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# Living Streets Corridor Pilot Study Potential Alternatives

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OCTOBER 16 | 2012

# Tonight's Discussion

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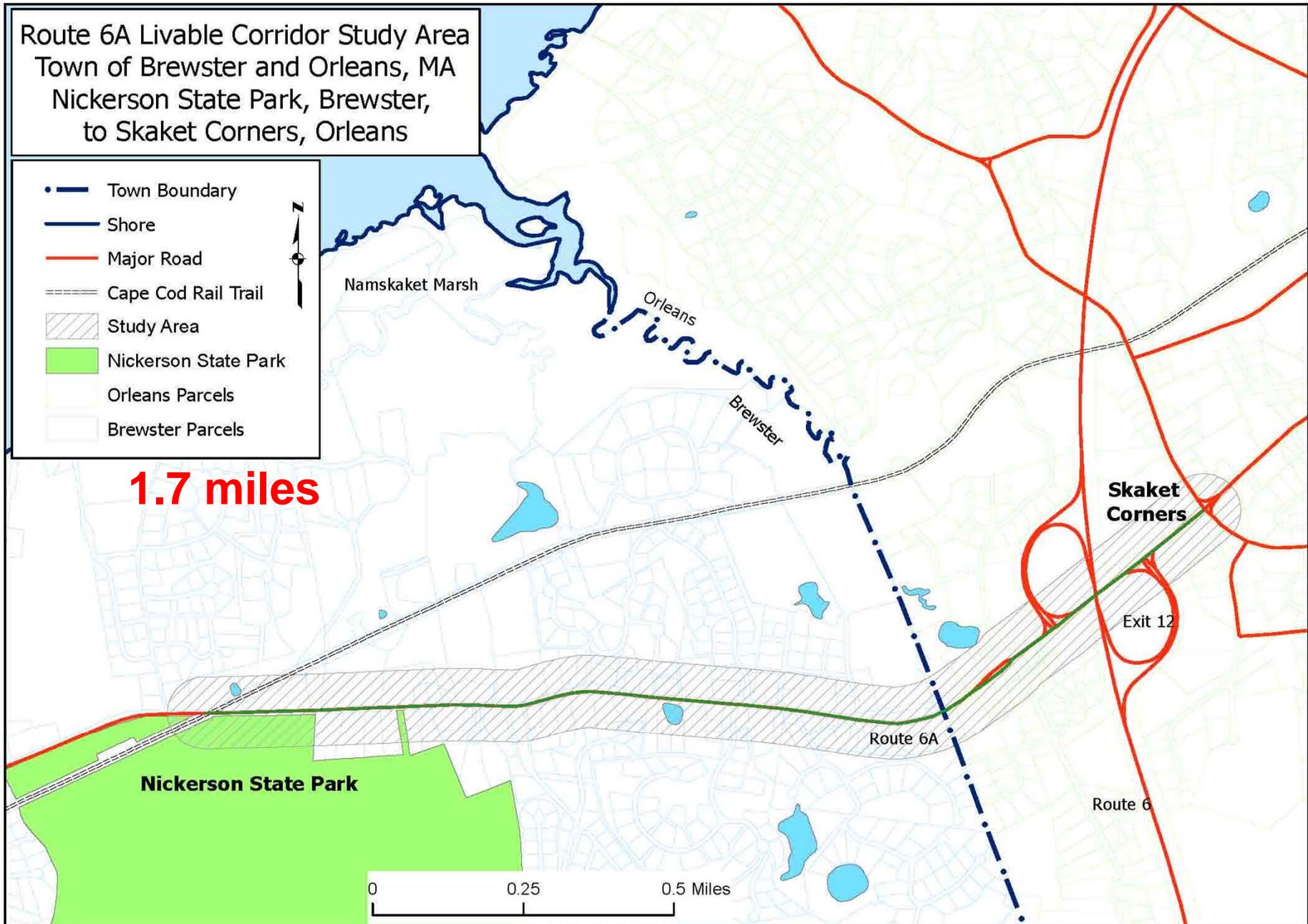
- **Project background**
- **Recap of April 2012 public meeting**
- **Priority site considerations**
- **Draft plans**
- **Comments/questions**
- **Next steps**

Route 6A Livable Corridor Study Area  
Town of Brewster and Orleans, MA  
Nickerson State Park, Brewster,  
to Skaket Corners, Orleans

- Town Boundary
- Shore
- Major Road
- Cape Cod Rail Trail
- ▨ Study Area
- Nickerson State Park
- Orleans Parcels
- Brewster Parcels



**1.7 miles**



0 0.25 0.5 Miles

# Project Background



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# Background, Purpose and Goals: How we chose this stretch of 6A

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- **Background**
  - What we've heard in our regional work: safety, flooding, universal accessibility concerns, maintain community character
  - UPWP (Unified Planning Work Program)  
Short/Long term planning project development:  
Green Streets → complete Streets
- **Purpose**
  - Living Streets **Pilot** Study
  - Regional approach (Orleans-Brewster)
- **Goals**
  - To provide non-motorized connections and improve bike/ped access
  - To explore the feasibility of implementing stormwater management along CC roadways
  - To discover a preferred alternative for future roadway improvements

# Getting to Living Streets: **What's the Challenge?**

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- **Safety & Connectivity**
- **Wet weather Management**
- **Maintaining Community Character of 6A**

# April 2012 kickoff meeting recap

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- Gave overview on living streets
- Purpose of project
- Reviewed proposed study area –priority sites
- Reviewed initial analysis of topography, land uses, utilities
- Discussion – input & feedback

# Living Streets: **What are they?**

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***A Living Street***  
*considers the needs of all users (Children, bicyclists, the disabled, motorists) to design context-sensitive solutions to improve the streetscape.*



- **Living Street Design can help to improve:**
  - Streets that are unsafe for pedestrians and bicyclists
  - Uninviting or unsightly streets
  - Street water runoff systems that funnel water into the street or into impaired waterbodies

# Living Streets: Some examples from Today



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*Wet weather  
management*

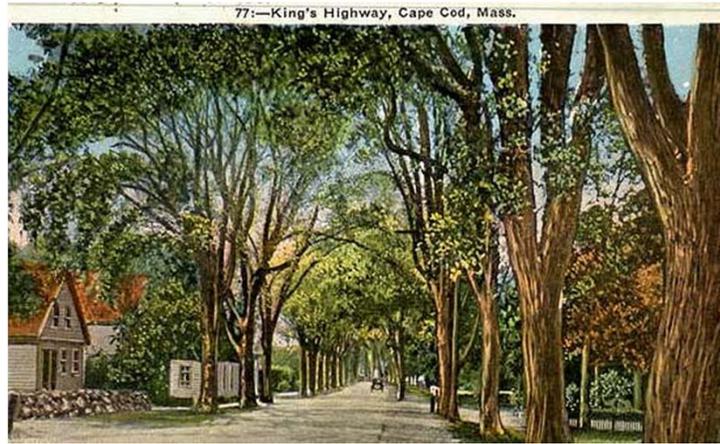
*Pedestrian  
Connectivity*

*Bicycle  
Access & Safety*

# Cape Cod Community Character



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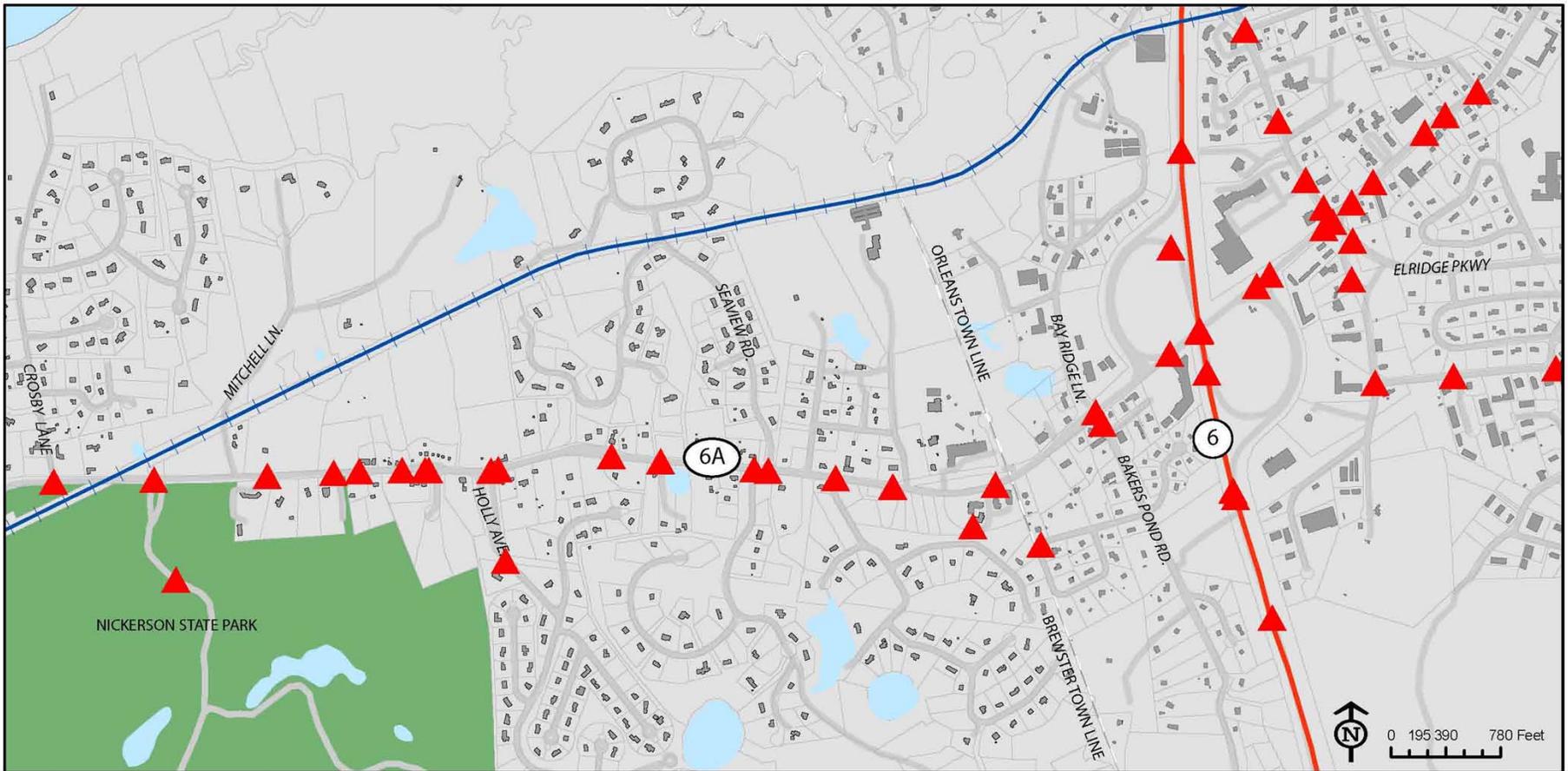


- **Considering Route 6A's history**
- **Improving roadway with context-sensitive design**

# **Design Process**

Inventory → Analyze → Evaluate

# Safety & Connectivity Consideration: Crash Locations



*The information depicted on these maps is for planning purposes only. It is not adequate for legal boundary definition, regulatory interpretation, or parcel level analysis. It should not substitute for actual on-site survey, or supersede deed research.*

## Legend

-  Crash Locations 2006-2008
-  Cape Cod Rail Trail
-  Ponds
-  Route 6: Mid Cape Hwy
-  Nickerson State Park



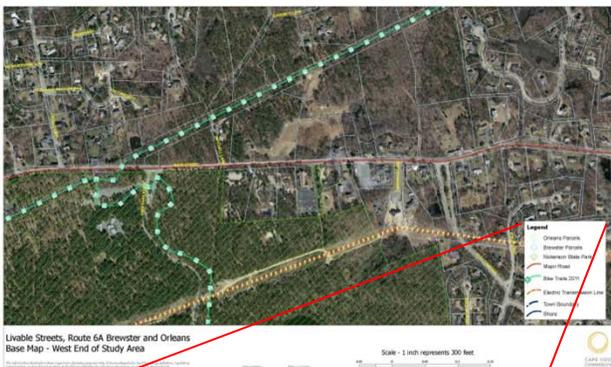
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Created by: TH  
Source CCC GIS ArcMap  
9.3.1, modified with CS.4

# Site Inventory and Analysis: What are the current conditions?



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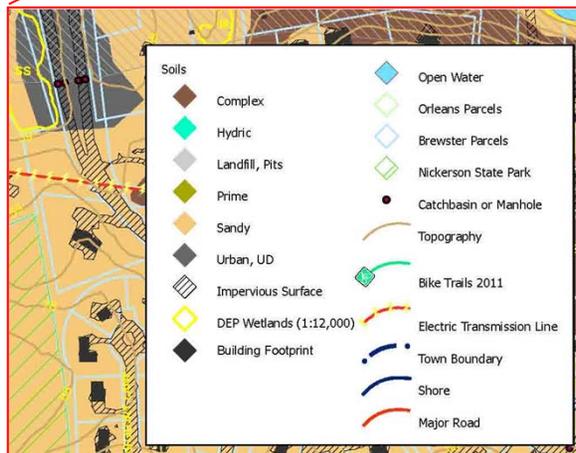
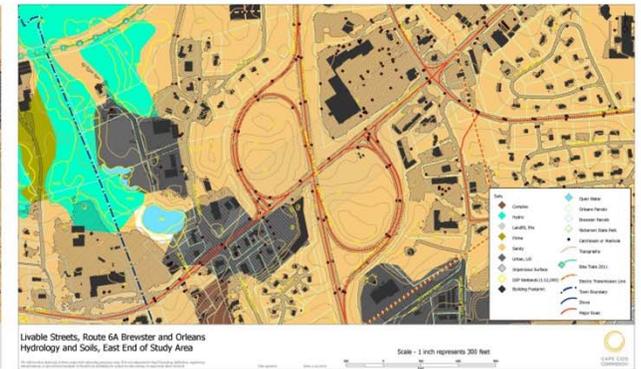
## Base information:

- Major/minor intersections
- Vegetation/Tree Cover
- Density/Open Spaces
- Road Right of Way

# Site Inventory and Analysis: What are the current conditions?



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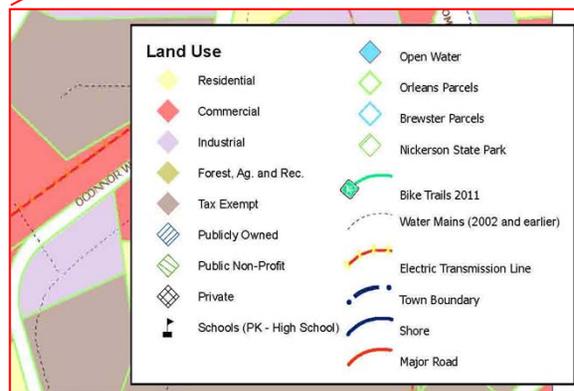
## Soils and Hydrology:

- What direction are flows?
- Where are there areas of impervious cover?
- Where are the existing flood management structures?

# Site Inventory and Analysis: What are the current conditions?



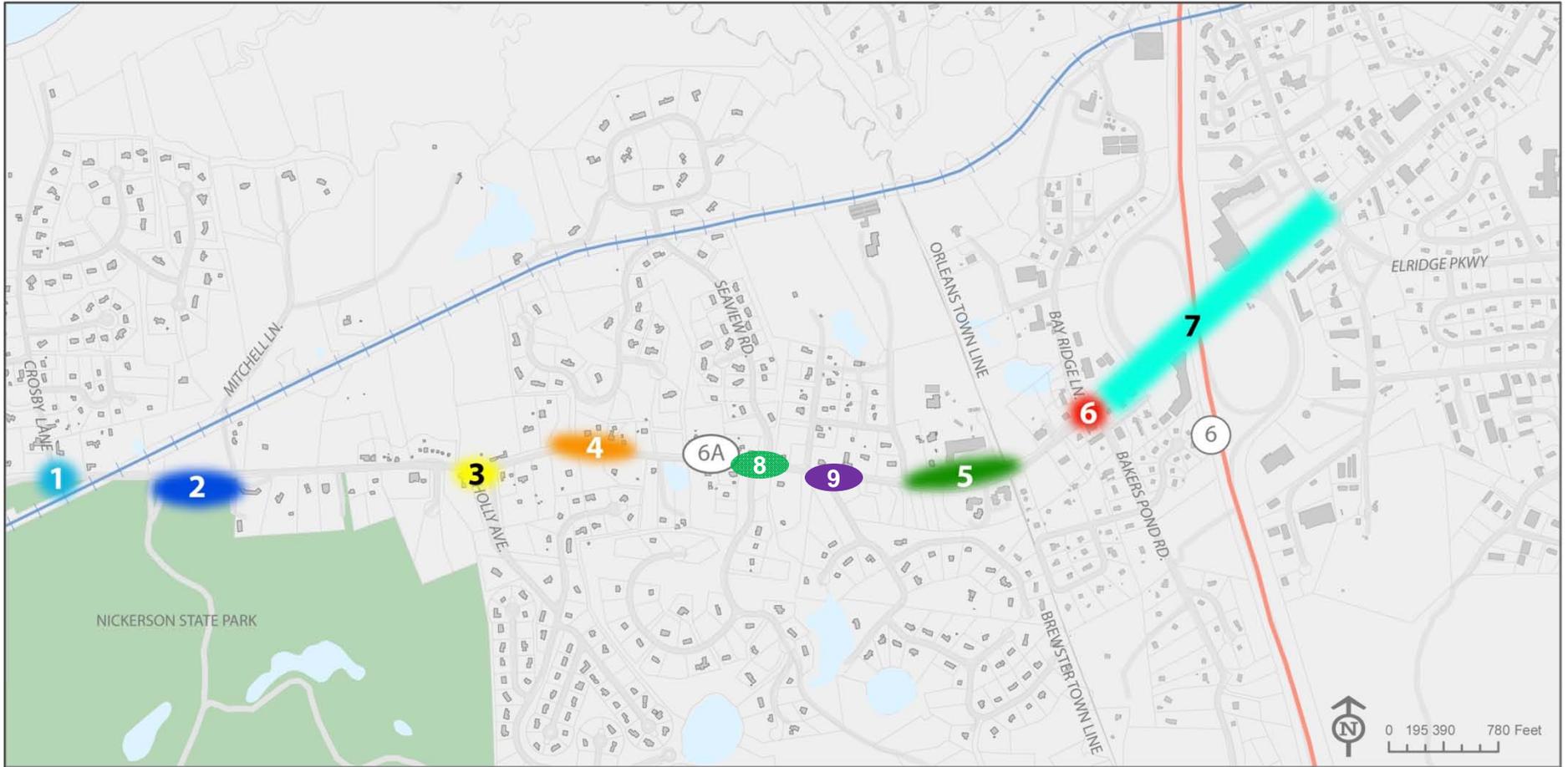
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## Land Uses:

- What land is public?
- Where should connections be strengthened?

# From analysis and public input: Identify Priority Sites



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## Legend

-  Cape Cod Rail Trail
-  Ponds
-  Route 6: Mid Cape Hwy
-  Nickerson State Park



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Source CCC GIS ArcMap  
9.3.1; modified with CS4

# Priority Site Photos



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## Area 1 Crosby



## Area 2 Nickerson entrance



## Area 3 Holly Ave



# Priority Site Photos



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## Area 4 Old Layout



## Area 6 Bakers Pond Rd/BayRidge



## Area 5 Old Layout Orl/Brew Industrial



# Priority Site Photos



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Area 7A Underground Mall-Underpass/East



Area 8 Owl Pond/Seaview



Area 7B Underpass-Skaket/West



Area 9 Vesper Pond



# Developing a Site Evaluation Matrix



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Design Siting Considerations	Facility/Application Type
Best fit for complete streets facilities by type	Sidewalks
	Textured/striped pavement
	Bike lane
	Bike shoulder**
	Sharrows
	Crosswalk improvements
	Colored "conflict zones"
	Bicycle safety signage
	Improved wayfinding signage
	Best fit for Low Impact Development (LID) facilities by type
Rain Garden	
Tree planting	
PAVINGS	
Permeable paving/Pavers	
CONVEYANCE	
Runnels/channels	
Boxwales	
OTHER	
Vegetated buffer strip	
Existing Conditions & Special Considerations	Right of Way width (feet)
	Lane Width (EB/WB) (feet)
	Shoulder width
	Existing pavement width
	Curb
	Guardrail
	Footpath
	Fog Line
	Steep grades adjacent to road
	Trees in right-of-way
	Utility pole/box in right-of-way
	Wetland resources present
	Historic resources present
	Specimen/historic trees present
	Recreational use adjacent
	Appropriate for passive recreation
	Permeable soil
	Within mapped rare species habitat

Began with listing types of treatment for:

- Complete Streets
- Stormwater
- Context Sensitivity...

# Developing a Site Evaluation Matrix



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Area 1	Area 2	Area 3	Area 4	Area 5	Area 6	Area 7A	Area 7B	Area 8	Area 9	Location of Facility		
Crosby Lane/ Nickerson	Nickerson driveway	Holly Ave. (Robinwood entry)	Brewster Old Layout	Brewster/ Orleans Industrial Old Layout (wb)	Bakers Pond Rd./ Bay Ridge Rd.	Undergrnd Mail to underpass+ eastside	Underpass to Skaket/west	Owl Pond/6A	Vesper Pond/6A	Private yards	Travel lane	Right of Way
X	X	X	X	X	X	X	-	X	-	-	-	X



....and then evaluated suitability for siting each design type through site visits to priority site locations...

# Developing a Site Evaluation Matrix



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## Final matrix provided guidance for creation of conceptual designs

Design Siting Considerations	Facility/Application Type	Area 1	Area 2	Area 3	Area 4	Area 5	Area 6	Area 7A	Area 7B	Area 8	Area 9	Location of Facility						
		Crosby Lane/ Nelson	Nelson drive	Holly Ave. (Robinwood entry)	Brewster Old Layout	Brewster/ Old Industrial Old Layout (with)	Bakers Pond Rd./By Ridge Rd.	Undergrad Ma I to underpass east side	Underpass to Slaletwest	Owl Pond/6A	Vesper Pond/6A	Private yards	Transect line	Right of Way				
Best fit for complete streets facilities by type	Sidewalks	X	X	X	X	X	X	X	X	X	X							
	Texture/striped pavement	X	X	X		X	X		X	X	X							
	Bike lane												X	X				
	Bike shoulder**	X (guardrail in places)											X	X				
	Sharrows																	
	Crosswalk improvements	X	X	X				X	X	X	X	X						
	Colored "conflict zones"							X	X	X	X							
Color safety signage	X					X	X	X	X	X								
Improved wayfinding signage	X					X	X											
Best fit for Low Impact Development (LID) facilities by type	SECRETION																	
	Rain Garden	X	X	X	X	X	P	X	X	X	X	X	X	X	X	X	X	X
	Tree planting				X	X					X	X	X	X	X	X	X	X
	PAVINGS																	
	Permeable paving/Pavers	X	X	X	X	X	X	X	X	X								
	CONVEYANCE																	
	Humus channels		X	X	X	X	P	P	P		P							
	Biowales		X		X	X		P	P									
	OTHER																	
	Vegetated bufferstrip		X	X	X	X	P	P			X	X	X	X	X	X	X	X
Existing Conditions & Special Considerations	Right of Way width (feet)	55	50	65	52-60	90+	68	41-50	41-50	52	50							
	Lane Width (EB/WB) (feet)	12/12	11/11	11/11	11/11	12/11-12	see note**	11(3)/11(2)	11(3)/12(2)	11/12								
	Shoulder width	3/3	2/1-5	1/16*	1/1	1/1	2/2	2/2	1/1	7/1								
	Existing pavement width	30	28	30-30	24	25-24	65-34	48	48									
	Curb						X	X	X									
	EB/ east of Crosby Lane		WB/west of entrance	EB&WB			X NW	X	X									
	Guardrail		EB				X NW	X	X									
	Footpath	X	EB	X	X			X	X	X	X							
	Fog Line	X	X	X	X	X	X	X	X	X	X							
	Steep grades adjacent to road		WB				X NW		X									
	Trees in right-of-way		X		X		(1)				X	X						
	Utility pole/box in right-of-way	X	X	X	X		(eb)	X		X	X							
	Wetland resources present			X														
	Historic resources present	X			X		marker											
	Specimen/historic trees present				X													
Recreational use adjacent	X	X																
Appropriate for passive recreation		X		X		X												
Permeable soil	X	X		X	X	X	X	X	X									
Within mapped rare species habitat	X	X	X	X														



**Too small to read?  
We brought copies!**

\*Bike lane possible on 1.5 miles generally not  
\*\*vehicle lane record provide adequate shoulder

# **Final Design Considerations**

# Getting to a Proposed Alternative by Developing Conceptual Plans

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## Plans take into consideration:

- MassDOT sidewalk plans
- State and National best management practices
- Emerging technologies

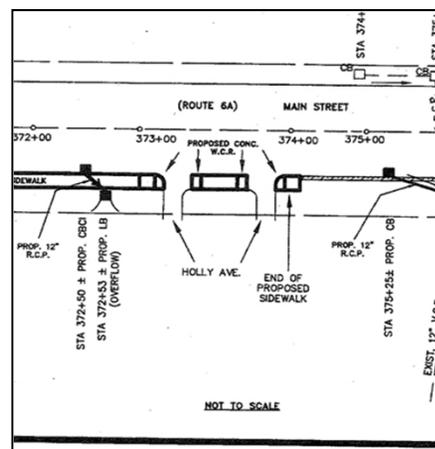
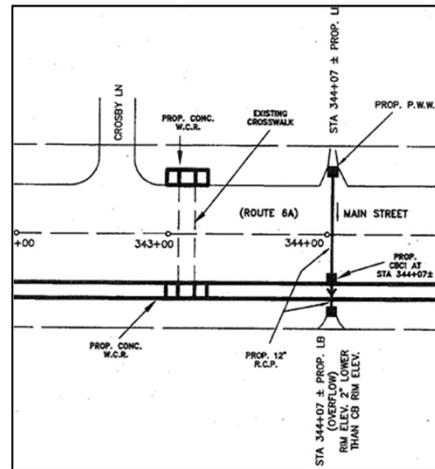
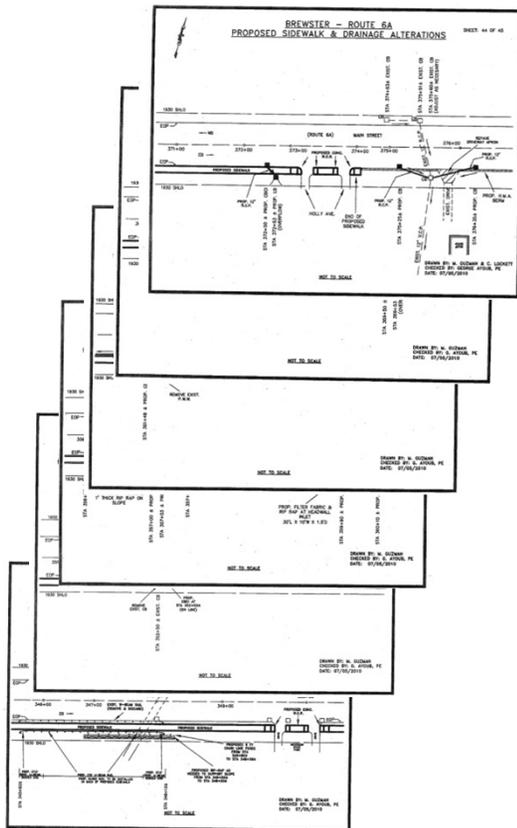
## And also consider:

- Traditional Cape Cod character
- Ease of implementation

# MassDOT Conceptual Sidewalk Plans (2010)



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- Include connection to Nickerson
- End at Holly
- Traditional concrete/granite curbing
- On hold

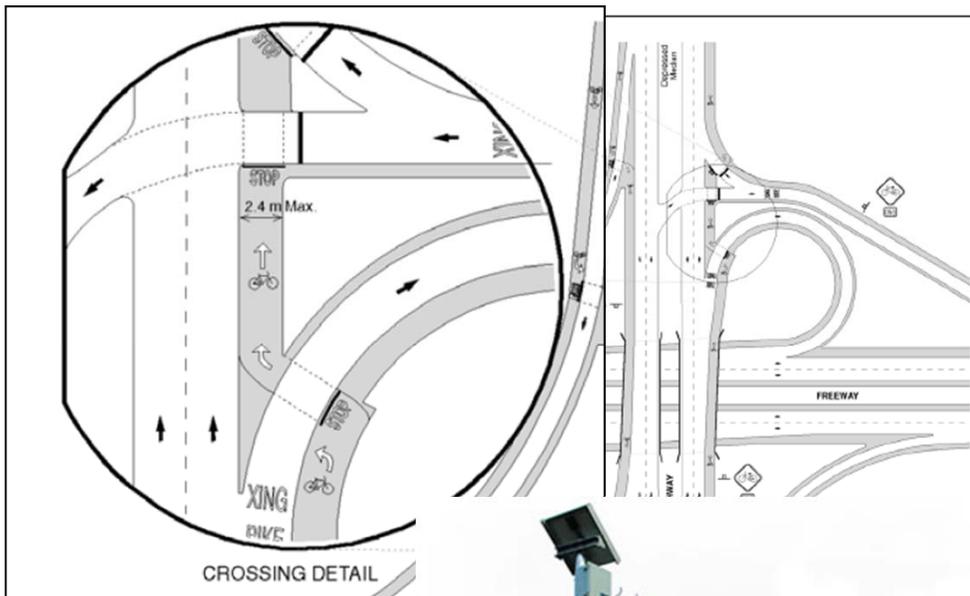
# Emerging Standards for Pedestrian Safety in High Traffic Areas



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December 2007  
KIPDA Interchange – Bicycle/Pedestrian Safety Study

Figure 12: Illinois' Guidance on Accommodating Bicycle Lanes through Interchanges



- Consulted transportation staff for difficult interchange
- Conceptual guidance for proposing future improvement
- Emerging practices and technologies
- Rectangular Rapid Flash Beacon?

# Current Practices: Context Sensitive design



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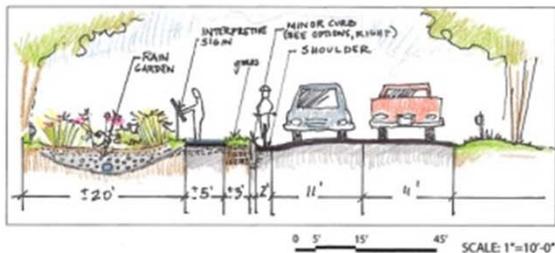
## The goal:

context sensitive,  
low impact pathways  
*(like these in Yarmouthport)*

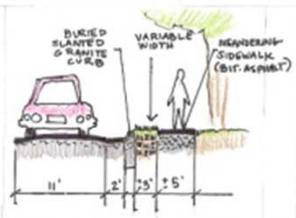
- Public support for **NO GRANITE CURBS!**
- Remember the history of 6A
- Meandering walk for careful attention to specimen trees and utility poles

**Proposed Alternatives**  
**Crosby Lane → Skaket Corners**

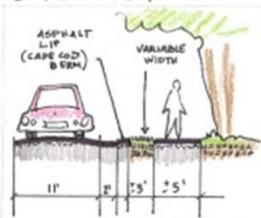
**SECTION AA: LOOKING EAST**



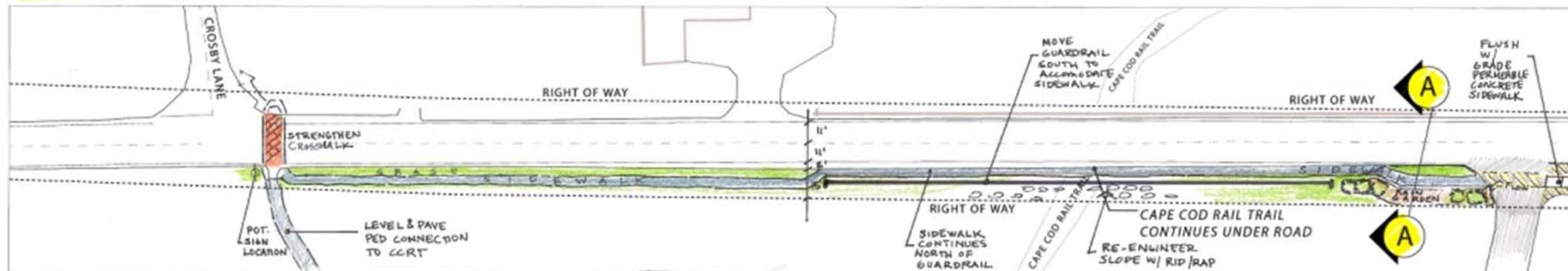
**CURB OPTION "A"**



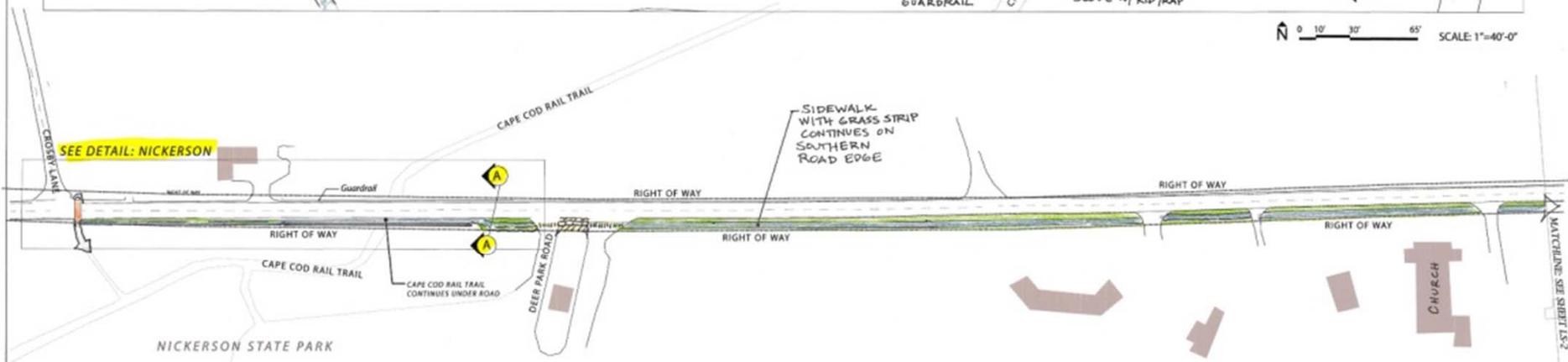
**CURB OPTION "B"**



**DETAIL: NICKERSON**



SCALE: 1"=40'-0"



SCALE: 1"=100'-0"

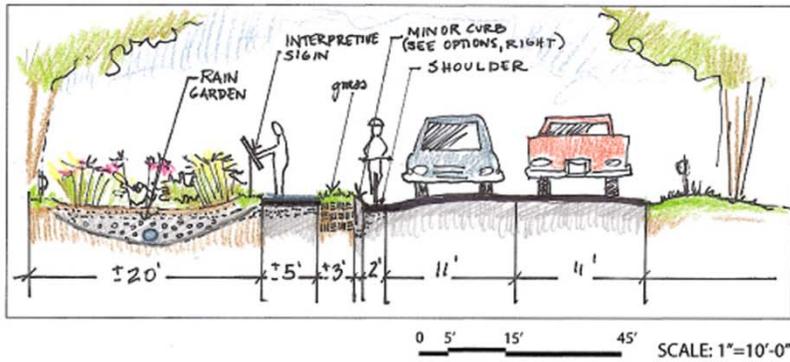
	LIVING STREET ALTERNATIVES RT 6A BREWSTER-ORLEANS	
	DRAWN BY: TH	LS-1
	DATE: _____	
NICKERSON TO CHURCH		

# Context sensitive curbing/ Rainwater harvesting

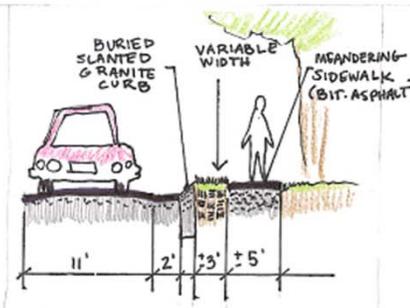


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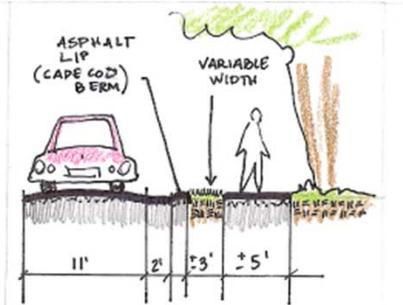
## SECTION AA: LOOKING EAST



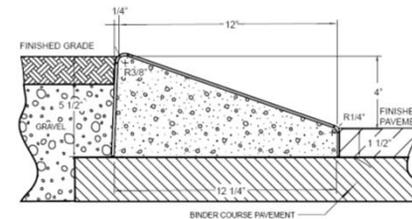
## CURB OPTION "A"



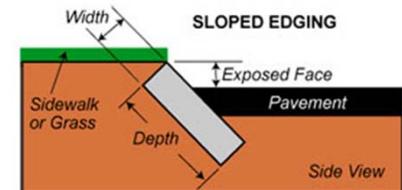
## CURB OPTION "B"



## A: Cape Cod Berm

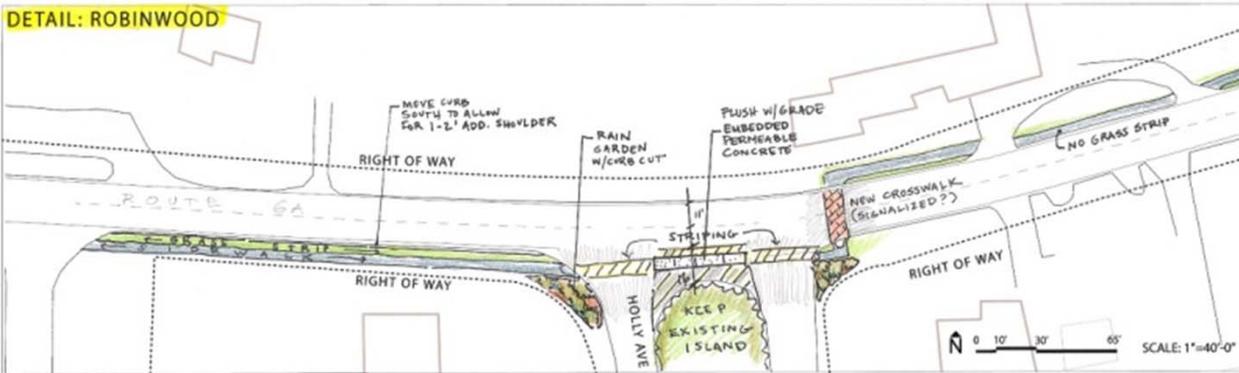


## B: Sloped curb

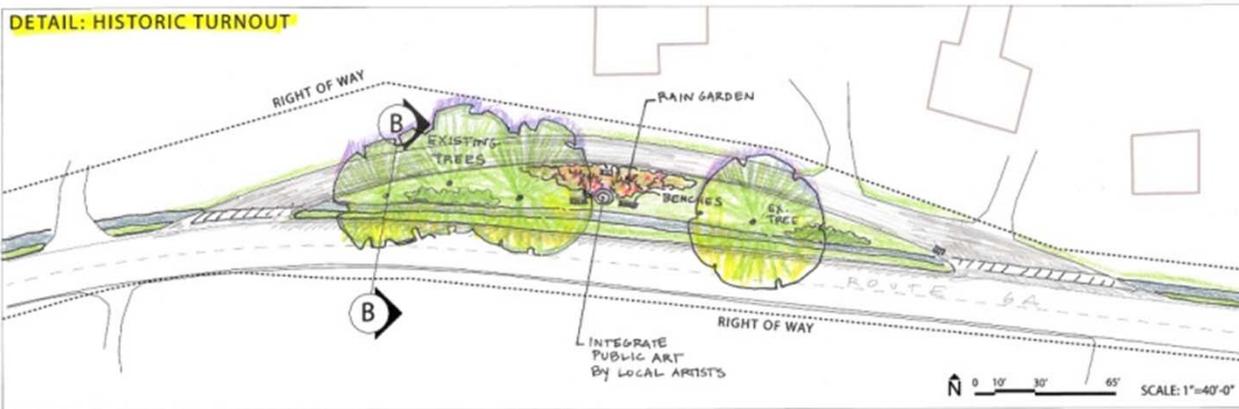


Rain Garden

**DETAIL: ROBINWOOD**



**DETAIL: HISTORIC TURNOUT**



PERSPECTIVE BB: AT HISTORICAL TURNOUT



	LIVING STREET ALTERNATIVES	
	RT 6A BREWSTER-ORLEANS	
	DRAWN BY: TH	LS-2
	DATE:	
LAURINO'S TO HISTORIC TURNOUT		



Current

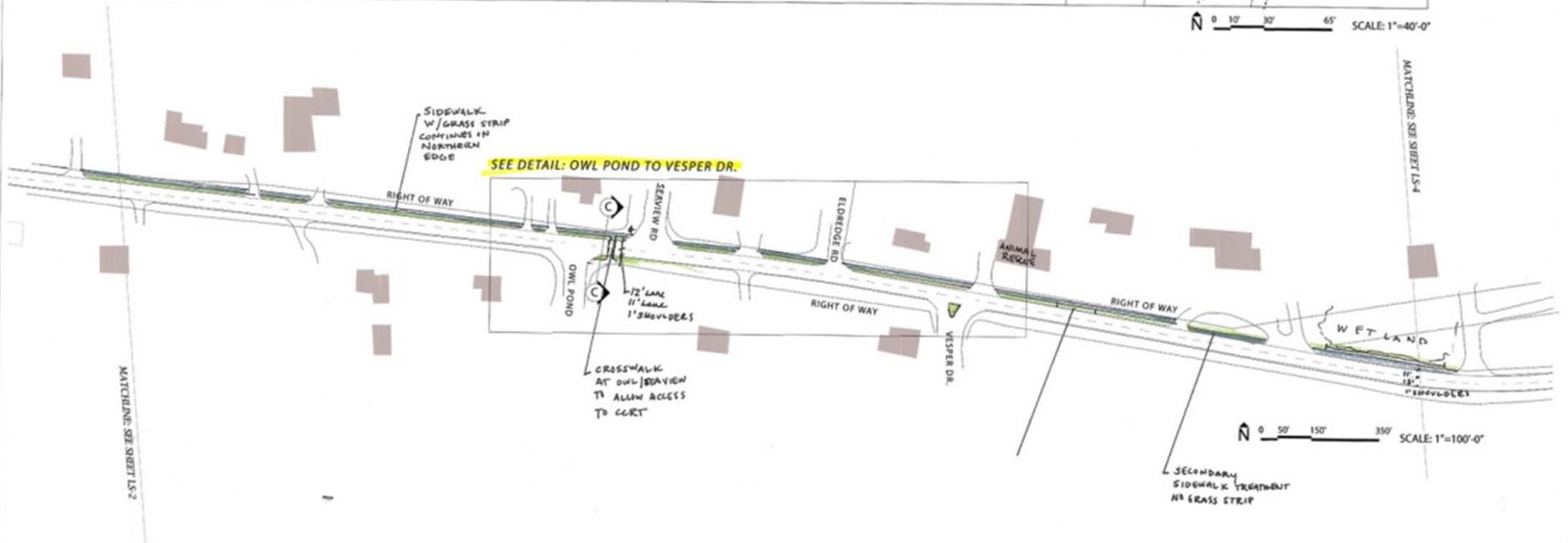


Bench/Rain garden  
Public art location

Meandering  
Asphalt sidewalk

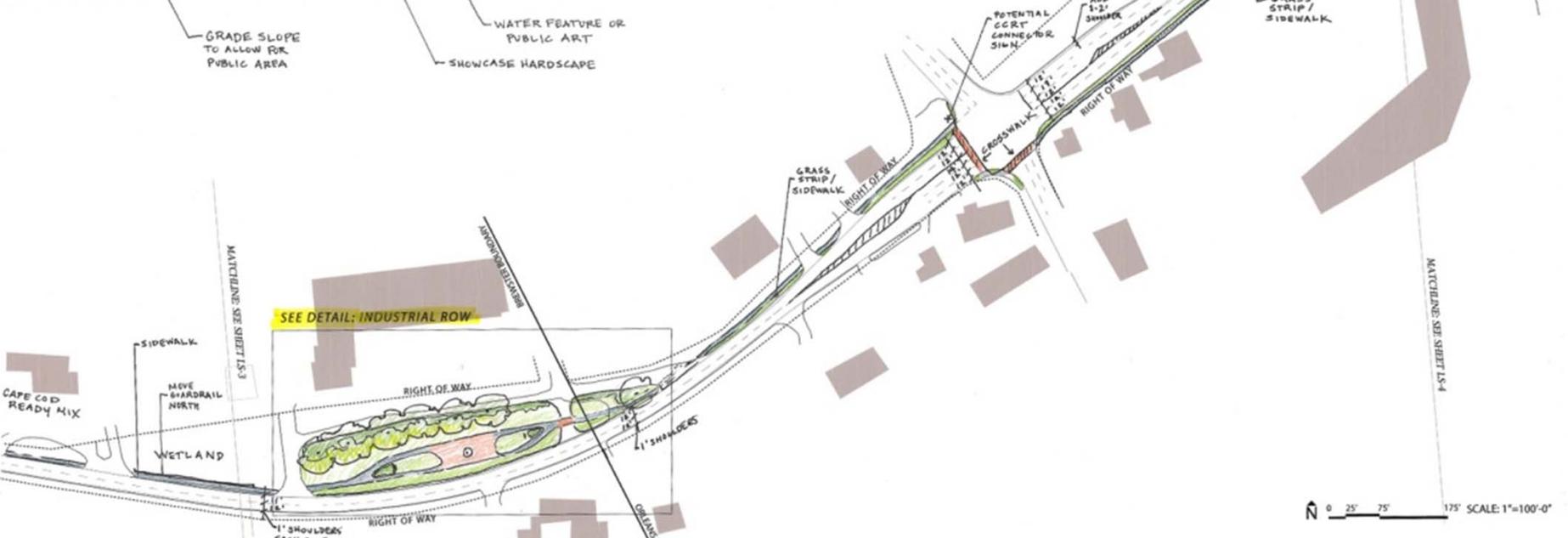
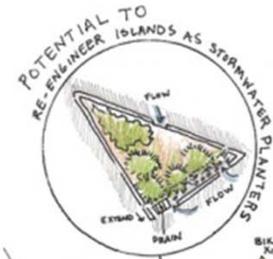
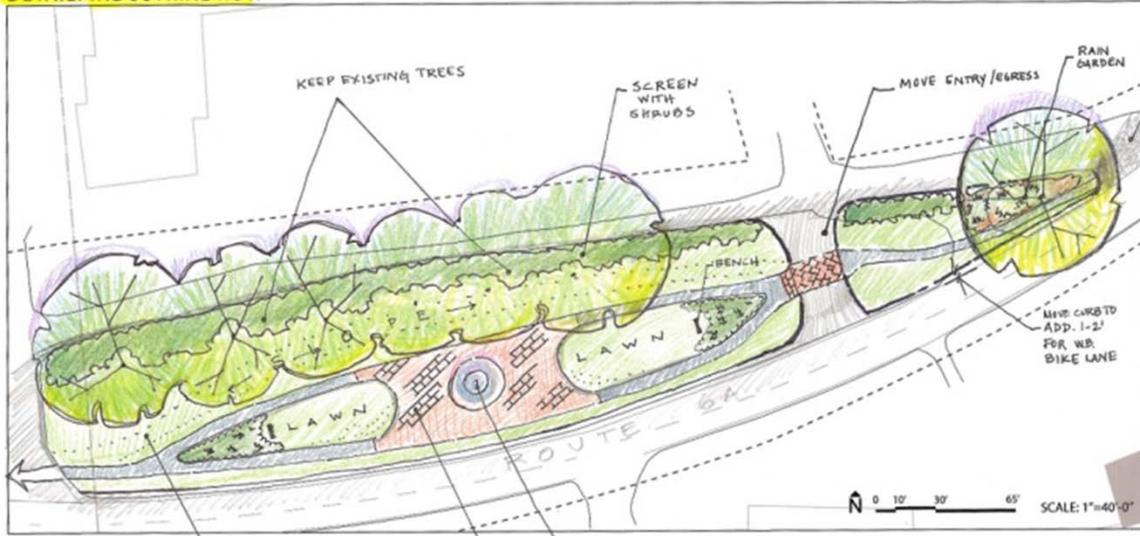
Proposed

SEE DETAIL: OWL POND TO VESPER DR.



 CAPE COD COMMISSION	LIVING STREET ALTERNATIVES RT 6A BREWSTER-ORLEANS	
	DRAWN BY: TH DATE:	LS-3 HISTORIC TREATMENT TO CC ROADWAY

**DETAIL: INDUSTRIAL ROW**



**SEE DETAIL: INDUSTRIAL ROW**

	LIVING STREET ALTERNATIVES: RT 6A BREWSTER-ORLEANS
	DATE:
	CC READY MIX TO UNDERGROUND

**PERSPECTIVE CC: LOOKING EAST**



0 25' 75' 175' SCALE: 1"=100'-0"

	LIVING STREET ALTERNATIVES RT 6A BREWSTER-ORLEANS	
	DRAWN BY: TH	LS-5
	ROUTE 6 INTERCHANGE	

Proposed



Sidewalk continues to Skaket Corners

Signalized Crosswalk with LED lights is activated by Pedestrian

Sidewalk continues from Underground Mall



Current

# We used to have Living Streets



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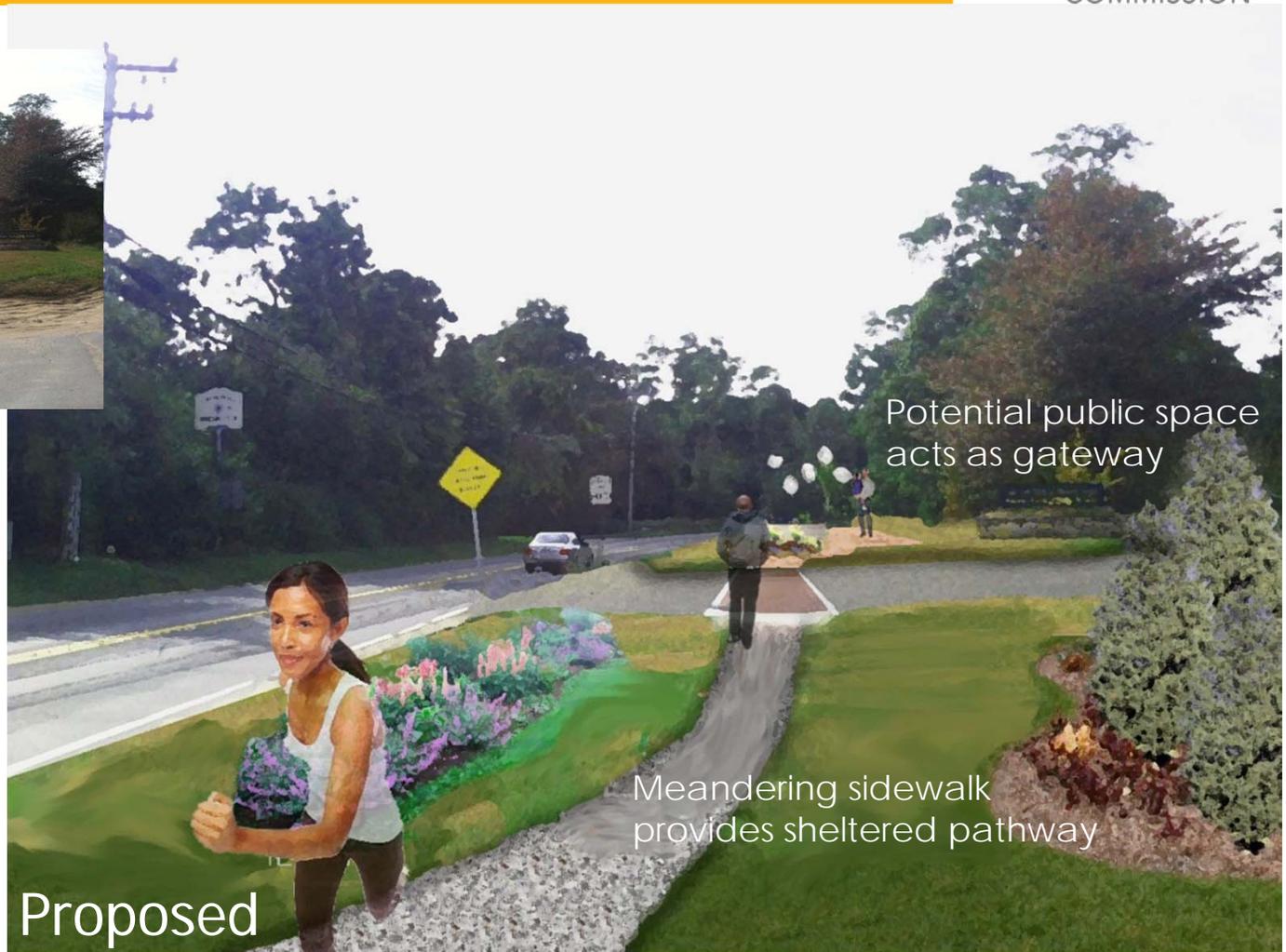
# ...We Can have Living Streets Again!



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Current



Potential public space  
acts as gateway

Meandering sidewalk  
provides sheltered pathway

Proposed

# Next Steps

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- MassDOT reporting of preferred alternative
  - Local buy-in
  - Future study for JTC →MPO→TIP
- OR phased implementation via small steps*

# We'd like to hear from you --

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## Questions/Comments?

### Contact:

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