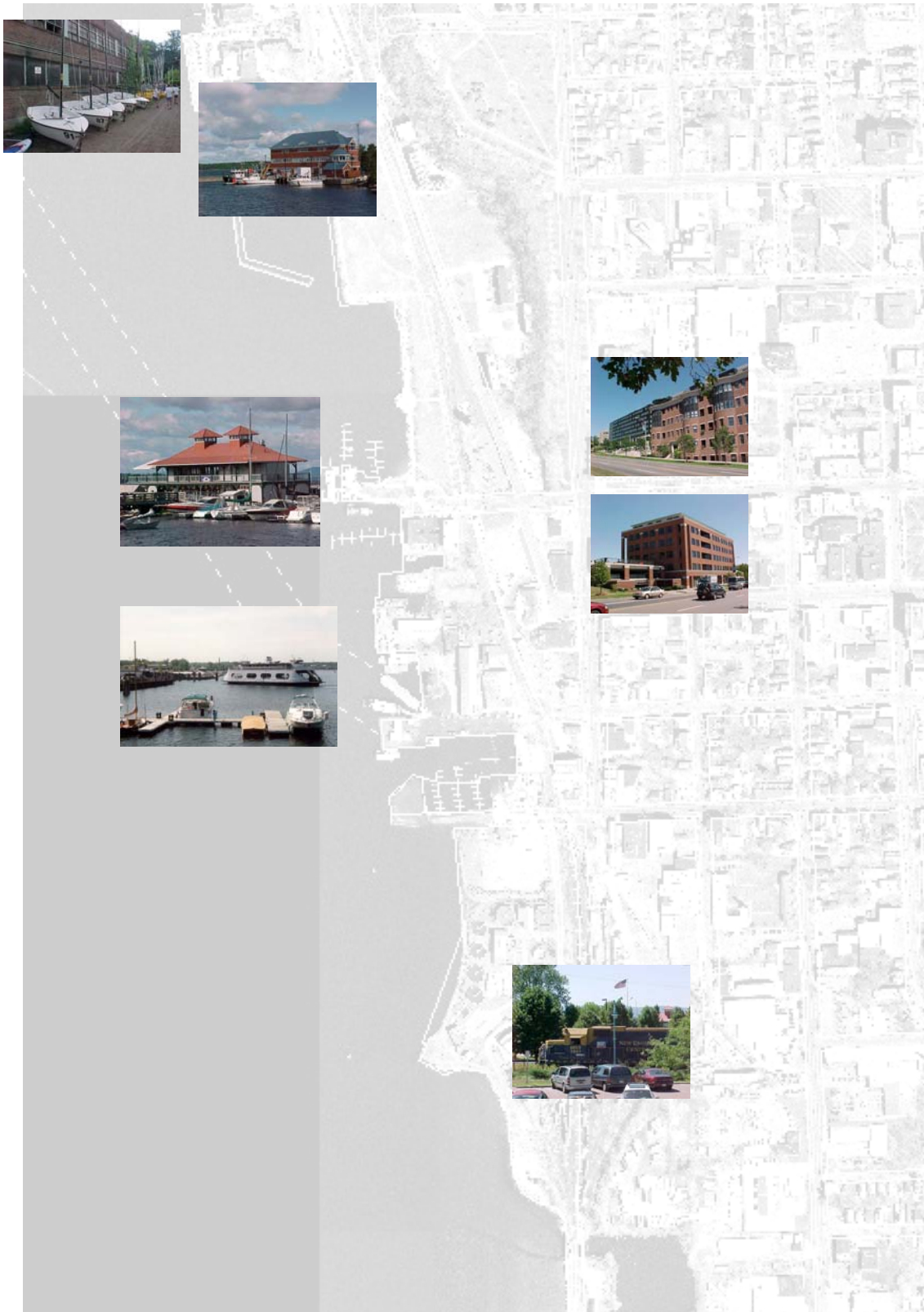


City of Burlington
Waterfront Transportation Plan



Waterfront Transportation Plan

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Waterfront Transportation Plan

Executive Summary

The *Waterfront Urban Renewal Plan*, as revised in 1999, called for the development of a transportation, parking and circulation plan for the waterfront in order to address existing and anticipated circulation and congestion issues.

Access to waterfront will emphasize and favor the use of public transit (in the form of shuttles, buses, ferries, and rail) and non-vehicular transportation (walking and bicycles). Specific efforts to implement this recommendation will include:

- Completion of the Downtown Transit Center on Battery Street to serve as a central node of regional transit service.
- Expansion of commuter and passenger rail service to Union Station.
- Expansion and improvements to regional transit service serving Chittenden County.
- The creation of a Transportation Management Association that will serve the downtown and waterfront areas of the city.

Future **parking** located on the waterfront will be constrained to serve primarily residential uses, handicapped visitors, and to a limited extent, water-dependent uses. The majority of parking for all other uses (both patrons and employees) will be found outside of the waterfront area. Specific efforts to implement this recommendation will include:

- Maximize the use of on-street parking for short-term visitors and convenience of patrons to waterfront businesses.
- Provide short-term parking to seasonal boaters to enable convenient loading and unloading of equipment and supplies, and parking for trailers. This will be concentrated at Perkins Pier, the Coast Guard boat ramp, and the Community Sailing Center.
- Expansion of “auto-capture” parking lots on the periphery of the city and commuter shuttles.
- Revise the parking requirements in the City *Zoning Ordinance* to provide only a minimal amount of on-site parking to serve future development.

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Pedestrian access points and routes to the waterfront from the downtown area will be strengthened by improved pedestrian crossings along Battery Street, and new access points that bridge the steep slope between Battery and Lake Streets north of College Street. Specific efforts to implement this recommendation will include:

- Design and implement pedestrian crossings along Battery Street at all major intersections.
- Construct stairways at the foot of Pearl and Sherman Streets to provide access down the steep escarpment to Lake Street.
- Consider the development a fully accessible, year-round link between Lake and Battery Streets such as a funicular or tunnel at either Cherry or Pearl Streets.
- Redesign Depot Street to serve primarily as a pedestrian/bicycle access route to the waterfront with vehicular access limited solely to emergency, maintenance, and possibly public transit vehicles.

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Background

Why a Waterfront Transportation Plan?

Burlington's Waterfront Urban Renewal Plan, originally created in 1991, underwent a comprehensive review and revision in 1999. In its review, the Planning Commission expressed the strong desire and pressing need for the development of a transportation, parking and circulation plan for the waterfront in order to address existing and anticipated circulation and congestion issues. They said, "To do otherwise may greatly jeopardize the timeliness of review by the Zoning Board and Planning Commission (and possibly Act 250), and place the burden for traffic and parking analysis on each proposed development."

The revised Waterfront Urban Renewal Plan called for the development of "...a Comprehensive Parking, Pedestrian Safety and Circulation Study (that) must take into consideration all permitted and proposed development and infrastructure improvements including but not limited to: the Champlain Park Way, Filenes, Multimodal Transportation Center, Union Station expansion, Moran redevelopment, development east of Lake Street, LOT Development, Skate Park, Science Center expansion, narrowing of Battery Street and closure of Depot Street."

Upon completion of the *Waterfront Urban Renewal Plan* in 1999, the Dept. of Public Works began to develop the background information that would serve as the basis for such a plan as part of their assessment of transportation impacts and needs associated with the development of the multimodal transportation center. A Request for Proposals was prepared, and Resource Systems Group (RSG) of White River Jct., VT was contracted to perform the work.

RSG completed its work for the transportation center and the technical information developed became available to support the preparation of the Waterfront Transportation Plan. RSG reviewed parking and transportation service needs and impacts of permitted and proposed development, and infrastructure improvements. The study also assessed the transportation impacts of these activities in light of the proposed transportation center.

An Advisory Committee comprised of representatives from the Planning Commission, Parks & Recreation/Harbor Commission, Public Works Commission, City Council Waterfront Committee, and City Council Transportation Committee, with staff support from the Departments of Public Works, Planning & Zoning, and the Community and Economic Development Office, was formed to oversee a succinct planning process. This Plan is the result of that process.

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The Waterfront Urban Renewal Plan

On November 6, 1990, the voters of Burlington approved the *Urban Renewal Plan for the Waterfront Revitalization District*. The 1990 Plan described an integrated, comprehensive strategy for the redevelopment of the City's urban waterfront in a manner that would ensure public use and enjoyment of the area. The Plan created an "Urban Renewal District" for the waterfront, and provided the City the necessary tools to implement many of the projects proposed in the Plan.

At the heart of the Plan were 13 major project elements describing physical improvements that the community wanted to have occur in the district. Those projects were drawn from years of public discussion and a number of studies exploring the feasibility of various development scenarios. The Plan also discussed how those projects might be financed, and what zoning changes would be necessary to implement the vision.

The original Waterfront Plan served the City well. It provided a guiding vision and unifying force for development of the Waterfront district. Because enormous progress has been made toward the goals outlined in the Plan in 1990, much of the document was no longer helpful in guiding actions forward. Many projects detailed in the 1990 Plan—like the creation of Waterfront Park and the relocation of the Naval Reserve were complete. Others—like the Renaissance Center—were canceled or replaced by similar projects due to changing circumstances.

The Waterfront Plan was revised in 1998, and adopted by the voters in March of 2000. At the heart of this revised Plan are 22 project elements planned for the Waterfront Revitalization District. The 22 elements are each at different stages of development. Some - like the creation of a mixed-use urban neighborhood adjacent to Lake Street or development of a multimodal transportation center - are currently under construction or in the planning stage. While others - like the redevelopment of the Moran Plant as an art space - remain conceptual.

In its review, the Planning Commission expressed the strong desire and pressing need for the development of a "transportation, parking and circulation plan" for the waterfront in order to address existing and anticipated circulation and congestion issues. They said, "To do otherwise may greatly jeopardize the timeliness of review by the Zoning Board and Planning Commission (and possibly Act 250), and place the burden for traffic and parking analysis on each proposed development." As a result, the revised Waterfront Urban Renewal Plan called for the development of "...a Comprehensive Parking, Pedestrian Safety and



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Circulation Study (that) must take into consideration all permitted and proposed development and infrastructure improvements including but not limited to: the Champlain Park Way, Filenes, Multimodal Transportation Center, Union Station expansion, Moran redevelopment, development east of Lake Street, LOT Development, Skate Park, Science Center expansion, narrowing of Battery Street and closure of Depot Street.”

Waterfront Parking, Pedestrian, and Circulation Study

In 2000, Resource Systems Group (RSG) was hired by the Dept. of Public Works and charged with documenting current traffic and parking conditions in the waterfront area, and assessing the parking and circulation issues that may arise from the cumulative development scenarios described in the *Waterfront Urban Renewal Plan*. The subsequent data collection and analysis encompassed the areas from Lake and Main Streets to the south to the Moran Plant to the north. The RSG study summarized an analysis of the demand on parking; pedestrian circulation requirements; traffic flow and circulation and transit service, assuming a build out of the waterfront in the year 2005.

- Parking

The study concluded there is a high degree of shared parking within the study area, parking demand along the waterfront would exceed the projected parking supply during mid-day hours. The projected shortfall was approximately 80 spaces.¹ This analysis takes into account the fact that some of the current parking will be replaced by future development.

However, RSG identified in excess of 1,000 structured parking spaces on the east side of Battery Street, and re-confirmed the importance of establishing pedestrian linkages to these facilities cited in earlier studies.²

¹ Since completion of the RSG Study, the Downtown Transit Center has been substantially redesigned resulting in an additional parking shortfall of 200 spaces.

² *Burlington Waterfront Pedestrian Linkages Study*. CCRPC. 1993

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- Traffic & Circulation

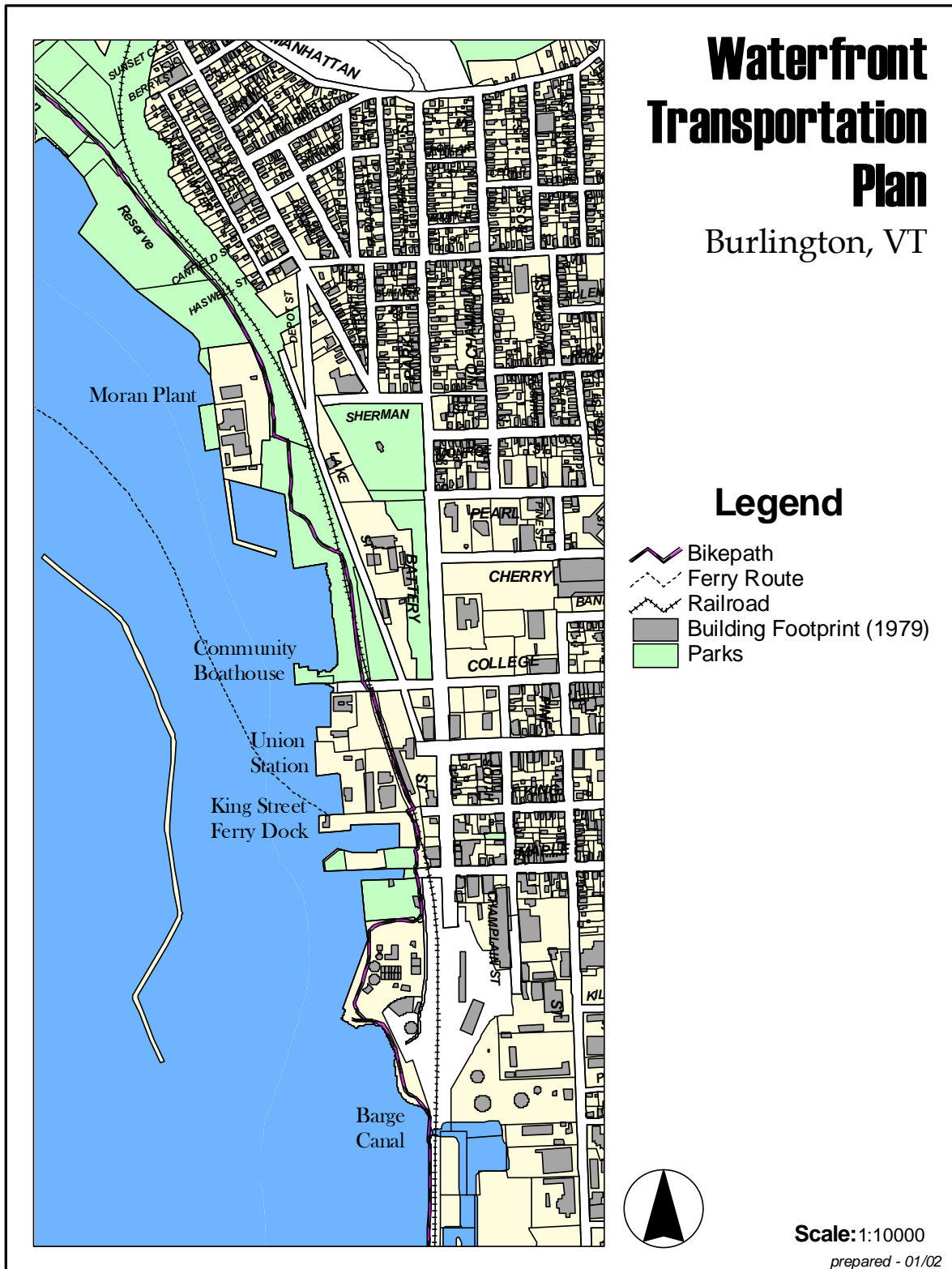
The study estimated that full build conditions in 2005 would generate an additional 734 morning and 600 afternoon trips on the waterfront. Under these circumstances, Lake Street will have sufficient capacity to operate at Level of Service (LOS) C, suggesting stable operations under peak hour flow. Assuming average travel speeds of 20-30 mph, it will be a predominately low speed environment as per the current design configuration of the street, which takes into account the heavy pedestrian presence in the area. The most significant capacity issue identified by the study was the College and Battery Street intersection that under the 2005 build out would have to accommodate these additional vehicles.

The study recommended two transit concepts. One a north-south circulator moving between the transit center on Battery Street and the Moran plant, and the second a circulator that would use Lake Street, Depot Street and Battery Street as a loop. Both options could be integrated into a downtown shuttle or circulator route.

The study included the following findings and recommendations:

- Under the projected 2005 full build conditions, the Waterfront is estimated to have a parking shortfall of 100-200 spaces. To remedy the parking shortage, RSG recommended the use of surplus parking that exists east of Battery Street.
- For use of the parking east of Battery Street to be viable option, pedestrian linkages between the waterfront and the downtown must be improved. Options include a mechanical connection, or funicular, at the foot of Cherry Street, and stairways that scale the grade change between Battery and Lake Streets.
- Provide Lake Street transit that is either dedicated to the waterfront or integrated into a downtown circulator route.

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The Plan

Burlington's Waterfront has experienced tremendous growth as a popular destination for local residents and visitors alike. A trend that will continue with the development anticipated in the *Waterfront Urban Renewal Plan*. This increase in activity presents the city with many challenges not the least of which is providing for access to and mobility on the waterfront. However, meeting this challenge is essential if the waterfront is to be developed and enjoyed as envisioned by Burlington residents. The following section of this plan outlines a series of strategies and recommendations that will serve to facilitate this vision.

Guiding Principles

As was the case with the *Waterfront Urban Renewal Plan*, development of this Waterfront Transportation Plan, was guided by the following principles:

- ❑ that infrastructure improvements be provided on the Waterfront which ensure safe pedestrian and vehicular access;
- ❑ that intrusion by the automobile should be minimized through dual footprint, underground, off-waterfront parking structures and innovative public transportation;
- ❑ that the Waterfront should complement Downtown and its uses and that Burlington's Downtown and the Waterfront should be connected through pedestrian linkages;
- ❑ that people with disabilities will have access to waterfront activities.

This plan provides a framework for developing future transportation systems and improvements in and around the downtown waterfront while respecting the following objectives:

- Relieve congestion and parking shortages;
- Enhance visitor safety, mobility, and accessibility;
- Preserve natural, cultural, and historic resources;
- Compliment the waterfront's scenic setting and urban character;
- Provide improved interpretation, education, and visitor information services;
- Reduce automobile generated pollution;
- Support future waterfront development opportunities

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The principle recommendations of this Plan largely come from the various plans and studies completed for the waterfront over the past several years including the *Waterfront Urban Renewal Plan*, the *Burlington Waterfront Pedestrian Linkages Study*, and the *Burlington Waterfront Parking, Pedestrian, and Circulation Study*.

These can be summarized as follows, with greater detail offered in the following discussion:

- ❑ **Access** to waterfront will emphasize and favor the use of public transit (in the form of shuttles, buses, ferries, and rail) and non-vehicular transportation (walking and bicycles).
- ❑ Future **parking** located on the waterfront will be constrained to serve primarily residential uses, handicapped visitors, and to a limited extent, water-dependent uses. The majority of parking for all other uses (both patrons and employees) will be found outside of the waterfront area.
- ❑ **Pedestrian access** points and routes to the waterfront from the downtown area will be strengthened by improved pedestrian crossings along Battery Street, and new access points that bridge the steep slope between Battery and Lake Streets north of College Street.
- ❑ **Circulation** along the waterfront will be facilitated by the creation of a high-frequency north-south shuttle along Lake Street between the proposed Downtown Transit Center and the Moran Plant.

Access

Principle Recommendation:

Access to waterfront will emphasize and favor the use of public transit (in the form of shuttles, buses, ferries, and rail) and non-vehicular transportation (walking and bicycles). Specific efforts to implement this recommendation will include:

- Completion of the Downtown Transit Center on Battery Street to serve as a central node of regional transit service.
- Expansion of commuter and passenger rail service to Union Station.
- Expansion and improvements to regional transit service serving Chittenden County.
- The creation of a Transportation Management Association that will serve the downtown and waterfront areas of the city.

One of the first and most important strategies for addressing future waterfront transportation needs is to develop a range of ways for visitors to reach Burlington's downtown waterfront without the need to bring a car either onto the

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waterfront itself or into the City at all. While many of these solutions are regional in scope and longer-term by nature, they bear repeating here as they will prove to be central to the overall improvement of mobility within the city. Following is a more detailed discussion of the facilities and service that will be pursued by the City.

Downtown Transit Center

A key element of this plan is the completion of the Downtown Transit Center (formerly known as the Multimodal Transportation Center) at 131 Battery Street. This facility will be a mixed-use development comprising approximately 50,000 square feet (including at-grade parking levels). It provides a single location for convenient access to passenger rail, ferry, and public transit. Located adjacent to Union Station, Lake Champlain Transportation ferry docks, and served by most major Chittenden County Transportation Authority (CCTA) routes, this facility will provide amenities for CCTA patrons and link Burlington's Waterfront District with the City's Central Business District (CBD) and Hill Institutions District. This important transportation node will make it possible for people to access the city from a number of directions and modes without the need for a car.

In addition to its intermodal uses, the facility will provide active pedestrian-friendly retail frontage, commercial and office space, and 56 parking spaces. The proposed design also calls for streetscape and landscape improvements, and traffic signal improvements intended to enhance pedestrian safety and access to/from the downtown area and Waterfront across Battery Street.

Key modes that the transit center will serve are:

- **CCTA/College Street Shuttle**

Once complete, CCTA buses will directly serve the Downtown Transit Center providing access to major transit routes both within the city and throughout CCTA's regional service area. As CCTA's services are expanded and improved, we expect that the Downtown Transit Center will serve as an even more important role as a common connection point for regional express services and local circulators and shuttles. Future improvements to regional transit will also include a range of information services and systems that improve the efficiency of the service itself (i.e. signal preemption) and the availability of service and schedule information to the user (these types of systems are commonly referred to as "Intelligent Transportation Systems" (ITS)³.

³ *Chittenden County Intelligent Transportation Systems Strategic Deployment Plan*, CCMPO, 2000.

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The College Street Shuttle continues to prove that free transportation between desired destinations works. Every day, the Shuttle keeps dozens—and sometimes hundreds—of vehicles off the Waterfront. Timed connections with the Champlain Flyer at the site of the transit center have demonstrated the need and success of multimodal design expanding access to downtown and hill institutions to residents south of Burlington. Future shuttles, serving the downtown and waterfront, area park-and-ride lots, and special events should also be linked through the transit center.

- **Commuter Rail**

Commuter rail will improve access to and from Burlington for commuters and visitors who must now travel on congested roads. Service now provided as a demonstration project by the Champlain Flyer connects Burlington to South Burlington, Shelburne, and Charlotte. An important addition to this service will be the expansion north and east through Winooski to Essex Junction currently under study by the Chittenden County Metropolitan Planning Organization (CCMPO). With such a route, much of Chittenden County would have fast, affordable and congestion-free access to Burlington.

Accompanying transportation from the Burlington train station to the riders' final destinations will be critical to the success of this transportation system. The Downtown Transit Center—adjacent to Union Station—will meet that need by providing direct access to CCTA buses, shuttles, and taxis.

- **Amtrak Expansion**

Amtrak currently runs the Ethan Allen Express from New York City to Rutland. This route should be expanded north to Burlington. Such an expansion would create a seven-hour link to Manhattan for Chittenden County residents. It would provide visitors to Vermont an alternative to interstate highway travel, and would put Burlington's Waterfront directly in the path of many visitors to Vermont. The train would become popular with summer and fall tourists and skiers, and keep thousands of cars off Vermont's roads.

Expansion of rail service to Burlington brings concerns about at-grade rail crossings so that they are safe and do not deter from the overall enjoyment of the waterfront by residents and visitors. It will be important to support safe rail crossings that respect the quality of life in nearby residential neighborhoods.

Transportation Demand Management

This plan recommends several improvements or additions to the Waterfront's transportation infrastructure - primarily high-capacity transit, park-and-ride, and

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extensive pedestrian linkages. However, if this infrastructure is to work most effectively, it is essential that there is an aggressive and coherent public marketing and education campaign, and that the transportation choices and facilities be seamlessly linked and coordinated.

The city and local service providers have established programs including park-and-ride shuttle services, rideshare matching, guaranteed ride home, preferential parking programs for high occupancy vehicles, etc. that fall under the rubric of Transportation Demand Management (TDM⁴). There are many different TDM strategies with a variety of transportation impacts. Some improve the transportation options available to consumers. Some cause changes in trip scheduling, route, destination, or mode choices. Others reduce the need for actual travel through more efficient land use patterns, or telecommunications that allow for working at home. TDM is an increasingly common response to the wide range of transportation challenges facing urbanizing communities. Although most individual TDM strategies only affect a small portion of total travel, the cumulative impacts of a comprehensive TDM program can be significant.

- Marketing

Marketing is an important for the success and sustainability of most TDM strategies. Public attitudes and understanding has a major effect on their willingness and ability use alternative transportation modes.

TDM marketing includes:

- Educating public officials, businesses about TDM strategies they can implement.
- Informing potential participants about TDM options they can use.
- Promoting benefits.
- Overcoming barriers to the use of alternative modes.
- Providing encouragement to participants.

Marketing of transportation demand management is usually implemented by government agencies or non-profit organizations as part of a comprehensive program. Virtually all stakeholders can have a role including federal, state, regional, and local agencies; Transportation Management Associations (TMA's), business associations, and individual businesses; and non-governmental organizations.

The following are key elements in the consideration of any TDM marketing program.

⁴ TDM is a general term for strategies that result in the more efficient use of transportation resources.

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- Marketing programs should be developed in cooperation with all major stakeholders, including government agencies, business organizations, non-profit organizations, and participant groups.
- Marketing should provide a clear and consistent message.
- Marketing should emphasize positive benefits to participants, including increased enjoyment and health.
- Marketing should offer useful information and resources (i.e., contacts for transit, rideshare, and carshare services, cycling safety tips, etc.).
- Marketing should only be implemented after TDM programs and services are operating effectively (it is counterproductive to promote TDM programs that give consumers an unsatisfactory experience, such as ineffective rideshare matching services).
- Potential users should be surveyed regularly to identify their needs and preferences, to evaluate the acceptance and effectiveness of marketing efforts, and to identify ways to improve marketing.
- Program evaluation should be incorporated into marketing efforts to ensure that the service being offered is effectively meeting the needs of the consumer.

- Organization

Transportation systems and management strategies outlined above stand a more realistic chance of success when supported by an organization dedicated to meeting access and mobility needs rather than the need of an individual mode. Such an organization would educate the public in ways to access transportation services, and stakeholders on how to leverage their respective transportation and business investments to provide a higher degree of access at a lower cost.

Review of similar efforts from around the country indicates that the formation of a transportation management association (TMA) similar to Campus Area Transportation Management Association (CATMA - representing Fletcher Allen Health Care, The University of Vermont, Champlain College, Trinity College and the American Red Cross) is worthy of consideration for Burlington's downtown and waterfront. In addition to CATMA, TMA's from around the country offer models for Burlington to explore to meet the requirements of downtown and waterfront access. Therefore, one action identified in this plan will be to explore the development of a Transportation Management Association.

Such an organization, comprised of public and private stakeholders the City, property owners, employers and event sponsors, and service providers, CCTA, the Vermont Transportation Authority (VTA), and others would provide a forum for users and providers of the transportation system to meet on a regular basis to define the nature of the services available, plan and coordinate existing and future

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service, and to produce and distribute informational materials that educate the public on the use of those services.

Waterfront Events

The waterfront has become, as planned, a significant venue for a wide variety of community events. Travel to the waterfront for these events has always been a challenge. Each of the strategies identified in this plan when applied during an event should make waterfront access safe, efficient and available to all. Particular attention should be paid to how that access is managed during events. Burlington's Parks and Recreation Department has performed more than admirably during the past several years working with event sponsors. A TMA or other form of organization charged with managing a TDM program as noted previously should be charged with overall management of access during major waterfront events.

Parking

Principle Recommendation:

Future parking located on the waterfront will be constrained to serve primarily residential uses, handicapped visitors, and to a limited extent, water-dependent uses. The majority of parking for all other uses (both patrons and employees) will be found outside of the waterfront area. Specific efforts to implement this recommendation will include:

- Maximize the use of on-street parking for short-term visitors and convenience of patrons to waterfront businesses.
- Provide short-term parking to seasonal boaters to enable convenient loading and unloading of equipment and supplies, and parking for trailers. This will be concentrated at Perkins Pier, the Coast Guard boat ramp, and the Community Sailing Center.
- Expansion of "auto-capture" parking lots on the periphery of the city and commuter shuttles.
- Revise the parking requirements in the City *Zoning Ordinance* to provide only a minimal amount of on-site parking to serve future development.

The parking shortfall identified by RSG in their build-out projections links with a statement found in the *Waterfront Urban Renewal Plan* which reads:

"The City should continue to allow no permanent parking to the west of Lake Street except on-street parking, handicapped parking, parking required to support existing uses and parking for water-

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dependent uses. The City should continue to encourage the incorporation of additional parking spaces and dual use shared parking spaces in projects developed east of Battery Street.”⁵

“The City should continue to pursue transportation modes other than the automobile. Existing modes should be enhanced, while significant new investments in public transportation infrastructure should be encouraged.”⁶

The shortfall illuminates a basic tenet of this plan that linkages to the infrastructure in place within the downtown and elsewhere should be the primary goal of any waterfront transportation plan.

On Street Parking

On street parking will be encouraged where ever feasible. In the case of Lake Street south of College Street, parking should be provided on both sides of the street. Where future roadway improvements are contemplated, every effort should be made to include parking on the street. Extensive bicycle parking should be provided both via racks and lockers at key destinations, and by use of single unit bicycle rings developed by the Department of Public Works for use with standard parking meter and sign poles.

Public rights of way devoted to transportation uses in Burlington are generally not very wide. Established when demand was comprised of horse drawn vehicles and pedestrians, these facilities offer a challenge today when the charge is to provide for the movement and storage of vehicles - both motorized and non-motorized, stormwater drainage, and the movement of pedestrians. Recent City policy has been to balance these various demands within this limited space rather than to exclude any use or greatly expand the size of the right-of-way. As such, the size of vehicle travel lanes, bicycle travel lanes, and parking bays are designed according to the minimum suggested width.

An example of this is Lake Street north of College Street where the narrow right of way accommodates drainage via existing systems and swales on the west, 9.5-foot travel lanes and 7.5-foot parking bays on the east. As noted in the RSG study, this provides sufficient roadway capacity to meet the build out demand in design year 2005.

“Under projected full build conditions in 2005, Lake Street is estimated to carry approximately 400 vehicles per hour per direction (northbound and southbound), for a total bi-directional flow of 780 vehicles per hour. This corresponds to LOS C conditions for an urban street, and is considered adequate from a capacity standpoint. LOS C conditions for Lake Street suggest

⁵ *Waterfront Urban Renewal Plan*

⁶ Ibid.

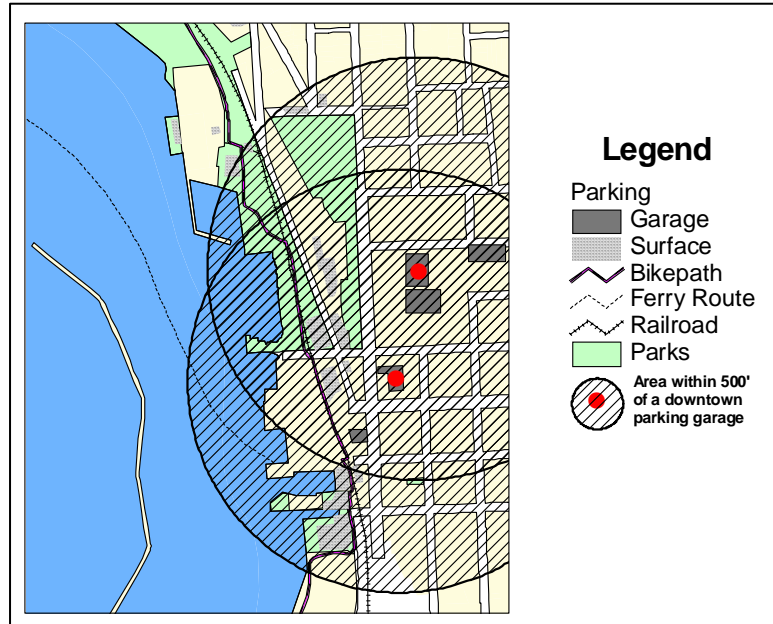
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stable operations under projected peak hour flow. Average travel speeds will range from 20-30 mph, and it will be a predominately low speed environment, which is consistent with the heavy pedestrian presence in the area.”⁷

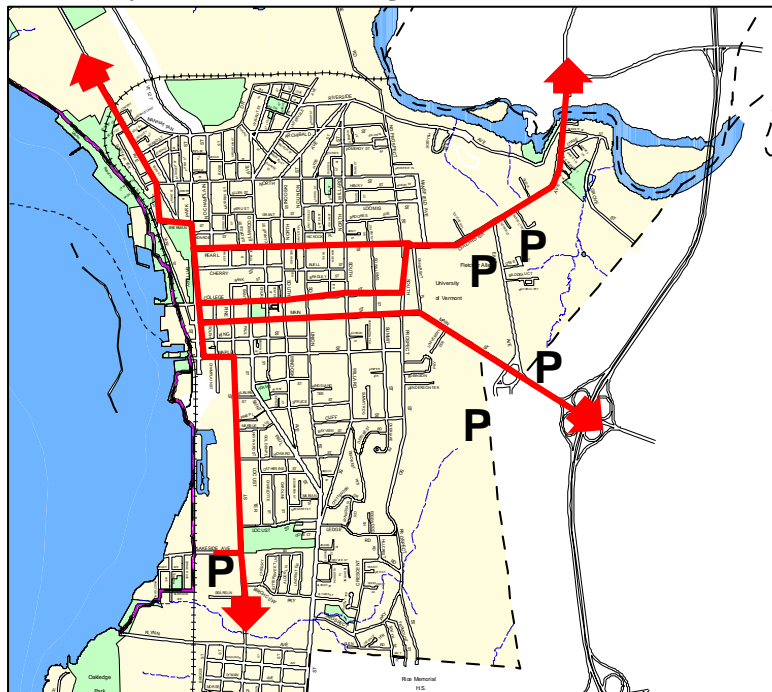
Offsite parking

While parking on the waterfront will be increasingly limited, many options exist within close proximity. There are over 1,375 structured public parking spaces east of Battery Street and within a short walk of the waterfront. The city and CCTA operate a park and ride facility at Innovation Park on Lakeside Avenue that can accommodate up to 350 automobiles and is connected to the downtown by regular shuttle service.

The city and Gilbane Properties, owners of Innovation Park, have discussed developing a structured facility at this location. This facility serves primarily as a commuter park-and-ride providing affordable parking for downtown employees during the workday. This facility has been used for major events such as First Night, and provides a valuable opportunity in the future.



Proximity of Downtown Parking Facilities



Major Transit Routes and Park-and-Ride Lots

⁷ *Burlington Waterfront Parking, Pedestrian, and Circulation Study*, RSG 2001

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The city will continue to develop park-and-ride capture lots to the north and east of the downtown with shuttle services into the core. This strategy will provide parking capacity for downtown growth without adding vehicle trips to neighborhood streets and ultimately increase transit capacity providing the higher frequency service often cited by residents.

Zoning Changes

One of the Guiding Principles of this plan reads: "Intrusion by the automobile should be minimized through dual footprint, underground, off-waterfront parking structures and innovative public transportation". Element G: Parking of the *Waterfront Urban Renewal Plan* states: "No parking should be allowed to the west of Lake Street except on-street parking, handicapped parking and parking required to support existing uses and water-dependent uses. To meet the goals of this plan, the zoning ordinance for zones WFC-E and WRM may be modified to set parking requirements for new Waterfront development to 50% of current standards, and to require developers to seek waivers if they plan to build additional spaces."

Parking requirements in waterfront zoning districts currently require developers to provide at least one parking space for every 150 square feet of retail space or 300 feet of office space. Two parking spaces are required for each residential unit. Developers may request a waiver for up to 50% of the required spaces if they submit a parking plan as part of their permit application. While this has met with some success, the City needs to reconsider how parking requirements for the waterfront address the demand for access and parking throughout the area. Additional techniques to lessen the pressure for additional parking on the waterfront itself include lowering the number of parking spaces required by use in the districts and changing the requirement from a minimum to a maximum number of spaces - in effect capping the number of parking spaces a developer can provide on-site. The remainder of the required spaces would have to be provided off-site or could be offset by participation in citywide TDM programs. Secondly, development on the waterfront should directly contribute to the cost for providing off-site parking in the downtown area (i.e. the Parking and Mass Transit Capital Fund) in lieu of creating on-site parking spaces.

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Pedestrian Access

Principle Recommendation:

Pedestrian access points and routes to the waterfront from the downtown area will be strengthened by improved pedestrian crossings along Battery Street, and new access points that bridge the steep slope between Battery and Lake Streets north of College Street. Specific efforts to implement this recommendation will include:

- Design and implement pedestrian crossings along Battery Street at all major intersections.
- Construct stairways at the foot of Pearl and Sherman Streets to provide access down the steep escarpment to Lake Street.
- Consider the development a fully accessible, year-round link between Lake and Battery Streets such as a funicular or tunnel.
- Redesign Depot Street to serve primarily as a pedestrian/bicycle access route to the waterfront with vehicular access limited solely to emergency, maintenance, and possibly public transit vehicles.

The principle task incumbent upon the City in providing access to the waterfront will be the development of the necessary linkages to the rest of the downtown. This means addressing the two leading barriers to waterfront access: Battery Street, and the escarpment between Battery and Lake Streets.

Battery Street Pedestrian Crossings

The *Waterfront Urban Renewal Plan* designated Maple, King, Main, College, Cherry, and Pearl Streets as “Waterfront Access Points.” Battery Street presents a barrier to pedestrians trying to move between the waterfront and downtown – four lanes of traffic, on a steep hill, moving fast. Some intersections, like Main and College, have incorporated some basic accommodations for pedestrians, while others, namely Cherry Street, currently have none. In the end, all intersections should be treated similarly, but the short-term priority should focus on the Cherry, Main, and College Street intersections.

Battery Street is an important north-south artery for the city, and any changes to its current configuration must be very careful not to disrupt the flow of traffic. However, several options remain that would make the street safer and more accommodating for both pedestrians and vehicles. These include:

- Narrowing the travel lanes to 10.5-11 feet like what was recently done on Main Street through the University.

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- Addition of a median (delineated with bricks or colored/textured pavement) that can provide some refuge to pedestrians at crossings.
- Narrow the crossing distance by creating bump-outs at the intersection where feasible.
- Clearly delineate wide pedestrian crossings using bricks or colored/textured pavement on both sides of the cross street.
- Traffic signals should be pedestrian activated and include a pedestrian phase and audible signal for those with sight disabilities.

Amenities in these corridors should be provided in accordance with the draft Wayfinding Plan currently under development for the Dept. of Public Works, and development along these corridors should be safe and inviting for pedestrians. Street furniture and pedestrian scale lighting should be installed along both sides of Battery Street.

Sidewalks on lower Maple Street west of Battery Street should be improved so that, like on College Street, sidewalks are on both sides of the street. These improvements should be completed as part of the construction of the Champlain Parkway.

The pedestrian path on the west side of Battery Street through the Battery Park Extension should be extensively redesigned to make it more inviting to pedestrians. Upgrades to the walkway and the addition of pedestrian scale lighting and furniture should be included in the improvements. Other activities like overlooks, street performers, and vendors should also be considered.

Battery/Lake Street Escarpment

Between Depot Street to the north and College Street to the south, there is a steep escarpment, or bluff, that runs north-south along the west side of Battery Park. This steep slope effectively prevents any east-west movement between the waterfront and downtown for over 3,000 feet.

The proposed Main Street Landing Co. development at the corner of Battery, Lake, and College Streets does include an elevator, which will provide a much welcome fully assessable pedestrian access. In addition, four short (150' to 200'), narrow pedestrian right-of-ways extending east off Lake Street below Bank, Cherry, Pearl and Sherman Streets are being preserved by their inclusion on the City's Official Map. With these



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routes potentially available⁸, a series of physical improvements must be developed to begin improving access to the waterfront. These could begin with something as simple as a staircase or as involved as a funicular.

- Stairways

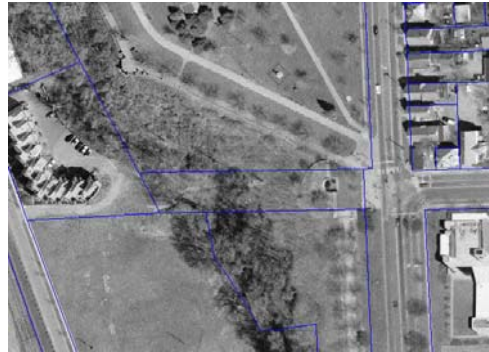
There are at least two places to construct public staircases (or “Stairway Streets”) that could provide simple and very cost-efficient public access to the waterfront. The first begins at the end of Pearl Street at the southern end of Battery Park, and would extend down the bank to the corresponding pedestrian right-of-way extending east from Lake Street. The second location is at the end of Sherman Street at the northern end of Battery Park, and would extend down the bank to the foot of Depot Street. More than simply a needed connection, Sherman Street steps would celebrate the natural tree covered rampart that is back-drop to Burlington’s Waterfront and provides the wonderful lake-mountain views from Battery Park.

Both would create “public staircases” like similar projects in cities like San Francisco, Rome, Paris, and Quebec City. Landings could host observation lookouts, benches, and other amenities for the users.

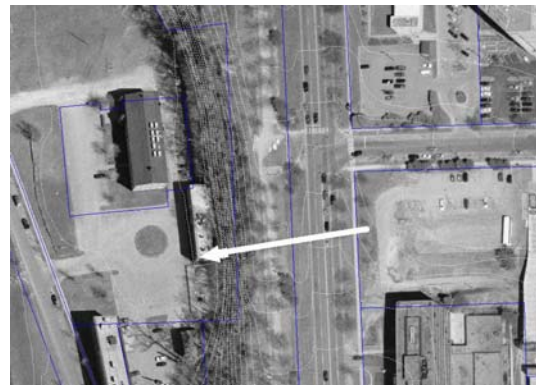
These staircases should be simple in design and construction. They could even be constructed as a VT Youth Conservation Corps project at a minimal cost. While they would not be fully accessible to those with disabilities, there are other ways of providing accessible accommodations using elevators, tunnels, funiculars, and shuttles (see below).

- Tunnels

Over the years, several recommendations have been made regarding creating an underground pedestrian connection between Lake and Battery Streets. The most logical way to create this underground link would be for it to be incorporated into future development at the



Pearl (top) and Sherman (bottom) Street stairways.



⁸ Inclusion on the Official Map temporarily precludes any proposed development enabling the city with the opportunity to purchase the property for the proposed public use.

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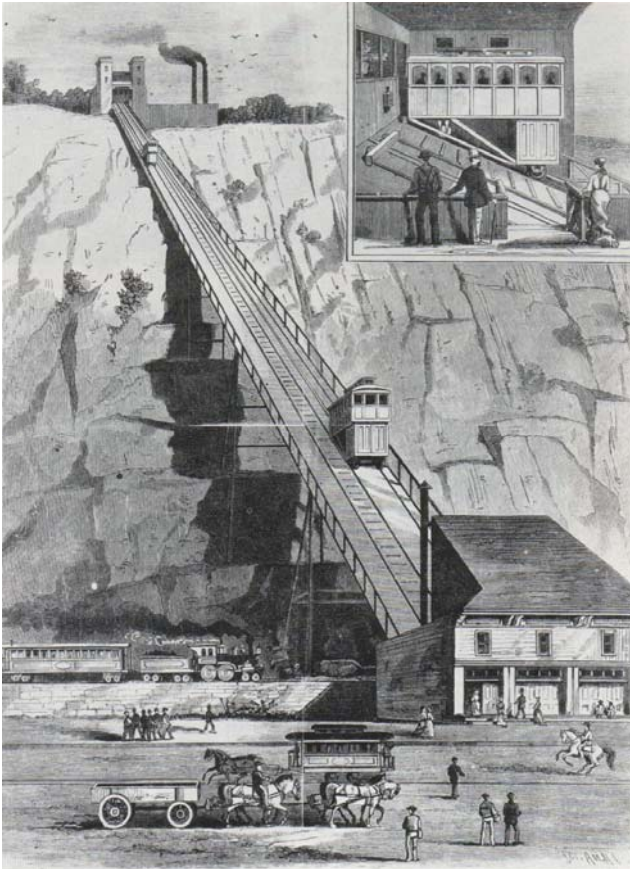
corner of Cherry and Battery Street and connected to future re-development on Lake Street. It would provide a pedestrian route protected from both the weather and traffic on Battery Street, and would offer a fully accessible access for those with disabilities. Any such connection needs to be attractive in and of itself - enlivened by color and the activity of retail and food concessions - and not just functional. Such a connection would also be expensive, and would have to be accomplished through a public-private partnership.

- Funicular

Funiculars are often mentioned in discussions of waterfront access especially when the elevation differences between Battery Park and Lake Street are discussed. A funicular is a cable railway running on a steep incline. Typically, such a railway operates two cars simultaneously counterbalancing one another as they are ascending and descending. Development of a funicular would not only provide an accessible link across the steep slope, but would serve as an attraction on its own like similar services in places like Quebec City. The most likely places to incorporate such a vehicle would be either at the intersection of Cherry or Pearl Streets as they are closest to waterfront and downtown activity centers. However, neither route is very long, possibly making the capital and operational costs prohibitive.

Below are examples of funiculars past and present. The appendix contains material developed for the Federal Transit Administration and the Federal Highway Administration by BRW Group, Inc. and published in August 2001 that provides additional information. An elevator or other vertical conveyance serves disabled persons.

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A drawing of the Duquesne Incline in Pittsburgh, PA. When The Duquesne Incline was opened to the public in May of 1877, it was one of four such inclined planes climbing Mount Washington (PA), carrying passengers and freight to the residential area that had spread along the top of the bluff.

Depot Street

Depot Street's function has long been debated: should it remain limited access as currently designated or be open to all traffic? A charrette was held in the spring of 2001 to explore Waterfront access via depot Street and Depot Street's function. The recommendation of the Charrette was to "...redesign Depot Street with a combination of sloped walkways and ramps, and level areas to create a pleasant and accessible pedestrian experience. Redesign might incorporate some characteristics of the stone wall "battery" of Battery Park." The RSG Study offered that Depot Street could be incorporated into a transit loop that serviced the waterfront possibly combined to a downtown circulator.



A funicular on Lucabettus Hill serving the Acropolis in Athens, Greece.



A funicular in Sedrun in the Swiss Alps.



A funicular in Budapest, Hungary

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Circulation

As the Interim Development Area, the Moran Station and the Lake Champlain Transportation Company property are redeveloped, public transportation between points on the Waterfront and from off-site parking to the Waterfront will be necessitated. Possible people-moving systems might include:

- Creation of a north-south tram from the Moran Plant to Roundhouse Point.
- Use of golf carts, tram, or a small van to shuttle visitors from downtown parking to the Waterfront—especially during special events.
- An extension of the College Street Shuttle route down Lake Street to the proposed Moran Circle turnaround.

The RSG study explored two basic concepts for waterfront transit. The first was a north-south circulator between the Downtown Transit Center at one pole, and the Moran Plant/Fishing Pier at the other. One transit vehicle could operate on 10-minute headways, and would shuttle back and forth along Lake Street. The second concept would be to add Lake Street as part of a downtown circulator route. This would be greatly enhanced by converting Depot Street to a transit-way.

Both concepts should be explored and consider an extension to Roundhouse Point as a southern terminus. Efforts should be made to integrate this service as seamlessly as possible into existing or planned downtown shuttle service.

Much discussion has center around creating a different way to move people along the waterfront. A way that is fun, efficient, environmentally responsible, and flexible enough to provide capacity during periods of peak demand such as during festivals or for summer month activities versus winter month activities. Appendix A contains information provided in *Federal Lands Alternative*



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Transportation Systems Study section on Candidate Vehicle Technologies prepared for the National Park Service.

As with the funiculars cited above, the appendix contains material developed for the Federal Transit Administration and the Federal Highway Administration by BRW Group, Inc. and published in August 2001 that provides additional information.

Bicycles

The planning and development of safe, functional bicycle routes has long been an important goal of the City. The development of the Waterfront Bike Path is the direct result of this commitment. However, the creation of a system of bicycle routes that compliment and broaden the utility of this route has been developed piece meal in the past. The City now has access to a bicycle planner who is currently working with a consultant to study bicycle access issues, especially along the north south axis of downtown. One goal of this study will be to develop plans for linking the Downtown Transit Center and Waterfront with the rest of the citywide bike network both on street and along separated paths. This will necessitate some accommodation along the Battery Street corridor for bikes, and the establishment of preferred routes for accessing the waterfront, the bike path, and the *Cycle the City* loop.

The bicycle study, combined with the Wayfinding study cited earlier, will identify the improvements necessary to establish these safe, functional routes. This Plan can suggest what those routes might be, thus offering some direction to those studying the larger system. With that in mind, accommodations for bicycles must be incorporated within the Battery Street corridor for safe, functional access to the transit center. While acknowledging that many bicycle trips along the waterfront are recreational in nature, and involve less experienced riders for whom Battery Street imposes an intimidating barrier, the Waterfront Bike Path will continue to serve as an important north-south route, and should be widened to ease congestion in this portion of the waterfront. Additionally, access to the Waterfront Bike Path from the on-street network shall utilize Maple Street to the South and Depot Street to the North employing those techniques identified in the north-south bicycle access study currently underway.

The relocation of the waterfront bike path from the east side of the VT RR tracks to the west side long identified as desirable remains a goal of this plan. Funding has been secured but right of way issues have surfaced that have delayed this project. The City will continue to work to resolve these issues. Another segment of bike path adjacent to the Moran Plant will need to be relocated when the site is redeveloped.

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Directional and Information Signage

The Department of Public Works has a contract with Land●Works of Middlebury, for the development of a “wayfinding” plan for the city. Entitled a *Plan for City Signing, Wayfinding and Information*, Land●Works was charged to study the city’s current systems downtown and on the waterfront, as well as relevant proposals and reports, and to recommend effective strategies for Burlington. This will establish clear pathways through specific signals - including signs, maps, and other “landmarks” - to direct the visitors from one point to another by providing critical information in a readily understood format. Ultimately this project, and the subsequent development of the project components, will make Burlington a more legible, accessible, and livable city, with a public realm that is safer and easier to move about in via the various modes of travel available, whether by bus, bicycle or on foot.

Key elements of this system include:

- The delineation and development of gateways and entry areas to the city
- Auto directional and parking signs, including parking entry signs with electronic information capabilities
- The integration of transit related signing from bus stops to electronic messaging in the downtown transit center
- Bicycle and pedestrian signs, including street markings and textured pavement as well as other forms of information such as electronic and paper maps.
- Interpretation elements such as signs and brochures, and celebration or aesthetic elements such as banners and public art.

Upon its final adoption, *A Plan for City Signing Wayfinding and Information* will serve as a central element in establishing the necessary linkages between downtown and the waterfront.

Actions

Actions	Principals	Time frame
Develop a TDM marketing program and research development of a TMA.	DPW, City Council Transportation Committee	0-18 months
Complete Transportation center and	DPW, CEDO	18 months

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intersection improvements		
Complete Wayfinding plan and initiate program	DPW	6 months
Develop lake Street Transit route	DPW, CEDO, CCMPO, CCTA	18-24 months
Provide amenities on approaching streets	CEDO, DPW	18 months
Stairway Streets	CEDO, DPW, Parks	5 years
Below Grade crossing	CEDO, Private developer	5 – 10 years
Sponsor design competition for stairway streets	CEDO, DPW and Planning	6 months
Identify potential funding sources	DPW, CEDO and Planning	Ongoing