APPENDIX 1 - California Administrative Code, Title 21, Division 2, Chapter 13, Grade Separation Projects

GRADE SEPARATION PROGRAM

TITLE 21. Public Works
Division 2. Department of Transportation
Chapter 13. Grade Separation Projects -- Applications for Allocation or Supplemental Allocations (Register 82, No. 34, filed 8-21-82)

Article 1. Applications

§1552. Last Date to File.

April 1 of each fiscal year is the last date on which applications for allocation of grade separation funds in that fiscal year can be filed; provided, however, if April 1 is a Saturday, Sunday, or a State of California holiday, then the last date of filing shall be the next business day following April 1. Filing is accomplished by filing the application with the Department of Transportation in the manner hereafter stated.

§1553. Place to File.

The complete application in triplicate must be received in the Office of the District Director of Transportation, State of California, in the transportation district in which the applicant is located, no later than 4:00 p.m. on the last day for filing.

§1554. Contents of Application.

The complete application must include a written request for an allocation in a specified monetary amount along with copies of each of the following attached to it:

(a) All necessary orders of the Public Utilities Commission of the State of California. Necessary orders of the Public Utilities Commission include:

(1) An order authorizing construction of the project;

(2) A statement of the applicant's position on the annual priority list established by the Public Utilities Commission pursuant to Streets & Highways Code Section 2452;

(3) In case the applicant and affected railroad or railroads cannot agree as to the apportionment of the cost of the project between them, an order apportioning such cost pursuant to Public Utilities Commission Code Section 1202.5, but in no case shall an allocation be made unless the railroad or railroads contribute no less than the amount required by Section 2454 of the Streets & Highways Code, except as may be otherwise provided by law.

(b) All necessary agreements with the affected railroad or railroads fully executed by railroad or railroads and applicant. The necessary agreements with the railroad include:

(1) Permission to enter upon railway right-of-way for construction, or in lieu thereof, an order of the Public Utilities Commission or of a court of competent jurisdiction authorizing such entry for construction purposes;

(2) A description of the project on a plan setting forth the area and items of the project and the particular area and items of the project to which the railroad or railroads agree to contribute;

(3) The percentage of railroad's or railroads' contribution to the cost of the area and items to which railroad or railroads agree to contribute;

(4) Identification or estimated cost of the area and items to which railroad or railroads do not contribute;

(5) Agreement that railroad or railroads shall contribute a minimum of 10 percent of the project without a maximum dollar limitation on the railroad's contribution, except that the contribution may be less than

10 percent of the cost of the project where expressly so provided by law.

(6) When two or more railroads are affected by a project, their combined contribution must be a minimum of 10 percent of the cost of the project without a maximum dollar limitation on the combined contribution, except that such combined contribution may be less than 10 percent of the cost of the project when expressly so provided by law.

(c) A certified resolution by the applicant's governing body authorizing the filing of application.

(d) Certified resolution by applicant's governing body stating that all matters prerequisite to the awarding of the construction contract can be accomplished within one year after allocation of funds for the project by the California Transportation Commission.

(e) A certified resolution by applicant's governing body stating that sufficient local funds will be made available as the work of the project progresses.

(f) Copies of all necessary Environmental Impact Reports or Negative Declarations, with a certified Notice of Determination and approval or acceptance of these documents by the Lead Agency. In cases where an Environmental Impact Statement or Negative Declaration has been prepared for the project pursuant to the requirements of the National Environmental Policy Act of 1969 and implementing regulations thereto, such documents may be submitted in lieu of an approved Environmental Impact Report or Negative Declaration and Notice of Determination, provided the Environmental Impact Statement or Negative Declaration fully develops the factors required in Title 14, Section 15143, of the State Administrative Code including Title 20, Section 17.1(d)(2), of the State Administrative Code and such Environmental Impact Statement or Negative Declaration has received Federal approval.

(g) General plan of the project, including profiles and typical sections.

(h) Project cost estimate, which is to be broken down to construction, preliminary and construction engineering, work by railroad forces, right of way costs, and utility relocation.

§1555. Project Limitation

Participation of the grade separation fund is limited only to that portion of the project which, in the determination of the California Transportation Commission, is necessary to make the grade separation operable and to effect the separation of grades between the highway and the railroad track or tracks, or necessary to effect the relocation of track or highway. Off-track maintenance roads shall be nonparticipating unless the existing access for maintenance purposes is severely impaired by the project. Participating items include, but are not limited to, approaches, ramps, connections, drainage, erosion control of slopes, such as ivy, iceplant, and rye grass, and preconstruction costs, such as right of way acquisition, preparation of environmental impact reports and utility relocation, necessary to make the grade separation operable. In any dispute as to scope of the project or qualification of an item, the decision of the California Transportation Commission shall be conclusive.

§1556. Allocation Limitation

Initial allocation of grade separation funds by the California Transportation Commission shall be limited to that based upon applicant's estimate of cost of project specified by applicant and utilized by the Public Utilities Commission of the State of California in establishment of applicant's priority pursuant to Streets and Highways Code Section 2452 of the State of California, and in no case shall the original and supplemental allocation for a single project exceed a total of five million dollars ($5,000,000) without specific legislative authorization in effect for the project at the final date and time for filing an application. A planned project must be a complete and operable project, and

effect the separation of grades, relocation of the highways or railroad, in order to qualify for an allocation.

Article 2. Supplemental Allocations

§1557. Last Date to File.

The last date on which an application for a supplemental allocation can be filed for the subsequent fiscal year is May 1 of the current calendar year. If May 1 is a Saturday, Sunday, or a State of California holiday, then the last date of filing shall be the next business day following May 1. The applicant must file a formal application with the project final report.

§1558. Place to File.

The complete application in triplicate must be received in the Office of the District Director of Transportation, State of California, in the transportation district in which the applicant is located, no later than 4:00 p.m. on the last day of filing.

§1559. Contents of Application

The application must include a written request for a supplemental allocation in a specified amount along with copies of each of the following attached thereto.

(a) A certified resolution by the applicant's governing body certifying that:

(1) Applicant has authority to make request for supplemental allocation;

(2) The project has been completed and has been accepted by the governing body;

(3) The actual and final cost of the project has been determined and set forth in the supplemental application;

(4) All costs set forth in the request for supplemental allocation were necessary to make the grade separation operable and effect the separation of grades or the relocation of track or highway.

(5) That railroad or railroads have contributed 10 percent of the cost of the project unless a lesser contribution is expressly provided by law.

(b) Evidence that funds would have been allocated for the project had the actual cost been used by the Public Utilities Commission of the State of California in determining the project's ranking on the priority list.

(c) A final accounting of the cost of the project with a statement explaining the detail why the original allocation was not sufficient.

APPENDIX 2 – New Proposed Priority Index Formulas

Formula For Crossing Nominated For Separation Or Elimination

$$P = \frac{V * (T + 0.1 * LRT) * (AH + 1)}{C} + SCF$$

Where:
- **P** - Priority Index Number
- **V** - Average 24-Hour Vehicular Volume (1 point per vehicle)
- **T** - Average 24-Hour Train Volume (1 point per train)
- **C** - Project Cost Share to be Allocated from Grade Separation Fund (1 point per thousand dollars)
- **LRT** - Average 24-Hour Light Rail Train Volume (1 point per train)
- **AH** - Accident History (up to 3 points per accident)
- **SCF** - Special Conditions Factor = BD+VS+RS+CG+PT+OF (up to 63 pts)
  - **BD** - Crossing Blocking Delay (up to 5 points)
  - **VS** - Vehicular Speed Limit (up to 5 points)
  - **RS** - Railroad Prevailing Maximum Speed (up to 7 pts)
  - **CG** - Crossing Geometrics (up to 17 points)
  - **PT** - Passenger Trains (up to 10 points)
  - **OF** - Other Factors: passenger buses, school buses, trains carrying hazardous materials trains and trucks, and community impact (up to 19 points)

C = Project Cost Share to be Allocated from Grade Separation Fund

Up to five million dollars per project will be allocated (S&H Code § 2454(g)) per fiscal year, unless the applicant is seeking multiple-year funding as prescribed in S&H Code § 2454(h). Local agencies are eligible to receive up to $5 million each year, over a period of 5 years. The total amount they may receive is $20 million, not to exceed 80% of the cost, if an at-grade crossing is closed and the project meets other specific requirements. Up to fifteen million dollars ($15,000,000) to a single project maybe be allocated if that project is the highest ranking project on the priority list (S&H Code § 2454(g) (2)).

For the $123 million of the Proposition 1B bond measure, pending Legislative action, a dollar for dollar match with non-State funds is required, and the limitation on maximum project cost shall not apply.

AH = Accident History (last 10 years from application filing due date)
The total AH score is the sum of points per accident awarded as follows for vehicle and pedestrian accidents involving trains at crossings with the Crossing Protection Factor (CPF) based on the crossing's warning devices:

Points per Accident = (1 + 2 x No. Killed + No. Injured) x CPF

STANDARD	9	8	1
CPF	1.0	0.4	0.1

Note 1: No more than three points shall be allowed for each accident prior to modification by the protection factor.

Note 2: Each accident is rated separately and modified by a factor based on the warning devices in existence at time of the accident.

Note 3: Pedestrian collisions with the train will be considered at the crossing, excluding all suicides.

SCF = Special Conditions Factor = BD+VS+RS+CG+PT+OF

BD = Blocking Delay by Train (The total time in which vehicular traffic is delayed to allow a train to pass at a crossing.) The blocking delay, for a typical day, is the elapse time in minutes when trains pass the crossing. The delay is measured from the point that the warning devices are activated at the crossing to the time after the train has cleared the crossing and the warning devices are reset. The BD points are the total delay time, valued in a range from 0 to 5 points.

VS = Vehicular Speed Limit - Posted Speed Limit

SPEED-MPH	0-30	31-35	36-40	41-45	46-50	51+
POINTS	0	1	2	3	4	5

RS = Railroad Maximum Speed

SPEED-MPH	0-25	26-35	36-45	46-55	56-65	66-75	76-85	86+
POINTS	0	1	2	3	4	5	6	7

CG = Crossing Geometrics - 0 - 17 points are awarded to each crossing based on the relative severity of physical conditions, i.e. grade, alignment, site distance, track skew angle, traffic signals, entrances and exits, etc.

PT = Passenger Trains – Additional points are given to projects that have passenger trains, including light rail transit, traveling through the crossing based on the following:

NO. OF TRAINS	1-2	3-5	6-10	11-20	21-30	31-40	41-50	51-60	61-70	70+
POINTS	1	2	3	4	5	6	7	8	9	10

OF = Other Factors- Other Factors are valued in a range from 0 to 19 points based on:

CATEGORY	**POINTS**
SCHOOL BUSES	0-3
PASSENGER BUSES	0-3
HAZ-MAT TRUCKS*	0-3
COMMUNITY IMPACT	0-10

*Hazardous material trucks must display the placard with a clearly visible diamond-shaped sign to be counted for this category.

Formula For Existing Separations Nominated For Alteration Or Reconstruction

$$P = \frac{V * (T + 0.1 * LRT)}{C} + SF$$

Where:

- **P** - Priority Index Number
- **V** - Average 24-Hour Vehicular Volume (1 point per vehicle)
- **T** - Average 24-Hour Train Volume (1 point per train)
- **LRT** - Average 24-Hour Light Rail Train Volume (1 point per train)
- **C** - Project Cost Share to be Allocated from Grade Separation Fund (1 point per thousand dollars)
- **SF** - Separation Factor = WC + HC + SR + AS + POF + AP + DE
  - **WC** - Width Clearance (up to 10 points)
  - **HC** - Height Clearance (up to 10 points)
  - **SR** - Speed Reduction (up to 5 points)
  - **AS** - Accidents at or near structure (0.1 pt per accident)
  - **POF** - Probability of Failure (up to 10 points)
  - **AP** - Accident Potential (up to 10 points)
  - **DE** - Delay Effects (up to 10 points)

C = Project Cost Share to be Allocated from Grade Separation Fund
Up to five million dollars per project will be allocated (S&H Code § 2454(g)) per fiscal year, unless the applicant is seeking multiple-year funding as prescribed in S&H Code § 2454(h). Projects are eligible to receive up to $5 million each year, over a period of 5 years, the maximum is $20 million, not to exceed 80% of the project cost, if an at-grade crossing is closed and the project meets other specific requirements. Up to fifteen million dollars ($15,000,000) to a single project maybe be allocated if that project is the highest ranking project on the priority list (S&H Code § 2454(g) (2)).

For the $123 million of the Proposition 1B bond measure, pending legislative action, a dollar for dollar match with non-State funds is required, and the limitation on maximum project cost shall not apply.

APPENDIX 2 – New Proposed Priority Index Formulas

SF = Separation Factor = WC+HC+SR+AS+PF+AP+DE

WC = Width Clearance is determined by bridge width (in feet) and the number of traffic lanes in existence (N):

If the Width is:	POINTS
Greater than or equal to 16′+12(N)	0
Greater than 12′ + 12(N) but less than 16′ + 12(N)	2
Greater than 8′ + 12(N) but less than 12′ + 12(N)	4
Greater than 11(N) but less than 8′+12(N)	6
Equal to 11(N)	8
Less than 11(N)	10

HC = Separation Height Clearance is determined by the height clearance from center of traffic lane and bridge (Underpass) or from top of rail and bridge (Overpass).

Underpass

Height (feet)	Points
15' and above	0
14' but less than 15'	4
13' but less than 14'	8
Less than 13'	10

Overpass

Height (feet)	Points
22.5' and above	0
20' but less than 22.5'	4
18' but less than 20'	8
Less than 18'	10

SR = Speed Reduction or Slow Order

	Points
None	0
Moderate	2
Severe	5

APPENDIX 2 – New Proposed Priority Index Formulas

AS = Accidents at or near the structure during the last 10 years from the application due date. The total AS points is determined by dividing the total number of occurrences by 10 and rounded off to the nearest tenth of a point (86 occurrences = 86/10= 8.6 points).

PF = Probability of Failure has a 10 point maximum taking structure age into account.

	Points
Minimal/None	0
Slight	2-3
Moderate	4-6
Extreme	7-10

AP = Accident Potential – A maximum of 10 points is given for the geometrics at the separation like: road curvature, signage, and illumination.

	Points
None	0
Slight	2-3
Moderate	4-6
Extreme	7-10

DE = Delay Effects – A maximum of 10 points is given to conditions that cause traffic delays at the separation like road bottlenecks, slow vehicle usage (trucks, agriculture equipment, lack of left or right turn lanes or other traffic congestion.

	Points
None	0
Slight	2-3
Moderate	4-6
Extreme	7-10

APPENDIX 3 - OII Interested Party Notice Letter

STATE OF CALIFORNIA ARNOLD SCHWARZENEGGER, *Governor*

PUBLIC UTILITIES COMMISSION
320 WEST 4TH STREET, SUITE 500
LOS ANGELES, CA 90013
(213) 576-7078 FAX 576-7072

July 18, 2007

To: All Interested Parties

Re: **Establishment of the Grade Separation Priority List for fiscal years 2008-2009 and 2009-2010 under Section 2450 et seq. of the California Streets and Highways Code.**

The Public Utilities Commission (Commission) issued an Order Instituting Investigation (OII) for establishing the highway-rail Grade Separation Priority List (Priority List) for fiscal year 2008-2009 (and possibly 2009-2010, depending on legislative action which may occur). The California Transportation Commission and the California Department of Transportation use the Grade Separation Priority List to allocate funds made available to the program to assist local governments in financing grade separations and crossing elimination projects.

If you wish to nominate a grade separation project for inclusion on the Priority List, you must complete and file a nomination application and participate in the Commission's OII. If you are interested, download the OII and appendices from our website at: http://www.cpuc.ca.gov/static/hottopics/4railsafety/index.htm. Search for I.07-07-006.

The OII and appendices include an explanation and filing requirements for participating in the program, including a nomination form and instructions, and listing the criteria and formulas used to rank all nominations. All applications are due Friday, October 19, 2007.

For additional clarifications or comments, please contact me at rxm@cpuc.ca.gov, (213) 576-7078.

Sincerely,

ROSA MUÑOZ, PE
Utilities Engineer
Rail Crossings Engineering Section
Consumer Protection & Safety Division

APPENDIX 4 - Caltrans, Railroad & Light Rail Transit Agency Mailing List

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APPENDIX 4 - Caltrans, Railroad & Light Rail Transit Agency Mailing List

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APPENDIX 4 - Caltrans, Railroad & Light Rail Transit Agency Mailing List

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California Transportation Commission
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California State Association of Counties
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APPENDIX 5 – GSN 1 FORM

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Investigation for the purpose of establishing a list for the fiscal years 2008-2009 and 2009-2010 of existing and proposed crossings at-grade of city streets, county roads or state highways in need of separation, or projects affecting the elimination of grade crossings by removal or relocation of streets or railroad tracks, or existing separations in need of alterations or reconstruction in accordance with Section 2452 of the Streets and Highways Code.	Investigation 07-07-006 (Filed July 12, 2007)

Nomination for Separation or Elimination

Of

Existing or Proposed Railroad-Grade Crossing

Nomination by _____

Road/Highway	
PUC Crossing ID No.	
DOT ID No.	
Railroad(s)	

This packet contains the GSN-1 Form and instructions. – Please carefully read the instructions before completing the form.

APPENDIX 5 – GSN 1 FORM

A. Nominating Party

Agency Name:						
Contact Name	Title	Street Address	City	Zip Code	Telephone	E-mail
					( )	
Alternate						
					( )	

B. Crossing Location and Project Type (List all crossings if a consolidation project)

Road/Highway Name	
PUC ID NO.	
DOT ID NO.	
City / County / ZIP Code	
Railroad(s)	
Project Type	Underpass [ ] Overpass [ ] Elimination [ ]
Is project part of a consolidation?	Yes [ ] No [ ]

C. Average Daily Vehicle and Train Volumes

Autos		Freight Trains	
School Buses		Passenger Trains	
Passenger Buses		Light Rail Trains	
Hazmat Trucks			
TOTAL VEHICLE COUNT		**TOTAL TRAIN COUNT**	
Date of Count(s)		Date of Count (s)	

D. Costs and Contributions

Please fill in the following worksheet to determine the total project costs.

Right-of Way allowance.....….$_____
Preliminary Engineering.....$_____
Construction Engineering.....$_____
Total Engineering ..... $_____
Bridge Construction.....… $_____
Railroad Work.....….. $_____
Highway Approaches & Connections…..$_____
Utility Relocation.....… $_____
Contingencies.....… $_____
Removing Existing Crossing.....…. $_____
Total Construction Costs.....…. $_____

TOTAL PROJECT COST $_____

ALLOCATED SHARE FROM STATE FUND: $_____

Contributions:

City	$
County	$
Railroad	$
Other (specify)	$

E. Accident History Data

Total Number of Trains vs. Vehicle and Pedestrian Accidents *			
Source	Date	Killed	Injured
Source	Date	Killed	Injured
Source	Date	Killed	Injured
Source	Date	Killed	Injured

* List all accidents from October 21, 1997 to October 21, 2007. For each accident specify the accident date, the number of fatalities and injuries.

F. Blocking Delay and Speed Limits

Total Blocking Delay	min.
Number of Observed Delays	
Information Provided by:	Railroad [ ] Observation [ ]
Date Delays Verified	
Posted Vehicle Speed Limit	mph
Train Speed Limit at Crossing	mph

G. Crossing Geometrics

Track Skewed Angle = _____°	Is there a parallel road to the track? Yes [ ] No [ ]
No. of Tracks = _____	Are there traffic signals within 50'? Yes [ ] No [ ]
Elevated Surface Profile Direction: _____ Height: _____ in. Direction: _____ Height: _____ in.	Is there an entrance/exit within 150'? Yes [ ] No [ ]
	Is there a raised median? Yes [ ] No [ ]
	Is there curvature on the road or track? Yes [ ]No [ ]

H. Other Information / Attachments

Did you enclose an 8 1/2" x 11"location map?	Yes [ ] No [ ]
Did you enclose two 8"x10" pictures of crossing?	Yes [ ] No [ ]
Did you attach a brief Community Impact evaluation?	Yes [ ] No [ ]

I. Declaration

I, _____, declare under penalty of perjury that the information on this form is true and correct to the best of my knowledge. The information has been verified by me or under my supervision and is the most current information available.

Signature: _____ Title: _____ Date: _____

APPENDIX 5 – GSN 1 FORM INSTRUCTIONS

Introduction: By July 1 of each year, the California Public Utilities Commission (Commission) is required to establish and furnish to the California Transportation Commission a priority list of railroad grade separation projects most urgently in need of separation or elimination. Nominations of grade separation/elimination projects must be submitted on the GSN-1 Form by October 19, 2007, in the Commission's OII. **All nominations** are reviewed and taken into consideration for the development of the Commission's Priority List. Incomplete and late-filed applications will not be processed or included in the Priority List. Please follow the instructions below to complete the application. Should you need assistance with this form please contact Rosa Muñoz at (213) 576-7078 or at rxm@cpuc.ca.gov.

INSTRUCTIONS:

A. INFORMATION ABOUT THE NOMINATING PARTY:

In the spaces provided, enter name, address, e-mail address and contact person along with contact's title and phone number. If you have hired a consultant to process the nomination, please provide the consultant's company name and phone number in the "Alternate" section.

B. CROSSING LOCATION AND PROJECT TYPE:

Provide the PUC and DOT crossing identification numbers for the proposed project along with the street location, city, county and zip code of the crossing and the name of the railroad(s) company operating the tracks. If the project involves the construction of a new grade separation at a site where there is no existing at grade crossing, then enter "NEW" for the PUC Crossing Number. Also specify the type of project the grade separation proposal involves with respect to train traffic. For example, if a bridge is to be built where the roadway goes over the tracks, the project is an "OVERPASS". If a bridge is to be built where roadway goes underneath the tracks, then the project is an "UNDERPASS".

NOTE: If your project involves more than one crossing, list each crossing separately in part B of GSN-1 form and answer "Yes" to the Consolidation question under Project Type.

C. AVERAGE DAILY VOLUME:

For all categories specified in this section, provide the vehicle and train count of a typical day. In the "AUTOS" category, specify the total number of vehicles flowing through the crossing that are not specified in the other categories. For example: all automobiles, pick-up trucks, vans, limos, 4WD Vehicles, etc should be counted in the "AUTOS" category. Count school buses, passenger buses, and hazardous-material trucks separately.

For the train counts specify the total number of trains that use the crossing into three categories: Freight Trains (UPRR, BNSF Railway, Short Lines, etc.), Passenger Trains (Amtrak, Metrolink, Caltrain, etc.), and Light Rail Trains (San Diego Trolley, VTA, etc.).

Include the date when the count(s) was (were) taken. This date should be within the last year of filing the application. If a later dated vehicle count is used, then specify in the affidavit that the vehicle count is an accurate representation of current traffic flow.

D. COSTS AND CONTRIBUTIONS:

Complete the work sheet to determine the total project costs. Also enter the amount of the costs that are expected from the sources specified on GSN-1 form. Indicate the amount sought from the Section 190 Grade Separation fund either the partial amount needed to fund the project, the maximum state allocation of five million dollars per project, or the amount if applicant is seeking multiple-year funding.

E. ACCIDENT HISTORY DATA

Provide the total number of train versus vehicle and pedestrian accidents that have occurred at the crossing(s) proposed for the grade separation project from October 19, 1997 to October 19, 2007 (10-year period). Pedestrian collisions with the train will be considered at the crossing, excluding all suicides. Attach a copy of the law enforcement report for all accidents to the original GSN-1 Form that is not found on the Federal Railroad Administration website: http://safetydata.fra.dot.gov/OfficeofSafety/NewCrossing/Default.asp. For each accident, specify

the location (if more than one crossing is involved with the project), accident date, the number of fatalities, the number of injuries, and the data source.

F. BLOCKING DELAY AND SPEED LIMITS

The blocking delay is the time, in minutes, from when the crossing signals are active until the train clears the crossing and the signals return to their upright position. In this section, specify the requested blocking delay information for a typical day. For example: Three trains use the crossing on a daily basis. The blocking delay is 5 min. for the first train, 3.5 min. for the second, and 7.75 min. for the third train. The total blocking delay is the sum of each delay for a total of 16.25 min.

VEHICULAR & TRAIN SPEED LIMIT: Specify the posted vehicular speed limit in direction of traffic flow that passes through crossing. If no signs are posted then assume 35 mph as the vehicular speed limit in urban areas, for rural areas 55 mph. Also specify the train speed limit at the crossing location.

G. CROSSING GEOMETRICS:

Provide the information requested about the physical attributes of existing crossing using the following guidelines:

TRACK SKEWED ANGLE: The skewed angle is the angle measurement, in degrees, from the tracks to the perpendicular of the roadway. Measure the angle using the vertex at the intersection between the curb or edge of roadway and the railroad track. Use the curb or edge of the roadway as an axis and measure the angle to the rail edge nearest to the curb. The track skewed angle is the absolute value of 90° less the measured angle (i.e. |90° - measured angle |).

NUMBER OF TRACKS: Specify the total number of tracks at the existing crossing.

ELEVATED SURFACE PROFILE: The elevated surface profile is the change in height from the top of the nearest rail track to the top of the roadway 30-ft. from the tracks. The measurement

should be in inches and the direction in which traffic is flowing should be specified as "N" for North, "S" for South, "E" for East and "W" for West.

PARALLEL ROAD TO TRACKS WITHIN 100 ft: Is there an adjacent road running parallel to the track(s)? Mark "Yes" if there is a parallel road, or "No" if there is not.

TRAFFIC SIGNALS WITHIN 50 ft: Are there any traffic signals within 50 feet of crossing? (not the active warning devices at the crossing). Mark "Yes" if there is a traffic signal, or "No" if there is not.

ENTRANCE / EXIT WITHIN 150 ft: Is there a driveway entrance or exit within 150 ft from crossing? Mark "Yes" if there is a driveway entrance or exit, or "No" if there is not.

RAISED MEDIAN PROTECTION: Is there a raised median protection at the crossing? Mark "Yes" if there is a raised median, or "No" if there is not.

CURVATURE OF ROAD OR TRACK: Is the road and/or track curvature sufficient to impair visibility by vehicular traffic? If highway/roadway visibility is hindered, mark "Yes". If curvature does not interfere with visibility mark "No".

H. ATTACHMENTS

Please attach an 8 ½" x 11" location map and two 8" x 10" photographs of the proposed crossing location (one from each approach) showing the entire crossing and pertinent crossing geometrics. Also attach a brief explanation of the community impact including its justification, how it meets transportation planning goals, and impacts especially emergency vehicle usage.

I. DECLARATION

Please complete the declaration with the information requested and sign.

BEFORE THE PUBLIC UTILITIES COMMISSION OF THE STATE OF CALIFORNIA

Investigation for the purpose of establishing a list for the fiscal years 2008-2009 and 2009-2010 of existing and proposed crossings at-grade of city streets, county roads or state highways in need of separation, or projects affecting the elimination of grade crossings by removal or relocation of streets or railroad tracks, or existing separations in need of alterations or reconstruction in accordance with Section 2452 of the Streets and Highways Code.	Investigation 07-07-006 (Filed July 12, 2007)

Nomination for Alteration or Reconstruction

Of
Existing Grade Separation

Nomination by _____

Road/Highway	
PUC Crossing ID No.	
DOT ID No.	
Railroad(s)	

This packet contains the GSN-2 Form and instructions. – Please carefully read the instructions before completing the form.

A. Nominating Party

Agency Name:						
Contact Name	Title	Street Address	City	Zip Code	Telephone	E-mail
					( )	
Alternate						
					( )	

B. Crossing Location and Project Type (List all crossings if a consolidation project)

Road/Highway Name	
PUC ID NO.	
DOT ID NO.	
City / County / ZIP Code	
Railroad(s)	
Project Type	Underpass [ ] Overpass [ ] Elimination [ ]
Is project part of a consolidation?	Yes [ ] No [ ]

C. Clearances

Horizontal Width	ft.
Height Clearance	Ft.
Number of Lanes	
Separation Type	Underpass [ ] Overpass [ ]

D. Speed Reduction or Slow Order

Vehicle Speed Reduction	mph
Railroad Slow Order	mph
Is there a center divider?	Yes [ ] No [ ]

E. Average Daily Vehicle & Train Volumes

Transportation Mode	COUNT	COUNT DATE
Total Number of Vehicles		
Total Number of Trains		
Freight Trains		
Passenger Trains		
Light Rail Trains		

F. Accident History Data

Total Number Accidents *			
Source	Date	Killed	Injured
Source	Date	Killed	Injured
Source	Date	Killed	Injured
Source	Date	Killed	Injured

* List all accidents from October 21, 1997 to October 21, 2007. For each accident specify the accident date, the number of fatalities and injuries.

G. Costs and Contributions

Please fill in the following worksheet to determine the total project costs.

Right-of Way allowance.....….$_____
Preliminary Engineering.....$_____
Construction Engineering.....$_____
Total Engineering .....… $_____
Bridge Construction.....…. $_____
Railroad Work.....…… $_____
Highway Approaches & Connections.….$_____
Utility Relocation.....….$_____
Contingencies.....….$_____
Removing Existing Crossing.....$_____
Total Construction Costs.....…...$_____

TOTAL PROJECT COSTS $_____

ALLOCATED SHARE FROM STATE FUND: $_____

Contributions:

City	$
County	$
Railroad	$
Other (specify)	$

H. Probability of Failure

Specify the date that the structure was built?	
When was structure last evaluated? *	
Has the structure been retrofitted to current standards for seismic safety or other improvements? ** If so, indicate completion date of retrofit work.	Yes [ ] No [ ]

* Please attach a copy of the evaluation results with recommendations for corrective action(s).
** Please attach a summary of work performed and completion date(s).

I. Attachments

Did you enclose an 8 ½" x 11" location map?	Yes [ ] No [ ]
Did you enclose two 8"x10" pictures of crossing?	Yes [ ] No [ ]

J. Declaration

I, _____, declare under penalty of perjury that the information on this form is true and correct to the best of my knowledge. The information has been verified by me or under my supervision and is the most current information available.

Signature: _____ Title: _____ Date: _____

APPENDIX 6 – GSN 2 FORM INSTRUCTIONS

Introduction: By July 1 of each year, the California Public Utilities Commission (Commission) is required to establish and furnish to the California Transportation Commission a priority list of railroad grade separation projects most urgently in need of separation or elimination. Nominations for alteration or reconstruction of existing separation projects must be submitted on the GSN-2 Form by October 19, 2007, in the Commission's OII. **All nominations** are reviewed and taken into consideration for the development of the Commission's Priority List. Incomplete and late-filed applications will not be processed or included in the Priority List. Please follow the instructions below to complete the application. Should you need assistance with this form please contact Rosa Muñoz at (213) 576-7078 or at rxm@cpuc.ca.gov.

INSTRUCTIONS:

A. INFORMATION ABOUT THE NOMINATING PARTY:

In the spaces provided, enter name, address, e-mail address and contact person along with contact's title and phone number. In the "Alternate" section, list consultant information if they are processing the nomination.

B. CROSSING LOCATION AND PROJECT TYPE:

Provide the PUC and DOT crossing identification numbers for the existing structure along with the street location, nearest cross street, city, county and the railroad track owner. Please specify if the project is an alteration or reconstruction. If the reconstruction involves the relocation of the existing separation, then enter "NEW" for the Federal and PUC numbers.

C. CLEARANCES:

Provide the information requested about the physical attributes of existing separation. The Horizontal Width should be measured between the edge of roadway/curb to the opposite edge of roadway/curb. For the Height Clearance, measure from the top of rail to bottom of structure, or, measure from the center of the roadway to bottom of structure. Also specify if the structure is an Overpass or Underpass.

D. SPEED REDUCTION AND/OR SLOW ORDER

Quantitatively identify any vehicular speed reduction that may be due to the presence of the structure. For example, speed over the structure being reduced from 60 mph to 30 mph. Information regarding a railroad slow order may be obtained from the railroad company (see Appendix 4 for list of Railroads).

E. AVERAGE DAILY VEHICLE & TRAIN VOLUMES

Provide an average 24-hour day count of vehicles and trains and enter the date when count was taken. The count should be completed by the filing due date and should not be more than one year old. If a current count is not available, provide the information along with the date of the most current count. Do not estimate the data.

F. ACCIDENT HISTORY DATA:

Provide a count of the total number of accidents that may be attributed to the presence of the grade separation structure. Include a copy of the data and source(s).

G. COSTS AND CONTRIBUTIONS:

Complete the worksheet to determine the total project costs. Also enter the amount of the total costs expected from the sources on GSN-2 Form. Indicate the amount sought from the state fund either the partial amount needed to fund the project, the maximum state allocation of five million dollars per project, or the amount if applicant is seeking multiple-year funding.

H. PROBABILITY OF FAILURE DATA:

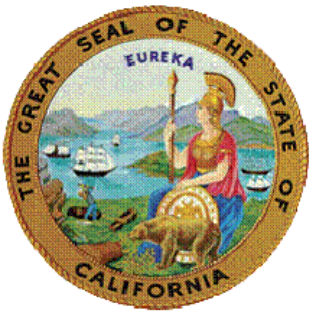
Please specify the date the structure was constructed and the date the structure was last evaluated for probability of failure. Attach a copy of the evaluation with recommendations for corrective action(s) to the original GSN-2 Form. If retrofitting work is in progress or has been completed, attach a summary of work completed and the completion dates. Also specify if other work is being planned for completion prior October 19, 2007.

I. ATTACHMENTS

Please attach a location map and two photographs of the existing structure (one from each approach) showing the entire separation and pertinent crossing geometrics.

J. DECLARATION: Please complete the declaration with the information requested and sign.

California Public Utilities Commission



Consumer Protection and Safety Division
Rail Transit and Crossings Branch
Rail Crossings Engineering Section

Richard W. Clark, Director

Summary Report

State Section 190
Grade Separation Fund Priority List Formula – Examination pursuant to Assembly Concurrent Resolution 151

June 2007

Table of Contents

Executive Summary

The Consumer Protection and Safety Division-Rail Crossings Engineering Section (RCES or Staff) prepared this report in response to Assembly Concurrent Resolution (ACR) 151, authored by Assembly Member Barbara Matthews and approved by the legislature in September 2006. A copy of ACR-151 is attached as Appendix A.

ACR-151 requests the Public Utilities Commission (Commission) revise the prioritization formula used to establish the priority list for railroad crossing grade separation projects to add a factor that accounts for delays that disproportionately affect emergency vehicles, especially in rural areas. The measure also requested the Commission notify the Assembly Committee on Transportation and the Senate Committee on Transportation and Housing when it has considered this revision. This report responds to that legislative directive.

In response to ACR-151, on October 20, 2006, Staff sent a letter and/or e-mail to over 400 local agencies and other interested parties informing them of ACR-151 and requesting comments on the formula or their interest to receive future communications on this subject. Staff also created a website where parties could receive additional information. Fifty two respondents requested to be added to the correspondence list; however, Staff received a total of only three comments on the formula used for establishing the priority list. The summary of the first round of comments received is attached as Appendix B-1.

After posting the initial comments on the web site, a second round of comments were also solicited, received and considered for the formula revisions. Four parties responded to the second solicitation with written comments and ten more respondents requested to be placed on correspondence list. A summary of the comments were posted on the web site. The summary of the second round of comments is attached as Appendix B-2.

Due to the limited extent of comments received, workshops were not deemed necessary. The majority of comments were not supported with data. RCES has analyzed the specific proposals and all of the comments received and made its recommendations for modifications to the formula to the Commission. The recommendations and Staff's justification for its recommendations are contained in this report.

Summary of Recommended Changes:

CI - Staff recommends increasing the maximum number of Community Impact (CI) points from 5 to 10 in the formula for projects which eliminate crossing(s). The points awarded for CI are not based on a formula but rather given on a subjective basis. Among the types of impact Commission staff evaluates is traffic congestion, whether the at-grade crossing cuts off emergency vehicle service, and pedestrian traffic including students getting to and from school. Although, for the highest ranking projects on the grade separation priority list, the points given for CI have a very small to insignificant impact on the overall priority index of a

nominated project. The CI points can serve as a tie breaker which could become more important if funds for the Priority List are increased.

AH –Staff recommends revising its formula to include pedestrian crossing accidents in the accident history factor (AH) excluding suicides to fully account for the full severity of the number of accidents/incidents occurring at the crossing. In past OIIs, the pedestrian versus train accidents at crossings were not included in the accident history. The Federal Railroad Administration considers a highway-rail crossing accident/incident an impact between on-track railroad equipment and a highway user (e.g., an automobile, bus, truck, motorcycle, bicycle, farm vehicle, pedestrian or other highway user) at a designated crossing site. Sidewalks, pathways, shoulders and ditches associated with the crossing are considered to be part of the crossing site. The term "highway user" includes pedestrians, cyclists, and all other modes of surface transportation.

Background of the Grade Separation Program

By July 1 of each year, the Commission is required, pursuant to S&H Code Section 2452, to establish and furnish to the California Transportation Commission (CTC) a priority list of existing and proposed crossings at grade in need of separation, including the elimination of existing or proposed grade crossings, the elimination of grade crossings by removal or relocation of streets or railroad tracks, and existing grade separations in need of alteration or reconstruction. The Priority List, based on criteria established by the Commission, includes projects on city streets, county roads, and state highways, which are not freeways as defined in S&H Code Section 257.

Funding for projects included on each annual Priority List is provided by S&H Code Section 190. Additional funds may be available as a result of the passage of Proposition 1B[1] which includes $250 million for improving highway-rail crossings and constructing grade separations.

Existing Priority Formula

The criteria for prioritizing and ranking projects are left to the discretion of the Commission (S&H Code § 2452). The criteria have been continually refined in previous proceedings. The principal method adopted by the Commission to prioritize a project is a formula which weighs vehicular and train traffic volumes (V*T) multiplied by the crossing accident history (AH), along with project costs (C) and a variety of special condition factors (SCF) which includes the blocking delay (BD) at the nominated site. Different SCF were developed for the elimination and separation of grade crossings than for the alteration or reconstruction of

---

1 Relevant Proposition 1B language:

(j) (1) Two hundred fifty million dollars ($250,000,000) shall be deposited in the Highway-Railroad Crossing Safety Account, which is hereby created in the fund. Funds in the account shall be available, upon appropriation by the Legislature, to the Department of Transportation for the completion of high-priority grade separation and railroad crossing safety improvements. Funds in the account shall be made available for allocation pursuant to the process established in Chapter 10 (commencing with Section 2450) of Division 3 of the Streets and Highways Code, except that a dollar for dollar match of nonstate funds shall be provided for each project, and the limitation on maximum project cost in subdivision (g) of Section 2454 of the Streets and Highways Code shall not be applicable to projects funded with these funds.

(2) Notwithstanding the funding allocation process described in paragraph (1), in consultation with the department and the Public Utilities Commission, the California Transportation Commission shall allocate one hundred million dollars ($100,000,000) of the funds in the account to high-priority railroad crossing improvements, including grade separation projects, that are not part of the process established in Chapter 10 (commencing with Section 2450) of Division 3 of the Streets and Highways Code. The allocation of funds under this paragraph shall be made in consultation and coordination with the High-Speed Rail Authority created pursuant to Division 19.5 (commencing with Section 185000) of the Public Utilities Code.

existing grade separations. The nominated project's data is applied to a specified formula, which results in the assignment of points for the various factors as the resultant priority index. The project's priority index is then ranked in the current pool of nominations from highest to lowest on the Grade Separation Priority List.

The objective of the Grade Separation Program is to improve safety and reduce traffic congestion and motorist delays at the crossings. Commission adopted the most recent priority evaluation formulas in I.01-07-008, issued July 12, 2001, which were used for the last six years.

Current Formula - Crossings Nominated for Separation or Elimination:

$$P = \frac{V * (T + 0.1LRT) * (AH + 1)}{C} + SCF$$

Where:
- **P** - Priority Index Number
- **V** - Average 24-Hour Vehicular Volume (1 point per vehicle)
- **T** - Average 24-Hour Train Volume (1 point per train)
- **C** - Project Cost Share to be Allocated from Grade Separation Fund (1 point per thousand dollars)
- **LRT** - Average 24-Hour Light Rail Train Volume (1 point per train)
- **AH** - Accident History (up to 3 points per accident)
- **SCF** - Special Conditions Factor = BD+VS+RS+CG+PT+OF (up to 58 pts)
  - **BD** - Crossing Blocking Delay (up to 5 points)
  - **VS** - Vehicular Speed Limit (up to 5 points)
  - **RS** - Railroad Prevailing Maximum Speed (up to 7 pts)
  - **CG** - Crossing Geometrics (up to 17 points)
  - **PT** - Passenger Trains (up to 10 points)
  - **OF** - Other Factors: passenger buses, school buses, trains carrying hazardous materials trains and trucks, and community impact (up to 14 points)

Current Formula - Existing Separations Nominated for Alteration or Reconstruction:

$$P = \frac{V * (T + 0.1 * LRT)}{C} + SF$$

Where:
- **P** - Priority Index Number
- **V** - Average 24-Hour Vehicular Volume (1 point per vehicle)
- **T** - Average 24-Hour Train Volume (1 point per train)
- **LRT** - Average 24-Hour Light Rail Train Volume (1 point per train)
- **C** - Project Cost Share to be Allocated from Grade Separation Fund (1 point per thousand dollars)
- **SF** - Separation Factor = WC + HC + SR + AS + POF + AP + DE
  - **WC** - Width Clearance (up to 10 points)
  - **HC** - Height Clearance (up to 10 points)
  - **SR** - Speed Reduction (up to 5 points)
  - **AS** - Accidents at or near structure (0.1 pt per accident)
  - **POF** - Probability of Failure (up to 10 points)
  - **AP** - Accident Potential (up to 10 points)
  - **DE** - Delay Effects (up to 10 points)

Appendix A – Assembly Concurrent Resolution 151, September 2006

ACR 151, Matthews Grade separation projects.

This measure would request the Public Utilities Commission to revise the prioritization formula used to establish the priority list for grade separation projects at the next Order Instituting Investigation to add a factor for delays that disproportionately affect emergency vehicles. The measure would also request the Public Utilities Commission to notify the Assembly Committee on Transportation and the Senate Committee on Transportation and Housing when it has considered this revision.

WHEREAS, The Public Utilities Commission has exclusive power to determine and prescribe the manner of a crossing of a street by a railroad; and

WHEREAS, The commission is required to adopt an annual grade separation priority list for projects that the commission determines to be most urgently in need of grade separation or alteration, determined on the basis of criteria established by the commission; and

WHEREAS, The California Transportation Commission is required to allocate available funding to projects pursuant to the annual priority list; and

WHEREAS, There are significant public safety concerns related to the juxtaposition of railroad crossings to emergency services where railroad traffic can and does adversely affect the delivery of emergency services, particularly in small communities with only one hospital or emergency care facility; and

WHEREAS, The impact of grade separation crossings on emergency services and public safety response time is an important consideration that should be given more weight by the Public Utilities Commission when adopting the annual priority list; now, therefore, be it

Resolved by the Assembly of the State of California, the Senate thereof concurring, That the Legislature requests the Public Utilities Commission to revise the prioritization formula used to establish the grade separation priority list at the next Order Instituting Investigation to add a factor for delays that disproportionately affect emergency vehicles, especially in rural areas; and be it further

Resolved, That the Legislature requests the Public Utilities Commission to notify the Assembly Committee on Transportation and the Senate Committee on Transportation and Housing when it has considered the revision described in this resolution; and be it further

Resolved, That the Chief Clerk of the Assembly transmit copies of this resolution to the Public Utilities Commission and to the author for appropriate distribution.

Appendix B-1 – Summary of First Set of Comments

Summary of First Set of Comments to Formula Used for Establishing the Priority List

These comments were received from parties as a result of solicitation by the Consumer Protection and Safety Division, Rail Crossings Engineering Section, during our examination of the formulas used in evaluating nominated projects under the Section 190 Grade Separation program. There are two formulas used to establish the priority rankings. One deals with new grade separation proposals and the other with replacement or reconstruction of existing grade separation structures. These are the first set of comments received in the matter.

Parties submitting comments recommended changes to the formula for new grade separations, specifically, the factors that make up various elements of the formula, rather than the formula itself. No changes were proposed for the formula evaluating replacement or reconstruction of existing grade separation structures.

RCES Staff sent out e-mail notices to interested parties as requested from replies to our initial notice, and received a total of three (3) comments to the first solicitation regarding the grade separation formula.

****

Assembly Member Barbara Matthews recommends giving more points in the CI factor for potential emergency vehicle blockage, particularly in rural areas, and sponsored ACR 151 to prompt its examination.

From Peninsula Corridor Joint Powers Board (JPB or Caltrain):

JPB recommends revising the formula to include:

1) Considering pedestrian incidents (fatalities and/or injuries) on an equal weighting in the scoring formula as incidents that occur in vehicles.

2) The potential for incidents is greatest during peak commute periods factoring all trip modes. Therefore, consideration should be given to providing an emphasis in the formula on trips made during peak commute hours (e.g. am and pm commuter periods). In this scenario, a crossing that has a high number of train trips and a high number of vehicle trips during the same time (e.g. during the peak commute periods) would score higher

than a crossing that may have a high number of vehicle trips and a high number of train trips during different times.

3) Flexibility to potentially include trespasser accidents that have occurred in the near vicinity of a crossing, but not directly at it, if it can be demonstrated that a grade separated crossing could have prevented the trespass from occurring.

From City of Vista:

To Whom it may concern,

I am responding to express my interest on behalf of the City of Vista in commenting on the formula used for establishing the priority list. In my past testimony before the Administrative Law Judge before the PUC at the Grade Separation hearing, I have expressed my concerns about the formula only taking into account current train counts, and not allowing future train counts for project that are “on track” to be constructed. If grade separations could be funded then, they would be much less costly than after the trains are operational.

From City of Encinitas:

a) Pedestrian vs. train in incidents should be considered in evaluative formula.
b) At-grade non-motorized vehicle and pedestrian crossing should be eligible projects.
c) Funding Limit per Project and Program Funding Increase.

Appendix B-2 – Summary of Second Set of Comments

Summary of Second Set of Comments to Formula Used for Establishing the Priority List

These comments were received from parties as a result of solicitation by the Consumer Protection and Safety Division, Rail Crossings Engineering Section, during our examination of the formulas used in evaluating nominated projects under the Section 190 Grade Separation program. There are two formulas used to establish the priority rankings. One deals with new grade separation proposals and the other with replacement or reconstruction of existing grade separation structures. These are the second set of comments received in the matter.

Parties submitting comments recommended changes to the formula for new grade separations, specifically, the factors that make up various elements of the formula, rather than the formula itself. No changes were proposed for the formula evaluating replacement or reconstruction of existing grade separation structures.

RCES Staff sent out e-mail notices to interested parties as requested from initial notice, and received a total of four (4) comments to the second solicitation regarding the grade separation formula.

****

From Neill, Moffatt & Nichol, Private Industry Consultants:

1. I suggest that the estimated grade separation cost be used as the C factor. This would somewhat dilute this portion of the formula, which would modestly increase the importance to the SCF factors. The SCF factors have become less and less important as Train Volumes and Vehicular Volumes have both increased.
2. I also believe the AH accident factor should use a graduated decline in accidents after the ten year period. It doesn't seem consistent that an accident is worth three points one year and after ten years it is assigned a value of zero. I think a graduated decline over a 15 year period would be worthwhile considering.
3. I agree with the comments from JPB that accidents that involve pedestrians should be counted. We are going to great extremes to add pedestrian crossing protection currently. If the crossing was separated, the incidence of pedestrian crossings would be eliminated since the Right of Way could be fenced. I believe that accidents within 50 feet of the crossing could be

addressed within the formula. The cause of the accident would have to be considered.

4. The BD blocking delay is a factor that has not been adequately addressed within the current formula. I have studied the economic impact of a blocked grade crossing. The study is attached for your consideration. It indicates that a grade separation can be partially justified by blocking delay, independent of the accident potential. It was suggested by JPB and in the summary that consideration for peak hour traffic be addressed. If this were done, it is very likely that blocking delay costs would increase, as noted in the study. I believe the BD should be on a 24 hour basis, with some consideration for the cost; possibly BD/C. This adjustment and the VT/C factor would both represent cost benefit factors for a project.
5. There has been some discussion about using future train counts for "on track" projects. Previously, when these were considered the projections were unrealistic hence on the LRT factor the formula uses a constant rate of 10%. We are examining the "potential accident" history. Obviously future traffic projections are not verifiable.

****

From the Honorable Mayor Ellie Wooten, City of Merced:

1. Currently, BD is calculated on the impact one track crossing generates. The City would like to see additional points in the BD category where additional track delays occur within three-quarters of a mile from the first track crossing. In Merced, there are two BNSF tracks and two UPRR tracks crossing G Street less than three-quarters of a mile apart. Emergency vehicles have to cross both tracks to arrive at the only hospital and emergency room in the City. The City suggests that a factor be added to the SCF to recognize this Dual Train (DT) crossing impact in our City. Up to 10 points should be added based on the Community Impact (CI) statement.
2. The current formula uses the SCF as an add-on to the railroad count and traffic count. As such, it provides very little impact in the overall point distribution. The City recommends that SCF be used as a multiplier in the numerator of the formula. The formula would then be:
   $P=V*(T + 0.1*LRT)*(AH + SCF) / C$
3. The City further recommends that the Accident History (AH) be counted as the raw number of accidents worth one point per accident. Counted accidents should include pedestrian/train accidents within one mile of the intersection. These accidents cause train delays, often several hours, that exacerbate the problem of emergency vehicles getting across the City.
4. When the formula is changed to allow for dual crossings within a certain distance, the Train Volume (T) used in the formula should include the train

counts for both tracks. In the City of Merced, both BNSF and UPRR passenger trains and freight trains would be worth one point each.

5. More points should be allowed for "Community Impact." This would take into account the number of at-grade crossings in a community and the spacing between the crossings. Out of 16 railroad crossings in the City of Merced, only one (located at the far east side of the City) is grade separated. Inside the City, both BNSF and UPRR have dual tracks. Outside of the City, each operate on single tracks. Currently, if there is a need to shift one train over so another can pass, the railways utilize the spur tracks thereby blocking traffic inside the City. The City recommends that the Community Impact point total be raised.

Overall, these changes will improve the formula by adding emphasis on physical conditions which create safety issues now and in the future. The existing formula overweights past accidents.

The City has been fortunate not to have any at-grade accidents at the G Street crossing in the last decade. The current formula penalizes Merced with heavy weighting on the number of past accidents. We recognize the overall safety implications intended by the formula, and increasing the value of the Special Conditions Factor will balance the formula for future safety issues as opposed to relying on past accidents only.

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<u>From the Mr. Ron Ruettgers, Engineer to the Greater Bakersfield Separation of Grade District:</u>

1. Under the present formula, the current priority list ranks 70 projects with priority indices from 19,513.8 to 14.0. Prior to the last modification, a typical annual priority list would comprise of 70-100 project with priority indices ranging from the 100 to 50 vicinity. Under the current formula, a few projects generate extremely high indices, leaving the vast majority of nominations with low indices.
2. The formula is heavily skewed in favor of a few projects because accident history has been placed in the numerator and the cost factor has been limited to the State participation, thus <u>leaving only 58 points available under "special condition factors</u>." Therefore, slight modifications to "other factors" or "community impact" components will do little to correct a formula that has lost its balance.
3. The State Separation of Grade Program is currently facing a more fundamental problem than an out-of-kilter formula. <u>The maximum amount of $5 million dollars available for an individual project and the annual allocation of only $15 million for the entire Program are woefully inadequate.</u> Several years ago, the Commission of the CPUC recommended to the legislature a minimum

increase to $60 million per year for the Program to no avail. This recommendation should be renewed with vigor.

4. While the present formula takes into account emergency vehicles and community impacts, the District suggests the CPUC should concentrate first increasing program funding. Once adequate funding is secured for the program, we recommend that the entire formula be reviewed so that more projects, not just a handful of projects, will be able to compete.

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From the Honorable Cathleen Galgiani, Assembly member, 17th District:

I am writing in support of the City of Merced's comments regarding proposed changes the California Public Utility Commission's (CPUC) formula used to prioritize grade separation projects. These changes are critical for the city of Merced because 73% of the population is denied across to the emergency services at the city's only hospital when a train is stopped, or a crossing gate malfunction occurs.

In my prior capacity as Chief of Staff to Assembly member Barbara Matthews, I have been involved with this issue since 2004, when we formed the Merced Railroad Crossing Task Force in order to identify options for remedying Merced's railroad crossing problems. Those meetings and discussions eventually led to Assembly member Matthews introducing Assembly Bill (AB) 1853 of 2006. AB 1853 would have required the CPUC to specifically account for crossings blocking delays that disproportionately affect emergency services when establishing their priority list for grade separation projects. At a meeting we held with the representatives of the CPUC, it was advised that legislation was not necessary to affect this purpose and alternative suggestions to revise the formula were discussed, such as allocating bonus points.

Last May, Assembly member Barbara Matthews introduced a resolution, ACR 151, that requested the Public Utilities Commission to revise the prioritization formula used to establish the priority list for grade separation projects, at the next Order Instituting Investigation, to add a factor for delays that disproportionately affect emergency vehicles. Assemblymember Matthews submitted a letter in August, 2006, as requested by representatives of the Commission that outlined her proposal for revising the formula which involved the Special Conditions Factor (SCF), and specifically the Community Impact (CI) under Other Factors (OF). One suggestion discussed at the meeting with CPUC representatives was to allocate bonus points for crossing delays that impact emergency services within the CI factor. Another suggestion was to add a new factor underneath OF named "special circumstances". For either of these suggestions, point allocation could be anywhere from 0-10 points. Cities could request "bonus points" or points for "special circumstances" under the "community impact statement" section of the application, by citing compelling evidence that crossing delays threaten access to

emergency services. Assemblymember Matthews' Assembly Constitutional Resolution 151 was adopted by the entire Legislature this past September, Resolution Chapter 133, Statutes of 2006.

To reiterate past remarks, the City of Merced has a unique set of circumstances that are detrimental to the flow of traffic through town. First, the two railroads dissect the entire city. The only access route through town that isn't dissected by the railroad track is the Bradley overpass, and the problem will be further exacerbated by the impending closure of the overpass due to a badly needed replacement. Secondly, unique to Merced is the fact that the railroad crossings are so close together, that a train approaching one crossing triggers the closure of nearby crossings even though a train may still be a significant distance away. This is not a problem in communities where crossings have a greater geographical separation. To further compound the situation, we will experience over 2,000 people entering this community each and every year for the next 20 years.

Merced's most significant concern is the impact on emergency services given the juxtapositions of the rail lines. With the closure of Mercy Dominican Hospital, 73% of the population is denied access to emergency services in Merced's only remaining hospital when a train is stopped or a crossing gate malfunction occurs, as the majority of residents live on the other side of the tracks. An even higher percentage of the City's population will be denied access to emergency services following the pending closure of the Bradley overpass.

The City of Merced has drafted comments regarding proposed changes to the prioritization formula, and submitted a letter under separate cover. Nonetheless, I have enclosed a copy of the City's letter citing additional suggestions and ask for your full consideration.

Thank your for the opportunity to comment on the proposed revisions to the formula used to prioritize the grade separation projects funding.

Appendix B-3 –Summary of Comments and RCES Staff Formula Recommendation

I. Summary of Comments:

1. Increase Community Impact (CI) factor: One party suggested the CI factor be valued from 0-10, rather than the current 0-5 points, to give more points to this factor, specifically, potentially blocked emergency vehicles at crossings. That would mean that the Other Factors (OF) available points, of which CI is part, would be 0-19, rather than the 0-14 that is currently available.
   OF = Other Factors- Currently valued in a range from 0 to 14 points based on:

CATEGORY	POINTS
SCHOOL BUSES	0-3
PASSENGER BUSES	0-3
HAZ-MAT TRUCKS	0-3
COMMUNITY IMPACT	0-5

2. New Special Circumstance Factor in OF: One party suggested giving more points to this factor taking into account the number of at-grade crossings in a community and the spacing between the crossings. Another party suggested the creation of a "Special Circumstances" factor, supporting bonus points for crossing delays that impact emergency services with CI factor or new factor in OF named "special circumstances," point range from 0-10 points.

3. Accident History (AH) factor: One respondent suggested the formula include all pedestrian and vehicle incidents/accidents, rather than just those involving motor vehicles. Another party suggest that the AH factor should include trespasser accidents that have occurred in the near vicinity of a crossing, but not directly at it. One party suggested that these trespasser incidents be considered within one mile of the crossing as opposed to 50 feet outside the crossing suggested by another party. The value of the AH was suggested to be graduated, the concern is that the value is zero after the ten year period. One party suggested the value of each accident be worth just one point per accident.

4. Peak Traffic hour: One party recommended that consideration should be given to providing an emphasis in the formula on trips made during peak commute hours (e.g. am and pm commuter periods).

5. Future Train Counts (T): One party suggested the formulas should take into account future train counts for projects that are "on track" to be constructed, while another suggested not to, since the data is not verifiable.

6. Full Cost in Denominator: the SCF factor has become less important as train and vehicle volumes have both increased, and because the AH is a multiplier in the formula's numerator. It was suggested that the Full Cost be used in the

formula denominator (rather than just the State share) to reduce the importance of that first part of the formula and increase the SCF importance.

7. Blocking Delay (BD) Factor should include more costs & peak traffic considerations: As the factor stands today, it does not take into account all costs and peak traffic versus commuter train conflicts.

8. Proposed new Dual Track factor: To account for multiple crossings on the same route where no alternate routes exist and both sets of tracks must be crossed.

9. SCF should be a multiplier in the numerator of the formula: Concerned the SCF calculated value gives little impact in the overall point distribution.

10. Current formula generates extremely high indices: Concern it leaves the vast majority of nominations with low indices:

11. Funding: The maximum amount of the fund has remained only $15 million (since 1974).

II. Rail Crossings Engineering Section reply comments:

The majority of comments submitted failed to include supporting data

1. We agree there are merits to increasing Community Impact (CI) factor: As suggested we recommend the CI factor be valued from 0-10, rather than the current 0-5 points, to give more points to potentially blocked emergency vehicles at crossings. That would mean that the Other Factors (OF) available points, of which CI is part, would be 0-19, rather than the 0-14 that is currently available.

   OF = Other Factors (PROPOSED) are valued in a range from 0 to 19 points based on:

CATEGORY	**POINTS**
SCHOOL BUSES	0-3
PASSENGER BUSES	0-3
HAZ-MAT TRUCKS	0-3
COMMUNITY IMPACT	0-10

2. New Special Circumstance Factor in OF We believe that with the change Staff recommends in number 1, above, that the OF component will allow consideration of the presence of multiple crossings along the same route, as suggested. However, we believe an additional 10 points specifically for this condition, in conjunction with the additional points added to the CI factor, is not justified.

3. Accident History (AH) factor: We agree with the recommendation to change the Accident History (AH) factor to include all pedestrian and vehicle incidents/accidents, rather than just those involving motor vehicles with the exception of the exclusion of suicides. By adopting the Federal Railroad Administration definition of a highway-rail crossing accident/incident which states a crossing incident is an impact between on-track railroad equipment and a highway user (e.g., an automobile, bus, truck, motorcycle, bicycle, farm vehicle, pedestrian or other highway user) at a designated crossing site. Sidewalks, pathways, shoulders and ditches associated with the crossing are considered to be part of the crossing site. The term "highway user" includes pedestrians, cyclists, and all other modes of surface transportation.

   Regarding the use of only the most recent 10 years of accident history, we believe it is appropriate. The use of accident history (AH) for the most recent period accounts for the reduction or elimination of train versus vehicle collisions and the resulting potential for loss of life and property damage, medical costs, liability, disruption to train service, etc. that result from crossing upgrades. Each accident is given a one point value with additional points awarded to injuries and fatalities, for a maximum of 3 points. By adopting a ten year history period a more representative factor of the crossing characteristic is taken into account. The AH factor takes into account any significant changes that have occurred at the crossing, for example the installation of signals by changing the warning device multiplying factor. Thereby, the potential reduction in the number and/or severity of collisions is accurately reflected and weighed in the formula.

4. Peak Traffic hour: The suggestion to provide an emphasis in the formula on trips made during peak commute hours (e.g. am and pm commuter periods) is not recommended for implementation and we believe is already largely considered in the V*T factor since typically those crossings experiencing the most conflict between vehicle versus train during peak periods would experience the same rate of conflict using the annual average daily traffic.

5. Future Train Counts (T): We agree that the formulas should not take into account future train counts for projects that are “on track” to be constructed. Future traffic projections are not verifiable and therefore should not be considered.

6. Full Cost in Denominator: We are not recommending this change, as we believe it would have little overall effect on the project rankings. Staff compared the full cost of a project and the current state-share cost with the SCF. In the full cost scenario comparison, for the top ten projects, the SCF contributes less than 6% to the overall priority index, with the average for all projects being 33.5% of the total priority index. By comparison, in the current

state-share cost formulation, the SCF percentage is less than 3% with an average of 18%.

The SCF value contributes to the overall ranking of the projects, contributing significant information in which all nominations are ranked. In the lower ranked projects, the SCF makes up a higher percentage of the total priority index, since the first part of the formula has less significance resulting from lower vehicle, train and accident counts, regardless of community classification of rural or urban. Also the ranking of the top ten projects when using the full cost in the formula, resulted in minor ranking changes, but with the top five projects still in remaining in the top five.

7. Blocking Delay (BD) Factor should include more costs & peak traffic considerations: We do not support this recommended change. The objective of the grade separation formula is to rank projects according to the greatest need for improvement to safety. In addition, the formula considers to a lesser extent the reduction in traffic congestion and motorist delays at crossings. Therefore, the current formula reflects the intent of the grade separation program by giving greater weight to accident history and blocking delay, eliminating the potential danger to the largest number of people at the public crossing. The current formula does not take into account other cost-benefit factors such as travel time savings or environmental benefits.

8. Factor of Dual Train (DT) worth up to 10 points in Community Impact and allow both sets of Train volumes to be counted: We agree crossing multiple tracks should be taken into account, since in the Crossing Geometrics (CG) factor (17 points maximum) embedded in the SCF, multiple tracks are awarded additional points due to the fact that it takes a driver additional time to clear the tracks. However, we believe that additional points could not be accounted for “dual crossings” of separate tracks unless the project proposed to eliminate both separate highway-rail crossings. This circumstance should be accounted for in the CI Factor. Awarding points in the Community Impact (CI) are subject to the following considerations: applicant information given as to the potential for emergency vehicle blockage if the crossing is near a hospital, or if the path over the crossing is classified as an emergency vehicle route; if there is a mention of a school bus or passenger bus route; location of nearby fire/police station(s) and even school(s); designated hazardous material carrier route; a major arterial route; classification as a state highway/route; description of no grade-separation crossings in the city/area; and/or inclusion of data showing the actual blockage of an emergency vehicle.

9. SCF should be a multiplier in the numerator of the formula We do not believe the comments merit revision of the formula as recommended. In staff’s sample run with the proposed SCF as multiplier, for the top ten projects, the

rankings were slightly reshuffled, either moving up or down a few positions on the list. Therefore, the relative ranking of the projects changed little.. .

10. Current formula generates extremely high indices. Staff believes the formula is working since the relative ranking of the projects regardless of the point distribution. The higher indices are an indication of higher risk which needs to be eliminated.

11. Funding: The maximum amount of the fund has remained only $15 million (since 1974):Although this comment does not address, the formula, it is true that the $15 million allocation for safety prioritized projects mandated by S&H Code Section 190 was set in 1974 is woefully inadequate today. The $5 million cap per project is for those projects most urgently in need of elimination or restoration.

III. RCES Staff Recommendations:

Based on the comments received The Staff of the Rail Crossings Engineering Section is making the following recommendations to the Commission:

CI – Increase the maximum number of Community Impact (CI) points from 5 to 10 in the formula for projects which eliminate crossing(s).

AH - Include pedestrian accidents in the accident history factor (AH), excluding suicides.

Appendix C – Final Revised Formulas Adopted by the Public Utilities Commission

New Formula
For
Crossing Nominated For Separation Or Elimination

$$P = \frac{V * (T + 0.1 * LRT) * (AH + 1)}{C} + SCF$$

Where:
- **P** - Priority Index Number
- **V** - Average 24-Hour Vehicular Volume (1 point per vehicle)
- **T** - Average 24-Hour Train Volume (1 point per train)
- **C** - Project Cost Share to be Allocated from Grade Separation Fund (1 point per thousand dollars)
- **LRT** - Average 24-Hour Light Rail Train Volume (1 point per train)
- **AH** - Accident History (up to 3 points per accident)
- **SCF** - Special Conditions Factor = BD+VS+RS+CG+PT+OF (up to 63 pts)
  - **BD** - Crossing Blocking Delay (up to 5 points)
  - **VS** - Vehicular Speed Limit (up to 5 points)
  - **RS** - Railroad Prevailing Maximum Speed (up to 7 pts)
  - **CG** - Crossing Geometrics (up to 17 points)
  - **PT** - Passenger Trains (up to 10 points)
  - **OF** - Other Factors: passenger buses, school buses, trains carrying hazardous materials trains and trucks, and community impact (up to 19 points)

C = Project Cost Share to be Allocated from Grade Separation Fund
Up to five million dollars per project will be allocated (S&H Code § 2454(g)) per fiscal year, unless the applicant is seeking multiple-year funding as prescribed in S&H Code § 2454(h). Local agencies are eligible to receive up to $5 million each year, over a period of 5 years. The total amount they may receive is $20 million, not to exceed 80% of the cost, if an at-grade crossing is closed and the project meets other specific requirements. Up to fifteen million dollars ($15,000,000) to a single project maybe be allocated if that project is the highest ranking project on the priority list (S&H Code § 2454(g) (2)).

For the $123 million of the Proposition 1B bond measure, pending legislative action, a dollar for dollar match with non-State funds is required, and the limitation on maximum project cost shall not apply.

AH = Accident History (last 10 years from application filing due date)
The total AH score is the sum of points per accident awarded as follows for vehicle and pedestrian accidents involving trains at crossings with the Crossing Protection Factor (CPF) based on the crossing's warning devices:

Points per Accident = (1 + 2 x No. Killed + No. Injured) x CPF

STANDARD	9	8	1
CPF	1.0	0.4	0.1

Note 1: No more than three points shall be allowed for each accident prior to modification by the protection factor.

Note 2: Each accident is rated separately and modified by a factor based on the warning devices in existence at time of the accident.

Note 3: Pedestrian collisions with the train will be considered at the crossing, excluding all suicides.

SCF = Special Conditions Factor = BD+VS+RS+CG+PT+OF

BD = Blocking Delay by Train (The total time in which vehicular traffic is delayed to allow a train to pass at a crossing.) The blocking delay, for a typical day, is the elapse time in minutes when trains pass the crossing. The delay is measured from the point that the warning devices are activated at the crossing to the time after the train has cleared the crossing and the warning devices are reset. The BD points are the total delay time, valued in a range from 0 to 5 points.

VS = Vehicular Speed Limit - Posted Speed Limit

SPEED-MPH	0-30	31-35	36-40	41-45	46-50	51+
POINTS	0	1	2	3	4	5

RS = Railroad Maximum Speed

SPEED-MPH	0-25	26-35	36-45	46-55	56-65	66-75	76-85	86+
POINTS	0	1	2	3	4	5	6	7

CG = Crossing Geometrics - 0 - 17 points are awarded to each crossing based on the relative severity of physical conditions, i.e. grade, alignment, site distance, track skew angle, traffic signals, entrances and exits, etc.

PT = Passenger Trains – Additional points are given to projects that have passenger trains, including light rail transit, traveling through the crossing based on the following:

NO. OF TRAINS	1-2	3-5	6-10	11-20	21-30	31-40	41-50	51-60	61-70	70+
POINTS	1	2	3	4	5	6	7	8	9	10

OF = Other Factors- Other Factors are valued in a range from 0 to 19 points based on:

CATEGORY	**POINTS**
SCHOOL BUSES	0-3
PASSENGER BUSES	0-3
HAZ-MAT TRUCKS*	0-3
COMMUNITY IMPACT	0-10

*Hazardous material trucks must display the placard with a clearly visible diamond-shaped sign to be counted for this category.

Formula For Existing Separations Nominated For Alteration Or Reconstruction

(not revised or proposed for revision)

$$P = \frac{V * (T + 0.1 * LRT)}{C} + SF$$

Where:

- **P** - Priority Index Number
- **V** - Average 24-Hour Vehicular Volume (1 point per vehicle)
- **T** - Average 24-Hour Train Volume (1 point per train)
- **LRT** - Average 24-Hour Light Rail Train Volume (1 point per train)
- **C** - Project Cost Share to be Allocated from Grade Separation Fund (1 point per thousand dollars)
- **SF** - Separation Factor = WC + HC + SR + AS + POF + AP + DE
  - **WC** - Width Clearance (up to 10 points)
  - **HC** - Height Clearance (up to 10 points)
  - **SR** - Speed Reduction (up to 5 points)
  - **AS** - Accidents at or near structure (0.1 pt per accident)
  - **POF** - Probability of Failure (up to 10 points)
  - **AP** - Accident Potential (up to 10 points)

DE - Delay Effects (up to 10 points)

C = Project Cost Share to be Allocated from Grade Separation Fund
Up to five million dollars per project will be allocated (S&H Code § 2454(g)) per fiscal year, unless the applicant is seeking multiple-year funding as prescribed in S&H Code § 2454(h). Projects are eligible to receive up to $5 million each year, over a period of 5 years, the maximum is $20 million, not to exceed 80% of the project cost, if an at-grade crossing is closed and the project meets other specific requirements. Up to fifteen million dollars ($15,000,000) to a single project maybe be allocated if that project is the highest ranking project on the priority list (S&H Code § 2454(g) (2)).

For the $123 million of the Proposition 1B bond measure, pending legislative action, a dollar for dollar match with non-State funds is required, and the limitation on maximum project cost shall not apply.

SF = Separation Factor = WC+HC+SR+AS+PF+AP+DE

WC = Width Clearance is determined by bridge width (in feet) and the number of traffic lanes in existence (N):

If the Width is:	POINTS
Greater than or equal to 16'+12(N)	0
Greater than 12' + 12(N) but less than 16' + 12(N)	2
Greater than 8' + 12(N) but less than 12' + 12(N)	4
Greater than 11(N) but less than 8'+12(N)	6
Equal to 11(N)	8
Less than 11(N)	10

HC = Separation Height Clearance is determined by the height clearance from center of traffic lane and bridge (Underpass) or from top of rail and bridge (Overpass).

Underpass

Height (feet)	Points
15' and above	0
14' but less than 15'	4
13' but less than 14'	8
Less than 13'	10

Overpass

Height (feet)	Points
22.5' and above	0

20' but less than 22.5'	4
18' but less than 20'	8
Less than 18'	10

SR = Speed Reduction or Slow Order

	Points
None	0
Moderate	2
Severe	5

AS = Accidents at or near the structure during the last 10 years from the application due date. The total AS points is determined by dividing the total number of occurrences by 10 and rounded off to the nearest tenth of a point (86 occurrences = 86/10= 8.6 points).

PF = Probability of Failure has a 10 point maximum taking structure age into account.

	Points
Minimal/None	0
Slight	2-3
Moderate	4-6
Extreme	7-10

AP = Accident Potential – A maximum of 10 points is given for the geometrics at the separation like: road curvature, signage, and illumination.

	Points
None	0
Slight	2-3
Moderate	4-6
Extreme	7-10

DE = Delay Effects – A maximum of 10 points is given to conditions that cause traffic delays at the separation like road bottlenecks, slow vehicle usage (trucks, agriculture equipment, lack of left or right turn lanes or other traffic congestion.

	Points
None	0
Slight	2-3
Moderate	4-6
Extreme	7-10