



Update on Train Horn Noise

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Safety and Quality of Life

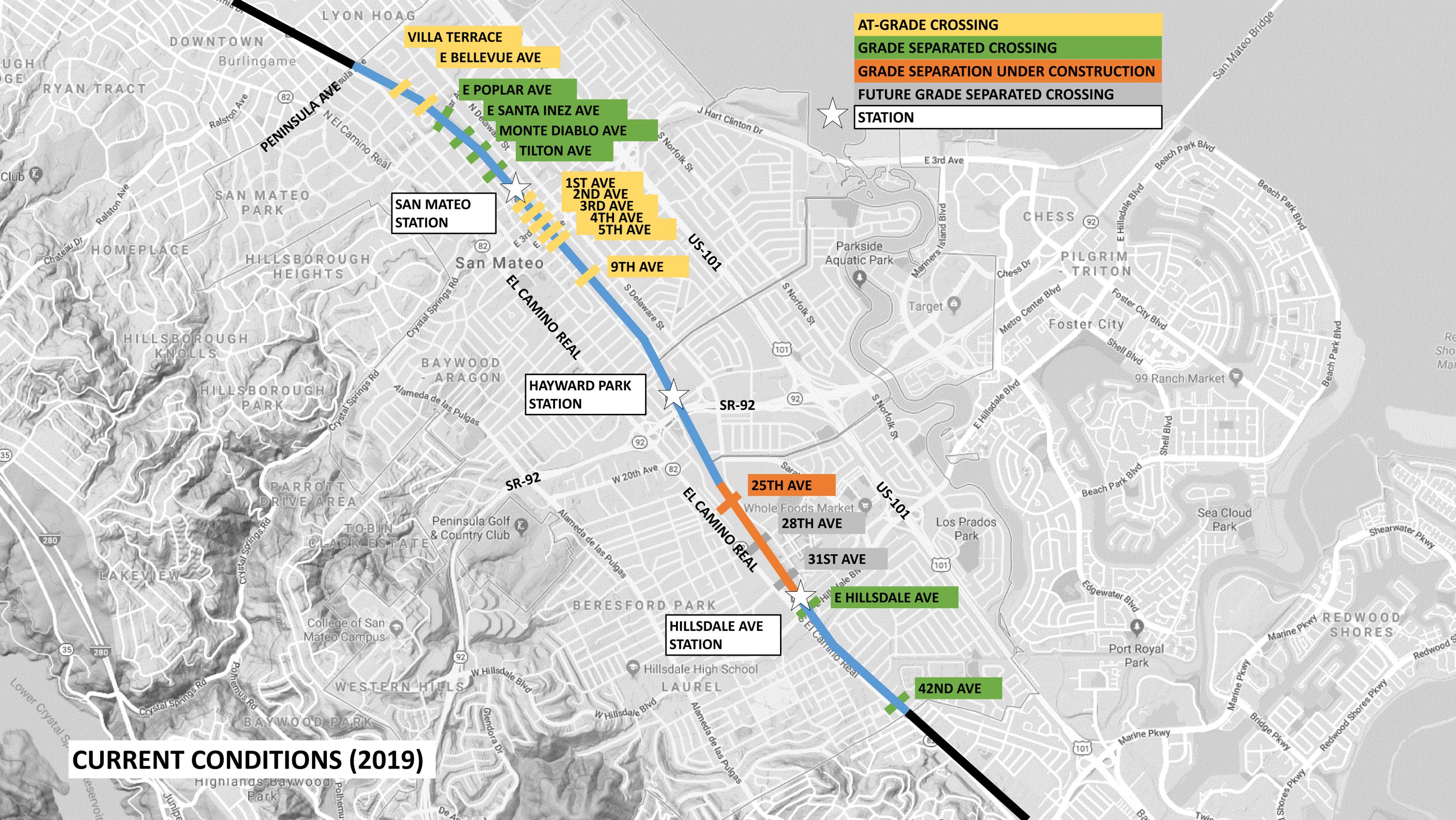
Reduce risk of collisions



Limit use of train horns

Background Information and Regulations

- Federal Railroad Administration (FRA) - governance
 - Caltrain, Union Pacific Railroad – owner/operator
- Train Horn Rule
 - Code of Federal Regulations, Title 49, Part 222
 - Train horns are a safety precaution and warning device required by the Federal Railroad Administration at all grade crossings, construction zones, occupied station platforms, and other situations.
- Exception
 - Municipalities can establish a Quiet Zone to restrict the use of train horns *at grade crossings* if certain safety improvements are made so as not to increase the risk of collisions.



- AT-GRADE CROSSING
- GRADE SEPARATED CROSSING
- GRADE SEPARATION UNDER CONSTRUCTION
- FUTURE GRADE SEPARATED CROSSING
- STATION

VILLA TERRACE
 E BELLEVUE AVE
 E POPLAR AVE
 E SANTA INEZ AVE
 MONTE DIABLO AVE
 TILTON AVE

SAN MATEO STATION

1ST AVE
 2ND AVE
 3RD AVE
 4TH AVE
 5TH AVE

9TH AVE

HAYWARD PARK STATION

25TH AVE

28TH AVE

31ST AVE

HILLSDALE AVE STATION

E HILLSDALE AVE

42ND AVE

CURRENT CONDITIONS (2019)

Timeline of Efforts

- 2009 – San Mateo Request to Lower Train Horn Volume
 - Caltrain – Horn Relocation
 - Union Pacific – No Change
- 2013 – Train Horn Noise Assessment
 - Existing horns appeared to be within FRA requirements.
- 2018 – Staff Update on Train Horn Noise Efforts
- 2019 – Progress Update

Quiet Zone Metrics

Quiet Zone Risk Index (QZRI) –

A calculation of aggregate risk of collision within a segment of rail used to compare anticipated risk under different conditions and scenarios.

National Significant Risk Threshold (NSRT) –

A numeric representation of the national average level of risk of collision at rail road crossings equipped with standard flashing lights and gates, and at which horns are sounded.

Risk Index with Horns (RIWH)

A measure of risk when train horns are routinely sounded at every grade crossing within a segment of rail being considered for a quiet zone.

To qualify for a quiet zone: $QZRI < NSRT$ or $QZRI < RIWH$

Achieving a Quiet Zone

Approaches to qualify for a quiet zone:

- Install Supplemental Safety Measures (SSMs) at all grade crossings, or
- Reduce the risk of collision by installing SSMs at selected grade crossings

Supplemental Safety Measures (SSMs) –

FRA pre-approved risk reduction engineering treatments installed at public rail crossings that have been determined to be effective in reducing collision risk.

- Permanent Street Closure
- Temporary Street Closure (with traffic barriers)
- One-Way Street Conversion
- Four-Quadrant Gates
- Medians or Channelization Devices

Currently San Mateo does not have any grade crossings with qualifying SSMs

Current Projects to Improve Grade Crossings

Improvements at 4th and 5th Avenue crossings

- Install 4-quadrant gates at 4th and 5th Avenues
- California Public Utilities Commission (CPUC) recommendation for funding under Railroad-Highway Grade Crossing Program “Section 130”
- Average estimated cost \$3.6 million per crossing
- Qualifying SSMs - progress toward quiet zone

Scenarios for Establishing a Quiet Zone

Proposed Improvements	Quiet Zone Collision Risk Index*
Existing Condition (No SSMs)	167% of Threshold – Does Not Qualify
Section 130 Improvements (4-Quadrant Gates at 4 th Ave and 5 th Ave)	113% of Threshold – Does Not Qualify
Section 130 & Close Villa Terrace	105% of Threshold – Does Not Qualify
	Threshold – Risk Index With Horns (RIWH)
Section 130 & Convert 3 rd Ave to One-Way	99.8% of Threshold – Qualifies for Quiet Zone
Section 130 & Medians at Bellevue Avenue	92% of Threshold – Qualifies for Quiet Zone
Section 130 & Convert Bellevue Ave to One-Way	91% of Threshold – Qualifies for Quiet Zone
Section 130 & Close Bellevue Avenue	89% of Threshold – Qualifies for Quiet Zone
Section 130 & Medians on Belview and Close Villa Terr	73% of Threshold – Qualifies for Quiet Zone
Section 130 & Close Villa Terr and Bellevue Ave	67% of Threshold – Qualifies for Quiet Zone

*Based on latest FRA data, dated May 2019.

Additional Efforts Toward Quiet Zone

- Evaluating physical and economic feasibility of various SSMs
- Analyzing Potential Closure of Villa Terrace and/or Bellevue Avenue
 - Street closure would eliminate need for trains to sound horns
 - Traffic impact analysis to study closure impacts
- Evaluating median islands at Bellevue crossing

Caltrain Safety Improvements

- Caltrain Safety Improvement Project
 - Install medians at 1st Ave, 2nd Ave, and 3rd Ave
 - The proposed medians would not qualify as SSMs towards Quiet Zone



Challenges of Achieving a Quiet Zone

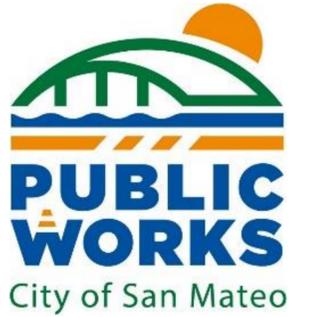
- All safety improvements within railroad right of way must be designed and constructed by Caltrain
- Rail crossing safety improvements are costly and there are minimal opportunities for grant funding
- Out of all the grade crossings in San Mateo, only Bellevue Ave can accommodate medians meeting SSM criteria without impacting driveways and nearby roadways

Next Steps

- Coordinate funding agreements and improvements with Caltrans, Caltrain, and CPUC for Section 130 improvements at 4th & 5th
 - Estimated construction in 2023
- Traffic Study – present results to Council
 - Estimated Fall 2020
- Initiate installation of medians on Bellevue Ave.
 - Budget funds in FY 21/22 to initiate medians on Bellevue including outreach to adjacent residents
- Council input or questions
 - Any other actions desired at this time?



Thank you for your time.



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<https://www.cityofsanmateo.org/2279/Train-Horn-Noise>

Stewards of your infrastructure

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Supplemental Slides

Medians or Channelization Devices as a Supplemental Safety Measure

To qualify as an SSM towards a Quiet Zone, medians or channelization devices must:

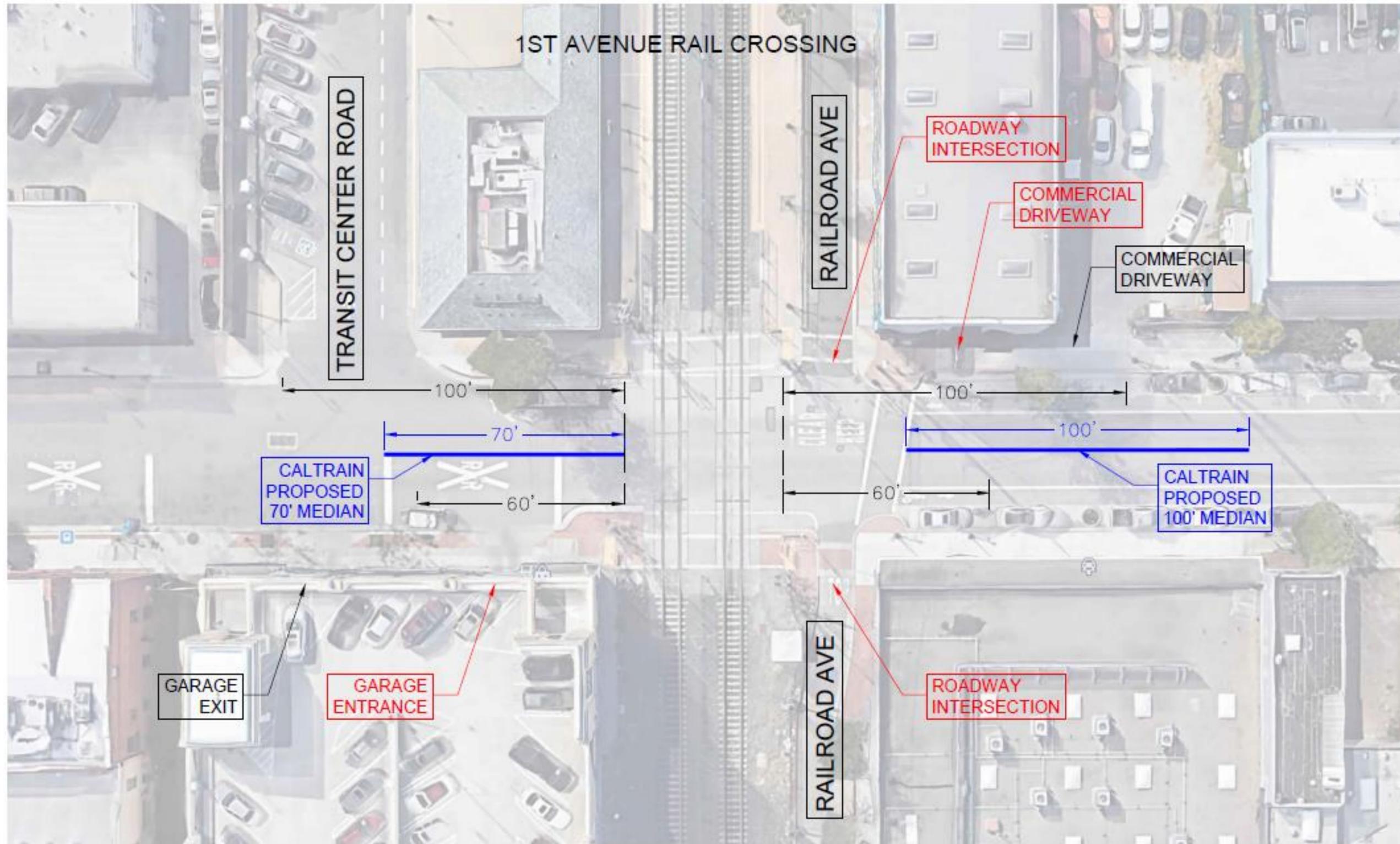
- Extend at least 100 ft from the gate arm, or
- If there are intersections within 100 ft, extend at least 60 ft from the gate arm AND all intersections within 60 ft of the gate arm must be closed.

Intersections include:

- Intersections of streets
- Commercial driveways
- Driveways serving residences of more than 4 units.

All crossings except Bellevue Ave have existing intersections within 60 ft of the gate arm.

Medians as SSMs – Illustration



Potential Medians at Bellevue

