Rhode Island Hospital Institutional Master Plan Traffic and Landscape Executive Summary Report

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Transportation Study Executive Summary

Summary Overview

Vanasse Hangen Brustlin (VHB), Inc. has prepared a transportation study of the area surrounding the hospital as part of the 2025 Institutional Master Plan update being prepared for the Brown University Health's Rhode Island Hospital. The study is an update of a prior study conducted by VHB in September 2021, hereinafter referred to as the "2021 Study". This document summarizes the existing transportation system serving the hospital; identifies parking issues; identifies areas of traffic congestion; and discusses possible improvement measures to improve existing deficiencies and enhance future traffic operations.

Future development projects were reviewed to determine the impacts of these projects on the transportation network. There are two proposed developments near the RIH campus area projects that are expected to be constructed and occupied in the next five years, The Flynn residential development and the Achievement First Charter School. The impacts of these projects were analyzed as the 2030 No-Build Conditions (future growth without the RIH projects). The projected impacts of the proposed RIH projects (The Concourse-Platform Building and the New Plain Street Parking Garage) were analyzed under 2030 Build conditions. These conditions also include the Flyn and the Achievement First developments.

Transportation Conditions (2025, 2030 No-Build and 2030 Build)

An extensive transportation data collection program was conducted in February 2025 to establish base traffic conditions within the study area. Traffic volumes and traffic operations have been significantly impacted by the closure of the Washington Bridge (I-195) westbound bridge and rerouting of I-195 traffic onto the eastbound bridge. There are currently many unprocessed vehicles on local streets and at intersections (particularly the Point Street Corridor) during peak hour conditions because traffic is backed up at on-ramps and queues extend through adjacent intersections. It should also be noted that many vehicles have changed their travel patterns as a result of the congestion. Existing traffic operations at these intersections with these downstream constraints are poor with long vehicle queues and delays. In order to determine if the existing

infrastructure (roadways and intersections) can accommodate existing and future traffic volumes the traffic analysis was performed assuming unconstrained downstream conditions. The traffic signal timings have also been optimized.

Signalized Intersections

Under 2025 Conditions all signalized intersections within the study area operate at acceptable levels of service (LOS) C or better during the weekday peak periods except for the Eddy Street/Dudley Street and Point Street/East Franklin Street intersections. The queues along Point Street and Eddy Street and queues at some of the other study area intersections backup into and beyond adjacent intersections.

There are projected to be significant differences in calculated delays at the Point Street signalized intersections between 2025 Existing and 2030 No-Build Conditions (with The Flynn and Achievement First). Under future 2030 No-Build conditions the Point Street intersections with West and East Franklin Street are projected to operate at or over capacity with longer queues that will spill back into adjacent intersections. The impacts of the increased traffic generated by the construction of the Achievement First charter school is projected to result in longer delays and queues at these intersections. The other intersections are projected to operate comparable to existing conditions with some increases in delays on some intersection approaches.

The queues during peak periods on Point Street will only be further exacerbated under 2030 Build Conditions.

Unsignalized Intersections

Under 2025 Conditions all unsignalized intersections within the study area operate at acceptable levels of service (LOS) C or better during the weekday peak periods except for the Eddy Street/RIH Main Entrance, Dudley Street/Prairie Avenue, and Blackstone Street/Eddy Street intersections. The unsignalized intersections along Point Street (at Prairie Avenue/Prince Street and Beacon Avenue) and along Pearl Street (at Prairie Avenue and Service Road/Gay Street) also experience congestion during peak periods. Under 2030 No-Build Conditions the differences in calculated delays at these intersections between 2025 Existing and 2030 No-Build Conditions (with The Flynn and Achievement First) are significant. There are also projected to be increases in delays along the Dudley Street corridor (at Prairie Avenue and Gay Street), along Blackstone Street (at Prairie Street and Eddy Street), and at the Prairie Avenue at Potters Avenue intersection. The delays and queues at study area intersections will only be further exacerbated under 2030 Build Conditions.

Transportation Improvements Recommendations

The following potential infrastructure improvements on the roadway network serving the RIH campus area should be considered to improve traffic operations under 2030 Build traffic conditions (with The Flynn, Achievement First, New Plain Street Garage, and Concourse-Platform Building). Many of the improvements have been discussed in previous studies.

Eddy Street Corridor:

The 2021 study noted that there were remaining elements of the RIDOT I-195 relocation (IWAY) project that included corridor improvements along Eddy Street. The Dudley Street Extension was proposed to alleviate congestion on Eddy Street by providing an alternate route to the hospital from the south. The design of this project was not advanced and the location where the Dudley Street

Extension was proposed has been modified to accommodate layover area for RIPTA buses. There are also conceptual plans being developed to consider modifying the Thurbers Avenue interchange to allow vehicles to enter I-95 North and South from Allens Avenue at the Thurbers Avenue interchange. With the Dudley Street Extension, this would further alleviate congestion on Eddy Street by allowing vehicles exiting the hospital to also travel along Allens Avenue to the Thurbers Avenue interchange.

Point Street Corridor:

Conceptual improvements have been discussed in the 2016 and 2021 traffic studies. The following is a summary of improvements that should be considered (as shown in the Point Street – Prairie Avenue to W. Franklin Street and Point Street at East Franklin Street Conceptual Improvement Plans):

Point Street Corridor: It is recommended that the Point Street be converted to one-way eastbound and striped as three-lanes eastbound from Prairie Street/Prince Street to the West Franklin Street existing traffic signal and continue to the East Franklin Street signalized intersection.

Point Street/Prairie Avenue/Prince Street: It is recommended that a traffic signal be installed at this intersection. It is also recommended that widening the Prairie Avenue northbound approach be considered to provide two lanes (a shared left-turn/through lane and an exclusive right-turn lane).

Point Street/Beacon Avenue: It is recommended that Beacon Avenue be made one-way southbound between Point Street and Emmett Street. This will eliminate the side friction along Point Street eastbound and allow the Point Street/West Franklin Street intersection to process more eastbound vehicles per cycle length. The conversion of Beacon Avenue to one-way southbound will require rerouting existing northbound traffic on Beacon Avenue to Plain Street, Service Road, Pearl Street, Prairie Avenue and Point Street.

Point Street/West Franklin Street: It is recommended that the island on the northwest corner of the intersection be modified to provide three eastbound lanes. It is also recommended that the island be modified to eliminate the West Franklin Street southbound channelized right turn lane onto Point Street that aligns with Beacon Avenue. It is critical that the lane designations on the Point Street eastbound approach are made clear to motorists in advance of the intersection; therefore, it is recommended that overhead lane use signage be installed.

Point Street/ East Franklin Street: It is recommended that the channelized left turn island on the Point Street eastbound approach be modified and the lane markings at the intersection be changed to create a second left-turn lane onto East Franklin Street northbound. In addition to modifying the island, the eastbound through lane would be shifted over to the south side of the bridge (into the striped gore area in the shoulder). The existing channelized left-turn lane will be signed as I-95 NORTH ONLY and paddles will be installed to direct traffic around the corner onto East Franklin Street and then onto the I-95 North On-Ramp. This channelized left turn movement will need to be designed to accommodate large vehicles which may require that East Franklin Street be widened to maintain two northbound through lanes on the northbound departure from the intersection. The implementation of the eastbound channelized left turn movement onto I-95 North will require that the northbound approach to the intersection be restriped from three existing lanes to two lanes. Appropriate signage will need to accompany this plan to ensure that drivers on the eastbound approach select the correct lane before reaching the signalized intersection. The improvements are schematically depicted in the Point Street at East Franklin Street Conceptual Improvement Plan.

Pearl Street Corridor

Service Road/Gay Street/Pearl Street: It is recommended that the Service Road be widened to the north to create separate left and right turn lanes at the intersection and new pavement markings and signage be installed at the intersection. Due to the limited width of pavement available for two-way travel on Pearl Street as a result of on-street parking, it is recommended that on-street parking on Pearl Street be restricted between the Service Road and Prairie Avenue. Some parking may need to remain in support of the business located on the south side of Pearl Street.

Prairie Avenue/Pearl Street: This alternative proposes to widen Pearl Street to provide an exclusive westbound right-turn lane. It is also recommended that the four-way stop control at this intersection be upgraded to install a new traffic signal. Parking along Prairie Avenue north of Pearl Street should be prohibited to minimize disruptions to traffic flow.

Additional Improvements

In addition to the conceptual improvements discussed above, other possible improvement measures for consideration include extending Frank Street to Prairie Avenue (through the residential development west of Beacon Avenue), evaluating/monitoring roadways throughout the campus and developing a program for upgrades when poor pavement condition impact drainage and traffic flow, implementing intersection improvements at the Eddy Street/Thurbers Avenue intersection, and relocating the RIPTA buses and constructing the Dudley Street Extension and Thurbers Avenue interchange improvements. If additional development occurs along Prairie Avenue as envisioned under the Prairie Avenue Revitalization Initiative, consideration may need to be given to additional widening along Prairie Avenue and upgrades to the existing traffic signals at the intersections of Prairie Avenue/Public Street, Broad Street/Public Street, and Broad Street/Potters Avenue.

Parking Improvements

The Rhode Island Hospital parking system will continue to provide adequate parking for its patients, visitors, and staff through active management of the RIH parking system. The proposed new parking garage will result in more available parking spaces near the core of the hospital campus. Any projected new parking demand can be accommodated in the existing parking system—at the Willard Avenue Garage and Dudley Street Garage for patient/visitor parking and at the CORO Garage for staff parking.

It should be noted that the signs restricting parking along most study area roadways are in poor condition with many signs missing or faded, making it difficult to determine where parking is restricted.

Transportation Demand Management Program

RIH currently provides TDM programs to its employees, as discussed in the Existing Conditions chapter of this report. It is recommended that the hospital continue to look at ways to reduce the number of vehicle trips and the amount of parking. At a minimum, this should include improved outreach to RIH employees including conversations with RIPTA about pass subsidy programs and other TDM measures. In addition to providing TDM programs, there are also proposals to develop work force housing in the neighborhoods surrounding the hospital. These new housing units can play a significant role in reducing traffic and required parking if hospital employees live in the neighborhoods surrounding the hospital and do not need to drive to work.

Brown U Health Off Street Parking Inventory Overview

Brown Health/Rhode Island Hospital IMP | Providence, Rhode Island

Employee Parking Lot

Visitor Parking Lot

Physician Parking Lot

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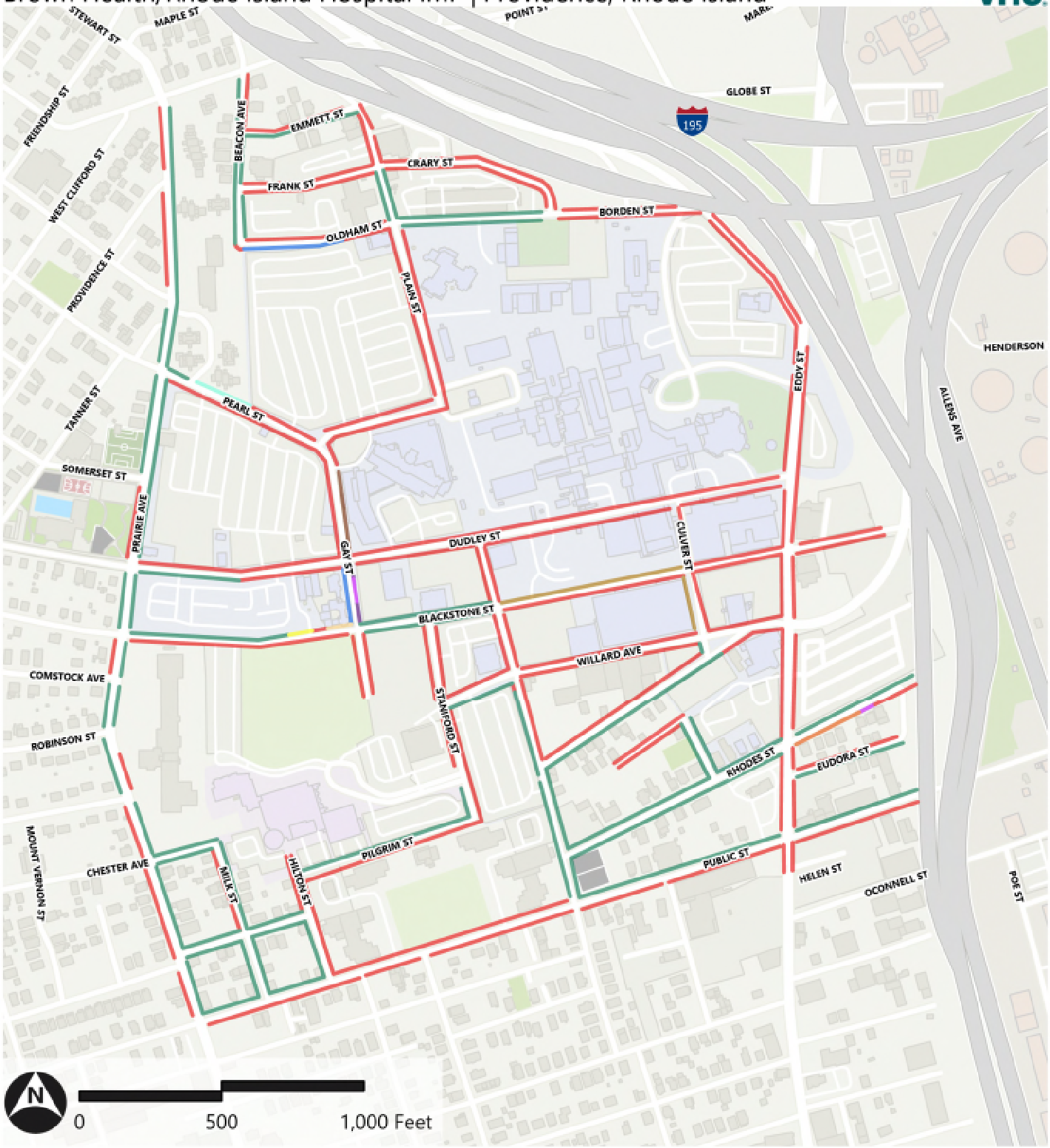
Table Off-Street Parking Facilities

VISITOR PARKING	Lot	No. of Spaces
Undesignated Visitor Parking	Plain Street Lot[1]	309
	Eddy Street Lot	355
	Dudley Street Garage[2]	240
	Willard Avenue Garage	447
Designated Visitor Parking	P-1 (Valet, Oncology)	45
	P-2 (HC, MRI, Hasbro)	40
	P-3 (Hasbro)	19
	P-5 (HC)	6
	P-6 (Short-term)	10
	P-7 [3]	45
Subtotal: Visitor Parking		**1,516**
EMPLOYEE PARKING:	**Lot**	**No. of Spaces**
	E-1	541
	E-2 (Leased)	107
	E-3[4]	43
	E-6	69
	E-7	621
	E-9	248
	E-10	300
	E-11	129
	Borden Street (leased)[5]	107
	CORO Garage[6]	100
Subtotal: Employee Parking		**2,265**
PHYSICIAN PARKING:	D-1	23
	D-2	134
	D-3	96
	D-4[7]	55
	D-5	120
	D-7	71
Subtotal Physicians:		**499**
TOTAL RIH Parking		**4.280**

1. Plain Street Lot is used by W&I visitors and patients. Typically, they use approximately 100 spaces.
2. 22 spaces were occupied by boxes and crate and not available for parking.
3. This lot was used for shuttle parking. In previous studies the lot was striped as 45 parking spaces.
4. 3 Spaces were occupied by trailers and not available for parking.
5. This parking lot is gravel, without marked spaces and is estimated to provide up to 125 parking spaces.
6. There are more than 900 spaces at the CORO Garage. 100 spaces were used by employees from the RIH campus in previous studies. It is difficult to determine the current number because the gates are open.
7. Does not include 30 spaces for W&I

Brown U Health On Street Parking Inventory Overview

Brown Health/Rhode Island Hospital IMP | Providence, Rhode Island



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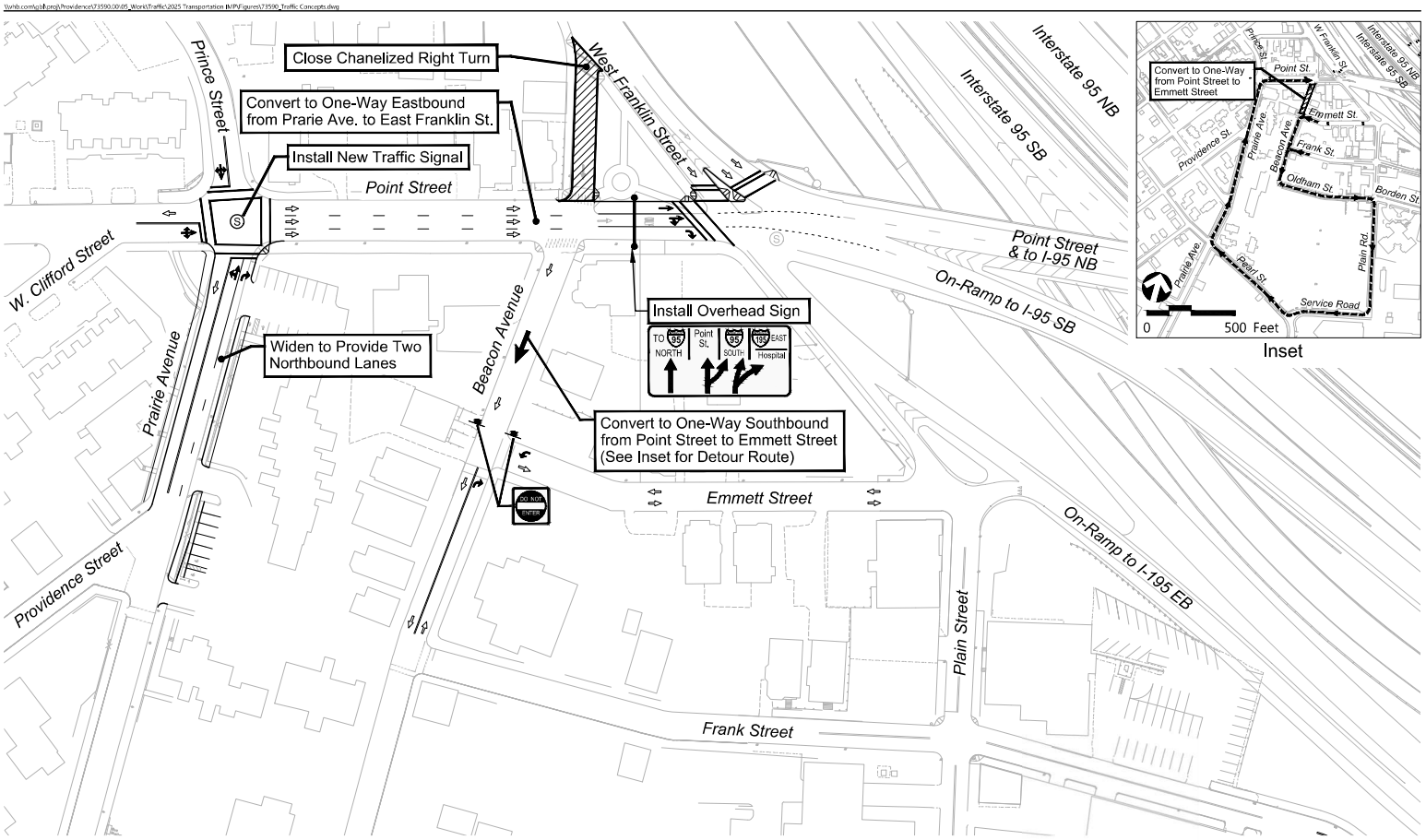
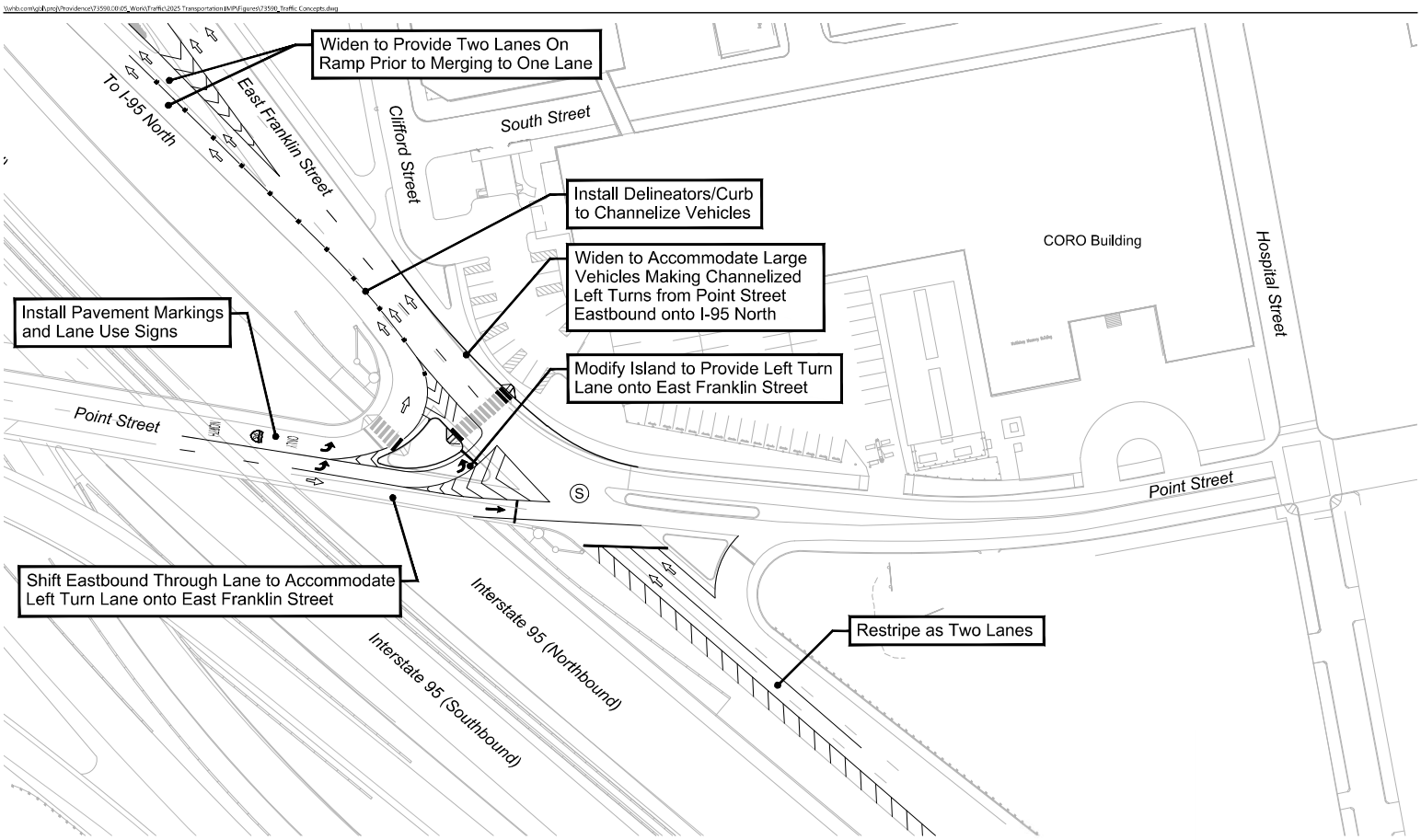
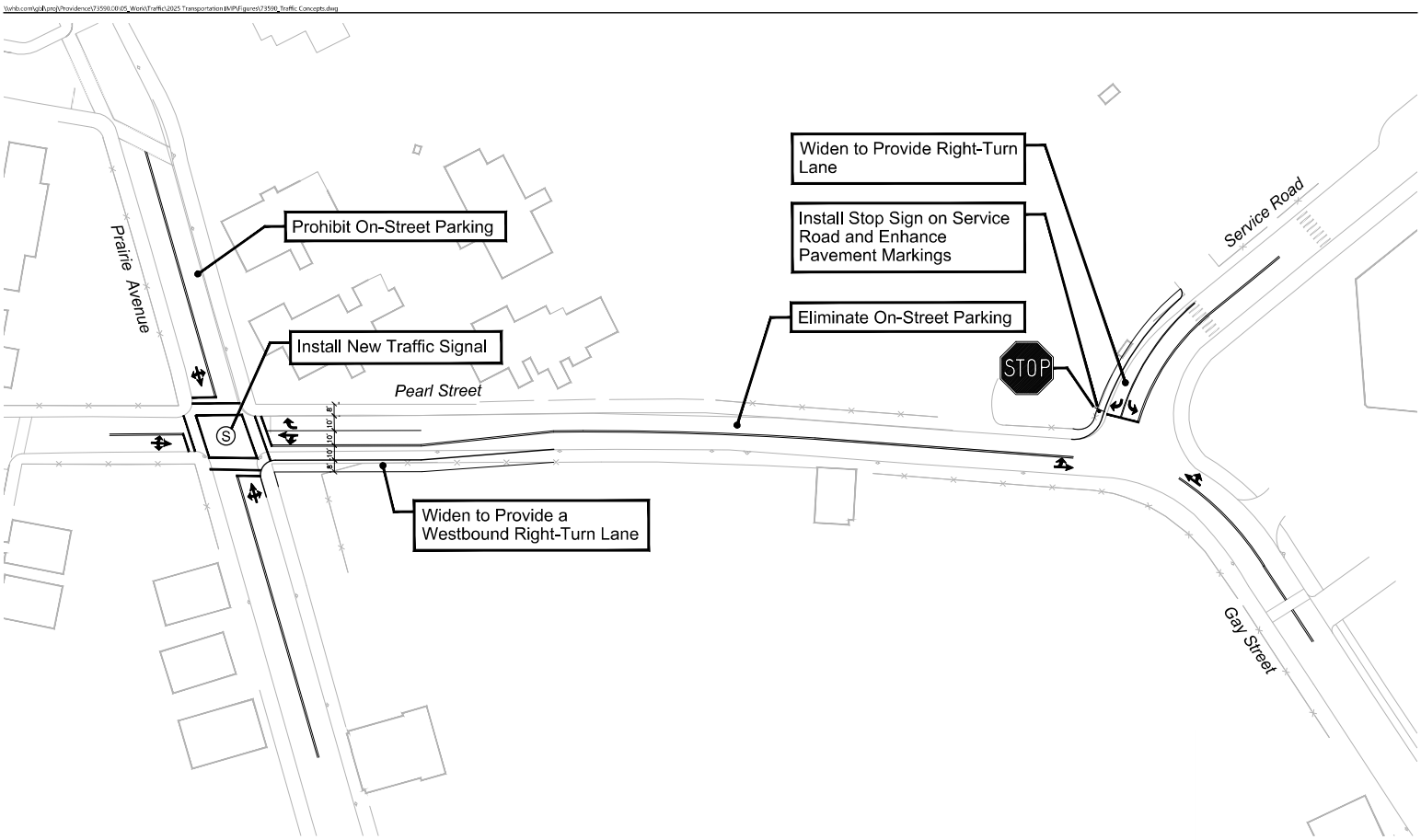
- No Parking
- No Parking (1PM-5PM) School Days
- No Clear Restriction Posted
- One Hour Parking (8AM-6PM)
- Two Hour Parking (8AM-6PM)
- Two Hour Metered Parking (8AM-6PM)
- Four Hour Parking (8AM-6PM)
- Four Hour Metered Parking (8AM-6PM)
- Delivery, Courier, & Shuttle Parking
- Handicap Parking
- 15 Minute Parking - Pickup & Dropoff



Point Street-Prairie Avenue
to W. Franklin Street
Conceptual Improvement Plan
Rhode Island Hospital
Providence, RI



Point Street at East Franklin Street
Conceptual Improvement Plan
Rhode Island Hospital
Providence, RI



Pearl Street Corridor
Conceptual Improvement Plan
Rhode Island Hospital
Providence, RI

2

Landscape Tree Inventory Executive Summary

Summary Overview

As part of the 2025 Institutional Master Plan update being prepared for Brown University Health's Rhode Island Hospital, VHB reviewed the status of parking lot trees and associated street trees in order to support the standards set forth in the Providence Zoning Ordinance's Institutional Master Plan requirements. The driving force of the outlined requirements are to develop a plan to improve the aesthetic appeal of the interior and frontages of parking lots and to reduce heat island effect.

Evaluation and Recommendations

VHB found that parking lot perimeter and interior requirements for shade trees were met where existing tree pits, planting strips, and islands occurred, but many lots had some deficiencies. Due to the nature of urban parking lots being mostly paved surfaces, it will take extra planning and construction of new landscaped areas to bring some lots into full conformance with zoning requirements. It is recommended that the improvements be considered with each new project and/or parking lot improvement plan.

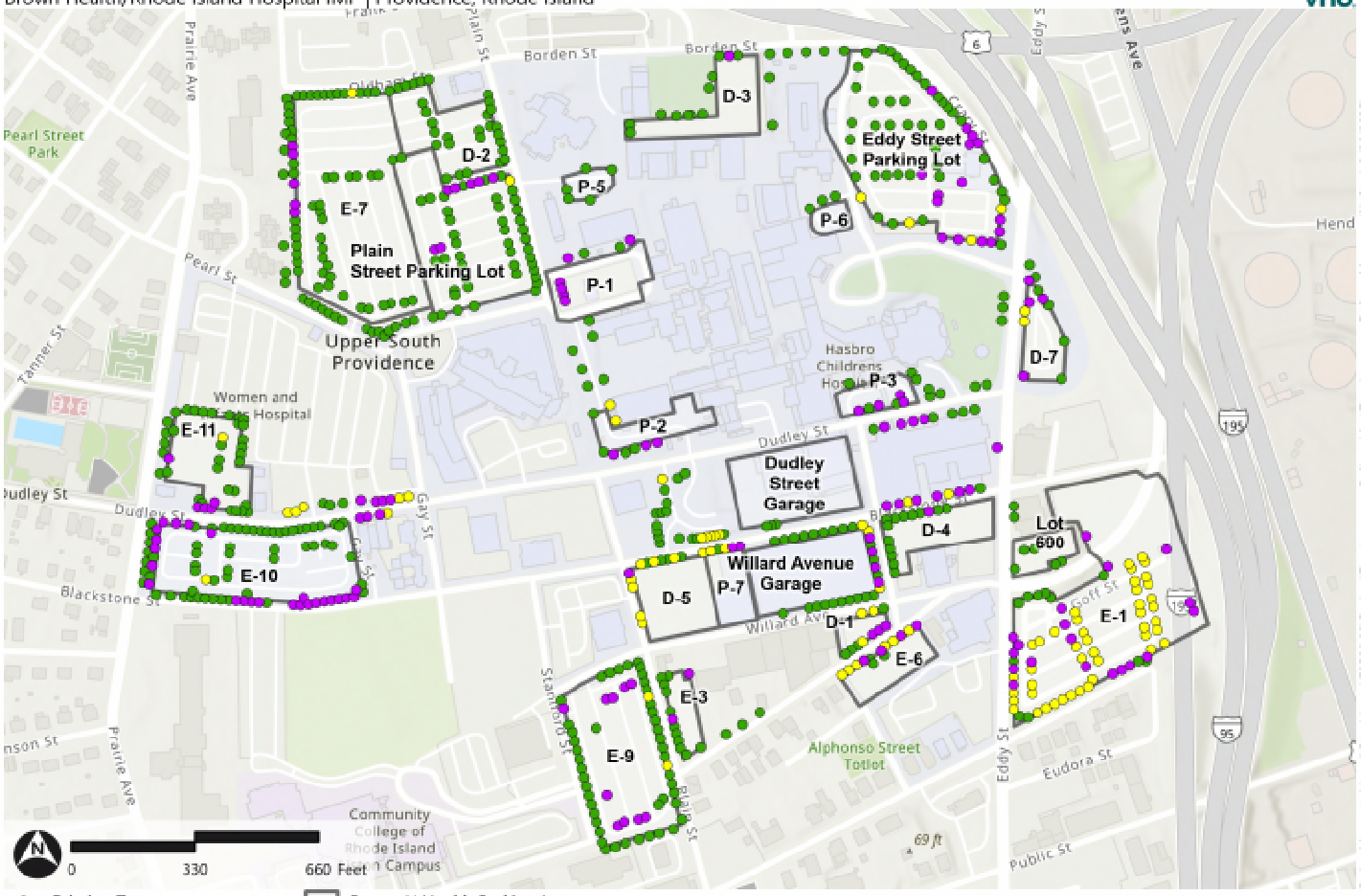
VHB's evaluation determined that currently 11% of the evaluated trees are in Excellent health, 45% are Good, 24% are Fair, and 19% are Poor are Dead. There are 29 species of trees in the evaluation, with the native and urban tolerant Honeylocust being the most common tree.

Based on the new 2025 inventory, it was found that 94 trees will need to be replaced due to old age or poor acclimatization, and 138 new trees will need to be planted to bring lots into conformance with the Tree Canopy requirement and to bring the campus closer to the perimeter/interior requirements.

To implement these improvements, each parking lot will require full construction level planting plans, details, and specifications, so that proposed trees can be coordinated with existing landscape conditions. In addition to site-specific planting plans and details, the Hospital should also consider implementing/updating a maintenance plan for establishment (watering) and maintenance (mulch, weeding, pruning, etc.) that would further support the trees' survival and the hospital's investment.

Brown U Health Tree Survey Overview

Brown Health/Rhode Island Hospital IMP | Providence, Rhode Island



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Appendix A – 2025 Transportation Study

Rhode Island Hospital Campus
Providence, Rhode Island

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June 2025

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Introduction

Introduction

Rhode Island Hospital (RIH) has retained Vanasse Hangen Brustlin (VHB), Inc. to perform a transportation study of the area surrounding the hospital. The study is an update of a prior study conducted by VHB in September 2021, hereinafter referred to as the "2021 Study". This document summarizes the existing transportation system serving the hospital; identifies parking issues; identifies areas of traffic congestion; and discusses possible improvement measures to improve existing deficiencies and enhance future traffic operations.

Study Methodology

The following tasks were key components of the methodology in assessing the existing and future transportation conditions within the study area:

- Inventory of the roadway infrastructure surrounding the hospital areas
- Review of existing parking facilities
- Inventory of public transportation and shuttle services
- Observations of traffic and pedestrian flows
- Collection of daily and peak period traffic and pedestrian counts
- Identification of planned transportation improvement projects
- Review of RIH's current Transportation Demand Management (TDM) strategies

- Review of other projects in the area surrounding the RIH area that may affect future transportation system operation
- Assessment of existing and future patient and staffing levels
- Evaluation of the impact of future hospital growth on the transportation system
- Development of a transportation improvement program aimed at improving transportation operations in the area

The following report satisfies the Transportation Study requirements of the 2030 Institutional Master Plan submission.

2

Existing Conditions

Reviewing the existing transportation conditions and identifying the critical access and circulation issues are the first step in the development of the Rhode Island Hospital (RIH) Comprehensive Transportation Study. This chapter quantifies existing traffic, parking, pedestrian, and public transportation conditions on and around the hospital campus. For the purpose of this study, the "RIH campus area" refers to the network of buildings and parking areas making up RIH and the supporting roadway network.

Study Area

Rhode Island Hospital is located within the Upper South Providence neighborhood and abuts other Providence neighborhoods. Within the Upper South Providence neighborhood, the main hospital campus area is separated from Providence's Jewelry District by Interstate I-95. Downtown Providence is located to the north, the Lower South Providence neighborhood is located to the south, and the Elmwood and West End neighborhoods are to the west. The following institutions are within or near the hospital campus area in the Upper South Providence neighborhood:

- Women & Infants Hospital of Rhode Island (W&I), a Care New England hospital, is located to the west of the RIH buildings. Women & Infants Hospital is bounded by Dudley Street to the south, Gay Street to the west, and Service Road to the north.

- The Liston Campus of the Community College of Rhode Island, a public institution of higher learning, is located to the southwest of RIH on almost seven acres of land. The campus is generally bounded by Pilgrim Street to the south, Blackstone Street to the north, and Staniford Street to the east.
- The Urban League of Rhode Island (ULRI) was a community-based, non-profit organization that educates and assists minorities. The ULRI is located on Prairie Avenue to the west of CCRI. It is bounded by Blackstone Street to the north and Chester Street to the south. This property is currently vacant and will be redeveloped under an upcoming request for proposals (RFP) process.
- The Metropolitan Regional and Technical Center (The Met) is a group of small, public high schools open to all Rhode Island students in grades 9-12. The Public Street Campus is generally bounded by Public Street to the south, Hilton Street to the west, Pilgrim Street to the north, and Plain Street to the east.
- The Community Preparatory School is an independent middle school, grades three through eight with enrollment of approximately 150 students. The school is located to the west of the main RIH campus area on the north side of Somerset Street between Tanner Street and Prairie Avenue.

These neighboring institutions also have an impact on transportation operations in the area. RIH and its neighbors depend on a transportation system comprised of various modes including automobiles, public transportation, bicycling, and walking.

The project study area is generally bounded by Point Street and Interstate Route 95 to the north, Public Street and Potters Avenue to the south, Eddy Street to the east and Broad Street to the west, as shown in Figure 2-1.

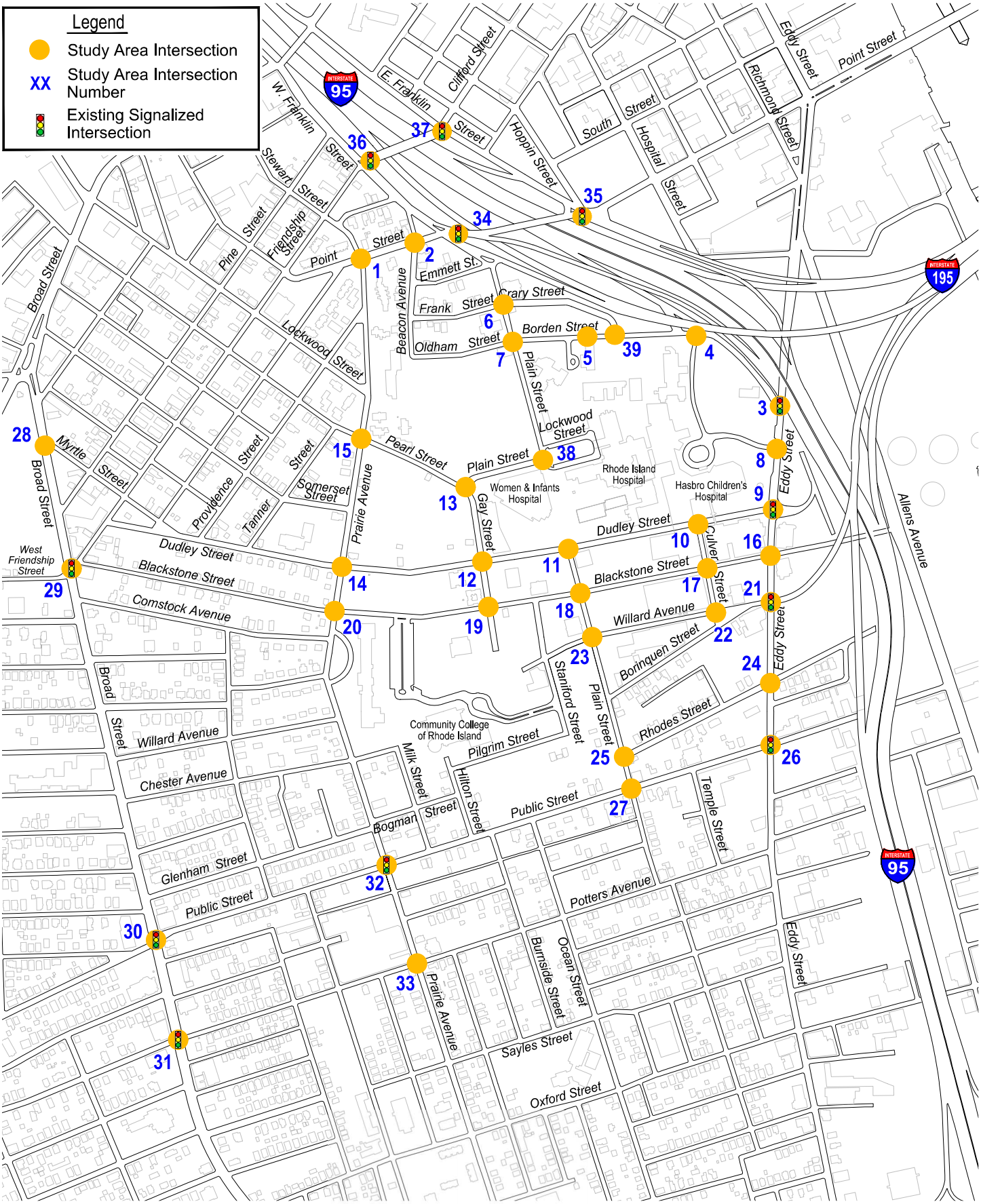
In total, this study includes thirty-nine (39) intersection. In addition to the thirty-seven (37) intersections performed under prior Institutional Master Planning studies two additional intersections (Bordan Street at Crary Street and Borden Street at I-95 South Off-Ramp/Lockwood Street) were included in the 2025 study. The following is a list of study area intersections:

1. Point Street at Prairie Avenue/Prince Street
2. Point Street at Beacon Avenue/Plain Street
3. Eddy Street at Borden Street/ I-95 South Ramp (signalized)
4. I-95 South Ramp at Borden Street
5. Crary Street at Borden Street
6. Crary Street/Frank Street at Plain Street
7. Borden Street/Beacon Avenue at Plain Street

8. Eddy Street at RIH Main Entrance
9. Eddy Street at Dudley Street (signalized)
10. Dudley Street at Culver Street
11. Dudley Street at Plain Street
12. Dudley Street at Gay Street
13. Service Road at Gay Street/Pearl Street
14. Dudley Street at Prairie Avenue
15. Pearl Street at Prairie Avenue
16. Blackstone Street at Eddy Street
17. Blackstone Street at Culver Street
18. Blackstone Street at Plain Street
19. Blackstone Street at Gay Street
20. Blackstone Street at Prairie Avenue
21. Eddy Street at Willard Avenue/I-195 West Off-Ramp (signalized)
22. Willard Avenue at Culver Street/Borinquen Street
23. Willard Avenue at Plain Street
24. Rhodes Street at Eddy Street
25. Rhodes Street at Plain Street
26. Eddy Street at Public Street (signalized)
27. Public Street at Plain Street
28. Broad Street at Myrtle Street
29. Broad Street at Friendship Street (signalized)
30. Broad Street at Public Street (signalized)
31. Broad Street at Potters Avenue (signalized)
32. Prairie Avenue at Public Street (signalized)
33. Prairie Avenue at Potters Avenue
34. Point Street at West Franklin Street/I-95 South On-Ramp (signalized)
35. Point Street at East Franklin Street/I-95 North Off-Ramp (signalized)
36. Clifford Street/Friendship Street at East Franklin Street (signalized)
37. Clifford Street East Franklin Street at (signalized)
38. Service Road/Potter Building Driveway at Plain Street

39. Borden Street at I-95 South Off-Ramp

These study area intersections were evaluated in detail using standard traffic engineering analysis techniques to establish the baseline that will be used to identify incremental impacts of future traffic growth and the effect of potential improvement measures.



vhb

Study Area
Rhode Island Hospital
Providence, RI

Figure 2-1

0 700 Feet

Vehicular Access and Roadway Conditions

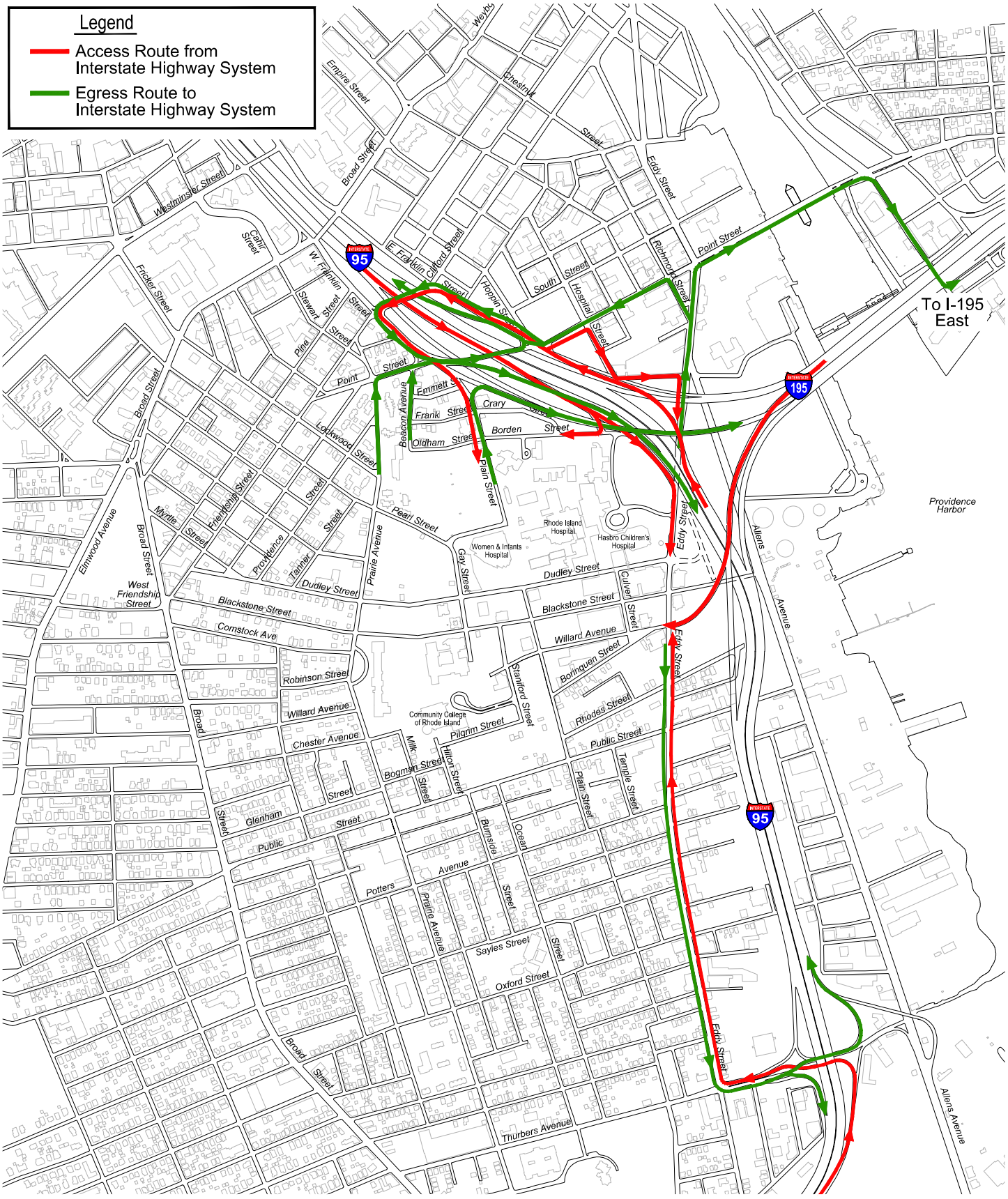
The following section describes the hospital area vehicular access, roadway circulation, observed conditions, traffic volumes and traffic operations.

Vehicular Access

The RIH campus area is serviced by an off-ramp from Interstate Route 95 Southbound which intersects Eddy Street, a principal urban arterial that borders the campus to the east, north of Dudley Street. In addition, vehicles can access the campus area from I-195 westbound via an off-ramp which intersects Eddy Street at Willard Avenue. The campus area is also bisected by two urban collector roadways: Dudley Street and Blackstone Street, and is bordered by another urban collector roadway, Prairie Avenue, to the west. These roadways, in addition to several city streets such as Plain Street, Pearl Street, Crary Street, Borden Street, and Willard Avenue, provide vehicular access to the campus.

Interstate Highway Connections

The existing primary connections between the RIH campus area and I-95 and I-195 are shown in Figure 2-2. As shown, the I-95 South Eddy Street off-ramp (Exit 36B) provides direct access to the RIH campus area for vehicles traveling south on I-95. From I-195 travelling west, vehicles traveling to the hospital area exit at Eddy Street (Exit 1B) and access the campus via Willard Avenue. Vehicles traveling northbound on I-95 exit at Thurbers Avenue (Exit 35) and turn onto Eddy Street northbound to access the RIH campus. Additionally, some of the northbound vehicles on I-95 also travel north of the Thurbers Avenue exit to access the campus via Point Street (Exit 36B). The choice of the exit for vehicles traveling north on I-95 is based on the parking directions provided on the RIH website.



Primary Interstate Highway Connections **Figure 2-2**
Rhode Island Hospital
Providence, RI

Vehicles exiting the RIH campus and destined to I-95 North/South and I-195 East use the Point Street interchange. I-95 South can also be accessed to the south of the hospital at the Thurbers Avenue on-ramp. I-195 East can also be accessed via Eddy Street and Point Street, by the India Street on-ramp east of the Point Street Bridge.

Roadways

The primary roadways providing access to the hospitals are described below.

Eddy Street

Eddy Street is a north-south principal arterial roadway which runs from Ship Street in the Providence's Jewelry District to Broad Street at the Cranston city line. Within the study area, Eddy Street is approximately 33 feet wide, with parking prohibited along both sides of the road. Eddy Street provides access to the RIH main entrance and to three hospital surface parking lots located on the east side of Eddy Street.

Traffic signals currently exist at the Eddy Street intersections with the I-95 South off-ramp, Dudley Street, the I-195 West off-ramp/Willard Avenue, and Public Street. The unsignalized intersections along Eddy Street are controlled by stop-signs on the east-west "minor street" approaches.

Dudley Street

Dudley Street is an east-west urban collector roadway which runs from Eddy Street to Friendship Street. Myrtle Street, a local roadway, provides a connection from Broad Street to Dudley Street, which is used for access to the RIH campus area. Dudley Street currently serves as the primary access roadway to the RIH campus from the east and provides direct access to the Emergency Department and several RIH buildings as well as Women & Infants Hospital. Within the study area, Dudley Street is approximately 30 feet wide. Parking is prohibited along both sides of the roadway from Prairie Avenue to Eddy Street with the exception of a short segment along the south side of Dudley Street east of Prairie Avenue.

Dudley Street/Eddy Street is a signalized intersection. The Dudley Street intersections with Gay Street and with Prairie Avenue are controlled by stop signs on all approaches, and the remaining unsignalized intersections along Dudley Street within the study focus area are controlled by stop signs on the north-south "minor street" approaches.

Blackstone Street

Blackstone Street is an east-west urban collector roadway which runs from Allens Avenue (Route 1A) to Broad Street/Friendship Street. Within the study area, Blackstone Street is approximately 20 feet wide west of Prairie Avenue, 25 feet wide between Prairie Avenue and Culver Street, and 22 feet wide between Culver Street

and Eddy Street. In the block between Prairie Avenue and Gay Street, Blackstone Street is one-way eastbound with parking generally allowed on the north side and prohibited on the south side. Between Plain Street and Culver Street four-hour multi meter parking is enforced between 8:00AM and 6:00PM.

The intersections of Blackstone Street with Gay Street and with Plain Street are controlled by stop signs on all approaches. At the intersections with Eddy Street and with Prairie Avenue only vehicles on Blackstone Street are required to stop. The remaining unsignalized intersections along Blackstone Street are controlled by stop signs on the north-south "minor street" approaches.

Prairie Avenue

Prairie Avenue is a north-south urban collector roadway which runs from Point Street to Broad Street. Within the study area, Prairie Avenue is approximately 30 feet wide, although in the area just south of Point Street, Prairie Avenue is approximately 24 feet wide. In general, there are currently no signs restricting parking along the east side of Prairie Avenue and signs restricting parking along the west side, except in a few segments. It can be assumed that parking is allowed along the eastern side of the roadway, except where the roadway geometry would prohibit vehicles from safely parking. Few vehicles were observed parking along Prairie Avenue, except between Pearl Street and Dudley Street and just north of Pearl Street where all potential spaces were typically occupied.

The intersection of Prairie Avenue and Public Street is controlled by a traffic signal. The Prairie Avenue intersections with Point Street, Pearl Street, Dudley Street, and Potters Avenue are currently controlled by stop signs on all approaches. The intersection with Blackstone Street is controlled by stop signs on the Blackstone Street eastbound approach.

Plain Street

Plain Street is a north-south local roadway that runs from West Franklin Street to Lockwood Street/Service Road north of Women & Infants Hospital. South of Women & Infants Hospital, Plain Street runs from Dudley Street to Potters Avenue. Within the study area, Plain Street is approximately 24 feet wide with parking generally restricted on both sides between Dudley Street and Willard Avenue. From Willard Avenue to Borinquen Street parking is restricted on the east side but is not restricted on the west side. From Borinquen Street to Public Street, there are currently no signs restricting parking, so it is assumed that parking is allowed. Parking is generally restricted on both sides of the northern section of Plain Street (between Emmett Street/Service Road and Lockwood Street; however, there are missing signs including the section between Oldham Street/Borden Street and Frank Street/Crary Street.

The intersection of Plain Street/West Franklin Street and Point Street is controlled by a traffic signal. The intersection of Dudley Street with Plain Street is stop controlled on the northbound Plain Street approach. The intersections of Plain Street with Frank Street/Crary Street, with Blackstone Street, with Willard Avenue, and with Public Street are controlled by stop signs on all approaches. The remaining unsignalized intersections along Plain Street within the study area are controlled by stop signs on the east-west "minor street" approaches.

Willard Avenue

Willard Avenue is an east-west local roadway that runs from Eddy Street to Staniford Street and from Prairie Avenue to Broad Street. Within the study area, Willard Avenue is approximately 24 feet wide, with parking generally prohibited along both sides of the road. Parking is allowed on the south side of the roadway west of Plain Street. Willard Avenue is one-way westbound between Eddy Street and Plain Street, and two-way between Plain Street and Staniford Street and from Prairie Avenue and Broad Street.

The intersection of Willard Avenue with Plain Street is all-way stop controlled. The intersection of Willard Avenue and Culver Street/Borinquen Street is controlled by stop signs on the Culver Street/Borinquen Street approaches. The intersection of Willard Avenue and Eddy Street is controlled by a traffic signal.

Public Street

Public Street is an east-west minor arterial roadway which connects Elmwood Avenue (Route 1) to Allens Avenue. Within the study area, Public Street is approximately 30 feet wide. Currently, there are signs restricting parking along Public Street between Eddy Street and Prairie Avenue on the southern side of the roadway. There are no parking restrictions along the north side of Public Street. Few parked vehicles were observed along the roadway with the exception of a few vehicles and vans related to the Met School located between Hilton Street and Plain Street. Land use along Public Street is a mix between residential and institutional developments, with a few businesses.

Traffic signals exist at the study area intersections of Public Street with Eddy Street, Prairie Avenue, and Broad Street. The unsignalized intersection of Public Street with Plain Street is controlled by all-way stop signs.

Broad Street

Broad Street is a north-south principal arterial roadway that runs from Empire Street to the Cranston city line. The roadway is approximately 43 feet wide in the area between Myrtle Street and Blackstone Street/Friendship Street. It widens near the signalized intersections with Public Street and Potters Avenue to provide for turning lanes. Parking is generally allowed along both sides of Broad Street.

Traffic signals exist at the study area intersections of Broad Street with Blackstone Street/Friendship Street, Public Street, and Potters Avenue. The unsignalized intersection of Broad Street with Myrtle Street is controlled by stop signs on the "minor street" approaches.

Observed Conditions

During the course of the study, VHB observed traffic conditions along the various roadways and intersections within the study area. Feedback provided by RIH relative to existing traffic operations was also taken into consideration. Specific highlights of the traffic observations are presented below. Overall, congestion and other operational deficiencies have remained consistent with observations from past Institutional Master Plans prior to COVID. Eddy Street and Point Street continue to be two areas that are most congested.

Traffic volumes and traffic operations have been significantly impacted by the closure of the Washington Bridge (I-195) westbound bridge and rerouting of I-195 traffic onto the eastbound bridge. There are currently many unprocessed vehicles on local streets and at intersections during peak hour conditions because traffic is backed up at on-ramps and queues extend through adjacent intersections. It should also be noted that many vehicles have changed their travel patterns as a result of the congestion. For example, many vehicles avoid the Point Street on-ramp to I-195 East and travel through the city to get to the I-195 East on-ramp near India Point. Another trend in traffic patterns is that the peak hour volumes, time periods, and travel patterns at some intersections have changed after COVID-19 traffic conditions.

Traffic Signal Observations

As shown in Figure 2-1, there are twelve (12) existing signalized intersections within the study area. In regard to exiting traffic operations, it should be noted that traffic signal timings have been adjusted by the City/RIDOT at the Point Street intersections with East and West Franklin Street and the Clifford Street/Friendship Street intersections with East and West Franklin Street, in an attempt to compensate for the Washington Bridge impacts; however, the backups at the on ramps and queues that extend through adjacent intersections often result in vehicles not being fully processed during green times. Existing traffic operations at these intersections with these downstream constraints are poor with long vehicle queues and delays.

At times, the City of Providence has implemented pedestrian recalls within city owned traffic signal controllers. This means that any traffic signal phase that has an associated pedestrian interval assigned to it will be serviced every cycle, even if there are no pedestrians present at the intersection. A pedestrian recall impacts the ability of the traffic signal controllers to reallocate green time to other phases and reduce delays/queues at the intersection. The increases in delays and queues due to this decision by the City could have impacts on response times to the hospital. If the City

chooses to implement pedestrian recalls, they will impact traffic in the study area under future conditions.

Additional Observations

Additional observations made by VHB traffic engineers during the data collection efforts include:

- Vehicle operations are further complicated by pedestrians who are sharing the roadways. During the morning and afternoon peak periods, some intersections internal to the Rhode Island Hospital campus area experience delays and vehicle queues as vehicles enter and exit the hospital parking areas. The vehicle queues were most noticeable at the entrances to the large parking lots and the intersection of Dudley Street and Gay Street during the morning peak hour. During the afternoon peak hour, vehicle queues were observed at the exits of the large parking lots and at the intersections of Dudley Street with Prairie Avenue and Pearl Street with Prairie Avenue.
- Blackstone Street is one lane in each direction with metered parking on the north side of the roadway between Plain Street and Culver Street. The roadway is narrow, and the metered parking does not have striped parking spaces; therefore, vehicles encroach on the travel lanes. This reduces traffic flow along the roadway because vehicles are operating under one lane alternating conditions throughout most of the day due to the narrowed lane.
- Pavement conditions on many of the roadways near the hospitals are fair to poor. The poor pavement conditions in some areas impact drainage and traffic flow.
- Various sections of the sidewalk along Dudley Street are in poor condition and in need of repair.

  The poor pavement conditions, in conjunction with faded and barely visible pavement markings, as well as missing/faded regulatory signage contribute to driver confusion and potential safety deficiencies on the roadways surrounding the hospital and within the parking lots and garages.

Traffic Volumes

An extensive transportation data collection program was conducted in February 2025 to establish base traffic conditions within the study area. Traffic volumes for the study area roadways and intersections were collected by Precision Data Industries (PDI). This effort included morning and afternoon peak hour turning movement counts (TMCs) between 6:45 AM and 8:45 AM and between 2:30 PM and 4:30 PM at the study area intersections. These periods correspond to the peak periods of the adjacent roadway network and the peak period for RIH campus area related traffic.

In addition to TMCs, Automatic Traffic Recorder (ATR) counts were also conducted for a one-week period at the following locations:

1. Eddy Street south of Dudley Street
2. Dudley Street west of Eddy Street
3. Willard Avenue west of Culver Street
4. Plain Street south of Dudley Street
5. Prairie Avenue south of Point Street
6. Prairie Avenue north of Public Street
7. Public Street west of Eddy Street
8. Broad Street north of Public Street

Table 2-1 presents a summary of the observed daily and peak hour traffic from the ATR data.

Table 2-1 Existing Traffic Volume Summary

	Daily	Weekday Morning Peak Hour			Weekday Afternoon Peak Hour		
Location[4]	**Weekday (vpd)[1]**	**Volume (vph)[2]**	**"K" Factor[3]**	**Directional Distribution**	**Volume (vph)**	**"K" Factor**	**Directional Distribution**
Eddy Street (North of Blackstone Street)	12,690	995	7.8	55% SB	945	7.4	57% SB
Dudley Street (East of Eddy Street)	8,460	595	7.0	68% WB	620	7.3	57% WB
Willard Avenue (East of Parking Garage Driveway)	2,700	285	10.6	100% WB	175	6.5	100% WB
Plain Street (South of Dudley Street)	3,230	275	8.5	66% NB	280	8.7	71% NB
Prairie Avenue (South of Point Street)	9,520	725	7.6	74% NB	520	5.5	76% NB
Prairie Avenue (North of Public Street)	9,630	895	9.3	61% NB	835	8.6	58% NB
Public Street (West of Wendy's Driveway)	4,390	335	7.6	60% WB	360	8.2	54% WB
Broad Street (North of Public Street)	9,775	740	7.6	52% NB	720	7.4	57% NB

Source: Compiled by VHB from automatic traffic recorder (ATR) counts conducted by Precision Data Industries in February 2025.
1 Daily traffic expressed in vehicles per day (vpd)
2 Peak hour volumes expressed in vehicles per hour (vph).
3 "K" factor = percent of daily traffic that occurs during the peak hour
4 Wednesday volumes were determined to be the highest day. Volumes listed represent Wednesday volumes.

In addition to performing new traffic counts, traffic counts conducted for the 2016 Study were also reviewed for consistency as well as to inform the methodology for developing future traffic growth in this study, as discussed later in this document. It should be noted that no traffic counts were performed in 2021 per the direction of the Providence Department of Planning, due to the impacts of COVID on traffic.

The weekday morning peak hour occurred between 7:45 AM and 8:45 AM along the Broad Street corridor, and between 7:30 AM and 8:30 AM for the remaining

roadways within the RIH campus area. The afternoon peak hour period occurred between 3:15 PM and 4:15 PM along the Broad Street and Prairie Avenue corridors, between 3:30 PM and 4:30 PM on the Eddy Street corridor, between 4:00 PM and 5:00 PM on the Prairie Avenue corridor, and between 2:45 PM and 3:45 PM for the remaining study area intersections.

As stated previously, traffic volumes and traffic operations have been significantly impacted by the closure of the Washington Bridge (I-195) westbound bridge and rerouting of I-195 traffic onto the eastbound bridge. There are currently many unprocessed vehicles on local streets and at intersections during peak hour conditions because traffic is backed up at on-ramps and queues extend through adjacent intersections. It should also be noted that many vehicles have changed their travel patterns, including avoiding the Point Street on-ramp to I-195 East and traveling through the city to get to the I-195 East on-ramp near India Point. Another trend in traffic patterns is that the peak hour volumes, time periods, and travel patterns at some intersections have changed after COVID-19 traffic conditions.

The existing weekday morning and weekday afternoon peak hour traffic volumes are presented in Figures 2-3 and 2-4, respectively. Note that the orientation of these figures has been rotated 90 degrees counterclockwise with north pointing to the left. See north arrow located in the bottom left corner of the figures.

Traffic Operations Analysis

Measuring existing traffic volumes quantifies traffic flow within the study area. To assess quality of flow, intersection capacity analyses were conducted with respect to existing traffic volumes, intersection geometry, and traffic control. Capacity analyses provide an indication of how well the roadway facilities serve the traffic demands placed upon them. Roadway operating conditions are classified by calculated levels of service as described below.

As discussed above in the Observed Conditions section, there are backups at the on ramps and queues that extend through adjacent intersections often result in vehicles not being fully processed during green times. These existing traffic conditions cannot be accurately modeled using Synchro to show these poor operations. A more important assessment of the existing roadway infrastructure is an assessment of its ability to accommodate existing traffic volumes when the Washington Bridge downstream constraints are removed (after completion of the bridge replacement project. In order to assess the existing infrastructure, the downstream constraints are assumed to be corrected, and the traffic signal timings have been optimized under the 2025 existing conditions analysis.

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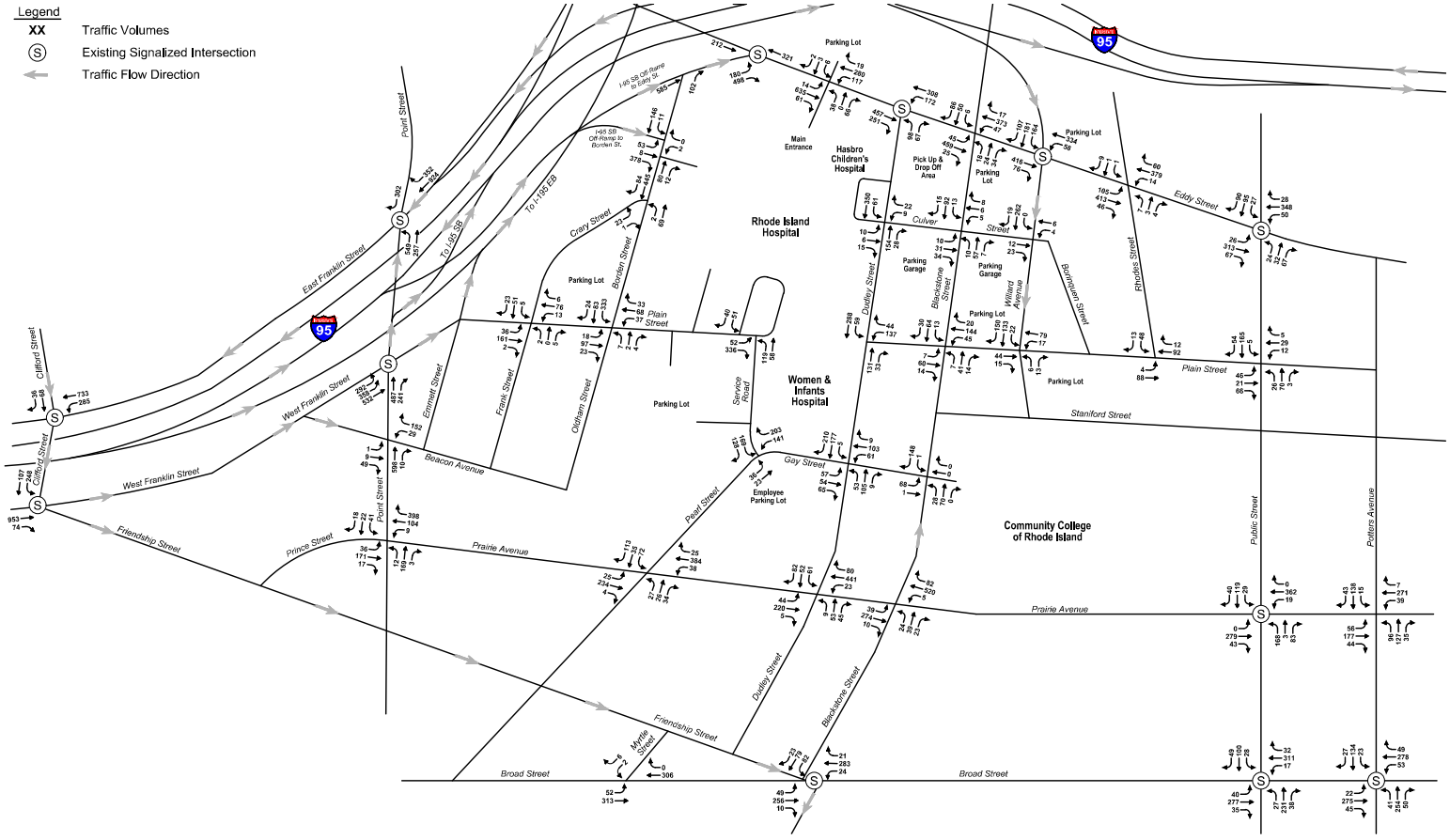

Not to Scale

2025 Existing Weekday Morning Peak Hour Traffic Volumes
Rhode Island Hospital
Providence, RI

Figure 2-3

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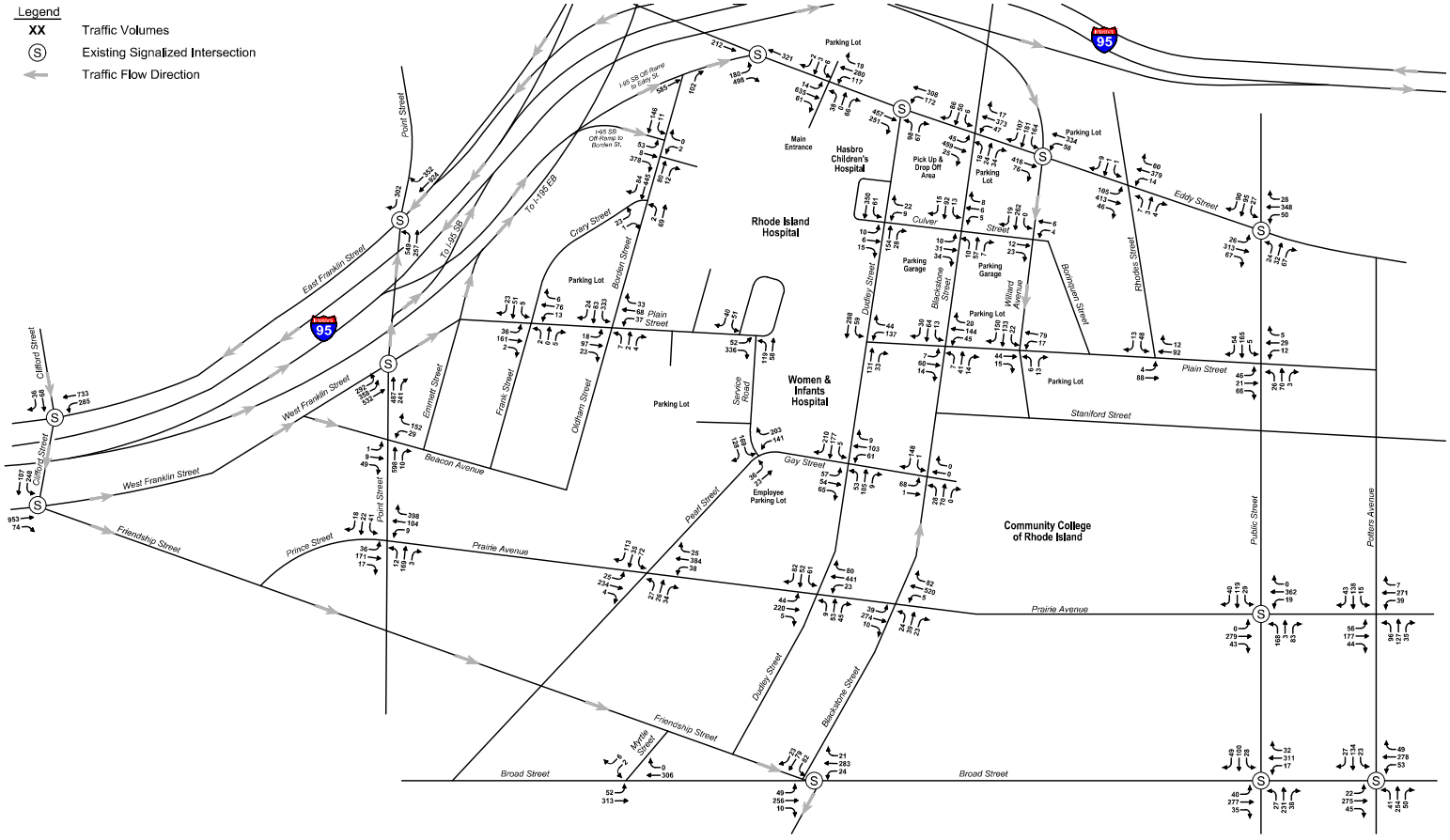


Not to Scale

2025 Existing Weekday Evening Peak Hour Traffic Volumes
Rhode Island Hospital
Providence, RI

Figure 2-4

Level-Of-Service Criteria

Level-of-service (LOS) is the term used to denote the different operating conditions which occur on a given roadway segment under various traffic volume loads. It is a qualitative measure of the effect of a number of factors including roadway geometrics, speed, travel delay and freedom to maneuver. Level-of-service provides an index to the operational qualities of a roadway segment or an intersection. Level-of-service designations range from A to F, with LOS A representing the best operating conditions with little or no delay and LOS F representing the worst operating conditions with highly congested operations and long delays. The evaluation criteria used to analyze study area intersections are based on the Highway Capacity Manual[1].

The level-of-service designation is reported differently for signalized and unsignalized intersections. For signalized intersections, the analysis considers the operation of each lane or lane group entering the intersection and the LOS designation is for the overall conditions at the intersection. For unsignalized intersections, however, the analysis assumes that free flowing traffic on the main street is not affected by traffic on the side streets. The LOS is only determined for left turns from the main street and all movements from the minor street. The overall LOS designation is for the most critical movement, which is most often the left turn out of the side street.

Signalized Intersections

Capacity analyses were conducted at the study area signalized intersections included in this study. As discussed in the Observed Conditions section of this report, the traffic signal timings have been adjusted at the Point Street intersections with East and West Franklin Street and the Clifford Street/Friendship Street intersections with East and West Franklin Street, in an attempt to compensate for the Washington Bridge impacts; however, the backups at the on ramps and queues that extend through adjacent intersections often result in vehicles not being fully processed during green times. Existing traffic operations at these intersections with these downstream constraints are poor with long queues and delays. These existing traffic conditions cannot be accurately modeled using Synchro to show the poor operations. A more important assessment of the existing roadway infrastructure is an assessment of its ability to accommodate existing traffic volumes when the Washington Bridge downstream constraints are removed (after completion of the bridge replacement project).

The analysis of 2025 traffic volumes under unconstrained traffic conditions (without the impacts of the Washington Bridge project) were therefore analyzed to determine if the existing infrastructure (roadways and intersections) can accommodate existing

[1] Highway Capacity Manual; Transportation Research Board; Washington D.C.; 2000.

traffic volumes if the downstream congestion did not exist. The traffic signal timings have also been optimized. Signalized intersection capacity analyses using 2025 traffic volumes without downstream constraints are presented in Table 2-2.

It is important to note that the capacity analysis software analyzes the operation at the intersections only. Interruptions to traffic flow caused by pedestrians, bus blockages, delivery trucks, parking maneuvers, double parked vehicles, weaving/lane changes, and extended vehicle queues from adjacent intersections can occur at signalized intersections. These interruptions can block traffic from getting to and/or through the signalized intersections resulting in congestion. Blockages of traffic on approaches or departures of a signalized intersection will degrade the overall operation of the intersection and can result in severe congestion if the volume of traffic at the intersection is at or near capacity.

Due to the fact that the capacity analysis does not totally take into account disruptions to traffic flow between intersections, the reported delay times and resulting levels of service could be underestimated. In this case, the capacity analysis software is a tool used to identify problem areas and to give a comparison between existing and future conditions. Due to the limitations of the Synchro analysis, it is recommended that future analysis of the intersections along the East Franklin Street and West Franklin Street (at Friendship Street/Clifford Street and Point Street be modeled using VISSIM.

Table 2-2 2025 Conditions Signalized Intersection Analysis

		2025 Conditions		
Location	**Peak Hour**	**V/C[1]**	**Delay[2]**	**LOS[3]**
Eddy Street/ Borden St/I-95 Ramp	Weekday AM	0.71	18	B
	Weekday PM	0.64	14	B
Eddy Street / Dudley Street	Weekday AM	0.67	39	D
	Weekday PM	0.72	28	C
Eddy Street/ Willard Ave/I-195 Ramp	Weekday AM	0.63	14	B
	Weekday PM	0.54	10	A
Eddy Street / Public Street	Weekday AM	0.46	10	B
	Weekday PM	0.41	9	A
Broad Street / Friendship Street	Weekday AM	0.46	12	B
	Weekday PM	0.54	16	B
Broad Street / Public Street	Weekday AM	0.51	14	B
	Weekday PM	0.60	14	B
Broad Street / Potters Avenue	Weekday AM	0.50	13	B
	Weekday PM	0.48	12	B
Prairie Avenue / Public Street	Weekday AM	0.55	9	A
	Weekday PM	0.56	9	A
Point Street / W. Franklin Street	Weekday AM	0.82	28	C
	Weekday PM	0.85	26	C
Point Street / E. Franklin Street	Weekday AM	0.96	70	E
	Weekday PM	0.88	33	C
Clifford Street / W. Franklin Street	Weekday AM	0.48	17	B
	Weekday PM	0.62	17	B
Clifford Street / E. Franklin Street	Weekday AM	0.35	6	A
	Weekday PM	0.51	18	B

Source: Synchro 11 software using the procedures in the 2000 Highway Capacity Manual. Compiled by VHB

1 V/C = volume to capacity ratio

2 Delay = Vehicle delay expressed in seconds per vehicle (See note below)

3 LOS = Level of service

4 Observed delays and resulting levels of service exceed the calculated values due to disruptions in traffic flow caused by the geometry of the intersection, vehicular queues on the critical approaches, and the operation at adjacent intersections

Unsignalized Intersections

Capacity analyses were also conducted at the unsignalized intersections included in this study area. A summary of the unsignalized intersection capacity analysis results under existing conditions is presented in Table 2-3.

As stated in the signalized intersections analysis section, the capacity analysis software analyzes the operation at the intersections only and does not take into account disruptions to traffic flow between intersections. As a result, the reported delay times and resulting levels of service can be underestimated. In this case, the capacity analysis software is a tool used to identify problem areas and to give a comparison between existing and future conditions.

During the weekday morning peak hour period, all of the intersections operate at a calculated LOS D or better except for the Eddy Street/RIH Main Entrance and Dudley Street/Prairie Avenue intersections which operate at LOS E. During the weekday afternoon peak hour period, all of the intersections operate at a calculated LOS D or better except for the Blackstone Street/Eddy Street intersection which operate at LOS E. It is important to note that this analysis is based on unconstrained downstream conditions (without the current backups from the I-195 Washington Bridge). Traffic conditions in the Point Street area with the current backups are much worse. In addition to the intersections listed above, the following intersections also experience delays and congestion during peak periods:

- Point Street at Prairie Avenue/Prince Street: The northbound approach to the intersection experiences long queues and delays during peak periods. These delays are a result of the heavy northbound right turn volumes during the afternoon peak periods and congestion/backups from the poor operations of the Point Street signalized intersections with West and East Franklin Street.
- Point Street at Beacon Avenue: The northbound approach to the intersection experiences long queues and delays during peak periods. These delays are also a result of the heavy right turn volumes during the afternoon peak periods and congestion/backups from the poor operations of the Point Street signalized intersections with West and East Franklin Street.
- Pearl Street at Prairie Avenue: The westbound and northbound approaches experience long queues and delays during peak periods. The shift changes at the hospitals and arrival/dismissal times of the schools are contributing factors of this congestion.
- Service Road at Gay Street/Pearl Street: The Service Road westbound approach experiences poor operations during the afternoon peak period. These delays are due to the shift changes at the hospitals and poor geometry and delineation of the intersection.

Table 2-3 2025 Conditions Unsignalized Intersection Analysis

		2025 Conditions			
Location	**Peak Hour**	**Critical Movement[1]**	**Demand[2]**	**Delay[3]**	**LOS[4]**
Point Street/ Prairie Ave/ Prince St	Weekday AM	NB LTR	241	13	B
	Weekday PM	NB LTR	250	12	B
Point Street/ Beacon Ave/Plain St	Weekday AM	NB LTR	220	23	C
	Weekday PM	NB LTR	253	24	C
I-95 South Ramp/ Borden Street (East)	Weekday AM	EB R	131	15	C
	Weekday PM	EB R	223	15	C
Crary Street/ Borden Street	Weekday AM	SB LR	32	15	C
	Weekday PM	SB LR	32	12	B
Crary Street/Frank Street/Plain Street	Weekday AM	NB LTR	120	8	A
	Weekday PM	NB LTR	375	12	B
Plain Street/ Borden St/Beacon Ave	Weekday AM	WB LTR	506	19	C
	Weekday PM	NB LTR	404	14	B
Eddy Street/ RIH Main Entrance	Weekday AM	EB LTR	128	44	E
	Weekday PM	EB LTR	119	30	D
Dudley Street/ Culver Street	Weekday AM	SB LTR	40	16	C
	Weekday PM	SB LTR	57	17	C
Dudley Street/ Plain Street	Weekday AM	NB LR	203	23	C
	Weekday PM	NB LR	220	18	C
Dudley Street/ Gay Street	Weekday AM	WB LTR	450	17	C
	Weekday PM	WB LTR	379	22	C
Service Road/ Gay Street/Pearl Street	Weekday AM	WB LR	346	18	C
	Weekday PM	WB LR	319	20	C
Dudley Street/ Prairie Avenue	Weekday AM	NB LTR	572	40	E
	Weekday PM	NB LTR	466	32	D
Prairie Avenue/ Pearl Street	Weekday AM	NB LTR	502	33	D
	Weekday PM	NB LTR	368	17	C
Blackstone Street/ Eddy Street	Weekday AM	EB LTR	111	32	D
	Weekday PM	EB LTR	192	42	E
Blackstone Street/ Culver Street	Weekday AM	EB LTR	119	8	A
	Weekday PM	EB LTR	197	9	A
Blackstone Street/ Plain Street	Weekday AM	NB LTR	228	10	A
	Weekday PM	NB LTR	252	10	B

Blackstone Street/ Gay Street	Weekday AM	EB LTR	124	8	A
	Weekday PM	EB LTR	152	9	A
Blackstone Street/ Prairie Avenue	Weekday AM	EB LTR	112	28	D
	Weekday PM	EB LTR	44	24	C
Willard Avenue/ Culver Street/ Borinquen Street	Weekday AM	NB LT	20	12	B
	Weekday PM	NB LT	39	11	B
Willard Avenue/ Plain Street	Weekday AM	WB LTR	346	10	B
	Weekday PM	WB LTR	216	9	A
Eddy Street/ Rhodes Street	Weekday AM	EB LTR	24	25	C
	Weekday PM	EB LTR	32	18	C
Plain Street/ Rhodes Street	Weekday AM	WB LR	67	10	B
	Weekday PM	WB LR	117	12	B
Public Street/ Plain Street	Weekday AM	WB LTR	280	10	B
	Weekday PM	WB LTR	248	12	B
Broad Street/ Myrtle Street	Weekday AM	NW LR	16	12	B
	Weekday PM	NW LR	20	14	B
Prairie Avenue/ Potters Avenue	Weekday AM	NB LTR	373	27	D
	Weekday PM	SB LTR	426	31	D
Lockwood Street/ Plain Street	Weekday AM	EB LR	158	11	B
	Weekday PM	EB LR	422	15	C
I-95 South Ramp/ Borden Street (West)	Weekday AM	NB LTR	4	39	E
	Weekday PM	NB LTR	32	15	C
Borden Street at Main Entrance	Weekday AM	NB LR	389	12	B
	Weekday PM	NB LR	216	11	B
Plain Street at North Entrance	Weekday AM	WB LR	128	14	B
	Weekday PM	WB LR	100	16	C

Source: Synchro 9 software using the procedures in the 2000 Highway Capacity Manual. Compiled by VHB.

1 L= Left-turn movement, T= Through movement, R= Right-turn movement

2 Demand = Demand of critical movement, expressed in vehicles per hour

3 Delay = Vehicle delay expressed in seconds per vehicle (See note below)

4 LOS = Level of service

5 Although there are no visible stop signs, it was assumed that the Service Road westbound approach operates under stop control

Note: Interruptions to traffic flow caused by pedestrians, bus blockages, delivery vehicles, and parking maneuvers, were observed on the study area roadways between intersections. These interruptions caused congestion along these roadways during the peak hour periods. As a result, the observed delay times at some intersections exceeded the calculated values.

Based on the findings of the traffic analysis, field observations, and feedback from RIH, Figure 2-5 shows the "hotspots" within the RIH campus area that would need to be further reviewed as part of the future conditions analysis and for consideration of potential capacity enhancement measures. It should be noted that Figure 2-5 does not show all locations within the study area that were identified as having less than optimal analytical results. Rather, it shows a subset of the congested locations that are critical in terms of their impacts to the overall quality of traffic flow within and surrounding the RIH campus area.

Traffic Volumes

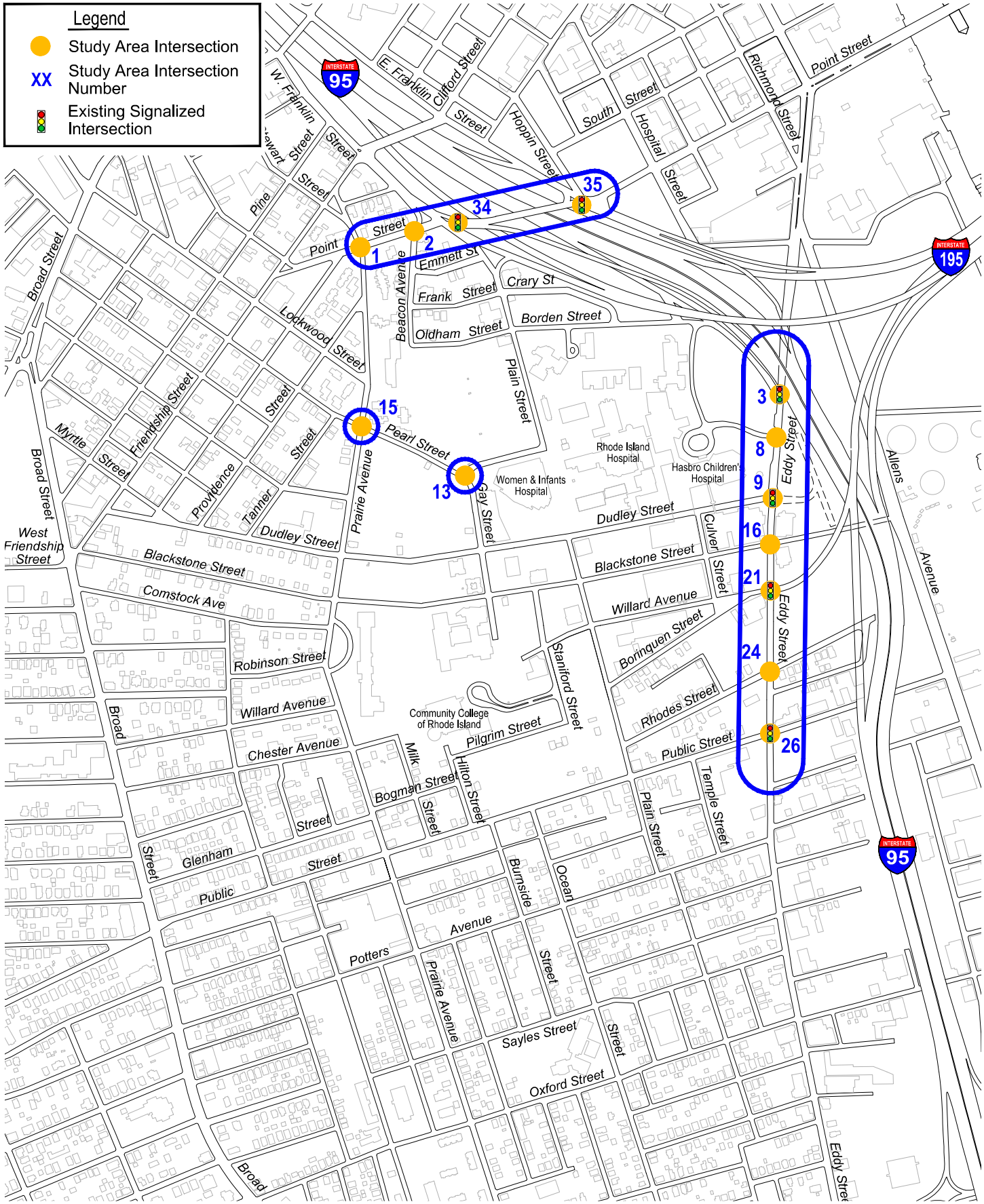
The RIH campus is served by an extensive system of off-street parking spaces and a small amount of on-street parking. In addition, RIH owns several other parking lots that are leased by Women and Infants Hospital. The following describes the current parking supply and peak parking utilization at the RIH.

On-Street Parking

The on-street parking locations and posted restrictions near the RIH campus are illustrated on Figure 2-6. There are approximately 60 metered/multi-metered and non-metered parking spaces close to the hospital; spread among Oldham Street, Pearl Street, Blackstone Street, and Culver Street. There are also a few non-metered on-street parking spaces on Gay Street near the Ronald McDonald House. Farther from the main hospital buildings, where land uses transition to residential neighborhoods, there are no posted on-street parking restrictions.

On-street parking plays a modest role in accommodating RIH parking activity. Spot counts conducted in February of 2025 show that most of the designated time-limited parking spaces within the immediate vicinity of the hospital are fully used during the midday. There were as many as 90 cars parked near the hospitals on Oldham Street, Pearl Street, Gay Street, Blackstone Street and Culver Street.

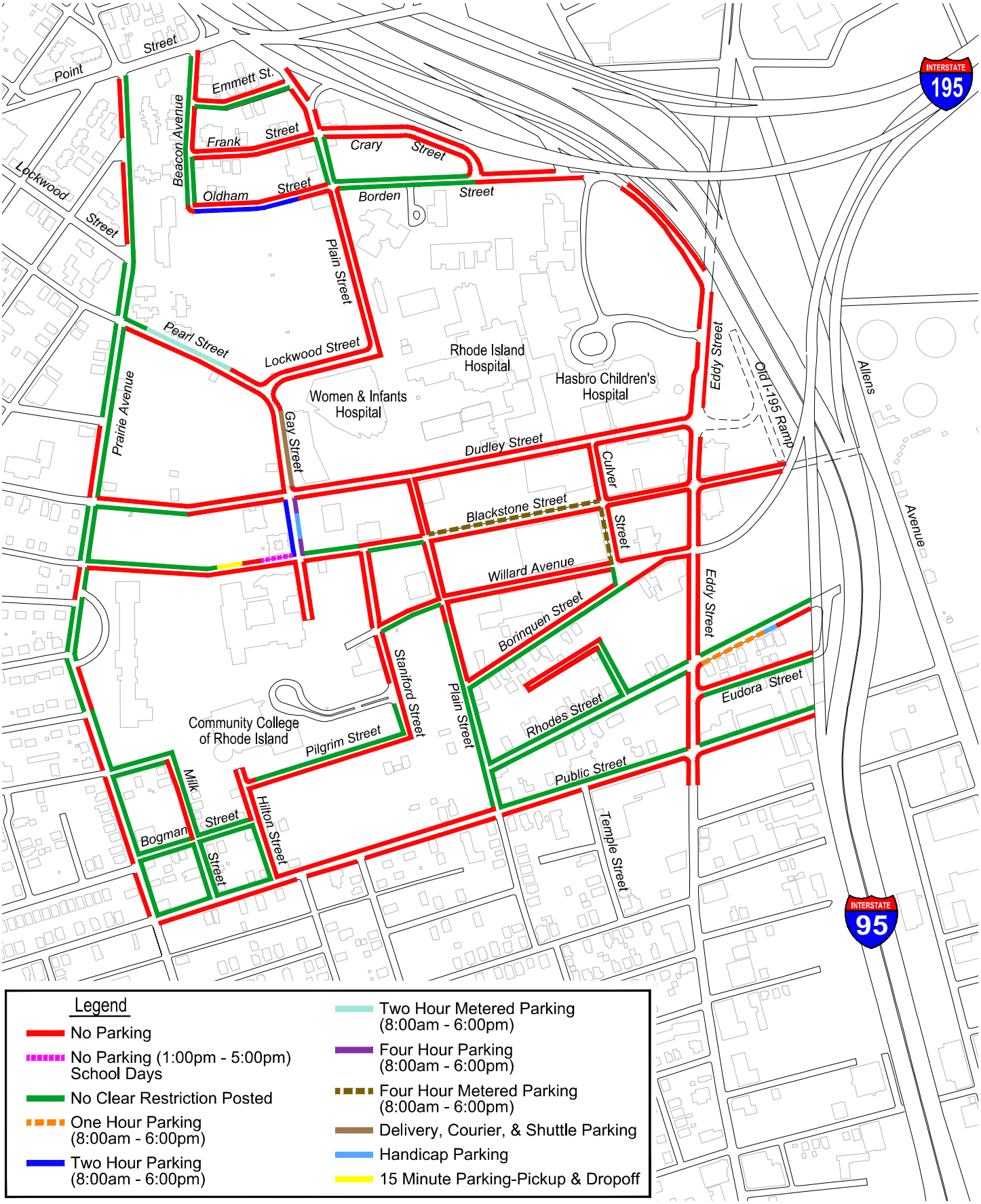
The time-limited on-street parking is presumed to be used primarily by visitors. Farther from the hospital, some on-street parking without time limits was observed to be used by employees. There are typically about 25 cars parked on Prairie Avenue near Pearl Street that are presumed to be used by employees of Women and Infants Hospital. On-street parking by RIH employees was observed on Borinquen Street, Rhodes Street and Plain Street. There are an estimated 30 additional RIH employee vehicles among the other streets.



0 700 Feet

Study Area Hot Spots
Rhode Island Hospital/
Women & Infants Hospital
Providence, RI

Figure 2-5



Existing On-Street Parking
Rhode Island Hospital
Providence, RI

Figure 2-6

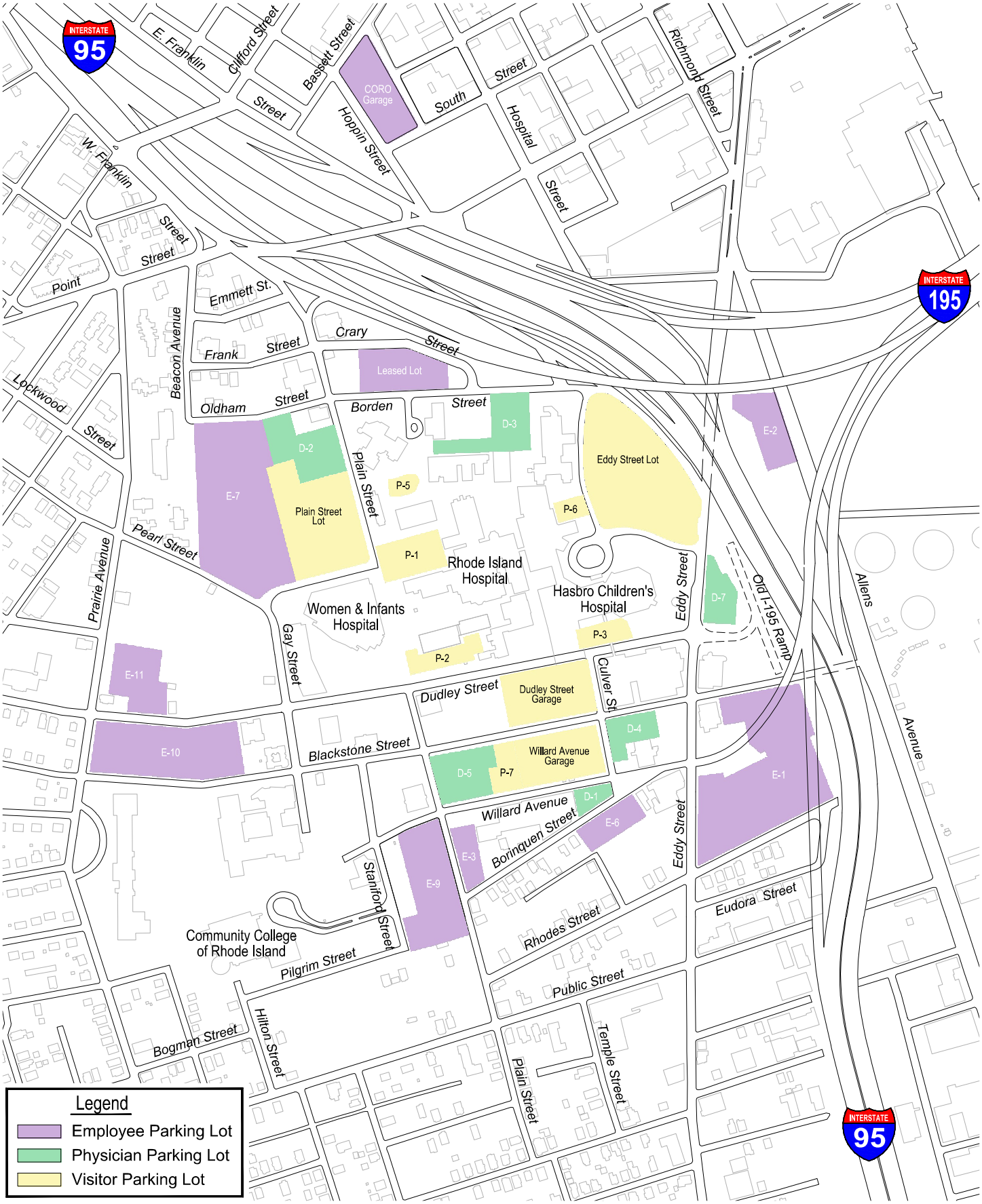
0 500 Feet

There is little double parking or illegal parking that occurs on streets near the hospitals. The exception is a section of Service Road adjacent to Women and Infants Hospital. There occasionally a few vehicles parked in this area.

It should also be noted that the signs restricting parking along most study area roadways in poor condition with many signs missing or faded, making it difficult to determine where parking is restricted.

Off-Street Parking

The off-street parking facilities at the RIH campus are depicted on Figure 2-7. As listed in Table 2-4, there are 4,280 parking spaces, including parking in two leased lots and over 100 employees parked remotely at the CORO garage. Currently many spaces at the CORO Center garage are used for these employees. In past studies approximately 100 spaces were used by RIH employees; however, it is difficult to determine the current number because the gates are open. Patient parking in the CORO garage is not related to the main campus and is therefore not fully counted in the main campus numbers.



Existing Off-Street Parking
Rhode Island Hospital
Providence, Ri

Figure 2-7

Table 2-4 Off-Street Parking Facilities

VISITOR PARKING	Lot	No. of Spaces
Undesignated Visitor Parking	Plain Street Lot[1]	309
	Eddy Street Lot	355
	Dudley Street Garage[2]	240
	Willard Avenue Garage	447
Designated Visitor Parking	P-1 (Valet, Oncology)	45
	P-2 (HC, MRI, Hasbro)	40
	P-3 (Hasbro)	19
	P-5 (HC)	6
	P-6 (Short-term)	10
	P-7 [3]	45
Subtotal: Visitor Parking		**1,516**
EMPLOYEE PARKING:	**Lot**	**No. of Spaces**
	E-1	541
	E-2 (Leased)	107
	E-3[4]	43
	E-6	69
	E-7	621
	E-9	248
	E-10	300
	E-11	129
	Borden Street (leased)[5]	107
	CORO Garage[6]	100
Subtotal: Employee Parking		**2,265**
PHYSICIAN PARKING:	D-1	23
	D-2	134
	D-3	96
	D-4[7]	55
	D-5	120
	D-7	71
Subtotal Physicians:		**499**
TOTAL RIH Parking		**4.280**

1. Plain Street Lot is used by W&I visitors and patients. Typically, they use approximately 100 spaces.
2. 22 spaces were occupied by boxes and crate and not available for parking.
3. This lot was used for shuttle parking. In previous studies the lot was striped as 45 parking spaces.
4. 3 Spaces were occupied by trailers and not available for parking.
5. This parking lot is gravel, without marked spaces and is estimated to provide up to 125 parking spaces.
6. There are more than 900 spaces at the CORO Garage. 100 spaces were used by employees from the RIH campus in previous studies. It is difficult to determine the current number because the gates are open. Patient parking in the CORO garage is not related to the main campus and is therefore not accounted in the main campus numbers.
7. Does not include 30 spaces for W&I

RIH Public Parking

Rhode Island Hospital provides self-parking and valet-parking options for its visitors and patients. The primary public parking areas at RIH are the Eddy Street Lot, the Plain Street Lot, the Dudley Street Garage, and the Willard Avenue Garage. One of the public parking lots, the Eddy Street Lot, is shared with W&I visitors. Valet parking is available at Hasbro, the Ambulatory Patient Center, and the Medical Office Complex.

In addition to the primary public parking areas, there are also some small public parking lots that are restricted to specific users, such as patients with disabled parking placards, dialysis patients, etc. In total, there are 1,516 public parking spaces among the various RIH parking facilities.

It should be noted that the Dudley Street Garage is at or near capacity throughout the day due to many spaces that are currently blocked for construction activities.

The standard fees for the public parking areas are free for those parking under 30 minutes, $5.00 for 30 minutes to two hours, $6.00 for two to four hours, and $7.00 for four to 24 hours. There are also some discounted parking rates, such as for family members of in-patients and patients coming to the hospital regularly for outpatient services. Many of the lots should be restriped and some of the parking garages should be reevaluated to determine if better signage and circulation can be implemented.

RIH Staff Parking

About two-thirds of the total Rhode Island Hospital parking, some 2,764 spaces, is used for RIH staff parking. There are 499 parking spaces among six lots used by physicians, and 2,265 spaces among the ten parking lots used by employees. Two of the employee parking lots, E-2 and the Borden Lot, and one of the doctor's lots (D-7) are leased. Lots E-1 and E-2 are over capacity with many vehicles parked illegally and the Bordan Street lot is underutilized. Doctors Lot D-4 should be restriped and reconfigured to better maximize parking.

Utilization of Off-Street Parking

As noted in previous studies, parking is managed as necessary to ensure adequate parking availability. Most parking lots were full on the busiest days of the week, but excess parking for visitors was available in the Willard Avenue Garage and any temporary excess parking for employees was managed by tandem parking. The utilization of the parking system today is similar to past years, although management strategies have been adapted.

Excess parking capacity for visitor cars remains in the Willard Avenue Garage. Spot counts during February indicate that at least 60 parking spaces are available even on the busy days. In addition, valet parking operations have been enhanced during the past five years and there is the ability to store more cars in the valet park storage areas (such as P-7) if need be. As in past years, additional parking for employees is currently available in the CORO Garage. The hospital routinely tracks the availability of parking in the CORO Garage. There were at least 150 parking spaces unused.

Public Transportation

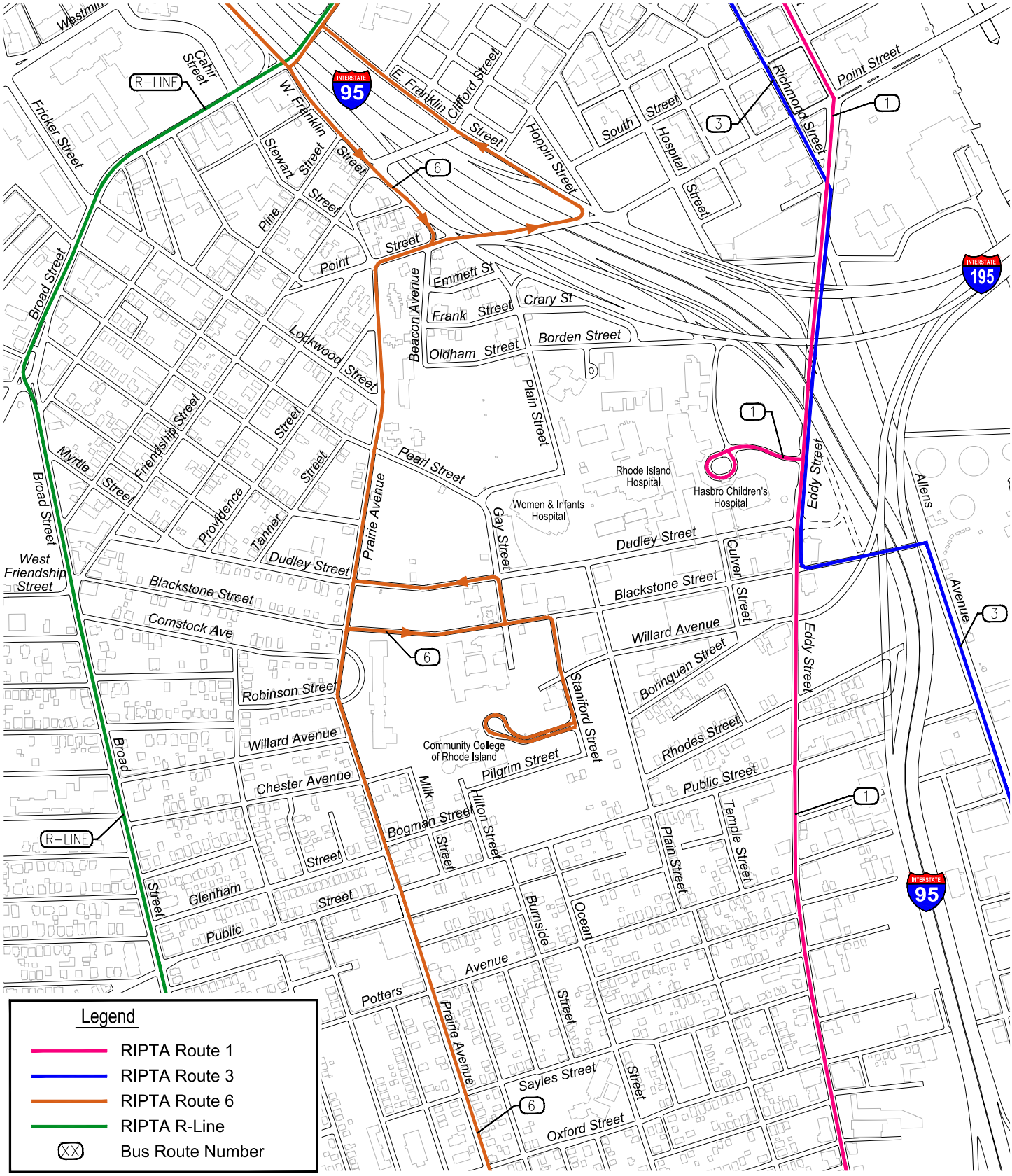
The RIH campus area is served by several Rhode Island Public Transit Authority (RIPTA) routes, as shown in Figure 2-8. Commuters without direct service from their area can take any bus service to Kennedy Plaza and transfer to any of the four routes described below to reach the RIH area.

Bus Service

There are several existing RIPTA bus routes that currently serve the RIH campus area:

- Route 1 Eddy/Hope/Benefit (all trips serve study area)
- Route 3 Oakland Beach (all trips serve study area)
- Route 4 Warwick Avenue
- Route 6 Prairie/R.W. Zoo (all trips serve study area)
- R-Line (all trips travel along Broad Street, proximate to the study area)

A brief description of the routes that service the RIH area on all trips throughout the day is included below. The R-Line provides frequent service along the Broad Street corridor, which is at the western end of Blackstone Street, approximately one-half mile from the RIH campus area.



0 700 Feet

Public Transportation
Rhode Island Hospital
Providence, RI

Figure 2-8

Route 1 Eddy/Hope/Benefit

Route 1 operates on to approximately 20-minute headways during the weekday hours. This route connects T.F. Green Airport in Warwick with the South Attleboro commuter rail station in Massachusetts with stops in Warwick, Cranston, Providence, and Pawtucket. Key transfer points along the route include Rhode Island Hospital, Kennedy Plaza in Providence, Thayer Street in Providence, and the Pawtucket Transit Center.

Route 3 Oakland Beach

Route 3 operates on approximately 40-minute headways during the weekday hours. The route begins at Oakland Beach Road at Suburban Parkway in Warwick, Rhode Island, and continues to and along Warwick Avenue through Airport Road (Hoxsie Four Corners) and Post Road to Norwood Avenue in Cranston. From there, the route continues along Narragansett Boulevard, Allens Avenue, and Blackstone Street to Eddy Street where it stops outside of Rhode Island Hospital on the way to Kennedy Plaza and the Providence Train Station.

Route 4 Warwick Avenue

Route 3 operates on approximately 40-minute headways during the weekday hours. The route begins at Warwick Neck Avenue and Barton Avenue in Warwick, Rhode Island, and continues to and along Warwick Neck Avenue to Samuel Gorton Avenue, Longmeadow Avenue, Tidewater Drive, and West Shore Road to Warwick Avenue in Warwick. From there, the route continues along Warwick Avenue to Narragansett Parkway, Broad Street, Norwood Avenue, Narragansett Boulevard, Allens Avenue, and Blackstone Street to Eddy Street where it stops outside of Rhode Island Hospital on the way to Kennedy Plaza and the Providence Train Station.

Route 6 Prairie Avenue/Roger Williams Park Zoo

Route 6 operates on approximately every 60-minute headways during the weekday hours. The route begins at the Roger Williams Park Zoo in Providence and continues along Broad Street then Prairie Avenue to stop at the CCRI Providence Campus and continues by making a loop into the RIH campus area before making its final stop at Kennedy Plaza.

R-Line

R-Line is a Rapid Bus, which operates on approximately 10-minute headways during the weekday hours. The route begins at the Pawtucket-Central Falls Transit Center on Pine Street and continues along Main Street to stop at Kennedy Plaza in Providence before making its final stop along Broad Street at Montgomery Avenue, which is the Providence/Cranston city line.

Shuttle Service

In addition to the various RIPTA routes serving the RIH and W&I campuses, there are several shuttle routes. RIH operates a shuttle service that runs continuously between the CORO Center parking garage and the Zecchino Pavilion (main building) as well as the Physician's Office Building (POB). The shuttle routes are shown in Figure 2-9. These shuttle routes are currently being reviewed and potentially modified to improve operations.

An additional shuttle van, referred to by RIH as the "Silver Bullet," runs between the RIH facilities off of Allens Avenue (south of Thurbers Avenue) and the Zecchino Pavilion (main building) entrance.

In addition, the Brown Daytime Shuttle provides transportation from Brown University to Downtown Providence, the Jewelry District and Rhode Island Hospital for Brown and RISD students, faculty, and staff.

Pedestrian Activity

Pedestrian volumes were counted in the study area in conjunction with the traffic volumes, as previously described, on typical weekdays in February 2025 during the weekday morning and weekday afternoon peak hour periods. This showed the highest pedestrian flows along Culver Street, Blackstone Street, and Dudley Street. Due to the high density of parking areas and hospital destinations in these few blocks, pedestrian volumes vary widely from intersection to intersection. Significant hourly pedestrian volumes were recorded in the following areas:

- Crossing Blackstone Street at Culver Street, between the Willard and Dudley garages (210 morning and 248 afternoon)
- Crossing Culver Street at Blackstone Street, between the Willard and Dudley garages (120 morning and 60 afternoon)
- Crossing Dudley Street at Culver Street, opposite the Dudley Garage (75 morning and 115 afternoon)
- Crossing Eddy Street at Blackstone Street, in the vicinity of parking lot E-1 (145 morning and 100 afternoon)
- Crossing Plain Street at Service Road, in the vicinity of the Plain Street Parking Lot (180 morning and 200 afternoon)
- Crossing Dudley Street at Plain Street, (50 morning and 45 afternoon)
- Crossing Gay Street at Dudley Street, (70 morning and 45 afternoon)

The majority of the pedestrian activity throughout the study area was along routes to/from the parking areas. Often, pedestrians followed paths away from the roadway and were not captured in the volumes recorded above. There was also heavy

pedestrian activity observed at the midblock pedestrian crosswalks on Plain Street, Service Road, and Gay Street adjacent to the large parking areas.

The visitor pedestrian volumes observed under the 2021 study were reduced due to protocols implemented due to the pandemic. Compared to the 2016 study, visitor pedestrian volumes overall have returned to pre-pandemic conditions.

Transportation Demand Management Programs

Rhode Island Hospital provides a number of transportation demand management (TDM) programs, which are designed to reduce the number of vehicle trips and the amount of parking. The following section describes the management program.

RIPTA Pass Program

As described in the Public Transportation section, the RIH campus area is served by several RIPTA bus lines in addition to various shuttles. Employees can purchase RIPTA monthly passes at Rhode Island Hospital.

Remote Parking at the CORO Center

As described in the Parking section, some employees working at the main RIH campus are assigned to parking at the CORO Center Garage and travel to/from the main campus via RIH shuttle buses. This practice has been in place for many years. Currently many spaces at the CORO Center Garage are used for these employees. In past studies approximately 100 spaces were used by RIH employees; however, it is difficult to determine the current number because the gates are open. The CORO Garage is readily accessible from I-95, I-195, and other primary routes and thus those parking there do not travel through the local roadway system near the main campus and do not contribute to congestion in that area. It should be noted that the gates of the garage were open during the observations at the CORO Center Garage so there was no need to use an access card. Even with the unrestricted access (garage gates being open to all users), there were still approximately 200 unoccupied parking spaces during peak periods.

Other Transportation Demand Management Techniques

Some of the facilities and services provided for patients and visitors within RIH serve as TDM measures, as additional trips to locations off-site are not required. These include multiple ATM locations, a cafeteria that is open daily, a pharmacy (open Monday through Friday from 7:00 AM to 11:30 PM weekdays and 8:00 AM to 4:30 PM on Saturday and Sunday), a chapel, and a gift shop.

3

Future Conditions

Transportation conditions in and around the RIH campus area are expected to experience changes in the future due to minor growth in traffic volumes associated with generalized regional growth and site-specific traffic growth due to two projects near the RIH campus area (The Flynn residential development and the Achievement First Charter School). There is no significant proposed growth of RIH operations due to known projects that would result in significant traffic or parking growth; however, there will be a redistribution in traffic due to the relocation of the main entrance to a new platform building at the Mid-Campus location on Plain Street (where Lot P-1 is currently located) and the construction of a new parking garage on the northwest corner of the Plain Street/Service Road intersection (where the existing Plain Street surface lot is located). This section discusses the future No-Build conditions (conditions without the proposed RI Hospital projects) and Build conditions (with the RI Hospital proposed projects). This section also discusses the projected impacts to traffic under future No-Build and Build conditions. It is important to note that the No-Build conditions include normal background growth that is expected to occur in the City of Providence as well as the site-specific developments that are currently scheduled to be completed and occupied within the next 5 years. There are additional developments that were discussed with the Providence Department of Planning and Development; however, they are not expected to be completed and occupied in the next 5 years; therefore, VHB was directed and are not included in this study.

Transportation Infrastructure Improvements

Based on discussions with the Providence Department of Planning, and Department of Traffic Engineering, there are no major infrastructure improvements proposed in the study area. The 2021 Study identified two projects that were being proposed (the Eddy Street Corridor Improvements/Dudley Street Extension project and the Downtown Transit Corridor (DTC) project). The DTC project has been completed, and the RIPTA buses have been located where the Eddy Street Corridor Improvements/ Dudley Street Extension project was proposed to be constructed. The DTC and the bus layover area projects did not include infrastructure improvements to provide more capacity on the roadways; however, they were implemented to help RIPTA buses maintain reliable schedules which could result in increasing RIPTA ridership and reducing the number of passenger vehicles and congestion on the city roadways like Eddy Street.

Background Traffic Growth

Traffic growth on area roadways is a function of the expected land development, economic activity, and changes in demographics. Several methods can be used to estimate this growth. A procedure frequently employed is to estimate an annual percentage increase and apply that increase to study area traffic volumes. Another procedure is to identify estimated traffic generated by planned new major developments that would be expected to impact the project study area roadways. Both methods were utilized for this assessment. The following sections describe the procedures used to arrive at the No-Build traffic volume networks.

Regional Traffic Growth

As part of the 2025 Study, employee/staff and in- and out-patient growth projections were reviewed. The review suggested that little or no growth was expected at RIH. A comparison of the traffic count data collected in 2016 with the data collected in 2025 suggests that peak hour traffic entering/exiting the campus has remained relatively constant. The 2025 traffic volumes appear to have returned to pre-pandemic conditions.

Based on historic traffic data and future hospital projections, it is projected that future traffic volumes will remain relatively flat, with little to no growth. In order to provide a conservatively high estimate, an annual traffic growth rate of 0.25 percent was used in the analysis.

Site Specific Traffic Growth

Through discussions with the City of Providence Department of Planning & Development and Department of Traffic Engineering, there are two projects identified at this time near the study area that would have any impacts on traffic

operations. These projects include The Flynn residential development and the Achievement First Charter School.

The Flynn is a mixed-use development is a 178 affordable residential development with ground floor neighborhood amenities, offices, and community space located at 220 Blackstone Street. the development is currently under construction and is scheduled for completion in 2026. The development only includes 66 parking spaces and is not projected to generate a significant volume of traffic because The Flynn is located near the RI Hospital and Women and Infants Hospital, which are expected to employ a significant number of residents, and the development is also located near several RIPTA routes.

ITE Land Use Code (LUC) 221 – Multifamily Housing (Mid-Rise) close to rail transit was used to project peak hour traffic generated by the site. As shown in Table 3-1, The Flynn is projected to generate 56 trips (20 entering and 36 exiting) during the weekday morning peak and 52 trips (33 entering and 19 exiting) during the weekday afternoon peak.

A new charter school (Achievement First) is proposed on the southwest corner of the Blackstone Street/Gay Street intersection. The proposed school is projected to have up to 700 students. Many of the students will travel by buses; however, a significant number will travel by private vehicles to and from school. Based on ITE LUC 536 (Charter Elementary School) the new school is projected to generate 733 trips (381 entering and 352 exiting) during the weekday morning peak and 486 trips (238 entering and 248 exiting) during the weekday afternoon peak.

Table 3-1 No-Build - Site Specific Trip Generation

Time Period/ Movement	Multifamily Mid-Rise Residential[1]	Charter Elementary School[2]
Morning Peak[3]		
Enter	20	381
Exit	36	352
Total	56	733
Afternoon Peak[3]		
Enter	33	238
Exit	19	248
Total	52	486

Source: Trip Generation, 11th Edition; Institute of Transportation Engineers (ITE); Washington, D.C.

1. Based on ITE LUC 221 (Multifamily Mid-Rise) for 178 proposed residential units
2. Based on ITE LUC 536 (Charter Elementary School) for 700 students
3. Vehicles per hour (vph)

Having estimated site specific traffic generated by the new residential development and school, the next step in the study is to determine the trip distribution of projected traffic and assign these trips to the roadway network. The projected new trips associated with the proposed development were distributed on the study area roadways based on the following assumptions:

- 10% to/from the north on local streets
- 25% to/from the north on I-95
- 10% to/from the east on local roads
- 15% to/from the east on I-195
- 20% to/from the south on I-95
- 10% to/from the south on local streets
- 10% to/from the west on local streets

There are additional developments that were discussed with the Providence Department of Planning and Development; however, they are not expected to be completed and occupied in the next 5 years; therefore, VHB was directed and are not included in this study.

2030 No-Build Traffic Volumes

The 2030 No-Build peak hour traffic volumes were determined by applying the 0.25 percent annual growth rate for five years to the 2025 Existing peak hour traffic volumes and adding the site-specific traffic. The 2030 No-Build condition peak hour traffic volumes for the weekday morning and afternoon peak hours are shown in **Figures 3-1 and 3-2**. Note that the orientation of these figures has been rotated 90 degrees counterclockwise with north pointing to the left. See north arrow located in the bottom left corner of the figures.

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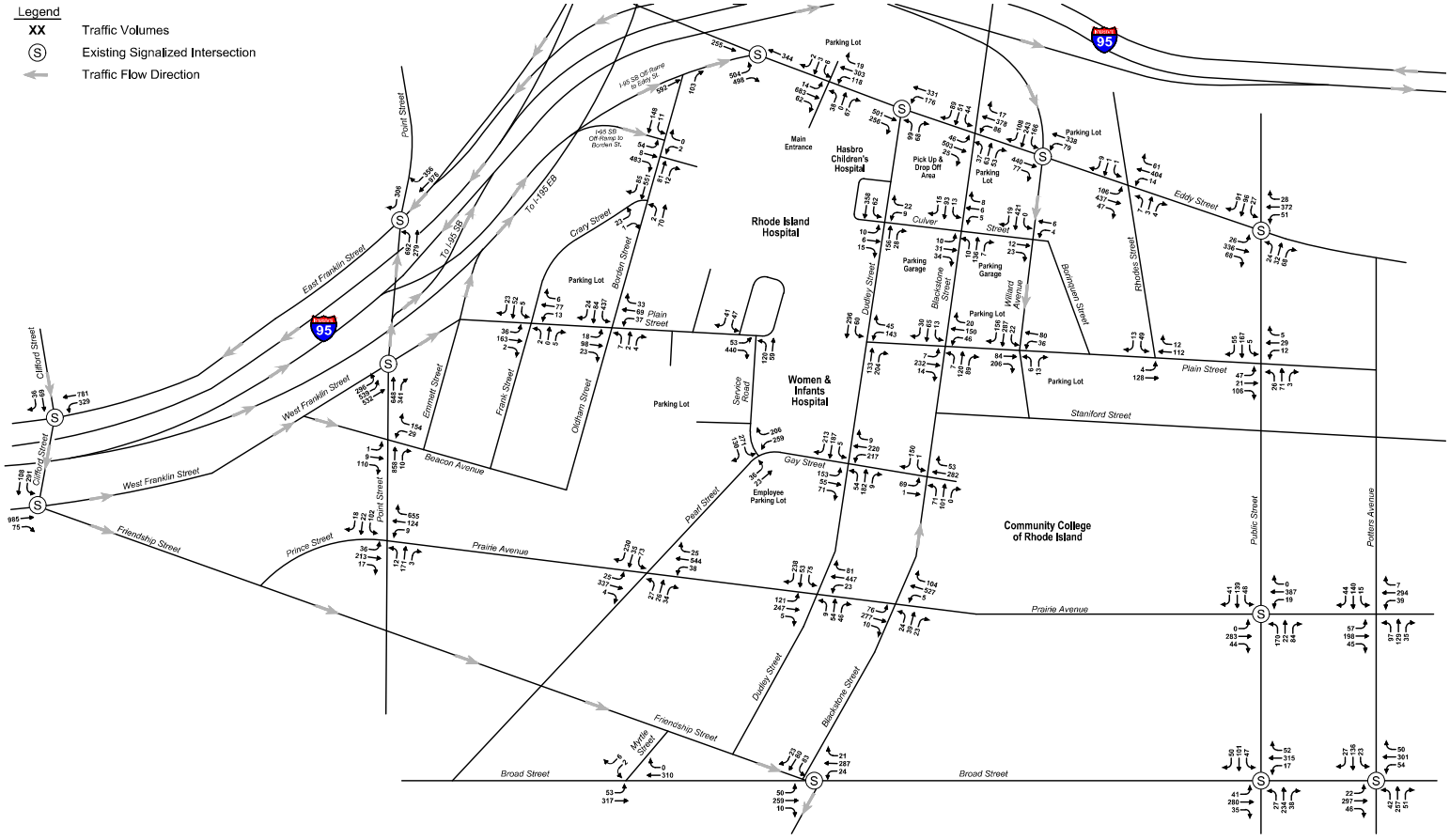

vhb

2030 No-Build Weekday Morning Peak Hour Traffic Volumes
Rhode Island Hospital
Providence, RI

Figure 3-1

Not to Scale

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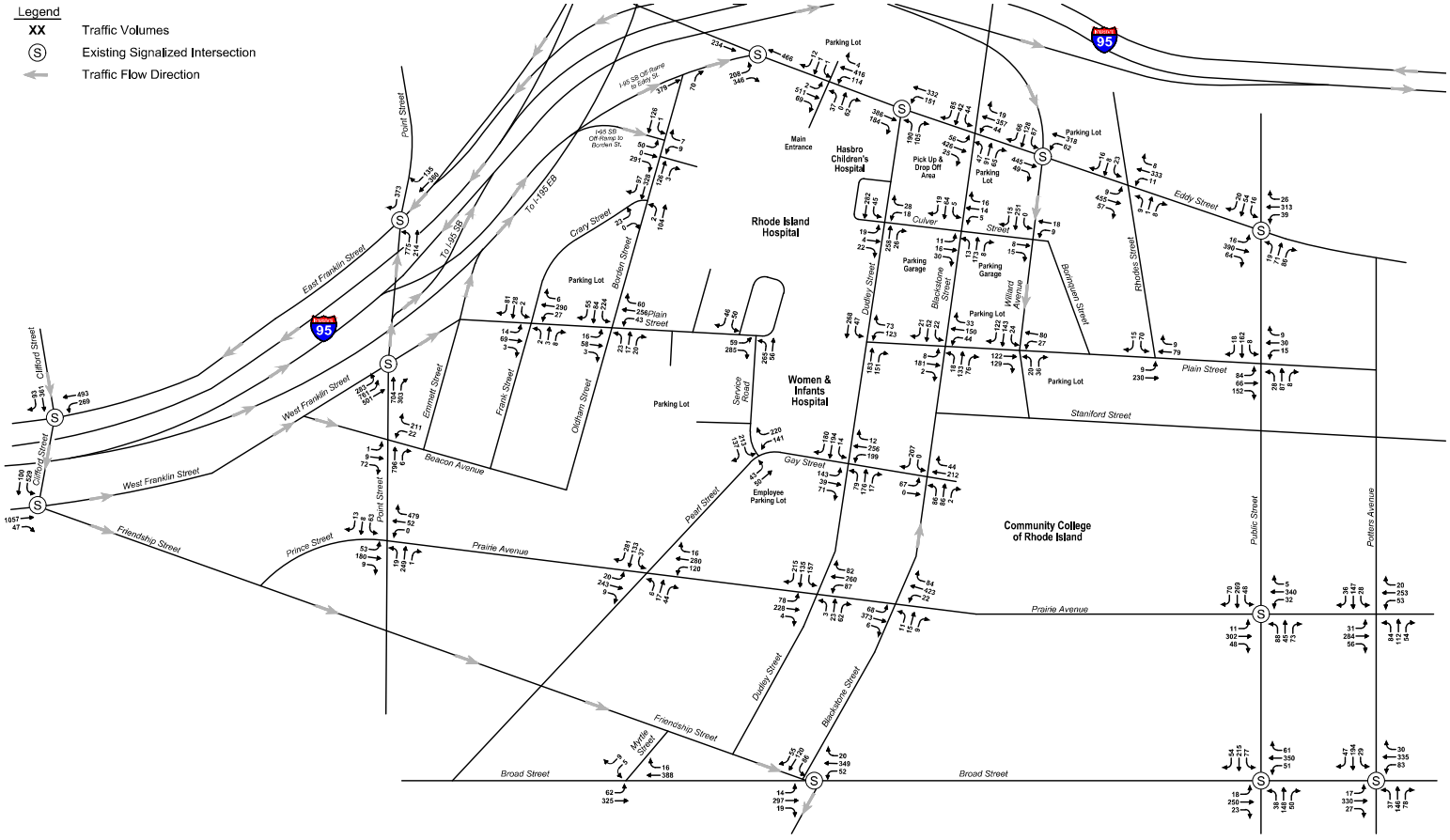

2030 No-Build Weekday Evening Peak Hour Traffic Volumes
Rhode Island Hospital
Providence, RI

Figure 3-2

Not to Scale

Proposed Hospital Projects

There are two projects that are proposed to be constructed in the next five (5) years that involve the redevelopment of the Rhode Island Hospital Mid-Campus. These projects include the construction of a new Concourse-Platform and a new parking garage. The following sections discusses these projects.

The Concourse-Platform Building

The Concourse-Platform Building will have three components: a two-level concourse, and a four-level platform building. The building will have connections to the Ambulatory Patient Center (APC), Main Building/Zecchino, and Davol/Bridge Inpatient buildings. Site improvements will be required and include a revised drop-off and parking area and a connection between the Plain Street/Service Road intersection and Dudley Street (the Plain Street Connector). The building and site improvements area will encompass approximately 4.25 acres of the Mid-Campus.

Construction of the new roadway segment between the Plain Street/Service Road intersection and Dudley Street (the Plain Street Connector) is included in the Concourse-Platform Building design and will improve access/egress to and from the new drop-off/pickup area.

New Plain Street Parking Garage

The redevelopment of the Mid-Campus will also include the construction of a new 700 space parking garage located on the northwest corner of the Plain Street/Service Road intersection. The garage is proposed to be located where the Plain Street surface parking lot is currently located and will result in a net increase of approximately 500 parking spaces.

Based on conversations with the Rhode Island Hospital, it is assumed that 450 spaces will be designated for employees and 250 spaces will be designated for patients/visitors. Since the garage will be replacing 200 existing visitor/patient spaces there will only be an increase of 50 visitor spaces and increase of 450 employee spaces (total of 500 spaces).

The peak periods when the garage fills and empties is typically viewed as a two-hour period in the morning when 60 to 80 percent of the garage enters and a two-hour period in the afternoon when 60 to 80 percent of the garage exits. In order to account for the more concentrated shift changes associated with a hospital it is assumed that 60 percent of the new garage spaces designated for employees (450 spaces) turn over (enter and exit) during the morning and afternoon peak hours. This will result in 270 new employee trips entering and 270 trips exiting during the morning and afternoon peak hours. It is assumed that the patient/visitor trips will be more spread out than the employee trips; therefore, it is assumed that 40 percent of the 50 new patient/visitor spaces turn over (enter and exit) during the morning and

afternoon peak hours. This will result in 20 new patient/visitor trips entering and 20 trips exiting during the morning and afternoon peak hours. The existing 200 patient/visitor parking spaces are already accounted for in the existing traffic counts.

Table 3-2 Build – Mid-Campus Trip Generation

Time Period/ Movement	Proposed Employee Trips[1]	Proposed Patient/Visitor Trips[2]	Total Trips
Morning Peak[3]			
Enter	270	20	290
Exit	270	20	290
Total	540	40	580
Afternoon Peak[3]			
Enter	270	20	290
Exit	270	20	290
Total	540	40	580

1. Based on 60% turnover (entering/exiting) with 450 designated employee parking spaces
2. Based on 40% turnover (entering/exiting) with 50 designated patient/visitor parking spaces
3. Vehicles per hour (vph)

Future Site Access

The main vehicular access to the Mid-Campus of Rhode Island Hospital is either via Plain Street from the North or the Service Road from Pearl Street to the West. There is an internal driveway that works its way down from the existing APC drop off south to the parking lot associated with the Multiphasic building. The internal driveway is for hospital operational access and is not meant for public through access to Dudley Street.

The Mid-Campus master planning and Concourse-Platform building project includes a new planned access throughway from the Plain Street/Service Road intersection to Dudley Street to assist in the traffic distribution anticipated with the new facility and future growth within the Mid-Campus.

A new arrival and drop off circle have been planned for the new Concourse-Platform and the existing APC buildings. A two-lane arrival, inclusive of a drop off lane and passenger drop area, and a through lane has been prepared. The new Concourse-Platform building drop-off and parking area has been designed to accommodate a fire truck.

Current Pedestrian access to the Mid-Campus and Concourse-Platform building include a walkway system along Plain Street from outlying parking areas (Plain Street Parking Lot, Parking Lot D-2 etc.), and also internal walks from the north between

the APC building and Physician Office Building, and from the south along the Multiphasic Building and Crawford/Allen garden. A new improved pedestrian walkway system has been proposed from the Plain Street parking lot to the Concourse-Platform building and along the new Plain Street Connector.

Redistribution of Traffic and Future Build Conditions

The proposed construction of the Mid-Campus Concourse-Platform, new parking garage, and Plain Street Connector roadway will result in a redistribution of traffic and a higher concentration of traffic to the Mid-Campus of the hospital. The 2030 Build condition peak hour traffic volumes for the weekday morning and afternoon peak hours are shown in **Figures 3-3 and 3-4**. Note that the orientation of these figures has been rotated 90 degrees counterclockwise with north pointing to the left. See north arrow located in the bottom left corner of the figures.

The new parking garage is proposed to be used by visitors/patients and employees; however, the exact number of each has not been determined. Some existing surface parking lots on the hospital campus may be eliminated due to the construction of the new Plain Street Parking Garage (500 parking spaces net increase). At this time, the location of surface parking lot(s) that will be eliminated and/or repurposed is not known; therefore, the 2030 Build condition peak hour traffic volumes do not show any reduction in traffic volumes or modifications to traffic to account for these changes. If existing surface parking spaces in the vicinity of the new parking garage are removed/repurposed, the impacts to traffic along Point Street, Prairie Street, and Beacon Avenue will not be as great as reflected in this analysis.

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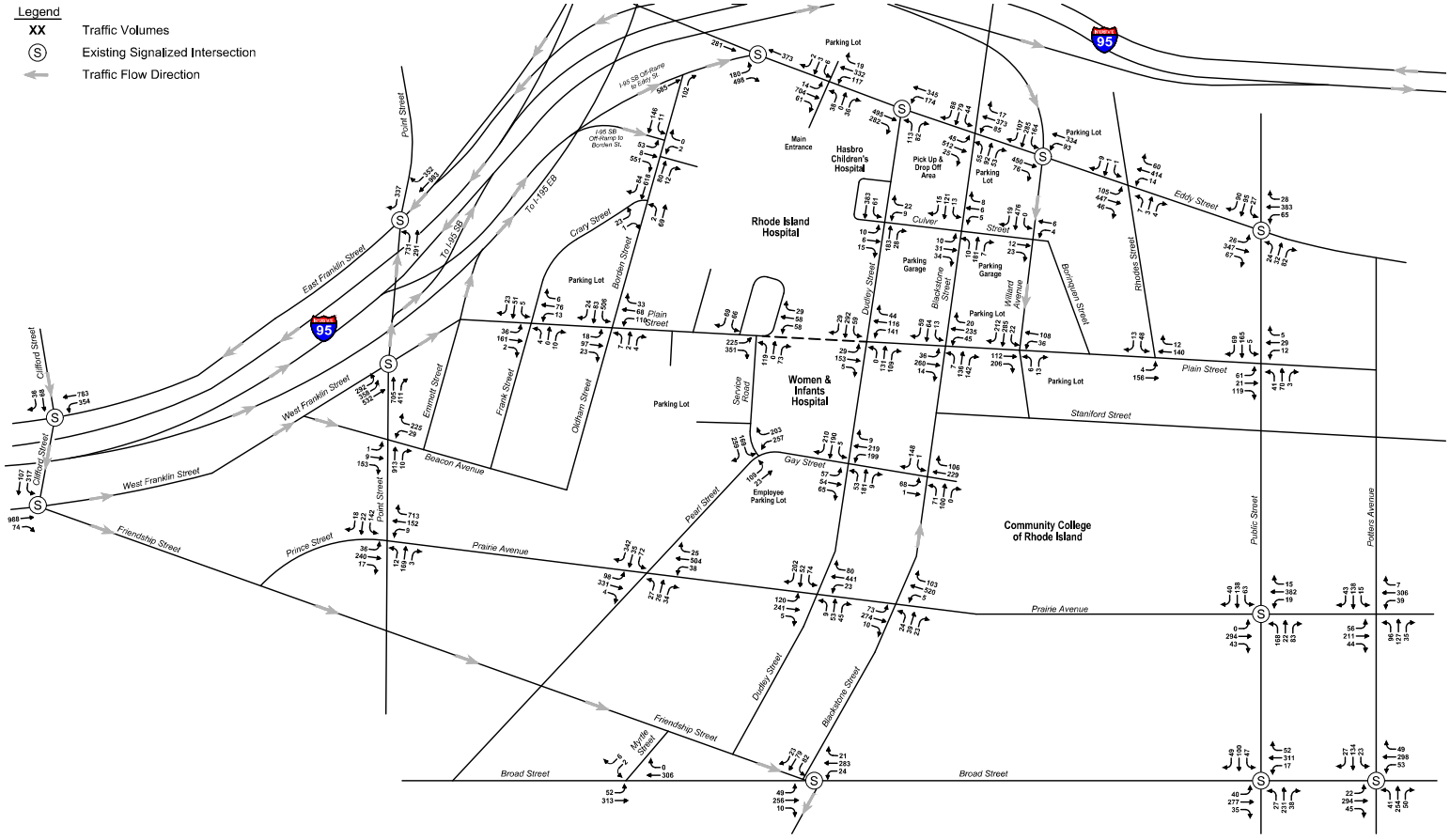

Not to Scale

2030 Build Weekday Morning Peak Hour Traffic Volumes
Rhode Island Hospital
Providence, RI

Figure 3-3

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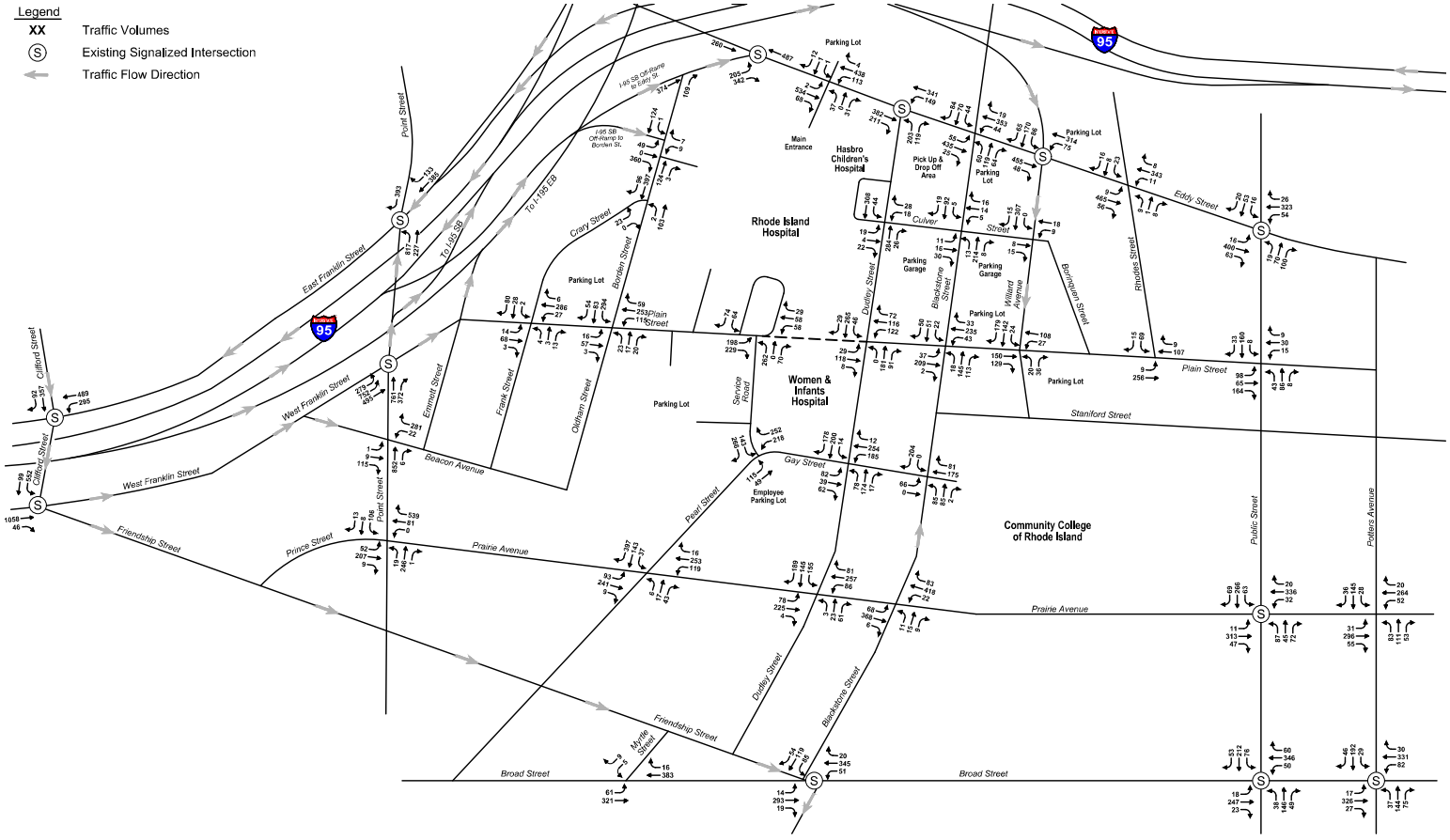


2030 Build Weekday Evening Peak Hour Traffic Volumes
Rhode Island Hospital
Providence, RI

Figure 3-4

2030 No-Build and 2030 Build Traffic Analysis

The results of the 2030 No-Build and 2030 Build conditions signalized and unsignalized intersection capacity analyses are presented in Table 3-3 and Table 3-4, respectively. It is important to note that this analysis is based on unconstrained downstream conditions (without the current backups from the I-195 Washington Bridge) and traffic conditions with the current backups are much worse.

Signalized Intersections

Capacity analyses were conducted at the signalized intersections included in this study for 2025 Conditions and for 2030 No-Build and Build Conditions. As discussed in the Observed Conditions section of this report, the traffic signal timings have been adjusted at the Point Street intersections with East and West Franklin Street and the Clifford Street/Friendship Street intersections with East and West Franklin Street, in an attempt to compensate for the Washington Bridge impacts; however, the backups at the on ramps and queues that extend through adjacent intersections often result in vehicles not being fully processed during green times. Existing traffic operations at these intersections with these downstream constraints are poor with long queues and delays. These existing traffic conditions cannot be accurately modeled using Synchro to show the poor operations. A more important assessment of the existing roadway infrastructure is an assessment of its ability to accommodate existing and future projected traffic volumes when the Washington Bridge downstream constraints are removed (after completion of the bridge replacement project).

The analysis of 2025 and 2030 No-Build and Build traffic volumes under unconstrained traffic conditions (without the impacts of the Washington Bridge project) were therefore analyzed to determine if the existing infrastructure (roadways and intersections) can accommodate existing and future traffic volumes when the downstream congestion does not exist. Traffic signal timings have also been optimized under 2025 and 2030 No-Build and Build conditions. Signalized intersection capacity analyses using 2025 and 2030 No-Build and Build traffic volumes without downstream constraints are presented in Table 3-3.

It is important to note that the capacity analysis software analyzes the operation at the intersections only. Interruptions to traffic flow caused by pedestrians, bus blockages, delivery trucks, parking maneuvers, double parked vehicles, weaving/lane changes, and extended vehicle queues from adjacent intersections can occur at signalized intersections. These interruptions can block traffic from getting to and/or through the signalized intersections resulting in congestion. Blockages of traffic on approaches or departures of a signalized intersection will degrade the overall operation of the intersection and can result in severe congestion if the volume of traffic at the intersection is at or near capacity.

Due to the fact that the capacity analysis does not totally take into account disruptions to traffic flow between intersections, the reported delay times and resulting levels of service could be underestimated. In this case, the capacity analysis software is a tool used to identify problem areas and to give a comparison between existing and future conditions. Due to the limitations of the Synchro analysis, it is recommended that future analysis of the intersections along the East Franklin Street and West Franklin Street (at Friendship Street/Clifford Street and Point Street be modeled using VISSIM.

As shown in Table 3-3, the results of the capacity analyses indicate that under 2025 Conditions all signalized intersections within the study area operate at an overall calculated levels of service (LOS) C or better during the weekday morning and weekday afternoon peak hour periods except for two locations. The Eddy Street/Dudley Street intersection operates at a calculated LOS D and the Point Street/East Franklin Street intersection operates at LOS E during the weekday morning peak hour period. The calculated queues on some of the intersections' approaches often backup into and beyond adjacent intersections. This is consistent with the field observations discussed in previous studies. For example, the analysis as well as field observations revealed lengthy queues and long delays on all approaches to the intersections along Eddy Street during the afternoon peak period. Similarly, at the intersection of Point Street/West Franklin Street, the queues on Point Street extend beyond Beacon Avenue during the weekday afternoon peak hour. The Point Street westbound approach at East Franklin Street experiences long delays and queues during the afternoon peak hour. It is important to note again that this analysis is based on unconstrained downstream conditions (without the current backups from the I-195 Washington Bridge). Traffic conditions with the current backups are much worse.

As shown in Table 3-3, the differences in calculated delays at the Point Street signalized intersections between 2025 Existing and 2030 No-Build conditions are significant. Under future 2030 No-Build conditions the Point Street intersections with West and East Franklin Street are projected to operate at or over capacity with longer queues that will spill back into adjacent intersections. The impacts of the increased traffic generated by the construction of the Achievement First charter school is projected to result in longer delays and queues at these intersections. The other intersections are projected to operate comparable to existing conditions (LOS C or better) with some increases in delays on some intersection approaches.

As discussed previously under the 2025 Conditions, the Point Street/East Franklin Street intersection operates at LOS E during the weekday morning peak hour period under 2025 Conditions. The queues and delays on the eastbound and westbound approaches to the intersection are projected to increase under 2030 No-Build conditions. The eastbound queues are projected to spill back further into the Point Street/ West Franklin Street intersection resulting in additional delays and

congestion. These congested conditions are also projected during the afternoon peak period under 2030 No-Build Conditions.

The calculated queues at some of the other study area intersections' approaches often backup into and beyond adjacent intersections under 2025 Conditions and are projected to increase under 2030 No-Build Conditions. The lengthy queues and long delays on approaches to the intersections along Eddy Street and Point Street, the queues during peak periods on Point Street will only be further exacerbated under 2030 Build Conditions.

As the Achievement First charter school project is further designed, it is recommended that the impacts of the drop-off and pickup operations be further evaluated and modified, to minimize impacts on the surrounding roadway network.

Table 3-3 2030 No-Build and Build Conditions Signalized Intersection Analysis

		2025 Conditions			2030 No-Build			2030 Build		
Location	**Peak Hour**	**V/C[1]**	**Delay[2]**	**LOS[3]**	**V/C[1]**	**Delay[2]**	**LOS[3]**	**V/C[1]**	**Delay[2]**	**LOS[3]**
Eddy Street/ Borden St/I-95 Ramp	Weekday AM	0.71	18	B	0.65	15	B	0.74	20	B
	Weekday PM	0.64	14	B	0.72	19	B	0.68	16	B
Eddy Street / Dudley Street	Weekday AM	0.67	39	D	0.76	31	C	0.68	28	C
	Weekday PM	0.72	28	C	0.67	28	C	0.73	28	C
Eddy Street/ Willard Ave/I-195 Ramp	Weekday AM	0.63	14	B	0.60	12	B	0.75	23	C
	Weekday PM	0.54	10	A	0.71	19	B	0.58	13	B
Eddy Street / Public Street	Weekday AM	0.46	10	B	0.43	9	A	0.51	10	B
	Weekday PM	0.41	9	A	0.48	10	B	0.48	9	A
Broad Street / Friendship Street	Weekday AM	0.46	12	B	0.55	15	B	0.43	14	B
	Weekday PM	0.54	16	B	0.46	13	B	0.58	17	B
Broad Street / Public Street	Weekday AM	0.51	14	B	0.64	15	B	0.50	18	B
	Weekday PM	0.60	14	B	0.53	15	B	0.69	21	B
Broad Street / Potters Avenue	Weekday AM	0.50	13	B	0.50	12	B	0.49	18	B
	Weekday PM	0.48	12	B	0.51	13	B	0.48	17	B
Prairie Avenue / Public Street	Weekday AM	0.55	9	A	0.60	10	A	0.61	10	A
	Weekday PM	0.56	9	A	0.60	10	A	0.69	12	B
Point Street / W. Franklin Street	Weekday AM	0.82	28	C	0.94	34	C	1.01	41	D
	Weekday PM	0.85	26	C	0.97	35	C	1.02	47	D
Point Street / E. Franklin Street	Weekday AM	0.96	70	E	0.98	48	D	1.13	105	F
	Weekday PM	0.88	33	C	1.07	83	F	1.11	86	F
Clifford Street / W. Franklin Street	Weekday AM	0.48	17	B	0.64	17	B	0.53	17	B
	Weekday PM	0.62	17	B	0.52	17	B	0.63	18	B
Clifford Street / E. Franklin Street	Weekday AM	0.35	6	A	0.53	18	B	0.36	7	A
	Weekday PM	0.51	18	B	0.36	7	A	0.57	18	B

Source: Synchro 11 software using the procedures in the 2000 Highway Capacity Manual. Compiled by VHB.

1 V/C = volume to capacity ratio
2 Delay = Vehicle delay expressed in seconds per vehicle (See note below)
3 LOS = Level of service

Unsignalized Intersections

Capacity analyses were also conducted at the unsignalized intersections included in this study area for 2025 Conditions and for 2030 No-Build and Build Conditions. A summary of the unsignalized intersection capacity analysis results under existing conditions is presented in Table 3-4.

As stated in the signalized intersections analysis section, the capacity analysis software analyzes the operation at the intersections only and does not take into account disruptions to traffic flow between intersections. As a result, the reported delay times and resulting levels of service can be underestimated. In this case, the capacity analysis software is a tool used to identify problem areas and to give a comparison between existing and future conditions.

During the weekday morning peak hour period under 2025 Conditions, all of the intersections operate at a calculated LOS D or better except for the Eddy Street/RIH Main Entrance and Dudley Street/Prairie Avenue intersections which operate at LOS E. During the weekday afternoon peak hour period, all of the intersections operate at a calculated LOS D or better except for the Blackstone Street/Eddy Street intersection which operates at LOS E. It is important to note that this analysis is based on unconstrained downstream conditions (without the current backups from the I-195 Washington Bridge). Traffic conditions in the Point Street area with the current backups are much worse. In addition to the intersections listed above, the following intersections also experience delays and congestion during peak periods under 2025 Conditions:

- Point Street at Prairie Avenue/Prince Street: The northbound approach to the intersection experiences long queues and delays during peak periods. These delays are a result of the heavy northbound right turn volumes during the afternoon peak periods and congestion/backups from the poor operations of the Point Street signalized intersections with West and East Franklin Street.
- Point Street at Beacon Avenue: The northbound approach to the intersection experiences long queues and delays during peak periods. These delays are a result of the heavy right turn volumes during the afternoon peak periods and congestion/backups from the poor operations of the Point Street signalized intersections with West and East Franklin Street.
- Pearl Street at Prairie Avenue: The westbound and northbound approaches experience and long queues and delays during peak periods. The shift changes at the hospitals and arrival/dismissal times of the schools are contributing factors of this congestion.
- Service Road at Gay Street/Pearl Street: The Service Road westbound approach experiences poor operations during the afternoon peak period.

these delays are due to the shift change at the hospitals and poor geometry and delineation of the intersection.

As shown in Table 3-4, the differences in calculated delays at several unsignalized intersections between 2025 Existing and 2030 No-Build conditions are significant. The impacts of the increased traffic generated by the construction of the Achievement First charter school is projected to result in longer delays and queues at intersections along Point Street, Pearl Street, Dudley Street, and Blackstone Street. The following is a discussion of the projected traffic impacts under 2030 No-Build Conditions:

- Point Street at Prairie Avenue/Prince Street: The northbound approach to the intersection is projected to experience longer queues and delays during peak periods resulting from the increase in traffic under 2030 No-Build Conditions. The projected traffic added to the already heavy right turn volumes during the peak periods and congestion and backups from the poor operations of the Point Street signalized intersections with West and East Franklin Street will result in increased congestion.
- Point Street at Beacon Street: The northbound approach to the intersection is projected to experiences longer queues and delays under 2030 No-Build Conditions during peak periods resulting from the increase in traffic under 2030 No-Build Conditions. The projected traffic added to the already heavy Point Street eastbound volumes during the peak periods and congestion and backups from the poor operations of the Point Street signalized intersections with West and East Franklin Street will result in increased congestion.
- Pearl Street at Prairie Avenue: The westbound and northbound approaches are projected to experience longer queues and delays during peak periods due to the increase in traffic generated under 2030 No-Build Conditions.
- Service Road at Gay Street/Pearl Street: The existing poor operations on the Service Road westbound approach are projected to be worse due to the increased traffic projected under 2030 No-Build Conditions.

The following intersections are also expected to have increases in delays and queues during peak periods as a result of the projected increase in traffic under 2030 No-Build Conditions:

- Dudley Street at Prairie Avenue
- Dudley Street at Gay Street
- Blackstone Street at Prairie Street
- Blackstone Street at Eddy Street
- Prairie Avenue at Potters Avenue

The delays and queues at study area intersections will only be further exacerbated under 2030 Build Conditions.

Table 3-4 2030 No-Build and Build Conditions Unsignalized Intersection Analysis

		2025 Conditions				2030 No-Build				2030 Build			
Location	**Peak Hour**	**Critical Movement[1]**	**Demand[2]**	**Delay[3]**	**LOS[4]**	**Critical Movement**	**Demand**	**Delay**	**LOS**	**Critical Movement**	**Demand**	**Delay**	**LOS**
Point Street/ Prairie Ave/ Prince St	Weekday AM	NB LTR	241	13	B	NB LTR	829	>120	F	NB LTR	920	>120	F
	Weekday PM	NB LTR	250	12	B	NB LTR	632	54	F	NB LTR	652	98	F
Point Street/ Beacon Ave/Plain St	Weekday AM	NB LTR	220	23	C	NB LTR	223	65	F	NB LTR	309	>120	F
	Weekday PM	NB LTR	253	24	C	NB LTR	256	48	F	NB LTR	370	>120	F
I-95 South Ramp/ Borden Street (East)	Weekday AM	EB R	131	15	C	EB R	46	13	B	EB LR	46	13	B
	Weekday PM	EB R	223	15	C	EB R	155	13	B	EB LR	156	12	B
Crary Street/ Borden Street	Weekday AM	SB LR	32	15	C	SB LR	32	17	C	SB LR	32	19	C
	Weekday PM	SB LR	32	12	B	SB LR	32	13	B	SB LR	31	15	C
Crary Street/Frank Street/Plain Street	Weekday AM	NB LTR	120	8	A	WB LTR	139	9	A	WB LTR	137	9	A
	Weekday PM	NB LTR	375	12	B	NB LTR	380	12	B	NB LTR	404	13	B
Plain Street/ Borden St/Beacon Ave	Weekday AM	WB LTR	506	19	C	WB LTR	627	34	D	WB LTR	705	76	F
	Weekday PM	NB LTR	404	14	B	NB LTR	492	26	D	NB LTR	534	42	E
Eddy Street/ RIH Main Entrance	Weekday AM	EB LTR	128	44	E	EB LTR	130	48	E	EB LTR	91	50	E
	Weekday PM	EB LTR	119	30	D	EB LTR	121	32	D	EB LTR	84	45	E
Dudley Street/ Culver Street	Weekday AM	SB LTR	40	16	C	SB LTR	40	17	C	SB LTR	40	18	C
	Weekday PM	SB LTR	57	17	C	NB LTR	56	18	C	NB LTR	77	19	C
Dudley Street/ Plain Street	Weekday AM	NB LR	203	23	C	NB LR	212	32	D	NB LTR	333	>120	F
	Weekday PM	NB LR	220	18	C	NB LR	231	21	C	NB LTR	344	>120	F
Dudley Street/ Gay Street	Weekday AM	WB LTR	450	17	C	NB LTR	495	111	F	WB LTR	474	65	F
	Weekday PM	WB LTR	379	22	C	NB LTR	525	>120	F	NB LTR	501	86	F
Service Road/ Gay Street/Pearl Street	Weekday AM	WB LR	346	18	C	WB LR	466	51	F	WB LR	498	98	F
	Weekday PM	WB LR	319	20	C	WB LR	402	44	E	WB LR	475	79	F
Dudley Street/ Prairie Avenue	Weekday AM	NB LTR	572	40	E	NB LTR	580	>120	F	NB LTR	572	97	F
	Weekday PM	NB LTR	466	32	D	WB LTR	552	95	F	WB LTR	531	82	F
Prairie Avenue/ Pearl Street	Weekday AM	NB LTR	502	33	D	NB LTR	682	>120	F	NB LTR	637	>120	F
	Weekday PM	NB LTR	368	17	C	NB LTR	501	55	F	WB LTR	812	>120	F
Blackstone Street/ Eddy Street	Weekday AM	EB LTR	111	32	D	EB LTR	225	>120	F	EB LTR	294	>120	F
	Weekday PM	EB LTR	192	42	E	EB LTR	263	>120	F	EB LTR	357	>120	F
Blackstone Street/ Culver Street	Weekday AM	EB LTR	119	8	A	EB LTR	246	9	A	EB LTR	319	10	B
	Weekday PM	EB LTR	197	9	A	EB LTR	273	10	A	EB LTR	379	11	B
Blackstone Street/ Plain Street	Weekday AM	NB LTR	228	10	A	SB LTR	288	13	B	SB LTR	352	21	C
	Weekday PM	NB LTR	252	10	B	SB LTR	293	14	B	NB LTR	338	17	C

		2025 Conditions				2030 No-Build				2030 Build			
Location	**Peak Hour**	**Critical Movement[1]**	**Demand[2]**	**Delay[3]**	**LOS[4]**	**Critical Movement**	**Demand**	**Delay**	**LOS**	**Critical Movement**	**Demand**	**Delay**	**LOS**
Blackstone Street/ Gay Street	Weekday AM	EB LTR	124	8	A	NB TR	365	13	B	NB LTR	364	13	B
	Weekday PM	EB LTR	152	9	A	NB TR	526	>120	F	NB LTR	278	11	B
Blackstone Street/ Prairie Avenue	Weekday AM	EB LTR	112	28	D	EB LTR	112	37	E	EB LTR	112	35	E
	Weekday PM	EB LTR	44	24	C	EB LTR	44	30	D	EB LTR	45	25	D
Willard Avenue/ Culver Street/ Borinquen Street	Weekday AM	NB LT	20	12	B	NB LT	20	14	B	NB LTR	20	14	B
	Weekday PM	NB LT	39	11	B	NB LT	39	12	B	NB LTR	54	13	B
Willard Avenue/ Plain Street	Weekday AM	WB LTR	346	10	B	WB LTR	528	23	C	WB LTR	590	37	E
	Weekday PM	WB LTR	216	9	A	WB LTR	336	12	B	WB LTR	391	15	C
Eddy Street/ Rhodes Street	Weekday AM	EB LTR	24	25	C	EB LTR	24	26	D	EB LTR	24	26	D
	Weekday PM	EB LTR	32	18	C	WB LTR	32	19	C	EB LTR	86	20	C
Plain Street/ Rhodes Street	Weekday AM	WB LR	67	10	B	WB LR	68	11	B	WB LR	67	11	B
	Weekday PM	WB LR	117	12	B	WB LR	118	13	B	WB LR	94	13	B
Public Street/ Plain Street	Weekday AM	WB LTR	280	10	B	WB LTR	284	11	B	WB LTR	298	11	B
	Weekday PM	WB LTR	248	12	B	SB LTR	445	16	C	SB LTR	424	15	C
Broad Street/ Myrtle Street	Weekday AM	NW LR	16	12	B	NWB L	16	12	B	NWB L	16	12	B
	Weekday PM	NW LR	20	14	B	NWB L	20	14	B	NWB L	28	15	C
Prairie Avenue/ Potters Avenue	Weekday AM	NB LTR	373	27	D	NB LTR	446	39	E	NB LTR	414	42	E
	Weekday PM	SB LTR	426	31	D	SB LTR	400	37	E	SB LTR	416	55	F
Lockwood Street/ Plain Street	Weekday AM	EB LR	158	11	B	EB LR	159	12	B	EB LR	166	19	C
	Weekday PM	EB LR	422	15	C	EB LR	428	17	C	EB LR	316	26	D
Borden Street at Main Entrance	Weekday AM	NB LR	389	12	B	NB LTR	288	11	B	NB LR	284	11	B
	Weekday PM	NB LR	216	11	B	NB LTR	158	11	B	NB LR	218	11	B
Plain Street at North Entrance	Weekday AM	WB LR	128	14	B	WB LR	131	15	C	WB LR	190	21	C
	Weekday PM	WB LR	100	16	C	WB LR	102	17	C	WB LR	194	23	C

Source: Synchro 9 software using the procedures in the 2000 Highway Capacity Manual. Compiled by VHB.

1 L= Left-turn movement, T= Through movement, R= Right-turn movement

2 Demand = Demand of critical movement, expressed in vehicles per hour

3 Delay = Vehicle delay expressed in seconds per vehicle (See note below)

4 LOS = Level of service

5 Although there are no visible stop signs, it was assumed that the Service Road westbound approach operates under stop control

Note: Interruptions to traffic flow caused by pedestrians, bus blockages, delivery vehicles, and parking maneuvers, were observed on the study area roadways between intersections. These interruptions caused congestion along these roadways during the peak hour periods. As a result, the observed delay times at some intersections exceeded the calculated values.

Projected Parking Conditions

Over the next five years, the changes within the RIH parking system will relate more to accommodating displacement of existing parking during construction of the proposed new parking garage than to accommodating additional parking demand associated with construction of proposed projects. During construction of the new parking garage located on the northwest corner of the Plain Street/Service Road intersection (on the Plain Field Lot) it is projected that at approximately 200 surface parking spaces designated for patients/visitors in the Plain Street Lot will be eliminated. A separate study is being prepared to address mitigation measures; however, one solution that could be considered involves expanding the Plain Street Lot to the west into the Employee lot (Lot E-7) to accommodate patients/visitors and temporarily relocating employees to the Coro Garage. Based on Parking Occupancy counts performed in February 2025 there were at least 200 spaces available in the Coro Garage. There are likely even more available spaces because the gates were open during the observations, and anyone was allowed to park in the garage without paying.

After the 700-space parking garage is constructed, there will be a net increase of 500 parking spaces. There will be an excess of parking, and the hospital can reassign users of the parking areas to eliminate the overparking that occurs in some lots under existing conditions. The hospital can then assess where existing surface parking lots can be eliminated and/or repurposed.

Future Pedestrian and Transit Conditions

The proposed Rhode Island Mid-Campus Concourse project and proposed new Plain Street parking garage will include the construction of a new pedestrian skybridge which will help mitigate the impacts of the increased pedestrian activity in the area. The hospital is also working with the Rhode Island Public Transit Authority (RIPTA) to modify bus routes, bus stops/shelters, and bus schedules to meet the needs of the community and the hospital.

4

Improvement Measures

This chapter identifies potential measures on the roadway network serving the RIH campus area with the goal of improving traffic operations under 2030 projected traffic conditions.

Roadway Infrastructure Improvements

Potential roadway infrastructure improvements are described in the following sections. Some versions of the improvements have been presented in the 2016 and 2021 Studies and included a preliminary assessment of the projected operations under "2030 Build with improvement measures". Further analysis of proposed improvements will need to be further assessed as the design/permitting process of proposed developments in the project area are advanced including The Flynn, Achievement First charter school, and the hospital projects.

Eddy Street Corridor

As depicted in Figure 2-5, the Eddy Street corridor represents one of the congestion "hot spots" within the RIH campus area that requires further review and identification of potential capacity enhancement measures. There are times when congestion from the Eddy Street/Thurbers Avenue intersection extends past the RIH

campus area (especially when there is an "incident" on Interstate Route 95). Some of the potential measures to improve overall traffic operations in the area are described below. The proposed Mid-Campus Concourse-Platform, new parking garage, and Plain Street Connector roadway will redistribute traffic resulting in a higher concentration of traffic to the Mid-Campus of the hospital and some reduction in traffic along Eddy Street.

The 2021 study noted that there were remaining elements of the RIDOT I-195 relocation (IWAY) project that included corridor improvements along Eddy Street. Also stated in the Future Conditions chapter, there were two projects that were identified in the 2021 Study that would impact traffic conditions along the Eddy Street Corridor (the Eddy Street Corridor Improvements/Dudley Street Extension project and the Downtown Transit Corridor project). The DTC project has been completed, and the RIPTA buses have been located where the Eddy Street Corridor Improvements/Dudley Street Extension project was proposed to be constructed. The Dudley Street Extension was proposed to alleviate congestion on Eddy Street by providing an alternate route to the hospital from the south. The extension of Dudley Street to the east of Eddy Street to connect with Blackstone Street (the Dudley Street Connector). This connection would provide an alternate route to hospital traffic that travels north on I-95 and takes the Thurbers Avenue exit. If the road extension were completed, signage improvements could be implemented at the Thurbers Avenue exit to promote the use of Allens Avenue over Eddy Street for traffic destined to the RIH campus area. The design of this project was not advanced and the location where the Dudley Street Extension was proposed has been modified to accommodate layover area for RIPTA buses. There are also conceptual plans being developed to consider modifying the Thurbers Avenue interchange to allow vehicles to enter I-95 North and South from Allens Avenue at the Thurbers Avenue interchange. With the Dudley Street Extension, this would further alleviate congestion on Eddy Street by allowing vehicles exiting the hospital to also travel along Allens Avenue to the Thurbers Avenue interchange.

It should be noted that although the DTC and the bus layover area projects did not include infrastructure improvements to provide more capacity on the roadways for passenger cars, they were implemented to help RIPTA buses maintain reliable schedules which could result in increasing RIPTA ridership and reducing the number of passenger vehicles and congestion on city roadways like Eddy Street

In addition to the Dudley Street Connector, previous concept plans for the Eddy Street Corridor have considered restriping and minor widening to provide the following improvements:

› Eddy Street northbound left-turn lane onto Willard Avenue

- Two northbound through lanes on Eddy Street between Willard Avenue and Blackstone Street
- Eddy Street northbound left-turn lane onto Dudley Street
- Extending the Eddy Street southbound right-turn lane onto Dudley Street
- Eddy Street northbound left-turn lane into the RI Hospital Main Entrance
- Two southbound lanes on Eddy Street between Borden Street and the RI Hospital Main Entrance and increase the length of the bus bay
- Restriping the Borden Street eastbound approach to Eddy Street to provide a shared left-turn/right-turn lane and a right-turn lane

Other modifications that were considered include the following:

- Converting Blackstone Street to one-way eastbound from Culver Street to Eddy Street and restriping it as two eastbound lanes
- Blackstone Street and the proposed new Dudley Street Connector were considered to be two way on the east side of Eddy Street under one alternative and one way on a different alternative

In addition to the specific improvements identified for locations along the corridor, it is recommended that, when exploring future development potential along Eddy Street near RIH, uses that generate high traffic volumes not be considered on the east side of Eddy Street as they could further exacerbate the existing congestion on the roadway. It is also recommended that access management principles be applied to Eddy Street in the area of RIH to limit the number of curb cuts and related vehicle conflicts along this stretch of roadway.

Eddy Street/Blackstone Street

The 2021 study noted that consideration should be given to converting Blackstone Street to one-way eastbound between Culver Street and Eddy Street. This modification is projected to reduce the level of vehicular delays at the intersection of Eddy Street/Blackstone Street and to optimize the access and egress to the Willard Avenue parking garage with Willard Avenue already being one-way westbound. The Blackstone Street eastbound approach to Eddy Street could be restriped as a shared left-turn/through lane and an exclusive right-turn lane.

The conversion of Blackstone Street to one-way and restriping the eastbound approach to allow for a shared left-turn/through lane and an exclusive right turn lane is projected to reduce the delays during both the weekday morning and afternoon peak hours. Although the eastbound shared left-turn/through lane is projected to be congested, the traffic signals and improvements along Eddy Street

would likely create gaps in the traffic stream to allow traffic from Blackstone Street to turn onto Eddy Street.

If Blackstone Street is converted to one-way elimination of on-street parking along Blackstone Street, between Culver Street and Plain Street, should be considered; however, it may be desirable to maintain parking to maintain a traffic calming effect. It is also recommended that on-street parking be eliminated along Culver Street, between Blackstone Street and Borinquen Street, be eliminated to allow for improved traffic flow.

Eddy Street/Dudley Street

To reduce vehicular delays and congestion at the Eddy Street/Dudley Street intersection, the existing southbound right turn lane could be extended all the way to Borden Street by widening Eddy Street. This measure has the potential to increase vehicular storage capacity on that section of the roadway and also reduce the durations for which the RIH main entry driveway is blocked by vehicular queues.

It is projected that the Eddy Street southbound through vehicular queues would be reduced, which in turn allows traffic exiting the RIH main driveway and traffic on Borden Street to enter the Eddy Street traffic stream more easily. The cross section in this area may need to be further widened to accommodate bikes.

Eddy Street/Zecchino Pavilion (RIH main building) Driveway

The Zecchino Pavilion driveway is located between Dudley Street and Borden Street. Field observations and feedback from RIH indicated that vehicles exiting the driveway currently face delays during certain time periods, primarily due to congestion related to vehicular queues on Eddy Street. To reduce the delays for vehicles exiting the driveway, it is recommended that the driveway exit onto Eddy Street be restricted to right turns only for all vehicles except RIPTA buses and CORO shuttles. The restricted left-turn movements could be replaced at the Borden Street driveway that provides access to the Borden Street/Eddy Street traffic signal where left turns can be accommodated. In addition, a new northbound left-turn lane could be constructed on Eddy Street by widening the roadway so that vehicles waiting to turn left into the driveway do not impede through vehicular traffic on the roadway. By restricting left-turns out of the Zecchino Pavilion driveway, the delays for traffic exiting the driveway are projected to be greatly reduced.

It should be noted that driver compliance with turn restrictions based solely on signage is generally low and therefore, the effectiveness of this measure, especially during the initial months of implementation, could be limited. But, even if some of the left turning vehicles comply and use the Borden Street driveway rather than the

driveway onto Eddy Street, operations at the Eddy Street driveway can be expected to improve over existing conditions. Additionally, the signage will help promote the fact that drivers have the choice to use an alternate driveway that provides access to a signalized intersection for left turns. Internal signage in the parking lot can also be implemented to guide and encourage vehicles to use the signalized intersection for left turns onto Eddy Street northbound.

Point Street Corridor

Another congestion "hot spot" identified with significant impacts to RIH related traffic operations is the Point Street corridor. This area has been discussed in the 2016 and 2021 traffic studies and several potential measures to improve overall traffic operations have been suggested.

Traffic volumes and traffic operations have been significantly impacted by the closure of the Washington Bridge (I-195) westbound bridge and rerouting of I-195 traffic onto the eastbound bridge. There are currently many unprocessed vehicles on local streets and at intersections during peak hour conditions, including Point Street, because traffic is backed up at on-ramps and queues extend through adjacent intersections. The traffic signal timings have been adjusted to compensate for the Washington Bridge impacts; however, the backups at the on ramps and queues that extend through adjacent intersections often result in vehicles not being fully processed during green times. In order to assess the existing infrastructure's ability to accommodate existing traffic volumes without the backups caused by the Washington Bridge project, the traffic signal timings have been optimized under 2025 and 2030 conditions.

2030 No-Build Conditions are projected to increase traffic along the Point Street corridor and increase delays and queues. The proposed Mid-Campus Concourse-Platform and new parking garage will change traffic patterns and further increase traffic volumes. If existing surface parking lots in the area are removed/repurposed the increase in traffic volumes along Point Street could be minimized.

Potential measures to improve overall traffic operations in the area are described below. As previously discussed, it is recommended that future analysis of the intersections along the East Franklin Street and West Franklin Street (at Friendship Street/Clifford Street and Point Street) be modeled using VISSIM, due to the limitations of the Synchro analysis.

Cost implications of the solutions, as well as right-of-way impacts and construction feasibility, will need to be further evaluated, before deciding on the appropriate solution(s) for short- and long-term implementation. VHB has performed a preliminary review of the options to understand the relative benefits that can be

realized with each option. After preferred improvement options are selected, a more detailed analysis can be performed to quantify the operational benefits associated with the solution.

Point Street/Prairie Avenue/Prince Street

With the existing geometry and traffic control at the intersection of Point Street and Prairie Avenue/Prince Street, the Prairie Avenue northbound movement currently operates, and is projected to continue to operate, poorly during the peak periods with long delays and vehicle queues. 2030 No-Build Conditions are projected to increase traffic at this intersection and increase the delays and queues. The proposed RI Hospital projects (Mid-Campus Concourse-Platform and new parking garage) will change traffic patterns and could also increase traffic volumes and delays at this intersection.

In order to accommodate the existing and projected traffic, it is recommended that a traffic signal be installed at this intersection. A signal warrant analysis would be necessary to justify the installation of a traffic signal at this location. It is also recommended that the Point Street eastbound departure from the intersection be restriped as three lanes and one-way eastbound (away from the intersection). This three-lane eastbound (one-way) would extend from Prairie Street to the West Franklin Street existing traffic signal and continue to the East Franklin Street signalized intersection.

It is also recommended that widening the Prairie Avenue northbound approach be considered to provide two lanes (a shared left-turn/through lane and an exclusive right-turn lane). The recommended geometry for the intersection is schematically depicted in Figure 4-1. Due to the limited right-of-way along Prairie Avenue north of Providence Street, the existing width of the sidewalks along Prairie Avenue would need to be reduced in order to accommodate the third lane.

With the installation of a traffic signal at this intersection, traffic operations are improved from 2025, 2030 No-Build, and 2025 Build conditions. It should be noted that a no right turns on red sign should be installed on the northbound approach and an exclusive pedestrian phase will need to be implemented to accommodate pedestrians crossing the east leg of the intersections without conflicting with the heavy northbound right turns. If the intersection is signalized and the Prairie Avenue northbound approach is widened to provide two lanes (a shared left-turn/through lane and an exclusive right-turn lane) operations at the intersection will improve operations with less queues and delays.

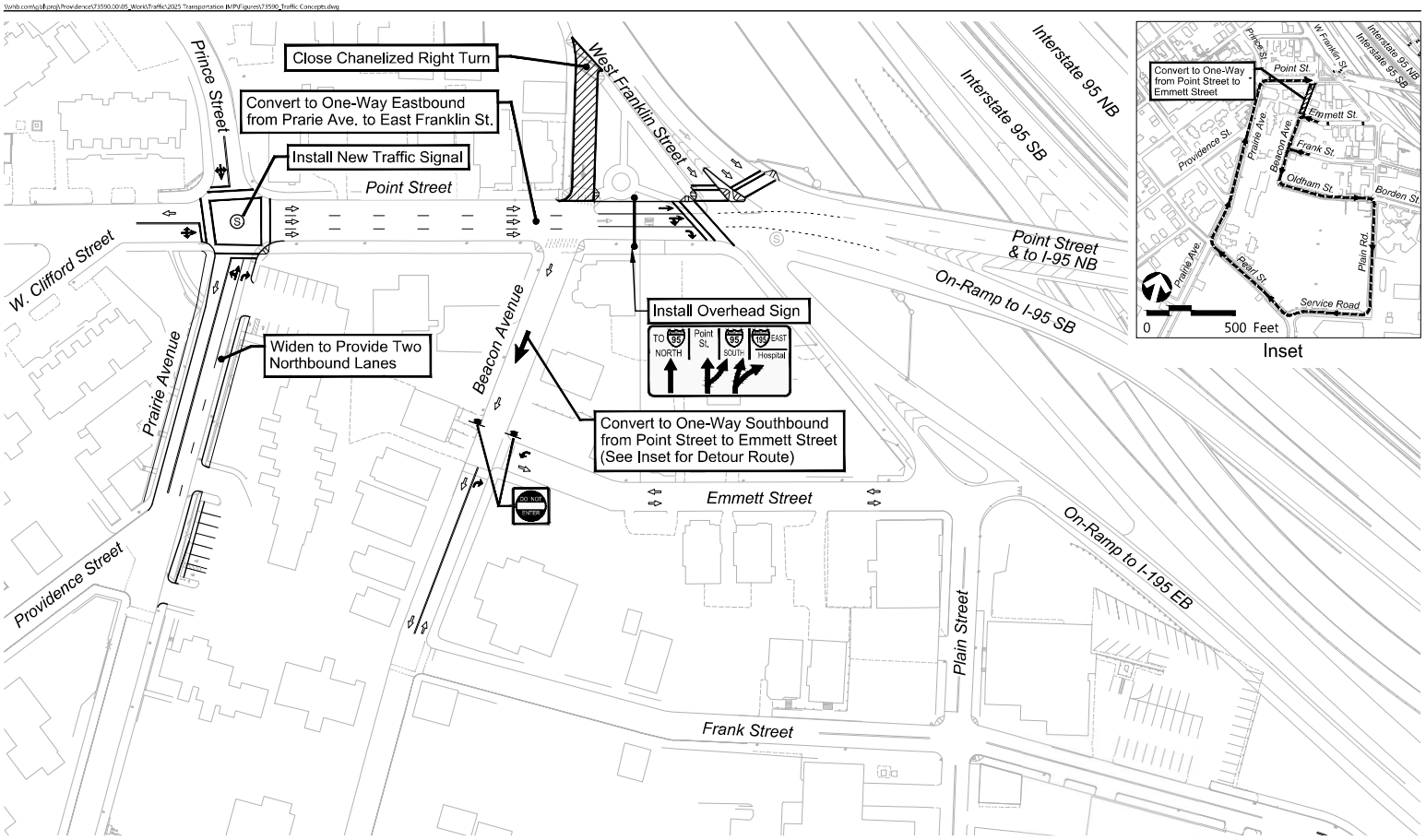
Point Street/Beacon Avenue

The Beacon Avenue northbound approach to Point Street currently operates with long delays during the weekday afternoon peak hour period, and the condition is expected to worsen in the future. The existing eastbound queues on Point Street from the West Franklin Street/Point Street intersection frequently backs up through the intersection with Beacon Avenue. The intersection is also used by the CORO Express shuttle, which experiences delays during periods of congestion at the intersection. Vehicles on the Beacon Avenue northbound approach often cut in front of Point Street eastbound traffic resulting in gaps, inefficient operations on the eastbound approach to the Point Street/West Franklin Street intersection, and reduced capacity at the existing traffic signal.

In order to address the existing issues at the Point Street at Beacon Avenue intersection it is recommended that Beacon Avenue be made one-way southbound between Point Street and Emmett Street. This will eliminate the side friction along Point Street eastbound and allow the Point Street/West Franklin Street intersection to process more eastbound vehicles per cycle length. The conversion of Beacon Avenue to one-way southbound will require rerouting existing northbound traffic on Beacon Avenue to Plain Street, Service Road, Pearl Street, Prairie Avenue and Point Street, as shown in the inset on Figure 4-1. The conversion to one-way southbound would also impact the CORO Express Shuttle operation and require that they travel a different route. Point Street eastbound also benefits from converting this segment (from Prairie Street to West Franklin Street) into one-way eastbound with three travel lanes and eliminating the conflicts by making Beacon Street one-way southbound.

Point Street/West Franklin Street

The Point Street eastbound approach currently consists of two lanes. It is recommended that the island on the northwest corner of the intersection be modified to provide three eastbound lanes. It is also recommended that the island be modified to eliminate the West Franklin Street southbound channelized right turn lane onto Point Street that aligns with Beacon Avenue. It is critical that the lane designations on the Point Street eastbound approach are made clear to motorists in advance of the intersection; therefore, it is recommended that overhead lane use signage be installed. The recommended geometry for the intersection is schematically depicted in Figure 4-1.



Point Street-Prairie Avenue to W. Franklin Street Conceptual Improvement Plan
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Figure 4-1

Point Street/ East Franklin Street

Traffic flow through this intersection, especially during the afternoon commuter peak hours, is impeded due to the limited capacity afforded by the intersection geometry and traffic signal phasing. The eastbound queues often extend over the bridge and through the West Franklin Street signalized intersection. As discussed previously, congestion at the intersection also impacts the CORO shuttle that drops-off/picks-up passengers at the CORO building main entrance.

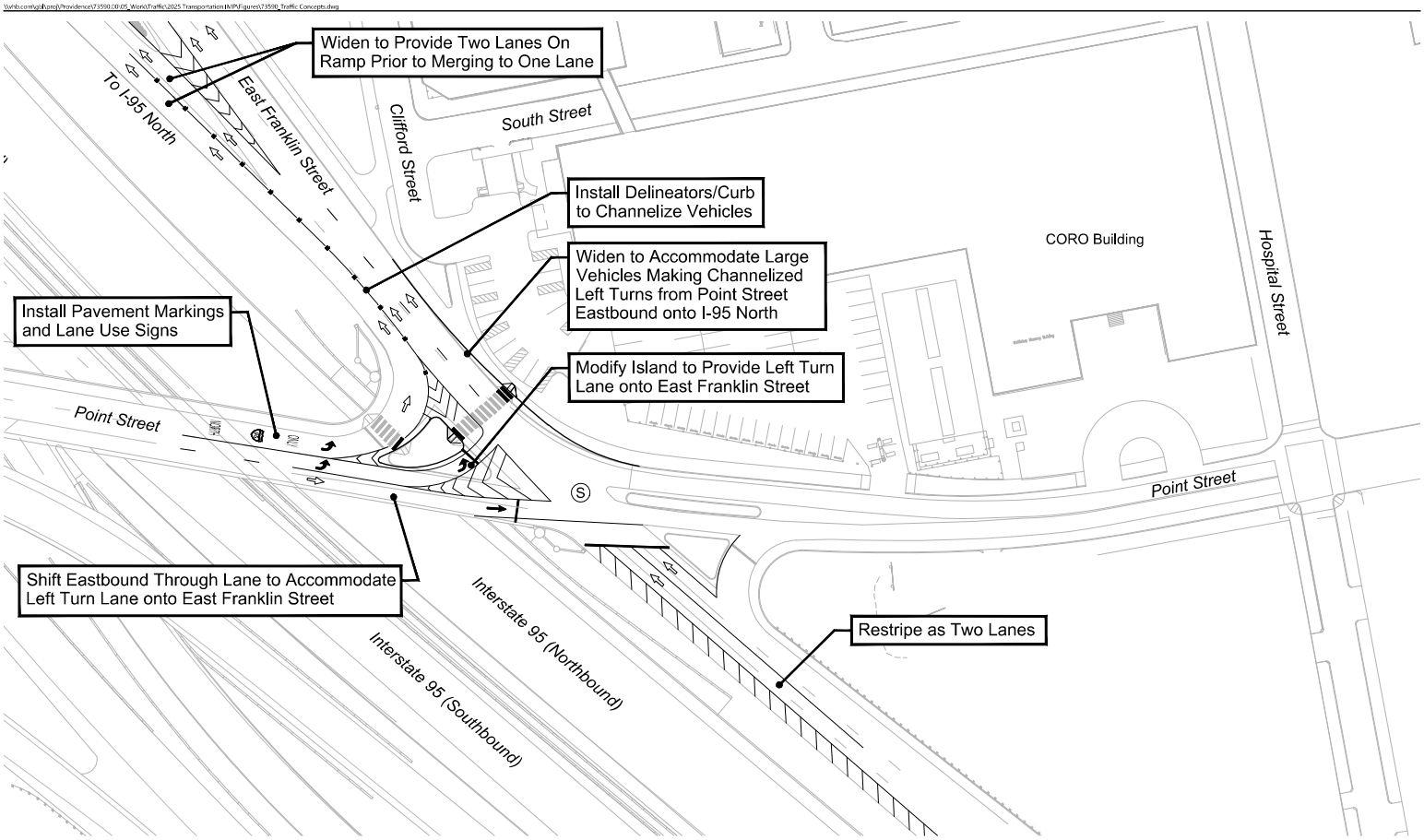
To improve the traffic operations at the intersection, it is recommended that the channelized left turn island on the Point Street eastbound approach be modified and the lane markings at the intersection be changed to create a second left-turn lane onto East Franklin Street northbound. In addition to modifying the island, the eastbound through lane would be shifted over to the south side of the bridge (into the striped gore area in the shoulder). The existing channelized left-turn lane will be signed as I-95 NORTH ONLY and paddles will be installed to direct traffic around the corner onto East Franklin Street and then onto the I-95 North On-Ramp. This channelized left turn movement will need to be designed to accommodate large vehicles which may require that East Franklin Street be widened to maintain two northbound through lanes on the northbound departure from the intersection. The implementation of the eastbound channelized left turn movement onto I-95 North will require that the northbound approach to the intersection be restriped from three existing lanes to two lanes. Appropriate signage will need to accompany this plan to ensure that drivers on the eastbound approach select the correct lane before reaching the signalized intersection.

The improvements are schematically depicted in Figure 4-2.

Pearl Street Corridor

Service Road/Gay Street/Pearl Street

Due to the existing geometry and lack of visible pavement markings and signage at the intersection, the Service Road approach currently operates, and is projected to continue to operate, poorly during the peak periods. In order to accommodate the projected traffic volumes, help reduce driver confusion, and potentially improve safety, it is recommended that the Service Road be widened to the north to create separate left and right turn lanes at the intersection and new pavement markings and signage be installed at the intersection, as shown in Figure 4-3. Finally, due to the limited width of pavement available for two-way travel on Pearl Street as a result of on-street parking, it is recommended that on-street parking on Pearl Street be restricted between the Service Road and Prairie Avenue. Some parking may need to remain in support of the business located on the south side of Pearl Street.



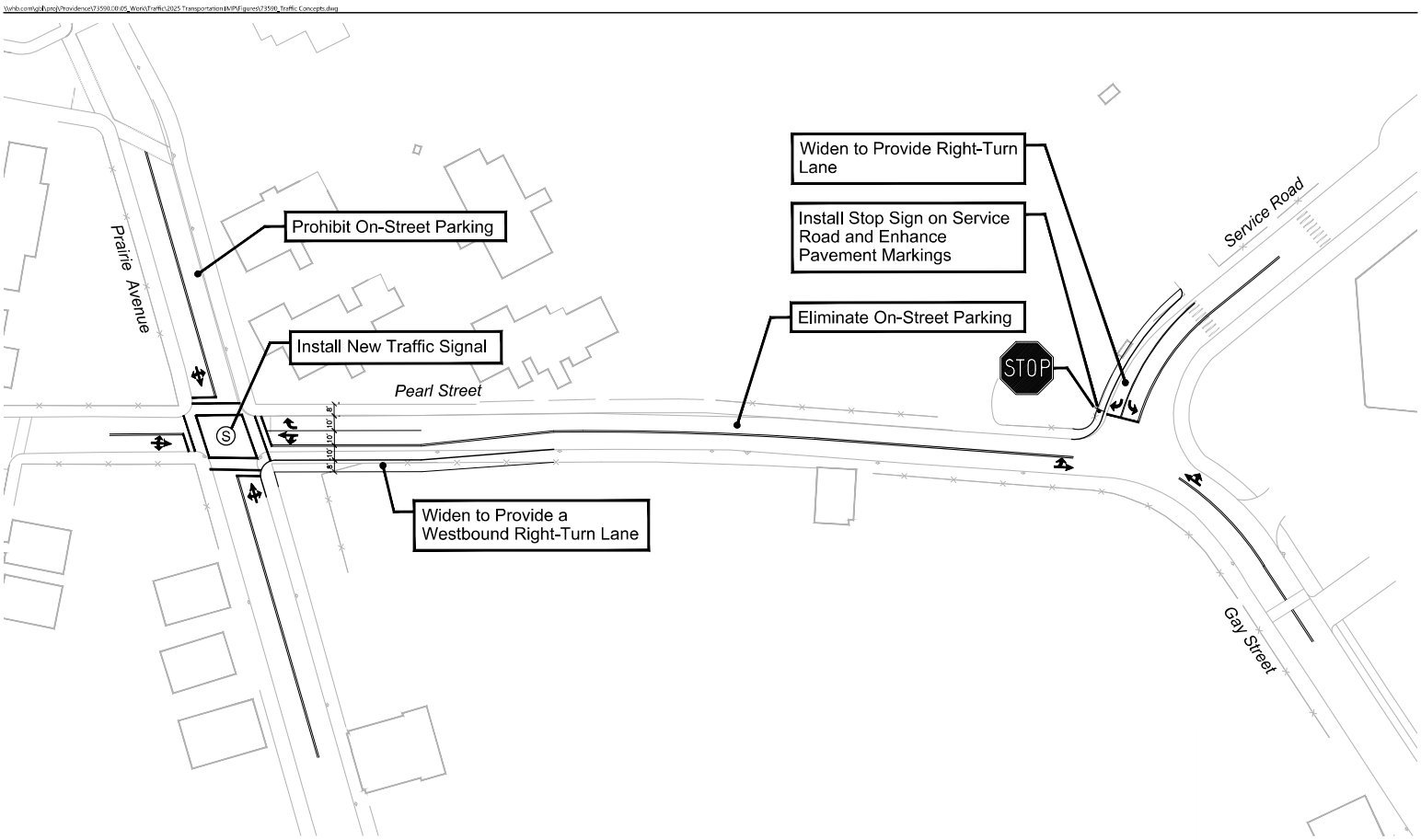
Point Street at East Franklin Street
Conceptual Improvement Plan
Rhode Island Hospital
Providence, RI

Figure 4-2

Prairie Avenue/Pearl Street

With the existing geometry at the intersection of Prairie Avenue and Pearl Street, the Prairie Avenue northbound and Pearl Street westbound movements are projected to operate poorly during peak periods with long delays and vehicle queues on both approaches. In order to accommodate the projected traffic, this alternative proposes to widen Pearl Street to provide an exclusive westbound right-turn lane as shown in Figure 4-3. It is also recommended that the four-way stop control at this intersection be upgraded to install a new traffic signal. A traffic signal warrant analysis should be performed to justify the installation of a new traffic signal at this location. Parking along Prairie Avenue north of Pearl Street should be prohibited to minimize disruptions to traffic flow.

With the proposed widening and modifying the stop control from an all-way stop to a traffic signal, the peak hour delays are projected to be greatly reduced.



Pearl Street Corridor
Conceptual Improvement Plan
Rhode Island Hospital
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Figure 4-3

Additional Improvements

In addition to the conceptual improvements discussed above, other possible improvement measures for consideration are summarized below:

- In the long term, the potential for extending Frank Street to Prairie Avenue, through the residential development west of Beacon Avenue, should be explored. This improvement has the benefit of relieving congestion on Beacon Avenue without causing undue congestion at other locations within the RIH campus area, such as the Prairie Avenue/Pear Street and Gay Street/Pearl Street/ Service Road intersections.
- It is recommended that the roadways throughout the campus be evaluated/monitored and a program for upgrades be developed, as needed, when poor pavement condition impact drainage and traffic flow.
- Although not included in the study area, it is recommended that the intersection of Eddy Street/Thurbers Avenue be reconstructed to incorporate capacity improvements including potential right-of-way acquisitions for additional lanes. It should be noted that constrained capacity at this intersection is one of the major causes of congestions problems experienced farther to the north on Eddy Street. There are also discussions regarding modifications to the Thurbers Avenue interchange that should be further explored to improve traffic operations and connectivity to/from Allens Avenue.
- The RIPTA buses could be relocated, and the Dudley Street Extension concept could be reconsidered for implementation. The Dudley Street Extension project was proposed to be constructed to alleviate congestion on Eddy Street by providing an alternate route to the hospital from the south. The extension of Dudley Street was to the east of Eddy Street and would connect with Blackstone Street (the Dudley Street Connector). This connection would provide an alternate route to hospital traffic that travels north on I-95 and takes the Thurbers Avenue exit. If the road extension were completed, signage improvements could be implemented at the Thurbers Avenue exit to promote the use of Allens Avenue over Eddy Street for traffic destined to the RIH campus area. The design of this project was not advanced and the location where the Dudley Street Extension was proposed has been modified to accommodate layover area for RIPTA buses. There are also conceptual plans being developed to consider modifying the Thurbers Avenue interchange to allow vehicles to enter I-95 North and South from Allens Avenue at the Thurbers Avenue interchange. With the Dudley Street Extension, this would further alleviate congestion on Eddy Street by allowing vehicles exiting the hospital to also travel along Allens Avenue to the Thurbers Avenue interchange.

› If additional development occurs along Prairie Avenue as envisioned under the Prairie Avenue Revitalization Initiative, consideration may need to be given to additional widening along Prairie Avenue and upgrades to the existing traffic signals at the intersections of Prairie Avenue/Public Street, Broad Street/Public Street, and Broad Street/Potters Avenue.

Effect of Roadway Improvements on Shuttles

As noted in the Existing Conditions chapter, in addition to RIPTA buses, the RIH campus area is also served by a network of shuttle routes that connect the main campus with the parking lots, CORO building to the north, and the Annex to the south. However, the congestion that currently impacts general traffic flow through the area also affects shuttle operations. Some of the roadway enhancements outlined previously can be expected to help shuttle operations as well. Some of these improvements are outlined below.

› Lack of intersection delineation and adequate and clearly visible traffic signage currently affects traffic flow at intersections. The proposed improvements to pavement markings and signage would benefit the shuttle route that travels through the intersection.

› Restriping and optimization of signals along Eddy Street will help shuttle operations.

› Extension of the Eddy Street southbound right turn lane at Dudley Street to the north will help reduce the amount of time vehicular queues block shuttles that turn left out of the main hospital driveway.

› Shuttles exiting onto Point Street from the CORO Building during the peak hours often encounter long queues extending back from the Point Street/East Franklin Street intersection. Improvements proposed for the Point Street corridor will reduce delays currently encountered by shuttles leaving the CORO building.

› Improvements at the Point Street/Beacon Avenue intersection would require rerouting the CORO Express route but would improve traffic operations along Point Street by reducing the delays and vehicular queues for all vehicles.

› Finally, RIH should review their current shuttle routes to determine if there are more efficient ways to get employees and visitors to and from the parking areas. Adjustments to the number of shuttles, number of routes, direction of travel, and times of arrivals/departures should all be evaluated.

Parking Improvements

The Rhode Island Hospital parking system will continue to provide adequate parking for its patients, visitors, and staff through active management of the RIH parking system. The proposed new parking garage will result in more available parking spaces near the core of the hospital campus. Any projected new parking demand can be accommodated in the existing parking system—at the Willard Avenue Garage and Dudley Street Garage for patient/visitor parking and at the CORO Garage for staff parking.

It should be noted that the signs restricting parking along most study area roadways are in poor condition with many signs missing or faded, making it difficult to determine where parking is restricted.

Transportation Demand Management Program

RIH currently provides TDM programs to its employees, as discussed in the Existing Conditions chapter of this report. It is recommended that the hospital continue to look at ways to reduce the number of vehicle trips and the amount of parking. At a minimum, this should include improved outreach to RIH employees including conversations with RIPTA about pass subsidy programs and other TDM measures. In addition to providing TDM programs, there are also proposals to develop work force housing in the neighborhoods surrounding the hospital. These new housing units can play a significant role in reducing traffic and required parking if hospital employees live in the neighborhoods surrounding the hospital and do not need to drive to work.

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