

TRAFFIC IMPACT STUDY

DIRIGO PLAZA MIXED-USE COMMERCIAL DEVELOPMENT
WESTBROOK ARTERIAL, LARRABEE ROAD AND MAIN STREET
WESTBROOK, MAINE

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EXECUTIVE SUMMARY

Vanasse & Associates, Inc. (VAI) has conducted a Traffic Impact Study (TIS) in order to determine the potential impacts on the transportation infrastructure associated with the proposed construction of a mixed-use commercial development to be known as Dirigo Plaza and located on an assemblage of parcels bounded by Main Street (Route 25B), Westbrook Arterial, and Larrabee Road, in Westbrook, Maine (hereafter referred to as the “Project”). This assessment was prepared in consultation with the Maine Department of Transportation (MDOT) and the Cities of Westbrook and Portland; was performed in accordance with the scoping determination issued by MDOT for the Project and Section 7, Traffic Study Requirements, of MDOT’s *Traffic Movement Permit* guidelines; and was conducted pursuant to the standards of the Traffic Engineering and Transportation Planning professions for the preparation of such reports. Based on this assessment, we have concluded the following with respect to the Project:

1. Using trip-generation statistics published by the Institute of Transportation Engineers (ITE)¹ and applying appropriate adjustments to account for pass-by trips, the Project is predicted to generate approximately 13,366 new vehicle trips on an average weekday and 18,890 new vehicle trips on a Saturday (two-way volume over the operational day of the Project), with 351 new vehicle trips expected during the weekday morning peak-hour, 1,217 new vehicle trips expected during the weekday evening peak-hour and 1,853 new vehicle trips expected during the Saturday midday peak-hour;
2. The Project will not have a significant impact (increase) on motorist delays or vehicle queuing over anticipated future conditions without the Project (No-Build conditions) at the majority of the study intersections;
3. At those locations where the Project was shown to have a pronounced impact or where a capacity or safety deficiency was identified, specific improvement measures have been identified to reconcile these conditions or to advance design plans for a future improvement project by others; and
4. Lines of sight to and from the Project site driveway intersections with Main Street, Westbrook Arterial and Larrabee Road were found to exceed the required minimum distance for the intersections to function in a safe and efficient manner based on the appropriate approach speed along the intersecting roadway.

¹*Trip Generation*, 9th Edition; Institute of Transportation Engineers; Washington, DC; 2012.

In consideration of the above, we have concluded that the Project can be accommodated within the confines of the existing transportation infrastructure in a safe and efficient manner with implementation of the recommendations that follow.

RECOMMENDATIONS

A detailed transportation improvement program has been developed that is designed to provide safe and efficient access to the Project site and address any deficiencies identified at off-site locations evaluated in conjunction with this study. The following improvements have been recommended as a part of this evaluation and, where applicable, will be completed in conjunction with the Project subject to receipt of all necessary rights, permits, and approvals.

Project Access

Access to the Project site is proposed as follows: two (2) driveways that will intersect Larrabee Road and will align with Terminal Street and Saunders Way, respectively; an existing driveway that serves the Project site that intersects Main Street opposite the driveway to the Westbrook Crossing shopping center that will be placed under traffic signal control; a right-turn, entrance only driveway that will intersect Main Street approximately 100 feet east of Larrabee Road; and a full access driveway that will intersect Westbrook Arterial approximately 550 feet east of Larrabee Road that will be placed under traffic signal control. As discussed with MDOT, it is proposed that the rights to construct a third full access driveway on Larrabee Road (to be located between the Westbrook Arterial and the railroad tracks) be transferred to Westbrook Arterial in order to allow for the construction of the full access driveway on Westbrook Arterial. The following recommendations are offered with respect to the design and operation of the Project site driveways:

- The Project site driveway intersections with Main Street (full access driveway to be located opposite the driveway to Westbrook Crossing) and Westbrook Arterial should be placed under traffic signal control. The proposed traffic signals should be interconnected and coordinated with the adjacent traffic signals on Main Street and Westbrook Arterial.
- The Main Street approach to the full access Project site driveway should provide a westbound left-turn, while maintaining the eastbound left-turn lane to the Westbrook Crossing shopping center and two (2) through travel lanes in both directions.
- The Westbrook Arterial approach to the Project site driveway should provide two (2) westbound travel lanes, an eastbound left-turn lane and a single eastbound through travel lane.
- The signalized project site driveways should accommodate two (2) 11 to 12-foot wide exiting travel lanes and a single 14-foot wide (minimum) entering lane separated by a double-yellow centerline or a raised median a minimum of 6-feet in width.
- The north driveway on Larrabee Road (opposite Terminal Street) should be designed to accommodate the future installation of a traffic control signal if and when warranted (see *Traffic Monitoring Program*), to include the installation of traffic signal conduit and pullboxes. Larrabee Road approaching the intersection should be widened to provide a left-turn lane in both the north and southbound directions, with the Project site driveway providing two (2) 11 to 12-foot wide exiting travel lanes and a single 14-foot wide (minimum) entering lane separated by a double-yellow centerline or raised median a

minimum of 6-feet in width, and vehicles exiting the driveway placed under STOP-sign control with a marked STOP-line provided.

- The south driveway on Larrabee Road (opposite Saunders Way) should provide two (2) 11 to 12-foot wide exiting travel lanes and a single 14-foot wide (minimum) entering lane separated by a double-yellow centerline or raised median a minimum of 6-feet in width, with vehicles exiting the driveway placed under STOP-sign control with a marked STOP-line provided.
- All signs and pavement markings to be installed within the Project site shall conform to the applicable standards of the *Manual on Uniform Traffic Control Devices (MUTCD)*.²
- Sidewalks should be provided within the Project site linking the proposed buildings to the sidewalk infrastructure along Main Street.
- Wheelchair ramps should be provided for crossing the Project site driveways where a sidewalk is present and at locations internal to the Project site where pedestrian crossings are proposed.
- Signs and landscaping to be installed internal to the Project site and at the Project site driveway intersections should be designed and maintained so as not to restrict lines of sight.
- Snow windrows along the Project site frontage within the sight triangle areas of the Project site driveways shall be promptly removed where such accumulations would exceed 2.5 feet in height.

Off-Site

The following off-site improvements are proposed to off-set the impact of the Project and improve traffic operations, and will be implemented by the Project proponent prior to the issuance of a Certificate of Occupancy for the Project and subject to receipt of all necessary rights, permits and approvals:

Westbrook:

- ***Cumberland Street at Bridge Street*** – Design and implement an optimal traffic signal timing and phasing plan, to include the installation of all necessary hardware and appurtenances to implement the changes.
- ***Main Street at Forest Street*** – Convert the Main Street westbound right-turn lane to a through/right-turn lane and design and implement an optimal traffic signal timing and phasing plan, to include the installation of all necessary hardware and appurtenances to implement the changes.
- ***Main Street at Larrabee Road*** – Remove the raised triangular islands on the Larrabee Road approaches to eliminate the right-turn slip-ramps; install crosswalks, wheelchair ramps and pedestrian traffic signal equipment (push buttons, signal indications and phasing); reconstruct/upgrade/replace traffic signal equipment as necessary to accommodate the intersection improvements; and interconnect and coordinate with adjacent traffic signals at the Project site driveway/Westbrook Crossing shopping center and Brighton Avenue/Riverside Street intersections.

²*Manual on Uniform Traffic Control Devices (MUTCD)*; Federal Highway Administration; Washington, D.C.; 2009.

- ***Main Street at Bridge Street*** – Design and implement an optimal traffic signal timing and phasing plan, to include the installation of all necessary hardware and appurtenances to implement the changes.
- ***William Clarke Drive at New Gorham Road*** – Design and implement an optimal traffic signal timing and phasing plan, to include the installation of all necessary hardware and appurtenances to implement the changes.
- ***William Clarke Drive at Spring Street*** – Design and implement an optimal traffic signal timing and phasing plan, to include the installation of all necessary hardware and appurtenances to implement the changes.
- ***William Clarke Drive at Stroudwater Street*** – Design and implement an optimal traffic signal timing and phasing plan, to include the installation of all necessary hardware and appurtenances to implement the changes.
- ***Westbrook Arterial at Larrabee Road*** – Design and implement an optimal traffic signal timing and phasing plan, and interconnect and coordinate with the proposed traffic control signal to be installed at the Project site driveway. These improvements include the installation of all necessary hardware and appurtenances to implement the changes.
- ***Cumberland Street at Park Road*** – Perform a detailed Traffic Signal Warrants Analysis (TSWA) in accordance with the methodology established in the MUTCD, to include conducting a 12-hour (7:00 AM to 7:00 PM) manual turning movement count on an average weekday. The results of the TSWA will be summarized in a memorandum provided to the City and will include a conceptual improvement plan depicting the recommended intersection improvements.
- ***Stroudwater Street at Forest Street*** - Perform a detailed TSWA in accordance with the methodology established in the MUTCD, to include conducting a 12-hour (7:00 AM to 7:00 PM) manual turning movement count on an average weekday. The results of the TSWA will be summarized in a memorandum provided to the City and will include a conceptual improvement plan depicting the recommended intersection improvements.

Portland:

- ***Riverside Street at Warren Avenue*** – Design and implement an optimal traffic signal timing and phasing plan, to include the installation of all necessary hardware and appurtenances to implement the changes.
- ***Riverside Street at Larrabee Road and the I-95 Ramps*** – Design and implement an optimal traffic signal timing and phasing plan, to include the installation of all necessary hardware and appurtenances to implement the changes.
- ***Main Street at Brighton Avenue and Riverside Street*** – Interconnect and coordinate with adjacent traffic signals at the Project site driveway/Westbrook Crossing shopping center and Main Street/Larrabee Road intersections. These improvements include the implementation of an optimal traffic signal timing and phasing plan, and the installation of all necessary hardware and appurtenances to implement the changes.

- ***Westbrook Arterial at Rand Road and the I-95 Ramps*** – Design and implement an optimal traffic signal timing and phasing plan, to include the installation of all necessary hardware and appurtenances to implement the changes.
- ***Brighton Avenue at Steven Avenue*** – Design and implement an optimal traffic signal timing and phasing plan, to include the installation of all necessary hardware and appurtenances to implement the changes.
- ***Capisic Street at Frost Street*** - Perform a detailed TSWA in accordance with the methodology established in the MUTCD, to include conducting a 12-hour (7:00 AM to 7:00 PM) manual turning movement count on an average weekday. The results of the TSWA will be summarized in a memorandum provided to the City and will include a conceptual improvement plan depicting the recommended intersection improvements.

Safety Improvements

The following safety-related improvements will be completed in conjunction with the Project and will be implemented by the Project proponent prior to the issuance of a Certificate of Occupancy for the Project and subject to receipt of all necessary rights, permits and approvals:

Westbrook:

- ***Main Street at Larrabee Road***
 - i.) Review and upgrade the existing traffic signal system to meet current design standards which may include: signal indications; vehicle detection system to include bicycle detection; controller and cabinet; emergency vehicle detection system (OPTICOM™); and all necessary appurtenances to provide a fully functional traffic signal system;
 - ii.) Design and implement an optimal traffic signal timing and phasing plan to include vehicle clearance times developed in accordance with current MUTCD, City and MDOT standards; and
 - iii.) Review, upgrade and replace existing signs and pavement markings as may be necessary.
- ***Main Street at Cumberland Street, Warren Avenue and Harnois Avenue*** – The City of Westbrook will be implementing specific improvements at these intersections that includes the installation of traffic control signals to enhance safety and facilitate pedestrian and bicycle access. No additional improvements are required at this time.
- ***Cumberland Street at Park Road***
 - i.) Selective trimming of vegetation along Cumberland Street to improve sight lines;
 - ii.) Install “Intersection Ahead” (graphic symbol) warning signs on Cumberland Street in advance of the intersection; and
 - iii.) Review, upgrade and replace existing signs and pavement markings as may be necessary.

➤ ***Stroudwater Street at Forest Street***

- i.) Selective trimming of vegetation along Stroudwater Street to improve sight lines;
- ii.) Install “Intersection Ahead” (graphic symbol) warning signs on Stroudwater Street in advance of the intersection; and
- iii.) Review, upgrade and replace existing signs and pavement markings as may be necessary.

Portland:

➤ ***Riverside Street at Larrabee Road and the I-95 Ramps***

- i.) Review and upgrade the existing traffic signal system to meet current design standards which may include: signal indications; pedestrian pushbuttons and indications; vehicle detection system to include bicycle detection; controller and cabinet; emergency vehicle detection system (OPTICOM™); and all necessary appurtenances to provide a fully functional traffic signal system;
- ii.) Design and implement an optimal traffic signal timing and phasing plan to include vehicle clearance times developed in accordance with current MUTCD, City and MDOT standards; and
- iii.) Review, upgrade and replace existing signs and pavement markings as may be necessary.

➤ ***Brighton Avenue at Steven Avenue***

- i.) Review and upgrade the existing traffic signal system to meet current design standards which may include: signal indications; pedestrian pushbuttons and indications; vehicle detection system to include bicycle detection; controller and cabinet; emergency vehicle detection system (OPTICOM™); and all necessary appurtenances to provide a fully functional traffic signal system;
- ii.) Design and implement an optimal traffic signal timing and phasing plan to include vehicle clearance times developed in accordance with current MUTCD, City and MDOT standards; and
- iii.) Review, upgrade and replace existing signs and pavement markings as may be necessary.

➤ ***Capisic Street at Frost Street***

- i.) Selective trimming of vegetation along Capisic Street to improve sight lines;
- ii.) Install an “Intersection Ahead” (graphic symbol) warning sign on Capisic Street west of the intersection;
- iii.) Install a “Stop Sign Ahead” (graphic symbol) warning sign on Frost Street approaching the intersection; and
- iv.) Review, upgrade and replace existing signs and pavement markings as may be necessary.

Transportation Demand Management

The Project site is ideally situated to take advantage of available public transportation resources in the area, including the METRO bus service operated by the Greater Portland Transit District. In an effort to encourage use of alternative modes of transportation to single-occupant vehicles, the following Transportation Demand Management (TDM) measures will be implemented as a part of the Project:

- Information regarding public transportation services, maps, schedules and fare information will be made available to employees of the Project and posted in a central location within each building;
- A packet will be provided to new employees of the Project detailing available public transportation services, bicycle and walking alternatives, and commuter options;
- Pedestrian accommodations will be incorporated within the Project site and extending to Main Street;
- A METRO bus stop will be provided along Main Street or at an appropriate location determined in consultation with Greater Portland Transit District; and
- Secure bicycle parking will be provided, including both exterior bicycle racks and weather protected bicycle parking in a secure area where such accommodations can be made.

Traffic Monitoring Program

The Project proponent will conduct a post-development traffic monitoring program in order to validate the trip projections for the Project and to determine if and when the installation of a traffic control signal may be justified at the Larrabee Road/Project site Driveway/Terminal Street intersection. The monitoring program will include:

- i) Obtaining traffic volume information over a continuous seven day, weeklong period at the driveways serving the Project site;
- ii) Performing a continuous 12-hour (7:00 AM to 7:00 PM) manual turning movement and vehicle classification count on an average weekday at the Project site driveway intersection with Larrabee Road and Terminal Street; and
- iii) Completing a detailed TSWA at the Larrabee Road/Project site Driveway/Terminal Street intersection in accordance with the methodology established in the MUTCD.

The monitoring program will commence six (6) months after issuance of the first Certificate of Occupancy for the Project and will continue on an annual basis thereafter for a period not to exceed 2-years after Project completion and occupancy. The results of the monitoring program will be summarized in a report to be provided to the City of Westbrook within 2-months after the completion of the data collection effort. If and when the installation of traffic control signal is found to be warranted at the Larrabee Road/Project site Driveway/Terminal Street intersection, the Project proponent will advance the design and construction the traffic signal system subject to receipt of all necessary rights permits and approvals.

Loading and Deliveries

The Project has been designed to accommodate all loading and delivery functions on-site in a safe and efficient manner. Designated loading areas will be provided on-site to accommodate deliveries. Refuse/recycling will be accommodated in centralized areas for each building. Truck routes and hours of deliveries will be coordinated to minimize truck activity during the commuter peak hours. Reasonable efforts will be made to use service vendors currently delivering in the vicinity of the Project site in an effort to reduce the overall number of new trucks in the area.

With implementation of the above recommendations, safe and efficient access will be provided to the Project site and the Project can be accommodated within the confines of the existing and improved transportation system.

INTRODUCTION

Vanasse & Associates, Inc. (VAI) has conducted a Traffic Impact Study (TIS) in order to determine the potential impacts on the transportation infrastructure associated the proposed construction of a mixed-use commercial development to be known as Dirigo Plaza and located on an assemblage of parcels bounded by Main Street (Route 25B), Westbrook Arterial (Route 25), and Larrabee Road, in Westbrook, Maine (hereafter referred to as the “Project”). This study evaluates the following specific areas as they relate to the Project: i) access requirements; ii) potential off-site improvements; and iii) safety considerations; and identifies and analyzes existing traffic conditions and future traffic conditions, both with and without the Project, in Westbrook along Main Street, Cumberland Street, Westbrook Arterial, William Clarke Drive, Stroudwater Street, Forest Street, Larrabee Road and Riverside Street, and in Portland along Brighton Avenue, Woodford Street, Forest Avenue, Capisic Street and Rand Road, as well as at the Interstate 95 (I-95)/Maine Turnpike interchanges with Rand Road (Exit 47) and Larrabee Road (Exit 48).

PROJECT DESCRIPTION

As proposed, the Project will entail the construction of a 489,461± square foot (sf) mixed-use commercial development that will encompass multiple buildings containing a mix of retail, consumer service and restaurant uses, including a membership based vehicle fueling facility that will provide four (4) pumps and eight (8) vehicle fueling positions (vfps).³ The Project site encompasses property in both Westbrook and Portland; however, the planned development will occur entirely within the Westbrook properties. The development area includes two (2) lots (Westbrook Tax Map 42B Lots 11 and 14) that are bisected by a railroad right-of-way (Westbrook Tax Map 42B Lot 15) that total approximately 63.7± acres of land bounded by Main Street and commercial properties to the north; Westbrook Arterial to the south; I-95/ Maine Turnpike and areas of open and wooded space to the east; and Larrabee Road, commercial properties and areas of open and wooded space to the west. The Project site has an existing access easement over the tracks which will be utilized to connect the north and south portions of the Project. Figure 1 depicts the Project site location in relation to the existing roadway network.

³The vehicle fueling facility will serve members of an on-site retail tenant only.

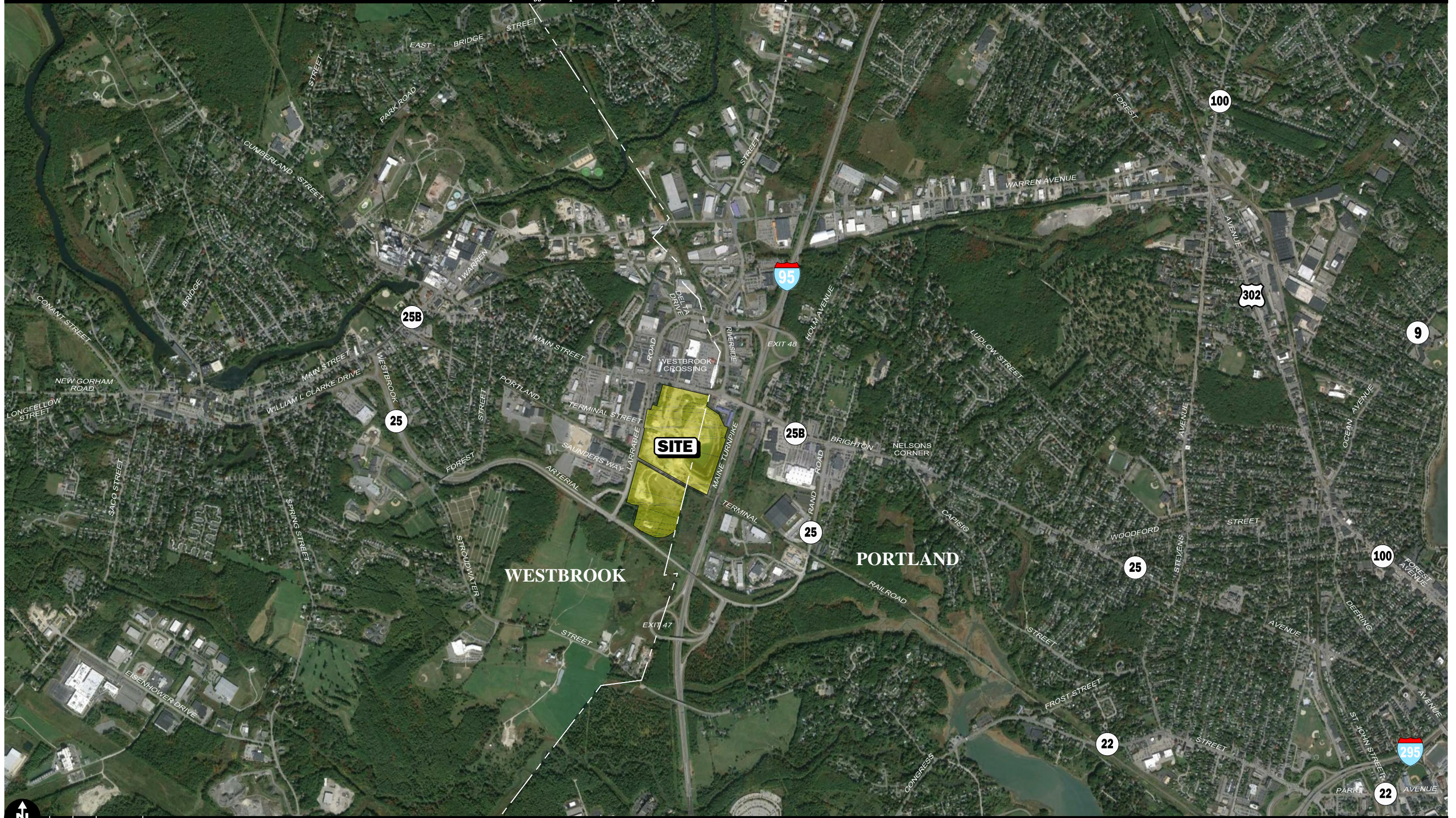


Figure 1
Site Location Map

Pike Industries currently uses the property as an aggregates and bituminous concrete manufacturing facility. Pike Industries markets a wide range of aggregate products and the Main Street office has a truck scale for sale of products to contractors. Portions of the Project site have been excavated to obtain and process aggregate materials. The site currently has three (3) driveways on Main Street, two (2) of which are used on a daily basis, and a driveway on Larrabee Road north of the railroad tracks that bisect the site. Rights for an additional two (2) driveways on Larrabee Road between Westbrook Arterial and the railroad tracks have been established by the Maine Department of Transportation (MDOT) to serve the Project site which have not yet been constructed.

Access to the Project site is proposed as follows: two (2) driveways that will intersect Larrabee Road and will align with Terminal Street and Saunders Way, respectively; an existing driveway that serves the Project site that intersects Main Street opposite the driveway to the Westbrook Crossing shopping center that will be placed under traffic signal control; a right-turn, entrance only driveway that will intersect Main Street approximately 100 feet east of Larrabee Road; and a full access driveway that will intersect Westbrook Arterial approximately 550 feet east of Larrabee Road that will be placed under traffic signal control. As discussed with MDOT, it is proposed that the rights to construct a third full access driveway on Larrabee Road (to be located between the Westbrook Arterial and the railroad tracks) be transferred to Westbrook Arterial in order to allow for the construction of the full access driveway on Westbrook Arterial.

On-site parking will be provided for 2,215 vehicles, including 65 handicapped accessible spaces, which exceeds City Zoning requirements for the proposed uses.

STUDY METHODOLOGY

This study was prepared in consultation with MDOT and the Cities of Westbrook and Portland; was performed in accordance with: i) the scoping determination issued by MDOT for the Project; ii) Section 7, Traffic Study Requirements, of MDOT's *Traffic Movement Permit* guidelines; and iii) the standards of the Traffic Engineering and Transportation Planning professions for the preparation of such reports; and was conducted in three distinct stages.

The first stage involved an assessment of existing conditions in the study area and included an inventory of roadway geometrics; pedestrian and bicycle facilities; public transportation services; observations of traffic flow; and collection of daily and peak period traffic counts.

In the second stage of the study, future traffic conditions were projected and analyzed. Specific travel demand forecasts for the Project were assessed along with future traffic demands due to expected traffic growth independent of the Project. A five-year time horizon (2021) was selected for analyses consistent with MDOT's *Traffic Movement Permit* guidelines and represents the anticipated completion date of the Project. The traffic analysis conducted in stage two identifies existing or projected future roadway capacity, traffic safety, and site access issues.

The third stage of the study presents and evaluates measures to address traffic and safety issues, if any, identified in stage two of the study.

EXISTING CONDITIONS

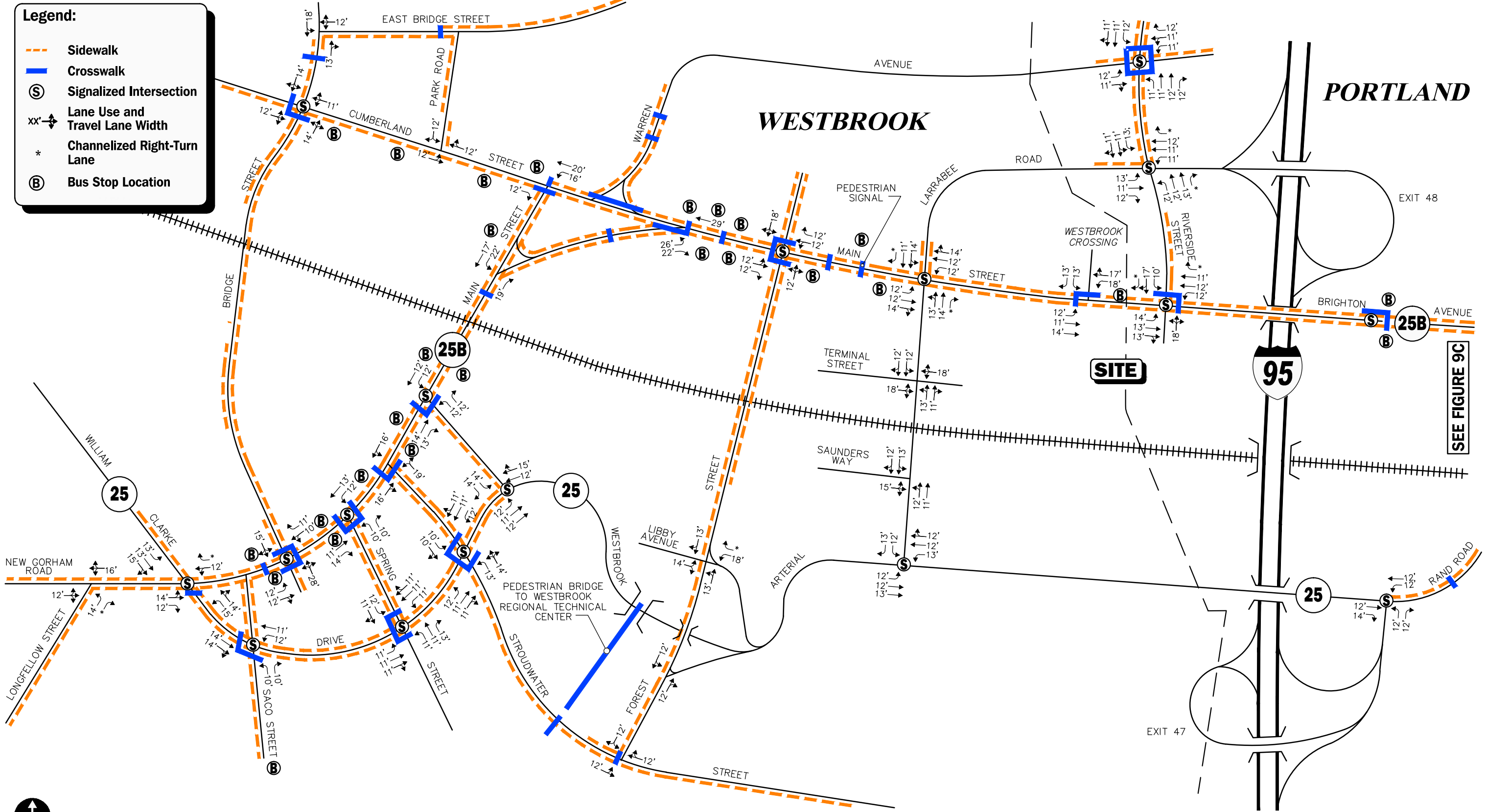
A comprehensive field inventory of existing conditions within the study area was conducted in September, October and November 2015. The field investigation consisted of an inventory of existing roadway geometrics; pedestrian and bicycle facilities; public transportation services; traffic volumes; and operating characteristics; as well as posted speed limits and land use information within the study area. The study area that was assessed for the Project was defined as a part of the scoping determination that was issued by MDOT and included input from the Cities of Westbrook and Portland, and encompasses 24 intersections in Westbrook and 14 intersections in Portland. Figure 2 graphically depicts the study area roadways and intersections, and includes a summary of traffic control, lane use, lane width and pedestrian facility locations within the study area as observed in the Fall/Winter 2015. The detailed field inventories for each of the study area intersections are included in the Technical Appendix.

EXISTING TRAFFIC VOLUMES

In order to determine existing traffic-volume demands and flow patterns within the study area, automatic traffic recorder (ATR) counts, manual turning movement counts (TMCs) and vehicle classification counts were completed in September and October 2015 while public schools were in regular session. The ATR counts were conducted on Main Street, Westbrook Arterial and Larrabee Road in the vicinity of the Project site in order to record weekday daily traffic conditions over an extended period, with weekday morning (7:00 to 9:00 AM), weekday evening (4:00 to 6:00 PM) and Saturday midday (11:00 AM to 2:00 PM) peak period manual TMCs performed at the study intersections. These time periods were selected for analysis purposes as they are representative of the peak traffic volume hours for both the Project and the adjacent roadway network.

Traffic Volume Adjustments

In accordance with MDOT requirements, the raw traffic count data was adjusted to the 30th highest hour (6th highest week of the year) in order to develop design condition traffic volumes from which to assess the impact of the Project on the roadway network. In order to determine the appropriate adjustment factor, traffic count data available from MDOT was reviewed for Urban Type 1 Roadways, the functional classification for Main Street (Route 25B)



SEE FIGURE 9C

Not To Scale

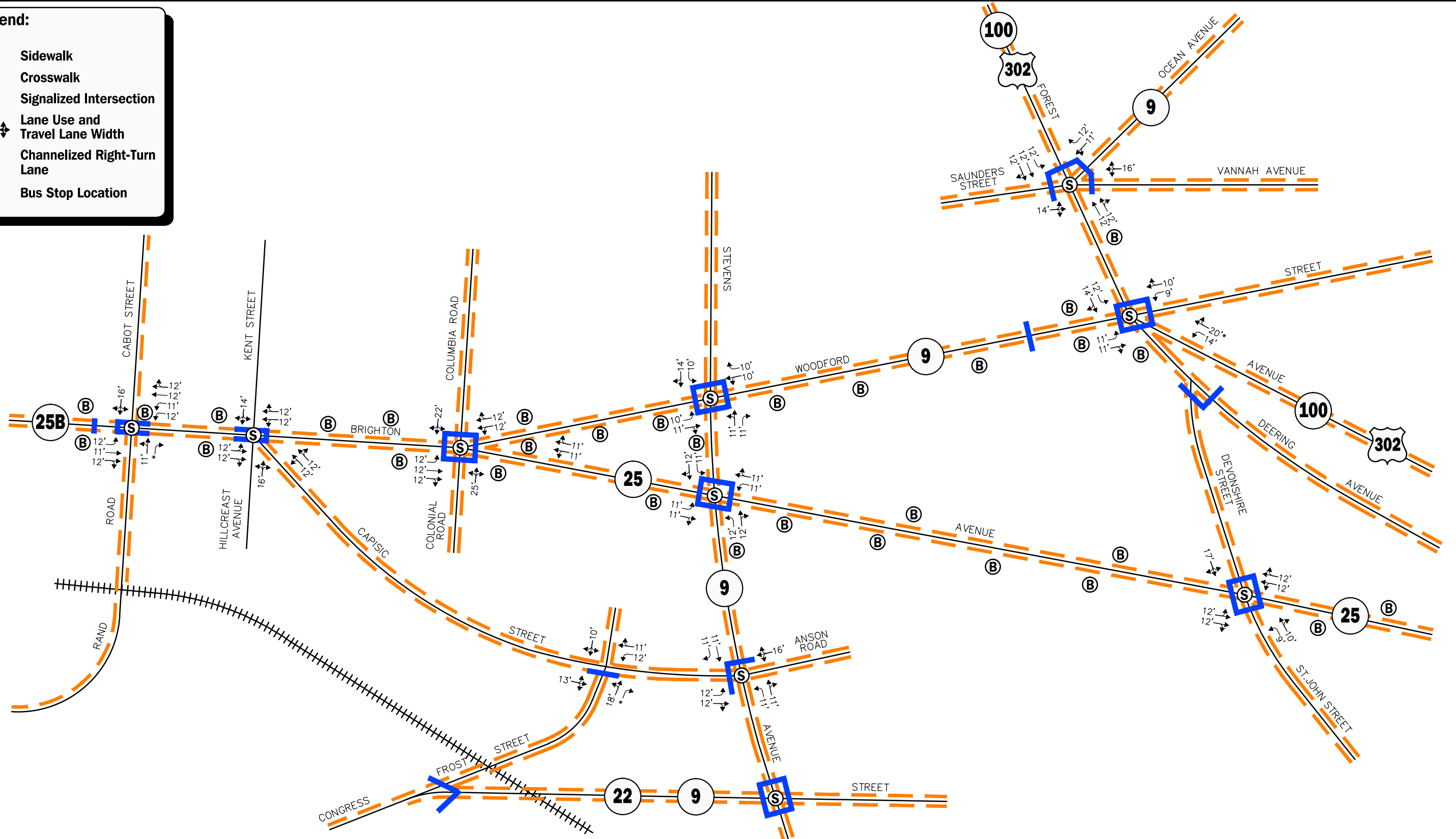


Figure 2A
Existing Intersection Lane Use, Travel Lane Width and Pedestrian Facilities

Legend:

- Sidewalk
- █ Crosswalk
- (S) Signalized Intersection
- xx' ↕ Lane Use and Travel Lane Width
- * Channelized Right-Turn Lane
- (B) Bus Stop Location

SEE FIGURE 2A



Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.
Not To Scale



Figure 2B
Existing Intersection
Lane Use, Travel Lane Width and
Pedestrian Facilities

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and Westbrook Arterial (Route 25).⁴ Based on a review of this data, it was determined that the traffic count data required an adjustment (increase) of 3.4 percent in order to be representative of the 30th highest design hour. The 2015 Existing Design Hour traffic volumes are summarized in Table 1, with the weekday morning, weekday evening and Saturday midday peak-hour traffic volumes graphically depicted on Figures 3, 4 and 5, respectively. Note that the peak-hour traffic volumes presented in Table 1 were obtained from the TMCs and are reflected on the aforementioned figures.

Table 1
2015 EXISTING DESIGN HOUR TRAFFIC VOLUMES

Location	AWT ^a	Saturday ^b	VPH ^c	K Factor ^d	Directional Distribution
<i>Main Street, west of Riverside Street:</i>					
Weekday Morning Peak Hour (7:45 – 8:45 AM)	17,550	14,530	--	--	--
Weekday Evening Peak Hour (4:15 – 5:15 PM)	--	--	1,568	8.9	59.3% EB
Saturday Midday Peak Hour (11:45 AM – 12:45 PM)	--	--	2,038	11.6	62.1% WB
			1,776	12.2	51.5% WB
<i>Westbrook Arterial, east of Larrabee Road:</i>					
Weekday Morning Peak Hour (7:15 – 8:15 AM)	16,710	11,420	--	--	--
Weekday Evening Peak Hour (4:30 – 5:30 PM)	--	--	1,522	9.1	64.7% EB
Saturday Midday Peak Hour (11:30 AM – 12:30 PM)	--	--	1,515	9.1	54.2% WB
	--	--	970	8.5	52.1% EB
<i>Larrabee Road, north of Westbrook Arterial:</i>					
Weekday Morning Peak Hour (8:00 – 9:00 AM)	4,975	3,575	--	--	--
Weekday Evening Peak Hour (4:15 – 5:15 PM)	--	--	694	13.9	63.8% NB
Saturday Midday Peak Hour (11:15 AM – 12:15 PM)	--	--	1,016	20.4	66.8% SB
	--	--	725	20.3	52.0% SB

^aAverage weekday traffic in vehicles per day.

^bAverage Saturday traffic in vehicles.

^cVehicles per hour.

^dPercent of daily traffic occurring during the peak-hour.

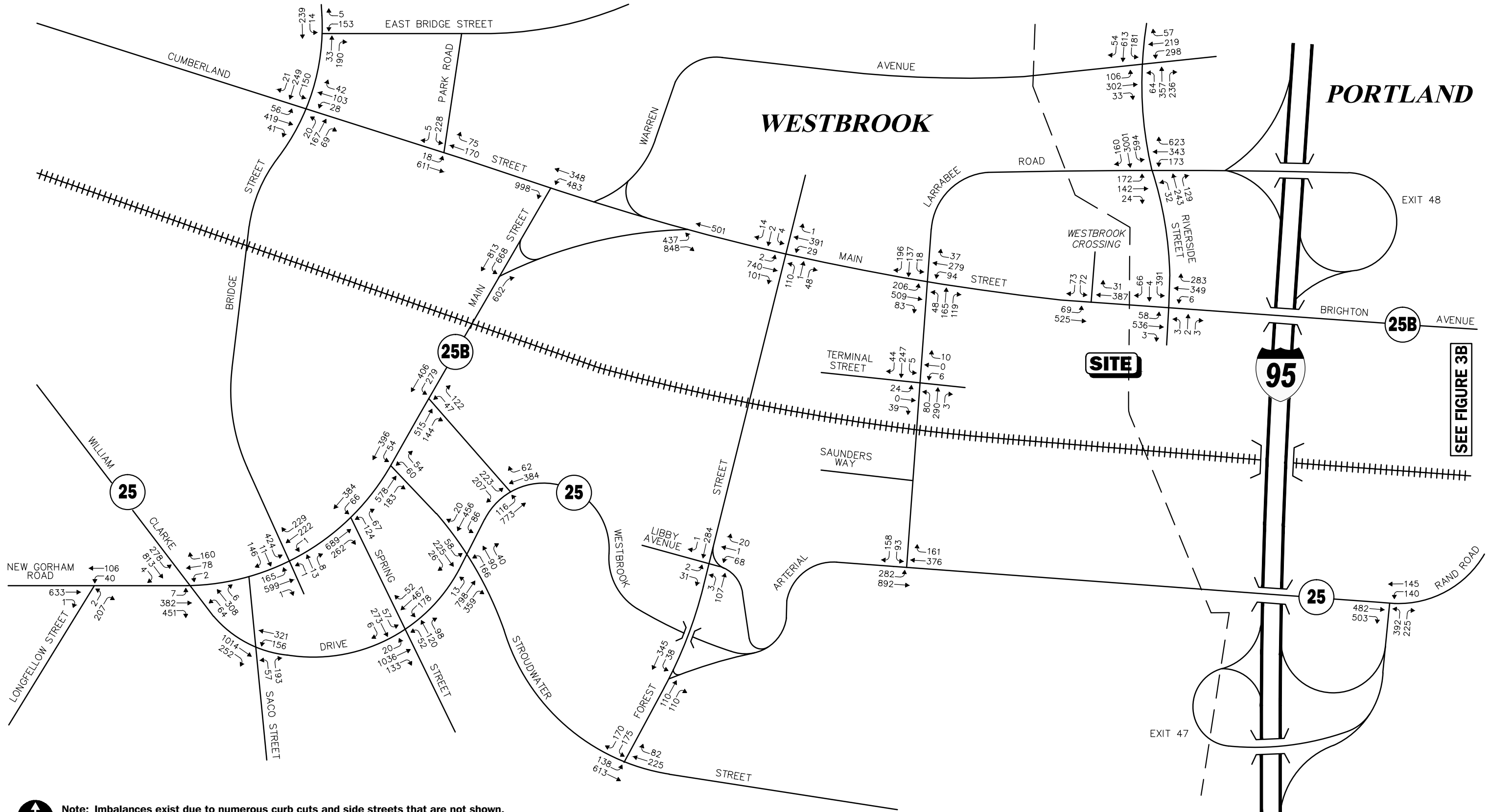
NB = northbound; SB = southbound; EB = eastbound; WB = westbound.

PEDESTRIAN AND BICYCLE FACILITIES

A review of pedestrian and bicycle facilities within the study area was undertaken in conjunction with the field inventories and consisted of a review of the location of sidewalks and pedestrian crossing locations along the study roadways and at the study intersections, as well as the location of existing and planned future bicycle facilities. As detailed on Figure 2, sidewalks are generally provided along one or both sides of the study area roadways, with marked crosswalks provided at the study intersections. Notable exceptions are Westbrook Arterial, Larrabee Road and Warren Road, where sidewalks are not currently provided or are discontinuous. In addition, we note that the City of Westbrook identified the Main Street/Larrabee Road intersection as a “pedestrian challenged area” in the 2012 *City Comprehensive Plan*.

Bicycle accommodations are provided within the study area by way of marked bicycle lanes, “sharrow” pavement markings or signs indicating “Share the Road”. In the downtown area, the Westbrook Riverwalk provides an off-road pathway along the south side of the Presumpscot River. In addition, the City of Westbrook is a part of the Sebago to the Sea Trail Coalition, which

⁴MDOT Traffic Volume Counts, 2014 Annual Report, Urban Group 1 Roadways.



SEE FIGURE 3B


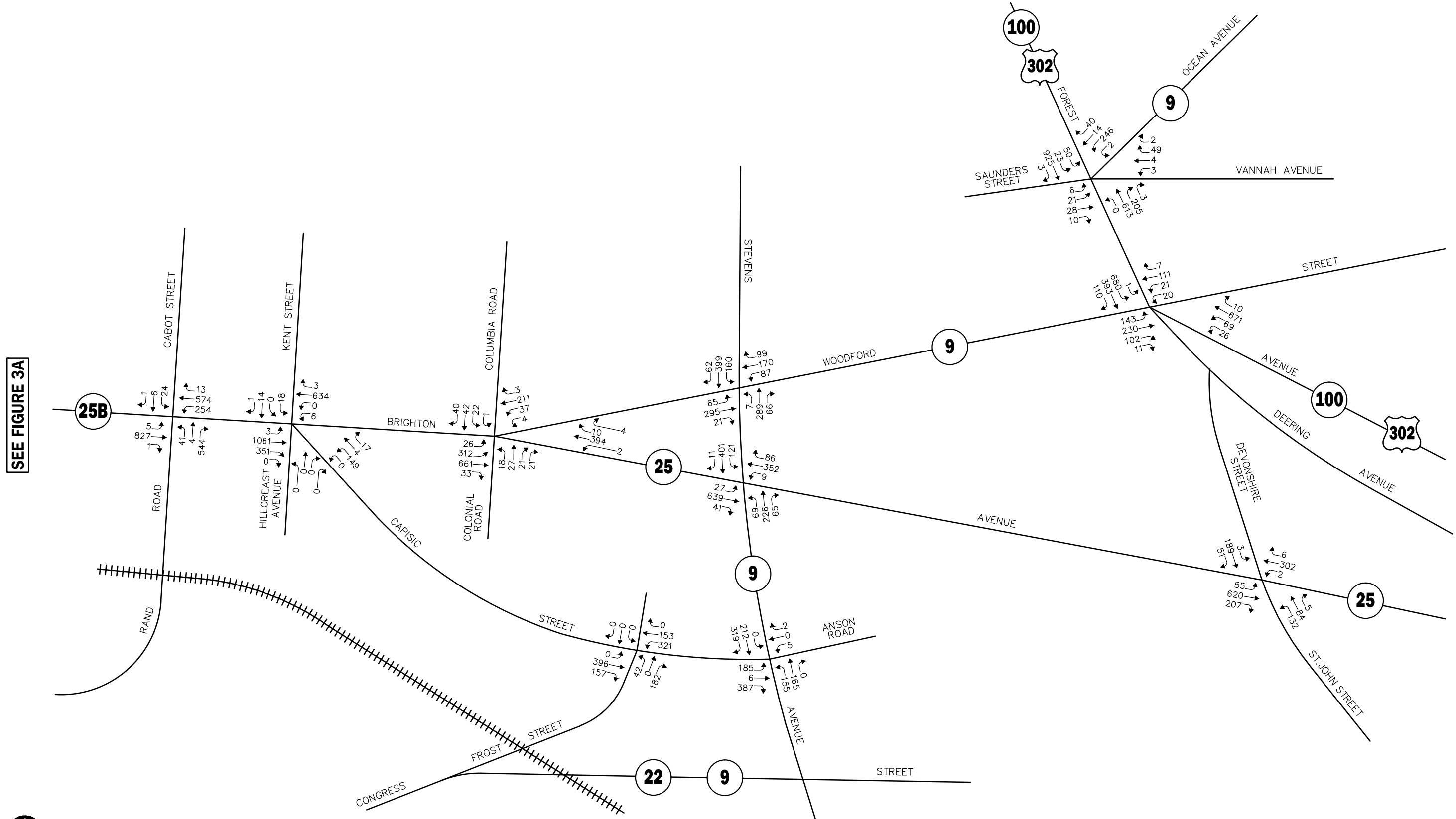

Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.
 Not To Scale



Figure 3A
 2015 Existing Design-Hour
 Weekday Morning
 Peak Hour Traffic Volumes

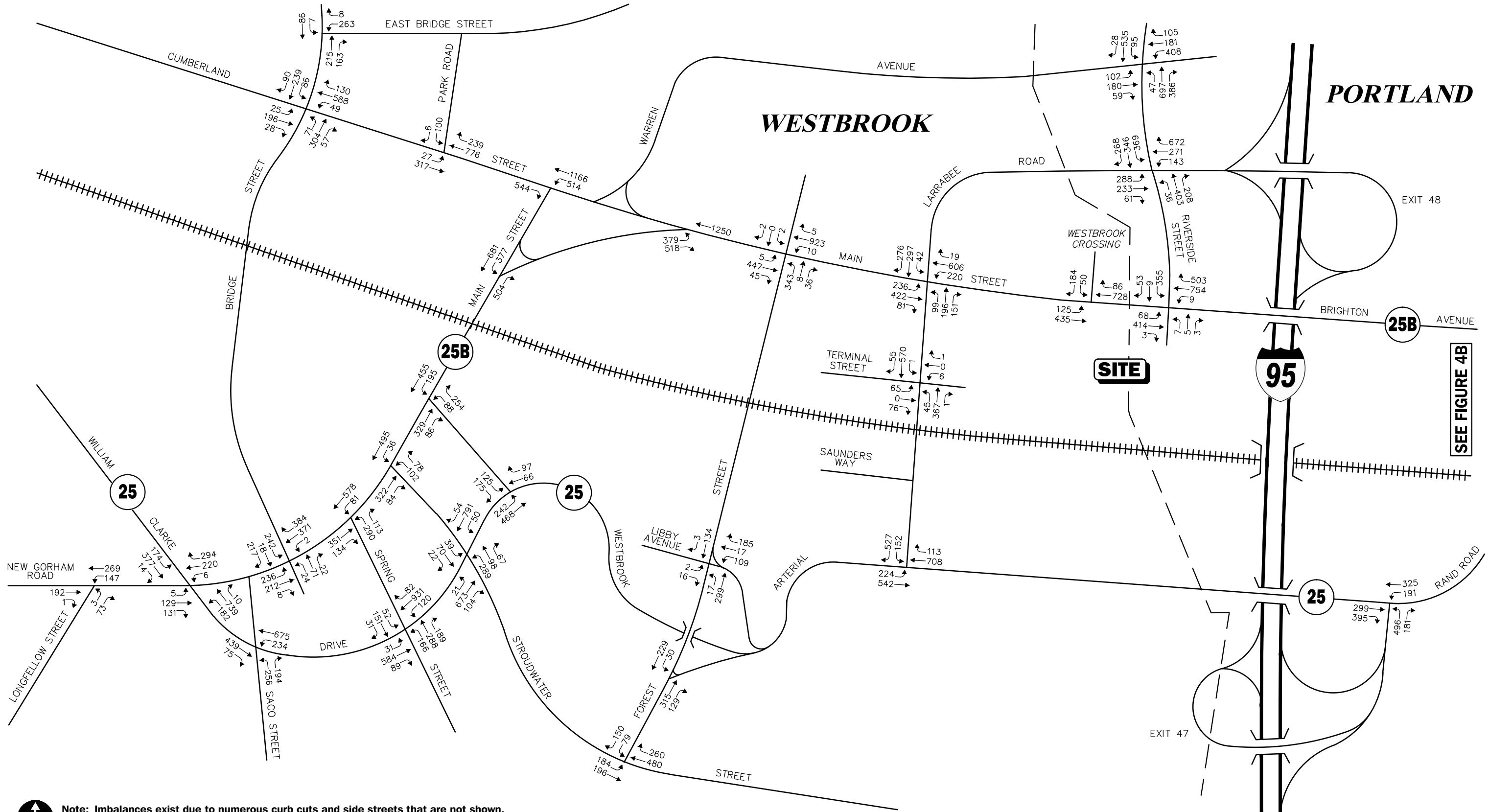


SEE FIGURE 3A

Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.
Not To Scale



Figure 3B
2015 Existing Design-Hour
Weekday Morning
Peak Hour Traffic Volumes

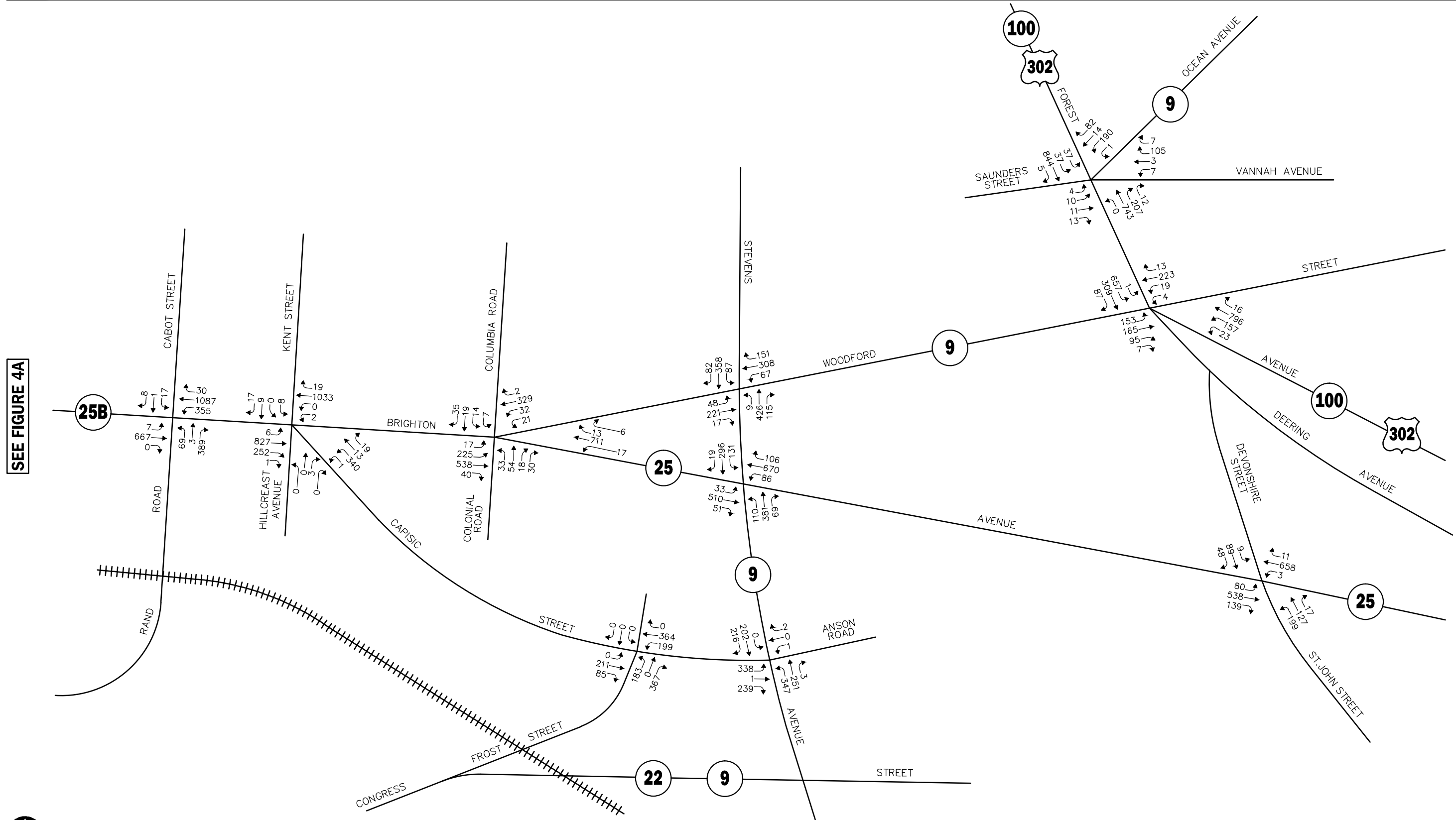


SEE FIGURE 4B

Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.
Not To Scale



Figure 4A
2015 Existing Design-Hour
Weekday Evening
Peak Hour Traffic Volumes

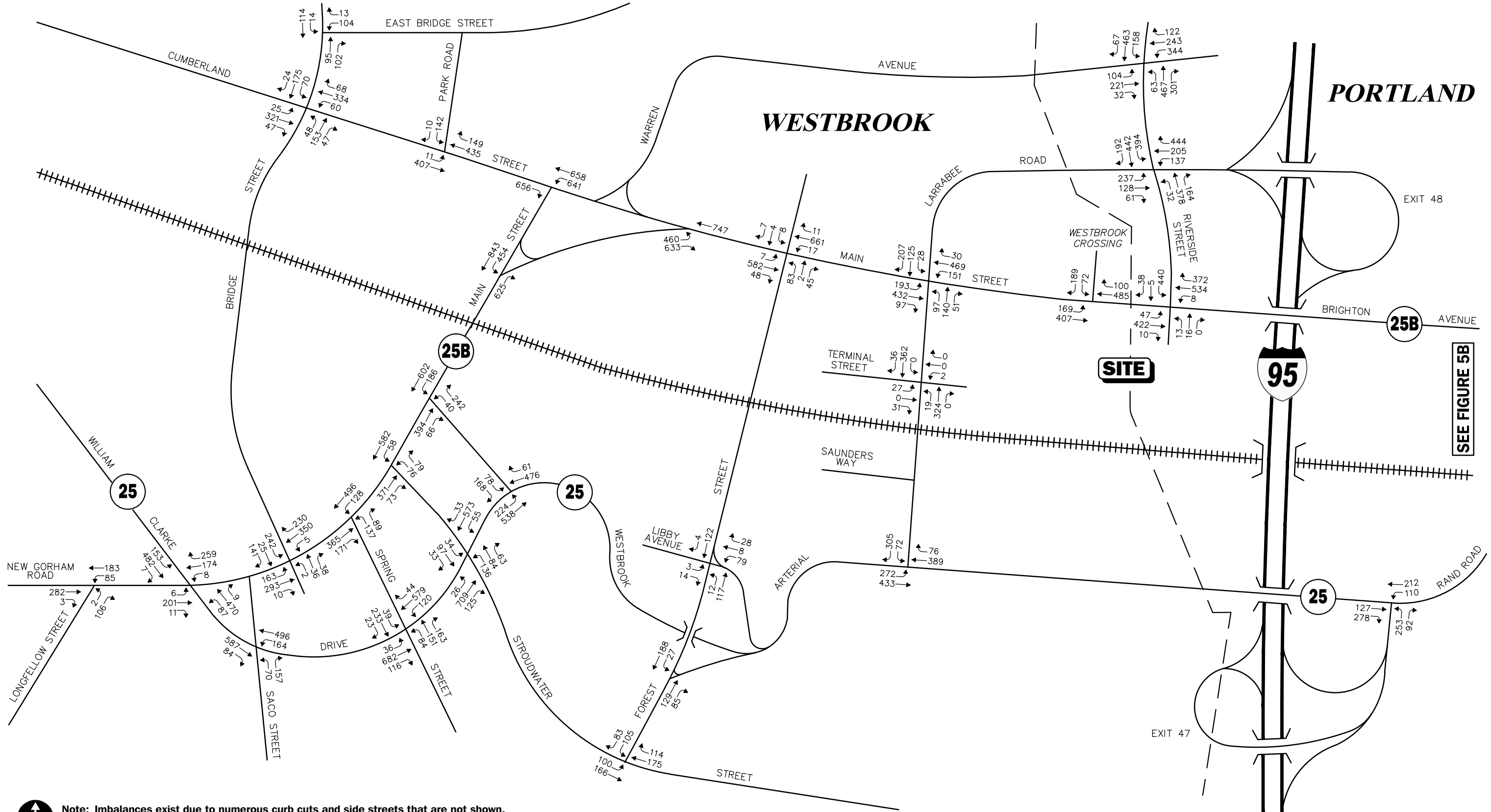


SEE FIGURE 4A

Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.
Not To Scale



Figure 4B
2015 Existing Design-Hour
Weekday Evening
Peak Hour Traffic Volumes



SEE FIGURE 5B

Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.
Not To Scale



Figure 5A
2015 Existing Design-Hour
Saturday Midday
Peak Hour Traffic Volumes

seeks to connect Casco Bay to Sebago Lake via a regional trail system. The trail connection through Westbrook would follow the existing Presumpscot River Trail along the north side of the river from Bridgeton Road to Halidon Road, transitioning to an on-road facility to East Bridge Street and Bridge Street, and then off-road into Windham along the MDOT rail right-of-way.

PUBLIC TRANSPORTATION

Public transportation services are provided within the study area by the Greater Portland Transit District, which operates the METRO bus service. The METRO bus provides service from the Portland Transportation Center (PTC) and includes eight (8) routes as follows:

- *M1 - Congress Street, Munjoy Hill/Mercy at the Fore/PTC*
- *M2 – Riverton, Forest Avenue*
- *M4 – Westbrook, Brighton Avenue*
- *M5 – Maine Mall, Portland Jetport/Outer Congress Street*
- *M7 – Falmouth, Route 1*
- *M8 – Peninsula Loop, Casco Bay Ferry Terminal*
- *M9A – Crosstown Loop via Stevens Avenue*
- *M9B – Crosstown Loop via Washington Avenue*

At the PTC, connections can be made to other METRO bus lines, the South Portland Bus (three (3) service routes), shuttle bus services (four (4) service routes) and the Amtrak Downeaster train, with connections by bus to the Casco Bay Lines ferry service and inter-city bus service (the WAVE). METRO buses are equipped with a bicycle rack at the front of the bus. The M4 METRO bus provides service along Main Street in Westbrook with a stop at the Westbrook Crossing shopping center located opposite the Project site.

The public transportation schedules and fare information are provided in the Technical Appendix.

SPOT SPEED MEASUREMENTS

Vehicle travel speed measurements were performed on Main Street, Westbrook Arterial and Larrabee Road in the vicinity of the Project site in conjunction with the ATR counts. Table 2 summarizes the vehicle travel speed measurements.

Table 2
VEHICLE TRAVEL SPEED MEASUREMENTS

	Main Street	Westbrook Arterial	Larrabee Road
	EB/WB	EB/WB	NB/SB
Mean Travel Speed (mph)	32/30	47/34	36/33
85 th Percentile Speed (mph)	38/35	53/42	39/38
Posted Speed Limit (mph)	35	45	35

mph = miles per hour.

NB = northbound; SB = southbound; EB = eastbound; WB = westbound.

As can be seen in Table 2, the mean (average) vehicle travel speed along Main Street in the vicinity of the Project site was found to be approximately 31 mph. The average measured 85th percentile vehicle travel speed, or the speed at which 85 percent of the observed vehicles traveled at or below, was found to be approximately 36 mph, which is generally consistent with the posted speed limit. The 85th percentile speed is used as the basis of engineering design and in the evaluation of sight distances, and is often used in establishing posted speed limits.

The mean vehicle travel speed along Westbrook Arterial was found to be approximately 41 mph, with the average measured 85th percentile vehicle travel speed found to be approximately 50 mph, which is 5 mph above the posted speed limit. The mean vehicle travel speed along Larrabee Road was found to be approximately 34 mph, with the average measured 85th percentile vehicle travel speed found to be approximately 38 mph, which is 3 mph above the posted speed limit.

ACCIDENT DATA

Accident data for the study area intersections was provided by the MDOT for the most recent three-year period available (2011 through 2013, inclusive) in order to examine crash trends occurring within the study area. Based on a review of the accident data provided by MDOT, seven (7) high accident locations that were identified within the study area: Main Street/Larrabee Road (Westbrook); Main Street/Cumberland Street/Warren Avenue (Westbrook); Cumberland Street/Park Road (Westbrook); Stroudwater Street/Forest Street (Westbrook); Larrabee Road/Riverside Street (Portland); Brighton Avenue/Stevens Avenue (Portland); and Capisic Street/Frost Street (Portland). Figure 6 depicts the subject locations in relation to the Project site along with a summary of the number of accidents occurring at each of the identified high accident locations and the associated critical rate factor. The detailed accident summary reports are provided in the Technical Appendix.

Legend:
● High Accident Locations
CRF = Critical Rate Factors

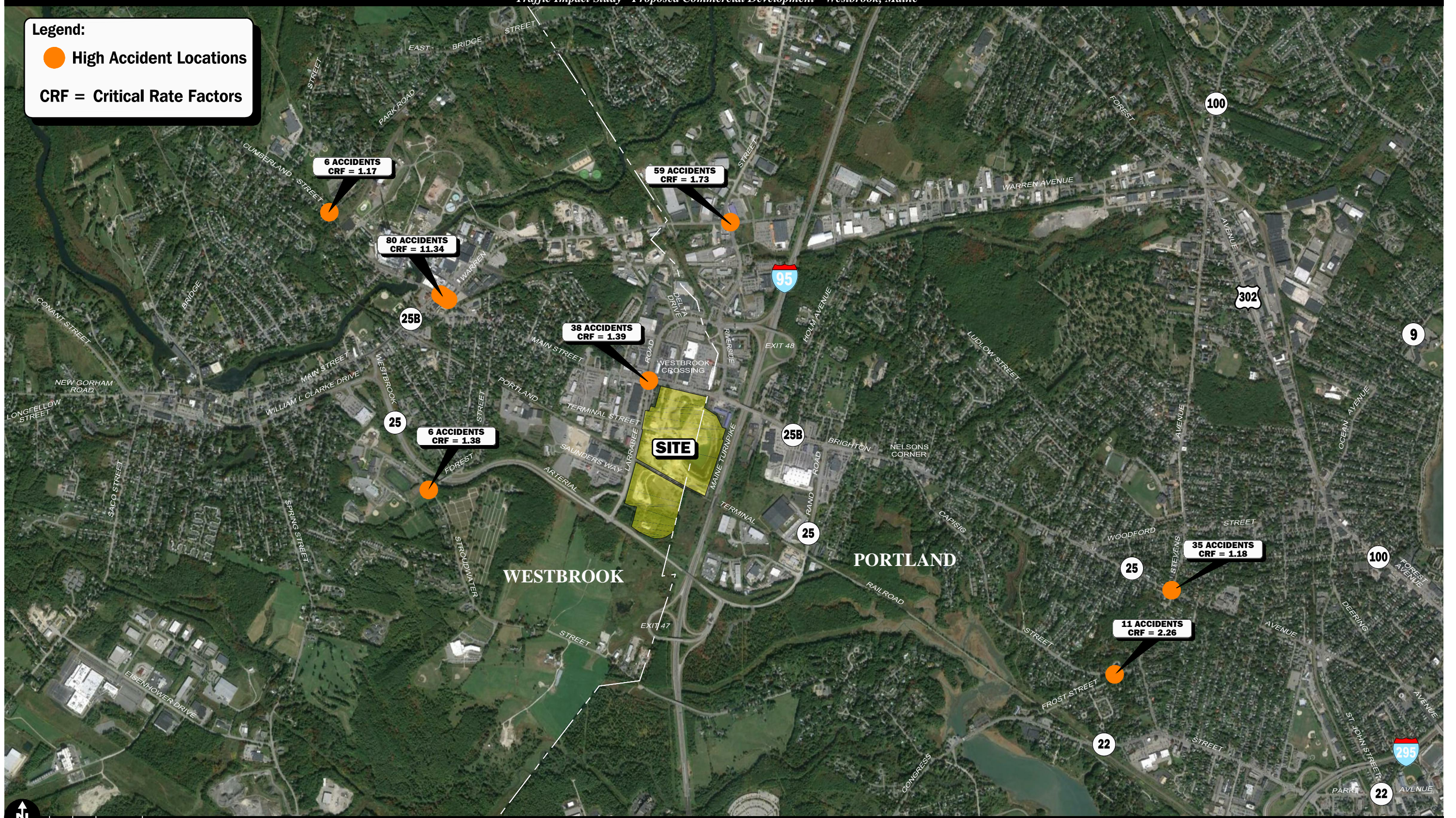


Figure 6
High Accident Location Map

FUTURE CONDITIONS

Traffic volumes in the study area were projected to the year 2021, which reflects a five-year planning horizon consistent with MDOT's *Traffic Movement Permit* guidelines and represents the anticipated completion date of the Project. Independent of the Project, traffic volumes on the roadway network in the year 2021 under No-Build conditions include all existing traffic and new traffic resulting from background traffic growth. Anticipated Project-generated traffic volumes superimposed upon the 2021 No-Build traffic volumes reflect 2021 Build traffic volume conditions with the Project.

FUTURE TRAFFIC GROWTH

Future traffic growth is a function of the expected land development in the immediate area and the surrounding region. Several methods can be used to estimate this growth. A procedure frequently employed estimates an annual percentage increase in traffic growth and applies that percentage to all traffic volumes under study. The drawback to such a procedure is that some turning volumes may actually grow at either a higher or a lower rate at particular intersections.

An alternative procedure identifies the location and type of planned development, estimates the traffic to be generated, and assigns it to the area roadway network. This procedure produces a more realistic estimate of growth for local traffic; however, potential population growth and development external to the study area would not be accounted for in the resulting traffic projections.

To provide a conservative analysis framework, both procedures were used, the salient components of which are described below.

Specific Development by Others

The Planning Department of the City of Westbrook and the City of Portland Planning Department website were consulted in order to determine if there were any projects planned within the study area that would have an impact on future traffic volumes at the study intersections. Based on these consultations, the following projects were identified that may result in an increase in traffic within the study area:

- ***Blue Spruce Farm, Spring Street, Westbrook, Maine.*** This project is currently under construction and will consist of 53 single-family homes, 32 residential condominiums and 98 apartments to be located off Spring Street in Westbrook, Maine.
- ***Medical Center, Westbrook, Maine.*** This project will entail the construction of a 5,000 sf medical center to be located off Saco Street in Westbrook, Maine.
- ***Prides Corner Condominiums, Westbrook, Maine.*** This project will entail the construction of 46 residential condominium units to be located at 375 Pride Street in Westbrook, Maine.

Traffic volumes associated with the aforementioned specific development projects by others were obtained from the respective traffic studies or using trip-generation information available from the Institute of Transportation Engineers (ITE)⁵ for the appropriate land use, and were assigned onto the study area roadway network based on existing traffic patterns where no other information was available. No other developments were identified at this time that are expected to result in an increase in traffic within the study area beyond the general background traffic growth rate.

General Background Traffic Growth

The Planning Department of the City of Westbrook was consulted to determine general traffic growth trends in the City. Based on this discussion, a 1.0 percent per year compounded annual background traffic growth rate was used in order to account for future traffic growth and presently unforeseen development within the study area.

Roadway Improvement Projects

MDOT and the Cities of Westbrook and Portland were consulted in order to determine if there were any planned future roadway improvement projects expected to be complete by 2021 within the study area. Based on these discussions, the following roadway improvement projects were identified within the study area:

- ***Cumberland Mills Triangle Improvement Project, Westbrook, Maine.*** This roadway improvement project will entail the reconstruction of the Cumberland Mills Triangle (intersection of Main Street, Cumberland Street and Harnois Avenue) to add traffic control signals to the Main Street/Cumberland Street, Main Street/Harnois Street and Cumberland Street/Harnois Street intersections to improve traffic flow and increase the safety of vehicles and pedestrians navigating the intersections. Construction of these improvements is expected to commence in 2016/2017.
- ***Woodfords Corner/Forest Avenue Improvement Project, Portland Maine.*** This roadway/streetscape improvement project will entail the reconstruction of the Woodfords Corner intersection (Woodford Street/Forest Avenue/Deering Avenue) extending to and including the Forest Avenue/Vannah Avenue/Saunders Street/Ocean Avenue intersection. The planned improvements will include the replacement of the traffic signal systems at both intersections, pavement rehabilitation, sidewalk reconstruction, street tree installation and the addition of street furnishings (street lights,

⁵Ibid 1.

benches, bicycle racks, etc.) Construction of these improvements is expected to commence in 2016/2017.

No other roadway improvement projects aside from routine maintenance activities were identified to be planned within the study area at this time.

No-Build Traffic Volumes

The 2021 No-Build Design Hour traffic-volumes were developed by applying the 1.0 percent per year compounded annual background traffic growth rate to the 2015 Existing Design Hour traffic volumes and then superimposing the peak-hour traffic volumes associated with the identified specific development projects by others. Based on a review of the traffic volume projections for the Project (discussion follows), the weekday evening and Saturday midday peak-hours were determined to be the critical analysis periods and represent the peak traffic generation periods for the Project. Accordingly, the future condition traffic volume projections and analyses focus on these peak periods. The 2021 No-Build Design Hour weekday evening and Saturday midday peak-hour traffic volumes are shown on Figures 7 and 8, respectively.

PROJECT-GENERATED TRAFFIC

Design year (2021 Build) traffic volumes for the study area roadways were determined by estimating Project-generated traffic volumes and assigning those volumes on the study roadways. The following sections describe the methodology used to develop the anticipated traffic characteristics of the Project.

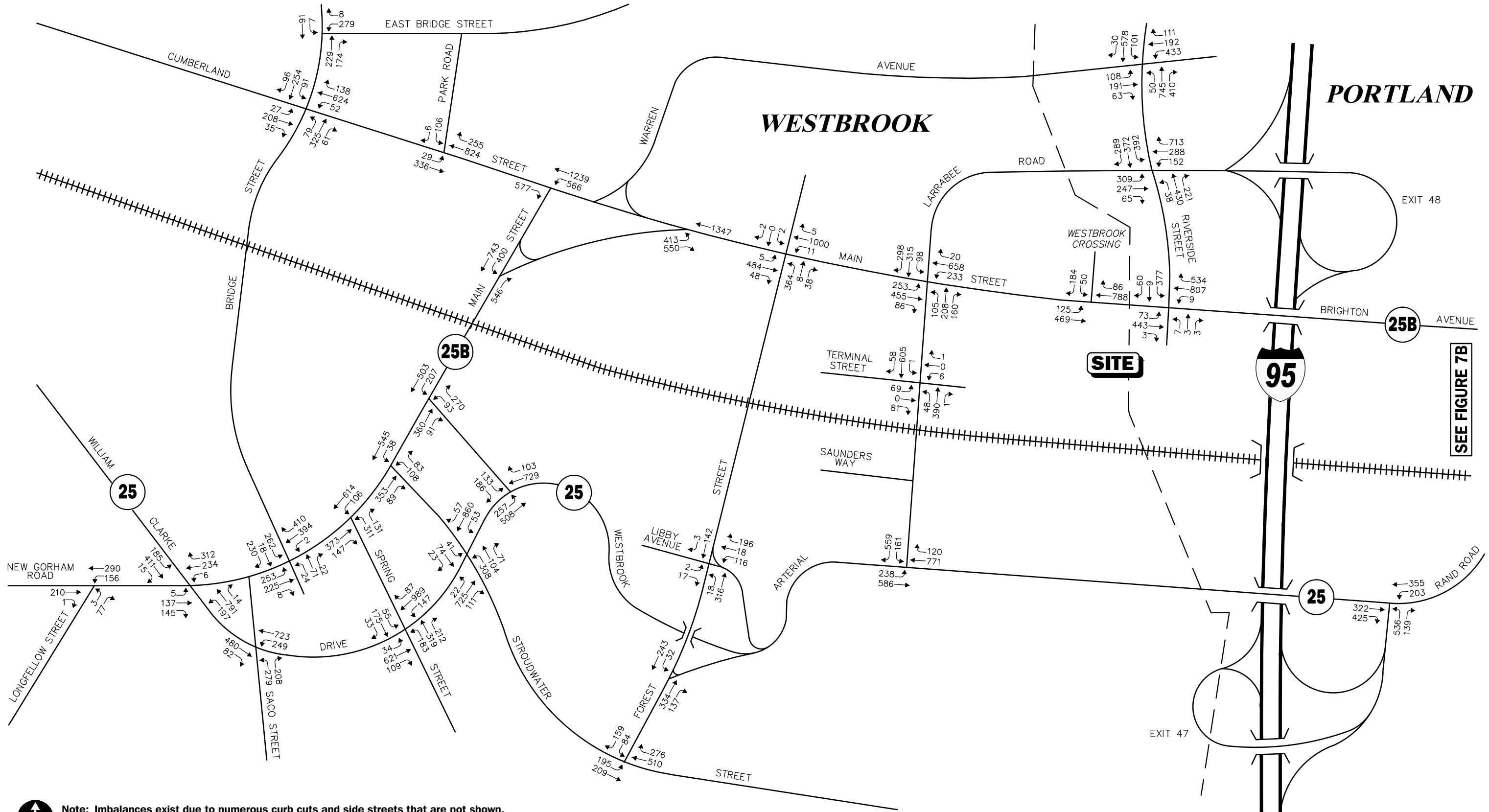
As proposed, the Project will entail the construction of a 489,461± sf mixed-use commercial development that will encompass multiple buildings containing a mix of retail, consumer service and restaurant uses, including a membership based vehicle fueling facility that will provide four (4) pumps and eight (8) vehicle fueling positions (vfps). In order to determine the traffic characteristics of the Project, trip-generation methodologies established by the ITE⁶ were used. The ITE provides trip-generation information for various types of land uses developed as a result of scientific studies that have been conducted over the past 50 plus years, the most recent update of which was published in 2012. This data includes trip estimates for land uses that are similar to those that are to be located within the Project site. ITE Land Use Codes (LUCs) 820, *Shopping Center*, and 944, *Gasoline/Service Station*, were used to develop the traffic characteristics of the Project.

Pass-By Trips

It is expected that a significant portion of the traffic that will be generated by the Project will consist of pass-by trips, or vehicles that are already travelling along Main Street, Larrabee Road and Westbrook Arterial for other purposes that will also patronize the Project in conjunction with their trip. These trips do not represent new vehicles on the roadway network as a result of the Project. Statistics published by the ITE⁷ indicate that up to 34 percent of the trips generated by a shopping center and 58 percent of the trips generated by a fueling facility may consist of pass-by

⁶Ibid 1.

⁷*Trip Generation Handbook*, 3rd Edition, An ITE Proposed Recommended Practice; Institute of Transportation Engineers; Washington, D.C.; August 2014.



SEE FIGURE 7B



Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.

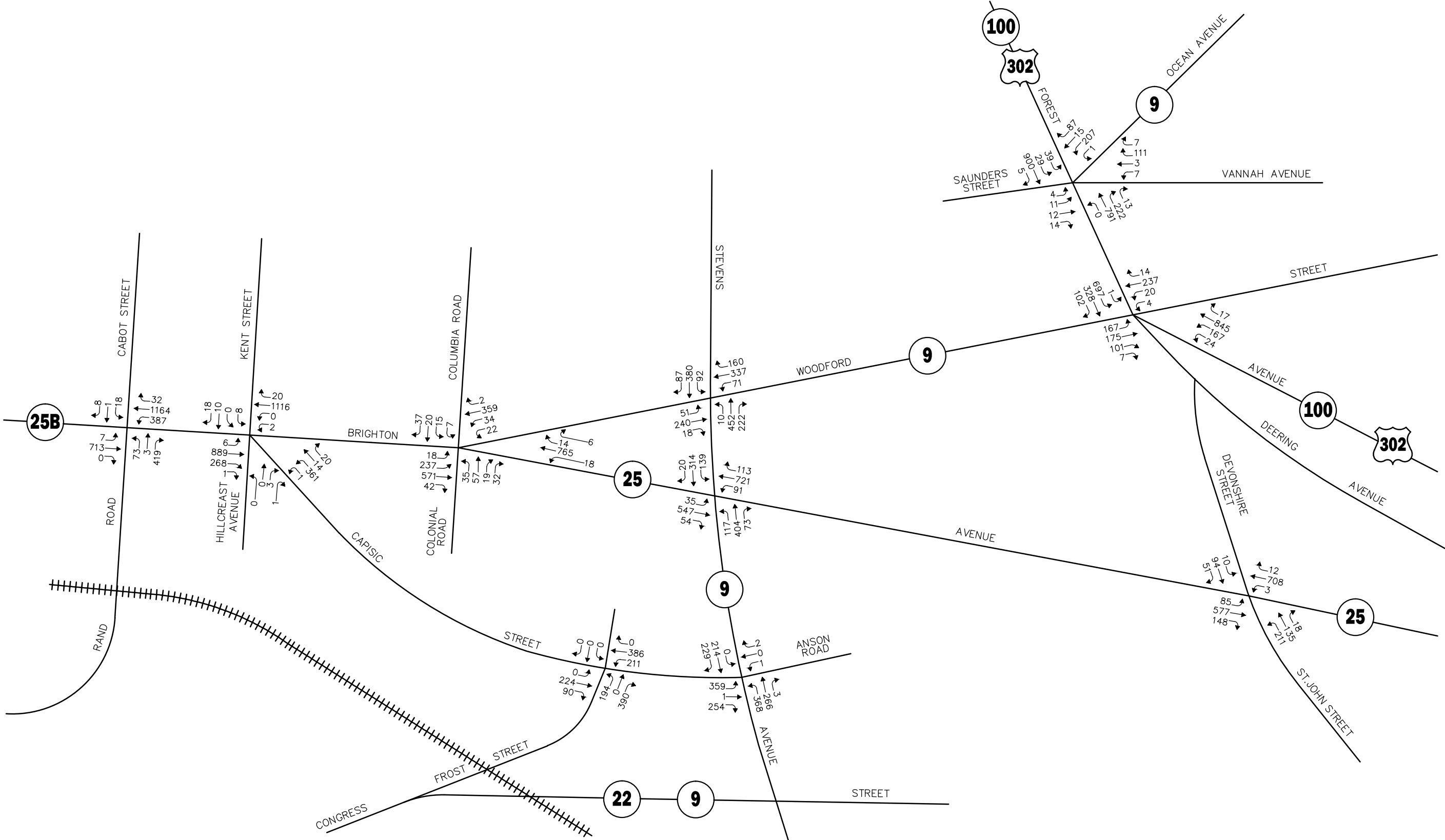
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Figure 7A

2021 No-Build Design-Hour
Weekday Evening
Peak Hour Traffic Volumes

SEE FIGURE 7A




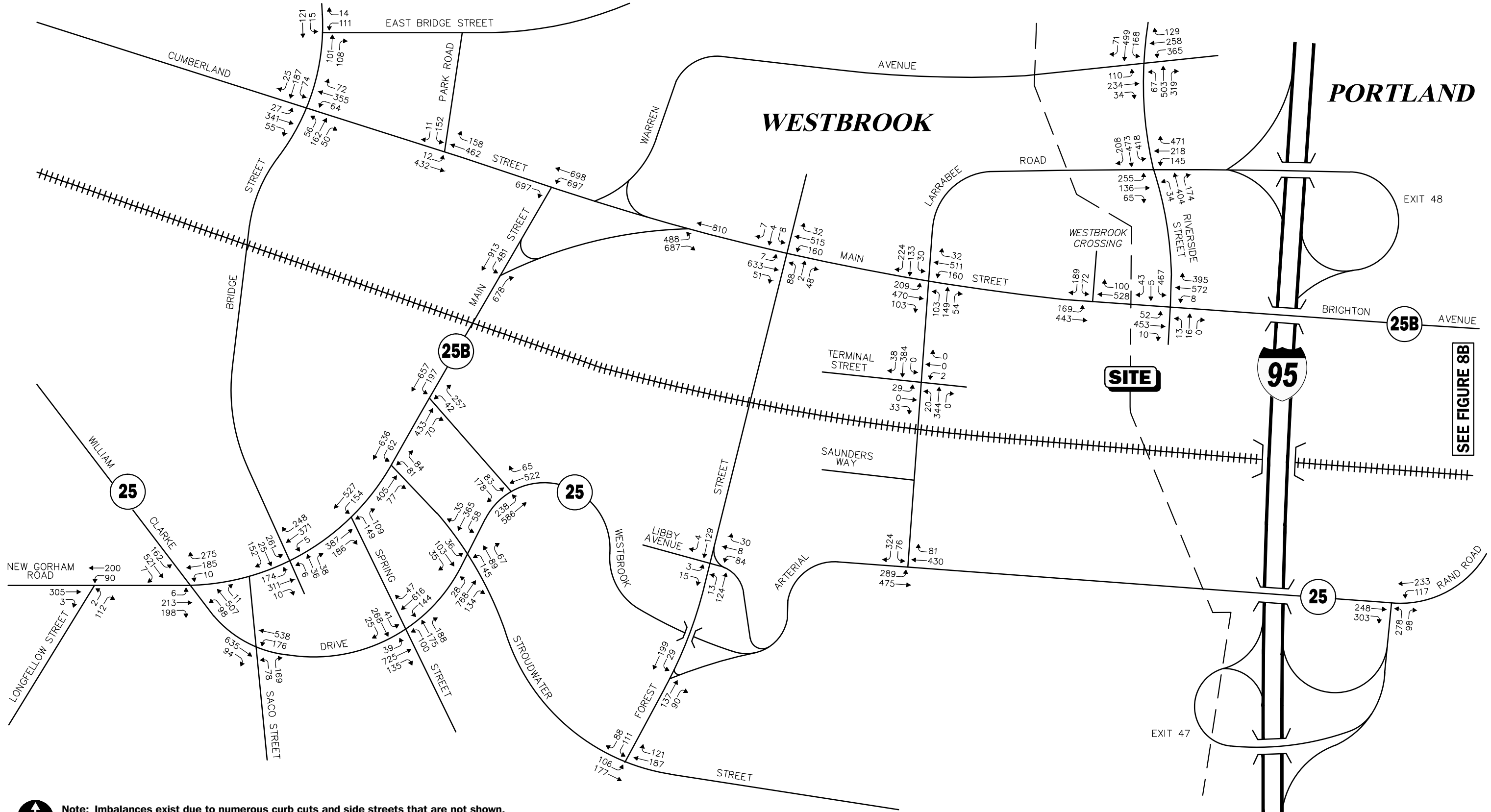
 Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.
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Figure 7B
2021 No-Build Design-Year
Weekday Evening
Peak Hour Traffic Volumes



SEE FIGURE 8B


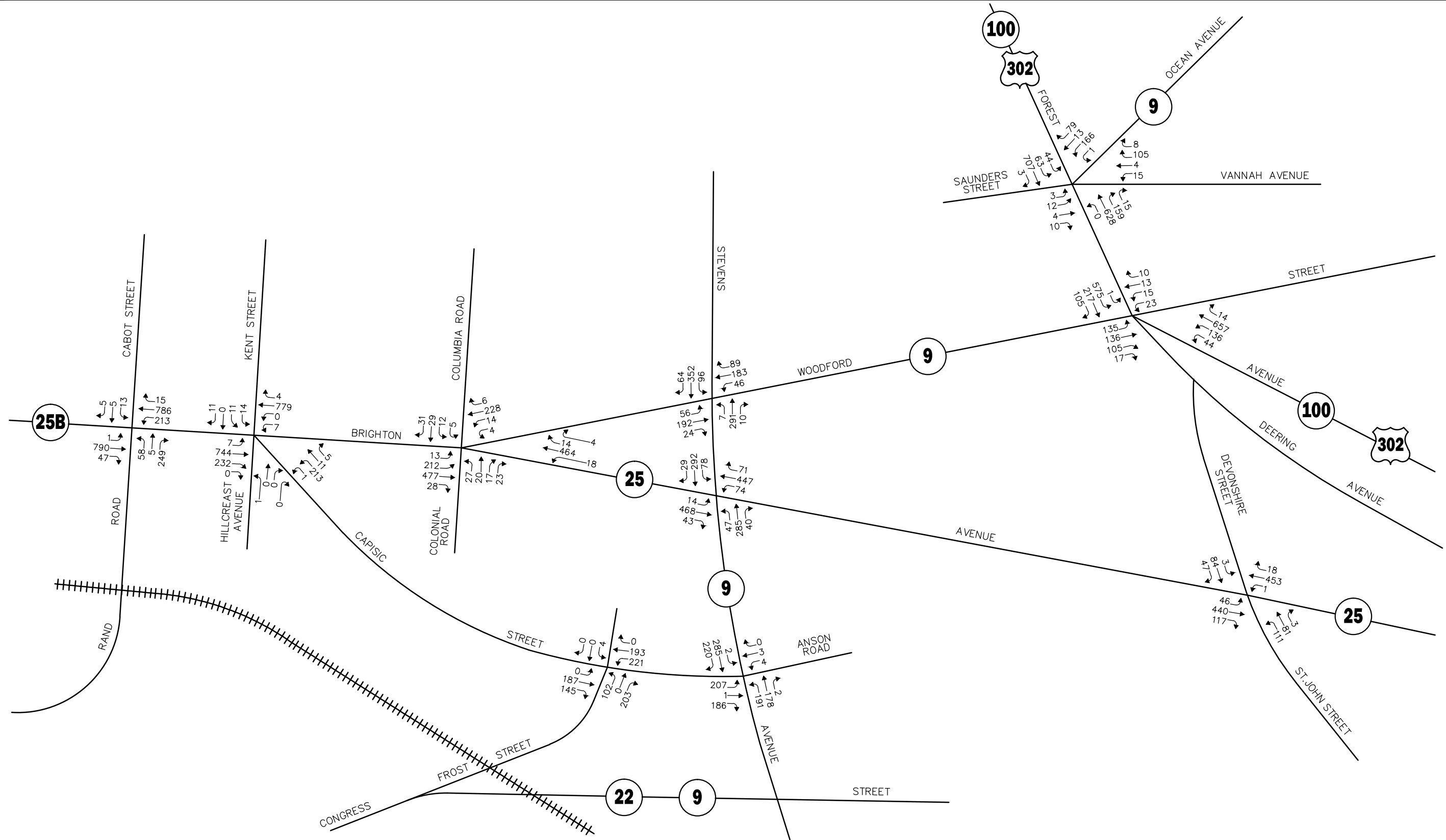
 Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.
Not To Scale



Figure 8A
2021 No-Build Design-Hour
Saturday Midday
Peak Hour Traffic Volumes

SEE FIGURE 8A



Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.

Not To Scale



Figure 8B

2021 No-Build Design-Hour Saturday Midday Peak Hour Traffic Volumes

trips. For the purpose of this assessment, the ITE referenced pass-by trip rates were applied to the trip-generation calculations for the Project.

Table 3 summarizes the anticipated traffic characteristics of the Project using the above methodology.

Project-Generated Traffic Volume Summary

As can be seen in Table 3, using the aforementioned methodology, the Project is predicted to generate approximately 13,366 new vehicle trips on an average weekday and 18,890 new vehicle trips on a Saturday (two-way volume over the operational day of the Project), with 351 new vehicle trips (232 entering and 119 exiting) expected during the weekday morning peak-hour, 1,217 new vehicle trips (574 entering and 643 exiting) expected during the weekday evening peak-hour and 1,853 new vehicle trips (976 entering and 877 exiting) expected during the Saturday midday peak-hour.

Trip Distribution and Assignment

The directional distribution of generated trips to and from the Project site was determined based on a review of: i) existing traffic patterns within the study area; ii) population densities; and iii) the local and regional roadway network. The resulting trip distribution for the Project is graphically depicted on Figure 9, with the additional traffic expected to be generated by the Project assigned on the study area roadway network as shown on Figures 10 and 11 for the weekday evening and Saturday midday peak hours, respectively.

FUTURE TRAFFIC VOLUMES - BUILD CONDITION

The 2021 Build Design Hour traffic volumes consist of the 2021 No-Build Design Hour traffic volumes with the additional traffic expected to be generated by the Project added to them. The 2021 Build Design Hour weekday evening and Saturday midday peak-hour traffic-volumes are graphically depicted on Figures 12 and 13, respectively.

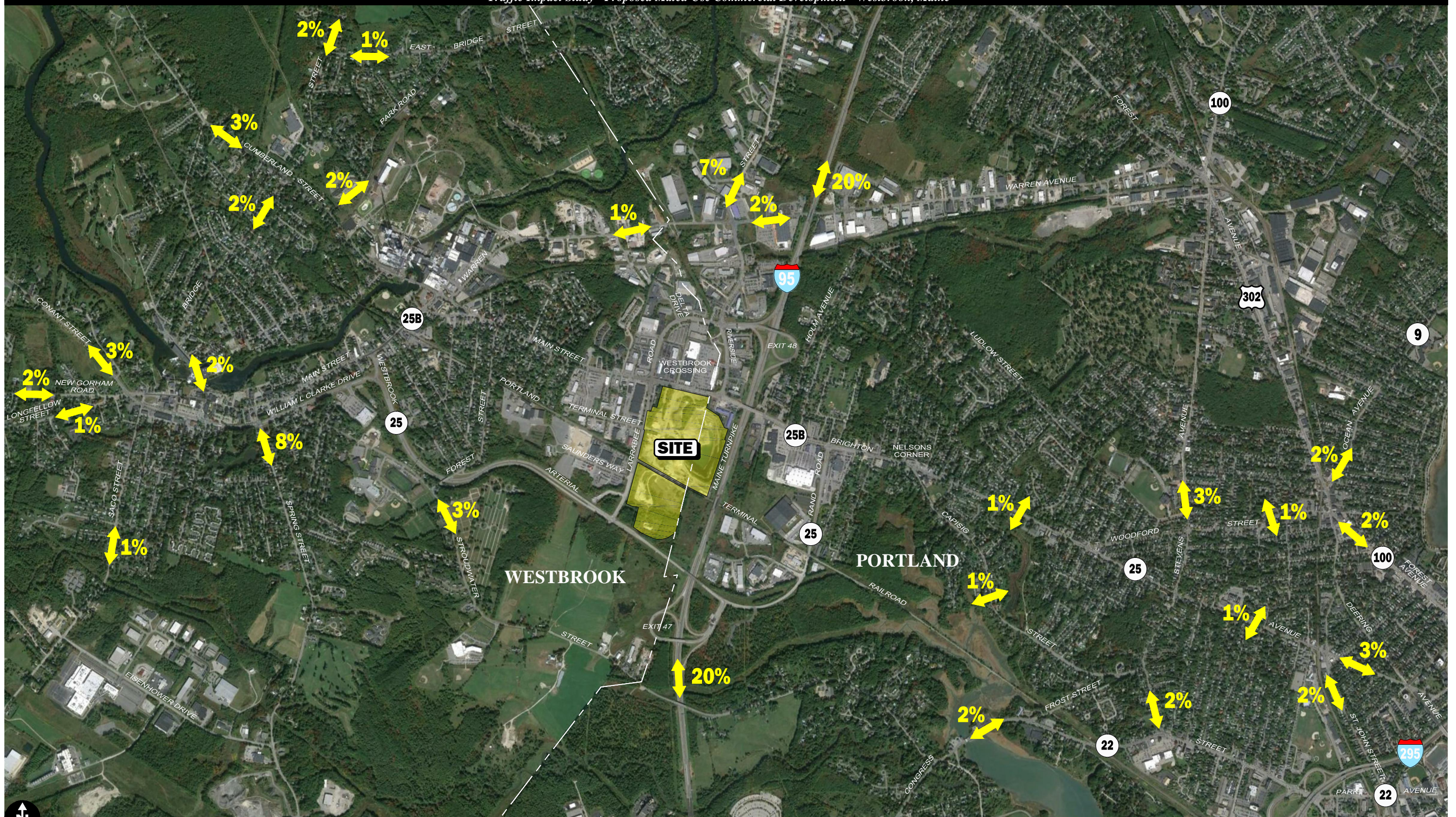
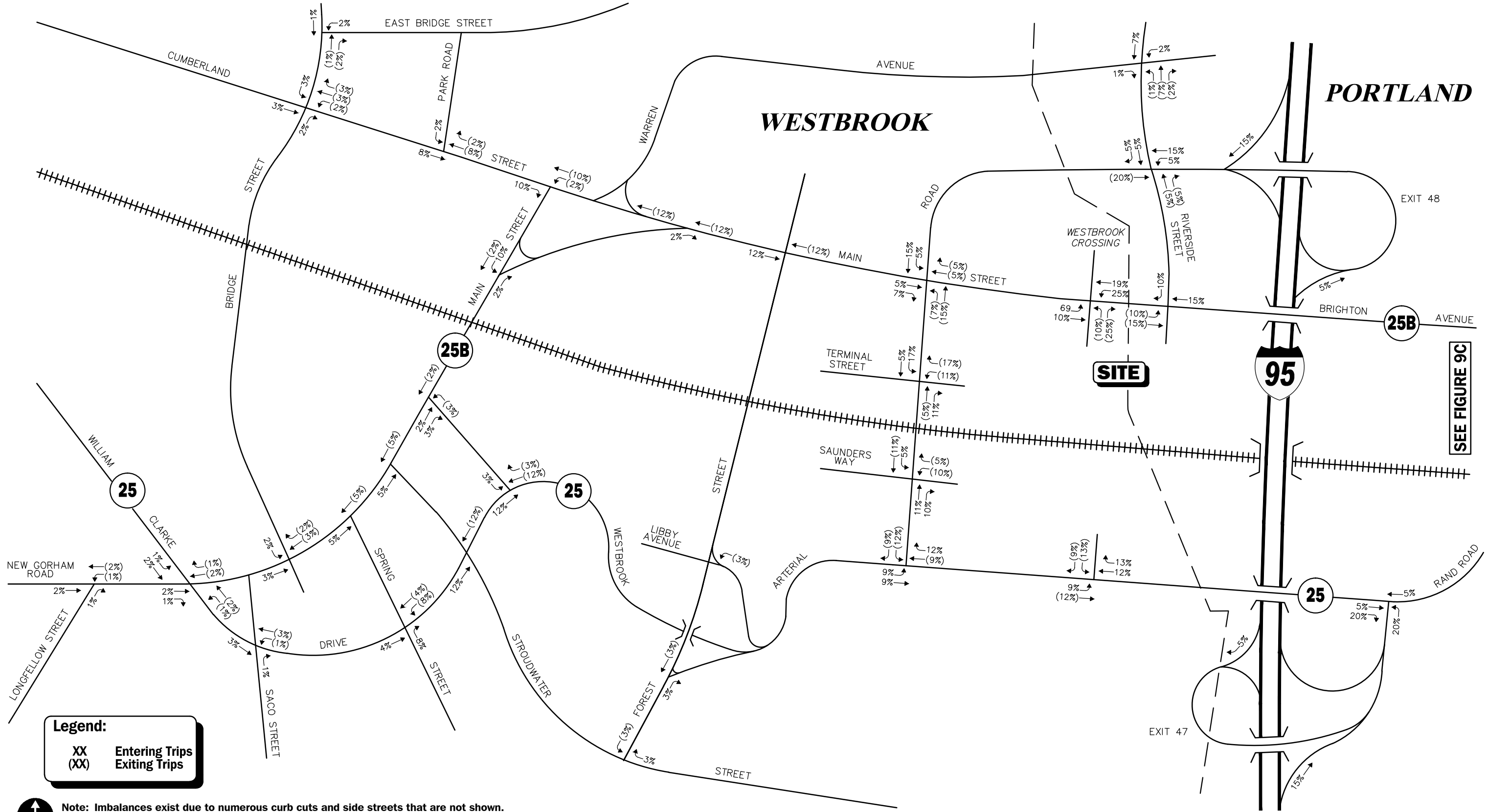


Figure 9A
Trip Distribution Map



Legend:
 XX Entering Trips
 (XX) Exiting Trips

Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.

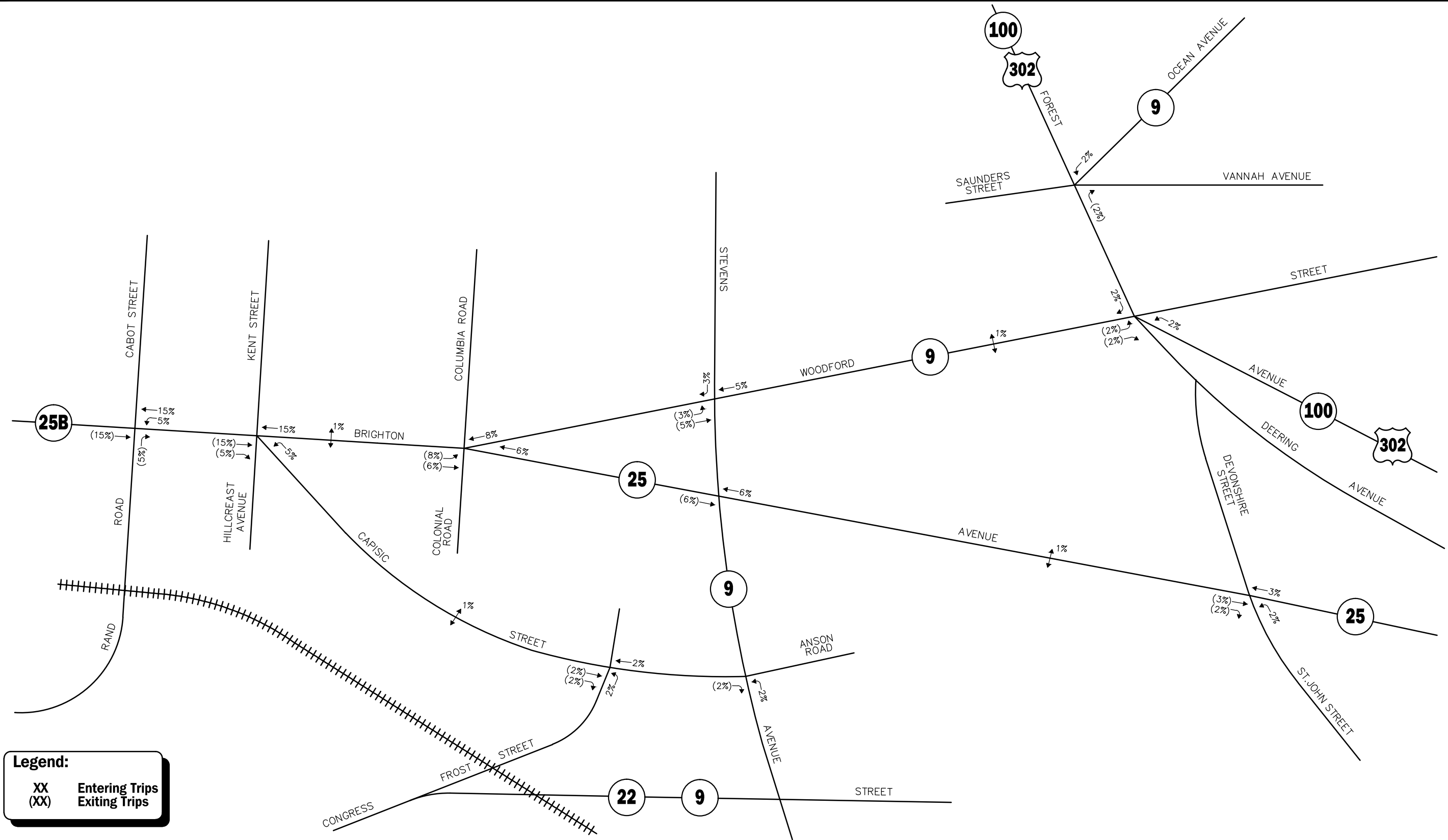
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Figure 9B
 Trip Distribution Map

SEE FIGURE 9C

SEE FIGURE 9B



Legend:
 XX Entering Trips
 (XX) Exiting Trips

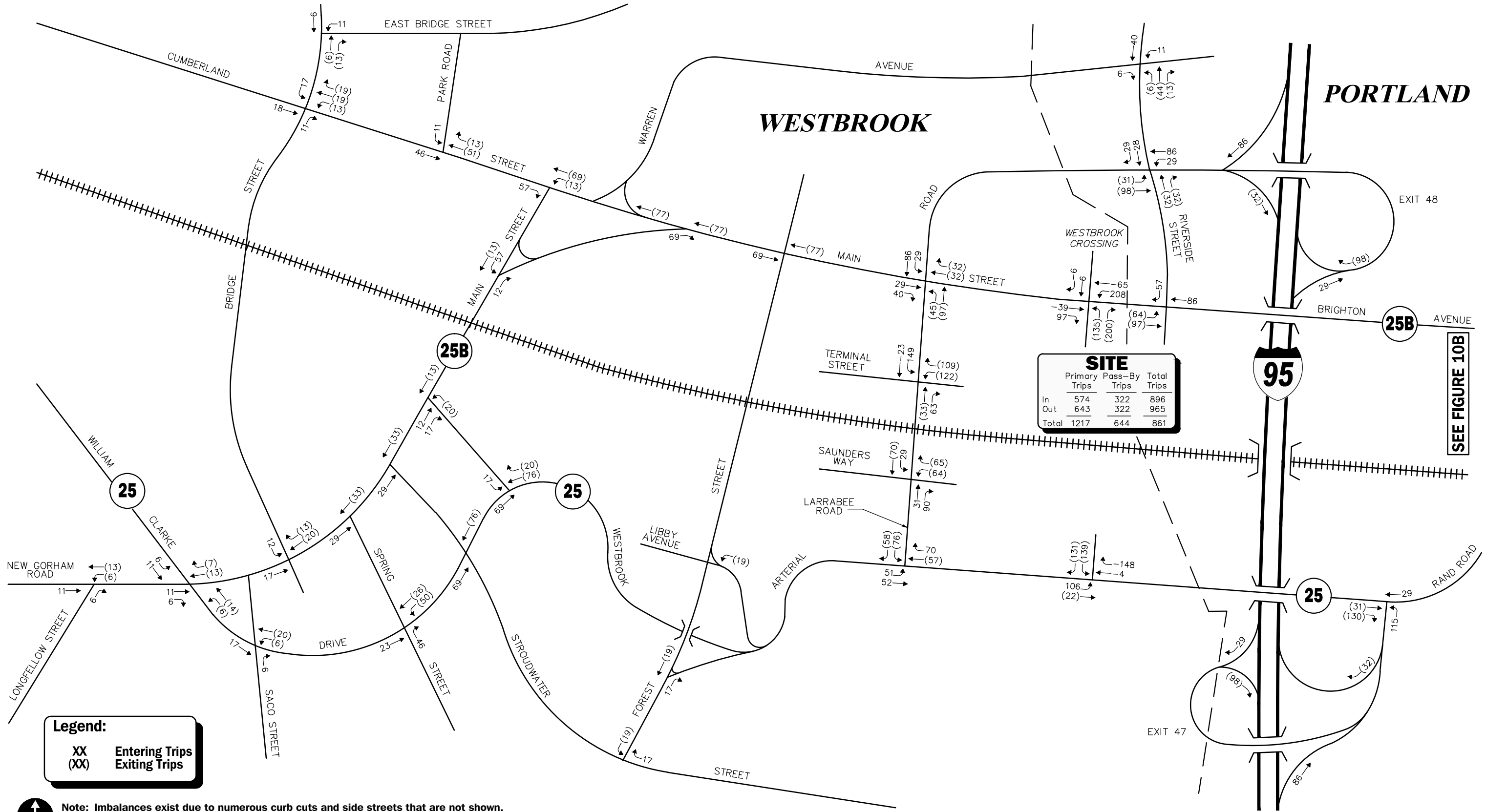
Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.

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Figure 9C
 Trip Distribution Map

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Legend:
 XX Entering Trips
 (XX) Exiting Trips

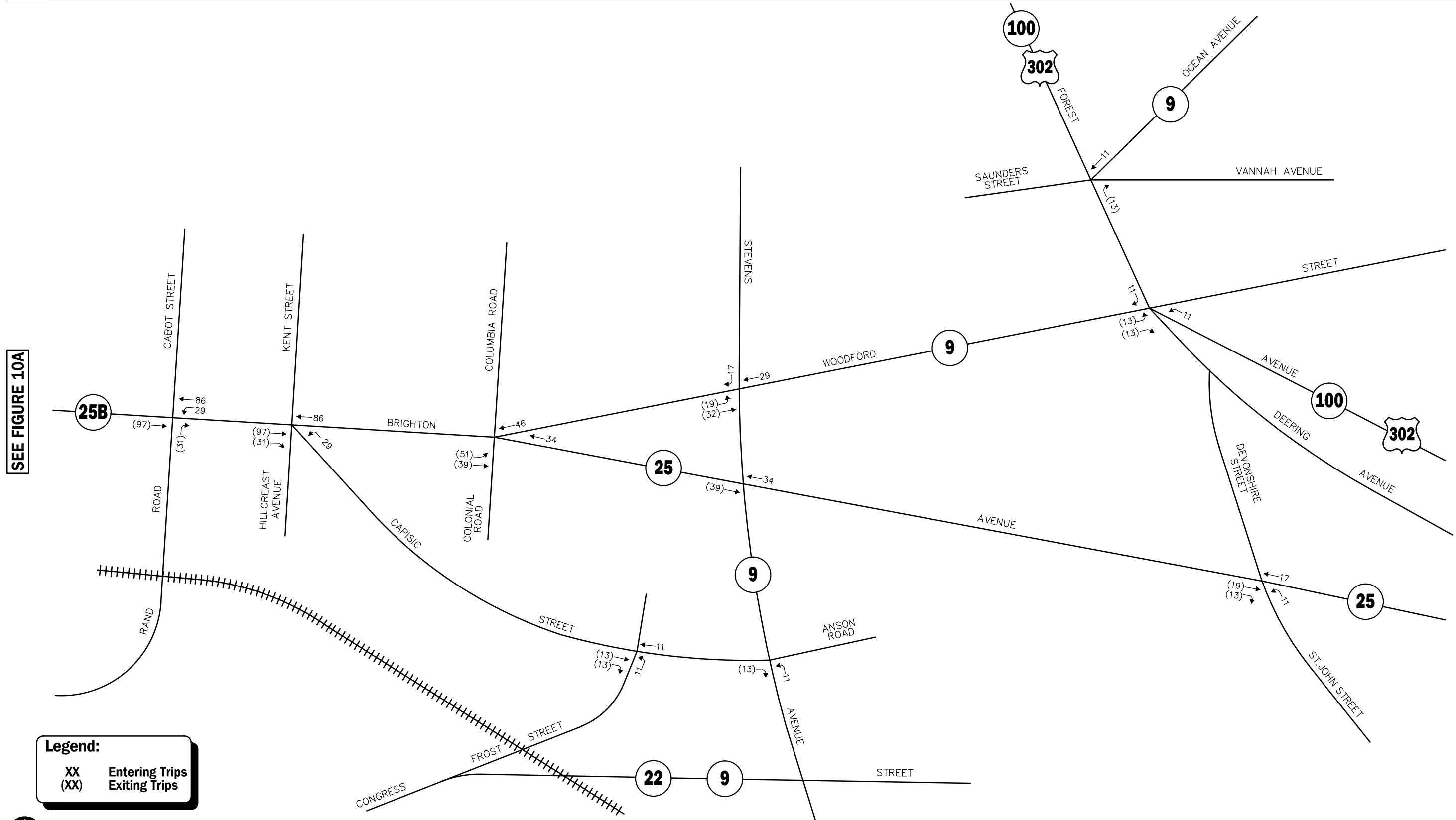
Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.

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Figure 10A
 Project-Generated
 Weekday Evening
 Peak Hour Traffic Volumes

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SEE FIGURE 10A

Figure 10B
 Project-Generated
 Weekday Evening
 Peak Hour Traffic Volumes

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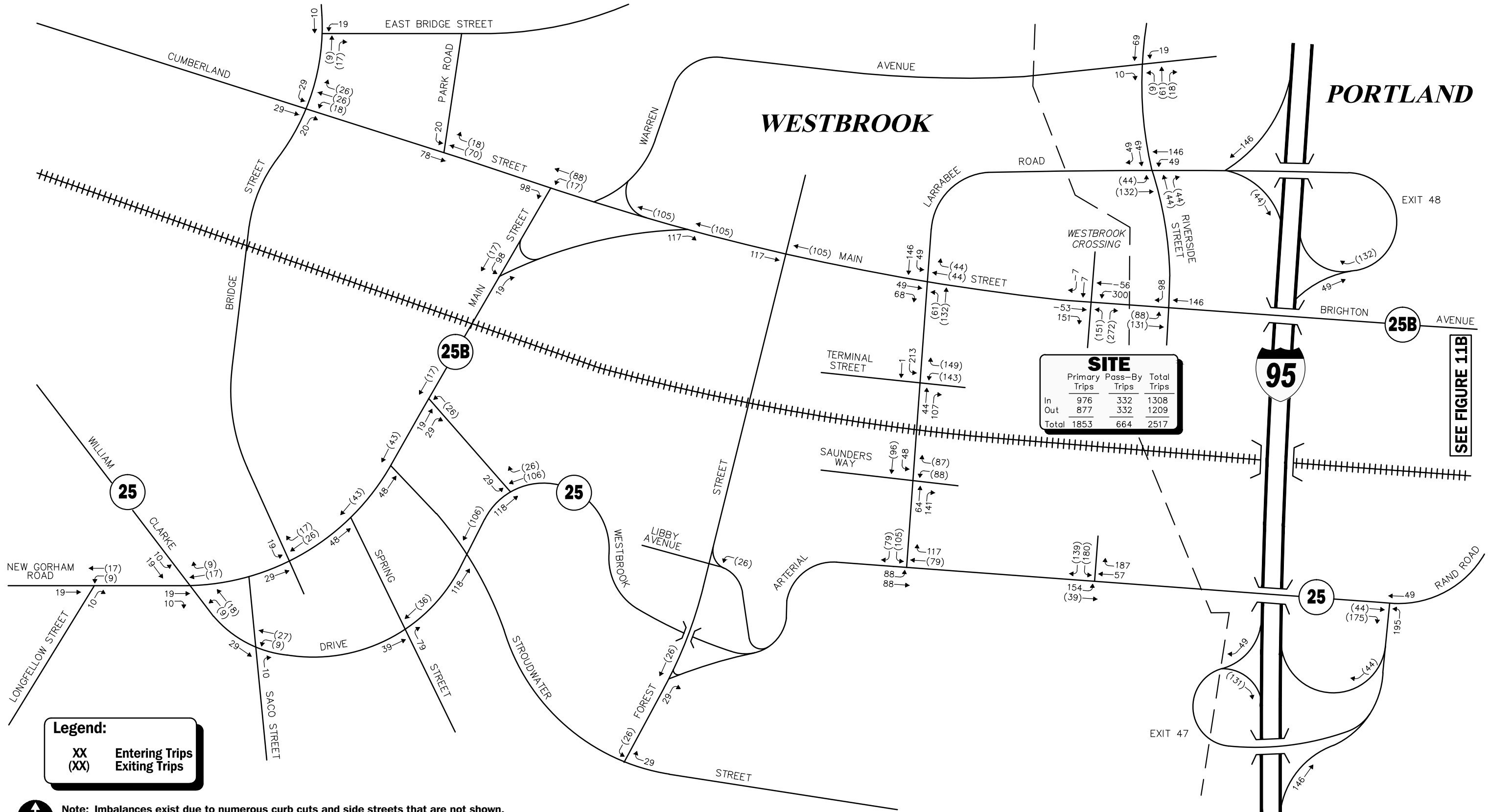


Figure 11A

Project-Generated
 Saturday Midday
 Peak Hour Traffic Volumes



SEE FIGURE 11B

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SEE FIGURE 11A

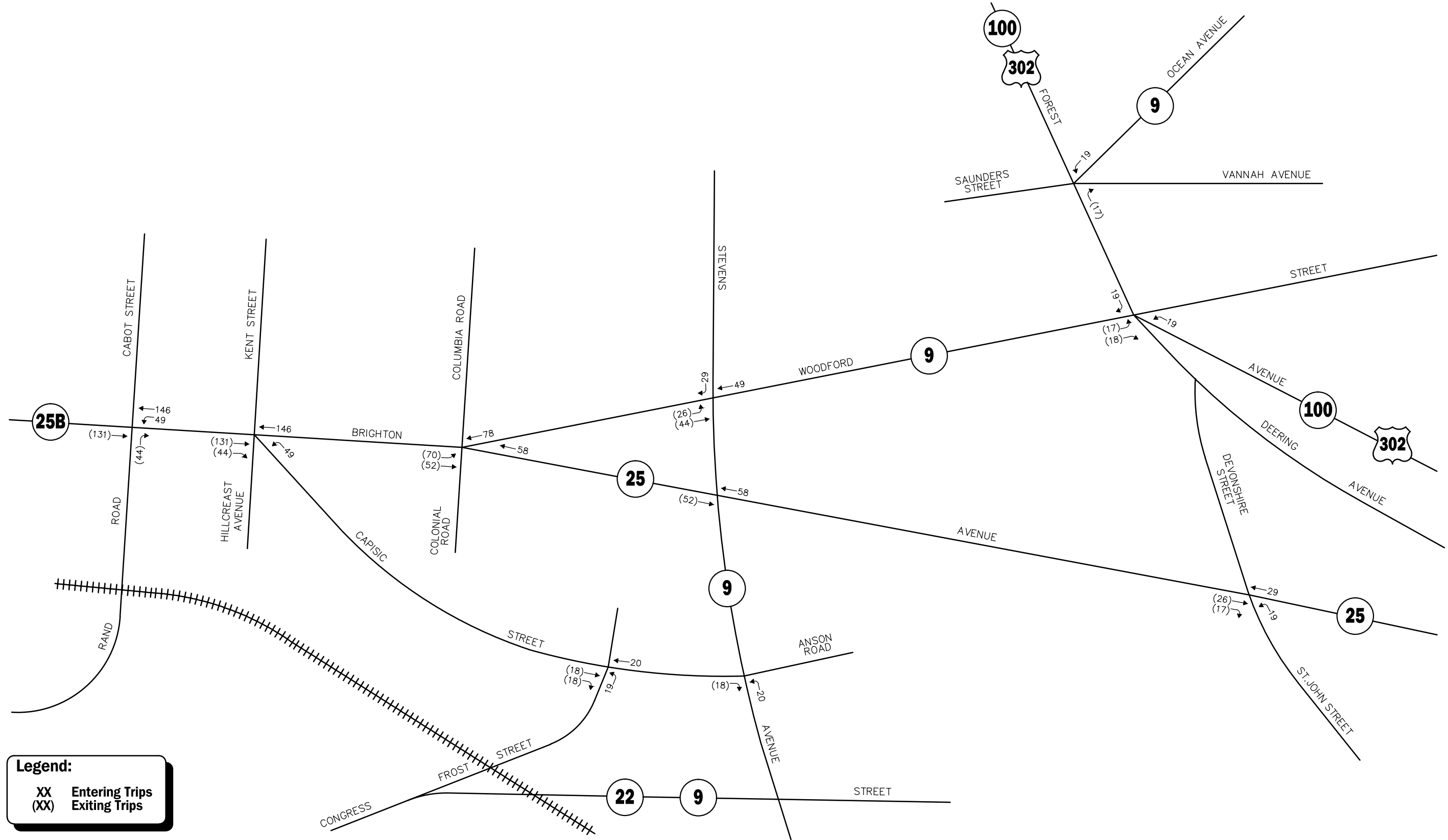
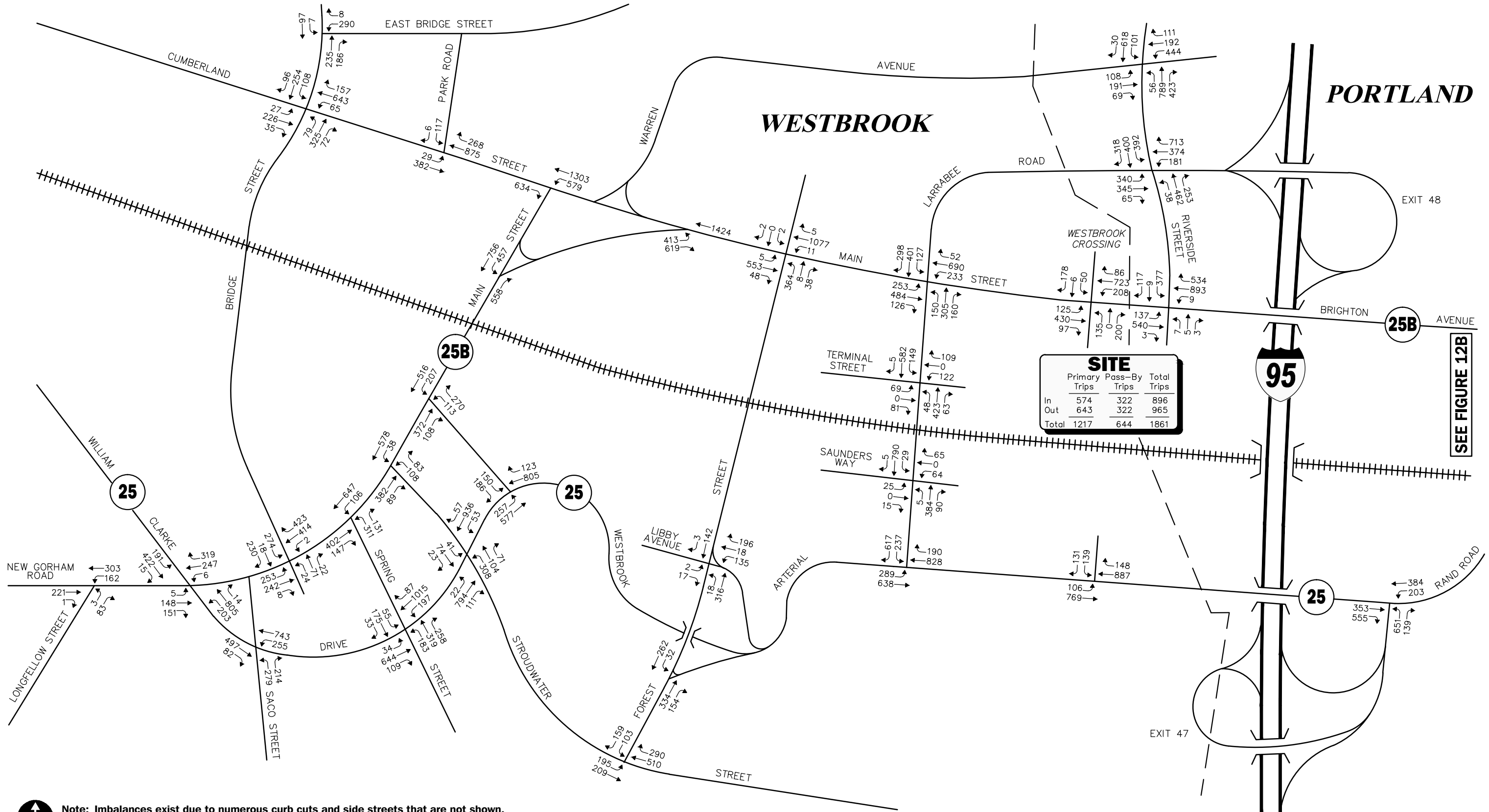


Figure 11B
 Project-Generated
 Saturday Midday
 Peak Hour Traffic Volumes



Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.
Not To Scale

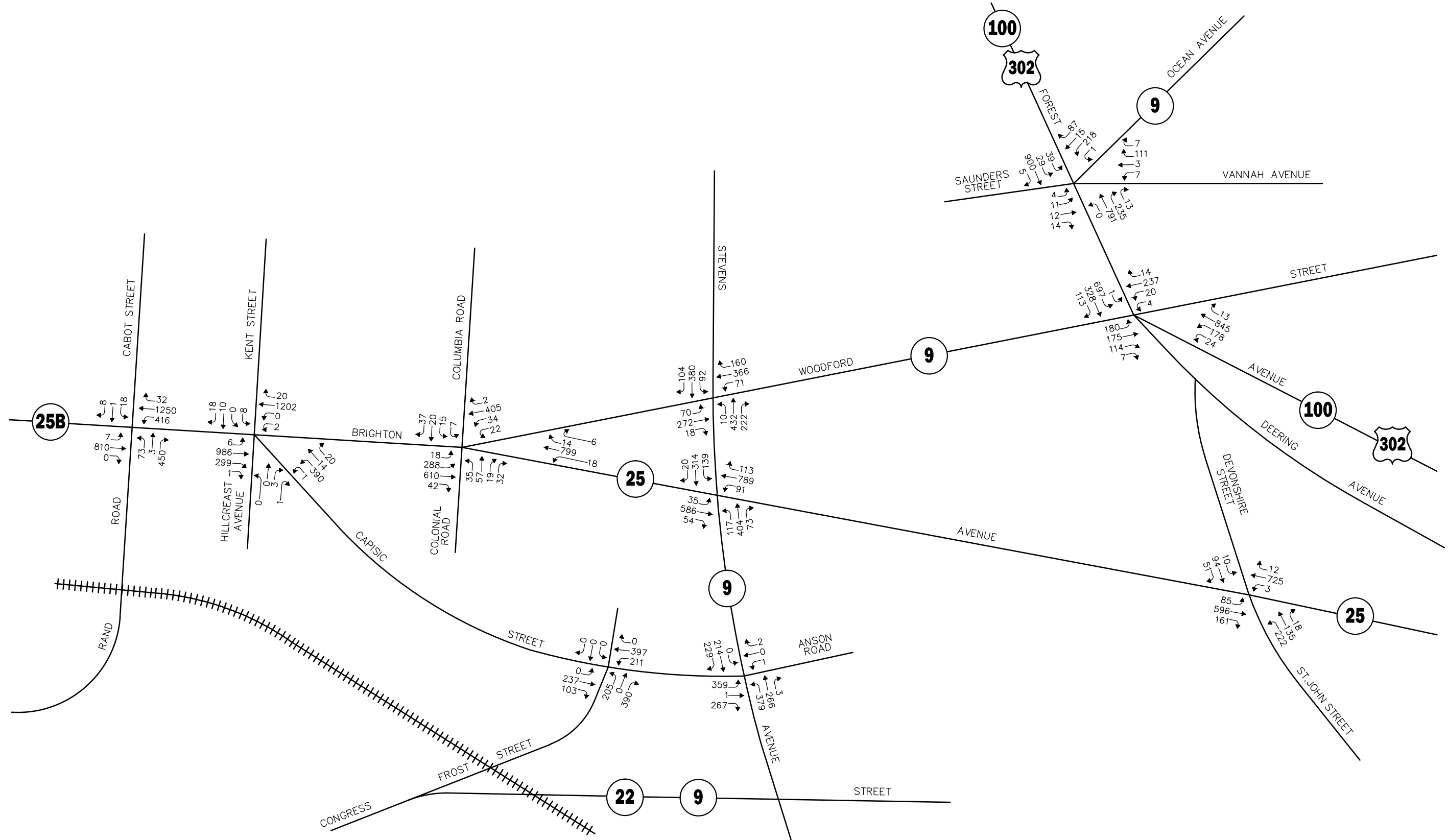


Figure 12A
2021 Build Design-Hour
Weekday Evening
Peak Hour Traffic Volumes

SEE FIGURE 12B

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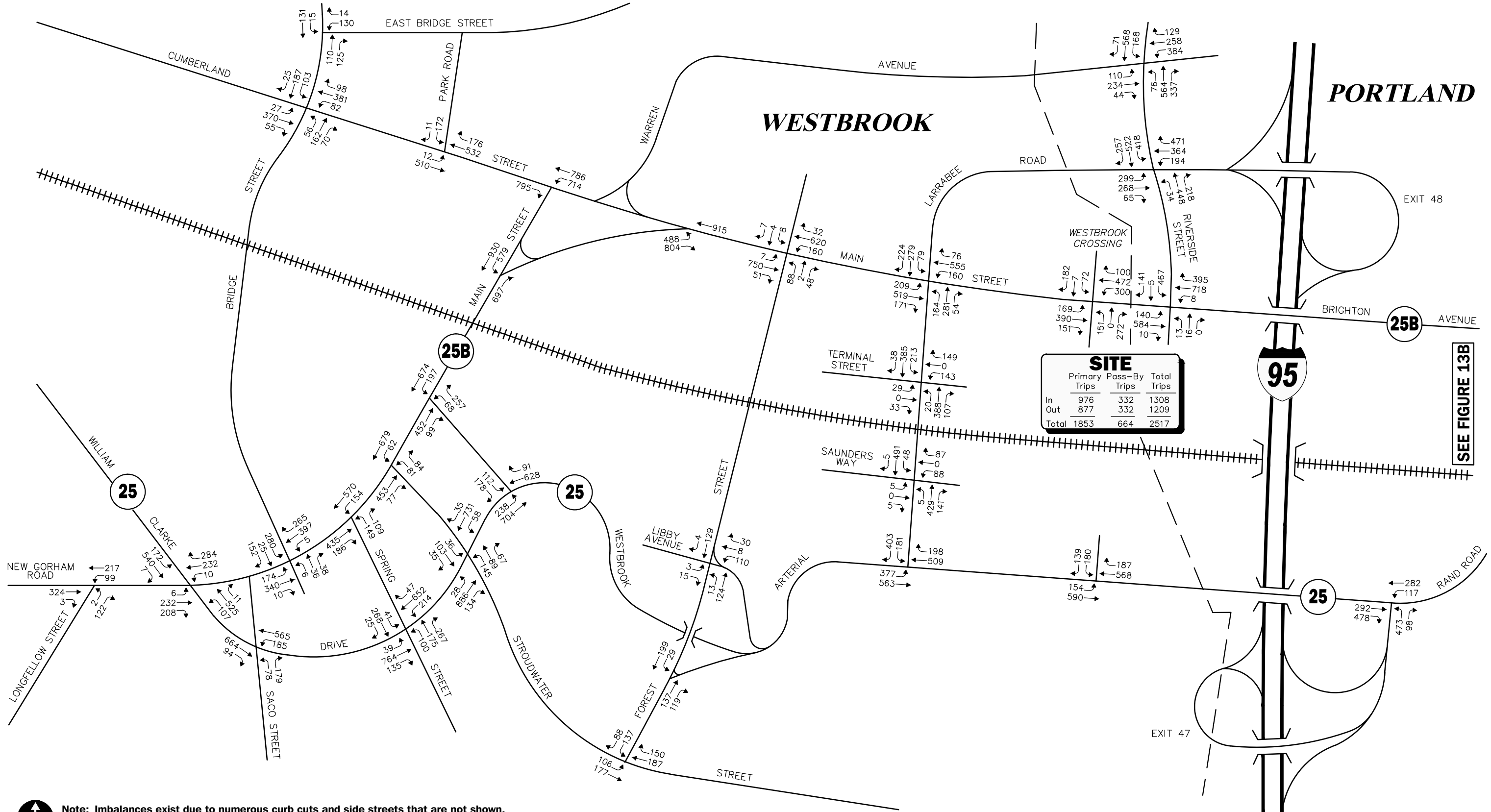
SEE FIGURE 12A



Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.
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Figure 12B
2021 Build Design-Hour
Weekday Evening
Peak Hour Traffic Volumes



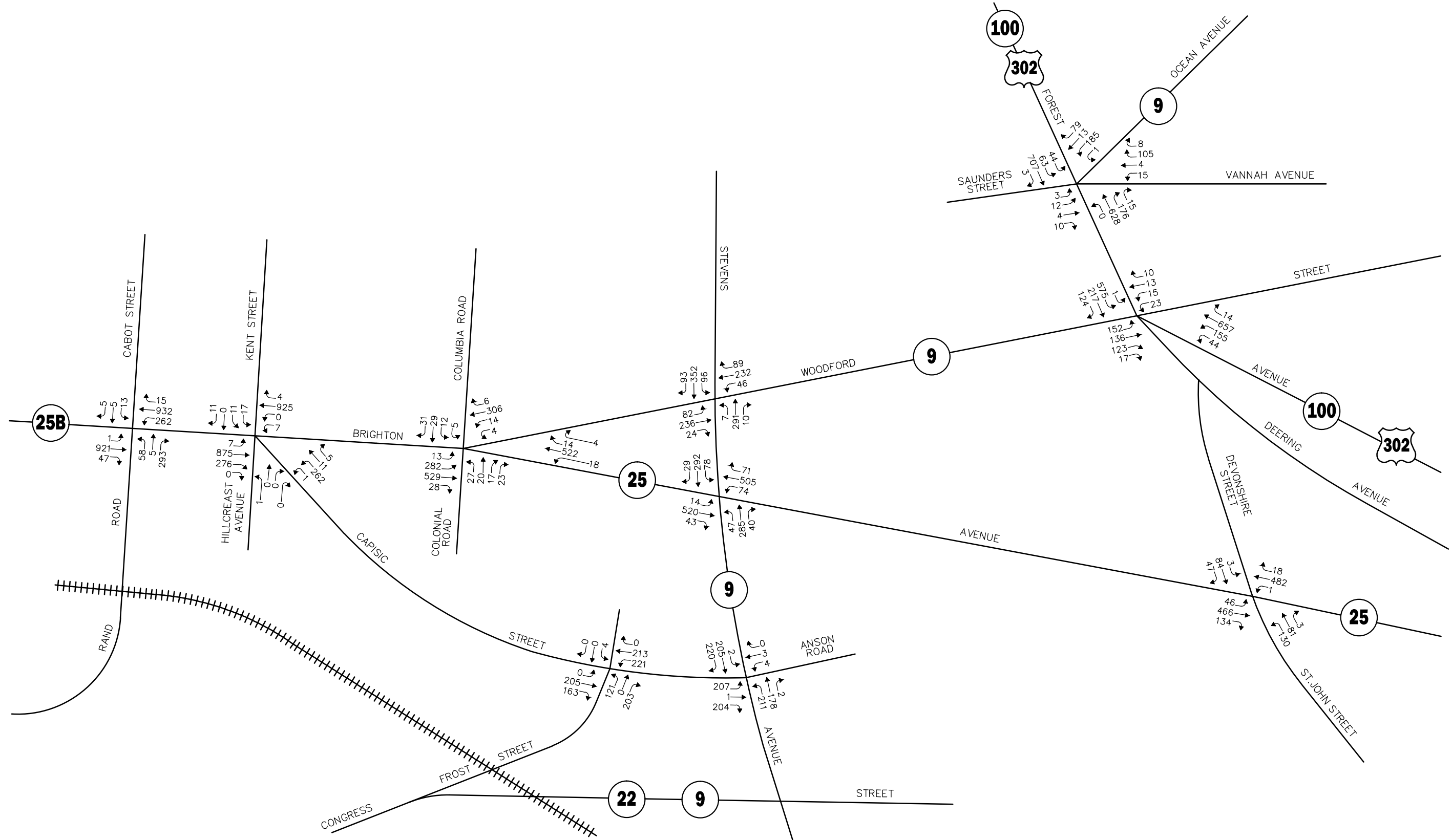
Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.
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Figure 13A
2021 Build Design-Hour
Saturday Midday
Peak Hour Traffic Volumes

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SEE FIGURE 13A



Note: Imbalances exist due to numerous curb cuts and side streets that are not shown.

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Figure 13B

2021 Build Design-Hour
Saturday Midday
Peak Hour Traffic Volumes

Table 3
DIRIGO PLAZA
TRIP GENERATION SUMMARY

Time Period/Direction	Shopping Center			Fueling Facility			(G= B+E) Total Pass-By Trips	(H= C + F) Total New Trips
	(A) Shopping Center (489,461 sf) ^a	(B) Pass-By Trips ^b	(C = A - B) New Trips	(D) Fueling Facility (8 VFPs) ^c	(E) Pass-By Trips	(F= D - E) News Trips		
<i>Average Weekday Daily:</i>								
Entering	9,533	3,241	6,292	674	283	391	3,524	6,683
Exiting	<u>9,533</u>	<u>3,241</u>	<u>6,292</u>	<u>674</u>	<u>283</u>	<u>391</u>	<u>3,524</u>	<u>6,683</u>
Total	19,066	6,482	12,584	1348	566	782	7,048	13,366
<i>Weekday Morning Peak Hour:</i>								
Entering	291	80	211	51	30	21	110	232
Exiting	<u>179</u>	<u>80</u>	<u>99</u>	<u>50</u>	<u>30</u>	<u>20</u>	<u>110</u>	<u>119</u>
Total	470	160	310	101	60	41	220	351
<i>Weekday Evening Peak Hour:</i>								
Entering	833	295	538	63	27	36	322	574
Exiting	<u>903</u>	<u>295</u>	<u>608</u>	<u>62</u>	<u>27</u>	<u>35</u>	<u>322</u>	<u>643</u>
Total	1,736	590	1,146	125	54	71	644	1,217
<i>Saturday Daily:</i>								
Entering	12,565	3,267	9,298	254	107	147	3,374	9,445
Exiting	<u>12,565</u>	<u>3,267</u>	<u>9,298</u>	<u>254</u>	<u>107</u>	<u>147</u>	<u>3,374</u>	<u>9,445</u>
Total	25,130	6,534	18,596	508	214	294	6,748	18,890
<i>Saturday Midday Peak Hour:</i>								
Entering	1,276	319	957	32	13	19	332	976
Exiting	<u>1,178</u>	<u>319</u>	<u>859</u>	<u>31</u>	<u>13</u>	<u>18</u>	<u>332</u>	<u>877</u>
Total	2,454	638	1,816	63	26	37	664	1,853

^aBased on ITE LUC 820, *Shopping Center*.

^bPass-By trip rates equal 34 percent for weekday and 26 percent for Saturday.

^cBased on ITE LUC 944, *Gasoline/Service Station*.

^dPass-By trip rates equal 42 percent for weekday daily, weekday evening peak-hour, Saturday daily and Saturday midday peak-hour; and 58 percent for weekday morning peak-hour.

TRAFFIC OPERATIONS ANALYSIS

Measuring existing and future traffic volumes quantifies traffic flow within the study area. To assess quality of flow, roadway capacity and vehicle queue analyses were conducted under Existing, No-Build and Build traffic volume conditions. Capacity analyses provide an indication of how well the roadway facilities serve the traffic demands placed upon them, with vehicle queue analyses providing a secondary measure of the operational characteristics of an intersection or section of roadway under study.

METHODOLOGY

Levels of Service

A primary result of capacity analyses is the assignment of level of service to traffic facilities under various traffic-flow conditions.⁸ The concept of level of service is defined as a qualitative measure describing operational conditions within a traffic stream and their perception by motorists and/or passengers. A level-of-service definition provides an index to quality of traffic flow in terms of such factors as speed, travel time, freedom to maneuver, traffic interruptions, comfort, convenience, and safety.

Six levels of service are defined for each type of facility. They are given letter designations from A to F, with level-of-service (LOS) A representing the best operating conditions and LOS F representing congested or constrained operating conditions.

Since the level of service of a traffic facility is a function of the traffic flows placed upon it, such a facility may operate at a wide range of levels of service, depending on the time of day, day of week, or period of year.

⁸The capacity analysis methodology is based on the concepts and procedures presented in the *Highway Capacity Manual*; Transportation Research Board; Washington, DC; 2010.

Unsignalized Intersections

The six levels of service for unsignalized intersections may be described as follows:

- *LOS A* represents a condition with little or no control delay to minor street traffic.
- *LOS B* represents a condition with short control delays to minor street traffic.
- *LOS C* represents a condition with average control delays to minor street traffic.
- *LOS D* represents a condition with long control delays to minor street traffic.
- *LOS E* represents operating conditions at or near capacity level, with very long control delays to minor street traffic.
- *LOS F* represents a condition where minor street demand volume exceeds capacity of an approach lane, with extreme control delays resulting.

The levels of service of unsignalized intersections are determined by application of a procedure described in the 2010 *Highway Capacity Manual*.⁹ Level of service is measured in terms of average control delay. Mathematically, control delay is a function of the capacity and degree of saturation of the lane group and/or approach under study and is a quantification of motorist delay associated with traffic control devices such as traffic signals and STOP signs. Control delay includes the affects of initial deceleration delay approaching a STOP sign, stopped delay, queue move-up time, and final acceleration delay from a stopped condition. Definitions for level of service at unsignalized intersections are also given in the 2010 *Highway Capacity Manual*. Table 4 summarizes the relationship between level of service and average control delay for two way stop controlled and all-way stop controlled intersections.

**Table 4
LEVEL-OF-SERVICE CRITERIA FOR
UNSIGNALIZED INTERSECTIONS^a**

Level-Of-Service by Volume-to-Capacity Ratio		Average Control Delay (Seconds Per Vehicle)
v/c ≤ 1.0	v/c > 1.0	
A	F	≤10.0
B	F	10.1 to 15.0
C	F	15.1 to 25.0
D	F	25.1 to 35.0
E	F	35.1 to 50.0
F	F	>50.0

^aSource: *Highway Capacity Manual*; Transportation Research Board; Washington, DC; 2010; page 19-2.

⁹*Highway Capacity Manual*; Transportation Research Board; Washington, DC; 2010.

Signalized Intersections

The six levels of service for signalized intersections may be described as follows:

- *LOS A* describes operations with very low control delay; most vehicles do not stop at all.
- *LOS B* describes operations with relatively low control delay. However, more vehicles stop than *LOS A*.
- *LOS C* describes operations with higher control delays. Individual cycle failures may begin to appear. The number of vehicles stopping is significant at this level, although many still pass through the intersection without stopping.
- *LOS D* describes operations with control delay in the range where the influence of congestion becomes more noticeable. Many vehicles stop and individual cycle failures are noticeable.
- *LOS E* describes operations with high control delay values. Individual cycle failures are frequent occurrences.
- *LOS F* describes operations with high control delay values that often occur with over-saturation. Poor progression and long cycle lengths may also be major contributing causes to such delay levels.

Levels of service for signalized intersections were calculated using the Percentile Delay Method implemented as a part of the Synchro™ 8 software in order to compensate for errors found when employing the 2010 *Highway Capacity Manual* methodology as a part of the software. The Percentile Delay Method assesses the effects of signal type, timing, phasing, and progression; vehicle mix; and geometrics on “percentile” delay. Level-of-service designations are based on the criterion of percentile delay per vehicle and is a measure of: i) driver discomfort; ii) motorist frustration; and iii) fuel consumption; and includes a uniform delay based on percentile volumes using a Poisson arrival pattern, an initial queue move-up time, and a queue interaction delay that accounts for delays resulting from queues extending from adjacent intersections. Table 5 summarizes the relationship between level-of-service and percentile delay, and uses the same numerical delay thresholds as the HCM method. The tabulated percentile delay criterion may be applied in assigning level-of-service designations to individual lane groups, to individual intersection approaches, or to entire intersections.

Table 5
LEVEL-OF-SERVICE CRITERIA
FOR SIGNALIZED INTERSECTIONS

Level of Service	Percentile Delay Per Vehicle (Seconds)
A	≤10.0
B	10.1 to 20.0
C	20.1 to 35.0
D	35.1 to 55.0
E	55.1 to 80.0
F	>80.0

ANALYSIS RESULTS

Level-of-service and vehicle queue analyses were conducted for 2021 No-Build and 2021 Build Design Hour conditions for the intersections within the study area. The results of the intersection capacity analysis are summarized in Tables 6 and 7. The detailed analysis results are presented in the Technical Appendix.

The following is a summary of the level-of-service analysis for the intersections within the study area.

Table 6
SIGNALIZED INTERSECTION LEVEL-OF-SERVICE SUMMARY

Signalized Intersection/ Peak Hour/Movement	2021 No-Build			2021 Build		
	V/C ^a	Delay ^b	LOS ^c	V/C	Delay	LOS
Westbrook Intersections						
<i>Cumberland Street at Bridge Street</i>						
<i>Weekday Evening:</i>						
Cumberland Street EB LT/TH/RT	0.32	9.5	A	0.35	9.8	A
Cumberland Street WB LT/TH/RT	0.89	27.6	C	0.96	37.7	D
Bridge Street NB LT/TH/RT	0.98	58.4	E	1.00	62.9	E
Bridge Street SB LT/TH/RT	1.00	65.7	E	1.12	99.7	F
Overall	--	41.4	D	--	55.0	D
<i>Saturday Midday:</i>						
Cumberland Street EB LT/TH/RT	0.58	12.9	B	0.60	14.8	B
Cumberland Street WB LT/TH/RT	0.67	15.1	B	0.75	20.2	C
Bridge Street NB LT/TH/RT	0.51	16.9	B	0.52	17.6	B
Bridge Street SB LT/TH/RT	0.59	19.2	B	0.68	23.4	C
Overall	--	15.6	B	--	18.9	B
<i>Cumberland Street at Harnois Avenue</i>						
<i>Weekday Evening:</i>						
Cumberland Street EB RT	0.81	25.4	C	0.83	25.4	C
Cumberland Street WB LT	0.33	4.3	A	0.36	5.1	A
Cumberland Street WB TH	0.68	5.6	A	0.72	6.7	A
Overall	--	10.4	B	--	11.3	B
<i>Saturday Midday:</i>						
Cumberland Street EB RT	0.84	24.8	C	0.90	28.9	C
Cumberland Street WB LT	0.50	7.6	A	0.58	12.1	B
Cumberland Street WB TH	0.39	0.6	A	0.43	0.8	A
Overall	--	11.5	B	--	14.6	B

See notes at end of table.

Table 6 (Continued)
SIGNALIZED INTERSECTION LEVEL-OF-SERVICE SUMMARY

Signalized Intersection/ Peak Hour/Movement	2021 No-Build			2021 Build		
	V/C ^a	Delay ^b	LOS ^c	V/C	Delay	LOS
<i>Main Street at Cumberland Street</i>						
<i>Weekday Evening:</i>						
Main Street WB TH	0.72	19.0	B	0.77	20.7	C
Main Street NB LT	0.71	24.2	C	0.71	23.6	C
Main Street NB RT	0.35	0.5	A	0.40	0.6	A
Overall	--	15.5	B	--	16.1	B
<i>Saturday Midday:</i>						
Main Street WB TH	0.45	12.6	B	0.52	13.9	B
Main Street NB LT	0.80	32.3	C	0.80	32.3	C
Main Street NB RT	0.44	0.7	A	0.52	0.8	A
Overall	--	13.3	B	--	13.8	B
<i>Main Street at Forest Street</i>						
<i>Weekday Evening:</i>						
Main Street EB LT/TH	0.74	19.2	B	0.85	26.3	C
Main Street EB RT	0.06	1.2	A	0.06	1.2	A
Main Street WB LT/TH	1.08	69.3	E	1.16	101.7	F
Main Street WB RT	0.01	0.0	A	0.01	0.0	F
Forest Street NB LT/TH/RT	1.25	156.7	F	1.25	156.7	F
Forest Street SB LT/TH/RT	0.02	0.0	A	0.02	0.0	A
Overall	--	74.4	E	--	90.9	F
<i>Saturday Midday:</i>						
Main Street EB LT/TH	0.55	8.4	A	0.65	10.3	B
Main Street EB RT	0.05	1.0	A	0.05	1.0	A
Main Street WB LT/TH	0.88	25.6	C	1.15	101.2	F
Main Street WB RT	0.03	0.3	A	0.03	0.3	A
Forest Street NB LT/TH/RT	0.56	26.6	C	0.56	26.6	C
Forest Street SB LT/TH/RT	0.08	16.2	B	0.08	16.2	B
Overall	--	17.2	B	--	50.7	D

See notes at end of table.

Table 6 (Continued)
SIGNALIZED INTERSECTION LEVEL-OF-SERVICE SUMMARY

Signalized Intersection/ Peak Hour/Movement	2021 No-Build			2021 Build		
	V/C ^a	Delay ^b	LOS ^c	V/C	Delay	LOS
Main Street at Larrabee Road						
<i>Weekday Evening:</i>						
Main Street EB LT	0.77	57.6	E	0.81	66.8	E
Main Street EB TH/RT	0.71	42.7	D	0.47	28.3	C
Main Street WB LT	0.59	43.8	D	1.11	141.7	F
Main Street WB TH/RT	0.75	41.6	D	0.67	39.1	D
Larrabee Road NB LT/TH/RT	0.81	48.6	D	1.15	127.8	F
Larrabee Road SB LT/TH	0.74	50.8	D	1.01	89.4	F
Larrabee Road SB RT	0.61	10.0	B	0.62	10.4	B
Overall	--	42.6	D	--	69.5	E
<i>Saturday Midday:</i>						
Main Street EB LT	0.74	50.3	D	0.84	68.5	E
Main Street EB TH/RT	0.72	33.6	C	0.69	33.3	C
Main Street WB LT	0.62	48.2	D	0.89	89.2	F
Main Street WB TH/RT	0.69	36.1	D	0.68	39.5	D
Larrabee Road NB LT/TH/RT	0.65	43.3	D	1.02	90.9	F
Larrabee Road SB LT/TH	0.48	42.8	D	0.91	69.4	E
Larrabee Road SB RT	0.66	11.6	B	0.62	11.3	B
Overall	--	36.3	D	--	52.8	D
Main Street at Harnois Avenue						
<i>Weekday Evening:</i>						
Main Street NB RT	0.87	23.1	C	0.88	27.0	C
Harnois Avenue SB LT	0.30	4.4	A	0.36	6.1	A
Harnois Avenue SB TH	0.41	0.6	A	0.42	0.6	A
Overall	--	9.0	A	--	10.6	B
<i>Saturday Midday:</i>						
Main Street NB RT	0.87	26.9	C	0.88	29.3	C
Harnois Avenue SB LT	0.49	12.2	B	0.63	14.9	B
Harnois Avenue SB TH	0.52	0.8	A	0.53	0.7	B
Overall	--	12.2	B	--	13.7	B

See notes at end of table.

Table 6 (Continued)
SIGNALIZED INTERSECTION LEVEL-OF-SERVICE SUMMARY

Signalized Intersection/ Peak Hour/Movement	2021 No-Build			2021 Build		
	V/C ^a	Delay ^b	LOS ^c	V/C	Delay	LOS
Main Street at Westbrook Arterial						
<i>Weekday Evening:</i>						
Main Street EB TH	0.57	15.9	B	0.58	16.3	B
Main Street EB RT	0.16	3.8	A	0.18	3.8	A
Main Street WB LT	0.38	5.7	A	0.61	6.0	A
Main Street WB TH	0.47	6.2	A	0.48	6.5	A
Westbrook Arterial NB LT	0.31	19.0	B	0.36	20.0	C
Westbrook Arterial NB RT	0.56	7.2	A	0.56	7.0	A
Overall	--	9.2	A	--	9.6	A
<i>Saturday Midday:</i>						
Main Street EB TH	0.63	15.7	B	0.64	16.1	B
Main Street EB RT	0.12	3.7	A	0.16	3.7	A
Main Street WB LT	0.39	5.4	A	0.40	5.7	A
Main Street WB TH	0.58	6.8	A	0.59	7.1	A
Westbrook Arterial NB LT	0.15	19.2	B	0.24	20.5	C
Westbrook Arterial NB RT	0.56	8.1	A	0.56	8.1	A
Overall	--	9.4	A	--	9.7	A
Main Street at Spring Street						
<i>Weekday Evening:</i>						
Main Street EB TH	0.61	20.6	C	0.64	20.9	C
Main Street EB RT	0.23	7.2	A	0.23	7.5	A
Main Street WB LT	0.25	8.1	A	0.26	8.0	A
Main Street WB TH	0.65	12.9	B	0.67	13.3	B
Spring Street NB LT	0.61	24.9	C	0.62	26.5	C
Spring Street NB RT	0.25	9.8	A	0.25	10.4	B
Overall	--	15.7	B	--	16.3	B
<i>Saturday Midday:</i>						
Main Street EB TH	0.58	16.4	B	0.61	16.7	B
Main Street EB RT	0.26	5.8	A	0.25	6.1	A
Main Street WB LT	0.30	5.9	A	0.31	5.9	A
Main Street WB TH	0.51	7.5	A	0.53	7.7	A
Spring Street NB LT	0.39	21.6	C	0.40	23.4	C
Spring Street NB RT	0.25	6.5	A	0.25	6.9	A
Overall	--	10.7	B	--	11.1	B

See notes at end of table.

Table 6 (Continued)
SIGNALIZED INTERSECTION LEVEL-OF-SERVICE SUMMARY

Signalized Intersection/ Peak Hour/Movement	2021 No-Build			2021 Build		
	V/C ^a	Delay ^b	LOS ^c	V/C	Delay	LOS
Main Street at Bridge Street						
<i>Weekday Evening:</i>						
Main Street EB LT	0.58	17.0	B	0.59	17.5	B
Main Street EB TH/RT	0.24	12.0	B	0.26	12.0	B
Main Street WB LT/TH	0.79	47.5	D	0.80	54.9	D
Main Street WB RT	0.71	23.6	C	0.72	25.5	C
Bridge Street NB LT/TH/RT	0.22	25.0	C	0.22	25.8	C
Bridge Street SB LT/TH/RT	1.02	76.2	E	1.07	91.5	F
Overall	--	40.6	D	--	46.6	D
<i>Saturday MIDDAY:</i>						
Main Street EB LT	0.49	15.7	B	0.50	15.6	B
Main Street EB TH/RT	0.40	14.5	B	0.43	14.6	B
Main Street WB LT/TH	0.80	45.1	D	0.81	47.9	D
Main Street WB RT	0.49	16.9	B	0.50	17.9	B
Bridge Street NB LT/TH/RT	0.15	17.7	B	0.15	18.4	B
Bridge Street SB LT/TH/RT	0.88	48.3	D	0.95	60.4	E
Overall	--	31.0	C	--	35.0	C
New Gorham Road at William Clarke Drive						
<i>Weekday Evening:</i>						
New Gorham Road EB LT/TH	0.37	33.0	C	0.39	33.5	C
New Gorham Road EB RT	0.35	7.5	A	0.35	7.5	A
New Gorham Road WB LT/TH	0.69	42.3	D	0.72	44.0	D
New Gorham Road WB RT	0.57	10.2	B	0.58	10.9	B
William Clarke Drive NB LT	0.95	93.9	F	1.00	107.1	F
William Clarke Drive NB TH/RT	0.91	87.4	F	0.92	88.5	F
William Clarke Drive SB LT	0.67	48.0	D	0.70	49.4	D
William Clarke Drive SB TH/RT	0.24	12.2	B	0.24	12.2	B
Overall	--	49.2	D	--	50.8	D
<i>Saturday MIDDAY:</i>						
New Gorham Road EB LT/TH	0.60	33.0	C	0.61	33.6	C
New Gorham Road EB RT	0.46	7.2	A	0.45	7.2	A
New Gorham Road WB LT/TH	0.59	33.6	C	0.68	36.9	D
New Gorham Road WB RT	0.52	6.7	A	0.51	6.7	A
William Clarke Drive NB LT	0.44	40.7	D	0.50	44.5	D
William Clarke Drive NB TH/RT	0.75	26.7	C	0.78	29.0	C
William Clarke Drive SB LT	0.54	37.3	D	0.58	40.0	D
William Clarke Drive SB TH/RT	0.31	12.8	B	0.32	13.4	B
Overall	--	21.6	C	--	23.3	C

See notes at end of table.

Table 6 (Continued)
SIGNALIZED INTERSECTION LEVEL-OF-SERVICE SUMMARY

Signalized Intersection/ Peak Hour/Movement	2021 No-Build			2021 Build		
	V/C ^a	Delay ^b	LOS ^c	V/C	Delay	LOS
William Clarke Drive at Saco Street						
<i>Weekday Evening:</i>						
William Clarke Drive EB TH/RT	0.61	22.9	C	0.62	23.3	C
William Clarke Drive WB LT	0.65	31.1	C	0.65	31.4	C
William Clarke Drive WB TH	0.74	14.8	B	0.75	15.1	B
Saco Street NB LT	0.67	33.0	C	0.68	33.9	C
Saco Street NB RT	0.44	11.8	B	0.45	12.1	B
Overall	--	21.3	C	--	21.6	C
<i>Saturday Midday:</i>						
William Clarke Drive EB TH/RT	0.60	17.0	B	0.61	17.4	B
William Clarke Drive WB LT	0.51	29.9	C	0.53	27.9	C
William Clarke Drive WB TH	0.50	6.5	A	0.52	6.7	A
Saco Street NB LT	0.33	28.2	C	0.33	29.3	C
Saco Street NB RT	0.47	9.6	A	0.49	9.8	A
Overall	--	14.4	B	--	14.8	B
William Clarke Drive at Spring Street						
<i>Weekday Evening:</i>						
William Clarke Drive EB LT	0.27	47.0	D	0.27	47.6	D
William Clarke Drive EB TH/RT	0.83	38.8	D	0.85	40.7	D
William Clarke Drive WB LT	0.66	53.6	D	0.80	64.2	E
William Clarke Drive WB TH/RT	0.83	82.2	F	0.82	82.2	F
Spring Street NB LT	0.79	62.1	E	0.80	64.2	E
Spring Street NB TH	0.64	38.4	D	0.66	39.9	D
Spring Street NB RT	0.37	10.1	B	0.44	10.4	B
Spring Street SB LT	0.36	47.9	D	0.37	48.7	D
Spring Street SB TH/RT	0.56	42.8	D	0.58	44.8	D
Overall	--	54.4	D	--	55.2	E
<i>Saturday Midday:</i>						
William Clarke Drive EB LT	0.27	45.9	D	0.28	46.7	D
William Clarke Drive EB TH/RT	0.82	36.1	D	0.85	39.2	D
William Clarke Drive WB LT	0.65	51.6	D	0.84	66.3	E
William Clarke Drive WB TH/RT	0.50	24.2	C	0.51	24.2	C
Spring Street NB LT	0.52	48.3	D	0.54	49.5	D
Spring Street NB TH	0.37	31.0	C	0.38	31.9	C
Spring Street NB RT	0.33	6.1	A	0.44	6.1	A
Spring Street SB LT	0.28	46.0	D	0.29	46.8	D
Spring Street SB TH/RT	0.75	63.7	E	0.79	78.8	E
Overall	--	35.1	D	--	38.4	D

See notes at end of table.

Table 6 (Continued)
SIGNALIZED INTERSECTION LEVEL-OF-SERVICE SUMMARY

Signalized Intersection/ Peak Hour/Movement	2021 No-Build			2021 Build		
	V/C ^a	Delay ^b	LOS ^c	V/C	Delay	LOS
William Clarke Drive at Stroudwater Street						
<i>Weekday Evening:</i>						
William Clarke Drive EB LT	0.15	44.1	D	0.16	45.0	D
William Clarke Drive EB TH/RT	0.72	29.6	C	0.78	37.1	D
William Clarke Drive WB LT	0.30	45.3	D	0.33	46.9	D
William Clarke Drive WB TH/RT	0.66	27.1	C	0.72	75.8	E
Stroudwater Street NB LT	0.72	45.4	D	0.79	51.1	D
Stroudwater Street NB TH/RT	0.67	40.4	D	0.73	44.3	D
Stroudwater Street SB LT	0.22	39.2	D	0.24	40.1	D
Stroudwater Street SB TH/RT	0.49	41.6	D	0.52	43.0	D
Overall	--	32.9	C	--	54.1	D
<i>Saturday Midday:</i>						
William Clarke Drive EB LT	0.19	45.6	D	0.20	46.1	D
William Clarke Drive EB TH/RT	0.80	34.6	C	0.84	73.9	E
William Clarke Drive WB LT	0.36	47.6	D	0.37	48.7	D
William Clarke Drive WB TH/RT	0.54	24.3	C	0.59	26.0	C
Stroudwater Street NB LT	0.55	42.8	D	0.57	44.1	D
Stroudwater Street NB TH/RT	0.66	41.6	D	0.68	43.3	D
Stroudwater Street SB LT	0.16	36.9	D	0.16	37.3	D
Stroudwater Street SB TH/RT	0.57	42.6	D	0.59	44.0	D
Overall	--	33.8	C	--	50.7	D
William Clarke Drive at Westbrook Arterial						
<i>Weekday Evening:</i>						
William Clarke Drive EB LT	0.73	38.8	D	0.74	39.6	D
William Clarke Drive EB TH	0.28	7.6	A	0.31	7.8	A
Westbrook Arterial WB TH/RT	0.82	32.2	C	0.89	36.6	D
Westbrook Arterial SB LT	0.31	26.8	C	0.35	27.5	C
Westbrook Arterial SB RT	0.36	6.1	A	0.36	6.1	A
Overall	--	23.4	C	--	25.5	C
<i>Saturday Midday:</i>						
William Clarke Drive EB LT	0.65	33.5	C	0.66	35.4	D
William Clarke Drive EB TH	0.31	8.3	A	0.36	8.5	A
Westbrook Arterial WB TH/RT	0.68	26.3	C	0.75	27.8	C
Westbrook Arterial SB LT	0.16	22.3	C	0.22	24.1	C
Westbrook Arterial SB RT	0.30	5.7	A	0.31	5.8	A
Overall	--	18.8	B	--	19.7	B

See notes at end of table.

Table 6 (Continued)
SIGNALIZED INTERSECTION LEVEL-OF-SERVICE SUMMARY

Signalized Intersection/ Peak Hour/Movement	2021 No-Build			2021 Build		
	V/C ^a	Delay ^b	LOS ^c	V/C	Delay	LOS
Westbrook Arterial at Larrabee Road						
<i>Weekday Evening:</i>						
Westbrook Arterial EB LT	0.52	24.4	C	0.65	29.6	C
Westbrook Arterial EB TH	0.27	5.2	A	0.31	6.5	A
Westbrook Arterial WB TH/RT	0.90	38.6	D	1.08	80.0	E
Larrabee Road SB LT	0.57	33.0	C	0.70	36.4	D
Larrabee Road SB RT	0.72	16.0	B	0.75	17.1	B
Overall	--	22.8	C	--	40.2	D
<i>Saturday MIDDAY:</i>						
Westbrook Arterial EB LT	0.53	20.5	C	0.74	31.7	C
Westbrook Arterial EB TH	0.17	3.0	A	0.25	5.5	A
Westbrook Arterial WB TH/RT	0.55	17.5	B	0.82	30.3	C
Larrabee Road SB LT	0.27	24.8	C	0.59	33.1	C
Larrabee Road SB RT	0.44	8.6	A	0.49	9.9	A
Overall	--	12.8	B	--	21.2	C
<u>Portland Intersections</u>						
Riverside Street at Warren Avenue						
<i>Weekday Evening:</i>						
Warren Street EB LT	0.33	37.0	D	0.33	37.2	D
Warren Street EB TH/RT	0.76	49.3	D	0.78	50.8	D
Warren Street WB LT	0.76	46.0	D	0.77	46.4	D
Warren Street WB LT/TH	0.77	46.1	D	0.77	45.8	D
Warren Street WB RT	0.18	3.8	A	0.17	3.7	A
Riverside Street NB LT	0.30	29.8	C	0.33	30.7	C
Riverside Street NB TH	1.17	128.2	F	1.25	159.3	F
Riverside Street NB RT	0.99	65.3	E	1.04	78.2	E
Riverside Street SB LT	0.49	33.5	C	0.49	33.9	C
Riverside Street SB TH/RT	0.80	48.1	D	0.87	53.5	D
Overall	--	66.8	E	--	78.2	E
<i>Saturday MIDDAY:</i>						
Warren Street EB LT	0.31	36.8	D	0.31	36.8	D
Warren Street EB TH/RT	0.73	48.7	D	0.74	49.3	D
Warren Street WB LT	0.75	44.5	D	0.75	45.0	D
Warren Street WB LT/TH	0.74	43.7	D	0.76	44.6	D
Warren Street WB RT	0.19	3.7	A	0.19	3.6	A
Riverside Street NB LT	0.28	27.6	C	0.37	29.9	C
Riverside Street NB TH	0.72	44.4	D	0.82	50.5	D
Riverside Street NB RT	0.67	21.3	C	0.73	26.3	C
Riverside Street SB LT	0.65	38.1	D	0.73	45.1	D
Riverside Street SB TH/RT	0.67	40.5	D	0.77	45.4	D
Overall	--	38.2	D	--	41.8	D

See notes at end of table.

Table 6 (Continued)
SIGNALIZED INTERSECTION LEVEL-OF-SERVICE SUMMARY

Signalized Intersection/ Peak Hour/Movement	2021 No-Build			2021 Build		
	V/C ^a	Delay ^b	LOS ^c	V/C	Delay	LOS
<i>Riverside Street at Larrabee Road and the I-95 Ramps</i>						
<i>Weekday Evening:</i>						
Larrabee Road EB LT	1.51	283.5	F	1.69	357.8	F
Larrabee Road EB TH/RT	0.53	38.8	D	0.73	46.9	D
I-95 Off-Ramp WB LT	0.74	64.2	E	0.83	73.8	E
I-95 Off-Ramp WB TH	0.90	71.7	E	1.19	149.3	F
I-95 Off-Ramp WB RT	1.13	93.2	F	1.15	98.6	F
Riverside Street NB LT	0.12	35.4	D	0.11	35.0	C
Riverside Street NB TH	0.68	45.0	D	0.69	44.9	D
Riverside Street NB RT	0.48	8.2	A	0.51	7.9	A
Riverside Street SB LT	0.92	64.6	E	0.93	67.8	E
Riverside Street SB LT/TH/RT	0.82	37.4	D	0.89	43.4	D
Overall	--	77.7	E	--	94.8	F
<i>Saturday Middy:</i>						
Larrabee Road EB LT	0.87	67.9	E	0.99	91.0	E
Larrabee Road EB TH/RT	0.29	26.2	C	0.49	38.2	D
I-95 Off-Ramp WB LT	0.63	54.0	D	0.75	60.1	E
I-95 Off-Ramp WB TH	0.73	54.7	D	1.12	127.8	F
I-95 Off-Ramp WB RT	0.77	14.8	B	0.85	26.9	C
Riverside Street NB LT	0.11	35.9	D	0.11	35.6	D
Riverside Street NB TH	0.67	44.4	D	0.71	46.4	D
Riverside Street NB RT	0.42	8.3	A	0.48	8.0	A
Riverside Street SB LT	0.95	73.5	E	1.02	92.5	F
Riverside Street SB LT/TH/RT	0.90	50.5	D	1.05	83.0	F
Overall	--	44.5	D	--	66.4	E

See notes at end of table.

Table 6 (Continued)
SIGNALIZED INTERSECTION LEVEL-OF-SERVICE SUMMARY

Signalized Intersection/ Peak Hour/Movement	2021 No-Build			2021 Build		
	V/C ^a	Delay ^b	LOS ^c	V/C	Delay	LOS
Main Street at Riverside Street						
<i>Weekday Evening:</i>						
Main Street EB LT	0.33	40.6	D	0.56	48.0	D
Main Street EB TH/RT	0.25	11.4	B	0.27	10.9	B
Main Street WB LT	0.06	44.1	D	0.07	48.7	D
Main Street WB TH	0.63	22.4	C	0.69	25.3	C
Main Street WB RT	0.37	0.7	A	0.37	0.7	A
Driveway NB LT/TH/RT	0.12	37.9	D	0.15	41.3	D
Riverside Street SB LT	0.55	36.1	D	0.62	42.6	D
Riverside Street SB LT/TH	0.56	36.1	D	0.63	42.6	D
Riverside Street SB RT	0.04	0.1	A	0.08	0.1	A
Overall	--	17.9	B	--	20.2	C
<i>Saturday Midday:</i>						
Main Street EB LT	0.02	32.0	C	0.54	45.1	D
Main Street EB TH/RT	0.40	17.4	B	0.33	14.0	B
Main Street WB LT	0.04	31.8	C	0.06	45.4	D
Main Street WB TH	0.51	18.5	B	0.66	28.3	C
Main Street WB RT	0.27	0.4	A	0.27	0.4	A
Driveway NB LT/TH/RT	0.18	29.4	C	0.27	44.8	D
Riverside Street SB LT	0.48	22.9	C	0.63	39.5	D
Riverside Street SB LT/TH	0.49	23.0	C	0.64	39.9	D
Riverside Street SB RT	0.03	0.0	A	0.09	0.1	A
Overall	--	15.6	B	--	22.3	C
Westbrook Arterial and Rand Road at the I-95 Ramps						
<i>Weekday Evening:</i>						
Westbrook Arterial EB TH	0.73	36.4	D	0.76	37.4	D
Westbrook Arterial EB RT	0.35	2.2	A	0.46	3.5	A
Rand Road WB LT	0.63	19.2	B	0.65	20.0	B
Rand Road WB TH	0.50	15.7	B	0.53	16.0	B
I-95 Off-Ramp NB LT	0.88	40.7	D	1.09	89.5	F
I-95 Off-Ramp NB RT	0.16	1.9	A	0.16	2.0	A
Overall	--	22.3	C	--	36.7	D
<i>Saturday Midday:</i>						
Westbrook Arterial EB TH	0.53	20.4	C	0.62	23.4	C
Westbrook Arterial EB RT	0.50	4.8	A	0.66	5.7	A
Rand Road WB LT	0.25	8.4	A	0.28	9.1	A
Rand Road WB TH	0.27	8/5	A	0.31	9.4	A
I-95 Off-Ramp NB LT	0.62	23.9	C	0.98	60.3	E
I-95 Off-Ramp NB RT	0.13	2.5	A	0.13	2.6	A
Overall	--	12.9	B	--	24.2	C

See notes at end of table.

Table 6 (Continued)
SIGNALIZED INTERSECTION LEVEL-OF-SERVICE SUMMARY

Signalized Intersection/ Peak Hour/Movement	2021 No-Build			2021 Build		
	V/C ^a	Delay ^b	LOS ^c	V/C	Delay	LOS
<i>Brighton Avenue at Rand Road and Cabot Street</i>						
<i>Weekday Evening:</i>						
Brighton Avenue EB LT	0.05	44.4	D	0.05	46.0	D
Brighton Avenue EB TH/RT	0.60	23.0	C	0.64	23.9	C
Brighton Avenue WB LT	0.55	33.3	C	0.59	35.4	D
Brighton Avenue WB TH/RT	0.53	11.3	B	0.56	11.6	B
Rand Road NB LT/TH	0.35	41.4	D	0.37	43.5	D
Rand Road NB RT	0.62	10.5	B	0.68	14.0	B
Cabot Street SB LT/TH/RT	0.19	33.8	C	0.21	35.1	D
Overall	--	18.7	B	--	19.6	B
<i>Saturday MIDDAY:</i>						
Brighton Avenue EB LT	0.01	36.0	D	0.14	41.0	D
Brighton Avenue EB TH/RT	0.68	21.7	C	0.72	23.0	C
Brighton Avenue WB LT	0.42	33.7	C	0.50	37.3	D
Brighton Avenue WB TH/RT	0.42	11.8	B	0.46	11.8	B
Rand Road NB LT/TH	0.30	37.4	D	0.32	42.2	D
Rand Road NB RT	0.60	11.2	B	0.66	12.3	B
Cabot Street SB LT/TH/RT	0.16	34.0	C	0.17	38.1	D
Overall	--	18.7	B	--	19.8	B
<i>Brighton Avenue at Capisic Street, Hillcrest Avenue and Kent Street</i>						
<i>Weekday Evening:</i>						
Brighton Avenue EB LT/TH/RT	0.78	21.2	C	0.84	24.4	C
Brighton Avenue WB LT/TH/RT	0.70	18.7	B	0.73	20.0	C
Hillcrest Avenue NB LT/TH/RT	0.03	0.2	A	0.03	0.2	A
Kent Street SB LT/TH/RT	0.28	29.1	C	0.30	29.9	C
Capisic Street NWB LT/TH/RT	0.62	34.8	C	0.66	36.7	D
Overall	--	22.3	C	--	24.4	C
<i>Saturday MIDDAY:</i>						
Brighton Avenue EB LT/TH/RT	0.68	15.9	B	0.74	17.6	B
Brighton Avenue WB LT/TH/RT	0.57	13.9	B	0.62	14.9	B
Hillcrest Avenue NB LT/TH/RT	0.02	35.0	C	0.02	39.0	D
Kent Street SB LT/TH/RT	0.19	2.6	A	0.21	2.8	A
Capisic Street NWB LT/TH/RT	0.45	29.1	C	0.53	32.9	C
Overall	--	16.3	B	--	18.1	B

See notes at end of table.

Table 6 (Continued)
SIGNALIZED INTERSECTION LEVEL-OF-SERVICE SUMMARY

Signalized Intersection/ Peak Hour/Movement	2021 No-Build			2021 Build		
	V/C ^a	Delay ^b	LOS ^c	V/C	Delay	LOS
<i>Brighton Avenue at Woodford Street and Columbia Road</i>						
<i>Weekday Evening:</i>						
Brighton Avenue EB LT	0.74	38.8	D	0.91	61.8	E
Brighton Avenue EB TH/RT	0.35	17.3	B	0.37	17.5	B
Brighton Avenue WB LT/TH/RT	0.84	47.4	D	0.87	49.1	D
Columbia Road NB LT/TH/RT	0.77	67.9	E	0.78	68.9	E
Columbia Road SB LT/TH/RT	0.46	44.6	D	0.47	44.9	D
Woodford Street SWB LT/TH/RT	1.17	51.9	D	1.32	65.8	E
Overall	--	41.1	D	--	47.0	D
<i>Saturday Midday:</i>						
Brighton Avenue EB LT	0.49	17.4	B	0.64	22.9	C
Brighton Avenue EB TH/RT	0.30	14.0	B	0.32	14.8	B
Brighton Avenue WB LT/TH/RT	0.71	39.0	D	0.77	43.8	D
Columbia Road NB LT/TH/RT	0.47	47.4	D	0.52	53.4	D
Columbia Road SB LT/TH/RT	0.39	41.3	D	0.43	45.8	D
Woodford Street SWB LT/TH/RT	0.93	30.1	C	1.13	38.6	D
Overall	--	27.9	C	--	32.1	C
<i>Woodford Street at Steven Avenue</i>						
<i>Weekday Evening:</i>						
Woodford Street EB LT	0.22	21.0	C	0.33	23.9	C
Woodford Street EB TH/RT	0.39	20.0	C	0.44	20.7	C
Woodford Street WB LT/TH	0.61	24.9	C	0.67	26.9	C
Woodford Street WB RT	0.23	10.3	B	0.23	10.3	B
Steven Avenue NB LT/TH	0.74	29.0	C	0.74	29.4	C
Steven Avenue NB RT	0.36	10.3	B	0.36	10.3	B
Steven Avenue SB LT	0.30	12.0	B	0.30	12.0	B
Steven Avenue SB TH/RT	0.57	15.5	B	0.59	15.9	B
Overall	--	19.9	B	--	20.7	C
<i>Saturday Midday:</i>						
Woodford Street EB LT	0.20	16.0	B	0.24	16.6	B
Woodford Street EB TH/RT	0.39	16.8	B	0.36	16.1	B
Woodford Street WB LT/TH	0.49	18.6	B	0.45	18.6	B
Woodford Street WB RT	0.18	6.1	A	0.14	6.1	A
Steven Avenue NB LT/TH	0.54	21.3	C	0.62	27.5	C
Steven Avenue NB RT	0.02	0.1	A	0.02	0.1	A
Steven Avenue SB LT	0.22	9.3	A	0.28	12.8	B
Steven Avenue SB TH/RT	0.53	12.1	B	0.66	18.5	B
Overall	--	15.2	B	--	17.7	B

See notes at end of table.

Table 6 (Continued)
SIGNALIZED INTERSECTION LEVEL-OF-SERVICE SUMMARY

Signalized Intersection/ Peak Hour/Movement	2021 No-Build			2021 Build		
	V/C ^a	Delay ^b	LOS ^c	V/C	Delay	LOS
Forest Avenue at Ocean Avenue, Saunders Street and Vannah Avenue						
<i>Weekday Evening:</i>						
Saunders Street EB LT/TH/RT	0.31	40.5	D	0.31	40.5	D
Vannah Avenue WB LT/TH/RT	0.67	68.6	E	0.67	68.6	E
Forest Avenue NB TH/RT	0.67	23.6	C	0.68	24.8	C
Forest Avenue SB LT/TH	0.33	18.8	B	0.35	19.5	C
Forest Avenue SB TH/RT	0.52	20.1	C	0.53	20.6	C
Ocean Avenue SWB LT	0.17	68.7	E	0.78	68.6	E
Ocean Avenue SWB TH/RT	0.17	7.1	A	0.29	6.9	A
Overall	--	27.9	C	--	28.7	C
<i>Saturday MIDDAY:</i>						
Saunders Street EB LT/TH/RT	0.20	29.5	C	0.20	29.5	C
Vannah Avenue WB LT/TH/RT	0.64	52.8	D	0.64	52.8	D
Forest Avenue NB TH/RT	0.64	25.7	C	0.66	26.5	C
Forest Avenue SB LT/TH	0.39	17.6	B	0.41	18.6	B
Forest Avenue SB TH/RT	0.40	15.9	B	0.41	16.4	B
Ocean Avenue SWB LT	0.71	54.3	D	0.75	55.8	E
Ocean Avenue SWB TH/RT	0.27	3.0	A	0.27	2.9	A
Overall	--	25.3	C	--	26.2	C
Forest Avenue at Woodford Street and Deering Avenue						
<i>Weekday Evening:</i>						
Woodford Street EB LT	0.93	83.6	F	1.01	101.9	F
Woodford Street EB TH/RT	0.63	43.9	D	0.66	45.1	D
Woodford Street WB LT	0.15	45.4	D	0.16	45.6	D
Woodford Street WB TH/RT	0.89	78.4	E	0.89	78.4	E
Forest Avenue NB LT	0.82	78.9	E	0.85	81.6	F
Forest Avenue NB TH/RT	0.43	14.2	B	0.43	14.2	B
Forest Avenue SB TH	0.97	83.5	F	0.97	86.6	F
Forest Avenue SB RT	0.65	24.9	C	0.67	25.9	C
Overall	--	50.1	D	--	52.6	D
<i>Saturday MIDDAY:</i>						
Woodford Street EB LT	0.50	36.2	D	0.51	35.3	D
Woodford Street EB TH/RT	0.67	40.9	D	0.66	39.6	D
Woodford Street WB LT	0.32	44.8	D	0.30	43.0	D
Woodford Street WB TH/RT	0.12	26.2	C	0.11	25.7	C
Forest Avenue NB LT	0.73	56.8	E	0.77	59.8	E
Forest Avenue NB TH/RT	0.32	9.5	A	0.33	10.3	B
Forest Avenue SB TH	0.74	23.2	C	0.79	26.6	C
Forest Avenue SB RT	0.44	4.7	A	0.49	6.2	A
Overall	--	22.4	C	--	24.1	C

See notes at end of table.

Table 6 (Continued)
SIGNALIZED INTERSECTION LEVEL-OF-SERVICE SUMMARY

Signalized Intersection/ Peak Hour/Movement	2021 No-Build			2021 Build		
	V/C ^a	Delay ^b	LOS ^c	V/C	Delay	LOS
Brighton Avenue at St. John's Street and Devonshire Street						
<i>Weekday Evening:</i>						
Brighton Avenue EB LT/TH/RT	0.72	17.2	B	0.73	17.2	B
Brighton Avenue WB LT/TH/RT	0.53	13.6	B	0.52	13.6	B
St. John's Street NB LT	0.60	24.0	C	0.65	28.5	C
St. John's Street NB TH/RT	0.25	15.9	B	0.26	17.0	B
Devonshire Street SB LT/TH/RT	0.49	27.0	C	0.50	28.2	C
Overall	--	17.3	B	--	17.8	B
<i>Saturday Midday:</i>						
Brighton Avenue EB LT/TH/RT	0.59	14.3	B	0.65	15.6	B
Brighton Avenue WB LT/TH/RT	0.42	12.8	B	0.46	13.5	B
St. John's Street NB LT	0.31	12.3	B	0.36	13.4	B
St. John's Street NB TH/RT	0.15	10.5	B	0.15	10.9	B
Devonshire Street SB LT/TH/RT	0.40	20.1	C	0.44	21.2	C
Overall	--	14.0	B	--	14.9	B
Brighton Avenue at Steven Avenue						
<i>Weekday Evening:</i>						
Brighton Avenue EB LT	0.23	14.8	B	0.24	14.8	B
Brighton Avenue EB TH/RT	0.88	45.2	D	0.96	65.7	E
Brighton Avenue WB LT	0.46	18.9	B	0.55	27.3	C
Brighton Avenue WB TH/RT	1.10	89.5	F	1.17	115.7	F
Steven Avenue NB LT	0.48	42.0	D	0.49	43.0	D
Steven Avenue NB TH/RT	1.10	109.0	F	1.12	116.1	F
Steven Avenue SB LT	0.79	56.9	E	0.81	59.4	E
Steven Avenue SB TH/RT	0.51	33.4	C	0.52	34.8	C
Overall	--	68.3	E	--	84.0	F
<i>Saturday Midday:</i>						
Brighton Avenue EB LT	0.05	11.6	B	0.06	11.6	B
Brighton Avenue EB TH/RT	0.83	36.0	D	0.86	38.6	D
Brighton Avenue WB LT	0.28	14.0	B	0.31	14.6	B
Brighton Avenue WB TH/RT	0.68	24.4	C	0.72	26.1	C
Steven Avenue NB LT	0.20	34.3	C	0.22	35.8	D
Steven Avenue NB TH/RT	0.73	44.9	D	0.75	47.3	D
Steven Avenue SB LT	0.36	26.8	C	0.39	28.6	C
Steven Avenue SB TH/RT	0.69	29.5	C	0.61	31.9	C
Overall	--	31.8	C	--	33.8	C

See notes at end of table.

Table 6 (Continued)
SIGNALIZED INTERSECTION LEVEL-OF-SERVICE SUMMARY

Signalized Intersection/ Peak Hour/Movement	2021 No-Build			2021 Build		
	V/C ^a	Delay ^b	LOS ^c	V/C	Delay	LOS
Steven Avenue at Capisic Street and Anson Road						
<i>Weekday Evening:</i>						
Capisic Street EB LT	0.86	43.3	D	0.86	43.6	D
Capisic Street EB TH/RT	0.40	4.7	A	0.41	4.8	A
Anson Road WB LT/TH/RT	0.01	0.0	A	0.01	0.0	A
Steven Avenue NB LT	0.67	15.5	B	0.69	16.1	B
Steven Avenue NB TH/RT	0.30	9.4	A	0.30	9.4	A
Steven Avenue SB LT/TH	0.60	29.0	C	0.60	28.9	C
Steven Avenue SB RT	0.47	6.1	A	0.47	6.1	A
Overall	--	19.2	B	--	19.2	B
<i>Saturday MIDDAY:</i>						
Capisic Street EB LT	0.63	29.0	C	0.64	29.7	C
Capisic Street EB TH/RT	0.37	5.8	A	0.39	5.9	A
Anson Road WB LT/TH/RT	0.03	18.3	B	0.03	18.6	B
Steven Avenue NB LT	0.34	7.9	A	0.36	8.1	A
Steven Avenue NB TH/RT	0.19	6.7	A	0.19	6.7	A
Steven Avenue SB LT/TH	0.57	24.0	C	0.57	24.3	C
Steven Avenue SB RT	0.46	5.5	A	0.46	5.5	A
Overall	--	13.5	B	--	13.5	B

^aVolume-to-capacity ratio.

^bPercentile delay per vehicle (seconds).

^cLevel-of-Service.

NB = northbound; SB = southbound; EB = eastbound; WB = westbound; NWB = northwestbound; SWB = southwestbound; LT = left-turning movements; TH = through movements; RT = right-turning movements.

Table 7
UNSIGNALIZED INTERSECTION LEVEL-OF-SERVICE SUMMARY

Signalized Intersection/ Peak Hour/Movement	2021 No-Build			2021 Build		
	Demand ^a	Delay ^b	LOS ^c	Demand	Delay	LOS
<u>Westbrook Intersections</u>						
<i>Bridge Street at East Bridgewater Street</i>						
<i>Weekday Evening:</i>						
East Bridgewater Street WB LT/RT	287	19.2	C	298	20.7	C
Bridge Street NB TH/RT	403	0.0	A	421	0.0	A
Bridge Street SB LT/TH	98	0.6	A	104	0.6	A
<i>Saturday Midday:</i>						
East Bridgewater Street WB LT/RT	125	11.8	B	144	12.6	B
Bridge Street NB TH/RT	209	0.0	A	235	0.0	A
Bridge Street SB LT/TH	136	0.8	A	146	0.8	A
<i>Cumberland Street at Park Road</i>						
<i>Weekday Evening:</i>						
Cumberland Street EB LT/TH	365	0.9	A	411	0.9	A
Cumberland Street WB TH/RT	1,079	0.0	A	1,143	0.0	A
Park Road SB LT/RT	112	113.6	F	123	212.2	F
<i>Saturday Midday:</i>						
Cumberland Street EB LT/TH	444	0.2	A	522	0.2	A
Cumberland Street WB TH/RT	620	0.0	A	708	0.0	A
Park Road SB LT/RT	163	52.2	F	183	129.8	F
<i>Main Street at the Westbrook Crossing Driveway and the Project Site Driveway</i>						
<i>Weekday Evening:</i>						
Main Street EB LT	125	11.1	B	125	10.6	B
Main Street EB TH/RT	469	0.0	A	527	0.0	A
Main Street WB LT	--	--	--	208	9.8	A
Main Street WB TH/RT	874	0.0	A	809	0.0	A
Project Site Driveway NB LT/TH	--	--	--	135	2,681.6	F
Project Site Driveway NB RT	--	--	--	200	11.6	B
Westbrook Crossing SB LT/TH	50	82.7	F	56	976.8	F
Westbrook Crossing SB RT	184	15.8	C	178	13.3	B
<i>Saturday Midday:</i>						
Main Street EB LT	169	9.8	A	169	9.5	A
Main Street EB TH/RT	443	0.0	A	541	0.0	A
Main Street WB LT	--	--	--	300	10.3	B
Main Street WB TH/RT	628	0.0	A	572	0.0	A
Project Site Driveway NB LT/TH	--	--	--	151	3,366.3	F
Project Site Driveway NB RT	--	--	--	272	11.9	B
Westbrook Crossing SB LT/TH	72	55.7	F	79	1,617.2	F
Westbrook Crossing SB RT	189	12.9	B	182	11.4	B

See notes at end of table.

Table 7 (Continued)
UNIGNALIZED INTERSECTION LEVEL-OF-SERVICE SUMMARY

Signalized Intersection/ Peak Hour/Movement	2021 No-Build			2021 Build		
	Demand ^a	Delay ^b	LOS ^c	Demand	Delay	LOS
Main Street at Stroudwater Street						
<i>Weekday Evening:</i>						
Main Street EB TH/RT	442	0.0	A	471	0.0	A
Main Street WB LT/TH	583	0.5	A	616	0.5	A
Stroudwater Street NB LT/RT	191	37.1	E	191	45.3	E
<i>Saturday Midday:</i>						
Main Street EB TH/RT	482	0.0	A	530	0.0	A
Main Street WB LT/TH	698	0.8	A	741	0.8	A
Stroudwater Street NB LT/RT	165	71.4	F	165	108.8	F
New Gorham Road at Longfellow Street						
<i>Weekday Evening:</i>						
New Gorham Road EB TH/RT	211	0.0	A	222	0.0	A
New Gorham Road WB LT/TH	446	2.8	A	465	2.8	A
Longfellow Street NB LT/RT	80	10.6	B	86	10.8	B
<i>Saturday Midday:</i>						
New Gorham Road EB TH/RT	308	0.0	A	327	0.0	A
New Gorham Road WB LT/TH	290	2.6	A	316	2.6	A
Longfellow Street NB LT/RT	114	11.7	B	124	12.1	B
Stroudwater Street at Forest Street						
<i>Weekday Evening:</i>						
Stroudwater Street EB LT/TH	404	5.8	A	404	5.9	A
Stroudwater Street WB TH/RT	786	0.0	A	800	0.0	A
Forest Street SB LT/RT	243	233.7	F	262	335.2	F
<i>Saturday Midday:</i>						
Stroudwater Street EB LT/TH	283	3.2	A	283	3.3	A
Stroudwater Street WB TH/RT	308	0.0	A	337	0.0	A
Forest Street SB LT/RT	199	27.7	D	225	39.2	E
Forest Street at the Westbrook Arterial Eastbound On-Ramp						
<i>Weekday Evening:</i>						
Forest Street NB TH/RT	471	0.0	A	488	0.0	A
Forest Street SB LT/TH	275	1.0	A	294	1.0	A
<i>Saturday Midday:</i>						
Forest Street NB TH/RT	227	0.0	A	256	0.0	A
Forest Street SB LT/TH	228	1.0	A	228	1.0	A

See notes at end of table.

Table 7 (Continued)
UNSIGNALIZED INTERSECTION LEVEL-OF-SERVICE SUMMARY

Signalized Intersection/ Peak Hour/Movement	2021 No-Build			2021 Build		
	Demand ^a	Delay ^b	LOS ^c	Demand	Delay	LOS
<i>Forest Street at the Westbrook Arterial Westbound Off-Ramp and Libby Avenue</i>						
<i>Weekday Evening:</i>						
Libby Avenue EB LT/RT	19	10.3	B	19	10.3	B
Westbrook Arterial Off-Ramp WB LT/TH	134	20.1	C	153	22.0	C
Westbrook Arterial Off-Ramp WB RT	196	11.8	B	196	11.8	B
Forest Street NB LT/TH	334	0.4	A	334	0.4	A
Forest Street SB TH/RT	145	0.0	A	145	0.0	A
<i>Saturday MIDDAY:</i>						
Libby Avenue EB LT/RT	18	9.5	A	18	9.5	A
Westbrook Arterial Off-Ramp WB LT/TH	92	12.2	B	118	12.7	B
Westbrook Arterial Off-Ramp WB RT	30	9.1	A	30	96.1	A
Forest Street NB LT/TH	137	0.7	A	137	0.7	A
Forest Street SB TH/RT	133	0.0	A	133	0.0	A
<i>Larrabee Road at Terminal Street and the North Project Site Drive</i>						
<i>Weekday Evening:</i>						
Terminal Street EB LT/TH/RT	150	40.9	E	150	323.2	F
North Project Site Drive WB LT/TH/RT	7	24.2	C	--	--	--
North Project Site Drive WB LT/TH	--	--	--	122	553.5	F
North Project Site Drive WB RT	--	--	--	109	10.5	B
Larrabee Road NB LT/TH/RT	439	1.4	A	534	1.1	A
Larrabee Road SB LT/TH/RT	664	0.0	A	789	2.4	A
<i>Saturday MIDDAY:</i>						
Terminal Street EB LT/TH/RT	62	14.0	B	62	73.1	F
North Project Site Drive WB LT/TH/RT	2	15.4	C	--	--	--
North Project Site Drive WB LT/TH	--	--	--	143	935.6	F
North Project Site Drive WB RT	--	--	--	149	11.6	B
Larrabee Road NB LT/TH/RT	364	0.6	A	515	0.4	A
Larrabee Road SB LT/TH/RT	422	0.0	A	636	3.6	A

See notes at end of table.

Table 7 (Continued)
UNIGNALIZED INTERSECTION LEVEL-OF-SERVICE SUMMARY

Signalized Intersection/ Peak Hour/Movement	2021 No-Build			2021 Build		
	Demand ^a	Delay ^b	LOS ^c	Demand	Delay	LOS
<i>Larrabee Road at Saunders Way and the South Project Site Drive</i>						
<i>Weekday Evening:</i>						
Saunders Way LT/TH/RT	--	--	--	40	30.0	D
South Project Site Drive WB LT/TH	--	--	--	64	29.9	D
South Project Site Drive WB RT	--	--	--	65	10.2	B
Larrabee Road NB LT/TH/RT	--	--	--	479	0.1	A
Larrabee Road SB LT/TH/RT	--	--	--	824	0.5	A
<i>Saturday MIDDAY:</i>						
Saunders Way LT/TH/RT	--	--	--	10	17.2	C
South Project Site Drive WB LT/TH	--	--	--	88	33.2	D
South Project Site Drive WB RT	--	--	--	87	10.8	B
Larrabee Road NB LT/TH/RT	--	--	--	575	0.1	A
Larrabee Road SB LT/TH/RT	--	--	--	544	1.1	A
<i>Westbrook Arterial at the Project Site Drive</i>						
<i>Weekday Evening:</i>						
Westbrook Arterial EB LT	--	--	--	106	12.2	B
Westbrook Arterial EB TH	--	--	--	769	0.0	A
Westbrook Arterial WB TH/RT	--	--	--	1,035	0.0	A
Project Site Drive SB LT	--	--	--	139	691.3	F
Project Site Drive SB RT	--	--	--	131	16.0	C
<i>Saturday MIDDAY:</i>						
Westbrook Arterial EB LT	--	--	--	154	10.7	B
Westbrook Arterial EB TH	--	--	--	590	0.0	A
Westbrook Arterial WB TH/RT	--	--	--	755	0.0	A
Project Site Drive SB LT	--	--	--	180	459.1	F
Project Site Drive SB RT	--	--	--	139	13.2	B
<u>Portland Intersections</u>						
<i>Capisic Street at Frost Street</i>						
<i>Weekday Evening:</i>						
Capisic Street EB LT/TH/RT	314	0.0	A	340	0.0	A
Capisic Street WB LT	211	8.6	A	211	8.7	A
Capisic Street WB TH/RT	386	0.0	A	397	0.0	A
Frost Street NB LT	194	229.5	F	205	299.1	F
Frost Street SB RT	390	15.9	C	390	16.6	C
Driveway SB LT/TH/RT	0	0.0	A	0	0.0	A
<i>Saturday MIDDAY:</i>						
Capisic Street EB LT/TH/RT	332	0.0	A	368	0.0	A
Capisic Street WB LT	221	8.8	A	221	9.0	A
Capisic Street WB TH/RT	193	0.0	A	213	0.0	A
Frost Street NB LT	102	47.0	E	121	81.2	F
Frost Street SB RT	203	11.0	B	203	11.3	B
Driveway SB LT/TH/RT	4	34.5	D	4	38.3	E

^aDemand in vehicles per hour.

^bAverage control delay per vehicle (in seconds).

^cLevel-of-Service.

^dQueue length in vehicles.

EB = eastbound; WB = westbound; NB = northbound; SB = southbound; LT = left-turning movements; TH = through movements; RT = right-turning movements.

Signalized Intersections

As can be seen in Table 6, with the addition of Project-related traffic, 22 of the 28 signalized intersections within the study area were shown to continue to operate at an overall LOS D or better during the weekday evening and Saturday midday peak hours under 2021 Build Design Year conditions, where an LOS of “D” or better is generally defined as “acceptable” operating conditions. The following intersections were identified to be operating at or over the theoretical design capacity of the intersection (defined as LOS E or F, respectively):

Westbrook:

- ***Main Street/Forest Street*** – This intersection was found to be operating at an overall LOS E during the weekday evening peak-hour under 2021 No-Build conditions (independent of the Project) and is predicted to operate at LOS F during this period with the addition of Project-related traffic.
- ***Main Street/Larrabee Road*** – Overall operating conditions at this signalized intersection are predicted to degrade from LOS D to LOS E during the weekday evening peak-hour with the addition of Project-related traffic, with specific movements operating LOS E/F during both the weekday evening and Saturday midday peak hours.
- ***William Clarke Drive/Spring Street*** – Overall operating conditions at this signalized intersection are predicted to degrade from LOS D to LOS E during the weekday evening peak-hour with the addition of Project-related traffic, with specific movements operating at LOS E/F during both the weekday evening and Saturday midday peak hours.

Portland:

- ***Riverside Street/Warren Avenue*** – This signalized intersection was shown to operate at an overall LOS E during the weekday evening peak-hour under both 2021 No-Build and 2021 Build Design Year conditions independent of the Project, with specific movements operating at LOS F.
- ***Riverside Street/Larrabee Road/I-95 Ramps*** – Overall operating conditions at this signalized intersection are predicted to degrade from LOS E to LOS F during the weekday evening peak-hour and from LOS D to LOS E during the Saturday midday peak-hour with the addition of Project-related traffic.
- ***Brighton Avenue/Steven Avenue*** - Overall operating conditions at this signalized intersection are predicted to degrade from LOS E to LOS F during the weekday evening peak-hour with the addition of Project-related traffic.

Unsignalized Intersections

As can be seen in Table 7, six (6) of the 11 unsignalized intersections within the study area were found to have one or more movements operating below LOS “D” during one or more peak-hour under 2021 No-Build and 2021 Build Design Year conditions. The identified intersections are as follows:

Westbrook:

- ***Cumberland Street/Park Road*** – All movements from the Park Road approach were shown to operate at LOS F during both the weekday evening and Saturday midday peak hours under 2021 No-Build and 2021 Build Design Year conditions.
- ***Main Street/Westbrook Crossing Driveway*** – Left-turn/through movements from the Westbrook Crossing driveway were shown to operate at LOS F during both the weekday evening and Saturday midday peak hours under 2021 No-Build and 2021 Build Design Year conditions. The proposed installation of a traffic control signal at this intersection in conjunction with the Project will improve overall operating conditions and facilitate the ability of motorists to access both the Westbrook Crossing shopping center and the Project site.
- ***Main Street/Stroudwater Street*** – All movements from the Stroudwater Street approach were shown to operate at LOS E/F during both the weekday evening and Saturday midday peak hours under 2021 No-Build and 2021 Build Design Year conditions.
- ***Stroudwater Street/Forest Street*** – All movements from the Forest Street approach were shown to operate at LOS F during the weekday evening peak-hour under 2021 No-Build and 2021 Build Design Year conditions, and to degrade from LOS D to LOS E during the Saturday midday peak-hour with the addition of Project-related traffic.
- ***Larrabee Road/Terminal Street*** – All movements from the Terminal Street approach were shown to degrade from LOS E to LOS F during the weekday evening peak-hour and from LOS B to LOS F during the Saturday midday peak-hour with the addition of Project-related traffic. Planned improvements at this intersection as a part of the Project will result in improved access to Terminal Street.

Portland:

- ***Capisic Street/Frost Street*** – Left-turn movements from the Frost Street northbound approach were shown to operate at LOS F during the weekday evening peak-hour under 2021 No-Build and 2021 Build Design Year conditions, and to degrade from LOS E to LOS F during the Saturday midday peak-hour with the addition of Project-related traffic.

SIGHT DISTANCE EVALUATION

Sight distance measurements were performed at the Project site driveway intersections with Main Street, Westbrook Arterial and Larrabee Road in accordance with MDOT and American Association of State Highway and Transportation Officials (AASHTO)¹⁰ requirements. Both stopping sight distance (SSD) and intersection sight distance (ISD) measurements were performed. In brief, SSD is the distance required by a vehicle traveling at the design speed of a roadway, on wet pavement, to stop prior to striking an object in its travel path. ISD or corner sight distance (CSD) is the sight distance required by a driver entering or crossing an intersecting roadway to perceive an on-coming vehicle and safely complete a turning or crossing maneuver with on-coming traffic. In accordance with AASHTO standards, if the measured ISD is at least equal to the required SSD value for the appropriate design speed, the intersection can operate in a safe manner. Table 8 presents the measured SSD and ISD at the subject intersections.

¹⁰*A Policy on Geometric Design of Highway and Streets*, 6th Edition; American Association of State Highway and Transportation Officials (AASHTO); Washington D.C.; 2011.

Table 8
SIGHT DISTANCE MEASUREMENTS^a

Intersection/Sight Distance Measurement	Feet		
	Required Minimum (SSD)	Desirable (ISD) ^b	Measured
<i>Main Street at the Full Access Project Site Driveway</i>			
<i>Stopping Sight Distance:</i>			
Main Street approaching from the east	305	--	650+
Main Street approaching from the west	305	--	650+
<i>Intersection Sight Distance:</i>			
Looking to the east from the Project Site Driveway	305	385/445	650+
Looking to the west from the Project Site Driveway	305	385/445	650+
<i>Westbrook Arterial at the Project Site Driveway</i>			
<i>Stopping Sight Distance:</i>			
Westbrook Arterial approaching from the east	495	--	650+
Westbrook Arterial approaching from the west	495	--	650+
<i>Intersection Sight Distance:</i>			
Looking to the east from the Project Site Driveway	495	530/610	650+
Looking to the west from the Project Site Driveway	495	530/610	650+
<i>Larrabee Road at the North Project Site Driveway</i>			
<i>Stopping Sight Distance:</i>			
Larrabee Road approaching from the north	305	--	650+
Larrabee Road approaching from the south	305	--	650+
<i>Intersection Sight Distance:</i>			
Looking to the north from the Project Site Driveway	305	385/445	650+
Looking to the south from the Project Site Driveway	305	385/445	650+
<i>Larrabee Road at the South Project Site Driveway</i>			
<i>Stopping Sight Distance:</i>			
Larrabee Road approaching from the north	305	--	650+
Larrabee Road approaching from the south	305	--	650+
<i>Intersection Sight Distance:</i>			
Looking to the north from the Project Site Driveway	305	385/445	650+
Looking to the south from the Project Site Driveway	305	385/445	650+

^aRecommended minimum values obtained from *A Policy on Geometric Design of Highways and Streets*, 6th Edition; American Association of State Highway and Transportation Officials (AASHTO); 2011; and based on a 40 mph approach speed on Main Street and Larrabee Road, and a 55 mph approach speed on Westbrook Arterial.

^bValues shown are the intersection sight distance for a vehicle turning right/left exiting a roadway under STOP control such that motorists approaching the intersection on the major street should not need to adjust their travel speed to less than 70 percent of their initial approach speed.

As can be seen in Table 8, lines of sight at the Project site driveway intersections exceed the recommended minimum sight distance requirements to function in a safe (SSD) and efficient (ISD) manner based on the appropriate approach speed along the intersecting roadway.

CONCLUSIONS AND RECOMMENDATIONS

CONCLUSIONS

VAI has completed a detailed assessment of the potential impacts on the transportation infrastructure associated with the proposed construction of a mixed-use commercial development to be known as Dirigo Plaza and located on an assemblage of parcels bounded by Main Street (Route 25B), Westbrook Arterial (Route 25), and Larrabee Road, in Westbrook, Maine. The following specific areas have been evaluated as they relate to the Project: i) access requirements; ii) potential off-site improvements; and iii) safety considerations; under existing and future conditions, both with and without the Project. Based on this assessment, we have concluded the following with respect to the Project:

1. Using trip-generation statistics published by the ITE¹¹ and applying appropriate adjustments to account for pass-by trips, the Project is predicted to generate approximately 13,366 new vehicle trips on an average weekday and 18,890 new vehicle trips on a Saturday (two-way volume over the operational day of the Project), with 351 new vehicle trips expected during the weekday morning peak-hour, 1,217 new vehicle trips expected during the weekday evening peak-hour and 1,853 new vehicle trips expected during the Saturday midday peak-hour;
2. The Project will not have a significant impact (increase) on motorist delays or vehicle queuing over anticipated future conditions without the Project (No-Build conditions) at the majority of the study intersections;
3. At those locations where the Project was shown to have a pronounced impact or where a capacity or safety deficiency was identified, specific improvement measures have been identified to reconcile these conditions or to advance design plans for a future improvement project by others; and
4. Lines of sight to and from the Project site driveway intersections with Main Street, Westbrook Arterial and Larrabee Road were found to exceed the required minimum distance for the intersections to function in a safe and efficient manner based on the appropriate approach speed along the intersecting roadway.

¹¹Ibid 1.

In consideration of the above, we have concluded that the Project can be accommodated within the confines of the existing transportation infrastructure in a safe and efficient manner with implementation of the recommendations that follow.

RECOMMENDATIONS

A detailed transportation improvement program has been developed that is designed to provide safe and efficient access to the Project site and address any deficiencies identified at off-site locations evaluated in conjunction with this study. The following improvements have been recommended as a part of this evaluation and, where applicable, will be completed in conjunction with the Project subject to receipt of all necessary rights, permits, and approvals.

Project Access

Access to the Project site is proposed as follows: two (2) driveways that will intersect Larrabee Road and will align with Terminal Street and Saunders Way, respectively; an existing driveway that serves the Project site that intersects Main Street opposite the driveway to the Westbrook Crossing shopping center that will be placed under traffic signal control; a right-turn, entrance only driveway that will intersect Main Street approximately 100 feet east of Larrabee Road; and a full access driveway that will intersect Westbrook Arterial approximately 550 feet east of Larrabee Road that will be placed under traffic signal control. As discussed with MDOT, it is proposed that the rights to construct a third full access driveway on Larrabee Road (to be located between the Westbrook Arterial and the railroad tracks) be transferred to Westbrook Arterial in order to allow for the construction of the full access driveway on Westbrook Arterial. The following recommendations are offered with respect to the design and operation of the Project site driveways and are also depicted on Figure 14:

- The Project site driveway intersections with Main Street (full access driveway to be located opposite the driveway to Westbrook Crossing) and Westbrook Arterial should be placed under traffic signal control. The proposed traffic signals should be interconnected and coordinated with the adjacent traffic signals on Main Street and Westbrook Arterial.
- The Main Street approach to the full access Project site driveway should provide a westbound left-turn, while maintaining the eastbound left-turn lane to the Westbrook Crossing shopping center and two (2) through travel lanes in both directions.
- The Westbrook Arterial approach to the Project site driveway should provide two (2) westbound travel lanes, an eastbound left-turn lane and a single eastbound through travel lane.
- The signalized project site driveways should accommodate two (2) 11 to 12-foot wide exiting travel lanes and a single 14-foot wide (minimum) entering lane separated by a double-yellow centerline or a raised median a minimum of 6-feet in width.
- The north driveway on Larrabee Road (opposite Terminal Street) should be designed to accommodate the future installation of a traffic control signal if and when warranted (see *Traffic Monitoring Program*), to include the installation of traffic signal conduit and pullboxes. Larrabee Road approaching the intersection should be widened to provide a left-turn lane in both the north and southbound directions, with the Project site driveway providing two (2) 11 to 12-foot wide exiting travel lanes and a single 14-foot wide (minimum) entering lane separated by a double-yellow centerline or raised median a

minimum of 6-feet in width, and vehicles exiting the driveway placed under STOP-sign control with a marked STOP-line provided.

- The south driveway on Larrabee Road (opposite Saunders Way) should provide two (2) 11 to 12-foot wide exiting travel lanes and a single 14-foot wide (minimum) entering lane separated by a double-yellow centerline or raised median a minimum of 6-feet in width, with vehicles exiting the driveway placed under STOP-sign control with a marked STOP-line provided.
- All signs and pavement markings to be installed within the Project site shall conform to the applicable standards of the *Manual on Uniform Traffic Control Devices (MUTCD)*.¹²
- Sidewalks should be provided within the Project site linking the proposed buildings to the sidewalk infrastructure along Main Street.
- Wheelchair ramps should be provided for crossing the Project site driveways where a sidewalk is present and at locations internal to the Project site where pedestrian crossings are proposed.
- Signs and landscaping to be installed internal to the Project site and at the Project site driveway intersections should be designed and maintained so as not to restrict lines of sight.
- Snow windrows along the Project site frontage within the sight triangle areas of the Project site driveways shall be promptly removed where such accumulations would exceed 2.5 feet in height.

Off-Site

The following off-site improvements are proposed to off-set the impact of the Project and improve traffic operations, and will be implemented by the Project proponent prior to the issuance of a Certificate of Occupancy for the Project and subject to receipt of all necessary rights, permits and approvals. The resulting improvement in operating conditions is summarized in Table 9, with the detailed analysis worksheets included in the Technical Appendix.

Westbrook:

- ***Cumberland Street at Bridge Street*** – Design and implement an optimal traffic signal timing and phasing plan, to include the installation of all necessary hardware and appurtenances to implement the changes.
- ***Main Street at Forest Street*** – Convert the Main Street westbound right-turn lane to a through/right-turn lane and design and implement an optimal traffic signal timing and phasing plan, to include the installation of all necessary hardware and appurtenances to implement the changes.
- ***Main Street at Larrabee Road*** – Remove the raised triangular islands on the Larrabee Road approaches to eliminate the right-turn slip-ramps; install crosswalks, wheelchair ramps and pedestrian traffic signal equipment (push buttons, signal indications and phasing); reconstruct/upgrade/replace traffic signal equipment as necessary to accommodate the intersection improvements; and interconnect and

¹²Ibid 2.

coordinate with adjacent traffic signals at the Project site driveway/Westbrook Crossing shopping center and Brighton Avenue/Riverside Street intersections.

- ***Main Street at Bridge Street*** – Design and implement an optimal traffic signal timing and phasing plan, to include the installation of all necessary hardware and appurtenances to implement the changes.
- ***William Clarke Drive at New Gorham Road*** – Design and implement an optimal traffic signal timing and phasing plan, to include the installation of all necessary hardware and appurtenances to implement the changes.
- ***William Clarke Drive at Spring Street*** – Design and implement an optimal traffic signal timing and phasing plan, to include the installation of all necessary hardware and appurtenances to implement the changes.
- ***William Clarke Drive at Stroudwater Street*** – Design and implement an optimal traffic signal timing and phasing plan, to include the installation of all necessary hardware and appurtenances to implement the changes.
- ***Westbrook Arterial at Larrabee Road*** – Design and implement an optimal traffic signal timing and phasing plan, and interconnect and coordinate with the proposed traffic control signal to be installed at the Project site driveway. These improvements include the installation of all necessary hardware and appurtenances to implement the changes.
- ***Cumberland Street at Park Road*** – Perform a detailed Traffic Signal Warrants Analysis (TSWA) in accordance with the methodology established in the MUTCD, to include conducting a 12-hour (7:00 AM to 7:00 PM) manual turning movement count on an average weekday. The results of the TSWA will be summarized in a memorandum provided to the City and will include a conceptual improvement plan depicting the recommended intersection improvements.
- ***Stroudwater Street at Forest Street*** - Perform a detailed TSWA in accordance with the methodology established in the MUTCD, to include conducting a 12-hour (7:00 AM to 7:00 PM) manual turning movement count on an average weekday. The results of the TSWA will be summarized in a memorandum provided to the City and will include a conceptual improvement plan depicting the recommended intersection improvements.

Portland:

- ***Riverside Street at Warren Avenue*** – Design and implement an optimal traffic signal timing and phasing plan, to include the installation of all necessary hardware and appurtenances to implement the changes.
- ***Riverside Street at Larrabee Road and the I-95 Ramps*** – Design and implement an optimal traffic signal timing and phasing plan, to include the installation of all necessary hardware and appurtenances to implement the changes.
- ***Main Street at Brighton Avenue and Riverside Street*** – Interconnect and coordinate with adjacent traffic signals at the Project site driveway/Westbrook Crossing shopping center and Main Street/Larrabee Road intersections. These improvements include the implementation of an optimal traffic signal timing and phasing plan, and the installation of all necessary hardware and appurtenances to implement the changes.

- ***Westbrook Arterial at Rand Road and the I-95 Ramps*** – Design and implement an optimal traffic signal timing and phasing plan, to include the installation of all necessary hardware and appurtenances to implement the changes.
- ***Brighton Avenue at Steven Avenue*** – Design and implement an optimal traffic signal timing and phasing plan, to include the installation of all necessary hardware and appurtenances to implement the changes.
- ***Capisic Street at Frost Street*** - Perform a detailed TSWA in accordance with the methodology established in the MUTCD, to include conducting a 12-hour (7:00 AM to 7:00 PM) manual turning movement count on an average weekday. The results of the TSWA will be summarized in a memorandum provided to the City and will include a conceptual improvement plan depicting the recommended intersection improvements.

Safety Improvements

The following safety-related improvements will be completed in conjunction with the Project and will be implemented by the Project proponent prior to the issuance of a Certificate of Occupancy for the Project and subject to receipt of all necessary rights, permits and approvals:

Westbrook:

- ***Main Street at Larrabee Road***
 - i.) Review and upgrade the existing traffic signal system to meet current design standards which may include: signal indications; vehicle detection system to include bicycle detection; controller and cabinet; emergency vehicle detection system (OPTICOM™); and all necessary appurtenances to provide a fully functional traffic signal system;
 - ii.) Design and implement an optimal traffic signal timing and phasing plan to include vehicle clearance times developed in accordance with current MUTCD, City and MDOT standards; and
 - iii.) Review, upgrade and replace existing signs and pavement markings as may be necessary.
- ***Main Street at Cumberland Street, Warren Avenue and Harnois Avenue*** – The City of Westbrook will be implementing specific improvements at these intersections that includes the installation of traffic control signals to enhance safety and facilitate pedestrian and bicycle access. No additional improvements are required at this time.
- ***Cumberland Street at Park Road***
 - i.) Selective trimming of vegetation along Cumberland Street to improve sight lines;
 - ii.) Install “Intersection Ahead” (graphic symbol) warning signs on Cumberland Street in advance of the intersection; and
 - iii.) Review, upgrade and replace existing signs and pavement markings as may be necessary.

➤ ***Stroudwater Street at Forest Street***

- i.) Selective trimming of vegetation along Stroudwater Street to improve sight lines;
- ii.) Install “Intersection Ahead” (graphic symbol) warning signs on Stroudwater Street in advance of the intersection; and
- iii.) Review, upgrade and replace existing signs and pavement markings as may be necessary.

Portland:

➤ ***Riverside Street at Larrabee Road and the I-95 Ramps***

- i.) Review and upgrade the existing traffic signal system to meet current design standards which may include: signal indications; pedestrian pushbuttons and indications; vehicle detection system to include bicycle detection; controller and cabinet; emergency vehicle detection system (OPTICOM™); and all necessary appurtenances to provide a fully functional traffic signal system;
- ii.) Design and implement an optimal traffic signal timing and phasing plan to include vehicle clearance times developed in accordance with current MUTCD, City and MDOT standards; and
- iii.) Review, upgrade and replace existing signs and pavement markings as may be necessary.

➤ ***Brighton Avenue at Steven Avenue***

- i.) Review and upgrade the existing traffic signal system to meet current design standards which may include: signal indications; pedestrian pushbuttons and indications; vehicle detection system to include bicycle detection; controller and cabinet; emergency vehicle detection system (OPTICOM™); and all necessary appurtenances to provide a fully functional traffic signal system;
- ii.) Design and implement an optimal traffic signal timing and phasing plan to include vehicle clearance times developed in accordance with current MUTCD, City and MDOT standards; and
- iii.) Review, upgrade and replace existing signs and pavement markings as may be necessary.

➤ ***Capisic Street at Frost Street***

- i.) Selective trimming of vegetation along Capisic Street to improve sight lines;
- ii.) Install an “Intersection Ahead” (graphic symbol) warning sign on Capisic Street west of the intersection;
- iii.) Install a “Stop Sign Ahead” (graphic symbol) warning sign on Frost Street approaching the intersection; and
- iv.) Review, upgrade and replace existing signs and pavement markings as may be necessary.

Transportation Demand Management

The Project site is ideally situated to take advantage of available public transportation resources in the area, including the METRO bus service operated by the Greater Portland Transit District. In an effort to encourage use of alternative modes of transportation to single-occupant vehicles, the following Transportation Demand Management (TDM) measures will be implemented as a part of the Project:

- Information regarding public transportation services, maps, schedules and fare information will be made available to employees of the Project and posted in a central location within each building;
- A packet will be provided to new employees of the Project detailing available public transportation services, bicycle and walking alternatives, and commuter options;
- Pedestrian accommodations will be incorporated within the Project site and extending to Main Street;
- A METRO bus stop will be provided along Main Street or at an appropriate location determined in consultation with Greater Portland Transit District; and
- Secure bicycle parking will be provided, including both exterior bicycle racks and weather protected bicycle parking in a secure area where such accommodations can be made.

Traffic Monitoring Program

The Project proponent will conduct a post-development traffic monitoring program in order to validate the trip projections for the Project and to determine if and when the installation of a traffic control signal may be justified at the Larrabee Road/Project site Driveway/Terminal Street intersection. The monitoring program will include:

- i) Obtaining traffic volume information over a continuous seven day, weeklong period at the driveways serving the Project site;
- ii) Performing a continuous 12-hour (7:00 AM to 7:00 PM) manual turning movement and vehicle classification count on an average weekday at the Project site driveway intersection with Larrabee Road and Terminal Street; and
- iii) Completing a detailed TSWA at the Larrabee Road/Project site Driveway/Terminal Street intersection in accordance with the methodology established in the MUTCD.

The monitoring program will commence six (6) months after issuance of the first Certificate of Occupancy for the Project and will continue on an annual basis thereafter for a period not to exceed 2-years after Project completion and occupancy. The results of the monitoring program will be summarized in a report to be provided to the City of Westbrook within 2-months after the completion of the data collection effort. If and when the installation of traffic control signal is found to be warranted at the Larrabee Road/Project site Driveway/Terminal Street intersection, the Project proponent will advance the design and construction the traffic signal system subject to receipt of all necessary rights permits and approvals.

Loading and Deliveries

The Project has been designed to accommodate all loading and delivery functions on-site in a safe and efficient manner. Designated loading areas will be provided on-site to accommodate deliveries. Refuse/recycling will be accommodated in centralized areas for each building. Truck routes and hours of deliveries will be coordinated to minimize truck activity during the commuter peak hours. Reasonable efforts will be made to use service vendors currently delivering in the vicinity of the Project site in an effort to reduce the overall number of new trucks in the area.

With implementation of the above recommendations, safe and efficient access will be provided to the Project site and the Project can be accommodated within the confines of the existing and improved transportation system.

**Table 9
MITIGATED SIGNALIZED INTERSECTION LEVEL-OF-SERVICE SUMMARY**

Signalized Intersection/ Peak Hour/Movement	2021 No-Build			2021 Build With Mitigation		
	V/C ^a	Delay ^b	LOS ^c	V/C	Delay	LOS
Westbrook Intersections						
<i>Cumberland Street at Bridge Street</i>						
<i>Weekday Evening:</i>						
Cumberland Street EB LT/TH/RT	0.32	9.5	A	0.36	11.5	B
Cumberland Street WB LT/TH/RT	0.89	27.6	C	1.00	50.6	D
Bridge Street NB LT/TH/RT	0.98	58.4	E	0.90	41.2	D
Bridge Street SB LT/TH/RT	1.00	65.7	E	1.00	63.4	E
Overall	--	41.4	D	--	45.9	D
<i>Saturday Midday:</i>						
Cumberland Street EB LT/TH/RT	0.58	12.9	B	0.60	14.8	B
Cumberland Street WB LT/TH/RT	0.67	15.1	B	0.74	19.2	B
Bridge Street NB LT/TH/RT	0.51	16.9	B	0.52	18.4	B
Bridge Street SB LT/TH/RT	0.59	19.2	B	0.69	24.8	C
Overall	--	15.6	B	--	18.8	B
<i>Main Street at Forest Street</i>						
<i>Weekday Evening:</i>						
Main Street EB LT/TH	0.74	19.2	B	0.69	18.8	B
Main Street EB RT	0.06	1.2	A	0.06	1.7	A
Main Street WB LT/TH	1.08	69.3	E	--	--	--
Main Street WB LT/TH/RT	--	--	--	0.76	18.7	B
Main Street WB RT	0.01	0.0	A	--	--	--
Forest Street NB LT/TH/RT	1.25	156.7	F	0.95	53.8	D
Forest Street SB LT/TH/RT	0.02	0.0	A	0.02	0.0	A
Overall	--	74.4	E	--	25.4	C
<i>Saturday Midday:</i>						
Main Street EB LT/TH	0.55	8.4	A	0.62	9.6	A
Main Street EB RT	0.05	1.0	A	0.05	1.1	A
Main Street WB LT/TH	0.88	25.6	C	--	--	--
Main Street WB LT/TH/RT	--	--	--	0.55	7.9	A
Main Street WB RT	0.03	0.3	A	--	--	--
Forest Street NB LT/TH/RT	0.56	26.6	C	0.56	22.7	C
Forest Street SB LT/TH/RT	0.08	16.2	B	0.08	14.3	B
Overall	--	17.2	B	--	9.7	A

See notes at end of table.

Table 9 (Continued)
MITIGATED SIGNALIZED INTERSECTION LEVEL-OF-SERVICE SUMMARY

Signalized Intersection/ Peak Hour/Movement	2021 No-Build			2021 Build With Mitigation		
	V/C ^a	Delay ^b	LOS ^c	V/C	Delay	LOS
Main Street at Larrabee Road						
<i>Weekday Evening:</i>						
Main Street EB LT	0.77	57.6	E	0.92	74.2	E
Main Street EB TH/RT	0.71	42.7	D	0.75	36.9	D
Main Street WB LT	0.59	43.8	D	0.92	71.1	E
Main Street WB TH/RT	0.75	41.6	D	0.96	52.1	D
Larrabee Road NB LT/TH/RT	0.81	48.6	D	0.91	51.3	D
Larrabee Road SB LT/TH	0.74	50.8	D	0.91	56.1	E
Larrabee Road SB RT	0.61	10.0	B	0.60	8.9	A
Overall	--	42.6	D	--	48.8	D
<i>Saturday MIDDAY:</i>						
Main Street EB LT	0.74	50.3	D	0.91	72.6	E
Main Street EB TH/RT	0.72	33.6	C	0.89	40.8	D
Main Street WB LT	0.62	48.2	D	0.89	73.1	E
Main Street WB TH/RT	0.69	36.1	D	0.88	39.3	D
Larrabee Road NB LT/TH/RT	0.65	43.3	D	0.92	55.9	E
Larrabee Road SB LT/TH	0.48	42.8	D	0.83	48.0	D
Larrabee Road SB RT	0.66	11.6	B	0.60	9.0	A
Overall	--	36.3	D	--	45.3	D
Main Street at Bridge Street						
<i>Weekday Evening:</i>						
Main Street EB LT	0.58	17.0	B	0.69	23.2	C
Main Street EB TH/RT	0.24	12.0	B	0.28	14.2	B
Main Street WB LT/TH	0.79	47.5	D	0.78	50.2	D
Main Street WB RT	0.71	23.6	C	0.70	23.8	C
Bridge Street NB LT/TH/RT	0.22	25.0	C	0.70	27.7	C
Bridge Street SB LT/TH/RT	1.02	76.2	E	0.97	61.4	E
Overall	--	40.6	D	--	38.0	D
<i>Saturday MIDDAY:</i>						
Main Street EB LT	0.49	15.7	B	0.54	18.6	B
Main Street EB TH/RT	0.40	14.5	B	0.45	16.7	B
Main Street WB LT/TH	0.80	45.1	D	0.81	52.9	D
Main Street WB RT	0.49	16.9	B	0.50	18.4	B
Bridge Street NB LT/TH/RT	0.15	17.7	B	0.14	16.6	B
Bridge Street SB LT/TH/RT	0.88	48.3	D	0.89	49.0	D
Overall	--	31.0	C	--	33.8	C

See notes at end of table.

Table 9 (Continued)
MITIGATED SIGNALIZED INTERSECTION LEVEL-OF-SERVICE SUMMARY

Signalized Intersection/ Peak Hour/Movement	2021 No-Build			2021 Build With Mitigation		
	V/C ^a	Delay ^b	LOS ^c	V/C	Delay	LOS
<i>New Gorham Road at William Clarke Drive</i>						
<i>Weekday Evening:</i>						
New Gorham Road EB LT/TH	0.37	33.0	C	0.40	34.8	C
New Gorham Road EB RT	0.35	7.5	A	0.36	7.8	A
New Gorham Road WB LT/TH	0.69	42.3	D	0.74	46.4	D
New Gorham Road WB RT	0.57	10.2	B	0.55	7.4	A
William Clarke Drive NB LT	0.95	93.9	F	0.69	49.4	D
William Clarke Drive NB TH/RT	0.91	87.4	F	0.91	75.1	E
William Clarke Drive SB LT	0.67	48.0	D	0.71	51.1	D
William Clarke Drive SB TH/RT	0.24	12.2	B	0.27	14.7	B
Overall	--	49.2	D	--	42.6	D
<i>Saturday Midday:</i>						
New Gorham Road EB LT/TH	0.60	33.0	C	0.60	32.7	C
New Gorham Road EB RT	0.46	7.2	A	0.45	6.8	A
New Gorham Road WB LT/TH	0.59	33.6	C	0.67	36.0	D
New Gorham Road WB RT	0.52	6.7	A	0.51	6.3	A
William Clarke Drive NB LT	0.44	40.7	D	0.44	39.5	D
William Clarke Drive NB TH/RT	0.75	26.7	C	0.77	28.1	C
William Clarke Drive SB LT	0.54	37.3	D	0.60	41.4	D
William Clarke Drive SB TH/RT	0.31	12.8	B	0.33	14.6	B
Overall	--	21.6	C	--	23.1	C
<i>William Clarke Drive at Spring Street</i>						
<i>Weekday Evening:</i>						
William Clarke Drive EB LT	0.27	47.0	D	0.27	46.9	D
William Clarke Drive EB TH/RT	0.83	38.8	D	0.84	38.9	D
William Clarke Drive WB LT	0.66	53.6	D	0.72	53.6	D
William Clarke Drive WB TH/RT	0.83	82.2	F	0.78	78.0	E
Spring Street NB LT	0.79	62.1	E	0.76	58.0	E
Spring Street NB TH	0.64	38.4	D	0.73	45.0	D
Spring Street NB RT	0.37	10.1	B	0.48	12.3	B
Spring Street SB LT	0.36	47.9	D	0.36	47.7	D
Spring Street SB TH/RT	0.56	42.8	D	0.69	51.8	D
Overall	--	54.4	D	--	53.7	D
<i>Saturday Midday:</i>						
William Clarke Drive EB LT	0.27	45.9	D	0.27	46.7	D
William Clarke Drive EB TH/RT	0.82	36.1	D	0.86	40.3	D
William Clarke Drive WB LT	0.65	51.6	D	0.82	64.2	E
William Clarke Drive WB TH/RT	0.50	24.2	C	0.50	23.2	C
Spring Street NB LT	0.52	48.3	D	0.55	51.3	D
Spring Street NB TH	0.37	31.0	C	0.39	31.3	C
Spring Street NB RT	0.33	6.1	A	0.44	6.0	A
Spring Street SB LT	0.28	46.0	D	0.28	46.8	D
Spring Street SB TH/RT	0.75	63.7	E	0.79	59.8	E
Overall	--	35.1	D	--	36.7	D

See notes at end of table.

Table 9 (Continued)
MITIGATED SIGNALIZED INTERSECTION LEVEL-OF-SERVICE SUMMARY

Signalized Intersection/ Peak Hour/Movement	2021 No-Build			2021 Build With Mitigation		
	V/C ^a	Delay ^b	LOS ^c	V/C	Delay	LOS
William Clarke Drive at Stroudwater Street						
<i>Weekday Evening:</i>						
William Clarke Drive EB LT	0.15	44.1	D	0.15	45.0	D
William Clarke Drive EB TH/RT	0.72	29.6	C	0.73	28.4	C
William Clarke Drive WB LT	0.30	45.3	D	0.33	47.4	D
William Clarke Drive WB TH/RT	0.66	27.1	C	0.68	28.0	C
Stroudwater Street NB LT	0.72	45.4	D	0.76	50.3	D
Stroudwater Street NB TH/RT	0.67	40.4	D	0.71	44.5	D
Stroudwater Street SB LT	0.22	39.2	D	0.23	39.9	D
Stroudwater Street SB TH/RT	0.49	41.6	D	0.50	42.7	D
Overall	--	32.9	C	--	33.7	C
<i>Saturday Midday:</i>						
William Clarke Drive EB LT	0.19	45.6	D	0.20	47.8	D
William Clarke Drive EB TH/RT	0.800	34.6	C	0.81	34.3	C
William Clarke Drive WB LT	.36	47.6	D	0.41	52.8	D
William Clarke Drive WB TH/RT	0.54	24.3	C	0.58	23.8	C
Stroudwater Street NB LT	0.55	42.8	D	0.59	46.6	D
Stroudwater Street NB TH/RT	0.66	41.6	D	0.70	46.0	D
Stroudwater Street SB LT	0.16	36.9	D	0.17	38.8	D
Stroudwater Street SB TH/RT	0.57	42.6	D	0.60	45.5	D
Overall	--	33.8	C	--	34.1	C
Westbrook Arterial at Larrabee Road						
<i>Weekday Evening:</i>						
Westbrook Arterial EB LT	0.52	24.4	C	0.73	38.7	D
Westbrook Arterial EB TH	0.27	5.2	A	0.29	5.4	A
Westbrook Arterial WB TH/RT	0.90	38.6	D	0.83	18.5	B
Larrabee Road SB LT	0.57	33.0	C	0.81	51.3	D
Larrabee Road SB RT	0.72	16.0	B	0.85	27.8	C
Overall	--	22.8	C	--	22.5	C
<i>Saturday Midday:</i>						
Westbrook Arterial EB LT	0.53	20.5	C	0.78	37.9	D
Westbrook Arterial EB TH	0.17	3.0	A	0.24	5.2	A
Westbrook Arterial WB TH/RT	0.55	17.5	B	0.67	16.3	B
Larrabee Road SB LT	0.27	24.8	C	0.64	39.1	D
Larrabee Road SB RT	0.44	8.6	A	0.53	13.3	B
Overall	--	12.8	B	--	18.4	B

See notes at end of table.

Table 9 (Continued)
MITIGATED SIGNALIZED INTERSECTION LEVEL-OF-SERVICE SUMMARY

Signalized Intersection/ Peak Hour/Movement	2021 No-Build			2021 Build With Mitigation		
	V/C ^a	Delay ^b	LOS ^c	V/C	Delay	LOS
<i>Main Street at the Westbrook Crossing Driveway and the Project Site Driveway</i>						
<i>Weekday Evening:</i>						
Main Street EB LT				0.58	39.0	D
Main Street EB TH/RT				0.39	10.8	B
Main Street WB LT				0.54	19.3	B
Main Street WB TH/RT				0.46	1.9	A
Project Site Driveway NB LT/TH				0.65	47.8	D
Project Site Driveway NB RT				0.27	6.1	A
Westbrook Crossing SB LT/TH		See Unsignalized		0.34	36.1	D
Westbrook Crossing SB RT		Intersection Capacity		0.32	11.4	B
Overall		Analysis (Table 7)		--	12.5	B
<i>Saturday Midday:</i>						
Main Street EB LT				0.64	51.7	D
Main Street EB TH/RT				0.39	3.9	A
Main Street WB LT				0.76	54.0	D
Main Street WB TH/RT				0.35	3.7	A
Project Site Driveway NB LT/TH				0.70	48.7	D
Project Site Driveway NB RT				0.35	6.5	A
Westbrook Crossing SB LT/TH				0.47	40.1	D
Westbrook Crossing SB RT				0.27	3.0	A
Overall				--	18.6	B
<i>Westbrook Arterial at the Project Site Driveway</i>						
<i>Weekday Evening:</i>						
Westbrook Arterial EB LT				0.53	45.9	D
Westbrook Arterial EB TH				0.33	3.4	A
Westbrook Arterial WB TH/RT				0.57	13.8	B
Project Site Driveway SB LT				0.57	39.8	D
Project Site Driveway SB RT		See Unsignalized		0.40	8.9	A
Overall		Intersection Capacity		--	13.1	B
		Analysis (Table 7)				
<i>Saturday Midday:</i>						
Westbrook Arterial EB LT				0.60	42.4	D
Westbrook Arterial EB TH				0.26	3.6	A
Westbrook Arterial WB TH/RT				0.49	15.7	B
Project Site Driveway SB LT				0.63	39.2	D
Project Site Driveway SB RT				0.38	7.6	A
Overall				--	15.8	B

See notes at end of table.

Table 9 (Continued)
MITIGATED SIGNALIZED INTERSECTION LEVEL-OF-SERVICE SUMMARY

Signalized Intersection/ Peak Hour/Movement	2021 No-Build			2021 Build With Mitigation		
	V/C ^a	Delay ^b	LOS ^c	V/C	Delay	LOS
Portland Intersections						
Riverside Street at Warren Avenue						
<i>Weekday Evening:</i>						
Warren Street EB LT	0.33	37.0	D	0.35	39.2	D
Warren Street EB TH/RT	0.76	49.3	D	0.82	57.0	E
Warren Street WB LT	0.76	46.0	D	0.82	52.2	D
Warren Street WB LT/TH	0.77	46.1	D	0.82	54.4	D
Warren Street WB RT	0.18	3.8	A	0.19	4.6	A
Riverside Street NB LT	0.30	29.8	C	0.32	26.9	C
Riverside Street NB TH	1.17	128.2	F	0.99	69.9	E
Riverside Street NB RT	0.99	65.3	E	0.89	42.5	D
Riverside Street SB LT	0.49	33.5	C	0.54	33.3	C
Riverside Street SB TH/RT	0.80	48.1	D	0.73	42.0	D
Overall	--	66.8	E	--	51.0	D
<i>Saturday MIDDAY:</i>						
Warren Street EB LT	0.31	36.8	D	0.31	38.2	D
Warren Street EB TH/RT	0.73	48.7	D	0.76	52.1	D
Warren Street WB LT	0.75	44.5	D	0.77	48.3	D
Warren Street WB LT/TH	0.74	43.7	D	0.77	47.8	D
Warren Street WB RT	0.19	3.7	A	0.19	4.0	A
Riverside Street NB LT	0.28	27.6	C	0.35	27.8	C
Riverside Street NB TH	0.72	44.4	D	0.75	45.0	D
Riverside Street NB RT	0.67	21.3	C	0.68	22.3	C
Riverside Street SB LT	0.65	38.1	D	0.70	40.8	D
Riverside Street SB TH/RT	0.67	40.5	D	0.72	41.8	D
Overall	--	38.2	D	--	40.3	D
Riverside Street at Larrabee Road and the I-95 Ramps						
<i>Weekday Evening:</i>						
Larrabee Road EB LT	1.51	283.5	F	1.31	197.8	F
Larrabee Road EB TH/RT	0.53	38.8	D	0.54	36.5	D
I-95 Off-Ramp WB LT	0.74	64.2	E	0.74	60.7	E
I-95 Off-Ramp WB TH	0.90	71.7	E	0.95	73.5	E
I-95 Off-Ramp WB RT	1.13	93.2	F	1.06	68.0	E
Riverside Street NB LT	0.12	35.4	D	0.16	42.9	D
Riverside Street NB TH	0.68	45.0	D	0.96	77.6	E
Riverside Street NB RT	0.48	8.2	A	0.59	10.9	B
Riverside Street SB LT	0.92	64.6	E	0.92	69.7	E
Riverside Street SB LT/TH/RT	0.82	37.4	D	1.05	79.0	E
Overall	--	77.7	E	--	76.7	E
<i>Saturday MIDDAY:</i>						
Larrabee Road EB LT	0.87	67.9	E	0.94	77.9	E
Larrabee Road EB TH/RT	0.29	26.2	C	0.42	34.2	C
I-95 Off-Ramp WB LT	0.63	54.0	D	0.73	58.7	E
I-95 Off-Ramp WB TH	0.73	54.7	D	0.96	79.4	E
I-95 Off-Ramp WB RT	0.77	14.8	B	0.78	19.6	B
Riverside Street NB LT	0.11	35.9	D	0.14	42.7	D
Riverside Street NB TH	0.67	44.4	D	0.96	77.1	E
Riverside Street NB RT	0.42	8.3	A	0.55	10.8	B
Riverside Street SB LT	0.95	73.5	E	0.98	80.0	E
Riverside Street SB LT/TH/RT	0.90	50.5	D	1.00	70.0	E
Overall	--	44.5	D	--	58.9	D

See notes at end of table.

Table 9 (Continued)
MITIGATED SIGNALIZED INTERSECTION LEVEL-OF-SERVICE SUMMARY

Signalized Intersection/ Peak Hour/Movement	2021 No-Build			2021 Build With Mitigation		
	V/C ^a	Delay ^b	LOS ^c	V/C	Delay	LOS
Main Street at Riverside Street						
<i>Weekday Evening:</i>						
Main Street EB LT	0.33	40.6	D	0.53	39.7	D
Main Street EB TH/RT	0.25	11.4	B	0.26	6.3	A
Main Street WB LT	0.06	44.1	D	0.10	42.9	D
Main Street WB TH	0.63	22.4	C	0.63	24.6	C
Main Street WB RT	0.37	0.7	A	0.37	0.7	A
Driveway NB LT/TH/RT	0.12	37.9	D	0.18	35.8	D
Riverside Street SB LT	0.55	36.1	D	0.72	48.5	D
Riverside Street SB LT/TH	0.56	36.1	D	0.72	48.6	D
Riverside Street SB RT	0.04	0.1	A	0.08	0.1	A
Overall	--	17.9	B	--	19.5	B
<i>Saturday Midday:</i>						
Main Street EB LT	0.02	32.0	C	0.51	44.6	D
Main Street EB TH/RT	0.40	17.4	B	0.30	16.9	B
Main Street WB LT	0.04	31.8	C	0.09	42.6	D
Main Street WB TH	0.51	18.5	B	0.57	26.6	C
Main Street WB RT	0.27	0.4	A	0.27	0.4	A
Driveway NB LT/TH/RT	0.18	29.4	C	0.31	42.8	D
Riverside Street SB LT	0.48	22.9	C	0.73	47.4	D
Riverside Street SB LT/TH	0.49	23.0	C	0.75	48.3	D
Riverside Street SB RT	0.03	0.0	A	0.09	0.1	A
Overall	--	15.6	B	--	24.0	C
Westbrook Arterial and Rand Road at the I-95 Ramps						
<i>Weekday Evening:</i>						
Westbrook Arterial EB TH	0.73	36.4	D	0.85	51.0	D
Westbrook Arterial EB RT	0.35	2.2	A	0.45	3.8	A
Rand Road WB LT	0.63	19.2	B	0.86	48.7	D
Rand Road WB TH	0.50	15.7	B	0.62	24.3	C
I-95 Off-Ramp NB LT	0.88	40.7	D	0.91	39.0	D
I-95 Off-Ramp NB RT	0.16	1.9	A	0.16	1.9	A
Overall	--	22.3	C	--	28.7	C
<i>Saturday Midday:</i>						
Westbrook Arterial EB TH	0.53	20.4	C	0.68	30.9	C
Westbrook Arterial EB RT	0.50	4.8	A	0.68	6.8	A
Rand Road WB LT	0.25	8.4	A	0.32	13.4	B
Rand Road WB TH	0.27	8/5	A	0.34	13.3	B
I-95 Off-Ramp NB LT	0.62	23.9	C	0.85	34.9	D
I-95 Off-Ramp NB RT	0.13	2.5	A	0.12	2.0	A
Overall	--	12.9	B	--	19.8	B

See notes at end of table.

Table 9 (Continued)
MITIGATED SIGNALIZED INTERSECTION LEVEL-OF-SERVICE SUMMARY

Signalized Intersection/ Peak Hour/Movement	2021 No-Build			2021 Build With Mitigation		
	V/C ^a	Delay ^b	LOS ^c	V/C	Delay	LOS
Brighton Avenue at Steven Avenue						
<i>Weekday Evening:</i>						
Brighton Avenue EB LT	0.23	14.8	B	0.25	14.4	B
Brighton Avenue EB TH/RT	0.88	45.2	D	0.91	49.3	D
Brighton Avenue WB LT	0.46	18.9	B	0.53	21.9	C
Brighton Avenue WB TH/RT	1.10	89.5	F	1.12	97.5	F
Steven Avenue NB LT	0.48	42.0	D	0.52	44.9	D
Steven Avenue NB TH/RT	1.10	109.0	F	1.14	124.5	F
Steven Avenue SB LT	0.79	56.9	E	0.87	73.7	E
Steven Avenue SB TH/RT	0.51	33.4	C	0.54	35.8	D
Overall	--	68.3	E	--	76.0	E
<i>Saturday Middy:</i>						
Brighton Avenue EB LT	0.05	11.6	B	0.06	11.9	B
Brighton Avenue EB TH/RT	0.83	36.0	D	0.86	38.4	D
Brighton Avenue WB LT	0.28	14.0	B	0.32	15.2	B
Brighton Avenue WB TH/RT	0.68	24.4	C	0.73	26.8	C
Steven Avenue NB LT	0.20	34.3	C	0.21	34.9	C
Steven Avenue NB TH/RT	0.73	44.9	D	0.74	46.0	C
Steven Avenue SB LT	0.36	26.8	C	0.38	27.9	C
Steven Avenue SB TH/RT	0.69	29.5	C	0.60	31.1	C
Overall	--	31.8	C	--	33.6	C

^aVolume-to-capacity ratio.

^bPercentile delay per vehicle (seconds).

^cLevel-of-Service.

NB = northbound; SB = southbound; EB = eastbound; WB = westbound; LT = left-turning movements; TH = through movements; RT = right-turning movements.

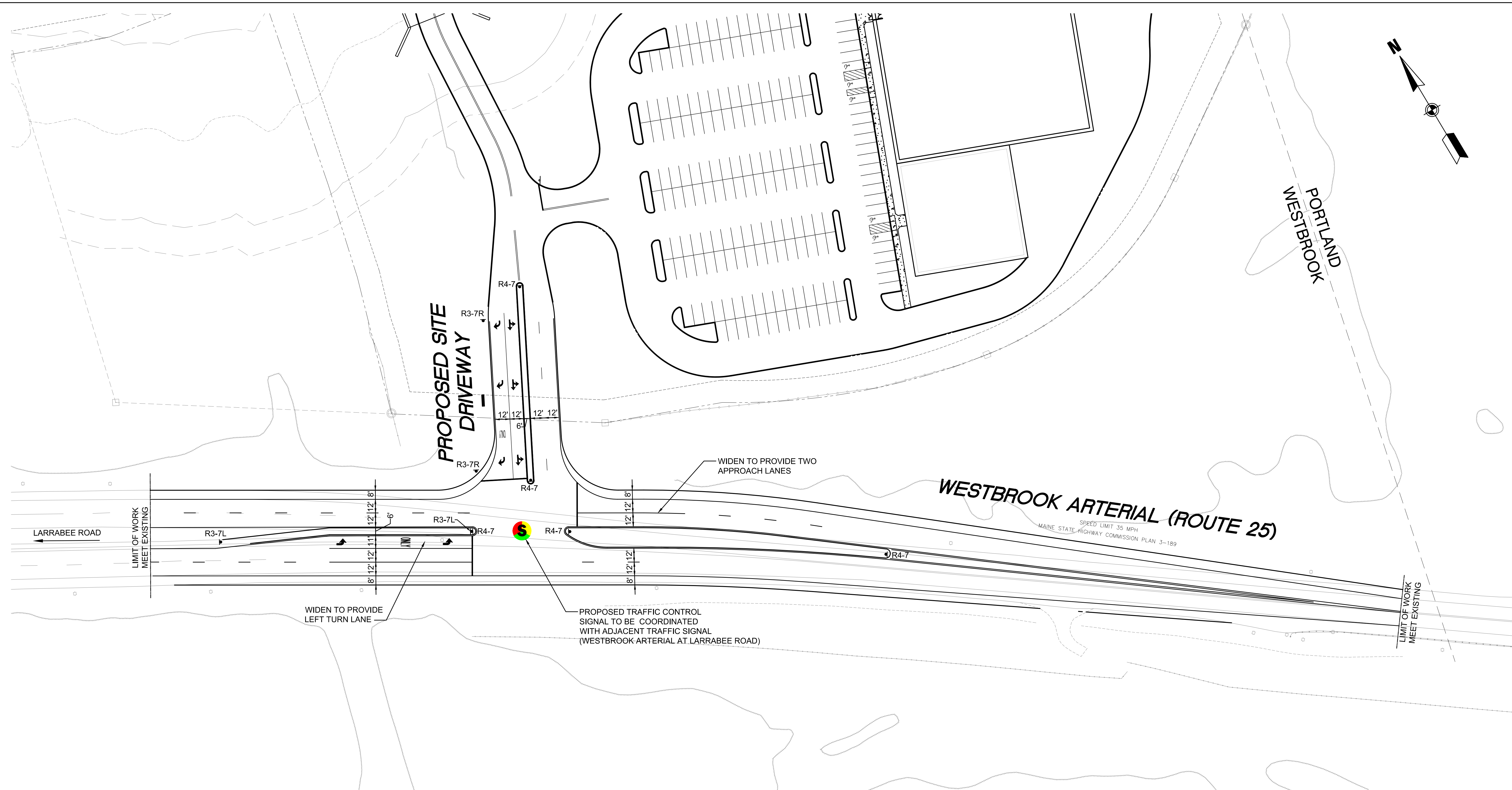
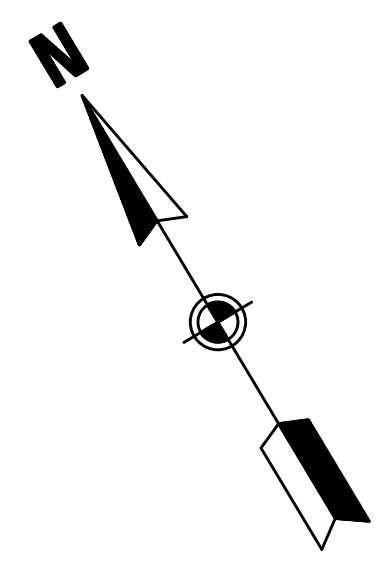
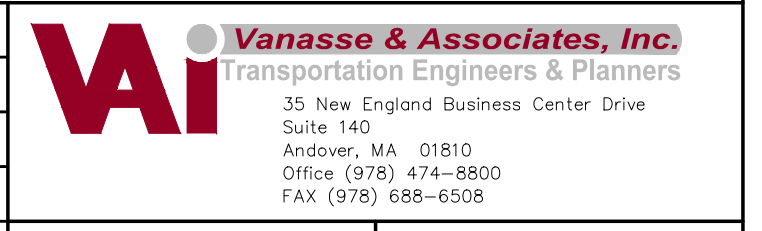


FIGURE 14
CONCEPTUAL IMPROVEMENT PLAN

PROJECT:
PROPOSED COMMERCIAL DEVELOPMENT
WESTBROOK, MAINE

PROPOSER:
J&J GOVE DEVELOPMENT, LLC
HAMPTON FALLS, NEW HAMPSHIRE

NO.	REVISIONS	DATE

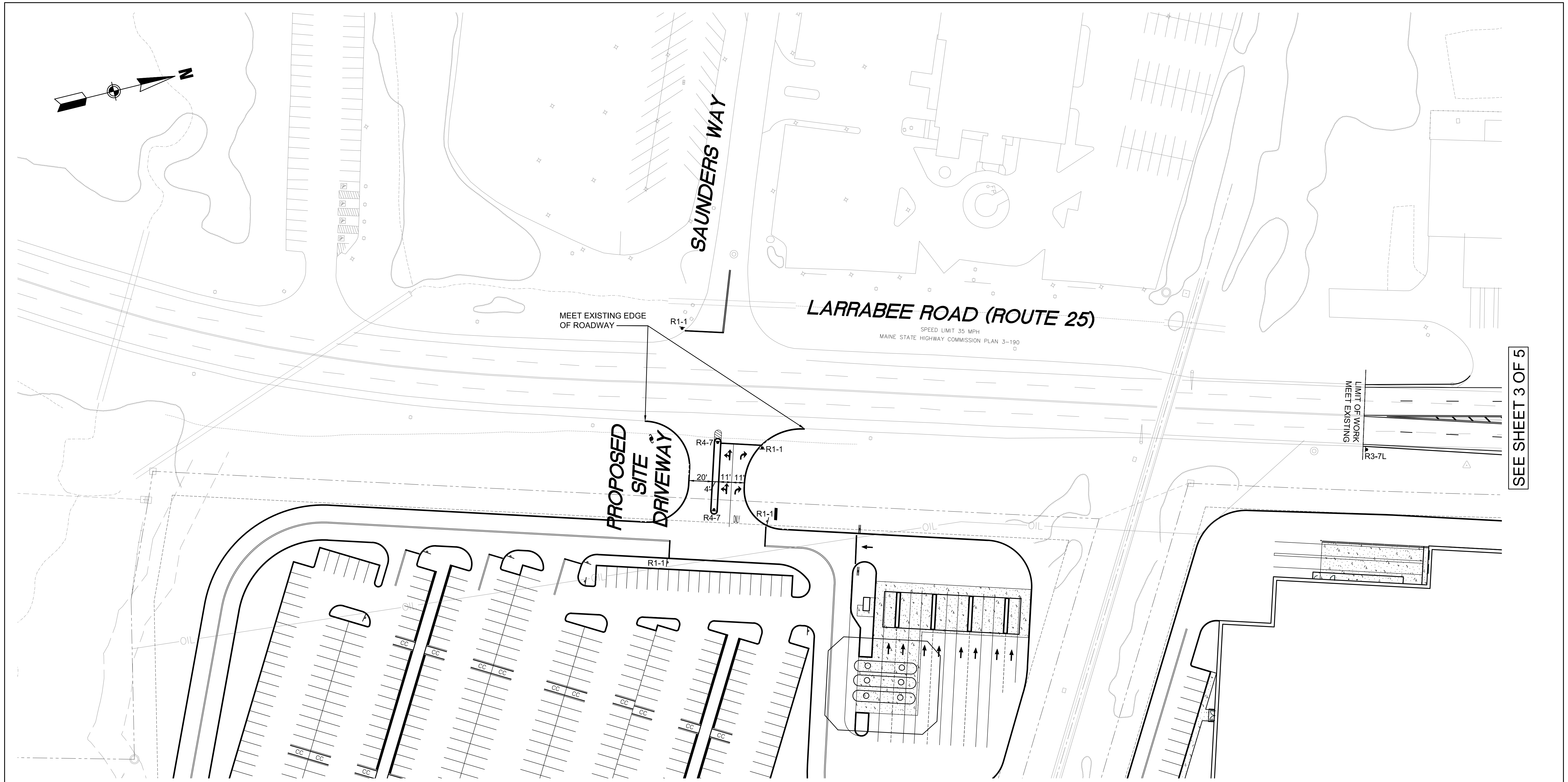


DESIGNED BY: BG DATE: 2/5/16
DRAWN BY: JTG SCALE: 1" = 40'
CHECKED BY: JSD SHEET 1 OF 5

NOTES: 1. THIS PLAN IS FOR REVIEW PURPOSES ONLY AND IS NOT INTENDED FOR CONSTRUCTION.
2. BASE PLAN INFORMATION OBTAINED FROM JONES & BEACH ENGINEERS, INC.



SIGN LEGEND	
R3-7R	RIGHT LANE MUST TURN RIGHT
R3-7L	LEFT LANE MUST TURN LEFT
R4-7	



SEE SHEET 3 OF 5

SIGN LEGEND	
R1-1	
R4-7	

FIGURE 14
CONCEPTUAL IMPROVEMENT PLAN

PROJECT:
PROPOSED COMMERCIAL DEVELOPMENT
WESTBROOK, MAINE

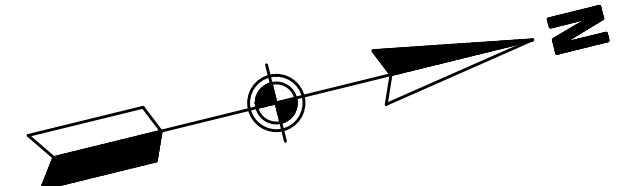
PROPOSER:
J&J GOVE DEVELOPMENT, LLC
HAMPTON FALLS, NEW HAMPSHIRE

NO.	REVISIONS	DATE

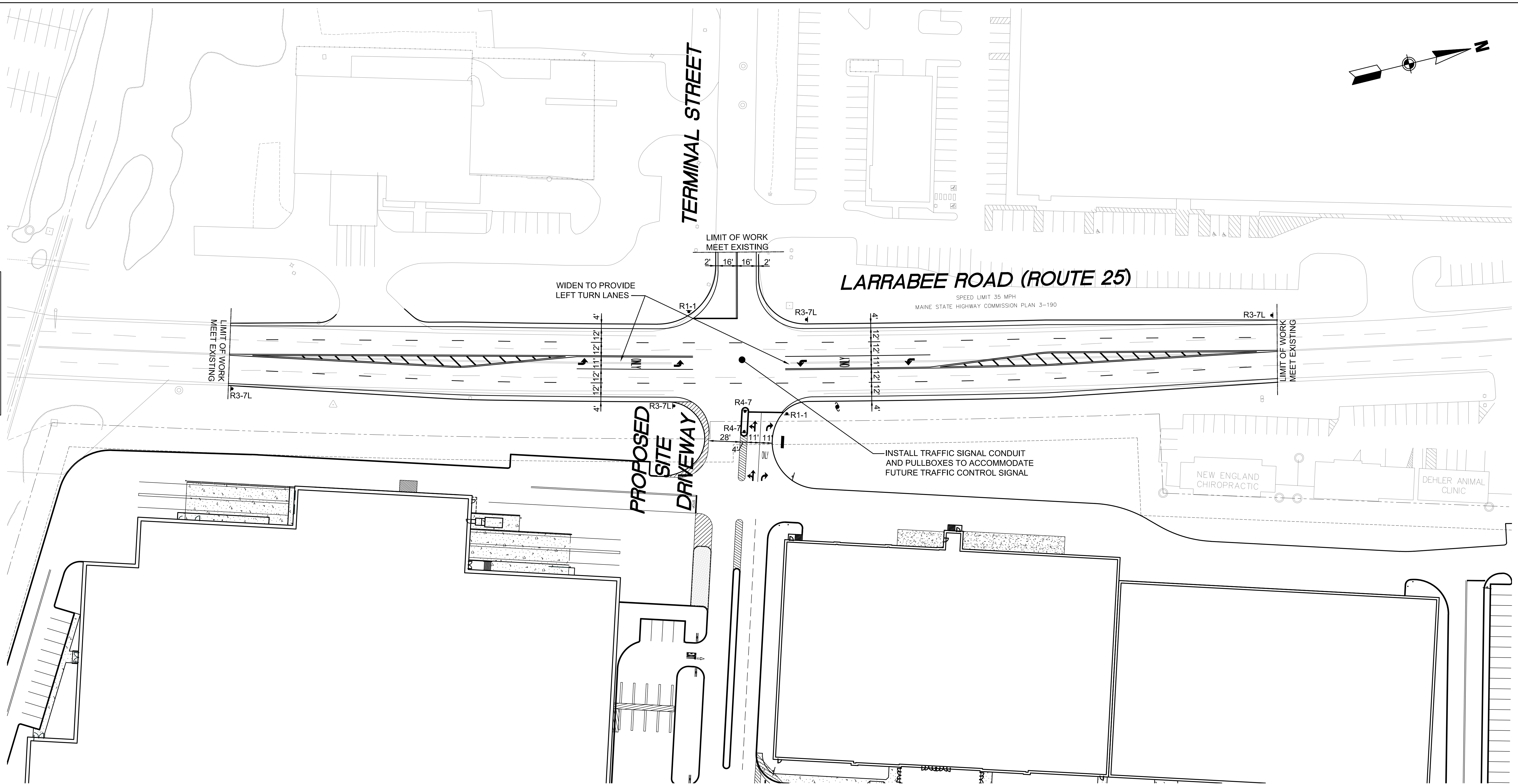
VAI **Varasse & Associates, Inc.**
 Transportation Engineers & Planners
 35 New England Business Center Drive
 Suite 140
 Andover, MA 01810
 Office (978) 474-8800
 Fax (978) 688-6508

DESIGNED BY: **BG** DATE: **2/5/16**
 DRAWN BY: **JTG** SCALE: **1" = 40'**
 CHECKED BY: **JSD** SHEET **2 OF 5**

NOTES: 1. THIS PLAN IS FOR REVIEW PURPOSES ONLY AND IS NOT INTENDED FOR CONSTRUCTION.
 2. BASE PLAN INFORMATION OBTAINED FROM JONES & BEACH ENGINEERS, INC.



SEE SHEET 2 OF 5



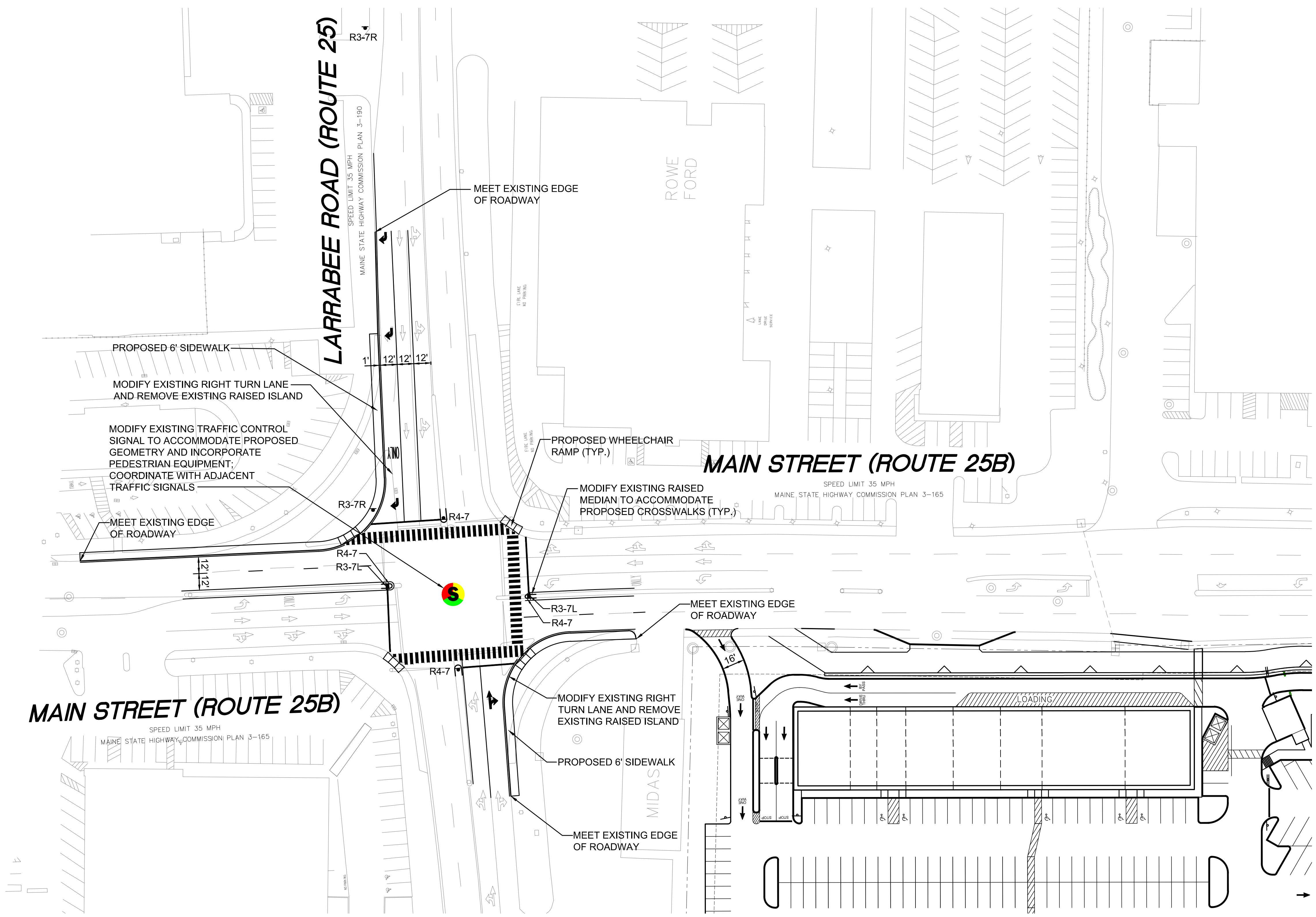
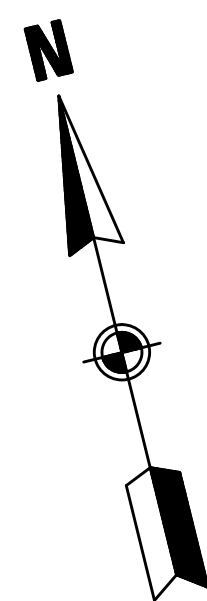
SIGN LEGEND	
R1-1	
R3-7L	
R4-7	



NOTES: 1. THIS PLAN IS FOR REVIEW PURPOSES ONLY AND IS NOT INTENDED FOR CONSTRUCTION.
 2. BASE PLAN INFORMATION OBTAINED FROM JONES & BEACH ENGINEERS, INC.

FIGURE 14
 CONCEPTUAL IMPROVEMENT PLAN

PROJECT: PROPOSED COMMERCIAL DEVELOPMENT WESTBROOK, MAINE	
PROPOSER: J&J GOVE DEVELOPMENT, LLC HAMPTON FALLS, NEW HAMPSHIRE	
NO.	REVISIONS
	DATE
DESIGNED BY:	BG
DATE:	2/5/16
DRAWN BY:	JTG
SCALE:	1" = 40'
CHECKED BY:	JSD
SHEET:	3 OF 5



SEE SHEET 5 OF 5

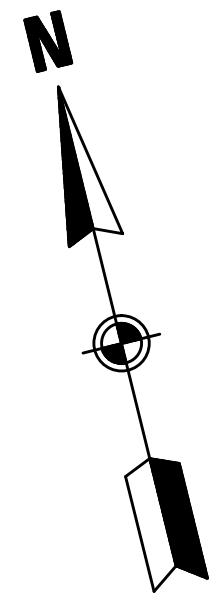
SIGN LEGEND	
R3-7R	RIGHT LANE MUST TURN RIGHT
R3-7L	LEFT LANE MUST TURN LEFT
R4-7	



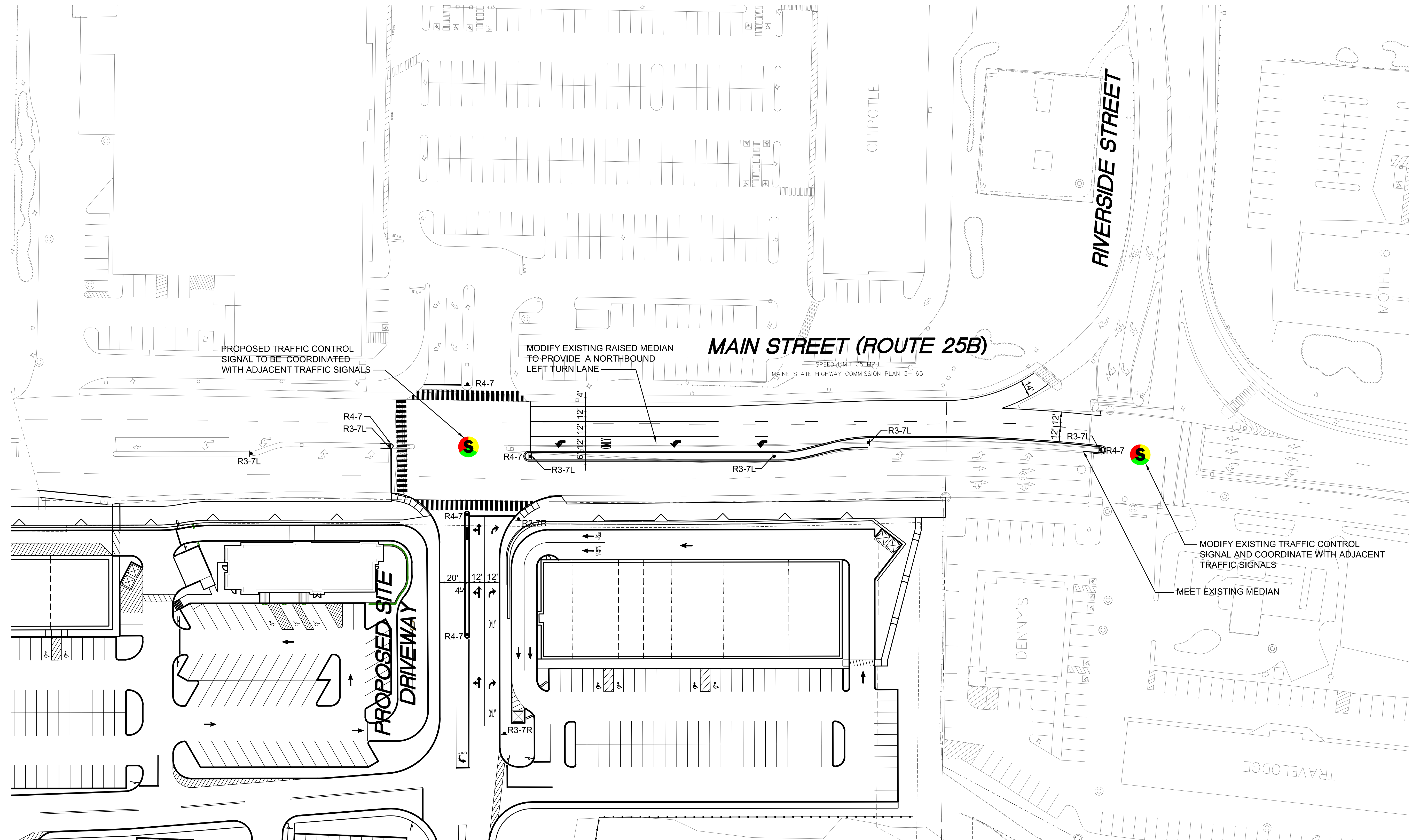
- NOTES: 1. THIS PLAN IS FOR REVIEW PURPOSES ONLY AND IS NOT INTENDED FOR CONSTRUCTION.
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FIGURE 14
CONCEPTUAL IMPROVEMENT PLAN

PROJECT: PROPOSED COMMERCIAL DEVELOPMENT WESTBROOK, MAINE			
PROPOSER: J&J GOVE DEVELOPMENT, LLC HAMPTON FALLS, NEW HAMPSHIRE			
NO.	REVISIONS	DATE	<p>Vanasse & Associates, Inc. Transportation Engineers & Planners 35 New England Business Center Drive Suite 140 Andover, MA 01810 Office (978) 474-8800 Fax (978) 688-6508</p>
DESIGNED BY:	BG	DATE:	2/5/16
DRAWN BY:	JTG	SCALE:	1" = 40'
CHECKED BY:	JSD	SHEET:	4 OF 5



SEE SHEET 4 OF 5



SIGN LEGEND	
R3-7R	RIGHT LANE MUST TURN RIGHT
R3-7L	LEFT LANE MUST TURN LEFT
R4-7	



- NOTES: 1. THIS PLAN IS FOR REVIEW PURPOSES ONLY AND IS NOT INTENDED FOR CONSTRUCTION.
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