BEFORE THE BOARD OF COMMISSIONERS OF LANE COUNTY, OREGON

ORDER NO: 19-08-20-19

ORDER / IN THE MATTER OF
APPROVING THE TERRITORIAL
HIGHWAY (GILLESPIE CORNERS –
TOWN OF LORANE) CORRIDOR PLAN
AND DESIGN CONCEPT; AND
AUTHORIZING STAFF TO PREPARE
ORDERS OF NECESSITY FOR RIGHT
OF WAY NEEDS AS IDENTIFIED FOR
EACH PHASE

WHEREAS, Lane Manual 15.580 establishes a process for citizen involvement for roadway improvement projects and requires Board approval of Design Concepts;

WHEREAS, the attached (Exhibit A) Territorial Highway (Gillespie Corners – Town of Lorane) Corridor Plan and Design Concept (Design Concept) reflects the community-preferred design alternative vetted through a public involvement planning process involving stakeholders consistent with the citizen involvement process;

WHEREAS, a public hearing was held by the Transportation Advisory Committee (TrAC) on July 24, 2019, at which the TrAC recommended the Board approve the attached Design Concept;

NOW, THEREFORE, the Board of County Commissioners of Lane County ORDERS the following:

1. Approval of the Design Concept presented in Exhibit A for improvement of Territorial Highway from Gillespie Corners to the town of Lorane. This action authorizes the County Engineer to determine all other project design standards and exceptions to design standards not identified in the design concept, pursue all necessary permits, and prepare plans and specifications for improvements. The cost of the improvements will not be assessed to the benefiting properties in accordance with the Lane County Special Assessment Policy as outlined in Lane Code Chapter 15 and ORS 371.625 and 371.640, because this project will be funded by a portion of the jurisdictional transfer funds.

2. Authority for staff to prepare Orders of Necessity for right of way needs as identified for each phase.

ADOPTED this 20th day of August, 2019

Pete Sorenson, Chair
Lane County Board of Commissioners

APPROVED AS TO FORM

OFFICE OF LEGAL COUNSEL
Territorial Highway (Gillespie Corners – Town of Lorane) Corridor Plan and Design Concept

July 2019

Planned improvements and design concepts for the Territorial Highway corridor located between Gillespie Corners and the town of Lorane
Acknowledgements

In Honor of Jane Higdon
So many community members rallied around the tragic death of Jane Higdon
to bring about this project

Special thanks to the following stakeholders
for their involvement and leadership

Congressman Peter DeFazio
Senator Floyd Prozanski
Senator Ron Wyden
Senator Jeffrey A. Merkley
Representative Paul Holvey
Jay Bozievich, Lane County Commissioner – District 1 West Lane
Sid Leiken, Former Lane County Commissioner
Richard Hughes, Bicycle Advocate
Tom Jefferson, Widower of Jane Higdon
Ed King, King Estates

Regional Partners

Oregon Transportation Commission
Oregon Department of Transportation
Lane Area Commission on Transportation

Project Management and Technical Team:

Kerry Werner, Project Manager and Design Engineer
Kevin Brown, Environmental
Peggy Keppler, County Engineer
Alex Cuyler, Legislative Liaison
Becky Taylor, Transportation Planner

Thanks to the legacy and hard work of prior staff:

Lydia Kaye (McKinney), former project manager
Bill Morgan, former County Engineer
Janet Mayer, former design engineer
Peder Alison, former engineering technician
Sarah Wilkinson, former planner
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Executive Summary

**Territorial Highway** is a valuable asset, as a continuous corridor through West Lane County, providing regional connectivity to adjacent counties to the north and south, and local access to rural communities and resource lands, including forest, farming, and winery operations. The City of Veneta and several unincorporated communities, such as Cheshire, Elmira, Crow, Hadleyville, and Gillespie Corners and Lorane, have developed around Territorial Highway. It has as a rich culture, as part of the historic Applegate Trail, and is a gateway to the scenic countryside, making it a popular bicycle route and tourist attraction.

The highway was built without the benefit of current technology and equipment, yet it intelligently followed the natural terrain. As such, it is a narrow, windy road, presenting challenges for roadway users. The needs and values of the highway vary along the corridor, depending on the surrounding environment, which include residential and commercial communities, as well as farmlands and wetlands.

The consistent need throughout the corridor is improvements to the roadway, as the current structure is deteriorated with potholes. There are active landslides along the corridor with areas of roadway failure. Several bridges and culverts flood on a regular basis and waters overtop the roadway during 100-year storm events, preventing through traffic.

For years, Lane County has been working with the community to improve Territorial Highway, especially the portion located between Gillespie Corners and the town of Lorane, in response to the tragic death of Jane Higdon who was hit by a logging truck on her bicycle. Until only recently, Territorial Highway has been under the jurisdiction of the Oregon Department of Transportation, making it a lower priority for investments when compared to other State facilities, such as Beltline and Interstate-5. On March 21, 2019, Territorial Highway was transferred to Lane County which now has ownership and jurisdiction over the entire corridor; maintenance responsibilities, however, will be phased over several years.

The jurisdictional transfer of Territorial Highway to Lane County came with additional funding provided by the Oregon Legislature. There is not enough funding to improve the entire corridor, but investments will be prioritized toward maintenance and safety. A portion of the corridor, between the communities of Gillespie Corners and Lorane, has committed funding for improvements which is the focus of this plan.

This plan provides the design concept that was shaped by a community planning effort which began in 2014. Construction of the community-preferred alternative is now possible and is scheduled to commence in 2020 and phased over several years through 2024. The project is to improve the 5.71 miles of Territorial Highway located between Gillespie Corners (milepost 32.06) and the town of
Lorane (milepost 37.37), generally following the existing roadway alignment, with the exception of
the segment through the slide area (milepost 34.09 to 35.3 at Stony Point) and including:

- Widening the road to provide 6-foot shoulders and two 11-foot vehicle travel lanes
- Softening 4 curves to improve access and sight distance
- Replacing culverts and raising and widening bridges to address deficient waterway crossings
- Stabilizing the slide at Stony Point through roadway realignment

Figure 1. Solution Study

Lane County Staff Evaluate Roadway
Chapter 1 – Introduction

This chapter provides a summary of the project purpose, plan, and process.

Purpose
The purpose of this project is to improve safety for all users of Territorial Highway. The project area is the 5.71 miles of Territorial Highway that is located between Gillespie Corners and the town of Lorane. The combination of conflicting factors between freight users and recreational cyclists using this substandard, narrow facility was brought home in 2006 by the tragic death of Jane Higdon, an experienced cyclist who was killed when a logging truck passed her on this narrow stretch of the road. Due largely to the road’s geometric condition, the truck driver was found not to be at fault. Not only will the improvements address safety issues, they will result in a resilient, attractive roadway that no longer hinders economic growth and encourages multi-modal travel.

Figure 2. Project Area
Plan
The improvements – the preferred design alternative that was supported by the community – include widening the paved surface to 34 feet in width, to provide two 11-foot travel lanes and six-foot shoulders. Improvements include addressing both vertical and horizontal curves and raising and widening bridges that frequently flood. The project will also stabilize the roadway on Stony Point by realignment. Design details are provided in Chapter 5.

Process
This plan constitutes a Design Concept, pursuant to Lane Manual 15.580 which establishes a public involvement process and requires Design Concept approval by the Lane County Board of Commissioners. Consistent with these procedural requirements, there was a robust public involvement process to determine the appropriate design solution. Lane County has been working with stakeholders for several years to develop this project.

2014-2015
Lane County initiated the planning process in 2014, upon receipt of a $440,000 Transportation, Community, and System Preservation Program (TCSP) grant, which was matched with $100,000 in private funds and in-kind staff time from Lane County and ODOT. Lane County’s successful grant application was supported by over 60 stakeholders, including community members, emergency
service providers, and members of the bicycling community, and logging and trucking industries. The 2014-2015 process included public workshops and resulted in a community preferred alternative which is reflected in this Design Concept. The public involvement process is detailed in Chapter 3.

2016-2019

Following the public workshops, Lane County staff investigated the feasibility of the community-preferred designed. The investigation included geotechnical, hydraulic, pavement, right-of-way, utilities, storm water, cultural and environmental analysis. Although the design was intended to minimize impacts, by generally following the existing alignment, the physical characteristics of wetlands and an active slide necessitated additional funding to advance the design, prompting Lane County to apply for Statewide Transportation Improvement Program (STIP) funding. In 2016, Lane County produced a technical report summarizing the findings, concluding the planning funding. An additional $1M STIP funding for design was programmed for 2018-2021.

In 2017, the Oregon Legislature provided $30M for the jurisdictional transfer of Territorial Highway from the Oregon Department of Transportation to Lane County. The funding is not enough to improve the entire highway, but enabled Lane County to commit to constructing the proposed improvements for Territorial between Gillespie Corners and the town of Lorane. In 2018 and 2019, Lane County completed the design work necessary to ensure the feasibility of constructing the community-preferred alternative.

On June 20, 2019, a public meeting was held update stakeholders on the development and implementation of the project. The meeting was attended by over 70 community members, including area residents, business owners, and bicycling enthusiasts. There was an overwhelming celebratory feeling expressed by community members.

A public hearing before the Lane County Transportation Advisory Committee (TrAC) is scheduled for July 24, 2019. The TrAC will advance a recommendation on the Design Concept to the Board of County Commissioners for a Board Order.

2020-2024

Approval of this plan and Design Concept will enable Lane County staff to advance the project toward construction, which is planned to commence in phases between 2020 and 2024 as shown in Figure 4. The first priority for construction is stabilizing Stony Point which is scheduled to commence in 2020 and involves a realignment that will soften sharp curves. Phase 2 construction in 2021 is at the north end of the project at Gillespie Corners which will involve replacing two bridges. Phase 3 construction in 2022 is between Easy Acres Drive and Hamm Road which includes realignment of a curve. The final phase of construction is planned to commence in 2023 to complete the southern portion of the project to the town of Lorane. The entire corridor, from Gillespie Corners to Lorane, will be improved to have six-foot wide shoulders.
Figure 4. Construction Phasing Plan

Phase 1: Stony Point (2020)
Phase 2: Gillespie Corners (2021)
Phase 3: Easy Acres – Hamm (2022)
Phase 4: Lorane (2023)
Chapter 2 – Existing Conditions

This chapter describes constraints and opportunities of the corridor today.

Roadway Conditions
The average daily traffic (ADT) of Territorial Highway is 1700 vehicle trips and conveys a relatively high percentage of freight traffic (10%). Bicyclists utilize this scenic rolling highway for recreational and commuter purposes, although there is no bike lane or shoulder. The overall roadway width varies between 20 and 22 feet. The roadway geometry is substandard with sharp curves and steep grades that limit sight distance. A portion of the project is located within an active slide area at Stony Point and will require geotechnical mitigation. Bridges within the project area are prone to flooding and need to be raised or replaced.

Figure 5. Existing Roadway Conditions

<table>
<thead>
<tr>
<th>No shoulders for bicycles</th>
<th>Poor Pavement</th>
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<tbody>
<tr>
<td>Slides and Sharp Curves</td>
<td>Flooding</td>
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</table>
Safety

This project was initiated following the tragic death of Jane Higdon, who was hit by a logging truck while cycling on Territorial Highway. As shown in Figure 6, there have been 24 crashes along the corridor, resulting in a variety of injuries in recent years.
Environmental

There are known cultural, wetland, waterway and habitat resources around the project area. Prior to the construction of any improvements, a more detailed review of environmental impacts will occur, in accordance with the National Environmental Policy Act (NEPA) or other applicable regulations. A summary of resources is provided below.

Cultural Resources: Archaeological and Historical Sites

Territorial Highway, which runs the full length of Lane County, was once the path of the historic Applegate Trail used by pioneers as a southern approach to the rich fertile land of the Willamette Valley. A preliminary subsurface reconnaissance of the project site by an ODOT Archaeologist resulted in the identification of three sites containing prehistoric or historic artifacts. The sites were on private property outside of the existing right-of-way. Although permission to enter was granted by the property owners for the exploration, the location and findings are considered sensitive to protect both the property owners and the artifacts. Remains found at the isolated finds were considered to be too sparse to warrant further investigation. The project management team evaluated the alignment of the various alternatives to avoid impact to these sites.

A historic building exists at the southern end of the project. The structure was built in 1920 and was once a tavern, known as the “Dew Drop.” The building is currently vacant. The property owners shared some of the history with staff and expressed a willingness to work with the County to preserve this building. The building will need to be moved to implement the project.

Geology: Ancient and Active Landslide(s)

An ancient and active landslide exists adjacent to Territorial Highway, where it abuts Stony Point. The roadway has obvious sinking and sliding damage. Roadway repairs and slide stabilization work has been minimal.

Review of existing information dated back to 1951 with an Oil and Gas Investigations Map. Aerial photography was compared over several decades, beginning with 1952. State drawings of the roadway were also consulted. ODOT staff has multiple recorded site visits, from 1983 to present.

Between 2014 and 2015, ODOT took instrumentation readings within the project area, which detected movement, resulting in a preliminary geotechnical report for the project. More recently, Lane County has hired geotechnical professionals to collect additional data and develop geotechnical recommendations necessary to build the project.
Water Resources: Waterways and Wetlands

The project spans two river watershed basins: the Long Tom and the Siuslaw. Coho salmon, which is listed as threatened under ESA, are found in the Siuslaw watershed. The Long Tom watershed provides habitat for cutthroat trout, which is listed as a species of concern by the Oregon Department of Fish and Wildlife. Coyote Creek, Norris Creek, Crow Creek, North Fork Siuslaw River, and three unnamed creeks are within the project area and are considered “waters of the United States” and “waters of the State.” As such, any construction activity below the Ordinary High Water Mark requires authorization from the Department of State Lands and the US Army Corps of Engineers, in accordance with Oregon’s Removal-Fill Law and the Clean Water Act.

Wetlands are located along the length of the project. A wetland delineation report was prepared by Lane County and submitted to the Department of State Lands. Approximately 7.4 acres of wetlands may be impacted by this project. Impacts to wetlands needs to minimized and mitigated in order to comply with federal and state requirements. Any runoff to the wetlands requires pre-treatment to reduce pollutants.

Runoff from the roadway currently sheet flows to roadside ditches and open waterways. The surrounding soils are predominantly silty clay loams, which are classified as hydrologic soil group C. Group C soils have low infiltration rates when thoroughly wetted and consist chiefly of soils with a layer that impedes downward movement of water and soils with moderately-fine to fine structure. If stormwater runoff from the roadway is to infiltrate, the adjacent soils will need to be amended by replacing the existing poor-draining soils.

The area currently floods and two bridges and several culvert structures are substandard. Preliminary hydraulics study has been performed by ODOT at both bridges, but a more detailed analysis is underway. The current rise required for the bridge raisings based on preliminary data is 2’-6”. This value may change and may be different for each bridge. The final hydraulics study will reveal this information.

Approximately eighty culverts are located within the limits of the project. All of the culverts have a diameter of 4 feet or less and can be designed to small culvert criteria as outlined in ODOT’s Hydraulic Manual with the exception of three culverts located at possible fish bearing stream crossings. These three culverts may require a medium culvert design study and may need to meet either NMFS or ODFW fish passage standards, further study is required.
Chapter 3 – Public Involvement

The community provided significant input on the project which is summarized in this chapter.

This plan was developed through a robust public involvement process, which brought the diverse viewpoints of stakeholders together. Community support is demonstrated by the $100,000.00 private cash donations and over 60 letters of support. The Jane Higdon Foundation provided $87,500. King Estates Winery pledged $12,500. Support letters were provided from wineries, logging companies, the school district, cyclists, residents, and business owners.

Stakeholder Input
Stakeholders, representing a variety of interests, were consulted to review and comment on the data. The Stakeholder Advisory Committee included the following members:

- Jim Bailor, Lorane Rural Fire Protection District
- Catherine Boucher, Local Resident (Hamm Road)
- Theresa Brand, Lane Transit District (LTD) Point2Point
- Jed Kaul, Long Tom Watershed Council
- Dean Livelybrooks, Crow-Applegate-Lorane School District
- Bill McCoy, Freight
- Ellen Mooney, Lane County Roads Advisory Committee (former)
- Terry Ney, Lane Fire Authority
- Paul Nicholson, Bicycle Way of Life
- John Norrena, Lane Electric
- Ann Sanders, Siuslaw Watershed Council
- Arite Weiner, King Estate Wine

Public Meetings

On October 28, 2014, the first open house was held at King Estates, which is within the project boundary. Over 100 people participated in this event, representing diverse users, including freight, bikers, emergency service providers, and area residents. There was strong consensus that addressing safety while maintaining the rural character of the road should be the primary goal.
A second open house was held on June 16, 2014 was held at the Lorane Grange to view and discuss two design alternatives that were developed based on the public input received at the first open house. The project team received strong public support to improve Territorial Highway to a 34-foot wide road that mostly maintains the existing road alignment. In the preferred alternative, travel lanes would be widened, shoulders added, horizontal and vertical curves realigned, and new bridges to raise the road and eliminate repeat flood events.

A third public meeting was held on June 20, 2019 at the Lorane Grange to update stakeholders about the project advancing to construction in 2020-2023. The meeting was attended by over 70 community members, including area residents, business owners, and bicycling enthusiasts. There was an overwhelming celebratory feeling expressed by community members for the County to finally be able to deliver the community-preferred design that was developed in 2014.

Public Hearing
The Lane County Transportation Advisory Committee (TrAC) held a public hearing on July 24, 2019. The TrAC heard testimony from six people, all of whom spoke in support of the project. The TrAC voted in favor of recommending the Board approve the Design Concept.

Project Webpage
Throughout the process, the County updated a webpage dedicated to the study to enable interested parties to review key documents, be informed about upcoming opportunities to provide in-person feedback and to establish a County staff member as the primary contact point for the process. Through this information, a number of interested residents and business owners contacted County staff to provide feedback independent of formal meetings or briefings.

Mailings
Interested parties received project updates via email. Postcards and letters were mailed to abutting property owners at project milestones, such as the jurisdictional transfer and notices of public meetings.
Environmental Justice and Title VI Civil Rights

Environmental Justice (EJ) and Title VI focus on understanding and addressing the unique needs of different socioeconomic groups, which are vital components to effective transportation decision-making. Key areas of consideration for compliance include: identifying populations so that their needs can be acknowledged and addressed; and evaluating and improving the public involvement process to eliminate participation barriers and engaging minority and low-income populations in transportation decision-making.

Potential environmental justice populations surrounding the project area include: residents over 65. There were no discernable minority, limited English proficient, impoverished or disable populations for the affected census tracts. Direct mail and holding public meetings nearby are outreach procedures supportive of elderly needs. Both of the techniques were used throughout the process.
Chapter 4 – Alternatives Considered and Preferred Alternative

This chapter describes the outcome of the planning process.

Alternatives Considered
Following completion of the existing conditions analyses and stakeholder interviews, staff reviewed the opportunities and constraints associated with alternatives for the corridor. These alternatives were vetted through two public open houses, resulting in a clear community preference for a context sensitive design that minimizes environmental impacts and maximizes use of the existing roadway footprint. The community specifically preferred the slowest design speeds on the curves and a roadway cross-section with 11-foot wide vehicle travel lanes (one in each direction) and six-foot wide shoulders (on both sides).

1. Do Nothing: The existing conditions (see Chapter 2) are unsafe and will only worsen over time. The option to do nothing is not acceptable.

Figure 12. Existing Cross-Section
2. **Build Traditional Cross-Section** (ODOT/AASHTO 4R Standards): This design facilitates 55 mph speeds throughout the corridor, requiring significant changes to horizontal and vertical geometry, and includes 12’ travel lanes and 8’ shoulders, creating a wider footprint impacting adjacent properties and natural resources. This alternative was not supported by the community which valued the natural surroundings, historical character, and slower vehicle speeds.

![Figure 13. Traditional Cross-Section](image1)

![Figure 14. Realignments Required for Traditional Cross-Section (55 mph Design Speed)](image2)
3. **Build Context Sensitive** (ODOT/AASHTO 3R Standard): The community-preferred design is to generally follow the existing roadway alignment to minimize environmental impacts and to facilitate slower vehicle speeds, resulting in the softening of sharp curves rather than significant realignments. The preferred travel lane configuration is 11-foot lanes in each direction for vehicles and six-foot shoulders on both sides for people to walk and bicycle.

![Figure 15. Context-Sensitive Cross-Section (Community Preference)](image)

A comparison of the traditional design and context-sensitive designs are illustrated in the following figures showing three design speed alignments of 55 mph, 45 mph, and 35 mph. The faster speeds require more significant roadway realignments and involve more property impacts. The community preference was for the slowest design speed which also more closely follows the existing roadway alignment.
Figure 16. Comparison of Design Speed Alignments (North Section)

55 mph speed (Traditional Design)
45 mph speed (Variable Design)
35 mph speed (Preferred Design)
Figure 17. Comparison of Design Speed Alignments (Mid-Section)

- 55 mph speed (Traditional Design)
- 45 mph speed (Variable Design)
- 35 mph speed (Preferred Design)
Figure 18. Comparison of Design Speed Alignments (South Section)

55 mph speed (Traditional Design)
45 mph speed (Preferred Design – for this curve only)
This chapter provides the design drawings consistent with the community-preferred alternative which constitutes the Design Concept.

Design Drawings
The design drawings are included as Appendix 1. These drawings translate the community-preferred alternative into a design concept for the project. The project is to improve the 5.71 miles of Territorial Highway located between Gillespie Corners (milepost 32.06) and the town of Lorane (milepost 37.37), generally following the existing roadway alignment, with the exception of the segment through the slide area (milepost 34.09 to 35.3 at Stony Point) and including:

- Widening the road to provide 6-foot shoulders and two 11-foot vehicle travel lanes
- Softening 4 curves to improve access and sight distance
- Replacing culverts and raising and widening bridges to address deficient waterway crossings
- Stabilizing the slide at Stony Point through roadway realignment

The design concept is required to be approved by the Lane County Board of Commissioners. The plans will then advance into more detailed engineering drawings for construction. Affected property owners will be consulted during the design refinement, right-of-way acquisition, and construction process in order to minimize and mitigate property impacts.

Approval of this plan and Design Concept will enable Lane County staff to advance the project toward construction, which is planned to commence in phases between 2020 and 2024 as shown in Figure 4. The first priority for construction is stabilizing Stony Point which is scheduled to commence in 2020 and involves a realignment that will soften sharp curves. Phase 2 construction in 2021 is at the north end of the project at Gillespie Corners which will involve replacing two bridges. Phase 3 construction in 2022 is between Easy Acres Drive and Hamm Road which includes realignment of a curve. The final phase of construction is planned to commence in 2023 to complete the southern portion of the project to the town of Lorane. The entire corridor, from Gillespie Corners to Lorane, will be improved to have six-foot wide shoulders.
Appendix 1. Design Drawings
Appendix 1. Design Drawings

LANE COUNTY
DEPARTMENT OF PUBLIC WORKS
ENGINEERING AND CONSTRUCTION SERVICES DIVISION

PLANS FOR PROPOSED PROJECT
GRADING, DRAINAGE, STRUCTURES AND PAVING

GILLESPIE CORNERS TO COTTAGE GROVE-LORANE ROAD
TERRITORIAL HIGHWAY

X X X X X X 2 0 X X

No Scale
T. 19 S., R. 5 W., W.M.
T. 20 S., R. 5 W., W.M.

Overall Length Of Project - 5.77 Miles

ATTENTION
Oregon Law Requires You To Follow Rules
Adopted By The Oregon Utility Notification Center.
Those Rules Are Set Forth in OAR 352-001-000 through
352-001-0000. You may obtain copies of the rules from the Center.
The Telephone Number is: 1-800-332-3344

LANE COUNTY COMMISSIONERS
JAY BODIEVICH, CHAIR
FAYE H. STEWART II, VICE CHAIR
PAT FARR
SID LEIKEN
PETER SORENSON

PUBLIC WORKS DIRECTOR
MARSHA A. MILLER

COUNTY ENGINEER
WILLIAM F. MORGAN, P.E.

CONTRACT NO. XX/XX-XX
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PROJECT NO. STP-XXXX(XXX)
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Appendix 1. Design Drawings

SUPERELEVATED

Water Quality Mix - 8 in.
NORMAL CROWN WITH BIOFILTRATION SWALE
Appendix 1. Design Drawings

SUPERELEVATED WITH INFILTRATION TRENCH
Appendix 1. Design Drawings

1. Sta. L 0+00.00, Lt & Rt
   Sawcut And Match Extg. Pavement
   Begin Total Reconstruction

2. Sta. L 438+80.15, Lt & Rt
   Sawcut And Match Extg. Pavement

   Const. Asph. Conc. Drivw. - 13.8' Wide
   (For Details, See Dwg. RD715)

4. Sta. L 11+73.55 Lt & Rt
   Raise Extg 32'x62' Bridge - x.x'
   Widen Extg 32'x62' Bridge - 4 Slabs Lt. & 1 Slab Rt.
   (For Details, See Shl. x)

5. Sta. L 9+35.42 Rt. To Sta. L 11+42.55 Rt.
   Const. Guardrail, Type 2A - 125 Ft.
   Const. Guardrail, Type 3 - 125 Ft.
   Const. Guardrail Terminal, Energy Absorbing (Non-Flared) - 1 Each
   W=1.0', E=2.0', L=50', Test Level 3
   Const. Guardrail Transition - 1 Each
   (For Details, See Dwgs. RD400, RD410, RD415 and RD420)

   Const. Guardrail, Type 2A - 125 Ft.
   Const. Guardrail, Type 3 - 125 Ft.
   Const. Guardrail Terminal, Energy Absorbing (Non-Flared) - 1 Each
   W=1.0', E=2.0', L=50', Test Level 3
   Const. Guardrail Transition - 1 Each

Legend

-.------- Cut Catch Line
-.-.-.- Fill Catch Line
### Appendix 1: Design Drawings

<table>
<thead>
<tr>
<th>No.</th>
<th>Mileage</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>22+91.64 to 23+10.41</td>
<td>Mailbox turnout - 4' wide (For Details, see Sht. 2B-x)</td>
</tr>
<tr>
<td>2</td>
<td>23+29.21</td>
<td>Asph. Conc. Driveway = 12.6' wide (For Details, see Dwg. Rd715)</td>
</tr>
<tr>
<td>3</td>
<td>43+82.15</td>
<td>Sawcut and match extg. pavement</td>
</tr>
<tr>
<td>4</td>
<td>14+73.15</td>
<td>Raise extg. 32'x42'; bridge = x'x'. Widen extg. 32'x43'; bridge = 1 slab li. &amp; 4 slab rt. (For Details, see Sht. xx)</td>
</tr>
<tr>
<td>5</td>
<td>12+07.16 to 14+53.80</td>
<td>Guardrail, Type 2A - 190 ft. Guardrail, Type 3 - 25 ft. Guardrail transition - 2 each (For Details, see Dwg. Rd400, Rd405, Rd415 and Rd420)</td>
</tr>
<tr>
<td>6</td>
<td>14+15.48</td>
<td>Guardrail, Type 2A = 204 ft. Guardrail, Type 3 = 25 ft. Guardrail terminal, energy absorbing (non-flared) - 1 each Guardrail transition - 2 each</td>
</tr>
<tr>
<td>7</td>
<td>14+93.81 to 115+78.49</td>
<td>Guardrail, Type 2A - 12.5 ft. Guardrail, Type 3 - 12.5 ft. Guardrail terminal, energy absorbing (non-flared) - 1 each W=1.0', E=2.0', L=50', test level 3 Guardrail transition - 1 each</td>
</tr>
<tr>
<td>8</td>
<td>14+91.26 to 16+97.82</td>
<td>Guardrail, Type 2A - 112.5 ft. Guardrail, Type 3 - 12.5 ft. Guardrail terminal, energy absorbing (non-flared) - 1 each W=1.0', E=2.0', L=50', test level 3 Guardrail transition - 1 each</td>
</tr>
</tbody>
</table>

**Legend**

- Cut Catch Line
- Fill Catch Line
Appendix 1. Design Drawings
Appendix 1. Design Drawings

1. Sta. L 55+52.26 Lt.
   Const. Asph. Conc. Drivw. - 44.6' Wide
   (For Details, See Dwg. RD715)

2. Sta. L 55+71.51 Rt.
   Const. Asph. Conc. Drivw. - 12.7' Wide

Legend

...... Cut Catch Line
----- Fill Catch Line
<table>
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<tr>
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<th>ELEV.</th>
<th>Notes</th>
</tr>
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<td>43+00</td>
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<td>TA: 42+38.54</td>
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</tr>
</tbody>
</table>

Design Drawings

Appendix 1: Design Drawings

- Evp. Ground @ CL
- Design Grade @ CL

LOW PT STA: 50+00 R5
LOW PT ELEV: 510.27
PVI STA: 50+36.14
PVI ELEV: 509.55
K: 151.56
LEV: 300.00
1. Sto. L 76+31.18 Lt.
   Const. Asph. Conc. Drwy. - 14.0' Wide
   (For Details, See Dwg. RD715)

2. Sto. L 94+08.61 Lt.
   Const. Asph. Conc. Drwy. - 14' Wide
1. Sta. L 96+58.04 ft.
   Const. Asph. Conc. Drivg. - 20.2' Wide
   (For Details, See Dwg. RD715)

2. Sta. L 94+58.37 Rt.

Legend

--------- Cut Catch Line
---------- Fill Catch Line
Sta. L 107+03.64 Ft.
Const. Asph. Conc. Driv. - 23.9' Wide
(For Details, See Dwg. RD715)
Appendix 1. Design Drawings

1. Sta. L 115+81.02 Ft.
   Const. Asph. Conc. Drayv. - 14.3' Wide
   (For Details, See Dwg. RD715)

2. Sta. L 126+87.77 Ft.
Appendix 1: Design Drawings
Appendix 1. Design Drawings

1. Sta. L 145+00.82 Rt.
   Const. Asph. Conc. Drwy. - 12' Wide
   (For Details, See Dwg. RD715)

2. Sta. L 145+83.32 Rt.
   Const. Asph. Conc. Drwy. - 13.3' Wide

3. Sta. L 151+90.81 Lt.
   Const. Asph. Conc. Drwy. - 12' Wide

4. Sta. L 152+32.95 Lt.
   Const. Asph. Conc. Drwy. - 14' Wide

   Const. Guardrail, Type 2A - 1237.5 Ft.
   Const. Guardrail Terminal, Energy Absorbing (Non-Floored) - 2 Each
   W=1.0', E=2.0', L=50', Text Level 3
   (For Details, See Dwg. RD400, RD405, RS415 and RD420)
Appendix 1. Design Drawings

   Const. Asph. Conc. Dwy. - 18.5’ Wide
   (For Details, See Dwg. RD715)

   Const. Guardrail, Type 2A - 262.5 Ft.
   Const. Guardrail Terminal, Energy Absorbing (Non-Flared) - 2 Each
   W=1.0', E=2.0', L=50', Test Level 3
   (For Details, See Dwg. RD420, RD430, RD415 and RD420)

   Const. Guardrail, Type 2A - 800 Ft.
   Const. Guardrail Terminal, Energy Absorbing (Non-Flared) - 2 Each
   W=1.0', E=2.0', L=50', Test Level 3

Legend

- - - - Cut Catch Line
- - - - Fill Catch Line
Appendix 1. Design Drawings

   Const. Asph. Conc. Driv. - 28' Wide
   (For Details, See Dwg. RD715)

2. Sta. L 182+76.72 Lt.
   Const. Asph. Conc. Driv. - 16' Wide

3. Sta. L 182+73.04 Rt.
   Const. Asph. Conc. Driv. - 23' Wide

   Const. Asph. Conc. Driv. - 12' Wide

5. Sta. L 174+35.90 Lt.
   Const. Asph. Conc. Driv. - 12' Wide

Legend

---------- Cut Catch Line
---------- Fill Catch Line
Sta. L 193+54.49 Lf.
Const. Asph. Crct: Gray - 12.7" Wide
(For Details, See Dwg. RD715)

Legend

.......... Cut Catch Line
-------- Fill Catch Line
Appendix 1: Design Drawings

LEGEND

- Cut Slope
- Fill Slope
- Removal of Existing Pipe
Appendix 1. Design Drawings

1. Sta. L 206+69.54 Rl.
   Const. Asph. Conc. Drwy. – 16' Wide
   (For Details, See Dwg. RD715)

2. Sta. L 230+01.94 Lt.
   Const. Asph. Conc. Drwy. – 12' Wide

3. Sta. L 229+80.52 Rl.
   Const. Asph. Conc. Drwy. – 12' Wide

Legend

Cut Catch Line
Fill Catch Line
Appendix 1. Design Drawings

1. Sta. L 232+51.27 Ft.
   Const. Asph. Conc. Driv. – 12’ Wide
   (For Details, See Dwg. RO715)

   Const. Asph. Conc. Driv. – 12’ Wide

3. Sta. L 237+89.60 Ft.
   Const. Asph. Conc. Driv. – 12’ Wide

4. Sta. L 238+03.04 Lt.
   Const. Asph. Conc. Driv. – 12’ Wide

5. Sta. L 241+78.25 Ft.
   Const. Asph. Conc. Driv. – 30’ Wide

   Const. Asph. Conc. Driv. – 19’ Wide

7. Sta. L 240+49.32 Lt.
   Const. Asph. Conc. Driv. – 12’ Wide

   Const. Asph. Conc. Driv. – 21’ Wide

Legend

-------- Cut Catch Line
-------- Fill Catch Line
Appendix 1. Design Drawings

1. Sto. L 247+24.38 R1
   Const. Asph. Conc. Drwy. - 12' Wide
   (For Details, See Dwg. R0715)

2. Sto. L 249+63.15 R1
   Const. Asph. Conc. Drwy. - 12' Wide

3. Sto. L 250+43.23 R1
   Const. Asph. Conc. Drwy. - 12' Wide

4. Sto. L 252+82.29 R1
   Const. Asph. Conc. Drwy. - 12' Wide

5. Sto. L 253+58.87 R1
   Const. Asph. Conc. Drwy. - 14' Wide

6. Sto. L 258+27.11 R1
   Const. Asph. Conc. Drwy. - 19' Wide

7. Sto. L 259+18.04 R1
   Const. Asph. Conc. Drwy. - 19' Wide

Legend

......... Cut Catch Line
-------- Fill Catch Line
Appendix 1. Design Drawings

1. Sta. L 263+78.47 Rt.
   Const. Asph. Conc. Drwy. = 12' Wide
   (For Details, See Dwg. PG0715)

2. Sta. L 264+52.57 Rt.
   Const. Asph. Conc. Drwy. = 12' Wide

3. Sta. L 265+61.26, 63.4' Rt.
   Sawcut And Match Excg Pavement

4. Sta. L 266+33.06, 58.6' Rt.
   Sawcut And Match Excg Pavement

5. Sta. L 270+83.11 Rt.
   Const. Asph. Conc. Drwy. = 25' Wide

   Const. Asph. Conc. Drwy. = 14' Wide

7. Sta. L 266+77.76 Rt.
   Const. Asph. Conc. Drwy. = 12' Wide

Legend

- - - - Cut Catch Line
- - - - Fill Catch Line
Appendix 1. Design Drawings

1. Sta. L 286+60.70 Lt. To Sta. L 296+27.78 Lt.
   Const. Guardrail, Type 2A – 462.5 Ft.
   Const. Guardrail Terminal, Energy Absorbing (Non-Flored) – 2 Each
   W=1.0”, E=2.0”, L=50”, Test Level 3
   (For Details, See Dwg. RD4000, RD4050, RD4150 and RD4200)

2. Sta. L 291+75.27 Lt. To Sta. L 294+57.87 Lt.
   Const. Conc. Curb And Gutter
   (For Details, See Dwg. RD7000)

   Const. Conc. Driv. – 12” Wide
   (For Details, See Dwg. RD1050)

4. Sta. L 298+44.45 Lt.
   Const. Asph. Conc. Driv. – 12” Wide
   (For Details, See Dwg. RD7115)

5. Sta. L 300+05.48 Lt. To Sta. L 302+68.57 Lt.
   Const. Conc. Curb And Gutter

6. Sta. L 303+58.52, 58.6” Lt.
   Sawcut And Match Extg. Pavement

7. Sta. L 302+69.34, 76.4” Lt.
   Sawcut And Match Extg. Pavement

8. Sta. L 303+84.33
   Sawcut And Match Extg. Pavement

Legend

-------- Cut Catch Line
-------- Fill Catch Line