

# **Review of the Leelanau Scenic Heritage Route Trailway Plan and Environmental Assessment**

Prepared for:  
The Property Owners on Traverse Lake Road

May 18<sup>th</sup>, 2012

May 17, 2012

Re: Review of the Leelanau Scenic Heritage Route Trailway Plan

To Whom It May Concern:

Mansfield & Associates, Inc. a Traverse City, Michigan-based planning, engineering and surveying firm, has been retained by the property owners on Traverse Lake Road to review the Leelanau Scenic Heritage Route Trailway Plan in textural context as well as the inclusive findings as they relate to specifically to the Preferred Alternative (B) proposed for Segment 9 of the plan. As no one should propose a problem without a potential solution, the team is also proposing an alternate route which we believe alleviates all of the concerns analyzed in the plan except for the premise of not wanting to open up the Sleeping Bear Dunes Proposed Wilderness area as defined in the 2009 General Management Plan/Wilderness Study/ Environmental Impact Statement or the 1981 Wilderness Recommendation.

Prior to proceeding, it needs to be formally stated that the property owners and Mansfield & Associates, Inc. are firm supporters and users of trail systems. We have long-standing relationships with the local bicycling groups, park systems, trail advocacy organizations and similar causes. No one working on this initiative has taken the stand that a trail is a bad thing.

Mansfield & Associates, Inc. also understands and recognizes that none of our staff attended any of the hearings, meetings, planning sessions or other discussions related to what was and remains a huge undertaking which obviously involved thousands of hours outlining this conceptual plan. We are not informed of any details regarding the consultant's scope of work or what they were paid. We also understand that this is a "Conceptual Plan" and that the final design, engineering, permitting, and funding for Segment 9 is years away. We have not had conversations with the "Stakeholder Group" as outlined in the plan except for a few well-informed citizens. We only are reviewing what is documented and available to the public.

The intent of this review is to go on record that the Preferred Alternative for Segment 9 as found in Chapter 2, and the conflicting proposal outlined in Chapter 5 and the Appendix for this segment, in our opinion, do not meet the vision or design criteria found herein. This submittal is intended to be an honest and objective review of the plan as available in the records online.

Most Respectfully,



Douglas L. Mansfield  
President

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## **Section 1: Summary of Report Review**

In reviewing the report, three conflicts are the most prevalent, or not discussed at all, these include: Character Impacts, Visitor Experience, and the Permitting of the trail itself. If the trail is constructed according to the Preferred Alternative in Chapter 2, the residents currently living along and adjacent to Segment 9 of the trail will have to contend with broad changes in the character of their environment in terms of the landscape, visual and noise impacts, as well as impediments to their daily living experience. Also if the trail is constructed in an off-road scenario, as sometimes proposed in this report, the residents along Traverse Lake Road will see major tree clearing in the right-of-way and Federal Lands, hundreds of feet of retaining wall and railing, barren side slopes, and hundreds of thousands of un-invested, pass-through visitors. Residents will be burdened with having to listen to uninvited noise and cleaning up the inevitable trash left behind. In the cost projections for this segment, only 50 trees and \$3,325 in seeding are scheduled to amend the trail corridor encroachment of some 4.5 miles, into the now sensitive, complex and scenic residential neighborhood. This equates to one tree for every five hundred feet of trail. The residents living along this “Preferred Alternative” desire to take another look at this impact and the cost to remedy the same.

The next conflict in the report has to deal with visitor experience. It is the belief of those who live along this segment that the proposed and “Preferred Alternative” offers little to expand the visitor experience. The pictures, photos, and context of the report, websites, and brochures conjure images and suggestions of the Appalachian Trail, New York’s Central Park and other iconic national trail experiences, when in reality almost 75% of the proposed multi-million dollar trail will be located within 10 feet of the same county road or highway that travelers have driven, cycled or walked along for decades. The truth of this proposal is that trail users will still be, for the majority of the route, impacted with traffic, road debris, noise, and visual impediments. The residents of the area truly do believe that the environment they live in is one of the most beautiful landscapes in the nation. They also believe that tourists and residents alike should be able to travel its forests, bluffs and shoreline in a manner commensurate with the grandeur of this landscape. The residents believe that a trail on the interior of the park and in true proximity to forms, forest and waters shown in the brochures could be as iconic as the other national and historical trails systems cited, but this proposal is not going to achieve that vision. It will sadly fall short of being a great trail system, because it appears no one wants to fight the red tape of Washington.

Red tape, or the lack thereof, is the final ironic conflict. A resident of the area cannot review this report and some of the fantastic proposals for encroachments into the dunes, wetlands and roadways without saying to themselves, “How can they do that, and we can’t?” Anyone who has attempted to build or expand a structure into these same elements themselves has felt like the process for permitting such a feat seems to be designed to wear a person out, either financially or mentally or both. As taxpayers, we employ persons whose sole role is to protect these same sensitive landscapes that are proposed to be now developed on the basis of a study that is so flawed one can wonder if anyone really read it. And as residents of the area, these same people serve on boards,

planning commissions and committees through which they have sacrificed friendships, employment opportunities and tax base on the premise of preserving the landscape, and again it seems the government can do this without nearly the review, time and diligence of the average citizen. It just does not seem fair or right.

It should be now noted that a major portion of this review will center on an issue whereby Alternative B – the Preferred Alternative as defined in some of the plan as “...a separate 10’ off road asphalt path on the north side of Traverse Lake Road either within the county road right-of-way or on Lakeshore property south of the proposed wilderness.”, such as found on page 32 under Segment 9, second sentence, and similarly on page 54 under B (The Preferred), second sentence – is in conflict. In the map for Segment 9, found on page 43, the trail is graphically depicted on the map and in the legend as *Boardwalk* and *Crushed Limestone*. This conflict could be considered a minor deviation or error in the report and be corrected administratively. But what is most disconcerting is that in Chapter 5 and beginning with page 122 Trailway Segments – Alternative B under Segment 9, the Trail Surface Materials for the Traverse Lake Road Portion or the 2.43 miles, the chart denotes the material to be employed as “*On-road Bike Lanes*”. This is supported in the Cost Projection – Trail Segment 9 – Alt B under Trail Construction Costs as 2.43 miles of “*On-Road Bikelane*” and again in Table 18 of the Appendix. In even the most common of terms, this is a gross deviation from the description used in the Plan, the Impact Assessment, and as stated to the public or conversely to the entities involved in approving the appropriations and financing for the construction, maintenance and operations of such a trail, and ultimately the public who will be paying for this trail. Depending on the actual intent of the materials and methods correctly proposed for this Segment, the Cost Projection could very well quadruple for this Segment.

Also, if the intent is to construct an off-road and separate trail as told to the neighbors of this proposed route, then it will be surmised that the findings in Table 17 – Segment 9 Impact to the Environment of the Appendix under Option 9.2 in relationship to the Topography, Wetlands, Streams and Creeks, Soils, Wildlife, Vegetation and Viewsheds, Recreational Experience, SLBE Visitor Experience, Safety, Cost and Operations and Maintenance are also in error and the report will need to be corrected and re-heard at least by the approving bodies and most deservedly, the public.

And if the opposite is intended, and the proposal is only to stripe two 5-foot wide On-Road Bike Lanes along what is an existing 22-foot wide, two-way, public asphalt road in at most a working condition, this leaves only a single 12-foot dedicated lane for vehicular traffic. We would have a very hard time finding any traffic engineer, road commission manager, emergency services manager, trail user or citizen who would say this meets the Trailway Work Group’s Vision for “... a safe alternative...”. This also contradicts the Guiding Principals as outlined in Chapter 1, and in our opinion, should firstly have caused the Impacts to Feasibility to skyrocket, and secondly, these defined conflicts should cause the report approval to be null and void.

To provide a quick and simple reference to those conflicts expanded on in the complete report please refer to:

Page 120 Reference to cross section of “On-road Bike Lane (4”white waterborne 2 sides) \$7,500.

Page 122 Reference in segment 9 to 2.43 - on road bike lane

Page 131 Reference to cross section of “On-road Bike Lane (4”white waterborne 2 sides) \$7,500 per unit, \$18,225 total Little Traverse Lake Road

Appendix A

Table 17 Option 9.2

Topographic score 0 – comments “existing”

Land Use – see comments “co rd chip seal”

Table 18 Option 9.2

Cost score 0 – comments “utilizes existing road no modification”

Safety score 1 – comments “utilizes existing chip seal road (22’)”

As one will see there are several references to utilizing the existing road without modification. This is in conflict with the narratives which again describe an off road trail.

We now ask that you read the following excerpts and analysis as a member of the public, not having the years of understanding and background of the Trail Management Team. We also ask you to review the proposal in terms of what has been actually written, setting aside the confusion of the study, and understand that you are talking about the investment and future of these residents’ front yard.

## **Section 2: Summary of Significant Considerations & Real World Cross Sections**

### 1. Impact on natural beauty of Traverse Lake Road

The environmental assessment report did not adequately identify or assess the impact of constructing a trail along Traverse Lake Road upon the scenic beauty of Traverse Lake Road. Traverse Lake Road is a scenic winding road that has a unique beauty that is of significant value to the private property residents who live along the road. Traverse Lake Road has outstanding natural features including many ferns, wildflowers (protected lady slippers, trillium), critical dunes, cedar wetlands, a creek, and a unique canopy of native trees that are wild, uncultivated and at the road's edge. These would all be significantly impact by widening the current road or constructing a trail offset by 10 feet from pavement edge. (see cross section profiles)

### 2. Impact on residential residents

The environmental assessment report made no mention of the impact on potential residents along the proposed Traverse Lake route. The proposed trail crosses the front yards of several homes located on M-22 and Traverse Lake Road and will require removal of all trees in the front yard (see cross section profiles). The proposed trail also passes in close proximity to several other residential homes along the route and the projected volume of traffic will create a significant negative experience to local residents. Widening the existing road width would also impact on residential mailboxes, driveways, front yards, and utility connections.

### 3. Impact on wetland areas

The assessment report minimized the impact of the proposed trail route upon the significant cedar wetland areas adjoining the necessary crossing of Shalda Creek as well as wetland areas in the Bufka Farm area (see cross section profiles). The construction costs for these segments will also be considerably higher than budget or projected.

### 4. Impact on forest areas

Trail construction would require removal of a significant number of trees that are critical to providing the natural beauty associated with the winding Traverse Lake Road and to maintain the forested ecosystem adjoining the road. Typical construction patterns on the Dune Climb to Glen Arbor section has resulted in cutting a swath 22+ feet through forested areas which would significantly alter the adjoining forested areas.

### 5. Impact on critical dunes

The assessment report did not take into considerations the significant critical dune hills along the east end of Traverse Lake Road, which are more than 50 feet in height, have a

slope greater than 1:3, and end at the road's edge. These dunes have evidenced of active erosion and are now just beginning to be fully stabilized with vegetation. These critical dunes are regulated under state law (Natural Resources And Environmental Protection Act, Act 451 Of 1994, Part 353, Sand Dunes Protection And Management). A use on a slope within a critical dune area that has a slope steeper than a 1-foot vertical rise in a 3-foot horizontal plane is not permitted unless a special variance is granted. Construction of the trail in this area would drastically impact the natural beauty of Traverse Lake Road by removing stabilizing vegetation, natural hillsides and require expensive construction techniques of large retaining walls (see cross section profiles).

#### 6. Impact on wildlife habitat areas.

The trail is proposed to continue from Traverse Lake Road to Buffka Farm, which route will dissect one of the most significant deer habitat areas and one of the most popular hunting areas – a contiguous area where deer travel from the higher critical dunes and forests on the west side of the proposed trail route into the cedar wetlands to the east side of the proposed trail route. The trail would cut off the natural deer travel patterns and introduce thousands of trail users into a prime hunting area.

#### 7. Impact on cost considerations

The assessment report inadequately estimated trail costs and did not take into account the expensive construction designs of crossing significant wetland areas, creek bridging, tree removal and dune excavation. The proposed route requires significant grade excavation on the east end of Traverse Lake Road as well as north of the Bufka farm where there are significant construction challenges with steep hills and valleys alongside M-22.

### Summary of Problems Associated with Proposed Options

The Lakeshore has proposed various route options over time. Many of these route options, and the associated impacts, have not addressed by the environmental assessment report. Here is a summary of problems associated with various Traverse Lake Road options proposed by the Lakeshore to-date to extend the trail past CR 669:

#### *Option 1: Route trail traffic onto existing Traverse Lake Road*

- Limited recreational options - trail proposed as diverse opportunities but difficult for wheelchairs, rollerblading, cross country skiing on existing county road
- Substandard trail experience for user with using county road with traffic
- Considerable public safety concerns with trail users mixing with vehicles on winding road
- Huge volume impact on local residents with projected 350,000 to 400,000 trail users
- Overburden of township park facilities with no maintenance plan or support

*Option 2: Route trail onto expanded paved 5' shoulders of the road*

- AASHTO standards – vehicular separation recommended for two-way trail traffic only on one side (minimum 10' ft wide shoulder path) or a 5' ft wide shoulder path on both shoulders of road
- Limited recreational activities- trail proposed as diverse opportunities but difficult for wheelchairs, rollerblading, cross country skiing
- Substandard experience for trail users using county road with traffic
- Public safety concerns with trail users mixing with vehicles on winding road
- Road shoulder would conflict with existing underground utilities and mailboxes
- Removal of mature trees that provide scenic canopy
- Impact on protected critical dune hills which end at roadway's edge
- Shoulders cannot be expanded alongside wetlands and over creek
- Destruction of natural character – 22' scenic road now becomes 32' paved highway
- Huge volume impact on local residents with projected 350,000 to 400,000 trail users
- Overburden of township park facilities with no maintenance plan or support

*Option 3: Construct trail in the road right of way, offset 10' from road's edge*

- Boardwalk construction over lengthy wetland required with clearing of cedar trees along private property – unstable soils
- Extensive bridging over Shalda Creek required
- Significant cutting of trees along road will be required, impacting tree canopy
- Significant excavation of protected critical dune hills will be required
- Substandard trail experience with exposure and close proximity to road traffic
- Costs increase greatly (Park's estimated cost only \$18,225 for trail along Traverse Lake Road)
- Impact on private residences with trail across front yards and impact on scenic beauty road

*Option 4: Construct trail within 100' from road's centerline*

- Wetland boardwalking required and clearing of cedar trees along private property – unstable soils
- Extensive bridging over Shalda Creek required
- Major clearing of trees through mature forest within view-sight of Traverse Lake Road
- Removal of protected critical dune hills will be required to meet grade requirements
- Construction costs increase very significantly
- Impact on private residences with trail running across front yards

## **Section 3: Review of Report**

### **Chapter 1 – Overview of the Planning Process**

#### **1.1 Introduction**

Page 2 paragraph 1 states that:

*“The multi-use trail would begin at Manning road (Leelanau County line) and extend approximately 27 miles to County Road 651 along M-22 and M-109 through the Sleeping Bear Dunes National Lakeshore.”*

There is no mention of the trail running parallel with Traverse Lake Road.

#### **1.2 Defining the Vision and Guiding Principals**

Page 3 last paragraph

There is no mention of the conceptual route including the road right-of-way owned and managed by the Leelanau County Road Commission.

#### **1.3 Background and Scope**

Minimum design Requirements for the Trailway:

*Task 1-6*

If the intent is to construct two striped bike lanes on a shared roadway of 22 feet in width, as outlined in Chapter 5 and the Appendix, one cannot understand how this task could be realized.

*Task 7*

We could not locate anticipated cost data for operation and maintenance for the two top alternatives, anywhere in the report.

#### **1.4 Relationship to other Planning Projects**

It would seem that the Leelanau County Road Commission’s Master Road Plan and/or Capital Plan would have been integrated.

Transportation Study – Sleeping Bear Dunes National Lakeshore

It is hard to understand how the goals of this plan were met when approximately 60% of the trail in either alternative parallels M-22. This may be a key element in having to open the Wilderness Areas in the Lakeshore, as the report recognizes the need for a trail system and per this study states, “without having to travel on M-22, except in a few relatively short sections”.

### **Chapter 2 – Environmental Assessment**

#### **2.1 Purpose and Need**

Page 8 paragraph 2

*“The approximate 27 mile non-motorized multi-use trail **will** generally parallel M-22 and M-109, the major roads through the lakeshore.”*

In Alternative B- The Preferred Alternative, 40% of the trail is located far off M-22 and M-109.

*“The Trail will be separated from the roadways wherever possible and **will** provide a safe, alternative...”*

Chapter 5 of the plan delineates Segment 9 as *On Road Bike Lanes*, which on a 22-foot wide road are definitely not “safe”. Table 18 of the Appendix also provides for this method of service.

Page 8 paragraph 3

*“Trail use projections are estimated for the first three years at approximately 350,000 – 400,000 visitors/year.”*

This is an extremely important statement. When we take this statement at face value, the following numbers can be extracted and will impact the many elements of “Environment” not fully considered by report, which is the effect on the Traverse Lake Road neighborhood. Using the fact that this is a linear trail and presuming most users would need to return to their origin, requiring a “trip” of back and forth, and one can theoretically double the minimum stated count of 350,000 trail users. We can also presume that 80% of these trips will take place in the 5 months between May and October, at 30 days/month, during the average 12 hour daylight period, this could mean that, without incorporating peak use days or hours, one could expect a trail user to pass through their now quiet, picturesque but worn neighborhood roadway at:

$350,000 \times 2 \text{ (trip)} \times 0.80 / 5 \text{ months} / 30 \text{ days} / 12 \text{ hours} / 60 \text{ minutes} = \text{An Average of } 5.2 \text{ trail users per minute or one per every } 11 \text{ seconds of the daytime hours, every day of the summer.}$

Simply put, this is a staggering figure. You have to wonder, on a 22-foot wide road, where it seems to be proposed to take up ten feet of that road with dedicated bike lanes, with an expected trail user passing by an average of every 11 seconds, how the mail will be delivered, how the garbage trucks will stop, how one will be able to pull out of their driveway, and just what would happen if an emergency services needs to get down the road? The proposal for incorporating two individual 5-foot wide bike lanes on this 22-foot wide chip and seal road is highly impractical.

### **2.3 Alternatives**

Page 11 paragraph 2, last sentence

*“Several options were eliminated during this process as they were not feasible or fell within proposed wilderness areas identified in the Sleeping Bear Dunes National Lakeshore General Management Plan.”*

We realize this report is preliminary. The team acknowledges the many dollars and years as it will take to bring to the entire trail system to a successful completion. The team notes the exceptions supported and granted for trailways in the lakeshore previously. As neighbors and users our layperson’s pure logic supports trails within the park interior. The SBDNL support the same in the findings of its own 2001 Transportation Study.

With that foundation laid we cannot understand the process whereby the “Lakeshore” and Trailways Management Team withdrew the alternate design of implementing more trails interior of the proposed wilderness areas on primarily existing and maintained roadways. We can only suppose it was because of what appears to be the

political hurdles and paperwork involved. If this is so it only serves to minimize the grandeur of this place and what this trail system is and could have been.

### **Segment 9**

Page 32 paragraph 1, second sentence

*“It continues as a separate 10’ off road asphalt path on the north side of Traverse Lake Road either within the county road right-of-way or on Lakeshore property south of the proposed wilderness.”*

This statement is that which was understood by the citizens and residents to be the proposed method and material for the segment. It is consistent with 2.3.7 Comparison of Alternatives for Segment 9, as found on Page 54. It is **not** consistent with the Segment 9 Map as found on Page 43 or the Cost Estimates as outlined in Chapter 5 or Table 18 of the Appendix.

### **Map 2.18a – Proposed Trailways Alternatives**

Segment 9: Alternative B

Page 43

The Map and the inclusive legend depict the proposed route to be constructed of *Crushed Limestone* and *Boardwalk* which is inconsistent with the narrative for Segment 9 as found on Page 32 paragraph 1, second sentence or the Cost Estimates as outlined in Chapter 5 or Table 18 of the Appendix.

### **2.3.4 Environmentally Preferable Alternative**

Page 45

Alternative B

With the inconsistencies found in the study, it is apparent that these findings will need to be completely re-stated once the true proposal for methods and materials for this segment are defined.

### **2.3.6 Best Management Practices and Mitigation for the Action Alternatives**

Page 47

Land Use

This mitigating element should be expanded to limit disturbance to private housing developments in and near the Traverse Lake neighborhood.

### **2.3.7 Comparison of Alternatives**

Page 54

Alternate B (the Preferred)

*“It continues as a separate 10’ off road asphalt path on the north side of Traverse Lake Road either within the county road right-of-way or on Lakeshore property south of the proposed wilderness.”*

This statement is that which was understood to be the proposed method and material for the segment, by the Citizenry. It is consistent with the narrative for Segment 9 as found on Page 32. It is **not** consistent with the Segment 9 Map as found on Page 43 or the Cost Estimates as outlined in Chapter 5 or Table 18 of the Appendix.

### **2.3.8 Impact to the Trailway Alternatives**

Page 55

Alternative B (Preferred)

With the inconsistencies found in the study it is apparent that these findings will need to be completely re-stated once the true proposal for methods and materials for this segment are defined.

### **2.4.7 Socioeconomics**

Page 63

It would be interesting to revisit the study given the new census data, the effects of the recession, and regression of property/tax values in the area coupled with the introduction of a major trailway being constructed in the frontage of many of these homes.

### **2.4.9 Visitor Opportunities and Use**

Page 67 paragraph 4

*“The Trailway will result in more off-season use in the lakeshore and trail use projections are estimated to be approximately 350,000 to 400,000 visits per year.”*

This is an extremely important statement. When we take this statement at face value, the following numbers can be extracted and will impact the many elements of “Environment” not fully considered by report, which is the effect on the Traverse Lake Road neighborhood. Using the fact that this is a linear trail and presuming most users would need to return to their origin, requiring a “trip” of back and forth, and one can theoretically double the minimum stated count of 350,000 trail users. We can also presume that 80% of these trips will take place in the 5 months between May and October, at 30 days/month, during the average 12 hour daylight period, this could mean that, without incorporating peak use days or hours, one could expect a trail user to pass through their now quiet, picturesque but worn neighborhood roadway at:

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Simply put, this is a staggering figure. You have to wonder, on a 22-foot wide road, where it seems to be proposed to take up ten feet of that road with dedicated bike lanes, with an expected trail user passing by an average of every 11 seconds, how the mail will be delivered, how the garbage trucks will stop, how one will be able to pull out of their driveway, and just what would happen if an emergency services needs to get down the road? The proposal for incorporating two individual 5-foot wide bike lanes on this 22-foot wide chip and seal road is highly impractical.

### **2.4.10 Operations and Maintenance**

Pages 67-69

There is no mention of the Leelanau County Road Commission, although the maintenance of the existing roadway, proposed to be encumbered by a non-motorized

trailway over 40% of the existing and worn chip and seal surface, falls within their jurisdiction.

#### **2.4.11 Impact topics eliminated from Further Analysis**

Pages 69 and 70

There is no mention of the impact on the Township Park located along Traverse Lake Road in Segment 9. As the only public rest area for several miles, it could be anticipated that the toilet facilities are completely undersized for the 350,000-400,000 visitors per year projected to use this Trailway. Also as the public access point for the lake, the impacts to the park's infrastructure and nuisance mitigation will be taxed as people are drawn to the aesthetics of the lake.

#### **Proposed Wilderness**

Page 70, paragraph 3

*“Trail routes in both alternatives have been identified to avoid conflicts with lands proposed as wilderness in the 2009 General Management Plan/Wilderness Study/Environmental Impact Statement. No Trailway developments could occur on lands proposed for wilderness in the 1981 Wilderness Recommendations unless and until Congress acts upon a recommendation.”*

This statement seems in conflict with the Sleeping Bear Dunes National Lakeshore – Transportation Study, which according to the narrative found in Chapter 1 of this report, supports trails in the lakeshore without having to travel on M-22. It would seem that if traffic is being caused primarily by the visitors to the park as stated in Section 2.4.9, that the park lands should be those most impacted by the Trailway intended to serve it. Management Plans are just that, plans, and are intended to be amended as times and generation's change. That is why there is an outlined process for doing so. Yes, it may take a lot of red tape and political will, but to say it cannot happen and should not be analyzed is simply lackadaisical and lessens the intent of this entire scope.

#### **2.5.4 Impact topics and Environmental Analysis**

##### **Topography**

Page 74 third paragraph

Alternative B: the Preferred Alternative

In part, the apparent intent of Alternative B, which is being proposed specifically in Segment 9, is to avoid proposing a Trailway encumbrance to the proposed Wilderness Area of the National Lakeshore.

With the inconsistencies found in the study it is obvious that these findings will need to be completely re-stated once the accurate and consistent proposal for methods and materials for this segment are defined.

##### **Wetlands**

Page 77, fifth paragraph

Alternative B: the Preferred Alternative

In part, the apparent intent of Alternative B, which is being proposed specifically in Segment 9, is to avoid proposing a Trailway encumbrance to the proposed Wilderness Area of the National Lakeshore.

With the inconsistencies found in the study it is obvious that these findings will need to be completely re-stated once the accurate and consistent proposal for methods and materials for this segment are defined.

### **Vegetation**

Page 80, sixth paragraph

Alternative B: the Preferred Alternative

In part, the apparent intent of Alternative B, which is being proposed specifically in Segment 9, is to avoid proposing a Trailway encumbrance to the proposed Wilderness Area of the National Lakeshore.

With the inconsistencies found in the study it is obvious that these findings will need to be completely re-stated once the accurate and consistent proposal for methods and materials for this segment are defined.

Page 81, forth paragraph, third sentence

Conclusions

*“... From implementation of alternative A...”*

Should read Alternative **B**.

### **Michigan State Listed Species**

Page 83, forth paragraph

Alternative B: the Preferred Alternative

In part, the apparent intent of Alternative B, which is being proposed specifically in Segment 9, is to avoid proposing a Trailway encumbrance to the proposed Wilderness Area of the National Lakeshore.

With the inconsistencies found in the study it is obvious that these findings will need to be completely re-stated once the accurate and consistent proposal for methods and materials for this segment are defined.

### **Soils**

Page 85-86, sixth paragraph

Alternative B: the Preferred Alternative

In part, the apparent intent of Alternative B, which is being proposed specifically in Segment 9, is to avoid proposing a Trailway encumbrance to the proposed Wilderness Area of the National Lakeshore.

With the inconsistencies found in the study it is obvious that these findings will need to be completely re-stated once the accurate and consistent proposal for methods and materials for this segment are defined.

### **Socioeconomics**

Page 91, forth paragraph

Alternative B: the Preferred Alternative

In part, the apparent intent of Alternative B, which is being proposed specifically in Segment 9, is to avoid proposing a Trailway encumbrance to the proposed Wilderness Area of the National Lakeshore.

Second sentence

*“Development of the Trailway would have negligible impacts on the population of the area in both the long and short term.”*

With the information gathered in and for this report, correct or not, consistent or not, this still has to be the most under-rated statement in any Environmental Assessment in recent times. To encumber a neighborhood with more than fifty to sixty years of history, growth, maturity, and textural complexities in terms of terrain, vegetation, soils, etc. with a Trailway intended on serving 350,000-400,000 visitors per year via one proposal only providing two white stripes in a 22-foot wide chip and seal road and say there are only negligible impacts is simply incorrect. This trailway, to be created either in the road or the right-of-way, will change everything the residents of this neighborhood knew of their home.

With the inconsistencies found in the study it is obvious that these findings will need to be completely re-stated once the accurate and consistent proposal for methods and materials for this segment are defined.

### **Cultural Resources**

Page 93-94

Alternative B: the Preferred Alternative

In part, the apparent intent of Alternative B, which is being proposed specifically in Segment 9, is to avoid proposing a Trailway encumbrance to the proposed Wilderness Area of the National Lakeshore.

With the inconsistencies found in the study it is obvious that these findings will need to be completely re-stated once the accurate and consistent proposal for methods and materials for this segment are defined.

### **Visitor use**

Visitor Opportunities

Page 95

Paragraph 1, sentence 1

*“Development of the Trailway would provide visitors with opportunities to experience the lakeshore in a way not currently available.”*

This statement is difficult to assess given that approximately 80% of the length of the Preferred Alternative runs parallel, adjacent to, or on existing county or state road rights-of-way, or the road itself as proposed in Segment 9 of Alternate B: the Preferred Alternative. As the Trailway primarily runs 10 feet off or actually on the existing roadways, will the users not be experiencing essentially what they did when they traveled

on the road or the shoulder before the millions dollars and all the impacts are expended? With a very few exceptions will they not be experiencing, within reason, anything different from what any vehicular traveler would be seeing. This makes one think, are the costs and impacts of the proposed alternative worth the few true experiences gained in the routing? Would it not be a larger draw with less safety concerns, less cost, fewer environmental impacts and greater park experiences if the trailway actually went through the lakeshore property, utilizing old roads and existing trails that have existed for decades, and in areas where the desired vistas, smells, breezes, noise, conflicts or lack thereof be experienced?

Methods and materials used in Segment 9 as proposed in Chapter 5 of the study and as already delineated do not provide for “*a safe alternative*” as stated in the last sentence of this paragraph.

Page 96, sixth paragraph

Alternative B: the Preferred Alternative

In part, the apparent intent of Alternative B, which is being proposed specifically in Segment 9, is to avoid proposing a Trailway encumbrance to the proposed Wilderness Area of the National Lakeshore.

Second sentence

“...*provides a safe alternative for walking...*”

Methods and materials used in Segment 9 as proposed in Chapter 5 of the study and Table 18 of the Appendix as already delineated do not provide for “*a safe alternative*”.

Forth sentence

“*Recent research suggests that overall visitor use in the lakeshore may increase about 60,000 visitors due to development of the Trailway, a short and long term, moderate beneficial impact.*”

This finding of a moderate beneficial impact would, most likely, not be agreed with by persons living along this route.

With the inconsistencies found in the study it is obvious that these findings will need to be completely re-stated once the accurate and consistent proposal for methods and materials for this segment are defined.

### **Operations and Maintenance**

Page 98, forth paragraph

Alternative B: the Preferred Alternative

In part, the apparent intent of Alternative B, which is being proposed specifically in Segment 9, is to avoid proposing a Trailway encumbrance to the proposed Wilderness Area of the National Lakeshore.

Item 7 of the scope of work, as found on page 4 of Chapter 1 of the study, requested the provision of anticipated operation and maintenance cost data for the two top alternatives. This consultant was unable to find such data in the study and it would have been an important part of reviewing this element.

Important to Segment 9 would be the impact on the operation and maintenance of the Township Park at Traverse Lake as it is one of the only public rest areas on the proposed trail route for miles and is the only public access points for the lake.

No mention is made of the County Road Commission and their input on staging all this activity on an existing 22-foot wide chip and seal road.

With the inconsistencies found in the study it is obvious that these findings will need to be completely re-stated once the accurate and consistent proposal for methods and materials for this segment are defined.

### **Chapter 3 – Public Involvement**

Page 103

Second paragraph

*“What: The proposed 25 mile non-motorized Trailway **would** parallel M-22 and M-109....”*

As a layperson reading this, one would not derive that the proposed trailway would parallel or adjoin Traverse Lake road and in such have any concern for this corridor.

#### **Map**

Page 104

The map does not denote Traverse Lake Road as an Alternative Route. It does not denote the use of the Township Park as a rest area or scenic turnout. It does not denote any areas of concern in what came to be Alternative B, Segment 9. Again as a layperson living on Traverse Lake Road and looking at this map, one would have no reason to believe that the Traverse Lake Road corridor is any part of this Trailway, and would find no reason to concern them self with attending the meetings and such.

If the use of the Traverse Lake Road corridor came after the use of this map as stated on page 105, paragraph 2, then the public should have been re-notified. This was a gross deviation from the original route, and a change significant enough to demand another public hearing. In reviewing this map the average citizen was not going to have any idea that a Trailway of such magnitude is going to be routed down this road. It would have seemed easy enough to denote a route change and date on the map.

It is also interesting to note that the public review period as denoted on page 105, was during the month of October 2008. The demographics of the population living along Traverse Lake Road are primarily seasonal and it is questionable how many persons were notified since many had left the area for the season.

### **Chapter 4 – Trail Cross Section Development**

#### **4.1 Typical Corridor Cross Sections**

Shared use Paths

Page 107 paragraph 6, sentence 2

*“...and serve multiple uses including pedestrians, joggers, dog walkers, people pushing baby carriages, persons in wheel chairs, skate boarders, and in line skaters.”*

This is only true if the paths are constructed of asphalt or similar surfaces. Much of this proposed trail system is proposed to be surfaced with crushed limestone, which

will not suffice for many of these uses. This statement as portraying the benefits for this railway is misleading and should be revised.

#### **4.2 Typical Railway Construction Sections**

Page 114 paragraph 2

*“...is more environmentally friendly in regard to permeability...”*

It should also be noted that Crushed Limestone is not friendly to supporting the root structure of nearby trees and should not be used in instances of 5% or greater slope as stormwater will erode the fines in the soil and cause safety and maintenance issues which will greatly exceed the cost of asphalt.

The Cross Sections onto themselves are great tools for exhibiting typical segment treatments and estimating and they do represent the minimal standards for design of MDOT and AASHTO Trailways. However and per the consultant’s clarifications, when these typical Cross Section are placed in real world settings, elements of the design need to be integrated much more intricately. What is surprising about this study is just how inaccurate the typical cross sections are from the real world. In such, Mansfield & Associates took the time to review several real world cross-sections and tried to input those elements discussed in this study. In doing so we found several inconsistencies and impacts far greater than that foreseen in the study. These are attached to this report as Addendum B.

### **Chapter 5 – Cost Projections**

#### **5.2 Assumptions**

page 121

*“- Detailed design elements such as retaining walls, guardrails, culverts, advanced warning signals are not quantified in the estimate but identified as probable details to be included in the final design.”*

The elements listed above are some of the most design-, construction- and cost-intensive items involved with any site development project, and the fact that they were not included in the cost projections, leads us to believe that the provision for a cost projection was nothing more than an obligatory mention to conclude this study. Without the integration of these elements and their inclusive costs, this estimate is frankly useless. As these are significant and common design elements, and the required locations of such elements are normally easily identified within the route, there is no reason they should not have been included in such an estimate.

*“- A 20% contingency was utilized to account for details to be included in the final design.”*

Twenty percent is an appropriate contingency for the study phase of a project but with the exclusion of major design elements, the contingency will not come close to covering the actual expense of the segment or Trailway as defined in the narrative.

#### **5.3 Cost Projection Summary**

Page 121 paragraph 1

*“ The modifications to Alternative B, Segments 1, 2 and 9 do not significantly impact the overall cost projections for the alternative.”*

Again this review primarily examined Segment 9 of Alternative B. As stated previously, the methods and materials for Segment 9 as outlined in the narratives do match those provided in the Cost Projections or the corresponding Table in the Appendix. In such it is impossible to estimate what the cost projection would be. If the proposal for Segment 9 is as was proposed to the citizenry then the cost projections could quadruple. One would reason that such an increase would impact the overall cost.

### **Trailway Segments – Alternative B**

Page 122

Segment 9

This spread sheet denotes the use of “*On-road Bike Lanes*” for 2.43 miles of the segment route. This a gross deviation from the cross section defined in the study narrative. Should the narrative be correct, the cost projection for this segment could quadruple. Should the cost projections and description in the corresponding tables in the Appendix be correct, the impact and assessment findings would be incorrect and the vision and goals of this study would not be met. In any case, the study is in conflict with regard to this segment and this flaw needs to be defined, which potentially may open up the entire public process.

### **Trailway Segment 9 – Alt B**

Cost projection

Page 131

This spread sheet denotes the use of “*On-road Bike Lanes*” for 2.43 miles of the segment route. This a gross deviation from the cross section defined in the study narrative. Should the narrative be correct, the cost projection for this segment could quadruple. Should the cost projections and description in the corresponding tables in the Appendix be correct, the impact and assessment findings would be incorrect and the vision and goals of this study would not be met. In any case, the study is in conflict with regard to this segment and this flaw needs to be defined, which potentially may open up the entire public process.

## Section 4: Review of the Appendix

**Table 17 – Segment 9 Impact to the Environment**

Option 9.2

Because of the inconsistencies found in the plan, it is virtually impossible for the layperson to analyze the Impacts to the Environment. Should the narrative be correct, the Impacts to the Environment would combine to make this segment one of, if not the highest, scoring segments along the entire route. To list the impacts individually with the concept of a separate off road asphalt path the impact to the environment, on a score of 1-3 (three being the most impact) the table should read:

<b>Element</b>	<b>Proposed multiplier</b>	<b>As shown in study</b>
- Topography	3 (steep slopes on north side of road)	0
- Wetlands	3 (boardwalk req'd west end of Traverse Lake Rd)	0
- Streams and Creeks	1 (Creek Crossing)	0
- Soils	3 (wetland/slopes)	0
- Wildlife	1 (wetland)	0
- Vegetation	1 (wetland)	0
- Land Use	3 (Twp. Park/Lake access/Priv.Land)	2
- Cultural Resource	2 (borders wilderness area)	2
- Viewshed	3 (clearing road r.o.w.)	0
<b>Total</b>	<b>20(the highest in the table)</b>	<b>4</b>

Even if elements as outlined in Chapter 5 and Table 18 of the Appendix are the intended methods and materials, the impact findings maybe correct but the vision statement and goals of this plan would not be met. To again list the impacts individually with the concept of staging 350,000-400,000 visitors per year on two 5-foot wide bike lanes on an existing 22-foot wide chip and seal road to be shared with the neighborhood traffic, one would suppose that the impact to the environment, on a score of 1-3 (three being the most impact) to be:

- Topography	0
- Wetlands	0
- Streams and Creeks	0
- Soils	0
- Wildlife	0 (wetland)
- Vegetation	0 (wetland)
- Land Use	3 ( <b><u>Twp. Park/Lake access</u></b> /Priv.Land, Co. Rd.)
- Cultural Resource	2 (borders wilderness area)
- <u>Viewshed</u>	<u>0</u>
<b>Total Impact to the Environment</b>	<b>5</b>

**Table 18 – Segment 9 Impact to Feasibility**

Option 9.2

Because of the inconsistencies found in the plan it is virtually impossible for the layperson to analyze the Impacts to Feasibility. Should the narrative descriptions for methods and materials be correct, the Impacts to the Feasibility would combine to make

this segment one of the highest scoring segments along the entire route. To list the impacts individually with the concept of a separate off-road asphalt path, the impact to feasibility, on a score of 1-3 (three being the most impact) would read:

Element	As Proposed	As Shown in Study
- Recreational Experience	0	0
- SLBE Visitor Experience	0	0
- Safety	0	1
- Cost	3 (boardwalk and retaining wall required)	0
- <u>Operation and Maintenance</u>	<u>3 (overburdening of Township Park)</u>	<u>0</u>
Total Impact to Feasibility	6 (highest on table)	1
<b>Total Combined Impact</b>	<b>26 (highest in entire Trailway route)</b>	<b>5</b>

Even if elements as outlined in Chapter 5 are the intended methods and materials, the impact findings are completely under-estimated and the vision statement and goals of this plan would not be met. To truly list the impacts individually with the concept of staging 350,000-400,000 visitors per year on two 5-foot wide bike lanes on an existing 22-foot wide chip and seal road to be shared with the neighborhood traffic, one would suppose that the impact to feasibility, on a score of 1-3 (three being the most impact) to be:

- Recreational Experience	3 (unless you consider dodging traffic recreation)
- SLBE Visitor Experience	3 (total detraction)
- Safety	3 (continuous traffic/user conflicts)
- Cost	3 (emergency services)
- <u>Operation and Maintenance</u>	<u>3 (Overburdening of Township Park)</u>
Total Impact to Feasibility	15 (highest on table instead of lowest as shown)
<b>Total Combined Impact</b>	<b>19(highest in entire Trailway route)</b>

## **Section 5: Conclusion**

After a careful examination of this Plan, specifically as it relates to Segment 9 of Alternative B: the Preferred Alternative, it is the opinion of Mansfield & Associates, Inc. that there are such gross and significant deviations and conflicts between the Narratives, and Cost Projections, and between the Impact Findings and Assessments in the proposed methods and materials to be used to develop the proposed railway, that no layperson could ever truly define just what is the intent of the Plan. Now after comparing our initial conversations and interpretations, with members of TLPO, with our reading of Plan as it pertains to Segment 9 of Alternate B, and being persons and professionals who work with such terminology, plans and relate exhibits on a daily basis, we cannot say with any certainty what, even in concept, is being proposed in this segment. The final review of this plan simply begs the question – “What are they proposing?”

It is our understanding that this plan is to be the guide for the design, funding, construction and operation of this Trailway for the next decade or longer. During such a period it can be expected that some of the original Trailway Management Team, Lakeshore staff, neighbors to the trail and other involved agents will change. In such, it is crucial that this Plan be correct and consistent. Currently this Plan is neither correct nor consistent. In our opinion, the perception of the neighbors is not consistent with the plan or our interpretation of comments made earlier by members of this community, and given the conflicting information found herein only compounds the situation.

In reviewing this Plan and without further knowledge of the process under which the Plan was developed, it our opinion that the discrepancies are so severe that any adoption of this plan should be voided, and the study re-opened and re-heard. If there is continued support once the findings are corrected, then adoption could proceed. We would ask that you again think about: enhancing the visitor’s experience, relating to the impact on the existing residents, and remember that the concern and process for development in the Park should not be only at the private level but must also apply to that of public improvements.

## Addendum A: The Proposal

### Alternative Route Proposal for Heritage Trail

As part of the public process of exploring route options, the Lakeshore should consider alternatives that would avoid the present challenges and omissions discussed in this report. There is an alternative route that would leave intact the scenic beauty of the existing M-22 and Traverse Lake Road while providing an enhanced experience to the trail user.

The Lakeshore has the opportunity to create one of the most unique and beautiful trails in the state and in the nation by also providing trail users an exposure to the namesake's lakeshore of the Park. Yet, nowhere does the proposed route of the Trail go along the lakeshore or even provide trail users a glimpse of the water, other than at Glen Haven. A route including exposure to the lakeshore would provide some of the best sights and sounds of the Park and would provide an exceptional experience, far superior to a trail alongside a county road.

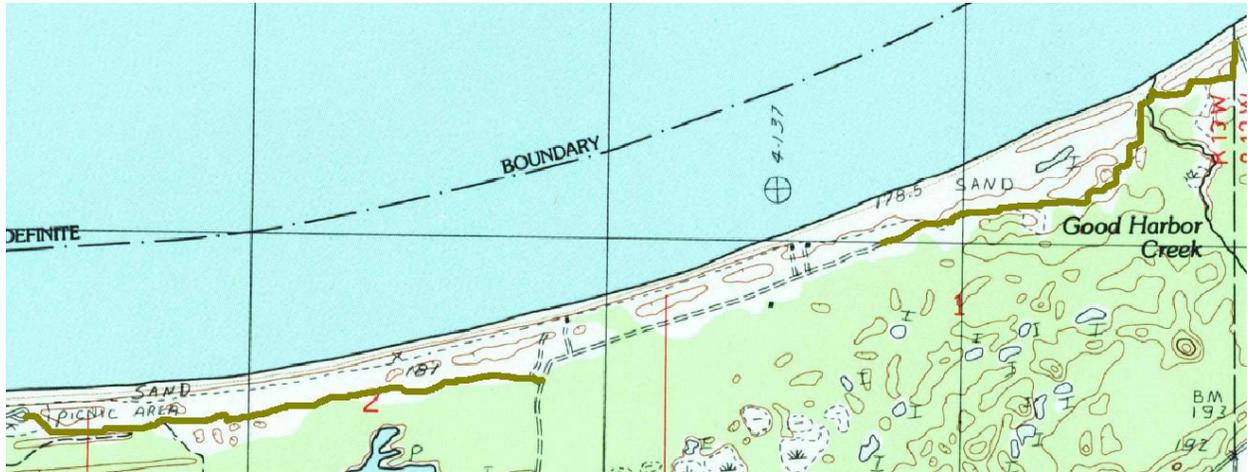
An alternative route would parallel the lakeshore starting at the facilities at the end of County Road 669 and continue to the facilities at the end of County Road 651. This trail route would use existing roads as well as travel historical road beds that run along the lakeshore.



The Trail route would be as follows:

- a) From M22 and CR669, proceed north on 669 to the end of road at Lake Michigan, where there is improved parking and restroom facilities. The 100-foot buffer between the road and the “wilderness” designated area allows the Trail to be routed here.
- b) Proceed east 4500 feet on Lake Michigan Road to the end of road. The trail can use the existing road or offset between the road and the beach. Again, the 100-foot buffer between the road and the designated “wilderness” area allows the Trail to be routed here.
- c) Construct a trail east another 4500 feet paralleling the shoreline to connect with existing Juniper Lane (as the map shows). This proposed routing passes through an existing picnic area and generally parallels along the beach at the transition area between dunes and forest. There would be no significant tree clearing necessary and the terrain is level and stabilized.
- d) Proceed east using the existing portion of Juniper Lane which runs approximately 4300 feet. Juniper Lane is a gravel two track road which has been graded after work last summer. No tree clearing is necessary.

- e) At the end of Juniper Lane, construct a trail eastward approximately 3400 feet following the old beach trail to the end of CR651 at the beachhead. There is substantial parking at this location and improved facilities, making it an ideal staging area for trail users. Again, this portion of the trail parallels the shore and runs along the forest transition area avoiding any critical dune areas.



There are many advantages to this alternative route that merits consideration, including:

- a) It provides an enhanced natural experience to the trail user, including the sights and sounds of Lake Michigan. This route creates a far superior trail experience for recreational users (walkers, bikers, roller bladders, wheel chairs, cross country skiers) than a trail along Traverse Lake Road.
- b) It avoids the wetland areas near Shalda Creek and the Buffka Farm and eliminates the need for constructing a bridge over Shalda Creek.
- c) It avoids the need to excavate significant critical dune hills along Traverse Lake Road and along M-22 north of the Bufka Farm. The route along the Lake is relatively flat, requiring no cutting and filling.
- d) There are few trees required to be cut and removed due to the sparse tree population along this route, avoiding clearing a major swath through mature forests along Traverse Lake Road. This route would be very similar to the Dune Climb to Glen Haven portion of the trail currently under construction.
- e) It utilizes facilities and parking in existence at the end of two county roads. This is a huge advantage to the routing the trail along the Lake.
- f) It utilizes an existing gravel road (Juniper Lane) which requires minimal preparation for trail construction.
- g) Construction costs are significantly less than the construction required along M-22 and Traverse Lake Road. Trail construction costs would be similar to those currently experienced from the Dune Climb to Glen Haven. The current Traverse Lake Road route will accrue substantial construction costs with wetland crossings, creek crossing, forest clearing, major dune excavation, and cutting and filling of hills and valleys north of Bufka farm.

- h) The trail route still maintains the contiguous undisturbed habitat within the proposed wilderness area, with the trail being located on the peripheral edge of the core area. It leaves intact one of the most significant wildlife habitats and travel corridors which includes the cedar wetlands south of Bufka farm and north of Traverse Lake Road and also includes the hills to the west. This is one of the prime hunting areas in the Lakeshore, which will be dissected by the current trail route from Traverse Lake Road to the Bufka Farm.
- i) It maintains the natural beauty of M-22 and Traverse Lake Road. It also avoids the negative impact of trail traffic on private property owners and local residents. It also avoids any potential safety concerns of running a trail along Traverse Lake Road.
- j) Since the route along the Lake would be similar to the Dune Climb to Glen Haven portion, the assessment of environmental impact would be similar to those identified in constructing the current trail for that portion. The assessment scoring would certainly be significantly less than an accurate assessment being done for the proposed Traverse Lake Road route. It would be aesthetically more appealing, avoiding significant public opposition to the impacts of the proposed Traverse Lake Road route.

**Table of Comparison – Traverse Lake Road (TLR) and Along the Shore**

<b>Variable</b>	<b>TLR</b>	<b>Shore</b>
No Wetlands		X
No Significant Creeks		X
No Mature Forest Clearing		X
Flat Topography - No Critical Dune Hills		X
No Public Safety Issues		X
No Residential Impact		X
Lower Construction Cost		X
Existing Parking & Restroom Facilities		X
More Recreational Opportunities		X
Superior User Experience		X
Wilderness Impact	-	-
Existing Roads	X	X

There may be an objection to this alternative route due to its location within the proposed wilderness area but this can easily be addressed based on precedence set in the Park and modified as part of a much needed updated public comment process as discussed earlier. The wilderness areas have been modified over time and have currently been tweaked recently since the park management maps were adopted in 2008. For example, the boundary line of the wilderness area on the map was subsequently modified to accommodate the proposed trail near the Bufka Farm and the wilderness areas have been modified to accommodate the trail from Dune Climb to Glen Haven. The wilderness

boundary area was also drawn to exclude a 100 foot buffer around roads that transect into the heart of proposed wilderness areas. The northern boundary of the proposed wilderness area could be modified to accommodate the Heritage Trail as has been done elsewhere throughout the Park.

In addition, an exception was made with the Cottonwood trail located within proposed wilderness area:

"(4) Central area of the mainland - Sleeping Bear Plateau - with a wilderness exclusion for the Cottonwood Trail to provide an opportunity for large groups to experience the namesake Sleeping Bear Dunes." (Lakeshore General Management Plan, Chapter 4 page 61)

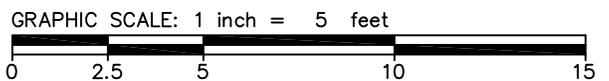
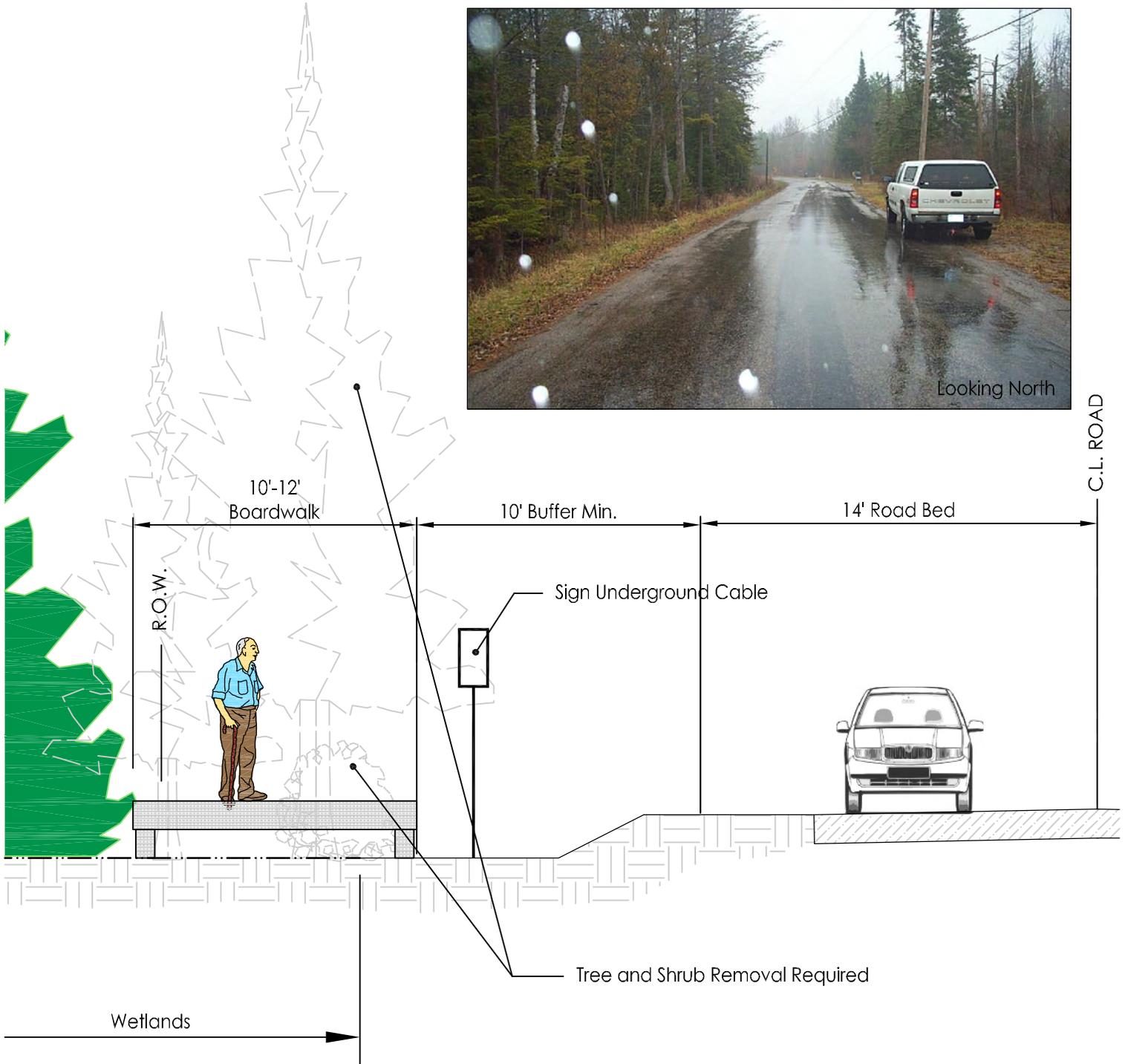
The proposed wilderness area can easily be amended with similar language referencing the Heritage Trail and providing a similar wilderness exclusion:

"a wilderness exclusion for the Sleeping Bear Heritage Trail to provide a unique recreational opportunity for visitors to experience the diverse, varied and protected landscapes that make up the natural beauty of Sleeping Bear National Lakeshore."

This alternative route along the Lake could provide an experience that rivals or surpasses the Huron Sunrise Trail, which stretches four miles along the beach area of Lake Huron between Hoefft State Park and Rogers City. It is regarded as one of Michigan's most beautiful trails. Routing the Heritage Trail along the Lake Michigan shoreline would certainly provide an opportunity to create a unique legacy and superior experience – thus being known as "America's Most Beautiful Trail."

**Addendum B: Cross Sections**  
(Please see following pages)

# Cross Section A



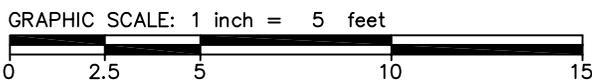
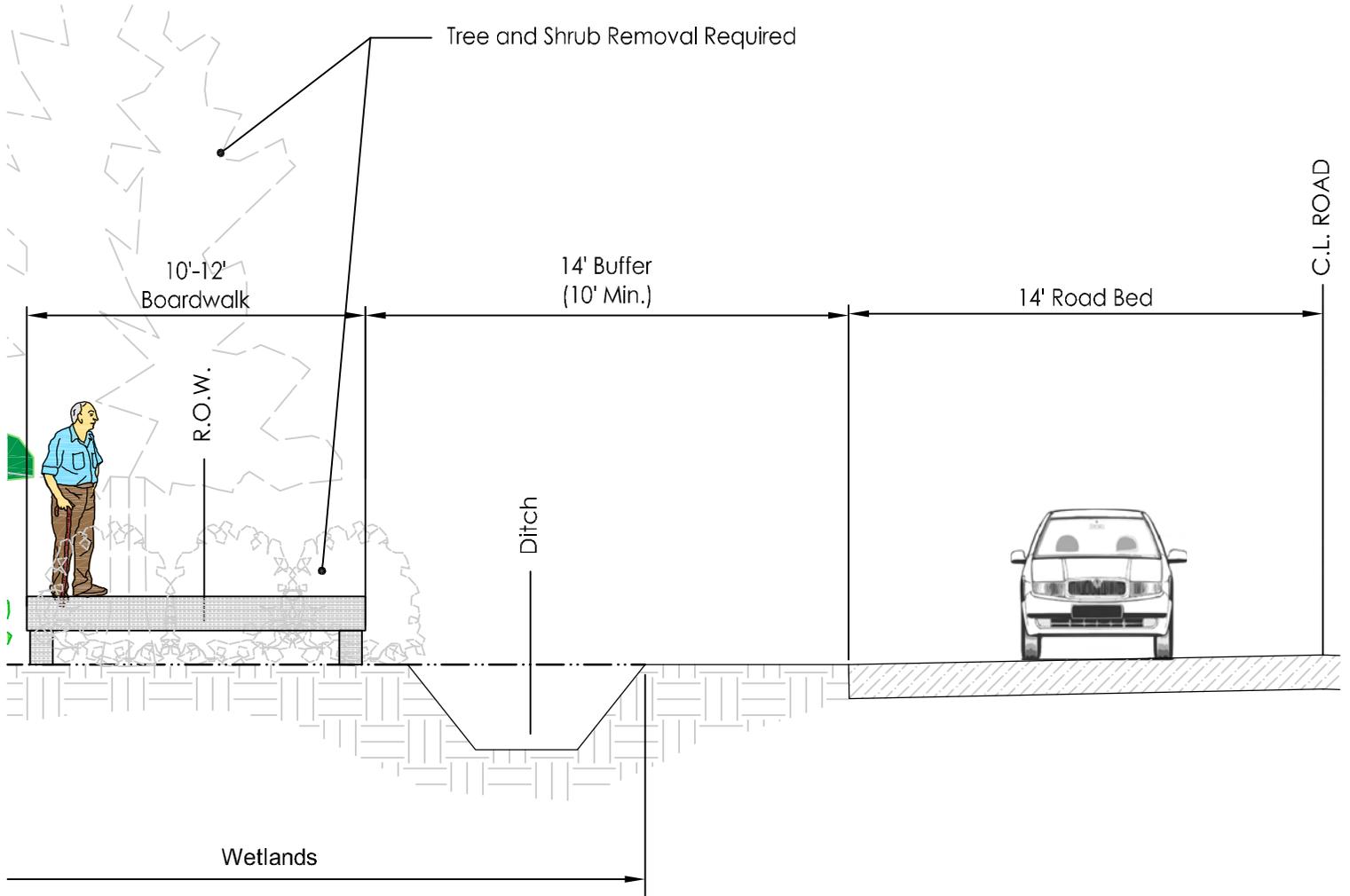
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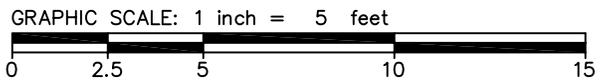
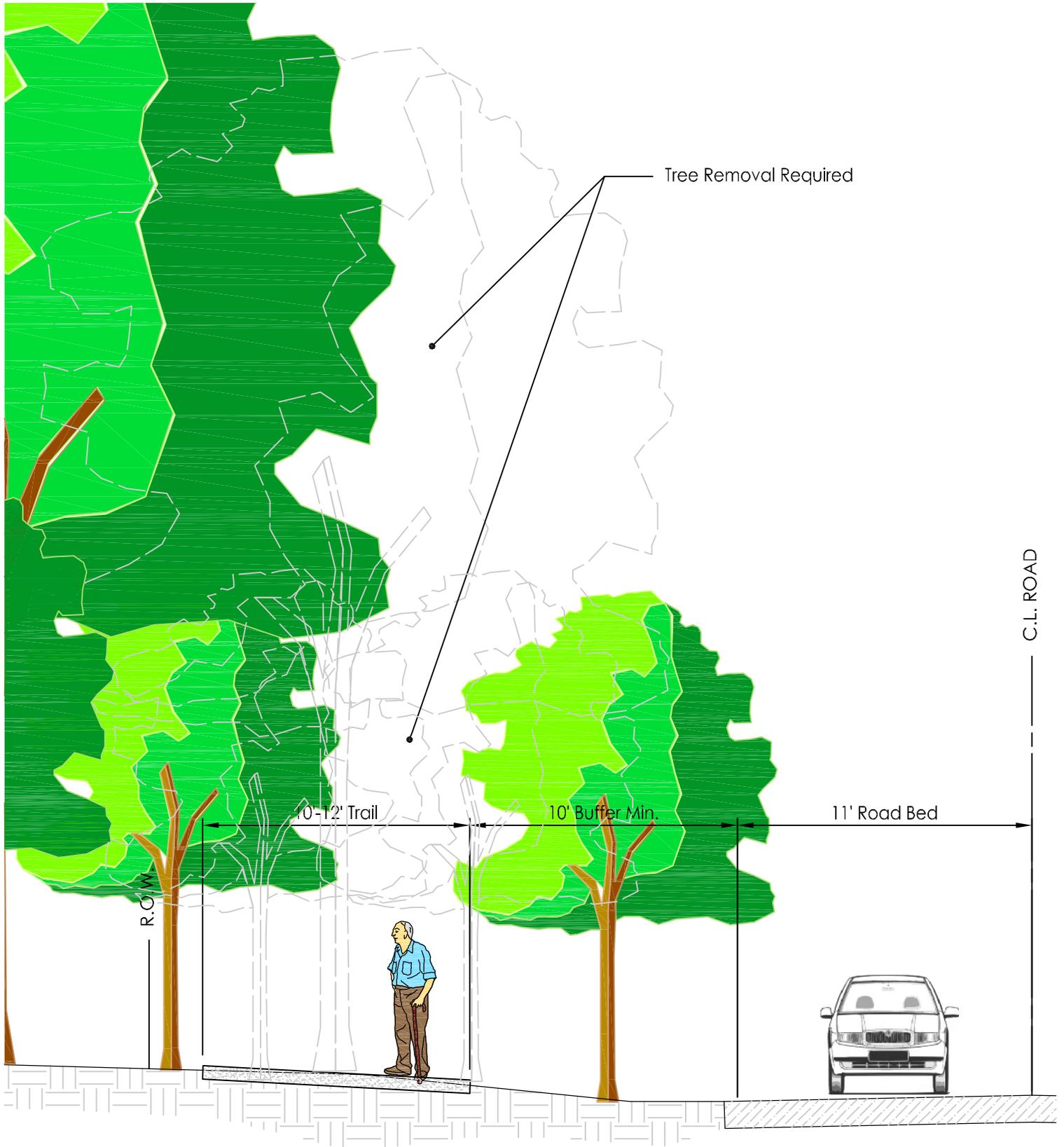
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 www.maaeps.com

DRN: MKG	CKD: MKG
Little Traverse Lake Heritage Trail - Way Point #2 Cleveland Township, Leelanau County, Michigan	
12/29/11	
11092	
SHT 1 OF 6	

# Cross Section B



# Cross Section C



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Little Traverse Lake  
 Heritage Trail - Way Point #6  
 Cleveland Township, Leelanau County, Michigan

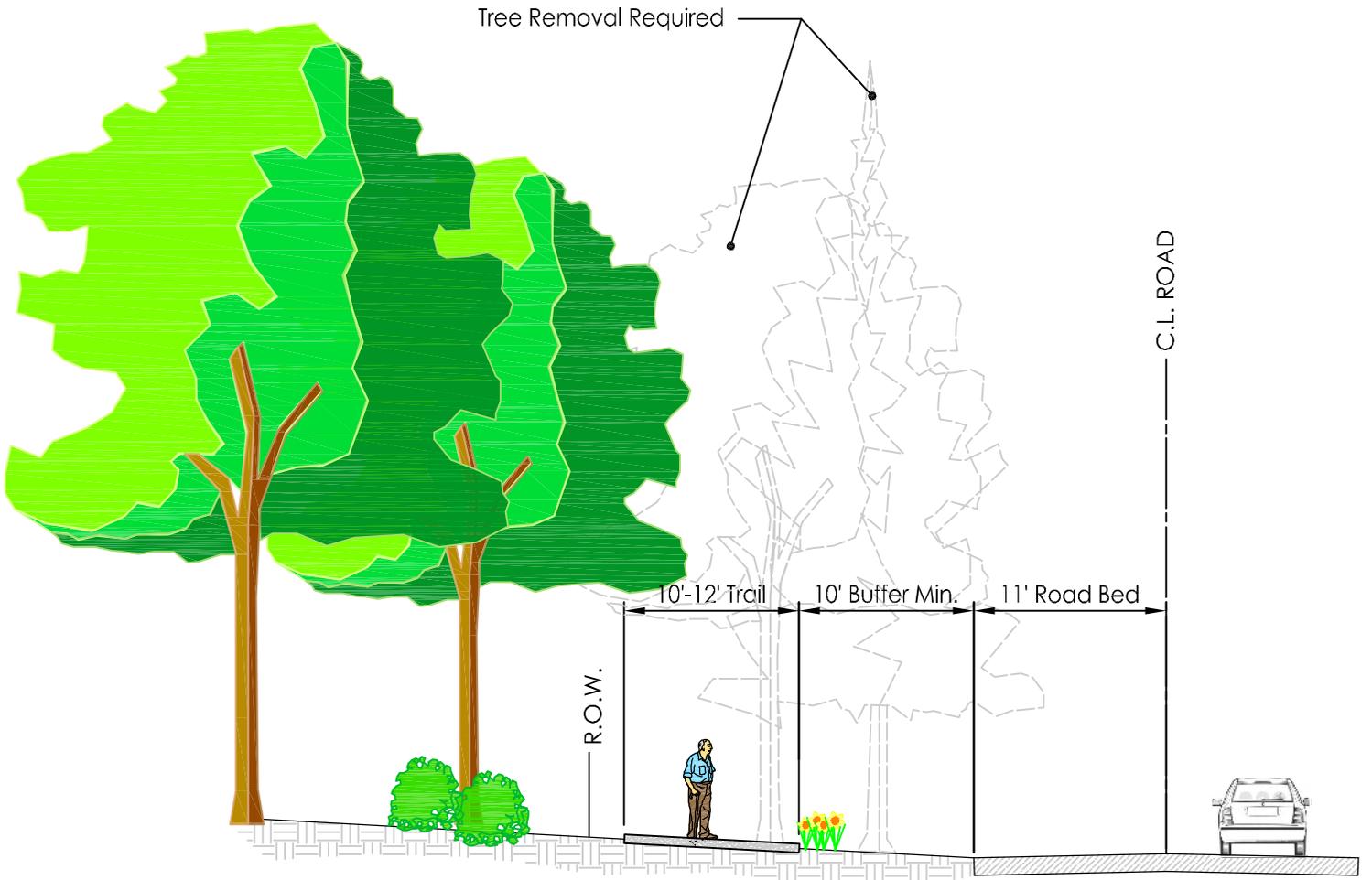
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SHT 3 OF 6

# Cross Section D



GRAPHIC SCALE: 1 inch = 10 feet



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Little Traverse Lake  
 Heritage Trail - Way Point #7  
 Cleveland Township, Leelanau County, Michigan

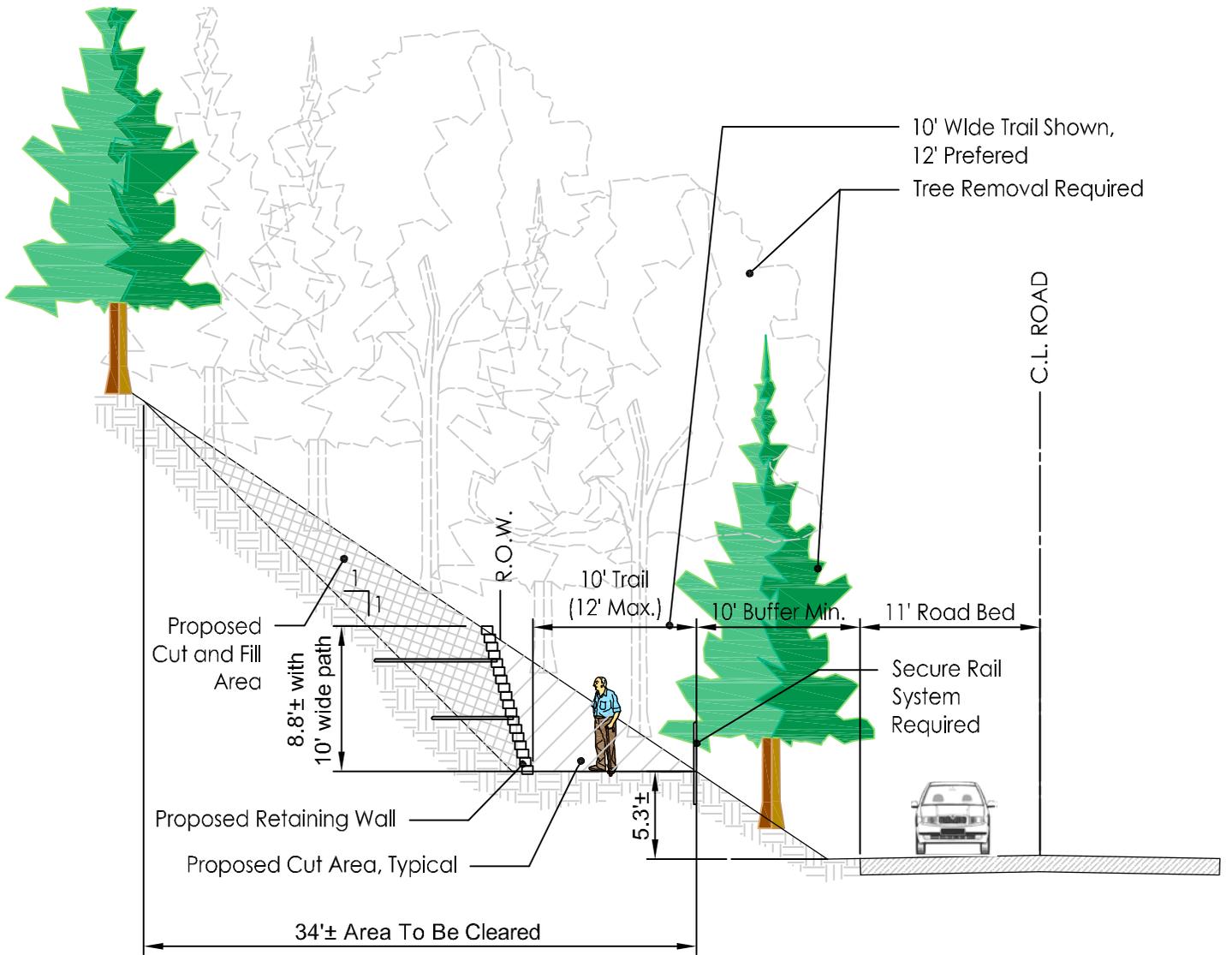
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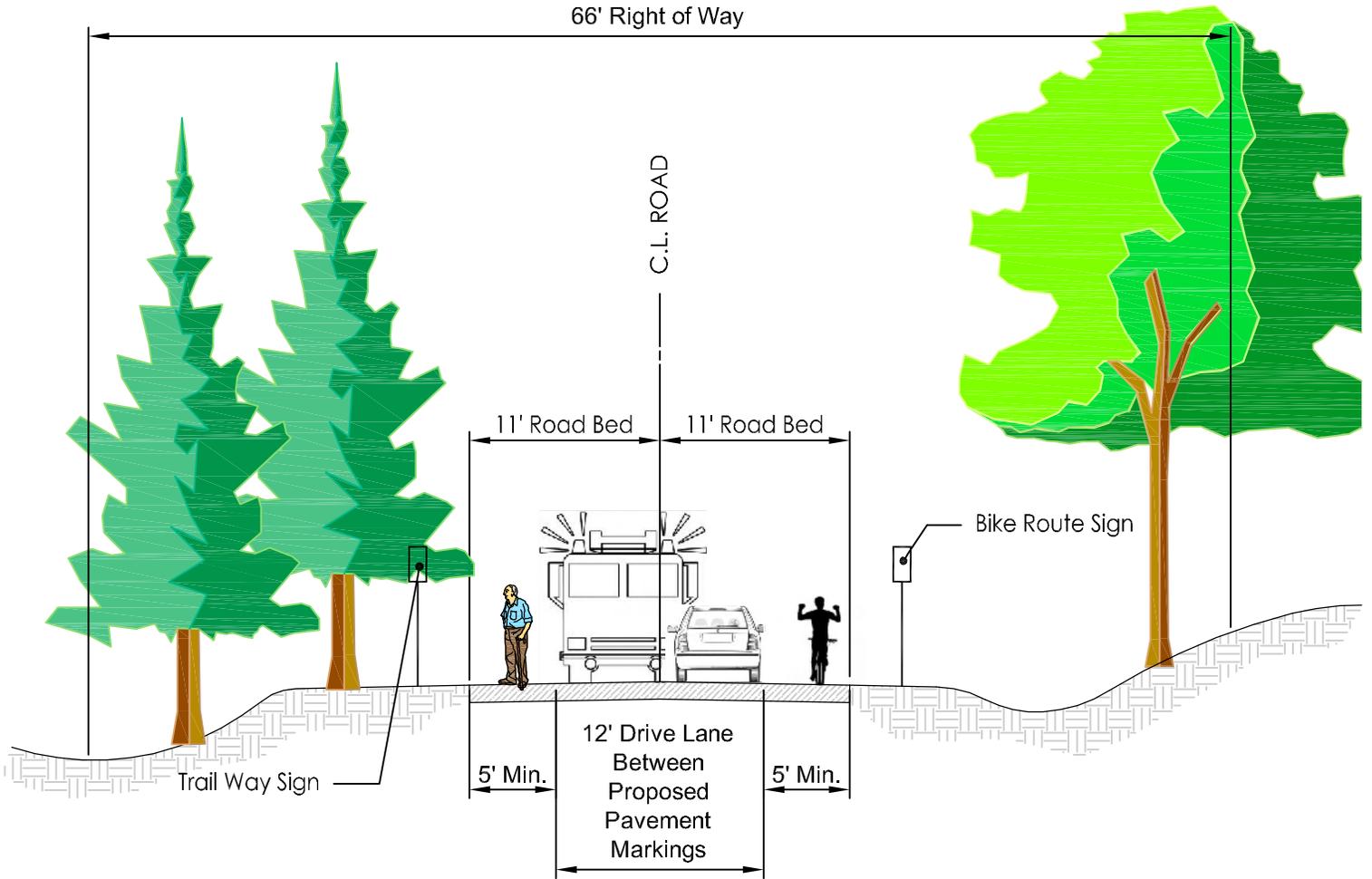
# Cross Section E



GRAPHIC SCALE: 1 inch = 10 feet



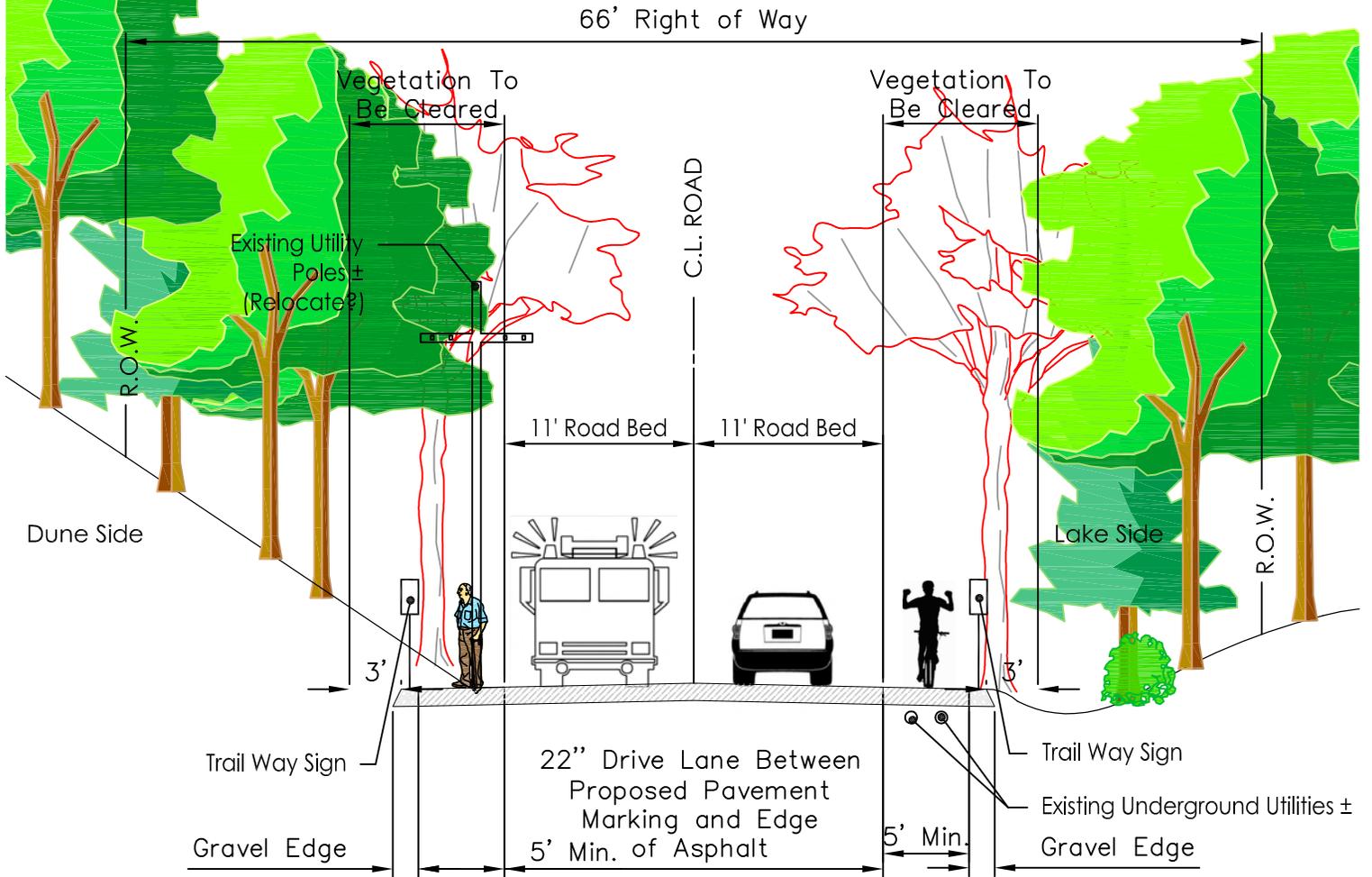
# Cross Section as Proposed in Chapter 5 - Cost Projections



GRAPHIC SCALE: 1 inch = 10 feet



# Cross Section as Recently Proposed By: Leelanau Scenic Heritage Route Committee; Sleeping Bear Dunes National Lakeshore; Friends of the Sleeping Bear Dunes, Inc.; TART Trails, Inc.



GRAPHIC SCALE: 1 inch = 10 feet



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SHT 1 OF 1