Pedestrian Connection Feasibility Study
Final Report

Between Hathaway Creative Center and Downtown/Two Cent Bridge
Waterville, Maine

Prepared for:
City of Waterville

Submitted by:

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June 2009

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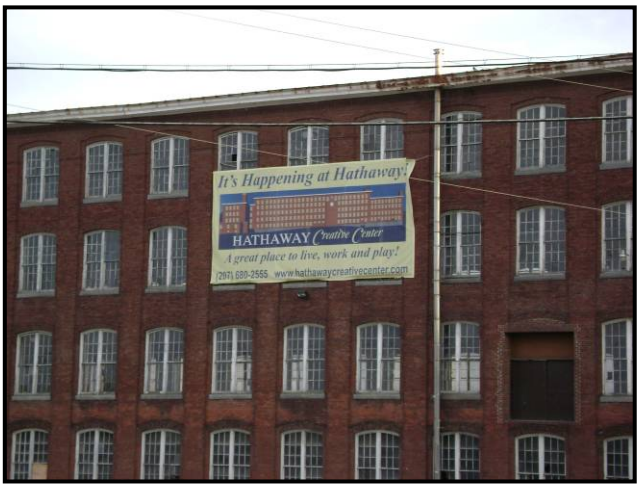
1.0 STUDY BACKGROUND AND PURPOSE

The historic landmark in downtown Waterville, the C.F. Hathaway Co. building, was purchased for revitalization into a multipurpose complex for retail, residential and office space known as The Hathaway Creative Center. The Hathaway Building Purchase and Sales Agreement states that "the City of Waterville will aggressively pursue an at-grade pedestrian connection that will provide a safe and attractive connector between the downtown business district and the Hathaway Creative Center. The City will also work closely with Kennebec-Messalonskee Trails organization to develop a recreational/bike path to the Hathaway Creative Center."



The purpose of this study is to identify and analyze various pedestrian connector alternatives between the Hathaway Creative Center and downtown Waterville, while also considering a multiuse riverfront facility as one of the alternatives with three primary objectives:

- Identify safe and appropriate pedestrian crossings of Bridge and Spring Streets that connect Hathaway Creative Center to Downtown Waterville and/or Two Cent Bridge;
- Identify safe and appropriate pedestrian routes that connect Bridge and Spring Streets with Downtown Waterville; and
- Identify safe and appropriate pedestrian routes that connect Bridge and Spring Streets with Two Cent Bridge.

The final outcome of the study is to provide a recommended alternative that meets the purpose and need statement of the study, and includes conceptual illustrations, photos, cost estimates and an evaluation matrix.

2.0 STUDY AREA AND STUDY PROCESS

The study area is comprised of an area delineated by the Kennebec River to the east, Main Street to the west, Temple Street to the north, and the Hathaway Creative Center to the south. See **Figure 1** located in **Appendix A**.

The study process includes six basic items noted below.

- Purpose and Need Statement
- Existing Conditions
- Meetings
- Alternative Analysis and Evaluation Matrix
- Preliminary Cost Estimates
- Recommended Alternative

3.0 PURPOSE AND NEED STATEMENT

The Purpose and Need Statement is a tool for the decision-making portion of a study process. The P&N Statement is a guiding set of specific objectives that the study is designed to meet and the deficiencies the study is geared to address. If done well, the P&N Statement helps narrow the range of practicable alternatives that can reasonably meet the objectives and address the deficiencies. Alternatives that do *not* meet the P&N Statement can then be dropped from further consideration. Alternatives that *do* meet the P&N Statement are subject to further study.

The City of Waterville prepared a draft purpose and need statement and has provided opportunities for public comment via the city website and the Public Scoping Meeting that was held May 21, 2008. The P&N is summarized as follows:

3.1 Purpose and Needs of the Hathaway Pedestrian Connector

Purpose: The Purpose of the Hathaway Pedestrian Connector is for the City to provide a safe and attractive pedestrian connection between the Downtown Business District and the Hathaway Creative Center. Additionally, the Connector shall closely coordinate with the Kennebec-Messalonskee Trails organization such that it is integrated with a future multiuse trail.

Needs:

- Residents, patrons and employees within the redeveloped mill buildings will need to access the Downtown area on a daily basis.
- Businesses locating within the mill complex will need to attract Downtown patrons to this location.
- Encouraging pedestrian access between the two destinations will reduce vehicle traffic and maximize parking efficiency. An attractive and inviting pedestrian access way will encourage foot traffic and discourage short vehicle hops.
- Modifying the uninviting vehicular intersection between Downtown and the Hathaway Creative Center will visually and physically tie this redevelopment project to the Downtown; essentially increasing the size of the Downtown Business District.
- The new pedestrian connector must be ADA compatible. The existing pedestrian crossing is unsuitable for disabled individuals.

- Connecting the Hathaway to the Downtown will improve the probability that property surrounding the mill redevelopment project will also be improved to its highest and best use.
- It is essential that the design and implementation of this pedestrian connector harmonize with other proposed traffic improvements in the immediate vicinity, both pedestrian and vehicular. To this end, a cursory review of all Downtown traffic enhancement initiatives should be reviewed in concert with this proposal. Specific issues that may be impacted by this connector must be carried forward and be presented in sufficient detail to understand the interaction between this connector and related projects.

3.2 Purpose and Needs of the KMT Riverfront Trail

Purpose: The Purpose of the KMT Riverfront Trail is for the City to provide a safe and attractive pedestrian/bicycle riverfront trail between the Two Cent Bridge and the Hathaway Creative Center.

Needs:

- The Two Cent Bridge is established as the Head of Trails. It is critical that the trail start on the City owned Head of Falls development parcel.
- Proximity to the river is critical. A continuous trail along the river bank is ideal. If this arrangement is not possible, the trail must have side trails or loops that do provide access to the river, to the maximum extent possible.
- The trail must be ADA compatible. (Assumes future federal funds will be utilized.)
- The trail must allow all Waterville residents access to the river. Convenient parking must be located within walking distance from access points. Clear signage and well marked walkways must be utilized between proposed parking areas and trail access points.
- The rail crossing must be achieved as safely as possible.
- The trail must be inviting and be perceived as safe and secure.
- At any point where the trail and roadway might be in close proximity, trail users must be insulated from vehicular traffic. Separation may be achieved by distance, structures, or landscape features.
- The southern end of this trail segment at the Hathaway project must not be a permanent termination. Continuation into and through the South End neighborhood is essential to realize KMT's long range vision of connecting existing and proposed trails in southern Waterville to the Head of Trails via this trail segment.
- The trail should incorporate historic, aesthetic, or educational waypoints to increase use and value.

4.0 EXISTING CONDITIONS

Aerial base mapping was provided by the City of Waterville, and also obtained from the Maine GIS database. The City also provided electronic mapping data for the study area that comprised of contours, right of way, property lines, and other common mapping features. Field inventory was performed to verify the base mapping data, which updated and expanded the data provided.

The City also provided the FEMA Flood Insurance Rate Map for purposes of defining the floodplain. **Figure 2** located in **Appendix A** shows a portion of the FIRM map showing the

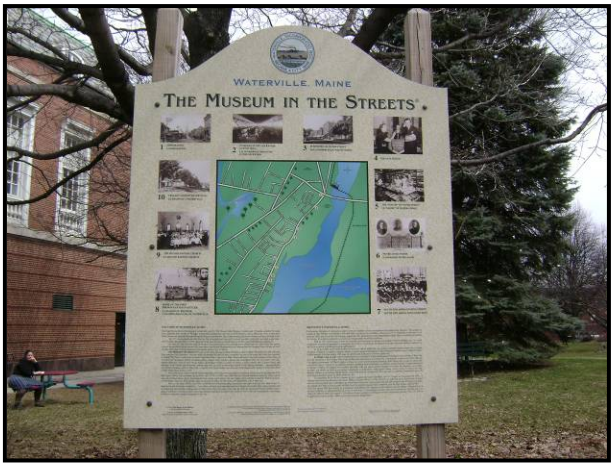
floodplain within the study area. Also, a rough sketch of the floodplain was added to the base mapping using the existing contours as a guide. Photographs were taken to document existing conditions as presented in the **Photo Log, Appendix B**.

Traffic information contained in the MaineDOT Traffic Movement Permit Application for the Hathaway Creative Center was provided by the City. The application contained existing traffic volumes and expected new traffic generation from the Hathaway Creative Center. Traffic volumes from this application was used to evaluate traffic conditions

The study area was reviewed and evaluated for possible pedestrian deficiencies as well as existing positive attributes that would help to further analyze the possible alternatives. This section summarizes the observations made, but is not all inclusive. Much of the data gathered can be viewed on the figures and photographs.

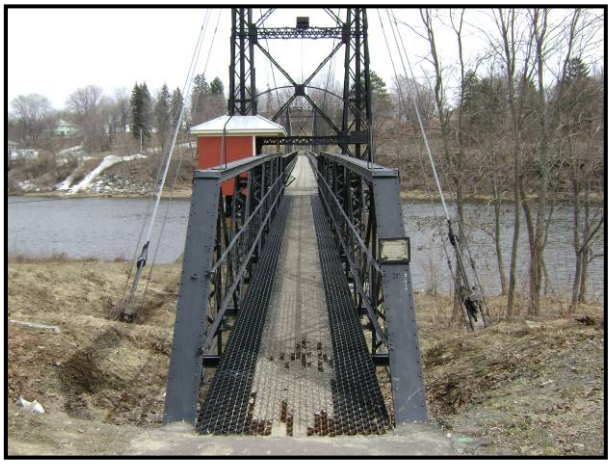
4.1 Main Street

Main Street has many positive attributes for providing safety, function and pedestrian accommodations. Within the study area on Main Street there are eight foot sidewalks in excellent condition; decorative pedestrian lighting; street trees; sidewalk ramps; crosswalks; a downtown kiosk; park areas with benches and walkways. Some of the opportunities for improvement include enhanced and additional crosswalks, and ADA compliant detectable warning surfaces at ramps and crossings. The Bridge Street/Water Street/Spring Street/Main Street/Front Street intersection needs improvement for pedestrian safety and function. There are no accommodations for bicyclist due to heavy traffic and parking; the sidewalks are not wide enough for bicyclists and pedestrians. Main Street is a two-lane one-way southbound street with parking on both sides. According to MaineDOT data, the 2006 AADT on Main Street near Spring Street was 8,310 vehicles.



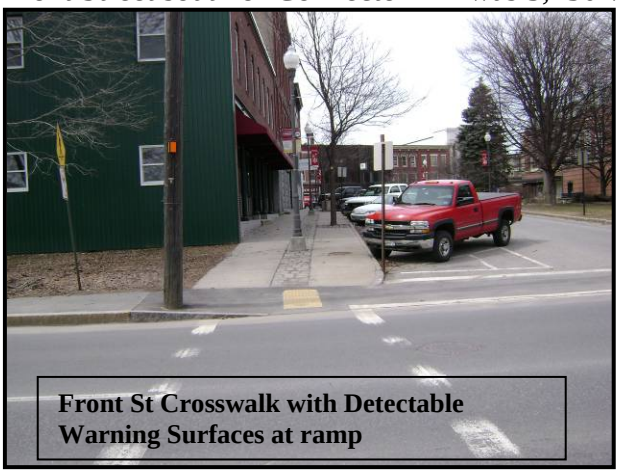
4.2 Temple Street

Temple Street has sidewalks on both sides of the street in moderate condition, some pedestrian lighting and a pedestrian signal at the Main Street intersection. The intersection at Front Street is STOP sign controlled and pedestrians must compete with vehicles when crossing Front Street. The primary positive feature in the Temple Street area is the Two Cent Bridge that crosses the Kennebec River- it is attractive and provides scenic views of the river. The sidewalk, from Front Street to the river, crosses railroad tracks at one location near the Two Cent Bridge and is in poor condition. Temple Street is a two-lane two-way street with some on-street parking.



4.3 Front Street

Front Street is a two-lane, one-way northbound street with five foot sidewalks on both sides. Most of the sidewalk ramps provide detectable warning surfaces and there are mid-block crosswalks near City Hall and the police station. A positive attribute is that there are some areas with trees and green space near the sidewalks. According to MaineDOT data the 2006 AADT on Front Street south of Connector 'A' was 5,730 vehicles.



Front St Crosswalk with Detectable Warning Surfaces at ramp

Front St looking North

Front St looking South to Hathaway Creative Center

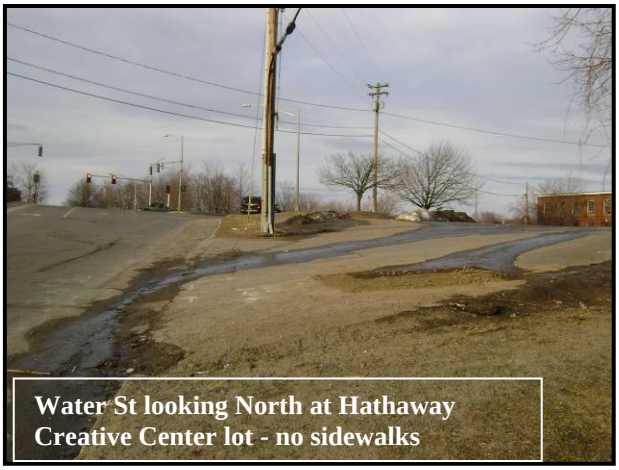
Front St looking North toward Temple St

4.4 Intersection of Bridge Street/Water Street/Spring Street/Main Street/Front Street

This intersection covers a large open area. Spring Street and Bridge Street are five lanes wide, with additional right turn slip lanes in all directions. These features make crossing for pedestrians dangerous and difficult. There are eight foot sidewalks on both sides, although they are not connected well; there are no pedestrian signals and crosswalks do not exist or are in poor condition. Front Street and Main Street provide sidewalk connections and nice green space areas with trees. The East side of Water Street does not have a sidewalk. According to MaineDOT data, the following AADT volumes exist at this intersection:

Bridge St Intersection looking East

- Bridge Street east of Water Street at the Winslow town line – 19,330 vehicles (2006)
- Spring Street west of Main Street – 10,390 vehicles (2003)
- Water Street southwest of Spring Street – 4,830 (2006)


Water St looking North at Hathaway Creative Center lot - no sidewalks


Looking South at Spring St crosswalk toward Water St/Hathaway Creative Center

4.5 Riverfront

The riverfront has the potential to provide scenic views as a route to the Two Cent Bridge, but currently, the trees and brush are thick and block the view of the river unless standing on either of the bridges within the study area. Exploring a pedestrian route in this area is faced with significant challenges such as steep slopes; the floodplain limits in conjunction with the existing buildings or right of way issues that limit space available; and providing safety features that would be needed such as lighting and railings. There is also a railroad crossing that needs to be improved or reconfigured for safety and ADA compliance. There are two small park areas along the riverfront within the study area- one at the corner of Front Street and Bridge Street and one near the pedestrian Two Cent Bridge with park benches.


Riverfront looking South behind Sentinel


Riverfront at park near Two Cent Bridge on Temple St

5.0 MEETINGS

A Public Scoping meeting was held on May 21, 2008. The purpose of the meeting was to introduce and explain the study to the public, the work that had been done to date, gather input from the public for use in developing/analyzing alternatives, and further evaluate the purpose and need statement. The meeting minutes and attendance can be found in **Appendix D**.

Wilbur Smith Associates in conjunction with the City of Waterville met with Maine Department of Transportation on October 9, 2008 to discuss the project. Meeting Minutes and attendance are provided in **Appendix D**.

The second public meeting was held on December 17, 2008 to present concepts that were evaluated and developed from input from the previous public meeting. The meeting presented various pros and cons of the concepts, a revised schedule, the tasks completed to date and what tasks remained. Each of the riverfront segments were also presented and explained. The meeting minutes and attendance for this meeting can also be found in **Appendix D**.

6.0 ALTERNATIVE ANALYSIS

This section provides a description of the alternatives, a summary of the analysis, challenges and opportunities of each, and the outcomes of alternatives evaluated during the study process.

6.1 Assessment Criteria

Evaluating whether a route or an area is functional and safe for pedestrians is generally guided by the following assessment criteria.

<u>Safety and Functional Needs</u>

- ADA Accessibility (sidewalk ramps & widths, signals, etc.)
- Continuity & Directness of Sidewalks
- Separation / Protection from Traffic
- Pedestrian Crossings & Connections
- Crossing Streets Safely – Intersections & Mid-Block
- Connections to Trails or High Volume Areas
- Traffic Operations

<u>Pedestrian-Oriented Considerations:</u>

- Street & Intersection Widths; Speed & Volume of Traffic
- Street Trees / Esplanades / Green Strips
- Pedestrian Lighting
- Landscaping
- Access from Street to Building Entrances
- Scale of Signs
- Pedestrian Circulation in/near Parking Lots

6.2 Pedestrian Crossing Concepts at Bridge and Spring Streets

Five overall concepts were reviewed to improve pedestrian crossing at the intersection of Bridge Street/Water Street/Spring Street/Main Street/Front Street, and one concept expanded into sub-concepts. The concepts were analyzed and could be implemented individually, but if warranted

also could be combined to develop an overall master alternative that meets all the objectives. The following five concepts are explained further in sections 6.2.1 to 6.2.5 and shown on **Figure 3** in Appendix A. These concepts are also listed in **Table 2: Evaluation Matrix for Pedestrian Crossing Concepts**, located in Appendix E which is also summarized in Section 8.0:

A. Overhead Pedestrian Bridge- Water Street to Main Street
B. Intersection Improvement
    B.1 Roundabout (**Figure 4**)
    B.2 Reconfiguration (**Figure 5**)
C. Grade Separated Path- Water Street to Front Street/Riverfront (**Figure 6**)
D. Overhead Pedestrian Bridge- Hathaway Building to Riverfront
E. Catwalk Under Bridge

6.2.1 Concept A- Overhead Pedestrian Bridge-Water Street to Main Street

This concept explores an overhead pedestrian bridge from a potential parking garage on the corner of Spring Street and Water Street to building structure somewhere on Main Street. Although this concept would provide a safe crossing of Spring Street for pedestrians and connection to downtown, it does not warrant additional analysis due to a number of factors. The following list provides a summary of the issues this concept faces:


Spring St looking West at Concept A area

- Does not accommodate bicyclists
- Does not provide easy accessibility to persons with disabilities- would need elevator or ramp system in both the future garage and in an existing building on Main Street.
- Parking garage feasibility/timetable is unknown.
- Does not provide a direct/easy connection to the waterfront and/or a connection for the Kennebec-Messalonskee Trails organization for future use.
- Targets the users of the parking garage; non-garage users are forced to detour from the sidewalk system; thus there may still be a need to provide at grade crossings.

For the above reasons, this concept was not carried forward. The above reasons do not meet the purpose and need of this study.

6.2.2 Concept B- Intersection Improvement

An evaluation of improvement options was performed for safely crossing pedestrians at the Bridge Street/Water Street/Spring Street/Main Street/Front Street intersection. Two concept designs were evaluated, a roundabout and a traditional signalized intersection. The traffic analysis was performed for the weekday PM peak hour and accounted for current intersection turning movement volumes, increased the base volumes by 20% to reflect a 10 to 20 year growth horizon, and added expected new traffic from the Hathaway Creative Center. **Table 1** presents traffic volumes at the intersection.

Table 1: Traffic Turning Volumes:

Movement	2008 Design Hour Volume	Hathaway Creative Center Trips	10-year Background Growth	2018 Design Hour Volume
Spring St. Left	100	0	20	120
Spring St. Through	363	-14	73	422
Spring St. Right	24	29	5	58
Bridge St. Left	72	57	14	143
Bridge St. Through	327	-12	65	380
Bridge St. Right	474	0	95	569
Water St. Left	40	41	8	89
Water St. Through	137	56	27	220
Water St. Right	113	101	23	237
Main St. Left	588	0	118	706
Main St. Through	169	54	34	257
Main St. Right	90	0	18	108
Total	2497	312	500	3309

6.2.2.1 Concept B1- Roundabout

An evaluation of traffic operations was performed at the subject intersection using the roundabout software program RODEL. According to the model output, a one-lane roundabout configuration would result in long delays for two of the roadway approaches (Main and Bridge Streets), and therefore would not be recommended for implementation. A second one-lane roundabout concept was reviewed, but with the introduction of a "slip" lane for vehicles destined to Front Street. While delay improved on one of the poorly operating approaches, substandard conditions would exist on the Main Street approach. Accordingly, it is recommended that a two-lane roundabout be considered to accommodate future traffic volume conditions. A two-lane roundabout is projected to operate at level of service 'A' during the future PM peak hour.

A second analysis was conducted using existing traffic volumes in an effort to determine whether a single-lane roundabout could be constructed in the short-term. The results indicate that acceptable traffic operating conditions would be provided if the subject intersection was converted to a single-lane roundabout in the near future. Accordingly, it appears that a phased construction approach could be undertaken with a single-lane roundabout constructed initially, with the design accounting for future expansion sometime in the future.

The roundabout concept would provide a ten foot wide shared-use sidewalk to accommodate pedestrians and bicyclists, with relief medians between directional traffic in all four directions. The roundabout provides a shorter, safer crossing for pedestrians than the existing intersection, although signalization may be needed per ADA accessibility standards, which somewhat compromises the purpose of a roundabout- to keep traffic moving. The design speed of traffic would be low, approximately 25 MPH. **Figure 4** in **Appendix A** shows the two lane roundabout concept overlaid on existing geometry.

Key Conclusions:

- Two-lane roundabout configuration required to accommodate traffic levels requires additional land area than the single lane roundabout or the reconfiguration option (described below).
- Although not yet standardized, two-lane roundabouts may require signalization of crosswalks to meet ADA requirements. This signalization requirement neutralizes the benefit of a roundabout.
- The roundabout serves u-turn movements well and could easily accommodate the Main Street to Front Street movement.
- Good traffic operations will be provided in the future with the two-lane concept.
- A phased construction scheme is feasible with a single-lane roundabout implemented initially and retrofitted to become a two-lane roundabout when traffic volumes warrant.

6.2.2.2 Concept B2- Reconfiguration

Reconfiguration of the intersection would eliminate all four right turn slip lanes, which eliminates four pedestrian crossing locations. Another primary change would be reducing the Spring Street approach from three lanes to two; the right through lane and slip lane are eliminated, providing one left turn lane and one through-right lane. The westbound two lanes would be reduced to a single lane, thus shortening the distance pedestrians need to cross. The entire intersection would provide sidewalks and crosswalks at every leg, pedestrian signals, and other ADA features. A capacity analysis was performed for the future volume scenario using the software program SYNCHRO. Results indicate that the subject intersection will operate at level of service 'C' overall with one movement (Spring Street through) operating at level of service 'E'. This concept overlaid on existing geometry is shown on **Figure 5** in **Appendix A**.

Key Conclusions:

- Improved pedestrian conditions by removing free-flowing slip lanes and a significant reduction of crossing distances.
- Reduced pavement areas, thus allowing landscaping and improved aesthetics.
- Acceptable overall level of service conditions, although one movement would experience some delay.

6.2.3 Concept C- Grade Separated Path- Water Street to Front Street/Riverfront

This concept outlines a grade separated path from the east side of Water Street to the east side of Front Street or riverfront area. An above grade sub-concept of this option would be impractical due to many of the same issues of the similar overhead bridge concepts of A and D and existing topography; so the primary focus of this concept was to explore an underpass that would begin near the Hathaway Creative Center along Water Street and go underneath Bridge Street to the north and then exit near Front Street, with connection options to Front Street and/or the riverfront

area. **Figure 6** located in **Appendix A** shows an example of a pedestrian underpass. Underpasses can be perceived as unsafe by users, so security lighting and cameras should be included in the design and it is recommended that pedestrians are able to see the other opening to provide an open and safe environment. Design should also meet ADA standards for accessibility- such as railings and appropriate slopes. Adequate drainage in tunnel structure will need to be provided to prevent ponding or icing conditions. There appears to be approximately a 5-foot grade difference between Bridge Street and the parking lot on the southeast quadrant of the intersection. Assuming a 10-foot vertical clearance within the tunnel, approximately 15 feet of vertical grade differential would be required to tunnel under Bridge Street.


Water St looking North to Front St (approximate location of Concept C)

Key Conclusions:

- Provides accessibility for a variety of users, including persons with disabilities
- Separates pedestrians from traffic- ideal for safety
- Can act as a plaza/gathering place if constructed with context-sensitivity in mind[1].
- Provides a sense of connectivity between major pedestrian centers- directly connected to the Hathaway Creative Center lot, access to downtown and to the possible riverfront trail
- Does not provide other pedestrian movements- not a solution for every pedestrian crossing at the intersection
- In order to accommodate the underpass, Bridge Street may need to be raised and/or a large sewer/storm line may need to be relocated.
- Maintenance would be required to keep tunnel walls free of graffiti and vandalism.

6.2.4 Concept D- Overhead Pedestrian Bridge- Hathaway Building to Riverfront

This concept suggests an overhead pedestrian bridge that would connect the second floor of the Hathaway building to the riverfront near the park area on the corner of Bridge and Front Streets. This option would provide an elevated safe pedestrian crossing, while simultaneously providing a gateway to the City of Waterville from Winslow (A rough sketch is provided in **Appendix D** as part of the meeting minutes for the public scoping meeting held in May 2008). This option was not practical for further analysis for similar reasons as Concept A as follows:


Bridge St looking West to Concept D location at Hathaway Creative Center

- Does not accommodate bicyclists
- Does not provide easy accessibility to persons with disabilities- would need elevator in the Hathaway building and on the other side to the park or an excessive ramp structure

[1] Institute of Transportation Engineers: Improving the Environment through Innovative Transportation Design.

- Does not provide a direct connection to downtown
- Targets the users of the Hathaway Creative Center only; other users (particularly those using the future multi-use trail) are forced to detour from the sidewalk and trail system

For the above reasons, this concept was not carried forward. The above reasons do not meet the purpose and need of this study.

6.2.5 Concept E- Catwalk Under Bridge

This concept explored a cantilevered catwalk that connects on the south side of Bridge Street near the Hathaway Building, going under the bridge and connecting to the riverfront near the park area on the corner of Bridge and Front Streets.

Early on, it was determined that this concept was not feasible and did not need further analysis due to the lack of space between the floodplain and the underside of the bridge's existing structure. The City of Waterville provided field data, notes and photos documenting this. Provided below is a summary of the key points:

- 100 year flood elevation at this location is about 65 feet (FIRM, **Figure 2**)
- 1987 flood of record reached 74 feet (FEMA flood report)
- Benchmark (RM19) at 83.43 feet on bridge abutment (FIRM, **Figure 2**)
- Lowest elevation of bridge steel superstructure is about 12 feet below roadway elevation, or about 70 feet
- Arch geometry of structure requires that a pedestrian structure to pass 25 to 30 feet out from the abutment then dogleg back to shore
- There is not enough elevation under the arch to locate a pedestrian structure above the 100 year flood plain; spring ice flow damage is also a concern.

Arch at Abutment, Looking Downstream

Looking East, Old Bridge, New Bridge and Arch

This concept is not feasible and requires no additional investigation or consideration.

6.3. Pedestrian Routes to Downtown

6.3.1 Main Street

As mentioned in section 4.0 Existing Conditions, Main Street has many existing positive attributes for pedestrians. It provides the most direct route from Bridge Street/Spring Street to the downtown area and also would require the least amount of improvements. Any improvements would need to coincide with the recommended alternative as discussed in Section 9.0. Opportunities for improvements are as follows:

- Add/enhance crosswalks
- Add detectable warning surfaces at sidewalk ramps
- Provide continuity and directness of sidewalks to Bridge Street/Hathaway Creative Center
- Provide Accommodations for Bicyclists

Main Street appears to be the most feasible and most logical routing for pedestrians between downtown Waterville and the Hathaway Creative Center.

6.3.2 Front Street

Front Street has opportunity to provide access to both downtown and Two Cent Bridge simultaneously, provided that Front Street and a connection to Main Street are improved. The appeal of this route is its directness from Hathaway Creative Center and the opportunity for improvements that would provide not only an attractive safe route for pedestrians but also accommodate other users such as bicyclists, skaters, etc. **Figures 7a to 7e** located in **Appendix A** show the existing cross section (**Figure 7a**) and various possible cross sections of Front Street and are discussed further below.

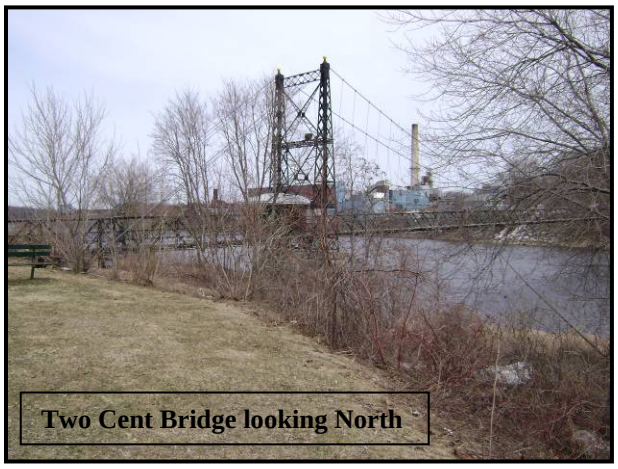
- Two-Lane/One-Way with no Widening (**Figure 7b**) – Maintaining two lanes in the northbound direction, but reducing pavement width by 4 feet and using that width for a landscaped esplanade.
- Two-Lane/One-Way with Widening (**Figure 7c**) – Maintaining two lanes in the northbound direction, and providing a 10-foot shared use path on the eastside with a landscaped esplanade.

- One-Lane/One-Way with no Widening (**Figure 7d**) – Providing one travel lane in the northbound direction, providing a 5-foot bicycle lane, a 10-foot shared use path, and a landscaped esplanade.
- Two-Lane/Two-Way with no Widening (**Figure 7e**) – Providing two-way flow with one lane in each direction, and providing a 7-foot sidewalk on the eastside with a landscaped esplanade.

Front Street can be considered a secondary route to downtown. It is slightly indirect for pedestrians going to downtown, unless any possible improvements were to create a more desirable route for pedestrians in terms of safety, attractiveness and accessibility than Main Street. If Front Street is used solely as a secondary route to either downtown or Two Cent Bridge, assuming a riverfront route is also built, than there is less importance of improvements needed on Front Street.

6.4 Pedestrian Routes to Two Cent Bridge

Front Street and the riverfront area were broken down into segments, along with segments that connect the two routes. These segments were then evaluated for feasibility by use of a matrix summarizing benefits and challenges of each segment. The matrix helped analysis and to determine which segments should have cost estimates prepared for use in determining the recommended alternative. **Figure 8** in **Appendix A** shows the segment labels and the detailed matrix is available in **Appendix E**.


Two Cent Bridge looking North

6.4.1 Front Street

As mentioned in Section 6.3.2, Front Street has potential to provide access to Two Cent Bridge and downtown simultaneously. Improvements can adjust accordingly depending on the purpose of the route or if other alternatives are pursued. The Front Street segments are referred to as S1-S3 on **Figure 8** in **Appendix A** as a reference to the street route option to the Two Cent Bridge.

This route is feasible. Sections showing possible improvement concepts are shown on **Figures 7a to 7e** located in **Appendix A**. The same strategies that are listed in Section 6.3.2 would apply in this case as well, but with impacts because Front Street would become a primary route to Two Cent Bridge and should accommodate all pedestrian users.

6.4.2 Riverfront Segments

The riverfront segments are summarized below. See **Figure 8** and Matrix **Table 3** located in **Appendix E** for more information. Various combinations of these segments and connectors could be developed into one or more full route alternatives that can be evaluated as a whole. The feasibility and considerations of individual segments can impact the extent of improvements required on Front Street, as noted in previous section. **Figures 9a to 9c** located in **Appendix A** show cross sections that were developed as part of analysis to help determine if any of these riverside segments were feasible and to assist with cost estimates.

- R1: Runs along the East side of the City's parking lot, at the top of the riverfront embankment.
    - No ROW acquisition/City property
    - Somewhat level relative to the rest of the segments, no retaining structure should be needed
    - Opportunities to create a "look out" point for scenic view of the river

Bridge St view of the riverfront

- R2: Runs behind the Bank's ATM Lot
    - Considerable slope- retaining wall required, if not to affect the bank lot
    - No retaining structure required if bank lot reconfiguration is considered
    - ROW acquisition needed
- R3: Runs behind the Sentinel
    - No ROW acquisition required/City property
    - Very steep slope- retaining wall structure needed
    - Most likely impacts parking area behind the Sentinel building
- R4: Runs along the east side of the Sentinel parking lot North of the building
    - City property but may impact RR ROW
    - Elevation/slope issues
    - Retaining wall structure needed
    - Parking reconfiguration required
- R5: Runs between Temple St sidewalk diagonally across the lawn between the RR tracks and the city parking lot
    - Within RR ROW; ROW easement required
    - Is a segment in lieu other segments that have ADA slope issues
- R6: Runs around the Temple St city parking lot and near the Kennebec River to connect other segments to the Two Cent Bridge
    - RR ROW easement may be needed
    - Impacted by/ Impacts Head of Falls Development project
    - Close proximity to and views of the river
- R7: Runs from the SE corner of the Sentinel parking lot, across the RR tracks, to the SE corner of the city parking lot near the Two Cent Bridge park area
    - RR ROW easement and coordination required
    - One of the closest segments to the river & more secluded from traffic/parking
    - Significant structures required to span the elevation dips

The connector segments are outlined below:

- C1: Connects the first riverfront trail segment with the Bridge Street Crossing Concepts B,C,D or E, or to the existing sidewalk system
    - This segment is required if there is to be a riverfront route at all
    - This segment does not pose any significant impacts, and simply becomes part of the Riverfront Route if implemented
- C2: Connects riverfront segments to Front Street on the North end of the city parking lot
    - Does not require ROW acquisition/City property
    - Use if there are issues continuing the riverfront route R2 along back side of Bank ATM lot
- C3: Connects riverfront segments to Front Street on the South end of the Sentinel parking lot
    - Does not require ROW acquisition/City property
    - May require parking reconfiguration
- C4: Connects riverfront segments to Front Street at the North end of the Sentinel building
    - Does not require ROW/City property
    - Reroutes users prior to segment R4 which may have ADA slope issues
- C5: Utilizes an existing connection North of the Sentinel parking lot between Front Street and the stairs that lead to the RR crossing
    - May need parking lot reconfiguration
    - Feasibility of this connector contingent on the elevation of the connecting riverfront segments
- C6: Runs along existing access path at RR track crossing to City parking area by Two Cent Bridge
    - Existing stairs are non-compliant with ADA standards; possible reconfiguration with slope to meet other segments and connectors
    - Existing stairs remain if ADA compliant path was routed to Front St using C5
    - Crosses RR tracks and RR ROW
- C7: Existing RR crossing on Temple St sidewalk (later extended to Two-Cent Bridge)
    - Poor condition RR crossing
    - Short section has a slope too steep per ADA recommendations

7.0 PRELIMINARY COST ESTIMATES

Preliminary Cost Estimates for construction of improvements, structures and trail segments were developed in order to assist the evaluation of possible alternatives. These cost estimates provide a basis for future fund planning or to apply for construction funding only. More detailed estimates will be required as any alternative advances into the design phase.

Unit costs were developed from average Maine DOT unit prices where applicable. Engineering, mobilization, maintenance and protection of traffic and construction administration were also factored into the cost estimates where applicable. A 20 percent contingency was added to the unit costs to account for unknown costs associated with environmental permitting, and mitigation. Right-of-way acquisition costs were not included in the estimate. Lastly, cost estimates were derived from 2008 dollars, and included adjustments for inflation to 2009 costs.

Not all segments and alternatives were estimated as certain alternatives were deemed infeasible or impractical during an earlier screening process.

A summary of preliminary cost estimates can be found in **Table 4** (below) for each concept that was carried forward during the study process. A breakdown of and assumptions made for these cost estimates can be found in **Appendix F** and are also entered into the evaluation matrices in **Appendix E**.

Table 4: Preliminary Cost Estimates

Concept	Estimated Cost (2009 Dollars)	Notes/Assumptions
A – Pedestrian Bridge	$960,000	• Assumes no sidewalk/ramp connections. • Structure access via proposed parking garage.
B1 – Roundabout	$1,680,000	• Assumes drainage improvements only. • No other utility relocation is anticipated or accounted for.
B2 – Signalized Intersection Improvements	$760,000	• Assumes drainage improvements only. • No other utility relocation is anticipated or accounted for.
C – Pedestrian Underpass	$1,970,000	• Includes excavation, structural concrete, retaining walls, and lighting. • Does not include provisions for pedestrian furniture. • North portal may require significant earthwork due to grade differences.
D – Pedestrian Overpass	$920,000	• Assumes sidewalk/ramp connection on north side. • Assumes southern access via Hathaway Building second floor.
R – Riverfront Trail Segments	$777,260	• Segments R1-R4 and R6 included. • Segments R5 and R7 were not considered.
C1 - Connector	$36,000	• Sidewalk connector to riverfront walk.
C7 – Temple Street	$69,000	• Sidewalk segment along Temple Street near Two Cent Bridge.

8.0 EVALUATION MATRIX

An evaluation matrix- a tool in chart form- was used to help identify challenges and opportunities of the various alternatives relative to one another. It helped to narrow down many options to a few feasible, practical alternatives that were evaluated more thoroughly, so that cost estimates and detailed final recommendations could be made.

Matrix **Table 2** in **Appendix E** was developed to evaluate the Bridge Street/Spring Street crossing concepts and Matrix **Table 3** (also in **Appendix E**) was developed to evaluate the riverfront trail segments. The data included in the matrices is summarized throughout this report as well.

9.0 RECOMMENDED ALTERNATIVES AND CONCLUSIONS

The recommended or preferred alternatives were developed from input from the City of Waterville, public meetings and feasibility analysis. Given that many different options are

possible, the recommended alternatives do not rule out all competing alternatives, but rather selects the ideal options to move forward to the next study phases. **Figure 10** in **Appendix A** shows the recommended alternative- the combination of concepts and recommendations for further study as described in the following sections.

9.1 Main Street

Existing Main Street was determined to accommodate pedestrians fairly well and would allow users to be able to access downtown in conjunction with improvements made at the intersection with Spring/Bridge Streets. It is recommended to make some minor improvements to further enhance the existing Main Street as also stated in section 6.3.1; opportunities for improvements are as follows:

- Enhance crosswalks (evaluate parking needs with pedestrians crossing mid-block to add safety features.)
- Add detectable warning surfaces at sidewalk ramps
- Provide continuity and directness of sidewalks to Bridge Street/Hathaway Creative Center (As discussed below in the Bridge Street crossing recommendations.)
- Provide Accommodations for Bicyclists- Providing access to downtown via bicycle can help any traffic or parking issues while also increasing overall safety.

9.2 Spring Street/Bridge Street Crossing

Pedestrian and bicycle movements across Bridge and Spring Streets are currently problematic and this study identifies recommendations for both general downtown pedestrian activity and accommodating long-term multi-use trail opportunities along the riverfront.

9.2.1 General Pedestrian Accommodations

Two improvement concepts were evaluated that would provide pedestrian benefits between the Hathaway Creative Center area and Downtown- a modified intersection and a roundabout. Both options provide improved conditions and are feasible. Based upon input from the process, it was determined that Concept B1, a two lane Roundabout is the recommended alternative. The roundabout will provide adequate flow for traffic, while minimize crossing distances for pedestrians. The roundabout will have ADA compliant crosswalks, ramps and sidewalks on all sides, and will provide access to downtown, Front Street, and any future multi-use trail along the riverfront. The roundabout option is more expensive than concept B2, the reconfiguration of the intersection with a traditional signal; however, the cost is relative to the level of benefits. The roundabout offers greater benefits to traffic and to pedestrians. This concept meets the Purpose and Needs established early in the study. This option also benefits other future possibilities for Front Street and a riverfront trail. It is further recommended that a phased design and construction of the roundabout be incorporated. Analysis indicates that a single-lane roundabout will operate acceptably under existing traffic volumes and the need for expansion will occur as future growth occurs. Accordingly, a single-lane roundabout should be constructed and retrofitted with a two-lane roundabout when volume demand necessitates expansion.

9.2.2 Multi-Use Pedestrian/Bicycle Accommodations

Several “high level” improvement options were explored that would provide a facility that would have regional trail benefits through downtown Waterville and would serve trail or non-general pedestrian traffic (although general pedestrian traffic could use it). Based upon the analysis, Concept C, a pedestrian underpass under Bridge Street, should be further explored and studied. The concept was determined feasible and preliminary cost estimates were established in this

study. The cost estimates were based on the underpass being built concurrently with any intersection improvement (such as the roundabout.) Any portion of this study that moves forward should consider this concept to be built concurrently or to further study the impacts of building the underpass as a future project. If it were to be part of a future project, then the design of the roundabout (or any roadway improvement on Bridge Street) should account for the building of the underpass during design. For instance, any utilities or roadway elevation changes that need to be made should be done as part of the roadway design to allow room for the underpass in the future and thus reduce overall costs. Either side of the tunnel would provide a plaza which acts as a gathering place for pedestrians. This option works well for all purposes of this study-pedestrian access to downtown, access to Two-Cent Bridge, and a future riverfront trail. Examples of a pedestrian underpass are shown in **Figure 6** in **Appendix A**.

9.3 Front Street/Downtown Traffic Study

There are no recommendations for Front Street at this time. Instead, further study is needed. It is recommended that a Downtown Traffic Circulation and Parking Study be conducted which would study the entire area and also help determine the needs of Front Street (one-way, two-way, etc.). A draft Request for Proposal (RFP) is available in **Appendix G** that outlines a scope of work for this traffic study. The improvements on Front Street would also need to be coordinated with riverfront trail design. If the trail were built (adequate funding, etc), then Front Street improvements could have less trail-user emphasis in the design. Should the trail not be built, then Front Street would need to accommodate trail users to act as a connector between Two Cent Bridge and Water Street and/or the Hathaway Creative Center area.

9.4 Riverfront Trail

Several slight alignment variations were reviewed along the riverfront between Bridge Street and the Two Cent Bridge. The trail (R1) can start at the Bridge Street sidewalk or near the city parking lot. An interim connector (C1) would be required depending on the order of the other improvements that are built. The connector could be built as part of the Roundabout or if the trail was built prior to the roundabout, connection should be established to the existing sidewalk system. From segment R1, the trail would run along segments R2, R3, and R4. Segment R4 ends where there is an existing 5-foot walk that crosses the railroad tracks, connector C6. This connector walk would need to be enhanced such as widening and so that it conforms to trail width requirements. Due to the stairs and slope issues of C6, Connector C5 should be enhanced with safety features to separate pedestrians from the parking lot and provide access to the existing sidewalk system for users who are not able to use C6. Existing sidewalk segment on Front Street (S3) and the sidewalk on Temple Street (C7) should also be enhanced for accessibility and safety to accommodate users who do not use the stairs. Trail segment R6 is designed to route pedestrians around the parking lot and be as close to the river as possible. The segments in this area (R6, C7, S3, C5, C6) should be considered during any developmental projects in the area. Should segment R6 be excluded from the trail, there should be a design to include crosswalks and/or sidewalks to route pedestrians from the existing walk (C6) to the Two Cent Bridge to minimize safety issues of pedestrians crossing the parking lot. It should be noted that it is recommended that the riverfront trail be constructed outside of existing parking areas, thus limiting property and parking supply impacts and allowing for better separation. This approach does require increased cost, due to the need for retaining structures, as included in the costs estimates included in the body of the report. ■

APPENDIX A: FIGURES

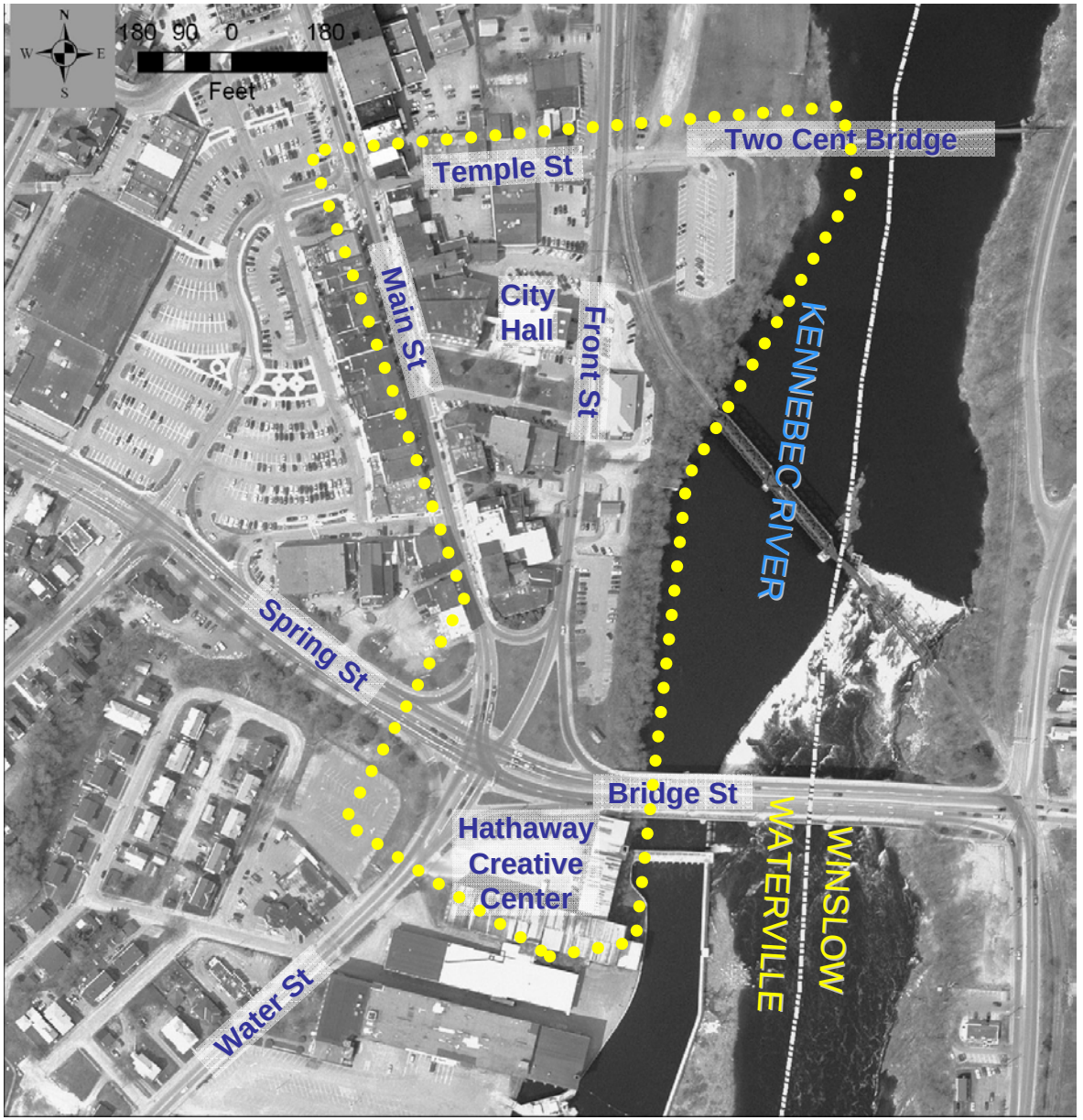


Figure 1: Study Area

Pedestrian Connector Feasibility Study
City of Waterville, Maine

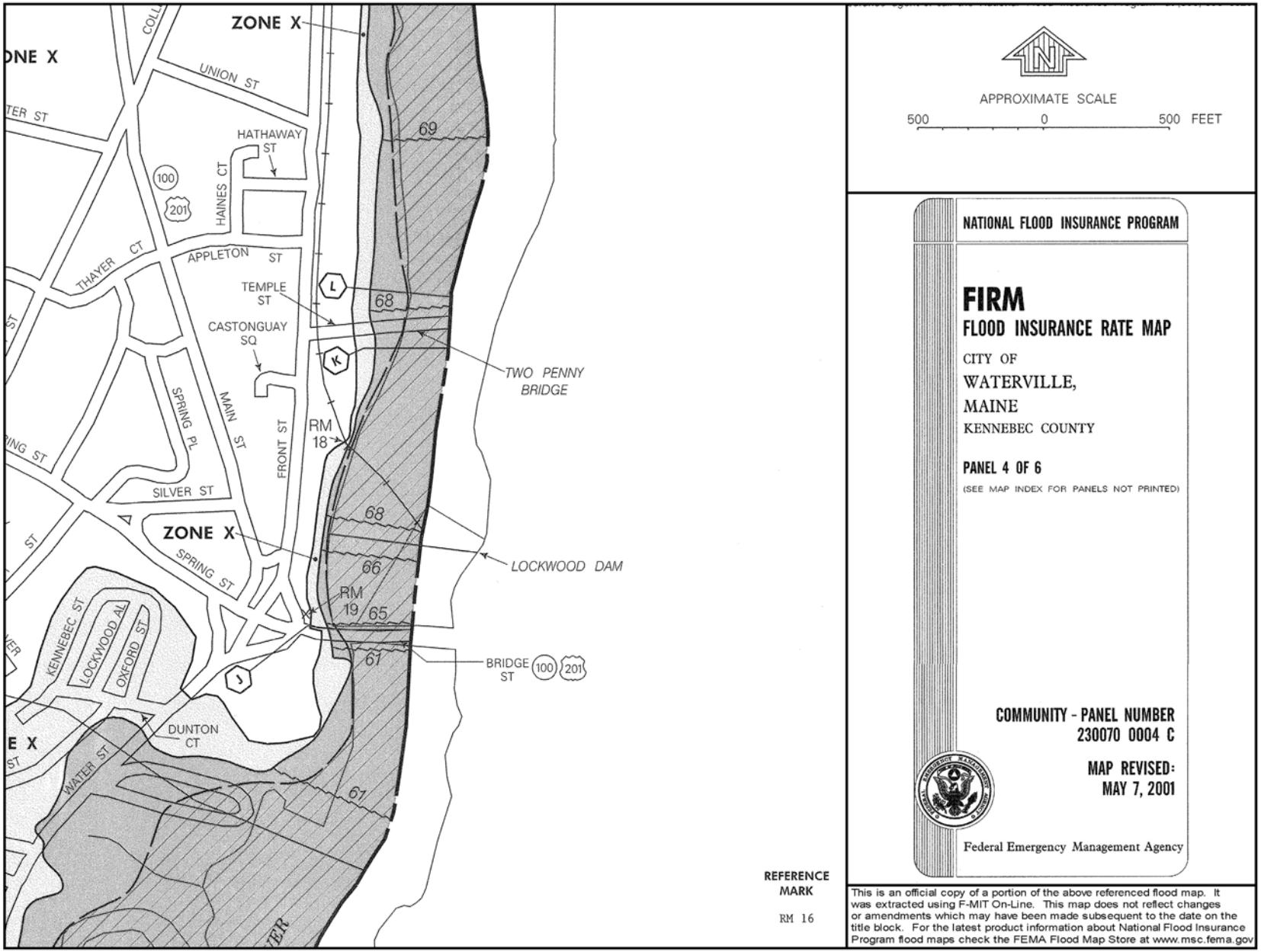


Figure 2: Study Area Floodplain FIRM Map

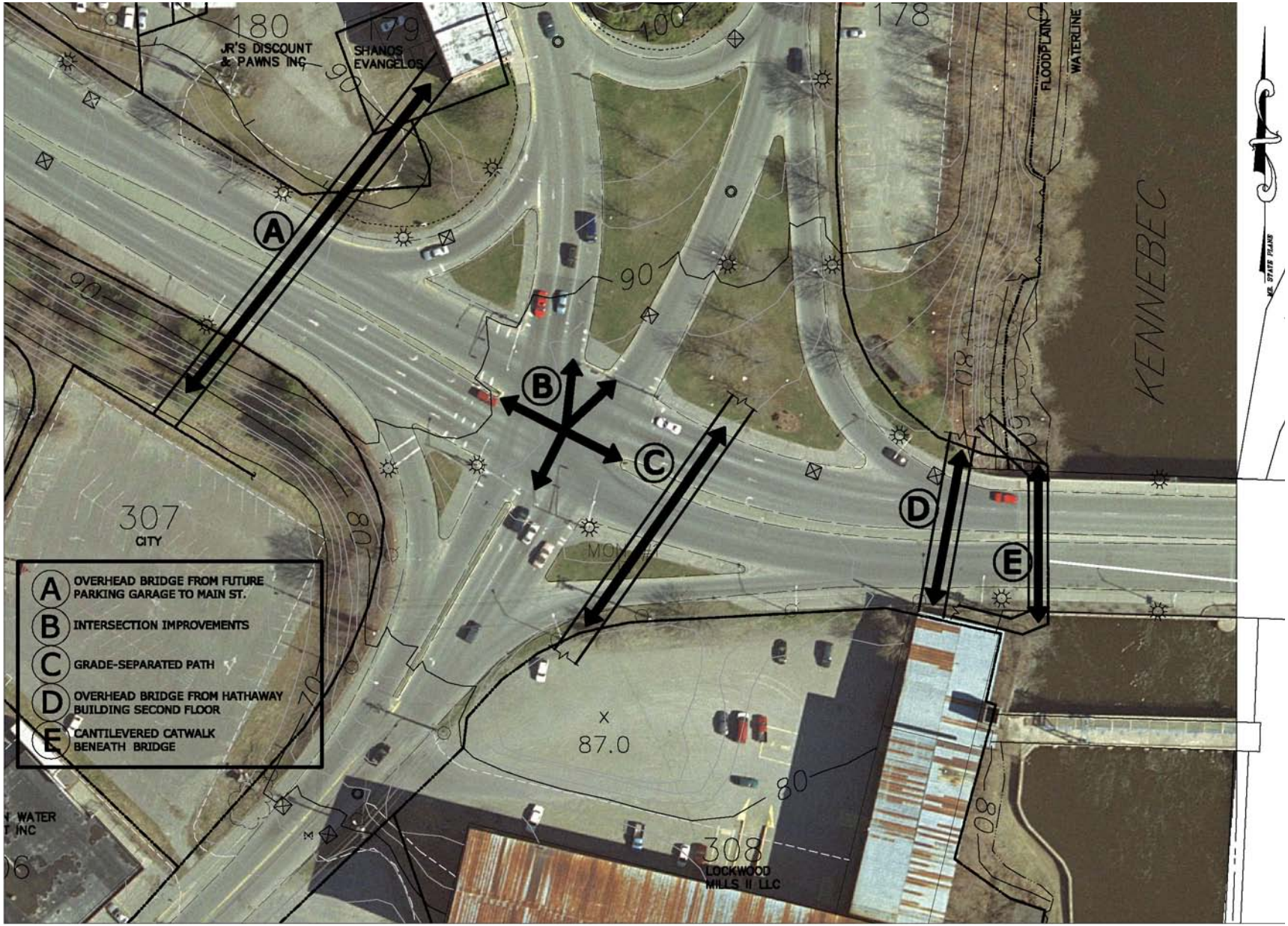


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Figure 3: Pedestrian Crossing Concepts

Scale: 1" = 90'

Pedestrian Connector Feasibility Study
City of Waterville, Maine

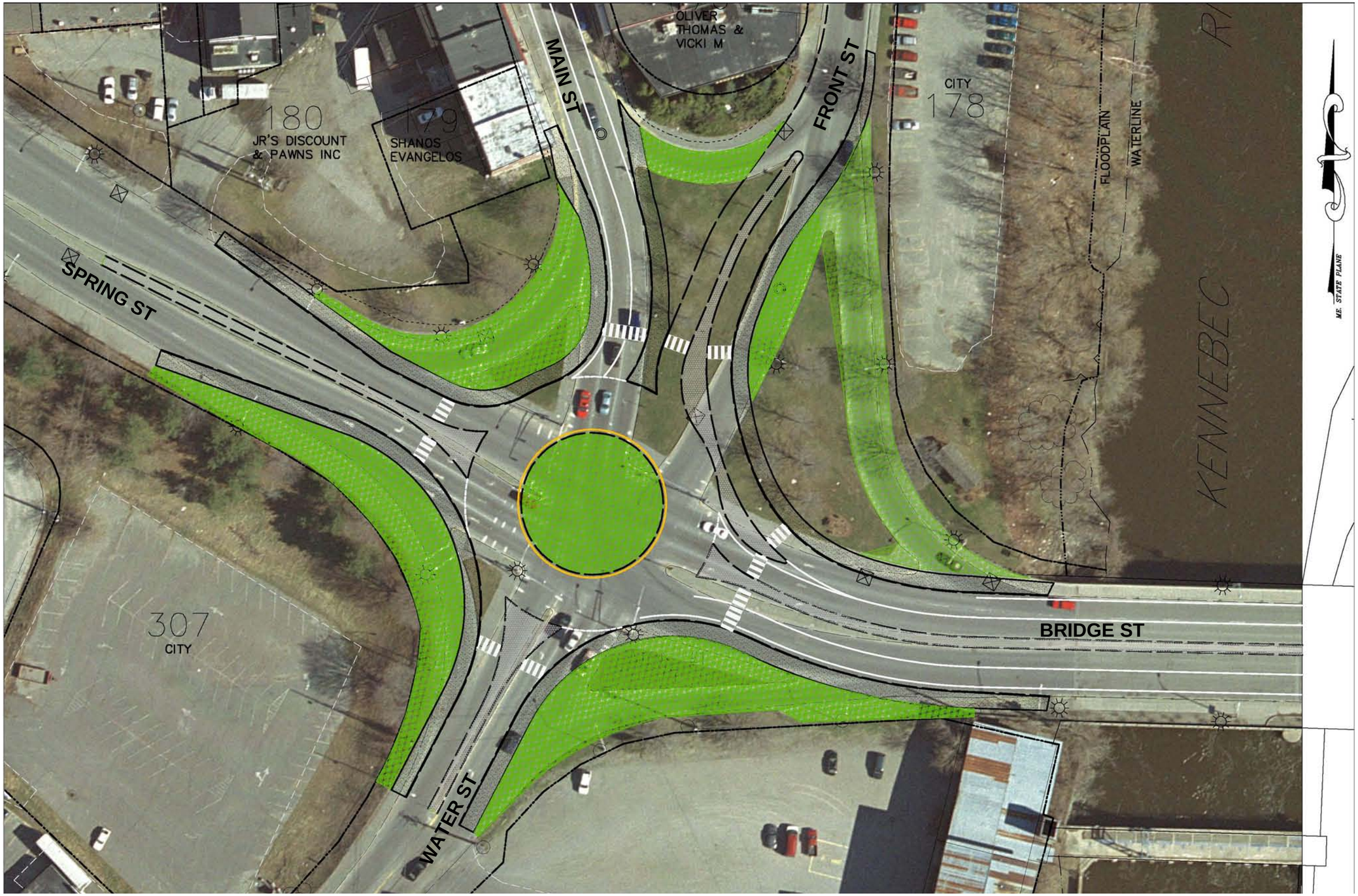
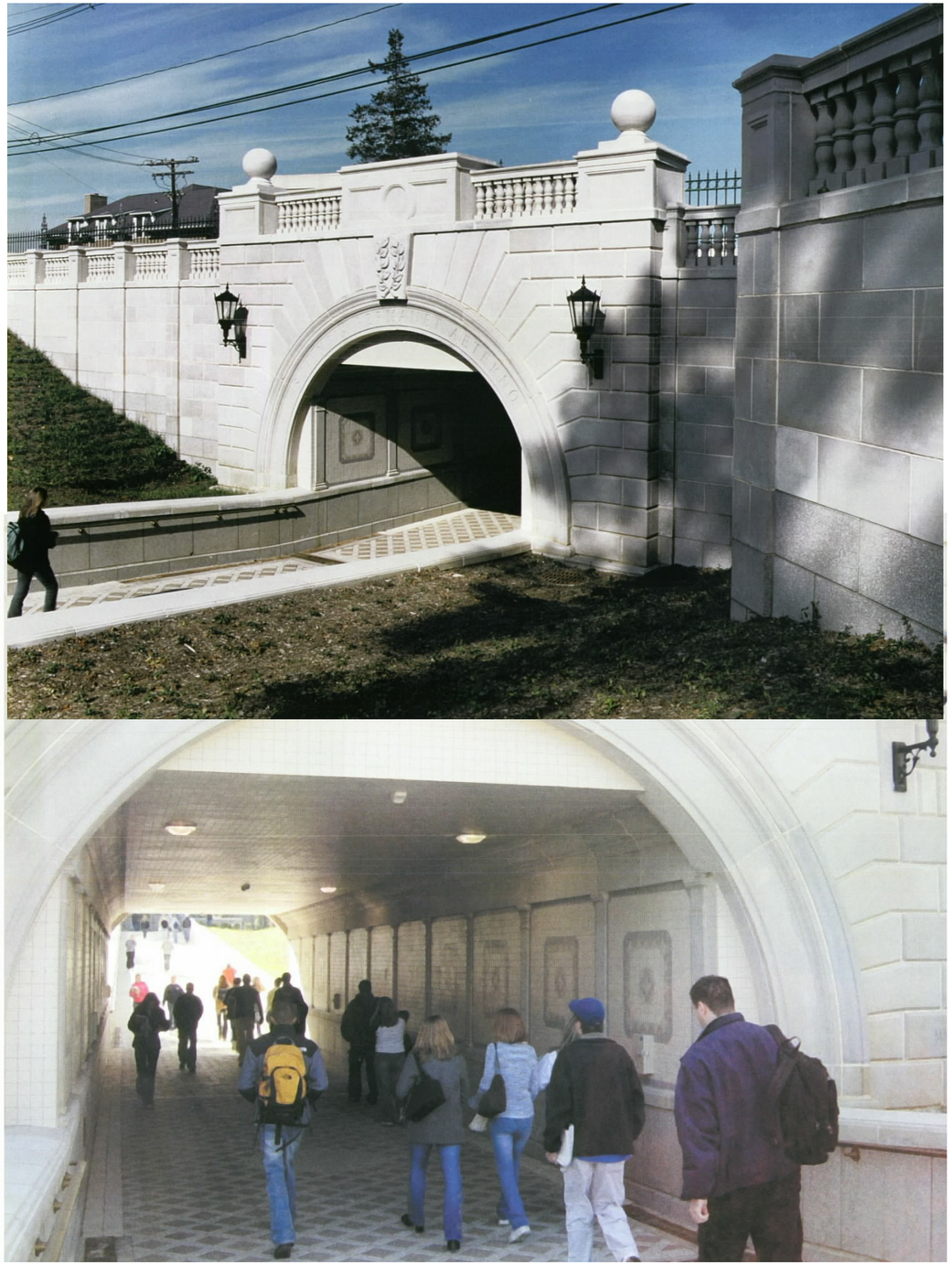


Figure 4: Concept B1- Two Lane Roundabout

Scale: 1" = 60'

Figure 5: Concept B2- Intersection Reconfiguration

Scale: 1" = 60'

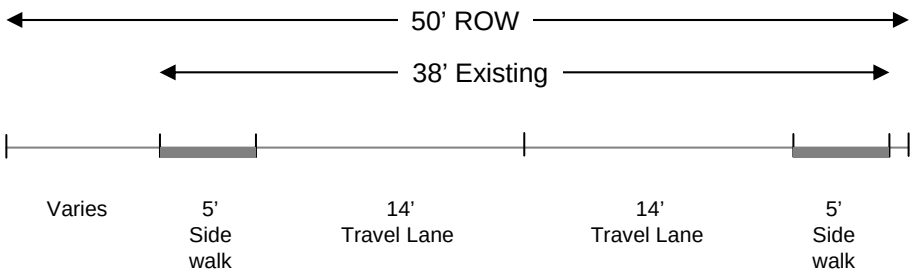


Project Example of a Pedestrian Underpass:

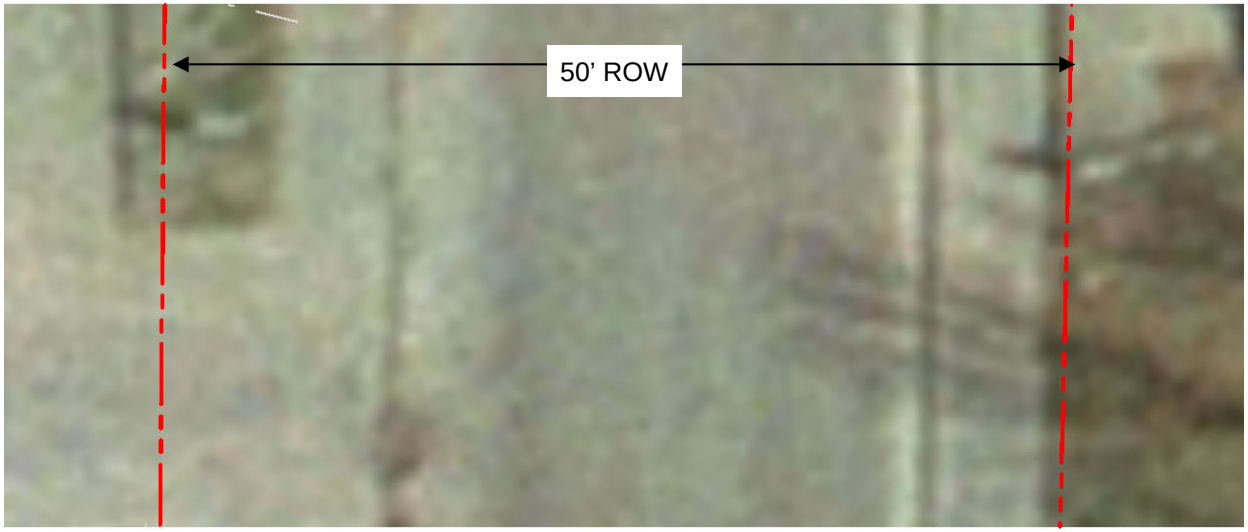
ROUTE 71 PEDESTRIAN TUNNEL AT MONMOUTH UNIVERSITY for NJ Department of Transportation

Source: ITE

Figure 6: Concept C Example Underpass



Existing Cross Section



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Scale 1” = 10’

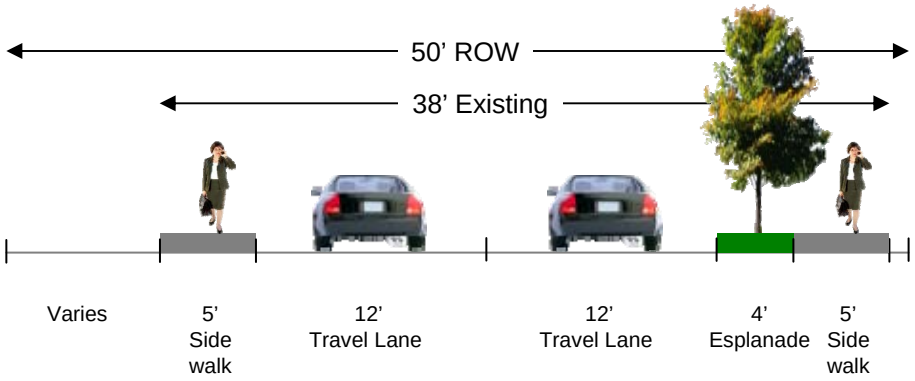
Existing Plan

WilburSmith ASSOCIATES

Figure 7a: Front Street: Existing Two-Lane / One-Way

Pedestrian Connector Feasibility Study
City of Waterville, Maine

Scale: 1” = 10’



Cross Section

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Scale 1” = 10’

Plan

WilburSmith ASSOCIATES

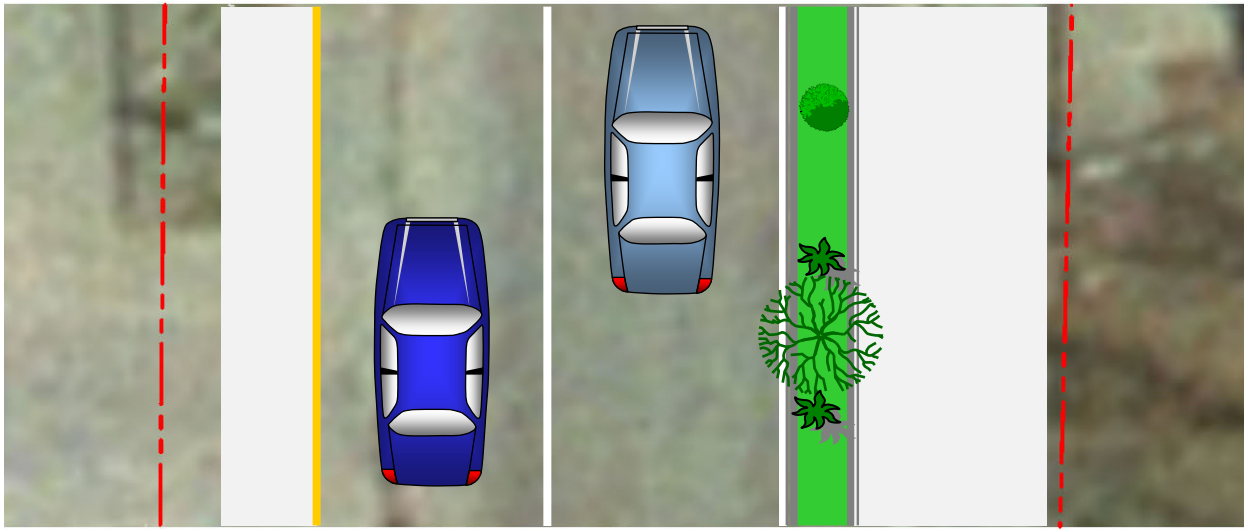
Figure 7b: Front Street: Improved Existing Two-Lane / One-Way

Scale: 1” = 10’

Pedestrian Connector Feasibility Study
City of Waterville, Maine

Final Report June 2009

Cross Section



N

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Scale 1” = 10’

Plan

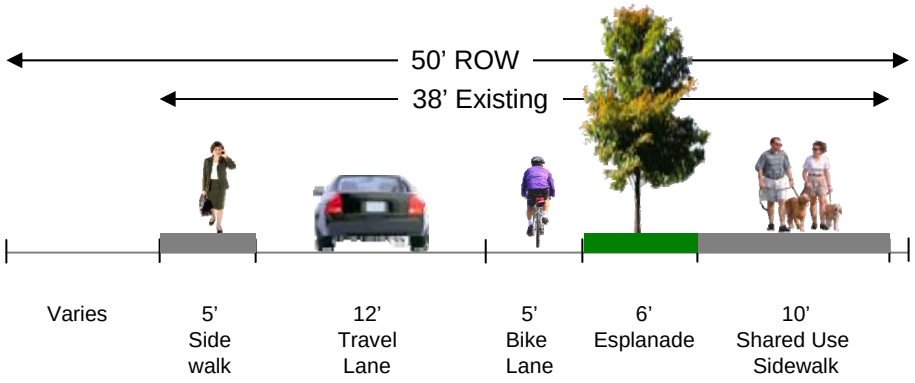
WilburSmith ASSOCIATES

Figure 7c: Front Street: Two-Lane / One-Way

Pedestrian Connector Feasibility Study
City of Waterville, Maine

Scale: 1” = 10’

Final Report June 2009



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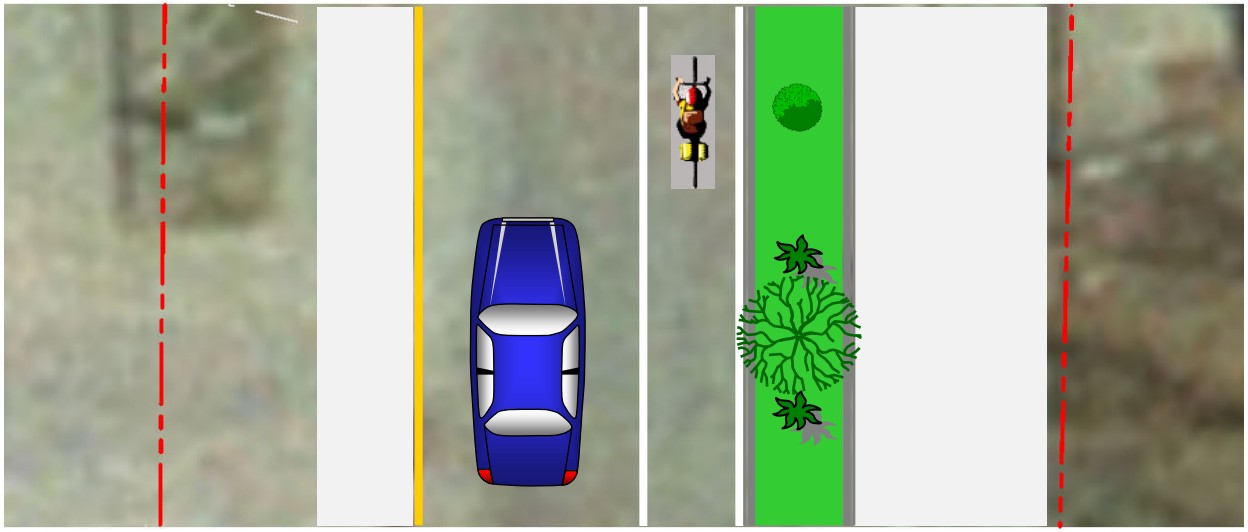
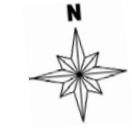


Plan



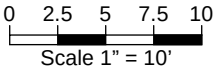


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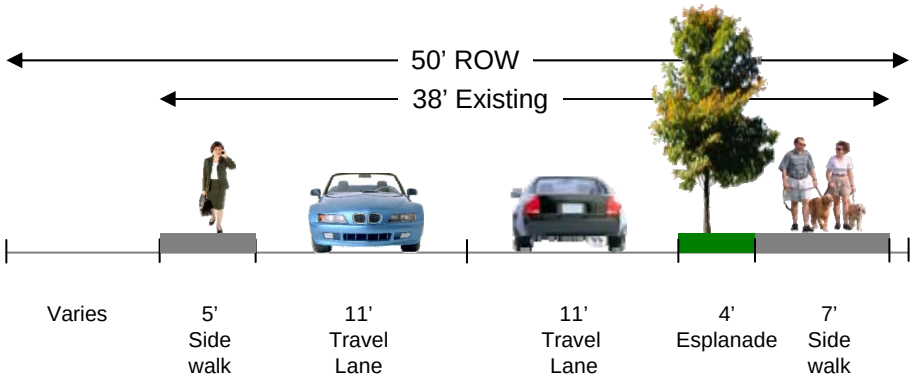
Figure 7d: Front Street: One-Lane / One-Way

Scale: 1” = 10’

Pedestrian Connector Feasibility Study
City of Waterville, Maine

Final Report June 2009



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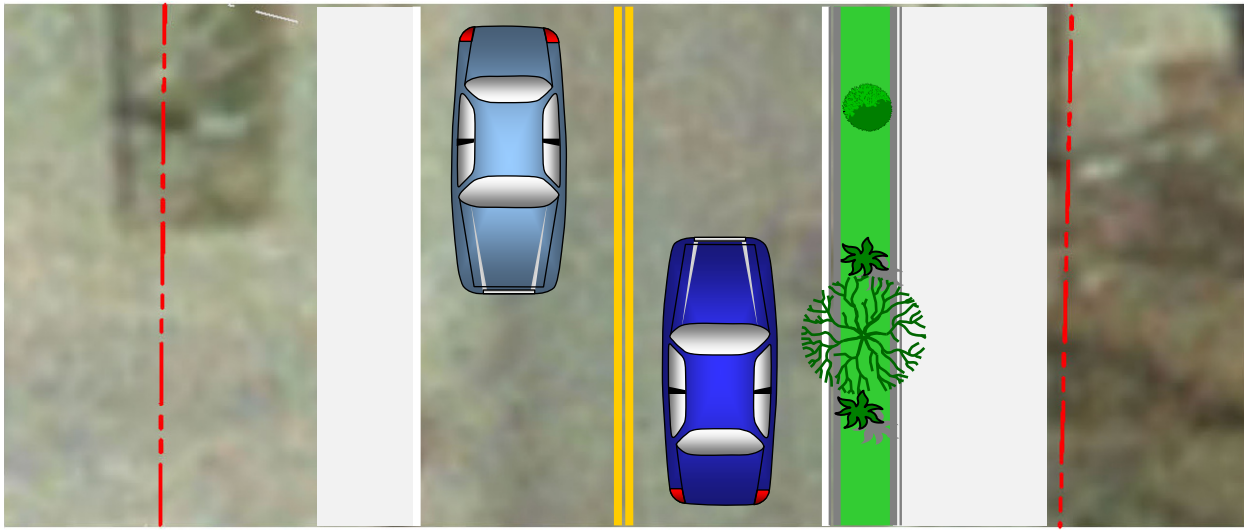

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Scale 1” = 10’

Plan

WilburSmith ASSOCIATES

Figure 7e: Front Street: Two-Way

Pedestrian Connector Feasibility Study
City of Waterville, Maine

Scale: 1” = 10’

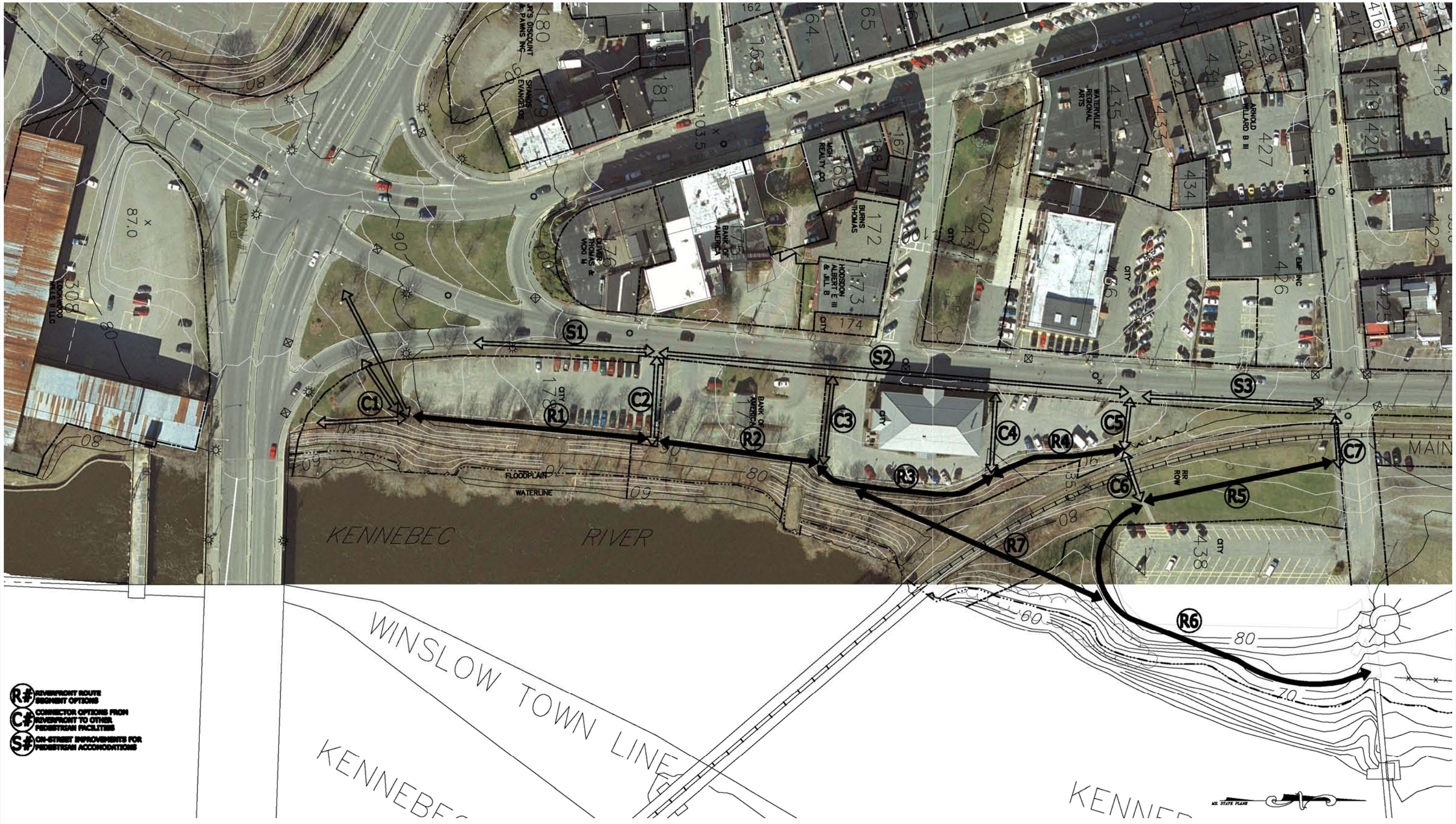
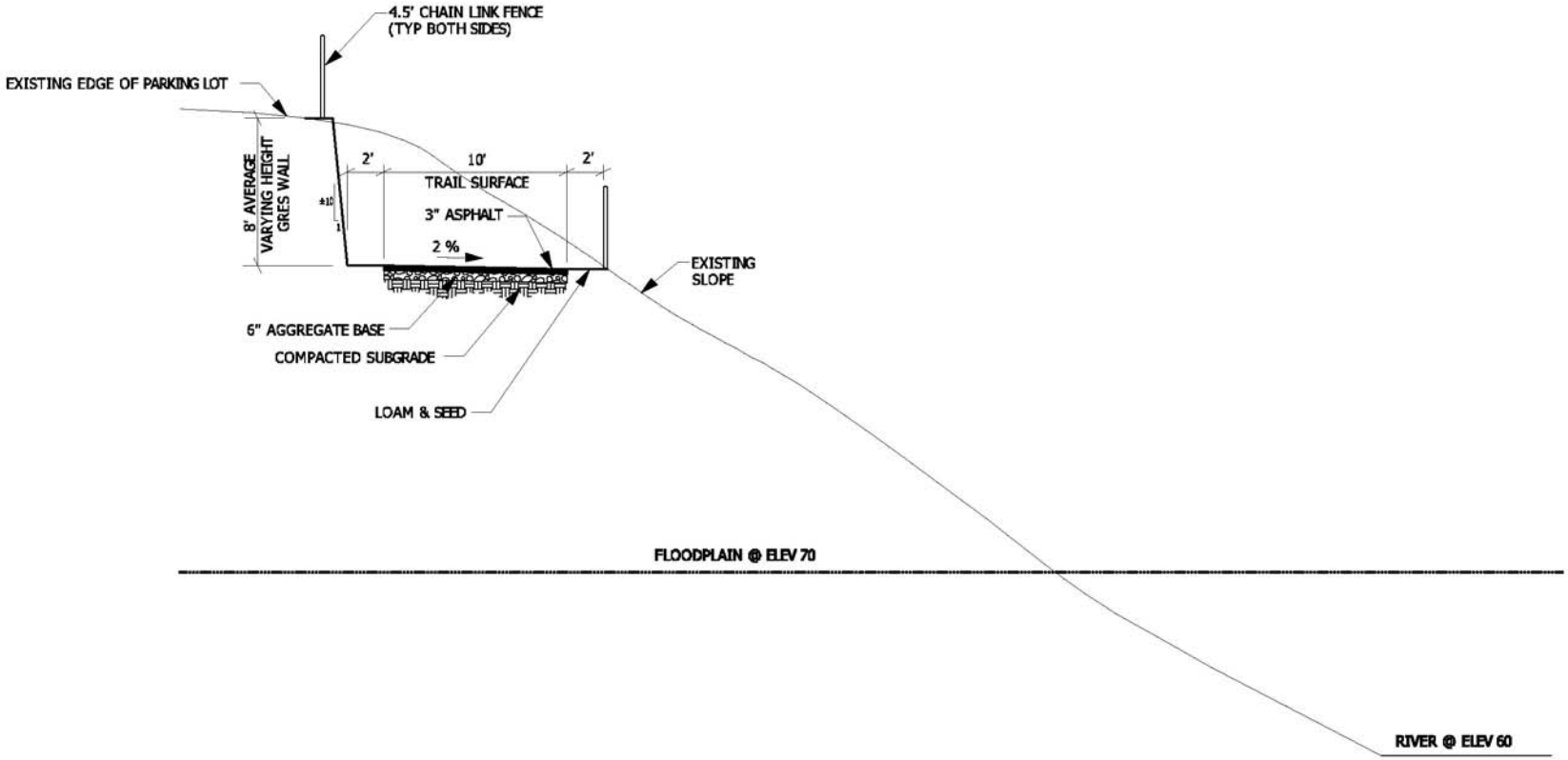


Figure 8: Pedestrian Route Segments to Two Cent Bridge

Scale: 1" = 100'

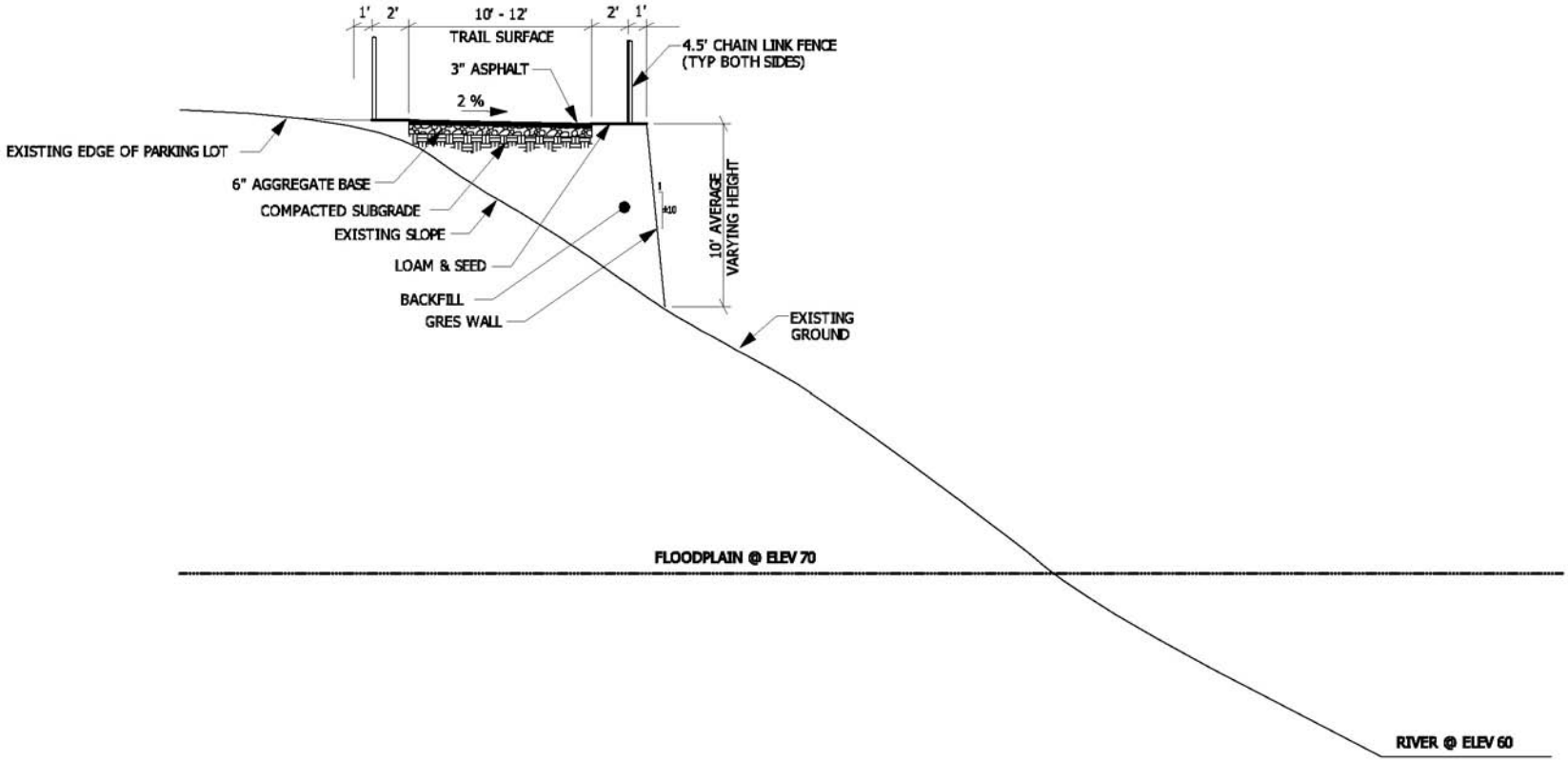


Riverfront Segment R2,

Behind Bank of America ATM Lot

Figure 9a: Cross Section Riverfront Segment R2, Option 1

Scale: 1" = 10'



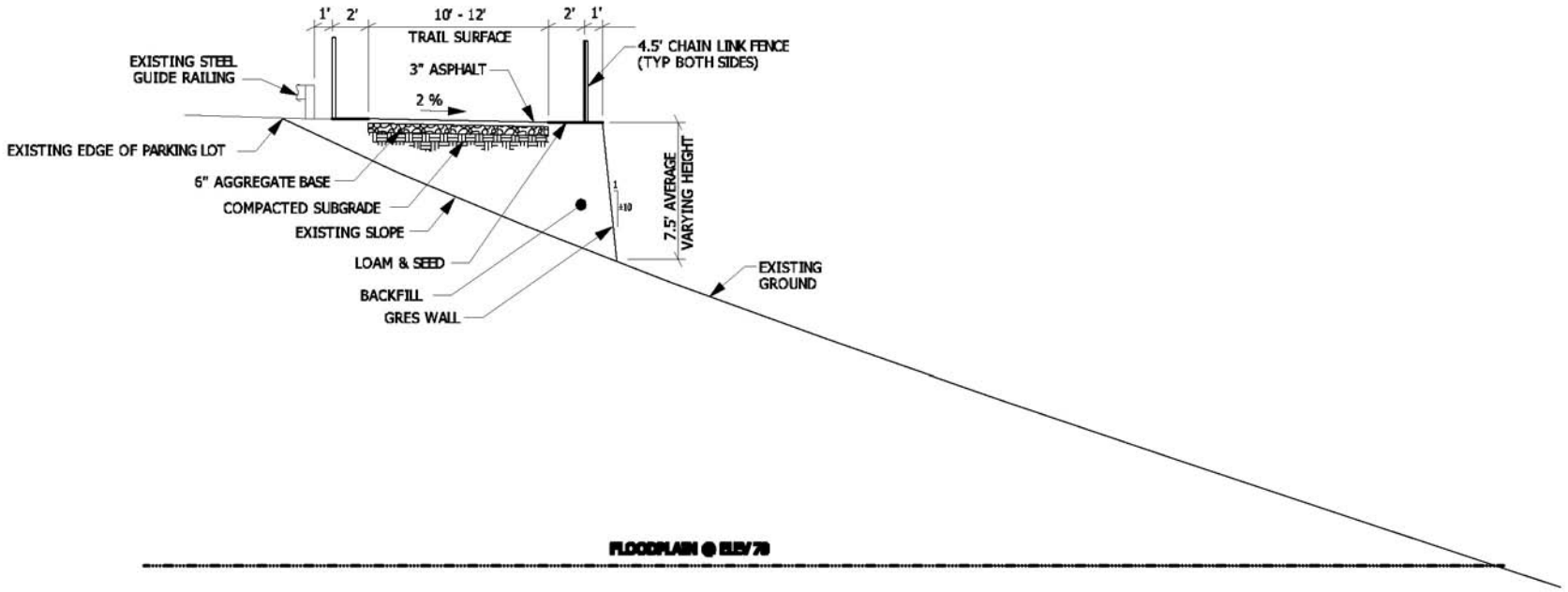
Riverfront Segment R2,

Behind Bank of America ATM Lot

WilburSmith ASSOCIATES

Figure 9b: Cross Section Riverfront Segment R2, Option 2

Scale: 1" = 10'



Riverfront Segment R3,

Behind Sentinel Building/Lot

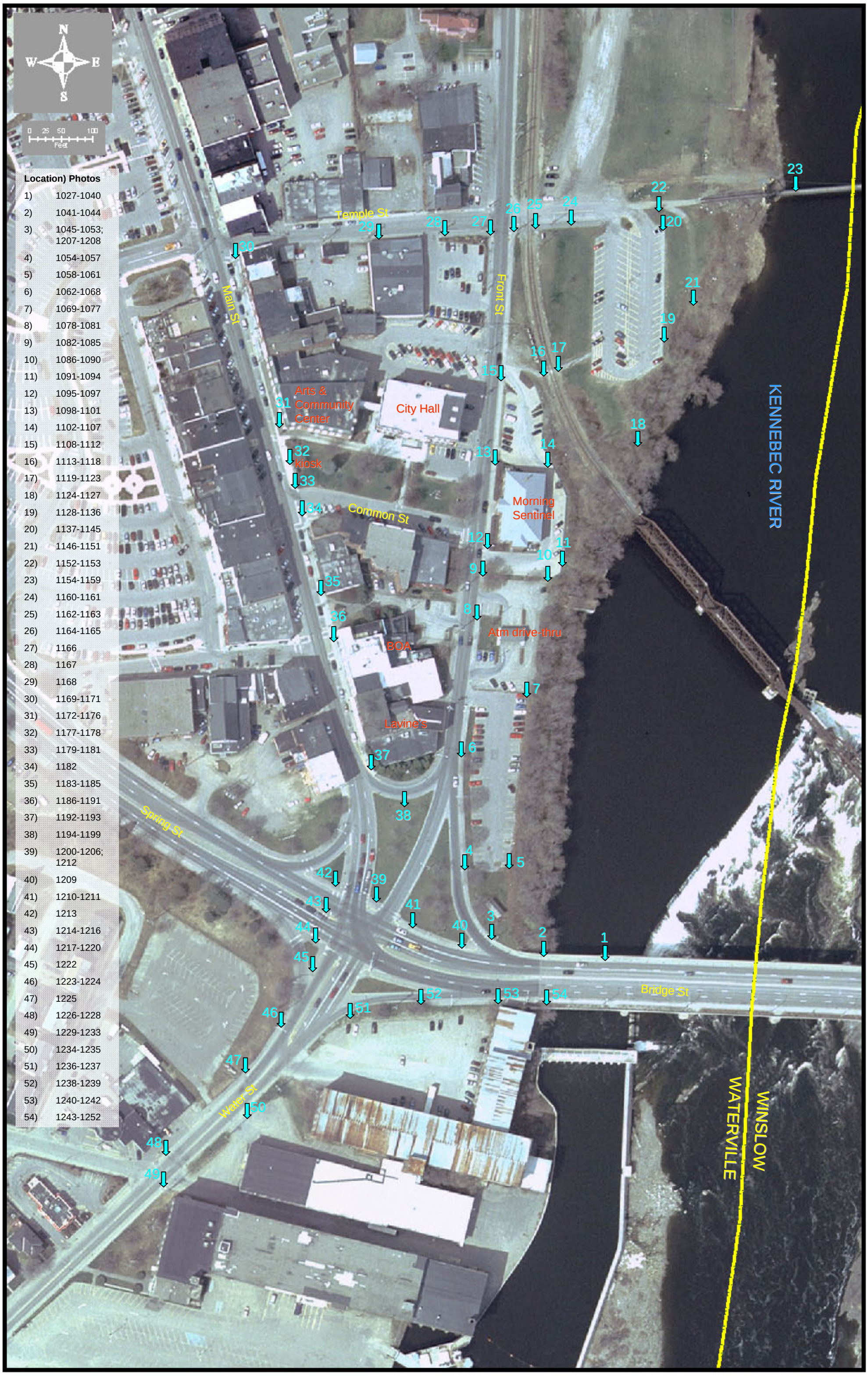
Figure 9c: Cross Section Riverfront Segment R3

Scale: 1" = 10'

Figure 10: Conceptual Recommended Alternatives

Scale: 1" = 100'

APPENDIX B: PHOTO LOG



Location) Photos

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36)	1186-1191
37)	1192-1193
38)	1194-1199
39)	1200-1206; 1212
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42)	1213
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APPENDIX C: TRAFFIC COUNTS/TRAFFIC ANALYSIS

E	(m)	5.00	5.00	5.00	5.00
L'	(m)	25.00	25.00	25.00	25.00
V	(m)	4.50	4.50	4.50	4.50
RAD	(m)	30.00	30.00	30.00	30.00
PHI	(d)	30.00	30.00	30.00	30.00
DIA	(m)	30.00	30.00	30.00	30.00
GRAD SEP		0	0	0	0

TIME PERIOD	min		60
TIME SLICE	min		15
RESULTS PERIOD	min	0	60
TIME COST	$/hr		15.00
FLOW PERIOD	min	0	60
FLOW TYPE	pcu/veh		VEH
FLOW PEAK	am/op/pm		PM

LEG NAME	PCU	FLOWS (1st exit 2nd etc...U)				FLOF	CL	FLOW RATIO				FLOW TIME		
main sb	1.02	90	169	588	0	1.00	50	0.75	1.125	0.75		0	30	60
spring eb	1.02	24	363	100	0	1.00	50	0.75	1.125	0.75		0	30	60
water nb	1.02	113	137	40	0	1.00	50	0.75	1.125	0.75		0	30	60
bridge wb	1.02	474	327	72	0	1.00	50	0.75	1.125	0.75		0	30	60

FLOW	veh	847	487	290	873
CAPACITY	veh	1225	981	841	1327
AVE DELAY	mins	0.16	0.12	0.10	0.13
MAX DELAY	mins	0.27	0.18	0.16	0.21
AVE QUEUE	veh	2	1	1	2
MAX QUEUE	veh	3	1	1	3

AVDEL	s	8.0
L O S		A
VEH HRS		5.6
COST	$	83.4

E	(m)	10.00	10.00	10.00	10.00
L'	(m)	25.00	25.00	25.00	25.00
V	(m)	9.00	9.00	9.00	9.00
RAD	(m)	50.00	50.00	50.00	50.00
PHI	(d)	30.00	30.00	30.00	30.00
DIA	(m)	45.00	45.00	45.00	45.00
GRAD SEP		0	0	0	0

TIME PERIOD min	60
TIME SLICE min	15
RESULTS PERIOD min	0 60
TIME COST $/hr	15.00
FLOW PERIOD min	0 60
FLOW TYPE pcu/veh	VEH
FLOW PEAK am/op/pm	PM

LEG NAME	PCU	FLOWS (1st exit	2nd etc...U)	FLOF	CL	FLOW RATIO	FLOW TIME
main sb	1.02	108 257 706	0	1.00	50	0.75 1.125 0.75	0 30 60
spring eb	1.02	58 422 120	0	1.00	50	0.75 1.125 0.75	0 30 60
water nb	1.02	237 220 89	0	1.00	50	0.75 1.125 0.75	0 30 60
bridge wb	1.02	569 380 143	0	1.00	50	0.75 1.125 0.75	0 30 60

FLOW	veh	1071	600	546	1092
CAPACITY	veh	2468	2021	1892	2634
AVE DELAY	mins	0.04	0.04	0.04	0.04
MAX DELAY	mins	0.06	0.06	0.06	0.05
AVE QUEUE	veh	1	0	0	1
MAX QUEUE	veh	1	1	1	1

AVDEL s	2.3
L O S	A
VEH HRS	2.1
COST $	31.8

E	(m)	5.00	5.00	5.00	5.00
L'	(m)	25.00	25.00	25.00	25.00
V	(m)	4.50	4.50	4.50	4.50
RAD	(m)	30.00	30.00	30.00	30.00
PHI	(d)	30.00	30.00	30.00	30.00
DIA	(m)	30.00	30.00	30.00	30.00
GRAD SEP		0	0	0	0

TIME PERIOD	min		60
TIME SLICE	min		15
RESULTS PERIOD	min	0	60
TIME COST	$/hr		15.00
FLOW PERIOD	min	0	60
FLOW TYPE	pcu/veh		VEH
FLOW PEAK	am/op/pm		PM

LEG NAME	PCU	FLOWS (1st exit	2nd	etc...U)	FLOF	CL	FLOW RATIO	FLOW TIME
main sb	1.02	108	257	706	0	1.00	50 0.75 1.125 0.75	0 30 60
spring eb	1.02	58	422	120	0	1.00	50 0.75 1.125 0.75	0 30 60
water nb	1.02	237	220	89	0	1.00	50 0.75 1.125 0.75	0 30 60
bridge wb	1.02	569	380	143	0	1.00	50 0.75 1.125 0.75	0 30 60

FLOW	veh	1071	600	546	1092
CAPACITY	veh	1117	817	726	1232
AVE DELAY	mins	1.42	0.28	0.39	0.61
MAX DELAY	mins	3.03	0.50	0.75	1.31
AVE QUEUE	veh	28	3	4	12
MAX QUEUE	veh	56	5	6	23

AVDEL	s	46.7
L O S		E
VEH HRS		43.0
COST	$	644.5

```
*******************************************************************************
*                                                                             *
*  25:6:08              waterville 1 Lane w slip ramp 08                  17  *
*                                                                             *
*******************************************************************************
*                                                *                            *
* E     (m)    5.00   5.00   5.00   5.00         * TIME PERIOD    min     60  *
* L'    (m)   25.00  25.00  25.00  25.00         * TIME SLICE     min     15  *
* V     (m)    4.50   4.50   4.50   4.50         * RESULTS PERIOD min   0 60  *
* RAD   (m)   30.00  30.00  30.00  30.00         * TIME COST     $/hr  15.00  *
* PHI   (d)   30.00  30.00  30.00  30.00         * FLOW PERIOD    min   0 60  *
* DIA   (m)   30.00  30.00  30.00  30.00         * FLOW TYPE  pcu/veh    VEH  *
* GRAD SEP       0      0      0      0         * FLOW PEAK am/op/pm     PM  *
*                                                *                            *
*******************************************************************************
* LEG NAME *PCU *FLOWS (1st exit 2nd etc...U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *               *         *
*main sb   *1.02*  108  257  706  0           *1.00*50*0.75 1.125 0.75* 0 30 60 *
*spring eb *1.02*   58  422  120  0           *1.00*50*0.75 1.125 0.75* 0 30 60 *
*water nb  *1.02*  237  220   89  0           *1.00*50*0.75 1.125 0.75* 0 30 60 *
*bridge wb *1.02*    0  380  143  0           *1.00*50*0.75 1.125 0.75* 0 30 60 *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*******************************************************************************
*                                                          *                  *
* FLOW         veh    1071    600    546    523           *                  *
* CAPACITY     veh    1117    816    725   1232           * AVDEL s     45.0 *
* AVE DELAY   mins    1.53   0.28   0.38   0.08          * L  O  S        E *
* MAX DELAY   mins    3.22   0.49   0.73   0.12          * VEH HRS     34.2 *
* AVE QUEUE    veh      30      3      4      1          * COST  $    513.3 *
* MAX QUEUE    veh      61      4      6      1          *                  *
*                                                          *                  *
*******************************************************************************
```

```
*****************************************************************************
*                                                                           *
*  1:12:06                 Slip ramp  PM SCHEME NAME                   11   *
*                                                                           *
*****************************************************************************
*                                                 *                         *
* E     (m)     5.00   5.00   5.00   5.00         * TIME PERIOD    min     60  *
* L'    (m)    25.00  25.00  25.00  25.00         * TIME SLICE     min     15  *
* V     (m)     4.50   4.50   4.50   4.50         * RESULTS PERIOD min   0 60  *
* RAD   (m)    30.00  30.00  30.00  30.00         * TIME COST     $/hr  15.00  *
* PHI   (d)    30.00  30.00  30.00  30.00         * FLOW PERIOD    min   0 60  *
* DIA   (m)    30.00  30.00  30.00  30.00         * FLOW TYPE  pcu/veh    VEH  *
* GRAD SEP        0      0      0      0         * FLOW PEAK am/op/pm     PM  *
*                                                 *                         *
*****************************************************************************
* LEG NAME *PCU *FLOWS (1st exit 2nd etc...U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *              *         *
*water nb  *1.02*  136  138   27  0           *1.00*50*0.75 1.125 0.75* 0 30 60 *
*main sb   *1.02*   23  104  669  0           *1.00*50*0.75 1.125 0.75* 0 30 60 *
*spring eb *1.02*   23  378   81  0           *1.00*50*0.75 1.125 0.75* 0 30 60 *
*bridge wb *1.02*    0  294   73  0           *1.00*50*0.75 1.125 0.75* 0 30 60 *
*          *    *                            *    *  *              *         *
*          *    *                            *    *  *              *         *
*          *    *                            *    *  *              *         *
*****************************************************************************
*                                                          *                  *
* FLOW          veh     301    796    482    367          *                  *
* CAPACITY      veh    1219   1351    999    793          * AVDEL s      6.3 *
* AVE DELAY    mins    0.06   0.10   0.11   0.14          * L  O  S        A *
* MAX DELAY    mins    0.09   0.16   0.17   0.23          * VEH HRS      3.4 *
* AVE QUEUE     veh       0      1      1      1          * COST  $     50.7 *
* MAX QUEUE     veh       0      2      1      1          *                  *
*                                                          *                  *
*****************************************************************************
```

E	(m)	5.00	5.00	5.00	5.00
L'	(m)	25.00	25.00	25.00	25.00
V	(m)	4.50	4.50	4.50	4.50
RAD	(m)	30.00	30.00	30.00	30.00
PHI	(d)	30.00	30.00	30.00	30.00
DIA	(m)	30.00	30.00	30.00	30.00
GRAD SEP		0	0	0	0

TIME PERIOD	min	60
TIME SLICE	min	15
RESULTS PERIOD	min	0 60
TIME COST	$/hr	15.00
FLOW PERIOD	min	0 60
FLOW TYPE	pcu/veh	VEH
FLOW PEAK	am/op/pm	PM

LEG NAME	PCU	FLOWS (1st exit	2nd	etc...U)	FLOF	CL	FLOW RATIO	FLOW TIME
water nb	1.02	127	142	18 0	1.00	50	0.75 1.125 0.75	0 30 60
main sb	1.02	97	168	640 0	1.00	50	0.75 1.125 0.75	0 30 60
spring eb	1.02	20	158	72 0	1.00	50	0.75 1.125 0.75	0 30 60
bridge wb	1.02	468	320	80 0	1.00	50	0.75 1.125 0.75	0 30 60

FLOW	veh	287	905	250	868
CAPACITY	veh	1205	1350	982	955
AVE DELAY	mins	0.06	0.13	0.07	1.19
MAX DELAY	mins	0.08	0.21	0.11	2.59
AVE QUEUE	veh	0	2	0	18
MAX QUEUE	veh	0	3	0	40

AVDEL s	30.8
L O S	D
VEH HRS	19.7
COST $	296.0

E	(m)	10.00	10.00	10.00	10.00
L'	(m)	25.00	25.00	25.00	25.00
V	(m)	9.00	9.00	9.00	9.00
RAD	(m)	30.00	30.00	30.00	30.00
PHI	(d)	30.00	30.00	30.00	30.00
DIA	(m)	45.00	45.00	45.00	45.00
GRAD SEP		0	0	0	0

TIME PERIOD	min	60
TIME SLICE	min	15
RESULTS PERIOD	min	0 60
TIME COST	$/hr	15.00
FLOW PERIOD	min	0 60
FLOW TYPE	pcu/veh	VEH
FLOW PEAK	am/op/pm	PM

LEG NAME	PCU	FLOWS (1st exit	2nd	etc...U)	FLOF	CL	FLOW RATIO	FLOW TIME
water nb	1.02	127	142	18 0	1.00	50	0.75 1.125 0.75	0 30 60
main sb	1.02	97	168	640 0	1.00	50	0.75 1.125 0.75	0 30 60
spring eb	1.02	20	158	72 0	1.00	50	0.75 1.125 0.75	0 30 60
bridge wb	1.02	468	320	80 0	1.00	50	0.75 1.125 0.75	0 30 60

FLOW	veh	287	905	250	868
CAPACITY	veh	2562	2770	2246	2206
AVE DELAY	mins	0.02	0.03	0.03	0.04
MAX DELAY	mins	0.03	0.04	0.04	0.06
AVE QUEUE	veh	0	0	0	1
MAX QUEUE	veh	0	1	0	1

AVDEL	s	2.0
L O S		A
VEH HRS		1.3
COST	$	18.9

```
*******************************************************************************
*                                                                             *
*  1:12:06                  Slip ramp  AM SCHEME NAME                    12  *
*                                                                             *
*******************************************************************************
*                                                 *                           *
* E     (m)    5.00   5.00   5.00   5.00          * TIME PERIOD    min     60  *
* L'    (m)   25.00  25.00  25.00  25.00          * TIME SLICE     min     15  *
* V     (m)    4.50   4.50   4.50   4.50          * RESULTS PERIOD min   0 60  *
* RAD   (m)   30.00  30.00  30.00  30.00          * TIME COST     $/hr  15.00  *
* PHI   (d)   30.00  30.00  30.00  30.00          * FLOW PERIOD    min   0 60  *
* DIA   (m)   30.00  30.00  30.00  30.00          * FLOW TYPE  pcu/veh    VEH  *
* GRAD SEP       0      0      0      0          * FLOW PEAK am/op/pm     PM  *
*                                                 *                           *
*******************************************************************************
* LEG NAME *PCU *FLOWS (1st exit 2nd etc...U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *               *         *
*water nb  *1.02*  127  142   18  0           *1.00*50*0.75 1.125 0.75* 0 30 60 *
*main sb   *1.02*   97  168  640  0           *1.00*50*0.75 1.125 0.75* 0 30 60 *
*spring eb *1.02*   20  158   72  0           *1.00*50*0.75 1.125 0.75* 0 30 60 *
*bridge wb *1.02*    0  320   80  0           *1.00*50*0.75 1.125 0.75* 0 30 60 *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*          *    *                            *    *  *               *         *
*******************************************************************************
*                                                       *                     *
* FLOW         veh     287    905    250    400         *                     *
* CAPACITY     veh    1204   1350    982    955         * AVDEL s      6.4    *
* AVE DELAY   mins    0.06   0.13   0.07   0.10         * L  O  S        A    *
* MAX DELAY   mins    0.09   0.21   0.11   0.16         * VEH HRS      3.2    *
* AVE QUEUE    veh       0      2      0      1         * COST  $     48.7    *
* MAX QUEUE    veh       0      3      0      1         *                     *
*                                                       *                     *
*******************************************************************************
```

```
*****************************************************************************
*                                                                           *
*  1:12:06                 waterville PM SCHEME NAME                   10   *
*                                                                           *
*****************************************************************************
*                                                *                          *
* E    (m)    5.00   5.00   5.00   5.00          * TIME PERIOD    min     60  *
* L'   (m)   25.00  25.00  25.00  25.00          * TIME SLICE     min     15  *
* V    (m)    4.50   4.50   4.50   4.50          * RESULTS PERIOD min   0 60  *
* RAD  (m)   30.00  30.00  30.00  30.00          * TIME COST     $/hr  15.00  *
* PHI  (d)   30.00  30.00  30.00  30.00          * FLOW PERIOD    min   0 60  *
* DIA  (m)   30.00  30.00  30.00  30.00          * FLOW TYPE  pcu/veh    VEH  *
* GRAD SEP       0      0      0      0          * FLOW PEAK am/op/pm     PM  *
*                                                *                          *
*****************************************************************************
* LEG NAME *PCU *FLOWS (1st exit 2nd etc...U)*FLOF*CL*  FLOW RATIO   *FLOW TIME*
*          *    *                            *    *  *              *         *
*water nb  *1.02*  136  138   27  0           *1.00*50*0.75 1.125 0.75* 0 30 60 *
*main sb   *1.02*   23  104  669  0           *1.00*50*0.75 1.125 0.75* 0 30 60 *
*spring eb *1.02*   23  378   81  0           *1.00*50*0.75 1.125 0.75* 0 30 60 *
*bridge wb *1.02*  418  294   73  0           *1.00*50*0.75 1.125 0.75* 0 30 60 *
*          *    *                            *    *  *              *         *
*          *    *                            *    *  *              *         *
*          *    *                            *    *  *              *         *
*****************************************************************************
*                                                      *                    *
* FLOW          veh     301    796    482    785       *                    *
* CAPACITY      veh    1231   1353    999    793       * AVDEL s     58.8   *
* AVE DELAY    mins    0.06   0.10   0.11   2.76       * L  O  S        F   *
* MAX DELAY    mins    0.08   0.15   0.17   5.51       * VEH HRS     38.6   *
* AVE QUEUE     veh       0      1      1     41       * COST  $    579.6   *
* MAX QUEUE     veh       0      2      1     78       *                    *
*                                                      *                    *
*****************************************************************************
```

E	(m)	10.00	10.00	10.00	10.00
L'	(m)	25.00	25.00	25.00	25.00
V	(m)	9.00	9.00	9.00	9.00
RAD	(m)	30.00	30.00	30.00	30.00
PHI	(d)	30.00	30.00	30.00	30.00
DIA	(m)	45.00	45.00	45.00	45.00
GRAD SEP		0	0	0	0

TIME PERIOD	min	60	
TIME SLICE	min	15	
RESULTS PERIOD	min	0	60
TIME COST	$/hr	15.00	
FLOW PERIOD	min	0	60
FLOW TYPE	pcu/veh	VEH	
FLOW PEAK	am/op/pm	PM	

LEG NAME	PCU	FLOWS (1st exit	2nd	etc...U)	FLOF	CL	FLOW RATIO	FLOW TIME
water nb	1.02	136	138	27	0	1.00	50 0.75 1.125 0.75	0 30 60
main sb	1.02	23	104	669	0	1.00	50 0.75 1.125 0.75	0 30 60
spring eb	1.02	23	378	81	0	1.00	50 0.75 1.125 0.75	0 30 60
bridge wb	1.02	418	294	73	0	1.00	50 0.75 1.125 0.75	0 30 60

FLOW	veh	301	796	482	785
CAPACITY	veh	2584	2772	2269	1975
AVE DELAY	mins	0.02	0.03	0.03	0.05
MAX DELAY	mins	0.03	0.04	0.04	0.07
AVE QUEUE	veh	0	0	0	1
MAX QUEUE	veh	0	0	0	1

AVDEL	s	2.0
L O S		A
VEH HRS		1.3
COST	$	20.1

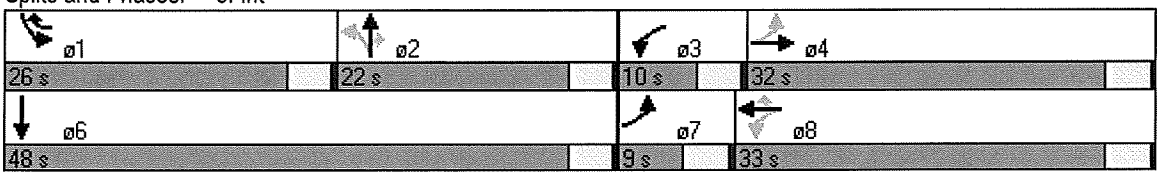
Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Lane Configurations												
Volume (vph)	120	422	58	143	380	569	89	220	237	706	257	108
Ideal Flow (vphpl)	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900	1900
Lane Util. Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	0.97	1.00	1.00
Frt		0.982				0.850			0.850		0.956	
Flt Protected	0.950			0.950			0.950			0.950		
Satd. Flow (prot)	1770	1829	0	1770	1863	1583	1770	1863	1583	3433	1781	0
Flt Permitted	0.266			0.143			0.528			0.950		
Satd. Flow (perm)	495	1829	0	266	1863	1583	984	1863	1583	3433	1781	0
Right Turn on Red			Yes			Yes			Yes			Yes
Satd. Flow (RTOR)		8				252			185		33	
Link Speed (mph)		30			30			30			30	
Link Distance (ft)		482			483			425			370	
Travel Time (s)		11.0			11.0			9.7			8.4	
Peak Hour Factor	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92	0.92
Adj. Flow (vph)	130	459	63	155	413	618	97	239	258	767	279	117
Shared Lane Traffic (%)												
Lane Group Flow (vph)	130	522	0	155	413	618	97	239	258	767	396	0
Enter Blocked Intersection	No	No	No	No	No	No	No	No	No	No	No	No
Lane Alignment	Left	Left	Right	Left	Left	Right	Left	Left	Right	Left	Left	Right
Median Width(ft)		12			12			24			24	
Link Offset(ft)		0			0			0			0	
Crosswalk Width(ft)		16			16			16			16	
Two way Left Turn Lane												
Headway Factor	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00	1.00
Turning Speed (mph)	15		9	15		9	15		9	15		9
Number of Detectors	1	2		1	2	1	1	2	1	1	2	
Detector Template	Left	Thru		Left	Thru	Right	Left	Thru	Right	Left	Thru	
Leading Detector (ft)	20	100		20	100	20	20	100	20	20	100	
Trailing Detector (ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Position(ft)	0	0		0	0	0	0	0	0	0	0	
Detector 1 Size(ft)	20	6		20	6	20	20	6	20	20	6	
Detector 1 Type	Cl+Ex	Cl+Ex		Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	Cl+Ex	
Detector 1 Channel												
Detector 1 Extend (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Queue (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 1 Delay (s)	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Detector 2 Position(ft)		94			94			94			94	
Detector 2 Size(ft)		6			6			6			6	
Detector 2 Type		Cl+Ex			Cl+Ex			Cl+Ex			Cl+Ex	
Detector 2 Channel												
Detector 2 Extend (s)		0.0			0.0			0.0			0.0	
Turn Type	pm+pt			pm+pt		pm+ov	Perm		Perm	Prot		
Protected Phases	7	4		3	8	1		2		1	6	
Permitted Phases	4			8		8	2		2			
Detector Phase	7	4		3	8	1	2	2	2	1	6	
Switch Phase												
Minimum Initial (s)	4.0	4.0		4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	
Minimum Split (s)	8.0	20.0		8.0	20.0	20.0	20.0	20.0	20.0	20.0	20.0	

Lane Group	EBL	EBT	EBR	WBL	WBT	WBR	NBL	NBT	NBR	SBL	SBT	SBR
Total Split (s)	9.0	32.0	0.0	10.0	33.0	26.0	22.0	22.0	22.0	26.0	48.0	0.0
Total Split (%)	10.0%	35.6%	0.0%	11.1%	36.7%	28.9%	24.4%	24.4%	24.4%	28.9%	53.3%	0.0%
Maximum Green (s)	5.0	28.0		6.0	29.0	22.0	18.0	18.0	18.0	22.0	44.0	
Yellow Time (s)	3.5	3.5		3.5	3.5	3.5	3.5	3.5	3.5	3.5	3.5	
All-Red Time (s)	0.5	0.5		0.5	0.5	0.5	0.5	0.5	0.5	0.5	0.5	
Lost Time Adjust (s)	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0
Total Lost Time (s)	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0	4.0
Lead/Lag	Lead	Lag		Lead	Lag	Lead	Lag	Lag	Lag	Lead		
Lead-Lag Optimize?	Yes	Yes		Yes	Yes	Yes	Yes	Yes	Yes	Yes		
Vehicle Extension (s)	3.0	3.0		3.0	3.0	3.0	3.0	3.0	3.0	3.0	3.0	
Recall Mode	None	None		None	None	Max	Max	Max	Max	Max	Max	
Walk Time (s)		5.0			5.0	5.0	5.0	5.0	5.0	5.0	5.0	
Flash Dont Walk (s)		11.0			11.0	11.0	11.0	11.0	11.0	11.0	11.0	
Pedestrian Calls (#/hr)		0			0	0	0	0	0	0	0	
Act Effct Green (s)	31.9	26.9		33.9	27.9	54.0	18.0	18.0	18.0	22.0	44.0	
Actuated g/C Ratio	0.36	0.30		0.38	0.31	0.61	0.20	0.20	0.20	0.25	0.49	
v/c Ratio	0.52	0.93		0.76	0.71	0.58	0.49	0.63	0.55	0.90	0.44	
Control Delay	25.5	55.7		43.7	34.5	8.4	41.4	41.3	15.2	48.5	15.4	
Queue Delay	0.0	0.0		0.0	0.0	0.0	0.0	0.0	0.0	0.0	0.0	
Total Delay	25.5	55.7		43.7	34.5	8.4	41.4	41.3	15.2	48.5	15.4	
LOS	C	E		D	C	A	D	D	B	D	B	
Approach Delay		49.7			22.1			30.0			37.2	
Approach LOS		D			C			C			D	
Queue Length 50th (ft)	45	279		54	203	104	49	126	35	219	128	
Queue Length 95th (ft)	82	#474		#131	307	195	100	205	110	#326	202	
Internal Link Dist (ft)		402			403			345			290	
Turn Bay Length (ft)												
Base Capacity (vph)	249	582		203	607	1059	199	377	468	849	898	
Starvation Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Spillback Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Storage Cap Reductn	0	0		0	0	0	0	0	0	0	0	
Reduced v/c Ratio	0.52	0.90		0.76	0.68	0.58	0.49	0.63	0.55	0.90	0.44	

Intersection Summary

Area Type: Other
Cycle Length: 90
Actuated Cycle Length: 89
Natural Cycle: 90
Control Type: Actuated-Uncoordinated
Maximum v/c Ratio: 0.93
Intersection Signal Delay: 33.3 Intersection LOS: C
Intersection Capacity Utilization 78.7% ICU Level of Service D
Analysis Period (min) 15
95th percentile volume exceeds capacity, queue may be longer.
Queue shown is maximum after two cycles.

Splits and Phases: 3: Int



Maine Traffic Resources
25 Vine Street
Gardiner, ME 04345
(207) 582-5252

Location: Spring/Bridge & Main/Water
City/Town: Waterville
Counter: SK & RD
Weather: Clear, Sunny

File Name : WatervBridgeMain1
Site Code : 00000667
Start Date : 5/1/2008
Page No : 1

Groups Printed- Passenger Vehicles - Light Trucks - Heavy Trucks

	Main Street Southbound					Bridge Street Westbound					Water Street Northbound					Spring Street Eastbound							
Start Time	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Right	Thru	Left	Peds	App. Total	Exclu. Total	Inclu. Total	Int. Total
Factor	1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0		1.0	1.0	1.0	1.0				
03:00 PM	22	57	128	0	207	95	94	11	0	200	20	25	2	0	47	5	71	22	2	98	2	552	554
03:15 PM	23	49	143	0	215	104	89	13	0	206	25	25	9	0	59	5	66	20	4	91	4	571	575
03:30 PM	19	47	133	0	199	120	85	13	1	218	27	30	12	0	69	4	80	27	0	111	1	597	598
03:45 PM	29	41	147	0	217	97	77	19	0	193	27	33	10	0	70	8	88	14	5	110	5	590	595
Total	93	194	551	0	838	416	345	56	1	817	99	113	33	0	245	22	305	83	11	410	12	2310	2322
04:00 PM	23	36	122	0	181	120	68	16	2	204	28	37	5	0	70	6	78	28	4	112	6	567	573
04:15 PM	13	34	148	0	195	106	76	19	0	201	24	28	10	0	62	4	94	25	1	123	1	581	582
04:30 PM	15	28	141	0	184	99	89	11	0	199	26	33	4	0	63	4	72	27	3	103	3	549	552
04:45 PM	20	48	119	3	187	80	95	15	0	190	25	36	6	0	67	5	85	23	1	113	4	557	561
Total	71	146	530	3	747	405	328	61	2	794	103	134	25	0	262	19	329	103	9	451	14	2254	2268
05:00 PM	15	44	165	0	224	108	83	20	0	211	26	38	8	0	72	10	96	19	2	125	2	632	634
05:15 PM	10	31	121	0	162	97	83	14	0	194	20	35	4	0	59	5	76	24	1	105	1	520	521
05:30 PM	8	32	124	0	164	89	74	12	0	175	20	31	5	0	56	3	69	18	0	90	0	485	485
Grand Total	197	447	1491	3	2135	1115	913	163	3	2191	268	351	75	0	694	59	875	247	23	1181	29	6201	6230
Apprch %	9.2	20.9	69.8			50.9	41.7	7.4			38.6	50.6	10.8			5.0	74.1	20.9					
Total %	3.2	7.2	24.0		34.4	18.0	14.7	2.6		35.3	4.3	5.7	1.2		11.2	1.0	14.1	4.0		19.0	0.5	99.5	

	Main Street Southbound				Bridge Street Westbound				Water Street Northbound				Spring Street Eastbound				
Start Time	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Right	Thru	Left	App. Total	Int. Total
Peak Hour From 03:00 PM to 05:30 PM - Peak 1 of 1																	
Intersection	03:30 PM																
Volume	84	158	550	792	443	306	67	816	106	128	37	271	22	340	94	456	2335
Percent	10.6	19.9	69.4		54.3	37.5	8.2		39.1	47.2	13.7		4.8	74.6	20.6		
03:30 Volume	19	47	133	199	120	85	13	218	27	30	12	69	4	80	27	111	597
Peak Factor																	0.978
High Int.	03:45 PM				03:30 PM				03:45 PM				04:15 PM				
Volume	29	41	147	217	120	85	13	218	27	33	10	70	4	94	25	123	
Peak Factor				0.912				0.936				0.968				0.927	
Peak Hour From 03:00 PM to 05:30 PM - Peak 1 of 1																	
By Approach	03:00 PM				03:15 PM				03:30 PM				04:15 PM				
Volume	93	194	551	838	441	319	61	821	106	128	37	271	23	347	94	464	
Percent	11.1	23.2	65.8		53.7	38.9	7.4		39.1	47.2	13.7		5.0	74.8	20.3		
High Int.	03:45 PM				03:30 PM				03:45 PM				05:00 PM				
Volume	29	41	147	217	120	85	13	218	27	33	10	70	10	96	19	125	
Peak Factor				0.965				0.942				0.968				0.928	

Avg I = 0.93/0.87 = 1.069

90 588 474 72 113 40 24 100

169 397 137 363

APPENDIX D: MEETING MINUTES AND ATTENDANCE

May 23, 2008

Project: Waterville Pedestrian Connector Feasibility Study

Public Scoping Meeting Notes - May 21, 2008

Attendees:

- Greg Brown P.E.: City of Waterville
- Tom Errico P.E.: Wilbur Smith Associates
- See Attendance Sheet for Public Attendees

The following summarizes input and comments from the public:
We need to: decide/city/or downtown:

- Slow traffic
- Access across Spring raises many options but should consider:
    - Main and Front both 2-way as options
- Empty space should be building- highest and best use
- Narrow and slow traffic/traffic calming
- Reroute truck traffic in downtown
- Enforce traffic laws/yellow means go before red.
- Tunnel Ballpark- to private lot
- Tunnel = bridge overpass for traffic
- Reuse existing intersection ROW vast expanse into:
    - Park,
    - Building, or
    - Other uses
- How do we feed downtown merchants w/ redirected traffic?
- Traffic changes two-way will affect parking.
    - May have to make parking concessions to improve traffic two-way
- Parking garages at ball field lot & near Front St/Josephs Market or neighborhood.
- If overhead why not near river?
- (See Attached) Sketch for overhead/bridge off roof or higher level to high ground to land North end.
    - North end could split- one to Downtown, one to River Front Trail- 2 & Br.
- Parking garage very $$
- Bridge thru building would require ROW but would help ADA issues
- Concern w/ pedestrians stopping traffic- auto backup
- May need to provide interconnection using Common St. and Temple St.

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- Why was 2 way changed to 1 way? One way now has wide sidewalks & angled parking stick out into traffic.
- Increase DT occupancy will require parking & will increase ped traffic/energy
- Redesign must support DT ped friendly destinations vs. thru traffic
- MIT report recommends infill con… at Main/Farmers Mkt area & also Spring St. side at Silver St. Light.
- Why do we need Spring St? i.e.: Now it's a straight-a-way. Can an alt. route serve thru traffic? Or one way or ????
- Premature to do ped crossing now vs. DT comprehensive plan.
- Only way DT can compete is Mixed Use: Residential, Services, Restaurant.

Other Notes: (Tom's)

- How solid is the riverbank?
- Sewer line issues
- Re-link the City (between Hathaway - Downtown
- Roundabouts
- Multiple Pedestrian Crossing points
- Why would people walk long distances?
- Public bus circulation- exists now
- Bicycle lanes on Front St. and Main
- Calm Traffic on Front St.
- Roller bladers
- Trail behind Eastside buildings on Front St. (sketched on aerial)
- Boardwalk under bridge to South (sketch on aerial)
- Trail crossing at roundabout
- Easy access between trail and downtown
- Paved trail makes sense
- 2nd level pedestrian deck at building on Main St.
- Two way traffic pedestrian friendly
- Plan must be compatible with 2-way flow
- Don't do anything until long term plan is in place (along riverfront).
- Make Main St all pedestrian Mall
- People will not want to bicycle and walk together at same time.

Last Session:

- Q) Other buried thing- how do we verify? WSA will do an analysis.
- Q) Passenger Rail?
- Q) People Mover (shown on aerial to travel from Two Cent Area, across Front St, around City Hall, then down Front St, to connect to Hathaway)
- Q) Public Transportation
- Aerial shows Parking Garage on corner of Water/Spring with upper level bridge connection to Main St. area, and a connection across Water to Hathaway Center.
- Aerial shows possible parking on green space at Front St/Bridge St.

3 Attachments to these notes:

- 3 pages Public Attendance Sheets
- Hand Sketch of Bridge
- Aerial Map with mark ups and notes (too large for report)

Waterville Downtown Pedestrian Feasibility Study

Public Meeting

May 21, 2008

Name	Address/email	Business or Affiliation
Charles Rumsey	crumsey@waterville-me.gov	Waterville P.D.
John O'Donnell	16 Barnet Ave	WTVL
Heather Mercier	hmercier@verizon.net	Resident
Claire Prontnicki	102 Western Ave. Wtvl.	resident
DAVID HALLOS	12 GRAY ST.	
FAYE NICHOLSON	93 Main St.	REM
MARLENE MYERS	128 RIVER RD BENTON	REM
Linda Moody	1312 East Ridge Rd Corinville	REM
JACKIE DALTON	145 RODERICK RD WINSLOW	REM
Peter Joseph	8 Roberts Ave	WTVL. Safety Council
Alt Julie Hosmer	10 Common St WTVL	A. E. Hosmer
Al Herbole	"	"
Jon Languet	33 Pleasant St	Languet Law, LLC
Ave Vinick	31 MORRILL AVE	Coop Wm-Hinckley
C/o Ford Manchester	16 Broadway St.	wtvl. Plan. Bd.

Waterville Downtown Pedestrian Feasibility Study

Public Meeting

May 21, 2008

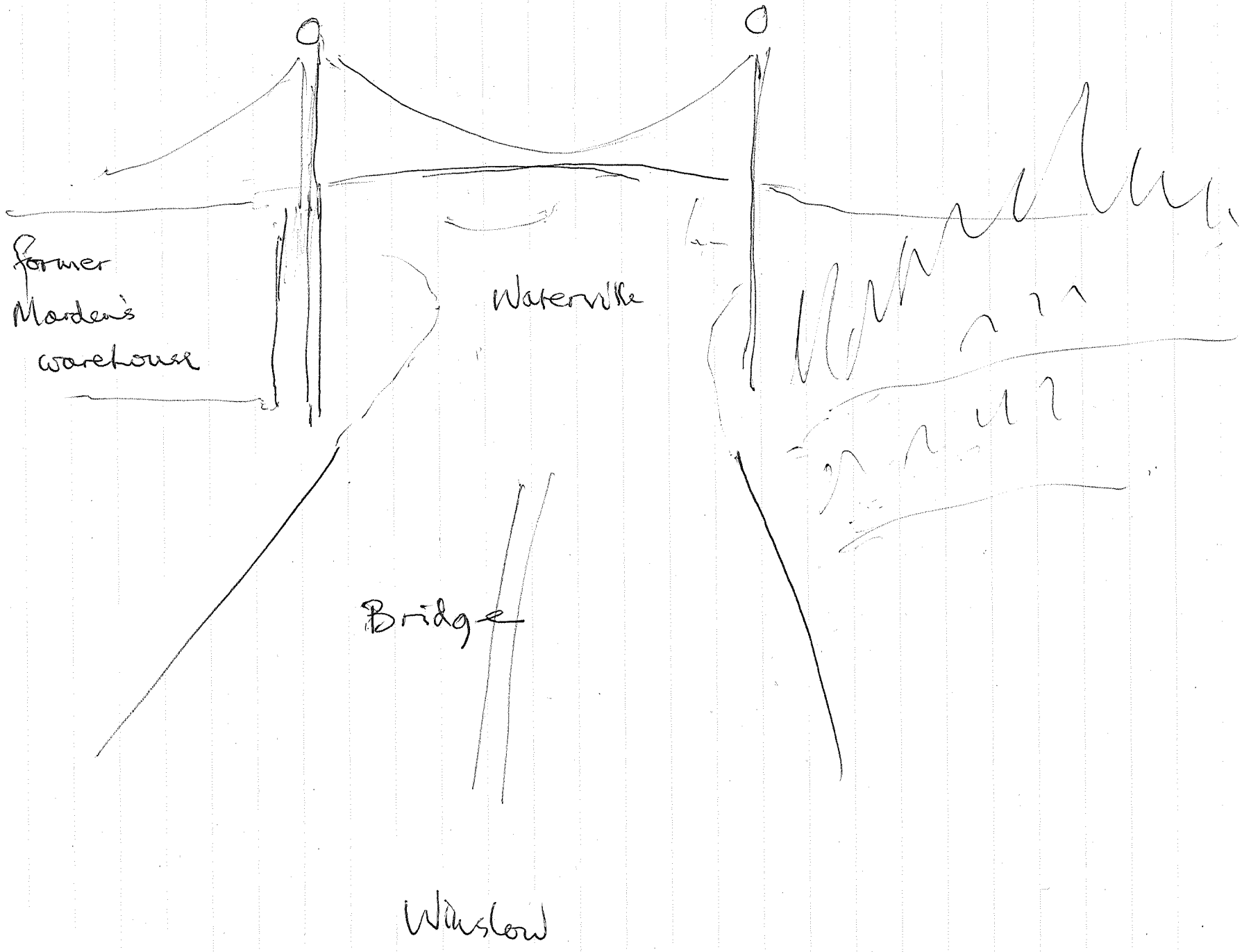
Name	Address/email	Business or Affiliation
Sarah Seder	6 Burleigh St. WTVL	Maine General
Bill NAJPAUER	WNAJPAUER@ wi.rr.com	RENAISSANCE PLANNING
Erik Thomas	Erik@digitalimageworks.biz	←
Ryan D. Tibbetts	5 Vallee Avenue, WTVL	Resident (REM)
Anissa Cousins	?	Resident
Cindy Longstaff	39 Pleasant St. WTVL	Resident
Tom LONGSTAFF	39 PLEASANT ST	CITY COUNCIL
Peter Garrett	peter.garrett@eggi.com	Ken. Messalonskee Trails
Mark Turner	mturner@waterville-me.gov	City of Waterville

Waterville Downtown Pedestrian Feasibility Study

Public Meeting

May 21, 2008

Name	Address/email	Business or Affiliation
Whitney Blakeslee	133 Water St	USMC Ret.
Charles R. Poulin	14 Clark St	
Mary Jane Poulin	14 Clark St	
Rosemary Winslow	rosemary.winslow@mail.house.gov	City Councilor
Ann Beverage		
Kim Haller	12 Gray Khaller@swi.net	SEMA


former
Marden's
warehouse
Waterville
Bridge
Winslow

October 9, 2008

Project: Waterville Pedestrian Connector Feasibility Study

MaineDOT Coordination Meeting Notes - October 9, 2008

Attendees:

- Greg Brown, City of Waterville (via telephone)
- Peggy Duval, MaineDOT
- Dan Stewart, MaineDOT
- Norm Baker, MaineDOT
- Dave Allen, MaineDOT
- Tom Errico, Wilbur Smith Associates

The following summarizes comments during a review of the Draft Feasibility Study.

- Peggy requested that for public meetings, advertisement is published in the newspaper. Additionally, she was concerned about having the public meeting being part of a City Council meeting. She suggested that it be 1st on the agenda if that was the format.
- There was concern about the turning radii at the Bridge/Main intersection under the improvement concept scenario. WSA will conduct an Auto-Turn analysis and revise the geometrics as necessary.
- All participants liked the roundabout concept at the Bridge/Main intersection, even though it requires two-lanes. Dave suggested that we run the analysis with existing volumes with a one-lane concept to see if it will operate acceptably. It may make sense to build the roundabout in phases with a one-lane roundabout being constructed first, and when needed expanded to two-lanes.
- It was requested that existing level of service be provided at the Bridge/Main intersection. Tom will request information from Diane Morabito as part of her work on permitting the Hathaway Project.
- In respect to a facility near the Kennebec River, it was noted that occasional flooding (once or twice) is allowed.
- Environmental permitting in the vicinity of the river and Hathaway buildings will be difficult.
- Greg noted that if traffic could be diverted away from the Bridge/Main intersection, it may allow for a 1-lane roundabout to work.
- If there is some desire to evaluate a two-way Front Street/Main Street one-way, a contract amendment would need to be processed such that WSA could perform this out of scope effort.
- It was asked what could be done to shift traffic to the Carter Memorial Bridge.

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- It was suggested that the report should be finalized and that a key recommendation would be for the further study of the roundabout with a downtown circulation study.
- The report should clearly note that no matter what, a feasible alternative exists for the Bridge/Main intersection (e.g. a two-lane roundabout).
- The City should consider conditions of approval for the Hathaway project (as part of Site Plan permitting) that include monetary contributions towards future recommendations.
- Any rail crossing shall be perpendicular.
- Trail option R7 has many issues including, rail crossing alignment, satisfying rail sight distance requirements, and adding another rail crossing. It was noted that C6 should be maintained for current pedestrian facility needs and that there would be an ADA compliant alternative via Front and Temple Streets.

CITY OF WATERVILLE

Community Development

MEMO: 23 December 2008
To: Tom Errico
From: Greg Brown
Reference: Wednesday 17 December 2008 Public Meeting Notes
Downtown Pedestrian Connector and Riverfront Trail

Meeting began at 5:30 pm in Waterville's City Council Chambers.
Attendance sheets are attached.

Tom Errico presented a brief recap of project history. He reviewed purpose and needs statements, reviewed previous meeting results and discussed the purpose of this last public meeting. He indicated that the input and consensus of the group would be summarized and appended to the existing draft report. The final document would then be a guide for future City action.

The final report will be issued in mid January to allow the City time to apply for funding for the next step(s).

Tom presented a graphic of all the options (A thru E) investigated to cross the Spring / Bridge intersection. He presented and discussed "like options" as groups.

The overhead options A &D were presented first and Tom indicated that each of these "bridges" had negative issues that precluded further study. A complete listing of these issues is presented in the decision matrix of the report and is not duplicated herein.

Next, Tom presented the at grade options, B1 & B2. Essentially each of these options redefined the vehicular traffic and pedestrian conflicts associated with the existing intersection. Dedicated right turn movements were eliminated at all locations, except one to remain in option B 2, the Roundabout, to allow Winslow traffic access to Front Street. Tom explained that pending ADA changes to pedestrian crossing of two lane roundabouts could require a pedestrian signal in the near future. He also indicated that increased traffic through the intersection would require a two lane roundabout versus a single lane roundabout. Differing opinions as to how, or when, to construct the optimum roundabout (one or two lanes) were presented. This issue was further discussed during the general review/discussion following the entire presentation.

Considerable discussion ensued regarding future traffic volume assumptions, rerouting existing traffic, redirecting through traffic, and other issues beyond the scope of this study, but, all of which have a considerable effect on the future value of either option B1 or B2.

One Common Street, Waterville, ME 04901 (207)680-4232 FAX 680-4234 email gbrown@waterville-me.gov

All participants agreed that there were still a significant number of unknowns that precluded a selection of a preferred at grade option at this time.

Tom and Greg informed the audience that the MDOT had similar concerns and they voiced those concerns at a project review meeting held in Augusta. The MDOT recommended that Tom actually write a scope of work related to Downtown traffic issues and append that scope of work to this report. City action on any option presented in this report should be made with a full understanding of the remaining work that needs to be performed.

Participants agreed that this appended scope of work should become a part of this final report and Greg requested that Tom prepare that scope. Greg and Tom also agreed to review the existing project scope of work and determine if a Change Order is in order. Tom will prepare the CO for presentation to the City and MDOT.

(Note: a follow up discussion, after the meeting, between Greg and Joel Kittredge, the MDOT Project Manager, indicated the consultant's contract could be amended to allow the remaining funds to be spent on the CO as discussed above. Joel did indicate that any costs above the Grant amount would not be eligible for MDOT reimbursement, as defined in the MDOT / City agreement.)

Tom presented the final intersection crossing option, E, under the existing highway bridge path, and both Greg and Tom indicated that physical constraints, most notably flooding and ice dam issues, precluded this as a viable option.

The discussion then focused on the River Front Trail segments that would connect Head of Falls to the Hathaway Project. Tom spent a few minutes on each option to define constraints, possibilities and relative costs. A full discussion on the options is presented in the report and is not duplicated here. Essentially, Tom indicated that a River Front Trail is possible, but, further work will be needed to define relative costs. The group did not weigh in on any particular preferred option, but essentially left the decision of the most feasible trail up to the consultant based on probability that the RR issues could be resolved and that cost would be minimized. It was understood that additional trail segments could be constructed in phases if the City chose to implement the easy segments in the near future and follow up later with those segments that required additional right of way or funding issues. (Note: a relative ranking of each segment may be desired in the final report with the most feasible segments receiving more cost projection attention that the lower ranked segments.)

A healthy general discussion followed the presentation on future traffic patterns in Waterville and all agreed that Downtown should be more pedestrian friendly. Various traffic pattern changes were discussed that could allow this transformation. One option that seemed to carry the group was to modify Front Street to two way traffic and connect the north end of Front St, near the new Post Office to Chaplin St. This would require a new College Ave intersection (perhaps a roundabout) within the existing MDOT right of way that exists. The benefits of this change would be that through traffic, pulp trucks, non destination vehicles and similar traffic, would not be utilizing Main Street. Then destination traffic would be manageable, possibly allowing better parking options, better interconnection options between Front and Main, and potentially allowing two way traffic on portions or all of Main Street between PO Square and

Bridge Street. It was agreed that this option should be included in the previously mentioned scope of work related to Downtown traffic.

Another option, redefining US Route 201 as Benton Ave in Winslow, was presented as an information only concept. Although this option may be viable in the future, MDOT planning staff would be required to coordinate and discuss this option with all parties affected, including the towns of Winslow and Fairfield and The Federal Highway Administration. Even with a redefined US 201, Downtown issues present today would still exist.

Some discussion centered on the possibility of passenger rail service coming to Waterville as well as intermodal truck traffic increases due to Guilford's recent partnership with Norfolk Southern. Both of these issues require further attention and should be kept in mind as the Downtown review is defined, but, it may be outside of the scope to craft options that hinge on these two issues.

Participants were encouraged to submit additional comments after the meeting by utilizing the email address pedconnector@waterville-me.gov

Sign In Sheet December 17th 2008

Public Meeting - Options Presentation
Downtown Pedestrian Connector and River Trail

Name	Organization	phone / email info
Carl BASGALL		cbasgall @ WTVL - Mag.
Nate Rog	City of WTVL	
Guy Bron	WTVL	
Kim Hallee	SENA / Health Coach	
Dave Hallee	SENA	
Shannon Haines	WMSt	Shannon@watervillemainstreet.org
Rosemary Winslow	City Council	rosemary.winslow@mail.thorse.gov
Paul DePape	Mayor WTVL	
Ave VINICK	WTVL Main St	

Sign In Sheet December 17th 2008

Public Meeting - Options Presentation
Downtown Pedestrian Connector and River Trail

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APPENDIX E: DETAILED MATRICES

Table 2: Evaluation Matrix for Pedestrian Crossing Concepts

Concept	Description	Directness/ Convenience	Functionality/ Users	Level of Safety and/or ADA compatible	Direct Connect to Downtown	Direct Connect to Two Cent Bridge/ KMT Trail	Future Flexibility with other projects or intersections	Parcels/ ROW Involved	Intersection Operation
A	Overhead Bridge from future Parking Garage corner of Spring/Water St to Bldg on Main St.	Indirect and Inconvenient for most users other than parking garage users	Peds only; Not Functional for Bicyclists/other; Very Difficult for disabled persons (note 1)	(+) Isolated from Traffic; (-)Elevators and Ramps Req'd	Yes	No	Yes	(+)City Lot 307-empty (-)Main St Lots: 179 or 180- 179-Shanos Evangelos; 180-JR's Discount and Pawns Inc.	Reduced Pedestrian Conflict
B1	Intersection Improvement-Roundabout	Moderately Direct and Convenient for Hathaway Users and users in all other directions	Functional for all users; Wide Shared Use Sidewalk Req'd for Bicyclists	(+)Crossing Dist.= 14' to 27'; (+)Relief Medians;	Yes	Yes	Yes	(+)Existing Street ROW	Good Operations
B2	Intersection Improvement-Std Signalized-Reconfigured	Direct and Convenient for Hathaway Users and users in all other directions	Functional for all users; no Bike Lane; Wide Shared Use Sidewalk optional	(+)Crossing Dist.= 14' to 36'; (+)Relief Medians; (+)Signalized Crossing;	Yes	Yes	Somewhat	(+) Existing Street ROW	Overall Good, but one movement Poor
C	Underground Travel Path/Grade Separation	Direct and Convenient for Hathaway Users and users in all other directions	Functional for all users	(+) Isolated from Traffic; (+)ADA Accessible	Depends on Design Features	Yes	Yes	(+) Existing Street ROW (-)Hathaway Lot 308	Reduced Pedestrian Conflict
D	Overhead Bridge from Hathaway Bldg to Corner Lot of Bridge/Front St; Possible City Gateway	Indirect and Inconvenient for most users other than Hathaway users	Peds only; Not Functional for Bicyclists/other; Very Difficult for disabled persons (note 1)	(+) Isolated from Traffic; (-)Elevators and Ramps Req'd	No	Indirect Access	Yes	(+) Existing Street ROW (-)Hathaway Lot 308 (+)City Lot 178	Reduced Pedestrian Conflict
E	Cantilevered Catwalk Below Bridge (not feasible)	Not Feasible (NF)	NF	NF	NF	NF	NF	NF	NF

Notes:
1. Difficulty for disabled persons is due to either the indirectness and/or other improvements that would be needed in the related structures.

_____
Matrix was developed and used for initial discussion and analysis only and may not coincide with final recommendation or reflect all known data.

Table 3: Evaluation Matrix of Riverfront Segments

Route Segment	Segment sub-alternate	Description	Proximity to River (horizontal feet)	Level of Safety and/or ADA compatible; RR Safety	Separation from Traffic	Connections (to other segments or to sidewalk system)	Impacts to other projects or intersections	Parcels/ ROW Involved	Notable Features/ Considerations
R1	a	Runs along East side of City Parking Lot at the corner of Bridge/Front St.	80 ft	Notes 1, 2, 3	Yes	C1 C2, R2	No	City parcel 178 (Existing Parking Lot)	Requires Parking Reconfiguration
	b	Runs behind East side of City Parking Lot at the corner of Bridge/Front St.	64 ft	Notes 1, 2, 3	Yes	C1 C2, R2	No	City parcel 178 (Existing Parking Lot)	Requires Parking Reconfiguration
R2	a	Runs along East side of Bank of America ATM Lot at Front St.	73 ft	Notes 1, 2, 3	Yes	C2, R1, C3, R3 or R7	No	Bank of America ATM parcel 177	Requires Parking Reconfiguration
	b	Runs behind East side of Bank of America ATM Lot at Front St	57 ft	Notes 1, 2, 3	Yes	C2, R1, C3, R3 or R7	No	Bank of America ATM parcel 177	
R3	a	Runs along East side of Sentinel Lot behind the building	94 ft	Notes 1, 2, 3	Yes	C3, R2, C4, R4	No	City parcel 438 (Sentinel Bldg Lot)	Requires Parking Reconfiguration
	b	Runs behind East side of Sentinel Lot behind the building	78 ft	Notes 1, 2, 3	Yes	C3, R2, C4, R4	No	City parcel 438 (Sentinel Bldg Lot)	
R4	a	Runs along East side of Sentinel Lot north of the building	180-240 ft	Notes 1, 2, 3, 4	Yes	C4, R3, C5, C6	No	City parcel 438 (Sentinel Bldg Lot)	Requires Parking Reconfiguration
	b	Runs behind East side of Sentinel Lot north of the building	164-222 ft	Notes 1, 2, 3, 4	Yes	C4, R3, C5, C6	No	City parcel 438 (Sentinel Bldg Lot) RR ROW conflict	Requires Parking Reconfiguration
R5	n/a	Runs between RR and city parking lot, diagonally across the slope	200-300 ft	Notes 1, 2, 5	Yes	C7, C6, R6	No	RR ROW	Note 5
R6	a	Uses the edge of the existing parking lot from walk near RR to the East to Two Cent Bridge	90-150 ft	Notes 1, 2, 3	Yes	C6, R5, R7 (note 6)	Note 7	City parcel 438 (Existing Parking Lot RR ROW easement	Note 7
	b	Runs on the outer edge of existing parking lot from existing walk near RR to the East to Two Cent Bridge, as close to the water as possible	50-100 ft	Notes 1, 2, 3	Yes	C6, R5, R7 (note 6)	Note 7		
R7	n/a	Runs from South of Sentinel building parallel with riverfront, across RR tracks to the city parking lot off Temple St.	60-75 ft	Notes 1, 2, 3, 8	Yes	R2, C3 R6	Note 7 (at connection to R6)	City Lot 438, RR ROW easement	One of the closest segments to the riverfront; Requires significant structures and RR Coordination
C1	n/a	Corner of Bridge/Front St, connect to one of the Intersection Concepts	n/a		Yes	R1, S1		City parcel 178, Front St. ROW	Required for Riverfront path

Route Segment	Segment sub-alternate	Description	Proximity to River (horizontal feet)	Level of Safety and/or ADA compatible; RR Safety	Separation from Traffic	Connections (to other segments or to sidewalk system)	Impacts to other projects or intersections	Parcels/ ROW Involved	Notable Features/ Considerations
C2	n/a	North End of Front Street Parking Lot	n/a	Notes 2,3	Yes	R1, R2 S1		City parcel 178, Street ROW	Requires Parking Reconfiguration
C3	n/a	Between Bank of America ATM and Sentinel Lots	n/a	Notes 2,3	Yes	R2, R3 or R7 S1		City parcel 178 (Sentinel Bldg Lot) Or BOA ATM parcel 177	Diagonally across from Common St.
C4	n/a	Runs along North side of Sentinel Bldg	n/a	May cross parking lot travel way that goes behind building Notes 2, 3	R3a- Yes R3b- No	R3, R4 S1		City parcel 438 (Sentinel Bldg Lot)	Across from City Hall; If path user needs to avoid slope of R4 this connection could be used to return to Front St. sidewalk
C5	n/a	Runs along existing access path North of Sentinel Parking Area	n/a	Notes 2, 3, 4 (ref)	Note 2	R4, C6 S1		City parcel 438 (Sentinel Bldg Lot)	Note 4; Possibly Reconfigure Parking lot and Access
C6	n/a	Runs along existing access path at RR Track Crossing to City parking area by Two Cent Bridge	n/a	Note 2, 3, 4, 5, 8	Yes	R4, C5 R5, R6	Note 7 (depends on outcome of R5/R6)	City parcel 438 RR ROW	Exiting Stairs and RR Crossing- notes 4, 5 and 8.
C7	n/a	Temple Street from Front to Two Cent Bridge	n/a	Notes 2, 3, 5, 7 8, 9	Note 2	R5, R6 S1 Two Cent Bridge	Note 7	City parcel 438 RR ROW Temple St. ROW	RR Crossing, Steep slope- notes 5, 7, 8, 9

Notes:
1. Segment would require a safety barrier/fence on the East side/river side of the path. Segment R7 requires safety barrier/fence on both sides of path.
2. Segment would require a barrier/fence, separation, or barrier to protect path users from vehicles that use the area adjacent to the path (such as parking).
3. Segment shall have safety/security lighting illuminating the path way.
4. Segment R4 (a or b) needs to drop in elevation 4-6 feet in order to accommodate the C6 crossing at the RR (moving the stairs from C6 to C5). If C5 is utilized as it exists, then segment R4 should not drop in elevation.
5. Segment R5 is an alternative if the existing C6 connector (with stairs/slope) and Temple St (C7) are to remain. R5 would provide the necessary slope required for ADA accessibility standards; connector C6 and Temple Street both have too steep a grade to be used as connector options as is.
6. If R7 is used, segment R6 could be shortened to run between R7 and Two Cent Bridge only; if R6 is not shortened, it could provide another access/connector location to the path.
7. The Head of Falls development project could impact/be impacted by a path in this area.
8. Requires a RR Crossing at grade. Coordination is required with RR utility that there is adequate safety for all path users and for the RR.
9. Provide pedestrian signals at Temple/Front St intersection for users wanting to access the riverfront trail from Main/Temple St area. (Signal Warrant Analysis Required)

_____
Matrix was developed and used for initial discussion and analysis only and may not coincide with final recommendation or reflect all known data.

APPENDIX F: DETAILED COST ESTIMATES

CONCEPTUAL COST ESTIMATE

Pedestrian Connector Feasibility Study - Waterville, ME

Concept A Pedestrian Overpass

ITEM NO.	*ITEM*	*UNIT*	*TOTAL QUANTITY*	*UNIT PRICE*	*AMOUNT*
201.11	CLEARING	AC	0.2	$ 13,500.00	$2,700
203.20	COMMON EXCAVATION	CY	42.0	$ 15.00	$630
203.21	ROCK EXCAVATION	CY	2.0	$ 95.00	$190
-	STEEL TRUSS SUPERSTRUCTURE - 250' SPAN				
	20' VERTICAL CLEARANCE				
	12'W X 6" D CONCRETE DECK				
	12' STRUCTURE WIDTH	SF	3000.0	$ 150.00	$450,000
-	ASSUME ELEVATORS REQUIRED	EA	2.0	$ 100,000.00	$200,000
-	ASSUME RAMPS ARE NOT CONSTRUCTED				
					$0
634.2043	LUMINARIES - HORIZONTAL SPOT	EA	25.0	$ 950.00	$23,750
-	MAINT. & PROTECTION OF TRAFFIC (5%)	LS	1.0	$ 33,863.50	$33,864
-	EROSION CONTROL (2%)	LS	1.0	$ 13,545.40	$13,545
-	MOBILIZATION (7.5%)	LS	1.0	$ 50,795.25	$50,795

SUBTOTAL	$677,270
ENGINEERING, PERMITTING AND CONSTRUCTON ADMIN. (8.5%)	$57,568
CONTINGENCY (20%)	$135,454
TOTAL 2008 COSTS	$870,292
ASSUME 10% INFLATION TO 2009 COSTS	$957,321

Unit prices based on estimates provided by MEDOT

Wilbur Smith Associates
ENGINEERS PLANNERS ECONOMISTS

PROJECT PEDESTRIAN CONNECTOR STUDY FILE NO.
SUBJECT WATERVILLE, ME SHEET NO. OF
COMPUTED BY KMS CHECKED BY DATE 2/4/09

PEDESTRIAN BRIDGE OVERPASS - CONCEPT A

- ASSUME 20' CLEARANCE
- ASSUME 250' SPAN
- ASSUME STEEL TRUSS SUPERSTRUCTURE
- ACCESS VIA PROPOSED PARKING GARAGE AND OTHER EXISTING BUILDING
- 2 ELEVATORS TO BE INSTALLED @ $100,000 EACH
- ASSUME NO CLEARING REQUIRED, NO RAMPS
- EXCAVATION FOR PIER FOUNDATION

  ASSUME 15'x5'x5' = 375 CF ⇒ 14CY x 3 PIERS ⇒ 42 CY

- ROCK EXCAVATION
  - ASSUME 5% OF COMMON ⇒ 2 CY
- ASSUME 25 HORIZONTAL LIGHTING FIXTURES

CONCEPTUAL COST ESTIMATE

Pedestrian Connector Feasibility Study - Waterville, ME

Concept B1 - Two Lane Roundabout

ITEM NO.	*ITEM*	*UNIT*	*TOTAL QUANTITY*	*UNIT PRICE*	*AMOUNT*
201.11	CLEARING	AC	0.6	$ 13,500.00	$8,100
203.20	COMMON EXCAVATION	CY	4363.0	$ 15.00	$65,445
203.21	ROCK EXCAVATION	CY	220.0	$ 95.00	$20,900
304.10	AGGREGATE SUBBASE COURSE-GRAVEL	CY	4760.0	$ 30.00	$142,800
308.35	FULL DEPTH RECONSTRUCTED PAVEMENT	SY	4760.0	$ 8.00	$38,080
403.207	HOT MIX ASPHALT	T	3200.0	$ 85.00	$272,000
502.341	STRUCTURAL CONCRETE - RAISED ISLAND	CY	305.0	$ 400.00	$122,000
603.175	18" RCP CLASS III	LF	600.0	$ 85.00	$51,000
604.164	REBUILD CATCH BASIN	EA	10.0	$ 2,600.00	$26,000
604.166	REBUILD MANHOLE	EA	5.0	$ 2,000.00	$10,000
608.08	REINFORCED CONCRETE SIDEWALK	SY	1440.0	$ 80.00	$115,200
608.431	RECONSTRUCT PED CURB RAMPS	EA	8.0	$ 2,350.00	$18,800
609.34	CURB TYPE 5	LF	4100.0	$ 25.00	$102,500
615.07	LOAM	CY	1690.0	$ 50.00	$84,500
-	TURF ESTABLISHMENT	SY	5525.0	$ 5.00	$27,625
627.4071	REFL. PL WHITE OR YEL PAVEMENT MARKING	LF	4100.0	$ 2.50	$10,250
634.2041	LUMINARIES	EA	22.0	$ 1,000.00	$22,000
634.21	CONVERTIONAL LIGHT STANDARD	EA	22.0	$ 2,350.00	$51,700
-	MAINT. & PROTECTION OF TRAFFIC (5%)	LS	1.0	$ 59,445.00	$59,445
-	EROSION CONTROL (2%)	LS	1.0	$ 23,778.00	$23,778
-	MOBILIZATION (7.5%)	LS	1.0	$ 89,167.50	$89,168

SUBTOTAL	$1,188,900
ENGINEERING, PERMITTING AND CONSTRUCTON ADMIN. (8.5%)	$101,057
CONTINGENCY (20%)	$237,780
TOTAL 2008 COSTS	$1,527,737
ASSUME 10% INFLATION TO 2009 COSTS	$1,680,510

Unit prices based on estimates provided by MEDOT

Wilbur Smith Associates
ENGINEERS PLANNERS ECONOMISTS

PROJECT PEDESTRIAN CONNECTOR STUDY FILE NO.
SUBJECT WATERVILLE, ME SHEET NO. OF
COMPUTED BY KMS CHECKED BY DATE 2/3/09

ROUNDABOUT CONCEPT

- CLEARING
  AREAS 1-6 → 27,530 SF → 0.6 AC

- COMMON EXCAVATION
  AREAS 1-5 → 23,010 SF
  6-10 → 6,800 SF
  11-13 → 9,460 SF
  39,270 SF → 4,363 SY
  ASSUME 3' DEPTH ⇒ 4,363 CY

- ROCK EXCAVATION - ASSUME 5% → 220 CY

- FULL DEPTH PAVEMENT CONSTRUCTION → INCLUDE AGG. SUB-BASE COURSE - GRAVEL (3' DEPTH)
  AREAS A-G → 42,850 SF → 4,760 SY

- REBUILD CATCH BASIN - ESTIMATE 10

- REBUILD MANHOLE - ESTIMATE 5

- PLACEMENT OF DRAIN PIPE → ASSUME 18" CLASS III RCP ~600'

- CURB - ASSUME TYPE 5 4,100 LF

- LOAM - ASSUME SAME AS EXCAVATION QUANTITY 4,363 SY
  ASSUME 1' DEPTH ⇒ 1,450 CY

  PLUS MEDIAN AREAS
  - 150 LF x 5 LF
  - 130 LF x 5 LF
  - 240 LF x 5 LF
  - 300 LF x 5 LF ⇒ 455 SY x 1'D ⇒ 150 CY

  PLUS ROUNDABOUT CENTER
  6,360 SF → 707 SY x 1'D ⇒ 240 CY

- SEED ⇒ ASSUME LOAM SY QUANTITY ⇒ 5,525 SY

- ROADWAY LIGHTING

⇒ ASSUME ~ 2,200 LF ALONG "PERIMETER" OF ROADWAYS

ASSUME 1 LUMIAIRE @ 100' INTERVALS ⇒ 22 UNITS

INCLUDE LUMIAIRE AND LIGHT STANDARD

- HOT MIX ASPHALT ⇒ 1 CF ≈ 200 LB

ASSUME 9" D 42,850 x 9/12 ⇒ 32,140 CF

⇒ 3,200T

- SIDEWALK - 1,850 LF (ASSUME 7'W) ⇒ 1,440 SY

PAVEMENT MARKING

⇒ ASSUME LENGTH OF CURB ⇒ 4,100 SF

* DOES NOT INCLUDE UTILITY RELOCATION BEYOND MANHOLE, CATCH BASIN AND STORM SEWER REBUILD *

CLEARING

- CURBING

WilburSmith ASSOCIATES

Figure 4: Concept B1- Two Lane Roundabout

Pedestrian Connector Feasibility Study
City of Waterville, Maine

Scale: 1" = 60'

DRAFT September 30, 2008

COMMON EXCAVATION

- FULL DEPTH PAVEMENT RECONST.

WilburSmith ASSOCIATES

Figure 4: Concept B1- Two Lane Roundabout

Pedestrian Connector Feasibility Study
City of Waterville, Maine

Scale: 1" = 60'

DRAFT September 30, 2008

CONCEPTUAL COST ESTIMATE

Pedestrian Connector Feasibility Study - Waterville, ME

Concept B2 - Intersection Reconfiguration

ITEM NO.	*ITEM*	*UNIT*	*TOTAL QUANTITY*	*UNIT PRICE*	*AMOUNT*
201.11	CLEARING	AC	0.6	$ 13,500.00	$8,100
203.20	COMMON EXCAVATION	CY	2640.0	$ 15.00	$39,600
203.21	ROCK EXCAVATION	CY	130.0	$ 95.00	$12,350
304.10	AGGREGATE SUBBASE COURSE-GRAVEL	CY	0.0	$ 30.00	$0
308.35	FULL DEPTH RECONSTRUCTED PAVEMENT	SY	0.0	$ 8.00	$0
310.24	PLANT MIX RECYCLED ASPHALT PAVEMENT - 4 IN.	SY	4540.0	$ 15.00	$68,100
603.175	18" RCP CLASS III	LF	600.0	$ 85.00	$51,000
604.18	ADJUST CATCH BASIN TO GRADE	EA	5.0	$ 700.00	$3,500
604.18	ADJUST MANHOLE TO GRADE	EA	5.0	$ 700.00	$3,500
604.166	REBUILD MANHOLE	EA	0.0	$ 2,000.00	$0
608.08	REINFORCED CONCRETE SIDEWALK	SY	1480.0	$ 80.00	$118,400
608.431	RECONSTRUCT PED CURB RAMPS	EA	8.0	$ 2,350.00	$18,800
609.34	CURB TYPE 5	LF	1900.0	$ 25.00	$47,500
615.07	LOAM	CY	900.0	$ 50.00	$45,000
-	TURF ESTABLISHMENT	SY	2640.0	$ 5.00	$13,200
-	TRAFFIC CONTROL SIGNAL WORK	EA	1.0	$ 100,000.00	$100,000
627.4071	REFL. PL WHITE OR YEL PAVEMENT MARKING	LF	4400.0	$ 2.50	$11,000
634.2041	LUMINARIES	EA	0.0	$ 1,000.00	$0
634.21	CONVERTIONAL LIGHT STANDARD	EA	0.0	$ 2,350.00	$0
-	MAINT. & PROTECTION OF TRAFFIC (5%)	LS	1.0	$ 27,002.50	$27,003
-	EROSION CONTROL (2%)	LS	1.0	$ 10,801.00	$10,801
-	MOBILIZATION (7.5%)	LS	1.0	$ 40,503.75	$40,504

SUBTOTAL	$540,050
ENGINEERING, PERMITTING AND CONSTRUCTON ADMIN. (8.5%)	$45,904
CONTINGENCY (20%)	$108,010
TOTAL 2008 COSTS	$693,964
ASSUME 10% INFLATION TO 2009 COSTS	$763,361

Unit prices based on estimates provided by MEDOT

Wilbur Smith Associates
ENGINEERS PLANNERS ECONOMISTS

PROJECT PEDESTRIAN CONNECTOR STUDY FILE NO.
SUBJECT WATERVILLE, ME SHEET NO. 1 OF 2
COMPUTED BY KMS CHECKED BY DATE 2/3/09

INTERSECTION RECONFIGURATION CONCEPT

- CLEARING
  AREAS 1-5 → 26,650 SF → 0.6 AC

- COMMON EXCAVATION
  ① 8050 SF
  ② 4,500 SF
  ③/④ 5,250 SF
  ⑤ 6,000 SF
  23,800 SF → 2,640 SY
  ASSUME 3' DEPTH → 2,640 CY

- ROCK EXCAVATION
  - ASSUME 5% OF COMMON → 130 CY

- ASSUME NO FULL DEPTH PAVEMENT RECONSTRUCTION REQUIRED

- CATCH BASINS - ASSUME 5 REMOVED, 5 ADJUSTED
- MANHOLES - ASSUME 5 ADJUSTED

- ASSUME ~ 600' 18" CLASS III RCP DRAINPIPE

- CURB → ASSUME REBUILD TYPE 5 → 1,900 LF

- LOAM → ASSUME SAME AS common EXCAVATION QUANTITY
  2,640 SY X 1' DEPTH = 900 CY

- SEED → ASSUME SAME AS LOAM → 2,640 SY

- ROADWAY LIGHTING - ASSUME NEW EQUIPMENT NOT REQUIRED

- HOT MIX ASPHALT
  - ASSUME MILL & OVERLAY

450 LF x 60 LF
150 LF x 50 LF
110 LF x 40 LF
80 LF x 25 LF

40,900 SF ⇒ 4540 SY

ASSUME PLANT MIX RECYCLED - 4 IN ? (310.24)

- SIDEWALK - ASSUME FULL REBUILD

CURB LENGHT 1,900 LF x 7' W
= 1,480 SY

- MEDIAN NOT REBUILT
- PAVEMENT MARKING
  → ASSUME LENGTH OF CURB → 1,900 LF
  PLUS SAY 2500 LF
  ⇒ 4,400 LF

TRAFFIC SIGNAL - ASSUME NEW SYSTEM @ $100,000

* DOES NOT INCLUDE UTILITY RELOCATION BEYOND STORM SEWER REBUILD AND MANHOLE/CATCH BASIN ADJUSTMENT.

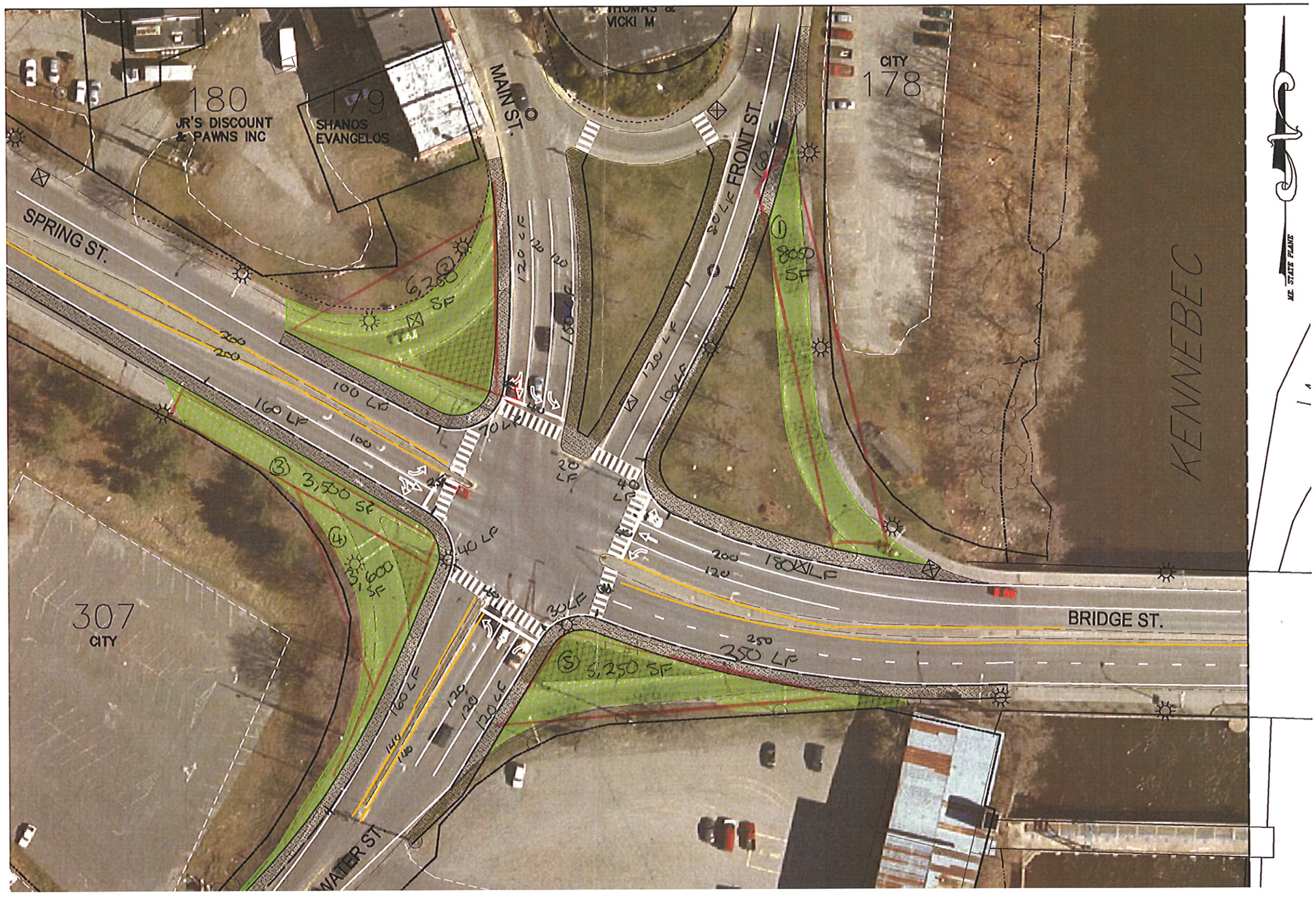

Figure 5: Concept B2- Intersection Reconfiguration

Pedestrian Connector Feasibility Study
City of Waterville, Maine

Scale: 1" = 60'

DRAFT September 30, 2008

WilburSmith ASSOCIATES

CONCEPTUAL COST ESTIMATE

Pedestrian Connector Feasibility Study - Waterville, ME

Concept C Grade Separated Path

ITEM NO.	*ITEM*	*UNIT*	*TOTAL QUANTITY*	*UNIT PRICE*	*AMOUNT*
201.11	CLEARING	AC	0.2	$ 13,500.00	$2,700
203.20	COMMON EXCAVATION	CY	1700.0	$ 15.00	$25,500
203.21	ROCK EXCAVATION	CY	85.0	$ 95.00	$8,075
304.10	AGREGATE SUB BASE COURSE - GRAVEL	CY	150.0	$ 25.00	$3,750
534.71	PRECAST CONCRETE BOX CULVERT	CY	670.0	$ 1,700.00	$1,139,000
606.55	GUIDE RAIL TYPE 3	LF	200.0	$ 25.00	$5,000
608.08	REINFORCED CONCRETE SIDEWALK	SY	550.0	$ 80.00	$44,000
634.2043	LUMINARIES - HORIZONTAL SPOT	EA	25.0	$ 950.00	$23,750
636.30	MSE RETAINING WALL	SF	950.0	$ 60.00	$57,000
-	UTILITY RELOCATION	LS	1.0	$ 30,000.00	$30,000
-	TUNNEL DRAINAGE	LS	1.0	$ 30,000.00	$30,000
-	LANDSCAPING	EA	1.0	$ 25,000.00	$25,000
-	MAINT. & PROTECTION OF TRAFFIC (5%)	LS	1.0	$ 69,688.75	$69,689
-	EROSION CONTROL (2%)	LS	1.0	$ 27,875.50	$27,876
-	MOBILIZATION (7.5%)	LS	1.0	$ 104,533.13	$104,533

SUBTOTAL	$1,393,775
ENGINEERING, PERMITTING AND CONSTRUCTON ADMIN. (8.5%)	$118,471
CONTINGENCY (20%)	$278,755
TOTAL 2008 COSTS	$1,791,001
ASSUME 10% INFLATION TO 2009 COSTS	$1,970,101

Unit prices with item numbers based on estimates provided by MEDOT

Wilbur Smith Associates

PROJECT PEDESTRIAN CONNECTOR STUDY FILE NO.

SUBJECT WATERVILLE, ME SHEET NO. 1 OF 2

COMPUTED BY KMS CHECKED BY DATE 2/5/09

CONCEPT C - PEDESTRIAN TUNNEL

- ASSUME 15' x 15' REQUIRED EXCAVATION
- ASSUME TUNNEL LENGTH ~ 200'

  ⇒ 1,700 CY COMMON EXCAVATION

- ROCK EXCAVATION → ASSUME 5% OF COMMON ⇒ 85 CY
- ASSUME ~5,000 SF CLEARING
- ASSUME PRE CAST BOX CULVERT CONSTRUCTION

  1.5' THICKNESS

  15' x 200'L x 1.5 = 4,500 CF

  x 4 SIDES = 18,000 CF

  ≈ 670 CY

- AGGREGATE SUB BASE

  - ASSUME 200'L x 15'W x 1'TH = 110 CY

  INCL APPROACHES SAY 150 CY

- ASSUME MSE RETAINING WALL

  SOUTH FACE

60'L x 10'H x 1/2 = 300 SF

50'L x 10' H x 1/2 = 250 SF

550 SF

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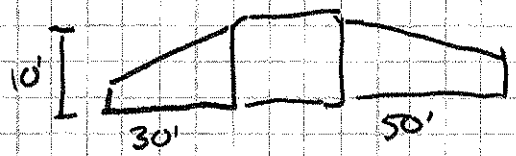
PROJECT _____ FILE NO. _____

SUBJECT _____ SHEET NO. 2 OF 2

COMPUTED BY _____ CHECKED BY _____ DATE _____

- MSE RETAINING WALL NORTH FACE



30' L x 10' H x 1/2 = 150 SF

50' L x 10' H x 1/2 = 250 SF

400 SF

TOTAL RETAINING WALL ⇒ 950 SF

- ASSUME 200 LF GUIDE RAIL FOR ROADWAY
- ASSUME REINFORCED CONCRETE SIDEWALK
  - SAY 5,000 SF
- ASSUME $30,000 UTILITY RELOCATION
- ASSUME $30,000 TUNNEL DRAINAGE
- LANDSCAPING ⇒ $25,000

CONCEPTUAL COST ESTIMATE

Pedestrian Connector Feasibility Study - Waterville, ME

Concept D Pedestrian Overpass

ITEM NO.	*ITEM*	*UNIT*	*TOTAL QUANTITY*	*UNIT PRICE*	*AMOUNT*
201.11	CLEARING	AC	0.2	$ 13,500.00	$2,700
203.20	COMMON EXCAVATION	CY	28.0	$ 15.00	$420
203.21	ROCK EXCAVATION	CY	1.5	$ 95.00	$143
-	STEEL TRUSS SUPERSTRUCTURE - 100' SPAN				
	20' VERTICAL CLEARANCE				
	12' STRUCTURE WIDTH	SF	1200.0	$ 150.00	$180,000
-	ACCESS RAMP - NORTH SIDE				
	ASSUME 10% GRADE - 20' VERTICAL CLEARANCE				
	200' LONG RAMP (2-100' SWITCHBACKS)				
	12' STRUCTURE WIDTH	SF	2400.0	$ 150.00	$360,000
-	ASSUME ELEVATOR AT HATHAWAY BUILDING	EA	1.0	$ 100,000.00	$100,000
					$0
634.2043	LUMINARIES - HORIZONTAL SPOT	EA	10.0	$ 950.00	$9,500
-	MAINT. & PROTECTION OF TRAFFIC (5%)	LS	1.0	$ 32,638.13	$32,638
-	EROSION CONTROL (2%)	LS	1.0	$ 13,055.25	$13,055
-	MOBILIZATION (7.5%)	LS	1.0	$ 48,957.19	$48,957

SUBTOTAL	$652,763
ENGINEERING, PERMITTING AND CONSTRUCTON ADMIN. (8.5%)	$55,485
CONTINGENCY (20%)	$130,553
TOTAL 2008 COSTS	$838,800
ASSUME 10% INFLATION TO 2009 COSTS	$922,680

Unit prices based on estimates provided by MEDOT

Wilbur Smith Associates
ENGINEERS PLANNERS ECONOMISTS

PROJECT PEDESTRIAN CONNECTOR STUDY FILE NO.
SUBJECT WATERVILLE, ME SHEET NO. OF
COMPUTED BY KMS CHECKED BY DATE 2/3/09

PEDESTRIAN BRIDGE OVERPASS

- ASSUME 20' CLEARANCE
- ASSUME 100' SPAN
- ASSUME STEEL TRUSS SUPERSTRUCTURE
- ASSUME ACCESS FROM 2ND FLOOR OF HATHAWAY BLDG
- WOULD NEED RAMP/SLOPE ON NORTH SIDE
- CONCRETE DECK 12' W x 6" D x 100' L => 1,200 SF
- ASSUME APPROACH RAMP (12' W) STRUCTURE @ ~~200~~ $150 /SF
  - 10% GRADE @ 20' VERTICAL DIMENSION
    - ↳ 200' L RAMP (DOUBLE-BACK @ 100')
- ASSUME 1 ELEVATOR @ $100,000
- CLEARING
  - ASSUME 5,000 SF AREA
- EXCAVATION FOR PIER FOUNDATION
  - ASSUME 15' x 5' x 5' = 375 CF => 14 CY x 2 PIERS => 28 CY
- ROCK EXCAVATION
  - ASSUME 5% OF COMMON => 1.5 CY

- ASSUME 10 HORIZONTAL LIGHTING FIXTURES

CONCEPTUAL COST ESTIMATE

Pedestrian Connector Feasibility Study - Waterville, ME

Concept R1 Riverfront Segment 1

ITEM NO.	*ITEM*	*UNIT*	*TOTAL QUANTITY*	*UNIT PRICE*	*AMOUNT*
201.11	CLEARING	AC	0.2	$ 13,500.00	$2,700
203.20	COMMON EXCAVATION	CY	140.0	$ 15.00	$2,100
203.21	ROCK EXCAVATION	CY	7.0	$ 95.00	$665
304.09	AGGREGATE BASE COURSE - CRUSHED	CY	45.0	$ 25.00	$1,125
310.23	PLANT MIX RECYCLED ASPHALT - 3 IN.	SY	280.0	$ 10.00	$2,800
607.16	CHAIN LINK FENCE - 4'	LF	500.0	$ 20.00	$10,000
615.07	LOAM	CY	35.0	$ 50.00	$1,750
-	TURF ESTABLISHMENT	SY	110.0	$ 5.00	$550
-	DECORATIVE PEDESTRIAN LIGHTING	EA	5.0	$ 4,000.00	$20,000
-	EROSION CONTROL (2%)	LS	1.0	$ 833.80	$834
-	MOBILIZATION (7.5%)	LS	1.0	$ 3,126.75	$3,127

SUBTOTAL	$41,690
ENGINEERING, PERMITTING AND CONSTRUCTON ADMIN. (8.5%)	$3,544
CONTINGENCY (20%)	$8,338
TOTAL 2008 COSTS	$53,572
ASSUME 10% INFLATION TO 2009 COSTS	$58,929

Unit prices with item numbers based on estimates provided by MEDOT

Wilbur Smith Associates
ENGINEERS PLANNERS ECONOMISTS

PROJECT PEDESTRIAN CONNECTOR STUDY FILE NO.
SUBJECT WATERVILLE, ME SHEET NO. 1 OF 1
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TRAIL SECTION R1

- ASSUME SEGMENT LENGTH ~ 250 FT
- 6" AGGREGATE BASE COURSE ⇒ 1,250 CF
- 10' TRAIL WIDTH W/ 2' BUFFER EACH SIDE
  - ASSUME 20' WIDTH FOR CLEARING
- CLEARING ⇒ 5,000 SF
- ASSUME 4' X 250' x 1' ⇒ 1,000 CF LOAM
- ASSUME 500 LF CHAIN LINK FENCE
- ASSUME DECORATIVE LIGHT POLE & LUMINARIES @ 50' INTERVALS ⇒ 5 LIGHTS
- ASSUME COMMON EXCAVATION 250' x 15' W x 1' D = 3750 CF
- PLANT MIX ASPHALT ~ 250 X 10' W = 2500 SF
- TURF ESTABLISHMENT 250' L x 2' W x 2 BUFFERS = 1,000 SF

CONCEPTUAL COST ESTIMATE

Pedestrian Connector Feasibility Study - Waterville, ME

Concept R2 Riverfront Segment 2 - Concept 1

ITEM NO.	*ITEM*	*UNIT*	*TOTAL QUANTITY*	*UNIT PRICE*	*AMOUNT*
201.11	CLEARING	AC	0.1	$ 13,500.00	$1,350
203.20	COMMON EXCAVATION	CY	400.0	$ 15.00	$6,000
203.21	ROCK EXCAVATION	CY	20.0	$ 95.00	$1,900
304.09	AGGREGATE BASE COURSE - CRUSHED	CY	35.0	$ 25.00	$875
310.23	PLANT MIX RECYCLED ASPHALT - 3 IN.	SY	200.0	$ 10.00	$2,000
607.16	CHAIN LINK FENCE - 4'	LF	360.0	$ 20.00	$7,200
615.07	LOAM	CY	25.0	$ 50.00	$1,250
635.30	PREFABRICATED MODULAR GRAVITY WALL	SF	1450.0	$ 60.00	$87,000
-	TURF ESTABLISHMENT	SY	80.0	$ 5.00	$400
-	DECORATIVE PEDESTRIAN LIGHTING	EA	4.0	$ 4,000.00	$16,000
-	EROSION CONTROL (2%)	LS	1.0	$ 2,479.50	$2,480
-	MOBILIZATION (7.5%)	LS	1.0	$ 9,298.13	$9,298

SUBTOTAL	$123,975
ENGINEERING, PERMITTING AND CONSTRUCTION ADMIN. (8.5%)	$10,538
CONTINGENCY (20%)	$24,795
TOTAL 2008 COSTS	$159,308
ASSUME 10% INFLATION TO 2009 COSTS	$175,239

Unit prices with item numbers based on estimates provided by MEDOT

Wilbur Smith Associates
ENGINEERS PLANNERS ECONOMISTS

PROJECT PEDESTRIAN CONNECTOR STUDY
SUBJECT WATERVILLE, ME
COMPUTED BY KMS
CHECKED BY
FILE NO.
SHEET NO. 1 OF 1
DATE 2/5/09

TRAIL SECTION R2 (OPTION 1)

- SEGMENT LENGTH ~180'
- ASSUME 20' WIDTH FOR CLEARING => 3,600 SF
- COMMON EXCAVATION
  - AVERAGE DEPTH ~ 8'
  - ASSUME 15' W
  => 10,800 CF
- AGGREGATE BASE COURSE 6" => 900 CF
- MODULAR GRAVITY/ RETAINING WALL
  - AVERAGE HEIGHT - 8'
  => 1,450 SF
- PLANT MIX ASPHALT ~180'L x 10'W = 1,800SF
- CHAIN LINK FENCE => 360 LF
- LIGHTING @ 50' INTERVALS => 4
- LOAM 4'x180'x1 => 720 CF
- TURF ESTABLISHMENT 180'L x2'W x2 BUFFERS => 720 SF

CONCEPTUAL COST ESTIMATE

Pedestrian Connector Feasibility Study - Waterville, ME

Concept R2 Riverfront Segment 2 - Concept 2

ITEM NO.	*ITEM*	*UNIT*	*TOTAL QUANTITY*	*UNIT PRICE*	*AMOUNT*
201.11	CLEARING	AC	0.1	$ 13,500.00	$1,350
203.24	COMMON BORROW	CY	500.0	$ 20.00	$10,000
304.09	AGGREGATE BASE COURSE - CRUSHED	CY	35.0	$ 25.00	$875
310.23	PLANT MIX RECYCLED ASPHALT - 3 IN.	SY	200.0	$ 10.00	$2,000
607.16	CHAIN LINK FENCE - 4'	LF	360.0	$ 20.00	$7,200
615.07	LOAM	CY	25.0	$ 50.00	$1,250
635.30	PREFABRICATED MODULAR GRAVITY WALL	SF	1800.0	$ 60.00	$108,000
-	TURF ESTABLISHMENT	SY	80.0	$ 5.00	$400
-	DECORATIVE PEDESTRIAN LIGHTING	EA	4.0	$ 4,000.00	$16,000
-	EROSION CONTROL (2%)	LS	1.0	$ 2,941.50	$2,942
-	MOBILIZATION (7.5%)	LS	1.0	$ 11,030.63	$11,031

SUBTOTAL	$147,075
ENGINEERING, PERMITTING AND CONSTRUCTION ADMIN. (8.5%)	$12,501
CONTINGENCY (20%)	$29,415
TOTAL 2008 COSTS	$188,991
ASSUME 10% INFLATION TO 2009 COSTS	$207,891

Unit prices with item numbers based on estimates provided by MEDOT

Wilbur Smith Associates
ENGINEERS PLANNERS ECONOMISTS

PROJECT PEDESTRIAN CONNECTOR STUDY FILE NO.
SUBJECT WATERVILLE, ME SHEET NO. OF
COMPUTED BY KMS CHECKED BY DATE 2/5/09

TRAIL SECTION R2 (OPTION 2)

- SEGMENT LENGTH ~180'
- ASSUME 20' WIDTH FOR CLEARING => 3,600 SF
- COMMON BORROW
  - AVERAGE DEPTH ~10'
  - ASSUME 15'W
  => 13,500 CF
- AGGREGATE BASE COURSE 6" => 900 CF
- MODULAR GRAVITY RETAINING WALL
  - AVERAGE HEIGHT ~10'
  => 1,800 SF
- PLANT MIX ASPHALT ~180'L X10'W => 1,800 SF
- CHAIN LINK FENCE => 360 LF
- LIGHTING @ 50' INTERVALS
- LOAM 4X180'X1 => 720 CF
- TURF ESTABLISHMENT 180'L x 2'W x 2 BUFFERS => 720 SF

* ROW ACQUISITION NOT INCLUDED

CONCEPTUAL COST ESTIMATE

Pedestrian Connector Feasibility Study - Waterville, ME

Concept R3 Riverfront Segment 3

ITEM NO.	*ITEM*	*UNIT*	*TOTAL QUANTITY*	*UNIT PRICE*	*AMOUNT*
201.11	CLEARING	AC	0.1	$ 13,500.00	$1,350
203.24	COMMON BORROW	CY	445.0	$ 20.00	$8,900
304.09	AGGREGATE BASE COURSE - CRUSHED	CY	35.0	$ 25.00	$875
310.23	PLANT MIX RECYCLED ASPHALT - 3 IN.	SY	225.0	$ 10.00	$2,250
607.16	CHAIN LINK FENCE - 4'	LF	400.0	$ 20.00	$8,000
615.07	LOAM	CY	30.0	$ 50.00	$1,500
635.30	PREFABRICATED MODULAR GRAVITY WALL	SF	1500.0	$ 60.00	$90,000
-	TURF ESTABLISHMENT	SY	90.0	$ 5.00	$450
-	DECORATIVE PEDESTRIAN LIGHTING	EA	4.0	$ 4,000.00	$16,000
-	EROSION CONTROL (2%)	LS	1.0	$ 2,586.50	$2,587
-	MOBILIZATION (7.5%)	LS	1.0	$ 9,699.38	$9,699

SUBTOTAL	$129,325
ENGINEERING, PERMITTING AND CONSTRUCTION ADMIN. (8.5%)	$10,993
CONTINGENCY (20%)	$25,865
TOTAL 2008 COSTS	$166,183
ASSUME 10% INFLATION TO 2009 COSTS	$182,801

Unit prices with item numbers based on estimates provided by MEDOT

Wilbur Smith Associates
ENGINEERS PLANNERS ECONOMISTS

PROJECT PEDESTRIAN CONNECTOR STUDY FILE NO.
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TRAIL SECTION R3

- SEGMENT LENGTH ~ 200'
- ASSUME 20' WIDTH FOR CLEARING => 4,000 SF
- COMMON BORROW
  - AVERAGE DEPTH ~ 7.5'
  - ASSUME 16' W
  => 12,000 CF
- AGGREGATE BASE COURSE 6" => 1,000 CF
- MODULAR GRAVITY RETAINING WALL
  - AVG. HEIGHT ~ 7.5'
  => 1,500 SF
- PLANT MIX ASPHALT ~200'L X10' => 2,000 SF
- CHAIN LINK FENCE => 400 LF
- LIGHTING @ 50' INTERVALS
- LOAM 4 X 200 => 800 CF
- TURF ESTABLISHMENT => 800 SF

→ ROW ACQUISITION NOT INCLUDED

CONCEPTUAL COST ESTIMATE

Pedestrian Connector Feasibility Study - Waterville, ME

Concept R4 Riverfront Segment 4

ITEM NO.	*ITEM*	*UNIT*	*TOTAL QUANTITY*	*UNIT PRICE*	*AMOUNT*
201.11	CLEARING	AC	0.1	$ 13,500.00	$1,350
203.24	COMMON BORROW	CY	350.0	$ 20.00	$7,000
304.09	AGGREGATE BASE COURSE - CRUSHED	CY	30.0	$ 25.00	$750
310.23	PLANT MIX RECYCLED ASPHALT - 3 IN.	SY	170.0	$ 10.00	$1,700
607.16	CHAIN LINK FENCE - 4'	LF	300.0	$ 20.00	$6,000
615.07	LOAM	CY	25.0	$ 50.00	$1,250
635.30	PREFABRICATED MODULAR GRAVITY WALL	SF	1125.0	$ 60.00	$67,500
-	TURF ESTABLISHMENT	SY	25.0	$ 5.00	$125
-	DECORATIVE PEDESTRIAN LIGHTING	EA	3.0	$ 4,000.00	$12,000
-	EROSION CONTROL (2%)	LS	1.0	$ 1,953.50	$1,954
-	MOBILIZATION (7.5%)	LS	1.0	$ 7,325.63	$7,326

SUBTOTAL	$97,675
ENGINEERING, PERMITTING AND CONSTRUCTION ADMIN. (8.5%)	$8,302
CONTINGENCY (20%)	$19,535
TOTAL 2008 COSTS	$125,512
ASSUME 10% INFLATION TO 2009 COSTS	$138,064

Unit prices with item numbers based on estimates provided by MEDOT

Wilbur Smith Associates
ENGINEERS PLANNERS ECONOMISTS

PROJECT PEDESTRIAN CONNECTOR STUDY FILE NO.
SUBJECT WATERVILLE, ME SHEET NO. OF
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TRAIL SECTION R4

- NO CROSS-SECTION DEVELOPED - ASSUME R 3 TOPOGRAPHY
- SEGMENT LENGTH ~ 150'
- ASSUME 20' WIDTH FOR CLEARING => 3,000 SF
- COMMON BORROW
  - AVERAGE DEPTH ~ 7.5'
  - ASSUME 16' W => 9,000 CF
- AGGREGATE BASE COURSE 6" => 750 CF
- MODULAR GRAVITY RETAINING WALL
  - AVG. HEIGHT ~ 7.5'
  - => 1,125 SF
- PLANT MIX ASPHALT ~ 150'L x 10' => 1,500 SF
- CHAIN LINK FENCE => 300 LF
- LIGHTING @ 50' INTERVALS
- LOAM 4 x 150 => 600 CF
- TURF ESTABLISHMENT => 600 CF

* ROW ACQUISITION NOT INCLUDED

CONCEPTUAL COST ESTIMATE

Pedestrian Connector Feasibility Study - Waterville, ME

Concept R6 Riverfront Segment 6

ITEM NO.	*ITEM*	*UNIT*	*TOTAL QUANTITY*	*UNIT PRICE*	*AMOUNT*
201.11	CLEARING	AC	0.2	$ 13,500.00	$2,700
203.24	COMMON BORROW	CY	295.0	$ 20.00	$5,900
304.09	AGGREGATE BASE COURSE - CRUSHED	CY	85.0	$ 25.00	$2,125
310.23	PLANT MIX RECYCLED ASPHALT - 3 IN.	SY	500.0	$ 10.00	$5,000
607.16	CHAIN LINK FENCE - 4'	LF	900.0	$ 20.00	$18,000
615.07	LOAM	CY	65.0	$ 50.00	$3,250
635.30	PREFABRICATED MODULAR GRAVITY WALL	SF	1000.0	$ 60.00	$60,000
-	TURF ESTABLISHMENT	SY	200.0	$ 5.00	$1,000
-	DECORATIVE PEDESTRIAN LIGHTING	EA	9.0	$ 4,000.00	$36,000
-	EROSION CONTROL (2%)	LS	1.0	$ 2,679.50	$2,680
-	MOBILIZATION (7.5%)	LS	1.0	$ 10,048.13	$10,048

SUBTOTAL	$133,975
ENGINEERING, PERMITTING AND CONSTRUCTION ADMIN. (8.5%)	$11,388
CONTINGENCY (20%)	$26,795
TOTAL 2008 COSTS	$172,158
ASSUME 10% INFLATION TO 2009 COSTS	$189,374

Unit prices with item numbers based on estimates provided by MEDOT

Wilbur Smith Associates
ENGINEERS PLANNERS ECONOMISTS

PROJECT WATERVILLE PEDESTRIAN CONNECTOR STUDY FILE NO.
SUBJECT WATERVILLE, ME SHEET NO. 1 OF 1
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TRAIL SECTION R6

- ASSUME SEGMENT LENGTH ~450'
- ASSUME 20' WIDTH FOR CLEARING => 9,000 SF
- COMMON BORROW
  - ASSUME DEPTH ~ 5'
  - 16' W
  - APPROX 200 LF OF TRAIL SEGMENT ONLY
  => 8,000 CF
- AGGREGATE BASE COURSE 6" => 2,250 CF
- MODULAR GRAVITY RETAINING WALL
  - AVG. HEIGHT ~ 5'
  - 200 LF
  => 1,000 SF
- PLANT MIX ASPHALT ~ 450'L x 10'W => 4,500 SF
- CHAIN LINK FENCE => 900 LF
- LIGHTING @ 50' INTERVALS
- LOAM 4 x 450 => 1,800 CF
- TURF ESTABLISHMENT => 1,800 SF

* ROW ACQUISITION NOT INCLUDED

CONCEPTUAL COST ESTIMATE

Pedestrian Connector Feasibility Study - Waterville, ME

Concept C7 Temple St Sidewalk to Two-Cent Bridge

ITEM NO.	*ITEM*	*UNIT*	*TOTAL QUANTITY*	*UNIT PRICE*	*AMOUNT*
304.09	AGGREGATE BASE COURSE - CRUSHED	CY	35.0	$ 25.00	$875
608.08	REINFORCED CONCRETE SIDEWALK	SY	220.0	$ 80.00	$17,600
609.34	CURB TYPE 5	LF	150.0	$ 25.00	$3,750
615.07	LOAM	CY	40.0	$ 50.00	$2,000
-	TURF ESTABLISHMENT	SY	125.0	$ 5.00	$625
-	DECORATIVE PEDESTRIAN LIGHTING	EA	6.0	$ 4,000.00	$24,000
-	EROSION CONTROL (2%)	LS	1.0	$ 977.00	$977
-	MOBILIZATION (7.5%)	LS	1.0	$ 3,663.75	$3,664

SUBTOTAL	$48,850
ENGINEERING, PERMITTING AND CONSTRUCTION ADMIN. (8.5%)	$4,152
CONTINGENCY (20%)	$9,770
TOTAL 2008 COSTS	$62,772
ASSUME 10% INFLATION TO 2009 COSTS	$69,049

Unit prices with item numbers based on estimates provided by MEDOT

Wilbur Smith Associates
ENGINEERS PLANNERS ECONOMISTS

PROJECT PEDESTRIAN CONNECTOR STUDY FILE NO.

SUBJECT WATERVILLE, ME SHEET NO. OF

COMPUTED BY KMS CHECKED BY DATE

Sidewalk C7

- ASSUME FULL SIDEWALK CONSTRUCTION
  - 280'L , 7'W
  - REINFORCED CONCRETE => 1,960 SF
- NEW TYPE 5 CURB ~ 190 LF
- ASSUME 280'L X 8'W CLEARING => 2,250 SF
- AGGREGATE BASE COURSE => 6" 980 CF
- LIGHTING @ 50' INTERVALS
- LOAM 4'W x 280'L => 1,120 CF
- TURF ESTABLISHMENT => 1,120 SF

*ROW ACQUISITION NOT INCLUDED

APPENDIX G: DRAFT RFP DOWNTOWN TRAFFIC CIRCULATION AND PARKING STUDY, CITY OF WATERVILLE

DRAFT

Request for Professional Services
City of Waterville
Traffic Circulation and Parking Study
For Downtown Waterville

February 10, 2009

The City of Waterville invites the submission of proposals for professional services to complete a downtown study which will assess the short and long term needs regarding:

1. Pedestrian safety, sidewalks and crosswalks,
2. Traffic circulation and access management,
3. Intermodal connections and opportunities,
4. Bicycle safety and circulation,
5. Parking (both on-street and off-street), and
6. Lighting, signage, landscaping and visual character.

Proposals must be submitted to Waterville's City Managers Office no later than 3:00 PM on March 15, 2009 EST. Proposals shall be submitted in sealed packages labeled "Proposal for Professional Services – Waterville Traffic Circulation and Parking Study."

I. Introduction and Background

The focus of this study will be to find solutions that will benefit all stakeholders and not just to recommend infrastructure improvements which create additional capacity. Sustainability and retention of pedestrian-friendly, walkable downtowns are key goals, as is the need to address the short term and long term traffic circulation and parking requirements of residents, visitors and business owners.

The objective of the study will be to look at the study area (as specified in Section II) and develop both a short-term and a long-term improvement(s) plan and an implementation schedule.

II. Study Area

The study area is bounded by the following streets: Bridge Street/Spring Street to the south; Front Street to the east; Elm Street to the west; and Union Street to the north.

III. **Contact and Planning Advisory Committee**

The consultant's point of contact shall be the City Engineer. The project will be overseen and directed by a Committee to be established by the City. This Committee will provide the selected consultant with input and regular feedback on the direction of the Study.

IV. **Scope of Services**

The City has identified the following general outline to be used for the preparation of the traffic and parking study:

1. Public Participation Process which includes several public informational meetings (to be coordinated with study committee) and other workshop meetings with City staff, City committees and Planning Board as needed to gather feedback and complete project.

2. Complete an up to date traffic and parking assessment for the Downtown:

a.) traffic and circulation analysis including review of existing traffic volumes and crash data and gathering of new data where needed;

b.) inventory/square footage of business space in each of the downtowns with available parking assigned to each use;

c.) on-street and off-street parking analysis, including both public and private space availability;

d.) 10 year projections of traffic and parking needs;

e.) assessment should include peak summer traffic and parking evaluation;

f) traffic circulation analysis shall include a feasibility assessment of converting the existing one-way street system to two-way flow.

g) a traffic simulation analysis shall be conducted to provide visual computer materials for review.

h) renderings shall be prepared for key roadway sections illustrating proposed recommendations.

i) a detailed evaluation of sidewalk, crosswalks, and bicycle accommodations shall be performed.

j) an evaluation of truck routing through the Downtown Study area shall be performed.

3. Preparation of a draft report narrative and plan graphic(s) depicting current roadway and parking conditions for the Downtown and separate plan graphic depicting recommended short and long term improvements. Public Hearings shall be held in order to present findings and gather feedback from City committees, staff and residents. All site plans shall be at a maximum scale of 1" = 100'. Coordination with the MaineDOT, and other applicable organizations will be expected.

4. Investigate/evaluate any on-going or planned transportation improvements by adjacent communities that may impact or influence traffic planning efforts for Waterville.

5. Review the Downtown area for aesthetics/landscaping improvements, signage improvements, and other improvements that will complement traffic improvements recognizing the balance between maintaining urban character and assuring safe pedestrian and vehicle traffic flow.

6. Prepare cost estimates, and potential funding sources, for recommended short and long-term improvements.

7. Prepare a final report of findings detailing the results of the study and recommendations, including graphics and plans. (Twenty copies shall be provided to the City and three CD ROM copies of all finished products in accordance with the scope of work in formats to be agreed upon.)

The above components are intended as minimum requirements outlining the City of Waterville's intent and objective for the study. The consultant is encouraged to expand upon these minimum requirements to develop a scope of services responsive to the intent and objective of the City. Each consultant will be evaluated on the content of the RFP submittal, approach, qualifications, and responsiveness to the City's traffic and parking goals.

V. Minimum RFP Submittal Requirements for the Complete Proposal

Twenty (20) copies of the complete proposal (as outlined below) are required to be deemed a complete submission.

1. General Qualifications of Firm
a) Profile of similar projects
b) Firm introduction and background
c) References
d) Representative client listing
e) References
f) Subconsultants and project team

2. Personnel and Resources
Resumes of project manager and other personnel to be assigned to this project

3. Project Approach and Scope of Services
Provide a detailed explanation of the proposer's project approach and scope of services demonstrating responsiveness to the City's RFP requirements and overall project goals and objectives.

4. Fee Schedule
a.) Include a schedule of fees keyed to each component of the scope of services. The fees for this project shall be lump sum for each component of the project. Proposers shall submit a narrative describing cost control measures, ability to meet project budget, and past performance on cost control.

b.) Include hourly rate schedule for all personnel who will work on this project.

VI. Questions and Inquiries

Questions should be directed in writing to the Waterville City Engineer Greg Brown.
Greg Brown, P.E.
Waterville City Engineer
6 Wentworth Court
Waterville, Maine 04901

VII. Selection Criteria

Selection criteria will be the based upon the following:

- 35% -project approach, responsiveness to the RFP, qualifications of the Project Team, and ability to meet the project schedule.
- 35% -past experience on similar or related projects.
- 30% -lump sum cost to complete the Study.

The City of Waterville reserves the right to accept or reject any or all proposals for any reason and to negotiate with any individual or firm.

VIII. Project Schedule

The following anticipated schedule may be modified by the City in order to address scheduling conflicts and/or valid processing delays.

a.) Proposals due March 15, 2009

b.) Consultant interviews by City April 9 – 20, 2009
c.) Firm Selected May 1, 2009
d.) Draft Report September 1, 2009
e.) Final Report October 15, 2009