Corridor Crossings STRATEGY

January 2026 – Program rollout presentation

DRAFT Deliberative

AGENDA

- **Safety Moment**
- **CCS**
  Why, What, Who, & How
- **Sequence Lists**
  Safety Enhancements and Eliminations
- **Rollout**
  + Internal Work

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Corridor Crossings Strategy

Connecting communities. Enhancing safety. Reducing risks.

CCS: The WHY

- **Safe, Accessible Corridor:** We have a shared goal of enhancing safety and improving connections for everyone who lives, works, and travels on, along, and through the Caltrain corridor

- **Stronger Together:** By aligning Caltrain, Transportation Authorities, and cities under one coordinated framework, we can plan and deliver safety projects more effectively—speaking with one corridor voice to achieve shared goals for safety, mobility, and community benefit.

- **Local Benefits:** Safer crossings mean more comfort for people walking or biking, small businesses benefit from more inviting environment. Neighborhoods are easier to navigate and calmer. The coordinated corridor approach helps corridor partners invest resources into projects that yield early benefits, creating meaningful quality-of-life improvements sooner.

CCS: The WHY Continued

- **Strategic and Transparent Funding Decisions:** With constrained funding at the federal, state, and local levels a corridor-wide program ensures that every dollar is directed where it delivers the greatest safety, mobility, and community benefit. Through a data-driven and transparent process, partners can make difficult but necessary tradeoffs to prioritize projects that are most competitive for external funding and deliver the highest public value.

- **Efficient and Accountable Delivery**: A unified program structure provides clear visibility into project status and progress, fostering coordination, consistency, and accountability across all partners.

WHAT

- **Safety Enhancement Program:** Process of establishing a **sequencing** and integrated delivery of near-term, at-grade crossing safety projects along the corridor
  - Baseline and Advanced

- **Elimination Program:** Process of establishing a **sequencing** and integrated delivery of crossing elimination projects
  - Closures and grade separations

- **Creation of venues** for corridor partners to jointly own resource allocation and share lessons learned for safety enhancement and elimination projects

- Creation of a **Delivery Guide,** living document, that translates corridor processes, standards and policies into guidelines and lessons learned for projects https://www.caltrain.com/caltrain-corridor-crossings-delivery-guide

WHO

Over the last two years, there have been dozens of meetings and hundreds of comments from corridor partners to shape the program. Including participation from:

- Caltrain Board and Staff
- Transportation Authority Leadership and Staff from the 3 counties
- City Elected officials and staff from the 20 jurisdictions from San Francisco to Gilroy
- MTC, transit advocates, business leaders, labor and member of the public

Caltrain's current role is to establish a framework and facilitate the launch of the CCS Programs. As the program evolves, roles may change over time

HOW and WHEN Sequence Lists Updated

Corridor Level Roadmap: Sequence list will inform funding strategies and roadmap for delivery of safety enhancement and elimination projects for cities, funding partners and Caltrain

Sequence List Updated Annually: Sequence list would be updated on an annual basis, informed by data driven inputs. Sequence list would be adopted by the Caltrain Board on annual basis.

Transparent, Program & Project Level Updates Quarterly:

- TA Executive Leaders and Senior Staff; MTC Executive Leaders and Senior Staff
- Local Policy Maker Group (Elected Officials from 20 jurisdictions)
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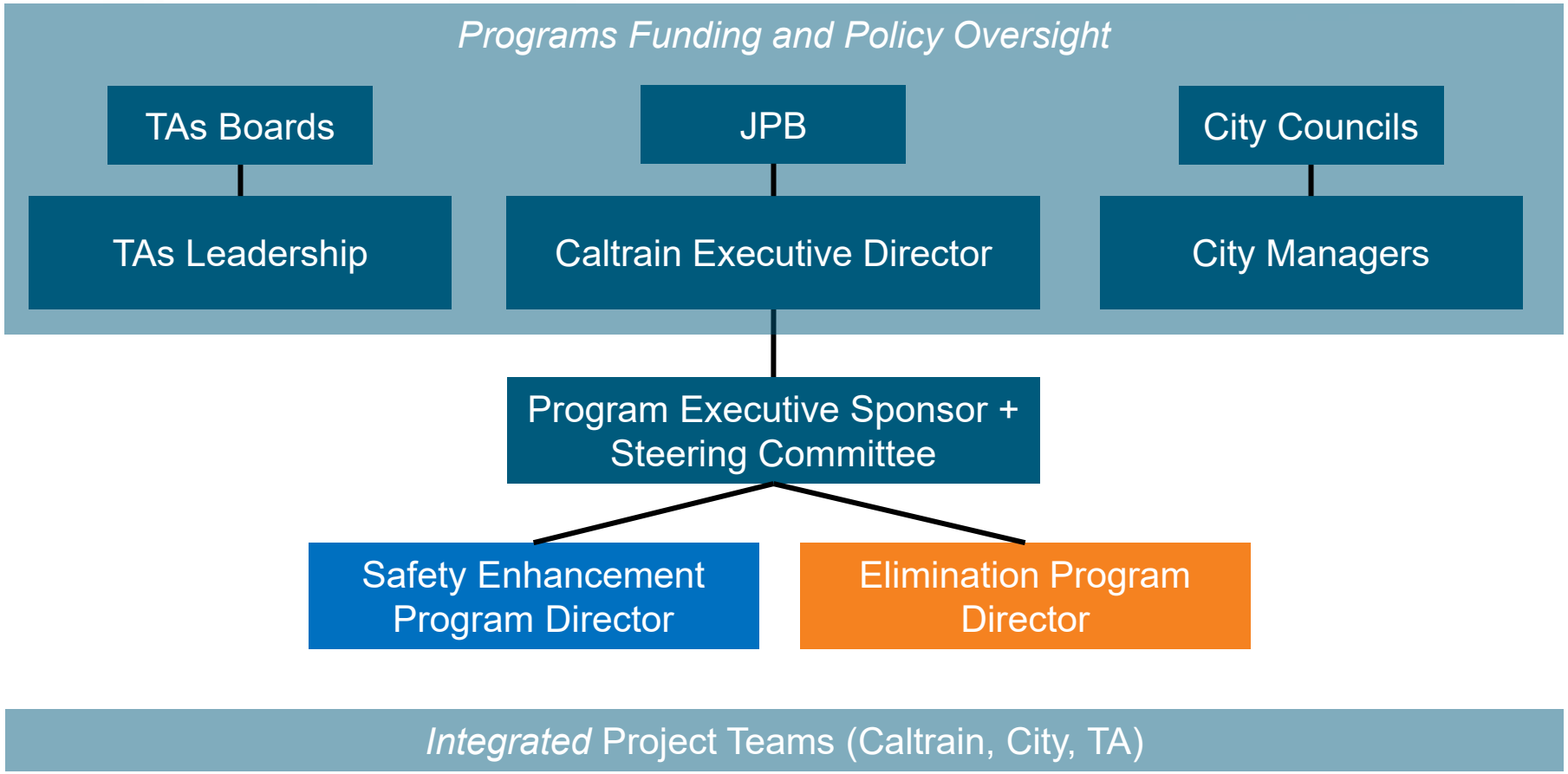
- City / County Staff Coordinating Group (staff from 20 jurisdictions)

Programs Oversight and Delivery



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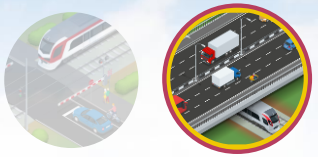
Elimination Delivery Strategy



- ***An intentionally staffed, integrated cross-functional team*** *of dedicated experts ensuring alignment, transparency, and focused prioritization of the CCS Program.*

- Goals:
  - **Standardize Designs**: Reduce redundancy, achieve economies of scale, and ensure consistent safety and design standards corridor-wide.
  - **Explore Innovative Delivery**: Facilitate quality and efficiency of construction across the corridor, including exploring modular and prefabricated solutions as well as projects bundling.
  - **Minimize Service Disruption**: Strategize construction approach to reduce impacts on Caltrain operations.

Safety Enhancement Program

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Safety Enhancement Program

Baseline Safety Enhancements (All Crossings)

- Average Costs Range: Less than $1M*
- Average time design to completed project: 0-1 year

- Delineators
- Pavement Markings/Signage/Hatching
- City Traffic Timing Adjustments
- Solar Lane Markers

Advanced Safety Enhancements (Crossing-Specific)

- Average Costs Range: $1M to $6M*
- Average time design to completed project: < 2 years

- Fencing
- Gates and Gate Warning Signals
- Lighting
- Concrete Work
- Quad Gates
- AI/Intrusion Technology
- Median Installation/Roadway Channelization
- Drainage Improvements

*based on 2025 cost estimates, subject to change

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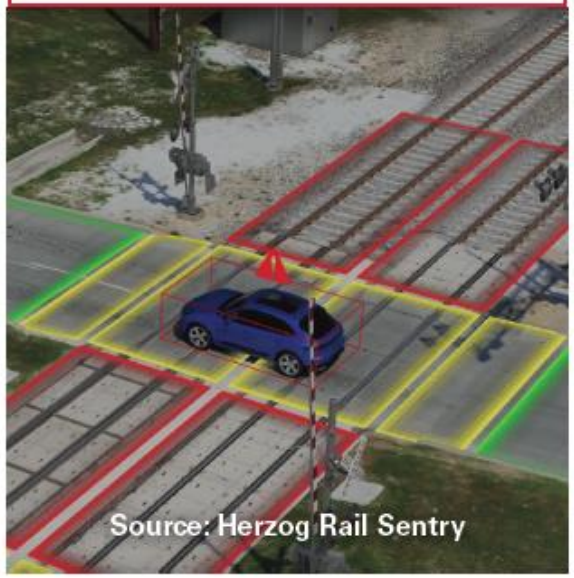
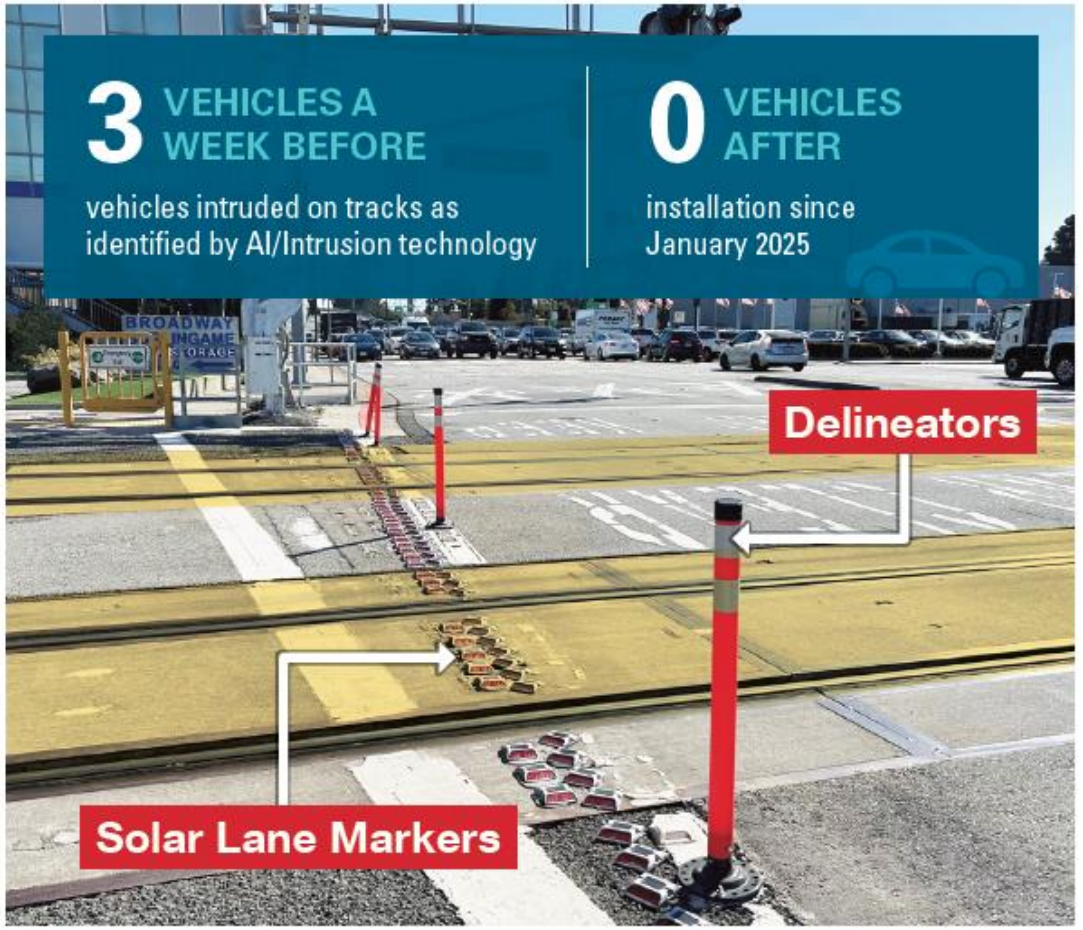
Example: Installed Safety Enhancement Project

Caltrain is deploying **AI/Intrusion technology** learning software that uses a combination of LiDAR and cameras to observe crossings and send alerts to operations about potential hazards to mitigate collisions.





- Cost of installation ~ $300K

Worked with technology providers to improve audio and visual directions by tracks

Safety Enhancement: Data Input for Sequence List

Goal	Evaluation Criteria
Safe and Equitable Mobility	**Fatal Rail Incidents** • Total number of rail incidents that resulted in at least 1 fatality (2017-2023)
	Total Rail Incidents • Total number of rail incidents at a crossing (2017-2023)
	FRA Accident Prediction System • Predicted accident rank
	Street Incident - AADT Ratio • Street incidents (2017-2023) • Ratio = Total street incidents per 1,000 adjusted AADT • Identify crossings with a high number of street incidents and low AADT

Caltrain prioritizes closures of crossings. Closures that can be delivered independently from a grade separation project will take priority over safety enhancement projects.

Safety Enhancement: Sequence Definitions

Funding Groups	Near-Term Objectives
1 *(Score ≥ 3)*	**Design and construct** safety enhancements to address highest priority safety crossings.
2 *(Score = 2)*	**Advance design** of safety enhancements to address next highest priority safety crossings.
3 *(Score = 1)*	**Monitor** annual safety trends for crossings with low safety indicators.
4 *(Score = 0)*	**Monitor** annual safety trends for crossings with lowest safety indicators.

Note: Baseline safety enhancements will be deployed across all Caltrain crossings

Baseline Safety Enhancement Projects

Baseline Safety Enhancements	Crossing	City
Closure of Castro Street**		**Mountain View**
Closure of Villa Terrace**		**San Mateo**
+	Mission Bay Drive	SF
+	16th Street	SF
+	Linden Avenue	SSF
+	Scott Street	San Bruno
+	Center Street	Millbrae
+	Santa Paula Ped	Millbrae
+	Broadway*	Burlingame
+	Morrell Avenue Pedestrian Crossing	Burlingame
+	Oak Grove Avenue	Burlingame
+	North Lane	Burlingame
+	Howard Avenue	Burlingame
+	Bayswater Avenue	Burlingame
+	Peninsula Avenue	Burlingame

Baseline Safety Enhancements	Crossing	City
+	Bellevue Avenue	San Mateo
+	1st Avenue	San Mateo
+	2nd Avenue	San Mateo
+	3rd Avenue	San Mateo
+	4th Avenue	San Mateo
+	5th Avenue	San Mateo
+	9th Avenue	San Mateo
+	Whipple Avenue	RWC
+	Brewster Avenue	RWC
+	Broadway/Marshall Street	RWC
+	Maple Street	RWC
+	Main Street	RWC
+	Chestnut Street	RWC
+	Fair Oaks Lane	Atherton

Baseline Safety Enhancements	Crossing	City
+	Watkins Avenue	Atherton
+	Encinal Avenue	Menlo Park
+	Glenwood Avenue	Menlo Park
+	Oak Grove Avenue	Menlo Park
+	Ravenswood Avenue	Menlo Park
+	Palo Alto Avenue*	Palo Alto
+	Churchill Avenue*	Palo Alto
+	East Meadow Drive*	Palo Alto
+	Charleston Road*	Palo Alto
+	Rengstorff Avenue	MV
+	Mary Avenue	Sunnyvale
+	Sunnyvale Avenue	Sunnyvale
+	Auzerais Avenue	San Jose
+	Virginia Street	San Jose

* Denotes crossings with identified baseline safety enhancement project (completed or ongoing).
** Indicates that a closure project is ongoing and funded for the specific crossing.

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Sequence: Advanced Safety Enhancement Projects

Group	Crossing	City
Closures	**Castro Street****	**Mountain View**
	Villa Terrace**	**San Mateo**
1 Design and Construct	Mission Bay Drive	SF
	Scott Street	San Bruno
	Broadway	Burlingame
	Brewster Avenue	RWC
	Main Street	RWC
	Churchill Avenue	Palo Alto
	East Meadow Drive	Palo Alto
	Rengstorff Avenue	MV
2 Design	16th Street	SF
	North Lane	Burlingame
	Charleston Road	Palo Alto

Group	Crossing	City
3 Monitor	Bayswater Avenue	Burlingame
	Bellevue Avenue	San Mateo
	Whipple Avenue	RWC
	Marshall Street	RWC
	Oak Grove Avenue	Menlo Park
	Mary Avenue	Sunnyvale
4 Monitor	Linden Avenue	SSF
	Center Street	Millbrae
	Santa Paula Ped	Millbrae
	Oak Grove Avenue	Burlingame
	Howard Avenue	Burlingame
	Peninsula Avenue	Burlingame

Group	Crossing	City
4 Monitor	1st Avenue	San Mateo
	2nd Avenue	San Mateo
	3rd Avenue	San Mateo
	4th Avenue	San Mateo
	5th Avenue	San Mateo
	9th Avenue	San Mateo
	Maple Street	RWC
	Chestnut Street	RWC
	Fair Oaks Lane	Atherton
	Encinal Avenue	Menlo Park
	Glenwood Avenue	Menlo Park
	Ravenswood Avenue	Menlo Park
	Palo Alto Avenue	Palo Alto
	Sunnyvale Avenue	Sunnyvale
	Auzerais Avenue	San Jose
	Virginia Street	San Jose

*** Indicates that a closure project is ongoing and funded for the specific crossing.*
Note: All projects are treated equally within each group.

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Safety Enhancements: Funding Landscape

- Projects will be incorporated into the Caltrain Capital Improvement Program (CIP)

- State / Federal
  - Limited *dedicated* funding for safety enhancement projects
  - Broad eligibility across multiple, highly competitive federal and state sources
  - Positive track record Federal and State earmarks

- Regional: Eligible in Caltrain capital programs
  - Measure A San Mateo County: $84M total unprogrammed (Caltrain Category)
  - Measure B Santa Clara County: $314M total (in 2017 dollars)
  - Prop L San Francisco County: Prop L does not include dedicated source. Projects may be eligible in certain transit categories.

Smaller projects often move forward more quickly because their modest funding needs are typically easier to fulfill.

Elimination Program

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Elimination Program

Closures

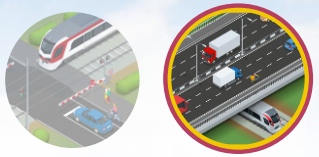
- Average Cost Range: $6M - $15M*
- Average time design to completed project: 3-5 years

Grade Separations

- Bike/Ped Crossings Average Cost Range: Less than $100M*
- Grade Separation Average Cost Range: More than $500M*
- Average time from concept to completed project: 15-30 years

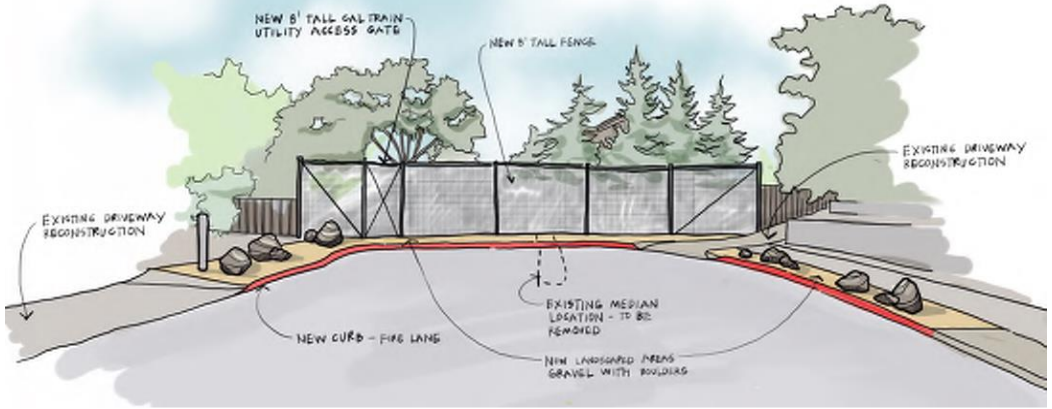
*based on 2025 cost estimates, subject to change

Example of Closure: Villa Terrace



Benefits of Permanent Full or Partial Closure:

- **Safety:** Eliminates vehicle, pedestrian, and cyclist conflicts with trains. Trains do not need to sound horns at closed crossings unless there are trespassers.
- **Cost Effective:** Usually less than $15M and avoids additional maintenance costs.
- **Faster Delivery:** Reduced design, permitting and construction complexity for corridor improvements.
- **Minimize Community Impacts:** minimal construction and far fewer impacts to the residents and business
- **Strategic Alignment:** Supports corridor-wide efforts to reduce at-grade crossings and focus resources where most impactful. Realistic funding environment.



San Mateo Council Approved Permanent Full Closure at Villa Terrace on August 18, 2025

Closures are incentivized because they can be delivered efficiently and provide the SAME safety benefits at a fraction of the cost of other improvements.

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Elimination: Data Input for Sequence List

Goal	Evaluation Criteria
Safe and Equitable Mobility	• Fatal Rail Incidents (Non-Intentional Only) • Fatal/Severe Street Incidents • Bike AND Pedestrian Access • Total Street Incidents per 1,000 Adjusted • AADT • Gate Downtime Growth ≥ 75%
Equity Priority Community Benefits	• Within 0.5 Miles of a School • Within Equity Priority Community • Within EnviroScreen Disadvantaged Community • Within Climate and Economic Justice Census Tract • Within Persistent Poverty Census Tract
Cost Efficiencies & Reliable Funding Implementable Program	• Within 0.3 Miles of Another Crossing • Dedicated Local/County Funding • Dedicated State/Federal Funding • Active Project Phase • Locally Preferred Alternative • Environmental Clearance • Closure
Maximize Rail Corridor Utility	• Fatal Rail Incidents (Including Intentional) • Identified in a 4-Track segment • Identified in a 4-Track segment needed for Caltrain Adopted Service Vision

NOTE: Caltrain prioritizes closures of crossings. Closures that can be delivered independently from a grade separation project will take priority over safety enhancement projects.

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Elimination Projects: Sequence Definitions

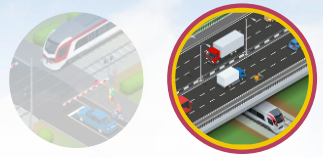
Funding Groups	Near-Term Objectives
A *(Score ≥ 12)*	Advance projects through **construction**.
B *(12 < Score ≥ 9)*	Advance projects through **final design**.
C *(9 < Score ≥ 7)*	Advance through **preliminary engineering and environmental clearance**.
D *(Score < 7)*	Evaluate Alternatives

Sequence: Elimination Projects

Groups	Project	City	Score*	Estimate Project Cost (2024) (Committed Funds)
Closures	**Closure of Villa Terrace, San Mateo**	San Mateo	/	
	Closure of Castro Street, Mountain View	Mountain View	/	
A *Construction*	Rengstorff Grade Separation Project	Mountain View	13	$400 – $500 M ($294 M*)
	Broadway Burlingame Grade Separation	Burlingame	12	$600 - $700 M ($258 M)
B *Final design*	Connecting Palo Alto: Churchill, Meadow, and Charleston	Palo Alto	10.7	$600 - $1,000 M ($44 M*)
	South Linden Avenue and Scott Street Grade Separation	South San Francisco / San Bruno	9.5	$300 - $400 M ($13 M)
	Middle Avenue Bike/Ped New Undercrossing	Menlo Park	9	$50 - $65M ($21.8 M)
C *Advance through PE and env. clearance*	Redwood City Grade Separation Study	Redwood City	8.8	$800 - $950 M ($13.7 M)
	Mary Avenue Grade Separation	Sunnyvale	8	$200 - $700 M ($25 M*)
	Sunnyvale Avenue Grade Separation	Sunnyvale	8	$100 - $200 M (*)
	Bernardo Avenue Bike/Ped New Undercrossing	Sunnyvale	8	$50 - $100 M ($21 M)
	Castro Street Grade Separation Project	Mountain View	8	$100 – $200 M
	Pennsylvania Avenue Extension (Mission Bay Drive, 16th St)	San Francisco	7.5	$2,500 M ($2.5 M)
D *Evaluate Alternatives*	Menlo Park Grade Separation	Menlo Park	6	Group D does not include estimated project costs due to these projects being in the early project development phases.
	San Mateo Grade Separation	San Mateo	4.2	
	Benton Brokaw Grade Separation Study	San Jose	4	
	Diridon Area Projects	San Jose	4	
	Southern San Jose Grade Separation	San Jose	4	
	South Palo Alto New Bike/Ped Crossing	Palo Alto	4	
	Morgan Hill Grade Separation	Morgan Hill	3.5	
	Palo Alto Avenue Grade Separation	Palo Alto	2	

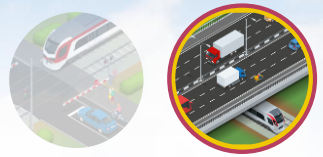
** Total available 2016 Measure B Caltrain Grade Separation Program funds to be allocated by percentage: 25% to City of Sunnyvale, 25% to City of MV and 50% to City of Palo Alto.*

Elimination Activities



Group	Objective	Funding Activities	Implementation Activities
A	Advance projects through construction.	• Apply for funds to complete design and construction.	• Perform value engineering, confirm scope, develop detailed cost estimates, and confirm financial viability with corridor partners. • Perform early work activities (i.e., utility relocation and right-of-way acquisitions.
B	Advance projects through final design.	• Apply for funds to complete design and right-of-way acquisitions.	• Perform value engineering, confirm scope, develop detailed cost estimates, and confirm financial viability with corridor partners. • Identify early work activities.
C	Advance through preliminary engineering and environmental clearance.	• Provide letters of support solely for design funds. • Not to compete with Groups A and B	• Define scope of project to identify more cost-effective solutions given constrained funding environment. • Conduct independent cost estimating (ICE) at end of preliminary engineering.
D	Evaluate Alternatives	• Provide letters of support solely for planning funds. • Not to compete with Groups A-C.	• Define scope of project to identify more cost-effective solutions given constrained funding environment. • Perform feasibility and constructability review prior. • Conduct ICE at end of 15% conceptual design.

Eliminations: Funding Landscape



Limited Dedicated Grade Separation Funding

- Fed: Rail Crossing Elimination (subject to reauthorization and appropriations): ~$600M available / year between FY22-26
- State: CPUC Section 190: $15M / year (statewide)

Broad, Competitive Sources that fund variety of activities (grade seps funded last 5 years)

- State: Transit and Intercity Rail Capital Program (TIRCP): ~$100M
- Fed: Consolidated Rail Infrastructure and Safety Improvements Program (CRISI): ~$270M
- Fed: Nationally Significant Multimodal Freight & Highways Program (INFRA): ~$200M; 2022 – 2026
- Fed: Rebuilding American Infrastructure with Sustainability and Equity (BUILD): $27M; 2021 - 2025

County

- SMCTA Measure A &W: $228M total (for grade separations)
- VTA measure B: $700M total (in 2017 dollars for grade separations between Palo Alto, MV, and Sunnyvale)
- SF: Prop L does not include dedicated source. Projects may be eligible in certain transit categories.

Alternative funding options are possible but only a limited number of grade separations can realistically be advanced in the near term with existing funding.

Summary and Next Steps

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All Crossings

City	Crossing	Safety Enhancement Program		Elimination Program
		Baseline Safety Enhancements	Sequence Lists	
			Advanced Safety Enhancements	Eliminations
San Francisco	Mission Bay Drive	+	1	C
	16th Street*	+	2	C
South San Francisco	South Linden Avenue	+	4	B
San Bruno	Scott Street	+	1	B
Millbrae	Center Street	+	4	
	Santa Paula Pedestrian Crossing	+	4	
Burlingame	Broadway*	+	1	A
	Morrell Avenue Pedestrian Crossing	+	No advanced enhancements proposed.	
	Oak Grove Avenue	+	4	
	North Lane	+	2	
	Howard Avenue	+	4	
	Bayswater Avenue	+	3	
	Peninsula Avenue	+	4	
San Mateo	Villa Terrace**	Closure		
	Bellevue Avenue**	+	3	
	1st Avenue	+	4	D
	2nd Avenue	+	4	D
	3rd Avenue	+	4	D
	4th Avenue**	+	4	D
	5th Avenue**	+	4	D
	9th Avenue	+	4	D

* Denotes crossings with identified safety enhancement projects led by Caltrain (completed or ongoing).
** Denotes crossings with identified at-grade projects led by the local jurisdiction (ongoing).

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All Crossings (continued)

City	Crossing	Safety Enhancement Program		Elimination Program
		Baseline Safety Enhancements	Sequence Lists	
			Advanced Safety Enhancements	Eliminations
Redwood City	Whipple Avenue	+	3	C
	Brewster Avenue	+	1	C
	Broadway/Marshall Street	+	3	C
	Maple Street	+	4	C
	Main Street	+	1	C
	Chestnut Street	+	4	C
Atherton	Fair Oaks Lane	+	4	
	Watkins Avenue*	+	No advanced enhancements proposed.	
Menlo Park	Encinal Avenue	+	4	D
	Glenwood Avenue	+	4	D
	Oak Grove Avenue**	+	3	D
	Ravenswood Avenue**	+	4	D
	Middle Avenue Bike/Ped Undercrossing	No existing At-Grade Crossing		B
Palo Alto	Palo Alto Avenue*/**	+	4	D
	Churchill Avenue*/**	+	1	B
	East Meadow Drive*/**	+	1	B
	Charleston Road*/**	+	2	B
	South Palo Alto Bike/Ped Crossing	No existing At-Grade Crossing		D
Mountain View	Rengstorff Avenue	+	1	A
	Castro Street*	Closure		C
Sunnyvale	Bernardo Avenue Undercrossing	No existing At-Grade Crossing		C
	Mary Avenue	+	3	C
	Sunnyvale Avenue	+	4	C
Santa Clara	Benton Street and Brokaw Road Grade Separation	No existing At-Grade Crossing		D
San Jose	Auzerais Avenue	+	4	D
	Virginia Street	+	4	D

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