	None
Storage Length	65	-	-	100	-	-	-	-	-	-	-	-
Veh in Median Storage, #	-	0	-	-	0	-	-	0	-	-	0	-
Grade, %	-	0	-	-	0	-	-	0	-	-	0	-
Peak Hour Factor	96	96	96	95	95	95	92	92	92	81	81	81
Heavy Vehicles, %	2	2	2	2	2	2	2	2	2	2	2	2
Mvmt Flow	98	881	50	105	1028	124	0	0	358	0	0	51

Major/Minor	Major1			Major2			Minor1			Minor2		
Conflicting Flow All	1152	0	0	931	0	0	-	-	466	-	-	1090
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy	4.13	-	-	4.13	-	-	-	-	6.93	-	-	6.23
Critical Hdwy Stg 1	-	-	-	-	-	-	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-	-	-	-	-	-	-
Follow-up Hdwy	2.219	-	-	2.219	-	-	-	-	3.319	-	-	3.319
Pot Cap-1 Maneuver	604	-	-	733	-	-	0	0	544	0	0	261
Stage 1	-	-	-	-	-	-	0	0	-	0	0	-
Stage 2	-	-	-	-	-	-	0	0	-	0	0	-
Platoon blocked, %		-	-		-	-						
Mov Cap-1 Maneuver	604	-	-	733	-	-	-	-	544	-	-	261
Mov Cap-2 Maneuver	-	-	-	-	-	-	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-	-	-	-	-	-	-

Approach	EB	WB	NB	SB
HCM Control Delay, s	1.2	0.9	23.4	22.1
HCM LOS			C	C

Minor Lane/Major Mvmt	NBLn1	EBL	EBT	EBR	WBL	WBT	WBR	SBLn1
Capacity (veh/h)	544	604	-	-	733	-	-	261
HCM Lane V/C Ratio	0.657	0.162	-	-	0.144	-	-	0.194
HCM Control Delay (s)	23.4	12.1	-	-	10.7	-	-	22.1
HCM Lane LOS	C	B	-	-	B	-	-	C
HCM 95th %tile Q(veh)	4.8	0.6	-	-	0.5	-	-	0.7

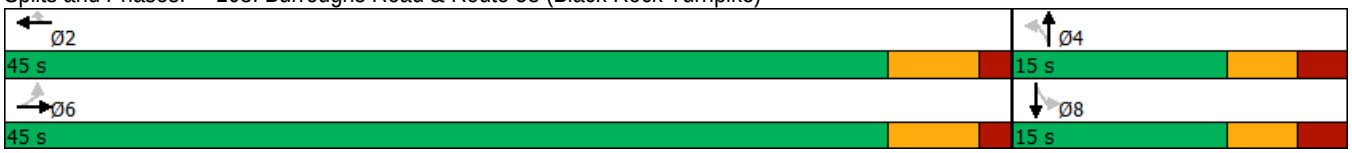
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	874	15	0	865	112	20	64	10	126	52	65
Future Volume (vph)	80	874	15	0	865	112	20	64	10	126	52	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	16	12	12	16	12
Storage Length (ft)	65		0	0		130	0		0	125		0
Storage Lanes	1		0	0		1	0		0	1		0
Taper Length (ft)	50			25			25			50		
Lane Util. Factor	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998				0.850		0.986			0.917	
Flt Protected	0.950							0.989		0.950		
Satd. Flow (prot)	1770	3414	0	0	1801	1583	0	2059	0	1770	1936	0
Flt Permitted	0.202							0.890		0.904		
Satd. Flow (perm)	376	3414	0	0	1801	1583	0	1853	0	1684	1936	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		6				118		8			70	
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		407			390			466			265	
Travel Time (s)		9.3			8.9			12.7			7.2	
Peak Hour Factor	0.92	0.92	0.92	0.95	0.95	0.95	0.88	0.88	0.88	0.93	0.93	0.93
Adj. Flow (vph)	87	950	16	0	911	118	23	73	11	135	56	70
Shared Lane Traffic (%)												
Lane Group Flow (vph)	87	966	0	0	911	118	0	107	0	135	126	0
Turn Type	Perm	NA			NA	Perm	Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6					2	4			8		
Detector Phase	6	6			2	2	4	4		8	8	
Switch Phase												
Minimum Initial (s)	15.0	15.0			15.0	15.0	9.0	9.0		9.0	9.0	
Minimum Split (s)	20.6	20.6			20.6	20.6	14.4	14.4		14.4	14.4	
Total Split (s)	45.0	45.0			45.0	45.0	15.0	15.0		15.0	15.0	
Total Split (%)	75.0%	75.0%			75.0%	75.0%	25.0%	25.0%		25.0%	25.0%	
Yellow Time (s)	4.1	4.1			4.1	4.1	3.1	3.1		3.1	3.1	
All-Red Time (s)	1.5	1.5			1.5	1.5	2.3	2.3		2.3	2.3	
Lost Time Adjust (s)	0.0	0.0			0.0	0.0		0.0		0.0	0.0	
Total Lost Time (s)	5.6	5.6			5.6	5.6		5.4		5.4	5.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	Min	Min			Min	Min	None	None		None	None	
Act Effct Green (s)	35.1	35.1			35.1	35.1		9.6		9.6	9.6	
Actuated g/C Ratio	0.70	0.70			0.70	0.70		0.19		0.19	0.19	
v/c Ratio	0.33	0.41			0.73	0.10		0.30		0.42	0.30	
Control Delay	9.2	5.3			11.7	1.2		22.4		26.2	13.7	
Queue Delay	0.0	0.0			0.0	0.0		0.0		0.0	0.0	
Total Delay	9.2	5.3			11.7	1.2		22.4		26.2	13.7	
LOS	A	A			B	A		C		C	B	
Approach Delay		5.6			10.5			22.4			20.2	
Approach LOS		A			B			C			C	
Queue Length 50th (ft)	11	68			180	0		27		38	15	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	37	101			336	12		70		93	58	
Internal Link Dist (ft)		327			310			386			185	
Turn Bay Length (ft)	65					130				125		
Base Capacity (vph)	297	2705			1426	1278		373		333	439	
Starvation Cap Reductn	0	0			0	0		0		0	0	
Spillback Cap Reductn	0	0			0	0		0		0	0	
Storage Cap Reductn	0	0			0	0		0		0	0	
Reduced v/c Ratio	0.29	0.36			0.64	0.09		0.29		0.41	0.29	

Intersection Summary

Area Type: Other
Cycle Length: 60
Actuated Cycle Length: 50.4
Natural Cycle: 60
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.73
Intersection Signal Delay: 9.9 Intersection LOS: A
Intersection Capacity Utilization 85.5% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 108: Burroughs Road & Route 58 (Black Rock Turnpike)



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	486	11	41	519	5	57
Future Volume (vph)	486	11	41	519	5	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	10	10
Storage Length (ft)		0	0		0	50
Storage Lanes		0	0		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00
Frt	0.997					0.850
Flt Protected				0.996	0.950	
Satd. Flow (prot)	3411	0	0	1793	1652	1478
Flt Permitted				0.996	0.950	
Satd. Flow (perm)	3411	0	0	1793	1652	1478
Link Speed (mph)	30			30	25	
Link Distance (ft)	1095			214	782	
Travel Time (s)	24.9			4.9	21.3	
Peak Hour Factor	0.88	0.88	0.90	0.90	0.80	0.80
Adj. Flow (vph)	552	13	46	577	6	71
Shared Lane Traffic (%)						
Lane Group Flow (vph)	565	0	0	623	6	71
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 56.7%	ICU Level of Service B
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	486	11	41	519	5	57
Future Vol, veh/h	486	11	41	519	5	57
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	90	90	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	552	13	46	577	6	71

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	565	0	1228	283
Stage 1	-	-	-	-	559	-
Stage 2	-	-	-	-	669	-
Critical Hdwy	-	-	4.13	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.219	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	1005	-	183	715
Stage 1	-	-	-	-	537	-
Stage 2	-	-	-	-	508	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1005	-	171	715
Mov Cap-2 Maneuver	-	-	-	-	171	-
Stage 1	-	-	-	-	501	-
Stage 2	-	-	-	-	508	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	11.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	171	715	-	-	1005	-
HCM Lane V/C Ratio	0.037	0.1	-	-	0.045	-
HCM Control Delay (s)	26.9	10.6	-	-	8.8	0
HCM Lane LOS	D	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	0.3	-	-	0.1	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	22	74	53	495	599	38
Future Volume (vph)	22	74	53	495	599	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	12	12
Storage Length (ft)	0	0	25			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		50			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.896				0.992	
Flt Protected	0.989		0.950			
Satd. Flow (prot)	1871	0	1770	1863	1848	0
Flt Permitted	0.989		0.950			
Satd. Flow (perm)	1871	0	1770	1863	1848	0
Link Speed (mph)	25			30	30	
Link Distance (ft)	586			395	218	
Travel Time (s)	16.0			9.0	5.0	
Peak Hour Factor	0.80	0.80	0.98	0.98	0.93	0.93
Adj. Flow (vph)	28	93	54	505	644	41
Shared Lane Traffic (%)						
Lane Group Flow (vph)	121	0	54	505	685	0
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 52.9%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	22	74	53	495	599	38
Future Vol, veh/h	22	74	53	495	599	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	25	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	98	98	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	93	54	505	644	41

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1278	665	685	0	-	0
Stage 1	665	-	-	-	-	-
Stage 2	613	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	183	460	908	-	-	-
Stage 1	511	-	-	-	-	-
Stage 2	541	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	172	460	908	-	-	-
Mov Cap-2 Maneuver	172	-	-	-	-	-
Stage 1	481	-	-	-	-	-
Stage 2	541	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	21.9	0.9	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	908	-	332	-	-
HCM Lane V/C Ratio	0.06	-	0.361	-	-
HCM Control Delay (s)	9.2	-	21.9	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.2	-	1.6	-	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	987	5	0	963	0	14
Future Volume (vph)	987	5	0	963	0	14
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	0.999					0.865
Flt Protected						
Satd. Flow (prot)	1861	0	0	1863	0	1611
Flt Permitted						
Satd. Flow (perm)	1861	0	0	1863	0	1611
Link Speed (mph)	30			30	30	
Link Distance (ft)	187			131	186	
Travel Time (s)	4.3			3.0	4.2	
Peak Hour Factor	0.94	0.94	0.95	0.95	0.80	0.80
Adj. Flow (vph)	1050	5	0	1014	0	18
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1055	0	0	1014	0	18
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 62.3%	ICU Level of Service B
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	987	5	0	963	0	14
Future Vol, veh/h	987	5	0	963	0	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	95	95	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1050	5	0	1014	0	18

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	1053
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	-	-	0	-	0	275
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	275
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	19
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	275	-	-	-
HCM Lane V/C Ratio	0.064	-	-	-
HCM Control Delay (s)	19	-	-	-
HCM Lane LOS	C	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	11	1	3	204	0	167	2	680	26	65	643	4
Future Volume (vph)	11	1	3	204	0	167	2	680	26	65	643	4
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	16	12	12	13	12	12	13	12
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		0.972			0.939			0.995			0.999	
Flt Protected		0.964			0.973						0.995	
Satd. Flow (prot)	0	1959	0	0	1910	0	0	1897	0	0	1895	0
Flt Permitted		0.778			0.818			0.999			0.881	
Satd. Flow (perm)	0	1581	0	0	1606	0	0	1895	0	0	1678	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			44			3				
Link Speed (mph)		25			30			35			35	
Link Distance (ft)		378			442			1898			522	
Travel Time (s)		10.3			10.0			37.0			10.2	
Peak Hour Factor	0.80	0.80	0.80	0.84	0.84	0.84	0.94	0.94	0.94	0.91	0.91	0.91
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	14	1	4	243	0	199	2	723	28	71	707	4
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	19	0	0	442	0	0	753	0	0	782	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	11.7	11.7		11.7	11.7		20.6	20.6		20.6	20.6	
Total Split (s)	37.0	37.0		37.0	37.0		63.0	63.0		63.0	63.0	
Total Split (%)	37.0%	37.0%		37.0%	37.0%		63.0%	63.0%		63.0%	63.0%	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.4	1.4		1.4	1.4		1.6	1.6		1.6	1.6	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.7			4.7			5.6			5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Min	C-Min		C-Min	C-Min	
Act Effct Green (s)		28.6			28.6			61.1			61.1	
Actuated g/C Ratio		0.29			0.29			0.61			0.61	
v/c Ratio		0.04			0.90			0.65			0.76	
Control Delay		20.4			53.5			12.2			21.6	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		20.4			53.5			12.2			21.6	
LOS		C			D			B			C	
Approach Delay		20.4			53.5			12.2			21.6	
Approach LOS		C			D			B			C	
Queue Length 50th (ft)		7			239			232			357	
Queue Length 95th (ft)		20			323			238			560	
Internal Link Dist (ft)		298			362			1818			442	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Turn Bay Length (ft)												
Base Capacity (vph)		513			548			1160			1026	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.04			0.81			0.65			0.76	

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 95 (95%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.90
Intersection Signal Delay: 25.1 Intersection LOS: C
Intersection Capacity Utilization 110.9% ICU Level of Service H
Analysis Period (min) 15

Splits and Phases: 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Lane Configurations							
Traffic Volume (vph)	54	136	366	739	622	198	
Future Volume (vph)	54	136	366	739	622	198	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	10	10	11	11	12	12	
Storage Length (ft)	0	50	100			50	
Storage Lanes	1	1	1			1	
Taper Length (ft)	25		50				
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00	
Frt		0.850				0.850	
Flt Protected	0.950		0.950				
Satd. Flow (prot)	1636	1463	1694	3388	1845	1568	
Flt Permitted	0.950		0.193				
Satd. Flow (perm)	1636	1463	344	3388	1845	1568	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		164				54	
Link Speed (mph)	25			30	35		
Link Distance (ft)	445			510	341		
Travel Time (s)	12.1			11.6	6.6		
Peak Hour Factor	0.83	0.83	0.91	0.91	0.94	0.94	
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	
Adj. Flow (vph)	65	164	402	812	662	211	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	65	164	402	812	662	211	
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm	
Protected Phases	4		1	6	2		3
Permitted Phases		4	6			2	
Detector Phase	4	4	1	6	2	2	
Switch Phase							
Minimum Initial (s)	9.0	9.0	5.0	15.0	15.0	15.0	7.0
Minimum Split (s)	13.0	13.0	9.2	21.9	21.9	21.9	22.0
Total Split (s)	13.0	13.0	22.1	65.0	42.9	42.9	22.0
Total Split (%)	13.0%	13.0%	22.1%	65.0%	42.9%	42.9%	22%
Yellow Time (s)	3.0	3.0	3.2	4.9	4.9	4.9	4.0
All-Red Time (s)	1.0	1.0	1.0	2.0	2.0	2.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	4.0	4.2	6.9	6.9	6.9	
Lead/Lag	Lag	Lag	Lead		Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	C-Min	C-Min	C-Min	None
Act Effct Green (s)	9.8	9.8	82.0	79.3	47.7	47.7	
Actuated g/C Ratio	0.10	0.10	0.82	0.79	0.48	0.48	
v/c Ratio	0.41	0.56	0.62	0.30	0.75	0.27	
Control Delay	50.0	14.8	11.9	1.8	26.1	13.7	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	50.0	14.8	11.9	1.8	26.1	13.7	
LOS	D	B	B	A	C	B	
Approach Delay	24.8			5.2	23.1		
Approach LOS	C			A	C		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Queue Length 50th (ft)	40	0	84	2	212	34	
Queue Length 95th (ft)	74	46	86	34	m#561	m98	
Internal Link Dist (ft)	365			430	261		
Turn Bay Length (ft)		50	100			50	
Base Capacity (vph)	160	291	652	2686	880	776	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.41	0.56	0.62	0.30	0.75	0.27	

Intersection Summary

Area Type: Other
Cycle Length: 100
Actuated Cycle Length: 100
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow, Master Intersection
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.75
Intersection Signal Delay: 13.9 Intersection LOS: B
Intersection Capacity Utilization 73.1% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

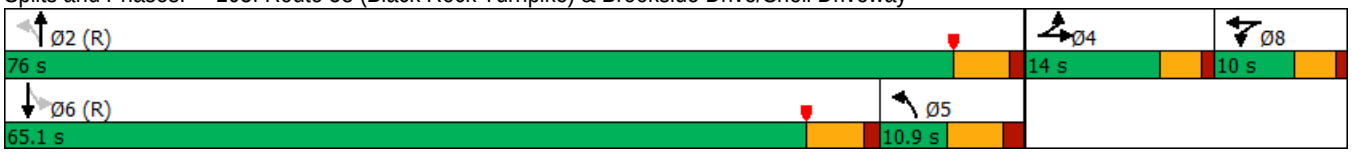
Splits and Phases: 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	61	1	15	3	0	48	59	1051	0	1	586	181
Future Volume (vph)	61	1	15	3	0	48	59	1051	0	1	586	181
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	16	12	12	12	12	12	12	12
Storage Length (ft)	50		0	0		0	0		0	200		0
Storage Lanes	1		0	0		0	0		0	1		0
Taper Length (ft)	50			25			25			50		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.939			0.873						0.965	
Flt Protected	0.950	0.972			0.997			0.997				
Satd. Flow (prot)	1887	1599	0	0	1820	0	0	3494	0	0	3382	0
Flt Permitted	0.950	0.972			0.997			0.837			0.954	
Satd. Flow (perm)	1887	1599	0	0	1820	0	0	2934	0	0	3227	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		19			134						73	
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		347			133			293			336	
Travel Time (s)		9.5			3.6			6.7			7.6	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.90	0.90	0.90	0.88	0.88	0.88
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	76	1	19	4	0	60	66	1168	0	1	666	206
Shared Lane Traffic (%)	35%											
Lane Group Flow (vph)	49	47	0	0	64	0	0	1234	0	0	873	0
Turn Type	Split	NA		Split	NA		pm+pt	NA		Perm	NA	
Protected Phases	4	4		8	8		5	2			6	
Permitted Phases							2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	9.0	9.0		5.0	5.0		5.0	15.0		15.0	15.0	
Minimum Split (s)	13.0	13.0		9.0	9.0		10.9	20.4		20.4	20.4	
Total Split (s)	14.0	14.0		10.0	10.0		10.9	76.0		65.1	65.1	
Total Split (%)	14.0%	14.0%		10.0%	10.0%		10.9%	76.0%		65.1%	65.1%	
Yellow Time (s)	3.0	3.0		3.0	3.0		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.7	1.2		1.2	1.2	
Lost Time Adjust (s)	0.0	0.0			0.0			0.0			0.0	
Total Lost Time (s)	4.0	4.0			4.0			5.4			5.4	
Lead/Lag							Lag			Lead	Lead	
Lead-Lag Optimize?							Yes			Yes	Yes	
Recall Mode	None	None		None	None		None	C-Min		C-Min	C-Min	
Act Effct Green (s)	9.2	9.2			5.6			77.4			77.4	
Actuated g/C Ratio	0.09	0.09			0.06			0.77			0.77	
v/c Ratio	0.28	0.29			0.28			0.54			0.35	
Control Delay	46.9	33.6			3.1			4.6			0.8	
Queue Delay	0.0	0.0			0.0			0.4			0.0	
Total Delay	46.9	33.6			3.1			5.1			0.8	
LOS	D	C			A			A			A	
Approach Delay		40.4			3.1			5.1			0.8	
Approach LOS		D			A			A			A	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	31	17			0			111			11	
Queue Length 95th (ft)	61	47			0			130			8	
Internal Link Dist (ft)		267			53			213			256	
Turn Bay Length (ft)	50											
Base Capacity (vph)	188	177			235			2272			2515	
Starvation Cap Reductn	0	0			0			502			0	
Spillback Cap Reductn	0	0			0			0			25	
Storage Cap Reductn	0	0			0			0			0	
Reduced v/c Ratio	0.26	0.27			0.27			0.70			0.35	

Intersection Summary	
Area Type: Other	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 57 (57%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.54	
Intersection Signal Delay: 4.8	Intersection LOS: A
Intersection Capacity Utilization 73.9%	ICU Level of Service D
Analysis Period (min) 15	

Splits and Phases: 103: Route 58 (Black Rock Turnpike) & Brookside Drive/Shell Driveway

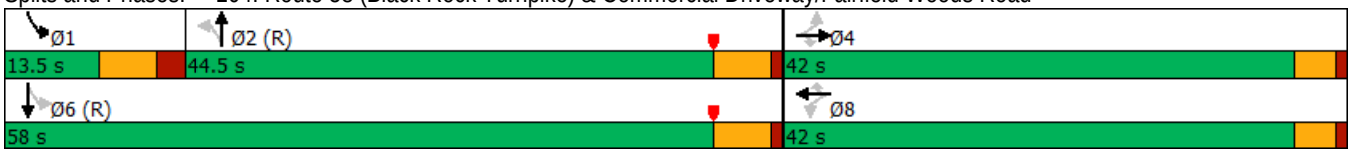


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	0	1	50	0	340	8	783	25	84	533	3
Future Volume (vph)	5	0	1	50	0	340	8	783	25	84	533	3
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	11	12	11	12	12	11	12
Storage Length (ft)	0		0	0		75	200		0	0		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.995			0.999	
Flt Protected		0.950			0.950		0.950			0.950		
Satd. Flow (prot)	0	1752	1568	0	1752	1516	1752	3371	0	1752	1781	0
Flt Permitted		0.720			0.754		0.428			0.203		
Satd. Flow (perm)	0	1328	1568	0	1391	1516	790	3371	0	374	1781	0
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			96					4				
Link Speed (mph)		30			25			30			30	
Link Distance (ft)		97			499			535			293	
Travel Time (s)		2.2			13.6			12.2			6.7	
Peak Hour Factor	0.80	0.80	0.80	0.90	0.90	0.90	0.88	0.88	0.88	0.92	0.92	0.92
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	6	0	1	56	0	378	9	890	28	91	579	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	6	1	0	56	378	9	918	0	91	582	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	4	4	4	8	8	8	2	2		1	6	
Switch Phase												
Minimum Initial (s)	9.0	9.0	9.0	9.0	9.0	9.0	15.0	15.0		3.0	15.0	
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	20.3	20.3		9.5	20.3	
Total Split (s)	42.0	42.0	42.0	42.0	42.0	42.0	44.5	44.5		13.5	58.0	
Total Split (%)	42.0%	42.0%	42.0%	42.0%	42.0%	42.0%	44.5%	44.5%		13.5%	58.0%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.3	4.3		4.3	4.3	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		2.2	1.0	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		4.0	4.0		4.0	4.0	5.3	5.3		6.5	5.3	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Recall Mode	None	None	None	None	None	None	C-Max	C-Max		None	C-Max	
Act Effct Green (s)		29.5	29.5		29.5	29.5	51.2	51.2		60.0	61.2	
Actuated g/C Ratio		0.30	0.30		0.30	0.30	0.51	0.51		0.60	0.61	
v/c Ratio		0.02	0.00		0.14	0.85	0.02	0.53		0.30	0.53	
Control Delay		21.2	0.0		24.0	50.1	17.5	20.1		5.4	5.3	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.2	
Total Delay		21.2	0.0		24.0	50.1	17.5	20.1		5.4	5.6	
LOS		C	A		C	D	B	C		A	A	
Approach Delay		18.2			46.7			20.0			5.5	
Approach LOS		B			D			C			A	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		3	0		26	224	3	208		7	44	
Queue Length 95th (ft)		10	0		50	302	14	313		16	110	
Internal Link Dist (ft)		17			419			455			213	
Turn Bay Length (ft)						75	200					
Base Capacity (vph)		504	655		528	576	404	1727		321	1090	
Starvation Cap Reductn		0	0		0	0	0	0		0	108	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.01	0.00		0.11	0.66	0.02	0.53		0.28	0.59	

Intersection Summary	
Area Type: Other	
Cycle Length: 100	
Actuated Cycle Length: 100	
Offset: 37 (37%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.85	
Intersection Signal Delay: 20.9	Intersection LOS: C
Intersection Capacity Utilization 62.3%	ICU Level of Service B
Analysis Period (min) 15	

Splits and Phases: 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	48	379	133	178	685	71	150	165	62	105	351	46
Future Volume (vph)	48	379	133	178	685	71	150	165	62	105	351	46
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	11	12	12	11	11	12	12	12	12
Storage Length (ft)	200		325	200		0	400		75	170		75
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	85			50			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.961			0.986				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1678	3225	0	1678	3423	0	1678	1766	1553	1736	1827	1553
Flt Permitted	0.950			0.950			0.233			0.579		
Satd. Flow (perm)	1678	3225	0	1678	3423	0	411	1766	1553	1058	1827	1553
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		34			8				186			
Link Speed (mph)		30			30			30			25	
Link Distance (ft)		628			408			637			355	
Travel Time (s)		14.3			9.3			14.5			9.7	
Peak Hour Factor	0.88	0.88	0.88	0.86	0.86	0.86	0.80	0.80	0.80	0.81	0.81	0.81
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	55	431	151	207	797	83	188	206	78	130	433	57
Shared Lane Traffic (%)												
Lane Group Flow (vph)	55	582	0	207	880	0	188	206	78	130	433	57
Turn Type	Prot	NA		Prot	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases							4		4	8		8
Detector Phase	5	2		1	6		7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	15.0		5.0	15.0		5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.7	21.6		9.7	21.6		9.3	16.8	16.8	9.3	16.8	16.8
Total Split (s)	12.0	27.0		20.0	35.0		12.0	32.1	32.1	12.9	33.0	33.0
Total Split (%)	9.6%	21.6%		16.0%	28.0%		9.6%	25.7%	25.7%	10.3%	26.4%	26.4%
Yellow Time (s)	3.0	4.1		3.0	4.1		3.3	4.4	4.4	3.3	4.4	4.4
All-Red Time (s)	1.7	2.5		1.7	2.5		1.0	2.4	2.4	1.0	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	6.6		4.7	6.6		4.3	6.8	6.8	4.3	6.8	6.8
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min		None	Min		None	None	None	None	None	None
Act Effct Green (s)	6.8	20.4		15.3	30.9		36.2	26.0	26.0	36.6	26.2	26.2
Actuated g/C Ratio	0.07	0.22		0.17	0.34		0.39	0.28	0.28	0.40	0.28	0.28
v/c Ratio	0.44	0.79		0.74	0.76		0.70	0.41	0.14	0.27	0.83	0.13
Control Delay	52.1	40.5		54.1	33.3		33.4	30.2	0.5	17.2	46.6	25.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	52.1	40.5		54.1	33.3		33.4	30.2	0.5	17.2	46.6	25.5
LOS	D	D		D	C		C	C	A	B	D	C
Approach Delay		41.5			37.2			26.6			38.5	
Approach LOS		D			D			C			D	

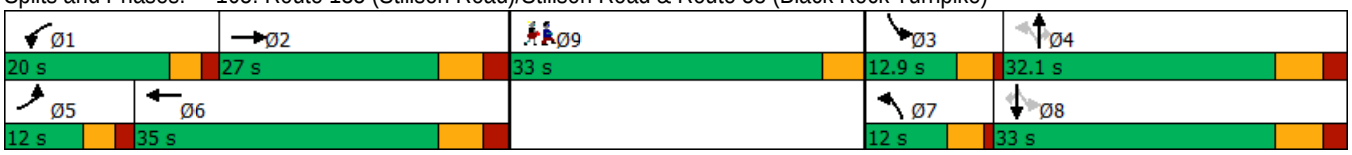
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	33.0
Total Split (s)	33.0
Total Split (%)	26%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	31	159		116	247		67	98	0	44	236	25
Queue Length 95th (ft)	68	214		#202	303		98	142	0	71	#308	49
Internal Link Dist (ft)		548			328			557			275	
Turn Bay Length (ft)	200			200			400		75	170		75
Base Capacity (vph)	133	741		279	1154		267	498	572	492	520	442
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.41	0.79		0.74	0.76		0.70	0.41	0.14	0.26	0.83	0.13

Intersection Summary

Area Type: Other
Cycle Length: 125
Actuated Cycle Length: 92
Natural Cycle: 145
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 36.7 Intersection LOS: D
Intersection Capacity Utilization 70.8% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike)



Lane Group	Ø9
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	24	471	8	25	892	42	51	5	20	29	1	11
Future Volume (vph)	24	471	8	25	892	42	51	5	20	29	1	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	13	13	12	13	13
Storage Length (ft)	0		0	325		0	0		25	0		25
Storage Lanes	0		0	1		0	0		1	0		1
Taper Length (ft)	50			50			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998			0.993				0.850			0.850
Flt Protected		0.998			0.999			0.956			0.954	
Satd. Flow (prot)	0	3342	0	0	3329	0	0	1805	1605	0	1801	1605
Flt Permitted		0.876			0.927			0.720			0.681	
Satd. Flow (perm)	0	2933	0	0	3089	0	0	1359	1605	0	1286	1605
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			7				131			131
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		401			502			123			137	
Travel Time (s)		9.1			11.4			3.4			3.7	
Peak Hour Factor	0.80	0.80	0.80	0.89	0.89	0.89	0.80	0.80	0.80	0.91	0.91	0.91
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	30	589	10	28	1002	47	64	6	25	32	1	12
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	629	0	0	1077	0	0	70	25	0	33	12
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2			4		4	4		4
Detector Phase	1	6		2	2		4	4	4	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	15.0		15.0	15.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	9.0	20.8		20.8	20.8		11.0	11.0	11.0	11.0	11.0	11.0
Total Split (s)	9.0	56.0		47.0	47.0		12.0	12.0	12.0	12.0	12.0	12.0
Total Split (%)	10.0%	62.2%		52.2%	52.2%		13.3%	13.3%	13.3%	13.3%	13.3%	13.3%
Yellow Time (s)	3.0	4.3		4.3	4.3		3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.5		1.5	1.5		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0			0.0			0.0	0.0		0.0	0.0
Total Lost Time (s)		5.8			5.8			4.0	4.0		4.0	4.0
Lead/Lag	Lead			Lag	Lag		Lag	Lag	Lag	Lag	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Min	C-Max		C-Max	C-Max		None	None	None	None	None	None
Act Effct Green (s)		72.8			63.3			9.6	9.6		9.6	9.6
Actuated g/C Ratio		0.81			0.70			0.11	0.11		0.11	0.11
v/c Ratio		0.26			0.50			0.48	0.09		0.24	0.04
Control Delay		2.9			2.3			48.3	0.6		40.0	0.3
Queue Delay		0.0			0.2			0.0	0.0		0.0	0.0
Total Delay		2.9			2.5			48.3	0.6		40.0	0.3
LOS		A			A			D	A		D	A
Approach Delay		2.9			2.5			35.8			29.4	
Approach LOS		A			A			D			C	

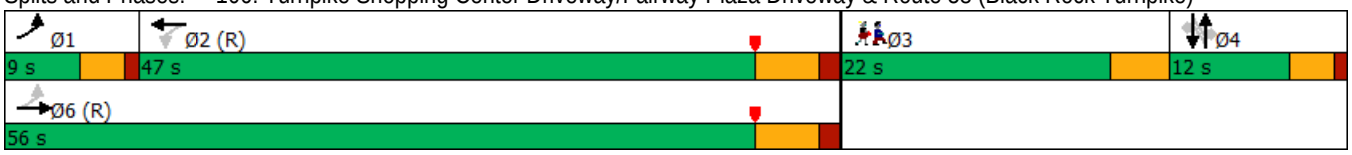
Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	22.0
Total Split (s)	22.0
Total Split (%)	24%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		36			30			38	0		18	0
Queue Length 95th (ft)		56			m36			68	0		44	0
Internal Link Dist (ft)		321			422			43			57	
Turn Bay Length (ft)									25			25
Base Capacity (vph)		2388			2173			149	293		142	293
Starvation Cap Reductn		0			355			0	0		0	0
Spillback Cap Reductn		0			0			0	0		0	0
Storage Cap Reductn		0			0			0	0		0	0
Reduced v/c Ratio		0.26			0.59			0.47	0.09		0.23	0.04

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 19 (21%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 75
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.50
Intersection Signal Delay: 5.0 Intersection LOS: A
Intersection Capacity Utilization 62.0% ICU Level of Service B
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike)



Lane Group	Ø3
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

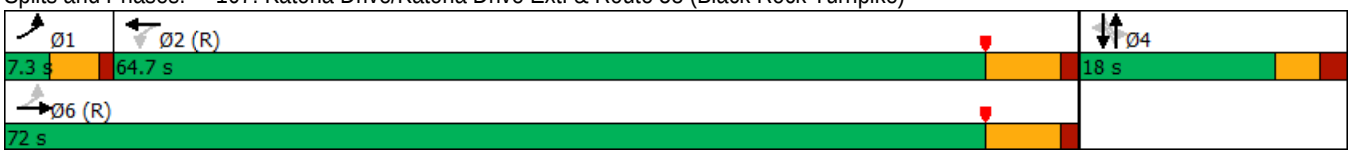
Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	5	456	58	54	958	3	76	5	31	3	2	2
Future Volume (vph)	5	456	58	54	958	3	76	5	31	3	2	2
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	10	10	12	12	12
Storage Length (ft)	0		0	175		0	75		250	0		0
Storage Lanes	0		0	1		0	1		0	1		0
Taper Length (ft)	25			25			50			25		
Lane Util. Factor	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.983						0.869			0.925	
Flt Protected				0.950			0.950			0.950		
Satd. Flow (prot)	0	3298	0	1736	1766	0	1736	1482	0	1736	1690	0
Flt Permitted		0.950		0.405			0.754			0.732		
Satd. Flow (perm)	0	3133	0	740	1766	0	1377	1482	0	1337	1690	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		40						34			3	
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		502			407			405			198	
Travel Time (s)		11.4			9.3			11.0			5.4	
Peak Hour Factor	0.80	0.80	0.80	0.92	0.92	0.92	0.92	0.92	0.92	0.80	0.80	0.80
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	6	570	73	59	1041	3	83	5	34	4	3	3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	649	0	59	1044	0	83	39	0	4	6	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2			4			4		
Detector Phase	1	6		2	2		4	4		4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	7.3	21.3		21.3	21.3		11.9	11.9		11.9	11.9	
Total Split (s)	7.3	72.0		64.7	64.7		18.0	18.0		18.0	18.0	
Total Split (%)	8.1%	80.0%		71.9%	71.9%		20.0%	20.0%		20.0%	20.0%	
Yellow Time (s)	3.3	5.0		5.0	5.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.3		1.3	1.3		1.9	1.9		1.9	1.9	
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.3		6.3	6.3		4.9	4.9		4.9	4.9	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		71.7		58.4	58.4		9.4	9.4		9.4	9.4	
Actuated g/C Ratio		0.80		0.65	0.65		0.10	0.10		0.10	0.10	
v/c Ratio		0.26		0.12	0.91		0.58	0.21		0.03	0.03	
Control Delay		2.7		1.5	9.9		53.7	17.1		34.7	27.6	
Queue Delay		0.0		0.0	2.7		0.0	0.0		0.0	0.0	
Total Delay		2.7		1.5	12.6		53.7	17.1		34.7	27.6	
LOS		A		A	B		D	B		C	C	
Approach Delay		2.7			12.0			42.0			30.4	
Approach LOS		A			B			D			C	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		36		3	56		46	3		2	2	
Queue Length 95th (ft)		46		m3	m58		89	31		10	11	
Internal Link Dist (ft)		422			327			325			118	
Turn Bay Length (ft)				175			75					
Base Capacity (vph)		2518		480	1145		200	244		194	248	
Starvation Cap Reductn		0		0	46		0	0		0	0	
Spillback Cap Reductn		0		0	0		0	0		0	0	
Storage Cap Reductn		0		0	0		0	0		0	0	
Reduced v/c Ratio		0.26		0.12	0.95		0.41	0.16		0.02	0.02	

Intersection Summary	
Area Type:	Other
Cycle Length: 90	
Actuated Cycle Length: 90	
Offset: 9 (10%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow	
Natural Cycle: 80	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.91	
Intersection Signal Delay: 10.9	Intersection LOS: B
Intersection Capacity Utilization 70.8%	ICU Level of Service C
Analysis Period (min) 15	
m Volume for 95th percentile queue is metered by upstream signal.	

Splits and Phases: 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike)



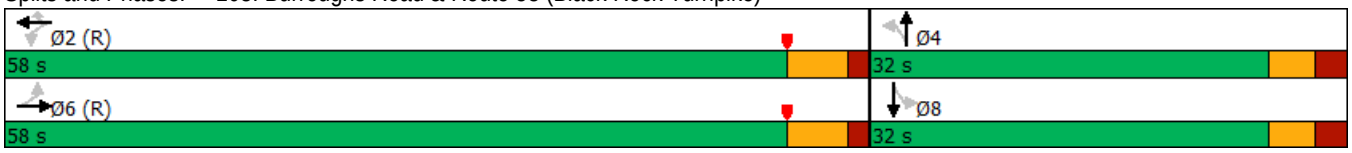
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	464	8	5	963	71	7	88	3	146	76	75
Future Volume (vph)	29	464	8	5	963	71	7	88	3	146	76	75
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	16	12	12	16	12
Storage Length (ft)	0		0	0		150	0		0	0		0
Storage Lanes	0		0	0		1	0		0	0		0
Taper Length (ft)	50			25			25			50		
Lane Util. Factor	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998				0.850		0.996			0.966	
Flt Protected		0.997						0.996			0.976	
Satd. Flow (prot)	0	3307	0	0	1749	1538	0	2034	0	0	1934	0
Flt Permitted		0.724			0.997			0.970			0.785	
Satd. Flow (perm)	0	2401	0	0	1744	1538	0	1981	0	0	1555	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3				49		2			19	
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		407			390			466			265	
Travel Time (s)		9.3			8.9			12.7			7.2	
Peak Hour Factor	0.80	0.80	0.80	0.95	0.95	0.95	0.80	0.80	0.80	0.80	0.80	0.80
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	36	580	10	5	1014	75	9	110	4	183	95	94
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	626	0	0	1019	75	0	123	0	0	372	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2		2	4			8		
Detector Phase	6	6		2	2	2	4	4		8	8	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0	15.0	9.0	9.0		9.0	9.0	
Minimum Split (s)	20.6	20.6		20.6	20.6	20.6	23.4	23.4		14.4	14.4	
Total Split (s)	58.0	58.0		58.0	58.0	58.0	32.0	32.0		32.0	32.0	
Total Split (%)	64.4%	64.4%		64.4%	64.4%	64.4%	35.6%	35.6%		35.6%	35.6%	
Yellow Time (s)	4.1	4.1		4.1	4.1	4.1	3.1	3.1		3.1	3.1	
All-Red Time (s)	1.5	1.5		1.5	1.5	1.5	2.3	2.3		2.3	2.3	
Lost Time Adjust (s)		0.0			0.0	0.0		0.0			0.0	
Total Lost Time (s)		5.6			5.6	5.6		5.4			5.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)		55.6			55.6	55.6		23.4			23.4	
Actuated g/C Ratio		0.62			0.62	0.62		0.26			0.26	
v/c Ratio		0.42			0.95	0.08		0.24			0.89	
Control Delay		7.7			36.0	4.0		25.9			54.2	
Queue Delay		0.0			0.0	0.0		0.0			0.0	
Total Delay		7.7			36.0	4.0		25.9			54.2	
LOS		A			D	A		C			D	
Approach Delay		7.7			33.8			25.9			54.2	
Approach LOS		A			C			C			D	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		46			518	6		53			188	
Queue Length 95th (ft)		56			#847	24		83			247	
Internal Link Dist (ft)		327			310			386			185	
Turn Bay Length (ft)						150						
Base Capacity (vph)		1484			1077	968		586			472	
Starvation Cap Reductn		0			0	0		0			0	
Spillback Cap Reductn		0			0	0		0			0	
Storage Cap Reductn		0			0	0		0			0	
Reduced v/c Ratio		0.42			0.95	0.08		0.21			0.79	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow, Master Intersection
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.95
Intersection Signal Delay: 29.4 Intersection LOS: C
Intersection Capacity Utilization 87.1% ICU Level of Service E
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 108: Burroughs Road & Route 58 (Black Rock Turnpike)



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	271	2	64	633	0	61
Future Volume (vph)	271	2	64	633	0	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	10	10
Storage Length (ft)		0	0		0	50
Storage Lanes		0	0		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00
Frt	0.999					0.850
Flt Protected				0.995		
Satd. Flow (prot)	3352	0	0	1757	1705	1449
Flt Permitted				0.995		
Satd. Flow (perm)	3352	0	0	1757	1705	1449
Link Speed (mph)	30			30	25	
Link Distance (ft)	1095			214	782	
Travel Time (s)	24.9			4.9	21.3	
Peak Hour Factor	0.80	0.80	0.91	0.91	0.80	0.80
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	339	3	70	696	0	76
Shared Lane Traffic (%)						
Lane Group Flow (vph)	342	0	0	766	0	76
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 51.1%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	1.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	271	2	64	633	0	61
Future Vol, veh/h	271	2	64	633	0	61
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	91	91	80	80
Heavy Vehicles, %	4	4	4	4	4	4
Mvmt Flow	339	3	70	696	0	76

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	342	0	1177	171
Stage 1	-	-	-	-	341	-
Stage 2	-	-	-	-	836	-
Critical Hdwy	-	-	4.16	-	6.66	6.96
Critical Hdwy Stg 1	-	-	-	-	5.86	-
Critical Hdwy Stg 2	-	-	-	-	5.46	-
Follow-up Hdwy	-	-	2.238	-	3.538	3.338
Pot Cap-1 Maneuver	-	-	1203	-	195	838
Stage 1	-	-	-	-	687	-
Stage 2	-	-	-	-	420	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1203	-	176	838
Mov Cap-2 Maneuver	-	-	-	-	176	-
Stage 1	-	-	-	-	622	-
Stage 2	-	-	-	-	420	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.8	9.7
HCM LOS			A

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	838	-	-	1203	-
HCM Lane V/C Ratio	-	0.091	-	-	0.058	-
HCM Control Delay (s)	0	9.7	-	-	8.2	0
HCM Lane LOS	A	A	-	-	A	A
HCM 95th %tile Q(veh)	-	0.3	-	-	0.2	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	20	68	76	357	394	32
Future Volume (vph)	20	68	76	357	394	32
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	12	12
Storage Length (ft)	0	0	25			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		50			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.896				0.990	
Flt Protected	0.989		0.950			
Satd. Flow (prot)	1817	0	1719	1810	1791	0
Flt Permitted	0.989		0.950			
Satd. Flow (perm)	1817	0	1719	1810	1791	0
Link Speed (mph)	25			30	30	
Link Distance (ft)	586			395	218	
Travel Time (s)	16.0			9.0	5.0	
Peak Hour Factor	0.80	0.80	0.92	0.92	0.92	0.92
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	25	85	83	388	428	35
Shared Lane Traffic (%)						
Lane Group Flow (vph)	110	0	83	388	463	0
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 42.2%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	20	68	76	357	394	32
Future Vol, veh/h	20	68	76	357	394	32
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	25	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	92	92	92	92
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	25	85	83	388	428	35

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1000	446	463	0	-	0
Stage 1	446	-	-	-	-	-
Stage 2	554	-	-	-	-	-
Critical Hdwy	6.45	6.25	4.15	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.245	-	-	-
Pot Cap-1 Maneuver	266	606	1083	-	-	-
Stage 1	639	-	-	-	-	-
Stage 2	570	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	246	606	1083	-	-	-
Mov Cap-2 Maneuver	246	-	-	-	-	-
Stage 1	590	-	-	-	-	-
Stage 2	570	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	15.4	1.5	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	1083	-	455	-	-
HCM Lane V/C Ratio	0.076	-	0.242	-	-
HCM Control Delay (s)	8.6	-	15.4	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.2	-	0.9	-	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	615	1	0	956	0	3
Future Volume (vph)	615	1	0	956	0	3
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
Flt Protected						
Satd. Flow (prot)	1827	0	0	1827	0	1580
Flt Permitted						
Satd. Flow (perm)	1827	0	0	1827	0	1580
Link Speed (mph)	30			30	30	
Link Distance (ft)	187			131	186	
Travel Time (s)	4.3			3.0	4.2	
Peak Hour Factor	0.80	0.80	0.95	0.95	0.80	0.80
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	769	1	0	1006	0	4
Shared Lane Traffic (%)						
Lane Group Flow (vph)	770	0	0	1006	0	4
Sign Control	Free			Free	Stop	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 53.6%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	0

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	615	1	0	956	0	3
Future Vol, veh/h	615	1	0	956	0	3
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	95	95	80	80
Heavy Vehicles, %	4	4	4	4	4	4
Mvmt Flow	769	1	0	1006	0	4

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	770
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.24
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.336
Pot Cap-1 Maneuver	-	-	0	-	0	397
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	397
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	14.2
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	397	-	-	-
HCM Lane V/C Ratio	0.009	-	-	-
HCM Control Delay (s)	14.2	-	-	-
HCM Lane LOS	B	-	-	-
HCM 95th %tile Q(veh)	0	-	-	-

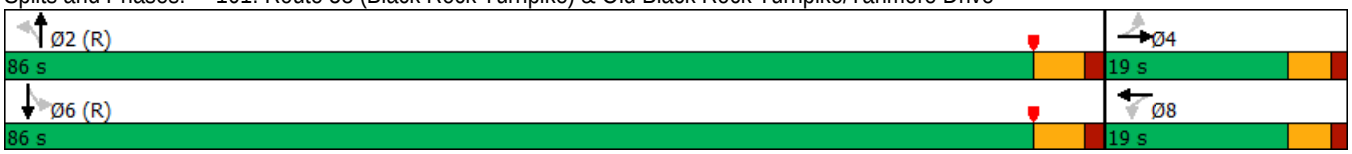
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	0	1	46	0	47	5	662	62	58	724	5
Future Volume (vph)	6	0	1	46	0	47	5	662	62	58	724	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	16	12	12	13	12	12	13	12
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		0.985			0.932			0.989			0.999	
Flt Protected		0.957			0.976						0.996	
Satd. Flow (prot)	0	1990	0	0	1920	0	0	1904	0	0	1915	0
Flt Permitted		0.752			0.839			0.996			0.900	
Satd. Flow (perm)	0	1564	0	0	1651	0	0	1896	0	0	1731	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		27			40			14			1	
Link Speed (mph)		25			30			35			35	
Link Distance (ft)		378			442			1898			522	
Travel Time (s)		10.3			10.0			37.0			10.2	
Peak Hour Factor	0.80	0.80	0.80	0.84	0.84	0.84	0.95	0.95	0.95	0.94	0.94	0.94
Adj. Flow (vph)	8	0	1	55	0	56	5	697	65	62	770	5
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	9	0	0	111	0	0	767	0	0	837	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	11.7	11.7		11.7	11.7		20.6	20.6		20.6	20.6	
Total Split (s)	19.0	19.0		19.0	19.0		86.0	86.0		86.0	86.0	
Total Split (%)	18.1%	18.1%		18.1%	18.1%		81.9%	81.9%		81.9%	81.9%	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.4	1.4		1.4	1.4		1.6	1.6		1.6	1.6	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.7			4.7			5.6			5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Min	C-Min		C-Min	C-Min	
Act Effct Green (s)		9.7			9.7			85.0			85.0	
Actuated g/C Ratio		0.09			0.09			0.81			0.81	
v/c Ratio		0.05			0.59			0.50			0.60	
Control Delay		4.0			41.9			2.7			6.3	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		4.0			41.9			2.7			6.3	
LOS		A			D			A			A	
Approach Delay		4.0			41.9			2.7			6.3	
Approach LOS		A			D			A			A	
Queue Length 50th (ft)		0			46			49			152	
Queue Length 95th (ft)		2			89			17			308	
Internal Link Dist (ft)		298			362			1818			442	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		236			259			1536			1400	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.04			0.43			0.50			0.60	

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 105
Offset: 16 (15%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 55
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.60
Intersection Signal Delay: 6.9 Intersection LOS: A
Intersection Capacity Utilization 93.0% ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive



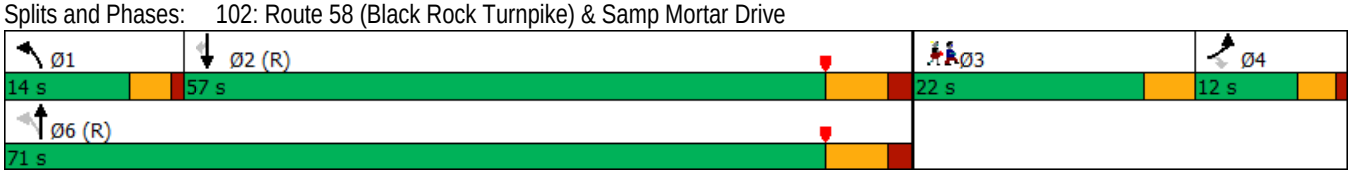
Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Lane Configurations							
Traffic Volume (vph)	80	177	173	661	702	72	
Future Volume (vph)	80	177	173	661	702	72	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	10	10	11	11	12	12	
Storage Length (ft)	0	50	100			50	
Storage Lanes	1	1	1			1	
Taper Length (ft)	25		50				
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00	
Frt		0.850				0.850	
Flt Protected	0.950		0.950				
Satd. Flow (prot)	1636	1463	1694	3388	1845	1568	
Flt Permitted	0.950		0.272				
Satd. Flow (perm)	1636	1463	485	3388	1845	1568	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		216				20	
Link Speed (mph)	25			30	35		
Link Distance (ft)	445			510	341		
Travel Time (s)	12.1			11.6	6.6		
Peak Hour Factor	0.82	0.82	0.86	0.86	0.97	0.97	
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	
Adj. Flow (vph)	98	216	201	769	724	74	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	98	216	201	769	724	74	
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm	
Protected Phases	4		1	6	2		3
Permitted Phases		4	6			2	
Detector Phase	4	4	1	6	2	2	
Switch Phase							
Minimum Initial (s)	9.0	9.0	5.0	15.0	15.0	15.0	7.0
Minimum Split (s)	13.0	13.0	9.2	21.9	21.9	21.9	22.0
Total Split (s)	12.0	12.0	14.0	71.0	57.0	57.0	22.0
Total Split (%)	11.4%	11.4%	13.3%	67.6%	54.3%	54.3%	21%
Yellow Time (s)	3.0	3.0	3.2	4.9	4.9	4.9	4.0
All-Red Time (s)	1.0	1.0	1.0	2.0	2.0	2.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	4.0	4.2	6.9	6.9	6.9	
Lead/Lag	Lag	Lag	Lead		Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	C-Min	C-Min	C-Min	None
Act Effct Green (s)	11.9	11.9	84.9	82.2	68.3	68.3	
Actuated g/C Ratio	0.11	0.11	0.81	0.78	0.65	0.65	
v/c Ratio	0.53	0.61	0.40	0.29	0.60	0.07	
Control Delay	54.1	13.5	6.3	3.0	10.5	5.2	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	54.1	13.5	6.3	3.0	10.5	5.2	
LOS	D	B	A	A	B	A	
Approach Delay	26.2			3.7	10.0		
Approach LOS	C			A	B		

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Queue Length 50th (ft)	63	0	18	48	149	7	
Queue Length 95th (ft)	102	48	55	71	208	m17	
Internal Link Dist (ft)	365			430	261		
Turn Bay Length (ft)		50	100			50	
Base Capacity (vph)	184	356	517	2653	1200	1027	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.53	0.61	0.39	0.29	0.60	0.07	

Intersection Summary	
Area Type:	Other
Cycle Length: 105	
Actuated Cycle Length: 105	
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow, Master Intersection	
Natural Cycle: 90	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.61	
Intersection Signal Delay: 9.5	Intersection LOS: A
Intersection Capacity Utilization 66.6%	ICU Level of Service C
Analysis Period (min) 15	

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

Splits and Phases: 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive

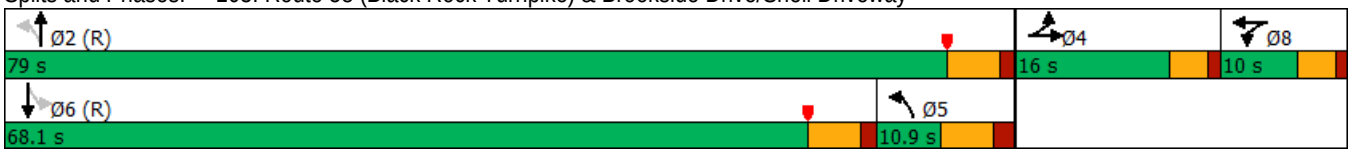


Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	68	1	49	4	0	25	54	767	0	2	792	89
Future Volume (vph)	68	1	49	4	0	25	54	767	0	2	792	89
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	16	12	12	12	12	12	12	12
Storage Length (ft)	50		0	0		0	0		0	200		0
Storage Lanes	1		0	0		0	0		0	1		0
Taper Length (ft)	50			25			25			50		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.870			0.884						0.985	
Flt Protected	0.950	0.994			0.993			0.997				
Satd. Flow (prot)	1887	1515	0	0	1835	0	0	3494	0	0	3452	0
Flt Permitted	0.950	0.994			0.993			0.813			0.954	
Satd. Flow (perm)	1887	1515	0	0	1835	0	0	2849	0	0	3293	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		57			128						20	
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		347			133			293			336	
Travel Time (s)		9.5			3.6			6.7			7.6	
Peak Hour Factor	0.86	0.86	0.86	0.80	0.80	0.80	0.83	0.83	0.83	0.98	0.98	0.98
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	79	1	57	5	0	31	65	924	0	2	808	91
Shared Lane Traffic (%)	10%											
Lane Group Flow (vph)	71	66	0	0	36	0	0	989	0	0	901	0
Turn Type	Split	NA		Split	NA		pm+pt	NA		Perm	NA	
Protected Phases	4	4		8	8		5	2			6	
Permitted Phases							2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	9.0	9.0		5.0	5.0		5.0	15.0		15.0	15.0	
Minimum Split (s)	13.0	13.0		9.0	9.0		10.9	20.4		20.4	20.4	
Total Split (s)	16.0	16.0		10.0	10.0		10.9	79.0		68.1	68.1	
Total Split (%)	15.2%	15.2%		9.5%	9.5%		10.4%	75.2%		64.9%	64.9%	
Yellow Time (s)	3.0	3.0		3.0	3.0		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.7	1.2		1.2	1.2	
Lost Time Adjust (s)	0.0	0.0			0.0			0.0			0.0	
Total Lost Time (s)	4.0	4.0			4.0			5.4			5.4	
Lead/Lag							Lag			Lead	Lead	
Lead-Lag Optimize?							Yes			Yes	Yes	
Recall Mode	None	None		None	None		None	C-Min		C-Min	C-Min	
Act Effct Green (s)	9.7	9.7			5.6			83.8			83.8	
Actuated g/C Ratio	0.09	0.09			0.05			0.80			0.80	
v/c Ratio	0.41	0.35			0.16			0.44			0.34	
Control Delay	52.0	19.8			1.6			3.3			1.5	
Queue Delay	0.0	0.0			0.0			0.0			0.0	
Total Delay	52.0	19.9			1.6			3.3			1.5	
LOS	D	B			A			A			A	
Approach Delay		36.5			1.6			3.3			1.5	
Approach LOS		D			A			A			A	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)	48	6			0			55			15	
Queue Length 95th (ft)	89	44			0			39			51	
Internal Link Dist (ft)		267			53			213			256	
Turn Bay Length (ft)	50											
Base Capacity (vph)	215	223			225			2273			2632	
Starvation Cap Reductn	0	0			0			165			0	
Spillback Cap Reductn	0	2			0			0			4	
Storage Cap Reductn	0	0			0			0			0	
Reduced v/c Ratio	0.33	0.30			0.16			0.47			0.34	

Intersection Summary	
Area Type:	Other
Cycle Length: 105	
Actuated Cycle Length: 105	
Offset: 47 (45%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow	
Natural Cycle: 60	
Control Type: Actuated-Coordinated	
Maximum v/c Ratio: 0.44	
Intersection Signal Delay: 4.7	Intersection LOS: A
Intersection Capacity Utilization 70.0%	ICU Level of Service C
Analysis Period (min) 15	

Splits and Phases: 103: Route 58 (Black Rock Turnpike) & Brookside Drive/Shell Driveway



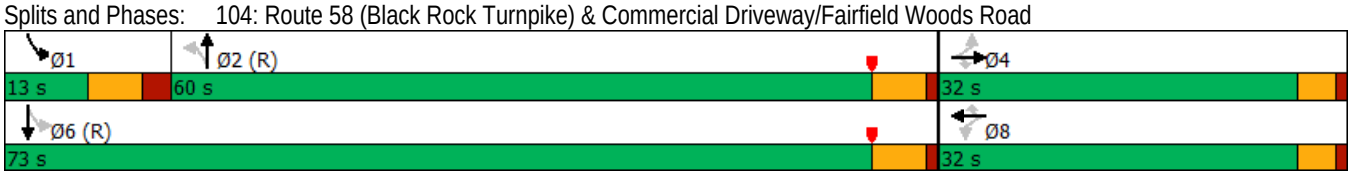
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	15	3	33	149	4	65	31	674	54	88	732	22
Future Volume (vph)	15	3	33	149	4	65	31	674	54	88	732	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	11	12	11	12	12	11	12
Storage Length (ft)	0		0	0		75	200		0	0		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.989			0.996	
Flt Protected		0.960			0.954		0.950			0.950		
Satd. Flow (prot)	0	1788	1583	0	1777	1531	1770	3384	0	1770	1793	0
Flt Permitted		0.764			0.715		0.335			0.278		
Satd. Flow (perm)	0	1423	1583	0	1332	1531	624	3384	0	518	1793	0
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			91					12			3	
Link Speed (mph)		30			25			30			30	
Link Distance (ft)		97			499			535			293	
Travel Time (s)		2.2			13.6			12.2			6.7	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.89	0.89	0.89	0.96	0.96	0.96
Adj. Flow (vph)	19	4	41	186	5	81	35	757	61	92	763	23
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	23	41	0	191	81	35	818	0	92	786	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	4	4	4	8	8	8	2	2		1	6	
Switch Phase												
Minimum Initial (s)	9.0	9.0	9.0	9.0	9.0	9.0	15.0	15.0		3.0	15.0	
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	20.3	20.3		9.5	20.3	
Total Split (s)	32.0	32.0	32.0	32.0	32.0	32.0	60.0	60.0		13.0	73.0	
Total Split (%)	30.5%	30.5%	30.5%	30.5%	30.5%	30.5%	57.1%	57.1%		12.4%	69.5%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.3	4.3		4.3	4.3	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		2.2	1.0	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		4.0	4.0		4.0	4.0	5.3	5.3		6.5	5.3	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Recall Mode	None	None	None	None	None	None	C-Max	C-Max		None	C-Max	
Act Effct Green (s)		19.4	19.4		19.4	19.4	66.6	66.6		75.1	76.3	
Actuated g/C Ratio		0.18	0.18		0.18	0.18	0.63	0.63		0.72	0.73	
v/c Ratio		0.09	0.11		0.78	0.29	0.09	0.38		0.21	0.60	
Control Delay		33.0	0.6		60.9	37.4	11.5	11.4		5.3	5.8	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Delay		33.0	0.6		60.9	37.4	11.5	11.4		5.3	5.8	
LOS		C	A		E	D	B	B		A	A	
Approach Delay		12.2			53.9			11.4			5.7	
Approach LOS		B			D			B			A	
Queue Length 50th (ft)		13	0		123	47	9	133		6	45	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		29	0		160	73	29	217		35	194	
Internal Link Dist (ft)		17			419			455			213	
Turn Bay Length (ft)						75	200					
Base Capacity (vph)		379	488		355	408	395	2150		449	1303	
Starvation Cap Reductn		0	0		0	0	0	0		0	3	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.06	0.08		0.54	0.20	0.09	0.38		0.20	0.60	

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 105
Offset: 2 (2%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 55
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.78
Intersection Signal Delay: 14.6 Intersection LOS: B
Intersection Capacity Utilization 79.7% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	79	563	193	126	585	109	207	204	133	178	196	55
Future Volume (vph)	79	563	193	126	585	109	207	204	133	178	196	55
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	11	12	12	11	11	12	12	12	12
Storage Length (ft)	200		325	200		0	400		75	170		75
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	85			50			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.962			0.976				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1711	3291	0	1711	3454	0	1711	1801	1583	1770	1863	1583
Flt Permitted	0.950			0.950			0.455			0.625		
Satd. Flow (perm)	1711	3291	0	1711	3454	0	819	1801	1583	1164	1863	1583
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		39			18				157			
Link Speed (mph)		30			30			30			25	
Link Distance (ft)		628			408			637			355	
Travel Time (s)		14.3			9.3			14.5			9.7	
Peak Hour Factor	0.91	0.91	0.91	0.93	0.93	0.93	0.96	0.96	0.96	0.96	0.96	0.96
Adj. Flow (vph)	87	619	212	135	629	117	216	213	139	185	204	57
Shared Lane Traffic (%)												
Lane Group Flow (vph)	87	831	0	135	746	0	216	213	139	185	204	57
Turn Type	Prot	NA		Prot	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases							4		4	8		8
Detector Phase	5	2		1	6		7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	15.0		5.0	15.0		5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.7	21.6		9.7	21.6		9.3	16.8	16.8	9.3	16.8	16.8
Total Split (s)	11.8	33.8		14.4	36.4		13.7	22.4	22.4	11.4	20.1	20.1
Total Split (%)	10.3%	29.4%		12.5%	31.7%		11.9%	19.5%	19.5%	9.9%	17.5%	17.5%
Yellow Time (s)	3.0	4.1		3.0	4.1		3.3	4.4	4.4	3.3	4.4	4.4
All-Red Time (s)	1.7	2.5		1.7	2.5		1.0	2.4	2.4	1.0	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	6.6		4.7	6.6		4.3	6.8	6.8	4.3	6.8	6.8
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min		None	Min		None	None	None	None	None	None
Act Effct Green (s)	7.1	27.2		9.7	29.8		27.3	15.4	15.4	22.7	13.1	13.1
Actuated g/C Ratio	0.09	0.33		0.12	0.36		0.33	0.19	0.19	0.28	0.16	0.16
v/c Ratio	0.59	0.74		0.67	0.59		0.58	0.63	0.33	0.49	0.68	0.22
Control Delay	53.5	27.9		52.3	22.9		26.5	39.7	6.3	25.0	45.4	32.5
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	53.5	27.9		52.3	22.9		26.5	39.7	6.3	25.0	45.4	32.5
LOS	D	C		D	C		C	D	A	C	D	C
Approach Delay		30.3			27.4			26.5			35.3	
Approach LOS		C			C			C			D	
Queue Length 50th (ft)	44	187		67	156		80	101	0	67	100	26

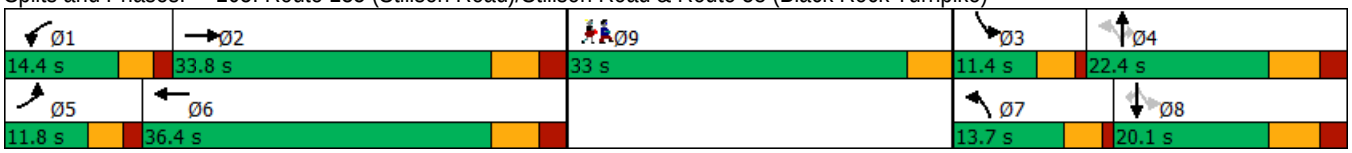
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	33.0
Total Split (s)	33.0
Total Split (%)	29%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	#104	256		#146	213		136	173	37	117	#187	59
Internal Link Dist (ft)		548			328			557			275	
Turn Bay Length (ft)	200			200			400		75	170		75
Base Capacity (vph)	148	1120		202	1269		375	343	428	376	303	257
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.59	0.74		0.67	0.59		0.58	0.62	0.32	0.49	0.67	0.22

Intersection Summary

Area Type: Other
Cycle Length: 115
Actuated Cycle Length: 81.8
Natural Cycle: 115
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.74
Intersection Signal Delay: 29.4 Intersection LOS: C
Intersection Capacity Utilization 69.2% ICU Level of Service C
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike)



Lane Group	Ø9
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	72	677	32	60	613	69	163	12	82	54	13	33
Future Volume (vph)	72	677	32	60	613	69	163	12	82	54	13	33
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	13	13	12	13	13
Storage Length (ft)	0		0	325		0	0		25	0		25
Storage Lanes	0		0	1		0	0		1	0		1
Taper Length (ft)	50			50			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.994			0.986				0.850			0.850
Flt Protected		0.995			0.996			0.956			0.961	
Satd. Flow (prot)	0	3351	0	0	3327	0	0	1822	1620	0	1832	1620
Flt Permitted		0.795			0.811			0.686			0.703	
Satd. Flow (perm)	0	2677	0	0	2709	0	0	1308	1620	0	1340	1620
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		7			15				157			157
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		401			502			123			137	
Travel Time (s)		9.1			11.4			3.4			3.7	
Peak Hour Factor	0.91	0.91	0.91	0.97	0.97	0.97	0.95	0.95	0.95	0.88	0.88	0.88
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	79	744	35	62	632	71	172	13	86	61	15	38
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	858	0	0	765	0	0	185	86	0	76	38
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2			4		4	4		4
Detector Phase	1	6		2	2		4	4	4	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	15.0		15.0	15.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	9.0	20.8		20.8	20.8		11.0	11.0	11.0	11.0	11.0	11.0
Total Split (s)	9.0	39.0		30.0	30.0		14.0	14.0	14.0	14.0	14.0	14.0
Total Split (%)	12.0%	52.0%		40.0%	40.0%		18.7%	18.7%	18.7%	18.7%	18.7%	18.7%
Yellow Time (s)	3.0	4.3		4.3	4.3		3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.5		1.5	1.5		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0			0.0			0.0	0.0		0.0	0.0
Total Lost Time (s)		5.8			5.8			4.0	4.0		4.0	4.0
Lead/Lag	Lead			Lag	Lag		Lag	Lag	Lag	Lag	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Min	C-Max		C-Max	C-Max		None	None	None	None	None	None
Act Effct Green (s)		46.6			37.1			18.6	18.6		18.6	18.6
Actuated g/C Ratio		0.62			0.49			0.25	0.25		0.25	0.25
v/c Ratio		0.51			0.57			0.57	0.17		0.23	0.07
Control Delay		8.9			9.1			32.3	1.2		24.2	0.3
Queue Delay		0.0			0.0			0.0	0.0		0.0	0.0
Total Delay		8.9			9.1			32.3	1.2		24.2	0.3
LOS		A			A			C	A		C	A
Approach Delay		8.9			9.1			22.4			16.2	
Approach LOS		A			A			C			B	

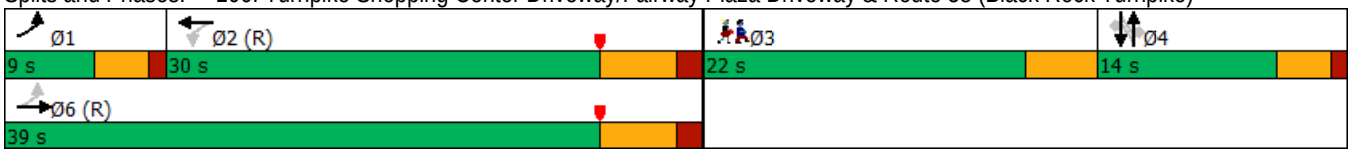
Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Heavy Vehicles (%)	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	22.0
Total Split (s)	22.0
Total Split (%)	29%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		92			48			76	0		28	0
Queue Length 95th (ft)		138			108			135	5		59	0
Internal Link Dist (ft)		321			422			43			57	
Turn Bay Length (ft)									25			25
Base Capacity (vph)		1699			1347			324	519		332	519
Starvation Cap Reductn		0			0			0	0		0	0
Spillback Cap Reductn		0			0			0	0		0	0
Storage Cap Reductn		0			0			0	0		0	0
Reduced v/c Ratio		0.51			0.57			0.57	0.17		0.23	0.07

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 4 (5%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 80
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.57
Intersection Signal Delay: 11.2 Intersection LOS: B
Intersection Capacity Utilization 72.0% ICU Level of Service C
Analysis Period (min) 15

Splits and Phases: 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike)



Lane Group	Ø3
Queue Length 50th (ft)	
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

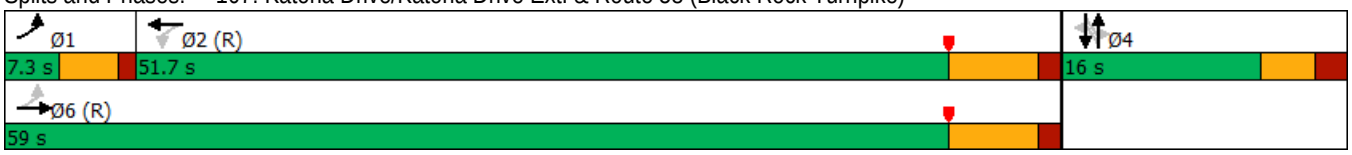
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	16	724	107	47	684	5	93	11	51	7	10	12
Future Volume (vph)	16	724	107	47	684	5	93	11	51	7	10	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	10	10	12	12	12
Storage Length (ft)	0		0	175		0	75		250	0		0
Storage Lanes	0		0	1		0	1		0	1		0
Taper Length (ft)	25			25			50			25		
Lane Util. Factor	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.981			0.999			0.876			0.920	
Flt Protected		0.999		0.950			0.950			0.950		
Satd. Flow (prot)	0	3320	0	1752	1781	0	1752	1508	0	1752	1697	0
Flt Permitted		0.941		0.294			0.739			0.709		
Satd. Flow (perm)	0	3128	0	542	1781	0	1363	1508	0	1308	1697	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		51			1			61			15	
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		502			407			405			198	
Travel Time (s)		11.4			9.3			11.0			5.4	
Peak Hour Factor	0.87	0.87	0.87	0.95	0.95	0.95	0.84	0.84	0.84	0.80	0.80	0.80
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	18	832	123	49	720	5	111	13	61	9	13	15
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	973	0	49	725	0	111	74	0	9	28	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2			4			4		
Detector Phase	1	6		2	2		4	4		4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	7.3	21.3		21.3	21.3		11.9	11.9		11.9	11.9	
Total Split (s)	7.3	59.0		51.7	51.7		16.0	16.0		16.0	16.0	
Total Split (%)	9.7%	78.7%		68.9%	68.9%		21.3%	21.3%		21.3%	21.3%	
Yellow Time (s)	3.3	5.0		5.0	5.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.3		1.3	1.3		1.9	1.9		1.9	1.9	
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.3		6.3	6.3		4.9	4.9		4.9	4.9	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		56.9		45.4	45.4		9.3	9.3		9.3	9.3	
Actuated g/C Ratio		0.76		0.61	0.61		0.12	0.12		0.12	0.12	
v/c Ratio		0.41		0.15	0.67		0.66	0.31		0.06	0.13	
Control Delay		3.1		4.2	7.0		49.8	14.5		28.6	19.7	
Queue Delay		0.0		0.0	0.2		0.0	0.0		0.0	0.0	
Total Delay		3.1		4.2	7.2		49.8	14.5		28.6	19.7	
LOS		A		A	A		D	B		C	B	
Approach Delay		3.1			7.0			35.7			21.9	
Approach LOS		A			A			D			C	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		44		5	68		50	5		4	5	
Queue Length 95th (ft)		61		m7	88		91	35		14	23	
Internal Link Dist (ft)		422			327			325			118	
Turn Bay Length (ft)				175			75					
Base Capacity (vph)		2396		328	1078		201	275		193	263	
Starvation Cap Reductn		0		0	38		0	0		0	0	
Spillback Cap Reductn		0		0	0		0	0		0	0	
Storage Cap Reductn		0		0	0		0	0		0	0	
Reduced v/c Ratio		0.41		0.15	0.70		0.55	0.27		0.05	0.11	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 2 (3%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.67
Intersection Signal Delay: 8.1 Intersection LOS: A
Intersection Capacity Utilization 60.2% ICU Level of Service B
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike)



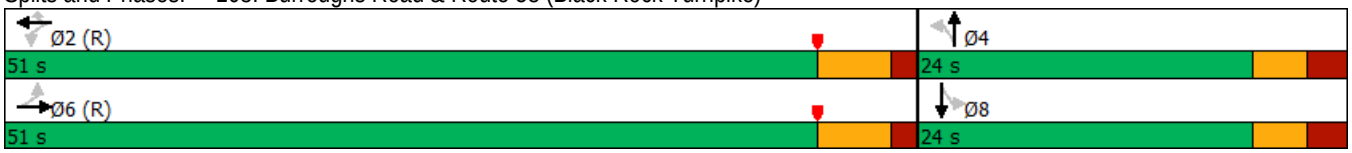
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	62	753	12	5	674	113	14	59	7	118	51	47
Future Volume (vph)	62	753	12	5	674	113	14	59	7	118	51	47
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	16	12	12	16	12
Storage Length (ft)	0		0	0		150	0		0	0		0
Storage Lanes	0		0	0		1	0		0	0		0
Taper Length (ft)	50			25			25			50		
Lane Util. Factor	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998				0.850		0.988			0.970	
Flt Protected		0.996						0.991			0.973	
Satd. Flow (prot)	0	3335	0	0	1766	1553	0	2027	0	0	1954	0
Flt Permitted		0.831			0.994			0.919			0.812	
Satd. Flow (perm)	0	2783	0	0	1755	1553	0	1880	0	0	1631	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3				118		6			18	
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		407			390			466			265	
Travel Time (s)		9.3			8.9			12.7			7.2	
Peak Hour Factor	0.86	0.86	0.86	0.96	0.96	0.96	0.80	0.80	0.80	0.83	0.83	0.83
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	72	876	14	5	702	118	18	74	9	142	61	57
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	962	0	0	707	118	0	101	0	0	260	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2		2	4			8		
Detector Phase	6	6		2	2	2	4	4		8	8	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0	15.0	9.0	9.0		9.0	9.0	
Minimum Split (s)	20.6	20.6		20.6	20.6	20.6	23.4	23.4		14.4	14.4	
Total Split (s)	51.0	51.0		51.0	51.0	51.0	24.0	24.0		24.0	24.0	
Total Split (%)	68.0%	68.0%		68.0%	68.0%	68.0%	32.0%	32.0%		32.0%	32.0%	
Yellow Time (s)	4.1	4.1		4.1	4.1	4.1	3.1	3.1		3.1	3.1	
All-Red Time (s)	1.5	1.5		1.5	1.5	1.5	2.3	2.3		2.3	2.3	
Lost Time Adjust (s)		0.0			0.0	0.0		0.0			0.0	
Total Lost Time (s)		5.6			5.6	5.6		5.4			5.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)		49.1			49.1	49.1		14.9			14.9	
Actuated g/C Ratio		0.65			0.65	0.65		0.20			0.20	
v/c Ratio		0.53			0.62	0.11		0.27			0.77	
Control Delay		5.3			11.3	1.6		24.4			41.6	
Queue Delay		0.0			0.0	0.0		0.0			0.0	
Total Delay		5.3			11.3	1.6		24.4			41.6	
LOS		A			B	A		C			D	
Approach Delay		5.3			9.9			24.4			41.6	
Approach LOS		A			A			C			D	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 50th (ft)		47			170	0		37			106	
Queue Length 95th (ft)		64			310	18		64			158	
Internal Link Dist (ft)		327			310			386			185	
Turn Bay Length (ft)						150						
Base Capacity (vph)		1824			1149	1058		470			418	
Starvation Cap Reductn		70			0	0		0			0	
Spillback Cap Reductn		0			0	0		0			0	
Storage Cap Reductn		0			0	0		0			0	
Reduced v/c Ratio		0.55			0.62	0.11		0.21			0.62	

Intersection Summary

Area Type: Other
Cycle Length: 75
Actuated Cycle Length: 75
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow, Master Intersection
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.77
Intersection Signal Delay: 12.4 Intersection LOS: B
Intersection Capacity Utilization 91.3% ICU Level of Service F
Analysis Period (min) 15

Splits and Phases: 108: Burroughs Road & Route 58 (Black Rock Turnpike)



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	440	11	36	411	3	61
Future Volume (vph)	440	11	36	411	3	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	10	10
Storage Length (ft)		0	0		0	50
Storage Lanes		0	0		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00
Frt	0.996					0.850
Flt Protected				0.996	0.950	
Satd. Flow (prot)	3374	0	0	1776	1636	1463
Flt Permitted				0.996	0.950	
Satd. Flow (perm)	3374	0	0	1776	1636	1463
Link Speed (mph)	30			30	25	
Link Distance (ft)	1095			214	782	
Travel Time (s)	24.9			4.9	21.3	
Peak Hour Factor	0.85	0.85	0.86	0.86	0.88	0.88
Heavy Vehicles (%)	3%	3%	3%	3%	3%	3%
Adj. Flow (vph)	518	13	42	478	3	69
Shared Lane Traffic (%)						
Lane Group Flow (vph)	531	0	0	520	3	69
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 49.5%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	440	11	36	411	3	61
Future Vol, veh/h	440	11	36	411	3	61
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	85	85	86	86	88	88
Heavy Vehicles, %	3	3	3	3	3	3
Mvmt Flow	518	13	42	478	3	69

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	531	0	1087	266
Stage 1	-	-	-	-	525	-
Stage 2	-	-	-	-	562	-
Critical Hdwy	-	-	4.145	-	6.645	6.945
Critical Hdwy Stg 1	-	-	-	-	5.845	-
Critical Hdwy Stg 2	-	-	-	-	5.445	-
Follow-up Hdwy	-	-	2.2285	-	3.5285	3.3285
Pot Cap-1 Maneuver	-	-	1028	-	223	730
Stage 1	-	-	-	-	557	-
Stage 2	-	-	-	-	567	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1028	-	211	730
Mov Cap-2 Maneuver	-	-	-	-	211	-
Stage 1	-	-	-	-	526	-
Stage 2	-	-	-	-	567	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.7	11
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	211	730	-	-	1028	-
HCM Lane V/C Ratio	0.016	0.095	-	-	0.041	-
HCM Control Delay (s)	22.3	10.4	-	-	8.7	0
HCM Lane LOS	C	B	-	-	A	A
HCM 95th %tile Q(veh)	0	0.3	-	-	0.1	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	21	65	53	406	484	35
Future Volume (vph)	21	65	53	406	484	35
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	12	12
Storage Length (ft)	0	0	25			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		50			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.898				0.991	
Flt Protected	0.988		0.950			
Satd. Flow (prot)	1820	0	1719	1810	1793	0
Flt Permitted	0.988		0.950			
Satd. Flow (perm)	1820	0	1719	1810	1793	0
Link Speed (mph)	25			30	30	
Link Distance (ft)	586			395	218	
Travel Time (s)	16.0			9.0	5.0	
Peak Hour Factor	0.90	0.90	0.94	0.94	0.87	0.87
Heavy Vehicles (%)	5%	5%	5%	5%	5%	5%
Adj. Flow (vph)	23	72	56	432	556	40
Shared Lane Traffic (%)						
Lane Group Flow (vph)	95	0	56	432	596	0
Sign Control	Stop			Free	Free	

Intersection Summary			
Area Type:	Other		
Control Type: Unsignalized			
Intersection Capacity Utilization 46.1%		ICU Level of Service A	
Analysis Period (min) 15			

Intersection	
Int Delay, s/veh	1.8

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	21	65	53	406	484	35
Future Vol, veh/h	21	65	53	406	484	35
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	25	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	94	94	87	87
Heavy Vehicles, %	5	5	5	5	5	5
Mvmt Flow	23	72	56	432	556	40

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1120	576	596	0	-	0
Stage 1	576	-	-	-	-	-
Stage 2	544	-	-	-	-	-
Critical Hdwy	6.45	6.25	4.15	-	-	-
Critical Hdwy Stg 1	5.45	-	-	-	-	-
Critical Hdwy Stg 2	5.45	-	-	-	-	-
Follow-up Hdwy	3.545	3.345	2.245	-	-	-
Pot Cap-1 Maneuver	225	511	966	-	-	-
Stage 1	556	-	-	-	-	-
Stage 2	576	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	212	511	966	-	-	-
Mov Cap-2 Maneuver	212	-	-	-	-	-
Stage 1	524	-	-	-	-	-
Stage 2	576	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	17.6	1	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	966	-	380	-	-
HCM Lane V/C Ratio	0.058	-	0.251	-	-
HCM Control Delay (s)	9	-	17.6	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.2	-	1	-	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	824	6	0	756	0	9
Future Volume (vph)	824	6	0	756	0	9
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	0.999					0.865
Flt Protected						
Satd. Flow (prot)	1825	0	0	1827	0	1580
Flt Permitted						
Satd. Flow (perm)	1825	0	0	1827	0	1580
Link Speed (mph)	30			30	30	
Link Distance (ft)	187			131	186	
Travel Time (s)	4.3			3.0	4.2	
Peak Hour Factor	0.90	0.90	0.96	0.96	0.80	0.80
Heavy Vehicles (%)	4%	4%	4%	4%	4%	4%
Adj. Flow (vph)	916	7	0	788	0	11
Shared Lane Traffic (%)						
Lane Group Flow (vph)	923	0	0	788	0	11
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 53.7%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	824	6	0	756	0	9
Future Vol, veh/h	824	6	0	756	0	9
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	90	90	96	96	80	80
Heavy Vehicles, %	4	4	4	4	4	4
Mvmt Flow	916	7	0	788	0	11

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	920
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.24
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.336
Pot Cap-1 Maneuver	-	-	0	-	0	326
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	326
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	16.4
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	326	-	-	-
HCM Lane V/C Ratio	0.035	-	-	-
HCM Control Delay (s)	16.4	-	-	-
HCM Lane LOS	C	-	-	-
HCM 95th %tile Q(veh)	0.1	-	-	-

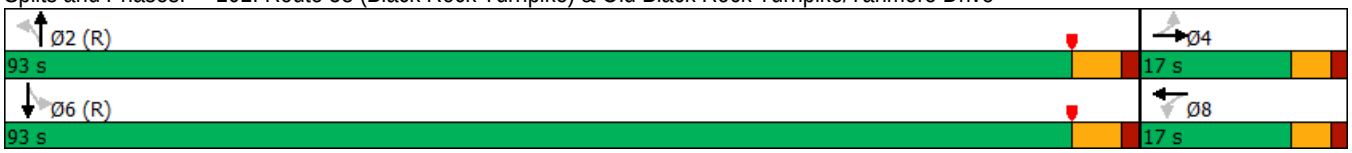
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	10	0	1	54	4	57	4	802	112	128	975	5
Future Volume (vph)	10	0	1	54	4	57	4	802	112	128	975	5
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	16	12	12	13	12	12	13	12
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		0.990			0.932			0.983			0.999	
Flt Protected		0.956			0.977						0.994	
Satd. Flow (prot)	0	1998	0	0	1922	0	0	1892	0	0	1911	0
Flt Permitted		0.650			0.844			0.996			0.776	
Satd. Flow (perm)	0	1359	0	0	1661	0	0	1885	0	0	1492	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		26			37			22			1	
Link Speed (mph)		25			30			35			35	
Link Distance (ft)		378			442			1898			522	
Travel Time (s)		10.3			10.0			37.0			10.2	
Peak Hour Factor	0.80	0.80	0.80	0.91	0.91	0.91	0.92	0.92	0.92	0.87	0.87	0.87
Adj. Flow (vph)	13	0	1	59	4	63	4	872	122	147	1121	6
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	14	0	0	126	0	0	998	0	0	1274	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	11.7	11.7		11.7	11.7		20.6	20.6		20.6	20.6	
Total Split (s)	17.0	17.0		17.0	17.0		93.0	93.0		93.0	93.0	
Total Split (%)	15.5%	15.5%		15.5%	15.5%		84.5%	84.5%		84.5%	84.5%	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.4	1.4		1.4	1.4		1.6	1.6		1.6	1.6	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.7			4.7			5.6			5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Min	C-Min		C-Min	C-Min	
Act Effct Green (s)		10.1			10.1			89.6			89.6	
Actuated g/C Ratio		0.09			0.09			0.81			0.81	
v/c Ratio		0.09			0.68			0.65			1.05	
Control Delay		9.2			52.0			6.7			52.9	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		9.2			52.0			6.7			52.9	
LOS		A			D			A			D	
Approach Delay		9.2			52.0			6.7			52.9	
Approach LOS		A			D			A			D	
Queue Length 50th (ft)		0			61			374			~988	
Queue Length 95th (ft)		8			123			356			#1196	
Internal Link Dist (ft)		298			362			1818			442	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		175			218			1539			1215	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.08			0.58			0.65			1.05	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 67 (61%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 150
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.05
Intersection Signal Delay: 33.5 Intersection LOS: C
Intersection Capacity Utilization 127.4% ICU Level of Service H
Analysis Period (min) 15
~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Lane Configurations							
Traffic Volume (vph)	178	344	135	808	946	88	
Future Volume (vph)	178	344	135	808	946	88	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	10	10	11	11	12	12	
Storage Length (ft)	0	50	100			50	
Storage Lanes	1	1	1			1	
Taper Length (ft)	25		50				
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00	
Frt		0.850				0.850	
Flt Protected	0.950		0.950				
Satd. Flow (prot)	1652	1478	1711	3421	1863	1583	
Flt Permitted	0.950		0.065				
Satd. Flow (perm)	1652	1478	117	3421	1863	1583	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		215				18	
Link Speed (mph)	25			30	35		
Link Distance (ft)	445			510	341		
Travel Time (s)	12.1			11.6	6.6		
Peak Hour Factor	0.90	0.90	0.88	0.88	0.95	0.95	
Adj. Flow (vph)	198	382	153	918	996	93	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	198	382	153	918	996	93	
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm	
Protected Phases	4		1	6	2		3
Permitted Phases		4	6			2	
Detector Phase	4	4	1	6	2	2	
Switch Phase							
Minimum Initial (s)	9.0	9.0	5.0	15.0	15.0	15.0	7.0
Minimum Split (s)	13.0	13.0	9.2	21.9	21.9	21.9	22.0
Total Split (s)	17.0	17.0	10.2	71.0	60.8	60.8	22.0
Total Split (%)	15.5%	15.5%	9.3%	64.5%	55.3%	55.3%	20%
Yellow Time (s)	3.0	3.0	3.2	4.9	4.9	4.9	4.0
All-Red Time (s)	1.0	1.0	1.0	2.0	2.0	2.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	4.0	4.2	6.9	6.9	6.9	
Lead/Lag	Lag	Lag	Lead		Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	C-Min	C-Min	C-Min	None
Act Effct Green (s)	26.4	26.4	75.4	72.7	57.2	57.2	
Actuated g/C Ratio	0.24	0.24	0.69	0.66	0.52	0.52	
v/c Ratio	0.50	0.74	0.63	0.41	1.03	0.11	
Control Delay	40.7	25.7	37.6	7.0	38.7	6.1	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	40.7	25.7	37.6	7.0	38.7	6.1	
LOS	D	C	D	A	D	A	
Approach Delay	30.8			11.4	35.9		
Approach LOS	C			B	D		
Queue Length 50th (ft)	123	111	63	115	~691	17	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Queue Length 95th (ft)	187	218	124	122	m#742	m19	
Internal Link Dist (ft)	365			430	261		
Turn Bay Length (ft)		50	100			50	
Base Capacity (vph)	396	518	243	2261	968	832	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.50	0.74	0.63	0.41	1.03	0.11	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow, Master Intersection
Natural Cycle: 120
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 1.03
Intersection Signal Delay: 25.2 Intersection LOS: C
Intersection Capacity Utilization 80.2% ICU Level of Service D
Analysis Period (min) 15

~ Volume exceeds capacity, queue is theoretically infinite.
Queue shown is maximum after two cycles.

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

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

Splits and Phases: 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive

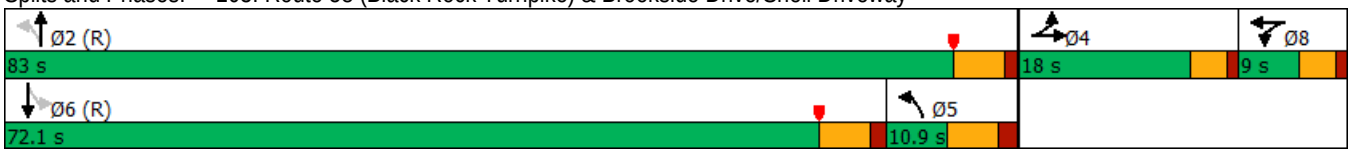
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	135	3	73	4	0	36	40	778	1	5	1171	166
Future Volume (vph)	135	3	73	4	0	36	40	778	1	5	1171	166
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	16	12	12	12	12	12	12	12
Storage Length (ft)	50		0	0		0	0		0	200		0
Storage Lanes	1		0	0		0	0		0	1		0
Taper Length (ft)	50			25			25			50		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.893			0.878						0.981	
Flt Protected	0.950	0.988			0.995			0.998				
Satd. Flow (prot)	1905	1561	0	0	1844	0	0	3532	0	0	3472	0
Flt Permitted	0.950	0.988			0.995			0.805			0.953	
Satd. Flow (perm)	1905	1561	0	0	1844	0	0	2849	0	0	3309	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		91			122						26	
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		347			133			293			336	
Travel Time (s)		9.5			3.6			6.7			7.6	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.97	0.97	0.97	0.97	0.97	0.97
Adj. Flow (vph)	169	4	91	5	0	45	41	802	1	5	1207	171
Shared Lane Traffic (%)	19%											
Lane Group Flow (vph)	137	127	0	0	50	0	0	844	0	0	1383	0
Turn Type	Split	NA		Split	NA		pm+pt	NA		Perm	NA	
Protected Phases	4	4		8	8		5	2			6	
Permitted Phases							2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	9.0	9.0		5.0	5.0		5.0	15.0		15.0	15.0	
Minimum Split (s)	13.0	13.0		9.0	9.0		10.9	20.4		20.4	20.4	
Total Split (s)	18.0	18.0		9.0	9.0		10.9	83.0		72.1	72.1	
Total Split (%)	16.4%	16.4%		8.2%	8.2%		9.9%	75.5%		65.5%	65.5%	
Yellow Time (s)	3.0	3.0		3.0	3.0		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.7	1.2		1.2	1.2	
Lost Time Adjust (s)	0.0	0.0			0.0			0.0			0.0	
Total Lost Time (s)	4.0	4.0			4.0			5.4			5.4	
Lead/Lag							Lag			Lead	Lead	
Lead-Lag Optimize?							Yes			Yes	Yes	
Recall Mode	None	None		None	None		None	C-Min		C-Min	C-Min	
Act Effct Green (s)	12.5	12.5			5.6			80.4			80.4	
Actuated g/C Ratio	0.11	0.11			0.05			0.73			0.73	
v/c Ratio	0.63	0.49			0.24			0.41			0.57	
Control Delay	59.4	22.1			2.7			5.2			6.3	
Queue Delay	0.0	0.0			0.0			0.1			0.0	
Total Delay	59.4	22.1			2.7			5.3			6.3	
LOS	E	C			A			A			A	
Approach Delay		41.4			2.7			5.3			6.3	
Approach LOS		D			A			A			A	
Queue Length 50th (ft)	98	25			0			107			186	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	140	64			0			76			m112	
Internal Link Dist (ft)		267			53			213			256	
Turn Bay Length (ft)	50											
Base Capacity (vph)	253	286			209			2104			2425	
Starvation Cap Reductn	0	0			0			407			0	
Spillback Cap Reductn	0	0			0			0			1	
Storage Cap Reductn	0	0			0			0			0	
Reduced v/c Ratio	0.54	0.44			0.24			0.50			0.57	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 37 (34%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.63
Intersection Signal Delay: 9.6 Intersection LOS: A
Intersection Capacity Utilization 71.8% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 103: Route 58 (Black Rock Turnpike) & Brookside Drive/Shell Driveway



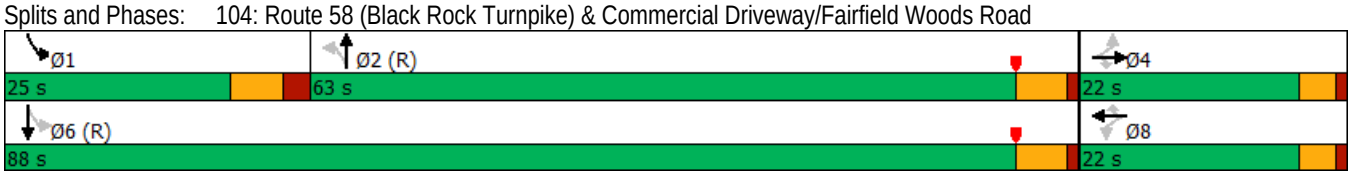
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	29	18	46	69	15	110	47	706	90	292	918	37
Future Volume (vph)	29	18	46	69	15	110	47	706	90	292	918	37
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	11	12	11	12	12	11	12
Storage Length (ft)	0		0	0		75	200		0	0		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.983			0.994	
Flt Protected		0.970			0.960		0.950			0.950		
Satd. Flow (prot)	0	1807	1583	0	1788	1531	1770	3363	0	1770	1790	0
Flt Permitted		0.788			0.723		0.278			0.271		
Satd. Flow (perm)	0	1468	1583	0	1347	1531	518	3363	0	505	1790	0
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			87					19			6	
Link Speed (mph)		30			25			30			30	
Link Distance (ft)		97			499			535			293	
Travel Time (s)		2.2			13.6			12.2			6.7	
Peak Hour Factor	0.92	0.92	0.92	0.80	0.92	0.80	0.92	0.93	0.93	0.98	0.98	0.92
Adj. Flow (vph)	32	20	50	86	16	138	51	759	97	298	937	40
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	52	50	0	102	138	51	856	0	298	977	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	4	4	4	8	8	8	2	2		1	6	
Switch Phase												
Minimum Initial (s)	9.0	9.0	9.0	9.0	9.0	9.0	15.0	15.0		3.0	15.0	
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	20.3	20.3		9.5	20.3	
Total Split (s)	22.0	22.0	22.0	22.0	22.0	22.0	63.0	63.0		25.0	88.0	
Total Split (%)	20.0%	20.0%	20.0%	20.0%	20.0%	20.0%	57.3%	57.3%		22.7%	80.0%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.3	4.3		4.3	4.3	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		2.2	1.0	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		4.0	4.0		4.0	4.0	5.3	5.3		6.5	5.3	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Recall Mode	None	None	None	None	None	None	C-Max	C-Max		None	C-Max	
Act Effct Green (s)		13.9	13.9		13.9	13.9	71.5	71.5		85.6	86.8	
Actuated g/C Ratio		0.13	0.13		0.13	0.13	0.65	0.65		0.78	0.79	
v/c Ratio		0.28	0.18		0.60	0.72	0.15	0.39		0.60	0.69	
Control Delay		46.0	3.8		59.5	65.7	10.7	10.2		10.6	5.5	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.1	0.3	
Total Delay		46.0	3.8		59.5	65.7	10.7	10.2		10.7	5.7	
LOS		D	A		E	E	B	B		B	A	
Approach Delay		25.3			63.1			10.2			6.9	
Approach LOS		C			E			B			A	
Queue Length 50th (ft)		34	0		69	95	13	133		7	40	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		70	11		122	137	37	210		108	153	
Internal Link Dist (ft)		17			419			455			213	
Turn Bay Length (ft)						75	200					
Base Capacity (vph)		240	331		220	250	336	2193		605	1413	
Starvation Cap Reductn		0	0		0	0	0	0		19	83	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.22	0.15		0.46	0.55	0.15	0.39		0.51	0.73	

Intersection Summary

Area Type: Other
Cycle Length: 110
Actuated Cycle Length: 110
Offset: 17 (15%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.72
Intersection Signal Delay: 14.2 Intersection LOS: B
Intersection Capacity Utilization 86.5% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	90	791	157	148	625	131	232	279	177	189	270	44
Future Volume (vph)	90	791	157	148	625	131	232	279	177	189	270	44
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	11	12	12	11	11	12	12	12	12
Storage Length (ft)	200		325	200		0	400		75	170		75
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	85			50			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.975			0.974				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1711	3336	0	1711	3447	0	1711	1801	1583	1770	1863	1583
Flt Permitted	0.950			0.950			0.316			0.311		
Satd. Flow (perm)	1711	3336	0	1711	3447	0	569	1801	1583	579	1863	1583
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		16			17				125			
Link Speed (mph)		30			30			30			25	
Link Distance (ft)		628			408			637			355	
Travel Time (s)		14.3			9.3			14.5			9.7	
Peak Hour Factor	0.94	0.94	0.94	0.97	0.97	0.97	0.89	0.89	0.89	0.87	0.87	0.87
Adj. Flow (vph)	96	841	167	153	644	135	261	313	199	217	310	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	96	1008	0	153	779	0	261	313	199	217	310	51
Turn Type	Prot	NA		Prot	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases							4		4	8		8
Detector Phase	5	2		1	6		7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	15.0		5.0	15.0		5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.7	21.6		9.7	21.6		9.3	16.8	16.8	9.3	16.8	16.8
Total Split (s)	16.6	46.0		18.0	47.4		16.0	32.0	32.0	16.0	32.0	32.0
Total Split (%)	11.4%	31.7%		12.4%	32.7%		11.0%	22.1%	22.1%	11.0%	22.1%	22.1%
Yellow Time (s)	3.0	4.1		3.0	4.1		3.3	4.4	4.4	3.3	4.4	4.4
All-Red Time (s)	1.7	2.5		1.7	2.5		1.0	2.4	2.4	1.0	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	6.6		4.7	6.6		4.3	6.8	6.8	4.3	6.8	6.8
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min		None	Min		None	None	None	None	None	None
Act Effct Green (s)	10.5	39.4		13.3	42.2		39.4	25.2	25.2	39.4	25.2	25.2
Actuated g/C Ratio	0.09	0.35		0.12	0.38		0.35	0.22	0.22	0.35	0.22	0.22
v/c Ratio	0.60	0.85		0.75	0.60		0.82	0.77	0.44	0.66	0.74	0.14
Control Delay	64.2	41.4		71.2	30.0		48.1	54.9	17.9	35.2	52.3	36.2
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	64.2	41.4		71.2	30.0		48.1	54.9	17.9	35.2	52.3	36.2
LOS	E	D		E	C		D	D	B	D	D	D
Approach Delay		43.4			36.8			43.1			44.4	
Approach LOS		D			D			D			D	
Queue Length 50th (ft)	67	345		108	233		133	213	44	107	209	30

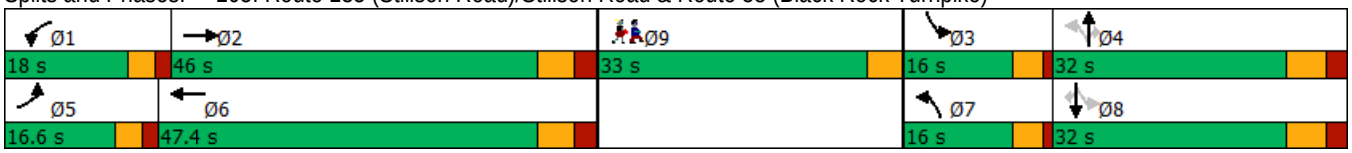
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	33.0
Total Split (s)	33.0
Total Split (%)	23%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	122	434		#209	300		#202	#334	111	161	297	62
Internal Link Dist (ft)		548			328			557			275	
Turn Bay Length (ft)	200			200			400		75	170		75
Base Capacity (vph)	181	1183		203	1308		319	405	453	328	419	356
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.53	0.85		0.75	0.60		0.82	0.77	0.44	0.66	0.74	0.14

Intersection Summary

Area Type: Other
Cycle Length: 145
Actuated Cycle Length: 112
Natural Cycle: 145
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.85
Intersection Signal Delay: 41.7 Intersection LOS: D
Intersection Capacity Utilization 80.8% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike)



Lane Group	Ø9
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	74	875	22	77	678	62	173	12	115	48	5	31
Future Volume (vph)	74	875	22	77	678	62	173	12	115	48	5	31
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	13	13	12	13	13
Storage Length (ft)	0		0	325		0	0		25	0		25
Storage Lanes	0		0	1		0	0		1	0		1
Taper Length (ft)	50			50			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.997			0.989				0.850			0.850
Flt Protected		0.996			0.995			0.955			0.957	
Satd. Flow (prot)	0	3397	0	0	3367	0	0	1838	1636	0	1842	1636
Flt Permitted		0.751			0.726			0.695			0.639	
Satd. Flow (perm)	0	2562	0	0	2456	0	0	1338	1636	0	1230	1636
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		4			11				131			131
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		401			502			123			137	
Travel Time (s)		9.1			11.4			3.4			3.7	
Peak Hour Factor	0.93	0.93	0.93	0.90	0.90	0.90	0.84	0.84	0.84	0.85	0.85	0.85
Adj. Flow (vph)	80	941	24	86	753	69	206	14	137	56	6	36
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1045	0	0	908	0	0	220	137	0	62	36
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2			4		4	4		4
Detector Phase	1	6		2	2		4	4	4	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	15.0		15.0	15.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	9.0	20.8		20.8	20.8		11.0	11.0	11.0	11.0	11.0	11.0
Total Split (s)	9.0	50.0		41.0	41.0		18.0	18.0	18.0	18.0	18.0	18.0
Total Split (%)	10.0%	55.6%		45.6%	45.6%		20.0%	20.0%	20.0%	20.0%	20.0%	20.0%
Yellow Time (s)	3.0	4.3		4.3	4.3		3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.5		1.5	1.5		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0			0.0			0.0	0.0		0.0	0.0
Total Lost Time (s)		5.8			5.8			4.0	4.0		4.0	4.0
Lead/Lag	Lead			Lag	Lag		Lag	Lag	Lag	Lag	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Min	C-Max		C-Max	C-Max		None	None	None	None	None	None
Act Effct Green (s)		56.9			47.4			23.3	23.3		23.3	23.3
Actuated g/C Ratio		0.63			0.53			0.26	0.26		0.26	0.26
v/c Ratio		0.63			0.70			0.64	0.26		0.19	0.07
Control Delay		12.0			9.6			38.7	6.8		27.5	0.3
Queue Delay		0.0			0.0			0.0	0.0		0.0	0.0
Total Delay		12.0			9.6			38.7	6.8		27.5	0.3
LOS		B			A			D	A		C	A
Approach Delay		12.0			9.6			26.4			17.5	
Approach LOS		B			A			C			B	
Queue Length 50th (ft)		146			48			112	3		28	0

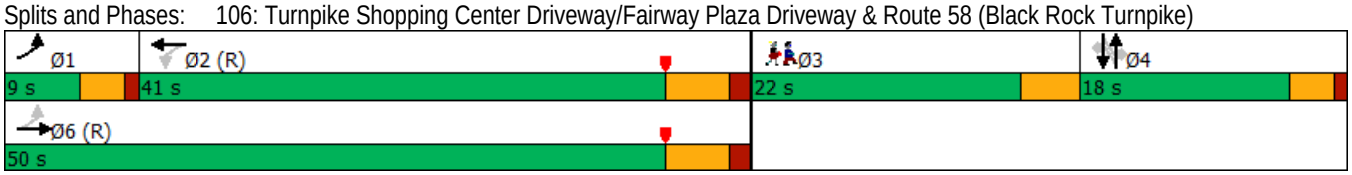
Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	22.0
Total Split (s)	22.0
Total Split (%)	24%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		207			148			167	37		55	0
Internal Link Dist (ft)		321			422			43			57	
Turn Bay Length (ft)									25			25
Base Capacity (vph)		1654			1298			346	520		318	520
Starvation Cap Reductn		0			0			0	0		0	0
Spillback Cap Reductn		0			0			0	0		0	0
Storage Cap Reductn		0			0			0	0		0	0
Reduced v/c Ratio		0.63			0.70			0.64	0.26		0.19	0.07

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 90
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.70
Intersection Signal Delay: 13.5 Intersection LOS: B
Intersection Capacity Utilization 79.9% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike)



Lane Group	Ø3
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

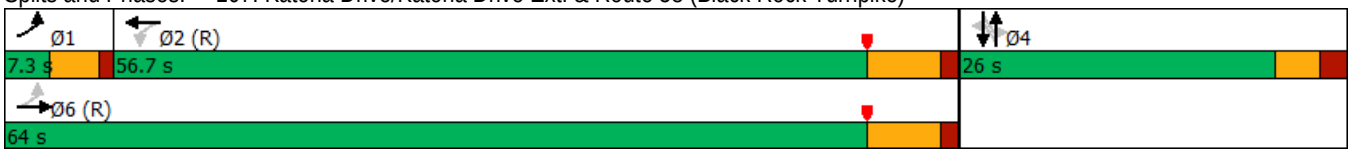
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	26	989	107	48	765	7	106	13	67	6	3	15
Future Volume (vph)	26	989	107	48	765	7	106	13	67	6	3	15
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	10	10	12	12	12
Storage Length (ft)	0		0	175		0	75		250	0		0
Storage Lanes	0		0	1		0	1		0	1		0
Taper Length (ft)	25			25			50			25		
Lane Util. Factor	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.986			0.999			0.874			0.876	
Flt Protected		0.999		0.950			0.950			0.950		
Satd. Flow (prot)	0	3370	0	1770	1799	0	1770	1520	0	1770	1632	0
Flt Permitted		0.908		0.233			0.742			0.694		
Satd. Flow (perm)	0	3063	0	434	1799	0	1382	1520	0	1293	1632	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		25			1			82			19	
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		502			407			405			198	
Travel Time (s)		11.4			9.3			11.0			5.4	
Peak Hour Factor	0.93	0.93	0.93	0.96	0.96	0.96	0.82	0.82	0.82	0.80	0.80	0.80
Adj. Flow (vph)	28	1063	115	50	797	7	129	16	82	8	4	19
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1206	0	50	804	0	129	98	0	8	23	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2			4			4		
Detector Phase	1	6		2	2		4	4		4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	7.3	21.3		21.3	21.3		11.9	11.9		11.9	11.9	
Total Split (s)	7.3	64.0		56.7	56.7		26.0	26.0		26.0	26.0	
Total Split (%)	8.1%	71.1%		63.0%	63.0%		28.9%	28.9%		28.9%	28.9%	
Yellow Time (s)	3.3	5.0		5.0	5.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.3		1.3	1.3		1.9	1.9		1.9	1.9	
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.3		6.3	6.3		4.9	4.9		4.9	4.9	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		66.6		50.4	50.4		12.2	12.2		12.2	12.2	
Actuated g/C Ratio		0.74		0.56	0.56		0.14	0.14		0.14	0.14	
v/c Ratio		0.52		0.21	0.80		0.69	0.35		0.05	0.10	
Control Delay		4.8		10.1	15.6		55.0	14.0		31.3	16.4	
Queue Delay		0.1		0.0	0.8		0.0	0.0		0.0	0.0	
Total Delay		4.9		10.1	16.4		55.0	14.0		31.3	16.4	
LOS		A		B	B		D	B		C	B	
Approach Delay		4.9			16.0			37.3			20.3	
Approach LOS		A			B			D			C	
Queue Length 50th (ft)		86		8	135		71	8		4	2	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		137		m17	233		109	40		14	18	
Internal Link Dist (ft)		422			327			325			118	
Turn Bay Length (ft)				175			75					
Base Capacity (vph)		2306		243	1007		324	419		303	397	
Starvation Cap Reductn		212		0	53		0	0		0	0	
Spillback Cap Reductn		0		0	0		0	0		0	0	
Storage Cap Reductn		0		0	0		0	0		0	0	
Reduced v/c Ratio		0.58		0.21	0.84		0.40	0.23		0.03	0.06	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 81 (90%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.80
Intersection Signal Delay: 12.4 Intersection LOS: B
Intersection Capacity Utilization 71.5% ICU Level of Service C
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike)



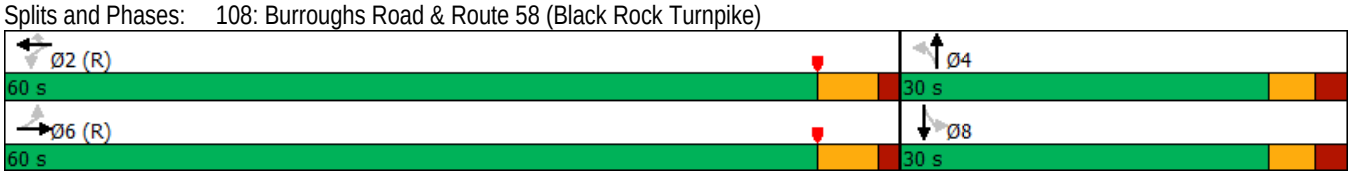
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	86	973	15	7	746	156	18	110	7	129	52	52
Future Volume (vph)	86	973	15	7	746	156	18	110	7	129	52	52
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	16	12	12	16	12
Storage Length (ft)	0		0	0		150	0		0	0		0
Storage Lanes	0		0	0		1	0		0	0		0
Taper Length (ft)	50			25			25			50		
Lane Util. Factor	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998				0.850		0.993			0.970	
Flt Protected		0.996						0.993			0.973	
Satd. Flow (prot)	0	3401	0	0	1801	1583	0	2082	0	0	1992	0
Flt Permitted		0.733			0.989			0.938			0.697	
Satd. Flow (perm)	0	2503	0	0	1781	1583	0	1966	0	0	1427	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3				147		3			16	
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		407			390			466			265	
Travel Time (s)		9.3			8.9			12.7			7.2	
Peak Hour Factor	0.99	0.99	0.99	0.92	0.92	0.92	0.90	0.90	0.90	0.93	0.93	0.93
Adj. Flow (vph)	87	983	15	8	811	170	20	122	8	139	56	56
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1085	0	0	819	170	0	150	0	0	251	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2		2	4			8		
Detector Phase	6	6		2	2	2	4	4		8	8	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0	15.0	9.0	9.0		9.0	9.0	
Minimum Split (s)	20.6	20.6		20.6	20.6	20.6	23.4	23.4		14.4	14.4	
Total Split (s)	60.0	60.0		60.0	60.0	60.0	30.0	30.0		30.0	30.0	
Total Split (%)	66.7%	66.7%		66.7%	66.7%	66.7%	33.3%	33.3%		33.3%	33.3%	
Yellow Time (s)	4.1	4.1		4.1	4.1	4.1	3.1	3.1		3.1	3.1	
All-Red Time (s)	1.5	1.5		1.5	1.5	1.5	2.3	2.3		2.3	2.3	
Lost Time Adjust (s)		0.0			0.0	0.0		0.0			0.0	
Total Lost Time (s)		5.6			5.6	5.6		5.4			5.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)		60.7			60.7	60.7		18.3			18.3	
Actuated g/C Ratio		0.67			0.67	0.67		0.20			0.20	
v/c Ratio		0.64			0.68	0.15		0.37			0.83	
Control Delay		4.9			13.8	2.1		31.6			53.8	
Queue Delay		0.0			0.1	0.0		0.0			0.0	
Total Delay		4.9			14.0	2.1		31.6			53.8	
LOS		A			B	A		C			D	
Approach Delay		4.9			11.9			31.6			53.8	
Approach LOS		A			B			C			D	
Queue Length 50th (ft)		108			250	4		72			129	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		154			475	29		116			199	
Internal Link Dist (ft)		327			310			386			185	
Turn Bay Length (ft)						150						
Base Capacity (vph)		1689			1201	1115		539			401	
Starvation Cap Reductn		0			0	0		0			0	
Spillback Cap Reductn		0			35	0		0			0	
Storage Cap Reductn		0			0	0		0			0	
Reduced v/c Ratio		0.64			0.70	0.15		0.28			0.63	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow, Master Intersection
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 14.3 Intersection LOS: B
Intersection Capacity Utilization 103.1% ICU Level of Service G
Analysis Period (min) 15

Splits and Phases: 108: Burroughs Road & Route 58 (Black Rock Turnpike)



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	630	6	49	414	0	84
Future Volume (vph)	630	6	49	414	0	84
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	10	10
Storage Length (ft)		0	0		0	50
Storage Lanes		0	0		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00
Frt	0.999					0.850
Flt Protected				0.995		
Satd. Flow (prot)	3418	0	0	1792	1739	1478
Flt Permitted				0.995		
Satd. Flow (perm)	3418	0	0	1792	1739	1478
Link Speed (mph)	30			30	25	
Link Distance (ft)	1095			214	782	
Travel Time (s)	24.9			4.9	21.3	
Peak Hour Factor	0.95	0.95	0.90	0.90	0.83	0.83
Adj. Flow (vph)	663	6	54	460	0	101
Shared Lane Traffic (%)						
Lane Group Flow (vph)	669	0	0	514	0	101
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 48.8%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	1.3

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	630	6	49	414	0	84
Future Vol, veh/h	630	6	49	414	0	84
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	95	95	90	90	83	83
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	663	6	54	460	0	101

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	669	0	1234	335
Stage 1	-	-	-	-	666	-
Stage 2	-	-	-	-	568	-
Critical Hdwy	-	-	4.13	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.219	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	919	-	181	662
Stage 1	-	-	-	-	473	-
Stage 2	-	-	-	-	566	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	919	-	167	662
Mov Cap-2 Maneuver	-	-	-	-	167	-
Stage 1	-	-	-	-	436	-
Stage 2	-	-	-	-	566	-

Approach	EB	WB	NB
HCM Control Delay, s	0	1	11.4
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	-	662	-	-	919	-
HCM Lane V/C Ratio	-	0.153	-	-	0.059	-
HCM Control Delay (s)	0	11.4	-	-	9.2	0
HCM Lane LOS	A	B	-	-	A	A
HCM 95th %tile Q(veh)	-	0.5	-	-	0.2	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	34	96	55	492	562	28
Future Volume (vph)	34	96	55	492	562	28
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	12	12
Storage Length (ft)	0	0	25			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		50			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.900				0.994	
Flt Protected	0.987		0.950			
Satd. Flow (prot)	1875	0	1770	1863	1852	0
Flt Permitted	0.987		0.950			
Satd. Flow (perm)	1875	0	1770	1863	1852	0
Link Speed (mph)	25			30	30	
Link Distance (ft)	586			395	218	
Travel Time (s)	16.0			9.0	5.0	
Peak Hour Factor	0.83	0.83	0.91	0.91	0.95	0.95
Adj. Flow (vph)	41	116	60	541	592	29
Shared Lane Traffic (%)						
Lane Group Flow (vph)	157	0	60	541	621	0
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 52.4%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	3.2

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	34	96	55	492	562	28
Future Vol, veh/h	34	96	55	492	562	28
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	25	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	83	83	91	91	95	95
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	41	116	60	541	592	29

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1268	607	621	0	-	0
Stage 1	607	-	-	-	-	-
Stage 2	661	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	186	496	960	-	-	-
Stage 1	544	-	-	-	-	-
Stage 2	514	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	174	496	960	-	-	-
Mov Cap-2 Maneuver	174	-	-	-	-	-
Stage 1	510	-	-	-	-	-
Stage 2	514	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	24.9	0.9	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	960	-	334	-	-
HCM Lane V/C Ratio	0.063	-	0.469	-	-
HCM Control Delay (s)	9	-	24.9	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.2	-	2.4	-	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	1101	3	0	877	0	11
Future Volume (vph)	1101	3	0	877	0	11
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
Flt Protected						
Satd. Flow (prot)	1863	0	0	1863	0	1611
Flt Permitted						
Satd. Flow (perm)	1863	0	0	1863	0	1611
Link Speed (mph)	30			30	30	
Link Distance (ft)	187			131	186	
Travel Time (s)	4.3			3.0	4.2	
Peak Hour Factor	0.97	0.97	0.92	0.92	0.80	0.80
Adj. Flow (vph)	1135	3	0	953	0	14
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1138	0	0	953	0	14
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 68.1%	ICU Level of Service C
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	0.1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	1101	3	0	877	0	11
Future Vol, veh/h	1101	3	0	877	0	11
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	97	97	92	92	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1135	3	0	953	0	14

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	1137
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	-	-	0	-	0	246
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	246
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	20.5
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	246	-	-	-
HCM Lane V/C Ratio	0.056	-	-	-
HCM Control Delay (s)	20.5	-	-	-
HCM Lane LOS	C	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-

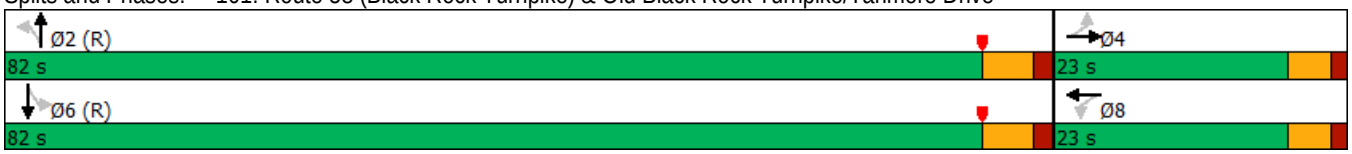
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	6	1	2	75	1	111	2	820	77	71	895	8
Future Volume (vph)	6	1	2	75	1	111	2	820	77	71	895	8
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	16	12	12	16	12	12	13	12	12	13	12
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		0.966			0.920			0.988			0.999	
Flt Protected		0.968			0.980						0.996	
Satd. Flow (prot)	0	1974	0	0	1903	0	0	1902	0	0	1915	0
Flt Permitted		0.743			0.864			0.999			0.868	
Satd. Flow (perm)	0	1515	0	0	1678	0	0	1900	0	0	1669	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3			61			12			1	
Link Speed (mph)		25			30			35			35	
Link Distance (ft)		378			442			1898			522	
Travel Time (s)		10.3			10.0			37.0			10.2	
Peak Hour Factor	0.80	0.80	0.80	0.80	0.80	0.80	0.94	0.94	0.94	0.94	0.94	0.94
Adj. Flow (vph)	8	1	3	94	1	139	2	872	82	76	952	9
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	12	0	0	234	0	0	956	0	0	1037	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		4			8			2			6	
Permitted Phases	4			8			2			6		
Detector Phase	4	4		8	8		2	2		6	6	
Switch Phase												
Minimum Initial (s)	7.0	7.0		7.0	7.0		15.0	15.0		15.0	15.0	
Minimum Split (s)	11.7	11.7		11.7	11.7		20.6	20.6		20.6	20.6	
Total Split (s)	23.0	23.0		23.0	23.0		82.0	82.0		82.0	82.0	
Total Split (%)	21.9%	21.9%		21.9%	21.9%		78.1%	78.1%		78.1%	78.1%	
Yellow Time (s)	3.3	3.3		3.3	3.3		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.4	1.4		1.4	1.4		1.6	1.6		1.6	1.6	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.7			4.7			5.6			5.6	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	None	None		None	None		C-Min	C-Min		C-Min	C-Min	
Act Effct Green (s)		14.7			14.7			80.0			80.0	
Actuated g/C Ratio		0.14			0.14			0.76			0.76	
v/c Ratio		0.06			0.82			0.66			0.82	
Control Delay		32.3			53.6			8.7			15.9	
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		32.3			53.6			8.7			15.9	
LOS		C			D			A			B	
Approach Delay		32.3			53.6			8.7			15.9	
Approach LOS		C			D			A			B	
Queue Length 50th (ft)		5			113			217			383	
Queue Length 95th (ft)		19			164			401			696	
Internal Link Dist (ft)		298			362			1818			442	
Turn Bay Length (ft)												

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Base Capacity (vph)		266			342			1449			1271	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.05			0.68			0.66			0.82	

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 105
Offset: 99 (94%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.82
Intersection Signal Delay: 16.9 Intersection LOS: B
Intersection Capacity Utilization 122.8% ICU Level of Service H
Analysis Period (min) 15

Splits and Phases: 101: Route 58 (Black Rock Turnpike) & Old Black Rock Turnpike/Tahmore Drive



Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Lane Configurations							
Traffic Volume (vph)	120	207	144	803	810	77	
Future Volume (vph)	120	207	144	803	810	77	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	10	10	11	11	12	12	
Storage Length (ft)	0	50	100			50	
Storage Lanes	1	1	1			1	
Taper Length (ft)	25		50				
Lane Util. Factor	1.00	1.00	1.00	0.95	1.00	1.00	
Frt		0.850				0.850	
Flt Protected	0.950		0.950				
Satd. Flow (prot)	1652	1478	1711	3421	1863	1583	
Flt Permitted	0.950		0.148				
Satd. Flow (perm)	1652	1478	266	3421	1863	1583	
Right Turn on Red		Yes				Yes	
Satd. Flow (RTOR)		196				19	
Link Speed (mph)	25			30	35		
Link Distance (ft)	445			510	341		
Travel Time (s)	12.1			11.6	6.6		
Peak Hour Factor	0.82	0.82	0.98	0.98	0.90	0.90	
Adj. Flow (vph)	146	252	147	819	900	86	
Shared Lane Traffic (%)							
Lane Group Flow (vph)	146	252	147	819	900	86	
Turn Type	Prot	Perm	pm+pt	NA	NA	Perm	
Protected Phases	4		1	6	2		3
Permitted Phases		4	6			2	
Detector Phase	4	4	1	6	2	2	
Switch Phase							
Minimum Initial (s)	9.0	9.0	5.0	15.0	15.0	15.0	7.0
Minimum Split (s)	13.0	13.0	9.2	21.9	21.9	21.9	22.0
Total Split (s)	14.0	14.0	10.4	69.0	58.6	58.6	22.0
Total Split (%)	13.3%	13.3%	9.9%	65.7%	55.8%	55.8%	21%
Yellow Time (s)	3.0	3.0	3.2	4.9	4.9	4.9	4.0
All-Red Time (s)	1.0	1.0	1.0	2.0	2.0	2.0	0.0
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	
Total Lost Time (s)	4.0	4.0	4.2	6.9	6.9	6.9	
Lead/Lag	Lag	Lag	Lead		Lag	Lag	Lead
Lead-Lag Optimize?	Yes	Yes	Yes		Yes	Yes	Yes
Recall Mode	None	None	None	C-Min	C-Min	C-Min	None
Act Effct Green (s)	15.5	15.5	81.3	78.6	64.4	64.4	
Actuated g/C Ratio	0.15	0.15	0.77	0.75	0.61	0.61	
v/c Ratio	0.60	0.66	0.43	0.32	0.79	0.09	
Control Delay	52.1	19.4	12.0	3.9	18.5	8.6	
Queue Delay	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	52.1	19.4	12.0	3.9	18.5	8.6	
LOS	D	B	B	A	B	A	
Approach Delay	31.4			5.2	17.6		
Approach LOS	C			A	B		
Queue Length 50th (ft)	93	34	15	56	238	6	

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR	Ø3
Queue Length 95th (ft)	137	87	84	104	#789	m28	
Internal Link Dist (ft)	365			430	261		
Turn Bay Length (ft)		50	100			50	
Base Capacity (vph)	243	384	343	2562	1143	978	
Starvation Cap Reductn	0	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	0	
Reduced v/c Ratio	0.60	0.66	0.43	0.32	0.79	0.09	

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 105
Offset: 0 (0%), Referenced to phase 2:SBT and 6:NBTL, Start of Yellow
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.79
Intersection Signal Delay: 14.8 Intersection LOS: B
Intersection Capacity Utilization 70.7% ICU Level of Service C
Analysis Period (min) 15

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

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

Splits and Phases: 102: Route 58 (Black Rock Turnpike) & Samp Mortar Drive

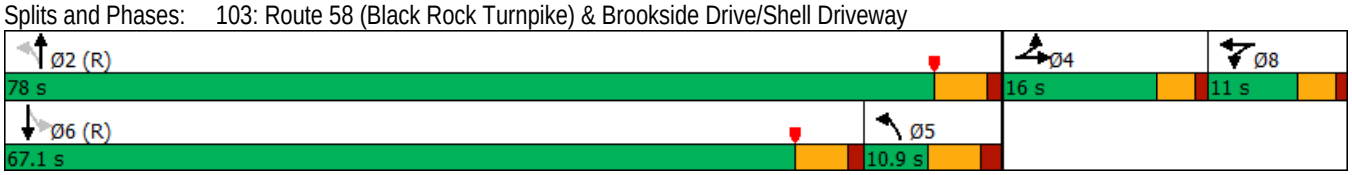
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	89	0	59	3	2	41	54	900	1	7	952	108
Future Volume (vph)	89	0	59	3	2	41	54	900	1	7	952	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	16	12	12	12	12	12	12	12
Storage Length (ft)	50		0	0		0	0		0	200		0
Storage Lanes	1		0	0		0	0		0	1		0
Taper Length (ft)	50			25			25			50		
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00	0.95	0.95	0.95	0.95	0.95	0.95
Frt		0.875			0.880						0.985	
Flt Protected	0.950	0.992			0.996			0.997				
Satd. Flow (prot)	1905	1536	0	0	1850	0	0	3529	0	0	3486	0
Flt Permitted	0.950	0.992			0.996			0.806			0.949	
Satd. Flow (perm)	1905	1536	0	0	1850	0	0	2853	0	0	3308	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		128			48						20	
Link Speed (mph)		25			25			30			30	
Link Distance (ft)		347			133			293			336	
Travel Time (s)		9.5			3.6			6.7			7.6	
Peak Hour Factor	0.83	0.83	0.83	0.85	0.85	0.85	0.98	0.98	0.98	0.96	0.96	0.96
Adj. Flow (vph)	107	0	71	4	2	48	55	918	1	7	992	113
Shared Lane Traffic (%)	13%											
Lane Group Flow (vph)	93	85	0	0	54	0	0	974	0	0	1112	0
Turn Type	Split	NA		Split	NA		pm+pt	NA		Perm	NA	
Protected Phases	4	4		8	8		5	2			6	
Permitted Phases							2			6		
Detector Phase	4	4		8	8		5	2		6	6	
Switch Phase												
Minimum Initial (s)	9.0	9.0		5.0	5.0		5.0	15.0		15.0	15.0	
Minimum Split (s)	13.0	13.0		9.0	9.0		10.9	20.4		20.4	20.4	
Total Split (s)	16.0	16.0		11.0	11.0		10.9	78.0		67.1	67.1	
Total Split (%)	15.2%	15.2%		10.5%	10.5%		10.4%	74.3%		63.9%	63.9%	
Yellow Time (s)	3.0	3.0		3.0	3.0		4.2	4.2		4.2	4.2	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.7	1.2		1.2	1.2	
Lost Time Adjust (s)	0.0	0.0			0.0			0.0			0.0	
Total Lost Time (s)	4.0	4.0			4.0			5.4			5.4	
Lead/Lag							Lag			Lead	Lead	
Lead-Lag Optimize?							Yes			Yes	Yes	
Recall Mode	None	None		None	None		None	C-Min		C-Min	C-Min	
Act Effct Green (s)	10.4	10.4			6.7			76.5			76.5	
Actuated g/C Ratio	0.10	0.10			0.06			0.73			0.73	
v/c Ratio	0.49	0.32			0.33			0.47			0.46	
Control Delay	53.6	5.6			21.7			5.4			3.5	
Queue Delay	0.0	0.0			0.0			0.1			0.0	
Total Delay	53.6	5.6			21.7			5.5			3.5	
LOS	D	A			C			A			A	
Approach Delay		30.7			21.7			5.5			3.5	
Approach LOS		C			C			A			A	
Queue Length 50th (ft)	64	0			4			117			68	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	105	10			37			97			67	
Internal Link Dist (ft)		267			53			213			256	
Turn Bay Length (ft)	50											
Base Capacity (vph)	222	292			175			2096			2414	
Starvation Cap Reductn	0	0			0			246			0	
Spillback Cap Reductn	0	0			0			0			1	
Storage Cap Reductn	0	0			0			0			0	
Reduced v/c Ratio	0.42	0.29			0.31			0.53			0.46	

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 105
Offset: 46 (44%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.49
Intersection Signal Delay: 6.8 Intersection LOS: A
Intersection Capacity Utilization 79.7% ICU Level of Service D
Analysis Period (min) 15

Splits and Phases: 103: Route 58 (Black Rock Turnpike) & Brookside Drive/Shell Driveway



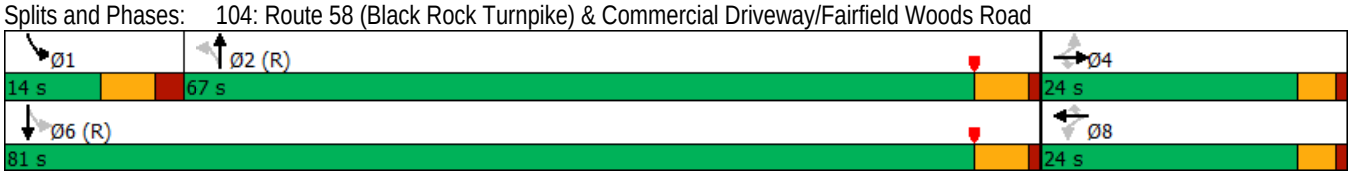
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	36	19	42	88	22	131	36	835	75	108	881	43
Future Volume (vph)	36	19	42	88	22	131	36	835	75	108	881	43
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	12	12	12	12	11	12	11	12	12	11	12
Storage Length (ft)	0		0	0		75	200		0	0		0
Storage Lanes	0		1	0		1	1		0	1		0
Taper Length (ft)	25			25			25			25		
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.95	0.95	1.00	1.00	1.00
Frt			0.850			0.850		0.988			0.993	
Flt Protected		0.968			0.962		0.950			0.950		
Satd. Flow (prot)	0	1803	1583	0	1792	1531	1770	3380	0	1770	1788	0
Flt Permitted		0.673			0.727		0.263			0.244		
Satd. Flow (perm)	0	1254	1583	0	1354	1531	490	3380	0	455	1788	0
Right Turn on Red			Yes			No			Yes			Yes
Satd. Flow (RTOR)			91					15			6	
Link Speed (mph)		30			25			30			30	
Link Distance (ft)		97			499			535			293	
Travel Time (s)		2.2			13.6			12.2			6.7	
Peak Hour Factor	0.88	0.88	0.88	0.80	0.80	0.80	0.97	0.97	0.97	0.96	0.96	0.96
Adj. Flow (vph)	41	22	48	110	28	164	37	861	77	113	918	45
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	63	48	0	138	164	37	938	0	113	963	0
Turn Type	Perm	NA	Perm	Perm	NA	Perm	Perm	NA		pm+pt	NA	
Protected Phases		4			8			2		1	6	
Permitted Phases	4		4	8		8	2			6		
Detector Phase	4	4	4	8	8	8	2	2		1	6	
Switch Phase												
Minimum Initial (s)	9.0	9.0	9.0	9.0	9.0	9.0	15.0	15.0		3.0	15.0	
Minimum Split (s)	13.0	13.0	13.0	13.0	13.0	13.0	20.3	20.3		9.5	20.3	
Total Split (s)	24.0	24.0	24.0	24.0	24.0	24.0	67.0	67.0		14.0	81.0	
Total Split (%)	22.9%	22.9%	22.9%	22.9%	22.9%	22.9%	63.8%	63.8%		13.3%	77.1%	
Yellow Time (s)	3.0	3.0	3.0	3.0	3.0	3.0	4.3	4.3		4.3	4.3	
All-Red Time (s)	1.0	1.0	1.0	1.0	1.0	1.0	1.0	1.0		2.2	1.0	
Lost Time Adjust (s)		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.0	
Total Lost Time (s)		4.0	4.0		4.0	4.0	5.3	5.3		6.5	5.3	
Lead/Lag							Lag	Lag		Lead		
Lead-Lag Optimize?							Yes	Yes		Yes		
Recall Mode	None	None	None	None	None	None	C-Max	C-Max		None	C-Max	
Act Effct Green (s)		15.1	15.1		15.1	15.1	68.7	68.7		79.4	80.6	
Actuated g/C Ratio		0.14	0.14		0.14	0.14	0.65	0.65		0.76	0.77	
v/c Ratio		0.35	0.16		0.71	0.75	0.12	0.42		0.27	0.70	
Control Delay		44.4	2.4		61.7	62.6	9.6	9.9		3.3	4.7	
Queue Delay		0.0	0.0		0.0	0.0	0.0	0.0		0.0	0.1	
Total Delay		44.4	2.4		61.7	62.6	9.6	9.9		3.3	4.8	
LOS		D	A		E	E	A	A		A	A	
Approach Delay		26.2			62.2			9.9			4.6	
Approach LOS		C			E			A			A	
Queue Length 50th (ft)		38	0		89	106	9	142		1	12	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		74	6		130	149	27	220		22	119	
Internal Link Dist (ft)		17			419			455			213	
Turn Bay Length (ft)						75	200					
Base Capacity (vph)		238	375		257	291	320	2216		437	1373	
Starvation Cap Reductn		0	0		0	0	0	0		0	33	
Spillback Cap Reductn		0	0		0	0	0	0		0	0	
Storage Cap Reductn		0	0		0	0	0	0		0	0	
Reduced v/c Ratio		0.26	0.13		0.54	0.56	0.12	0.42		0.26	0.72	

Intersection Summary

Area Type: Other
Cycle Length: 105
Actuated Cycle Length: 105
Offset: 18 (17%), Referenced to phase 2:NBTL and 6:SBTL, Start of Yellow
Natural Cycle: 60
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.75
Intersection Signal Delay: 14.7 Intersection LOS: B
Intersection Capacity Utilization 86.3% ICU Level of Service E
Analysis Period (min) 15

Splits and Phases: 104: Route 58 (Black Rock Turnpike) & Commercial Driveway/Fairfield Woods Road



Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	86	679	171	142	657	160	233	210	157	241	275	61
Future Volume (vph)	86	679	171	142	657	160	233	210	157	241	275	61
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	11	12	11	12	12	11	11	12	12	12	12
Storage Length (ft)	200		325	200		0	400		75	170		75
Storage Lanes	1		1	1		0	1		1	1		1
Taper Length (ft)	85			50			100			100		
Lane Util. Factor	1.00	0.95	0.95	1.00	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.970			0.971				0.850			0.850
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1711	3319	0	1711	3437	0	1711	1801	1583	1770	1863	1583
Flt Permitted	0.950			0.950			0.325			0.411		
Satd. Flow (perm)	1711	3319	0	1711	3437	0	585	1801	1583	766	1863	1583
Right Turn on Red			Yes			Yes			Yes			No
Satd. Flow (RTOR)		21			21				125			
Link Speed (mph)		30			30			30			25	
Link Distance (ft)		628			408			637			355	
Travel Time (s)		14.3			9.3			14.5			9.7	
Peak Hour Factor	0.90	0.90	0.90	0.91	0.91	0.91	0.90	0.90	0.90	0.88	0.88	0.88
Adj. Flow (vph)	96	754	190	156	722	176	259	233	174	274	313	69
Shared Lane Traffic (%)												
Lane Group Flow (vph)	96	944	0	156	898	0	259	233	174	274	313	69
Turn Type	Prot	NA		Prot	NA		pm+pt	NA	Perm	pm+pt	NA	Perm
Protected Phases	5	2		1	6		7	4		3	8	
Permitted Phases							4		4	8		8
Detector Phase	5	2		1	6		7	4	4	3	8	8
Switch Phase												
Minimum Initial (s)	5.0	15.0		5.0	15.0		5.0	10.0	10.0	5.0	10.0	10.0
Minimum Split (s)	9.7	21.6		9.7	21.6		9.3	16.8	16.8	9.3	16.8	16.8
Total Split (s)	14.0	43.9		17.9	47.8		18.0	30.5	30.5	19.7	32.2	32.2
Total Split (%)	9.7%	30.3%		12.3%	33.0%		12.4%	21.0%	21.0%	13.6%	22.2%	22.2%
Yellow Time (s)	3.0	4.1		3.0	4.1		3.3	4.4	4.4	3.3	4.4	4.4
All-Red Time (s)	1.7	2.5		1.7	2.5		1.0	2.4	2.4	1.0	2.4	2.4
Lost Time Adjust (s)	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.7	6.6		4.7	6.6		4.3	6.8	6.8	4.3	6.8	6.8
Lead/Lag	Lead	Lag		Lead	Lag		Lead	Lag	Lag	Lead	Lag	Lag
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	None	Min		None	Min		None	None	None	None	None	None
Act Effct Green (s)	9.3	37.3		13.2	41.2		38.8	22.6	22.6	42.2	24.3	24.3
Actuated g/C Ratio	0.08	0.34		0.12	0.37		0.35	0.20	0.20	0.38	0.22	0.22
v/c Ratio	0.67	0.84		0.77	0.70		0.75	0.63	0.41	0.64	0.77	0.20
Control Delay	73.1	41.2		72.6	32.5		39.5	49.0	15.6	31.0	54.2	36.9
Queue Delay	0.0	0.0		0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0
Total Delay	73.1	41.2		72.6	32.5		39.5	49.0	15.6	31.0	54.2	36.9
LOS	E	D		E	C		D	D	B	C	D	D
Approach Delay		44.2			38.4			36.6			42.7	
Approach LOS		D			D			D			D	
Queue Length 50th (ft)	68	323		111	280		127	153	29	135	211	40

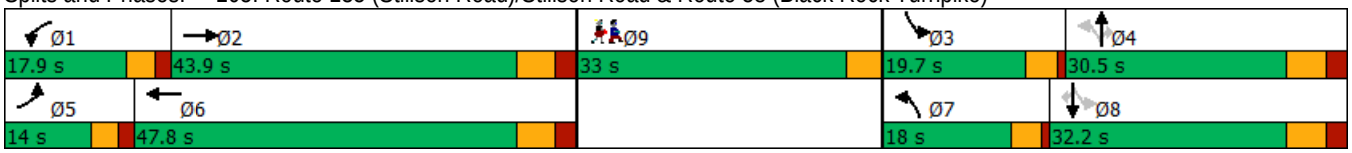
Lane Group	Ø9
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	9
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	33.0
Total Split (s)	33.0
Total Split (%)	23%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	
Lead-Lag Optimize?	
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)	#146	408		#216	355		#215	238	91	200	304	78
Internal Link Dist (ft)		548			328			557			275	
Turn Bay Length (ft)	200			200			400		75	170		75
Base Capacity (vph)	143	1130		203	1290		344	385	436	431	426	362
Starvation Cap Reductn	0	0		0	0		0	0	0	0	0	0
Spillback Cap Reductn	0	0		0	0		0	0	0	0	0	0
Storage Cap Reductn	0	0		0	0		0	0	0	0	0	0
Reduced v/c Ratio	0.67	0.84		0.77	0.70		0.75	0.61	0.40	0.64	0.73	0.19

Intersection Summary

Area Type: Other
Cycle Length: 145
Actuated Cycle Length: 110.9
Natural Cycle: 145
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.84
Intersection Signal Delay: 40.6 Intersection LOS: D
Intersection Capacity Utilization 78.1% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 105: Route 135 (Stillson Road)/Stillson Road & Route 58 (Black Rock Turnpike)



Lane Group	Ø9
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	94	795	48	80	755	95	171	23	135	78	20	41
Future Volume (vph)	94	795	48	80	755	95	171	23	135	78	20	41
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	13	13	12	13	13
Storage Length (ft)	0		0	325		0	0		25	0		25
Storage Lanes	0		0	1		0	0		1	0		1
Taper Length (ft)	50			50			25			25		
Lane Util. Factor	0.95	0.95	0.95	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.992			0.985				0.850			0.850
Flt Protected		0.995			0.996			0.958			0.962	
Satd. Flow (prot)	0	3377	0	0	3356	0	0	1844	1636	0	1852	1636
Flt Permitted		0.659			0.752			0.651			0.594	
Satd. Flow (perm)	0	2237	0	0	2534	0	0	1253	1636	0	1143	1636
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8			16				131			131
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		401			502			123			137	
Travel Time (s)		9.1			11.4			3.4			3.7	
Peak Hour Factor	0.96	0.96	0.96	0.95	0.95	0.95	0.92	0.92	0.92	0.81	0.81	0.81
Adj. Flow (vph)	98	828	50	84	795	100	186	25	147	96	25	51
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	976	0	0	979	0	0	211	147	0	121	51
Turn Type	pm+pt	NA		Perm	NA		Perm	NA	Perm	Perm	NA	Perm
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2			4		4	4		4
Detector Phase	1	6		2	2		4	4	4	4	4	4
Switch Phase												
Minimum Initial (s)	5.0	15.0		15.0	15.0		7.0	7.0	7.0	7.0	7.0	7.0
Minimum Split (s)	9.0	20.8		20.8	20.8		11.0	11.0	11.0	11.0	11.0	11.0
Total Split (s)	9.0	49.0		40.0	40.0		19.0	19.0	19.0	19.0	19.0	19.0
Total Split (%)	10.0%	54.4%		44.4%	44.4%		21.1%	21.1%	21.1%	21.1%	21.1%	21.1%
Yellow Time (s)	3.0	4.3		4.3	4.3		3.0	3.0	3.0	3.0	3.0	3.0
All-Red Time (s)	1.0	1.5		1.5	1.5		1.0	1.0	1.0	1.0	1.0	1.0
Lost Time Adjust (s)		0.0			0.0			0.0	0.0		0.0	0.0
Total Lost Time (s)		5.8			5.8			4.0	4.0		4.0	4.0
Lead/Lag	Lead			Lag	Lag		Lag	Lag	Lag	Lag	Lag	Lag
Lead-Lag Optimize?	Yes			Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes
Recall Mode	Min	C-Max		C-Max	C-Max		None	None	None	None	None	None
Act Effct Green (s)		54.5			45.0			25.7	25.7		25.7	25.7
Actuated g/C Ratio		0.61			0.50			0.29	0.29		0.29	0.29
v/c Ratio		0.70			0.77			0.59	0.26		0.37	0.09
Control Delay		14.6			13.5			35.3	7.1		29.5	0.3
Queue Delay		0.0			0.0			0.0	0.0		0.0	0.0
Total Delay		14.6			13.5			35.3	7.1		29.5	0.3
LOS		B			B			D	A		C	A
Approach Delay		14.6			13.5			23.8			20.8	
Approach LOS		B			B			C			C	
Queue Length 50th (ft)		143			67			104	7		55	0

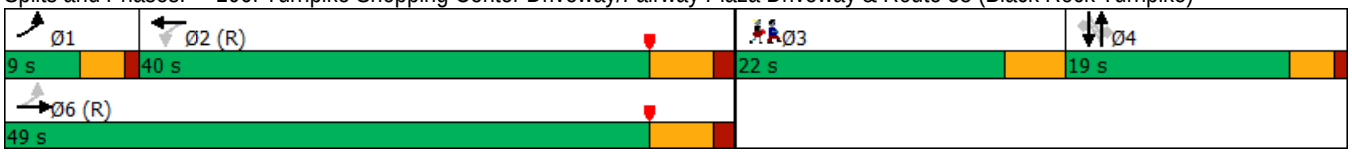
Lane Group	Ø3
Lane Configurations	
Traffic Volume (vph)	
Future Volume (vph)	
Ideal Flow (vphpl)	
Lane Width (ft)	
Storage Length (ft)	
Storage Lanes	
Taper Length (ft)	
Lane Util. Factor	
Frt	
Flt Protected	
Satd. Flow (prot)	
Flt Permitted	
Satd. Flow (perm)	
Right Turn on Red	
Satd. Flow (RTOR)	
Link Speed (mph)	
Link Distance (ft)	
Travel Time (s)	
Peak Hour Factor	
Adj. Flow (vph)	
Shared Lane Traffic (%)	
Lane Group Flow (vph)	
Turn Type	
Protected Phases	3
Permitted Phases	
Detector Phase	
Switch Phase	
Minimum Initial (s)	7.0
Minimum Split (s)	22.0
Total Split (s)	22.0
Total Split (%)	24%
Yellow Time (s)	4.0
All-Red Time (s)	0.0
Lost Time Adjust (s)	
Total Lost Time (s)	
Lead/Lag	Lead
Lead-Lag Optimize?	Yes
Recall Mode	None
Act Effct Green (s)	
Actuated g/C Ratio	
v/c Ratio	
Control Delay	
Queue Delay	
Total Delay	
LOS	
Approach Delay	
Approach LOS	
Queue Length 50th (ft)	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		202			m111			174	49		90	0
Internal Link Dist (ft)		321			422			43			57	
Turn Bay Length (ft)									25			25
Base Capacity (vph)		1404			1274			358	561		326	561
Starvation Cap Reductn		0			0			0	0		0	0
Spillback Cap Reductn		0			0			0	0		0	0
Storage Cap Reductn		0			0			0	0		0	0
Reduced v/c Ratio		0.70			0.77			0.59	0.26		0.37	0.09

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 82 (91%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 100
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.77
Intersection Signal Delay: 15.9 Intersection LOS: B
Intersection Capacity Utilization 82.8% ICU Level of Service E
Analysis Period (min) 15
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 106: Turnpike Shopping Center Driveway/Fairway Plaza Driveway & Route 58 (Black Rock Turnpike)



Lane Group	Ø3
Queue Length 95th (ft)	
Internal Link Dist (ft)	
Turn Bay Length (ft)	
Base Capacity (vph)	
Starvation Cap Reductn	
Spillback Cap Reductn	
Storage Cap Reductn	
Reduced v/c Ratio	

Intersection Summary

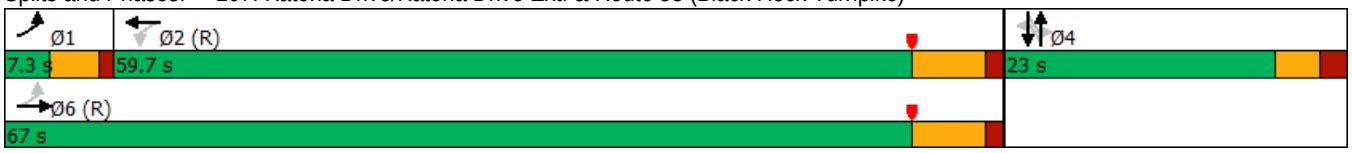
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	31	901	130	58	884	6	122	16	52	9	1	16
Future Volume (vph)	31	901	130	58	884	6	122	16	52	9	1	16
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	10	10	12	12	12
Storage Length (ft)	0		0	175		0	75		250	0		0
Storage Lanes	0		0	1		0	1		0	1		0
Taper Length (ft)	25			25			50			25		
Lane Util. Factor	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.982			0.999			0.885			0.858	
Flt Protected		0.999		0.950			0.950			0.950		
Satd. Flow (prot)	0	3356	0	1770	1799	0	1770	1539	0	1770	1598	0
Flt Permitted		0.823		0.240			0.745			0.712		
Satd. Flow (perm)	0	2765	0	447	1799	0	1388	1539	0	1326	1598	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		37			1			53			18	
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		502			407			405			198	
Travel Time (s)		11.4			9.3			11.0			5.4	
Peak Hour Factor	0.90	0.90	0.90	0.97	0.97	0.97	0.98	0.98	0.98	0.88	0.88	0.88
Adj. Flow (vph)	34	1001	144	60	911	6	124	16	53	10	1	18
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1179	0	60	917	0	124	69	0	10	19	0
Turn Type	pm+pt	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	1	6			2			4			4	
Permitted Phases	6			2			4			4		
Detector Phase	1	6		2	2		4	4		4	4	
Switch Phase												
Minimum Initial (s)	3.0	15.0		15.0	15.0		7.0	7.0		7.0	7.0	
Minimum Split (s)	7.3	21.3		21.3	21.3		11.9	11.9		11.9	11.9	
Total Split (s)	7.3	67.0		59.7	59.7		23.0	23.0		23.0	23.0	
Total Split (%)	8.1%	74.4%		66.3%	66.3%		25.6%	25.6%		25.6%	25.6%	
Yellow Time (s)	3.3	5.0		5.0	5.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.3		1.3	1.3		1.9	1.9		1.9	1.9	
Lost Time Adjust (s)		0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Total Lost Time (s)		6.3		6.3	6.3		4.9	4.9		4.9	4.9	
Lead/Lag	Lead			Lag	Lag							
Lead-Lag Optimize?	Yes			Yes	Yes							
Recall Mode	Max	C-Max		C-Max	C-Max		None	None		None	None	
Act Effct Green (s)		66.9		53.4	53.4		11.9	11.9		11.9	11.9	
Actuated g/C Ratio		0.74		0.59	0.59		0.13	0.13		0.13	0.13	
v/c Ratio		0.56		0.23	0.86		0.68	0.28		0.06	0.08	
Control Delay		4.4		8.8	16.8		54.9	16.0		32.1	15.1	
Queue Delay		0.2		0.0	1.3		0.0	0.0		0.0	0.0	
Total Delay		4.5		8.8	18.1		54.9	16.0		32.1	15.1	
LOS		A		A	B		D	B		C	B	
Approach Delay		4.5			17.6			41.0			21.0	
Approach LOS		A			B			D			C	
Queue Length 50th (ft)		75		9	157		68	8		5	1	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		121		m17	#678		118	43		18	18	
Internal Link Dist (ft)		422			327			325			118	
Turn Bay Length (ft)				175			75					
Base Capacity (vph)		2112		265	1067		279	351		266	335	
Starvation Cap Reductn		239		0	47		0	0		0	0	
Spillback Cap Reductn		0		0	0		0	0		0	0	
Storage Cap Reductn		0		0	0		0	0		0	0	
Reduced v/c Ratio		0.63		0.23	0.90		0.44	0.20		0.04	0.06	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 81 (90%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow
Natural Cycle: 65
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.86
Intersection Signal Delay: 13.0 Intersection LOS: B
Intersection Capacity Utilization 74.6% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.
m Volume for 95th percentile queue is metered by upstream signal.

Splits and Phases: 107: Katona Drive/Katona Drive Ext. & Route 58 (Black Rock Turnpike)



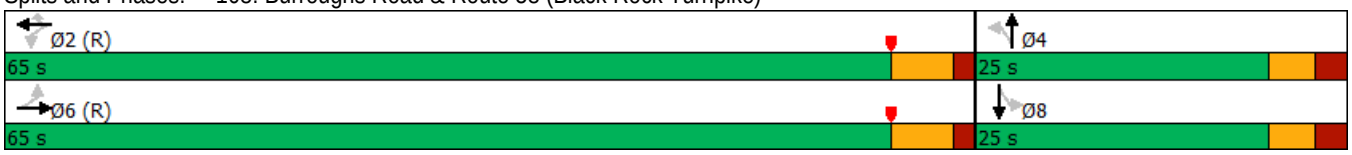
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Traffic Volume (vph)	80	874	15	4	861	112	20	64	10	126	52	65
Future Volume (vph)	80	874	15	4	861	112	20	64	10	126	52	65
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	12	11	12	12	11	12	12	16	12	12	16	12
Storage Length (ft)	0		0	0		150	0		0	0		0
Storage Lanes	0		0	0		1	0		0	0		0
Taper Length (ft)	50			25			25			50		
Lane Util. Factor	0.95	0.95	0.95	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Frt		0.998				0.850		0.986			0.964	
Flt Protected		0.996						0.989			0.975	
Satd. Flow (prot)	0	3401	0	0	1801	1583	0	2059	0	0	1984	0
Flt Permitted		0.701			0.996			0.885			0.788	
Satd. Flow (perm)	0	2393	0	0	1793	1583	0	1842	0	0	1604	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		3				107		6			19	
Link Speed (mph)		30			30			25			25	
Link Distance (ft)		407			390			466			265	
Travel Time (s)		9.3			8.9			12.7			7.2	
Peak Hour Factor	0.92	0.92	0.92	0.95	0.95	0.95	0.88	0.88	0.88	0.93	0.93	0.93
Adj. Flow (vph)	87	950	16	4	906	118	23	73	11	135	56	70
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	1053	0	0	910	118	0	107	0	0	261	0
Turn Type	Perm	NA		Perm	NA	Perm	Perm	NA		Perm	NA	
Protected Phases		6			2			4			8	
Permitted Phases	6			2		2	4			8		
Detector Phase	6	6		2	2	2	4	4		8	8	
Switch Phase												
Minimum Initial (s)	15.0	15.0		15.0	15.0	15.0	9.0	9.0		9.0	9.0	
Minimum Split (s)	20.6	20.6		20.6	20.6	20.6	23.4	23.4		14.4	14.4	
Total Split (s)	65.0	65.0		65.0	65.0	65.0	25.0	25.0		25.0	25.0	
Total Split (%)	72.2%	72.2%		72.2%	72.2%	72.2%	27.8%	27.8%		27.8%	27.8%	
Yellow Time (s)	4.1	4.1		4.1	4.1	4.1	3.1	3.1		3.1	3.1	
All-Red Time (s)	1.5	1.5		1.5	1.5	1.5	2.3	2.3		2.3	2.3	
Lost Time Adjust (s)		0.0			0.0	0.0		0.0			0.0	
Total Lost Time (s)		5.6			5.6	5.6		5.4			5.4	
Lead/Lag												
Lead-Lag Optimize?												
Recall Mode	C-Max	C-Max		C-Max	C-Max	C-Max	None	None		None	None	
Act Effct Green (s)		62.3			62.3	62.3		16.7			16.7	
Actuated g/C Ratio		0.69			0.69	0.69		0.19			0.19	
v/c Ratio		0.64			0.73	0.10		0.31			0.83	
Control Delay		4.0			14.0	1.6		31.2			54.9	
Queue Delay		0.0			0.3	0.0		0.0			0.0	
Total Delay		4.0			14.3	1.6		31.2			54.9	
LOS		A			B	A		C			D	
Approach Delay		4.0			12.9			31.2			54.9	
Approach LOS		A			B			C			D	
Queue Length 50th (ft)		95			298	2		49			131	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Length 95th (ft)		20			489	18		91			#235	
Internal Link Dist (ft)		327			310			386			185	
Turn Bay Length (ft)						150						
Base Capacity (vph)		1656			1240	1128		405			364	
Starvation Cap Reductn		6			0	0		0			0	
Spillback Cap Reductn		0			56	0		0			0	
Storage Cap Reductn		0			0	0		0			0	
Reduced v/c Ratio		0.64			0.77	0.10		0.26			0.72	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 90
Offset: 0 (0%), Referenced to phase 2:WBTL and 6:EBTL, Start of Yellow, Master Intersection
Natural Cycle: 70
Control Type: Actuated-Coordinated
Maximum v/c Ratio: 0.83
Intersection Signal Delay: 14.3 Intersection LOS: B
Intersection Capacity Utilization 106.7% ICU Level of Service G
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 108: Burroughs Road & Route 58 (Black Rock Turnpike)



Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	486	11	41	519	5	57
Future Volume (vph)	486	11	41	519	5	57
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	11	12	12	11	10	10
Storage Length (ft)		0	0		0	50
Storage Lanes		0	0		1	1
Taper Length (ft)			25		25	
Lane Util. Factor	0.95	0.95	1.00	1.00	1.00	1.00
Frt	0.997					0.850
Flt Protected				0.996	0.950	
Satd. Flow (prot)	3411	0	0	1793	1652	1478
Flt Permitted				0.996	0.950	
Satd. Flow (perm)	3411	0	0	1793	1652	1478
Link Speed (mph)	30			30	25	
Link Distance (ft)	1095			214	782	
Travel Time (s)	24.9			4.9	21.3	
Peak Hour Factor	0.88	0.88	0.90	0.90	0.80	0.80
Adj. Flow (vph)	552	13	46	577	6	71
Shared Lane Traffic (%)						
Lane Group Flow (vph)	565	0	0	623	6	71
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 56.7%	ICU Level of Service B
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	1

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	486	11	41	519	5	57
Future Vol, veh/h	486	11	41	519	5	57
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	0	50
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	88	88	90	90	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	552	13	46	577	6	71

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	565	0	1228	283
Stage 1	-	-	-	-	559	-
Stage 2	-	-	-	-	669	-
Critical Hdwy	-	-	4.13	-	6.63	6.93
Critical Hdwy Stg 1	-	-	-	-	5.83	-
Critical Hdwy Stg 2	-	-	-	-	5.43	-
Follow-up Hdwy	-	-	2.219	-	3.519	3.319
Pot Cap-1 Maneuver	-	-	1005	-	183	715
Stage 1	-	-	-	-	537	-
Stage 2	-	-	-	-	508	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	1005	-	171	715
Mov Cap-2 Maneuver	-	-	-	-	171	-
Stage 1	-	-	-	-	501	-
Stage 2	-	-	-	-	508	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0.6	11.9
HCM LOS			B

Minor Lane/Major Mvmt	NBLn1	NBLn2	EBT	EBR	WBL	WBT
Capacity (veh/h)	171	715	-	-	1005	-
HCM Lane V/C Ratio	0.037	0.1	-	-	0.045	-
HCM Control Delay (s)	26.9	10.6	-	-	8.8	0
HCM Lane LOS	D	B	-	-	A	A
HCM 95th %tile Q(veh)	0.1	0.3	-	-	0.1	-

Lane Group	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Volume (vph)	22	74	53	495	599	38
Future Volume (vph)	22	74	53	495	599	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	12	12	12	12	12
Storage Length (ft)	0	0	25			0
Storage Lanes	1	0	1			0
Taper Length (ft)	25		50			
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00
Frt	0.896				0.992	
Flt Protected	0.989		0.950			
Satd. Flow (prot)	1871	0	1770	1863	1848	0
Flt Permitted	0.989		0.950			
Satd. Flow (perm)	1871	0	1770	1863	1848	0
Link Speed (mph)	25			30	30	
Link Distance (ft)	586			395	218	
Travel Time (s)	16.0			9.0	5.0	
Peak Hour Factor	0.80	0.80	0.98	0.98	0.93	0.93
Adj. Flow (vph)	28	93	54	505	644	41
Shared Lane Traffic (%)						
Lane Group Flow (vph)	121	0	54	505	685	0
Sign Control	Stop			Free	Free	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 52.9%	ICU Level of Service A
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	2.3

Movement	EBL	EBR	NBL	NBT	SBT	SBR
Lane Configurations						
Traffic Vol, veh/h	22	74	53	495	599	38
Future Vol, veh/h	22	74	53	495	599	38
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Stop	Stop	Free	Free	Free	Free
RT Channelized	-	None	-	None	-	None
Storage Length	0	-	25	-	-	-
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	80	80	98	98	93	93
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	28	93	54	505	644	41

Major/Minor	Minor2		Major1		Major2	
Conflicting Flow All	1278	665	685	0	-	0
Stage 1	665	-	-	-	-	-
Stage 2	613	-	-	-	-	-
Critical Hdwy	6.42	6.22	4.12	-	-	-
Critical Hdwy Stg 1	5.42	-	-	-	-	-
Critical Hdwy Stg 2	5.42	-	-	-	-	-
Follow-up Hdwy	3.518	3.318	2.218	-	-	-
Pot Cap-1 Maneuver	183	460	908	-	-	-
Stage 1	511	-	-	-	-	-
Stage 2	541	-	-	-	-	-
Platoon blocked, %				-	-	-
Mov Cap-1 Maneuver	172	460	908	-	-	-
Mov Cap-2 Maneuver	172	-	-	-	-	-
Stage 1	481	-	-	-	-	-
Stage 2	541	-	-	-	-	-

Approach	EB	NB	SB
HCM Control Delay, s	21.9	0.9	0
HCM LOS	C		

Minor Lane/Major Mvmt	NBL	NBT	EBLn1	SBT	SBR
Capacity (veh/h)	908	-	332	-	-
HCM Lane V/C Ratio	0.06	-	0.361	-	-
HCM Control Delay (s)	9.2	-	21.9	-	-
HCM Lane LOS	A	-	C	-	-
HCM 95th %tile Q(veh)	0.2	-	1.6	-	-

Lane Group	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Volume (vph)	987	5	0	963	0	14
Future Volume (vph)	987	5	0	963	0	14
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	0.999					0.865
Flt Protected						
Satd. Flow (prot)	1861	0	0	1863	0	1611
Flt Permitted						
Satd. Flow (perm)	1861	0	0	1863	0	1611
Link Speed (mph)	30			30	30	
Link Distance (ft)	187			131	186	
Travel Time (s)	4.3			3.0	4.2	
Peak Hour Factor	0.94	0.94	0.95	0.95	0.80	0.80
Adj. Flow (vph)	1050	5	0	1014	0	18
Shared Lane Traffic (%)						
Lane Group Flow (vph)	1055	0	0	1014	0	18
Sign Control	Free			Free	Stop	

Intersection Summary	
Area Type:	Other
Control Type: Unsignalized	
Intersection Capacity Utilization 62.3%	ICU Level of Service B
Analysis Period (min) 15	

Intersection	
Int Delay, s/veh	0.2

Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations						
Traffic Vol, veh/h	987	5	0	963	0	14
Future Vol, veh/h	987	5	0	963	0	14
Conflicting Peds, #/hr	0	0	0	0	0	0
Sign Control	Free	Free	Free	Free	Stop	Stop
RT Channelized	-	None	-	None	-	None
Storage Length	-	-	-	-	-	0
Veh in Median Storage, #	0	-	-	0	0	-
Grade, %	0	-	-	0	0	-
Peak Hour Factor	94	94	95	95	80	80
Heavy Vehicles, %	2	2	2	2	2	2
Mvmt Flow	1050	5	0	1014	0	18

Major/Minor	Major1		Major2		Minor1	
Conflicting Flow All	0	0	-	-	-	1053
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-
Critical Hdwy	-	-	-	-	-	6.22
Critical Hdwy Stg 1	-	-	-	-	-	-
Critical Hdwy Stg 2	-	-	-	-	-	-
Follow-up Hdwy	-	-	-	-	-	3.318
Pot Cap-1 Maneuver	-	-	0	-	0	275
Stage 1	-	-	0	-	0	-
Stage 2	-	-	0	-	0	-
Platoon blocked, %	-	-		-		
Mov Cap-1 Maneuver	-	-	-	-	-	275
Mov Cap-2 Maneuver	-	-	-	-	-	-
Stage 1	-	-	-	-	-	-
Stage 2	-	-	-	-	-	-

Approach	EB	WB	NB
HCM Control Delay, s	0	0	19
HCM LOS			C

Minor Lane/Major Mvmt	NBLn1	EBT	EBR	WBT
Capacity (veh/h)	275	-	-	-
HCM Lane V/C Ratio	0.064	-	-	-
HCM Control Delay (s)	19	-	-	-
HCM Lane LOS	C	-	-	-
HCM 95th %tile Q(veh)	0.2	-	-	-

BLACK ROCK TURNPIKE
SAFETY STUDY

BLACK ROCK TURNPIKE SAFETY STUDY

APPENDIX E: PERMITTING MAPS

MAY 2019

Innovative Planning
BETTER COMMUNITIES

Tighe&Bond
Engineers | Environmental Specialists

METROCOG
Connecticut Metropolitan Council of Governments

Design, Permitting, Construction, & Cost

Following the initiation of a project and identification of a funding source, the remaining steps to implement an improvement will involve design and construction. Based on the complexity of a project, an initial Preliminary Engineering phase may be required to conduct a more detailed engineering study and refine the concept plans and project scope. A preliminary engineering study can help establish the potential impacts to environmental and natural resources, identify potential property and utility impacts, and help refine the expected costs in current dollars rather than forecasting based on estimates reported in this Study, which are provided in current, 2018 dollars.

Once Preliminary Engineering is complete and the decision is made to move forward with a project, final design will take place to add detail to the plan, conduct a right of way acquisition process, address utility conflicts and possible relocations, and develop construction documentation to facilitate bidding and construction of the improvements. Generally, projects that are identified as having a low level of complexity can be designed within 12-18 months from initiation of the project by the Towns. As complexity grows, so does the timeframe required to design improvements. Design phases can potentially last three years or more for highly complex projects. The following sections detail the permitting and compliance issues that will need to be incorporated during the design processes followed by construction considerations and an opinion of probable construction cost for the improvements outlined in Concept A.

Permitting and Compliance

The following sections detail the various permitting and compliance activities that need to be considered as the Study recommendations move into the design and implementation stages. Each section describes the purpose and need for the permitting/compliance activity as well as the locations where they need to be considered. Included are sections on Environmental Permitting, Federal Funding and Preservation Compliance, Stormwater Permitting, and CTDOT Construction and Development Permitting.

Environmental Permitting

Improvement projects should assess natural resources within the project area study area including, but not limited to: 1) Threatened and Endangered Species and Critical Habitats, 2) Floodplains, and 3) Wetlands. Work proposed within these mapped resource areas would likely require obtaining permits from local, state, and federal regulatory entities. The environmental permits anticipated for the concept improvements are described in the following sections. Funding sources also play a role in which environmental permits may be required for future work.

Threatened and Endangered Species and Critical Habitats

The Threatened and Endangered Species information is available through the CTDEEP Natural Diversity Data Base (NDDB). There is one NDDB area mapped within the study area in the vicinity of the Mill River Crossing as shown in the attached NDDB map provided in Appendix C. Improvements proposed within the mapped NDDB areas will be required to coordinate with CTDEEP to determine what species may be affected by the project and any preventative or mitigative measures needed in the project design/schedule/approach. To request an NDDB state listed species review, the NDDB review request form package must be completed and submitted to CTDEEP. NDDB mapping is updated on an annual basis, so projects should be re-screened if they move forward in the future. As such, the improvements to the Black Rock Turnpike at Tahmore Drive may require a NDDB review request.

Preparation of a NDDB form submittal is estimated to take approximately two weeks, with an estimated agency review time of one to three months.

Floodplains

Floodplains are limited to the areas adjacent to and feeding the Mill River in the northern end of the study area as shown in the attached Federal Emergency Management Agency (FEMA) Flood Insurance Rate Maps (FIRM) maps provided in Appendix D. Improvements proposed within the mapped floodway and 100-year floodplains will be required to obtain a Flood Management Certification approval. Areas of 500-year floodplain also exist within the study area, and these will need to be considered during design and permitting. It is assumed that since the work is proposed on state roadways, that state funding would be used, and the applicant for permits would be CTDOT. Depending upon the impacts and extent of the work, this permit could be a CTDEEP Individual Flood Management Certification or CTDOT Flood Management General Certification (CTDOT applicant and minimal impacts). Based upon a review of the mapping, only the improvements to the Black Rock Turnpike at Tahmore Drive intersection may require floodplain permitting.

Preparation of a Flood Management permit package is estimated to take approximately six weeks, with an estimated agency review time of four to six months. If CTDOT is the permit applicant, there would be no municipal floodplains permits required.

Wetlands

There are mapped wetlands surrounding the Mill River as described in the Floodplains section above and along smaller streams, ponds, and wet areas within the study area. To determine if a project requires a wetlands permit, wetlands must be delineated in the field by a professional soil scientist, as well as waterbodies and watercourses. For purposes of this study, concepts within mapped wetland areas, waterbodies or watercourses have been identified as having the potential for wetland permitting needs.

Based upon the review of the study area, it is expected that only the improvements to the Black Rock Turnpike and Tahmore Drive intersection may require wetlands permitting and impact to the wetlands is likely to be limited. In addition, it is unlikely that the wetlands located to the north and west of Katona Drive Extension and Burroughs Road and those located northwest of the Black Rock Turnpike and Samp Mortar Drive intersection will be impacted by the proposed improvements. Notwithstanding, the following is provided to give a general overview of wetlands permitting requirements should any wetlands be impacted by the proposed improvements.

Improvements proposed within the mapped wetland resource areas have the potential to be required to obtain an Inlands Wetlands and Watercourses permit through CTDEEP. If there are activities that alter or fill wetlands or watercourses, a United States Army Corps. of Engineers (USACE) Section 404 permit would be required. Generally, for USACE Section 404 approval, if impacts are less than 5,000 square feet (sf), then submitting a Self-Verification (SV) form to USACE would be needed. If impacts are greater than 5,000 sf and less than one acre, then a Pre-Construction Notification (PCN) would be needed. If the extent of the work within wetlands and watercourses causes greater impacts than one acre, an individual Section 404 permit would be required. Authorization would likely be through General Permit (GP) No. 18, however, if authorization under a different GP was required, then thresholds may be different than those outlined above.

In addition to the USACE Section 404 permit, a Water Quality Certification (WQC) approval under Section 401 of the Federal Clean Water Act would be needed. If authorization under GP 18 is sought, WQC approval would be granted as part of the SV approval process, if SV applies to the project. If the PCN is being sought and the project has under 0.5 acres of impact, the CTDEEP Connecticut Addendum Army Corps of Engineers General Permit State of CT (CT Addendum) would be required for the WQC. If impacts are over 0.5 acres, an individual WQC through CTDEEP would be required. If USACE Section 404 approval were through a GP other than GP 18, then Section 401 WQC thresholds may change. If a USACE Section 404 permit is needed, the CTDEEP General Permit for Water Resource Construction Activities will also apply as long as the project has under one acre of wetland and watercourse impacts.

If CTDOT is the permit applicant, there would be no municipal wetlands permits required, as CTDOT coordinates with the municipalities during the design process.

Preparation of the SV form submittal is estimated to take approximately two weeks, with no agency review time. Preparation of the PCN, General Permit for Water Resource Construction Activities permit, and/or CT Addendum packages are estimated to take approximately six weeks, with an estimated agency review time of four to six months. Preparation of Individual USACE and/or Individual WQC permit packages are estimated to take approximately twelve weeks, with an estimated agency review time of eight to twelve months.

Federal Funding and Preservation Compliance

Depending upon the funding source for projects, federal and/or state-level environmental documentation would be required. If federal funding is used, and if impacts are minimal, a Categorical Exclusion (CE) would likely satisfy the federal requirements. If the project has federal funding and greater impacts are anticipated, then the preparation of an Environmental Assessment (EA) may be necessary. If state funding is involved, to satisfy Connecticut Environmental Policy Act (CEPA) state environmental documentation requirements, a Post Scoping Notice or an Environmental Impact Evaluation (EIE) would be required. As the project advances into conceptual design and additional project details are known, a determination should be made about the applicability of NEPA and CEPA and the proper class of documentation. Opportunities for streamlining the environmental documentation process should be used, if available (e.g., preparation of a combined NEPA/CEPA document).

If federal funds are used for the improvements, the project would be subject to Section 4(f) of the US Department of Transportation Act to determine if the improvements would have any impact to publicly-owned public parks, recreation areas, and wildlife or waterfowl refuges, or any publicly or privately-owned historic site listed or eligible for listing on the National Register of Historic Places. Similarly, Section 106 of the National Historic Preservation Act requires that federal agencies take into account the effects of their actions on properties listed in, or eligible for listing in, the National Register of Historic Places. A review shows that Whitewood Knoll is the only park located within the study area and there are no listed sites on the National Register of Historic Places or within the Town of Fairfield list of Historic Properties. As such, the improvements to the Black Rock Turnpike at Tunxis Hill Cutoff, Moritz Place, and Whitewood Drive may require a review for compliance with Section 4(f). As the improvements are advanced into conceptual design and additional project details are known an assessment should be undertaken to determine what documentation is required in order to comply with Section 4(f) of the US Department of Transportation Act and consultation should be conducted with the CT State Historic Preservation Office to determine if there will be any impacts to historic places.

Stormwater Permitting

It is unknown which concepts and segments will be constructed together, however if the soil disturbance proposed for a project is over one acre, a CTDEEP General Permit for the Discharge of Stormwater and Dewatering Wastewaters from Construction Activities (Stormwater GP) would be required. With CTDOT as the applicant, this project would be classified as a locally exempt project. Any concepts that require the Stormwater GP, even if located outside of a mapped NDDB area, must also request the NDDB review and include the CTDEEP response in the stormwater permit package.

Preparation of the Stormwater GP package is estimated to take approximately six weeks. This permit filing must be submitted to CTDEEP 60 days before the start of construction if the soil disturbance area is between one (1) and twenty (20) acres. If the project's soil disturbance is greater than 20 acres, the permit should be submitted 90 days before the start of construction. CTDEEP has the 60- or 90-day timeframe to review the filing and provide any feedback to the applicant.

If CTDOT is the permit applicant, there would be no municipal stormwater permits required. If soil disturbance for the project is less than one acre, and a CTDEEP wetlands permit is required, no municipal stormwater permits would be needed.

CTDOT Improvement Construction & Development Permitting

In addition to the permitting for natural resources, CTDOT will require permits for developments and construction of improvements within the State right-of-way for Municipal roadway improvements and driveways to developments that are not included within the scope of a CTDOT project. The permits include encroachment permits and signal revision permits for any Municipal roadway and development driveway improvements and Office of State Traffic Administration (OSTA) permits for revisions to large developments that exceed the OSTA size limits and or those that are currently certified by OSTA. Depending on the scope of the work and the entity, the Municipality or a private developer performing the design, funding for the permits may come from public and/or private resources.

Construction & Opinions of Probable Construction Cost

Following the completion of the design phase, the projects will begin the construction phase. The steps involved in a publicly funded project include advertisement for bids to contractors, collecting bids on the work and awarding the contract, and finally conducting the construction to build the improvement. Utility relocations typically take place during construction, but in some instances a utility company may relocate facilities in advance of a project taking place once a utility agreement is in place. Generally, smaller projects are completed within one construction season between March and November. Larger projects can span several construction seasons depending on the complexity of the work, the construction staging and phasing needed to facilitate the maintenance and protection of traffic operations during construction, and possibly the availability of funding. Projects identified as having Moderate Complexity can be expected to take up to two construction seasons and highly complex projects could take more than two construction seasons to build.

To assist in the budgeting of funding for the improvements, opinions of preliminary probable construction costs (OPC) were developed for improvement Concept A. The preliminary costs have been estimated following the guidelines published by the CTDOT and are presented in 2019 dollars. Project costs may require inflation factors looking out into the future to determine actual funding needs for funding programming. The "Preliminary Cost Estimating Guidelines" provide unit costs and percentage based lump sum costs to facilitate the estimation of project costs at the Preliminary Engineering level of project development. The

approximate project costs presented in this Study are limited to the construction item costs and exclude costs related to rights of way actions and environmental remediation, and engineering. The estimates include contingency (25%) and incidentals (25%) in the total opinion of probable costs.

As shown in Table 11 below, the improvements outlined in Concept A are estimated to cost approximately $23.15 Million to construct. The table also presents estimated construction costs for each intersection to allow for estimates for projects including multiple intersections. The full OPC for each intersection including items, quantities, and unit costs are provided in Appendix E.

TABLE 11

Opinion of Probable Construction Cost Summary – Concept A

Intersection		Opinion of Probable Construction Cost
1	Black Rock Turnpike at Tahmore Drive & Old Black Rock Turnpike	$360,000
2	Black Rock Turnpike at Samp Mortar Drive	$2,273,000
3	Black Rock Turnpike at Brookside Drive and Fairfield Woods Road	$2,288,000
4	Black Rock Turnpike at at Lake Hills & Black Rock Shopping Centers	$3,817,000
5	Black Rock Turnpike at Route 135 (Stillson Road) & Stillson Road	$2,327,000
6	Black Rock Turnpike at Turnpike Shopping Center & Fairway Plaza	$1,139,000
7	Black Rock Turnpike at Katona Drive & Katona Drive Extension	$3,523,000
8	Black Rock Turnpike at Burroughs Road	$2,675,000
9	Black Rock Turnpike at Tunxis Hill Cutoff, Route 732, Mortiz Pl. & Whitewood Rd.	$4,746,000
	Total	**$23,148,000**

Attachments: Figures
Tables
Appendix A – Overall Traffic Operations Summary Tables
Appendix B – Capacity Analysis Worksheets
Appendix C – FEMA FIRM Maps
Appendix D – NDDB Map
Appendix E – Opinion of Probable Construction Costs by Intersection

J:\C\C5003 CT METROCOG\001 Black Rock Tpke Study\Report_Evaluation\Final Report Memo\2018_01-09 - BRT Final Report Memo.docx

Natural Diversity Data Base Areas

FAIRFIELD, CT

December 2018

State and Federal Listed Species & Significant Natural Communities

Town Boundary

NOTE: This map shows general locations of State and Federal Listed Species and Significant Natural Communities. Information on listed species is collected and compiled by the Natural Diversity Data Base (NDDB) from a number of data sources . Exact locations of species have been buffered to produce the general locations. Exact locations of species and communities occur somewhere in the shaded areas, not necessarily in the center. A new mapping format is being employed that more accurately models important riparian and aquatic areas and eliminates the need for the upstream/downstream searches required in previous versions.

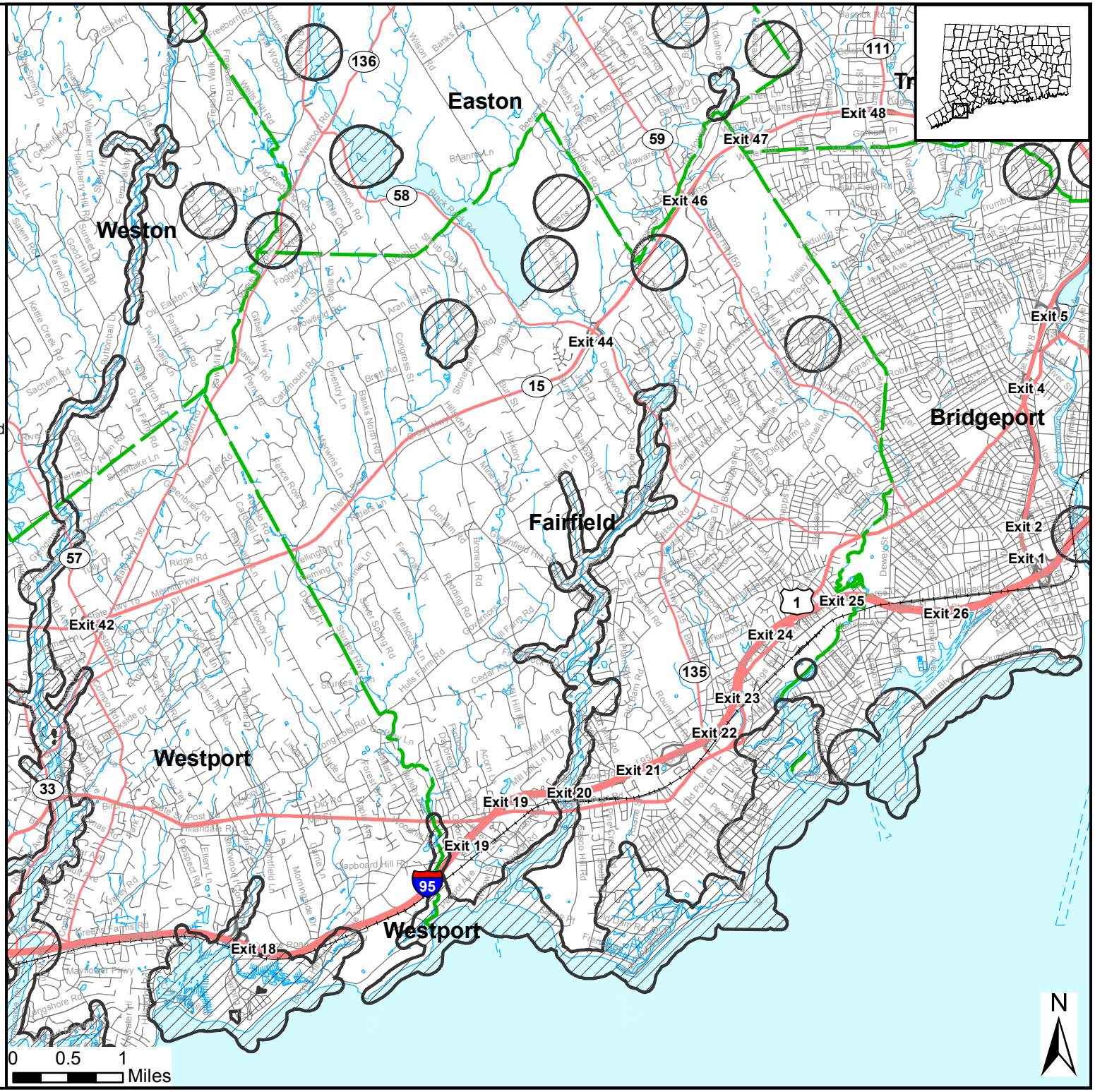
This map is intended for use as a preliminary screening tool for conducting a Natural Diversity Data Base Review Request. To use the map, locate the project boundaries and any additional affected areas. If the project is within a shaded area there may be a potential conflict with a listed species. For more information, complete a Request for Natural Diversity Data Base State Listed Species Review form (DEP-APP-007), and submit it to the NDDB along with the required maps and information. More detailed instructions are provided with the request form on our website.

www.ct.gov/deep/nddbrequest

Use the CTECO Interactive Map Viewers at www.cteco.uconn.edu to more precisely search for and locate a site and to view aerial imagery with NDDB Areas.

QUESTIONS: Department of Energy and Environmental Protection (DEEP)
79 Elm St., Hartford CT 06106
Phone (860) 424-3011

Connecticut Department of Energy & Environmental Protection
Bureau of Natural Resources
Wildlife Division



NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Connecticut State Plane (FIPSZONE 0600). The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3182
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit its website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was provided in digital format by the Connecticut Department of Environmental Protection. This information was derived from digital orthophotos produced at a scale of 1:12,000 from aerial photography flown in 2004 supplemented with aerial photography from 2005.

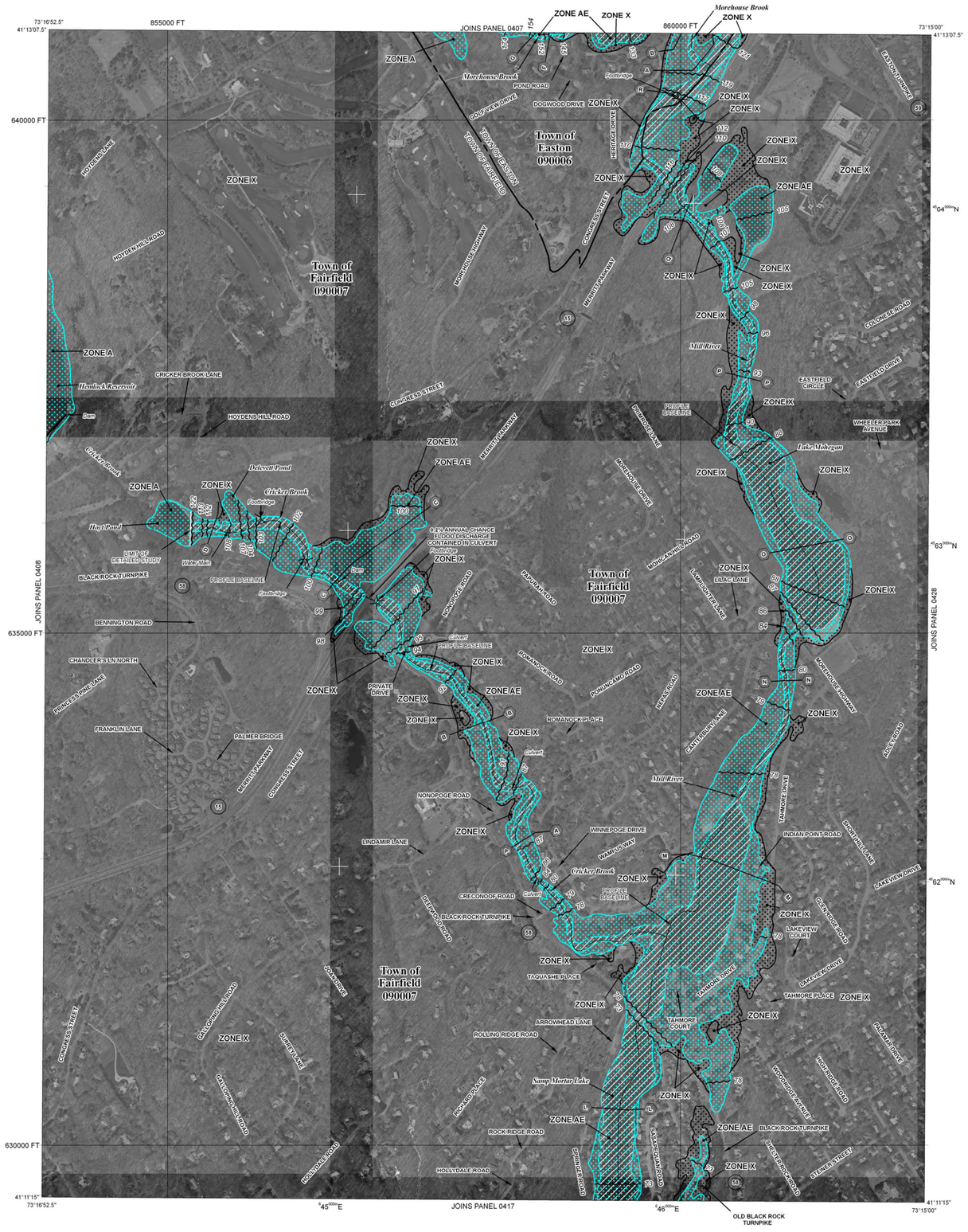
Based on updated topographic information, this map reflects more detailed and up-to-date **stream channel configurations and floodplain delineations** than those shown on the previous FIRM for this jurisdiction. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map. Also, the road to floodplain relationships for unrevised streams may differ from what is shown on previous maps.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://www.msc.fema.gov.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

	1% annual chance floodplain boundary
	0.2% annual chance floodplain boundary
	Floodway boundary
	Zone D boundary
	CBRS and OPA boundary
	Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.
513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

(A)———(A)	Cross section line
(23)- - - - -(23)	Transect line
87°07'45", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
5000mE	1000-meter Universal Transverse Mercator grid values, zone 18
600000 FT	5000-foot grid values: Connecticut State Plane coordinate system (FIPSZONE 0600), Lambert Conformal Conic projection
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
● M1.5	River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
June 18, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

Plan Printed N.T.S.

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0409F

FIRM
FLOOD INSURANCE RATE MAP

FAIRFIELD COUNTY, CONNECTICUT
(ALL JURISDICTIONS)

PANEL 409 OF 626
(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
EASTON, TOWN OF	090006	0409	F
FAIRFIELD, TOWN OF	090007	0409	F

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

MAP NUMBER
09001C0409F

EFFECTIVE DATE
JUNE 18, 2010

Federal Emergency Management Agency

NOTES TO USERS

This map is for use in administering the National Flood Insurance Program. It does not necessarily identify all areas subject to flooding, particularly from local drainage sources of small size. The **community map repository** should be consulted for possible updated or additional flood hazard information.

To obtain more detailed information in areas where **Base Flood Elevations** (BFEs) and/or **floodways** have been determined, users are encouraged to consult the Flood Profiles and Floodway Data and/or Summary of Stillwater Elevations tables contained within the Flood Insurance Study (FIS) report that accompanies this FIRM. Users should be aware that BFEs shown on the FIRM represent rounded whole-foot elevations. These BFEs are intended for flood insurance rating purposes only and should not be used as the sole source of flood elevation information. Accordingly, flood elevation data presented in the FIS report should be utilized in conjunction with the FIRM for purposes of construction and/or floodplain management.

Coastal Base Flood Elevations shown on this map apply only landward of 0.0' North American Vertical Datum of 1988 (NAVD 88). Users of this FIRM should be aware that coastal flood elevations are also provided in the Summary of Stillwater Elevations table in the Flood Insurance Study report for this jurisdiction. Elevations shown in the Summary of Stillwater Elevations table should be used for construction and/or floodplain management purposes when they are higher than the elevations shown on this FIRM.

Boundaries of the **floodways** were computed at cross sections and interpolated between cross sections. The floodways were based on hydraulic considerations with regard to requirements of the National Flood Insurance Program. Floodway widths and other pertinent floodway data are provided in the Flood Insurance Study report for this jurisdiction.

Certain areas not in Special Flood Hazard Areas may be protected by **flood control structures**. Refer to Section 2.4 "Flood Protection Measures" of the Flood Insurance Study report for information on flood control structures for this jurisdiction.

The **projection** used in the preparation of this map was Connecticut State Plane (FIPSZONE 0600). The **horizontal datum** was NAD83, GRS1980 spheroid. Differences in datum, spheroid, projection or State Plane zones used in the production of FIRMs for adjacent jurisdictions may result in slight positional differences in map features across jurisdiction boundaries. These differences do not affect the accuracy of this FIRM.

Flood elevations on this map are referenced to the North American Vertical Datum of 1988. These flood elevations must be compared to structure and ground elevations referenced to the same **vertical datum**. For information regarding conversion between the National Geodetic Vertical Datum of 1929 and the North American Vertical Datum of 1988, visit the National Geodetic Survey website at http://www.ngs.noaa.gov or contact the National Geodetic Survey at the following address:

NGS Information Services
NOAA, N/NGS12
National Geodetic Survey
SSMC-3, #9202
1315 East-West Highway
Silver Spring, Maryland 20910-3182
(301) 713-3242

To obtain current elevation, description, and/or location information for **bench marks** shown on this map, please contact the Information Services Branch of the National Geodetic Survey at **(301) 713-3242**, or visit its website at http://www.ngs.noaa.gov.

Base map information shown on this FIRM was provided in digital format by the Connecticut Department of Environmental Protection. This information was derived from digital orthophotos produced at a scale of 1:12,000 from aerial photography flown in 2004 supplemented with aerial photography from 2005.

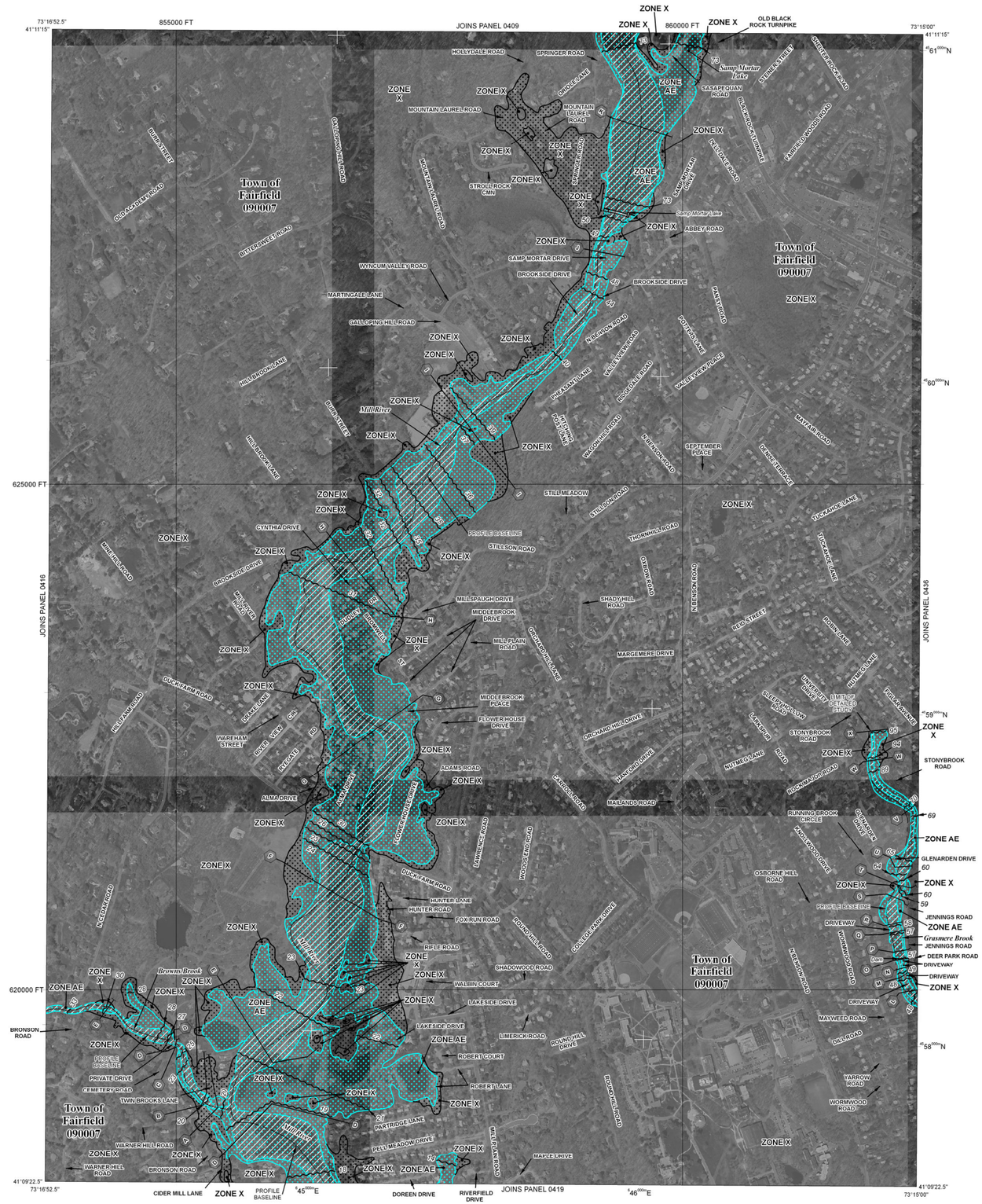
Based on updated topographic information, this map reflects more detailed and up-to-date **stream channel configurations and floodplain delineations** than those shown on the previous FIRM for this jurisdiction. As a result, the Flood Profiles and Floodway Data tables in the Flood Insurance Study Report (which contains authoritative hydraulic data) may reflect stream channel distances that differ from what is shown on this map. Also, the road to floodplain relationships for unrevised streams may differ from what is shown on previous maps.

Corporate limits shown on this map are based on the best data available at the time of publication. Because changes due to annexations or de-annexations may have occurred after this map was published, map users should contact appropriate community officials to verify current corporate limit locations.

Please refer to the separately printed **Map Index** for an overview map of the county showing the layout of map panels; community map repository addresses; and a Listing of Communities table containing National Flood Insurance Program dates for each community as well as a listing of the panels on which each community is located.

Contact the **FEMA Map Service Center** at 1-800-358-9616 for information on available products associated with this FIRM. Available products may include previously issued Letters of Map Change, a Flood Insurance Study report, and/or digital versions of this map. The FEMA Map Service Center may also be reached by Fax at 1-800-358-9620 and its website at http://www.msc.fema.gov/.

If you have **questions about this map** or questions concerning the National Flood Insurance Program in general, please call **1-877-FEMA MAP** (1-877-336-2627) or visit the FEMA website at http://www.fema.gov.



LEGEND

SPECIAL FLOOD HAZARD AREAS SUBJECT TO INUNDATION BY THE 1% ANNUAL CHANCE FLOOD

The 1% annual flood (100-year flood), also known as the base flood, is the flood that has a 1% chance of being equaled or exceeded in any given year. The Special Flood Hazard Area is the area subject to flooding by the 1% annual chance flood. Areas of Special Flood Hazard include Zones A, AE, AH, AO, AR, A99, V, and VE. The Base Flood Elevation is the water-surface elevation of the 1% annual chance flood.

ZONE A	No Base Flood Elevations determined.
ZONE AE	Base Flood Elevations determined.
ZONE AH	Flood depths of 1 to 3 feet (usually areas of ponding); Base Flood Elevations determined.
ZONE AO	Flood depths of 1 to 3 feet (usually sheet flow on sloping terrain); average depths determined. For areas of alluvial fan flooding, velocities also determined.
ZONE AR	Special Flood Hazard Area formerly protected from the 1% annual chance flood by a flood control system that was subsequently decertified. Zone AR indicates that the former flood control system is being restored to provide protection from the 1% annual chance or greater flood.
ZONE A99	Area to be protected from 1% annual chance flood by a Federal flood protection system under construction; no Base Flood Elevations determined.
ZONE V	Coastal flood zone with velocity hazard (wave action); no Base Flood Elevations determined.
ZONE VE	Coastal flood zone with velocity hazard (wave action); Base Flood Elevations determined.

FLOODWAY AREAS IN ZONE AE

The floodway is the channel of a stream plus any adjacent floodplain areas that must be kept free of encroachment so that the 1% annual chance flood can be carried without substantial increases in flood heights.

OTHER FLOOD AREAS

ZONE X — Areas of 0.2% annual chance flood; areas of 1% annual chance flood with average depths of less than 1 foot or with drainage areas less than 1 square mile; and areas protected by levees from 1% annual chance flood.

OTHER AREAS

ZONE X — Areas determined to be outside the 0.2% annual chance floodplain.

ZONE D — Areas in which flood hazards are undetermined, but possible.

COASTAL BARRIER RESOURCES SYSTEM (CBRS) AREAS

OTHERWISE PROTECTED AREAS (OPAs)

CBRS areas and OPAs are normally located within or adjacent to Special Flood Hazard Areas.

1% annual chance floodplain boundary

0.2% annual chance floodplain boundary

Floodway boundary

Zone D boundary

CBRS and OPA boundary

Boundary dividing Special Flood Hazard Area Zones and boundary dividing Special Flood Hazard Areas of different Base Flood Elevations, flood depths or flood velocities.

513	Base Flood Elevation line and value; elevation in feet*
(EL 987)	Base Flood Elevation value where uniform within zone; elevation in feet*

* Referenced to the North American Vertical Datum of 1988

(A)———(A)	Cross section line
(23)- - - - -(23)	Transect line
87°07'45", 32°22'30"	Geographic coordinates referenced to the North American Datum of 1983 (NAD 83), Western Hemisphere
5076000mN	1000-meter Universal Transverse Mercator grid values, zone 18
600000 FT	5000-foot grid values: Connecticut State Plane coordinate system (FIPSZONE 0600), Lambert Conformal Conic projection
DX5510 ×	Bench mark (see explanation in Notes to Users section of this FIRM panel)
● M1.5	River Mile

MAP REPOSITORY
Refer to listing of Map Repositories on Map Index

EFFECTIVE DATE OF COUNTYWIDE
FLOOD INSURANCE RATE MAP
June 18, 2010

EFFECTIVE DATE(S) OF REVISION(S) TO THIS PANEL

For community map revision history prior to countywide mapping, refer to the Community Map History table located in the Flood Insurance Study report for this jurisdiction.

To determine if flood insurance is available in this community, contact your Insurance agent or call the National Flood Insurance Program at 1-800-638-6620.

MAP SCALE 1" = 500'

250 0 500 1000 FEET

150 0 150 300 METERS

Plan Printed N.T.S.

NFIP

NATIONAL FLOOD INSURANCE PROGRAM

PANEL 0417F

FIRM

FLOOD INSURANCE RATE MAP

FAIRFIELD COUNTY, CONNECTICUT
(ALL JURISDICTIONS)

PANEL 417 OF 626

(SEE MAP INDEX FOR FIRM PANEL LAYOUT)

CONTAINS:

COMMUNITY	NUMBER	PANEL	SUFFIX
FAIRFIELD, TOWN OF	090007	0417	F

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

MAP NUMBER
09001C0417F

EFFECTIVE DATE
JUNE 18, 2010

Federal Emergency Management Agency

BLACK ROCK TURNPIKE
SAFETY STUDY

BLACK ROCK TURNPIKE SAFETY STUDY

APPENDIX F: ORDER OF MAGNITUDE COST ESTIMATES

MAY 2019

Innovative Planning
BETTER COMMUNITIES

Tighe&Bond
Engineers | Environmental Specialists

METROCOG
Connecticut Metropolitan Council of Governments

Tighe&Bond
Engineers | Environmental Specialists

Prep'd Date	10/24/2018	By	ALW
Ch'kd Date	10/24/2018	By	COG
Town of	Fairfield, CT		
Project No.	12-5003		
Sheet No.	1	of	1

Opinion of Probable Cost for the Construction of
Black Rock Turnpike Transportation Planning Study
Intersection 1 - Black Rock Turnpike at Tahmore Drive & Old Black Rock Turnpike

Item	Unit	Quantity	Price	Amount
Earth Excavation	CY	100	$20.00	$2,000
Rock Excavation	CY	0	$100.00	$0
Formation of Subgrade	SY	0	$3.00	$0
Subbase	CY	0	$40.00	$0
Sedimentation Control System	LF	500	$4.00	$2,000
HMA S1.0	TN	0	$120.00	$0
HMA S0.5	TN	200	$105.00	$21,000
Milling of Bituminous Concrete 0-4"	SY	1,700	$5.00	$8,500
15" R.C. Pipe	LF	0	$75.00	$0
Granite Curbing	LF	0	$75.00	$0
Concrete Curbing	LF	0	$35.00	$0
Granite Pavers on 8" Concrete Base Slab	SF	0	$50.00	$0
8" Reinforced Concrete Base Slab for Pavers	SF	0	$15.00	$0
Concrete Sidewalk	SF	1,500	$10.00	$15,000
Concrete Sidewalk Ramp	EA	8	$1,250.00	$10,000
Bituminous Concrete Driveway	SY	0	$45.00	$0
Concrete Driveway	CY	0	$700.00	$0
Furnishing And Placing Topsoil	SY	300	$8.00	$2,400
Turf Establishment	SY	300	$2.00	$600
Trafficperson (Municipal Police Officer)	HR	800	$90.00	$72,000
Utility Pole Relocation	EA	0	$10,000.00	$0
Landscaping	LS	0	$0.00	$0
Type "C" Catch Basin	EA	0	$3,500.00	$0
Type "CL" Catch Basin	EA	0	$3,500.00	$0
Manhole	EA	0	$3,100.00	$0
New Traffic Signal	LS	0	$250,000.00	$0
Minor Signal Modification	LS	1	$30,000.00	$30,000
Major Signal Modification	LS	0	$80,000.00	$0
Identified Items Subtotal				$164,000
Minor Items (25%)				$41,000
Items Subtotal				$205,000
Lump Sum Items				
Clearing and Grubbing (3%)				$6,200
M&P of Traffic (5%)				$10,300
Mobilization (7%)				$14,400
Construction Staking (2%)				$4,100
Incidentals (25%)				$60,000
Contingencies (25%)				$60,000
Total				**$360,000**

Tighe&Bond
Engineers | Environmental Specialists

Prep'd Date	10/24/2018	By	ALW
Ch'kd Date	10/24/2018	By	COG
Town of	Fairfield, CT		
Project No.	12-5003		
Sheet No.	1 of 1		

Opinion of Probable Cost for the Construction of
Black Rock Turnpike Transportation Planning Study
Intersection 2 - Black Rock Turnpike at Samp Mortar Drive

Item	Unit	Quantity	Price	Amount
Earth Excavation	CY	500	$20.00	$10,000
Rock Excavation	CY	50	$100.00	$5,000
Formation of Subgrade	SY	700	$3.00	$2,100
Subbase	CY	300	$40.00	$12,000
Sedimentation Control System	LF	1,000	$4.00	$4,000
HMA S1.0	TN	200	$120.00	$24,000
HMA S0.5	TN	800	$105.00	$84,000
Milling of Bituminous Concrete 0-4"	SY	6,300	$5.00	$31,500
15" R.C. Pipe	LF	25	$75.00	$1,875
Granite Curbing	LF	800	$75.00	$60,000
Concrete Curbing	LF	0	$35.00	$0
Granite Pavers on 8" Concrete Base Slab	SF	0	$50.00	$0
8" Reinforced Concrete Base Slab for Pavers	SF	0	$15.00	$0
Concrete Sidewalk	SF	4,400	$10.00	$44,000
Concrete Sidewalk Ramp	EA	7	$1,250.00	$8,750
Bituminous Concrete Driveway	SY	200	$45.00	$9,000
Concrete Driveway	CY	30	$700.00	$21,000
Furnishing And Placing Topsoil	SY	0	$8.00	$0
Turf Establishment	SY	0	$2.00	$0
Trafficperson (Municipal Police Officer)	HR	2,800	$90.00	$252,000
Utility Pole Relocation	EA	3	$20,000.00	$60,000
Landscaping	LS	0	$0.00	$0
Type "C" Catch Basin	EA	1	$3,500.00	$3,500
Type "CL" Catch Basin	EA	0	$3,500.00	$0
Manhole	EA	1	$3,100.00	$3,100
New Traffic Signal	LS	1	$250,000.00	$250,000
Minor Signal Modification	LS	0	$30,000.00	$0
Major Signal Modification	LS	0	$80,000.00	$0
Concrete Retaining Wall	SF	1,000	$150.00	$150,000
Identified Items Subtotal				$1,036,000
Minor Items (25%)				$259,000
Items Subtotal				$1,295,000
Lump Sum Items				
Clearing and Grubbing (3%)				$38,900
M&P of Traffic (5%)				$64,800
Mobilization (7%)				$90,700
Construction Staking (2%)				$25,900
Incidentals (25%)				$379,000
Contingencies (25%)				$379,000
Total				**$2,273,000**

Tighe&Bond
Engineers | Environmental Specialists

Prep'd Date	10/24/2018	By	ALW
Ch'kd Date	10/24/2018	By	COG
Town of	Fairfield, CT		
Project No.	12-5003		
Sheet No.	1 of 1		

Opinion of Probable Cost for the Construction of
Black Rock Turnpike Transportation Planning Study
Intersection 3 - Black Rock Turnpike at Brookside Drive and Fairfield Woods Road

Item	Unit	Quantity	Price	Amount
Earth Excavation	CY	100	$20.00	$2,000
Rock Excavation	CY	25	$100.00	$2,500
Formation of Subgrade	SY	150	$3.00	$450
Subbase	CY	50	$40.00	$2,000
Sedimentation Control System	LF	0	$4.00	$0
HMA S1.0	TN	50	$120.00	$6,000
HMA S0.5	TN	800	$105.00	$84,000
Milling of Bituminous Concrete 0-4"	SY	6,500	$5.00	$32,500
15" R.C. Pipe	LF	0	$75.00	$0
Granite Curbing	LF	200	$75.00	$15,000
Concrete Curbing	LF	100	$35.00	$3,500
Granite Pavers on 8" Concrete Base Slab	SF	0	$50.00	$0
8" Reinforced Concrete Base Slab for Pavers	SF	0	$15.00	$0
Concrete Sidewalk	SF	0	$10.00	$0
Concrete Sidewalk Ramp	EA	0	$1,250.00	$0
Bituminous Concrete Driveway	SY	0	$45.00	$0
Concrete Driveway	CY	160	$700.00	$112,000
Furnishing And Placing Topsoil	SY	100	$8.00	$800
Turf Establishment	SY	100	$2.00	$200
Trafficperson (Municipal Police Officer)	HR	2,800	$90.00	$252,000
Utility Pole Relocation	EA	1	$20,000.00	$20,000
Landscaping	LS	1	$10,000.00	$10,000
Type "C" Catch Basin	EA	0	$3,500.00	$0
Type "CL" Catch Basin	EA	0	$3,500.00	$0
Manhole	EA	0	$3,100.00	$0
New Traffic Signal	LS	2	$250,000.00	$500,000
Minor Signal Modification	LS	0	$30,000.00	$0
Major Signal Modification	LS	0	$80,000.00	$0
Identified Items Subtotal				$1,043,000
Minor Items (25%)				$261,000
Items Subtotal				$1,304,000
Lump Sum Items				
Clearing and Grubbing (3%)				$39,100
M&P of Traffic (5%)				$65,200
Mobilization (7%)				$91,300
Construction Staking (2%)				$26,100
Incidentals (25%)				$381,000
Contingencies (25%)				$381,000
Total				**$2,288,000**

Tighe&Bond
Engineers | Environmental Specialists

Prep'd Date	10/24/2018	By	ALW
Ch'kd Date	10/24/2018	By	COG
Town of	Fairfield, CT		
Project No.	12-5003		
Sheet No.	1 of 1		

Opinion of Probable Cost for the Construction of
Black Rock Turnpike Transportation Planning Study
Intersection 4 - Black Rock Turnpike at at Lake Hills & Black Rock Shopping Centers

Item	Unit	Quantity	Price	Amount
Earth Excavation	CY	4,500	$20.00	$90,000
Rock Excavation	CY	450	$100.00	$45,000
Formation of Subgrade	SY	6,500	$3.00	$19,500
Subbase	CY	2,200	$40.00	$88,000
Sedimentation Control System	LF	600	$4.00	$2,400
HMA S1.0	TN	1,200	$120.00	$144,000
HMA S0.5	TN	1,000	$105.00	$105,000
Milling of Bituminous Concrete 0-4"	SY	0	$5.00	$0
15" R.C. Pipe	LF	800	$75.00	$60,000
Granite Curbing	LF	2,500	$75.00	$187,500
Concrete Curbing	LF	0	$35.00	$0
Granite Pavers on 8" Concrete Base Slab	SF	3,500	$50.00	$175,000
8" Reinforced Concrete Base Slab for Pavers	SF	3,500	$15.00	$52,500
Concrete Sidewalk	SF	5,400	$10.00	$54,000
Concrete Sidewalk Ramp	EA	14	$1,250.00	$17,500
Bituminous Concrete Driveway	SY	0	$45.00	$0
Concrete Driveway	CY	20	$700.00	$14,000
Furnishing And Placing Topsoil	SY	1,000	$8.00	$8,000
Turf Establishment	SY	1,000	$2.00	$2,000
Trafficperson (Municipal Police Officer)	HR	5,120	$90.00	$460,800
Utility Pole Relocation	EA	5	$20,000.00	$100,000
Landscaping	LS	1	$50,000.00	$50,000
Type "C" Catch Basin	EA	14	$3,500.00	$49,000
Type "CL" Catch Basin	EA	0	$3,500.00	$0
Manhole	EA	5	$3,100.00	$15,500
New Traffic Signal	LS	0	$250,000.00	$0
Minor Signal Modification	LS	0	$30,000.00	$0
Major Signal Modification	LS	0	$80,000.00	$0
Identified Items Subtotal				$1,740,000
Minor Items (25%)				$435,000
Items Subtotal				$2,175,000
Lump Sum Items				
Clearing and Grubbing (3%)				$65,300
M&P of Traffic (5%)				$108,800
Mobilization (7%)				$152,300
Construction Staking (2%)				$43,500
Incidentals (25%)				$636,000
Contingencies (25%)				$636,000
Total				**$3,817,000**

Tighe&Bond
Engineers | Environmental Specialists

Prep'd Date	10/24/2018	By	ALW
Ch'kd Date	10/24/2018	By	COG
Town of	Fairfield, CT		
Project No.	12-5003		
Sheet No.	1 of 1		

Opinion of Probable Cost for the Construction of
Black Rock Turnpike Transportation Planning Study
Intersection 5 - Black Rock Turnpike at Route 135 (Stillson Road) & Stillson Road

Item	Unit	Quantity	Price	Amount
Earth Excavation	CY	300	$20.00	$6,000
Rock Excavation	CY	30	$100.00	$3,000
Formation of Subgrade	SY	500	$3.00	$1,500
Subbase	CY	200	$40.00	$8,000
Sedimentation Control System	LF	300	$4.00	$1,200
HMA S1.0	TN	100	$120.00	$12,000
HMA S0.5	TN	1,300	$105.00	$136,500
Milling of Bituminous Concrete 0-4"	SY	10,600	$5.00	$53,000
15" R.C. Pipe	LF	25	$75.00	$1,875
Granite Curbing	LF	0	$75.00	$0
Concrete Curbing	LF	400	$35.00	$14,000
Granite Pavers on 8" Concrete Base Slab	SF	1,900	$50.00	$95,000
8" Reinforced Concrete Base Slab for Pavers	SF	1,900	$15.00	$28,500
Concrete Sidewalk	SF	1,800	$10.00	$18,000
Concrete Sidewalk Ramp	EA	8	$1,250.00	$10,000
Bituminous Concrete Driveway	SY	0	$45.00	$0
Concrete Driveway	CY	120	$700.00	$84,000
Furnishing And Placing Topsoil	SY	0	$8.00	$0
Turf Establishment	SY	0	$2.00	$0
Trafficperson (Municipal Police Officer)	HR	2,800	$90.00	$252,000
Utility Pole Relocation	EA	4	$20,000.00	$80,000
Landscaping	LS	0	$0.00	$0
Type "C" Catch Basin	EA	1	$3,500.00	$3,500
Type "CL" Catch Basin	EA	0	$3,500.00	$0
Manhole	EA	1	$3,100.00	$3,100
New Traffic Signal	LS	1	$250,000.00	$250,000
Minor Signal Modification	LS	0	$30,000.00	$0
Major Signal Modification	LS	0	$80,000.00	$0
Identified Items Subtotal				$1,061,000
Minor Items (25%)				$265,000
Items Subtotal				$1,326,000
Lump Sum Items				
Clearing and Grubbing (3%)				$39,800
M&P of Traffic (5%)				$66,300
Mobilization (7%)				$92,800
Construction Staking (2%)				$26,500
Incidentals (25%)				$388,000
Contingencies (25%)				$388,000
Total				**$2,327,000**

Tighe&Bond
Engineers | Environmental Specialists

Prep'd Date	10/24/2018	By	ALW
Ch'kd Date	10/24/2018	By	COG
Town of	Fairfield, CT		
Project No.	12-5003		
Sheet No.	1 of 1		

Opinion of Probable Cost for the Construction of
Black Rock Turnpike Transportation Planning Study
Intersection 6 - Black Rock Turnpike at Turnpike Shopping Center & Fairway Plaza

Item	Unit	Quantity	Price	Amount
Earth Excavation	CY	200	$20.00	$4,000
Rock Excavation	CY	25	$100.00	$2,500
Formation of Subgrade	SY	300	$3.00	$900
Subbase	CY	100	$40.00	$4,000
Sedimentation Control System	LF	0	$4.00	$0
HMA S1.0	TN	50	$120.00	$6,000
HMA S0.5	TN	600	$105.00	$63,000
Milling of Bituminous Concrete 0-4"	SY	3,400	$5.00	$17,000
15" R.C. Pipe	LF	0	$75.00	$0
Granite Curbing	LF	300	$75.00	$22,500
Concrete Curbing	LF	200	$35.00	$7,000
Granite Pavers on 8" Concrete Base Slab	SF	1,000	$50.00	$50,000
8" Reinforced Concrete Base Slab for Pavers	SF	1,000	$15.00	$15,000
Concrete Sidewalk	SF	800	$10.00	$8,000
Concrete Sidewalk Ramp	EA	8	$1,250.00	$10,000
Bituminous Concrete Driveway	SY	0	$45.00	$0
Concrete Driveway	CY	40	$700.00	$28,000
Furnishing And Placing Topsoil	SY	100	$8.00	$800
Turf Establishment	SY	100	$2.00	$200
Trafficperson (Municipal Police Officer)	HR	1,500	$90.00	$135,000
Utility Pole Relocation	EA	2	$20,000.00	$40,000
Landscaping	LS	1	$5,000.00	$5,000
Type "C" Catch Basin	EA	0	$3,500.00	$0
Type "CL" Catch Basin	EA	0	$3,500.00	$0
Manhole	EA	0	$3,100.00	$0
New Traffic Signal	LS	0	$250,000.00	$0
Minor Signal Modification	LS	0	$30,000.00	$0
Major Signal Modification	LS	0	$80,000.00	$0
New HAWK Signal	LS	1	$100,000.00	$100,000
Identified Items Subtotal				$519,000
Minor Items (25%)				$130,000
Items Subtotal				$649,000
Lump Sum Items				
Clearing and Grubbing (3%)				$19,500
M&P of Traffic (5%)				$32,500
Mobilization (7%)				$45,400
Construction Staking (2%)				$13,000
Incidentals (25%)				$190,000
Contingencies (25%)				$190,000
Total				**$1,139,000**

Tighe&Bond
Engineers | Environmental Specialists

Prep'd Date	10/24/2018	By	ALW
Ch'kd Date	10/24/2018	By	COG
Town of	Fairfield, CT		
Project No.	12-5003		
Sheet No.	1 of 1		

Opinion of Probable Cost for the Construction of
Black Rock Turnpike Transportation Planning Study
Intersection 7 - Black Rock Turnpike at Katona Drive & Katona Drive Extension

Item	Unit	Quantity	Price	Amount
Earth Excavation	CY	3,500	$20.00	$70,000
Rock Excavation	CY	350	$100.00	$35,000
Formation of Subgrade	SY	5,400	$3.00	$16,200
Subbase	CY	1,800	$40.00	$72,000
Sedimentation Control System	LF	600	$4.00	$2,400
HMA S1.0	TN	1,100	$120.00	$132,000
HMA S0.5	TN	900	$105.00	$94,500
Milling of Bituminous Concrete 0-4"	SY	0	$5.00	$0
15" R.C. Pipe	LF	300	$75.00	$22,500
Granite Curbing	LF	1,800	$75.00	$135,000
Concrete Curbing	LF	0	$35.00	$0
Granite Pavers on 8" Concrete Base Slab	SF	4,500	$50.00	$225,000
8" Reinforced Concrete Base Slab for Pavers	SF	4,500	$15.00	$67,500
Concrete Sidewalk	SF	2,900	$10.00	$29,000
Concrete Sidewalk Ramp	EA	8	$1,250.00	$10,000
Bituminous Concrete Driveway	SY	0	$45.00	$0
Concrete Driveway	CY	60	$700.00	$42,000
Furnishing And Placing Topsoil	SY	800	$8.00	$6,400
Turf Establishment	SY	800	$2.00	$1,600
Trafficperson (Municipal Police Officer)	HR	5,120	$90.00	$460,800
Utility Pole Relocation	EA	4	$20,000.00	$80,000
Landscaping	LS	1	$50,000.00	$50,000
Type "C" Catch Basin	EA	10	$3,500.00	$35,000
Type "CL" Catch Basin	EA	0	$3,500.00	$0
Manhole	EA	6	$3,100.00	$18,600
New Traffic Signal	LS	0	$250,000.00	$0
Minor Signal Modification	LS	0	$30,000.00	$0
Major Signal Modification	LS	0	$80,000.00	$0
Identified Items Subtotal				$1,606,000
Minor Items (25%)				$402,000
Items Subtotal				$2,008,000
Lump Sum Items				
Clearing and Grubbing (3%)				$60,200
M&P of Traffic (5%)				$100,400
Mobilization (7%)				$140,600
Construction Staking (2%)				$40,200
Incidentals (25%)				$587,000
Contingencies (25%)				$587,000
Total				**$3,523,000**

Tighe&Bond
Engineers | Environmental Specialists

Prep'd Date	10/24/2018	By	ALW
Ch'kd Date	10/24/2018	By	COG
Town of	Fairfield, CT		
Project No.	12-5003		
Sheet No.	1 of 1		

Opinion of Probable Cost for the Construction of
Black Rock Turnpike Transportation Planning Study
Intersection 8 - Black Rock Turnpike at Burroughs Road

Item	Unit	Quantity	Price	Amount
Earth Excavation	CY	300	$20.00	$6,000
Rock Excavation	CY	30	$100.00	$3,000
Formation of Subgrade	SY	500	$3.00	$1,500
Subbase	CY	200	$40.00	$8,000
Sedimentation Control System	LF	500	$4.00	$2,000
HMA S1.0	TN	100	$120.00	$12,000
HMA S0.5	TN	600	$105.00	$63,000
Milling of Bituminous Concrete 0-4"	SY	4,300	$5.00	$21,500
15" R.C. Pipe	LF	0	$75.00	$0
Granite Curbing	LF	0	$75.00	$0
Concrete Curbing	LF	1,000	$35.00	$35,000
Granite Pavers on 8" Concrete Base Slab	SF	1,100	$50.00	$55,000
8" Reinforced Concrete Base Slab for Pavers	SF	1,100	$15.00	$16,500
Concrete Sidewalk	SF	3,600	$10.00	$36,000
Concrete Sidewalk Ramp	EA	8	$1,250.00	$10,000
Bituminous Concrete Driveway	SY	0	$45.00	$0
Concrete Driveway	CY	60	$700.00	$42,000
Furnishing And Placing Topsoil	SY	0	$8.00	$0
Turf Establishment	SY	0	$2.00	$0
Trafficperson (Municipal Police Officer)	HR	2,800	$90.00	$252,000
Utility Pole Relocation	EA	4	$20,000.00	$80,000
Landscaping	LS	0	$0.00	$0
Type "C" Catch Basin	EA	0	$3,500.00	$0
Type "CL" Catch Basin	EA	0	$3,500.00	$0
Manhole	EA	0	$3,100.00	$0
New Traffic Signal	LS	1	$250,000.00	$250,000
Minor Signal Modification	LS	0	$30,000.00	$0
Major Signal Modification	LS	0	$80,000.00	$0
Retaining Wall	SF	3,250	$100.00	$325,000
Identified Items Subtotal				$1,219,000
Minor Items (25%)				$305,000
Items Subtotal				$1,524,000
Lump Sum Items				
Clearing and Grubbing (3%)				$45,700
M&P of Traffic (5%)				$76,200
Mobilization (7%)				$106,700
Construction Staking (2%)				$30,500
Incidentals (25%)				$446,000
Contingencies (25%)				$446,000
Total				**$2,675,000**

Tighe&Bond
Engineers | Environmental Specialists

Prep'd Date	10/24/2018	By	ALW
Ch'kd Date	10/24/2018	By	COG
Town of	Fairfield, CT		
Project No.	12-5003		
Sheet No.	1 of 1		

Opinion of Probable Cost for the Construction of
Black Rock Turnpike Transportation Planning Study
Intersection 9 - Black Rock Turnpike at Tunxis Hill Cutoff, Route 732, Mortiz Pl & Whitewood Rd

Item	Unit	Quantity	Price	Amount
Earth Excavation	CY	4,700	$20.00	$94,000
Rock Excavation	CY	500	$100.00	$50,000
Formation of Subgrade	SY	7,300	$3.00	$21,900
Subbase	CY	2,500	$40.00	$100,000
Sedimentation Control System	LF	1,200	$4.00	$4,800
HMA S1.0	TN	1,200	$120.00	$144,000
HMA S0.5	TN	1,200	$105.00	$126,000
Milling of Bituminous Concrete 0-4"	SY	5,400	$5.00	$27,000
15" R.C. Pipe	LF	700	$75.00	$52,500
Granite Curbing	LF	3,400	$75.00	$255,000
Concrete Curbing	LF	0	$35.00	$0
Granite Pavers on 8" Concrete Base Slab	SF	5,800	$50.00	$290,000
8" Reinforced Concrete Base Slab for Pavers	SF	5,800	$15.00	$87,000
Concrete Sidewalk	SF	12,250	$10.00	$122,500
Concrete Sidewalk Ramp	EA	15	$1,250.00	$18,750
Bituminous Concrete Driveway	SY	0	$45.00	$0
Concrete Driveway	CY	140	$700.00	$98,000
Furnishing And Placing Topsoil	SY	2,000	$8.00	$16,000
Turf Establishment	SY	2,000	$2.00	$4,000
Trafficperson (Municipal Police Officer)	HR	5,120	$90.00	$460,800
Utility Pole Relocation	EA	4	$20,000.00	$80,000
Landscaping	LS	1	$50,000.00	$50,000
Type "C" Catch Basin	EA	12	$3,500.00	$42,000
Type "CL" Catch Basin	EA	0	$3,500.00	$0
Manhole	EA	6	$3,100.00	$18,600
New Traffic Signal	LS	0	$250,000.00	$0
Minor Signal Modification	LS	0	$30,000.00	$0
Major Signal Modification	LS	0	$80,000.00	$0
Identified Items Subtotal				$2,163,000
Minor Items (25%)				$541,000
Items Subtotal				$2,704,000
Lump Sum Items				
Clearing and Grubbing (3%)				$81,100
M&P of Traffic (5%)				$135,200
Mobilization (7%)				$189,300
Construction Staking (2%)				$54,100
Incidentals (25%)				$791,000
Contingencies (25%)				$791,000
Total				**$4,746,000**