GENERAL PROVISIONS – CONTRACT SPECIFIC

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1. BRIEF SCOPE OF WORK:

Rhode Island Contract No. 2024-CB-045, Federal Aid Project No. BRO-017C(002) for Bridge Group 17C - Newell and Sneech in the town of Cumberland will consist of erosion control, replacement of Newell Bridge No. 204 using Accelerated Bridge Construction (ABC) methods, pavement reconstruction, micro milling and overlay, utility adjustments, pavement marking installation, field office, mobilization, and maintenance and protection of traffic.

2. LIST OF CONTRACT DOCUMENTS:

The Contract Documents include the following contents:

- February 2024 Edition of the Rhode Island Department of Transportation Standard Specifications for Road and Bridge Construction
- Required Contract Provisions for Federal-Aid Construction Contracts
- RIDOA Division of Purchases Procurement Regulations
- Rhode Island Standard Details
- Bridge Standard Details
- General Provisions
- General Provisions Contract Specific
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- Distribution of Quantities
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3. UTILITY AND MUNICIPAL NOTIFICATION AND COORDINATION

The following utility and municipal contacts are provided:

<u>Verizon</u>

Peter DeCosta Verizon State Highway Coordinator Verizon Communications, Inc. 85 High Street Pawtucket, RI 02860 508-944-6701 peter.x.decosta@verizon.com <u>CoxCom, LLC</u> Shawn Murphy Right-of-Way Agent II Cox Communications / Northeast Region 401-430-5599 Shawn.Murphy@cox.com <u>Rhode Island Energy – Electric</u> Patrick Ventre Rhode Island Energy/Project Manager RI Energy - Electric 280 Melrose Street Providence, RI 02907 732-672-3359 pventre@rienergy.com

<u>Crown Castle - Fiber</u> Chris Stevens Fiber Construction Manager 1800 West Park Drive Suite 250 Westborough, MA 01581 508-621-1874 Christopher.Stevens@crowncastle.com

Cumberland Department of Public Works Joseph Duarte Director Cumberland DPW 45 Broad Street Cumberland, RI 02864 401-728-2400 ext. 143 jduarte@cumberlandri.org <u>Rhode Island Energy – Gas</u> James Paulette Principal Engineer Rhode Island Energy - Gas 642 George Washington Highway Lincoln, RI 02865 401-465-8580 JMPaulette@rienergy.com

<u>Cumberland Sewer Department</u> David Carr Superintendent Cumberland Sewer Department 45 Broad Street Cumberland, RI 02864 401-728-2400 ext. 122 <u>dcarr@cumberlandri.org</u>

<u>Cumberland Water Department</u> Romeo N. Mendes, PE Superintendent Cumberland Water Department 98 Nate Whipple Highway Cumberland, RI 02864 401-658-0666 rmendes@cumberlandri.org

Upon award, the Contractor shall notify all applicable utility companies relative to their anticipated construction start date. Immediately following the Pre-Construction Conference, the Contractor shall initiate all required utility notifications.

The following is the anticipated notification periods and construction durations for the Contractor to coordinate with utility companies:

Utility Company Name	Notification Period	Construction Duration
Rhode Island Energy - Electric	4 weeks (min)	6 weeks
Crown Castle	2 weeks (min)	3-4 days
Cox Communications	4 weeks (min)	1 week
Verizon Business/MCI Metro	2 weeks (min)	1 week
Rhode Island Energy - Gas	2 weeks (min)	1 week
Verizon (Underground)	4 weeks (min)	8 weeks

The locations of existing utilities have been shown on the Plans using the best available information and are approximate only. The Contractor shall verify the exact locations of all existing utilities and service connections both underground and overhead in accordance with DIG SAFE prior to commencing any work that may impact the utilities in the area. Any damage to the utilities, which are detailed by DIG SAFE or shown on the Plans, shall be the Contractor's responsibility. The cost to repair such damage shall be borne by the Contractor.

The Contractor shall contact DIG SAFE (1-888-344-7233) prior to commencing with construction.

Contractor shall coordinate with all underground and overhead utility companies for permanent relocations.

Verizon Underground

Coordinate with Verizon to maintain uninterrupted cable service during construction. The Verizon telephone cable relocations shall be completed by a Verizon appointed contractor. Cables shall temporarily be supported across the river and across excavations by a temporary bridge and or supports. Once the new bridge is constructed, the Contractor shall continue to coordinate with Verizon so their appointed contractor can furnish and install utility supports on the new bridge, furnish and install the cables in new conduits, and remove the temporary bridge and or supports after the relocation is complete.

Rhode Island Energy – Gas

Regulations

- a. Contractor shall follow the guidelines listed in RI Energy's "Guidelines for Working Around Gas Utilities", document attached in Appendix "A".
- b. Depth of gas facilities are unknown and could be shallow, use caution when working in the vicinity of any gas facility, hand digging only.
- c. RI Energy requires a minimum of one foot of separation between crossing utilities and existing gas facilities.
- d. RI Energy requires a minimum of three feet of separation between the gas main and the parallel facility for steel and plastic gas mains. For cast iron gas main see line item for encroachment guidelines.
- e. At a proposed utility and **critical** gas main crossing, a RI Energy gas damage prevention inspector must be on site when crossing. Call Ed Souza at 401-283-9159 or Jeff Cassel at 508-468-7217.
- f. If a **gas main is** exposed or **going to be exposed** call RI Energy dispatch at 877-304-1203 for an inspector to be dispatched to the site to inspect the line before backfill.
- g. If a **gas main or gas main coating is** damaged call RI Energy dispatch office at 877-304-1203 for an inspector to be dispatched to the site for repair before backfill.
- h. For any exposed gas facility, provide backfill materials and compact the backfill materials in accordance with RI Energy's "Guidelines for Backfill and Compaction Around Gas Pipes", document attached.
- i. When crossing or exposing a steel or plastic gas facility support may be required. Follow the guidelines listed and illustrated in RI Energy's "Support Requirements for Exposed & Undermined Steel or Plastic Gas Facilities", document (dwg no. CNST-6045) attached.
- j. All gas valve boxes shall be adjusted to the new road/sidewalk surface. Valve boxes, if required for replacement, can be obtained at Rhode Island Energy's Providence location, 477 Dexter Street,

Providence, RI or Lincoln location, 642 George Washington Highway (quantities 5 or less). Gas valve boxes need to be accessible at all times to be operated by RI Energy in the event of an emergency.

- k. All cathodic protection boxes (boxes that contain wires that go down to the gas main) shall be adjusted to the new road/sidewalk surface. Care shall be exercised when adjusting so as not to damage the wires. If the wires are damaged or if assistance is needed, contact RI Energy corrosion engineer to visit the site. Contact Rick LePage 508-948-8432. New boxes, if required, can be obtained at RI Energy's Providence facility, 477 Dexter Street, Providence, RI or RI Energy's Lincoln facility, 642 George Washington Highway, Lincoln, RI (quantities 5 or less). Contractor shall follow the guidelines listed in RI Energy's "Guidelines for Working Around Corrosion Control System Components", document attached.
- I. Due to system reliability and public safety concerns, it is RI Energy's practice to restrict all construction work on or near gas facilities between November 15th and April 15th. All scheduled work should be completed between April 15th and November 15th. As gas usage peak during the months of December to March driven by heating needs, RI Energy's priority is to provide our customers with safe and reliable gas service. Any work on or near the gas facility will expose our customers to unnecessary risk. Exceptions will be considered on a case-by-case basis. Approvals from gas control, operational engineering, and project engineering will be required for these cases.
- m. For a gas leak call 800-640-1595.
- n. For a damaged gas facility call 800-870-1664.
- o. RI Energy will purge our old gas main of gas, wipe test sample the inside of the pipe, cap the ends and abandon in place. Pipe four inches and less in diameter can't be sampled; this pipe will be assumed to be contaminated. If the wipe test results show PCB contamination and a section or sections need to be removed by the contractor then the contractor will need to transport the removed sections with sealed ends to either our Allens Ave facility at 642 Allens Ave in Providence or our Dexter St facility at 477 Dexter St in Providence or our Lincoln facility at 642 George Washington Hwy in Lincoln and place them in our red open top "Pipe to be Cleaned" container on site. RI Energy would then handle the cleaning and proper disposal. RI Energy also requires that the open pipe ends of the abandoned pipe remaining in the ground be capped or sealed with expanding foam. If the wipe test shows that the pipe has no PCB contamination then removed sections can just be disposed of by the contractor as scrap metal.

Cast Iron Involvement

- p. If excavating parallel to or crossing a cast iron gas facility then encroachment of the cast iron line is a possibility and a concern where replacement may be required. Whenever an excavation is in the vicinity of a cast iron gas main contact RI Energy encroachment engineer to be on site, call Ed Souza at 401-283-9159 or Jeff Cassel at 508-468-7217. Guidelines in avoiding an encroachment are listed in RI Energy's "Cast Iron Gas Main Encroachment Prevention", document attached.
- q. If excavating parallel to or crossing a cast iron facility that is greater than 8", this line is not covered under the encroachment guidelines and law. RI Energy does not allow more than 10' of gas main to be exposed and only allows (1) bell & spigot joint to be exposed. If a bell & spigot joint is exposed said joint must be leak clamped before backfill unless a clamp is already in place. Provide backfill materials and compact the backfill materials in accordance with RI Energy's "Guidelines for Backfill and Compaction Around Gas Pipes", document attached. Minimum 95% compaction of the soil below a cast iron is always required. Always call RI Energy damage prevention department for an inspector to be dispatched to site. Call Ed Souza at 401-283-9159 or Jeff Cassel at 508-468-7217.

Regulator Station

RI Energy requires notification of construction work within 200 ft of a gas regulator station for safety monitoring during construction. Please call RI Energy I & R Supervisor Mike Romano at 617-910-7854 or George Maerkle at 401-595-8276 or Jay Costa at 781-290-3515 when digging within 200 ft of regulator station. After hours, please call 877-304-1209.

Conduit Installs

- s. Rhode Island Energy requires a one-foot separation between proposed conduit and any gas facility.
- t. Rhode Island Energy does not allow the use of grinding wheel type trenchers over any gas facility, hand digging only in these areas.
- u. If it is necessary to go under our facility and our facility is 4", 6" or 8" cast iron, then encroachment becomes an issue. In order to avoid an encroachment and avoid the main section being replaced keep the trench width for 4" cast iron to less than 3' wide and for 6" cast iron to less than 4' wide and for 8" cast iron to less than 5'6" wide. 95% compaction of the soil below a cast iron is always required and proper backfill in accordance with our backfill and compaction around gas mains document. If an encroachment is suspected please call Ed Souza at 401-283-9159 or Jeff Cassel at 508-468-7217.

See Appendix "A" – RI Energy Guidelines for Working Around Gas, for the above referenced attachments. Also included in Appendix "A" are additional guidance through Rhode Island Energy Installation Specifications, Section 100 Main Installation Across Bridge and Code Reconciliation Section 200 Installation of Steel Gas Main and Standard Details that shall be used, provided by the Rhode Island Energy.

Rhode Island Energy Approved Gas Piping Contractors in Rhode Island (Last Updated 8/15/23)

The Contractor will need to use a RI Energy approved gas contractor to do the proposed gas work. The Contractor must use one of the following approved Contractors for this work:

AGI Construction Inc. 34 Appian Way Smithfield, RI 02917 Michael Smith 401-233-0021 msmith@agiconstruction.com

GPL Construction Inc. 2180 Mendon Road, Suite 31 Cumberland, RI 02864 Mike Gaudette II 401-639-6282 Mgaudette2@gpl-construction.com Ferreria Construction Co Inc. 1598 South County Trail East Greenwich, RI 02818 Al Marsocci 401-400-4891 amarsocci@ferreriaconstruction.com

4. COORDINATION WITH OTHER CONTRACTS

It shall be the Contractor's responsibility to coordinate, cooperate and schedule his work and all segments thereof with the Engineer, other contractors, utility owners, and applicable local authorities, so as to minimize impacts to the construction schedule.

The Contractor is hereby notified that the construction projects listed below will be ongoing simultaneously with their contract and they shall be responsible to coordinate their work efforts with those Contractors:

- TIP ID 3181 Bridge Group 17A I-295 Cumberland
- TIP ID 3070 Bridge Group 48_H Arnold Mills Bridge IDs 030101 & 069101
- TIP ID 3016 Bridge Group 14 Route 99

There may also be work occurring at Culvert No. 124501 (Sneech Pond Road over Long Brook) during the duration of this project.

5. SPECIALTY ITEMS

Specialty Items in this Contract are as follows:

- Directional, Regulatory, Warning, Delineators, and Street Signs (Except temporary construction signs)
- Striping
- Seeding Items
- Guardrail
- Structures
- Interpretive Sign and Foundation
- Storm Water Treatment Device 1

6. NOTICE TO CONTRACTORS

A. Standard Specifications

The reference "Standard Specifications" as written in the General Provisions – Contract Specific and the Job Specific Specifications shall mean the February 2024 Edition of the Rhode Island Department of Transportation Standard Specifications for Road and Bridge Construction.

B. Contract Submittal List (CSL)

The Contract Submittal List (CSL) shall be a table listing shop drawings and submittals required for the Contract, some of which are critical to the commencement of construction. A preliminary CSL is included in Appendix "B". Shop drawings and submittals are required for, but not limited to, the items included in the CSL.

C. Plans and Shop Drawings

The Contractor shall note specification "105.02 Plans and Shop Drawings". The Contractor shall submit Shop Drawings electronically directly to the Consulting Engineer Andrew Prezioso, P.E. (aprezioso@vhb.com) – VHB, to the RIDOT Project Manager, and to the Resident Engineer.

D. Use of Explosives

The Contractor is NOT allowed to use explosives on this project.

E. Unit Bid Item and Lump sum Bid Item Payments

For requirements and work described in the Contract Documents but not expressly identified to be measured separately for payment, the costs thereof shall be included in the contract bid prices of the items of work to which they pertain as listed in the Proposal.

F. Dust Control

The Contractor is prohibited from using calcium chloride as dust control. The Contractor shall only use water to control dust.

G. Storage of Construction Material and/or Equipment

The Contractor shall place all equipment and material in their field yard or on site in a location approved by the Engineer.

Storage of materials shall be coordinated with and approved by the Engineer. Storage of construction material and/or equipment shall be a minimum distance of 30 feet from the roadway.

Stockpiles shall be covered and must be located outside any areas of RIDEM jurisdiction including but not limited to wetlands and their associated buffers. Any storage or stockpile of construction material and/or equipment on private property will be the Contractor's responsibility.

There shall be no storage of construction equipment and/or parking of vehicles under the drip lines of any trees.

H. Disposal of Surplus Material

All existing or other material not required or needed for use on the project, and not required to be removed and stockpiled, shall become the property of the Contractor and shall be removed from the site during the construction period and legally disposed of. No separate payment will be made for this work, but all costs in connection therewith shall be included in the unit bid prices for this Contract.

 Project Coordination Meetings When a field meeting or in-person meeting is required, all personnel shall have the appropriate personal protective equipment (PPE) devices.

J. Road/Lane Closures

The Contractor shall notify the Department 3 weeks in advance of a bridge or roadway closure/split/shift/travel lane width reductions on any roads within the State.

All full closures, splits, or shifts shall be scheduled to begin on *Friday or Saturday night*, as determined by the TMP, to allow motoring public time to adjust to new travel patterns while allowing RIDOT the opportunity to evaluate its success. Construction work can commence on the Monday following the evaluation period.

Any exceptions to this must be approved by the Senior Management of Department.

K. Construction Signage

The Contractor shall be responsible for maintaining appropriate construction related signing at all times. All temporary construction signs not appropriate for the construction activity taking place shall be removed, covered, or otherwise concealed. This includes the period between erecting the signs, and the start of construction, as well as when a construction phase is completed, or suspended. All signs not appropriate for lane closures, speed limits or construction activity taking place at any given time shall be removed or covered to the satisfaction of the Engineer.

L. Right-of-Way

There are no ROW impacts for this project.

M. Tree Trimming/Clearing

RIDOT will utilize the State-Wide tree trimming program in advance of the overhead utility relocations on Diamond Hill Road. Any tree trimming or clearing activities by the Contractor shall only be completed between November 1 and March 31.

7. SEQUENCE OF CONSTRUCTION AND SCHEDULE

General Stipulations: The Contractor shall adhere to the following requirements:

- a) The Contractor shall coordinate, cooperate and schedule his work and all segments thereof with the Engineer, other contractors, utility owners, and applicable local authorities, so as to minimize impacts to the construction schedule.
- b) Included as an appendix (See Appendix "C") to these Contract Specific General Provisions is the Transportation Management Plan (TMP) for this project. The TMP lays out the set of coordinated transportation management strategies that will be used to manage the work zone safety and mobility impacts of this project. In the event of a discrepancy between information in the TMP and information elsewhere in the Contract Documents, the former shall govern.
- c) All work shall be completed in accordance with the Traffic-Related Work Restrictions indicated in the Transportation Management Plan.

- d) The Department's latest Training Guidelines for Personnel Responsible for Work Zone Safety & Mobility are available under the "Contractors & Consultants" section at http://www.dot.ri.gov/business/contractorsandconsultants.php
- e) The Contractor is advised that the signs and other traffic control devices shown on the Traffic Control Plans and Details are minimum requirements. The Contractor shall be responsible to supplement these as required to ensure the public's safety. All traffic control set-ups shall conform to the latest edition of the Manual on Uniform Traffic Control Devices, with latest revisions.
- f) Before starting construction activities that require traffic control, the Contractor shall furnish and install all construction signing and traffic control devices. All temporary construction signs shall be removed, covered or otherwise concealed when they are not needed to properly warn drivers and/or pedestrians. The Contractor shall be compensated for this under Item Code 937.0100, "Furnish, Install, Maintain, and Move Temporary Traffic Protection".
- g) The Contractor shall coordinate requirements for Uniformed Traffic Control Persons with the Engineer who will coordinate with the local police department.
- h) In cases of emergency and/or as directed by the Engineer, the Contractor shall move equipment to allow for the passage of emergency vehicles and/or open closed lanes to maintain traffic flow.
- i) The Contractor shall not commence work that impacts vehicular and pedestrian traffic until fabrication of materials required to complete such work is finished and on site.
- j) The Contractor will be permitted to work during both daytime and nighttime hours provided that the minimum number of lanes and shoulders listed in TMP are maintained and access to and egress from all side streets, driveways, buildings, and other pedestrian pathways are maintained. To minimize impacts to traffic and local businesses, all pavement marking installation shall be performed at night.

8. SMALL-SITE STORMWATER POLLUTION PREVENTION PLAN

The Small-Site Stormwater Pollution Prevention Plan (SWPPP) for this project is included as Appendix "D." The SWPPP provides guidance for complying with the terms and conditions required under the General Permit, however, this document does not negate or eliminate the need to understand and adhere to all applicable RIPDES regulations.

The Small-Site Stormwater Pollution Prevention Plan details the anticipated erosion & sediment controls required for this project. The Contractor must designate a SWPPP contact person, experienced in storm water management on construction sites, who is available on site throughout the life of the project, and who has the authority to direct contractor's personnel and/or subcontractor's personnel in carrying out corrective actions requested by RIDOT's Qualified Plan Inspector and/or Resident Engineer. The Contractor's designated SWPPP contact person must be available to oversee all SWPPP related activities and to accompany the RIDOT's Qualified Inspector, as requested, when inspections are performed. The Contractor shall identify the SWPPP contact person at the Pre-Construction Meeting. The SWPPP contact person should be at the Pre-Construction Meeting if possible.

9. ENVIRONMENTAL PERMITS

The Bridge Group 17C - Newell and Sneech project will require a RIDEM Freshwater Wetlands Permit. See Appendix "E" – Freshwater Wetlands Permit, for the above referenced attachments.

PROTECTION UNDER THE MIGRATORY BIRD TREATY ACT

Under the Migratory Bird Treaty Act (MBTA), it is unlawful to intentionally or unintentionally take, capture or kill any migratory bird unless a Migratory Bird Permit is first obtained from the U.S. Fish and Wildlife Service. The USFWS's rules define "take" for MBTA purposes to mean to "pursue, hunt, shoot, wound, kill, trap, capture, or collect." Each violation of the MBTA can result in a fine of \$15,000, imprisonment for six months, or both.

There are few bird species that are not protected under the MBTA; they are Rock Doves (domestic pigeons), House Sparrows, and European Starlings. Although these species are not protected, they must be treated in a humane manner. The Contractor is encouraged to relocate active nests of unprotected species into nearby trees after approval from the RIDOT Natural Resources Unit (401-479-1327). Bird species that are protected under the MBTA include all waterfowl, herons, eagles, hawks, falcons, owls and songbirds (including swallows, eastern phoebes and American robins). Nests typically may be found empty, with eggs, or chicks from March 1st to August 31st in trees, brush, open fields, and bridge structures. Raptors (hawks, falcon, owls, and eagles) nest as early as January 22nd through August 31st in or on trees, on telephone poles, open fields, or bridge structures.

Clearing and Grubbing, Tree Removal, and Land Disturbing Activities

A variety of bird species nest in trees, shrubs and grass areas within the highway ROW. If clearing and grubbing, tree removal, staging areas or other land disturbing activities will occur during the migratory bird breeding season (March 1st- August 31st), the Contractor shall avoid any active bird nests. During the breeding season (March 1st - August 31st), the Contractor should inspect the affected right-of-way for bird nests before commencing work. The Contractor shall not disturb any active nests (completed or partially completed nests that contain eggs or nestlings).

The Contractor shall not disturb any active nests (completed or partially completed nests that contain eggs or nestlings). If any active nest is discovered and the nest cannot be avoided, work shall stop and the RIDOT Natural Resources Unit shall be contacted to evaluate the potential for disturbance of nests. The project will avoid the removal and destruction of active bird nests except through federal and state approved options.

At no time should large nests of ospreys, hawks, falcons or eagles be destroyed, as these species return to the same nest site year after year and reuse the same nest. If a raptor nest must be removed for work to take place, it can be moved in cooperation with the USFWS.

All questions relating to migratory birds and nesting should be directed to the RIDOT Natural Resources Unit (401-479-1327).

Birds Nesting On or Under Bridges

A variety of bird species nest on or under bridges. Before commencing any bridge-related construction activities during the breeding season (March 1st-August 31st), the Contractor shall inspect the bridge(s) for bird nests. If any active nest is discovered, work shall stop and the RIDOT Natural Resources Unit shall be contacted.

The Contractor shall not disturb any active nests (completed or partially completed nests that contain eggs or nestlings). If any active nest is discovered and the nest cannot be avoided, work shall stop and the RIDOT Natural Resources Unit shall be contacted to evaluate the potential for disturbance of nests. The project will avoid the removal and destruction of active bird nests except through federal and state approved options.

At no time should large nests of ospreys, hawks, falcons or eagles be destroyed, as these species return to the same nest site year after year and reuse the same nest. If a raptor nest must be removed for work to take place, it can be moved in cooperation with the USFWS.

All questions relating to migratory birds and nesting should be directed to the RIDOT Natural Resources Unit (401-479-1327).

Taking of a Migratory Bird

The taking of a migratory bird shall be reported to the RIDOT Natural Resources Unit (401-479-1327). The Contractor shall be responsible for all penalties levied by the USFWS for the taking of a migratory bird. The USFWS's rules define "take" for MBTA purposes to mean to "pursue, hunt, shoot, wound, kill, trap, capture, or collect."

All questions relating to migratory birds and nesting should be directed to the RIDOT Natural Resources Unit (401-479-1327).

NORTHERN LONG-EARED BAT & TRICOLORED BAT PROTECTION

(To be used with FHWA Programmatic Consultation) The U.S. Fish and Wildlife Service has listed the Northern Long-Eared Bat and Tricolored Bat as endangered under the Endangered Species Act (ESA) and the following requirements exist to protect the bats and their habitat. This project has been reviewed in accordance with the provisions of the Range-Wide Programmatic Consultation for Indiana Bat, Northern Long-Eared Bat and Tricolored Bat coordinated among the Federal Highway Administration, Federal Railroad Administration, Federal Transit Administration and the U.S. Fish and Wildlife Service; compliance with the requirements below are necessary to ensure compliance with the ESA.

The Contractor shall ensure all personnel working on the project site are made aware of the potential presence and protected status of the Northern Long-Eared Bat and Tricolored Bat. The Contractor shall ensure all personnel working on the project site are aware of all environmental commitments related to the Northern Long-Eared Bat and Tricolored Bat. The Northern Long-Eared Bat and Tricolored Bat flyer shall be made available to all personnel and posted on project bulletin boards (see Appendix "I").

Contact the RIDOT Natural Resources Unit (401-479-1327) for questions about project limits, restrictions, or conservation measures.

Tree Cutting and Clearing Restriction:

All phases/aspects of the project (e.g., temporary work areas, alignments) will be modified, to the extent practicable, to avoid tree removal* in excess of what is required to implement the project safely.

All tree removal of trees **equal to or greater than 3 inch diameter at breast height** shall be completed between *November 1st and March 31st*. The Contractor shall ensure tree removal is limited to that specified in project plans. Prior to tree removal the Contractor shall layout the clearing limits in the field (e.g. with bright orange flagging/fencing or another marking method, subsidiary to the Work) to ensure all tree clearing work is within the tree clearing limits.

*"Tree removal" is defined by the USFWS as cutting down, harvesting, destroying, trimming, or manipulating in any other way the trees, saplings, snags, or any other form of woody vegetation likely to be used by northern long-eared bats.

10. ASBESTOS ABATEMENT

The project includes Asbestos Abatement protocols for certain locations and materials within the project. See Appendix "G" and Appendix "H" for additional information.

11. SURVEY LAYOUT NOTES

Field survey work was performed by Crossman Engineering. See Job Specific Plan Symbols, Legend & Notes plan in the contract plan set and signed Existing Conditions Survey plan in the Contract Plans for additional information.

The Engineer will not authorize construction activities to begin until they are satisfied that all appropriate ground control has been established, tied down, and duly recorded in standard field books. It is the Contractor's responsibility to ensure that construction layout is provided in sufficient detail, thereby enabling them to construct the project in conformity with the plans, details, and specifications.

There will be no separate payment for this type of survey work, as indicated in Section 934 of the Standard Specifications.

12. GEOTECHNICAL DATA REPORT & BORING LOGS

A Geotechnical Data Report for Bridge Group 17C including boring logs was prepared by GZA GeoEnvironmental, Inc. See Appendix "F" for a copy of the report.

Appendix A

Rhode Island Energy Guidelines for Working Around Gas Rhode Island Energy - Gas Installation Specifications



10/01/12 Revised 2/6/2023

Guidelines for Working Around Gas Utilities

Notification of Construction

RI Energy requests at least six week advanced notification prior to the start of construction to perform scheduled work in the proposed project area. Be aware that some gas work cannot be performed during the normal heating season.

Support and Protect

Contractor must call Dig Safe to have the gas mains and services marked out before construction. Care must be exercised when saw cutting over any gas infrastructure, especially services, which are more shallow than the main. Depth of gas mains vary. Contractor shall dig test pits in order to ascertain exact locations, cover and invert elevations, clearances, alignment and operating status of existing gas facilities. Contractor shall exercise extreme caution when excavating in the vicinity of any gas facility. Hand excavation shall be performed to locate all gas facilities and whenever digging within 24" of gas facilities. If cover over gas piping is removed the required cover must be replaced, or if not feasible, RI Energy must be notified for review of the issue. Undermined gas pipe must be adequately supported and protected from damage. Contact RI Energy engineer for guidelines regarding proper pipe support. Significant vibration from pile driving and such may negatively impact gas facilities, particularly cast iron mains and regulator station vaults. Contact RI Energy engineer prior to performing such activities as well as operations which may undermine gas facilities such as micro-tunneling, jacking, directional drilling, etc.

Gas Leaks

For any gas leak please call 800-640-1595 immediately.

Types of Gas Facilities

Gas mains and services are made of several different materials and contain a wide range of pressures. Typical materials used for buried gas pipe includes bare steel, coated steel, plastic, cast iron, wrought iron, ductile iron, and copper. Never assume that a pipe is not gas. At times gas lines are inserted into older lines to save excavation cost.

Exposure of Gas Facilities

If any gas mains or services become exposed, RI Energy must be notified to inspect the line before backfilling. Also any damage that may have been made to the pipe or pipe coating will need to be repaired by RI Energy before backfilling. Contact our Dispatch office at (877) 304-1203 for inspection. It is important that even minor damage or scrapes be reported to RI Energy. Backfill shall be 6" of sand around the gas line and clean compacted fill above.



Regulator Stations

Gas regulator stations are particularly critical facilities and RI Energy must be notified whenever work is to take place within 200 feet of a station. Regulator stations are typically in buried vaults accessed through either manhole covers or aluminum doors. ONLY AUTHORIZED RI ENERGY EMPLOYEES SHALL OPEN A REGULATOR STATION VAULT. Be aware that a complex nest of piping and valves often exists in the vicinity outside the vaults.

Blasting

RI Energy must be notified of any blasting that will take place within 200 feet of a gas utility. RI Energy must be supplied with a detailed blast plan for blasting in the vicinity of gas facilities. The evaluation of the blast plan by a RI Energy engineer may take some time, therefore, blast plan data should be submitted at least two weeks prior to the planned blasting. As a general rule blasting will not be permitted within 10 feet of a gas line and PPV at the nearest gas pipe shall not exceed 5 in/sec. PPV at the nearest gas main shall be monitored.

Valves

Access to gas valves must be maintained throughout construction and left at grade at the end of construction. Should valve boxes be damaged and need to be replaced RI Energy will supply replacements upon request. NEVER OPERATE A GAS VALVE. ONLY RI ENERGY SHALL OPERATE GAS VALVES.

Clearance

Adequate clearance must be provided when installing other utilities, foundations, structures, etc. Contact RI Energy engineer for guidance.

Rhode Island Energy

RIDOT BRIDGE GROUP 17C REPLACEMENT OF NEWELL BRIDGE NO. 204 OVER EAST SNEECH BROOK DIAMOND HILL RD @ NATE WHIPPLE HIGHWAY CUMBERLAND, RI

MAIN INSTALLATION ACROSS BRIDGE

SECTION 100

JOB DESCRIPTION AND DESIGN SPECIFICS

July 19, 2024

101 JOB DESCRIPTION

- 101.1 Work within this project by the RIDOT appointed bridge contractor consists of:
 - 101.11 Installation of (2) 8-in galvanized steel sleeves approx. 4 feet long in each of the backwall areas for the gas main carrier to pass through.
- 101.2 Work within this project by the bridge contractor's appointed Rhode Island Energy approved gas contractor consists of:
 - 101.21 Installation of approx. 50 feet of 4-in steel pipe across the new bridge including (3) double roller supports with 220/240 casing insulators through the 8-inch steel backwall sleeves, including poly spacers, link seals and casing end seals, and ending with a 4-in weld cap.
 - 101.22 Removal of each of the 4-in weld caps and continuing soil side installation with a weld elbowed installation into the ground for anchorage and depth to tie into the existing gas main.
 - 101.23 Soil side install continues with 20 total feet of 4-inch steel till the approach slab end then transitions to plastic with the installation of approx. 95 total feet of 6-inch plastic buried pipe in the roadway elbowed over on the ends and transitioned to steel and welded to the existing 4-in steel 60psig main with a 3-way tee.
 - 101.24 Installation of (2) 2-in shortstop fittings adjacent to the 3-way tee's.

- 101.25 Pressure testing the buried plastic and steel bridge piping together to 90 psig for a minimum of 1 hour in accordance with Section 106 and document CNST04003.
- 101.26 Installation of cathodic protection consisting of (4) bonding wire test stations with no anodes and approx. 95 ft of bonding wire installed along the plastic ... install in accordance with document 030026-CS.
- 101.27 Development of "as-built" drawings based upon the Rhode Island Energy Location Plans.
- 101.3 All work included in this section shall be performed by the state appointed Rhode Island Energy approved gas piping contractor.
- 101.4 Live gas tie-ins and cut-offs will be done exclusively by Rhode Island Energy.
- 101.5 Rhode Island Energy reserves the right to make inspections of the work during the progress of installation and, where required, have all installation sequences performed in the presence of its inspector or authorized agent.

102 MATERIAL AVAILABILITY

102.1 All piping materials, including pipe, valves, fittings and appurtenances shall be provided by Rhode Island Energy and shall not include padding sand and special backfill. Material shall be available at a designated Rhode Island Energy location during normal working hours. Transportation to the job site, including loading and unloading, shall be performed by the contractor.

103 MATERIAL – SPECIFICATIONS – PIPE

103.1 Eight-Inch Steel Pipe: (Gas Sleeve in each Backwall)

- 103.11 Length Required: Approximately 4 feet each, Total 8 feet
- 103.12 Specifications: API-5L, Grade B, PSL-2, HFW, bevel ends, double random lengths.
- 103.13 Wall Thickness std wall (t): 0.322"
- 103.14 Longitudinal Joint Factor (E): 1.0
- 103.15 Minimum Specific Yield Strength (S); 35,000 psi
- 103.16 Pipe Coating: Galvanized

Newell Bridge, Cumberland July 19, 2024 Sheet 3 of 5

103.1 Four-Inch Steel Pipe: (Gas Main Across Bridge & Buried)

- 103.11 Length Required: Approximately 70 feet
- 103.12 Specifications: API-5L, Grade B, PSL-1, HFW, bevel ends, double random lengths.
- 103.13 Wall Thickness std wall(t): 0.237"
- 103.14 Longitudinal Joint Factor (E): 1.0
- 103.15 Minimum Specific Yield Strength (S); 35,000 psi
- 103.16 Design Hoop Stress @ psig =

 $\frac{(100)(P)(D)}{2(t)(E)(S)} = \frac{(100)(35)(6.625)}{(2)(0.280)(1.0)(35,000)} = 3.4\% \text{ of SMYS}$

103.17 Pipe Coating: Pritec 15/50

103.2 Six-Inch Plastic Pipe: (Gas Main Buried)

- 103.21 Length Required: Approximately 95 feet
- 103.22 Specifications: Performance Pipe Yellowstripe 8300, PE 4710/PE100, Polyethylene Pipe, 40-foot lengths.
- 103.23 Wall Thickness (t): 0.602" (DR 11.0)

103.24 Long Term Hydrostatic Strength (S): 1600 psi @ 73.4 degrees F

103.25 Maximum Operating Pressure $(2xSxtx0.32) = (2x1600x0.602x0.32) = 102 \text{ psig}^{*}$ (D-t) (6.625-0.602)

• These values are limited to a maximum of 100 psig by DOT Code of Federal Regulations, Part 192, Title 49, Subpart C, Section 192.123.

104 OTHER MATERIAL

104.1 Weld Valves

104.11 None

104.2 Plastic Valves

104.21 (2) 6" Full Bore

Newell Bridge, Cumberland July 19, 2024 Sheet 4 of 5

104.3 Weld Fittings:

104.31 Elbow: (4) 4"x 45 degree 104.32 Transition Fitting: (4) 4" 104.33 TDW Shortstop Fitting: (2) 4" 104.34 TDW 3-Way Tee: (2) 4" 104.35 Weld Cap: (2) 4"

104.4 Plastic Fittings

104.41 Reducer: (4) 4"x 6" 104.42 Elbow: (2) 6"x 90 degree 104.43 Transition Fitting: See Weld Fittings

104.5 Other:

105.51 (6) Road Box

(3) 4" LB&A Double Roller Supports w/ Non-Conduc Rollers 304SS (w 4 extra nuts ea & 24" long threaded rods)

(3) 4" Glasmesh FRP 220/240 Casing Insulators

- (6) 4"x 8" Plastic Casing Spacers
- (2) 4"x 8" Rubber Casing End Seals
- (28) LS-475-S Link Seals
- 95' of Tracing Wire
- 95' of 6" Marking Tape
- 95' of Bonding Cable

105 INSTALLATION OF MAIN

- 105.1 All plastic pipe installation work shall conform to the requirements of Rhode Island Energy's Installation Specifications and Code Reconciliation: Section 200A, Installation of Polyethylene Gas Mains, Revised January 18, 1988.
- 105.2 All steel pipe installation work shall conform to the requirements of Rhode Island Energy's Installation and Code Reconciliation: Section 200, Installation of Steel Gas Mains, Revised March 26, 1992 and Installation of Steel Distribution Mains CNST04005 and the RIDOT project plans.
- 105.3 The installation of the gas main across the bridge and within the roadway shall conform to the RIDOT Newell Bridge Installation Plans and Details and to the Rhode Island Energy Newell Bridge Installation Plans and Details.
- 105.4 Installations will terminate as close to the tie-in points as practical. All tie-in locations must be aligned with the existing pipe when installed.

Newell Bridge, Cumberland July 19, 2024 Sheet 5 of 5

> 105.5 Any damage to the pipe or pipe coating should be immediately brought to the attention of Rhode Island Energy construction department or the on-site inspector for inspection and, if necessary, repair or replacement.

106 PRESSURE TEST

- 106.1 Pressure test the buried plastic and steel bridge piping together both to 90 psig for a minimum of 1 hour in accordance with Rhode Island Energy document CNST04003—Pressure Testing Mains Operating Below 125psig.
- 106.2 Test Media: Compressed air, inert gas, or any combination thereof. The contractor shall provide the air compressor and/or inert gas for all required pressure testing.

INSTALLATION SPECIFICATIONS AND CODE RECONCILIATION SECTION 200 INSTALLATION OF STEEL GAS MAIN MARCH 21, 1975

Revised 2/6/2023

201 CONSTRUCTION SPECIFICS (FR 192.5, .303; ANSI 841.21)

All construction work performed by the Contractor shall be in accordance with the primary and supplemental publications of 49CFR 1921/; the ANSI Standard2/, B31.8-1968 Code; and RI Energy Construction Specifications and Drawings. The Contractor shall also abide by the Terms and Conditions for General Construction. Any variation with, deletion from, or additions to the named references and the Project Drawings due to local conditions must originate from sound and specific reason. Arbitrary changes are not permitted. Remedial work required for noncompliance, unacceptable changes or additions, or acceptable changes or additions, where neither have received proper Company approval, will be at the Contractor's expense.

In the event specifics are detailed by both 49CFR 192 and ANSI B31.8, the more rigorous requirement shall control, unless specifically stated otherwise by the Company specifications.

All construction must meet the requirements of a Class 4 installation as defined by 49CFR 192 and as provided for by these specifications. All piping shall be designed for Design Hoop Stress levels of less than 20% of SMYS.

As used in this section "may" means "is permitted to" or "is authorized to," "may not" means "is not permitted to" or "is not authorized to," and "shall" is used in the mandatory and imperative sense.

202 GENERAL REQUIREMENTS (FR 192.305, .307; ANSI 841.221, .223, .271)

- **202.01** The Company has authority to enforce construction in accordance with Subsection 201, including the removal and replacement of any section of main that fails to meet the described standards.
 - 1) The Federal Register, Volume 35, Number 161, Title 49 Part 192 (Under OPS, DOT) dated August 19, 1970 and effective November 1970, is designated as 49CFR 192. Specific paragraph references are preceded by FR to indicate source.
 - 2) The ANSI Standard B31.8-1968 is designated as ANSI B31.8. Specific paragraph references are preceded by ANSI as to indicate source.
 - 3) RI Energy and its agents are designated as the Company.
- **202.02** Material Handling
 - **202.02.1** Materials issued to the Contractor by the Company become his responsibility. The Contractor shall assume the responsibility of inventory and inspection before acceptance of materials. Methods of material transfer, handling, and storage are subject to the approval of the Company. Any material determined, by the sole determination of the Company, to be unsatisfactory for construction after acceptance by the Contractor, shall be repaired to the complete satisfaction of the Company, or replaced at the Contractor's expense. Any damage discovered previous to the Contractor's acceptance shall be replaced by the Company or repaired by the Contractor at a predetermined expense to the Company.
 - **202.02.2** The hauling and stringing of pipe or other materials shall be performed in such manner as to prevent damage and to cause the least interference with the normal use of roadways or driveways. Gaps shall be left at intervals to permit passage of vehicles

and pedestrians. In the event transportation by rail or flatcar is involved, the provisions of API Standard RP5L1 shall apply.

- **202.02.3** Should it become necessary for the Contractor to store material, the Contractor shall do so at his expense and in a manner that will prevent damage from weather, vandalism, or other causes.
- **202.03** Primary material shall be provided by the Company. The Contractor shall provide all equipment necessary for installation of the facility as designated in Table 200-1, unless otherwise specified.
- **202.04** The Contractor shall provide all equipment necessary to test for gas tightness, structure integrity, and pigging as designated in Table 200-2, unless otherwise specified.
- **202.05** Permits for installation shall be provided by the Company. All permits for the transportation of pipe and other materials, and for construction procedures such as blasting shall be secured by the Contractor.

203 TRENCHING (FR 192.327; ANSI 841.16)

- **203.01** The route of the main shall be as shown on the plans. The specifications and drawings unless otherwise required by field conditions and specifically agreed to by the Company. The Contractor shall conduct his operations so that paving, driveway, and sidewalk cuts are bridged immediately after the trenching operation. Work shall be executed by the Contractor so that all fire hydrants and hydrant valves adjacent to the work area shall be readily accessible to fire-fighting apparatus. Under no conditions shall any materials or obstacles be placed within 15 feet of any fire hydrant or control valve unless by permit secured by the Contractor from the proper authorities.
- **203.02** All trenching operations shall conform to local Township, Town, City, State, or Federal specifications as required with regard to the overall length, width, and depth of the operation.
- **203.03** Trenching includes all excavation whether by trenching machine, power shovel, hand or other methods, which may be necessary for preparation of the pipe bed. The Company Specifications require a normal minimum cover of 44 inches. In no event shall depths less than 24 inches be allowed.
- **203.04** Payment for ledge removal by blasting or other means is limited to the specified dimensions of the trench plus an additional six inches (6") below the pipe for padding. Any ledge removal in excess, without the written approval of the Company, will be at the expense of the Contractor.
- **203.05** The normal width of the trench shall be the diameter of the pipe plus 14" unless otherwise required to meet minimum trench requirements, or as specified or agreed on in order to facilitate or expedite installation, or to improve the efficiency of construction so as to attain minimum cost of overall installation. Opening width may be increased as necessary for the installation of valves, fittings and appurtenances.
- **203.06** The minimum width of the trench shall be that which is necessary for the proper fabrication, installation, and padding or other protection of the pipeline and all materials and appurtenances associated with the system installation, unless otherwise specified by the Company.
- **203.07** A minimum clearance of three feet (3') shall be maintained between parallel runs, and a minimum clearance of six inches (6") shall be maintained at crossings of the Company main and a foreign structure, or shall be otherwise protected as specifically indicated by design detail. Where in-field conditions require variations with the above, the Design Engineer shall be consulted and methods of appropriate protection shall be inaccordance with his specifications.
- 203.08 Pavement Cuts
 - **203.08.1** Pavement shall be cut to the full trench width prior to excavation to provide a neat patch joint.

- **203.08.2** Where required by local governmental agencies, paving shall be cut six inches (6") wider than the trench in order to provide for a neat joint overlap on both sides unless one edge is adjacent to the curbing.
- **203.08.3** No payment for paving excavations wider than specified will be allowed unless specifically agreed to by the Company.
- **203.09** Surface materials must be kept separate from potential backfill material. The term "surface materials" includes asphalt, oiled sand, concrete, brick, paving stones, loam, and other surface substance which is dissimilar to the substrata materials of the trench excavation. Trenching includes removal and appropriate disposition of this material as the work progresses.
- **203.10** Care shall be taken in placing excavated material so that lawns and shrubs are not covered or damaged, and, if possible, streets and gutters are left unobstructed.
- **203.11** Excess excavated material that is acceptable for backfill shall be removed to a site satisfactory to the Company at the Contractor's expense.
- **203.12** Precautions shall be taken to avoid damage to any existing utilities. Proper support shall be provided before excavating below any utility line. However, when a utility line is accidentally damaged or broken, the Contractor shall immediately notify the authorities of the utility involve Contractor shall then cooperate and assist with immediate repair of damaged line, and in no case shall the trench be backfilled before approval by authorities of the involved utility is obtained.
- **203.13** Shoring will be provided in accordance with OSHA requirements, or where soil conditions are such that excessive widening of the trench occurs due to caving.

204 INSTALLATION

Welding or other joining procedure must be continuous from the point of origin to terminus and intermittent installations along the route of traverse is not permitted without special approval of the Design Engineer.

Due to difficulties encountered in support and alignment of "double joined" sections of double random lengths of pipe, the practice of double joining is not allowed.

All connecting points with the existing main must be aligned and spaced for connection to the existing main when installed in order that connecting segments may be true and continuous.

Adequate methods shall be employed to prevent the entrance of dirt or debris into the pipe during stringing and installation.

All pipe and associated equipment shall be inspected prior to installation but after stringing to insure that damage has not occurred to the hardware or protective coating during handling. The provisions of Subsection 202.02 apply to any damages discovered.

205 WELDING OF STEEL (FR 192.223, .225, .227, .229, 231, .235, .241,.243, .245; ANSI 821.3, 823.1, 824.1, 825.1, .2, 828.1, 841.22)

- 205.01 General
 - **205.01.1** Welds and welding procedures must be qualified under API Standard 1104 and Subpart E of 49CFR 192.
 - **205.01.2** All welders must be qualified under RI Energy Safety Department Standards and FR 192.227.
 - **205.01.3** The quality of field welds will be checked by either destructive or nondestructive inspection.

- **205.01.3.1** Nondestructive inspection shall consist of radiographic examination over the entire weld circumference, unless otherwise specified.
- **205.01.3.2** Destructive testing requires a field weld to be cut from the pipe as a cylinder and tested according to the requirements of API standard 1104.
- **205.01.4** The Contractor will cooperate with the Company during inspection of welded joints. The welds inspected will be selected at random by the Company. Inspected weld shall be identified and noted on the Foreman's Work Order. If a weld is nondestructively tested, the testing company will examine the welds and classify approval or rejection.
- **205.01.5** If there is any reason to believe that a field weld is defective after nondestructive testing and it cannot be repaired in accordance with FR 192.245, it shall be removed from the line with the cost for cutting and rewelding borne by the Contractor. The welder may be disqualified for further construction if deemed appropriate by the Company.
- **205.02** Testing and Inspection
 - **205.02.1** Initial weld inspection for steel main
 - **205.02.1.1** A testing company shall be employed by the Company, at its expense, unless otherwise specified, to nondestructively test by techniques described in Sub-section 205.01.3.1 all welds done by each welder during his first day on the job. A minimum of five (5) welds shall be tested during the testing period. Results of the test must be satisfactory and shall be reported to the project inspector and the Company Safety Department before proceeding with further construction.
 - **205.02.1.2** The radiographic contractor must provide documentary evidence that the radiographer who interprets the film is a certified SNT-TC-1A Level 11 or Level 111 radiographer.
 - **205.02.2** In addition to Subsection 205.02.1, the Company will inspect, at its expense, 10% of the project's welds. The specifications of Subsections 205.01.4 and 205.01.5 will apply.
- **205.03** Welding Specifics
 - **205.03.1** A firm and positive grounding electrical connection must be established. Connecting apparatus equal to or exceeding the requirements of the Pipetron Quick-Bond Clamp is required, and jury-rig attachments such as homemade spring bars, etc., are disallowed.
 - **205.03.2** Arc burns have been found to cause serious stress concentrations in pipe. The metallurgical notch caused by arc burns shall be prevented or eliminated in all mains. Arc burns resulting from faulty grounds and connections are not allowed and must be removed by cutting out the damaged portion of the pipe as a cylinder and replaced at the Contractor's expense. (See Subsection 209.)
 - **205.03.3** It is suggested that grinding be given consideration after both the root and hot pass of welds in order to assure a clean field for subsequent welding. This practice may obviate an area of potential weld test failure.
 - **205.03.4** The different wall thickness between pipe and fittings requires that the thicker wall be ground or the weld joint backwelded to avoid stress concentrations.

206 BENDS, ELBOWS, AND FITTINGS (FR 192.147, .149, .155, .313, .315; ANSI 831.21, .22, .23, .3, .4, .5, 841.23)

- 206.01 Flanges, Gaskets and Bolting
 - **206.01.1** Steel pipeline flanges shall be manufactured in accordance with MSS Standard SP-44.
 - **206.01.2** Flange connections between 150 psi steel and Class 125 cast iron flanges will be made with flat faced flanges, full faced gaskets, and allow steel bolts conforming to ASTM Specification A-193.
 - **206.01.3** Flange connections between steel flanges will be made with raised face flanges, flat ring gaskets, and alloy steel bolts conforming to ASTM Specification A-193.
 - **206.01.4** PSI products flange insulating gasket kits shall be used wherever points of isolation are specified in Section 900. Gasket kit specification is as follows: PSI Gasket Seal Type E with Phenolic Retainer and Nitrile (Buna N) Seal equipped with one piece sleeve and washers and steel washers. Alloy-steel bolts conforming to ASTM Specification A-193 with A-194 nuts shall be used in conjunction with raised face flanges when both are steel and with flat face flanges when one is steel and the other Class 125 cast iron.

206.02 Elbows and Bends

- **206.02.1** Miter bends shall be disallowed.
- **206.02.2** Elbows, reducers, tees, laterals, and other fittings shall be standard wall conforming with ASTM Speciation A-234, Grade WPB.
- **206.02.3** Field formed cold bends may be used for changes of direction less than 1-1/2 degrees per diameter length. They must be free from buckling, cracks, or other evidence of mechanical damage, and shall be formed with an appropriate die or shoe such that the deformation does not produce a difference between the maximum and minimum diameters in excess of 2.5% of the nominal diameter.
- **206.02.4** For greater changes in direction than that provided for in Subsection 206.02.3, factorymade wrought-steel welding elbows or transverse segments, cut there from shall be used. For transverse segments, the arc length measured along the crotch shall be at least on inch (1") on pipe sizes two inches (2") and larger.
- 206.03 Branch Connections
 - **206.03.1** Tees and branches for branch connections with d/D ratios greater than 1/3 and operating at less than 20% of SMYS, shall be fabricated with factory manufactured fittings having smooth configuration and manufactured in accordance with applicable codes. Where the complete fitting cannot be used, full encirclement fittings shall be provided in accordance with Figure 831-D of the ANSI B31.8.
 - **206.03.2** Tees or laterals for branch connections or manifolds, with d/D ratios of less than 1/3 and operating at less than 20% of SMYS, may be field- or shop fabricated from pipe, if approved by the Design Engineer.
 - **206.03.3** Thread-o-let and weld-o-let penetrations shall be clean cut holes for the full diameter of the connection.

207 SURFACE DAMAGE AND IMPERFECTIONS (FR 192.309)

207.01 Inspection for the detection of dents, gouges, and grooves shall be made prior to the pipe section being welded into the line, or just ahead of the backfilling operation. A dent is a depression which produces a gross disturbance in the curvature of the pipe wall without reducing the pipe wall thickness. A gouge or groove results where the metal of the pipe has been disrupted producing

minor changes in wall thickness and resulting points of stress concentrators.

- **207.02** A dent shall be removed where: it contains a stress concentrator such as a gouge, groove, or scratch; or if the dent results in a depression of more than 2% of the nominal pipe diameter, enclosed in an area of less than one pipe diameter in any direction. Gouges and grooves shall always be removed.
- **207.03** Dents requiring removal shall be removed by cutting out the damaged portion of the pipe as a cylinder, or shall be repaired by installing full encirclement reinforcing segments to completely lap the damaged area. Patching or coupon replacement is not permissible.
- **207.04** A gouge or groove shall be removed by smoothly grinding or sanding, provided that the remaining wall thickness is not less than that required by the pipe specification tolerances. Where the remaining wall thickness becomes less than the pipe specification tolerances, repair must be made by cutting out the damaged portion of the pipe as a cylinder. Patching or coupon replacement is not permitted.

208 INTERNAL CLEANING

- **208.01** Prior to the pressure test, each section of completed construction shall be "pigged" to remove any scale, dirt, or debris which may have been inadvertently entrained. Pigging shall be repeated until the exit air is free of traces of dust and dirt. The Contractor shall be responsible, at his expense, for locating and removing a trapped pig, and shall repair the main as may be necessary. It is recommended that a signaling device be incorporated in the pig for easy location. The pig used by the Contractor must be approved by the Company.
- **208.02** Care must be exercised during the pigging operation to prevent the pressure from exceeding the design pressure of the main.
- **208.03** The Contractor shall install a device to restrain and retain the pig upon exit from the main such that injury or damage to persons or property will be prevented. Any device judged unsuitable by the Company may be rejected.

209 PIPE TESTING (FR 192.507, .509, .619; ANSI 841.3, .42, .43, .44, .5, 845.22)

- **209.01** New mains shall be tested after construction and before being placed in operation to demonstrate gas tightness and structural integrity.
- **209.02** All steel welded main shall have a design operating pressure of 75 psig, be qualified for a Class 4 location as defined by the Register, and be tested to a minimum pressure of 150 psig, unless otherwise specified.
- **209.03** Testing procedure shall be by either standup static test or by direct inspection methods as designated in the Job Specifications.
 - **209.03.1** Standup static testing prodecure shall require a minimum of 24 hours, after compression, for stabilization, and a static period of an additional 24 hours. The temperature and pressure shall be recorded immediately after the initial compression, after the 24-hour stabilization period, and after the 24-hour static test period. Pressures adjusted for temperature differential must remain static over the test period.
 - **209.03.2** Direct inspection testing procedure shall require that all welds and mechanical connections be soap tested by thoroughly soaping the area and determining that no leaks are evident. During the test, the soaped area must be thoroughly shielded from wind or other disturbances. A standup period, at the required test pressure, must be maintained for a minimum of one hour prior to initiation of the test.
 - **209.03.3** The pipe should be open and free to the test when possible.

- **209.04** The test medium shall be air, inert gas (N2 or CO2), or any combination thereof, unless otherwise specified.
- **209.05** Costs shall be borne by the Contractor for repair of defects disclosed by testing, and any further testing necessitated thereby, except that the Company shall assume responsibility for defects which are shown to be solely attributable to materials which the Company has supplied.
- **209.06** All temporary connections to the line shall be repaired to the satisfaction of the Company.

210 PADDING AND BACKFILL (FR 192.319; ANSI 841.273)

- **210.01** Backfill must be performed in a manner to provide firm support under the pipe. Care shall be used to prevent damage to the coating, by such means as the use of rock-shield material, or by making the initial fill with rock-free material to a sufficient depth over the main to prevent rock damage. (See Subsection 210.08)
- **210.02** Where it is indicated that soil conditions will be unstable, a clean backfill material must be provided around the pipe to provide continuous support along the section. (Clay soils can undergo severe volume changes resulting in soil plasticity with corresponding shifting and heaving producing increased secondary stresses on the pipeline.)
- **210.03** The Contractor shall provide all equipment necessary to place padding and backfill. Padding material shall be uniform natural bank sand, graded from all particles sizes smaller than the No. 10 sieve and coarser than a No. 200. Backfill material shall consist of natural bank gravel having durable particles graded from fine (greater than No. 200) to coarse (2-inch) in a reasonable uniform combination with no boulders or stones larger than 2-inch in size. Padding and backfill material must be free of lumps, frozen material, cinders, ash rubbish, paving material, clay, loam, rocks and any other material which might subject pipe, associated equipment, or coating, to injury. All padding and backfilled material must meet the approval of the Company. All wood used for blocking or shoring must be removed from the trench prior to the backfill operation.
- **210.04** Where suitable material, approved by the Company, for either padding or backfill is available along the line of traverse, the Contractor shall haul and place such fill under the contract price without extra cost. Where suitable fill is not available from excavated materials, by the sole determination of the Company, the Contractor shall procure, haul, and place suitable gravel to the satisfaction of the Company.
- **210.05** The Contractor shall submit a unit price for gravel fill, purchased, hauled, and placed, and shall be entitled to payment determined as the product of said price quotation and placed quantities only when such quantities are appropriately measured or otherwise accounted for at delivery and approved by the Company as correctly received. Gravel needed to replace fill which has been excavated from the trench and made unusable, in the opinion of the Company, due to failure by the Contractor to exercise reasonable care to save such otherwise usable fill in accordance with these specifications, and gravel to fill that portion of a trench opening which exceeds the width of the nominal run of the trench or the maximum trench width otherwise specified, whichever is the lesser, will be provided by the Contractor without extra cost, unless previously and specifically agreed to by the Company.
- **210.06** Where the Contractor fails to specify a unit price for gravel fill as an extra in his original quotation, no payment will be allowed.
- **210.07** Where padding is necessary in the opinion of the Company, it shall be placed in the trench bottom to a minimum depth of four inches (4") and to a minimum dimension of six inches (6") elsewhere around the pipe so as to completely encase and protect the pipe, piping materials, and coating from injury.
- **210.08** Wherever, in the opinion of the Company, the conditions of trench and surroundings is such that damage to any coating used would result from using machine methods of placing backfill to a depth of six inches (6") above pipe, Contractor shall place same by hand shoveling. This backfill, to a depth of six inches (6") above the top of appurtenances along the top of the main, shall be

placed as soon as possible after the pipe has been lowered in the trench.

- **210.09** Backfill shall be carefully placed under the main and any appurtenances, and compaction of the backfill to the original density is required by wetting and/or tamping by six-inch (6") layers to a level six inches (6") above the top of appurtenances along the top of the main. Similar compaction of the remainder of the trench shall be performed if required by local governmental authorities.
- **210.10** Whenever crossing under an existing Cast Iron or Ductile Iron main is required, the backfill material below the Cast Iron or Ductile Iron main shall be compacted to its original density by wetting and tamping in four-inch (4") layers to a level six inches (6") above the top of appurtenances along the top of the main.
- **210.11** The trench shall be backfilled to a point of within ten feet (10') of the end of the completed main installed each day. The trench may be left open overnight, to the extent necessary to permit testing by direct inspection methods, provided the amount is not in excess of that allowed by local governmental authorities.

211 RESURFACING

- **211.01** All roadway paving, sidewalk resurfacing, backfilling and compaction shall conform to local Township, Town, City, State or Federal specifications as required.
- **211.02** All resurfacing shall be kept in repair by the Contractor for two years. If settling or any other defect is evident, the Contractor shall make repairs at his expense until the resurfacing is determined acceptable by all governmental bodies concerned.

212 PURGING (FR 192.629, .751; ANSI 841.28)

- **212.01** A minimum of two (2) tested gascopes are required for each test when purging. Continuous sampling with two (2) gascopes at each location is required during each purge and all welding and cutting operations.
- **212.02** Purging During Welding and Cutting Operations
 - **212.02.1** If no gas is detected on the L.E.L. scale of either of two (2) gascopes, or the reading is below 10% L.E.L., it is safe to proceed without adding nitrogen.
 - **212.02.2** If gas is detected and complete shut-off is impossible or impractical, nitrogen must be added either upstream or downstream of the welding or cutting operation until the combustible gas concentration of the mixture is decreased to a point where the admixture of any additional amount of air will not result in a flammable mixture.
 - **212.02.2.1** If nitrogen is added downstream of the welding or cutting operation, it is safe to proceed only when sufficient nitrogen has been added to reduce the L.E.L. readings taken upstream of the welding or cutting operation with two (2) gascopes, to below 30% L.E.L. in nitrogen
 - **212.02.2.2** Although it is normally preferred that nitrogen be added downstream of the welding or cutting operation, specific conditions may require that nitrogen be added at an upstream location. If nitrogen is added upstream of the welding or cutting operation, it is safe to preceed only when sufficient nitrogen has been added to reduce the L.E.L. readings taken downstream of the welding or cutting operation with two (2) gascopes, to below 20% L.E.L. in nitrogen.

INSTALLATION SPECIFICATIONS AND CODE RECONCILIATION SECTION 200A INSTALLATION OF POLYETHYLENE GAS MAIN AUGUST 6, 1976 (REVISED JANUARY 24, 1979) (REVISED JANUARY 18, 1988)

201A CONSTRUCTION SPECIFICS

- **201.01A** These specifications set forth standards to which the installation of piping shall adhere to.
- **201.02A** The specifications cover the installation and handling procedures for polyethylene pipe, tubing, and associated fittings when used for mains and service piping.
- **201.03A** Piping material is manufactured as outlined by the Department of Transportation Title 49, Part 192, TRANSPORTATION OF NATURAL AND OTHER GAS BY PIPELINE MINIMUM SAFETY REGULATIONS and the ANSI B 31.8 Code for GAS TRANSMISSION AND DISTRIBUTION PIPING SYSTEM based on ASTM D-2513 SPECIFICATION FOR THERMOPLASTIC GAS PRESSURE PIPE TUBING FITTINGS.

202A GENERAL REQUIREMENTS

202.02A The Company has the authority to enforce these specifications in accordance with Section 200 (Installation of Steel Gas Main, 3/21/75) and Section 200A (Installation of Polyethylene Gas Main, 8/6/76), (Revised January 24, 1979). This includes the stipulation that: "Any variation with, deletion from, or additions to the named references and the Project Drawings due to local conditions must originate from sound and specific reason. Arbitrary changes are not permitted. Remedial work required for noncompliance, unacceptable changes or additions, or acceptable changes or additions, where neither have received prior Company approval, will be at the Contractor's expense."

203A MATERIAL STORAGE AND HANDLING

- **203.01A** For periods of storage in excess of two weeks, the piping material shall be stored indoors, or shall be covered so as to shield it from direct sunlight. It shall be stacked so that no out-of-round flattening, or "egging" results. Exposure to excessive heat or harmful chemicals shall be avoided.
- **203.02A** When the polyethylene material must be transported, the pipe, tubing and fittings shall be handled carefully. Proper support so as to minimize movement between the pipe and its support to avoid kinking, cutting, gouging, or abrading the surface will be maintained.
- **203.03A** Prior to actual installation, polyethylene piping shall be stored on the job site in a cool dry place protected from direct sunlight.
- **203.04A** Polyethylene pipe shall not be left exposed in the work area during the absence of the installation crew, because of possible damage by vehicular or foot traffic, construction equipment and miscellaneous foreign objects.

204A INSTALLATION PROCEDURES

- **204.01A** The polyethylene pipe must be carefully inspected for cuts, gouges, deep scratches and other imperfections before use. Defective pipe will be rejected.
- **204.02A** Adequate attention must be given to polyethylene pipe during placement in the trench to prevent kinking, stretching or the striking of sharp objects. The pipe shall be snaked in the trench to permit contraction. The extra length installed shall amount to one foot per 100 feet of trench.

- **204.03A** The bottom of the trench shall be as smooth and level as practical and free of rocks and other abrasive materials. Sand or soil, free of stones and other abrasive materials, shall be used as base to protect the polyethylene piping from damage. A minimum of six inches of padding sand will be installed at the bottom of the trench.
- **204.04A** Polyethylene mains require a normal minimum cover of 44 inches. Depths less than 24 inches will not be allowed.
- **204.05A** Polyethylene service pipe shall be installed at least 30 inches below grade between the curb and the property line. The cover at the foundation wall will be 24 inches below finished grade. Depths less than 18 inches cover on private property and 24 inches cover on public property will not be allowed.
- **204.06A** A minimum clearance of three feet shall be maintained between parallel runs. A minimum clearance of twelve inches shall be maintained at crossings of a Company main and a foreign structure, or shall otherwise be protected as specifically indicated by design detail. Where infield conditions require variations with the above, the Design Engineer shall be consulted and methods of appropriate protection shall be in accordance with his specifications.
- **204.07A** Polyethylene pipe may be bent in conformity with the natural curve of a reel. Otherwise changes in direction must be made with suitable fittings. Miter bends are not permitted and neither are bends which exhibit buckles, cracks, or other evidence of damage. There shall be a minimum of 3 feet straight run out of a branching tee, coupling, service tee, meter riser or any rigid filling before the initiation of a bend.
- **204.08A** Polyethylene pipe or tubing will be cut utilizing special cutters designed for plastic pipe to insure square cut ends.
- **204.09A** Adequate pipe anchorage will be properly installed as noted on design specifications.

205A PIPELINE SUPPORTS

- **205.01A** When polyethylene pipe or tubing is used and soil conditions are indicated to be unstable, additional support shall be provided by installing a protective polyethylene sleeve.
- **205.02A** A protective polyethylene sleeve will be installed at metal-to-plastic transition fittings, at services with a saddle and tapping tee, and at those locations where forces on the pipe may result in bending and shear stresses.
- **205.03A** The protective polyethylene sleeve will be installed in such a way that it fits securely around the pipe being protected. It will be backfilled and compacted as soon as possible to provide ground support across the span. The installation of a protective polyethylene sleeve does not eliminate the need for proper backfilling and compaction around and under the sleeve. Care must be exercised to insure that the protective polyethylene sleeve does not move from its intended position during backfilling and tamping.

206A POLYETHYLENE FUSION AND MECHANICAL JOINTS

- **206.01A** When field joints are required, the polyethylene pipe shall be cut several inches too long and the extra length distributed as slack as near as possible to the joint. This will provide for contraction of the polyethylene pipe due to temperature changes and should be in proportion of 12 inches per 100 feet of pipe.
- 206.02A Heat-fusion joints. Each heat-fusion joint on polyethylene pipe must comply with the following:
 - (1) A butt heat-fusion joint must be joined by a device that holds the heater element square to the ends of the piping, compresses the heated ends together, and holds the

pipe in proper alignment while the polyethylene hardens.

- (2) A socket heat-fusion joint must be joined by a device that heats the mating surfaces of the joint uniformly and simultaneously to essentially the same temperature
- (3) Heat may not be applied with a torch or other open flame.
- **206.03A** Heat-fusion joint will not be disturbed until it has properly set for 10 minutes. Cooling time for "rough handling" will be 20 minutes after the last joint has set.
- **206.04A** Any fused joint of questionable integrity will be removed and repaired at contractor expense.
- **206.05A** Mechanical joints each compression-type mechanical joint on polyethylene pipe must comply with the following:-
 - (1) The gasket material in the compression coupling must be compatible with the polyethylene.
 - (2) A metal insert stiffener must be used in conjunction with the coupling.
 - (3) They must effectively resist pull-out forces caused by thermal contraction or by external loading forces.

207A VALVES AND METER RISERS

- **207.01A** Valves installed in polyethylene systems must be properly anchored to prevent rotational stresses when operated.
- 207.02A Meter risers shall be installed to permit easy installation of the meter at the foundation wall.
- **207.03A** Curb boxes or other enclosures shall not be supported by the polyethylene pipe, or in any way impose stress on the pipe.

208A PRESSURE TESTING PROCEDURES

- **208.01A** Pressure testing will not be initiated until 20 minutes after the final heat fused joint has set.
- **208.02A** In accordance with the rating of polyethylene pipe and tubing, installations shall be tested to a pressure of at least 1.5 times the maximum operating pressure or 90 psig, whichever is greater. The test pressure, however, must not exceed three times the design pressure of the pipe or 100 psig, whichever is the least. All joints will be soap tested at this pressure before being backfilled.
- **208.03A** Temperature of the polyethylene pipe shall not exceed 100°F during test.

209A PIPE LOCATOR AND MARKING TAPE

- **209.01A** To facilitate location of directly buried pipe, No. 12 AWG THW coated copper wire will be strung along the full length of the pipe. The locator wire will be secured to the steel meter riser at the building wall. If the polyethylene service is connected to a polyethylene main, the locator wires for both the service and the main must be connected by stripping sufficient insulation to twist the bare copper end of the service wire onto a bare section of the main wire within six inches (6") of the service tee. This connection must be thoroughly coated with TAPECOAT MASTIC.
- **209.02A** The locator wire and marking tape shall be installed after backfilling and tamping 12 inches above all direct burial polyethylene mains and stubs. The marking tape is high-visibility orange and is imprinted with the words, "CAUTION BURIED GAS LINE BELOW".

210A STATIC ELECTRICITY

210.01A Procedures to minimize the possibility of static electricity will include keeping the pipe wet (water spray, wet rag, wet rope), wetting down both the polyethylene pipe and excavation hole before attempting to work on the piping, and by performing squeeze-off operations in a separate excavation hole, removed from and upwind of any escaping gas.

211A INSPECTION AND REPAIR

- **211.01A** If any section of polyethylene pipe or tubing is found to be kinked, flattened, or out-of-round, or if there is evidence of damage due to sunlight, excessive heat, or chemicals, the damaged section must be replaced.
- **211.02A** All metal fittings and bare metallic surfaces used in conjunction with polyethylene pipe shall not be coated by any material which requires the application of heat. Fittings and surfaces requiring coating protection shall be protected by thorough application of Tapecoat Mastic.

211A PADDING AND BACKFILL

- **212.01A** Padding sand will be installed in such a way that there will be a layer of 6 inches below and 12 inches above the pipe.
- **212.02A** Care must be exercised when backfilling to insure that no sharp objects or rocks will be in contact with the pipe. Mechanical tamping shall not be used until 12 inches of cover has been placed over the pipe.
- **212.03A** Special care shall be exercised to backfill and tamp the excess soil at the service tee and at all other joints of the polyethylene system.
- **212.04A** The Contractor shall provide all equipment necessary to place padding and backfill. Padding material shall be uniform natural bank sand, graded from all particles sizes smaller than the No. 10 sieve and coarser than a No. 200. Backfill material shall consist of natural bank gravel having durable particles graded from fine (greater than No. 200) to coarse (2-inch) in a reasonably uniform combination with no boulders or stones larger than 2-inch in size. Padding and backfill material must be free of lumps, frozen material, cinders, ash, rubbish, paving material, clay, loam, rocks and any other material which might subject pipe, associated equipment, or coating, to injury. All padding and backfill material must meet the approval of the Company. All wood used for blocking or shoring must be removed from the trench prior to the backfill operation.

GUIDELINES FOR BACKFILL AND COMPACTION AROUND GAS PIPES

PERMANENT BACKFILL AND COMPACTION

DESCRIPTION

This work shall consist of backfilling and compacting all disturbed material at and around existing gas pipes and facilities. Size of pipe, material, length of exposed pipe, location of pipe, etc. will all follow the same set of Standards and Specifications stipulated by RI Energy. If design plans call for gas pipes to be exposed and supported (sheeting methods not used), then at the time of backfill, all disturbed material below the invert of the gas pipe shall be removed and replaced with suitable roadway or trench excavation material or bedding material. The contractor will not be allowed to replace this disturbed material with the same existing material if it has now been mixed with adjacent silty subsoil (clays) and fines. Well-graded gravel and sands will be used to replace the unsuitable material when no excess suitable material is available on site. Soils with high humus or mineral content should not be used to for backfill because they can promote electrolytic or bacterial attack.

Backfilling the gas pipe should begin immediately after the work in that location is complete. The region within 6" alongside and on top of the gas pipe shall be backfilled with padding sand (free of cinders, ash, and rock). In no case shall the material used for backfilling in this region contain any stones. Backfill shall consist of suitable materials (medium to coarse sands with little or no silts) placed in layers of not more than 8" to 12" after compaction.

Trench spoil material shall be suitable for backfilling above the padding material as long as rocks with a diameter larger than 3" are removed. The layers shall be mechanically compacted to the industry standard of 95% or until a density comparable to the unexcavated material is achieved. In some instances, flooding with water is an acceptable method of compaction but only if the back-fill material is clean, coarse, and adequate drainage is existent. The above specified backfill material is essential in order to attain the degree of compaction necessary to avoid future settlement.

Tracing Wire, if necessary, shall be installed 2" to 6" below Plastic gas pipes.

Warning Tape shall be installed approximately 12" above the gas pipe.

A minimum of 2" temporary pavement shall be applied over the trench as soon as possible.


NOTES:

- A. THIS CONSTRUCTION STANDARD SHALL BE USED TO SUPPORT PLASTIC OR STEEL GAS FACILITIES WHICH ARE UNDERMINED AND EXPOSED BY CONSTRUCTION ACTIVITY.
- B. IF AN EXCAVATION IS MADE AT ANY DISTANCE PARALLEL TO THE GAS FACILITY WITH ADEQUATE OSHA STRUCTURAL SHORING, AS SHOWN IN DETAIL "A", OR IF A STABLE SOIL CONDITION WITH SUFFICIENT COVER ABOVE THE PIPE'S CENTERLINE EXISTS, AS SHOWN IN DETAIL "B", THEN SUPPORTS ARE NOT REQUIRED. UNSTABLE SOIL IS DEFINED AS A SOIL WHICH CAN CAUSE "SOIL RUN OUT" FROM BENEATH THE PIPE (e.g., WASHOUT, SOFT CLAY, etc.,) OR CAN SHIFT DUE TO CONSTRUCTION ACTIVITY, VIBRATIONS, etc.; AND CAUSE A SOIL SCENARIO TO OCCUR AS SHOWN IN DETAIL "B" TO REQUIRE PIPE SUPPORT.
- C. IF AN EXCAVATION CROSSES OR RUNS PARALLEL TO A GAS FACILITY, SUPPORTS MAY NOT BE REQUIRED IF THE EXPOSED SECTION OF PLASTIC PIPES IS 3' OR LESS AND STEEL PIPES 7' OR LESS.
- ALL EXCAVATIONS SHALL BE PERFORMED IN ACCORDANCE WITH THE REQUIREMENTS OF THE ONE CALL DIG SAFE PROGRAM USING THE APPROPRIATE MARK OUT, TEST HOLES AND EXCAVATION TO AVOID DAMAGE TO PIPE OR PIPE COATINGS:
 NEW YORK STATE CODE RULE 753
 - MA CHAPTER 82 SECTION 40, GENERAL LAWS, REGULATING NOTICE REQUIREMENTS FOR EXCAVATION IN PUBLIC WAYS
 - NH DIG SAFE LAW, RSA 374 REGULATING UNDERGROUND UTILITY DAMAGE PREVENTION SYSTEM
- E. USE OF THIS CONSTRUCTION STANDARD DOES NOT RELIEVE THE CONSTRUCTION AGENCY OR AUTHORITY OR THEIR RESPECTIVE CONTRACTORS OF RESPONSIBILITY FOR DAMAGES. ALL DAMAGES WILL BE REPAIRED IN ACCORDANCE WITH EXISTING STANDARDS AND THE APPROPRIATE PARTY SHALL BE BILLED FOR ALL EXPENSES.
- F. GAS FACILITIES SHOULD NOT BE UNDERMINED WITHOUT ADEQUATE SUPPORT (DETAIL A). ALL SUPPORT LINES SHALL BE TENSIONED SO THAT NO DEFLECTION WILL OCCUR WHEN THE FACILITY IS UNDERMINED. THIS TENSION SHALL BE CHECKED AT THE START AND END OF EACH DAY AND ADJUSTED AS NECESSARY.
- G. WHERE A COUPLING, GAS SERVICE, CLAMP, VALVE, DRIP LINE OR OTHER APPURTENANCE EXISTS ON THE EXPOSED SECTION OF MAIN, AN ADDITIONAL SUPPORT SHALL BE INSTALLED AT THE LOCATION.
- H. WHEN SUPPORTING AN EXPOSED FACILITY, THE PIPE COATING SHALL BE PROTECTED WITH ROCK SHIELD (ITEM ID 00301097), OR OTHER LIKE MATERIAL CUT TO A MINIMUM WIDTH OF ½ THE SUPPORTED PIPE DIAMETER. SUPPORT LINES SHALL BE A MINIMUM OF ¾" POLYPROPYLENE OR BETTER.
- I. SUPPORTS FOR GAS TRANSMISSION FACILITIES SHALL BE REVIEWED WITH GAS ENGINEERING PRIOR TO INSTALLATION.
- J. THE MAXIMUM SPACING BETWEEN SUPPORTS FOR STEEL FACILITIES SHALL BE AS FOLLOWS: 7' SPACING FOR ½" AND 1 ¼" STEEL 10' SPACING FOR 2" STEEL 15' SPACING FOR 3" AND 4" STEEL 20' SPACING FOR 6" AND LARGER STEEL
- K. THE MAXIMUM SPACING BETWEEN SUPPORTS FOR PLASTIC FACILITIES SHALL BE AS FOLLOWS : 3 'SPACING FOR 2" AND SMALLER PLASTIC 6' SPACING FOR 4" AND LARGER PLASTIC
- L. VIBRATING MACHINES ARE ALLOWED OVER STEEL OR PLASTIC FACILITIES WITH 24" OR GREATER COVER. HAND HELD MECHANICAL. TAMPER IS ACCEPTABLE OVER ANY FACILITY WITH 12" OR GREATER COVER.
- M. WHEN CONSTRUCTION ACTIVITY IS COMPLETED, CLEAN FILL SHALL BE COMPACTED AROUND AND UNDER THE GAS FACILITY BEFORE REMOVING SUPPORTS.
- N. SEE REGIONAL PBWK5010 PROCEDURES FOR **REPLACEMENT** REQUIREMENTS OF CAST IRON PIPE.

No.	ITEM	CODE No.
	BILL OF MATERIAL	

GUIDELINES FOR WORKING AROUND CORROSION CONTROL SYSTEM COMPONENTS

DESCRIPTION

This guideline shall control work around existing Corrosion Control components. Replacement of test stations, anodes and test wire leads shall comply with Standards and Specifications stipulated by RI Energy. If design plans call for work in the area of Corrosion Control components, care must be taken to prevent damage to such components.

GENERAL NATIONALGRID CONSIDERATIONS

The contractor shall perform replacement of damaged corrosion control test boxes, resetting of disturbed test boxes, and ensure a minimum of 12" of excess wire above the rim of the test box after set to finished grade. Wires shall not be pulled taught to achieve the 12" above the box, as this will cause stress on the wire connection at the main. Wires needing to be lengthened, damaged corrosion control components i.e. wires, or wire coating, shall require notification to the Corrosion Control Department (508-948-8432) to initiate inspection/repair or replacement of the damaged components.

Backfilling exposed Corrosion Control wire components should begin immediately after the work in that location is complete. The region within 6" alongside and on top of the connector wires shall be backfilled with padding sand (free of cinders, ash, and rock). Test wire leads must be kept with enough slack to prevent stress on the points where the wires connect to the gas main. Trench spoil material shall be suitable for backfilling above the padding material as long as rocks with a diameter larger than 3" are removed. The 8" to 12" backfill layers shall be mechanically compacted to the industry standard of 95%.

Cast Iron Gas Main Encroachment Prevention

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<u>CI Encroachments</u>

- CI Encroachments can occur when excavating under or next to CI gas mains
- CI Encroachments can occur <u>Even when a gas main</u> is not exposed
- Two types of Encroachments: Undermine and Parallel
 - Undermine Encroachments (Cross Trench)
 - Parallel Encroachments



Cross Trench - Rules of Thumb:

- The shorter the undermine, the better
- Limiting the length of the undermine to 30" or less will always avoid an encroachment

Cross Trench with Tunneling



Elevation View

Tunneling is an Effective Way of Preventing Encroachments

Cast Iron Encroachments can occur even when the Gas Main is not Exposed



Angle of Influence:

- The AOI extends up from the bottom of the excavation at a 45 degree angle
- The AOI can affect cast iron gas mains even if the gas main is not exposed

Excavation Next to Gas Main

(view from above looking down)



 Limiting the length of the parallel to 7'-6" or less will always avoid an encroachment

Parallel Excavation with Sloped Ends



Elevation View

Sloping the ends of an Excavation can be an Effective Way of Preventing Encroachments

Trenching Next to Gas Main

(view from above looking down)



Plan View

Parallel Trenching Rules of Thumb:

- The greater the separation between the gas main and the trench, the better
- Keeping the distance between the excavation and the gas main greater than the (depth of the trench - 2') will in most cases avoid an encroachment

CI Encroachments

- CI Encroachments can occur when excavating under or next to CI gas mains
- CI Encroachments can occur <u>Even when a gas main</u> <u>is not exposed</u>
- Two types of Encroachments: Undermine and Parallel
 - Undermine Encroachments (Cross Trench)
 - In all cases, the shorter the length of gas main undermined the better
 - Limiting undermining to less than 30" in length will always avoid an encroachment
 - Tunneling under the gas main can be an effective method for avoiding encroachments

Parallel Encroachments

- Parallel Encroachments can occur even if the gas main is not exposed
- In all cases, the greater the separation between the gas main and the parallel excavation, the better
- Limiting excavations adjacent to gas main to less than 7'-6" in length will always avoid an encroachment
- Keeping parallel excavations more than the (depth of the trench – 2') from gas main in most cases will prevent an encroachment





Mains

Revision 1.3 – 7/15/2018

Installing Steel Distribution Mains CNST04005

1. Purpose

This document describes the requirements for installing steel distribution mains that will have maximum allowable operating pressures (MAOPs) below 125 psig and less than 20% SMYS. If the pipeline will exceed either of these parameters, then the pipeline shall be installed in accordance with Installing Transmission Lines and Pipelines Operating at 125 psig or Greater [CNST04006].

2. Responsibilities

Construct & Maintain or Designee shall be responsible for:

Installing steel distribution mains in accordance with this procedure

3. Personal & Process Safety

All required PPE shall be worn and utilized in accordance with the Rhode Island Energy Safety Policy.

4. Operator Qualification Required Tasks [Qualified or Directed & Observed]

- Task 31 Installation of Pipe
- Task 49 Mechanical Joining of Pipe Other Than Plastic
- Task 53 Non-Destructive Testing of Welds
- Task 54 Welding on a Pipeline
- Task 70 Abnormal Operating Conditions and Properties of Natural Gas



Not all personnel shall be required to perform all tasks associated with this document. Therefore, Operations personnel shall only be required to qualify on those tasks associated with the tasks they will perform.

5. Content

General

Mains shall be installed in accordance with the line and grade specified on the drawings for the job. Where no grade is specified, mains shall be installed in accordance with the cover requirements in the section below titled, "Steel Pipe Installation."
 The trench width shall be as described in the specifications or as directed by the Rhode Island Energy representative. There shall be no undercutting of the pavement.
 All underground facilities shall be marked prior to construction. Test holes may be required to verify and determine the depth, size, and exact location of all subsurface facilities that cross or lay parallel (within the affected work area) to any excavation for the proposed installation of the gas main prior to excavating the line trench.
 Where drawings or field conditions indicate the presence of other substructures and facilities notification, mark-out, and excavation shall be in accordance with regional damage prevention procedures.



Installing Steel Distribution Mains

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Mains

Revision 1.3 – 7/15/2018

Pipeline welding shall be performed in accordance with <u>Welding policy [CNST05002]</u> and <u>Pipe</u> <u>Welding Safety [CNST05003]</u> .
All excavations shall be performed in accordance with <u>Standards for Working in Excavations M-1301</u> .
The finished pipe shall be clean, dry, and free of foreign material.
Install cathodic protection in accordance with Rhode Island Energy's specifications including, <u>Corrosion Design Criteria [COR01100]</u> . Steel mains including welds, valves, and fittings shall be properly coated in accordance with the <u>Facility Coating Guide [030031-CS]</u> .
Anodes and test stations shall be installed as designated on the drawings. In the absence of specific guidance on the drawings or from Corrosion Engineering, refer to <u>Installation of Magnesium Anodes [COR04001]</u> and <u>Installation of Test Stations for Cathodic Protection</u> [COR04003].
Insulating joints shall be installed as designated on the drawings. Install and electrically-test each insulated joint in accordance with <u>Installation of Insulating Joints for Cathodic Protection</u> [COR04005].
Pipeline markers shall be installed at locations indicated on the installation drawings and as per, Pipeline Markers for Main and Transmission Lines [DAM01020].
If supplemental odorization is required prior to placing the pipeline in service, it shall be performed in accordance with <u>Supplemental Odorization for New Piping [INR06002]</u> .
Prior to and after the pressure test, the pipeline shall be cleaned to the satisfaction of Rhode Island Energy. Brush pigs shall be used to clean the pipe before testing. After a hydrostatic test, foam pigs shall be used to remove all water and to dry the pipeline. Sufficient "pig" runs shall be made to ensure a clean, dry pipeline prior to introducing natural gas into the pipeline. This is determined by measuring dust penetration into the pig. Generally, dust penetration of less than 1 inch is acceptable.
For pressure testing mains, refer to <u>Pressure Testing Mains Operating Below 125 psig</u> [CNST04003].
If there is a plan to uprate the pipeline in the future to operate at pressures of 125 psig or greater, or operate at 20% SMYS or greater, then the pipeline shall be installed and repaired in accordance with the more stringent requirements described in Installing Transmission Lines and Pipelines Operating at 125 psig or Greater [CNST04006].
For situations where pipelines are exposed to the public (such as aboveground piping) and where the pipeline may be used by the public for unintended purposes, signs should be posted to warn the public to keep away from these facilities.

Inspections

Perform a thorough field inspection to prevent damaged/gouged, grooved pipe, or coating from being installed in the completed pipeline. The inspection shall be performed by someone other



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Installing Steel Distribution Mains

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	than a person who participated in the construction (49 CFR §192.305).
	When an applied-coating holiday test is required, perform the test in accordance with <u>Testing of</u> <u>Pipe Coating [COR03001]</u> .
	Inspect the bottom of the excavation just before the pipe is lowered in and remove any object that could harm the piping.
	Inspect the fit of the pipe to the ditch prior to backfilling to prevent unnecessary strain on the pipe.
4	All exposed existing piping shall be inspected for hazardous liquids in accordance with <u>Handling</u> <u>Contaminated Materials and Piping [SHE02001]</u> prior to working on the pipe.
	Examine all exposed existing piping for external corrosion and the condition of the coating in accordance with <u>Inspection of Exposed Steel Pipe for Corrosion [COR02020]</u> . In addition, existing piping, whenever accessible or removed such as at tie-ins, shall be internally examined for signs of corrosion in accordance with <u>Inspection of Exposed Steel Pipe for Corrosion [COR02020]</u> .

Supporting Existing Structures and Utilities

Exposed gas facilities shall be properly supported
Gas facilities that will be crossed or exposed shall be excavated in accordance with regional damage prevention procedures.
If an in-service unrestrained coupling is unearthed on a high-pressure (pressures above low pressure) pipeline while excavating, then precautions shall be taken to prevent pipe pullout. Unrestrained couplings located near pipeline offsets or bends present a higher risk than couplings on straight segments of pipe due to the longitudinal force applied to the offset or bend from the pressure in the pipe. Prior to fully exposing the unrestrained coupling, in order to prevent pipe pullout, ensure that the pipe on each side of the coupling is embedded in the earth before fully exposing the coupling.
If an unrestrained coupling is unearthed after a pipeline offset or bend is unearthed, then further excavation work shall stop until the pipeline is adequately braced horizontally and vertically.
If Gas Control and Gas Systems Engineering provide permission for the operating pressure of the in-service pipeline to be lowered or for the pipeline to be shut down, then the risk of pipe pullout will be reduced.
An unrestrained coupling that is unearthed shall be restrained using anchorage lugs and threaded rods. Provide plastic insulators for the reinforcing lugs as necessary (refer to Construction standard, Supplemental Restraining of Non-Restraining Mechanical Compression Couplings and Caps on Steel Pipe [MAIN-6220]). Following the installation of an insulating coupling, contact Corrosion for testing.
If visual inspection is not conclusive about whether an exposed coupling is self-restraining or unrestrained, refer to the markings on the coupling to determine its status. Contact Engineering if guidance is needed.
The Installer shall notify the Rhode Island Energy field representative when cast iron mains, eight (8) inches and less in diameter, are exposed. Prior to undermining any cast iron, refer to the regional cast iron encroachment policy.



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	Adequately support all other subsurface facilities to ensure protection from damage. Any damage shall be promptly reported to Supervision.
	Maintain the integrity of fences, poles, and other structures adjacent to the trench, pits, and work area.
	Exercise care to prevent damage to transverse and parallel curbs, sidewalks, driveways, and property monuments.

Materials

Steel pipes shall comply with the material specifications contained in <u>Steel Pipe API 5L Grade B</u>, <u>X42 and Greater [120020-MS]</u>. Factory-coated steel pipes shall comply with <u>External Coating of</u> <u>Steel Pipe with Pritec [MS-017]</u> or <u>Coating and Inspection of Steel Pipe with Fusion Bonded</u> <u>Epoxy (FBE) and Powercrete Abrasion Resistant Epoxy Overlay [MS-018]</u>.

Steel fittings such as flanges, ells, tees, reducers, and caps shall be forged welded fittings in accordance with Rhode Island Energy specifications. Prior to the start of construction, material certifications and material grades/markings shall be verified to ensure that they meet the design requirements.

Steel Pipe Installation

The pipe shall be laid without causing unnecessary strain on the pipe. The pipe shall be laid with as few vertical and horizontal changes in direction as possible.

The bottom of the trench shall be relatively smooth and free of any objects which may damage the pipe coating. The backfill material to be used around the main and for a minimum of 6 inches over the piping shall be free of any material that could be harmful to the pipe surface (see <u>Backfill</u> and <u>Restoration [CNST01003]</u>).

In areas where it is not practicable to pad the trench with sand prior to lowering the pipe into the trench, sandbags shall be placed in the trench to act as a bed for the pipe. These bags shall generally be placed at intervals of 10 feet or as directed. After the pipe has been positioned and welded in the trench, sand backfill acceptable to the Rhode Island Energy field representative shall be placed. The sandbags shall then be broken in a manner acceptable to the Rhode Island Energy field representative.

The amount of cover from the top of the pipeline (e.g., tees, couplings, and other appurtenances) to finished grade shall be as shown on the project drawings and as described in the project specifications. If not specified, the pipeline shall be installed with the covers shown in Table 1 below. The cover may be varied at the discretion of the Rhode Island Energy Project Engineer in order to avoid interference with existing structures or high ground water conditions. Where an underground structure prevents the installation of the pipeline with the minimum cover, obtain permission from the appropriate agency, where required, and protect the pipeline (such as with steel plates). For highway and railroad crossings, refer to <u>Design Requirements for Installation of Casings [ENG04010]</u> for casing cover requirements when casings are required and <u>Design of Distribution Mains [ENG04001]</u>.



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Table 1: Cover Requirements				
	Streets and Road the State	ds Not Controlled by or the DOT	State Rigi	nt-of-Way
Region	Recommended	Minimum	Below the Roadway Minimum	Outside the Roadway but within the Right-of- Way Minimum
RI	30"	24"	36"	36"
All	48 inches of cover in consolidated rock be	n soil below navigable rive etween the top of the pipe	er, stream, or harbor or 2 and the underwater nati	4 inches in ural bottom.
Each pipe of the pipe	segment shall be th before the joints are	oroughly cleaned to rei e aligned for welding.	move all dirt or foreign	matter from the ends
In order to installed or enter the p suitable m	keep the inside of the the open ends of the open ends of the open ends of the tipe after laying and eans before the final	he pipe free of foreign r he pipeline at the end o joining operations have I test.	material, a suitable tam of each day. Any foreig e been completed shal	np plug or cap shall be In matter which may I be removed by
If pigging is full-restrair	s to be performed to nt or welded end cap	clean the pipe and the os shall be used to resi	e need arises to cap the st the pressure from the	e laterals, then only e pigging operations.
It is imperative that the inside of the pipe be kept free and clean of all obstructions, and it shall be the Installer's responsibility to protect the pipe from any hazard. In the event that a storm, broken water main, or other condition should allow water and muck into the line, the Installer shall be required to clean the pipe in a manner that is acceptable to Rhode Island Energy.				
At the end prevent mo	of each day's work, ovement in the even	the pipe shall be capp t the trench becomes fl	ed, made watertight, a looded.	nd anchored to
The preferred clearance for distribution piping when crossing other underground structures is 12 inches. However, distribution piping shall have a minimum clearance of 6 inches from other underground facilities or structures not used in conjunction with the installation of the gas pipeline, except as follows. Where this distance cannot be achieved, a field representative shall notify Gas Systems Engineering for guidance on how to protect the gas distribution facility. The minimum clearance, provided the main is suitably protected from other underground structures, is 2 inches (4 inches minimum preferred for LI).				
Note: 6 inches of clearance from water lines should be maintained, whenever practicable.				
Considera proximity	ation should be giver to steam lines.	n regarding protection f	or the coating on steel	pipes located in close
Changes in direction of piping should be made with welded fittings such as ells, whenever possible. If field cold bending is necessary for line pipe, it shall be performed in accordance with, <u>Field Cold Bending of Line Pipe [CNST04007]</u> to ensure that pipe ovality limits and minimum radii requirements are met. Upon completion of the bending, check the coating for defects in accordance with <u>Testing of Pipe Coating [COR03001]</u> and repair it in accordance with,				



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Application of Coating Systems [COR02001].

The preferred method of joining steel pipe is by welding. The cut end of the pipe shall be beveled in accordance with <u>Welding Policy [CNST05002]</u>. Welding elbows furnished by Rhode Island Energy should be either 90 degrees or 45 degrees long radius with a wall thickness that at least matches the pipe thickness.

When welded sections of pipe are lowered into the trench, care shall be taken to prevent a permanent bend or distortion to the pipe.

Repairing Steel Pipe

Each imperfection or damage that impairs the serviceability of the pipe shall be repaired or removed. If repair is made by grinding, the remaining wall thickness shall at least be equal to either (49 CFR §192.309(a)):

- The minimum thickness required by the tolerances in the specification to which the pipe was manufactured; or
- The nominal wall thickness required for the design pressure of the pipeline.

A gouge, groove, arc burn, or dent shall <u>not</u> be repaired by insert patching or pounding out.

Each gouge, groove, arc burn, or dent that is removed from a length of pipe shall be removed by cutting out the damaged portion as a cylinder. The cylinder shall be replaced with a new pipe that meets the design specification.

Notches and laminations on pipe ends shall not be repaired; the damaged portion shall be removed as a cylinder and the pipe ends re-beveled.

Pipe Joining

Unless otherwise noted, joints between pipe sections, valves, and fittings shall be welded. All welding, inspections, and nondestructive testing shall be performed in accordance with <u>Welding</u> <u>Policy [CNST05002]</u> and <u>Pipe Welding Safety [CNST05003]</u> .
Whenever practicable, joints shall not be located under active tracks or any other substructures.
The welder and inspector or foreman shall visually examine the quality of all the welds.
All steel distribution mains shall have at least 10% of all welds nondestructively examined in accordance with <u>Welding Policy [CNST05002]</u> . A Main Field Record (weld map) should be created with the welds numbered along the length of the pipeline.
Compression couplings and caps may only be used under extenuating circumstances, such as for tie-ins, where welding is not practicable. If non-restraining mechanical couplings or caps are used, then they shall be restrained in the field using anchorage lugs and threaded rods in accordance with <u>Supplemental Restraining of Non-Restraining Mechanical Compression</u> <u>Couplings and Caps on Steel Pipe [MAIN-6220]</u> . Approved self-restraining couplings and caps require no further supplemental restraining when installed in accordance with the manufacturer's



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specifications.

Threaded joints shall not be used, unless specifically approved by the Rhode Island Energy VP of Gas Systems Engineering or the VP of Asset Management for a particular project or condition.

Valves

Valves shall be furnished as specified in the particular project specifications and they shall be of the appropriate pressure class to meet or exceed the MAOP of the pipeline.
All valves should be below grade and shall have roadway boxes which provide access to the operating mechanism.
At Rhode Island Energy's option, valves may be pressure tested prior to installation as specified in the particular project specification.
The Installer shall use extreme care when making a valve weld.
If the valve leaks during a pressure test Rhode Island Energy, at its option, may arrange to contact the manufacturer's representative for assistance, and if Rhode Island Energy determines it necessary, a replacement valve will be ordered.
The Installer shall leave line valves in an open position and purge valves in a closed position. The Installer shall not open and close valves after installation unless directed by the Field representative.
System Interconnection Valves – A minimum of two valves placed in series that are used for manual pressure control between two mains operating at different MAOPs may be installed provided they are approved by Gas Control and Long-Term Planning. The valves shall be installed in accordance with current standards or special designs as specified by Project Engineering & Design, but as a minimum shall be of the appropriate pressure class for the system with the highest MAOP and shall be installed with pressure taps upstream, downstream, and between both valves. Lock high-pressure valves to prevent unauthorized operation.

Application and Testing of Protective Coating

Field-Applied Coating:

The external surfaces of bare steel pipe, pipe welded joints, anode and test lead connections, valves, fittings, and pipe coating damage, etc., shall be cleaned and coated in accordance with, <u>Application of Coating Systems [COR02001]</u>.

Tests and Inspection of Coating:

 Standards of Acceptance: It is the intent of this procedure to require protective coating completely free from holidays and other faults. Work not satisfying these requirements shall be repaired in accordance with <u>Application of Coating Systems [COR02001]</u>. Care shall be exercised during all phases of the application of protective coating to prevent cleaning, priming, or coating materials from damaging or adhering to any internal surfaces. Prior to backfilling, holiday testing should be performed by jeep testing the pipe in accordance with



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Testing of Pipe Coating [COR03001].

• Rhode Island Energy Acceptance Test: Rhode Island Energy or its representative will perform a pipe-to-earth electrical potential test, as it deems necessary, to ensure adequate cathodic protection and coating integrity in accordance with <u>Measuring Pipe-to-Soil Potential</u> [COR03002].

	Recordkeeping					
	Main field records shall be required for all pipe installations per <u>Preparation of Gas Facility</u> <u>Historical Records [CNST01005]</u> .					
	The Installer shall keep a historical record and update all related drawings of work performed and facilities encountered in performing the work. The location of all welds shall be indicated and numbered in sequence on the project historical drawings. These historical records and drawings shall include the following:					
• The locations of pipes, valves, directional drills, welds, mechanical couplings, an stations and offsets relative to the baseline. Cover or elevations relative to the be taken at every weld and sleeve end.						
	 The locations of insulating joints and valves by stations and offsets relative to baseline and take-offs from physical structures such as houses, poles, etc. 					
	 The locations of cathodic protection test stations and attachment to pipe by station, offset, and elevation. 					
	• The locations of subsurface obstructions, listing the type of obstruction by station, offset, and elevation.					
	The final completed historical package shall be presented to the Rhode Island Energy Project Engineer prior to placing the pipeline in service. Refer to <u>Processing Gas Main and New Services</u> <u>Work Packages [GEN03002]</u> .					

6. Knowledge Base & References

Code	Section	Description		
49 CFR	192.309	Repair of steel pipe		
49 CFR	192.309	Repair of steel pipe		
220 CMR	101.6	Additional Rules or Modifications		
220 CMR	101.6	Additional Rules or Modifications		

7. Attachments

No Attachments.



*Axle lengths may affect B dimension. Contact supplier before pre drilling holes.









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	MATERIAL LIST				
	Description	Item ID	MATERIAL NOTES		
1	TEST BOX WITH COVER	(Sm - 445) 9311209 or (Lg - 556) in Prov. 9311208	NON-LOCKING COVER. DISCARD FOOT PIECE. (PREFERRED USAGE FOR GRASS AND DIRT AREAS)		
	or				
	TEST BOX 9" SQUARE HEAVY DUTY		WEIGHS 95 LBS, STREET USE, WITHOUT COVER PREFERRED USAGE FOR ROADWAY INSTALLATIONS		
	COVER FOR 9" SQUARE BOX		NON-LOCKING COVER		
2	WIRE, NO. 8, 7 STRAND	9307539	TEST WIRE ONLY, NOT FOR GROUND BEDS, UPSTATE AND RI WIRE HAS 19 STRANDS.		
3	WIRE, NO. 6, 7 STRAND	9311795	BOND WIRE ONLY, NOT FOR GROUND BEDS		
4	WIRE 1/0 – 19 STRAND 600 V –1/C	NON STOCK	USE IN STRAY CURRENT AREAS		
5	TAPE, PVC - ³ / ₄ " WIDE	9316070	NOT FOR PIPE COATING.		
6	CONNECTOR, SPLIT BOLT, TYPE 6	NON STOCK 9331641	USE WITH NO. 6 CABLE		
	BOLT FOR #8 WIRE	_			
7	CONNECTOR, SPLIT BOLT, TYPE 1/01		USE WITH 1/0 CABLE		
	CONNECTOR, TWIST-ON WIRE NUT	9314631			
8	TAG, ADHESIVE NUMBER 1 NUMBER 2 NUMBER 3	9307918 9307896 9307895	LABEL WITH #1 (N) OR (E), CONSECUTIVELY TO (S) OR (W) SEE DETAILS "B" AND "C"		
	NUMBER 4 LETTER A	9307894 9307893	USE TO LABEL ANODES		
9	GROUNDING CELL	NON-STOCK	AS SPECIFIED BY CORROSION ENGINEERING		
10	ANODE, MAGNESIUM 17LBS	9311183	SATURATE WITH WATER BEFORE BACKFILL. ANODE MAY BE INSTALLED VERTICALLY OR HORIZONTALLY.		
11	COUPON	By Corrosion	MC MILLER OR EQUAL		
12	REFERENCE CELL	By Corrosion	BORIN MFGR INC OR EQUAL		

Appendix B

Preliminary Contract Submittal List

APPENDIX B

PRELIMINARY CONTRACT SUBMITTAL LIST

Submittal No.	Description	Spec No.	Date Submitted to RIDOT	Date Returned to Contractor	Date Returned to RIDOT	Comments
CSL-001	Interpretive Sign & Foundations					
CSL-002	Storm Water Treatment Device 1					
	(4' Diameter)					
CSL-003	Sequence of Construction					
CSL-004	Crane Submittals					
CSL-005	Concrete, Grout and Mortar: Mix					
	Designs, Placing and Methods,					
	Equipment, Curing Plan and					
	Methods, Personnel Resources					
CSL-006	Reinforcing Steel, Splices, Headed					
	Rebar and Inserts					
CSL-007	Bridge Bearing Assembly					
CSL-008	Bridge Name/Seal Tablets					
CSL-009	Expansion Joint Assemblies					
CSL-010	Concrete Subcontractor's					
	Qualifications and Experience					
CSL-011	Structural Computations					
CSL-012	Bridge Demolition; Equipment,					
	Detailed Sequence of Work					
CSL-013	Earth Support Systems/Cofferdams					
	(Sheeting, etc.)					
CSL-014	Temporary Protection Shields for					
	Demolition and Construction					
CSL-015	Architectural Treatments (Special					
	Forms/Liners, Granite Veneer, etc.)					
CSL-016	Concrete Forms; Stay-in Place,					
	Specialty Formwork					
CSL-017	Erection Procedures; Equipment					
	(Type/Size and Placement),					
	Detailed Sequence of Work					
CSL-018	Bridge Barriers					
CSL-019	Pre Construction Survey, Pre/Post					
	Construction Summary of					
	Surrounding Structures and					
	waterway (By Geotechnical Design					
	Firm)					
CSL-020	Fence Details					
	Vielding Procedures					
CSL-022	Precast Concrete Elements (NEX)					
	Beams, Abutments, Bridge					

	Sidewalks, Median Barriers,			
	Parapets with Historic Appearance,			
	Approach Slabs, etc.)			
CSL-023	Joint Fillers			
CSL-024	Waterproofing Membrane			
CSL-025	Non-shrink Grout			
CSL-026	Utility Supports			
CSL-027	Filter Fabric			
CSL-028	Steel Beam Guardrail Approach End			
	Treatment			
CSL-029	Steel Beam Guardrail Transition to			
	Rigid Barrier			
CSL-030	Micropiles			

Appendix C

Transportation Management Plan

Driven fo get you there	LEVEL 3 TRANSPORTATION MANAGEMENT PLAN	Project Name: RI Design Cont RI Construction PTSID #	Bridge Group ′ ract No(s): Contract No(s):	17C - Newell and 2023-EB-028B 2024-CB-045 2602D	Sneech
		Submissio	n: ADV	Date:	8/5/2024
Brief Project Description:	Rhode Island Contract No. 202 town of Cumberland will cons (ABC) methods, pavement rec office, mobilization, and main	PROJECT 24-CB-045, Federal Aid ist of erosion control, r construction, micro mill tenance and protection	INFORMATION Project No. BRO-017C replacement of Newell ling and overlay, utility of traffic.	(002) for Bridge Group 17 Bridge No. 204 using Acc adjustments, pavement r	C - Newell and Sneech in the elerated Bridge Construction marking installation, field
General Work Limits:	The work zone will generally e areas.	encompass the entire re	oadway segment or int	ersection including road	way, sidewalks, and shoulder

WORK ZONE LOCATIONS								
ROADWAY NAME or INTERSECTION	FROM	то	APPROX. LENGTH					
Diamond Hill Road (Route 114)	Nate Whipple Highway (Route 120)	3540 Diamond Hill Road	500'					
Sneech Pond Road	Nate Whipple Highway (West Intersection)	Nate Whipple Highway (East Intersection)	0.75 mi					

General <u>I</u>

Work is expected to commence in Fall 2024 and be completed in Summer 2026.

Project Schedule*:

*The information in this section is not intended to and shall not supersede the approved schedule and milestone/completion dates for the project.

TRAFFIC-RELATED WORK RESTRICTIONS					
General Restrictions:	See Attachment A: General Restrictions Chart, Attachment B: Volume Analysis, and Attachment C: Hourly Volumes. <u>A Trip Generation & Traffic Impact Study report was previously completed to assess the potential impacts of a full closure of</u> Diamond Hill Road (Route 114) for the reconstruction of Newell Bridge No. 204 (see Attachment D).				
Holiday Restrictions:	NOTE: IN CASE OF DISCREPENCY BETWEEN THESE HOLIDAY RESTRICTIONS AND THE GENERAL RESTRICTIONS (ATTACHMENT A), THESE HOLIDAY RESTRICTIONS SHALL GOVERN.				
	New Year's Day (if on weekend, the Holiday is recognized the Monday after) No lane closures on 13:00 New Year's Eve Day through 0:00 day after New Year's (or the Monday if on a weekend)				
	Martin Luther King Day - No lane closures on the Holiday.				
	Presidents Day - No lane closures on the Holiday.				
	Easter Day - No lane closures on the Holiday.				
	Memorial Day - No lane closures from 13:00 Friday Before to 00:00 Tuesday after the Holiday.				
	Juneteenth National Freedom Day - No lane closures on the Holiday (if the Holiday falls on the weekend the holiday is recognized on the Monday following the Holiday.)				
	Independence Day - No lane closures from 13:00 day before until 00:00 the day after the holiday.				
	Victory Day - No lane closures on the Holiday.				
	Labor Day - No lane closures from 13:00 day before until 00:00 the day after the holiday				
	Columbus Day - No lane closures on the holiday.				
	Veteran's Day - No lane closures on the holiday.				
	Election Day (If its an Observed RI State Holiday) - No lane closures on the holiday.				
	Thanksgiving Day - No lane closures shall be performed by the contractor on Wednesday through Sunday of Thanksgiving Week. Work can resume at 00:00 on Monday after the Holiday weekend.				
	Christmas Day (if on weekend, the Holiday is recognized the Monday after) - No lane closures from 13:00 on Christmas Eve through 0:00 day after Christmas				

TEMPORARY TRAFFIC CONTROL PLANS

These RIDOT- and/or Designer-Developed TTC Plans will be used during the work on this project

	Included in:		Includ	led in:	
RIDOT TYPICAL TTC PLANS	TMP Plan Set	DESIGNER-DEVELOPED TTC PLANS	TMP	Plan Set	
Mobile Operation		Typical Work Beyond the Shoulder		X	
Work Beyond the Shoulder		Typical Shoulder Work with Minor Encroachment		X	
Shoulder Closure - Two Lane Road		Typical One-Lane Closure with Alternating Traffic		X	
Shoulder Closure - Limited Access		Detour Plan No. 1		X	
1-Side Lane Shift - Two Lane Road					
2-Side Lane Shift - Two Lane Road					
Lane Shift - Limited Access					
Lane Closure - Two Lane Road					
Lane Closure - Four Lane Road					
Lane Closure - Limited Access					
Double Lane Closure - Limited Access					

PUBLIC INFORMATION PLAN

These strategies will be used to provide information concerning the project to road users and the community

SELECTED STRATEGIES RIDOT travel advisories news releases RIDOT travel advisories web site RIDOT 511 traveler information system Highway advisory radio (HAR) RESPONSIBILITIES / REQUIREMENTS / SPECIAL CONSIDERATIONS RIDOT TMP Imp. Mngr. to send RIDOT notification form to Communications min. 48 hrs. in advance of restrictions. RIDOT TMP Imp. Mngr. to send RIDOT notification form to Communications min. 48 hrs. in advance of restrictions. RIDOT TMP Imp. Mngr. to send RIDOT notification form to RIDOT TMC min. 48 hrs. in advance of restrictions. Permanent (existing) RIDOT HAR systems to be updated by RIDOT TMC as applicable based on submitted CMG Restriction Forms.

TRANSPORTATION OPERATIONS PLAN

These strategies will be used to provide improved transportation operations/safety within project work zones

SELECTED STRATEGIES	RESPONSIBILITIES / REQUIREMENTS / SPECIAL CONSIDERATIONS

PERFORMANCE MONITORING, CHANGES TO TMP, & CONTINGENCIES

The Contractor's TMP Implementation Manager is responsible for keeping the portion of the project being used by public traffic in a condition that (1) safely and adequately accommodates such traffic and (2) is in accordance with the Traffic-Related Work Restrictions, the Temporary Traffic Control Plans, and where appropriate, the other transportation management strategies identified above.

The RIDOT TMP Implementation Manager or his/her responsible designee should (1) inspect the project work zones for conformance with the Temporary Traffic Control Plans, the ATSSA Quality Guidelines for Temporary Traffic Control Devices and Features, and where applicable, the other transportation management strategies identified above and (2) document all work zone-related feedback and complaints that are received from the public.

If at any time (1) a deviation from any of the strategies included in the TMP (e.g., the use of an alternate construction sequence) is desired by one or more members of the project implementation team, (2) field observations and/or data suggest that impacts to road users are or will be unacceptable, or (3) one or more performance requirements established in the TMP are not being met in the field, the RIDOT TMP Implementation Manager and/or Project Manager shall report the situation to his/her supervisor. The Project Manager will coordinate with the Design Consultant of record and present the changes to the State Traffic Safety Engineer, Director of the Division of Project Management, the Chief Engineer of Infrastructure, and/or other interested parties as appropriate and/or necessary to consider and determine whether revised alternate strategies should be implemented in an effort to lessen the adverse safety and mobility impacts of the project. If any changes should be implemented in a revised version of the TMP. Any changes implemented can be removed at any time, at RIDOTs discretion, if unexpected adverse impacts to traffic occur.

If a deviation from any of the strategies included in the TMP is requested by the Contractor, the Contractor is responsible for preparing and submitting to the RIDOT TMP Implementation Manager appropriate documentation (e.g., design calculations, analysis reports, Temporary Traffic Control Plans, etc.) showing that the requested change(s) are (1) feasible and (2) expected to result in safety and mobility impacts that are no more adverse than the impacts resulting from the strategies already included in the latest approved TMP. RIDOT will review and consider the submittal(s) as described in the preceding paragraph and will determine whether the changes should be implemented. The Contractor shall prepare and submit to the RIDOT TMP Implementation Manager a revised version of the latest approved TMP in both printed and electronic (Microsoft® Excel) format that documents all of the proposed changes. Work to implement the changes shall not begin until the revised TMP is approved.

When unexpected events (e.g., crashes, inclement weather, unforeseen traffic demands, etc.) occur in a project work zone where one or more lanes are closed, the RIDOT TMP Implementation Manager or his/her responsible designee should (1) determine whether or not the lane closure(s) can/should be removed in order to improve traffic operations and/or minimize delays and (2) if deemed appropriate, take action to remove the lane closure(s).

Other

Requirements:



Title:	
Unit:	
Office Phone:	
Mobile Phone:	
E-Mail:	

	CONTRACTOR
Name:	
Title:	
Company/Unit:	
Office Phone:	
Mobile Phone:	
E-Mail:	

TRAFFIC-RELATED WORK RESTRICTIONS / General Restrictions:

			MINIMUM NUMBER OF LANES & SHOULDERS TO REMAIN OPEN TO TRAFFIC ^{1,2,3,4}				FFIC ^{1,2,3,4}		
	Time	of Day		Day of Week					
Location	From	То	SUN	MON	TUES	WED	THURS	FRI	SAT
	0:00	6:00	ALL	1L - ALT	1L - ALT	1L - ALT	1L - ALT	1L - ALT	ALL
Diamond Hill Poad (Pouto 114)	6:00	9:00	ALL	ALL	ALL	ALL	ALL	ALL	ALL
Snooch Pond Pond ⁵	9:00	15:00	ALL	1L - ALT	1L - ALT	1L - ALT	1L - ALT	1L - ALT	ALL
Sheech F Oliu Rodu	15:00	20:00	ALL	ALL	ALL	ALL	ALL	ALL	ALL
	20:00	0:00	1L - ALT	1L - ALT	1L - ALT	1L - ALT	1L - ALT	ALL	ALL
Diamond Hill Bood (Pouto 114)	0:00	5:00	DETOUR	DETOUR	ALL	ALL	ALL	ALL	DETOUR
(Super Weekend Bridge Construction) ⁶	5:00	22:00	DETOUR	ALL	ALL	ALL	ALL	ALL	DETOUR
(ouper Weekena Bruge oonstrugtion)	22:00	0:00	DETOUR	ALL	ALL	ALL	ALL	DETOUR	DETOUR

LEGEND:



ALL

A minimum of one 11-foot wide travel lane shall remain open to alternating traffic



All travel lanes and shoulders shall remain open to traffic

NOTES

1 The set-up and break-down of temporary traffic control devices within a traveled way or shoulder shall be construed as a closure of that traveled way or shoulder.

2 The provisions noted herein shall not free the Contractor from his responsibility to conduct all work in such a manner that assures the least possible obstruction to traffic.

3 At locations with a sidewalk(s), a minimum of one sidewalk on one side of the roadway shall remain open to pedestrians at all times.

4 Access to and egress from all side streets, driveways, buildings, and other pedestrian pathways intersecting the Project work zones shall be maintained at all times unless otherwise noted or shown on Plans.

5 Based on discussion with the RIDOT Office of Safety, it was determined that traffic volumes on Sneech Pond Road are minimal and will result in no impacts to traffic during construction.

6 A maximum of (2) 55 Hour Super Weekend closures of Diamond Hill Road shall be allowed from Friday night to Monday morning unless otherwise directed by RIDOT.

WEEKDAY DELAY AND QUEUE ANALYSIS FOR THE CLOSURE OF 2 LANES TO 1 LANE ALT (DIAMOND HILL ROAD) NORTHBOUND & SOUTHBOUND

Hour Beginning "t"	Wednesday August 3, 2022 (Vt) vph	Capacity (Ct) vph	Queue at End of Hour (Qt)	Delay of Last Vehicle Entering (Dt) min.	Avg. Delay Per Vehicle (ADt) min.
0000	40	900	0	0.00	0.00
0100	23	900	0	0.00	0.00
0200	11	900	0	0.00	0.00
0300	19	900	0	0.00	0.00
0400	25	900	0	0.00	0.00
0500	110	900	0	0.00	0.00
0600	268	1800	0	0.00	0.00
0700	513	1800	0	0.00	0.00
0800	546	1800	0	0.00	0.00
0900	416	900	0	0.00	0.00
1000	371	900	0	0.00	0.00
1100	361	900	0	0.00	0.00
1200	414	900	0	0.00	0.00
1300	448	900	0	0.00	0.00
1400	472	900	0	0.00	0.00
1500	649	1800	0	0.00	0.00
1600	784	1800	0	0.00	0.00
1700	837	1800	0	0.00	0.00
1800	638	1800	0	0.00	0.00
1900	444	1800	0	0.00	0.00
2000	302	900	0	0.00	0.00
2100	232	900	0	0.00	0.00
2200	134	900	0	0.00	0.00
2300	92	900	0	0.00	0.00

8,149
Rhode Island Dept. of Transportation

080050_NB Weekly Volume Report - Mon 08/01/2022 - Sun 08/07/2022

Location ID:	080050_NB						Type:		SPOT				
Located On:	RI-114						:						
Direction	NB												
Community:	Cumberland						Period:		Mon 08	3/01/20)22 - Su	n 08/07	/2022
AADT:	3404												
	_								-				
Start Time	Mon	Tue	W	/ed	Т	hu	Fi	ri	S	at	S	un	Avg
12:00 AM	13	8	:	10	1	.1	1	5	2	0	1	.5	13
1:00 AM	3	2		5		3	7	'	9	Э	1	.3	6
2:00 AM	0	4		3		5	7			7		6	5
3:00 AM	2	2		8		3	6	j	4	1		3	4
4:00 AM	10	9	1	15	1	.3	7		I,	5	-	5	9
5:00 AM	99	51	6	51	5	6	3	7	1	3		5	46
6:00 AM	251	198	1	45	1	61	13	5	3	8	:	8	134
7:00 AM	290	237	2	52	2	02	18	57	5	4	2	23	178
8:00 AM	228	203	2	41	1	93	13	0	7	1	4	16	159
9:00 AM	132	120	1	.48	g)7	11	.9	1:	16	6	53	114
10:00 AM	108	93	1	04	ç	96	10	13	1:	18	7	'0	99
11:00 AM	118	99	9	99	1	09	8	8	13	34	14	44	113
12:00 PM	121	107	1	25	1	03	12	7	16	50	12	29	125
1:00 PM	118	114	1	20	1	05	12	0	13	36	12	25	120
2:00 PM	132	156	1	29	1	38	16	8	13	37	1	36	142
3:00 PM	119	123	1	.31	1	40	17	3	14	43	12	26	136
4:00 PM	164	145	1	.30	1	32	15	2	17	76	1	52	150
5:00 PM	158	171	1	.79	1	63	30	0	17	75	1	73	188
6:00 PM	154	118	1	.79	1	32	36	5	23	34	13	88	196
7:00 PM	96	120	1	.12	1	12	21	.4	29	95	2	29	168
8:00 PM	77	109	8	38	8	80	18	6	20	09	1	37	127
9:00 PM	68	64	8	32	2	19	11	.6	13	36	1	18	90
10:00 PM	42	29	4	42	2	21	11	.0	7	8	8	33	58
11:00 PM	28	17	2	23	2	21	5	1	5	5	3	34	33
Total	2531	2299	24	431	21	45	292	23	25	23	20)31	
24HrTotal	25	531	2299	24	431	21	L45	29	923	25	23		2412
AM Pk Hr	7:00	7:00	7	:00	7:	00	7:0	00	11	:00	11	:00	
AM Peak	290	237	2	52	2	02	18	57	13	34	14	44	207
PM Pk Hr	4:00	5:00	5	:00	5:	00	6:0	00	7:	00	7:	00	
PM Peak	164	171	1	79	1	63	36	5	29	95	2	29	224
% Peak Hr	11.46%	10.31%	5 1 0 .	.37%	9.4	2%	12.4	9%	11.0	59%	11.	28%	10.71%
% Peak Hr	11.	46%	10.31%	10.	37%	9.4	12%	12.	49%	11.	69%		11.00%

Rhode Island Dept. of Transportation

080050_SB Weekly Volume Report - Mon 08/01/2022 - Sun 08/07/2022

Location ID:	080050_SB				Туре:	SPOT		
Located On:	RI-114				:			
Direction	SB							
Community:	Cumberland				Period:	Mon 08/01/20)22 - Sun 08/07	/2022
AADT:	5141							
	_					_		
Start Time	Mon	Tue	Wed	Thu	Fri	Sat	Sun	Avg
12:00 AM	29	29	30	34	33	46	80	40
1:00 AM	13	15	18	18	18	31	28	20
2:00 AM	2	13	8	14	13	16	12	11
3:00 AM	7	7	11	6	3	8	15	8
4:00 AM	19	22	10	19	11	8	3	13
5:00 AM	36	44	49	55	54	19	16	39
6:00 AM	128	118	123	126	107	48	39	98
7:00 AM	228	269	261	242	220	113	79	202
8:00 AM	270	283	305	301	242	177	121	243
9:00 AM	239	228	268	255	228	240	172	233
10:00 AM	227	233	267	263	275	320	226	259
11:00 AM	247	250	262	258	305	355	295	282
12:00 PM	253	267	289	301	333	432	317	313
1:00 PM	266	344	328	299	369	382	326	331
2:00 PM	319	377	343	398	455	399	342	376
3:00 PM	464	598	518	544	594	394	346	494
4:00 PM	566	628	654	700	669	379	317	559
5:00 PM	617	700	658	648	652	401	398	582
6:00 PM	375	424	459	431	554	368	391	429
7:00 PM	251	311	332	290	360	511	370	346
8:00 PM	184	265	214	227	327	443	348	287
9:00 PM	128	136	150	186	294	418	318	233
10:00 PM	72	91	92	109	333	484	344	218
11:00 PM	57	64	69	72	267	333	76	134
Total	4997	5716	5718	5796	6716	6325	4979	
24HrTotal	49	97 5	716 57	718 57	796 67	/16 63	325	5750
AM Pk Hr	8:00	8:00	8:00	8:00	11:00	11:00	11:00	
AM Peak	270	283	305	301	305	355	295	302
PM Pk Hr	5:00	5:00	5:00	4:00	4:00	7:00	5:00	
PM Peak	617	700	658	700	669	511	398	608
% Peak Hr	12.35%	12.25%	11.51%	12.08%	9.96%	8.08%	7.99%	10.57%
% Peak Hr	12.	35% 12	.25% 11.	51% 12.	08% 9.9	96% 8.0)8%	10.60%

Attachment D to Level 3 TMP - Bridge Group 17C - Newell and Sneech

Trip Generation & Traffic Impact Study Newell Bridge Replacement – Cumberland, RI Revised March 2023

TRIP GENERATION & TRAFFIC IMPACT STUDY RIDOT – NEWELL BRIDGE NO 204 REPLACEMENT CUMBERLAND, RI

Prepared by: Crossman Engineering Engineers & Surveyors 151 Centerville Road Warwick, RI 02886

MARCH 2020 REVISED MARCH 2023

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INTRODUCTION

A Traffic Impact Study was performed to assess the potential traffic impacts of a full closure of the Newell Bridge No 204 while it is being reconstructed. The bridge is located on Diamond Hill Road (Route 114) just north of the signal at Diamond Hill Road / Nate Whipple Highway (Route 120). The local intersections to be analyzed as part of this study are located along possible proposed detour routes during construction and include the five locations listed below in Existing Conditions.

This traffic study examines existing conditions, describes three proposed traffic alternatives for bridge reconstruction, capacity analysis of existing conditions and proposed conditions for each traffic alternative and our subsequent conclusions/recommendations for the most feasible option. The existing conditions consist of geometric data gathered from field investigations and existing traffic volume data collected during peak hours. Our conclusions and recommendations are prepared following a comprehensive review of the capacity analysis.

EXISTING CONDITIONS

As stated, Newell Bridge No 204 is located on Diamond Hill Road (Route 114) just north of the signal at Diamond Hill Road / Nate Whipple Highway (Route 120). The local intersections to be analyzed as part of this study are located along possible proposed detour routes during construction and include the following:

- Diamond Hill Road at Nate Whipple Highway (signalized)
- Nate Whipple Highway at Mendon Road (signalized)
- Mendon Road at West Wrentham Road (signalized)
- West Wrentham Road at Pine Swamp Road (signalized)
- Pine Swamp Road at Diamond Hill Road / Wrentham Road (unsignalized)

The study area is shown on Figure 1.

A. Roadways

Diamond Hill Road (Route 114)

Diamond Hill Road generally runs north – south from Pine Swamp Road (Route 114) / Wrentham Road (Route 121) to High Street (Route 114). In the vicinity of the study area, the road consists of one lane in each direction. From the 2019 Rhode Island Highway Functional Classification map dated March 11, 2019, Diamond Hill Road is classified as an urban principal arterial. It is a major connection to Route I-295 south of the study area. The road has a posted speed of 30 mph in both directions north of Nate Whipple Highway. The speed is posted 35 mph on the northbound approach to Nate Whipple Highway. In the vicinity of the study area there are no existing



sidewalks on Diamond Hill Road except at 55' along the approaches to the Nate Whipple Highway signal.

Nate Whipple Highway (Route 120)

Nate Whipple Highway generally runs east-west from Hickory Road (Route 120) at the North Attleboro, MA town line to Mendon Road (Route 122) in Cumberland. In the vicinity of the study area, the road consists of one lane in each direction. From the 2019 Rhode Island Highway Functional Classification map dated March 11, 2019, Nate Whipple Highway is classified as an urban minor arterial. In the study area, the road has a posted speed of 40 mph in both directions east of Sprague Street and 30 mph west of Sprague Street. There are existing sidewalks on both sides of the street west of Meehan Lane, east of Diamond Hill Road and for 540' along the eastbound approach to Diamond Hill Road.

Mendon Road (Route 122)

Mendon Road generally runs northwest-southeast from Paine Street at the Bellingham, MA / Woonsocket town line to Lonsdale Avenue (Route 122) at the Cumberland / Lincoln town line. In the vicinity of the study area, the road generally consists of one lane in each direction. Between Manville Hill Road and Nate Whipple Highway the road widens to allow for an added left-turn only lane in both directions. Between Manville Hill Road and West Wrentham Road, Mendon Road consists of one lane in each direction separated by a single two-way left-turn lane (TWLTL). From the 2019 Rhode Island Highway Functional Classification map dated March 11, 2019, Mendon Road is classified as an urban principal arterial. It is a major connection to Route I-295 south of the study area. In the study area, the road has a posted speed of 35 mph. There are existing sidewalks on both sides of the road.

West Wrentham Road

West Wrentham Road generally runs north-south from Spring Street at the Wrentham, MA town line to Mendon Road (Route 122). In the vicinity of the study area, the road consists of one lane in each direction. From the 2019 Rhode Island Highway Functional Classification map dated March 11, 2019, West Wrentham Road is classified as an urban minor arterial. In the study area, the road has a posted speed of 35 mph and a posted speed of 25 mph at the approach to Pine Swamp Road. There are existing sidewalks on both sides of the road only at the 900' approach to Mendon Road.

Pine Swamp Road (Route 114)

Pine Swamp Road runs east – west from the intersection of Wrentham Road / Diamond Hill Road (Route 114) in Cumberland to Bound Road / Diamond Hill Road (Route 114) on the Woonsocket city line. The road generally consists of one lane in each direction. There are existing sidewalks on both sides of Pine Swamp Road west of West Wrentham Road and for 85' on the east side of West Wrentham Road. From the 2019 Rhode Island Highway Functional Classification map dated March 11, 2019, Pine Swamp Road is classified as an urban principal arterial. In the study area, Pine Swamp Road has the following posted speed limits:

- 30 mph eastbound from just east of Northland Farm and Garden Center to approximately 1,400' east of the West Wrentham Road intersection
- 40 mph eastbound from approximately 1,400' east of the West Wrentham Road intersection to just east of Little Street
- 30 mph eastbound just east of Little Street
- 40 mph westbound from Diamond Hill Road to 76 Pine Swamp Road (just west of West Wrentham Road signal)

Wrentham Road (Route 121)

Wrentham Road generally runs north – south from Cumberland Road (Route 121) on the Wrentham, MA town line to Pine Swamp Road (Route 114) / Diamond Hill Road (Route 114) in Cumberland. In the vicinity of the study area, the road generally consists of one lane in each direction. From the 2019 Rhode Island Highway Functional Classification map dated March 11, 2019, Wrentham Road is classified as an urban minor arterial. The road has a posted speed of 30 mph. In the vicinity of the study area there are no existing sidewalks on Diamond Hill road except at 55' along the approaches to the Nate Whipple Highway signal.

B. Intersections

Diamond Hill Road (Route 114) / Nate Whipple Highway (Route 120)

Diamond Hill Road at Nate Whipple Highway is a four-legged signalized intersection. There is a signalized pedestrian crosswalk across each approach. Each approach consists of a single traffic lane and shoulder in each direction. Land use around the intersection is mostly residential. The signal operates in two phases:

- Nate Whipple Highway eastbound and westbound
- Diamond Hill Road northbound and southbound

Diamond Hill Road north of the intersection measures approximately 29' and consists of a 12' travel lane with 4' shoulder northbound and an 11.5' travel lane with 1.5' shoulder southbound. The southern parapet to the Newell Bridge on Diamond Hill Road is located approximately 245' north of the southbound stop line. The Newell Bridge structure measures 26.5' in length from parapet to parapet and 26' wide between edge of pavement. Diamond Hill Road south of the

intersection measures approximately 30.5' and consists of an 11' travel lane with 3' shoulder northbound and an 11.5' travel lane with 5' shoulder southbound.

Nate Whipple Highway east of the intersection measures approximately 35.5' and consists of a 12' travel lane with 7' shoulder eastbound and a 12.5' travel lane with 4' shoulder westbound. Nate Whipple Highway west of the intersection measures approximately 36' and consists of a 12.5' travel lane with 5' shoulder eastbound and a 13' travel lane with 5.5' shoulder westbound.



Diamond Hill Rd NB facing Newell Bridge ahead



Nate Whipple Hwy EB at Diamond Hill Rd signal

Nate Whipple Highway (Route 120) / Mendon Road (Route 122)

Nate Whipple Highway at Mendon Road is a three-legged signalized intersection. There is a signalized pedestrian crosswalk across the westbound and southeast bound approaches as well as across the channelized right turn lane northwest bound. Land use around the intersection is a mix of commercial and residential. The signal operates in three phases:

- Mendon Road northwest bound and southeast bound
- Mendon Road southeast bound
- Nate Whipple Highway westbound

The westbound Nate Whipple Highway approach measures approximately 36.5' and consists of a 12.5' travel lane with 5' shoulder eastbound and a 13' travel lane with 6' shoulder southbound. Mendon Road northwest of the intersection measures approximately 51' and consists of a 10.5' left turn lane, 13.5' thru lane with 1.5' shoulder northwest bound, and in the southeast direction an 11' left turn lane, a 13' thru lane with 1.5' shoulder. Mendon Road southeast of the intersection measures 43.5' wide. The northwest approach to the intersection consists of a 15.5' travel lane (that splits to a thru lane and right turn channelized lane) with 2.5' shoulder; the southeast direction consists of a 12.5' departure lane with 3' shoulder. Southeast of the intersection, the lanes are separated by a 10' wide painted median island.



Nate Whipple Hwy WB facing Mendon Rd

Mendon Rd SE bound toward Nate Whipple Hwy

Mendon Road (Route 122) / West Wrentham Road

Mendon Road at West Wrentham Road is a four-legged signalized intersection including the small shopping plaza driveway on the northbound approach. There is a signalized pedestrian crosswalk across the southbound and northwest bound approaches. Land use around the intersection is a mix of commercial and residential. The signal operates in two phases:

- Mendon Road northwest bound and southeast bound
- West Wrentham Road southbound and plaza driveway northbound

The southeast side of Mendon Road measures approximately 44.5' and consists of an 11' two-way left turn lane (TWLTL), 14' thru/right lane travel with 2.5' shoulder northwest bound, and a 14.5' travel lane with 2.5' shoulder southeast bound. The northwest side of Mendon Road measures approximately 43.5' and consists of a 13.5' travel lane with 2.5' shoulder northwest bound, an 11' painted median; southeast bound a 13.5' travel lane with 3' shoulder.

West Wrentham Road measures 34' and consists of a 12.5' travel lane in each direction, a 4' northbound shoulder and a 5' southbound shoulder.

The signalized plaza exit driveway to the south measures 19' wide and the separate entrance driveway measures 19' wide.



Mendon Rd NW bound at West Wrentham Rd

West Wrentham Rd SB at Mendon Rd

West Wrentham Road / Pine Swamp Road (Route 114)

West Wrentham Road at Pine Swamp Road is a four-legged signalized intersection. Except for the eastbound approach, there is a signalized pedestrian crosswalk across each approach. Each approach consists of a single traffic lane in each direction. Land use around the intersection is mostly residential with some commercial. The signal operates in two phases:

- Pine Swamp Road eastbound and westbound
- West Wrentham Road northbound and southbound

West Wrentham Road north of the intersection measures only 21' and consists of a 10.5' travel lane in each direction. South of the intersection West Wrentham Road measures approximately 37' consisting of a 13' travel lane with 5' shoulder northbound and 14.5' travel lane with 4.5' shoulder southbound. Both the northbound and southbound West Wrentham Road approaches to the intersection are posted, "NO RIGHT TURN ON RED".

Pine Swamp Road east of the intersection measures 40.5' consisting of a 12.5' travel lane in each direction, a 7.5' shoulder westbound and 8' shoulder eastbound. West of the intersection Pine Swamp Road measures 41' consisting of a 12.5' travel lane in each direction, a 7.5' shoulder westbound and 8.5' shoulder eastbound. The Pine Swamp Road eastbound approach to the intersection is posted, "NO TURN ON RED".



West Wrentham Rd NB at Pine Swamp Rd

Pine Swamp Rd EB at West Wrentham Rd

Pine Swamp Road (Route 114) / Wrentham Road (Route 121) / Diamond Hill Road (Route 114)

Pine Swamp Road / Wrentham Road / Diamond Hill Road is a three-legged unsignalized intersection. The Pine Swamp Road eastbound approach is uncontrolled for the thru movement to Wrentham Road and yield controlled at the right turn channelized lane to Diamond Hill Road to the south. There is no control at the Wrentham Road westbound approach. The Diamond Hill Road northbound approach is stop controlled at the T-intersection for left turns and yield controlled at the channelized right turn lane merging onto Wrentham Road.

At the intersection Pine Swamp Road widens from one lane in each direction. Pine Swamp Road adds a channelized right turn lane eastbound beginning approximately 420' in advance of the intersection. Pine Swamp Road on the west side of the intersection consists of a 12' right turn channelized lane and 12' thru travel lane eastbound, painted median, 12' westbound lane and varying shoulders in both directions.

At the intersection Wrentham Road widens from one lane in each direction. Wrentham Road adds a left turn lane westbound beginning approximately 270' in advance of the intersection. Wrentham Road on the east side of the intersection consists of a 12.5' left turn lane, 12.5' thru travel lane eastbound, and a westbound thru lane and merging departure lane measuring a total of 24' westbound with varying shoulders in both directions.

South of the intersection Diamond Hill Road measures approximately 31' consisting of a 12' travel lane in each direction and a 3' shoulder northbound and 4' shoulder southbound. Closer to the intersection Diamond Hill Road widens and splits to a 15' channelized right turn lane and a 15' approach lane and 15' departure lane at the T-intersection.



Pine Swamp Rd EB at Diamond Hill Rd/Wrentham Rd Diamond Hill Rd NB at Pine Swamp Hill Rd /Wrentham Rd

C. Existing Traffic Volumes

Manual turning movement traffic counts were conducted on Thursday March 5, 2020 between 7-9 AM and 4-6 PM and Saturday March 7, 2020 10 AM - 2 PM at the five study intersections. For the study area, the weekday morning peak hour was determined to be 7:30-8:30 AM, the weekday afternoon peak hour was determined to be 4:45-5:45 PM and the Saturday peak hour was determined to be 10:45 - 11:45 AM. The peak hour volumes counts can be found in the Appendix and the peak hour volumes are shown in Figures 2 - 4.

BRIDGE CONSTRUCTION TRAFFIC ALTERNATIVES

A. Full Bridge Closure with Detour

The first alternative CE analyzed during weekday AM, weekday PM and Saturday peak hours is full closure of the Newell Bridge on Diamond Hill Road during replacement of the bridge. This construction alternative will require re-routing peak existing northbound traffic from Diamond Hill Road to Nate Whipple Highway westbound, to Mendon Road northwest bound, to West Wrentham Road northbound to Pine Swamp Road eastbound. Likewise, it will require re-routing peak existing southbound traffic from Diamond Hill Road to Pine Swamp Road westbound, to West Wrentham Road southbound traffic from Diamond Hill Road to Pine Swamp Road westbound, to West Wrentham Road southbound traffic from Diamond Hill Road southeast bound, to Nate Whipple Highway eastbound. The change in existing traffic due to full bridge closure (detour on Diamond Hill Road in both directions) is shown in Figures 5-7. The resulting traffic is shown in Figures 8-10.

B. Two Weekend (55-Hour) Full Bridge Closures

Two weekend (55-Hour) full bridge closures will be performed so that the bridge can be constructed over the course of two separate weekends. The change in existing traffic due to full bridge closure (detour on Diamond Hill Road in both directions) is shown in Figure 7. The resulting traffic is shown in Figure 10.



















C. Two-Stage Construction with Temporary Signal

The final alternative analyzed will include a temporary signal on the north side of the Newell Bridge which will run coordinated and on the same controller as the existing signal at Diamond Hill Road / Nate Whipple Highway. The temporary signal will allow one lane to remain open at the bridge location for the passage of one-way traffic alternating between northbound traffic and southbound traffic on Diamond Hill Road. The work will be staged for construction on the east side of the bridge while maintaining a full traffic lane for one-way alternating passage on the west, then construction on the west side of bridge while maintaining a full traffic lane for one-way alternating passage on the east. This alternative does not require re-routing traffic for detours.



Facing north on Diamond Hill Rd toward Newell Bridge SB toward bridge in advance of Nate Whipple Hwy signal

TRAFFIC OPERATIONS ANALYSIS

Traffic operations analysis describes the quality of traffic flow at the study intersections for the traffic demands. As a basis for this assessment, intersection capacity analyses were conducted using Synchro capacity analysis software for the study area intersections for the 2020 Existing Conditions, Full Bridge Closure (Detour Diamond Hill Road both directions), Bridge Closure with Temporary Bridge (Detour Northbound Traffic Only) and Temporary Signal. This analysis is based on procedures contained in the 2010 Highway Capacity Manual (HCM). A discussion of the evaluation criteria and a summary of the results of the capacity analyses are presented below.

Level-Of-Service Criteria

The analyses result in a Level of Service (LOS) being assigned to the intersection. LOS is defined as a qualitative measure describing operational conditions based on vehicular delay. There are six levels of service ranging from LOS A (little or no delay) to LOS F (worst operating conditions – high delays) with LOS D being considered acceptable for peak hour conditions at signalized intersections.

Signalized Intersections

The levels of service at signalized intersections are determined by a procedure described in the 2010 Highway Capacity Manual and as shown in Table 1.

LOS	Control Delay	General Description
	(seconds/vehicle)	
А	<u><</u> 10	Free Flow
В	>10.0 to 20.0	Stable Flow (slight delays)
С	>20.0 to 35.0	Stable Flow (acceptable delays)
D	>35.0 to 55.0	Approaching Unstable Flow (tolerable delay, occasionally
		wait through more than one signal cycle before proceeding)
Е	>55.0 to 80.0	Unstable Flow (operating at capacity)
F	>80.0	Forced Flow (congested and queues fail to clear)

Table 1	l – Level	of Service	Criteria	for S	Signalized	Intersections
I dole 1			CITCITA		-Shanzoa	

Unsignalized Intersections

The levels of service at unsignalized intersections are determined by a procedure described in the 2010 Highway Capacity Manual. The level of service criteria for unsignalized intersections is described in Table 2.

Table 2 - Level of Service Criteria forUnsignalized Intersections										
LOS	Control Delay									
	(seconds/vehicle)									
А	<u><</u> 10.									
В	>10.0 to 15.0									
С	>15.0 to 25.0									
D	>25.0 to 35.0									
Е	>35.0 to 50.0									

CAPACITY ANALYSIS RESULTS

F

The capacity analyses indicated volume to capacity ratios, average vehicle delay (in seconds), and the levels of service shown in Tables 3, 4, 5 and Table 6 for signalized intersections and unsignalized intersections, respectively, in the study area.

>50.0

		2	020 Existin	g	Full	Bridge Cl	osure	Full	Bridge C	losure	Temporary			
Location	Movement					•	0		Optimize	d		Signal	0	
		v/c	Delay	LOS	v/c	Delay	LOS	v/c	Delay	LOS	v/c	Delay	LOS	
				AM	PEAK	HOUR								
Diamond Hill Rd / Nate Whipple Hwy	OVERALL	0.62	12.4	В	0.80	20.1	С	0.81	18.0	В	1.20	145.9	F	
Nate Whipple Hwy	EB	0.56	16.5	В	0.80	21.2	С	0.81	19.1	В	1.57	330.3	F	
Nate Whipple Hwy	WB	0.51	15.7	В	0.43	12.4	В	0.52	11.1	В	0.87	73.0	Е	
Diamond Hill Rd	NB	0.55	9.1	Α	0.81	23.4	С	0.82	21.1	С	1.37	234.7	F	
Diamond Hill Rd	SB	0.66	11.2	В	0.00	0.0	Α	0.00	0.0	А	0.56	11.7	В	
Mendon Rd / Nate Whipple Hwy	OVERALL	0.88	43.9	D	1.46	379.1	F	1.38	163.2	F				
Nate Whipple Hwy	WB	0.76	30.8	С	1.25	157.4	F	1.29	181.3	F	-			
Mendon Rd	SE	1.22	72.7	Е	3.25	703.8	F	1.42	145.5	F				
Mendon Rd	NW	0.79	20.3	С	0.82	23.2	С	1.38	175.7	F	-			
Plaza Driveway /											Dia	amond Hi	ll Rd	
W. Wrentham Rd /	OVERALL	0.50	8.5	Α	1.68	173.8	F	1.50	160.9	F	Ten	nporary S	Signal	
Mendon Rd											Nort	h Side of	Bridge	
Plaza Driveway	NB	0.04	10.1	В	0.03	16.0	В	0.03	22.7	С	0.28	0.3	Α	
W. Wrentham Rd	SB	0.38	11.7	В	1.60	304.9	F	1.61	317.7	F	1.70	374.8	F	
Mendon Rd	SE	0.35	6.6	Α	1.74	372.8	F	1.44	244.7	F				
Mendon Rd	NW	0.57	7.9	Α	0.93	29.2	С	0.90	28.6	С				
W. Wrentham Rd /											Dia	mond Hil	l Rd	
Pine Swamp Rd	OVERALL	0.80	17.3	В	1.68	465.1	F	1.66	290.7	F	Ten	Temporary Signal		
											Sout	South Side of Bridg		
Pine Swamp Rd	EB	0.48	11.8	В	0.31	9.1	A	0.40	27.4	C				
Pine Swamp Rd	WB	0.77	19.3	В	1.04	64.3	Е	1.62	330.4	F				
W. Wrentham Rd	NB	0.84	21.7	С	2.59	742.3	F	1.69	342.5	F	0.57	1.7	Α	
W. Wrentham Rd	SB	0.36	10.2	В	0.18	13.7	В	0.12	13.5	В	0.24	0.0	Α	

Table 3 - AM Peak Hour Signalized Level-Of-Service Analysis Summary

		20	020 Existir	ıg	Full	Bridge Cl	osure	Full	Bridge C	losure	Temporary			
Location	Movement						-		Optimize	ed		Signal	_	
		v/c	Delay	LOS	v/c	Delay	LOS	v/c	Delay	LOS	v/c	Delay	LOS	
				PN	I PEAK	HOUR								
Diamond Hill Rd / Nate Whipple Hwy	OVERALL	1.58	277.5	F	7.81	2432.2	F	1.94	283.7	F	2.55	735.2	F	
Nate Whipple Hwy	EB	1.03	71.0	Е	1.05	61.9	Е	0.73	14.2	В	1.42	245.2	F	
Nate Whipple Hwy	WB	2.34	633.6	F	13.11	5493.6	F	2.10	520.6	F	4.00	1400.6	F	
Diamond Hill Rd	NB	0.65	19.1	В	0.82	30.2	С	1.43	266.2	F	2.21	611.8	F	
Diamond Hill Rd	SB	0.91	41.5	D	0.00	0.0	Α	0.00	0.0	А	0.60	20.5	С	
Mendon Rd / Nate Whipple Hwy	OVERALL	0.70	20.4	С	1.03	93.0	F	0.96	43.2	D				
Nate Whipple Hwy	WB	0.72	29.8	С	1.08	93.3	F	0.93	51.5	D				
Mendon Rd	SE	0.70	14.8	В	1.44	131.9	F	0.95	26.4	С				
Mendon Rd	NW	0.68	20.3	С	0.75	25.8	С	1.01	59.6	E				
Plaza Driveway /											Dia	mond Hi	ll Rd	
W. Wrentham Rd /	OVERALL	0.85	21.1	С	1.70	281.6	F	1.80	273.3	F	Ten	iporary S	lignal	
Mendon Rd											Nort	h Side of 1	Bridge	
Plaza Driveway	NB	0.00	17.0	В	0.00	27.3	С	0.00	25.7	С	0.24	0.3	Α	
W. Wrentham Rd	SB	0.74	28.0	С	2.34	648.0	F	2.13	550.9	F	1.63	348.4	F	
Mendon Rd	SE	0.90	28.7	С	1.50	251.7	F	1.68	334.4	F				
Mendon Rd	NW	0.47	8.8	Α	0.68	10.1	В	0.70	11.7	В				
W. Wrentham Rd /											Dia	mond Hi	ll Rd	
Pine Swamp Rd	OVERALL	0.65	10.8	В	1.21	172.3	F	1.19	95.5	F	Ten	Temporary Signal		
											Sout	South Side of Bridg		
Pine Swamp Rd	EB	0.30	6.3	Α	0.32	7.2	Α	0.40	17.9	В				
Pine Swamp Rd	WB	0.68	10.3	В	0.89	24.4	С	1.23	147.9	F				
W. Wrentham Rd	NB	0.59	14.7	В	1.80	388.1	F	1.14	140.1	F	0.43	1.4	Α	
W. Wrentham Rd	SB	0.42	12.9	В	0.40	15.9	В	0.25	14.6	В	0.19	0.0	А	

Table 4 - PM Peak Hour Signalized Level-Of-Service Analysis Summary

		20	2020 Existing			Bridge C	losure	Full	Bridge Cl	losure	Temporary				
Location	Movement								Optimize	d		Signal			
		v/c	Delay	LOS	v/c	Delay	LOS	v/c	Delay	LOS	v/c	Delay	LOS		
				SATUR	RDAY F	PEAK HO	UR	-							
Diamond Hill Rd / Nate Whipple Hwy	OVERALL	0.73	16.9	В	0.81	19.4	В	0.81	17.4	В	1.27	190.7	F		
Nate Whipple Hwy	EB	0.65	21.7	С	0.85	21.7	С	0.82	18.1	В	1.98	515.0	F		
Nate Whipple Hwy	WB	0.55	18.7	В	0.55	11.8	В	0.58	10.6	В	0.96	88.8	F		
Diamond Hill Rd	NB	0.41	9.3	Α	0.77	22.0	С	0.81	22.2	С	1.55	323.7	F		
Diamond Hill Rd	SB	0.78	17.7	В	0.00	0.0	Α	0.00	0.0	А	0.55	4.9	Α		
Mendon Rd / Nate Whipple Hwy	OVERALL	0.63	15.6	В	0.94	74.7	Е	0.88	33.0	С					
Nate Whipple Hwy	WB	0.59	23.3	С	0.75	32.8	С	0.58	25.6	С					
Mendon Rd	SE	0.55	10.2	В	1.46	131.3	F	0.93	23.3	С					
Mendon Rd	NW	0.69	17.2	В	0.76	21.7	С	1.01	57.3	Е					
Plaza Driveway /											Dia	mond Hil	l Rd		
W. Wrentham Rd /	OVERALL	0.58	9.1	Α	1.34	236.3	F	1.67	203.2	F	Tem	porary S	ignal		
Mendon Rd											North	Side of I	Bridge		
Plaza Driveway	NB	0.05	13.3	В	0.05	24.3	С	0.04	27.1	С	0.24	0.3	Α		
W. Wrentham Rd	SB	0.53	16.4	В	2.41	673.5	F	1.60	320.3	F	1.60	323.0	F		
Mendon Rd	SE	0.61	8.3	Α	0.98	44.6	D	1.70	353.7	F					
Mendon Rd	NW	0.48	6.7	Α	0.68	9.7	Α	0.78	21.8	С					
W. Wrentham Rd /											Dia	mond Hil	l Rd		
Pine Swamp Rd	OVERALL	0.42	7.5	Α	1.12	109.3	F	1.10	73.1	Ε	Tem	porary S	ignal		
											South	South Side of Bridge			
Pine Swamp Rd	EB	0.37	5.5	Α	0.60	12.8	В	0.64	28.0	C					
Pine Swamp Rd	WB	0.36	5.5	Α	0.86	31.1	C	1.10	114.2	F					
W. Wrentham Rd	NB	0.53	12.0	В	1.41	209.4	F	1.09	88.5	F	0.56	1.7	Α		
W. Wrentham Rd	SB	0.32	10.8	В	0.17	10.6	В	0.13	14.2	В	0.28	0.0	Α		

Table 5 - Saturday Peak Hour Signalized Level-Of-Service Analysis Summary

Location	Movement	20	020 Existi	ng	Full B	Bridge Clo	osure
Location	Movement	v/c	Delay	LOS	v/c	Delay	LOS
	AN	I PEAI	K HOUR				
Diamond Hill Rd							
/ Pine Swamp Rd							
/ Wrentham Rd							
Pine Swamp Rd	EB	0.24	0.0	Α	0.53	0.0	Α
Wrentham Rd	WB	0.26	5.6	Α	0.34	0.4	Α
Diamond Hill Rd	NB	1.40	215.1	F	0.37	29.6	D
	PN	I PEAI	K HOUR				
Diamond Hill Rd							
/ Pine Swamp Rd							
/ Wrentham Rd							
Pine Swamp Rd	EB	0.14	0.0	А	0.32	0.0	Α
Wrentham Rd	WB	0.41	5.7	Α	0.37	3.2	Α
Diamond Hill Rd	NB	3.93	Err	F	0.12	35.4	E
	SATUR	RDAY I	PEAK HO	OUR			
Diamond Hill Rd							
/ Pine Swamp Rd							
/ Wrentham Rd							
Pine Swamp Rd	EB	0.12	0.0	Α	0.25	0.0	А
Wrentham Rd	WB	0.15	4.8	А	0.00	0.0	А
Diamond Hill Rd	NB	0.61	21.2	С	0.00	0.0	Α

Table 6 - Unsignalized Level-Of-Service Analysis Summary

CONCLUSION

Existing Conditions

At the signalized intersections, overall levels of service (LOS) are generally good, with LOS C or better. The exceptions to this are:

- Mendon Road / Nate Whipple Highway during the AM Peak where overall LOS is D
- Diamond Hill Road / Nate Whipple Highway during the PM Peak where overall LOS is F

At the unsignalized intersection of Pine Swamp Road / Diamond Hill Road, all approaches are good, LOS C or better during Saturday peak and on the eastbound and westbound approaches during AM Peak and PM Peak. The Northbound stop-controlled approach of Diamond Hill Road experiences LOS F during the AM and Peak hours.

Full Bridge Closure with Optimized Signal Timing

With the additional traffic added to the study intersections from detouring all traffic from the bridge, during the AM Peak Diamond Hill Road / Nate Whipple Highway can maintain existing overall LOS B but the remaining signals all deteriorate to overall LOS F.

For the PM Peak hour Diamond Hill Road / Nate Whipple Highway remains an overall LOS F. Mendon Road / Nate Whipple Highway degrades from overall LOS C to D. West Wrentham Road / Mendon Road deteriorates from overall LOS C to F. West Wrentham Road / Pine Swamp Road deteriorate from overall LOS B to LOS F

For the Saturday Peak hour Diamond Hill Road / Nate Whipple Highway maintains an overall LOS B. Mendon Road / Nate Whipple Highway degrades from overall LOS B to C. West Wrentham Road / Mendon Road deteriorates from overall LOS A to F. West Wrentham Road / Pine Swamp Road deteriorate from overall LOS A to LOS E.

At the unsignalized intersection of Pine Swamp Road / Diamond Hill Road, all approaches are very good, LOS A during Saturday peak and on the eastbound and westbound approaches during AM Peak and PM Peak. The Northbound stop-controlled approach of Diamond Hill Road experiences LOS D during the AM Peak and LOS E during PM Peak.

Temporary Signal

In order to provide a safe clearance time for alternating traffic to completely pass through the bridge construction zone, the southbound approach to the temporary signal and the eastbound, westbound and northbound approaches to the Diamond Hill Road / Nate Whipple Highway signal experience excessively long delays and queues and all function as LOS F.

RECOMMENDATION

Based on field, traffic, and signal conditions in 2020, the alternative that is least disruptive to traffic of the three options analyzed is Option 2 - Two Weekend (55-Hour) Full Bridge Closures. This appears to be the most feasible because traffic disruptions would be limited to the shortest amount of time (two separate weekends). The temporary signal is not considered feasible as it would create excessive delays and extensive queues along the Nate Whipple Highway and Diamond Hill Road corridors and could result in long periods of gridlock. In addition, the close proximity of the bridge, and alternating temporary signal to the Diamond Hill Road / Nate Whipple Highway signal provides very little queuing area for traffic and would also require prohibiting right turns on red for Nate Whipple Highway westbound.

APPENDIX

TRAFFIC COUNTS



SUBJ:	DELIVERABLE: Weekday AM Traffic Counts – Cumberland RI
DATE:	March 9, 2020
FROM:	Valerie J. Southern, VJS-TC, LLC
	steve baker, steere Engineering
τO·	Steve Baker Steere Engineering

Thursday, March 5, 2020 – 7:00 AM - 9:00AM

- 1 Diamond Hill Road @ Nate Whipple Highway
- 2 Pine Swamp Road @ Wrentham Road
- 3 Pine Swamp Road @ Diamond Hill Road
- 4 Mendon Road @ West Wrentham Road
- 5 Nate Whipple Highway @ Mendon Road

43 CLINTON AVENUE JAMESTOWN, RHODE ISLAND 02835 (401) 560-7930 Type text here

Location:	Diamond H	lill Road @	Nate Whipp	le Highway	1				City/Town	Cumbe	rland, RI			
Checker:	DCN		Weather:		Sunny				Job:	Group 17	7C Newell			
Date:	3/5/20	Tue	Start Time:		7:00 AM				Pk Hr:	7:30 AM	8:30 AM			
# of minutes	counted pe	r interval:	14.0	minutes										
					2									
END			From the NO	RTH (SO	JTHBOUI	ND)	N Leg			From the E	EAST (WES	STBOUND)	E Leg
TIME	RT	TH	LT	TOTAL	HV	Bikes	Peds	RT	TH	LT	TOTAL	HV	Bikes	Peds
7:15 AM	11	50	20	81	3	0	0	21	24	4	49	3	4	0
7:30 AM	13	59	24	96	3	0	0	25	29	4	58	3	5	0
7:45 AM	18	77	32	127	4	0	0	32	38	5	75	4	6	0
8:00 AM	12	54	22	88	3	0	0	23	27	4	54	3	4	0
8:15 AM	13	59	24	96	3	0	0	25	29	4	58	3	5	0
8:30 AM	15	63	26	104	4	0	0	27	31	5	63	3	5	0
8:45 AM	11	50	21	82	3	0	0	21	24	4	49	3	4	0
9:00 AM	9	41	17	67	2	0	0	17	20	3	40	2	6	0
					•						8. 	-		
1														
PK HR	58	253	104	415	14	0	0	107	125	18	250	13	20	0
Adj HR	62	271	111	444	15	0	0	115	134	19	268	14	21	0
2														
END			From the SC	DUTH (NOF	RTHBOUM	VD)	S Leg			From the \	NEST (EAS	STBOUND)	W Leg
TIME	RT	TH	LT	TOTAL	HV	Bikes	Peds	RT	TH	LT	TOTAL	HV	Bikes	Peds
7:15 AM	4	61	10	75	3	0	0	6	24	12	42	3	0	0
7:30 AM	5	73	11	89	3	0	0	9	28	14	51	3	0	0
7:45 AM	6	95	15	116	4	0	0	10	37	19	66	4	0	0
8:00 AM	4	67	11	82	3	0	0	7	27	13	47	3	0	0
8:15 AM	5	73	11	89	3	0	0	7	29	14	50	3	0	0
8:30 AM	5	78	12	95	4	0	0	8	31	15	54	3	0	0
8:45 AM	4	61	10	75	3	0	0	6	24	12	42	3	0	0
9:00 AM	3	50	8	61	2	0	0	5	20	10	35	2	0	0
PK HR	20	313	49	382	14	0	0	32	124	61	217	13	0	0
Adj HR	21	335	53	409	15	0	0	34	133	65	232	14	0	0

VIS-TC	HC-	Steere/RIDOT	Counts -	Cumberland	RI
VJJ-10,	LLU-	Steelentino	Counts -	Cumpenanu	, I XI

END		15 Min To	tals (adj)				
TIME	Veh	HV	Peds	Bikes			
7:15	265	13	4	0	Time	Rolling	
7:30	315	13	5	0	Start - End	Hr Vol	Pk Hr?
7:45	411	17	6	0	7:00 AM 8:00	AM 1281	no
8:00	290	13	4	0	7:15 AM 8:15	AM 1330	no
8:15	314	13	5	0	7:30 AM 8:30	AM 1354	YES
8:30	339	15	5	0	7:45 AM 8:45	AM 1209	no
8:45	266	13	4	0	8:00 AM 9:00	AM 1137	no
0.00	040	0	6	0			



VJS-TC, LLC - Steere/RIDOT Counts - Cumberland, RI





APPROACH VOLUME TURN MOVEMENTS -- PEAK HOUR



Pedestrians (Pea	k Hour)	Bikes (Peak Ho	our)
Crossing Leg	# of	Approach	# of
North	0	From North:	0
South	0	From South:	0
East	0	From East:	21
West	0	From West:	0
Total	0	Total	21

ADJUSTIME	ENT FACTORS DE	RIVED FRO		
Peak Hour Factors:	From North:	0.82	SB	
	From South:	0.82	NB	
	From East:	0.83	WB	
	From West:	0.82	EB	
5 a	Total	0.82	All	
Heavy Vehicles:	From North:	15	3.4%	SB
11 100 - 200	From South:	15	3.7%	NB
	From East:	14	5.2%	WB
	From West:	14	6.0%	EB

William Popp Associates[©]

Location:	Pine Swam	ip Road @	Wrentham F	Road					City/Town	Cumber	riand, RI			
Checker:	VJS		Weather:		Sunny				Job:	Group 17	C Newell			
Date:	3/5/20	Tue	Start Time:		7:00 AM				Pk Hr:	7:00 AM	8:00 AM			
# of minutes	counted pe	r interval:	14.0	minutes										
END			From the NO	RTH (SO	JTHBOUN	ND)	N Leg			From the E	AST (WES	STBOUND)	E Leg
TIME	RT	TH	LT	TOTAL	HV	Bikes	Peds	RT	TH	LT	TOTAL	HV	Bikes	Peds
7:15 AM	2	23	9	34	0	0	0	4	41	26	71	3	0	0
7:30 AM	2	28	11	41	1	0	0	4	48	31	83	4	0	0
7:45 AM	3	35	14	52	1	0	0	6	61	39	106	4	0	0
8:00 AM	2	25	10	37	0	0	0	4	44	28	76	4	0	0
8:15 AM	0	17	5	22	0	0	0	4	30	18	52	1	0	0
8:30 AM	7	11	11	29	3	0	0	3	49	29	81	4	0	0
8:45 AM	4	10	3	17	0	0	0	1	24	14	39	1	0	0
9:00 AM	0	11	0	11	1	0	0	0	46	18	64	1	0	0
PK HR	9	111	44	164	2	0	0	18	194	124	336	15	0	0
Adj HR	10	119	47	176	2	0	0	19	208	133	360	16	0	0
											-			
END			From the SC	OUTH (NOF	RTHBOUN	ND)	S Leg			From the V	VEST (EAS	STBOUND)	W Leg
TIME	RT	TH	LT	TOTAL	HV	Bikes	Peds	RT	TH	LT	TOTAL	HV	Bikes	Peds
7:15 AM	53	26	7	86	0	0	0	10	40	5	55	1	0	0
7:30 AM	64	31	9	104	0	0	0	12	47	6	65	0	0	0
7:45 AM	81	39	11	131	0	0	0	15	60	7	82	0	0	0
8:00 AM	58	28	8	94	0	0	0	11	43	5	59	1	0	0
8:15 AM	30	16	6	52	0	0	0	10	14	9	33	1	0	0
8:30 AM	12	13	26	51	0	0	0	9	33	7	49	0	0	0
8:45 AM	11	3	17	31	0	0	0	2	47	5	54	1	0	0
9:00 AM	10	12	18	40	3	0	0	1	49	7	57	2	0	0
PK HR	256	124	35	415	0	0	0	48	190	23	261	2	0	0
Adj HR	274	133	38	445	0	0	0	51	204	25	280	2	0	0

VJS-TC, LLC - Steere/RIDOT Counts - Cumberland, RI

END		15 Min To	tals (adj)				
TIME	Veh	HV	Peds	Bikes			
7:15	264	4	0	0	Time	Rolling	
7:30	314	5	0	0	Start - End	Hr Vol	Pk Hr?
7:45	398	5	0	0	7:00 AM 8:00 /	AM 1261	YES
8:00	285	5	0	0	7:15 AM 8:15	AM 1167	no
8:15	170	2	0	0	7:30 AM 8:30	AM 1078	no
8:30	225	8	0	0	7:45 AM 8:45	AM 831	no
8:45	151	2	0	0	8:00 AM 9:00 /	AM 730	no
0.00	101	0	1 0	0			



William Popp Associates $^{\circ}$




(Hour)	Bikes (Peak H	our)
# of	Approach	# o1
0	From North:	0
0	From South:	0
0	From East:	0
0	From West:	0
0	Total	0
	k Hour) # of 0 0 0 0 0	K Hour) Bikes (Peak H # of Approach 0 From North: 0 From South: 0 From East: 0 From West: 0 Total

Peak Hour Factors:	From North:	0.79	SB	
	From South:	0.79	NB	
	From East:	0.79	WB	
	From West:	0.80	EB	
101	Total	0.79	All	
Heavy Vehicles:	From North:	2	1.1%	SB
	From South:	0	0.0%	NB
	From East:	16	4.4%	WB
	From West:	2	0.7%	EB

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Location:	Pine Swam	p Road@I	Diamond Hill	Road					City/Tow	n Cumber	rland, RI			
Checker:	GAN		Weather:		Sunny				Job:	Group 17	C Newell			
Date:	3/5/20	Tue	Start Time:		7:00 AM				Pk Hr:	7:30 AM	8:30 AM			
# of minutes	counted pe	r interval:	14.0	minutes										
					e. 19									-
END			From the NC	RTH (SOL	JTHBOUN	ID)	N Leg			From the E	AST (WES	TBOUNE))	E Leg
TIME	RT	TH	LT	TOTAL	HV	Bikes	Peds	RT	TH	LT	TOTAL	HV	Bikes	Peds
7:15 AM	0	0	0	0	0	0	0	0	14	49	63	2	0	0
7:30 AM	0	0	0	0	0	0	0	0	16	59	75	3	0	0
7:45 AM	0	0	0	0	0	0	0	0	21	74	95	4	0	0
8:00 AM	0	0	0	0	0	0	0	0	15	53	68	2	0	0
8:15 AM	0	0	0	0	0	0	0	0	31	55	86	1	0	0
8:30 AM	0	0	0	0	0	0	0	0	48	74	122	0	0	0
8:45 AM	0	0	0	0	0	0	0	0	32	70	102	4	0	0
9:00 AM	0	0	0	0	0	0	0	0	32	41	73	2	0	0
														5455
PK HR	0	0	0	0	0	0	0	0	115	256	371	7	0	0
Adj HR	0	0	0	0	0	0	0	0	123	274	397	8	0	
						(D)		r		Europe Alex V		TROUND	1	Wing
END		101112	From the SC	DUTH (NOF		ID)	SLeg			From the V	TOTAL		J) Dikaa	Dede
TIME	RT	TH	LT	TOTAL	HV	Bikes	Peds	RI	IH		TOTAL	HV O	Dikes	Peus
7:15 AM	87	0	24	111	5	0	0	54	66	0	120	2	0	0
7:30 AM	105	0	29	134	4	0	0	65	79	0	144	1	0	
7:45 AM	132	0	36	168	6	0	U	82	100	0	182	3	0	0
8:00 AM	95	0	26	121	5	0	0	59	12	0	131	2	0	
8:15 AM	128	0	38	166	4	0	0	36	66	0	102	4	0	0
8:30 AM	123	0	49	172	3	0	0	21	55	0	70	0	0	
8:45 AM	80	0	32	112	2	0	0	40	35	0	01	2	0	0
9:00 AM	57	0	32	89	1	0	0	44	45	0	09	2	0	0
DKUD	470	0	140	627	18	0	0	198	293	0	491	9	0	0
	4/0	1 0	149	672	10		0	212	314	1 0	526	10	1 0	0
# AUTIN	512													
	512		1 100	0/2	1		and the second distances of the second distances of the second distances of the second distances of the second	and the second	anyayan makana kata kata kata kata kata kata kata					alaanaa ahaan ta'aanaa
	512 END		15 Min To	tale (adi)		1					1			ang al a conservation and a second
	512 END		15 Min To	tals (adj)	Bikes						1			
L	512 END TIME	Veh	15 Min To	tals (adj) Peds	Bikes		Time		Rolling					

END		15 Min To	tals (adj)				
TIME	Veh	HV	Peds	Bikes			
7:15	315	10	0	0	Time	Rolling	
7:30	378	9	0	0	Start - End	Hr Vol	Pk Hr?
7:45	477	14	0	0	7:00 AM 8:00 A	M 1513	no
8:00	343	10	0	0	7:15 AM 8:15 A	M 1577	no
8:15	379	10	0	0	7:30 AM 8:30 A	M 1595	YES
8:30	396	3	0	0	7:45 AM 8:45 A	M 1434	no
8:45	316	8	0	0	8:00 AM 9:00 A	M 1360	no
9.00	269	5	0	0			



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APPROACH VOLUME TURN MOVEMENTS -- PEAK HOUR



Pedestrians (Peal	k Hour)		Bikes (Peak H	our)
Crossing Leg	# of		Approach	# o
North	0		From North:	0
South	0		From South:	0
East	0		From East:	0
West	0		From West:	0
Total	0	-	Total	0

Peak Hour Factors	From North	n/a	SB	
reak nour ractors.	From South:	0.91	NB	
	From East:	0.76	WB	
	From West:	0.67	EB	_
	Total	0.84	All	
Heavy Vehicles:	From North:	0	#DIV/0!	SB
	From South:	19	2.8%	NB
	From East:	8	2.0%	WB
	From West:	10	1.9%	EB

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Location:	Mendon Ro	ad @ Wes	t Wrentham	Road					City/Towr	Cumber	land, RI			
Checker:	LF		Weather:		Sunny				Job:	Group 17	C Newell			
Date:	3/5/20	Tue	Start Time:		7:00 AM				Pk Hr:	8:00 AM	9:00 AM			
# of minutes	counted pe	r interval:	14.0	minutes			CONTRACTOR OF THE OWNER							
														E Los
END	Ι		From the NO	RTH (SOL	JTHBOUN	D)	N Leg			From the E	AST (WES	STBOUND)	ELeg
TIME	RT	TH	LT	TOTAL	HV	Bikes	Peds	RT	TH	LT	TOTAL	HV	Bikes	Peds
7:15 AM	12	0	18	30	0	0	0	14	38	2	54	5	0	0
7:30 AM	12	0	19	31	0	0	0	15	39	2	56	5	0	0
7:45 AM	33	0	23	56	3	0	0	33	94	1	128	6	0	0
8:00 AM	25	0	25	50	2	0	0	27	85	4	116	4	0	0
8:15 AM	18	0	21	39	1	0	0	37	62	1	100	4	0	0
8:30 AM	28	0	15	43	2	0	0	31	97	1	129	3	0	0
8:45 AM	40	0	37	77	3	0	0	37	90	1	128	3	0	0
9:00 AM	19	0	18	37	2	0	0	29	100	2	131	4	0	0
1														
PK HR	105	0	91	196	8	0	0	134	349	5	488	14	0	0
Adj HR	113	0	98	211	9	0	0	144	374	5	523	15	0	0
	and the second													1
END	T		From the SC	OUTH (NOF	RTHBOUN	ID)	S Leg			From the \	NEST (EAS)) 	VV Leg
TIME	RT	TH	LT	TOTAL	HV	Bikes	Peds	RT	TH	LT	TOTAL	HV	Bikes	Peds
7:15 AM	0	0	0	0	0	0	0	14	51	18	83	0	0	0
7:30 AM	0	0	0	0	0	0	0	5	52	20	77	0	0	0
7:45 AM	0	0	0	0	0	0	0	8	45	16	69	3	0	0
8:00 AM	0	0	0	0	0	0	0	1	45	11	57	0	0	0
8:15 AM	0	0	0	0	0	0	0	3	25	10	38	3	0	0
8:30 AM	0	0	0	0	0	0	0	1	28	15	44	1	0	0
8:45 AM	0	0	0	0	0	0	0	0	60	8	68	4	0	0
9:00 AM	0	0	0	0	0	0	0	0	59	12	71	6	0	0
		-												
1														
PK HR	0	0	0	0	0	0	0	4	172	45	221	14	0	0
Adj HR	0	0	0	0	0	0	0	4	184	48	236	15	0	0

END		15 Min To	tals (adj)				
TIME	Veh	HV	Peds	Bikes			
7:15	179	5	0	0	Time	Rolling	
7:30	176	5	0	0	Start - End	Hr Vol	Pk Hr?
7:45	271	13	0	0	7:00 AM 8:00 A	M 865	no
8:00	239	6	0	0	7:15 AM 8:15 A	M 876	no
8.15	190	9	0	0	7:30 AM 8:30 A	M 931	no
8:30	231	6	0	0	7:45 AM 8:45 A	M 953	no
8:45	293	11	0	0	8:00 AM 9:00 A	M 970	YES
9.00	256	13	0	0			



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om West:	0
Total	0

ADJUSTME	ENT FACTORS DE	RIVED FRO	DIM COUNT	
Peak Hour Factors:	From North:	0.64	SB	
	From South:	n/a	NB	
	From East:	0.93	WB	
	From West:	0.78	EB	
, for an and the second second	Total	0.83	All	
Heavy Vehicles:	From North:	9	4.3%	SB
	From South:	0	#DIV/0!	NB
	From East:	15	2.9%	WB
	From West:	15	6.4%	EB

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Total

0

Checker: AF Weather: Sunny Job: Group 17C Newell Date: 3/5/20 Tue Start Time: 7:00 AM Pk Hr: T:00 AM 8:00 AM # of minutes counted per interval: 14.0 minutes 14.0 minutes From the NORTH (SOUTHBOUND) N Leg From the EAST (WESTBOUND) TIME RT TH LT TOTAL HV Bikes Peds RT TH LT TOTAL HV Bikes Peds RT TH LT TOTAL HV Bikes Peds RT TH LT TOTAL HV Bikes 7:30 AM 64 0 28 82 7 0 0 36 113 0 149 11 0 7:30 AM 64 0 28 100 3 0 0 23 83 0 106 2 0 8:00 AM 64 9 73 0 0 27 105 114 4<				erland, RI	n Cumbe	City/Town	yyaanna oo ka ahaa da ka				Road	y@Mendon	ole Highwa	Nate Whipp	Location:
Date: 3/5/20 Tue Start Time: 7:00 AM Pk Hr. T:00 AM 8:00 AM # of minutes counted per interval: Trom the NORTH (SOUTHBOUND) N Leg From the EAST (WESTBOUND) TIME RT TH LT TOTAL HV Bikes Peds RT TH LT TOTAL HV Bikes 7:30 AM 64 0 28 82 7 0 0 33 85 0 118 11 0 7:30 AM 64 0 24 88 4 0 0 36 113 0 149 11 0 7:30 AM 64 0 20 94 1 0 0 39 142 0 181 12 0 8:00 AM 81 0 19 100 3 0 20 85 0 105 4 0 8:00 AM 64 0 9 73 0 0				7C Newell	Group 1	Job:				Sunny		Weather:		AF	Checker:
# of minutes 14.0 minutes From the NORTH (SOUTHBOUND) N Leg From the EAST (WESTBOUND) TIME RT TH LT TOTAL HV Bikes Peds RT TH LT TOTAL HV Bikes 7:15 AM 54 0 28 82 7 0 0 33 85 0 118 11 0 7:30 AM 64 0 20 94 1 0 0 36 113 0 149 11 0 7:30 AM 64 0 20 94 1 0 0 36 113 0 149 11 0 8:00 AM 81 0 19 100 3 0 0 20 85 0 106 2 0 8:00 AM 64 0 9 73 0 0 0 21 93 0 114 4 0 9:00 AM 50 0 144 64				8:00 AM	7:00 AM	Pk Hr:				7:00 AM		Start Time:	Tue	3/5/20	Date:
END From the NORTH (SOUTHBOUND) N Leg From the EAST (WESTBOUND) TIME RT TH LT TOTAL HV Bikes Peds RT TH LT TOTAL HV Bikes 7.15 AM 54 0 28 82 7 0 0 33 85 0 118 11 0 7:30 AM 64 0 24 88 4 0 0 36 113 0 149 11 0 7:45 AM 74 0 20 94 1 0 0 39 142 0 181 12 0 8:00 AM 81 0 19 100 3 0 0 23 83 0 106 2 0 8:15 AM 75 0 28 103 8 0 0 21 93 0 114 4 0 9:00 AM 50 0											minutes	14.0	r interval:	counted per	# of minutes
END From the NORTH (SOUTHBOUND) N Leg From the EAST (WESTBOUND) TIME RT TH LT TOTAL HV Bikes Peds RT TH LT TOTAL HV Bikes 7:15 AM 54 0 28 82 7 0 0 33 85 0 118 11 0 7:30 AM 64 0 24 88 4 0 0 36 113 0 149 11 0 7:45 AM 75 0 28 103 8 0 0 23 83 0 106 2 0 8:00 AM 64 0 9 73 0 0 0 9 90 0 99 3 0 8:45 AM 70 0 6 76 2 0 0 114 4 0 9:00 AM 50 0 14 64 2 0 </td <td></td>															
TIME RT TH LT TOTAL HV Bikes Peds RT TH LT TOTAL HV Bikes 7:15 AM 54 0 28 82 7 0 0 33 85 0 118 11 0 7:45 AM 64 0 24 88 4 0 0 39 142 0 181 12 0 8:00 AM 81 0 19 100 3 0 0 23 83 0 105 4 0 8:00 AM 64 0 9 73 0 0 0 9 90 0 99 3 0 8:30 AM 64 0 9 73 0 0 0 27 105 0 114 4 0 9:00 AM 50 0 14 64 2 0 0 131 423 0	E Leg))	TBOUND	EAST (WES	From the I			N Leg	1D)	JTHBOUN	RTH (SOU	From the NC			END
7:15 AM 54 0 28 82 7 0 0 33 85 0 118 11 0 7:30 AM 64 0 24 88 4 0 0 36 113 0 149 11 0 7:30 AM 64 0 20 94 1 0 0 36 113 0 149 11 0 8:00 AM 81 0 19 100 3 0 0 23 83 0 106 2 0 8:05 AM 76 0 28 103 8 0 0 29 90 0 99 3 0 8:30 AM 64 0 9 73 0 0 27 105 0 114 4 0 9:00 AM 50 0 144 64 2 0 0 27 105 0 132 7 0 PK HR 273 0 91 364 15 0 0 <td>Peds</td> <td>Bikes</td> <td>HV</td> <td>TOTAL</td> <td>LT</td> <td>TH</td> <td>RT</td> <td>Peds</td> <td>Bikes</td> <td>HV</td> <td>TOTAL</td> <td>LT</td> <td>TH</td> <td>RT</td> <td>TIME</td>	Peds	Bikes	HV	TOTAL	LT	TH	RT	Peds	Bikes	HV	TOTAL	LT	TH	RT	TIME
7:30 AM 64 0 24 88 4 0 0 36 113 0 149 11 0 7:45 AM 74 0 20 94 1 0 0 39 142 0 181 12 0 8:00 AM 81 0 19 100 3 0 0 23 83 0 106 2 0 8:15 AM 75 0 28 103 8 0 0 20 85 0 105 4 0 8:30 AM 64 0 9 73 0 0 0 9 90 0 99 3 0 8:45 AM 70 0 6 76 2 0 0 27 105 0 114 4 0 9:00 AM 50 0 144 64 2 0 0 27 105 0 114 4 0 9:00 AM 50 91 364 15 0 0	0	0	11	118	0	85	33	0	0	7	82	28	0	54	7:15 AM
7:45 AM 74 0 20 94 1 0 0 39 142 0 181 12 0 8:00 AM 81 0 19 100 3 0 0 23 83 0 106 2 0 8:15 AM 75 0 28 103 8 0 0 20 85 0 106 2 0 8:30 AM 64 0 9 73 0 0 0 9 90 0 99 3 0 8:45 AM 70 0 6 76 2 0 0 27 105 0 114 4 0 9:00 AM 50 0 14 64 2 0 0 27 105 0 1132 7 0 9:00 AM 293 0 98 391 16 0 0 140 453 0 593 <td>0</td> <td>0</td> <td>11</td> <td>149</td> <td>0</td> <td>113</td> <td>36</td> <td>0</td> <td>0</td> <td>4</td> <td>88</td> <td>24</td> <td>0</td> <td>64</td> <td>7:30 AM</td>	0	0	11	149	0	113	36	0	0	4	88	24	0	64	7:30 AM
8:00 AM 81 0 19 100 3 0 0 23 83 0 106 2 0 8:15 AM 75 0 28 103 8 0 0 20 85 0 105 4 0 8:30 AM 64 0 9 73 0 0 0 9 90 0 99 3 0 8:45 AM 70 0 6 76 2 0 0 21 93 0 114 4 0 9:00 AM 50 0 14 64 2 0 0 27 105 0 132 7 0 PK HR 273 0 91 364 15 0 0 131 423 0 554 36 0 PK HR 293 0 98 391 16 0 0 140 453 0 593 39 0 TIME RT TH LT TOTAL HV Bikes	0	0	12	181	0	142	39	0	0	1	94	20	0	74	7:45 AM
8:15 AM 75 0 28 103 8 0 0 20 85 0 105 4 0 8:30 AM 64 0 9 73 0 0 0 9 90 0 99 3 0 8:45 AM 70 0 6 76 2 0 0 21 93 0 114 4 0 9:00 AM 50 0 14 64 2 0 0 27 105 0 132 7 0 PK HR 273 0 91 364 15 0 0 131 423 0 554 36 0 Adj HR 293 0 98 391 16 0 0 140 453 0 593 39 0 TIME RT TH LT TOTAL HV Bikes Peds RT TH LT TOTAL HV Bikes 73 61 112 8 0 0	0	0	2	106	0	83	23	0	0	3	100	19	0	81	8:00 AM
8:30 AM 64 0 9 73 0 0 9 90 0 99 3 0 8:45 AM 70 0 6 76 2 0 0 21 93 0 114 4 0 9:00 AM 50 0 14 64 2 0 0 27 105 0 132 7 0 PK HR 273 0 91 364 15 0 0 131 423 0 554 36 0 PK HR 293 0 98 391 16 0 0 140 453 0 593 39 0 TIME RT TH LT TOTAL HV Bikes Peds RT TH LT TOTAL HV Bikes 7:15 AM 0 0 0 0 0 0 0 0 90 42 132 10 0 7:30 AM 0 0 0 0 0 0 <	0	0	4	105	0	85	20	0	0	8	103	28	0	75	8:15 AM
8:45 AM 70 0 6 76 2 0 0 21 93 0 114 4 0 9:00 AM 50 0 14 64 2 0 0 27 105 0 132 7 0 PK HR 273 0 91 364 15 0 0 131 423 0 554 36 0 Adj HR 293 0 98 391 16 0 0 140 453 0 593 39 0 TIME RT TH LT TOTAL HV Bikes Peds RT TH LT TOTAL HV Bikes 7:15 AM 0 0 0 0 0 0 0 0 112 8 0 7:30 AM 0 0 0 0 0 0 0 107 90 112 8 0 7:30 AM 0 0 0 0 0 0 0 0 <t< td=""><td>0</td><td>0</td><td>3</td><td>99</td><td>0</td><td>90</td><td>9</td><td>0</td><td>0</td><td>0</td><td>73</td><td>9</td><td>0</td><td>64</td><td>8:30 AM</td></t<>	0	0	3	99	0	90	9	0	0	0	73	9	0	64	8:30 AM
9:00 AM 50 0 14 64 2 0 0 27 105 0 132 7 0 PK HR 273 0 91 364 15 0 0 131 423 0 554 36 0 Adj HR 293 0 98 391 16 0 0 140 453 0 593 39 0 END From the SOUTH (NORTHBOUND) S Leg From the WEST (EASTBOUND) SI Leg RT TH LT TOTAL HV Bikes Peds RT TH LT TOTAL HV Bikes Peds RT TH LT TOTAL HV Bikes Peds RT TH LT TOTAL HV Bikes 7:15 AM 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	0	0	4	114	0	93	21	0	0	2	76	6	0	70	8:45 AM
PK HR 273 0 91 364 15 0 0 131 423 0 554 36 0 Adj HR 293 0 98 391 16 0 0 140 453 0 593 39 0 END From the SOUTH (NORTHBOUND) S Leg From the WEST (EASTBOUND) TIME RT TH LT TOTAL HV Bikes Peds RT TH LT TOTAL HV Bikes 7:15 AM 0 0 0 0 0 0 0 112 8 0 7:30 AM 0 0 0 0 0 0 0 0 90 42 132 10 0 7:45 AM 0 0 0 0 0 0 0 107 90 197 11 0 8:00 AM 0 0 0 0 0 0 0 </td <td>0</td> <td>0</td> <td>7</td> <td>132</td> <td>0</td> <td>105</td> <td>27</td> <td>0</td> <td>0</td> <td>2</td> <td>64</td> <td>14</td> <td>0</td> <td>50</td> <td>9:00 AM</td>	0	0	7	132	0	105	27	0	0	2	64	14	0	50	9:00 AM
PK HR 273 0 91 364 15 0 0 131 423 0 554 36 0 Adj HR 293 0 98 391 16 0 0 140 453 0 593 39 0 END From the SOUTH (NORTHBOUND) S Leg From the WEST (EASTBOUND) TIME RT TH LT TOTAL HV Bikes Peds RT TH LT TOTAL HV Bikes Peds RT TH LT TOTAL HV Bikes Peds RT TH LT TOTAL HV Bikes 7:35 AM 0 <td></td>															
PK HR 273 0 91 364 15 0 0 131 423 0 554 36 0 Adj HR 293 0 98 391 16 0 0 140 453 0 593 39 0 END From the SOUTH (NORTHBOUND) S Leg From the WEST (EASTBOUND) TIME RT TH LT TOTAL HV Bikes Peds RT TH LT TOTAL HV Bikes 7:15 AM 0 0 0 0 0 0 0 0 0 112 8 0 7:30 AM 0 0 0 0 0 0 0 0 0 0 112 8 0 7:30 AM 0 0 0 0 0 0 0 0 0 0 0 11 0 8:00 AM 0 0 0 0															
Adj HR 293 0 98 391 16 0 0 140 453 0 593 39 0 END From the SOUTH (NORTHBOUND) S Leg From the WEST (EASTBOUND) From the WEST (EASTBOUND) N	0	0	36	554	0	423	131	0	0	15	364	91	0	273	PK HR
END From the SOUTH (NORTHBOUND) S Leg From the WEST (EASTBOUND) TIME RT TH LT TOTAL HV Bikes Peds RT TH LT Bikes Peds RT TH LT Bikes O O	0	0	39	593	0	453	140	0	0	16	391	98	0	293	Adj HR
END From the SOUTH (NORTHBOUND) S Leg From the WEST (EASTBOUND) TIME RT TH LT TOTAL HV Bikes Peds AT Peds AT Peds AT Peds AT Peds AT Peds AT															
TIME RT TH LT TOTAL HV Bikes Peds Peds<	W Leg	D)	TBOUNE	WEST (EAS	From the			S Leg	ID)	RTHBOUN	OUTH (NOF	From the SC		T	END
7:15 AM 0 0 0 0 0 0 72 40 112 8 0 7:30 AM 0 0 0 0 0 0 0 0 90 42 132 10 0 7:35 AM 0 0 0 0 0 0 0 90 42 132 10 0 7:45 AM 0 0 0 0 0 0 0 107 90 197 11 0 8:00 AM 0 0 0 0 0 0 0 0 73 61 134 3 0 8:15 AM 0 0 0 0 0 0 0 0 61 31 92 6 0 8:30 AM 0 0 0 0 0 0 0 5 28 86 6 0	Peds	Bikes	HV	TOTAL	LT	TH	RT	Peds	Bikes	HV	TOTAL	LT	ТН	RT	TIME
7:30 AM 0 0 0 0 0 0 90 42 132 10 0 7:45 AM 0 0 0 0 0 0 0 107 90 197 11 0 8:00 AM 0 0 0 0 0 0 0 73 61 134 3 0 8:15 AM 0 0 0 0 0 0 6 0 8:30 AM 0 0 0 0 0 0 58 28 86 6 0	0	0	8	112	40	72	0	0	0	0	0	0	0	0	7:15 AM
7:45 AM 0 0 0 0 0 0 0 107 90 197 11 0 8:00 AM 0 0 0 0 0 0 0 0 73 61 134 3 0 8:00 AM 0 0 0 0 0 0 0 73 61 134 3 0 8:15 AM 0 0 0 0 0 0 61 31 92 6 0 8:30 AM 0 0 0 0 0 0 5 28 86 6 0	0	0	10	132	42	90	0	0	0	0	0	0	0	0	7:30 AM
8:00 AM 0 0 0 0 0 0 73 61 134 3 0 8:15 AM 0 0 0 0 0 0 0 61 31 92 6 0 8:15 AM 0 0 0 0 0 0 61 31 92 6 0 8:30 AM 0 0 0 0 0 0 58 28 86 6 0	0	0	11	197	90	107	0	0	0	0	0	0	0	0	7:45 AM
8:15 AM 0 0 0 0 0 0 0 0 1 31 92 6 0 8:30 AM 0 0 0 0 0 0 0 58 28 86 6 0	0	0	3	134	61	73	0	0	0	0	0	0	0	0	8:00 AM
8:30 AM 0 0 0 0 0 0 0 0 58 28 86 6 0	0	0	6	92	31	61	0	0	0	0	0	0	0	0	8:15 AM
	0	0	6	86	28	58	0	0	0	0	0	0	0	0	8:30 AM
8:45 AM 0 0 0 0 0 0 0 0 0 0 10 59 129 5 0	0	0	5	129	59	70	0	0	0	0	0	0	0	0	8:45 AM
9:00 AM 0 0 0 0 0 0 0 0 85 3 88 8 0	0	0	8	88	3	85	0	0	0	0	0	0	0	0	9:00 AM
											L				
PKHR 0 0 0 0 0 0 0 0 342 233 575 32 0	0	0	32	575	233	342	0	0	0	0	0	0	0	0	PK HR
AdjHR 0 0 0 0 0 0 0 0 366 250 616 34 0	0	0	34	616	250	366	0	0	0	0	0	0	0	0	Adj HR

END		15 Min To	tals (adj)				
TIME	Veh	HV	Peds	Bikes			
7:15	334	28	0	0	Time	Rolling	
7:30	395	27	0	0	Start - End	Hr Vol	Pk Hr?
7:45	506	26	0	0	7:00 AM 8:00 AI	Л 1599	YES
8:00	364	9	0	0	7:15 AM 8:15 AI	A 1586	no
8:15	321	19	0	0	7:30 AM 8:30 AI	A 1467	no
8:30	276	10	0	0	7:45 AM 8:45 AI	A 1303	no
8:45	342	12	0	0	8:00 AM 9:00 AI	A 1243	no
9:00	304	18	0	0			





From West:

EB

5.5%

34



SUBJ: ============	DELIVERABLE: Weekday PM Traffic Counts – Cumberland RI
DATE:	March 9, 2020 Southern
FROM:	Valerie J. Southern, VJS-TC, LLC
TO:	Steve Baker, Steere Engineering

<u>Thursday, March 5, 2020 – 3:00 PM – 6:00 PM</u>

- 1 Diamond Hill Road @ Nate Whipple Highway
- 2 Pine Swamp Road @ Wrentham Road
- 3 Pine Swamp Road @ Diamond Hill Road
- 4 Mendon Road @ West Wrentham Road
- 5 Nate Whipple Highway @ Mendon Road

VJS-TC, LLC - Steere	e/RIDOT Counts - Cumberland, RI

				VJS-TC, LLC - Steere	PRIDOT Counts - Cumberland,	RI			
Location:	Diamond H	Hill Road @	Nate Whipple	Highway	City/Town:	Cumberia	ind, RI		
Checker:	DLN		Weather:	Sunny	Job:	Group 17C	Newell		
Date:	3/5/20	enter day	Start Time:	3:00 PM	Pk Hr.	4:45 PM	to	5:45 PM	
# of minutes	counted per i	interval:	14 n	ninutes		-			

END		F	From the No	ORTH (SOL	THBOUND	D)	N Leg			From the I	EAST (WES	TBOUND)		E Leg
TIME	RT	TH	LT	TOTAL	HV	Bikes	Peds	RT	TH	LT	TOTAL	HV	Bikes	Peds
3:15 PM	6	17	9	32	0	0	0	17	36	10	63	0	0	0
3:30 PM	7	20	10	37	4	0	0	18	38	8	64	0	0	0
3:45 PM	6	19	8	33	4	0	0	17	36	9	62	6	2	0
4:00 PM	7	14	12	33	3	0	0	30	75	27	132	1	0	0
4:15 PM	7	7	10	24	0	0	0	22	50	24	96	4	0	0
4:30 PM	2	7	9	18	0	0	0	13	33	9	55	4	0	0
4:45 PM	16	54	30	100	7	0	0	37	141	65	243	13	0	0
5:00 PM	12	60	29	101	8	0	0	32	133	57	222	13	0	0
5:15 PM	1	24	15	40	3	0	0	20	66	35	121	9	0 /	0
5:30 PM	10	38	28	76	4	0	0	26	103	60	189	10	0	0
5:45 PM	15	52	41	108	5	0	0	32	140	84	256	13	0	0
6:00 PM	8	21	24	53	4	0	0	30	45	3	78	0	0	0
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PK HR	38	174	113	325	20	0	0	110	442	236	788	45	0	0
Adj HR	41	186	121	348	21	0	0	118	474	253	845	48	0	0

END			From the SC	DUTH (NOR	THBOUND)	S Leg			From the	WEST (EAS	TBOUND)		W Leg
TIME	RT	TH	LT	TOTAL	HV	Bikes	Peds	RT	тн	LT	TOTAL	HV	Bikes	Peds
3:15 PM	10	20	3	33	2	0	0	1	9	8	18	1	0	0
3:30 PM	13	25	4	42	3	0	0	3	12	7	22	1	0	0
3:45 PM	16	25	5	46	14	4	0	4	11	13	28	2	0	0
4:00 PM	22	35	4	61	4	0	0	11	49	8	68	3	0	0
4:15 PM	1	9	0	10	0	0	0	3	25	0	28	0	0	0
4:30 PM	4	6	1	11	0	0	0	6	17	6	29	4	0	0
4:45 PM	47	45	14	106	8	0	0	6	81	18	105	7	0	0
5:00 PM	39	54	9	102	6	0	0	7	79	14	100	14	0	0
5:15 PM	19	33	8	60	2	0	0	14	44	13	71	9	0	0
5:30 PM	28	57	10	95	3	0	0	12	74	18	104	13	0	0
5:45 PM	34	81	8	123	8	0	0	10	109	23	142	17	0	0
6:00 PM	14	62	14	90	8	0	0	0	41	6	47	8	0	0
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
					-									
PK HR	120	225	35	380	19	0	0	43	306	68	417	53	0	0
Adj HR	129	241	38	408	20	0	0	46	328	73	447	57	0	0

END	15 Min Tota	als (adj)							
TIME	Veh	ΗV	Peds	Bikes				Rolling	
3:15 PM	156	3	0	0	R	olling He	our	Hour	
3:30 PM	177	9	0	0	Start	to	End	Volume	Pk Hr?
3:45 PM	181	28	6	0	3:00 PM	-	4:00 PM	829	no
4:00 PM	315	12	0	0	3:15 PM	-	4:15 PM	842	no
4:15 PM	169	4	0	0	3:30 PM	(73)	4:30 PM	786	no
4:30 PM	121	9	0	0	3:45 PM	(m)	4:45 PM	1199	no
4:45 PM	594	38	0	0	4:00 PM		5:00 PM	1447	no
5:00 PM	563	44	0	0	4:15 PM	(4 1)	5:15 PM	1591	no
5:15 PM	313	25	0	0	4:30 PM		5:30 PM	1967	no
5:30 PM	497	32	0	0	4:45 PM	220	5:45 PM	2047	YES
5:45 PM	674	46	0	0	5:00 PM		6:00 PM	1771	no
6:00 PM	287	21	0	0	5:15 PM	-	6:15 PM	1458	no
6:15 PM	0	0	0	0	5:30 PM		6:30 PM	961	no
6:30 PM	0	0	0	0	5:45 PM	L	6:45 PM	287	no
6:45 PM	0	0	0	0	6:00 PM		7:00 PM	0	no
7:00 PM	0	0	0	0					





VJS-TC	LLC -	Steere/R	IDOT	Counts	- Cumberland	RI
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Location:	Pine Swa	mp Road @	Wrentham I	Road					City/Town:	Cumbe	rland, RI			
Checker:	VJS		Weather:		Sunny				Job:	Group 1	7C Newell			
Date:	3/5/20	enter day	Start Time:		3:00 PM				Pk Hr.	4:45 PM	to	5:45 PM		
# of minutes c	ounted per	interval:	14	minutes					100000000000000000000000000000000000000					
0000000	C 31 (12)													
END														11
END			From the NC	RTH (SOL))	N Leg			From the	EAST (WES	TBOUND)		ELeg
TIME	RT	TH	LT	TOTAL	HV	Bikes	Peds	RT	TH	LT	TOTAL	HV	Bikes	Peds
3:15 PM	6	16	5	27	0	0	0	2	36	15	53	1	0	0
3:30 PM	7	20	6	33	0	0	0	3	45	19	67	0	0	0
3:45 PM	8	18	5	31	1	0	0	3	63	26	92	2	0	0
4:00 PM	3	29	11	43	1	0	0	3	79	37	119	1	0	0
4:15 PM	6	22	8	36	1	0	0	6	77	37	120	1	0	0
4:30 PM	7	24	5	36	0	0	0	1	82	30	113	0	0	0
4:45 PM	3	27	7	37	0	0	0	2	90	24	116	1	0	0
5:00 PM	5	35	5	45	1	0	0	5	96	30	131	0	0	0
5:15 PM	4	26	5	35	0	0	0	8	61	27	96	1	0	0
5:30 PM	6	35	8	49	0	0	0	7	78	36	121	2	0	0
5:45 PM	7	24	7	38	0	0	0	5	70	29	104	0	0	0
6:00 PM	4	22	3	29	0	0	0	1	81	31	113	0	0	0
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	0	0	ot	0	0	0	0	0	0	0	0	0	0	0
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
											I		U	
סע עס	20	400	05	107	121	-			101 M.S. 101970					
Aditio	22	120	25	167	1	0	0	25	305	122	452	3	0	0
Auj HR		1 129	21	180	1	0	0	27	327	131	485	3	0	0
END		F	From the SO	UTH (NOR	THBOUND)	-	S Leg			From the \	WEST (EAS	TBOUND)		W Leg
TIME	RT	TH	т Г	TOTAL	HW	Bikos	Pode	DT	ты	I.T.	TOTAL		Dileas	Deda

LIND			From the St		THEOUND	9	Sleg	1		From the	WEST (EAS	(IROUND)		W Leg
TIME	RT	TH	LT	TOTAL	HV	Bikes	Peds	RT	тн	LT	TOTAL	HV	Bikes	Peds
3:15 PM	2	5	14	21	0	0	0	2	27	5	34	0	0	0
3:30 PM	3	6	18	27	0	0	0	2	34	6	42	0	0	0
3:45 PM	13	6	26	45	1	0	0	10	53	3	66	3	0	0
4:00 PM	16	11	7	34	0	0	0	8	40	12	60	0	0	0
4:15 PM	5	7	22	34	1	0	0	1	49	10	60	0	0	0
4:30 PM	7	10	25	42	0	0	0	7	40	4	51	0	0	0
4:45 PM	20	12	5	37	1	0	0	2	32	3	37	0	0	0
5:00 PM	35	12	7	54	0	0	0	12	46	3	61	0	0	0
5:15 PM	23	18	11	52	0	0	0	3	36	2	41	0	0	0
5:30 PM	26	19	8	53	0	0	0	4	14	8	26	0	0	0
5:45 PM	40	14	11	65	0	0	0	9	37	3	49	0	0	0
6:00 PM	21	15	11	47	0	0	0	4	36	3	43	0	0	0
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
											10000	36S		
PKHR	124	63	37	224	0	0	0	28	133	16	177	0	0	0
Adj HR	133	68	40	241	0	0	0	30	143	17	190	0	0	0

END	15 Min Tota	als (adj)							67.5
TIME	Veh	HV	Peds	Bikes				Rolling	
3:15 PM	145	.1	0	0	R	olling H	DUL	Hour	
3:30 PM	181	0	0	0	Start	to	End	Volume	Pk Hr?
3:45 PM	251	8	0	0	3:00 PM	-	4:00 PM	851	no
4:00 PM	274	2	0	0	3:15 PM	-	4:15 PM	974	no
4:15 PM	268	3	0	0	3:30 PM	-	4:30 PM	1052	no
4:30 PM	259	0	0	0	3:45 PM	22	4:45 PM	1044	no
4:45 PM	243	2	0	0	4:00 PM	-	5:00 PM	1082	no
5:00 PM	312	1	0	0	4:15 PM	2	5:15 PM	1054	no
5:15 PM	240	1	0	0	4:30 PM	-	5:30 PM	1062	no
5:30 PM	267	2	0	0	4:45 PM	-	5:45 PM	1093	YES
5:45 PM	274	0	0	0	5:00 PM	-	6:00 PM	1030	no
6:00 PM	249	0	0	0	5:15 PM	-	6:15 PM	790	no
6:15 PM	0	0	0	0	5:30 PM		6:30 PM	523	no
6:30 PM	0	0	0	0	5:45 PM		6:45 PM	249	по
6:45 PM	0	0	0	0	6:00 PM	-	7:00 PM	0	no
7:00 PM	0	0	0	0					

SPECIAL CONDITIONS
NOTES



VJS-TC,	LLC -	Steere/RIDOT	Counts -	Cumberland	. RI
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Location:	Pine Swam	p Road @	Diamond Hill Road	t	City/Town:	Cumberla	nd, RI	
Checker:	GN		Weather:	Sunny	Job:	Group 17C	Newell	
Date:	3/5/20	enter day	Start Time:	3:00 PM	Pk Hr.	4:45 PM	to	5:45 PM
# of minutes c	ounted per in	terval:	14 minute	es			81.138	

END		F	From the NC	ORTH (SOL	THBOUN	D)	N Leg			From the	EAST (WES	TBOUND)		E Leg
TIME	RT	TH	LT	TOTAL	HV	Bikes	Peds	RT	TH	LT	TOTAL	HV	Bikes	Peds
3:15 PM	0	0	0	0	0	0	0	0	70	92	162	6	0	0
3:30 PM	0	0	0	0	0	0	0	0	88	116	204	7	0	0
3:45 PM	0	0	0	0	0	0	0	0	70	79	149	9	0	0
4:00 PM	0	0	0	0	0	0	0	0	91	112	203	7	0	0
4:15 PM	0	0	0	0	0	0	0	0	94	131	225	5	0	0
4:30 PM	0	0	0	0	0	0	0	0	82	121	203	3	0	0
4:45 PM	0	0	0	0	0	0	0	0	84	128	212	4	0	0
5:00 PM	0	0	0	0	0	0	0	0	77	129	206	0	0	0
5:15 PM	0	0	0	0	0	0	0	0	91	128	219	2	0	0
5:30 PM	0	0	0	0	0	0	0	0	77	131	208	3	0	0
5:45 PM	0	0	0	0	0	0	0	0	81	136	217	5	0	0
6:00 PM	0	0	0	0	0	0	0	0	72	89	161	1	0	0
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		· · · · · · · · · · · · · · · · · · ·												
PK HR	0	0	0	0	0	o	0	0	326	524	850	10	o	0
Adj HR	0	0	0	0	0	0	0	0	349	561	910	11	0	0

END			From the Se	OUTH (NOR	THBOUNE))	S Leg	8		From the	WEST (EAS	TBOUND)		W Leg
TIME	RT	TH	LT	TOTAL	HV	Bikes	Peds	RT	TH	LT	TOTAL	HV	Bikes	Peds
3:15 PM	47	0	25	72	3	0	0	33	31	0	64	1	0	0
3:30 PM	60	0	32	92	4	0	0	42	39	0	81	1	0	0
3:45 PM	32	0	46	78	2	0	0	52	34	0	. 86	4	0	0
4:00 PM	38	0	43	81	3	0	0	62	21	0	83	3	0	0
4:15 PM	44	0	68	112	4	0	0	49	30	0	79	3	0	0
4:30 PM	45	0	59	104	1	0	0	49	39	0	88	4	0	0
4:45 PM	49	0	51	100	1	0	0	35	38	0	73	2	0	0
5:00 PM	40	0	55	95	1	0	0	45	32	0	77	0	0	0
5:15 PM	53	0	51	104	1	0	0	51	33	0	84	0	0	0
5:30 PM	56	0	45	101	2	0	0	45	40	0	85	1	0	0
5:45 PM	74	0	44	118	0	0	0	47	60	0	107	2	0	0
6:00 PM	40	0	46	86	1	0	0	32	35	0	67	1	0	0
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PK HR	223	0	195	418	4	0	0	188	165	0	353	3	0	0
Adj HR	239	0	209	448	4	0	0	201	177	0	378	3	0	0

END	15 Min Tota	als (adj)							
TIME	Veh	HV	Peds	Bikes				Rolling	
3:15 PM	319	11	0	0	R	olling H	our	Hour	1
3:30 PM	404	13	0	0	Start	to	End	Volume	Pk Hr?
3:45 PM	335	16	0	0	3:00 PM	-	4:00 PM	1451	no
4:00 PM	393	14	0	0	3:15 PM	-	4:15 PM	1578	no
4:15 PM	446	13	0	0	3:30 PM	-	4:30 PM	1597	no
4:30 PM	423	9	0	0	3:45 PM	-	4:45 PM	1675	no
4:45 PM	413	8	0	0	4:00 PM	-	5:00 PM	1687	no
5:00 PM	405	1	0	0	4:15 PM	-	5:15 PM	1677	no
5:15 PM	436	3	0	0	4:30 PM	-	5:30 PM	1676	no
5:30 PM	422	6	0	0	4:45 PM	-	5:45 PM	1737	YES
5:45 PM	474	8	0	0	5:00 PM	-	6:00 PM	1668	no
6:00 PM	336	3	0	0	5:15 PM	1	6:15 PM	1232	no
6:15 PM	0	0	0	0	5:30 PM	-	6:30 PM	810	no
6:30 PM	0	0	0	0	5:45 PM	-	6:45 PM	336	no
6:45 PM	0	0	0	0	6:00 PM	-	7:00 PM	0	no
7:00 PM	0	0	0	0					





VJS-TC, LLC - Steere/RIDOT	Counts - Cumberland, R
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Location.	Mendon R	oad@West	Wrentham I	Road					City/Town:	Cumbe	rland, RI			
Checker:	LF		Weather:		Sunny				Job:	Group 17	7C Neweli			
Date:	3/5/20	enter day	Start Time	:	3:00 PM				Pk Hr.	4:45 PM	to	5:45 PM		
# of minutes of	counted per i	interval:	14	minutes						1. 1.000000000 2				
												2		- C. C.
											1		the state of the s	
END		ſ	From the NO	ORTH (SOL	JTHBOUNE	D)	N Leg			From the I	EAST (WES	TBOUND)	2	E Leg
TIME	RT	TH	LT	TOTAL	HV	Bikes	Peds	RT	TH	LT	TOTAL	HV	Bikes	Peds
3:15 PM	19	2	33	54	3	0	0	34	99	2	135	5	0	0
3:30 PM	24	2	41	67	6	0	0	42	124	3	169	6	0	0
3:45 PM	22	0	37	59	2	0	0	32	85	1	118	4	0	0
4:00 PM	30	0	30	60	2	0	0	31	85	2	118	5	0	0
4:15 PM	42	0	35	77	4	0	0	30	112	6	148	3	0	0
4:30 PM	29	0	31	60	0	0	0	32	70	0	102	2	0	0
4:45 PM	29	1	39	69	2	0	0	18	73	3	94	0	0	0
5:00 PM	26	0	52	78	3	0	0	34	99	4	137	1	0	0
5:15 PM	24	0	27	51	0	0	0	35	58	0	93	1	0	0
5:30 PM	38	0	41	79	2	0	0	36	90	1	127	2	0	0
5:45 PM	31	0	44	75	0	0	0	24	95	2	121	1	0	0
6:00 PM	31	0	23	54	0	0	0	24	98	1	123	1	0	0
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	0	0	0	0	0	0	0	D	0	0	0	0	0	D
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
				The course of th	10 21					da di second				
PK HR	119	0	164	283	5	0	0	129	342	7	478	5	0	0
Adj HR	128	0	176	304	5	0	0	138	366	0	512	5	0	0
								100	1 500 1	0	012	~ 1	U 1	0
							ÿ	100	500 1	0	512	Ŭ I	<u> </u>	U
							ÿ	100	1 000 1	<u> </u>	512			
END		F	rom the SC	DUTH (NOR	THBOUND)	SLeg	100		From the V	VEST (EAS	TBOUND)	<u> </u>	W Leg
END TIME	RT	F TH	From the SC	DUTH (NOR TOTAL	THBOUND) Bikes	S Leg Peds	RT	тн	From the V	VEST (EAS	TBOUND) HV	Bikes	W Leg Peds
END TIME 3:15 PM	RT 0	F TH 0	From the SC	DUTH (NOR TOTAL 0	THBOUND HV 0) Bikes 0	S Leg Peds 0	RT 1	TH 67	From the V LT 10	VEST (EAS TOTAL 78	TBOUND) HV 2	Bikes 0	W Leg Peds
END TIME 3:15 PM 3:30 PM	RT 0 0	F TH O O	From the SC LT 0 0	DUTH (NOR TOTAL 0 0	THBOUND HV 0 0) Bikes 0 0	S Leg Peds 0 0	RT 1 0	TH 67 84	From the V LT 10 12	VEST (EAS TOTAL 78 96	TBOUND) HV 2 3	Bikes 0 0	W Leg Peds 0 0
END TIME 3:15 PM 3:30 PM 3:45 PM	RT 0 0 0	F TH O O O	From the SC LT 0 0	DUTH (NOR TOTAL 0 0 0	THBOUND HV 0 0) Bikes 0 0 0	S Leg Peds 0 0	RT 1 0 1	TH 67 84 107	From the V LT 10 12 13	VEST (EAS TOTAL 78 96 121	TBOUND) HV 2 3 5	Bikes 0 0	W Leg Peds 0 0
END TIME 3:15 PM 3:30 PM 3:45 PM 4:00 PM	RT 0 0 0 0	ГН 0 0 0 0 0	From the SC LT 0 0 0	DUTH (NOR TOTAL 0 0 0 0	THBOUND HV 0 0 0 0) Bikes 0 0 0 0	S Leg Peds 0 0 0 0	RT 1 0 1 2	TH 67 84 107 74	From the V LT 10 12 13 14	VEST (EAS TOTAL 78 96 121 90	TBOUND) HV 2 3 5 3	Bikes 0 0 0	W Leg Peds 0 0 0
END TIME 3:15 PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM	RT 0 0 0 0	F TH 0 0 0 0 0 0	From the SC LT 0 0 0 0 0	DUTH (NOR TOTAL 0 0 0 0	THBOUND HV 0 0 0 0) Bikes 0 0 0 0 0	S Leg Peds 0 0 0 0 0	RT 1 0 1 2 3	TH 67 84 107 74 110	From the V LT 10 12 13 14 25	VEST (EAS TOTAL 78 96 121 90 138	TBOUND) HV 2 3 5 3 1	Bikes 0 0 0 0 0	W Leg Peds 0 0 0 0
END TIME 3:15 PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM	RT 0 0 0 0 0 0	F TH 0 0 0 0 0 0	From the SC LT 0 0 0 0 0 0 0 0	DUTH (NOR TOTAL 0 0 0 0 0 0	THBOUND HV 0 0 0 0 0 0) Bikes 0 0 0 0 0 0 0	S Leg Peds 0 0 0 0 0 0 0 0	RT 1 0 1 2 3 0	TH 67 84 107 74 110 71	From the V LT 10 12 13 14 25 32	VEST (EAS TOTAL 78 96 121 90 138 103	TBOUND) HV 2 3 5 3 1 3	Bikes 0 0 0 0 0 0 0	W Leg Peds 0 0 0 0 0 0
END TIME 3:15 PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:35 PM	RT 0 0 0 0 0 0 0 0	F TH 0 0 0 0 0 0 0 0	From the SC LT 0 0 0 0 0 0 0 0 0 0	DUTH (NOR TOTAL 0 0 0 0 0 0 0 0	THBOUND HV 0 0 0 0 0 0 0 0 0) Bikes 0 0 0 0 0 0 0 0 0 0	S Leg Peds 0 0 0 0 0 0 0 0 0 0	RT 1 0 1 2 3 0	TH 67 84 107 74 110 71 71	From the V LT 10 12 13 14 25 32 26	VEST (EAS TOTAL 78 96 121 90 138 103 98	TBOUND) HV 2 3 5 3 1 3 4	Bikes 0 0 0 0 0 0 0 0 0	W Leg Peds 0 0 0 0 0 0 0 0 0 0
END TIME 3:15 PM 3:30 PM 4:00 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM	RT 0 0 0 0 0 0 0 0 0 0	F TH 0 0 0 0 0 0 0 0 0 0 0 0 0	From the SC LT 0 0 0 0 0 0 0 0 0 0 0 0 0	DUTH (NOR TOTAL 0 0 0 0 0 0 0 0 0	THBOUND HV 0 0 0 0 0 0 0 0 0 0 0) Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	S Leg Peds 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	RT 1 0 1 2 3 0 1	TH 67 84 107 74 110 71 71 102	From the V LT 10 12 13 14 25 32 26 31	VEST (EAS TOTAL 78 96 121 90 138 103 98 133	TBOUND) HV 2 3 5 3 1 3 4 4	Bikes 0 0 0 0 0 0 0 0 0 0 0 0	W Leg Peds 0 0 0 0 0 0 0 0 0 0 0 0
END TIME 3:15 PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 5:00 PM 5:15 PM	RT 0 0 0 0 0 0 0 0 0 0 0	F TH 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	From the SC LT 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	DUTH (NOR TOTAL 0 0 0 0 0 0 0 0 0 0 0	THBOUND HV 0 0 0 0 0 0 0 0 0 0 0 0 0	Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0 0	S Leg Peds 0 0 0 0 0 0 0 0 0 0 0 0 0 0	RT 1 0 1 2 3 0 1 0 1 0	TH 67 84 107 74 110 71 71 71 102 97	From the V LT 10 12 13 14 25 32 26 31 34	VEST (EAS TOTAL 78 96 121 90 138 103 98 133 132	TBOUND) HV 2 3 5 3 1 3 4 4 4 1	Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0	W Leg Peds 0 0 0 0 0 0 0 0 0 0 0
END TIME 3:15 PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM	RT 0 0 0 0 0 0 0 0 0 0 0 0 0 0	F TH 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	From the SC LT 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	DUTH (NOR TOTAL 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	THBOUND HV 0 0 0 0 0 0 0 0 0 0 0 0 0) Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	S Leg Peds 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	RT 1 0 1 2 3 0 1 0 1 0 1 0	TH 67 84 107 74 110 71 71 102 97 88	From the V LT 10 12 13 14 25 32 26 31 34 34 31	VEST (EAS TOTAL 78 96 121 90 138 103 98 133 132 119	TBOUND) HV 2 3 5 3 1 3 4 4 4 1 4	Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0 0	W Leg Peds 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
END TIME 3:15 PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 5:00 PM 5:15 PM 5:30 PM 5:35 PM	RT 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	F TH 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	From the SC LT 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	DUTH (NOR TOTAL 0 0 0 0 0 0 0 0 0 0 0 0 0 0	THBOUND HV 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0) Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	S Leg Peds 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	RT 1 0 1 2 3 0 1 1 0 1 0 1 0 2	TH 67 84 107 74 110 71 71 102 97 88 104	From the V LT 10 12 13 14 25 32 26 31 34 31 46	VEST (EAS TOTAL 78 96 121 90 138 103 98 133 132 119 152	TBOUND) HV 2 3 5 3 1 3 4 4 4 1 4 0	Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	W Leg Peds 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
END TIME 3:15 PM 3:30 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:36 PM 6:00 PM	RT 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	F TH 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	From the SC LT 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	DUTH (NOR TOTAL 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	THBOUND HV 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0) Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	S Leg Peds 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	RT 1 0 1 2 3 0 1 0 1 0 1 0 1 0 2 0	TH 67 84 107 74 110 71 71 102 97 88 104 98	From the V LT 10 12 13 14 25 32 26 31 34 31 34 31 46 26	VEST (EAS TOTAL 78 96 121 90 138 103 98 133 132 119 152 124	TBOUND) HV 2 3 5 3 5 3 1 3 4 4 4 4 1 4 0 0	Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	W Leg Peds 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
END TIME 3:15 PM 3:30 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 6:00 PM 6:15 PM	RT 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	F TH 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	From the SC LT 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	DUTH (NOR TOTAL 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	THBOUND HV 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0) Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	S Leg Peds 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	RT 1 0 1 2 3 0 1 0 1 0 2 0 0 0	TH 67 84 107 74 110 71 102 97 88 104 98 0	From the V LT 10 12 13 14 25 32 26 31 31 34 31 46 26 0	VEST (EAS TOTAL 78 90 121 90 138 103 138 103 133 132 119 152 124 0	TBOUND) HV 2 3 5 3 1 3 4 4 1 4 0 0 0	Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0	W Leg Peds 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
END TIME 3:15 PM 3:30 PM 3:45 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:30 PM 5:30 PM 6:15 PM 6:30 PM 6:30 PM	RT 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	TH 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	From the SC LT 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	DUTH (NOR TOTAL 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	THBOUND HV 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0) Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	S Leg Peds 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	RT 1 0 1 2 3 0 1 0 1 0 1 0 1 0 2 0 0 0 0	TH 67 84 107 74 110 71 71 102 97 88 104 98 0 0	From the V LT 10 12 13 14 25 32 26 31 34 31 46 26 0 0	VEST (EAS TOTAL 78 96 121 90 138 103 98 133 132 133 132 119 152 124 0 0	TBOUND) HV 2 3 5 3 1 3 4 4 4 4 0 0 0 0 0	Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	W Leg Peds 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
END TIME 3:15 PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 5:00 PM 5:30 PM 5:30 PM 6:15 PM 6:30 PM 6:30 PM 6:45 PM	RT 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	FTH 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	From the SC LT 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	DUTH (NOR TOTAL 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	THBOUND HV 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0) Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	S Leg Peds 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	RT 1 0 1 2 3 0 1 0 1 0 1 0 1 0 0 1 0 0 0 0 0 0 0	TH 67 84 107 74 110 71 71 102 97 88 104 98 0 0 0	From the V LT 10 12 13 14 25 32 26 31 34 31 34 31 34 31 46 26 0 0 0	VEST (EAS TOTAL 78 96 121 90 138 103 103 139 133 132 139 152 124 0 0 0	TBOUND) HV 2 3 5 5 3 1 3 4 4 4 0 0 0 0 0 0 0	Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	W Leg Peds 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
END TIME 3:15 PM 3:30 PM 3:45 PM 4:00 PM 4:30 PM 4:35 PM 5:00 PM 5:15 PM 6:00 PM 6:15 PM 6:30 PM 6:35 PM 6:30 PM	RT 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0		From the SC LT 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	DUTH (NOR TOTAL 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	THBOUND HV 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	S Leg Peds 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	RT 1 0 1 2 3 0 1 0 1 0 1 0 1 0 0 0 0 0 0 0 0 0	TH 67 84 107 74 110 71 71 102 97 88 104 98 0 0 0 0	From the V LT 10 12 13 14 25 32 26 31 34 31 34 31 46 26 0 0 0 0	VEST (EAS TOTAL 78 96 121 90 138 103 98 133 132 119 152 124 0 0 0 0	TBOUND) HV 2 3 5 3 5 3 1 3 4 4 4 0 0 0 0 0 0 0 0 0 0	Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	W Leg Peds 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
END TIME 3:15 PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 5:15 PM 5:00 PM 5:15 PM 5:45 PM 6:00 PM 6:30 PM 6:30 PM 6:45 PM 7:00 PM	RT 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	F TH 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	From the SC LT 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	DUTH (NOR TOTAL 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	THBOUND HV 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	S Leg Peds 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	RT 1 0 1 2 3 0 1 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0	TH 67 84 107 74 110 71 71 102 97 88 104 98 0 0 0 0 0 0 0 0	From the V LT 10 12 13 14 25 32 26 31 34 31 34 31 46 26 0 0 0 0 0 0	VEST (EAS TOTAL 78 96 121 90 138 103 98 133 132 119 152 124 0 0 0 0 0	TBOUND) HV 2 3 5 3 1 3 4 4 4 1 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	W Leg Peds 0
END TIME 3:15 PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:30 PM 5:30 PM 6:30 PM 6:30 PM 6:30 PM 6:30 PM	RT 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	FTH 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	From the SC LT 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	DUTH (NOR TOTAL 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	THBOUND HV 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0) Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	S Leg Peds 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	RT 1 0 1 2 3 0 1 0 1 0 1 0 2 0 0 0 0 0 0 0 0	TH 67 84 107 74 110 71 71 97 88 104 98 0 0 0 0 0 0	From the V LT 10 12 13 14 25 32 26 31 34 31 34 46 26 0 0 0 0 0 0	VEST (EAS TOTAL 78 96 121 90 138 103 98 133 132 119 152 124 0 0 0 0 0	TBOUND) HV 2 3 5 3 1 3 4 4 4 4 0 0 0 0 0 0 0 0 0 0	Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	W Leg Peds 0
END TIME 3:15 PM 3:30 PM 3:45 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:30 PM 6:00 PM 6:30 PM 6:30 PM 6:30 PM 6:45 PM 7:00 PM	RT 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	FTH 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	From the SC LT 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	DUTH (NOR TOTAL 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	THBOUND HV 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0) Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	S Leg Peds 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	RT 1 0 1 2 3 0 1 0 1 0 1 0 0 0 0 0 0 0 0 0 0	TH 67 84 107 74 110 71 71 102 97 88 104 98 0 0 0 0 0 0	From the V LT 10 12 13 14 25 26 31 34 31 34 46 26 0 0 0 0 0 0	VEST (EAS TOTAL 78 96 121 90 138 103 103 103 103 139 119 1152 1124 0 0 0 0 0	TBOUND) HV 2 3 5 5 3 1 3 4 4 4 0 0 0 0 0 0 0 0 0 0 0 0 0	Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	W Leg Peds 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
END TIME 3:15 PM 3:30 PM 3:45 PM 4:00 PM 4:30 PM 4:35 PM 5:00 PM 5:15 PM 6:00 PM 6:15 PM 6:30 PM 6:45 PM 7:00 PM	RT 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	F TH 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	From the SC LT 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	DUTH (NOR TOTAL 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	THBOUND HV 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	S Leg Peds 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	RT 1 0 1 2 3 0 1 0 1 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0	TH 67 84 107 74 110 71 71 102 97 88 104 98 0 0 0 0 0 0 0	From the V LT 10 12 13 14 25 32 26 31 34 31 34 31 46 26 0 0 0 0 0 0 0 0	VEST (EAS TOTAL 78 96 121 90 138 103 103 139 139 132 119 152 124 0 0 0 0 0 536 574	TBOUND) HV 2 3 5 3 5 3 1 1 3 4 4 4 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	W Leg Peds 0
END TIME 3:15 PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 5:00 PM 5:15 PM 5:30 PM 6:15 PM 6:30 PM 6:15 PM 7:00 PM PK HR Adj HR	RT 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	TH 0	From the SC LT 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	DUTH (NOR TOTAL 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	THBOUND HV 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0) Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	S Leg Peds 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	RT 1 0 1 2 3 0 1 2 3 0 1 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	TH 67 84 107 74 110 71 71 102 97 88 104 98 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	From the V LT 10 12 13 14 25 32 26 31 34 31 34 31 26 0 0 0 0 0 0 142 26 152	VEST (EAS TOTAL 78 96 121 90 138 103 98 133 132 119 152 124 0 0 0 0 536 574	TBOUND) HV 2 3 5 3 5 3 1 3 4 4 4 4 0 0 0 0 0 0 0 0 0 0 9 10	Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	W Leg Peds 0
END TIME 3:15 PM 3:30 PM 3:45 PM 4:00 PM 4:15 PM 4:30 PM 5:15 PM 5:30 PM 5:45 PM 6:00 PM 6:30 PM 6:30 PM 6:30 PM 6:30 PM 6:31 PM 6:30 PM	RT 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	TH 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	From the SC LT 0 0 0 0 0 0 0 0 0 0 0 0 0	DUTH (NOR TOTAL 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	THBOUND HV 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0) Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	S Leg Peds 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	RT 1 0 1 2 3 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	TH 67 84 107 74 110 71 102 97 88 104 98 0 0 0 0 0 0 0 0 0 0 0 0 0 0	From the V LT 10 12 13 14 25 32 26 31 31 34 31 46 26 0 0 0 0 0 0 142 152	VEST (EAS TOTAL 78 96 121 90 138 103 98 133 132 119 152 124 0 0 0 0 0 536 574	BOUND) HV 2 3 5 3 1 3 4 4 0 0 0 0 0 0 0 0 0 10	Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	W Leg Peds 0
END TIME 3:15 PM 3:30 PM 3:45 PM 4:15 PM 4:30 PM 4:45 PM 5:00 PM 5:15 PM 5:30 PM 6:00 PM 6:30 PM 6:30 PM 6:45 PM 7:00 PM PK HR Adj HR	RT 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	F TH 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	From the SC LT 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	DUTH (NOR TOTAL 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	THBOUND HV 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0) Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	S Leg Peds 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	RT 1 0 1 2 3 0 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	TH 67 84 107 74 110 71 71 71 97 88 104 98 0 0 0 0 391 419	From the V LT 10 12 13 14 25 31 34 31 34 46 26 0 0 0 0 0 0 142 152	VEST (EAS TOTAL 78 96 121 90 138 103 98 133 132 119 152 124 0 0 0 0 0 536 574	TBOUND) HV 2 3 5 3 1 3 4 4 4 1 4 0 0 0 0 0 0 0 0 0 0 0 0 0	Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	W Leg Peds 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

	To Mar Tol	and (aug)							
TIME	Veh	HV	Peds	Bikes				Rolling	
3:15 PM	286	11	0	0	R	olling He	our	Hour	
3:30 PM	356	16	0	0	Start	to	End	Volume	Pk Hr?
3:45 PM	319	12	0	0	3:00 PM	-	4:00 PM	1248	no
4:00 PM	287	11	0	0	3:15 PM	-	4:15 PM	1351	no
4:15 PM	389	9	0	0	3:30 PM		4:30 PM	1279	no
4:30 PM	284	5	0	0	3:45 PM	-	4:45 PM	1240	no
4:45 PM	280	6	0	0	4:00 PM	100	5:00 PM	1326	no
5:00 PM	373	9	0	0	4:15 PM	-	5:15 PM	1233	no
5:15 PM	296	2	0	0	4:30 PM	-	5:30 PM	1297	no
5:30 PM	348	9	0	0	4:45 PM	-	5:45 PM	1390	YES
5:45 PM	373	1	0	0	5:00 PM	in .	6:00 PM	1340	no
6:00 PM	323	1	0	0	5:15 PM	-	6:15 PM	1044	no
6:15 PM	0	0	0	0	5:30 PM	-	6:30 PM	696	no
6:30 PM	0	0	0	0	5:45 PM	12	6:45 PM	323	no
6:45 PM	0	0	0	0	6:00 PM	-	7:00 PM	0	no
7:00 PM	0	0	0	0			And the second s		





VJS-TC, LLC - Steere/RIDOT Counts - Cumberland, RI

Location:	Nate Whip	ple Highway	@ Mendon Road	1	City/Town:	Cumberla	nd, RI	
Checker:	AF		Weather:	Sunny	Job:	Group 17C	Newell	
Date:	3/5/20	enter day	Start Time:	3:00 PM	Pk Hr.	4:45 PM	to	5:45 PM
# of minutes c	ounted per i	interval:	14 minu	tes			the same w	

END		10 11	From the NC	ORTH (SOL	THBOUN))	N Leg			From the	EAST (WES	TBOUND)	E Leg
TIME	RT	TH	LT	TOTAL	HV	Bikes	Peds	RT	TH	LT	TOTAL	HV	Bikes	Peds
3:15 PM	23	0	21	44	2	0	0	14	72	0	86	2	0	0
3:30 PM	46	0	18	64	0	0	0	31	111	0	142	4	0	0
3:45 PM	68	0	42	110	1	0	0	25	102	0	127	4	0	0
4:00 PM	39	0	37	76	1	0	0	14	81	0	95	3	0	0
4:15 PM	73	0	35	108	2	0	0	22	80	0	102	2	0	0
4:30 PM	57	0	23	80	1	0	0	25	86	0	111	2	0	0
4:45 PM	38	0	24	62	1	0	0	31	74	0	105	0	0	0
5:00 PM	55	0	25	80	0	0	0	18	94	0	112	0	0	0
5:15 PM	46	0	24	70	2	0	0	23	95	0	118	1	0	0
5:30 PM	83	0	25	108	0	0	0	22	114	0	136	1	0	0
5:45 PM	54	0	25	79	0	0	0	29	89	0	118	1	0	0
6:00 PM	50	0	25	75	0	0	0	29	91	0	120	0	0	0
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
		6												
PK HR	238	0	99	337	2	0	0	92	392	0	484	3	0	0
Adi HR	255	0	106	361	2	0	0	99	420	0	519		TO	0

END			From the SC	DUTH (NOR	THBOUND)	S Leg			From the	NEST (EAS	TBOUN	D)	W Leg
TIME	RT	TH	LT	TOTAL	HV	Bikes	Peds	RT	TH	LT	TOTAL	HV	Bikes	Peds
3:15 PM	0	0	0	0	0	0	0	0	105	42	147	8	0	0
3:30 PM	0	0	0	0	0	0	0	0	99	51	150	5	0	0
3:45 PM	0	0	0	0	0	0	0	0	123	61	184	4	0	0
4:00 PM	0	0	0	0	0	0	0	0	87	59	146	2	0	0
4:15 PM	0	0	0	0	0	0	0	0	95	56	151	5	0	0
4:30 PM	0	0	0	0	0	0	0	0	86	64	150	3	0	0
4:45 PM	0	0	0	0	0	0	0	0	87	52	139	1	0	0
5:00 PM	0	0	0	0	0	0	0	0	101	49	150	1	0	0
5:15 PM	0	0	0	0	0	0	0	0	105	63	168	1	0	0
5:30 PM	0	0	0	0	0	0	0	0	104	65	169	3	0	0
5:45 PM	0	0	0	0	0	0	0	0	113	65	178	1	0	0
6:00 PM	0	0	0	0	0	0	0	0	74	52	126	0	0	0
6:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:30 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
6:45 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
7:00 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
PK HR	0	0	0	0	0	0	0	0	423	242	665	6	0	0
Adj HR	0	0	0	0	0	0	0	0	453	259	712	6	0	0

END	15 Min Tota	als (adj)							0
TIME	Veh	HV	Peds	Bikes				Rolling	
3:15 PM	297	13	0	0	R	olling H	our	Hour	
3:30 PM	381	10	0	0	Start	to	End	Volume	Pk Hr?
3:45 PM	451	10	0	0	3:00 PM	-	4:00 PM	1469	no
4:00 PM	340	6	0	0	3:15 PM	-	4:15 PM	1559	no
4:15 PM	387	10	0	0	3:30 PM	-	4:30 PM	1543	no
4:30 PM	365	6	0	0	3:45 PM	4	4:45 PM	1420	no
4:45 PM	328	2	0	0	4:00 PM	-	5:00 PM	1446	no
5:00 PM	366	1	0	0	4:15 PM	-	5:15 PM	1440	no
5:15 PM	381	4	0	0	4:30 PM	-	5:30 PM	1518	no
5:30 PM	443	4	0	0	4:45 PM	2	5:45 PM	1592	YES
5:45 PM	402	2	0	0	5:00 PM	-	6:00 PM	1570	no
6:00 PM	344	0	0	0	5:15 PM	2	6:15 PM	1189	по
6:15 PM	0	0	0	D	5:30 PM	-	6:30 PM	746	no
6:30 PM	0	0	0	0	5:45 PM	8	6:45 PM	344	no
6:45 PM	0	0	0	D	6:00 PM	-	7:00 PM	0	no
7:00 PM	0	0	0	0					



Nate Whipple Highway @ Mendon Road 4:45 PM 5:45 PM INTERSECTION: PEAK HOUR: DATE: Thursday, March 05, 2020 DIRECTIONAL LEG VOLUMES -- PEAK HOUR Ν 361 358 675 519 W Е 712 559 00 S APPROACH VOLUME TURN MOVEMENTS -- PEAK HOUR 361 255 106 0 RIGHT THRU LEFT 259 LEFT NORTH RIGHT 99 712 453 THRU WEST EAST THRU 420 519 RIGHT 0 SOUTH LEFT 0 THRU LEFT RIGHT 0 0 0 0 Pedestrians (Peak Hour) Bikes (Peak Hour) Crossing Leg # of Approach # of North 0 From North: 0 South 0 From South: 0 East 0 From East: 0 West 0 From West: 0

0 NB 9 WB 3 EB	
9 WB 3 EB	i
3 EB	
0 All	
2 0.6%	6 SE
0 0.0%	6 NE
202	0.6%

Total

0

Total

0





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SUBJ:	DELIVERABLE: Weekend Traffic Counts – Cumberland RI
DATE:	March 9, 2020
FROM:	Valerie J. Southern, VJS-TC, LLC
TO:	Steve Baker, Steere Engineering

<u>Saturday, March 7, 2020 – 10:00 AM – 2:00 PM</u>

- 1 Diamond Hill Road @ Nate Whipple Highway
- 2 Pine Swamp Road @ Wrentham Road
- 3 Pine Swamp Road @ Diamond Hill Road
- 4 Mendon Road @ West Wrentham Road
- 5 Nate Whipple Highway @ Mendon Road

43 CLINTON AVENUE JAMESTOWN, RHODE ISLAND 02835 (401) 560-7930

Location:	Diamond H	Hill Road @	Nate Whipple Higl	nway	City/Town:	Cumberla	nd, RI		
Checker:	DLN	-	Weather:	Sunny	Jab:	Group 17C	Newell		
Date:	3/7/20	enter day	Start Time:	10:00 AM	Pk Hr.	10:45 AM	to	11:45 AM	
# of minutes	counted per	interval:	14 minut	es					

END		F	rom the NC	ORTH (SOL	THBOUND	D)	N Leg			From the I	EAST (WES	TBOUND)		E Leg
TIME	RT	тн	LT	TOTAL	HV	Bikes	Peds	RT	TH	LT	TOTAL	HV	Bikes	Peds
10:15 AM	a	45	28	82	1	Ó	0	15	21	6	42	1	0	0
10:30 AM	10	48	30	88	1	0	1	16	22	6	44	1	0	0
10:45 AM	14	59	29	101	2	0	0	25	27	3	55	3	0	0
10.45 AM	24	56	58	138	2	0	0	32	23	2	57	1	0	0
11.00 AW	24	50	54	100	1	1	0	28	39	8	75	1	0	0
11:15 AM	10	50	24	104	2	0	1	38	24	3	65	0	0	0
11:30 AM	18	00		104	2	0	0	31	31	4	66	3	0	0
11:45 AM	16	58	33	107	3	0	0	27	23	4	54	2	0	0
12:00 PM	14	53	21	94			0	24	18	10	52	2	0	0
12:15 PM	20	32	40	92		0	0	22	20	10	63	1	0	0
12:30 PM	20	40	48	108	2	0	0	42	20	10	74	0	0	0
12:45 PM	21	48	57	126	1	1	0	42	22	8	75	1	0	0
1:00 PM	6	28	27	61	3	0		39	20	0	52	1	0	0
1:15 PM	28	59	36	123	0	0	0	23	29	0	66	2	ñ	0
1:30 PM	14	41	34	89	0	0	0	21	31	0	00	2	0	0
1:45 PM	14	40	40	94	3	0	0	30	31	5	00	2	0	0
2:00 PM	15	57	40	112	3	0	0	43	29	13	65		0	0
								1				-	0	
PK HR	76	225	176	477	8	1	1	129	117	17	263	5	0	0
Adj HR	81	241	189	511	9	1	1	138	125	18	281	0	U	

END		F	From the SC	DUTH (NOR	THBOUND	1)	S Leg			From the \	NEST (EAS	TBOUND)	1000007	W Leg
TIME	RT	тн	LT	TOTAL	HV	Bikes	Peds	RT	TH	LT	TOTAL	HV	Bikes	Peds
10:15 AM	5	29	18	52	1	0	0	5	29	18	52	1	0	0
10:30 AM	5	31	19	55	2	0	0	5	31	19	55	2	0	0
10:45 AM	7	38	7	52	0	0	0	8	44	14	66	1	0	0
10.45 AW	e e	55	18	79	0	0	0	8	31	24	63	4	0	0
11:00 AM	<u> </u>	55	10	74	1	0	0	13	35	22	70	4	0	0
11:15 AM	9	50	10	73	2	0	0	14	25	15	54	1	0	0
11:30 AM	5	54	7	59	2	0	0	7	28	22	57	4	0	0
11:45 AM	10	41	12	71	1	0	0	15	26	18	59	1	0	0
12:00 PM	5	53	13		6	0	0	12	18	4	34	1	0	0
12:15 PM	4	42	8	54	6	0	0	13	22	7	42	2	0	0
12:30 PM	5	48	6	59	0	0	0	14	26	10	50	1	0	0
12:45 PM	6	54	5	65	6	U	0		20	20	76	0	0	0
1:00 PM	10	70	14	94	5	0	0	14	32		27	0	0	0
1:15 PM	4	55	3	62	0	0	0	3	25	9	51	2	0	0
1:30 PM	9	41	15	65	1	0	0	9	29	13	51	2		0
1:45 PM	6	53	10	69	0	0	0	9	33	17	59		0	
2:00 PM	6	48	10	64	2	0	0	7	34	11	52	0	0	0
	-										·			
											1000	1000		
PK HR	30	205	49	284	5	0	0	42	119	83	244	13	0	0
Adj HR	32	220	53	305	5	0	0	45	128	89	262	14	0	

END	15 Min Tota	als (adj)							
TIME	Veh	HV	Peds	Bikes				Rolling	
10:15 AM	244	4	0	0	R	olling Ho	our	Hour	
10:30 AM	259	6	0	1	Start	to	End	Volume	Pk Hr?
10:45 AM	294	6	0	0	10:00 AM	÷.	11:00 AM	1158	no
11:00 AM	361	8	0	0	10:15 AM	-	11:15 AM	1286	no
11-15 AM	372	8	1	0	10:30 AM		11:30 AM	1344	no
11.30 AM	317	5	0	1	10:45 AM	- 27	11:45 AM	1359	YES
11.30 AM	300	13	0	0	11:00 AM	(-)	12:00 PM	1296	no
12:00 DM	208	5	0	0	11:15 AM	-	12:15 PM	1173	no
12.00 PW	2.00	11	0	0	11:30 AM	-	12:30 PM	1147	no
12.10 F M	240	11	0	0	11:45 AM	-	12:45 PM	1176	no
12.30 PW	201	0	1	0	12:00 PM		1:00 PM	1206	no
12:40 PM	200	10			12:15 PM	-	1:15 PM	1251	по
1:00 PM	328	10		0	12:30 PM	-	1:30 PM	1250	no
1:15 PM	294				12:45 PM		1:45 PM	1221	no
1:30 PM	290	5	0		1:00 PM		2.00 PM	1228	no
1:45 PM	309	6	0		1.00 FW		2.001 1		00000
2:00 PM	335	6	0	0	A REAL PROPERTY AND A REAL	377			



William Popp Associates©



VJS-TC, L	LC - Steere/RIDOT	Counts - Cumberland, R
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Location:	West Wren	tham Road	@ Pine Sw	amp Road				10.000 Mar	City/Town:	Cumber	land, RI			
Checker:	VJS		Weather:		Sunny				Job:	Group 17	C Newell	8 8 22 8		
Date:	3/7/20	enter day	Start Time:		10:00 AM				Pk Hr:	12:30 PM	to	1:30 PM		
# of minutes cr	ounted per in	nterval:	14	minutes										
				511				1995 - M	#S		2221		jh.	
END		Ē	From the NC	ORTH (SOL	JTHBOUNE))	N Leg			From the E	AST (WES	TBOUND)		ELeg
TIME	RT	TH	LT	TOTAL	HV	Bikes	Peds	RT	TH	LT	TOTAL	HV	Bikes	Peds
10:15 AM	0	14	31	45	0	0	0	6	31	14	51	0	0	0
10:30 AM	4	4	4	12	0	0	0	4	30	6	40	0	0	0
10:45 AM	2	10	5	17	0	0	1	1	32	8	41	0	0	0
11:00 AM	3	11	5	19	0	0	0	2	45	12	59	0	0	0
11:15 AM	3	17	3	23	1	0	0	3	52	18	73	0	0	1
11:30 AM	4	10	3	17	0	0	0	4	41	15	60	2	0	0
11:45 AM	1	8	q	18	0	0	0	3	38	15	56	0	0	0
12:00 PM		0	6	16	0	0	0	4	47	13	64	1	0	0
12:15 PM		6	1	11	0	0	0	3	33	9	45	1	0	0
12.10 FW		0	4	16	0	0	0	4	51	11	66	1	0	0
12.30 PW	2	0 44	0	24	0	0	0	5	68	12	85	0	0	0
12:45 PM	0	11	0	24	0	0	0	4	48	8	60	1	0	0
1:00 PM	<u> </u>	10	0	21	0	0	2	6	57	16	79	1	0	0
1:15 PM		8	3	12	0	0	2	2	42	20	64		1	l n
1:30 PM	4	13	3	20	0	0	0	2	42	10	66	3	0	0
1:45 PM	3	13	6	22	0	0	0	2	52	14	50	0	0	0
2:00 PM	2	7	2	11	0	0	0	0	42	11	00	0	0	
1														
	200			Accession,	120			17	045	50	200	2	a	0
PK HR	15	42	20	77	0	0	2	1/	215	00	200			0
Adj HR	16	45	21	82	0	0	Z	18	230	00	300	Z		
					TUDOUNE		C.Law			From the V	NEST /EAS			Wlea
END			From the So))	S Leg	DT	TU	From the V	WEST (EAS		Bikas	W Leg
END TIME	RT	TH	From the SC	OUTH (NOF)) Bikes	S Leg Peds	RT	TH	From the V	WEST (EAS	TBOUND) HV	Bikes	W Leg Peds
END TIME 10:15 AM	RT 20	TH 3	From the SC LT 5	OUTH (NOF TOTAL 28)) Bikes 0	S Leg Peds	RT 3 7	TH 20 35	From the V LT 6	WEST (EAS TOTAL 29 46	TBOUND) HV 0	Bikes 0 0	W Leg Peds 0
END TIME 10:15 AM 10:30 AM	RT 20 14	ТН 3 5	From the SC LT 5 7	DUTH (NOF TOTAL 28 26)) Bikes 0 1	S Leg Peds 1 0	RT 3 7	TH 20 35	From the V LT 6 4	WEST (EAS TOTAL 29 46	TBOUND) HV 0 0	Bikes 0 0	W Leg Peds 0 0
END TIME 10:15 AM 10:30 AM 10:45 AM	RT 20 14 12	TH 3 5 3	From the So LT 5 7 8	DUTH (NOF TOTAL 28 26 23	RTHBOUNE HV 0 0)) Bikes 0 1 0	S Leg Peds 1 0	RT 3 7 12	TH 20 35 55	From the V LT 6 4	WEST (EAS TOTAL 29 46 68	TBOUND) HV 0 0	Bikes 0 0 0	W Leg Peds 0 0
END TIME 10:15 AM 10:30 AM 10:45 AM 11:00 AM	RT 20 14 12 12	TH 3 5 3 4	From the SC LT 5 7 8 8 8	DUTH (NOF TOTAL 28 26 23 24)) Bikes 0 1 0 0 0	S Leg Peds 1 0 1 0	RT 3 7 12 8	TH 20 35 55 44	From the V LT 6 4 1 4	WEST (EAS TOTAL 29 46 68 56	TBOUND) HV 0 0 0	Bikes 0 0 0 0	W Leg Peds 0 0 0
END TIME 10:15 AM 10:30 AM 10:45 AM 11:00 AM 11:15 AM	RT 20 14 12 12 12 14	TH 3 5 3 4 7	From the SC LT 5 7 8 8 8 9	DUTH (NOF TOTAL 28 26 23 24 30	THBOUNE HV 0 0 0 0)) Bikes 0 1 0 0 0	S Leg Peds 1 0 1 0	RT 3 7 12 8 16	TH 20 35 55 44 62	From the V LT 6 4 1 4 3	WEST (EAS TOTAL 29 46 68 56 81	TBOUND) HV 0 0 0 0	Bikes 0 0 0 0 0	W Leg Peds 0 0 0 0 0
END TIME 10:15 AM 10:30 AM 10:45 AM 11:00 AM 11:15 AM 11:30 AM	RT 20 14 12 12 12 14 14	TH 3 5 3 4 7 15	From the SC LT 5 7 8 8 8 9 19	DUTH (NOF TOTAL 28 26 23 24 30 48	THBOUNE HV 0 0 0 0 0 0)) Bikes 0 1 0 0 0 0 0	S Leg Peds 1 0 1 0 0 0	RT 3 7 12 8 16 7	TH 20 35 55 44 62 48	From the V LT 6 4 1 4 3 5	WEST (EAS TOTAL 29 46 68 56 81 60	TBOUND) HV 0 0 0 0 0 2	Bikes 0 0 0 0 0 0 0	W Leg Peds 0 0 0 0 0 0 0
END TIME 10:15 AM 10:30 AM 10:45 AM 11:00 AM 11:15 AM 11:30 AM 11:45 AM	RT 20 14 12 12 14 14 14 14	TH 3 5 3 4 7 15 7	From the S0 LT 5 7 8 8 8 9 19 19 6	DUTH (NOF TOTAL 28 26 23 24 30 48 24	THBOUND HV 0 0 0 0 0 0 0)) Bikes 0 1 0 0 0 0 0 0 0	S Leg Peds 1 0 1 0 0 0 0	RT 3 7 12 8 16 7 11	TH 20 35 55 44 62 48 46	From the V LT 6 4 1 4 3 5 5 2	WEST (EAS TOTAL 29 46 68 56 81 60 59	TBOUND) HV 0 0 0 0 0 2 0	Bikes 0 0 0 0 0 0 0	W Leg Peds 0 0 0 0 0 0 0 0 0 0
END TIME 10:15 AM 10:30 AM 10:45 AM 11:15 AM 11:30 AM 11:45 AM 11:45 AM	RT 20 14 12 12 14 14 14 11 11	TH 3 5 3 4 7 15 7 4	From the S0 LT 5 7 8 8 9 19 6 10	DUTH (NOF TOTAL 28 26 23 24 30 48 24 25	THBOUND HV 0 0 0 0 0 0 0 0 0 0 0 0)) Bikes 0 1 0 0 0 0 0 0 0 0 0 0 0	S Leg Peds 1 0 1 0 0 0 0 0 0	RT 3 7 12 8 16 7 11 9	TH 20 35 55 44 62 48 46 46 43	From the V LT 6 4 1 4 3 5 2 2 2	WEST (EAS TOTAL 29 46 68 56 81 60 59 54	TBOUND) HV 0 0 0 0 0 2 0 0 0 2	Bikes 0 0 0 0 0 0 0 0 0 0 0	W Leg Peds 0 0 0 0 0 0 0 0 0 0 0
END TIME 10:15 AM 10:36 AM 10:35 AM 11:00 AM 11:15 AM 11:30 AM 11:30 AM 12:00 PM 12:15 PM	RT 20 14 12 12 14 14 14 11 11 8	TH 3 5 3 4 7 15 7 4 3	From the S0 LT 5 7 8 8 9 19 6 10 7	DUTH (NOF TOTAL 28 26 23 24 30 48 24 25 18	THBOUNE HV 0 0 0 0 0 0 0 0 0 0)) Bikes 0 1 0 0 0 0 0 0 0 0 0	S Leg Peds 1 0 0 0 0 0 0	RT 3 7 12 8 16 7 11 9 6	TH 20 35 55 44 62 48 46 43 30	From the V LT 6 4 1 4 3 5 2 2 2 1	WEST (EAS TOTAL 29 46 68 56 81 60 59 54 37	TBOUND) HV 0 0 0 0 0 2 0 0 0 1	Bikes 0 0 0 0 0 0 0 0 0 0 0	W Leg Peds 0 0 0 0 0 0 0 0 0 0 0
END TIME 10:15 AM 10:30 AM 10:45 AM 11:00 AM 11:15 AM 11:30 AM 11:45 AM 12:00 PM 12:15 PM 12:30 PM	RT 20 14 12 12 14 14 14 11 11 8 16	TH 3 5 3 4 7 15 7 4 3 8	From the So LT 5 7 8 8 9 19 6 10 7 7 7	DUTH (NOF TOTAL 28 26 23 24 30 48 24 25 18 31	RTHBOUNE HV 0 0 0 0 0 0 0 0 0 0 0 0 0)) Bikes 0 1 0 0 0 0 0 0 0 0 0 0 0	S Leg Peds 1 0 1 0 0 0 0 0 0 0 0 0	RT 3 7 12 8 16 7 11 9 6 10	TH 20 35 55 44 62 48 46 43 30 51	From the V LT 6 4 1 4 3 5 2 2 2 1 3 3	WEST (EAS TOTAL 29 46 68 56 81 60 59 54 37 64 90	TBOUND) HV 0 0 0 0 0 2 0 0 0 1 1 1	Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	W Leg Peds 0 0 0 0 0 0 0 0 0 0 0 0 0 0
END TIME 10:15 AM 10:30 AM 11:45 AM 11:30 AM 11:35 AM 11:45 AM 12:00 PM 12:15 PM 12:30 PM 12:35 PM	RT 20 14 12 12 14 14 14 14 11 11 8 16 24	TH 3 5 3 4 7 15 7 4 3 8 13	From the Std LT 5 7 8 8 9 19 6 10 7 7 7 7	DUTH (NOF TOTAL 28 26 23 24 30 48 24 25 18 31 44	ATHBOUND HV 0	b) Bikes 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	S Leg Peds 1 0 1 0 0 0 0 0 0 0 0 0 0	RT 3 7 12 8 16 7 11 9 6 10 14	TH 20 35 55 44 62 48 46 43 30 51 70	From the V LT 6 4 1 4 3 5 2 2 2 1 3 4	WEST (EAS TOTAL 29 46 68 56 81 60 59 54 37 64 88	TBOUND) HV 0 0 0 0 0 0 0 0 0 0 0 0 1 0	Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	W Leg Peds 0 0 0 0 0 0 0 0 0 0 0 0 0 0
END TIME 10:15 AM 10:30 AM 11:45 AM 11:45 AM 11:45 AM 11:45 AM 12:00 PM 12:15 PM 12:45 PM 12:45 PM	RT 20 14 12 12 14 14 14 11 11 11 8 16 24 22	TH 3 5 3 4 7 15 7 4 3 8 13 4 13 4 13 4 13 4 13 4 13 4 13 4 13 4 13 4 13 13 4 13 13 14 13 13 13 14 13 13 13 14 13 13 14 13 13 13 14 13 13 14 13 13 14 15 15 15 15 15 15 15 15 15 15 15 15 16 <th16< th=""> 16 <th16< th=""> <th16< t<="" td=""><td>From the SC LT 5 7 8 8 9 19 6 10 7 7 7 7 7 7</td><td>DUTH (NOF TOTAL 28 26 23 24 30 48 24 25 18 31 44 33</td><td>RTHBOUNE HV 0</td><td>)) Bikes 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</td><td>S Leg Peds 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0</td><td>RT 3 7 12 8 16 7 11 9 6 10 14 7</td><td>TH 20 35 55 44 62 48 46 43 30 51 70 45</td><td>From the V LT 6 4 3 5 2 2 2 1 3 3 4 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2</td><td>WEST (EAS TOTAL 29 46 68 56 81 60 59 54 37 64 88 54</td><td>5TBOUND) HV 0 0 0 0 0 2 0 0 0 1 1 1 0 0 0</td><td>Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0 0</td><td>W Leg Peds 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</td></th16<></th16<></th16<>	From the SC LT 5 7 8 8 9 19 6 10 7 7 7 7 7 7	DUTH (NOF TOTAL 28 26 23 24 30 48 24 25 18 31 44 33	RTHBOUNE HV 0)) Bikes 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	S Leg Peds 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0	RT 3 7 12 8 16 7 11 9 6 10 14 7	TH 20 35 55 44 62 48 46 43 30 51 70 45	From the V LT 6 4 3 5 2 2 2 1 3 3 4 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2	WEST (EAS TOTAL 29 46 68 56 81 60 59 54 37 64 88 54	5TBOUND) HV 0 0 0 0 0 2 0 0 0 1 1 1 0 0 0	Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0 0	W Leg Peds 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
END TIME 10:15 AM 10:35 AM 11:00 AM 11:15 AM 11:45 AM 11:45 AM 12:00 PM 12:15 PM 12:30 PM 12:45 PM 1:00 PM 1:00 PM	RT 20 14 12 12 14 14 14 14 11 11 8 16 24 22 22 12	TH 3 5 3 4 7 15 7 4 3 8 13 4 0	From the SK LT 5 7 8 8 8 9 19 6 10 7 7 7 7 7 7 4	DUTH (NOF TOTAL 28 26 23 24 30 48 24 25 18 31 44 33 16	ATHBOUNC HV 0)) Bikes 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	S Leg Peds 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	RT 3 7 12 8 16 7 11 9 6 10 14 7 8	TH 20 35 55 44 62 48 46 43 30 51 70 45 39	From the V LT 6 4 1 4 3 5 2 2 2 1 3 4 2 2 1 3 4 2 2 1	WEST (EAS TOTAL 29 46 68 56 81 60 59 54 37 64 37 64 88 88 88 54 48	TBOUND) HV 0 0 0 0 0 0 2 0 0 0 1 1 1 1 0 0 0	Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	W Leg Peds 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
END TIME 10:15 AM 10:30 AM 10:45 AM 11:00 AM 11:15 AM 11:30 AM 11:45 AM 12:00 PM 12:15 PM 12:30 PM 12:45 PM 1:15 PM 1:15 PM 1:30 PM	RT 20 14 12 12 14 14 14 14 11 11 11 8 16 24 22 12 16	TH 3 5 3 4 7 15 7 4 3 8 13 4 0 0 12	From the SK LT 5 7 8 8 9 19 6 10 7 7 7 7 7 7 7 4 8	DUTH (NOF TOTAL 28 26 23 23 24 30 48 24 25 18 31 44 44 33 16 56	RTHBOUNE HV 0	b) Bikes 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	S Leg Peds 1 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	RT 3 7 12 8 16 7 11 9 6 10 14 7 8 10	TH 20 35 55 44 62 48 46 43 30 51 70 45 39 45	From the V LT 6 4 1 4 3 5 2 2 2 1 3 4 2 1 3 3 4 2 1 3 3	MEST (EAS TOTAL 29 46 68 56 81 60 59 54 37 64 88 54 48 54 48 58	TBOUND) HV 0 0 0 0 0 0 0 0 0 0 1 1 0 0 0 0 1 1 0 0 0 2	Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	W Leg Peds 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
END TIME 10:15 AM 10:30 AM 11:45 AM 11:30 AM 11:45 AM 11:45 AM 12:00 PM 12:45 PM 12:00 PM 12:45 PM 1:00 PM 1:15 PM 1:30 PM 1:45 PM	RT 20 14 12 12 14 14 14 14 11 11 8 16 24 22 12 12 16 13	TH 3 5 3 4 7 15 7 4 3 8 113 4 0 12 7	From the S0 LT 5 7 8 8 9 19 6 10 7 7 7 7 7 7 7 8 8 4	DUTH (NOF TOTAL 28 26 23 24 30 48 24 25 18 31 44 33 16 36 24	ATHBOUNE HV 0 1	b) Bikes 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	S Leg Peds 1 0	RT 3 7 12 8 16 7 11 9 6 10 14 7 7 8 10 9	TH 20 35 55 44 62 48 46 43 30 51 70 45 39 45 49	From the V LT 6 4 1 4 3 5 2 2 1 3 4 2 1 3 4 1 3 4 4	MEST (EAS TOTAL 29 46 68 56 81 60 59 54 37 64 88 54 37 64 88 54 58 58 58 62	STBOUND) HV 0 0 0 0 0 0 2 0 0 1 1 1 0 0 0 0 2 2 0	Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0	W Leg Peds 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
END TIME 10:15 AM 10:30 AM 11:45 AM 11:45 AM 11:45 AM 12:45 PM 12:45 PM 12:45 PM 1:26 PM 1:26 PM 1:26 PM 1:20 PM 1:27 PM 1:20 PM 1:20 PM	RT 20 14 12 12 14 14 11 11 11 8 16 24 22 12 16 13 12	TH 3 5 3 4 7 15 7 4 3 8 13 4 0 12 7 4 3 8 13 4 0 12 7 4 3 8 13 4 0 12 7 4 3 4 12 7 4 3 12 7 4 12 7 4 12 7 4 12 7 4 12 7 4 12 12 7 12 12 7 4 12 <td>From the S0 LT 5 7 8 8 8 9 19 6 10 7 7 7 7 7 7 7 4 8 4 8 4 6</td> <td>DUTH (NOF TOTAL 28 26 23 24 30 48 24 25 18 31 44 43 33 16 36 24 22</td> <td>RTHBOUNE HV 0</td> <td>)) Bikes 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0</td> <td>S Leg Peds 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</td> <td>RT 3 7 12 8 16 7 11 9 6 10 14 7 8 10 14 7 8 9 9 9 11</td> <td>TH 20 35 55 44 62 48 46 43 30 51 70 45 39 45 49 48</td> <td>From the V LT 6 4 1 4 3 5 5 2 2 2 1 1 3 4 4 2 1 1 3 4 4 3 3</td> <td>WEST (EAS TOTAL 29 46 68 56 81 60 59 54 37 64 88 54 48 88 54 48 62 62 62</td> <td>TBOUND) HV 0 0 0 0 0 2 0 0 0 1 1 1 0 0 0 2 2 0 0 2 2 0 0 2</td> <td>Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</td> <td>W Leg Peds 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0</td>	From the S0 LT 5 7 8 8 8 9 19 6 10 7 7 7 7 7 7 7 4 8 4 8 4 6	DUTH (NOF TOTAL 28 26 23 24 30 48 24 25 18 31 44 43 33 16 36 24 22	RTHBOUNE HV 0)) Bikes 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	S Leg Peds 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	RT 3 7 12 8 16 7 11 9 6 10 14 7 8 10 14 7 8 9 9 9 11	TH 20 35 55 44 62 48 46 43 30 51 70 45 39 45 49 48	From the V LT 6 4 1 4 3 5 5 2 2 2 1 1 3 4 4 2 1 1 3 4 4 3 3	WEST (EAS TOTAL 29 46 68 56 81 60 59 54 37 64 88 54 48 88 54 48 62 62 62	TBOUND) HV 0 0 0 0 0 2 0 0 0 1 1 1 0 0 0 2 2 0 0 2 2 0 0 2	Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	W Leg Peds 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
END TIME 10:15 AM 10:30 AM 10:35 AM 11:00 AM 11:15 AM 11:45 AM 12:00 PM 12:15 PM 12:30 PM 12:30 PM 1:30 PM 1:30 PM 1:45 PM 2:00 PM	RT 20 14 12 12 14 14 14 14 11 11 8 16 24 22 12 12 16 13 12	TH 3 5 3 4 7 15 7 4 3 8 13 4 0 12 7 4	From the SX LT 5 7 8 8 8 9 19 6 10 7 7 7 7 7 7 7 7 4 8 8 4 6	DUTH (NOF TOTAL 28 26 23 24 30 48 24 25 18 31 44 25 18 31 44 33 16 36 24 22	RTHBOUNE HV 0 1 0	b) Bikes 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	S Leg Peds 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	RT 3 7 12 8 16 7 11 9 6 10 10 14 7 8 10 9 11	TH 20 35 55 44 62 48 46 43 30 51 70 45 39 45 39 45 49 48	From the V LT 6 4 1 4 3 5 2 2 2 1 3 4 2 2 1 3 4 2 1 3 4 3 4 3 3	WEST (EAS TOTAL 29 46 68 56 81 60 59 54 37 64 37 64 88 88 54 48 58 62 62	TBOUND) HV 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	W Leg Peds 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
END TIME 10:15 AM 10:36 AM 11:00 AM 11:15 AM 11:30 AM 11:30 AM 12:00 PM 12:15 PM 12:30 PM 12:45 PM 1:00 PM 1:45 PM 2:00 PM	RT 20 14 12 12 14 14 14 11 11 11 11 11 11 11 11 11 11	TH 3 5 3 4 7 15 7 4 3 8 13 4 0 12 7 4 4	From the SK LT 5 7 8 8 8 9 19 6 10 7 7 7 7 7 7 7 7 7 4 8 4 6	DUTH (NOF TOTAL 28 26 23 23 24 30 48 24 25 18 31 44 25 18 31 44 33 16 36 24 22	RTHBOUNE HV 0	b) Bikes 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	S Leg Peds 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	RT 3 7 12 8 16 7 11 9 6 10 14 7 7 8 10 9 11	TH 20 35 55 44 62 48 46 43 30 51 70 45 39 45 49 48	From the V LT 6 4 1 4 3 5 2 2 2 1 3 3 4 2 1 3 3 4 3 3 4 3 3	MEST (EAS TOTAL 29 46 68 56 81 60 59 54 37 64 88 54 48 58 62 62 62	TBOUND) HV 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 2 0 2 0 2 0	Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	W Leg Peds 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
END TIME 10:15 AM 10:30 AM 11:45 AM 11:30 AM 11:35 AM 11:35 AM 12:30 PM 12:45 PM 12:30 PM 12:45 PM 1:30 PM 1:30 PM 1:30 PM 1:45 PM 2:00 PM	RT 20 14 12 12 14 11 11 11 11 8 16 24 22 12 16 13 12 74	TH 3 5 3 4 7 15 7 4 3 8 13 4 0 12 7 4 29	From the SK LT 5 7 8 8 9 19 6 10 7 7 7 7 7 7 7 8 8 4 6 5 7 26	DUTH (NOF TOTAL 28 26 23 23 24 30 48 24 25 18 31 44 43 31 6 36 24 22 22	RTHBOUNE HV 0	b) Bikes 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	S Leg Peds 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	RT 3 7 12 8 16 7 11 9 6 10 14 7 8 10 9 11 39	TH 20 35 55 44 62 48 46 43 30 51 70 45 39 45 49 48 199	From the V LT 6 4 1 4 3 5 2 2 1 3 4 4 2 1 3 4 4 3 4 3 1 3 4 3 1 1 3 1 4 3 1 1 1 4 3 1 1 1 4 1 3 1 1 1 1	NEST (EAS TOTAL 29 46 68 56 81 60 59 54 37 64 88 54 58 62 62 248	STBOUND) HV 0 0 0 0 0 0 0 0 0 0 1 1 1 0 0 0 0 2 0 2	Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0	W Leg Peds 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
END TIME 10:15 AM 10:30 AM 11:45 AM 11:45 AM 11:45 AM 11:45 AM 12:45 PM 12:45 PM 12:45 PM 1:26 PM 1:26 PM 1:26 PM 1:20 PM 1:27 PM 1:20 PM	RT 20 14 12 12 14 11 11 11 11 8 16 24 22 12 16 13 12 12 74 79	TH 3 5 3 4 7 15 7 4 3 8 13 4 0 12 7 4 29 31	From the S0 LT 5 7 8 8 8 9 19 6 10 7 7 7 7 7 7 7 7 7 4 8 8 4 6 5 7 7 7 7 7 2 6 28	DUTH (NOF TOTAL 28 26 23 24 30 48 24 25 18 31 44 43 33 16 36 24 25 18 31 24 25 18 31 24 25 18 31 24 25 18 31 24 25 18 31 26 26 23 24 30 26 23 24 30 26 26 23 26 26 23 26 26 26 23 26 26 26 26 26 26 26 26 26 26 26 26 26	RTHBOUNE HV 0)) Bikes 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	S Leg Peds 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	RT 3 7 12 8 16 7 11 9 6 0 14 7 8 10 9 9 11	TH 20 35 55 44 62 48 46 43 30 51 70 45 39 45 45 49 48	From the V LT 6 4 1 4 3 5 2 2 2 1 3 4 2 1 3 4 2 1 3 4 3 2 1 1 3 1 1 1 1 1	WEST (EAS TOTAL 29 46 68 56 81 60 59 54 37 64 88 54 48 54 48 54 48 62 62 62 62	TBOUND) HV 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 2 0 0 2 2 2 2 2	Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	W Leg Peds 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
END TIME 10:15 AM 10:30 AM 11:00 AM 11:15 AM 11:15 AM 11:45 AM 12:00 PM 12:15 PM 12:30 PM 12:30 PM 12:15 PM 1:30 PM 1:45 PM 1:30 PM 1:45 PM 1:45 PM	RT 20 14 12 12 14 14 14 11 11 8 16 24 22 12 12 16 13 12 74 79	TH 3 5 3 4 7 15 7 4 3 8 13 4 0 12 7 4 29 31	From the S0 LT 5 7 8 8 8 9 19 6 10 7 7 7 7 7 4 8 4 6 10 7 7 7 7 4 8 4 6 10 7 7 2 8 8 4 6 10 7 7 7 2 8 8 8 8 9 19 19 19 19 19 19 19 19 19 19 19 19 1	DUTH (NOF TOTAL 28 26 23 24 30 48 24 25 18 31 44 25 18 31 44 33 16 36 24 22 22 129 138	RTHBOUNE HV 0	Bikes 0 1 0	S Leg Peds 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	RT 3 7 12 8 16 7 11 9 6 10 9 14 7 8 10 9 11 11 39 42	TH 20 35 55 44 62 48 46 43 30 51 70 45 39 45 48 199 213	From the V LT 6 4 1 4 3 5 2 2 2 1 3 4 2 2 1 3 4 2 2 1 3 4 2 2 1 3 4 2 2 2 1 1 3 4 2 2 2 1 1 3 4 1 2 2 2 2 1 1 1 1 3 5 5 5 1 1 1 1 1 3 5 5 5 1 1 1 1	WEST (EAS TOTAL 29 46 68 56 81 60 59 54 37 64 37 64 88 54 48 53 62 62 248 266	TBOUND) HV 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 1 0 0 0 0 2 0 0 0 2 0 0 2 0 0 2 0 2 0 2 0 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 2 3<	Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0	W Leg Peds 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
END TIME 10:15 AM 10:30 AM 10:35 AM 11:00 AM 11:15 AM 11:45 AM 12:00 PM 12:15 PM 12:30 PM 12:45 PM 1:00 PM 1:45 PM 2:00 PM PK HR Adj HR	RT 20 14 12 12 14 14 11 11 11 8 16 24 22 12 16 13 12 12 74 79	TH 3 5 3 4 7 15 7 4 3 8 13 4 0 12 7 4 29 31	From the SK LT 5 7 8 8 9 19 6 10 7 7 7 7 7 7 7 7 4 8 4 6 26 28	DUTH (NOF TOTAL 28 26 23 24 30 48 24 25 18 31 44 25 18 31 44 33 31 44 25 18 31 44 25 18 31 44 25 18 31 44 25 18 31 44 25 18 31 16 16 26 26 27 26 28 28 26 28 28 28 26 28 28 28 28 28 28 28 28 28 28 28 28 28	RTHBOUNE HV 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0)) Bikes 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	S Leg Peds 1 0	RT 3 7 12 8 16 7 11 9 6 10 14 7 8 10 9 11 39 42	TH 20 35 55 44 62 48 46 43 30 51 70 45 39 45 49 48 199 213	From the V LT 6 4 1 4 3 5 2 2 2 1 3 4 2 2 1 3 4 3 4 3 10 11	NEST (EAS TOTAL 29 46 68 56 81 60 59 54 37 64 88 84 88 54 48 54 48 58 62 62 62 248 266	TBOUND) HV 0 0 0 0 0 2 0 0 0 1 1 1 0 0 0 2 0 0 2 2 0 2 2 2	Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0	W Leg Peds 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
END TIME 10:15 AM 10:30 AM 11:45 AM 11:30 AM 11:45 AM 11:30 AM 11:45 AM 12:00 PM 12:45 PM 1:00 PM 1:45 PM 1:30 PM 1:45 PM 2:00 PM PK HR Adj HR	RT 20 14 12 12 14 11 11 11 11 8 16 24 22 12 16 6 13 12 74 79	TH 3 5 3 4 7 15 7 4 3 8 13 4 0 12 7 4 - 29 31 -	From the SK LT 5 7 8 8 9 19 6 10 7 7 7 7 7 7 7 4 8 8 4 6 26 28	DUTH (NOF TOTAL 28 26 23 24 30 48 24 25 18 31 44 25 18 31 44 25 18 31 44 25 18 31 44 22 25 18 31 44 24 22 25 18 31 44 26 26 26 27 30 48 26 26 27 30 48 26 26 27 30 48 26 26 27 30 48 26 26 27 30 48 26 27 30 48 26 27 30 48 26 27 30 48 26 27 30 48 26 27 30 48 26 27 30 48 26 27 30 48 26 27 30 48 26 27 30 48 26 27 30 48 26 27 30 48 26 27 30 48 27 30 48 27 30 48 27 30 48 27 30 48 27 30 48 27 30 48 27 30 48 27 30 27 30 27 30 27 30 27 30 48 27 30 27 30 27 30 30 48 27 30 30 31 44 27 30 31 44 30 31 31 31 31 31 31 31 27 32 32 32 30 48 27 30 31 31 31 31 31 31 31 31 31 31 31 31 31	RTHBOUNE HV 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Bikes 0 1 0	S Leg Peds 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	RT 3 7 12 8 16 7 11 9 6 10 14 7 8 10 9 11 39 42	TH 20 35 55 44 62 48 46 43 30 51 70 45 39 45 49 48 199 213	From the V LT 6 4 1 4 3 5 2 2 2 1 3 4 4 2 1 3 4 3 4 3 10 11	NEST (EAS TOTAL 29 46 68 56 81 60 59 54 37 64 88 54 54 54 28 62 248 266	TBOUND) HV 0 0 0 0 0 0 0 0 0 0 0 1 1 0 0 2 2 2 2 2 2 2 2	Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0	W Leg Peds 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
END TIME 10:15 AM 10:30 AM 11:45 AM 11:45 AM 11:45 AM 11:45 AM 12:00 PM 12:45 PM 12:00 PM 12:45 PM 1:00 PM 1:15 PM 1:30 PM 1:45 PM 2:00 PM	RT 20 14 12 12 14 11 11 11 11 8 16 24 22 12 16 13 12 74 79	TH 3 5 3 4 7 15 7 4 3 8 13 4 0 12 7 4 29 31 tais (adj) HW	From the SX LT 5 7 8 8 9 19 6 10 7 7 7 7 7 7 7 4 8 4 6 10 7 7 7 7 4 8 4 6 10 7 7 2 6 2 8	DUTH (NOF TOTAL 28 26 23 24 30 48 24 25 18 31 44 25 18 31 16 36 24 22 25 18 31 16 36 24 22 22 22 22 22 22 22 22 22 22 22 22	RTHBOUNE HV 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0)) Bikes 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	S Leg Peds 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	RT 3 7 12 8 16 7 11 9 6 0 14 7 8 10 9 9 11	TH 20 35 55 44 62 48 46 43 30 51 70 45 39 45 45 49 48 199 213	From the V LT 6 4 1 4 3 5 2 2 2 1 3 4 2 1 3 4 2 1 3 4 3 3 4 2 1 1 3 1 1 1 1 1 1 1 1 1 1 1 1 1 1 2 2 2 1 1 3 1 3	WEST (EAS TOTAL 29 46 68 56 81 64 88 54 48 58 62 62 62 62 248 266	TBOUND) HV 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 2 2 2 2 2 2 2 2	Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0	W Leg Peds 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0
END TIME 10:15 AM 10:30 AM 11:00 AM 11:15 AM 11:45 AM 11:45 AM 12:00 PM 12:15 PM 12:30 PM 12:45 PM 12:30 PM 1:45 PM 1:30 PM 1:45 PM 1:30 PM 1:45 PM 1:45 PM 1:45 PM 1:45 PM 1:45 PM 1:45 PM 1:45 PM 1:45 PM	RT 20 14 12 12 14 14 11 11 8 16 13 12 12 16 13 12 16 13 12 74 79	TH 3 5 3 4 7 15 7 4 3 8 13 4 0 12 7 4 29 31 tals (adj) HV	From the S0 LT 5 7 8 8 8 9 19 6 10 7 7 7 7 7 4 8 4 6 10 7 7 7 7 4 8 8 4 6 6 10 7 7 7 7 2 8 8 8 8 9 9 19 9 19 9 19 9 19 9 6 6 10 7 7 7 7 7 7 8 8 8 8 8 9 9 19 9 19 9 19	DUTH (NOF TOTAL 28 26 23 24 30 48 24 25 18 31 44 33 16 36 24 22 22 129 138 Bikes	RTHBOUNE HV 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0)) Bikes 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0	S Leg Peds 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	RT 3 7 12 8 16 7 11 9 6 10 9 14 7 8 10 9 9 11 11 9 9 11	TH 20 35 55 44 62 48 46 43 30 51 70 45 39 45 49 45 49 48 199 213 Rolling Hour	From the V LT 6 4 1 4 3 5 2 2 2 1 3 4 2 2 1 3 4 2 2 1 3 4 2 2 1 3 4 2 2 1 3 4 1 3 1 4 2 2 2 1 1 3 4 1 1 1 3 5 5 1 1 1 1 3 5 5 1 1 1 1 3 5 5 1 1 1 1	WEST (EAS TOTAL 29 46 68 56 81 60 59 54 37 64 37 64 88 54 48 88 54 48 62 62 62 248 266	STBOUND) HV 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 2 2 2 2 2 2 2 2	Bikes 0 0 0 0 0 0 0 0 0 0 0 0 0	W Leg Peds 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0

END	15 MILLION	is (auj)							
TIME	Veh	HV	Peds	Bikes				Rolling	
10:15 AM	164	0	0	1	Ro	olling He	our	Hour	
10:30 AM	133	0	1	0	Start	to	End	Volume	Pk Hr?
10:45 AM	160	0	0	2	10:00 AM	12	11:00 AM	626	no
11:00 AM	169	0	0	0	10:15 AM	171	11:15 AM	684	no
11:15 AM	222	1	0	1	10:30 AM	ца) 1	11:30 AM	749	no
11:30 AM	198	4	0	0	10:45 AM	-	11:45 AM	757	no
11:45 AM	168	0	0	0	11:00 AM	-	12:00 PM	758	no
12:00 PM	170	1	0	0	11:15 AM	()	12:15 PM	655	no
12:15 PM	119	2	0	0	11:30 AM	-	12:30 PM	647	no
12:30 PM	190	2	0	0	11:45 AM	(**)	12:45 PM	737	no
12:45 PM	258	0	0	0	12:00 PM		1:00 PM	747	no
1:00 PM	180	1	0	0	12:15 PM	-	1:15 PM	794	no
1:15 PM	166	1	0	2	12:30 PM		1:30 PM	795	YES
1:30 PM	191	2	1	0	12:45 PM	-	1:45 PM	723	no
1:45 PM	186	4	0	0	1:00 PM		2:00 PM	707	no
2:00 PM	164	2	0	0					



VJS-TC	LLC - Steere/RIDOT	Counts - Cumberland, RI
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Location:	Pine Swan	np Road @	Diamond Hill	Road				10	City/Town:	Cumberla	and, RI			
Checker:	GAN		Weather:		Sunny				Job:	Group 170	Newell			
Date:	3/7/20	enter day	Start Time:		10:15 AM				Pk Hr:	12:30 PM	to	1:30 PM		
# of minutes c	ounted per i	interval:	14	minutes							i			
				1									dimension of the second	
END				BELL (00)	ITL (DOLINE)		Milog			From the E	AST WES	TBOUND)		
1 1 1 1 /			From the NO	RIHISOU	THBUUNL	9	NLEG			i ioni alo 🖬	101 (1120			ELeg
TIME	RT	тн	From the NO	TOTAL	HV) Bikes	Peds	RT	тн		TOTAL	HV	Bikes	E Leg Peds

TIME	RT	TH	LT	TOTAL	HV	Bikes	Peds	RT	TH	LT	TOTAL	HV	Bikes	Peds
10:30 AM	0	0	0	0	0	0	0	0	19	51	70	1	0	0
10:45 AM	0	0	0	0	0	0	0	- 0	25	41	66	1	0	0
11:00 AM	0	0	0	0	0	0	0	0	26	33	59	2	0	0
11:15 AM	0	0	0	0	0	0	0	0	36	45	81	2	0	0
11:30 AM	0	0	0	0	0	0	0	0	32	38	70	0	0	0
11:45 AM	0	0	0	0	0	0	0	0	32	54	86	0	0	0
12:00 PM	0	0	0	0	0	0	0	0	26	35	61	1	0	0
12.15 PM	0	0	0	0	0	0	0	0	18	25	43	1	0	0
12:30 PM	0	0	0	0	0	0	0	0	26	41	67	2	0	0
12:45 PM	0	0	0	0	0	0	0	0	33	56	89	3	0	0
1:00 PM	0	0	0	0	0	0	0	0	31	44	75	4	0	0
1.15 PM	0	0	0	0	0	0	0	0	31	44	75	3	0	0
1:30 PM	0	0	0	0	0	0	0	0	36	39	75	0	0	0
1:45 PM	0	0	0	0	0	0	0	0	38	38	76	2	0	0
2:00 PM	0	0	0	0	0	0	D	0	27	56	83	2	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
							10 Page 1999							
PK HR	0	0	0	0	0	0	0	0	131	183	314	10	0	0
Adj HR	0	0	0	0	0	0	0	0	140	196	336	11	0	0

END			From the So	DUTH (NOR	THBOUND))	S Leg			From the \	NEST (EAS	TBOUND)	5	W Leg
TIME	RT	тн	LT	TOTAL	HV	Bikes	Peds	RT	тн	LT	TOTAL	HV	Bikes	Peds
10:30 AM	40	0	14	54	0	0	0	37	16	0	53	0	0	0
10:45 AM	29	0	27	56	0	0	0	43	40	0	83	1	1	0
11:00 AM	36	0	45	81	3	0	0	49	28	0	77	0	0	0
11:15 AM	43	0	49	92	0	0	0	53	44	0	97	1	0	0
11:30 AM	49	0	38	87	1	0	0	48	35	0	83	1	0	0
11:45 AM	47	0	40	87	3	0	0	43	39	0	82	0	0	0
12:00 PM	42	0	47	89	0	0	0	47	32	0	79	1	0	0
12:15 PM	30	0	33	63	1	0	0	33	22	0	55	1	0	0
12:30 PM	45	0	52	97	1	0	0	42	25	0	67	0	0	0
12:45 PM	61	0	70	131	0	0	0	51	28	0	79	0	0	0
1.00 PM	57	0	52	109	2	0	0	77 ·	28	0	105	1	0	0
1:15 PM	43	0	51	94	3	0	1	42	21	0	63	4	0	0
1:30 PM	45	0	46	91	3	1	0	48	32	0	80	2	0	0
1:45 PM	38	0	46	84	2	0	0	52	33	0	85	1	0	0
2:00 PM	46	0	50	96	3	0	0	53	44	0	97	4	0	0
2:15 PM	0	0	0	0	0	0	0	0	0	0	0	0	0	0
								NACLOS		-		-		
PK HR	206	0	219	425	8	1	1	218	109	0	327	(0	
Adj HR	221	0	235	456	9	1	1	234	117	0	351	8	0	

END	15 Min Tota	als (adj)							
TIME	Veh	HV	Peds	Bikes				Rolling	
10:30 AM	190	1	0	0	R	olling Ho	bur	Hour	
10:45 AM	220	2	1	0	Start	to	End	Volume	Pk Hr?
11:00 AM	233	5	0	0	10:15 AM	-	11:15 AM	932	no
11:15 AM	289	3	0	0	10:30 AM	177	11:30 AM	999	no
11:30 AM	257	2	0	0	10:45 AM	1.00	11:45 AM	1052	no
11:45 AM	273	3	0	0	11:00 AM	-	12:00 PM	1064	no
12:00 PM	245	2	0	0	11:15 AM	-	12:15 PM	948	no
12:15 PM	173	3	0	0	11:30 AM		12:30 PM	939	no
12:30 PM	248	3	0	0	11:45 AM	-	12:45 PM	986	no
12:45 PM	320	3	0	0	12:00 PM	-	1:00 PM	1051	no
1:00 PM	310	8	0	0	12:15 PM	-	1:15 PM	1127	no
1:15 PM	249	11	0	1	12:30 PM		1:30 PM	1143	YES
1:30 PM	264	5	1	0	12:45 PM	-	1:45 PM	1086	no
1:45 PM	263	5	0	0	1:00 PM		2:00 PM	1072	no
2:00 PM	296	10	0	0	1:15 PM	2	2:15 PM	823	no
2:15 PM	0	0	0	0					





Location:	Mendon R	oad @ West	Wrentham	Road	3 - 53 - 18				City/Town:	Cumber	rland, Rl			
Checker:	SP		Weather:		Sunny				Job:	Group 17	C Newell			8
Date:	3/7/20	enter day	Start Time:		10:00 AM				Pk Hr.	10:30 AM	to	11:30 AM		
# of minutes co	ounted per	interval:	14	minutes						L				
		e destructions												
END		F	From the NC	ORTH (SOL	JTHBOUND)	N Leg			From the I	EAST (WES	STBOUND)		ELeg
TIME	RT	TH	LT	TOTAL	HV	Bikes	Peds	RT	TH	LT	TOTAL	HV	Bikes	Peds
10:15 AM	10	0	9	19	0	0	0	18	88	11	117	1	0	0
10:30 AM	14	0	18	32	0	0	0	11	58	3	72	1	0	0
10:45 AM	17	0	33	50	0	0	0	29	52	12	93	4	2	0
11:00 AM	15	0	32	47	1	0	0	24	86	11	121	5	0	0
11:15 AM	15	0	32	47	1	0	0	18	66	6	90	8	0	0
11:30 AM	16	0	26	42	0	0	0	26	104	0	130	3	0	0
11:45 AM	22	0	33	55	2	0	0	23	80	5	108	3	0	0
12:00 PM	22	0	29	51	2	0	0	25	73	6	104	2	0	0
12:15 PM	15	0	20	35	1	0	0	18	57	4	79	1	0	0
12:30 PM	17	0	22	39	1	0	0	23	64	7	94	2	0	0
12:45 PM	19	0	23	42	2	0	0	28	75	9	112	3	0	0
1:00 PM	20	0	34	54	0	0	0	28	88	4	120	0	0	0
1:15 PM	18	0	22	40	0	0	0	17	65	1	83	2	0	0
1:30 PM	22	0	22	44	1	0	0	14	65	3	82	1	0	0
1:45 PM	12	0	16	28	o	0	0	13	67	0	80	1	0	0
2:00 PM	16	0	19	35	0	0	0	18	65	0	83	0	0	0
		21)									Carlos			
PK HR	63	0	123	186	2	0	0	97	308	29	434	20	2	0
Adj HR	68	0	132	200	2	0	0	104	330	31	465	21	2	0
		-												
END		F	From the SC	OUTH (NOR	THBOUND)	l.	S Leg			From the \	WEST (EAS	STBOUND)		W Leg
TIME	RT	TH	LT	TOTAL	HV	Bikes	Peds	RT	TH	LT	TOTAL	HV	Bikes	Peds
10:15 AM	0	0	0	0	0	0	0	1	131	11	143	1	0	0
10:30 AM	0	0	0	0	0	0	0	4	69	18	91	1	0	0
10:45 AM	0	0	0	0	0	0	0	6	117	19	142	0	0	0
11:00 AM	0	0	0	0	0	0	0	6	117	22	145	1	0	0
11:15 AM	0	0	0	0	0	0	0	1	65	12	78	2	0	0
11:30 AM	0	0	0	0	0	0	0	2	79	19	100	2	0	0
11:45 AM	0	0	0	0	0	0	0	1	85	19	105	1	0	0
12:00 PM	0	0	0	0	0	0	0	2	82	17	101	5	0	0
12:15 PM	0	0	0	0	0	0	0	2	58	12	72	4	0	0
12:30 PM	0	0	0	0	0	0	0	3	70	15	88	5	0	0
12:45 PM	0	0	0	0	0	0	0	2	82	17	101	5	0	0
1:00 PM	0	0	0	0	0	0	0	1	94	14	109	4	0	0
1:15 PM	0	0	0	0	0	0	0	0	83	9	92	1	0	0
1:30 PM	0	0	0	0	0	0	0	5	57	4	66	4	0	0
1:45 PM	0	0	0	0	0	0	0	1	71	12	84	4	0	0
2:00 PM	0	0	0	0	0	0	0	2	56	13	71	5	0	0
1					14-1 <u>7</u> -11-11-11-11-11-11-11-11-11-11-11-11-11				1	()		200		
PKHR	0	0	0	0	0	0	0	15	378	72	465	5	0	0
Adj HR	0	0	0	0	0	0	0	16	405	77	498	5	0	0

END	15 Min Tota	als (adj)							
TIME	Veh	HV	Peds	Bikes				Rolling	
10:15 AM	299	2	0	0	R	olling Ho	our	Hour	
10:30 AM	209	2	0	0	Start	to	End	Volume	Pk Hr?
10:45 AM	305	4	2	0	10:00 AM		11:00 AM	1148	no
11:00 AM	335	8	0	0	10:15 AM	-	11:15 AM	1079	no
11:15 AM	230	12	0	0	10:30 AM		11:30 AM	1161	YES
11:30 AM	291	5	0	0	10:45 AM	2	11:45 AM	1143	no
11:45 AM	287	6	0	0	11:00 AM		12:00 PM	1082	no
12:00 PM	274	10	0	0	11:15 AM	-	12:15 PM	1051	no
12:15 PM	199	6	0	0	11:30 AM	=	12:30 PM	997	no
12:30 PM	237	9	0	0	11:45 AM	<u> -</u>	12:45 PM	983	no
12:45 PM	273	11	0	0	12:00 PM	-	1:00 PM	1012	no
1:00 PM	303	4	0	0	12:15 PM	÷	1:15 PM	1043	no
1:15 PM	230	3	0	0	12:30 PM	-	1:30 PM	1012	no
1:30 PM	206	6	0	0	12:45 PM	-	1:45 PM	945	no
1:45 PM	206	5	0	0	1:00 PM	e.	2:00 PM	845	no
2:00 PM	203	5	0	0					





Location:	Nate Whip	ople Highway	@ Mendor	Road					City/Town:	Cumbe	rland, RI			
Checker:	AF		Weather:		Sunny				Job:	Group 17	7C Newell			
Date:	3/7/20	enter day	Start Time.		10:00 AM				Pk Hr.	11:00 AM	to	12:00 PM		
# of minutes co	ounted per	interval:	14	minutes										
					19 - 11 - 11 - 11 - 11 - 11 - 11 - 11 -									
ENID			From the MI	DITU (POI	TUDOUN	1	NLog			Crow the	CAOT ANE			Elen
TIME	рт			TOTAL		Dilor	Roda	DT	TH	From the	TOTAL		Dilton	Dede
10:15 AM	12	0	22	10TAL		DIRES	reus	10	60	0	70	51V	Dikes	Peas
10:10 AM	42	0	25	77	0	0	0	10	77	0	07	2	0	0
10:45 AM	20		20			0	0	10	11	0	6/	1	0	0
11:00 AM	39	0	20	64		0	0	20	93	0	07	0	2	0
11:15 AM	50	0	16	60	2		0	1/	00	0	97		0	0
11:30 AM	30	0	10	70		0	0	14	00	0	97		0	0
11.30 AN	40 E7		20	10	0		0	21	104	0	120	0	0	0
11.45 AM	57	0	20	82		0	0	21	120	U	103	U	U	0
12.00 PM	00	0	30	80	U	0	0	20	89	0	109	U	0	0
12:10 PW	29	0	12	41		U	0	13	00	U	69		0	0
12:30 PM	40	0	19	64	1	0		21	94	0	115	1	0	0
12.45 PM	00	0	20	80		0	U	29	132	0	161	2	0	0
1.00 FW	31	0	17	54	0	0	0	14	00	0	94	0	0	0
1.15 PW	30	0	20	20	0	0	0	21	99	0	120	0	U	0
1:45 DM	32	0	19	61	0	0	0	23	00	0	07	0	0	0
1.45 FM	45	0	10	01		0	0	17	74	0	31	1	0	0
2.00 PW	- 34	0	10	44		U	U	17	11	0	00		0	0
1												1		
	202	0	06	200		0	0	02	402	0	101	1	0	0
Adi HR	202		103	319	r		0	88	402	0	519		0	0
	210	1 -	100						1.01	ÿ	010			
END			From the SC	OUTH (NOF	THBOUND))	S Lea			From the \	NEST (EAS	TBOUND)		W Lea
TIME	RT	TH	LT	TOTAL	Ιнν	Bikes	Peds	RT	TH	LT	TOTAL	HV .	Bikes	Peds
10:15 AM	0	0	0	0	0	0	0	0	95	32	127	2	0	0
10:30 AM	0	0	0	0	0	0	0	0	80	45	125	1	0	0
10:45 AM	0	0	0	0	0	0	0	0	98	45	143	1	0	0
11:00 AM	0	0	0	0	0	0	0	0	76	31	107	0	0	0
11:15 AM	0	0	0	0	0	0	0	0	104	43	147	4	0	0
11:30 AM	0	0	0	0	0	0	0	0	118	42	160	1	0	0
11:45 AM	0	0	0	0	0	0	0	0	108	42	150	1	0	0
12:00 PM	0	0	0	0	0	0	0	0	90	51	141	1	0	0
12:15 PM	0	0	0	0	0	0	0	0	82	40	122	0	0	0
12:30 PM	0	0	0	0	0	0	0	0	101	43	144	1	0	0
12:45 PM	0	0	0	0	0	0	0	0	120	46	166	2	0	0
1:00 PM	0	0	0	0	0	0	0	0	90	36	126	0	0	0
1:15 PM	0	0	0	0	0	0	0	0	92	34	126	0	0	0
1:30 PM	0	0	0	0	0	0	0	0	67	46	113	1	0	0
1:45 PM	0	0	0	0	0	0	0	0	32	29	61	1	0	0
2:00 PM	0	0	0	0	0	0	0	0	87	29	116	1	0	0
				1										
													1998 - 14 A	
PK HR	0	0	0	0	0	0	0	0	420	178	598	7	0	0
Adj HR	0	0	0	0	0	0	0	0	450	191	641	8	0	0

END	15 Min Tota	als (adj)							
TIME	Veh	HV	Peds	Bikes				Rolling	
10:15 AM	289	4	0	0	R	olling He	оиг	Hour	1
10:30 AM	310	2	0	0	Start	to	End	Volume	Pk Hr?
10:45 AM	349	2	2	0	10:00 AM	2	11:00 AM	1236	no
11:00 AM	288	3	0	0	10:15 AM	=	11:15 AM	1279	no
11:15 AM	332	5	0	0	10:30 AM		11:30 AM	1349	no
11:30 AM	380	1	0	0	10:45 AM	-	11:45 AM	1413	no
11:45 AM	413	2	0	0	11:00 AM	2	12:00 PM	1479	YES
12:00 PM	354	1	0	0	11:15 AM	-	12:15 PM	1396	no
12:15 PM	249	2	0	0	11:30 AM	-	12:30 PM	1362	no
12:30 PM	346	3	0	0	11:45 AM	-	12:45 PM	1392	no
12:45 PM	443	5	0	0	12:00 PM		1:00 PM	1332	no
1:00 PM	294	0	0	0	12:15 PM		1:15 PM	1406	no
1:15 PM	323	0	0	0	12:30 PM	73	1:30 PM	1376	no
1:30 PM	316	2	0	0	12:45 PM	-	1:45 PM	1168	no
1:45 PM	235	1	0	0	1:00 PM	72	2:00 PM	1140	no
2:00 PM	266	3	0	0					







AM-PM Weekday Peak Hour Counts <u>Cumberland Hill Plaza Driveways at West Wrentham Road and Mendon Road</u> Cumberland, Rhode Island March 17, 2020

Count Time		7:30 A	M to 8:	30 AM		-02						
	Fr	om Nor	th	F	rom Ea	st	Fr	om Sou	th	From West		
Report Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left
7:45 AM	0	0	0	0	0	0	0	0	0	0	0	0
8:00 AM	O	0	0	0	0	2	0	1	0	1	0	0
8:15 AM	0	1	0	0	0	5	3	0	0	1	0	0
8:30 AM	0	0	0	0	0	1	3	0	3	1	0	0
Peak Hour	0	1	0	0	0	8	6	1	3	3	0	0
Peak 15 min		1			5			6		1		
PHF		0.25			0.4			0.42		0.75		

Count Time		4:45 PI	M to 5:	45 PM									
	Fr	om Nor	th	F	rom Ea	st	Fr	om Sou	th	From West			
Report Time	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	Right	Thru	Left	
5:00 PM	0	0	0	0	0	1	1	0	1	0	0	0	
5:15 PM	0	1	0	0	0	0	0	0	0	0	0	0	
5:30 PM	0	1	0	0	0	0	1	0	1	. 0	0	0	
5:45 PM	0	0	0	0	0	1	0	0	1	0	0	0	
Peak Hour	0	2	0	0	0	2	2	0	3	0	0	0	
Peak 15 min		1		10.0	1			2		ĺ	0		
PHF		0.5		0.5				0.63		0			

VALERIE J SOUTHERN TRANSPORTATION CONSULTANT, LLC JAMESTOWN, RI EMAIL: valerie.southern@vjs-consultant.com

Location	:	Diamond Hill Road @ South End of Newell Bridge	
Location	•	Diamona mini Koaa @ South Ena of Newell Dhage	

Site: Loc 01

City, State : Cumberland, RI

Counter #

: NT-2811

				Seven Day Volum	e, per Channel				
				Dual	Dir				
	Sun	Mon	Tue	Wed	Thu	Fri	Sat	Mon - Fri	
Interval Start	3/8/2020	3/9/2020	3/10/2020	3/11/2020	3/12/2020	3/13/2020	3/14/2020	Average	7 Day Average
12:00 AM	-	35	57	44	64	63	112	52.6	62.5
1:00 AM	-	19	25	25	25	30	47	24.8	28.5
2:00 AM	-	13	28	16	16	15	36	17.6	20.7
3:00 AM	-	13	18	14	28	17	28	18.0	19.7
4:00 AM	-	59	64	69	68	47	28	61.4	55.8
5:00 AM	-	264	272	254	234	241	85	253.0	225.0
6:00 AM	-	726	780	757	718	600	175	716.2	626.0
7:00 AM	-	1107	1144	1129	1096	891	296	1073.4	943.8
8:00 AM	-	1062	1054	1094	1014	928	468	1030.4	936.7
9:00 AM	-	636	644	634	572	510	633	599.2	604.8
10:00 AM	-	540	546	557	552	530	768	545.0	582.2
11:00 AM	-	550	588	583	596	605	976	584.4	649.7
12:00 PM	954	632	642	642	652	621	1018	637.8	737.3
1:00 PM	910	674	626	728	646	661	927	667.0	738.9
2:00 PM	972	911	884	951	872	840	916	891.6	906.6
3:00 PM	911	1202	1164	1072	1066	1106	922	1122.0	1063.3
4:00 PM	795	1350	1245	1258	1240	1112	926	1241.0	1132.3
5:00 PM	674	1426	1324	1326	1212	1090	764	1275.6	1116.6
6:00 PM	602	1000	944	900	880	766	628	898.0	817.1
7:00 PM	450	645	589	522	580	542	422	575.6	535.7
8:00 PM	272	372	398	407	404	342	332	384.6	361.0
9:00 PM	202	231	234	238	304	274	278	256.2	251.6
10:00 PM	102	158	154	128	140	221	196	160.2	157.0
11:00 PM	85	105	89	74	98	161	152	105.4	109.1
Totals	6929	13730	13513	13422	13077	12213	11133	13191.0	12681.8
				<u>Peak H</u>	<u>ours</u>				
12:00 AM - 12:00 PM	-	7:00 AM	7:00 AM	7:00 AM	7:00 AM	8:00 AM	11:00 AM	7:00 AM	7:00 AM
Volume	-	1107	1144	1129	1096	928	976	1073.4	943.8
12:00 PM - 12:00 AM	2:00 PM	5:00 PM	5:00 PM	5:00 PM	4:00 PM	4:00 PM	12:00 PM	5:00 PM	4:00 PM
Volume	972	1426	1324	1326	1240	1112	1018	1275.6	1132.3

VALERIE J SOUTHERN TRANSPORTATION CONSULTANT, LLC JAMESTOWN, RI EMAIL: valerie.southern@vjs-consultant.com

cation	:	Diamond Hill Road @ South End of Newell Bridge	
Cacion		Blainena inn nead e beatin End ei nemen Bridge	

Site: Loc 01

Lo : Cumberland, RI

: NT-2811

City, State

Counter #

				Seven Day Volum	ne, per Channel				
				Dual	Dir				
Interval Start	Sun 3/15/2020	Mon 3/16/2020	Tue 3/17/2020	Wed 3/18/2020	Thu 3/19/2020	Fri 3/20/2020	Sat 3/21/2020	Mon - Fri Average	7 Day Average
12:00 AM	104	44	0	0		-	-	14.7	37.0
1:00 AM	47	21	0	1	-	-	-	7.3	17.3
2:00 AM	28	15	0	0	-	-	-	5.0	10.8
3:00 AM	16	16	0	0	-	-	-	5.3	8.0
4:00 AM	18	54	0	0	-	-	-	18.0	18.0
5:00 AM	50	232	0	0	-	-	-	77.3	70.5
6:00 AM	106	513	0	0	-	-	-	171.0	154.8
7:00 AM	234	919	0	0	-	-	-	306.3	288.3
8:00 AM	290	844	0	0	-	-	-	281.3	283.5
9:00 AM	522	752	0	0	-	-	-	250.7	318.5
10:00 AM	600	714	0	0	-	-	-	238.0	328.5
11:00 AM	754	788	0	0	-	-	-	262.7	385.5
12:00 PM	807	558	0	0	-	-	-	186.0	341.3
1:00 PM	979	0	0	0	-	-	-	0.0	244.8
2:00 PM	923	0	0	0	-	-	-	0.0	230.8
3:00 PM	978	0	0	0	-	-	-	0.0	244.5
4:00 PM	824	0	0	0	-	-	-	0.0	206.0
5:00 PM	738	0	0	0	-	-	-	0.0	184.5
6:00 PM	538	0	0	0	-	-	-	0.0	134.5
7:00 PM	445	0	0	0	-	-	-	0.0	111.3
8:00 PM	316	0	0	0	-	-	-	0.0	79.0
9:00 PM	192	0	0	0	-	-	-	0.0	48.0
10:00 PM	108	0	0	-	-	-	-	0.0	36.0
11:00 PM	102	0	0	-	-	-	-	0.0	34.0
Totals	9719	5470	0	1	0	0	0	1823.7	3815.0
				<u>Peak H</u>	<u>lours</u>				
12:00 AM - 12:00 PM	11:00 AM	7:00 AM	-	1:00 AM	-	-	-	7:00 AM	11:00 AM
Volume	754	919	-	1	-	-	-	306.3	385.5
12:00 PM - 12:00 AM	1:00 PM	12:00 PM	-	-	-	-	-	12:00 PM	12:00 PM
Volume	979	558	-	-	-	-	-	186.0	341.3

Trip Generation & Traffic Impact Study Newell Bridge Replacement – Cumberland, RI Revised March 2023

CAPACITY ANALYSES

03/22/2020

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Movement	EBL	EBT	EBR	WBL -	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		ф.			÷			4			4	
Traffic Volume (vph)	61	124	32	18	125	107	49	313	20	104	253	58
Future Volume (vph)	61	124	32	18	125	107	49	313	20	104	253	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	13	13	13	13	12	12	12	12	12	12
Total Lost time (s)		4.0			4.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.98			0,94			0.99			0,98	
Flt Protected		0.99			1.00			0.99			0.99	
Satd. Flow (prot)		1789			1757			1803			1787	
Flt Permitted		0.83			0.97			0.89			0.80	
Satd. Flow (perm)		1503			1710			1622			1456	
Peak-hour factor, PHF	0.80	0.84	0.80	0.90	0.82	0.84	0.82	0.82	0.83	0.81	0.82	0.81
Adj. Flow (vph)	76	148	40	20	152	127	60	382	24	128	309	72
RTOR Reduction (vph)	0	7	0	0	30	0	0	3	0	0	8	0
Lane Group Flow (vph)	0	257	0	0	269	0	0	463	0	0	501	0
Heavy Vehicles (%)	6%	6%	6%	5%	5%	5%	4%	4%	4%	3%	3%	3%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)		16.2			16.2			27.6			27.6	
Effective Green, g (s)		16.2			16.2			27.6			27.6	
Actuated g/C Ratio		0.31			0.31			0.52			0.52	
Clearance Time (s)		4.0			4.0			5.0			5.0	
Vehicle Extension (s)		2.6			2.6			3.0			3.0	
Lane Grp Cap (vph)		461			524			847			761	
v/s Ratio Prot											en statute e tratación	
v/s Ratio Perm		c0.17			0.16			0.29			c0.34	
v/c Ratio		0.56	1001010-000-0000	the set of t	0.51			0.55	and an an Adolf come		0.66	NO VICTORIA
Uniform Delay, d1		15.3			15.1			8.4			9.2	
Progression Factor	10446479103/05700	1.00			1.00	ve service (ve ve traba		1.00			1.00	101112-0014-001
Incremental Delay, d2		1.2			0.7			0.7			2.1	
Delay (s)		16.5			15.7			9.1			11.2	
Level of Service		, B			S B			A			В	
Approach Delay (s)		16.5		0.000.000000000	15./ D			9.1 			11.Z 6	SISSING
Approach LOS		В			В			A			В	
Intersection Summary												
HCM 2000 Control Delay			12.4	H	CM 2000	Level of	Service		В			
HCM 2000 Volume to Capacity	ratio		0.62									
Actuated Cycle Length (s)			52,8	S	um of losi	time (s)			9.0			
Intersection Capacity Utilizatio	n		76.0%	IC	CU Level o	of Service	•		D			
Analysis Period (min)			15									

c Critical Lane Group

Lanes, Volumes, Tin	nings				
1: Diamond Hill Rd (I	RI 114) &	Nate Whipple	Hwy ((RI	120)

03/22/2020

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		. 1			A					<pre>bit production of address of the county of the county</pre>		dament benefic the contained
Traffic Volume (vph)	61	194	32	18	125	107	49	313	20	104	253	58
Future Volume (vph)	61	121	32	18	125	101	4Q	313	20	101	253	58
Ideal Flow (vphp)	1000	1000	1900	100	1000	100	1000	1000	1900	1000	1900	1900
Lono Width (ft)	12	1300	1300	13	1300	12	1000	1000	12	1200	1000	1000
Crade (9/)	U U	10	U I	U U	0%	10	14	ے ر \00	۲۲	۲	۲۲ ۱۷	۲۱
Storago Longth (ft)	∩ ^	U 70	<u>م</u>	۵۵۵ ۸	U 70	<u>م</u>	<u>^</u>	070	n 0	n N	070	00000000 A
	v n		v 0	U A		ů n	ں م		ں م	ں م		Ŭ A
Storage Lanes	U ne		U	0 05		V	0 0		U	0 25		v
naper Length (it)	20			20		Vaa	20	546363	Naa	20		Vaa
Right Turn on Red		40	res		40	165			res		20	res
Link Speed (mpn)		40 4054	9767-1197-249723		40 4400			30 4 r o o			00 4 - 1	
Link Distance (ft)		1854			4162			1592			454	
I ravel 1 me (s)	en e	31.6			70.9			36.2			10.3	THE REAL PROPERTY AND A
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)					o in the second seco					e de fangele gelegele		1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 -
Peak Hour Factor	0.80	0.84	0.80	0.90	0.82	0,84	0.82	0.82	0.83	0.81	0.82	0.81
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	6%	6%	6%	5%	5%	5%	4%	4%	4%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)			uli is op d									
Lane Group Flow (vph)	0	264	0	0	299	0	0	466	0	0	509	0
Turn Type	Perm	ŇĂ		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Detector Phase	1	1		1	1		2	2		2	2	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	14.0	14.0		14.0	14.0		15.0	15.0		15.0	15.0	
Total Split (s)	29.0	29.0		29.0	29.0		58.0	58.0		58.0	58.0	
Total Split (%)	33,3%	33,3%		33.3%	33.3%		66.7%	66.7%		66.7%	66.7%	
Maximum Green (s)	25.0	25.0		25.0	25.0		53.0	53.0		53.0	53.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	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	
Total Lost Time (s)		4.0			4.0			5.0			5.0	
Lead/Lag	Lead	Lead	9.88	Lead	Lead		Lag	Lag		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.6	2.6		2.6	2,6		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0,0	0.0	daaraa muraa ayaa	0.0	0.0		0.0	0.0		0.0	0.0	serely along Waland
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)			e e se	anarantan dikeratikak		1999-1999 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	n na standina a standi	an ta sa	u de la compañía de l		and the second state of the	1.000000000000000000000000000000000000
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)	e e se	eren der enter tillt.	nationisi initiati M	an contraction An contraction An contraction	aanta ta t	ana ang ang ang ang ang ang ang ang ang		erenden son son son son son son son son son so		u usan artak wa Wil	a an	nen en
v/c Ratio		0.58			0.55			0.56			0.68	
Control Delay		23.7	nan sowerige		20.1	al ana a 49.5 (41.9 %) 1917		11.7	a, every craffic authority	uusen et teknelisiet	14.6	i su en serbad

Existing AM Peak 02/27/2020 Baseline EAM

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		23.7			20.1			11.7			14.6	
Queue Length 50th (ft)		62			62			79			92	
Queue Length 95th (ft)		169			162			171			203	
Internal Link Dist (ft)		1774			4082			1512			374	
Turn Bay Length (ft)							an a	ner enster honoren rentere			orn and a state galactic set	- 1 1023 442 4773
Base Capacity (vph)		783			906			1446			1300	Si Sheriya
Starvation Cap Reductn		0		a haar ay daaraa Taarad	0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0	essansi simai sinarisi.		0			0			0	osi (ne tulura vir
Reduced v/c Ratio		0.34			0.33			0.32			0.39	
Intersection Summary												
Area Type: O	ther											
Cycle Length: 87												
Actuated Cycle Length: 53.9												
Natural Cycle: 45												
Control Type: Actuated-Uncod	ordinated								9.868			0.460554
Collite and Dhases 4. Diam	and Will D	a (DI 114	\ & Nato 1	Mhinnla I	huar (DI 1	20)						
		<u>u (i vi i i 4</u> 1		winhhie i	iwy (IXI I	20)						
		2	1 07									

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	ς.	┣	\searrow	\mathbf{X}	×	ペ	
Movement	WBL	WBR	SEL	SET	NWT	NWR	
Lane Configurations	¥		ሻ	•	1	7	
Traffic Volume (vph)	76	294	210	299	400	9 ¹	
Future Volume (vph)	76	294	210	299	400	91	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width	13	13	11	13	12	12	
Total Lost time (s)	4.0		4.0	5.0	5.0	5.0	
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00	
Frt	0.90		1.00	1.00	1.00	0.85	
Flt Protected	0.99		0.95	1.00	1.00	1.00	
Satd. Flow (prot)	1693		1662	1870	1827	1553	
FIt Permitted	0.99		0.95	1.00	1.00	1.00	
Satd. Flow (perm)	1693		1662	1870	1827	1553	
Peak-hour factor, PHF	0.68	0.91	0.58	0.70	0.71	0.58	
Adj. Flow (vph)	112	323	362	427	563	157	
RTOR Reduction (vph)	149	0	0	0	0	64	
Lane Group Flow (vph)	286	0	362	427	563	93	
Heavy Vehicles (%)	3%	3%	5%	5%	4%	4%	
Turn Type	Prot		Prot	NA	NA	Prot	
Protected Phases	3		2	12	1	1	
Permitted Phases							
Actuated Green, G (s)	14.0		11.2	40.7	24.5	24.5	
Effective Green, g (s)	14.0		11.2	40.7	24.5	24.5	
Actuated g/C Ratio	0.22		0,18	0.65	0.39	0.39	
Clearance Time (s)	4.0		4.0		5.0	5.0	
Vehicle Extension (s)	2,6		2.6		2.6	2.6	
Lane Grp Cap (vph)	378		296	1213	713	606	
v/s Ratio Prot	c0.17	10.11.10 1.11.10 1.	c0.22	0.23	c0.31	0.06	
v/s Ratio Perm		0.00.00					
v/c Ratio	0.76		1.22	0.35	0.79	0.15	
Uniform Delay, d1	22.8		25.8	5.0	16,8	12.4	
Progression Factor	1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2	8.1		126.7	0.1	5.7	0.1	
Delay (s)	30.8		152.5	5.1	22.5	12.5	
Level of Service	С		F	А	C	В	
Approach Delay (s)	30.8			72.7	20.3		
Approach LOS	С			E	C		
Intersection Summary							
HCM 2000 Control Delay			43.9	H	CM 2000	Level of Service	D
HCM 2000 Volume to Cap	pacity ratio		0.88				
Actuated Cycle Length (s)			62.7	Si	um of los	t time (s)	13.0
Intersection Capacity Utiliz	zation		65.9%	IC	U Level	of Service	С
Analysis Period (min)			15				

Lane Group WBL WBR SEL SET NWT NWR Lane Configurations Y Y ↑	
Lane Configurations Y I	
Traffic Volume (vph) 76 294 210 299 400 91 Future Volume (vph) 76 294 210 299 400 91	
Future Volume (vph) 76 294 210 299 400 91	
(deal Flow (vohp)) 1900 1900 1900 1900 1900	<u>Neg el se </u>
Lane Width (ft) 13 13 11 13 12 12	
Grade (%) 0% 0%	
Storage Length (ff) 0 0 0 80	egon (es (excessión) es
Storage Lanes 1 0 1 1	
Taper Length (ff) 25 25	alas) - ana ang magana a
Right Turn on Red Yes Yes	
Link Speed (mph) 30 35 35	
Link Distance (ff) 2348 381 2230	
Travel Time (s) 53.4 7.4 43.4	2080-00800000
Confl Beds (#/hr)	
Confl Bikes (#/hr)	
Peak Hour Eactor 0.68 0.91 0.58 0.70 0.71 0.58	
Growth Eactor 100% 100% 100% 100% 100%	alan senara (1991) Alan senara (1991)
Heavy Vehicles (%) 3% 5% 5% 4%	
$\begin{array}{cccccccccccccccccccccccccccccccccccc$	
Parking /#/hr)	
Mid-Block Traffic (%) 0% 0%	
Sharad Jana Traffic (%)	
ane Group Flow (vph) 435 0 362 427 563 157	
Turn Type Prot Prot NA NA Prot	
Protocted Phases 3 2 12 1 1	
Parmittad Phases	
Detector Phase 3 2 12 1 1	
Switch Phase	
Minimum Initial (s) 10.0 5.0 10.0 10.0	
Minimum Snlit (s) 14.0 9.0 15.0 15.0	
Total Split (c) 20.0 15.0 35.0 35.0	
Total Split (%) 28.6% 21.4% 50.0%	
Maximum Green (s) = 16.0 = 11.0 = 30.0 = 30.0 = 30.0	
Vollow Time (s) 3.0 3.0 4.0 4.0	
$\Delta II_{\rm Red} Time (s) = 10 = 10 = 10 = 10$	903/92/98/98/99
Lost Time Adjust (s) 0.0 0.0 0.0	
Total lost Time (s) 40 40 50 50	
Load Lag Load Load	
Vehicle Extension (s) 2.6 2.6 2.6 2.6	
$\begin{array}{cccc} \text{Minimum Gap /s} & 20 & 20 & 20 \\ \text{Minimum Gap /s} & 30 & 30 & 30 \\ \end{array}$	2013) - Constant - Con
Time To Reduce (s) 0.0 0.0 0.0 0.0	
Parall Made None None Min Min	
Walk Time (s)	
Flach Dont Walk (s)	
Pedestrian Calls (#/hr)	
V/c Ratio 0.83 1.22 0.36 0.79 0.24	
Control Delay 29.3 156.9 6.7 26.2 6.1	

Existing AM Peak 02/27/2020 Baseline EAM

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Lanes, Volumes, Timings 6: Mendon Rd (RI 122) & Nate Whipple Hwy (RI 120)

G

						•				
Lane Group	WBL	WBR	SEL	SET	NWT	NWR				
Queue Delay	0.0		0.0	0.0	0.0	0.0		S E C S	QT 50 CC	
Total Delay	29.3		156.9	6.7	26.2	6.1	 		 	
Queue Length 50th (ft)	94		~203	73	192	13				
Queue Length 95th (ft)	113		#192	83	211	18	 		 	
Internal Link Dist (ft)	2268			301	2150					
Turn Bay Length (ft)						80				
Base Capacity (vph)	581		296	1169	888	809				
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	0.75		1.22	0.37	0.63	0.19				

C

Intersection Summary

Area Type: Other

Cycle Length: 70

Actuated Cycle Length: 63

Natural Cycle: 55

Control Type: Actuated-Uncoordinated

~ 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: 6: Mendon Rd (RI 122) & Nate Whipple Hwy (RI 120)

X _{Ø1}	102	€ ø3
35 s	15 8	20 s

HCM Signalized Intersection Capacity Analysis 7: Plaza Driveway/West Wrentham Rd & Mendon Rd (RI 122)

03/22/2020

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Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		4			44			\$		Ťj	ĥ	
Traffic Volume (vph)	3	1	6	84	0	104	52	143	13	7	338	128
Future Volume (vph)	3	1	6	84	0	104	52	143	13	7	338	128
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	16	16	16	12	12	12	14	14	12	11	14	14
Total Lost time (s)		4.0			4.0			5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00			1.00		1.00	1.00	
Frt		0,94			0.92			0.98		1.00	0.96	
Fit Protected		0.98			0.98			0.99		0.95	1.00	
Satd, Flow (prot)		1986			1651			1915		1694	1886	
Flt Permitted		0.86			0.86			0.82		0.66	1.00	
Satd. Flow (perm)		1749			1443			1580		1184	1886	
Peak-hour factor, PHF	0.25	0.25	0.50	0.84	0.92	0.79	0.81	0.79	0.41	0.44	0.87	0.86
Adj. Flow (vph)	12	4	12	100	0	132	64	181	32	16	389	149
RTOR Reduction (vph)	0	9	0	0	72	0	0	8	0	0	22	0
Lane Group Flow (vph)	0	19	0	0	160	0	0	269	0	16	516	0
Heavy Vehicles (%)	0%	0%	0%	4%	4%	4%	3%	3%	3%	3%	3%	3%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)		11.4			11.4			19.0		19.0	19.0	
Effective Green, g (s)		11.4			11.4			19.0		19.0	19.0	
Actuated g/C Ratio		0.29			0.29		والمحاور والمراد المراجع المحاوم والم	0.48		0.48	0.48	Sector management
Clearance Time (s)		4.0			4.0			5.0		5.0	5.0	
Vehicle Extension (s)		2.6			2.6			2.8		2.8	2.8	<u> </u>
Lane Grp Cap (vph)		506			417			761		570	909	
v/s Ratio Prot											c0.27	
v/s Ratio Perm		0.01			c0.11			0.17		0.01		
v/c Ratio		0.04		-	0.38			0.35		0.03	0.57	
Uniform Delay, d1		10.1			11.2			6.4		5.4	7.3	
Progression Factor		1.00			1.00	Normania and Alexandra	an faats fan sterre	1.00		1.00	1.00	
Incremental Delay, d2		0.0			0.5			0.3		0.0	0.8	
Delay (s)		10.1			11.7			6.6		5.4	8.0	
Level of Service		В			В			A		Α	A	
Approach Delay (s)	an a company second and a first of	10.1			11.7			6.6			7.9	1000 1000 1000 1000 A
Approach LOS		В			В			A			A	
Intersection Summary												
HCM 2000 Control Delay			8.5	H	CM 2000	Level of S	Service		A	- State 1984		
HCM 2000 Volume to Capacity	ratio		0.50		a ann an a							
Actuated Cycle Length (s)			39,4	Si	um of los	t time (s)			9.0			
Intersection Capacity Utilization	n		65.8%	IC	U Level	of Service			С			and a sum to the fact
Analysis Period (min)			15									

Lanes, Volumes, Timings		
7: Plaza Driveway/West Wrentham Rd & Mendon Rd (RI 122)

03/22/2020

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Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		ф			4			44		ሻ	4	
Traffic Volume (vph)	3	1	6	84	0	104	52	143	13	ż	338	128
Future Volume (vph)	3	ronninninnor 1	6	84	0	104	52	143	13	7	338	128
Ideal Flow (vohol)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ff)	16	16	16	12	12	12	14	14	12	11	14	14
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0	1999 - 1999 - 1997 - 1996 -	0	0	0900000000000	0	0	and a state of the s	0	0	58988585555555555555555555555555555555	0
Storage Lanes	<u> </u>		, N	Ō		Ō	Ō		Ō	1		Ō
Taper Length (ff)	25			25	terdarile e freida	n an a' an	25	894949494957 1	4969 4099 400 490 490 	25		899.899.99 <u>7</u> 9
Right Turn on Red			Yes			Yes			Yes			Yes
Link Sneed (mnh)		25			35		energi eta da	35	1999 - 1997 -	n de senten de sente La compansión de senten de sente	35	Second Second
Link Distance (ff)		209			662			1525			777	
Travel Time (s)	90000000000000000000000000000000000000	5 7			12.9		ander een heerde	29.7		Algerigen van Serve	15.1	oneenneed.
Confl Peds (#/hr)												
Confl Rikes (#/hr)					880988350888							202223223
Deak Hour Factor	0.25	0.25	0.50	<u> </u>	<u> </u>	∩ 7q	0.81	ሰ 70	∩ 41	<u>∩ 44</u>	<u> </u>	0.86
Growth Eactor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	00%	00%	00%	4%	10070	10070	20%	10070 2%	3%	3%	3%	20%
Pue Blockages (#/br)	עט ה	ሳ U በ	∿0 ∩	ግ/ሳ በ	ግሥ በ	ግሥ። በ	% ت ۱	<u></u>	ν. Ω		<u>مريحية</u> 1	<u>888</u> A
Dus Diuckayes (#/iii) Dorking (#/br)	v	v	v	U	v	U	v	v	v	U	U	U S
Mid Block Troffic (%)		ሰ%			ሰ%			ሰ%			ሰ%	
Chorod Long Troffic (9)		0 70 (1999)			V 70			070			0 70	<u>1990</u>
Snareu Lane Tranic (%)	n		0	۵	020	00000000000000000000000000000000000000	A ■	977	<u>م</u>	46	520	
Lane Group Flow (vpn)	Dorm	20 NIA	v	Dorm	ZJZ	U	Dorm		v	Dorm		U I
Turri Type Destasted Desses	Peini	NA ס		генн	ואא ר		Feilli	INA 1		FEIIII	NA 4	
Protected Phases		ک		ი	4		4	I		4	1	
Petroter Dhases	2	0 0		2	0		ا المحديد المح المحديد المحديد	1		1	1	
	ک (1999)	ک موجود میں		4	_ 1997-1998		1 8988009888	l Hereforder			1 2003-2003	94565555
Switch Phase	40.0	40.0		40.0	40.0		40.0	40.0		10.0	40.0	49,497,497,4
Minimum Initial (S)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	14.0	14.0		14.0	14.0		10.0	12.0		10.0	10.0	
Total Split (s)	27.0	27.0		27.0	27.0		43.0	43.0		43.0	43,0	
Total Split (%)	38.6%	38.6%		38,6%	38.6%		01.4%	01.4%		01.4%	01.4%	
Maximum Green (s)	23.0	23.0		23.0	23.0		38.0	38,0		38.U	38.U	
Yellow Time (s)	3.0	3.0		3.0	3.0		4.0	4.0		4.0	4,0	
All-Red Lime (s)	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		e lega garana	4.0			5.0	0.0000000000000000000000000000000000000	5.0	0,C	percenter
Lead/Lag	Lag	Lag		Lag	Lag		Lead	Lead		Lead	Lead	
Lead-Lag Optimize?	Yes	Yes	waningan ana ang	Yes	Yes	1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	Yes	Yes		Yes	Yes	1990-1990-1990-19
Vehicle Extension (s)	2.6	2.6		2.6	2.6		2.8	2.8		2.8	2.8	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0	transi oleh katan kata	0.0	0.0		0.0	0.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)										Negovoje state do s		Shindheev aaster
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.06			0.48			0.36		0.03	0.58	
Control Delay		9.5			11.4			7.8		5.7	9.9	

Existing AM Peak 02/27/2020 Baseline EAM

Lanes, Volumes,	Timings				
7: Plaza Driveway	/West Wrentham Rd & Mendon	Rd (RI	122)	į

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Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Queue Delay		0.0			0.0	5.4.6.8		0,0		0.0	0.0	
Total Delay		9.5			11.4			7.8		5.7	9.9	
Queue Length 50th (ft)		2			18			29		2	61	
Queue Length 95th (ft)		3			82			66		4	148	
Internal Link Dist (ft)		129			582			1445			697	
Turn Bay Length (ft)												
Base Capacity (vph)		1051			903			1461		1095	1747	S. Sala
Starvation Cap Reductn		0			0			0		0	0	
Spillback Cap Reductn		0			0			0		0	0	
Storage Cap Reductn		0			0			0		0	0	
Reduced v/c Ratio		0.03			0.26			0.19		0.01	0.31	
Intersection Summary		-										
Area Type: 0	Other					8 8 8 6						
Cycle Length: 70												
Actuated Cycle Length: 39.7												
Natural Cycle: 40												
Control Type: Actuated-Unco	oordinated											
Online and Diseases 7 Dise	- Debraura	141006141	un uthana t	Tel Q Mana	lan Dal /							
	a Driveway	//west w	renunam r	TO & Ment	ion Ra (RI 122)	l.					
N N Ø1							₩ ø2					
42 -							975					

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		÷.			4			4 3+			ф	
Traffic Volume (vph)	28	150	45	114	184	17	51	96	181	40	88	12
Future Volume (vph)	28	150	45	114	184	17	51	96	181	40	88	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	13	13	13	13	13	13	13	11	11	11
Total Lost time (s)		5.0			5.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.98			0,99			0.93			0.98	
Flt Protected		0.99			0.98			0.99			0.99	
Satd. Flow (prot)		1887			1840			1800			1748	
Flt Permitted		0.93			0.74			0.90			0.83	
Satd, Flow (perm)		1757			1382			1636			1469	
Peak-hour factor, PHF	0.78	0.63	0.75	0.73	0.75	0.71	0.49	0.62	0.56	0.71	0.63	0.43
Adj. Flow (vph)	36	238	60	156	245	24	104	155	323	56	140	28
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	334	0	0	421	0	0	582	0	0	224	0
Heavy Vehicles (%)	1%	1%	1%	4%	4%	4%	0%	0%	0%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)		20.1			20.1		.,	21.4			21.4	•
Effective Green, g (s)		20.1			20.1			21.4			21.4	
Actuated g/C Ratio		0.40			0.40			0.42			0.42	
Clearance Time (s)		5.0			5.0			4.0			4,0	
Vehicle Extension (s)		2.8		ang sebagai na kata na kata sebagai kata na sebagai kata se	2.8			2.6			2.6	
Lane Grp Cap (vph)		699			550			693			622	
v/s Ratio Prot									······			useen need to grow
v/s Ratio Perm		0.19			c0.30			c0.36			0.15	
v/c Ratio		0.48	n agen e negen e e ing Pore		0.77		an a	0.84			0.36	
Uniform Delay, d1		11.3			13.2			13.0			9.9	
Progression Factor		1.00	****		1.00			1.00			1.00	
Incremental Delay, d2		0.5			6.2			8.7			0.3	
Delay (s)		11.8			19.3			21.7			10.2	
Level of Service		B			B			<u>.</u>			L B	
Approach Delay (s)		11.8	77524253354535		19.3 		Alter Alexandra	21.7			10.2	ana ang ang ang ang ang ang ang ang ang
Approach LOS		В			В			C			В	
Intersection Summary												
HCM 2000 Control Delay			17.3	H	CM 2000	Level of	Service	9.00.00	В			
HCM 2000 Volume to Capa	acity ratio		0.80									
Actuated Cycle Length (s)			50.5	Si	um of lost	time (s)			9.0			
Intersection Capacity Utiliz	ation		62.5%	1C	U Level o	of Service			В			en en en de soort
Analysis Period (min)			15									

Lanes, Volumes, Timings 17: West Wrentham Rd & Pine Swamp Rd (RI 114)

03/22/2020

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			\$			4			4	
Traffic Volume (vph)	28	150	45	114	184	17	51	96	181	40	88	12
Future Volume (vph)	28	150	45	114	184	17	51	96	181	40	88	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	13	13	13	13	13	13	13	13	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25	e en		25			25		1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 -
Right Turn on Red			No			Yes			No			No
Link Speed (mph)		30		e e forde de la construction de la	40	,		25			25	1999 - 1999 -
Link Distance (ft)		3320			7947			1008			920	
Travel Time (s)	an a raise an	75.5		an gang tana tanan sang si	135.5	*****	ada. 1949 (1959) (1959)	27.5	1010.000.00000000000000	9995 AUA 1997 AUA 1997 AUA	25.1	0.000000000000000000000000000000000000
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)		ener and the second of the		n de belen de element		Arenta está del Producto	a de coma de com	an Consel Services (C	Salo Socio Bardillada			e etype te
Peak Hour Factor	0.78	0.63	0.75	0.73	0.75	0.71	0.49	0.62	0.56	0.71	0.63	0.43
Growth Eactor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	1%	4%	4%	4%	0%	0%	0%	2%	2%	2%
Bus Blockages (#/hr)	0 0	0	0	0	0	0 0	0	0	0	0	0	0
Parking (#/hr)				-	-		-	-	-		-	
Mid-Block Traffic (%)		0%			0%			0%			0%	an a
Shared Lane Traffic (%)												
Lane Group Flow (voh)	0	334	0	0	425	0	0	582	0	0	224	0
Turn Type	Perm	NA		Perm	ŇĂ		Perm	NA		Perm	NA	
Protected Phases		299999999999999999999999999999 1	1986 - Maria (1987) - Maria (1987) 1987 - Maria (1987) - Maria (1987) - Maria (1987) - Maria (1987) - Maria (19	a ngagaga ngagangga ngagang	**************************************	n a stand a st		2	ana ang ang ang ang ang ang ang ang ang		2	derinte receive
Permitted Phases	1			1			2			2		
Detector Phase	1	1		1	1		2	2	iin Nie Verster (der	2	2	1992 - Weiter General († 1993) 1993 - Marie General († 1993) 1993 - Marie General († 1994)
Switch Phase							-					
Minimum Initial (s)	10.0	10.0		10.0	10.0	000000000000000000000000000000000000000	5.0	5.0	792-4920-9920-9930 792-4920-9920-9930	5.0	5.0	909,000,000,000,3
Minimum Solit (s)	15.0	15.0		15.0	15.0		9.0	9.0		9.0	9.0	
Total Split (s)	35.0	35.0	vinte orderendine	35.0	35.0	na kata kata ani kata kata kata kata kata kata kata kat	25.0	25.0	ang sa	25.0	25.0	leget ale an air fead
Total Split (%)	58.3%	58.3%		58.3%	58.3%		41.7%	41.7%		41.7%	41.7%	
Maximum Green (s)	30.0	30.0	413 (10 - 10 - 10 - 10 - 10 - 10 - 10 - 10	30.0	30.0		21.0	21.0		21.0	21.0	1000000000000
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0	diperint per per per	1.0	1.0	00022034202040044004400	1.0	1.0	242000000000000000000	1.0	1.0	0.01950000004
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.0		99991999909999	5.0		natoli nini ka benni	4.0	a esta de transmenses A de transmenses	a de la construcción de la construcción La construcción de la construcción d	4.0	anda an san s
Lead/Lag	Lead	Lead		Lead	Lead		Lao	Lad		Lao	Lao	
Lead-Lag Ontimize?	Yes	Yes	e diversite de la construcción da construcción da construcción da construcción da construcción da construcción Construcción da construcción da construcción da construcción da construcción da construcción da construcción da	Yes	Yes		Yes	Yes	lana mananjata ka	Yes	Yes	and a second second
Vehicle Extension (s)	2.8	2.8		2.8	2.8		2.6	2.6		2.6	2.6	
Minimum Gap (s)	3.0	3.0	10120100200200200000	3.0	3.0		3.0	3.0	a fa na balanga ang sang sang sang sang sang sang s	3.0	3.0	PRO120101013
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	, eos en de 1993.
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Walk Time (s)			en en men winnen ble	976807 877 888				eesta Täätäisi	inel de receiling		00000000000000000000000000000000000000	usaana kanasi ka
Elash Dont Walk (s)												
Pedestrian Calls (#/hr)					~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	neteritettettettettettettettettettettettettet	en an	1999-999-999) 1999-999-999)	er den in den sign	u tana mang kang ka	na Secentra de	
Vic Ratio		0 48			0 77			0 84			0.36	
Control Delay	ere en	13.2		1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 I Standard David Standard - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - I Standard - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1	22.7		1999 - 1997 -	31.3	aa de server te te self		14.5	

Existing AM Peak 02/27/2020 Baseline EAM

Lanes, Volumes, Timings 17: West Wrentham Rd & Pine Swamp Rd (RI 114)

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Lane Group	EBL B	BT EBR	WBL W	/BT WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0	Sector and a sector	0.0	0.00.00.00.00	0.0		10 IS IS IS	0.0	S 43 53
Total Delay	1	3.2	2	2.7		31.3			14.5	
Queue Length 50th (ft)		69		101		149			44	
Queue Length 95th (ft)		75		135		191		n	73	shahatina asalara
Internal Link Dist (ft)	3	240	7	867		928			840	
Turn Bay Length (ft)								en an		
Base Capacity (vph)	1	058		835		690			619	
Starvation Cap Reductn		0		0	n Mennennelsene viller	0			0	
Spillback Cap Reductn		0		0		0			0	
Storage Cap Reductn		0		0		0			0	00089303203
Reduced v/c Ratio	().32	(),51		0.84			0.36	
Intersection Summary										
Area Type: C	Dther									
Cycle Length: 60						ور و و و و و و و و و و و				
Actuated Cycle Length: 50.7										
Natural Cycle: 50					an an an an an an Andrean an Angraean a					
Control Type: Actuated-Unco	ordinated									
Splits and Phases: 17: We	st Wrentham	Rd & Pine Sv	vamp Rd (RI 11	4)						
v Ø1				-	f øz					
35 s				<u></u>	5					1983 (N

HCM Unsignalized Intersection Capacity Analysis 20: Diamond Hill Rd (RI 114) & Pine Swamp Rd (RI 114)/Wrentham Rd (RI 121)

	-	\rightarrow	×	-	1	1
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	ł	7	ሻ	•	٦	7
Traffic Volume (veh/h)	293	198	256	115	149	478
Future Volume (Veh/h)	293	198	256	115	149	478
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.73	0.60	0.86	0.60	0.76	0.91
Hourly flow rate (vph)	401	330	298	192	196	525
Pedestrians						
Lane Width (ft)		950 - 240 - 200 - 200 1990 - 260 - 260 - 260 - 260 - 260 - 260 - 260 - 260 - 260 - 260 - 260 - 260 - 260 - 260				
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)	st			N		10
Median type	None			None		
Median storage ven)						
opstream signar (it)						
pA, platoon unbiocked			<i>λ</i> Ω1		1180	<i>\</i> /\1
vC1_stage 1 conf vol			4V I		1100	4V I
vC2_stage 2 conf vol						
vGu unblocked vol			401		1189	401
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2	5797011519191919490519 1	3.5	3.3
p0 queue free %			74		0	19
cM capacity (veh/h)	an endered ender en eit de erten ei	a - 19 - 19 - 19 - 19 - 19 - 19 - 19 - 1	1158	1999-1996 (1999-1996) 1999-1996 (1999-1996)	153	647
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	401	330	298	192	721	
Volume Left	0	0	298	0	196	
Volume Right	0	330	0	0	525	
cSH	1700	1700	1158	1700	514	
Volume to Capacity	0.24	0.19	0.26	0.11	1.40	
Queue Length 95th (ft)	0	0	26	0	847	
Control Delay (s)	0.0	0.0	9.2	0.0	215.1	
Lane LOS			Â		F	
Approach Delay (s)	0.0		5.6		215.1	
Approach LOS					- Here	
Intersection Summary						
Average Delay			81.3			
Intersection Capacity Utiliza	ation		51.7%)I	CU Level o	of Service
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis 1: Diamond Hill Rd (RI 114) & Nate Whipple Hwy (RI 120)

03/22/2020

t ۶ ۴ NBT NBR Movement EBL EBT EBR WBL WBT WBR NBL SBL SBT SBR Lane Configurations 4 4 4 4 442 Traffic Volume (vph) 68 306 43 236 110 35 225 120 113 174 38 Future Volume (vph) 68 306 43 236442 110 35 225 120 113 174 38 Ideal Flow (vphpl) 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 1900 Lane Width 13 13 13 13 13 13 12 12 12 12 12 12 5.0 Total Lost time (s) 4.0 4.0 5.0 Lane Util. Factor 1.00 1.00 1.00 1.00 0.99 Frt 0.98 0.96 0.98 Flt Protected 0.99 0.98 1.00 0.98 Satd, Flow (prot) 1702 1791 1730 1730 FIt Permitted 0.78 0.57 0.94 0.60 Satd. Flow (perm) 1332 1033 1635 1065 0.70 0.77 0.79 0.77 Peak-hour factor, PHF 0.74 0.70 0.86 0.88 0.69 0.69 0.73 0.63 Adj. Flow (vph) 559 128 326 156 238 92 437 56 337 40 164 60 RTOR Reduction (vph) 0 3 5 0 0 6 0 0 19 0 0 0 Lane Group Flow (vph) 0 0 0 0 1019 0 0 503 0 0 582 456 Heavy Vehicles (%) 13% 13% 13% 6% 6% 6% 5% 5% 5% 6% 6% 6% Turn Type NA Perm NA Perm NA Perm NA Perm Protected Phases 1 1 2 2 Permitted Phases 1 1 2 2 Actuated Green, G (s) 35.7 35.7 39.7 39.7 39.7 Effective Green, g (s) 39.7 35.7 35.7 Actuated g/C Ratio 0.42 0.42 0.47 0.47 Clearance Time (s) 4.0 4.0 5.0 5.0 Vehicle Extension (s) 2.6 2.6 3.0 3.0 436 Lane Grp Cap (vph) 563 769 500 v/s Ratio Prot v/s Ratio Perm 0.44 c0.99 0.31 c0.43 v/c Ratio 1.03 2.34 0.65 0.91 24.4 Uniform Delay, d1 24.4 17.1 20.7 **Progression Factor** 1.00 1.00 1.00 1.00 Incremental Delay, d2 46.7 609.2 2.0 20.8 Delay (s) 71.0 633.6 19.1 41.5 Level of Service Ε F В D Approach Delay (s) 71.0 633.6 19.1 41.5 Approach LOS F Ε В D Intersection Summary HCM 2000 Control Delay 277.5 HCM 2000 Level of Service F HCM 2000 Volume to Capacity ratio 1.58 Actuated Cycle Length (s) 84.4 9.0 Sum of lost time (s) Intersection Capacity Utilization 119.3% ICU Level of Service Н Analysis Period (min) 15

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Lanes, Volumes, Tir	nings				
1: Diamond Hill Rd (RI 114) &	Nate Whip	ple Hwy	(RI	120)

03/22/2020

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		<u>.</u>			\$			44			44	
Traffic Volume (voh)	68	306	43	236	442	110	35	225	120	113	174	38
Future Volume (voh)	68	306	43	236	442	110	35	225	120	113	174	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
l ane Width (ft)	13	13	13	13	13	13	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	n N	989988 X-X -47	0	n N	9999999 9 9999	n N	0 0		0 0	۵ ۵	(1999) (199 9)	08998999999 0
Storage Lanes	ň		Ő	Ň		, N	Ň		Ň	Ō		Ň
Taner Length (ff)	25			25		alen en esta e	25			25		이 같은 사람이 가지 않다.
Right Turn on Red			Yes			Yes			Yes			Yes
Link Sneed (mph)		40	100		40			30	1.00		30	
Link Distance (ff)		1854			4162			1592			454	
Travel Time (s)		31.6	1988-007050-08		70.9		********	36.2		841989388488 <u>8</u> 9	10.3	
Confl Peds (#/hr)					10.0			00,2			10.0	
Confl Bikes (#/hr)												
Deak Hour Factor	<u> </u>	0.70	0.77	0.70	0 70	0.86	0.88	0.60	0 77	0 6Q	0.73	0.63
Crowth Eactor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Hoow Vohiclos (%)	100 /0	10070	430	6%	6%	6%	50/	50/	F0070	6%	6%	6%
Rue Blockage (#/hr)	1070 A	1070 A	יני. ה	ω. 0	0/0 ۵	070 0	0.0 N			0,0 A	رب م	<u>% ک</u>
Dus Diockages (#/11) Darking (#/br)	U	v	v	v	v	v	v	v	v	v	v	V
Mid Block Troffic (%)		 ∩%			በ%			ሰ%			በ%	
Shorod Long Traffic (%)		U 70			U /u			070			070	
I and Group Flow (vph)	<u>م</u>	283	۵	۵ ۱	409/	۸	Λ	ፍንን	Λ	۸	462	التحقيق م
Turn Tyne	Porm	ND	v	Dorm	NA	v	Dorm	JZZ NΔ	V	Dorm	402 NA	
Diretected Disease	I OIII	۲۹ ۹۰ ۱۹		гонн	میں 1		генн	ריי איו		гаш	_مرزا ر	
Pormitted Phases	4	 		- 1	ا بالارد المراجع		2				4	
Dotootor Dhoco	1 (1995) 1	1		1	1 1		2 2	n		ב ס)	
Puitch Dhose	 	 		I Bashsaliya			ک	ے (1997) 1997 (1997)		ل موجود المراجع	L Shakesholder	<u>elensional</u>
Minimum Initial (a)	40.0	40.0		10.0	40 N		40 O	<u>40</u> Ω	88-69-68-63	10.0	10 N	
Minimum Initial (3)	10.0	10.0		44.0	10.0		10.0	10.0		10.0	10.0	
Total Split (a)	14.V 20.0	20.0		20.0	20.0		50 O	50 A		59 A	50 0	
Total Split (5)	0.00 10 00/	39.0 AO 90/		0.00	10 200		50.0%	0.00		0,00	0.00	
Aovimum Croon (a)	40.270 25.0	40.270 25 0		40.2 <i>1</i> 0 35.0	40.270 35 0		53.0 %	09.0 /0 52 0		53.0 %	53.0 // 53 0	
Wallow Time (a)	30.U 2 0	30.0 2 A		0.00 2 N	30.0 2 A		00.0 / A	00.0 1 A		00.0 / 0	0,66	
All Dod Time (s)	0,0 4 ∩	3.0 4 A		3,0 4 A	3.0 1 D		4.U 1 ∩	4.V 1 D		4.0 1 A	4.U 4 Ω	
All-Reu Time (5)	1.0	0.0		1.0	0.0		1.0	1.0		1.0	1.0	
LOSUTIME Aujust (S)		0.0 4 O			0.0 1 A			υ.υ Ε Δ			0.0 5.0	
Total Lost Time (5)	Lood	4.V 1.opd		bool	4.V 600		ا مم	0.0 1 og		[og	0,0	
Leau/Lay	Leau	Leau		Vee	Leau		Lay Voo	Lay		Lay	Lay	
Leau-Lag Optimize?	165	165		105	105		162	165		162	165	
Venicle Extension (s)	2.0	2,0		2.0	2,0		0.U 2.0	ວ.0 ວຸດ		0.C	ວ່າ 20	
Minimum Gap (S)	3.0	3.U 0.0		0.U	3.U 0.0		3.U 0.0	3.0		ა.u ი.o	ა.U იი	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (S)	U.U Nore	U,U		U.U Nono	U.U		U.U N/I	U.U Mi~		U.U N/I	U.U Mix	
Recall Mode	NOUG	NOUL		none	None		IVIII)	IVIIII		INID	MIN	
Walk Time (S)												(Second
Flash Dont Walk (S)												
reuestrian Calls (#/nr)		4 0 4			0.00			0.00			0.04	
WC Katio		1.04			2.33			0.00			0.91	
Control Delay		76.3			024.7			19.8			43.8	

Existing PM Peak 02/27/2020 Baseline EAM

Synchro 9 Report Page 1

Lanes, Volumes, Timings 1: Diamond Hill Rd (RI 114) & Nate Whipple Hwy (RI 120)

03/22/2020

1: Diamond Hill Rd	(RI 114) & Na	te Wh	ipple	Hwy (R	1 120)					03/2	22/2020
	۶	·	\mathbf{i}	≮		×	1	Ť	1	1	Ļ	~
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
Queue Delay		0.0			0.0			0.0			0.0	8 (G. 1)
Total Delay		76.3			624.7			19.8			43.8	
Queue Length 50th (ft)		~348			~927			187			209	
Queue Length 95th (ft)		#435			#1145			185			236	
Internal Link Dist (ft)		1774			4082			1512			374	
Turn Bay Length (ft)					un sud namet nå men na maan me	والمرود والمحاور والمراجع والمروان						
Base Capacity (vph)		565	9888		439			1056			684	
Starvation Cap Reductn		0	verseentre ere en er fe		0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		1.04			2.33			0.49			0.68	
Intersection Summary												
Area Type:	Olher											
Cycle Length: 97												
Actuated Cycle Length: 84.6	3											
Natural Cycle: 110												
Control Type: Actuated-Unc	oordinated											
 Volume exceeds capaci 	ty, queue is	theoretic	ally infinit	e.								
Queue shown is maximu	m after two	cycles.										
# 95th percentile volume e	exceeds ca	pacity, qu	eue may	be longe	r.							
Queue shown is maximu	m after two	cycles.										
Solits and Phases: 1. Dia	mond Hill 5	d (RI 114	\ & Nate	Whinnle	Hwy (RI 1	20)						
						~~ <u> </u>						
₩ Ø1			,	₩ Ø2								
39 s			5	8,s		and the second						

5 NWT NWR WBL WBR SEL SET Movement ¥۴ Ϋ́ Ŧ Ť ۴ Lane Configurations 99 238 242 423 392 92 Traffic Volume (vph) 99 238 242 423 392 92 Future Volume (vph) 1900 1900 1900 1900 1900 1900 Ideal Flow (vphpl) Lane Width 13 13 11 13 12 12 4.0 4.0 5.0 5.0 5.0 Total Lost time (s) 1.00 1.00 1.00 1.00 1.00 Lane Util. Factor 0.85 0.90 1.00 1.00 1.00 Frt 0.99 0.95 1.00 1.00 1.00 Flt Protected 1599 1722 1728 1944 1881 Satd. Flow (prot) 0.99 0.95 1.00 1.00 1.00 Flt Permitted 1599 1722 1728 1944 1881 Satd. Flow (perm) 0.79 0.99 0.72 0.93 0.94 0.86 Peak-hour factor, PHF Adi, Flow (vph) 100 331 260 450 456 116 48 RTOR Reduction (vph) 133 0 0 0 0 68 298 0 260 450 456 Lane Group Flow (vph) 1% 1% 1% 1% 1% 1% Heavy Vehicles (%) Prot Prot NA NA Prot Turn Type 1 12 **Protected Phases** 3 2 1 Permitted Phases 24.5 44.4 24.5 Actuated Green, G (s) 16.6 14.9 Effective Green, g (s) 16.6 14.9 44.4 24.5 24.5 Actuated g/C Ratio 0.22 0.64 0.36 0.36 0.24 5.0 4.0 4.0 5.0 Clearance Time (s) 2.6 Vehicle Extension (s) 2.6 2.6 2.6 Lane Grp Cap (vph) 414 373 1250 667 567 0.23 c0.24 0.04 c0.15 v/s Ratio Prot c0.17 v/s Ratio Perm 0.36 0.68 0.12 0.72 0.70 v/c Ratio Uniform Delay, d1 24.1 25.0 5.7 18.9 15.0 1.00 1.00 1.00 Progression Factor 1.00 1.00 Incremental Delay, d2 5.8 5.2 0.1 2.7 0.1 15.1 30.2 5.8 21.7 29.8 Delay (s) А С В Level of Service С C Approach Delay (s) 29.8 14.8 20.3 Approach LOS В С С Intersection Summary 20.4 HCM 2000 Level of Service С HCM 2000 Control Delay 0.70 HCM 2000 Volume to Capacity ratio 69.0 Sum of lost time (s) 13.0 Actuated Cycle Length (s) Intersection Capacity Utilization 65.0% ICU Level of Service С 15 Analysis Period (min)

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03/22/2020

	s.	*	\ *	X	×	4	
Lane Group	WBL	WBR	SEL	SET	NWT	NWR	
Lane Configurations	۲		ኻ	*	ŧ	7	
Traffic Volume (vph)	99	238	242	423	392	92	
Future Volume (vph)	90 99	238	242	423	392	92	
Ideal Flow (vphn)	1900	1900	1900	1900	1900	1900	
Lane Width (ff)	13	13	11	13	12	12	, and a second secon Second second
Grade (%)	n%			 /%	0%		
Storage Length (ft)	<u>م ک</u>	00000000000000000000000000000000000000	۵ ۵	8989 8 79 8	0.999 Beerley Mes	AN NR	
Storage Lanes	- V	Ň	1			Ĩ	
Taper Length (ft)	25		25				
Right Turn on Red	LU	Vee	<i>L</i> V			Yes	
Link Snood (mnh)	<u>۲</u> ۵		80901000009466	25	35		
Link Distance (ff)	2248			381	2230		
Travel Time (e)	2070 52 /			74	43.4		
Confl Dode (#/hr)	JJ. 1			ד. ו היינאונאנא	т л. т		
Confl. Rikos (#/hr)							
Dook Hour Costor	0.00	0.70	0.02	0.04	0.86	0 70	
Crowth Easter	1000	10.0%	10.00	10.04	10.00	100%	
	10070	100%	10070	100%	100%	100%	
Due Dieskages (#/br)	170	170	170	170	۱ <i>1</i> 0	۱ <i>7</i> 0 ۸	
Bus Biockages (#/nr)	U	U	V	U	V	V	
Parking (#/nr)	00/			007	00/		
	U%			U%	U%		
Shared Lane Traffic (%)	404		000	450	450	440	
Lane Group Flow (vph)	431	U	260	450	455	116	
lurn lype	Prot		Prot	NA	NA	Prot	
Protected Phases	3		2	12	1	1	
Permitted Phases							
Detector Phase	3	MANGERAL PROFESS	2 	12	1 1000-000-000-000	1 	
Switch Phase				3-88-48-68-			
Minimum Initial (s)	10.0	aatoolaat koo kiiraka	5.0		10.0	10.0	
Minimum Split (s)	14.0		9,0		15.0	15.0	
Total Split (s)	26.0		20.0		44.0	44.0	
Total Split (%)	28.9%		22.2%		48.9%	48.9%	
Maximum Green (s)	22.0		16.0		39.0	39.0	
Yellow Time (s)	3.0		3.0		4.0	4.0	
All-Red Time (s)	1.0		1.0		1.0	1.0	
Lost Time Adjust (s)	0.0		0.0		0.0	0.0	
Total Lost Time (s)	4.0	a saaraha ka ka ka sa sa	4.0		5.0	5.0	
Lead/Lag			Lag	9-94-59 (G.	Lead	Lead	
Lead-Lag Optimize?			Yes		Yes	Yes	
Vehicle Extension (s)	2,6		2.6		2.6	2.6	
Minimum Gap (s)	3.0		3.0		3.0	3.0	
Time Before Reduce (s)	0.0		0.0		0.0	0.0	
Time To Reduce (s)	0.0		0.0		0.0	0.0	
Recall Mode	None		None		Min	Min	
Walk Time (s)							
Flash Dont Walk (s)							
Pedestrian Calls (#/hr)							
v/c Ratio	0.79		0.70	0.37	0.69	0.19	
Control Delay	28.2	-	41.4	7.6	25.7	8.0	· · · · · · · · · · · · · · · · · · ·

Existing PM Peak 02/27/2020 Baseline EAM

			-	•	7	•	
Lane Group	WBL	WBR	SEL	SET	NWT	NWR	
Queue Delay	0.0		0.0	0.0	0.0	0.0	
Total Delay	28.2		41.4	7.6	25.7	8.0	
Queue Length 50th (ft)	103		103	82	168	12	
Queue Length 95th (ft)	#283		#276	152	264	35	
Internal Link Dist (ft)	2268			301	2150		
Turn Bay Length (ft)						80	
Base Capacity (vph)	691		419	1303	1113	977	
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	0.62		0.62	0.35	0.41	0.12	

* * * * * *

Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 69.7

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 6: Mendon Rd (RI 122) & Nate Whipple Hwy (RI 120)

X ₀₁	W Ø2	€ ø3	
44s	20 s	76 s	

HCM Signalized Intersection Capacity Analysis 7: Plaza Driveway/West Wrentham Rd & Mendon Rd (RI 122)

03/22/2020

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Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		4			\$			\$		ሻ	ţ,	
Traffic Volume (vph)	3	0	2	164	0	119	142	391	3	7	342	129
Future Volume (vph)	3	0	2	164	0	119	142	391	3	7	342	129
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	16	16	16	12	12	12	14	14	12	11	14	14
Total Lost time (s)		4.0			4.0			5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00			1.00		1.00	1.00	51
Frt		0.93			0.95			1.00		1.00	0.96	
Fit Protected	V (****) * (* (* (* (* (* ***)	0.98			0.97	175 77 15 77 13 LAL 191		0.99	1709 N. 1910, 1979-02111	0.95	1.00	
Satd. Flow (prot)		1959			1715			1954		1728	1927	
Fit Permitted	an de militaria de militari	0.89			0.80	10.00000000000000000000000000000000000	19919100000000000	0.59		0.43	1.00	
Satd. Flow (perm)		1780			1424			1172		776	1927	
Peak-hour factor, PHF	0.75	0.92	0.50	0.79	0.92	0.96	0.77	0.94	0.36	0.44	0.86	0.90
Adi Flow (vph)	4	0	4	208	0	124	184	416	8	16	398	143
RTOR Reduction (vph)	0	6 6	0	0	22	0	0		0 0	0	19	0
ane Group Flow (vph)	Ō	$\overline{2}$	Ō	Ō	310	Ō	Ō	607	Ō	16	522	Ō
Heavy Vehicles (%)	0%	0%	0%	2%	2%	2%	2%	2%	2%	1%	1%	1%
	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	ાંબાા	2		1 9111	2 2	CONSISTER OF STREET	1.0111	ененикан 1		. vuu	1 v v 1	3233793354
Permitted Phases	2			2			1			1		
Actuated Green G (s)		20.3			20.3			39.3	680160 (FBV 876)	39.3	39.3	
Effective Green g (s)		20.0			20.3			39.3		39.3	39.3	
Actuated q/C Ratio		0.30			0.30			0.57		0.57	00.0 0.57	
Clearance Time (s)		2.00 4 0			<u>4</u> 0			5.0		5.01	5.0	
Vehicle Extension (s)		26	1400000000	NGRACES AND AND	2 R	NEW SERVICES	010/06/04/09	0.0 28		28	28	20422010-014
Lano Grn Can (vph)		526			/21			671		<u></u>	1103	
vis Ratio Prot		520			741			011			0 27	
v/s Ratio Perm		0.00			cf) 22			c0 52		0.02	V.F.1	
v/c Ratio		0.00	**********		00.2L			0 90		0.02	0 47	9999999999 1
Liniform Delay d1		17.0			21.7			13.0		64	86	
Progression Factor		1 00			1 00	99969393939393 9996939393939393		1 00	2010-00-00-00-00-00-00-00-00-00-00-00-00-	1 00	1 00	and and a state of the second s
Incremental Delay d2		00			63			15.7		0.0	0.3	
Delay (s)		17 N			28.0			28.7		64	89	74 Hans (1964-4)
Level of Service		,			C			C		Ā	0.0 A	
Approach Delay (s)		17 0			28.0			287			88	9999999994
Approach LOS					2.0.0 C			<u>с.</u>			о.о А	
					9.000 (9 .00			Y				
Intersection Summary												
HCM 2000 Control Delay			21.1	H(SM 2000	Level of S	Service		U.			
HCM 2000 Volume to Capacity	/ ratio		0.85	niga (españo) de la composición de la c				a ang sinang s		0000050450400		operate
Actuated Cycle Length (s)			68.6	S	im of los	tume (s)			9.0			
Intersection Capacity Utilization	n		85.6%	IC	U Level (ot Service			E			806940540 8
Analysis Period (min)			15									

Lanes, Volumes,	Timings	
7: Plaza Driveway	/West Wrentham Rd & Mendon Rd	(RI 122)

03/22/2020

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Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		ф.			44			44		۲	1.→	
Traffic Volume (vph)	3	0	2	164	0	119	142	391	3	7	342	129
Future Volume (vph)	3	0	2	164	0	119	142	391	3	7	342	129
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	12	12	12	14	14	12	11	14	14
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0	an an an Arthorna a' Ann an Ann a Ann an Ann an A	0	0	an a san taga taga ta	0	0	ceres actions at a cava	0
Storage Lanes	Ō		Ō	Ō		Ō	0		0	1		0
Taper Length (ff)	25	al and a set of the	1999-1999-1999-1999-1999-1999-1999-199	25	1999 - Carlos Colores (Carlos Colores (Carlos Colores (Carlos Carlos Carlos Carlos Carlos Carlos Carlos Carlos 1999 - Carlos C	Naar ay faada tara Tiy fayn	25	Santanan Santana Santana Santanan Santana Santana	-bret (nd With Albert 1922)	25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mnh)		25		in an	35			35	0.000		35	ann an thair
Link Distance (fft)		209			662			1525			777	
Travel Time (s)		57	anganggi ng panggi Ng panggi ng	4999-6999999999999999999999999999999999	12.9	2020/09/29/2020		29.7		electro Coesterio Colo	15.1	antitala sociona
Confl Peds (#/hr)												
Confl. Bikes (#/hr)												Second Secol
Peak Hour Factor	0.75	0.92	0,50	0.79	0.92	0.96	0.77	0.94	0.36	0.44	0.86	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	2%	2%	2%	2%	2%	2%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)	an in the state of t	0%	in an the Constant State of State of States	1999-9999-9999999999999999999999999999	0%	verse national in standing		0%			0%	1997 - 1997 -
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	8	0	0	332	0	0	608	0	16	541	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Profected Phases	10000000000000000000000000000000000000	2	ander offen einer en einer	an a	2	a na sana sa	ning 1940 (1990) (1997) (1997) 1997)	1	a de ser a consecu		1	ana (1999) - 1993 - 1993 - 1993 - 1993 - 1993 - 1993 - 1993 - 1993 - 1993 - 1993 - 1993 - 1993 - 1993 - 1993 -
Permitted Phases	2			2			1			1		
Detector Phase	2	2		2	2	***************	1	1		1	1	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	99699999999999999999	10.0	10.0	andraan ahed alaa	10.0	10.0	oon connool and a
Minimum Split (s)	14.0	14.0		14.0	14.0		15.0	15.0		15.0	15.0	
Total Split (s)	24.0	24.0	universitetettet	24.0	24.0	en stanljeger af ander fjylge	66.0	66.0	2000-0963-098095 1	66.0	66.0	-976/03/04/06-988
Total Split (%)	26.7%	26.7%		26.7%	26.7%		73.3%	73.3%		73.3%	73.3%	
Maximum Green (s)	20.0	20.0		20.0	20.0	NU 449 BAY 678 BAY 69 BAY	61.0	61.0	an a	61.0	61.0	ang di kanalari di kanalar Kanalari kanalari di kanalar
Yellow Time (s)	30	30		3.0	30		4.0	4.0		4.0	4.0	
All-Red Time (s)	10 10	1 O		1.0	1.0	NGC BOY GROUPS	1.0	1.0	an a	1.0	1.0	98997099994
Lost Time Adjust (s)	110	0.0			0.0			0.0		00	00	
Total Lost Time (s)		4 N			4.0		000000000000000000000000000000000000000	5.0	899999 Mileidau 1	5.0	5.0	este se de la sectoritation de La sectoritation de la sectoritation Sectoritation de la sectoritation
Lead/Lan	nel	nel	NSM (SREAM)	l an	n		lead	lead		lead	l ead	
Lead an Ontimize?	Luy Yes	Ves		Yes	Yes	leiden seiteringe	Yes	Yes		Yes	Yes	8406366994
Vohiclo Extension (s)	26	26		26	2.6		28	28		28	28	
Minimum Can (e)	2.0 2.0	2.0 3 N		ረት ግብ	30		30	3.0		9. 2 3.0	2.0 3 N	880908999999 1
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Deduce (s)	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	
Decell Mede	V.V Nono	Nono		Mone	None		Min	0.0 Min		Min	Min	
Nolk Time (s)	SILON			INUTIC			IVIIII	STATES IN THE		IVINI -	a and a second	
Flach Dont Walk (a)			<u></u>									
Fidal Dull Walk (S) Dedectrian Calls (#/br)										ntersenéné		Station of the
recestrian Galls (#/III)		0.04		0.000	0 75			<u>0</u> 01		ሰ ባለ	በ ላዩ	SALE CARE
Viu Mallu Control Dolou		ו U,U ג נ			27.2			וש.ט 21 ג		40.0 A A	0. 4 0 2 2	
Unitive Delay		0.4			01.0			01.0		0.0	0.0	

Existing PM Peak 02/27/2020 Baseline EAM

Lanes, Volumes, Timings 7: Plaza Driveway/West Wrentham Rd & Mendon Rd (RI 122)

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Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Queue Delay		0.0			0.0			0.0		0.0	0.0	5 35 S.
Total Delay		3.4			37.3			31.8		5.6	8.8	
Queue Length 50th (ft)		0			113			201		3	108	
Queue Length 95th (ft)		4			#347			370		4	152	
Internal Link Dist (ft)		129			582			1445			697	
Turn Bay Length (ft)			ور منه و در ور ور و ر و ر							a a state the second states	on or a strange to a straight	ter an
Base Capacity (vph)		557			454			1020		675	1681	
Starvation Cap Reductn		0			0			0		0	0	
Spillback Cap Reductn		0			0			0		0	0	
Storage Cap Reductn	an a	0			0			0		0	0	
Reduced v/c Ratio		0.01			0.73			0,60		0.02	0.32	
Intersection Summary												
Area Type: C	Other											
Cycle Length: 90												
Actuated Cycle Length: 68.9												
Natural Cycle: 60							و به میرود به در میرود می	en en antañ de la constante de				
Control Type: Actuated-Unco	ordinated											
# 95th percentile volume ex	ceeds cap	oacity, que	eue may b	be longer.						•		
Queue shown is maximum	n after two	cycles.										
Splits and Phases: 7: Plaza	a Driveway	/West W	rentham F	Rd & Men	don Rd (RI 122)						

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M	Øi		Ø2	
66 s			24s	

03/22/2020

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		ф			¢.			4			ф.	CALLED AND IN CONTRACTOR
Traffic Volume (vph)	16	133	28	122	305	25	37	63	124	25	120	22
Future Volume (vph)	16	133	28	122	305	25	37	63	124	25	120	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	13	13	13	13	13	13	13	11	11	11
Total Lost time (s)		5.0			5.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.98			0.99			0.92			0.98	
Flt Protected		0.99			0.99			0.99			0.99	
Satd. Flow (prot)		1904			1905			1798			1770	
Flt Permitted		0.91		n na sen de la na ser en	0.84			0.92			0.93	. Share and the second
Satd. Flow (perm)		1743			1618			1675			1665	
Peak-hour factor, PHF	0.50	0.72	0.58	0.85	0.79	0.78	0.84	0.83	0.78	0.78	0.86	0.79
Adj. Flow (vph)	32	185	48	144	386	32	44	76	159	32	140	28
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	265	0	0	558	0	0	279	0	0	200	0
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	0%	0%	0%	1%	1%	1%
Turn Type	Perm	ŇA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		1	11.50 A.1.570 (12.51) (17		1	1. Tables and the state of the	la con enversa entres com	2			2	
Permitted Phases	. 1			1			2			2		
Actuated Green, G (s)		21.5	en compensione		21.5			12.1	shekela ana an		12.1	generation and the
Effective Green, g (s)		21.5			21.5			12.1			12.1	
Actuated g/C Ratio		0.50	an na shekarar	enan Ashirina	0.50			0.28			0.28	
Clearance Time (s)		5.U			5.0			4.0			4.0	Sec. (5)
Venicle Extension (s)		2.8			2.8			2.6			2.6	
Lane Grp Cap (vph)		879			816			475			472	
V/s Ratio Prot		~ ~ ~			0.04			047	•		0.10	
VIS Ratio Perm		0.15			CU.34			CU.17			0,12	
V/C Rallo		0.30			0.00		NISO MINUN	0.09 4 2 4			U.4Z	GRACE STR
Drinorin Delay, un		1.00			1.00			1.00			12.4	
Incremental Delay, d2		1.00			1.00			1.00			1,00	
Dolay (e)		63 63			10.3			1,0			12.0	
Level of Service		0.0 Δ			R			R			12.0 B	
Approach Delay (s)		63			10.3			14 7			12 Q	
Approach LOS		A.			B			B			B	
Pre-Frankinski stationer and a					ang series and series a	er en en sterijken.		1997 - 1997 -			50 (1997) (1997) 	640999163W
Intersection Summary												
HCM 2000 Control Delay			10.8	H	GM 2000	Level of S	service		В			
HCM 2000 Volume to Capac	aty ratio		0.65							99909000000		200222001
Actuated Cycle Length (s)			42.6	Si Si	um of lost	ume (s)			9.0			
Analysis Period (min)	ion		03.5% 15	IC	U Level (DI SELVICE			В			

Lanes, Volumes, Timings 17: West Wrentham Rd & Pine Swamp Rd (RI 114)

03/22/2020

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			ф	
Traffic Volume (vph)	16	133	28	122	305	25	37	63	124	25	120	22
Future Volume (vph)	16	133	28	122	305	25	37	63	124	25	120	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	13	13	13	13	13	13	13	13	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0	w.::://::://///////////////////////////	0	0	and and a strength of	0	0	vente Politiko (1979)	0	0	1999 ACTA (AAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAAA	0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25	And and a second second second		25	Andrea (na Arranda) (, (25	den hende verseerde		25	-1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999	adonana antariat
Right Turn on Red			No			Yes			No			No
Link Speed (mph)		30			40		an a shekara ta ta ta ta ta ta ta ta	25			25	1999-9-1976-918 1999-9-1976-918
Link Distance (ft)		3320			7947			1008			920	
Travel Time (s)		75.5	19992946909893949	80000000000000000000000000000000000000	135.5	1999/1999/1999/1999		27.5	na se este ventes		25.1	9999999999999999999
Confl Peds (#/hr)												
Confl. Bikes (#/hr)		Alter all and a second and a s		240251122006002	eronologi () e developee	an san san sa	40.000 k 6 of 40.000 f	eferantika serenya 202			Rectant de la com	Harve erden
Peak Hour Factor	0.50	0.72	0.58	0.85	0.79	0.78	0.84	0.83	0.78	0.78	-0.86	0.79
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	0%	0%	0%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%		orensornese:	0%		A-868 9868690	0%	1995/1997/900 90 1995/1997/900		0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	265	0	0	562	0	0	279	0	0	200	
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases			1969-969-969-969-969-969-969-969-969-969	99999999999999999999999999999999999999		1999)))) (1999) (1999) (1999)	000050050555555000	2	alaan miraaliya (inte		2	(ensing)/23943
Permitted Phases	S - 1			1			2			2		
Detector Phase	1	1		1	1		2	2		2	2	
Switch Phase												
Minimum Initial (s)	10.0	10.0	2000-000-0000-000 000-000-000-000-000-00	10.0	10.0	19799795949597995	5.0	5.0	9942109097809410	5.0	5.0	456932696089
Minimum Split (s)	15.0	15.0		15.0	15.0		9.0	9.0		9.0	9.0	
Total Split (s)	40.0	40.0		40.0	40.0	4080.4894.04449	20.0	20.0	ng ben ng Boble (jelike) en	20.0	20.0	See and see and see all she
Total Split (%)	66.7%	66.7%		66.7%	66.7%		33.3%	33.3%		33.3%	33.3%	
Maximum Green (s)	35.0	35.0		35.0	35.0		16.0	16.0		16.0	16.0	
Yellow Time (s)	4.0	4.0		4.0	4 0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	976-1999-1999-1999-199 1997-1997-1997-1997-	1.0	1.0	000000000000000000000000000000000000000	1.0	1.0	95974992499 3
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.0		9990999999999999 1	5.0			4.0		994999779999977	4.0	an a
Lead/Lad	lead	lead		Lead	lead		l ao	80		l ad	ao	
Lead-Lag Ontimize?	Yes	Yes	an a	Yes	Yes	ale felense ander	Yes	Yes	needderod fae	Yes	Yes	0-14-0-10-14
Vehicle Extension (s)	28	28		28	2.8		26	26		26	26	
Minimum Gap (s)	30	0	46069986666	3.0	3.0		3.0	3.0	000000000000000000000000000000000000000	3.0	3.0	003939903903
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	nder 969363
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Walk Time (s)	ann de MUNUS	antes a la compañía de la compañía d Compañía de la compañía	an a	entre di Mili Mili	n - 2010 (2010) (2010) (2010) (2010) (2010) (2010) (2010) (2010) (2010) (2010) (2010) (2010) (2010) (2010) (2010) (2010) (2010) (2010) (2010)		an a	es de MilMès	n an		san ku K êl	constantini
Flash Dont Walk (s)				9080-20485.								
Pedestrian Calls (#/hr)				er retablistik	ren an							AND CANFERD
v/c Ratio		0.31			0.70			0.60			0.43	
Control Delay		7.5			13.5	. aanta an 100 (1907) 19		21.8			18.4	

Existing PM Peak 02/27/2020 Baseline EAM

Synchro 9 Report Page 7

Lanes, Volumes, Timings 17: West Wrentham Rd & Pine Swamp Rd (RI 114)

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		7.5			13.5		No. 1 1 - 1 1 1 14 10 - 10 10 - 10 -	21.8			18.4	
Queue Length 50th (ft)		34			93			59			40	
Queue Length 95th (ft)		56			153			142			108	
Internal Link Dist (ft)		3240			7867			928			840	
Turn Bay Length (ft)			n waa aa san waa ya waa ƙarar a									
Base Capacity (vph)		1410	89.49 Q.43		1309			674			670	
Starvation Cap Reductn		0			0		www.cometroware.htm	0			0	
Spillback Cap Reductn		0			0			0			<u>0</u>	
Storage Cap Reductn		0			0			0			0	-
Reduced v/c Ratio		0.19			0.43			0.41			0.30	
Intersection Summary												
Area Type: O	Nher											
Cycle Length: 60												
Actuated Cycle Length: 43.5												
Natural Cycle: 40												
Control Type: Actuated-Unco	ordinated											
				D / -								
Splits and Phases: 17: Wes	st Wrentha	m Rd & I	Pine Swai	mp Rd (R	ki 114)			F 3				
								1 /32				
20.5								ñe .				

HCM Unsignalized Intersection Capacity Analysis

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20: Diamond Hill Rd (RI 114) & Pine Swamp Rd (RI 114)/Wrentham Rd (RI 121)

	-	\rightarrow	F	-	1	1
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	†	۲	ኘ	↑	ሻ	7
Traffic Volume (veh/h)	165	188	524	326	195	223
Future Volume (Veh/h)	165	188	524	326	195	223
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0,69	0.92	0.96	0.90	0.89	0.75
Hourly flow rate (vph)	239	204	546	362	219	297
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						10
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			239		1693	239
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
vCu, unblocked vol			239		1693	239
tC, single (s)	n over a several a several de several de several de		4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)			2.2		3.5	3.3
p0 queue free %			59		0	63
cM capacity (veh/h)			1334		61	802
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	239	204	546	362	516	
Volume Left	0	0	546	0	219	
Volume Right	0	204	0	0	297	
cSH	1700	1700	1334	1700	131	
Volume to Capacity	0.14	0.12	0.41	0.21	3.93	
Queue Length 95th (ft)	0	0	51	0	Err	
Control Delay (s)	0.0	0.0	9.6	0.0	Err	
Lane LOS			Α		F	
Approach Delay (s)	0.0		5.7		Err	
Approach LOS					F	
Intersection Summary						
Average Delay			2766.3			
Intersection Canacity Utiliza	ation		58.5%	Sinter Second	U Level o	of Service
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis 1: Diamond Hill Rd (RI 114) & Nate Whipple Hwy (RI 120)

03/22/2020

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		44			\$			4			\$	
Traffic Volume (vph)	83	119	42	17	117	129	49	205	30	176	225	76
Future Volume (vph)	83	119	42	17	117	129	49	205	30	176	225	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	13	13	13	13	12	12	12	12	12	12
Total Lost time (s)		4.0			4.0			5.0			5,0	
Lane Util. Factor		1.00			1.00	any meaning of the state of a state of the		1.00			1.00	
Frt		0,97			0.94			0,98			0.98	
Flt Protected		0.98			1.00			0.99			0.98	
Satd. Flow (prot)		1792			1800			1813			1783	
Flt Permitted		0.74	the second second starts		0.95			0.82			0.73	evereveren
Satd. Flow (perm)		1340			1721			1496			1320	
Peak-hour factor, PHF	0.86	0.85	0.75	0.53	0.75	0.85	0.68	0.93	0.75	0.75	0.97	0.79
Adj. Flow (vph)	97	140	56	32	156	152	72	220	40	235	232	96
RTOR Reduction (vph)	0	9	0	0	32	0	0	7	0	0	10	0
Lane Group Flow (vph)	0	284	0	0	308	0	0	325	0	0	553	0
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA	9) (0) (SA 31)	Perm	NA		Perm	NA	
Protected Phases		1			1		arreates Const Contrations	2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)		21.0			21.0			34.4			34.4	
Effective Green, g (s)		21,0			21.0			34.4			34.4	
Actuated g/C Ratio		0.33			0.33			0.53			0.53	
Clearance Lime (s)		4.0			4.0			5.0			5.0	
Vehicle Extension (s)		2.6			2.6			3.0			3.0	
Lane Grp Cap (vph)		436			561			799			/05	
V/s Ratio Prot		~ ~ ~ ~			040			0.00			-0.40	
v/s Ratio Perm		c0.21			0.18			0.22			CU.42	
V/c Katio		0.65			0.55			0.41			U.78	
Uniform Delay, d I		10,0			1.00			0.9 4 00			12.0	
Progression Factor		1.00			1.00			1.00			1.00	
Dology (a)		0.Z 01 7			187			0.0			17.7	
Level of Service		21.7 C			10.7 R			υ.υ Δ			- 17.7 R	
Approach Dolay (c)		21.7			187			03			17 7	
Approach LOS		21.1 C			R			υ.υ Δ			R	
		v			Ľ		15020303	ana ana ang ang ang ang ang ang ang ang			L.	
Intersection Summary												
HCM 2000 Control Delay			16.9	H(3M 2000	Level of S	service		В			
HCM 2000 Volume to Capa	acity ratio		0.73						~~~			899999999
Actuated Cycle Length (s)			64.4	Su	im of lost	time (s)			9.0			
Intersection Capacity Utiliza	ation		84.9%	IC	U Level (DT Service			E			5/5/154
Analysis Period (min)			15									

03/22/2020

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ane Group	FBI	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					ጨ			ፈъ		www.electronic.com	<u>.</u>	
Traffic Volume (vnh)	83	119	42	17	117	129	49	205	30	176	225	76
Future Volume (vph)	83	119	42	17	117	129	49	205	30	176	225	76
Ideal Flow (vnhnl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	13	13	13	13	13	12	12	12	12	12	12
Grade (%)		0%			0%			 //%			0%	
Storage Length (ft)	n	·····	n N	n N	¥70	1999 - 1	n N	· · · · · · · · · · · · · · · · · · ·	0 0	n N		0
Storage Lanes	Ň		Ň	Ň		Ň	<u> </u>		Ň	Ő		ň
Taner Length (ff)	25	Series		25			25			25		
Right Turn on Red	~~~ ~~~		Yes	~~~		Yes			Yes			Yes
Link Speed (mph)		40			40			30			30	
Link Distance (ff)		1854			4162			1592			454	
Travel Time (s)	0.499.999.999.99	31.6	660117777201781		70.9			36.2			10.3	896989 (9884
Confl Pede (#/hr)		01.0						00.2			10.0	
Confl Bikes (#/hr)			(Seastering)									89250933
Deak Hour Factor	A8 (L	0.85	0.75	0.53	0.75	0.85	0.68	0 93	0.75	0.75	0.97	<u>0 79</u>
Crowth Eactor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Hosin/Vohiclos (%)	5%	5%	50%	- 100 % 	2%	2%	2%	7%	70070	2%	2%	2%
Rue Blockages (#/br)	ο	ሳ ም በ	ייי 0	ደም በ	ዲም በ	<u>ዲ</u> ም ሀ	<u> </u>	<u>ት ም</u> በ	6. A	<u>~~ν</u> Ω	ት የ	<u>γ.</u> Λ
Dus Diockages (#/ii/) Darking (#/hr)	v		U	<u> </u>	v		v			v	. Chaine an	, i i i i i i i i i i i i i i i i i i i
Mid-Block Traffic (%)		۵%			በ%			ሰ%			በ%	
Shared Lane Traffic (%)		070						070			0.0	
Lane Group Flow (vph)	ĥ	293	ĥ	۵	340	0	۵	332	0	۵	563	۱. ۱
	Perm	NΔ		Perm	NA		Perm	NA		Perm	NA	sa j
Protocted Phases		SS (1994) 1		i onn				2		ST STILL	2	
Permitted Phases	1			1			2	_		2	-	
Defector Phase	1	1		1	1		2	2		2	2	
Switch Phase				•								
Minimum Initial (s)	10 N	10.0	******	10.0	10.0		10 0	10.0		10.0	10.0	8.008169594
Minimum Split (s)	14.0	14.0		14.0	14.0		15.0	15.0		15.0	15.0	
Total Split (s)	29.0	29.0		29.0	29.0		58.0	58.0		58.0	58.0	alita di seconda di se Seconda di seconda di se
Total Split (%)	33.3%	33.3%		33.3%	33.3%		66 7%	66.7%		66.7%	66 7%	
Maximum Green (s)	25.0	25.0		25.0	25.0		53.0	53.0		53.0	53.0	1990-0999-0999-09
Yellow Time (s)	3.0	3.0		3.0	30		4.0	40		40	4.0	
All-Red Time (s)	10	1.0	verweiten bebiede	1.0	1.0	488 688 888 687 1	1.0	1.0	0200020020000	1.0	1.0	NCONCEPTION I
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		4.0	- 1940-1940-1940-1940 		4.0			5.0			5.0	(4)-197(4)-1970 (4)-197(4)-1970
Lead/Lag	lead	Lead		Lead	Lead		Lao	Lag		Lao	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	elekan kanada men	Yes	Yes	alueren ur er i
Vehicle Extension (s)	26	2.6		2.6	2.6		3.0	3.0	9	3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0	ARTINEUR WERKINGER	3.0	3.0	-9910-9990-999
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)			an geografiain (42		ere ta	ALCHING CONTRACTOR	0078197 8.01 88	entra esta del			autoral and a second	erata en anticipativa
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)	werren die	eenstatiitiitiitii		************		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~					auseustratiki	on a successfund the
v/c Ratio		0.67			0.58			0.42			0.80	
Control Delay		30.2	ana kata kata kata bahar da Ka	a na 2-aite tradit (2020-712)	23.0	- 1		10.5			21.7	ala ann an Anna Al

Existing Saturday Peak 02/27/2020 Baseline EAM

Lanes, Volumes, Timings 1: Diamond Hill Rd (RI 114) & Nate Whipple Hwy (RI 120)

03/22/2020

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0		18 B B	0.0			0.0			0.0	
Total Delay		30.2			23.0			10.5			21.7	and a start of the
Queue Length 50th (ft)		95			96			77			179	
Queue Length 95th (ft)		#223			177			129		energi e po e trata da Araz	310	
Internal Link Dist (ft)		1774			4082			1512			374	
Turn Bay Length (ft)												
Base Capacity (vph)		569			748			1214			1070	
Starvation Cap Reductn		0			0			0			0	V/1000000000000000000000000000000000000
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0	an a		0	uriansteinioogi
Reduced v/c Ratio		0.51			0.45			0,27			0.53	
Intersection Summary						an a	1					
Area Type: C	other											
Cycle Length: 87				2. 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 199								
Actuated Cycle Length: 65.2												
Natural Cycle: 45												
Control Type: Actuated-Unco	ordinated											
# 95th percentile volume ex	ceeds cap	oacity, qu	eue may	be longer	•						and the state of the state	
Queue shown is maximum	n after two	cycles.										
Splits and Phases: 1: Diam	iond Hill R	d (RI 114) & Nate	Whipple I	Hwy (RI 1	20)						

	1 01	÷.	Ø2		
la la	2 Pl	5	S		

	5	۲	\.	X	×	マ	
Movement	WBL	WBR	SEL	SET	NWT	NWR	
Lane Configurations	M		ሻ	ŧ	*	7	
Traffic Volume (vph)	87	196	158	406	393	79	
Future Volume (vph)	87	196	158	406	393	79	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width	13	13	11	13	12	12	un die ferende van die die een een die meerste die die die die die die die die die di
Total Lost time (s)	4.0		4.0	5.0	5.0	5.0	
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00	
Frt	0.91		1.00	1.00	1.00	0.85	
Flt Protected	0.98		0.95	1.00	1.00	1.00	
Satd, Flow (prot)	1735		1728	1944	1881	1599	
Flt Permitted	0.98		0.95	1.00	1.00	1.00	
Satd. Flow (perm)	1735		1728	1944	1881	1599	
Peak-hour factor. PHF	0.87	0.86	0.94	0.86	0.78	0.73	
Adi Elow (vnh)	100	228	168	472	504	108	
RTOR Reduction (vnh)	103	0 0	0 0	0	0 0	44	
ane Group Flow (vph)	225	ñ	168	472	504	64	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	
	Prot		Prot	ΝΔ	NΔ	Prot	
Protocted Phases	ר וטנ ז		່າເປັ	19 19	ראין 1	1.100	
Dermitted Dhases	J		-	۲ ۲			
-emilieu Filases Natuatad Groop, G (e)	13 F		10 Q	20.5	22 K	22.6	
-tottated Green, G (S)	13.5		10.0	20.5	20.0	23.0	
Inective Green, y (s)	0.22		10.8 0.49	0.65	20.0 0.30	0.30	
Notualeu y/O Natio	0.22		U.10 / 0	0.00	0.58	5.0	
Jearance mile (5)	4.U 2.G		9.U 9.C		ວ.0 ລຸດ	0.0 0.6	
	2.0		2.0	4050	2.0	2.0	
ane Grp Cap (vpn)	383		-0.40	1258	-0.07	610	
I/s Ratio Prot	CU.13		CU.1U	U.24	CU.27	0.04	
ils Ratio Perm	0.50		0 55	0 00	0.00	0.40	
//C Ratio	0.59		0.00	0.38	0.69	0.10	
Uniform Delay, d1	21.3		4.00	5.U	10.7	11.9	
-rogression Factor	1.00		1.00 A A	1.00	1.00	1.00	
nçremental Delay, d2	2.0		1,0	U.1	Z.1	0.1	
Delay (S)	23.3		24.4	5.2	18.4	12.U D	
Level of Service			U	A	470	В	
Approach Delay (s)	23.3			10.2	17.Z		
Approach LOS	Ü			B	В		
Intersection Summary							
HCM 2000 Control Delay			15.6	H	CM 2000	Level of Service	В
HCM 2000 Volume to Capa	city ratio	a second di tradici	0.63	en per gran en en en en el falte	, ya su na shiradada		
Actuated Cycle Length (s)			61.0	S	um of los	time (s)	13.0
Intersection Capacity Utiliza	ition	an en ser sin de la Versen.	57.2%	10 	CU Level	of Service	B
Analysis Period (min)			15			-	
c Critical Lane Group	, es, al que través de la constant L'éche de la constant	, er okkensen och		10.500030930939393	er er andre vik folget		an sa na manana na manana ang ang ang ang ang ang ang ang an

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03/22/2020

	5	*	\searrow	\mathbf{X}	×	4	
Lane Group	WBL	WBR	SEL	SET	NWT	NWR	
Lane Configurations	۲		۲	ł	*	ሻ	
Traffic Volume (vph)	87	196	158	406	393	79	
Future Volume (voh)	87	196	158	406	393	79	
Ideal Flow (vphpi)	1900	1900	1900	1900	1900	1900	
l ane Width (ft)	1000	13	11	13	12	12	
Grade (%)	0%			0%	0%		
Storage Length (ff)	0	0	0	non ottaliter		80	
Storage Lanes	1	Ň	<u> </u>			1	
Taper Length (ft)	25		25				
Right Turn on Red	<u>ب</u> ر	Ves			a.	Yes	
Link Sneed (mph)	ব০	100		35	35		
Link Opeen (hiph)	2348			281	2230		
Link Distance (ii) Traval Time (s)	53 /			7 /	43 A		
Confl Dode (#/hr)	55.4			1.1	70.7		
Confl. Peus. (#/m) Confl. Pikoc (#/br)							
Comin Dires (#/in)	0 07	0 00	A	0.06	0.70	0 72	
Peak Hour Factor	4000/	40.00	4000/	4000/	100%	10.00/	
	100%	100%	10070	100%	10070	10070	
Heavy venicles (%)	170	1%	170	1%	170	170	
Bus Blockages (#/nr)	U	U	U	U	0	U	
Parking (#/nr)	00/			<u>^</u> /	<u> </u>		
Mid-Block raffic (%)	U%			U%	U%		
Shared Lane Traffic (%)							
Lane Group Flow (vph)	328	0	168	4/2	504	108	
Turn Type	Prot		Prot	NA	NA	Prot	
Protected Phases	3		2	12	1	1	
Permitted Phases							
Detector Phase	3		2	12	1	1	
Switch Phase							
Minimum Initial (s)	10.0	مناري بالدر مساور رسانه و اور سر المر	5.0		10.0	10.0	
Minimum Split (s)	14.0		9.0		15.0	15.0	
Total Split (s)	22.0		18.0		40.0	40.0	
Total Split (%)	27.5%		22.5%		50.0%	50.0%	
Maximum Green (s)	18,0		14.0		35.0	35.0	
Yellow Time (s)	3.0		3.0		4.0	4.0	
All-Red Time (s)	1.0		1.0		1.0	1.0	
Lost Time Adjust (s)	0.0		-0.0		0.0	0.0	
Total Lost Time (s)	4.0	1.000.000.000.000.000	4.0		5.0	5.0	
Lead/Lag			Lag		Lead	Lead	
Lead-Lag Optimize?	-e salations antibul	energi da de la deservição da 1980. A construição da deservição da 1980.	Yes		Yes	Yes	
Vehicle Extension (s)	2.6		2.6		2.6	2.6	
Minimum Gap (s)	3.0	en en sessen en e	3.0		3.0	3.0	n en la la companya en la color de la companya de la color de l La color de la c
Time Before Reduce (s)	0.0		0.0		0.0	0.0	
Time To Reduce (s)	0.0		0.0		0.0	0.0	
Recall Mode	None		None		Min	Min	
Walk Time (s)				erretari (634) Sta	a is where the day is fail	en men og som	
Elash Dont Walk (s)							
Pedestrian Calls (#/hr)	a nasan tahihi di				urrena di Maria		
v/c Ratio	0.68		0.55	0.30	0.70	∩ 1 7	
II VI MUV		Contraction of the state of the			Construction of the second	Second Contractor Second	이 사람이 있는 것 같아요. 그는 것 같아요. 이 같이 있는 것 같아요. 이 같이 많이 많이 많이 많이 많이 같아요. 이 가지 않는 것 같아요. 이 가지 않는 것 같아요. 이 같이 있는 것 같아요. 이 가지 않는 것 않는 것 같아요. 이 가지 않는 것 같아요. 이 가지 않는 것 않는

Existing Saturday Peak 02/27/2020 Baseline EAM

Lane Group	WBL \	WBR SEL	SET	NWT	NWR		- 1		
Queue Delay	0.0	0.0	0.0	0.0	0.0	(1993) (d. 197	10-10-10-13		203 S 30 1
Total Delay	23.0	33.9	6.7	22.5	6.7				
Queue Length 50th (ft)	67	58	68	152	8				
Queue Length 95th (ft)	166	139	131	231	26				
Internal Link Dist (ft)	2268		301	2150					
Turn Bay Length (ft)					80				
Base Capacity (vph)	627	415	1377	1130	990				
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	0.52	0.40	0.34	0.45	0.11				

Intersection Summary

Area Type: Other Cycle Length: 80

Actuated Cycle Length: 61.8

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

Splits and Phases: 6: Mendon Rd (RI 122) & Nate Whipple Hwy (RI 120)

N _{Ø1}	1 102	\$ 03	
40 s	18 s	22 s	

HCM Signalized Intersection Capacity Analysis 7: Plaza Driveway/West Wrentham Rd & Mendon Rd (RI 122)

03/22/2020

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Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		(]+			4			4		ኻ	4	
Traffic Volume (vph)	7	2	20	123	0	68	72	346	10	22	336	91
Future Volume (vph)	7	2	20	123	0	68	72	346	10	22	336	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	16	16	16	12	12	12	14	14	12	11	14	14
Total Lost time (s)		4.0			4.0			5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00			1.00		1.00	1.00	a waa il sis frantsiy
Frt		0.91			0.95			0,99		1.00	0.97	
Fit Protected		0.99			0.97			0.99		0.95	1.00	
Satd. Flow (prot)		1935			1711			1980		1678	1891	
Flt Permitted		0.91	nome en no recencia de 2014		0.79			0.86		0.45	1.00	
Satd. Flow (perm)		1790			1389			1725		788	1891	le services
Peak-hour factor, PHF	0.58	0.50	0.62	0.93	0.92	0.77	0.82	0.74	0.42	0.50	0.81	0.88
Adj. Flow (vph)	12	4	32	132	0	88	88	468	24	44	415	103
RTOR Reduction (vph)	0	24	0	0	29	0	0	3	0	0	15	0
Lane Group Flow (vph)	0	24	0	0	191	0	0	577	0	44	503	Q
Heavy Vehicles (%)	0%	0%	0%	2%	2%	2%	1%	1%	1%	4%	4%	4%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)		12.5			12.5			26.5		26.5	26.5	
Effective Green, g (s)		12.5			12.5			26.5		26.5	26.5	
Actuated g/C Ratio		0.26			0.26			0.55		0.55	0.55	
Clearance Time (s)		4.0			4.0			5.0		5,0	5.0	
Vehicle Extension (s)		2.6			2.6			2.8		2.8	2.8	
Lane Grp Cap (vph)		466			361			952		435	1043	
v/s Ratio Prot											0.27	
v/s Ratio Perm		0.01			c0.14			c0.33		0.06		
v/c Ratio	mana a anna hairthairt	0.05		na - a conservato da ana ba	0.53			0.61		0.10	0.48	100.547.00001017+804
Uniform Delay, d1		13.3			15.2			7.2		5.1	6.6	
Progression Factor		1.00			1.00			1.00	e fan de service ander de fanse	1.00	1.00	contraction of the second
Incremental Delay, d2		0.0			1.1			1.0		0,1	0.3	
Delay (s)		13.3			16.4			8.3		5.2	6.9	900(0000000000000000000000000000000000
Level of Service		В			В			A		A	A	500000
Approach Delay (s)		13.3		97 631 837 N 6 5 6 5	16.4			8.3			6.7	6796357476655561
Approach LOS		В	Sieners		В			A			A	
Intersection Summary												
HCM 2000 Control Delay			9.1	H	CM 2000	Level of S	Service		A			
HCM 2000 Volume to Capac	ity ratio		0.58									
Actuated Cycle Length (s)			48.0	Si	um of losi	time (s)			9.0		6 (C) (C) (C)	
Intersection Capacity Utilizat	ion		75.3%	IC	CU Level o	of Service			D			
Analysis Period (min)			15									

Lanes, Volumes, Timings		
7: Plaza Driveway/West Wrentham Rd & Mendon Rd ('RI	122)

03/22/2020

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Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		44			4			4		ሻ	4î	
Traffic Volume (vph)	7	2	20	123	0	68	72	346	10	22	336	91
Future Volume (vph)	7	2	20	123	0	68	72	346	10	22	336	91
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	12	12	12	14	14	12	11	14	14
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	- 0		0	1		0
Taper Length (ft)	25	1999 - 1999 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	nonik dele kelendidi	25		a na print di bindendari et	25	******	1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 -	25	an a	section and the section
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25	alimiation and a state of a sec		35	ne a de la Caldela a Const	an in the state of the state of the	35			35	deletide existenci i
Link Distance (ft)		209			662			1525			777	
Travel Time (s)	1999 1999 1999 1999	5.7	102001001001020	2123415422000	12.9			29.7	11.500000000000000000000000000000000000		15.1	oesesseered.
Confl Peds (#/hr)												
Confl Bikes (#/hr)												2012년(1912년)
Peak Hour Factor	ሰ 58	0.50	0.62	0.93	0.92	0 77	0.82	0 74	0 42	0.50	0.81	0.88
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	100 %	0%	00%	2%	2%	2%	1%	1%	1%	4%	4%	10070
Rue Blockages (#/hr)	<u>۷</u> ۷%	<u>ም የ</u> በ	۳. ۵	ራሎ በ	е <u>м</u> О	ሳት በ	ייי ח	n N	<u>م</u> ، ۱	∿⊤ ∩	<u></u>	<u>89</u> 10
Dus Diockages (#/iii) Darking (#/hr)	v	v	U	V		Ū	<u> </u>	<u> </u>		<u> </u>	v	
Mid Block Troffic (%)		ሰ%			0%			በ%			ሰ%	
Charod Long Troffic (9/)		U 70			070			0 /0			070	
and Group Flow (vpb)	۵ ۱	<u>م</u> ر ۸۵	A 200	۸	220	n	٥	580		۲۸ ۸۸	518	New Second
Turn Type	Dorm	HO NA	v	Porm	220 NA	v	Porm	NIA		Dorm		
Distant of Disease	CGIII	אני ר	an a	гыш	וזר <i>י</i> ר ר		ΓΟΠΠ	ראו. 1			רען 1	
Protected Filases	<u>,</u>	ل		0	2		4	1		1	1 (************************************	
Detector Dhase	2 0	0		ב ר	<u>о</u>		4 1	4		4 (C)	1	
Delector Fliase	ک در چې د ورو د د	ک اندان واردو		4	د		 	9-12-12-55 9-12-12-55			ا دور اور اور او	e a a a a a a a a a a a a a a a a a a a
Switch Pildse	40.0	10.0		10.0	10.0		40.0	10.0		40.0	40 O	
Minimum Initial (S)	10.0	10.0		10.0	0.01		10,0	10.0		10.0	10.0	
MINIMUM Spile (S)	14.0	14.0		14.0	14.0		10.U	10.U		10.U	10,U 50.0	
Total Split (S)		22.0		22.U			0.0C	00.U		00.U 70.E0/	00.U	
ii otai Spiit (%)	27,5%	21.5%		21.0%	21.5%		72.5%	72.5%		12:0%	12.0%	
Maximum Green (s)	18.0	10.0		10.0	10.0		0.0C	0.00		0.UG	00.U	
Yellow Time (s)	3,0	3.0		3.0	3.0		4.0	4,0		4.0	4.0	994999760
All-Ked Time (s)	1.0	1.0		1.0	1.0		U.I	1.0		1.0	1.U 0.0	15000-190
Lost Time Adjust (s)		0,0			0.0			0.0		0.0	U.U 5.0	
Total Lost Time (s)		4.0			4.0			5.0		0.U	5.U	
Lead/Lag	Lag	Lag		Lag	Lag		Lead	Lead		Lead	Lead	
Lead-Lag Optimize?	Yes	Yes	un an	Yes	Yes		Yes	Yes		Yes	Yes	109.000 (SM
Vehicle Extension (s)	2.6	2.6		2.6	2.6		2.8	2.8		2.8	2.8	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	Service Sec.
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0,0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0	ran gagaal Aasa ghada	0.0	0.0	Server were a
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)	99 CH199 KITTER KITTER K	olan kanadara sara		an a				SERVICE CONTRACT				
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)							94-00-00-00-00-00-00-00-00-00-00-00-00-00					
v/c Ratio		0.10			0,57			0.61		0.10	0.49	
Control Delay		9.9			20.7			10.8		6.1	8.2	

Existing Saturday Peak 02/27/2020 Baseline EAM

Lanes, Volumes, Timings 7: Plaza Driveway/West Wrentham Rd & Mendon Rd (RI 122)

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Lane Group	NBL	NBŤ	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Queue Delay		0.0	9 - D - D - D		0,0			0.0		0.0	0.0	
Total Delay		9.9			20.7			10.8		6.1	8.2	an maa maaann M
Queue Length 50th (ft)		3			39			83		5	62	
Queue Length 95th (ft)		10			127			149		10	132	
Internal Link Dist (ft)		129			582			1445			697	
Turn Bay Length (ft)							ر موجر بردین مراجع					*****
Base Capacity (vph)		715			563			1651		755	1812	
Starvation Cap Reductn		0	وروم مردمور متحجب ورورهم		0			0		0	0	
Spillback Cap Reductn		0			0			0	S. (3. 2) (5	0	0	
Storage Cap Reductn	والمعرفين والمعرفين والمعرفين والمعرفين	0			0			0		0	0	
Reduced v/c Ratio		0.07			0,39			0.35		0.06	0.29	
Intersection Summary												
Area Type:	Other											
Cycle Length: 80												
Actuated Cycle Length: 48.4												
Natural Cycle: 40												
Control Type: Actuated-Unc	oordinated											
Splits and Phases: 7: Plaz	za Drivewa	y/West W	rentham F	Rd & Men	don Rd (RI 122)						
Nø1									₫ø2			
58 s									S			

HCM Signalized Intersection Capacity Analysis 17: West Wrentham Rd & Pine Swamp Rd (RI 114)

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		ф.			4			4	<u>, , , , , , , , , , , , , , , , , , , </u>		4	
Traffic Volume (vph)	14	200	42	60	176	12	42	33	51	20	46	11
Future Volume (vph)	14	200	42	60	176	12	42	33	51	20	46	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	13	13	13	13	13	13	13	11	11	11
Total Lost time (s)		5,0			5.0			4,0			4.0	
Lane Util. Factor		1.00	wanyo weini		1.00			1.00			1.00	
Frt		0.97			0,99			0.96			0.98	
Fit Protected		1.00			0.99			0.98			0.99	
Satd. Flow (prot)		1887			1906			1849			1759	
Fit Permitted		0.97			0.80			0.82			0.89	
Said. Flow (perm)	0 70	1839	0.00	0.00	1043	0.75	0 F.F.	1043	0.04	0 50	0.00	0.00
Peak-hour factor, PHF	0.70	0.81	0.66	0.83	0.85	0.75	0.55	0.55	0.91	0.56	0.68	0.69
Adj. Flow (Vpn)	20	247	64	12	207	di A	70	уa	0C 0	30	80	01
Long Croup Flow (uph)	U A	0	0	0	4 201	0	U A	402	0	0	100	U O
Lane Group Flow (vpr)	U 10/	୍ ୦୦୮ 10/	10/	10/	291 10/	10/	0 0%	192 00/	0 \0\	10/	· 10/	10/
Rus Blockagos (#/br)	۱ <i>1</i> 0	/0 	۱ <i>۱</i> ۵	۱ <i>/</i> ۵	۱ <i>/</i> ۵	۱ <i>۱</i> ۵	0 /0 N	0 /0	070 12	۱ <i>۱</i> ۵	1 /0	۰ <i>۱</i>
Turn Turn	Dorm	NIA		Dorm	NΔ	<u></u>	Dorm	NΔ		Perm	NIΔ	Vereine
Protected Phases	геш	1		ГСІШ	ויאר א		L CIIII	2		Leill	2	
Permitted Phases	1			1 1			2			2		
Actuated Green G (s)		16.1			161		- 	78		-	78	
Effective Green, g (s)		16.1			16.1			7.8			7.8	an search a
Actuated g/C Ratio		0.49			0.49			0.24			0.24	
Clearance Time (s)		5.0	14203-012-012-012-012-012-01	an a	5.0	anal e subservasiones	en en sen sen sen sen sen sen sen sen se	4.0	1999 - Andrew A. A. S.	an an an ann an an an an an an an an an	4.0	1997-0999-0079
Vehicle Extension (s)		2.8			2.8			2.6			2,6	
Lane Grp Cap (vph)		899			804			365			374	
v/s Ratio Prot												
v/s Ratio Perm		c0.18			0.18			c0.12			0.08	
v/c Ratio	- 107 CH-501	0.37			0.36			0.53			0.32	
Uniform Delay, d1		5.2			5.2			10.9			10.4	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2	···· . Poor	0.2			0.2			1.1			0.4	- Web-robolize-co-co-c
Delay (s)		5.5			5.5			12.0			10.8	
Level of Service		A			A			B			В	
Approach Delay (s)		5.5			5.5			12.0	te entrai	19919519519	10.8	
Approach LOS		А			A			В			в	
Intersection Summary												
HCM 2000 Control Delay			7.5	H	CM 2000	Level of S	Service		А			
HCM 2000 Volume to Capacity	y ratio	4 43 S (8	0.42									
Actuated Cycle Length (s)			32.9	Sl	im of los	t time (s)		en en se sen ante	9.0	101220-00-0010-00-00	41176284068-10-14-14	n The State of States of States
Intersection Capacity Utilizatio	n		49.4%	IC	U Level o	of Service			Α			
Analysis Period (min)			15	e politi e di menuna co								
c Critical Lane Group												

Lanes, Volumes, Timings 17: West Wrentham Rd & Pine Swamp Rd (RI 114)

03/22/2020

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			\$			4			4	<u> </u>
Traffic Volume (vph)	14	200	42	60	176	12	42	- 33	51	20	46	11
Future Volume (vph)	14	200	42	60	176	12	42	33	51	20	46	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ff)	13	13	13	13	13	13	13	13	13	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ff)	0	99.09997.5 7 .999	0	0	RENEDENN RED-GADY	0	0	69999.09999.0999 6999	0	0		0
Storage Lanes	Ō		0	0		0	0		0	0		0
Taper Length (ft)	25	0 80 887 9 8 8 8 9 8 9 8 1	un an	25		199.999.999.999.9999. 199.999.999.999.99	25	san de se de la constante.	an ar an	25	folfenset gesteren seren er	sector and
Right Turn on Red			No			Yes			No			No
Link Speed (mph)		30	11 7 - 1		40			25	n de la constante de la constan La constante de la constante de		25	-99/9999-99/99/91/1
Link Opeca (mph)		3320			7947			1008			920	
Travel Time (s)	0.05000540040	75 5		90090000946900	135.5			27.5	0.9699999999999		25.1	2009/2009/2003
Confl Dode (#/br)												
Confl Dikos (#/hr)				Rosensensens				84689-664-671			Phoneseers	
Dook Hour Costor	0.70	0.94	- 29 U	0.83	0.85	0.75	0.55	0.55	Λ Q1	0.56	0.68	0.60
Crowth Easter	400%	10.01	100%	100%	40.00	100%	100%	10.00	100%	100%	100%	100%
	10070	100 /0	10070	100 //	100 /0	10070	0070	10070 N%	0070	10070	10078	10070
Due Dieskerse (#/br)	1.70	۱ <i>/</i> ۵	۲ <i>1</i> /0	۱ <i>/</i> ۹ ۵	1.70	۱ <i>/</i> ۵	ωυ Ω	0 <i>1</i> 0 Λ	10	۱ <i>۳</i> 0 ۵	۳. م	۲ <u>۳۱</u>
Desitioner (#Inc)	U	V	U	v	v		v		74	U		
Parking (#/nr)		00/			<u>^0/</u>			^0/			<u>^%</u>	
		U70			U //			070			V /0	
Snared Lane Tranic (%)	^	004	^	^	205	 ∧	0	400	ی دور دی م	0	100	<u>م</u>
Lane Group Flow (vpn)	V D	1 GG N I N	v Sinteresseres	U Dorm	230 NIA	U NAMESISAN	Dorm	IUZ NIA	U	Dorm		
lium iype	Pelm	INA 4		Felli	NA 4	9694998 (BB) (B	генн	אאן יא		Feilli	NA O	
Protected Phases		 		1	ا 1000-000-000		- -	<u> </u>		0	۷	
Permitted Phases	1	4		4	4		2 A	0		<u>ר</u> ח	0	
Detector Phase	1	1 570-00-00-00		1 	1 2005/2005		۷	Z		ل موجع موجع	۲	
Switch Phase		10.0		40.0	40.0		F 0			E O	۶A	
Minimum Initial (s)	10.0	10.0		10.0	10.0 260		0.U	0.0		0.0	0.0	
Minimum Split (s)	15.0	15.0		15.0	15.0		9.0	9.0	Min (2008) 40	9.0	9.0	
I otal Split (s)	35.0	35.0		35.0	35.0		25.U	25.0		20.0	20.0	
Total Split (%)	58.3%	58.3%		58.3%	58.3%		41.7%	41.7%		41.7%	41.7%	
Maximum Green (s)	30.0	30.0		30.0	30.0	989/9250/257759	21.0	21.0		21.0	21.0	erestrate e
Yellow Time (s)	4.0	4.0		4.0	4.0		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	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.0			5.0			4.0			4.0	Sanaa Santa
Lead/Lag	Lead	Lead		Lead	Lead		Lag	Lag		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	ant an engelist	Yes	Yes	monserviseavite	Yes	Yes		Yes	Yes	ESTON ONSEAN
Vehicle Extension (s)	2.8	2.8	19 E 19 E	2.8	2.8		2.6	2.6		2.6	2.6	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0	area araitara de Se	3.0	3.0	1000745-00749
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Walk Time (s)			en e			and the second second					and a state of the second	secondaria (A.C. 1974
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												55.05.05.00 AV 17 TO 1
v/c Ratio		0.34			0.34			0.44			0.27	
Control Delay		7.9			7.9			13.3			11.0	

Existing Saturday Peak 02/27/2020 Baseline EAM

Lanes, Volumes, Timings 17: West Wrentham Rd & Pine Swamp Rd (RI 114)

03/22/2020

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	188 ST 85	0.0			0.0			0.0	6) (S) (S) (S)		0.0	
Total Delay		7.9			7.9			13.3			11.0	
Queue Length 50th (ft)		32			28			22			13	
Queue Length 95th (ft)		82			79			41			35	
Internal Link Dist (ft)		3240			7867			928			840	
Turn Bay Length (ft)												
Base Capacity (vph)		1688			1510			1034			1059	
Starvation Cap Reductn	n o ana ang sa	0			0	oli mana sena da manta a Mari	en an thair an tha thair an th	0			0	
Spillback Cap Reductn	100 KB 500	0			0			0			0	
Storage Cap Reductn		0		n an air an tha an air an	0			0			0	NA SANTAN ANG SANTAN
Reduced v/c Ratio		0.20			0.20			0.19			0,11	
Intersection Summary				1			<u> </u>				- 4	20
Area Type: O	ther											
Cycle Length: 60	odrazo kazili, kodika	anal service and service				/ht/d.white100000012000		2010 YO & 10-1000 YO A				
Actuated Cycle Length: 32.3												
Natural Cycle: 40				· · · · · · · · · · · · · · · · · · ·								
Control Type: Actuated-Uncod	ordinated											
Splits and Phases: 17: Wes	st Wrentha	am Rd & F	^p ine Swa	mp Rd (F	RI 114)							
						***	Ø2					

25 s

35 s

HCM Unsignalized Intersection Capacity Analysis

20: Diamond Hill Rd (RI 114) & Pine Swamp Rd (RI 114)/Wrentham Rd (RI 121)

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		\rightarrow	*		*	*	
Movement	EBT	EBR	WBL	WBT	NBL	NBR	
Lane Configurations	♠	Ť	ሻ	^	۲	7	
Traffic Volume (veh/h)	146	193	170	126	172	175	
Future Volume (Veh/h)	146	193	170	126	172	175	
Sign Control	Free			Free	Stop		
Grade	0%			0%	0%		
Peak Hour Factor	0.83	0.91	0.79	0.88	0.88	0.89	
Hourly flow rate (vph)	176	212	215	143	195	197	
Pedestrians							
Lane Width (ft)							
Walking Speed (ft/s)		9993					
Percent Blockage							
Right turn flare (veh)						10	
Median type	None			None			
Median storage veh)							
Upstream signal (ft)	a na hair a sha Marting S						gegafystatory
pX, platoon unblocked							
vC, conflicting volume			176		749	176	Nerozeczawa
vC1, stage 1 conf vol	5.8.8						
vC2, stage 2 conf vol			00000000000000000000000000000000000000				
vCu, unblocked vol			176		749	176	
tC, single (s)			4.1		6.4	6.2	
tC, 2 stage (s)							
tF (s)			2,2 85		3.5	3.3	0.661165040
p0 queue free %			85		39	11	
cM capacity (veh/h)			1406		321	867	
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1		
Volume Total	176	212	215	143	392		000000000
Volume Left	0	0	215	Q	195		
Volume Right	0	212	0	0	197		
cSH	1700	1700	1406	1700	646		
Volume to Capacity	U.1U	0.12	U.15	0.08	U.61		
Queue Length 95th (tt)	U A	0	াও	0 0 0	102		
Control Delay (s)	U.U	0.0	8.U	0.0	21.2		Secondaria Secondaria
Lane LUS	~ ^ ^		A 4 O		04 O		Secondari
Approach Delay (S)	U.U		4.ŏ		21.2		
Approach LOS							
Intersection Summary							
Average Delay			8.8				
Intersection Capacity Utilizatio	n		36.6%	IC	U Level (of Service A	
Analysis Period (min)			15				
03/22/2020

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			43			4			4	
Traffic Volume (vph)	0	228	285	18	232	0	362	0	20	0	0	0
Future Volume (vph)	0	228	285	18	232	0	362	0	20	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	13	13	13	13	12	12	12	12	12	12
Total Lost time (s)		4.0			4.0			5.0				
Lane Util. Factor		1.00			1.00			1.00	an air an tha an air		de la politica de la composición de la	oo aa a
Frt		0.92			1.00			0.99				
Flt Protected	0584786707844	1.00			1.00	rana da servez		0.95	ana ana ang ang ang ang ang ang ang ang			
Satd. Flow (prot)		1710			1864			1732				
Fit Permitted		1.00			0.89			0.74				790727375A
Satd. Flow (perm)		1/10			1659			1337				
Peak-hour factor, PHF	0.80	0.84	0.80	0.90	0.82	0.84	0.82	0.82	0.83	0.81	0.82	0.81
Adj. Flow (vph)	0	271	356	20	283	Û	441	0	24	Û	0	<u> </u>
RIOR Reduction (vph)	0	44	0	0	0	0	0	(0	0	0	0
Lane Group Flow (vph)	0	583	0	0	303	U	0	458	0	0	U	0
Heavy Venicles (%)	5%	6%	6%	5%	5%	5%	4%	4%	4%	3%	3%	3%
llurn lype		NA		Perm	NA		Perm	NA				
Protected Phases		1			1		'n	Z		<u>ہ</u>	Z	5050053
Actuated Phases		0E E		l.	0E E		۷.	0E 4		- Ζ		
Actuated Green, G (S)		20.0 05 5			20.0			20.4 05 4				
Actuated a/C Patio		20.0			20.0			20.4				
Cloarance Time (s)		0.40 / 0			V.40 / 0			0.42 5 0				
Vehicle Extension (s)		7.0 26			9.0 2.6			30 20	69,489,489,487 1			8488883
Lane Crn Can (vnh)		707			706			0.0 888				
vie Ratio Prot		c0 3/		0000-990 6970	100	89. An An An		500				8-88-84
v/s Ratio Perm		00.04			0.18			c0 34				
v/c Ratio		0.80			0.10			0.81				States (
Uniform Delay d1		15.0			12.1			15.1				
Progression Factor	202202333762246	1.00		nanika na kabana	1.00	209 Marin (1990) (1990) 2009 Marin (1990) (1990)		1.00	649.003000999888			are see al
Incremental Delay, d2		6,2			0.3			8.3				
Delay (s)		21.2	onte providente de la com		12.4	1997 N. 1997 P.		23.4	ns Aurub nd Sutines.		Badelander de Barre	90 AVD 2 A 10 A
Level of Service		С			В			Ċ		5.03.03.03		
Approach Delay (s)		21.2			12.4			23.4			0.0	
Approach LOS		С			В			Ċ			Α	
Intersection Summary	11.2.11.2											
HCM 2000 Control Delay			20.1	H	CM 2000	Level of S	Service	e Gung-de	C		1.8.6.6.	
HCM 2000 Volume to Capacity	ratio		0.80							a a sector a Martina Car		
Actuated Cycle Length (s)			59.9	Si	um of lost	time (s)			9.0			
Intersection Capacity Utilization	1		58.2%	IC	U Level o	of Service			В			
Analysis Period (min)			15									

Lanes, Volumes, Timings 1: Diamond Hill Rd (RI 114) & Nate Whipple Hwy (RI 120)

03/22/2020

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4						\$			\$	
Traffic Volume (vph)	0	228	285	18	232	0	362	0	20	0	0	0
Future Volume (vph)	0	228	285	18	232	0	362	0	20	0	0	0
Ideal Flow (vphp)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	13	13	13	13	13	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0	and a second	0	0		0	0	-274325743-2741257	0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25		o e 2004 o esta - de sate de	25	1		25	fel de ile este albid.		25		stration contracted
Right Turn on Red		63. Sh & A	Yes	5169-6317 <u>6</u> -		Yes			Yes			Yes
Link Speed (mph)		40	***********		40			30		u setore destrui	30	tiens entre some
Link Distance (ft)		1854			4162			1592			454	
Travel Time (s)	and an	31.6			70.9	00800000000000000000000000000000000000	6999-0999-00009-000-000-000 1	36.2		2 60000 0 8289 889 899 9	10.3	1069/1689/10660/#
Confl. Peds. (#/hr)			01.52.644									
Confl. Bikes (#/hr)	restand franklikt strikt	rehet Sweizkoe wers		te nikînisti terdikerte		anta kaisi dadi kar		100000000000000000000000000000000000000				409400 (490044)
Peak Hour Factor	0.80	0.84	0.80	0.90	0.82	0.84	0.82	0.82	0.83	0.81	0.82	0.81
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	6%	6%	6%	5%	5%	5%	4%	4%	4%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	****************
Shared Lane Traffic (%)				se se age ner								
Lane Group Flow (voh)	0	627	0	0	303	0	0	465	0	0	0	0
Turn Type		NA		Perm	NA		Perm	NA				
Protected Phases	a nga salawa sa sa sana sa			hallootin olaa dabby	1		in in the second second	2	29120018-2000-20128-2		2	004662046666662
Permitted Phases	5 1			1			2			2		
Detector Phase	1	1		1	1		2	2		2	2	59997569652d
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0	Den server and so and so and so	10.0	10.0	oons on the own of
Minimum Split (s)	14.0	14.0		14.0	14.0	nging ing ng	15.0	15,0		15.0	15.0	
Total Split (s)	29.0	29.0		29.0	29.0	ander obereiten beiten.	58.0	58.0		58.0	58.0	http://doi.org/10.04
Total Split (%)	33.3%	33,3%		33.3%	33.3%		66.7%	66.7%		66.7%	66.7%	
Maximum Green (s)	25.0	25.0		25.0	25.0		53.0	53.0		53.0	53.0	1976 - 1976 -
Yellow Time (s)	3.0	3.0		3.0	3.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	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	60.60.50.50		0.0	
Total Lost Time (s)		4.0			4.0			5.0			5.0	
Lead/Lag	Lead	Lead		Lead	Lead		Lag	Lag		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.6	2.6		2.6	2.6		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0	deneterative de service	0.0	0.0		0.0	0.0		0.0	0.0	to the base of spind
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)	an a	en de la construir de la const Construir de la construir de la Construir de la construir de la		an an an an the state of the st							un on or or other states and	-91 - 93 - 94 - 94 - 94 - 94 - 94 - 94 - 94
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)			, autorene eterarialitet	un de la composition								aannaan Sarriy
v/c Ratio		0.81			0.43			0.81				
Control Delay	<u>-</u>	27.2		e a sere e recentionel	17.2		a na sana na manda ka si Wa	26.5			e na ser e décidentées	a na serie da Marte I

AM Peak Full Bridge Closure 02/27/2020 Baseline EAM

Lanes, Volumes, Timings 1: Diamond Hill Rd (RI 114) & Nate Whipple Hwy (RI 120)

03/22/2020

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0,0			0.0	9 S S S		0.0			6.98.40.23	
Total Delay		27.2			17.2			26.5				
Queue Length 50th (ft)		161			71			134				
Queue Length 95th (ft)		#424			166			196				
Internal Link Dist (ft)		1774			4082			1512			374	
Turn Bay Length (ft)												
Base Capacity (vph)		770			704			1183				
Starvation Cap Reductn	nen versen bester versteren socialisitet	0			0			0			an an general an an	ATTANTING AND A
Spillback Cap Reductn		0			0			0				
Storage Cap Reductn		0	wa na menang kana kana kana		0	-		0				
Reduced v/c Ratio		0.81			0.43			0.39				
Intersection Summary												
Area Type:	Other											
Cycle Length: 87	a Talatan kara	THE STREET	All	Nell'Astronomica est	66999030300309030303	al ann an Air ann an Air		de destructura en estes		alle han ei ean ean an	and the product of the second	675019.000.0009.000 #
Actuated Cycle Length: 60.	1											
Natural Cycle: 50					11.14.14.14.14.14.14.14.14.14.14.14.14.1		an a		1999 (1999 (1999 (1999 - 1999 - 1999) 1999 (1999 (1999 (1999 - 1999 - 1999)	//////////////////////////////////////		
Control Type: Actuated-Unc	coordinated											
# 95th percentile volume	exceeds cap	pacity, que	eue may l	be longer	ſ.		····					
Queue shown is maximu	um after two	cycles.										
Splits and Phases: 1: Dia	amond Hill R	td <mark>(RI 114</mark> ≀) & Nate '	Whipple I	Hwy (RI 1	20)						

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29.s	58.s

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	5	*	\	\mathbf{X}	ĸ	<		
Movement	WBL	WBR	SEL	SET	NWT	NWR		de a
Lane Configurations	۲¥		ሻ	*	. †	7		
Traffic Volume (vph)	64	668	524	312	418	73		
Future Volume (vph)	64	668	524	312	418	73		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Lane Width	13	13	11	13	12	12		
Total Lost time (s)	4.0		4.0	5.0	5.0	5.0		
Lane Util. Factor	1.00	energen en en eren Eren en eren eren eren eren eren eren er	1.00	1.00	1.00	1.00		
Frt	0.88		1.00	1,00 `	1.00	0.85		
Flt Protected	0.99		0.95	1.00	1.00	1.00	nan dependent	A1922-244
Satd, Flow (prot)	1669		1662	1870	1827	1553		
Fit Permitted	0.99	ine (19 med 19 den 1993)	0,95	1,00	1,00	1.00	9 periodi antico de la construcción de la construcción de la construcción de la construcción de la construcción El construcción de la construcción d	
Satd. Flow (perm)	1669		1662	1870	1827	1553		
Peak-hour factor. PHF	0.68	0.91	0.58	0,70	0.71	0.58		
Adi Flow (vph)	94	734	903	446	589	126		
RTOR Reduction (vph)	321	0	0	0	0	49	na da antica da c	80054945
ane Group Flow (vph)	507	Ō	903	446	589	77		
Heavy Vehicles (%)	3%	3%	5%	5%	4%	4%		
Turn Type	Prof		Prot	NA	NA	Prot		
Protected Phases	3	94.490.6000.990	2	12	1	1	999069906	contraria
Permitted Phases		<u>ansi asa</u>						
Actuated Green, G (s)	16.1	en son constants	11.1	42.1	26.0	26.0	ad the Cold	Stillinger:
Effective Green (a (s)	16.1		111	42.1	26.0	26.0		
Actuated g/C Ratio	0.24		0.17	0.64	0.39	0.39	<u> 1997</u> 1997	01044404
Clearance Time (s)	4.0		4 0		50	50		
Vehicle Extension (s)	2.6	90000000000000000000000000000000000000	2.6		2.6	2.6	2557055722	eegeene
Lane Grn Can (vnh)	405		278	1189	717	609		
v/s Ratio Prot	-100 - በ ዓበ		<u>دا 54</u>	n 94	cfi 32	0.05		3/1839-4
v/s Ratio Perm	00.00			V. L T	00.02	0.00		
v/c Ratio	1 25		3 25	በ ጓጸ	ሰ 82	0.13		<u>Negeo</u>
Liniform Delay, d1	75 1		0.20 97.6	5.00	18.0	12.8		
Progression Eactor	40.1 1 በበ		1 NN	0,0 1 00	1 00	1.00	195494924	000993
Incremental Delay, d2	132.4		1021.0	0.2	7.4	01		
Dolay (e)	157 A		1021.0	5.Q	25.4	12.9		
Level of Service	101. 4 E	Participan de Chico	1040.0 F	υ.υ	20.7 C	12.0 R		
Approach Delay (s)	157 <i>A</i>			703.8	23.2	D		
Approach LOS	107.4 C			700.0 E	23.2			
Appluauli LOO	F			ani	V			antein.
Intersection Summary					a distante de la compañía de la comp			
HCM 2000 Control Delay			379.1	H	CM 2000	Level of Servic	e	
HCM 2000 Volume to Cap	acity ratio		1.46			e na si pangan na sangan ka si pangan sa sa si si pangan sa sa sa		
Actuated Cycle Length (s)			66.2	S	um of lost	t time (s)		
Intersection Capacity Utiliz	zation		106.7%	IC	CU Level o	of Service		an manag
Analysis Period (min)			15		e na serie de la com			

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Lane Group	WBL	WBR	SEL	SET	NWT	NWR	
Lane Configurations	Ŵ		ሻ	*	¥	7	
Traffic Volume (vph)	64	668	524	312	418	73	
Future Volume (vph)	64	668	524	<u>312</u>	418	73	
Ideal Flow (vobol)	1900	1900	1900	1900	1900	1900	
Lane Width (ff)	13	13	11	13	12	12	
Grade (%)	0%			0%	0%		
Storage Length (ft)	<u>л</u> е Л	ланананан П	ĥ		· · · · · · · · · · · · · · · · · · ·	80	
Storage Lanes	1	Ň	Ť			1	
Taper Length (ft)	1 25		25				
Right Turn on Red	40	Voc	20			Yoe	
ink Speed (mph)	5U	1 63		25	35		
Link Opecu (inpi)	00			281	2220		
Link Distance (n) Travel Time (a)	2040 52 /			7 /	12 1		
Confl. Dodo (#/br)	00.4			4.1	40,4		
Confi, Peus, (#/III)							
Jonii. Bikes (#/ni/) Dala li la seconda	0.00	A	0 50	0.70	0.74	0.50	
Peak Hour Factor	0,08	0.91	0.08	4001/	U.71	400%	
Growin Factor	100%	100%	100%	100%	100%	100%	
Heavy venicies (%)	- აზ	3%	°0%	5%	4%	4%	
Bus Blockages (#/hr)	U	U	U	U	<u> </u>	U	
Parking (#/hr)				~~/	~~/		
Mid-Block Traffic (%)	0%	5059459946994699		0%	0%		
Shared Lane Traffic (%)							
Lane Group Flow (vph)	828	0	903	446	589	126	
Turn Type	Prot		Prot	NA	NA	Prot	
Protected Phases	3		2	12	1 ::::::::::::::::::::::::::::::::::::	1	
Permitted Phases						-6 A - 6 - 6	
Detector Phase	3	august and the stand start	2	12	1	1	
Switch Phase						133 (S <u>1</u> 334)3 (
Minimum Initial (s)	10.0		5.0		10.0	10.0	
Minimum Split (s)	14.0		9.0		15.0	15.0	
Total Split (s)	20.0		15.0		35.0	35.0	
Total Split (%)	28.6%		21.4%		50.0%	50.0%	
Maximum Green (s)	16.0		11.0		30.0	30.0	
Yellow Time (s)	3.0		3.0		4,0	4.0	
All-Red Time (s)	1.0		1.0		1.0	1.0	
Lost Time Adjust (s)	0.0		0,0		0.0	0.0	
Total Lost Time (s)	4.0		4.0		5.0	5.0	
Lead/Lag			Lag		Lead	Lead	
Lead-Lag Optimize?			Yes		Yes	Yes	
Vehicle Extension (s)	2.6		2.6		2.6	2,6	
Minimum Gap (s)	3.0	se an e natrice (1966) States (1966)	3.0		3.0	3.0	e a cara e se ante e transmissión de la característica de 1997 e de la constituíe de 1997 Alteria de 1997 Alter A característica de la característica de la característica de 1997 e de la característica de 1997 Alteria de 19
Time Before Reduce (s)	0.0		0.0		0.0	0.0	
Time To Reduce (s)	0.0		0.0		0.0	0.0	
Recall Mode	None		None		Min	Min	
Walk Time (s)				<u>esta anti anti</u>			
Flash Dont Walk (e)							
Podeetrian Calle (#/hr)							
vio Patio	1 1 /		3 26	0.38	በ	n 10	
no Nailo Control Dolou	05 5		1020 F	0,00 7 0	20.02 20 N	د ۲. د ۲	
Control Delay	90.0		1009.0	1.4	20.9	0.0	

AM Peak Full Bridge Closure 02/27/2020 Baseline EAM

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Lane Group	WBL	WBR SEL	SET	NWT	NWR			
Queue Delay	0.0	0.0	0.0	0.0	0.0			
Total Delay	95.5	1039.5	7.2	28.9	6.3			
Queue Length 50th (ft)	~277	~705	77	206	11			
Queue Length 95th (ft)	#247	#549	87	222	17			
Internal Link Dist (ft)	2268		301	2150				
Turn Bay Length (ft)					80			
Base Capacity (vph)	726	277	1134	833	751			
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	1.14	3.26	0.39	0.71	0.17			

Intersection Summary

Area Type:

Cycle Length: 70

Actuated Cycle Length: 66.2

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

~ Volume exceeds capacity, queue is theoretically infinite.

Other

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: 6: Mendon Rd (RI 122) & Nate Whipple Hwy (RI 120)

X _{Ø1}	W 102	K Ø3
25 <i>c</i>	15.8	20 s

HCM Signalized Intersection Capacity Analysis 7: Plaza Driveway/West Wrentham Rd & Mendon Rd (RI 122)

03/22/2020

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Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		44			4			4		۴	4î	
Traffic Volume (vph)	3	1	6	453	0	150	95	100	13	7	292	566
Future Volume (vph)	3	1	6	453	0	150	95	100	13	7	292	566
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	16	16	16	12	12	12	14	14	12	11	14	14
Total Lost time (s)		4.0			4.0			5,0		5.0	5.0	
Lane Util. Factor		1.00			1.00			1.00		1.00	1.00	
Frt		0.94			0.96			0.98		1.00	0.90	
Flt Protected		0.98			0.96			0.98		0.95	1.00	
Satd. Flow (prot)		1986			1700			1897		1694	1772	
FIt Permitted		0.90			0.76			0.15		0.60	1.00	
Satd. Flow (perm)		1835			1347			287		1079	1772	
Peak-hour factor, PHF	0.25	0.25	0.50	0.84	0.92	0.79	0.81	0.79	0.41	0.44	0.87	0.86
Adj. Flow (vph)	12	4	12	539	0	190	117	127	32	16	336	658
RTOR Reduction (vph)	0	8	0	0	21	0	0	7	0	0	101	0
Lane Group Flow (vph)	0	20	0	0	708	0	0	269	0	16	893	0
Heavy Vehicles (%)	0%	0%	0%	4%	4%	4%	3%	3%	3%	3%	3%	3%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)		23.0			23.0			38.0		38.0	38.0	
Effective Green, g (s)		23.0			23.0	2 4 4 4 4		38.0		38.0	38.0	
Actuated g/C Ratio	100- M 1	0.33			0.33			0.54		0.54	0.54	
Clearance Time (s)		4.0			4.0			5.0		5.0	5.0	
Vehicle Extension (s)		2.6			2.6			2.8		2.8	2.8	
Lane Grp Cap (vph)		602			442			155		585	961	
v/s Ratio Prot											0.50	
v/s Ratio Perm		0.01			c0.53			c0.94		0.01		
v/c Ratio		0.03			1.60			1.74		0.03	0.93	
Uniform Delay, d1		16.0			23.5			16.0		7.4	14.8	
Progression Factor		1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2		0,0			281.4			356.8		0.0	14.7	
Delay (s)		16.0			304.9			372.8		7.4	29.5	
Level of Service		В	9 8 S S		F.		64964	F.		A	C	
Approach Delay (s)		16.0			304.9			372.8			29.2	
Approach LOS		В		8.44.8.4	F			F			С	
Intersection Summary							1			s - di -		
HCM 2000 Control Delay			173.8	H	CM 2000	Level of S	Service		F			
HCM 2000 Volume to Capacity	ratio	to an an star way a sub-star and a sub-	1.68				100 00 100 00 100 00 100	والمعارية والمعارية والمعارية والمعارية والمعار	Ayr co crywn co ann ang tra			
Actuated Cycle Length (s)			70,0	Sı	um of lost	time (s)			9.0			
Intersection Capacity Utilization	1	•	114.0%	IC	U Level o	of Service			Н			
Analysis Period (min)			15									

Lanes, Volumes, Ti	mings		
7: Plaza Driveway/	Vest Wrentham Rd &	& Mendon Rd ((RI 122)

03/22/2020

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Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		44			\$			4		ኘ	Þ	
Traffic Volume (vph)	3	1	6	453	0	150	95	100	13	7	292	566
Future Volume (vph)	3	1	6	453	0	150	95	100	13	7	292	566
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	12	12	12	14	14	12	11	14	14
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (ft)	25	599, 1999, 2011, Ave. 19		25			25			25	8 - 12 D - 17 - 17 - 17 - 17 - 17 - 17 - 17 -	
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)	a. 1999-1997 1997 1997 1997 1997 1997 1997	25			35			35			35	
Link Distance (ft)		209			662			1525			777	
Travel Time (s)		5.7	***************		12.9			29.7	*********	····· ··· · · · · · · · · · · · · · ·	15.1	
Confl, Peds. (#/hr)												
Confl. Bikes (#/hr)		· · · · · · · · · · · · · · · · · · ·	- 111	-1	en en de la constant i		an analy of the sector	198 - Constantina (m. 1997). 1981 - Constantina (m. 1997).	ele nere l'ignere prècese, mue	ni kuta ng mala lana. Na		n en felor en feloren g
Peak Hour Factor	0.25	0.25	0.50	0.84	0.92	0,79	0.81	0.79	0.41	0.44	0.87	0.86
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	4%	4%	4%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)					8.5.5.6.							
Mid-Block Traffic (%)		0%	veree een die die die	799455409-9446-494 1	0%			0%		*********	0%	(999) (9 <u>11</u> 99 (999) 3
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	28	0	0	729	0	0	276	0	16	994	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	ŇA	
Protected Phases	and a state of the second s	2	aret e vices (diriter en	serre in exercise reserve	2	de cara ble a de contre e	u debeted totel eu eret	1	1975) dire direkter Destrum		1	a fisika ana fisika
Permitted Phases	2		1999 (SAN 2546)	2			1			1		
Detector Phase	2	2		2	2		1	1		1	1	***************************************
Switch Phase												
Minimum Initial (s)	10.0	10.0	19 <u>52</u> 192797979797979287975	10.0	10.0		10.0	10.0	99999999999999999999999999999999999999	10.0	10.0	**************************************
Minimum Split (s)	14.0	14.0		14.0	14.0		15.0	15.0		15.0	15.0	
Total Split (s)	27.0	27.0	ala 1995 yang ber	27.0	27.0	1(111.)11	43.0	43.0		43.0	43.0	11991119991919
Total Split (%)	38.6%	38.6%		38.6%	38.6%		61.4%	61.4%		61.4%	61.4%	
Maximum Green (s)	23.0	23.0		23.0	23.0	-960-676-9-6-660-9-9-6	38.0	38.0		38.0	38.0	tellitetelle verseta
Yellow Time (s)	3.0	3.0		3.0	3.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	6.0747777677677679
Lost Time Adjust (s)		0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)	no or kan de de kalende berelden	4.0			4.0			5.0		5.0	5.0	unu sosynatia
Lead/Lag	Lag	Lag		Lag	Lag		Lead	Lead		Lead	Lead	
Lead-Lag Optimize?	Yes	Yes	danan da kara da kuna	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.6	2.6		2.6	2.6		2.8	2.8		2.8	2.8	
Minimum Gap (s)	3.0	3.0	na na balancia da bas	3.0	3.0		3.0	3.0		3.0	3.0	an an tha a start a
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0	a and states and states (0.0	0.0	,	0.0	0.0	non nan ta'n Nath A
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)	19. CONTRACTOR (1997)	aantaan IIN Taliil	1965 (1967) - ANGERSON (1967)	an na martina an a		a adama di seta 1939			, men on the second		anan-2009.2733	an an the thirt of the set
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												a a ser en estador de la compacta d La compacta de la comp
v/c Ratio		0.05			1.57			1.70		0.03	0.94	
Control Delay		11.9	na santa tati Mandali Ma		291.5	erete sonione albi		361.7	e e contra esta de la contra de l	7.7	29.5	

AM Peak Full Bridge Closure 02/27/2020 Baseline EAM

Lanes, Volumes, Timings 7: Plaza Driveway/West Wrentham Rd & Mendon Rd (RI 122)

03/22/2020

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Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWF
Queue Delay		0.0			0.0			0.0		0.0	0.0	
Total Delay		11.9		e a transfer at transfer and a state	291.5		و و و و و و و و و و و و و و و و و و و	361.7	August - August - Free August	7.7	29.5	and the sector of the
Queue Length 50th (ft)		5			~453			~178		3	298	
Queue Length 95th (ft)		3	outou anterezza.		#656			#202		5	#557	
Internal Link Dist (ft)		129			582			1445			697	
Turn Bay Length (ft)	contro artistication		3000000000000000									
Base Capacity (vph)		610			463			162		585	1063	
Starvation Cap Reductn		0			0		anna ann an ann an an an an an an an an	0		0	0	
Spillback Cap Reductn		0			0			0		0	0	
Storage Cap Reductn		0			() 			0		0	0	
Reduced v/c Ratio		0.05			1.57			1.70		0.03	0,94	
Intersection Summary								18 K. 1				
Area Type: O	other											
Cycle Length: 70												
Actuated Cycle Length: 70												
Natural Cycle: 100												
Control Type: Actuated-Unco	ordinated											
 Volume exceeds capacity 	, queue is	theoretica	ally infinite).								100000 10000 100000
Queue shown is maximum	after two	cycles.										
# 95th percentile volume ex	ceeds cap	acity, que	ue may b	e longer								uzancence.
Queue shown is maximum	n after two	cycles.										
Colite and Dhasper 7: Diazo		MAlast Mr	onthom E	d & Man	idon Dd (DI 100\						
	a Drivewa)	AAAGSE AAI	onutani P		iuon nu (i	122	1					
Nø1							₩ø2					
43.5							27 s					

03/22/2020

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		<u>4</u> 4			4.			4			44	
Traffic Volume (vph)	0	7	188	348	79	7	156	106	547	2	50	12
Future Volume (vph)	0	7	188	348	79	7	156	106	547	2	50	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	13	13	13	13	13	13	13	11	11	11
Total Lost time (s)		5.0			5.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1,00			1.00	
Frt		0.87			1.00			0,91			0.97	
Fit Protected		1.00			0.96			0.99			1.00	
Satd. Flow (prot)		1692			1811			1768			1736	
Flt Permitted		1.00		منتقرف متعرضة متنار فارتدر ومتارين ا	0.60		ور هر دورده در در به رووه رو رو رو .	0.90			0.99	
Satd. Flow (perm)		1692			1135			1616			1717	
Peak-hour factor, PHF	0.78	0.63	0.75	0.73	0.75	0.71	0.49	0.62	0.56	0.71	0.63	0.43
Adj. Flow (vph)	0	11	251	477	105	10	318	171	977	3	79	28
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	262	0	0	591	0	0	1466	0	0	110	0
Heavy Vehicles (%)	1%	1%	1%	4%	4%	4%	0%	0%	0%	2%	2%	2%
Turn Type		NA		Perm	NA		Perm	NA		Perm	NA	808081
Protected Phases	e en oue-en avenne (och den e	1			1	ales komo como mome		2			2	an a
Permitted Phases	1			1			2			2		
Actuated Green, G (s)		30.0			30.0			21.0			21.0	FREE COLOR
Effective Green, g (s)		30.0			30.0			21.0			21.0	
Actuated g/C Ratio		0.50		18 <u>0988</u> 4056908	0.50			0.35			0.35	
Clearance Time (s)		5.0			5.0			4.0			4.0	
		2,8			2.8			2.6			2.6	sis received and the second
Lane Grp Cap (vph)		846			567			565			600	
V/s Ratio Prot		0.15						~ ~ ~ ~			0 00	5000000
V/s Ratio Perm		0.04			CU.52			CU.91			0.06	
V/C Ratio		0.31			1.04			2,59			0.18	57055519
Drogroopion Easter		1.00			10.0			1.00			10.0	
Incremental Delay, d2		1.00			1.00			702.8			1.00	
Delay (s)		0.Z Q 1			43.5 64 3			7/23			0.1 13.7	80.80.40 d
Level of Service		Δ			04.0 F			172.0 F			R	
Approach Delay (s)		9 1			64 3			742 3			137	
Approach LOS		A			E			F			B	
Intersection Summary												
HCM 2000 Control Delay			465 1	Н	CM 2000	Level of S	Service		F			
HCM 2000 Volume to Capac	city ratio		1.68				- 	9488008899999 9				seed
Actuated Cycle Length (s)			60.0	Si	um of lost	time (s)			9.0			
Intersection Capacity Utilizat	lion	n e 1999 (1995) (1992) (1992) 1997 (1995) (1992) (1992) (1992) (1992) (1992) (1992) (1992) (1992) (1992) (1992) (1992) (1992) (1992) (1992) (1	102.0%	lC	U Level o	of Service	a		G	er en		soucevers.
Analysis Period (min)			15				50000					

Lanes, Volumes, Timings 17: West Wrentham Rd & Pine Swamp Rd (RI 114)

03/22/2020

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		¢\$+						4				
Traffic Volume (vph)	0	7	188	348	79	7	156	106	547	2	50	12
Future Volume (vph)	0	 7	188	348	79	7	156	106	547	2	50	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	13	13	13	13	13	13	13	13	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0	1999) - 1999) - 1999) 1999 - 1999 - 1997) 1999 - 1997 - 1997	0	0	an a	0	0		0	0	a na sela contra contra de la con	0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25	oko kalenda kerkelek		25			25	an de service de la composition de la c	-99779-99279-992-9927-9927-9927-992	25	1997 - 1997 -	P-01-0220070000000
Right Turn on Red			No			Yes			No			No
Link Speed (mph)		30			40	1993 AND 1994 AND 1993 AND 4	14.1-4.19.19.19.19.49.49.49.49.19.19	25			25	200700.00004
Link Distance (ft)		3320			7947			1008			920	
Travel Time (s)	62 H PHE ALCO VIA 194	75.5		an padai kanyareheri	135.5			27.5			25.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)	1997 - 1997 -	1999 - Yoshi Maraka (1993) 1999 - Yoshi Maraka (1993)			an gana an an ta						and frankrik i nashiri di	
Peak Hour Factor	0.78	0.63	0.75	0.73	0.75	0.71	0.49	0.62	0.56	0.71	0.63	0.43
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	1%	4%	4%	4%	0%	0%	0%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%	y regige for the set	andriche a chura sa active.	0%			0%	992903999999999
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	262	0	0	592	0	0	1466	0	0	110	0
Turn Type		NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases			a fara ta seconda a fara a fara	ener beselver and so so a c	1		na fashtentinesena	2			2	4099294774279244 4
Permitted Phases	1			1	s in orde		2			2		
Detector Phase	1	1		1	1	2 Mart 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	2	2		2	2	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	15.0	15.0		15.0	15.0		9.0	9.0		9.0	9.0	
Total Split (s)	35.0	35.0		35.0	35.0		25.0	25.0		25.0	25.0	
Total Split (%)	58.3%	58.3%		58,3%	58.3%		41.7%	41.7%		41.7%	41.7%	
Maximum Green (s)	30.0	30.0	an a	30.0	30.0		21.0	21.0		21.0	21.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		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	
Lost Time Adjust (s)		0.0	S. S. S. S.		0.0			0.0	9 - S - S		0.0	
Total Lost Time (s)		5.0			5.0			4.0			4.0	
Lead/Lag	Lead	Lead		Lead	Lead		Lag	Lag		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2,8	2.8		2.8	2.8		2.6	2.6		2.6	2.6	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.31			1.04			2.59			0.18	
Control Delay		10.2			68.2			739.9			14.6	

AM Peak Full Bridge Closure 02/27/2020 Baseline EAM

Lanes, Volumes, Timings 17: West Wrentham Rd & Pine Swamp Rd (RI 114)

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03/22/2020

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0	6.00.00		0.0	8 (S. 40 S)		0.0			0.0	
Total Delay		10.2			68.2		40 0 1 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	739.9			14.6	and court of the state
Queue Length 50th (ft)		52			~240			~921			27	
Queue Length 95th (ft)		60			#308			#722			39	
Internal Link Dist (ft)		3240			7867	이 같은 생각한		928			840	
Turn Bay Length (ft)					en ander an strander (1997).	ور و د در در در در کار در دارد	have a state of the state of the	en e				
Base Capacity (vph)		846		Gillion Child	569	63333		565	5 (S - S - S)		600	
Starvation Cap Reductn	Alexandra and Albert Andre	0		weiner an eine Arte	0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0	an a		0			0		-	0	
Reduced v/c Ratio		0.31			1.04			2.59			0.18	
Intersection Summary												
Area Type: Ot	her											
Cycle Length: 60												
Actuated Cycle Length: 60												
Natural Cycle: 150					and factor more and area	*****						
Control Type: Actuated-Uncoo	rdinated											
~ Volume exceeds capacity,	queue is	theoretic	ally infinit	e.								

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: 17: West Wrentham Rd & Pine Swamp Rd (RI 114)

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35.5	25 s

HCM Unsignalized Intersection Capacity Analysis 20: Diamond Hill Rd (RI 114) & Pine Swamp Rd (RI 114)/Wrentham Rd (RI 121)

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03/22/2020

	\rightarrow	\rightarrow	×.	•	1	1
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	*	7	ሻ	^	ሻ	7
Traffic Volume (veh/h)	659	17	22	349	34	112
Future Volume (Veh/h)	659	17	22	349	34	112
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	and and a state of the state of t
Peak Hour Factor	0.73	0.60	0.86	0.60	0.76	0.91
Houriy now rate (vpn)	903	28	26	582	45	123
recestilians						
Walking Speed (ff/s)						
Percent Blockage						
Right turn flare (veh)						10
Median type	None	1949-1950) 948(8) 6(8 1	11 CARLEN (C. C. C	None	***************	
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			903		1537	903
vC1, stage 1 conf vol						
vC2, stage 2 conf vol						
VCu, unblocked vol			903		1537	903
tC, single (s)			4.1		6.4	6,2
te (e)			• • •		25	2.2
n (s)			2.2 07		0.0 63	3.3 62
cM canacity (veh/h)			753		122	334
Direction Long #	ED 4	EDO	14/0 4			
Volume Total	0U3	<u>ግር በ 7</u> 28	1 COVV 26	580 580	169	
Volume Left	303 N	20 N	20 26	00Z N	100 25	
Volume Right	v O	28	е <u>ч</u> е О	О	123	
cSH	1700	1700	753	1700	457	
Volume to Capacity	0.53	0.02	0.03	0.34	0.37	
Queue Length 95th (ft)	0	0	3	0	42	
Control Delay (s)	0.0	0.0	10.0	0.0	29.6	
Lane LOS			A		D	
Approach Delay (s)	0.0	rock Private Construction	0.4		29.6	
Approach LOS					D	
Intersection Summary						
Average Delay			3,1			
Intersection Capacity Utilizat	lion	******************	48.3%	ICI	U Level o	f Service
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis 1: Diamond Hill Rd (RI 114) & Nate Whipple Hwy (RI 120)

03/22/2020

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		¢\$			4 2			\$			ф	
Traffic Volume (vph)	0	419	217	236	552	0	260	0	120	0	0	0
Future Volume (vph)	0	419	217	236	552	0	260	0	120	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	13	13	13	13	12	12	12	12	12	12
Total Lost time (s)		4.0			4.0			5.0				
Lane Util. Factor		1.00			1.00			1.00				
Frt		0.96			1.00			0.95		18187 SA 4		
Flt Protected		1.00			0.98			0.97				
Satd. Flow (prot)		1662			1823			1670				
Flt Permitted		1.00			0.09		via il dana del antes	0.80		un na star d'Arra Parantia Re		
Satd. Flow (perm)		1662			159			1384				
Peak-hour factor, PHF	0.74	0.70	0.77	0.70	0.79	0.86	0.88	0.69	0.77	0.69	0.73	0.63
Adj. Flow (vph)	0	599	282	337	699	0	295	0	156	0	0	0
RTOR Reduction (vph)	0	14	0	0	0	0	0	27	0	0	0	0
Lane Group Flow (vph)	0	867	0	0	1036	0	0	424	0	0	0	0
Heavy Vehicles (%)	13%	13%	13%	<u> </u>	6%	6%	<u> </u>	5%	5%	6%	6%	6%
Turn Type		ŇA		Perm	NA		Perm	NA				
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)		35.5			35.5			26.6				
Effective Green, g (s)		35.5			35.5			26,6				
Actuated g/C Ratio	Seconda de color Marcel de	0.50		Marana kachupatan	0.50	eran anger	100/11/12/00/12/12	0.37	ilen in Betreel in State			
Clearance Time (s)		4.0			4.0			5.0				
Vehicle Extension (s)		2.6			2.6			3.0				
Lane Grp Cap (vph)		829			79			517				
v/s Ratio Prot		0.52			0 50					Tejarosta alterat		50958-594
v/s Ratio Perm					C6.50			c0.31				
V/C Ratio	CONTRACTORIA	1.05			13.11			0.82	STERSON CONTROL		PERMINIST	anawawa
Uniform Delay, d1		17.8			17.8			20.1				
Progression Factor		1,00						1,00				
Incremental Delay, dZ		44.1 64 0			0470.0 6402.6			10.1				
Delay (S)		01.9			0490.0 E			ა ს. 2				
Level OI Selvice		61 O			5/02 C			30.0			<u>۸</u> ۸	
Approach LOS		01.9 E			0490.0 E			JU.Z			0.0 A	
		F						U.			7	
Intersection Summary												
HCM 2000 Control Delay			2432.2	H	CM 2000	Level of S	Service		F			
HCM 2000 Volume to Capac	ity ratio	د مد دوم مر مدمر درمی می و درستانی	7.81	والمتعادية		and the second second second second			والمعادية ومعروف والمراجع			
Actuated Cycle Length (s)			71.1	S	um of lost	time (s)			9.0			
Intersection Capacity Utilizati Analysis Period (min)	ion		110.0% 15	IC	CU Level o	of Service			Н			

Lanes, Volumes, Tir	nings			
1: Diamond Hill Rd (RI 114) 8	& Nate Whip	ple Hwy	(RI 120)

03/22/2020

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		\$			\$			4			44	
Traffic Volume (vph)	0	419	217	236	552	0	260	0	120	0	0	0
Future Volume (vph)	0	419	217	236	552	0	260	0	120	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	13	13	13	13	13	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0	an tha an th	0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		1854			4162			1592			454	
Travel Time (s)	taria tana kata mitaka di	31.6	ter for the second s	4	70.9			36.2			10.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)	an ta		6699686666666666	1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	3978.8 POPPA 78887	******************	2006 CONTRACTOR		2010-00-00-00-00-00-00-00-00-00-00-00-00-			1946 1447 ANN 1863 ANN
Peak Hour Factor	0.74	0.70	0.77	0.70	0.79	0.86	0.88	0.69	0.77	0.69	0.73	0.63
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	13%	13%	13%	6%	6%	6%	5%	5%	5%	6%	6%	6%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	Ō	0
Parking (#/hr)												
Mid-Block Traffic (%)	an a shekara na san san sa	0%	nder hann seiter sind seiter. T	n (een gebeur die gebeur die see die s	0%	(ended) - State State States and		0%	hend (that share el al sol	i filmandin (meneri yang ang ang	0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	881	0	0	1036	0	0	451	0	0	0	0
Turn Type		NA		Perm	NA		Perm	NA				
Protected Phases	anga masa kadan		9907 ##677608 CMCF	and a state of the s	aaaa 1	na kultur (or en la seconda se Seconda seconda		2	an a	9 19 19 19 19 19 19 19 19 19 19 19 19 19	2	eline and a second s
Permitted Phases	1			1			2			2		
Detector Phase	1	1	realanda anna an Anna Anna	1	1	-1944-64,4199-04024	2	2	uniu ana distriku tubaksi	2	2	or on the second of the second
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	2427-2428-24228-244
Minimum Solit (s)	14.0	14.0		14.0	14.0		15.0	15.0	S. 19, 15, 53	15.0	15.0	
Total Split (s)	39.0	39.0	eren serena er	39.0	39.0	an a	58.0	58.0	e e a concentration	58.0	58,0	-2-12-22-22-22
Total Split (%)	40.2%	40.2%		40.2%	40.2%		59,8%	59.8%		59.8%	59.8%	
Maximum Green (s)	35.0	35.0		35.0	35.0		53.0	53.0	81.011111_01_01	53.0	53.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	1997) 1997-1997 (MARCON) 1997) 1997) 1997-1997 (MARCON) 1997)	1.0	1.0		1.0	1.0		1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)	ale of each of each of the first of the	4.0			4.0	an a super en an	1999 - 1997 -	5.0			5.0	
Lead/Lag	Lead	Lead		Lead	Lead		Lag	Lag		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	****/****/1.211*1.07*1.	Yes	Yes		Yes	Yes	*******	Yes	Yes	2012 - 2012 - 2012 - 2012 - 2012 - 2012 - 2012 - 2012 - 2012 - 2012 - 2012 - 2012 - 2012 - 2012 - 2012 - 2012 -
Vehicle Extension (s)	2.6	2.6		2.6	2.6		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3,0		3.0	3.0	
Time Before Reduce (s)	0,0	0.0		0,0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0	1997 - 1974 - 1965 - 1997 -	0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	None	None	3 3 3 A	None	None		Min	Min		Min	Min	
Walk Time (s)	eren Geraldek				en er en	en erkrinnen fra 1953	,					
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)					5 . 13 . II.A. SUA (1993)		a an					an, a la constanti
v/c Ratio		1.05			13.11			0.83				
Control Delay		65.7	a a caracterizative de la construitative de la construitative de la construitative de la construitative de la c		5480.1			31.7				

PM Peak Full Bridge Closure 02/27/2020 Baseline EAM

Synchro 9 Report Page 1

Lanes, Volumes, Timings 1: Diamond Hill Rd (RI 114) & Nate Whipple Hwy (RI 120)

03/22/2020

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0			0.0			0.0				
Total Delay		65.7			5480.1			31.7				
Queue Length 50th (ft)		~413			~903			157				
Queue Length 95th (ft)		#548			#1189			167				
Internal Link Dist (ft)		1774			4082		Se Brank	1512			374	
Turn Bay Length (ft)					and the state of the	mentangan anti darapata		an name wan generatin na mwanya.				-
Base Capacity (vph)		843			79			1055				
Starvation Cap Reductn	وروا و برور و و و و و و و و و و و و و و و و	0			0			0				
Spillback Cap Reductn		0			0			0				
Storage Cap Reductn		0			0			0				
Reduced v/c Ratio		1.05			13.11			0.43				
Intersection Summary												
Area Type: Oth	ner											
Cycle Length: 97	2899-23-04-5-64-5		- 1990 (1990) (1990) (1990) 				- 1964 - 1945 - 1945 - 1945 - 1945 - 1945 - 1945 - 1945 - 1945 - 1945 - 1945 - 1945 - 1945 - 1945 - 1945 - 194 - 1946 - 1946 - 1946 - 1946 - 1946 - 1946 - 1946 - 1946 - 1946 - 1946 - 1946 - 1946 - 1946 - 1946 - 1946 - 1946			1	······································	
Actuated Cycle Length: 71.2												
Natural Cycle: 140												
Control Type: Actuated-Uncoor	rdinated						- Ci Ci (ci (8000 <u>-</u> 800				
~ Volume exceeds capacity,	queue is	theoretic	ally infinit	te.								
Queue shown is maximum a	after two	cycles.										
# 95th percentile volume excr	eeds car	pacity, qu	eue may	be longe	r.							
Queue shown is maximum a	after two	cycles.										
Onthe and Disease 1. Diama		14/DI 444	1) Q Mata	Whinnlo	Huar /D14	20)						
Splits and Phases: 1. Diamo	nu mili K	<u>.u (RI 114</u>) & Nate		nwy (rti i	20)						

	1 1 g2
10 c	58.5

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Movement	WBL	WBR	SEL	SET	NWT	NWR			
Lane Configurations	M		۲	∱	≜	7			
Traffic Volume (vph)	88	546	480	434	411	73			
Future Volume (vph)	88	546	480	434	411	73			
deal Flow (vphpl)	1900	1900	1900	1900	1900	1900			
Lane Width	13	13	11	13	12	12			
Total Lost time (s)	4.0		4.0	5.0	5.0	5.0			
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00			
Fr t	0.88		1.00	1.00	1.00	0.85			
Flt Protected	0.99		0.95	1.00	1.00	1.00			
Satd. Flow (prot)	1700		1728	1944	1881	1599			
It Permitted	0.99	urenteer to "De profes nue	0.95	1.00	1.00	1.00			
Satd. Flow (perm)	1700		1728	1944	1881	1599			
Peak-hour factor. PHF	0.99	0.72	0.93	0.94	0.86	0.79		·	
Adi Flow (vph)	89	758	516	462	478	92			
RTOR Reduction (vph)	322	чина политика О	0	0	0	38		**********************	erstrot over of the
ane Group Flow (vph)	525	Ō	516	462	478	54			
leavy Vehicles (%)	1%	1%	1%	1%	1%	1%			
Turn Type	Prot		Prot	NA	NA	Prof			
Protected Phases	3	and have a second second	2	12	·•• 1	1			1999-1997 (Station of St
Permitted Phases			-						
Actuated Green G (s)	22.2	1940-009 (1960-009) 1940-009 (1960-009)	16.2	47 7	26.5	26.5			888888888888888
Effective Green (a (s)	22.2		16.2	477	26.5	26.5			
Actuated o/C Ratio	0.28		0.21	0.61	0.34	0.34			1999 1999 1999 1999 1999 1999 1999 199
Clearance Time (s)	4.0		4.0		5.0	5.0			
/ehicle Extension (s)	2.6	hallan da an	2.6		2.6	2.6			
ane Grn Can (vnh)	484		359	1190	639	543			
uls Ratio Prot	-იი 31	Selection and	c0 30	0 24	c0 25	0.03		generation (no 1988 and a station and a stati	
ils Ratio Perm	00.01		00.00	0.21	00.20	0.00			
//c Ratio	1 08	99.929.939.939.93	1 44	0.39	0 75	0.10			
Iniform Delay, d1	27.9		30.9	77	227	17.6			
Progression Factor	1 00	en e	1 00	1 00	1 00	1.00		BY CARACTURE CONTROL OF	
ncremental Delay d2	65.4		212.1	0.2	4 6	0.1			
Delav (s)	93.3		242.9	7.8	27.3	17.6	energeten son son son son son son son son son so		, na sana na sana sa
evel of Service	F		F	Â	Č.	B			
Approach Delay (s)	93.3	anasan (1993) 		131.9	25.8	en en stat an stat stat stat st			
Approach LOS	F			F	Ū.				
ntersection Summary									
HCM 2000 Control Delay			93.0	H	ICM 2000	Level of Service		F	
HCM 2000 Volume to Capa	citv ratio		1.03		ः 	ana manananan Tatabén Tatabén Tatabén Salah S	en de la compañía de		
Actuated Cycle Lenoth (s)			77.9	S	um of los	t time (s)		13.0	
Intersection Capacity Utiliza	ition		97.6%		CU Level (of Service	n di mangangkan di kangkan di mangkan di kangkan di kangkan di kangkan di kangkan di kangkan di kangkan di kang	F	a yana akara kata kata kata kata kata kata ka
Analysis Period (min)			15						

	s.	₩	\searrow	X	×	4	
Lane Group	WBL	WBR	SEL	SET	NWT	NWR	
Lane Configurations	Ŵ		ኣ	₩	۸	7	
Traffic Volume (vph)	. 88	546	480	434	411	73	
Future Volume (vph)	88	546	480	434	411	73	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	13	13	11	13	12	12	
Grade (%)	0%			0%	0%		
Storage Length (ff)	0	0	0			80	a na pananana na pananana na mangala na panana na na na na na na na pananana na manana na manana manana na man Na na
Storage Lanes	1	0	1			1	
Taper Length (ff)	25	999 (900) 100 (900) (900) 1999 (900) 100 (900) (900)	25	9.03669069069066	and a state of states of	ere frederige foot ve	
Right Turn on Red		Yes				Yes	
Link Speed (mph)	30			35	35		
Link Distance (ff)	2348			381	2230		
Travel Time (s)	53.4			74	43.4		
Confl Peds (#/hr)							
Confl Bikes (#/hr)		Helioperio (1979)		ona istrativa	an sa an		
Peak Hour Factor	0 00	0.72	0 93	∩ 94	0.86	0 79	
Crowth Factor	100%	100%	100%	100%	100%	100%	
Hoow Vehicles (%)	10076	100 %	100 70	1%	1%	1%	
Rue Blockages (#/hr)	۰، ۱	۸ I A	ייי ה	ر ، ا	א ויייייי ה	1.70 N	
Das biockages (#/iii) Darking (ff/hr)	U C	v Na sin					
Mid Block Traffic (%)	በ%			በ%	ሰ%		
Charad Lana Traffic (%)	070			070	0.0		
Long Group Flow (vph)	8/17	٨	516	462	178	02	
Turn Turn	Drot	v	Prot	τυ <u>2</u> ΝΔ	NΔ	Prof	
Protected Phases	יוטנ א		ייין אינא ייי	12	איזענייייייי 1	1.19 1 . 1	
Dormitted Dhases	J		ے 1919 کا 19	14	I A Contraction		
Defector Desc	3		ິ ໂ	19	1 1	1	
Switch Dhoro	J		ل محمد المحمد الم	14	1 (************************************	1	
Minimum Initial (a)	10.0		ፍ በ		10.0	10.0	
Minimum Split (e)	1/ 0		0.0 0 N		10.0	10.0	
Total Split (a)	0.41 26 U		20 N		10.0 // N	14.0	
Total Split (8)	20.0	5.00.000	20.0		44.0	44.0	
Novimum Croop (o)	20,970 22 0		16.0		40.970 20 N	40.970 20 N	
Vollow Time (a)	2.0		2.0		10	10	
All Red Time (s)	ο.υ 1 Λ		0.0 1 0		4.0 1 O	4.0 1 N	
All-Reu Time (5)	יייו 1.0		1.0		1.V 0.0	1.0	
LUST TIME AUJUST (5)	0.0 / 0		0.0 1 A		υ.υ 5 Λ	0.0 הח	
Total Lost Time (S)	4.V		4.0		0.0 bool	0.0	
Lead Log Optimize?			Lay Voc		Voc	Voe	
Vehicle Extension (e)	0 C		26		26	0 R	
Minimum Con (a)	2.0 2 N		2.0 3 A		2.V 3 N	2,0 3 ()	
Time Defere Deduce (a)	ა. ს იი		0.0 0.0		0.0 0.0	0.0	
Time To Deduce (S)	0.0		0.0 0.0		0.0 0.0	0.0 0.0	
Pocell Mode	U.U Mone		U.U Nono		U.U Min	U.U Min	
Nolk Time (a)	NOIIE				INNI.	A A A A A A A A A A A A A A A A A A A	
Walk Hille (S)							
Fiden Done Walk (S)							
reuesilian Ualis (#/III)	1 05		1 7 2	0 / 0	0.75	0 1 A	
WU Mallu Control Dolor	50.1 20 0		0/2 0	0,40 0.4	0.1 J 20 J	0.10 Ω <i>Ι</i>	
UNITION DEIDY	02.0		24J.U	3.1	JU.Z	0,4	

PM Peak Full Bridge Closure 02/27/2020 Baseline EAM

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			•	*	•		
Lane Group	WBL WBR	SEL	SET	NWT	NWR		
Queue Delay	0.0	0.0	0.0	0.0	0.0		
Total Delay	62.0	243.0	9.1	30.2	8.4	 	
Queue Length 50th (ft)	~280	~344	105	200	11		
Queue Length 95th (ft)	#580	#626	157	280	32		
Internal Link Dist (ft)	2268		301	2150			
Turn Bay Length (ft)					80		
Base Capacity (vph)	806	357	1180	949	835		
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	1.05	1.45	0.39	0,50	0.11		
Intersection Summary							
Area Type:	Other						
Cycle Length: 90							

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Actuated Cycle Length: 78.1

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

~ 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: 6: Mendon Rd (RI 122) & Nate Whipple Hwy (RI 120)

× _{Ø1}	₩ <u>Ø</u> 2	K ø3
44 s	20 s	26 s

HCM Signalized Intersection Capacity Analysis 7: Plaza Driveway/West Wrentham Rd & Mendon Rd (RI 122)

03/22/2020

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Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		4			4			44		ሻ	ĥ	
Traffic Volume (vph)	3	0	2	462	0	146	191	342	3	Ż	315	483
Future Volume (vph)	3	0	2	462	0	146	191	342	3	7	315	483
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	16	16	16	12	12	12	14	14	12	11	14	14
Total Lost time (s)		4.0			4.0			5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00			1.00		1.00	1.00	
Frt		0.93			0.97			1.00		1.00	0.91	
Flt Protected		0.98			0.96			0.98		0.95	1.00	
Satd. Flow (prot)		1959			1742			1945		1728	1828	
Fit Permitted		0.96			0.77			0.31		0.44	1.00	
Satd. Flow (perm)		1920			1385			610		792	1828	
Peak-hour factor, PHF	0.75	0.92	0.50	0.79	0.92	0.96	0.77	0.94	0.36	0.44	0.86	0.90
Adj. Flow (vph)	4	0	4	585	0	152	248	364	8	16	366	537
RTOR Reduction (vph)	0	6	0	0	19	0	0	1	0	0	59	0
Lane Group Flow (vph)	0	2	0	0	718	0	0	619	0	16	844	0
Heavy Vehicles (%)	0%	0%	0%	2%	2%	2%	2%	2%	2%	1%	1%	<u> 1% </u>
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)		20.0		and the state of the	20.0			61.0		61.0	61.0	
Effective Green, g (s)		20.0			20.0			61.0		61.0	61.0	
Actuated g/C Ratio		0.22		ev net ter son and a rest of a	0.22			0.68		0.68	0.68	: (
Clearance Time (s)		4.0			4.0			5.0		5.0	5.0	
Vehicle Extension (s)		2.6			2.6			2.8		2.8	2.8	and a second state of the
Lane Grp Cap (vph)		426			307			413		536	1238	
v/s Ratio Prot											0.46	(4)(4)(4)(4)(4)(4)(4)(4)(4)(4)(4)(4)(4)(
v/s Ratio Perm		0.00			c0.52			c1.01		0.02		
v/c Ratio	Selectros de la competencia de la comp	0.00			2.34	NAS ALEXANDARIA	anan sa mang	1.50	esecter and a sector	0.03	0.68	1600-0607-07013
Uniform Delay, d1		27.2	9 9 9 9 9 S		35.0			14.5		4.8	8.7	
Progression Factor		1.00			1.00		97599540945976	1.00		1.00	1.00	25055295209
Incremental Delay, d2		0.0			613.0			237.2		0.0	1.5	
Delay (s)		21.3			648.0			251.7		4.8	10.2	(Sagaran
Level of Service		07.0			C40.0			054 7		А	40 4	
Approach Delay (S)		21.3			040.0			201.7 E			ו.v. ו ה	
Approach LOS		U.			a de F ac	0100000					D	
Intersection Summary												
HCM 2000 Control Delay			281.6	Η	CM 2000	Level of	Service		F			
HCM 2000 Volume to Capa	city ratio		1.70								· · · · · · · · · · · · · · · · · · ·	
Actuated Cycle Length (s)			90.0	S	um of los	t time (s)			9.0			
Intersection Capacity Utiliza	tion	•	127.8%	IC	CU Level o	of Service			Н			terreterreterreterreterreterreterreter
Analysis Period (min)			15									

Lanes, Volumes,	Timings			
7: Plaza Driveway	/West Wrentham	Rd & Mend	on Rd (R	l 122)

03/22/2020

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Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations					4			4		ሻ	î≱	
Traffic Volume (vph)	3	Ō	2	462	0	146	191	342	3	7	315	483
Future Volume (vph)	3	0	2	462	0	146	191	342	3	7	315	483
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ff)	16	16	16	12	12	12	14	14	12	11	14	14
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0	9999 699 67 <u>7</u> 677 678 6	0	0	1999 S.C. 1997 S.C. 1997	0	0	in en an	0	0	1999-9999-9999 1999-9999-9999	0
Storage Lanes	Ō		0	0		0	0		0	1		0
Taper Length (ft)	25	nen de nationen (***********	25	2019-1-1220-1444-1449-144 2019-1-1220-1449-1449-1449-1449-1449-1449-1449-144	29-29-20-20-20-20-20-20-20-20-20-20-20-20-20-	25			25		are considered.
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25	1999년 1977년 1997년 1997년 - 1997년 1997년 1997년 1997년 - 1997년	aliya ay ya an takaya	35	and and a stand of the set	- Alfred and Article Add	35			35	
Link Distance (ff)		209			662			1525			777	
Travel Time (s)		57	Veloción neories		12.9	n en de la constante		29.7		n teachar a teachte	15.1	0.000400004
Confl Peds (#/hr)												
Confl Bikes (#/hr)					890 1999 (1997) 1997 - 1999 (1997)		inse in desert	90.949.959 (PPA) 	an an an tha tha			9:::::::::::::::::::::::::::::::::::::
Peak Hour Factor	0 75	0 92	0.50	በ 79	0.92	0.96	0 77	0.94	0.36	0 44	0.86	0 90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Hogy Vahiolas (%)	100 // //%	100 <i>%</i>	0%	2%	2%	2%	2%	2%	2%	1%	1%	1%
Rue Blockages (#/br)	υ <i>ν</i> υ Λ	۰ <i>۳</i> ۷ ۸	ο	<u>۳</u> م	селение Л	60 0	<u>-</u> Α	۲ ۳	ስ እ	איי ה	n N	AN DESERT
Dus Diockayes (#/m) Darking (#/br)		v Server v				v.	v	v	, ,		, in the second	
Mid Plock Troffic (%)		0%			ሰ%	ene sense ne		ሰ%			በ%	영상한 전망하기
Sharod Lano Traffic (%)		V 70			V /0			070			070	
Long Croup Flow (uph)	٥	Q	n N	0	727	۸	٨	620	89999998 ∩	16	003	
	Dorm	ں ۸۲۸	v	Dorm	νυν 197		Porm	NΔ	v Sugara	Porm	NΔ	
Distant Appe	гыш	איו ר		r enn	<u>ראנו</u> ר			ריין איז. 1		GIII	1 1	******
Dormitted Dhases	ം	4		<u></u>	2		4			1	1	
Permilleu Pridses	ך ע	0		2 ໂ	<u>о</u>		1	1		ار کار کار 1	1	
Delector Pilase	4	ک		4	4		l	I Maria			l Sealaithe	
OWILLII FIIdSE	40.0	10.0		40 A	10.0		ሳስ ስ	10 O	en e	40 O	10 O	
Minimum muar(s)	0.01	10.0		11.0	10.0		10.0	16.0		0.01	10.0	
Minimum Spin (S) Takal Califi (a)	14.0	04.0		14.U 04.0	14.0 24 0		10.0 66 0	10.0 66 0		10.0 66 0	10.0 66.0	
	24.U	24.0		24.U	24.0		72.20	00.0		72.20/	72.20/	
10tal Spill (%)	20.7%	20.7%		20.7%	20.7 %		13.370	10.070 61.0		61 0	10.070 64.0	
Maximum Green (S)	20.0	20.0		20.0	20.0		01.0	01.0	910909109	01.0 / 0	01.0 4 0	
Yellow Hime (S)	3.U ≰ ∩	3.U		0.U 4 A	3.U 4 0		4,U 4 A	4.U 1 O		4.0 4 A	4,U 4 A	
All-Reo Time (s)	1.U	0.1		1.0	1.0		U.U	1.0		1.0	1.0	10455464
LOST TIME ADJUST (S)		0.0			U.U 4 0			U.U E O		U.U E A	U.U E A	
Total Lost Time (s)		4.U		l a a	4.∪ 1			0.0		0.0	U,U	
Lead/Lag	Lag	Lag		Lag	Lag		Leau	Leau		Leau	Leau	
Lead-Lag Optimize?	Yes	Yes		res	res	Bang Bangabara	res	res		105	res	Borgoogi
Venicle Extension (s)	2.6	2.0		2.6	2.0		2.8	2.8		2.8	2.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3,0		3.0	3.0	and the second
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)									500604646		59450959403-24	ganganarad
Flash Dont Walk (s)							G.A.					
Pedestrian Calls (#/hr)	nge varinge to No Kom T											2000-000-000-004 1990-000-004
v/c Ratio		0.02			2.26			1.50		0.03	0.70	
Control Delay		3.4			598.2			256.0		5.0	10.3	

PM Peak Full Bridge Closure 02/27/2020 Baseline EAM

Lanes, Volumes, Timings 7: Plaza Driveway/West Wrentham Rd & Mendon Rd (RI 122)

03/22/2020

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Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	. NWL	NWT	NWR
Queue Delay		0.0			0.0			0,0		0.0	0.0	
Total Delay		3.4			598.2			256.0		5.0	10.3	
Queue Length 50th (ft)		0			~685			~256		3	213	
Queue Length 95th (ft)		4			#905			#465		4	306	
Internal Link Dist (ft)		129			582			1445			697	
Turn Bay Length (ft)								anang sa tang sa tang				- to the Association in the
Base Capacity (vph)		445			326			414		537	1297	
Starvation Cap Reductn	with a state of the state of the state	0			0		na kana kana sa sa	0		0	0	eserescora
Spillback Cap Reductn	0.00.0003	0			0			0		0	0	
Storage Cap Reductn		0	506 (500 - 500 - 500 (760 - 500 - 500 - 500 - 500 - 500 - 500 - 500 - 500 - 500 - 500 - 500 - 500 - 500 - 50	weber southout	0	a e a su a		0		0	0	
Reduced v/c Ratio		0.02			2.26			1.50		0.03	0.70	
Intersection Summary			2.74						<u></u>			
Area Type: Ot	her										13 (5)	
Cycle Length: 90								en andre an de la de la				BOURDWARDAR
Actuated Cycle Length: 90												
Natural Cycle: 140												
Control Type: Actuated-Uncoo	rdinated											
 Volume exceeds capacity, 	queue is	theoretic	ally infinit	e. conservation								58677597674
Queue shown is maximum	after two	cycles.				8.19 ANA						
# 95th percentile volume exc	eeds ca	pacity, qu	eue may l	be longe	r.							
Queue shown is maximum	after two	cycles.										
And Croup NBL NBT NBR SBL SBT SBR SEL SER SER NWL NWT N Queue Delay 0.0 0.0 0.0 0.0 0.0 0.0 0.0 Total Delay 3.4 598.2 256.0 5.0 10.3 Queue Length 50th (ft) 0 ~685 ~256 3 213 Queue Length 95th (ft) 4 #905 #4465 4 306 Internal Link Dist (ft) 129 582 1445 697 Turn Bay Length (ft) Base Capacity (vph) 445 326 414 537 1297 Starvation Cap Reductn 0 0 0 0 0 0 0 Starvation Cap Reductn 0												
	Entonia	,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,										
<u>∽ 1/01</u> 66 s									+1⊻Z 4s			

HCM Signalized Intersection Capacity Analysis 17: West Wrentham Rd & Pine Swamp Rd (RI 114)

03/22/2020

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			¢.			\$			4	
Traffic Volume (vph)	16	61	100	361	131	11	211	77	339	11	134	22
Future Volume (vph)	16	61	100	361	131	11	211	77,	339	11	134	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	13	13	13	13	13	13	13	11	11	11
Total Lost time (s)		5.0			5.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.92			1.00			0.92			0.98	
Flt Protected		0.99		······	0.97			0.98			1.00	an de anteres en este este este este este este este
Satd. Flow (prot)		1796			1872			1787			1777	
Flt Permitted		0.91			0.65			0.81			0.95	escolectivista da
Satd. Flow (perm)		1650			1261			1465			1693	
Peak-hour factor, PHF	0.50	0.72	0.58	0.85	0.79	0.78	0.84	0.83	0.78	0.78	0.86	0.79
Adj. Flow (vph)	32	85	172	425	166	14	251	93	435	14	156	28
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	289	0	0	604	0	0	//9	0	0	198	0
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	0%	0%	0%	1%	1%	1%
Turn Type	Perm	NA		Perm	NĄ		Perm	NA		Perm	NA	
Protected Phases		1 050-100-10-1000			1			2	son aso en usa		2	
Permitted Phases	1			1	<u>^^</u>		2	40.0		2	40.0	
Actuated Green, G (s)		29,8			29.8			10.3			10.3	Second Second
Effective Green, g (s)		29.8			29.0			0.20			0.20	
Actualed g/C Rallo		0.04			0.04 5 0			0.30			0.30 A A	
Vehicle Extension (c)		0,U 2,Q			ິບ.ບ 2 ຊ			4.0 2.6			4.0 2.6	
		2.0			2.0			<u></u>			<u> </u>	
Lane Gip Cap (vpri)		092	on de la ca		001		aja sadaba	433			200	E.S. SA
V/s Ratio Porm		0 18			c0 48			- ሰ 53			0.12	
vic Rafio		0.10			0.40 0 80			1.80			0.12	2543 (CAU
Liniform Delay, d1		70			11.2			19.4			15.5	
Progression Factor		1 00	494 A 684 484 684 684 684 684 684 684 684 684		1.00	999-028-988-98 9		1.00	ing di nang manjadan j		1.00	999-099-099-094 1999-099-099-094
Incremental Delay, d2		0.2			13.2			368.7			0.4	
Delav (s)	a na ana ang ang ang ang ang ang ang ang	7.2		contextine con cos	24.4	ani dan sa nga pasa sa		388.1	, ha na tanàn amin' a Iomra dia mandritra dia kaominina dia kaominina dia kaominina dia kaominina dia kaominina dia kaominina dia kaom	Water in the Water Difference	15.9	operation of the
Level of Service		Α			С			F			В	
Approach Delay (s)		7.2			24.4			388.1			15.9	
Approach LOS		Α			C ·			F			В	
Intersection Summary								-				
HCM 2000 Control Delay			172.3	н	CM 2000	l evel of	Service		F			
HCM 2000 Volume to Canacil	lv ratio		1 21				5511100					en e
Actuated Cycle Length (s)	y 1000		551	Si	im of los	time (s)			9.0			
Intersection Canacity Utilization	00000000000000000000000000000000000000	nin son in the second	98.3%). Dl	U Level	of Service	ania ning di 1993. F	en an	erenenenen F		enconsections of	an a
Analysis Period (min)			15									

Lanes, Volumes, Timings 17: West Wrentham Rd & Pine Swamp Rd (RI 114)

03/22/2020

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			\$			4			\$	
Traffic Volume (vph)	16	61	100	361	131	11	211	77	339	11	134	22
Future Volume (vph)	16	61	100	361	131	11	211	77	339	11	134	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	13	13	13	13	13	13	13	13	11	11	11
Grade (%)		. 0%			0%			0%			0%	
Storage Length (ft)	0	- 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997	0	0		0	0	oloon alloono as bito	0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25	494999799799799999	terre alle and a second	25	0		25		(*************************************	25	21992201001004901014	to of provide states
Right Turn on Red			No			Yes			No			No
Link Speed (mph)	1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-	30	ing states der sage for	1999 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	40			25		***************	25	the classical sectors of the sectors
Link Distance (ft)		3320			7947			1008			920	
Travel Time (s)	an a	75.5	2007.0000000000000000000000000000000000	an e e e e e e e e e e e e e e e e e e e	135.5		1999 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	27.5	and a feature sector from	a na ana ang ang ang ang ang ang ang ang	25.1	1997-1997-1997-1997
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)	999-99970-6702-693-693-	40% - 448 (ABARA BARA BARA) 1990	1999	e poster de la compositione de la composition de la composition de la composition de la composition de la compo	en di Kalinta Astrona	1990 - Andrewski Statu	le subserve sederer	erital pierada (for ere	1	an an an taon a Taon an taon an t	ada se teste de teste.	1999 - A.
Peak Hour Factor	0.50	0.72	0.58	0.85	0.79	0.78	0.84	0.83	0.78	0.78	0.86	0.79
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	0%	0%	0%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0		0	0	0	0
Parking (#/hr)									-			
Mid-Block Traffic (%)		0%	89999000 - ANNA - ANNA - AN	aleren meletateate	0%	erender of the first of the first of the		0%			0%	eren er en er en er en er
Shared Lane Traffic (%)						en en conse 155 65 69 45						
Lane Group Flow (vph)	0	289	0	0	605	0	0	779	0	0	198	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	Second
Protected Phases			1997/1496/081/984				(1999) - 19 97 - 1997 -	2	na meneralan	V99407445399	2	900000000000
Permitted Phases	1			1			2			2		
Detector Phase	1	1	en an an an an an an Annail An an an an an Annail Annail	1	1		2	2	en an an the state of the	2	2	the straights
Switch Phase												
Minimum Initial (s)	10.0	10.0	1965 (A. 407) (A. 417) (A. 4	10.0	10.0	2009. V 2020 - 01992	5.0	5.0	en an	5.0	5.0	n e recipite de est
Minimum Split (s)	15.0	15.0		15.0	15.0		9.0	9.0		9.0	9.0	
Total Split (s)	40.0	40.0	enderste nach die sei	40.0	40.0	na an a	20.0	20.0	selt servere velet	20.0	20.0	al destructions and
Total Split (%)	66.7%	66.7%		66.7%	66.7%		33.3%	33.3%		33.3%	33.3%	
Maximum Green (s)	35.0	35.0	All a service and an	35.0	35.0	1997) - 1997) - 1997) 1997) - 1997) - 1997) - 1997) - 1997) - 1997) - 1997) - 1997) - 1997) - 1997) - 1997) - 1997) - 1997) - 1997) 1997) - 1997) - 1997) - 1997) - 1997) - 1997) - 1997) - 1997) - 1997) - 1997) - 1997) - 1997) - 1997) - 1997) -	16.0	16.0	ni na si na si na si	16.0	16.0	2009-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0	alerate transmissi	1.0	1.0		1.0	1.0		1.0	1.0	2000-000-000-000-000-000-000-000-000-00
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)	-re a-reader of sector	5.0	enderer til Skore forste skaret.	nter el transfor de tra tra	5.0	/ 19 10 10 10 10 10 10 10 10 10 10 10 10 10	- 1997) (1997) (1997) (19	4.0	and dialactic baseline all'h	alah di sang sang sang sa	4.0	inite providencies de la seconda de la s La seconda de la seconda de
Lead/Lag	Lead	Lead		Lead	Lead		Lad	Lao		Lao	Lag	
Lead-Lag Optimize?	Yes	Yes	444 (ANG 1949 (BA)	Yes	Yes		Yes	Yes		Yes	Yes	a da serie de la companya de la comp
Vehicle Extension (s)	2.8	2.8		2.8	2.8		2.6	2.6		2.6	2.6	
Minimum Gap (s)	3.0	3.0	ebenden ortenise	3.0	3.0	verske konstata (* 1993) 1	3.0	3.0	2040.0001000000000	3.0	3.0	enverse Ashersha
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0	, Marija (novilja) Dobači (* 1	0.0	0.0	والتركيم والمراجع وا	0.0	0.0		0.0	0.0	26472202229
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Walk Time (s)	2012/07/07/07/07/07/07/07/07/07/07/07/07/07/	00000000000000000000000000000000000000	ND 0193 018 77 77 79 77 97 97 97 97 97 97 97 97 97	ensametātātā (2	50 900 900 700 700 700 700 700 700 700 70	0000-00-0014938 1	eren andra an a'	14112465347748	en en stationen	eren herende herre der	sessen in the second	e na menangan janjad
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)			artastalda (1996) A	9898999999999 	n territişiddi.	noota estativiteiteiteiteiteiteiteiteiteiteiteiteitei		erender för som för		e se se filte 199	entristiitiit	20232030976
v/c Ratio		0.32			0.89			1.81			0.40	
Control Delay	ana na pranta dia Malia Malia	7.8	alle en de gestelle de 1981	A.C.A.C.A.C.A.C.A.C.A.C.A.C.A.C.A.C.A.C	28.5	, energen statistikk	un na setter de la s	393.9		urse de tratities	20.5	

PM Peak Full Bridge Closure 02/27/2020 Baseline EAM

Lanes, Volumes, Timings 17: West Wrentham Rd & Pine Swamp Rd (RI 114)

03/22/2020

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Lane Group	EBL EBT	EBR WBL	WBT WI	BR NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0		0.0		0.0			0.0	
Total Delay	7.8		28.5		393.9			20.5	
Queue Length 50th (ft)	46		153		~454			59	
Queue Length 95th (ft)	62		224		#581			106	
Internal Link Dist (ft)	3240		7867		928			840	
Turn Bay Length (ft)									
Base Capacity (vph)	1063		814		431			498	
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	0.27		0.74		1.81			0.40	
Intersection Summary									
Area Type: O	ther								1
Cycle Length: 60						an an an taon an tao an an tao an an tao an an tao an t			1999-199
Actuated Cycle Length: 55.2									
Natural Cycle: 90									
Control Type: Actuated-Unco	ordinated								
~ Volume exceeds capacity	, queue is theoretica	ally infinite.							
Queue shown is maximum	i after two cycles.								
# 95th percentile volume ex	ceeds capacity, que	eue may be longer	ſ.						
Queue shown is maximum	after two cycles.								
Splits and Phases: 17: Wes	st Wrentham Rd & F	ine Swamp Rd (F	RI 114)						
_ A					LA				

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40 g	20 s

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HCM Unsignalized Intersection Capacity Analysis 20: Diamond Hill Rd (RI 114) & Pine Swamp Rd (RI 114)/Wrentham Rd (RI 121)

03/22/2020

	-	\rightarrow	F	*******	^	1		
Movement	EBT	EBR	WBL	WBT	NBL	NBR		·
Lane Configurations	≜	۴	ሻ	Ť	ሻ	*		
Traffic Volume (veh/h)	380	102	285	565	7	8		
Future Volume (Veh/h)	380	102	285	565	7	8		
Sign Control	Free			Free	Stop			
Grade	0%			0%	0%			
Peak Hour Factor	0.69	0.92	0.96	0,90	0.89	0.75		
Hourly flow rate (vph)	551	111	297	628	8	11		
Pedestrians								
Lane Width (ft)								
Walking Speed (ft/s)								
Percent Blockage						na an a		way in which we have an all the state of the
Right turn flare (veh)					0.00.00.00	10		
Median type	None			None	n in with carry and in t			
Median storage veh)								
Upstream signal (ft)								
oX, platoon unblocked								
vC, conflicting volume	n tana mana ang mang	en soleh instantigete	551		1773	551		ta di secondo de la compo
/C1, stage 1 conf vol				- 10 (SA (SA (S				
vC2, stage 2 cont vol			ee)		4996			
VCu, unblocked vol			551		1//3	551		
C, single (s)			4,1	nesseere	6.4	6.2		
U, 2 stage (s)					0 F	0.0		
ተ (S) በ			L.L 71		3.D 00	3.3 09		
pv queue free %		0.020,000,000,000	1004		00 65	500		
civi capacity (ven/n)			1024		60	550		
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1			
/olume lotal	551	111	297	028	19			
Volume Len Jolumo Dight	U A	444 144	297	U A	0 11			
	1700	111	0 1024	1700	11			
Volumo to Consoity	0 22	0.07	0.20	0 37	0 1 2			
Volume to Capabily	0.02 N	0.07	0.20 20	0.07	10			
Control Delay (s)	0 0 0	0 0 0	00 Q Q	0 0 0	35.4			
ona l OS	U.U	0.0	υ.υ Δ	v.v				
Anornach Delay (e)	ሰሰ		30		354			
Approach LOS	0.0		J. L					
⊐pprodon ⊏oo					L.			
Intersection Summary								
Average Delay			2,3			· .		
Intersection Capacity Utilization	on		49.1%	IC	U Level (t Service	A	
Analysis Period (min)			15					

HCM Signalized Intersection Capacity Analysis 1: Diamond Hill Rd (RI 114) & Nate Whipple Hwy (RI 120)

03/22/2020

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			44			4			4	
Traffic Volume (vph)	0	295	267	17	246	0	254	0	30	0	0	0
Future Volume (vph)	0	295	267	17	246	0	254	0	30	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	13	13	13	13	12	12	12	12	12	12
Total Lost time (s)		4.0			4.0	5101 (S-C)		5.0				
Lane Util. Factor		1.00			1.00			1.00				
Frt		0.93			1.00			0.99				
Flt Protected		1.00			1.00			0.96	*			anacuratas 4
Satd. Flow (prot)		1742			1916			1759				
Flt Permitted		1.00	nan weeke keringen an		0.75	nan an an an an an Ara an		0.75				
Satd. Flow (perm)		1742			1451			1372				
Peak-hour factor, PHF	0.86	0.85	0.75	0.53	0.75	0.85	0.68	0.93	0.75	0.75	0.97	0.79
Adj. Flow (vph)	0	347	356	32	328	0	374	0	40	0	0	0
RTOR Reduction (vph)	0	33	0	0	0	0	0	8	0	0	0	0
Lane Group Flow (vph)	0	670	0	0	360	0	0	406	0	0	0	0
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type		NA		Perm	NA		Perm	NA	ju des de Sie			
Protected Phases		1		arran ar turneda an	1			2	TA ROTE CORRORATION (DECEMBER)	15 M (21) 64	2	000000000000000000000000000000000000000
Permitted Phases	1		60 62 CO	1			2			2		
Actuated Green, G (s)		25.4			25.4			21.4				
Effective Green, g (s)		25,4			25.4			21.4				
Actuated g/C Ratio		0.46			0.46			0.38				
Clearance Time (s)		4.0			4.0			5.0				
Vehicle Extension (s)		2.6			2.6			3.0				
Lane Grp Cap (vph)		792			660			526				
v/s Ratio Prot		c0.38						0.00				teres and
v/s Ratio Perm		A 05			0.25			CU.30				
V/c Ratio		0.85			0.00			U.//				
Uniform Delay, d1		13.5			11.0			10,1				
Progression Factor		1.00			1.00			1.00				189933
Incremental Delay, dz		0.2			U.O			0,9 00 0				6.88.884
Delay (S)		21.7			11.0 D			22.0 C				
Level of Service		01 7			11 Q			22.0			በበ	
Approach LOC		21.1 O			11.0 B			<u>ح</u> ح.0			0.0	
Approach 200		Y			L			V				
Intersection Summary												
HCM 2000 Control Delay			19.4	H	CM 2000	Level of	Service		В			
HCM 2000 Volume to Capaci	ty ratio		0.81				an a					en e
Actuated Cycle Length (s)			55.8	S	um of los	t time (s)	06023300		9.0			
Intersection Capacity Utilization	on	ter patrice in the second second second	55.2%	IC	U Level o	of Service			B			38689.0×0×1×
Analysis Period (min)			15									

Lanes, Volumes, Tir	nings				
1: Diamond Hill Rd (RI 114) & I	Nate Whipple	Hwy	(RI	120)

03/22/2020

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
I ane Configurations	******	<u></u>			4			ሔ			44	
Traffic Volume (vph)	0	295	267	17	246	0	254	0	30	0	0	0
Future Volume (vph)	0	295	267	17	246	0	254	0	30	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	13	13	13	13	13	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0	99999 -7 8799	0	0	99 (199 - 7 1 1 199		0		0	0		0
Storage Lanes	Ň		Õ	0		Ň	Ő		Ň	Ō		ō
Taper Length (ft)	25	n an head an an head an The second and the sec		25			25			25	u da se se a se a se a se a se a se a se	
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)	a de classiques	40			40			30			30	9999- 9 7
Link Distance (ff)		1854			4162			1592		V 577 (MST 1946) 727	454	
Travel Time (s)		31.6	000000000000000000000000000000000000000	ang karabah tarak	70.9	useniisei seenisei	alente en el	36.2	000000000000000000000000000000000000000	NUCLEUR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONTRACTOR CONT	10.3	08999999999
Confl Peds (#/hr)												
Confl Bikes (#/hr)						64694668866						6993559966993
Peak Hour Factor	0.86	0.85	0 75	0.53	0 75	0.85	0.68	0.93	0 75	0.75	0.97	0 79
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/br)	ν Ω	<u>م</u> بر ۵	رمین ۱	- ~ ~ በ	ም የ የ	۳ ۳	<u>% -</u> ۱	ه د مح	0 0	η- 1	n N	<u>α</u> 0
Parking (#/hr)	, v	v	· ·	, 							, v	
Mid-Block Traffic (%)		በ%			በ%			በ%			በ%	
Shared Lane Traffic (%)		070			070			0.0			0.00	
Lane Group Flow (vph)	٨	703	n N	۵ ۱	360	۵	۵	414	0	۵	۵	0
		NA		Perm	NA		Perm	NA				
Protected Phases		1			890800.6800.0000 1			2		enterenter fil	2	1999 - 1999 -
Permitted Phases	1			1			9	-		2	-	
Detector Phase	1	1		1	1		2	2		2	2	8999888988988
Switch Phase								-		-	- 	
Minimum Initial (s)	10.0	10 በ		10.0	10.0	889,889,889,889	10.0	10.0		10.0	10.0	GROOMERIN
Minimum Split (s)	14.0	14.0		14.0	14.0		15.0	15.0		15.0	15.0	
Total Solit (s)	29.0	29.0	an a	29.0	29.0		58.0	58.0	See See See See	58.0	58.0	(Salahakhasan)
Total Split (%)	33.3%	33.3%		33.3%	33.3%		66.7%	66.7%		66.7%	66.7%	
Maximum Green (s)	25.0	25.0	8986999809998	25.0	25.0		53.0	53.0		53.0	53.0	advadratica (4
Yellow Time (s)	3.0	30		30	30		4.0	4.0		4.0	4.0	
All-Red Time (s)	10	10	01911020000000	1.0	1.0	1999 - 1997 - 1997 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 -	1.0	1.0		1.0	1.0	Second Second
Lost Time Adjust (s)		0 n			0.0			0.0			0.0	
Total Lost Time (s)		4 0			4.0	en fin fin de		5.0			5.0	
Lead/Lag	lead	lead		lead	lead		l ao	De l		l an	lan	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	en de la competencia.	Yes	Yes	antinating (see	Yes	Yes	alahisi si
Vehicle Extension (s)	26	26		26	26		30	3.0		3.0	3.0	
Minimum Gan (s)	3.0	30	8899999 (SS (SS (SS (SS (SS (SS (SS (SS (S	30	30	oon foonika (Hinip	3.0	3.0	87999999999999	3.0	3.0	899 (99 (99 (99 (99 (99 (99 (99 (99 (99
Time Before Reduce (s)	0.0	<u> </u>		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	*******
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)			***********			sente de la Section Section de la Section de la Section de la Section de la	949999 999999			ang		
Elash Dont Walk (s)												
Pedestrian Calls (#/hr)		no este se a constante de la co Constante de la constante de la Constante de la constante de la	onten Table.	aan ah sa		an a	na na sanga sa				er en	o-9009409939
v/c Ratio		0.85			0.55			0.78				
Control Delay	areat and a stability	28.2	aastaata see taal		17.1	under heter in technik (NV Birk		25.2	este di Antonio di Chile de Californi di Chile d Chile di Chile	u wa sa waga shishishishishi		

Saturday Peak Full Bridge Closure 02/27/2020 Baseline EAM

Lanes, Volumes, Timings 1: Diamond Hill Rd (RI 114) & Nate Whipple Hwy (RI 120)

58 s

03/22/2020

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0			0.0			0.0				
Total Delay		28.2			17.1	terre base tests on the family		25.2				
Queue Length 50th (ft)		173			79			111				
Queue Length 95th (ft)	tan sa sa marangan kata ka sa sa sa sa sa	#445			158			198				
Internal Link Dist (ft)		1774			4082			1512			374	
Turn Bay Length (ft)												
Base Capacity (vph)		824			658			1277				
Starvation Cap Reductn		0	TRANSIA MARANA MANA		0 	e mer versaal		0				
Spillback Cap Reductn	20109-0910	0			Û			0				
Storage Cap Reductin		U	ener en					0				
Reduced V/C Ratio		0,85			0.55			0.32				
Intersection Summary												
Area Type: Ot	her											
Cycle Length: 87												
Actuated Cycle Length: 55.9												
Natural Cycle: 50												
Control Type: Actuated-Uncoo	rdinated								8.6) 8.6			
# 95th percentile volume exc	ceeds cap	bacity, que	eue may l	be longer	Autoriale accessionation de	water and the second	the state of the state of the					
Queue shown is maximum	after two	cycles.										
	–											
Splits and Phases: 1: Diamo	ond Hill R	d (RI 114)) & Nate	Whipple I	lwy (RI 1	20)						
₩ø1		16) 1	M Ø2									

29 s

Movement VBL WBR SEL SET NWT NWR Lane Configurations Y							4	2	×	i.	•	\.	*	C		
Lane Configurations Y \uparrow \uparrow \uparrow \uparrow Traffic Volume (vph) 63 478 503 430 420 52 Future Volume (vph) 63 478 503 430 420 52 Idea Flow (vphp) 1900 1900 1900 1900 1900 1900 Lane Vilth 13 13 11 13 12 12 Total Lost time (s) 4.0 4.0 5.0 5.0 5.0 Lane Uilt Factor 1.00 1.00 1.00 1.00 1.00 Ft Protected 0.99 0.95 1.00 1.00 1.00 Satd. Flow (perm) 1702 1728 1944 1881 1599 Pretek-hour factor, PHF 0.87 0.66 0.78 0.73 Adj. Flow (perm) 1702 1728 1944 1881 1599 Peak-hour factor, PHF 0.87 0.66 0.78 0.73 Adj. Flow (wph) 72 256 535 500 538 74 RTOR Reduction (wph) <td></td> <td></td> <td></td> <td></td> <td>44</td> <td></td> <td>WR</td> <td>NV</td> <td>NWT</td> <td>ΞT</td> <td></td> <td>SEL</td> <td>WBR</td> <td>WBL</td> <td></td> <td>Aovement</td>					44		WR	NV	NWT	ΞT		SEL	WBR	WBL		Aovement
Traffic Volume (vph) 63 478 503 430 420 52 Future Volume (vph) 63 478 503 430 420 52 Ideal Flow (vphp) 1900 1900 1900 1900 1900 1900 Lane Width 13 11 13 12 12 12 Total Lost time (s) 4.0 4.0 5.0 5.0 5.0 Lane Width 13 11 13 12 12 Total Lost time (s) 4.0 4.0 5.0 5.0 5.0 Lane Width 1.00 1.00 1.00 1.00 1.00 Satd. Flow (prot) 1702 1728 1944 1881 1599 Peter-hour factor, PHF 0.87 0.86 0.78 0.73 Adj. Flow (prot) 72 556 535 500 538 71 RTOR Reduction (vph) 278 0 535 500 538 44 Heavy Vehicles (%) 1% 1% 1% 1% 1% Tum Type							7		Ť	₳		۲		¥¥		ane Configurations
Future Volume (vph) 63 478 503 430 420 52 ideal Flow (vphpi) 1900 1900 1900 1900 1900 Lane Width 13 13 11 13 12 12 Total Lost time (s) 4.0 4.0 5.0 5.0 1.00 Satd.Flow (ptn) 1702 1728 1944 1881 1599 Perek-hour factor, PHF 0.87 0.86 0.73 0.73 Adj. Flow (ptn) 72 556 535 500 538 71 TIT TR TR Reduction (vph) 350 0 0 0 27 Lane Group Flow (vph) 278 0 535 500							52		420	30		503	478	63		raffic Volume (vph)
Ideal Flow (vphp) 1900 1900 1900 1900 Lane Width 13 13 11 13 12 Total Lost time (s) 4.0 4.0 5.0 5.0 Lane Will Factor 1.00 1.00 1.00 1.00 Frt 0.88 1.00 1.00 1.00 Fit Protected 0.99 0.95 1.00 1.00 Satd. Flow (prot) 1702 1728 1944 1881 1599 Fit Permitted 0.99 0.95 1.00 1.00 1.00 Satd. Flow (perm) 1702 1728 1944 1881 1599 Peak-hour factor, PHF 0.87 0.86 0.78 0.73 Adj. Flow (vph) 72 556 535 500 538 71 RTOR Reduction (vph) 350 0 0 0 27 1ane Group Flow (vph) 278 0 535 500 538 44 - Heavy Vehicles (%) 1% 1% 1% 1% 1% 1% 1% 1% 1% <td>1024043420103142443</td> <td></td> <td>-621-464333756</td> <td></td> <td></td> <td></td> <td>52</td> <td>10.09696096</td> <td>420</td> <td>30</td> <td>000444</td> <td>503</td> <td>478</td> <td>63</td> <td>20000000000000</td> <td>Future Volume (vph)</td>	1024043420103142443		-621-464333756				52	10.09696096	420	30	000444	503	478	63	20000000000000	Future Volume (vph)
Lane Width 13 13 11 13 12 12 Total Lost time (s) 4.0 4.0 5.0 5.0 5.0 Lane Util. Factor 1.00 1.00 1.00 1.00 1.00 Fit 0.88 1.00 1.00 1.00 0.85 Fit Protected 0.99 0.95 1.00 1.00 1.00 Satd. Flow (port) 1702 1728 1944 1881 1599 Peak-hour factor, PHF 0.87 0.86 0.78 0.73 Add, Flow (perm) 1702 556 535 500 538 71 RTOR Reduction (vph) 350 0 0 0 27 Lane Group Flow (vph) 278 0 535 500 538 44 - - Protected Phases 3 2 12 1 1 - - - Actuated Green, G (s) 14.8 14.4 45.1 25.7 25.7 - - - - - - - - - - -<							900	19	1900	00		1900	1900	1900		deal Flow (vphpl)
Total Lost time (s) 4.0 4.0 5.0 5.0 5.0 Lane Util, Factor 1.00 1.00 1.00 1.00 1.00 Fit Corrected 0.88 1.00 1.00 1.00 0.85 Fit Protected 0.99 0.95 1.00 1.00 1.00 Satd. Flow (prot) 1702 1728 1944 1881 1599 Fit Permitted 0.99 0.95 1.00 1.00 1.00 Satd. Flow (perm) 1702 1728 1944 1881 1599 Peak-hour factor, PHF 0.87 0.86 0.94 0.86 0.73 Add, Flow (vph) 72 556 550 538 71 RTOR Reduction (vph) 350 0 0 0 27 Lane Group Flow (vph) 278 0 535 500 538 44 Heavy Vehicles (%) 1% 1% 1% 1% 1% 1% Protected Phases 3 2 </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>12</td> <td></td> <td>12</td> <td>13</td> <td></td> <td>11</td> <td>13</td> <td>13</td> <td></td> <td>ane Width</td>							12		12	13		11	13	13		ane Width
Lane Util. Factor 1.00 1.00 1.00 1.00 1.00 Frt 0.88 1.00 1.00 1.00 0.85 Fil Protected 0.99 0.95 1.00 1.00 1.00 Satd. Flow (port) 1702 1728 1944 1881 1599 Fil Permitted 0.99 0.95 1.00 1.00 1.00 Satd. Flow (perm) 1702 1728 1944 1881 1599 Peak-hour factor, PHF 0.87 0.86 0.78 0.73 Adj. Flow (uph) 72 556 535 500 538 71 RTOR Reduction (vph) 350 0 0 0 27 Lane Group Flow (vph) 278 0 535 500 538 44 - Protected Phases 3 2 12 1 1 -					9009040 800000		5.0	1	5.0	5.0		4.0		4.0		fotal Lost time (s)
Fit 0.88 1.00 1.00 1.00 0.85 FIt Protected 0.99 0.95 1.00 1.00 1.00 Satd. Flow (port) 1702 1728 1944 1881 1599 FIt Permitted 0.99 0.95 1.00 1.00 1.00 Satd. Flow (perm) 1702 1728 1944 1881 1599 Peak-hour factor, PHF 0.87 0.86 0.94 0.86 0.73 Adj. Flow (pph) 72 556 535 500 538 71 RTOR Reduction (vph) 350 0 0 0 27 Lane Group Flow (vph) 278 0 535 500 538 44 Heavy Vehicles (%) 1% 1% 1% 1% 1% Turn Type Prot Prot NA NA Prot Protected Phases 3 2 12 1 1 Permitted Prases 3 2 25.7 25.7 Effective Green, g (s) 14.8 14.4 45.1 25.7 </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>1.00</td> <td>1.</td> <td>1.00</td> <td>00</td> <td></td> <td>1.00</td> <td></td> <td>1.00</td> <td></td> <td>ane Util. Factor</td>							1.00	1.	1.00	00		1.00		1.00		ane Util. Factor
Fil Protected 0.99 0.95 1.00 1.00 1.00 Satd, Flow (prot) 1702 1728 1944 1881 1599 FIL Permitted 0.99 0.95 1.00 1.00 1.00 Satd, Flow (perm) 1702 1728 1944 1881 1599 Peak-hour factor, PHF 0.87 0.86 0.74 0.73 Add, Flow (vph) 72 556 535 500 538 71 RTOR Reduction (vph) 350 0 0 0 27 Lane Group Flow (vph) 278 0 535 500 538 44 - Heavy Vehicles (%) 1% 1% 1% 1% 1% 1% 1% 1% - Protected Phases 3 2 1 1 1 - <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>).85</td> <td>0.</td> <td>1.00</td> <td>00</td> <td></td> <td>1.00</td> <td></td> <td>0.88</td> <td></td> <td>Frt</td>).85	0.	1.00	00		1.00		0.88		Frt
Satd. Flow (prot) 1702 1728 1944 1881 1599 Fit Permitted 0.99 0.95 1.00 1.00 1.00 Satd. Flow (perm) 1702 1728 1944 1881 1599 Peak-hour factor, PHF 0.86 0.94 0.86 0.73 0.73 Adj. Flow (vph) 72 556 535 500 538 71 RTOR Reduction (vph) 350 0 0 0 27 Lane Group Flow (vph) 278 0 535 500 538 44 Heavy Vehicles (%) 1% 1% 1% 1% 1% 1% Protected Phases 3 2 1 1 1 1% Protected Phases 3 2 12 1 1 1 Permitted Phases 3 2 12 1 1 1 Actuated Green, G (s) 14.8 14.4 45.1 25.7 25.7 25.7 Effective Green, g (s) 4.0 4.0 5.0 5.0 1 4.0 </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>1.00</td> <td>1.</td> <td>1.00</td> <td>00</td> <td></td> <td>0.95</td> <td></td> <td>0.99</td> <td></td> <td>It Protected</td>							1.00	1.	1.00	00		0.95		0.99		It Protected
Fit Permitted 0.99 0.95 1.00 1.00 1.00 Satd. Flow (perm) 1702 1728 1944 1881 1599 Peak-hour factor, PHF 0.87 0.86 0.78 0.73 Adj. Flow (vph) 72 556 535 500 538 71 RTOR Reduction (vph) 350 0 0 0 0 27 Lane Group Flow (vph) 278 0 535 500 538 44 Heary Vehicles (%) 1% 1% 1% 1% 1% 1% 1% Protected Phases 3 2 1.2 1 1 1 1 Permitted Phases - - 25.7 25.7 25.7 Effective Green, g (s) 14.8 14.4 45.1 25.7 25.7 Effective Green, g (s) 14.8 14.4 45.1 25.7 25.7 Actuated g/C Ratio 0.22 0.21 0.66 0.38 0.38 Clearance Time (s) 4.0 4.0 5.0 5.0 <t< td=""><td></td><td></td><td></td><td></td><td></td><td></td><td>599</td><td>15</td><td>1881</td><td>44</td><td></td><td>1728</td><td></td><td>1702</td><td></td><td>Satd. Flow (prot)</td></t<>							599	15	1881	44		1728		1702		Satd. Flow (prot)
Satul. Flow (perm) 1702 1728 1944 1881 1599 Peak-hour factor, PHF 0.87 0.86 0.94 0.86 0.73 Adj. Flow (vph) 72 556 535 500 538 71 RTOR Reduction (vph) 350 0 0 0 0 27 .ane Group Flow (vph) 278 0 535 500 538 44 Heavy Vehicles (%) 1%							1.00	1.	1.00	00		0.95		0.99		It Permitted
Peak-hour factor, PHF 0.87 0.86 0.94 0.86 0.78 0.73 Adj. Flow (vph) 72 556 535 500 538 71 RTOR Reduction (vph) 350 0 0 0 27 Lane Group Flow (vph) 278 0 535 500 538 44 Heavy Vehicles (%) 1% 1% 1% 1% 1% 1% Turn Type Prot Prot NA NA Prot Permitted Phases 3 2 1 1 Actuated Green, G (s) 14.8 14.4 45.1 25.7 25.7 Effective Green, g (s) 14.8 14.4 45.1 25.7 25.7 Actuated g/C Ratio 0.22 0.21 0.66 0.38 0.38 Clearance Time (s) 4.0 4.0 5.0 5.0 5.0 Vehicle Extension (s) 2.6 2.6 2.6 2.6 2.6 Lane Grp Cap (vph) 370 366 1291 711 605 0.3 v/s Ratio Pror							599	15	1881	44		1728		1702		Satd. Flow (perm)
Adj. Flow (vph) 72 556 535 500 538 71 RTOR Reduction (vph) 350 0 0 0 27 Lane Group Flow (vph) 278 0 535 500 538 44 Heavy Vehicles (%) 1% 1% 1% 1% 1% 1% Turn Type Prot Prot NA NA Prot Protected Phases 3 2 12 1 1 Permitted Phases 3 2 12 1 1 Protected Green, G (s) 14.8 14.4 45.1 25.7 25.7 Effective Green (s) 4.0 4.0 5.0 5.0 5.0 </td <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td>).73</td> <td>0.</td> <td>0.78</td> <td>86</td> <td></td> <td>0.94</td> <td>0.86</td> <td>0.87</td> <td></td> <td>Peak-hour factor, PHF</td>).73	0.	0.78	86		0.94	0.86	0.87		Peak-hour factor, PHF
RTOR Reduction (vph) 350 0 0 0 27 Lane Group Flow (vph) 278 0 535 500 538 44 Heavy Vehicles (%) 1% 1% 1% 1% 1% 1% 1% Turn Type Prot Prot NA NA Prot Protected Phases 3 2 12 1 1 Permitted Phases 3 2 12 1 1 Reductated Green, G (s) 14.8 14.4 45.1 25.7 25.7 Effective Green, g (s) 4.0 4.0 5.0 5.0 5.0 Vehicle Extension (s) 2.6 2.6 2.6 2.6 2.6<							71		538	00		535	556	72		Adi, Flow (vph)
Lane Group Flow (vph) 278 0 535 500 538 44 Heavy Vehicles (%) 1% 1% 1% 1% 1% 1% Turn Type Prot Prot NA NA Prot Protected Phases 3 2 1.2 1 1 Permitted Phases							27	1.00000 0.000	0	0		0	0	350	1.404.000.000.000	RTOR Reduction (vph)
Heavy Vehicles (%) 1% 1% 1% 1% 1% 1% Turn Type Prot Prot NA NA Prot Protected Phases 3 2 1 1 Permitted Phases Actuated Green, G (s) 14.8 14.4 45.1 25.7 25.7 Effective Green, g (s) 14.8 14.4 45.1 25.7 25.7 Actuated g/C Ratio 0.22 0.21 0.66 0.38 0.38 Clearance Time (s) 4.0 4.0 5.0 5.0 Vehicle Extension (s) 2.6 2.6 2.6 2.6 Lane Grp Cap (vph) 370 366 1291 711 605 v/s Ratio Prot c0.16 c0.31 0.26 c0.29 0.03 v/s Ratio Perm							44		538	00		535	0	278		ane Group Flow (vph)
Turn Type Prot Prot NA NA Prot Protected Phases 3 2 1.2 1 1 Permitted Phases Actuated Green, G (s) 14.8 14.4 45.1 25.7 25.7 Effective Green, g (s) 14.8 14.4 45.1 25.7 25.7 Actuated g/C Ratio 0.22 0.21 0.66 0.38 0.38 Clearance Time (s) 4.0 4.0 5.0 5.0 Vehicle Extension (s) 2.6 2.6 2.6 Lane Grp Cap (vph) 370 366 1291 711 605 v/s Ratio Prot c0.16 c0.31 0.26 c0.29 0.03 v/s Ratio Prot c0.16 c0.31 0.26 c0.29 0.03 v/s Ratio Prot v/c Ratio 0.75 1.46 0.39 0.76 0.07 Uniform Delay, d1 24.8 26.8 5.2 18.4 13.5 1.00 Incremental Delay, d2 8.0 22.							1%	1	1%	%	-11-2-11	1%	1%	1%		leavy Vehicles (%)
Protected Phases 3 2 1 2 1 Permitted Phases Actuated Green, G (s) 14.8 14.4 45.1 25.7 Effective Green, g (s) 14.8 14.4 45.1 25.7 Actuated g/C Ratio 0.22 0.21 0.66 0.38 0.38 Clearance Time (s) 4.0 4.0 5.0 5.0 Vehicle Extension (s) 2.6 2.6 2.6 2.6 Lane Grp Cap (vph) 370 366 1291 711 605 v/s Ratio Prot c0.16 c0.31 0.26 c0.29 0.03 v/s Ratio Prot c0.16 c0.31 0.26 c0.29 0.03 v/s Ratio Perm v/c Ratio 0.75 1.46 0.39 0.76 0.07 Uniform Delay, d1 24.8 26.8 5.2 18.4 13.5 13.5 Progression Factor 1.00 1.00 1.00 1.00 1.00 1.00 Incremental Delay, d2 8.0 222.3 0.2 4.4 0.0 0.28 131.3 21.7							Prot	P	NA	A		Prot		Prot		Turn Type
Permitted Phases Actuated Green, G (s) 14.8 14.4 45.1 25.7 25.7 Effective Green, g (s) 14.8 14.4 45.1 25.7 25.7 Actuated g/C Ratio 0.22 0.21 0.66 0.38 0.38 Clearance Time (s) 4.0 4.0 5.0 5.0 Vehicle Extension (s) 2.6 2.6 2.6 Lane Grp Cap (vph) 370 366 1291 711 605 v/s Ratio Prot c0.16 c0.31 0.26 c0.29 0.03 v/s Ratio Prot c0.16 c0.31 0.26 c0.29 0.03 v/s Ratio Perm	e anna an tao		daren tarat.	-totototoja	d de construir s		1	9753.0540	1	2	.t7mbah	2	4. ent Vielieren (* 1	3	and a second	Protected Phases
Actuated Green, G (s) 14.8 14.4 45.1 25.7 25.7 Effective Green, g (s) 14.8 14.4 45.1 25.7 25.7 Actuated g/C Ratio 0.22 0.21 0.66 0.38 0.38 Clearance Time (s) 4.0 4.0 5.0 5.0 Vehicle Extension (s) 2.6 2.6 2.6 Lane Grp Cap (vph) 370 366 1291 711 605 V/s Ratio Prot c0.16 c0.31 0.26 c0.29 0.03 v/s Ratio Perm v/c Ratio 0.75 1.46 0.39 0.76 0.07 Uniform Delay, d1 24.8 26.8 5.2 18.4 13.5 Progression Factor 1.00 1.00 1.00 1.00 1.00 Incremental Delay, d2 8.0 222.3 0.2 4.4 0.0 Delay (s) 32.8 249.1 5.3 22.8 133.5 Level of Service C F A C B																Permitted Phases
Effective Green, g (s) 14.8 14.4 45.1 25.7 25.7 Actuated g/C Ratio 0.22 0.21 0.66 0.38 0.38 Clearance Time (s) 4.0 4.0 5.0 5.0 Vehicle Extension (s) 2.6 2.6 2.6 2.6 Lane Grp Cap (vph) 370 366 1291 711 605 v/s Ratio Prot c0.16 c0.31 0.26 c0.29 0.03 v/s Ratio Perm v/c Ratio 0.75 1.46 0.39 0.76 0.07 Uniform Delay, d1 24.8 26.8 5.2 18.4 13.5 Progression Factor 1.00 1.00 1.00 1.00 1.00 Incremental Delay, d2 8.0 222.3 0.2 4.4 0.0 Delay (s) 32.8 249.1 5.3 22.8 13.5 Level of Service C F A C B							25.7	25	25.7	5.1		14.4	orani (1997).	14.8	1996, 909, 909, 909, 909 1996, 909, 909, 909, 909, 909, 909, 909,	Actuated Green, G (s)
Actuated g/C Ratio 0.22 0.21 0.66 0.38 0.38 Clearance Time (s) 4.0 4.0 5.0 5.0 Vehicle Extension (s) 2.6 2.6 2.6 2.6 Lane Grp Cap (vph) 370 366 1291 711 605 v/s Ratio Prot c0.16 c0.31 0.26 c0.29 0.03 v/s Ratio Perm v/c Ratio 0.75 1.46 0.39 0.76 0.07 Uniform Delay, d1 24.8 26.8 5.2 18.4 13.5 Progression Factor 1.00 1.00 1.00 1.00 1.00 Incremental Delay, d2 8.0 222.3 0.2 4.4 0.0 Delay (s) 32.8 249.1 5.3 22.8 13.5 Level of Service C F A C B							25.7	2!	25,7	5.1		14.4		14.8		Effective Green, q (s)
Clearance Time (s) 4.0 4.0 5.0 5.0 Vehicle Extension (s) 2.6 2.6 2.6 2.6 Lane Grp Cap (vph) 370 366 1291 711 605 v/s Ratio Prot c0.16 c0.31 0.26 c0.29 0.03 v/s Ratio Perm v/c Ratio 0.75 1.46 0.39 0.76 0.07 Uniform Delay, d1 24.8 26.8 5.2 18.4 13.5 Progression Factor 1.00 1.00 1.00 1.00 Incremental Delay, d2 8.0 222.3 0.2 4.4 0.0 Delay (s) 32.8 249.1 5.3 22.8 13.5 Level of Service C F A C B		1979 - NAN USAN USAN USAN USAN USAN USAN USAN).38	0.	0.38	66		0.21	19 10 10 10 10 10 10 10 10 10 10 10 10 10	0.22		Actuated g/C Ratio
Vehicle Extension (s) 2.6 2.6 2.6 2.6 2.6 Lane Grp Cap (vph) 370 366 1291 711 605 v/s Ratio Prot c0.16 c0.31 0.26 c0.29 0.03 v/s Ratio Perm v/c Ratio 0.75 1.46 0.39 0.76 0.07 Uniform Delay, d1 24.8 26.8 5.2 18.4 13.5 Progression Factor 1.00 1.00 1.00 1.00 1.00 Incremental Delay, d2 8.0 222.3 0.2 4.4 0.0 Delay (s) 32.8 249.1 5.3 22.8 13.5 Level of Service C F A C B							5.0	ļ	5.0			4.0		4.0		Clearance Time (s)
Lane Grp Cap (vph) 370 366 1291 711 605 v/s Ratio Prot c0.16 c0.31 0.26 c0.29 0.03 v/s Ratio Perm v/c Ratio 0.75 1.46 0.39 0.76 0.07 Uniform Delay, d1 24.8 26.8 5.2 18.4 13.5 Progression Factor 1.00 1.00 1.00 1.00 Incremental Delay, d2 8.0 222.3 0.2 4.4 0.0 Delay (s) 32.8 249.1 5.3 22.8 13.5 Level of Service C F A C B							2.6	1	2.6			2.6		2.6		/ehicle Extension (s)
v/s Ratio Prot c0.16 c0.31 0.26 c0.29 0.03 v/s Ratio Perm v/c Ratio 0.75 1.46 0.39 0.76 0.07 Uniform Delay, d1 24.8 26.8 5.2 18.4 13.5 Progression Factor 1.00 1.00 1.00 1.00 Incremental Delay, d2 8.0 222.3 0.2 4.4 0.0 Delay (s) 32.8 249.1 5.3 22.8 13.5 Level of Service C F A C B							605	6	711	91		366		370		ane Grp Cap (vph)
v/s Ratio Perm v/c Ratio 0.75 1.46 0.39 0.76 0.07 Uniform Delay, d1 24.8 26.8 5.2 18.4 13.5 Progression Factor 1.00 1.00 1.00 1.00 1.00 Incremental Delay, d2 8.0 222.3 0.2 4.4 0.0 Delay (s) 32.8 249.1 5.3 22.8 13.5 Level of Service C F A C B							0.03	0.	c0.29	26	1	c0.31		0.16	(//s Ratio Prot
v/c Ratio 0.75 1.46 0.39 0.76 0.07 Uniform Delay, d1 24.8 26.8 5.2 18.4 13.5 Progression Factor 1.00 1.00 1.00 1.00 1.00 Incremental Delay, d2 8.0 222.3 0.2 4.4 0.0 Delay (s) 32.8 249.1 5.3 22.8 13.5 Level of Service C F A C B																//s Ratio Perm
Uniform Delay, d1 24.8 26.8 5.2 18.4 13.5 Progression Factor 1.00 1.00 1.00 1.00 1.00 Incremental Delay, d2 8.0 222.3 0.2 4.4 0.0 Delay (s) 32.8 249.1 5.3 22.8 13.5 Level of Service C F A C B							0.07	0.	0.76	39		1.46		0.75		//c Ratio
Progression Factor 1.00 <th1.00< th=""> 1.00 1.00<td></td><td></td><td></td><td></td><td></td><td></td><td>13.5</td><td>1,</td><td>18.4</td><td>5.2</td><td></td><td>26.8</td><td></td><td>24.8</td><td></td><td>Jniform Delay, d1</td></th1.00<>							13.5	1,	18.4	5.2		26.8		24.8		Jniform Delay, d1
Incremental Delay, d2 8.0 222.3 0.2 4.4 0.0 Delay (s) 32.8 249.1 5.3 22.8 13.5 Level of Service C F A C B Approach Delay (c) 32.8 131.3 21.7							1.00	1.	1.00	00		1.00		1.00	1.410.000.000.000	Progression Factor
Delay (s) 32.8 249.1 5.3 22.8 13.5 Level of Service C F A C B							0.0	() (4.4),2		222,3		8.0		ncremental Delay, d2
Level of Service C F A C B							13.5	1:	22.8	5.3		249.1		32.8		Delay (s)
Approach Dolay (c) 32.8 131.3 21.7							В		C	Α		F		С		evel of Service
Rprodrdrdrdrdrdrdrdr									21.7	1.3	1			32.8	1.1.	Approach Delay (s)
Approach LOS C F C									C	F				С		Approach LOS
Intersection Summary				à de la	-											ntersection Summary
HCM 2000 Control Delay 74.7 HCM 2000 Level of Service F	F	F		and the second second	ice	Servic	el of 9) eve	CM 200	H	<u>067/1070222</u>	74 7			J	CM 2000 Control Delay
HCM 2000 Volume to Canacity ratio 0.94	a da las a de cardela. A construction de la const				20			, 2990		889.U	201233	0.94	06766766	atio	i anacity r	ICM 2000 Volume to Ca
Actuated Cycle Length (s) 67.9 Sum of Lost time (s) 13.0	30	13.0					ie (s)	st time	um of lo	୍ର		67 Q		uuv	apuolity I	Actuated Cycle Length /
Intersection Canacity Utilization 93.8% ICUL evel of Service F	F	F	2000000000	94699368		a 2	ervice	of Se	2010 2011 evel	ان ۲	San di Angelani Angel	93.8%			7 lization	ntersection Canacity Liti
Analysis: Period (min) 15										د ا 1999		15				Analysis Period (min)

	5	۲.	\ *	X	K	4	
ane Group	WBL	WBR	SEL	SET	NWT	NWR	
Lane Configurations	¥		۲	木	*	7	
Traffic Volume (vph)	63	478	503	430	420	52	
Future Volume (vph)	63	478	503	430	420	52	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	13	13	11	13	12	12	
Grade (%)	0%			0%	0%		
Storage Length (ft)	0	0	0	an a		80	rezh fabit werd de benezh even e e e e e e e e e e e e e e e e e
Storage Lanes	1	0	1			1	
Taper Length (ft)	25	4769-729-7100-71-97	25	n orden konstantikov	1912) (PARTO PORTO PORTO.	and the second second	aan faafaa gabaha kari talaki kari tala kari maraka kari kari maraka kari tala kari tala kari kari kari kari ma Ana kari kari kari tala kari talaki kari kari kari kari kari kari kari k
Right Turn on Red		Yes				Yes	
Link Speed (mph)	30			35	35	and the first set for a set of	
Link Distance (ff)	2348			381	2230		
Travel Time (s)	53.4		V950-01-09-40-000.	7.4	43.4		n ben hennen ef an beste hennen het en en en beste hennen verken hennen sen en e En en
Confl Peds (#/hr)		Teoreman					
Confl Bikes (#/hr)	eren eta dela porte	989 HARREN (* 19	09994394699999		Antonia de Celos de Le	Antibele de Antilia inidate	
Peak Hour Factor	0.87	0.86	0.94	0.86	0.78	0.73	
Growth Factor	100%	100%	100%	100%	100%	100%	
Heavy Vehicles (%)	10070	1%	1%	1%	1%	1%	
Bus Blockages (#/hr)	0	0 0	0 0	0	алландаа О	0	
Parking (#/hr)	, e e e						
Mid-Block Traffic (%)	0%	(4) - Carlos Carlos (Carlos (eren de la composition de la compositio La composition de la c	0%	0%	ini a nijeta nijeta i plana i s	
Shared Lane Traffic (%)							
Lane Groun Flow (voh)	628	0	535	500	538	71	
Turn Type	Prof		Prot	NA	NA	Prot	
Protected Phases	3	1998 NG UNICANGOZ	2	12	::::::::::::::::::::::::::::::::::::::		
Permitted Phases							
Detector Phase	3		2	12	1	1	
Switch Phase			-				
Minimum Inifial (s)	10.0		5.0		10.0	10.0	
Minimum Solit (s)	14.0	59.050750.09	9.0		15.0	15.0	
Total Split (s)	22.0		18.0	n an an Airt an Airt an Airt an A	40.0	40.0	
Total Split (%)	27.5%		22.5%		50.0%	50.0%	
Maximum Green (s)	18.0		14.0	899 (A. 1997) 1997 - 1997 - 1997 1997 - 1997 - 1997 - 1997	35.0	35.0	
Yellow Time (s)	3.0		3.0		4.0	4.0	
All-Red Time (s)	1.0		1.0	ala na serie da series	1.0	1.0	i de la Ferdelande e ferte de la regelanda de la decención de la construction de la decara de la decención de m La defendada e ferte de la decención de la decención de la decención de la decara de la decención de la decenció
Lost Time Adjust (s)	0.0		0.0		0.0	0.0	
Total Lost Time (s)	4.0	2010-000 (CONSUL 1010-000 (CONSUL	4.0	na na mangang kang kang kang kang kang kang kan	5.0	5.0	
lead/Lag			Lag		Lead	Lead	
Lead-Lag Optimize?			Yes	1940-1940-1940-1940-1940-1940-1940-1940-	Yes	Yes	
Vehicle Extension (s)	2.6		2.6		2.6	2.6	
Minimum Gap (s)	3.0	alah katan kata datad	3.0	699962996249666999	3.0	3.0	
Time Before Reduce (s)	0.0		0.0		0.0	0.0	
Time To Reduce (s)	0.0		0.0	an an an tha	0.0	0.0	
Recall Mode	None		None		Min	Min	
Walk Time (s)					980-1817-07-07-07-07-07-07-07-07-07-07-07-07-07	- CC	
Elash Dont Walk (s)							
Pedestrian Calls (#/hr)	en et techi del CAN	**************	anna tailinn Sala	eeneerin eeringekis	sarren Siniñ		n na na haran da karan kara
v/c Ratio	0.87		1.47	0.40	0.76	0.11	
Control Delav	23.5	ang kakang Pring Masalan	252.1	7.0	26.3	7.4	

Saturday Peak Full Bridge Closure 02/27/2020 Baseline EAM

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	4	¥	×	Ì		
Lane Group	WBL	WBR SEL	SET	NWT	NWR	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	23.5	252.1	7.0	26.3	7.4	
Queue Length 50th (ft)	69	~350	95	200	7	
Queue Length 95th (ft)	#255	#591	140	250	22	
Internal Link Dist (ft)	2268		301	2150		
Turn Bay Length (ft)					80	
Base Capacity (vph)	787	364	1260	992	864	
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	0,80	1.47	0.40	0.54	0.08	
Intersection Summary						

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Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 68.3

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

~ 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: 6: Mendon Rd (RI 122) & Nate Whipple Hwy (RI 120)

X _{Ø1}	W 102	4 Ø3
40 s	18 s	22 s

HCM Signalized Intersection Capacity Analysis 7: Plaza Driveway/West Wrentham Rd & Mendon Rd (RI 122)

03/22/2020

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Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		4 7+						4		ሻ	1≽	
Traffic Volume (vph)	7	2	20	548	0	120	128	290	10	22	284	452
Future Volume (vph)	7	2	20	548	0	120	128	290	10	22	284	452
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	16	16	16	12	12	12	14	14	12	11	14	14
Total Lost time (s)		4.0			4.0			5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00			1.00		1.00	1.00	
Frt		0.91			0.97			0.99		1.00	0.91	
Fit Protected		0.99			0.96			0.99		0.95	1.00	
Satd. Flow (prot)		1935			1741			1968		1678	1775	
Fit Permitted		0.97			0.74			0.44		0.45	1.00	
Satd. Flow (perm)		1895			1337			881		794	1775	
Peak-hour factor, PHF	0.58	0.50	0.62	0.93	0.92	0.77	0.82	0.74	0.42	0.50	0.81	0.88
Adj. Flow (vph)	12	- 4	32	589	0	156	156	392	24	44	351	514
RTOR Reduction (vph)	0	25	0	0	21	0	0	2	0	0	66	0
Lane Group Flow (vph)	0	23	0	0	724	0	0	570	0	44	799	0
Heavy Vehicles (%)	0%	0%	0%	2%	2%	2%	1%	1%	1%	4%	4%	4%
Turn Type	Perm	NA		Perm	NA		Perm	NA	9. S. S. S	Perm	NA	
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)		18.0			18.0			52.8		52.8	52.8	
Effective Green, g (s)		18.0			18.0			52.8		52.8	52.8	
Actuated g/C Ratio		0.23			0.23			0.66		0.66	0.66	
Clearance Time (s)		4.0			4.0			5.0		5.0	5.0	
Vehicle Extension (s)		2.6			2.6			2.8		2.8	2.8	
Lane Grp Cap (vph)		427			301			582		525	1174	
v/s Ratio Prot											0.45	
v/s Ratio Perm		0.01			c0.54			c0.65		0.06		
v/c Ratio	and a grade start style i an a	0.05			2.41			0.98		0.08	0.68	
Uniform Delay, d1		24.2			30.9			13.0		4.8	8.3	
Progression Factor		1.00			1.00	Park Providence		1.00		1.00	1.00	
Incremental Delay, d2		0.0			642,6			31.7		0.1	1.6	
Delay (s)		24.3		weene en en en e	673.5		TATION CONTRACTOR	44.6		4.9	9,9	
Level of Service		C			F			<u> </u>		A	A	
Approach Delay (s)		24.3			673.5			44.6			9.7	
Approach LOS		С			h an tha			D			A	
Intersection Summary												
HCM 2000 Control Delay			236.3	Н	CM 2000	Level of	Service		F			
HCM 2000 Volume to Capaci	ty ratio	e el entre nel travita (1947)	1.34	na ann ann a' Annaichte	, «Leverne e final e firelle f	a segura de la constanta de la	yan da kuranan da bahat		a			
Actuated Cycle Length (s)			79.8	S	um of los	t time (s)			9.0			
Intersection Capacity Utilizati	on		121.6%	IC	CU Level	of Service	•		Н			
Analysis Period (min)			15									

Lanes, Volumes, Timings 7: Plaza Driveway/West Wrentham Rd & Mendon Rd (RI 122)

03/22/2020

ane Group NB NBR SBL SBT SBR SBL SBT SBR SBL SET SER NWL NWL NWR Lane Configurations 4 4 4 4 4 4 7 P Trafic Volume (vph) 7 2 20 548 0 120 128 290 10 22 284 452 deal Flow (vphpl) 1900 <t< th=""></t<>
Lane Configurations Φ Φ Φ Φ Φ Φ Traffic Volume (vph) 7 2 20 548 0 120 128 290 10 22 284 452 Ideal Flow (vphp) 1900
Traffic Volume (vph) 7 2 20 548 0 120 128 290 10 22 284 452 Luture Volume (vph) 7 2 20 548 0 120 128 290 10 22 284 452 Lane Width (ft) 16 16 16 12 12 12 14 14 12 11 14 14 Grade (%) 0%
Future Volume (vph) 7 2 20 548 0 120 128 290 10 22 284 452 Ideal Flow (vphpl) 1900 100
Ideal Flow (vphp) 1900
Lane Width (ft) 16 16 16 12 12 14 14 12 11 14 14 Grade (%) 0% 11 0% 11 11 14 14 14 10% 10% 10% 10% 11
Grade (%) 0% 0% 0% 0% 0% Storage Length (ft) 0 <
Storage Length (ft) 0 1 0 Taper Length (ft) 25 777 15 10 100
Storage Lanes 0 0 0 0 0 0 1 0 Taper Length (ft) 25 35 15 35 15 35 15 35 15 150 160 161 162 1525 777 15.1 Confl. Peds. (#hr) 20.7 15.1 150 160
Taper Length (ft) 25 25 25 25 Right Turn on Red Yes
Right Turn on Red Yes Jack
Link Speed (mph) 25 35 35 35 35 Link Distance (ft) 209 662 1525 777 Travel Time (s) 5.7 12.9 29.7 15.1 Confl. Breds. (#/hr) Confl. Breds. (#/hr) Confl. Breds. (#/hr) Ventor Ventor Ventor Peak Hour Factor 0.58 0.50 0.62 0.93 0.92 0.77 0.82 0.74 0.42 0.50 0.81 0.88 Growth Factor 100%
Link Distance (tt) 209 662 1525 777 Travel Time (s) 5.7 12.9 29.7 15.1 Confl. Peds. (#/hr)
Travel Time (s) 5.7 12.9 29.7 15.1 Confl. Peds. (#/hr) Confl. Bikes (#/hr) Peak Hour Factor 0.58 0.50 0.62 0.93 0.92 0.77 0.82 0.74 0.42 0.50 0.81 0.88 Growth Factor 100% 10% 10% 10% 10% 10% 1
Confl. Peds. (#/hr) Confl. Bikes (#/hr) Peak Hour Factor 0.58 0.50 0.62 0.93 0.92 0.77 0.82 0.74 0.42 0.50 0.81 0.88 Growth Factor 100% 10% 10% 10% 10%<
Confl. Bikes (#/hr) Peak Hour Factor 0.58 0.50 0.62 0.93 0.92 0.77 0.82 0.74 0.42 0.50 0.81 0.88 Growth Factor 100%
Peak Hour Factor 0.58 0.50 0.62 0.93 0.92 0.77 0.82 0.74 0.42 0.50 0.81 0.88 Growth Factor 100% 100
Growth Factor 100% 00% <t< td=""></t<>
Heavy Vehicles (%) 0% 0% 0% 2% 2% 1% 1% 1% 4%
Bus Blockages (#/hr) 0
Detector Phase 2 2 1 1 Permitted Phases 2 2 1 1 Detector Phase 2 2 1 1 Switch Phase 2 2 1 1 Minimum Initial (s) 10.0 10.0 10.0 10.0 10.0 Minimum Split (s) 14.0 14.0 14.0 15.0 15.0 15.0 Total Split (s) 22.0 22.0 25.0 58.0 58.0 58.0 Minimum Split (s) 14.0 14.0 14.0 15.0 15.0 15.0 Total Split (s) 22.0 22.0 22.0 58.0 58.0 58.0 58.0 Vellow Time (s) 18.0 18.0 18.0 18.0 53.0 53.0 53.0 53.0
Mid-Block Traffic (%) 0% 0% 0% 0% Shared Lane Traffic (%) 0 48 0 0 745 0 0 572 0 44 865 0 Turn Type Perm NA NA NA NA
Shared Lane Traffic (%) 0 48 0 0 745 0 0 572 0 44 865 0 Turn Type Perm NA Perm NA Perm NA Perm NA Protected Phases 2 2 1 1 1 Permitted Phases 2 2 1 1 1 Detector Phase 2 2 2 1 1 1 Switch Phase 2 2 2 1 1 1 1 Switch Phase 0 10.0
Lane Group Flow (vph) 0 48 0 0 745 0 0 572 0 44 865 0 Turn Type Perm NA Perm
Turn Type Perm NA Perm
Protected Phases 2 2 1 1 Permitted Phases 2 2 1 1 1 Detector Phase 2 2 2 1 1 1 Switch Phase 2 2 2 2 1 1 1 Switch Phase 2 2 2 2 1 1 1 1 Switch Phase
Permitted Phases 2 2 1 1 Detector Phase 2 2 2 1 1 1 Switch Phase 2 2 2 2 1 1 1 1 Switch Phase 10.0
Detector Phase 2 2 2 2 2 1 1 1 1 Switch Phase
Switch Phase Image: Switch Phase Minimum Initial (s) 10.0
Minimum Initial (s) 10.0 </td
Minimum Split (s) 14.0 14.0 14.0 14.0 15.0 <th15.0< th=""> <th15.0< th=""> 15.0</th15.0<></th15.0<>
Total Split (s) 22.0 22.0 22.0 22.0 58.0 58.0 58.0 Total Split (%) 27.5% 27.5% 27.5% 72.5%
Total Split (%) 27.5% 27.5% 27.5% 72.5%
Maximum Green (s) 18.0 18.0 18.0 18.0 53.0
Yellow Time (s) 3.0 3.0 3.0 3.0 4.0
All-Red Time (s) 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
Total Lost Time (s) 4.0 4.0 5.0 5.0 5.0
Lead/Lag Lag Lag Lag Lead Lead Lead Lead
Lead-Lag Ontimize? Yes Yes Yes Yes Yes Yes Yes Yes
Vehicle Extension (s) 2.6 2.6 2.6 2.6 2.8 2.8 2.8
Minimum Gan (s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0
Time Before Beduce (s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0
Time To Reduce (s) $0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.$
Recall Mode None None None Min Min Min Min
Walk Time (s)
Flash Dont Walk (s)
Pedestrian Calls (#/hr)
v/c Ratio 0.98 0.08 0.70
Control Delay 13.4 621.5 48.3 5.3 10.0

Saturday Peak Full Bridge Closure 02/27/2020 Baseline EAM

Synchro 9 Report Page 5

Lanes, Volumes, Timings		
7: Plaza Driveway/West Wrentham Rd & Mendon Rd ((RI	122)

03/22/2020

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Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Queue Delay		0.0			0,0			0.0		0.0	0.0	
Total Delay		13.4			621.5	to Manada da La como a da d		48.3		5.3	10.0	
Queue Length 50th (ft)		6			~617			235		7	175	
Queue Length 95th (ft)		12			#829			#344		9	229	nand Adrid Hara Prida
Internal Link Dist (ft)		129			582			1445			697	
Turn Bay Length (ft)											sos garagonetar.	
Base Capacity (vph)		452			322			587		526	1243	
Starvation Cap Reductn		0			0			0		0	0	0.000.000.000.000.000.000
Spillback Cap Reductn		0			0			0		0	0	
Storage Cap Reductn	en de la contra a construir de la con	0			0			0		0	0	an a
Reduced v/c Ratio		0.11			2.31			0.97		0.08	0.70	
Intersection Summary Area Type: C	Other											
Actuated Cycle Length: 79.8 Natural Cycle: 120				S. S								
Control Type: Actuated-Unco	ordinated											
 Volume exceeds capacity 	/, queue is	theoretic	ally infinit	e.	saaraa waaanaala	-	69 CON550550					
Queue shown is maximun	n atter two	cycles.										
# 95th percentile volume ex	ceeds cap	pacity, qu	eue may l	be longei	i. Baarda waxaada							ana
Queue shown is maximun	n atter two	cycles.										
Splits and Phases: 7: Plaz	a Drivewa	y/West W	rentham I	Rd & Mei	ndon Rd (RI 122)						
an an									Ø2			

58 s

22 s

HCM Signalized Intersection Capacity Analysis 17: West Wrentham Rd & Pine Swamp Rd (RI 114)

03/22/2020

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		\$			4			4	<u>, , , , , , , , , , , , , , , , , , , </u>		4	
Traffic Volume (vph)	14	0	272	284	0	0	236	46	261	0	69	11
Future Volume (vph)	14	0	272	284	0	0	236	46	261	0	69	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	13	13	13	13	13	13	13	11	11	11
Total Lost time (s)		5.0			5.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.87			1.00			0,95			0.98	
Flt Protected		1.00			0.95			0.97			1.00	
Satd. Flow (prot)		1690			1847			1819			1785	
Flt Permitted		0.98			0.47			0.77			1.00	
Satd. Flow (perm)		1654			907			1438			1785	
Peak-hour factor, PHF	0.70	0.81	0.66	0.83	0.85	0.75	0.55	0.55	0.91	0.56	0.68	0.69
Adj. Flow (vph)	20	0	412	342	0	0	429	84	287	0	101	16
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	432	0	0	342	0	0	800	0	0	117	Q
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	42	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA			NA	
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)		23.6			23.6			21.4			21.4	
Effective Green, g (s)		23.6			23.6			21.4			21.4	
Actuated g/C Ratio		0.44			0.44			0.40			0.40	
Clearance Time (s)		5.0			5.0			4.0			4.0	
Vehicle Extension (s)		2.8			2.8			2.6			2.6	
Lane Grp Cap (vph)		722			396			569			707	
v/s Ratio Prot											0.07	
v/s Ratio Perm		0.26			c0.38			c0.56				
v/c Ratio		0.60			0.86			1.41			0,17	
Uniform Delay, d1		11.6			13.7			16.3			10.5	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		1.3			17.3			193.1			0.1	
Delay (s)		12.8			31.1			209.4			10.6	
Level of Service		В			С			F	en laster vertaans.		В	
Approach Delay (s)		12.8			31,1			209.4	<u>, e sue a</u>		10.6	
Approach LOS		В			С			F			В	
Intersection Summary												
HCM 2000 Control Delay			109.3		ICM 2000) Level of	Service		F			
HCM 2000 Volume to Capac	itv ratio		1.12	Species Sec.	Si na via sa							
Actuated Cycle Length (s)	e e secontin Servició		54.0	S	Sum of los	st time (s)	un en el este de la 1993		- 9.0		a karranan di karibi	el el la construction d'a la filia.
Intersection Capacity Utilizati	on		83.2%	10	CU Level	of Service	}		E			
Analysis Period (min)	annan antaratan (aa ah oo waxaa dadha	15					a sa tao ana amin'ny faritr'i Aritr'i A	a a mara na stant metal.			
c Critical Lane Group												
Lanes, Volumes, Timings 17: West Wrentham Rd & Pine Swamp Rd (RI 114)

03/22/2020

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4)			\$			4	
Traffic Volume (vph)	14	Ō	272	284	Ō	0	236	46	261	0	69	11
Future Volume (vph)	14	0	272	284	0	0	236	46	261	0	69	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	13	13	13	13	13	13	13	13	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0	-1	0	0		0	0		0	0		0
Storage Lanes	0		0	0		0,	0		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			No			Yes			No			No
Link Speed (mph)		30			40			25			25	
Link Distance (ft)		3320			7947			1008			920	
Travel Time (s)		75.5			135.5			27.5			25.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.70	0.81	0.66	0.83	0.85	0.75	0.55	0.55	0.91	0.56	0.68	0.69
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	42	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)			0.00									
Lane Group Flow (vph)	0	432	0	0	342	0	0	800	0	0	117	0
Turn Type	Perm	NA		Perm	NA		Perm	NA			NA	
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Detector Phase	1	1		1	1		2	2		2	2	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		5.0	5.0		5.0	5.0	
Minimum Split (s)	15.0	15.0		15.0	15.0		9.0	9,0		9.0	9.0	
Total Split (s)	35.0	35.0		35.0	35.0		25.0	25.0		25.0	25.0	
Total Split (%)	58.3%	58.3%		58.3%	58.3%		41.7%	41.7%		41.7%	41.7%	
Maximum Green (s)	30.0	30.0		30.0	30.0		21.0	21.0		21.0	21.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		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	ana a la sa shi nan wa ƙwa
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.0			5.0			4.0			4.0	
Lead/Lag	Lead	Lead		Lead	Lead	in de Toest	Lag	Lag		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	na na sama na sa ta Masa	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.8	2.8		2.8	2.8		2.6	2.6		2.6	2,6	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0	na amatri astu 4000	3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0	- 219 - 27 - 27 - 27 - 27 - 27 - 27 - 27 - 2	0.0	0.0	gangga keradak
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Walk Time (s)		n 1991 - 1991 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994 - 1994								nyany (ana anta-da tari	na senta se contra	eren ander and
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.60			0.86			1.41			0.17	
Control Delay		15.0			37.0			216.8			13.7	

Saturday Peak Full Bridge Closure 02/27/2020 Baseline EAM

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Lanes, Volumes, Timings 17: West Wrentham Rd & Pine Swamp Rd (RI 114)

03/22/2020

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		15.0			37.0			216.8			13.7	
Queue Length 50th (ft)		98			92			~396			26	
Queue Length 95th (ft)		143			#206		norma concessioned and a second	#301			44	
Internal Link Dist (ft)		3240			7867			928			840	
Turn Bay Length (ft)												
Base Capacity (vph)		932			512			567			705	
Starvation Cap Reductn		0	se oteorete oote		0			0		370 (S.C.) (S.C.)	U	0000000000
Spillback Cap Reductn		0			0			Û			0	
Storage Cap Reductn		0		(1957)) (1957) (1957)	0 • • • •			U 		60.000 March	U 0 4 7	
Reduced v/c Ratio		0.46			0.67			1.41			0.17	
Intersection Summary												
Area Type:	Other											
Cycle Length: 60												
Actuated Cycle Length: 54.	1											
Natural Cycle: 110												
Control Type: Actuated-Un	coordinated											
 Volume exceeds capac 	city, queue is	theoretic	ally infini	te.	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~							errover en
Queue shown is maxim	um after two	cycles,										
# 95th percentile volume	exceeds cap	bacity, qu	eue may	be longe	ſ.						oriente Sta	
Queue shown is maxim	um after two	cycles.						er en 1997 († 1917) Geser en serve				

Splits and Phases: 17: West Wrentham Rd & Pine Swamp Rd (RI 114)

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03/22/2020

	→	\mathbf{i}	4	*	*	1
Movement	FBT	EBR	WBI	WBT	NBL	NBR
Lane Configurations	*	7	ሻ	•	ኻ	7
Traffic Volume (veh/h)	356	0	0	350	Ō	, 0
Future Volume (Veh/h)	356	0	0	350	0	0
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.83	0.91	0.79	0.88	0.88	0.89
Hourly flow rate (vph)	429	0	0	398	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Kignt ium nare (ven)	Nono			Mono		10
Median type	None			none		
Unstream signal (ff)						
nX nlatoon unblocked			and also where the			
vC conflicting volume			429		827	429
vC1. stage 1 conf vol						
vC2, stage 2 conf vol		en andre en andre an Andre andre and	1999 - 1997 -	e weet to be the set		******
vCu, unblocked vol			429		827	429
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)						
tF (s)		un e superior de la compañía.	2.2		3.5	3.3
p0 queue free %			100		100	100
cM capacity (veh/h)			1136		341	626
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	429	0	0	398	0	eren and work we wre
Volume Left	0	0	0	0	0	
Volume Right	0	0	0	0	0	er en contra de
cSH	1700	1700	1700	1700	1700	
Volume to Capacity	0.25	0.00	0.00	0.23	0.00	
Queue Length 95th (ft)	0	0	0	0	0	
Control Delay (s)	0.0	U.U	0.0	U.U	U.U A	
Lane LUS	0.0	Salah da ka	0.0		А 0.0	
Approach LOS	0.0		0.0		υ.υ Δ	
νημισανιτου					n.	
Intersection Summary						
Average Delay		o de Saga	0.0			
Intersection Capacity Utiliza	ation		22.1%	lC	U Level o	ot Service
Analysis Period (min)			15			

HCM Signalized Intersection Capacity Analysis 1: Diamond Hill Rd (RI 114) & Nate Whipple Hwy (RI 120)

03/22/2020

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		44			4			()}			ر ية	
Traffic Volume (vph)	0	228	285	18	232	Ō	362	0	20	0	0	0
Future Volume (vph)	0	228	285	18	232	0	362	0	20	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	13	13	13	13	12	12	12	12	12	12
Total Lost time (s)		4.0			4.0			5.0				
Lane Util. Factor		1.00			1.00			1.00				
Frt		0.92			1.00			0.99				
Flt Protected		1.00			1.00	ىرى بىر مۇمۇمۇ بار بۇرۇمۇمۇرىي قۇر		0.95				
Satd. Flow (prot)		1710			1864			1732				
Flt Permitted		1.00			0.81			0.74	والمركز فالمراجع ومعاولا والمراجع			و موجود الدر و و را مار ال
Satd. Flow (perm)		1710			1515			1337				
Peak-hour factor, PHF	0.80	0.84	0.80	0.90	0.82	0.84	0.82	0.82	0.83	0.81	0.82	0.81
Adj. Flow (vph)	0	271	356	20	283	0	441	0	24	0	0	0
RTOR Reduction (vph)	0	97	0	0	0	0	0	13	0	0	0	0
Lane Group Flow (vph)	0	530	0	0	303	0	0	452	0	0	0	0
Heavy Vehicles (%)	6%	6%	6%	5%	5%	5%	4%	4%	4%	3%	3%	3%
Turn Type		NA		Perm	NA		Perm	NA				
Protected Phases		1			1			2			2	1
Permitted Phases	1			1			2			2		
Actuated Green, G (s)		17.1			17.1	navelen groene angelen m		18.3				
Effective Green, g (s)		17.1			17.1			18.3				
Actuated g/C Ratio		0.39			0.39			0.41	menan karantat menangan			4
Clearance Time (s)		4.0			4.0			5.0			1.5 A. A.	
Vehicle Extension (s)		2.6			2.6			3.0	where interna timona is the			10000 10000 1017
Lane Grp Cap (vph)		658			583			551				
v/s Ratio Prot		c0.31									chican an an	1
v/s Ratio Perm					0.20			c0.34				
v/c Ratio	okuntaya daga	0.81		en en son en ante de traves	0.52			0.82	Lori Constanti Alti			annara anna
Uniform Delay, d1		12.2			10.5			11.6				
Progression Factor		1.00			1.00			1.00				
Incremental Delay, d2		7.0			0.6			9.5				
Delay (s)		19.1			11.1			21.1				
Level of Service		B			B			U A			<u> </u>	
Approach Delay (s)		19.1 			11.1 B			21.1			U.U	
Approach LOS		В			В			U			A	
Intersection Summary								19 9 - Sec. 1				
HCM 2000 Control Delay	19 Q Q		18.0	H	CM 2000	Level of S	Service		В			
HCM 2000 Volume to Capacity	ratio		0.81									
Actuated Cycle Length (s)			44.4	Si	um of lost	time (s)			9.0			
Intersection Capacity Utilization	1		58.2%	IC	U Level o	of Service			В			
Analysis Period (min)			15									

Lanes, Volumes, Timings 1: Diamond Hill Rd (RI 114) & Nate Whipple Hwy (RI 120)

03/22/2020

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		44			4			44			¢.	
Traffic Volume (vph)	0	228	285	18	232	0	362	0	20	0	0	0
Future Volume (vph)	0	228	285	18	232	0	362	0	20	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	13	13	13	13	13	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ff)	0	nin den fekene	0	0	yna ar ei gwladaeon	0	0	************	0	0	an a defendante a barret	0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25	Geologia (terlakk)		25		1965199999999999
Right Turn on Red			Yes			Yes			Yes		6	Yes
Link Speed (mph)		40		***********	40	******		30	rediste e le tradición de tra	2014-1994-199 <u>4-19</u> 96-199	30	2000-000-000-000-000-000-000-000-000-00
Link Distance (ft)		1854			4162	0.25.25.25		1592			454	
Travel Time (s)		31.6	129990.02008096002	1940-754790271403109	70.9			36.2	100000000000000000000000000000000000000	(en 459,000 (menodo) (f	10.3	1996,000,000,000
Confl Peds (#/hr)					2200							
Confl. Bikes (#/hr)												(90434890694
Peak Hour Factor	0.80	0.84	0.80	0.90	0.82	0.84	0.82	0.82	0.83	0.81	0.82	0.81
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	6%	6%	6%	5%	5%	5%	4%	4%	4%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	and and an
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0 0	627	0	0	303	0	0	465	0	0	0	0
Turn Type		NA		Perm	NA		Perm	NA				
Protected Phases								2	nini Aliontoin	on an	2	42279-829 (1922)
Permitted Phases	ane sa 1 à			1			2			2		
Detector Phase	1	1		1	1		2	2		2	2	1999 - Yeshidaya (1999 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 19 1997 -
Switch Phase												
Minimum Initial (s)	10.0	10.0	191757.41717019510991	10.0	10.0		10.0	10.0	496-24 85-54 996-946	10.0	10.0	90090009999999 9
Minimum Split (s)	14.0	14.0		14.0	14.0		15.0	15.0		15.0	15.0	
Total Split (s)	24.0	24.0	an a	24.0	24.0	anda ta ang kang kang kang kang kang kang kang	26.0	26.0		26.0	26.0	Vennikonikoni3
Total Split (%)	48.0%	48.0%		48.0%	48.0%		52.0%	52.0%		52.0%	52.0%	
Maximum Green (s)	20.0	20.0		20,0	20.0		21.0	21.0		21.0	21.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	en de la ser de la serie d	1.0	1.0		1.0	1.0		1.0	1.0	1122219090211.1
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)	kato de Alexanderon	4.0			4.0			5.0	vicht wietweiter vei		5.0	0.000.000.000
Lead/Lag	Lead	Lead		Lead	Lead		Lad	Lag		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	e verden konstructuur allen	Yes	Yes		Yes	Yes	and substantial states of the second states of
Vehicle Extension (s)	2.6	2.6		2.6	2.6		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0	0.0500000000000000000000000000000000000	3.0	3.0	11199-09804-0909-098	3.0	3.0	9128 SC 1960 CC 1986 PH	3.0	3.0	0010900202000004
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0	n all form from the N. R. a Politi	0.0	0.0	o dono dentros vec	0.0	0.0	*******************	0.0	0.0	Arr-Sellebyra, Sourd
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)			e erstere til statiske	an sen arang Balan		naanse officielije		ransansett der	weensen en 19537WHE			a
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)		nese nivê û dirênê bilî tirê		en a construction de la construcción de la construcción de la construcción de la construcción de la construcción Construcción de la construcción de l	un an	e ne na marana katika ka	. el tra se se tata de la completa (B	aan oo shi dhadayadhiidhii	ni da din tanƙƙƘ	un entre en el Salta den Salt Sa	a oraș în Arte Martille A	
v/c Ratio		0.84			0.52			0.83				
Control Delay		22.3			15.0			28.1				

AM Peak Full Bridge Closure - Optimized 02/27/2020 Baseline EAM

Lanes, Volumes, Timings 1: Diamond Hill Rd (RI 114) & Nate Whipple Hwy (RI 120)

03/22/2020

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0	d a an		0.0			0.0				
Total Delay		22.3			15.0			28.1				
Queue Length 50th (ft)		113			63			107				
Queue Length 95th (ft)		#244			106			#215				
Internal Link Dist (ft)		1774 -			4082			1512			374	
Turn Bay Length (ft)												
Base Capacity (vph)		879			704			663				
Starvation Cap Reductn		0			0			0			an de la companya de	
Spillback Cap Reductn		0			0			0				
Storage Cap Reductn		0			0			0				
Reduced v/c Ratio		0.71			0.43			0.70				
Intersection Summary												
Area Type: O	Other											
Cycle Length: 50		an na an a	1990-1993-1997 (1997) 1997 - 1997 (1997) 1997 - 1997 (1997)		999 (999 (999 (999 (999 (999 (999 (999	ana (asarta 14)			CREASE CON			9990099999999
Actuated Cycle Length: 44.7												
Natural Cycle: 50	21:0433:4444444444 	en an		011202022800								an a
Control Type: Actuated-Unco	ordinated	9.6× -9.65										
# 95th percentile volume ex	ceeds cap	acity, que	eue may l	be longer	en en en sondige en delan • •	on ann an Alban Ann Ann An An		ter - Constrated (1997)	an a			ner de la compañía de
Queue shown is maximum	n after two	cycles.										
	en en el este en el en el este de la del	us e ong ong olympi				ansa arrenda da Azek			ana ang distakadi			
Splits and Phases: 1: Diam	ond Hill R	d (RI 114) & Nate '	Whipple H	Hwy (RI 1	20)						

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	s.	۲.	\searrow	\mathbf{X}	×	ペ	
Movement	WBL	WBR	SEL	SET	NWT	NWR	
Lane Configurations	۲¥		۲	Ŷ	4	7	
Traffic Volume (vph)	64	668	524	312	418	73	
Future Volume (vph)	64	668	524	312	418	73	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width	13	13	11	13	12	12	
Total Lost time (s)	4.0		4.0	5.0	5.0	5.0	
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00	
Frt	0.88		1.00	1.00	1.00	0.85	
Flt Protected	0,99		0.95	1.00	1.00	1.00	·
Satd. Flow (prot)	1669		1662	1870	1827	1553	
Fit Permitted	0.99		0.95	1.00	1.00	1.00	
Satd. Flow (perm)	1669		1662	1870	1827	1553	
Peak-hour factor, PHF	0.68	0.91	0.58	0.70	0.71	0.58	
Adj. Flow (vph)	94	734	903	446	589	126	
RTOR Reduction (vph)	468	0	0	0	0	54	
Lane Group Flow (vph)	360	0	903	446	589	72	
Heavy Vehicles (%)	3%	3%	5%	5%	4%	4%	
Turn Type	Prot		Prot	NA	NA	Prot	
Protected Phases	3		2	12	1	1	
Permitted Phases							
Actuated Green, G (s)	10.0	gang sanasgag	23.0	42.0	14.0	14.0	
Effective Green, g (s)	10.0		23.0	42.0	14.0	14.0	
Actuated g/C Ratio	0.17		0.38	0.70	0.23	0.23	
Clearance Ime (s)	4.0		4.0		5.0	5.0	
Vehicle Extension (s)	2.6		2.6		2.6	2.6	
Lane Grp Cap (vph)	278		637	1309	426	362	
V/s Ratio Prot	c0.22		c0.54	0.24	c0.32	0.05	
v/s Ratio Perm	4 00		4 4 0	0.04	4 00	0.00	
WC Ratio	1.29 05.0		1.42 40 c	0.34 D.C	1,38	0.20	
Uniform Delay, 01	25.0		18.5	3.5	23.0	18.5	
Progression Factor	1.00		1.00	1.00	1,00	1.00	
Doloy (o)	100.0		19/.1	0,1 2.7	200.2	10.2	
Lovel of Service	101.J E		210.0 C	υ.1 Δ	203.J E	10.7 R	
Approach Delay (s)	1Q1 Q		e estas din i dini	1/55	175.7	P	
Approach LOS	IOI.J E			F	- 175.7 F		
				0003630 1 .50			
Intersection Summary			18 - 18 - 16 19				
HCM 2000 Control Delay			163.2	H	GM 2000	Level of Service	F
HCM 2000 Volume to Cap	acity ratio		1.38	tere en stere er er er			
Actuated Cycle Length (s)			60.0	Ś	um of los	t time (s)	13.0
Intersection Capacity Utiliz	zation		106.7%	IC	CU Level (of Service	G
Analysis Period (min)			15				

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	£	*	\	\mathbf{x}	×	4	
Lane Group	WBL	WBR	SEL	SET	NWT	NWR	
Lane Configurations	¥.1		ሻ	۴	*	7	
Traffic Volume (vph)	64	668	524	312	418	73	
Future Volume (vph)	64	668	524	312	418	73	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	13	13	11	13	12	12	
Grade (%)	0%			0%	0%		
Storage Length (ft)	0	0	0			80	
Storage Lanes	1	0	1			1	
Taper Length (ft)	25		25				
Right Turn on Red		Yes				Yes	
Link Speed (mph)	30			35	35		
Link Distance (ft)	2348			381	2230		
Travel Time (s)	53.4			7.4	43.4		
Confl. Peds. (#/hr)							
Confl. Bikes (#/hr)			1.014.011.010.010.010.010.010.010.010				
Peak Hour Factor	0.68	0.91	0.58	0.70	0.71	0.58	
Growth Factor	100%	100%	100%	100%	100%	100%	
Heavy Vehicles (%)	3%	3%	5%	5%	4%	4%	
Bus Blockages (#/hr)	0	0	0	0	0	0	
Parking (#/hr)		68 69 69 6					
Vid-Block Traffic (%)	0%			0%	0%		
Shared Lane Traffic (%)							
Lane Group Flow (vph)	828	0	903	446	589	126	
Turn Type	Prot		Prot	NA	NA	Prot	
Protected Phases	3		2	12	1	1	
Permitted Phases		63 63 63 63		8 () () ()			
Detector Phase	3		2	12	1	1	יין איז
Switch Phase							
Minimum Initial (s)	10.0		5.0		10.0	10.0	
Minimum Split (s)	14.0		9.0		15.0	15.0	
Total Split (s)	14.0		27.0		19.0	19.0	
Total Split (%)	23.3%	59.64	45.0%		31.7%	31.7%	
Maximum Green (s)	10.0		23.0		14.0	14.0	
Yellow Time (s)	3.0		3.0		4.0	4.0	
All-Red Time (s)	1.0		1.0		1.0	1.0	
Lost Time Adjust (s)	0.0		0.0		0.0	0.0	
Total Lost Time (s)	4.0		4.0		5.0	5.0	
Lead/Lag			Lag	e de service	Lead	Lead	
Lead-Lag Optimize?	dan ministration and a standard state of the		Yes		Yes	Yes	
Vehicle Extension (s)	2.6		2.6		2,6	2.6	
Minimum Gap (s)	3.0		3.0		3.0	3.0	
Time Before Reduce (s)	0.0		0.0		0.0	0.0	
Time To Reduce (s)	0.0		0.0		0.0	0.0	יידי איז איז איז איז איז איז איז איז איז אי
Recall Mode	None		None		Min	Min	
Walk Time (s)		version he so 74					
Flash Dont Walk (s)							
Pedestrian Calls (#/hr)							
v/c Ratio	1.11		1.42	0.35	1.38	0.30	
Control Delay	79.6		218.9	4.9	210.9	12.1	

AM Peak Full Bridge Closure - Optimized 02/27/2020 Baseline EAM

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Lane Group	WBL	WBR	SEL	SET	NWT	NWR	
Queue Delay	0:0		0.0	0.0	0.0	0.0	
Total Delay	79.6		218.9	4.9	210.9	12.1	
Queue Length 50th (ft)	~161	18. S. O.	~455	53	~293	16	
Queue Length 95th (ft)	#149		#333	62	#331	25	
Internal Link Dist (ft)	2268			301	2150		
Turn Bay Length (ft)						80	
Base Capacity (vph)	746		637	1277	426	416	
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	1.11		1.42	-0.35	1.38	0.30	
Intersection Summary							
	Othor		eren versien Litte MRS				

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Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 60

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

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: 6: Mendon Rd (RI 122) & Nate Whipple Hwy (RI 120)

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19 5	27.8	145

AM Peak Full Bridge Closure - Optimized 02/27/2020 Baseline EAM

HCM Signalized Intersection Capacity Analysis 7: Plaza Driveway/West Wrentham Rd & Mendon Rd (RI 122)

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Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		ф.			\$			\$		ሻ	د أ	
Traffic Volume (vph)	3	1	6	453	0	150	95	100	13	7	292	566
Future Volume (vph)	3	1	6	453	0	150	95	100	13	7	292	566
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	16	16	16	12	12	12	14	14	12	11	14	14
Total Lost time (s)		4.0			4.0			5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00			1.00		1.00	1.00	
Frt		0.94			0.96			0.98		1.00	0.90	
Flt Protected		0.98			0.96			0.98		0.95	1.00	
Satd. Flow (prot)		1986	\$1.51 (§ 4)		1700			1897		1694	1772	
Flt Permitted		0.89		naes Nass (20 activates	0.76			0.17	antiko estato de Galerda antika	0.59	1.00	000000000014
Satd. Flow (perm)		1807			1347			326		1055	1772	
Peak-hour factor, PHF	0.25	0.25	0.50	0.84	0.92	0.79	0.81	0.79	0.41	0.44	0.87	0.86
Adj. Flow (vph)	12	4	12	539	0	190	117	127	32	16	336	658
RTOR Reduction (vph)	0	8	0	0'	15	0	0	5	0	0	71	0
Lane Group Flow (vph)	0	20	0	0	714	0	0	271	0	16	923	0
Heavy Vehicles (%)	0%	0%	0%	4%	4%	4%	3%	3%		3%	3%	3%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2		NOTED UNDER DER TAG	2			1			1	ana ana
Permitted Phases	2			2			1			1		
Actuated Green, G (s)		33.0			33.0			58.0		58.0	58.0	
Effective Green, g (s)		33.0			33.0			58.0		58.0	58.0	
Actuated g/C Ratio		0.33			0.33			0.58		0.58	0.58	STERATORIA
Clearance Time (s)		4.0	6.6.6.6		4.0			5,0		5.0	5,0	
Venicle Extension (s)		<u>Z.b</u>			2.0			2.8		2.8	2.8	94333574
Lane Grp Cap (vph)		596			444			189		611	1027	
V/s Ratio Prot		0.04			0 50			0.00		0.00	0.52	
vs Ratio Perm		0.01			CU.53			CU.83		0,02	0.00	
V/C Rallo		0.03			1.01			1.44		0.03	0.90	
Uniform Delay, di		4.00	69-69-69-69-69-		33.0		189 (SOLIS) (J	Z1.0		9.0	10.4	
Progression Factor		1.00			1.00		15003030340	1.00		1.00	10.5	
Delay (a)		0.0			204.2			223.7		0.0	10.0 28 0	
Lovel of Service		22.1 C						244.1 F		υ.υ Δ	20.9	
Approach Dolay (s)		00 7 00 7			317.7			244 7		Λ.	28.6	
Approach LOS		<u>22.1</u>			511.7 E		1570050666	244.1 F			<u></u>	885389
Approach Loo		Ŷ									J	84790350
Intersection Summary					-							
HCM 2000 Control Delay			160,9	H(CM 2000	Level of S	Service		F			
HCM 2000 Volume to Capacity	/ ratio		1.50			w						ugarawan.
Actuated Cycle Length (s)			100.0	Si	um of los	t time (s)			9.0			
Intersection Capacity Utilization Analysis Period (min)	n		114.0% 15	IC	:U Level (of Service			H			

Lanes, Volumes,	Timings			
7: Plaza Driveway	/West Wrentham	Rd & Men	don Rd (Rl	122)

03/22/2020

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Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		4			\$		•	4		۲	4	
Traffic Volume (vph)	3	1	6	453	0	150	95	100	13	7	292	566
Future Volume (vph)	3	1	6	453	0	150	95	100	13	7	292	566
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	12	12	12	14	14	12	11	14	14
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (ft)	25	191 - George George George		25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			35			35			35	
Link Distance (ft)		209			662			1525			777	
Travel Time (s)	an an an an tha an an an	5.7	100 (1997) - Constanting (1997)		12.9			29.7			15.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)	Marthale - Constant		a la transferi endes	- 1999 - N 1999 - 1998 - 19	. 1.1.1.1.	. 1911 - 1979 - 1971 - 1991	- 1, 1-2, 1-2, 2-1, 1-2, 1-2, 1-2, 1-2,					
Peak Hour Factor	0.25	0.25	0.50	0.84	0.92	0.79	0.81	0.79	0.41	0.44	0.87	0.86
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	4%	4%	4%	3%	3%	3%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)	an a	0%	an a chuir a sin a chuir.	: 14 Cont & number of the	0%	, en		0%	1		0%	101111111111
Shared Lane Traffic (%)			aan een gerkan. SN soonse serv									
Lane Group Flow (vph)	0	28	0	0	729	0	0	276	0	16	994	0
Turn Type	Perm	ŇĂ		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2	anna's factor ann	ini e un titel i direte à co	2	1999 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	1999-1999-1997 - 1997 - 1997 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997	1	999 (999 (999 (999 (999 (999 (999 (999		1	
Permitted Phases	2			2			1			1		
Detector Phase	2	2		2	2	1996. (2007) 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	1	1		1	1	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	14.0	14.0		14.0	14.0		15.0	15.0		15.0	15.0	
Total Split (s)	37.0	37.0	al en anter a proporte.	37.0	37.0	49 1.49 (10 (10 (10 (10 (10 (10 (10 (10 (10 (10	63.0	63.0	ana la la constanción	63.0	63.0	
Total Split (%)	37.0%	37.0%		37.0%	37.0%		63.0%	63.0%		63.0%	63.0%	
Maximum Green (s)	33.0	33.0	- 10, 10, 10, 10, 10, 10, 10, 10, 10, 10,	33.0	33.0		58.0	58.0		58.0	58.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	2229 C C C C C C C C C C C C C C C C C C	1.0	1.0		1.0	1.0		1.0	1.0	and a second
Lost Time Adjust (s)		0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)	in an	4.0	*****		4.0			5.0		5.0	5.0	
Lead/Lag	Lag	Lag		Lag	Lag		Lead	Lead		Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.6	2.6		2.6	2.6		2.8	2.8		2.8	2.8	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)	eren en veren berefe Stille		en en ser en		- Lucie de la construcción.	ana ang kanalon Pelantek	a na sana watawa ƙ	a ann an saothradaidh				
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)	1			1995 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -		2000 A.						
v/c Ratio		0.05			1.59			1.43		0.03	0.91	
Control Delay		16.1		a a construction de la constructión de	301.5			243.5		9.1	28.7	

AM Peak Full Bridge Closure - Optimized 02/27/2020 Baseline EAM

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Lanes, Volumes, Timings 7: Plaza Driveway/West Wrentham Rd & Mendon Rd (RI 122)

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Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Queue Delay		0.0			0.0			0.0		0.0	0.0	
Total Delay		16.1			301.5			243.5		9.1	28.7	
Queue Length 50th (ft)		7			~663			~238		4	455	
Queue Length 95th (ft)		3			#891			#214		6	#733	an an de public an un tra
Internal Link Dist (ft)		129			582			1445			697	
Turn Bay Length (ft)												
Base Capacity (vph)		603			459			193		611	1098	
Starvation Cap Reductn		0			0	and the second states and		0		0	0	
Spillback Cap Reductn		0			0			0		0	0	
Storage Cap Reductn		0			0			0		0	0	
Reduced v/c Ratio		0.05			1.59			1.43		0.03	0.91	
Intersection Summary							1					
Area Type:	Other											
Cycle Length: 100											48.000 x 000 X 48.	TATAB CORRECTIONS
Actuated Cycle Length: 100												
Natural Cycle: 100						ango tara kutanggu Bagaw.						
Control Type: Actuated-Unco	oordinated											
 Volume exceeds capacit 	y, queue is	s theoretic	ally infinit	е.		*******						
Queue shown is maximul	m after two	o cycles.								18116-04140		
# 95th percentile volume e	xceeds cap	pacity, qu	eue may l	be longe	r.	ana ang ang ang ang ang ang ang ang ang		even as an	Franciska (* 1960)			
Queue shown is maximul	m after two	cycles.										
Onlite and Diseases 7: Dis-		VRMoot M	ronthors I		ndan Dd /	DI 400\						
Splits and Phases: 7: Plaz	za Drivewa	y/west w	rentnam		nuon Ru (RI 122)	10 4					
X ₀₁								Ø2				
63 s							37.s					

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			ф			(}			4	
Traffic Volume (vph)	0	7	188	348	79	7	156	106	547	2	50	12
Future Volume (vph)	0	7	188	348	79	7	156	106	547	2	50	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	13	13	13	13	13	13	13	11	11	11
Total Lost time (s)		5.0			5,0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.87			1.00			0.91			0.97	
Flt Protected		1.00			0.96			0.99			1.00	
Satd. Flow (prot)		1692			18 1 1			1768			1736	
Flt Permitted		1.00			0.51			0.90			0.97	
Satd. Flow (perm)		1692			951			1604			1690	
Peak-hour factor, PHF	0.78	0.63	0.75	0.73	0.75	0.71	0.49	0.62	0.56	0.71	0.63	0.43
Adj. Flow (vph)	0	11	251	477	105	10	318	171	977	3	79	28
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	262	0	0	591	0	0	1466	0	0	110	Q
Heavy Vehicles (%)	1%	1%	1%	4%	4%	4%	0%	0%	0%	2%	2%	2%
Turn Type		NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)		46.0			46.0			65.0			65.0	
Effective Green, g (s)		46.0			46.0			65.0			65.0	
Actuated g/C Ratio		0.38			0.38			0.54			0.54	
Clearance Time (s)		5.0			5.0			4.0			4.0	
Vehicle Extension (s)		2.8			2.8			2.6			2.6	
Lane Grp Cap (vph)		648			364			868			915	
v/s Ratio Prot		0.15										
v/s Ratio Perm					c0.62	10 10 10 -51		c0.91			0.07	
v/c Ratio		0.40			1.62			1.69			0.12	
Uniform Delay, d1		27.0			37.0			27.5			13.5	
Progression Factor		1.00			1.00		,	1.00			1.00	
Incremental Delay, d2		0.4			293.4			315.0			0.0	
Delay (s)		27.4			330.4	a maan milalay kuduu araa ji	an bran a sao dao amin'na ar	342.5		na se	13.5	
Level of Service		C			F			F			В	
Approach Delay (s)		27.4			330.4			342.5		0.000.000-0.000.000	13.5	
Approach LOS		С			F			F			В	
Intersection Summary												
HCM 2000 Control Delay			290.7	H	CM 2000	Level of S	Service		F			
HCM 2000 Volume to Capacity	v ratio		1.66					a				serections.
Actuated Cycle Length (s)			120.0	S	um of losi	time (s)			9.0			
Intersection Capacity Utilizatio	eneren en e		102.0%	IC	CU Level o	of Service			G		19 4965 19 99 19 99 19 99 19 99 19 99 19 99 19 99 19 99 19 99 19 99 19 99 19 99 19 19 9 9 9	s. coc. 00/0778
Analysis Period (min)			15									

Lanes, Volumes, Timings 17: West Wrentham Rd & Pine Swamp Rd (RI 114)

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			<u>ቆ</u>		and the second shall be a second	4			£1.	
Traffic Volume (vph)	0	7	188	348	79	7	156	106	547	2	50	12
Future Volume (vph)	0	7	188	348	79		156	106	547	2	50	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ff)	13	13	13	13	13	13	13	13	13	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0 0	0	1999 - 199 7 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999	0	0	1999 (Statistics of Statistics of Statistics of Statistics of Statistics of Statistics of Statistics of Statist		0	1999-1997-1998-1998 1999-1997 - 1998-1998 1999-1997 - 1998 - 1998 - 1998 - 1998 - 1998 - 1998 - 1998 - 1998 - 1998 - 1998 - 1998 - 1	0
Storage Lanes	Ň		Ň	ō		Ō	Ō		Ō	Ō		Ō
Taper Length (ft)	25	er y Kalenjer, Afrika.	an a	25	nga katan tangga parata	eropoli incontrete A	25		baneso sin Tenn	25		alan kana
Right Turn on Red			No			Yes			No			No
Link Speed (mph)		30	an an the second se	Andrew Cherry	40	georges and and		25			25	ಂಗಿಯಲ್ಲಾನ್ನಡುವು
Link Distance (ft)		3320			7947			1008			920	
Travel Time (s)	1201410200202	75.5	666 soor 864 698	AND 8999 9999 9	135.5	************	a de la de la deserve	27.5	an an Anna an Anna an Anna. An Anna an Anna		25.1	un en
Confl Peds (#/br)												
Confl Bikes (#/hr)		CARACTERISTICS CARACTERISTICS	489,489,899,469,60	2014년 - 11일 - 1 11일 - 11일 - 11 11일 - 11일 - 11	e: ::-:::::::::::::::::::::::::::::::::							992098393
Peak Hour Factor	0 78	0.63	0 75	0.73	0 75	0.71	0 49	0.62	0.56	0.71	0.63	0 43
Growth Eactor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	100%	1%	1%	4%	4%	4%	0%	0%	0%	2%	2%	2%
Bus Blockages (#/hr)	or i م	0 0	n N	n N	е желе са	0	مە 1	о, О	0	0	<u>، ج</u>	8199-0000 0
Parking (#/hr)	v	`	,				•	• •				
Mid-Block Traffic (%)		በ%			0%			0%			0%	
Shared Lane Traffic (%)		070			070			0,0			· · / ·	
Lane Groun Flow (voh)	n	262	0 0	0	592	0	٥	1466	0 0	0	110	0
		NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		sossotetetete 1			899999999999999999 1	de la plan de la baix		2			2	0.9999-9999-9994 0.9999-9999-9994
Permitted Phases	1	evaloasosa-		1			2	-		2	-	
Detector Phase	1	1		1			2	2	en e	2	2	
Switch Phase	•											
Minimum Initial (s)	10.0	10.0	waswasseeded	10.0	10.0	****************	5.0	5.0	9.09969903999999	5.0	5.0	048-05097014
Minimum Split (s)	15.0	15.0		15.0	15.0		9.0	9.0		9.0	9.0	
Total Split (s)	51.0	51.0	Sérestrandori:	51.0	51.0	an a transformation and	69.0	69.0	en estisini este	69.0	69.0	2010/2012/2013
Total Split (%)	42.5%	42.5%		42.5%	42.5%		57.5%	57.5%		57.5%	57.5%	
Maximum Green (s)	46.0	46.0	na dona pode na set	46.0	46.0	ana wanda ya sengaren	65.0	65.0	19.709.759.999 19.709.997	65.0	65.0	entre entre de la
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0	1994, 1997, 1999, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 19	1.0	1.0	NG NG KUNANGAN BU	1.0	1.0	te na ser nega ser ser	1.0	1.0	-0560-0660-078 -
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)	References and the second s	5.0	alender son	.804.000.000	5.0	1999 - 1999 - 1999 - 1999 - 1997 - 1997 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -		4.0	d Maria e a ta esta esta esta f	(1993) - Constitution (1997) - Constitution (1997) - Constitution (1997) - Constitution (1997) - Constitution (4.0	
Lead/Lag	Lead	Lead		Lead	Lead		Lag	Lag		Laq	Lag	
Lead-Lag Optimize?	Yes	Yes	: 279 (1991) - 260 (1993) - 279 (1999) - 260 (1993)	Yes	Yes	un ann an a' an	Yes	Yes	ne stillted viewe troch.	Yes	Yes	043 A 64 04 64 41 0
Vehicle Extension (s)	2.8	2.8		2.8	2.8		2.6	2.6		2.6	2.6	
Minimum Gap (s)	3.0	3.0	eren mentre men	3.0	3.0	alen etter en tertette.	3.0	3.0	anan da subara a sa	3.0	3.0	(2000-000-000-00-00-00-00-00-00-00-00-00-
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	-estates distanti
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Walk Time (s)	1999-003-05-0 <u>5</u> -07-07-07-07-07-07-07-07-07-07-07-07-07-	aan ah				nen sen der		no musica de Calificia de	le constante vetes			e were werd heef
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)	an na shekarar ta ƙwallon ƙ		ne des uses sõeb		and national national particular	e se transferi de la dela del 1985. No	unun anta sera sa Auna Hilitz	ne konstant filmini fil	, e oren en litteren de	o en receberra de Persado (1969) A	a a ser ta contractoria da	energing reading and 2
v/c Ratio		0.40			1.62			1.69			0.12	
Control Delay		29.4			320.4			339.1			14.0	

AM Peak Full Bridge Closure - Optimized 02/27/2020 Baseline EAM

Lanes, Volumes, Timings 17: West Wrentham Rd & Pine Swamp Rd (RI 114)

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03/22/2020

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Lane Group	EBL EBT	EBR WBL WBT	WBR NBL	NBT NB	IR SBL	SBT	SBR
Queue Delay	0.0	0,0		0.0	S QUAL DE C	0.0	
Total Delay	29.4	320.4		339.1		14.0	
Queue Length 50th (ft)	146	~666		~1663		40	
Queue Length 95th (ft)	143	#692		#1110		48	
Internal Link Dist (ft)	3240	7867		928		840	
Turn Bay Length (ft)							
Base Capacity (vph)	648	365		868		915	
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	1.62		1.69		0.12	
Intersection Summary							
Area Type:	Other						
Cycle Length: 120							
Actuated Cycle Length: 120							
Natural Cycle: 150							
Control Type: Actuated-Unc	oordinated						

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~ 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: 17: West Wrentham Rd & Pine Swamp Rd (RI 114)

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51s	69 s
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	-	\mathbf{i}	*	-	*	1
Movement	EBT	EBR	WBI	WBT	NBI	NBR
Lane Configurations	*	7 7	<u></u>	*	<u> </u>	*
Traffic Volume (veh/h)	659	17	22	349	34	112
Future Volume (Veh/h)	659	17	22	349	34	112
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0,73	0.60	0.86	0.60	0.76	0.91
Hourly flow rate (vph)	903	28	26	582	45	123
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						10
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			903		1537	903
vC1, stage 1 conf vol						
vC2, stage 2 conf vol			~~~			
vCu, unblocked vol			903		153/	903
tC, single (s)		en weerse	4.1		6.4	6.2
tC, 2 stage (s)		8 15 15 15				
1⊢ (S)			Z.Z		<u>ა.</u> ე	<u>ა</u> .ა
pu queue tree %			97		63	03 294
civi capacity (ven/n)			753		122	334
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	903	28	26	582	168	
Volume Left	0	0	26	0	45	
Volume Right	0	28	0	0	123	
cSH	1700	1700	753	1700	457	
Volume to Capacity	0.53	0.02	0.03	0.34	0.37	n an
Queue Length 95th (ft)	0	0	3	0	42	
Control Delay (s)	0.0	0.0	10.0	0.0	29.6	
Lane LOS			A		D	
Approach Delay (s)	0.0		0.4		29.6	
Approach LOS					D	
Intersection Summary						
Average Delay			3.1			
Intersection Capacity Utilizat	lion		48.3%	IC	U Level o	of Service
Analysis Period (min)			15			8 9 S 6

HCM Signalized Intersection Capacity Analysis 1: Diamond Hill Rd (RI 114) & Nate Whipple Hwy (RI 120)

03/22/2020

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			ф э			\$			4	
Traffic Volume (vph)	0	419	217	236	552	0	260	0	120	0	0	0
Future Volume (vph)	0	419	217	236	552	0	260	0	120	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	13	13	13	13	12	12	12	12	12	12
Total Lost time (s)		4.0			4.0			5.0				
Lane Util. Factor		1.00			1.00			1.00				
Frt		0,96			1.00			0.95				
Flt Protected		1.00			0.98			0.97				
Satd. Flow (prot)		1662			1823			1670				
FIt Permitted		1.00			0.37			0.80				
Satd. Flow (perm)		1662			692			1384				
Peak-hour factor, PHF	0.74	0.70	0.77	0.70	0.79	0.86	0.88	0.69	0.77	0.69	0.73	0.63
Adj. Flow (vph)	0	599	282	337	699	0	295	0	156	0	0	0
RTOR Reduction (vph)	0	12	0	0	0	0	0	13	0	0	0	0
Lane Group Flow (vph)	0	869	0	0	1036	0	0	438	0	0	0	0
Heavy Vehicles (%)	13%	13%	13%	6%	6%	6%	5%	5%	5%	6%	6%	6%
Turn Type		NA		Perm	NA		Perm	NA				
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)		100.0			100.0			31.0				
Effective Green, g (s)		100.0			100.0			31.0				
Actuated g/C Ratio		0.71			0.71	- energia da da Antonia da Antoni		0.22				
Clearance Time (s)		4.0			4.0			5.0				
Vehicle Extension (s)		2.6			2.6			3.0				
Lane Grp Cap (vph)		1187			494			306				
v/s Ratio Prot		0.52										sexternettika
v/s Ratio Perm					c1.50			c0.32				
v/c Ratio	-an-consecut	0.73	aanaana taraati		2.10		04504000000000000000	1.43	seeden aan aan aan aan a			
Uniform Delay, d1		12.0			20.0			54.5				
Progression Factor	ana ang ang ang ang ang ang ang ang ang	1.00			1.00			1.00				www.ai.ederol
Incremental Delay, d2		2.3			500.6			211.7				
Delay (s)		14.2			520.6			266.2				
Level of Service		L B									<u> </u>	
Approach Delay (s)		14.2			520.6			266.2	Na kata kata kata kata kata kata kata ka		U.U	seensey
Approach LOS		В			F			ana an Fair			A	ang ng d
Intersection Summary												
HCM 2000 Control Delay			283.7	H	CM 2000	Level of	Service		S F			
HCM 2000 Volume to Capacity	ratio		1.94			anga (taabuut tina ata siti						
Actuated Cycle Length (s)			140.0	Si	um of lost	t time (s)			9.0			
Intersection Capacity Utilization Analysis Period (min)			110.0% 15	IC	U Level (of Service			H			

c Critical Lane Group

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		ጨ		99079990994088899 <u>7</u> 2028889999	4			ф			đ.,	
Traffic Volume (vph)	0	419	217	236	552	0	260	0	120	0	0	0
Future Volume (vph)	0 0	419	217	236	552	0 0	260	0	120	0	0	0
Ideal Flow (vohol)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	13	13	13	13	13	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ff)	0	064 MARCE - MARCE - C	0	0	99,999,795,799 99,999,795,799	0	0	1000000000000000	0	0		0
Storage Lanes	Ň		Ō	Ō		Ō	Ō		Ō	0		Ō
Taper ength (ff)	25		er en de State France	25	(nyanasay sasar sasa	deregiler för streffer för	25		904) (479-1497) (1997)	25		1929 VENERALEY
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		40			40			30	***********		30	9999-9999-9997-59
Link Distance (ft)		1854			4162			1592			454	
Travel Time (s)	alan (na dia dia kata).	31.6	19222199324992499		70.9	1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997	1979-99331976197697 1979-9933197697	36.2	909 (900) (909 (900) 	0469769997699	10.3	069600000008
Confl Peds (#/hr)												
Confl. Bikes (#/hr)		ingen ander andere jangen er se		-909863/2019-69904								41009134993993
Peak Hour Factor	0.74	0.70	0 77	0.70	0.79	0.86	0.88	0.69	0.77	0.69	0.73	0.63
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	13%	13%	13%	6%	6%	6%	5%	5%	5%	6%	6%	6%
Bus Blockages (#/hr)	89990676669 0		0	0	0	0	0	0	0	0	0 0	0
Parking (#/hr)	<u>.</u>											
Mid-Block Traffic (%)		0%			0%			0%	ang di Selanda di S		0%	and an official states of the
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	881	0	0	1036	0	0	451	0	0	0	0
Turn Type		NA		Perm	NA		Perm	NA				
Protected Phases	99,999,999,999,999,9			en e		n gestalen het der seine	************	2	Eberationeraner	1999-1993-1993-1993-1993-1993-1993-1993	2	researched (septer)
Permitted Phases	1			1			2			2		
Detector Phase	1	1		1	1		2	2	ngan mini kana mini	2	2	attin an an an an
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	an a	10.0	10.0	*******	10.0	10.0	ana Gilminini
Minimum Split (s)	14.0	14.0		14.0	14.0		15.0	15.0		15.0	15.0	
Total Split (s)	104.0	104.0	NPARADORINICI	104.0	104.0		36.0	36.0	0002000002230	36,0	36.0	New York (New York)
Total Split (%)	74.3%	74.3%		74.3%	74.3%		25.7%	25.7%		25.7%	25.7%	
Maximum Green (s)	100.0	100.0	a na sa	100.0	100.0		31.0	31.0		31.0	31.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	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	
Total Lost Time (s)	- (4.0			4.0			5.0		1992 - 1992 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	5.0	
Lead/Lag	Lead	Lead		Lead	Lead		Lag	Lag		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.6	2.6		2.6	2.6		3.0	3.0		3,0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0	, be much a rule (be right	0.0	0.0		0.0	0.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)		a da mana da seconda da da seconda da second Seconda da seconda da s		a an	er en regel a fan de Miladi		una en activadad	ourses and shotted	and a second second second			unu nomenunu titu Ma
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)			a na na ang ang ang ang ang ang ang ang							en an eine an eine ster staffete		
v/c Ratio		0.73			2.10			1.41				
Control Delay		16.0			522.0			242.0				

PM Peak Full Bridge Closure - Optimized 02/27/2020 Baseline EAM

Lanes, Volumes, Timings 1: Diamond Hill Rd (RI 114) & Nate Whipple Hwy (RI 120)

03/22/2020

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0			0.0			0.0				
Total Delay		16.0			522.0			242.0				a
Queue Length 50th (ft)		418			~1045			~541				
Queue Length 95th (ft)		334			#1034			#507				
Internal Link Dist (ft) Turn Bay Length (ft)		1774			4082			1512			374	
Base Capacity (vph)		1199			493			319				
Starvation Cap Reductn		0			0			0				
Spillback Cap Reductn		0			0			0				
Storage Cap Reductn		0			0			0				
Reduced v/c Ratio		0.73			2.10			1.41				
Intersection Summary												
Area Type:	Other											
Cycle Length: 140								na o na mandro de servi				1999, 1999, 1999, 1999, 1999, 1999, 1999, 1999, 1999, 1999, 1999, 1999, 1999, 1999, 1997, 1997, 1997, 1997, 19
Actuated Cycle Length: 140												
Natural Cycle: 140												્રાય કે આ ગામ છે.
Control Type: Actuated-Unc	oordinated											
 Volume exceeds capaci 	ty, queue is	theoretic	ally infinit	e.								STATES ST
Queue shown is maximu	m after two	cycles.										800000000000000000000000000000000000000
# 95th percentile volume e	exceeds cap	acity, qu	eue may	be longer								
Queue snown is maximu	m atter two	cycles.										
Splits and Phases: 1: Dia	mond Hill R	d (RI 114) & Nate	Whipple I	Hwy (RI 1	20)						
									₩ø2			
104 s	-	1 N N N.			a				16 s			

	5	★	\searrow	\mathbf{x}	×	4	
Movement	WBL	WBR	SEL	SET	NWT	NWR	
Lane Configurations	M		ኝ	4	Ą	7	
Traffic Volume (vph)	88	546	480	434	411	73	
Future Volume (vph)	88	546	480	434	411	73	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width	13	13	11	13	12	12	
Total Lost time (s)	4.0		4.0	5.0	5.0	5.0	
Lane Util. Factor	1.00	-1	1.00	1.00	1.00	1.00	
Frt	0.88		1.00	1.00	1.00	0.85	
FIt Protected	0.99	000000000000000000000000000000000000000	0.95	1.00	1.00	1.00	
Satd, Flow (prot)	1700		1728	1944	1881	1599	
Flt Permitted	0.99	1999-1999-1990-1999-1997 1999-1999-1990-1990-1997-1997	0.95	1.00	1.00	1.00	
Satd. Flow (perm)	1700		1728	1944	1881	1599	
Peak-hour factor PHF	0.99	0.72	0.93	0.94	0.86	0.79	
Adi Flow (vph)	89	758	516	462	478	92	
RTOR Reduction (vnh)	507	0	0	0 0	0 0	49	
ane Group Flow (vph)	340	Ō	516	462	478	43	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	
Turn Tyne	Prof		Prof	NA	NA	Prot	
Protected Phases	3		2	12	1		
Permitted Phases							
Actuated Green (G (s)	13.0		18.9	38.9	15.0	15.0	
Effective Green a (s)	13.0		18.9	38.9	15.0	15.0	
Actuated n/C Ratio	0.22		0.32	0.65	0.25	0.25	
Clearance Time (s)	4.0		4.0	0.00	5.0	50	
Vehicle Extension (s)	2.6	enter (* 1993) Geographie (* 1993)	2.6	weers een een een een een een een een een ee	2.6	2.6	
ane Grn Can (vnh)	368		545	1262	471	400	
v/s Ratio Prot	-0.20		cf) 30	0.24	c0 25	0.03	
v/s Rafio Perm	00.20		00.00	T-4.V	00.20	0.00	
wo Ratio	0 93		ሰ ዓ5	0.37	1 01	0.11	
Uniform Delay, d1	23.0		20.0	4.8	22.4	17.3	
Progression Factor	1 00		1 00	1 00	1 00	1.00	
Incremental Delay, d2	28.5		25.6	01	45.3	01	
Delav (s)	51.5		45 7	50	67.7	17.4	
Level of Service	ă î		 ה	Ā	F	В	
Approach Delay (s)	51 5		888-999 - 1 999	26.4	59.6		
Approach LOS	Ď			C	Ē		
				×			
HCM 2000 Control Delay			42.2	Ц	CM 2000	Level of Service	D
HOM 2000 CONTROLDERAY	oitu rotio	8-23-22-20	ትን.ረ በ ዐፍ				Ľ
Actuated Cycle Longth (a)	urià ratio		50.0	c		time (s)	13.0
Intersection Canacity Litilize	tion		07.6%	ہ ۱	uni uni usi VIII evel i	rume (o) of Service	F
Analysis Dariad (min)	uVII		37.070 15			3 JUNUU 3 JUNUU	L

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	5	۳	\searrow	\mathbf{X}	×	へ	
Lane Group	WBL	WBR	SEL	SET	NWT	NWR	
Lane Configurations	¥		۲	•	↑	7	
Traffic Volume (vph)	88	546	480	434	<u>41</u> 1	73	
Future Volume (vph)	88	546	480	434	411	73	a abar nati kanana kanan kanan kanan kanan kanan kanan kanan da manan kanan kanan kanan kanan kanan kanan kana A
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	13	13	11	13	12	12	
Grade (%)	0%			0%	0%		
Storage Length (ft)	0	0	0		5 (1) (1) (1) (1) (1) (1) (1) (1)	80	
Storage Lanes	1	0	1			1	
Taper Length (ft)	25		25		970-000-000-000-00-00		
Right Turn on Red		Yes				Yes	
Link Speed (mph)	30			35	35		
Link Distance (ff)	2348			381	2230		
Travel Time (s)	53.4		ala data minantan	7.4	43.4		lan far personan de la company de la comp Internet
Confl Peds (#/hr)							
Confl Bikes (#/hr)	1214-091-1970-09019 1	-99229-0399-03993		9970497984972	REAL PROPERTY	gen on severale.	
Peak Hour Factor	0 00	0 72	0.93	0.94	0.86	0 79	
Growth Factor	100%	100%	100%	100%	100%	100%	
Hoaw Vehicles (%)	1%	100%	10070	1%	1%	1%	
Rue Blockages (#/hr)	ν. Ω	ም በ	<u> </u>	، ا	n N	Λ Λ	
Dus Diockages (#/11) Dorking /#/hr)	v.	v Silesses					
Mid Plack Troffic (%)				ሰ%	ሰ%		
Sharod Lano Traffic (%)	070			070	070		
Lana Croup Flow (mb)	<u>8</u> /17	٥	516	785	178	92	
Lane Gloup Flow (vpn)	Drof		Drof	HUZ MA		Drot	
Protocted Disease	ן ו וענ ז		י וטנ י	ראין 1 יין	2000 U/A-3 4	4 1	
Parmitted Dhacos	J		ے	1 4	1	E	
Defector Dhace	2		2	1 2	Gales (2013) 1	1 1	
Cultab Dhoop	J		2	14	ן פיניא פיניא		
Winimum Initial (a)	10.0		۶A		40.0	10.0	
Minimum Colit (a)	10.0		0.0		10.0	10.0	
Tatal Calit (a)	14.U 17.0		9.0 22.0		10.0 20.0	20.0	
	0.11		20.0		20.0	20.0	
Total Split (%) Maximum Cross (a)	20.0% 12.0		30,3%		33.370 15.0	33,370 15 0	
Waximum Green (s)	10.0		19.0		10.0	10.0	
Yellow Time (s)	3.U 4 A		0.0 4 0		4.U 4.0	4.U 4 A	
All-Reo Time (S)	V.I	vantenserret	۱. ۷		ו.ט ה ה	1.0	
Lost Time Adjust (s)	U.U		0.0		U.U E A	U.U E 0	
Total Lost Time (s)	4.0		4.U		0.C	0.0 6 6 1	
Lead/Lag			Lag		Lead	Lead	
Lead-Lag Optimize?	<u>^</u>		Tes		res	Tes	
venicie Extension (s)	2.b	99.025.00569	2.6		2.0	2.0	
Minimum Gap (s)	3.0		3.U		3.U	3.U	
Time Before Reduce (s)	0.0		0.0		0.0	0.0	
Time To Reduce (s)	0.0		0.0		U.U	U.U • •	
Recall Mode	None		None		Min	Min	
Walk Time (s)		49.050000000			999-999-999-999-		
Flash Dont Walk (s)			51-50-561-0				
Pedestrian Calls (#/hr)							
v/c Ratio	0.97		0.95	0,38	1.01	0.20	
Control Delay	32.5		51.0	6.4	72.1	9.4	

PM Peak Full Bridge Closure - Optimized 02/27/2020 Baseline EAM

	A		`	X			
Lane Group	WBL	WBR	SEL	SET	NWT	NWR	
Queue Delay	0.0		0.0	0.0	0.0	0.0	
Total Delay	32.5		51.0	6.4	72.1	9.4	
Queue Length 50th (ft)	65		179	68	~178	7	
Queue Length 95th (ft)	#308		#351	111	#324	30	•
Internal Link Dist (ft)	2268			301	2150		
Turn Bay Length (ft)						80	
Base Capacity (vph)	875		548	1233	471	449	
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	0.97		0.94	0.37	1.01	0.20	

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Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 59.9

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

~ 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: 6: Mendon Rd (RI 122) & Nate Whipple Hwy (RI 120)

X Ø1	W 102	K Ø3
20 s	23 s	175

HCM Signalized Intersection Capacity Analysis 7: Plaza Driveway/West Wrentham Rd & Mendon Rd (RI 122)

03/22/2020

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Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		4			ф			4		ሻ	Å	
Traffic Volume (vph)	3	0	2	462	0	146	191	342	3	7	315	483
Future Volume (vph)	3	0	2	462	0	146	191	342	3	7	315	483
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	16	16	16	12	12	12	14	14	12	11	14	14
Total Lost time (s)		4.0			4.0			5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00			1.00		1.00	1.00	
Frt		0.93			0,97			1.00		1.00	0.91	
Flt Protected		0.98			0.96			0.98		0.95	1.00	
Satd. Flow (prot)		1959			1742			1945		1728	1828	
Flt Permitted		0.96			0.77			0.28		0.43	1.00	
Satd. Flow (perm)		1924			1385			562		789	1828	
Peak-hour factor, PHF	0.75	0.92	0.50	0.79	0.92	0.96	0.77	0.94	0.36	0.44	0.86	0.90
Adj. Flow (vph)	4	0	4	585	0	152	248	364	8	16	366	537
RTOR Reduction (vph)	0	6	0	· 0	18	0	0	1	0	0	59	0
Lane Group Flow (vph)	0	2	0	0	719	0	0	619	0	16	844	0
Heavy Vehicles (%)	0%	0%	0%	2%	2%	2%	2%	2%	2%	1%	1%	1%
Turn Type	Perm	NA		Perm	ŇA		Perm	NA		Perm	NA	
Protected Phases		2	ta ana series e traves a tachedo	e Manadona da Adriana de Manadona	2	and the second		1	and had dependents	one the court and	1	transformet and
Permitted Phases	2			2			1			1		
Actuated Green, G (s)		22.0			22.0			59.0		59.0	59.0	
Effective Green, g (s)		22.0			22.0			59.0		59.0	59.0	
Actuated g/C Ratio		0.24			0.24			0.66		0.66	0.66	999-000-00 999-00-00
Clearance Lime (s)		4.0			4.0			5.0		5.0	5.0	
Vehicle Extension (s)		2.6			2.6		vilition konstant	2.8		2.8	2.8	
Lane Grp Cap (vph)		470			338			368		517	1198	
v/s Ratio Prot	arakati dara tara ta										0.46	2002/2010/2018
v/s Ratio Perm		0.00			c0.52			c1.10		0.02	0 70	
v/c Ratio		0.00			2.13			1.68		0.03	0.70	
Uniform Delay, d1		25.7			34.0			15.5		5.4	9.9	
Progression Factor		1.00			1.00			1.00		1.00	1,00 0 k	
Incremental Delay, d2		0.0	le saises		010.9			318.9		U.U Г Г	1.9	
		20.7			000.9 E			აე4.4		0.0 A	11.0	Hereita de la composición de la composi La composición de la c
Approach Dolay (a)		05 7			550 O			224 A		A	D 14 7	
Approach LOC		20.1 C			000.9 E			JJ4.4 C			I./ D	
Approach LOS		v			ang sa For						D	
Intersection Summary		1								and the second		
HCM 2000 Control Delay			273.3	H	CM 2000	Level of	Service		F			
HCM 2000 Volume to Capacity	/ ratio		1.80									
Actuated Cycle Length (s)			90.0	Si	um of los	t time (s)			9.0			
Intersection Capacity Utilizatio	n		127.8%	IC	CU Level	of Service			Н	والمراجعة والمحمد والمراجع		
Analysis Period (min)			15									

Lanes, Volumes, Timings 7: Plaza Driveway/West Wrentham Rd & Mendon Rd (RI 122)

03/22/2020

BalaChoip SHD MDT MDT MDT SHD		ኘ	Ť	۴	L,	ţ	ايو	ها	\mathbf{X}	\rightarrow	₽	×	*
Lane Configurations ϕ_{1} ϕ_{2} ϕ_{3} <th>Lane Group</th> <th>NBL</th> <th>NBT</th> <th>NBR</th> <th>SBL</th> <th>SBT</th> <th>SBR</th> <th>SEL</th> <th>SET</th> <th>SER</th> <th>NWL</th> <th>NWT</th> <th>NWR</th>	Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Traffic Volume (vph) 3 0 2 462 0 146 191 342 3 7 315 483 Future Volume (vph) 1900 100 100 100 <t< td=""><td>Lane Configurations</td><td></td><td>4</td><td></td><td></td><td>4</td><td></td><td></td><td>\$</td><td></td><td>ሻ</td><td>ţ,</td><td></td></t<>	Lane Configurations		4			4			\$		ሻ	ţ,	
Future (vph) 3 0 2 462 0 146 191 342 3 7 315 483 Ideal Flow (vphp) 1900 1000 100 100 <td>Traffic Volume (vph)</td> <td>3</td> <td>0</td> <td>2</td> <td>462</td> <td>0</td> <td>146</td> <td>191</td> <td>342</td> <td>3</td> <td>7</td> <td>315</td> <td>483</td>	Traffic Volume (vph)	3	0	2	462	0	146	191	342	3	7	315	483
Ideal Flow (php) 1900	Future Volume (vph)	3	0	2	462	0	146	191	342	3	7	315	483
Lane Midth (ft) 16 16 16 12 12 12 14 14 12 11 14 14 12 Grade (%) 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%) 0% 0% 0% 0% 0% Storage Length (ff) 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 1 0 Tape Length (ff) 25 25 25 25 25 25 1 0 1 0 0 0 1 0 0 0 1 0 0 0 1 0 0 0 0 1 0	Lane Width (ft)	16	16	16	12	12	12	14	14	12	11	14	14
Storage Length (ft) 0	Grade (%)		0%			0%			0%			0%	
Storage Lands 0 0 0 0 0 0 1 0 Taper Length (II) 25 277 15.1 Confl. Rices (#Im) 209 650 0.77 0.94 0.36 0.44 0.86 0.80 35 35 36 36 36 36 0.44 0.86 0.80 36 36 36 0.44 0.86 0.80 36	Storage Length (ft)	0	ne na 2007 na 2008 na Na 2008 na 2008	0	0	and an off a physical sector	0	0		0	0	994 (N. Y.	0
Tape Length (ft) 25 25 25 25 Right Turn on Red Yes Yes Yes Yes Link Speed (mph) 25 35 35 35 Link Distance (ft) 209 662 1525 777 Travel Time (s) 5.7 12.9 29.7 16.1 Confl. Peds. (#hr) 208 0.96 0.77 0.94 0.36 0.44 0.86 0.90 Growth Factor 0.75 0.52 0.50 0.79 0.92 296 0.77 0.94 0.36 0.44 0.86 0.90 Bock Hour Factor 0.075 0.92 0.96 0.77 0.94 0.36 0.44 0.86 0.90 Bus Blockages (#hr) 0	Storage Lanes	. 0		0	0		0	0		0	1		0
Right Turn on Red Yes Yes Yes Yes Yes Link Depend (mph) 25 35 35 36 36 Link Delance (tt) 209 662 1525 777 Travel Time (s) 5.7 12.9 29.7 15.1 Confl. Bikes (tt/n) 0.075 0.52 0.50 0.79 0.92 0.96 0.77 0.94 0.36 0.44 0.86 0.96 Growth Factor 100% 10	Taper Length (ft)	25	eren antera antera		25		daren daren daren daren daren	25	eri da organizati da organizati	****************	25	-1949 - 1949	1919-1944-1179
Link Speed (mph) 25 35 35 35 35 Link Distance (II) 209 662 1625 777 Travel Time (s) 5.7 12.9 29.7 15.1 Confl. Picks (#hr) Peak Hour Factor 0.75 0.92 0.96 0.77 0.94 0.36 0.44 0.86 0.90 Growth Factor 100% <	Right Turn on Red			Yes			Yes			Yes			Yes
Link Distance (ft) 209 662 1525 777 Travel Time (s) 5.7 12.9 29.7 15.1 Confl. Biks (#hr) 12.9 29.7 15.1 Confl. Biks (#hr) 100% 100	Link Speed (mph)		25	n de mensione de la construction de la construction		35		er en les sons en les en le	35	al contractions and	- 19-0-4-20 19-4-6-4-5	35	0.9999999999999999999
Travel Time (s) 5.7 12.9 29.7 15.1 Confl. Rices (#hr) Confl. Rices (#h	Link Distance (ft)		209			662			1525			777	
Confl. Peds. (#hr) Confl. Peds. (#hr) Peak Hour Factor 0.75 0.92 0.50 0.77 0.94 0.36 0.44 0.86 0.90 Growth Factor 100%	Travel Time (s)	este normalise entre secon	5.7	n na mana ana ang sa	-2040-m (PAR) - 2014 -	12.9	1999 - 1997 - 1997 - 1997 - 1995 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	a an	29.7	a des résonations avés		15.1	ana na kana sa
Confl. Bikes (#hr) Peak Hour Factor 0.75 0.92 0.50 0.79 0.92 0.96 0.77 0.94 0.36 0.44 0.86 0.90 Growth Factor 100%	Confl. Peds. (#/hr)												
Peak Hour Factor 0.75 0.92 0.50 0.77 0.94 0.36 0.44 0.86 0.90 Growth Factor 100% 100	Confl. Bikes (#/hr)	hada ma cha bhaine a'	1990/9499/0499/0401 1990/9499/0489/0401		Nagala segui da da d			n na mai panapara apaga sa	040404040404040	20202322222222222222222	*************	on an an an an Albert an Albert a	ana na mangana w
Growth Factor 100% 00 0 <td>Peak Hour Factor</td> <td>0.75</td> <td>0.92</td> <td>0.50</td> <td>0.79</td> <td>0.92</td> <td>0.96</td> <td>0.77</td> <td>0.94</td> <td>0.36</td> <td>0.44</td> <td>0.86</td> <td>0.90</td>	Peak Hour Factor	0.75	0.92	0.50	0.79	0.92	0.96	0.77	0.94	0.36	0.44	0.86	0.90
Heavy Vehicles (%) 0% 0% 0% 2% 1	Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Bus Blockages (#/hr) 0	Heavy Vehicles (%)	0%	0%	0%	2%	2%	2%	2%	2%	2%	1%	1%	1%
Parking (#hr) O <	Bus Blockages (#/hr)	0 0	0 0	0		0 0		0	······································	0 0	0	0	0
Mid-Block Traffic (%) 0% 0% 0% 0% Shared Lane Traffic (%) 0 8 0 737 0 0 620 0 16 903 0 Tum Type Perm NA Perm NA Perm NA Perm NA Protected Phases 2 2 1 1 1 1 Permitted Phases 2 2 1 1 1 1 Switch Phase 2 2 2 1 1 1 1 Switch Phase	Parking (#/hr)							• •					
No. Both Name NA NA NA NA NA NA NA Perm	Mid-Block Traffic (%)	ya wa kata	0%			0%	antai katika katika Katika katika k	e - an an an fillean a	0%			0%	ang ng n
Definition Chy O 8 0 0 737 0 0 620 0 16 903 0 Turn Type Perm NA	Shared Lane Traffic (%)		070	alexala de la					0,0			•,•	
Line Topp Perm NA Perm NA Perm NA Perm NA Protected Phases 2 2 1	Lane Group Flow (vnh)	n	8	n	0	737	n	0	620	0	16	903	0
Bin role 2 2 1 1 Permitted Phases 2 2 1 1 Detector Phase 2 2 2 1 1 Switch Phase 2 2 2 1 1 1 Switch Phase 1 1 1 1 1 Switch Phase 1 1 1 1 1 Switch Phase 1 1 1 1 1 Switch Phase 14.0 14.0 14.0 15.0 15.0 15.0 15.0 Total Split (s) 26.0 26.0 26.0 64.0 64.0 64.0 Maximum Green (s) 22.0 22.0 22.0 22.0 59.0 59.0 59.0 Yellow Time (s) 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 Lead/Last Time (s) 4.0 4.0 4.0 5.0 5.0 5.0<	Turn Type	Perm	NĂ		Perm	NA		Perm	NA		Perm	NA	
Incoded Hases 2 2 1 1 Detector Phase 2 2 2 1 1 1 Switch Phase 2 2 2 2 1 1 1 Switch Phase 1 1 1 1 1 1 1 Switch Phase 1 1 1 1 1 1 1 Minimum Initial (s) 10.0 10.0 10.0 10.0 10.0 10.0 10.0 Minimum Spit (s) 14.0 14.0 14.0 14.0 15.0 15.0 15.0 15.0 Total Spit (%) 28.9% 28.9% 28.9% 71.1%	Protected Phases	an a anna				2	9990,9999,990,999 99			SELLOCH PARTIES		10000000000000000000000000000000000000	REFERENCES
Name of the original of the set	Permitted Phases	2			2	_ Na (Section)		1			1		
Display Hase L <thl< th=""> L <thl< th=""> L <thl< th=""> L <thl< th=""> <thl< <="" td=""><td>Detector Phase</td><td>2</td><td>2</td><td></td><td> 2</td><td>2</td><td></td><td>1</td><td>1</td><td></td><td>1</td><td>1 1</td><td>ana ang ang ang ang ang ang ang ang ang</td></thl<></thl<></thl<></thl<></thl<>	Detector Phase	2	2		 2	2		1	1		1	1 1	ana ang ang ang ang ang ang ang ang ang
Minimum Initial (s) 10.0 </td <td>Switch Phase</td> <td></td> <td>-</td> <td></td> <td>-</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	Switch Phase		-		-								
Minimum Split (s) 14.0 14.0 14.0 14.0 14.0 14.0 16.0 <th16.0< th=""> <th16.0< th=""> 16.0</th16.0<></th16.0<>	Minimum Initial (s)	10.0	10.0		10.0	10.0	ana ang muning sa	10.0	10.0		10.0	10.0	andari seri di seri di
Minimum Gap (c) 100	Minimum Snlit (s)	14.0	14.0		14.0	14.0	08.109.43016	15.0	15.0		15.0	15.0	
Total Split (%) 28.9% 28.9% 28.9% 71.1%	Total Solit (s)	26.0	26.0	2889-0889-08-08 	26.0	26.0	000000000000000000000000000000000000000	64.0	64 0	HANDON PORT	64 0	64.0	9913793197A
Maximum Green (s) 22.0 22.0 22.0 22.0 22.0 59.0 59.0 59.0 59.0 59.0 Yellow Time (s) 3.0 3.0 3.0 3.0 3.0 4.0 4.0 4.0 4.0 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 0.0 0.0 0.0 Total Lost Time (s) 4.0 4.0 5.0 5.0 5.0 5.0 Lead/Lag Lag Lag Lag Lag Lead Lead Lead Lead Lead-Lag Optimize? Yes Yes Yes Yes Yes Yes Yes Vehicle Extension (s) 2.6 2.6 2.6 2.6 2.8 2.8 2.8 2.8 Minimum Gap (s) 3.0 <t< td=""><td>Total Split (%)</td><td>28.9%</td><td>28.9%</td><td></td><td>28.9%</td><td>28.9%</td><td></td><td>711%</td><td>71 1%</td><td></td><td>711%</td><td>71 1%</td><td></td></t<>	Total Split (%)	28.9%	28.9%		28.9%	28.9%		711%	71 1%		711%	71 1%	
Yellow Time (s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 3.0 4.0 4.0 4.0 4.0 All-Red Time (s) 1.0	Maximum Green (s)	22.0	22.0		22.0	22.0		59.0	59 0		59 0	59.0	anvertet / I
All-Red Time (s) 1.0 <th1.0< th=""> <th1.0< th=""> 1.0 <th1.0< th=""></th1.0<></th1.0<></th1.0<>	Vellow Time (s)	20	3.0		30	30		4.0	40		4 0	4.0	
Lost Time Adjust (s) 0.0	All-Red Time (s)	1.0	1 N	essenteerer 1999 - Deserver	1.0	1.0	an da sharar	10	1.0		1 N	10	enter or and
Los Time (s) 4.0 4.0 5.0 5.0 5.0 5.0 Lead/Lag Lag Lag Lag Lag Lag Lag Lead Le	Lost Time Adjust (s)	110	0.0			00			<u>, 10</u>		00	00	
Lead/Lag Lag Lag Lag Lag Lag Lag Lag Lag Lag Lead Lead Lead Lead Lead Lead-Lag Optimize? Yes	Total Lost Time (s)		4 N			40	699 (335 PAPE) 1		5.0		50	5.0	anter anter an a
Lead-Lag Optimize? Yes	lead/lan	l an	ne l		l an	l an		Lead	lead	951962-0 <u>8</u> 104	lead	l ead	
Vehicle Extension (s) 2.6 2.6 2.6 2.6 2.8	Lead-Lag Onfimize?	Yes	Yes	elis et of the second sec	Yes	Yes		Yes	Yes		Yes	Yes	959.999.99999
Violation Exception (b) 2.0 <th2.0< th=""> 2.0 <th2.0< th=""> 2.0 <th2.0< th=""></th2.0<></th2.0<></th2.0<>	Vehicle Extension (s)	26	2.6		26	26		28	28		28	28	
Time Before Reduce (s) 0.0	Minimum Gan (s)	2.0 3.0	2.0 3 N	999902970797050 9	30	3.0		3.0	30	(0000000000000000000000000000000000000	30	2.0 3.0	serte de la
Time To Reduce (s) 0.0	Time Before Reduce (s)	0.0	0.0		0.0	<u>0.0</u>		0.0	0.0		0.0	0.0	
Recall Mode None None None Min Min Min Walk Time (s) Flash Dont Walk (s) Pedestrian Calls (#/hr) V/c Ratio 0.02 2.07 1.68 0.03 0.72 Control Delay 3.2 513.6 339.6 5.7 11.9	Time To Reduce (s)	0.0 በ በ	0.0		0.0 0.0	0.0 በበ		0.0	0.0 N N		0.0	0.0 0.0	
Walk Time (s) Hone	Recall Mode	None	None		None	None		Min	Min		Min	Min	
Flash Dont Walk (s) Pedestrian Calls (#/hr) v/c Ratio 0.02 2.07 1.68 0.03 0.72 Control Delay 3.2 513.6 339.6 5.7 11.9	Walk Time (s)	TAORIO			NONO				Second Anna S		a na sa sa sa sa sa sa sa sa	1999-999-9 14 (K. U . 29	
Pedestrian Calls (#/hr) v/c Ratio 0.02 2.07 1.68 0.03 0.72 Control Delay 3.2 513.6 339.6 5.7 11.9	Flash Dont Walk /e)												
V/c Ratio 0.02 2.07 1.68 0.03 0.72 Control Delay 3.2 513.6 339.6 5.7 11.9	Podeetrian Calle (#/hr)					enen en er		ana ang ang ang ang ang ang ang ang ang				80530600	10020000
Control Delay 3.2 513.6 339.6 5.7 11.9	Ve Ratio		0 0.0			2 07			1.68		0.03	0 72	
	Control Delav		3.2		1993-1993 1993	513.6			339.6	states a states a	5.7	11.9	

PM Peak Full Bridge Closure - Optimized 02/27/2020 Baseline EAM

Synchro 9 Report Page 5

Lanes, Volumes, Timings 7: Plaza Driveway/West Wrentham Rd & Mendon Rd (RI 122)

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Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Queue Delay		0.0			0.0			0.0		0.0	0.0	
Total Delay		3.2			513.6			339.6		5.7	11.9	
Queue Length 50th (ft)		0			~667			~313		3	238	
Queue Length 95th (ft)		4			#887			#522		5	340	
Internal Link Dist (ft)		129			582			1445			697	
Turn Bay Length (ft)										1	y army arranged areas	samang sinanagan s
Base Capacity (vph)		488			356			368		517	1256	
Starvation Cap Reductn		0			0		ang menang kalang kanang ka	0	contraction workshold	0	0	
Spillback Cap Reductn		0			0			0		0	0	
Storage Cap Reductn		0			0			0		0	0	NATIONAL ASSOCIA
Reduced v/c Ratio		0.02			2.07			1.68		0.03	0.72	
Intersection Summary												
Area Type: 0	Dther											
Cycle Length: 90												
Actuated Cycle Length: 90												
Natural Cycle: 140								en visuent foto das beter				
Control Type: Actuated-Unco	ordinated											
 Volume exceeds capacity 	y, queue is	theoretic	ally infinite	Э.	severile et esternit de la	5755755175557755775577						avantan taasa
Queue shown is maximun	n after two	cycles.				9-9-9-0-9-0-9-						
# 95th percentile volume ex	xceeds ca _l	pacity, qu	eue may t	be longe	r.		· · · · · · · · · · · · · · · · · · ·				onenne eine an te	and all and a second a
Queue shown is maximun	n after two	cycles.										
Onlite and Disease 7: Dis-	o Drivovo	dialoot 14	onthom [) d Q Ma	ndon Dd (1400						
Spins and Phases: 7: Plaz	a Dinema	yrvvest vv		tu α ivie	nuon Ra (ri 122)		ŝ.				
No1								L.	(ø2			
54s		-11						26.5				10000

03/22/2020

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		ф.			44			4			¢.,	
Traffic Volume (vph)	16	61	100	361	131	11	211	77	339	11	134	22
Future Volume (vph)	16	61	100	361	131	11	211	77	339	11	134	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	13	13	13	13	13	13	13	11	1 1	11
Total Lost time (s)		5.0			5.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.92			1.00			0.92			0,98	
Flt Protected		0.99			0.97			0.98			1.00	
Satd. Flow (prot)		1796			1872			1787			1777	
Flt Permitted		0.91			0.58			0.81			0.94	
Satd. Flow (perm)		1650			1129			1465			1683	
Peak-hour factor, PHF	0.50	0.72	0.58	0.85	0.79	0,78	0.84	0.83	0.78	0.78	0.86	0,79
Adj. Flow (vph)	32	85	172	425	166	14	251	93	435	14	156	28
RTOR Reduction (vph)	0	0	0	0	1	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	289	0	0	604	0	0	779	0	0	198	0
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	0%	0%	0%	1%	1%	1%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)		39.0			39.0			42.0		1.4.50.00 (0.1.00.000) (0.1.0.000)	42.0	
Effective Green, g (s)		39.0			39.0			42.0			42.0	
Actuated g/C Ratio		0.43			0.43			0.47	son son a luce a rec	1114040/111601/1011111111	0.47	20040304
Clearance Time (s)		5.0			5.0			4.0			4.0	
Vehicle Extension (s)		2.8			2.8			2.6		a forestata como a de	2.6	
Lane Grp Cap (vph)		715			489			683			785	
v/s Ratio Prot										yanggala saysang an		
v/s Ratio Perm		0.18			c0.54			c0.53			0.12	
v/c Ratio		0.40	6664066666666		1.23		ver servere versere	1.14			0.25	1017577-019
Uniform Delay, d1		17.5			25.5			24.0			14.5	
Progression Factor		1.00			1.00			1.00	2014/09/2014/09/2		1.00	
Incremental Delay, d2		0.3			122.4			80.1			0.1	
Delay (s)		17.9			147.9			104.1 E			14.0 D	0050063
Level of Service		47 O			447.0			404 4			44 C	
Approach Delay (s)		17.9 D	88486885665		147.9			104.1			14.0 D	91593W
Approach LOS	14 A A A	В			States Files			Cesta Fe			D	
Intersection Summary HCM 2000 Control Delay HCM 2000 Volume to Capace Actuated Cycle Length (s) Intersection Capacity Utilizat Analysis Period (min)	ity ratio ion		95.5 1.19 90.0 98.3% 15	Hı Sı IC	CM 2000 um of losi U Level (Level of time (s) of Service	Service		F 9.0 F			

Lanes, Volumes, Timings 17: West Wrentham Rd & Pine Swamp Rd (RI 114)

03/22/2020

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		\$			4 3-			4			44	
Traffic Volume (vph)	16	61	100	361	131	11	211	77	339	11	134	22
Future Volume (vph)	16	61	100	361	131	11	211	77	339	11	134	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	13	13	13	13	13	13	13	13	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0	and and the parts	0	0		0	0		0	0	ALL CONTRACTOR OF A	0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25	1999)	Andre Heine Anna (Brasse Bra	25	oria potra deserva	n na shekara ka shekar Na shekara ka shekara k	25		riteri di Liberato del del	25		1.0011.001.001.001.0
Right Turn on Red			No			Yes			No			No
Link Speed (mph)	er en staar gester de staar gester st	30		1999-1990-1999-1999 1997-1997	40			25			25	
Link Distance (ft)		3320			7947			1008			920	
Travel Time (s)		75.5	993 - CHURNESSER A.C.	1999 T. 1999 (1999)	135.5	1996-1996-1997-1997 1996-1997-1997-1997	1961	27.5	119149619966900000		25.1	40304014932494
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)		in tha hiddyrthonywra.	9999 Anto 1997 - 59	a sa	here ever for a service of the	ne linier of elefety		an an an tha an	ne alfaine i ne a ana	1995-1997-1997-1997-1997 1997-1997		an a
Peak Hour Factor	0.50	0.72	0.58	0.85	0.79	0.78	0.84	0.83	0.78	0.78	0.86	0.79
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	0%	0%	0%	1%	1%	1%
Bus Blockages (#/hr)	0	0 0	0		0	0 0	0		0	0	0	0
Parking (#/hr)					-			-		-		
Mid-Block Traffic (%)	1948-1998-1999 1949-1999	0%	1999년 1일은 19일이 1997 1997년 1일은 19일이 19일이 19일이 19일이 19일이 19일이 19일이 19일이		0%	ang		0%			0%	494499999999
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	289	0	0	605	0	0	779	0	0	198	0
Turn Type	Perm	NA		Perm	ŇĂ		Perm	NA		Perm	NA	
Protected Phases	in de la seconda de la sec La seconda de la seconda de	89800940-866 1	aroneen maare			an da servicio de la servicio de la La servicio de la serv	an in the second se	2 North 1998	1.550.5500.6590.599 	al ang signi ang	2	and glob of all
Permitted Phases	1			1			2			2		
Detector Phase	1	1		1	1	i deni e principaneni n	2	2	1975-2010-2010-2010-2010 1975-2010-2010-2010-2010-2010-2010-2010-201	2	2	and a second
Switch Phase												
Minimum Initial (s)	10.0	10.0	i fi i dalar na finana	10.0	10.0	ulian ning bann ba	5.0	5.0	helio esta de ser	5.0	5.0	(2016)
Minimum Split (s)	15.0	15.0		15.0	15.0		9.0	9.0		9.0	9.0	
Total Split (s)	44.0	44.0	a de vie de général	44.0	44.0		46.0	46.0	999949949999999999 1999	46.0	46.0	1999,999,999,999,999,999,999,999 1999,999,
Total Split (%)	48.9%	48.9%		48.9%	48.9%		51.1%	51.1%		51.1%	51.1%	
Maximum Green (s)	39.0	39.0		39.0	39.0	n an	42.0	42.0	and the second second	42.0	42.0	and the second
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0	ana ang manang sa	1.0	1.0	0.0000000000000000000000000000000000000	1.0	1.0	989602993242282923	1.0	1.0	weet000012090
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.0	anga susa dangan sa	an a	5.0			4.0		4. 499 June 1999 494	4.0	100000000000000000000000000000000000000
lead/Lag	Lead	Lead		Lead	Lead		Laq	Lag		Lad	Lao	
Lead-Lag Opfimize?	Yes	Yes	elenen en sen sen sen sen sen sen sen sen	Yes	Yes	an a	Yes	Yes	lana shandi maasi dada	Yes	Yes	and the stands of the
Vehicle Extension (s)	2.8	2.8		2.8	2.8		2.6	2.6		2.6	2.6	
Minimum Gap (s)	3.0	3.0	40140340304060404	3.0	3.0	nan new ere winner were	3.0	3.0		3.0	3.0	94000000 960 9
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0	aaaan di kanadi kana di ka	0.0	0.0	en en ser en de ser de la ser Internet de la ser de	0.0	0.0		0.0	0.0	
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Walk Time (s)		servetänetä tälä			estration and the second s		aan ah	eenee 74.2 749.	and displaying for	และอย่างได้ได้ไม่ได้	99999999999999999999999999999999999999	ware over Heads
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)	1999-1999-1997 1997 - 1997 - 1997 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1	u de la constant de La constant de la cons		este statistik	040000000000000	ec <i>elenten</i> (20	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~	sevenn (360 %3)	an da tang ang sa ang sa	aan dharan dharan dharan dharan dharan ah shekaran sa		0.0000000000000000000000000000000000000
v/c Ratio		0.40			1.24			1.14			0.25	
Control Delay		19.7	astronomia Ethiologi A	a	149.7		anagraagaagag	105.0	eleset interfetiol (* 167	e kono kokonerkinisteiliinteiliinteiliinteiliinteiliinteiliinteiliinteiliinteiliinteiliinteiliinteiliinteiliint	15.6	e envirenvell)

PM Peak Full Bridge Closure - Optimized 02/27/2020 Baseline EAM

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Lanes, Volumes, Timings 17: West Wrentham Rd & Pine Swamp Rd (RI 114)

03/22/2020

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0		0.0150	0.0			0.0			0.0	
Total Delay		19.7			149.7			105.0			15.6	
Queue Length 50th (ft)		110			~433			~522			66	
Queue Length 95th (ft)		132			#524			#651			105	
Internal Link Dist (ft)		3240			7867			928			840	
Turn Bay Length (ft)												
Base Capacity (vph)		715	u passi		489			684			784	
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			1.24			1.14			0.25	
Intersection Summary												
Area Type: Otl	her											
Cycle Length: 90												
Actuated Cycle Length: 90												
Natural Cycle: 90												
Control Type: Actuated-Uncoo	rdinated											
~ Volume exceeds capacity,	queue is	theoretica	ally infinite	Э.								
Queue shown is maximum	after two	cycles.										
# 95th percentile volume exc	eeds cap	acity, que	eue may b	be longer	•							
Queue shown is maximum	after two	cycles.										
Splits and Phases: 17: West	t Wrentha	m Rd & F	'ine Swar	np Rd (F	(114)							
v Ø1					₩ [®] ø2	1						

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HCM Unsignalized Intersection Capacity Analysis 20: Diamond Hill Rd (RI 114) & Pine Swamp Rd (RI 114)/Wrentham Rd (RI 121)

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03/22/2020

MovementEBTEBRWBLWBTNBLNBRLane ConfigurationsImage: style="text-align: center;">Image: style="text-align: center;">Image: style="text-align: style="text-align: style="text-align: center;">NBLNBRLane ConfigurationsImage: style="text-align: style="text-align: style="text-align: center;">Image: style="text-align: style
Lane Configurations Image: Configuration in the image: Configuratine in the image: Configuration in the image: Configuration in th
Traffic Volume (veh/h) 380 102 285 565 7 8 Future Volume (Veh/h) 380 102 285 565 7 8 Sign Control Free Free Stop 7 8 Grade 0% 0% 0% 0% 0% Peak Hour Factor 0.69 0.92 0.96 0.90 0.89 0.75 Hourly flow rate (vph) 551 111 297 628 8 11 Pedestrians Lane Width (ft) Valking Speed (ft/s) 56 1000000000000000000000000000000000000
Future Volume (Veh/h) 380 102 285 565 7 8 Sign Control Free Free Stop Grade 0% </td
Sign Control Free Free Stop Grade 0% 0% 0% Peak Hour Factor 0.69 0.92 0.96 0.90 0.89 0.75 Hourly flow rate (vph) 551 111 297 628 8 11 Pedestrians Lane Width (ft)
Grade 0% 0% 0% Peak Hour Factor 0.69 0.92 0.96 0.90 0.89 0.75 Hourly flow rate (vph) 551 111 297 628 8 11 Pedestrians Lane Width (ft)
Peak Hour Factor 0.69 0.92 0.96 0.90 0.89 0.75 Hourly flow rate (vph) 551 111 297 628 8 11 Pedestrians
Hourly flow rate (vph) 551 111 297 628 8 11 Pedestrians Lane Width (ft) Walking Speed (ft/s)
Pedestrians Lane Width (ft) Walking Speed (ft/s)
Lane Width (ft) Walking Speed (ft/s)
Walking Speed (ft/s)
Percent Blockage
Right turn flare (veh) 10
Median type None None
Median storage veh)
Upstream signal (ft)
pX, platoon unblocked
vC, conflicting volume 551 1773 551
vC1, stage 1 conf vol
vC2, stage 2 conf vol
vCu, unblocked vol 551 1773 551
tC, single (s) 4.1 6.4 6.2
tC, 2 stage (s)
tF (s) 2.2 3.5 3.3
p0 queue free % 71 88 98
cM capacity (veh/h) 1024 65 536
Direction, Lane # EB1 EB2 WB1 WB2 NB1
Volume Total 551 111 297 628 19
Volume Left 0 0 297 0 8
Volume Right 0 111 0 0 11
cSH 1700 1700 1024 1700 155
Volume to Capacity 0.32 0.07 0.29 0.37 0.12
Queue Length 95th (ft) 0 0 30 0 10
Control Delay (s) 0.0 0.0 9.9 0.0 35.4
Lane LOS A E
Approach Delay (s) 0.0 3.2 35.4
Approach LOS E
Intersection Summary
Averane Delay 23
Intersection Canacity Utilization /0.1% ICILLevel of Service
Analysis Period (min) 15

HCM Signalized Intersection Capacity Analysis 1: Diamond Hill Rd (RI 114) & Nate Whipple Hwy (RI 120)

03/22/2020

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			ر ۍ			¢\$+			4	
Traffic Volume (vph)	0	295	267	17	246	0	254	0	30	0	0	0
Future Volume (vph)	0	295	267	17	246	0	254	0	30	0	0	0
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	13	13	13	13	12	12	12	12	12	12
Total Lost time (s)		4.0			4:0			5.0				
Lane Util. Factor		1.00			1.00			1.00		· · ·	a trade to set to set a financial	ale estato en ficial
Frt		0.93			1.00			0.99				
Flt Protected		1.00			1.00			0.96				
Satd. Flow (prot)		1742			1916			1759				
Flt Permitted		1.00			0.74		anan kasanan sam	0.75	527403527655395597			57775776574
Satd. Flow (perm)		1742			1426			1372				
Peak-hour factor, PHF	0.86	0.85	0.75	0.53	0.75	0.85	0.68	0.93	0.75	0.75	0.97	0.79
Adj. Flow (vph)	0	347	356	32	328	0	374	0	40	0	0	0
RTOR Reduction (vph)	0	77	0	0	0	0	0	14	0	0	0	0
Lane Group Flow (vph)	0	626	0	0	360	0	0	400	0	0	U	0
Heavy Vehicles (%)	<u> </u>	<u> </u>	5%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type		NA		Perm	NA		Perm	NA	0.0000			
Protected Phases		1	NER 200 - 100		1		~	2			2	
Permitted Phases	1	40.0		1	40.0		2	40.0		2		
Actuated Green, G (s)		19.6			19.0			10.2				
Effective Green, g (s)		19.6			19.0			10.Z				
		U.44			V.44 1 0			0.30				
Vehicle Extension (s)		4.0 2.6			4.U 2.G			0.0 3 0				089994
		2.0			2.0			406				
Lane GID Cap (vpn)		0.26			023			490				
Vis Ratio Fiot		60.00			0.25			~n 20				
ws Natio Ferri		0.82			0.20 0.58			0.23				
Iniform Delay d1		11.1			0.00 Q 5			12.9				
Progression Factor		1 00	99-191-99-19 99-19		1 00			1 00	NGANISAN SEALSAS			
Incremental Delay, d2		7.0			111			9.3				
Delay (s)		18.1	edellegen forde ble	i esta ista da	10.6			22.2	en ner ver en			dinitrializitat
Level of Service		В			В			С				
Approach Delay (s)	ana da serie	18.1	1899 November 1997 November	n di mang pinak panjanan te	10.6	or-Alexa dina Dina -		22,2	ere della de refer		0.0	20.099 A 260 A
Approach LOS		В			В			C			A	
Internetion Cummer												
Intersection Summary			47.4	11	CM 2000	Lovel of	Convice		D			
HOM 2000 Volume to Conservity	rotio		1/.4 0.01	n e			SELVICE		See ≤ D ≷			
Actuated Cuale Length /a)	าสแบ		U.OI	C.	um of loci	time (e)			0 0			
Intersection Canacity Litilization	88888888 \		44,0 55 0%	ວ າ	ערוויט 111 א ובעים	unic (s) Service	1997-1991-1991-1991-1991-1991- 1		9.0 R			
Analysis Period (min)	1		15	ıر.								

Lanes, Volumes, Timings 1: Diamond Hill Rd (RI 114) & Nate Whipple Hwy (RI 120)

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		ر ۍ			4			(}				
Traffic Volume (vph)	0	295	267	17	246	0	254	0	30	0	0	0
Future Volume (vph)	0	295	267	17	246	0	254	0	30	0	0	0
Ideal Flow (vohpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	13	13	13	13	13	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0	24249-4449-4444-4444 2424-244-444-4444-4	0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25	***************	1002000000000000000000	25	ner franssant streated	99999999999999999999999999999999999999	25	nte Autoria, en Politico de	1979-1199-1999-94 1979-1199-1199-1199-1199-1199-1199-1199	25	a la sul d'ar san aire an	on a provincia da
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		40			40			30		ene stressenskere buer	30	-0120-2-012-01-04-04
Link Distance (ff)		1854			4162			1592			454	
Travel Time (s)	2017-34 03097 0997 09	31.6	1009 INCO 1993 INCO	en elle the section of the des	70.9		**************	36.2			10.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)			988-499-699-699-699-69 1	andras eden den de la de		ahte vara sint at setter	04.030 (04.000 / Volume / Volu	n Denistantina.	entitik pint duden	11.124.000.00044-01483	-1	0.0000000000-0.45
Peak Hour Factor	0.86	0.85	0.75	0.53	0.75	0.85	0,68	0.93	0.75	0.75	0.97	0.79
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%	2009-040-040-040-040-040-040-040-040-040-	699996 (Menor) – Chordso	0%	tel en esté és conécienses a	999 (Parkas 97-199	0%		42.599 (CONTRACTOR OF ST	0%	
Shared Lane Traffic (%)									5.5.5.5.			
Lane Group Flow (vph)	0	703	0	0	360	0	0	414	0	0	0	0
Turn Type		NA		Perm	NA		Perm	NA				
Protected Phases		1	1999-999 (1999) (200	en de la compañía de la com		1997/04/04/09/07/1997/07/19	n a staten se an	2			2	0000000000000
Permitted Phases	1			1			2			2		
Detector Phase	1	1		1	1		2	2		2	2	-111111111113
Switch Phase												
Minimum Initial (s)	10.0	10.0	1999-1992-1992-1993	10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	14.0	14.0		14.0	14.0		15.0	15.0		15.0	15.0	
Total Split (s)	27.0	27.0	40022302294040404040	27.0	27.0	99194111-1-1-5621-19-14.	23.0	23.0		23.0	23.0	
Total Split (%)	54.0%	54.0%		54.0%	54.0%		46.0%	46.0%		46.0%	46.0%	
Maximum Green (s)	23.0	23.0	li de la construcción de la construcción National	23.0	23.0		18.0	18.0		18.0	18.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0	ng / 14 14 19 19 19 19 19 19 19 19 19 19 19 19 19	1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)	al della production de la colo	4.0	tender Kinalyndörter Krift -	gag teta dalah kerdena kerdara kerdara	4.0	*****	1990 (1990 (1997) - 1997) (199	5.0			5.0	
Lead/Lag	Lead	Lead		Lead	Lead		Lag	Lag		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.6	2.6		2.6	2.6		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0	na na panta na njerografita da st	0.0	0.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)	an na har na seith a' thairte.		aan ah	a contra da contra del						e na serie de la Constanti (Constanti)	anne na sana na sar	
v/c Ratio		0.84			0.58			0.82				
Control Delay		21.1			14.3			30.0				

Saturday Peak Full Bridge Closure - Optimized 02/27/2020 Baseline EAM

Lanes, Volumes, Tir	nings			
1: Diamond Hill Rd (RI 114) 8	& Nate Whip	ple Hwy ((RI 120)

03/22/2020

	٠	-	\rightarrow	*	**	۸.	*	1	1	1	Ļ	4
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0	9.51.25.51		0.0			0.0		8 4 5 8		
Total Delay		21.1			14.3			30.0				
Queue Length 50th (ft)		129			70			100				
Queue Length 95th (ft)		#252			102			#238				
Internal Link Dist (ft)		1774			4082			1512			374	
Turn Bay Length (ft)												
Base Capacity (vph)		984			752			580				
Starvation Cap Reductn		0			0			0				
Spillback Cap Reductn		0			0			0				
Storage Cap Reductn		0			0			0				
Reduced v/c Ratio		0,71			0.48			0.71				
Intersection Summary												
Area Type; Otl	her			-13-13-16-1								
Cycle Length: 50												
Actuated Cycle Length: 45.1												
Natural Cycle: 50												
Control Type: Actuated-Uncoor	rdinated											
# 95th percentile volume exc	eeds cap	oacity, que	eue may l	be longer	•							
Queue shown is maximum	after two	cycles.										
Splits and Phases: 1: Diamo	nd Hill R	d (RI 114) & Nate '	Whipple I	Hwy (RI 1	20)						

	Ø2
27s	23 s

$\mathbf{x} \stackrel{M}{\to} \mathbf{x} \stackrel{M}{\to} \mathbf{x}$	
Movement WBL WBR SEL SET NWT NWR	
Lane Configurations 💜 🌴 🛉 🎢	
Traffic Volume (vph) 63 478 503 430 420 52	
Future Volume (vph) 63 478 503 430 420 52	
Ideal Flow (vphpl) 1900 1900 1900 1900 1900 1900	
Lane Width 13 13 11 13 12 12	
Total Lost time (s) 4.0 4.0 5.0 5.0 5.0	
Lane Util. Factor 1.00 1.00 1.00 1.00	
Frt 0.88 1.00 1.00 0.85	
Flt Protected 0.99 0.95 1.00 1.00 1.00	ananan sa
Satd. Flow (prof) 1702 1728 1944 1881 1599	
Flt Permitted 0.99 0.95 1.00 1.00 1.00	
Said, Flow (perm) 1702 1728 1944 1881 1599	
Peak-hour factor, PHF 0.87 0.86 0.94 0.86 0.78 0.73	
Adi Flow (vph) 72 556 535 500 538 71	
RTOR Reduction (vnh) 463 0 0 0 33	
ane Group Flow (vph) 165 0 535 500 538 38	
Heavy Vehicles (%) 1% 1% 1% 1% 1% 1%	
Turn Type Prot Prot NA NA Prot	
Protected Phases 3 2 12 1 1	
Permitted Phases	
Actuated Green G (s) 10.0 19.9 41.9 17.0 17.0	an na han na hanna.
Effective Green α (s) 10.0 19.9 41.9 17.0 17.0	
Actuated q/C Ratio 0.17 0.33 0.70 0.28 0.28	
Clearance Time (s) 40 40 50 50	
/ebicle Extension (s) 26 26 26 26	
ane Gro Can (voh) 284 574 1359 533 453	
v/s Ratio Prot c0 10 c0 31 0 26 c0 29 0 02	
v/s Ratio Perm	
v/c Ratio 0.58 0.93 0.37 1.01 0.08	
Uniform Delay d1 23.0 19.3 3.6 21.4 15.7	
Progression Factor 1.00 1.00 1.00 1.00 1.00	an all ann an All an
ncremental Delay, d2 2.6 22.2 0.1 41.3 0.1	
Delay (s) 25.6 41.5 3.8 62.8 15.8	terolinin telefektélék
Level of Service C D A E B	
Approach Delay (s) 25.6 23.3 57.3	
Approach LOS C C E	
ntersection Summary	
HCM 2000 Control Delay 33.0 HCM 2000 Level of Service	C
HCM 2000 Volume to Capacity ratio 0.88	an an the second se
Actuated Cycle Length (s) 59.9 Sum of lost time (s)	13.0
Intersection Capacity Utilization 93.8% ICU Level of Service	F
Analysis Period (min) 15	

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Lanes, Volumes, Timings 6: Mendon Rd (RI 122) & Nate Whipple Hwy (RI 120)

03/22/2020

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Lane Group	WBL	WBR	SEL	SET	NWT	NWR	
Lane Configurations	¥		ሻ	ŕ	*	7	
Traffic Volume (vph)	63	478	503	430	420	52	
Future Volume (vph)	63	478	503	430	420	52	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	13	13	11	13	12	12	
Grade (%)	0%			0%	0%		
Storage Length (ft)	0	0	0			80	
Storage Lanes	1	0	1			1	
Taper Length (ft)	25		25				
Right Turn on Red		Yes				Yes	
Link Speed (mph)	30			35	35		
Link Distance (ft)	2348			381	2230		
Travel Time (s)	53.4			7.4	43.4		
Confl. Peds. (#/hr)							
Confl. Bikes (#/hr)							
Peak Hour Factor	0.87	0.86	0.94	0.86	0.78	0.73	
Growth Factor	100%	100%	100%	100%	100%	100%	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	
Bus Blockages (#/hr)	0	0	0	0	0	0	
Parking (#/hr)							
Mid-Block Traffic (%)	0%			0%	0%		
Shared Lane Traffic (%)							
Lane Group Flow (vph)	628	0	535	500	538	71	
Turn Type	Prot		Prot	NA	NA	Prot	
Protected Phases	3		2	12	1	1	
Permitted Phases							
Detector Phase	3		2	12	1	1	
Switch Phase							
Minimum Initial (s)	10.0		5.0		10.0	10.0	
Minimum Split (s)	14.0		9.0		15.0	15.0	
Total Split (s)	14.0		24.0		22.0	22.0	
Total Split (%)	23.3%		40.0%		36.7%	36.7%	
Maximum Green (s)	10.0		20.0		17.0	17.0	
Yellow Time (s)	3.0		3.0		4,0	4,0	
All-Red Time (s)	1.0		1.0	2499-099-000-000	1.0	1.0	
Lost Time Adjust (s)	0.0		0.0		0.0	0.0	
Total Lost Time (s)	4.0		4.0		5.0	5.0	
Lead/Lag			Lag		Lead	Lead	
Lead-Lag Optimize?		eren and an airth	Yes	782502005560	Yes	Yes	
Vehicle Extension (s)	2.6		2.6		2.6	2.6	
Minimum Gap (s)	3.0		3.0		3.0	3.0	
Time Before Reduce (s)	0.0		0.0		0.0	0.0	
Time To Reduce (s)	0.0		0.0		0.0	0.0	
Recall Mode	None		None		Min	Min	
walk lime (s)							
Hash Dont Walk (s)		anta ata					
Pedestrian Calls (#/hr)	~ ^ ^ /		0.00	0.00	1 12	0 15	
WC Katio	0.84		0.93	0.38	1.01	0.10	
Control Delay	17.0		46.9	0.C	00.0	9.Z	

Saturday Peak Full Bridge Closure - Optimized 02/27/2020 Baseline EAM

03/22/2020	
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Lane Group	WBL	WBR	SEL	SET	NWT	NWR	
Queue Delay	0.0		0.0	0.0	0.0	0.0	
Total Delay	17.0		46.9	5.0	66.8	9.2	
Queue Length 50th (ft)	23		183	61	~196	7	
Queue Length 95th (ft)	#160		#357	94	#299	23	
Internal Link Dist (ft)	2268			301	2150		
Turn Bay Length (ft)						80	
Base Capacity (vph)	746		577	1331	533	487	
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	0.84		0.93	0.38	1,01	0.15	

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Intersection Summary

Area Type: Other

Cycle Length: 60

Actuated Cycle Length: 59.9

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

~ 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: 6: Mendon Rd (RI 122) & Nate Whipple Hwy (RI 120)

X Ø1	₩02	\$ Ø3
22 s	24 s	14 5

Saturday Peak Full Bridge Closure - Optimized 02/27/2020 Baseline EAM

HCM Signalized Intersection Capacity Analysis 7: Plaza Driveway/West Wrentham Rd & Mendon Rd (RI 122)

03/22/2020

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Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		4			4			\$		ኘ	12	
Traffic Volume (vph)	7	2	20	548	0	120	128	290	10	22	284	452
Future Volume (vph)	7	2	20	548	0	120	128	290	10	22	284	452
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	16	16	16	12	12	12	14	14	12	11	14	14
Total Lost time (s)		4.0			4.0			5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00			1.00		1.00	1.00	
Frt		0.91			0.97			0.99		1.00	0.91	
Flt Protected		0.99			0.96			0.99		0.95	1.00	
Satd. Flow (prot)		1935			1741	den stalign e		1968		1678	1775	
Flt Permitted		0.93			0.76			0.28		0.42	1.00	
Satd. Flow (perm)		1813			1374			567		749	1775	
Peak-hour factor, PHF	0.58	0.50	0.62	0.93	0.92	0.77	0.82	0.74	0.42	0.50	0.81	0.88
Adj. Flow (vph)	12	4	32	589	0	156	156	392	24	44	351	514
RTOR Reduction (vph)	0	21	0	0	12	0	0	1	0	0	44	0
Lane Group Flow (vph)	0	27	0	0	733	0	0	571	0	44	821	Q
Heavy Vehicles (%)	0%	0%	0%	2%	2%	2%	1%	1%	1%	4%	4%	4%
Turn Type	Perm	NA	S. 23-22-7	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)		40.0			40.0			71.0		71.0	71.0	
Effective Green, g (s)		40.0			40.0			71.0		71.0	71.0	
Actuated g/C Ratio		0.33	و میں اور اور اور اور میں میں اور و میں و		0.33			0.59		0.59	0.59	
Clearance Time (s)		4.0		4.18 .68 .69	4.0			5,0	5,45,10,19	5.0	5.0	
Vehicle Extension (s)		2.6			2.6			2.8		2.8	2.8	
Lane Grp Cap (vph)		604			458			335		443	1050	
v/s Ratio Prot	•										0.46	
v/s Ratio Perm		0.01			c0.53			c1.01		0.06		
v/c Ratio	en been een bekenne bekenne.	0,04			1.60		un testeren gennen sent	1.70		0.10	0.78	
Uniform Delay, d1		27.1	Shearsang		40.0			24.5		10.6	18.6	
Progression Factor		1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2		0.0			280.3			329.2		0.1	3.8	
Delay (s)		27.1			320.3			353.7		10.7	22.4	informana
Level of Service		C C			F			F		В	C	
Approach Delay (s)		27.1			320.3			353.7		ANTER STRAT	21.8	
Approach LOS	1999 (S. 1999 (S. 1999	C			s F			F.	<u> </u>		С	
Intersection Summary												
HCM 2000 Control Delay			203.2	H	CM 2000	Level of	Service		F			645262
HCM 2000 Volume to Capa	city ratio		1.67							a a serenar se o construitor da se se construitor da se		
Actuated Cycle Length (s)			120.0	Si	um of losi	time (s)			9.0			
Intersection Capacity Utilization	ation		121.6%	IC	U Level o	of Service	}		Н			a social contraction of a d
Analysis Period (min)			15									
Lanes, Volumes, Timings 7: Plaza Driveway/West Wrentham Rd & Mendon Rd (RI 122)

03/22/2020

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Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		ф.			4			44		۲,	4	
Traffic Volume (vph)	7	2	20	548	0	120	128	290	10	22	284	452
Future Volume (vph)	7	2	20	548	0	120	128	290	10	22	284	452
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	12	12	12	14	14	12	11	14	14
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0	1993 Alex (643,9659)	0	0	ele contra de port	0	0	inden erste som setter.	0	0		0
Storage Lanes	0		0	0	Sagariya (0	0		0	1		0
Taper Length (ft)	25		1972) - 1973) - 1974) 1972) - 1975) - 1975) - 1975)	25	1999 - 1999 -	erteko kara sutuka	25	renderde Stean Aden		25	0.000.000.00000000	Charles and Charles
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25		141 - 144 - 144 - 144 - 144 - 144 - 144 - 146 - 146 - 146 - 146 - 146 - 146 - 146 - 146 - 146 - 146 - 146 - 14 1	35	er til efter som en så stære skaler	(nya kana arawa ta	35		1	35	an a
Link Distance (ft)		209			662			1525			777	
Travel Time (s)	Autorian conserva-	5.7	10040.0000.0000.0046	-1.174191919-9-1-1-1-6-6	12.9	net lennenetter	sesen menerations and	29.7	and a second second second	ananistaning heine an	15.1	ana ang ang ang ang ang ang ang ang ang
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)	an an tha		. Per fondere sin de la cale de la		999, 999 - Children († 1999) 1997 - Children († 1999)		n a stallen av ander av	ih Abrowi Abriek Abeleo	a fan de Arlue (1994).	n de la companya de La companya de la comp	alanikan kendulan	uleisiu du sitestat
Peak Hour Factor	0.58	0.50	0.62	0.93	0.92	0.77	0.82	0.74	0.42	0.50	0.81	0.88
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	2%	2%	2%	1%	1%	1%	4%	4%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)					-						-	
Mid-Block Traffic (%)	-946-1994-1996-1996-1996-1996-1996-1996-	0%	and a state of the second s		0%	fefat fefation of sheet	and second a finite state	0%	ne la construcción de la constru		0%	nala mendera da d
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	48	0	0	745	0	0	572	0	44	865	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	2107529-5257-5600. 	2	(antoine an	an fan skriet fan skrie F	2	1999-1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	0 - 20 B B B B B B B B B B B B B B B B B B	1	elaj na teta de la teta			estano organo (
Permitted Phases	2			2			1			1		
Detector Phase	2	2	an de clevele	2	2	1999.000	1	1		1	1	900789993094
Switch Phase												
Minimum Initial (s)	10.0	10.0	2000,004,004,004,004,004,004,004,004,004	10.0	10.0	8 11 M 4 19 19 19 19 19 19 19 19 19 19	10.0	10.0	addini selesi barbari	10.0	10.0	Performance and P
Minimum Split (s)	14.0	14.0		14.0	14.0		15.0	15.0		15.0	15.0	
Total Split (s)	44.0	44.0	1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	44.0	44.0	a de la completa de La completa de la comp	76.0	76.0	Nervensternere (er:	76.0	76.0	07210525011103
Total Split (%)	36.7%	36.7%		36.7%	36.7%		63,3%	63.3%		63.3%	63.3%	
Maximum Green (s)	40.0	40.0	10 for for 10 of of 10 or	40.0	40.0	an a	71.0	71.0	ener die ferste die die erstelle	71.0	71.0	en antista de la c
Yellow Time (s)	3.0	3.0		3.0	3.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	9901 NOVED 196074019	1.0	1.0	******************	1.0	1.0	or construction
Lost Time Adjust (s)		0.0			0.0			0.0		0.0	0.0	
Total Lost Time (s)	59,303,055,000,8700	4.0	1949-1990 (1949) 19		4.0	tan berezi de la secono de la se Secono de la secono d		5.0	-1	5.0	5.0	
Lead/Lag	Lag	Lag		Lag	Laq		Lead	Lead		Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	an a	Yes	Yes	er en di ne regione de la	Yes	Yes	
Vehicle Extension (s)	2.6	2.6		2.6	2.6		2.8	2.8		2.8	2.8	
Minimum Gap (s)	3.0	3.0	1999 - AND 1997 - AND 1	3.0	3.0	0.0000000000000000000000000000000000000	3.0	3.0	*******	3.0	3.0	entriten de stat
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0	19-000000000000000000000000000000000000	0.0	0.0	n berti Abarden berek	0.0	0.0	ngalatan girip yana ali	0.0	0.0	n din berek Akibara
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)				a ann an an Arthol Ar	ana na Nadistria		ong sa	e e e en l'Alter (CARCA)	1.21142447994998 1		en en en en tra 1925. El t	
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)	en arren arren 1899 (* 1897) Arren (* 1897)	eren de solo dobli	an na hainn an tha an tair an t		19 - 19 - 19 - 19 - 19 - 19 - 19 - 19 -	na anta an Canada (C		. 2	ana mananananana	ny enditra entre Sintes SVQ:	an ann ann 1960) a bha	
v/c Ratio		0.08			1.59			1.70		0.10	0.79	
Control Delay	a a de la regionaria facilia	13.6			302.6			351.5		11.4	22.8	

Saturday Peak Full Bridge Closure - Optimized 02/27/2020 Baseline EAM

Lanes, Volumes, Timings 7: Plaza Driveway/West Wrentham Rd & Mendon Rd (RI 122)

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Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Queue Delay		0.0			0.0			0.0		0.0	0.0	
Total Delay		13.6			302.6			351.5		11.4	22.8	
Queue Length 50th (ft)		8			~820			~393		14	433	
Queue Length 95th (ft)		12			#1061			#409		17	488	monto estatencia
Internal Link Dist (ft)		129			582			1445			697	
Turn Bay Length (ft)												
Base Capacity (vph)		625			470			336		443	1094	
Starvation Cap Reductn		0			0	ne odar ne doka kraljeva	en este se daglar	0		0	0	
Spillback Cap Reductn		0			0			0		0	0	
Storage Cap Reductn		0		*****************	0			0	and the product of	0	0	****
Reduced v/c Ratio		0.08			1.59			1.70		0.10	0.79	
Intersection Summary												
Area Type: (Other											
Cycle Length: 120											- to rectange and received	
Actuated Cycle Length: 120												
Natural Cycle: 120												
Control Type: Actuated-Unco	oordinated											
~ Volume exceeds capacit	y, queue is	, theoretic	cally infinit	ie.					er en en de la constant de la const			
Queue shown is maximur	m after two	cycles.										
# 95th percentile volume e	xceeds cap	pacity, qu	leue may	be longe	r.			en anderen anderen stateten.				
Queue shown is maximur	m after two	cycles.										
Solits and Phases: 7: Plaz	za Drivewa	v/West W	/rentham	Rd & Me	ndon Rd (RI 122)						
		<u></u>			<u> </u>							

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76.5	44 s

HCM Signalized Intersection Capacity Analysis 17: West Wrentham Rd & Pine Swamp Rd (RI 114)

03/22/2020

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (vph)	14	Ō	272	284	0	0	236	46	261	0	69	11
Future Volume (vph)	14	0	272	284	0	0	236	46	261	0	69	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	13	13	13	13	13	13	13	11	11	11
Total Lost time (s)		5.0			5.0			4.0			4.0	
Lane Util. Factor		1.00			1.00		ans the color Constantio	1.00			1.00	
Frt		0.87			1.00			0.95			0.98	
Flt Protected		1.00			0.95			0.97			1.00	
Satd, Flow (prot)		1690			1847			1819			1/85	
Fit Permitted		0.98			0.39			U.//		3505197455455	1.00	<u>UNACONT</u>
Sato, Flow (perm)	0.70	1652	0.00	0.00	/ 58	0.75	0 FF	1430	0.04	0 F0	0.00	0.00
Peak-hour factor, PHF	0.70	0.81	0.66	0.83	0.85	0.75	0.55	0.55	0.91	0.56	0.68	0.69
Adj. Flow (vpn)	20	U	41Z	342	U	U A	429	84	287	U A	101	מו ה
RTOR Reduction (vpn)	U N	0	U A	U	0	U A	0	0	U A	U O	U 117	U D
Lane Group Flow (vpi)	U 10/	40Z 10/	U 10/	U 10/2	04Z 10/	0 1%	0 /\%	000	0% 0%	1%	11/	
Rue Blockages (#/hr)	1/0	۱ <i>۱</i> ۵	1 /0 	۱ <i>۱</i> ۵	170	۱ <i>۱</i> ۵	0.0	ν <i>η</i> Ο	42	^//	1 // N	۰ <i>۳</i>
	Dorm	NIA		Dorm	NA	v	Dorm	۸۱۸	TL	100 W 200 W 200	ΝΛ	<u></u>
Protoctod Phases	Leun	1NA 1		LQIIII	1		гыш	ייע ר			2	<u> (1997)</u>
Dormitted Dhases	1	90.0000.000 . 000		1 16 16 16 16 16 16 16 16 16 16 16 16 16	erstentstat om		2	enter offer fo ter		2	1999 (199 6 , 19	
Actuated Green G (s)	1	45.0		•	45 ∩		-	56.0	G. (1943) (194	- -	56.0	
Effective Green, a (s)		45.0			45.0			56.0			56.0	an a
Actuated o/C Ratio		0.41			0.41			0.51			0.51	
Clearance Time (s)	n ja na kalenda kalenda ku	5.0	an an an an an an a' an a' a' an a'		5.0		1016-00-0000 (1960-000) 1	4.0	an an Anna an A	1997 I.S. 1999 I.S. 1997 I.S. 1997	4.0	-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1
Vehicle Extension (s)		2.8			2.8	242-242		2,6			2.6	
Lane Grp Cap (vph)		675			310			732			908	
v/s Ratio Prot											0.07	
v/s Ratio Perm		0.26			c0.45			c0.56				
v/c Ratio		0.64			1.10			1.09			0.13	
Uniform Delay, d1		26.0			32.5			27.0			14.2	
Progression Factor		1,00			1.00			1.00			1.00	
Incremental Delay, d2		2.0			81.7			61.5			0.1	
Delay (s)		28.0			114.2			88.5			14.2	
Level of Service		С	enersenne		F		ereş kaşatiyê şala kir	F			B	ANALASI MANA
Approach Delay (s)		28.0			114.2	5.6.6.6		88.5		iê es si s	14.2	
Approach LOS		С			F			F			В	
Intersection Summary												
HCM 2000 Control Delay			73.1	H	CM 2000	Level of	Service		E			
HCM 2000 Volume to Capa	icity ratio		1.10									
Actuated Cycle Length (s)			110.0	Si	um of los	t time (s)			9.0			
Intersection Capacity Utiliza	ation		83.2%	IC	U Level (of Service	•		Е			
Analysis Period (min)			15									
c Critical Lane Group	13 (S) (S) (S)											

Lanes, Volumes, Timings 17: West Wrentham Rd & Pine Swamp Rd (RI 114)

03/22/2020

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		<u>ф</u>			4			4			44	
Traffic Volume (voh)	14		272	284	0	0	236	46	261	0	69	11
Future Volume (vph)	14	0	272	284	0	0	236	46	261	0	69	11
Ideal Flow (vphnl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	13	13	13	13	13	13	13	13	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ff)	0		0	0	1974년 1979년 1979년 1979년 1979년 - 1979년 1979년 1979년 1979년 1979년 - 1979년	0	0	99909999999999999999999999999999999999	0	0		0
Storage Lanes	Ō		0	Ō		0	0		Ō	0		Ō
Taper Length (ft)	25	1997-1997 - 1997-1997 - 1997 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997	and a state of the s	25		999 (1990) 1990 - Station (1990)	25	NGA BARANGA KANA	en ereken Tere	25	n an	ielangen er 🕁
Right Turn on Red			No			Yes			No			No
Link Speed (mph)		30			40	4990 BAR 1997 BAR 1998		25	- 1999 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 199 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997		25	
Link Distance (ff)		3320			7947			1008			920	
Travel Time (s)	A98999999999999999	75.5	f de maiser en fan de se	969199599999999999	135.5	2008-000-000-000-000 -	NATIONAL AND	27.5	99990 9999 AB 9999 AB 999		25.1	and states and the
Confl Peds (#/hr)												
Confl. Bikes (#/hr)		ter of a third the						SANGE GERRADA	en en anderen.			24060476074
Peak Hour Factor	0.70	0.81	0.66	0.83	0.85	0.75	0.55	0.55	0.91	0.56	0.68	0.69
Growth Eactor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0		0	0	42	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)	1999 - 1999 - 1997 -	0%	egel) oolii iyoona		0%	ing industrial and all and all and a starting and a	ang a sa s	0%	en de la constant de La constant de la cons		0%	an an ann an tha
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	432	0	0	342	0	0	800	0	0	117	0
Turn Type	Perm	NA		Perm	NA		Perm	NA			NA	
Protected Phases			native energies	an a				2	erija na serena sere		2	
Permitted Phases	1			1			2			2		
Detector Phase		64949999999 1		1	1		2	2	an de la tradición de la compañía	2	2	16 feren Netrebré
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	areann-saoiseannach	5.0	5.0	1244.075444444444	5.0	5.0	en en sechi
Minimum Split (s)	15.0	15.0		15.0	15.0		9.0	9.0		9.0	9.0	
Total Split (s)	50.0	50.0	004004008040098008404	50.0	50.0		60.0	60.0	Court Cost Cost A second	60.0	60.0	an internet of the real
Total Split (%)	45.5%	45.5%		45.5%	45.5%		54.5%	54.5%		54.5%	54.5%	
Maximum Green (s)	45.0	45.0	1212-	45.0	45.0	, , , , , , , , , , , , , , , , , , ,	56.0	56.0	19 9 - 2 1, 2 1, 2	56.0	56.0	-97, 1974-1979-1984 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	******************	1.0	1.0	n e de de de este entre	1.0	1.0	and and a second
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)	100000000000000000000000000000000000000	5.0	here we also de dell'hader		5.0	9-0-01 - 0-1-1-1-0-0-0-0-0-0-	en versin en versitet oo	4.0	999999512995599955	612.229 (Here's Here's Are He	4.0	en bezerezen berezetetetetetetetetetetetetetetetetetet
Lead/Lag	Lead	Lead		Lead	Lead		Lag	Lag		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	eren berendet
Vehicle Extension (s)	2.8	2.8		2.8	2.8		2.6	2.6		2.6	2.6	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	507.000.000.000
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0	Nerve (12 Norrad Core of	0.0	0.0	a déna kalandar da dén	0.0	0.0	hanan basar basa hafar	0.0	0.0	. 1. 6 - 1 Part Cramber
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Walk Time (s)	9999 (1999) - BRERDE (1997) 1999 - BRERDE (1997) - BRERDE (1997) 1997 - BRERDE (1997) - BRERDE (1997)			nn 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 19 1997 -		99999999999999999999999999999999999999		~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~			e e 11. 60 60 60 60 60 60 60 60 60 60 60 60 60	en e
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)		en de la constanti (1993) Antici de la constanti (1993)		un en	eren en e		an an an an an Anna Anna Anna Anna Anna	entre mente de la compañía de la com La compañía de la comp			en en sen sen sen sen sen sen sen sen se	40000000000000000000000000000000000000
v/c Ratio		0.64			1.10			1.09			0.13	
Control Delay		31.3	ersonelse Bitter (1994	en de Neuroph Briebr	114.4	ang na sa		89.2		na anna Airtealtaíl	14.7	ale Contest NAS

Saturday Peak Full Bridge Closure - Optimized 02/27/2020 Baseline EAM

Synchro 9 Report Page 7

Lanes, Volumes, Timings 17: West Wrentham Rd & Pine Swamp Rd (RI 114)

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Lane Group	EBL EB	t ebr	WBL WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay	0	0	0.0			0.0			0.0	
Total Delay	31.	3	114.4			89.2			14.7	
Queue Length 50th (ft)	24	0	~275			~639			42	
Queue Length 95th (ft)	30	1	#418			329			54	
Internal Link Dist (ft)	324	0	7867			928			840	
Turn Bay Length (ft)										
Base Capacity (vph)	67	5	310			732			909	
Starvation Cap Reductn		0	0			0		1.1. II 1	0	
Spillback Cap Reductn		0	0			0			0	
Storage Cap Reductn		0	0			0			0	
Reduced v/c Ratio	0.6	4	1.10			1.09			0.13	
Intersection Summary Area Type: Oth Cycle Length: 110 Actuated Cycle Length: 110 Natural Cycle: 110 Control Type: Actuated-Uncoor ~ Volume exceeds capacity, Queue shown is maximum a # 95th percentile volume exc Queue shown is maximum a	rdinated queue is theor after two cycle eeds capacity, after two cycle	etically infir s. queue may s.	nite. y be longer.							
Splits and Phases: 17: West	Wrentham Ro	& Pine Sw	amp Rd (RI 114)	<u></u>						

	Ø2
50 s	60 s

Movement EBT EBR WBL WBT NBL NBR
Lane Configurations
Traffic Volume (veh/h) 356 0 0 350 0 0
Future Volume (Veh/h) 356 0 0 350 0 0
Sign Control Free Stop
Grade 0% 0%
Peak Hour Factor 0.83 0.91 0.79 0.88 0.88 0.89
Hourly flow rate (vph) 429 0 0 398 0 0
Pedestrians
Lane Width (ft)
Walking Speed (ft/s)
Percent Blockage
Right turn flare (veh) 10
Median type None None
Median storage veh)
Upstream signal (ff)
pX, platoon unblocked
vC, conflicting volume 429 827 429
VC1, stage 1 cont vol
VC2, stage 2 cont vol
10, single (s) 4.1 0.4 0.2
10, Z Stage (S) に(A) 22 35 33
IF (5) 2.2 5.5 5.5 n0 micro % 100 100 100
100 - 100
Volumo Total 429 0 0 398 0
Volume Right 0 0 0 0 0
csH 1700 1700 1700 1700 1700
Volume to Capacity 0.25 0.00 0.00 0.23 0.00
Queue Length 95th (ft) 0 0 0 0 0
Control Delay (s) 0.0 0.0 0.0 0.0 0.0
Lane LOS A
Approach Delay (s) 0.0 0.0 0.0
Approach LOS A
Intersection Summary
Average Delay V.U. Intersection Canacity Itilization 22 194 ICI Level of Corvice
Analysis Period (min) 15

HCM Signalized Intersection Capacity Analysis 1: Diamond Hill Rd (RI 114) & Nate Whipple Hwy (RI 120)

03/22/2020

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL -	NBT	NBR	SBL	SBT	SBR
Lane Configurations		÷			¢\$+							
Traffic Volume (vph)	0	124	32	18	232	0	362	0	20	104	253	58
Future Volume (vph)	0	124	32	18	232	0	362	0	20	104	253	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	13	13	13	13	12	12	12	12	12	12
Total Lost time (s)		4.0			4.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.97			1.00			0.99			0.98	
Flt Protected		1.00			1.00			0.95			0.99	
Satd. Flow (prot)		1799			1864			1732			1787	
Flt Permitted	ana katalan ne takak data katalan	1.00		ه و د درد رد در سیسی میرود.	0.97			0.45	nus 1,214710, 1212, 1114, 114		0.79	
Satd. Flow (perm)		1799			1820			817			1427	
Peak-hour factor, PHF	0.80	0.84	0.80	0.90	0.82	0.84	0.82	0.82	0.83	0.81	0.82	0.81
Adj. Flow (vph)	0	148	40	20	283	0	441	0	24	128	309	72
RTOR Reduction (vph)	0	12	0	0	0	0	0	5	0	0	6	0
Lane Group Flow (vph)	0	176	0:	0	303	0	0	460	0	0	503	0
Heavy Vehicles (%)	6%	6%	6%	5%	5%	5%	4%	4%	4%	3%	3%	3%
Turn Type		NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)		17.7			17.7	-		49.2			49.2	
Effective Green, g (s)		17.7			17.7			49.2			49.2	
Actuated g/C Ratio	en se finan e biberta titlet time	0.23		transferration and the second second	0.23			0.65			0.65	on veza worzeca
Clearance Time (s)		4.0			4.0			5.0		10.00.00.0	5.0	
Vehicle Extension (s)		2.6			2.6	00-000.000.000.000.000.000	and the second second second second	3.0			3.0	
Lane Grp Cap (vph)		419			424			529			925	
v/s Ratio Prot		0.10										
v/s Ratio Perm					c0.17	69 (S) (S) (S)		c0.56			0.35	
v/c Ratio		0.42	un na airtean an stàitean a' stàitean an stàitean an stàitean an stàitean an stàitean an stàitean an stàitean a	anno ar san san sa	0.71			0.87		and a start the set	0.54	oneconectata
Uniform Delay, d1		24.7			26.8			10.8			7.3	
Progression Factor		1.00	200239756002		1.00			1.00			1.00	
Incremental Delay, d2		0.5			5.3			14.5			0.7	
Delay (s)		25.3			32.1			25.3			7.9	538559
Level of Service		05.0			ل ۵۵.4			05 0			A 70	
Approach Delay (s)		20.3			3Z. I			20.3			1.9	
Approach LUS		U		Gerige Sant	U	Entra chuisti		U S			A	
Intersection Summary												
HCM 2000 Control Delay			20.7	SH(CM 2000	Level of S	Service	- 19 (S. 19)	-C			
HCM 2000 Volume to Capa	acity ratio		0.83									
Actuated Cycle Length (s)			75.9	Si	um of lost	time (s)			9.0			
Intersection Capacity Utiliza	ation		80.5%	IC	U Level o	of Service			D			
Analysis Period (min)			15									

Lanes, Volumes, Timings 1: Diamond Hill Rd (RI 114) & Nate Whipple Hwy (RI 120)

03/22/2020

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4 3+			ф.			ф.			4	
Traffic Volume (vph)	0	124	32	18	232	0	362	0	20	104	253	58
Future Volume (vph)	0	124	32	18	232	0	362	0	20	104	253	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	13	13	13	13	13	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0	00000000000000000000000000000000000000	0	0		0	0	24 US EXA 50 CA 200	0	0	una de	0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25		-1999-1997-1997-1997	25	1979-1911-1911-1943-1943-1943-1943-1943-194		25		andah sebia dipangkana	25		an (1997) - 1997) An (1997) - 1997)
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)	an an an Araba an Ar Araba an Araba an Arab	40	erdau The Colorato		40			30	99999999999999999 1999	- 49-69-68-68-68-68-68-68-68-68-68-68-68-68-68-	30	2000-2010-2010
Link Distance (ff)		1854			4162			1592			454	
Travel Time (s)	an dan mala balan d	31.6	0002000000000000	ad al construction of the	70.9	VEREY 8489 EV-849	-29-29/-429-49-49-49	36.2	000000000000000000000000000000000000000	000000000000000000000000000000000000000	10.3	29420824993
Confl Peds (#/hr)												
Confl. Bikes (#/hr)					Beeren beere			kentisakendel	felen senet.			
Peak Hour Eactor	0.80	0.84	0.80	0.90	0.82	0.84	0.82	0.82	0.83	0.81	0.82	0.81
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	6%	6%	6%	5%	5%	5%	4%	4%	4%	3%	3%	3%
Bus Blockages (#/hr)	۰ ۵	۰ ۵	0	0,0	0 0	n N	n. ا	۵۵۵۰۵۰۵ ۱	n 1	0	0 0	n Mariana N
Parking (#/hr)						•	v	,	, i i i i i i i i i i i i i i i i i i i		•	
Mid-Block Traffic (%)		0%			በ%			በ%			۵%	
Shared Lane Traffic (%)					070			070			V 70	
Lane Group Flow (vph)	۵ ا	188	۸	٥	303	دهور ورو ۸	۵	465	0 0	مر ۵	509	n an
Turn Type		NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	i de la company de la comp La company de la company de	∞∞∞um,son 1		, i onn	899999 /41 /489 1		9 OIII	2		, yiiii	, u.s. 2	
Permitted Phases	1			1			2	-		2		
Detector Phase	1	1		1	1		2	2		2	2	
Switch Phase							-			- 1911 - 1911		
Minimum Initial (s)	10.0	1 <u>0</u> 0	van Generalie	10.0	10.0	04904399399696	10.0	10 N		10 0	10.0	57264ES4
Minimum Split (s)	14.0	12.0		14.0	14.0		10.0	15.0		15.0	15.0	
Total Solit (s)	29.0	29.0		29 N	29 N		58.0	58 O		58 0	58 O	1502042554
Total Split (%)	33.3%	22.0		33.3%	22.3%		66.7%	66.7%		66.7%	66.7%	
Maximum Green (s)	25 N	25.0		25.0	25.0		53.0	53.0		53.0	53.0	99999999994 9
Yellow Time (s)	3.0	3.0		3.0	3.0		40	<u> </u>		4.0	4.0	
All-Red Time (s)		- 0.0 1 Ω		10	1 N		10	1 N	9891998 (BODAR)	 1 በ	1.0 1.0	Service March
Lost Time Adjust (s)	1.0				ំកំ			 			0.0	
Total Lost Time (s)		4 N			0.0 4 N	447-697-698-		5.0			5.0	
	l ead	bee		l ead	bea l		lao	ne l		l an	ne l	
Lead-Lag Optimize?	Υρς	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	26	26		26	28		30	20		3.0	30	
Minimum Gan (s)	2.0 2.0	30 30		2.0 3.0	2.0 3.0		0.0 3 በ	30	80,000,000	30	3.0	89088699
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0 0.0	0.0		0.0 0.0	0.0		0.0	0.0 በበ		0.0 0.0	0.0	
Peral Mode	V.V Nono	V.U None		None	None		Min	0,0 Min		0.0 Min	Min	
Walk Time (s)			19199999		NOUC	9848919818	IAIDT	IAN IAN I		IAIIII	IAUIT	
Flach Dont Malk (c)												
Podestrian Calle (#/hr)												
vic Retio		0 44			0 72			0 88			0.55	
Control Delay		27.0			38.1			33.0			10.7	

AM Peak NB Detour 02/27/2020 Baseline EAM

Lanes, Volumes, Timings 1: Diamond Hill Rd (RI 114) & Nate Whipple Hwy (RI 120)

03/22/2020

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0			0.0	5 (S. 18) (S. 18)		0.0			0.0	
Total Delay	4	27.0			38.1			33.0			10.7	
Queue Length 50th (ft)		74			141			152			110	
Queue Length 95th (ft)		121			199			#364			202	
Internal Link Dist (ft)	1	774			4082			1512			374	
Turn Bay Length (ft)												
Base Capacity (vph)		619			617			589			1029	
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		0.30			0.49			0.79			0.49	
Intersection Summary										1.		
Area Type: Ol	lher											
Cycle Length: 87												
Actuated Cycle Length: 76.1												
Natural Cycle: 50												
Control Type: Actuated-Uncoc	ordinated											
# 95th percentile volume exe	ceeds capac	ity, queue	e may be	e longer.			and the second second second			ann nachae baar dhe same		
Queue shown is maximum	after two cy	cles.										
Splits and Phases: 1: Diame	ond Hill Rd (l	RI 114) 8	Nate W	hipple H	wy (RI 12	20)						
		s s	⊾ ™ิิิิิิิิิ									
29 s	-	5 15 S										

03/22/2020

	5	┣	\	\mathbf{X}	×	4		
Movement	WBL	WBR	SEL	SET	NWT	NWR		
Lane Configurations	¥		ሻ	*	^	7		
Traffic Volume (vph)	76	714	167	299	418	73		
Future Volume (vph)	76	714	167	299	418	73		-vco-v.9-474-c+4740.ca.te-c
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Lane Width	13	13	11	13	12	12		
Total Lost time (s)	4.0		4.0	5.0	5.0	5.0		
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00		
Frt	0.88		1.00	1.00	1.00	0.85		
Flt Protected	0.99		0.95	1.00	1.00	1.00		
Satd. Flow (prot)	1671		1662	1870	1827	1553		
Flt Permitted	0.99		0.95	1.00	1.00	1.00		
Satd. Flow (perm)	1671		1662	1870	1827	1553		
Peak-hour factor, PHF	0.68	0.91	0.58	0.70	0.71	0.58		
Adj. Flow (vph)	112	785	288	427	589	126		
RTOR Reduction (vph)	321	0	0	0	0	49		
ane Group Flow (vph)	576	0	288	427	589	77		
-leavy Vehicles (%)	3%	3%	5%	5%	4%	4%		
Turn Type	Prot		Prot	NA	NA	Prot		
Protected Phases	3		2	12	1	1		***********************
Permitted Phases								
Actuated Green, G (s)	16.1		11.1	42.1	26.0	26.0		, ma ang manang manang a
Effective Green, g (s)	16.1		11.1	42.1	26.0	26.0		
Actuated g/C Ratio	0.24		0.17	0.64	0.39	0.39		
Clearance Time (s)	4.0		4.0		5.0	5.0		
Vehicle Extension (s)	2.6		2.6		2.6	2.6		
ane Grp Cap (vph)	406		278	1189	717	609		
//s Ratio Prot	c0,34		c0.17	0.23	c0.32	0.05		-
//s Ratio Perm								
//c Ratio	1.42		1.04	0.36	0.82	0.13		
Jniform Delay, d1	25.1		27.6	5.7	18.0	12.8		
Progression Factor	1.00		1.00	1.00	1.00	1.00		
ncremental Delay, d2	202.5		63.6	0.1	7,4	0.1		
Delay (s)	227.6		91.2	5.8	25.4	12.9		
Level of Service	F		F	A	C	В		
Approach Delay (s)	227.6			40.2	23.2			
Approach LOS	F			D	C			
ntersection Summary								
HCM 2000 Control Delay			107.2	la sa sh	ICM 2000	Level of Servic	e F	
HCM 2000 Volume to Capa	acity ratio		1.05			an in an ann an Anna an	en e	
Actuated Cycle Length (s)			66.2	S	um of los	t time (s)	13.0	
Intersection Capacity Utiliza	ation	er men traget digit	90.4%		CU Level (of Service	E	
Analysis Period (min)			15					

03/22/2020

	5	*	\searrow	X	×	4	
Lane Group	WBL	WBR	SEL	SET	NWT	NWR	
Lane Configurations	¥		ሻ	∱	^	7	
Traffic Volume (vph)	76	714	167	299	418	73	
Future Volume (vph)	76	714	167	299	418	73	
Ideal Flow (vohol)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	13	13	11	13	12	12	
Grade (%)	0%			0%	0%		
Storage Length (ft)	0	0	0		900 99 1 9 19 19 19 19 19 19 19 19 19 19 19 19 19	80	
Storage Lanes	ĺ	Ň	<u>่ เค</u>			Ĩ	
Taner Length (ft)	25		25	NATE AND DESCRIPTION			
Right Turn on Red		Yes				Yes	
Link Speed (mph)	30	anan da sana sana sana sana sana sana sa		35	35	eren er i statteren e	
Link Distance (ff)	2348			381	2230		
Travel Time (s)	53 4	9900-000-000-00 1	986-499-499-990-990- 996-499-49-999-990-990-990-990-990-990-990-	74	43.4		
Confl Peds (#/hr)	001-1						
Confl Rikes (#/hr)		an an an thaile an			ana ang ang ang ang ang ang ang ang ang		
Peak Hour Factor	0.68	<u> </u>	0 58	0.70	0.71	0.58	
Growth Eactor	100%	100%	100%	100%	100%	100%	
Heavy Vehicles (%)	20%	20%	5%	5%	100 %	10076	
Rus Blockades (#/br)	ን እ በ	ት እም በ	رو ۱	رم ۱	ግ ም በ	л. Л	
Dus Diockages (#/m) Darking (#/hr)	U	v	<u> </u>	v			
Mid Block Traffic (%)	በ%			በ%	በ%		
Shared Lane Traffic (%)	070			0,0	070		
Lano Group Flow (wh)	807	∩	288	A97	580	126	
Lane Group Frow (vpn) Turn Turn	Drot		Drof		NA	Prof	
Turri Type Distanted Disease	ו וטנ 2	89 - 69 - 69 - 69 - 69 - 69 - 69 - 69 -	י וטנ י	12	רע ל	1 IUL 1	
Dormitted Phases	J		ے	1 2		L Normal and the	
Dotootor Dhasa	2		2 2	10	1	1	
Delector Fildse Switch Dhoop	J		ے	1 4	1	1	
OWILUI FIIdSe Minimum Initial (a)	10.0		<u>ج</u> 6 0		10.0	10 N	
Minimum Initial (5) Minimum Chlit (6)	10.0		0.0		10.0	10.0	
IVIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	14.U 20.0		9.0 15 0		25 A	25.0	
Total Split (S) Total Split (9/)	20.0		10.0		50.0	50.0 50.00	
Total Spill (%)	20.0%	MARTING CAR	Z1.470		20.0%	20.0%	
Waximum Green (s)	10.0		11.0		ى.ى مە	30.0 4 0	
Tellow Time (S)	3.0		3,U 1 0		4.U 4 O	4.V 4 0	
All-Red Time (S)	1.0		1.0		U.I	1.U 0.0	
Lost Time Adjust (s)	U.U 4 0		0.0		U.U 5 0	U.U F 0	
Total Lost Time (s)	4.0		4.0		U.C	0.U	
Lead/Lag			Lag		Lead	Leao	
Lead-Lag Optimize?	<u>, , , , , , , , , , , , , , , , , , , </u>		Y es		Yes	t es	
Venicie Extension (s)	2.0		2,0		2.0	2.0	
winimum Gap (s)	3.0		3.0		3.0	3.0	
Lime Before Reduce (s)	0.0		0.0		0.0	0.0	
Time To Reduce (s)	0.0		0.0		<u>U.</u>	0.0	
Recall Mode	None		None		Min	Min	
Walk Time (s)	ner and an and a second						
Flash Dont Walk (s)				e de la contra			
Pedestrian Calls (#/hr)							
v/c Ratio	1.23		1.04	0.37	0.82	0.19	
Control Delay	133.9		97.6	7.1	28.9	6.3	

AM Peak NB Detour 02/27/2020 Baseline EAM

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	•	-	4	•	•			
Lane Group	WBL	WBR SEL	SET	NWT	NWR			
Queue Delay	0.0	0.0	0.0	0.0	0.0			
Total Delay	133.9	97.6	7.1	28.9	6.3		 	
Queue Length 50th (ft)	~342	~143	73	206	11			
Queue Length 95th (ft)	#299	#140	83	222	17	 	 	
Internal Link Dist (ft)	2268		301	2150				
Turn Bay Length (ft)					80			
Base Capacity (vph)	727	277	1134	833	751		88.89	
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	1.23	1.04	0.38	0.71	0.17			

Intersection Summary

Area Type: Other

Cycle Length: 70

Actuated Cycle Length: 66.2

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

~ 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: 6: Mendon Rd (RI 122) & Nate Whipple Hwy (RI 120)

× _{ø1}	W 102	K ø3
35 s	15 s	20 s

HCM Signalized Intersection Capacity Analysis 7: Plaza Driveway/West Wrentham Rd & Mendon Rd (RI 122)

03/22/2020

	ኘ	Ť	۴	L.	Ļ	N	•	X	\mathbf{i}	₽	×	*
Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		44			ф.		61	4		۲	Ъ	
Traffic Volume (vph)	3	1	6	84	0	104	95	100	13	7	338	566
Future Volume (vph)	3	1	6	84	0	104	95	100	13	7	338	566
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	16	16	16	12	12	12	14	14	12	11	14	14
Total Lost time (s)		4.0			4.0			5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00			1.00		1.00	1.00	
Frt		0.94			0.92			0.98		1.00	0.91	
Flt Protected		0.98			0.98		و سر و منه منه و در و مستور م	0.98		0.95	1.00	
Satd. Flow (prot)		1986			1651			1897		1694	1782	
Flt Permitted		0.89			0.85			0.32		0.63	1.00	
Satd. Flow (perm)		1809			1430			612		1117	1782	
Peak-hour factor, PHF	0.25	0.25	0.50	0.84	0.92	0.79	0.81	0.79	0.41	0.44	0.87	0.86
Adj. Flow (vph)	12	4	12	100	0	132	117	127	32	16	389	658
RTOR Reduction (vph)	0	10	0	0	81	0	0	5	0	0	66	0
Lane Group Flow (vph)	0	18	0	0	151	0	0	271	0	16	981	Q
Heavy Vehicles (%)	0%	0%	0%	4%	4%	4%	3%	3%	3%	3%	3%	3%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2		en entrem state in en par	1			1	1
Permitted Phases	2			2			1			1		
Actuated Green, G (s)	i Selanda Margar	12.2	webayotap kurisi	lan karakan karan	12.2			40.2		40.2	40.2	9498-1002-09-01-12-8
Effective Green, g (s)		12.2			12.2			40.2		40.2	40.2	
Actuated g/C Ratio	0.0000000000000000000000000000000000000	0.20	988 BRING GER 1987		0.20	Sectors and a sector		0.65		0.65	0.65	
Clearance Time (s)		4.0			4.0			5.0		5.0	5.0	
Vehicle Extension (s)	5253 575 575 575 575	2.6			2.6			2.8		2.8	2.8	Separate and a second
Lane Grp Cap (vph)		359			284			400		731	1166	
v/s Ratio Prot											c0.55	anterio en e
v/s Ratio Perm		0.01			c0.11			0.44		0.01	A	
	en de la companya	0.05		Vaaroo (Awaaroo)	0.53			0.68		0.02	0.84	901-701-70 V
Uniform Delay, d'I		19.9	90110.000 AQ		22.0			6,6		3.7	8.2	
Progression Factor	Stallasia	1.00		vile en en en	1.00			1.00	No Con Chillion	1.00	1.00	
Incremental Delay, 02		0.0			1.0			4.3		0.0	0.0	
Louid of Somico		20.0 D			20.0			10.9		J./	13.0 D	
Approach Dolay (a)		20 0			02 G			40 0		A	12 G	
Approach LOS		20.0 D			20.0		50.53.53.63	טו. מ			10.0 D	
Approach LOO		D			v			Р			D	
Intersection Summary	e gester de											
HCM 2000 Control Delay		0.5069433	14.7	H	SM 2000	Level of S	Service		В			
HCM 2000 Volume to Capacity Actuated Cycle Length (s) Intersection Capacity Utilization Analysis Period (min)	ratio 1		0.77 61.4 92.9% 15	Su IC	ım of lost U Level c	time (s) of Service			9.0 F			

Lanes, Volumes,	Timings		
7: Plaza Driveway	/West Wrentham Rd	& Mendon Rd (RI 122)

03/22/2020

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Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		ф			\$			ф,		ሻ	4î	
Traffic Volume (vph)	3	<u>1</u>	6	84	0	104	95	100	13	7	338	566
Future Volume (vph)	3	1	6	84	0	104	95	100	13	7	338	566
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	12	12	12	14	14	12	11	14	14
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0	0.0000000000000000000000000000000000000	0	0	and well-ready wells and	0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (ft)	25	feninde offeninde	- 1979 (1999 (1999 - 1996) 	25		Alexandre de la dec	25	e de la company	ante ata de la composita da se	25		alayin sahataang
Right Turn on Red			Yes		54.44	Yes			Yes			Yes
Link Speed (mph)	anda da kata da ka	25		and the second	35			35	999,999 , 5 7,999		35	ala de la compañía d La compañía de la comp
Link Distance (ff)		209			662			1525			777	
Travel Time (s)	ala na pila Kalèndané.	57	90500000000000000000000000000000000000	0.950.090.09000 1	12.9	el contre presente en	249797799999999999999999999999999999999	29.7	968400966888 9		15.1	W65022209107 3
Confl Peds (#/hr)												
Confl. Bikes (#/hr)		2014-2012-20120	in in the second		58899999999999999999 19	9474.999 (1999) 1997	a barange Asales	: 2013년 1998년 1999 				64782993
Peak Hour Factor	በ 25	0.25	0.50	<u> </u>	0 92	ሰ 79	0.81	0 79	0.41	∩ 44	ሰ 87	0.86
Growth Eactor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	00%	00%	0%	4%	100%	100%	3%	2%	20%	20%	20%	2%
Bus Blockages (#/br)	ν.ν Λ	<u>، ب</u>	ο, γ Ω	ም		ግድ በ	ο,ο Λ	۳. ۱	<u>۳۷ م</u>	υ <i>ν</i> ι Λ	<u>۳۷</u> ۵	<u>%</u> 0
Parking (#/br)	V	v	U State	Ŭ	v	v	v	v	v	v	v	
Mid-Block Traffic (%)		∩%			በ%			∩%			0%	
Shared Lane Traffic (%)		V /0			076			070			V 70	
Long Group Flow (uph)	<u>۸</u>	<u>γ</u> α	∩ ∩	<u>۸</u>	າາງ	© ∩	^ ^	976	<u>م</u>	16	1047	1
Turn Tuno	Dorm	20 NA	U	Dorm	ZUZ	v	Dorm	270 NA	v	Dorm	1047 NIA	
Protoctod Dhacoc		רע ר			אנו ר		ГСІШ	۸۷۱ ۱		Leim	NA 4	646264
Protected Flidses	ം	د 1983-1996		0	7			ן 1968 - 1969		4	l	
Defector Dhose	ິ ໂ	о О		2 0	0			1		د. ۱	4	
Delector Pridse	ک مرکز (1997)	_ 1949-00054155		4 موجودی	4 1997 - 1997		l Negerserver	ן פינאינאנאני	lanan senan	ا مەربەر مەربەر		
Switch Flidse	40 N	40.0		40.0	40.0		10.0	10.0		40.0	40.0	
Minimum Colitica	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	Station .
Total Calif (a)	14.U 07.0	14.0 27.0		14.U 07.0	14.U 27.0		10.0	0.GF		10.0	10.0	
	21.0	21.0		21.0	27.0		43.0	40.0		43.0	43.0	
Total Split (%) Maximum Groom (a)	00.06	00.0%		30.0%	00.0% 00.0%		01.4%	01.4%		01.4%	01.4%	
Waximum Green (S)	23.U 0 0	23.0		23.0	23.0		აშ.∪ ∡ი	30.U 1 0		38.U	38.0	(8058) (SM
Yellow III le (S)	3.0	3,0		3.U 4 0	3.0		4.0	4.0		4.0	4.0	Several A
All-Red Time (S)	١.υ	1.0		I.U	۱.U م م		I.U	1.0		1.0	1.0	
Lost Time Adjust (s)		0,0			0.0			U.U		0.0	0.0	
Total Lost Time (s)		4.0			4.0	ROMAN AND AL		5.0		5.0	5.0	294024999
Lead/Lag	Lag	Lag		Lag	Lag		Lead	Lead		Lead	Lead	
Lead-Lag Optimize?	Yes	Yes	warationa and	Yes	Yes	NEED SERVICE AND	Yes	Yes		Yes	Yes	26220002052000
Vehicle Extension (s)	2.6	2.6		2.6	2.6		2,8	2.8		2.8	2.8	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	526600000000000000000000000000000000000
Recall Mode	None	None	S. Orași e	None	None		Min	Min		Min	Min	
Walk Time (s)			and the second secon	XARSIN NAMA ANALAN		AGE E PARA CONTRACTO	0.1203.000.000.000.000					CREAR SAME AND
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)	- 1977, 1977, 1977, 1977, 1977, 1977, 1977, 1977, 1977, 1977, 1977, 1977, 1977, 1977, 1977, 1977, 1977, 1977, 1	ala da antica da anti	and the state of the second		Second contract for the second							
v/c Ratio		0.08			0.64			0.68		0.02	0.85	
Control Delay		14.0			20.6			19.3		4.9	16.8	

AM Peak NB Detour 02/27/2020 Baseline EAM

Lanes, Volumes, Timings 7: Plaza Driveway/West Wrentham Rd & Mendon Rd (RI 122)

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Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Queue Delay		0.0			0.0			0.0		0.0	0.0	
Total Delay		14.0			20.6			19.3		4.9	16.8	
Queue Length 50th (ft)		5			41			43		2	175	
Queue Length 95th (ft)		3			101			#148		4	#550	
Internal Link Dist (ft)		129			582			1445			697	
Turn Bay Length (ft)												
Base Capacity (vph)		688			601			406		730	1232	
Starvation Cap Reductn		0			0			0	·	0	0	
Spillback Cap Reductn		0			0			0		0	0	
Storage Cap Reductn		0			0			0		0	0	
Reduced v/c Ratio		0.04			0.39			0.68		0.02	0.85	
Intersection Summary												
Area Type: C	Other											
Cycle Length: 70		- ,			- 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1	-96.945 D.0096 94.965			00% (00% % 00% % % % % % % % % % % % % %			
Actuated Cycle Length: 61.4												
Natural Cycle: 60										- 14 - 15 - 16 and a fair a fair 16 ann		
Control Type: Actuated-Unco	ordinated											
# 95th percentile volume ex	ceeds cap	acity, que	eue may l	be longer	•							
Queue shown is maximun	n after two	cycles.										
Splits and Phases: 7: Plaz	a Driveway	/West W	rentham F	Rd & Mer	ndon Rd (RI 122)						
X _{Ø1}							Ø2					
43 s					10-17-38 ⁻		27 s					

HCM Signalized Intersection Capacity Analysis 17: West Wrentham Rd & Pine Swamp Rd (RI 114)

03/22/2020

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		44			44	2004 AN 1072 AN 1072 AN		4			ф.	
Traffic Volume (vph)	28	150	45	114	79	7	156	106	547	40	88	12
Future Volume (vph)	28	150	45	114	79	7	156	106	547	40	88	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	13	13	13	13	13	13	13	11	11	11
Total Lost time (s)		5.0			5.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00	/1.1111.0001.0001.0001.00	na an a	1.00	000000000000
Frt		0.98			1.00			0,91			0.98	
Flt Protected		0.99			0.97			0.99			0.99	
Satd. Flow (prot)		1887			1826			1768			1748	
Flt Permitted		0.94			0.63			0.87			0.71	
Satd. Flow (perm)		1784			1192			1563			1261	
Peak-hour factor, PHF	0.78	0.63	0.75	0.73	0.75	0.71	0.49	0.62	0.56	0.71	0.63	0.43
Adj. Flow (vph)	36	238	60	156	105	10	318	171	977	56	140	28
RTOR Reduction (vph)	0	0	0	0	3	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	334	0	0	268	0	0	1466	0	0	224	0
Heavy Vehicles (%)	1%	1%	1%	4%	4%	4%	0%	0%	0%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		1			1			2	frod a faith a faith a daoine	et nega ti sen pet pet ti di ti di pe	2	1014943447494 .0
Permitted Phases	1	S. 49 S. 45		1			2			2		
Actuated Green, G (s)		15.7			15.7			21.3			21.3	
Effective Green, g (s)		15.7			15.7			21.3			21,3	
Actuated g/C Ratio		0.34			0.34			0.46			0.46	
Clearance Time (s)		5.0			5.0			4.0			4.0	
Vehicle Extension (s)		2.8			2.8			2.6			2.6	
Lane Grp Cap (vph)		608			406			723			583	
v/s Ratio Prot												
v/s Ratio Perm		0.19			c0.22		6.00.000	c0.94			0.18	
v/c Ratio		0.55			0.66			2.03			0.38	
Uniform Delay, d1		12,3			12.9			12.3			8,1	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		0.9			3.7			467.3			0.3	
Delay (s)	and should be denote as sound one	13.2			16.6		a da mana ana ana ana	479.7		1.2. matta (1.1. m. 11. m. 11	8.4	
Level of Service		В			В			S. F.			Α	
Approach Delay (s)		13.2			16.6			479.7			8,4	
Approach LOS		В			В			F			A	
Intersection Summary												
HCM 2000 Control Delay			311.1	Н	CM 2000	Level of S	Service		F	100000000000000000000000000000000000000		
HCM 2000 Volume to Capa	acity ratio	1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.	1.45				a an 60 an 12 an 19 a Tha tha tha tha tha tha tha tha tha tha t	an geographic ang si sa ging si s			a menerangkan sebili s	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Actuated Cycle Length (s)	ĺ		46.0	SL	im of lost	time (s)			9.0			
Intersection Capacity Utilization	ation		89.3%	IC	U Level o	f Service	e e e e e e construction de la cons	an a	E	, e um constante de 1976		
Analysis Period (min)			15									

Lanes, Volumes, Timings 17: West Wrentham Rd & Pine Swamp Rd (RI 114)

03/22/2020

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations					44						4	
Traffic Volume (vph)	28	150	45	114	79	7	156	106	547	40	88	12
Future Volume (vph)	28	150	45	114	79	7	156	106	547	40	88	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	13	13	13	13	13	13	13	13	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0	an a	0	0	90.090-000-000-000 	0	0	*************	0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25	1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 -	A 990 000 800 000 000 000 000	25	la nerez Sinterne Antonio		25	1999-1999-1999-1999-1999-1999	1929-1949-1949-1949-1949-1949-1949-1949-	25	radiatio (1994) en en estero.	naniatas data catri
Right Turn on Red			No			Yes			No			No
Link Speed (mph)		30	t de la desta de la deserva de la seconda de la desta de la deserva de la deserva de la deserva de la deserva En la deserva de la deserva		40			25	-90		25	
Link Distance (ft)		3320			7947			1008			920	
Travel Time (s)		75.5	4 million and a state of the		135.5			27.5			25.1	1997 (1997) 1997 (1997)
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)		el en el este de la secte de la sec			alar da bi da ka babada	an san dan dan bahirada	analan kanat		denini energi de	en di territe de	Childhinith Childhi	den in the star
Peak Hour Factor	0.78	0.63	0.75	0.73	0.75	0.71	0.49	0.62	0.56	0.71	0.63	0.43
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	1%	4%	4%	4%	0%	0%	0%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0 0	0	0 0		0 0	0	0	0
Parking (#/hr)							- 1999-1999				- 	
Mid-Block Traffic (%)		0%			0%		an an an tha an an tha an an tha an tha Tha an tha an t	0%			0%	and the strength
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0 0	334	0	0	271	0	0	1466	0	0	224	0
Turn Tyne	Perm	NA		Perm	NA		Perm	NA	<u></u>	Perm	NA	
Protected Phases						(1970) - 1983) (1986) (1987) (1987) - 1983) (1986) (1987)		2			2	069406996994
Permitted Phases	1			1			2			2		
Detector Phase	1	1		1	1		2	2		2	2	2003 (1999) 1997 (1998) 1997 - 1997 (1997) 1997 (1997)
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	enerer er verstellet	5.0	5.0	24204.0494.04249.042	5.0	5.0	service in the service
Minimum Split (s)	15.0	15.0		15.0	15.0		9.0	90		90	90	
Total Split (s)	35.0	35.0	ABRI 1998 1988 1999	35.0	35.0	99999999999999999 999999999999999	25.0	25.0	linteriers statisticalities?	25.0	25.0	ana shekarad
Total Split (%)	58.3%	58.3%		58.3%	58.3%		41.7%	41.7%		41.7%	41.7%	
Maximum Green (s)	30.0	30.0		30.0	30.0	en e	21.0	21.0		21.0	21.0	1999-1997-1999-1 1999-1997-1997-1997-1
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0		1.0	1.0	-144-clinets entranciae A	1.0	1.0		1.0	1.0	26120120-03
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.0		a na sing ng sang ang sang sa	5.0			4.0			4.0	9879-9879 Grant
Lead/Lag	Lead	Lead		Lead	Lead		Lao	Lao		Lad	Lao	
Lead-Lag Optimize?	Yes	Yes	useran sa sanas	Yes	Yes	4000 00 000 000 000 000 000 000 000 000	Yes	Yes		Yes	Yes	1991,000,000
Vehicle Extension (s)	2.8	2.8		2.8	2.8		2.6	2.6		2.6	2.6	
Minimum Gap (s)	3.0	3.0		3.0	3.0	Andreas (1997) Andreas (1997)	3.0	3.0	100000000000000000000000000000000000000	3.0	3.0	1.0000000000000000000000000000000000000
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0	ingel of an and again from a	0.0	0.0	Anni (1996) (4
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Walk Time (s)						arra da 1984).					AND A THE AND A THE	1999-1999 (1997) 1997-1997 (1997) 1997 (1997)
Flash Dont Walk (s)									Ś. S. S. S. S.			
Pedestrian Calls (#/hr)	an a				20044083000			aanoo u Shaffii		resected in 1997. A	an an tha	
v/c Ratio	i in state	0.55			0.66			2.03			0.38	
Control Delay		15.6	unan sina sina tin	, en a en esta en estal.	20.8	a an an Shina Shina Shina Shin	e na na mainteachtacht	487.4		e e de la transferir de la defenir de la	12.6	eren en e

AM Peak NB Detour 02/27/2020 Baseline EAM

Lanes, Volumes, Timings 17: West Wrentham Rd & Pine Swamp Rd (RI 114)

03/22/2020

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Lane Group	EBL EBT	EBR WBL WBT	WBR	NBL NBT	NBR	SBL	SBT	SBR
Queue Delay	0.0	0,0		0.0			0.0	
Total Delay	15.6	20.8		487.4			12.6	
Queue Length 50th (ft)	69	57		~624			34	
Queue Length 95th (ft)	76	87		#669			67	
Internal Link Dist (ft)	3240	7867		928			840	
Turn Bay Length (ft)								
Base Capacity (vph)	1176	788		721			582	
Starvation Cap Reductn	0	0	ور د وی مردو می مربع مربع می در	0			0	
Spillback Cap Reductn	0	0		0			0	
Storage Cap Reductn	0	0		0			0	or and the second
Reduced v/c Ratio	0.28	0.34		2.03			0.38	
Intersection Summary								
Area Type: C	Other							
Cycle Length: 60								
Actuated Cycle Length: 46.1								
Natural Cycle: 140								
Control Type: Actuated-Unco	ordinated							
~ Volume exceeds capacity	, queue is theoretica	lly infinite.						onanaaaa
Queue shown is maximum	n after two cycles.							
# 95th percentile volume ex	ceeds capacity, que	ue may be longer.						
Queue shown is maximum	n after two cycles.							
Splits and Phases: 17: We	st Wrentham Rd & P	ine Swamp Rd (RI 114)						
			4	Ø2				

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	-	\rightarrow	*	+	*	1		
Movement	EBT	EBR	WBL	WBT	NBL	NBR		
Lane Configurations	*	7	۲	*	ሻ	*		
Traffic Volume (veh/h)	659	198	256	115	34	112		
Future Volume (Veh/h)	659	198	256	115	34	112	an shekararan da kalin	
Sign Control	Free			Free	Stop	an 19 (19 - 19 - 19 - 19 - 19 - 19 - 19 -		
Grade	0%			0%	0%			
Peak Hour Factor	0.73	0,60	0.86	0.60	0,76	0.91		
Hourly flow rate (vph)	903	330	298	192	45	123		
Pedestrians Lane Width (ft)								
Walking Speed (ft/s)							8 . (S. 65 . 5 .	
Percent Blockage	el habita di secondo del 1990 de de				the second state of the second			
Right turn flare (veh)						10		
Median type	None			None				
Median storage ven)								
Opstream signal (it)								
vC conflicting volume			003		1601	003		
vC1 state 1 confivel			300		1031	300		
vC2_stage 2 conf vol								NG (1999) (1999) (1999) (1999) (1999) (1999) (1999) (1999) (1999) (1999) (1999) (1999) (1999) (1999) (1999) (19
vCu: unblocked vol			903		1691	903		
tC. single (s)			4.1	a dika kata sala sa	6.4	6.2		
tC, 2 stage (s)								
tF (s)	- -		2.2	tenen tennen offang	3.5	3.3	2003/2003/2003/2007/2005/2002/2002/2002/2002/2002/2002	
p0 queue free %			60		27	63		
cM capacity (veh/h)			753		62	334		
Direction, Lane#	EB 1	EB 2	WB 1	WB 2	NB 1			
Volume Total	903	330	298	192	168			
Volume Left	0	0	298	0	45			
Volume Right	0	330	0	0	123			
cSH	1700	1700	753	1700	230			
Volume to Capacity	0.53	0.19	0.40	0.11	0.73			
Queue Length 95th (ft)	0	0	48	0	124			
Control Delay (s)	0.0	0.0	12.9	0.0	57.3			la phase Grantes and a second
Lane LOS			В		F			
Approach Delay (s)	0.0		7.8		57.3			
Approach LOS					F			
Intersection Summary								
Average Delay			7.1					
Intersection Capacity Utiliza	ation		62.2%	IC	U Level c	of Service		В
Analysis Period (min)			15		le (nos est			

HCM Signalized Intersection Capacity Analysis 1: Diamond Hill Rd (RI 114) & Nate Whipple Hwy (RI 120)

03/22/2020

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		44			4 4+			(‡+			4	
Traffic Volume (vph)	0	306	43	236	552	0	260	0	120	113	174	38
Future Volume (vph)	0	306	43	236	552	0	260	0	120	113	174	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	13	13	13	13	12	12	12	12	12	12
Total Lost time (s)		4.0			4.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.98			1.00			0.95			0.98	
Flt Protected		1.00			0.98			0.97			0.98	
Satd. Flow (prot)		1711			1823			1670			1730	
Flt Permitted		1.00			0.39			0.54			0.74	
Satd. Flow (perm)		1711			714			940			1297	
Peak-hour factor, PHF	0.74	0.70	0.77	0.70	0.79	0.86	0.88	0.69	0.77	0.69	0.73	0.63
Adj. Flow (vph)	0	437	56	337	699	0	295	0	156	164	238	60
RTOR Reduction (vph)	0	4	0	0	0	0	0	22	0	0	6	0
Lane Group Flow (vph)	0	489	0	0	1036	0	0	429	0	0	456	Ö
Heavy Vehicles (%)	13%	13%	13%	6%	6%	6%	5%	5%	5%	6%	6%	6%
Turn Type		NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)		35.5			35.5			44.3			44.3	
Effective Green, g (s)		35.5			35.5			44.3			44.3	
Actuated g/C Ratio		0.40			0.40			0.50		na na sé an de Garraí a Stara d	0.50	a bumilos sinces à
Clearance Time (s)		4.0			4.0			5.0	90.000.000.00		5.0	
Vehicle Extension (s)		2.6			2.6			3.0			3.0	1. June 1999 114 11 1997 194
Lane Grp Cap (vph)		684			285			468			647	
v/s Ratio Prot		0.29										
v/s Ratio Perm					c1.45			c0.46			0,35	
v/c Ratio		0.71	ana sananana	una anta anta anta anta	3.64			0.92			0.70	
Uniform Delay, d1		22,4			26.6			20.6			17.2	88.000 A
Progression Factor		1.00			1.00	and the second second		1.00			1.00	1999 - 1999 -
Incremental Delay, d2		3.4			1194.4			22.7			3.5	
Delay (s)		25.8			1221.1			43.3			20.7	
Level of Service		05 0			4004 4			40 0			00.7	
Approach Delay (s)		20.0			1221.1			43.3 D			20.7 C	
Approach LUS		U			Г			P			U	
Intersection Summary								-				
HCM 2000 Control Delay			535,1	H	CM 2000	Level of	Service		F -			
HCM 2000 Volume to Capac	city ratio		2.12							»» ا البر السياطر بي من م		
Actuated Cycle Length (s)			88,8	S	um of los	t time (s)			9.0			
Intersection Capacity Utiliza	tion		111.9%	IC	CU Level	of Service)	1999-1994 - Carlo I Car	Н			a provenski stali stali
Analysis Period (min)			15									

Lanes, Volumes, Timings 1: Diamond Hill Rd (RI 114) & Nate Whipple Hwy (RI 120)

03/22/2020

Lane Group EBL EBT EBR WBL WBT WBR NBL NBT NBR SBL S	BT SBR ₽
	þ
Lane Configurations du da	T*
Traffic Volume (vph) 0 306 43 236 552 0 260 0 120 113 1	74 38
Future Volume (vph) $0.306 43 236 552 0.260 0.120 113 1$	74 38
Ideal Flow (vphpl) 1900 1900 1900 1900 1900 1900 1900 190	
Lane Width (ff) 13 13 13 13 13 13 13 12 12 12 12	12 12
Grade (%) 0% 0% 0%	%
Storage Length (ft) 0 0 0 0 0 0 0	Δ. Δ
Storage Lanes 0 0 0 0 0 0	ň
Taper Length (ff) 25 25 25 25	
Right Turn on Red Yes Yes Yes	Yes
Link Speed (mph) 40 40 30	እ የ
Link Distance (fft) 1854 4162 1592 4	Х
Travel Time (s) 31.6 70.9 36.2 1	3
Confl Peds (#/hr)	
Confl Bikes (#/hr)	
Peak Hour Factor 0.74 0.70 0.77 0.70 0.79 0.86 0.88 0.69 0.77 0.69 0	73 0.63
Growth Eactor 100% 100% 100% 100% 100% 100% 100% 100	% 100%
Heavy Vehicles (%) 13% 13% 13% 6% 6% 6% 5% 5% 5% 6%	% 6%
Heavy venices (x) 10x 10x 10x 0x 0x <td>λ Λ Λ</td>	λ Λ Λ
Parking (#/hr)	V V
Mid-Block Traffic (%) 0% 0%	0/_
Sharad Jana Traffic (%)	70
1 and Calle Market (w)	32 A
$\frac{1}{1}$	Δ
Protected Phases 1 1 2	2
Permitted Phases 1 1 2 2	4
Detector Phase 1 1 1 1 1 2 2 2	2
Switch Phase	~
Minimum initial (s) 100 100 100 100 100 100 100 100 100 10	0 0
$\frac{100}{100} = \frac{100}{100} = $.υ Λ
Total Split (s) 39.0 39.0 39.0 39.0 58.0 58.0 58.0 58.0 5	۰ <u>۹</u>
Total Split (%) 40.2% 40.2% 40.2% 59.8% 59.8% 59.8%	.u
Maximum Green (s) 350 350 350 350 350 350 530 530 530	<u>/</u>
Yellow Time (s) 30 30 30 40 40 40 <th< td=""><td> n</td></th<>	 n
All-Red Time (s) 10 10 10 10 10 10	Maraalaan). N
	.0 N
Total Lost Time (s) 40 40 50	
Lead/lan lan lan lan lan lan lan lan lan lan	
Lead-Lag Onfimize? Yes	76 18
Vehicle Extension (s) 2.6 2.6 2.6 2.6 3.0 3.0 3.0	λ Λ
$ \begin{array}{cccccccccccccccccccccccccccccccccccc$	Л
Time Before Beduce (s) 0.0 0.0 0.0 0.0 0.0 0.0	0
	.ب ۱
Recall Mode None None None Min Min Min Min	.v in
Walk Time (s)	uusaasiisti (SA
Flash Dont Walk (s)	
Pedestrian Calls (#/hr)	
V/c Ratio 0.92 3.64 0.92 0	4
Control Delay 31.9 1210.7 44.9 23	. <u>.</u>

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Synchro 9 Report Page 1

Lanes, Volumes, Timings 1: Diamond Hill Rd (RI 114) & Nate Whipple Hwy (RI 120)

03/22/2020

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		31.9			1210.7			44.9			23.1	
Queue Length 50th (ft)		260			~1024			204			184	
Queue Length 95th (ft)		271			#1090			210			205	
Internal Link Dist (ft)		1774			4082			1512			374	
Turn Bay Length (ft)				1. en 1. haarde de bester	روین در در استان در استان		to commente activity and the					
Base Capacity (vph)		687			285			585			789	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.72			3.64			0.77			0.59	
Intersection Summary												
Area Type: Oth	ier											
Cycle Length: 97												
Actuated Cycle Length: 88.9												
Natural Cycle: 150												
Control Type: Actuated-Uncoord	dinated											
~ Volume exceeds capacity, o	queue is th	eoretica	ally infinite	; .								
Queue shown is maximum a	after two cy	ycles.	Antoniconiese Antoniconiese									
# 95th percentile volume exce	eds capar	city, que	ue may b	e longer.	•							
Queue shown is maximum a	after two cy	ycles.										
Splits and Phases: 1: Diamor	nd Hill Rd /	(RI 114)	/ & Nate V	Vhipple H	łwy (RI 1	20)			<u> </u>	<u> </u>		
			4	Lt.								

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Movement	WBL	WBR	SEL	SET	NWT	NWR	
Lane Configurations	¥		ሻ	۸	ŧ	7	
Traffic Volume (vph)	99	573	193	423	411	73	
Future Volume (vph)	99	573	193	423	411	73	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width	13	13	11	13	12	12	
Total Lost time (s)	4.0		4.0	5.0	5.0	5.0	
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00	
Frt	0.88		1.00	1.00	1.00	0.85	
Flt Protected	0.99		0.95	1.00	1.00	1.00	
Satd, Flow (prot)	1701		1728	1944	1881	1599	
Flt Permitted	0.99		0.95	1.00	1.00	1.00	
Satd. Flow (perm)	1701		1728	1944	1881	1599	
Peak-hour factor, PHF	0.99	0.72	0.93	0.94	0.86	0.79	
Adj. Flow (vph)	100	796	208	450	478	92	
RTOR Reduction (vph)	294	0	0	0	0	37	
Lane Group Flow (vph)	602	. 0	208	450	478	55	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	
Turn Type	Prot		Prot	NA	NA	Prot	
Protected Phases	3		2	12	1	1	
Permitted Phases							
Actuated Green, G (s)	22.5		13.2	44.2	26.0	26.0	
Effective Green, g (s)	22.5		13.2	44.2	26.0	26.0	
Actuated g/C Ratio	0.30		0.18	0.59	0.35	0.35	
Clearance Time (s)	4.0		4.0		5.0	5.0	
Vehicle Extension (s)	2.6		2.6		2.6	2.6	
Lane Grp Cap (vph)	512		305	1150	654	556	
v/s Ratio Prot	c0.35		c0.12	0.23	c0.25	0.03	
v/s Ratio Perm							
v/c Ratio	1.18		0.68	0.39	0.73	0.10	
Uniform Delay, d1	26.1		28.8	8.1	21.3	16.4	
Progression Factor	1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2	97.9		5.8	0.2	4.0	0.1	
Delay (s)	124.0		34.5	8.3	25.3	16.5	
Level of Service	F		C	A	С	В	
Approach Delay (s)	124.0	and with we define the state of a		16.6	23.9		
Approach LOS	F			В	С		
Intersection Summary							
HCM 2000 Control Delay			63.9	- A A	ICM 2000	Level of Service	E
HCM 2000 Volume to Capa	acity ratio		0.88				and and a second sec
Actuated Cycle Length (s)			74.7	S	um of los	time (s)	13.0
Intersection Capacity Utilization	ation		84.0%	IC	CU Level o	of Service	E
Analysis Period (min)			15				

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	5	₩	`	\mathbf{X}	×	4	
Lane Group	WBL	WBR	SEL	SET	NWT	NWR	
Lane Configurations	¥		ሻ	*	¥	オ	
Traffic Volume (vph)	99	573	193	423	411	73	
Future Volume (vph)	99	573	193	423	411	73	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	13	13	11	13	12	12	
Grade (%)	0%			0%	0%		
Storage Length (ft)	0	0	0		*********	80	
Storage Lanes	1	0	1			1	
Taper Length (ft)	25	enere el provincio en 2000.	25	le la companya de la	nieutestain eta		
Right Turn on Red		Yes				Yes	
_ink Speed (mph)	30		a Caracita de La Statistica de Statistic	35	35	an da serie de la serie de	
ink Distance (ft)	2348			381	2230		
Fravel Time (s)	53.4	-079399999999999999999999999999999999999		7.4	43.4	rennen en e	nd waard ood aa gebeered wij op geweerd de weerd weerde waard waard dat de de De de
Confl Peds (#/hr)							
Confl. Bikes (#/hr)			dente de	Adam-Anti-Antilia	2000-000-000-000-000-000-000-000-000-00		
Peak Hour Factor	0 99	0.72	0.93	0.94	0.86	0 79	
Growth Factor	100%	100%	100%	100%	100%	100%	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	
Bus Blockages (#/hr)	0	0	0 0	0	0	0 0	
Parking (#/hr)	•	• •					
Mid-Block Traffic (%)	۵%			0%	0%		
Shared Lane Traffic (%)	~~~			0.70	070		
ane Group Flow (vph)	896	0 seeses	208	450	478	92	
Furn Tyne	Prot		Prot	NA	NĂ	Prof	
Protected Phases	3		2	12			
Permitted Phases	•		-				
Detector Phase	3		2	12			
Switch Phase			_				
Vinimum Inifial (s)	10.0	leekeendinada.	50	00022932978097678	10.0	10.0	
Vinimum Snlit (s)	14.0		9.0		15.0	15.0	
Total Solit (s)	26.0	******	20.0		44.0	44.0	
Total Split (%)	28.9%		22.2%		48.9%	48.9%	
Maximum Green (s)	22.0		16.0	elen el	39.0	39.0	n la name a nijez na presente in franziska presentation i presentation francés presentation de la presentation In la name
Yellow Time (s)	3.0		3.0		4.0	4.0	
All-Red Time (s)	1.0	-57 (3-30/-30/-30) -	1.0	94003405534758 1	1.0	1.0	
ost Time Adjust (s)	0.0		0.0		0.0	0.0	
Total Lost Time (s)	4.0		4.0	ang ana kata	5.0	5.0	
ead/Lag			l aq		Lead	Lead	
ead-Lag Optimize?	n els destructions de la constant d La constant de la cons		Yes	100000000000000000000000000000000000000	Yes	Yes	
Vehicle Extension (s)	26		26		2.6	2.6	
Minimum Gap (s)	3.0	eense (*123/993)	3.0	an e ganati në ndëri T	3.0	3.0	
Time Before Reduce (s)	0.0		0.0		0.0	0.0	
Time To Reduce (s)	0.0		0.0		0.0	0.0	
Recall Mode	None		None		Min	Min	
Walk Time (s)				antes satelle de la companya de la c	oonaan (MANAG)	-1397-548-5 58 -5597-567	
Flash Dont Walk (s)							
Pedestrian Calls (#/hr)	enne en alta angla da sa		nerskond Vedalf (f.		eatertatel 308)		
v/c Ratio	1 1 1		0.69	0.40	0.73	0.16	
Control Delay	85.2		43.6	9.3	28.6	8.4	

PM Peak NB Detour Only 02/27/2020 Baseline EAM

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						•		
Lane Group	WBL	WBR	SEL	SET	NWT	NWR		
Queue Delay	0.0		0.0	0.0	0.0	0.0	N -	
Total Delay	85.2		43.6	9.3	28.6	8.4	 	
Queue Length 50th (ft)	~348		91	102	196	11		
Queue Length 95th (ft)	#670		#201	152	280	32	 	
Internal Link Dist (ft)	2268			301	2150			
Turn Bay Length (ft)						80		
Base Capacity (vph)	805 ்		377	1231	1001	878		
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	1.11		0.55	0.37	0.48	0.10		

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Intersection Summary

Area Type: Other

Cycle Length: 90

Actuated Cycle Length: 75

Natural Cycle: 90

Control Type: Actuated-Uncoordinated

~ 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: 6: Mendon Rd (RI 122) & Nate Whipple Hwy (RI 120)

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HCM Signalized Intersection Capacity Analysis 7: Plaza Driveway/West Wrentham Rd & Mendon Rd (RI 122)

03/22/2020

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Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		4			4			4		۲	4Î	
Traffic Volume (vph)	3	0	2	164	0	119	191	342	- 3	7	342	483
Future Volume (vph)	3	0	2	164	0	119	1 91	342	3	7	342	483
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	16	16	16	12	12	12	14	14	12	11	14	14
Total Lost time (s)		4.0			4.0			5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00			1.00		1.00	1.00	
Frt		0.93			0,95			1.00		1.00	0.91	
Flt Protected		0.98	a haay ka haad ka marata ya ka da	in a Murril of the Strict many (particle give	0.97		ana menatopote provide	0.98	e ser anticipation de la comp	0.95	1.00	ernause eus an 1-ens é
Satd. Flow (prot)		1959			1715			1945		1728	1834	
Flt Permitted	na an a	0.91	ne oor de ort		0.80			0.28		0.44	1.00	034000430544
Satd. Flow (perm)		1827			1424			563		792	1834	
Peak-hour factor, PHF	0.75	0.92	0.50	0.79	0.92	0.96	0.77	0.94	0.36	0.44	0.86	0.90
Adj. Flow (vph)	4	0	4	208	0	124	248	364	8	16	398	537
RTOR Reduction (vph)	0	6	0	0	24	0	0	1	0	0	54	0
Lane Group Flow (vph)	0	2	0	0	308	0	0	619	0	16	881	0
Heavy Vehicles (%)	0%	0%	0%	2%	2%	2%	2%	2%	2%	1%	1%	1%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NĄ	
Protected Phases	~	2			2			1			1	
Permitted Phases	2	~~ ~		2	~~ ~	8108 R	1	04.0		1	A 1 A	
Actuated Green, G (s)		20.0			20,0			61.U		01.0	01.0	
Effective Green, g (s)		20.0			20.0			0.00		0.00	0.00	
Actuated g/C Ratio		U.ZZ			U.ZZ	SISASIN		U.00		0.00	0.00	
Vehicle Extension (s)		4.U 2.G			4.U 2.G			0.U 20		0.0 20	0.0 0.0	(RESERVED)
		2.0			2.0			2.0		2,0 E00	4042	
Lane Grp Gap (vpn)		400			310			301		030	0.40	
vis Ralio Piul		0.00			on 22			o1 10		0.02	0,40	
via Ratio		0.00			00.22			1 63		0.02	0 71	
Uniform Delay, d1		0,00			24.7			1/ 5		0.00 // 8	0.7 T	
Progression Factor		47.4 1.00		the second	1 00	Sanganganan Sanganganan		1 00	98449445949U	4.0 1 00	0.0 1 ຄຄ	CREEKELSI
Incremental Delay, d2		0.0			43.3			293.3		0.0	1.00	
Delay (s)	en e	27.3	Herio He Herio Herio		78.1			307.8		4.8	10.8	SA BARAN
level of Service		C			F			F		Â	B	
Approach Delay (s)		27.3			78.1		1999 1999 1999 1999	307.8			10.7	Sector Se
Approach LOS		С			E			F			В	
Intersection Summary											a ana a	
HCM 2000 Control Delav			118.9	H	CM 2000	Level of	Service		F			
HCM 2000 Volume to Capac	city ratio	en en staat de keelen. G	1.46				e e contra de la con	-1				n-04996-042
Actuated Cycle Length (s)			90.0	S	um of los	t time (s)			9.0			
Intersection Capacity Utilizat	tion	,	107.4%	IC	U Level	of Service	usedes et de me		G		an an ann an an Stair Sanai (a	121 M 21 M 2017
Analysis Period (min)			15									

Lanes, Volumes,	Timings		
7: Plaza Driveway	/West Wrentham Rd & Mendon	Rd (RI	122)

03/22/2020

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Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		¢‡+						44		ሻ	1 .	ALCONTRACTOR OF A
Traffic Volume (vph)	3	0	2	164	0	119	191	342	3	$\dot{7}$	342	483
Future Volume (vph)	3	0	2	164	0	119	191	342	3	7	342	483
Ideal Flow (vohol)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	12	12	12	14	14	12	11	14	14
Grade (%)		0%			0%			0%			0%	
Storage Length (ff)	0	99999999999999999999999999999999999999	0	0	000000000000000000000000000000000000000	66605666666666 0	0	99999999999999999999999999999999999999	0	0		0
Storage Lanes	Ō	54444	Ō	Ō		Ō	Ō		Ō	Í		ō
Taner Length (ft)	25	and and a second se	899 - 699 - 677 - 699 - 699 - 699 - 697 - 699 - 699 - 699 - 699 - 699 - 699 - 699 - 699 - 699 - 699 - 699 - 699	25	(1997년) 1997년 - 1997년 - 1997년 - 1997년 -	energelene (2003)	25		aran da da di Tabi	25		20000000 0 0
Right Turn on Red			Yes			Yes			Yes			Yes
Link Sneed (mnh)		25		and a factoria	35		eren alar harar da	35		anistra (Consider) A	35	
Link Distance (ff)		209			662			1525			777	
Travel Time (s)	beren eren eleren	57	ngan kapatan kari kari kari kari kari kari kari kari		12.9	den en en de de de la del	na hana an	29.7			15.1	(1999-90)(1999-94 (1999-96)(1999-94)
Confl Peds (#/hr)												
Confl Rikes (#/hr)												(2023)9334
Peak Hour Eactor	0 75	0 02	0 50	n 70	0 02	በ ዓይ	0.77	n 94	0.36	0 44	A8 ()	n an
Growth Eactor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	00%	10070	0%	20%	20%	2%	20%	20070	20070	100 %	100 %	100 70
Bue Blockages (#/br)	υ <i>ν</i> Λ	0/0 በ	w ں م	770 ۱	7 - 20 م	4 <i>ν</i> Λ	470 م	4.2 م	ሩ /ሳ በ	۰، ا ۵	۰ <i>۱</i> ۵ ۸	<u>% الجمعة</u>
Dus Diockages (#/III) Darking (#/br)	v	U	v	v	v	v	V	v	v	v	v	v
Mid Block Troffic (%)		∩ 0∕			ሰሳሪ			0%			ሰባ/	
Charod Lana Troffia (9/)		V 70			V 70			U 70			U 76	
Sindley Edite Traffic (76)	<u>۸</u>	0	<u>م</u>	Δ	220		n N	600		16	025	Besides A
Lane Group Flow (vpn)	U Dorm		V	Dorm	JJZ NA	U	Dorm	020	V	Dorm	900 NIA	U I
Turn Type Drotected Disease	remi	AVI 0		reiiii	אין ח		reiiii	INA 4		reitti	INA 4	(assessed
Dormitted Dhanon	0	۷		ი	۷.		4	l Selection (Selection)		.	I	
Permilleu Phases	2 0	n 1		ך ג	0 0		4 (C)	4		ر المحديد المحدي 1	4	
Delector Phase	۷.	ل بهتری دورو		4	د مراجع		1 	ا 1000-000-000		1 1990-1990-1990-1990	i Neter (Destates)	58455454
Switch Pilase	40.0	10.0		10.0	40.0		10.0	10.0		40 A	40.0	
Minimum muai (S)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	Annanana
Tatal Onit (a)	14.U 04.0	14.U 04.0		14.0	14.0		10.0	0.01		10.0	0.01	
Total Split (S)	24.U	24.U		24.U	24.0		0.00	00.0		0.00	00,0	
Total Split (%)	20.7%	20.7%		20.7%	20.1%		13.3%	13.3%		13.3%	13.3%	
Maximum Green (S)	20.0	20.0		20.0	20.0		01.0	01.U		01.0	01.0	enersa
Yellow Time (s)	3.0	3.0	499 - 199 - <u>1</u> 9	3.0	3,0	en en en en	4.0	4,0		4.0	4.0	
All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	6000000
Lost Time Adjust (s)		0.0			0.0			0.0		0,0	0.0	
I otal Lost Time (s)		4.0			4.0			5.0		5.0	5.0	
Lead/Lag	Lag	Lag		Lag	Lag		Lead	Lead		Lead	Lead	
Lead-Lag Optimize?	Yes	Yes	no makasasa (n	Yes	Yes		Yes	Yes	NARIA KARAT	Yes	Yes	SECTORISTICS
Vehicle Extension (s)	2.6	2.6		2.6	2.6		2.8	2.8		2.8	2.8	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	endoverska
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	20000000000000
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)		so namo caro contra			Sarah (ng Xili sana menin	an fara a far a she an a she a s	No. 19 and a state of the	at Marthuana (1994).				5505575575575777
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)										e weer te een te de state de te	en dagen inden in er se	
v/c Ratio		0.02			0.98			1,62		0.03	0.72	
Control Delay		3.4			77.1			311.8		5.0	11.2	

PM Peak NB Detour Only 02/27/2020 Baseline EAM

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Lanes, Volumes, Timings 7: Plaza Driveway/West Wrentham Rd & Mendon Rd (RI 122)

03/22/2020

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Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Queue Delay		0.0			0.0			0.0		0.0	0.0	
Total Delay		3.4			77.1			311.8		5.0	11.2	
Queue Length 50th (ft)		0			173			~296		3	236	
Queue Length 95th (ft)		4			#347			#505		4	337	
Internal Link Dist (ft)		129			582			1445			697	
Turn Bay Length (ft)										general second secon	ana be nantri na me ana.	mus currentes com
Base Capacity (vph)		424			340			382		537	1296	
Starvation Cap Reductn		0		na mana ang sa sa sa sa sa sa	0	fan fan ei ei steart ea steart		0	55×665555-64666	0	0	second states of
Spillback Cap Reductn		0			0			0		0	0	
Storage Cap Reductn		0			0			0		0	0	
Reduced v/c Ratio		0.02			0.98			1,62		0.03	0.72	
Intersection Summary												
Area Type: O	ther											
Cycle Length: 90												
Actuated Cycle Length: 90												
Natural Cycle: 140				warme water dies einen en bezi	ta data data da a d	eren andere andere andere			tut varenati eza Ananet	Senter of the Address of the	e gran de angeles en ang	conserved and
Control Type: Actuated-Unco	ordinated											
 Volume exceeds capacity 	, queue is	theoretic	ally infinit	e.								
Queue shown is maximum	after two	cycles.										
# 95th percentile volume ex	ceeds cap	pacity, qu	eue may l	be longer	• •							
Queue shown is maximum	after two	cycles.										

Splits and Phases: 7: Plaza Driveway/West Wrentham Rd & Mendon Rd (RI 122)

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			44			\$	
Traffic Volume (vph)	16	133	28	122	131	11	211		339	25	120	22
Future Volume (vph)	16	133	28	122	131	11	211	77	339	25	120	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	13	13	13	13	13	13	13	11	11	11
Total Lost time (s)		5.0			5.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.98			0.99			0.92			0.98	
Flt Protected		0.99	-ene en energenere		0.98			0.98			0.99	
Satd. Flow (prot)		1904			1891			1787			1770	
Flt Permitted		0.93			0.77			0.84	an thay side to be a future of		0.89	
Satd. Flow (perm)		1780			1491			1525			1584	
Peak-hour factor, PHF	0.50	0.72	0.58	0.85	0.79	0.78	0.84	0.83	0.78	0.78	0.86	0.79
Adj. Flow (vph)	32	185	48	144	166	14	251	93	435	32	140	28
RTOR Reduction (vph)	0	0	0	0	4	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	265	0	0	320	0	0	779	0	0	200	0
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	0%	0%	0%	1%	1%	<u> 1% </u>
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		1			1			2			2	zinioza bozanie
Permitted Phases	1			1			2	1.0.0		2		
Actuated Green, G (s)		14.6	Secondari Ma		14.6			16.2			16.2	RANDARIANA
Effective Green, g (s)		14.6			14.6			16.2			16.2	
Actuated g/C Ratio		U.37			0.37	70000000000		U.41	Repáratoria		0.41	
Vehicle Extension (a)		0,U 0,0			0.0	Salange (S		4.U			4.0	
		2.8			2.0			2.0			2.0	NACIONALI I
Lane Grp Cap (vpn)		002			540	8 8 8 8		620			044	
WS Rallo Plot		0.46			-0.24			-0 E4			0.49	
vio Ratio		0.13			0.21			1.26			0,10	
Uniform Dolay d1		0.41 Q /			10.00			11.20			0.01 8.0	
Progression Eactor		1.00	n an an an Anna an Ann An Anna an Anna		1 00			1.00	899443666781		1 00	9999999994
Incremental Delay d2		0.4			1.00			128.2			0.2	
Delay (s)		9.7	********		11.7		194년 6월 6월 6월 6월	140.0			8.2	ikasa ing u
Level of Service		A			В			F			A	
Approach Delay (s)		9.7	den en generet den	an a	11.7			140.0	2929020209090902000	an a	8.2	~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~
Approach LOS		A			В			F			A	
Intersection Summary												
HCM 2000 Control Delay			74 7	H	CM 2000	l evel of 9	Service		F		1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 -	
HCM 2000 Volume to Can	acity ratio		0.94	na paga sa Pingina Pingina paga sa Pingina pag Pingina paga sa Pingina paga sa								
Actuated Cycle Length (s)			39.8	Sı	im of lost	time (s)			9.0			
Intersection Capacity Utiliz	ation	ennetergenetiteriski	84.5%		U Level o	of Service		a ang ang ang ang ang ang ang ang ang an	energiane E	usa na mangangi T	europarestain	00000000
Analysis Period (min)			15									

c Critical Lane Group

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Lanes, Volumes, Timings 17: West Wrentham Rd & Pine Swamp Rd (RI 114)

03/22/2020

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			£14			ቆ			4	
Traffic Volume (vph)	16	133	28	122	131	11	211	77	339	25	120	22
Future Volume (vph)	16	133	28	122	131	11	211	77	339	25	120	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	13	13	13	13	13	13	13	13	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0	1978 (1976) (1976) (1976) (1976) 1978 (1977) (1976) (1976) (1976) (1976) (1976) (1976) (1976) (1976) (1976) (19	0	0	an a	0	0	an a	0	0	entrenetten.	0
Storage Lanes	0		0	0		0	0		0	0		Ō
Taper Length (ft)	25		talan da silan da si	25	104 MAR 1498		25	lan yi kurdan sa sa sa		25		andra ang sa
Right Turn on Red			No			Yes			No			No
Link Speed (mph)	2000/000000000000000000000000000000000	30	led en de la defacter est		40			25	a an	1999-9999 - Constanting - C	25	and a conference
Link Distance (ft)		3320			7947			1008			920	
Travel Time (s)		75.5	a para na parti di Col di p	an dalah wang muli buruh	135.5		an sala talan jarah ta	27.5	99999999999999999999999999999999999999	498994304946994369	25.1	1999 - 1999 -
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)	2010 11 11 11 12 12 12 12 12 12 12 12 12 12		en de l'enderse ante			1999 - 1997 -		a ta sa	1	a na bang bang bang bang		
Peak Hour Factor	0.50	0.72	0.58	0.85	0.79	0.78	0.84	0.83	0.78	0.78	0.86	0.79
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	0%	0%	0%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)						-						
Mid-Block Traffic (%)	and a stand of a large of	0%	in the second	in de la construction de la	0%	en se	1997-1997-1997-1997-1997- 1997-1997-1997	0%			0%	of of the state of
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	265	0	0	324	0	0	779	0	0	200	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	and an			un de la compañía de construir de la construir Construir de la construir de la	1	. 1941 - 1942 - 1947	Contributive Contribution Prove	2			2	2.294-0.207-4-6.3
Permitted Phases	1	esticas à trèst Unicomotives		1			2			2		
Detector Phase	1	1	1997 (1997) 1997 (1997)	1	1		2	2	//	2	2	an a an
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0	an an Search States	5.0	5.0	o de transferencia.	5.0	5.0	n de solution e de la constituite de la
Minimum Split (s)	15.0	15.0		15.0	15.0		9.0	9.0		9.0	9.0	
Total Split (s)	40.0	40.0		40.0	40.0	la baltu della successi del 199	20.0	20.0	nen dan berezen er	20.0	20.0	NGA WATA A GANTA
Total Split (%)	66.7%	66.7%		66.7%	66.7%		33.3%	33.3%		33.3%	33.3%	
Maximum Green (s)	35.0	35.0		35.0	35.0		16.0	16.0		16.0	16.0	and a second second
Yellow Time (s)	4.0	4.0		4.0	4.0		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	
Lost Time Adjust (s)		0.0			0,0			0.0			0.0	
Total Lost Time (s)		5.0			5.0			4.0		19, 199 (19, 19, 19, 19, 19, 19) 19, 199 (19, 19, 19, 19, 19, 19)	4.0	19191999999999
Lead/Lag	Lead	Lead		Lead	Lead		Lag	Lag		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	1	Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.8	2.8		2.8	2.8		2.6	2.6		2,6	2.6	
Minimum Gap (s)	3.0	3,0	NATE - 1975 - 1985 - 1975	3.0	3.0	···· () ·······························	3.0	3.0	1999 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0	v til 1980-100 https://www.	0.0	0.0	
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Walk Time (s)	, e construction de sistementes de la seconda de la se La seconda de la seconda de			ana ang sanggary		a ann an tha			an a sur a transmit sa		e - en el construere 1943	
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)						ene succession vals					1.1.11.11.11.11.11.11.11	a sana antisat
v/c Ratio		0.41			0.59			1.26			0.31	
Control Delay		11.0			14.5			148.5			11.3	

PM Peak NB Detour Only 02/27/2020 Baseline EAM

Lanes, Volumes, Timings 17: West Wrentham Rd & Pine Swamp Rd (RI 114)

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Lane Group	EBL EBT	EBR WBL WBT	WBR N	NBL NBT	NBR	SBL	SBT	SBF
Queue Delay	0.0	0.0		0.0			0.0	
Total Delay	11.0	14.5		148.5			11.3	
Queue Length 50th (ft)	41	53		~226			27	
Queue Length 95th (ft)	59	86		#437			79	
Internal Link Dist (ft)	3240	7867		928			840	
Turn Bay Length (ft)		a a sua a sua a sua a sua sua a sua a sua su						
Base Capacity (vph)	1581	1324		619			643	
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	0.17	0.24		1.26			0.31	
Intersection Summary								
Area Type: 0	Other							
Cycle Length: 60								55 1919 19 2 400 Per
Actuated Cycle Length: 39.9								
Natural Cycle: 65								
Control Type: Actuated-Unco	oordinated							St. Salah
 Volume exceeds capacit 	y, queue is theoretica	ally infinite.						999 7 909999 9799
Queue shown is maximur	n after two cycles.							
# 95th percentile volume e	xceeds capacity, que	eue may be longer.						
Queue shown is maximur	n after two cycles.							
0 °								
Splits and Phases: 17: We	est wrentnam Rd & F	ne Swamp Ko (Ki 114)						
				1 an				
10 c				20.0	li.			9889798 -

		\mathbf{i}	4		*	1
Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	*	ৰ	ች	^	ሻ	オ
Traffic Volume (veh/h)	380	188	524	326	7	.8
Future Volume (Veh/h)	380	188	524	326	7	8
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.69	0.92	0.96	0.90	0.89	0.75
Hourly flow rate (vph)	551	204	546	362	8	11
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage				60 <u>62</u> 5059600575		1.5
Right turn flare (veh)		e en en en		\$1		10
Median type	None			None		
Median storage ven)						
Opstream signal (it)						
vC conflicting volume		9444 (444 FR	551		2005	133
vC1_stage 1 conf vol			001		2000	100
vC2_stage 2 conf vol						
vCii unblocked vol			551		2005	551
tC. single (s)			4.1		6.4	6.2
tC. 2 stage (s)						
tF (s)		anna 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 - 1979 -	2.2	to CONCREDENTS FOR THE	3.5	3.3
p0 queue free %			47		74	98
cM capacity (veh/h)			1024		31	536
Direction, Lane#	EB1	EB 2	WB 1	WB 2	NB 1	
Volume Total	551	204	546	362	19	
Volume Left	0	0	546	0	8	
Volume Right	0	204	0	0	11	
cSH	1700	1700	1024	1700	73	
Volume to Capacity	0.32	0.12	0.53	0.21	0.26	
Queue Length 95th (ft)	0	0	81	0	23	
Control Delay (s)	0.0	0.0	12.5	0.0	74.0	
Lane LOS			В		F	
Approach Delay (s)	0.0		7.5		74.0	
Approach LOS					E	
Intersection Summary						
Average Delay			4.9			
Intersection Capacity Utiliza	tion		62.4%	IC	U Level o	of Service
Analysis Period (min)		gons en av	15		X STATE	

HCM Signalized Intersection Capacity Analysis 1: Diamond Hill Rd (RI 114) & Nate Whipple Hwy (RI 120)

03/22/2020

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4 >			4			44			4 7+	
Traffic Volume (vph)	0	119	42	17	246	0	254	0	30	176	225	76
Future Volume (vph)	0	119	42	17	246	0	254	0	30	176	225	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	13	13	13	13	12	12	12	12	12	12
Total Lost time (s)		4.0			4.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.96			1,00			0.99			0.98	
Fit Protected		1.00	<		1.00			0.96			0.98	
Satd. Flow (prot)		1798			1916			1759			1783	
Flt Permitted		1.00			0.96			0.45	na e Romana a Maria	an buabbaan wa	0.71	
Satd. Flow (perm)		1798			1849			825			1295	
Peak-hour factor, PHF	0.86	0.85	0.75	0.53	0.75	0.85	0.68	0.93	0.75	0.75	0.97	0.79
Adj. Flow (vph)	0	140	56	32	328	0	374	0	40	235	232	96
RTOR Reduction (vph)	0	17 -	0	0	0	0	0	5	0	0	9	0
Lane Group Flow (vph)	0	179	0	0	360	0	0	409	0	0	554	0
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	é de cher	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		1			1			2			2	
Permitted Phases	1			1	10.7		2	10.0		2	10.0	
Actuated Green, G (s)		18.7			18.7			40.3			40,3	
Effective Green, g (s)		18.7			18.7			40.3			40.3	
Actuated g/C Ratio		0.27			0.27			0,59 F 6			U.59 F 0	
Clearance 1 line (S)		4.0			4.0	<u>e 18 80 88</u>		0.U 2 A			0.0 2 A	
		2.0			2.0			<u>3.0</u>	UN 25 92 857		3.0	
Lane Grp Cap (vpn)		494			508	8.8.8		488			/0/	
V/S Ratio Prot		0.10			-0.40			-0 F0			0 42	
WS Ralio Feili)		0.26			0.19			0.00			0.40	
WC Natio Uniform Dolov, d4		10.0			0.71			11.04			0.12	
Drogression Eactor		1 00			1 NN			1.00			1 NN	ana seta
Incremental Delay, d2		0.4			4.2			11 9			34	
Delay (s)		20.2		1480.8800.18942. 1	26.4			23.1			13.2	899999999
Level of Service		0						<u> </u>			В	
Approach Delay (s)	lan si kanala na kasa si ka	20.2	ARABAN DA ARDI		26,4			23.1			13.2	54829-1949 5
Approach LOS		С			Ċ			С			В	
Intersection Summary												
HCM 2000 Control Delay			19.9	H	CM 2000	Level of	Service		В	A 444		
HCM 2000 Volume to Capac	city ratio		0.80									
Actuated Cycle Length (s)			68.0	Si	um of lost	time (s)			9.0			
Intersection Capacity Utilizat	tion		67.3%	IC	U Level o	of Service	•		С			
Analysis Period (min)			15									

Lanes, Volumes, Timings 1: Diamond Hill Rd (RI 114) & Nate Whipple Hwy (RI 120)

03/22/2020

Bane Genup : EBL EBL EBR WBL WBL WBL WBL NBR NBR SBL <		۶		\mathbf{i}	4	←	۸.	1	Ť	1	1	Ļ	1
Lere Configurations ϕ_{3} ϕ_{4} ϕ_{4} ϕ_{4} Traffic Volume (vph) 0 119 42 17 246 0 254 0 30 176 225 76 Index Volume (vph) 1900 100 100 100 100 100	Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Traffic Volume (vph) 0 119 42 17 246 0 254 0 30 176 225 76 Future Volume (vph) 1900 1000 1000 1000 1000 100 0 0 0 0 0 0 0 0 0 0 0 0 100 100 100 100 100 100 100 100 100	Lane Configurations		4			4			4			÷.	
Future (vph) 0 119 42 17 246 0 264 0 30 176 225 76 deal Flow (vphp) 1900 100 100 100 100 <td>Traffic Volume (vph)</td> <td>0</td> <td>119</td> <td>42</td> <td>17</td> <td>246</td> <td>0</td> <td>254</td> <td>0</td> <td>30</td> <td>176</td> <td>225</td> <td>76</td>	Traffic Volume (vph)	0	119	42	17	246	0	254	0	30	176	225	76
$\begin{array}{c c c c c c c c c c c c c c c c c c c $	Future Volume (vph)	0	119	42	17	246	0	254	0	30	176	225	76
	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%) 0% 0% 0% 0% 0% Storage Longth (ft) 0 <	Lane Width (ff)	13	13	13	13	13	13	12	12	12	12	12	12
Storage Lengs 0 <	Grade (%)		0%			0%			0%			0%	
Storage Lanes 0 <	Storage Length (ft)	0	ninen die de Breite Breite. Geboord die Breite	0	0 0	10000000000000000000000000000000000000	0	0	an an an Annaichtean An an Annaichtean	0	0	89.999.979. 9 79.999	0
Tape Langth (II) 25 25 25 25 Righ Tum on Red Yes Yes Yes Yes Link Speed (mph) 40 40 30 30 Link Distance (II) 1854 4162 1592 454 Confl. Pets: (#/m) 2 10.3 30 30 Confl. Pets: (#/m) 2 10.3 0.75	Storage Lanes	Ū.		Ō	Ō		Ō	Ō		<u> </u>	Õ		Õ
Tarja Turio Rad Yes Yes Yes Yes Yes Link Speed (mph) 40 40 30 30 Link Distance (ft) 1854 4162 1592 454 Travel Time (s) 31.6 70.9 36.2 10.3 Confl. Bikes (#hr) 0.86 0.75 0.53 0.75 0.85 0.05 10.75 0.97 0.79 Growth Factor 10.86 0.85 0.75 0.53 0.75 0.85 0.05 100% <td< td=""><td>Taner Length (ff)</td><td>25</td><td></td><td></td><td>25</td><td></td><td></td><td>25</td><td></td><td>1999 - 1999 -</td><td>25</td><td></td><td>999999999999</td></td<>	Taner Length (ff)	25			25			25		1999 - 1999 -	25		99999999999 9
Link Speed (mph) 40 40 30 30 Link Distance (II) 1854 4162 1592 454 Travel Time (S) 31.6 70.9 36.2 10.3 Confl. Peds. (#hr) 0.86 0.85 0.75 0.85 0.68 0.93 0.75 0.97 0.79 Growth Factor 100%	Right Turn on Red	L.		Yes			Yes			Yes			Yes
Link Distance (II) 1054 4162 1532 4454 Confl. Pets, (#hr) Confl. P	Link Speed (mph)		<u>ፈ</u> ባ	199		<u>4</u> 0		905804989499949 1	30		nationer soldere	30	1999 - 1999 -
Link Delation (1) Toty Toty <thtoty< th=""> <thtoty< th=""> Toty</thtoty<></thtoty<>	Link Distance (ff)		185/			/162			1502			151	
Trave Toto Toto <thtoto< th=""> Toto Toto <th< td=""><td>Travel Time (s)</td><td></td><td>31.6</td><td></td><td></td><td>70 0</td><td></td><td></td><td>36.2</td><td></td><td></td><td>ብ ዓ 1በ ዓ</td><td></td></th<></thtoto<>	Travel Time (s)		31.6			70 0			36.2			ብ ዓ 1በ ዓ	
Conf. Bices (#hr) Peak Hour Factor 0.86 0.85 0.75 0.53 0.75 0.85 0.68 0.93 0.75 0.97 0.79 Growth Factor 100%	Confl Dede (#/br)		01.0			10.3			JU,Z			10.0	
Conn. Dates (HII) Conn. Dates (HIII) Conn. Dates (HIIII) Conn. Dates (HIIIII) Conn. Dates (HIIIII) Conn. Dates (HIIIIIIIII) Conn. Dates (HIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIIII	Confl. Pikee (#/hr)												
rear Noil Factor 0.03 0.0	Donk Llour Costor	0.00	0 O E	0.75	0 50		0.05	0.00	0.02		0 7E	0.07	0.70
Grown Patch Tody		1008/	1000/	4000/	4000/	40.0%	4000/	1000/	400%	4000/	0.70	0.97	0.79
Heary venicles (%) 5% 5% 5% 5% 2	Growin Facior	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Bus Blockages (#hr) 0	Heavy venicies (%)	5%	5%	5%	2%	Z%	2%	Z%	Ζ%	2%	2%	2%	2%
Parking (#/n/) Mid-Block Traffic (%) 0% 0% 0% 0% Lane Group Flow (vph) 0 196 0 360 0 414 0 0 563 0 Turn Type NA Perm NA	Bus Blockages (#/nr)	U	0	U	U	Ų	0	U	U	U	U	U	U
Mid-Block Irathic (%) 0% 0% 0% 0% 0% Shared Lane Traffic (%) 0 0 563 0 0 414 0 0 563 0 0 Turn Type NA Perm NA Na Na	Parking (#/hr)												
Shared Lane Traffic (%) 0 196 0 360 0 414 0 0 563 0 Lane Group Flow (vph) 0 196 0 360 0 414 0 0 563 0 Turn Type NA Perm NA Pathiotis is is is is is is is is	Mid-Block Traffic (%)		0%		teres de la ferrar de la	0%	uesta anti de la constante de l	overina severa de la caracteria	0%			0%	
Lane Group Flow (vph) 0 196 0 0 360 0 0 414 0 0 563 0 Turn Type NA Perm NA Perem NA N	Shared Lane Traffic (%)		0.000										
Turn Type NA Perm NA Perm NA Perm NA Protected Phases 1 1 2	Lane Group Flow (vph)	0	196	0	0	360	0	0	414	0	0	563	0
Protected Phases 1 1 2 2 Permitted Phases 1 1 1 2 2 Detector Phase 1 1 1 2 2 Minimum Initial (s) 10.0	Turn Type		NA		Perm	NA		Perm	NA		Perm	NA	
Permitted Phases 1 1 2 2 Detector Phase 1 1 1 2 2 2 Switch Phase	Protected Phases		1	100000000000000000000000000000000000000		1			2	ayan antara a araya	an shara an an an	2	an san sa
Detector Phase 1 1 1 1 1 2 2 2 Switch Phase Minimum Initial (s) 10.0	Permitted Phases	1			1			2		6.8.8	2		
Switch Phase Minimum Initial (s) 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 Minimum Split (s) 14.0 14.0 14.0 14.0 15.0 15.0 15.0 15.0 Total Split (s) 29.0 29.0 29.0 58.0 58.0 58.0 58.0 58.0 58.0 58.0 Total Split (s) 33.3% 33.3% 33.3% 66.7% 60.7% 61.0 1.0 1.0 1.0	Detector Phase	1	1		1	1	ukana ina para karawa karaz	2	2		2	2	
Minimum Initial (s) 10.0	Switch Phase												
Minimum Split (s) 14.0 14.0 14.0 14.0 15.0 15.0 15.0 15.0 Total Split (s) 29.0 29.0 29.0 29.0 58.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0	Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Total Split (s) 29.0 29.0 29.0 29.0 58.0 50.0 50.0 50.0 50.0	Minimum Split (s)	14.0	14.0		14.0	14.0		15.0	15.0		15.0	15.0	
Total Split (%) 33.3% 33.3% 33.3% 33.3% 33.3% 66.7%	Total Split (s)	29.0	29.0		29.0	29.0		58.0	58.0		58.0	58.0	
Maximum Green (s) 25.0 25.0 25.0 25.0 53.0 50.0 10.0 <td>Total Split (%)</td> <td>33.3%</td> <td>33.3%</td> <td></td> <td>33.3%</td> <td>33.3%</td> <td></td> <td>66.7%</td> <td>66.7%</td> <td></td> <td>66.7%</td> <td>66.7%</td> <td></td>	Total Split (%)	33.3%	33.3%		33.3%	33.3%		66.7%	66.7%		66.7%	66.7%	
Yellow Time (s) 3.0 3.0 3.0 3.0 4.0 1.0	Maximum Green (s)	25.0	25.0		25.0	25.0		53.0	53.0		53.0	53.0	
All-Red Time (s) 1.0 <td>Yellow Time (s)</td> <td>3.0</td> <td>3.0</td> <td></td> <td>3.0</td> <td>3.0</td> <td></td> <td>4.0</td> <td>4.0</td> <td></td> <td>4.0</td> <td>4.0</td> <td></td>	Yellow Time (s)	3.0	3.0		3.0	3.0		4.0	4.0		4.0	4.0	
Lost Time Adjust (s) 0.0 0.0 0.0 0.0 Total Lost Time (s) 4.0 5.0 5.0 Lead/Lag Lead Lead Lag Lag Lag Lag Lead-Lag Optimize? Yes Yes Yes Yes Yes Yes Yes Vehicle Extension (s) 2.6 2.6 2.6 3.0 3.0 3.0 3.0 Minimum Gap (s) 3.0	All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Total Lost Time (s) 4.0 4.0 5.0 5.0 Lead/Lag Lead Lead Lead Lag Lag <td>Lost Time Adjust (s)</td> <td></td> <td>0.0</td> <td></td> <td></td> <td>0.0</td> <td></td> <td></td> <td>0,0</td> <td></td> <td></td> <td>0.0</td> <td></td>	Lost Time Adjust (s)		0.0			0.0			0,0			0.0	
Lead/Lag Lead Lead Lead Lead Lag Lag <t< td=""><td>Total Lost Time (s)</td><td></td><td>4.0</td><td></td><td></td><td>4.0</td><td></td><td></td><td>5.0</td><td></td><td></td><td>5.0</td><td></td></t<>	Total Lost Time (s)		4.0			4.0			5.0			5.0	
Lead-Lag Optimize? Yes	Lead/Lag	Lead	Lead		Lead	Lead		Lag	Lag		Lag	Lag	
Vehicle Extension (s) 2.6 2.6 2.6 2.6 3.0	Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Minimum Gap (s) 3.0	Vehicle Extension (s)	2.6	2,6		2.6	2.6		3.0	3,0		3.0	3.0	
Time Before Reduce (s) 0.0	Minimum Gap (s)	3.0	3.0		3.0	3.0	1997 - B. 1997 - T. 1997 - D. 1997 -	3.0	3.0	1711 (1117) (1170) 1711 (1117)	3.0	3.0	
Time To Reduce (s) 0.0	Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall ModeNoneNoneNoneMinMinMinWalk Time (s)Flash Dont Walk (s)Pedestrian Calls (#/hr)v/c Ratio0.390.720.850.73Control Delay23.034.130.917.1	Time To Reduce (s)	0.0	0.0		0.0	0.0	n han an geannach ann an saoirt	0.0	0.0	and a standard a state	0.0	0.0	10000000000000
Walk Time (s) Flash Dont Walk (s) Pedestrian Calls (#/hr) v/c Ratio 0.39 0.72 0.85 0.73 Control Delay 23.0 34.1 30.9 17.1	Recall Mode	None	None		None	None		Min	Min		Min	Min	
Flash Dont Walk (s) Pedestrian Calls (#/hr) v/c Ratio 0.39 0.72 0.85 0.73 Control Delay 23.0 34.1 30.9 17.1	Walk Time (s)	~~~~~		a ante e Alta Martina de Si	anana ing Kabupatén Kabupatén Kabupatén Kabupatén Kabupatén Kabupatén Kabupatén Kabupatén Kabupatén Kabupatén Kabupatén Kabupatén Ka		a a star der terriet	1999, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 19 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997				101901955555555555	
Pedestrian Calls (#/hr) v/c Ratio 0.39 0.72 0.85 0.73 Control Delay 23.0 34.1 30.9 17.1	Flash Dont Walk (s)												
v/c Ratio 0.39 0.72 0.85 0.73 Control Delay 23.0 34.1 30.9 17.1	Pedestrian Calls (#/hr)					an in the Statist			ne anti si chi in fi		udan di dan 1940. Ma		0.4925-996793
Control Delay 23.0 34.1 30.9 17.1	v/c Ratio		0.39			0.72			0.85			0.73	
	Control Delay		23.0	a an	e e letter timt folgeligt	34.1			30,9	von en skind viji	en en strevensk kan det ferst	17.1	an da maria (de la

Saturday Peak NB Detour Only 02/27/2020 Baseline EAM

Synchro 9 Report Page 1

Lanes, Volumes, Timings 1: Diamond Hill Rd (RI 114) & Nate Whipple Hwy (RI 120)

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0			0.0			0.0	2005		0.0	
Total Delay		23.0			34.1			30.9			17.1	
Queue Length 50th (ft)		66			153			128			152	
Queue Length 95th (ft)		124			212			#359			316	
Internal Link Dist (ft)		1774			4082			1512			374	
Turn Bay Length (ft)		·										
Base Capacity (vph)		730			737			640			1006	
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		0.27			0.49			0.65			0.56	
Intersection Summary												
Area Type: O	lher											
Cycle Length: 87												
Actuated Cycle Length: 68.9												
Natural Cycle: 60												contractors Filippication a
Control Type: Actuated-Uncoc	ordinated											
# 95th percentile volume exe	ceeds cap	bacity, qu	eue may l	be longer	• 			والاسترواع والمستحد ورستار ورست				
Queue shown is maximum	after two	cycles.										
						00)						
Splits and Phases: 1: Diam	ond Hill R	d (RI 114) & Nate	whipple I	HWY (RE1	20)						i
			1 m									
79s	an ser an in		35	8. No. 4 18.			1997 - 1997 - 199					

03/22/2020

	5	*	\searrow	X	×	く	
Movement	WBL	WBR	SEL	SET	NWT	NWR	
Lane Configurations	¥		۲	•	*	7	
Traffic Volume (vph)	87	530	102	406	420	52	
Future Volume (vph)	87	530	102	406	420	52	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width	13	13	11	13	12	12	
Total Lost time (s)	4.0		4.0	5.0	5.0	5.0	
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00	
Frt	0.88		1,00	1.00	1.00	0.85	
Fit Protected	0.99	d el Conservationes	0.95	1.00	1.00	1.00	********
Satd. Flow (prot)	1706		1728	1944	1881	1599	
Flt Permitted	0.99	ant shart far for the set	0.95	1.00	1.00	1.00	
Satd. Flow (perm)	1706		1728	1944	1881	1599	
Peak-hour factor PHF	0.87	0.86	0.94	0.86	0.78	0.73	
Adi Flow (vnb)	100	616	109	472	538	71	
RTOR Reduction (voh)	258	0	0	0	0	27	
Lane Group Flow (vph)	458	Ň	109	472	538	44	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	99-94-9 1
Turn Type	Prof		Prot	NA	NA	Prot	
Protected Phases	3	endelselende	2	12	्रायकरण्ड ्रा 1	1 1	999994
Permitted Phases							
Actuated Green G (s)	18 5	****	97	<u>4</u> 0 0	25.3	25.3	
Effective Green, o (3)	18.5		0.7 Q 7	40.0	25.3	25.0	
Actuated a/C Patio	0.0 0.28		0.1 0.15	40.0 0 60	Δ0.0 Δ 38	0 38	
Clearance Time (e)	0.20 A A		4.0	V.VV	5.00	5.00	
Vehicle Extension (s)	ד.ע 2 ה		<u>л</u> . 26	******	0.0 2 ƙ	26	
Long Crn Con (unh)	<u>2.0</u> 171		2.0	1160	2.0	609	3335340
Lane Gip Gap (vpii)	4/4		202	-0.04	~ 	000	
WS Ralio Prot	CO.27		0.00	CO.24	60.29	0.05	
WS Ratio Perm	0.07		0 4 2	0 4 O	0.76	0.07	
	U.97		0.40 05 0	0.40	0.70 470	0.07	9939633
Uniform Delay, d I	23.7		20.9	1.0	1/.9	13.1	
Progression Factor	1.00		1.00	1.00	1.00	1.00	20255748
Incremental Delay, dz	32.3		0.9	U.Z	4.3	0.0	
Delay (s)	56.U		20.8	1.Z	22.2	13.2	
Level of Service	E CO O		ں د	40 0	04 4	B	
Approach Delay (s)	0.0C			1U.ð n	21.1		1993-199
Approach LOS	E			В	U		
Intersection Summary							
HCM 2000 Control Delay			31.1	H	ICM 2000	Level of Service	
HCM 2000 Volume to Cap	acity ratio		0.78				
Actuated Cycle Length (s)			66.5	S	um of losi	t time (s)	
Intersection Capacity Utiliz	ation		76.1%	IC	CU Level o	of Service	
Analysis Period (min)			- 15			era de Carro de S	

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c Critical Lane Group

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03/22/2020

	۲.	₩	\	X	×	7	
Lane Group	WBL	WBR	SEL	SET	NWT	NWR	
Lane Configurations	¥.1		ሻ	Ł	4	7	
Traffic Volume (vph)	87	530	102	406	420	52	
Future Volume (vph)	87	530	102	406	420	52	ue la filia prové novembre control con com ter canta presentation protector de la materia prove presenta pro pr
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	13	13	11	13	12	12	
Grade (%)	0%			0%	0%		
Storage Length (ft)	0	0	0			80	
Storage Lanes	1	0	1			1	
Taper Length (ft)	25		25				
Right Turn on Red		Yes				Yes	
Link Speed (mph)	30			35	35		
Link Distance (ft)	2348			381	2230		
Travel Time (s)	53.4			7.4	43.4		
Confl. Peds. (#/hr)							
Confl. Bikes (#/hr)							
Peak Hour Factor	0.87	0.86	0.94	0.86	0.78	0.73	
Growth Factor	100%	100%	100%	100%	100%	100%	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	
Bus Blockages (#/hr)	0	0	0	0	0	0	under beiden het het eine eine eine eine eine sterne eine seine het het het het het het het het het he
Parking (#/hr)					3 6 8 6		
Mid-Block Traffic (%)	0%			0%	0%		
Shared Lane Traffic (%)							
Lane Group Flow (vph)	716	0	109	472	538	71	
Turn Type	Prot		Prot	NA	NA	Prot	
Protected Phases	3		2	12	1	1	
Permitted Phases							
Detector Phase	3		2	12	1	1	
Switch Phase							
Minimum Initial (s)	10.0	101220000000000000000000000000000000000	5.0		10.0	10.0	
Minimum Split (s)	14.0		9.0		15.0	15,0	
Total Split (s)	22.0	angan kanalak pangangan pangangan pangangan kana kana pangangan kana pangangan pangangan pangangan pangangan p Pangan kana pangangan pangangan pangangan pangangan pangangan pangangan pangangan pangangan pangangan pangangang	18.0		40.0	40.0	
Total Split (%)	27.5%		22.5%		50.0%	50.0%	
Maximum Green (s)	18.0		14.0		35.0	35.0	
Yellow Time (s)	3.0		3.0		4.0	4.0	
All-Red Time (s)	1.0	10 M 100 M 100 D 10 D 20 D	1.0		1.0	1.0	
Lost Time Adjust (s)	0.0		0.0		0.0	0.0	
Total Lost Time (s)	4.0	e prinsi e haven e here i	4.0		5.0	5.0	
Lead/Lag			Lag		Lead	Lead	
Lead-Lag Optimize?	A.C. D.C. L.C. A.C. A.C. A.C. A.C. A.C. A.C. A	and an an air an an air an	Yes		Yes	Yes	
Vehicle Extension (s)	2.6		2.6		2.6	2.6	
Minimum Gap (s)	3.0		3.0		3.0	3.0	
Time Before Reduce (s)	0.0		0.0		0.0	0.0	
Time To Reduce (s)	0.0		0.0		0.0	0.0	
Recall Mode	None		None		Min	Min	
Walk Time (s)	, es provertinitaditas (M	a - na mang na mang katalog d		a da ser a ser en			
Flash Dont Walk (s)							
Pedestrian Calls (#/hr)	a da sera de Saladeira (* 1947) Alexandre de Saladeira (* 1947)						
v/c Ratio	0.98		0.43	0.42	0.76	0.11	
Control Delay	45.4		33.8	8.3	25.6	7.2	

Saturday Peak NB Detour Only 02/27/2020 Baseline EAM

	4	4	X			
Lane Group	WBL WBR	SEL	SET	NWT	NWR	
Queue Delay	0.0	0.0	0.0	0.0	0.0	
Total Delay	45.4	33.8	8.3	25.6	7.2	
Queue Length 50th (ft)	~164	42	91	184	7	
Queue Length 95th (ft)	#432	95	131	250	22	
Internal Link Dist (ft)	2268		301	2150		
Turn Bay Length (ft)					80	
Base Capacity (vph)	730	371	1276	1010	879	
Starvation Cap Reductn	0	0	0	0	0	
Spillback Cap Reductn	0	0	0	0	0	
Storage Cap Reductn	0	0	0	0	0	

0.37

0.08

0.53

(≯ **h**

0.29

Intersection Summary

Storage Cap Reductn

Reduced v/c Ratio

Area Type: Other

Cycle Length: 80

Actuated Cycle Length: 66.8

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

Volume exceeds capacity, queue is theoretically infinite. ~

Queue shown is maximum after two cycles.

95th percentile volume exceeds capacity, queue may be longer. #

0.98

Queue shown is maximum after two cycles.

Splits and Phases: 6: Mendon Rd (RI 122) & Nate Whipple Hwy (RI 120)

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4) c	18 5	27.5

HCM Signalized Intersection Capacity Analysis 7: Plaza Driveway/West Wrentham Rd & Mendon Rd (RI 122)

03/22/2020

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Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		44			\$			4		ሻ	4	
Traffic Volume (vph)	7	2	20	123	0	68	128	290	10	22	336	452
Future Volume (vph)	7	2	20	123	0	68	128	290	10	22	336	452
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	16	16	16	12	12	12	14	14	12	11	14	14
Total Lost time (s)		4.0			4.0			5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00			1.00		1.00	1.00	
Frt		0.91			0.95			0.99		1.00	0.92	
Flt Protected		0.99			0.97			0.99		0.95	1.00	
Satd. Flow (prot)		1935			1711			1968		1678	1787	
Flt Permitted		0.93			0.80			0.44		0.46	1.00	
Satd, Flow (perm)		1821			1412			884		806	1787	
Peak-hour factor, PHF	0.58	0.50	0.62	0.93	0.92	0.77	0.82	0.74	0.42	0.50	0.81	0.88
Adj. Flow (vph)	12	4	32	132	0	88	156	392	24	44	415	514
RTOR Reduction (vph)	0	26	0	0	32	0	0	2	0	0	49	0
Lane Group Flow (vph)	0	22	0	0	188	0	0	570	0	44	880	0
Heavy Vehicles (%)	0%	0%	0%	2%	2%	2%	1%	1%	1%	4%	4%	<u> 4% </u>
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			1	ور میں ایک		1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)		14.6			14.6			55.2	· · · · · · · · · · · · · · · · · · ·	55.2	55.2	
Effective Green, g (s)		14.6	9434316		14.6			55.2		55.2	55.2	
Actuated g/C Ratio		0.19			0.19			0.70		0.70	0.70	en der Können voll
Clearance Time (s)		4.0			4.0			5,0		5.0	5.0	
Vehicle Extension (s)		2.6			2.6			2.8		2.8	2.8	
Lane Grp Cap (vph)		337			261			619		564	1251	
v/s Ratio Prot							10				0.49	····
v/s Ratio Perm		0.01			c0.13			c0.65		0.05		
v/c Ratio		0.07			0.72			0.92		0.08	0.70	
Uniform Delay, d1		26,5			30.2			10.0		3.7	7.0	
Progression Factor		1.00			1.00			1.00	and the state of the state	1,00	1.00	nian an a
Incremental Delay, d2		0.1			9.0			19.2		0.1	1.8	
Delay (s)		26.5			39.2	ange soarte een	ana ang ang ang ang ang ang ang ang ang	29.2		3.8	8.7	00000403435
Level of Service		C			D			C		A	A	
Approach Delay (s)		26.5	on a contractor		39.2	508.00000000000000		29.2			8.5	
Approach LOS		С			D			С			A	
Intersection Summarv												
HCM 2000 Control Delay			19.2	H	CM 2000	Level of S	Service		В			
HCM 2000 Volume to Capac	itv ratio	ne e beere en efferet.	0.88		1999-1997				97079777777777777777777777777777777777			-e-treetelle
Actuated Cycle Length (s)			78.8	Si	um of losi	t time (s)			9.0			
Intersection Capacity Utilizat	ion	aanaa katatati	97.6%	IC	U Level o	of Service	a de la constante de la del	e nanosna nasla na sebila	F	a na manganganganganganganganganganganganganga		1999 Contraction (1999)
Analysis Period (min)			15									

Lanes, Volumes, Tir	nings	
7: Plaza Driveway/W	Vest Wrentham Rd &	Mendon Rd (RI 122)

03/22/2020

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Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		4			\$			\$		۲	4	
Traffic Volume (vph)	7	2	20	123	<u></u> 0	68	128	290	10	22	336	452
Future Volume (vph)	7	2	20	123	0	68	128	290	10	22	336	452
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	12	12	12	14	14	12	11	14	14
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (ft)	25		, a na si mata ta Janga ya n	25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		25			35	1111 111 1111 1111 1111 1111		35			35	
Link Distance (ft)		209			662			1525			777	
Travel Time (s)		5.7	1		12.9			29.7			15.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)		. 1999 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 199										
Peak Hour Factor	0.58	0.50	0.62	0.93	0.92	0.77	0.82	0.74	0.42	0.50	0,81	0.88
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	2%	2%	2%	1%	1%	1%	4%	4%	4%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	48	0	0	220	0	0	572	0	44	929	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Detector Phase	2	2		2	2		1	1		1	1	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	14.0	14.0		14.0	14.0		15.0	15.0		15.0	15.0	
Total Split (s)	22.0	22.0		22,0	22.0		58.0	58.0		58.0	58.0	
Total Split (%)	27.5%	27,5%		27.5%	27.5%		72,5%	72,5%		72.5%	72.5%	
Maximum Green (s)	18.0	18.0		18.0	18.0		53.0	53.0		53.0	53.0	_
Yellow Time (s)	3.0	3.0		3,0	3.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	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			5.0		5.0	5.0	
Lead/Lag	Lag	Lag		Lag	Lag		Lead	Lead		Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2,6	2.6		2.6	2.6		2.8	2.8		2.8	2.8	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)	·										ang serangan ang s	
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)						ومراجع والمراجع والمراجع والمراجع	a an					
v/c Ratio		0.13			0.75			0.92		0.08	0.71	
Control Delay		13.9			40.7			36.0		5.0	10.2	

Saturday Peak NB Detour Only 02/27/2020 Baseline EAM

Lanes, Volumes, Timings 7: Plaza Driveway/West Wrentham Rd & Mendon Rd (RI 122)

03/22/2020

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Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Queue Delay		0.0			0.0			0.0		0.0	0.0	
Total Delay		13.9			40.7			36.0		5.0	10.2	
Queue Length 50th (ft)		6			82			201		6	186	
Queue Length 95th (ft)		12			156			#343		9	279	
Internal Link Dist (ft)		129			582			1445			697	
Turn Bay Length (ft)												
Base Capacity (vph)		440			352			620		563	1300	
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		0.11			0.63			0.92		0.08	0.71	
Intersection Summary										4		
Area Type:	Other											
Cycle Length: 80												
Actuated Cycle Length: 78.	.8											
Natural Cycle: 70												
Control Type: Actuated-Un	coordinated											
# 95th percentile volume	exceeds ca	pacity, que	eue may l	be longer.	•							
Queue shown is maxim	um after two	cycles.										
Caliba and Dhassay 7. Die		WALLAN IAL	anthom r	od 0 Man	dan Dd (
Splits and Phases: 7. Pia	aza Drivewa	y/west wi	enmann r		<u>aon ka (</u>	RI 122j			ls.A.			
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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			\$	
Traffic Volume (vph)	14	200	42	60	İ	0	236	46	51	20	46	11
Future Volume (vph)	14	200	42	60	0	0	236	46	51	20	46	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	13	13	13	13	13	13	13	11	11	11
Total Lost time (s)		5.0			5.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.97			1.00			0.99			0.98	
Flt Protected		1.00			0.95			0.96			0.99	
Satd, Flow (prot)		1887			1847			1867			1759	
Flt Permitted		0.98			0.52			0.70			0.82	
Satd, Flow (perm)		1857			1016			1360			1466	
Peak-hour factor. PHF	0.70	0.81	0.66	0.83	0.85	0.75	0.55	0.55	0.91	0.56	0.68	0.69
Adi. Flow (vph)	20	247	64	72	0	0	429	84	56	36	68	16
RTOR Reduction (vph)	0	0	0	0	0	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	331	0	0	72	0	0	569	0	0	120	0
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	42	0	0	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	<u> </u>
Protected Phases		1			1			2			2	
Permitted Phases	1	an a	and an	1	energe etter	ran e dirae di makaran di	2	-1997 (1997), 1997), 1997),	1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	2		belengen et en d
Actuated Green, G (s)		13.3			13.3			21.1			21.1	
Effective Green, q (s)		13.3		1994-1992-1992-1992-1992-1992-1992-1992-	13.3	en fan ferste en seren seren se	,	21.1			21.1	2000 (2000) (2000) (2000) 2000 (2000) (2000) (2000)
Actuated g/C Ratio		0.31			0.31			0.49			0.49	
Clearance Time (s)		5.0	, este a la cella de la companie	, 1996 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 199 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997	5.0		200723-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0	4.0	2000 N.		4.0	00000000000000
Vehicle Extension (s)		2.8			2.8			2.6			2.6	
Lane Grp Cap (vph)		569			311			661			712	
v/s Ratio Prot												
v/s Ratio Perm		c0.18	an ta		0.07		n - Gendeline (de de de	c0.42	,		0.08	-9-69-00-01-03
v/c Ratio		0.58			0.23			0.86			0.17	
Uniform Delay, d1	Ares succession and has	12.7			11.2	- 94 C 14 C 15 C 17 C 17 C 19 C 14 C 19 C	1, 1963 - 1953 - 1953 - 195 1	9.9		. 176 4.0 - 67 6 6 6 6 6 6 6 6 6	6.2	CONTROLONDUM
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2	Alternetz Weltzber	1.4	99.00000000000000000000000000000000000	n en grup d'aux en anne anne	0.3		venselve Alexentre evensen	11.0	urone receber (12 discriber	in fallen litte sterne s	0.1	ter and to block at
Delay (s)		14.1			11.6			20,9			6.3	
Level of Service	0999,0799,42909	В			В			С	ana da ser parta da ser se		Α	
Approach Delay (s)		14.1			11.6			20.9			6.3	
Approach LOS	(00197091090 <u>6</u> 7607799	B			B	a status ta la secoletri	1974 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 - 1977 -	С			Α	20200000004
Intersection Summary												
HCM 2000 Control Delay			16.6	Н	CM 2000	Level of	Service		В			1
HCM 2000 Volume to Capacity	/ ratio		0,75									
Actuated Cycle Length (s)		e en le recentration de la companya	43.4	S	um of los	t time (s)			9.0		a an	ante esterente de la constancia de la const
Intersection Capacity Utilizatio	n		59.1%	<u> </u>	CU Level	of Service			В			
Analysis Period (min)	a a strike se strike i 187		15	, e na esta 2, da a mila il d		uaan ta statut no Kint minasan	entente des Bioffe estab	en de la companya de la companya		-,,	e estes a productions	a a construction de la construction de la construcción de la construcción de la construcción de la construcción
c Critical Lane Group												

Saturday Peak NB Detour Only 02/27/2020 Baseline EAM

Lanes, Volumes, Timings 17: West Wrentham Rd & Pine Swamp Rd (RI 114)

03/22/2020

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			\$			4			4	
Traffic Volume (vph)	14	200	42	60	0	0	236	46	51	20	46	11
Future Volume (vph)	14	200	42	60	0	0	236	46	51	20	46	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	13	13	13	13	13	13	13	13	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			No			Yes			No			No
Link Speed (mph)		30			40			25			25	
Link Distance (ft)		3320			7947			1008			920	
Travel Time (s)		75.5	*****		135.5			27.5			25.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)		0000 400 500 500 500 500 500 500 500 500	. (
Peak Hour Factor	0.70	0.81	0.66	0.83	0.85	0.75	0.55	0.55	0.91	0.56	0.68	0.69
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	0%	0%	0%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	42	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)	and a strategy provide	0%	1992		0%	e ne sterne sterne versteret.		0%		al an an da an di para bara .	0%	19 - 19 19 - 19 - 19 - 19 - 19 - 19 - 1
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	331	0	0	72	0	0	569	0	0	120	0
	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	a Versio subec seese	1	s in the land link, drive	on an the second second	1	1 - 40 (2), - 10 (10 - 5 - 10 - 10 - 10 - 10 - 10 - 10		2			2	
Permitted Phases	1			1			2			2		
Detector Phase	1	1		1	1		2	2		2	- 2	
Switch Phase												
Minimum Initial (s)	10,0	10.0	and the second second second	10.0	10.0		5.0	5.0		5.0	5.0	sanis tati sin sh
Minimum Split (s)	15.0	15.0		15.0	15.0		9.0	9.0		9.0	9.0	
Total Split (s)	35.0	35.0		35.0	35.0		25.0	25.0	s Information Pronocent	25.0	25.0	
Total Split (%)	58.3%	58.3%		58.3%	58.3%		41.7%	41.7%		41.7%	41.7%	
Maximum Green (s)	30.0	30.0		30.0	30.0		21.0	21.0		21.0	21.0	
Yellow Time (s)	4.0	4.0		4.0	4.0		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	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.0			5.0			4.0			4.0	
Lead/Lag	Lead	Lead		Lead	Lead		Lag	Lag		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2,8	2.8		2.8	2.8		2.6	2.6		2.6	2.6	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0,0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Walk Time (s)		e en l'annaitheachadh					oradiordi	e e e e e e e e e e e e e e e e e e e	an an an an an an an Anna an An			
Flash Dont Walk (s)		<u> Karan</u> g										
Pedestrian Calls (#/hr)					al on a contra sobre	aan ahaalaa ay					a an an the second s	
v/c Ratio		0.58			0.23			0.86			0.17	
Control Delay		17.1			12.8			29.6			8.3	

Saturday Peak NB Detour Only 02/27/2020 Baseline EAM

Lanes, Volumes, Timings 17: West Wrentham Rd & Pine Swamp Rd (RI 114)

03/22/2020

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBF
Queue Delay		0.0			0.0			0.0			0.0	
Total Delay		17.1			12.8			29.6			8.3	
Queue Length 50th (ft)		67			13			104			14	
Queue Length 95th (ft)		107			32			123			33	
Internal Link Dist (ft)		3240			7867			928			840	
Turn Bay Length (ft)	من ور بر بر بر بر ا	ر										
Base Capacity (vph)		1288			704			660			712	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0	contente de contentes		0			0	
Reduced v/c Ratio		0.26			0.10			0.86			0,17	
Intersection Summary												
Area Type: (Other											
Cycle Length: 60												
Actuated Cycle Length: 43.5												
Natural Cycle: 55										una com tura de las	an ta san ta sa ta ta san ta	vistore estatut
Control Type: Actuated-Unco	pordinated									ette og sand		
Splits and Phases: 17: We	est Wrenth	am Rd & I	⁻ ine Swa	mp Rd (F	RI 114)							
₩Ø1						*	Ø2					
39c		100 Mar 200 - 200 - 200		10 - 10 - 10 - 10		255				8. 	1997 - 1998 - 1999 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	

HCM Unsignalized Intersection Capacity Analysis

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20: Diamond Hill Rd (RI 114) & Pine Swamp Rd (RI 114)/Wrentham Rd (RI 121)

03/22/2020

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Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	Ť	7	ሻ	♠	ሻ	7
Traffic Volume (veh/h)	356	193	170	126	Ō	0
Future Volume (Veh/h)	356	193	170	126	0	0
Sign Control	Free	9143 - St. 64	23 Q (2) C	Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.83	0.91	0.79	0.88	0.88	0.89
Hourly flow rate (vph)	429	212	215	143	0	0
Pedestrians						
Lane Width (ft)						
Walking Speed (ft/s)		Masashai				
Percent Blockage						
Right turn flare (veh)						10
Median type	None			None	states y states and	
Median storage veh)						
Upstream signal (ft)	terra de la deservación de la comunicación de la comunicación de la comunicación de la comunicación de la comu					
pX, platoon unblocked						
vC, conflicting volume			429		1002	429
vC1, stage 1 conf vol						
vC2, stage 2 conf vol			100			100
vCu, unblocked vol			429		1002	429
tC, single (s)			4.1		6.4	6.2
tC, 2 stage (s)		ana ana				
t⊢ (s)			2.2		3.5	3.3 400
pU queue free %			1400		100	100
civi capacity (ven/n)			1130	n (an indiana), an 's à fil a Tàirt an An Anna	218	626
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume otal	429	212	215	143	0	
Volume Left	Û	0	215	0	U	
Volume Right	0	212	0	0	0	
CSH Volume la Oracella	1/00	1700	1130	1700	1700	
	U.25	0.12	0.19	0.08	0.00	
Queue Length 95th (It)	0	0 0	1	U 0 0	0	
Control Delay (s)	0.0	0.0	8,9	U.U	0.0	
Lane LUS	0.0		A F O		A	
Approach Delay (s)	0.0		0.0		U.U A	
Approach LOS		90310108(65) 			A	
Intersection Summary						and the second s
Average Delay			1.9			
Intersection Capacity Utiliz	ation		34.8%	IC	U Level o	of Service
Analysis Period (min)			15			

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03/22/2020

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			<u>.</u>			4	
Traffic Volume (vph)	0	124	32	18	232	0	362	0	20	104	253	58
Future Volume (vph)	0	124	32	18	232	0	362	0	20	104	253	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	13	13	13	13	12	12	12	12	12	12
Total Lost time (s)		4.0			4.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.97			1.00			0.99			0.98	
Fit Protected		1.00			1.00			0.95	- 946 al - 110 fair (11 1 1 1		0.99	
Satd. Flow (prot)		1799			1864			1732			1787	
Flt Permitted		1.00			0.97			0.47			0.79	
Satd. Flow (perm)		1799			1813			859			1438	
Peak-hour factor, PHF	0.80	0.84	0.80	0.90	0.82	0.84	0.82	0.82	0.83	0.81	0.82	0.81
Adj, Flow (vph)	0	148	40	20	283	0	441	0	24	128	309	72
RTOR Reduction (vph)	0	19	0	0	0	0	0	9	0	0	13	0
Lane Group Flow (vph)	0	169	0	0	303	0	0	456	0	0	496	0
Heavy Vehicles (%)	6%	6%	6%	5%	5%	5%	4%	4%	4%	3%	3%	3%
Turn Type		NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		1			1			2			2	- and a second sec
Permitted Phases	1			1			2			2		
Actuated Green, G (s)		10.1			10.1			28.2			28.2	
Effective Green, g (s)		10.1			10.1			28.2			28.2	
Actuated g/C Ratio	WI labeled developer 1 11 and and	0.21			0.21			0.60			0.60	
Clearance Time (s)		4.0			4.0			5.0			5.0	
Vehicle Extension (s)		2.6			2.6			3.0			3.0	
Lane Grp Cap (vph)		384			387			512			857	
v/s Ratio Prot		0.09										
v/s Ratio Perm			1990 (SP 1916-191		c0.17			c0.53			0.35	
v/c Ratio		0.44			0.78			0.89			0.58	
Uniform Delay, d1		16.1			17.6	(B) 429 429 42		8.2	To 60 48 49		5.9	
Progression Factor		1.00		• • • • • • • • • • • • • • • • • • •	1.00	etter ander konster et her andere etterer		1.00			1.00	
Incremental Delay, d2		0.6			9.7			17.4			1.0	
Delay (s)		16.8			27.2			25.7			6.8	
Level of Service		В			С			C			A	
Approach Delay (s)		16.8		d i dad yfa gargargang da my	27.2			25.7			6.8	
Approach LOS		В			C	oli guquoj		C	0.08 B		A	
Intersection Summary												
HCM 2000 Control Delay			18,3	H	CM 2000	Level of S	Service		В			
HCM 2000 Volume to Capa	city ratio		0.86									
Actuated Cycle Length (s)			47.3	Si	im of lost	time (s)			9.0			
Intersection Capacity Utiliza	ition		80.5%	IC	U Level o	of Service			D			
Analysis Period (min)			15									

Lanes, Volumes, Timings	3
1: Diamond Hill Rd (RI 11	14) & Nate Whipple Hwy (RI 120)

03/22/2020

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4 4+			4			44	
Traffic Volume (vph)	0	124	32	18	232	0	362	0	20	104	253	58
Future Volume (vph)	0	124	32	18	232	0	362	0	20	104	253	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	13	13	13	13	13	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25	5 (a (a)) a a a a a a a a a a a a a a a a		25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		1854			4162			1592			454	
Travel Time (s)	lan general series and series of the	31.6			70.9			36.2			10.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)	e të Platite e së Platite e e	Canan-transmanana)		- 110-19, 1999-1999-19					1999 (1999 (1999 (1999 (1999)))			anan marini marinj
Peak Hour Factor	0.80	0.84	0.80	0.90	0.82	0.84	0.82	0.82	0.83	0.81	0.82	0.81
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	6%	6%	6%	5%	5%	5%	4%	4%	4%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)					8 2 2 4 2							
Mid-Block Traffic (%)		0%		an fatin din di tati da	0%	nga palakan periodi kalan		0%	hand over the train of the	1979 - Standor Standor	0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	188	0	0	303	0	0	465	0	0	509	0
Turn Type		NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	999 0040 0920 0020 0		yana wana kata		erano-no-o- 1	reaction and a second a second	1962-1962-1963-1963 1962-1962-1962-1963	2	energe (ne-egy) (ne-		2	000000000000000000000000000000000000000
Permitted Phases	1			1			2			2		
Detector Phase	1	1	Red al de la Colomb	1	1	edenini diri delene	2	2		2	2	
Switch Phase												
Minimum Initial (s)	10.0	10.0	1922200000000000000000	10.0	10.0		10.0	10.0		10.0	10.0	and a second second
Minimum Split (s)	14.0	14.0		14.0	14.0		15.0	15.0		15.0	15.0	
Total Split (s)	14.0	14.0	-Confidence - Angle - A - Angle - Angle	14.0	14.0		36.0	36.0	1996 ALCON (1997) (1997)	36.0	36.0	01000104999900000443
Total Split (%)	28.0%	28.0%		28.0%	28,0%		72.0%	72,0%		72.0%	72.0%	
Maximum Green (s)	10.0	10.0		10.0	10.0		31.0	31.0		31.0	31.0	100410-000-0414109
Yellow Time (s)	3.0	3.0		3.0	3.0		4,0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	N MELTER (1997) (1997) (1993)	1.0	1.0	20090000000000000000000000000000000000	1.0	1.0	(12.01742) (*/1713-1744-75	1.0	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)	Contesta (1606069609)	4.0	ABUMANIN'I ANY		4.0	99999999999999999999999999999999999999		5.0	rene en en de de la parte esta	a para ang ang ang ang ang ang ang ang ang an	5.0	1997), 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 1997, 199
Lead/Lag	Lead	Lead	is de seu	Lead	Lead		Lad	Lag		Laq	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	ko-elis esekeli kirek ezek	Yes	Yes	
Vehicle Extension (s)	2.6	2.6		2.6	2.6		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0	AURODA BATTALOVARA	3.0	3.0		3.0	3.0	196 gan 291 Anno Anno Anno A	3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0	ndininin ni mini	0.0	0.0		0.0	0.0	enin der de de la B
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)					en an	eren de de Malik						
Flash Dont Walk (s)												500
Pedestrian Calls (#/hr)			anna Photos (196	aassa desti ta Silii.	aanten ontootio (da	n e casta del 1983	e over 1939 1930 1930 193	20092407611890		activenter Statio	a sesse an a tradition of the	- 67607474-6787898 -
v/c Ratio		0.47			0.78			0.89			0.59	2021
Control Delay		19.9	1996-9993 (1997) 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 19 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -		37.6			32.4		en om Grinne 2019	8.7	1999 (1999 (1999 (1999 (1999 (1999 (1999 (1999 (1999 (1999 (1999 (1999 (1999 (1999 (1999 (1999 (1999 (1999 (19 1999 (199

AM Peak NB Detour - Optimized 02/27/2020 Baseline EAM

Lanes, Volumes, Tin	nings				
1: Diamond Hill Rd (RI 114) &	Nate Whipp	ble Hwy	(RI	120)

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0			0.0			0.0		6.3.2.2	0.0	
Total Delay		19.9			37.6			32.4			8.7	
Queue Length 50th (ft)		43			86			85			65	
Queue Length 95th (ft)		83			#171			#228			107	
Internal Link Dist (ft)		1774			4082			1512			374	
Turn Bay Length (ft)												
Base Capacity (vph)		402	Geographies		387			576			962	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0	가 다 다 다 5 (한 종 (한		0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		0.47			0.78			0.81			0,53	

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Intersection Summary

Area Type:

Cycle Length: 50

Actuated Cycle Length: 47.4

Natural Cycle: 50

Control Type: Actuated-Uncoordinated

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

Other

Splits and Phases: 1: Diamond Hill Rd (RI 114) & Nate Whipple Hwy (RI 120)

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Movement	WBL	WBR	SEL	SET	NWT	NWR	
Lane Configurations	Υ		ሻ	1	1	7	
Traffic Volume (vph)	76	714	167	299	418	73	
Future Volume (vph)	76	714	167	299	418	73	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width	13	13	11	13	12	12	
Total Lost time (s)	4.0	2.2.2.3	4.0	5.0	5.0	5.0	
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00	
Frt	0.88		1.00	1.00	1.00	0.85	
Flt Protected	0.99		0.95	1.00	1.00	1.00	
Satd. Flow (prot)	1671	9	1662	1870	1827	1553	
Flt Permitted	0.99		0.95	1.00	1.00	1.00	
Satd. Flow (perm)	1671		1662	1870	1827	1553	
Peak-hour factor, PHF	0.68	0.91	0.58	0.70	0.71	0.58	
Adj. Flow (vph)	112	785	288	427	589	126	
RTOR Reduction (vph)	308	0	0	0	0	41	
Lane Group Flow (vph)	589	0	288	427	589	85	
Heavy Vehicles (%)	3%	3%	5%	5%	4%	4%	
Turn Type	Prot		Prot	NA	NA	Prot	
Protected Phases	3		2	12	1	1	
Permitted Phases							
Actuated Green, G (s)	27.0		15.0	45.0	25.0	25.0	
Effective Green, g (s)	27.0		15.0	45.0	25.0	25.0	
Actuated g/C Ratio	0.34		0.19	0.56	0.31	0.31	
Clearance Time (s)	4:0		4.0		5.0	5.0	
Vehicle Extension (s)	2.6		2.6		2.6	2.6	
Lane Grp Cap (vph)	563		311	1051	570	485	
v/s Ratio Prot	c0.35		c0.17	0.23	c0.32	0.06	
v/s Ratio Perm							
v/c Ratio	1.05		0.93	0.41	1.03	0.18	
Uniform Delay, d1	26.5		32.0	9.9	27.5	20.0	
Progression Factor	1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2	50.5		32.1	0.2	46.5	0.1	
Delay (s)	77.0		64.1	10.1	74.0	20.1	
Level of Service	Ē		E	В	E	C	
Approach Delay (s)	77.0			31.9	64.5		
Approach LOS	E			C	E		
Intersection Summary							
HCM 2000 Control Delay			59.3	н	CM 2000	Level of Service	E
HCM 2000 Volume to Cape	acity ratio		1.01				-
Actuated Cycle Length (s)			80.0	S	um of los	t time (s)	13.0
Intersection Canacity Utiliza	ation	nan halana kasa	90.4%	ب ۱۲	CU Level	of Service	E
Analysis Period (min)			15				

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03/22/2020

	5	¥	\searrow	\mathbf{x}	×	4	
ane Group	WBL	WBR	SEL	SET	NWT	NWR	
Lane Configurations	¥		ሻ	¥	¥	ا م	
Traffic Volume (voh)	76	714	167	299	418	73	
Future Volume (voh)	76	714	167	299	418	73	
Ideal Flow (vphnl)	1900	1900	1900	1900	1900	1900	
Lane Width (ft)	13	13	11	13	12	12	
Grade (%)	0%			0%	0%		
Storage Length (ft)	0	0	0			80	
Storage Lanes		Ō	1			1	
Taper Length (ft)	25	************	25	5199970509990 51999705099990	996966666666666666		
Right Turn on Red		Yes				Yes	
ink Sneed (mnh)	30			35	35		
Link Distance (ff)	2348			381	2230		
Travel Time (s)	53.4			7 <u>4</u>	43.4		
Confl Pade (#/hr)	UU 1						
Confl Rikes (#/hr)							
Dook Hour Factor	0 68	0.01	0.58	0.70	0.71	0.58	
Crowth Eactor	100%	100%	100%	100%	100%	10.00	
Growin Facior	20/	20/	100 % 50/	5%	100 %	10070	
Dealy venicies (%)	ა <i>რ</i> ე	0/C	U /0 0	0/U 0	470 A	47/0 0	
Dus Blockages (#/III)	U	V	U	V	U	U	
"arking (#/nr) Mid Disola Troffic (0()	00/			00/	∩ 0/		
VIU-BIOCK ITAIIIC (%)	U70			U 70	U70		
Snareo Lane Tranic (%)	007		000	407	E00	400	
Lane Group Flow (vpn)	897	U	200	421	60C	120 D-st	
lurn lype	Prot	88. B. B. B. B.	Prot	INA 4 O	INA.	FIOI	
Protected Phases	3		Z	1 Z		1	
Permitted Phases				4.0			
Detector Phase	3		2 	12	1) 2010-00-00-00-00-00-00-00-00-00-00-00-00-	
Switch Phase							
Minimum Initial (s)	10.0		5.0		10.0	10.0	
Minimum Split (s)	14.0		9.0		15.0	15.0	
Total Split (s)	31.0		19.0		30.0	30.0	
Total Split (%)	38.8%		23.8%		37.5%	37,5%	
Maximum Green (s)	27.0		15.0	con the Water Concerned	25.0	25.0	ייין איז
Yellow Time (s)	3.0		3.0		4.0	4.0	
All-Red Time (s)	1.0		1.0		1.0	1.0	
Lost Time Adjust (s)	0.0		0.0		0.0	0.0	
Total Lost Time (s)	4.0		4.0		5.0	5.0	
Lead/Lag			Lag	1 (S) (S) (S).	Lead	Lead	
Lead-Lag Optimize?	1.0. 1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1.1		Yes	Particular Solid Manufacture 199	Yes	Yes	
Vehicle Extension (s)	2.6		2.6		2.6	2.6	
Minimum Gap (s)	3.0		3.0		3.0	3.0	
Time Before Reduce (s)	0.0		0.0		0.0	0.0	
Time To Reduce (s)	0.0		0.0		0.0	0.0	
Recall Mode	None		None		Min	Min	
Walk Time (s)							
Flash Dont Walk (s)							
Pedestrian Calls (#/hr)							
v/c Ratio	1.03		0.93	0.42	1.03	0.24	
Control Delay	53.2	aan ah oo ah oo ah oo ah oo ah daa	70.0	12.1	76.2	13.0	

AM Peak NB Detour - Optimized 02/27/2020 Baseline EAM

					•			
Lane Group	WBL	WBR SE	L SET	NWT	NWR			
Queue Delay	0.0	0.	0 0.0	0.0	0.0			
Total Delay	53.2	70.	0 12.1	76.2	13.0			
Queue Length 50th (ft)	~316	14	3 115	~321	24			
Queue Length 95th (ft)	202	13	6 127	#341	31			
Internal Link Dist (ft)	2268		301	2150				
Turn Bay Length (ft)					80		 	
Base Capacity (vph)	872	31	1 1028	570	525			
Starvation Cap Reductn	0		0 0	0	0		 	
Spillback Cap Reductn	0		0 0	0	0			
Storage Cap Reductn	0		0 0	0	0	 	 م دور در	
Reduced v/c Ratio	1.03	0.9	3 0.42	1.03	0.24			
Intersection Summary								
Area Type:	Other							

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Area Type.

Cycle Length: 80

Actuated Cycle Length: 80

Natural Cycle: 80

Control Type: Actuated-Uncoordinated

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: 6: Mendon Rd (RI 122) & Nate Whipple Hwy (RI 120)

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HCM Signalized Intersection Capacity Analysis 7: Plaza Driveway/West Wrentham Rd & Mendon Rd (RI 122)

03/22/2020

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Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		()}			4			4		ኻ	4	
Traffic Volume (vph)	3	<u>i</u>	6	84	0	104	95	100	13	7	338	566
Future Volume (vph)	3	1	6	84	0	104	95	100	13	7	338	566
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	16	16	16	12	12	12	14	14	12	11	14	14
Total Lost time (s)		4.0			4.0			5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00			1.00		1.00	1.00	
Frt		0.94			0.92			0.98		1.00	0.91	
Flt Protected		0.98			0.98			0.98		0.95	1.00	
Satd. Flow (prot)		1986			1651			1897		1694	1782	
Flt Permitted		0.89			0.85			0.30		0.63	1.00	
Satd. Flow (perm)		1812			1430			583		1129	1782	
Peak-hour factor, PHF	0.25	0.25	0.50	0.84	0.92	0.79	0.81	0.79	0.41	0.44	0.87	0.86
Adj. Flow (vph)	12	4	12	100	0	132	117	127	32	16	389	658
RTOR Reduction (vph)	0	10	0	0	79	0	0	8	0	0	106	0
Lane Group Flow (vph)	0	18	0	0	153	0	0	268	0	16	941	0
Heavy Vehicles (%)	0%	0%	0%	4%	4%	4%	3%	3%	3%	3%_	3%	3%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	lo gaza
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)		11.0			11.0			34.8		34.8	34.8	
Effective Green, g (s)		11.0			11.0			34.8		34.8	34.8	
Actuated g/C Ratio		0.20	•		0.20			0.64		0.64	0.64	
Clearance Time (s)		4.0	0.985.9		4.0	10 10 10 10 10 10 10 10 10 10 10 10 10 1		5.0		5.0	5.0	
Vehicle Extension (s)		2.6			2.6			2.8		2.8	2.8	
Lane Grp Cap (vph)		363			287			370		716	1131	
v/s Ratio Prot			5 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 - 1 -								c0.53	
v/s Ratio Perm		0.01			c0.11			0.46		0.01		
v/c Ratio		0.05			0.53			0.72		0.02	0.83	
Uniform Delay, d1	31.141.55	17,7			19.6			6.8		3.7	7.7	
Progression Factor		1.00			1.00			1.00		1.00	1.00	
Incremental Delay, d2		0.0			1.6			6.7		0.0	5.3	
Delay (s)		17.7			21.2			13.5		3.7	13.1	
Level of Service		В			C			В		A	B	
Approach Delay (s)		17.7			21.2			13.5			12.9	
Approach LOS		В			С			В	69 69 68 69		В	
Intersection Summary		and the second										
HCM 2000 Control Delay	-		14.3	H	CM 2000	l evel of	Service	102 08 04 10 10	B			
HCM 2000 Collino Deldy	v ratio		ብ 7 6									
Actuated Cycle Length (c)	y railu		5/ 8	Qi	im of loe	t time (s)			9.0			
Intersection Canacity Hilizatic			92.9%	יט חו	llevel	of Service			F			
Analysis Period (min)			15									

Lanes, Volumes, Timings 7: Plaza Driveway/West Wrentham Rd & Mendon Rd (RI 122)

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Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		44						4		3	ţ,	
Traffic Volume (vph)	3	1	6	84	0	104	95	100	13	7	338	566
Future Volume (vph)	3		6	84	0	104	95	100	13	7	338	566
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	16	16	16	12	12	12	14	14	12	11	14	14
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0	en e	0	0	000000000000000	0	0			0	ever na setema	0
Storage Lanes	Ō		Ō	0		0	Ō		0	- 1		0
Taner Length (ff)	25	en e	enne en neer de lang	25			25		negenelsen nieder V oegen	25		HENRIGEN BERTH
Right Turn on Red			Yes			Yes			Yes			Yes
Link Sneed (mnh)		25			35			35	989-999 1 -0797-999		35	800200 <u>7</u> 79
Link Distance (ff)		209			662			1525			777	
Travel Time (s)		57	segyaatta araa ka		12.9	1999-1999-1995 1997-1997-1997	aanaa ahaa ahaa ahaa ahaa ahaa ahaa aha	29.7			15.1	500000000000000
Confl Peds (#/hr)		v.,			12.0			-0.1				
Confl Bikes (#/hr)												NUMBER OF
Dook Hour Footor	0.95	0.25	0.50	0.84	ഗരാ	∩ 70	0.81	0 70	0.41	∩ 44	<u> </u>	0.86
Growth Eactor	100%	100%	100%	100%	10.02	100%	10.01	100%	100%	100%	10.0%	100%
Growu'r acior Hogwy Yohiolog (%)	100 /0 /0%	0070	0070	10070	10070	10070	30/	20/	20%	20%	20%	20/
Pue Pleekages (#/br)	0/U م	υ <i>1</i> 0 Λ	۷/۹ ۸	ት /ሳ በ		71 70 0	ο (V Ω	یر ج 0	570 A	- Ω	۳.0 ۱	ັນ// ດ
Dus Diockages (#/III)	U	U	V	U	U	U	V	v	v	v	v	U Baseda
Parking (#/III) Mid Diock Troffic (0/)		<u>^0/</u>			00/			00/			<u>۸</u> ۵/	
WIG-BIOCK Hallic (%)		V70			U 70			V 70			U /0	
Snared Lane Tranic (%)	A	00	<u>م</u>	<u>م</u>	000	∧	<u>م</u>	076		46	4047	
Lane Group How (vpn)	U	20 NI A	U	V Dorm	ZJZ NIA	U 2008/2008	U Dorm	270 NIA	U	10 Dorm	1047 N1A	
Turn Type	Perm	NA 0		reim	NA 2		Feili	INA 4	1999 (CAN SEA OR)	rem	NA 4	sussesses i
Protected Phases	<u> </u>	۲.		റ	Z			1	Sector Sector	4	. 	
Permitted Phases	Z 0	•		2	n			4		ه ا د دو ورو ه	A	
Detector Phase	Z	ک ویوجودیون	na na state da se	2	۲		1	1		l Respondences	l Misioguy	
Switch Phase	40.0	40.0		40.0	40.0		40.0	40.0				
Minimum Initial (s)	10.0	10.0		10.0	10.0 • • • • •		10.0	10.0		10.0	10.0	
Minimum Split (s)	14.0	14.0		14.0	14.0		15.0	15.0		15.0	15.0	
Total Split (s)	16.0	16.0		16.U	16.U		44.0	44.0		44.0	44.0	
Total Split (%)	26.7%	26.7%		26.7%	-26.7%		73.3%	73.3%		73.3%	/3.3%	
Maximum Green (s)	12.0	12.0	ang tang tang tang tang tang tang tang t	12.0	12.0		39.0	39.0		39.0	39.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	1.0	1.0	erre asterreter	1.0	1.0		1.0	1.0		1.0	1.0	Sevenieria
Lost Time Adjust (s)		0.0			0,0			0,0		0.0	0.0	
Total Lost Time (s)		4.0			4.0			5.0		5.0	5.0	an a
Lead/Lag	Lag	Lag		Lag	Lag		Lead	Lead		Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.6	2.6		2.6	2,6		2,8	2,8		2.8	2.8	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)										-		A. P. IV. IV. IV. IV. IV. IV. IV. IV. IV. IV
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0,08			0.64			0.73		0.02	0.85	
Control Delay		15.4			21.8			21.3		3.9	14,2	

AM Peak NB Detour - Optimized 02/27/2020 Baseline EAM

Lanes, Volumes, Timings 7: Plaza Driveway/West Wrentham Rd & Mendon Rd (RI 122)

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03/22/2020

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Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Queue Delay		0.0			0.0			0.0		0.0	0.0	
Total Delay		15.4			21.8			21.3		3.9	14.2	
Queue Length 50th (ft)		5			41			45		2	147	
Queue Length 95th (ft)		4			#124			110		3	#326	
Internal Link Dist (ft)		129			582			1445			697	
Turn Bay Length (ft)												
Base Capacity (vph)		409			393			425		811	1363	
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		0,07			0.59			0.65		0.02	0.77	
Intersection Summary								1	-5. 1. 1.			
Area Type:	Other											

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Cycle Length: 60

Actuated Cycle Length: 54.9

Natural Cycle: 60

Control Type: Actuated-Uncoordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 7: Plaza Driveway/West Wrentham Rd & Mendon Rd (RI 122)

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HCM Signalized Intersection Capacity Analysis 17: West Wrentham Rd & Pine Swamp Rd (RI 114)

03/22/2020

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4 3-			4			4			44	
Traffic Volume (vph)	28	150	45	114	79	7	156	106	547	40	88	12
Future Volume (vph)	28	150	45	114	79	7	156	106	547	40	88	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	13	13	13	13	13	13	13	11	11	11
Total Lost time (s)		5.0			5.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.98			1.00			0.91			0.98	
Fit Protected		0.99			0.97			0.99			0.99	
Satd. Flow (prot)		1887			1826			1768			1748	
Flt Permitted		0.94			0.42			0.86			0.60	
Satd. Flow (perm)		1782			784			1543			1065	
Peak-hour factor, PHF	0.78	0.63	0.75	0.73	0.75	0.71	0.49	0.62	0.56	0.71	0.63	0.43
Adj. Flow (vph)	36	238	60	156	105	10	318	171	977	56	140	28
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	0
Lane Group Flow (vph)	0 –	334	0	0	270	0	0	1466	0	0	224	0
Heavy Vehicles (%)	1%	1%	1%	4%	4%	4%	0%	0%	0%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		1			1			2		estre at streatestader a	2	ooger ka-st statte ook
Permitted Phases	1			1			2			2		
Actuated Green, G (s)		30.0			30.0	and the second	enales (albertiers data	81.0			81.0	
Effective Green, g (s)		30.0			30.0			81.0			81.0	
Actuated g/C Ratio		0.25	ana ang ang ang ang ang ang ang ang ang	ay mala kisi day na bi	0.25	aana oo ahaanaa		0.68			0.68	250.02705094
Clearance Time (s)		5,0			5.0			4.0			4.0	
Vehicle Extension (s)		2.8			2.8		000000000000000000000000000000000000000	2.6			2.6	
Lane Grp Cap (vph)		445			196			1041			718	
v/s Ratio Prot			untoviski kalestaan	- 11.5-50,000,000,000,000							a sa	an a
v/s Ratio Perm		0.19			c0.34			c0.95			0.21	
v/c Ratio		0.75			1.38			1.41			0.31	20120010004
Uniform Delay, d1		41.5			45.0			19.5			8.0	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, dz	0.468.659.459.6	0.9	90. Ka 250. V		197.5			109.0			0.2	
Delay (s)		40.4 D			242.0 E			209.0			0.Z	
Level OI Service		10 A			040 E			200.0			20 20	
Approach LOC		40,4 D			242.J C			Z09.0	990 (990 (995 (995 (975 (975 (975 (975 (975 (975		0,Z A	
Approach LOS		ע			E Contraction of the second						A	
Intersection Summary												
HCM 2000 Control Delay			170.0	H	CM 2000	Level of S	Service		s e Fe			
HCM 2000 Volume to Capacil	ty ratio		1.40				- 					
Actuated Cycle Length (s)			120.0	Si	um of lost	time (s)			9,0			
Intersection Capacity Utilization	ภา	ومروق والمروق و	89.3%	IC	U Level o	of Service			E			
Analysis Period (min)			15									

Lanes, Volumes, Timings 17: West Wrentham Rd & Pine Swamp Rd (RI 114)

03	122	120	20
00	144	20	12.0

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			4			4			4	
Traffic Volume (vph)	28	150	45	114	79	7	156	106	547	40	88	12
Future Volume (vph)	28	150	45	114	79	7	156	106	547	40	88	12
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	13	13	13	13	13	13	13	13	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0	na di nani adalati n	0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			No			Yes			No			No
Link Speed (mph)	ini i na njena na na hili si n	30		dagarang san dari san	40			25			25	
Link Distance (ft)		3320			7947			1008			920	
Travel Time (s)		75.5	ngi ga kata ta kata bana		135.5			27.5		0.0001.000.000000	25.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)			den seren er en der		alle state de courselle		kanikaten territeten dirakati		een solen solen sole	an a	e e esta a pere desenta	Sector and a sector of the
Peak Hour Factor	0.78	0.63	0.75	0.73	0.75	0.71	0.49	0.62	0.56	0.71	0.63	0.43
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	1%	1%	1%	4%	4%	4%	0%	0%	0%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	-9442-57939
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	334	0	0	271	0	0	1466	0	0	224	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	99999999999999999999999999999999999999			an a		alan in an		2		009000000000000000000000000000000000000	2	1010112-V1102014
Permitted Phases	1			1			2			2		
Detector Phase	1	1	r de ses els ses	1	1	ento celo un sociel	2	2		2	2	rfaire-shirebhrrð
Switch Phase												
Minimum Initial (s)	10.0	10.0	259996 ay taona am	10.0	10.0	1999-1999-1999-1999-1999-1999-1999-199	5.0	5.0	na subscription de la compa	5.0	5.0	Standard and a stand In the standard and a standard a st
Minimum Split (s)	15.0	15.0		15.0	15.0		9.0	9.0		9.0	9.0	
Total Split (s)	35.0	35.0	aden veren der steller	35.0	35.0	NORENDER/07/07/07/07	85.0	85.0	(nijeva na nasložnači) je prav	85.0	85.0	multiplin daard
Total Split (%)	29.2%	29.2%		29.2%	29.2%		70.8%	70.8%		70.8%	70.8%	
Maximum Green (s)	30.0	30.0		30.0	30.0		81.0	81.0		81.0	81.0	neni tin laten s
Yellow Time (s)	4.0	4.0		4.0	4.0		3.0	3.0		3.0	3.0	
All-Red Time (s)	1.0	1.0	99699699969969 996996999	1.0	1.0	4150498248491994.	1.0	1.0		1.0	1.0	2009-002-002-002 2009-002-002-002-002-002-002-002-002-002
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.0	44842949999999		5.0			4.0			4.0	8899-9999-999-94 1
Lead/Lag	lead	lead		Lead	Lead		Lag	Lag		Lao	Lao	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	99999 <u>1999999999999</u> 9999999999999999999	Yes	Yes	1990 - NGARANA ANG SA	Yes	Yes	androppin and a
Vehicle Extension (s)	28	2.8		28	28		26	26		26	2.6	
Minimum Gap (s)	3.0	3.0	988-1880-1886-888 1	30	30		30	30		3.0	3.0	coverages d
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	PARTERIARI M
Recall Mode	Min	Min		Min	Min		None	None		None	None	
Walk Time (s)	IVD1			and a second				S TANK	een an a Canadana			69033970979
Flash Dont Walk (e)												
Pedestrian Calls (#/hr)		2010221224399				er en					an sean sean a shi a	1995-9494
Vic Ratio		0 75			1 38			1 41			0.31	
Control Delay		53.4			233.2			211.1			94	
CONTROL DEIGY		00.4			200.2			611.1			7.7	

AM Peak NB Detour - Optimized 02/27/2020 Baseline EAM

Lanes, Volumes, Timings 17: West Wrentham Rd & Pine Swamp Rd (RI 114)

03/22/2020

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0			0.0			0.0			0.0	2003.50
Total Delay		53.4			233.2			211.1			9.4	
Queue Length 50th (ft)		240			~279			~1523			65	
Queue Length 95th (ft)		222			#349			#970			66	
Internal Link Dist (ft)		3240			7867			928			840	
Turn Bay Length (ft)												
Base Capacity (vph)		445			197			1042			719	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0		an in the track of the second second	0			0		-ma-sta Practa Astronometers	0	an a
Reduced v/c Ratio		0.75			1.38			1.41			0.31	
Intersection Summary	- 10 - 10 - 14 - 14 - 14 - 14 - 14 - 14		an an an			de stande						
Area Type: Oth	ıer											
Cycle Length: 120												
Actuated Cycle Length: 120												
Natural Cycle: 140												
Control Type: Actuated-Uncoor	dinated											
~ Volume exceeds capacity, of	queue is	theoretic	ally infinit	e.								
Queue shown is maximum a	after two	cycles.										
# 95th percentile volume exce	eds cap	acity, que	eue may	be longer								
Queue shown is maximum a	after two	cycles.										
Splits and Phases: 17: West	Wrentha	ım Rd & F	Pine Swa	mp Rd (R	RI 114)							

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Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	*	7	ሻ	♠	ሻ	শ
Traffic Volume (veh/h)	659	198	256	115	34	112
Future Volume (Veh/h)	659	198	256	115	34	112
Sign Control	Free			Free	Stop	
Grade	0%			0%	0%	
Peak Hour Factor	0.73	0.60	0.86	0.60	0.76	0.91
Hourly flow rate (vph)	903	330	298	192	45	123
Pedestrians Lane Width (ft)						
Walking Speed (ft/s)						
Percent Blockage						
Right turn flare (veh)						10
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked						
vC, conflicting volume			903		1691	903
vC1, stage 1 conf vol		8188 - 82 F F	69.69.69.69			
vC2, stage 2 conf vol			000		4004	000
VCu, unblocked vol			903		1691	903
tC, single (s)			4,1		b. 4	6.2
to, 2 stage (s)			00000000 0 0		0 F	
T⊢ (S)			2,2 co		3.0 07	ა.ა იი
pu queue iree %			00 750		۲۱ دی	00 224
			100		UΖ	JJ4
Direction, Lane #	EB 1	EB 2	WB 1	WB 2	NB 1	
Volume Total	903	330	298	192	168	THE OWNER OF THE OWNER
Volume Left	0	0	298	0	45	
Volume Right	0	330	0	0	123	
CSH	1/00	1700	753	1/00	230	
Volume to Capacity	0.53	0.19	0.40	0.11	0.73	
Queue Length 95th (ft)	0	0	48	0	124	
Control Delay (s)	0.0	U.U	12.9 D	U.U	57.3	
Lane LOS	<u>^</u> ^		B		- F - F	
Approach Delay (s)	U.U	er and an and a second	6.1		97.3 E	
Approach LOS					Г	
Intersection Summary						
Average Delay			7.1			
Intersection Capacity Utilization	ation		62.2%	IC	U Level o	of Service
Analysis Period (min)			15			

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		<u>.</u>			4 4+			4 4+			4	
Traffic Volume (vph)	0	306	43	236	552	0	260	0	120	113	174	38
Future Volume (vph)	0	306	43	236	552	0	260	0	120	113	174	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	13	13	13	13	12	12	12	12	12	12
Total Lost time (s)		4,0			4.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.98			1.00		영상 영상 영상 영	0.95			0.98	
Fit Protected		1.00			0.98			0.97			0.98	
Satd. Flow (prot)		1711			1823			1670			1730	
Flt Permitted	والمحاوية والمحاوية والمحاوية والمحاو	1.00			0.57		water base of straights	0.50			0.78	
Satd. Flow (perm)		1711			1051			871			1368	
Peak-hour factor, PHF	0.74	0.70	0.77	0.70	0.79	0.86	0.88	0.69	0.77	0.69	0.73	0.63
Adj. Flow (vph)	0	437	56	337	699	0	295	0	156	164	238	60
RTOR Reduction (vph)	0	4	0	0	0	0	0	16	0	0	5	0
Lane Group Flow (vph)	0	489	0	0	1036	0	0	435	0	0	457	0
Heavy Vehicles (%)	13%	13%	13%	6%	6%	6%	5%	5%	5%	6%	6%	6%
Turn Type	18 2 C	NA		Perm	ŇA		Perm	ŇA		Perm	NA	
Protected Phases		1			1 			2			2	1999 States and a state state
Permitted Phases	1			1			2			2		
Actuated Green, G (s)		72.0			72.0			39.0			39.0	
Effective Green, g (s)		/2.0			72.0			39.0			39,0	
Actuated g/C Ratio		0.60			0.60			0.32			0.32	
Clearance Lime (s)		4.0	0.3.3.5		4.0			5.0	61 SI 26 SI	50000	0.0	
Venicle Extension (s)		<u></u>			<u> </u>			3.0			0.U	
Lane Grp Cap (vph)		1026			630			283			444	6.8.5.1
V/s Ratio Prot		0.29			-0.00			-0 50			0.90	
v/s Ratio Perm		0.40			4 64			4 54			1.02	
WC Rallo		U.40			1.04 07.0			1,04			1.00	
Dragrassian Easter		10.4			24.0 1 MM			40.0 1 00			1 00	89881997 1
Incromontal Dolay d2		1.00			207.1			258.4	9103-83 B)		50.6	
Dolou (c)		13.7			321.1			200. 4 298.9			91 1	
Level of Service		- 10.7 B			521.1	S. (* 15.)*					F	
Approach Delay (s)		13.7			321.1			298.9			91.1	in an
Approach LOS		B			F			F			F	
, ppress, 100												
Intersection Summary												
HCM 2000 Control Delay			211.4	H	CM 2000	Level of	Service		F			
HCM 2000 Volume to Capacit	y ratio		1.61	_ _					~~~~			
Actuated Cycle Length (s)			120.0	୍ ରା	um of losi	ume (s)			9.0			
Intersection Capacity Utilizatio Analysis Period (min)	n Seren al la com		111.9% 15	IC	U Level (DI SELAICE			Н			

	٠	→	\mathbf{F}	∢	-		1	Ť	1	\	ţ	-
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4 >			ф-	_		44			4	
Traffic Volume (vph)	0	306	43	236	552	0	260	0	120	113	174	38
Future Volume (vph)	0	306	43	236	552	0	260	0	120	113	174	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	13	13	13	13	13	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		Q
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes		N SS 10 (S	Yes			Yes			Yes
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		1854			4162			1592			454	
Travel Time (s)		31.6			70.9			36.2			10.3	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.74	0.70	0.77	0.70	0.79	0.86	0.88	0.69	0.77	0.69	0.73	0.63
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	13%	13%	13%	6%	6%	6%	5%	5%	5%	6%	6%	6%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	493	0	0	1036	0	0	451	0	0	462	0
Turn Type		NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Detector Phase	1	1		1	1		2	2		2	2	
Switch Phase						6.4.6.7		41453 azərbayı				
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	14.0	14.0		14.0	14.0		15.0	15.0		15.0	15.0	
Total Split (s)	76.0	76.0		76.0	76.0		44.0	44.0		44.0	44.0	,
Total Split (%)	63.3%	63.3%		63.3%	63.3%		36.7%	36.7%		36.7%	36.7%	
Maximum Green (s)	72.0	72.0		72.0	72.0		39.0	39.0		39.0	39.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	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	
Total Lost Time (s)		4.0			4.0			5.0			5.0	
Lead/Lag	Lead	Lead	0.0.0.0	Lead	Lead	694646946	Lag	Lag		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes	a a management of the second	Yes	Yes	
Vehicle Extension (s)	2.6	2.6		2.6	2.6		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	None	None	3-3-5-5	None	None		Min	Min		Min	Min	
Walk Time (s)							C. S.			منعد الرابع الرار الروح إعام عرار مع ال		
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0.48			1.64			1.51			1.03	
Control Delay		15.1			320.3			275.2			89.9	

PM Peak NB Detour Only - Optimized 02/27/2020 Baseline EAM

Lanes, Volumes, Tir	nings			
1: Diamond Hill Rd ((RI 114) &	Nate Whipple	Hwy (RI	120)

03/22/2020

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0			0.0			0,0	6 21 57 22		0.0	
Total Delay		15.1			320.3			275.2			89.9	
Queue Length 50th (ft)		198			~1162			~476			~379	
Queue Length 95th (ft)		193			#1181			#463			#407	
Internal Link Dist (ft)		1774			4082			1512			374	
Turn Bay Length (ft)												
Base Capacity (vph)		1030			630			299		a 3 8 5	449	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0	una da secondo de secon		0			0			0	
Reduced v/c Ratio		0.48			1.64			1.51			1.03	
Intersection Summary								441				
Area Type: C	Other											
Cycle Length: 120												
Actuated Cycle Length: 120												
Natural Cycle: 150												
Control Type: Actuated-Unco	ordinated							9 19 19 19 1				
~ Volume exceeds capacity	r, queue is	theoretic	ally infinil	e.			, , , , , , , , , , , , , , , , , , ,	ana any farita di 1920 ang ang ang ang		······		
Queue shown is maximun	n after two	cycles.										
# 95th percentile volume ex	ceeds cap	bacity, que	eue may	be longei	•	ermane errandalten als bestal				eren antara antaria		
Queue shown is maximun	n after two	cycles.										

Splits and Phases: 1: Diamond Hill Rd (RI 114) & Nate Whipple Hwy (RI 120)

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/hs	44s	990 990

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03/22/2020

	5	₩	\	X	×	4	
Movement	WBL	WBR	SEL	SET	NWT	NWR	
Lane Configurations	Ŵ		ሻ	¥	*	7	
Traffic Volume (vph)	99	573	193	423	411	73	
Future Volume (vph)	99	573	193	423	411	73	ann an ar ann ann ann ann ann an ann an ann an
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width	13	13	11	13	12	12	
Total Lost time (s)	4.0		4.0	5.0	5.0	5.0	
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00	
Frt	0.88		1.00	1.00	1.00	0.85	
Flt Protected	0.99		0.95	1.00	1.00	1.00	
Satd. Flow (prot)	1701		1728	1944	1881	1599	
Flt Permitted	0,99		0.95	1.00	1.00	1.00	
Satd. Flow (perm)	1701		1728	1944	1881	1599	
Peak-hour factor, PHF	0.99	0.72	0.93	0.94	0.86	0.79	
Adj. Flow (vph)	100	796	208	450	478	92	
RTOR Reduction (vph)	307	0	0	0	0	32	
Lane Group Flow (vph)	589	0	208	450	478	60	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	
Turn Type	Prot		Prot	NA	NA	Prot	
Protected Phases	3		2	12	1	1	
Permitted Phases							
Actuated Green, G (s)	30.6		13.7	42.9	24.2	24.2	
Effective Green, g (s)	30.6		13.7	42.9	24.2	24.2	
Actuated g/C Ratio	0.38		0.17	0.53	0.30	0.30	
Clearance Time (s)	4.0		4.0		5.0	5.0	
Vehicle Extension (s)	2.6		2.6		2.6	2.6	
Lane Grp Cap (vph)	638		290	1023	558	474	
v/s Ratio Prot	c0.35		c0.12	0.23	c0.25	0.04	
v/s Ratio Perm							
v/c Ratio	0.92		0.72	0.44	0.86	0.13	, strategiert stratisk bet Scinitisk Steam in strate Science and Science and Science Steam Science Steam Science Steam Science Steam Science Steam Science Steam Science
Uniform Delay, d1	24.3		32.1	11,9	27.0	20.9	
Progression Factor	1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2	19.1		7.8	0.2	12.2	0.1	
Delay (s)	43.5		39.8	12.1	39.2	21.0	
Level of Service	D		D	В	D	С	
Approach Delay (s)	43.5			20.9	36.3		
Approach LOS	D			C	D		
Intersection Summary							
HCM 2000 Control Delay			34.5	H	CM 2000	Level of Service	e C
HCM 2000 Volume to Cap	pacity ratio		0.86				
Actuated Cycle Length (s)		81.5	Si	um of los	t time (s)	13.0
Intersection Capacity Utili	zation	mana tanàna mandritra d	84.0%	IC	U Level (of Service	E.
Analysis Period (min)			- 15				

03/22/2020

Barbelongs Wfg WB SED SET A.WF MWC ane Configurations Y Y A Y		s.	۳	\searrow	\mathbf{x}	×	4	
ane Configurations Y Y A Y Trailly Outine (vph) 99 573 193 423 411 73 Trailly Outine (vph) 99 573 193 423 411 73 deal Fow (vph) 1000 1900 1900 1900 1900 1900 Strage Length (ff) 0 0 0% 0% 0% 0% Strage Length (ff) 25 25	Lane Group	WBL	WBR	SEL	SET	NWT	NWR	
Traffic Volume (vph) 99 573 193 423 411 73 uture Volume (vph) 90 573 193 423 411 73 ane Width (ft) 13 13 110 1900 1900 1900 ane Width (ft) 13 13 11 13 12 12 Storage Length (ft) 0 0 0% 50 50 Storage Length (ft) 0 0 0% 50 50 Storage Langth (ft) 0 0 0% 55 55 Storage Langth (ft) 234 361 2230 55 Link Speed (mph) 30 35 35 55 Link Speed (mph) 30 361 2230 56 Garth Factor 100% 100% 100% 100% 100% Confl. Reds (fthr) 2348 381 2230 57 Storage Langth (ft) 0 0 0 0 0 Confl. Reds (fthr) 2344 381 2230 57 Garwh Facto	Lane Configurations	Ŵ		ሻ	¥	*	7	
Liture Volume (vph) 99 573 193 423 411 73 deal Föw (vphp) 1900 1900 1900 1900 1900 1900 1900 are Witch (ft) 13 13 11 13 12 12 Storage Lanes 4 0 1 1 1 1 Storage Lanes 4 0 1 1 1 1 Storage Lanes 1 0 1 1 1 1 1 Storage Lanes 1 0 1	Traffic Volume (vph)	99	573	193	423	411	73	
deal Flow (vphp) 1900 1900 1900 1900 1900 ane Width (ft) 13 11 13 12 12 Storage Length (ft) 0 0 % 0% 0% Storage Length (ft) 0 0 0 80 30 Storage Length (ft) 25 25 Yes Yes Yes Storage Length (ft) 248 381 2230 Yes Yes Yes Storage Length (ft) 2448 381 2230 Yes	Future Volume (vph)	99	573	193	423	411	73	
Lane Width (ft) 13 13 11 13 12 12 Grade (%) 0% 0% 0% 0% 0% Storage Length (ft) 0 0 0 80 Storage Length (ft) 25 25 1 Taper Length (ft) 25 25 1 Jink Deade (ft) 30 35 35 Jink Deade (ft) 248 381 2230 Travel Time (s) 53.4 7.4 43.4 Coff. Reds. (ft/hr) 0.99 0.72 0.93 0.94 0.06 0.79 Growth Factor 10.99 0.72 0.93 0.94 0.96 0.79 Growth Factor 10.9% 100% 100% 100% 100% Storage Length (ft) 0 0 0 0 0 0 Storage Length (ft) 0.99 0.72 0.93 0.94 0.95 0.79 Growth Factor 10.99 0.72 0.93 0.94 0.94 19 Storage Lengt (ft) 0 0 0	Ideal Flow (vohnl)	1900	1900	1900	1900	1900	1900	
Stade (%) 0% 0% 0% Storage Length (ft) 0 0 0 Storage Length (ft) 0 0 0 Tager Length (ft) 25 25 Right Turn on Red Yes Yes Ink Distance (ft) 2348 381 Travel Time (s) 53.4 7.4 43.4 Contil Peds (ft/hr) 63.4 7.4 43.4 Contil Peds (ft/hr) 0 0 0 0.79 Growth Factor 0.99 0.72 0.93 0.94 0.86 0.79 Growth Factor 10.9% 100% 100% 100% 10% 10% Bus Blockages (ft/hr) 0 0 0 0 0 0 Parking (ft/hr) 0 0 0 0 0 0 Stardel Lane Traffic (%) % % % % % Prote Led Phasos 3 2 1.2 1 1 Protected Phasos 3 2 1.0 1.0 1.0 Vinimum Split (s)	Lane Width (ff)	13	13	11	13	12	12	
Storage Length (ft) 0 0 0 80 Storage Length (ft) 25 25 1	Grade (%)	0%			0%	0%		
Strage Langth (II) 25 26 Taper Length (III) 25 25 Jink Speed (mph) 30 35 35 Jink Speed (mph) 30 35 35 Jink Distance (III) 2349 381 2230 Travel Time (s) 53.4 7.4 43.4 Confl. Peeds, f#hr) Peedk Hour Factor 100% 100% 100% Confl. Peeds, f#hr) Peedk Hour Factor 100% 100% 100% 100% Strowth Factor 100% 100% 100% 100% 100% 100% Bas Biockages (#hri) 0 0 0 0 0 0 0 Parking (#hri) 0% 0% 0% 0% 5 52 Prote Prot Prot Prot NA Prot Prot Prot Parmited Phases 3 2 12 1 1 Switch Phase 3 2 12 1 1 Switch Phase	Storage Length (ft)	0	0	0			80	
Taper Length (th) 25 25 Right Turn on Red Yes Yes Yes Tave Time (s) 0.34 35 35 Jink Distance (th) 2348 381 2230 Travel Time (s) 53.4 7.4 43.4 Confl. Peds, (#/m) 200 100% 100% 100% Confl. Peds, (#/m) 200 0.99 0.72 0.33 0.94 0.86 0.79 Sorwh Factor 0.99 0.72 0.33 0.94 0.86 0.79 Sorwh Factor 100% 100% 100% 100% 100% 100% Bis Blockages (#/m) 0 0 0 0 0 0 0 Vide Biock Traffic (%) 0% 0% 0% 0% 0% 0% Jum Type Prot Prot NA NA Prot Prot Parking (#/m) 10.0 5.0 10.0 10.0 10.0 10.0 Unarrey Plases <	Storage Lanes	1	ñ	<u> </u>			Ĩ	
Construction Yes Yes Link Speed (mph) 30 35 35 Link Distance (th) 2348 381 2230 Travel Time (s) 53.4 7.4 43.4 Confl. Bikes (kflnr) Confl. Bikes (kflnr) Confl. Bikes (kflnr) Confl. Bikes (kflnr) Peak Hour Factor 0.99 0.72 0.93 0.94 0.86 0.79 Growth Factor 100% 100% 100% 100% 100% 100% Bus Blockages (kflnr) 0 0 0 0 0 0 Parking (kflnr) 0% 0% 0% 0% 0% 0% Utin Type Prot Prot Prot NA NA Prot Protected Phases 3 2 1.2 1 1 Permitted Phases	Taper Length (ft)	25	89.999899989 8 9999	25		68892086938		
Number 100 100 30 35 35 Link Distance (II) 2348 381 2230 Travel Time (s) 53.4 7.4 43.4 Confl. Peds; (#Irr) 200 100% 100% 100% Confl. Peds; (#Irr) 0.99 0.72 0.93 0.94 0.86 0.79 Sorwh Factor 100% 100% 100% 100% 100% 100% Sorwh Factor 100% 100% 100% 100% 100% 100% Heavy Vehicles (%) 1% 1% 1% 1% 1% 1% Bus Blockages (#hr) 0 0 0 0 0 0 Aler Alex Traffic (%) 0% 0% 0% 9% 9% Shared Lane Traffic (%) 0% 0% 0% 9% 9% Detockor Phase 3 2 1 1 1 Prinited Phase 3 2 12 1 1 Detotor P	Right Turn on Red		Yes				Yes	
Link Option (III) 2348 381 223 Trave Time (s) 53.4 7.4 43.4 Confl. Peds (#/hr) 0.01 0.86 0.79 Strowth Factor 100% 100% 100% 100% Peak Hour Factor 100% 100% 100% 100% Peak Hour Factor 100% 100% 100% 100% Strowth Factor 100% 100% 100% 100% Bus Blockages (#hr) 0 0 0 0 0 Praking (#hr) 0 0 0 0 0 0 Shared Lane Traffic (%) 0% 0% 0% 0% Strowth Factor Prote Traffic (%) 0 2 1 1 1 Protected Phases 3 2 12 1 1 Permited Phases 3 2 12 1 1 Switch Phase 3 2 12 1 1 Switch Phase 3 2 12 1 1 Polector Phase 3	Link Snood (mnh)	ସମ	1.00		35	25	100	
Lando Junizo (10) Lino Lino Confi. Decks. (#/hr) Confi. Decks. (#/hr) Confi. Decks. (#/hr) Down 100% Peak Hour Tactor 0.99 0.72 0.93 0.94 0.86 0.79 Growth Factor 100% 100% 100% 100% 100% 100% Bickages (#/hr) 0 0 0 0 0 0 Parking (#/hr) 0 0 0 0 0 0 Parking (#/hr) 0 0 0 0 0 0 Parking (#/hr) 0 0 0 0 0 0 Lane Group Flow (vph) 895 0 208 450 478 92 Trun Type Prot Prot NA NA Prot Protected Phases 3 2 12 1 1 Permitted Phases 3 2 12 1 1 Vinimum Initial (\$) 10.0 5.0 15.0 15.0 15.0 Total Split (\$) 3.0 3.0	Link Dietonco (ff)	2248			281	2230		
Index Fine (s) 0.91 0.91 1.9 1.9 1.9 1.0 <td>Traval Time (e)</td> <td>52 /</td> <td></td> <td></td> <td>7 /</td> <td>42.00 13.1</td> <td></td> <td></td>	Traval Time (e)	52 /			7 /	42.00 13.1		
Confine Received (Whr) Peak Hour Factor 0.99 0.72 0.93 0.94 0.86 0.79 Growth Factor 100% 100% 100% 100% 100% 100% Heavy Vehicles (%) 1% 1% 1% 1% 1% 1% Bus Blockages (#hr) 0 0 0 0 0 0 Parking (#hr) 0 0 0 0 0 0 0 Alde Stages (#hr) 0 0 0 0 0 0 0 Prive Prot Prot NA NA Prot Prot Prot Protected Phases 3 2 12 1 1 1 Protector Phase 3 2 12 1	Confl Dode (#/br)	JJ.H			1.4	40.4		
Control Direct (init) Desk Hour Factor 0.99 0.72 0.93 0.94 0.86 0.79 Growth Factor 100% 100% 100% 100% 100% 100% Biokages (#hr) 0 0 0 0 0 0 Parking (#mi) 0% 0% 0% 0% 0% Shared Lane Traffic (%) 0% 0% 0% 0% Shared Lane Traffic (%) 28 450 478 92 Turn Type Prot Prot NA NA Prot Protecled Phases 3 2 1 1 Permitted Phases	Confl. Dikog (#/III)							
Frack Poul Factor 0.93 0.72 0.93 0.94 0.00% Fourth Factor 100% 100% 100% 100% 100% 100% Bus Blockages (#/hr) 0 0 0 0 0 0 Parking (#/hr) 0 0 0 0 0 0 0 Shared Lane Traffic (%) 0% 0% 0% 0% 0% 0% MideBlock Traffic (%) 0% 0% 0% 0% 0% 0% Turn Type Prot Prot NA NA Prot Prot NA Prot Protected Phases 3 2 12 1 1 1 Switch Phase 100 10.0 <	Cornii, Dikes (#/11)	0.00	0 70	0.02	0.04	0.06	0.70	
Grown Factor Tool% Tool% Tool% Tool% Tool% Bay Vehicles (%) 1% 1% 1% 1% 1% Bus Blockages (#/hr) 0 0 0 0 0 Parking (#hr) 0 0 0 0 0 0 Parking (Employ 0 0 0 0 0 0 Parking (#hr) 0 0 0 0 0 0 Shared Lane Traffic (%) 0% 0% 0% 0% 0% Protected Phases 3 2 1.2 1 1 Perolector Phase 3 2 1.2 1 1 Switch Phase	Peak Hour Facior	400%	4000/	4000/	4000/	40.00	40.0%	
reavy vehicles (%) 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1% 1%		100% 40/	100%	100%	100%	100%	100%	
Bus Bickages (#/m) 0 0 0 0 0 0 0 Parking (#/m) Mid-Block Traffic (%) 0% 0% 0% 0% Shared Lane Traffic (%) 0 0 0 0 478 92 Furn Type Prot Prot NA NA Prot Protected Phases 3 2 1.2 1 1 Permitted Phases 0 0.0 10.0 10.0 10.0 Winimum Initial (s) 10.0 5.0 10.0 10.0 10.0 Minimum Split (s) 14.0 9.0 15.0 15.0 15.0 Total Split (%) 43.3% 22.2% 34.4% 34.4% Maximum Green (s) 3.0 3.0 4.0 4.0 All-Red Time (s) 1.0 1.0 1.0 1.0 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 Total Lost Time (s) 4.0 4.0 3.0 3.0 Lead-Lag Optimize? Yes Yes Yes Yes Vehicle Extensi	Heavy venicles (%)	1%	1%	1%	1%	1%	1%	
Parking (#mr) Mid-Block Traffic (%) Lane Group Flow (vph) 896 0 208 450 478 92 Turn Type Prot Prot NA NA Prot Protected Phases 3 2 12 1 1 Permitted Phases Detector Phase 3 2 12 1 1 Switch Phase 3 2 12 1 1 Switch Phase 3 2 12 1 0 Minimum Initial (s) 10.0 5.0 10.0 10.0 Minimum Split (s) 14.0 9.0 15.0 15.0 Total Split (s) 39.0 20.0 31.0 31.0 Total Split (s) 39.0 20.0 31.0 31.0 Total Split (s) 30.0 3.0 4.0 4.0 All-Red Time (s) 3.0 3.0 4.0 4.0 All-Red Time (s) 1.0 1.0 1.0 1.0 Last Time Adjust (s) 0.0 0.0 0.0 Total Lost Time (s) 4.0 4.0 5.0 Lead/Lag U Lag Lead Lead Lead/Lag U Lag Lead Lead Lead/Lag Optimize? Yes Yes Yes Yelicle Extension (s) 2.6 2.6 2.6 2.6 2.6 Yelicle Extension (s) 2.6 2.6 2.6 2.6 Yelicle Extension (s) 2.6 2.6 2.6 2.6 Yelicle Minimum Split (s) 0.0 0.0 0.0 Time Before Reduce (s) 0.0 0.0 None Min Min Walk Time (s) Flash Dont Walk (s) Pedestrian Calls (#/nr) v/c Ratio 0.95 0.72 0.45 0.86 0.18 Control Delay 32.6 49.3 15.1 46.0 15.1	Bus Blockages (#/nr)	U	U	U	U	U	U	
Mid-Biock Train (%) 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0% 0%	Parking (#/nr)	^ //			00/	08/		
Shared Lane Traffic (%) 896 0 208 450 478 92 Lane Group Flow (vph) 896 0 208 450 478 92 Protected Phases 3 2 12 1 1 Permitted Phases 3 2 12 1 1 Switch Phase	MIG-BIOCK I FATTIC (%)	U%			U%	U%		
Lane Group Flow (vph) 895 0 208 450 478 92 Furn Type Prot Prot NA NA Prot Protected Phases 3 2 12 1 1 Permitted Phases 3 2 12 1 1 Switch Phase 3 2 12 1 1 Winimum Split (s) 10.0 5.0 10.0 10.0 10.0 Total Split (s) 39.0 20.0 31.0 31.0 31.0 Total Split (s) 35.0 16.0 26.0 26.0 26.0 Yellow Time (s) 3.0 3.0 4.0 4.0 AlRed Time (s) 4.0 AlR-Rd Time (s) 1.0 1.0 1.0 1.0 1.0 1.0 Lead/Lag Dptimize? Yes Yes Yes Yes Ye	Shared Lane Traffic (%)				450	470	<u>^</u>	
Turn Type Prot Prot NA NA Prot Protected Phases 3 2 12 1 1 Periotted Phases 3 2 12 1 1 Detector Phase 3 2 12 1 1 Switch Phase 3 2 10 10.0 10.0 Minimum Split (s) 14.0 9.0 15.0 15.0 15.0 Total Split (%) 43.3% 22.2% 34.4% 34.4% Maximum Green (s) 3.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	Lane Group Flow (vph)	896	0 Mersenskov	208	450	4/8	92	
Protected Phases 3 2 1 2 1 1 Permitted Phases 3 2 1 2 1 1 Detector Phase 3 2 1 2 1 1 Winimum Initial (s) 10.0 5.0 10.0 10.0 Minimum Initial (s) 14.0 9.0 15.0 15.0 Total Split (s) 39.0 20.0 31.0 31.0 Total Split (%) 43.3% 22.2% 34.4% 34.4% Maximum Green (s) 35.0 16.0 26.0 26.0 Yellow Time (s) 3.0 3.0 4.0 4.0 Al.Red Time (s) 1.0 1.0 1.0 1.0 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 Load Last Time (s) 4.0 4.0 5.0 5.0 Lead/Lag Lag Lead Lead Lead Lead-Lag Optimize? Yes Yes Yes Vehicle Extension (s) 2.6 2.6 2.6 Minimum Gap (s) 3.0 3.0 3.0	Turn Type	Prot		Prot	NA	NA	Prot	
Permitted Phases 3 2 1 2 1 Switch Phase 3 2 1 2 1 1 Switch Phase 3 2 1 2 1 1 Switch Phase 3 2 1 2 1 1 Switch Phase 3 10.0 5.0 10.0 10.0 Minimum Initial (s) 14.0 9.0 15.0 15.0 Total Split (s) 39.0 20.0 31.0 31.0 Total Split (s) 43.3% 22.2% 34.4% 34.4% Maximum Green (s) 30.0 16.0 26.0 26.0 Yellow Time (s) 1.0 1.0 1.0 1.0 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 Lost Time Adjust (s) 2.6 2.6 2.6 2.6 Lead-Lag Optimize? Yes Yes Yes Yes Vehicle Extension (s) 2.6 2.6 2.6 2.6 Minimum Gap (s) 3.0 3.0 3.0 3.0 3.0 Time Defore Reduce (s) <td>Protected Phases</td> <td>3</td> <td></td> <td>2</td> <td>12</td> <td>1</td> <td>1</td> <td></td>	Protected Phases	3		2	12	1	1	
Detector Phase 3 2 12 1 1 Switch Phase	Permitted Phases							
Switch Phase Immum Initial (s) 10.0 5.0 10.0 10.0 Minimum Split (s) 14.0 9.0 15.0 15.0 Total Split (s) 39.0 20.0 31.0 31.0 Total Split (s) 43.3% 22.2% 34.4% Maximum Green (s) 35.0 16.0 26.0 Yellow Time (s) 3.0 3.0 4.0 4.0 4.0 All-Red Time (s) 1.0 1.0 1.0 1.0 1.0 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 1.0 1.0 Lead-Lag Optimize? Yes	Detector Phase	3		2	12	1 	1	
Minimum Initial (s) 10.0 5.0 10.0 10.0 Minimum Split (s) 14.0 9.0 15.0 15.0 Total Split (s) 39.0 20.0 31.0 31.0 Total Split (%) 43.3% 22.2% 34.4% 34.4% Maximum Green (s) 35.0 16.0 26.0 26.0 Yellow Time (s) 3.0 3.0 4.0 4.0 All-Red Time (s) 1.0 1.0 1.0 1.0 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 Total Lost Time (s) 4.0 4.0 5.0 5.0 Lead/Lag Lag Lead Lead Lead-Lag Optimize? Yes Yes Yes Vehicle Extension (s) 2.6 2.6 2.6 2.6 Minimum Gap (s) 3.0 3.0 3.0 3.0 3.0 Time Before Reduce (s) 0.0 0.0 0.0 0.0 0.0 Recall Mode None Min Min Min Min Walk Time (s) S S	Switch Phase	149 (S. 1614)						
Minimum Split (s) 14.0 9.0 15.0 15.0 Total Split (s) 39.0 20.0 31.0 31.0 Total Split (%) 43.3% 22.2% 34.4% 34.4% Maximum Green (s) 35.0 16.0 26.0 26.0 Yellow Time (s) 3.0 3.0 4.0 4.0 All-Red Time (s) 1.0 1.0 1.0 1.0 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 Lost Time (s) 4.0 4.0 5.0 5.0 Lead/Lag Lag Lead Lead Lead Lag Lead Lead Lead Lag Optimize? Yes Yes Vehicle Extension (s) 2.6 2.6 2.6 Jimmum Gap (s) 3.0 3.0 3.0 3.0 Time To Reduce (s) 0.0 0.0 0.0 0.0 Recall Mode None Min Min Walk Time (s) Flash Dont Walk (s) Pedestrian Calls (#/hr) V/c Ratio 0.95 0.72 0.45 0.86	Minimum Initial (s)	10.0		5.0		10.0	10.0	
Total Split (s) 39.0 20.0 31.0 31.0 Total Split (%) 43.3% 22.2% 34.4% 34.4% Maximum Green (s) 35.0 16.0 26.0 26.0 Yellow Time (s) 3.0 3.0 4.0 4.0 All-Red Time (s) 1.0 1.0 1.0 1.0 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 Total Lost Time (s) 4.0 4.0 5.0 5.0 Lead/Lag Lag Lead Lead Lead-Lag Optimize? Yes Yes Yes Vehicle Extension (s) 2.6 2.6 2.6 Minimum Gap (s) 3.0 3.0 3.0 Time Before Reduce (s) 0.0 0.0 0.0 Time To Reduce (s) 0.0 0.0 0.0 Recall Mode None Min Min Walk Time (s) Flash Dont Walk (s) Pedestrian Calls (#hr) V/c Ratio 0.95 0.72 0.45 0.86 0.18	Minimum Split (s)	14.0		9.0		15.0	15.0	
Total Split (%) 43.3% 22.2% 34.4% 34.4% Maximum Green (s) 35.0 16.0 26.0 26.0 Yellow Time (s) 3.0 3.0 4.0 4.0 All-Red Time (s) 1.0 1.0 1.0 1.0 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 Total Lost Time (s) 4.0 4.0 5.0 5.0 Lead/Lag Lag Lead Lead Lead-Lag Optimize? Yes Yes Yes Vehicle Extension (s) 2.6 2.6 2.6 2.6 Minimum Gap (s) 3.0 3.0 3.0 3.0 3.0 Time Before Reduce (s) 0.0 0.0 0.0 0.0 0.0 Time To Reduce (s) 0.0 0.0 0.0 0.0 0.0 Recall Mode None None Min Min Walk Time (s) S 0.72 0.45 0.86 0.18 Pedestrian Calls (#/hr) V/c Ratio 0.95 0.72 0.45 0.86 0.18	Total Split (s)	39.0		20.0		31.0	31.0	
Maximum Green (s) 35.0 16.0 26.0 26.0 Yellow Time (s) 3.0 3.0 4.0 4.0 All-Red Time (s) 1.0 1.0 1.0 1.0 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 Total Lost Time (s) 4.0 4.0 5.0 5.0 Lead/Lag Lag Lead Lead Lead-Lag Optimize? Yes Yes Yes Vehicle Extension (s) 2.6 2.6 2.6 Jimmum Gap (s) 3.0 3.0 3.0 3.0 Time Before Reduce (s) 0.0 0.0 0.0 0.0 Time To Reduce (s) 0.0 0.0 0.0 0.0 Walk Time (s) Flash Dont Walk (s) Pedestrian Calls (#/hr) V/c Ratio 0.95 0.72 0.45 0.86 0.18 Control Delay 32.6 49.3 15.1 46.0 15.1 15.1	Total Split (%)	43.3%		22.2%		34.4%	34.4%	
Yellow Time (s) 3.0 3.0 4.0 4.0 All-Red Time (s) 1.0 1.0 1.0 1.0 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 Total Lost Time (s) 4.0 4.0 5.0 5.0 Lead/Lag Lag Lead Lead Lead-Lag Optimize? Yes Yes Yes Vehicle Extension (s) 2.6 2.6 2.6 2.6 Minimum Gap (s) 3.0 3.0 3.0 3.0 Time Before Reduce (s) 0.0 0.0 0.0 0.0 Time To Reduce (s) 0.0 0.0 0.0 0.0 Recall Mode None Min Min Walk Time (s) Flash Dont Walk (s) Pedestrian Calls (#/hr) V/c Ratio 0.95 0.72 0.45 0.86 0.18 Control Delay 32.6 49.3 15.1 46.0 15.1	Maximum Green (s)	35.0		16.0		26.0	26.0	י אין אין אין אין אין אין אין אין אין אי
All-Red Time (s) 1.0 1.0 1.0 1.0 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 Total Lost Time (s) 4.0 4.0 5.0 5.0 Lead/Lag Lag Lead Lead Lead-Lag Optimize? Yes Yes Yes Vehicle Extension (s) 2.6 2.6 2.6 2.6 Minimum Gap (s) 3.0 3.0 3.0 3.0 Time Before Reduce (s) 0.0 0.0 0.0 0.0 Recall Mode None Min Min Walk Time (s) Flash Dont Walk (s) Pedestrian Calls (#/hr) V/c Ratio 0.95 0.72 0.45 0.86 0.18 Control Delay 32.6 49.3 15.1 46.0 15.1 46.0	Yellow Time (s)	3.0		3.0		4.0	4.0	
Lost Time Adjust (s) 0.0 0.0 0.0 0.0 Total Lost Time (s) 4.0 4.0 5.0 5.0 Lead/Lag Lag Lead Lead Lead-Lag Optimize? Yes Yes Yes Vehicle Extension (s) 2.6 2.6 2.6 2.6 Minimum Gap (s) 3.0 3.0 3.0 3.0 Time Before Reduce (s) 0.0 0.0 0.0 0.0 Time To Reduce (s) 0.0 0.0 0.0 0.0 Recall Mode None Min Min Min Walk Time (s) Flash Dont Walk (s) Pedestrian Calls (#/hr) V/x Ratio 0.95 0.72 0.45 0.86 0.18 Control Delay 32.6 49.3 15.1 46.0 15.1 15.1	All-Red Time (s)	1.0		1.0		1.0	1.0	
Total Lost Time (s) 4.0 5.0 5.0 Lead/Lag Lag Lead Lead Lead-Lag Optimize? Yes Yes Yes Vehicle Extension (s) 2.6 2.6 2.6 2.6 Minimum Gap (s) 3.0 3.0 3.0 3.0 3.0 Time Before Reduce (s) 0.0 0.0 0.0 0.0 0.0 Time To Reduce (s) 0.0 0.0 0.0 0.0 0.0 0.0 Recall Mode None None Min Min Min Min Walk Time (s) Flash Dont Walk (s) Pedestrian Calls (#/hr) V/2 0.45 0.86 0.18 Control Delay 32.6 49.3 15.1 46.0 15.1 15.1	Lost Time Adjust (s)	0.0		0.0		0.0	0.0	
Lead/Lag Lag Lead Lead-Lag Optimize? Yes Yes Vehicle Extension (s) 2.6 2.6 2.6 Minimum Gap (s) 3.0 3.0 3.0 3.0 Time Before Reduce (s) 0.0 0.0 0.0 0.0 Time To Reduce (s) 0.0 0.0 0.0 0.0 Recall Mode None Min Min Walk Time (s) Flash Dont Walk (s) Pedestrian Calls (#/hr) V/c Ratio 0.95 0.72 0.45 0.86 0.18 Control Delay 32.6 49.3 15.1 46.0 15.1	Total Lost Time (s)	4.0		4.0		5.0	5.0	
Lead-Lag Optimize? Yes Yes Yes Vehicle Extension (s) 2.6 2.6 2.6 2.6 Minimum Gap (s) 3.0 3.0 3.0 3.0 Time Before Reduce (s) 0.0 0.0 0.0 0.0 Time To Reduce (s) 0.0 0.0 0.0 0.0 Recall Mode None Min Min Walk Time (s) Flash Dont Walk (s) Pedestrian Calls (#/hr) v/c Ratio 0.95 0.72 0.45 0.86 0.18 Control Delay 32.6 49.3 15.1 46.0 15.1	Lead/Lag			Lag		Lead	Lead	and the concerned of the long of the Second attents
Vehicle Extension (s) 2.6 0.72 0.45 0.86 0.18 2.6 2.6 2.6 2.6 2.6 2.6 2.6 2.6 2.6 2.6 2.6 2.6 2.6 2.6 2.6 2.6 2.6 2.6 2.6 <td>Lead-Lag Optimize?</td> <td></td> <td></td> <td>Yes</td> <td></td> <td>Yes</td> <td>Yes</td> <td></td>	Lead-Lag Optimize?			Yes		Yes	Yes	
Minimum Gap (s) 3.0 3.0 3.0 3.0 Time Before Reduce (s) 0.0 0.0 0.0 0.0 Time To Reduce (s) 0.0 0.0 0.0 0.0 Recall Mode None Min Min Walk Time (s) Flash Dont Walk (s) Pedestrian Calls (#/hr) v/c Ratio 0.95 0.72 0.45 0.86 0.18 Control Delay 32.6 49.3 15.1 46.0 15.1	Vehicle Extension (s)	2.6		2.6		2.6	2.6	
Time Before Reduce (s) 0.0 0.0 0.0 0.0 Time To Reduce (s) 0.0 0.0 0.0 0.0 Recall Mode None Min Min Walk Time (s) Flash Dont Walk (s) Pedestrian Calls (#/hr) Vic Ratio 0.95 0.72 0.45 0.86 0.18 Control Delay 32.6 49.3 15.1 46.0 15.1	Minimum Gap (s)	3.0		3.0		3.0	3.0	
Time To Reduce (s) 0.0 0.0 0.0 0.0 Recall Mode None Min Min Walk Time (s) Flash Dont Walk (s) Flash Dont Walk (s) Flash Calls (#/hr) Vic Ratio 0.95 0.72 0.45 0.86 0.18 Control Delay 32.6 49.3 15.1 46.0 15.1	Time Before Reduce (s)	0.0		0.0		0.0	0.0	
Recall Mode None None Min Min Walk Time (s) Flash Dont Walk (s) Pedestrian Calls (#/hr) v/c Ratio 0.95 0.72 0.45 0.86 0.18 Control Delay 32.6 49.3 15.1 46.0 15.1	Time To Reduce (s)	0.0	 assesses and the second se second second sec	0.0		0.0	0.0	
Walk Time (s) Flash Dont Walk (s) Pedestrian Calls (#/hr) v/c Ratio 0.95 0.72 0.45 0.86 0.18 Control Delay 32.6 49.3 15.1 46.0 15.1	Recall Mode	None		None		Min	Min	
Flash Dont Walk (s) Pedestrian Calls (#/hr) v/c Ratio 0.95 0.72 0.45 0.86 0.18 Control Delay 32.6 49.3 15.1 46.0 15.1	Walk Time (s)		autoria (1940-1979) Altoria	1 1 1			and a stand of the Barry	
Pedestrian Calls (#/hr) V/c Ratio 0.95 0.72 0.45 0.86 0.18 Control Delay 32,6 49.3 15.1 46.0 15.1	Flash Dont Walk (s)							
v/c Ratio 0.95 0.72 0.45 0.86 0.18 Control Delay 32.6 49.3 15.1 46.0 15.1	Pedestrian Calls (#/hr)		aan good ah	-servetsensets	e are 2012 145 547	neo ontro tetta 1966		
Control Delay 32.6 49.3 15.1 46.0 15.1	v/c Ratio	0.95		0.72	0.45	0.86	0.18	
	Control Delay	32.6	astaticti (1911) B	49.3	15.1	46.0	15.1	

PM Peak NB Detour Only - Optimized 02/27/2020 Baseline EAM

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03/22/2020

	A		¥	X			
Lane Group	WBL	WBR	SEL	SET	NWT	NWR	
Queue Delay	0.0		0.0	0.0	0.0	0,0	
Total Delay	32.6		49.3	15.1	46.0	15.1	
Queue Length 50th (ft)	249		112	155	258	20	
Queue Length 95th (ft)	#540		#201	231	#400	46	
Internal Link Dist (ft)	2268			301	2150		
Turn Bay Length (ft)						80	
Base Capacity (vph)	1024		348	1064	616	553	
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	0.88		0.60	0.42	0.78	0.17	
Intersection Summary					-		
Area Type:	Other						
Cycle Length: 90							
Actuated Cycle Length: 8	1.9						

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Natural Cycle: 90

Control Type: Actuated-Uncoordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 6: Mendon Rd (RI 122) & Nate Whipple Hwy (RI 120)

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HCM Signalized Intersection Capacity Analysis 7: Plaza Driveway/West Wrentham Rd & Mendon Rd (RI 122)

03/22/2020

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Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations					()-			4		ሻ	1	
Traffic Volume (vph)	3	0	2	164	0	119	191	342	3	7	342	483
Future Volume (vph)	3	0	2	164	0	119	191	342	3	7	342	483
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	16	16	16	12	12	12	14	14	12	11	14	14
Total Lost time (s)		4.0			4.0			5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00			1.00		1.00	1.00	
Frt		0.93			0.95			1.00		1.00	0.91	
Flt Protected		0.98			0.97			0.98		0.95	1.00	
Satd. Flow (prot)		1959			1715			1945	9.2.3.2	1728	1834	
Flt Permitted		0.91			0.80			0.33		0.43	1.00	
Satd. Flow (perm)		1821			1424			657		788	1834	
Peak-hour factor, PHF	0.75	0.92	0,50	0.79	0.92	0.96	0.77	0.94	0.36	0.44	0.86	0.90
Adj. Flow (vph)	4	0	4	208	0	124	248	364	8	16	398	537
RTOR Reduction (vph)	0	6	0	0	18	0	0	0	0	0	41	0
Lane Group Flow (vph)	0	2	0	0	314	0	0	620	0	16	894	0
Heavy Vehicles (%)	0%	0%	0%	2%	2%	2%	2%	2%	2%	1%	1%	1%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	a to the second second second second second second	2			2			1	المراجع والمراجع والمراجع والمحر والمحرب والمراجع		1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)		23.0			23.0			88.0		88.0	88.0	10-11-1-11-11-11-1
Effective Green, g (s)		23.0			23.0			88.0		88.0	88.0	
Actuated g/C Ratio		0.19	n waar waara waarsa dalay		0.19		national sectors as we	0.73	ana ana ang ang ang ang ang ang ang ang	0.73	0.73	
Clearance Time (s)		4.0			4.0		037693818	5.0		5,0	5.0	
Vehicle Extension (s)		2.6	entres messers messense letter		2.6			2.8	****	2.8	2.8	
Lane Grp Cap (vph)		349			272			481		577	1344	
v/s Ratio Prot											0.49	
v/s Ratio Perm		0.00			c0.22			c0.94		0.02		
v/c Ratio		0.00			1.16			1.29		0.03	0.67	
Uniform Delay, d1		39.2			48.5			16.0		4.4	8.3	
Progression Factor		1.00			1.00	ostastastas		1.00		1.00	1.00	333/JA/35/73
Incremental Delay, d2		0.0	8-8-8-8		103.2			144.8		0.0	1.2	
Delay (s)		39,Z			101.7			160.8		4. 4	9.5	
Level of Service		20 0			454 7			100.0		Å	A 0.5	
Approach LOC		ა შ .2 ნ			IUI.7 C						9.U A	
Approach LOS		U			Г						A	
Intersection Summary							dir.					
HCM 2000 Control Delay	2895		83.4	H	CM 2000	Level of	Service		F			
HCM 2000 Volume to Capac	city ratio		1.26	en and and also for the second		na 200 kalendar olehan da manan	a special particular design from the	nin en gi entre sente en en en	and and the state of the state	an Seat (1993) an Arriston	112 Martin Dage Official Sciences	0.0000000000000
Actuated Cycle Length (s)		9 (S. 8) (S.	120.0	Si	um of los	t time (s)			9.0			
Intersection Capacity Utilizat	lion	•	107.4%	lC	U Level (of Service	•		G			1997 (Martin 1997 (Martin)
Analysis Period (min)			15									

Lanes, Volumes, Timings 7: Plaza Driveway/West Wrentham Rd & Mendon Rd (RI 122)

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Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		- ↔			4			\$		ኻ	4Î	
Traffic Volume (vph)	3	0	2	164	0	119	191	342	3	7	342	483
Future Volume (vph)	3	0	2	164	0	119	191	342	3	7	342	483
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900`	1900
Lane Width (ft)	16	16	16	12	12	12	14	14	12	11	14	14
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	1		0
Taper Length (ft)	25			25			25		1000 HILL IN 1991 CO. C. 1997 C	25		
Right Turn on Red	948-12749.		Yes			Yes			Yes			Yes
Link Speed (mph)		25			35			35			35	
Link Distance (ft)		209			662			1525			777	
Travel Time (s)		5.7			12.9			29.7			15.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.75	0.92	0.50	0.79	0.92	0.96	0.77	0.94	0.36	0.44	0.86	0.90
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	0%	0%	0%	2%	2%	2%	2%	2%	2%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)	0.0000000000000000000000000000000000000	0%	tribur ang ang ang ang ang		0%	inalitativid Alexandra alexand		0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	8	0	0	332	0	0	620	0	16	935	0
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases	2014 - 100 A. 142 A	2		1999 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	2			1			1	
Permitted Phases	2			2	(† 1875) 1976)		1			1		
Detector Phase	2	2		2	2		1	1		1	1	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	14.0	14.0		14.0	14.0		15.0	15.0		15.0	15.0	
Total Split (s)	27.0	27.0		27.0	27.0		93.0	93.0		93.0	93.0	
Total Split (%)	22.5%	22.5%		22.5%	22.5%		77.5%	77.5%		77.5%	77.5%	
Maximum Green (s)	23.0	23.0		23.0	23.0		88.0	88.0		88.0	88.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	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			5.0		5.0	5.0	
Lead/Lag	Lag	Lag		Lag	Lag		Lead	Lead		Lead	Lead	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.6	2.6		2.6	2.6		2.8	2.8		2.8	2.8	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0,0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	6143 B)
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		0,02			1.14			1.29	6141646	0.03	0.68	
Control Delay		7.6			138.8			165.1		4.6	9.7	

PM Peak NB Detour Only - Optimized 02/27/2020 Baseline EAM

Lanes, Volumes, Timings	/	
7: Plaza Driveway/West Wrentham Rd	& Mendon Rd	(RI 122)

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Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Queue Delay		0.0		100 (1997) <u>19</u> 67 (1	0.0	99 99 98 199		0.0		0.0	0.0	
Total Delay		7.6			138.8			165.1		4.6	9.7	
Queue Length 50th (ft)		0			~287			~615		3	276	
Queue Length 95th (ft)		8			#474			#462		4	357	
Internal Link Dist (ft)		129			582			1445			697	
Turn Bay Length (ft)												
Base Capacity (vph)		363			290			481		577	1385	
Starvation Cap Reductn		0	a ann a tha an tha an tha		0			0		0	0	
Spillback Cap Reductn		0	9 . S. IS A		0			0		0	0	
Storage Cap Reductn		0			0	antormaria escritoria.		0		0	0	a constant in the second
Reduced v/c Ratio		0,02			1.14			1,29		0.03	0.68	
Intersection Summary						19 (s. 19).						
Area Type: C	Other		8 A A A						51-61-69-6			
Cycle Length: 120												
Actuated Cycle Length: 120												
Natural Cycle: 140												5-11-11-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1-1
Control Type: Actuated-Unco	ordinated											
 Volume exceeds capacity 	/, queue is	theoretic	ally infinit	e.				sta da teorra de Alexander Juli				
Queue shown is maximun	n after two	cycles.										
# 95th percentile volume ex	xceeds cap	pacity, que	eue may l	be longer		son Alexander Sociales						
Queue shown is maximun	n after two	cycles.										
Onlike and Dhassas 7: Dis-	a Delucaria	Alast M	onthern	od 0 Mar	don Dd (01 100						
Splits and Phases: 7: Plaz	a Driveway	//west w	enmann			RI 122)			1 14			
No1										lø2		
93s		1		e e e e	and the second				275			

	۶	-+	\mathbf{F}	∢	·*	۰.	1	Ť	۲	1	Ļ	1
Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4						4			ф,	
Traffic Volume (vph)	16	133	28	122	131	11	211	77	339	25	120	22
Future Volume (vph)	16	133	28	122	131	11	211	77	339	25	120	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	13	13	13	13	13	13	13	11	11	11
Total Lost time (s)		5.0			5.0			4.0			4.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.98			0,99			0.92			0.98	
Flt Protected		0.99			0.98			0.98			0.99	
Satd. Flow (prot)		1904			1891			1787			1770	
Flt Permitted	National States of Control of States Adver	0.94			0.68	سی منتقرب میر دین مربق میر می در		0.83			0.86	
Satd. Flow (perm)		1795			1318		1000	1502	194 G. 199 au		1541	
Peak-hour factor, PHF	0.50	0.72	0.58	0.85	0.79	0.78	0.84	0.83	0.78	0.78	0.86	0.79
Adj. Flow (vph)	32	185	48	144	166	14	251	93	435	32	140	28
RTOR Reduction (vph)	0	0	0	0	2	0	0	0	0	0	0	0
Lane Group Flow (vph)	0	265	0	0	322	0	0	779	0	0	200	0
Heavy Vehicles (%)	0%	0%	0%	1%	1%	1%	0%	0%	0%	1%	1%	1%
Turn Type	Perm	NA	5.9.8.6	Perm	NA		Perm	NA		Perm	NA	
Protected Phases		1			1			2			2	
Permitted Phases	1			1			2			2		
Actuated Green, G (s)		17.3			17.3		Anton and a second	34.7			34.7	
Effective Green, g (s)		17.3			17.3			34.7			34.7	
Actuated g/C Ratio	an a	0.28			0.28			0.57			0.57	CINCLES A
Clearance Time (s)		5.0			5.0			4.0			4.0	
Vehicle Extension (s)	na kan kan kan kan k	2.8			2.8			2.6			2.6	02002220022223
Lane Grp Cap (vph)		509			373			854			876	
v/s Ratio Prot												Maria ana ang ang ang ang ang ang ang ang an
v/s Ratio Perm		0.15			c0.24			CU.52			0.13	
V/c Ratio		0.52			0.86 00.∀			0.91			0.23	
Uniform Delay, d1		18.4			20,7			11.8			6.5	
Progression Factor		1.00			101			1.00			1.00	
Incremental Delay, uz		40.9			20.0			10,9 05 7			U.I 6.6	
Delay (5)		19.2						20.1 C			0.0 A	Secondaria
Approach Dolay (a)		10.2			38 0 D			25.7			A 88	
Approach LOS		10.4 R						20.7			0.0	
Approach Loo		Ľ			P			v			Ų	
Intersection Summary												
HCM 2000 Control Delay		9.53.53.69	24.9	H	CM 2000	Level of	Service		С			
HCM 2000 Volume to Capa	acity ratio		0.89		an se an			generality and the	an ta			99990cc690cc9
Actuated Cycle Length (s).			61.0	્રા	im of lost	time (s)			9.0			
Intersection Capacity Utiliz	ation	ia desta a com	84.5%	IC	U Level o	ot Service			E			
Analysis Period (min)			15									

Lanes, Volumes, Timings 17: West Wrentham Rd & Pine Swamp Rd (RI 114)

03/22/2020

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		¢‡,			4 4+			\$			- ↔	<u></u>
Traffic Volume (vph)	16	133	28	122	131	11	211	77	339	25	120	22
Future Volume (vph)	16	133	28	122	131		211	77	339	25	120	22
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	13	13	13	13	13	13	13	13	11	11	11
Grade (%)		0%			0%			0%			0%	
Storage Length (ff)	0		0	0	30000000000000000000000000000000000000	0	0	****************	0	0		0
Storage Lanes	0		0	Ō		0	Ō		0	Ō		Ō
Taper Length (ft)	25	99090000000000000000000000000000000000	Real Contraction (Contraction)	25	2599269999999999	9292399930993 9	25	anisa ang ang ang ang ang ang ang ang ang an	570) (12) (15) , (15)	25		NER SERVICES (STATE)
Right Turn on Red			No			Yes			No			No
Link Speed (mph)		30			4۵			25	2004 (CON 1997) (CON		25	
Link Distance (ft)		3320			7947			1008			920	
Travel Time (s)		75.5			135.5			27.5	090,0999,0990,099		25.1	9500900 <u>98</u> 1
Confl Peds (#/br)					100.0			<i>L</i> . 1. V				
Confl Bikes (#/hr)												
Deak Hour Factor	ሰ 5ሰ	0 7 2	0.58	0.85	ሰ 70	0.78	<u>0.84</u>	0.83	0 78	0.78	0.86	
Crowth Eactor	100%	100%	100%	100%	100%	100%	100%	10.00	100%	10.10	100%	100%
Hogy Vobiolos (%)	00%	00%	0%	100 /0	10070	100 //	00%	00%	00%	10070	100 //	100 %
Pue Plackages (#/br)	0/0 A	0/ب م	070	% ا م	۰.1 <i>۱</i>	% I ۵	0 <i>1</i> 0 ∩	070 N	% v ۸	0/ I م	1 <i>1</i> 0 N	1944 A
Derking (#/hr)	v	v	v	U	U	U	v	U	v	U	U	U
Farking (#/III) Mid Block Troffic (%)		00/			^0/			∩%/			00/	
Charad Lana Troffic (%)		0./0			U /0			U /0			U /0	
Snared Lane Trainc (%)	<u>م</u>	005	^	^	204	<u>م</u>	<u>م</u>	770	∩	<u>م</u>	200	
Tane Group Flow (vpn)	V	CO7	V	U Dorm	024 N1A	U Selection	V Dorm	//9 NIA	V	U Dorm	200 NIA	
Protocted Dhoose	Feim	AXIS		renn	S NAS		reini	NA ס		Feili	NA O	
Protected Phases	4	 		4	1		o.	۷		0	Z	GRIGAS ASS
Permilieu Phases		4		1	4		2 0	<u>م</u>		<u>۲</u>	<u>م</u>	
	l	 		ا درجار المحمد المحمد ال	 		۷	ل		4	4	
Switch Phase	40.0	40.0		40.0	40.0		ΓΛ	ΕΛ		ΕΛ	E A	
	10.0 4 E A	10.0 4 F O		10.0	10.0		0.0	0.0		0.0	0.0	
Minimum Spiit (s)	15.0	0.0		10.0	10.0		9.0	9.0		9.0	9.0	
Total Split (s)	23.0	23.0		23.U	23.0		42.0	42.0		42.0	42.0	
li otal Split (%)	35.4%	35.4%		35.4%	35.4%		64.6%	04.0%		04.0%	64.6%	010000000
Maximum Green (s)	18.0	18.0		18.0	18.0		38.0	38.0		38.0	38.0	9900-999393
Yellow Ime (s)	4.0	4.0		4.0	4.0		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	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.0			5.0	us danasas		4.0			4.0	eswertent
Lead/Lag	Lead	Lead		Lead	Lead		Lag	Lag		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	ing and an	Yes	Yes	ere fonte formere	Yes	Yes	washanaminin
Vehicle Extension (s)	2.8	2,8		2.8	2.8		2.6	2.6		2.6	2.6	
Minimum Gap (s)	3.0	3.0	namen en en en en esta i de el	3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0	and and the second second second	0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	Min	Min	19. S. S. S	Min	Min		None	None		None	None	
Walk Time (s)	The work that a first of the second								ang kanang séring na masari			Sector Company and Contracts of A
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)											·	
v/c Ratio		0.52			0.87			0.91			0.23	
Control Delay		23.9			47.9			29.8			7.3	

PM Peak NB Detour Only - Optimized 02/27/2020 Baseline EAM

Lanes, Volumes, Timings 17: West Wrentham Rd & Pine Swamp Rd (RI 114)

03/22/2020

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0			0.0			0.0	5.121.02.07		0.0	
Total Delay		23.9			47.9			29.8			7.3	
Queue Length 50th (ft)		89			121			236		3.4.4.1	34	
Queue Length 95th (ft)	_	117			#210			#416			59	an a that to be been all
Internal Link Dist (ft)		3240			7867			928			840	
Turn Bay Length (ft)								والمحاصر والمحاصر والمحاور والمحاور			en secono con consecuto de	
Base Capacity (vph)		537			397			951			974	
Starvation Cap Reductn		0			0	ann deile she eile eile e		0			0	
Spillback Cap Reductn		0			0	8 S 8 0		0			0	
Storage Cap Reductn		0	nonevo esta da com		0			0			0	WARMAN CONTRACT
Reduced v/c Ratio		0.49			0.82			0.82			0.21	
Intersection Summary												
Area Type: 0	Other											
Cycle Length: 65												
Actuated Cycle Length: 61.1												
Natural Cycle: 65												
Control Type: Actuated-Unco	oordinated					2 Q Q Q						
# 95th percentile volume e	xceeds ca	pacity, qu	eue may	be longe	. ••••••••••••••••••••••••••••••••••••	ine na superiore						51017957070707957779
Queue shown is maximur	n after two	cycles.										
Splits and Phases: 17: We	est Wrenth	am Rd & I	Pine Swa	mp Rd (F	RI 114)							
<u>Au</u>												

<u>▼</u> Ø1		
235	42 s	

PM Peak NB Detour Only - Optimized 02/27/2020 Baseline EAM

	-+	\rightarrow	F	-	*	1			
Movement	EBT	EBR	WBL	WBT	NBL	NBR			
Lane Configurations	†	7	٣	۸	٦	7			
Traffic Volume (veh/h)	380	188	524	326	7	8			
Future Volume (Veh/h)	380	188	524	326	7	8	 		
Sign Control	Free			Free	Stop				
Grade	0%			0%	0%				
Peak Hour Factor	0.69	0.92	0.96	0.90	0.89	0.75			
Hourly flow rate (vph)	551	204	546	362	8	11	 		
Pedestrians Lane Width (ft)									
Walking Speed (ft/s)		e es es es							6666
Percent Blockage		ere and energy and the				un en construction (Antonio)		00.007.07203	
Right turn flare (veh)		5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 - 5 -				10			
Median type	None			None			5		
Median storage veh)									
Upstream signal (ft)									
pX, platoon unblocked					0005	FEA			
vC, conflicting volume			551		2005	551	ŝ	1204034	
VC1, stage 1 cont vol			Station of the	1.891.981.851.89					
VCZ, stage 2 cont vol			E E A		0005	561	3		
VCU, UNDIOCKEO VOI			100		2000	6.0	Š		
to, single (s)			4.1		0.4	0.2	, in the second s		
$IO_{1} \ge SIAYE (S)$			22		35	23	2		
n (s) n0 quoue free %			2.2 A7		5.5 74	0.0 QR			
cM canacity (veh/h)			1024		31	536		contes	SCA1978-1449-1474-1
	ED 4	ED 0		10/0	NID 4	000			
Volumo Total	ED 651	204	5/6	262	10		Æ		
Volume Loft	001	204 0	540	302 N	10				
Volume Right	0 0	204	ντν Ω	ې ۱	11	89 89 89 89 89 89 89 89 89 89 89 89 89 8		889 B.S	
rSH	1700	1700	1024	1700	73	dug si di ki			
Volume to Capacity	0.32	0 12	0.53	0.21	0.26			94989	
Queue Length 95th /ft)	0.02	0.12	81	0,71	23				
Confrol Delay (s)	00	0.0	12.5	0.0	74.0		93	88285	
Lane LOS	עיע		. <u>с</u> .о	v.v	 F				
Approach Delay (s)	0.0		7.5		74.0		919) 	20029	8469652666
Approach LOS					F	1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1 1			
Intersection Summary			4.0						
Average Delay	alian		4.9			of Convinc		666	
Analysis Period (min)	auon		02.4% 15	U.	o reael (N SELAICE			

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		ф,			4			4 >			4	
Traffic Volume (vph)	0	119	42	17	246	0	254	0	30	176	225	76
Future Volume (vph)	0	119	42	17	246	0	254	0	30	176	225	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	13	13	13	13	12	12	12	12	12	12
Total Lost time (s)		4,0			4.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	et anno 1 a mar 1 a card an 104
Frt		0.96			1.00			0.99			0.98	
Flt Protected		1.00			1.00			0.96			0.98	
Satd. Flow (prot)		1798			1916			1759			1783	
Flt Permitted		1.00			0.96			0.46			0.71	2000277/202074
Satd. Flow (perm)		1798	10-00-00 Q		1846			843			1296	290-291-191
Peak-hour factor, PHF	0.86	0.85	0.75	0.53	0.75	0.85	0.68	0.93	0.75	0.75	0.97	0.79
Adj. Flow (vph)	0	140	56	32	328	0	374	0	40	235	232	96
RTOR Reduction (vph)	0	24	0	0	0	0	0	8	0	0	13	0
Lane Group Flow (vph)	0	172	0	0	360	0	0	406	0	0	550	0
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type		NA		Perm	NA		Perm	NA	6 8 8 8	Perm	NA	
Protected Phases	verse et stad i soor	1 20145/02/2015			1 Steesesses		NICHIGEN STRAT	2			2	
Permitted Phases	1			1			2	<u>~~ /</u>	55 (65 (65 (65)	2	- <u></u>	
Actuated Green, G (s)		13.8			13.8			30.1			30.1	S
Effective Green, g (s)		13.8			13.8			30.1			30.1	
Actuated g/C Ratio		0,26			0.26			0.57			0.57	
Clearance Time (s)		4.0			4.0			0.0			0.0	
Venicle Extension (s)		2.0			2.0			3.0			<u>ა.∪</u> შიშ	
Lane Grp Cap (vph)		469		1991 (994 (974 (9	481		(1993) (9) (9	479			131	
V/s Ratio Prot		0.10			-040			-0.40			0.40	
v/s Ratio Perm		0.07			CU.19			CU,40			0.42	
V/C Rallo		0.37			0.70			0.00			0.70	
Uniform Delay, d I		10.0			1 00	097803093093		9.0 1.00			0.0 1 00	
Inoremental Delay, d2		0.4			6.0			12.1			1.00	
Dolov (c)		0.4 16 /			24 N			22 G	SA 68 68 69		т. 127	894094894
Level of Service		R			24.0 C			22.0 C			B	
Approach Delay (s)		164		sertetta eta eta eta eta eta eta eta eta et	24 0			22.6			12.7	
Approach LOS		В			C			C			B	
Intersection Summary			40.5	1.0	014 0000	Loughet	Porvies		D			
HGM 2000 Control Delay			18.5	H	GIVI ZUUU	Level of a	Service		В			
HUM 2000 Volume to Capaci	iy ratio		0,82	<u>^.</u>	im of los	Ltime 7a			0.0			
Actuated Gycle Length (S)			67.20/	୍ ରା ଜ		i une (S) of Coruioo			9.U			
Analysis Period (min)	มเ		15 UL	ι								
Lanes, Volumes, Tir	nings											
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1: Diamond Hill Rd ((RI 114)	& Nate Whip	ople Hwy	(RI 120)								

03/22/2020

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		÷.			44			¢\$+			ф.	
Traffic Volume (vph)	0	119	42	17	246	0	254	0	30	176	225	76
Future Volume (voh)	0	119	42	17	246	0	254	0	30	176	225	76
Ideal Flow (vohpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	13	13	13	13	13	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ff)	0		0	0		0	0		0	0		0
Storage Lanes	0		Ň	Ō		Ō	<u> </u>		Ō	0		Ō
Taper Length (ft)	25	ELELES SANT		25			25			25	belen moost	
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		4 0	100		40			30	1.00		30	
Link Dietance (ff)		1854			4162			1502			454	
Travel Time (e)		31.6		9429,994,999	70.9	<u> (1987) (1997) (1997)</u> (1997) (1997) (1997) (1997) (1997) (1997) (1997) (1997) (1997) (1997) (1997) (1997) (1997) (1997) (1997) (1997)		36.2		1990 (SA 98 93	10.3	
Confl Pede (#/hr)								00.2			10.0	
Confl Rikes (#/hr)												
Peak Hour Factor	0.86	0.85	0.75	0.53	0.75	<u>೧ 85</u>	0.68	0.93	0 75	0 75	<u> </u>	0 79
Growth Eactor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Hosini Vohicles (%)	5%	5%	5%	20%	2%	2%	2%	2%	2%	20070	2%	2%
Rue Blockages (#/br)	0 ∩	0 <i>ν</i> ο Λ	% پ ۱	<u>ر ح</u> ۱	<u>4</u> 70 ۱	<u>ራ ለ</u> በ	44 م	<u>۸</u> کې د	<u>ት የ</u>	<u>ረ //</u> በ	470 N	<u>የነ ት 2000</u> በ
Dus Diockayes (#/iii) Darking (#/br)	v		U	<u> </u>	v	v	<u>v</u>	v		U U	V	
Mid Block Traffic (%)		በ%			ሰ%			በ%			۵%	878989
Charod Lano Troffic (%)		U /0			070			070		La care Clasic Static de	070	
Long Croup Flow (uph)	٨	106	٥	0	760	۸	۸	111	0	Λ	563	n N
Turn Type	v Selektrol	NIA		Porm	<u></u>	v	Porm	MΔ		Dorm		
Dirotected Phases		می ر 1	(850-125-144-ca	L VIII	1			ראט י			יען 2	
Pormitted Dhases	4	Divenimiese		- 1			2			9	ــ	
Dotoctor Dhaso	1	1		1	1		2 ?	2		2	2	1999 - 1993 - 1 1993 - 1993 - 1993 - 1993 - 1993 - 1993 - 1993 - 1993 - 1993 - 1993 - 1993 - 1993 - 1993 - 1993 - 1993 - 1993 -
Switch Dhase				1	i Navenski (Solenn Navenski se		ـ	 		۔	_	
Minimum Initial (e)	1ሰ በ	1ሰ ሰ		10 N	<u> 1</u> በ በ		10.0	1ስ ስ		10.0	10 0	990980090 1
Minimum Solit (e)	1/10	1/1/0		14.0	14.0		15.0	10.0		15.0	15.0	
Total Solit (s)	19.0	19 N		19.0	19.0	9848938933	41 N	41 Ω		41.0	41 N	28932929393 2893
Total Split (%)	31.7%	31.7%		31.7%	31.7%		68.3%	68.3%		68.3%	68.3%	
Maximum Green (s)	15.0	15.0		15 N	15.0		36.0	36.0		36.0	36 0	
Vallow Time (s)	3.0	3.0		3.0	3.0		4.0	 		4.0	4.0	
All-Red Time (s)	0.0 1 ∩			0.0 1 ()	1 በ 1 በ		1.0 1 N	1 N		1.0	1.0 1.0	
Loet Time Adjust (s)		0.0			0.0		1.0	0.0		1.0	0.0	
Total Lost Time (s)		4 N			4 N			5.0			5.0	
	heal	l ead		lead	lead		nel	l an		l an	l an	
Lead-Lag Ontimize?	Yes	Yes	1999 011016940	Yes	Yes		Yes	Yes		Yes	Yes	
Vohicla Extension (s)	26	26		26	2.6		20	30		30	3.0	
Minimum Can (s)	3 D	2.0 3.0		30	30	(BATAVANA)	3.0	30 30		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0 0.0	0.0 0.0		0.0 0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (e)	110110			0110110			ixiii (IVIII I	
Flash Dont Walk (s)		9.22.22.59		10818555								
Pedestrian Calls (#/hr)								ekisi 707429			CARDAR AND	90999-55N
vic Ratio		<u>040</u>			በ 75			<u> </u>			በ 75	
Control Delay		18.3			32.6			29.5			16.0	
		10.0			02.0			20.0			10.0	

Saturday Peak NB Detour Only - Optimized 02/27/2020 Baseline EAM

Lanes, Volumes, Ti 1: Diamond Hill Rd	mings (RI 114) & Na	ite Wh	l elaair	Hwv (R	120)					03/2	22/2020
	<u>, , , , , , , , , , , , , , , , , , , </u>		\mathbf{i}	*	*	×.	*	ŧ	1	<u>→</u> ↓ <i>↓</i>		
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0			0.0			0.0	5 S S S		0.0	
Total Delay	10-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-0-	18.3			32.6	a a dhaaraan aharaa ay dharaa dharba		29.5			16.0	
Queue Length 50th (ft)		49			121			96	9.01.000		116	
Queue Length 95th (ft)		93			162			#271	en herendes erkende ander		232	
Internal Link Dist (ft)		1774			4082			1512			374	
Turn Bay Length (ft)	·····											1994 - Angeler A. A. Phys. 4
Base Capacity (vph)		550			542			598	6.0.0.6		919	
Starvation Cap Reductn		0			0			0			0	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0	n en en esta esta de la calenda (h		0	erren en en en en en erren en erren en erren en erren en er	fre niterre state of bringstore	0			0	an Analogo an
Reduced v/c Ratio		0.36			0.66			0.69			0.61	
Intersection Summary												
Area Type: C	Other											
Cycle Length: 60	- Anto-Anto-Anto-Anto-Anto-Anto-Anto-Anto-	en been bool eester Okano G										
Actuated Cycle Length: 53.2		Andri Gilandi Generation										
Natural Cycle: 60												
Control Type: Actuated-Unco	ordinated											
# 95th percentile volume ex	xceeds cap	pacity, que	eue may	be longer	-	osetogo.cijategi						5-7
Queue shown is maximun	n after two	cycles.										
Califa and Dhassay 1. Dian	mond Will D) @ Mata	Whinplo I	Liusz / DI 4	20)						
Splits and Phases. 1. Dian				wiiippie i	nwy (ru i	20)						

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19 s	All's	

03/22/2020

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Movement	WBL	WBR	SEL	SET	NWT	NWR	
ane Configurations	Ŵ		፞ጙ	¥	Ą	শ	
Traffic Volume (voh)	87	530	102	406	420	52	
Future Volume (vph)	87	530	102	406	420	52	
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Lane Width	13	13	11	13	12	12	
Total Lost time (s)	4.0		4.0	5.0	5.0	5.0	
Lane Util. Factor	1.00		1.00	1.00	1.00	1.00	
Frt	0.88		1.00	1.00	1.00	0.85	
Fit Protected	0.99		0.95	1.00	1.00	1.00	
Satd. Flow (prot)	1706		1728	1944	1881	1599	
Flt Permitted	0.99		0.95	1.00	1.00	1.00	
Satd. Flow (perm)	1706		1728	1944	1881	1599	
Peak-hour factor, PHF	0.87	0.86	0.94	0.86	0.78	0.73	
Adj. Flow (vph)	100	616	109	472	538	71	
RTOR Reduction (vph)	269	0	0	0	0	30	
Lane Group Flow (vph)	447	0	109	472	538	41	
Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	
Turn Type	Prot		Prot	NA	NA	Prot	
Protected Phases	3		2	12	1	1	
Permitted Phases							
Actuated Green, G (s)	18.2		7.5	32.7	20.2	20.2	
Effective Green, g (s)	18.2		7.5	32.7	20.2	20.2	
Actuated g/C Ratio	0.31		0.13	0.56	0.34	0.34	
Clearance Time (s)	4.0		4.0		5.0	5.0	
Vehicle Extension (s)	2.6		2.6		2.6	2.6	
Lane Grp Cap (vph)	527		220	1079	645	548	
v/s Ratio Prot	c0.26		0.06	c0.24	c0.29	0.03	
v/s Ratio Perm							
v/c Ratio	0.85	n a secola de personalitado	0.50	0.44	0.83	0.07	
Uniform Delay, d1	19.1		23.9	7.7	17,8	13.0	
Progression Factor	1.00		1.00	1.00	1.00	1.00	
Incremental Delay, d2	12.0		1.4	0.2	9.0	0.0	
Delay (s)	31.0		25.3	7.9	26.8	13.1	
Level of Service	C		C	A	0	В	
Approach Delay (s)	31.0			11.2	25.2		
Approach LOS	C	2 (S (D (D		В	C		
Intersection Summary							
HCM 2000 Control Delay			23.1	H	CM 2000	Level of Service	C
HCM 2000 Volume to Cap	pacity ratio		0.80			ni v za na zamiliwa di informa di na na muni va ci mu manuni sun	
Actuated Cycle Length (s)			58.9	SI	um of losi	t time (s)	13.0
Intersection Capacity Utili	zation		76.1%	IC	CU Level a	of Service	D
Analysis Period (min)			15				

c Critical Lane Group

Base Graup VDB VDB VDB VDB VDD VDD <thv< th=""><th></th><th>£</th><th>*</th><th>\searrow</th><th>X</th><th>ĸ</th><th>4</th><th></th></thv<>		£	*	\searrow	X	ĸ	4	
Lane Configurations Y	Lane Group	WBL	WBR	SEL	SET	NWT	NWR	
$\begin{tabular}{ c c c c c c c c c c c c c c c c c c c$	Lane Configurations	¥¥		ሻ	ł	Ť	۲	
Future (vph) 87 530 102 406 420 52 Idea How (vphp) 1900 1900 1900 1900 1900 1900 Grade (Vs) 0% 0% 0% 0% 0% 0% Storage Length (ff) 0 0 0 80 30 30 Storage Length (ff) 0 0 0 80 30 35 35 Link Speed (mph) 30 35 35 55 Ves 72 Contl. Bless (#hrt) Contl. Bless (#hrt) Contl. Bless (#hrt) 74 43.4 30 Growth Factor 0.87 0.96 0.94 0.86 0.78 0.73 Growth Factor 0.87 0.96 0.94 0.96 0.94 109 Bus Bockages (#hrt) 0 <td>Traffic Volume (vph)</td> <td></td> <td>530</td> <td>102</td> <td>406</td> <td>420</td> <td>52</td> <td></td>	Traffic Volume (vph)		530	102	406	420	52	
Ideal Flow (vphp) 1900 1900 1900 1900 Lane Width (ft) 13 13 11 13 12 12 Grade (%) 0%	Future Volume (vph)	87	530	102	406	420	52	
Lane Width (ft) 13 13 11 13 12 12 Grade (Kk) 0% 0% 0% 0% 0% 0% Storage Langth (ft) 0 0 0 80 30 30 35 35 Right Turn on Red Yes	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	
Grade (%) 0% 0% 0% 0% Storage Langth (ft) 0 0 1 1 Storage Langth (ft) 25 25 1 1 Storage Langth (ft) 25 25 1 1 1 Tapor Longth (ft) 23 35 35 35 1	Lane Width (ft)	13	13	11	13	12	12	
Storage Langs 1 0 0 80 Storage Langs 1 1 1 1 1 Storage Langs 1 0 1 1 1 Storage Langs 1 1 1 1 1 Storage Langs Yes Yes Yes Yes Link Speed (mph) 30 35 35 1 1 Link Distance (II) 2348 381 2230 1	Grade (%)	0%			0%	0%		
Storage Lanes 1 0 1 1 Taper Length (III) 25 25 Right Turi on Rod Yes Yes Link Destance (II) 2348 381 2230 Travel Time (IS) 53.4 7.4 43.4 Confl. Bikes (#hr) 0 0.86 0.78 0.73 Growth Factor 0.87 0.96 0.94 0.86 0.73 Growth Factor 0.07 100% 100% 100% 100% Bus Blockages (#hr) 0 0 0 0 0 0 Parking (#hr) 0 0 0 0 0 0 0 Velockages (#hr) 0 0 0 0 0 0 0 Parking (#hr) 0 0 0 0 0 0 0 Prokectod Phases 3 2 1.2 1 1 1 Prokectod Phases 3 2 1.2 1 1 <td>Storage Length (ft)</td> <td>0</td> <td>0</td> <td>0</td> <td></td> <td></td> <td>80</td> <td></td>	Storage Length (ft)	0	0	0			80	
Taper Length (ft) 25 Yes Yes Right Turn on Red Yes Yes Yes Link Speed (mph) 30 35 35 Link Distance (ft) 2348 381 2230 Travel Time (s) 53.4 7.4 43.4 Confl. Fetiz, (#hr) Confl. Fetiz, (#hr) Confl. Fetiz, (#hr) Confl. Fetiz, (#hr) Confl. Fetiz, (#hr) 0.86 0.78 0.73 Growth Factor 100%	Storage Lanes	1	0	1			1	
Right Turn on Red Yes Yes Link Speed (mph) 30 35 35 Link Distance (II) 2348 381 2230 Travel Time (s) 53.4 7.4 43.4 Confl. Bikes (#hr) 0 0.86 0.78 0.73 Growth Factor 100% 100% 100% 100% 100% Bay Scholas (#hr) 0 0 0 0 0 0 Bay Scholas (#hr) 0 0 0 0 0 0 Bay Scholas (#hr) 0 0 0 0 0 0 Parking (#hr) 0 0 0 0 0 0 Bus Slockages (#hr) 0 0 0 0 0 0 Parking (#hr) 0 0 0 0 0 0 Bus Slockages (#hr) 0 0 0 0 0 0 Protected Phases 3 2 1 1	Taper Length (ft)	25	Silver a presentation of	25				
Link Speed (mph) 30 35 35 Link Distance (II) 2348 .381 2230 Travel Time (s) 53.4 .7.4 43.4 Confl. Peds (#hr) Confl. Peds (#hr)	Right Turn on Red		Yes				Yes	
Link Distance (ft) 2348 381 2230 Travel Time (s) 53.4 7.4 43.4 Confl. Edis. (khr) Confl. Edis. (khr) Peak Hour Factor 0.07 0.06 0.94 0.86 0.78 0.73 Growth Factor 100% 100% 100% 100% 100% Heavy Vehicles (%) 1% 1% 1% 1% 1% 1% Bus Blockages (khr) 0 0 0 0 0 0 0 Shared Lane Traffic (%) Lane Group Flow (vph) 716 0 109 472 538 71 Turn Type Prot Prot NA NA Prot Protected Phases 3 2 12 1 1 Permitted Phases Detector Phase 3 2 12 1 1 Detector Phase 3 2 12 1 1 Detector Phase 3 2 12 1 1 Detector Phase 3 2 12 1 0 Switch Phase Detector Phase 3 2 12 1 1 Detector Phase 3 2 12 1 1 Detector Phase 3 2 12 1 0 Detector Phase 3 2 12 1 1 Detector Phase 3 2 12 1 0 Detector Phase 3 2 12 1 1 Detector Phase 3 2 12 1 1 Detector Phase 3 2 12 1 0 Detector Phase 3 2 12 1 1 Detector Phase 3 2 12 1 0 Detector Phase 3 2 12 1 1 Detector Phase 3 2 2 12 1 1 Detector Phase 3 2 2 12 1 1 Detector Phase 3 2 2 0 So 3 0 0 0 0 0 0 0 0 0 0 Do 0 0 0 0 0 0 0 0 0 Do 0 0 0 0 0 0 0 0 0 0 Do 0 0 0 0 0 0 0 0 0 0 0 Do 0 0 0 0 0 0 0 0 0 0 0 0 Do 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 Do 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 Do 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0 0	Link Speed (mph)	30			35	35		
Travel Time (s) 53.4 7.4 43.4 Confl. Bikes (#hr) Peak Hour Factor 0.87 0.86 0.94 0.86 0.73 Growth Factor 100% 100% 100% 100% 100% 100% Bikes (#hr) 0 0 0 0 0 0 Can Group Flow (#hr) 716 0 109 472 538 71 Turn Type Prot Prot NA NA Prot Prot Protected Phases 3 2 1.2 1 1 Switch Phase	Link Distance (ft)	2348			381	2230		
Confl. Peds. (#hr) Confl. Bikes (#hr) Peak Hour Factor 0.87 0.86 0.78 0.73 Growth Factor 100% 100% 100% 100% 100% Beary Vehicles (%) 1% 1% 1% 1% 1% Bus Blockages (#hr) 0 0 0 0 0 Parking (#hr) 0 0 0 0 0 0 Stardd Lane Traffic (%) 0% 0% 0% 0% 0% Shardd Lane Traffic (%) 0% 0% 0% 0% 0% Protected Phases 3 2 1.2 1 1 Protected Phases 3 2 1.2 1 1 Switch Phase 3 2 1.2.0 15.0 15.0 Total Split (s) 14.0 9.0 15.0 15.0 15.0 Total Split (s) 24.0 8.0 22.0 27.0 Total Split (s) 1.0 1.0 1.0	Travel Time (s)	53.4	1999 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 - 1997 -	officiel forwards of each	7.4	43.4	(90) - AND DALIM AND DALIMA	
Confl. Bikes (#hr) Peak Hour Factor 0.87 0.86 0.94 0.86 0.73 Growth Factor 100% 100% 100% 100% 100% Heavy Vehicles (%) 1% 1% 1% 1% 1% Bus Blockages (#hr) 0 0 0 0 0 Parking (#hr) 0 0 0 0 0 Mid-Block Traffic (%) Lane Group Flow (vph) 716 0 109 472 538 71 Tum Type Prot Prot NA NA Prot Protacted Phases 3 2 12 1 1 Deteorb Phase 3 2 12 1 1 Switch Phase 0 15.0 10.0 10.0 Total Spitt (%) 40.0% 18.5% 41.5% 41.5% 41.5% Maximum Green (s) 2.0 8.0 2.0 22.0 <td< td=""><td>Confl Peds (#/hr)</td><td></td><td></td><td></td><td></td><td></td><td></td><td></td></td<>	Confl Peds (#/hr)							
Pack Hour Factor 0.87 0.86 0.94 0.86 0.73 Growth Factor 10% 10% 10% 100% 100% Heavy Vehicles (%) 1% 1% 1% 1% 1% Bus Blockages (#hr) 0 0 0 0 0 Parking (#hr) 0 0 0 0 0 Mid-Block Traffic (%) 0% 0% 0% 0% Shared Lane Traffic (%) 716 0 109 472 538 71 Turn Type Prot Prot NA NA Prot Protacted Phases 3 2 1 1 Delector Phase 3 2 12 1 1 Switch Phase 3 2 12 1 1 Minimum Initial (s) 10.0 5.0 10.0 10.0 Total Split (s) 14.0 9.0 15.0 15.0 Total Split (s) 3.0 3.0 4	Confl. Bikes (#/hr)			en Bijerer en Benere	e o Colorina Color Novielle de C			
Growth Factor 100%	Peak Hour Factor	0.87	0.86	0.94	0.86	0.78	0.73	
Heavy Vehicles (%) 1% 1% 1% 1% 1% Bus Blockages (#/hr) 0 0 0 0 0 Parking (#/hr) 0 0 0 0 0 Mid-Block Traffic (%) 2 0% 0% 0% Lane Group Flow (vph) 716 0 109 472 538 71 Tum Type Prot Prot NA NA Prot Protected Phases 3 2 1.2 1 1 Permitted Phases	Growth Factor	100%	100%	100%	100%	100%	100%	
Data Signed Set (#hr) 0 0 0 0 0 Parking (#hr) 0 0 0 0 0 Mid-Block Traffic (%) 0% 0% 0% Shared Lane Traffic (%) 0 109 472 538 71 Turn Type Prot Prot Prot NA NA Prot Permitted Phases 3 2 12 1 1 Delector Phase 3 2 12 1 1 Switch Phase 0 0.0 10.0 10.0 10.0 Minimum Split (s) 14.0 9.0 15.0 15.0 10.1 10.1 Total Split (%) 40.0% 18.5% 41.5% 41.5% Maximum Green (s) 22.0 8.0 22.0 <td>Heavy Vehicles (%)</td> <td>1%</td> <td>1%</td> <td>1%</td> <td>1%</td> <td>1%</td> <td>1%</td> <td></td>	Heavy Vehicles (%)	1%	1%	1%	1%	1%	1%	
Backbody (%) 0% 0% 0% Mid-Block Traffic (%) 0% 0% 0% Shared Lane Traffic (%) 100 472 538 71 Turn Type Prot Prot NA NA Prot Protected Phases 3 2 12 1 1 Detector Phase 3 2 12 1 1 Switch Phase 3 2 12 1 1 Detector Phase 3 2 12 1 1 Switch Phase 3 2 12 1 1 Switch Phase 3 2 12 1 1 Switch Phase 3 2 12 7.0 7.0 Total Split (\$) 40.0% 18.5% 41.5% 44.5% Maimum Green (\$) 2.0 8.0 22.0 22.0 Yellow Time (\$) 1.0 1.0 1.0 1.0 Lost Time (\$) 1.0 1.0 1.0 1.0 Lead/Lag Optimize? Yes Yes Yes	Bus Blockages (#/hr)	ሰ	0	0	0		0	
Mining (M) 0% 0% 0% Shared Lane Traffic (%) 0 0 0% 0% Shared Lane Traffic (%) 0 0 0% 0% Shared Lane Traffic (%) 0 Prot Prot NA NA Turn Type Prot Prot NA NA Prot Protected Phases 3 2 12 1 1 Permitted Phases 3 2 12 1 1 Switch Phase 3 2 12 1 1 Switch Phase	Parking (#/hr)							
Mile Book Haine Traffic (%) 0.0 0.0 0.0 Lane Group Flow (vph) 716 0 109 472 538 71 Turn Type Prot Prot NA NA Prot Protected Phases 3 2 1.2 1 1 Permitted Phases 0 5.0 10.0 10.0 Detector Phase 3 2 1.2 1 1 Switch Phase 0 5.0 10.0 10.0 10.0 Minimum Initial (s) 10.0 5.0 10.0 10.0 Minimum Split (s) 26.0 12.0 27.0 27.0 Total Split (s) 22.0 8.0 22.0 22.0 Yellow Time (s) 3.0 3.0 4.0 4.0 Lost Time Agiust (s) 0.0 0.0 0.0 0.0 Lost Time Agiust (s) 0.0 0.0 0.0 0.0 Lost Time Agiust (s) 2.6 2.6 2.6 2.6 Lead-Lag Optimize? Yes Yes Yes Yes Veh	Mid-Block Traffic (%)	በ%			0%	0%		
Status Trife 0 109 472 538 71 Turn Type Prot Prot NA NA Prot Protected Phases 3 2 1 1 Permitted Phases Detector Phase 3 2 1 1 Switch Phase 3 2 1 1 1 Switch Phase 3 2 10.0 10.0 10.0 Minimum Split (s) 14.0 9.0 15.0 15.0 17.0 Total Split (%) 40.0% 18.5% 41.5% 41.5% Maximum Green (s) 22.0 8.0 22.0 22.0 Yellow Time (s) 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0 1.0	Shared Lane Traffic (%)	070			0.0			
Lanc Ordep From (pr) Frod Prod Prod Prod Protected Phases 3 2 1 1 Permitted Phases 3 2 12 1 1 Switch Phase 3 2 12.0 27.0 27.0 Total Split (\$) 26.0 12.0 27.0 27.0 27.0 Total Split (\$) 0.0 10.0 1.0 1.0 1.0 1.0 All-Red Time (\$) 1.0 1.0 1.0 1.0 1.0 1.0 Lead Lag Optimize (\$) 1.0 1.0 5.0 5.0 1.6 1.6 Lead-Lag Optimize (\$) <t< td=""><td>Lane Group Flow (yph)</td><td>716</td><td>۵</td><td>109</td><td>472</td><td>538</td><td>71</td><td></td></t<>	Lane Group Flow (yph)	716	۵	109	472	538	71	
Hain type 110 110 111 Protected Phases 3 2 12 1 Detector Phase 3 2 12 1 Switch Phase 3 2 12 1 Minimum Initial (s) 10.0 5.0 10.0 10.0 Minimum Split (s) 14.0 9.0 15.0 15.0 Total Split (s) 26.0 12.0 27.0 27.0 Total Split (%) 40.0% 18.5% 41.5% 41.5% Maximum Green (s) 22.0 8.0 22.0 22.0 Yelow Time (s) 3.0 3.0 4.0 4.0 All-Red Time (s) 1.0 1.0 1.0 1.0 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 Total Lost Time (s) 4.0 4.0 5.0 5.0 Lead-Lag Optimize? Yes Yes Yes Vehicle Extension (s) 2.6 2.6 2.6 Minimum Gap (s) 3.0 3.0 3.0 3.0 Time Before Reduce (s) 0		Prot		Prot	ΝA	NA	Prot	
Initial State 0 1 1 1 Permitted Phases 3 2 1 1 Switch Phase 3 2 1 1 Switch Phase 10.0 5.0 10.0 10.0 Minimum Initial (s) 10.0 5.0 10.0 10.0 Minimum Split (s) 14.0 9.0 15.0 15.0 Total Split (s) 26.0 12.0 27.0 27.0 Total Split (s) 20.0 8.0 22.0 22.0 Yellow Time (s) 3.0 3.0 4.0 4.0 Al-Red Time (s) 1.0 1.0 1.0 1.0 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 Lead-Lag Optimize? Yes Yes Yes Yes Vehicle Extension (s) 2.6 2.6 2.6 2.6 2.6 Minimum Gap (s) 3.0 3.0 3.0 3.0 3.0 3.0 Total Lost Time (s) 0.0 0.0 0.0 0.0 0.0 0.0 Lead/Lag <	Protected Phases	3	1900-990 (1000-1960) 1900-990 (1000-1960)	2	12			
Detector Phase 3 2 1 2 1 1 Switch Phase	Permitted Phases			-				
Decoder Hase 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 0 1 1 1 1 0 0 <t< td=""><td>Detector Phase</td><td>3</td><td></td><td>2</td><td>12</td><td>1</td><td>1</td><td></td></t<>	Detector Phase	3		2	12	1	1	
Minimum Initial (s) 10.0 5.0 10.0 10.0 Minimum Split (s) 14.0 9.0 15.0 15.0 Total Split (s) 26.0 12.0 27.0 27.0 Total Split (s) 40.0% 18.5% 41.5% 41.5% Maximum Green (s) 22.0 8.0 22.0 22.0 Yellow Time (s) 3.0 3.0 4.0 4.0 All-Red Time (s) 1.0 1.0 1.0 1.0 Lost Time (s) 1.0 0.0 0.0 0.0 Total Lost Time (s) 4.0 4.0 5.0 1.0 Lead-Lag Lag Lead Lead Lead Lead-Lag Optimize? Yes Yes Yes Yes Vehicle Extension (s) 2.6 2.6 2.6 2.6 Minimum Gap (s) 3.0 3.0 3.0 3.0 3.0 Time Before Reduce (s) 0.0 0.0 0.0 0.0 0.0 Walk Time (s) Fl	Switch Phase	U.S. S.				•		
Minimum Split (s) 10.0 0.0 15.0 15.0 Minimum Split (s) 14.0 9.0 15.0 15.0 Total Split (s) 20.0 12.0 27.0 27.0 Total Split (%) 40.0% 18.5% 41.5% 41.5% Maximum Green (s) 22.0 8.0 22.0 22.0 Yelow Time (s) 3.0 3.0 4.0 4.0 All-Red Time (s) 1.0 1.0 1.0 1.0 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 Total Lost Time (s) 4.0 4.0 5.0 5.0 Lead-Lag Optimize? Yes Yes Yes Vehicle Extension (s) 2.6 2.6 2.6 Jime To Reduce (s) 0.0 0.0 0.0 0.0 Time To Reduce (s) 0.0 0.0 0.0 0.0 Recall Mode None Min Min Min Walk Time (s) Flash Dont Walk (s) Pedestrian Calls (#hr) 9.0 0.50 0.45 0.84 0.12	Minimum Initial (s)	10.0		5 በ	MARIO ROMANDA A	10.0	10.0	
Initiation Opin (o) 17.0 0.0 10.0 10.0 Total Split (s) 26.0 12.0 27.0 27.0 Total Split (%) 40.0% 18.5% 41.5% 41.5% Maximum Green (s) 22.0 8.0 22.0 22.0 Yellow Time (s) 3.0 3.0 4.0 4.0 All-Red Time (s) 1.0 1.0 1.0 1.0 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 Total Lost Time (s) 4.0 4.0 5.0 5.0 Lead/Lag Lag Lead Lead Lead-Lag Optimize? Yes Yes Yes Vehicle Extension (s) 2.6 2.6 2.6 Jimmum Gap (s) 3.0 3.0 3.0 3.0 Time Before Reduce (s) 0.0 0.0 0.0 0.0 Time To Reduce (s) 0.0 0.0 0.0 0.0 Recall Mode None Nin Min Min Walk Time (s) Flash Dont Walk (s) Pedestrian Calls (#/hr) 0.90 0.50	Minimum Snlit (s)	10.0		9.0 9.0		15.0	15.0	
Total Split (%) 40.0% 18.5% 41.5% 41.5% Maximum Green (s) 22.0 8.0 22.0 22.0 Yellow Time (s) 3.0 3.0 4.0 4.0 All-Red Time (s) 1.0 1.0 1.0 1.0 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 Total Lost Time (s) 4.0 4.0 5.0 5.0 Lead/Lag Lag Lead Lead Lead-Lag Optimize? Yes Yes Yes Vehicle Extension (s) 2.6 2.6 2.6 Minimum Gap (s) 3.0 3.0 3.0 3.0 Time Before Reduce (s) 0.0 0.0 0.0 0.0 Time To Reduce (s) 0.0 0.0 0.0 0.0 Recall Mode None None Min Min Walk Time (s) Flash Dont Walk (s) Pedestrian Calls (#/hr) V/c Ratio 0.90 0.50 0.45 0.84 0.12	Total Split (e)	0 AC		12 N		27 N	27 0	
Maximum Green (s) 22.0 8.0 22.0 22.0 Yellow Time (s) 3.0 3.0 3.0 4.0 4.0 All-Red Time (s) 1.0 1.0 1.0 1.0 1.0 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 1.0 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 1.0 Lost Time (s) 4.0 4.0 5.0 5.0 1.0 Lead/Lag Lag Lead Lead 1.0 1.0 Lead/Lag 1.0 3.0 3.0 3.0 3.0 3.0 Yelicle Extension (s) 2.6 2.6 2.6 2.6 3.0 3.0 Time Before Reduce (s) 0.0 0.0 0.0 0.0 0.0 0.0 Time To Reduce (s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 Recall Mode None None Min Min Min Min Walk Time (s) Flash Dont Walk (s) Pedestrian Calls (#/hr) V/c Ratio 0.90 0.50	Total Split (%)	20.0		18.5%		41.5%	41.5%	
Yellow Time (s) 3.0 3.0 4.0 4.0 All-Red Time (s) 1.0 1.0 1.0 1.0 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 Total Lost Time (s) 4.0 4.0 5.0 5.0 Lead/Lag Lag Lead Lead Lead-Lag Optimize? Yes Yes Yes Yehicle Extension (s) 2.6 2.6 2.6 2.6 Minimum Gap (s) 3.0 3.0 3.0 3.0 3.0 Time Before Reduce (s) 0.0 0.0 0.0 0.0 0.0 Time To Reduce (s) 0.0 0.0 0.0 0.0 0.0 Recall Mode None None Min Min Walk Time (s) Flash Dont Walk (s) Pedestrian Calls (#/hr) V/c Ratio 0.0 0.0 0.12 Volume 0.90 0.50 0.45 0.84 0.12 0.0	Maximum Green (s)			10.070 8 0		22.0	22 N	
All-Red Time (s) 1.0 1.0 1.0 1.0 All-Red Time (s) 1.0 1.0 1.0 1.0 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 Total Lost Time (s) 4.0 4.0 5.0 5.0 Lead/Lag Lag Lead Lead Lead-Lag Optimize? Yes Yes Yes Vehicle Extension (s) 2.6 2.6 2.6 2.6 Minimum Gap (s) 3.0 3.0 3.0 3.0 Time Before Reduce (s) 0.0 0.0 0.0 0.0 Time To Reduce (s) 0.0 0.0 0.0 0.0 Recall Mode None None Min Min Walk Time (s) Flash Dont Walk (s) Pedestrian Calls (#/hr) V/c Ratio 0.90 0.50 0.45 0.84 0.12	Vollow Time (e)	22.0 3 N		3.0 2.0		<u>4</u> 0	4.0	
Laired nine (s) 1.0 1.0 1.0 1.0 1.0 Lost Time Adjust (s) 0.0 0.0 0.0 0.0 Total Lost Time (s) 4.0 4.0 5.0 5.0 Lead/Lag Lag Lead Lead Lead-Lag Optimize? Yes Yes Yes Vehicle Extension (s) 2.6 2.6 2.6 2.6 Minimum Gap (s) 3.0 3.0 3.0 3.0 Time Before Reduce (s) 0.0 0.0 0.0 0.0 Time To Reduce (s) 0.0 0.0 0.0 0.0 Recall Mode None None Min Min Walk Time (s) Flash Dont Walk (s) Pedestrian Calls (#/hr) V/c Ratio 0.90 0.50 0.45 0.84 0.12	All Dod Time (s)	1.0 1.0		0.0 1 N		10 10	10	
Lost Hille Adjust (s) 0.0 0.0 0.0 0.0 Total Lost Time (s) 4.0 5.0 5.0 Lead/Lag Lag Lead Lead Lead-Lag Optimize? Yes Yes Yes Vehicle Extension (s) 2.6 2.6 2.6 2.6 Minimum Gap (s) 3.0 3.0 3.0 3.0 Time Before Reduce (s) 0.0 0.0 0.0 0.0 Time To Reduce (s) 0.0 0.0 0.0 0.0 Recall Mode None Min Min Walk Time (s) Flash Dont Walk (s) Pedestrian Calls (#/hr) V/c Ratio 0.90 0.50 0.45 0.84 0.12	Lost Timo Adjust (s)	0.0		1.0 0.0		0.0	0.0	
Lead/Lag Lag Lead Lead-Lag Optimize? Yes Yes Vehicle Extension (s) 2.6 2.6 2.6 Minimum Gap (s) 3.0 3.0 3.0 Time Before Reduce (s) 0.0 0.0 0.0 Time To Reduce (s) 0.0 0.0 0.0 Recall Mode None Min Min Walk Time (s) Flash Dont Walk (s) Pedestrian Calls (#/hr) v/c Ratio 0.90 0.50 0.45 0.84 0.12	Total Lost Time (a)	0.0 1 A		0.0 / ()		5.0 5.0	5.0	
Lead-Lag Load Load Lead-Lag Optimize? Yes Yes Vehicle Extension (s) 2.6 2.6 Minimum Gap (s) 3.0 3.0 Time Before Reduce (s) 0.0 0.0 Time To Reduce (s) 0.0 0.0 Recall Mode None Min Walk Time (s) Flash Dont Walk (s) Pedestrian Calls (#/hr) V/c Ratio 0.90 0.50 0.45 0.45 0.84 0.12		4.0		ort Doci		beal	0.0 heal	
Vehicle Extension (s) 2.6	Lead Log Optimize?			Lay		Loau Voe	Ves	
Venicie Extension (s) 2.0 <th2.0< th=""> 2.0 <th2.0< th=""></th2.0<></th2.0<>	Vobiolo Extoncion (c)	26		2.6		26	26	
Minimul Bap (s) 3.0 0.0 0.0 0.0 Time Before Reduce (s) 0.0 0.0 0.0 0.0 Time To Reduce (s) 0.0 0.0 0.0 0.0 Recall Mode None Min Min Walk Time (s) Flash Dont Walk (s) Pedestrian Calls (#/hr) y/c Ratio 0.90 0.50 0.45 0.84 0.12	Minimum Con (a)	۲.0 ۲ ۸	onisis si entre.	3 U		2.0 3.0	2.0 2.0	
Time Define (Nodes (s) 0.0 0.0 0.0 0.0 Time To Reduce (s) 0.0 0.0 0.0 0.0 Recall Mode None Min Min Walk Time (s) Flash Dont Walk (s) Pedestrian Calls (#/hr) V/c Ratio 0.90 0.50 0.45 0.84 0.12	Timo Roforo Poduco (o)	0.0		0.0 0.0		0.0	0.0 0.0	
Recall Mode None None Min Min Walk Time (s) Flash Dont Walk (s) Pedestrian Calls (#/hr) V/c Ratio 0.90 0.50 0.45 0.84 0.12	Time To Deduce (8)	0.0 A A		0.0 0.0		0.0 ^ ^	0.0 0 0	
Note Note Note Note Walk Time (s) Flash Dont Walk (s) Pedestrian Calls (#/hr) V/c Ratio 0.90 0.50 0.45 0.84 0.12		U.U Nono		V.U None		0.0 Min	0.0 Min	
Flash Dont Walk (s) Pedestrian Calls (#/hr) v/c Ratio 0.90 0.50 0.45 0.84 0.12	Neuk Time (n)	INDUR		NOTE		IAIR I	I III IIII	
Pedestrian Calls (#/hr) v/c Ratio 0.90 0.50 0.45 0.84 0.12	Walk Tille (5)							
V/c Ratio 0.90 0.50 0.45 0.84 0.12	Padastrian Calle (#/br)							
	recesciali Calis (#/11)	0.00		0 50	በ ለፍ	V 8 V	0 12	
Control Liplay 76.1 35.1 10.9 33.4 X.7	Control Delay	0.00 96 1		0.00 25 1	10 Q	3.0∓ 3.2 ∕l	<u>۲۲ والع</u>	

Saturday Peak NB Detour Only - Optimized 02/27/2020 Baseline EAM

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03/22/2020

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Lane Group	WBL	WBR	SEL	SET	NWT	NWR		
Queue Delay	0,0		0.0	0.0	0.0	0.0		
Total Delay	26.1		35.1	10.9	33.4	8.2		5. 11 1 1 - 1 - 1 11 - 2 - 1 1 1 - 1 1 - 1 11 - 1
Queue Length 50th (ft)	117		41	108	194	7		
Queue Length 95th (ft)	#302		#86	164	#253	22		
Internal Link Dist (ft)	2268			301	2150			
Turn Bay Length (ft)						80		on en
Base Capacity (vph)	891		239	1039	718	639		
Starvation Cap Reductn	0		0	0	0	0		
Spillback Cap Reductn	0		0	0	0	0		
Storage Cap Reductn	0		0	0	0	0	•	
Reduced v/c Ratio	0.80		0.46	0.45	0.75	0.11		
Intersection Summary			(H)					

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4

Area Type: Other

Cycle Length: 65

Actuated Cycle Length: 59.2

Natural Cycle: 65

Control Type: Actuated-Uncoordinated

95th percentile volume exceeds capacity, queue may be longer.

Queue shown is maximum after two cycles.

Splits and Phases: 6: Mendon Rd (RI 122) & Nate Whipple Hwy (RI 120)

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27s	123	25.5

HCM Signalized Intersection Capacity Analysis 7: Plaza Driveway/West Wrentham Rd & Mendon Rd (RI 122)

03/22/2020

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Movement	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Lane Configurations		4			\$			4		ሻ	£Î	
Traffic Volume (vph)	7	2	20	123	0	68	128	290	10	22	336	452
Future Volume (vph)	7	2	20	123	0	68	128	290	10	22	336	452
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	16	16	16	12	12	12	14	14	12	11	14	14
Total Lost time (s)		4.0			4.0			5.0		5.0	5.0	
Lane Util. Factor		1.00			1.00			1.00		1.00	1.00	
Frt		0.91			0.95			0.99		1.00	0.92	
Fit Protected		0.99			0.97			0,99		0.95	1.00	
Satd. Flow (prot)	5 2 S S I	1935			1711			1968		1678	1787	
Flt Permitted		0.93			0.79			0.46		0.46	1.00	
Satd. Flow (perm)		1814			1389			914		818	1787	
Peak-hour factor, PHF	0.58	0.50	0.62	0.93	0.92	0.77	0.82	0.74	0.42	0.50	0.81	0.88
Adj. Flow (vph)	12	4	32	132	0	88	156	392	- 24	44	415	514
RTOR Reduction (vph)	0	27	0	0	34	0	0	2	0	0	65	0
Lane Group Flow (vph)	0	21	0	0	186	0	0	570	0	44	864	0
Heavy Vehicles (%)	0%	0%	0%	2%	2%	2%	1%	1%	1%	4%	4%	4%
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		2			2			1			1	
Permitted Phases	2			2			1			1		
Actuated Green, G (s)		11.6			11.6			46.9		46.9	46.9	
Effective Green, g (s)		11.6			11.6			46.9		46.9	46.9	
Actuated g/C Ratio		0.17		an and the second to	0.17			0.69		0.69	0.69	
Clearance Time (s)		4.0			4.0			5.0	8 16 30 10	5.0	5.0	
Vehicle Extension (s)		2.6			2.6			2.8		2.8	2.8	
Lane Grp Cap (vph)		311			238			635		568	1241	
v/s Ratio Prot											0.48	
v/s Ratio Perm		0.01			c0.13			c0.62		0.05		
v/c Ratio		0.07			0.78			0.90		0.08	0.70	and the second second
Uniform Delay, d1		23.4	\$ 0.0 S		26.7			8.3	84490 161 161	3.3	6.1	
Progression Factor	n a de active en a strene en en tre and de s	1.00			1.00		naur e Anael miert na me	1.00		1.00	1.00	
Incremental Delay, d2		0,1			14.9			15.3		0.1	1.7	
Delay (s)		23.5			41.6			23.6		3.4	7.8	
Level of Service		С			D			C		Α	A	
Approach Delay (s)		23.5	anna ceanna 1813.		41.6	7		23.6			7.6	
Approach LOS		C	<u>6 8 6 6</u>		D			C			A	
Intersection Summary												
HCM 2000 Control Delay			17.2	H	CM 2000	Level of	Service		В			
HCM 2000 Volume to Capac	ity ratio		0.87	www.www.www.	leg gegenere verben ve	ruge konstantas oraș		u ang paga mananing paga	alay says cruck how	ana ang katalakan		ja j
Actuated Cycle Length (s)			67.5	Si	um of los	t time (s)			9.0			
Intersection Capacity Utilizati	ion		97.6%	IC	U Level (ot Service) 1935-1935 - Star		۲			
Analysis Period (min)			15									

c Critical Lane Group

Lanes, Volumes, Timings 7: Plaza Driveway/West Wrentham Rd & Mendon Rd (RI 122)

03/22/2020

Base Group Set NB3 NB3 NB3 NB3 SET SET SET SET NB3 NMB3 SET S		ሻ	Ť	۴	l,	Ļ	¥J	ي.	X	\mathbf{i}	£	×	*
Lane Configurations ϕ_{1} ϕ_{2} <th>Lane Group</th> <th>NBL</th> <th>NBT</th> <th>NBR</th> <th>SBL</th> <th>SBT</th> <th>SBR</th> <th>SEL</th> <th>SET</th> <th>SER</th> <th>NWL</th> <th>NWT</th> <th>NWR</th>	Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Traffic Vokima (vph) 7 2 20 123 0 68 128 290 10 22 336 452 ideal Flow (vph) 1900 100 100 100 <td< td=""><td>Lane Configurations</td><td></td><td>4</td><td></td><td></td><td>4</td><td></td><td></td><td>\$</td><td></td><td>٦</td><td>4Î</td><td></td></td<>	Lane Configurations		4			4			\$		٦	4Î	
Future Volume (vph) 7 2 20 123 0 66 128 290 10 22 336 452 ideal Flow (vphp) 1900	Traffic Volume (vph)	7	2	20	123	0	68	128	290	10	22	336	452
local Fox (pshp1) 1900 <td>Future Volume (vph)</td> <td>7</td> <td>2</td> <td>20</td> <td>123</td> <td>0</td> <td>68</td> <td>128</td> <td>290</td> <td>10</td> <td>22</td> <td>336</td> <td>452</td>	Future Volume (vph)	7	2	20	123	0	68	128	290	10	22	336	452
$ \begin{array}{c c c c c c c c c c c c c c c c c c c $	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Grade (%) 0% 0% 0% 0% 0% Storage Length (ft) 0 <	Lane Width (ft)	16	16	16	12	12	12	14	14	12	11	14	14
Shorage Lengh (ft) 0 0 0 0 0 0 0 0 0 0 0 0 1 0 Storage Lenes 0 0 0 0 0 0 1 0 Storage Lenes 0 25 25 25 25 25 1 0 1 0 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 0 1 0 1 0 1 0 0 1 0 1 0 1 0 1	Grade (%)		0%			0%			0%			0%	
Shorage Lanes 0 0 0 0 0 1 0 Taper Length (II) 25 777 12.9 29.7 15.1 777 7 7 7 7 7 7 7 7 7 7 7 7 10.0 10.00 10.0% 1	Storage Length (ft)	0		0	0		0	0		0	0		0
Taper Length (III) 25 25 25 25 76s Yes Yes <thyes< th=""> <</thyes<>	Storage Lanes	0		0	0		0	0		0	1		0
Fight Turn on Red Yes Yes Yes Yes Yes Yes Link Spead (mph) 25 36 35 35 36 35 36 35 36 35 36 35 36 35 36	Taper Length (ft)	25			25			25			25		
Link Speed (mph) 25 35 35 36 Link Distance (ft) 209 662 1525 777 Confl. Pecks. (#hr) 5.7 12.9 29.7 15.1 Confl. Bikes (#hr)	Right Turn on Red		5 60 00 CO	Yes			Yes			Yes		143 (3 9)	Yes
Link Distance (ft) 209 662 1525 777 Travel Time (s) 5.7 12.9 29.7 15.1 Confl. Pets. (#hr) 15.1 Confl. Pets. (#hr) 15.1 Confl. Pets. (#hr) 15.1 Confl. Pets. (#hr) 0 0.82 0.74 0.42 0.50 0.81 0.88 Growth Factor 100%	Link Speed (mph)		25			35			35			35	
Travel Time (s) 5.7 12.9 29.7 15.1 Confl. Pices. (#hr) 0.58 0.50 0.62 0.93 0.92 0.77 0.82 0.74 0.42 0.50 0.81 0.88 Growth Factor 100% <td< td=""><td>Link Distance (ft)</td><td></td><td>209</td><td></td><td></td><td>662</td><td></td><td></td><td>1525</td><td></td><td></td><td>777</td><td></td></td<>	Link Distance (ft)		209			662			1525			777	
Conf. Peds. (#hr) Conf. Bikos (#hr) Peak Hour Factor 100% <td>Travel Time (s)</td> <td></td> <td>5.7</td> <td></td> <td></td> <td>12.9</td> <td></td> <td></td> <td>29,7</td> <td></td> <td></td> <td>15.1</td> <td></td>	Travel Time (s)		5.7			12.9			29,7			15.1	
Confl. Elikes (#/hr) Peak Hour Factor 0.58 0.50 0.62 0.93 0.92 0.77 0.82 0.74 0.42 0.50 0.81 0.88 Growth Factor 100%	Confl. Peds. (#/hr)												
Peak Hour Factor 0.58 0.50 0.62 0.93 0.92 0.77 0.82 0.74 0.42 0.50 0.81 0.88 Growth Factor 100% 100	Confl. Bikes (#/hr)												
Growth Factor 100%	Peak Hour Factor	0.58	0.50	0.62	0.93	0.92	0.77	0.82	0.74	0.42	0.50	0.81	0.88
Heavy Vehicles (%) 0% 0% 0% 2% 2% 2% 1% 1% 1% 4% 4% 4% Bus Blockages (#hn) 0	Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Bus Blockages (#/hr) 0	Heavy Vehicles (%)	0%	0%	0%	2%	2%	2%	1%	1%	1%	4%	4%	4%
Parking (#/hr) Mid-Block Traffic (%) 0% 0% 0% 0% Shared Lane Traffic (%) 0 48 0 0 220 0 0 572 0 44 929 0 Turn Type Perm NA ND ND ND ND ND ND ND ND ND ND <td>Bus Blockages (#/hr)</td> <td>0</td>	Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Mid-Block Traffic (%) 0% 0% 0% 0% 0% Shared Lane Traffic (%)	Parking (#/hr)									94000			
Shared Lane Traffic (%) / Lane Group Flow (vph) 0 48 0 0 220 0 0 572 0 44 929 0 Turn Type Perm NA Perm NA Perm NA Perm NA Protected Phases 2 2 1 1 1 1 1 Detector Phase 2 2 2 1 1 1 1 1 Switch Phase 2 2 2 1 <td>Mid-Block Traffic (%)</td> <td></td> <td>0%</td> <td></td> <td></td> <td>0%</td> <td></td> <td></td> <td>0%</td> <td></td> <td></td> <td>0%</td> <td></td>	Mid-Block Traffic (%)		0%			0%			0%			0%	
Lane Group Flow (vph) 0 48 0 0 220 0 0 572 0 44 929 0 Turn Type Perm NA Perm NA Perm NA Perm NA Protected Phases 2 2 1 1 1 Detector Phase 2 2 1 1 1 1 Switch Phase 2 2 2 1 1 1 1 Switch Phase	Shared Lane Traffic (%)						67 63 53 iğ						1
Turn Type Perm NA Perm NA Perm NA Perm NA Protected Phases 2 2 1	Lane Group Flow (vph)	0	48	0	0	220	0	0	572	0	44	929	0
Protected Phases 2 2 1 1 Permitted Phases 2 2 1 1 1 Detector Phase 2 2 2 1 1 1 Switch Phase	Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Permitted Phases 2 2 1 1 Detector Phase 2 2 2 1 1 1 Switch Phase	Protected Phases	220000000000000000000000000	2			2			1			1	
Detector Phase 2 2 2 2 1 1 1 1 Switch Phase	Permitted Phases	2			2			1			1		
Switch Phase Minimum Initial (s) 10.0 <t< td=""><td>Detector Phase</td><td>2</td><td>2</td><td>·········</td><td>2</td><td>2</td><td></td><td>1</td><td>1</td><td></td><td>1</td><td>1</td><td></td></t<>	Detector Phase	2	2	·········	2	2		1	1		1	1	
Minimum Initial (s) 10.0	Switch Phase												
Minimum Split (s) 14.0 14.0 14.0 14.0 15.0 15.0 15.0 15.0 Total Split (s) 16.0 16.0 16.0 16.0 54.0 40.0 49.0 49.0 49.0 49.0 49.0 49.0 40.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 4.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0 5.0	Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Total Split (s) 16.0 16.0 16.0 16.0 54.0 56.0 50.0 50.0 50.0 50.0 50.0 50.0 50.0	Minimum Split (s)	14.0	14.0		14.0	14.0		15.0	15.0		15.0	15.0	
Total Split (%) 22.9% 22.9% 22.9% 77.1%	Total Split (s)	16.0	16.0		16.0	16.0		54.0	54.0		54.0	54.0	
Maximum Green (s) 12.0 12.0 12.0 12.0 49.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 40.0 10.0 1.0	Total Split (%)	22.9%	22.9%		22.9%	22.9%		77.1%	77.1%		77.1%	77.1%	
Yellow Time (s) 3.0 3.0 3.0 3.0 4.0 4.0 4.0 4.0 All-Red Time (s) 1.0 </td <td>Maximum Green (s)</td> <td>12.0</td> <td>12.0</td> <td></td> <td>12.0</td> <td>12.0</td> <td></td> <td>49.0</td> <td>49.0</td> <td></td> <td>49.0</td> <td>49.0</td> <td></td>	Maximum Green (s)	12.0	12.0		12.0	12.0		49.0	49.0		49.0	49.0	
All-Red Time (s) 1.0 <td>Yellow Time (s)</td> <td>3.0</td> <td>3,0</td> <td></td> <td>3.0</td> <td>3.0</td> <td></td> <td>4.0</td> <td>4.0</td> <td></td> <td>4.0</td> <td>4.0</td> <td></td>	Yellow Time (s)	3.0	3,0		3.0	3.0		4.0	4.0		4.0	4.0	
Lost Time Adjust (s) 0.0	All-Red Time (s)	1.0	1.0		1.0	1.0		1.0	1.0		1.0	1.0	
Total Lost Time (s) 4.0 4.0 5.0 5.0 5.0 Lead/Lag Lag Lag Lag Lag Lead	Lost Time Adjust (s)		0.0			0.0			0.0		0.0	0.0	
Lead/Lag Lag Lag Lag Lag Lag Lag Lag Lag Lead Lead <thlead< th=""> <thlead<< td=""><td>Total Lost Time (s)</td><td></td><td>4.0</td><td></td><td></td><td>4.0</td><td></td><td></td><td>5.0</td><td></td><td>5.0</td><td>5.0</td><td></td></thlead<<></thlead<>	Total Lost Time (s)		4.0			4.0			5.0		5.0	5.0	
Lead-Lag Optimize? Yes	Lead/Lag	Lag	Lag		Lag	Lag		Lead	Lead		Lead	Lead	
Vehicle Extension (s) 2.6 2.6 2.6 2.6 2.8	Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes		Yes	Yes	
Minimum Gap (s) 3.0	Vehicle Extension (s)	2.6	2.6		2.6	2.6		2.8	2.8		2.8	2.8	
Time Before Reduce (s) 0.0	Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time To Reduce (s) 0.0 Recall Mode Min Min Min Min Min Min Min Min Win Min Min </td <td>Time Before Reduce (s)</td> <td>0.0</td> <td>0.0</td> <td></td> <td>0.0</td> <td>0.0</td> <td></td> <td>0.0</td> <td>0.0</td> <td></td> <td>0.0</td> <td>0.0</td> <td></td>	Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode None None None Min Min Min Walk Time (s) Flash Dont Walk (s) Pedestrian Calls (#/hr) V/c Ratio 0.14 0.81 0.90 0.08 0.71 V/c Ratio 0.14 0.81 0.90 0.08 0.71 Control Delay 14.3 47.3 29.5 3.7 8.3	Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Walk Time (s) Flash Dont Walk (s) Pedestrian Calls (#/hr) v/c Ratio 0.14 0.81 0.90 0.08 0.71 Control Delay 14.3 47.3 29.5 3.7 8.3	Recall Mode	None	None		None	None		Min	Min		Min	Min	
V/c Ratio 0.14 0.81 0.90 0.08 0.71 Control Delay 14.3 47.3 29.5 3.7 8.3	Walk Time (s)			an an gan san ar she bara siya a									
V/c Ratio 0.14 0.81 0.90 0.08 0.71 Control Delay 14.3 47.3 29.5 3.7 8.3	Flash Dont Walk (s)												
v/c Ratio 0.14 0.81 0.90 0.08 0.71 Control Delay 14.3 47.3 29.5 3.7 8.3	Pedestrian Calls (#/hr)						,		a ann ann a' féire bhfi			= = = = = (* * * * * * * * * * * * * *	
Control Delay 14.3 47.3 29.5 3.7 8.3	v/c Ratio		0.14			0.81			0.90		0.08	0.71	
	Control Delay		14.3			47.3			29.5		3.7	8.3	

Saturday Peak NB Detour Only - Optimized 02/27/2020 Baseline EAM

Lanes, Volumes, Timings 7: Plaza Driveway/West Wrentham Rd & Mendon Rd (RI 122)

03/22/2020

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Lane Group	NBL	NBT	NBR	SBL	SBT	SBR	SEL	SET	SER	NWL	NWT	NWR
Queue Delay		0.0			0.0			0.0	44.614	0.0	0.0	20 - St. (S)
Total Delay		14.3			47.3			29.5		3.7	8,3	
Queue Length 50th (ft)		6			75			156		5	138	
Queue Length 95th (ft)		12			#188			210		7	188	
Internal Link Dist (ft)		129			582			1445			697	
Turn Bay Length (ft)												
Base Capacity (vph)		349			281			667		595	1358	
Starvation Cap Reductn		0			0			0		0	0	
Spillback Cap Reductn		0			0			0		0	0	
Storage Cap Reductn		0			0			0		0	0	Amala automatication of 1
Reduced v/c Ratio		0.14			0.78			0.86		0.07	0.68	
Intersection Summary												
Area Type: Ol	her											
Cycle Length: 70												
Actuated Cycle Length: 67.5												
Natural Cycle: 70												
Control Type: Actuated-Uncoc	ordinated				8.5.5.5							
# 95th percentile volume exc	ceeds cap	acity, que	eue may l	be longe	r.							

Queue shown is maximum after two cycles.

Splits and Phases: 7: Plaza Driveway/West Wrentham Rd & Mendon Rd (RI 122)

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03/22/2020

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		ф.			, ‡}-			4 4+			\$	
Traffic Volume (vph)	14	200	42	60	0	0	236	46	51	20	46	11
Future Volume (vph)	14	200	42	60	0	0	236	46	51	20	46	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	13	13	13	13	13	13	13	11	11	11
Total Lost time (s)		5.0			5.0			4.0			4.0	
Lane Util. Factor	1969-9969-4999-1996-9979 1996-1996-1999-1996-1996-1996-1996-199	1.00		therfeldestillestille	1.00	4999949283999 <u>9</u> 94499		1.00	0199900000097999		1.00	PORTE VERSE ARE DRAM
Frt		0.97			1.00			0.99			0.98	
Fit Protected	900900/20102002	1.00	1999/02/02/2012/02/2		0.95		********	0.96	802748767676767676767676767676767676767 	220928897793779 	0.99	19999122092004
Satd, Flow (prot)		1887			1847			1867			1759	
Fit Permitted	*::::::::::::::::::::::::::::::::::::::	0.98			0.49			0.70			0.82	
Satd. Flow (perm)		1856			961			1360			1471	
Peak-hour factor, PHF	0.70	0.81	0.66	0.83	0.85	0.75	0.55	0.55	0.91	0.56	0.68	0.69
Adi, Flow (vph)	20	247	64	72	0	0	429	84	56	36	68	16
RTOR Reduction (vph)	0	8000-77864000 0	0	0 0	0 0	онананана О	0	онотона ()	0 0	0 1	0	0
Lane Group Flow (vph)	Ő	331	Ō	Ō	72	Ō	Ō	569	Ō	Ō	120	<u>,</u>
Heavy Vehicles (%)	1%	1%	1%	1%	 1%	1%	0%	0%	0%	1%	1%	1%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	42	0	0	Ö
Turn Type	Perm	NA		Perm	NA		Perm	NA		Perm	NA	
Protected Phases		1			1			2			2	
Permitted Phases	80.650 m.696 sizona 1	*****		1			2	00000000000000000000000000000000000000	*****	2		i sessiones anno 19
Actuated Green, G (s)		13.0			13.0			23.5			23.5	
Effective Green, a (s)		13.0	anda mala teo de ala 1920.	an diberna Diaman.	13.0			23.5	161993-949419-949419-9594 1	li se se i se	23.5	1.000000000000000
Actuated g/C Ratio		0.29			0.29			0.52		-50.531755.5	0.52	
Clearance Time (s)	09000000000000000000000000000000000000	5.0	A195-992-9961-996	ana ang tang tang tang tang tang tang ta	5.0	anna sinn ann an		4.0		:	4.0	1990-1990-1990-1
Vehicle Extension (s)		2.8			2,8			2.6			2.6	
Lane Grp Cap (vph)		530			274			702			759	
v/s Ratio Prot												
v/s Ratio Perm		c0.18			0.07	landa kana sa sharana sh		c0.42		1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 - 1999 -	0.08	- 1.1. A construction of
v/c Ratio		0.62			0.26			0.81	60.48.09.55		0.16	
Uniform Delay, d1		14.1			12.5			9.1			5.8	
Progression Factor		1.00			1.00			1.00			1.00	
Incremental Delay, d2		2,2		wanesa wasa ƙasarta	0.5		2103023333333434343000	6.9		i Aleksi Aleksi Millere lik	0.1	
Delay (s)		16.3			13.0			-16.1			5.9	
Level of Service	rinte della della della	В			В	ni i Mantili (Nandi)		В		-9	A	entration (Section 2016) - 4
Approach Delay (s)		16.3			13.0			16.1			5.9	
Approach LOS	na da ngangana kata	В			В			В			A	n na stan an stan an stan stan stan stan
Intersection Summary												
HCM 2000 Control Delay			14.8	H	CM 2000	Level of	Service		В			
HCM 2000 Volume to Capacit	y ratio		0.74					5. 19. (58-58-52)				
Actuated Cycle Length (s)	• reconcidente (447		45.5	SL	im of lost	time (s)		1919 - NALIS STANDAR († 1919) 1919 - Nalis Standard († 1919)	9.0			
Intersection Capacity Utilization	n		59.1%	IC	U Level o	of Service			В			
Analysis Period (min)	19 COM 11 COM 10	oeverser Alfantiska	15	ananan na sana sa	n an	an ta da bara ƙasar ƙasar	a contra contra Me		a na sana sang sang sang sang sang sang			~~~~~ <u>~</u>
c Critical Lane Group			9.8.6									

Lanes, Volumes, Timings			
17: West Wrentham Rd & Pine Swamp	Rd (RI	114)

03/22/2020

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4						÷‡÷			ф,	
Traffic Volume (vph)	14	200	42	60	0	0	236	46	51	20	46	11
Future Volume (vph)	14	200	42	60	0	0	236	46	51	20	46	11
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ff)	13	13	13	13	13	13	13	13	13	11	11	11
Grade (%)		0%			0%			0%	contras resolutes Securitor resolutes		0%	
Storage Length (ff)	0		0	0	-2011/02/07/27/27/27/2	0	0	-948-959-958-958-958-958-958-958-958-958-95	0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Lenoth (ft)	25	8718-269 (VII) (UZ) ((8976) 998 (8876) 998 (8976) 998 (8876) 998	25	enderen Barelandean.	terranderse er sons fordet.	25		1999 (1995 - 1997) 1999 (1996 - 1997)	25	an bada sa	PROFESSION STREET
Right Turn on Red			No			Yes			No			No
Link Sneed (mph)		30			40			25			25	
Link Distance (ff)		3320			7947			1008			920	
Travel Time (s)		75.5	0570,00500,0050,005		135.5	1920/06/00/07/1/02/ 1920/06/07/07/1/02/		27.5		000000000000000000000000000000000000000	25.1	en e
Confl Peds (#/hr)					100,0							
Confl Bikes (#/br)		884 - 887 - 888 - 888 - 888 - 888 - 888 - 888 - 888 - 888 - 888 - 888 - 888 - 888 - 888 - 888 - 888 - 888 - 88 - 888 - 888 - 888 - 888 - 888 - 888 - 888 - 888 - 888 - 888 - 888 - 888 - 888 - 888 - 888 - 888 - 888 - 888 - 8 - 888 - 888 - 888 - 888 - 888 - 888 - 888 - 888 - 888 - 888 - 888 - 888 - 888 - 888 - 888 - 888 - 888 - 888 - 8										en e
Peak Hour Factor	0.70	<u>∩ 81</u>	0.66	0.83	<u> </u>	0 75	0.55	0.55	<u> </u>	0.56	0.68	0 69
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Hagyw Vahirles (%)	100%	10070	1%	1%	10070	1%	0%	100 % N%	100%	100 70	1%	10070
Rue Blockages (#/br)	۳, ۱ ۵	۰ <i>۳</i> ۳	איז	<u> </u>	۰. ۱	<u>مەرىچە</u> 1		ν.ν Λ	070 12	<u>%</u> ا	אינאינא איני ח	89.689.69 A
Dus Diockages (#/iii) Darking (#/br)	v	v	v	<u> </u>	v	v	v		- <u></u>	V	v	v Na v
Faiking (#/III) Mid Block Troffic (%)		U0/			0%			በ%			ሰ%	
Phorod Long Troffig (9/)		078			070			V N			070	
Sindled Lane Trailic (%)	۵	224	<u>م</u>	<u>م</u>	70	n •	0	660	<u>م</u>	٩	120	
Lane Gloup Flow (vpi)	Dorm	JJ I NIA	V	Dorm		v Stario	Dorm	NIA	U	Dorm	IZU NA	U U
Protected Phases	Leiiii	NA 4		гени	۸۷۱ 4	83448486003	Генн	אַנו ר		FGIII	ארו 2	
Protected Phases	4	ا میں 1988 میں 1984 میں		4	1		0	4		<u> </u>	4	28.454 (See
Petrotor Dhono	1	4		1	1		2 2	0		2 2	2	
Deleciul Pilase	l Series and series	l 2013		1	 		7	ک دور دو روی		Z	Z	
Switch Phase	40.0	10.0		10.0	10.0		<u>۶</u> ۵	۶۵ د		ΕΛ	۶ ۸	
Minimum Initial (S)	10.0	10.0		10.0	10.0		0.0	0.0		0.0	0.0	RADIONSEA
Minimum Spiit (S)	10.0	00.0	68 <u>61</u> 9.698.6	10.0	0.01		9.U 25 0	9.0		9.U 25 A	9.U 25.0	as denoted
Total Split (S)	20.0	20.0		20.0	20.0		0.CC	30.0		30.0	30.0	
Total Split (%)	30.4%	30,4%		30.4%	30.4%		03.0%	03.0%		03,0%	03.0%	
Maximum Green (s)	15.U	15.U	400000 (STORE	10.0	15.0		31.0	31.0		31.U 0.0	31.U	00001300303
Yellow Time (s)	4.0	4.U		4.0	4.0		3.0	3.0	8.9.5.19	3.U	3.0	
All-Red Lime (s)	1.0	1.0		1.0	1.0		1.0	1.0		U.f	1.0	
Lost Time Adjust (s)		0.0			0.0			0.0			0.0	
Total Lost Time (s)		5.0			5.0		1	4.0			4.0	
Lead/Lag	Lead	Lead		Lead	Lead		Lag	Lag		Lag	Lag	
Lead-Lag Optimize?	Yes	Yes	vero storen dar	Yes	Yes		Yes	Yes		Yes	Yes	
Vehicle Extension (s)	2.8	2.8		2.8	2.8		2.6	2.6		2.6	2.6	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0,0		0.0	0.0		0.0	0.0	
Recall Mode Walk Time (s) Flash Dont Walk (s)	Min	Min		Min	Min		None	None		None	None	
Pedestrian Calls (#/hr)		0.00			0.07			0.00			040	
vic Ratio Control Delay		0.63			0.27 18.3			20.9			0.16 6.4	

Saturday Peak NB Detour Only - Optimized 02/27/2020 Baseline EAM

Lanes, Volumes, Timings 17: West Wrentham Rd & Pine Swamp Rd (RI 114)

03/22/2020

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0	8.43 SI 8		0.0			0.0			0.0	
Total Delay		22.8			18.3			20.9			6.4	
Queue Length 50th (ft)		83			16			114			15	
Queue Length 95th (ft)		146			44			95			26	10 1. CTUDATI 10 11
Internal Link Dist (ft)		3240			7867			928			840	
Turn Bay Length (ft)												
Base Capacity (vph)		635			329			963			1042	
Starvation Cap Reductn		0			0			0			0	szynastacia
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn	na comunication de la comunicación de	0			0			0			0	
Reduced v/c Ratio		0.52			0.22			0.59			0.12	
Intersection Summary												
Area Type: O	ther					6.6.6.6						
Cycle Length: 55												
Actuated Cycle Length: 45.9												
Natural Cycle: 55	مندر و در در در در در در در در											NTC (1997)
Control Type: Actuated-Uncoc	ordinated											
Splits and Phases: 17: Wes	t Wrentha	am Rd & I	Pine Swai	mp Rd (R	RI 114)							
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03/22/2020

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Movement	EBT	EBR	WBL	WBT	NBL	NBR
Lane Configurations	↑	7	٣	ł	ሻ	ሻ
Traffic Volume (veh/h)	356	193	170	126	Ó	0
Future Volume (Veh/h)	356	193	170	126	0	0
Sign Control	Free			Free	Stop	9 8 9 g i
Grade	0%	et en		0%	0%	
Peak Hour Factor	0.83	0.91	0.79	0.88	0.88	0.89
Hourly flow rate (vph)	429	212	215	143	0	0
Pedestrians Lane Width (ft)						
Walking Speed (ft/s)			99 87 57 S			10 10 10 10 10
Percent Blockage						
Right turn flare (veh)						10
Median type	None			None		
Median storage veh)						
Upstream signal (ft)						
pX, platoon unblocked					4000	400
vC, conflicting volume			429		1002	429
vC1, stage 1 cont vol						(5) (3) (3) (3) (3) (3)
vC2, stage 2 cont vol			400		1000	400
VOU, UNDIOCKED VOI			429			429 60
IC, SINGIE (S)			4.1		0.4	0.2
IC, Z Slaye (S)			22		32	33
n (s)			2,2 81	1997/210/20/19	100	100
cM capacity (veh/h)			1136		218	626
Direction Lane #	EB 1	EB 2	W/R 1	WR 2	NR 1	010
Volume Total	129	212	215	143	<u></u> Ω	
Volume Left	<u>م</u> حد 1	<u></u>	215	0	Ň	
Volume Right	, C	212	- · · 0	Ŭ 0		
cSH	1700	1700	1136	1700	1700	
Volume to Capacity	0.25	0.12	0.19	0.08	0.00	nara katabés di kélépéké
Queue Length 95th (ft)	0	0	17	0	0	
Control Delay (s)	0.0	0.0	8.9	0.0	0.0	
Lane LOS			Α		Α	
Approach Delay (s)	0.0		5.3		0.0	
Approach LOS					Α	
Intersection Summary						
Average Delay			19			ASN PARTOS AGENT
Intersection Capacity Utiliza	ation		34.8%	n Cl	U Level (of Service
Analysis Period (min)			15			

	4	•	Ť	1	1	Ļ		
Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations			^			^		
Traffic Volume (vph)	0	0	481	0	0	415		
Future Volume (vph)	0	0	481	0	0	415		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Total Lost time (s)			4.0			13.5		
Lane Util. Factor			1.00			1.00		
Frt			1.00			1.00		
Flt Protected			1.00			1.00		
Satd. Flow (prot)			1863			950		
Flt Permitted			1.00			1.00		
Satd. Flow (perm)			1863			950		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92		
Adj. Flow (vph)	0	0	523	0	0	451		
RTOR Reduction (vph)	0	0	0	0	0	0		
Lane Group Flow (vph)	0	0	523	0	0	451		
Heavy Vehicles (%)	2%	2%	2%	2%	2%	100%		
Turn Type			NA			NA		
Protected Phases			Free			4		
Permitted Phases								
Actuated Green, G (s)			120.0			33.5		
Effective Green, g (s)			120.0			33.5		
Actuated g/C Ratio			1.00			0.28		
Clearance Time (s)						13.5		
Lane Grp Cap (vph)			1863			265		
v/s Ratio Prot			0.28			c0.47		
v/s Ratio Perm								
v/c Ratio			0.28			1.70		
Uniform Delay, d1			0.0			43.2		
Progression Factor			1.00			1.00		
Incremental Delay, d2			0.3			331.5		
Delay (s)			0.3			374.8		
Level of Service			А			F		
Approach Delay (s)	0.0		0.3			374.8		
Approach LOS	А		А			F		
Intersection Summary								
HCM 2000 Control Delay			173.7	Н	CM 2000	Level of Servi	ce	
HCM 2000 Volume to Capacit	y ratio		0.92					
Actuated Cycle Length (s)			120.0	S	um of los	t time (s)		
Intersection Capacity Utilization	n		33.1%	IC	CU Level	of Service		
Analysis Period (min)			15					

c Critical Lane Group

03/25/2020

Lane Group WBL WBR NBT NBR SBL SBT Ø2 Ø3 Ø5 Ø6 Ø7 Lane Configurations Ø3 Ø5 Ø6 Ø7 Ø3 Ø5 Ø6 Ø7 Ø3 Ø5 Ø6 Ø7 Traffic Volume (vph) 0 0 481 0 0 415 Ø3 Ø5 Ø6 Ø7 Ø3 Ø5 Ø6 Ø7 Ø3 Ø5 Ø6 Ø7 Ø3 Ø5 Ø6 Ø7 Ø3 Ø5 Ø6 Ø7		-	•	1	1	- \	Ļ						
Lane Configurations Image of the state of t	Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø2	Ø3	Ø5	Ø6	Ø7	
Lane Working ActivitiesImage: Constraint of the second secon	Lane Configurations			*			*						
Hume Volume (vph) 0 181 0 0 415 Ideal Flow (vphpl) 1900 1900 1900 1900 1900 Lane Width (ft) 12 12 12 12 12 Grade (%) 0% 0% 0% 0% Storage Length (ft) 0 0 0 0 Taper Length (ft) 25 25 25 Right Turn on Red Yes Yes 1 Link Speed (mph) 20 20 20 Link Distance (ft) 281 227 8671 Travel Time (s) 9.6 7.7 295.6 Confl. Bikes (#/hr) Confl. Bikes (#/hr) 7 295.6 Confl. Peds. (#/hr) 7 295.6 292.6 Growth Factor 0.92 0.92 0.92 0.92 Growth Factor 0.92 0.92 0.92 0.92 Growth Factor 100% 100% 100% 100% Heavy Vehicles (%) 2% 2% 2% 100% Bus Blockages (#/hr) 0 0	Traffic Volume (vph)	0	0	481	0	0	415						
Ideal Flow (vphpl) 1900 1900 1900 1900 1900 Lane Width (ft) 12 12 12 12 12 12 Grade (%) 0% 0% 0% 0% 0% 0% Storage Length (ft) 0 0 0 0 0 0 Storage Lanes 0 0 0 0 0 0 0 Taper Length (ft) 25 25 25 25 20	Future Volume (vph)	0	0	481	0	0	415						
Lane Width (ft) 12 12 12 12 12 12 Grade (%) 0% 0% 0% 0% Storage Length (ft) 0 0 0 0 Taper Length (ft) 25 25 25 Right Turn on Red Yes Yes Yes Link Distance (ft) 281 227 8671 Travel Time (s) 9.6 7.7 295.6 Confl. Peds. (#/hr) Confl. Bikes (#/hr) Ves Ves Peak Hour Factor 0.92 0.92 0.92 0.92 Growth Factor 100% 100% 100% 100% Heavy Vehicles (%) 2% 2% 2% 2% 100% Bus Blockages (#/hr) 0 0 0 0 0 Parking (#/hr) 0% 0% 0% 0% 0%	Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900						
Land Har (H) Hz Hz <td>Lane Width (ft)</td> <td>12</td> <td>12</td> <td>12</td> <td>12</td> <td>12</td> <td>12</td> <td></td> <td></td> <td></td> <td></td> <td></td> <td></td>	Lane Width (ft)	12	12	12	12	12	12						
Storage Length (ft) 0 0 0 0 Storage Lanes 0 0 0 0 Taper Length (ft) 25 25 Right Turn on Red Yes Yes Link Speed (mph) 20 20 Link Distance (ft) 281 227 8671 Travel Time (s) 9.6 7.7 295.6 Confl. Peds. (#/hr) 0 0.92 0.92 0.92 Peak Hour Factor 0.92 0.92 0.92 0.92 Growth Factor 100% 100% 100% 100% Heavy Vehicles (%) 2% 2% 2% 100% Bus Blockages (#/hr) 0 0 0 0 Parking (#/hr) 0 0 0 0	Grade (%)	0%	12	0%	14	12	0%						
Storage Lange 0 0 0 0 Taper Length (ft) 25 25 Right Turn on Red Yes Yes Link Speed (mph) 20 20 Link Distance (ft) 281 227 8671 Travel Time (s) 9.6 7.7 295.6 Confl. Peds. (#/hr) 0 0.92 0.92 0.92 Peak Hour Factor 0.92 0.92 0.92 0.92 Growth Factor 100% 100% 100% 100% Heavy Vehicles (%) 2% 2% 2% 100% Bus Blockages (#/hr) 0 0 0 0 Parking (#/hr) 0 0 0 0	Storage Length (ft)	0,0	0	070	0	0	070						
Taper Length (ft) 25 25 Right Turn on Red Yes Yes Link Speed (mph) 20 20 Link Distance (ft) 281 227 Right Turn on Red Yes Yes Link Distance (ft) 281 227 Right Turn on Red Yes Yes Link Distance (ft) 281 227 Right Turn on Red 9.6 7.7 Confl. Peds. (#/hr) 0 7.7 Peak Hour Factor 0.92 0.92 0.92 Growth Factor 100% 100% 100% 100% Heavy Vehicles (%) 2% 2% 2% 100% Bus Blockages (#/hr) 0 0 0 0 Parking (#/hr) 0 0 0 0 0 Mid-Block Traffic (%) 0% 0% 0% 0% 0%	Storage Lanes	0	0		0	0							
Right Turn on Red Yes Yes Link Speed (mph) 20 20 20 Link Distance (ft) 281 227 8671 Travel Time (s) 9.6 7.7 295.6 Confl. Peds. (#/hr) 0.92 0.92 0.92 0.92 Peak Hour Factor 0.92 0.92 0.92 0.92 0.92 Growth Factor 100% 100% 100% 100% 100% Heavy Vehicles (%) 2% 2% 2% 2% 100% Bus Blockages (#/hr) 0 0 0 0 0 Parking (#/hr) 0 0 0 0 0	Taper Length (ft)	25	0		0	25							
Link Speed (mph) 20 20 20 Link Distance (ft) 281 227 8671 Travel Time (s) 9.6 7.7 295.6 Confl. Peds. (#/hr) 0 0.92 0.92 0.92 0.92 Peak Hour Factor 0.92 0.92 0.92 0.92 0.92 Growth Factor 100% 100% 100% 100% 100% Heavy Vehicles (%) 2% 2% 2% 100% 100% Bus Blockages (#/hr) 0 0 0 0 0 Parking (#/hr) 0 0 0 0 0	Right Turn on Red	20	Yes		Yes	20							
Link Opod (mph) 20 20 20 20 20 20 20 20 20 20 20 20 20	Link Speed (mph)	20	100	20	100		20						
Image: Distance (iii) 1201 121 0011 Travel Time (s) 9.6 7.7 295.6 Confl. Peds. (#/hr) 0011 0011 0011 Confl. Bikes (#/hr) 0.92 0.92 0.92 0.92 Peak Hour Factor 0.92 0.92 0.92 0.92 0.92 Growth Factor 100% 100% 100% 100% 100% Heavy Vehicles (%) 2% 2% 2% 100% Bus Blockages (#/hr) 0 0 0 0 Parking (#/hr) 0 0 0 0	Link Distance (ft)	281		227			8671						
Confl. Peds. (#/hr) 0.92 0.92 0.92 0.92 0.92 0.92 Peak Hour Factor 0.92 0.92 0.92 0.92 0.92 0.92 Growth Factor 100% 100% 100% 100% 100% 100% Heavy Vehicles (%) 2% 2% 2% 2% 100% Bus Blockages (#/hr) 0 0 0 0 0 Parking (#/hr) 0% 0% 0% 0%	Travel Time (s)	9.6		77			295.6						
Confl. Bikes (#/hr) Peak Hour Factor 0.92 0.92 0.92 0.92 0.92 Growth Factor 100% 100% 100% 100% 100% Heavy Vehicles (%) 2% 2% 2% 2% 100% Bus Blockages (#/hr) 0 0 0 0 0 Parking (#/hr) 0% 0% 0% 0%	Confl Peds (#/hr)	0.0		1.1			200.0						
Peak Hour Factor 0.92	Confl Bikes (#/hr)												
Growth Factor 100% 100% 100% 100% 100% Heavy Vehicles (%) 2% 2% 2% 2% 100% Bus Blockages (#/hr) 0 0 0 0 0 Parking (#/hr) 0% 0% 0% 0%	Peak Hour Factor	0 92	0.92	0 92	0 92	0 02	0 92						
Heavy Vehicles (%) 2% 2% 2% 2% 100 % <t< td=""><td>Growth Factor</td><td>100%</td><td>100%</td><td>100%</td><td>100%</td><td>100%</td><td>100%</td><td></td><td></td><td></td><td></td><td></td><td></td></t<>	Growth Factor	100%	100%	100%	100%	100%	100%						
Bus Blockages (#/hr) 0	Heavy Vehicles (%)	2%	2%	2%	2%	2%	100%						
Dus blockages (#/hr) 0 0 0 0 0 0 Parking (#/hr) Mid-Block Traffic (%) 0% 0	Bus Blockages (#/br)	2 /0	2 /0	2 /0	2 /0	2 /0	0,001						
Mid-Block Traffic (%) 0% 0% 0%	Dus Diockages (#/III)	0	0	0	0	0	0						
	Mid-Block Traffic (%)	0%		0%			0%						
Shared Lane Traffic (%)	Shared Lane Traffic (%)	0 70		0 70			0 /0						
$\int \operatorname{Are} \operatorname{Croup} \operatorname{Flow} (\operatorname{Vrb}) = 0 = 0 = 523 = 0 = 0 = 451$	Lane Group Flow (vph)	٥	0	523	0	٥	151						
		0	0	NA	0	0	NΔ						
Protected Phases Erec 4 2 3 5 6 7	Protected Phases			Eroo			1	2	3	5	6	7	
	Parmitted Phases			TIEE			4	2	5	5	0	I	
Detector Phases	Detector Phase						1						
Switch Phase	Switch Phase						Ŧ						
	Minimum Initial (s)						5.0	10.0	5.0	10.0	10.0	10.0	
Minimum Snlit (s) 18.5 23.0 18.5 14.0 15.0 15.0	Minimum Solit (s)						18.5	23.0	18.5	14.0	15.0	15.0	
Total Split (s) 10.5 20.0 10.0 14.0 10.0 10.0 10.0 10.0 10.0 1	Total Split (s)						10.5	20.0 54.5	18.5	27.0	27.5	65.5	
Total Split (%) 30.2% 45% 15% 23% 55%	Total Split (%)						30.2%	15%	15%	27.0	27.5	55%	
$\begin{array}{c} 33.5 \\ 33.5 \\ 33.5 \\ 50.5 \\ 33.5 \\ 50.5 \\ 23.0 \\ 23$	Maximum Green (s)						33.2 /0	50.5	50	23.0	22.5	60.5	
Vellow Time (s) 35.3 30.3 5 30 40 40	Vellow Time (s)						35	3.0	3.5	20.0	10	4.0	
All-Red Time (s) 100 10 10 10 10	All-Red Time (s)						10.0	1.0	10.0	1.0	4.0 1.0	4.0	
$\int A(r) dr (s) = 0.0 1.0 $	Lost Time Adjust (s)						0.0	1.0	10.0	1.0	1.0	1.0	
Total Lost Time (s) 13.5	Total Lost Time (s)						13.5						
							l an		heal	heal	ne l		
Lead-Lag Lead Lead Lag	Lead Lag						Ves		Vee	Vos	Vas		
Vehicle Extension (s) 30 26 30 26 30 30	Vehicle Extension (s)						3.0	26	3.0	2.6	3.0	3.0	
Minimum Gan (s) 3.0 3.0 3.0 3.0 3.0 3.0 3.0	Minimum Gap (s)						3.0	2.0	3.0	2.0	3.0	3.0	
	Time Before Reduce (s)						0.0	0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s) 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0 0.0	Time To Peduce (s)						0.0	0.0	0.0	0.0	0.0	0.0	
Pacall Made Max None Max None Min Min	Pacall Mode						Max	None	Max	None	0.0 Min	0.0 Min	
	Walk Time (e)						Ινίαλ	NULLE	IVIAN	NULLE	IVIIII	IVIIII	
Flash Dont Walk (s)	Flash Dont Walk (s)												
Padestrian Calle (#/hr)	Pedestrian Calls (#/br)												
v/c Ratio 0.28 1.70	v/c Ratio			0.28			1 70						
Control Delay 0.3 361.0	Control Delay			0.20			361.0						

AM Peak Temporary Signal 02/27/2020 Baseline EAM

	4	*	1	1	1	ţ						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø2	Ø3	Ø5	Ø6	Ø7	
Queue Delay			0.0			0.0						
Total Delay			0.3			361.0						
Queue Length 50th (ft)			0			~513						
Queue Length 95th (ft)			0			#718						
Internal Link Dist (ft)	201		147			8591						
Turn Bay Length (ft)												
Base Capacity (vph)			1863			265						
Starvation Cap Reductn			0			0						
Spillback Cap Reductn			0			0						
Storage Cap Reductn			0			0						
Reduced v/c Ratio			0.28			1.70						
Intersection Summary												

 Area Type:
 Other

 Cycle Length: 120

 Actuated Cycle Length: 120

 Offset: 0 (0%), Referenced to phase 2:NBT and 6:, Start of Green

 Natural Cycle: 150

 Control Type: Pretimed

 ~ 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: 29: Diamond Hill Rd (RI 114) & Dummy Signal 2

#28 Ø2 (R)		#28 Ø3	#29 • Ø4	
54.5 s		18.5 <mark>s</mark>	47 s	
#1	#1 Ø6 (R)	#1 • Ø7		
27 s	27.5 s	65.5 s		

	1	•	†	1	×	Ŧ		
Movement	WBI	WBR	NBT	NBR	SBI	SBT		
Lane Configurations			*			*		
Traffic Volume (vph)	0	0	481	0	0	415		
Future Volume (vph)	0	0	481	0	0	415		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Total Lost time (s)			4.0			4.0		
Lane Util. Factor			1.00			1.00		
Frt			1.00			1.00		
Flt Protected			1.00			1.00		
Satd. Flow (prot)			1863			1863		
Flt Permitted			1.00			1.00		
Satd. Flow (perm)			1863			1863		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92		
Adj. Flow (vph)	0	0	523	0	0	451		
RTOR Reduction (vph)	0	0	0	0	0	0		
Lane Group Flow (vph)	0	0	523	0	0	451		
Turn Type			NA			NA		
Protected Phases			23			Free		
Permitted Phases								
Actuated Green, G (s)			59.5			120.0		
Effective Green, g (s)			59.5			120.0		
Actuated g/C Ratio			0.50			1.00		
Clearance Time (s)								
Lane Grp Cap (vph)			923			1863		
v/s Ratio Prot			c0.28			0.24		
v/s Ratio Perm								
v/c Ratio			0.57			0.24		
Uniform Delay, d1			21.2			0.0		
Progression Factor			0.07			1.00		
Incremental Delay, d2			0.2			0.0		
Delay (s)			1.7			0.0		
Level of Service			Α			А		
Approach Delay (s)	0.0		1.7			0.0		
Approach LOS	А		A			А		
Intersection Summary								
HCM 2000 Control Delay			0.9	H	CM 2000	Level of Servic	e	A
HCM 2000 Volume to Capacity	ratio		0.54					
Actuated Cycle Length (s)			120.0	S	um of lost	t time (s)	3	36.0
Intersection Capacity Utilization	า		33.1%	IC	CU Level of	of Service		А
Analysis Period (min)			15					
c Critical Lane Group								

Lanes, Volumes, Timings 28: Diamond Hill Rd (RI 114) & Dummy Signal 1

03/23/2020	03	25	20)20	
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Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7
Lane Configurations			*			*						
Traffic Volume (vph)	0	0	481	0	0	415						
Future Volume (vph)	0	0	481	0	0	415						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900						
Lane Width (ft)	12	12	12	12	12	12						
Grade (%)	0%		0%			0%						
Storage Length (ft)	0	0	0,0	0	0	0,0						
Storage Lanes	0	0		0	0							
Taper Length (ft)	25	Ū		, , , , , , , , , , , , , , , , , , ,	25							
Right Turn on Red		Yes		Yes								
Link Speed (mph)	30		20			20						
Link Distance (ft)	238		150			227						
Travel Time (s)	54		51			77						
Confl Peds (#/hr)	0.11		011									
Confl Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92						
Growth Factor	100%	100%	100%	100%	100%	100%						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%						
Bus Blockages (#/hr)	2 /0	270	270	2 /0	270	270						
Parking (#/hr)	Ŭ	Ŭ	Ū	Ŭ	Ŭ	Ū						
Mid-Block Traffic (%)	0%		0%			0%						
Shared Lane Traffic (%)	070		070			070						
Lane Group Flow (vph)	0	0	523	0	0	451						
Turn Type	Ŭ	Ŭ	NA	Ŭ	Ŭ	NA						
Protected Phases			2.3			Free	2	3	4	5	6	7
Permitted Phases			20			1100	-	Ū		Ŭ	Ű	
Detector Phase			23									
Switch Phase			_ •									
Minimum Initial (s)							10.0	5.0	5.0	10.0	10.0	10.0
Minimum Split (s)							23.0	18.5	18.5	14.0	15.0	15.0
Total Split (s)							54.5	18.5	47.0	27.0	27.5	65.5
Total Split (%)							45%	15%	39%	23%	23%	55%
Maximum Green (s)							50.5	5.0	33.5	23.0	22.5	60.5
Yellow Time (s)							3.0	3.5	3.5	3.0	4.0	4.0
All-Red Time (s)							1.0	10.0	10.0	1.0	1.0	1.0
Lost Time Adjust (s)												
Total Lost Time (s)												
Lead/Lag								Lead	Lao	Lead	Lag	
Lead-Lag Optimize?								Yes	Yes	Yes	Yes	
Vehicle Extension (s)							2.6	3.0	3.0	2.6	3.0	3.0
Minimum Gap (s)							3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)							0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)							0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode							None	Max	Max	None	Min	Min
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio			0.49			0.24						
Control Delay			1.2			0.7						

AM Peak Temporary Signal 02/27/2020 Baseline EAM

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Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7
Queue Delay			54.8			0.0						
Total Delay			56.0			0.8						
Queue Length 50th (ft)			5			0						
Queue Length 95th (ft)			m4			m0						
Internal Link Dist (ft)	158		70			147						
Turn Bay Length (ft)												
Base Capacity (vph)			1071			1863						
Starvation Cap Reductn			599			0						
Spillback Cap Reductn			0			283						
Storage Cap Reductn			0			0						
Reduced v/c Ratio			1.11			0.29						

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 Intersection Summary

 Area Type:
 Other

 Cycle Length: 120
 Actuated Cycle Length: 120

 Actuated Cycle Length: 120
 Offset: 0 (0%), Referenced to phase 2:NBT and 6:, Start of Green

 Natural Cycle: 150
 Control Type: Pretimed

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

Splits and Phases: 28: Diamond Hill Rd (RI 114) & Dummy Signal 1



HCM Signalized Intersection Capacity Analysis 1: Diamond Hill Rd (RI 114) & Nate Whipple Hwy (RI 120)

03/25/2020

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4.			44			4 44			44	
Traffic Volume (vph)	61	124	32	18	125	107	49	313	20	104	253	58
Future Volume (vph)	61	124	32	18	125	107	49	313	20	104	253	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	13	13	13	13	12	12	12	12	12	12
Total Lost time (s)		4.0			4.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.98			0.94			0.99			0.98	
Flt Protected		0.99			1.00			0.99			0.99	
Satd. Flow (prot)		1789			1757			1803			1787	
Flt Permitted		0.48			0.95			0.99			0.99	
Satd. Flow (perm)		862			1668			1803			1787	
Peak-hour factor, PHF	0.80	0.84	0.80	0.90	0.82	0.84	0.82	0.82	0.83	0.81	0.82	0.81
Adj. Flow (vph)	76	148	40	20	152	127	60	382	24	128	309	72
RTOR Reduction (vph)	0	6	0	0	22	0	0	2	0	0	5	0
Lane Group Flow (vph)	0	258	0	0	277	0	0	464	0	0	504	0
Heavy Vehicles (%)	6%	6%	6%	5%	5%	5%	4%	4%	4%	3%	3%	3%
Turn Type	Perm	NA		Perm	NA		Split	NA		Split	NA	
Protected Phases		5			5		6	6		7	7	
Permitted Phases	5			5								
Actuated Green, G (s)		23.0			23.0			22.5			60.5	
Effective Green, g (s)		23.0			23.0			22.5			60.5	
Actuated g/C Ratio		0.19			0.19			0.19			0.50	
Clearance Time (s)		4.0			4.0			5.0			5.0	
Lane Grp Cap (vph)		165			319			338			900	
v/s Ratio Prot								c0.26			c0.28	
v/s Ratio Perm		c0.30			0.17							
v/c Ratio		1.57			0.87			1.37			0.56	
Uniform Delay, d1		48.5			47.0			48.8			20.6	
Progression Factor		1.00			1.00			1.00			0.45	
Incremental Delay, d2		281.8			26.0			186.0			2.5	
Delay (s)		330.3			73.0			234.7			11.7	
Level of Service		F			E			F			В	
Approach Delay (s)		330.3			73.0			234.7			11.7	
Approach LOS		F			E			F			В	
Intersection Summary												
HCM 2000 Control Delay			145.9	Н	CM 2000	Level of S	Service		F			
HCM 2000 Volume to Capacity	y ratio		1.20									
Actuated Cycle Length (s)			120.0	S	um of lost	time (s)			36.0			
Intersection Capacity Utilizatio	n		76.0%	IC	CU Level of	of Service			D			
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings 1: Diamond Hill Rd (RI 114) & Nate Whipple Hwy (RI 120)

03/25/2020

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4 2-			4			44			4	
Traffic Volume (vph)	61	124	32	18	125	107	49	313	20	104	253	58
Future Volume (vph)	61	124	32	18	125	107	49	313	20	104	253	58
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	13	13	13	13	13	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		1854			4162			1592			150	
Travel Time (s)		31.6			70.9			36.2			3.4	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.80	0.84	0.80	0.90	0.82	0.84	0.82	0.82	0.83	0.81	0.82	0.81
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	6%	6%	6%	5%	5%	5%	4%	4%	4%	3%	3%	3%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	264	0	0	299	0	0	466	0	0	509	0
Turn Type	Perm	NA		Perm	NA		Split	NA		Split	NA	
Protected Phases		5			5		6	6		. 7	7	
Permitted Phases	5			5								
Detector Phase	5	5		5	5		6	6		7	7	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	14.0	14.0		14.0	14.0		15.0	15.0		15.0	15.0	
Total Split (s)	27.0	27.0		27.0	27.0		27.5	27.5		65.5	65.5	
Total Split (%)	22.5%	22.5%		22.5%	22.5%		22.9%	22.9%		54.6%	54.6%	
Maximum Green (s)	23.0	23.0		23.0	23.0		22.5	22.5		60.5	60.5	
Yellow Time (s)	3.0	3.0		3.0	3.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	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	
Total Lost Time (s)		4.0			4.0			5.0			5.0	
Lead/Lag	Lead	Lead		Lead	Lead		Lag	Lag				
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes				
Vehicle Extension (s)	2.6	2.6		2.6	2.6		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	None	None		None	None		Min	Min		Min	Min	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		1.55			0.88			1.37			0.56	
Control Delay		308.7			69.2			223.8			11.8	

AM Peak Temporary Signal 02/27/2020 Baseline EAM

Lane Group	Ø2	Ø3	Ø4
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Ideal Flow (vphpl)			
Lane Width (ft)			
Grade (%)			
Storage Length (ft)			
Storage Lanes			
Taper Length (ft)			
Right Turn on Red			
Link Speed (mph)			
Link Distance (ff)			
Travel Time (s)			
Confl Peds (#/hr)			
Confl Bikes (#/hr)			
Peak Hour Factor			
Growth Eactor			
Bus Blockages (#/br)			
Dus Diochayes (#/111) Darking (#/hr)			
Mid Block Troffic (0/)			
Sharad Lana Traffic (%)			
Shared Lane Trailic (%)			
Lane Group Flow (vpn)			
Turn Type	0	0	4
Protected Phases	2	3	4
Permitted Phases			
Detector Phase			
Switch Phase	10.0		
Minimum Initial (s)	10.0	5.0	5.0
Minimum Split (s)	23.0	18.5	18.5
Total Split (s)	54.5	18.5	47.0
Total Split (%)	45%	15%	39%
Maximum Green (s)	50.5	5.0	33.5
Yellow Time (s)	3.0	3.5	3.5
All-Red Time (s)	1.0	10.0	10.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag		Lead	Lag
Lead-Lag Optimize?		Yes	Yes
Vehicle Extension (s)	2.6	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0
Recall Mode	None	Max	Max
Walk Time (s)			
Flash Dont Walk (s)			
Pedestrian Calls (#/hr)			
v/c Ratio			
Control Delay			
Sond Doluy			

AM Peak Temporary Signal 02/27/2020 Baseline EAM

Lanes, Volumes, Timings 1: Diamond Hill Rd (RI 114) & Nate Whipple Hwy (RI 120)

03/25/2020

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0			0.0			0.3			17.5	
Total Delay		308.7			69.2			224.0			29.3	
Queue Length 50th (ft)		~286			208			~479			48	
Queue Length 95th (ft)		#417			#309			#602			112	
Internal Link Dist (ft)		1774			4082			1512			70	
Turn Bay Length (ft)												
Base Capacity (vph)		170			341			339			906	
Starvation Cap Reductn		0			0			0			389	
Spillback Cap Reductn		0			0			9			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		1.55			0.88			1.41			0.98	

Intersection Summary

Area Type: Other

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 2:NBT and 6:, Start of Green

Natural Cycle: 150

Control Type: Pretimed

Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Splits and Phases: 1: Diamond Hill Rd (RI 114) & Nate Whipple Hwy (RI 120)

#28 Ø2 (R)		#28 Ø3	#29 Ø4	
54.5 s		18.5 <mark>s</mark>	47 s	
#1 Ø5	#1 Ø6 (R)	#1		
27 s	27.5 s	65.5 s		

Lane Group	Ø2	Ø3	Ø4
Queue Delay			
Total Delay			
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			

	∢	•	1	۲	1	Ļ		
Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations			•			•		
Traffic Volume (vph)	0	0	403	0	0	325		
Future Volume (vph)	0	0	403	0	0	325		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Total Lost time (s)			4.0			13.5		
Lane Util. Factor			1.00			1.00		
Frt			1.00			1.00		
Flt Protected			1.00			1.00		
Satd. Flow (prot)			1863			950		
Flt Permitted			1.00			1.00		
Satd. Flow (perm)			1863			950		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92		
Adj. Flow (vph)	0	0	438	0	0	353		
RTOR Reduction (vph)	0	0	0	0	0	0		
Lane Group Flow (vph)	0	0	438	0	0	353		
Heavy Vehicles (%)	2%	2%	2%	2%	2%	100%		
Turn Type			NA			NA		
Protected Phases			Free			4		
Permitted Phases								
Actuated Green, G (s)			120.0			27.5		
Effective Green, q (s)			120.0			27.5		
Actuated g/C Ratio			1.00			0.23		
Clearance Time (s)						13.5		
Lane Grp Cap (vph)			1863			217		
v/s Ratio Prot			0.24			c0.37		
v/s Ratio Perm								
v/c Ratio			0.24			1.63		
Uniform Delay, d1			0.0			46.2		
Progression Factor			1.00			1.00		
Incremental Delay, d2			0.3			302.1		
Delay (s)			0.3			348.4		
Level of Service			А			F		
Approach Delay (s)	0.0		0.3			348.4		
Approach LOS	А		А			F		
Intersection Summary								
HCM 2000 Control Delay			155.6	Н	CM 2000	Level of Serv	ice	F
HCM 2000 Volume to Capacity	ratio		0.75		2000	20101010010		
Actuated Cycle Length (s)			120.0	S	um of lost	t time (s)		36.0
Intersection Capacity Utilization)		28.4%	10	CU Level o	of Service		A
Analysis Period (min)			15					

c Critical Lane Group

Lanes, Volumes, Timings 29: Diamond Hill Rd (RI 114) & Dummy Signal 2

03/25/2020

	4	•	1	1	1	Ļ						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø2	Ø3	Ø5	Ø6	Ø7	
Lane Configurations			*			*						
Traffic Volume (vph)	0	0	403	0	0	325						
Future Volume (vph)	0	0	403	0	0	325						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900						
Lane Width (ft)	12	12	12	12	12	12						
Grade (%)	0%		0%			0%						
Storage Length (ft)	0	0	0,0	0	0	0,0						
Storage Lanes	0	0		0	0							
Taper Length (ft)	25	-		-	25							
Right Turn on Red		Yes		Yes								
Link Speed (mph)	20		20			20						
Link Distance (ft)	281		227			8671						
Travel Time (s)	9.6		7.7			295.6						
Confl. Peds. (#/hr)	,10					27010						
Confl Bikes (#/hr)												
Peak Hour Factor	0.92	0 92	0.92	0.92	0 92	0.92						
Growth Factor	100%	100%	100%	100%	100%	100%						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	100%						
Bus Blockages (#/hr)	0	0	0	0	0	0						
Parking (#/hr)	Ū	U	Ū	Ū	0	Ū						
Mid-Block Traffic (%)	0%		0%			0%						
Shared Lane Traffic (%)	070		070			070						
Lane Group Flow (vph)	0	0	438	0	0	353						
Turn Type	Ū	Ű	NA	Ŭ	Ű	NA						
Protected Phases			Free			4	2	3	5	6	7	
Permitted Phases			1100			•	-	Ū	U	Ŭ	,	
Detector Phase						4						
Switch Phase												
Minimum Initial (s)						5.0	5.0	5.0	10.0	10.0	10.0	
Minimum Split (s)						22.5	22.5	18.5	14.0	15.0	15.0	
Total Split (s)						41.0	62.0	17.0	41.0	21.0	58.0	
Total Split (%)						34.2%	52%	14%	34%	18%	48%	
Maximum Green (s)						27.5	57.5	3.5	37.0	16.0	53.0	
Yellow Time (s)						3.5	3.5	3.5	3.0	4.0	4.0	
All-Red Time (s)						10.0	1.0	10.0	1.0	1.0	1.0	
Lost Time Adjust (s)						0.0						
Total Lost Time (s)						13.5						
Lead/Lag						Lag		Lead	Lead	Lag		
Lead-Lag Optimize?						Yes		Yes	Yes	Yes		
Vehicle Extension (s)						3.0	3.0	3.0	2.6	3.0	3.0	
Minimum Gap (s)						3.0	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)						0.0	0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)						0.0	0.0	0.0	0.0	0.0	0.0	
Recall Mode						Мах	Мах	Мах	Max	Мах	Мах	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio			0.24			1.63						
Control Delay			0.3			333.8						

PM Peak Temporary Signal 02/27/2020 Baseline EAM

	4	*	1	1	1	ţ						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø2	Ø3	Ø5	Ø6	Ø7	
Queue Delay			0.0			0.0						
Total Delay			0.3			333.8						
Queue Length 50th (ft)			0			~394						
Queue Length 95th (ft)			0			#582						
Internal Link Dist (ft)	201		147			8591						
Turn Bay Length (ft)												
Base Capacity (vph)			1863			217						
Starvation Cap Reductn			0			0						
Spillback Cap Reductn			0			0						
Storage Cap Reductn			0			0						
Reduced v/c Ratio			0.24			1.63						
Intersection Summary												

intersection Summary				
Area Type:	Other			
Cycle Length: 120				
Actuated Cycle Length: 1	20			
Offset: 23.5 (20%), Refer	enced to ph	ase 7:SBTL, Start of Gr	een	
Natural Cycle: 150				
Control Type: Pretimed				
Malana a sura a da a su		the discount of the discount of the second sec		

~ 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: 29: Diamond Hill Rd (RI 114) & Dummy Signal 2

	, , , , , , , , , , , , , , , , , , , ,			
#28 Ø2		#28 Ø3	#29 ↓ Ø4	
62 s		17 s	41 s	
#1	#1 1 Ø6	#1 Ø7 (R)		
41 s	21 s	58 s		

	€	•	†	1	×	Ŧ		
Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations			•			•		
Traffic Volume (vph)	0	0	403	0	0	325		
Future Volume (vph)	0	0	403	0	0	325		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Total Lost time (s)			4.5			4.0		
Lane Util. Factor			1.00			1.00		
Frt			1.00			1.00		
Flt Protected			1.00			1.00		
Satd. Flow (prot)			1863			1863		
Flt Permitted			1.00			1.00		
Satd. Flow (perm)			1863			1863		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92		
Adj. Flow (vph)	0	0	438	0	0	353		
RTOR Reduction (vph)	0	0	0	0	0	0		
Lane Group Flow (vph)	0	0	438	0	0	353		
Turn Type			NA			NA		
Protected Phases			23			Free		
Permitted Phases								
Actuated Green, G (s)			65.5			120.0		
Effective Green, g (s)			65.5			120.0		
Actuated g/C Ratio			0.55			1.00		
Clearance Time (s)								
Lane Grp Cap (vph)			1016			1863		
v/s Ratio Prot			c0.24			0.19		
v/s Ratio Perm								
v/c Ratio			0.43			0.19		
Uniform Delay, d1			16.2			0.0		
Progression Factor			0.08			1.00		
Incremental Delay, d2			0.1			0.0		
Delay (s)			1.4			0.0		
Level of Service			А			А		
Approach Delay (s)	0.0		1.4			0.0		
Approach LOS	А		А			А		
Intersection Summary								
HCM 2000 Control Delay			0.8	H	CM 2000	Level of Servic	e A	
HCM 2000 Volume to Capacity	ratio		0.44					
Actuated Cycle Length (s)			120.0	S	um of los	t time (s)	36.0	
Intersection Capacity Utilization			28.4%	IC	CU Level	of Service	А	
Analysis Period (min)			15					
c Critical Lane Group								

Lanes, Volumes, Timings 28: Diamond Hill Rd (RI 114) & Dummy Signal 2

03/25/2020

	4	•	1	1	1	Ļ						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7
Lane Configurations			*			•						
Traffic Volume (vph)	0	0	403	0	0	325						
Future Volume (vph)	0	0	403	0	0	325						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900						
Lane Width (ft)	12	12	12	12	12	12						
Grade (%)	0%		0%			0%						
Storage Length (ft)	0	0		0	0							
Storage Lanes	0	0		0	0							
Taper Length (ft)	25	Ū		0	25							
Right Turn on Red	20	Yes		Yes	20							
Link Speed (mph)	20		20			20						
Link Distance (ft)	269		150			227						
Travel Time (s)	92		51			77						
Confl Peds (#/hr)	,.=		011									
Confl Bikes (#/hr)												
Peak Hour Factor	0.92	0 92	0.92	0.92	0 92	0.92						
Growth Factor	100%	100%	100%	100%	100%	100%						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%						
Bus Blockages (#/hr)	270	2,0	2,0	2,0	2,0	2,0						
Parking (#/hr)	0	0	0	U	U	U						
Mid-Block Traffic (%)	0%		0%			0%						
Shared Lane Traffic (%)	070		070			070						
Lane Group Flow (vph)	0	0	/138	0	0	353						
	0	0	NΔ	U	U	NΔ						
Protected Phases			23			Free	2	3	4	5	6	7
Permitted Phases			2 5			TICC	2	5	г	5	0	,
Detector Phase			23									
Switch Phase			2 5									
Minimum Initial (s)							5.0	5.0	5.0	10.0	10.0	10.0
Minimum Snlit (s)							22.5	18.5	22.5	14.0	15.0	15.0
Total Split (s)							62.0	17.0	41.0	41.0	21.0	58.0
Total Split (%)							52%	14%	34%	34%	18%	48%
Maximum Green (s)							57.5	35	27.5	37.0	16.0	53.0
Vellow Time (s)							37.5	3.5	27.5	37.0	4.0	4 0
All-Red Time (s)							1.0	10.0	10.0	1.0	1.0	1.0
Lost Time Adjust (s)							1.0	10.0	10.0	1.0	1.0	1.0
Total Lost Time (s)												
								Lead	Lan	l ead	Lan	
Lead-Lag Optimize?								Yes	Yes	Yes	Yes	
Vehicle Extension (s)							3.0	3.0	3.0	2.6	3.0	3.0
Minimum Gan (s)							3.0	3.0	3.0	2.0	3.0	3.0
Time Before Reduce (s)							0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)							0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode							Max	Max	Max	Max	Max	Max
Walk Time (s)							max	Max	mux	Mux	Μαλ	Max
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio			ሀ ሪሪ			0 10						
Control Delay			1 0			0.17						

PM Peak Temporary Signal 02/27/2020 Baseline EAM

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Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7
Queue Delay			61.4			0.3						
Total Delay			62.5			0.9						
Queue Length 50th (ft)			5			0						
Queue Length 95th (ft)			m2			m0						
Internal Link Dist (ft)	189		70			147						
Turn Bay Length (ft)												
Base Capacity (vph)			1156			1863						
Starvation Cap Reductn			897			0						
Spillback Cap Reductn			0			975						
Storage Cap Reductn			0			0						
Reduced v/c Ratio			1.69			0.40						

Intersection Summary	
Area Type:	Other
Cycle Length: 120	
Actuated Cycle Length: 120	
Offset: 23.5 (20%), Referen	nced to phase 7:SBTL, Start of Green
Natural Cycle: 150	
Control Type: Pretimed	

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

Splits and Phases: 28: Diamond Hill Rd (RI 114) & Dummy Signal 2



HCM Signalized Intersection Capacity Analysis 1: Diamond Hill Rd (RI 114) & Nate Whipple Hwy (RI 120)

03/25/2020

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			\$			4			\$	
Traffic Volume (vph)	68	306	43	236	442	110	35	225	120	113	174	38
Future Volume (vph)	68	306	43	236	442	110	35	225	120	113	174	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	13	13	13	13	12	12	12	12	12	12
Total Lost time (s)		4.0			4.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.99			0.98			0.96			0.98	
Flt Protected		0.99			0.98			1.00			0.98	
Satd. Flow (prot)		1702			1791			1730			1730	
Flt Permitted		0.77			0.46			1.00			0.98	
Satd. Flow (perm)		1327			830			1730			1730	
Peak-hour factor, PHF	0.74	0.70	0.77	0.70	0.79	0.86	0.88	0.69	0.77	0.69	0.73	0.63
Adj. Flow (vph)	92	437	56	337	559	128	40	326	156	164	238	60
RTOR Reduction (vph)	0	3	0	0	4	0	0	13	0	0	4	0
Lane Group Flow (vph)	0	582	0	0	1020	0	0	509	0	0	458	0
Heavy Vehicles (%)	13%	13%	13%	6%	6%	6%	5%	5%	5%	6%	6%	6%
Turn Type	Perm	NA		Perm	NA		Split	NA		Split	NA	
Protected Phases		5			5		6	6		. 7	7	
Permitted Phases	5			5								
Actuated Green, G (s)		37.0			37.0			16.0			53.0	
Effective Green, g (s)		37.0			37.0			16.0			53.0	
Actuated g/C Ratio		0.31			0.31			0.13			0.44	
Clearance Time (s)		4.0			4.0			5.0			5.0	
Lane Grp Cap (vph)		409			255			230			764	
v/s Ratio Prot								c0.29			c0.26	
v/s Ratio Perm		0.44			c1.23							
v/c Ratio		1.42			4.00			2.21			0.60	
Uniform Delay, d1		41.5			41.5			52.0			25.4	
Progression Factor		1.00			1.00			1.00			0.67	
Incremental Delay, d2		203.7			1359.1			559.8			3.4	
Delay (s)		245.2			1400.6			611.8			20.5	
Level of Service		F			F			F			С	
Approach Delay (s)		245.2			1400.6			611.8			20.5	
Approach LOS		F			F			F			С	
Intersection Summary												
HCM 2000 Control Delay			735.2	Н	CM 2000	Level of S	Service		F			
HCM 2000 Volume to Capacity	y ratio		2.55									
Actuated Cycle Length (s)			120.0	S	um of los	t time (s)			36.0			
Intersection Capacity Utilizatio	n		119.3%	IC	CU Level	of Service			Н			
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings 1: Diamond Hill Rd (RI 114) & Nate Whipple Hwy (RI 120)

03/25/2020

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			\$			4			\$	
Traffic Volume (vph)	68	306	43	236	442	110	35	225	120	113	174	38
Future Volume (vph)	68	306	43	236	442	110	35	225	120	113	174	38
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	13	13	13	13	13	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		40			40			30			20	
Link Distance (ft)		1854			4162			1592			150	
Travel Time (s)		31.6			70.9			36.2			5.1	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.74	0.70	0.77	0.70	0.79	0.86	0.88	0.69	0.77	0.69	0.73	0.63
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	13%	13%	13%	6%	6%	6%	5%	5%	5%	6%	6%	6%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	585	0	0	1024	0	0	522	0	0	462	0
Turn Type	Perm	NA		Perm	NA		Split	NA		Split	NA	
Protected Phases		5			5		. 6	6		. 7	7	
Permitted Phases	5			5								
Detector Phase	5	5		5	5		6	6		7	7	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	14.0	14.0		14.0	14.0		15.0	15.0		15.0	15.0	
Total Split (s)	41.0	41.0		41.0	41.0		21.0	21.0		58.0	58.0	
Total Split (%)	34.2%	34.2%		34.2%	34.2%		17.5%	17.5%		48.3%	48.3%	
Maximum Green (s)	37.0	37.0		37.0	37.0		16.0	16.0		53.0	53.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	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	
Total Lost Time (s)		4.0			4.0			5.0			5.0	
Lead/Lag	Lead	Lead		Lead	Lead		Lag	Lag				
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes				
Vehicle Extension (s)	2.6	2.6		2.6	2.6		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	Мах	Max		Max	Max		Max	Max		Max	Max	
Walk Time (s)												
Flash Dont Walk (s)												
Pedestrian Calls (#/hr)												
v/c Ratio		1.42			3.94			2.15			0.60	
Control Delay		235.5			1345.5			555.7			20.6	

PM Peak Temporary Signal 02/27/2020 Baseline EAM

Lane Group	Ø2	Ø3	Ø4
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Ideal Flow (vphpl)			
Lane Width (ft)			
Grade (%)			
Storage Length (ft)			
Storage Lanes			
Taper Length (ft)			
Right Turn on Red			
Link Speed (mph)			
Link Distance (ff)			
Travol Timo (s)			
Confl Dode (#/br)			
Confl. Peus. (#/hi)			
Dook Hour Easter			
Crowth Easter			
neavy vehicles (%)			
Bus Blockages (#/NF)			
Parking (#/nr)			
IVIIU-BIOCK ITATIC (%)			
Shared Lane Traffic (%)			
Lane Group Flow (vph)			
Turn Type		-	
Protected Phases	2	3	4
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	5.0	5.0	5.0
Minimum Split (s)	22.5	18.5	22.5
Total Split (s)	62.0	17.0	41.0
Total Split (%)	52%	14%	34%
Maximum Green (s)	57.5	3.5	27.5
Yellow Time (s)	3.5	3.5	3.5
All-Red Time (s)	1.0	10.0	10.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag		Lead	Lag
Lead-Lag Optimize?		Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0
Recall Mode	Max	Max	Max
Walk Time (s)	man		
Flash Dont Walk (s)			
Pedestrian Calls (#/hr)			
v/c Ratio			
Control Delay			
Control Delay			

PM Peak Temporary Signal 02/27/2020 Baseline EAM

Lanes, Volumes, Timings 1: Diamond Hill Rd (RI 114) & Nate Whipple Hwy (RI 120)

03/25/2020

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0			0.0			0.3			55.8	
Total Delay		235.5			1345.5			556.0			76.4	
Queue Length 50th (ft)		~612			~1268			~642			94	
Queue Length 95th (ft)		#575			#1288			#609			132	
Internal Link Dist (ft)		1774			4082			1512			70	
Turn Bay Length (ft)												
Base Capacity (vph)		412			260			243			768	
Starvation Cap Reductn		0			0			0			371	
Spillback Cap Reductn		0			0			5			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		1.42			3.94			2.19			1.16	

Intersection Summary

Area Type:

Cycle Length: 120

Actuated Cycle Length: 120

Offset: 23.5 (20%), Referenced to phase 7:SBTL, Start of Green

Other

Natural Cycle: 150

Control Type: Pretimed

~ Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Splits and Phases: 1: Diamond Hill Rd (RI 114) & Nate Whipple Hwy (RI 120)

#28 Ø2		#28 Ø3	#29 • Ø4	
62 s		17 s	41s	
#1	#1 1 Ø6	#1 Ø7 (R)		
41 s	21 s	58 s		

Lane Group	Ø2	Ø3	Ø4
Queue Delay			
Total Delay			
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			

	4	•	1	۲	1	Ļ		
Movement	WBL	WBR	NBT	NBR	SBL	SBT		
Lane Configurations			*		-	*		
Traffic Volume (vph)	0	0	417	0	0	477		
Future Volume (vph)	0	0	417	0	0	477		
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900		
Total Lost time (s)			4.0			13.5		
Lane Util. Factor			1.00			1.00		
Frt			1.00			1.00		
Flt Protected			1.00			1.00		
Satd. Flow (prot)			1863			950		
Flt Permitted			1.00			1.00		
Satd. Flow (perm)			1863			950		
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92		
Adj. Flow (vph)	0	0	453	0	0	518		
RTOR Reduction (vph)	0	0	0	0	0	0		
Lane Group Flow (vph)	0	0	453	0	0	518		
Heavy Vehicles (%)	2%	2%	2%	2%	2%	100%		
Turn Type			NA			NA		
Protected Phases			Free			4		
Permitted Phases								
Actuated Green, G (s)			120.0			41.0		
Effective Green, g (s)			120.0			41.0		
Actuated g/C Ratio			1.00			0.34		
Clearance Time (s)						13.5		
Lane Grp Cap (vph)			1863			324		
v/s Ratio Prot			0.24			c0.55		
v/s Ratio Perm								
v/c Ratio			0.24			1.60		
Uniform Delay, d1			0.0			39.5		
Progression Factor			1.00			1.00		
Incremental Delay, d2			0.3			283.5		
Delay (s)			0.3			323.0		
Level of Service			А			F		
Approach Delay (s)	0.0		0.3			323.0		
Approach LOS	А		А			F		
Intersection Summary								
HCM 2000 Control Delay			172.5	Н	CM 2000	Level of Servi	се	F
HCM 2000 Volume to Capacit	y ratio		0.97					
Actuated Cycle Length (s)			120.0	S	um of los	t time (s)		36.0
Intersection Capacity Utilization	n		36.4%	IC	CU Level	of Service		А
Analysis Period (min)			15					

c Critical Lane Group

03/25/2020

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Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø2	Ø3	Ø5	Ø6	Ø7	
Lane Configurations			•			•	~-		~~~		~ .	
Traffic Volume (vph)	0	0	417	0	0	477						
Future Volume (vph)	0	0	417	0	0	477						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900						
Lane Width (ft)	12	12	12	12	12	12						
Grade (%)	0%		0%			0%						
Storage Length (ft)	0	0	0,0	0	0	0,0						
Storage Lanes	0	0		0	0							
Taper Length (ft)	25	-		-	25							
Right Turn on Red		Yes		Yes								
Link Speed (mph)	30		30			30						
Link Distance (ft)	281		228			8666						
Travel Time (s)	6.4		5.2			197.0						
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92						
Growth Factor	100%	100%	100%	100%	100%	100%						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	100%						
Bus Blockages (#/hr)	0	0	0	0	0	0						
Parking (#/hr)	Ŭ	Ū	Ŭ		, i i i i i i i i i i i i i i i i i i i	, , , , , , , , , , , , , , , , , , ,						
Mid-Block Traffic (%)	0%		0%			0%						
Shared Lane Traffic (%)	• , •		• , •			0,0						
Lane Group Flow (vph)	0	0	453	0	0	518						
Turn Type	-	-	NA	-	-	NA						
Protected Phases			Free			4	2	3	5	6	7	
Permitted Phases												
Detector Phase						4						
Switch Phase												
Minimum Initial (s)						5.0	5.0	5.0	10.0	10.0	10.0	
Minimum Split (s)						31.5	22.5	18.5	14.0	15.0	15.0	
Total Split (s)						54.5	47.0	18.5	28.0	19.0	73.0	
Total Split (%)						45.4%	39%	15%	23%	16%	61%	
Maximum Green (s)						41.0	42.5	5.0	24.0	14.0	68.0	
Yellow Time (s)						3.5	3.5	3.5	3.0	4.0	4.0	
All-Red Time (s)						10.0	1.0	10.0	1.0	1.0	1.0	
Lost Time Adjust (s)						0.0						
Total Lost Time (s)						13.5						
Lead/Lag						Lag		Lead	Lead	Lag		
Lead-Lag Optimize?						Yes		Yes	Yes	Yes		
Vehicle Extension (s)						3.0	3.0	3.0	2.6	3.0	3.0	
Minimum Gap (s)						3.0	3.0	3.0	3.0	3.0	3.0	
Time Before Reduce (s)						0.0	0.0	0.0	0.0	0.0	0.0	
Time To Reduce (s)						0.0	0.0	0.0	0.0	0.0	0.0	
Recall Mode						Max	Max	Max	Max	Max	Max	
Walk Time (s)						7.0	7.0					
Flash Dont Walk (s)						11.0	11.0					
Pedestrian Calls (#/hr)						0	0					
v/c Ratio			0.24			1.60						
Control Delay			0.3			313.0						

Saturday Peak Temporary Signal 02/27/2020 Baseline EAM
	4	•	1	1	1	ţ						
Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø2	Ø3	Ø5	Ø6	Ø7	
Queue Delay			0.0			0.0						
Total Delay			0.3			313.0						
Queue Length 50th (ft)			0			~573						
Queue Length 95th (ft)			0			#788						
Internal Link Dist (ft)	201		148			8586						
Turn Bay Length (ft)												
Base Capacity (vph)			1863			324						
Starvation Cap Reductn			0			0						
Spillback Cap Reductn			0			0						
Storage Cap Reductn			0			0						
Reduced v/c Ratio			0.24			1.60						
Intersection Summary												

Are	ea Type: Other
Су	cle Length: 120
Ac	tuated Cycle Length: 120
Of	fset: 0 (0%), Referenced to phase 7:SBTL, Start of Green
Na	tural Cycle: 150
Со	ntrol Type: Pretimed
~	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: 29: Diamond Hill Rd (RI 114) & Dummy Signal 2

#28 Ø2		#28 Ø3	#29 Ø4		
47 s		18.5 <mark>\$</mark>	54.5 s		
#1	#1 1 Ø6	#1 Ø7 (R)			
28 s	19 s	73 s			

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Movement	WBL	WBR	NBT	NBR	SBL	SBT			
Lane Configurations			*		-	*			
Traffic Volume (vph)	0	0	417	0	0	477			
Future Volume (vph)	0	0	417	0	0	477			
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900			
Total Lost time (s)			4.5			4.0			
Lane Util. Factor			1.00			1.00			
Frt			1.00			1.00			
Flt Protected			1.00			1.00			
Satd. Flow (prot)			1863			1863			
Flt Permitted			1.00			1.00			
Satd. Flow (perm)			1863			1863			
Peak-hour factor, PHF	0.92	0.92	0.92	0.92	0.92	0.92			
Adj. Flow (vph)	0	0	453	0	0	518			
RTOR Reduction (vph)	0	0	0	0	0	0			
Lane Group Flow (vph)	0	0	453	0	0	518			
Turn Type			NA			NA			
Protected Phases			23			Free			
Permitted Phases									
Actuated Green, G (s)			52.0			120.0			
Effective Green, g (s)			52.0			120.0			
Actuated g/C Ratio			0.43			1.00			
Clearance Time (s)									
Lane Grp Cap (vph)			807			1863			
v/s Ratio Prot			c0.24			0.28			
v/s Ratio Perm									
v/c Ratio			0.56			0.28			
Uniform Delay, d1			25.5			0.0			
Progression Factor			0.06			1.00			
Incremental Delay, d2			0.3			0.0			
Delay (s)			1.7			0.0			
Level of Service			А			А			
Approach Delay (s)	0.0		1.7			0.0			
Approach LOS	А		А			А			
Intersection Summary									
HCM 2000 Control Delay			0.8	H	CM 2000	Level of Servic	e	A	
HCM 2000 Volume to Capacity	ratio		0.54						
Actuated Cycle Length (s)			120.0	S	um of los	t time (s)		36.0	
Intersection Capacity Utilization	1		36.4%	IC	CU Level	of Service		А	
Analysis Period (min)			15						
c Critical Lane Group									

Lanes, Volumes, Timings 28: Diamond Hill Rd (RI 114) & Dummy Signal 1

03/23/2020	03	25	20)20	
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Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7
Lane Configurations			*			•						
Traffic Volume (vph)	0	0	417	0	0	477						
Future Volume (vph)	0	0	417	0	0	477						
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900						
Lane Width (ft)	12	12	12	12	12	12						
Grade (%)	0%		0%		.=	0%						
Storage Length (ft)	0	0	0,0	0	0	• , •						
Storage Lanes	0	0		0	0							
Taper Length (ft)	25	· ·			25							
Right Turn on Red		Yes		Yes								
Link Speed (mph)	30		30			30						
Link Distance (ff)	268		154			228						
Travel Time (s)	61		3.5			52						
Confl. Peds. (#/hr)	••••		0.0			0.2						
Confl. Bikes (#/hr)												
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92						
Growth Factor	100%	100%	100%	100%	100%	100%						
Heavy Vehicles (%)	2%	2%	2%	2%	2%	2%						
Bus Blockages (#/hr)	0	0	0	0	0	0						
Parking (#/hr)	Ŭ	Ŭ	Ŭ	Ű	Ű	Ŭ						
Mid-Block Traffic (%)	0%		0%			0%						
Shared Lane Traffic (%)	0,0		0,0			• / •						
Lane Group Flow (vph)	0	0	453	0	0	518						
Turn Type	-	-	NA	-	-	NA						
Protected Phases			23			Free	2	3	4	5	6	7
Permitted Phases								-		-	-	
Detector Phase			23									
Switch Phase												
Minimum Initial (s)							5.0	5.0	5.0	10.0	10.0	10.0
Minimum Split (s)							22.5	18.5	31.5	14.0	15.0	15.0
Total Split (s)							47.0	18.5	54.5	28.0	19.0	73.0
Total Split (%)							39%	15%	45%	23%	16%	61%
Maximum Green (s)							42.5	5.0	41.0	24.0	14.0	68.0
Yellow Time (s)							3.5	3.5	3.5	3.0	4.0	4.0
All-Red Time (s)							1.0	10.0	10.0	1.0	1.0	1.0
Lost Time Adjust (s)												
Total Lost Time (s)												
Lead/Lag								Lead	Lag	Lead	Lag	
Lead-Lag Optimize?								Yes	Yes	Yes	Yes	
Vehicle Extension (s)							3.0	3.0	3.0	2.6	3.0	3.0
Minimum Gap (s)							3.0	3.0	3.0	3.0	3.0	3.0
Time Before Reduce (s)							0.0	0.0	0.0	0.0	0.0	0.0
Time To Reduce (s)							0.0	0.0	0.0	0.0	0.0	0.0
Recall Mode							Max	Max	Max	Max	Max	Max
Walk Time (s)							7.0		7.0			
Flash Dont Walk (s)							11.0		11.0			
Pedestrian Calls (#/hr)							0		0			
v/c Ratio			0.48			0.28						
Control Delay			1.3			0.4						

Saturday Peak Temporary Signal 02/27/2020 Baseline EAM

Synchro 9 Report Page 1

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Lane Group	WBL	WBR	NBT	NBR	SBL	SBT	Ø2	Ø3	Ø4	Ø5	Ø6	Ø7
Queue Delay			56.7			0.0						
Total Delay			58.0			0.4						
Queue Length 50th (ft)			9			0						
Queue Length 95th (ft)			m6			m0						
Internal Link Dist (ft)	188		74			148						
Turn Bay Length (ft)												
Base Capacity (vph)			947			1863						
Starvation Cap Reductn			565			0						
Spillback Cap Reductn			0			222						
Storage Cap Reductn			0			0						
Reduced v/c Ratio			1.19			0.32						

Intersection Summary																
Area Type:	Other															
Cycle Length: 120																
Actuated Cycle Length: 12	20															
Offset: 0 (0%), Reference	Offset: 0 (0%), Referenced to phase 7:SBTL, Start of Green															
Natural Cycle: 150																
Control Type: Pretimed																

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

Splits and Phases: 28: Diamond Hill Rd (RI 114) & Dummy Signal 1

#28 Ø2		#28 Ø3	#29 ↓ Ø4	
47 s		18.5 <mark>s</mark>	54.5 s	
#1 \$\$\$	#1 1 Ø6	#1		
28 s	19 s	73 s		

Saturday Peak Temporary Signal 02/27/2020 Baseline

EAM

03/25/2020

HCM Signalized Inte	ersection Capacity Anal	lysis
1: Diamond Hill Rd ((RI 114) & Nate Whipple	e Hwy (RI 120)

03/25/2020

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Movement	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4			\$			4			\$	
Traffic Volume (vph)	83	119	42	17	117	129	49	205	30	176	225	76
Future Volume (vph)	83	119	42	17	117	129	49	205	30	176	225	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width	13	13	13	13	13	13	12	12	12	12	12	12
Total Lost time (s)		4.0			4.0			5.0			5.0	
Lane Util. Factor		1.00			1.00			1.00			1.00	
Frt		0.97			0.94			0.98			0.98	
Flt Protected		0.98			1.00			0.99			0.98	
Satd. Flow (prot)		1792			1800			1813			1783	
Flt Permitted		0.40			0.91			0.99			0.98	
Satd. Flow (perm)		723			1643			1813			1783	
Peak-hour factor, PHF	0.86	0.85	0.75	0.53	0.75	0.85	0.68	0.93	0.75	0.75	0.97	0.79
Adj. Flow (vph)	97	140	56	32	156	152	72	220	40	235	232	96
RTOR Reduction (vph)	0	7	0	0	24	0	0	4	0	0	6	0
Lane Group Flow (vph)	0	286	0	0	316	0	0	328	0	0	557	0
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Turn Type	Perm	NA		Perm	NA		Split	NA		Split	NA	
Protected Phases		5			5		6	6		7	7	
Permitted Phases	5			5								
Actuated Green, G (s)		24.0			24.0			14.0			68.0	
Effective Green, g (s)		24.0			24.0			14.0			68.0	
Actuated g/C Ratio		0.20			0.20			0.12			0.57	
Clearance Time (s)		4.0			4.0			5.0			5.0	
Lane Grp Cap (vph)		144			328			211			1010	
v/s Ratio Prot								c0.18			c0.31	
v/s Ratio Perm		c0.40			0.19							
v/c Ratio		1.98			0.96			1.55			0.55	
Uniform Delay, d1		48.0			47.6			53.0			16.4	
Progression Factor		1.00			1.00			1.00			0.17	
Incremental Delay, d2		467.0			41.2			270.7			2.1	
Delay (s)		515.0			88.8			323.7			4.9	
Level of Service		F			F			F			А	
Approach Delay (s)		515.0			88.8			323.7			4.9	
Approach LOS		F			F			F			A	
Intersection Summary												
HCM 2000 Control Delay			190.7	Н	CM 2000	Level of S	Service		F			
HCM 2000 Volume to Capacity	y ratio		1.27									
Actuated Cycle Length (s)			120.0	S	um of los	t time (s)			36.0			
Intersection Capacity Utilizatio	n		84.9%	IC	U Level	of Service			E			
Analysis Period (min)			15									
c Critical Lane Group												

Lanes, Volumes, Timings

1: Diamond Hill Rd (RI 114) & Nate Whipple Hwy (RI 120)

03/25/2020

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Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations		4 2-			4.			4			4.	
Traffic Volume (vph)	83	119	42	17	117	129	49	205	30	176	225	76
Future Volume (vph)	83	119	42	17	117	129	49	205	30	176	225	76
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Width (ft)	13	13	13	13	13	13	12	12	12	12	12	12
Grade (%)		0%			0%			0%			0%	
Storage Length (ft)	0		0	0		0	0		0	0		0
Storage Lanes	0		0	0		0	0		0	0		0
Taper Length (ft)	25			25			25			25		
Right Turn on Red			Yes			Yes			Yes			Yes
Link Speed (mph)		40			40			30			30	
Link Distance (ft)		1854			4162			1592			154	
Travel Time (s)		31.6			70.9			36.2			3.5	
Confl. Peds. (#/hr)												
Confl. Bikes (#/hr)												
Peak Hour Factor	0.86	0.85	0.75	0.53	0.75	0.85	0.68	0.93	0.75	0.75	0.97	0.79
Growth Factor	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%	100%
Heavy Vehicles (%)	5%	5%	5%	2%	2%	2%	2%	2%	2%	2%	2%	2%
Bus Blockages (#/hr)	0	0	0	0	0	0	0	0	0	0	0	0
Parking (#/hr)												
Mid-Block Traffic (%)		0%			0%			0%			0%	
Shared Lane Traffic (%)												
Lane Group Flow (vph)	0	293	0	0	340	0	0	332	0	0	563	0
Turn Type	Perm	NA		Perm	NA		Split	NA		Split	NA	
Protected Phases		5			5		6	6		7	7	
Permitted Phases	5			5								
Detector Phase	5	5		5	5		6	6		7	7	
Switch Phase												
Minimum Initial (s)	10.0	10.0		10.0	10.0		10.0	10.0		10.0	10.0	
Minimum Split (s)	14.0	14.0		14.0	14.0		15.0	15.0		15.0	15.0	
Total Split (s)	28.0	28.0		28.0	28.0		19.0	19.0		73.0	73.0	
Total Split (%)	23.3%	23.3%		23.3%	23.3%		15.8%	15.8%		60.8%	60.8%	
Maximum Green (s)	24.0	24.0		24.0	24.0		14.0	14.0		68.0	68.0	
Yellow Time (s)	3.0	3.0		3.0	3.0		4.0	4.0		4.0	4.0	
All-Red Time (s)	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	
Total Lost Time (s)		4.0			4.0			5.0			5.0	
Lead/Lag	Lead	Lead		Lead	Lead		Lag	Lag				
Lead-Lag Optimize?	Yes	Yes		Yes	Yes		Yes	Yes				
Vehicle Extension (s)	2.6	2.6		2.6	2.6		3.0	3.0		3.0	3.0	
Minimum Gap (s)	3.0	3.0		3.0	3.0		3.0	3.0		3.0	3.0	
Time Before Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Time To Reduce (s)	0.0	0.0		0.0	0.0		0.0	0.0		0.0	0.0	
Recall Mode	Max	Max		Max	Max		Max	Max		Max	Max	
vvalk Time (s)												
Flash Dont Walk (s)												
Pedestrian Galls (#/hr)		4.04			0.07			4 5 4			0 55	
V/C Katio		1.94			0.97			1.54			0.55	
Control Delay		4/3.4			84.0			302.1			4.9	

Saturday Peak Temporary Signal 02/27/2020 Baseline EAM

Synchro 9 Report Page 1

Lane Group	Ø2	Ø3	Ø4
Lane Configurations			
Traffic Volume (vph)			
Future Volume (vph)			
Ideal Flow (vphpl)			
Lane Width (ft)			
Grade (%)			
Storage Length (ft)			
Storage Lanes			
Taper Length (ff)			
Right Turn on Red			
Link Speed (mph)			
Link Distance (ff)			
Confl Pode (#/br)			
Confl Bikes (#/hr)			
Doak Hour Factor			
Growth Easter			
Rue Blockages (#/br)			
Dus Diuckayes (#/III) Darking (#/br)			
Mid Plock Troffic (0/)			
Nilu-DIUCK HAIIIC (%)			
Snared Lane Traffic (%)			
Lane Group Flow (Vpn)			
Turn Type	0	0	
Protected Phases	2	3	4
Permitted Phases			
Detector Phase			
Switch Phase			
Minimum Initial (s)	5.0	5.0	5.0
Minimum Split (s)	22.5	18.5	31.5
Total Split (s)	47.0	18.5	54.5
Total Split (%)	39%	15%	45%
Maximum Green (s)	42.5	5.0	41.0
Yellow Time (s)	3.5	3.5	3.5
All-Red Time (s)	1.0	10.0	10.0
Lost Time Adjust (s)			
Total Lost Time (s)			
Lead/Lag		Lead	Lag
Lead-Lag Optimize?		Yes	Yes
Vehicle Extension (s)	3.0	3.0	3.0
Minimum Gap (s)	3.0	3.0	3.0
Time Before Reduce (s)	0.0	0.0	0.0
Time To Reduce (s)	0.0	0.0	0.0
Recall Mode	Max	Max	Max
Walk Time (s)	7 0	max	7.0
Flash Dont Walk (s)	11.0		11.0
Pedestrian Calls (#/hr)	0		0
v/c Ratio	U		U
Control Delay			
Control Delay			

Saturday Peak Temporary Signal 02/27/2020 Baseline EAM

Lanes, Volumes, Timings 1: Diamond Hill Rd (RI 114) & Nate Whipple Hwy (RI 120)

03/25/2020

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		•	•	•			,	•	· ·		•	
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Queue Delay		0.0			0.0			0.0			4.7	
Total Delay		473.4			84.0			302.1			9.6	
Queue Length 50th (ft)		~348			243			~361			12	
Queue Length 95th (ft)		#490			#309			#547			62	
Internal Link Dist (ft)		1774			4082			1512			74	
Turn Bay Length (ft)												
Base Capacity (vph)		151			352			215			1017	
Starvation Cap Reductn		0			0			0			374	
Spillback Cap Reductn		0			0			0			0	
Storage Cap Reductn		0			0			0			0	
Reduced v/c Ratio		1.94			0.97			1.54			0.88	

Intersection Summary

Area Type: Other Cycle Length: 120

Actuated Cycle Length: 120

Offset: 0 (0%), Referenced to phase 7:SBTL, Start of Green

Natural Cycle: 150

Control Type: Pretimed

Volume exceeds capacity, queue is theoretically infinite.

Queue shown is maximum after two cycles.

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

Splits and Phases: 1: Diamond Hill Rd (RI 114) & Nate Whipple Hwy (RI 120)

#28 Ø2		#28 Ø3	#29 ↓ Ø4	
47 s		18.5 <mark>s</mark>	54.5 s	
#1 Ø5	#1 1 Ø6	#1 Ø7 (R)		
28 s	19 s	73 s		

Lane Group	Ø2	Ø3	Ø4	
Queue Delay				
Total Delay				
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				

Appendix D

Small-Site Stormwater Pollution Prevention Plan

Bridge Group 17C – Newell and Sneech

Town of Cumberland, RI PTSID No. 2602D

RIDOT Bridge No. 020401 over East Branch Sneech Brook and RIDOT Bridge No. 124501 over Long Brook

PREPARED FOR



Rhode Island Department of Transportation Two Capitol Hill Providence, RI 02903

PREPARED BY



1 Cedar Street, Suite 400 Providence, RI 02903

May 2024

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SMALL-SITE Stormwater Pollution Prevention Plan

For:

Bridge Group 17C – Newell and Sneech

Town of Cumberland

Rhode Island

	RI DEPARTMENT OF TRANSPORTATION				
	Alisa Diaz Richardson				
Owner:	2 Capitol Hill				
	Providence, RI 02903				
	401-222-2468				
	Company Name				
Operator:	Name				
Operator.	Address				
	City, State, Zip Code				
	Telephone Number				
Estimated Project Dates:	Start Date: 8/5/2024				
	Completion Date: 5/26/2026				
	VHB, Inc.				
	Shawn Giatas, P.E.				
SWPPP Prepared By:	1 Cedar Street, Suite 400				
	Providence, RI, 02903				
	401-272-8100				
SWPPP Preparation Date:	4/11/2024				

OWNER CERTIFICATION

I certify under penalty of law that this document and all attachments were prepared under the direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete.

Ap & Rihr

Owner Signature:

<u>5/24/24</u> Date

Owner Name: Alisa Diaz Richardson, PE Owner Title: Administrator, Environmental Division Company Name: Rhode Island Department of Transportation

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INTRODUCTION

This Small-Site Storm Water Pollution Prevention Plan (SWPPP) has been prepared for the State of Rhode Island Department of Transportation (RIDOT) for a construction project that has <u>less than</u> one (1) acre of soil disturbance. This document provides general guidance for the installation and maintenance of erosion and sediment controls on small projects.

The purpose of erosion and sedimentation best management practices (BMPs) is to prevent pollutants from leaving the construction site and entering waterways or environmentally sensitive areas during and after construction. This SWPPP has been prepared prior to the initiation of construction activities to address anticipated worksite conditions. The best management practices (BMPs) depicted on the site plan and described in this narrative should be considered the minimum measures required to control erosion, sedimentation, and stormwater runoff at the site. Since construction is a dynamic process with changing site conditions, it is the operator's responsibility to manage the site during the construction phases to prevent pollutants from leaving the site. This may require the operator to revise and amend the SWPPP during construction to address varying site and/or weather conditions, such as by adding or realigning erosion or sediment controls.

It is the responsibility of the RIDOT Construction Manager to maintain the SWPPP, including all attachments, amendments, and inspection records, at the project field office and to make all records available for inspection by RIDEM during construction.

The RIDOT Construction Manager and designated Certified SWPPP Inspector are required to review the SWPPP and sign the Party Certification pages (Section 8). The prime contractor and all subcontractors involved in earthwork or exterior construction activities are also required to review the SWPPP and sign the certification pages before construction begins.

Any questions regarding the SWPPP, BMPs, inspection requirements, or any other facet of this document may be addressed to the RIDOT Environmental Division at 401-734-4892.

Please note: Even if practices are correctly installed on a site <u>according to the approved plan</u>, the site is only in compliance when erosion and sedimentation are effectively controlled throughout the entire site.

SECTION 1: SITE DESCRIPTION

1.1 Project/Site Information

- Replacement of Newell Bridge No. 204 including temporary and permanent relocation of utilities, replacement of drainage structures, guardrail installation, sidewalk and curb replacement and pavement markings.
- New pavement connection and milling and overlaying of Sneech Pond Road
- Rehabilitation of Sneech Pond Road Culvert No. 124501 including guardrail installation

1.2 Nature and Sequence of Construction Activity

Estimated Project Start Date:	8/5/2024
Estimated Project Completion Date:	5/26/2026
Estimated Number of Months:	22

1.3 Construction Site Estimates

The following are estimates of the construction site:

Total Project Area	3.03 acres
Construction Site Area to be disturbed	0.14 acres
Percentage impervious area before construction	55 %
Percentage impervious area after construction	50 %

1.4 Potential Discharges

Environmentally Sensitive Areas	Construction Site Discharges to: (Yes / No)	List discharge points & indicate how determination was made
Waters of the State	Yes	East Sneech Brook, determined from the RIDEM Environmental Resource Map
Wetlands (Coastal or Upland)	Yes	East Sneech Brook, determined from the RIDEM Environmental Resource Map
Separate Storm Sewer System	No	
303(d) Impaired Waters	Yes	East Sneech Brook, determined from the RIDEM Environmental Resource Map
TMDL Waters	Yes	Enterococcus impairments within the East Sneech Brook waterbody; WBID RI0001006R-03, determined from the RIDEM Environmental Resource Map and the mywaterway.epa.gov waterbody report for East Sneech Brook.
Special Resource Protection Waters (SRPWs)	Yes	East Sneech Brook, determined from the RIDEM Environmental Resource Map
Cold Water Fisheries	No	
Natural Heritage Areas	No	
Historic/Cultural Areas	Yes	East Sneech Brook, determined from the RIDEM Environmental Resource Map
Permanent Stormwater Structures (swales, outfalls, treatment units, etc.)	No	

1.5 Allowable Non-Storm Water Discharges

RIPDES Construction General Permit – IV.E.1.g

Are there allowable non-stormwater discharges on or near the project area?

List of allowable non-stormwater discharges:

• Not applicable.

Are there any known or contaminated discharges, including dewatering operations, on or near the project area?

 \Box Yes \boxtimes No

If yes, list the discharges and the RIPDES individual permit number(s) or RIPDES Remediation General Permit Authorization number(s) associated with these discharges.

- RIPDES individual permit number: Not applicable.
- RIPDES Remediation General Permit Authorization number: Not applicable.

1.6 Potential Sources of Pollution

Anticipated on this Project (Y/N)	Operation/ Location	Stormwater Pollutants
Y	Clearing, grading, excavating, and unstabilized areas	Sediment; Trash/Debris
Y	Construction Entrance	Sediment
N	Soil Stockpiles	Sediment
Y	Paving operations	Sediment; Trash/Debris
Y	Concrete washout and waste	Heavy metals; pH; Trash/Debris
Y	Structure construction/ painting/ cleaning	Nutrients; pH; Trash/Debris; Toxic chemicals
Y	Demolition and debris disposal	Sediment; Trash/Debris
N	Dewatering operations	Sediment; Nutrients
N	Drilling and blasting operations	Sediment; pH; Trash/Debris
Y	Material delivery and storage	Sediment; Nutrients; Heavy metals; pH; Pesticides/Herbicides; Oil/Grease; Trash/Debris; Toxic chemicals
Y	Material use during building process	Nutrients; heavy metals; pH; pesticides/herbicides; oil/grease; trash/debris; toxic chemicals
Y	Solid waste/ trash/ debris	trash/debris; toxic chemicals
N	Hazardous waste	heavy metals; pH; pesticides/herbicides; oil/grease; toxic chemicals
N	Contaminated spills	Nutrients; heavy metals; pH; pesticides/herbicides; oil/grease; toxic chemicals
Y	Sanitary/septic waste (porta potty?)	Nutrients; pH; Bacteria/Viruses; toxic chemicals
N	Vehicle/equipment fueling and maintenance	Oil/Grease; Toxic chemicals; fuel
Y	Vehicle/equipment use and storage	Oil/Grease; Toxic chemicals
N	Landscaping operations	Sediment; Nutrients; Trash/Debris
N	Off-site LUHPPL run-on	Industrial toxins; oil/grease; heavy metals; fuel; salt; hazardous materials
N	Other:	

1.7 Site Plans

TITLE & DATE OF PLAN SET(S): Bridge Group 17C – Newell and Sneech

- Areas that will not be disturbed

- Election of environmentally sensitive features/areas to be protected (Section 1.4)
- Constraint locations of material storage areas, equipment storage areas, concrete washouts, dumpsters, stockpiles, fueling locations etc.
 (i.e. locations where these activities will <u>not</u> occur)

SECTION 2: EROSION AND SEDIMENTATION CONTROLS

What is a BMP?

Erosion and Sedimentation controls are Best Management Practice (BMP) devices, practices, or methods for preventing storm water pollutants from leaving the construction site and reaching environmentally sensitive areas. The most common BMPs are compost filter socks, straw bales, and silt fence, but a BMP can also be a policy or procedure like construction sequencing and street sweeping. The objectives of erosion and sediment controls are to minimize the potential for erosion and sedimentation during construction activities.

If BMPs are not depicted on the approved plan set, but erosion or sedimentation is occurring, appropriate BMPs must be installed as directed by the RIDOT Construction Manager.

2.1 *Minimize Disturbed Area and Protect Natural Features*

As far as is practicable, existing vegetation will be protected and left in place, in accordance with the clearing limits shown on the approved Plans. Prior to any land disturbance activities commencing on the site, the Contractor will physically mark limits of disturbance (LOD) on the site and any areas to be protected within the site, so that workers can see the areas to be protected. Topsoil will be preserved where possible, in accordance with stock pile management specifications

Ø 2.2 Phase Construction Activity

At a minimum, construction sequencing and timing of construction activities will include:

- 1. <u>Before</u> any earthwork begins, erosion and sediment controls will be installed as depicted on the Approved Plans, and in accordance with all applicable sections of the RIDOT Standard Specifications. Upon acceptable completion of site preparation and installation of erosion and sediment controls, site construction activities may commence.
- 2. <u>While</u> earthwork is being done, routine inspection and maintenance and/or modification of erosion and sediment controls will be performed.
- 3. Final stabilization of any disturbed areas <u>after</u> earthwork has been completed.

2.3 Control Stormwater Flowing Onto & Through Project

Structural BMPs will be used to divert flows from exposed soils, retain or detain flows, or otherwise limit runoff and the discharge of pollutants from exposed areas of the site.

BMPs will be installed as depicted on the approved plan set and in accordance with applicable RIDOT Standard Specifications.

Control measures that may be used, upon approval, include straw bales/silt fencing, compost filter socks, fiber rolls, gravel bag berms, slope drains, check dams, and riprap.

⊘ 2.4 Stabilizing Soils

Phased Clearing & Grubbing:

Only areas that can be reasonably expected to have active construction work being performed within 21-days of disturbance will be cleared/grubbed at any one time. It is NOT acceptable to clear and grub the entire construction site if disturbed portions will not be active within the 21-day time-frame.

Clearing/Grubbing will not take place during a rain event if erosion is likely to occur; nor will it occur if a rain event is forecasted and appropriate erosion controls cannot be installed prior to the storm and in accordance with section 201, 206 through 211 of the RIDOT standard specifications.

No undisturbed areas will be cleared of existing vegetation after October 15th of any calendar year or during any period of full or limited winter shutdown. All disturbed soils exposed prior to October 15 of any calendar year will be seeded or protected by that date. Any such areas that do not have adequate vegetative stabilization, as determined by the Construction Manager or environmental inspector, by November 15 of any calendar year, must be stabilized by erosion control matting or mulch, in accordance with specifications contained within the RI Soil Erosion and Sediment Control Handbook (as amended). If work continues within any of these areas during the period from October 15 through April 15, care must be taken to ensure that only the area required for that Day's work is exposed, and all erodible soil must be restabilized within 5 working days.

 As per RIDOT Standard Specification 201.03.1 – Clearing and Grubbing: After clearing, and by the end of each day's grubbing operation, the Contractor will install erosion control measures that are indicated on the Plans or as directed by the Construction Manager. Such erosion control measures will be installed in strict accordance with the requirements of SECTIONS 206, 207, and 208 of these Specifications, PERIMETER EROSION CONTROLS, CHECK DAMS, and TEMPORARY DEWATERING BASINS, respectively.

Initiating Stabilization Practices

Upon completion and acceptance of site preparation and initial installation of erosion and sediment controls the operator will initiate appropriate stabilization practices <u>during all phases of construction</u> on all disturbed areas as soon as possible but not more than fourteen (14) days after the construction activity in that area has temporarily or permanently ceased, unless the activity is to resume within twenty-one (21) days.

Any disturbed areas that will not have active construction activity occurring within twenty-one (21) days must be stabilized using the BMPs depicted on the approved plan set and in accordance with RIDOT Standard Specifications Section L.02 – Seeding, Section L.05 - Seed Stabilizers and Section M.18 – Landscape Materials (M.18.08 – Mulch and M.18.09 – Seed Stabilizer Materials).

Maintaining Stabilization

Controls and methods that may be used to maintain soil stabilization include the placement of geotextiles, erosion control blankets/mats, and temporary seeding. If the stabilization BMPs fail and erosion occurs, then alternative control measures &/or methods may need to be substituted.

⊘ 2.5 Protect Slopes

Structural BMPs will be used to temporarily conduct concentrated stormwater runoff safely down the face of a cut or fill slope without causing erosion on or below the slope.

BMPs will be installed as depicted on the approved plan set and in accordance with applicable RIDOT Standard Specifications.

Control measures that may be used, upon approval, include temporary slope drains, compost filter socks, fiber rolls, gravel bag berms, erosion control mats/blankets, and temporary vegetative cover.

2.6 Protect Storm Drain Inlets

Structural BMPs will be used to protect ALL stormwater inlets &/or catch basins that may receive sedimentladen stormwater flow.

BMPs will be installed as depicted on the approved plan set and in accordance with applicable RIDOT Standard Specifications.

Control measures that may be used, upon approval, include catch basin inserts, compost filter socks, fiber rolls, and gravel bag berms.

□ 2.7 Protect Storm Drain Outfalls.

Structural BMPs will be used to protect ALL stormwater outfalls that may discharge sediment-laden stormwater flow.

BMPs will be installed as depicted on the approved plan set and in accordance with applicable RIDOT Standard Specifications.

Control measures that may be used, upon approval, include compost filter socks, fiber rolls, gravel bag berms, and rip-rap.

Storm drain inlets will be protected to catch sediment-laden stormwater flow. The stormwater outfalls are outside of the project limits and outside of the existing ROW.

2.8 Establish Perimeter Controls and Sediment Barriers.

Structural BMPs will be used to establish perimeter barriers that will stop sediment-laden stormwater flow from leaving the construction site.

BMPs will be installed as depicted on the approved plan set and in accordance with applicable RIDOT Standard Specifications.

Control measures that may be used, upon approval, include baled straw &/or silt fence, compost filter socks, fiber rolls, and gravel bag berms.

2.9 Retain Sediment On-Site and Control Dewatering Practices

Sediment traps, basins, and barriers are used to retain sediment on the site to protect streams, lakes, drainage systems, and adjacent property. These devices are used at the outlets of channels, diversions, and other runoff conveyance measures to allow sediment-filled water to pool and sediment to settle. These measures are often used as the last line of defense to stop sediment from leaving the site.

The dewatering of non-contaminated non-stormwater (i.e. groundwater) or accumulated precipitation discharge of sediment-laden water into storm drains, streams, lakes or wetlands <u>prior to sediment removal</u> is prohibited.

The dewatering of <u>contaminated</u> non-stormwater cannot be discharged without prior notice and approval from either the Rhode Island Department of Environmental Management (RIDEM) or the Coastal

Resources Management Council (CRMC). Should dewatering of contaminated water be occurring on this construction project, appropriate permits will have been obtained, and will be included as part of the Contract Documents.

• Compost filter socks and sedimentation inlet protections will be used project wide. If necessary, standard dewatering practices as specified in the RIDOT Blue Book will be performed.

2.10 *Monitoring Weather Conditions*

Care will be taken to avoid having unstabilized areas exposed during precipitation events. Weather forecasts will be routinely checked, and in the case of an expected precipitation event of over 0.25-inches over a 24-hour period, all BMPs will be inspected, and maintained as necessary, prior to the weather event.

In the case of an extreme weather forecast (greater than one-inch of rain over a 24-hour period), additional erosion/sediment controls will be installed where appropriate.

• CUMBERLAND, RI US; GHCND:US1RIPR0021

SECTION 3: GOOD HOUSEKEEPING BMPS

The purpose of good housekeeping is to prevent daily construction operations and activities from causing pollution.

Ø 3.1 Off-site Tracking of Sediments

Any construction site access point must employ the BMPs depicted on the approved plan set and in accordance with RIDOT Standard Specifications Section 211 – Construction Accesses, or any method approved of by the RIDOT Construction Manager and the RIDOT Environmental Division. Construction accesses will be used in conjunction with the stabilization of construction roads to reduce the amount of mud picked up by construction vehicles. All RI STD 9.9.0 Construction Access roads will be constructed prior to any roadway accepting construction traffic

If a Construction Access BMP is not designated on the plans, it is still the responsibility of the Operator to ensure that no sediment is tracked off the construction site by any vehicles leaving the site. Additional control measures that may be used, upon approval, include a vehicle washing station and/or daily street sweeping.

The Operator will remain responsible for the clean-up of any mud or dirt that is tracked onto streets or paved areas, even with the installation of gravel construction entrances. Inspect access for excessive sediment build up. Remove sediment and rebuild the exit as necessary to retain effectiveness and prevent off-site tracking. Additional street cleaning may be required if unable to retain sediment on site.

Ø 3.2 Waste Disposal

Building materials and other construction site wastes will be properly managed and disposed of to prevent the discharge of solid materials from wind and precipitation. All types of waste generated at the site will be disposed of in a manner consistent with State Law and/or regulations.

- The waste collection area will not be within any of the constraint areas located on the "Constraint Map" (Section 1.7) and will be approved by the RIDOT Construction Manager.
- All waste containers will be covered to avoid contact with wind and precipitation.
- Waste collection will be scheduled frequently enough to prevent containers from overfilling.
- All construction site wastes will be collected, removed, and disposed of in accordance with applicable regulatory requirements and only at authorized disposal sites.
- Equipment and containers will be checked for leaks, corrosion, support or foundation failure, or other signs of deterioration. Those that are found to be defective will be immediately repaired or replaced.

Ø 3.3 Spill Prevention and Control Plan

Spills and leaks will be avoided through frequent inspection of equipment and material storage areas. Heavy equipment and other vehicles will be routinely inspected for leaks and repaired as necessary. Material storage areas will be routinely inspected for leaky containers, open containers, or improper storage techniques that may lead to spills or leaks. Appropriate cleanup procedures and supplies will be available on-site. Spills will be cleaned up immediately and following proper response procedures and in accordance with any applicable regulatory requirements. At no time will spills be cleaned and flushed down storm drains or in to any environmentally sensitive area (i.e. stream, pond, wetland).

Equipment/vehicle fueling and repair/maintenance operations or hazardous material storage will not take place within any of the constraint areas located on the "Constraint Map" (Section 1.7) and will be approved by the RIDOT Construction Manager.

□ 3.4 Control of Allowable Non-Storm Water Discharges

Non-storm water discharges will be controlled to reduce the likelihood of contamination. Allowable discharges will be kept separate from stormwater flow with BMPs.

For contaminated non-stormwater discharge(s), the requirements and regulations of the associated RIPDES individual permit or RIPDES Remediation General Permit will be adhered to at all times.

Not part of this project.

□ 3.5 Establish Proper Building Material Staging Areas

Stock piles will not be located within any of the constraint areas located on the "Constraint Map" (Section 1.7) and will be approved by the RIDOT Construction Manager. They will have side slopes no greater than 30% and stockpiles of erodible material will be seeded and ringed with RI STD 9.1.0 to stabilize (or RIDOT approved equivalent: berms, dikes, fiber rolls, compost socks, sandbag, gravel bags).

If soil stockpiles are not stabilized with vegetation, then they will be securely covered at the end of each workday.

All chemicals and/or hazardous waste material must be stored properly and legally in covered areas, with containment systems constructed in or around the storage areas. Areas must be designated for materials delivery and storage. Designated areas will not be located within any of the constraint areas located on the "Constraint Map" (Section 1.12) and will be approved by the RIDOT Construction Manager.

Not part of this project.

□ 3.6 Designate Washout Areas

Concrete mixer trucks and chutes will be <u>washed in a designated area or concrete wastes will be properly</u> <u>disposed of off-site</u>. Washout areas for concrete, paint or any other material will not be within any of the constraint areas located on the "Constraint Map" (Section 1.12) and will be approved by the RIDOT Construction Manager.

Temporary concrete washout areas must be constructed and maintained to contain all water and concrete waste generated by washout operations. A sign should be placed at the washout site to inform concrete equipment operators of the facility location. Facilities must be cleaned or replaced when they reach 75% capacity.

At no time will any material (concrete, paint, chemicals) be washed into storm drains, open ditches, streets, streams, wetlands, or any environmentally sensitive area. The site operator must ensure that construction waste is properly and legally disposed of, to avoid exposure to precipitation, at the end of each working day. Designated areas will not be located within any of the constraint areas located on the "Constraint Map" (Section 1.12) and will be approved by the RIDOT Construction Manager.

Not part of this project.

□ 3.7 Establish proper equipment/vehicle fueling & maintenance practices

Vehicle fueling, maintenance and/or washing will occur off-site, or in designated areas. Designated areas will not be located within any of the constraint areas located on the "Constraint Map" (Section 1.7) and will be approved by the RIDOT Construction Manager.

Areas will be clearly designated, and berms, sandbags, or other barriers will be used around the perimeter of the maintenance area to prevent storm water contamination.

Construction vehicles will be inspected frequently for leaks. Repairs will take place immediately. Disposal of all used oil, antifreeze, solvents and other automotive-related chemicals will be according to applicable regulations; at no time will any material be washed down the storm drain or in to any environmentally sensitive area.

Not part of this project.

Ø 3.8 Dust Control

Dust control procedures and practices will be used to suppress dust on a construction site during the construction process, as applicable. Precipitation, temperature, humidity, wind velocity and direction will determine amount and frequency of applications. However, the best method of controlling dust is to prevent dust production. This can best be accomplished by limiting the amount of bare soil exposed at one time. RIDOT Standard Specifications Section 907 – Dust Control – will be followed.

Dust Control methods may include watering, surface roughening, wind barriers, walls, and covers.

⊠ 3.9 Sweeping

Sweeping of streets, roads, highways, and parking lots that have accumulated significant amounts of pollutants (construction site sediment, trash, debris) will be done as necessary, or as directed by the RIDOT Construction Manager. When construction exits are not keeping construction site sediment from the roadway, sweeping will be done daily. Disposal of collected sweeping material will follow RIDOT Standard Specifications Section 931 – Cleaning and Sweeping Pavement.

SECTION 4: POST-CONSTRUCTION BMPs

Post-Construction Best Management Practices are BMPs that are installed <u>during</u> the Construction Phase of a project to manage storm water flow <u>after</u> the construction is completed.

Measures must be used during the construction project to protect permanent or long term BMPs as they are installed so that they will function properly when they are brought online at the end of the construction phase.

Such long-term BMPs may include: infiltration basins, open vegetated swales and natural depressions, vegetated buffer strips, and detention/ retention structures. Controls may also be needed to prevent or minimize erosion at outfall locations or along the length of vegetated channels to reduce velocity flow from the structure to the receiving waters.

Control measures that may need to be implemented <u>during</u> the construction phase typically include measures to ensure proper installation and/or long term functioning of the long-term BMPs. Examples include: ensuring proper material staging areas and equipment routing to avoid compaction of soil in areas meant for permanent BMPs, and final cleaning of structural BMPs before construction finalization.

Location	Post-Construction BMP	Protective Measures
Not applicable.		

4.1 Post-Construction BMPs

SECTION 5: MAINTENANCE and INSPECTIONS

RIPDES Construction General Permit – Section IV.E.2.d

5.1 Maintenance

Maintenance procedures for erosion and sedimentation controls and stormwater management structures/facilities are described on the approved plan set and in Section 212 of the RHODE ISLAND DEPARTMENT OF TRANSPORTATION Standard Specifications for Road and Bridge Construction August 2023 EDITION (and Amendments).

The Contractor will maintain erosion and pollution controls to the satisfaction of the Construction Manager. Erosion and pollution controls must be able to prevent, under normal weather conditions, both the movement of soil materials and the intrusion of sediment-laden discharges into environmentally sensitive areas.

Construction will not commence or continue until all specified erosion and pollution controls are in place, properly installed and accepted by the Construction Manager.

Erosion and pollution controls will be cleaned when sediment deposits reach the heights indicated in the table provided in Section 212.03.1 of the RIDOT Standard Specifications, after a rainstorm as necessary; and/or when directed by the RIDOT Construction Manager.

Erosion control structures will remain in place until all disturbed earth has been securely stabilized and accepted by RIDOT. Before final removal, all accumulated sediment on the upstream side will be removed and legally disposed of. After removal of structures, disturbed areas will be regraded and stabilized as necessary.

BMPs will be maintained in effective operating condition by appropriate means. Upon identification of BMPs that are not operating effectively, maintenance and/or appropriate means will be performed as soon as practicable.

Timely maintenance of the control measures identified in this SWPPP will be ensured by weekly and post-storm event site inspections. These site inspections are a condition and requirement of the RIDOT Stormwater Management Program Plan.

Please Note: The contractor is required to have a full-time, on-site designated contact person responsible for working with the RIDOT Construction Manager and the SWPPP Inspector to resolve SWPPP-related issues.

5.2 Inspections

Minimum Monitoring and Reporting Requirements

The construction site must be inspected at least once every seven (7) calendar days and within twenty-four (24) hours after any storm event which generates at least 0.25-inches of precipitation per twenty-four (24) hour period and/or after a significant amount of runoff or snowmelt. An appropriate rain gauge (as may be found on www.wunderground.com or www.nws.noaa.gov (or similar sites)) must be identified and utilized for the determination of the storm events.

General Notes

- <u>The Certified SWPPP Inspector (Inspector) will prepare a separate inspection report for each inspection</u>.
- The <u>Inspection Reference Number</u> will be a combination of the Construction Contract Number - <u>consecutively numbered inspections</u>. ex. Inspection reference number for the 4th inspection of a project would be: 2011-AA-BBB-4
- <u>Each report will be signed and dated by the SWPPP Inspector</u> and forwarded to the Construction Manager within 24 hours of the inspection.
- <u>Each report will be signed and dated by the Construction Manager</u> and forwarded to the Contractor's designated representative.
- Each report will be signed and dated by the Contractor upon receipt.
- If Corrective Actions are required, the Contractor will initiate appropriate measures within 24 hours of receiving of the inspection report.
- It is the responsibility of the RIDOT Construction Manager to maintain a copy of the SWPPP, copies of <u>all</u> completed inspection reports, and amendments as part of the SWPPP documentation at the project field office during construction.

ATTACHMENT A: Inspection Report Instructions and Template

5.3 Corrective Actions

If, in the opinion of the Inspector or Construction Manager, corrective action is required, the Inspector or Construction Manager will note it on the inspection report and will notify and direct the Contractor to take corrective action and make all necessary repairs whenever maintenance of the erosion and pollution controls is required.

In accordance with Section 212 of the RIDOT Standard Specifications, the Contractor will commence with the requisite cleaning and maintenance measures no later than the next consecutive calendar day after receiving such a directive from the Construction Manager, and will aggressively and expeditiously perform such cleaning and maintenance work until the original problem is remedied to the complete satisfaction of the Construction Manager.

If the Construction Manager decides on any given day that those erosion and pollution controls specified in the Contract are not in place or have not been adequately maintained as specified in this Section, the daily charge set forth in Special Provision Code 212.1000 will be deducted from monies due the Contractor as a charge for failure to comply with this Specification. Moreover, the stated daily charge will continue each consecutive calendar day thereafter until the deficiencies noted have been corrected to the complete satisfaction of the Construction Manager.

ATTACHMENT A: Inspection Report Instructions and Template including Corrective Action Log

SECTION 6: Amendments

This SWPPP is intended to be a working document.

It is expected that amendments will be required throughout the construction of the project.

Even if practices are installed on a site per the approved plan, the site is only in compliance when erosion and sedimentation are effectively controlled throughout the entire site.

The SWPPP will be amended whenever there is a change in design, construction, operation, maintenance, or other procedure which has a significant effect on the potential for the discharge of pollutants, or if the SWPPP proves to be ineffective in achieving its objectives (i.e. the selected BMPs are not effective in controlling erosion or sedimentation).

All revisions must be recorded in the Record of Amendments Log Sheet within the SWPPP, and dated red-line drawings and/or a detailed written description must be appended to the SWPPP. Inspection Forms must be revised to reflect all amendments. Update the Revision Date and the Version # in the footer of the Report to reflect amendments made.

All SWPPP Amendments, except minor non-technical revisions, must be approved by the Construction Manager.

SECTION 7: Recordkeeping

7.1 Requirements

It is the RIDOT Construction Manager's responsibility to have the following documents at the Field Office and immediately available for review upon request:

- A copy of the fully signed and dated SWPPP
- Copies of all signed and dated Inspection Reports
- Corrective Action Log
- Amendment Log
- Any Regulatory permits obtained as part of the Project

SECTION 8: Party Certifications

All parties working for the Rhode Island Department of Transportation are required to comply with the Stormwater Pollution Prevention Plan (SWPPP) for any work that is performed on-site. Any person or group who violates any condition of the SWPPP may be subject to substantial penalties or loss of contract. Contractors and Sub-Contractors are encouraged to advise all employees working on this project of the requirements of the SWPPP. A copy of the SWPPP is available for your review at the RIDOT Field Office, or may be obtained from the RIDOT Environmental Division by calling (401) 734-4892.

The prime contractor and each subcontractor engaged in activities at the construction site that could impact stormwater must be identified and sign the following certification statement.
I acknowledge that I have read and understand the terms and conditions of the SWPPP for the above designated project and agree to follow the BMPs and practices described in the SWPPP.

RIDOT Construction Manager: Insert Company or Organization Name Insert Name & Title	
Insert Address	signature/date
Insert City, State, Zip Code	C C
Insert Telephone Number, Insert Fax/Email	
Contractor's Certified SWPPP Inspector:	
Insert Company or Organization Name	
Insert Name & Title	
Insert Address	signature/date & certification w/#
Insert City, State, Zip Code	
Insert Telephone Number, Insert Fax/Email	
Contractor SWPPP Contact:	
Insert Company or Organization Name	
Insert Name & Title	
Insert Address	signature/date
Insert City, State, Zip Code	
Insert Telephone Number, Insert Fax/Email	
Subcontractor SWPPP Contact:	
Insert Company or Organization Name	
Insert Name & Title	
Insert Address	signature/date
Insert City, State, Zip Code	
Insert Telephone Number, Insert Fax/Email	

Amendment Log All Amendments must be approved by ridot construction Manager

Describe amendment to be made to SWPPP, the date, and the person/title making the amendment. The RIDOT Construction Manager must approve ALL amendments.

	Date	Description of Amendment	R.E. initials
1			
2			
3			
4			
5			
6			
7			
8			
9			
10			

SWPPP APPENDICES

Attachment A

Small-Site SWPPP Inspection Report with Instructions Small-Site SWPPP Corrective Action Log



Department of Transportation Two Capitol Hill Providence, RI 02903

Office 401-222-2450 Fax 401-222-3905

Small-Site SWPPP Inspection Report with Instructions

For all projects with <u>less than one (1) acre of soil disturbance</u>, RIDOT is required to develop and enforce a site-specific **Storm Water Pollution Prevention Plan** (**SWPPP**) to remain in compliance with RIDOT's Stormwater Management Program Plan (SWMPP). As part of the SWPPP, a site-specific inspection report must be created and utilized.

Preparing the Inspection Report

This inspection report template has been provided by RIDOT for the development of the site-specific SWPPP Inspection Report. It must be customized for each individual Project to meet the requirements of the RIPDES Construction General Permit and our SWMPP.

It is expected that this Inspection Report will be prepared as part of the preparation of the site-specific SWPPP. This inspection report template is designed to be customized according to the SWPPP document (initially) and then customized based on conditions at the site.

Review the site-specific SWPPP and the Plans to develop the inspection report. On a copy of the site plan, number all stormwater BMPs and areas of the site that will be inspected. Include both structural (basins, outlet protection, swales, etc) and non-structural (construction entrances, perimeter barriers, trash areas, etc) BMPs and areas that will be inspected. Also, identify all point source outfalls, areas of highly erodible soils, and the priority natural resource areas (i.e. streams, wetlands, mature trees, etc). List each BMP or area to be inspected separately in the site-specific BMP section of the inspection report.

An appropriate rain gauge must be identified and utilized for the determination of the storm events. Rain gauges may be found on <u>www.wunderground.com</u>, <u>www.nws.noaa.gov</u> (or similar sites).

Small-Site SWPPP Inspection Report Instructions for:

RIDOT ENVIRONMENTAL DIVISION

• The RIDOT Administrator of the Environmental Division must review the SWPPP and sign the Certification Statement as the site OWNER on p. iii of the SWPPP.

RIDOT CONSTRUCTION MANAGER

- The RIDOT Construction Manager (CM) must review the SWPPP and sign the Certification Statement for <u>RIDOT Construction Manager</u> in Section 8. If the CM has any questions, contact the RIDOT Environmental Division (ED) at 401-734-4892.
- After an inspection has been performed, the CM must sign the 'acknowledgement' certification on Page 1 of the Inspection Report **at time of receipt from the Inspector.**
- The CM must review the Inspection Report within 24-hours of receipt.
 - o If the CM agrees with the Inspection report, the CM must:
 - Fill out the "NOTICE TO CONTRACTOR" box on the last page of the Report
 - Have the Contractor sign the 'acknowledgement' certification on Page 1
 - Make a <u>copy</u> of the Inspection Report <u>with all 3 signatures</u> for the Contractor's use
 - o If the CM disagrees with a corrective action item, the CM must:
 - Document objection with each item and provide justifiable reason in the inspection report. The contractor will <u>not</u> responsible for initiating corrective actions for such items. RIDOT's ED will review such items if warranted.
 - Fill out the "NOTICE TO CONTRACTOR" box on the last page of the Report
 - Have the Contractor sign the 'acknowledgement' certification on Page 1
 - Make a <u>copy</u> of the Inspection Report <u>with all 3 signatures</u> for the Contractor's use
- It is the responsibility of the RIDOT Construction Manager to maintain a copy of the SWPPP, copies of <u>all</u> completed inspection reports, and amendments as part of the SWPPP documentation <u>at the project field office during construction</u>.
- The Inspection Report serves as the RIDOT directive to the Contractor to proceed with corrective actions.
- The CM is responsible for verifying Corrective Actions performed by the Contractor (sign/date on Corrective Action Log).

 On a <u>monthly</u> basis, the Construction Manager must electronically submit a PDF of the Inspection Reports to the Project Manager (PM) and the Environmental Division (ED). Please submit ED reports to: <u>dot.swppp@dot.ri.gov</u>.

Monthly submission:

- must include each completed, dated, and signed inspection report, including any associated photos.
- must be submitted no later than the 10th of the month following the end of the reporting period.
- must include a copy of the daily rainfall summary data for the month as reported by the selected rain gauge (ex/ the monthly calendar from www.wunderground.com).
- may have the report content, frequency, &/or submission format changed with approval from the ED.

CONTRACTOR'S CERTIFIED SWPPP INSPECTOR

- The Contractor may be the Inspector if they are qualified, or the Contractor may designate another qualified person as the Inspector (see current Section 212 of RIDOT Specifications). The designated inspector must review the SWPP Plan and sign the Certification Statement for <u>SWPPP Inspector</u> in Section 8 of the SWPPP.
- It is the responsibility of the Contractor's Inspector to start the SWPPP Inspections BEFORE EARTHWORK BEGINS. Earthwork is NOT allowed to proceed until a SWPPP Inspection of the site has been completed.
- A separate inspection report will be prepared for each inspection.
- Complete any items that will remain constant, such as the project information and BMP locations and descriptions. Then print out multiple copies (double-sided!) of this customized inspection report to use during the inspections or save the file for future use on a computer. The Inspector must also include their Certification/Qualification number on each inspection report.
- The <u>Inspection Reference Number</u> shall be a combination of the Construction Contract Number - <u>consecutively numbered inspections</u>. ex. Inspection reference number for the 4th inspection of a project would be: 2006-AA-BBB-4
- Check the rain gauge for past & future weather data prior to inspection.
- Minimum Monitoring and Reporting Requirements

"...the site must be inspected at <u>least once every seven (7) calendar days</u> and <u>within twenty-four (24) hours after any storm event</u> which generates at least 0.25-inches of precipitation per twenty-four (24) hour period and/or after a significant amount of runoff or snowmelt." (per RIPDES CGP)

- When conducting the inspection, walk the site by following the site map and numbered BMPs locations for inspection. Also, note whether the overall site issues have been addressed.
- Take photos to document issues, completed required maintenance/corrective actions – each photo should be dated and have a unique identification # and written description indicating where it is located within the project area. If a close-up photo is required, it should be preceded with a photo including both the detail area and some type of visible fixed reference point. Photos should be annotated with Station numbers and other identifying information where needed.
- <u>For each inspection</u>, the Inspector must determine if the Construction site is in compliance with the SWPPP, or not. The Inspector must check the appropriate check-box on Page 1 of the inspection report.
- Each report must be <u>signed and dated</u> by the Inspector and forwarded to the RIDOT Construction Manager <u>within 24-hours of the inspection</u>.

CONTRACTOR

- The Contractor must review the SWPPP and sign the Certification Statement for <u>Contractor</u> in Section 8 of the SWPPP.
- After an Inspection has been performed, the Contractor must sign the 'acknowledgement' certification on Page 1 of the inspection form at time of receipt from the Construction Manager.
- The CM will provide a copy of the signed Inspection Report to the Contractor.
- The Inspection Report serves as your RIDOT directive to proceed with corrective actions.
- In accordance with the SWPPP and Section 212 of the RIDOT Standard Specifications, the Contractor will commence with the requisite cleaning and maintenance measures no later than the next consecutive calendar day after receiving such a directive from the Construction Manager, and will aggressively and expeditiously perform such cleaning and maintenance work until the original problem is remedied to the complete satisfaction of the Construction Manager.
- The CONTRACTOR is responsible for maintaining the CORRECTIVE ACTION LOG for each inspection report. The log is a running total. Do not create a new one for each inspection.

Small-Site SWPPP Inspection Report Instructions for:

INSPECTOR, CONSTRUCTION MANAGER, & CONTRACTOR

Amendments

The SWPPP shall be amended whenever there is a change in design, construction, operation, maintenance, or other procedure which has a significant effect on the potential for the discharge of pollutants, or if the SWPPP proves to be ineffective in achieving its objectives.

SWPPP Amendments may be recommended by any party, but <u>all amendments must be</u> <u>approved by the Construction Manager</u>. The revision must be recorded in the Record of Amendments Log Sheet within the SWPPP and dated red-line drawings and/or a detailed written description must be appended to the SWPPP. Inspection Forms must be revised to reflect all amendments by the Inspector.

Questions

RIDOT Environmental Division 360 Lincoln Ave Warwick, RI 02888 401-734-4892

dot.swppp@dot.ri.gov

INSPECTION #

RIDOT Small-Site SWPPP Inspection Report

Project Information				
Name/RIC/PTSID				
RIDOT Project Mgr		RIDOT Construction Mgr		
Contractor		Contractor's Project Superintendent		
E&S Sub-Contractor Contact		Certified SWPPP Inspector's Cert. & Cert. #		
	Inspectio	on Information	•	
Contractor's SWPPP Inspector Info	Name	Phone	Email	
Inspection Date	Click or tap to enter a date.	Start/End Time		
Inspection Type	e-storm event 🛛 During :	storm event 🛛 Post-storm	event 🛛 Violation	
	Weathe	r Information		
Rain Gauge:				
Last Rain Event			\	
Date Click or tap to en	ter a date.: Duration (hrs):	Approximate Rainfall (I	n):	
Current Weather at tir	ne of this inspection:			
Weather Forecast at ti	me of this inspection: (And:	When is next precipitation or wi	nd event anticipated?)	
	Certificat	ion Statements		
Inspector: (check one) □ I, as the designated Ir SWPPP.	nspector, certify that this site ha	as been inspected and <u>is in comp</u>	<u>liance</u> with the site-specific	
\Box I, as the designated Ir	nspector, certify that this site ha	as been inspected and I have ma	de the determination that the	
site requires corrective ac are noted within this insp	<u>tions</u> before it will be compliant ection report.	t with the site-specific SWPPP. T	he required corrective actions	
Print Name:	Signature:		Date:	
			date.	
Construction Manager: I, the RIDOT Construction Manager, acknowledge the receipt of this SWPPP inspection report, and understand the requirements set forth in the RIDOT Standard Specifications and the Contract Documents regarding the implementation and maintenance of erosion and sedimentation controls. Print Name: Signature: Date: Click or tap to enter a				
Contractor:				
I, the designated Contract the requirements set fort	tor representative, acknowledg h in the RIDOT Standard Specif	e the receipt of this SWPPP inspirications and the Contract Docum	ection report, and understand nents regarding the	
implementation and main	tenance of erosion and sedime	ntation controls.		
Print Name:	Signature:		Date: Click or tap to enter a date.	

RIC #				INSPECTION #
EROS BMP	SION AND SEDIMENTATION INSPECTION	"No" means needs attention	Assoc. Photo #	If "No", what is the CORRECTIVE ACTION to bring into compliance?
2.1	Are Limits of Disturbance clearly marked at the site?	□Yes □No		
2.1	Are natural resource areas (e.g., streams, wetlands, trees, etc.) <u>protected</u> with sediment barriers or similar BMPs?	□Yes □No □None on/adjacent to site		
2.2	Is construction sequencing being <u>followed</u> ?	□Yes □No □N/A		
2.3	Are structural BMPs properly installed to <u>divert stormwater flow</u> from entering the construction site?	□Yes □No □None needed		
2.4	Is clearing/grubbing only occurring in areas that will have <u>active work</u> within 21-days?	□Yes □No		
2.4	Is clearing/grubbing taking place inside the <u>Apr 15 - Oct 15</u> window?	□Yes □No		
2.4	Do disturbed/unstabilized areas have appropriate <u>erosion/</u> <u>sedimentation controls</u> in place?	□Yes □No □All areas stabilized		
2.5	Are all slopes <u>protected</u> from concentrated stormwater flow?	□Yes □No □No slopes		
2.6	Are ALL storm drain inlets &/or catch basins properly <u>protected with</u> <u>silt sacks or other appropriate BMPs</u> ?	□Yes □No		
2.7	Are ALL storm drain outfalls properly protected from scour/erosion?	□Yes □No □No outfalls		
2.8	Are perimeter and sediment controls adequately <u>installed &</u> <u>maintained</u> to prevent sediment from leaving the site (including entering drainage system)?	□Yes □No		
2.9	If dewatering, are <u>discharge points</u> <u>protected</u> & receiving waters <u>free of</u> <u>sediment</u> deposits?	□Yes □No □No dewatering		
2.10	Is weather forecast being <u>checked</u> <u>regularly</u> ?	□Yes □No		
Notes	on Erosion and Sediment Controls:			

RIC #				INSPECTION #
GOC BMP	D HOUSEKEEPING INSPECTION	"No" means needs attention	Assoc. Photo #	If "No", what is CORRECTIVE ACTION to bring into compliance?
3.1	Are BMPs effectively limiting sediment from being <u>tracked</u> into the street?	□Yes □No		
3.2	Is trash/litter from work areas collected & placed in <u>covered</u> containers regularly?	□Yes □No		
3.3	Are equipment , vehicles, containers, & storage areas <u>free from leaks</u> ?	□Yes □No		
3.3	Are materials that are potential stormwater contaminants <u>covered</u> or <u>stored</u> inside?	□Yes □No		
3.4	Are non-storm water discharges (i.e. dust control H_2O) free from contamination?	□Yes □No		
3.5	Are stockpiles <u>covered</u> (either with temporary vegetation or tarps), <u>ringed</u> with barrier BMPs, & located <u>at least 50</u> <u>feet away</u> from natural resources & storm drains?	□Yes □No □No stockpiles		
3.6	Are washout facilities (e.g. paint, grout, concrete) <u>available</u> , clearly <u>marked</u> , and maintained & located <u>at</u> <u>least 50-feet away</u> from natural resources and storm drains?	□Yes □No □No concrete use at this time		
3.7	Are vehicle & equipment fueling, cleaning, & maintenance areas <u>free from</u> <u>leaks</u> & located <u>at least 50-feet away</u> from natural resources & storm drains?	□Yes □No □No fueling areas		
3.8	Is dust being <u>controlled</u> on-site?	□Yes □No		
3.9	Is sweeping being used to <u>keep</u> <u>sediment off roads</u> & parking lots?	□Yes □No		
PRO BMP	CEDURAL PINSPECTION	"No" means needs attention	Assoc. Photo #	If "No", what is CORRECTIVE ACTION to bring into compliance?
4.1	Are permanent stormwater STUs (i.e. infiltration basins, swales, permeable pavement areas) being <u>protected from compaction</u> ? (<i>No</i> <i>stockpiling or vehicles in these areas</i> !)	□Yes □No □No permanent STUs		
5.1	Are all erosion & pollution controls being <u>maintained</u> in accordance with RIDOT Standard Spec Section 212?	□Yes □No		
5.2	Are inspections taking place at least every 7 days & after storm events?	□Yes □No		
5.3	Has the Contractor <u>initiated & completed</u> previous Corrective Actions (CA)?	□Yes □No □No previous CA		
6.0	Are SWPPP Amendments being logged?	□Yes □No □None		
7.0	Are SWPPP & ALL inspection reports being kept at RIDOT Field Office?	□Yes □No		

TO BE FILLED OUT BY RIDOT CONSTRUCTION MANAGER

OUTSTANDING CORRECTIVE ACTIONS

Were CORRECTIVE ACTIONS reported in the <u>previous</u> inspection report?				
□ NO	No Corrective Actions were issued in previous inspection report.			
YFS and	□ All Corrective Actions have been addressed			
	Date work began:Click or tap to enter a date. Date work completed:Click or tap to			
	 Corrective Actions remain and are <u>noted in this inspection report</u>. WHY did they not get addressed w/in 7-days? 			

NOTICE TO CONTRACTOR				
This SWPPP Inspe	ection Report, completed by a qualified inspector, indicates that this construction site is:			
	 No immediate actions are required. Keep up the good work! Work is required to maintain site compliance. Contractor to complete the noted corrective actions within 24 hours to stay in compliance. Site moves into non-compliant category after 24 hours if not completed. Charges may be assessed. 			
□ NON-COMPLIANT	This document serves as your RIDOT directive to proceed with the CORRECTIVE ACTIONS that have been outlined above. The SWPPP, Construction Contract documents, and Section 212 of the RIDOT Standard Specifications state that the Contractor will commence with the requisite cleaning and maintenance measures no later than the next consecutive calendar day after receiving such a directive from the Construction Manager and will aggressively and expeditiously perform such cleaning and maintenance work until the original problem is remedied to the complete satisfaction of the Construction Manager .			
	Date work to begin: Click or tap to enter a date. Date work to be completed: Click or tap to enter a date.			
R.E. initials:	R.E. Comments:			
Date: Click or	tap to enter a date.			

Corrective Action Log

THIS FORM TO BE FILLED OUT BY SITE CONTRACTOR FOR EVERY INSPECTION

Location/ Station	Corrective Action	Date Notified	Date Completed	RIDOT Initial
		Click	Click or	
		or tap	tap to	
		to	enter a	
		Click	Click or	
		or tap	tap to	
		to	enter a	
		CLICK	Click or	
		or tap	tap to	
		Click	enter a	
		or top	tap to	
		to	cap to	
		Click	Click or	
		or tap	tap to	
		to	enter a	
		Click	Click or	
		or tap	tap to	
		to	enter a	
		Click	Click or	
		or tap	tap to	
		to	enter a	
		Click	Click or	
		or tap	tap to	
		to	enter a	
		Click	Click or	
		or tap	tap to	
		to Click	enter a	
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		to tap	cap to	
		Click	Click or	
		or tap	tap to	
		to	enter a	
		Click	Click or	
		or tap	tap to	
		to	enter a	
			Click or	tap to
Operator Signature:		Date:	enter a d	ate.

Appendix E

Freshwater Wetland Permit



RHODE ISLAND DEPARTMENT OF ENVIRONMENTAL MANAGEMENT OFFICE OF WATER RESOURCES 235 Promenade Street Providence, Rhode Island 02908

July 18, 2024

RI Department of Transportation Alisa Richardson, MS, PE, PMP, Administrator, Environmental Division 360 Lincoln Avenue Warwick, RI, 02888

Freshwater Wetlands Permit

Re: Application No. 24-0152 for the property and project located:

At the Newell Bridge and within the state highway right-of-way on Diamond Hill Road, approximately 270feet north of Nate Whipple Highway and approximately 400-feet northeast of Nate Whipple Highway and its intersection with Sneech Pond Road, near Utility Pole Nos. 302 to 304, RI State Highway Plat 121, Cumberland, RI.

Dear Ms. Richardson:

Kindly be advised that the Department of Environmental Management's ("DEM") Freshwater Wetlands Program ("Program") has completed its review of your **Application for a Freshwater Wetlands Permit** as described in Rule 3.11 of the Rules and Regulations Governing the Administration and Enforcement of the Fresh Water Wetlands Act, 250-RICR-150-15-3 ("Rules"). This review included a site inspection of the above referenced property ("subject property") and an evaluation of the proposed replacement of the Newell Bridge superstructure within the existing bridge footprint, including the installation of new micropilesupported abutments installed behind the existing stone abutments to remain, utility pole relocation, drainage improvements and associated site alterations as illustrated and detailed on site plans submitted with your application. These site plans were received by the DEM on June 20, 2024.

Our observations of the subject property, review of the site plans and evaluation of the proposed project reveals that alterations of jurisdictional areas are proposed. However, pursuant to Rule 3.7.3A of the Rules, this project meets the General Variance Criteria and a **Freshwater Wetlands Permit** may be issued under the following terms and conditions:

Terms and Conditions for Wetlands Application No. 24-0152:

- 1. This letter is the DEM's permit for this project under the R.I. Fresh Water Wetlands Act, R.I. Gen. Laws § 2-1-18 et seq.
- 2. This permit is specifically limited to the project, site alterations and limits of disturbance as detailed on the site plans submitted with your application and received by the DEM on June 20, 2024. A copy of the site plans stamped approved by the DEM is enclosed. Changes or revisions to the project that would alter jurisdictional areas are not authorized without a permit from the DEM.
- 3. Where the terms and conditions of the permit conflict with the approved site plans, these terms and conditions shall be deemed to supersede the site plans.

Telephone 401.222.4700 | www.dem.ri.gov | Rhode Island Relay 711

- 4. You must notify this Program in writing of the anticipated start date, and of your contractor's contact information, by submitting the Notice of Start of Construction Form prior to commencement of any permitted site alterations or construction activity. You must also notify this Program in writing upon completion of the project. The Start of Construction Form can be found on the webpage: dem.ri.gov/stormwaterconstruction.
- 5. A copy of the stamped approved site plans and a copy of this permit must be kept at the site at all times during site preparation, construction, and final stabilization. Copies of this permit and the stamped approved plans must be made available for review by any DEM or town representative upon request.
- 6. The effective date of this permit is the date this letter was issued. This permit expires five (5) years from the date of this letter unless renewed pursuant to the Rules.
- 7. Any material utilized in this project must be clean and free of matter that could pollute any jurisdictional area. Debris captured by temporary floats and tarps must be removed daily or as needed to prevent dust and debris from entering the river. Debris collected must be disposed of in accordance with all local, state and federal laws.
- 8. Prior to commencement of site alterations, you shall erect or post a sign resistant to the weather and at least twelve (12) inches wide and eighteen (18) inches long, which boldly identifies the initials "DEM" and the application number of this permit. This sign must be maintained at the site in a conspicuous location until such time that the project is complete.
- 9. Temporary erosion and sediment controls detailed or described on the approved site plans shall be properly installed at the site prior to or commensurate with site alterations. Such controls shall be properly maintained, replaced, supplemented, or modified as necessary throughout the life of this project to minimize soil erosion and to prevent sediment from being deposited in any freshwater wetland, buffer, floodplain, area subject to storm flowage, or area subject to flooding or other jurisdictional areas not subject to disturbance under this permit.
- 10. Upon permanent stabilization of all disturbed soils, temporary erosion and/or sediment controls must be removed.
- 11. You are responsible for the proper installation, operation, maintenance and stability of any mitigative features, stormwater treatment facilities, and systems of treatment and control that are installed or used in compliance with this permit to prevent harm to adjacent freshwater wetland, buffer, floodplain or other jurisdictional areas until documentation is provided that this responsibility has been assigned to another entity. Operation and maintenance shall be as described in the plan entitled, "RIDOT Small-Site Stormwater Pollution Prevention Plan Bridge Group 17C Newell and Sneech, Town of Cumberland, RI PTSID No. 2602D", dated May 2024, as prepared by VHB, 1 Cedar Street, Suite 400, Providence, RI 02903.
- 12. You are obligated to install, utilize, follow, and maintain all best management practices detailed or described on the approved site plans in the construction of the project to minimize or prevent adverse impacts to any adjacent freshwater wetland, buffer or floodplain, or other jurisdictional areas and the functions and values provided by such freshwater wetlands and buffers or floodplain.
- 13. No clearing of vegetated buffer, unless otherwise exempt per Section 3.6 of the Rules is authorized under this permit for the relocation of utility poles or other construction activities.

Application No. 24-0152 Page 3

14. You must provide written certification from a registered land surveyor or registered professional engineer that the stormwater drainage system including any and all basins, piping systems, catch basins, culverts, swales and any other stormwater management control features have been constructed/installed in accordance with the site plans approved by this permit. This written certification must be submitted to this Program within twenty (20) days of its request or upon completion of the project.

You are required to comply with the terms and conditions of this permit and to carry out this project in compliance with the Rules at all times. Failure to do so may result in an enforcement action by this Department.

In permitting the proposed alterations, the DEM assumes no responsibility for damages resulting from faulty design or construction.

Kindly be advised that this permit is not equivalent to a verification of the type or extent of freshwater wetlands or jurisdictional areas on site. Should you wish to have the types and extent of freshwater wetlands verified, you may submit the appropriate application in accordance with 250-RICR-150-15-3.9.3.

This permit does not remove your obligation to obtain any local, state, or federal approvals or permits required by ordinance or law and does not relieve you from any duties owed to adjacent landowners with specific reference to any changes in drainage. If you have not already done so, or in order to check on the status of their review, please contact the U.S. Army Corps of Engineers to determine federal permit requirements on your project.

Please contact Sam Dufresne of this office (telephone: 401-537-4220) should you have any questions regarding this letter.

Sincerely,

Naucy L. Freeman

Nancy L. Freeman, Environmental Scientist III Office of Water Resources Freshwater Wetlands Program

NLF/SGD/sgd

Enclosure: Approved site plans

ec: Andrew F. Prezioso, PE, VHB Scott S. Hobson, PWS, Senior Ecologist, VHB Heather Hamilton, RIDOT Joseph Duarte, Director of Public Works, Cumberland, RI

Appendix F

Geotechnical Data Report & Boring Logs



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GEOTECHNICAL DATA REPORT

RIDOT Bridge Group 17C Major Bridge Rehabilitation Newell Bridge (No. 020451) Cumberland, Rhode Island

April 14, 2020 03.0034674.00



PREPARED FOR: Steere Engineering, Inc. Warwick, Rhode Island

GZA GeoEnvironmental, Inc.

188 Valley Street, Suite 300 | Providence, RI 02909 401-421-4140

31 Offices Nationwide www.gza.com

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GEOTECHNICAL ENVIRONMENTAL ECOLOGICAL WATER CONSTRUCTION MANAGEMENT

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April 14, 2020 File No. 03.0034674.00

Ms. Alison Steere, P.E. Steere Engineering, Inc. 2350 Post Road, Suite 100 Warwick, Rhode Island 02886

Re: Geotechnical Data Report (GDR) RIDOT Bridge Group 17C - Major Bridge Rehabilitation Newell Bridge (No. 020451) Cumberland, Rhode Island

Dear Ms. Steere:

We are pleased to provide Steere Engineering, Inc. with this "Geotechnical Data Report" (GDR) for the Newell Bridge (No. 020451) Project in Cumberland, Rhode Island. This report presents a compilation of existing boring data and the findings of a recent subsurface exploration and laboratory testing program performed as part of this study. This report is intended to be used by Steere Engineering, Inc. for project scoping and development of preliminary design documents for the major rehabilitation or the replacement of the bridge structure or superstructure.

The preparation of this report was undertaken by GZA GeoEnvironmental, Inc. (GZA) in accordance with our proposal dated December 5, 2019, revised on January 7, 2020, and is subject to the Limitations in **Appendix A**.

We appreciate the opportunity to have provided these services to Steere Engineering, Inc. If you have any questions or need additional information, please do not hesitate to contact the undersigned at your convenience.

Sincerely, GZA GEOENVIRONMENTAL, INC.

Akxandr Heroq

Alexander Haag, Dipl. Ing. Project Manager

Drane Barle

Diane Y. Baxter, Ph.D., P.E., LEED AP Associate Principal

J:\Geo\34674.ah\TASK 1 - NEWELL BRIDGE, CUMBERLAND\Report\GDR\20200414_GDR_Newell Bridge.docx



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FIGURES

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APPENDICES

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APPENDIX C	CURRENT BORING LOGS
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APPENDIX E	LABORATORY TEST RESULTS
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1.0 INTRODUCTION

1.1 <u>GENERAL</u>

This report presents a compilation of existing and current boring data and laboratory testing results performed to evaluate the subsurface conditions for the design of the rehabilitation or replacement of Newell Bridge (No. 020451) in Cumberland, Rhode Island. This Geotechnical Data Report (GDR) was prepared by GZA GeoEnvironmental, Inc. (GZA) in accordance with our proposal dated December 5, 2019 and revised on January 7, 2020. This report is subject to the **Limitations** that are attached in **Appendix A**.

1.2 PURPOSE AND SCOPE

GZA's services consisted of completing a limited test boring and laboratory testing program to supplement existing subsurface information to be used for preliminary design for the subject bridge.

The location of the subject bridge is shown on **Figure 1, Locus Plan** and **Figure 2, Exploration Location Plan**. The substructures that are to be evaluated as part of this project include:

- Newell Bridge (No. 020451) South Abutment
- Newell Bridge (No. 020451) North Abutment

1.3 EXISTING CONDITIONS

Based on review of information provided to us for the preparation of this work, we understand that the Newell Bridge No. 20401 was originally constructed around 1886 on stone masonry abutments. The existing bridge is approximately 26 feet long and approximately 42 feet wide. It is unknown if the bridge is founded on shallow foundations or on deep foundations such as timber piles. Plans and physical evidence suggest that around 1926, the bridge's beam seats were modified, and the bridge's superstructure was replaced with a reinforced concrete slab spanning the distance between the north and south abutments. Recent bridge inspections have revealed damage to the masonry abutments, concrete beam seats, and concrete superstructure.

The bridge spans north to south over East Sneech Brook and is bounded to the north and to the south by Diamond Hill Road (Route 114), to the east by Arnold Mills Reservoir and to the west by East Sneech Brook. The roadway cross section contains two traffic lanes and two sidewalks.

The existing approaches for the Newell Bridge are comprised of granular fill within masonry coping walls. The existing road grade has been estimated at approximate elevation 177.5 to 178 feet in reference to the North American Vertical Datum of 1988 (NAVD88). Roadway grade elevation estimations are based on recent survey of four storm drainage manhole rim elevations in the vicinity of the Newell Bridge and survey of the roadway elevation at the recent boring location shown in **Figure 2, Exploration Location Plan**. Please note that elevations on the previous exploration location plan and boring logs that are included in **Appendix B**, are referenced to the National Geodetic Vertical Datum of 1929 (NGVD29) which is equivalent to the USC&GS Mean Seal Level Datum of 1929 (MSL). Elevation estimates should be considered approximate. Ground surface elevations are generally level across the bridge span but decrease gradually from north to south along Diamond Hill Road.



1.4 <u>REPORT LIMITATIONS</u>

This report has been prepared for specific application to the Newell Bridge (No. 020451) rehabilitation project. This report was prepared in accordance with generally accepted soil and foundation engineering practices. No other warranty, expressed or implied, is made. Refer to the **Limitations** in **Appendix A**.

The data submitted in this report are based upon information from moderately spaced subsurface explorations. The nature and extent of variations between these explorations may not become evident until construction. If variations then appear evident, it will be necessary to reevaluate the information presented in this report.

Water level readings were made in the drill holes and measured from surface water bodies where stated on the boring logs. It must be noted that fluctuations in the level of the groundwater may occur due to variations in rainfall, temperature, and other factors occurring since the time measurements were made.

Existing data included in this report from previous investigations by others was provided to GZA by Rhode Island Department of Transportation (RIDOT). No responsibility is assumed for the completeness or accuracy of subsurface information for explorations not completed or observed by GZA.

The geotechnical scope of this study did not include an assessment of environmental conditions or the presence of hazardous materials.

2.0 BACKGROUND INFORMATION

2.1 <u>GENERAL</u>

GZA compiled and reviewed available information from previous subsurface investigations and drawings for the subject bridge. These include:

- 1926 structural plans associated with the re-construction of the existing Newell Bridge superstructure;
- 2003 subsurface test boring and probe logs drilled at the existing Newell Bridge.

2.2 PREVIOUS INVESTIGATIONS AND EXISTING DATA

The above referenced documents were provided to GZA in PDF format. The 2003 exploration location plan shows the location of three test borings and eight probes that were completed as part of a previous evaluation effort for Newell Bridge in May to June of 2003.

The test borings, BB1(OW), BB2, and BB4 were advanced to depths between 36 and 43 feet below the existing ground surface. Test probes were conducted to investigate the shape and depth of the back of the abutments. Test probes P1A, P1B, P1C, P1D, P1E, and P1F were completed on the southern side of the bridge and were advanced to depths ranging from 2.5 to 30 feet below the existing ground surface. The probes except P1B and P1F were advanced to refusal. Test probes P2A, P2B, P2C, and P2D were completed on the northern side of the bridge and were advanced to refusal, to depths ranging from 3.5 to 19.3 feet below the existing ground surface.

The subsurface profile established from the previous boring logs consists of approximately 16 feet of fill, underlain by approximately 7 feet of glacial outwash, underlain by 6 to 10 feet of glacial till/weathered rock underlain by bedrock to



the bottom of explorations. Test boring logs, probe logs and the associated exploration location plan are attached in **Appendix B**.

2.3 REGIONAL GEOLOGIC SETTING

Available United States Geological Survey (USGS) publications were reviewed in order to obtain an understanding of the area geology. According to the 1949 Bedrock Geology Map of the Pawtucket Quadrangle, Rhode Island-Massachusetts, the bedrock underlying the site at the Newell Bridge is undifferentiated sedimentary rocks that are underlain by Pennsylvanian strata. Pennsylvanian strata in this area include the Wamsutta formation, which is further described as red conglomerate, sandstone, and shale.

The 1949 Surficial Geology Map of the Pawtucket Quadrangle, Rhode Island-Massachusetts, indicates that the surficial soils in the vicinity of Newell Bridge are comprised of outwash plains to the north, and Kame Terraces and Ground Moraine to the south. Outwash plains in this case are further described as sand and gravel plains deposited by flowing glacial meltwater along valley floors. Kame terraces are further described as deposits of glacial sand and gravel against one or both walls of the valley and Ground Moraine is described as till deposited by the ice as an uneven layer over much of the quadrangle, and is composed of loose, sandy, and generally light gray till or compact, slightly indurated, and brownish till. Ground Moraine includes areas of unusually abundant glacial boulders. Copies of the referenced publications are contained in **Appendix D**.

SUBSURFACE INVESTIGATIONS

2.4 <u>GENERAL</u>

The following sections describe the test boring that was drilled as part of this study. The boring location is shown on the attached **Figure 2, Exploration Location Plan** and the boring log of the test boring is included in **Appendix C**.

2.5 <u>TEST BORING</u>

One test boring, designated SB-101 was drilled at Newell Bridge by New England Boring Contractors (NEBC) between March 2 and 3, 2020. The test boring was advanced to a depth of 49 feet below existing grade using 5-inch (PW) and 4-inch (HW) casing. Casing was advanced using standard drive-and-wash techniques with rotary equipment.

Split spoon soil samples were generally obtained continuously from 0 to 28 feet and in conformance with ASTM D-1586, the Standard Penetration Test (SPT). The Standard Penetration Test consists of driving a 1-3/8 inch inside diameter standard split spoon sampler at least 18 inches with a 140-pound hammer dropping from a height of 30 inches. The standard penetration value is the number of blows required to drive the sampler from 6 to 18 inches of penetration and is a commonly used indicator of soil density and consistency.

Four continuous rock cores (C-1 through C-4) were obtained from 30 to 49 feet below the existing ground surface. The rock cores were collected with a standard double tube core barrel with an inner and outer diameter of 2 and 2.5 inches respectively. The collected cores were 2 inches in diameter. Coring rates were recorded in minutes per foot. Rock cores were processed for recovery, rock quality designation (RQD), and classification immediately upon retrieval from the inner core barrel. The RQD values for cores C-1 through C-4 were approximately 17%, 93%, 52%, and 96% respectively. Photographs of the rock cores included in **Appendix F**.

The subsurface profile encountered within the exploration can be generalized as approximately 0.6-feet of surficial asphalt, underlain by granular fill to approximately 12-feet below ground surface, underlain by glacial outwash to approximately 20 feet below ground surface, underlain by glacial till to approximately 28 feet below ground surface,



April 14, 2020 Newell Bridge (No. 020451), Cumberland, RI 03.0034674.00 Page | 4

underlain by weathered rock to 34 feet below ground surface, underlain by bedrock to the end of exploration depth of 49 feet below ground surface. The fill primarily consisted of fine to coarse sand and gravel with little silt. The glacial outwash primarily consisted of fine to coarse sand, some fine to coarse gravel and little to trace silt. The glacial till primarily consisted of fine to coarse sand, some fine gravel and little silt. The weathered rock appeared to be of the same nature of the underlying bedrock which can generally be classified as meta-conglomerate.

GZA personnel observed and logged the test borings. The exploration locations were determined using "line-of-sight" and tape measurements from existing site features and should be considered accurate only to the degree implied by the methods used. The ground surface elevation at the exploration location was surveyed by others following completing of the boring. The grade surface elevation (referenced to the NAVD88 datum) provided to GZA agrees with estimates of ground surface elevations based on the previous exploration location plan and boring logs that are included in **Appendix B**, that are referenced to the NGVD1929 datum. Generally, the ground surface elevations of the exploration should be considered approximate.

3.0 LABORATORY TESTING PROGRAM

3.1 SOIL TESTING

Five soil samples collected from split spoons were submitted for laboratory analyses. Three samples were submitted for mechanical grain size analyses (ASTM D6913). Two soil samples were submitted for corrosivity testing. The results of these tests are included in **Appendix E** and are summarized below.

Boring	Sample (Strata)	Depth (ft)	Modified Burmister Classification	Percent Fines (%)	Resistivity (Mohms-cm)	Sulfate (mg/kg)	Chloride (mg/kg)	рН
SB-101	SS-3 (Fill)	6-8	Reddish brown, fine to coarse SAND, some fine to coarse Gravel, little Silt	16.7				
SB-101	SS-8 (Outwash)	16-18	Brown, fine to coarse SAND and fine to coarse GRAVEL, trace Silt	7.2				
SB-101	SS-11 (Till)	22-24	Reddish brown, fine to coarse SAND, some fine Gravel, little Silt	17.7				
SB-101	SS-4 (Fill)	8-10			0.013	205	155	8.69
SB-101	SS-12 (Till)	24-26			0.002	68	ND	7.89

ND = Not Detectable

3.2 ROCK TESTING

Two representative sections of rock core were submitted for unit weight analysis and unconfined compression testing. The results of these tests are included in **Appendix E** and are summarized below.



Boring	Core Run	Core Depth (ft)	Rock Formation Description	Unit Weight (PCF)	Strength (PSI)	Break Description
SB-101	C-2	37.3-38	Arkosic Conglomerate	16.7	4708	Break was fresh that went around some lithics
SB-101	C-4	47-47.9	Arkosic Conglomerate	7.2	6200	Break was fresh

4.0 REFERENCES

- 1. "Geologic Map of the Pawtucket Quadrangle, Rhode Island-Massachusetts, Surficial Geology," Department of the Interior, dated 1949.
- 2. "Geologic Map of the Pawtucket Quadrangle, Rhode Island-Massachusetts, Bedrock Geology," Department of the Interior, dated 1949.
- 3. "Newell Bridge, Cumberland, Rhode Island, Additional Coping Walls," State Board of Public Roads, Bridge Department, dated 1926.
- 4. "Final Structural Evaluation Report, Newell Bridge No. 204, Diamond Hill Road over East Branch Sneech Brook, Cumberland, Rhode Island", Green international Affiliates, dated October 2003.



FIGURES



GZA GeoEnvironmental, Inc. GZA-J:\GEO\34674.AH\TASK 1 - NEWELL BRIDGE, CUMBERLAND\FIGURES\CAD\DWGS\34674.00_LOCUS.DWG 1 - LOCUS JUNE 12, 2014 MICHAEL AUBIN I 2016



GENERAL NOTES

- 1. AERIAL BASE MAP DEVELOPED FROM THE RHODE ISLAND GEOGRAPHIC INFORMATION SYSTEM (RIGIS). AERIAL IMAGERY TAKEN AND PUBLISHED IN APRIL 2019.
- 2. THE LOCATION OF THE EXPLORATION WAS MEASURED IN FIELD USING TAPE MEASUREMENTS FROM EXISTING FEATURES. THE EXPLORATION LOCATION SHOULD BE CONSIDERED ACCURATE TO THE DEGREE IMPLIED BY THE METHOD USED.

LEGEND

 INDICATES BORING DRILLED BY NEW ENGLAND BORING CONTRACTORS FROM SB-101 MARCH 2, 2020 TO MARCH 3, 2020 AND OBSERVED AND LOGGED BY GZA.





APPENDIX A

LIMITATIONS



GEOTECHNICAL LIMITATIONS

Use of Report

 GZA GeoEnvironmental, Inc. (GZA) prepared this report on behalf of, and for the exclusive use of our Client for the stated purpose(s) and location(s) identified in the Proposal for Services and/or Report. Use of this report, in whole or in part, at other locations, or for other purposes, may lead to inappropriate conclusions; and we do not accept any responsibility for the consequences of such use(s). Further, reliance by any party not expressly identified in the agreement, for any use, without our prior written permission, shall be at that party's sole risk, and without any liability to GZA.

Standard of Care

- 2. GZA's findings and conclusions are based on the work conducted as part of the Scope of Services set forth in Proposal for Services and/or Report, and reflect our professional judgment. These findings and conclusions must be considered not as scientific or engineering certainties, but rather as our professional opinions concerning the limited data gathered during the course of our work. If conditions other than those described in this report are found at the subject location(s), or the design has been altered in any way, GZA shall be so notified and afforded the opportunity to revise the report, as appropriate, to reflect the unanticipated changed conditions.
- 3. GZA's services were performed using the degree of skill and care ordinarily exercised by qualified professionals performing the same type of services, at the same time, under similar conditions, at the same or a similar property. No warranty, expressed or implied, is made.

Subsurface Conditions

- 4. The generalized soil profile(s) provided in our Report are based on widely-spaced subsurface explorations and are intended only to convey trends in subsurface conditions. The boundaries between strata are approximate and idealized, and were based on our assessment of subsurface conditions. The composition of strata, and the transitions between strata, may be more variable and more complex than indicated. For more specific information on soil conditions at a specific location refer to the exploration logs.
- 5. In preparing this report, GZA relied on certain information provided by the Client, state and local officials, and other parties referenced therein which were made available to GZA at the time of our evaluation. GZA did not attempt to independently verify the accuracy or completeness of all information reviewed or received during the course of this evaluation.
- 6. Water level readings have been made in test holes (as described in the Report) and monitoring wells at the specified times and under the stated conditions. These data have been reviewed and interpretations have been made in this Report. Fluctuations in the level of the groundwater however occur due to temporal or spatial variations in areal recharge rates, soil heterogeneities, the presence of subsurface utilities, and/or natural or artificially induced perturbations. The water table encountered in the course of the work may differ from that indicated in the Report.



- 7. GZA's services did not include an assessment of the presence of oil or hazardous materials at the property. Consequently, we did not consider the potential impacts (if any) that contaminants in soil or groundwater may have on construction activities, or the use of structures on the property.
- 8. Recommendations for foundation drainage, waterproofing, and moisture control address the conventional geotechnical engineering aspects of seepage control. These recommendations may not preclude an environment that allows the infestation of mold or other biological pollutants.

Compliance with Codes and Regulations

9. We used reasonable care in identifying and interpreting applicable codes and regulations. These codes and regulations are subject to various, and possibly contradictory, interpretations. Compliance with codes and regulations by other parties is beyond our control.

Cost Estimates

10. Unless otherwise stated, our cost estimates are only for comparative and general planning purposes. These estimates may involve approximate quantity evaluations. Note that these quantity estimates are not intended to be sufficiently accurate to develop construction bids, or to predict the actual cost of work addressed in this Report. Further, since we have no control over either when the work will take place, or the labor and material costs required to plan and execute the anticipated work, our cost estimates were made by relying on our experience, the experience of others, and other sources of readily available information. Actual costs may vary over time and could be significantly more, or less, than stated in the Report.

Additional Services

11. GZA recommends that we be retained to provide services during any future: site observations, design, implementation activities, construction and/or property development/redevelopment. This will allow us the opportunity to: i) observe conditions and compliance with our design concepts and opinions; ii) allow for changes in the event that conditions are other than anticipated; iii) provide modifications to our design; and iv) assess the consequences of changes in technologies and/or regulations.



APPENDIX B

EXISTING BORING INFORMATION



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OUTE 114)									
Λ Λ Λ Λ Λ Λ 17	<u>^ ^ ^ </u>								
DRAWING PREPARED BY O TITLED "SUBSURFACE EX , DIAMOND HILL ROAD," FE ORING LOCATIONS SHOWI	GREEN INTERNATIONAL PLORATION PLAN, NEWELL BRUARY 20, 2003. N. BORINGS WERE LOCATED								
MEASURING DISTANCES FROM EXISTING FEATURES.									
RE 3 FOR SUBSURFACE PR	OFILE. DRAFT								
ewell Bridge, No. 204 Diamond Hill Road nberland, Rhode Island	BORING LOCATION PLAN								
Project 02361	June 2003 Fig. 2								
	02361-NEWELL-03 ptc 5/29/03								

	Green I	nternational A	Affiliat	es, In	C.	A	DDRESS	Medfor	d, MA		HOLE NO.	3B1(C	W)	
REPO	RTSENT	TO above	ave. or	New	en bria	ges L		East P	rovidence/Cum	berland, R.I.	PROJ. NO.	02361	-0	
G	ROUND	NATER OBSERV	ATIONS	1			CASING	SAMPLE	R CORE BAR	!	SURF ELEV.	178	. 7_	t/-
A +	15	9						SAMP LL	CORE BAR.			DATE		
~`	15.	o alter	Hou	rs I	ize I D		A"		<u>NV-II</u>	Start		5/8/03		
At		after	Hou	rs H	ammer W	/t.	300#	140#	-	Complete	5/9/03			
				н	ammer Fa	all _	24"	30"	Dia	Inspector/Engr.	J. Mazzarino			
LOC	ATION OF	F BORING	Ne	well	Bridae	No. 2	04 - Cun	nherland	1 8 1					
Depth	Casing		Туре	Type Blows per 6"			Moisture	Strata	SOIL OR ROCK IDENTIFICATION			1		
	Blows per foot	Sample Depths From - To	of	From 0-6	on Sampler om To		Density o	Change Elev./	Remarks include color, gradation, t Rock-color, type, condition, hardness		ype of soil etc. s, drilling time,	SAMPLE		LE
					1012	12-10		Depth	Asphalt	seams, etc.		NO.	Pen	R
		1.0-3.0	D	13	15	10	- 1	0.6	Dark Brown mediu	im to fine SAND an	d fine to	-1	24	-
						7			medium Gravel		17/10/1070758	+ ·		
-						+			F	5H		[·	1	1-
5 -	-	4.0-6.0	D	13	9	11	-		Brown fine to coars	se SAND, some fin	e gravel	2	24	
ł		+ +			+	+			F	ill .				4
t					+		1							1
Ľ					1		1				5			
10+		9.0-11.0	D	26	17	13	1		Brown fine to medi	ine to medium SAND, some o		3	24	-
F					+	25	4		fine to medium grav	n gravel, trace silt, cobbles	es			T
ł					+		1		(Fi	ill)]
F							1							
		14.0-16.0	D 1	16	12	9		1	" (Possible Fill)				24	
19	15	P				-	-7	+						
					1]	16.5						
							1							1
F		19.0-21.0	+	62	- 27 -	13			Brown medium to coarse GRA		and Sand			
20 +	Í				1	18			Cobbles & Boulders	les & Boulders (Possible Glacial Outw) sand,)utwash)	5	24	9
Ę.					[7.7.7.4	ť		, and a second					
-														 [
+.	+	24.0.26.0						23.0						
5+		24.0-20.0		32	24	29			Red compact silty fir	compact silty fine to medium SANI		6	24	8
	+								Red CONGLOMER	ATE and coarse Sa	.			
t-			+-							ATE and coarse Sa	nasione			
							1							
0	+	29.0-31.0	D	32	60	60	1		Red completely weathered CONGLC		MERATE and	7	24	11
						33			coarse Sandstone					
							Min/Ft		Red CONGLOMERATE and coarse Sandstone, soft			-		
		33.0-38.0	c	(R	QD=0%)		6	33.0				C1	60	
5	<u>-</u>			,1			5				ndstone, soft			24
]		1	5		o very soft, moderate	very soft, moderately to severely weathere				
							5.5	-	close to close joint spacing.	0) (R) (
		380.430	····		00-00		7		(WAMSUTTA FORMATION)				5/78	
		30.0-43.0		†	QD=9%)		6.45					C2	60	42
UNC	SURFAC	CE TO 33'	<i>W</i> .	i.	US	ED H	W c	ASING:	THEN Cored	to 43'				
nple ⁻	Туре		I	Propor	tions Use	d :		140 lb.	Wt x 30" fall on 2" C	D.D. Sampler	L	SUM	MAR	Y:
Jrive	C=Cored	W=Washed	tra	ace	0 to 1	0%	Cohesionles	s Densi	ty Cohesive	Consistency	Eart	h Borin	g 3:	3'
Test	Pit A=Au	iger	lit	tle	10 to 2	0%	0-10 10-30	Loos Med De	e 0-4	Soft 30	+ Hard Roc	k Corin	g 10	0'
= Op	en End R	od	ar	hd	35 to 5	0%	30-50	Dens	a 8.15	Siff	Sam	ples 7		

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PROJECT NAME <u>Newman Ave. & Newell Bridges</u> REPORT SENT TO above						es LO	LOCATION East Providence/Cumberland,			PROJ. NO.	2361-0			
	Casing Blows per foot		Туре	Blows per 6"		6"	Moisture	Strata	SOIL OR ROCK IDENTIF	ICATION	1/0./ +/-			
Depth		From - To	of Sample	From 0-6	m To		Density or Consist.	Elev./	Remarks include color, gradation Rock-color, type, condition, hardn	, type of soil etc. ess, drilling time,	SAMPLE			
		,	1				8	Ceptri	seams, etc.					
							7				r			
ŀ							4	43.0	Bottom of Boring 42'		+ -			
			1	i				43.0	Bottom of Boring 43		(23)	i		
				į	1									
				1			İ		Installed 2" PVC Well at 25'					
			1		1				10 Slotted - 15' Solid 4 Bags of Sand					
		×		4.1 X.1					10 lbs. of Hole Plug					
				ŧ.		i			One 6" Gate Box			1		
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		10 30												
	SUPEAG	ETO 22'		1										
nple	SURFAC	210 33		Proportie		D <u>HV</u>	CA	SING:	THEN Cored to 43'	• • • • • • • • • • • • • • • • • • •	SUM	ARV.		
Drive	C=Cored	W=Washed	tra	ce	0 to 10	% C	ohesionless	Density	Cohesive Consistency	Fart	h Boring	33'		
=Fixe	d Piston L	JT=Shelby Tube	littl	e	10 to 20	%	0-10	Loose	0-4 Soft 3	0 + Hard	Costa	10'		
TO G PROJE	CT NAME	ternational A Newman A o <u>above</u>	Ave. &	s, Inc Newe	Il Bridg		DDRESS DCATION UR JOB NO.	Medford, East Pro 03-233	MA ovidence/Cum	berland, R.I.	HOLE NO. B PROJ NO. 0 SURF. ELEV.	B2 2361 178.	-0 7 +	1
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At	ROUNDW	after	Hour	s Tyj Siz s Ha Ha	be le I.D. mmer Wt mmer Fal		HW 4" 300# 24"	S/S 1-3/8" 140# 30"	BIT Dia.	Start Complete Boring Foreman Inspector/Engr.	5 5 P. Br J. Ma	/7/03 /9/03 escia zzari	no	
LOCA Depth	Casing Blows	BORING Sample Depths From - To	New Type of	From	Bridge I Blows per on Sampl	No. 20 6" er To	Moisture Density or	Strata Change Elev./	R.I. SOIL OI Remarks includ Rock-color, type	R ROCK IDENTIFIC de color, gradation, e, condition, hardne	CATION type of soil etc. ess, drilling time,	Na	SAMF	=
5		1.0-3.0	D	39	45	27 17 6 4			Asphalt Brown fine to med medium gravel Brown fine to coa	fill FILL FILL FILL FILL	ilt & fine to vel, trace silt	2	24	
10		9.0-11.0	D	15	16	6 17 12		10.0	Brown medium to	coarse SAND, trac	ce fine gravel	4	24	20 27
15		14.0-16.0	D	15	12	39			Brown medium to Cobbles (Pos	coarse SAND and	medium Gravel,	5	24	
20		19.0-21.0		12	9	17 31	1		Brown medium to Gravel, Cobbles, li	fine SAND and fine	e to coarse	6	24	
25		24.0-24.3	D	100/3"				22.0	BO (Change in co Red compact silty medium Gravel - CONGLOMERAT	ULDER lor on Roller Bit - R fine to medium SA Completely weathe E and coarse Sand	ed) ND and fine to ered Red stone	7	3	
30		29.0-29.6 31.0-36.0	C	54 (R	65/1"	5) 	Min/Ft 6 6.30 5 6.45	29.6	Red CONCLOME medium hard (0-1 moderately to seve joint spacing, clay (WAMSUTTA FOI	RATE and coarse S 8"), soft to very sof erely weathered, ve visible at joints (18 RMATION)	Sandstone, t (18"-47"), rry close to close "-47").	8 C1	60	
					• • • •			36.0	Bottom	of Boring 36'			1	
SROUN Sample D=Drive UP=Fix TP=Tes OE = C	ID SURFA e Type e C=Core ced Piston st Pit A=A Open End I	CE TO 31' d W=Washed UT=Shelby Tube uger Rod	e 1	Propo trace little some	Uto ortions Us 0 to 10 to 20 to	SED ed 10% 20% 35%	Cohesionles 0-10 10-30 30-50	CASING: 140 lb ss Dens Loo Med. D	THEN Core Wt x 30" fall on 2 sity Cohesive se 0-4 Pense 4-8 co 8,15	d to 36' 2" O.D. Sampler Consistency Soft M./Stiff	30 + Hard Rc Sa	<u>SU</u> rth Boo ock Cor mples	IMMA ring ing 8	

PROJE	ECT NAM	Newman	Ave. &	Newe	Il Brid	ges		East P	rovidence/Cum	berland, R.I.	PROJ. NO.	0236	1-0	
REPO	RT SENT	TO above					OUR JOB NO.	03-23	3		SURF. ELEV.	179	.1 +	-/-
G	ROUNDV	ATER OBSERV	ATIONS				CASING	SAMPLE	R CORE BAR			DATE		
At	15.8	after	Hour	rs Typ	e . L D		HW	S/S	NV-II	Start		5/5/0	3	
At		after	Hour	SIZ	e I.D.	•	200#	1-3/8		Complete		5/6/03	3	
/ ···				S Har	nmer Fa	с. Л	24"	30"	– BIT Dia	Boring Foreman	P.E	resci	a	
2										inspector/Engr.	J. N	azzai	1110	
LOCA	ATION OF	BORING	Ne	well B	ridge	No. 2	04 - Cum	berland	1, R.I.					
Danth	Casing	Sample Depths	Туре		iows per on Samp	ler	Moisture	Change	SOIL OF	R ROCK IDENTIFI	CATION		SAM	PLE
Depth	per foot	From - To	Sample	From 0-6	6-12	To	Density or 8 Consist.	Elev./	Remarks includ Rock-color, type	e color, gradation, , condition, hardne	type of soil etc. ss, drilling time			
					1012	12-1		Depth	Asphalt	seams, etc.		NO	Per	
t		1.0-3.0	D -	27	22	25	-	0.7	Dark Brown fine to	o medium SAND a	nd fine to coars	-1 e 1	24	
Ì						37	-		Gravel, trace silt				-	1.
[1	-			FILL			-j	· 1-
5		4.0-6.0	D	5	3	3	_		Brown fine to med	ium SAND, some i	fine gravel, trac	e 2	24	
ŀ						3	-		silt				1	1
ŀ							-		(Pc	ossible Fill)				1
F							-							4-
t		9.0-11.0	D	15	16	10	-		Brown fine to med	ium SAND, some f	ine to medium		54	+-
10				4		15			gravel, trace silt (P	ossible Fill)				+
L									•					1-
-				•									1	
F	+	140-160	+				.	140	First to CO					1-
15 +		14.0-10.0		3		1		, 14.0	(Possible Glacial C	AVEL, some coarse	e sand	4	24	-
F			!				1 Ť		(Fossible Glacial C	utwash)				
E														
Ļ	!													1-
20 -		19.0-21.0	D	16	16	22] [19.5	Red compact fine to	medium SAND	ome fine grave	5	24	11
					+	20			& silt - Completely	weathered Red	ine inte grutt	·		1
+ -	+	+		+					CONGLOMERATE	and coarse Sands	tone			
-		' +					-							
25		24.0-25.3	D	22	16	100/3"						6	15	1-1
25							1					-	1	1
														1
		G-0-20-0		100 0				27.0	(Roller Bit 2' inte	Possible Rock to	29')	T		
		29.0-34.0		100/0		ī	Min/Ft							
30			-	(10	0-50 %	/	6.5		Red CONGLOMEP	ATE and coarse St	andstone bard		60	5
			+ -				7	1	slightly to moderate	ly weathered, very	close to close	+		
[]			+-	1 -	•		6.5	1	joint spacing.					1
							8.5		(WA	AMSUTTA FORMA	TION)	[1
35		34.0-39.0	C	(RC	D=29%))	8	1				C2	60	5
				. .		-	7.5							l
					i .		11							
							8							
								39.0	Bottom c	of Boring 3	9'	+		
ROUNE	SURFAC	E TO 27'			US	ED	HW C	ASING:	THEN R.B. to	o 29' then Cor	ed	1		
ample '	Туре		l	Proporti	ons Use	d	100	140 lb	. Wt x 30" fall on 2"	O.D. Sampler	1	SU	MMA	RY:
=Unve P=Fixe	d Piston	W=Washed	tr	ace	0 to 1	0%	Cohesionless	Dens	ity Cohesive	Consistency	Ea	irth Bori	ing _	29'
P=Test			lit	ue	10 to 2	0%	0-10	LOOS	se 0-4	Soft 30	+ Hard Ro	ock Cori	ng 1	0'



		Newman A	Ave. & N	ewel	Brid			East Prov	vidence/Cum	berland, R.I.	PROJ. NO. 0	2361-	-0	
G	ROUNDW	ATER OBSERV	ATIONS	1			CASING	SAMPLER	CORE BAR.	1	SURF. ELEV.	DATE	1 -	<u>+</u>
At		after	Hours	Тур	e	4	" Solid	Probe		Start	5	/2/03		_
At		after	Hours	Han	nmer W	·	Auger			Boring Foreman	 P.Br	escia	/	
				Han	nmer Fa				811	Inspector/Engr.	J. Ma	zzarii	no	
LOC	ATION OF	BORING	New	ell B	ridge	No. 20	4 - Cum	berland,	R.I.					
Depth	Casing	Sample Depths	Туре	B	lows per n Samp	6" ler	Moisture	Strata Change	SOIL OI				AMP	2
Depin	per foot	From - To	Sample	-rom 0-6	6-12	12-18	Consist.	Elev./ Depth	Rock-color, type	, condition, hardnes seams, etc.	ss, drilling time,	No.	Pen	
								8	3" Asphalt					-
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ROUN	DSURFA	CE TO	E.	1	! US	SED		ASING	THEN					L
ample	Туре		F	Proport	tions Us	ed	`	140 lb. V	Wt x 30" fall on 2'	O.D. Sampler	È	SUM	MAF	2
)=Drive	e C=Corec	d W=Washed	trac	ce	0 to	10%	Cohesionles	s Density	Cohesive	Consistency	Ear	th Borir	ng 2	2
P=Fix	ed Piston	UT=Shelby Tube	little	e	10 to 2	20%	0-10	Loose	0-4	Soft 30	0 + Hard Roo	k Corir	na	1

PROJE	ECT NAME	Newman A O <u>above</u>	Ave. &	s, inc. Newel	Il Bridg		CATION _	East Prov 03-233	vidence/Cum	berland, R.I.	PROJ. NO.	02361	-0 7 +/	
GI At At		ATER OBSERV/	ATIONS Hour Hour	s Typ Size s Har	e I.D. mmer Wi	4	CASING " Solid Auger	SAMPLER Probe	CORE BAR.	Start Complete Boring Foreman	P.E	DATE 5/2/03 5/2/03 Brescia		
			Alex	Har	nmer Fa			hadand		Inspector/Engr.		azzan		
Depth	Casing Blows	Sample Depths	Type	From	llows per on Sampl	6" er To	Moisture Density or	Strata Change Fley /	SOIL OR Remarks include	ROCK IDENTIFI	CATION type of soil etc		SAMP	L
	per foot		Sample	0-6	6-12	12-18	Consist.	Depth	Rock-color, type,	seams, etc.	ss, anning time	" No.	Pen"	-
					+				5" Asphait					-
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30							-	30.0	No Refusa	al - Bottom of Prob	be 30'			
Sample	ID SURFA	CE TO	1	Proper		SED	(LASING:	THEN	O D. Sampler	ī	SU	MMAF	21
D=Driv UP=Fix TP=Te	e C=Core ked Piston st Pit A=A	d W=Washed UT=Shelby Tube uger	e t	ittle some	0 to 10 to 20 to	10% 20% 35%	Cohesionles 0-10 10-30	ss Densit Loose Med. De	y Cohesive e 0-4 nse 4-8	Consistency Soft : M./Stiff	30 + Hard	Earth Bor Rock Cor	ing <u>3</u> ng	30

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TO _G	Green In ECT NAME RT SENT	ternational A Newman A TO above	Affiliate: Ave. & M	s, Inc lewe	Il Bridg		DRESS CATION JR JOB NO.	Aedford, East Prov 03-233	MA vidence/Cum	berland, R.I.	HOLE NO. P PROJ. NO. 0 SURF. ELEV.	1C 2361 178.	-0 7 +
At	3	after after	Hours	Typ Siz Har Har	be e I.D. mmer W mmer Fa	4' t	" Solid Auger	Probe	BIT	Start Complete Boring Foreman Inspector/Engr.	5 5 9. Br J. Ma	5/2/03 5/2/03 escia zzari	no
LOCA Depth	Casing Blows	BORING Sample Depths	Nev Type of	vell B B From	lows per on Samp	No. 20 6" ler To	4 - Cum Moisture Density or	Strata Change	R.I. SOIL OI Remarks includ	R ROCK IDENTIFIC	CATION	5	SAMP
	per foot		Sample	0-6	6-12	12-18	Consist.	Depth	Rock-color, type	e, condition, hardnes seams, etc.	ss, drilling time,	No.	Pen
-			 	 	 	+ + +		4.0	Refusal	- Bottom of Probe	4'	 	
								5					
	e.							-			948		
	-										*. *.		
	¥												
ROUNI Sample D=Drive	D SURFAC Type C=Cored	CE TO	tra	Proport	US ions Use 0 to 1	SED	Cohesionless	ASING: 140 lb. V Density	THEN	O.D. Sampler Consistency	Earl	<u>SUN</u>	1MAR

TO <u>G</u> PROJE REPOI	Green In ECT NAME RT SENT 1	ternational A Newman A O above	Affiliates Ave. & N	s, Inc. lewel	l Brid <u>c</u>		DRESS CATION JR JOB NO.	ledford, East Prov 03-233	MA vidence/Cum	berland, R.I.	HOLE NO PROJ. NO SURF. ELEV.	21D 02361- 178.7	0 7 +/	<i>.</i>
GI	ROUNDW	/ATER OBSERV/	ATIONS	Typ	e e I.D.	4	CASING " Solid Auger	SAMPLER Probe	CORE BAR.	Start Complete		DATE 5/2/03 5/2/03		
At		atter	Hours	Har	nmer vvi nmer Fa				ВІТ	Inspector/Engr.	J. M	azzarii	10	
LOC	ATION OF	BORING	New	vell B	ridge	No. 20	4 - Cum	berland, Strata	R.I.		CATION			
Depth	Casing Blows per foot	Sample Depths From - To	of Sample	o From 0-6	6-12	er To 12-18	Density or Consist.	Change Elev./ Depth	Remarks includ Rock-color, type	e color, gradation, , condition, hardne seams, etc.	type of soil etc. ss, drilling time,	No.	AMP Pen'	"
							1	1	8" Asphalt					
								2.5	Refusal - Bot	ttom of Probe 2.5'				
	18													
											3			
													The second secon	
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	8	A												
•	i.													The second secon
GROUN		СЕ ТО			U	SED	C	ASING:	THEN				MMA	P
Sample D=Driv UP=Fix TP=Ter	e Type e C=Core ed Piston st Pit A=A	d W=Washed UT=Shelby Tube uger	e lit	Propor ace tle	tions Us 0 to 10 to	ed 10%	Cohesionles 0-10 10-30	140 lb. s Densit Loose Med De	Wt x 30" fall on 2" y Cohesive 9 0-4 nse 4-8	O.D. Sampler Consistency Soft 3	0 + Hard R	arth Bori ock Cori	ng _2	2

o _	Green In	ternational A	ffiliates	s, Inc		A	DRESS	Medford,	MA		HOLE NO. P	1E		
ROJE	ECT NAME	<u>Newman A</u>	Ave. & N	lewe	II Brid	ges LC	CATION	East Pro	ovidence/Cum	berland, R.I.	PROJ. NO0	2361-	-0	. /
G		ATER OBSERV	ATIONS	T			CASING	SAMPLER		i	SURF. ELEV.	1/0	• /	+/
				_				D.	CORE BAR.		W	DATE		
At		after	Hours	Siz	e el D	4	Auger	Probe	-	Start		5/2/03		
At		after	Hours	Ha	mmer W	't	Auger			Boring Foreman	P. Br	escia	1	
				Ha	mmer Fa	all _			. DII	Inspector/Engr.	J. Ma	zzari	no	_
	ATION OF	BORING	Nev	vell B	ridge	No. 20	4 - Cum	berland.	R.I.					
	Casing	Sample Depths	Туре	E	lows per	r 6" Ier	Moisture	Strata	SOIL OF	R ROCK IDENTIFIC	ATION			
epth	Blows per foot	From - To	of Sample	From	6 12	To	Density or	Elev./	Remarks includ Rock-color, type	e color, gradation, f , condition, hardnes	ype of soil etc. ss, drilling time,			
-				0-0	0-12	12-18		Depth	8" Asphalt	seams, etc.		NO.	Pen	
					+	+	1		o Aspirat			+		1
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								19.0	Refusal - Bot	tom of Probe 19'		T		1
	2													
								-	* Augers were not p	plumb at completion	n of probe.			
						5ā			Auger tip wandered	toward South duri	ng drilling.			
			-											
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												1		
	D SURFA	CE TO		Droper	UU	SED	(CASING:	THEN			SUM	AMAG	2
Drive	e C=Core	d W=Washed	tra	ace	0 to	10%	Cohesionles	s Dens	ity Cohesive	Consistency	Far	th Borir	na 1	9
=Fix	ed Piston	UT=Shelby Tube	lit	tle	10 to	20%	0-10	Loos	e 0-4	Soft 3	0 + Hard Ro	ck Corir	ng	
-105		uger	so	ome	20 to	35%	10-30	Med. De	ense 4-8	M./Stiff	Sa	moles	0	_

PROJ	ECT NAME	Newman A	ve. &	Newe	Il Bridg	ges	OCATION _	East Pro	vidence/Cum	berland, R.I.	PROJ. NO.	02361-0
REPO	RTSENT	TO above					OUR JOB NO.	03-233			SURF. ELEV.	178.7 +
G	ROUNDW	ATER OBSERVA	TIONS				CASING	SAMPLER	CORE BAR.			DATE
At_	/4	after	Hour	s Typ	be		4" Solid	Probe		Start		5/2/03
At		after	Hour	s Ha	e I.D. mmer W		Auger			Complete	PR	5/2/03
		anci		Ha	mmer Fa				BIT	Inspector/Engr.	J. Ma	azzarino
100		BORING	Ne	well B	ridae	No 2	04 - Cum	herland	RI	<u>.</u>		
	Casing		Type	E	Blows per	6"	Moisture	Strata	SOIL OF	R ROCK IDENTIFIC	CATION	T
Depth	Blows	Sample Depths From - To	of	From		To	Density or	Change Elev./	Remarks includ Rock-color, type	le color, gradation, , condition, hardne	type of soil etc. ss, drilling time,	SAMPI
			Sample	0-6	6-12	12-1	8 Consist.	Depth	9" Acchelt	seams, etc.		No. Pen"
					+	+			8 Asphalt			
					†	+	-					
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F									3.			
a -												
					2			29.5	No Refus	al - Bottom of Prob	e 29.5'	
										•		
				1								
				1								
GROUN	ID SURFA	СЕ ТО	1	1	U	SED	C	ASING:	THEN			
Sample	е Туре		ſ	Propo	rtions Us	ed		140 lb.	Wt x 30" fall on 2	O.D. Sampler	1	SUMMAR
UP=Fix	e C=Core red Piston	d W=Washed UT=Shelby Tube	t	race ittle	0 to 10 to	10% 20%	Cohesionles 0-10	s Densit Loose	y Cohesive e 0-4	Consistency Soft 3	0 + Hard Ro	irth Boring <u>2</u> xck Coring

TO	Croon In	10	O WATER	STREE		AST PRO	VIDENC	E, R.I.		SHEET 1	0	F	1
PRO	IFCT NAME	Newman	Ave. & Ne	inc. well Brid			Nedford, Fast Dro	MA widence/Cum	borland PL	HOLE NO.	2A	•	_
REP	ORT SENT	TO above		Well Dill			03-233	vidence/cum	berland, K.I.	PROJ. NO.	170	-0	1-
(GROUNDW	VATER OBSERV	ATIONS			CASING	SAMPLER	CORE BAR	1	SURF. ELEV.	DATE	1 1/	
A+		- 0		-		" Calid	Decks	BOIL BAIL	1		DATE		
AI _		after	Hours	SizeLD	4	Auger	Probe		Start		5/5/03		
At		after	Hours	Hammer V	Vt	Auger			Complete		5/5/03		
				Hammer F	all			BIT	Inspector/Engr.	F.B	azzari	no	
												,.	
LOC	CATION OF	BORING	Newe	II Bridge	No. 20	4 - Cum	berland,	<u>R.I.</u>			_		-
anti	Casing	Sample Depths	Туре	on Sam	pler	Moisture	Change	SOIL OF	ROCKIDENTIFIC	CATION	s	AMP	LE
epu	per foot	From - To	Sample C		To	Consist	Elev./	Remarks includ Rock-color, type	e color, gradation, , condition, hardne:	type of soil etc. ss, drilling time,			
	-			-0 0-12	12-18		Depth	0	seams, etc.		No.	Pen	'R
			+ +			-		8" Asphalt					
		+	++			1				2.2			4
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							3.5	Refusal - Bott	om of Probe 3.5'		7		
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mol	D SURFA	JE 10		(ISED	C/	ASING:	THEN			0111	MAG	V.
Driv	e rype ve C=Corec	W=Washed	Pro	oportions U	sed	ohesionless	140 lb.	Wt x 30" fall on 2"	O.D. Sampler		SUM	MAR	<u>Y:</u>
P=Fi	ked Piston	UT=Shelby Tube	little	10 to	20%	0-10	Loose	e 0-4	Soft 30	+ Hard Box	th Boring	g <u>3</u> .	5
=Te	st Pit A=Au	uger	some	e 20 to	35%	10-30	Med. Der	nse 4-8	M./Stiff	San	nples 0		-
	bommer		and	35 to	50%	50+	Dense Von Der	8-15	Stiff			D2/	

TO C PROJE REPOI	Green In ECT NAME RT SENT	ternational A Newman A O <u>above</u>	Affiliates Ave. & N	, Inc. ewel	Il Bridg	es LC	DRESS <u>N</u> CATION _ JR JOB NO.	Medford, East Pro 03-233	MA ovidence/Cum	berland, R.I.	HOLE NO PROJ. NO SURF. ELEV.	P2B 02361 179	-0 1 +,	/-
Gi At At		/ATER OBSERV/	ATIONS Hours Hours	Typ Size Han Han	e I.D. nmer Wt nmer Fal	4	CASING " Solid Auger	SAMPLER Probe	BIT	Start Complete Boring Foreman Inspector/Engr.	P. E J. N	DATE 5/5/03 5/5/03 Brescia lazzari	I NO	
LOC/ Depth	ATION OF Casing Blows	BORING Sample Depths From - To	New Type of Samole	ell B B From	ridge I lows per on Sample	lo. 20 6" Fo	Moisture Density or	berland, Strata Change Elev./	R.I. SOIL OR Remarks include Rock-color, type,	ROCK IDENTIFIC color, gradation, condition, hardne:	CATION type of soil etc. ss, drilling time		SAMPI	LE
5 -								 6.1	8" Asphalt Refusal - Bot	tom of Probe 6.1'				
	3								8					
											2 (8) (2)			
									с. ⁶					
Sample D=Drive UP=Fix TP=Tes	D SURFA Type e C=Core red Piston st Pit A=A	CE TO d W=Washed UT=Shelby Tube uger	tra litti soi	Proport ce e me	US tions Use 0 to 1 10 to 2 20 to 3	ED d 0% 5%	Cohesionless 0-10 10-30	ASING: 140 lb. 5 Densi Loos Med. De	THEN Wt x 30" fall on 2" ty Cohesive e 0-4 mse 4-8	O.D. Sampler Consistency Soft 30 M./Stiff	D + Hard R	SUI arth Bori ock Corin amples	MMAR ng <u>6.</u> ng	<u>Y:</u>

		10	0 WATE	ER ST	TREET	• E	AST PRO	VIDENCE	E, R.I.		SHEET 1	OF
	Green In ECT NAME	ternational /	Affiliate Ave. & I	s, Inc Newe	:. ell Bridg			Medford, East Pro	MA vidence/Cum	berland, R.I.	HOLE NO.	2C
REPO	RTSENT	TO _above					UR JOB NO	03-233			SURF. ELEV	179 1 +/
G	ROUNDW	ATER OBSERV	ATIONS				CASING	SAMPLER	CORE BAR.			DATE
At		after	Hour	s Tv	ре	4	" Solid	Probe		Start		EIEIAA
				Siz	ze I.D.		Auger			Complete		5/5/03
At		after	Hours	s Ha	mmer Wi	t			віт	Boring Foreman	P. B	rescia
				Ha	mmer Fa					Inspector/Engr.	J. Ma	azzarino
LOC	ATION OF	BORING	Nev	vell E	Bridge I	No. 20)4 - Cum	berland,	R.I.		CATION	
epth	Blows	Sample Depths	of	From	on Sampl	er	Moisture Density or	Change	Bemarks include			SAMPL
	per foot	From - To	Sample	0-6	6-12	12-18	Consist.	Elev./ Depth	Rock-color, type,	condition, hardne seams, etc.	ss, drilling time,	No. Pen"
									8" Asphalt		•	
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	SURFAC	E TO			119	FD			THEN			
ple	Туре		1 1	Proport	ions Use	d .	C/	140 IL M	/f x 30" fall on 2" (D Samalar	7	SUMMARY
Drive	C=Cored	W=Washed	tra	ice	0 to 10	0% 0	Cohesionless	Density	Cohesive	Consistency	East	b Boring 10
=Fixe	Pit A=A	JT=Shelby Tube	litt	le	10 to 20	0%	0-10	Loose	0-4	Soft 30	+ Hard Roc	k Coring
		901	SO	me	20 to 35	5%	10-30	Med. Den	se 4-8	M./Stiff	Com	

TO C PROJE REPO	Green In ECT NAME RT SENT	ternational A <u>Newman A</u> TO above	Affiliate Ave. & I	s, Inc Newe	Il Brid		DRESS DCATION JR JOB NO.	Medford, East Pro 03-233	MA vidence/Cum	berland, R.I.	HOLE NO. PROJ. NO. SURF. ELEV	P2D 02361-0 /179.1) . +/-
At	ROUND W	VATER OBSERV/	ATIONS Hours Hours	s Typ Siz s Hai	be e I.D. mmer W	4 	CASING " Solid Auger	SAMPLER Probe	CORE BAR.	Start Complete Boring Foreman	 P.	DATE 5/5/03 5/5/03 Brescia	
				Har	mmer Fa	dl				Inspector/Engr.	J.	Mazzarin	0
LOC		BORING	Nev	well B	ridge	No. 20	4 - Cum	berland,	R.I.				
Depth	Casing Blows per foot	Sample Depths From - To	Type of Sample	From	on Samp	o ler To	Moisture Density or Consist.	Change Elev./	Remarks includ Rock-color, type	e color, gradation, , condition, hardne	CATION type of soil et ss, drilling tim	c. le, No	MPLE
				0-0	1 0-12	12-10		Depth	8" Asphalt	seams, etc.		NO.	Pen R
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								9.6	Refusal - Bott	om of Probe 9.6'			
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ROUN		CE TO	i.	Proport	US	SED	c	ASING:	THEN			SUM	MARY
D=Drive	e C=Corec ed Piston	d W=Washed UT=Shelby Tube	tr lit	ace tle	0 to 1 10 to 2	10% (20%	Cohesionles 0-10	s Densit Loose	y Cohesive 0-4	Consistency Soft 30) + Hard	Earth Boring Rock Coring	9.6'
-1es	A PIL A=AL	uger	S	ome	20 to 3	504	10-30	Med. Der	1se 4-8	M /Stiff			



APPENDIX C

CURRENT BORING LOGS

RIDOT Project Newell Bridge	BORING #: SB-101 Sheet 1 of 4
Location (C/T): Providence / CUMBERLAND	RIDOT Database ID # :
RIC # : 2019-EH-024 WO#2 FAP # :	Date Start : 3/2/20 Date End : 3/3/20
Bridge/Road #: 020401	N Coord. : 328.076 Ft.
Design Consult Co. : Steere Engineering Inc.	E Coord : 352 600 Ft .
Gentech Consult Co : GZA GeoEnvironmental Inc	Ground Surface Elev Et : 1778
Inspector Name/Co : Nicholas Hetland	Elevation Datum NAVD88
Methods Used to Determine Borehole Coordinates and Elev	vation :
Digitized	
Г	
Drilling	Project No. :
Drilling Foreman : Norman Studdard	
Drilling Rig Make &	
Model: Truck Diedrich-D120	
Drilling Methods and Tools	
Coring Size 5 4 in	Hollow Stom Augor Elight OD (in)
Methods Upod to Advance Casing :	
Driven (200 lbc) Muvance Casing .	Bit D Spin D Open Hele D
Soils/Rock Sampling :	
	_
SPT Hammer Type Donut Safety	Automatic Trip 🛛 Other
Hammer Wt : <u>140</u> (lbs) Hammer Fall	: <u>30</u> (in)
Split Spoon Sampler : Barrel Length : 24	Barrel ID: <u>1.5</u> (in) Barrel OD : <u>2</u> (in)
	Shoe I D: <u>1.375</u> (in) Shoe OD : <u>2</u> (in)
Liner Type : Brass Steel	Plastic Spring Core Catcher
Undisturbed Samplers:	
Shelby Tube :	Length : (in) ID/OD : (in)
Fixed Piston Sampler Type	Length : (in) ID/OD : (in)
Other:	Length : (in) ID/OD : (in)
Bodrock Core Barrel Type : Standard double tube	\mathbf{D} / $\mathbf{O}\mathbf{D}$ · 2/25 (in) Core Diameter · 2 (in)
Standard double tube	
Groundwater Monitoring : Well Screen Depth from :	(ft) to (ft)
Soil/Rock Samples Delivered to :	
Name Thidach Engineering	Data : $2/E/20$
Address: 105 Ergnoss Ave Creater Di 02010	Date: 3/3/20
Rhode Island	
Construct of Transportation	KIC #: 2019-EH-024 WO#2
	Boring No. SB-101

Two Capitol Hill Providence, RI 02903

RIDOT Project	Newell Bridge	BORING #:	SB-101	Shee	<u>t 2</u> c	xf_4
Location (C/T) :	Providence / CUMBERLAND	RIDOT Data	baseID#:			
RIC #: 2019-E	H-024 WO#2 FAP #:	Date Start :	3/2/20	Date End :	3/3/20	
Bridge/Road #:	020401	N Coord.:	328,076	Ft.		
Design Consult Co	5. : Steere Engineering, Inc.	E Coord.:	352,600	Ft.		
Geotech Consult (Co. : GZA GeoEnvironmental, Inc.	Ground Surfa	ace Elev., Ft. :	177.8		
Inspector Name/C	o.: Nicholas Hetland	Elevation Dat	um NAVD8	88		

Borehole Location

Description: See Plan

Samp	ler: Un	less othe	rwise noted,	soil sampler cor	nsists of a 2 in. split spoon		(Groundw	vater Obser	vations		
	dri	ven usin	g a 140 lb ha	mmer, 30" fall.		Date	7	Time	Depth	Casing at	Stab. Tir	ne
Casin	g: Unle	ess other	wise noted, c	asing is driven u	ising 300 lb hammer,	03/03/20	C	00:00	NA	28	NA	
	tallır	ng 24 in.										
Casin	g Size:	_5, 4 ir	<u>n</u>	HSAuger	<u>X</u>				1			
D E P T H Ft.	CB AL SO IW NS G/Ft.	Type & Number	SAMPLER Pen/ Depth Rcy. Core Rcy. & RQD	Blows per6in. (Coringmin/ft) [Downpresspsi]	SOIL AND ROCK SAMPL Burmister Soil Classific	E DESCRIPTIO ation System	Ν	Depth of Stratum Change	C	STRATUM DESCRIPTION		REMARKS
-		-SS-1	24/17	34-36-27	Very dense, brown/gray, fin and fine Gravel, trace Silt, n	e to coarse SANI noist	0.0 D	6	FILL			1
_			3.0									
5_			24/5 4.0	8-6-3	Medium dense, brown, fine and fine to coarse GRAVEL	to medium SANI , little Silt, moist	D					
_		SS-3	24/11 ^{6.0}	18-18-20	Dense, light reddish brown, SAND, some fine to coarse (moist	fine to coarse Gravel, little Silt,						
_		- SS-4	24/6 8.0	10-6-7	Medium dense, reddish brov SAND, some fine Gravel, lit	wn, fine to mediu tle Silt, moist	ım					
10_		SS-5	24/3 10.0	10-9-8	Medium dense, brown, fine some fine Gravel, little Silt, attempt w/ 3-inch Sampler S to coarse SAND some fine 1	to medium SANI moist (additional S-5A: Brown, fii	D, ne					2
_		SS-6	24/0 12.0	7-13-9	NO RECOVERY (additiona Sampler SS-6A: NO RECOV	very) al attempt w/ 3-in / ERY)	12.0 Ich)	GLACIAL	OUTWASH		
- 15		SS-7	24/7	7-5-4	Medium dense, brown, fine to coarse SAND, trace Silt, r	GRAVEL and fin moist	ne					

REMARKS: 1. Boring advanced from 0'-1' below ground surface (bgs) with roller bit. A 7" thick layer of asphalt was measured at the ground surface. 2. Depth intervals 10'-12', 12'-14 and 20'-22' bgs resampled with a 3" split spoon as samples SS-5A, SS-6A and SS-10A respectively. 3" split spoons were driven through disturbed substrate; blow counts are not representative and therefore were not recorded.

		140# Wt x 30" fall	on 2" OD SS	Sampler	
Proportions Used	Sampler Type	Cohesionless Density	Cohesive	Consistency	
trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50%	SS - Split Spoon UT - Shelby Tube UP - Fixed Position C - Rock Core	0 - 10 Loose 10 - 30 Medium Dense 30 - 50 Dense 50 + Very Dense	0 - 4 4 - 8 8 - 15 15 - 30 30 +	Soft Firm Stiff Very Stiff Hard	RIC #: 2019-EH-024 WO#2 Boring No. : SB-101 Date Completed : 3/3/20 Database ID No. : 3/3/20

RID	OT Pr	oject C/T):	Newell Br	ridge ce/CUMBE		BORING #	tabase ID #	1Sheet <u>3</u> of #:	_4
D E P T H Ft.	CB AL SO IW NS G/Ft.	Type & Number	SAMPLER Pen/ Depth Rcy. Core Rcy. & RQD	Blows per 6 in. (Coring min/ft) [Downpress psi]	SOIL AND ROCK SAM Burmister Soil Class	IPLE DESCRIPTION	Depth of Stratum Change	STRATUM DESCRIPTION	R E M A R K S
-		SS-8	24/6 16.0	3-2-1	Loose, brown, fine to co coarse Gravel, trace Silt,	arse SAND, and fine to wet		GLACIAL OUTWASH	
-		SS-9	24/6 18.0	6-3-4	Loose, brown, fine to co fine to coarse Sand, trace	arse GRAVEL, some e Silt, wet			
20		SS-10	24/0 20.0	2-11-23	NO RECOVERY (additi Sampler SS-10A: Reddis SAND, little fine to coars wet, 5-inch recovery)	2 onal attempt w/ 3-inch sh brown, fine to coarse se Gravel, little Silt,	0. <u>0</u>	GLACIAL TILL	
-		SS-11	24/12 22.0	18-19-22	Dense, reddish brown, fi some fine Gravel, little S	ne to coarse SAND, ilt, wet			3
- 25 _		SS-12	24/18 24.0	19-27-20	Dense, reddish brown, fi some fine Gravel, little S	ne to coarse SAND, ilt, wet			
-		SS-13	20/11 26.0	8-9-65/2"	Medium dense, reddish I SAND, little Silt, little fii	prown, fine to medium ne Gravel, wet			
			27.7			2	8.0		
_				(3)				WEATHERED ROCK	4
-				(3)					5
30_		C-1	48/47 16.7%	(3)	Very soft, severely weath moderately fractured me (RUN=48", REC=47", R	hered, reddish brown, ta-conglomerate EC%=98%,			6
_				(3)	RQD=10.7%)				
				(4)					
-			04.0	(5)		-	4.0		
35_		C-2	60/60 93.3%	(4)	Soft, moderately weather with green and gray clas meta-conglomerate	ed, reddish brown ts, slightly fractured,	4.0	BEDROCK	7
				(4)	RQD=93.3%)	LC /0= 100 /0,			
				iver to 201 h m	4" (LNA) and a statement of	through 5" (D)A() posing	n often driving		
sam grou prog stop	ple S-13 und surfa gression i ped and	at ±27.8 ace and pl resumed. the core	bgs. Weather lugged; then th 6. 4" casing was removed.	ed bedrock infer ne boring was co g driven to ±28' k	red at this depth. 5. At environmentation of the second terms of terms of t	nd of day on 3/2/20 the alt cold patch. On 3/3/2 27.8'-30' bgs with roller	drill rods were 0 the asphalt p bit. 7. Rod	sample 5-104. 4. Split spon refusal e removed, casing was driven flush with batch and plug were removed and borin k core barrel jammed at 34' bgs. Run v	n the g vas
Prop	ortions	Used	Sampler T	ype Cohesi	140# W t x 30" fall on 2 onless Density Co	" OD SS Sampler ohesive Consistency	/		
trac little som and	ce 0 to 7 e 10 to ne 20 to 35 to	10% 20% 35% 50%	SS - Split Sp UT - Shelby UP - Fixed Po C - Rock (boon0 -Tube10osition30Core50	10 Loose - 30 Medium Dense - 50 Dense) + Very Dense	0 - 4 Soft 4 - 8 Firm 8 - 15 Stiff 15 - 30 Very Stiff	RIC # : Boring N Date Cor	2019-EH-024 WO#2 lo.: SB-101 mpleted: 3/3/20	
1						SU+ Hard	Database		

RIDOT Project Location (C/T) :	Newell Bridge Providence/C	CUMBERLAND	BORING # : RIDOT Databa	BORING #: <u>SB-101</u> RIDOT Database I D # :				
D CB E AL P SO Type & T IW Numbe H NS Ft. G/Ft.	SAMPLER Pen/ Depth pe Rcy. Core Rcy. & RQD [Dowr	Blows er 6 in. SOIL AND ROCK SAMPL Burmister Soil Classific npress ps]	E DESCRIPTION ation System	Depth of Stratum Change	STRATUM DESCRIPTION		R E M A R K S	
40	- 60/60 ^{39.0} 51.7% ^{44.0} 95.8% ^{44.0} 49.0	 (5) (3) (4) (3) Soft, moderately weathered with green and gray clasts, fractured meta-conglomerate (RUN=60", REC=60", REC (5) RQD=51.7%) (6) (3) (4) Soft, slightly weathered, rec gray clasts, slightly fracture meta-conglomerate (RUN=60", REC=60", REC (4) RQD=95.8%) (3) (4) (4) (4) 	, reddish brown, moderately e %=100%, ldish brown with d %=100%, 49.0_	BEDROCK			8	
REMARKS: 8. En Borehole fixed with measured within the of the boring.	nd of exploration at 49 cold mix asphalt patch boring due to the intro	9' bgs. Boring backfilled with clean grave h at the surface. Boring as-drilled locatic roduction of drilling fluid during drilling.	and sand. Concrete was n measured with tape fro Distance from bridge de	s added when backfillin om existing site feature ack to river surface mea	ng the top 5' of the s. 9. Groundwa sured at 16.5' upo) boring. ter not on comple	ation	
Proportions Used trace 0 to 10% little 10 to 20% some 20 to 35% and 35 to 50%	Sampler Type SS - Split Spoon UT - Shelby Tube UP - Fixed Position C - Rock Core	140# Wt x 30" fall on 2" C Cohesionless Density Cohe 0 - 10 Loose 0 10 - 30 Medium Dense 4 n 30 - 50 Dense 8 - 50 + Very Dense 15 30	DD SS Sampler esive Consistency 4 Soft 8 Firm 15 Stiff 30 Very Stiff + Hard	RIC #: 2019-EH- Boring No. : SB-1 Date Completed : Database ID No. :	024 WO#2 01 3/3/20			



APPENDIX D

USGS GEOLOGY MAPS







APPENDIX E

LABORATORY TESTING RESULTS

THIELSCH	195 Frances Avenue	Client Information:	Project Infor	mation:
	Cranston RI, 02910	GZA GeoEnvironmental	Newell B	ridge
	Phone: (401)-467-6454	Providence, RI	Cumberlar	nd, RI
	Fax: (401)-467-2398	PM: Alexander Haag	GZA Project Number	:: 03.0034674.00
ENGINEERING	thielsch.com	Assigned By: Nicholas Hetland	Summary Page:	1 of 1
	Let's Build a Solid Foundation	Collected By: Nicholas Hetland	Report Date:	03.12.2020

LABORATORY TESTING DATA SHEET, Report No.: 7420-C-111

					Ide	ntifica	tion Tests						Cor	rosivity Tests				
Boring ID	Sample No.	Depth (ft)	Laboratory No.	As Received Water Content %	LL %	PL %	Gravel %	Sand %	Fines %	Resitivity (Mohms- cm)	Sulfate (mg/kg)	Chloride (mg/kg)	Sulfide (mg/kg)	Redox Potential (mv)	рН	Electrical Resist. As Received Ohm- cm @ 60°F	Electrial Resist. Saturated Ohm- cm @ 60°F	Laboratory Log and Soil Description
				D2216	D4	318	Ι	06913				EP	ΡA			G	57	
GZ-1	S-3	6-8	20-S-665				24.1	59.2	16.7									Light Red Brown f-c SAND, some f- c Gravel, little Silt
GZ-1	S-8	16-18	20-S-666				37.0	55.8	7.2									Brown f-c SAND and f-c GRAVEL, trace Silt
GZ-1	S-11	22-24	20-S-667				20.5	61.8	17.7									Red Brown f-c SAND, some fine Gravel, little Silt
GZ-1	S-4	8-10	20-S-668							0.013	205	155			8.69			Analytical Only
GZ-1	S-12	24-26	20-S-669							0.002	68	ND			7.89			Analytical Only

Date Received: 03.05.2020

Reviewed By:

2. LR.fL

03.12.2020







Division of Thielsch Engineering, Inc.

BAL Laboratory

The Microbiology Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Steve Accetta Thielsch Engineering, Inc. 195 Frances Avenue Cranston, RI 02910

RE: Newell Bridge - GZA (0.0034674.00) ESS Laboratory Work Order Number: 20C0188

This signed Certificate of Analysis is our approved release of your analytical results. These results are only representative of sample aliquots received at the laboratory. ESS Laboratory expects its clients to follow all regulatory sampling guidelines. Beginning with this page, the entire report has been paginated. This report should not be copied except in full without the approval of the laboratory. Samples will be disposed of thirty days after the final report has been delivered. If you have any questions or concerns, please feel free to call our Customer Service Department.

REVIEWED

By ESS Laboratory at 2:27 pm, Mar 11, 2020

taurels

Laurel Stoddard Laboratory Director

Analytical Summary

The project as described above has been analyzed in accordance with the ESS Quality Assurance Plan. This plan utilizes the following methodologies: US EPA SW-846, US EPA Methods for Chemical Analysis of Water and Wastes per 40 CFR Part 136, APHA Standard Methods for the Examination of Water and Wastewater, American Society for Testing and Materials (ASTM), and other recognized methodologies. The analyses with these noted observations are in conformance to the Quality Assurance Plan. In chromatographic analysis, manual integration is frequently used instead of automated integration because it produces more accurate results.

The test results present in this report are in compliance with TNI and relative state standards, and/or client Quality Assurance Project Plans (QAPP). The laboratory has reviewed the following: Sample Preservations, Hold Times, Initial Calibrations, Continuing Calibrations, Method Blanks, Blank Spikes, Blank Spike Duplicates, Duplicates, Matrix Spikes, Matrix Spike Duplicates, Surrogates and Internal Standards. Any results which were found to be outside of the recommended ranges stated in our SOPs will be noted in the Project Narrative.

Division of Thielsch Engineering, Inc.

BAL Laboratory

The Microbiology Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: Thielsch Engineering, Inc. Client Project ID: Newell Bridge - GZA

ESS Laboratory Work Order: 20C0188

SAMPLE RECEIPT

The following samples were received on March 05, 2020 for the analyses specified on the enclosed Chain of Custody Record.

The client did not deliver the samples in a cooler.

Lab Number 20C0188-01 20C0188-02 <u>Sample Name</u> GZ-1 S-4 8-10ft GZ-1 S-12 24-26ft <u>Matrix</u> Soil Soil <u>Analvsis</u> 9038, 9045, 9050A, 9250 9038, 9045, 9050A, 9250

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CERTIFICATE OF ANALYSIS

Client Name: Thielsch Engineering, Inc. Client Project ID: Newell Bridge - GZA

ESS Laboratory Work Order: 20C0188

PROJECT NARRATIVE

No unusual observations noted.

End of Project Narrative.

DATA USABILITY LINKS

To ensure you are viewing the most current version of the documents below, please clear your internet cookies for www.ESSLaboratory.com. Consult your IT Support personnel for information on how to clear your internet cookies.

Definitions of Quality Control Parameters

- Semivolatile Organics Internal Standard Information
- Semivolatile Organics Surrogate Information
- Volatile Organics Internal Standard Information

Volatile Organics Surrogate Information

EPH and VPH Alkane Lists

Division of Thielsch Engineering, Inc.

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The Microbiology Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

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ESS Laboratory Work Order: 20C0188

CURRENT SW-846 METHODOLOGY VERSIONS

Analytical Methods

1010A - Flashpoint 6010C - ICP 6020A - ICP MS 7010 - Graphite Furnace 7196A - Hexavalent Chromium 7470A - Aqueous Mercury 7471B - Solid Mercury 8011 - EDB/DBCP/TCP 8015C - GRO/DRO 8081B - Pesticides 8082A - PCB 8100M - TPH 8151A - Herbicides 8260B - VOA 8270D - SVOA 8270D SIM - SVOA Low Level 9014 - Cyanide 9038 - Sulfate 9040C - Aqueous pH 9045D - Solid pH (Corrosivity) 9050A - Specific Conductance 9056A - Anions (IC) 9060A - TOC 9095B - Paint Filter MADEP 04-1.1 - EPH MADEP 18-2.1 - VPH

Prep Methods

3005A - Aqueous ICP Digestion
3020A - Aqueous Graphite Furnace / ICP MS Digestion
3050B - Solid ICP / Graphite Furnace / ICP MS Digestion
3060A - Solid Hexavalent Chromium Digestion
3510C - Separatory Funnel Extraction
3520C - Liquid / Liquid Extraction
3540C - Manual Soxhlet Extraction
3541 - Automated Soxhlet Extraction
3546 - Microwave Extraction
3580A - Waste Dilution
5030B - Aqueous Purge and Trap
5035A - Solid Purge and Trap

SW846 Reactivity Methods 7.3.3.2 (Reactive Cyanide) and 7.3.4.1 (Reactive Sulfide) have been withdrawn by EPA. These methods are reported per client request and are not NELAP accredited.

Division of Thielsch Engineering, Inc.

BAL Laboratory

The Microbiology Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: Thielsch Engineering, Inc. Client Project ID: Newell Bridge - GZA Client Sample ID: GZ-1 S-4 8-10ft Date Sampled: 03/05/20 16:00 Percent Solids: 91

ESS Laboratory Work Order: 20C0188 ESS Laboratory Sample ID: 20C0188-01 Sample Matrix: Soil

Classical Chemistry

Analyte	Results (MRL)	MDL	<u>Method</u>	<u>Limit</u>	DF	<u>Analyst</u>	Analyzed	<u>Units</u>	Batch
Chloride	WL 155 (33)		9250		1	EEM	03/09/20 12:41	mg/kg dry	DC00913
Corrosivity (pH)	8.69 (N/A)		9045		1	JLK	03/05/20 19:03	S.U.	DC00565
Corrosivity (pH) Sample Temp	Soil pH measured in w	vater at 20.2	°С.						
Resistivity	WL 0.013 (N/A)		9050A		1	CCP	03/09/20 12:30	Mohms-cm	DC00921
Sulfate	WL 205 (55)		9038		1	JLK	03/09/20 19:01	mg/kg dry	DC00950

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CERTIFICATE OF ANALYSIS

Client Name: Thielsch Engineering, Inc. Client Project ID: Newell Bridge - GZA Client Sample ID: GZ-1 S-12 24-26ft Date Sampled: 03/05/20 16:00 Percent Solids: 88

ESS Laboratory Work Order: 20C0188 ESS Laboratory Sample ID: 20C0188-02 Sample Matrix: Soil

Classical Chemistry

Analyte	Results (MRL)	MDL	Method	Limit	DF	Analys	t <u>Analyzed</u>	<u>Units</u>	Batch
Chloride	WL ND (34)		9250		1	EEM	03/09/20 12:46	mg/kg dry	DC00913
Corrosivity (pH)	7.89 (N/A)		9045		1	JLK	03/05/20 19:03	S.U.	DC00565
Corrosivity (pH) Sample Temp	Soil pH measured in w	vater at 20.0	°С.						
Resistivity	WL 0.002 (N/A)		9050A		1	CCP	03/09/20 12:30	Mohms-cm	DC00921
Sulfate	WL 68 (57)		9038		1	JLK	03/09/20 19:01	mg/kg dry	DC00950

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CERTIFICATE OF ANALYSIS

Client Name: Thielsch Engineering, Inc. Client Project ID: Newell Bridge - GZA

ESS Laboratory Work Order: 20C0188

Quality Control Data

Analyte	Result	MRL	Units	Spike Level	Source Result	%REC	%REC Limits	RPD	RPD Limit	Qualifier
		C	Classical Chen	nistry						
Batch DC00913 - General Preparation										
Blank										
Chloride	ND	3	mg/kg wet							
LCS										
Chloride	32		mg/L	30.00		106	90-110			
Batch DC00950 - General Preparation										
Blank										
Sulfate	ND	5	mg/kg wet							
LCS										
Sulfate	10		mg/L	9.988		98	80-120			

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The Microbiology Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: Thielsch Engineering, Inc. Client Project ID: Newell Bridge - GZA

ESS Laboratory Work Order: 20C0188

Notes and Definitions

Soil pH measured in water at 20.2 °C.
Soil pH measured in water at 20.0 °C.
Results obtained from a deionized water leach of the sample.
Analyte included in the analysis, but not detected
Analyte NOT DETECTED at or above the MRL (LOQ), LOD for DoD Reports, MDL for J-Flagged Analytes
Sample results reported on a dry weight basis
Relative Percent Difference
Method Detection Limit
Method Reporting Limit
Limit of Detection Limit of Quantitation
Detection Limit
Initial Volume
Final Volume
Subcontracted analysis; see attached report
Range result excludes concentrations of surrogates and/or internal standards eluting in that range.
Range result excludes concentrations of target analytes eluting in that range.
Range result excludes the concentration of the C9-C10 aromatic range.
Results reported as a mathematical average. No Recovery
Calculated Analyte
Subcontracted analysis; see attached report
Reporting Limit
Estimated Detection Limit
Membrane Filtration
Most Probably Number
Too numerous to Count
Colony Forming Units



Division of Thielsch Engineering, Inc.

BAL Laboratory

The Microbiology Division of Thielsch Engineering, Inc.

CERTIFICATE OF ANALYSIS

Client Name: Thielsch Engineering, Inc. Client Project ID: Newell Bridge - GZA

ESS Laboratory Work Order: 20C0188

ESS LABORATORY CERTIFICATIONS AND ACCREDITATIONS

ENVIRONMENTAL

Rhode Island Potable and Non Potable Water: LAI00179 http://www.health.ri.gov/find/labs/analytical/ESS.pdf

Connecticut Potable and Non Potable Water, Solid and Hazardous Waste: PH-0750 http://www.ct.gov/dph/lib/dph/environmental_health/environmental_laboratories/pdf/OutofStateCommercialLaboratories.pdf

Maine Potable and Non Potable Water, and Solid and Hazardous Waste: RI00002 http://www.maine.gov/dhhs/mecdc/environmental-health/dwp/partners/labCert.shtml

> Massachusetts Potable and Non Potable Water: M-RI002 http://public.dep.state.ma.us/Labcert/Labcert.aspx

New Hampshire (NELAP accredited) Potable and Non Potable Water, Solid and Hazardous Waste: 2424 http://des.nh.gov/organization/divisions/water/dwgb/nhelap/index.htm

New York (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: 11313 http://www.wadsworth.org/labcert/elap/comm.html

New Jersey (NELAP accredited) Non Potable Water, Solid and Hazardous Waste: RI006 http://datamine2.state.nj.us/DEP_OPRA/OpraMain/pi_main?mode=pi_by_site&sort_order=PI_NAMEA&Select+a+Site:=58715

United States Department of Agriculture Soil Permit: P330-12-00139

Pennsylvania: 68-01752 http://www.dep.pa.gov/Business/OtherPrograms/Labs/Pages/Laboratory-Accreditation-Program.aspx

N OF CUSTODY	Keporting Limits - Reporting Limits -	following: (please circle) Electonic Deliverable Yes X No	3P DOD Other Format: Excel Access PDF_A_Unter		ect Name/Client Name: Newell big ge/ GZA GeoEnvironmental had big big big big big big big big big big	act Pricing	Sample Identification # of Jar 표 한 여 명 이 문 이 문 이 문 이 이 이 이 이 이 이 이 이 이 이 이 이	GZ-1/S-4/8'-10' 1 XXX 1	32-1/S-12/24'-26' 1 XXX				6. CHOH	0000	hinking Water O-Oil W-Wipes F-Filter	land	out to: Rroth@thielsch.com, Saccetta@thielsch.com, mcolman@thielsch.com	Date/Time Received by: (Signature)	Date/Time Received by: (Signature)
	Furn Time Stands	State where samples s this project for an	MA-MCP CT-R		6		Matrix	S	s				MacVII 7 Accedic A old	DA	dwater SW-Surface Wat	Sampled by : Nichc	Comments: Please	Received by: Signature)	Received by Visionature)
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ESS La	Division of	Tel. (401) 4 www.esslab	191000' M M M	Project Mar	Company: Address:		ESS Lab Samula ID		a					Preservation U(Matrix: S-Soil	Cooler Press	Seals Intact	Cooler Tem Relinquished by: (;	,

MILS IN ST


LABORATORY TESTING DATA SHEET, Report No.: 7420-C-110

						Specime	n Data					Co	mpressive S	Strength Te	ests			
Boring No.	Sample No.	Depth (ft)	Laboratory No.	Mohs Hard- ness	Diameter (in)	Length (in)	(1) Unit Weight (PCF)	(2) Wet Density (PCF)	Bulk G _s	(3) Other Tests	(4) Strength PSI	(5) Strain %	(6) E sec PSI EE+06	(7) Poisson's Ratio	στ PSI	Is ₅₀ psi	(8) s _c PSI	Rock Formation or Description or Remarks
SB-101	C-2	37.3-38	20-8-663		1.989	4.692	163.7				4708							Arkosic Conglomerate
							Br	eak was fr	esh that	went ar	ound some	lithics.						
SB-101	C-4	47-47.9	20-S-664		1.983	4.613	170.7				6200							Arkosic Conglomerate
									Breal	c was fre	esh.							
(1) Volume	Determined I	By Meası	uring Dimensio	ons		(3) PLD=	=Point Lo	ad (diamet	rical),				(5) Strain	at Peak De	viator Stre	SS		
(2) Determin	ned by Measu	ring Din	nensions and		otes	PLA= Po	oint Load	(Axial) ST	Γ= Split	ting Ter	isile	otes	(6) Repres	ents Secan	t Modulus	at 50% of	Total Fa	ilure Stress
Weight of S	aturated Sam	ple			z	U= Unce	onfined C	ompressiv	e Streng	gth		Z	(7) Repres	ents Secan	t Poisson's	Ratio at 5	0% of T	otal Failure Stress
						(4) Taker	n at Peak	Deviator S	tress				(8) Estima	ted UCS fi	rom Table	1 of ASTN	A D5731	for NX cores (Is x 24)

Reviewed By:

Stato



APPENDIX F

ROCK CORE PHOTOS

BORING NO. CORE RUN TOP BOTTOM CORE LINCTI REC. LINCTI PRECENT (RQ) SB-101 C1 30.0 34.0 44 47 57.3 15.2 SB-101 C2 33.0 34.0 44 47 57.3 15.2 SB-101 C2 33.0 40.0 48.0 47 57.3 15.2 SB-101 C2 33.0 40.0 60.0 100.0 57.3 SB-101 C2 35.0 C4.0 50.0 C6.0 100.0 57.3 SB-101 C2 57.5 SNM (40.0 57.7 SNM (APPROX. DE	PTHS OF RUN		RECOVERY		ROCK QUALITY DESIGNATION
	BORING NO.	CORE RUN	ТОР	BOTTOM	CORE LENGTH	REC. LENGTH	PERCENT	(RQD)
SB-101 C-1 C-3 34.0 33.0 34.0 44.0 34.0 60 60 60 100.0 60 15.7 100.0 15.7 15.8 2% CPT - Music Reset Strategy of the Constraint Strategy of the Strategy of the Constraint Strategy of the Constraint Strategy of the Constrating Strategy of the Constraint Strategy of the Constraint Strate			[ft]	[ft]	[in]	[in]	[%]	
SP-101 C 23 39.0 34.0 60 60 60 100.0 93.3 C 4 40.0 40.0 60 60 60 100.0 93.3 C 4 40.0 40.0 60 60 60 100.0 93.3 C 4 40.0 40.0 60 60 60 100.0 93.3 C 4 40.0 40.0 40.0 60 60 60 100.0 93.3 C 4 40.0 40.0 40.0 40.0 40.0 80.0 100.0 93.3 S 5 (0 C 4 93.5 10.0 10.0 10.0 93.3 S 5 (0 C 4 93.5 10.0 10.0 10.0 93.3 S 5 (0 C 4 93.5 10.0 10.0 10.0 10.0 10.0 10.0 S 5 (0 C 4 93.5 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0 10.0<		C-1	30.0	34.0	48	47	97.9	16.7
C4 31.0 40.0 60 80.0 100.0 51.7 WC11-North Bases Strate Reset Strate St	SB-101	C-2	34.0	39.0	60	60	100.0	93.3
Child - Number Record Cont Con<		C-3	39.0	44.0	60 60	60	100.0	51.7
	THE REAL PROPERTY OF THE REAL	C-4	44.0	49.0	60	60	100.0	95.8
	54674 - NEWELL BRIDGE	I la rale	LENGTH OF D	Contraction Contraction	- RATE	RQD Comm	ENTS	
	58-01 [Co. Co. Co. Co] B	HORING # RUN # DEPTH (H) E	DATE CORE RUN (TH) KELOVER	(A Opt)				
	go → 49' 2 /2 /2020	58-01 C-1 30-34 3	5/3/20 48 47	3- 7. 3- 4. 3.	m 595 4m 495 -	16.7 %. Cone Bank	EL JAM A HE	
	151510400	58-01 C-2 34-39 3	3 3 10 60 60	4- 123 3- 380 4	- 442 3-18 0 4- 41	43.5%		
		58.01 (3 31-44)	3/3/20 60 60	3m 7. Un and Go	" 101 3m 2105 3m 2103	51.7%	C	
		10 mu'- 49'	alaho Loi Loi	31 353 34 524 2	" ulles " Sta " 545	15.0 %	145 M	
	0 0	58-01 C-4 44-11	111-1 0-					
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				1	1 4005		the second	
CASE OF PHYLOREMETRIAL IR. CRUMERER AND REDIDER REFLABILITATION REVEIL BRIDGE (ROUP 127 - MAIOR BRIDGE REFLABILITATION REVEIL BRIDGE REFLABI	TOP .		2.4		- Andrew Are			Barton
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DRY CONDITION	p1+ 2+ 2 + 2 + 2 + 2 + 2 + 10 +	11 11 12 12 10 15 1km 17 18 19 20	21 22 23 11 25 26 27 2	1 29 30 31 HI 33 34				
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DATE: 3/10/2020 FIGURE: F-001		DATE: 3/10/2020		SB-101: C-	1 THROUGH C-4			FIGURE: F-UUI



GZA GeoEnvironmental, Inc.

Appendix G

Asbestos Abatement Plan From RI Analytical

Asbestos Abatement Plan - Water Pipe Removal

Site: Newell Bridge #020401 RIDOT Bridge On-Call – Bridge Group 17C, Cumberland, RI 02864





Prepared for: VHB 1 Cedar Street, Suite 400, Providence, RI 02903

Owner: Rhode Island Department of Transportation Two Capitol Hill, Providence, RI 02908

RI Analytical Project #2023135

DATE: June 11, 2024





TRANSMITTAL to RIDOH

To:	Ms. Bonnie Cassani-Brandt	P: 401.222.7784
	RI Department of Health, Asbestos Program	E: Bonnie.cassanibrandt@health.ri.gov
	Three Capitol Hill, 206 Cannon Building	
	Providence, RI 02908	
cc:	Mr. Andrew Reeder, PE, PMP, Structural Engineer	P: 401.457.2011
	VHB	E: AReeder@VHB.com
	1 Cedar Street, Suite 400	
	Providence, RI 02903	
From	: Kenneth Davis	Date: June 11, 2024
RE: A	sbestos Abatement Plan – Water Pipe Removal	
S	ite: Newell Bridge #020401, Cumberland, RI 02864	

VHB #73500.01 - RI Analytical Project #2023135

Ms. Cassani-Brandt:

Attached to this Transmittal, please find the following.

(1) Asbestos Abatement Plan for your review and approval.

Table 2 below summarizes the ACM¹ identified that is to be abatement at the Site.

			Table 2 – ACM Inve	entory Summ	ary	
Line#	нм #	Material Type	ACM Location	Sample # Asbestos Content	Condition	Estimated Quantity/Notes
15/16	7	Sealer (black) on pipe, metal suspension anchors and on adjacent outer ACM paper pipe wrap at 4 hanger locations	Newell Bridge No. 204 - pipe that runs between the North and South concrete abutment walk and	7A, 7B 5-15% Chrysotile	l, NF	4 SF (1 SF x 4 anchors) This ACM black sealer is on the hangers at and adhered to the outer ACM black paper layer of the pipe and cannot be separated. The metal anchor needs to be cut and disposed of as ACM. [See photographs below]
17/21/ 25	8	Paper (black), thick Paper (black), thin Insulation (wool-type) (brown) Rope (light brown), wrapped around insulation Metal pipe	into concrete conduits on the East side of the bridge and that is anchored to the underside of the concrete bridge deck above with metal suspension hangers	8A, 8B, 8C 5-15% Chrysotile	D, NF	25 LF (~4-6" Ø interior metal pipe with 18"- 24"outside Ø of pipe with insulation, 25' length of pipe) All layers must be treated as ACM as they are adhered to and cannot be separated. There may be ACM mastic adhered to the metal pipe that may be difficult to remove. Any pipe to remain must be thoroughly cleaned and spray encapsulated.

HM = Homogenous Material; F = Friable²; NF = Non-Friable; I = Intact; D = Damaged (i.e. <10% of the material is damaged); SD = Significantly Damaged (i.e. >10% of the material is damaged); EA = Each; LF = Linear Feet; SF = Square Feet; CF = Cubic Feet

¹ ACM = Asbestos-Containing Material, i.e., material found to contain >1% asbestos by PLM laboratory analysis

² Friable = Material that, when dry, can be crumbled, shattered, pulverized or reduced to powder by hand pressure



TRANSMITTAL TO RIDOH

Asbestos Abatement Plan – Water Pipe Removal Site: Newell Bridge #020401, Cumberland, RI 02864 VHB #73500.01 - RI Analytical Project #2023135 June 11, 2024 - Page 2



NESHAP Units Calculation

NESHAP unit/RIDOH Abatement Plan Fee Calculation
- 1 NESHAP unit = 260 LF+160 SF+35 CF or combination thereof.

25 LF/ 260 LF + 4 SF / 160 SF = 0.125 NESHAP units. The RIDOH abatement plan filing fee is waived for Rhode Island State Agencies including RIDOT.

Table 3 below summarizes the **ACWM³** that will remain after completion of this asbestos abatement project. These materials will be managed in place by the Owner in accordance with the Long-Term Management Plan included in the attached Asbestos Abatement Plan.

³ ACWM = Asbestos-Containing Waste Materials, and materials contaminated with asbestos or materials found to contain ≤1% asbestos by PLM laboratory analysis



TRANSMITTAL TO RIDOH

Asbestos Abatement Plan – Water Pipe Removal Site: Newell Bridge #020401, Cumberland, RI 02864

VHB #73500.01 - RI Analytical Project #2023135 June 11, 2024 - Page 3

			Table 3 – A	CWM to Rem	nain	
	нм			Sample #		
Line#	#	Material Type	ACM Location	Asbestos	Condition	Estimated Quantity/Notes
				Content		
1/2	1	Paper (black, thick) between concrete parapet wall and stone abutment	Newell Bridge No. 204 – on the East and West sides of the bridge and North and South abutments	1A, 1B Trace Chrysotile	D, NF	1,680 SF [(~20' L x 42' W) x 2 North and South side of bridge] The precise extent and locations of this ACWM are not known. The ACWM paper likely covers the area where the concrete parapet wall meets the stone abutment on both the north and south abutments and spanning the width of the bridge. This ACWM can be demolished with the bridge using dust suppression water mist methods (i.e., no visible emissions during demolition activities) as well as methods for compliance with the OSHA Asbestos in Construction Standard (29CFR1926.1101) and EPA NESHAP asbestos regulation 40CFR61 Subpart M. The waste transported and disposed of at RIRRC ⁴



The following waivers are requested for ACM removal:

 Waiver for no clearance air sampling for exterior materials removal where no work containment enclosure will be constructed – plastic wrap with "candy-stripe" duct tape and glue and glovebag removal at sufficient points along the pipe to safely cut the pipe out in sections – followed by disposal of the pipe with wrap materials as ACM.

⁴ RIRRC = Rhode Island Resource Recovery Corporation – Central Landfill, 65 Shun Pike, Johnston, RI 02919.



TRANSMITTAL TO RIDOH

Asbestos Abatement Plan – Water Pipe Removal Site: Newell Bridge #020401, Cumberland, RI 02864 VHB #73500.01 - RI Analytical Project #2023135 June 11, 2024 - Page 4

In lieu of clearance air sampling, the asbestos abatement contractor will conduct worker OSHA compliance Excursion Limit and 8-hour TWA PCM air sampling, and RI Analytical (or other licensed asbestos consultant) will conduct upwind and downwind work zone perimeter PCM air sampling during the work [216-RICR-50-15-1 §1.14.8 K.].



RHODE ISLAND DEPARTMENT OF HEALTH

NOTARIZED CERTIFICATION OF ASBESTOS ABATEMENT PLAN

Facility/Building: Water Pipe - RIDOT Bridge - BG 17C - Newell Bridge #020401 Cumberland, RI 02864
Address: Diamond Hill Road off Nate Whipple Highway - over the East Sneech Brook
City/Town: Cumberland, RI ZIP: 02864 Amendment Phase No:
Abatement Plan Prepared By: Kenneth Davis RIDOH License No.: APD00510
Summary of specific waivers/variances being requested:
(1) 1. Waiver for no clearance air sampling for axterior materials removal where no work containment enclosure will be constructed – plastic wrap with "candy-stripe" duct tape and glue and glovebag removal at sufficient points along the pipe to safely cut the pipe out in sections - followed by disposal of the pipe with warp materials as ACM. In lieu of clearance air sampling, the sabestos abatement contractor will conduct worker OSHA compliance Excursion Limit and 8-hour TWA PCM air sampling, and RI Analytical (or other licensed asbestos consultant) will conduct upwind and downwind work zone perimeter PCM air sampling during the work [216-RICR-So-15-1]; 1,4,8,1
Abatement Information
Abatement Method: (Check all that apply)
Encapsulation Glovebag
Enclosure Asphalt Roofing
Other (specify): Exterior ACM removal where no work containment enclosure will be constructed - plastic wrap with "candy-stripe" duct
tape and glue and glovebag removal at sufficient points along the pipe to safely cut the pipe out in sections – followed by disposal of the pipe with wrap materials as ACM. Contractor OSHA air samples + upwind/downwind air samples.
Asbestos Contractor: To be determined RIDOH License No.:
Estimated Starting Date: July 15, 2024
Pre-Abatement Sampling Information
Bulk samples collected by: Jennifer Jencks RIDOH License No.: Al01191
Bulk samples analyzed by: RI Analytical Laboratories, Inc. RIDOH License No.: PLM00142
Air samples collected by: None to be collected for exterior work RIDOH License No.: N/A
Air samples analyzed by: None to be collected for exterior work RIDOH License No.: N/A
Clearance Air Sampling Information
Air samples to be collected by: To be determined
Air samples to be analyzed by: To be determined RIDOH License No.:

CERTIFICATION

I certify that: this asbestos abatement plan is prepared and submitted under the provisions of Rhode Island General Laws Chapter 23-24.5 and the Rules and Regulations for Asbestos Control (216-RICR-50-15-1); all abatement/ management activities performed in conjunction with this plan will be in compliance with the specifications prescribed in this plan (when approved) and the most current revision of all applicable federal and state regulations; and the asbestos abatement/management activities described in this plan will be performed by a Rhode Island licensed asbestos abatement contractor.

State of Rhode Island, County of <u>Providence</u>. On this <u>Providence</u> day of <u>July</u>, 2024 before me, the undersigned notary public, personally appeared <u>Neural Providence</u> (name of document signer), and proved to me through satisfactory evidence of identification to be the person whose name is signed on the preceding or attached document, and acknowledged that they signed it voluntarily for its stated purpose.

Printed Name of Building Owner or Agent Sign Building nn VRATO (off nature and stamp of notary) 26 и Commission expires: Printed Name, ID Number Notary Public Form XSB-16B Revised June 202



RHODE ISLAND DEPARTMENT OF HEALTH Center for Healthy Homes and Environment – Asbestos Program

ABATEMENT PLAN APPLICATION

1.	Owner/Contact Name: Ms. Nelia Piscopio	
	Title: Project Manager I	
	If owned by an organization, organization name: Address: 2 Capitol Hill	RIDOT
	City/State: Providence, RI	ZIP: 02903
	Phone: 401.563.4566 Em	nail: Nelia.Piscopio@DOT.RI.GOV
2.	Application prepared by: Name: Kenneth Davis Phone: 401.737.8500 x120 Em	RIDOH License No.: <u>APD00510</u> hail: kdavis@rianalytical.com
4.	Location of abatement work: Facility/Building Name: <u>Water Pipe - RIDOT Bridge - I</u> Street Address: Diamond Hill Road off Nate Whi City/Town: Cumberland, RI	BG 17C - Newell Bridge #020401 Cumberland, RI 02864 pple Highway - over the East Sneech Brook ZIP: 02864
5.	Reason for Application: (Check all that apply) □ Emergency Plan No. ✓ Standard Plan □ Annual Plan □ Response to a Notice or Order (attach copy)	
6.	Asbestos contractor (if known): Name: To be determined	RIDOH License No.:

RIDOH License No.:

7. Estimated Abatement Work Dates

	Start Date: June 15, 2024 (Completion Date: June 15, 2025
8.	Abatement Method: (Check all that apply) Removal Encapsulation Enclosure Demolition Other (Specify): Exterior ACM removal where no work tape and glue and glovebag removal disposal of the pipe with wrap mate	Glovebag Asphalt Roofing Operations & Maintenance Only why containment enclosure will be constructed – plastic wrap with "candy-stripe" duct at at sufficient points along the pipe to safely cut the pipe out in sections – followed by rials as ACM. Contractor OSHA air samples + upwind/downwind air samples.
9.	Facility Type: (Check one) Child Care Facility College/University Hospital Other (Specify): Public road bridge over brook	Private Residential Dwelling Public Housing School/School Building
10.	Building Access: (Check one) Public Access Limited Public Access	No Public Access Other (specify)
11.	Bulk Sampling: A. Samples collected by: Name: Jennifer Jencks	RIDOH License No.: Al01191
	B. Sampling Methodology: (Check one) EPA AHERA Sampling requirements [4 Other (Specify): Guidance for Controlling Asbe	0 CFR 763.86]. estos Containing Materials – 1985 Edition (EPA-560-5-85-024)
	C. Analytical Service: Name: <u>RI Analytical</u>	RIDOH License No.: PLM00142
	D. Analytical Method: (Check one) PLM (Phase Light Microscopy) TEM (Transmission Electron Micros Other (Specify):	сору)

12. Pre-Abatement Air Sampling:

RIDOH License No.: <u>PCM00142</u>
2

13. Removal and Disposal of Asbestos-Containing Material (ACM):

A. How will ACM be removed from the abatement site? If a hauler or broker will be used to transport the ACM to a disposal site, they must also be identified.

RACM will be removed by glovebag method and by wrap & remove method and asbestos materials waste will be placed in double 6-mil plastic lined dumpster & transported by licensed hauler (to be determined) to a licensed asbestos waste facility.

B. Provide the name and location of the authorized asbestos waste facility where the ACM will be transferred for disposal (if known).

To be determined.

14. Project Monitor: (not required)

Name: To be determined

RIDOH License No.:_____

Affiliation: To be determined

15. In-Process & Clearance Air Sampling:

- A. Describe in an attachment the type, number and location of air samples that will be collected outside the work area during the abatement project.
- B. Describe in an attachment the plan of action to be followed if the Indoor Non-Occupational Air Exposure Standard for Asbestos (0.01 fibers per cubic centimeter) is exceeded outside the work area during the abatement project.
- C. Describe in an attachment the type, number and location of air samples that will be collected as part of the final clearance testing.
- D. Describe in an attachment the plan of action to be followed if the Indoor Non-Occupational Air Exposure Standard for Asbestos (0.01 fiber per cubic centimeter) is exceeded during final clearance testing.

16. A separate and fully completed Form ASB-16A must be submitted for *each area* to be abated. List below the entry in Item 1 from each attached ASB-16A.

(1) Area 1 – Exterior

7. Asbestos Abatement Plan Application Fee:	
State Agency, fee waived	\$0
Operation & Maintenance Program Only	\$75
Up to One (1) NESHAP Unit	\$75
Between One (1) & Ten (10) NESHAP Units	\$300
Between Ten (10) & Fifty (50) NESHAP Units	\$600
Over Fifty (50) NESHAP Units	\$900
Annual Plan	N/A

One (1) NESHAP Unit = 260 linear feet or 160 square feet or 35 cubic meters

Name: Renneur Davis	RIDOH License No.: APD00510
Signature:	Date: June 11, 2024
Affiliation: RI Analytical Laboratories, Inc.	



RHODE ISLAND DEPARTMENT OF HEALTH Center for Healthy Homes and Environment – Asbestos Program

ASBESTOS ABATEMENT PLAN APPLICATION

Supplemental Information: Area Description and Proposed Plan

	Water Pipe - RIDOT Bridge - BG 17C - Newell Bridge #020401 Cumberland, RI 0286	4
Facility/Building:	· · · · · · · · · · · · · · · · · · ·	

INSTRUCTIONS:

A separate and fully completed Form ASB-16A must be submitted for *each area* to be abated. All items on this form must be addressed. All references to attachments must be clearly identified. All attachments must be marked with the specific item numbers on this form to which they pertain.

Area Location/Identification

 (1) Area 1 – Exterior

(Room Name/No., etc.):

- 2. Attach a description of each type (e.g., pipe, ceiling, etc.) of asbestos-containing material (ACM) in this area, including condition, location, quantity, and asbestos content. Attach a copy of the laboratory report(s) for all samples. All laboratory reports must include the name of the building(s) and the location(s) of the sample(s).
- 3. Attach a current scale drawing of this area, showing direction of North and East, which has been clearly annotated to show the type, location, and quantity of all ACM in this area. This drawing must include a legend which acts as a guide to the scale, symbols and nomenclature used in the drawing. If a master plan or multiple drawings are provided, indicate the specific location(s) and drawing number(s) which depict this area. The location of the decontamination chamber must also be so indicated on the appropriate drawing(s).
- 4. Proposed Plan:
 - A. Attach a description of the interim Operations and Maintenance Plan that will be implemented in accordance with 1.17.2(B).
 - B. Will any portion of this area be abated by use of 1.14 work procedures? Yes No

If yes, indicate below which ACM in this area will be abated by use of the following 1.14 work procedures: (Check all that apply)

1.14.2 & 1.14.3 Removal

Form ASB-16A

Revised June 2022



C. Are you requesting any waivers to the above selected 1.14 procedure for any of the abatement activities in this area?



If yes, attach a detailed description of the waivers requested you are proposing to utilize. All items must be keyed to the specific section(s) of the regulations for which waivers are requested.

- D. Are you proposing alternative procedures under 1.16 for any of the abatement activities in this area?
 - Yes No [See ATTACHMENT #5]

If yes, attach a detailed description of the alternate procedures requested you are proposing to utilize. *Alternate procedures must include a justification for not following specific section(s) of the regulations and be as protective of public health.*

E. Will any ACM remain in this area after abatement?

Yes •No OBeyond scope of inspection

If yes, attach a description of the ACM that will remain and the details of the ongoing Operations and Maintenance Plan that will be implemented in accordance with 1.17.2(B).

ATTACHMENT #1

ASB-16A - 1

Scope of Work:

The following Table 1 summarizes the materials suspected of containing asbestos that the Owner designated were likely to be impacted by the scope of work of the project. These materials were sampled prior to commencement of any work in order to determine if they contained asbestos so that appropriate work practices could be implemented. The laboratory analytical reports are located in Attachment #2.

EPA, OSHA, and RIDOH define a material that contains greater than one percent (>1%) asbestos utilizing PLM analysis as an **ACM**¹. Any materials found to contain \leq 1% asbestos by PLM laboratory analysis and materials contaminated with asbestos are defined as **ACWM**² and must be handled appropriately.

The sample results are summarized in **Table 1** below. Materials determined to be ACM are highlighted in **yellow**. Materials determined to be ACWM are highlighted in **green**. The laboratory analytical reports and chain-of-custody forms are attached.

	Table 1 – Suspect Materials - Laboratory Analytical Data Summary							
Line #	HM#/ Sample #	e Material Location A		Asbestos Result				
		Work Order #2312-20324	Collected December 1, 2023					
1	1A	Paper (black, thick) between concrete bridge and stone foundation	Newell Bridge No. 204, East side of bridge, SE abutment	Trace Chrysotile				
2	1B	Paper (black, thick) between concrete bridge and stone foundation	Newell Bridge No. 204, East side of bridge, SE abutment	Trace Chrysotile				
3	2A	Concrete (light brown) on stone and in between stone cracks of abutment	Newell Bridge No. 204, East side of bridge, SE abutment	Not Detected				
4	2B	Concrete (light brown) on stone and in between stone cracks of abutment	Newell Bridge No. 204, East side of bridge, SE abutment	Not Detected				
5	3A	Mortar (white/gray) on stone and in between stone cracks of abutment	Sneech Pond Road Culvert No. 124501, South side of bridge, SW abutment	Not Detected				
6	3B	Mortar (white/gray) on stone and in between stone cracks of abutment	Sneech Pond Road Culvert No. 124501, South side of bridge, SW abutment	Not Detected				
		Work Order #2401-00855	Collected January 15, 2024					
7	4A	Caulk (clear) between white PVC pipe conduit and black PVC pipe.	Newell Bridge No. 204, West side of bridge, South abutment – top pipe under bridge deck that runs from North to South	Not Detected				
8	4B	Caulk (clear) between white PVC pipe conduit and black PVC pipe.	Newell Bridge No. 204, West side of bridge, South abutment – top pipe under bridge deck that runs from North to South	Not Detected				
9	5A	Paper (black) on #6A	Newell Bridge No. 204, West side of bridge, South abutment – top pipe under bridge deck that runs from North to South	Not Detected				
10	6A	Paper (brown) under #5A on metal pipe	Newell Bridge No. 204, West side of bridge, South abutment – top pipe under bridge deck that runs from North to South	Not Detected				
11	5B	Paper (black) on #6B	Newell Bridge No. 204, West side of bridge, South abutment – top pipe under bridge deck that runs from North to South	Not Detected				

¹ ACM = Asbestos-Containing Materials

² ACWM = Asbestos-Containing Waste Materials

	Table 1 – Suspect Materials - Laboratory Analytical Data Summary						
Line #	HM#/ Sample #	Material	Location	Asbestos Result			
12	6B	Paper (brown) under #5B on metal pipe	Newell Bridge No. 204, West side of bridge, South abutment – top pipe under bridge deck that runs from North to South	Not Detected			
13	5C	Paper (black) on #6C	Newell Bridge No. 204, West side of bridge, South abutment – top pipe under bridge deck that runs from North to South	Not Detected			
14	6C	Paper (brown) under #5C on metal pipe	Newell Bridge No. 204, West side of bridge, South abutment – top pipe under bridge deck that runs from North to South	Not Detected			
15	7 A	Sealer (black) on metal anchor	Newell Bridge No. 204, East side of bridge, South abutment – 1 st anchor from south on pipe under bridge deck that runs from North to South	5-15% Chrysotile			
16	7 B	Sealer (black) on metal anchor	Newell Bridge No. 204, East side of bridge, South abutment – 1 st anchor from south on pipe under bridge deck that runs from North to South	5-15% Chrysotile			
17	8A	Paper (black), thick on #9A	Newell Bridge No. 204, East side of bridge, South abutment – on pipe under bridge deck that runs from North to South	5-15% Chrysotile			
18	9A	Paper (black), thin under #8A and on #10A	Newell Bridge No. 204, East side of bridge, South abutment – on pipe under bridge deck that runs from North to South	Not Detected			
19	10A	Insulation (wool-type) under #9A	Newell Bridge No. 204, East side of bridge, South abutment – on pipe under bridge deck that runs from North to South	Not Detected			
20	ПĂ	Rope (light brown), fibrous wrapped around #10A and under #9A on metal pipe	Newell Bridge No. 204, East side of bridge, South abutment – on pipe under bridge deck that runs from North to South	Not Detected			
21	8B	Paper (black), thick on #9B	Newell Bridge No. 204, East side of bridge, South abutment – on pipe under bridge deck that runs from North to South	5-15% Chrysotile			
22	9B	Paper (black), thin under #8B and on #10B	Newell Bridge No. 204, East side of bridge, South abutment – on pipe under bridge deck that runs from North to South	Not Detected			
23	10B	Insulation (wool-type) under #9B	Newell Bridge No. 204, East side of bridge, South abutment – on pipe under bridge deck that runs from North to South	Not Detected			
24	11B	Rope (light brown), fibrous wrapped around #10B and under #9B on metal pipe	Newell Bridge No. 204, East side of bridge, South abutment – on pipe under bridge deck that runs from North to South	Not Detected			
25	8C	Paper (black), thick on #9C	Newell Bridge No. 204, East side of bridge, South abutment – on pipe under bridge deck that runs from North to South	5-15% Chrysotile			
26	9C	Paper (black), thin under #8C and on #10C	Newell Bridge No. 204, East side of bridge, South abutment – on pipe under bridge deck that runs from North to South	Not Detected			
27	10C	Insulation (wool-type) under #9C	Newell Bridge No. 204, East side of bridge, South abutment – on pipe under bridge deck that runs from North to South	Not Detected			
28	11C	Rope (light brown), fibrous wrapped around #10C and under #9C on metal pipe	Newell Bridge No. 204, East side of bridge, South abutment – on pipe under bridge deck that runs from North to South	Not Detected			

The ACM identified by the results of the inspection and laboratory analysis that are to be abated are summarized in the Table of ACM (Table 2) below.

	Table 2 – ACM ³ Inventory Summary							
	нм			Sample #				
Line#	#	Material Type	ACM Location	Asbestos	Condition	Estimated Quantity/Notes		
				Content				
15/16	7	Sealer (black) on pipe, metal suspension anchors and on adjacent outer ACM paper pipe wrap at 4 hanger locations	Newell Bridge No. 204 - pipe that runs between the North and South concrete abutment walls and	7A, 7B 5-15% Chrysotile	I, NF	4 SF (1 SF x 4 anchors) This ACM black sealer is on the hangers at and adhered to the outer ACM black paper layer of the pipe and cannot be separated. The metal anchor needs to be cut and disposed of as ACM. [See photographs below]		
17/21/ 25	8	Paper (black), thick Paper (black), thin Insulation (wool-type) (brown) Rope (light brown), wrapped around insulation Metal pipe	into concrete conduits on the East side of the bridge and that is anchored to the underside of the concrete bridge deck above with metal suspension hangers	8A, 8B, 8C 5-15% Chrysotile	D, NF	25 LF (~4-6" Ø interior metal pipe with 18"- 24" outside Ø of pipe with insulation, 25' length of pipe) All layers must be treated as ACM as they are adhered to and cannot be separated. There may be ACM mastic adhered to the metal pipe that may be difficult to remove. Any pipe to remain must be thoroughly cleaned and spray encapsulated. [See photographs below]		

HM = Homogenous Material; F = Friable⁴; NF = Non-Friable; I = Intact; D = Damaged (i.e. <10% of the material is damaged); SD = Significantly Damaged (i.e. >10% of the material is damaged); EA = Each; LF = Linear Feet; SF = Square Feet; CF = Cubic Feet



NESHAP Units Calculation

NESHAP unit/RIDOH Abatement Plan Fee Calculation - 1 NESHAP unit = 260 LF+160 SF+35 CF or combination thereof.	25 LF/ 260 LF + 4 SF / 160 SF = 0.125 NESHAP units.	
	The RIDOH abatement plan filing fee is waived for	
	Rhode Island State Agencies including RIDOT.	

Table 3 below summarizes the **ACWM⁵** that will remain after completion of this asbestos abatement project. These materials will be managed in place by the Owner in accordance with the Long-Term Management Plan included in the attached Asbestos Abatement Plan.

³ ACM = Asbestos-Containing Material, i.e., material found to contain >1% asbestos by PLM laboratory analysis

⁴ Friable = Material that, when dry, can be crumbled, shattered, pulverized or reduced to powder by hand pressure

⁵ ACWM = Asbestos-Containing Waste Materials, and materials contaminated with asbestos or materials found to contain ≤1% asbestos by PLM laboratory analysis

	Table 3 – ACWM to Remain						
Line#	нм #	Material Type	ACM Location	Sample # Asbestos Content	Condition	Estimated Quantity/Notes	
1/2	1	Paper (black, thick) between concrete parapet wall and stone abutment	Newell Bridge No. 204 – on the East and West sides of the bridge and North and South abutments	1A, 1B Trace Chrysotile	D, NF	1,680 SF [(~20' L x 42' W) x 2 North and South side of bridge] The precise extent and locations of this ACWM are not known. The ACWM paper likely covers the area where the concrete parapet wall meets the stone abutment on both the north and south abutments and spanning the width of the bridge. This ACWM can be demolished with the bridge using dust suppression water mist methods (i.e., no visible emissions during demolition activities) as well as methods for compliance with the OSHA Asbestos in Construction Standard (29CFR1926.1101) and EPA NESHAP asbestos regulation 40CFR61 Subpart M. The waste transported and disposed of at RIRRC ⁶	



Notes:

- 1. {F} = Friable (materials not shown as friable, and those shown as non-friable, that may become friable during the course of the work must be considered as friable.
- 2. Quantities are approximate it is the Asbestos Abatement Contractor's responsibility to verify quantities as well as site conditions prior to submitting a bid.
- Refer to Owner's Contract Documents including bid forms, drawings, and specifications the strictest interpretation of all documents and regulations shall apply where conflicts in the documents arise. The Asbestos Abatement Contractor will comply with the Owner's Contract Documents including drawings.
- 4. Remove and dispose of ACM identified in the abatement plan in accordance with all applicable federal, state and local rules and regulations including EPA, OSHA, RIDEM and RIDOH rules and regulations.
- 5. All workers are to use protective clothing and respiratory protection as well as comply with all regulations, including OSHA regulations for asbestos abatement and building renovation. It is the Asbestos Abatement Contractor's

⁶ RIRRC = Rhode Island Resource Recovery Corporation – Central Landfill, 65 Shun Pike, Johnston, RI 02919.

responsibility to correctly select personnel protective equipment and respiratory protection and medical surveillance for all hazardous materials likely to be encountered.

- 6. Asbestos Abatement Contractor is responsible for all regulatory (including OSHA) compliance for all hazardous materials, including regulations related to disturbing paint that may contain lead or other hazardous materials. The Owner, its sub-consultants and their agents and sub-contractors are not responsible for the Asbestos Abatement Contractor's means and methods and regulatory compliance.
- 7. The Asbestos Abatement Contractor must consult with Owner prior to submitting a bid regarding who will supply water, power and drains required to complete the work. GFCI cords and panels, hoses and shut off valves are to be provided by the Asbestos Abatement Contractor.
- 8. Install barriers in a manner to avoid damage to finishes and surfaces. Pre-clean (prior to barrier installation) and post clean (after barrier removal) work areas. The Asbestos Abatement Contractor will ensure that no bridge components or equipment are damaged by the Asbestos Abatement Contractor's work methods.
- 9. Unless otherwise directed by the Owner's Representative or IH, critical barriers shall comprise a wood stud frame wall with outside ¼" smooth plywood or hardboard sheeting installed from the floor up to the ceiling and covered on the interior side (abatement work side) with 2 layers of 6-mil polyethylene (poly) sheeting, with gaps sealed with foam, spray adhesive, and plastic.
- 10. The Asbestos Abatement Contractor will use an opaque encapsulant and/or add dye to the encapsulant, if requested by the Owner's Representative, at no extra cost. <u>The encapsulant product data sheet shall be provided to the Owner for</u> <u>approval of compatibility with the new and existing finishes, materials and building components</u>. A bridging encapsulant shall be used if requested by the Owner at no additional cost.
- 11. The Asbestos Abatement Contractor shall designate 1 (one) asbestos abatement site supervisor for the project that shall be licensed by and in good standing with the RIDOH. The supervisor shall have a minimum of 5 (five) years of experience as an asbestos abatement site supervisor without violations, citations, or legal judgments. The asbestos abatement site supervisor shall attend pre-construction meetings as required by Owner. The designated asbestos abatement site supervisor shall be on site at all times during the work. The Asbestos Abatement Contractor shall maintain a licensed asbestos abatement worker outside the containment areas at all times during the work. The Owner reserves the right to immediately dismiss any Asbestos Abatement Contractor employee from the site for any reason whatsoever.
- 12. The Asbestos Abatement Contractor will ensure that no water escapes work areas and leaks into adjacent nonwork areas. All water shall be turned off and disconnected at the sources at the end of each work shift and verified as not leaking. The Asbestos Abatement Contractor is responsible for water damage as a result of their setup and failure to monitor and shut off the water.
- The Asbestos Abatement Contractor shall post signs around the perimeter of the work area and at all entry points to the work area identifying the locations and nature of the work in accordance with RIDOH regulations Subparagraph B.8.2 (g).
- 14. The Asbestos Abatement Contractor shall coordinate work with Owner's Representative, General Contractor, and other trades to ensure work areas are not disturbed and the integrity of the bridge is maintained and protected from weather and unauthorized entry.
- 15. Containment setups, Decontamination facility locations and HEPA unit quantities and locations on the attached drawing are schematic only and site conditions, availability of water, power and drains, as well as scheduling and other requirements may require modifications to be made, which must be reviewed in advance with the IH.
- 16. Costs associated with amendments to the RIDOH approved abatement plan and change notifications to RIDOH and EPA and any associated delays are the responsibility of the Asbestos Abatement Contractor.
- 17. Phasing/scheduling of the work shall meet the requirements of the Owner.

- The Asbestos Abatement Contractor will clean by HEPA vacuuming and damp wiping with amended water and move any free-standing and stored items in the way of abatement activities into adjacent non-work areas prior to commencement of setup.
- 19. Protect all piping (electrical, communication, water, gas, etc.). The Asbestos Abatement Contractor is responsible for damage to these items.
- 20. The Asbestos Abatement Contractor shall immediately comply and abide by all directives and stop work orders from Owner, Owner's representative or on-site IH/Project Monitor without prejudice and at no cost to Owner, Owner's representative or on-site IH/Project Monitor.
- 21. The Asbestos Abatement Contractor shall provide a copy of all permits and notifications to the Owner and IH/Project Monitor at the time of submission to applicable agencies, including to EPA and RIDOH. No work or preparation for work shall be undertaken prior to receipt of these permits and notifications.
- 22. The Asbestos Abatement Contractor shall construct staging below and to the side of the bridge with a work platform and safety rails in order to safely access and abate the identified ACM.
- 23. The scope of work included the inspection for materials suspected of containing asbestos, collection of bulk samples and determination of types of ACM found. Reasonable efforts were made to discover hidden suspect materials that will be impacted by the project, however, some hidden materials containing asbestos may only be discovered during demolition, at which time work must stop until the suspect materials can be inspected and sampled for asbestos by a licensed inspector, or the suspect materials can be presumed to be ACM and removed and disposed in accordance with federal and state regulations.

ATTACHMENT #2

Bulk Asbestos Laboratory Analytical Reports and Chain-of-Custody Forms



LABORATORY REPORT

R.I. Analytical Laboratories Attn: E.A.M. Division 15 Lark Industrial Parkway Smithfield, RI 02828

 Date Received:
 12/1/2023

 Date Reported:
 12/4/2023

 Work Order #:
 2312-20324

Page 1 of 3

Site Location: RIDOT-BG 17 EAM #2023135

Enclosed please find your sample(s) analysis results for asbestos content. The six asbestos types include amosite, chrysotile, crocidolite, anthophyllite, tremolite, and actinolite.

Analysis by Polarized Light Microscopy (PLM) was performed in accordance with EPA 40 CFR Appendix E to Subpart E of Part 763 and/or EPA 600/R-93/116.

R.I. Analytical Laboratories, Inc. maintains bulk asbestos fiber NVLAP accreditation under Lab Code 101440-0. This report does not serve as a product certification, approval, and/or endorsement by NVLAP, NIST, or any federal agency.

The sample(s) submitted for analysis were accepted by R.I. Analytical unless otherwise noted in the report. If a sample is found to be inhomogeneous, individual components will be analyzed separately. If individual components cannot be separated, the sample will be homogenized and a single result will be provided. These results only pertain to the samples submitted for this Work Order # and this report shall not be reproduced except in its entirety.

In accordance with EPA guidelines, vermiculite materials should be assumed to contain asbestos even if PLM analysis reports asbestos not detected. All NOB (Non-Friable Organically Bound) materials such as vinyl floor tile, vinyl sheet flooring, glues, and mastics, that test as <1% asbestos, trace asbestos and no asbestos detected, should be further analyzed by TEM (Transmission Electron Microscopy).

Samples submitted for analysis will be retained for three months for future reference.

We certify that the following results are true and accurate to the best of our knowledge. If you have questionsor need further assistance, please contact our Customer Service Department.

Approved by:

za Neft

Asbestos Signatory

R.I. Analytical Laboratories, Inc.

LABORATORY REPORT

R.I. Analytical Laboratories Date Received: 12/1/2023 Work Order #: 2312-20324 Site Location:RIDOT-BG 17 EAM #2023135

SAMPLE		SAMPLE		SAMPLE	SAMPLE		
NO.		DESCRIPTION	PARAMETER	RESULTS / UNITS		ANALYZED	ANALYST
001	1A	Paper between concrete bridge and stone foundation	PLM Fiber Analysis				
			Asbestos	Detected		12/4/2023	EDN
			Chrysotile	Trace	%	12/4/2023	EDN
			Glass Fiber	1-5	%	12/4/2023	EDN
			Non-fibrous	95-99	%	12/4/2023	EDN
			Sample Color	Black		12/4/2023	EDN
002	1B	Paper between concrete bridge and stone foundation	PLM Fiber Analysis				
			Asbestos	Detected		12/4/2023	EDN
			Chrysotile	Trace	%	12/4/2023	EDN
			Glass Fiber	1-5	%	12/4/2023	EDN
			Non-fibrous	95-99	%	12/4/2023	EDN
			Sample Color	Black		12/4/2023	EDN
003	2A	Concrete on stone and abutment cracks	PLM Fiber Analysis				
			Asbestos	Not Detected		12/4/2023	EDN
			Non-fibrous	100	%	12/4/2023	EDN
			Sample Color	Brown		12/4/2023	EDN
004	2B	Concrete on stone and abutment cracks	PLM Fiber Analysis			******	
			Asbestos	Not Detected		12/4/2023	EDN
			Non-fibrous	100	%	12/4/2023	EDN
			Sample Color	Brown		12/4/2023	EDN
005	3A	Mortar on stone and abutment cracks	PLM Fiber Analysis				ut
			Asbestos	Not Detected		12/4/2023	EDN
			Non-fibrous	100	%	12/4/2023	EDN
			Sample Color	Gray		12/4/2023	EDN

Page 3 of 3

R.I. Analytical Laboratories, Inc.

LABORATORY REPORT

R.I. Analytical Laboratories Date Received: 12/1/2023 Work Order #: 2312-20324 Site Location:RIDOT-BG 17 EAM #2023135

SAMPLE	SAMPLE DESCRIPTION		SAMPLE	SAMPLE		
NO.		PARAMETER	RESULTS	/ UNITS	ANALYZED	ANALYST
006 3	3B Mortar on stone and abutment cracks	PLM Fiber Analysis				
		Asbestos	Not Detected	ł	12/4/2023	EDN
		Non-fibrous	100	%	12/4/2023	EDN
		Sample Color	Gray		12/4/2023	EDN

	Å	A R.I. ANALYTICAL 41 Illinois Avenue - Warwick, RI 02888 P: (401) 737-8500 F: (401) 732-8034	SAMPLE DATA SHEET & CHAIN OF CUSTODY				
Pro	ect: VHB - I	RIDOT Bridge On-Call - BG 17C	Client PO #:	VHE	#73500.01		
Add	ress: Cumb	erland, RI	RI Analytical EAM Project #:	-	2023135		
Area	a: Newe	II Bridge No. 204 & Sneech Pond Road Culvert No. D1	RI Analytical Work Order #:	2312-	20324		
Sam	pled By:	lennifer Jencks License # Al01191	Inspection date: 12	/1/2023	Page 1 of 1		
Line	Sample #	Description	Location		Notes		
1	1A	Paper (black, thick) between concrete bridge and stone foundation	Newell Bridge No. 204, East SE abutment	side of bridge,			
2	1B	Paper (black, thick) between concrete bridge and stone foundation	Newell Bridge No. 204, East SE abutment	side of bridge,			
3	2A	Concrete (light brown) on stone and in between stone cracks of abutment	Newell Bridge No. 204, East SE abutment	side of bridge,			
4	2B	Concrete (light brown) on stone and in between stone cracks of abutment	Newell Bridge No. 204, East SE abutment	side of bridge,			
5	ЗA	Mortar (white/gray) on stone and in between stone cracks of abutment	Sneech Pond Road Culvert N South side of bridge, SW ab	No. 124501, utment			
6	3B	Mortar (white/gray) on stone and in between stone	 Sneech Pond Road Culvert N South side of bridge, SW ab 	No. 124501,			
7				utment			
8							
9							
10							
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19							
20					999999 99444 Adam Add Ada Ada Ada ya ya ya ya ya ya ya ya ya ya ya ya ya		

COMMENTS: Email report to: Name: <u>Jennifer Jencks</u> ; Email to: jjencks & kdavis @rianalytical.com A. (1) Analysis = 🛛 PLM, Asbestos (EPA 600/R-93/116); 🖄 PLM NOB as needed; 🗔 400 point count if friable and <10% ASB; 🔲 TEM NOB							
(2) TAT = <u>3-day</u> ; (3) No. samples submitted = <u>6</u> ; (4) □ Y or ⊠ N - Positive stop by Homogeneous # shown.							
Notes:							
RELINQUISHED BY: (SIGNATURE) Jennifer Jennifer Juncher	DATE/TIME 12/1/23 - 14:09	RECEIVED BY: (SIGNATURE)	DATE/TIME				
RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED BY: // (SIGNATURE)	DATE/TIME				



LABORATORY REPORT

R.I. Analytical Laboratories Attn: E.A.M. Division 15 Lark Industrial Parkway Smithfield, RI 02828
 Date Received:
 1/15/2024

 Date Reported:
 1/18/2024

 Work Order #:
 2401-00855

Site Location: VHB-RIDOT - BG17C EAM #2023135

Enclosed please find your sample(s) analysis results for asbestos content. The six asbestos types include amosite, chrysotile, crocidolite, anthophyllite, tremolite, and actinolite.

Analysis by Polarized Light Microscopy (PLM) was performed in accordance with EPA 40 CFR Appendix E to Subpart E of Part 763 and/or EPA 600/R-93/116.

R.I. Analytical Laboratories, Inc. maintains bulk asbestos fiber NVLAP accreditation under Lab Code 101440-0. This report does not serve as a product certification, approval, and/or endorsement by NVLAP, NIST, or any federal agency.

The sample(s) submitted for analysis were accepted by R.I. Analytical unless otherwise noted in the report. If a sample is found to be inhomogeneous, individual components will be analyzed separately. If individual components cannot be separated, the sample will be homogenized and a single result will be provided. These results only pertain to the samples submitted for this Work Order # and this report shall not be reproduced except in its entirety.

In accordance with EPA guidelines, vermiculite materials should be assumed to contain asbestos even if PLM analysis reports asbestos not detected. All NOB (Non-Friable Organically Bound) materials such as vinyl floor tile, vinyl sheet flooring, glues, and mastics, that test as <1% asbestos, trace asbestos and no asbestos detected, should be further analyzed by TEM (Transmission Electron Microscopy).

Samples submitted for analysis will be retained for three months for future reference.

We certify that the following results are true and accurate to the best of our knowledge. If you have questionsor need further assistance, please contact our Customer Service Department.

Approved by:

na Neft

Asbestos Signatory

Page 2 of 5

R.I. Analytical Laboratories, Inc.

LABORATORY REPORT

R.I. Analytical Laboratories Date Received: 1/15/2024 Work Order #: 2401-00855 Site Location:VHB-RIDOT - BG17C EAM #2023135

SAMPLE	, 7	SAMPLE		SAMPLE		DATE	
NO.		DESCRIPTION	PARAMETER	RESULTS /	UNITS	ANALYZED	ANALYST
001	4A	Caulk between white PVC pipe conduit and black PVC pipe	PLM Fiber Analysis				
			Asbestos	Not Detected		1/17/2024	EDN
			Non-fibrous	100	%	1/17/2024	EDN
			Sample Color	Clear		1/17/2024	EDN
002	4B	Caulk between white PVC pipe conduit and black PVC pipe	PLM Fiber Analysis				
			Asbestos	Not Detected		1/17/2024	EÐN
			Non-fibrous	100	%	1/17/2024	EDN
			Sample Color	Clear		1/17/2024	EDN
003	5A	Paper (black) on 6A	PLM Fiber Analysis				
			Asbestos	Not Detected		1/17/2024	EDN
			Non-fibrous	100	%	1/17/2024	EDN
			Sample Color	Black		1/17/2024	EDN
004	6A	Paper (brown) under 5A on metal pipe	PLM Fiber Analysis				
			Asbestos	Not Detected		1/17/2024	EDN
			Non-fibrous	100	%	1/17/2024	EDN
			Sample Color	Brown		1/17/2024	EDN
005	5B	Paper (black) on 6B	PLM Fiber Analysis				
			Asbestos	Not Detected		1/17/2024	EDN
			Non-fibrous	100	%	1/17/2024	EDN
			Sample Color	Black		1/17/2024	EDN
006	6B	Paper (brown) under 5B on metal pipe	PLM Fiber Analysis			· · · · ·	•
			Asbestos	Not Detected		1/17/2024	EDN
			Non-fibrous	100	%	1/17/2024	EDN
			Sample Color	Brown		1/17/2024	EDN

Page 3 of 5

R.I. Analytical Laboratories, Inc.

LABORATORY REPORT

R.I. Analytical Laboratories Date Received: 1/15/2024 Work Order #: 2401-00855 Site Location:VHB-RIDOT - BG17C EAM #2023135

SAMPLE	E SAMPLE		SAMPLE		DATE	
NO.	DESCRIPTION	PARAMETER	RESULTS /	UNITS	ANALYZED	ANALYST
007	5C Paper (black) on 6C	PLM Fiber Analysis				
		Asbestos	Not Detected		1/17/2024	EDN
		Non-fibrous	100	%	1/17/2024	EDN
		Sample Color	Black		1/17/2024	EDN
008	6C Paper (brown) under 5C on metal pipe	PLM Fiber Analysis				
		Asbestos	Not Detected		1/17/2024	EDN
		Non-fibrous	100	%	1/17/2024	EDN
		Sample Color	Brown		1/17/2024	EDN
009	7A Sealer (black) on metal anchor	PLM Fiber Analysis		****		
		Asbestos	Detected		1/17/2024	EDN
		Chrysotile	5-15	%	1/17/2024	EDN
		Non-fibrous	85-95	%	1/17/2024	EDN
		Sample Color	Black		1/17/2024	EDN
010	7B Sealer (black) on metal anchor	PLM Fiber Analysis				
		Asbestos	Detected		1/17/2024	EDN
		Chrysotile	5-15	%	1/17/2024	EDN
		Non-fibrous	85-95	%	1/17/2024	EDN
		Sample Color	Black		1/17/2024	EDN
011	8A Paper (black, thick) on 9A	PLM Fiber Analysis				
		Asbestos	Detected		1/17/2024	EDN
		Chrysotile	5-15	%	1/17/2024	EDN
		Non-fibrous	85-95	%	1/17/2024	EDN
		Sample Color	Black		1/17/2024	EDN
012	9A Paper (black, thin) under 8A and on 10A	PLM Fiber Analysis				
		Asbestos	Not Detected		1/17/2024	EDN
		Non-fibrous	100	%	1/17/2024	EDN
		Sample Color	Black		1/17/2024	EDN

Page 4 of 5

R.I. Analytical Laboratories, Inc.

LABORATORY REPORT

R.I. Analytical Laboratories Date Received: 1/15/2024 Work Order #: 2401-00855 Site Location:VHB-RIDOT - BG17C EAM #2023135

SAMPLE	SAMPLE		SAMPLE	SAMPLE		DATE	
NO.	DESCRIPTION	PARAMETER	RESULTS /	UNITS	ANALYZED	ANALYST	
013	A Insulation under 9A	PLM Fiber Analysis					
		Asbestos	Not Detected		1/17/2024	EDN	
		Non-fibrous	100	%	1/17/2024	EDN	
		Sample Color	Brown		1/17/2024	EDN	
014	11A Rope wraped around 10A and under 9A on metal pipe	PLM Fiber Analysis					
		Asbestos	Not Detected		1/17/2024	EDN	
		Non-fibrous	100	%	1/17/2024	EDN	
		Sample Color	Brown		1/17/2024	EDN	
015	8B Paper (black, thick) on 9B	PLM Fiber Analysis				<u>_</u>	
		Asbestos	Detected		1/17/2024	EDN	
		Chrysotile	5-15	%	1/17/2024	EDN	
		Non-fibrous	85-95	%	1/17/2024	EDN	
		Sample Color	Black		1/17/2024	EDN	
016	9B Paper (black, thin) under 8B and on 10B	PLM Fiber Analysis					
		Asbestos	Not Detected		1/17/2024	EDN	
		Non-fibrous	100	%	1/17/2024	EDN	
		Sample Color	Black		1/17/2024	EDN	
017	10B Insulation under 9B	PLM Fiber Analysis					
		Asbestos	Not Detected		1/17/2024	EDN	
		Non-fibrous	100	%	1/17/2024	EDN	
		Sample Color	Brown		1/17/2024	EDN	
018	11B Rope wraped around 10B and under 9B on metal pipe	PLM Fiber Analysis		<u></u>			
		Asbestos	Not Detected		1/17/2024	EDN	
		Non-fibrous	100	%	1/17/2024	EDN	
		Sample Color	Brown		1/17/2024	EDN	

Page 5 of 5

R.I. Analytical Laboratories, Inc.

LABORATORY REPORT

R.I. Analytical Laboratories Date Received: 1/15/2024 Work Order #: 2401-00855 Site Location:VHB-RIDOT - BG17C EAM #2023135

SAMPLE	SAMPLE		SAMPLE	SAMPLE RESULTS / UNITS		
NO.	DESCRIPTION	PARAMETER	RESULTS /			ANALYST
019	aper (black, thick) on 9C	PLM Fiber Analysis				
		Asbestos	Detected		1/17/2024	EDN
		Chrysotile	5-15	%	1/17/2024	EDN
		Non-fibrous	85-95	%	1/17/2024	EDN
		Sample Color	Black		1/17/2024	EDN
020	9C Paper (black, thin) under 8C and on 10C	PLM Fiber Analysis				
		Asbestos	Not Detected		1/17/2024	EDN
		Non-fibrous	100	%	1/17/2024	EDN
		Sample Color	Black		1/17/2024	EDN
021	10C Insulation under 9C	PLM Fiber Analysis			A	
		Asbestos	Not Detected		1/17/2024	EDN
		Non-fibrous	100	%	1/17/2024	EDN
		Sample Color	Brown		1/17/2024	EDN
022	11C Rope wraped around 10C and under 9C on metal pipe	PLM Fiber Analysis				
		Asbestos	Not Detected		1/17/2024	EDN
		Non-fibrous	100	%	1/17/2024	EDN
		Sample Color	Brown		1/17/2024	EDN



SAMPLE DATA SHEET &

CHAIN OF CUSTODY

Project: VHB	- RIDOT Bridge On-Call -		Client PO #:		VHB #73500.01		
Address: Cumberland, RI Area: Newell Bridge No. 204			RI Analytical EAM Project #: 2023135 RI Analytical Work Order #: 240-0085		2023135		
					00855		
Sampled By:	Jennifer Jencks	License #	AI01191	Inspection date:	1/1	15/2024	Page 1 of 2

Line	Sample #	Description	Location	Notes
		Coult (deed) between white DVC nine conduit and	Newell Bridge No. 204, West side of bridge,	
1	4A	Caulk (clear) between white PVC pipe conduit and black PVC pipe.	South abutment – top pipe under bridge deck	
			that runs from North to South	
			Newell Bridge No. 204, West side of bridge,	
2	4B	Caulk (clear) between white PVC pipe conduit and	South abutment – top pipe under bridge deck	
		black PVC pipe.	that runs from North to South	
			Newell Bridge No. 204, West side of bridge,	
3	5A	Paper (black) on #6A	South abutment – top pipe under bridge deck	
			that runs from North to South	
			Newell Bridge No. 204, West side of bridge,	
4	6A	Paper (brown) under #5A on metal pipe	South abutment – top pipe under bridge deck	
			that runs from North to South	
			Newell Bridge No. 204, West side of bridge,	
5	5B	Paper (black) on #6B	South abutment – top pipe under bridge deck	
			that runs from North to South	
			Newell Bridge No. 204, West side of bridge,	
6	6B	Paper (brown) under #5B on metal pipe	South abutment – top pipe under bridge deck	
			that runs from North to South	
			Newell Bridge No. 204, West side of bridge,	
7	5C	Paper (black) on #6C	South abutment – top pipe under bridge deck	
			that runs from North to South	
	6C	Paper (brown) under #5C on metal pipe	Newell Bridge No. 204, West side of bridge,	
8			South abutment – top pipe under bridge deck	
			that runs from North to South	
			Newell Bridge No. 204, East side of bridge,	
			South abutment – 1 st anchor from south on	
9	7A	Sealer (black) on metal anchor	pipe under bridge deck that runs from North to	
			South	_
			Newell Bridge No. 204, East side of bridge,	
			South abutment – 1 st anchor from south on	
10	7B	Sealer (black) on metal anchor	pipe under bridge deck that runs from North to	
			South	
			Newell Bridge No. 204, East side of bridge,	
11	8A	Paper (black), thick on #9A	South abutment – on pipe under bridge deck	
			that runs from North to South	
			Newell Bridge No. 204, East side of bridge,	
12	9A	Paper (black), thin under #8A and on #10A	South abutment – on pipe under bridge deck	
-	-/1		that runs from North to South	
			Newell Bridge No. 204, East side of bridge,	
13	10A	Insulation (wool-type) under #9A	South abutment – on pipe under bridge deck	
			that runs from North to South	
СОМ	MENTS - Email	report to: Name: Jennifer Jencks : Email to: iiencks & ke	davis, iprincipi @rianalytical.com	

A. (1) Analysis = ⊠ PLM, Asbestos (EPA 600/R-93/116); ⊠ PLM NOB as needed; ⊠ 400 point count if friable and <10% ASB; □ TEM NOB (2) TAT = <u>3-day</u>; (3) No. samples submitted = <u>22</u>; (4) □ Y or ⊠ N - Positive stop by Homogeneous # shown.

Notes:			
RELINQUISHED BY: Quelan Quelan	DATE/TIME	RECEIVED BY:	DATE/TIME / S //
(SIGNATURE) Jennifer Jencks	1/15/24 - 16:30	(SIGNATURE)	1,12,29
RELINQUISHED BY: (signature)	DATE/TIME	RECEIVED BY:	DATE/TIME



SAMPLE DATA SHEET &

CHAIN OF CUSTODY

Project: VHB - RIDOT Bridge On-Call - BG 17C Address: Cumberland, RI				Client PO #:		VH	B #73500.01
				RI Analytical EAM Project #:		2023135	
Area: Newell Bridge No. 204			RI Analytical Work Order #: 240 -00		-00 385		
Sampled By:	Jennifer Jencks	License #	Al01191	Inspection date:	1/1	.5/2024	Page 2 of 2

Line	Sample #	Description	Location	Notes
14	11A	Rope (light brown), fibrous wrapped around #10A and under #9A on metal pipe	Newell Bridge No. 204, East side of bridge, South abutment – on pipe under bridge deck that runs from North to South	
15	8B	Paper (black), thick on #9B	Newell Bridge No. 204, East side of bridge, South abutment – on pipe under bridge deck that runs from North to South	
16	9B	Paper (black), thin under #8B and on #10B	Newell Bridge No. 204, East side of bridge, South abutment – on pipe under bridge deck that runs from North to South	
17	10B	Insulation (wool-type) under #98	Newell Bridge No. 204, East side of bridge, South abutment – on pipe under bridge deck that runs from North to South	
18	11B	Rope (light brown), fibrous wrapped around #10B and under #9B on metal pipe	Newell Bridge No. 204, East side of bridge, South abutment – on pipe under bridge deck that runs from North to South	
19	8C	Paper (black), thick on #9C	Newell Bridge No. 204, East side of bridge, South abutment – on pipe under bridge deck that runs from North to South	
20	9C	Paper (black), thin under #8C and on #10C	Newell Bridge No. 204, East side of bridge, South abutment – on pipe under bridge deck that runs from North to South	
21	10C	Insulation (wool-type) under #9C	Newell Bridge No. 204, East side of bridge, South abutment – on pipe under bridge deck that runs from North to South	
22	11C	Rope (light brown), fibrous wrapped around #10C and under #9C on metal pipe	Newell Bridge No. 204, East side of bridge, South abutment – on pipe under bridge deck that runs from North to South	
23				
24				
25				
26				
27				
28				
29				

(SIGNATURE) Jennifer Jencks	DATE/TIME 1/15/24 – 16:30	(SIGNATURE)	DATE/TIME 1,15,24
RELINQUISHED BY: (SIGNATURE)	DATE/TIME	RECEIVED BY:	DATE/TIME

ATTACHMENT #3

ASB-16A - 3A

Operations & Maintenance (O&M) Plan

Interim Operations & Maintenance Plan

Contractors and personnel associated with the bridge are aware of the presence and location of ACM within the above stated areas through review of the Asbestos Inspection Report and this Asbestos Abatement Plan. They have been instructed not to disturb the material due to the potential health hazards if fibers become airborne. The Owner will follow regulatory requirements if a disturbance occurs. If previously unidentified, suspect building materials are discovered, a RIDOH-licensed Asbestos Inspector shall be summoned to evaluate the situation and take appropriate actions.

1. Notification

All personnel, including any contractors, entering the area and/or premises to perform work, shall be notified of the presence and location of ACM and cautioned regarding disturbance of the material(s). If an emergency fiber release occurs, the following procedures shall be initiated.

2. Fiber Release Episodes

A. Minor Release Episode

If a minor fiber release episode occurs (release of less than 10 linear feet or 25 square feet of material), trained maintenance staff or an Asbestos Abatement Contractor may perform the cleaning. Access to the area shall be restricted during clean up. All debris shall be thoroughly wetted using amended water and placed in labeled, double six-mil polyethylene bags. The area shall then be cleaned using HEPA filtered vacuums and/or wet cleaning methods. Damaged material must be cleaned and repaired with nonasbestos-containing material. The area shall then be evaluated to decide if further action is necessary.

B. Major Release Episode

If a major fiber release episode occurs (falling or dislodging of more than 10 linear feet or 25 square feet of ACBM), the cleaning must be carried out and directed by persons accredited to conduct and design response actions. After such an episode, the area shall be immediately restricted and entry to the area prevented. Warning signs shall be posted to caution people other than those qualified to deal with the problem. A response action shall be designed and carried out by qualified personnel.

3. Training

Any employee who, because of their work, may disturb ACM, shall be trained and certified as a Competent Person as described by the R.I. Rules and Regulations for Asbestos Control. The program coordinator shall ensure that the procedures described above to protect the personnel shall be followed for any operations and maintenance activities disturbing or involving ACM.
Long Term Operations and Maintenance Program - [216-RICR-50-15-1, §1.17.2]

The ACWM materials identified in Table 3 above will remain and are not included for removal. If the scope of work changes and these materials are to be removed, the Asbestos Abatement Plan may have to be amended with approval by RIDOH as is required by regulation, with amendment of the RIDOH and EPA start-work notification forms as needed.

All other areas and materials were beyond the scope of RI Analytical's work.

ATTACHMENT #5

Description of Waivers and Alternative Procedures

• Description of Waivers

The following waivers are requested for ACM removal:

1. Waiver for no clearance air sampling for exterior materials removal where no work containment enclosure will be constructed – plastic wrap with "candy-stripe" duct tape and glue and glovebag removal at sufficient points along the pipe to safely cut the pipe out in sections – followed by disposal of the pipe with wrap materials as ACM.

In lieu of clearance air sampling, the asbestos abatement contractor will conduct worker OSHA compliance Excursion Limit and 8-hour TWA PCM air sampling, and RI Analytical (or other licensed asbestos consultant) will conduct upwind and downwind work zone perimeter PCM air sampling during the work [216-RICR-50-15-1 §1.14.8 K.].

• Alternative Procedures

Exterior ACM removal where no work containment enclosure will be constructed – plastic wrap with "candy-stripe" duct tape and glue and glovebag removal at sufficient points along the pipe to safely cut the pipe out in sections – followed by disposal of the pipe with wrap materials as ACM. Contractor OSHA air samples + upwind/downwind air samples.

ATTACHMENT #6

Drawings

Not to scale. Typical ACM setups - setups are not shown at all locations. Actual setup configuration will be determined by the Asbestos Abatement Contractor based on site conditions, access restrictions and Owner's requirements. Refer to contract documents including drawings for renovation/demolition areas as well as details and dimensions. There is potential for hidden ACM.



APlan-ACM-Pipe-Nexwill Bridge #020401, Cumberland, RI 02664 - RIA #2023135 - 6/11/24 - PDF Page # 35 of 36



APIan-ACM-Pipe-Newell Bridge #020401, Cumberland, RI 02864 - RIA #2023135 - 5/11/24 - PDF Page # 36 of 36

Appendix H

Asbestos Abatement Transmittal Letter From RI Analytical



TRANSMITTAL TO OWNER

To: Mr. Andrew Reeder, PE, PMP Structural Engineer VHB 1 Cedar Street, Suite 400 Providence, RI 02903

From: Kenneth Davis

P: 401.457.2011 E: **AReeder@VHB.com**

Date: June 11, 2024

RE: Asbestos Abatement Plan – Water Pipe Removal Site: Newell Bridge #020401, Cumberland, RI 02864 VHB #73500.01 - RI Analytical Project #2023135

This transmittal is intended to guide you through completing some items for the Asbestos Abatement Plan and submitting it to the **RIDOH** (Rhode Island Department of Health) for approval. *This transmittal is not for submission with the abatement plan to RIDOH*.

Attached to this transmittal, please find the following items for your review.

1. Asbestos Abatement Plan for submittal to RIDOH.

Once you have reviewed and approved this plan, if no changes are needed, please have signed with notary witness and embossing stamp, the Asbestos Abatement Plan one page entitled "Notarized Certification of Asbestos Abatement Plan" (Form ASB-16B in the bottom left corner)

Please call us to collect or mail this signed/notarized page to RI Analytical, Smithfield, RI office. We will then email the compiled Asbestos Abatement Plan to you and print and bind copies of the plan for distribution as follows.

One signed/notarized/embossed copy for:-

• RIDOH (with original signed/notarized form ASB-16B)

The RIDOH abatement plan filing fee is waived for Rhode Island State Agencies including RIDOT.

Once the abatement plan has been reviewed and approved by RIDOH, the Owner (and RI Analytical) will receive an *abatement plan approval letter* which must be copied to the asbestos abatement contractor.

This abatement plan, until such time as approved by RIDOH, is a draft plan subject to RIDOH review and modifications may be required by RIDOH.

Please note the following.

- 1. Two weeks (10 working days) prior to commencement of the asbestos abatement work, the abatement contractor must file start work notification forms with the **RIDOH** and **EPA** as required by regulation.
- 2. Other permits may also be required (e.g. town, police, fire department, etc.).
- 3. The RIDOH typically takes 1-2 weeks to review and approve abatement plans, after which an approval letter will be sent to the Owner.
- 4. The Asbestos Abatement Plan is only valid for a total period of 1 year, after which, if the asbestos abatement work has not been completed, it expires, and a new plan must be prepared and submitted for completion of the remainder of the asbestos abatement work. Work must also



TRANSMITTAL TO OWNER

Asbestos Abatement Plan – Water Pipe Removal Site: Newell Bridge #020401, Cumberland, RI 02864 VHB #73500.01 - RI Analytical Project #2023135 June 11, 2024 - Page 2

commence within 6 months of the approval date or a re-activation application letter will need to be generated and submitted to RIDOH for approval.

- 5. The Asbestos Abatement Plan has been written based on information provided by Client and the inspection performed by RI Analytical.
- 6. Reasonable efforts were made to discover hidden suspect asbestos materials, however, some previously hidden or untested suspect materials may only be discovered during the work for this Asbestos Abatement Plan. Work must stop immediately upon discovery of previously hidden materials that are suspected of containing asbestos or materials not previously tested. The Owner must be notified immediately in order to test these suspect materials and quantify any additional ACM that would then have to be removed in accordance with all applicable regulations, including amendments to Asbestos Abatement Plan and RIDOH and EPA notifications as required. This would also apply if out of scope ACM are to be added to the work.

Appendix I

Northern Long-eared Bat and Tricolored Bat Flyers

Northern Long-Eared Bat (Myotis septentrionalis)

NLEB DESCRIPTION:

The Northern Long-Eared Bat (NLEB) is between 3" and 3.7" long with a wingspan of 9" to 10". NLEB are medium to dark brown on back and have tawny to pale brown undersides. NLEB have long ears. NLEB are nocturnal, they are active at night and sleep during the day.



Hibernating NLEB by Ann Froschauer USFWS

PROTECTION:

NLEB populations have been decimated by White-Nose Syndrome, a fungal disease that affects bats during hibernation. When a species experiences a significant population decline and is determined to be at risk, it may be listed under the Endangered Species Act (ESA). The NLEB was listed as endangered under the ESA in March of 2023. Endangered species are in danger of becoming extinct. This listing provides special protections for NLEB, which are intended to help the population recover.

HABITAT:

NI FB habitat found throughout is Rhode Island, NLEB hibernate in caves and mines called hibernacula during winter. NLEB wooded areas surrounding swarm in hibernacula in fall. During late spring and summer NLEB roost and forage in upland forests. During the day NLEB roost under bark and in tree crevices of both live trees and snags (dead trees). NLEB sometimes also roost in caves and structures, like buildings and bridges.

RI DOT CONSERVATION MEASURES:

RIDOT incorporates conservation measures into projects to protect the NLEB. The specific conservation measures for each project are found in the contract documents. Dead and sick bats of any species must immediately be reported to the RIDOT Natural Resources Unit (NRU), call 401-479-1327. Contact the RIDOT NRU for an explanation of NLEB conservation measures.

MORE NLEB INFORMATION:

To learn more about the NLEB visit the USFWS website and search for the species by name.

FHWA Programmatic Consultation Avoidance and Mitigation Measure (AMM) 1: Ensure all operators, employees, and contractors working in areas of known or presumed bat habitat are aware of all environmental commitments, including all applicable AMMs.

Tricolored Bat (*Perimyotis subflavus*)

TCB DESCRIPTION:

The tricolored bat (TCB) is between 3" and 3.5" long with a wingspan of 8" to 10". TCB is distinguished by its unique tricolored fur that appears dark at the base, lighter in the middle and dark at the tip. The TCB often appears yellowish, varying from pale yellow to nearly orange, but may also appear silvery-gray, chocolate brown or black. TCB are nocturnal, they are active at night and sleep during the day.



TCB by Pete Pattavina USFWS

PROTECTION:

TCB populations have been decimated by White-Nose Syndrome, a fungal disease that affects bats during hibernation. When a species experiences a significant population decline and is determined to be at risk, it may be listed under the Endangered Species Act (ESA). The TCB is proposed as endangered under the ESA. Endangered species are in danger of becoming extinct. This listing provides special protections for TCB, which are intended to help the population recover.

HABITAT:

TCB habitat is found throughout Rhode Island. TCB hibernate in caves and mines called hibernacula during winter. TCB swarm in wooded areas surrounding hibernacula in fall. During late spring and summer TCB roost and forage in upland forests. During the day TCB roost under bark and in tree crevices of both live trees and snags (dead trees). TCB sometimes also roost in caves and structures, like buildings and bridges.

RI DOT CONSERVATION MEASURES:

RIDOT incorporates conservation measures into projects to protect the TCB. The specific conservation measures for each project are found in the contract documents. Dead and sick bats of any species must immediately be reported to the RIDOT Resources Natural Unit (NRU), call 401-479-1327. Contact the RIDOT NRU for an explanation of TCB conservation measures.

MORE TCB INFORMATION:

To learn more about the TCB visit the USFWS website and search for the species by name.

FHWA Programmatic Consultation Avoidance and Mitigation Measure (AMM) 1: Ensure all operators, employees, and contractors working in areas of known or presumed bat habitat are aware of all environmental commitments, including all applicable AMMs.

Appendix J

Pavement Core Reports

RHODE ISLAND DEPARTMENT OF TRANSPORTATION

MATERIALS AND QUALITY ASSURANCE

File No:	285Lab No: 20161405PAVEMENT CORE REPORT									Da	te: 12/14	₽/2016
Contract	No: <u>2017-EH-0</u>	001 FAP No: <u>N</u>	[/A	PTSID:	Project	: <u>2017 PPE</u>	EST DIAMON	D HILL RD				
Town / City: CUMBERLAND Cored By: CORINGCREW												
Limits:	BROADVIE	EW AVE TO RTE	120									
			-									
	P.E. V Final			Acceptance			pecial Projects					
Comm	ents:											
Core ID	Station				Depth	Depth	Depth	Depth	Depth	Total Depth	Soil: Fro	om / To
Direction	LATITUDE	LONGITUDE	Compos	ite Pavement	Material	Material	Material	Material	Material	Cored To		
Lane ID	La	Lateral Offset (ft.) Curb Reveal (in.)			Qualifier	Qualifier	Qualifier	Qualifier	Qualifier	Cor	re Notes	
C-01		@ Pole #	212		7.25"					7.25"		
NB	0.000000	0.000000	Com	posite: No	Class I-1							
E 114 NOR		3 Left of Curb										
C-02		50' N of Pole #230			8.5"					8.5"		
NB	0.000000	0.000000	Com	posite: No	Class I-1							
E 114 NOR	2	3 Left of EOP										
C-03		@ Pole #248			9"					9"		
NB	0.000000	0.000000	Com	posite: No	Class I-1							
E 114 NOR		5 Left of EOP										
C-04	across from Pole #270			9.5"					9.5"			
NB	0.000000	0.000000	Com	posite: No	Class I-1							
E 114 NOR		4 Left of EOP										
C-05	across from Pole #286			10"					10"			
NB	0.000000	0.000000	Com	posite: No	Class I-1							
E 114 NOR		5 Left of Curb										
C-06	@ Pole #274			7.5"					7.5"			
SB	0.000000	0.000000	Com	posite: No	Class I-1							
E 114 SOU		6 Left of EOP										
C-07		@ Pole #253			9"					9"		
SB	0.000000	0.000000	Com	posite: No	Class I-1							
E 114 SOU	1	5 Left of EOP										

Core ID	Station				Depth	Depth	Depth	Depth	Depth	Total Depth	Soil: From / To	
Direction	LATITUDE	LONGITUDE	Composite Pavement		Material	Material	Material	Material	Material	Cored To		
Lane ID	Lateral Offset (ft.) Curb Reveal (in.)			Qualifier	Qualifier	Qualifier	Qualifier	Qualifier	Core Notes			
C-08	@ Pole #225				9"					9"		
SB	0.000000	0.000000	Com	posite: No	Class I-1							
E 114 SOU	5 Left of EOP											
C-09	@ Pole #40-K				12"					12"		
SB	0.000000 0.000000 Composite: No		Class I-1									
E 114 SOU	-	5 Left of Curb										
Average Depth:										9.08"		

Cores Requested By:

Measured By (Print / Sign)

Date

Reviewed By Date (Print / Sign)

RHODE ISLAND DEPARTMENT OF TRANSPORTATION

MATERIALS AND QUALITY ASSURANCE

PAVEMENT CORE REPORT

Date: 8/15/2022

Contract No: 2019-EH-024B FAP No: PTSID: 2602D Project: Bridge Group 17C Newell and Sneech Town / City: Cumberland Cored By: Lenox Sneech Pond Rd (1) Nate Whipple to Little Pond County Rd (2) Anna Mac Dr to Nate Whipple Limits: * P.E. 🖌 Final Special Projects Comments: Core ID Total Depth | Soil: From / To Station Depth Depth Depth Depth Depth LATITUDE LONGITUDE **Composite** Pavement Direction Material Material Material Material Cored To Material Lane ID Lateral Offset (ft.) Curb Reveal (in.) Qualifier Qualifier Qualifier Qualifier Qualifier Core Notes C-01 Sneech Rd-Pole #86 1.9" 2.1" N/A N/A 4" 4" 9" N/A EB 41.981570 -71.422670 HMA HMA Composite: No Soil/Gravel 4 Right EOP Broken/Tar Sme Broken Lane L1/L2 Bond Break C-02 Sneech Rd-Pole #97 1.3" N/A N/A N/A N/A 1.3" 1.3" 5.3" 41.981700 -71.417950 HMA EB Composite: No Soil/Gravel Broken Lane 7 Right EOP Sneech Rd-Pole #112 C-03 1.4" N/A N/A N/A N/A 1.4" 1.4" 5.4" 41,982250 -71.411840 HMA EB Composite: No Soil/Gravel 6 Right EOP Broken Lane Sneech Rd-Pole #95 C-04 1.3" N/A N/A N/A N/A 1.3" 1.3" 6.3" WB 41.981890 -71.419220 HMA Composite: No Soil/Gravel 7 Right EOP Broken Lane Sneech Rd-Pole #100 8" C-05 1.4" 0.7." N/A N/A N/A 2.1" 2" WB 41.981270 -71.416490 HMA Sand Mix Composite: No Soil/Gravel Broken Lane 9 Right EOP L1/L2 Bond Break C-06 Sneech Rd-Pole#114 1.6" N/A **`**1.6" N/A N/A N/A 1.6" 7.6" WB 41.982720 -71.411090 HMA Composite: No Soil/Gravel Broken Lane 6 Right EOP

File No: 3147

Lab No: 20220909

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Core ID		Station	Depth	Depth	Depth	Depth	Depth	Total Depth	Soil: From / To	
Direction	LATITUDE	LONGITUDE	Composite Pavement	Material	Material	Material	Material	Material	Cored To	
Lane ID	Lateral Offset (ft.) Curb Reveal (in.		Qualifier	Qualifier	Qualifier	Qualifier	Qualifier	Core Notes		
		<u>6</u>	Average Depth:	. 1.4"	1.4"	N/A	N/A	N/A		

Cores Requested By: Kyle Gagnon, Felipe Hernandez

*

7-17-22 hencon rannon Measured By Date (Print / Sign)

Inita Muyhall 8/17/22 Reviewed By (Print / Sign) Date

ID# TF2 - 389

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