Contents

Introduction

Transportation is a critical element for a redeveloping area. Development may be impeded without a safe, efficient, transportation network. The land use and travel generation relationship is constant because changes in one ultimately affect changes in the other. Transportation and land use should be coordinated to ensure a rational use of land, and a viable transportation network of roads and sidewalks that continues to serve the community.

COMPLETE STREETS

Complete streets: a transportation **policy** and design approach that requires **streets and sidewalks** to be planned, designed, operated, and maintained to enable safe, convenient and comfortable travel and access for users of all ages and abilities regardless of their mode of transportation.

A major key to economic growth for many communities is to have a convenient link to and from outside markets. Such access provides a way for goods to be available, as well as needed goods, services and/or employment that may not be found within the community. The most prevalent modes of transportation within Alexandria and Alexandria Bay are highways, streets, and roads, as well as waterways and sidewalks where available. The remainder of this section will give an overview of the transportation system, with the greatest focus given to the existing road network.

Road Mileage

Vehicle traffic within the Village and Town travels along various state, county, town, village streets and highways. Table 2 shows that Town roads comprise the greatest amount of mileage in Alexandria, with about 69 miles of roads, consisting of 50.92% of the total road system. County Roads comprise

the second most amount of mileage, with about 33.4 miles consisting of 24.65% of the system. State Roads include about 7.4 miles, consisting of about 5% of roads in the Town and Village.

Table 2. Town of Alexandria Road Mileage (NYS DOT - 2011)

Ownership/ Maintenance	Mileage	Percent
Town of Alexandria	69.0	50.92%
Village of Alexandria Bay	5.8	4.28%
Jefferson County	33.4	24.65%
New York State in Town	25.7	18.97%
New York State in Village	1.6	1.18%
Total	135.5	100%

Alexandria Bay's roadways consist of 5.8 miles of Village streets, and 1.6 miles of New York State maintained streets.

Road Types

By and large, roads offer the primary means of transport into and out of a given area or neighborhood. They also provide access to properties of all types. As noted in the brief history section, their quality can affect growth patterns, access to commercial markets and commuting patterns. Roads serve various functions throughout a given community. Arterials, major and minor collectors, and local streets and roads have various capacities and serve in different ways.

Arterial highways are designed to carry major traffic loads through and within a given area or region. Arterials carry the highest volume of traffic and much of the traffic consists of longer trips. In rural areas, they serve as major thoroughfares. For planning purposes, property access to abutting land should be subordinate to the movement of traffic loads. In the Village, NYS Route 12 and 26 (Church Street) are considered arterial highways/streets. While Interstate 81, NYS Routes 12, 26, and 37 are considered arterial highways in the Town.

Major collectors are streets that carry moderate traffic loads, gathering traffic from local streets and then emptying it into arterials. Similarly, **minor collectors** gather traffic from local streets, but also run through residential, commercial or industrial areas providing property access and traffic movement functionality. James Street, Walton Street and Miller Ave serve as collectors within Alexandria Bay.

Primarily, **local roads** provide land access and have lower traffic volumes. Local roads typically make up the largest volume of mileage, but carry only a small portion of total vehicle miles of travel. Local streets offer the lowest level of traffic mobility and thru-traffic is often discouraged. Where on-street parking is permitted, they serve to store vehicles as well.

Road Design Capacities

In order to gauge the adequacy of the road system and review proposals that could affect its level of service, generally recognized capacities should be examined. Level of service (LOS) is a qualitative measure used to relate the quality of motor vehicle traffic *service*. LOS is used to analyze roadways and intersections by categorizing traffic flow and assigning quality *levels* of traffic based on performance measure like vehicle speed, density, congestion, etc. The numbers of expected vehicles per hour and average daily traffic levels is one technique to weigh potential project impact relative to current traffic levels and road capacity. Example design capacity standards are shown in Table 1 and can be used for general planning purposes. They are flexible, however, and will be affected by other factors which must be taken into account during the design or approval of new streets and/or projects. The need for a developer sponsored (complete streets analysis)

Table 1. General Street Design Capacity

street type	Practical Capacity - vehicles per hour	Design Capacity - average daily traffic
2-lane city street, 2-way	600-750	6,500-8,500
2-lane city street, 1-way	900-1,100	10,000-12,000

Note: The capacities are based on typical traffic flow characteristics; 10% of total daily flow in peak hour; 60 to 65% of peak hour traffic in predominant direction of flow; 20% turning movement; 10% trucks; 50% green signal time.

Source: International City Management Association, 1979

LEVEL OF SERVICE -

A: free flow. Traffic flows at or above the posted speed limit and motorists have complete mobility between lanes. The average spacing between vehicles is about 550 ft(167 m) or 27 car lengths

B: reasonably free flow. LOS A = speeds are maintained, maneuverability within the traffic stream is slightly restricted. The lowest average vehicle spacing is about 330 ft(100 m) or 16 car lengths

C: stable flow, at or near free flow. Ability to maneuver through lanes is noticeably restricted and lane changes require more driver awareness. Minimum vehicle spacing is about 220 ft(67 m) or 11 car lengths. This is the target LOS for some urban and most rural highways.

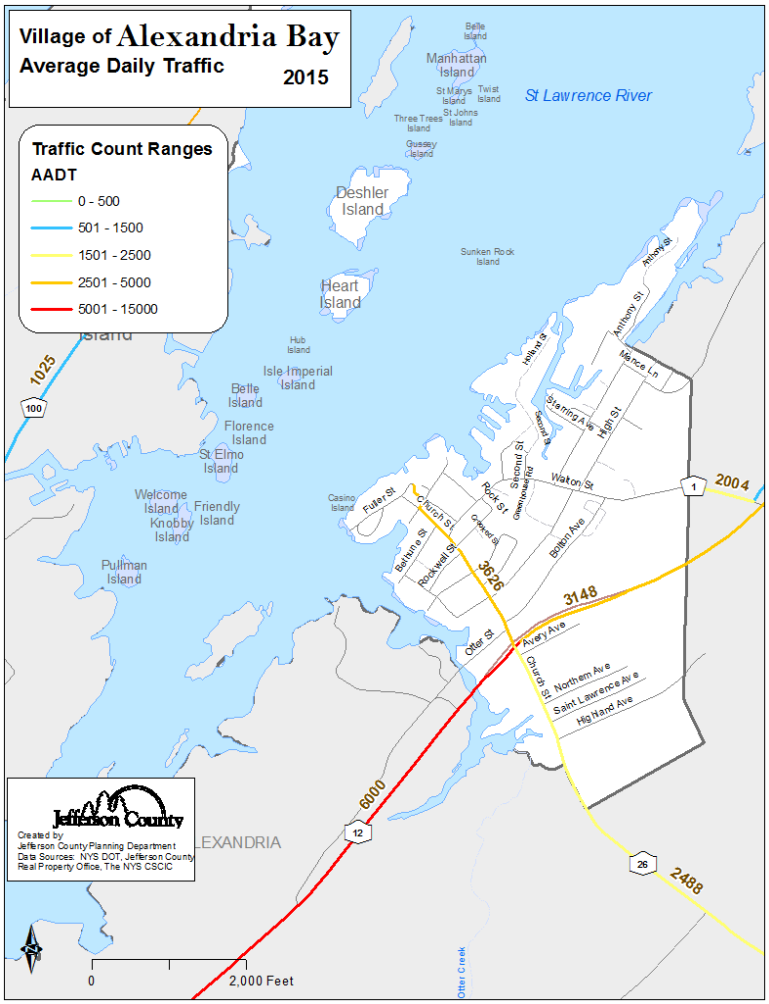
D: **approaching unstable flow**. Speeds slightly decrease as traffic volume slightly increase. Freedom to maneuver within the traffic stream is much more limited and driver comfort levels decrease. Vehicles are spaced about 160 ft(50m) or 8 car lengths. Minor incidents are expected to create delays. Examples are a busy shopping corridor in the middle of a weekday, or a functional urban highway during commuting hours. It is a common goal for urban streets during peak hours, as attaining LOS C would require prohibitive cost and societal impact in bypass roads and lane additions.

E: **unstable flow, operating at capacity**. Flow becomes irregular and speed varies rapidly because there are virtually no usable gaps to maneuver in the traffic stream and speeds rarely reach the posted limit. Vehicle spacing is about 6 car lengths, but speeds are still at or above 50 mi/h(80 km/h). Any disruption to traffic flow, such as merging ramp traffic or lane changes, will create a shock wave affecting traffic upstream. Any incident will create serious delays. Drivers' level of comfort become poor.[1] This is a common standard in larger urban areas, where some roadway congestion is inevitable.

F: **forced or breakdown flow**. Every vehicle moves in lockstep with the vehicle in front of it, with frequent slowing required. Travel time cannot be predicted, with generally more demand than capacity. A road in a constant traffic jam is at this LOS, because LOS is an average or typical service rather than a constant state. For example, a highway might be at LOS D for the AM peak hour, but have traffic consistent with LOS C some days, LOS E or F others, and come to a halt once every few weeks.

Most design or planning efforts typically use service flow rates at LOS C or D, to ensure an acceptable operating service for facility users

should be considered when potential expected volumes warrant.



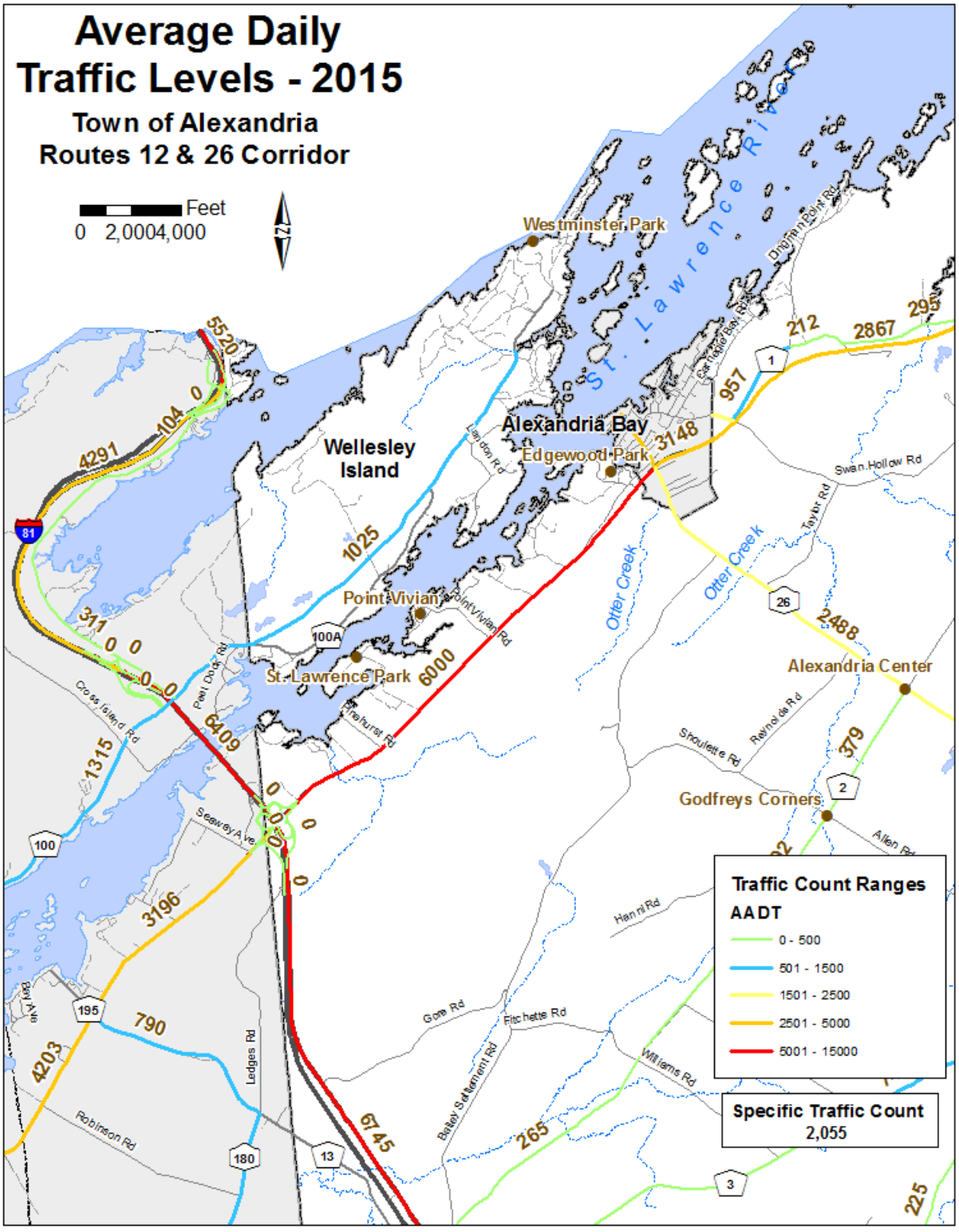
Alexandria and Alexandria Bay Traffic Levels

Automobiles, trucks and other vehicles use the road system in their round-trip daily commute to work, recreation trips, purchases retailers and many other purposes. Also, tourists, deliveries, and other traffic travels through the Town on its way to other destinations. Such traffic is measured periodically, as well as estimated by the New York State Department of Transportation and by the Jefferson County Highway Department on their respective roadways. This is performed to measure traffic levels to help ensure the roadways are operating within their design capacity levels or to identify areas of concern. Please refer to the Average Daily Traffic Level Map or Table 3. Average Traffic Levels below.

Table 3. Average Traffic Levels – State and County Roads near Village of Alexandria Bay

Annual Average per 24 hour period		
Roadway	***Number of Vehicles***	
NYS Route 12	**2010**	**2015**
segment 1	5,719	6,000
segment 2	3,852	3,148
NYS Route 26		
segment 1	2,055	3,626
segment 2	1,812	2,488
County Route 100		
segment 1	1,959	1,025

Sources: County Roads - Jefferson County Highway, State Roads - NYS Dept. of Transportation, Region 7 (2010, 2015)



Sources: Jefferson County Real Property Tax Services, NYS Office of Cyber Security and Critical Infrastructure Coordination, NYS Department of Transportation, Jefferson County Highway Department

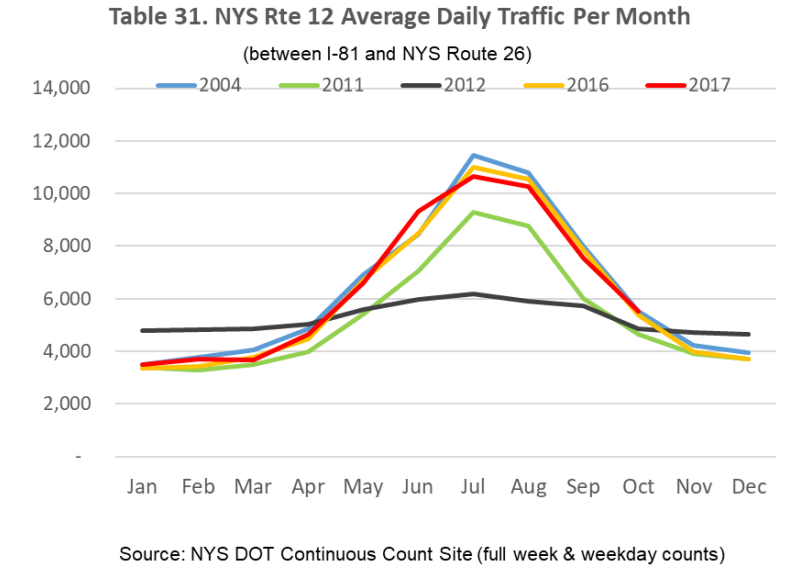
NYS Route 12 Corridor

NYS Route 12 serves as the arterial highway for the northern and central portions of Jefferson County. It connects Alexandria Bay to Interstate 81 and Clayton to the west and to the east Hammond, Morristown and Ogdensburg in St. Lawrence County. NYS Route 12's connection to I-81 provides Village residents with a quick link to Canada to the north and to Watertown and Syracuse to the south.

Table 4. Estimated Average Daily Traffic Per Month (NYS Route 12)

	2004	2011	2012	2016	2017	change (2004-2017)
Jan	3,508	3,380	4,784	3,358	3,509	0.0%
Feb	3,772	3,286	4,816	3,411	3,696	-2.0%
Mar	4,060	3,497	4,859	3,773	3,658	-9.9%
Apr	4,867	3,999	5,031	4,456	4,655	-4.4%
May	6,919	5,413	5,594	6,696	6,596	-4.7%
Jun	8,455	7,072	5,974	8,485	9,341	10.5%
Jul	11,454	9,279	6,197	10,989	10,658	-6.9%
Aug	10,774	8,754	5,890	10,557	10,263	-4.7%
Sep	8,003	6,023	5,720	7,861	7,551	-5.6%
Oct	5,516	4,641	4,853	5,367	5,514	0.0%
Nov	4,232	3,901	4,730	3,985		
Dec	3,950	3,709	4,650	3,704	3,547	-10.2%

Source: NYS DOT Continuous Count Site



Source: NYS DOT Continuous Count Site (full week & weekday counts)

Monthly Corridor Traffic

Historically, the NYS Department of Transportation has reported that average daily traffic counts taken on NYS Route 12 can triple during summer months, as seen in 2004, 2011, 2016, and 2017. Occasionally, summer counts can be flat during June, July, August, and September depending on weather and the economy. This occurred while winter counts increased in December, January, February and March in 2012. Although, recent developments such as Price Chopper Plaza and Swan Bay RV park within the corridor may have stabilized higher traffic levels during summer.

Expected Trip Generation

With most proposed projects, their expected trips can be weighed or compared to existing traffic levels. For example, roads or intersections are typically designed to handle a given number of vehicles. If a proposed project is reviewed that could generate a greater number of vehicles than the design capacity of the road or intersection, then improvements to the roadway in terms of the number of lanes, turning lanes, or intersection improvements could be considered to handle a significant increase in vehicles per hour.

For reference purposes, a sample of expected trips generated by a handful of common land uses can be found in Table 4.

Thousand Islands Bridge

The Thousand Islands Bridge system consists of five bridges over the St. Lawrence River at Collins Landing near Alexandria Bay, New York to Ivy Lea near Gananoque, Ontario. It provides a direct connection between US Interstate 81 and Canada's Highway 401.

The crossing over the American channel of the St. Lawrence River, from the mainland to Wellesley Island, consists of a suspension bridge of 800 ft. (main span), with an under clearance of 150 feet above the river. The American span from abutment to abutment is 4,500 feet.

In between the two large spans is the International Rift Bridge. While it is the smallest bridge, it crosses the actual boundary between the two countries connecting Wellesley Island to Hill Island.

The Canadian crossing includes the 600 foot continuous Warren Truss span connecting Hill Island to Constance Island, a steel arch of 348 feet. Connecting Constance Island to Georgina Island a suspension bridge of 750 feet from Georgina Island to the Canadian mainland (Ontario) with the suspension span providing 120 feet of under clearance above the river. The Canadian span from abutment to abutment is 3,330 feet.

Table 4. Sample Trip-Generation Rates by Land Use

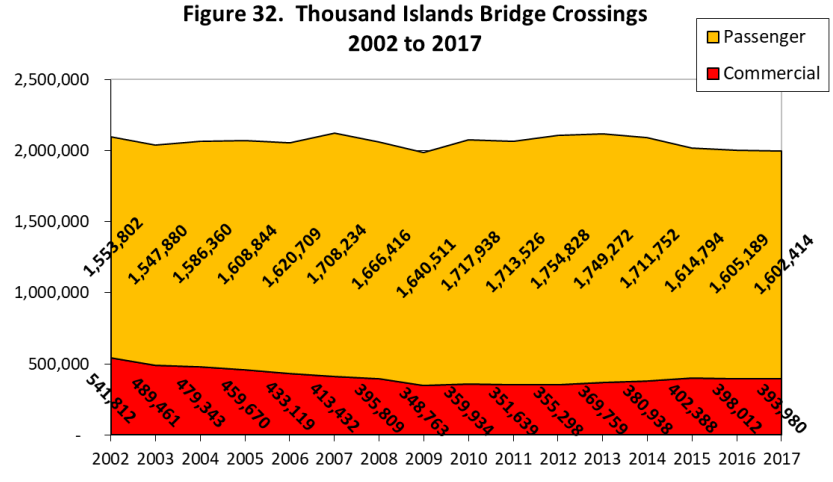
Type of Development	Average Weekday Trip-Ends
Single-family, detached	9-10 per dwelling unit
Townhouse / Apartment	6 per dwelling unit
Fast food restaurant with drive-thru	500 per 1,000 sq. ft. of floor area
Supermarket	111 per 1,000 sq. ft. of floor area
Shopping Center	50 per 1,000 sq. ft. of floor area
Office Building	3 per employee
Light industrial	3 per employee

Source: Institute of Transportation Engineers "Trip Generation." 6th Ed, 1997

TI Bridge Crossings

Bridge crossing numbers indicate the amount of vehicular traffic and commercial

Figure 32. Thousand Islands Bridge Crossings 2002 to 2017



Source: Thousand Islands Bridge Authority, Monthly Reports

trucks that cross the American span of the bridge system.

From 2002 to 2017, passenger vehicles increased by 3.1%, while experiencing a series of increases and some decreases during the time period. Commercial trucks, however, experienced a 27.3% decrease over the past fifteen years. Although since 2011, commercial traffic has rebounded somewhat recently, experiencing an increase of 15.4% from 2009 to 2015.

For comparison, the Ogdensburg - Prescott Bridge, (located approximately 44 miles northeast) Crossings subtotal of 712,000 passenger and 71,000 commercial vehicles in 2012.

Commuting Patterns

Commuting Patterns such as Place of Work, Travel Time to Work, and Time Leaving to go to Work, for Village and Town residents can be found in Chapter 2.

Arterial/Major Collector Road Protection

New York State invests significant amounts of resources in its arterial road system. Such highways are vital links between communities and serve as essential corridors for commerce, trade, tourism and recreational travel. However, in a familiar pattern, residential and commercial growth has occurred along many arterials serving the state's communities. This growth over time can create a need for costly highway improvements including additional travel lanes, bypasses, turning lanes, and intersection signalization. Unfortunately, few communities have enacted controls to address the rate and quality of this arterial roadside development, and taxpayers must bear the costs associated with strip development, traffic congestion, safety problems, and the resulting expensive remedial highway improvements.

Strip development occurs so slowly that it is seldom viewed as a crisis until traffic problems become severe. Development therefore is often allowed to continue in a haphazard manner until significant problems occur.

Arterials that carry large volumes of traffic are attractive locations for strip development. Residential and commercial developments locate along the arterial over time until strip development becomes the predominant land use pattern. The ability of the arterial to move traffic then becomes seriously compromised, resulting in increased traffic congestion and reduced safety.

Inefficient zoning, access points and street layout force businesses to connect access driveways to the arterial. If shared drives and/or side streets had been developed in concert, driveway access could have been rerouted to these streets. While NYS DOT has the right to restrict access on state roads to a point, they must allow access to properties adjacent to their roads, unless it is along a limited access roadway. Every parcel of land is required by law to have reasonable access to it, and it is not always possible to limit driveways to a set spacing throughout the length of an arterial. In many cases, municipalities zone and allow

subdivision of properties in a section of land in such a way that many small parcels must be granted access onto the arterial or else they would have no access at all. Additionally, such growth occurs not only on state roads, but also along county roads.

Local governments have the potential to better control land development along arterials and collectors. If it is a state controlled roadway, the local municipalities and the state jointly control the roadway and access to it. Reasonable access does not mean that access has to be provided directly off a main street or highway. In some cases, reasonable access may be provided off side streets or roads. Local governments therefore can prepare and adopt comprehensive planning and zoning ordinances to guide the overall development patterns.

Pedestrians vs. Vehicles

Prior to the advent of the automobile, many communities flourished as pedestrian oriented, compact hamlets or villages. Alexandria Bay and Redwood reflect this pattern with their historic downtown structures and nearby walkable neighborhoods with churches and other destinations in close proximity. This development pattern precluded the need for many parking spaces at business locations.

More recently, automobile dependent development that is more spread out with larger parking areas, has resulted in building placement further from the street and often separates residential areas. This pattern reinforces automobile dependency, which can increase traffic levels and limits pedestrian options. Options for more mixed-use, more compact development should be examined to reverse this trend. Similarly, parking should be located to the side yard and/or rear with bicycle and pedestrian pathways included to provide better pedestrian access.

Pedestrian Considerations

Maintaining walkability involves pedestrian scale, safety and convenient access. Along with hours of operation, walkability benefits storefronts by increasing the variety and likelihood of customer traffic from drop-in and destination shoppers.

Ongoing sidewalk maintenance from residential areas as well as along primary streets can affect the level of pedestrian access. Improved crosswalks, sidewalk maintenance and better business accessibility should be a priority for Alexandria Bay's downtown area, as well as the sidewalk connections to nearby neighborhoods. Even more important is accessibility and safety for all users such as pedestrians and bicyclists youth, older adults as well as people in wheelchairs and those with strollers.

Great Lakes Seaway Trail National/ State Scenic Byway

NYS Route 12 comprises the Great Lakes Seaway Trail Scenic Byway within the Town of Alexandria. The entire Great Lakes Seaway Trail is a 518-mile multi-state Scenic Byway that coincides with the scenic shoreline of Lake Ontario and the St.

Lawrence River within Jefferson County (NYS Routes 3, 180, and portions of NYS Route 12E, and 12). It encompasses the military history, agricultural ingenuity, shipping heritage and recreational resourcefulness that shape the distinct setting. It also serves as the main road through the northern portion of the Town providing access to Alexandria Bay and many other State Parks on the St. Lawrence River. The Great Lakes Seaway Trail is a preferred route for large numbers of bicyclists during warm weather.

St. Lawrence Seaway

The St. Lawrence River is traversed by a variety of boats and ships including pleasure craft of all sizes as well as freighters transiting this portion of the St. Lawrence Seaway. The St. Lawrence River and Lake Ontario are part of the 2,342-mile long St. Lawrence Seaway, the only commercial shipping route between the Great Lakes and the Atlantic Ocean. The locks of the Seaway accept vessels 740 feet long, 78 feet wide and up to 166.5 feet in height above the waterline. The Seaway handles 3,000 to 4,000 ship transits and 30,000,000 to 40,000,000 tons of cargo during a typical navigation season. Large freighters are commonly visible along the shorelines of the St. Lawrence River visible from several areas in the Village.

Private Boating on the St. Lawrence River

As a major market force and summer attraction to the area, water traffic ranges from kayaks, fishing boats, jetskis, ski-boats, pontoon boats, cabin cruisers, sailboats, yachts, off-shore performance boats, and tour boats. Recreation uses range from the obvious uses above to island and state park hopping, drifting/swimming as well as tourism related boating between islands in the US and Canada.

The dominance of private boating along the St. Lawrence River is clear, considering the number of boat sales, boat repair, storage and marinas in the area. In addition, the St. Lawrence Seaway, previously mentioned, is a major international shipping corridor serving the import/export needs of the Great Lakes region. Barges, riverboats, lakers and ocean going ships are often seen using the Seaway throughout the shipping season.

From the Village, tour-boat lines offer day tours of the Thousand Islands, combined tours of Boldt Castle, Singer Castle in St. Lawrence County, and sunset and dinner cruises. Area tour boats stop in the Village from Kingston, Gananoque and Prescott Ontario, on their way to and from other destinations.

Airport Service

An asset close to Alexandria Bay, Maxon Airfield is privately owned and located near the village on NYS Route 26.

Another facility within Jefferson County is the Watertown International Airport, located near Dexter, just west of the City of Watertown, approximately 30 minutes south of the Thousand Islands Bridge. It serves the primary aviation needs of Jefferson County with daily commercial jet service to and from Philadelphia, Pennsylvania. Other nearby commercial

airports include Syracuse Hancock International Airport (90 miles south), Ogdensburg International Airport (40 miles northeast) and Ottawa International Airport (95 miles north).

Village Transportation System Priorities:

√ Consider sidewalk maintenance a major priority within the Village, to enhance pedestrian safety, as well as maintain access and connectivity among neighborhoods and commercial areas for all users.

√ Increase pedestrian access and connectivity within parking areas and between project parking.

√ Promote a snowmobile trail connection to the NYS Snowmobile Corridor Trail to enhance year-round business viability.

√ Consider an affordable Village-wide or targeted shuttle bus service to alleviate parking pressure and vehicular congestion downtown, especially during events, enhance access to those who may not own a vehicle but would otherwise frequent businesses and access to needed services.

√ Consider reconfiguring downtown streets such as using one-way streets to improve traffic flow and visibility at crosswalks to enhance pedestrian and vehicular safety. Could be combined with sidewalk upgrades for pedestrian and/or parking modifications to widen travel lanes to enhance vehicular safety.

√ Maintain arterial street traffic flow by promoting interconnected projects between site parking areas, shared access, limit the number of access points along traffic arteries such as along NYS 12, and follow NYS DOT standards for driveway accesses. These steps should limit adding an excessive number of conflict points, decrease congestion and maintain traffic safety.

√ Consider altering street direction of flow and/or on-street parking downtown to decrease pedestrian vehicular conflicts and enhance pedestrian and vehicular safety/flow. The urgency for such changes are most evident during summer tourist season.

✓ Consider vehicular circulation, pedestrian circulation and parking recommendations from the Design Charrette process which are still relevant today.

✓ Consider phasing pedestrian (sidewalk, crosswalk, and roadway) improvements to allow priority projects to be pursued and allow funding for secondary projects and needs to be sought within subsequent rounds of potential funding.

COMPLETE STREETS POLICIES - CHECKLIST

An ideal Complete Streets policy includes the following:

1. **Vision and intent**: Includes an equitable vision for how and why the community wants to complete its streets. Specifies need to create complete, connected, network and specifies at least four modes, two of which must be biking or walking.
2. **Diverse users**: Benefits all users equitably, particularly vulnerable users and the most underinvested and underserved communities.
3. **Commitment in all projects and phases**: Applies to new, retrofit/reconstruction, maintenance, and ongoing projects.
4. **Clear, accountable expectations**: Makes any exceptions specific and sets a clear procedure that requires high-level approval and public notice prior to exceptions being granted.
5. **Jurisdiction**: Requires interagency coordination between government departments and partner agencies on Complete Streets.
6. **Design**: Directs the use of the latest and best design criteria and guidelines and sets a time frame for their implementation.
7. **Land use and context sensitivity**: Considers the surrounding community's current and expected land use and transportation needs.
8. **Performance measures**: Establishes performance standards that are specific, equitable, and available to the public.
9. **Project selection criteria**: Provides specific criteria to encourage funding prioritization for Complete Streets implementation.
10. **Implementation steps**: Includes specific next steps for implementation of the policy.

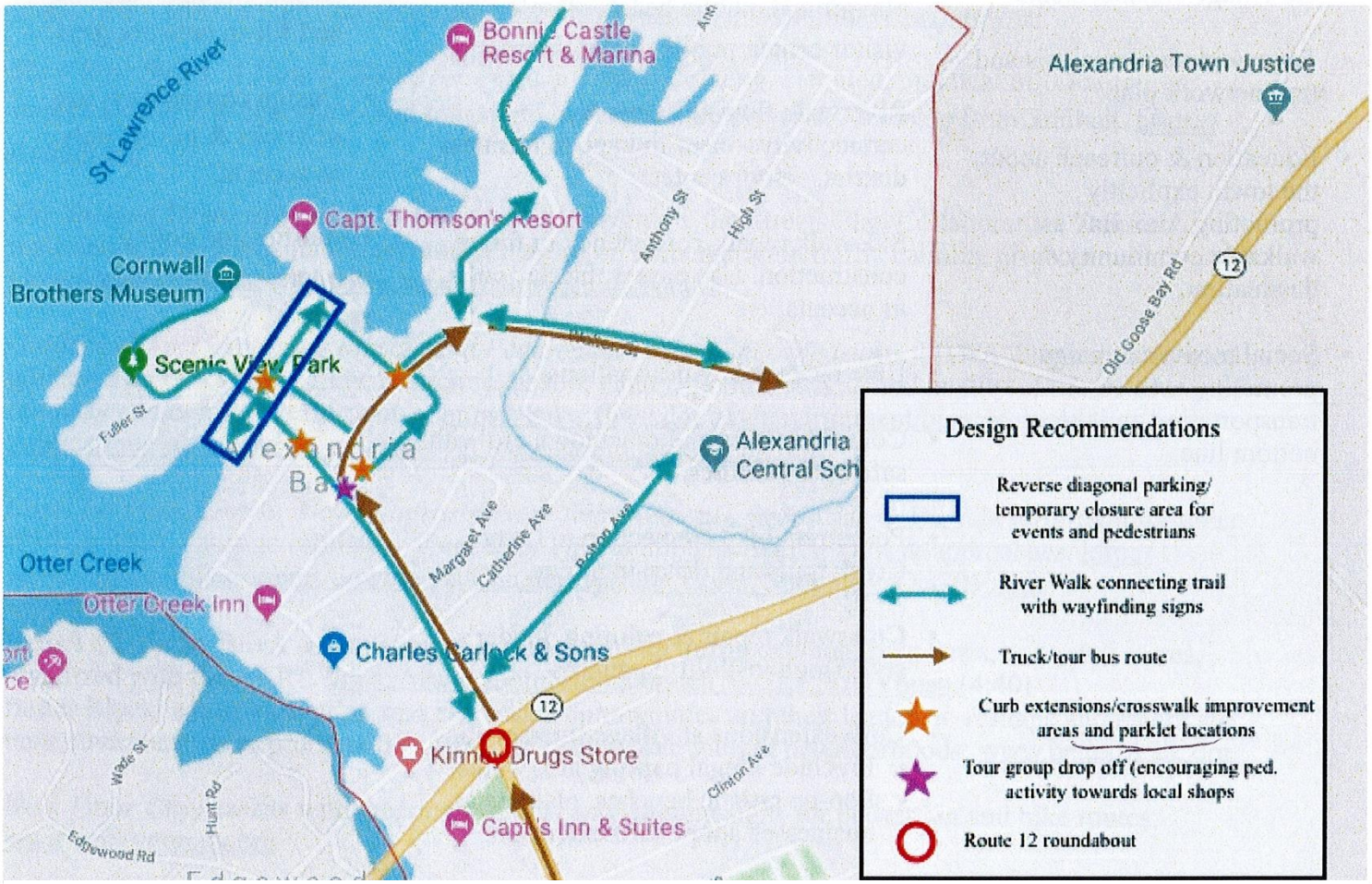
- ✓ Incorporate Complete Streets initiatives and criteria to enhance pedestrian safety and quality of life.
- ✓ Develop an interdisciplinary and inter-municipal working group on active transportation.
- ✓ The Town of Alexandria and Village of Alexandria Bay should collaborate and adopt Complete Streets Policies.
- ✓ Inventory key destinations, parking, and way-finding.
- ✓ Create an implementation plan with timeframes partnering with the Town of Alexandria and the Village of Alexandria Bay.
- ✓ Consider implementing pedestrian and bicycle improvements and Roadway Design Elements as listed in the Healthy Communities Workshop Summary completed by R. Mark Fenton and Peter Weafer M.S..
  - Pedestrian and bicycle pathway improvements,

- Roadway design demonstrations,
- Reverse diagonal parking,
- Curb extensions,
- High visibility crosswalks,
- Parklets (small green\open space areas occupying former parking spaces along the street),
- Bike accommodations,
- Street Furnishing,

Long-term Planning and Implementation Supporting Active Transportation

- Develop a shared Village and Town Comprehensive Plan, incorporating the Local Waterfront Revitalization Plan (LWRP).
- Route 12 roundabout,
- Route 12 Multi-Use Pathway,
- Route 12 sewer district expansion and pathway,
- Satellite parking program at an arena complex or other area,
- Route 12 pedestrian/bicycling crossing and Church Street pathway,

Design Recommendations map:



Incorporate the above Design Recommendations map completed during the Healthy Communities Walkability Workshop

- Pedestrian/Bicycling link to Redwood.

Healthy Community Workshop - Summary of Recommendations

Programs (e.g. events, outreach, education, promotions)	Projects (e.g. changes to physical infrastrure & the built environment)	Policy (e.g. rules, ordinances, guidelines, practices, & procudures)
Beautification program with community support	Gateway roundabout to the village at NYS Route 12 intersection	Complete Streets policies
Volunteer committee (active transportation committee) for sponsorship of bike racks, planters, benches, public art; village enhancements	Reverse diagonal parking in village along James St	Truck Route Policy
Village\Town wide trail analysis and trail network plan	Wayfinding signs and network connecting waterfront access, playground, public beach, storefronts, visitor center, public docks, restrooms	Sidewalk improvement Districts 1) repair existing sections and fill-in network gaps. 2) design consistency; use of bricks and pavers only as accents.
Education and outreach about the town and village, explicitly promoting Alex Bay as a walkable community & destination	Riverwalk flow & network connectivity - provide a clear linkage to business district & visitor center	Beautification policy - planters, greenery, bike racks
Social media campaign promoting active transportation and the triple bottom line	Sidewalk repair consistency in future construction, use pavers or bricks only as accents.	
	Bike racks at key destinations	
	Connect resorts and downtown area with safe bike facilities.	
	Pedestrian/bike connection to Otter Creek trails and drive-in movie business on NYS Route 26	
	Crosswalk repair and painting, ladder styel, (high visibility patterns)	
	Curb extensions at village intersections (they can preclude illigal parking at x-walks) (use of pop-up artistic benches, planters) as businesses adopt curb extensions.	
	Connect Big M supermarket to downtown via pedestrian crossing and sidewalk	
	Connect bike route to Indian River Lakes Conservancy Trail	