Heritage Road
Roundabout Evaluation

Eagle Ridge Drive
Traffic Calming Evaluation

Public Meeting
October 23, 2017
Contents/Agenda

Community Goals and Vision

Project Scope

Heritage Road
  • Roundabout Evaluation
  • Bicycle and Pedestrian Analysis
  • Recommendations

Eagle Ridge Drive
  • Traffic Calming Evaluation
  • Recommendations
Value Theme A
Accessible and Walkable
• Complete Streets policies
• Mobility and connectivity

Value Theme C
Safe, Clean, Quiet Neighborhoods
• Adequate sidewalks, bike lanes, trails
• Bicycle and pedestrian friendly signalization
• Traffic calming
Neighborhood / Transportation Plans

- Request for bicycle and pedestrian facilities on Heritage Road
- Heritage Road designated as a “Priority Complete Streets Corridor”
- Heritage Road identified as future complete street project

- Recommends narrower lanes, sharrows, separated sidewalks, etc.
Golden Vision 2030

Comprehensive Plan

South Neighborhood Plan

Neighborhood Improvements can be Achieved
Priorities for Heritage Road

- Traffic Calming
- Safety
- Bicycle and Pedestrian Facilities
- Noise
Project Scope for Evaluations

• Guideline Comparison
  • Field Visits
  • Vehicle tracking
  • Sight-distance triangles

• Recommendations
  • Improve function and experience for all users
  • Magnitude of cost
  • Best Management Practices

• Not an Alternative Analysis
Roundabout Evaluation-Guideline Comparison

List of Guidelines

City of Golden
- City of Golden Street, Drainage, and Sidewalk Specifications

Jefferson County
- Jefferson County Transportation Design and Construction Manual

Colorado Department of Transportation (CDOT)
- Colorado Bicycling Manual
- CDOT Roadway Design Guide

Federal Highway Administration
- FHWA-SA-10-006: Roundabouts
- Manual on Uniform Traffic Control Devices (MUTCD)
- FHWA: Roundabouts: An Informational Guide 1st/2nd Edition
- FHWA-SA-10-007: Mini-Roundabouts

Federal-Level Guidance
- American Association of State Highway and Transportation Officials (AASHTO)
- National Association of City Transportation Officials (NACTO)
- Institute of Transportation Engineers (ITE)

Included:
- Mini-roundabouts
- Urban single-lane
- Urban compact
<table>
<thead>
<tr>
<th>Roundabout</th>
<th>Design Speed</th>
<th>Approach Alignment</th>
<th>Entry Width (ft)</th>
<th>Apron Width (ft)</th>
<th>Central Island Diameter (ft)</th>
<th>Inscribed Circle Diameter (ft)</th>
<th>Exit Curves Radius (ft)</th>
<th>Splitter Island Length (ft)</th>
<th>Splitter Island Width (ft)</th>
<th>Landscaping Type</th>
</tr>
</thead>
<tbody>
<tr>
<td>Kimball Ave Roundabout</td>
<td>15</td>
<td>Left</td>
<td>11 (14-16 ft, typical)</td>
<td>7.5 (3-13 ft, typical)</td>
<td>Central Island Diameter (ft)</td>
<td>Inscribed Circle Diameter (ft)</td>
<td>Exit Curves Radius (ft)</td>
<td>Splitter Island Length (ft)</td>
<td>Splitter Island Width (ft)</td>
<td>Landscaping Type</td>
</tr>
<tr>
<td>4th Ave Roundabout</td>
<td>15</td>
<td>Center</td>
<td>11 (14-16 ft, typical)</td>
<td>No separate apron</td>
<td>36 ft</td>
<td>60 ft</td>
<td>22</td>
<td>13.5, 21 (50 ft, typical)</td>
<td>4</td>
<td>None</td>
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<tr>
<td>Eagle Ridge Dr Roundabout</td>
<td>15</td>
<td>Center</td>
<td>11 (14-16 ft, typical)</td>
<td>7.5 (3-13 ft, typical)</td>
<td>56 ft</td>
<td>100 ft</td>
<td>32</td>
<td>20, 21 (50 ft, typical)</td>
<td>4</td>
<td>Pond, boulders</td>
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Roundabout Evaluation - Vehicle Tracking

- Vehicles analyzed
  - Passenger vehicle
  - School Bus
  - Firetruck
  - SU-30

- about 5 MPH
- Mountable apron curb required for vehicles larger than passenger
Roundabout Evaluation - Sight Distance Triangles

• Evaluated at 15 MPH

• Signage, structures, and landscaping within sight triangle should be removed – including area within central islands
Roundabout Evaluation-Guideline Comparison

• Gaps in Alignment with Guidance
  • Entry width
  • Exit curves
  • Splitter islands
  • Apron vertical height
  • Depressed pond
  • Vehicle tracking
  • Sight-distance triangle
Bicycle and Pedestrian Analysis

- Guideline Comparison
- Ramps and Access
- Continuity and Consistency
Bicycle and Pedestrian Analysis

- Gaps in Alignment with Guidance
  - Lack of bicycle facilities through roundabouts
  - Lacking entrance/exit ramps
  - Lack of consistent bicycle markings
• Challenges along Corridor
  • Grade issues
  • ROW Limitations
  • Built environment
  • Multi-modal corridor
  • Not black and white

“…this guide is not intended as an inflexible “rule book,” but rather attempts to explain some principles of good design and indicate potential trade-offs.”

FHWA: Roundabouts
Corridor-Wide Recommendations

- Remove objects within sight-distance triangles
- Consolidate signage where applicable
- Create consistent signage
- Add sharrows at north and south ends of corridor
- Add sharrows to all roundabouts
- Enhance crosswalks
Recommendations-
Eagle Ridge Drive

**Low Cost**
- Remove boulders
- Add landscaping in central island
- Further refine southbound approach

**High Cost***
- Reduce height/width on roundabout apron curb

*will require further analysis
Recommendations- 4th Avenue

Low Cost

• Distinguish bicycle entrance/exit ramps

High Cost*

• Relocate outside curbs at all 4 corners
• Relocate sidewalk at southwest corner

*will require further analysis
Recommendations - Kimball Avenue

**Low Cost**
- Distinguish bicycle entrance/exit ramps
- Add striping at northbound entrance

**High Cost***
- Reduce height/width on roundabout apron curb
- Relocate outside curb at northeast corner

*will require further analysis
Recommendations - Bicycle and Pedestrian

Low Cost

• Delineate bicycle lane with continuous green paint
• Distinguish bicycle entrance/exit ramps
• Integrate additional bicycle stencils
• Add sharrows at roundabouts
• Add bicycle ramps where not yet available
Eagle Ridge Drive- Traffic Calming Analysis

- Gaps in Alignment with Guidance
  - Chicanes not off-set
  - Extended distance between medians

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<tr>
<td>Traffic Volume</td>
<td>1,632</td>
<td>1,541</td>
<td>1,603</td>
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<tr>
<td>Average Speed</td>
<td>35 MPH</td>
<td>27 MPH</td>
<td>26 MPH</td>
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<tr>
<td>Speeds (85th Percentile)</td>
<td>N/A</td>
<td>31 MPH</td>
<td>29 MPH</td>
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Eagle Ridge Drive-
Traffic Calming Recommendations

Low Cost
• Increase vertical elements within medians
• Add striping for on-street parking

High Cost
• Implement medians at additional locations
• Relocate chicanes to reduce gaps
Conclusions

Implement Recommendations

• Improve operations for all users
• Better align with guidance

Low Cost can be done immediately
High Cost require further analysis
Discussion

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