



PRESENTATION FOR

St. Mary's Road Roundabouts Project



Kimley»Horn
Expect More. Experience Better.



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St. Mary's Road Roundabouts Project



Welcome and Introductions

- Edric Kwan, Town of Moraga
 - Public Works Director/Town Engineer
- Jon King, Town of Moraga
 - Chief of Police
- Shawn Knapp, Town of Moraga
 - Senior Civil Engineer, Project Manager
- John Pulliam, Kimley-Horn and Associates
 - Consultant Project Manager
- Sean Houck, Kimley-Horn and Associates
 - Consultant Roundabout Design Engineer

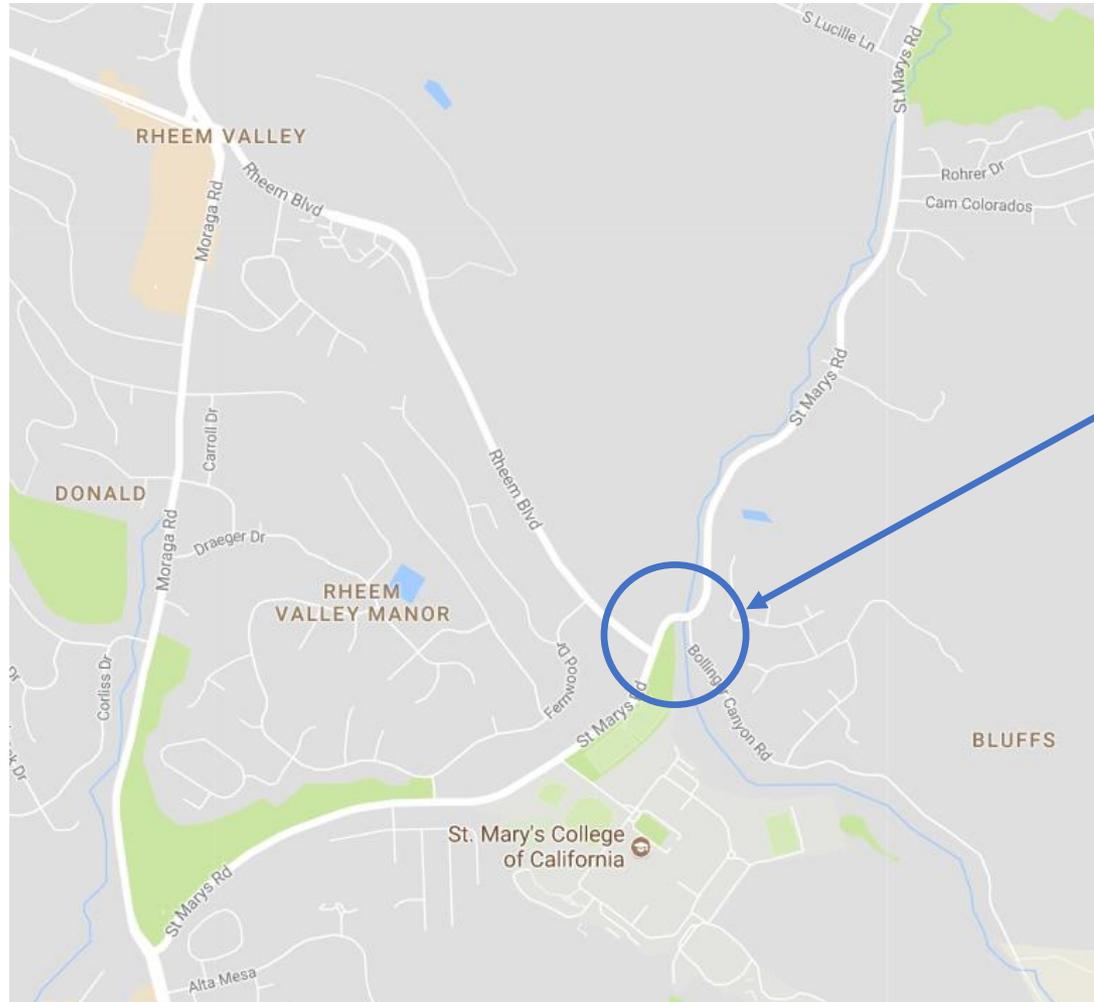


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Project Overview



Project Location



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Summary of Comments from First Public Meeting

- **OUTREACH:** Request for more public outreach and communication
- **SAFETY:** Questions about whether there are existing safety issues at these intersections
- **ALTERNATIVES:** Questions concerning alternative intersection improvements instead of roundabouts
- **FINANCE:** Concerns about project costs and best use of the Town's funds



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SAFETY: Issues at existing intersections





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SAFETY





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SAFETY: Roundabout safety features

- Reduced number of conflicts points from a typical intersection
- Single decision points for drivers
- Crash type/severity reduced by greatly reducing head-on and T-bone collisions



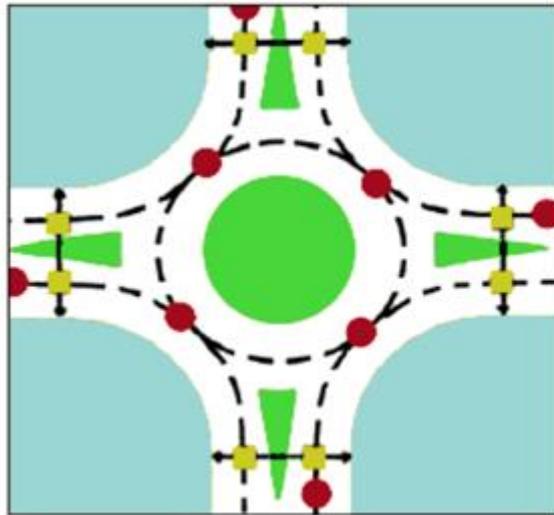
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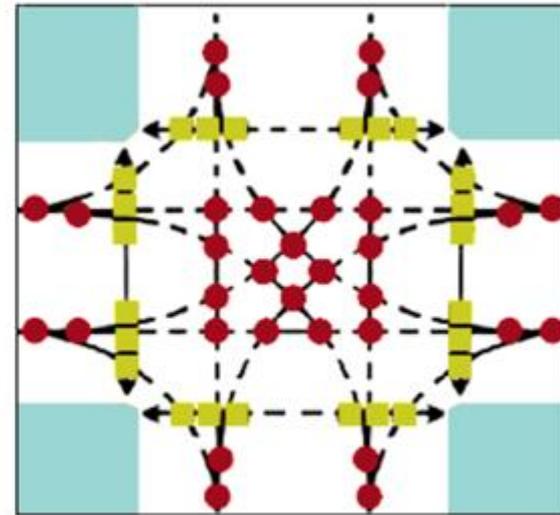
SAFETY: Reduced collision points

Roundabout



- 8 Vehicle conflicts
- 8 Pedestrian conflicts

Intersection



- 32 Vehicle conflicts
- 24 Pedestrian conflicts



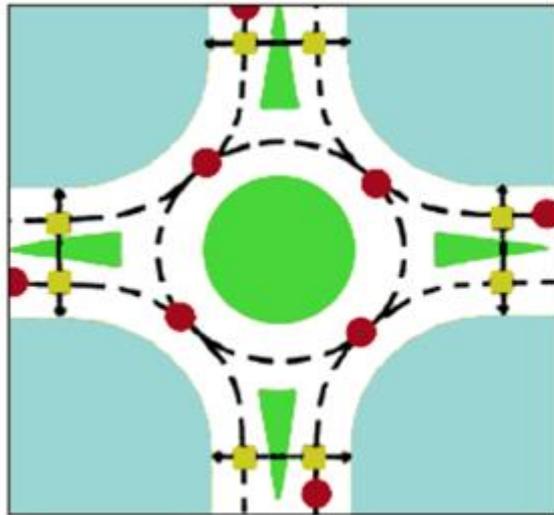
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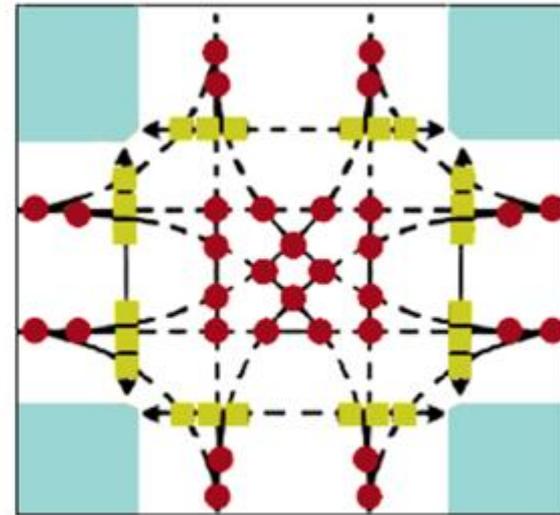
SAFETY: Single Decision Points

Roundabout



● 8 Vehicle conflicts
■ 8 Pedestrian conflicts

Intersection



● 32 Vehicle conflicts
■ 24 Pedestrian conflicts



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SAFETY: Reduced severity of crashes

Type of Crashes

<u>Typical 4-leg intersection</u>		<u>Roundabout</u>
Angle	Left turn	Sideswipe



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PROJECT NEED

Improvements are proposed in order to address:

- Existing insufficient stopping sight distance and visibility issues, and
- Insufficient capacity to accommodate planned future growth
- Town's "Walk | Bike Plan" identified these 2 intersections throughout the report for improvements

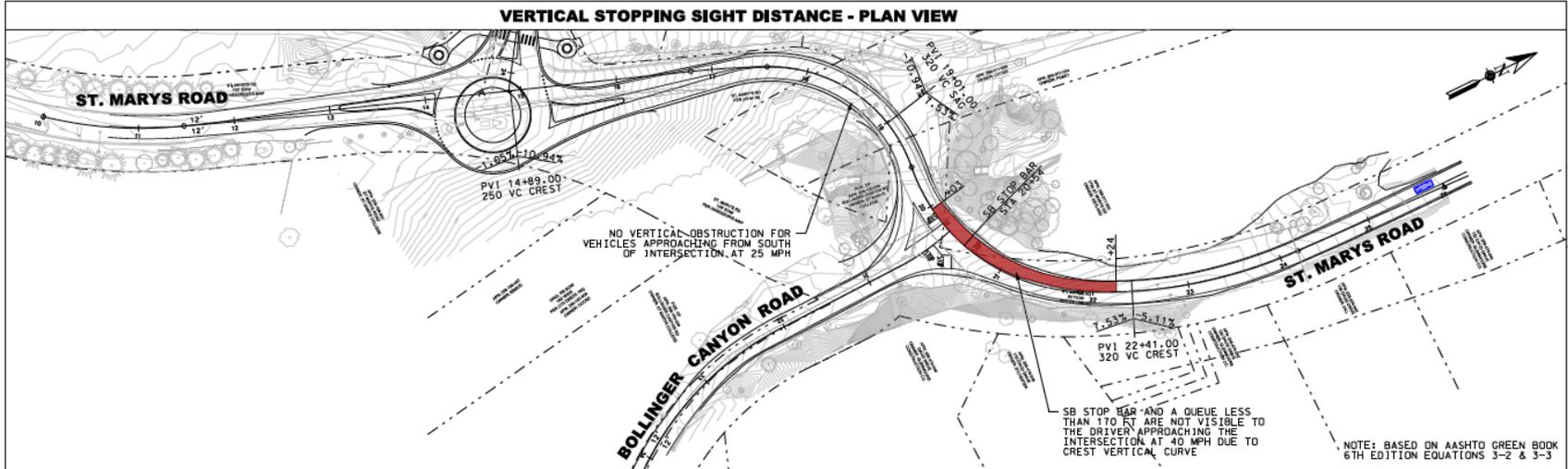


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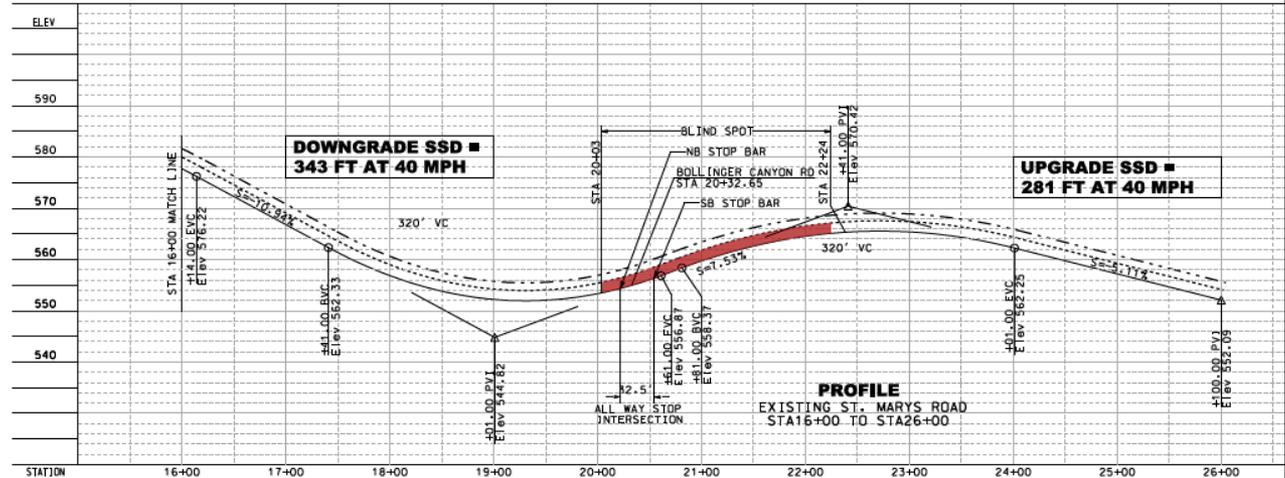
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PROJECT NEED



- LEGEND**
- APPROACHING VEHICLE
 - STOPPING SIGHT DISTANCE
 - - - EXISTING RIGHT OF WAY
 - █ BLIND SPOT FOR A DRIVER APPROACHING AT 40 MPH



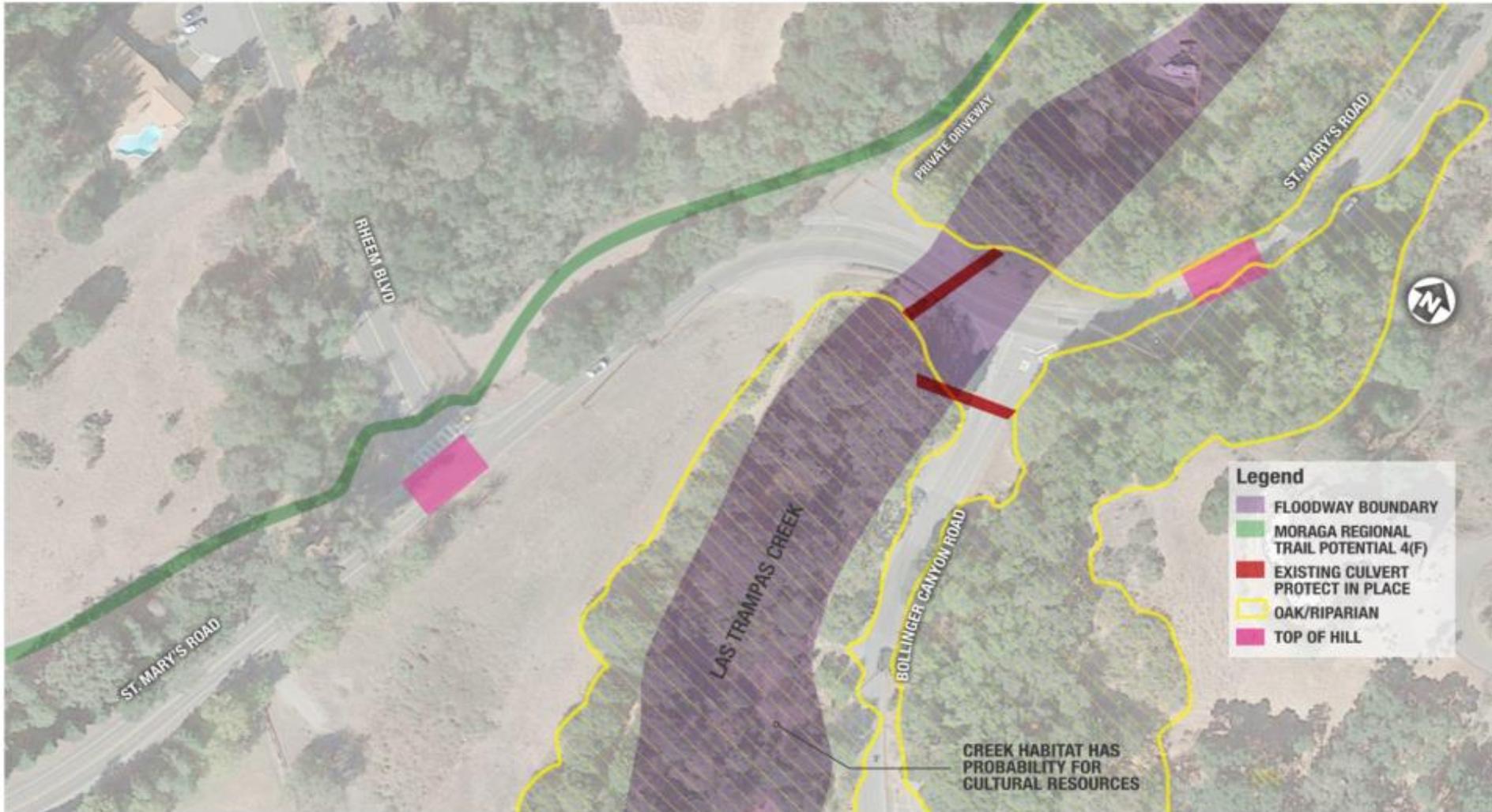


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CONSTRAINTS





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ALTERNATIVES

- Benefit/Cost Analysis Overview
- Alternatives
- Results



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Intersection Control Evaluation (ICE)

What Are the Steps to Conduct an ICE?

1	Evaluate Intersection Control Types	<ul style="list-style-type: none">✓ Alternative Intersection Control✓ Operations / Delay	<ul style="list-style-type: none">✓ Design / Service Life✓ Crash Prediction
2	Develop Concept Geometric Alternatives	<ul style="list-style-type: none">✓ Establish Footprint / Constraints✓ Ramp Meter / Queue Storage	<ul style="list-style-type: none">✓ Identify / Resolve Design Standard Deviations✓ Fatal Flaw Analysis
3	Calculate Benefit / Cost Ratio	<ul style="list-style-type: none">✓ Safety✓ Delay✓ Emissions	<ul style="list-style-type: none">✓ Operations & Maintenance✓ Construction
4	Select Alternative(s)	<ul style="list-style-type: none">✓ B/C Ratio✓ Qualitative Assessment	



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Benefit/Cost Analysis

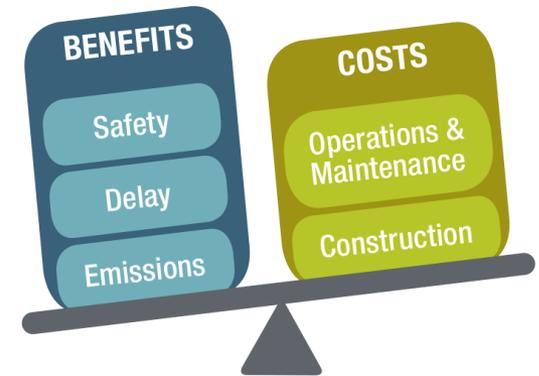
Performance Measures

In general, ICE analyses focus on five performance measures to calculate the benefit-cost ratio.

1. Safety
2. Delay (travel time reduction savings)
3. Emission reductions (not used in some states)
4. Operations and maintenance
5. Initial capital cost

Benefit Performance Measures calculate the benefits of an alternative compared to the existing condition

Cost Performance Measures calculate the added costs of an alternative compared to the existing condition



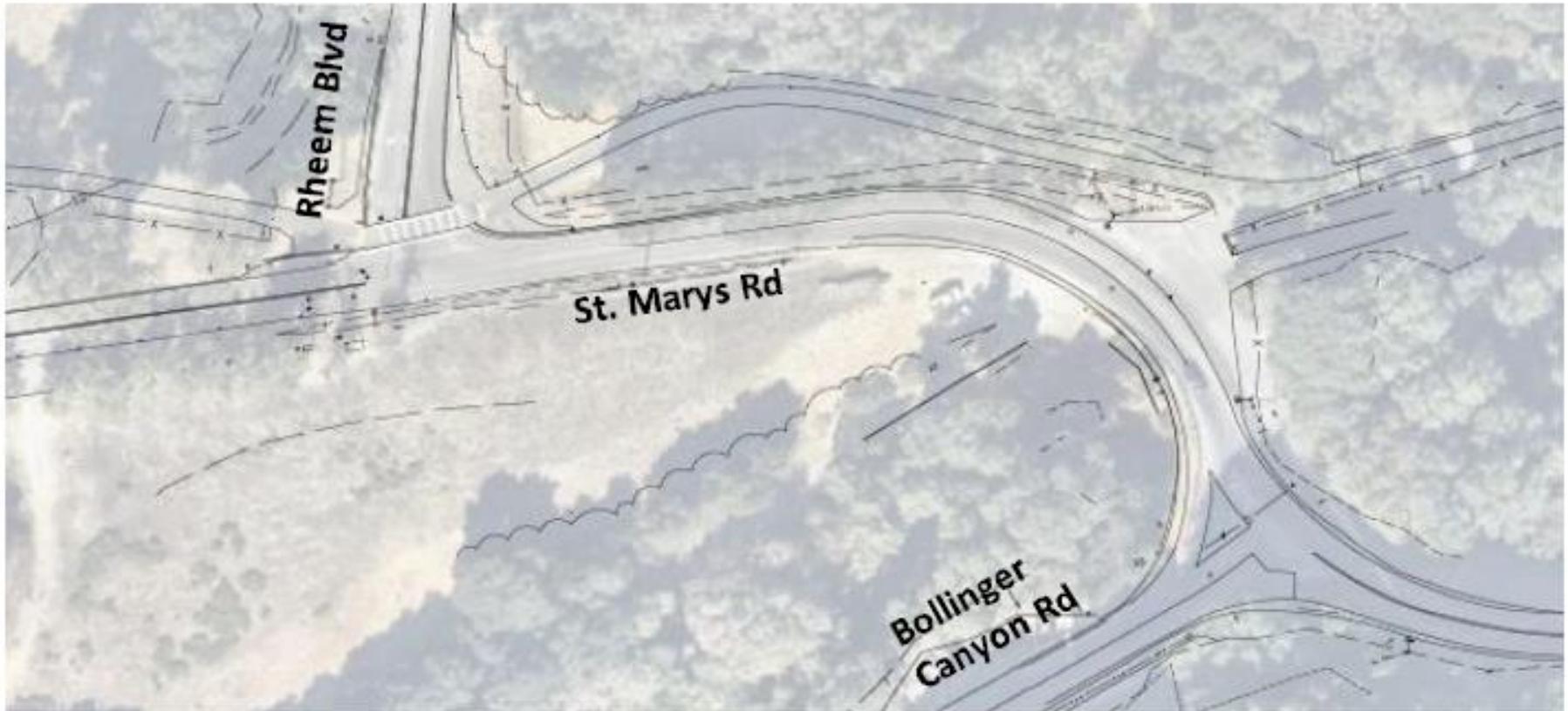


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Concept 1: Existing Configurations



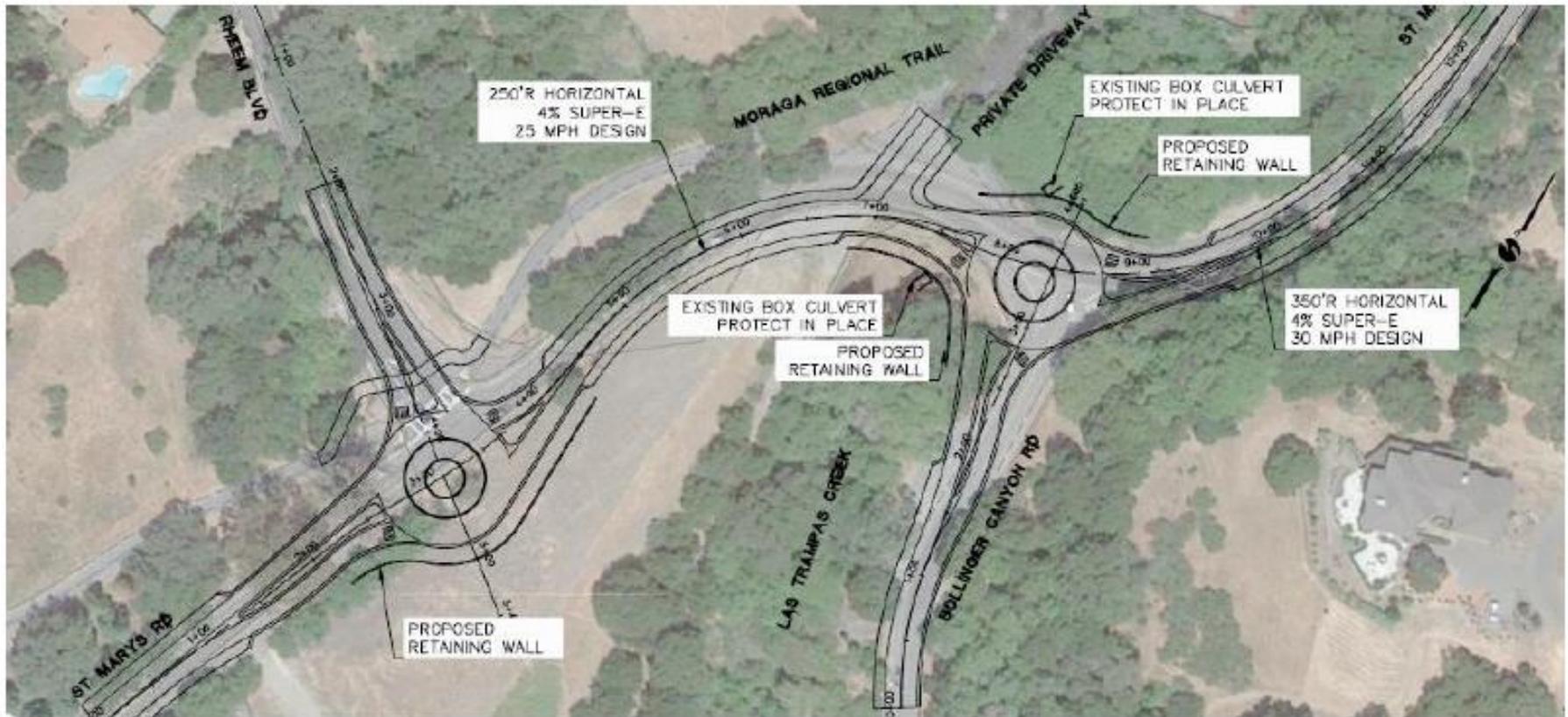


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Concept 2: Full-size Roundabouts at both intersections



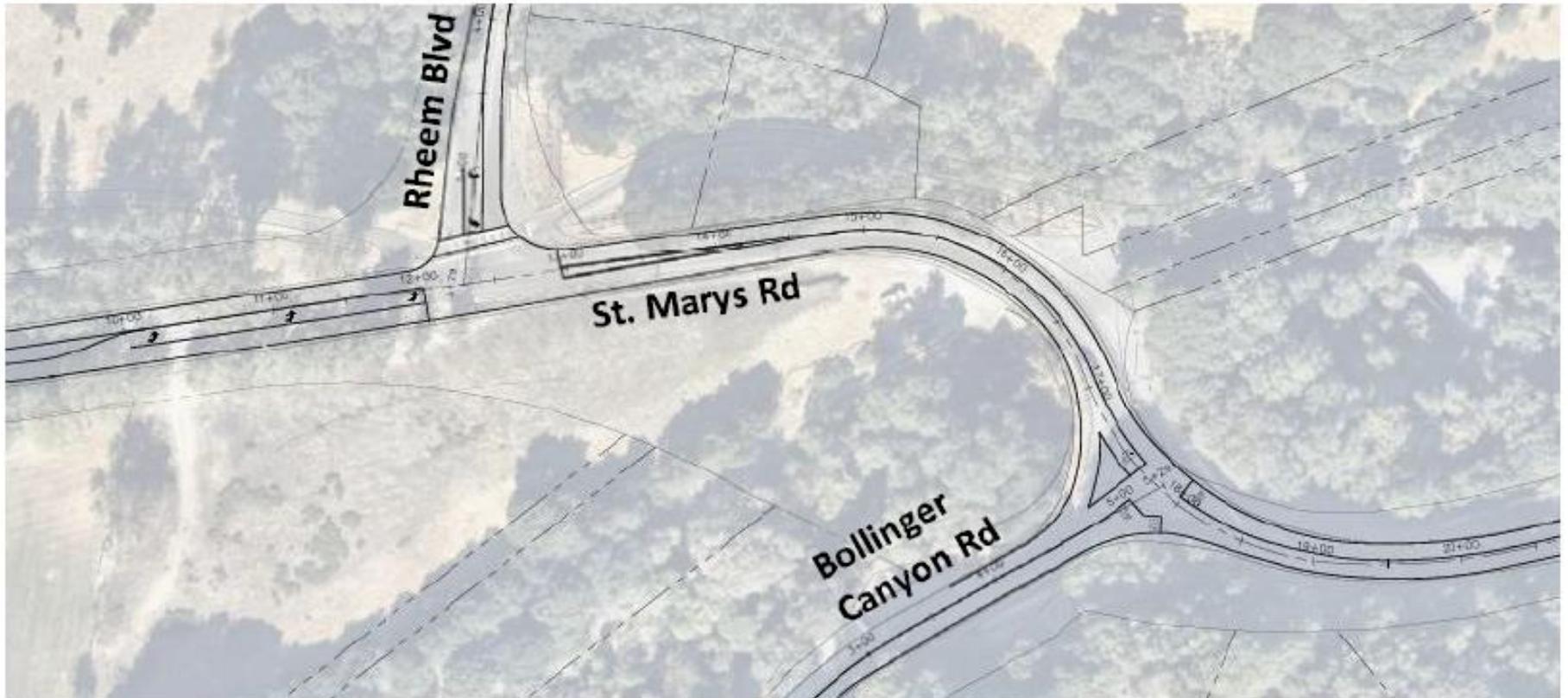


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Concept 3: Traffic Signal At Rheem, All-Way Stop at Bollinger



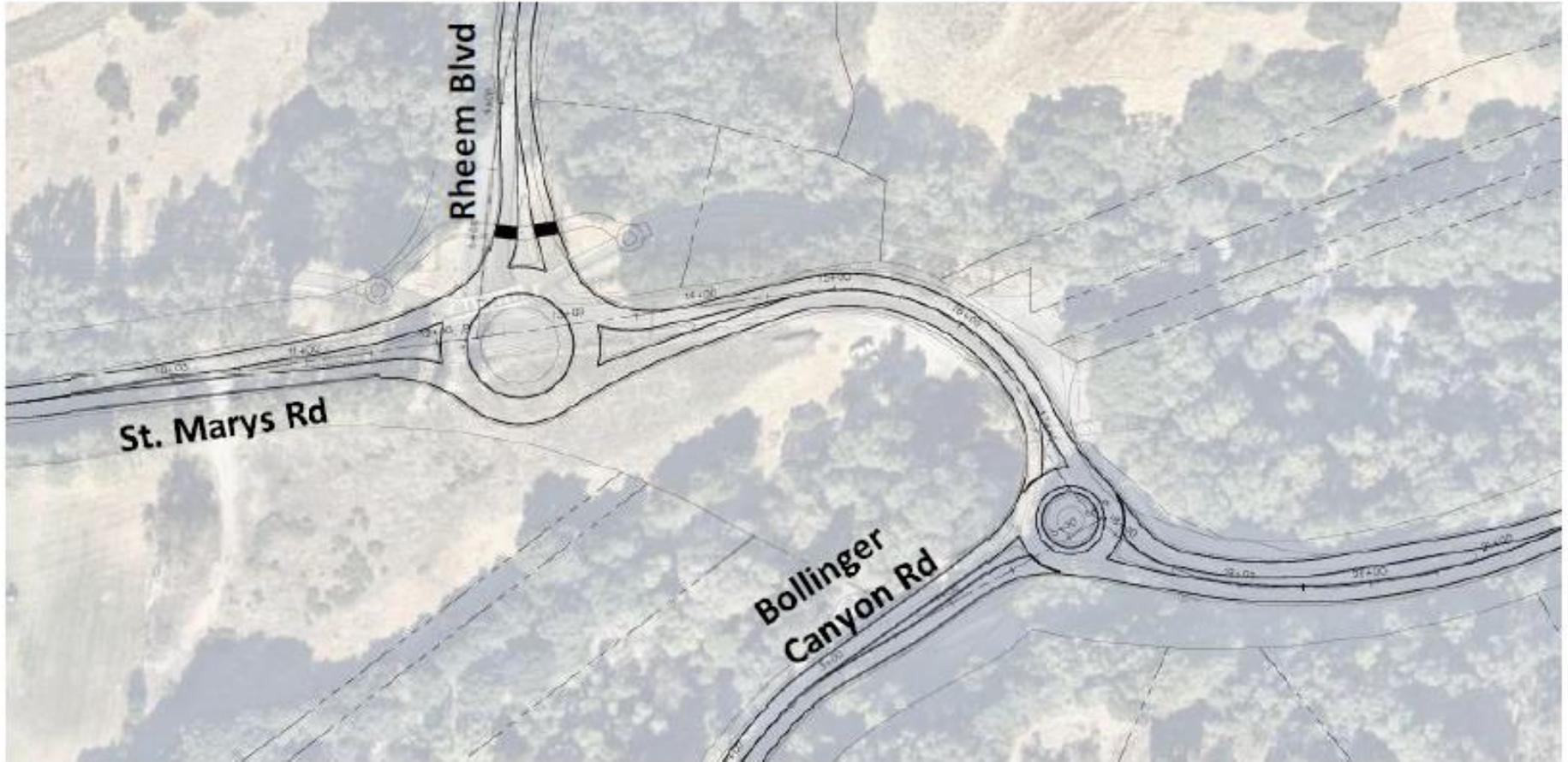


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Concept 4: RAB at Rheem, Mini-RAB at Bollinger



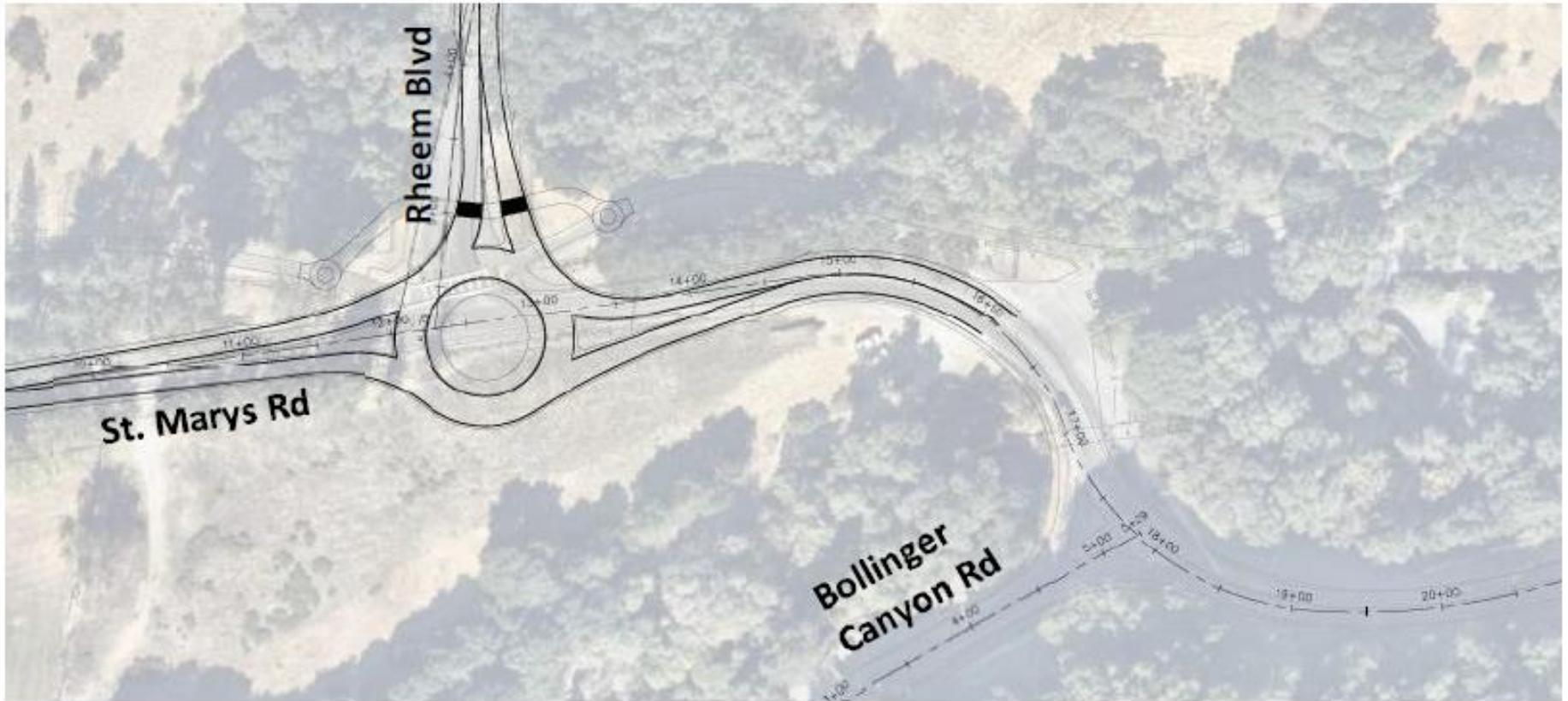


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Concept 5: RAB at Rheem and Existing Configuration at Bollinger





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Concept 6: RAB at Rheem, and All-Way Stop w/ Left-Turn Lane at Bollinger



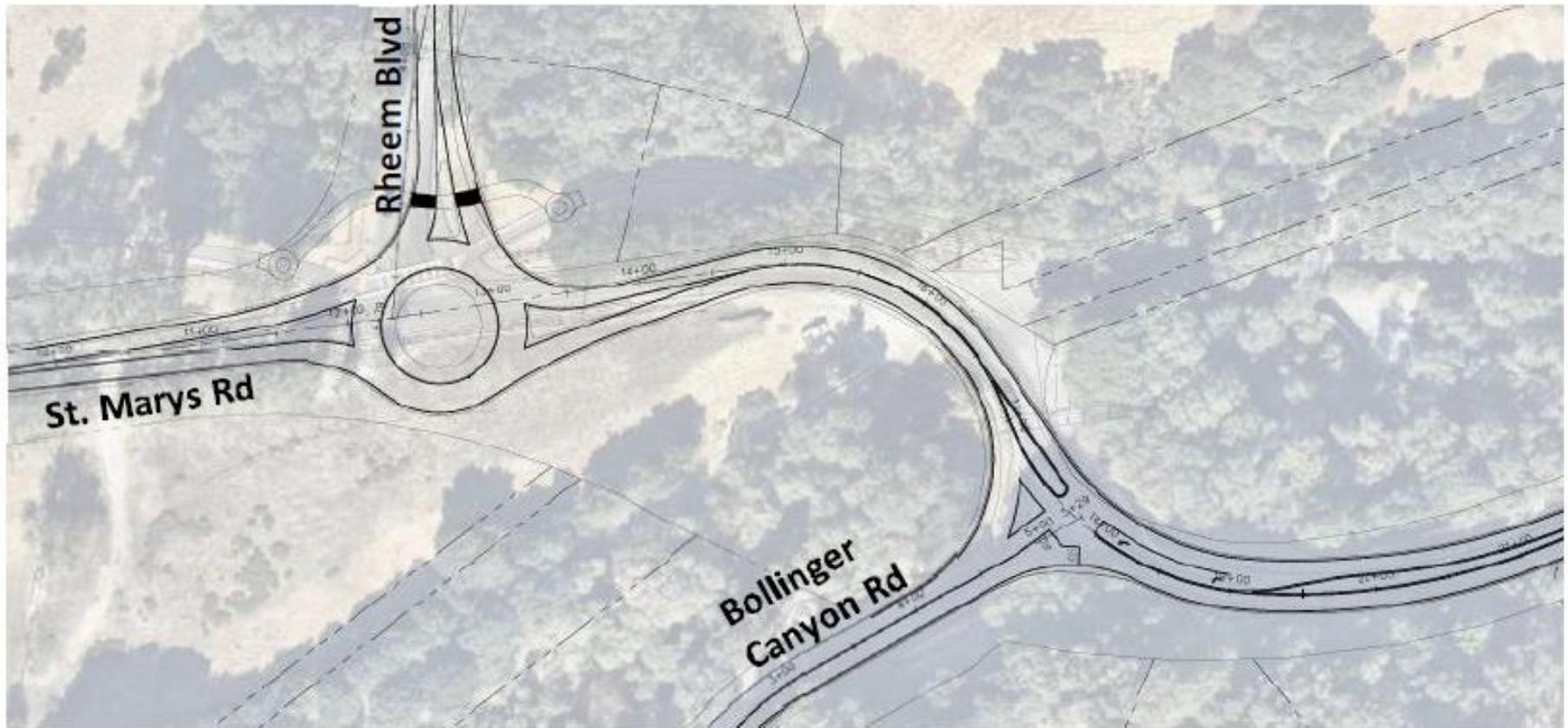


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Concept 7: RAB at Rheem and Stop Control on Bollinger with Left-Turn Lane at Bollinger





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B/C Analysis results

Concept #	Intersection	Control Type	B/C Ratio Score
1	Rheem Blvd.	Existing	-
	Bollinger Canyon Rd.	Existing	
2	Rheem Blvd.	Roundabout	< 1.0
	Bollinger Canyon Rd.	Roundabout	
3	Rheem Blvd.	Signal	< 1.0
	Bollinger Canyon Rd.	AWSC	
4	Rheem Blvd.	Roundabout	> 1.0
	Bollinger Canyon Rd.	Mini-Roundabout	
5	Rheem Blvd.	Roundabout	> 1.0 *
	Bollinger Canyon Rd.	Existing	
6	Rheem Blvd.	Roundabout	< 1.0
	Bollinger Canyon Rd.	AWSC w/LT	
7	Rheem Blvd.	Roundabout	> 1.0
	Bollinger Canyon Rd.	TWSC w/LT	

* Concept 5 does not include any improvements at Bollinger Canyon Road intersection



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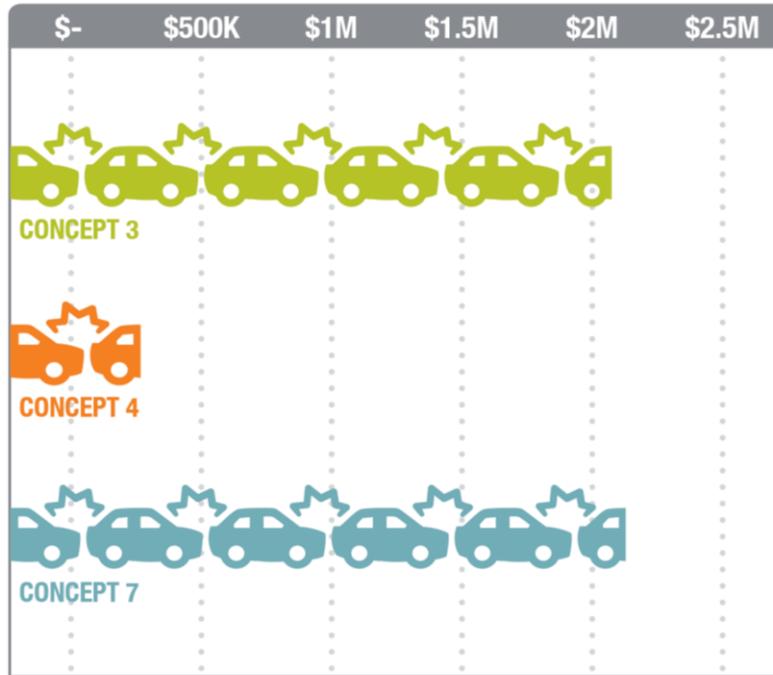
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Performance Measure Results

SAFETY COST

RHEEM BLVD AND BOLLINGER CANYON RD



The cost of crashes for **CONCEPT 3** & **CONCEPT 7** is **8x** more than **Concept 4**

- CONCEPT 3  
- CONCEPT 4  
- CONCEPT 7  



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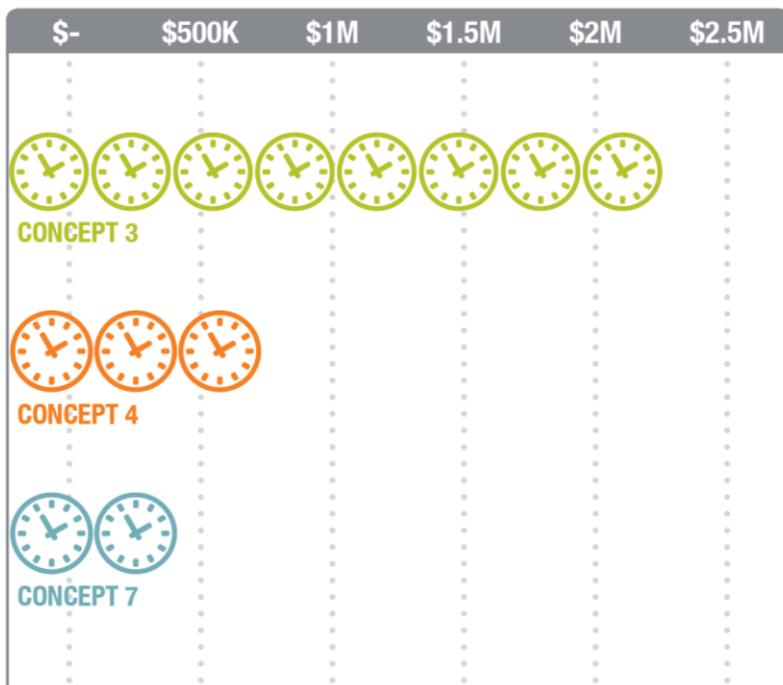
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Performance Measure Results

RHEEM BLVD AND BOLLINGER CANYON RD

DELAY



The cost of delay for **CONCEPT 3** is **3x** more than **Concept 4** & **4.5x** more than **Concept 7**

- CONCEPT 3  
- CONCEPT 4  
- CONCEPT 7  



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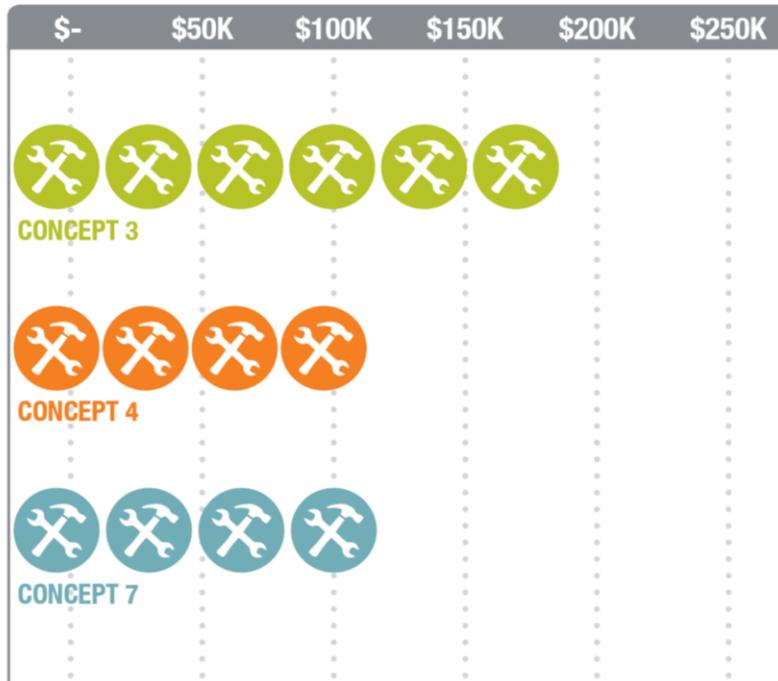
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Performance Measure Results

OPERATION & MAINTENANCE COST

RHEEM BLVD AND BOLLINGER CANYON RD



The cost of O & M for **CONCEPT 3** is **65%** more than **Concept 4 & Concept 7**

- CONCEPT 3  
- CONCEPT 4  
- CONCEPT 7  



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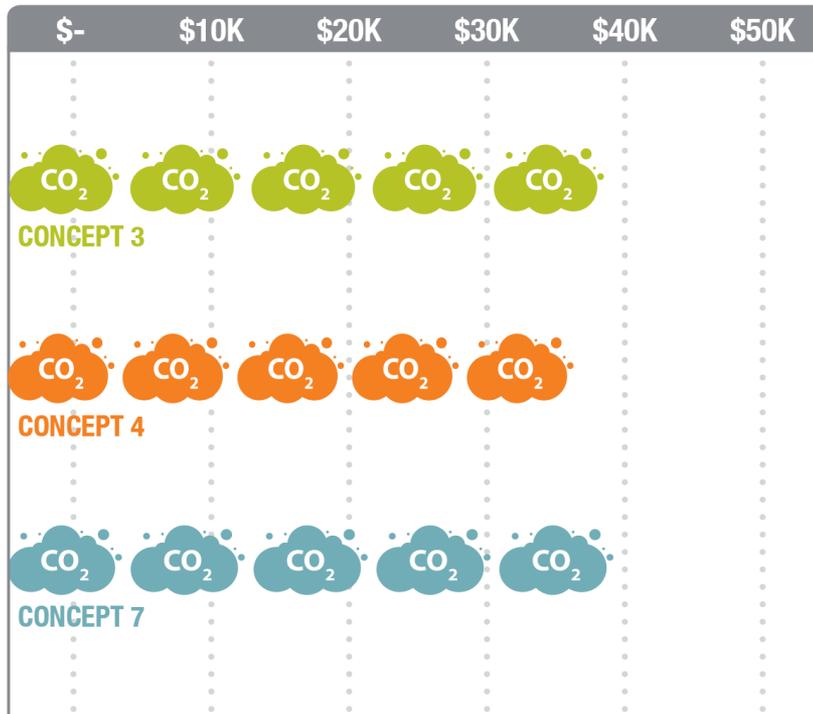
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Performance Measure Results

EMISSION

RHEEM BLVD AND BOLLINGER CANYON RD



- CONCEPT 3  
- CONCEPT 4  
- CONCEPT 7  



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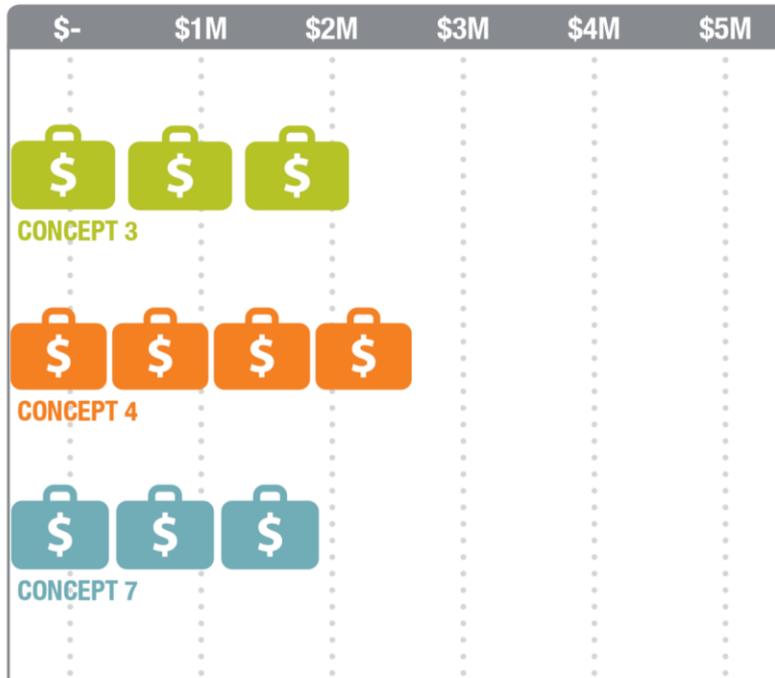
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Performance Measure Results

INITIAL CAPITAL COST

RHEEM BLVD AND BOLLINGER CANYON RD



The initial capital cost for **CONCEPT 4** is **30%** more than **Concept 3 & Concept 7**

- CONCEPT 3  
- CONCEPT 4  
- CONCEPT 7  



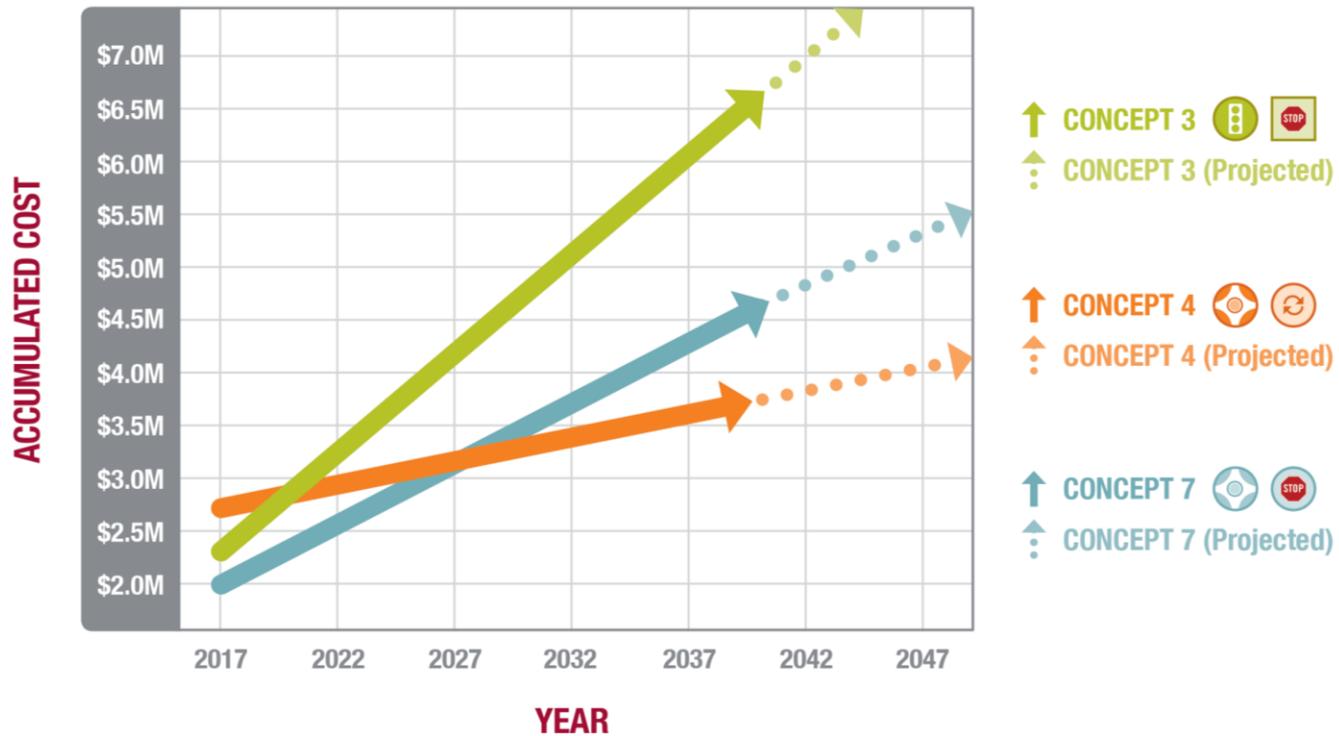
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Preferred Alternative

ACCUMULATED COSTS BETWEEN PROPOSED ALTERNATIVES





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Funding Discussion

- Contra Costa Transportation Agency (CCTA) \$450,000
- Lamorinda Fee and Finance Authority (LFFA) \$140,707
 - Lafayette, Moraga and Orinda form the LFFA to collect developer fees to address regional congestion needs
 - CCTA and LFFA Funds are earmarked specifically for major regional routes (roadway improvements)
 - St. Mary's Road Roundabouts was CCTA & LFFA approved project
- No Town General Funds
- CCTA and LFFA funds can't be repurposed for a different use - Consequences
- The Town will seek grant funds to complete project



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Project Costs Are Dropping

- The Town has worked with our consultants to refine the project in a manner that reduces costs, making the project:
 - More grant competitive
 - More likely to get funded and constructed sooner
- Project Evolution
 - 2009 – Options included a bridge over the creek (\$11 M)
 - 2015 – 2 Full-sized roundabouts (\$7 Million)
 - 2017/18 – One full size and one mini roundabout
 - \$0.35 Million Final Design and \$2.6 Million Construction



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Summary

- OUTREACH
- SAFETY
- ALTERNATIVES
- FINANCE



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Next Steps

City Council
presentation on
October 24

Complete CEQA

Complete 35%
Design

Apply for
additional grant
funding for final
design and
construction



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For more information or additional comments:

Shawn Knapp

(925) 888-7027

sknapp@moraga.ca.us

Project website:

<http://www.moraga.ca.us/roundabouts>

Please submit comments by October 12, 2018



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Breakout Groups

- Benefit/Cost Analysis of Alternatives - Sean
- Scale Model of Roundabouts and Simulations - John
- Intersection Safety - Edric and Jon
- Community Benefits (Landscaping, Bike, and Pedestrian Opportunities) - Shawn