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Windham Mountain Sporting Club

Additional Information Regarding Road Waivers

March 03, 2010



1. Site Opportunities and Constraints

The graphic on the following page, “Potential Development Diagram”, illustrates the results of the site opportunities and constraints studies done on the property. Outlined in black and colored yellow are those larger areas on the property where there are generally gentler slopes and a lack of wetlands. The project site road frontages on Trailside and Panorama are also shown on the following graphic.

The largest area on the site suitable for development is located in the eastern part of the property and extends to the west into the meadow area at the upper end of Upper Panorama Lane that is shown in red on the graphic on the next page.



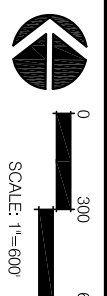
Western end of “the meadow”, view west. Upper Panorama Lane enters the meadow near the conifer on the right edge of the photo.



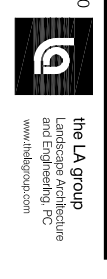
LEGEND	SYMBOL
EXISTING ROADS	
PROPERTY LINE	
ADJACENT PROP. BOUNDARIES	
EXISTING TREE LINE	
WETLAND	
WATERCOURSE	
SLOPES > 25%	

POTENTIAL DEVELOPMENT DIAGRAM

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Feb. 15, 2010





2. Sketch Plan Road Grade Waivers

The graphic on the following page, “Sketch Plan – Road gradients that require waivers”, shows the road slope waivers that were anticipated under the Sketch plan submitted on September 21, 2009. Under the sketch plan there were 9 locations totaling 4,475 linear feet of road where road grades exceeded 10%. This was 17.8% of the roads which total 25,111 feet.

Five (5) of the 9 sections greater than 10% were on Upper Panorama Lane (Sheridan Drive on the Sketch Plan) and they constituted 2,575 feet, or over half of the road length proposed to be greater than 10%.

Lengths of all 9 individual sections greater than 10% are provided on the graphic on the following page, and they range from 300 to 700 feet.



View west along the road near the northern property boundary towards the existing gate off of Trailside, the location of one of the proposed project entrances.

WAIVERS REQUIRED:

1. ROAD SLOPE:

SUBDIVISION REGS STATE 10% MAX. FOR PROPOSED ROADWAYS WITH SOME AREAS ALLOWED TO INCREASE UP TO 15%. WITH THE TOTAL LENGTH OF THE 15% SEGMENTS NOT TO EXCEED 10% OF THE TOTAL ROAD LENGTH. THE CURRENT PLAN HAS 25,088' OF PROPOSED ROADWAY. 4,475' OF PROPOSED ROADWAY (17.8%) EXCEEDS 10% SLOPE. WHILE MORE THAN HALF (2,250') OF THESE >10% SECTIONS ARE ON EXISTING ROADS.

ROAD STATS:

ROAD LENGTHS	OVER 10%
TUCK TRAIL	650 LF
SHERIDAN DRIVE	2,575 LF
CAVE MTN. ROAD	250 LF
MEADOW CROSSING	300 LF
SUNRISE TERRACE	3,426 LF
BATAVIA LANE	1,550 LF
TOTAL	25,111 LF / 4.75 MI
	4,475 LF (17.8% OF 25,111 LF)

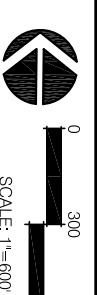


SKETCH PLAN - ROAD GRADIENTS THAT REQUIRE WAIVERS

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DEC. 30, 2009





3. Waiver Reductions

The plan on the following page entitled “Waiver Reduction Diagram” shows the same layout as the previous plan and a reduction in the amount of road that exceeds 10%. The reduction was accomplished by changing the grading for the road which is shown on the plan on the following page.

By making these changes the amount of road that exceeds 10% grades is now less than 10% of the subdivision roads and is in compliance with the subdivision regulations. Under this plan some of the other waivers that were originally thought to be necessary under the Sketch Plan, but are no longer needed, include road grades approaching intersections, the right-of-way width and cul-de-sac dimensions.

Also labeled on this plan are the road grades on some sections of Trailside that can serve as a point of reference when it comes to road grades.



View south up Trailside from near South Street. The grade, or slope, of the section of road before the road curves to the right is approximately 13% for a length of 230 feet.

WAWERS ELIMINATED:

1. ROAD SLOPE- SUBDIVISION BEGS STATE 10% MAX FOR PROPOSED ROADWAYS WITH SOME AREAS ALLOWED TO INCREASE UP TO 15% WITH THE TOTAL LENGTH OF THE 15% SEGMENTS NOT TO EXCEED 10% OF THE TOTAL ROAD LENGTH*
2. MAX. GRADE OF 3% WITHIN 50' OF AN INTERSECTION
3. WIDTH OF RIGHT-OF-WAY
4. CUL-DE-SAC RADIUS

WAWERS REQUIRED:

1. MIN. CENTERLINE RADIUS OF 100'
2. FIRST 100' OF INTERSECTION AT APPROXIMATE RIGHT ANGLE.

ROAD STATUS:	OVER 10%
ROAD LENGTHS	
TUCK TRAIL	500 LF
SHERIDAN DRIVE	1,850 LF
CAVE MTL. ROAD	
MEADOW CROSSING	
SUNRISE TERRACE	
BATAVIA LANE	
TOTAL	2,350 LF (10% OF 23,516 LF)
TOTAL, NO BATAVIA	23,516 LF / 4.45 MI



WAIVER REDUCTION DIAGRAM

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Waiver Reduction Diagram Jan 21, 2010



4. Preferred Access Analysis

The graphic on the following page, “Access Analysis – Preferred Alternative”, shows the same access road alignment as the previous plan as well as the approximate limits of grading needed to construct the road at this location.

The preferred road alignment continues to make use of the existing access road off of Trilside as well as a substantial amount of the existing Upper Panorama Lane. Approximately 1.4 miles of existing roads are being utilized.

Other statistics relating to the road are presented in the upper left corner of the graphic on the following page.

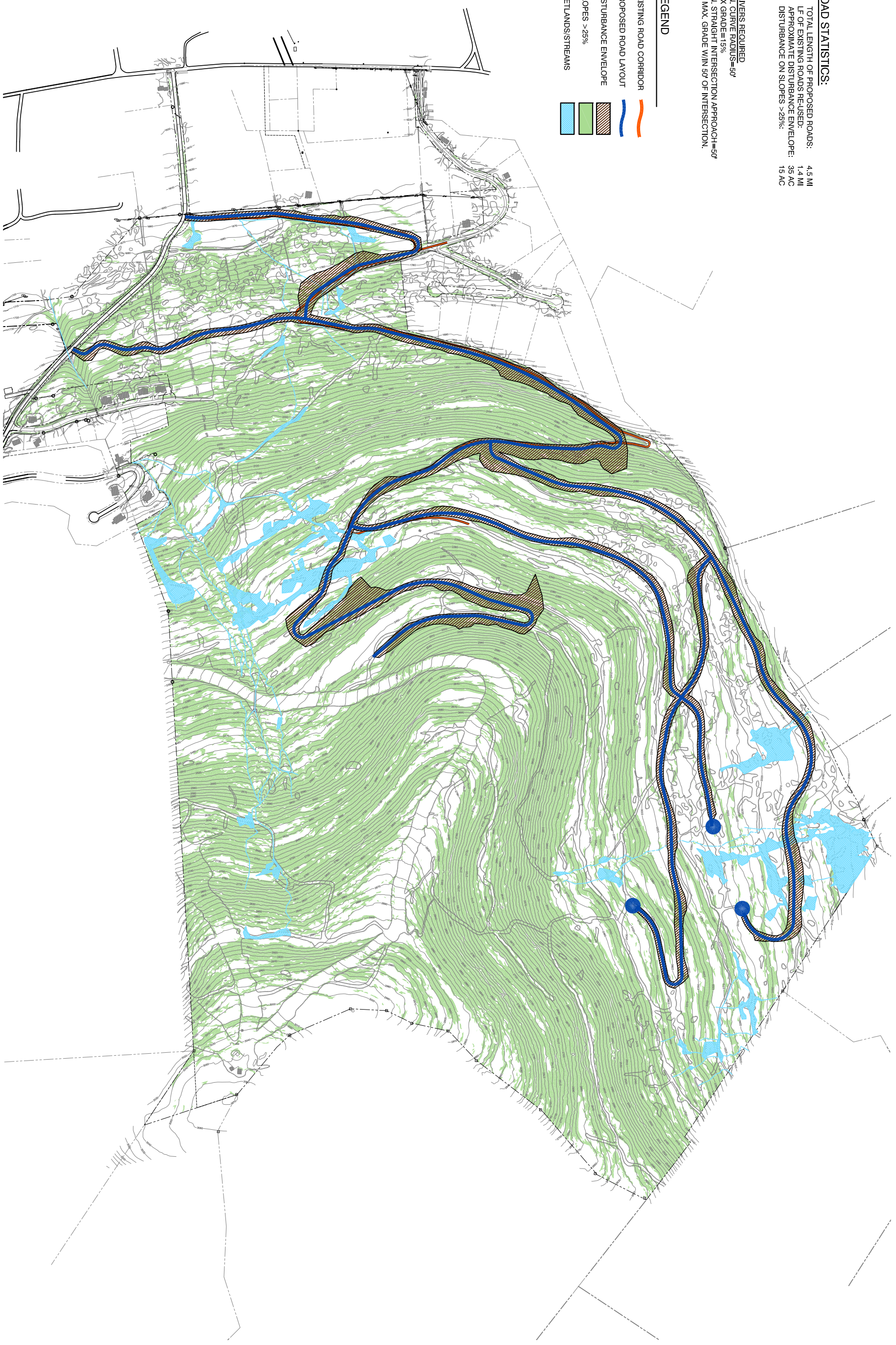


Section of Upper Panorama Lane. View east.

- ROAD STATISTICS:**
1. TOTAL LENGTH OF PROPOSED ROADS: 4.5 MI
 2. LF OF EXISTING ROADS RE-USED: 1.4 MI
 3. APPROXIMATE DISTURBANCE ENVELOPE: 35 AC
 4. DISTURBANCE ON SLOPES > 25%: 15 AC

WAIVERS REQUIRED
 MIN. CURVE RADIUS=50'
 MAX. GRADE=15%
 MIN. STRAIGHT INTERSECTION APPROACH=50'
 5% MAX. GRADE W/IN 50' OF INTERSECTION.

- LEGEND**
- EXISTING ROAD CORRIDOR
 - PROPOSED ROAD LAYOUT
 - DISTURBANCE ENVELOPE
 - SLOPES > 25%
 - WETLANDS/STREAMS



ACCESS ANALYSIS - PREFERRED ALTERNATIVE

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Feb. 15, 2010

SCALE: 1"=600'

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5. Alternative Access Analysis

As a result of comments received prior to and during the DEIS scoping process, an alternative road design was developed. This alternative design, which requires no waivers to the subdivision regulations standards for roads, is illustrated on the plan on the following page entitled “Access Analysis – Alternative #1 – No Waivers Required”.

The major difference between the preferred alternative and alternative #1 is the location of the section of road that provides access from Trailside to the eastern portion of the site and the largest area on the property suitable for development. In order to keep road grades under 10% it was necessary to gradually climb the slope between these two locations with a section of new road that is approximately 3,500 feet or 2/3 mile long. Much of this length is traversing across steep side slopes.



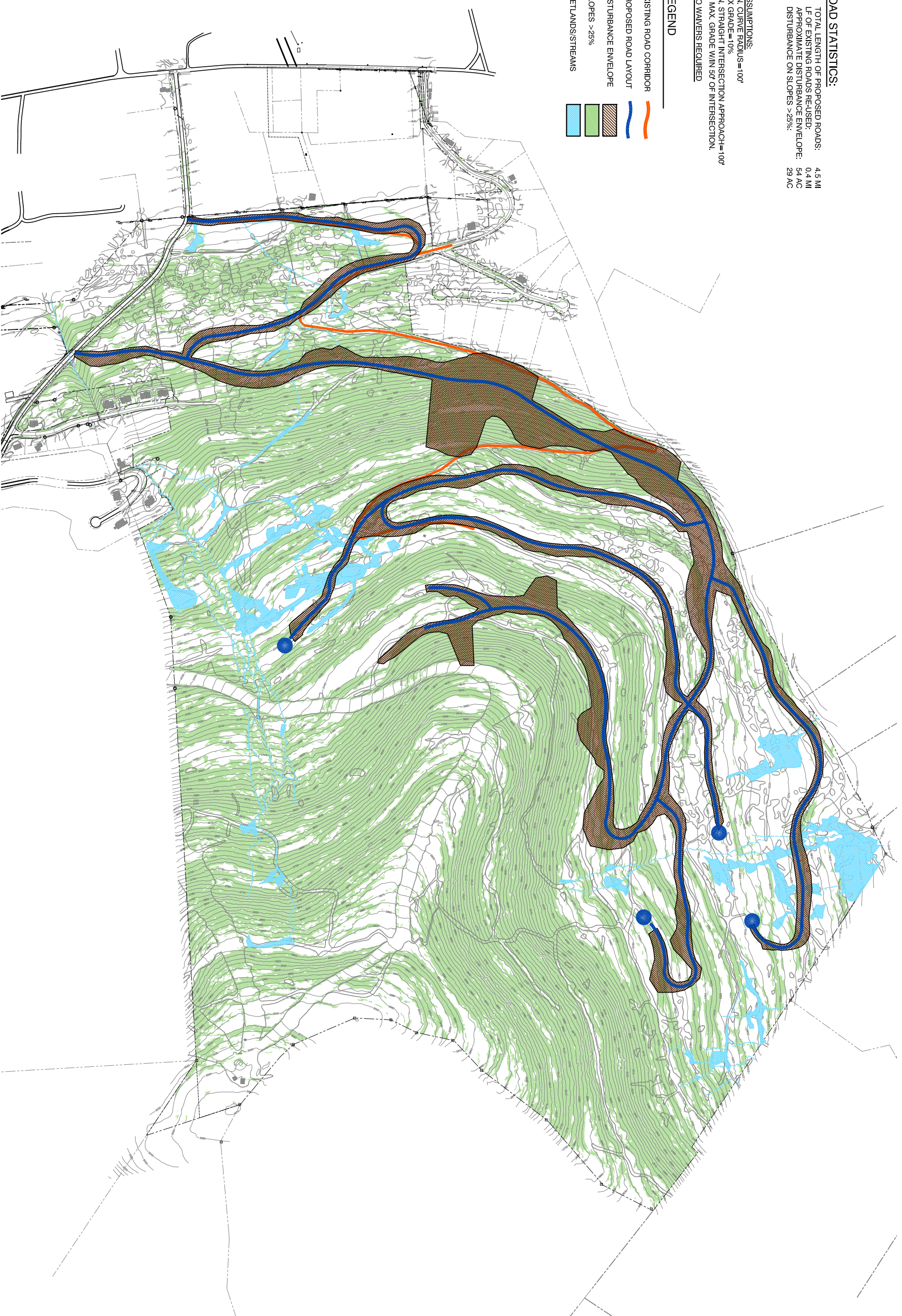
Side slopes in the vicinity of a portion of the alternative access road.

- ROAD STATISTICS:**
1. TOTAL LENGTH OF PROPOSED ROADS: 4.5 MI
 2. LF OF EXISTING ROADS RE-USED: 0.4 MI
 3. APPROXIMATE DISTURBANCE ENVELOPE: 54 AC
 4. DISTURBANCE ON SLOPES > 25%: 29 AC

***ASSUMPTIONS:**
 MIN. CURVE RADIUS=100'
 MAX GRADE=10%
 MIN. STRAIGHT INTERSECTION APPROACH=100'
 3% MAX. GRADE W/IN 50' OF INTERSECTION.
***NO WAIVERS REQUIRED**

LEGEND

- EXISTING ROAD CORRIDOR
- PROPOSED ROAD LAYOUT
- DISTURBANCE ENVELOPE
- SLOPES > 25%
- WETLANDS/STREAMS



ACCESS ANALYSIS - ALTERNATIVE #1 - NO WAIVERS REQUIRED

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6. Comparison of Preferred and Alternative Plans

The table on the following page provides a comparison of some of the characteristics of the two access plans previously presented.

- Under both plans there is a total of 4.5 miles of road.
- The preferred plan makes use of more than three times the amount of existing roads on the site, 1.4 miles, as compared to the 0.4 miles under alternative #1.
- Initial road grading studies were done to estimate how much land disturbance would be needed to construct the two road alignments, and alternative #1 requires 1.5 times more disturbance than the preferred alternative, 54 acres versus 35 acres.
- Using these same grading studies, it is estimated that alternative #1 requires almost double the amount of disturbance on slopes greater than 25%, 29 acres versus 15 acres for the preferred alternative.



VS.



COMPARISON OF ALTERNATIVE PLANS

Modified Sketch Plan

As-of-Right, No Road Waivers Plan

Total Road Length

4.5 Miles

4.5 miles

Length of Existing
Road Utilized

1.4 miles

0.4 miles

Total Area of Disturbance

35 acres

54 acres

Disturbance on
Slopes >25%

15 acres

29 acres



7. Slopes and Areas of Disturbance

The following page contains graphics that illustrate areas of disturbance under different land side slope conditions and for different road conditions.

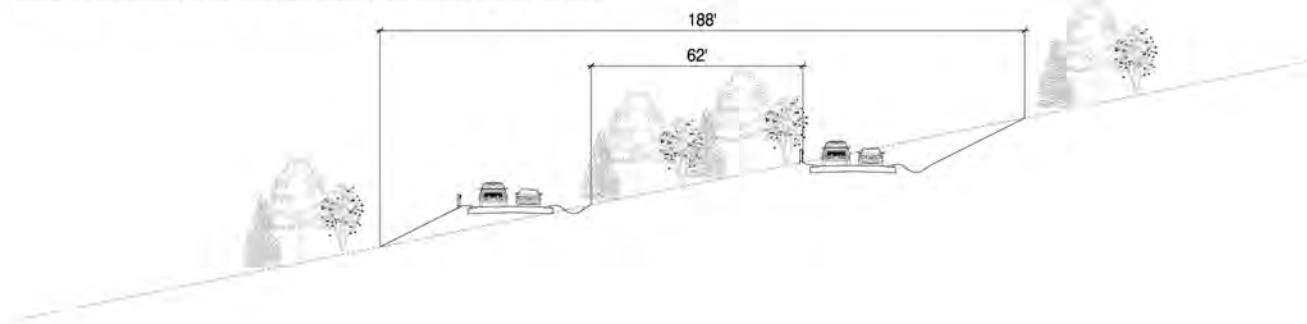
On the right side of the following page there are four different land slope conditions and the width of disturbance needed to get back to existing grades using a 2:1 slope under built conditions. In these details the existing slopes are dashed lines and as-built slopes are solid lines. The amount of disturbance increases dramatically as the existing side slopes increase.

On the top left of the following page there are illustrations showing the disturbance required for constructing roads with curve radii of 50 feet and 100 feet on 20% side slope, and the increase in the amount of disturbance, approximately 30% more, for the 100 foot curve radius.

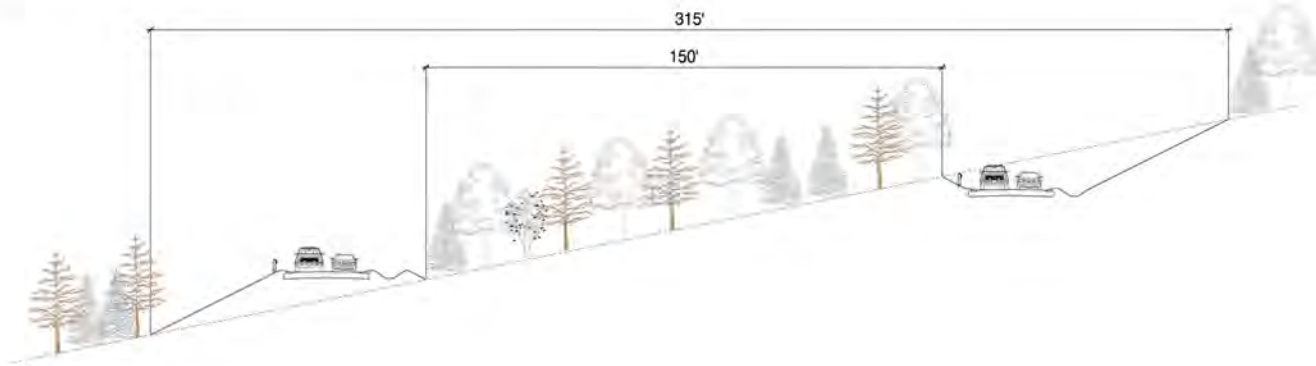


Construction on steeper side slopes requires wider areas of disturbance.

PROPOSED ROADWAY SWITCHBACK CROSS SECTIONS

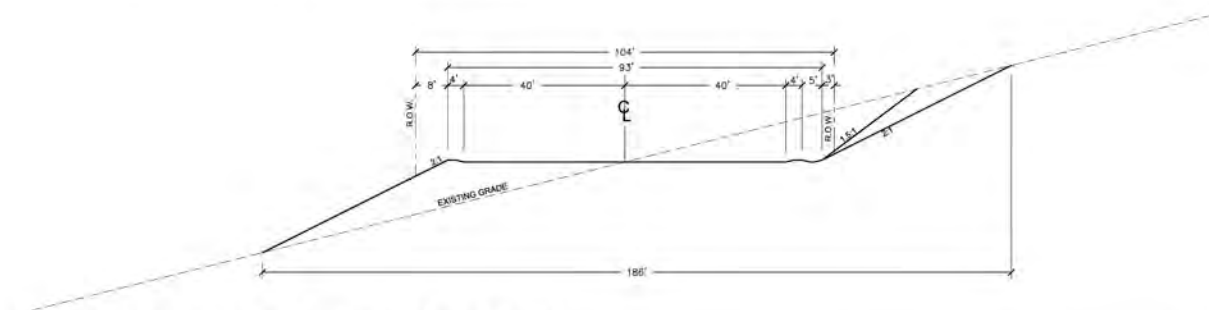


20% EXISTING SLOPE; 50' MINIMUM CURVE RADIUS

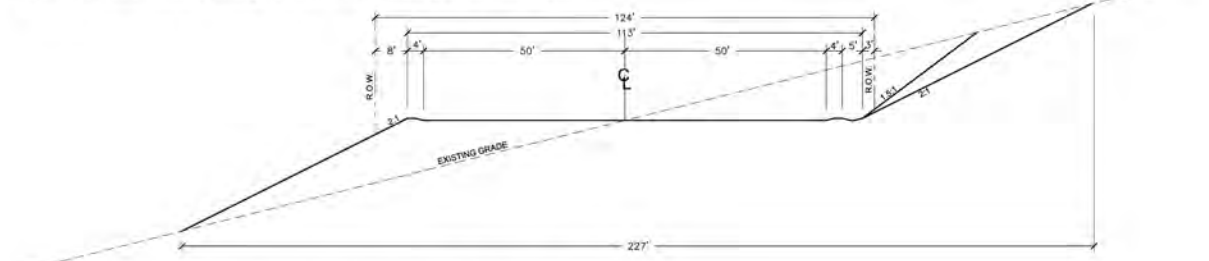


20% EXISTING SLOPE; 100' MINIMUM CURVE RADIUS

PROPOSED ROADWAY CUL-DE-SAC SECTIONS

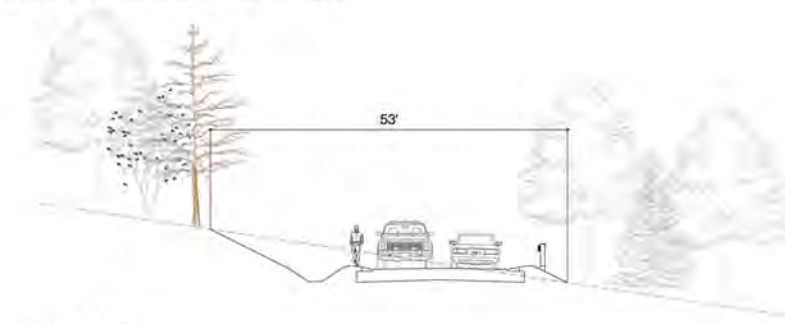


25% EXISTING SLOPE; 80' DIAMETER CUL-DE-SAC

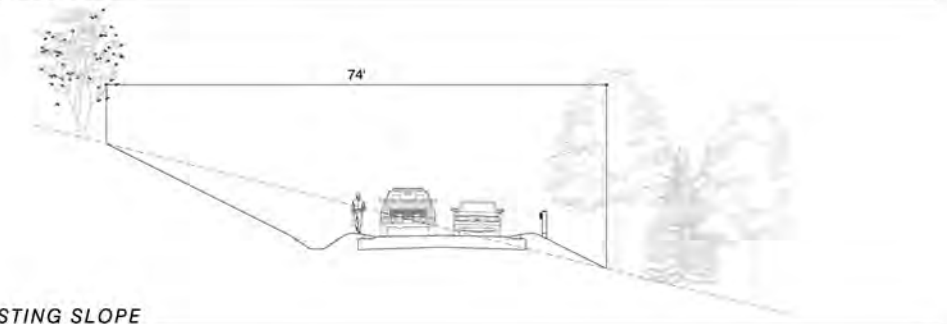


25% EXISTING SLOPE; 100' DIAMETER CUL-DE-SAC

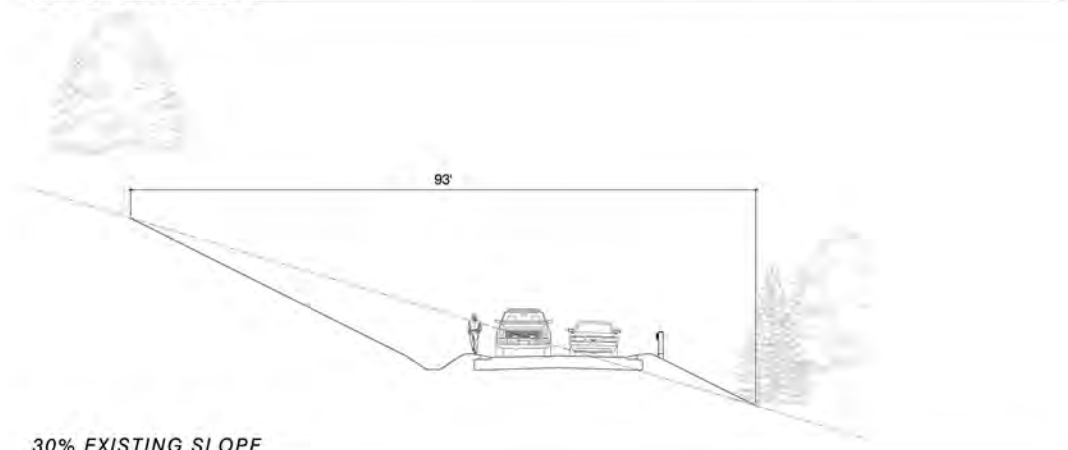
PROPOSED ROADWAY CROSS SECTIONS



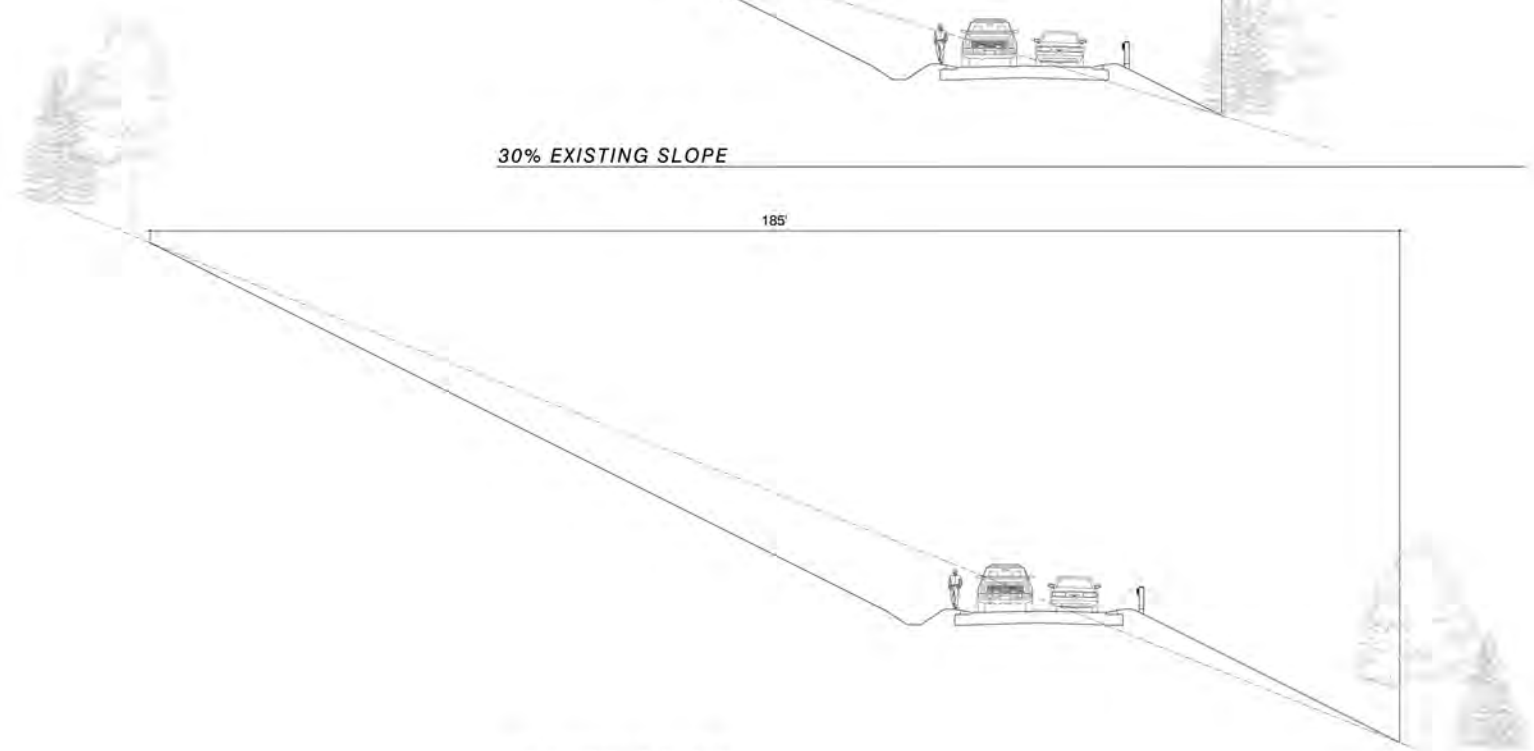
15% EXISTING SLOPE



25% EXISTING SLOPE



30% EXISTING SLOPE



40% EXISTING SLOPE

PROPOSED ROADWAY CROSS SECTIONS

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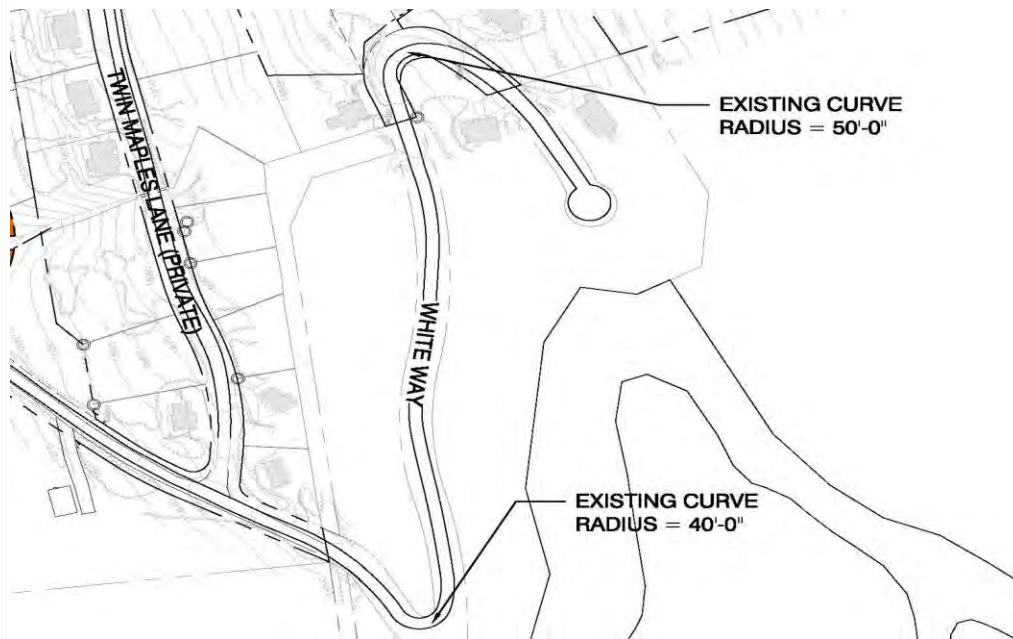
Feb. 15, 2010





8. Curve Radii Waivers

The project is still seeking waivers to allow for 50 foot curve radii (50 foot to centerline, 60 foot outside dimension) at some locations. The drawing on the last page shows the locations where these curves are located.



Curve radii above Twin Maples Lane for comparison/context.

From the inception of this project, the goal and intent has been to create a world-class destination which showcases and does not destroy the natural mountainous environment that is Windham. One consistent reason this project has sought waivers has been to limit natural site and visual disturbance. The project approach stated above is in keeping with Article 4, Section 2.G of the Town's Subdivision Regulations which states, "The road plan of a proposed subdivision shall bear a *logical* relationship to the topography of the property. . . [and that] Grades of roads shall conform as closely as possible to the original topography."

By using a 50 foot road radius, we have documented significantly less natural grade impacts and better utilization of specific site conditions and existing road cuts. By



limiting road grades on the switchbacks (less than 8%), and with the ability to control design speeds on the project roads (approximately 20 mph) it is possible to make turns with a 50 foot radius safe. With the proposed minimum 50 foot road radius, project access by a fire truck, school bus, or 60 foot long delivery truck is still safely accommodated.

It is the opinion of the applicant that a radii requirement of 100 feet is not a 'logical' requirement for the specific topographic site conditions found on The Windham Mountain Sporting Club site. Because of this project site's unique combination of topographic conditions and its location along the South Street corridor, where development in Windham has been focused, the Applicant believes that this project will not set precedents for other projects in the Town.

The Applicant and their consultants will continue to involve the Planning Board and the Town Highway Superintendent in discussions regarding the curve radii waiver.

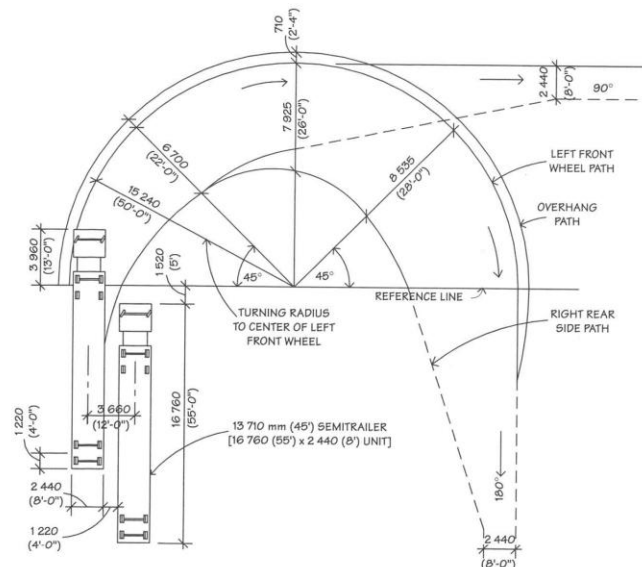
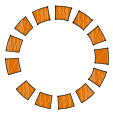


Figure 210-29. Turning radii for buses and semitrailers.

A 50' outside radius can accommodate buses and semitrailers as well as fire trucks and delivery vehicles.



WAIVERS

1. **SETBACKS-** SUBDIVISION REGS STATE 40' MINIMUM FOR LOT **SETBACKS**. CURRENTLY PROPOSING A 20' SETBACK.
2. **CURVE RADII-** SUBDIVISION REGS STATE 100' ROAD CENTERLINE MINIMUM CURVE RADIUS. CURRENT PLAN PROPOSES 50' RADIUS ON PROPOSED ROADWAY SWITCHBACKS.



SKETCH PLAN - CURVE RADII THAT REQUIRE WAIVERS

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FEB 17, 2010

