

Preliminary Analysis

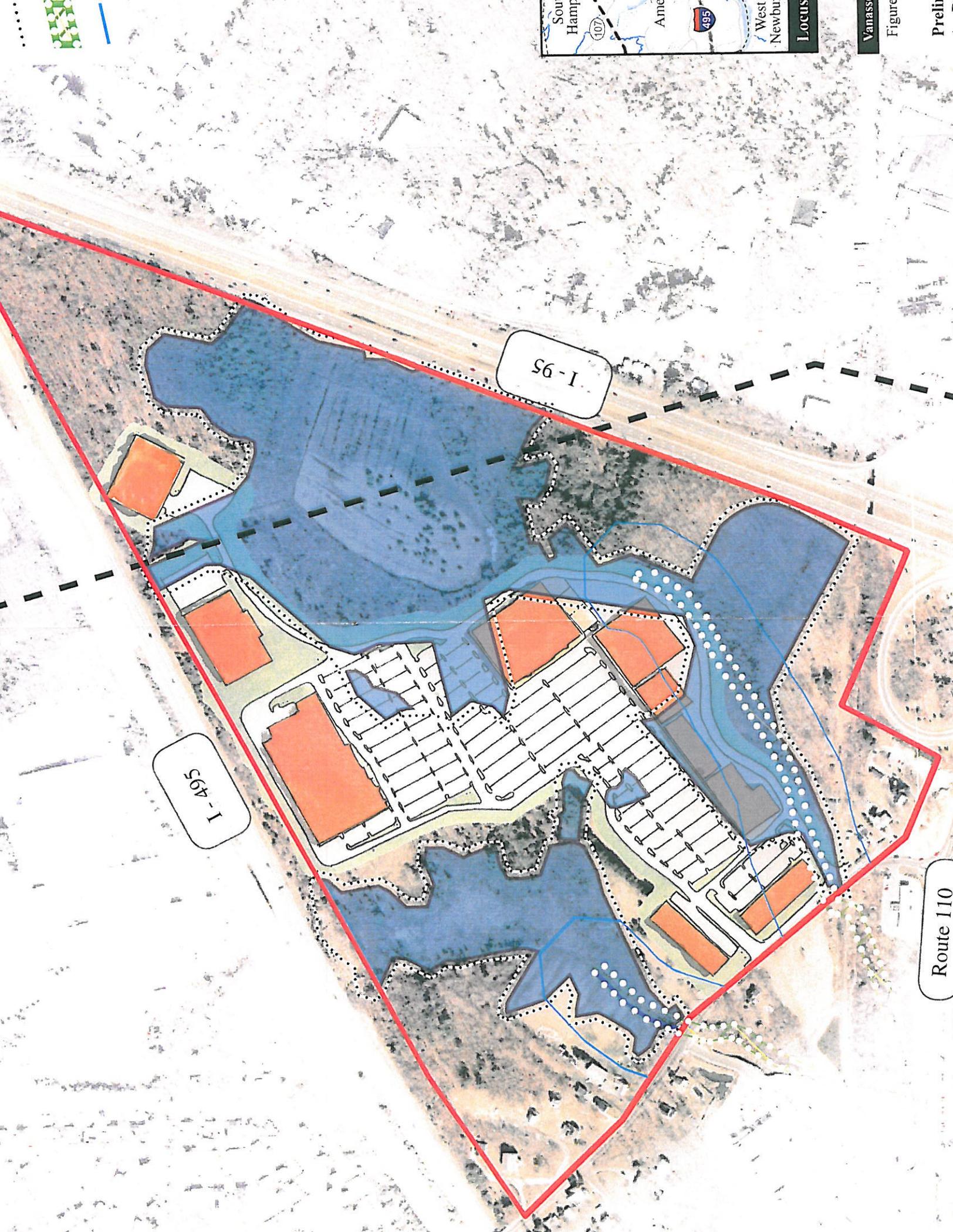
To determine what types and sizes of development could be located on this parcel, an upper range of development needed to be established. In early 2006, the Town of Amesbury was presented with a proposed development program for the Golden Triangle by a private developer who was interested in developing the parcel. This program consisted of 407,000 square feet of retail development and 113,000 square feet of office development. The layout for this development maximized retail square footage by concentrating parking in the center of the site and placing buildings along the perimeter, bordering (and in many cases encroaching on) the wetland areas. Although the Town felt the proposed site's layout was not ideal, the development program was of a magnitude that appealed to Town officials. Therefore, a development program of this type and size became a starting point for the analysis used for this study.

Environmental Analysis

As discussed in Chapter 2, the environmental data collection process completed as part of this project discovered large differences between wetlands on the site and those previously published. Additionally, since the proposal was received by the Town in early 2006, the State has reported rare species habitats on the site. Since the information provided by the original proponent was based on outdated information, the environmental impacts of that layout were reassessed. An approximation of the site layout received is presented in Figure 3-1. The new wetland and rare species habitat boundaries are superimposed on top of this development to show the environmental impacts that could be expected. Based on the magnitude of these impacts, it is unlikely a development of this scale could be permitted on the Golden Triangle.

Transportation Analysis

In the unlikely case that a development with such large environmental impacts could be permitted, a preliminary transportation analysis was conducted to determine the transportation infrastructure mitigation that would be required to support the development. In order to provide an assessment of the traffic impacts associated with this size development, the amount of traffic generated by the development was



I-95

I-495

Route 110



projected using trip generation rates for similar land use codes published in *Trip Generation* by the Institute of Transportation Engineers (ITE).¹ The ITE Trip Generation manual is the standard reference guide used by the transportation engineering community when attempting to forecast the number of vehicle trips a proposed development may generate once constructed and occupied. Trip rates are presented based on the total square footage (for retail and office development). Table 3-1 presents the number of trips expected by a development of this size.

**Table 3-1
Build Trip Generation**

	<u>Retail</u>	<u>Office</u>	<u>Total</u>
Weekday Daily	17,500	1,250	18,750
Saturday Daily	20,350	270	20,620
Weekday Morning Peak Hour:			
Enter	255	155	410
<u>Exit</u>	<u>165</u>	<u>20</u>	<u>185</u>
Total	420	175	595
Weekday Evening Peak Hour:			
Enter	735	30	765
<u>Exit</u>	<u>795</u>	<u>140</u>	<u>935</u>
Total	1,530	170	1,700
Saturday Peak Hour:			
Enter	1,050	25	1,075
<u>Exit</u>	<u>970</u>	<u>20</u>	<u>990</u>
Total	2,020	45	2,065

It is important to understand that the land use and size considered for this analysis is based on a previous proposal and that no market research was completed to determine whether this development would be viable in this location. For the purposes of the transportation analysis, the number of trips generated by the site is the key component to the mitigation program needed. The square footage of any land use that could generate 595 morning peak hour trips, 1,700 evening peak hour trips, or 2,065 Saturday peak hour trips would have similar transportation impacts and require a similar mitigation program, as described below. Depending on the ultimate land use selected, a credit may be taken for trips to the site that are destined to multiple uses. For example, a worker employed in the office portion of the site may stop at the retail portion on their way home from work. This trip is considered a shared trip and would be included in the office trip generation only. To present a conservative analysis, and because the actual use of the site is not known, not shared trip credit was taken.



¹ Trip Generation Seventh Edition, Institute of Transportation Engineers, Washington DC, (2003)



The new trips illustrated in Table 3-1 were added to the No-Build traffic networks. The resulting traffic volume networks represent the preliminary condition peak hour traffic volumes and are shown in Figures 3-2 through 3-4.



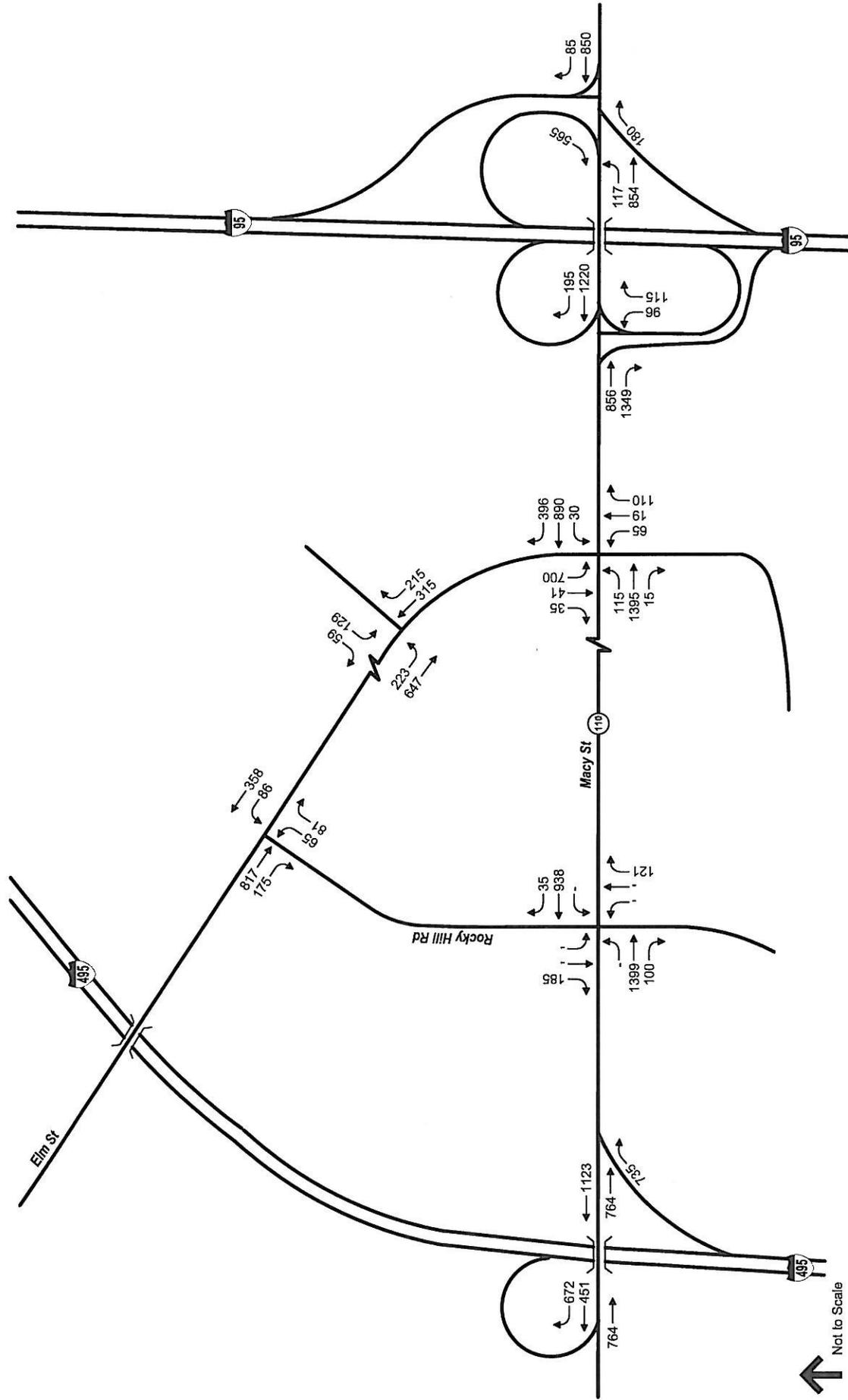
Transportation Mitigation Needs

Perhaps one of the biggest challenges to accommodating traffic related to a development of this size is managing the volume and flow of traffic along Route 110 and on the I-495 and I-95 exit ramps. Although it is assumed that Route 110 would be widened to two lanes per direction by 2016 (a condition of the Commonwealth's Section 61 findings on the Carriagetown Marketplace), the impacts to Route 110 east of Elm Street and to I-95 are significant. Any additional improvements are certain to require changes to the ramp systems of both I-95 and I-495, which will require Federal documentation and approvals and a design year that projects future volumes 20 years beyond the build year. It is likely that in addition to state and local permitting, development of the Golden Triangle would require an Interchange Modification Report (IMR) submission to the Federal Highway Administration (FHWA) and an Environmental Assessment or Environmental Impact Statement (with FHWA as the lead agency) to show compliance with the National Environmental Policy Act (NEPA).

Based on the preliminary transportation assessment, the improvement program necessary to mitigate the transportation impacts associated with a development of this size could include the following:

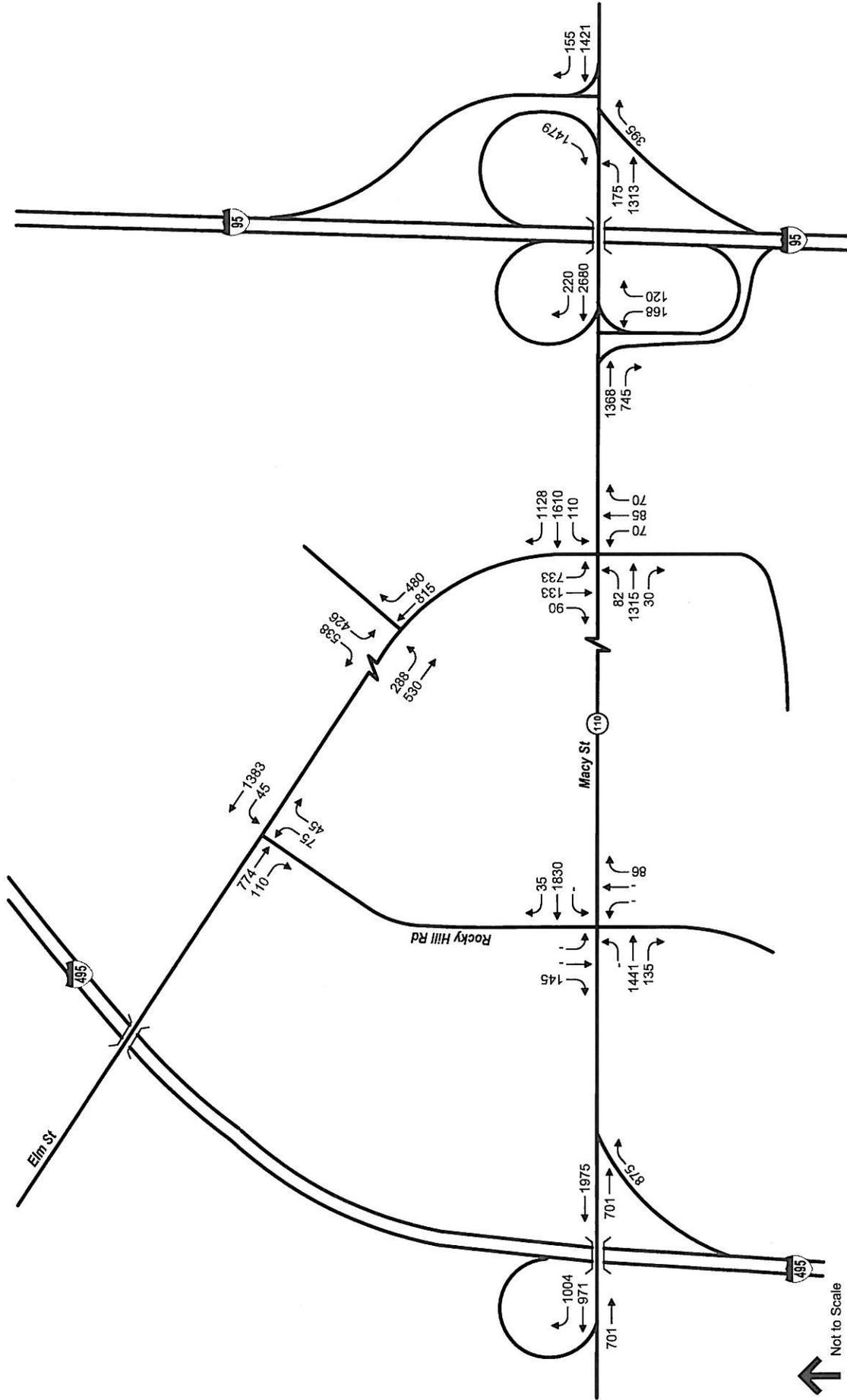
- Signalization of three study area intersections:
 - Route 110 at I-495 northbound off-ramp;
 - Route 110 at all I-95 off Ramps (with queue detection); and
 - Elm Street and Site Driveway.

- Geometric changes along several sections of the corridor:
 - Elm Street from the future site driveway (to be determined) to Route 110 would be widened to provide two lanes in each direction (based on the ultimate location of the site driveway, Elm Street may need to be widened from Route 110 to Rocky Hill Road);
 - Elm Street would be widened at its intersection with Rocky Hill Road to provide an exclusive westbound left-turn lane from Elm Street onto Rocky Hill Road;
 - Elm Street would be widened at its intersection with Route 110 to provide two exclusive left-turn lanes from Elm Street onto Route 110.
 - Route 110 would be widened from Elm Street to the I-95 northbound ramps to provide three lanes westbound (eastbound would remain two lanes);



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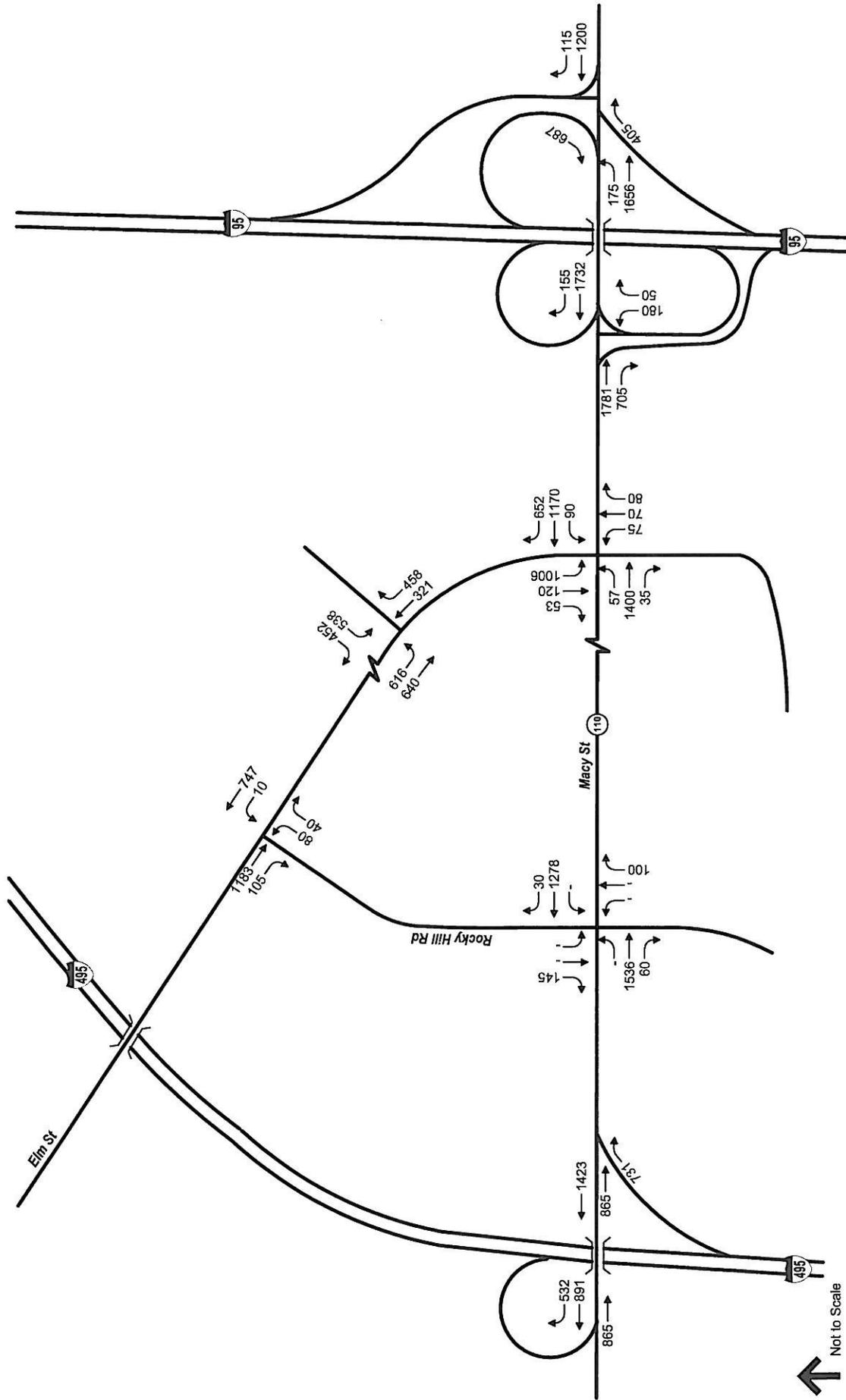
Figure 3-2
2016 Preliminary Build Weekday Morning
Peak Hour Traffic Volumes
Route 110 Economic Development Study
Amesbury, Massachusetts



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Not to Scale

Vanasse Hangen Brustlin, Inc.

Figure 3-3
2016 Preliminary Build Weekday Evening
Peak Hour Traffic Volumes
Route 110 Economic Development Study
Amesbury, Massachusetts



Vanasse Hangen Brustlin, Inc.

Figure 3-4

2016 Preliminary Build
Saturday Peak Hour Traffic Volumes
Route 110 Economic Development Study
Amesbury, Massachusetts

↑
Not to Scale



- The I-95 northbound off-ramp to Amesbury would be widened to provide two lanes at the approach to its intersection with Route 110.

In addition to the geometric and operational mitigation presented above, improvements to preserve or encourage alternate modes of transportation would be incorporated. These measures include:

- Provision of pedestrian crossings at new traffic signals on Rocky Hill Road and at the Elm Street/Route 110 intersection;
- Provision of ADA (Americans with Disabilities Act) compliant sidewalks and wheelchair ramps along all reconstructed roadways;
- Completion of a feasibility study for providing shared parking for a regional park and ride facility with shuttle connection to the Newburyport Commuter Rail Station. This study should also include the feasibility of providing a stop for the C & J express bus to downtown Boston; and
- Coordination with the Merrimack Valley Regional Transit Authority (MVRTA) to provide public transportation to/from the site.

As an alternative to widening Route 110 to as much as three lanes per direction, the Town should work with MassHighway and FHWA to evaluate reconstruction of the I-495/I-95 interchange to provide a full interchange at this location. As explained in Chapter 4, this would require construction of an I-495 northbound off-ramp to I-95 southbound and an I-95 northbound off-ramp to I-495 southbound. Currently, vehicles needing to make these connections must use Route 110 to do so. Therefore, a full interchange could substantially reduce traffic on Route 110 between I-495 and I-95. If the interchange is reconstructed to provide for full access between I-95 and I-495, the mitigation measures along Route 110 detailed above may be able to be reduced. An origin-destination study would be required to determine whether enough traffic could be removed from Route 110 to justify interchange reconstruction and reduce the related Route 110 capacity enhancements.

General industry standards estimate that mitigation costs for a retail development average about \$20 per square foot, including the cost to purchase the land. The mitigation program identified includes several significant, high cost mitigation measures to alleviate impacts created by the development. In addition to capital costs, a number of mitigation measures have extensive permitting requirements at the local, State, and Federal levels; making them more suitable for long-term solutions. These measures are likely cost-prohibitive for many proponents seeking to develop the Golden Triangle.

Assessment of Impacts

Based on the substantial environmental and transportation impacts related to the preliminary alternative, it became clear that the initially proposed development was not appropriate for the Golden Triangle. Therefore, a site review was needed to



establish an appropriate Build scenario. The intent of the Build scenario is to determine a program that can be developed with fewer environmental impacts and a more reasonable mitigation program.

The most challenging aspects of developing the site are associated with avoiding wetland impacts, widening Route 110 (beyond the 4-lane cross-section that is already required by Carriagetown Marketplace), or funding major reconstruction of the I-495/I-95 interchange. Therefore the review focused on a land use program that eliminates or significantly reduces the need for consideration of these measures. This was largely achieved by limiting the amount of retail space to be developed to under 50 percent of the initial proposal.

To determine the land use or mix of uses that could be appropriate, three generalized site boundaries were established for the Golden Triangle. These boundaries identify the size and shape of developable areas on the Golden Triangle based on restrictions imposed by varying interpretations of the environmental constraints. This Land Use assessment is provided in Chapter 4, *Land Use*.

From the analysis presented in Chapter 4, a specific development program was needed for a detailed transportation analysis. To determine the development program, an iterative process was used to assess transportation impacts to Route 110 and the interstate ramps. This process eliminated the initially proposed office space and slowly reduced the retail space within the development until widening Route 110 (beyond four lanes) was no longer needed to alleviate impacts. The size of the development that achieved this was then back-checked against the land use assessment to ensure that it could be constructed within the wetland constraints on site. The transportation analysis is presented in Chapter 5, *Transportation*.