



Killington Road Walkway Scoping Study

Alternative Presentation Meeting
Town of Killington Planning Commission
May 13, 2015



Project Background

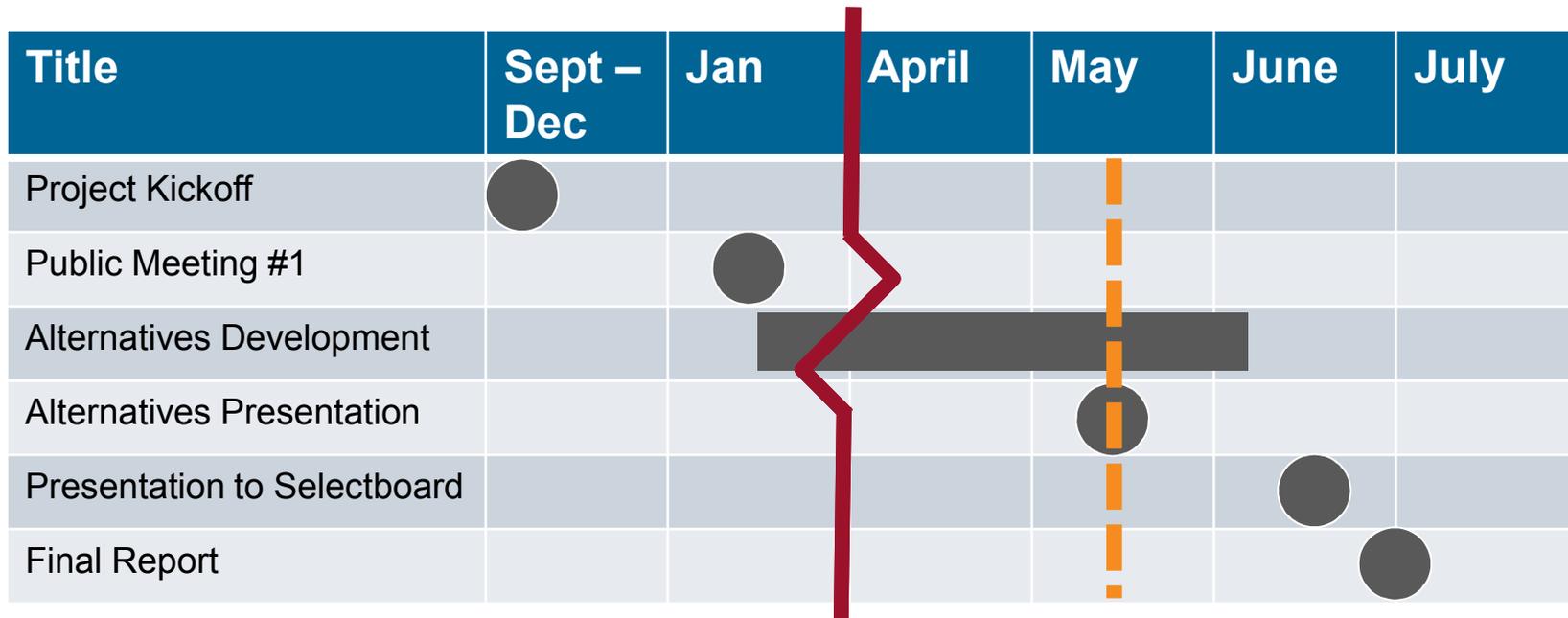
The Town of Killington has received a grant through the 2014 Transportation Alternatives Program to perform a scoping study to determine the feasibility of constructing a pedestrian walkway from the Killington Ski Resort to connect with the existing Killington Road walkway.

This project will look at the feasibility of constructing several alternative alignments for an approximately 3,000-foot long, eight-foot wide paved and lighted walkway.

Outcomes for this study:

- Assessment of environmental constraints
- Ensure local input and support of project
- Identification and prioritization of improvements
- Preliminary cost estimates for future engineering, admin, and construction
- A clear and concise report that documents this process

Project Schedule

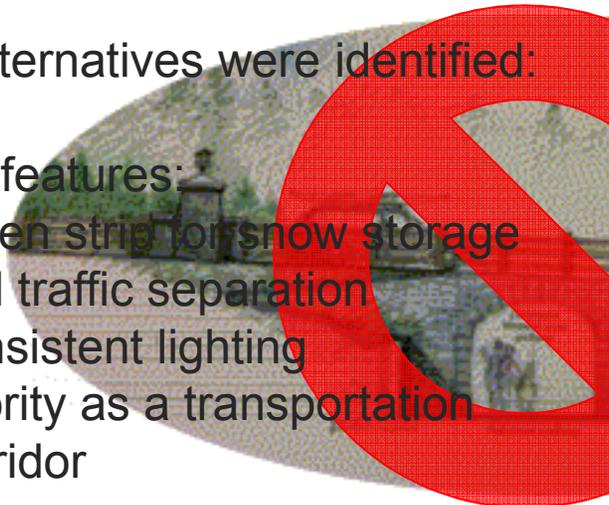


We are here

Where are we? How did we get here?

At the January 14 Meeting, we decided:

- **Safe**, efficient, and accessible pedestrian transportation options are important between the resort and the commercial district
- A grade separated road crossing (tunnel / bridge) is not desired
- Three alternatives were identified:
- Primary features:
 - Green strip for snow storage and traffic separation
 - Consistent lighting
 - Priority as a transportation corridor



Environmental Constraints Review

Primary Concerns:

Roaring Brook and Tributary
Buffer

Historic Buffer

Wetlands





Walkway Alignments

Walkway Alignments

Three Walkway Alignments

Alignment 1:

Off-Road, through resort parking area

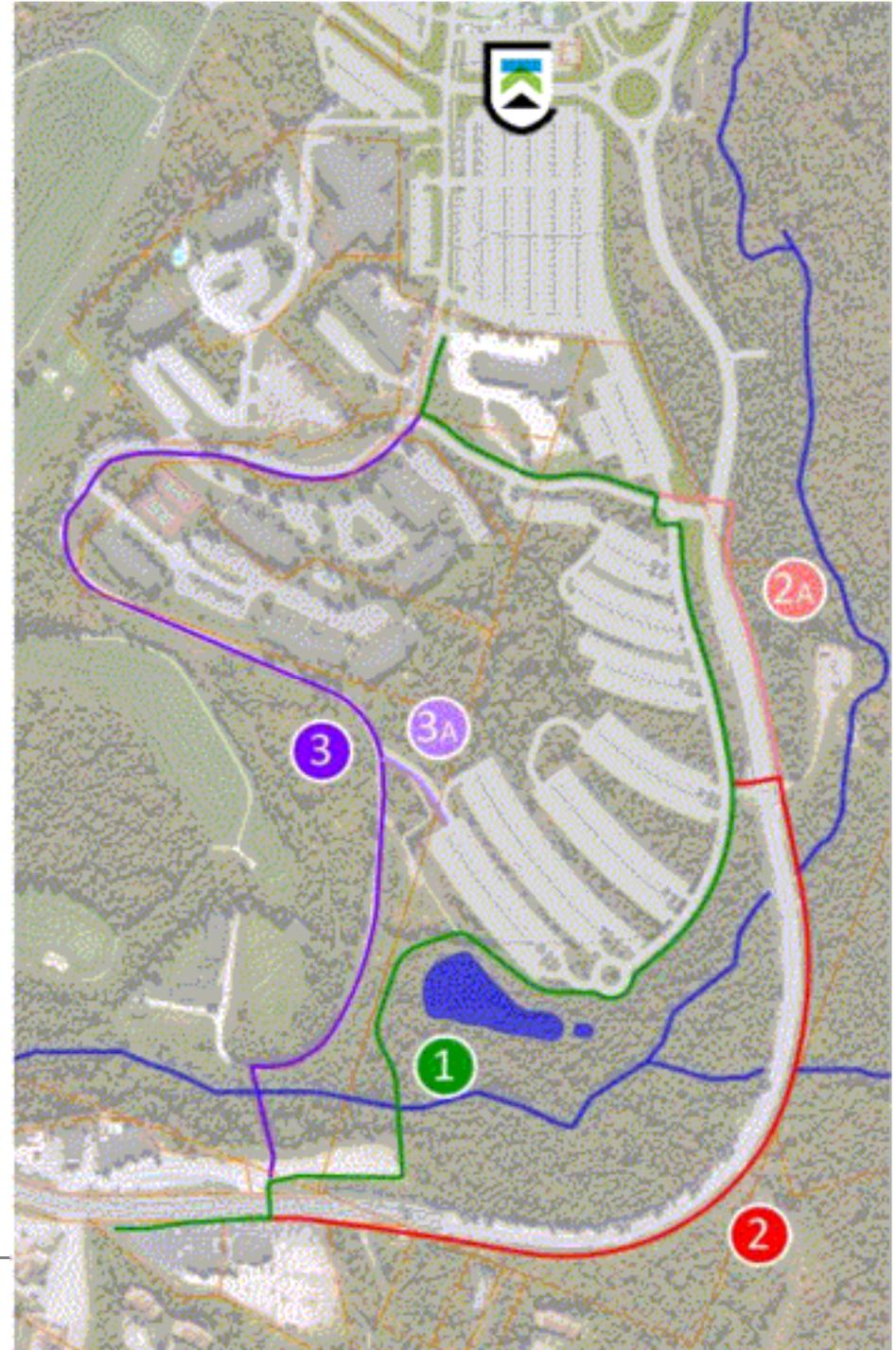
Alignment 2:

On-Road, west side of Killington Road

Alignment 3:

Off-Road, following Old Mill Road

All three alignments extend the walkway through the Lookout Tavern / True Wheels Bicycle lot



Common Alignment: Lookout Tavern – True Wheels Bicycle Lot

Outback Pizza

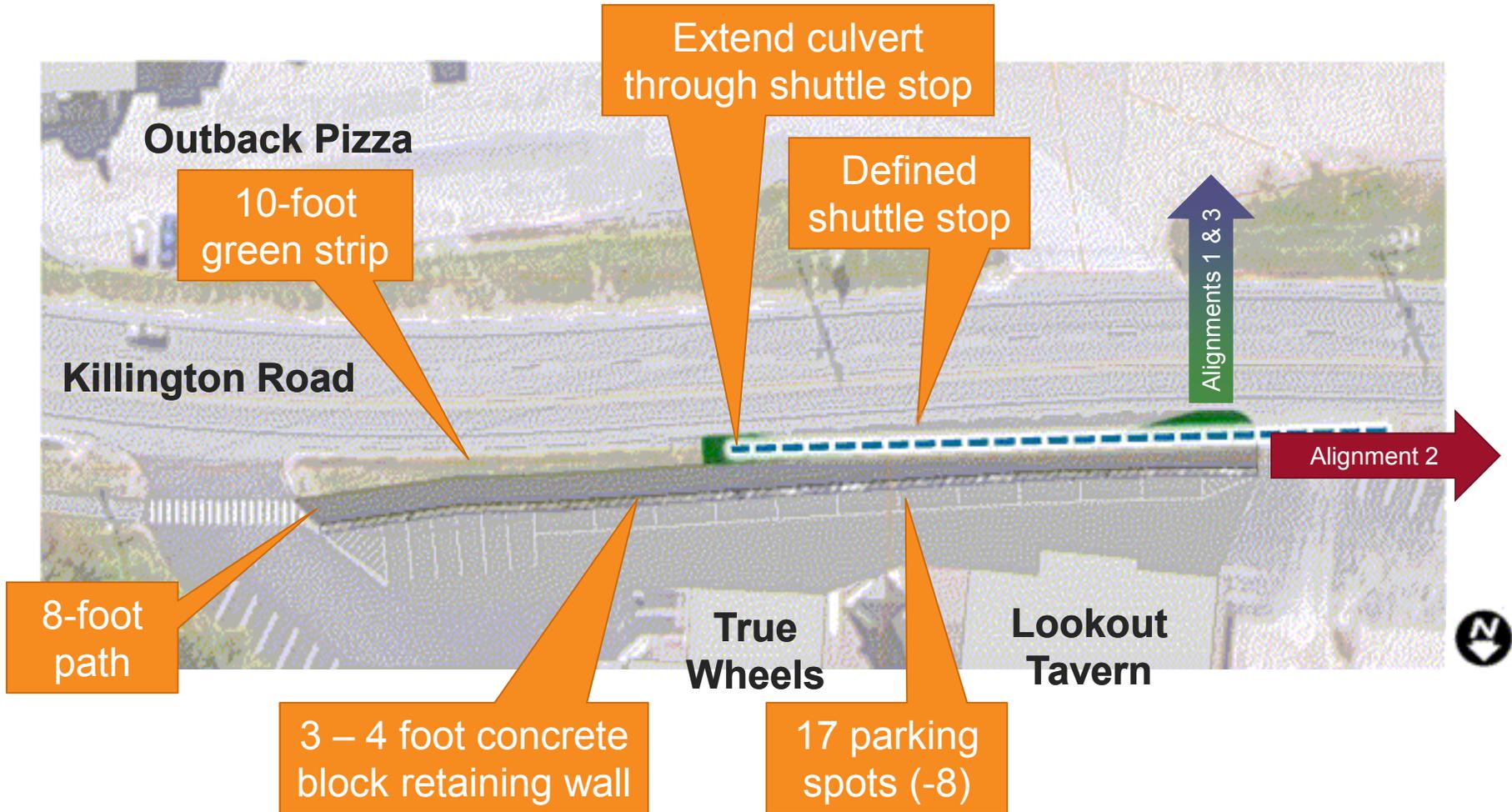


End of existing
walkway

True
Wheels

Lookout
Tavern

Common Alignment: Lookout Tavern – True Wheels Bicycle Lot



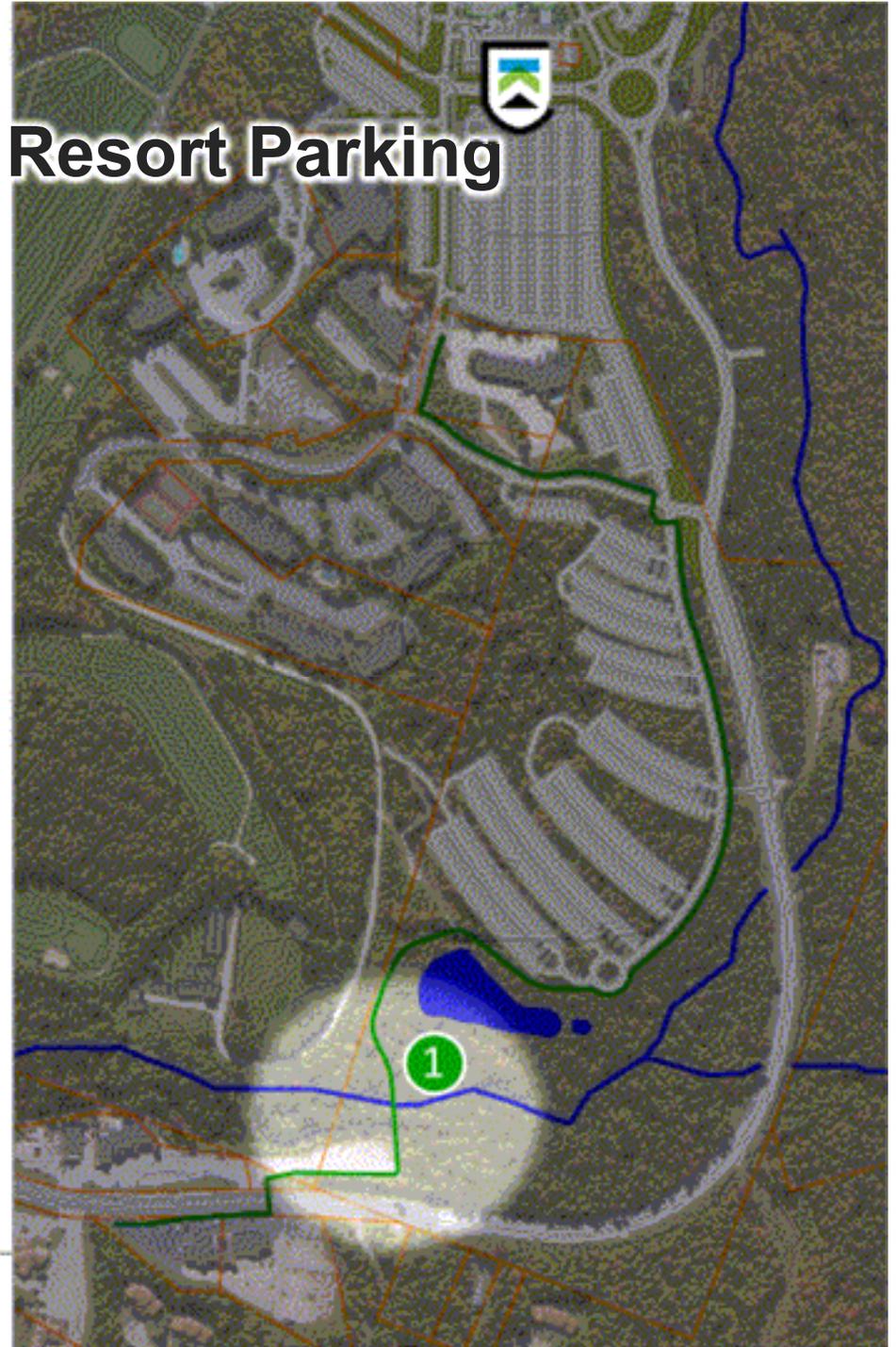
Alignment 1 – Through Resort Parking

- Overall Length – 4250 feet
- Almost half the walkway travels through the resort parking lots (2000 feet)
- Passes parking lot shuttle stop



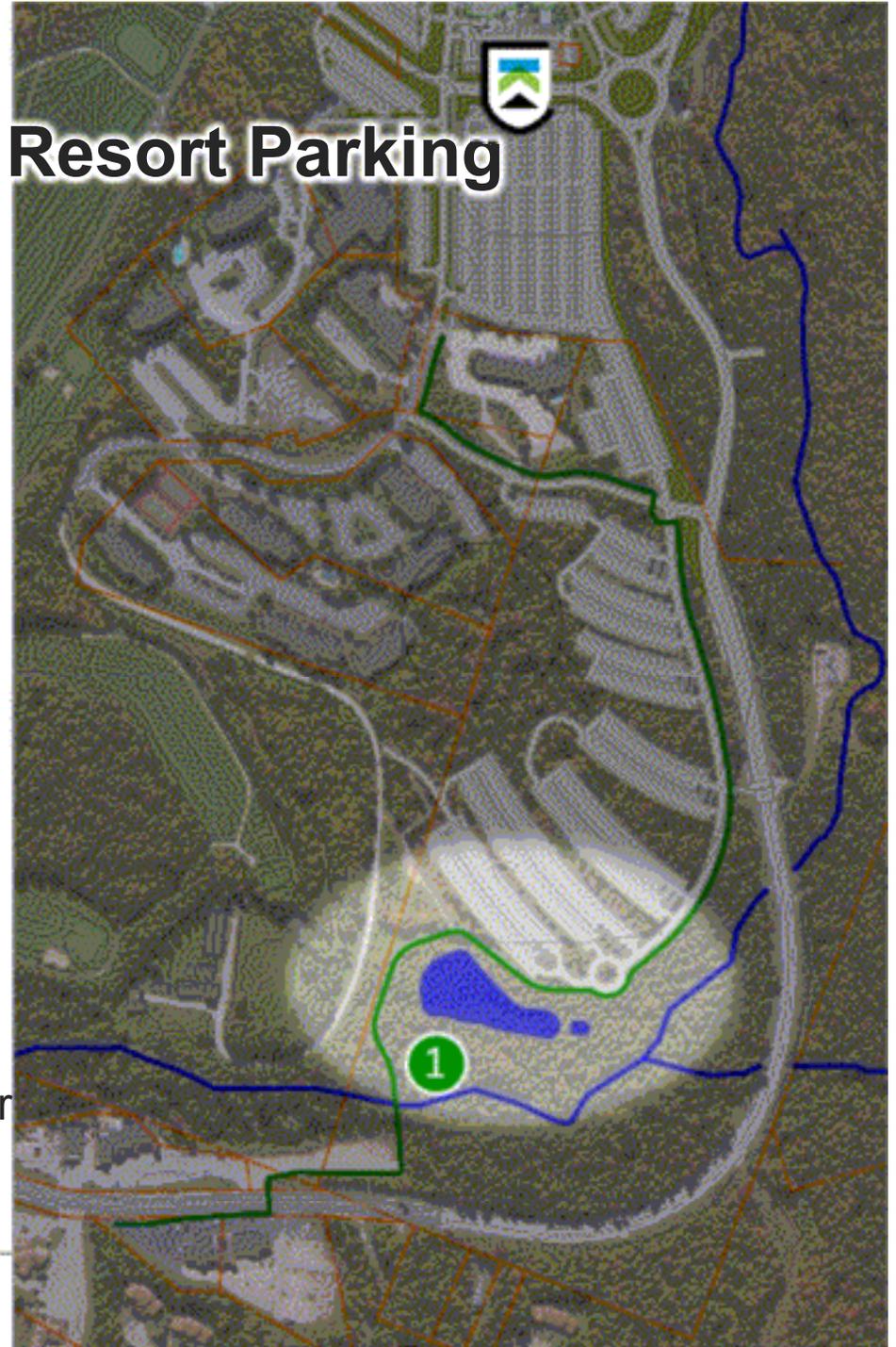
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- Crosses Killington Road at Lower Crossing Point
- New Stream Crossing
 - Assume 75-foot bridge
 - Impacts to Roaring Brook



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 - Impacts to Roaring Brook
- Steep Slope from river to parking lot
 - Approximately 8% grade
 - ADA recommended max is 5%
 - Site plan is very tight; no room for path without changes to pond or parking layout



Alignment 2 – Along Killington Road

- Overall Length – 4400 feet
- Continues path along west side of Killington Road, ~6% grade
- Approximately 1650 feet of path travels through resort parking lot
- Behind the existing utility poles; 15-foot green strip



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- Two large stream crossings
 - Assume box culvert extension
 - Impacts to river buffer



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 - Impacts to river buffer
- Crosses Killington Road at first drive access



Alignment 2 – Along Killington Road

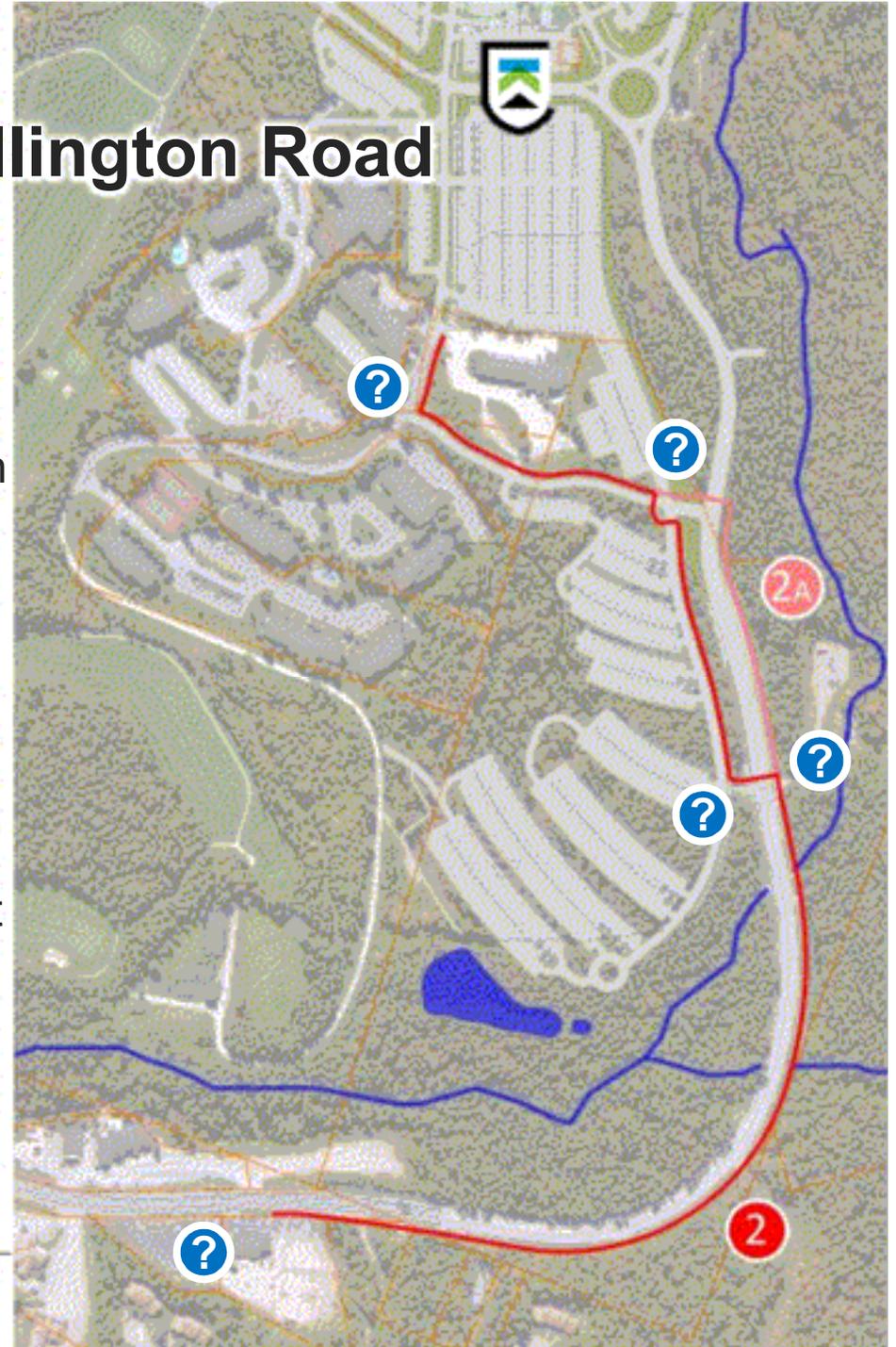
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- Alternate 2A:
 - Additional 880 feet
 - Crosses at second drive access



Alignment 2 – Along Killington Road

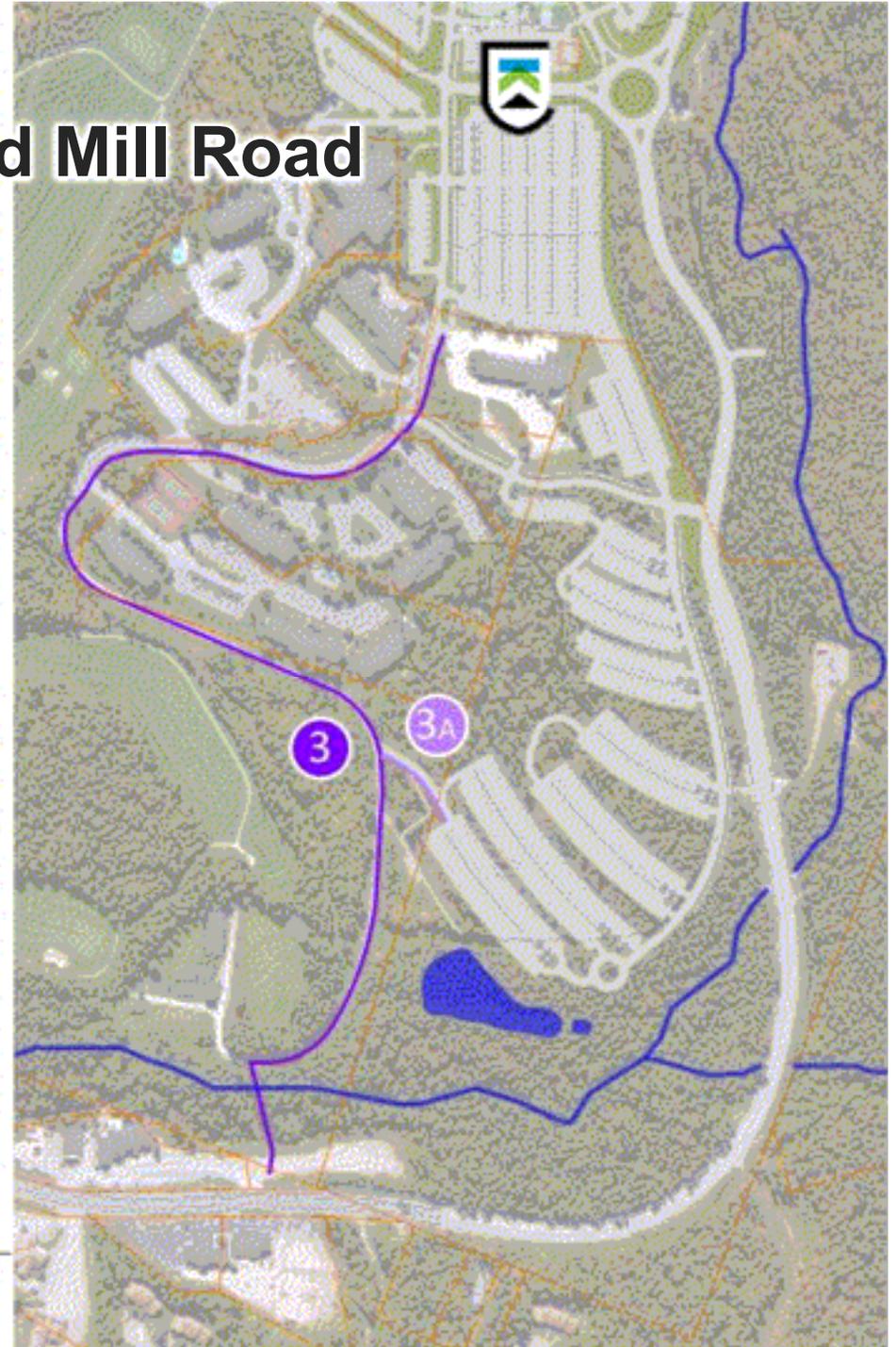
Less need for wayfinding signs
(but still helpful)

- Directional **arrows**, **mileage**, and **walking time** to destinations at each junction:
 - Resort
 - Commercial District
 - Parking Lots
 - Third Party Properties
 - Shuttle Stops / Shuttle Map
- Walkway is visible from the road, but lighting is still desired



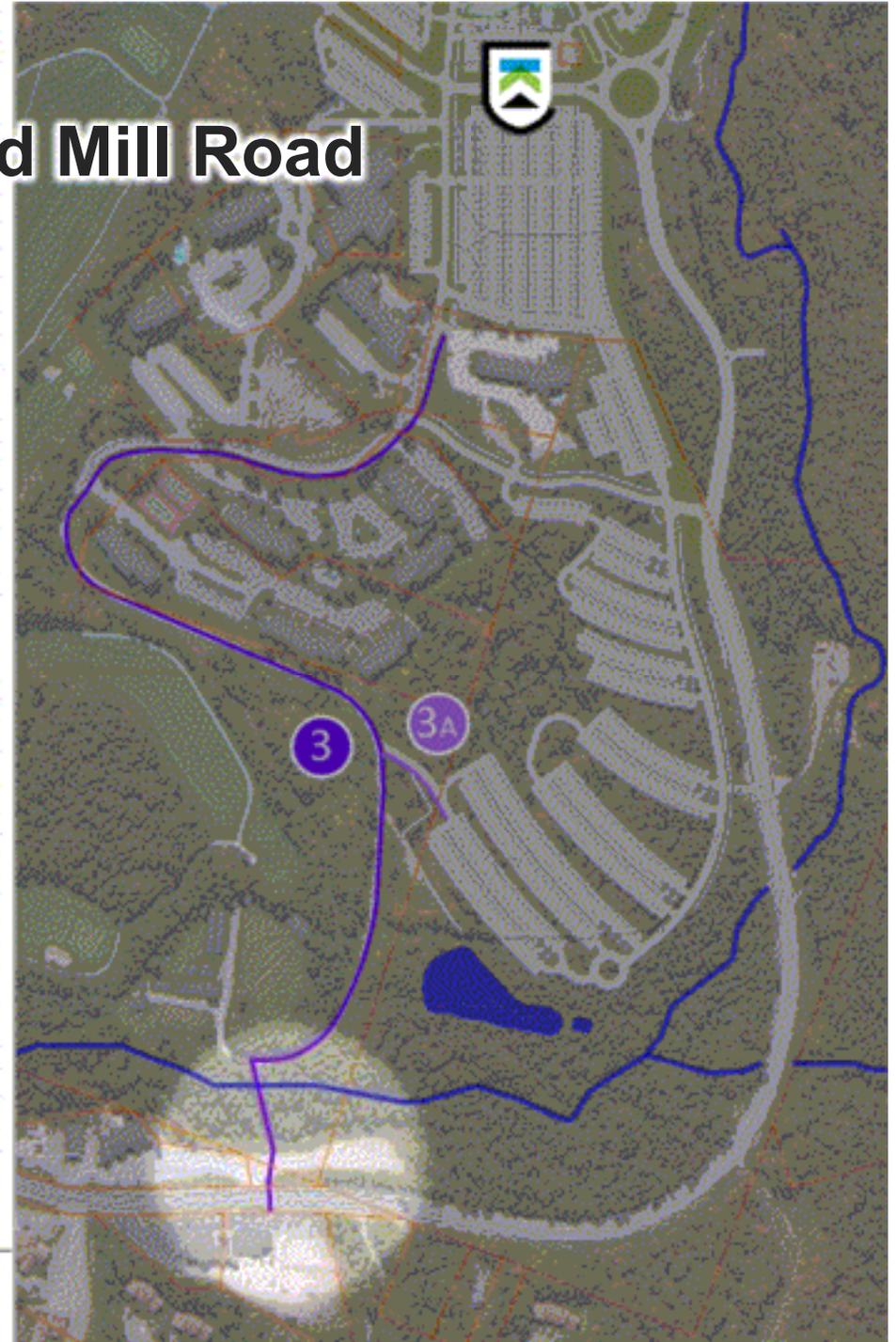
Alignment 3 – Along Old Mill Road

- Overall Length – 4000 feet
- Follows Old Mill Road grade, ~8%
- Approximately 200 feet travels through resort parking lot



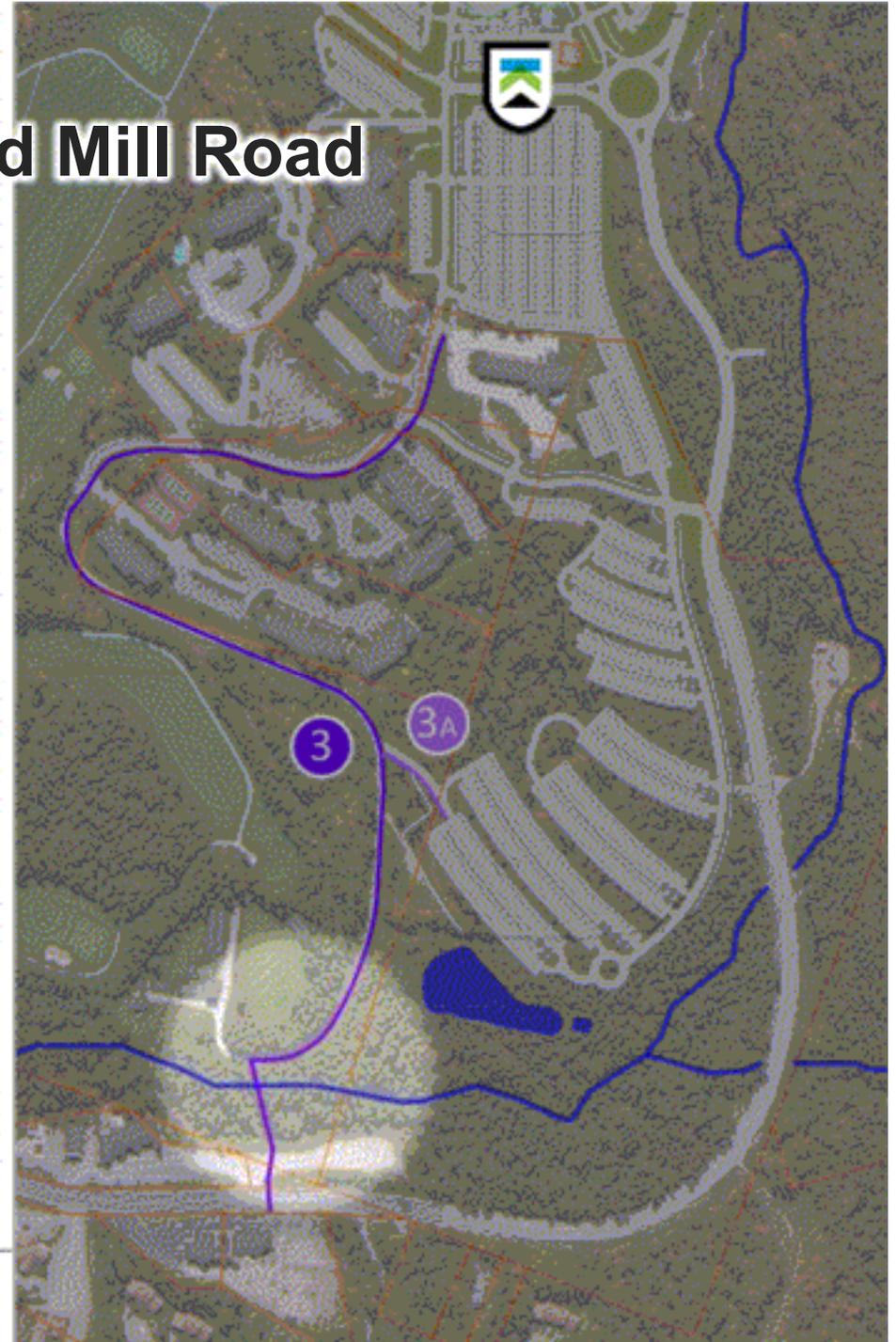
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- Follows Old Mill Road grade, ~8%
- Approximately 200 feet travels through resort parking lot
- Crosses Killington Road at Lower Crossing Point



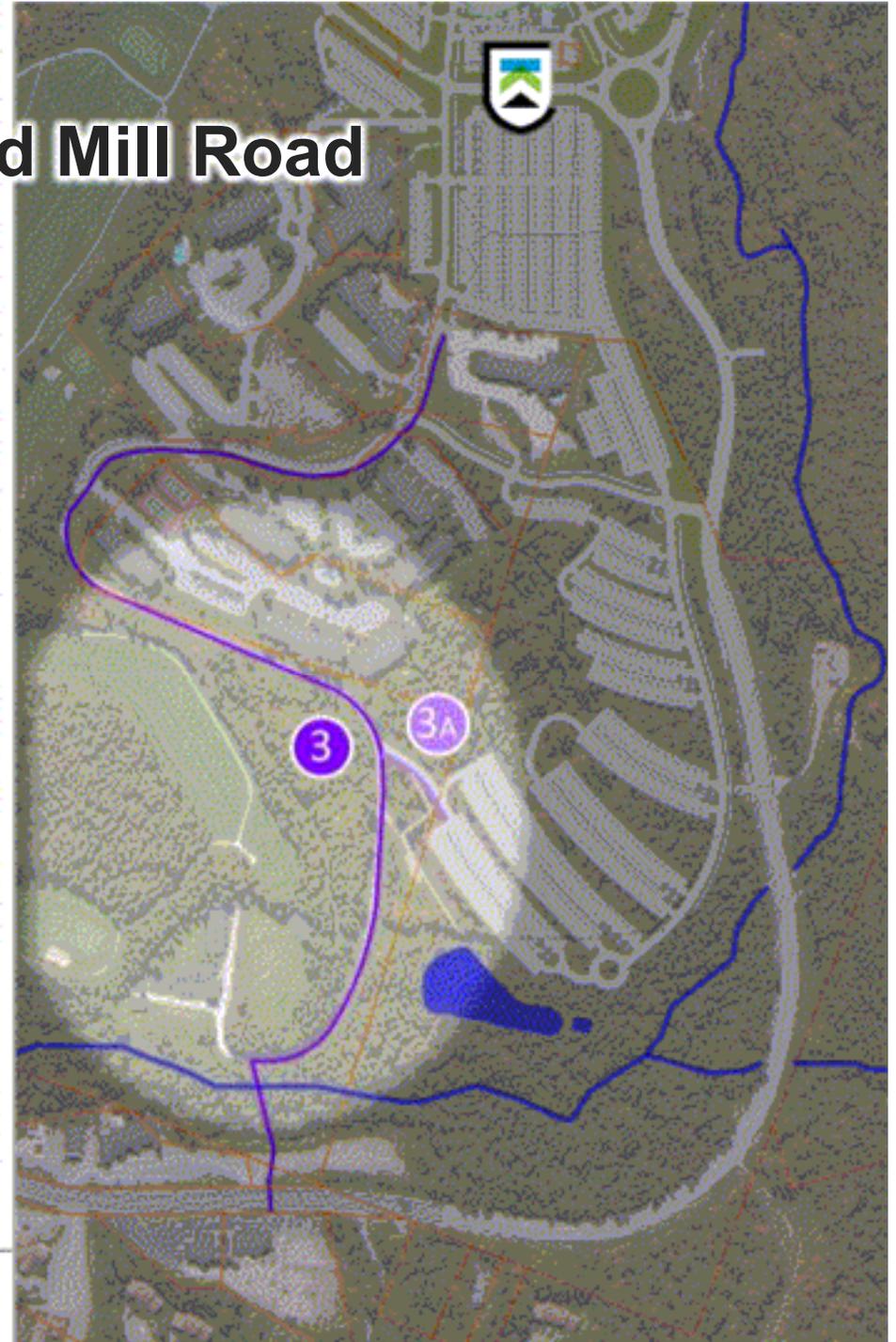
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- Approximately 200 feet travels through resort parking lot
- Crosses Killington Road at Lower Crossing Point
- New Stream Crossing
 - Assume 75-foot bridge
 - Impacts to Roaring Brook
 - Follows existing power line cut



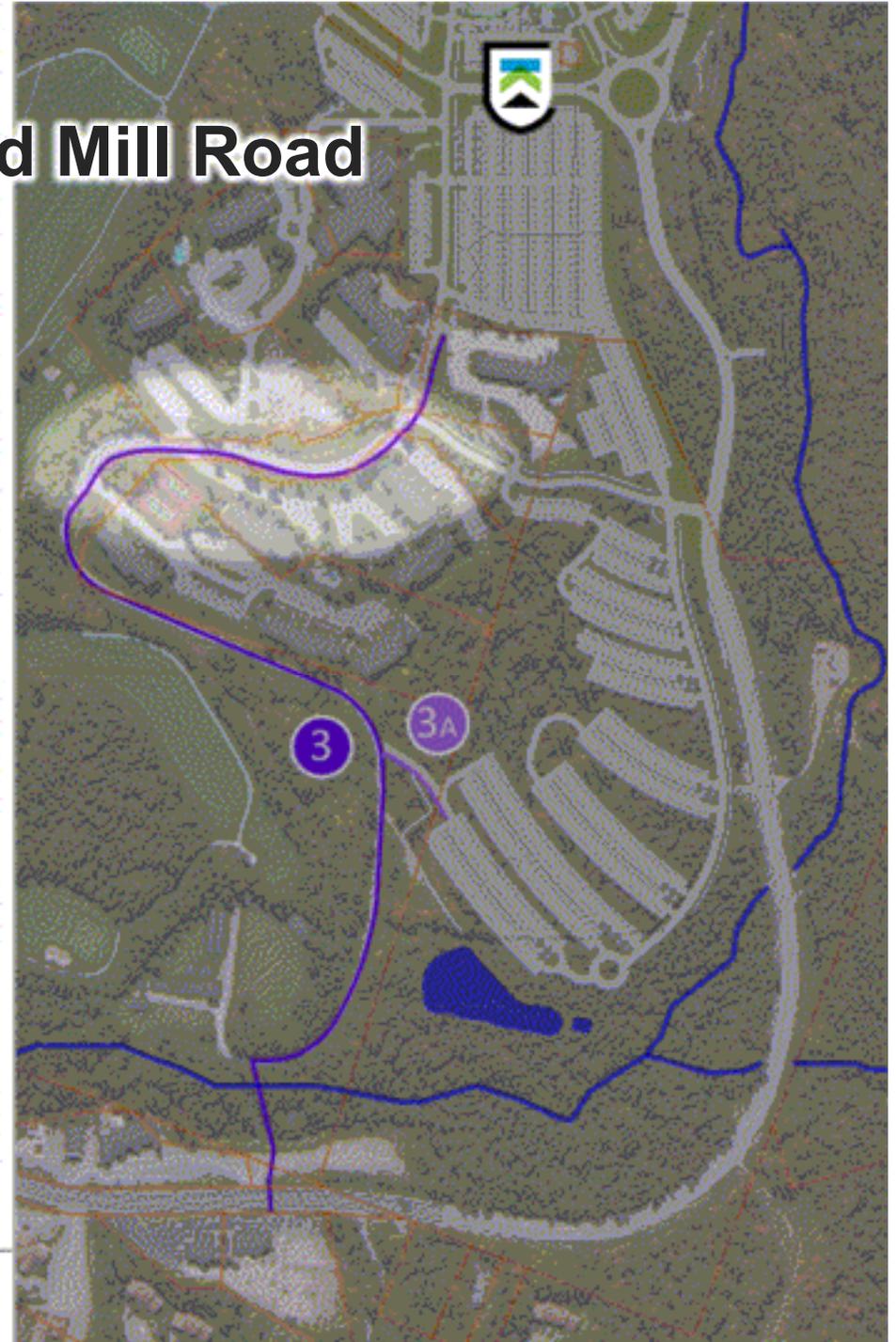
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- Alternate 3A to connect to resort parking lot, grade ~8%



Alignment 3 – Along Old Mill Road

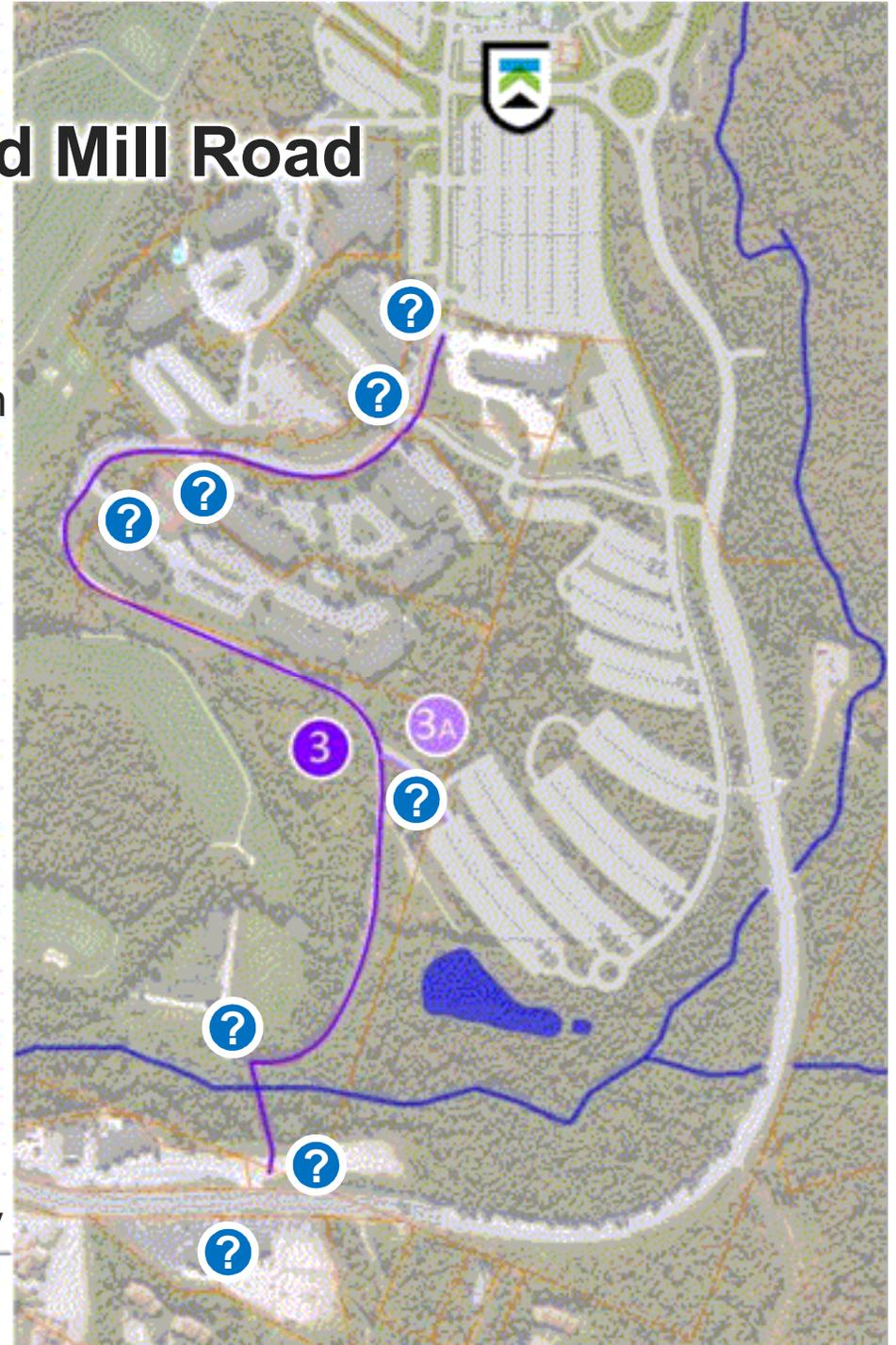
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- Path to shared on Old Mill Road
- Alternate 3A to connect to resort parking lot, grade ~8%
- Adjacent to Old Mill Road (no green strip) at Pinnacle Condo drives
 - Requires 8-foot retaining wall



Alignment 3 – Along Old Mill Road

Greatest need for wayfinding signs:

- Directional **arrows**, **mileage**, and **walking time** to destinations at each junction:
 - Resort
 - Commercial District
 - Parking Lots
 - Third Party Properties
 - Shuttle Stops / Shuttle Map
- Educational / Informational signs in between junctions to reinforce path
 - Roaring Brook
 - Flora & Fauna
 - Golf Course / Other Recreation
 - Mountain / Town Facts
- Include lighting along entire walkway





Crosswalk Review

What is a Crosswalk?

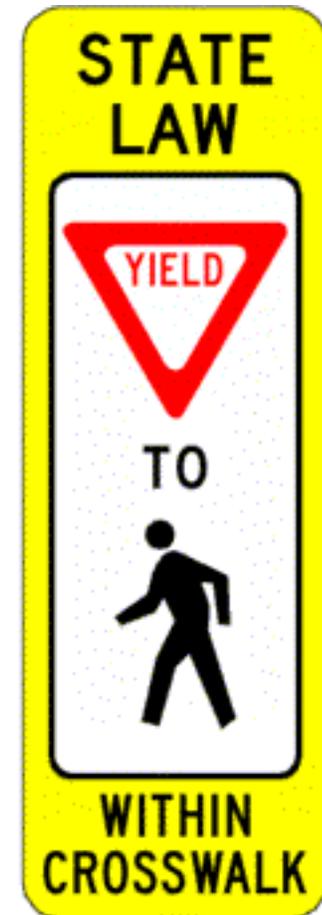
A crosswalk is a traffic control device that assigns right-of-way to a pedestrian. Installation of a crosswalk assigns right-of-way to the pedestrian over any other vehicle (except emergency vehicles).

Drivers must YIELD to pedestrians in crosswalk.

Pedestrians outside of a crosswalk must YIELD to all vehicles.

Crosswalks should not be used indiscriminately. Crosswalk locations should be limited to where:

- Adequate pedestrian facilities are located on both sides of the road, and
- Where there is demand.



R1-6

Crosswalk Considerations

What makes a safe crosswalk?

1. Visibility / Sight Distance

- Lighting to illuminate pedestrians
- Clear sight lines from both sides of crosswalk to both pedestrian approaches

2. Slow Vehicle Operating Speeds

- More time for vehicles to react and pedestrians to judge
- Severity of crashes greatly reduces under lower speeds

3. Short Crossing Distances

- Reduces the pedestrian exposure risk, or the time the person walking is in the road

4. Predictable Behavior

- Driver's aren't rapidly speeding up, frequently turning, or changing lanes; pedestrians aren't darting out

5. Volume of Vehicles and Pedestrians

- There can be too many cars, and too few
- More pedestrians increases driver awareness



Crosswalk Enhancement Options

- The following can be used to improve safety at a crosswalk:

1. Visibility / Sight Distance

- Street lighting
- High visibility signs, posts and striping
- Pedestrian activated warning beacons

2. Slow Vehicle Operating Speeds

- Raised crosswalk
- Reduced lane widths

3. Short Crossing Distances

- Pedestrian refuge median islands
- Bulb-outs / curb extensions

4. Predictable Behavior

- Crosswalk siting

5. Volume of Vehicles and Pedestrians

- Streetscape enhancements
- Increased density of development



VTrans Crosswalk Guideline

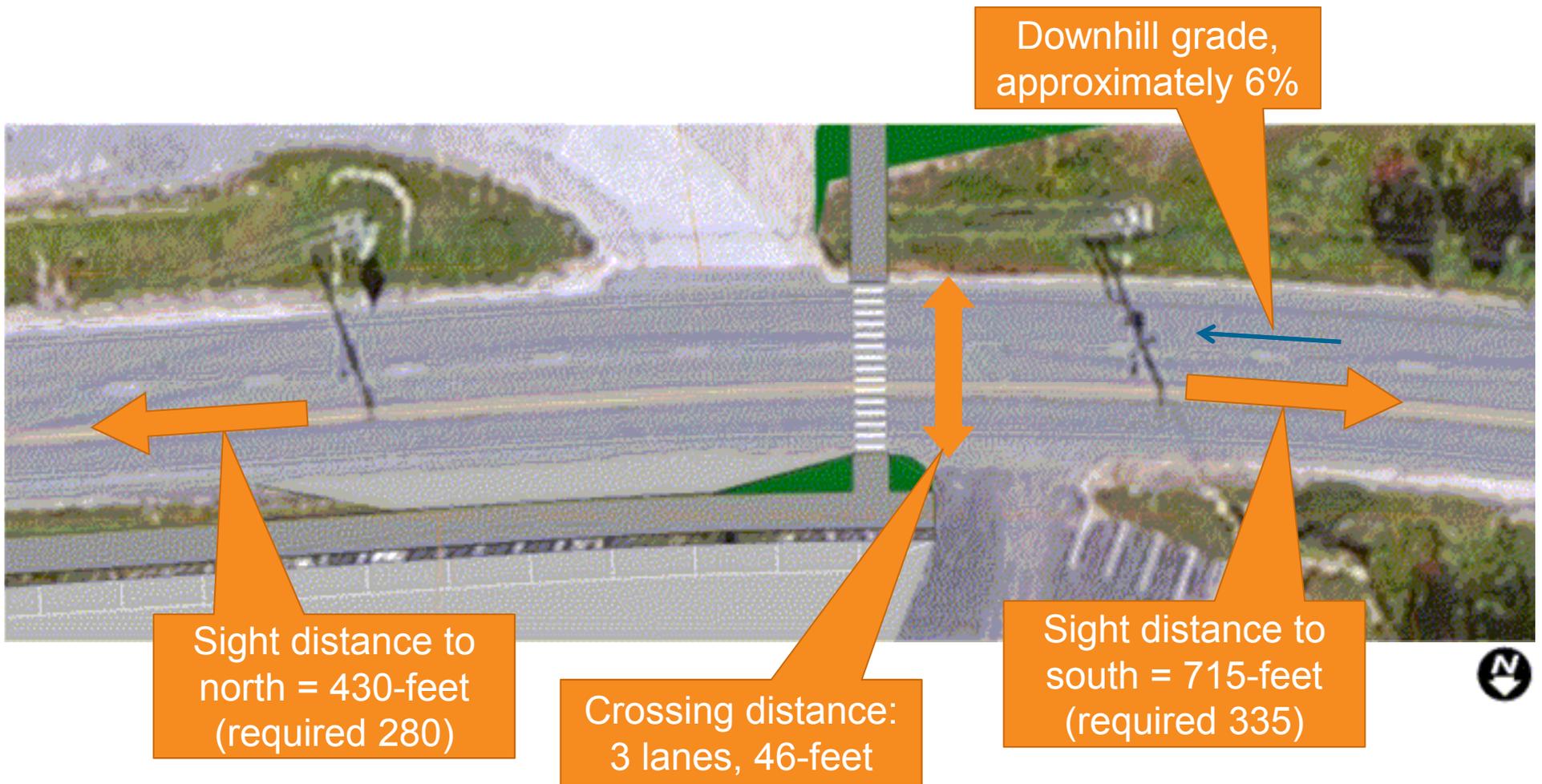
Updated January 2015 - Criteria Includes:

1. Speed Limit 40 mph or less
Speed Limit = 35 mph*
2. Adequate Sight Distance
Increased to 335-feet**
3. No other crosswalks in 200 feet
No other crosswalks
4. Vehicle volume exceeds 3000 vpd
AADT = 4500 vpd
5. Pedestrian Crossing Volume exceeds 20 / hour in the highest hour
Highly seasonal
6. No parking within 20 feet of crosswalk
No parking on Killington Road

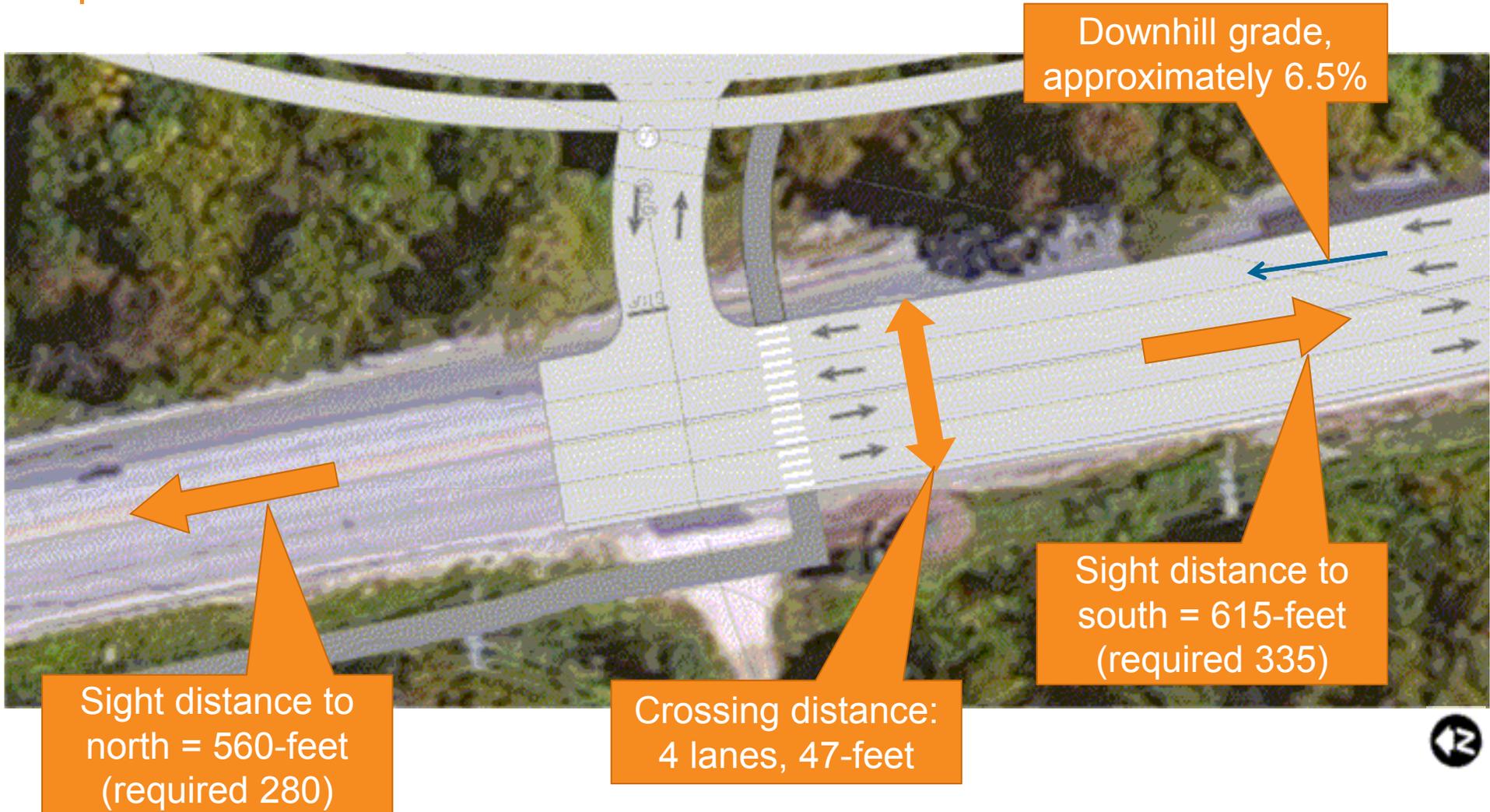
VERMONT AGENCY OF TRANSPORTATION
GUIDELINES FOR PEDESTRIAN CROSSING
TREATMENTS
January 2015 Update



Lower Crosswalk: Near Lookout Tavern & True Wheels Alignments 1 & 3



First Drive Crosswalk: Alignment 2



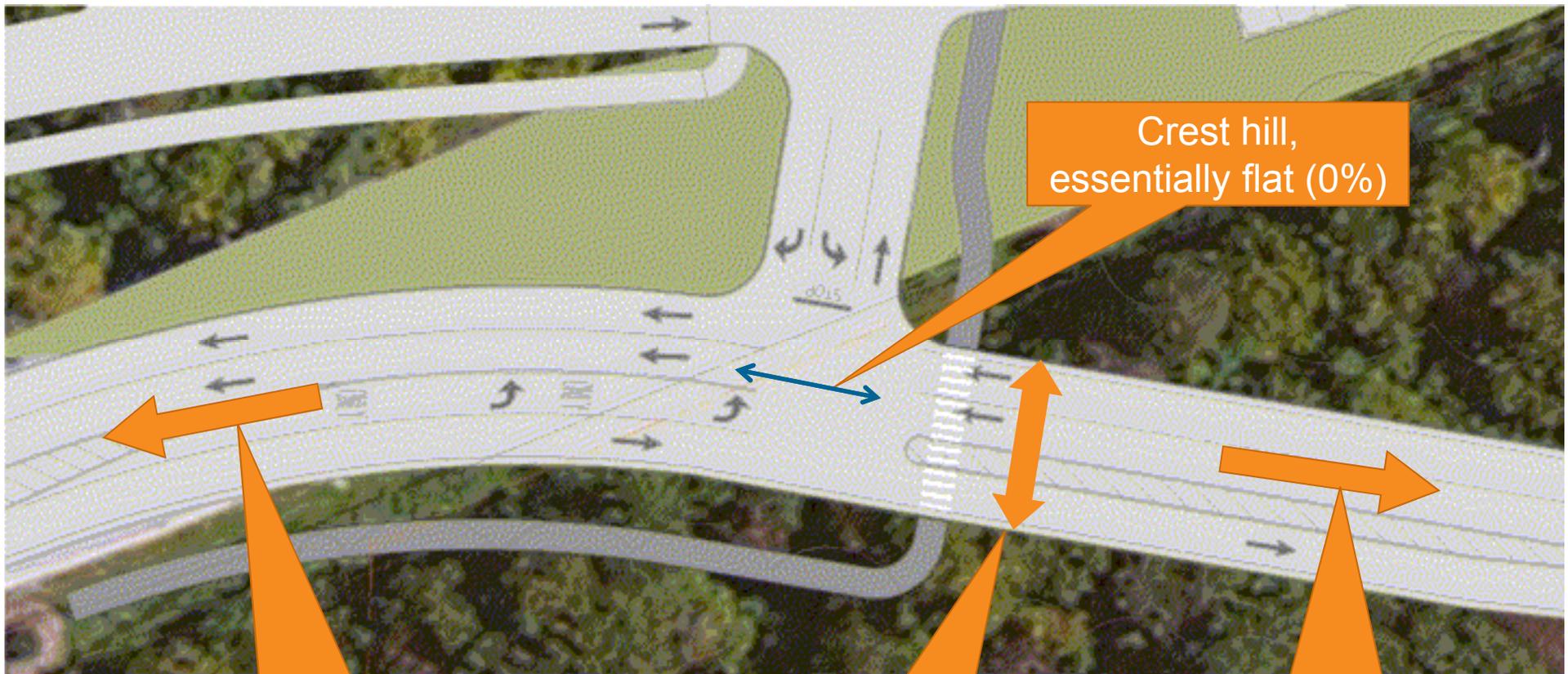
Sight distance to north = 560-feet (required 280)

Crossing distance: 4 lanes, 47-feet

Sight distance to south = 615-feet (required 335)

Downhill grade, approximately 6.5%

Second Drive Crosswalk: Alignment 3



Crest hill,
essentially flat (0%)

Sight distance to
north = 260-feet
(required 305)

Crossing distance:
3 lanes, 45-feet

Sight distance to
south = 275-feet
(required 305)

Crosswalk Warrant Summary

Crosswalk Warrant	Lower Crosswalk	First Drive	Second Drive
Speed Limit 40 mph or less	Y	Y	Y
Adequate Sight Distance	Y	Y	N
No other crosswalks in 200 feet	Y	Y	Y
Vehicle volume exceeds 3000 vpd	Y	Y	Y
Pedestrian Crossing Volume exceeds 20 / hour in the highest hours	?	?	?
No parking within 20 feet of crosswalk	Y	Y	Y

Appropriateness of Marked Crosswalk

From VTrans Crosswalk Guideline:

Roadway Type	3000 ≤ AADT ≤ 9,000		
	≤ 30 MPH	35 MPH	40 MPH
2 Lanes			
3 Lanes			X
4 or more Lanes <u>with</u> Raised Median			
4 or more Lanes <u>without</u> Raised Median			X

← Lower Crosswalk Location, Second Drive Crosswalk Location

← First Drive Crosswalk Location

	Marked Crosswalk alone may be appropriate
	Additional crosswalk enhancements should be included
	Additional crosswalk enhancements must be included, a marked crosswalk alone is not appropriate

Recommended Crosswalk Enhancements

From VTrans Crosswalk Guideline:

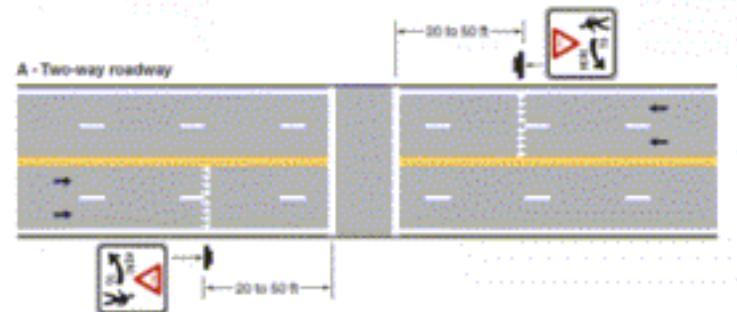
1. Pedestrian Refuge Island

- Reduce the number of lanes to cross at once
- Can help reduce traffic speeds
- Creates plow obstacle



2. Advanced Yield Line

- Stops traffic further back from crosswalk so both lanes can see the pedestrian in crosswalk
- “Multiple-Threat Crash”



Recommended Crosswalk Enhancements

From VTrans Crosswalk Guideline:

3. Rectangular Rapid Flashing Beacons

- Provides additional emphasis to crosswalk warning signs only when pedestrians are present
- Should be considered where nighttime use is expected



4. Pedestrian Hybrid Beacon (HAWK)

- Pedestrian activated stop light
- Requires substantial investment and pedestrian volume warrant



Crosswalk Signal and Vehicle Operations

Only the HAWK signal requires a vehicle STOP – other crosswalks require a YIELD.

YIELDS are difficult to model, but generally are less impactful to operations.

Modeling a traffic signal condition on the busiest road segment with 60 vehicle (pedestrians) crossings per hour:

	Killington Road
Delay	6 s
NB LOS	A
NB Max Queue	191 ft



Pedestrian HAWK signal in Colchester

Conservative methodology!



Alignment Summary

Alignment Evaluation Summary

	Alignment 1 Resort Parking Lot	Alignment 2 Killington Road	Alignment 3 Old Mill Road
COST AND ROW			
Conceptual Cost Estimate	\$1,454,000	\$1,379,000	\$1,558,000
Annual Maintenance Cost	\$43,620	\$41,370	\$46,740
ROW Impacts - Parcels	7	7	8
ALIGNMENT			
Resort Parking Terrace Accesses	7	3	1
Shuttle Stops	2	1	1
Buildings Accessed	4	4	11
Average Grade	8%	6%	8%
Crossing Location	Better	Acceptable	Better
% Visibility to Adjacent Roads	72%	100%	18%
IMPACTS			
Archaeological	Possible	Possible	Possible
Historic Structures/Sites	No	Yes	No
Floodplain	Yes	Yes	Yes
Wetlands	No	No	No
PERMITS			
Act 250	Possible	Possible	Possible
404 Corps of Engineers Permit	Yes	Yes	Yes
Stream Alteration	Yes	Yes	Yes
Conditional Use Determination	No	No	No
Storm Water Discharge	No	No	No
State Historic Preservation Office Clearance	No	Possible	No
NEPA Category	CE	CE	CE



**Initially Recommended
Alignment**

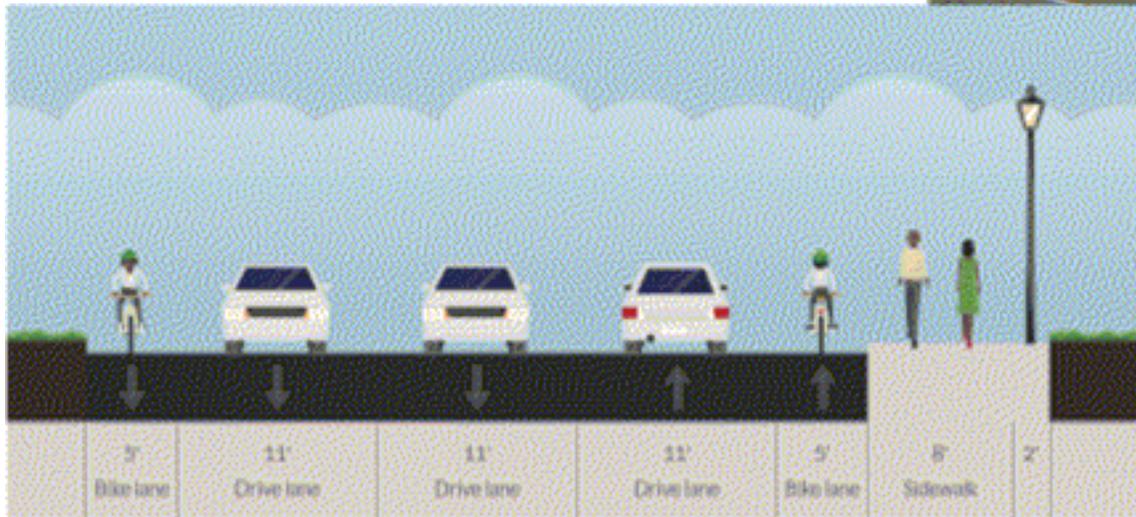
Modified Alignment 2 – Along Killington Road

1. Reduce uphill lanes from two to one
 - Road cross section to include three 11-foot lanes, and two four foot shoulders
 - Walkway offset downslope, 10-feet from shoulder



Modified Alignment 2 – Along Killington Road

At river crossings, reduce or fully remove the 10-foot buffer to reduce river impacts



Modified Alignment 2 – Along Killington Road

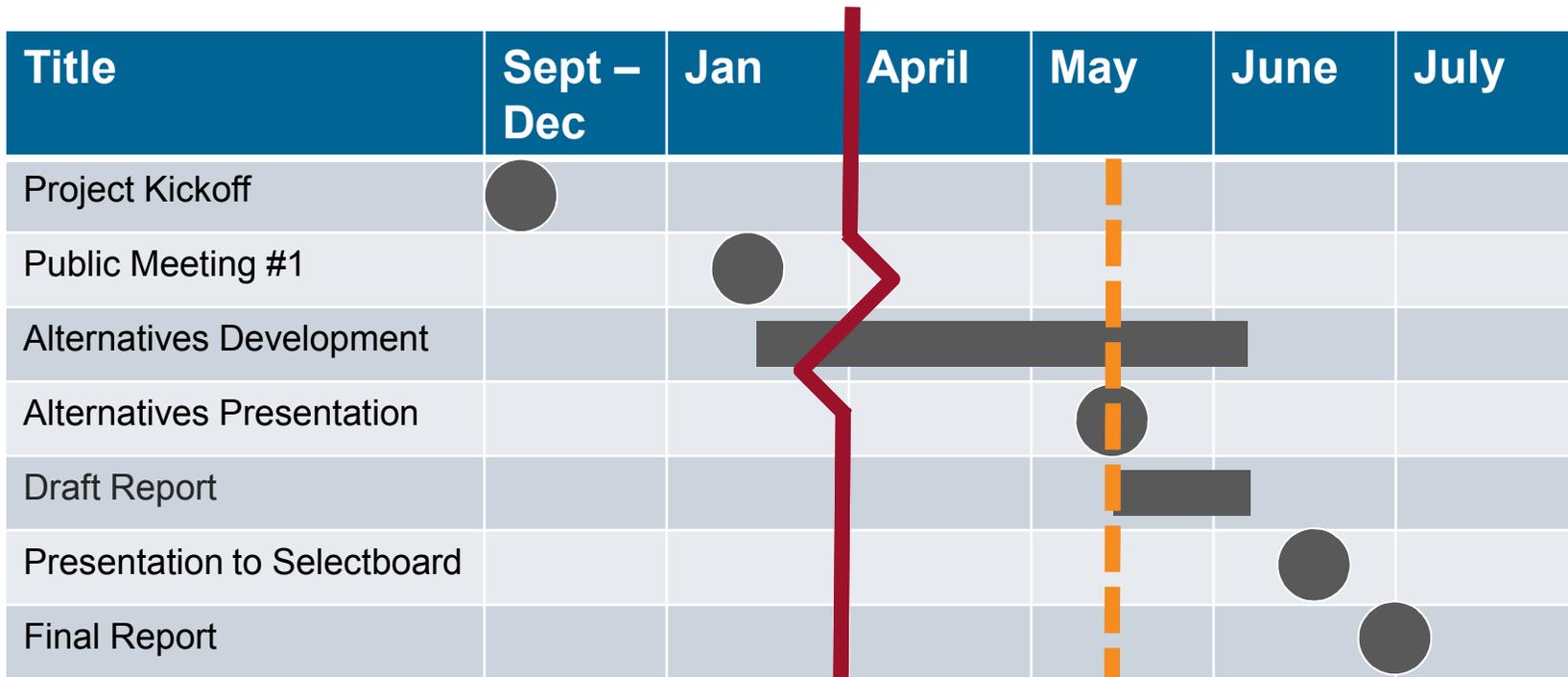
At crosswalk location, introduce an uphill left turn lane – opposite the left turn lane, include a Pedestrian Refuge Island, RRFB assembly, and advanced yield line





Next Steps

Project Schedule



We are here

How does the project get implemented?

Project Phases

- Scoping Study
- Design
- Construction
- Could be phased with resurfacing / reconstruction / development projects

Potential Funding Sources

- Transportation Alternatives Grant
- Vermont Bike/Ped Grant
- Town capital improvement plan
- Developer mitigation/impact fees
- Community Sponsorship



Contacts

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