

# Belmont Avenue Pedestrian and Bicycle Master Plan



Prepared by **Richardson & Associates**, Landscape Architects  
11 middle Street, Saco, Me, 04072/ t. 207.286.9291

For **Pedestrian, Hiking & Biking Committee** and **City of Belfast**  
Belfast, Maine

Original Submission: June 11, 2012  
Revised January 29, 2013\_ Revisions Based on Pedestrian Hiking & Biking Committee's and City's Comments

Final Submission: March 14, 2013

## BELMONT AVE PEDESTRIAN MASTER PLAN

### Pedestrian Friendly Street Design Characteristics and Tools

One of the highest priorities in the development of a Complete Street, one that functions for Bicyclists, Pedestrians, and Motorists, is to develop a streetscape that incorporates some of the following characteristics. While listed below, not all the Complete Street strategies are recommended for Belmont Avenue. See the following plans for individual recommendations.

1. **Enhanced Sidewalks and Crosswalk**
2. **ADA Compliant Curb Cuts and Ramps**
3. **Accommodating Pedestrians at intersections with Traffic Signals**
  - a. **No Right on Red**
    - i. When motorists are accustomed to being able to turn on red at all times, there is tendency to roll through a red light when there is no cross traffic. This can lead to collisions with pedestrians who have the right of way. Posting "No Turn on Red" limits conflicts.
  - b. **Leading Pedestrian Intervals (LPI)**
    - i. At intersections where there are conflicts between turning vehicles and pedestrians, pedestrians are given a "walk" designation a few seconds before the associated green phase for the intersections, allowing them to enter the roadway and be more visible to traffic.
  - c. **Pedestrian Push Buttons**
    - i. Pedestrian push buttons detect pedestrians desiring to cross at an actuated or semi-actuated traffic signal, at intersections with low pedestrian volumes.
  - d. **Audible Pedestrian Traffic Signals**
  - e. **Pedestrian Signal Indication ("Ped Head") and Countdowns**
    - i. Pedestrian signal indicators use a symbol to indicate when to cross at a signalized crosswalk. Countdown pedestrian signals are particularly beneficial, as they indicated –based on the MUTCD(Manual on Uniform Traffic Control Devices) walking speed standards- whether a pedestrian has time to cross the street before the signal phase ends.
4. **Bicycle Facilities**
  - a. **Bike Lanes**
  - b. **Multi-Use Paths**
  - c. **Street Signs and Markings**
    - i. Sharrows; Short for "shared land bicycle marking."This pavement marking is to remind motorists that bicyclists are permitted to use the full lane. There are no striped bicycle lanes on the streets marked when sharrows are used. Sharrows are not recommended in this plan study because generally the road width will accommodate a five foot wide bike lane in both directions.
    - ii. Share Road Signs
  - d. **Bicycle Parking/ Storage**
5. **Signs and Road Markings**
  - a. Wayfinding
  - b. Informational/Regulatory
6. **Traffic Calming Facilities**
  - a. **Curb Extensions**
    - i. Also referred to "bump outs" or "bulb outs", is a place where the sidewalk extends into the parking lane or wider shoulder of a roadway. Because curb extensions physically narrow the roadway, a pedestrian's crossing distance is reduced. Curb Extensions should be planned so that they do not impeded bicycle movement.
  - b. **Refuge Islands**
    - i. Median refuge islands help improve safety by providing a crossing refuge in the middle of a street or road, allowing pedestrians to gauge safe crossing of one direction of traffic at a time. A refuge island can also be used to shorten crossing distances. Refuge Islands on Belmont Avenue are not recommended because roadway widths.
  - c. **Speed Limits**
7. **Lighting**
8. **Amenities and Gateways**
  - a. **Gateway/Entry Signs** (i.e. "Welcome to...")
  - b. **Landscape Elements** (i.e. Plants, Walls, etc.)
  - c. **Focal Points-Points of interest** (i.e. Art Installations, fountains, plazas, etc.)
  - d. **Benches**

## Belmont Avenue Pedestrian Bike Recommendations

Belmont, Ave

Richardson & Associates, Landscape Architects

June 11, 2012

1. Revised January 29, 2013\_based on Comments received from the City and Pedestrian, Hiking & Bike Committee



1

Existing Site Condition\_Post Office/Family Dollar/Old Stuff

**Existing Conditions**

1. Steep Slope with On Street Parking on Both Side of the Road
2. 40'-5" Road Width (inside curb to inside curb) at Belfast Plaza
3. Wide Vehicular Opening at Post Office for loading dock

**Recommended Improvement**

1. Eliminate On-Street Parking at Post Office and Family Dollar on the South side only, uphill from the Post Office
2. Leave On-Street Parking on North Side of the street to serve existing residences and businesses
3. Add Retaining Wall to Hold Steep Grade and Add Sidewalk
3. Add Bike Lane on North and South Side of Road; See Plan View for the Beginning and Ending Points of the Bike Lanes
4. Maintain All Existing Sidewalk



2

Existing Site Condition\_Cedar Street Intersection

**Existing Conditions**

1. Existing Sign: "Stop for Pedestrians in Sidewalk"
2. Existing Mound at Cross Walk Causing Visibility Issues

**Recommended Improvement;**

1. Consider Adding Additional Pedestrian/Bike Signs
2. Re-Evaluate Topography at Cross Walk, Possibly Lowering or Flattening Grades

**General Recommendations (All Sheets)**

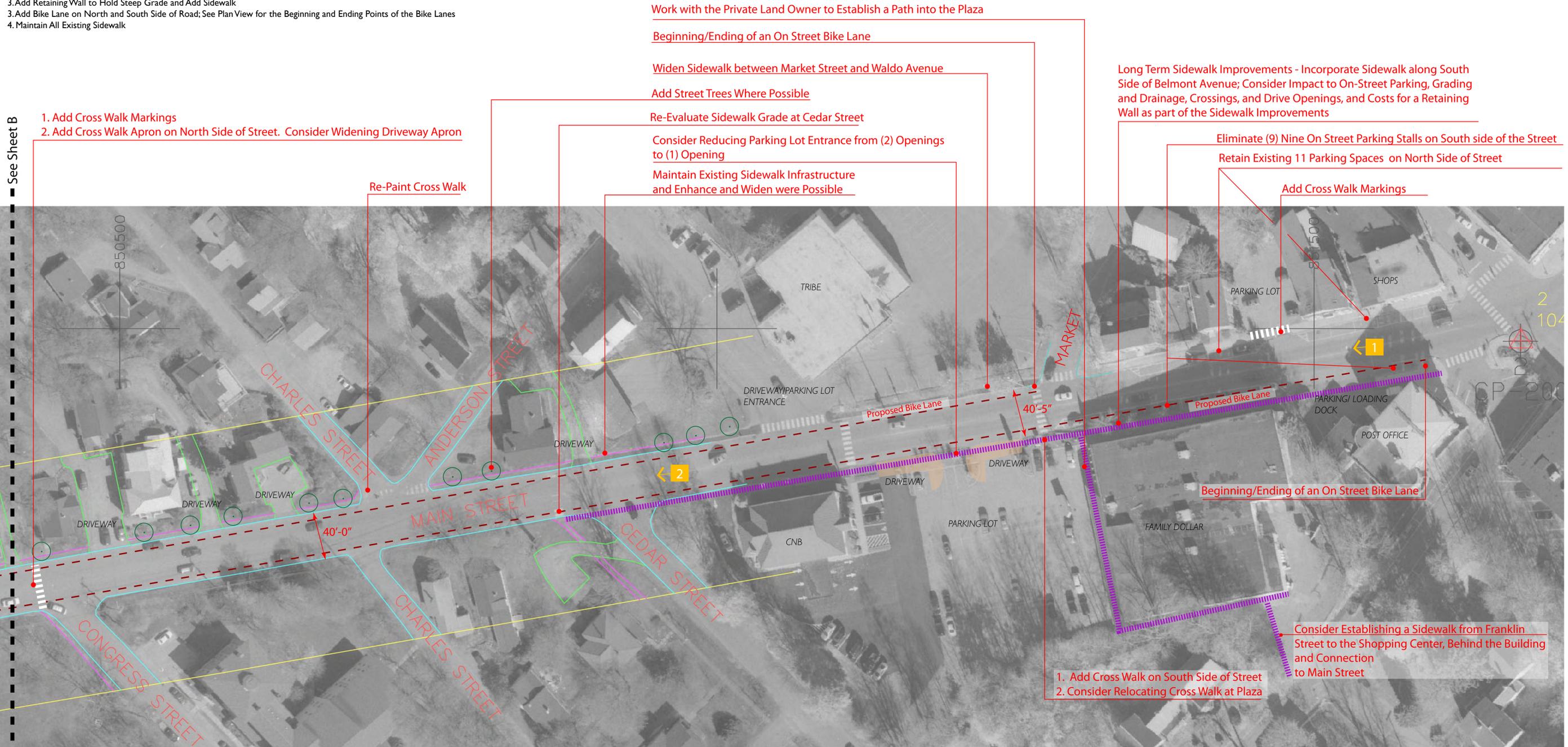
1. Consider lowering speed limit to increase pedestrian/bicyclist/vehicular safety.
2. Consider Using Dura-Therm Markings for all new crosswalks.
3. At high volume intersections consider installing pedestrian activated beacons.
4. At existing signaled intersections with pedestrian signals, verify the time allotted for pedestrian crossings. Increase the time where needed to provide safe pedestrian crossings.

**General Notes**

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4. It is the recommendation of the Pedestrian, Hiking & Biking Committee to install a bike lane on both sides of Belmont Ave. See the drawing for the starting/ending point to the bike lanes. The viability of this recommendation needs to be further studied in light of on street parking issues, road widths, grades and State/City ownership.
5. The bike lanes shall meet all DOT and AASHTO Standards.

**Key**

- Edge of Road
- Edge of Side Walk
- Edge of Pavement
- 200' Wide Survey Area
- Bike Lane
- Proposed Side Walk
- Proposed Street Tree



Belmont Avenue Pedestrian Bike Recommendations



1

Existing Site Condition\_Park/Street Relationship

**Existing Conditions**

1. Existing Pedestrian Sign and Cross Walk
2. Existing Topography obscures Sidewalk, limiting Visibility of Pedestrians from Vehicles on the Road
3. Narrow Sidewalks on the North Side of the Street

**Recommended Improvement;**

1. Widen Entrance to the Park, Re Grade Around the Street to Lower the Existing Topography
2. Add Pedestrian Activated Beacon
3. Consider Adding Pedestrian Bump Outs



2

**General Recommendations (All Sheets)**

1. Consider lowering speed limit to increase pedestrian/bicyclist/vehicular safety.
2. Consider Using Dura-Therm Markings for all new crosswalks.
3. At high volume intersections consider installing pedestrian activated beacons.
4. At existing signaled intersections with pedestrian signals, verify the time allotted for pedestrian crossings. Increase the time where needed to provide safe pedestrian crossings.

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5. The bike lanes shall meet all DOT and AASHTO Standards.

**Key**

- Edge of Existing Road
- Edge of Existing Side Walk
- Edge of Existing Pavement
- 200' Wide Survey Area
- Proposed Bike Lane
- Proposed Side Walk

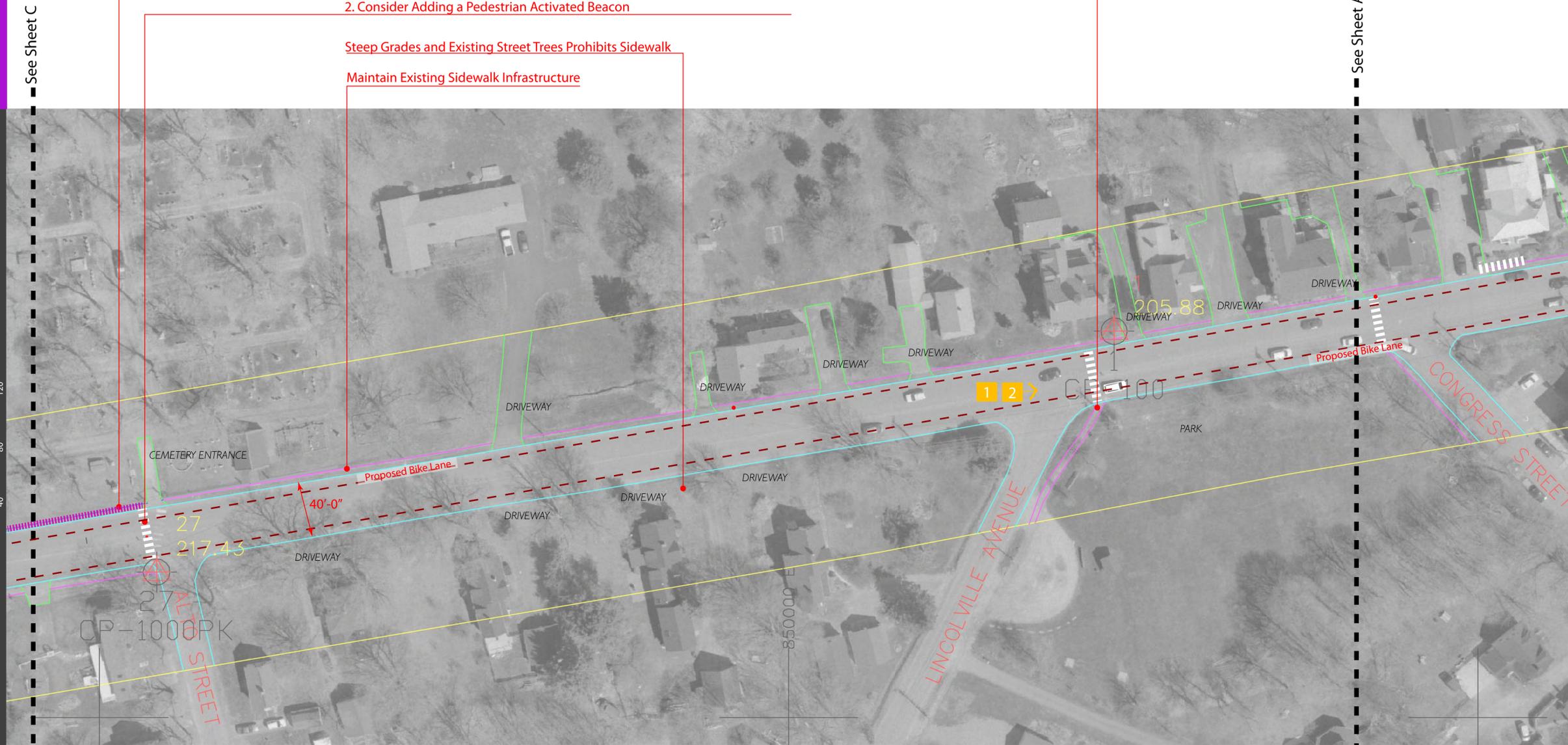
1. Enhance Park Entrance/Street Relationship - Provide Enlarged Paved Area
2. Consider Adding a Pedestrian Activated Beacon

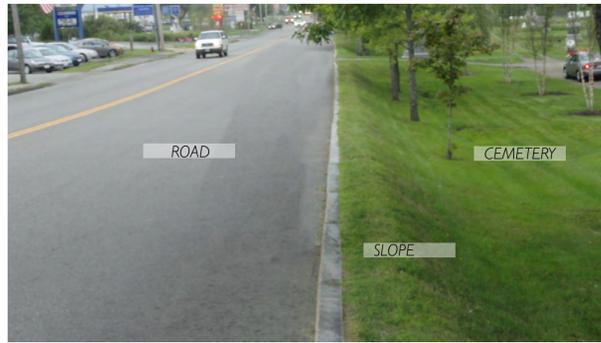
Sidewalk Ends ; Consider Adding a Sidewalk either within Road ROW or the City should Work with Cemetery to Add Sidewalk on the Cemetery's Property

1. Establish a Cross Walk and Apron that Aligns Perpendicular to the Travel Lanes
2. Consider Adding a Pedestrian Activated Beacon

Steep Grades and Existing Street Trees Prohibits Sidewalk

Maintain Existing Sidewalk Infrastructure





1 Existing Site Condition\_ Cemetery/Road Relationship

**Existing Conditions**

- 1. Steep grades with narrow shoulders on Cemetery property
- 2. No shoulder /Edge of road markings
- 3. No sidewalks along the entire frontage of the Cemetery

**Recommended Improvement;**

- 1. Add bike lane on both sides of the street
- 2. Add sidewalk (see note below on plan for private/public cooperation)

**General Recommendations (All Sheets)**

- 1. Consider lowering speed limit to increase pedestrian/bicyclist/vehicular safety.
- 2. Consider Using Dura-Therm Markings for all new crosswalks.
- 3. At high volume intersections consider installing pedestrian activated beacons.
- 4. At existing signaled intersections with pedestrian signals, verify the time allotted for pedestrian crossings. Increase the time where needed to provide safe pedestrian crossings.
- 5. Where possible minimize the vehicular pedestrian conflicts/crossings by reducing the number of entrances/exits of commercial properties along Belmont Avenue.

**General Notes**

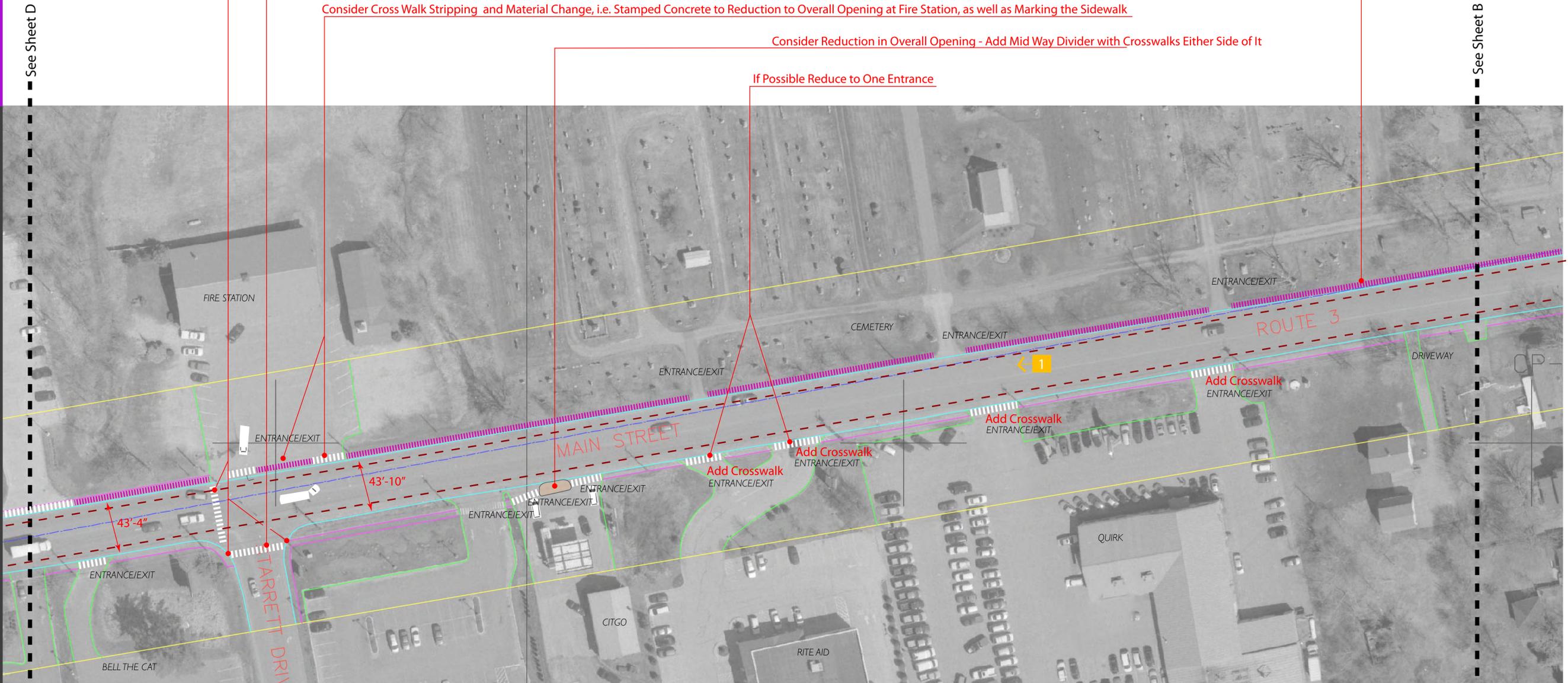
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- 5. The bike lanes shall meet all DOT and AASHTO Standards.

**Key**

	Edge of Road		Center line of 200' Wide Survey Area
	Edge of Side Walk		
	Edge of Pavement		
	200' Wide Survey Area		
	Bike Lane		
	Proposed Side Walk		



Scale: 1"=40'-0"



**Belmont Avenue Pedestrian Bike Recommendations**

Belmont, Ave  
Richardson & Associates, Landscape Architects  
June 11, 2012  
1. Revised January 29, 2013, based on Comments received from the City and Pedestrian, Hiking & Bike Committee



scale: 1"=40'-0"



**Existing Site Condition\_Route 1 By-Pass Off Lanes**  
**Existing Conditions**  
 1. Wide, unprotected, at grade crossing  
**Recommended Improvement**  
 1. Add Raised Refuge Island or Maintain Contrasting Color; Textured Surface  
 2. Add Pedestrian Activated Beacon  
 3. Add "Yield to Pedestrian" Sign



**Existing Site Condition\_Route 1 By-Pass On Lanes**  
**Existing Conditions**  
 1. No Pedestrian Sign  
 2. Cross walk material in various conditions  
**Recommended Improvement**  
 1. Add "Yield to Pedestrian" Sign  
 2. Repair Cross walk material  
 3. Add Pedestrian Activated Beacons



**Existing Site Condition\_Under Route 1 By-Pass**  
**Existing Conditions**  
 1. Poor night time visibility  
 2. Existing curbs in poor condition  
 3. Vegetation overgrown sidewalk  
**Recommended Improvement**  
 1. Add lighting on Concrete Abutments  
 2. Reset Curb  
 3. Clean up Vegetation

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5. The bike lanes shall meet all DOT and AASHTO Standards.

**Key**

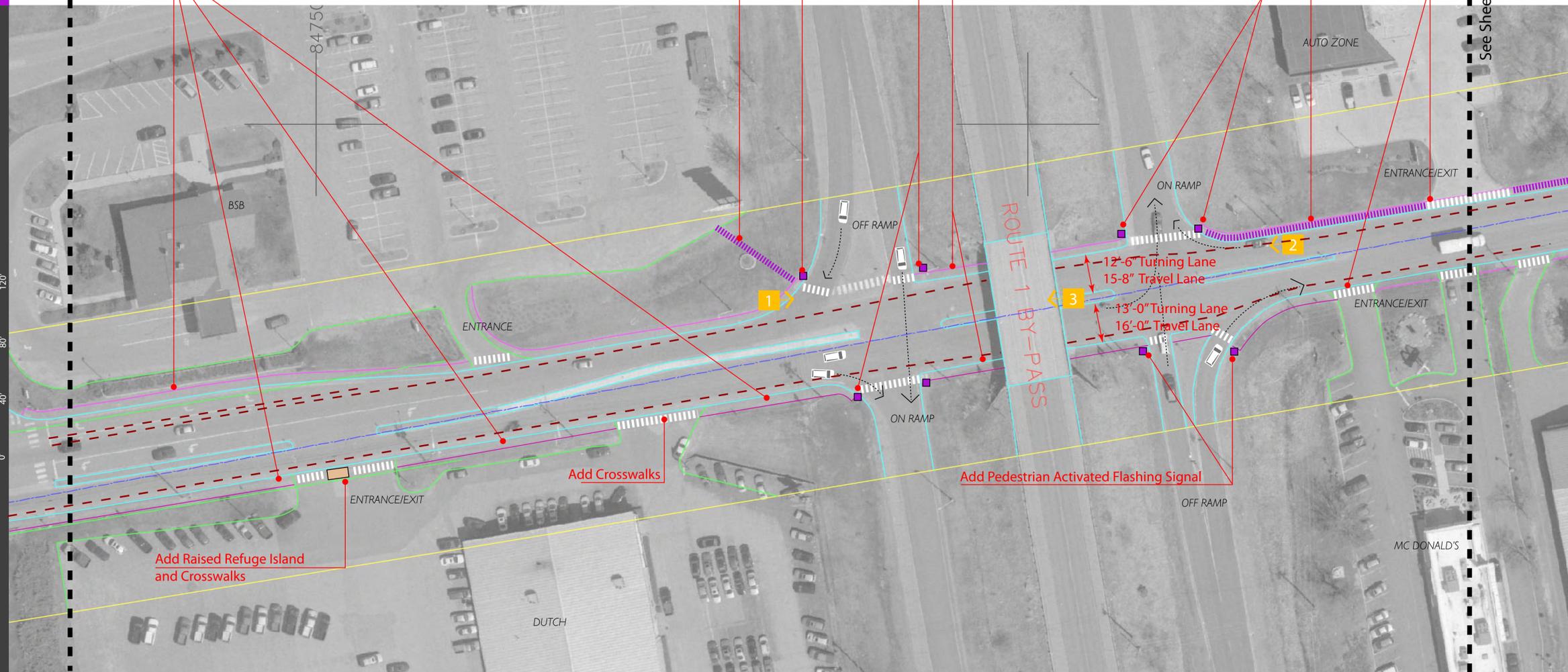
- Edge of Road
- Edge of Side Walk
- Edge of Pavement
- 200' Wide Survey Area
- Bike Lane
- Proposed Side Walk
- Center line of 200' Wide Survey Area

**General Recommendations (All Sheets)**

1. Consider lowering speed limit to increase pedestrian/bicyclist/vehicular safety.
2. Consider Using Dura-Therm Markings for all new crosswalks.
3. At high volume intersections consider installing pedestrian activated beacons.
4. At existing signaled intersections with pedestrian signals, verify the time allotted for pedestrian crossings. Increase the time where needed to provide safe pedestrian crossings.
5. Where possible minimize the vehicular pedestrian conflicts/crossings by reducing the number of entrances/exits of commercial properties along Belmont Avenue.

See Sheet E

See Sheet C



**Belmont Avenue Pedestrian Bike Recommendations**



1

Existing Site Condition\_ Belmont Avenue

**Existing Conditions**

1. 40' Overall Width of Pavement
2. No Pedestrian or Bicycle infrastructure

**Recommended Improvement;**

1. Add Sidewalks within ROW
2. Add Bike Lanes where possible (See Recommendation Options this sheet)

**Option B Recommendations - 46'-0" Road Width**

- 5'-0" Bike Lane
- 12'-0" Travel Lane
- 12'-0" Turning Lane
- 12'-0" Travel Lane
- 5'-0" Bike Lane

Add Sidewalk within ROW

**As part of Future Development Consider the Follow Recommendations:**

1. Limit Vehicle Access to One Location\_
2. Add Side Walk Along Road and Frontage of Future Development
3. Use Impact Fees for Improvements

Add Sidewalk within ROW

Long Term Improvement: Add Sidewalk

Right Turn Lane\_ Add No Right Turn Sign

Existing Sidewalk and Crosswalk

Add Crosswalk at Commercial Driveway Entrances, Typ.

Add Sidewalk with ROW\_ Adjust alignment or Width as needed to Accommodate Utility Poles and other Site Elements

**General Recommendations (All Sheets)**

1. Consider lowering speed limit to increase pedestrian/bicyclist/vehicular safety.
2. Consider Using Dura-Therm Markings for all new crosswalks.
3. At high volume intersections consider installing pedestrian activated beacons.
4. At existing signaled intersections with pedestrian signals, verify the time allotted for pedestrian crossings. Increase the time where needed to provide safe pedestrian crossings.

**Recommendations (this Sheet)**

1. The current road width does not allow for a bike lane on both sides of the road in addition to two (2) travel lanes and turning a lane starting in the vicinity of Wendy's and Dead River and ending at Schoodic Drive. Consider the following options to accommodate bike lanes here.

Option A. Add bicyclists on the road by adding Sharrow markings on the road. This does not exclude bike lanes in the future

Option B. Widen the road to accommodate 2 travel lanes and 1 turning lane, 12' wide and two bike lanes 5' wide; 46' Overall Road Width

2. Within the ROW add a sidewalk on North and South Side of the Road.

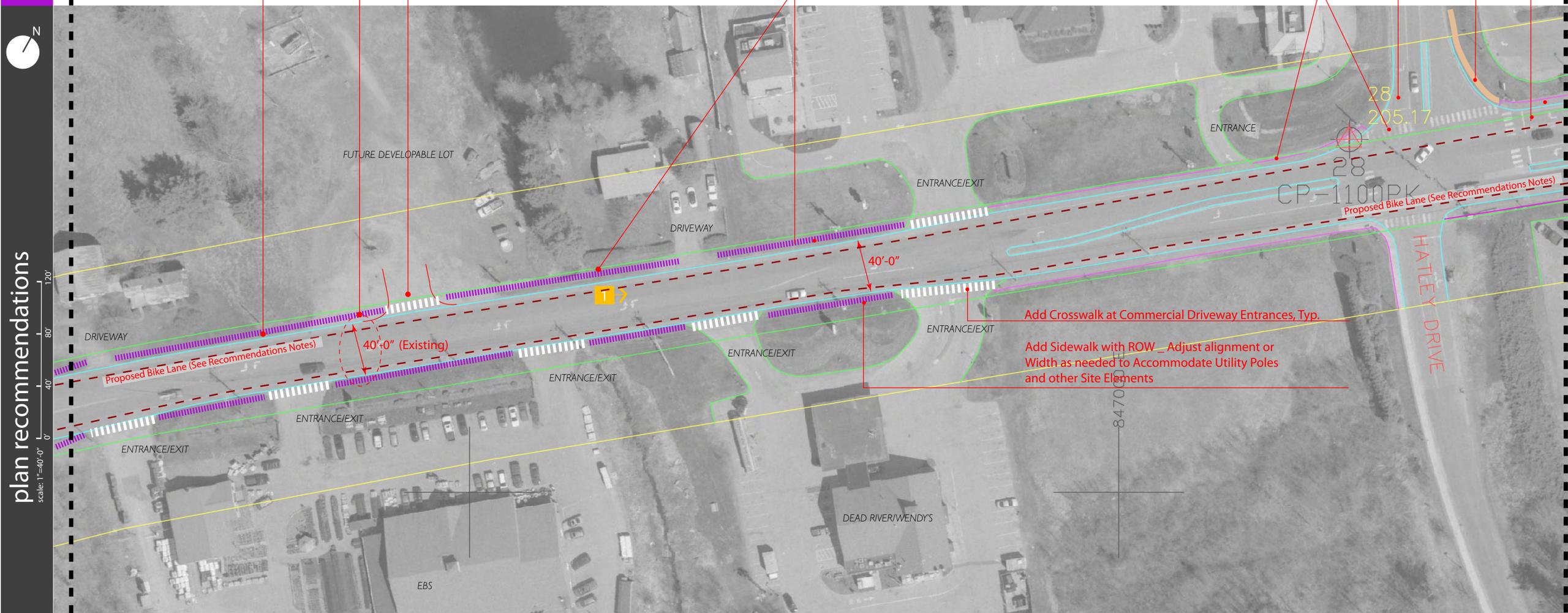
NOTE: North side improvements could use Impact Fees in connection with future development

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5. The bike lanes shall meet all DOT and AASHTO Standards.

**Key**

- Edge of Road
- Edge of Side Walk
- Edge of Pavement
- 200' Wide Survey Area
- Bike Lane
- Proposed Side Walk



**Belmont Avenue Pedestrian Bike Recommendations**

**General Recommendations (All Sheets)**

1. Consider lowering speed limit to increase pedestrian/bicyclist/vehicular safety.
2. Consider Using Dura-Therm Markings for all new crosswalks.
3. At high volume intersections consider installing pedestrian activate beacons.
4. At existing signaled intersections with pedestrian signals, verify the time allotted for pedestrian crossings. Increase the time where needed to provide safe pedestrian crossings.

**Recommendations (this Sheet)**

1. The current road width does not allow for a bike lane on both sides of the road with along with 2 travel lanes and a turning lane from Wendy's and Dead River to Schoodic Drive. Consider the following options to accommodate bike lanes on both sides of the road.

**Option A.** Add bicyclists on the road by adding Sharrow markings on the road. This does not exclude bike lanes in the future.

**Option B.** Widen the road to 46' - 0" to accommodate 2 travel lanes (12' wide each), 1 turning lane (12' wide) and 2 bike lanes (5' wide each)

2. All new sidewalks on the north side of the road should be part of the new development build out and paid for with private funds in connection with future development.

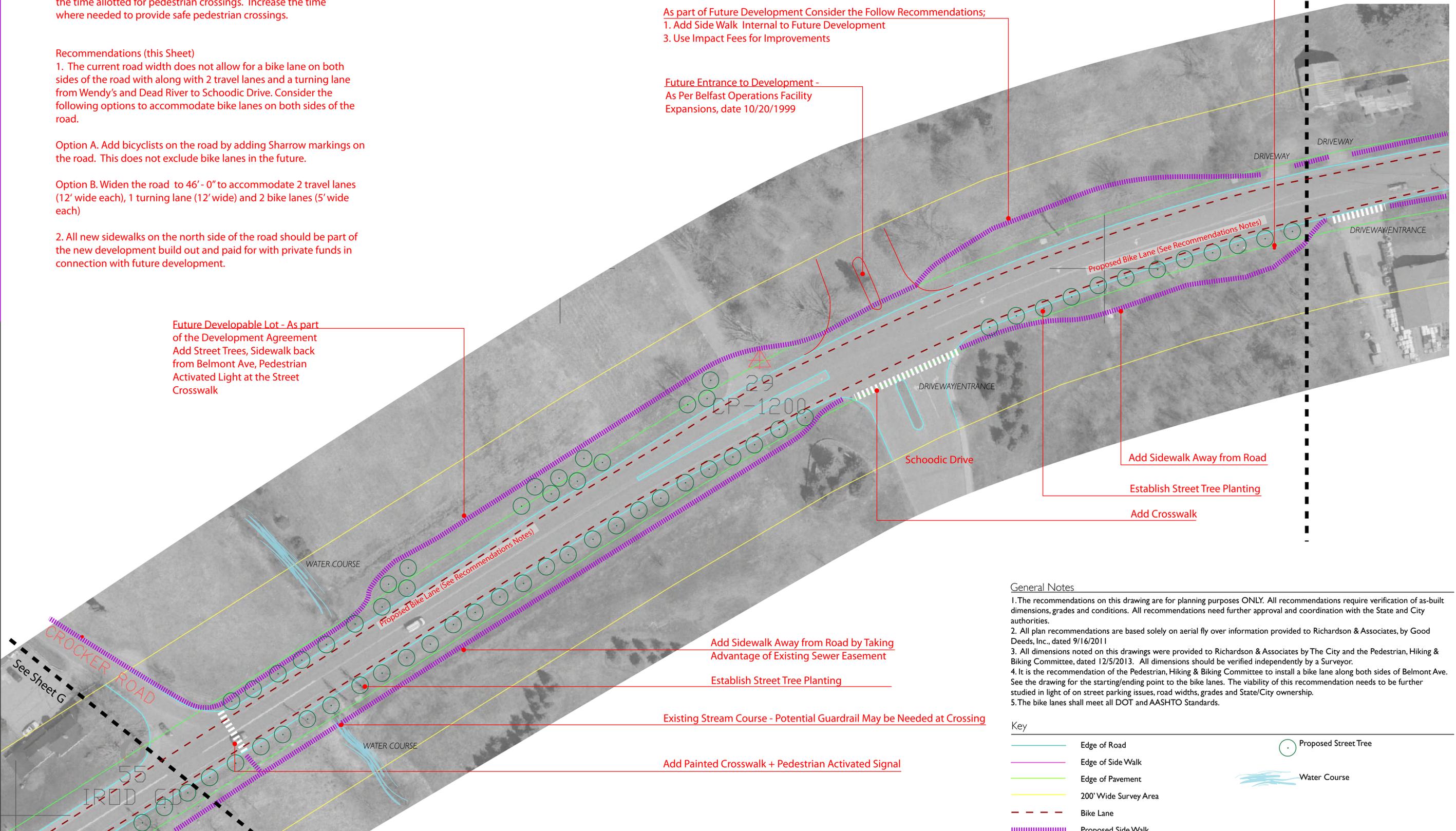
**Future Developable Lot - As part of the Development Agreement Add Street Trees, Sidewalk back from Belmont Ave, Pedestrian Activated Light at the Street Crosswalk**

**Site Conditions Needed to be Verified - Possible side Slope/Ditch Conflict**

**As part of Future Development Consider the Follow Recommendations;**

1. Add Side Walk Internal to Future Development
3. Use Impact Fees for Improvements

**Future Entrance to Development - As Per Belfast Operations Facility Expansions, date 10/20/1999**



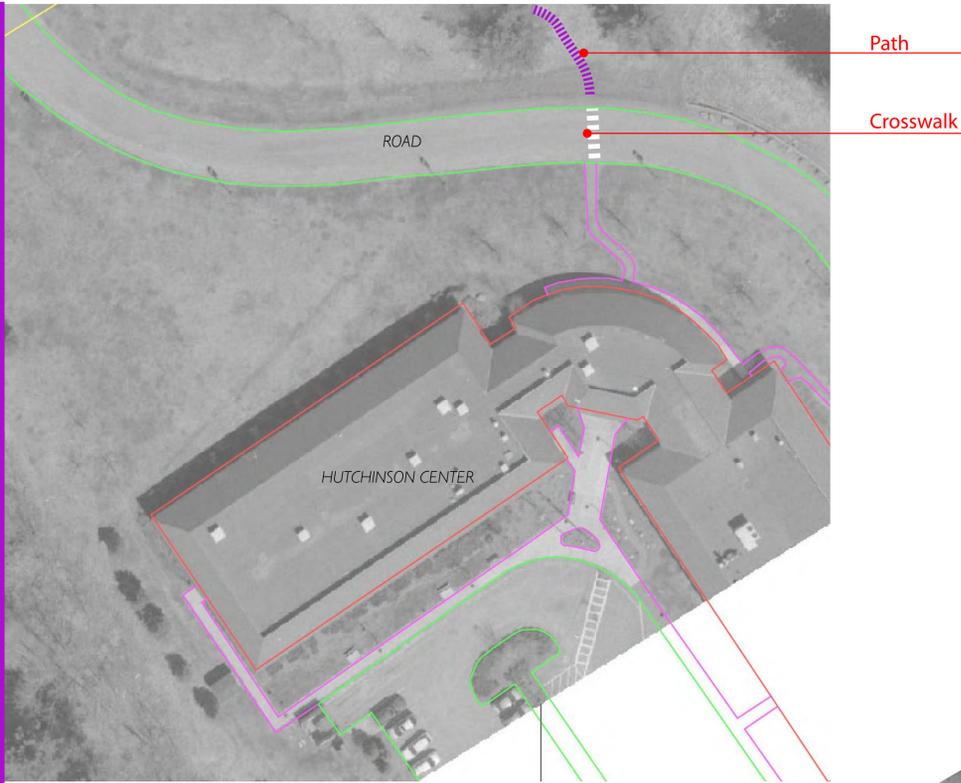
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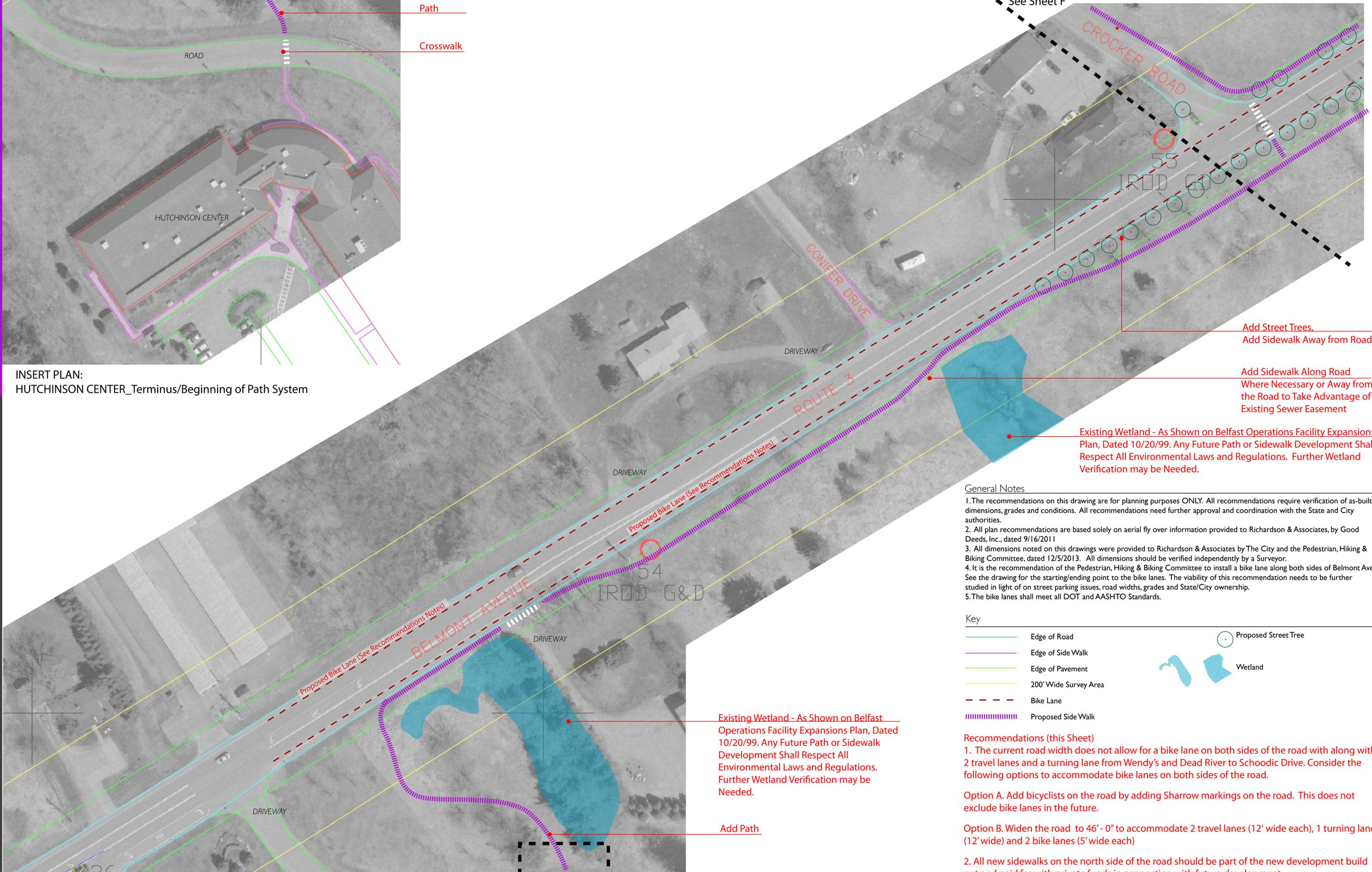
**Key**

	Edge of Road		Proposed Street Tree
	Edge of Side Walk		Water Course
	Edge of Pavement		
	200' Wide Survey Area		
	Bike Lane		
	Proposed Side Walk		

**Belmont Avenue Pedestrian and Bike Recommendations**



INSERT PLAN:  
HUTCHINSON CENTER\_Terminus/Beginning of Path System



See Sheet F

Add Street Trees,  
Add Sidewalk Away from Road

Add Sidewalk Along Road  
Where Necessary or Away from  
the Road to Take Advantage of  
Existing Sewer Easement

Existing Wetland - As Shown on Belfast Operations Facility Expansions  
Plan, Dated 10/20/99. Any Future Path or Sidewalk Development Shall  
Respect All Environmental Laws and Regulations. Further Wetland  
Verification may be Needed.

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Key

	Edge of Road		Proposed Street Tree
	Edge of Side Walk		Wetland
	Edge of Pavement		
	200' Wide Survey Area		
	Bike Lane		
	Proposed Side Walk		

Recommendations (this Sheet)

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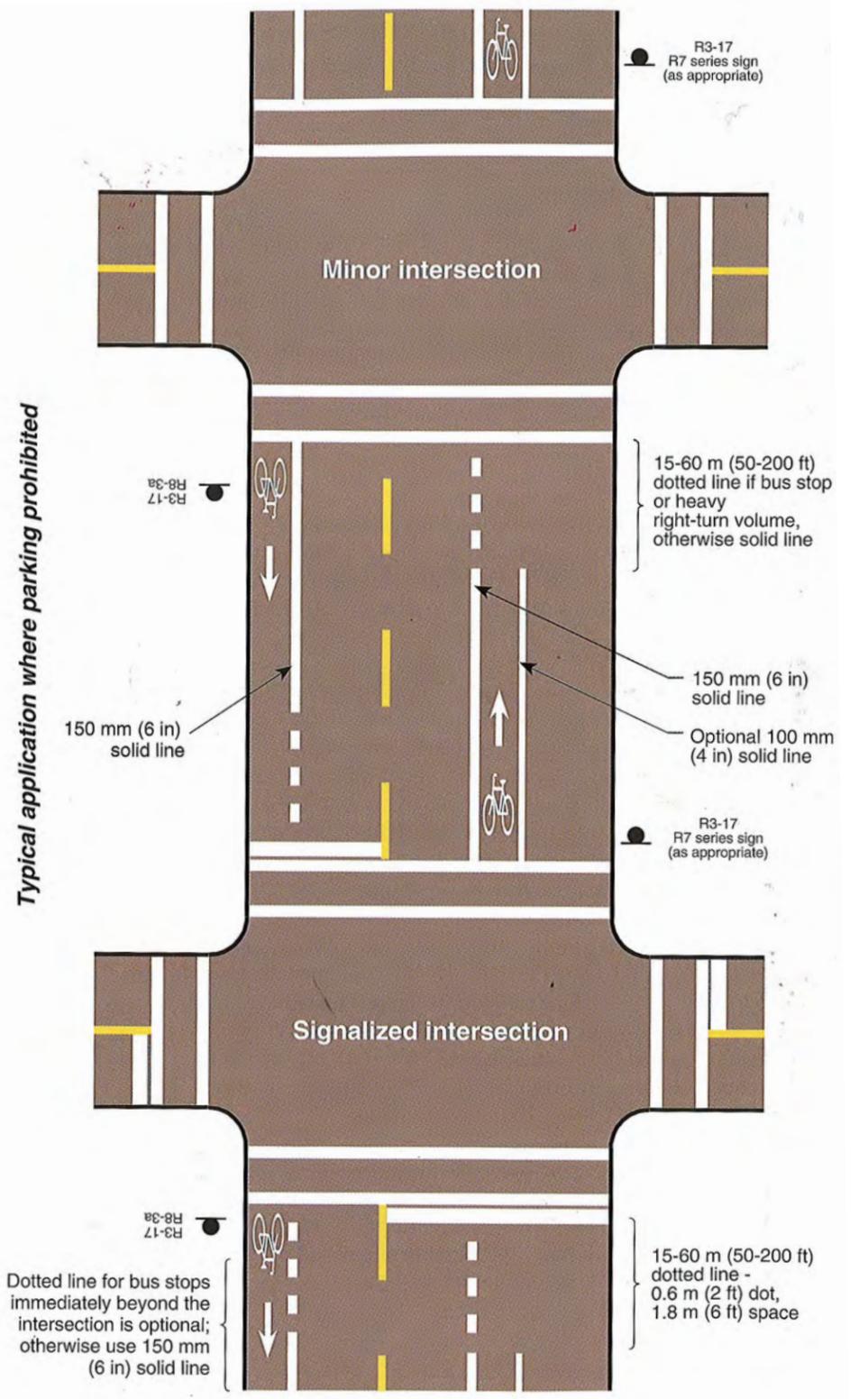
Existing Wetland - As Shown on Belfast  
Operations Facility Expansions Plan, Dated  
10/20/99. Any Future Path or Sidewalk  
Development Shall Respect All  
Environmental Laws and Regulations.  
Further Wetland Verification may be  
Needed.

Add Path

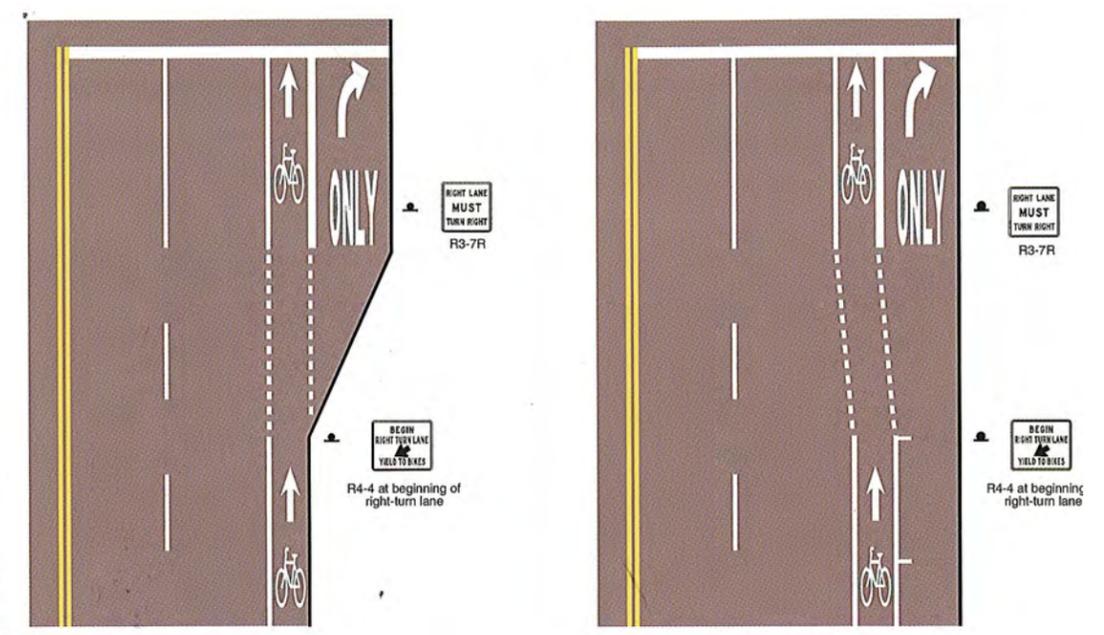
SEE INSERT PLAN ABOVE:  
HUTCHINSON CENTER

Belmont Avenue Pedestrian Bike Recommendations

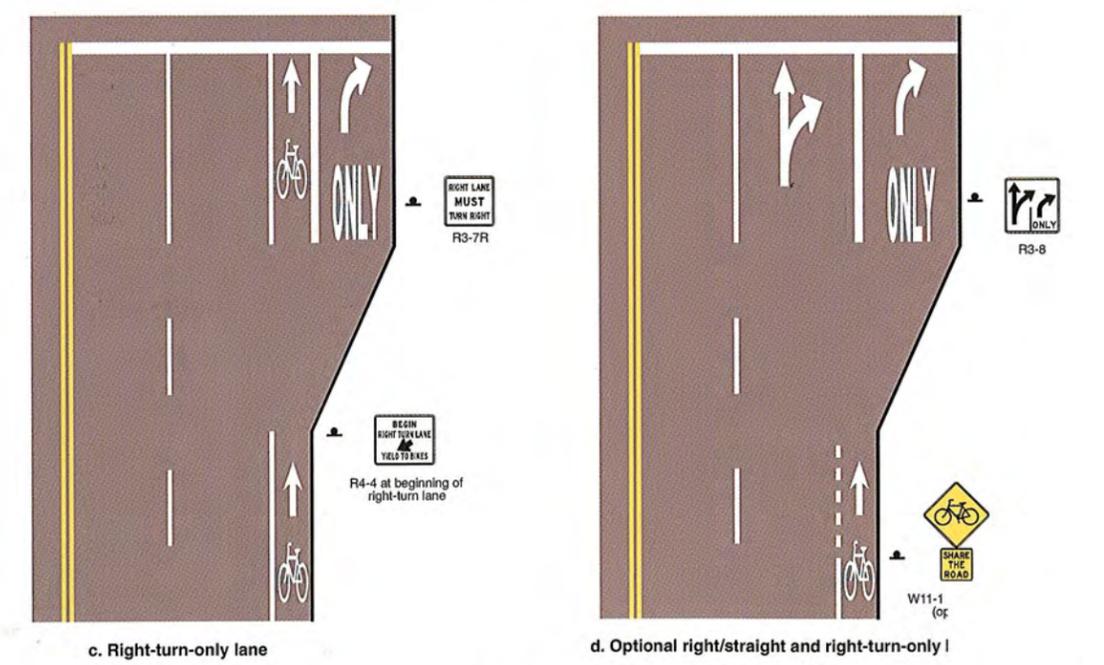
Typical application where parking prohibited



Typical Pavement Markings for Bike Lanes on Two Way Street  
 Guide for the Development of Bicycle Facilities  
 American Association of State Highway and Transportation Officials, date 1999



NOTE: The dotted lines in cases "a" and "b" are optional (see case "c".)



Bike Lanes Approaching Right Turn Only Lanes  
 Guide for the Development of Bicycle Facilities  
 American Association of State Highway and Transportation Officials, date 1999

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