

DESIGN EXCEPTION REPORT

Bicycle and Pedestrian Improvements along Beach Road From Existing Shared Use Path to Five Corners

*Tisbury, Massachusetts
MassDOT Project #607411*

Prepared for:



**Massachusetts Department of Transportation Highway Division
Ten Park Plaza
Boston, Massachusetts**

May 2015

*It is my professional opinion that this design
is safe and appropriate for this roadway.*

GPI Greenman-Pedersen, Inc.

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1.0 EXECUTIVE SUMMARY

1.1 Background

The project includes the Beach Road corridor from the termination of the existing Shared Use Path to the Five Corners intersection (Beach Road/Lagoon Pond Road/Water Street and Beach Street Ext.) in Tisbury, Massachusetts. A project location map is provided in the Appendix. The project limits along the corridor extend approximately 2,600 feet (0.49 miles) along Beach Road.

The purpose of the project is to improve pedestrian and bicycle accessibility as well as vehicular safety throughout the corridor.

The improvements proposed by this project are intended to enhance safety conditions, extend existing bicycle and pedestrian amenities and meet current ADA standards throughout the project. Specifically, the project entails adding sidewalks and shoulders to both sides of the roadway to extend from the multiuse path along the Beach Road causeway to the Five Corners intersection (Beach Road/Lagoon Pond Road/Water Street and Beach Street Ext.).

The project is scheduled to be funded through the 2017 Transportation Improvement Program for the Martha's Vineyard Commission.

1.2 Proposed Project

The purpose of this project is to provide improved on-road bicycle accommodation and off-road pedestrian accommodation along Beach Road. Geometric improvements are also proposed where possible. In addition to geometric improvements, the project includes pavement overlay, full depth pavement reconstruction, drainage improvements, ADA compliant cement concrete sidewalks and wheelchair ramps, granite curbing, as well as new pavement markings and signing throughout the corridor. The proposed project includes a typical section of 10.5 foot travel lanes, 4.5 foot shoulders and a 6 foot sidewalk. This cross section was mutually agreed upon between MassDOT and the Town at the meeting on December 3, 2014.

1.3 Design Exceptions

This report is prepared in accordance with Massachusetts Highway Department's 2006 Project Development and Design Guide. Design Exception is requested as follows:

Pedestrian Accommodation – Sidewalk Width

A design exception is requested for the minimum sidewalk width. The minimum width for sidewalks is 5 feet (excluding curb). There are 2 locations along Beach Road that fall below the minimum 5 foot width. This is due to the fact that there is a building located at the back of sidewalk at one location and a large concrete retaining wall at the back of sidewalk at the other location. The project's goal is to minimize right-of-way and construction impacts to abutters. A 4.5 foot sidewalk is being provided in this area and will extend for 193 feet.

Bicycle Accommodation – Shoulder Width

A design exception is requested for the minimum width for a bicycle lane. The minimum width for a bicycle lane is 5 feet. The lane width being proposed throughout the project is 4.5 feet. This is due to the fact that the project's goal is to minimize right-of-way and construction impacts to abutters.

Travel Lane Width

A design exception is requested for the minimum travel lane width. The minimum travel lane width is 11 feet. The travel lane width being proposed throughout the project is 10.5 feet. This is due to the fact that the project's goal is to minimize right-of-way and construction impacts to abutters.

Horizontal Alignment – Curve Radius

A design exception is requested for horizontal curves with a normal crown (Exhibit 4-9) and with a 4% slope (Exhibit 4-8). The minimum radius for curves with a 35 mph design speed and normal crown is 510 feet. The minimum radius for curves with a 35 mph design speed and 4% slope is 375 feet. There are two curves on the project that do not meet these requirements. It is important to note that the proposed Beach Road baseline reflects the existing 1954 State Highway baseline where the curves are also below the required minimum. There are no perceived concerns with the horizontal alignment today. Any changes to the alignment to meet the requirements would cause extensive right-of-way and construction impacts to abutters.

Horizontal Alignment – Length of Curve

A design exception is requested for the minimum length of curve. The minimum length for curves with a 35 mph design speed is 525 feet. All lengths of curve along the Beach Road proposed baseline are below the required minimum. This is due to the fact that the existing geometry has curves of this length and the project's goal is to minimize right-of-way and construction impacts to abutters. There are five curves along Beach Road that do not meet the minimum length.

Tisbury, Massachusetts

Section 4 of this report provides more information on the requested design exception.

Tisbury, Massachusetts

2.0 EXISTING CONDITIONS

2.1 Location

A locus map of the project area is provided in the Appendix.

2.2 Functional Classification and Land Uses

Beach Road is a two-lane road with a Functional Classification of “Urban Principal Arterial” that runs in an east/west direction. It primarily serves as a connection from the Vineyard Haven section of Tisbury to the west to Oak Bluffs to the east across the entrance of Lagoon Pond. The section of Beach Road within the project limits is a varied mix of retail, commercial and industrial uses. There are active boat yards, piers, motels, gas stations, restaurants, fuel storage tanks, pharmacies and hardware stores.

2.3 Traffic Character and Volumes

Following is a summary of the traffic characteristics along Beach Road:

- An Average Daily Traffic Volume of 13,500 vehicles.
- An average daily truck percentage of 3.5%.

2.4 Speeds

The posted speed within the project limits varies between 20 miles per hour (mph) to 40 mph dependent upon roadway alignment and surrounding land use. The east portion of the project corridor, beyond the large bend, has a posted speed of 40 mph. When entering the curve in the roadway, just east of Vineyard Haven Marina, the speed limit is 35 mph. Within the westerly portion of the project, between the Five Corners intersection and the large bend, the posted speed limit drops to 20 mph.

2.5 Crash Data

From the Functional Design Report, prepared by Greenman-Pedersen, Inc.;

Crash data has been researched from MassDOT records for the latest available five-year period (2008-2012). While the number of crashes is important, the crash rate is more significant as it accounts for the volume of traffic along a roadway segment. Accordingly, the crash rate was calculated for the study area roadway segments and compared with the averages. A segment crash rate is a measure of the frequency of crashes compared to the volume of traffic along that roadway segment and the segment length in miles and is presented in crashes per million vehicle miles traveled (c/mvmt).

Beach Road is classified as Urban Principal Arterial. The statewide average crash rate for Urban Roadways is 2.08 c/mvmt and the average crash rate for Urban Principal Arterials is 3.35 acc/mvmt. A comparison of the calculated crash rate to these averages can be used to establish the significance of crash occurrence and whether or not potential safety problems exist. Table 3 illustrates the results of the crash analysis.

The roadway segment of Beach Road between the termination of the existing Shared Use Path and Five Corners intersection (Beach Road/Lagoon Pond Road/Water Street/Beach Street and Beach Street Ext.) experienced 10 reported crashes over the five-year period studied (2 per year average). According to the crash data, 55 percent of the crashes involved property damage only and 30 percent of them resulted in non-fatal injuries. There were no fatalities reported. Most of the crashes along this roadway segment occurred during off peak periods. Two crashes (20 percent) were reported to have occurred during the morning peak period (7:00AM – 9:00AM) and one crash (10 percent) was reported to have occurred during the evening peak hour period (4:00PM – 6:00PM). The calculated crash rate for this roadway segment is 0.80 c/mvmt, which is lower than the statewide averages for Urban Roadways and for Urban Principal Arterials. Please refer to the Functional Design Report for the MassDOT Segment Crash Rate Worksheet.

2.6 Existing Lane and Shoulder Widths

The existing pavement width of Beach Road is approximately 30 feet and consists of one travel lane in each direction. The travel lane widths are approximately 12 feet with 3 foot shoulders. The edge of pavement is generally defined by vertical granite and concrete curbing with bituminous sidewalk along portions of the corridor.

2.7 Right-of-Way Layouts

The existing layout along Beach Road is generally 40 feet of State Highway Layout.

2.8 Environmental Factors

Site visits and review of MassGIS Oliver mapping indicate wetland resources areas (Coastal Beaches and Salt Marsh) are adjacent to or within 100 feet of the project limits. Resource areas will be survey located and provided at the 75% Design Submission.

2.9 Cultural Resources

The Massachusetts Cultural Resource Information System (MACRIS) was searched to locate cultural and historical resource within the project limits. There is one property located within the project limits, the Matha's Vineyard Co-Op Grocery Store. In the close vicinity of the project is the Ritter House, located on Beach Street.

The National Register of Historical Places was also searched to locate any historical places within the project limits. There are four historical properties listed within the Town of Tisbury including the Ritter House, however there are no located within the project limits.

3.0 PROPOSED IMPROVEMENTS

3.1 Project Description

The project involves the reconstruction of the Beach Road corridor to provide improved on-road bicycle accommodation where feasible and off-road bicycle and pedestrian accommodation. Geometric improvements are also proposed where possible. In addition to geometric improvements, the project includes pavement overlay, full depth pavement reconstruction, drainage improvements, ADA compliant cement concrete sidewalks and wheelchair ramps, granite curbing, as well as new pavement markings and signing throughout the corridor. The proposed project includes a typical section of 10.5 foot travel lanes and 4.5 foot shoulders. The project length along Beach Road is approximately 0.49 miles.

Tisbury, Massachusetts

3.2 Purpose

The primary objectives of this project are:

- Provide contiguous pedestrian accommodations
- Improve bicycle accommodations
- Improve pedestrian, bicycle and vehicular safety
- Reconstruct pavement along Beach Road
- Upgrade to the drainage system
- Improve geometry (where possible)

3.3 Improvements

The proposed project as summarized in Section 1.2 of this report will result in a substantial improvement to both pedestrian and bicycle accommodations while also improving the safety of vehicular travel. The improvements will also provide substantial drainage benefits and pavement reconstruction. The cross section of Beach Road will also be more consistent and have better delineation of travel lanes and shoulders through new signing and pavement markings.

The overall project length of roadway reconstruction is approximately 2,600 feet (0.49 miles). The proposed roadway improvements include full depth pavement reconstruction with limited milling and overlay at the project limits. The roadway will include minor widening in areas with improved realignment where possible.

4.0 DESIGN EXCEPTIONS

4.1 Controlling Criteria

As indicated in Section 1.3 of this report, design exceptions are requested for sidewalk width, bicycle lane width, travel lane width and for the length and radii of horizontal curves. The reason that the controlling criteria cannot be provided in accordance with MassDOT standards are as follows:

Sidewalk Width

There are two locations along Beach Road that do not meet the minimum 5 foot requirement (excluding curb). The location from Sta. 28+65 RT to Sta. 30+59 RT is a 4.5 foot sidewalk (excluding curb) for a length of approximately 193 feet due to the Martha's Vineyard Shipyard abutting the back of sidewalk. To meet the required sidewalk width, the building would have to at least be partially demolished, resulting in enormous right-of-way impacts with an associated substantial increase in construction cost. The location from Sta. 29+81 LT to Sta. 30+39 LT is a 4 foot sidewalk (excluding curb) for a length of approximately 58 feet due to a large concrete wall with barbed wire securing a large gas tank facility abutting the back of sidewalk. To meet the required sidewalk width, the concrete wall would have to be removed and rebuilt, which

would result in right-of-way impacts with an associated substantial increase in construction cost. However, according to the rules and regulations of the Massachusetts Architectural Access Board (AAB) as provided in 521CMR, a minimum 4 foot sidewalk is acceptable. Photos of the building and concrete wall are shown in the Appendix.

Bicycle Lane Width

The proposed cross section provides a 4.5' bike lanes extending throughout the length of the project. During the public coordination process there was immense pushback from property owners along the corridor to provide as much pedestrian access as possible while minimizing right-of-way impacts. The cross section was agreed upon by the Town and representatives from MassDOT at a meeting on December 3, 2014.

Travel Lane Width

The proposed cross section provides for 10.5' travel lanes extending throughout the length of the project. During the public coordination process there was immense pushback from property owners along the corridor to provide as much pedestrian access as possible while minimizing right-of-way impacts. The cross section was agreed upon by the Town and representatives from MassDOT at a meeting on December 3, 2014. This cross section also allows for a consistent roadway width throughout the project, if the travel lanes and bike lanes were increased to 11' and 5' respectively, there would be significant right-of-way issues where the project is bounded by the concrete retaining wall and building discussed in the sidewalk section.

Length and Radius of Horizontal Curve

To meet the required curve length and minimum radius, the roadway would have to be significantly realigned, resulting in enormous right-of-way impacts with an associated substantial increase in construction cost. A conceptual alignment was developed to illustrate the potential project impacts. The concept can be found in the Appendix. The proposed alignment included as part of the project was selected to best fit the existing roadway and right-of-way alignment. As shown in the conceptual alignment, providing the minimum horizontal alignment criteria results in an unrealistic project that would eliminate as many as 4 businesses.

4.2 Compatibility and Future Improvements

The project is being developed through close communication with MassDOT and the Town of Tisbury. There is no future roadway or utility reconstruction plans within the project limits.

5.0 RECOMMENDATION

Based on the justification presented in this report, it is requested that the horizontal alignment length of curve design exception for the improvements along Beach Road be approved. Reasonable engineering judgment has been applied during the design process, as follows:

- The proposed alignment best fits the existing right-of-way layout as well as the character of this mixed use area of Tisbury.

Tisbury, Massachusetts

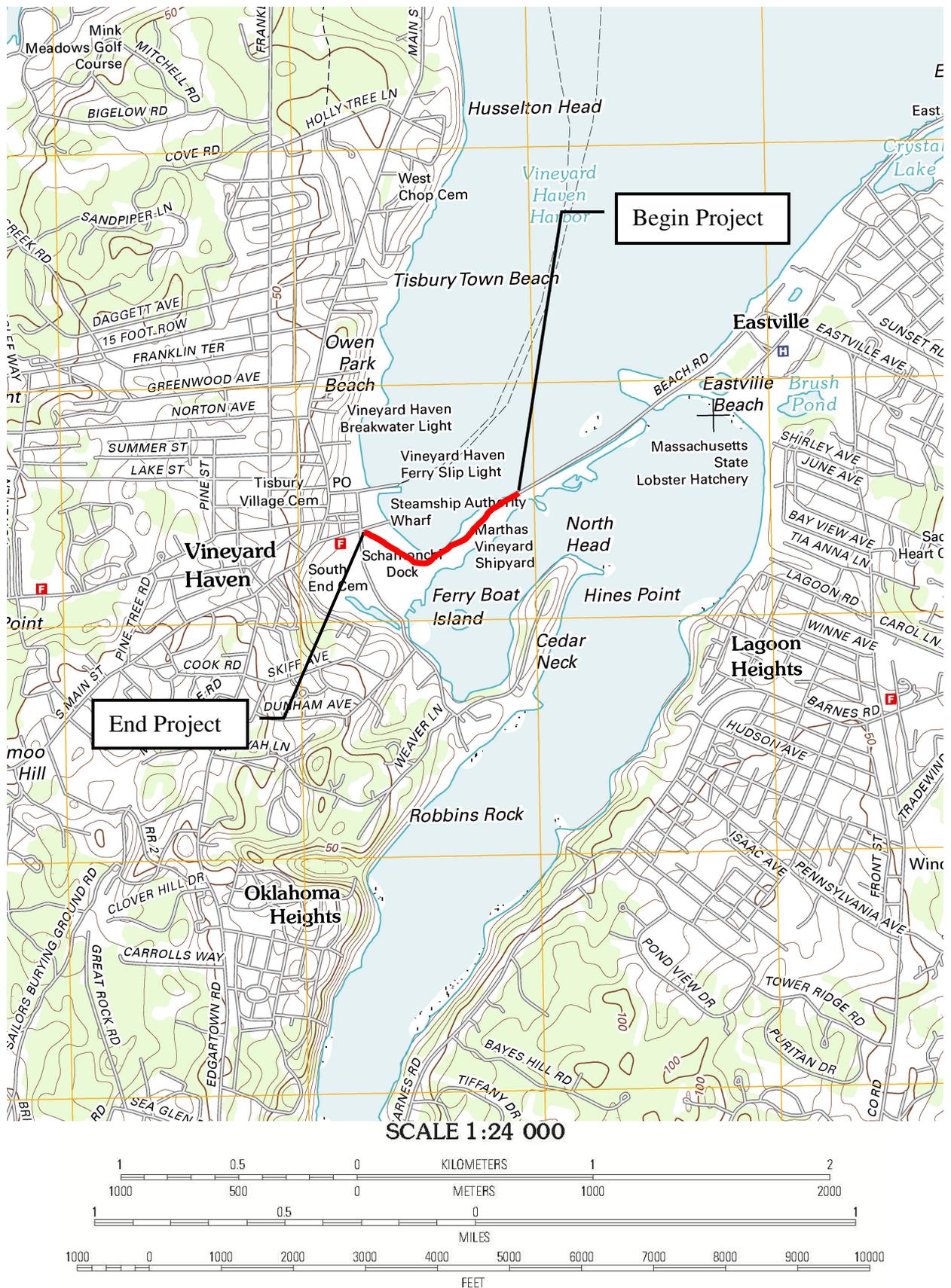
- The proposed project minimizes impacts to abutters and results in a project that is viable. An alignment that satisfies the horizontal design criteria would result in a project that is not feasible.
- The proposed project provides significant enhancement to on-road bicycle accommodation as well as off-road bicycle and pedestrian accommodation along Beach Road.

The proposed improvements include the proper balance between providing accommodations for all users and a design that is context sensitive.

APPENDIX

**PROJECT LOCATION MAP
CONCEPTUAL ALIGNMENT
DESIGN EXCEPTION WORKBOOK
PHOTOGRAPHS**

Tisbury, Massachusetts

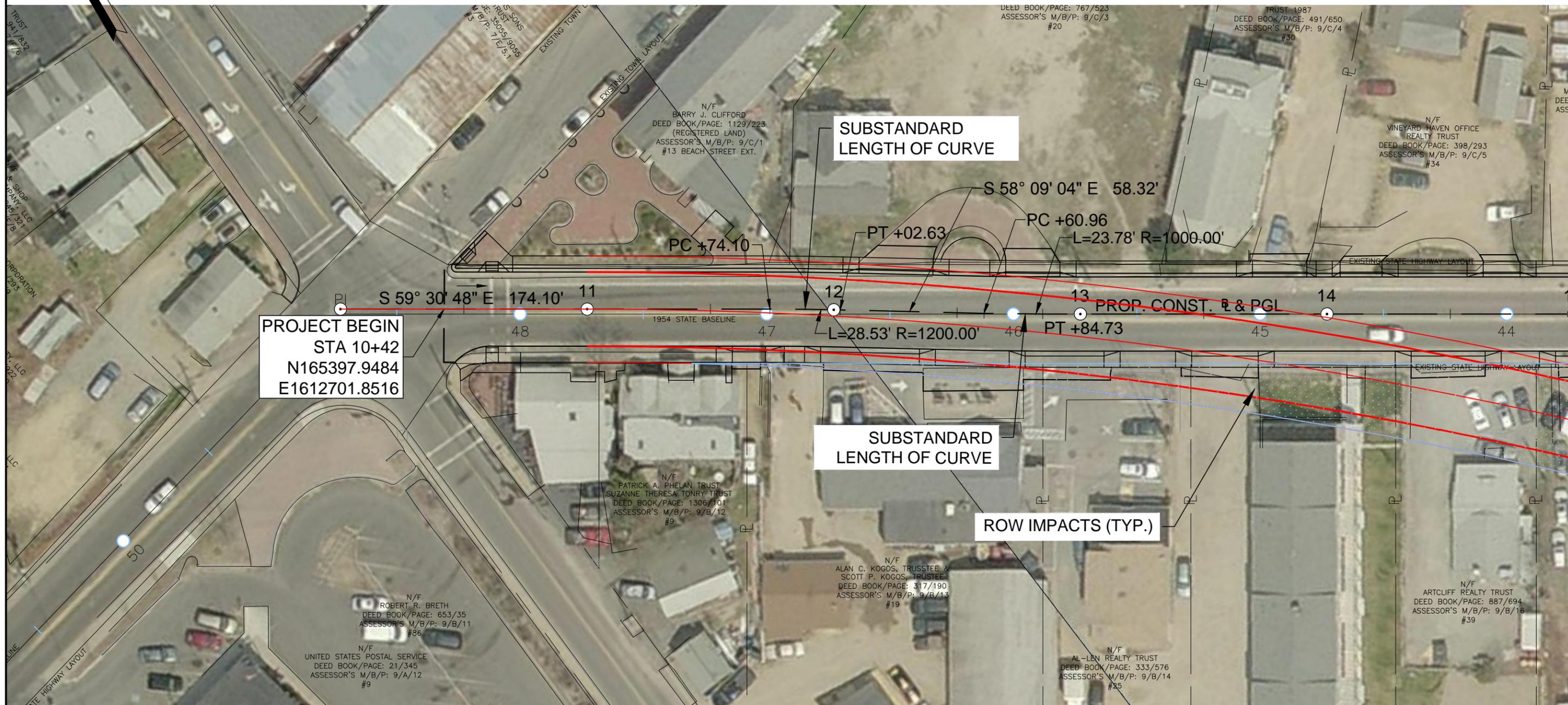
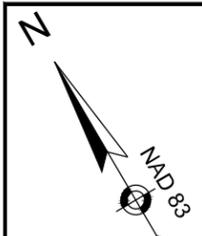


Project Locus Map

Figure 1

CONCEPTUAL ALIGNMENT

DER FIGURES
SUBSTANDARD
HORIZONTAL
CURVE RADII &
CURVE LENGTHS
SHEET 1 OF 5



PROJECT BEGIN
STA 10+42
N165397.9484
E1612701.8516

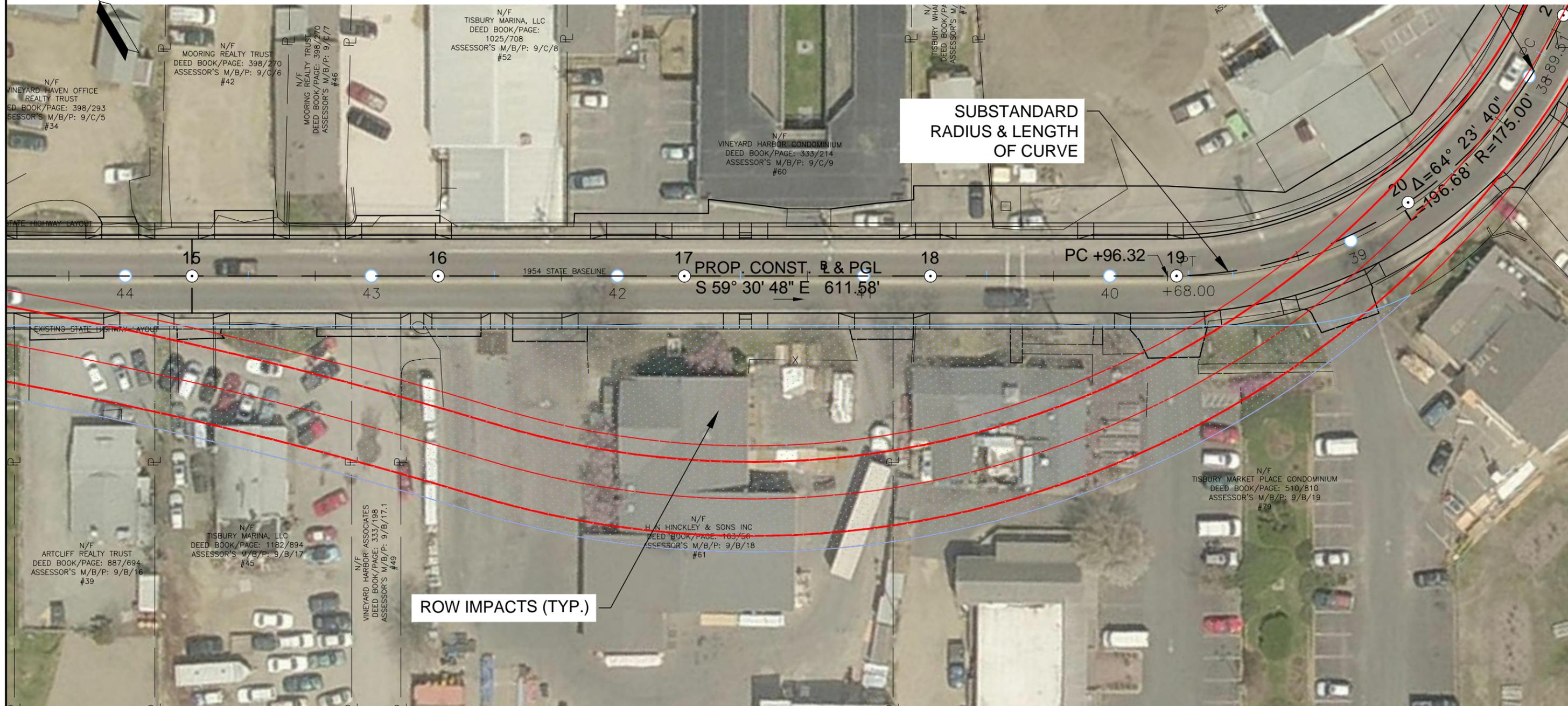
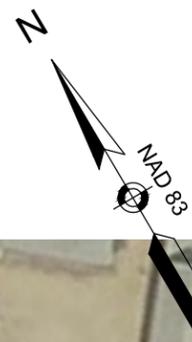
**SUBSTANDARD
LENGTH OF CURVE**

**SUBSTANDARD
LENGTH OF CURVE**

ROW IMPACTS (TYP.)



SCALE: 1" = 40'



N/F
VINEYARD HAVEN OFFICE
REALTY TRUST
DEED BOOK/PAGE: 398/293
ASSESSOR'S M/B/P: 9/C/5
#34

N/F
MOORING REALTY TRUST
DEED BOOK/PAGE: 398/270
ASSESSOR'S M/B/P: 9/C/6
#42

N/F
MOORING REALTY TRUST
DEED BOOK/PAGE: 398/270
ASSESSOR'S M/B/P: 9/C/7
#46

N/F
TISBURY MARINA, LLC
DEED BOOK/PAGE:
1025/708
ASSESSOR'S M/B/P: 9/C/8
#52

N/F
VINEYARD HARBOR CONDOMINIUM
DEED BOOK/PAGE: 333/214
ASSESSOR'S M/B/P: 9/C/9
#60

N/
TISBURY WHARF
DEED BOOK/PAGE:
ASSESSOR'S M/B/P:
#77

EXISTING STATE HIGHWAY LAYOUT

N/F
ARTCLIFF REALTY TRUST
DEED BOOK/PAGE: 887/694
ASSESSOR'S M/B/P: 9/B/16
#39

N/F
TISBURY MARINA, LLC
DEED BOOK/PAGE: 1182/894
ASSESSOR'S M/B/P: 9/B/17
#45

N/F
VINEYARD HARBOR ASSOCIATES
DEED BOOK/PAGE: 333/198
ASSESSOR'S M/B/P: 9/B/17.1
#49

N/F
H. N. HINCKLEY & SONS INC
DEED BOOK/PAGE: 183/56
ASSESSOR'S M/B/P: 9/B/18
#61

N/F
TISBURY MARKET PLACE CONDOMINIUM
DEED BOOK/PAGE: 510/810
ASSESSOR'S M/B/P: 9/B/19
#79

ROW IMPACTS (TYP.)

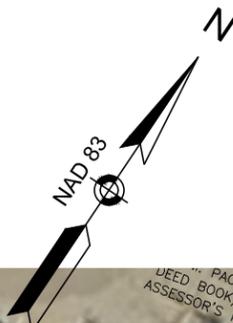
SUBSTANDARD
RADIUS & LENGTH
OF CURVE

20 Δ=64° 23' 40"
L=196.68' R=175.00'
PC +96.32
PT +68.00
3889.57

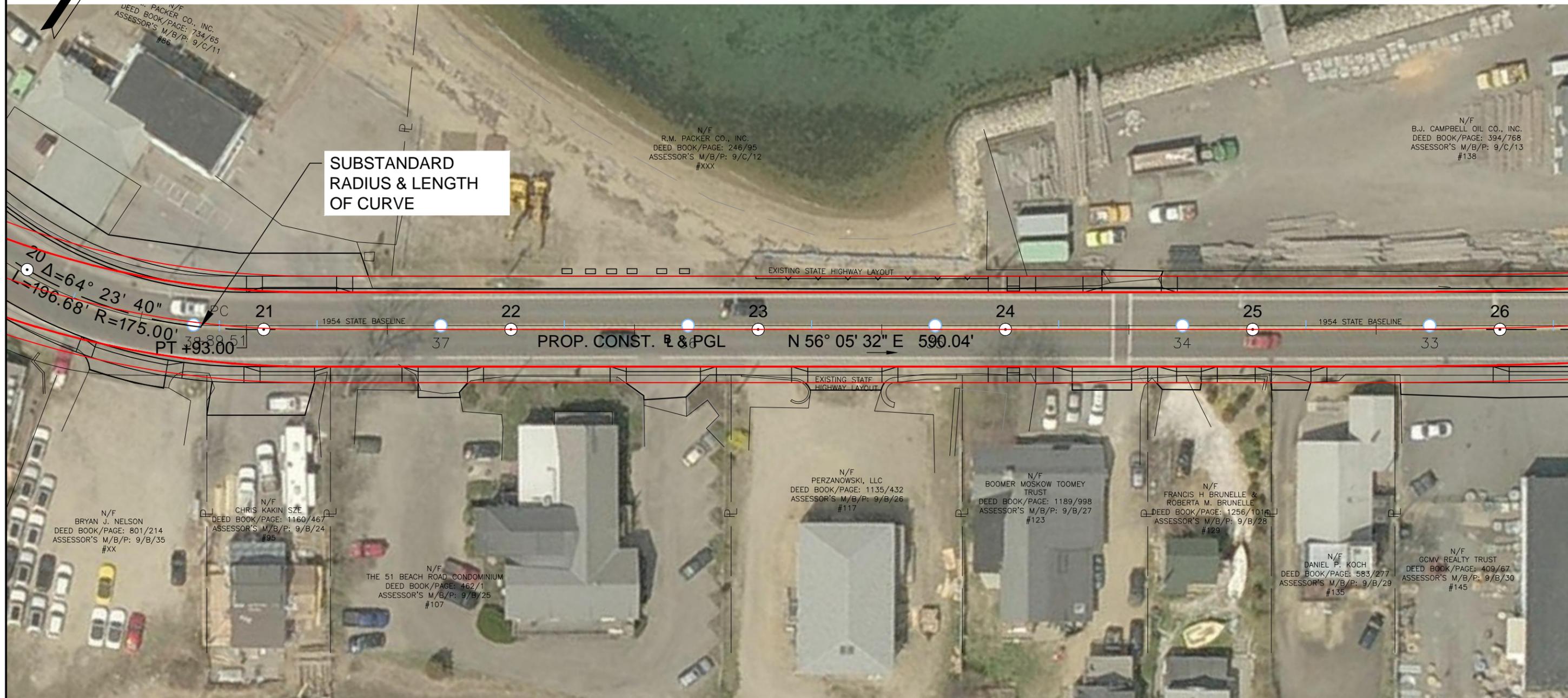


SCALE: 1" = 40'

DER FIGURES
 SUBSTANDARD
 HORIZONTAL
 CURVE RADII &
 CURVE LENGTHS
 SHEET 3 OF 5



**SUBSTANDARD
 RADIUS & LENGTH
 OF CURVE**



SCALE: 1" = 40'

N/F
 R.M. PACKER CO., INC.
 DEED BOOK/PAGE: 734/65
 ASSESSOR'S M/B/P: 9/C/11
 #66

N/F
 R.M. PACKER CO., INC.
 DEED BOOK/PAGE: 246/95
 ASSESSOR'S M/B/P: 9/C/12
 #XXX

N/F
 B.J. CAMPBELL OIL CO., INC.
 DEED BOOK/PAGE: 394/768
 ASSESSOR'S M/B/P: 9/C/13
 #138

N/F
 BRYAN J. NELSON
 DEED BOOK/PAGE: 801/214
 ASSESSOR'S M/B/P: 9/B/35
 #XX

N/F
 CHRIS KAKIN SZE
 DEED BOOK/PAGE: 1160/467
 ASSESSOR'S M/B/P: 9/B/24
 #95

N/F
 THE 51 BEACH ROAD CONDOMINIUM
 DEED BOOK/PAGE: 462/1
 ASSESSOR'S M/B/P: 9/B/25
 #107

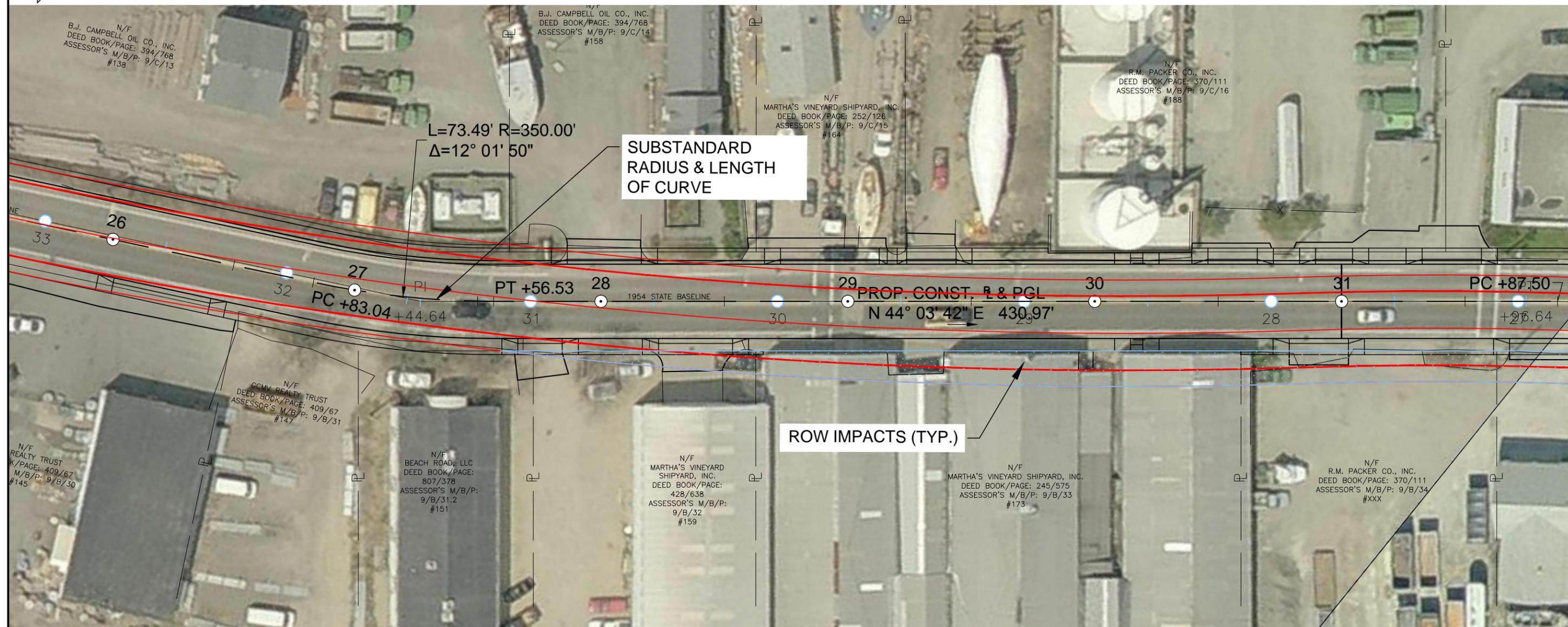
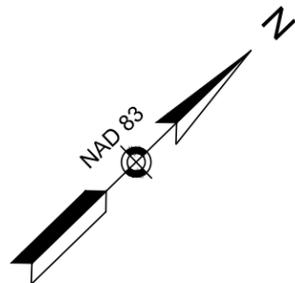
N/F
 PERZANOWSKI, LLC
 DEED BOOK/PAGE: 1135/432
 ASSESSOR'S M/B/P: 9/B/26
 #117

N/F
 BOOMER MOSKOW TOOMEY
 TRUST
 DEED BOOK/PAGE: 1189/998
 ASSESSOR'S M/B/P: 9/B/27
 #123

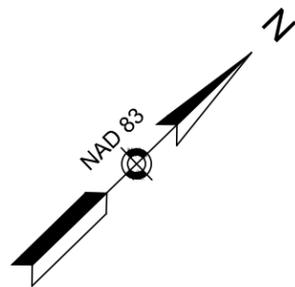
N/F
 FRANCIS H. BRUNELLE &
 ROBERTA M. BRUNELLE
 DEED BOOK/PAGE: 1256/1016
 ASSESSOR'S M/B/P: 9/B/28
 #129

N/F
 DANIEL P. KOCH
 DEED BOOK/PAGE: 583/277
 ASSESSOR'S M/B/P: 9/B/29
 #135

N/F
 GCMV REALTY TRUST
 DEED BOOK/PAGE: 409/67
 ASSESSOR'S M/B/P: 9/B/30
 #145



SCALE: 1" = 40'



SUBSTANDARD
LENGTH OF CURVE

END PROJECT
STA. 36+60.00
MEET EXISTING
N165920.0100
E1614856.9914



SCALE: 1" = 40'

Tisbury, Massachusetts

DESIGN EXCEPTION WORKBOOK

MASSDOT DESIGN CRITERIA WORKBOOK

Project: Beach Road Reconstruction, Tisbury, MA

Project File No.: 607411

I. Project Description

A. Type of Work Proposed

- | | |
|---|--|
| <input type="checkbox"/> New Construction | <input type="checkbox"/> Bridge Replacement/Rehabilitation |
| <input checked="" type="checkbox"/> Full Depth Reconstruction | <input type="checkbox"/> Intersection Improvement |
| <input type="checkbox"/> Reclamation | <input type="checkbox"/> Other |
| <input checked="" type="checkbox"/> Resurfacing/Box Widening | |

B. Primary Purpose of Project

- | | |
|--|--------------------------------------|
| <input type="checkbox"/> Additional Capacity | <input type="checkbox"/> Maintenance |
| <input checked="" type="checkbox"/> Safety Improvement | <input type="checkbox"/> Other |

Brief Project Description: The project involves the reconstruction of Beach Road from the Five Corners Intersection to the termination of the Shared Use Path on Beach Road. The purpose of the project is to enhance safety conditions, extend existing bicycle and pedestrian amenities and to meet ADA standards throughout the project. This will be accomplished by replacing or adding sidewalks and shoulders to both sides of the roadway along with the roadway reconstruction.

C. 3R Project? Yes No

D. Footprint Bridge Project? Yes No

II. Description of Facility

A. Functional Classification

- | | |
|--|--|
| <input type="checkbox"/> Urban Freeway | <input type="checkbox"/> Rural Freeway |
| <input checked="" type="checkbox"/> Urban Arterial | <input type="checkbox"/> Rural Arterial |
| <input type="checkbox"/> Urban Collector | <input type="checkbox"/> Rural Collector |
| <input type="checkbox"/> Urban Local | <input type="checkbox"/> Rural Local |

If Roadway Type differs from Functional Classification, describe here: _____

B. NHS Interstate Yes No

Other NHS Yes No

MASSDOT DESIGN CRITERIA WORKBOOK

Project: Beach Road Reconstruction, Tisbury, MA

Project File No.: 607411

Exempt. Exemption Type:

Pedestrian Accommodation

Sidewalk Presence

Refer to Healthy Transportation Policy Directive P-13-0001.

Minimum Number of Sidewalks 2

Proposed Number of Sidewalks 2

Design Exception required.

Sidewalk Width

Refer to Engineering Directive E-14-001.

Minimum 5'

Proposed 4.5'-6.5'

Design Exception required.

Accessibility

Refer to Notes on Walks and Wheelchair Ramps for Designers and Construction Engineers, issued under Engineering Directive E-12-005.

Variance required from the Massachusetts Architectural Access Board.
(Note, this Variance is separate from the MassDOT Design Exception.)

Bicycle Accommodation

Refer to Engineering Directive E-14-006.

Indicate if provided in Protected Path, Bicycle Lane or Shoulder: Shoulder

Minimum Width 5'

Proposed Width 4.5'

Design Exception required.

MASSDOT DESIGN CRITERIA WORKBOOK

Project: Beach Road Reconstruction, Tisbury, MA

Project File No.: 607411

IV. Design Criteria for Roadways and Bridges (FHWA's 13 Controlling Criteria)

Exempt. Exemption Type: _____

Shoulder Width

Refer to Guide, Exhibit 5-12, and to E-14-006.

	Left (Inside)		Right (Outside)
Desirable	<u>N/A</u>	Desirable	<u>12'</u>
Minimum	<u>N/A</u>	Minimum	<u>4'</u>
Proposed	<u>N/A</u>	Proposed	<u>4.5'</u>

Design Exception required. Design Exception required.

Lane Width

Refer to Guide, Exhibit 5-14, and to E-14-006.

Desirable	<u>12'</u>
Minimum	<u>11'</u>
Proposed	<u>10.5'</u>

Design Exception required.

Cross Slope

Refer to Guide, Section 5.5.2.

HMA	<u>0.020</u>
Concrete	<u>0.016</u>
Proposed	<u>0.020</u>

Design Exception required.

Design Speed

Refer to Guide, Section 3.6.5.

Desirable	<u>50 MPH</u>	Posted Speed <u>25-30 MPH</u>
Minimum	<u>25 MPH</u>	
Proposed	<u>35 MPH</u>	

Design Exception required.

MASSDOT DESIGN CRITERIA WORKBOOK

Project: Beach Road Reconstruction, Tisbury, MA

Project File No.: 607411

Horizontal Alignment

Refer to Guide, Exhibits 4-8 and 4-9.

Minimum <u>510</u> (e=2%)	Minimum <u>375</u> (e=4%)	
Proposed <u>350</u>	Proposed <u>175</u>	
PI Sta. <u>27+20</u>	PI Sta. _____	PI Sta. <u>19+95</u>
Radius <u>350</u>	Radius _____	Radius <u>175</u>

Design Exception required.

Refer to Guide, Chapter 4, Section 4.2 (Compound Curves).

Check all Compound Curves.

The radius of the tighter curve should be no less than 50% of the radius of the flatter curve.

Design Exception required.

Length of Curve

$L_{min} = 30 V$ (freeways)

$L_{min} = 15 V$ (other major highways)

V = Design Speed

Design Exception required.

Exempt per E-14-006.

Vertical Alignment

For Crest Vertical Curves, refer to Guide, Exhibit 4-26.

Minimum <u>29</u>		
Proposed <u>Varies >29</u>		
PVI Sta. _____	PVI Sta. _____	PVI Sta. _____
K _____	K _____	K _____

Design Exception required.

For Sag Vertical Curves, refer to Guide, Exhibit 4-27.

Minimum <u>49</u>		
Proposed <u>Varies >49</u>		
PVI Sta. _____	PVI Sta. _____	PVI Sta. _____
K _____	K _____	K _____

Design Exception required.

MASSDOT DESIGN CRITERIA WORKBOOK

Project: Beach Road Reconstruction, Tisbury, MA

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Stopping Sight Distance

Refer to Guide, Exhibit 3-8.

Minimum 250'

Proposed >250'

Design Exception required.

Refer to Guide, Section 3.7 and Exhibit 4-5 (SSD Middle Ordinate).

Minimum 50'

Proposed >50'

Design Exception required.

Grades

Refer to Guide, Exhibit 4-21.

Maximum 8%

Proposed 1.14%

Design Exception required.

Superelevation

Refer to Guide, Section 4.2. Check required values for superelevation rates, transitioning, runoff, banking, etc. for all lanes and shoulders.

Design Exception required.

Lateral Offset

Refer to AASHTO A Policy on Geometric Design of Highways and Streets and AASHTO Roadside Design Guide.

Minimum Lateral Offset behind curb = 1.5' from face of curb.

Minimum Lateral Offset with no curb = 4' from travel way.

Desirable 1.5' *(from Roadside Design Guide)*

Minimum 1.5'

Proposed 1.5'

Design Exception required.

MASSDOT DESIGN CRITERIA WORKBOOK

Project: Beach Road Reconstruction, Tisbury, MA

Project File No.: 607411

Bridge Only Design Criteria

Lane and Shoulder Width

Refer to AASHTO A Policy on Geometric Design of Highways and Streets.

- Design Exception required.

Structural Capacity

Refer to Bridge Manual, Chapter 3.

- Design Exception required.

Vertical Clearance

Refer to Guide, Exhibit 4-28.

Minimum _____

Proposed _____

- Design Exception required.

V. Design Exception Report Content Checklist

If a Design Exception is required, the Designer shall prepare a Design Exception Report containing the following items:

- Cover Page, including certification and approval signatures
- Executive Summary
- Locus Map
- Detailed Narrative
- Recommendation
- Design Criteria Workbook, including Summary of Impacts sheets

Additional Supporting Information (as necessary)

- Typical Sections
- Plan Drawings
- Photographs
- Crash Data/Crash Rates
- Letters, Testimonials and other supporting documents

MASSDOT DESIGN CRITERIA WORKBOOK

Project: Beach Road Reconstruction, Tisbury, MA

Project File No.: 607411

VI. Summary of Impacts

Provide a summary of the incremental impacts associated with the Desirable, Minimum and Proposed alternatives. Include impacts of incremental alternatives.

Prepare a separate Summary of Impacts sheet for each element that requires a Design Exception.

Controlling Criteria: Pedestrian Accommodation - Sidewalk Width
Bicycle Accomodation - Lane Width
Travel Lane Width

Summary of Impacts

Design Criteria Values	Coastal Beach (SF)	Trees (EA)	Walls (LF)	Building (SF)	ROW Cost (\$)	Construction Cost (\$)	Total Cost (\$)
Desirable							
Minimum	900	7	110±	170	\$1,120,000	\$1,800,000	\$2,920,000
Alternative 1							
Alternative 2							
Proposed	800	7	40	0	\$1,050,000	\$1,700,000	\$2,750,000

Note - Impacts to the building are not included in the ROW Cost

Minimum: *The minimum cross section consisting of 11' travel lanes, 5' bike lanes and 5.5' shoulders*

Proposed: *As shown on the 25% Design Submisison Package*

MASSDOT DESIGN CRITERIA WORKBOOK

Project: Beach Road Reconstruction, Tisbury, MA

Project File No.: 607411

VI. Summary of Impacts

Provide a summary of the incremental impacts associated with the Desirable, Minimum and Proposed alternatives. Include impacts of incremental alternatives.

Prepare a separate Summary of Impacts sheet for each element that requires a Design Exception.

Controlling Criteria: Horizontal Alignment - Curve Radius & Length

Summary of Impacts

Design Criteria Values	Wetlands (SF)	Trees (EA)	Stone Walls (LF)	Building (SF)	ROW Cost (\$)	Construction Cost (\$)	Total Cost (\$)
Desirable							
Minimum	900	15±	110±	12,000	\$2,750,000	\$2,300,000	\$5,050,000
Alternative 1							
Alternative 2							
Proposed	800	7	40	0	\$1,050,000	\$1,700,000	\$2,750,000

Note - Impacts to the buildings are not included in the ROW Cost

Minimum: *The curves along Beach Road modified to meet the minimum radius and length.*

Proposed: *As shown on the 25% Design Submission Package*

PHOTOGRAPHS

SIDEWALK WIDTH



Station 27+50, Looking East



Station 30+00, Looking East

SIDEWALK WIDTH (Continued)

