

ROUTE ONE SOUTH CONCEPT INFRASTRUCTURE PLAN

Falmouth, Maine

prepared by:
Town of Falmouth Community Development Committee

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January 17, 2013





COMMUNITY DEVELOPMENT COMMITTEE (Town Council Sub-committee)

January 17, 2013

Greetings,

This report presents a proposed plan for infrastructure improvements on Route One in the retail business district.

Members

Bonny Rodden
Chair

This proposed investment in Route One is intended to increase business, residential, and lifestyle activities along the town's primary commercial corridor and improve traffic management and traffic safety for all types of transportation. This investment, along with proposed zoning changes not included in this report, is intended to make Route 1 more successful and distinctive – a dynamic place to shop, live, and be entertained.

Tony Payne

Revitalizing Route 1 has been a goal of the Falmouth Town Council for 10 years. The Town Council has made this commitment to improve the Route One corridor because studies have shown that a center-oriented shopping area, improves the economic vitality of a community in the long-run, reduces suburban sprawl, better uses resources, and makes the area more walkable and community-oriented. In short, it will better define Falmouth's "sense of place."

Teresa Pierce

The improvements that are proposed at this time include landscaped islands in the middle of the street with left turn lanes, street trees, pedestrian-scaled lights, a wider sidewalk, traffic signal mast arms (instead of lights hanging from cables), and driveway curb cut modifications to improve traffic flow. At this point the committee is considering placing power lines underground, but this may not be proposed due to cost.

This multi-million dollar project is proposed to be financed with existing property tax revenues generated within this area, known as the "Route One South Tax Increment Financing District." Those taxes are set aside for the specific purpose of reinvestment in the area. New taxes will not be required to fund this project. Construction of the project is scheduled to complement the Maine Department of Transportation's \$700,000 planned repaving of Route One in 2015.

If approved by the Town Council, the infrastructure plan will go before the voters on June 11, 2013.

This concept plan is not final and councilors want your feedback on it. Outreach meetings are planned for the community at large and businesses along Route 1. The committee hopes you will participate to make this long-awaited plan work for Falmouth. Thank you for your interest.

Sincerely, Councilor Bonny Rodden, Chair

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EXECUTIVE SUMMARY

Introduction

Policy, zoning, and the required infrastructure must align to achieve a walkable, vibrant, and economically feasible community with a “sense of place.” After a decade-long planning effort, the Town of Falmouth is proposing to revise its policy and zoning standards in the Route One business district in concert with a proposed Route One South Concept Infrastructure Plan (“the Plan”) in order to make informed decisions about how to achieve a desired sense of place.

The Plan, which is described in this report, focuses on right-of-way improvements between the Route One/Route 88 intersection north to the Turnpike Spur. Making strategic investments in the right-of-way infrastructure will improve visual quality, establish a safe and inviting pedestrian environment, encourage private investment adjacent to the right-of-way that reinforces a village-scaled sense, and ultimately leverage mutually beneficial relationships between the public and private sector. If implemented in a thoughtful and responsible manner, investments in infrastructure shape the future character and economy of a place.

Implementation of the Plan is estimated to cost \$5.6 MM. The Plan is proposed to be financed with existing property tax revenues generated within this area, known as the “Route One South Tax Increment Financing District.” Those taxes are set aside for the specific purpose of reinvestment in the area. New taxes will not be required to fund this project. Construction of the project is scheduled to complement the Maine Department of Transportation’s \$700,000 planned repaving of Route One in 2015. The proposed curb cut and driveway connection work is proposed to be completed at the Town’s expense.

The Plan addresses the fundamental issues related to the goals of placemaking in an objective manner. Landscape medians improve traffic circulation and safety for both pedestrians (by offering refuge when crossing the street) and vehicles (by allowing for designated, non-conflicting left turn locations). The medians are also intended to be visually pleasing. As Route One traffic volumes increase over time, management of traffic flow through medians and access to private properties will become increasingly important. Decorative lighting will improve visual quality and will make Route One more safe and inviting for all users. The Plan conceptually addresses the design and cost of utilities required to power and “empower” the streetscape.

In summary, the Plan is an infrastructure and traffic project that supports a more village-like environment. Water, electrical, data, stormwater, curbing, soil composition are the foundations for revitalizing a place. How these infrastructure elements relate to each other and support the quality and scale of the visible “built environment” will allow the Town to achieve a sense of place for Route One.

Design of the Plan is being conducted in three separate steps or phases:

1. Concept Design Phase: This phase has been concluded. The January 2013 report contains an analysis and description of the concept design work.
2. Preliminary Design Phase: Between January and March 2013, the Concept Plan will be refined based on community feedback and topographic survey data. The construction cost estimate will be updated and the Council will be asked to recommend funding authorization language for a June 2013 Referendum.

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3. **Construction Design:** If voters approve the referendum question, a set of construction documents will be prepared for bid and construction purposes. Final design decisions will be made at this stage.

Construction start is anticipated for spring 2014. Pavement construction is scheduled for spring 2015.

The Concept Plan consists of three primary areas:

- Transportation Infrastructure
- Utility Infrastructure
- Streetscape

Transportation

Route One is an important transportation corridor and the economy of the area depends on the safe and continued movement of vehicles to access businesses. Recommended improvements to transportation infrastructure are proposed to be practical, business friendly and will improve safety and the flow of traffic. Traffic volume capacity will not decrease with the proposed improvements.

Transportation improvements include a series of landscaped islands in the middle of the street with left turn lanes, several driveway curb cut modifications, and new connections between properties. Official “bicycle lanes” that are five feet wide are not included in the Plan as such required a road widening of one foot which was estimated to cost more than \$1 MM. Wide sidewalks could accommodate the youngest and less experienced bicyclists. Route 88 provides an alternative north-south bicycle route. The Plan will include four feet wide paved shoulders suitable for safe bicycling. Intersection improvements may be needed in the future and have not been included in the Plan.

Utility Infrastructure

The utilities needed to support an attractive, safe, environmentally sensitive, and energy efficient place require the appropriate infrastructure. The Plan includes an analysis of the capacity of existing and required infrastructure such as sewer, water, data, electrical, and stormwater required to support the build-out of the vision. Underground power was much discussed, but may not be included due to its \$5 MM cost. The next phase of the project’s design will investigate this further and explore all options and costs for underground power.

Streetscape

Streetscape is what you see: street trees, streetlights, sidewalks, benches, and other amenities. The quality of the streetscape corresponds with the capacity and quality of utilities and the careful integration of transportation improvements that balance the needs of vehicles and pedestrians.

Streetscape improvements are a visible demonstration that a community is investing in the future of the area. The recommended streetscape improvements in the Plan are maximized for their environmental, economic, and visual impact. The Town is not beautifying by trying to “soften” the impact of development. By investing in a visual pleasing and practical streetscape, the Town is trying to energize and increase the visibility of economic development as well as increase economic activity in the corridor. Proposed improvements include approximately 200 street trees, 160 pedestrian-scaled lights, four bus stops with seating, five pedestrian rest areas with seating, bicycle racks, and trash receptacles, a wider, handicap-accessible sidewalk, and traffic signal poles and mast arms (instead of traffic lights suspended from cables) at intersections.

1.0 INTRODUCTION

The T.Y. Lin International (TYLI) Team, comprised of TYLI, MRLD Landscape Architecture + Urbanism (MRLD), and Woodard & Curran (W&C), was selected by the Town of Falmouth (Town) to develop an Infrastructure Plan (Plan) for Route One between Route 88 to the south and the Maine Turnpike spur to the north. The purpose of the Plan is a coordinated investment in, and improvement of, the public right-of-way (ROW) infrastructure of Route One to make it a more attractive, cohesive, functional, and pedestrian-friendly street that strengthens its economic viability and implements the Town's vision which includes:

- a denser pattern of development of the Route One area with activities day and night;
- a variety of uses including, but not limited to, retail, office, service, entertainment, and residential;
- an emphasis on pedestrians and sidewalks; and
- attractive landscaping that appeals to both businesses and shoppers

This Final Report provides a summary of the Plan recommendations as it relates to Transportation, Utility Infrastructure, and Streetscape elements. It was prepared by the Town Council Community Development Committee (CDC) with the technical support from Town staff and the Consultant Team.

2.0 STUDY PROCESS

This project was developed by the Community Development Committee. The project's design is being conducted in three separate steps or phases:

1. **Concept Design Phase:** This phase has been concluded. The January 2013 report contains an analysis and description of the concept design work.
2. **Preliminary Design Phase:** Between January and March 2013, the Concept Plan will be refined based on community feedback and topographic survey data. The construction cost estimate will be updated and the Council will be asked to recommend funding authorization language for a June 2013.
3. **Construction Design:** If voters approve the June 2013 referendum question, a set of construction documents will be prepared for bid and construction purposes. Final design decisions will be made at this stage.

For Phase 1 the committee met in 2012 more than a dozen times to review the work by the consultant and staff. This work began with the preparation of various visualizations of Route One to help affirm the direction on zoning, including building setbacks. This was followed by providing feedback on the key issues and conclusions that flowed from an analysis of existing conditions. After a review of projected future conditions, the committee reviewed three basic options for a Route One plan, from low cost to high cost, and presented these options to the Council. This was followed by an in-depth workshop to review specific details of the plan, such as whether or not there should be a proposal for a bicycle lane versus a paved shoulder, underground power, on-street parking, and what the widths of sidewalks and esplanades should be. This was followed by another Council update. After that the Committee reviewed a financing approach for the Concept Plan, each of the proposed curb cut modifications, and an analysis of the Turnpike Spur-Route One intersection. Three specific locations were identified for new visualizations to help illustrate the plan. The committee, consultant team, and Town staff

conducted a site walk in December to help fine-tune the direction for the preliminary plan and reviewed the draft Concept Plan report.

The next step in this process, Phase 2 Preliminary Design, will offer many opportunities for public input. Specifically, there will be public forums and specific project area business owner and property owner outreach efforts to gather input. This phase will further investigate the options for underground power, consider the public feedback obtained, and refine the design, layout, and cost estimate of the plan. This phase will conclude with the June 2013 Referendum.

3.0 EXISTING CONDITIONS SUMMARY

An initial comprehensive documentation and evaluation of existing conditions was conducted for the Plan and included a review of transportation, utility, and streetscape infrastructure. The following summarizes key conclusions of that effort. For more detail, the reader should refer to the [Existing Conditions Technical Memorandum, March 2012](#).

3.1 TRANSPORTATION

General Conclusions

- INTERSECTION CAPACITY
 - Overall intersection performance (e.g. vehicle delay) is acceptable.
 - Vehicle queues can be long between Depot Road and Clearwater Drive in the northbound direction.

- BICYCLE
 - No specific bicycle provisions are provided in the study corridor.
 - In some areas shoulder space is provided.

- PEDESTRIAN
 - Good visible crosswalks are provided.
 - Sidewalks are provided throughout most of the corridor and on side streets however there are gaps in the system. Sidewalk gaps should be filled.

- TRAFFIC SIGNALS
 - Overall traffic signals are efficient from an isolated intersection perspective.

- ROADWAY GEOMETRY
 - There is generally acceptable stopping sight distance throughout the study area.

- DRIVEWAY ACCOMMODATION / ACCESS MANAGEMENT
 - Generally good access management conditions exist within the corridor.
 - Many driveways are very wide.

- CRASH DATA
 - No locations within the study area are High Crash Locations per MaineDOT criteria.

3.2 UTILITY INFRASTRUCTURE

General Conclusions

- Existing utility infrastructure within the study area includes sanitary sewer, stormwater drainage, water, power and communications. Based on correspondence with utility companies and the Town, the existing utility infrastructure along the study area is in good condition and provides an adequate level of capacity and service to the existing properties along Route One, with no planned upgrades, replacements or expansions.
- Existing utility infrastructure within the study area does not include natural gas.
- Electrical and communications infrastructure within the study area, including main distribution lines and many services, consists of overhead lines. The Town would like to consider underground power and communications as part of the proposed plan, including the cost implications of this work.
- Existing stormwater drainage systems within the Route One ROW do not include stormwater quality treatment or stormwater quality control measures.

3.3 STREETSCAPE

General Conclusions

- **STREETSCAPE**
 - The ROW and adjacent development are landscaped and buffered in an attractive manner.
 - Sidewalks are found throughout most of the study area, but there are gaps in the system and the alignment of the sidewalk varies (straight versus curving). Currently there are no “streetscapes” that directly engage adjacent development.
 - Traditional streetscape amenities such as street trees, street lights, benches, bus stops, bike racks and trash receptacles are not present within the ROW.
 - While the study area is an attractive commercial corridor in terms of landscaping, there is a lack of what is considered a village “streetscape”, which typically includes a public realm (including the above mentioned amenities) that directly engage to the adjacent development.
 - The primary reason that there is not a traditional streetscape in the study area is that parking is placed between the buildings and the ROW.
- **LIGHTING**
 - Currently, lighting is not pedestrian-scaled and does not contribute to the visual quality of the study area, except for the recently installed lighting on Clearwater Drive.

4.0 FUTURE CONDITIONS ANALYSIS SUMMARY

An evaluation of future transportation conditions was performed and documented in detail within the Future Conditions Technical Memorandum, May 2012. That document provides anticipated

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future traffic volumes and expected traffic operating conditions along the study corridor in the year 2035. Key conclusions contained in that document are summarized below:

- Intersection turning movement volumes are expected to grow by 15 to 28 percent between now and 2035 with intersection growth percentages noted below (PM peak hour and Mid-day peak hour traffic growth are noted in parenthesis):
 - Route One/Route 88 – 20% (25%)
 - Route One/Fundy Road – 15% (25%)
 - Route One/Clearwater Drive – 19% (23%)
 - Route One/Depot Road – 24% (24%)
 - Route One/Bucknam Road – 27% (28%)
- Daily traffic volumes (“AADT”) are expected to experience similar growth rates with the following 2035 traffic volumes and the traffic volume percent growth between now and 2035 noted in parenthesis:
 - Route One north of Bucknam Road – 15,170 AADT (26%)
 - Route One north of Depot Road – 17,940 AADT (25%)
 - Route One north of Route 88 – 15,430 AADT (23%)
 - Route One south of Route 88 – 19,130 AADT (22%)
 - Depot Road west of Route One – 7,920 AADT (30%)
 - Bucknam Road west of Route One – 13,830 AADT (29%)
- The Route One intersections with Route 88 and Clearwater Drive are expected to operate at acceptable levels of service in the year 2035.
- The Route One intersections with Fundy Road, Depot Road, and Bucknam Road may operate at unacceptable levels of service and may experience long vehicle delays and queues during peak volume time periods in 2035.
- Based upon the results of the capacity analysis, mitigation improvements should be considered at the Route One intersections with Bucknam Road, Depot Road, and Fundy Road over time.

5.0 CONCEPT IMPROVEMENT PLAN

The following presents in detail the elements of the conceptual improvement plan identified for Route One. The plan is based upon many meetings with Staff and the consultant team. Figures 1 through 3 in the Appendix illustrate the plan. The primary focus area for the Plan was between Waldo’s (where Route One merges) to just north of Bucknam Road. Traffic evaluations of Route One at the Turnpike Spur were conducted and that information is summarized in Section 6.0. Following a review of existing traffic data and budgetary needs, it was concluded that no action is suggested in the Route 88 area. The intersection functions well and does not experience any safety concerns. It should be noted that the graphical representation of improvements assume a continuous cross-section for roadway width, esplanade, and sidewalks. ***A key consideration should include a recommendation that some existing property frontages may remain unchanged or slightly modified.*** The exact details of those modifications will be determined in the next phase of the Plan.

5.1 Transportation Infrastructure

- Pavement Markings
 - Travel Lanes/Bicycle Provisions - The project will include the adjustment of pavement markings such that 11-foot vehicle travel lanes and approximately 4-foot shoulders are provided. Various bicycle options were discussed and it was ultimately determined that the added cost of more than \$1 MM of moving curbs and drainage infrastructure to attain sufficient width for bicycle lanes (the need to widen one foot to attain the standard bicycle lane width of five feet would be required) was not recommended. It was concluded that, given this cost, the availability of other bicycle route options, and provision of wide sidewalks, dedicated bicycle lanes should not be included. In conjunction with ensuring bicycle travel is safe, drainage structures will be designed such that they are not located in the shoulder.
 - Crosswalks – will consist of painted “block” design layout. The “block” detail standard consists of 2-foot by 8-foot painted rectangles.

- Traffic Signals – All traffic signals will be upgraded to ornamental mast arm supports and equipment upgrades will allow for efficient traffic operations on an individual intersection basis, with modest improvements to coordinating signals in the corridor. While not included in the Plan, the Town should work with regional traffic signal management initiatives to link the Route One signals with the regional system such that traffic signal timing operations takes advantage of available system resources and technology.

- On-Street Parking – The provision for on-street parking is not an immediate envisioned component of the plan. As development occurs and street and property frontages are upgraded, the evaluation of the need and provision of on-street parking will be assessed at that time. The general direction from MaineDOT is that approval of on-street parking is contingent on parking demand needs. Given off-street parking resources, no action on increasing on-street supply is recommended at this time, but future opportunities to provide this are preserved.

- Roadway/Intersection Geometry
 - Route One/Bucknam Road
 - The channelization islands shall be eliminated and replaced with traditional turn lanes.
 - Crosswalks shall be provided on all approaches of the intersection.
 - A study was conducted to determine the feasibility of constructing a roundabout at this location. Based upon high traffic volumes, a partial two-lane roundabout may be required from a capacity perspective. It was concluded that capacity enhancements and considerations for a roundabout should be concurrent with redevelopment of the Falmouth Shopping Center (which as a major entrance at this intersection) or as traffic growth warrants. Therefore, no action is recommended at this time.

 - Route One/Depot Road
 - Increased intersection vehicle capacity may be necessary with future growth projections. Identification of specific improvements is recommended to be conducted at a later date.

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- Route One/Fundy Road
 - Increased intersection vehicle capacity may be necessary with future growth projections. Identification of specific improvements is recommended to be conducted at a later date.

- Median Islands – The plan includes the provision of raised landscape medians at many locations within the study corridor. The median islands are being proposed for several reasons. They will serve as a traffic management and safety strategy and will provide traffic calming benefits. Additionally the islands will be used for pedestrian refuge when located in conjunction with a proposed crosswalk. Lastly, the islands will provide space for trees/landscaping and thus will improve the visual quality of Route One. The publication *Designing Walkable Urban Thoroughfares: A Context Sensitive Approach*, by the Institute of Transportation Engineers, notes that “operational and safety benefits of medians include storage for turning vehicles, enforcing turn restrictions, reducing conflicts, pedestrian refuge, snow storage, reducing certain types of crashes such as head-on collisions and space for vehicles crossing the thoroughfare at unsignalized intersections.” It further notes “well-designed and landscaped medians can serve as the focal point of the street or an identifiable gateway into a community, district, or neighborhood”. Anticipated locations are noted below. It should be noted that the final design of the islands will be conducted during design development activities.
 - Between the Falmouth Shopping Center main driveway and the Key Bank/Starbucks driveway
 - Between the Falmouth Shopping Center driveway and the main driveway at the Shops at Falmouth
 - Between Bath Savings Institution and Depot Road
 - Between McDonald’s and the Dry Cleaners
 - Between Subway/Dunkin Donuts and Clearwater Drive
 - Between Fundy Road and the Falmouth Inn southerly driveway
 - Between Allen Sterling & Lothrop Garden Center and Morong
 - Between Falmouth Antiques & Furniture and Waldo’s

- Wal-Mart Deceleration Lane – It is recommended that the deceleration lane be eliminated on Route One. From a traffic and urban design perspective slow vehicle speeds allow for shared through/right turn lane movements.

- Driveway Modifications / Inter-Parcel Connections –Why is the plan including driveway connections between properties? The provision of inter-parcel connections is suggested as one of the access management improvements within the corridor for several reasons. In some cases, creating such interconnections allows customers to access adjacent properties without having to access Route One to get there. In other cases, the connections are proposed to allow businesses/properties to maintain full north/south access on Route One, where movements may otherwise be limited due to proposed median/curb cut recommendations. This may be accomplished by use of an abutting property driveway that permits the required vehicle turn, thus preserving full access/egress movements. A third purpose of providing connections is to allow vehicles the opportunity to access a safer location to accomplish a turn, for example by providing a connection to a driveway or road that is controlled by a traffic signal. It should be noted that all locations will be reviewed in greater detail during Phase 2 and 3 of the project design. This effort will include vehicle turn movement needs (e.g. trucks), site parking needs, circulation, and physical constraints.

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The following modifications are proposed and shown on the Plan:

- Implement turn restrictions at Falmouth Physical Therapy
- Construct a vehicle connection between Waldo's and Falmouth Physical Therapy.
- Construct a vehicle connection between Falmouth Physical Therapy and People's United Bank
- Implement turn restrictions at the southerly driveway to Falmouth Antiques & Furniture
- Close the northerly driveway to Allen Sterling & Lothrop Garden Center
- Construct a shared driveway for Allen Sterling & Lothrop Garden Center and the Falmouth Inn
- Close the driveway at the Falmouth Inn
- Construct a vehicle connection between Subway/Dunkin Donuts and Bangor Savings Bank
- Construct a vehicle connection between Subway/Dunkin Donuts and Five County Credit Union
- Construct a shared driveway for Subway/Dunkin Donuts and Five County Credit Union
- Close the southerly driveway to the Walmart Shopping Center
- Implement turn restrictions at Pratt Abbott Dry Cleaners
- Consider shifting the Pratt Abbott Dry Cleaners driveway on Depot Road farther from intersection
- Close the northerly entrance at Bath Savings Institution
- Modify site circulation at Bath Savings Institution to allow for full access/egress movements
- Construction of a vehicle connection between Bath Savings Institution and the Falmouth Shopping Center
- Close the right-turn entry driveway at The Shops at Falmouth Village
- Close the northerly driveway to Lil' Mart (Irving)

Not shown on the Plan, but suggested for Phase 2 consideration are:

- Construction of a vehicle connection between McDonald's and Five County Credit Union; and.
- Construction of a vehicle connection between the Irving Station and the Fire Station on Bucknam Road connecting to Bucknam Road.

5.2 Utility Infrastructure

- Sewer – Modifications to the sanitary sewer will include a 500 foot extension of the gravity sewer system north of the Route One/Bucknam Road intersection in anticipation of future build-out of adjacent properties. In addition, the frames and covers of existing sanitary sewer manholes will be adjusted to accommodate roadway improvements.
- Stormwater Collection and Conveyance – The stormwater collection and conveyance system will be modified to accommodate intersection improvements, widening of the roadway for traffic and bicycle accommodations (changes in curb line location), and any changes in roadway grade. These modifications will primarily include replacing or moving catch basin structures, extending existing drainage pipe to connect to the relocated structures, and raising catch basin and drain manhole frames and covers to grade. A parallel grant-funded effort has

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resulted in a Stormwater Management Plan for this area. That plan includes a number of possible public and private stormwater retrofits.

- **Stormwater Treatment** – Stormwater quality treatment will be provided along the extent of the project, treating a significant portion of the runoff from the hardened surfaces of Route One. Treatment areas will be sited within the esplanade, greenscape, and hardscape areas of the roadway ROW. Treatment systems will be designed with consideration for aesthetic and fit within the modified streetscape, and may include urban stormwater planters, conveyance soil filters, or proprietary box filter systems.
- **Water** – The water distribution mains and services will largely be unaffected by the project, and no upgrades or replacements are proposed. To accommodate certain components of the work, we anticipate that short sections of water mains and services may need to be relocated or offset to accommodate the installation of new utilities or structures. Valve boxes will be raised to grade to accommodate roadway improvements.
- **Power/Communications** – Certain areas of overhead power and communications will need to be relocated to accommodate roadway widening and intersection improvements. The Town may be interested in installing underground power and communications for some length of the project. In this case, significant work will be required to install power and communications duct banks, access structures, and services below ground. Underground power and communications would be installed below the east side of the Route One ROW, primarily within the esplanade and sidewalk areas outside of the traveled way (below the location of the existing overhead lines).
- **Natural Gas** – The Town is exploring options for natural gas service in the project area. Anticipating that natural gas service will be available in the future for the Route One corridor, a natural gas main will be installed within the roadway. If natural gas service is not available during construction of the Route One infrastructure improvements, a conduit will be installed to accommodate future service and demand.

5.3 Streetscape

- **Sidewalks** – It is the goal to utilize and enhance as much of the existing sidewalk system as possible. In certain areas the existing sidewalks do not meet ADA standards or are in poor condition. New sidewalks will be installed in these locations.

In certain areas, sidewalks will be strategically installed adjacent to the ROW in anticipation of/and promoting zero lot line frontage. In addition, there will be ‘nodes’ along the sidewalk system that are rest areas and will include amenities such as benches, trash receptacles, and lighting. These nodes may be placed at strategic bus stop locations to encourage and facilitate the use of public transit. This is a multi-modal corridor.

- **Lighting** - Decorative, pedestrian-scaled LED lighting (12’ tall) will be installed along the sidewalks – in the 10’ wide amenity zone esplanade adjacent to the curb line. Lighting will be spaced approximately 90’ on center. In certain areas, such as intersections, there will be similar pedestrian-scaled lighting, but taller and with an additional light at the top of the pole in order to illuminate a larger area. The taller lighting fixtures will also include arms for banners. Existing Cobra-style light fixtures will likely be removed. Lighting will be the most coherent visual architectural streetscape component defining the corridor. There will be

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locations where street lighting may be phased, but the conduit for the lighting will be installed in anticipation of a full streetscape build out.

- Landscape – As noted in the existing conditions analysis, the corridor is well landscaped. It is the goal to utilize as much of the mature trees along each parcel frontage. This will provide a diversity of species and add visual interest. Street trees will be planted in the esplanade 30’ on center in line with the streetlights. This will create a legible and comfortable pedestrian zone, while integrating the ROW travel lanes into a greater design.

Street trees will also be planted in the center medians, creating a more attractive corridor while still maintaining safe sight lines for vehicular and pedestrian movements and unobstructed views of businesses.

The street trees in the esplanade and the median serve a number of other purposes including the absorption of stormwater, the reduction of the heat island effect, and the ‘branding’ of Route One as both a ‘green’ corridor as well as a clear effort on the part of the Town to invest in the public realm as part of a greater economic development strategy.

As with other aspects of the streetscape, street trees may be phased in at the appropriate as development or redevelopment occurs along the corridor.

Other landscaping will include low-maintenance planting beds and rain gardens that treat stormwater in a decentralized manner. The rain gardens are both functional and attractive.

- Amenities – Amenities such as bike racks, benches, and trash receptacles will be added to the streetscape for functional and aesthetic purposes.

5.4 Concept Improvement Visualization Images

Three specific locations were identified for new visualizations to help illustrate the plan. The following pages present these visualizations.



**Before / After Visualization Looking North on Route One To Depot Road
(With Overhead Power)**

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**Before / After Visualization Looking North On Route One To Depot Road
(Without Overhead Power)**

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Before / After Visualization Looking South on Route One to the Shops at Falmouth

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Before / After Visualization Looking North on Route One to the Falmouth Shopping Center

5.4 Matrix and Cost Estimate

During the development of the Plan a concept matrix was prepared that summarized options for improvements and their associated cost. The matrix helped to guide throughout the process the selection of Plan options given costs and benefits. Under the current Plan components, the planning level cost for the project is approximately \$5,600,000. The cost estimate, included in the appendix, assumed the following key components:

- At this point Power and Communication will remain above ground. However, in conjunction with the preliminary engineering task refined cost estimates will be prepared for underground placement that will continue to inform the final Plan.
- Pavement marking costs are to be included in the cost of the MaineDOT project.
- The coordination of traffic signals will be a future PACTS project request.
- Route One will not be widened for bicycle lanes.
- Implementation of medians will be installed in select locations.
- Future capacity expansion at Bucknam Road, Depot Road, and Fundy Road will occur under separate future projects.
- Natural gas will be installed by others.
- Pedestrian scale lighting will begin at Waldo's and continue to Bucknam Road.
- Streetscape improvements are included for a portion of the side streets (Bucknam Road, Depot Road, Fundy Road, and Clearwater Drive).

6.0 ROUTE ONE/MAINE TURNPIKE SPUR

A feasibility assessment of creating an at-grade intersection between Route One and the Maine Turnpike Falmouth Spur was performed. The assessment consisted of: 1) reviewing prior analyses as it relates to highway design standards, 2) projecting future traffic volumes, 3) assessing traffic operations under both traffic signal control and a roundabout intersection configuration, and 4) preparing conceptual plans of each option (See Appendix for conceptual plans).

6.1 Highway Design Grade Conformity

A review of prior work conducted by Gorrill-Palmer Consulting Engineers, Inc. assessing the roadway design feasibility of creating an at-grade intersection was conducted. The consultant's professional opinion is that the conclusion of the GPCEI evaluation is reasonable and removing the bridge is feasible. Specific comments are noted below.

- The GPCEI assessment appears reasonable with the limited amount of data provided.
- For 40 MPH the crest vertical curve does not meet stopping sight distance for grade adjusted condition ($G=5.66\%$).
 - An increase of the vertical curve length to approximately 302 feet with the same grades will be acceptable.
- The maximum grade of 5.66% exceeds the maximum grade of 5% for this typical application (a design exception would seem to be reasonable for this location).
- Very flat grades are noted at both ends of the vertical curve and match existing conditions are less than the minimum 0.3% grade.

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- Beginning curve is matching the existing roadway profile so it may not be feasible to change.
- End curve location is a stop condition, so revision to standard may be applicable.

6.2 Future Traffic Volumes

Future 2035 traffic volumes were estimated at the Route One/Turnpike Spur intersection according to PACTS Travel Demand Model projections. These were conducted for the both the weekday Mid-Day and PM peak hours.

To account for potential future commercial development east of the subject intersection, traffic generation was estimate for a scenario where 100,000 square feet of retail space is constructed. The following table presents the results for the weekday PM peak hour:

Route One/Turnpike Spur 2035 PM Peak Hour Traffic Volumes PACTS Model Plus 100,000 sf Shopping Center		
Intersection Movement	w/o Development	w/ Development
Route One SB Right	149	149
Route One SB Through	491	447
Route One SB Left	0	105
Route One NB Left	193	193
Route One NB Through	595	531
Route One NB Right	0	166
Turnpike Spur Left	107	107
Turnpike Through	0	41
Turnpike Spur Right	187	187
Shopping Center Right	0	129
Shopping Center Through	0	21
Shopping Center Left	0	174

6.3 Traffic Operations Analysis

Based upon the forecasted traffic volumes, it is very likely that a traffic signal would be required, particularly if commercial development occurs on the east side of Route One. Accordingly, a capacity analysis was conducted for two intersection configuration scenarios, a standard signalized intersection, and a roundabout. The results are summarized below.

- Signalized intersection – A capacity analysis of the intersection indicates the intersection will operate at level of service C during the 2035 weekday PM peak hour. This analysis assumed the following intersection geometry:
 - Route One Southbound
 - Left Lane
 - Through Lane
 - Right Lane
 - Route One Northbound
 - Left Lane
 - Through Lane

Route One South Infrastructure Plan – Falmouth, Maine

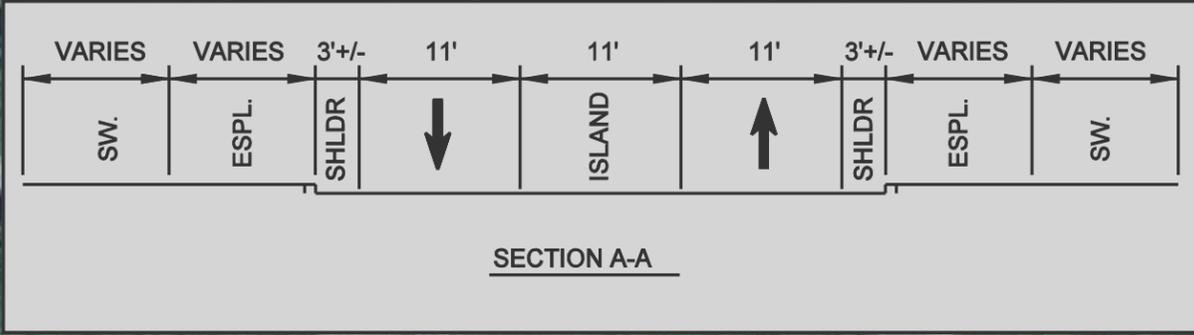
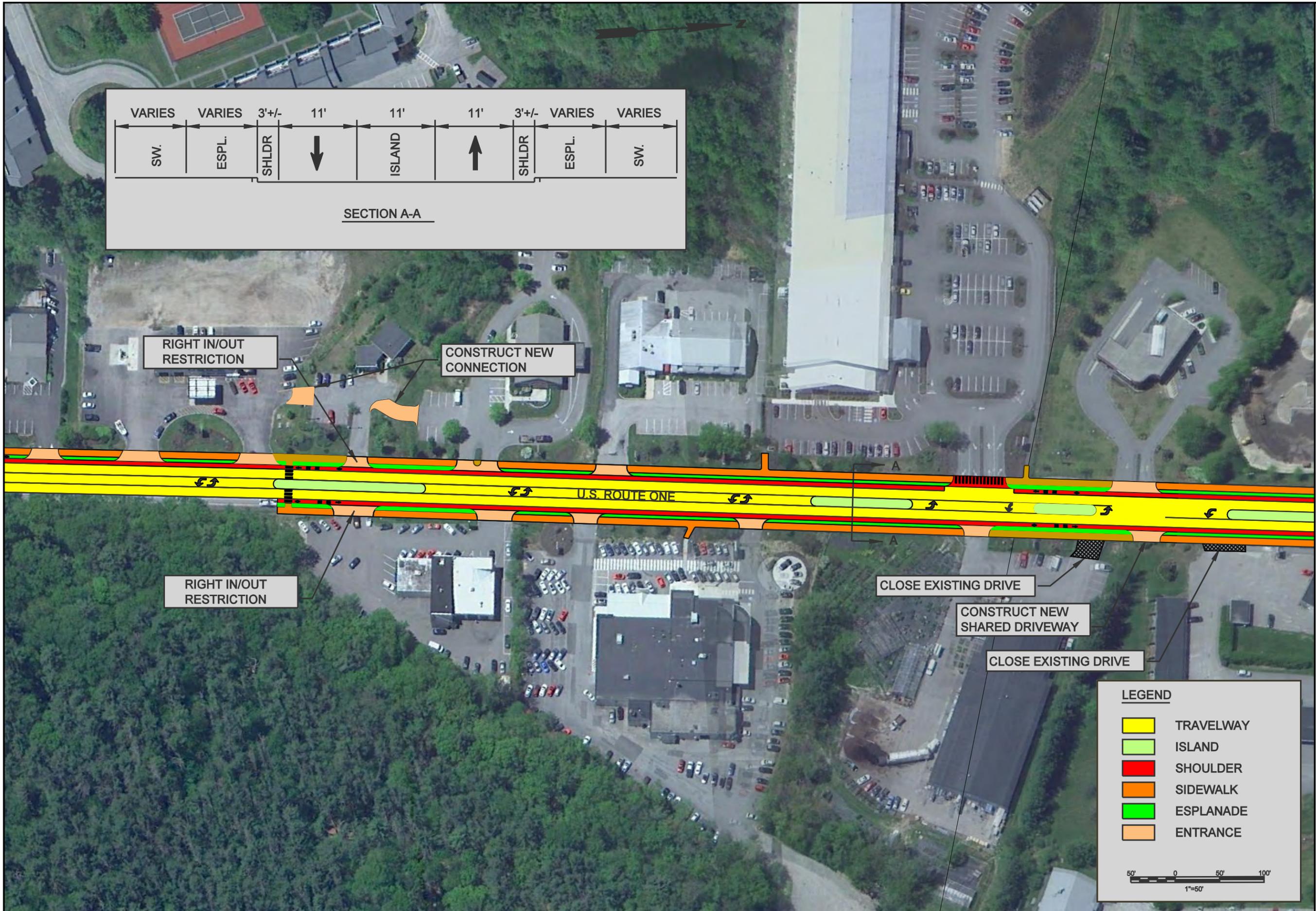
- Right lane
 - Turnpike Spur
 - Left Lane
 - Through Lane
 - Right Lane
 - Shopping Center
 - Left Lane
 - Through Lane
 - Right Lane
- Roundabout – A planning level capacity analysis was conducted using procedures contained in Synchro traffic analysis model and based upon the assumption of providing a single-lane roundabout, the intersection would be expected to operate at level of service B during the 2035 weekday PM peak hour.

FIGURES

List of Figures:

Figures 1 through 3
Figures 4 through 7

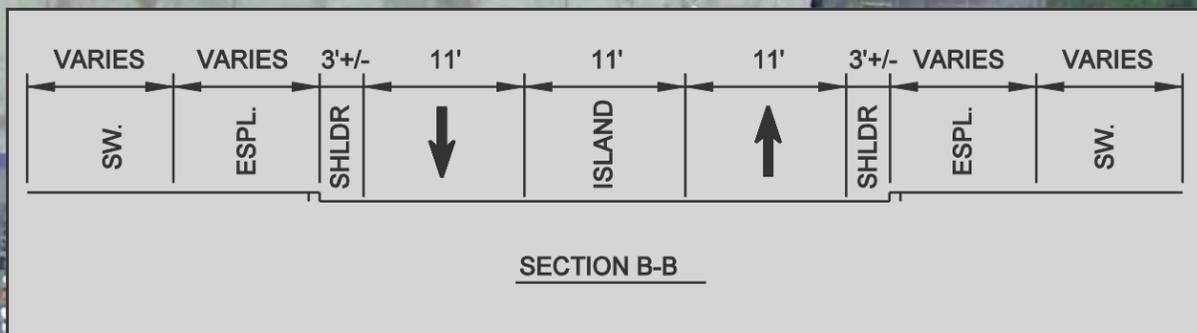
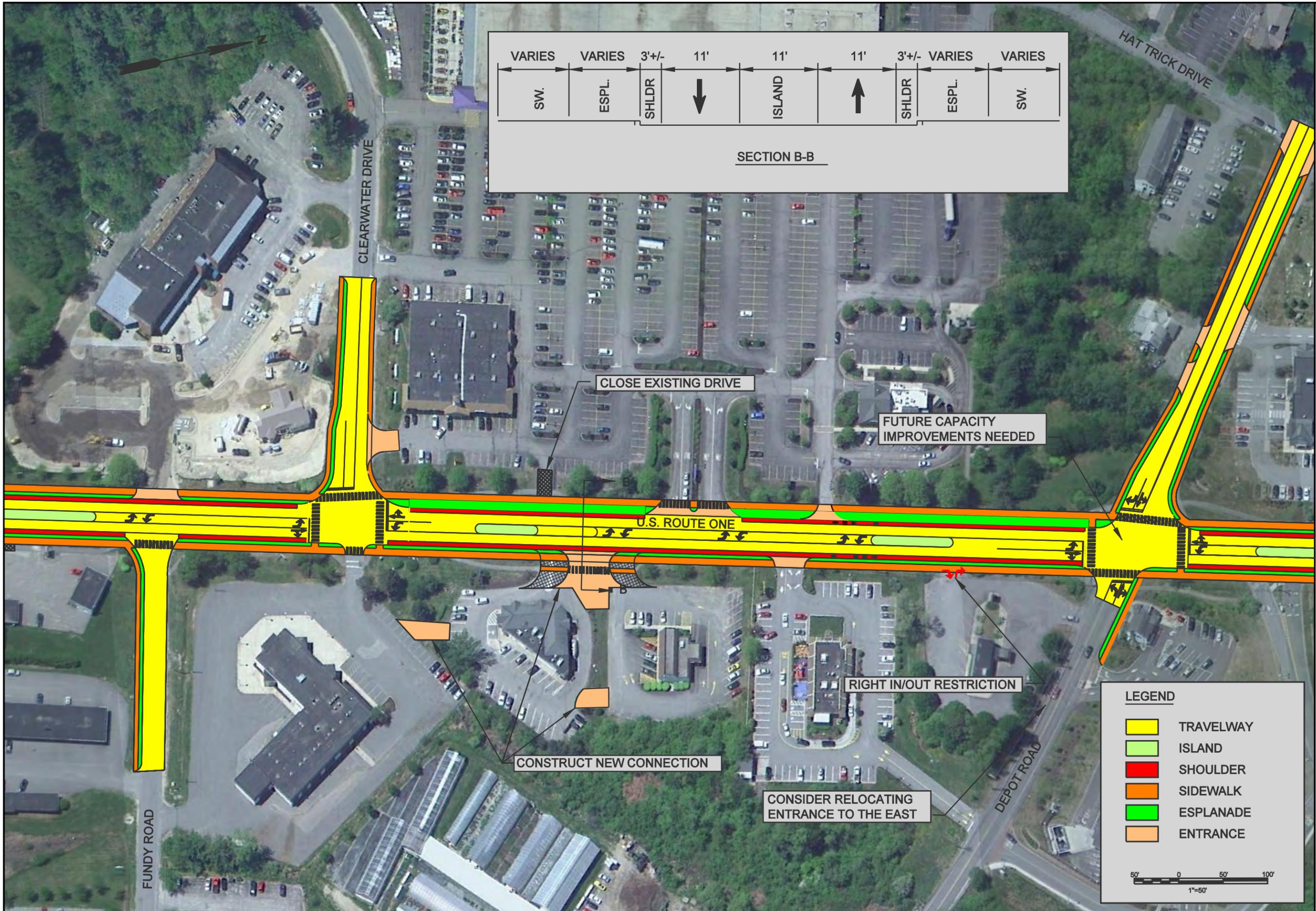
Proposed Concept Plans
Proposed Options for Route One/Turnpike Spur intersection



LEGEND

- TRAVELWAY
- ISLAND
- SHOULDER
- SIDEWALK
- ESPLANADE
- ENTRANCE

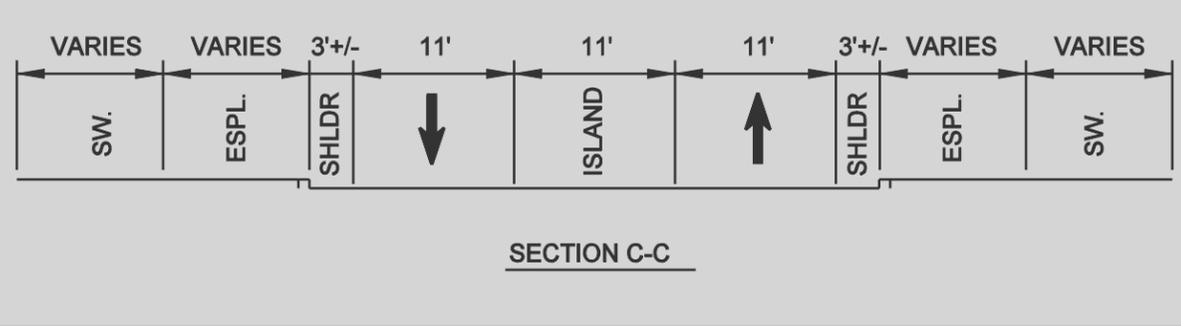
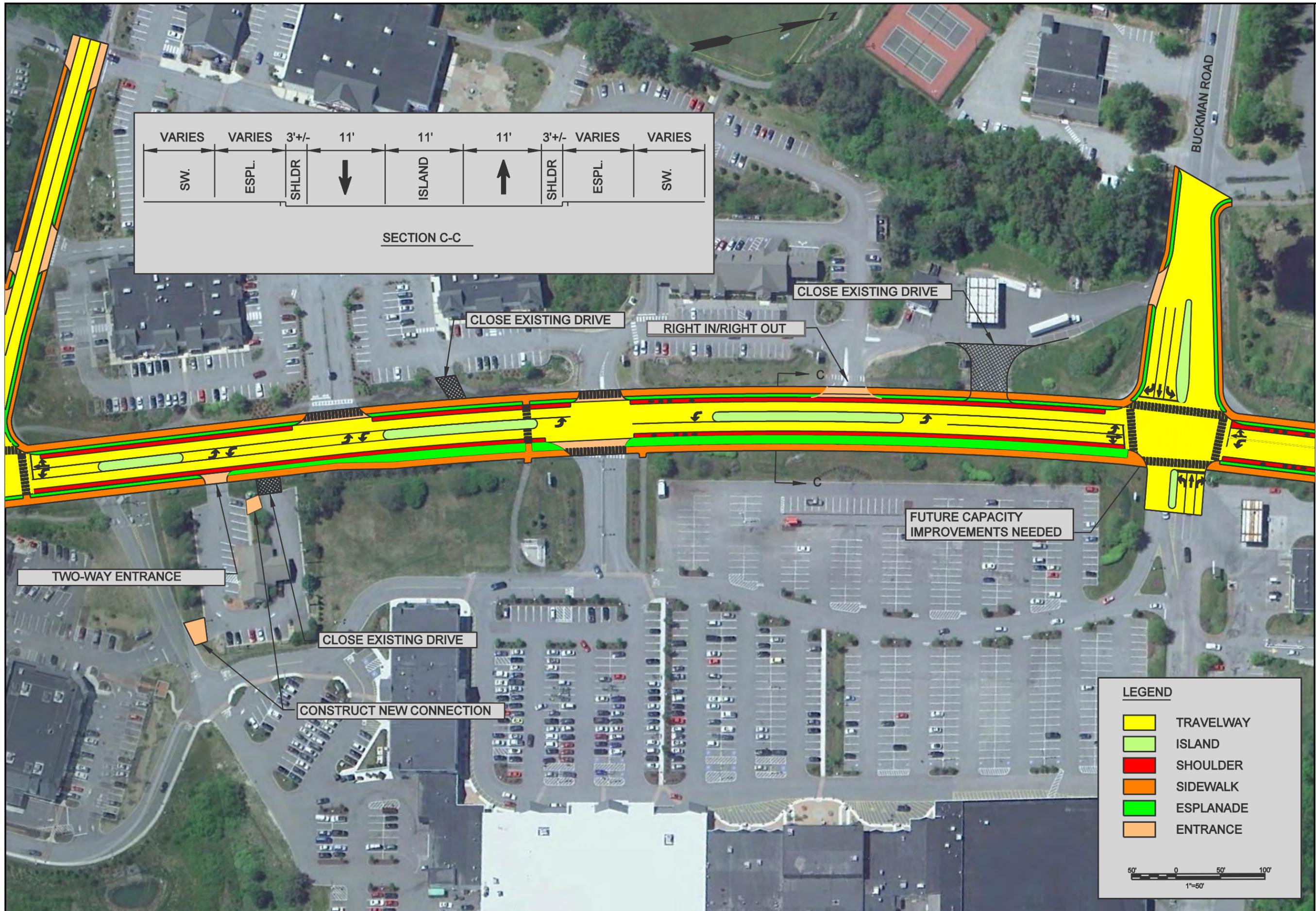
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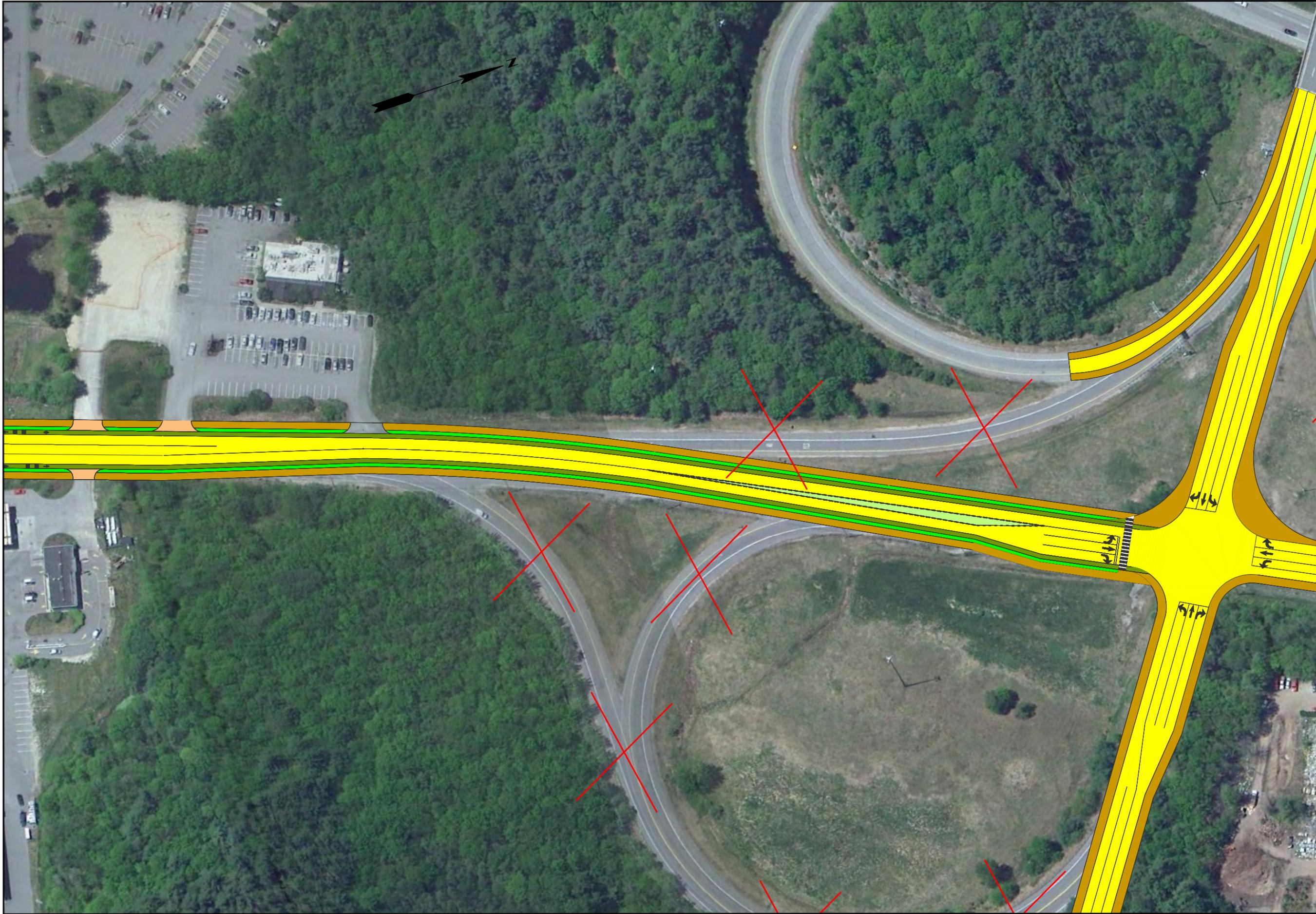


LEGEND

- TRAVELWAY
- ISLAND
- SHOULDER
- SIDEWALK
- ESPLANADE
- ENTRANCE

50' 0 50' 100'
1"=50'





TOWN OF FALMOUTH - ROUTE ONE SOUTH
INFRASTRUCTURE PLAN

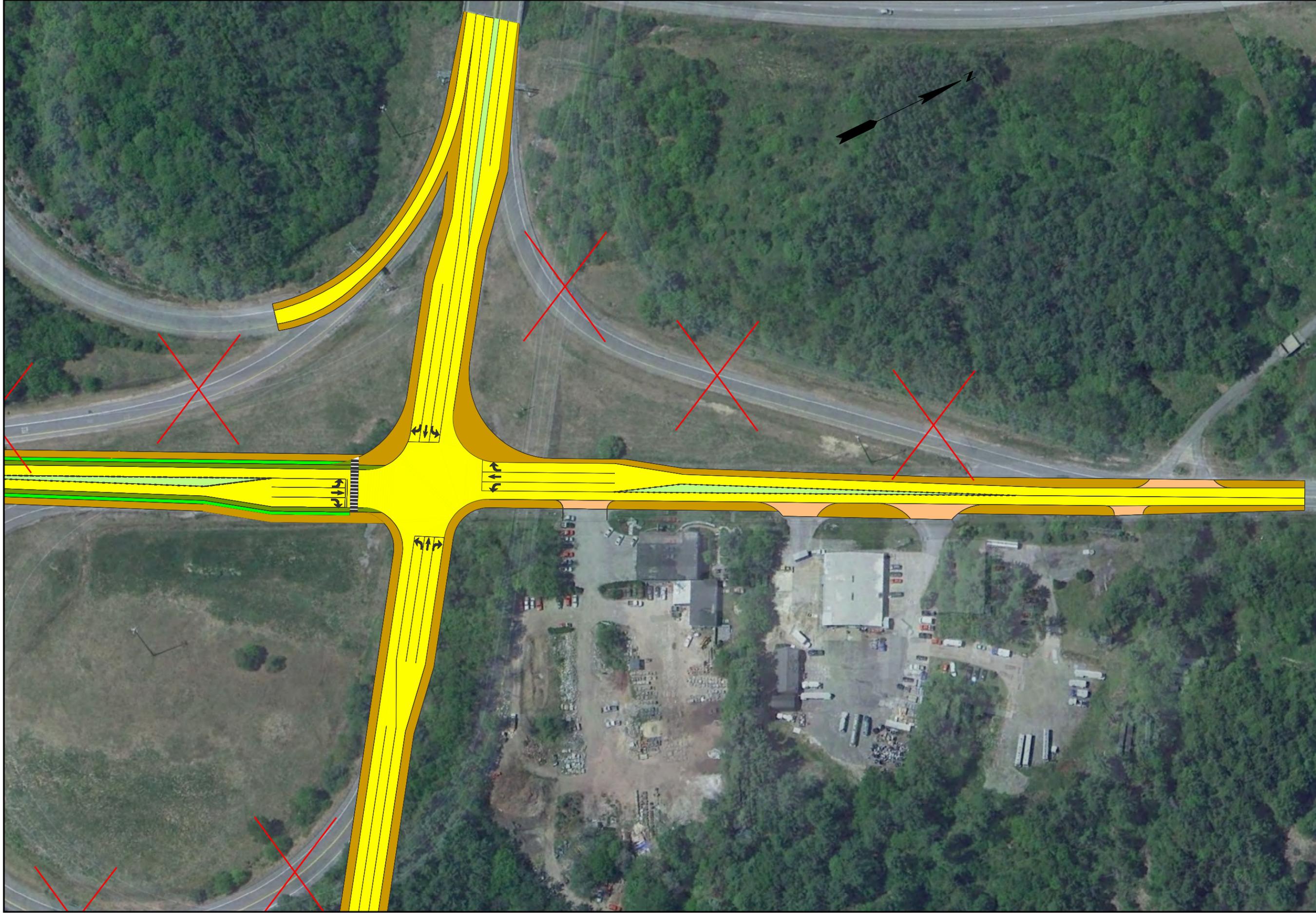
JOB NO.:
DATE: 10/10/12
SCALE: AS NOTED

TYLIN INTERNATIONAL
12 NORTHBROOK DRIVE, BUILDING A, SUITE ONE
FALMOUTH, MAINE 04106
(207) 781-4721



41 Hitchhiker Drive
Portland, Maine 04102
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TOWN OF FALMOUTH - ROUTE ONE SOUTH
INFRASTRUCTURE PLAN

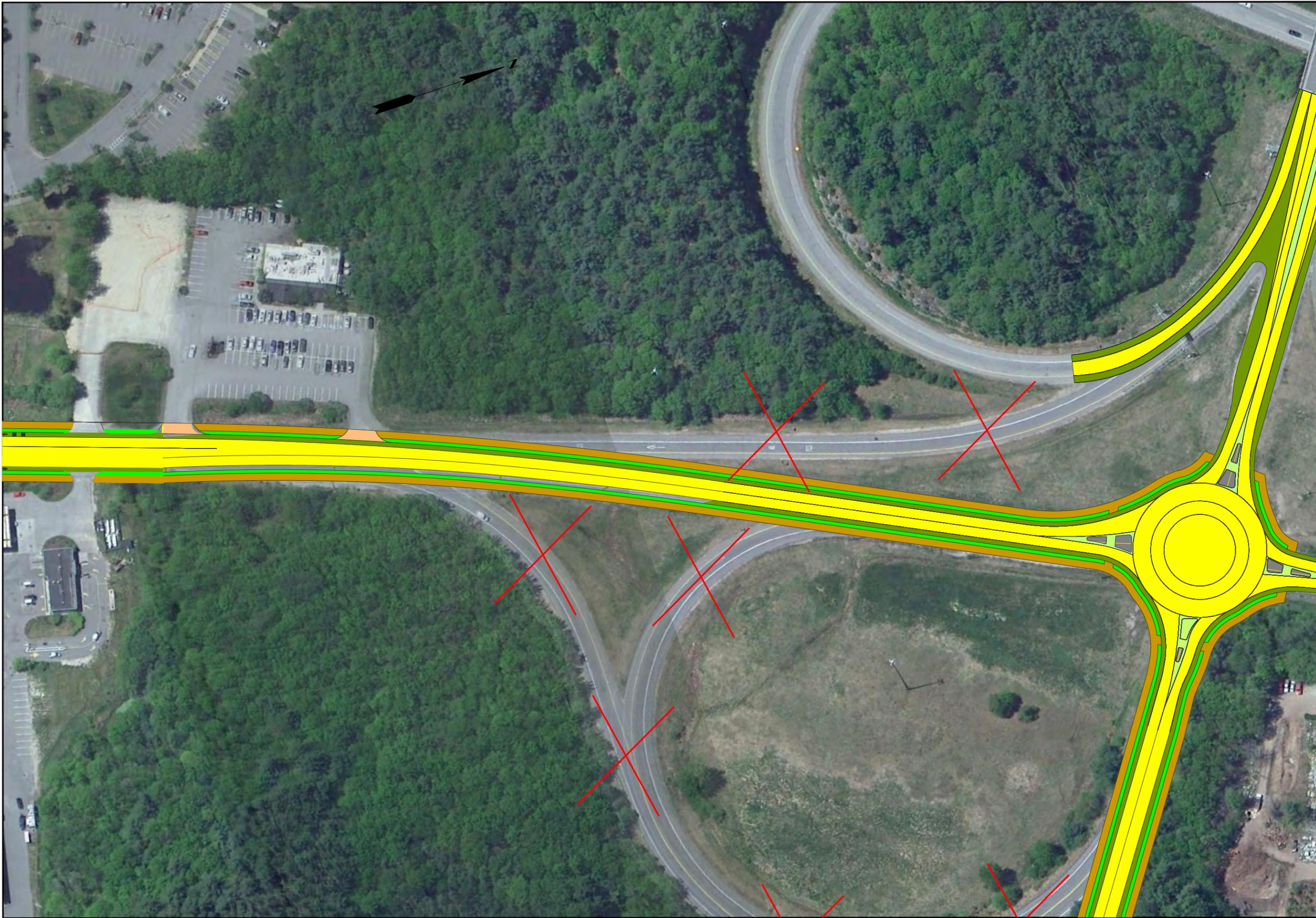
JOB NO.:
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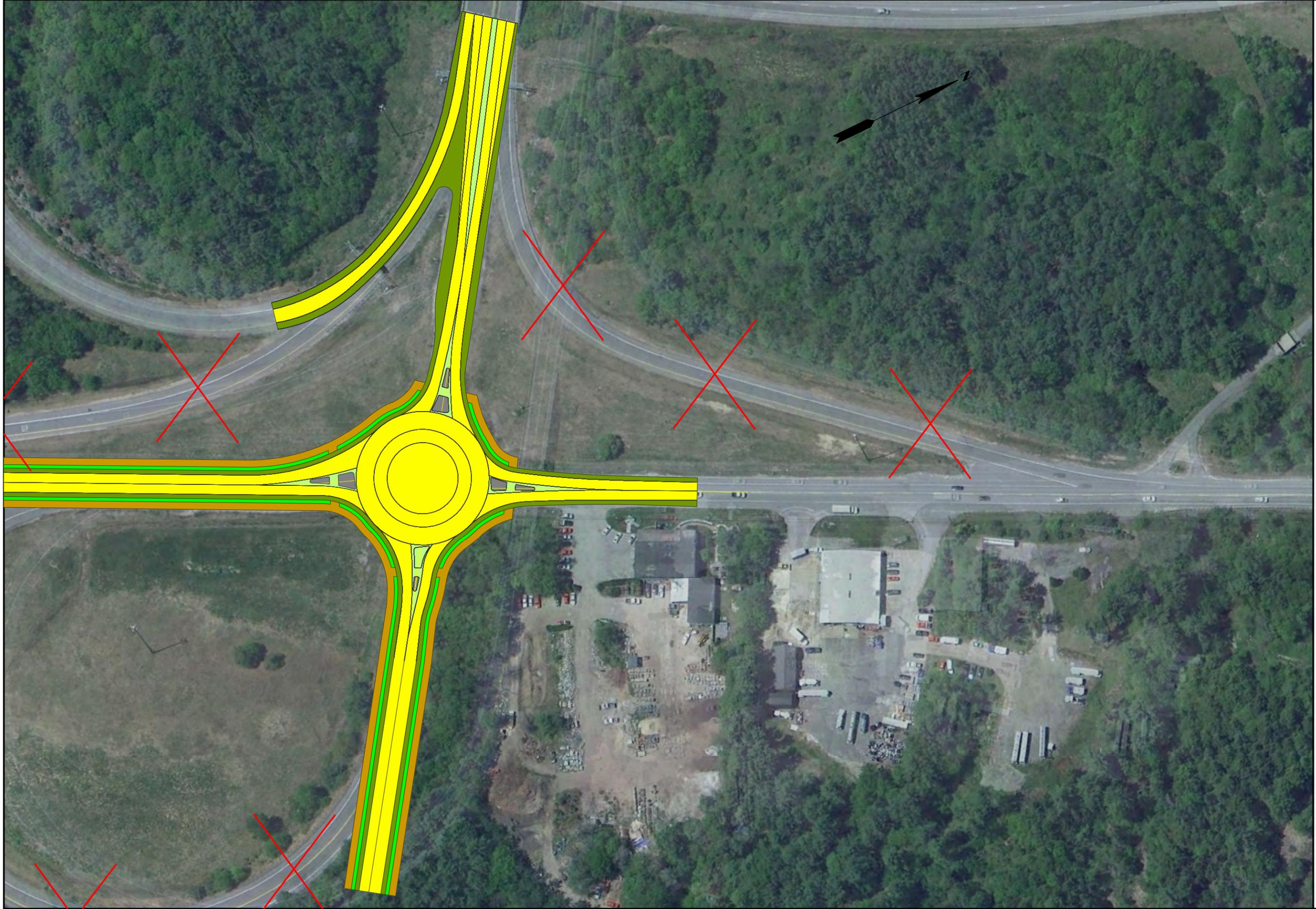
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TOWN OF FALMOUTH - ROUTE ONE SOUTH
INFRASTRUCTURE PLAN

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TOWN OF FALMOUTH - ROUTE ONE SOUTH
INFRASTRUCTURE PLAN

JOB NO.:
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SCALE: AS NOTED

7

FALMOUTH ROUTE ONE CONCEPT MATRIX (Draft: August 17, 2012)

Planning Level Cost Estimates

Options		CDC July 2012	CDC August 2012	Cost adjustment	TY Lin August 2012 Notes
I. TRANSPORTATION INFRASTRUCTURE					
Pavement Markings					
Re-stripe Route One to Provide Three 11-foot Travel Lanes and Two 4-foot Shoulders (minimum, includes removal of existing pvt mkgs)		\$13,500	\$0	-\$13,500	Covered by MaineDOT Paving Project
Upgrade Crosswalks to "Block" Design Paint at Uncontrolled Locations		\$5,400	\$0	-\$5,400	Covered by MaineDOT Paving Project
Provide Crosswalks at the Route One and Bucknam Road intersection (paint only)		\$1,080	\$0	-\$1,080	Covered by MaineDOT Paving Project
Add Crosswalk on South Side of Clearwater Drive (includes ADA ramps, ped signals, etc)		\$16,200	\$16,200	\$0	
Subtotal		\$36,180	\$16,200	-\$19,980	
Traffic Signals					
Coordinate Traffic Signals		\$270,000	\$0	-\$270,000	Possible PACTS Project
Upgrade Traffic Signal Supports to Ornamental Mast Arms		\$573,750	\$573,750	\$0	
Subtotal		\$843,750	\$573,750	-\$270,000	
Roadway / Intersection Geometry					
Eliminate right-turn channelization Islands at Route One and Bucknam Road intersection		\$88,435	\$88,435	\$0	
Eliminate Right-turn Deceleration Lane into Wal-Mart		\$63,180	\$63,180	\$0	This should stay in the plan
Raised Center Landscaped Medians (including drive closures) from Waldo's to Bucknam		\$522,450	\$391,838	-\$130,613	Reduced by 25% to account for phasing due to implementation schedule
Widen Route One to provide Bicycle Lanes (1-1.5 ft ea side)		\$1,743,000	\$0	-\$1,743,000	Bike lanes for future consideration
Increase intersection capacity at the Route One and Bucknam Road intersection (add lanes)		\$548,100	\$0	-\$548,100	For future consideration but should be accounted for in design
Increase intersection capacity at the Route One and Depot Road intersection (add lanes)		\$244,350	\$0	-\$244,350	For future consideration but should be accounted for in design
Subtotal		\$3,209,515	\$543,453	-\$2,666,063	
SUBTOTAL, TRANSPORTATION		\$4,089,445	\$1,133,403	-\$2,956,043	
II. UTILITY INFRASTRUCTURE					
Sewer					
Raise MH frames and covers to grade		\$0	\$0	\$0	Covered by MaineDOT Paving Project
Extend sewer pipe and structures approximate 500 lf north of Bucknam Road		\$82,013	\$25,000	-\$57,013	Extended 150LF north of Bucknam Road to approximate limit of paving project
Subtotal		\$82,013	\$25,000	-\$57,013	
Stormwater Collection & Conveyance					
Regrade low spot on walk in front of Olympia Sports to avoid ponding		\$4,050	\$0	-\$4,050	Recommended by MRLD
Subtotal		\$4,050	\$0	-\$4,050	
Stormwater Treatment					
Install approximately half (8) of ROW stormwater retrofits identified in Hillier & Associates report (Fundy to Bucknam)		\$459,000	\$0	-\$459,000	\$459,000 eliminated due to cost duplication
Install roadside edge stormwater treatment systems in esplanade (Waldo's to Bucknam)		\$1,296,000	\$1,296,000	\$0	
Subtotal		\$1,755,000	\$1,296,000	-\$459,000	
Water					
Raise valve boxes to grade as necessary for sidewalk and intersection improvements		\$1,350	\$0	-\$1,350	Included in MaineDOT Paving Project
Raise valve boxes to grade as necessary for full ROW improvements		\$6,750	\$0	-\$6,750	Included in MaineDOT Paving Project
Relocate water mains and services or provide offsets as necessary to accommodate full ROW improvements		\$27,000	\$27,000	\$0	
Extend and reinforce slope west side of Route One & Route 88 intersection for additional protection over PWD water main		\$43,200	\$0	-\$43,200	Outside of primary work area and to be undertaken as a stand alone project
Subtotal		\$78,300	\$27,000	-\$51,300	
Power / Communications (Options - Selected relocated and no cost added)					
Relocate utility poles and services as necessary for project improvements (cost borne by utility)		\$0	\$0	\$0	
Underground Power entire Length of Project		\$0	\$5,184,000	\$5,184,000	Possible alternate
Underground Power between Clearwater and Depot		\$0	\$1,296,000	\$1,296,000	Possible alternate
Install Conduit/Duct Bank Entire Length of Project		\$0	\$2,295,000	\$2,295,000	Possible alternate
Install Conduit/Duct Bank between Clearwater and Depot		\$0	\$573,750	\$573,750	Possible alternate
Subtotal		\$0	\$9,358,750	\$9,358,750	
Natural Gas					
Install "dead", capped gas main in Route One roadway for full length of project		By Others	By Others	\$0	
Subtotal		\$0	\$0	\$0	
SUBTOTAL, UTILITIES		\$1,919,363	\$1,348,000	-\$571,363	
III. Streetscape					
Sidewalks					
Widen sidewalk in strategic locations to allow for sitting areas		\$17,550	\$17,550	\$0	
8' wide sidewalks on Route One		\$324,000	\$430,000	\$106,000	Updated for sidewalk increase to 10 feet
5' wide sidewalks west on Bucknam Road, Depot Road, Clearwater Drive, and Fundy Road as needed		\$365,850	\$365,850	\$0	
6-9' esplanade from Waldo's to Bucknam (does not include trees and lights)		\$428,490	\$662,665	\$234,175	Updated for esplanade increase to 10 feet
Subtotal		\$1,135,890	\$1,476,065	\$340,175	
Lighting					
Pedestrian-scaled Lights with Banners					
Waldo's to Bucknam Road (60' o.c.)		\$869,400	\$869,400	\$0	
Remaining - Waldo's South -in center median (90 o.c.)		\$355,050	\$0	-\$355,050	Eliminated from project -- Lighting would start at Waldo's
Depot Road, Bucknam Road, and Clearwater Drive (50' o.c.)		\$402,300	\$402,300	\$0	
Subtotal		\$1,626,750	\$1,271,700	-\$355,050	
Landscape - Street Trees 30' o.c., 3" Caliper					
Esplanade - from Waldo's to Bucknam		\$324,000	\$324,000	\$0	No reduction suggested given a desire to maintain a strong streetscape design
Subtotal		\$324,000	\$324,000	\$0	
Amenities					
Veteran's Memorial		TBD	TBD	\$0	
Install bit. conc. pads at strategic bus stops - including benches		\$17,550	\$17,550	\$0	
Bike racks and other amenities in strategic locations		\$29,700	\$29,700	\$0	
Subtotal		\$47,250	\$47,250	\$0	
SUBTOTAL, STREETScape		\$3,133,890	\$3,119,015	-\$14,875	
TOTAL PROJECT COST (includes 25% contingency and 10% design costs)		\$9,142,698	\$5,600,418	-\$3,542,280	