

City of Newton, Massachusetts

Office of the Mayor

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March 28, 2022

Honorable City Council Newton City Hall 1000 Commonwealth Avenue Newton, MA 02459

Honorable City Councilors:

I respectfully submit this docket item to this Honorable Council requesting a discussion of MassDOT's proposed modification to the roundabout design located at the Grove Street intersection with the I-95 SB off-ramp and Quinobequin Road consistent with the requirements of Riverside Special Permit #27-20 (2), Condition 14c.

The relevant language from the Riverside Special Permit states:

Any material modifications to the final design of the Interchange Improvements by either MassDOT or FHWA will be considered consistent with the conceptually approved plan if, in the opinion of the Commissioner of Public Works, after consultation with the appropriate committee(s) of the City Council, the modified design achieves the same performance objectives as the conceptually approved design.

Please see the attached memo from Commissioner of Public Works James McGonagle and the detailed report from VHB on behalf of the project proponents.

Thank you for your consideration of this matter.

Sincerely,

Mayor Ruthanne Fuller

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City of Newton Ruthanne Fuller

DEPARTMENT OF PUBLIC WORKS

OFFICE OF THE COMMISSIONER

1000 Commonwealth Avenue Newton Centre, MA 02459-1449

March 25, 2022

To:

Jonathan Yeo, Chief Operating Officer

From:

James McGonagle, Commissioner

Subject: Request for Docket Item for Discussion of Riverside Station Off-site Transportation

Improvements

Consistent the requirements of Special Permit #27-20(2), Condition 14.c., DPW would like to discuss MassDOT's proposed modification to the roundabout design located at the Grove Street intersection with the I-95 SB off-ramp and Quinobequin Road.

The relevant language from the Riverside Special Permit states:

Any material modifications to the final design of the Interchange Improvements by either MassDOT or FHWA will be considered consistent with the conceptually approved plan if, in the opinion of the Commissioner of Public Works, after consultation with the appropriate committee(s) of the City Council, the modified design achieves the same performance objectives as the conceptually approved design.

Sincerely,

James McGonagle Commissioner of Public Works

cc:

Shawna Sullivan, DPW Deputy Commissioner Louis M. Taverna, P.E., City Engineer Jason Sobel, P.E., PTOE, Director of Transportation Operations

Isaac Prizant, Transportation Engineer

Telephone: 617-796-1009 • Fax: 617-796-1050 • Jmcgonagle@newtonma.gov



To: City of Newton

Date: 02/04/2022

Memorandum.

Project #: 10865.03

From: Randy Hart, Principal Matthew Duranleau, PE Re: Grove Street at I-95 Southbound Ramps Potential Intersection Treatments

VHB, on behalf of Mark Development (the Proponent) has prepared this memorandum to discuss the evaluation of the various different treatments that were done for the intersection of Grove Street at the I-95 Southbound Ramps in Newton, Massachusetts. This intersection will be reconstructed as part of the approved Riverside redevelopment, which will include the construction of approximately 1,025,000 of new development on the existing site of the MBTA Riverside station parking lot and the Hotel Indigo. As part of the development, significant roadway improvements will be implemented, including the reconstruction of the I-95 Northbound Exit 38 off-ramp to Grove Street, an extension of Recreation Road to Grove Street, the installation of three adaptive traffic signals, and improvements at the intersection of Grove Street at the I-95 Southbound Ramps.

In the local and state filings, the intersection of Grove Street at the I-95 Southbound Ramps was proposed to be replaced with a single-lane roundabout with four approaches: Grove Street from the east and west, the I-95 Southbound Ramps from the south, and Asheville Road from the north. As development of the 25-percent design plans began, the Proponent has been in close coordination with MassDOT regarding all aspects of the offsite design. During these detailed consultations, MassDOT has stressed the need to create more deflection on the various approaches to the proposed intersection reconstruction, specifically the Grove Street westbound and I-95 Southbound Off-Ramp approaches to the intersection. Increasing deflection will slow the traffic entering the roundabout thereby enhancing the pedestrian environment.

Revised Roundabout Concept

To meet the requests of MassDOT, the roundabout has been shifted a short distance to the northeast and by doing so, the geometry and right-of-way doesn't allow for Asheville Road to be included in the roundabout. Under this scenario, Ashville Road becomes a right-in/right-out at Grove Street south of the roundabout and drivers exiting Asheville Road would only be able to take a right turn onto Grove Street. To access Grove Street eastbound, drivers would need to use Pine Grove Avenue or Pierrepont Road to turn left onto Grove Street instead. Alternatively, drivers could use Pierrepont Road to turn right onto Grove Street and reverse direction at the roundabout. The proposed roundabout would consist of three approaches: Grove Street from the east and west and the I-95 Southbound Ramps from the south.

The shifting of the roundabout is a minor change from what was previously contemplated for the design of this intersection, and the only significant change is the shifting of the Roundabout easterly and the treatment of Asheville Road. There are benefits and disadvantages associated with this change, which include the following:



Benefits

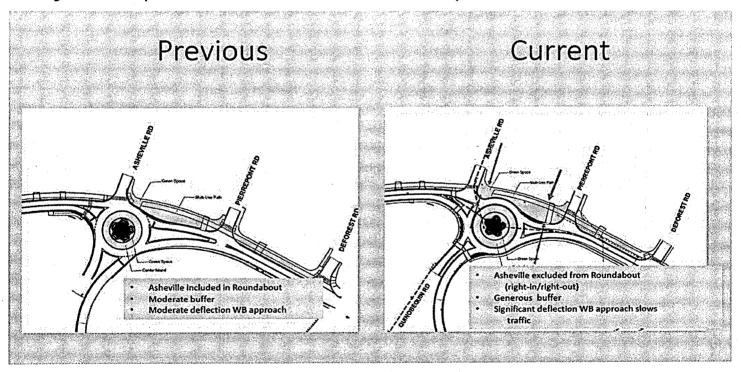
- > Increased deflection of the approaches will slow traffic even more than former concepts
- > Increased (substantially) green buffer between Grove Street and residents in northwest quadrant of intersection
- > Deemphasizes traffic movements onto Asheville Road (northern neighborhood traffic will likely not use Asheville to gain access to the roundabout)
- > Lower speed and more green space results in enhanced pedestrian environment

Detriments

> Residents on Asheville Road will not be able to turn left at Grove Street from Ashville's intersection with Grove.

To demonstrate the two roundabout options that have been considered, Figure 1 provides a side-by-side comparison of the previous four-legged roundabout concept and the currently proposed three-legged roundabout concept.

Figure 1 Comparison of Previous and Current Roundabout Concepts





Additional Intersection Concepts

At the initial Riverside Redevelopment Liaison Committee meeting on Tuesday January 25, 2022, the revised concept for the roundabout was presented. The initial feedback from members of the community was concern for the changes that would be introduced to Asheville Road. As a result of the comments and concerns, additional review of potential options has been considered and further discussion is being planned with MassDOT and the City of Newton.

To aid in those conversations, this memorandum has been prepared to evaluate various options that have been considered. These include:

- > Original Four-Legged Roundabout Concept (with Asheville Road included)
- > Revised Three-Legged Roundabout Concept (with Asheville Road excluded)
- > Signalized intersection with slight shift of northbound approach (the I-95 Southbound Ramps approach is shifted slightly west from its current location to directly align with Asheville Road)
- Signalized intersection in current location (each approach has the same geometry as existing conditions with the I 95 Southbound Ramps and Asheville Road slightly offset from each other)

Concept plans for the two signalized scenarios are provided in the Attachments to this memorandum.

The following section summarizes the intersection capacity results of the proposed roundabout and signalized intersection concepts.

Intersection Operations

To demonstrate future traffic operations at the intersection under different concept alternatives, intersection capacity analyses have been conducted based on the 2031 Build Conditions with mitigation traffic volumes as presented in the most recent MEPA filings for the Riverside redevelopment project¹. The traffic volumes present a future condition that includes a growth in traffic over existing conditions due to the Riverside redevelopment as well as due to other background projects. The intersection capacity analyses have been conducted for the weekday morning, weekday evening, and Saturday midday peak hours using Synchro 10 software for the signalized concepts and using Sidra 8 software for the roundabout concepts.

Roundabout Concepts

Table 1 presents a summary of the capacity analyses for intersection under the four-legged and three-legged roundabout alternatives. The intersection capacity worksheets are included in the Attachments to this memorandum.

¹ Supplemental Draft Environmental Impact Report, EEA No. 16024, Riverside Station Redevelopment; Prepared by VHB; May 17, 2021.



Table 1 Roundabout Intersection Capacity Analysis Summary

| | | | nditions v our-Legge | | | | | nditions w/ ee-Legged | _ | on |
|----------------------------|----------|------------------|-------------------------|-------|----------------------|-----|------|--------------------------|-----|--------------------|
| Location | D a | v/c ^b | Delay ^c | LOS d | 95 th Q ° | D | v/c | Delay | LOS | 95 th Q |
| Grove Street at I-95 South | bound Ra | mps / A | sheville Ro | oad | | · | | | | |
| Weekday Morning | | | | | | | | | | |
| Grove Street EB LTR | 575 | 0.75 | 20 | C | 321 | 590 | 0.76 | 20 | C | 339 |
| Grove Street WB LTR | 380 | 0.38 | 7 | Α | 50 | 380 | 0.38 | 7 | Α | : 50 |
| I-95 SB Off-Ramp NB LTR | 375 | 0.67 | 20 | C | 143 | 375 | 0.66 | 20 | .C | 142 |
| Asheville Road SB LTR | 15 | 0.03 | 6 | Α | 2 | n/a | n/a | n/a | n/a | n/a |
| Overall | | | 16 | С | | | | 16 | c | į |
| Weekday Evening | | | | | | | | | | |
| Grove Street EB LTR | 260 | 0.43 | 12 | В | 56 | 265 | 0.43 | 12 | В | 57 |
| Grove Street WB LTR | 730 | 0.76 | 17 | C | 212 | 730 | 0.75 | . 17 | C | 212 |
| I-95 SB Off-Ramp NB LTR | 190 | 0.25 | 7 | Α | 25 | 190 | 0.25 | 7 | Α | . 25 |
| Asheville Road SB LTR | 10 | 0.02 | 8 | Α | 1 | n/a | n/a | n/a | n/a | n/a |
| Overall | | | 14 | . В | | | | 14 | В | |
| Saturday Midday | | | | | | | | | | |
| Grove Street EB LTR | 220 | 0.28 | 7 | Α | -29 | 235 | 0.29 | 7 | Α | 31 |
| Grove Street WB LTR | 350 | 0.36 | 7 | Α | 45 | 350 | 0.36 | 7 | Α | 45 |
| I-95 SB Off-Ramp NB LTR | 280 | 0.33 | 7 | Α | 37 | 280 | 0.32 | 7 | Α | 37 |
| Asheville Road SB LTR | 15 | 0.02 | - 5 | Α | 2 | n/a | n/a | n/a | n/a | n/a |
| Overali | | | 7 | Α | | | Υ. | 7 | Α | |

Source: analyzed with Sidra 8 software.

- a Demand (input)
- b volume-to-capacity ratio
- c average total delay, in seconds per vehicle
- d level of service
- e 95th percentile queue length, measured in feet

As shown in Table 1, the intersection with either roundabout concept is proposed to operate at overall LOS C or better during each peak hour. Each approach is also expected to operate at LOS C or better and the queues on each approach are expected to be less than 350 feet during each peak hour. Operations are expected to be comparable between the four-legged and the three-legged roundabout concepts.

Signalized Intersection Concepts

Table 2 presents a summary of the capacity analyses for intersection under the two different signalized alternatives (Concept 1 assumes the I-95 Southbound Ramps approach is shifted slightly west to directly align with Asheville Road and Concept 2 assumes each approach has the same geometry as under existing conditions). The intersection capacity worksheets are included in the Attachments to this memorandum.



Table 2 Four-Legged Signalized Intersection Capacity Analysis

| | 203 | | ondition: Concept | s w/ Mitiga 1 | ntion | 2031 | Build Con Co | ditions oncept | - | ation |
|---------------------------|----------|--------------------|----------------------|---------------------------------|---------------------------------|------|-----------------|-------------------|--------------------|--------------------|
| Location | v/c ª | Delay ^b | LOS c | 50 th Q ^d | 95 th Q ^e | v/c | Delay | LOS | 50 th Q | 95 th Q |
| Grove Street at I-95 Sout | hbound R | lamps / As | heville F | Road | | | | | | |
| Weekday Morning | | | | | | | | | | |
| Grove Street EB LTR | 0.80 | 27 | C | 192 | #526 | 0.73 | 24 | C | 158 | #587 |
| Grove Street WB L | 0.45 | . 7 | Α | 22 | 103 | 0.50 | 11 | В | 22 | 148 |
| Grove Street WB TR | 0.12 | 5 | Α | 12 | 61 | 0.12 | 6 | Α | 12 | 81 |
| I-95 SB Off-Ramp NB LT | 0.03 | 33 | C | 2 | 15 | 0.03 | 31 | C | 2 | 15 |
| I-95 SB Off-Ramp NB R | 0.64 | 25 | C | 115 | #374 | 0.74 | 32 | C | 120 | #426 |
| Asheville Road SB LTR | 0.10 | 35 | C | 6 | 28 | 0.10 | 34 | C | 5 | 29 |
| Overall | | 21 | С | | | | 22 | С | | |
| Weekday Evening | | | | | | | | | | |
| Grove Street EB LTR | 0.58 | 27 | C | 81 | 220 | 0.64 | 32 | , C | 86 | #302 |
| Grove Street WB L | 0.56 | 8 | Α | 46 | 212 | 0.61 | 13 | В | 47 | #344 |
| Grove Street WB TR | 0.23 | 5 | Α | 26 | 122 | 0.25 | 7 | Α | 26 | 162 |
| I-95 SB Off-Ramp NB LT | 0.25 | 33 | C | 14 | 62 | 0.28 | 34 | C | 15 | 62 |
| I-95 SB Off-Ramp NB R | 0.20 | 10 | В | 19 | 102 | 0.19 | 11 | В | 22 | 104 |
| Asheville Road SB LTR | 0.04 | 31 | C | 2 | 18 | 0.04 | 33 | C | 3 | 18 |
| Overall | | 13 | В | | | | 16 | В | | |
| Saturday Midday | | | | | | | | | | |
| Grove Street EB LTR | 0.51 | 23 | C | 51 | 173 | 0.50 | 23 | C | 49 | 188 |
| Grove Street WB L | 0.36 | 7 | Α | 22 | 104 | 0.36 | 9 | Α | 20 | 131 |
| Grove Street WB TR | 0.12 | 6 | Α | 11. | 56 | 0.12 | 7 | Α | 10 | 71 |
| I-95 SB Off-Ramp NB LT | 0.16 | 25 | · C | 9 | 52 | 0.18 | 28 | C | 9 | 56 |
| I-95 SB Off-Ramp NB R | 0.32 | 11 | В | 28 | 157 | 0.33 | 14 | В | 28 | 194 |
| Asheville Road SB LTR | 0.08 | 26 | C | 4 | 27 | 0.07 | 30 | C | 4 | 30 |
| Overall | | 13 | В | | | | 15 | В | · | |

Source: analyzed with Synchro 10 software.

Note: analyzed with right turns on red prohibited on all approaches to provide a conservative analysis.

- a volume-to-capacity ratio
- b average delay in seconds per vehicle
- c level of service
- d 50th percentile queue length, measured in feet
- e 95th percentile queue length, measured in feet
- # 95th percentile volume exceeds capacity, queue may be longer

As shown in Table 2, the intersection with the four-legged signalized concept is proposed to operate at overall LOS C or better during each peak hour under both concepts. Each approach is also expected to operate at LOS C or better during each peak hour under both concepts.

Overall, operations are slightly better under signalized Concept 1 compared to signalized Concept 2. Under Concept 1, the I-95 Southbound Ramps is shifted slightly west to directly align with Asheville Road. This means that the Asheville Road and the I-95 Southbound Ramps approaches can run concurrently and have green lights at the same time. Under Concept 2, the two approaches cannot run concurrently and have green lights at different times due to the



approaches being offset from each other. By not allowing the two approaches to run at the same time, there is additional lost time at the intersection with the needed yellow and all-red time for the additional signal phase, which causes slightly higher delays and queues for all the approaches.

It should be noted that under both signalized concepts the queues are expected to be longer then compared to the roundabout concepts. For example, during the weekday morning peak hour, the 95th-percentile queue on the Grove Street eastbound approach is expected to be approximately 526 feet or 587 feet under the two signalized concepts but only 339 feet under the three-legged roundabout concept. In addition, the 95th-percentile queue on the I-95 Southbound Off-Ramp is expected to be approximately 374 feet or 426 feet during the weekday morning peak hour under the two signalized concepts but only 142 feet under the three-legged roundabout option.

Comparison of Options

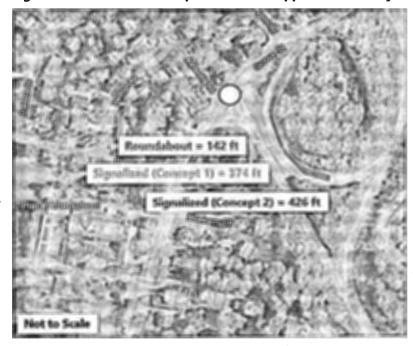
The operational analyses presented above show the difference in operations between a roundabout and traffic signal options. As highlighted, there is significant difference in vehicle queuing along Grove Street northbound and on the Southbound Ramp. To demonstrate, visually, the differences in options the following two graphics have been created to demonstrate the difference between the two critical periods. Figure 2 and Figure 3 provide illustrative comparisons of the 95th-percentile queues during the weekday morning peak hour on the Grove Street eastbound and I-95 SB Off-Ramp northbound approaches, respectively.



Figure 2 Grove Street Eastbound Approach Weekday Morning Peak Hour 95th Percentile Queues



Figure 3 I-95 SB Off-Ramp Northbound Approach Weekday Morning Peak Hour 95th Percentile Queues





As shown in Figures 1 and 2, queues on critical approaches to the intersection are substantially shorter with the roundabout proposed. This is particularly true along the I-95 Southbound Off-Ramp, where the queue under the proposed roundabout concept is less than one-third the length of the queue under the potential signalized options.

As part of the proposed Project, the Proponent is being required to do clearing in the interior of the I-95 Southbound Grove Street Off-Ramp to increase sight lines to ensure visibility to back of queue is available. This is a very important safety consideration for MassDOT and therefore treatments that minimize ramp queues should be considered preferable.

In addition, a major difference between the proposed roundabout concept and the signalized options is the elimination of the right-turn slip lane from the I-95 Southbound Off-Ramp to Grove Street eastbound. Under existing conditions, the slip lane does not provide adequate deflection to significantly reduce the speed of drivers exiting the interstate. Although the signalized options would include a signal on the slip lane, drivers will still be able to travel at high speeds onto Grove Street without significantly slowing down when the signal is green. Under the roundabout concept, the slip lane is eliminated, and all right-turning traffic must travel through the roundabout. The deflection provided in the three-legged roundabout will force drivers to slow down as they turn onto Grove Street.

Conclusion

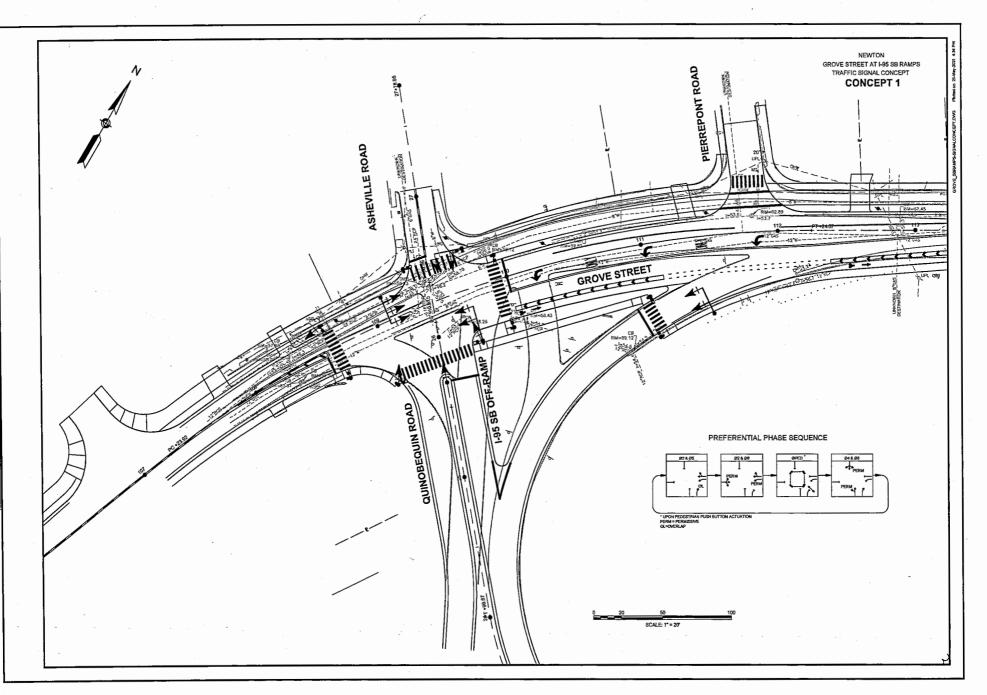
As outlined in this memorandum, future traffic conditions at the intersection of Grove Street at the I-95 Southbound Ramps are expected to operate at acceptable levels-of-service under both the roundabout concepts and the four-legged signalized concepts. However, the queues on each approach are expected to be much shorter under the roundabout concepts than under the signalized concepts. In addition, the three-legged roundabout concept is expected to provide improved safety for all users over the signalized concepts with lower vehicle speeds through the intersection and the elimination of the right-turn slip lane from the I-95 Southbound Off-Ramp to Grove Street eastbound.

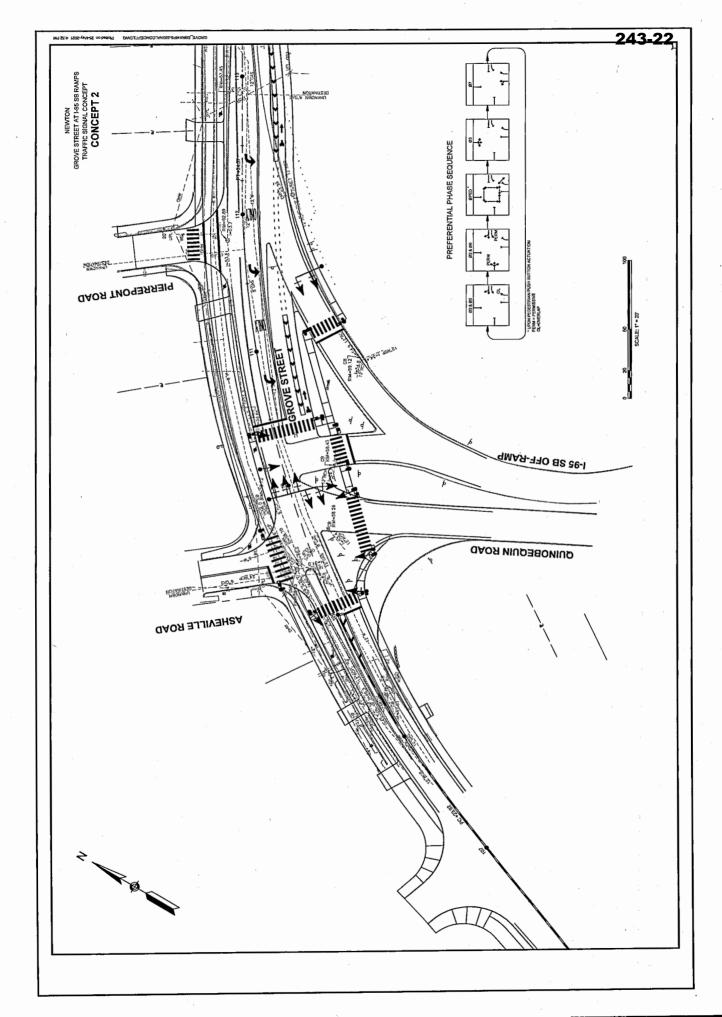
City of Newton Ref: 10865.03 02/04/2022 Attachments

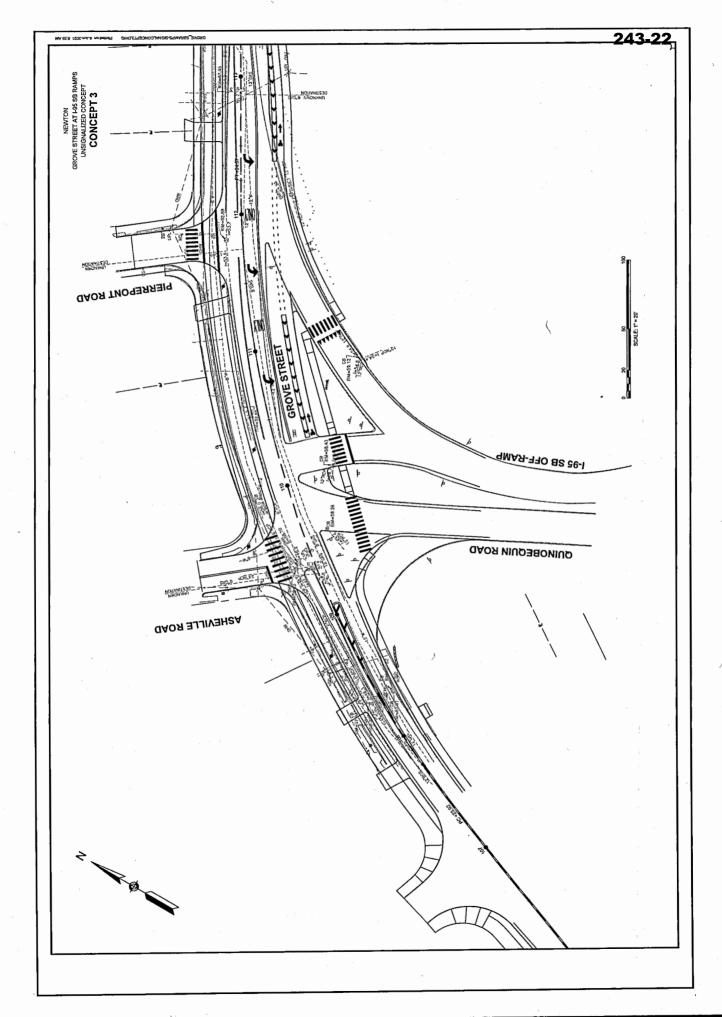


Attachments

- > Concept Plans Signalized
-) Intersection Capacity Analyses Roundabout
- > Intersection Capacity Analyses Signalized







Site: 101 [Weekday Morning_2031 Build with Mitigation]

Grove Street at Asheville Road / I-95 SB Ramps Site Category: (None)

Roundabout

| Lane Use a | | | nce | ested _ various as | Contract the second state | dere i maliciar de l'esconomic | percentage of the second of the | temperate i militar avvi i i sembe fine | no Reundaliserenciens | Rodone mikonomi senomena | saccini de Ambienas de | a Leonardaea | on was the |
|---------------------|-------------------|------------|-------|-----------------------------------|---------------------------|--------------------------------|---------------------------------|---|-----------------------|--------------------------|------------------------|--------------|-----------------|
| | Demand F Total | lows HV | Cap | Deg. Satn | Lane Util | Average Delay | Level of Service | 95% Back Veh | of Queue : Dist | Lane Config | | Cap. Adi | Prob. Block. |
| | veh/h | % | veh/h | | % | sec | | | ft | | ft | % | % |
| South: I-95 S | B Ramps | | | | | | | | | | | | dire. |
| Lane 1 ^d | 409 | 2.0 | 615 | 0.665 | 100 | 20.0 | LOS C | 5.6 | 143.1 | Full | 1600 | 0.0 | 0.0 |
| Approach | 409 | 2.0 | | 0.665 | | 20.0 | LOS C | 5.6 | 143.1 | | | | |
| East: Grove S | Street | | | 1.00 | | | | | | | | | |
| Lane 1 ^d | 413 | 3.0 | 1089 | 0.379 | 100 | 7.2 | LOS A | 2.0 | 50.1 | Full | 1600 | 0.0 | 0.0 |
| Approach | 413 | 3.0 | | 0.379 | | 7.2 | LOSA | 2.0 | 50.1 | | | | |
| North: Ashev | ille Road | | | an er monen men joseps All San | | COMPANY TO SERVE | | | | | | | |
| Lane 1 ^d | 17 | 7.0 | 690 | 0.025 | 100 | 5.5 | LOSA | 0.1 | 2.1 | Full | 1600 | 0.0 | 0.0 |
| Approach | 17 | 7.0 | | 0.025 | | 5.5 | LOS A | 0.1 | 2.1 | | | | |
| West: Grove | Street | | | - | | | | | | | | | |
| Lane 1 ^d | 626 | 2.0 | 832 | 0.752 | 100 | 20.0 | LOS C | 12.6 | 321.1 | Full | 1600 | 0.0 | 0.0 |
| Approach | 626 | 2.0 | | 0.752 | | 20.0 | LOS C | 12.6 | 321.1 | | | | |
| Intersection | s 1465 | 2.3 | | 0.752 | | 16.2 | LOS C | 12.6 | 321.1 | | | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab). Roundabout LOS Method: Same as Sign Control.

Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.

LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies. Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

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Project: \\vhb\gbl\proj\Wat-TS\10865.03 Mark Inv Riverside Newto\tech\Traffic\Sidra\TIAS\February 2021 TIA\Grove Street at I-95 SB

Ramps_Asheville Road_No Slip Lane.sip8

♥ Site: 101 [Weekday Evening_2031 Build with Mitigation]

Grove Street at Asheville Road / I-95 SB Ramps

Site Category: (None)

Roundabout

| Lane Use | and Perfo | rmar | тсе | · Harri | | | | | . 7. ^{A.V.} | | | | |
|---------------------|----------------------------|------|---------------|---------------------|--------------------|-------------------------|---------------------|--------------------|------------------------|----------------|----------------|-----------------|---|
| | Demand F Total veh/h | HV | Cap. veh/h | Deg. Satn v/c | Lane Util. % | Average Delay sec | Level of Service | 95% Back of Veh | Queue Dist | Lane Config | Lane Length | Cap Adj % | 1.00 Sept. 1.00 (1.00 Sept. 1.00 |
| South: I-95 | | | | Analisa alia | | | | | | | | | |
| Lane 1 ^d | 207 | 5.0 | 840 | 0.246 | 100 | 6.9 | LOSA | 0.9 | 24.7 | Full | 1600 | 0.0 | 0.0 |
| Approach | 207 | 5.0 | | 0.246 | | 6.9 | LOSA | 0.9 | 24.7 | | | | |
| East: Grove | Street | | | | | | A constitution | | | e o | | | 1000 |
| Lane 1 ^d | 793 | 2.0 | 1051 | 0.755 | 100 | 16.9 | LOS C | 8.3 | 212.0 | Full | 1600 | 0.0 | 0.0 |
| Approach | 793 | 2.0 | | 0.755 | | 16.9 | LOS C | 8.3 | 212.0 | | | | |
| North: Ashe | ville Road | | | | | | | | Mention of the Control | | E Malle | | |
| Lane 1 ^d | 9 | 0.0 | 486 | 0.018 | 100 | 7.6 | LOS A | 0.1 | 1.4 | Full | 1600 | 0.0 | 0.0 |
| Approach | 9 | 0.0 | | 0.018 | | 7.6 | LOS A | 0.1 | 1.4 | | | | |
| West: Grov | e Street | 14 | | | | | - 1 July 1 | | | | | | |
| Lane 1 ^d | 284 | 3.0 | 665 | 0.427 | 100 | 11.5 | LOS B | 2.2 | 56.0 | Full | 1600 | 0.0 | 0.0 |
| Approach | 284 | 3.0 | | 0.427 | | 11.5 | LOS B | 2.2 | 56.0 | | | | |
| Intersection | 1292 | 2.7 | | 0.755 | | . 14.1 | LOSB | 8.3 | 212.0 | | | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab). Roundabout LOS Method: Same as Sign Control.

Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.

LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies. Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

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Project: \https://doi.org/10.1009/10.10

Ramps_Asheville Road_No Slip Lane.sip8

Site: 101 [Saturday Midday_2031 Build with Mitigation]

Grove Street at Asheville Road / I-95 SB Ramps Site Category: (None) Roundabout

| Lane Use | and Perfo | ormai | псе | | | | | | | | | | |
|---------------------|----------------------------|-------|--------------|--------------------|--------------------|-------------------------|---------------------|-------------------|------------------------|----------------|----------------------|-----|---------------------|
| | Demand F Total veh/h | · HV | Cap veh/h | Deg Satn v/c | Lane Util. % | Average Delay sec | Level of Service | 95% Back (Veh | of Queue Dist ft | Lane Config | Lane Length ft | | Prob. Block % |
| South: I-95 | SB Ramps | | | | Y Line | | | | | | | | |
| Lane 1 ^d | 304 | 1.0 | 934 | 0.326 | 100 | 7.3 | LOSA | 1.5 | 37.1 | Full | 1600 | 0.0 | 0.0 |
| Approach | 304 | 1.0 | | 0.326 | | 7.3 | LOSA | 1.5 | 37.1 | | | | |
| East: Grove | e Street | | | | | | | | | | | | |
| Lane 1 ^d | 380 | 1.0 | 1065 | 0.357 | 100 | 7.0 | LOSA | 1.8 | 45.2 | Full | 1600 | 0.0 | 0.0 |
| Approach | 380 | 1.0 | | 0.357 | | 7.0 | LOSA | 1.8 | 45.2 | | | | 1 |
| North: Ashe | ville Road | | | | | | | | | | | | |
| Lane 1 ^d | 17 | 0.0 | 745 | 0.023 | 100 | 5.1 | LOSA | 0.1 | 1.9 | Full | 1600 | 0.0 | 0.0 |
| Approach | 17 | 0.0 | | 0.023 | | 5.1 | LOSA | 0.1 | 1.9 | | | | |
| West: Grov | e Street | | | | | | | | | | | | |
| Lane 1 ^d | 239 | 1.0 | 855 | 0.280 | 100 | 7.2 | LOSA | 1.2 | 29.3 | Full | 1600 | 0.0 | 0.0 |
| Approach | 239 | 1.0 | - | 0.280 | | 7.2 | LOSA | 1.2 | 29.3 | | | | |
| Intersection | 941 | 1.0 | | 0.357 | | 7,1 | LOSA | 1.8 | 45.2 | | | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab). Roundabout LOS Method: Same as Sign Control.

Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.

LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies. Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

₩ Site: 101 [Weekday Morning_2031 Build with Mitigation]

Grove Street at Asheville Road / I-95 SB Ramps

Site Category: (None)

Roundabout

| Lane Use | and Perfo | rmai | 1ce | | | | | | | | | | |
|---------------------|----------------|-------------|-------------------------|-------------|------------|----------------|----------|------------|--|--|--|-------------|------------|
| | Demand F | | Cap. | | | Average | Level of | 95% Back | Strategy Strategy Control of the Con | Lane | Services and Associated William | Cap. | |
| | Total veh/h | A TRANSPORT | veh/h | Satn v/c | Util. % | Delay sec | Service | ⊥ Veh | Dist ft | Config | Length ft | Adj. % | ыоск. % |
| South: I-95 | SB Ramps | | all Francis | Will Fail | | and the second | | | Late Africa | ng Lings ig | Secolar Sec | | 1007 |
| Lane 1 ^d | 408 | 2.0 | 616 | 0.662 | 100 | 19.9 | LOS C | 5.6 | 141.8 | Full | 1600 | 0.0 | 0.0 |
| Approach | 408 | 2.0 | | 0.662 | | 19.9 | LOS C | 5.6 | 141.8 | | | | |
| East: Grove | Street | | Company of the State of | | | | | | | And the second s | | in starting | |
| Lane 1 ^d | 413 | 3.0 | 1091 | 0.379 | 100 | 7.2 | LOS A | 2.0 | 50.0 | Full | 1600 | 0.0 | 0.0 |
| Approach | 413 | 3.0 | | 0.379 | | 7.2 | LOS A | 2.0 | 50.0 | | | | |
| West: Grov | e Street | | lile. | | D cui | | | . Property | | | | | |
| Lane 1 ^d | 641 | 2.0 | 847 | 0.757 | 100 | 20.0 | LOS C | 13.4 | 339.3 | Full | 1600 | 0.0 | 0.0 |
| Approach | 641 | 2.0 | | 0.757 | | 20.0 | LOS C | 13.4 | 339.3 | | | | 1 |
| Intersection | 1462 | 2.3 | | 0.757 | E-Vendel | 16.3 | LOS C | 13.4 | 339.3 | | 72 20 20 20 20 20 20 20 20 20 20 20 20 20 | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab). Roundabout LOS Method: Same as Sign Control.

Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.

LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies. Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

Site: 101 [Weekday Evening_2031 Build with Mitigation]

Grove Street at Asheville Road / I-95 SB Ramps Site Category: (None) Roundabout

| Lane Use | and Perfo | rmar | тсе | | | | | | | | | | |
|---------------------|---------------------------------|--------------|---------------|-------------|------------|--------------|----------|-------------|-------|--------|--------|-----------|------------|
| | Demand F | | | | | | Level of | 95% Back of | | Lane | | Cap. | |
| | Total veh/h | HV | Cap. veh/h | Satn V/c | Util. % | Delay sec | Service | Véh : | Dist | Config | Length | Adj. % | Block % |
| South: I-95 | The second livery of the second | | avelvar. | V/C | /0 | <u> 555</u> | | | | | | /0 | 200 ZOK |
| Lane 1 ^d | 207 | 5.0 | 841 | 0.245 | 100 | 6.9 | LOS A | 0.9 | 24.6 | Full | 1600 | 0.0 | 0.0 |
| Approach | 207 | 5.0 | | 0.245 | | 6.9 | LOS A | 0.9 | 24.6 | | | | |
| East: Grove | Street | | | | | | | | | | | | 7 |
| Lane 1 ^d | 793 | 2.0 | 1052 | 0.754 | 100 | 16.8 | LOS C | 8.3 | 211.8 | Full | 1600 | 0.0 | 0.0 |
| Approach | 793 | 2.0 | | 0.754 | | 16.8 | LOS C | 8.3 | 211.8 | | | | |
| West: Grov | e Street | NGP'N COUNTY | | | | | | | | | | | 117 SHIP |
| Lane 1 ^d | 288 | 3.0 | 670 | 0.430 | 100 | 11.5 | LOS B | 2.2 | 57.0 | Full | 1600 | 0.0 | 0.0 |
| Approach | 288 | 3.0 | | 0.430 | | 11.5 | LOS B | 2.2 | 57.0 | | | | |
| Intersection | 1288 | 2.7 | | 0.754 | | 14,1 | LOS B | 8.3 | 211.8 | | | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab). Roundabout LOS Method: Same as Sign Control.

Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.

LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).

Roundabout Capacity Model: US HCM 2010. HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies. Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

SIDRA INTERSECTION 8.0 | Copyright © 2000-2019 Akcelik and Associates Pty Ltd | sidrasolutions.com
Organisation: VANASSE HANGEN BRUSTLIN INC. | Processed: Thursday, January 27, 2022 4:25:26 PM
Project: \\vhob\gb\\proj\\Vat-TS\10865.03 \text{Mark Inv Riverside Newto\tech\Traffic\Sidra\TIAS\February 2021 TIA\January 2022_No Asheville Road
Approach\Grove Street at I-95 SB Ramps Asheville Road_No Slip Lane.sip8

Site: 101 [Saturday Midday_2031 Build with Mitigation]

Grove Street at Asheville Road / I-95 SB Ramps

Site Category: (None)

Roundabout

| Lane Use | and Perf | ormar | ıce | | | g. Pager | | | | | | | |
|---------------------|----------------------------|-------|---------------|--------|--------------------|-------------------------|---------------------|--------------------|---------------|----------------|----------------------|-------------------|-----|
| | Demand F Total veh/h | HV | Cap. veh/h | Sath | Lane Util. % | Average Delay sec | Level of Service | 95% Back of Veh | Queue Dist | Lane Config | Lane Length ft | Cap. Adj. % | |
| South: I-95 | SB Ramps | | See La | ding u | | | | | | | | | |
| Lane 1 ^d | 304 | 1.0 | 939 | 0.324 | 100 | 7.3 | LOS A | 1.5 | 36.9 | Full | 1600 | 0.0 | 0.0 |
| Approach | 304 | 1.0 | | 0.324 | | 7.3 | LOS A | 1.5 | 36.9 | | | | |
| East: Grove | Street | | | 2.46.7 | | | | | | | | | |
| Lane 1 ^d | 380 | 1.0 | 1071 | 0.355 | 100 | 7.0 | LOS A | 1.8 | 44.9 | Full | 1600 | 0.0 | 0.0 |
| Approach | 380 | 1.0 | | 0.355 | | 7.0 | LOS A | 1.8 | 44.9 | | | | |
| West: Grove | e Street | | | | | | | | | | | | |
| Lane 1 ^d | 250 | 1.0 | 869 | 0.288 | 100 | 7.2 | LOSA | 1.2 | 30.5 | Full | 1600 | 0.0 | 0.0 |
| Approach | 250 | 1.0 | | 0.288 | | 7.2 | LOS A | 1.2 | 30.5 | | | | |
| Intersection | 935 | 1.0 | | 0.355 | | 7.2 | LOSA | 1.8 | 44.9 | | | | |

Site Level of Service (LOS) Method: Delay & v/c (HCM 2010). Site LOS Method is specified in the Parameter Settings dialog (Site tab). Roundabout LOS Method: Same as Sign Control.

Lane LOS values are based on average delay and v/c ratio (degree of saturation) per lane.

LOS F will result if v/c > 1 irrespective of lane delay value (does not apply for approaches and intersection).

Intersection and Approach LOS values are based on average delay for all lanes (v/c not used as specified in HCM 2010).

Roundabout Capacity Model: US HCM 2010.

HCM Delay Formula option is used. Control Delay does not include Geometric Delay since Exclude Geometric Delay option applies. Gap-Acceptance Capacity: Traditional M1.

HV (%) values are calculated for All Movement Classes of All Heavy Vehicle Model Designation.

d Dominant lane on roundabout approach

101: Route 128 SB Ramps/Asheville Road & Grove Street Timing Plan: Weekday Moming t 4 NBL NBT NBR WBT Lane Group Lane Configurations Traffic Volume (vph) 370 Future Volume (vph) 520 55 240 135 5 370 10 5 0 deal Flow (vphpl) 1900 900 1900 900 1900 1900 1900 900 1900 Storage Length (ft) Λ ٥ 200 Λ n 200 Λ Λ Storage Lanes - 1 25 0 25 0 0 25 Taper Length (ft) 25 1752 Satd. Flow (prot) 0 0 0 0.243 Flt Permitted 0.837 0.843 Satd. Flow (perm) 448 1559 1497 Right Turn on Red No No No No Satd. Flow (RTOR) Link Speed (mph) 30 30 30 30 Link Distance (ft) 1604 920 838 182 Travel Time (s) 36.5 20.9 19.0 4.1 Confl. Peds. (#/hr) Confl. Bikes (#/hr) Peak Hour Factor Heavy Vehicles (%) 2% 2% 2% 3% 3% 3% 2% 2% 2% 7% 7% 7% Shared Lane Traffic (% n 626 0 261 152 0 402 n 16 Lane Group Flow (vph) n 6 ٥ Turn Type NA n+pt NA NA ot+ov NA Protected Phases 6 2 8 58 9 Permitted Phases **Detector Phase** 6 6 2 8 58 4 Switch Phase Minimum Initial (s) 10.0 10.0 6.0 6.0 6.0 6.0 6.0 4.0 Minimum Split (s) 14.0 14.0 10.0 14.0 10.0 10.0 10.0 10.0 20.0 Total Split (s) 39.0 39.0 19.0 58.0 12.0 12.0 12,0 20.0 12.0 Total Split (%) 3% 3.3% 4.4% 3.3% 3.3% 3.3% Yellow Time (s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 All-Red Time (s) 1.0 1.0 1.0 1.0 1.0 1.0 1.0 Lost Time Adjust (s) 0.0 0.0 0.0 ሰበ 0.0 Total Lost Time (s) 4.0 4.0 4.0 4.0 4.0 Lead/Lag Lag Lag Lead Lead-Lag Optimize Recall Mode Min Min None Min None None None None None Act Effct Green (s) 28.0 45.8 45.8 8.4 6.8 Actuated g/C Ratio 0.43 0.70 0.70 0.13 0.40 0.10 v/c Ratio 0.80 0.45 0,12 0.03 0.64 0.10 Control Delay 27.0 7.0 33.0 25,3 34.5 Queue Delay 0.0 0.0 0.0 0.0 0.0 7.0 Total Delay 27.0 4.5 33.0 25.3 34.5 Los О. 34.5 Approach Delay 27.0 61 254 Approach LOS C . . . ıΑ C 115 22 Queue Length 50th (ft) 192 12 2 6 Queue Length 95th (ft) #374 #526 103 Internal Link Dist (ft) 1524 840 758 102 Tum Bay Length (ft) Base Capacity (vph) 1026 626 1531 199 683 191 Starvation Cap Reductn Spillback Cap Reductn 0 0 Storage Cap Reductn 0 0 0.61 0.03 0.59 0.08 Reduced v/c Ratio 0.42 0.10 ntersection Summary Area Type: Cycle Length: 90 Other Actuated Cycle Length: 65.4 Natural Cycle: 90 Control Type: Actuated-Uncoordinated Maximum v/g Ratio: 0.80 Intersection LOS: C Intersection Signal Delay: 20.7 ICU Level of Service C Intersection Capacity Utilization 6 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 128 SB Ramps/Asheville Road & Grove Street

#1₀₉ ₽<u>Ø4</u> **₹** Ø2 12 s 58 s **₹** 105 PM

| 101. Route 120 OB Re | inpa/ranevi | iic rtoad c | x Olove Out | CCL | | | | | Timing t term tree | onday Evening |
|---|--|--|--|--|--|--|--|--|--|--|
| | <i>→</i> | ` | ✓ | _ | \ f | * | \ | 4 | | |
| | - | Y | • | | , , | | * | | | |
| Lane Group | EBL EBT | | WBL WBT | Children Taraban Carana | IBL NBT | ···· | SBL SBT | SBR Ø9 | | |
| Lane Configurations | 4 4 1 215 | 45 | *i } 445 275 | 10 | 40 5 | 145 | 4 ≽ 5 2 | and the second second | | |
| Traffic Volume (vph) Future Volume (vph) | 1 215 | | 445 275 445 275 | 10 | 40 5 40 5 | 145 | 5 2 5 2 | 1 | | |
| Ideal Flow (vphpl) | 1900 1900 | | 1900 1900 | 1900 19 | 900 1900 | | 900 1900 | | | |
| Storage Length (ft) | 0 | 0 | 200 | 0 | 0 | 200 | 0 | 0 | | decard the sources |
| Storage Lanes | 0 | 0 | | 0 " | 0 | 1 | | 0 | | |
| Taper Length (ft) | 25 | 14 | 25 | | 25 | | 25 | W. M. C. | | pp. Land and Commission and Commissi |
| Satd. Flow (prot) | 0 1802 | | 1770 1851 | . 0 | 0 1732 | 1538 | 0 1812 | -0 | | Market Section |
| Flt Permitted | 0.999 | | 0.341 | | 0.743 | 120 | 0.813 | | the standard of the latest of the standard of | |
| Satd, Flow (perm) | 0 1800 | | 635 1851 | | 0 - 1344 | 1538 | 0 1518 | | | |
| Right Turn on Red Satd. Flow (RTOR) | | No | | No | Kuladi e Sadeda | No | CPROCESSION OF | No | AND THE BOOK OF THE OWNER, WHEN THE | |
| Link Speed (mph) | 30 | | 30 | 10 LA | 30 | <u> </u> | 30 | | Same and the same of the same | |
| Link Distance (ft) | 1604 | | 883 | | 838 | APPROXICATION OF THE PROPERTY | 182 | | per car over the state of the | |
| Travel Time (s) | 36.5 | | 20,1 | HISTORICA GENERALISMO | 19.0 | in the state of th | 4.1 | | | Laurida Militaria de Carlos III. |
| Confl. Peds. (#/hr) | 16 | e de la composição de la | | 16 | | | | | The state of the s | |
| Peak Hour Factor | 0.92 0.92 | | 0.92 0.92 | | .92 0.92 | 0.92 | ,92 0.92 | 0.92 | 300 007 000 000 000 000 000 000 000 000 | |
| Heavy Vehicles (%) | 3% 3% | 3% | 2% 2% | 2% | 5% 5% | 5% | 0% 0% | 0% | | |
| Shared Lane Traffic (%) | | and the second s | | | BOZIK TIMBURAN PERSONA | | | | | |
| Lane Group Flow (vph) | 0 284 | | 484 310 | | 0 48 | | 0 8 | 0 | | |
| Turn Type Protected Phases | Perm NA | | m+pt NA 5 2 | | erm NA 8 | | erm NA 4 | en de la companya de | | water the contract of |
| Protected Phases Permitted Phases | 6 | | 2 2 | | 8 8 | 06 | 4 | 9. | | |
| Detector Phase | 6 6 | | 5 2 | | 8 8 | 58 | 4 4 | | | |
| Switch Phase | | | | | | | | | | |
| Minimum Initial (s) | 10.0 10.0 | | 6.0 6.0 | | 6.0 6.0 | | 6.0 6.0 | 4.0 | | |
| Minimum Split (s) | 14.0 14.0 | | 10.0 10.0 | 1 | 0.0 10.0 | | 0.0 10.0 | 20.0 | CT - ANNANCOMENSOR SECTION OF THE PROPERTY OF | - Management and Account account |
| Total Split (s) | 29.0 29.0 | | 29.0 58.0 | 1 | 2.0 12.0 | de de la | 2.0 12.0 | 20.0 | | 1 |
| Total Split (%) | 32.2% 32.2% | | 32.2% 64.4% | 13.3 | 3% 13.3% | 13. | | 22% | | |
| Yellow Time (s) | 3.0 3.0 | | 3.0 3.0 | | 3.0 3.0 | APPRILATED TO SERVICE AND ADDRESS OF THE SECOND | 3.0 3.0 | 3.0 | | |
| All-Red Time (s) | 1.0 1.0 | | 1.0 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 | | | |
| Total Lost Time (s) | 4.0 | | 4.0 4.0 | | 4.0 | | 4.0 | | Non-manufacture of the control of the second | national characteristics |
| Lead/Lag Lead-Lag Optimize? | Lag Lag | | Lead | | الأوجينية والماليمان | | particular designation of the second | | | |
| Recall Mode | Min Min | | None None | Ma | ne None | The state of the s | one None | None | | |
| Act Effct Green (s) | 15.2 | | 40.4 41.9 | Maria de la Companya | 8.1 | 29.5 | 8.1 | HOIG | Designation of the second of | north spanner to trad |
| Actuated g/C Ratio | 0.27 | | 0.72 0.74 | | 0.14 | 0.52 | 0.14 | | | |
| v/c Ratio | 0.58 | | 0.56 0.23 | Constitution Chair Section Constitution | 0.25 | 0.20 | 0.04 | | | Section of the Property of the Party of the |
| Control Delay | 26.7 | | 8.1 5.0 | | 33.0 | 10.4 | 31.0 | a dia an | | |
| Queue Delay | 0.0 | | 0.0 0.0 | | 0.0 | 0.0 | 0.0 | | | |
| Total Delay | 26.7 | | 8.1 5.0 | 1 (4) | 33.0 | 10,4 | 31.0 | | | 1981. |
| LOS | C | | A A | The strains of the second | C | В | C | | | and the second and the second |
| Approach Delay | 26.7 | 100 | 6.9 | | 15.6 | 5 (T | 31.0 | | | |
| Approach LOS | C 81 | minutasers, falles in press | A 46 26 | | 8 14 | 19 | C 2 | CONTRACTOR OF THE PROPERTY OF THE | THE RESERVE OF THE PARTY OF THE | |
| Queue Length 50th (ft) Queue Length 95th (ft) | 220 | all the last water and | 46 26 212 122 | | 62 | 102 | 2 18 | | | and the same of th |
| Internal Link Dist (ft) | 1524 | and the second second | 803 | and the same of the second second | 758 × | 102 | 102 | | Aller Committee Control | |
| Turn Bay Length (ft) | 3927 | | 200 | | | 200 | 194 | u juliju di kalendari se salah da salah | on en der II in die ee die de | |
| Base Capacity (vph) | 907 | | 1027 1660 | | 216 | 975 | 244 | | | |
| Starvation Cap Reductn | 0 | | 0 0 | | 0 | 0 | 0 | The second contract of | ······································ | |
| Spillback Cap Reductn | 0 | | 0 0 | Market Hardward Brand Hard Control | 0, | | 0 | | | |
| Storage Cap Reductn | 0 | | 0 0 | | 0 | 0 | 0 | | The start of the s | COMPANY OF THE PARTY OF THE PAR |
| Reduced v/c Ratio | 0.31 | | 0.47 0.19 | | 0.22 | 0.16 | 0.03 | | | |
| ntersection Summary | | | | | | | | | 196 | |
| | ner | | | vara Umar (S | | Maria an | | | ar ar ar | |
| Cycle Length: 90 | Table Million Street, Stroke Cl | | one and the second of the | and the second second second | ega illin beak bilin bekil | and the second | om autor or sustained union alle | THE RESERVE OF THE PARTY OF THE | | nama Rabarra da Kalamana |
| Actuated Cycle Length: 56.3 | | | | | ore to compare the compare to the co | | | | | |
| Delagica Choic reliding Solo | A CONTRACTOR DE LA CONT | | A COLUMN TO A COLU | | A CONTRACTOR OF THE PROPERTY O | | | | | |
| Natural Cycle: 65 | | | | | | | | | | |
| Natural Cycle: 65 Control Type: Actuated-Uncoordi | nated | | and from a strong re-size and | a de la companya de l | mayni ita kanala han da | ACTOR STATE | a California de la Cali | e, and the beauty of the history | | COLD SERVICE CONTRACTOR CONTRACTOR |
| Natural Cycle: 65 Control Type: Actuated-Uncoordi Maximum v/c Ratio: 0.58 | nated | | | | | | A Curio condia i calpada i | | | |
| Natural Cycle: 65 Control Type: Actuated-Uncoordi Maximum v/c Ratio: 0.58 Intersection Signal Delay: 12.8 | | | Intersection | | | | | | | |
| Natural Cycle: 65 Control Type: Actuated-Uncoordi Maximum v/c Ratio: 0.58 Intersection Signal Delay: 12.8 Intersection Capacity Utilization 5 | 3.8% | | | n LOS; B of Service A | | | | | | |
| Natural Cycle: 65 Control Type: Actuated-Uncoordi Maximum v/c Ratio: 0.58 Intersection Signal Delay: 12.8 | 3.8% | | | | | | | | | |
| Natural Cycle: 65 Control Type: Actuated-Uncoordi Maximum v/c Ratio: 0.58 Intersection Signal Delay: 12.8 Intersection Capacity Utilization 5 Analysis Period (min) 15 | 3.8% | sheville Road | ICU Level | | | | | | | |
| Natural Cycle: 65 Control Type: Actuated-Uncoordi Maximum vic Ratio: 0.58 Intersection Signal Delay: 12.8 Intersection Capacity Utilization 5 Analysis Period (min) 15 Splits and Phases: 101: Route | 3.8% | sheville Road | ICU Level | | | | | | | |
| Natural Cycle: 65 Control Type: Actuated-Uncoordi Maximum vic Ratio: 0.58 Intersection Signal Delay: 12.8 Intersection Capacity Utilization 5 Analysis Period (min) 15 Splits and Phases: 101: Route | 3.8% | sheville Road | ICU Level | | | programme and the second secon | Ak _{Ø9} | | ↓ **o₄ | |
| Natural Cycle: 65 Control Type: Actuated-Uncoordi Maximum vic Ratio: 0.58 Intersection Signal Delay: 12.8 Intersection Capacity Utilization 5 Analysis Period (min) 15 Splits and Phases: 101: Route | 3.8% | sheville Road | ICU Level | | | And the second s | Ak _{Ø9} | | 6 12 s | |
| Natural Cycle: 65 Control Type: Actuated-Uncoordi Maximum vic Ratio: 0.58 Intersection Signal Delay: 12.8 Intersection Capacity Utilization 5 Analysis Period (min) 15 Splits and Phases: 101: Route | 3.8% | | ICU Level | of Service A | | | ÿ 20 s | | | |

Riverside Station Development :: 10865.03 101: Route 128 SB Ramps/Asheville Road & Grove Street

| A | VIIIC I TODA & CI | d A | | | 1 1 | |
|--|--|--|--|------------------------|---|--|
| <i>,</i> – | · | - (| ↑ T | <i>></i> | + - | |
| | BT EBR WBL | CARACTER STATE STA | NBL NOT | NBR SBL | SBT SBR | Ø9 |
| Lane Configurations Fraffic Volume (vph) 5 1 | \$ 50 65 230 | | ୍ଷ 35 5 | 240 10 | 4 | |
| | 50 65 230 | | 35 5 | 240 10 | 5 1 | |
| the same of the sa | 00 1900 1900 | 1900 1900 | 1900 1900 | 1900 1900 | 1900 1900 | |
| Storage Length (ft) 0 Storage Lanes 0 | 0 200 0 1 | | 0 | 200 0 1 0 | 0 | |
| Taper Length (ft) 25 | 25 | AND STREET STREET STREET STREET STREET STREET STREET | 25 | 25 | | |
| Said, Flow (prot) 0 18 Flt Permitted 0.9 | 04 0 1787 95 0.398 | 1868 0 | 0 1802 0.767 | 1599 0 | 1826 Ö 0.849 | |
| Satd. Flow (perm) 0. 17 | 97 0 749 | 1868 0 | 0 1443 | 1599 0 | 1600 0 | |
| Right Turn on Red Satd. Flow (RTOR) | No . | No | | No | No | |
| Link Speed (mph) | 30 | 30 | 30 | | 30 | 50 TO 17 TO 18 |
| | 04 i.5 | 883 20.1 | 759 17.3 | | 182 4.1 | |
| Confl. Peds. (#/hr) 4 | | 20.1 | | | | |
| | 92 0.92 0.92 % 1% 1% | | 0.92 0.92 1% 1% | 0.92 0.92 1% 0% | 0.92 0.92 | |
| Heavy Vehicles (%) 1% 1 Shared Lane Traffic (%) | 76 176 176 | 170 176 | 170 170 | 76 U76 | · U/o · · · · · · · · · · · · · · · · · · · | |
| | 39 0 250 | the second residence of the second | 0 43 | 261 0 | 17 0 | |
| | IA pm+pt 6 5 | NA 2 | Perm NA 8 | pt+ov Perm | NA 4 | 9 |
| Permitted Phases 6 | 2 | | 8 | 58 4 | | |
| Detector Phase 6 Switch Phase | 6 - 5 | | 8 8 | 58 4 | **** 4 | |
| Minimum Initial (s) 10.0 10 | .0 6.0 | 10.0 | 6.0 6.0 | 6.0 | | |
| Minimum Split (s) 14.0 14 Total Split (s) 34.0 34 | .0 10.0 .0 23.0 | | 10.0 10.0 13.0 13.0 | 10.0 13.0 | | 0.0 0.0 |
| Total Split (%) 37.8% 37.8 | % 25.6% | 63.3% | 14.4% 14.4% | 14.4% | 14.4% 2 | 2% |
| | .0 3.0 .0 1.0 | | 3.0 3.0 1.0 1.0 | 3.0 1.0 | | 3.0 1.0 |
| Lost Time Adjust (s). | 0.0 | 0.0 | 0,0 | | 0.0 | |
| | .0 4.0 ag Lead | 4.0 | 4.0 | SAME TO SERVICE STREET | 4.0 | |
| Lead-Lag Optimize? | | | Andreas de la companya de la company | | | |
| Recall Mode Min N Act Effct Green (s) 12 | in None .9 29.4 | Min 29.4 | None None 9.0 | None 25.5 | None No 6.9 | ne financia |
| Actuated g/C Ratio 0.00 | 26 0.59 | 0.59 | 0.18 | 0.52 | 0.14 | |
| v/c Ratio 0. Control Delay 22 | | 0.12 5.9 | 0.16 25.0 | 0.32 10.8 | 0.08 25.9 | anni oraz (h. 1881). Anni oraz (h. 1881). Anni oraz (h. 1881). |
| Queue Delay 0 | .0 0.0 | 0.0 | 0.0 | 0.0 | 0.0 | |
| | 5 7.4 | The same of the sa | 25.0 C | 10.8 | 25.9 | |
| Approach Delay 22 | C A | A 6.91 | 12.8 | В | C 25.9 | |
| | C 51 22 | A | B 9 | 28 | C 4 | |
| Queue Length 95th (ft) 1 | | 56 ·/ | 52 | 26 157 | , 27 | |
| Internal Link Dist (ft) 15 | CONTRACTOR STATE OF THE PARTY O | 803 | 679 | 200 | 102 | |
| Turn Bay Length (ft) Base Capacity (vph) 11 | 200 876 | 1738 | 283 | 200 1052 | 315 | |
| Starvation Cap Reductn | 0 0 | 0 | 0 | 0 | 0 | |
| Spillback Cap Reductn Storage Cap Reductn | 0 0 | and the second s | . 0 | 0 | 0 | |
| Reduced v/c Ratio 0. | 20 0.29 | 0.07 | 0.15 | 0.25 | 0.05 | |
| ntersection Summary | | | | | | |
| Area Type: Other Cycle Length: 90 | | | | | | |
| Actuated Cycle Length: 49,5 | | | | | | |
| Natural Cycle: 60 Control Type: Actuated-Uncoordinated | | | | | | di 1386 Sir 1587 - Heli II ku The Tallin |
| Maximum v/c Ratio: 0.51 | | | | | | |
| Intersection Signal Delay: 13.1 Intersection Capacity Utilization 42.4% | | ntersection LOS: B CU Level of Service A | | | | |
| Analysis Period (min) 15 | | | | | | |
| Splits and Phases: 101: Route 128 SB Ramps | /Asheville Road & Gro | ve Street | | | | |
| ₹02 | | | | Aka | 39 | ₽ Ø4 |
| 57.s | | | | ₫ 20 s | | 138 |
| ₹PØ5 | | | | | | ≪ Pøs |

t ٩ NBR EBT WBL WBT NBT SBT Lane Group Lane Configurations Traffic Volume (vph) 240 520 Future Volume (vph) 55 240 135 5 370 10 0 5 1900 deal Flow (vphpl) 1900 900 1900 1900 900 QUU 900 1900 Storage Length (ft) n Λ 200 Λ Ω 200 Λ ٥ Storage Lanes 0 Taper Length (ft) 25 25 25 25 Satd. Flow (prot) 1752 Ö 0 0 Fit Permitted 0.253 0.832 Satd. Flow (perm) 467 1550 Right Turn on Red No No No No Satd, Flow (RTOR) Link Speed (mph) 30 30 30 30 1604 920 838 182 Link Distance (ft) Travel Time (s) 36.5 20.9 19.0 4.1 Confl. Peds. (#/hr) Confl. Bikes (#/hr) 1 1 Peak Hour Factor Heavy Vehicles (%) 3% 2% 2% 2% 3% 3% 2% 2% 2% 7% 7% 7% Shared Lane Traffic (% 261 626 152 n n 402 0 16 0 Lane Group Flow (vph) Λ ٥ 6 Turn Type NA n+pt NA ot+ov NA Protected Phases 6 57 3 9 Permitted Phases **Detector Phase** 6 6 5 2 57 3 3 Switch Phase Minimum Initial (s) 10.0 10.0 6.0 10.0 6.0 6.0 6.0 6.0 4.0 Minimum Split (s) 14.0 14.0 10.0 14.0 10.0 10.0 10.0 10.0 20,0 34.0 34.0 20.0 Total Split (s) 14.0 48.0 12.0 12.0 10.0 10.0 Total Split (%) .8% 5.6% 3.3% 1.1% .8% 3.3% 1.1% 3% 3.0 Yellow Time (s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 All-Red Time (s) 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 0.0 0.0 Lost Time Adjust (s) 0.0 0.0 0.0 Total Lost Time (s) 4.0 4.0 4.0 4.0 4.0 Lead/Lag Lag Lag Lead Lag Lag Lead Lead Lead-Lag Optimize Recall Mode Min Min None Min None None None None None Act Effct Green (s) 30.8 45.2 45.2 8.2 6.2 Actuated g/C Ratio 0.47 0.68 0.68 0.12 0.34 0.09 v/c Ratio 0.73 0,50 0.12 0.03 0.74 0.10 Control Delay 23.8 11.0 6,4 31.3 32.4 33.6 Queue Delay 0.0 0.0 0.0 0.0 0.0 0.0 Total Delay 23.8 11.0 31.3 32.4 33.6 6.4 OS В 32.4 33.6 Approach Delay 23.8 93 Approach LOS 22 Queue Length 50th (ft) 158 120 12 2 5 #148 #426 Queue Length 95th (ft) #587 Internal Link Dist (ft) 1524 840 758 102 Turn Bay Length (ft) Base Capacity (vph) 856 519 1254 192 541 165 Starvation Cap Reductn Spillback Cap Reductn 0 n n 0 Storage Cap Reductn 0 Ö 0 0.74 0.10 0.73 0.50 0.12 0.03 Reduced v/c Ratio intersection Summary Other Area Type: Cycle Length: 90 Actuated Cycle Length: 66 Natural Cycle: 90 Control Type: Actuated-Uncoordinated Maximum v/c Ratio: 0.74 Intersection LOS: C Intersection Signal Delay: 22.2 ICU Level of Service C Intersection Capacity Utilization 6 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 128 SB Ramps/Asheville Road & Grove Street **≪**₽_{Ø7} ₩ Ø2 #R09 ₽_{Ø3}

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|--|-----------------------|---|-----------------------|------------------|---------------------|-------------------------------------|--------------------|---------------|-------------------------|------------------------------|--|--|---|--|---|--|---|
| Lane Group | EBL | EBT | EBR | WBL | WBT | WBR | NBL | NBT | NBR | SBL | SBT | SBR | Ø9 | 100 | 100 | Metal Cal | |
| Lane Configurations Traffic Volume (vph) | | 4 > 215 | 45 | ኝ 445 | 1> 275 | 10 | 40 | र्व | 7 145 | E | 4 } 2 | | | -100 grand 1977 | CONTRACTOR OF THE | | |
| Future Volume (vph) | 1 | 215 | 45 | 445 | 275 275 | 10 | 40 | 5 5 5 | 145 | 5 5 | 2 | 1 | | | | | |
| Ideal Flow (vphpl) | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | 1900 | | | | | |
| Storage Length (ft) Storage Lanes | 0 | | 0 | 200 1 | | 0 | 0 0 | 1.7 | 200 1 | 0 | | 0 | | | | | |
| Taper Length (ft) | 25 | | | 25 | | | 25 | | Material September 1997 | 25 | | ALLEGA MARIE CANADA | | | io inventamentale, speine | (SECONDARY CHIRALES C | |
| Satd. Flow (prot) Fit Permitted | 0 | 1802 0.999 | 0 | 1770 0.283 | 1851 | 0 | 0 | 1732 0.743 | 1538 | 0 | 1812 | 0 | | | | لفتحدث | |
| Satd. Flow (perm) | 0 | 1800 | 0 | 527 | 1851 | 0 | . 0 | | 1538 | 0.7 | 1868 | 0 | | | | | |
| Right Turn on Red Satd, Flow (RTOR) | | | No | | | No | er og grande | | No | | | No | | | 000000000000000000000000000000000000000 | | |
| Link Speed (mph) | | 30 | | | 30 | W. 1525. | | 30 | | | 30 | | | | | | |
| Link Distance (ft) | | 1604 | | | 883 | 第一规划 | | 838 | | | 182 | | fat 1 | | | | |
| Travel Time (s) Confl. Peds, (#/hr) | 16 | 36.5 | | | 20.1 | 16 | Level 1 | 19.0 | | | 4.1 | | 10 T | 1540 | | NUSAS 0011 | |
| Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | | | | | |
| Heavy Vehicles (%) Shared Lane Traffic (%) | 3% | 3% | 3% | 2% | 2% | 2% | 5% | 5% | 5% | 0% | 0% | 0% | ************************************** | | 21.02.11 | Ale in | |
| Lane Group Flow (vph) | 0 | 284 | 0 | 484 | 310 | 0 | 0 | 48 | 158 | 0 | A STATE OF THE PARTY OF THE PAR | Ō | | and the second | American Action | | Perpose and the second |
| Turn Type Protected Phases | Perm | NA 6 | | pm+pt 5 | NA 2 | | Perm | NA 7 | pt+ov 5.7 | Perm | NA 3 | | o de la companya de | 學服務地別 | The state of the state of | | |
| Permitted Phases | 6 | | | 2 | and the second | Zan Se in more communication of the | 7 | | U | 3 | | | | | | | |
| Detector Phase | 6 | 6 | | 5 | 2 | | 7 | 7 | 5.7 | 3 | 3 | | | | | | |
| Switch Phase Minimum Initial (s) | 10.0 | 10.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | | 4.0 | | | | |
| Minimum Split (s) | 14.0 | 14.0 | | 10.0 | 10.0 | | 10.0 | 10.0 | | 10.0 | 10.0 | | 20.0 | A STATE OF THE STA | | | |
| Total Split (s) Total Split (%) | 20.0 22.2% | 20.0 | 第32.11 | 28.0 31.1% | 48.0 53.3% | | 12.0 13.3% | 12.0 13.3% | | 10,0 11,1% | 10.0 11.1% | | 20.0 22% | ALE PURCHER NOTE AND | distributes middle | Strandens 28 (St. | |
| Yellow Time (s) | 3.0 | 3,0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | | | |
| All-Red Time (s) | 1.0 | 1.0 | | 1.0 | 1.0 | CHARLESTON THE | 1.0 | 1.0 | | 1.0 | 1.0 | nanos de la compansión de | 1.0 | er en | na ostanomene | | |
| Lost Time Adjust (s) Total Lost Time (s) | والنفيدة ويوانين | #0.0 4.0 | | 0.0 4.0 | 0.0 4.0 | man light year and | | 0.0 4.0 | | december 110 | 0.0 4.0 | Control of the Contro | | ************************************** | | | |
| Lead/Lag | Lag | Lag | | Lead | | | Lag | Lag | | Lead | Lead | Orom y | | | The state of | | |
| Lead-Lag Optimize? Recall Mode | Min | Min | | None | None | | None | None | | None | None | | None | | | | |
| Act Effct Green (s) | | 15.2 | | 40.9 | 40.9 | a constant and | 1.010 | 7.8 | 33.5 | 7,010 | 6.3 | | 1010 | San Marca III | | and the same of th | |
| Actuated g/C Ratio v/c Ratio | | 0.25 0.64 | | 0.67 0.61 | 0,67 0,25 | | was del | 0.13 0.28 | 0.55 0.19 | | 0.10 | | | Da Eromonia | | | |
| Control Delay | | 32.4 | | 12.7 | 7.0 | | 121 | 34,4 | 10.8 | | 32.9 | | | | | | |
| Queue Delay | qraeeeee | 0.0 | | 0.0 | 0.0 | | TO SUPERIOR CONTRA | 0.0 | 0,0 | SICCESION PROPERTY. | 0.0 | contributed assessed | An annual region of section | nancos controles | | en proposition de | |
| Total Delay LOS | and a different | 32,4 C | | 12,7 B | 7,0 A | L. Children of the Color | | 34,4 C | 10.8 B | | 32,9 C | | | And the Control of th | 200 | A-THER RESIDENCE | |
| Approach Delay | | 32.4 | | | 10.5 | | | 16.3 | | | 32.9 | | | | | | |
| Approach LOS Queue Length 50th (ft) | A VENT | C 86 | | 47 | B 26 | | | B 15 | 22 | | C | | | | the age of the control of | PRINCIPLE DE LA | |
| Queue Length 95th (ft) | | #302 | orinila cuationistics | #344 | 162 | | | 62 | 104 | 4 maria 10 da 40 da 40 d | 18 | in the second | J. 12. 10. 10. 10. 10. 10. 10. 10. 10. 10. 10 | | NON-SELLANT DE SE | | articol Control |
| Internal Link Dist (ft) Turn Bay Length (ft) | | 1524 | 210 | 200 | 803 | | | 758 | 200 | | 102 | | - | | 100 | | |
| Base Capacity (vph) | | 497 | | 866 | 1405 | | | 185 | 904 | | 193 | | | 1 | . 1 | | |
| Starvation Cap Reductn | medical sections | 0 | | 0 | 0 | | | 0 | 0 | en ande en en en help de | 0 | | | e sa enema | | and the same of th | |
| Spillback Cap Reductn Storage Cap Reductn | | 0 | | 0 0 | 0 | | | 0 0 | 0 0 | | 0 | | | | and the soul | | |
| Reduced v/c Ratio | | 0.57 | | 0.56 | 0.22 | | | 0.26 | 0.17 | Tak conse | 0.04 | | | | | | |
| ntersection Summary | | | 600 2000 | | | | | | | | | | | | | | |
| Area Type: Oth | ier, | | | | . | | | 15.4 | | | | | فأنجأك | | | | |
| Cycle Length: 90 Actuated Cycle Length: 61.2 | | and the second | | or in the s | | | | | | | | Cr. Alt | | | ATT TO SHAPE | | |
| Natural Cycle: 80 | micron Security mass. | | | | | | | | | 1 - Page 2 and 1 and 1 and 1 | SECTION OF THE SECTION | ACT AUTOMORPHIC | the second second | Charles and the control of the contr | | | OFFICE OF THE PARTY OF T |
| Control Type: Actuated-Uncoordin Maximum v/c Ratio: 0.64 | nated | | | | dia martin | | | 第 5 2 2 3 | | | | | | | | and the second | S. S. S. S. S. S. |
| Intersection Signal Delay: 16.4 | | | | | ersection l | | | | | | | | | | | | |
| Intersection Capacity Utilization 5 Analysis Period (min) 15 | 3.8% | | Secondary would | ICI | J Level of | Service A | | | | n na stam i militaren n | A SUMMER PROPERTY. | | | v v m | | | |
| # 95th percentile volume exceed | ds capacit | y, queue r | may be long | jer. | | | | | | | | | | | | | |
| Queue shown is maximum afte | | *************************************** | | | | 1.40 | | 0 | | | | | din Hati | | 1 | | |
| Splits and Phases: 101: Route | 128 SB R | amps/Ash | eville Road | & Grove | Street | | | 4.2 | | | | | T _{rea} | | 12 | | \neg |
| ₩ 02 48 s | | | | a Die Will aller | | A 250 120 200 | | . ∱ Å. | Ø9 | | | | ∳ [≽] ø3 | 188375 | 12 s | | |
| | | Section 1995 | | A ₁₀₆ | | | SOURCE OF STREET | 20.5 | 2000 | | | | | | | 784 | |
| €€ Ø5 28 s | Market less | | 2 | 06 0 s | | | 51,71 (136) | 6 | | | | | | | | | |

Riverside Station Development :: 10865.03 101: Route 128 SB Ramps/Asheville Road & Grove Street

| | ١ | → | • | • | + | 4 | 4 | † | ~ | 1 | + | 4 | | • | | |
|--|--|---------------------------------|--|--|-----------------------------|--|-----------------------|-----------------|--|---------------------|---------------|---|----------------------------|---------------------------|--|-------------------------|
| Lane Group | EBL | EBT | EBR | WBL | 2000 | WBR | NBL | NBT | NBR | SBL | | SBR | Ø9 | And the second | | |
| Lane Configurations Traffic Volume (vph) | 5 | 4 > 150 | 65. | | 5 115 | 5. | 35 | ଣ ଅଧି | 240 T | 10 | 4 > | 77.01 | 78,5 | | | |
| Future Volume (vph) | 5 | 150 | 65 | 230 | 115 | 5 | 35 | 5 | 240 | 10 | 5 | 1 | THE RESERVE THE PERSON OF | 10)=10 NOV FIRE 1/2? | | |
| Ideal Flow (Vphpl) Storage Length (ft) | 1900 0 | 1900 | 1900 0 | 1900 200 | 1900 | 1900 0 | 1900 0 | 1900 | 1900 200 | 1900 0 | 1900 | 1900 0 | | | | |
| Storage Lanes | 0 | | 0 | 177 | | 0 | 0.1 | | 1 | 0 25 | | 0. | | | | |
| Taper Length (ft) Satd. Flow (prot) | 25 0 | 1804 | 0 | 25 1787 | 1868 | o . | 25 0 | 1802 | 1599 | 25 0 | 1826 | 0 | | erene senini wa su | | |
| Flt Permitted | | 0.995 | | 0.380 715 | 1868 | 0 | 0.5 | 0.756 1422 | 1599 | Ō | 1885 | Ö | | or a purely desire | egiamon a secundo da | |
| Satd. Flow (perm) Right Turn on Red | 0 | 1797 | 0 No | 115 | 1868 | No | 0 | 1422 | No | 0 | 1000 | No | las Late. | soules all II. There | | |
| Satd. Flow (RTOR) | | | | | | STATE OF THE PARTY | | 30 | an sanga sa ana | | 30 | | The second second | | | |
| Link Speed (mph) Link Distance (ft) | | 30 1604 | | | 30 883 | | | 759° | | | 182 | | | | | |
| Travel Time (s) | | 36.5 | | | 20.1 | | 440 | 17.3 | ne expenses of the con- | 1418-2014 (100 H-1) | 4.1 | | | endulation and accommodit | en de la companya de | |
| Confl. Peds. (#/hr) Peak Hour Factor | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | 0.92 | | 1271 4 15 15 15 15 | | |
| Heavy Vehicles (%) | 1% | 1% | 1% | 1% | 1% | 1% | 1% | 1% | 1% | 0% | 0% | 0% | | | | |
| Shared Lane Traffic (%) Lane Group Flow (vph) | 0. | 239 | 0 | 250 | 130 | 0 | . 0 | 43 | 261 | 0 | 17 | Ö | | | | |
| Tum Type | Perm | NA | | om+pt | NA 2 | diameter (School | Perm | NA 7 | pt+ov 5.7 | Perm | NA 3 | en interes | | | a a selection | |
| Protected Phases Permitted Phases | 6 | 6 | | 5 2 | , 2, | Jan de la companya da | 7 | I | 0/ | . 3 |) - J | | 49.11 | | | |
| Detector Phase | 6 | . 6 | | 5 | 2 | 12. | 7 | 7 | 57 | 3 | 3 | | | 0.9 | | ilimina a dinina 25 dan |
| Switch Phase Minimum Initial (s) | 10.0 | 10.0 | | 6.0 | 10.0 | | 6.0 | 6.0 | | 6.0 | 6.0 | | 4.0 | VIII A CREEDING | | |
| Minimum Split (s) | 14.0 | 14.0 | | 10.0 | 14.0 | | 10.0 | 10.0 | | 10.0 | 10.0 | | 20.0 | | užah ti skatini si ti | Ser vale all la |
| Total Split (s) Total Split (%) | 28.0 31.1% | 28.0 31.1% | | 20.0 22.2% | 48.0 53.3% | | 12.0 13.3% | 12.0 13.3% | | 10.0 11.1% | 10.0 11.1% | | 20.0 22% | | | |
| Yellow Time (s) | 3.0 | 3.0 | | 3.0 | 3.0 | | 3,0 | 3.0 | | 3.0 | 3.0 | | 3.0 | | THE RESERVE OF THE PERSON | |
| All-Red Time (s) Lost-Time Adjust (s) | 1.0 | 1.0 0.0 | | 1.0 | 1.0 | | 1.0 | 1.0 0.0 | | 1.0 | 1.0 0,0 | | 1.0 | | | |
| Total Lost Time (s) | CONTRACTOR OF SHIPS | 4.0 | Manager Contraction of the Contr | 4.0 | 4.0 | CARREST MINES | | 4.0 | runre di lone ve in l | | 4.0 | naerinekaaronice | THE RESERVE OF THE PERSONS | | | |
| Lead/Lag Lead-Lag Optimize? | Lag | Lag | | Lead | | | Lag | Lag | I many sales and a | Lead | Lead | 100 100 100 100 100 100 100 100 100 100 | | | | |
| Recall Mode | Min | Min | | None | Min | | None | None | 05.0 | None | None | | None | | (A) (A) | |
| Act Effct Green (s) Actuated g/G Ratio | | 13.7 0,27 | | 30,7 0.59 | 30.7 0.59 | | | 8.6 0.17 | 25.6 0.50 | 6 | 6.6 0.13 | | urstania selan | | | |
| v/c Ratio | | 0.50 | BARTON NO. OF THE STATE OF THE | 0.36 | 0.12 | | | 0.18 | 0.33 | | 0.07 | | months nothing your | | omphications : | |
| Control Delay Queue Delay | | 23.0 0.0 | en und in entre de Sanado | 8.6 0.0 | 7.1 0.0 | (1) | id or said by the own | 28.4 0.0 | 13.6 0.0 | | 29.6 0.0 | | | and a sub- | | The second second |
| Total Delay | دو د المالية | 23.0 | J. KS. J. | 8.6 | 7.1 | Andrew State of the Control of the C | Total Committee | 28,4 | 13,6 | | 29.6 | | | i di | المراجعة ا | |
| LOS Approach Delay | | C 23.0 | 1115 | A | A 8.1 | | | C 3 15.7 | В | | C 29,6 | | 11. | | in attack | |
| Approach LOS | | C | | | A | | | В | | | С | | | | | |
| Queue Length 50th (ft) Queue Length 95th (ft) | | 49 188 | | 20 131 | 71 71 | rene ala banketia | | 9 56 | 28 194 | | 4 30 | | | | | |
| Internal Link Dist (ft) | | 1524 | | | 803 | | | 679 | | | 102 | | | | | |
| Turn Bay Length (ft) Base Capacity (vph) | | 924 | | 200 793 | 1633 | | A TOP OF STREET | 244 | 200 924 | | 242 | | | | | 31 - M |
| Starvation Cap Reductn | | 0 | | 0 | . 0 | | | 0 | 0 | | 0 | | | | | |
| Spillback Cap Reductn Storage Cap Reductn | | 0 0 | | 0 | 0 0 | ريان مان المعادل المان المان المان | | 0_ 0 | 0 0 | | 0 0 | A Part of Subsection | CONTRACTOR OF | | | |
| Reduced V/c Ratio | | 0,26 | | A COLUMN TO THE PARTY OF THE PA | 0.08 | | | 0.18 | 0.28 | | 0.07 | Karana and | Mile and houselff and | | A Long State of State | |
| ntersection Summary | | | | | | | | 1 | | | | | | | | |
| Area Type: Otl Cycle Length: 90 | her 💮 | | | | | المعادية للسود الما | | | | | | | Ne Statement | | The second second | |
| Actuated Cycle Length: 51.6 | e la companya da la c | | | 1 | | | | | | | | | | | | |
| Natural Cycle: 65 Control Type: Actuated-Uncoordi | nated | | | | | | | | | | | | | | | |
| Maximum v/c Ratio: 0.50 | | an an income and an arrangement | G. Jury Belliums | | | | | | Total Statement of Lines. | | | divining differential di | | | | |
| Intersection Signal Delay: 14.7. | | | | | ersection L U Level of S | | | and bloom and | a de la companya de l | الأيا فالتابييان | | | وسيكون كوال | | | |
| Analysis Period (min) 15 | 12.770 | | | | | | | | | | 6 - E B | | | | | |
| Splits and Phases: 101: Route | 128 SR R | amns/Ash | eville Road | & Grove | Street | | | | | | | | | | | |
| Spills and Phases. 101. Route | .20 00 1 | - inputrion | | | | | | AB | /79 | | | | ₩03 | | ♦ | |
| ♥ Ø2 48 s | | | | | | | 15.00 | ₽ 20 s | | 7-01/25 | 76 (1989) | | 10 s | | 12 s | 9 |
| Fos | | | i | | | | | | | | | İ | | | | |
| 20 s | | ⊠28 s | | | | | | Ø 86 | | | | | | | | |