Newport City Thoroughfare Plan: Existing Conditions

This report is to describe Newport City's current street network, as well as all modes of transportation operating on it. While motor vehicle travel clearly dominates among the different users of the street network, Newport City is a compact and vibrant place, where walking, bicycling and public transit are more significant than in more rural areas.

Newport's Street Network

Newport has a street network that reflects the highly varied conditions and environment throughout the city. The downtown peninsula has a traditional grid of streets, interrupted in some places by geographic features or topography. The network allows for dispersal of US 5 and Route 105 traffic onto several streets, which avoids a concentration of traffic on Main Street.

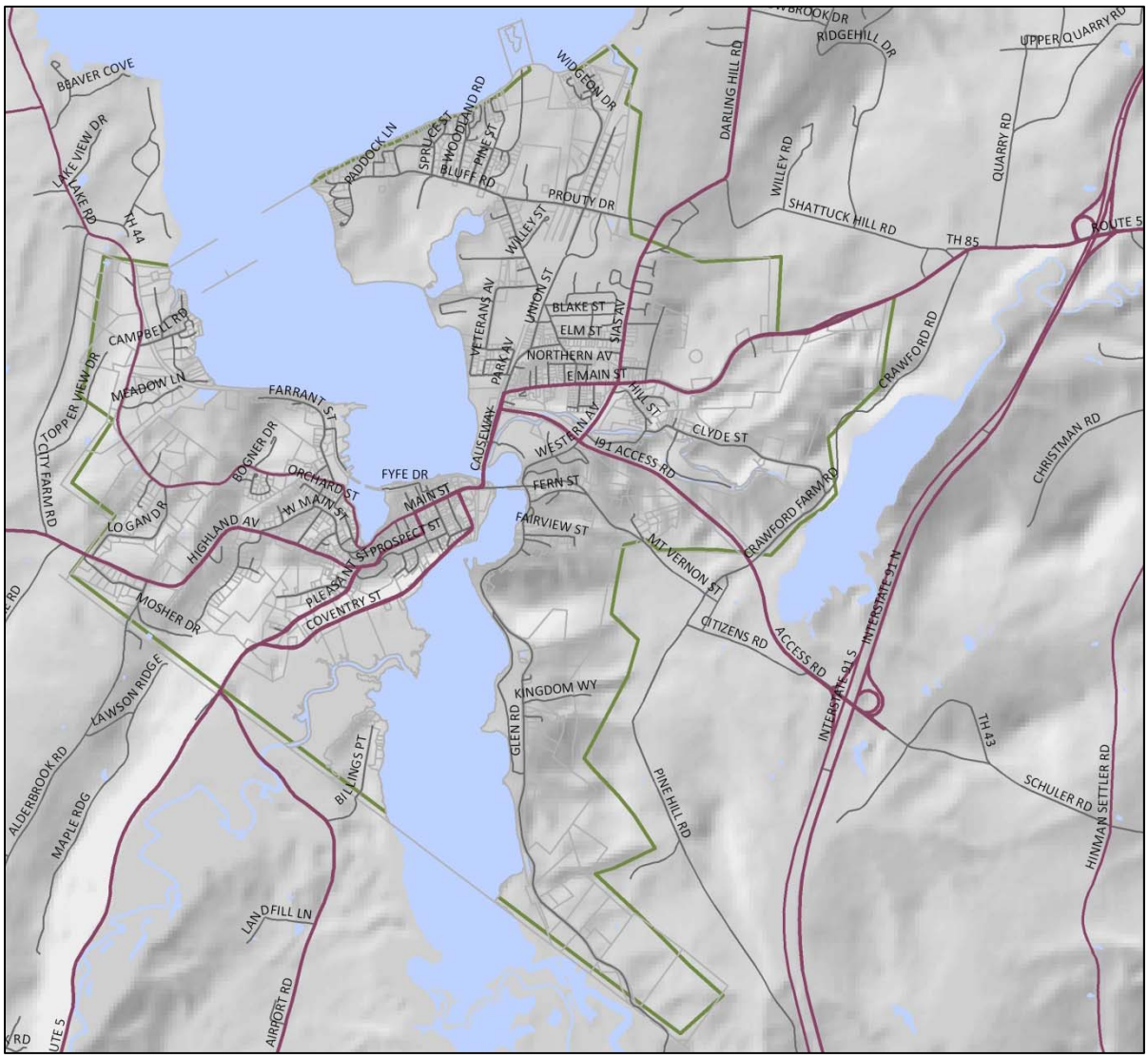


Figure 1: Newport City Street Network

Below is a map with more detail in the central area of Newport City.

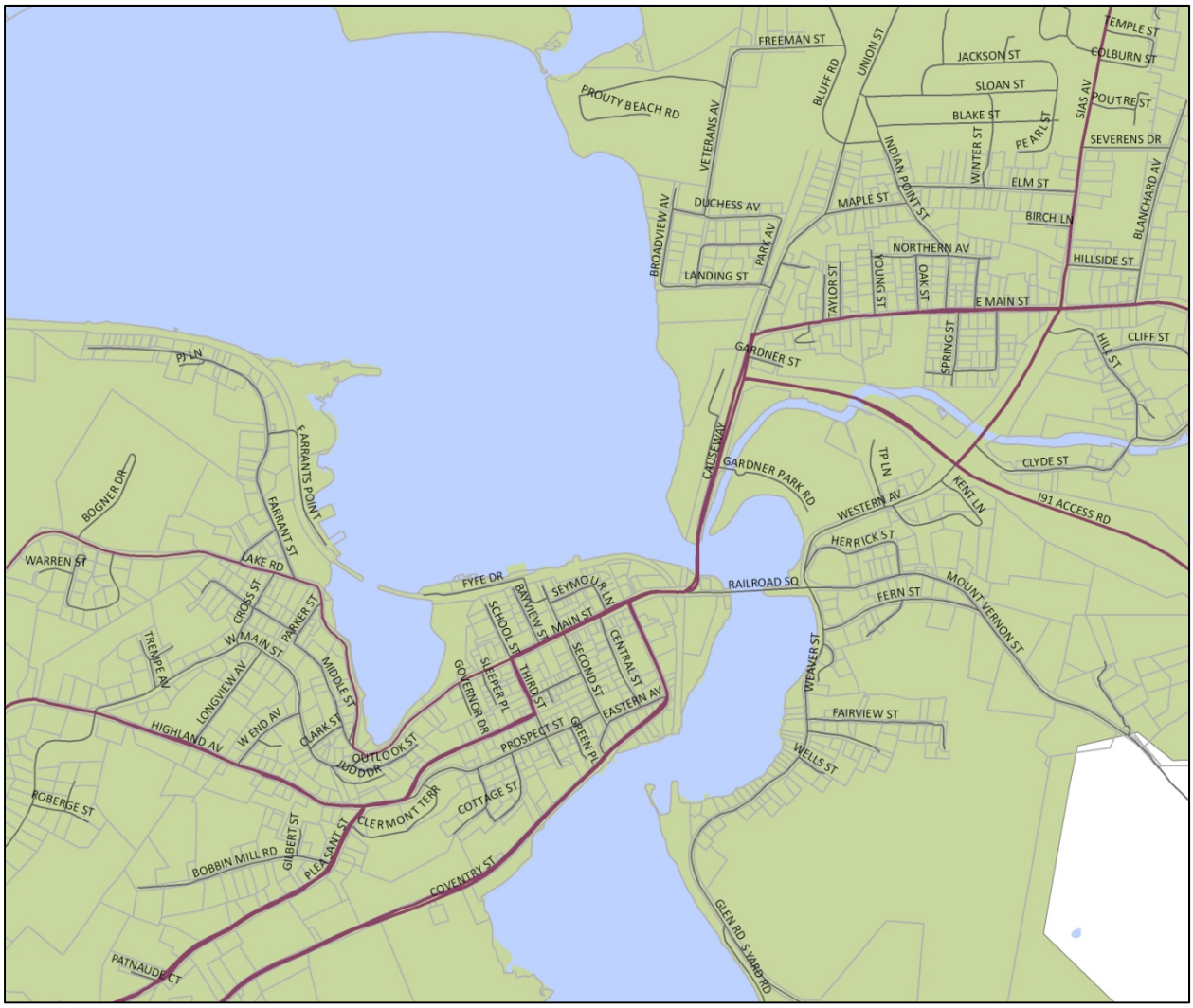


Figure 2: Central Newport City Street Map

From the maps above, it is clear that Newport City is well connected to the I-91 corridor to the east, although both interchanges are in the town of Derby. Route 105 is a major route through Newport City that connects to destinations to the west. The most critical point in the thoroughfare network is the section that carries Routes 5 and 105 (Main Street) from the downtown area to eastern destinations including the I-91 corridor. In the downtown peninsula area, Newport City has a well connected street network with smaller blocks, creating walkable neighborhoods. Outside of downtown, the street network and development patterns are generally less dense, except for the area around East Main Street.

Vehicular Traffic

The most widely used measure of overall traffic volume is annual average daily traffic (AADT). This measures total traffic in both directions on street segments over the course of an average day for the entire year, hence "annual average daily traffic".

Traffic volumes are counted every other year by VTrans at a large number of automatic traffic recorder (ATR) stations throughout the state. These data are used directly where they apply, and VTrans estimates volumes on the remainder of the State highway system from them. AADT on the key highway segments in Newport City are depicted in Fig 3.

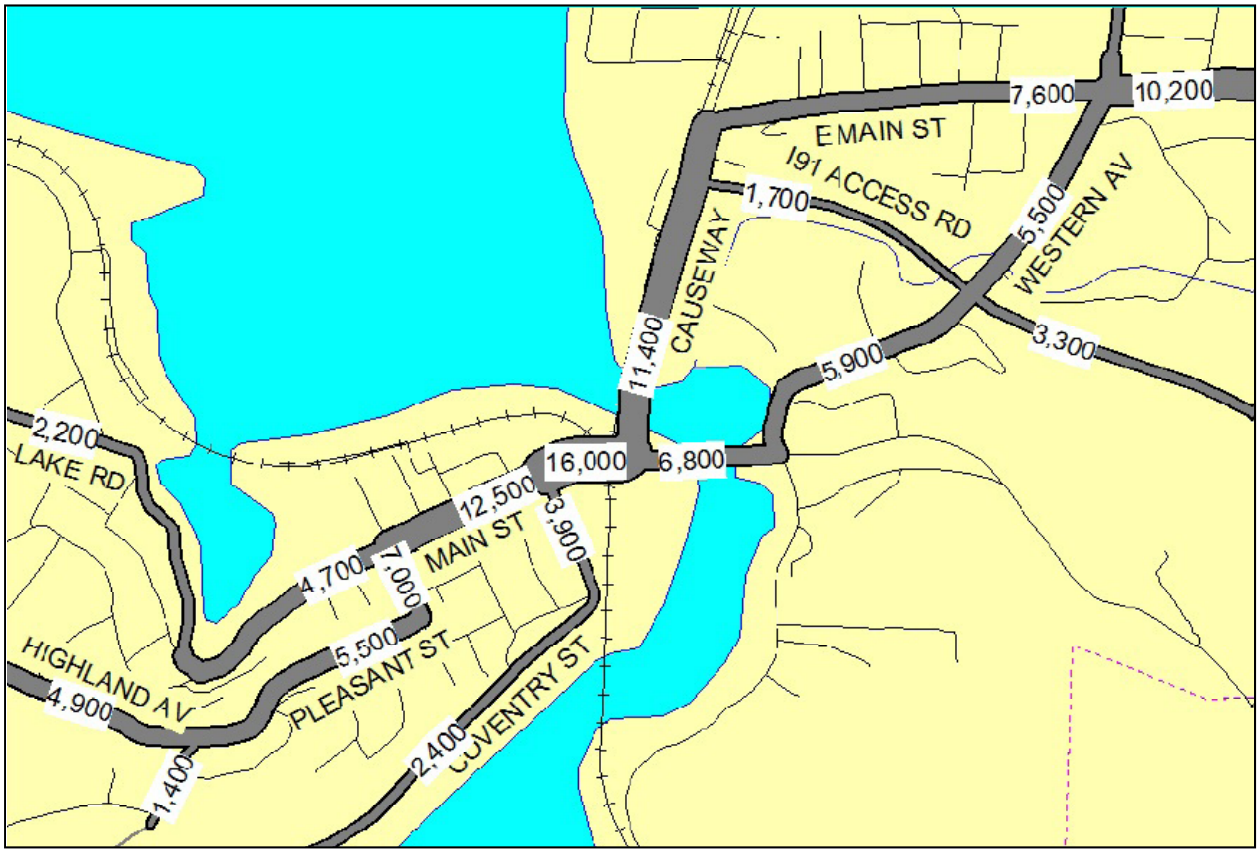


Figure 3: Annual Average Daily Traffic

Traffic volumes are highest on the downtown segments: Main St, especially between Coventry and Railroad Sq, and on Causeway. They drop off noticeably to the east and west, although to the east on East Main St, volumes pick up again east of Western Av. This is likely related to access to the growing highway commercial development a mile or so further east in Derby.

Traffic volumes are also appreciably lower than found by Hooper Associates in 1999. That study found AADT on Main St west of Coventry to be 13,000, only a little higher than today, and east of Coventry to be 17,600, fully 10% higher than today's 16,000.

Although daily traffic volumes in the range of 12,000 to 16,000 vehicles per day (vpd) are on the high side by Vermont standards, they do not represent an unacceptable level of strain by themselves. By comparison, a typical single arterial lane of traffic such as found in Newport has an absolute traffic capacity of over 1500 vehicles per hour, and a typical realized capacity of about 800 vehicles per hour, even including intersections. Of far greater importance than the traffic on the streets per se is the capacity and turning movements at intersections, which will be discussed later in this report.

In general, active downtowns may be expected to experience a fairly high degree of both traffic and congestion. Far from being a bad thing, this indicates higher levels of existing and/or potential commercial and civic activity. Hooper Associates (1999) found summer weekday volumes to be about 15% higher than AADT, and summer weekend volumes to about equal AADT.

Traffic Growth and Historic Traffic Volumes

In addition to the actual existing traffic volume currently found on roadways, the potential for future traffic growth is important. This consists of two components: 1. new traffic due to specific development or activity increases within the community itself, and 2. the growth in traffic generally, usually called "background" traffic. Traffic due to specific development within Newport will need to be addressed as part of the specific planning effort. Background traffic is usually addressed through growth factor(s) derived and applied generally.

VTrans has counted or estimated historic traffic volumes on State routes in the City. These have been plotted on a graph for the period 1990 - 2007 (the last year for which these data are available).

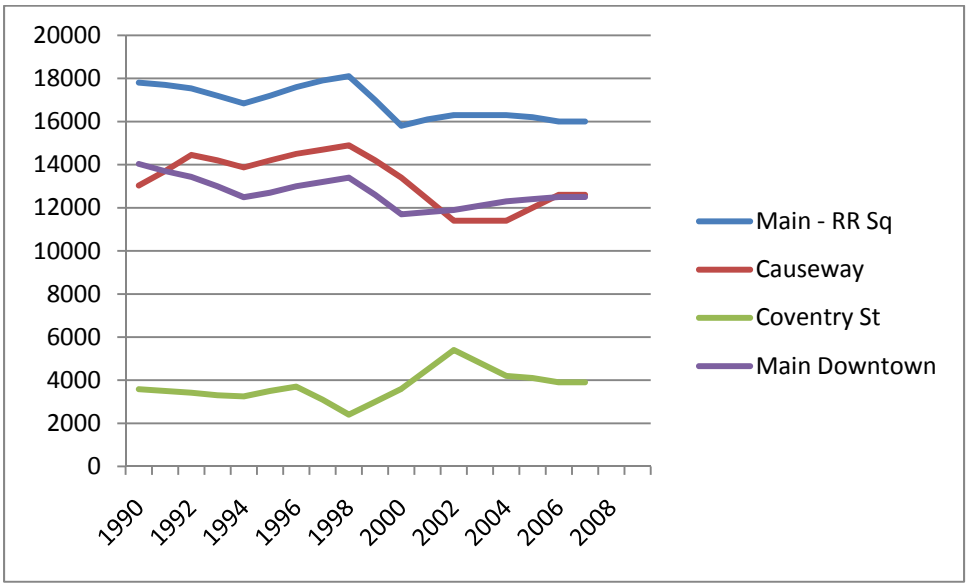


Figure 4: Daily Traffic Volume History for Newport City Stations

From this plot it is clear that traffic on none of Newport's principal roadways has grown significantly if at all. In fact, all of the higher volume roadways exhibit appreciably lower volumes than they did in the 1990s. This is consistent with the data of the Hooper Associates study as well as with broader statewide and national trends. For this reason, we have deemed the appropriate background traffic growth rate to be zero (0). That is, traffic not attributable to specific developments or activity changes will not grow at all over the next 10 years of this study. However, two development projects will be considered in the Main Street corridor analysis. The critical afternoon (PM) peak hour traffic generation for each is described below.

Waterfront Plaza Resort Hotel

This project, while not yet in formal development review, is reported to include a 150 suite hotel with supporting restaurant, retail and conference facilities. Using the ITE Trip Generation rates for the Hotel (310) Land Use, the proposed hotel would generate 92 peak hour trips with 53 entering trips and 39 exiting trips.

Currently, there is 84,000 square feet (sf) of commercial space in the Waterfront Plaza including a 30,000 sf supermarket. The proposed hotel would be located on the supermarket parcel while the rest of the retail/commercial space would remain. Using ITE Shopping Center trip rates (LUC 820), 84,000 sf of retail space generates 558 PM peak hour trips while 54,000 square feet generates 417 trips. Accordingly, elimination of the existing supermarket will reduce site traffic generation by 141 trips with 68 fewer entering trips and 39 fewer exiting trips. Based on the above calculations, the change in use from supermarket to hotel will reduce the amount of site generated traffic during the PM peak hour relative to existing conditions. Accordingly, to represent a “worst case” analysis scenario, no change in site traffic is assumed for the traffic operations analysis.

Bogner Facility

The existing Bogner building provides 90,000 square feet of floor space. Using ITE trip rates for Manufacturing (LUC 140) the building would generate 67 PM peak hour trips with 24 entering and 43 exiting. The Newport Renaissance Corporation reports that the building will be enlarged by 44,000 square feet to accommodate a research and development use. Applying ITE rates for Research and Development Center, (LUC 760), to the new total floor space yields a future traffic forecast of 145 PM peak hour trips (22 entering and 123 exiting). This results in a net increase of 78 PM peak hour trips for the site (-2 entering and 80 exiting).

Trucks

The community has expressed concern about truck traffic in the downtown, particularly as it affects the vitality and "place sense" of the downtown as a community destination. This is an understandable concern, as trucks, especially large trucks, can by noisy and cause perceptible vibration. Trucks can have a disproportionate impact to pedestrians due to their sheer size, and to traffic congestion due to their slower operations. On the other hand, some truck traffic in a downtown is essential. Commercial goods are almost all delivered by truck and a thriving downtown is not possible without at least some truck traffic.

There are three sources of truck traffic in downtown Newport. First among these are the trucks directly serving the businesses and other activities in the downtown. Although many are smaller trucks, some are larger semi-trailer rigs. Second, because of the significant impediments to east-west access due to Lake Memphremagog and its associated wetlands, Newport provides one of the few direct connections in northern Vermont between locations to US-5 and I-91. Finally, unique to Newport, Poulin Grain, a significant industrial use is located directly within the downtown and is itself a significant source of truck traffic.

VTrans conducts periodic "classification" counts at some of its ATR locations, including at a number of locations in and nearby Newport. These break down (classify) vehicles in the traffic stream according to the FHWA vehicle classification system. This classifies trucks (and other vehicles) by the number of axles (for purposes of these counts, a truck is any vehicle, including buses, with six tires). These are recorded as percent of the traffic. These data, including numbers of trucks as well as percentages, are shown for several stations relevant to Newport in Table 1.

Table 1: Truck Counts in Newport City

SiteID	Town	Route	Location	Year	AADT	All	Heavy
P189	Newport City	US5	0.1 mi S of VT191	2009	9,600	776	263
P222	Newport City	US5	betw RR Sq/Gardner Pk Rd	2006	11,400	643	263
P170	Newport City	US5	0.2 mi N of Airport Rd	2006	2,900	366	129
P116	Newport Town	VT105	0.5 mi W of Coventry TL	2008	3,800	184	33
P101	Derby	US5	0.2 mi W of Shattuck Hill Rd	2008	9,600	562	143

VTrans divides trucks into "medium" and "heavy" categories. This distinction is based exclusively on single unit versus semi-trailer/trailer (whether a single semi-trailer or multiples) Although some "medium" trucks can therefore be quite heavy, including fully loaded tri-axle dump trucks weighing up to 69,000 pounds, most medium trucks are of a more modest size, such as UPS delivery trucks, utility repair trucks, etc. It is the heavy class of trucks that have by far the largest impacts.

As might be expected, truck volumes are highest within the downtown, where several major routes and uses converge, and taper off on either side. For heavy trucks, no more than 60% can possibly be "through" trucks. The vast majority of passing through downtown use Alternate Route 5/Truck Route, bypassing some, though not all of the downtown commercial district. For purposes of comparison, the daily large truck traffic in Newport is shown with some other Vermont towns that have major transportation corridors passing through their downtowns in Figure 5.

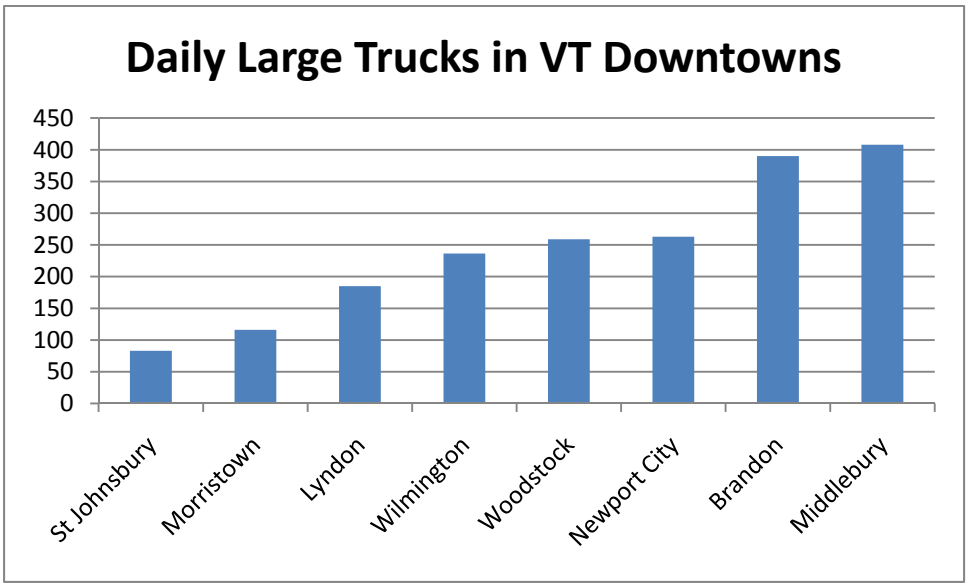


Figure 5: Daily Truck Volumes in Selected Vermont Downtowns

Based on this comparison, Newport does not have the absolutely highest volumes in the state, which occur along Route 7. However, they are higher than those in Woodstock (US 4) and Wilmington (VT 9), which are communities that have considered bypasses, increased enforcement of trucks, and other means to address the impacts of trucks on their downtowns.

Through Traffic

Considerable concern has been raised over the years about "through traffic" in the downtown and its effect on downtown commercial vitality. Among other things, this has led to considerable discussion of the desirability of a "bypass", especially for truck traffic.

Based on both truck and general traffic volumes, it is apparent that Newport street network does carry significant through traffic, as any traffic traveling to I-91 from points west must pass through Newport City. Truck through traffic is mostly limited to the easterly portion of downtown due the high level of use of the alternative truck routing via Route 5A (Coventry Street). It is possible, as more drivers become increasingly aware of the new higher Interstate weight limits, that some additional north/south truck traffic carrying raw materials (which had a higher weight limit on state highways than on interstate highways) will divert to the Interstate.

In addition to general traffic volumes as a guide, the 1998 Route 105 Corridor Study conducted a direct origin-destination survey that sheds additional light on trip making on the major east-west corridor. Unfortunately, this study has limited utility for several reasons:

- The data are now more than ten years old, and much has changed, especially in downtown Newport since it was collected
- The data are not fully "cross-tabbed" to capture both origin and destination
- The actual destination and origin data usually cite simply "Newport" without distinguishing between the Town and the City, and certainly not the downtown. However, since the vast preponderance of traffic generators are located within the City, and general usage tends to favor simply "Newport" when referring to the City, it has been assumed that the origins and destinations labeled “Newport” in the data overwhelmingly refer to Newport City.

The two locations selected for the survey in the vicinity of Newport are well suited to addressing destinations in the City otherwise. The consultant surveyed eastbound traffic between Route 100 (East) and Newport Line (loc #3), and westbound traffic between I-91 and Derby Village (loc #4). For the purposes of this analysis, only the weekday surveys have been considered. The weekend data are essentially consistent with the weekday data. Because of the directions surveyed (in both cases toward the City), only the destinations have been considered in this analysis.

The 1998 O-D survey found that 69% (118/172) westbound and 68% (177/259) eastbound motorists had destinations identified as "Newport" (including "Newport City") or other destinations identifiable as the City. Even allowing for a portion of the "Newport" destinations at some location other than the City/downtown, it is apparent that a high fraction of the general traffic on the highways is destined for the City, often the downtown. Trucks were not identified separately in this survey, so it provides no additional information about truck trip distribution.

Pedestrians

Pedestrians were studied extensively in the 1999 Hooper study, which indicates that Newport City has high levels of pedestrian activity in the downtown core. Unfortunately there are no recent counts that can be compared to the 1999 data, but field observations indicate Newport City continues to have high levels of pedestrian activity, especially in the downtown core. Newport City has the key characteristics of a highly walkable place: the 3D's of density, diversity and design:

- Density: High concentrations of both residential and non-residential land uses. In particular, Newport City has maintained their most important civic buildings in the center of downtown.
- Diversity: There is a wide variety of land uses and destinations within the walkable core of downtown.
- Design: Newport City's street network provides great conditions for pedestrians. There are sidewalks on most streets, a highly connected street network that allows pedestrians to reach their destinations in a relatively direct manner.

At the same time, there are some areas that are less than ideal, and some room for further improvement. The following areas are noted as less than optimal.

- Traffic speeds, even on Main Street, can be high enough to create a less friendly environment for pedestrians.
- The Railroad Square intersection lacks some pedestrian connections, and some areas are undefined for pedestrian travel. While pedestrian volumes are relatively low in this area, some improvements could be made as projects such as the upcoming bridge replacement are undertaken.
- The City has received complaints about the paving treatments on the crosswalks, and has opted to replace some of the paved crossings with typical asphalt paving and crosswalk markings.
- There are several gaps in the sidewalk network, and some neighborhoods that are within walking distance to downtown with less than ideal pedestrian connections. (see figure below) These include:
    - Lack of pedestrian crossing at the intersection of East Main Street/Union/Causeway, and Western Ave/Route 191.
    - Lack of a sidewalk along the south side of East Main Street requires pedestrians traveling from East Main Street to Causeway, Downtown, or Gardner Park to make several crossings.

Assuring that there are safe connections between these different areas of Newport City should be a consideration in the thoroughfare plan.

Figure 6: Newport Neighborhoods to Consider for Pedestrian Connectivity

Bicycles

Newport City has some outstanding bicycle path facilities, with the lakefront path and Beebe Spur. These are a tremendous asset to the City as both a means to attract vacationers seeking safe, comfortable routes for cycling (which are a rarity in Vermont), and also to broaden the use of this mode by residents. Data on the bicycle path usage is not available from VTrans, and is quite difficult to collect due to usage changing with weather conditions and related to special events.

While the Beebe Spur forms a wonderful “spine” of a bicycle path system, the conditions on the connecting streets is highly variable in its suitability for bicycling. The slower speed streets in the downtown peninsula of Newport City can be easily shared between bicycles and vehicles without providing wider lanes. On some of the higher speed connections into the city, however, such as East Main Street, the I-91 Access Road and Western Avenue, there are opportunities for reconfigurations, striping bicycle lanes, and other simple techniques to improve conditions for bicyclists.

Transit

Newport is served by the "Highlander" route, operated by Rural Community Transit, and has several bus stops at key locations in Newport and Derby (see Figure below).

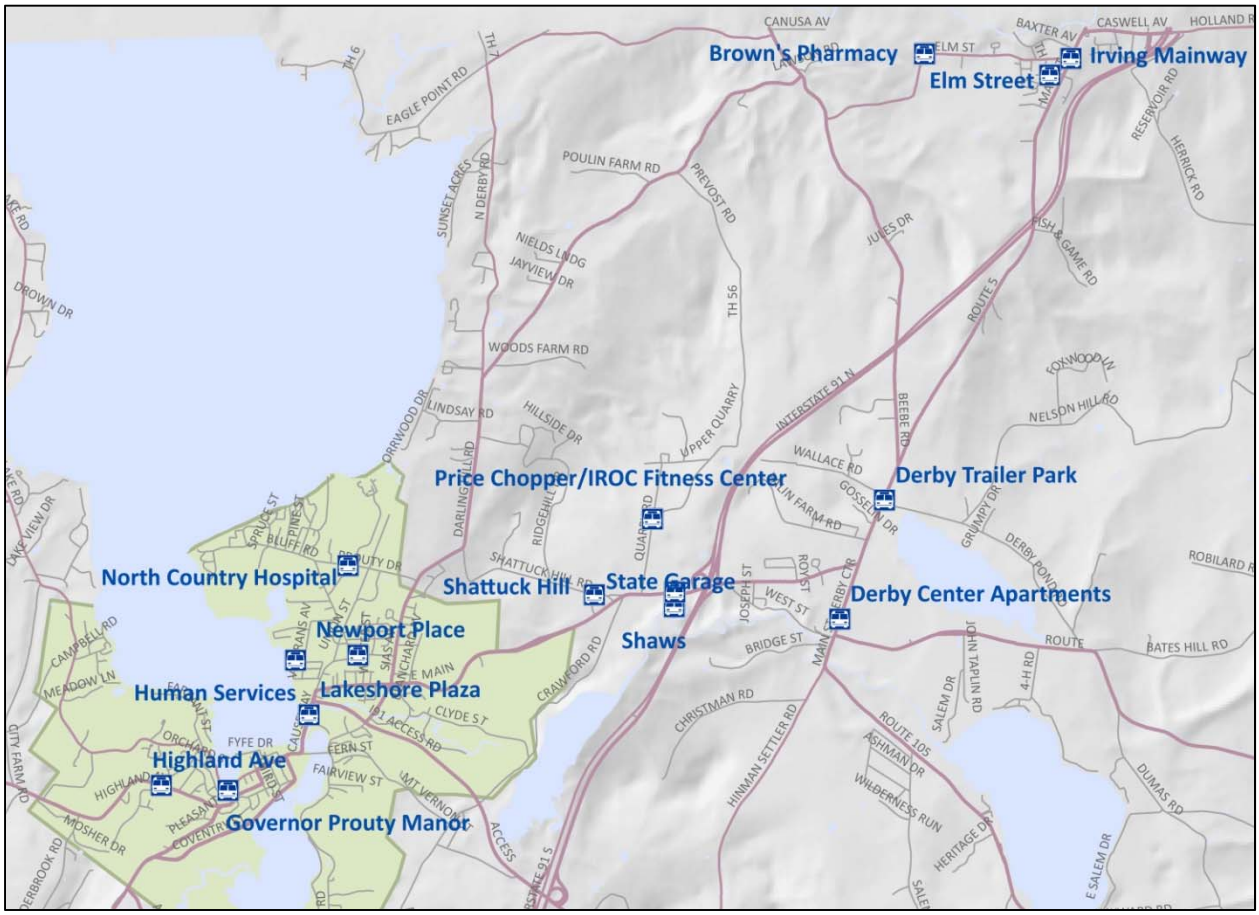


Figure 7: Public Transit Stop Locations for the Highlander Route

The route run four times per day, and is a "deviated" fixed route, where passengers can ask the driver to go up to one-quarter mile off the route.

Traffic Operations

While there are a large number of different users of Newport's street network, the most significant in number and impact is vehicular traffic. We also have the most advanced tools to analyze and evaluate traffic conditions, which is done briefly in this section. The following figures show the daily traffic patterns at two key intersections, which indicate that overall peak traffic occurs in the afternoon, with a smaller peak in the morning hours. There is somewhat of a lunch time peak hour as well, which is typical of busy locations that offer many services.

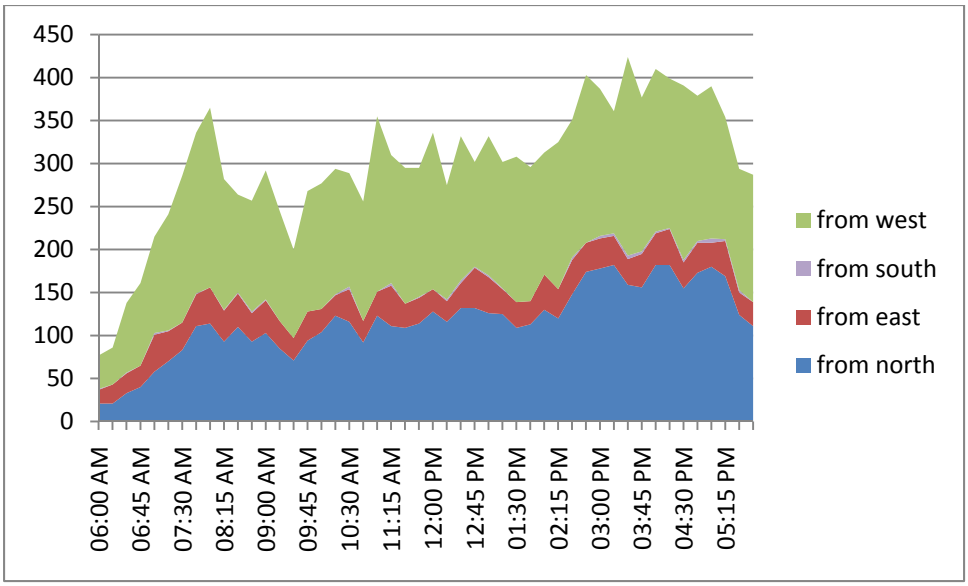


Figure 7: Daily Pattern at Railroad Square Intersection

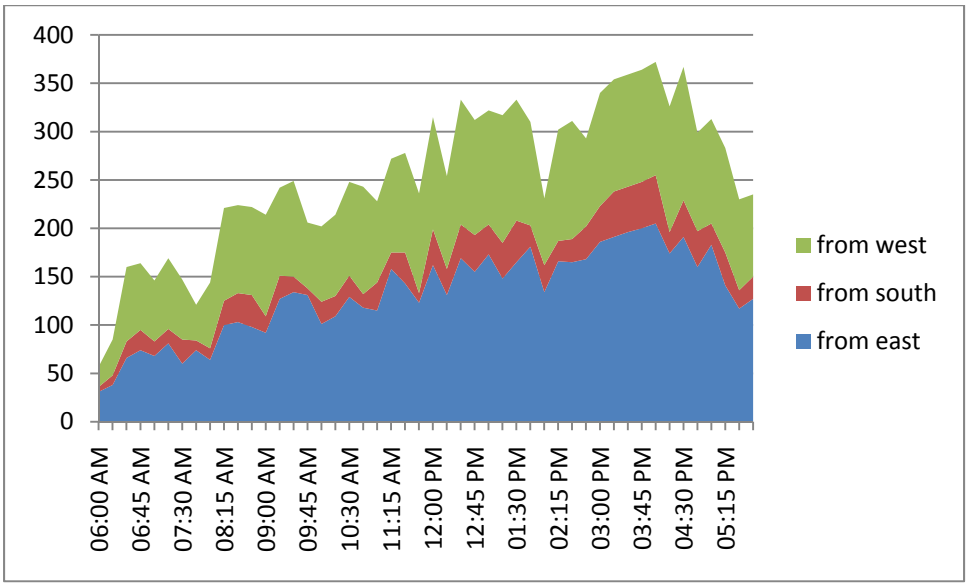


Figure 8: Daily Pattern at Main Street/ Pleasant Street

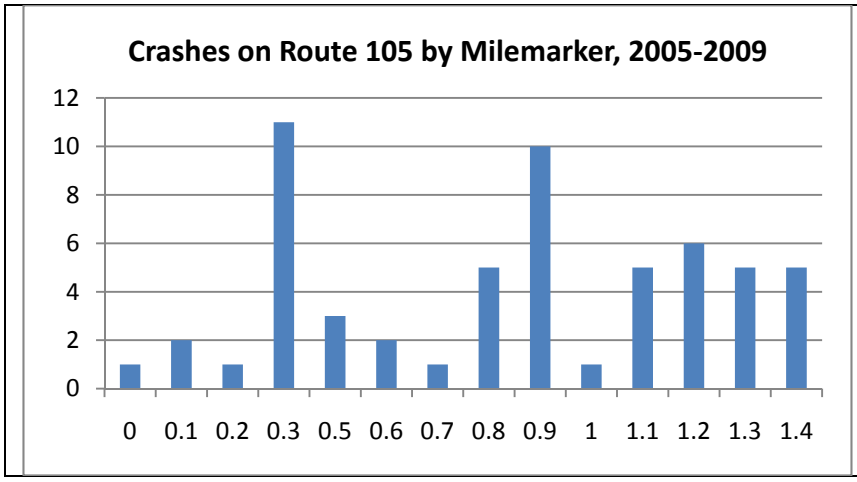
Levels of Service

Level of service is a measure of traffic operations for a roadway or intersection. It is a quantitative methodology, but the results are reported in terms of a letter grade of A through F, with A reflecting uncongested, free flow traffic, and F indicating severe congestion. LOS is typically conducted for peak hours, with acceptable results typically ranging from A through D. Intersection levels of service analyses were conducted using available data for the signalized intersections in Newport City. Using recent VTrans counts, and standard assumptions for Synchro software, the results of this analysis indicate that the signalized intersections all operate in the range of A through C, which is considered acceptable. The Railroad Square intersection was analyzed in detail in a recent report, and has therefore not been

further analyzed in this report, as conditions have not changed significantly since then. In the next phase of developing the thoroughfare plan, more data will be collected, to allow for detailed consideration for intersection alternatives along both Main Street and Causeway.

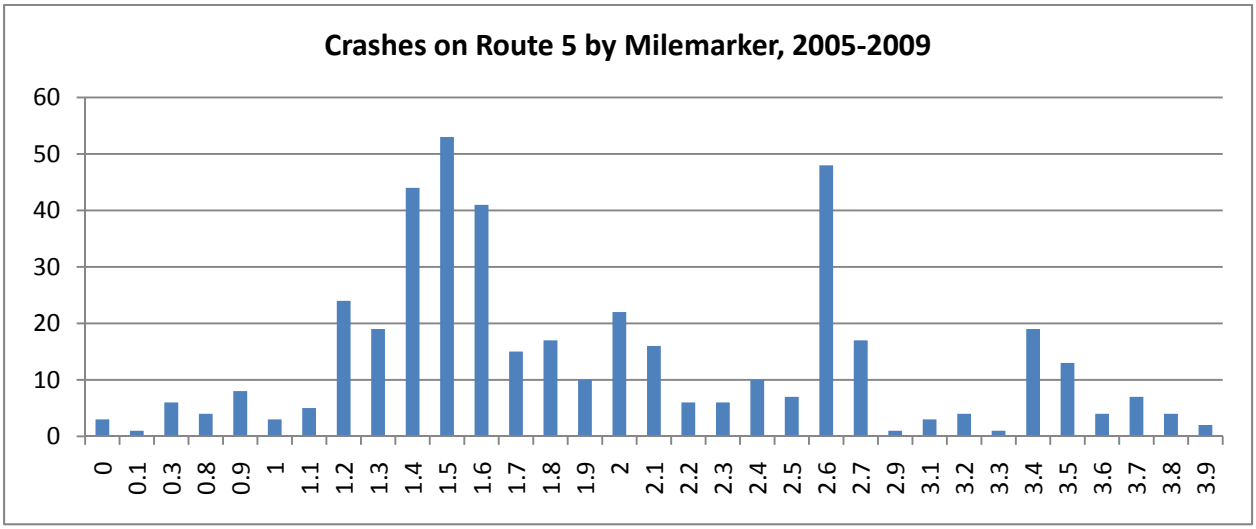
Safety

VTrans collects and compiles vehicle crash data on state highways for purposes of traffic safety analysis. The following charts show the data for the key corridors through Newport City, and are reported by milemarker.



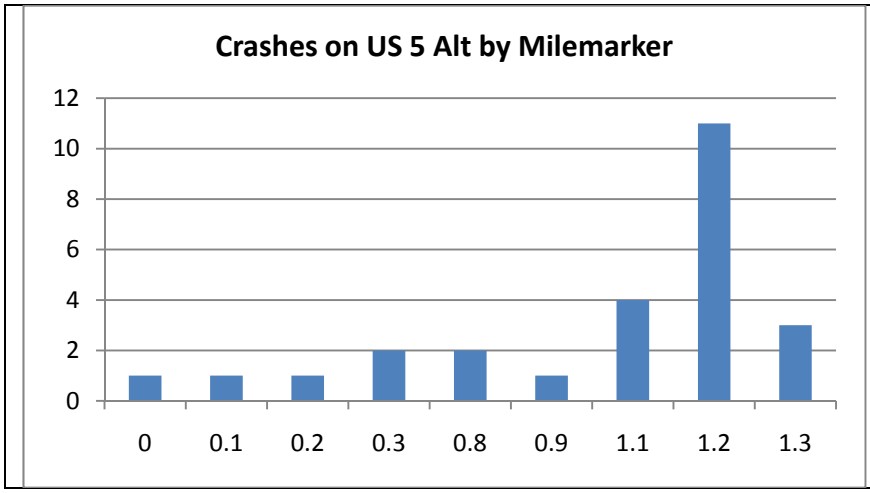
Milemarker	Location
0.3	Route 105 at Alderbrook Rd
0.9	Route 105 at West Main St
1.2	Highland/Rte 105 at West End Ave
1.4	Route 5 Intersection

Figure 9: VTrans Recorded Crashes on Route 105



Mile marker	Location
1.2	Pleasant & Third
1.4	Field/Second St
1.5	Coventry
1.6	RR Square
2	I-91 Access Rd
2.6	East Main at Western Ave
2.7	East Main at Blanchard
3.4	East Main at Derby Town Line (north side)

Figure 10: VTrans Recorded Crashes on Route 5



Milemarker	Location
1.1	Coventry at Eastern Ave
1.2	Between Eastern and Main Street
1.3	Coventry at Main St

Figure 11: VTrans Recorded Crashes on Route 5 Alternate

VTrans also analyzes the vehicle crash data to identify locations that have statistically higher incidence of crashes, which can be evaluated for potential improvements. The locations may be either a 0.3 miles segment of roadway, or an intersection. This data indicates that Newport City has 6 different 0.3 mile segments of Route 5, plus one intersection (Route 191/Western Ave) that are considered "high crash locations". The map below shows the locations of both the segments and intersection. One particular location, Route 5/105 between Railroad Square and Third Street, has a particularly pronounced crash rate, ranking #21 in the State of Vermont. However, it is not unusual to see high crash locations in downtown areas such as Newport City, because of increased chance of minor collisions due to conflicts with parking maneuvers and turning traffic. VTrans also analyzes the occurrence of injuries and fatalities to analyze the "severity" of the crashes. These results indicate that the Main Street locations all had low incidences of injuries, also not surprising due to the low speed environment. The locations further to the east toward I-91 had higher severity levels.

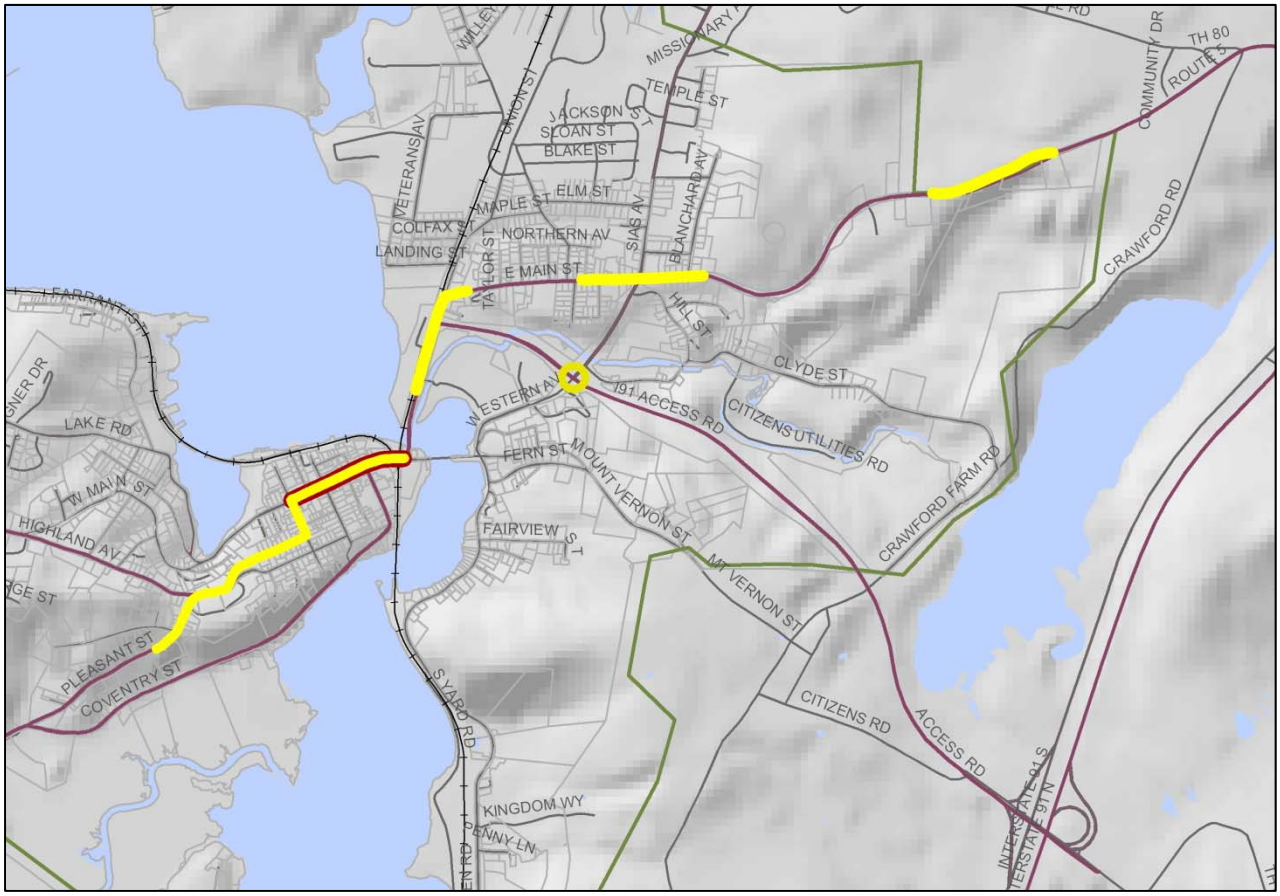


Figure 12: High Crash Locations in Newport City (shown in yellow)

Compatibility of Street Network and Design with Existing (and Future) Context

Newport's thoroughfare network has a great deal of complexity, with all streets serving a variety of functions, with different balances and intensities. The goal of the thoroughfare plan is to develop designs that will best serve these multiple needs, and be sensitive to the surrounding context of each street. This section reviews a number of streets in Newport for the general conditions for the variety of uses of the streets, including all modes of transportation as well as the "placemaking" function.

Main Street west of Coventry Street

This portion of Main Street is the center of downtown commercial and civic activities in Newport City. It is a beautiful street that has benefited from streetscape improvements that have defined parking, improved visibility of pedestrian crossings, and created a better setting for downtown businesses. This section of street has moderately high traffic volumes, typical of busier Main Streets in Vermont, and has fewer trucks than the portion of Main Street east of Coventry Street, due to most large trucks using the Coventry/Route 5A truck route.



While the street design is highly compatible with the downtown context, additional improvements and consideration of the street right-of-way will be part of the Thoroughfare Plan. In addition several important infill development sites could alter the street context, reinforcing the urban and walkable nature of Main Street.

The street cross section is generally about 65 feet, or 4 rods, between the building faces. Lane widths are a generous 12 feet wide, and parking is typically 8 feet wide, with the remaining space used for sidewalks. Vermont design guidelines allow for narrower lane and parking widths in downtowns, which

could be a consideration for reducing travel speeds, reducing crashes, and improving pedestrian safety as future improvements are planned.

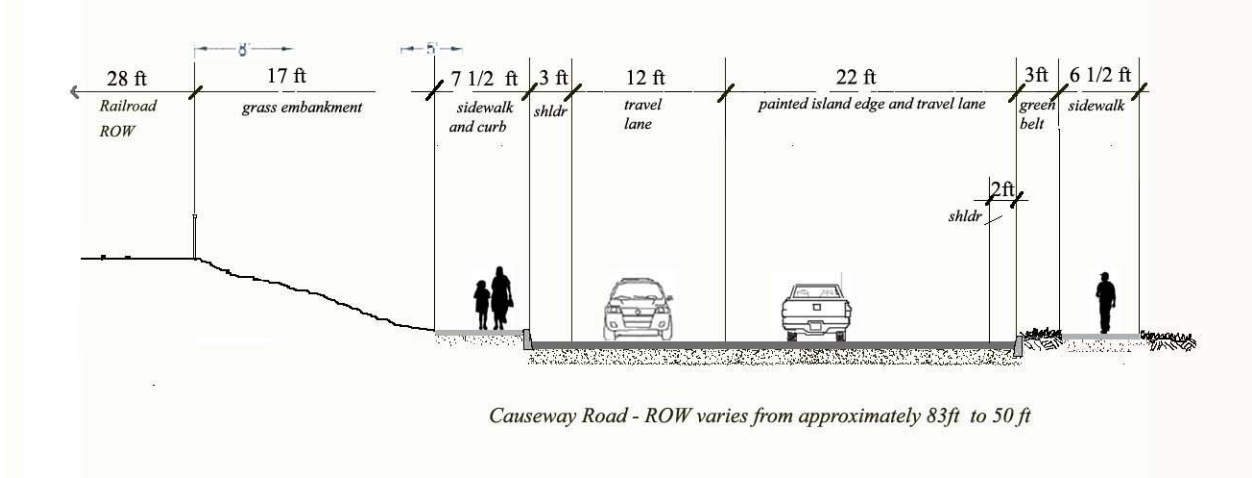
Main Street between Coventry and Railroad Square

This short section of road is where all traffic traveling through Newport must converge onto one thoroughfare. The intersections on either end are constrained, and have been the subject of several studies and consideration for improvement. It is this one block that is had led to consideration of bypasses as well, which would be tremendously challenging to implement due to the significant constraints of the railroad and South Bay. The stretch of road currently has a four lane cross section, which allows for travel lanes to be designated for through and left-turns on both westbound and eastbound approaches. The land use context in this area does seem to reflect the heavier transportation emphasis of this section, as buildings generally have a larger setback from the street, and on-street parking is very limited to just a few spaces.

While a bypass bridge has been identified in concept to relieve this location, it is likely that this short section of street will need to serve these higher volumes for the foreseeable future due to the great challenges faced by proposals for bypass routes, including financial and environmental.

Causeway Street

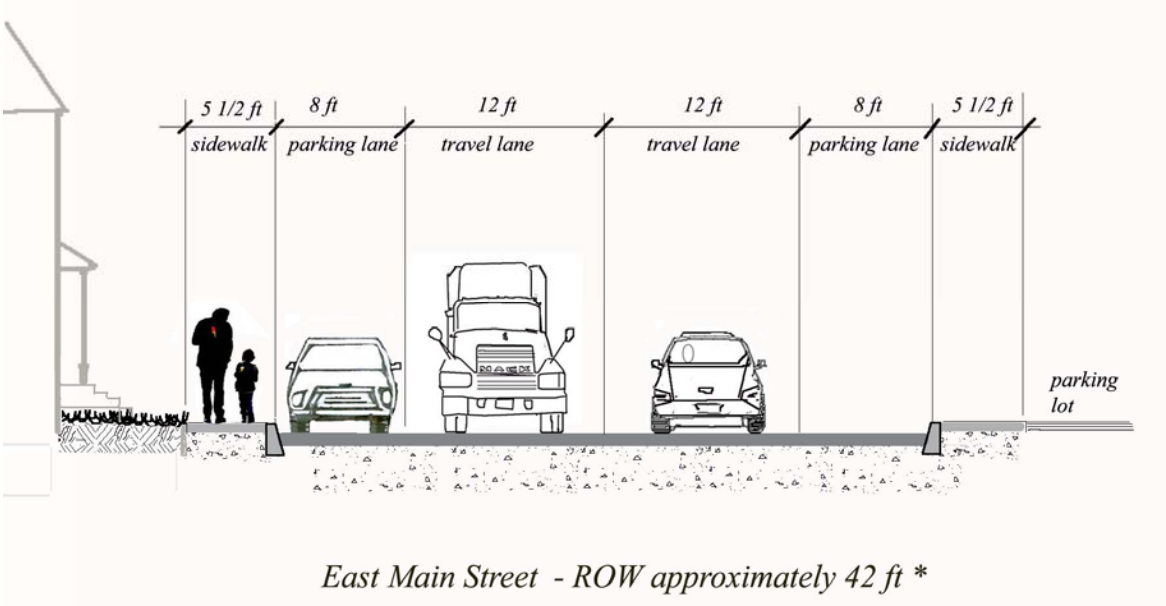
Causeway Street is the major traffic carrier into the Railroad Square and Main Street area, and appears to have been re-engineering with somewhat more modern design when it was last reconstructed. There are three signalized intersections along the corridor, providing access to Gardner Park and the shopping plazas, the I-91 Access Road, and East Main Street/Routes 105/5. It is paralleled by the Beebe Spur railroad line and parallel bicycle path, and generally is not enclosed with street fronting development. As such, it has a context with outstanding recreational features (Gardner Park and the bicycle path), and occasional dramatic views of the lake. The current design of this street is oriented more high traffic volumes, and there may be opportunity for softening and blending this thoroughfare with its context through landscaping and pavement markings with relatively low cost.



East Main Street

East Main Street is clearly another hub of commercial activity, and is connected to moderately dense residential areas. This is an area that could see significant transition and increasing intensity of uses as the region's economic activity increases.

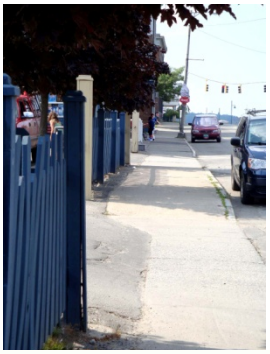
The street cross section, shown below, is generously wide in pavement, and provides room for on-street parking. However, because many of the businesses along this corridor have on-site parking available, the on-street spaces are mostly not used.

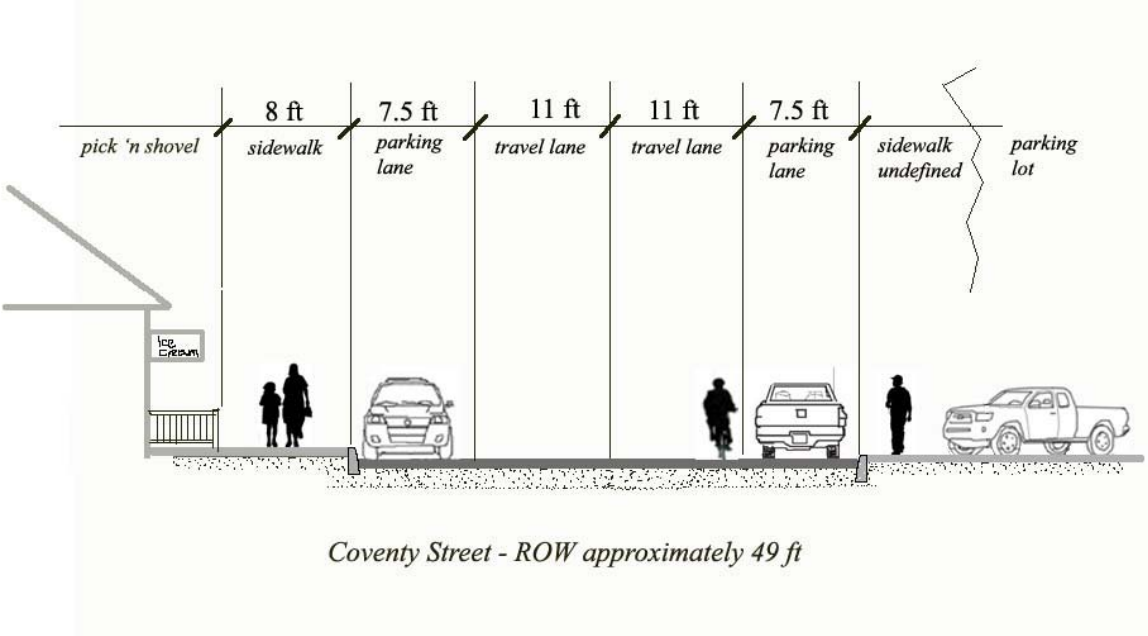


The appearance and comfort for walkers and bicyclists along this corridor could be enhanced by some pavement marking techniques that could narrow the appearance of the travel lanes. This might encourage patrons making multiple stops in the East Main Street area to park once and walk, by clearly showing the portion of the street intended for parking on the pavement. In the longer term, there may be opportunities to reallocate the street right-of-way to further encourage pedestrians and street-fronting land uses with wider sidewalks.

Coventry Street

Coventry Street is a key downtown business corridor, and also the designated truck route, hence its role in the thoroughfare network is complex. It forms the setting for Pick and Shovel and other successful businesses, although the street life along the sidewalk is somewhat limited.





In some locations, the sidewalks are quite narrower than those shown above, and might be expanded as improvements are contemplated.

Conclusions

While there is a great deal of information to consider as we proceed to develop a thoroughfare plan for Newport City, the following are among the conclusions that we have reached at this time.

- The street network functions reasonably well, though it can be congested during peak hours. The most critical location in terms of congestion is the portion of Main Street/Route 5/105 between Coventry and Railroad Square. After school hours also results in temporary congestion, particularly along Causeway and Union Streets.
- While there is substantial through traffic passing through downtown Newport City, the majority of traffic is local in nature, i.e. traveling between different areas of Newport or to Derby.
- Newport City has high volumes of trucks on Main Street east of Coventry and on Causeway, among the highest in Vermont for a downtown area. However, the core commercial area of Main Street west of Coventry has significantly reduced truck volumes due to the high proportion of trucks using Route 5 Alternate (Coventry).
- Traffic accident analyses indicate that Newport City's Main Street has an elevated crash rate, but the crashes are on average not particularly severe, in terms of injuries or fatalities. High crash locations on Causeway and East Main Street have higher injury rates, likely due to the higher speeds on these thoroughfares.
- Conditions for bicycles and pedestrians vary widely, with some parts of Newport City being outstanding places to walk or bike. On some other corridors there is room for improvement, and connections needed to make these modes safer.
- As development occurs, and the Form Based Code becomes implemented, there will be opportunities to reconfigure some of Newport City's streets to better serve the mix of functions of transportation and "placemaking," after considering the specific needs and desired functions of each street.